GROUND OPERATIONS MANUAL

Eastern Airways
Schiphol House
Humberside Airport
Kirmington
North Lincolnshire
England
DN39 6YH
Tel: 08703 669 669
Fax: 08703 669 670

Eastern Airways is the trading name of Air Kilroe Ltd

DISTRIBUTION LIST

STATION	RECIPIENTS	FORMAT
HUY	Ground Operations Manager	Electronic
HUY	Quality Department	Electronic
HUY	Director of Flight Operations	Electronic
HUY	Flight Operations	Hard - No.2
HUY	MD/Accountable Manager	Electronic
HUY	General Manager of Operations	Electronic
HUY	Head of Safety and Compliance Monitoring	Electronic
HUY	Maintenance Director	Electronic
HUY	Head of Cabin Services & Training	Electronic
HUY	Humberside Operations	Electronic
HUY	Training/Admin Co-ordinators	Electronic
HUY	SeMS Co-ordinator	Electronic
HUY	Airport Authority	Electronic
HUY	Swissport	Electronic
ABZ	Eastern Engineering	Electronic
ABZ	Airport Security	Electronic
ABZ	Fresh jet	Electronic
ABZ	Bristow	Electronic
ABZ	Dalcross	Electronic
CWL	Airport Security	Electronic
CWL	Swissport	Electronic
DND	HIA Airport Operations / diversion handling for ABZ	Electronic
INV	Dalcross Logisitcs – diversion for ABZ	Electronic
KNF	MOD Ops	Electronic
LBA	Airport Authority	Electronic
LBA	Flight Care	Electronic
LBA	Swissport	Electronic
LMO	MOD Ops	Electronic
LSI	Eastern Airways Handling	Electronic
MME	Airport Authority	Electronic
MME	Swissport	Electronic
NCL	Fresh jet	Electronic
NCL	Airport Authority	Electronic
NCL	Swissport	Electronic
NWI	Norwich Handling Operations	Electronic
ORY	Alyzia	Electronic
QCY	MOD Ops	Electronic
RDZ	Airport	Electronic
SCS	Serco Operations	Electronic
SOU	Airport Authority	Electronic
SOU	Swissport	Electronic
VLY	Apelonia	Electronic
WIC	Eastern Passenger Services	Electronic
WIC	Airport Authority	Electronic
WIC	Far North Aviation	Electronic
WTN	BAe Systems	Electronic
CAA	Authority Copy	Electronic

INTENTIONALLY LEFT BLANK

RECORD OF AMENDMENT

Amendments must be incorporated upon receipt and details entered below

AMENDMENT NO	DATE OF AMENDMENT	DATE INCORPORATED	ENTERED BY	SIGNATURE
RE-ISSUE	120913	120913	Publications	ELH
01/2015	300115	060215	Publications	MKM
01/2015a	102015	102015	Publications	ELH
2015-02	100815	100815	Publications	MKM
2015-03	030915	030915	Publications	MKM
2015-04	201115	181115	Publications	MKM
2017-01	040417	040417	Publications	CA
2017-02	111017	111017	Publications	CA
2018-01	100418	100418	Publications	CA
2019-01	010319	010319	Publications	CA
2020-01	170620	170620	Publications	CB
2021-01	130421	130421	Publications	CB
2021-02	191121	241121	Publications	PIC
2023-01	141123	141123	Publications	CB
2024-01	020224	020224	Publications	CB
2024-02	161024	161024	Publications	CB

INTENTIONALLY LEFT BLANK

LIST OF EFFECTIVE PAGES

PAGE	DATE
DIST/1	010319
DIST/2	010319
AMDT/1	**161024**
LOEP/1	**161024**
LOEP/2	**161024**
LOEP/3	**161024**
LOEP/4	**161024**
LOEP/5	**161024**
CON/1	130421
CON/2	130421
CON/3	130421
ABB/1	010319
ABB/2	010319
ABB/3	010319
ABB/4	010319
0.1/1	**161024**
0.2/1	141123
0.3/1	170620
0.4/1	170620
0.5/1	191121
0.5/2	191121
0.5/3	191121
0.6/1	020224
0.7/1	170620
0.7/2	170620
1.1/1	**161024**
1.1/2	**161024**
1.1/3	**161024**
1.1/4	**161024**
1.1/5	**161024**
1.1/6	**161024**
1.1/7	**161024**
1.1/8	**161024**
1.1/9	**161024**
1.1/10	**161024**
1.1/11	**161024**
1.1/12	**161024**
1.1/13	**161024**
1.1/14	**161024**
1.2/1	170620
1.2/2	170620
1.3/1	170620
1.3/2	170620
1.4/1	191121
1.4/2	191121
1.4/3	141123
1.4/4	141123
1.4/5	141123
1.4/6	141123
1.4/7	170620
1.4/8	170620
1.4/9	170620
1.4/10	170620
1.4/11	170620
1.4/12	170620
1.4/13	170620
1.4/14	170620
1.4/15	170620
1.5/1	141123
1.5/2	141123
1.5/3	170620
1.5/4	170620
1.6/1	170620
1.6/2	170620
1.7/1	170620
1A/1	170620
1B/1	170620
2.1/1	**161024**
2.1/2	**161024**
2.1/3	**161024**
2.1/4	**161024**
2.1/5	**161024**
2.2/1	**161024**
2.2/2	**161024**
2.2/3	**161024**
2.2/4	**161024**
2.2/5	**161024**
2.2/6	**161024**
2.2/7	**161024**
2.3/1	191121
2.3/2	191121
2.3/3	130421
2.4/1	170620
2.5/1	020224
2.6/1	020224
2.7/1	**161024**
2.7/2	**161024**
2.8/1	020224
2.8/2	020224
2.8/3	020224
2.8/4	020224
2.8/5	020224
2.8/6	020224
2.8/7	020224
2.9/1	170620
2.9/2	170620
2.10/1	170620
3.1/1	**161024**
3.1/2	**161024**
3.1/3	**161024**
3.1/4	**161024**
3.1/5	**161024**
3.1/6	**161024**
3.1/7	**161024**
3.1/8	**161024**
3.1/9	**161024**
3.1/10	**161024**
3.1/11	**161024**
3.1/12	**161024**
3.1/13	**161024**
3.1/14	**161024**
3.1/15	**161024**
3.1/16	**161024**
3.2/1	130421
3.2/2	130421
3.2/3	130421
3.2/4	130421
3.3/1	**161024**
3.3/2	**161024**
3.3/3	**161024**
3.3/4	**161024**
3.4/1	170620
3.4/2	170620
3.4/3	170620
3.4/4	170620
3.4/5	170620
3.4/6	170620

6.9/1	100418
6.9/2	100418
6.9/3	100418
7.1/1	141123
7.1/2	141123
7.1/3	141123
7.2/1	100418
7.2/2	100418
7.2/3	100418
7.2/4	100418
7.2/5	100418
7.2/6	100418
7.3/1	100418
7.3/2	100418
7.4/1	170620
7.4/2	170620
7.4/3	170620
7.4/4	170620
7.4/5	170620
7.4/6	170620
7.4/7	170620
7.4/8	170620
7.4/9	170620
7.4/10	170620
7.4/11	170620
7.4/12	170620
7.5/1	100418
7.5/2	100418
7.5/3	100418
7.5/4	100418
7.5/5	100418
7.6/1	170620
7.6/2	170620
7.6/3	170620
7.6/4	170620
7.6/5	130421
7.6/6	130421
7.7/1	170620
7.7/2	170620
7.7/3	170620
7.8/1	130421
7.8/2	130421
7.8/3	130421
7.8/4	130421
7.8/5	130421
7.8/6	130421
7.8/7	130421
7.8/8	130421

7.8/9	130421
7.8/10	130421
7.8/11	130421
7.8/12	130421
7.8/13	130421
7.8/14	130421
7.9/1	100418
7.9/2	100418
7.9/3	130421
7.10/1	100418
7.10/2	100418
7.11/1	170620
7.11/2	170620
7.11/3	130421
7.11/4	130421
7.11/5	100418
7.11/6	100418
7.11/7	100418
7.11/8	100418
7.11/9	191121
7.12/1	130421
7.12/2	130421
7.13/1	100418
7.13/2	100418
7.14/1	100418
7.14/2	100418
7.14/3	100418
7.14/4	100418
7.14/5	100418
7.15/6	100418
7.15/7	100418
7.15/8	100418
7.15/9	100418
7.15/10	100418
7.15/11	100418
7.15/12	100418
7.15/13	100418
7.15/14	100418
7.15/15	100418
7.15/16	100418
7.15/17	100418
7.15/18	100418
7.15/19	100418
7.15/20	100418
8.1/1	020224
8.2/1	191121
8.2/2	191121
8.2/3	130421

8.2/4	130421
8.3/1	100418
8.3/2	100418
8.3/3	100418
8.3/4	100418
8.4/1	100418
8.4/2	100418
8.4/3	100418
8.5/1	100418
8.5/2	100418
8.5/3	100418
8.5/4	100418
8.6/1	191121
8.6/2	191121
8.6/3	100418
8.6/4	100418
8.6/5	100418
9/1	010319
10/1	010319
11.1/1	010319
11.2/1	010319
11.2/2	010319
11.2/3	010319
11.2/4	010319
11.2/5	010319
11.2/6	010319
11.2/7	141123
11.2/8	141123
11.2/9	010319
11.2/10	010319
11.2/11	010319
11.2/12	010319
11.2/13	010319
11.3/1	170620
11.3/2	170620
11.3/3	010319
11.3/4	010319
11.3/5	010319
11.3/6	010319
11.4/1	010319
11.4/2	010319
11.4/3	141123
11.4/4	141123
11.4/5	010319
11.4/6	010319
11.4/7	010319

D/25	141123
D/26	141123
D/27	020224
D/28	020224
D/29	141123
D/30	141123
D/31	**161024**
D/32	**161024**
D/33	**161024**
D/34	**161024**
D/35	141123
D/36	141123
D/37	141123
D/38	141123
D/39	141123
D/40	141123
D/41	141123
D/42	141123
D/43	141123
D/44	141123
D/45	141123
D/46	141123
D/47	141123
D/48	141123
D/49	141123
D/50	141123
D/51	141123
D/52	141123
D/53	141123
D/54	141123
D/55	141123
D/56	141123
D/57	141123
D/58	141123
D/59	141123
APPENDIX E	
E/1	141123
E/2	141123
E/3	141123
E/4	141123
E/5	141123
E/6	141123
E/7	141123
E/8	141123
E/9	141123
E/10	141123
E/11	141123
E/12	141123
E/13	141123
E/14	141123
E/15	141123
E/16	141123
E/17	141123
E/18	141123
E/19	141123
E/20	141123
E/21	141123
E/22	141123
E/23	141123
E/24	141123
E/25	141123
E/26	141123
E/27	020224
E/28	020224
E/29	141123
E/30	141123
E/31	141123
E/32	141123
E/33	141123
E/34	141123
E/35	141123
E/36	141123
E/37	141123
E/38	141123
E/39	141123
E/40	141123
E/41	141123
E/42	141123
E/43	141123
E/44	141123
E/45	141123
E/46	141123
E/47	141123
E/48	141123
E/49	141123
E/50	141123
E/51	141123
E/52	141123
E/53	141123
E/54	141123
E/55	141123

INTENTIONALLY LEFT BLANK

CONTENTS

INTENTIONALLY LEFT BLANK

ABBREVIATIONS, DEFINITIONS AND ACRONYMS

Term	Definition
Adhoc	Flights not rostered (one-off charters)
Aft	Rear of Aircraft (as in fore (forward) and aft)
Aileron	Part of aircraft wing (used to control aircraft turning in flight)
Aircraft	Left hand side of the aircraft (see also Portside)
Aircraft	Right hand side of the aircraft (see also Starboard)
Airlarder	Metal or fibreboard container used for the storage of catering
Airside	Area(s) of an airport beyond the customs, immigration and/or security checkpoint(s) that usual constitute the security restricted area – opposite of 'landside'
Aisle	Gangway between seats in cabin of aircraft
Anti-Collision Light (or Anti-Collision Beacon)	Red Strobe (flashing) beacon (light) on the underside and top of the fuselage
Bank	The angle between the aircraft's normal, or vertical, axis and the earth's vertical plane containing the aircrafts longitudinal axis.
Blox/Blocks	The time – i.e. 'blox time' or 'blocks time' or similarly, 'off blox/blocks time' that represents the time the aircraft arrives at the stand and shuts down engines at the completion of a flight sector, or the time at which the aircraft commences pushback (or taxi if 'power in/power out') at the commencement of a flight sector being the 'off blox' or 'off blocks' time
Bulkhead	Aircraft partition or wall
Cabin	Pressure inside the cabin (expressed as the equivalent atmospheric pressure at a given altitude- e.g. cabin pressurised to 10,000 ft)
Chocks	Wedges used to prevent aircraft movement in the event of brake failure – placed in front and/or behind, aircraft wheels (tyres)
Chock to Chock	Elapsed time between off-chocks and next on-chocks (also may be referred to as 'offblox' and 'on-blox' and/or 'blox to blox')
Cruise	Altitude for the majority of a flight
Deadhead	A crew member positioning on duty, travelling as a passenger
Descent	Flight to a lower altitude/flight level
Disarmed	Door with escape slide fitted with automatic deployment disabled (set to manual) (girt bar retracted and out of and away from floor brackets)
Downwind	Direction in which the wind is blowing
Dry Store(s)	Non-perishable items – i.e. tea, coffee, sugar, etc.)
Elevator	A moveable horizontal surface attached to the back of the stabiliser
Ferry	A positioning flight (i.e. operated empty of commercial load under normal circumstances)
Flap	Part of aircraft providing for greater flight control at slower speeds
Forward	Front of aircraft – also 'fore' (as in fore and aft)
Fuel Jettison	Process of removal of excess fuel from the aircraft
Fuselage	Body of an aircraft
Galley	Kitchen area of an aircraft and used for meal preparation and/or storage
Gashbag	Rubbish/waste bag
Glide	The angle of descent during an aircraft's approach to land
Hangar	Covered parking space for aircraft, usually enclosed

Hold	Stowage area for baggage, cargo, mail, etc. usually divided into compartments within each hold – e.g. forward hold containing compartments 1 and 2 and aft hold containing compartments 3 and 4 (and possibly, 5)
Holding	Aircraft circling in the vicinity of the airport of destination, awaiting turn in the queue to land
Hotac	Hotel Accommodation
Interline Pax	Passenger transferring from one airline to another as part of a through journey
Landing gear	The aircraft undercarriage
Leading Edge	Foremost portion of the wing, located at the very front of the wing
Leg/Sector (Segment)	More formally, a leg is an individual component of a journey whereas a sector is a starting point and a stopping point which may cover a number of legs in between – e.g. LHR-FRA-CDG whereby there are two legs LHR-FRA and FRA-CDG but a sector or segment can be LHR-FRA or LHR-CDG or FRA-CDG.
Loadsheet	Document detailing the aircraft load by weight and distribution including all traffic load, company stores, fuel, oil, etc and specifying the aircraft centre of gravity, Mean Aerodynamic Chord (%MAC) at both take-off and zero fuel weight and specifying the actual weights relative to maximum structural or regulated – take-off weight, zero fuel weight, landing weight, taxi weight and total fuel (loadsheet fuel) and trip fuel or burnoff
Local	Usually used to indicate the time of day or night at the location of departure or arrival – as in 'local time' or by specifying a time followed by the word 'local' (GMT and/or UTC is referred to as 'Zulu' time)
Manifest	List of passengers on board. For international flights must follow the requirements of ICAO specified in Annex 9 to the Chicago Convention (1944), specifically in Appendix 2. Other relevant documents are also contained in the other appendices to Annex 9 (e.g. cargo manifest, general declaration, etc.)
No Show	Sometimes spelled 'NOSHO' or 'Nosho' and represents a booked/ticketed passenger who does not arrive in time or check in for the flight. A passenger that does check in and subsequently does not board (and may be offloaded along with their baggage if not located)
Off Chocks	Actual time that aircraft moves from the parking stand for departure (as in the time that pushback commences or if taxiing out under own power from power-in-power-out stand). May also be referred to as 'off-blox'
Offload	To remove, passengers, cargo, mail, catering and/or company stores or other items of traffic load from an aircraft – e.g. '120 kg of company stores were offloaded due to aircraft weight restrictions'
On Chocks	Actual time that aircraft comes to a standstill at the parking stand – may also be referred to as 'on-blox'
Overbooked	Also referred to as 'oversold' but represents a situation where more passengers are booked than there are saleable seats available/fitted to the aircraft
Pax	Passenger(s)
POD	Ventral hand baggage pod located aft of the wing
Positioning	A flight or journey with no passengers to a specific location to pick up passengers and/or an aircraft
Pushback	Where an aircraft is pushed by a tug from a nose in parking stand

	onto a taxiway or other part of the surface movement area where the aircraft may proceed from under its own power – of course
Ramp/Stand	Aircraft parking area – technically the 'apron' is where aircraft park but it is generally referred to as the 'ramp' and specific aircraft parking locations (usually defined by painted borders and nose-in guidelines/equipment limit lines) are referred to as a 'stand' and in some locations a 'bay' or 'gate'
Roster	Programme of duties over a defined period of time, usually in weeks or months
Rudder	A moveable vertical surface attached to the rear of the horizontal stabiliser and used to provide yaw control by changing the angle of attack of the rudder when controls are manipulated – the rudder, horizontal stabiliser and the rearmost portion of the fuselage to which they are attached is referred to as the empennage – quite often the APU (auxiliary power unit) and the flight recorders are located in this region as well
Runway	Strip of pavement or other surface appropriate to the aircraft type in use that is used by aircraft to take-off and land – sometimes called a landing strip
Slats	Situated on the leading edge of the wing, slats work in conjunction with the flaps to improve lift at slower speeds by smoothing the airflow over the leading edge to augment the amount of lift
Slip Station	The place at which there is a change of crew and in some circumstances where the incoming crew 'slip' for a night or number of nights before operating another service out of that station or positioning to home base
Stopover	Any day or night stop abroad or within the United Kingdom
AOC	Air Operators Certificate
AMC	Acceptable Means of Compliance
ARA	Authority Requirements for Aircrew
ARO	Authority Requirements for Air Operations
ASR	Air Safety Reports
ATC	Air Traffic Control
ATO	Approved Training Organisation
ATR	ATR72-212 Aircraft
CAA	Civil Aviation Authority (UK)
CAME	Continuing Airworthiness Management Exposition
CAT	Commercial Air Transport
CCI	Cabin Crew Instruction
CFMU	Central Flow Management Unit
CG	Centre of Gravity
CHI	Cargo Handling Instruction
DG	Dangerous Goods
EASA	European Aviation Safety Agency
EMB ERJ/EMB145	Embraer Aircraft
FCI	Flight Crew Instruction
FOD	Foreign Object Debris
FOI	Flight Operations Inspector
FSTD A	Flight Simulator Training Device Aeroplane

GHI	Ground Handling Instruction
GHM	Ground Handling Manual
GOM	Ground Operations Manual
GPU	Ground Power Unit
GSR	Ground Safety Report
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IDE	Instruments Data and Equipment
J41	Jetstream 41 Aircraft
LVP	Low Visibility Procedures
MAB	Mass And Balance
MEL	Minimum Equipment List
MLR	Manuals, Logs and Records
MMEL	Master Minimum Equipment List
MOE	Maintenance Organisation Exposition
MOR	Mandatory Occurrence Report
MPA	Multi Pilot Aircraft
MSM	Management System Manual
MSN	Management System Notice
NAA	National Aviation Authorities
NPA	Notice of Proposed Amendment
OP	Operating Procedure
ORA	Organisation Requirements for Aircrew
OPS	Air Operations
ORO	Organisation Requirements for Air Operations
PBN	Performance Based Navigation
POL	Performance and Operating Limitations
PRM	Passenger of Reduced Mobility
RIE	Rectification Interval Extension
SAN	Safety Advice Notice
SB20	Saab 2000 Aircraft
SEC	Security
SIB	Security Information Bulletin
SMS	Safety Management System
SPA	Specific Approvals

SECTION 0: GENERAL

0.1 General

References to EU Regulations contained within this manual are those as retained and amended by the UK European Union Withdrawal Act 2018.

The Ground Operations Manual contains information aligned with the IGOM for personnel and handling agents involved in Eastern Airways scheduled and ad-hoc charter operations. The information contained in the IATA Airport Handling Manual (AHM) should be used alongside the content of this manual. So that the manual is appropriate for use by ground handing personnel, it is produced in electronic format that is easily distributed and legible.

Acceptance of a handling request from Eastern Airways shall be treated as an agent's acceptance of the procedures contained within this manual. It shall be the responsibility of the relevant Station Manager to ensure handling activities and staff responsibilities are carried out in accordance with the scope contained within the latest downloaded copy of this manual and Ground Handling Instructions (GHI).

The handling agent is responsible for ensuring that its staff are aware of the content and location of the Eastern Airways GOM & applicable Eastern Airways GHI, and that where necessary, the content has been integrated with the handling agents training and procedures.

Disclosure of Client Information on Social Networking Sites

Eastern Airways is committed to safeguarding the privacy of our clients during both Charter and Scheduled Operations. All staff must be aware of the risks and consequences of deliberately or inadvertently disclosing information about the identity and location of our customers whilst using social networking sites.

With the current tendency towards the erosion of privacy safeguards, any information posted on networking sites has an ever increasing potential to be distributed far more widely than intended. All staff members must respect our obligations to client confidentiality and understand that this is an important facet of the service that we provide.

NOTE: *This document is distributed to external service providers using the internet and if printed becomes an uncontrolled document. Agents are to ensure that they have access to the latest version of this document for any planned operation involving an Eastern Airways aircraft.*

INTENTIONALLY LEFT BLANK

0.2 Contact Details

Eastern Airways is based at Humberside International Airport in North Lincolnshire.

Headquarters Address:	Eastern Airways Schiphol House Humberside International Airport Kirmington DN39 6YH
Headquarters Switchboard:	Tel: +44 1652 688886 Fax: +44 1652 680899
Operations:	Tel: +44 1652 688405 Fax: +44 1652 680899
Reservations:	Tel: 08703 669100/ +44 1652 680600 Fax: +44 1652 680606
Engineering:	Tel: +44 1652 680693 Fax: +44 1652 688300
Ground Operations Manager:	Tel: +44 1652 681010 +44 779 2118443 Fax: +44 1652 680899 Postal address as above
Full name:	Air Kilroe Limited – trading as Eastern Airways
Website:	www.easternairways.com
IATA Designator:	T3
ICAO code:	EZE
Call-sign:	Eastflight
Ground Operations Email	DLGroundOps@easternairways.com

INTENTIONALLY LEFT BLANK

0.3 Principles of Operation

Eastern Airways ensures the highest standards achievable for each and every customer, to ensure they want to fly with Eastern Airways on a repeated basis. Therefore, consistency of service must also be a feature inherent in our daily operation.

Our core principles are:
(a) Safety
(b) Punctuality
(c) Service
(d) Reliability
(e) Value

0.3.1 Safety

Will always be our number one and unquestioned priority. This is paramount to running both a successful and trusted service. By operating modern, exceptionally well maintained aircraft and ensuring training to the very highest standards, this will always underline our focus on delivering an entirely safe operation on the ground and in the air.

0.3.2 Punctuality

In the marketplace we operate within is paramount to our customers reaching their destinations as required and repeatedly selecting our services ahead of our competition. Wherever possible we shall do all possible to ensure our aeroplanes are operating on or as close to schedule as is possible.

0.3.3 Service

When traveling with Eastern Airways, we want to ensure a service that is above and beyond not only our competition, but any expectations levels passengers could have on a regional service. We regard our aeroplanes as flying lounges & thus treat our customers as privileged guests on-board. From in-flight product to staff service delivery, this should always be of an impeccable standard leaving our customers comfortable and having enjoyed their time with Eastern Airways.

0.3.4 Reliability

Is fundamental to all parts of the service delivery chain. We do pride ourselves on offering not only a punctual but also a reliable schedule. We will always do our utmost to avoid cancellation as this is a failure to deliver the service we have offered our customers, even if this does mean operating later than scheduled. This will give our customers confidence that subject to matters outside of our control, we will fly our customer between the points booked.

0.3.5 Value

Not at the foot of the list because it is least important, but if any of the previous four aims are sacrificed, value will not be perceived to have been gained from the customer's perspective. If we achieve our primary aims, then we will have delivered value in terms of meeting the customer's expectation.

INTENTIONALLY LEFT BLANK

0.4 Uniform Requirements

The aim of this section is to highlight the importance of maintaining the highest standards of uniform presentation, whether an employee of Eastern Airways or representative of Eastern Airways.

It is Eastern Airways' aim to strive for excellence by achieving high standards of service. Our customers form part of their impression of the airline from the staff they meet throughout their journey.

Eastern Airways expects the highest standard of service and presentation from our handling agents at all times. Employees of Eastern Airways must conform to the Eastern Airways uniform guide available on the company intranet.

INTENTIONALLY LEFT BLANK

0.5 Staff Training

All staff including external service providers must be appropriately trained prior to commencing duties on all Eastern Airways aircraft. This must include;

(a) Initial training prior to being assigned to perform such operational duties.

(b) Recurrent training on a frequency in accordance with requirements of the regulatory authority but not less than once during every 36-month period, except for recurrent training in dangerous goods (24 months). In the event any staff member becomes unqualified, a process is in place to prevent them from performing duties until training is provided to requalify them.

(c) Where applicable the training must include, but not limited to the list below:

(a) SMS Training

(b) Familiarization training on applicable regulations;

(c) In-depth training on requirements, including policies, procedures and operating practices;

(d) Training in human factors principles;

(e) Safety training on associated operational hazards.

Passenger Services: Dispatcher/Check-in/Boarding Agents.

(a) Eastern Airways Procedures

(b) IOSA standards manual table 6.1

1. Aviation basics
2. Arrivals/departures
3. Baggage services
4. Check-in
5. Passenger assistance and PRM
6. Post-flight requirements
7. Special category passengers
8. Transfer of load information
9. Transfer, transit and connection
10. Boarding bridge operations
11. Aircraft cabin access doors

Ramp Services:

(a) Eastern Airways Procedures

(b) IOSA standards manual table 6.1

1. Basic ramp
2. Airside driving
3. Basic hand signals
4. Aircraft marshalling
5. Boarding bridge operations
6. Aircraft cargo access doors
7. Aircraft cabin access doors
8. Aircraft loading
9. Aircraft arrival

10. Aircraft departure
11. Aircraft pushback
12. Aircraft towing
13. GSE operations
14. Ground to flightdeck headset communication and engine start
15. Ramp baggage handling
16. Aircraft loading supervision
17. Airside safety supervision

Load Control Training: Dispatcher/Loader/Loading Supervisor

(a) Load Control Training (AHM 590, 591, 1110 & DGR 1.5)
(b) Eastern Airways LIR form
(c) IOSA standards manual table 6.1
    1. Aviation basics
    2. Aircraft weight and balance principles
    3. Load planning and load sheet
    4. Documentation and messaging

Airside Operations: Aircraft Handlers/Cleaning/Catering staff.

(a) Airside Safety Training (AHM 611 & 640)
(b) Airside Driver Training (AHM 611)
(c) GSE Operations Training (AHM 630)
(d) Aircraft Access Door Training (AHM 430)
(e) Eastern Airways Procedures
(f) Airport Airside Procedures
(g) Aircraft ground movement

Dangerous Goods: Staff that have been assigned operational functions or duties as specified in IATA DGR 1.5.6;

(a) Eastern Airways Procedures: OM-A1 Section 9 Dangerous Goods & Weapons

Security: Staff that have been assigned operational functions or duties as specified in National Aviation Security Programme;

(a) Baggage Reconciliation
(b) General Security Awareness
(c) Cargo Security
(d) Aircraft security

Aircraft fuelling

(a) Safe operation of equipment
(b) Emergency procedures
(c) Fuel spillage avoidance response
(d) Aircraft fuelling and defuelling procedures
(e) Aircraft specific training

Aircraft de/anti-icing

(a) Common standard, regulation and recommendation including local rule and restriction
(b) Hazard of snow, ice and frost
(c) Safe operation of equipment and de/anti-icing operation including aircraft critical area
(d) Fluid characteristics and application and limitation of hold over time
(e) De-icing/anti-icing codes, communication and coordination

The person delivering this training must be a qualified trainer.

The training material must be regularly reviewed and updated to remain relevant and current, and may be audited at the discretion of Eastern Airways management and must be available on request.

Such training must include testing or evaluation by written, oral or practical means, as applicable and require a demonstration of adequate knowledge, competency and proficiency to perform duties, execute procedures and/or operate equipment

Eastern Airways auditors will check staff qualified in initial and recurrent training records. Training currency will be reviewed IAW (In Accordance With) applicable regulation and agreements.

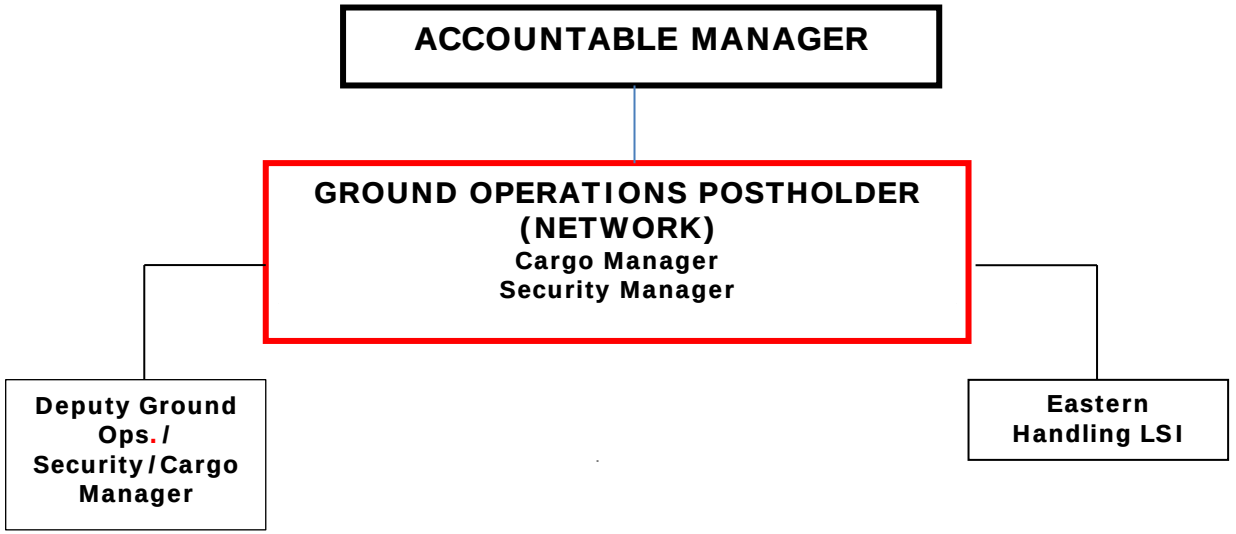
All potential records including training records must be retained for a minimum period of 5 years and must all be;

(a) Identifiable
(b) Legible
(c) Maintained
(d) Retrievable
(e) Stored securely
(f) Disposed or deleted when required (electronic records)

Positions within the scope of operations are to filled by personnel on the basis of knowledge, skills, training and experience appropriate for the position.

INTENTIONALLY LEFT BLANK

0.6 Operations Organisation *[ORO.GEN.200(a)(1)]*



INTENTIONALLY LEFT BLANK

0.7 Document Control

The Documentation Control Standards that the Ground Operations Manual (GOM), Air Carrier Security Program (ACSP), Security Management Systems Manual (SeMS), Ground Handling instructions (GHI), Security Information Bulletins (SIB) and Safety Advice Notice (SAN) will adhere to.

All documents which are used within the Ground Handling and Security department are (in accordance with MSN 2018-03 & MSN 2018-04);

(i) Identified by assigning a version or issue number and effective date of relevant documents and/or data to be issued. This will be carried out by the Publications department.

(ii) Identified by assigning a title and, if applicable, sub-titles of relevant documents and/or data. This will be completed by the Ground Operations Manager or nominated deputies.

(iii) Distributed to a pre-defined email address list that is updated by the Ground Operations Department and Managed by the Publications department. The pre-Defined email address list will cover appropriate areas of the organisation and contracted service providers that conduct operational functions for Ground Handling and Security.
All documents will be issued on or before the effective date.

(iv) Issued either electronically or as hard copy.

(v) Defined on the contents sheet to indicate if a document is re-issued or removed (obsolete).

(vi) All issued documents will be periodically reviewed by the Ground Operations Manager or nominated deputies to ensure the published information is still current and relevant. Once reviewed, documents will either be cancelled or revised and re-published by the Publications department.

(vii) Documents will be retained for the period of time that they are valid. When Considered obsolete following review, documents will be removed.

(viii) The company server is subject to routine back-up in the event of a failure so as to ensure data and documents are recovered. This is managed by the IT department. In accordance with MSM 1.6.9, all data not retained on the company server will be Copied to the server at regular intervals to ensure it is backed up. Physical media used for back-ups will be stored in a fire proof safe or cabinet.

(ix) All electronic documents are accessible for internal and external persons and service providers via the department's external webpage. Access to which is published in the Ground Operations Manual. All soft copy documents are issued as PDF. Modification of these documents can be carried out by the Ground Operations Manager or nominated deputies or the Publications department.

(x) Information on documentation received from external sources and published by the Ground Operations and Security department will be annotated as such. Documents of external origin made available by the department will either be made available on the Ground Operations Manual webpage or issued as a GHI, SAN or SIB.

(xi) Produce to be legible

SECTION 1: PASSENGER HANDLING PROCEDURES

1.1 Passenger Departure

1.1.1 Pre-Departure Activities

1.1.1.1 Ticket Sales Counter

If a Ticket Sales Counter is located at the airport display either electronic or manual versions of:
(a) Operating airline signage.
(b) Dangerous goods and CAA prohibited articles notifications.

1.1.1.2 Passenger Pre-Flight Preparation

Prepare check-in for flights in accordance with operating airline policy prior to the opening of web or airport check-in, and verify all necessary data has been transferred into the check-in system correctly.
(a) Review the booking status.
(b) For code share flights with an active blocked space agreement, check the allotment to ensure the block of seats, as agreed, is guaranteed to the partner.
(c) Review the curtain version (if applicable).
(d) Confirm the Passenger Name List (PNL) and Additions and Deletions List (ADL) were properly transmitted and match the booking status.
(e) Block seats for security officers, crew, weight and balance, and if seats are unserviceable.
(f) Confirm the seating plan is set according to the actual aircraft type and version.
(g) Review the flight remarks, if applicable.
(h) Record passenger status on PNR, if applicable.
(i) Review the boarding time, departure time, and gate. Brief staff about the reason for any delays.
(j) Apply payload restrictions, if any.
(k) Check the passenger list for special passengers (e.g. WCH, UM, etc.) and pre-assign as per operating airline policy and according to the aircraft type.
(l) If not pre-reserved, prepare seating for families traveling with infants or children, as per operating airline policy. Check total infants booked and order additional life vests if needed.
(m) Where free/open seating is applied, inform the crew and passengers and ensure special category passengers have appropriate seats.
(n) Ensure flight status is open for web check-in if applicable.
(o) Check-in is opened once the pre-flight preparation is complete.

1.1.2 Check-In Counter Requirements Prior to opening the check-in counters:

(a) Start and test equipment.
(b) Ensure scales are functioning and calibrated.
(c) Stock boarding card and bag tag printers as per operating airline requirements.
(d) Ensure adequate stock of any other operating airline required tags.
(e) Display operating airline required signage, both electronic and manual versions (including J41 hand baggage signage if applicable)

(f) Ensure Dangerous goods notifications are prominently displayed at the check-in area as well as ticket offices, baggage drop-off areas, self-serve check-in areas, and transfer counters.
(g) Ensure carriers Dangerous Goods Passenger Provisions guide is available for reference. Any Dangerous Goods queries that cannot be answered using this table should be referred to Operations, who should ensure they have access to the latest edition of the IATA Dangerous Goods Regulations (DGRs) for reference.
(h) Prepare check-in queues, stanchions, carpets, baggage seizers, podiums etc., as per operating airline specifications

1.1.3 Passenger Check-In

1.1.3.1 General

Check-in is the complete sequence of steps which involves the registration of the passengers and their baggage in a DCS or manual system, the labelling of the baggage and the issuance of one or more boarding passes. Boarding passes containing the passenger name must be issued for all passengers, either on paper or electronically. Those carrying out check-in activities should have access to a supervisor if required.

1.1.3.2 Dangerous Goods Questions

All passengers at the point of check-in must be asked questions relating to the carriage of dangerous goods on a flight operated by Eastern Airways. Passengers must be asked;

(a) If they are carrying lithium powered devices in their checked in baggage (this includes hand baggage for flights operated by the Jetstream 41 aircraft)
(b) To confirm that none of the contents on the prohibited articles list is being carried.

Check-in agents must gain positive confirmation of the above before completing check-in.

Passengers must be advised that large PEDs containing lithium batteries should be carried in the passenger cabin. This is to enable the crew to react expeditiously in case an incident involving such a PED occurs.

If PED's are carried in hold baggage, passengers must be advised that PED's are to be;

(a) Completely switched off and effectively protected from accidental activation. To ensure the device is never powered on during its transport, any application, alarm or pre-set configuration that may activate it shall be disabled or deactivated;
(b) Protected from the risk of accidental damage by applying suitable packaging or casing or by being placed in a rigid bag protected by adequate cushioning (e.g. clothing);
(c) Not carried in the same baggage together with flammable material (e.g. perfumes, aerosols, etc.)

Check-in agents must gain positive confirmation of the above before completing check-in.

Should a device not be completely switched off or the passenger indicates that the device is not adequately protected to prevent damage to it, the luggage must not be checked in until it is either removed or switched off and adequately protected from damage.

Passengers must also be asked;

(a) If they are carrying spare lithium batteries in their checked in baggage (this includes hand baggage for flights operated by the Jetstream 41 aircraft)
(b) If any battery is damaged, defective or recalled.
(c) If they are carrying e-cigarettes or any cigarette substitute device that emits a vapour or has a power source or produces a light.

These must be carried in the cabin only and not in checked in baggage (this includes hand baggage for flights operated by the Jetstream 41 aircraft). Refills are not permitted.

For damaged, defective or recalled batteries, require the passenger concerned to keep the battery or device where it can be observed, switched off (not in sleep or hibernation mode), protected from accidental activation (also disabling any features that may switch it on, e.g., alarms), and not to be charged at any time.

Remind passengers of the need to immediately inform the cabin crew when a battery or device is damaged, hot, produces smoke, is lost, or falls into the seat structure.

Eastern Airways prohibits the carriage of small vehicles powered by lithium Batteries such as hoverboards, air wheels and solo wheels and damaged, defective or recalled batteries (as cargo).

1.1.3.3 Recognition of PEDs

In accordance with CAT GEN MPA 140 P.E.D. all staff involved with the passenger handling function (check-in, Gate, dispatch) must be able to recognise Personnel Electronic Devices, their potential risk and what action to take.

PED's can include, but not limited to;

(a) Mobile phones
(b) Tablet computers
(c) Laptops
(d) MP3 Players

1.1.3.4 Check-In Deadlines

Apply check-in deadlines as follows, respecting applicable passenger rights and on-time departure requirements.

(a) Check in opens at STD -90 minutes
(b) Check-in closure at STD -30 minutes

Note:

(a) A passenger who joins the check-in queue before the published closure time is considered to have arrived on time, even if, due to queuing, the

passenger actually arrives at the front of the queue after official closure time.

(b) Queue combing should be used where practical/necessary to ensure passengers are correctly identified as 'on-time' or 'late' based on the time at which he joined the queue. Where common check-in is used, queue-combing should also be used to call forward passengers just before a flight closes.

(c) Late passengers (LMCs) may be accepted after check-in closure on the condition that there is no operational impact upon the on-time departure of the aircraft, this must be authorised by the Captain. Any delay on the departure of any aircraft must be authorised by T3 Operations.

(d) Where there is the potential for a weight problem, check-in closure times should be strictly adhered to. Passengers who join the queue after published check-in closure time will normally be denied travel (without compensation) unless there is space / weight available and they can be accepted as and LMC (see above).

1.1.3.5 Operating Carrier, Marketing Carrier and Wet Lease

Advise the passenger of the operating carrier no later than the time of check-in, if different from the one noted as the "carrier" on the ticket.

1.1.3.6 Check-In Types

1.1.3.6.1 General

Check-in may be provided at check-in counters, via self-service methods such as web check-in, kiosk or SMS, and may be performed using a departure control system (DCS) or manually.

1.1.3.6.2 Manual Check-In

Where no DCS is available, apply established manual check-in procedures.

1.1.3.6.3 Through Check-In

Perform through check-in whenever possible and as per the interline agreement. Travel documents must be checked for all through-checked parts of the journey.

1.1.3.6.4 Return Check-In

The check-in for the return flight is permitted if the flight is open as per the operating airline policy.

1.1.3.6.5 Self-Service Check-In

Web/mobile/kiosk/SMS check-in may be offered if the following conditions are met:

(a) The passenger is holding an electronic ticket.

(b) The passenger is departing from an airport where the operating airline's or ground handler's DCS is in use.

(c) The passenger meets any other qualifying criteria set by the operating airline.

(d) Dangerous goods and CAA prohibited articles notifications are displayed and acknowledged by the passenger.

1.1.3.6.6 Off-site Check-In

Off-site check-in may be permitted if:
(a) The passenger is holding a valid ticket.
(b) The location is an approved site.
(c) The passenger meets any other qualifying criteria set by the operating airline.
(d) Local off-site security process must be followed.

1.1.3.6.7 Emergency Back-Up Check-In

In case of DCS and/or BHS failure, local back-up procedures must be established in every station and tested regularly.

1.1.3.7 Check-In Opening

Conduct a staff briefing for check-in agents before the check-in counters are opened and receive and review any summarized flight information.

1.1.4 Baggage Drop-Off

Passengers who have used a self-service check-in facility may drop their checked baggage at a baggage drop-off.
(a) Review the boarding pass and pull up the passenger data in the check-in system.
(b) Verify identity and travel document, assess carry-on baggage, and accept checked baggage.
(c) Add baggage information and any SSR's to the DCS if required and apply any related fees.

1.1.5 Travel Documents and Verification

1.1.5.1 General

(a) Check the validity of the ticket with regard to the itinerary, flight, date, carrier, reservation status, class, and restrictions.
(b) Check the ticket for the final destination and confirm this with the passenger.
(c) Verify the passenger's identity against the travel document presented, including review of date of birth, expiry status of document, a visual comparison of the photo to the passenger and ensure the name on the travel document matches the booked name.
(d) Verify the travel document is valid and good for all persons traveling.
(e) Report any document that shows signs of tampering.
(f) Locate the passenger in the DCS and review any special remarks.
(g) Check travel documents for destination and/or transit requirements.
(h) Review Visa or entry conditions or limitations if required.
(i) Collect Advanced Passenger Information (API) if required.
(j) When you identify an issue with a document, notify your supervisor who will contact the appropriate authority for assistance.

Note: *children and infants between the ages of 2 and 16 years travelling on our domestic service with an adult are required to produce the following acceptable forms of identification if no photographic identification listed below are available:*
(a) Birth certificate
(b) NHS health record

1.1.5.1 Acceptable forms of ID

The following are acceptable forms of ID:
(a) A valid passport
(b) An expired passport (domestic flights only up to two years after expiry)
(c) Valid EU national identity card
(d) Valid driving license (full or provisional are accepted)
(e) Valid armed forces identity card
(f) Valid police warrant card/badge
(g) Valid airport employees security identity pass
(h) A child on a parents passport is an acceptable form of ID
(i) Citizen Card or Civilian card
(j) Valid firearm certificate
(k) Valid Government issued identity card
(l) SMART card
(m) Electoral identity card
(n) NUS card (National Union of Students)
(o) University/college ID card
(p) Company ID card of a nationally recognised company
(q) Council issued bus pass
(r) Young scot card
(s) Disabled badges which have a photograph of the holder

1.1.5.3 Advance Passenger Information

Where International flights are operated by Eastern Airways, API data must be collected at the time of check-in, or review data already provided.
Always protect passenger's personal information and securely dispose of any related paperwork not kept on file.

1.1.6 Passenger Acceptance

1.1.6.1 Requirements for Passenger Acceptance

Eastern Airways may deny boarding to any passenger presenting themselves in unsuitable attire, such as being scantly dressed, bare feet or distastefully decorated garments which may cause offence to other passengers.

When accepting a passenger, observe the following:

(a) Welcome and greet the passenger.
(b) Ask for an itinerary/booking confirmation and an official travel document (e.g., passport), if necessary and verify validity (refer to GOM 1.1.5).
(c) Pay attention to any signs that the passenger might not be allowed to travel (e.g., unruly behaviour, illness). Certain categories of passengers may be refused travel at the operating airline's discretion. Apply operating airline procedures with respect to acceptance.
(d) Identify the passenger in the check-in system, accept the passenger and assign a seat in line with operating Eastern procedures.
(e) The acceptance of passengers on the waitlist is based on booking status and operating airline procedures.
(f) Update passenger and baggage information to add any SSR to the DCS, if required, and apply any related fees in line with operating procedures.
(g) If required, apply irregularity handling in line with operating procedures, (e.g., search for volunteers in case of over-sales).
(h) Observe through check-in or return check-in, if applicable, and issue all related boarding passes.
(i) Hand the boarding passes to the passenger and give information about the departure gate, boarding time and any flight irregularities, if applicable, in line with operating procedures.
(j) Say goodbye and show the direction to the boarding gate.

Note: Certain categories of passengers may be refused travel at the operating airline's discretion.

1.1.6.2 Seating

Each passenger (except infants not occupying a separate seat) is assigned an individual seat number per flight. On certain occasions (i.e. where a flight is combined), passengers may be offered free seating.
(a) Allocate seating for special categories of passengers in accordance with point (c).
(b) The acceptance of passengers on the waitlist is based on booking status and operating airline directives.
(c) Aircraft type seating requirements;

Jetstream 41

Emergency exit seats

Row 10	Seats B, C
Row 9	Seat A
Row 6	Seats A, B, C
Row 1	Seats A, B, C

Special passenger seating

Unaccompanied minors	Row 8, 9	Seats B, C
Infants	Row 8, 9	Seats B, C
SCP – elderly, disabled, & wheelchair passenger	Row 3, 4, 5	Seats A, C

ERJ135

Emergency exit seats

Row 1	Seats A
Row 2	Seats D, F
Row 9	Seats A, D, F

Special passenger seating

Unaccompanied minors	Row 3, 4	Seats D, F
Infants	Row 3, 8 & 10-12	Seats D & F
SCP – elderly, disabled, & wheelchair passenger	Row 5, 6, 7	Seats A, F

ERJ145

Emergency exit seats

Row 1	Seats A
Row 2	Seat A
Row 3	Seats D, F
Row 12	Seats A, D, F

Special passenger seating

Unaccompanied minors	Row 4, 5	Seats D, F
Infants	Row 14, 15 , 16, 17, 18	Seats D, F
SCP – elderly, disabled, & wheelchair passenger	Row 6, 7	Seats A, F

ATR72

G-IACY & G-IACZ

Emergency exit seats

Row 1	Seats A, B, C, D
Row 19	Seats A, B, C, D

Special passenger seating

Unaccompanied minors	Row 2-3 Row 17-18	Seats B, C
Infants	Row 3-17	Seats A,D
SCP – elderly, disabled, & wheelchair passenger	Row 2-18	Seats A, D

G-CMEI

Emergency exit seats

Row 1	Seats A, B, C, D
Row 18	Seats A, B, C, D

Special passenger seating

Unaccompanied minors	Row 2-3 Row 15-16	Seats B, C
Infants	Row 1-16 (only 1 infant per row)	Seats A,D
SCP – elderly, disabled, & wheelchair passenger	Row 2-16	Seats A, D

G-CMFI

Emergency exit seats

Row 1	Seats A, B, C, D
Row 18	Seats C,D
Row 19	Seats A,B

Special passenger seating

Unaccompanied minors	Row 2-3, 16-17	Seats B, C
Infants	Row 3-16	Seats A, D
SCP – elderly, disabled, & wheelchair passenger	Row 2-17	Seats A, D

E170

G-CMLI

Emergency exit seats

Row 1	Seats A, B, C, D
Row 19	Seats A, B, C, D

Special passenger seating

Unaccompanied minors	Row 17,18	Seats B, C
Infants	Row 3, 5, 7, 9, 11, 13, 15, 17 (one per row)	Seats C, D
SCP – elderly, disabled, & wheelchair passenger	Row 2 & 3 Row 17, 18	Seats A, D Seats A, D

G-CMPI

Emergency exit seats

Row 1	Seat C
Row 2	Seat C
Row 3	Seats A,B
Row 20	Seats A,B,C,D

Special passenger seating

Unaccompanied minors	Row 18&19	Seats B, C
Infants	Row 5-18 (one per row)	Seats A, B,C,D
SCP – elderly, disabled, & wheelchair passenger	Row 5, 6 Row 17,18	Seats A, D Seats A, D

E190
G-CLSN

Emergency exit seats

Row 3	Seats A,B,C,D
Row 13	Seats A,B,C,D
Row 27	Seats A,B,C,D

Special Passenger Seating

Unaccompanied minors	Row 25 & 26	Seats B, C
Infants (one per row)	Row 5, 7, 9, 11, 16, 18, 20, 22, 24	Seats C ,D
SCP – elderly, disabled & wheelchair passenger	Row 4, 5, 6, 24, 25, 26	Seats A, D

G-CLYU

Emergency exit seats

Row 1	Seats A,B,C,D
Row 12	Seats A,B,C,D
Row 25	Seats A,B,C,D

Special Passenger Seating

Unaccompanied minors	Row 23 & 24	Seats B, C
Infants (one per row)	Row 3,5,7,9 14,16,18,20,22	Seats C, D
SCP – elderly, disabled, & wheelchair passenger	Row 2,4,5 22,23,24	Seats A, D

1.1.6.3 Exit Row Seating

Passengers occupying emergency exit row seating must be able-bodied and not;

(a) Physically and mentally handicapped persons including the blind, deaf and frail

(b) Passengers under 16 and over 60 years of age

(c) Expectant Mothers

(d) Deportees or persons in custody

(e) Obese persons

(f) Passengers with a poor command of the English language

Wherever possible passengers should be seated into seats adjacent to emergency exits and made aware at check in.
If it is not possible to seat passengers into the seats adjacent to the exit, due to weight and balance, then the nearest seat to the exit should be allocated.

1.1.7 Passenger Boarding

1.1.7.1 General

Those carrying out check-in activities should have access to a supervisor if required.

(a) Check that boarding facilities and gate monitors are displaying flight information.
(b) Ensure dangerous goods and prohibited articles notices are displayed at the boarding gate.

(c) Before boarding, ensure passengers and their cabin baggage are security screened.
(d) If walking on ramp, ensure the route to the aircraft is safe and clearly marked for both passengers and staff. Passengers must be supervised on the ramp at all times.
(e) For passenger boarding bridge boarding, secure the route to the aircraft and block off any unused passageways if required. Identify passageways e.g. per class, as per operator requirements when there is more than one passageway in use.
(f) If passenger handling staff are trained and authorized to operate cabin access doors, refer to GOM 4.4.2. If passenger handling staff operate the passenger boarding bridge, refer to GOM 3.1.3.5.
(g) For an on time departure and irrespective of ATC slot (CTOT), passenger boarding (auto board) will commence automatically to achieve the following;
1. Presentation at Aircraft door (**all departures**) STD -10min, STD -15min for ATR.
The handling agent is responsible for ensuring that all pre-board calls and calls for airport busses (where required) are done in sufficient time to present passengers at the aircraft steps STD -10min, or STD -15min if operated on an ATR.

The aircraft dispatcher will not reaffirm boarding times prior to commencement of boarding. It is the responsibility of the Captain to inhibit auto board.
Automatically boarding passengers will always be the case providing:
(a) There is at least one Cabin Crew member and Pilot (either Captain or First Officer) on board the aircraft.
(b) They have not been advised by the Captain or Operations Control of any reason not to automatically board. This reason will then be the delay code to be used for any delayed flight.

Normally cleaning, catering or fuelling will not stop the process of auto boarding unless local airport operating restrictions dictate otherwise.
Should an aircraft be off schedule, the dispatcher MUST liaise with the flight crew regarding the auto board procedure.
(h) Follow safety requirements for fuelling in progress as per 3.2.3
(i) Wheelchair and assistance passengers should be pre-boarded where it is practical to do so. Considerations should also be given to families with children/infants and other passengers requiring extra time to board.
(j) Verify each passenger's identity as per the requirements.
(k) Check the name on the passenger identity document with the one on the ticket, and visually match passenger with photograph.
(l) Confirm each passenger's boarding acceptance in the DCS before allowing them to board.
(m) For manual or non-automated boarding, check the flight number and date on the boarding card.
(n) Apply cabin baggage policies of the and account for any gate tagged items.
(o) Secure the flight by matching the checked-in passengers to the boarded passengers.
(p) Provide final passenger numbers to cabin and/or flight crew.
(q) Provide required flight documents to cabin and/or flight crew.
(r) Advise ramp staff and/or load control of the gate baggage to be loaded.

(s) Ensure communication with load control as per airline policy about passenger and/or baggage information.
(t) Send required post flight messages upon flight close out.

1.1.7.2 Boarding Announcement

The following boarding announcement for Eastern Airways flights is to be used;

"Eastern Airways Flight No. T3XXXX to XXX is now ready for boarding.

Before you leave the departure lounge, please ensure that you take all your hand baggage and personal belongings with you.

Please would all passengers turn off any mobile phones and other portable electronic devices not being used to display your boarding pass.

I would like to take this opportunity to wish you a pleasant flight and to thank you for choosing Eastern Airways."

During boarding, passengers may use their mobile phone to display their electronic boarding card. During the boarding announcement, passengers must be asked to turn off any mobile phone and all other portable electronic devices not being used to display their electronic boarding card and to retain on their person to speed up boarding.
The potential risk from PED's are, but not limited to;
(a) Potential interference with aircraft electronics
(b) Potential source of fire from overheating batteries
(c) Source of distraction whilst in the airside environment
(d) Potential interference whilst refuelling

1.1.7.3 Passenger Boarding Discrepancies

If there are passenger discrepancies (minus or plus), they must be resolved prior to closing the aircraft door.
(a) Make every attempt to locate missing passengers and obtain visual proof of boarding and
documents if they are located on the aircraft.
(b) Apply triple A procedures with respect to the removal of checked baggage of passengers who checked-in but fail to board.
(c) Notify crew and load controller of any last minute changes to passenger and/or baggage load.

1.1.7.4 Boarding in Case of DCS Breakdown

Where no DCS is available or in case of DCS failure, apply manual boarding procedures.
Ensure the final checked-in count matches the boarded passenger count prior to door closure and prepare and board a final manifest.

1.1.8 Flight Documents

1.1.8.1 General

Provide the flight crew with the required documents as follows;

- Passenger information list (PIL)
- Hold baggage manifest (including hand baggage for J41 aircraft)
- Load information report form (LIRF)

1.1.8.2 Passenger Information List (PIL)

The Passenger Information List (PIL) provides information to the cabin crew about passengers on board, (name, seat number, special service requirements). Provide a PIL to the senior cabin crew member before departure.

1.1.8.3 Other Flight Documents

Other required documents may include:
(a) Bag tag list for double destination flights.
(b) General declarations if required.
(c) Other special information (i.e. INAD documents, etc.).

1.1.9 Post Flight Departure Activities

1.1.9.1 Messages

Ensure all relevant messages are dispatched to the appropriate addresses.
Messages may include:
(a) Teletype Passenger Manifest (TPM)
(b) Passenger Transfer Message (PTM)
(c) Passenger Service Message (PSM)
(d) Passenger Protection Message (PPM)
(e) Seat Occupied Message (SOM)
(f) Industry Discount Message (IDM)
(g) Advance Passenger Information (API)
(h) Electronic Ticket List (ETL)

1.1.9.2 Flight Document Retention

Retain (electronically or paper files) flight documents for a period of no less than three months unless otherwise specified.

1.2 Passenger Security

1.2.1 Security of Documents

1.2.1.1 Boarding Passes, Transit Passes and Baggage Tags

All materials used for passenger and hold baggage processing (e.g. boarding passes, baggage tags, FIMs, vouchers, stamps) must be protected or be under surveillance at all times in order to prevent unauthorized access and use.

1.2.1.2 Disposal of Printed Documents

Printed material such as boarding passes, passenger lists, and handling forms may have to be reprinted and are therefore left behind as waste. Dispose of these documents according to data protection rules, as they contain passenger data.

1.2.1.3 Information Security

Departure control systems (check-in systems) must be controlled to prevent unauthorized access.
(a) Follow airport procedures intended to prevent unauthorized use and access to un-issued (blank) boarding passes.
(b) Before leaving the counter, remove boarding passes and baggage tags from the respective printers or lock them.
(c) Before leaving the counter, sign-out, log-off and lock the system.
(d) Observe regulations concerning the usage of sign-ins and passwords.

1.2.1.4 Restricted Areas

Secure all gate and departure areas by keeping doors closed, use appropriate barricades when directing passengers.
(a) Ensure all access doors are closed when not in use.
(b) Position staff as required to direct passengers.
(c) If passengers have to walk on the apron to aircraft, ensure passengers proceed directly to the aircraft.
(d) If transportation has to be provided to passengers to move them from the terminal building to the aircraft, make sure only authorized personnel and screened passengers are allowed to board the vehicle.

1.2.2 Passenger Suitability for Travel

Assess each passenger in terms of security risk by looking for anomalies and observing certain emotional characteristics and/or body language. Be on the lookout for overall fitness to fly, including potentially communicable diseases, medical conditions, intoxication, etc.
Further questioning may be required to assist with passenger assessment:
(a) When you identify a potential problem passenger, notify your supervisor.
(b) The supervisor will contact the appropriate local authority for assistance.

For further information relating to disruptive passenger handling, refer to 'Disruptive Passenger Handling Instructions' located on the http://ops.easternairways.com/login.asp

1.2.3 Security of Passengers and their Baggage

It is the responsibility of supervision staff to ensure all security threats are immediately reported to Eastern Airways, the flight crew and applicable authorities as per local requirement.

Apply regulatory and airport authority security procedures for the handling of passengers and their baggage in the event of:

(a) A bomb threat condition.

(b) An increased security threat condition.

1.3 Passenger Arrival, Transfer and Transit

1.3.1 Pre-Arrival

Review the pre-arrival information from DCS and/or messages.
(a) Prepare for short connections if applicable.
(b) Arrange facilitation for passengers requiring assistance, e.g. UMNR, PRMs.
(c) Check requirements for any gate delivery mobility aids.
(d) In case of delay of arrival, check onward connections and make new reservations if required and as per operating airline policy.

1.3.2 Arrival

(a) Prepare passenger boarding bridge, ensuring it is free of debris and position as per the standard height for the aircraft type.
(b) Secure the disembarkation route for passengers. If passengers are required to walk across the ramp, they must be supervised.
(c) If passenger handling staff are trained and authorized to operate cabin access doors, refer to GOM 4.4.2. If passenger handling staff operate the passenger boarding bridge, refer to GOM 3.1.3.5.
(d) Disembark passengers in accordance with GOM 4.1.2.3.
(e) Provide assistance to passengers requiring it. Communicate any delays in providing assistance services.

1.3.3 Transfer (Passenger Handling at Connecting Airport)

If applicable;
(a) Check the inbound/outbound connections and the number of passengers affected.
(b) Check time-critical connections, and inform gate staff of onward transfer.
(c) Prepare for handling of passengers requiring assistance.
(d) Meet the transferring passengers upon arrival of the incoming aircraft.
(e) Direct passengers:
1. through-checked passengers to the appropriate departure gate(s).
2. non-through checked passengers to the transfer desk or gate for check-in, whichever is applicable.

1.3.4 Transit

1.3.4.1 General

Transit passengers may be require to disembark should an aircraft swap be required.
Transit passenger should be escorted during the transit time.
Local requirements must be applied regarding security of transit passengers up to and including screening requirements.

1.3.4.2 Disembarkation of Transit Passengers

1.3.4.2.1 Disembarkation Procedure

(a) Provide each passenger with a transit boarding pass or instruct passengers to retain their original
boarding pass.
(b) Inform passengers about boarding time and gate and available facilities.
(c) Transit passengers must be re-secured when re-boarding the flight. (i.e. travel document checked, boarding status verified, transit card collected).

1.3.4.2.2 Transit Passengers Remain on Board

Eastern Airways transit flights allow passengers to remain onboard. It is important that the turn around is conducted as quickly as possible so the waiting time is minimised.

1.3.4.3 Boarding Transit Passengers

1.3.4.3.1 Boarding Procedure

(a) Board transit passengers before local passengers.
(b) Re-secure the flight by checking travel documents and validating boarding status by collection of the transit card or review of the original boarding card. Validation may also be done using the flight manifest or DCS.

1.3.4.3.2 Missing Transit Passengers

The flight must be re-secured before door closure. If passengers are missing, apply the procedure for missing passengers as per 1.1.7.3.

1.3.4.4 Programmed Aircraft Change En Route

(a) Advise cabin crew that all transit passengers must disembark with their carry-on baggage.
(b) Distribute transit boarding passes (or instruct passengers to retain their original boarding pass) and inform passengers about boarding time and gate and available facilities.
(c) Provide passenger assistance as required.
(d) In case of a change of configuration, assign passengers new seat numbers if applicable, or apply free/open seating.

1.4 Special Categories of Passengers

1.4.1 Unaccompanied Minors (UMNR)

1.4.1.1 Seating

Seat UMNRs as per 1.1.6.2 and do not assign seats in emergency exit rows.

1.4.1.2 Acceptance Restrictions

An unaccompanied minor (UMNR) is a child between the ages of 5 to 11 years inclusive travelling alone with no parent or guardian. This service can only be provided for this age group if requested at the time of making the reservation and is free of charge.
The number of UMNRs accepted on a T3 flight is **4**.
We cannot accept UNMINS on multiple sectors.

Your copy should be placed in the folder in the office and retained for 6 (six) months.

For children travelling alone between the ages of 12-16 years inclusive, we can offer a Meet and Assist (MAAS). However, we do not offer an unaccompanied minor type of service. There is no requirement to complete any paperwork.

1.4.1.3 Procedures for Handling Unaccompanied Minors

(a) Complete the handling advice/declaration form ensuring the responsible adult has signed authorization and provided proof of identity.
(b) Distribute and keep copies as required (departure station, crew, arrival station)
(c) Ensure the correct remarks and SSR codes are in the check-in record.
(d) Apply handling fee where applicable.
(e) Follow carrier seating requirements (1.1.6.2)
(f) Inform the responsible adult to remain at the airport until the aircraft has been airborne for 30 minutes.
(g) UMNR must not be unsupervised until handed over to the cabin crew.
(h) Board the UMNR first where possible.
(i) Advise/release responsible adult once flight is airborne.

1.4.1.4 Transfer Station Procedure

(a) Meet, assist UMNR and collect any travel documents from the cabin crew.
(b) Hand over the UMNR to the cabin crew of the connecting flight.
(c) In case of interline transfer, hand over UMNR to the onward connecting airline agent.
(d) If flight is cancelled at transfer station, UMNR to be accompanied at all times.

1.4.1.5 Arrival Station Procedure

(a) Meet, assist UMNR and collect any travel documents from the cabin crew.
(b) Complete the handling advice/declaration form for airline staff responsible.
(c) Where applicable, ensure baggage of UMNR is collected.
(d) Hand over the UMNR only to the designated adult noted on the handling advice after verifying the identity of this person and having received his signature for receipt of the UMNR.

1.4.1.6 Divert Station Procedures

(a) T3 Operations will inform the divert station handling agent of the divert flight

(b) Details of the UMNR will be passed and a request will be made for the handling agent to provide a member of staff to escort the UMNR.

(c) Should ground transport be arranged, the handling agent will be requested to provide an escort for the UMNR on the ground transport .

(d) If an escort is unavailable, the UMNR will return to the origin station on the aircraft.

(e) If a return to the origin station is not possible, a member of Cabin Crew will accompany the UMNR on the ground transport.

1.4.2 Infants and Children

1.4.2.1 Infants

1.4.2.1.1 General

An infant is a minor that has not yet reached his/her 2nd birthday.

Infants must be a minimum of 2 weeks (14 days) old to travel for their own health and safety.

All infants must be booked to travel and so also must have a boarding card & valid form of identification.

When passing the figures to flight deck or completing your loadsheet, the stated number of passengers will be the number of adults & children checked-in plus the infant/s you have, i.e. +1. e.g.15+1 pax. This is because an infant sits on the parents lap with an extended seatbelt & does not have an allocated seat of their own.

Infants do not have a luggage allowance, however, up to two pieces of infant equipment such as pushchair and car seat or travel cot is permitted free of charge. Any additional items are subject to excess baggage charges and space availability in the hold

Wherever possible, try not to seat a mother or father with an infant next to another travelling passenger for reasons of comfort.

1.4.2.1.2 Seating

No infant seats are permitted and it is one infant per adult.

The summary of infant restraint and age limits are as follows:

Less than 6 months (classified as 'Infant')	Extension seat belt on adult's lap
6 months – Less than 2 years (classified as 'Infant')	Extension seat belt on adult's lap
2 years or more (classified as 'Child')	Passenger seat and seat belt

1.4.2.1.3 Aircraft Baby Bassinets

If the aircraft is equipped with baby bassinets, apply operating airline policy for assignment, respecting any age and weight limitations.

1.4.2.1.4 Baby Strollers

Apply operating airline policy regarding checked-in or delivery at aircraft (DAA) service for strollers and provide information to the passenger concerning the procedure, if applicable.

1.4.2.2 Children

1.4.2.2.1 General

A child is a minor between 2 and 16 (has reached his/her 2nd birthday, but has not reached his/her 16th birthday). If the minor reaches his/her 2nd birthday during the journey, he/she will be considered a child as of the birthday.
There are no limits to the number of children an adult can travel with permitted they all have identification and all have a reservation.

1.4.2.2.2 Seating

Children must occupy an individual passenger seat and may not be seated in emergency exit rows.

1.4.2.2.3 Child Restraint Device

Eastern Airways does not accept the use of car seats and other restraint devices on board.Apply operating airline procedures.

1.4.3 Groups

1.4.3.1 General

There is no limit for the number of passengers travelling together in a group.

1.4.3.2 Check-In

(a) Check-in and accept all passengers individually.
(b) When possible assign seats together; if requested respect any special seating requirements.
(c) Issue baggage tags individually:
1. each piece of baggage must bear the respective passenger's identification.
2. exception: Bag tags for family members travelling together may be issued on one family name.

1.4.3.3 Non-Standard Weights

It is important to identify and communicate when there are unusual groups, excessive weights, or anything outside the standard that may affect the aircraft loading. This must be communicated to load control. Such non normal items may be;

(a) Hold baggage, individual or cumulative weights, that exceed normal allowances.
(b) Gate delivery items, including individual or cumulative weights that exceed normal allowances.
(c) Other non-normal items that must be considered in the load control process (i.e. sports teams with higher passenger weights, musical instruments etc).

If manual load sheets are completed by the crew, then they must be notified of any non standard items/weights.

1.4.4 Expectant Mothers

1.4.4.1 General

Expectant mothers are permitted to travel up until their 28th week without any documentation. During the period of 28th week to **34th** week inclusive we are able to accept travel upon the production of a medical certificate stating that they are fit to travel issued from a G.P. or appropriate medical specialist to reduce the risk of non-acceptance at the time of departure.

Expectant mothers beyond 34th week are not permitted to travel.

Pregnant persons should be seated where they will not impede the crew in their duties, obstruct emergency exits or access to emergency equipment. An adult is only permitted to travel with one infant. Should the passenger also have a child, that is permitted.
For a mother who is expecting more than a single birth, we are only able to accept for travel up until the 32nd week of pregnancy.

1.4.4.2 New Mothers

Following giving birth, mothers who have given birth naturally are permitted to travel after 2 weeks (14 days)
If birth has been by caesarean section then the mother is not permitted to travel until after 6 weeks (42 days) after the section.
For any variance on the above, GP's certification should be provided and he company's doctor consulted before acceptance.

1.4.5 Passengers Requiring Assistance

1.4.5.1 General

Persons requiring special conditions, assistance and/or devices when carried on a flight shall be considered as SCPs including at least:

(a) persons with reduced mobility (PRMs) who, without prejudice to Regulation (EC) No 1107/2006, are understood to be any person whose mobility is reduced due to any physical disability, sensory or locomotory, permanent or temporary, intellectual disability or impairment, any other cause of disability, or age;
(b) infants and unaccompanied children; and
(c) deportees, inadmissible passengers or prisoners in custody.

For passengers with disabilities and those requiring or requesting assistance:
(a) Ask the passenger what assistance they require and how you can help them.
(b) Discuss the most appropriate seating based on their individual needs and the aircraft specifications, even if seats have already been pre-assigned.
(c) Advise passengers what services and assistance are available based on their needs.
(d) Advise the passenger of operating airline equipment such as on board wheelchairs, braille or tactile markings, accessible lavatories.
(e) Provide information to passengers in alternate formats upon request.
(f) Ensure accurate SSR codes and any other relevant information are recorded in the DCS and PNR.
(g) Ensure crew are made aware of SCP.

1.4.5.2 Passengers with Reduced Mobility

Appropriately code specific wheelchair requirements based on the passengers specific needs;

(a) WCHR – Passengers who can ascend and descend steps and move in the aircraft cabin but who require a wheelchair for distance to/from the aircraft.

(b) WHCS – Passengers who cannot ascend and descend steps, where the wheelchair is required to/from the aircraft and the passenger must be carried up/down the steps but is able to make their own way to/from the cabin seat.

(c) WCHC – Passengers who are completely immobile and require a wheelchair to/from the aircraft and must be carried up/down the steps and to/from their cabin seat.

1.4.5.2.1 General

It is the responsibility of the Airport Authority to handle Passengers with Reduced Mobility (**PRM)**. All PRM's should be directed to the PRM help desk following check in.

As part of the PRM provision, Eastern Airways and its agents shall have made every effort to ensure the appropriate service provider at the departure and arrival airport have been advised including transit stations.

On the Jetstream 41 we do not accept passengers that are unable to walk the aircraft steps unaided (WCHC). We are not able to assist the passenger in any way so although this question should have been asked before making the reservations please repeat the question at check in. Should the passenger not be able to make the steps, we MUST deny boarding immediately.

If a passenger travels able bodied with us outbound, but has had an accident before returning with us we are within our rights to deny boarding if the passenger is no longer able bodied.

Wheelchairs must be tagged as an item to be placed in the hold. Please advise your baggage handling team of the arriving station that they should expect a wheelchair but ensure the passenger is advised they will not get this item until at the foot of the aircraft steps.

We are able to provide a lift-on/off service on the EMB ERJ and EJET aircraft.

1.4.5.2.2 Process for the Carriage of Mobility Aids

Electric mobility aids (EMAs) are classified as "Dangerous Goods" because of the batteries used to power them.
Eastern Airways may accept electronic mobility aids for carriage subject to certain conditions. If these conditions are not complied with incidents can occur which, in the worst case, can result in a fire.

Currently (EMAs) can only be carried on the following aircraft:

- Jetstream 41 (x1 EMA) 32 kilos maximum weight
- ATR72 (x2 EMA) 40 kilos maximum weight per EMA
- EJET (x2 EMA's) 40 kilos maximum weight per EMA

References

- CAA SN 2112/003 for a detailed reference for the carriage of electric mobility aids.
- IATA Dangerous Goods Regulations

Acceptance process

Passengers are required to request carriage of a mobility aid with Eastern Airways at least 48 hours prior to travel. Passengers are to complete the PRM request form on the booking page at www.easternairways.com

- The completed Electric Mobility Aid Form will then be emailed to PRM.Requests@easternairways.com
- The mobility aid details will be reviewed and providing the EMA is within aircraft limits (hold dimensions and weight), it will be accepted for carriage.
- Acceptance confirmation will be sent to Operations who will note the relevant airplan for information to the crew and annotate the leg sticker to reflect carriage, and to Customer Service
- Customer Service will inform the passenger and amend the booking (SSR remarks). The system will then generate a PAL & CAL to the PRM provider.

Check-in

Check in agents, are to check the passenger booking for confirmation the mobility aid has been accepted for carriage.

The mobility aid will be tagged at check-in (Appendix A) and annotated with the passenger's name and flight information.

Please Note: *In the event of a special assistance passenger (who has not pre-notified) announces their intention to travel with an electric mobility aid at check in the following will apply;*

- *The handling agent should contact T3 Ops to advise they are currently ascertaining mobility aid information. Whilst every effort will be made to accommodate the travelling passenger, if due to time constraints or lack of information which cannot guarantee the safe carriage of the mobility aid, carriage will be refused.*

In the event a special assistance passenger can demonstrate that they pre-notified appropriately but the notification has not been transmitted to the PRM provider or handling agent the following will apply;

- *The PRM provider will alert the handling agent.*
- *The handling agent will contact T3 Ops to advise they are currently ascertaining mobility aid information.*

- *On obtaining this information the relevant Handling and PRM providers will a complete the mobility aid form. Whilst every effort will be made to accommodate the travelling passenger, if due to time constraints or lack of information which cannot guarantee the safe carriage of the mobility aid, carriage will be refused.*
- *The EMA details will be assessed and confirmation provided for acceptance or refusal.*

If at any point of the process, ground personnel are not satisfied that the relevant information can be ascertained or that the mobility aid can be carried safely, carriage must be denied.

PRM Provider
The airport PRM provider will be sent notification of carriage of the mobility item by Eastern airways and the provider will assist the passenger to and from the aircraft.

The provider will dismantle the item (as required) and ensure the mobility item is safe for travel prior to handing the item over the loading agent.
It is the operator's responsibility to provide the following information:

- That there is an electric wheelchair booked onto a flight
- Passenger and flight information
- Information on how to dismantle / put the chair back together
- How to make the chair safe for travel

The PRM provider will be responsible for completing and signing the Electric Mobility Aid Tag (Appendix A) however the Loading Supervisor responsible for ensuring the mobility aid will not operate will be responsible for signing his / her section at the bottom of the form.

Ground Handling
The pilot-in-command must be informed of the location of a wheelchair or mobility aid with an installed battery or the location of a packed battery. It is recommended that passengers make advance arrangements with each operator; also that batteries which are spillable should be fitted with spill-resistant vent caps when feasible.

1.4.5.3 Passengers with Visual or Hearing Impairments
Provide passengers who identify themselves as persons having a visual or hearing impairment with access to the same information provided to other passengers. Ensure accurate SSR codes and any other relevant information are recorded in the DCS and PNR.

1.4.6 Passenger Requiring Medical Clearance
1.4.6.1 General
As per the operating airline policy, medical clearance may be required by passengers:
(a) who appear to have a communicable disease or condition that could pose a direct threat to the health and safety of others on the flight.
(b) whose medical condition gives reasonable doubt that the individual can complete the flight safely without requiring extraordinary assistance during

flight, e.g. persons with acute medical conditions as recent heart attack, stroke, embolism, persons with recent surgery.
(c) requesting medical treatment during flight, e.g. needing extra oxygen or other medical treatment like infusions.

1.4.6.2 IATA Medical Information Form (MEDIF)

The MEDIF is a standard form used to assess passengers requiring assistance. Examples are:

- Information sheet for passengers requiring special assistance) and;
- Information sheet for passengers requiring medical clearance).

Use the operating airline's own form if applicable.

1.4.6.3 Frequent Traveler's Medical Card (FREMEC)

If a passenger is a frequent airline traveller and has a stable medical condition established by the initial medical clearance, then a frequent traveller's medical card (FREMEC) may be issued.
A FREMEC shall be acceptable as medical clearance provided that:
(a) The travel is completed within its validity;
(b) The medical condition corresponds with the description provided;
(c) The passenger is its rightful holder;
(d) Any limitations stated thereon are observed.

1.4.6.4 Advance Notification

Passengers are asked to advise the airline of their needs at the time of reservation.
Advance notification is required for the following, subject to airline acceptance and approval:
(a) Passengers traveling on a stretcher.
(b) The use of oxygen on board and the use of a personal portable oxygen concentrator, ventilator or respirator onboard.
(c) The carriage of an incubator.

1.4.6.5 Seating

MEDA passengers are entitled to the most appropriate seating according to their needs, including the stowage of on board medical devices or equipment.
(a) Appropriate seating, as per operating airline policy and passenger needs, should be assigned to:
1. passengers needing extra oxygen on board.
2. passengers traveling on a stretcher.
3. completely immobile passengers.
4. a passenger travelling with a service animal.
5. a passenger with a fused or immobilized leg.
(b) Provide adjacent seating as applicable for:
1. a personal care attendant.
2. a safety assistant.
3. a reader/interpreter in case of a vision or hearing impairment.

PRM/MEDA and PRM/Non-MEDA may not be seated in emergency exits.

1.4.6.6 Request for Assistance without Advanced Notice

If a passenger's special needs were not communicated at the time of booking, or a passenger is identified as a PRM or potential MEDA case upon departure, take all reasonable efforts to accommodate the passenger.
Ask appropriate questions and record required codes in the DCS.

1.4.7 PRMs not Requiring Medical Clearance

1.4.7.1 Handling

Check that additional needs have been communicated via the respective SSR codes and entered into the DCS and PNR, and verify if escort requirements are fulfilled, if applicable.

1.4.7.2 Refusal of PRM's and/or MEDA Cases

1.4.7.2.1 General

Do not refuse the passenger unless there is a legitimate reason for refusal, as per the operating airline's policy.

1.4.7.2.2 Right of Refusal

A PRM and/or MEDA cases may be refused on the basis of the operating airline's General Conditions of Carriage (Right to Refuse Carriage)

1.4.7.2.3 Reasons for Refusal

Do not refuse a passenger unless one of the following reasons is applicable, and in accordance with the operating airline policy:
(a) The person has such a degree of physical infirmity that the trip would likely result in complications (e.g. diversion) or death.
(b) The person requires individual nursing or care during the flight, if not accompanied by a suitable escort.
(c) The person who, because of his physical or medical condition, pose a direct threat to the health or safety of other passengers, their property, the aircraft or crew that cannot be eliminated by providing additional aid or services or by other means (e.g. face masks, separate seating).
(d) The person fails or refuses to submit themselves to the specific conditions of carriage required by the operating airline regulations.
(e) Information is required about the passenger's medical condition (diagnosis) where the
passenger's own physician refuses to disclose such information to the Authorized Medical Service.
(f) The person has a communicable disease.
(g) The person does not consent to a search of his/her person or property in accordance with the Air Carrier Security Program.

1.4.7.2.4 Handling

In case of refusal of a PRM and/or MEDA case, inform the passenger and explain the reason for refusal with reference to the General Conditions of Carriage.
Apply the operating airline policy with respect to rebooking to a later date, and/or making all efforts to accommodate the passenger on the next possible flight, if applicable, or refund of the ticket.
(a) Enter all relevant information about the reason for refusal into the PNR or in the operating airline report e.g. pax refused [flight/date] d/t lack of safety assistant [SITA address/agent name].
(b) Forward the PNR or report to the appropriate airline department. Document all details of the incident and submit as specified by the operating airline.

1.4.8 Service Animals

As per the operating airline's acceptance policy, accept passengers with service animals (ESAN and certified SVAN) into the cabin, and provide appropriate seating.

1.4.9 Stretcher Transport

Eastern Airways is unable to accept stretchers for transport.

1.4.10 Oxygen for Medical Use

Pre notification is required by Eastern Airways:
(a) Arrange pre-boarding for the passenger.
(b) Add appropriate SSR codes for assistance.
(c) Seat the passenger as per operating airline policy allowing for stowage of equipment.

1.4.11 Inadmissible Passengers

The immigration and Nationality Department procedures provide for Aviation Operators to be informed when a person under the above listed categories is to be embarked on an aircraft.
If a deportee has a record of violence or unstable behaviour the authorities will consider whether it is necessary to provide a police escort during the flight.
In other cases of those listed, the Immigration service will advise the company of circumstances where the provision of a Police escort, Company or private security staff may be advisable to ensure the safety of the flight and no disruption to passengers.
The UK Authorities will notify Police or the Immigration authorities in a transit or destination state of a deportation or removal where escort are necessary to effect that removal.
The relevant Authorities will notify Police or the Immigration authorities in a transit or destination state, of a deportation or removal where an escort is necessary to effect that removal.
A risk assessment, where appropriate, will be conducted by the relevant government agency.

1.4.11.1 Inadmissible Passengers (INAD)

1.4.11.1.1 General

An INAD is an inadmissible passenger who is or will be refused admission to a State by its authorities.
For carriage procedures refer to Section 1.4.11.2 Deportees.

1.4.11.1.2 Unaccompanied or Accompanied Travel

In general, INADs travel without being accompanied.
INADs need to be accompanied if:
(a) The INAD physically resists carriage.
(b) He has already been denied transportation by another airline.
(c) There is any sign he might endanger the safety of the flight or passengers.
For the above reasons, unaccompanied INADs may also be refused at any stage.

1.4.11.1.3 Refusal

If an INAD resists transportation or gives rise to the assumption that he/she will be the source of annoyance to other passengers or crew members, then only accept him/her according to the procedure for DEPA. Refuse the carriage of deportees or inadmissible passengers if they are likely to:
(a) Involve any risk to the safety of the flight.
(b) Involve any hazard or risk to himself, other passengers or crew members.
(c) Cause discomfort or make himself objectionable to other passengers.
(d) Require special assistance from ground or in-flight staff.

1.4.11.2 Deportees

1.4.11.2.1 General

(a) DEPO is used to designate a deportee:
1. that was formally ordered by the authorities to leave that State.
2. who is under arrest who has to be transported to another State for legal reasons.
3. who has applied for asylum and is transferred to the state responsible for the application.
4. described by the term "Dublin Convention" as reasons for transportation.
(b) DEPA–deportee accompanied:
a deportee who is escorted by security escorts during flight.
(c) DEPU–deportee unaccompanied:
a deportee who is not escorted by security escorts during flight.
The responsibility for deportees lies fully with the state(s) concerned.
Deportees will be accepted for carriage only on request of an Authority and upon operating airline approval.

1.4.11.2.2 Procedures for Carriage

(a) An Air carrier will be notified in writing, in advance by the competent authority of the plan to embark a deportee on board its aircraft.
(b) The Flight Operations Director, the Chief Pilot and/or Ground Operations and Security Manager must be notified in writing of the circumstances at the point at which the flight is confirmed, particularly when an escort is required.

(c) The Operations Department will ensure the Captain is aware of all relevant details.
(d) The Handling Agents UK and Overseas are to be made aware.
(e) If a Transit stop is involved, or the flight is diverted, the persons under escort should remain in the aircraft after landing. If the flight is diverted the aircraft captain should notify the police or immigration authority at the airport concerned. If the persons must disembark, the police or immigration authority should be asked to assume responsibility for the decision as to the person's admissibility into the state concerned and necessary, detention or onward travel arrangements.
(f) Reference to carriage of deportees MUST also be included in the Charter Brief.
(g) A minimum of one security escort must be on-board.
(h) Potentially disruptive deportees must wear hand restraints.
(i) Foot restraints must not be worn.
(j) Restrained deportees must be escorted by security escort to the toilet.
(k) If security escorts are carrying firearms, then deportees must wear hand restraints.
(l) No disclosure of the movement other than to official bodies and those parties with a direct interest.
(m) Pre-boarding – common practice.
(n) Where possible, the PAX is to be seated in a window seat. PAX must be seated away from any exits.
(o) A pre-flight Safety Briefing must be given to advice guards how to fit lifejackets and oxygen masks to restrained passengers in the event of an emergency.
(p) During the flight, only polystyrene or paper cups and spoons are permitted for used during the cabin service. Plastic cutlery and cups may be carried, for use during subsequent flights once the deportee has disembarked.
(q) No alcohol is allowed to be served to deportee PAX.
(r) If the Deportee require medication during the flight, this cannot be administered unsupervised.
(s) Flight Crew must not deviate from Standard Operating Procedures and must inform the Duty Pilot immediately, if asked to operate outside of these.

1.4.11.3 Persons in Lawful Custody

1.4.11.3.1 General

Persons in lawful custody are people either under arrest or convicted criminals under escort and are classified into four categories:

(a) CAT A Prisoners whose escape would be highly dangerous to the public or the police, or to the safety of the state.
(b) CAT B Prisoners for whom the very highest conditions of security are not necessary, but for whom escape must be made difficult.
(c) CAT C Prisoners who cannot be trusted in open conditions, but do not have the ability or resources to make a determined escape attempt.
(d) CAT D Those who can be reasonably trusted to serve their sentence in open conditions.

Note: *Eastern Airways will NOT carry CAT A or B prisoners*

1.4.11.3.2 Procedures for Carriage

(a) Information will be supplied by the Prison Service including a Home Office assessment of the classification at least two days prior to travel. This is to enable Eastern Airways to give consideration to the carriage, which the company has the right to refuse.
(b) The Flight Operations Director, the Chief Pilot and/or Ground Operations and Security Manager must be notified in writing of the circumstances at the point at which the flight is confirmed, particularly when an escort is required.
(c) The Operations Department will ensure the Captain is aware of all relevant details.
(d) The Handling Agents UK and Overseas are to be made aware.
(e) If a Transit stop is involved, or the flight is diverted, the persons under escort should remain in the aircraft after landing. If the flight is diverted the aircraft captain should notify the police or immigration authority at the airport concerned. If the persons must disembark, the police or immigration authority should be asked to assume responsibility for the decision as to the person's admissibility into the state concerned and necessary, detention or onward travel arrangements.
(f) Reference to carriage of persons in custody MUST also be included in the Charter Brief.
(g) A minimum of one security escort must be on-board.
(h) Potentially disruptive PAX in Custody must wear hand restraints.
(i) Foot restraints must not be worn.
(j) Restrained PAX in custody must be escorted by security escort to the toilet.
(k) If security escorts are carrying firearms, then PAX in custody must wear hand restraints.
(l) No disclosure of the movement other than to official bodies and those parties with a direct interest.
(m) Pre-boarding – common practice.
(n) The PAX is to be seated in a window seat away from any exits.
(o) A pre-flight Safety Briefing must be given to advice guards how to fit lifejackets and oxygen masks to restrained passengers in the event of an emergency.
(p) During the flight, only polystyrene or paper cups and spoons are permitted for used during the cabin service. Plastic cutlery and cups may be carried, for use during subsequent flights once the person in custody has disembarked.
(q) No Alcohol is allowed to be served to PAX in custody.
(r) If the PAX requires medication during the flight, this cannot be administered unsupervised.
(s) Flight Crew must not deviate from Standard Operating Procedures and must inform the Duty Pilot immediately, if asked to operate outside of these.

1.4.11.4 Illegal Entrants

Illegal entrants are people who have unlawfully entered the UK in breach of a deportation order or of the immigration laws. HM Immigration may direct the removal of illegal entrants by the carrier bringing them to the UK or make alternative removal arrangements particularly when the inbound carrier is not known.

1.4.11.4.1 Procedures for Carriage

Refer to Section 1.4.11.2 Deportees.

Eastern Airways may carry potentially disruptive passengers. These passengers include:

The immigration and Nationality Department procedures provide for Aviation Operators to be informed when a person under the above listed categories is to be embarked on an aircraft.

If a deportee has a record of violence or unstable behaviour the authorities will consider whether it is necessary to provide a police escort during the flight.

In other cases of those listed, the Immigration service will advise the company of circumstances where the provision of a Police escort, Company or private security staff may be advisable to ensure the safety of the flight and no disruption to passengers.

The UK Authorities will notify Police or the Immigration authorities in a transit or destination state of a deportation or removal where escort are necessary to effect that removal.

The relevant Authorities will notify Police or the Immigration authorities in a transit or destination state, of a deportation or removal where an escort is necessary to effect that removal.

A risk assessment, where appropriate, will be conducted by the relevant government agency.

1.4.11.5 Disruptive Passenger Assessment

Factors that will have been taken into account in assessing whether or not a passenger may be disruptive are;

(a) A Record of violence or mental instability.
(b) Criminal Charges or Convictions.
(c) Political circumstances at the destination.
(d) Drug addiction.
(e) Threatening or unruly behaviour prior to departure.

The following questions must be answered by the relevant Boarder Agency, and provided by the Charter Broker, at least two days prior to departure:

(a) How many security escorts will there be and will they be armed?
(b) Do the passenger(s) have any physical or medical conditions?
(c) Are the passengers likely to be disruptive?
(d) Do the passengers need wheelchairs?
(e) Are there any precautions the crew needs to take with these passengers?
(f) Is there any Additional Information about these passengers which we should pass on to the crew?

1.4.11.3 Seating

Assign inadmissible passengers, deportees and their escorts seats as instructed by Eastern Airways.

1.4.11.4 Travel Documents

Hand the travel documents to the crew if required by the local authorities, local regulations or operating airline procedure.

1.4.11.5 Handling

Advise the crew and Pilot-in-Command of INAD, DEPA, DEPU and passengers with judicial proceedings.

1.4.12 Unruly Passengers

1.4.12.1 General Conditions of Passenger Carriage

For flight safety reasons Eastern Airways may refuse carriage or onward carriage of any unruly passengers and/or those who appear by manner or physical indications, to be under the influence of alcohol or drugs. Refer to the Disruptive Passenger Handling Guide for company procedures http://ops.easternairways.com/login.asp

1.4.12.2 Handling Unruly Passengers During Check-In or Boarding

Report to the supervisor any unruly passenger behaviour you observe at check-in, in the lounge, or at the boarding gate, and put baggage of such passengers on standby.

1.4.12.3 If Passenger is Denied Carriage

(a) Offload the passenger in the DCS and offload his baggage.
(b) Document the case in the airport or airline report, with details of the passenger's condition (e.g. intoxicated, general abuse, etc.).

1.4.12.4 If Passenger is Accepted for Travel

(a) Inform Pilot-in-Command and the senior cabin crew member.
(b) Document the case in the airport or airline report with details of the passenger's condition.
(c) Report the incident to the applicable departments and the onward airport.

Note: *Your Safety Report form must be completed a copy sent to Eastern Airways.*
Eastern Airways will fully support any offload where the passenger displays disruptive or abusive behaviour.

INTENTIONALLY LEFT BLANK

1.5 Passenger Irregularities

1.5.1 General Passenger Irregularity Guidelines

1.5.1.1 Information and Communication to Passengers

In general, provide immediate and accurate information at regular intervals:
(a) Ensure staff are briefed for consistent delivery of information.
(b) Provide passengers written information about their rights according to applicable regulations, upon requested or as required.
(c) Provide information in alternate formats to passengers with impairments.

1.5.2 Delays and Cancellations

1.5.2.1 Handling Procedures

In times of operational disruption, communication is key to help minimise delays and to provide accurate information to passengers.
As our appointed handling agent, you are representing Eastern Airways and are providing the customer service on behalf of us to the passenger. It is imperative that the disruption information that is provided by T3 Operations is acted on quickly.
(a) Passengers must be advised and notified of delays, and kept informed at regular intervals.
(b) Where applicable, provide delay notice or passenger rights information and in alternate formats for passengers with impairments.
(c) Brief staff on the estimated time of departure, estimated time of arrival, and any provisions being offered.

When disruption occurs T3 Operations will call the handling agent to pass on:
(a) The delay reason.
(b) Next information time or estimated departure time.

If the flight is cancelled:
(a) If the flight is cancelled, what the passenger options are.
(b) The value of LRV's to be issued if applicable.

We expect passengers to be informed of the above upon verbal instruction from T3 Operations.
T3 Operations will follow up with an email disruption notice to the handling agent reflecting the above (this will be sent within 30 minutes of the verbal instruction)

The handling agent must:
(a) Ensure that staff handling the flight are aware of the disruption information. If there is any uncertainty, you must call T3 Operations to confirm. This must be done before passengers are informed to avoid misinformation.
(b) Communicate the disruption to all passengers.
(c) Update the Airport systems with the next information time / ETD or flight cancelled message.
(d) Ensure that the handling agent is visible to the passengers throughout the disruption.

When communicating disruption to the passengers, only the information given by T3 Operations must be passed. It is not acceptable to provide personal opinion either of the delay reason or timings.
Handling Agents must be considerate when discussing the disruption internally that it is not within earshot of the passengers.

If limited or no information is available, ensure passengers that when further information is available, they will be informed.
If further information is needed or clarity regarding what delay reasons to give to passengers, call T3 Operations.

If we offer rerouting at the earliest opportunity (including ground transport on the day in question), we **will not** provide overnight accommodation if pax chooses to rebook for the next available flight.
Exception is special category passengers such as PRMs and UMMR who have confirmed their requirements in advance.
When ground transport is not an option (because of the length of journey or road conditions):
HOTAC to be provided to pax who are away from home with group transport to and from the airport and evening meal allowance up to £15.00
Do NOT authorise taxis to take people back to their local/home address.

The Daily Disruption Report (DDR) is to be forwarded to T3 Customer Support stating all passengers' choices.
Passengers are only to be given options available provided by T3 operations and not instructed to make their own arrangements and to then claim back through Eastern Airways.
Should passengers chose a refund option (only if applicable) or mention their own arrangements, this must be clearly identified on the DDR.

Connecting Passengers
Always ensure this is checked and there is a clear line of communication between CS/Ops/Handlers of what options are available for these passengers. Providing accurate, quick information to the passenger gives a better perception of customer service.

LRV information UK/EU
Delays less than 2 hours – no LRV.
(a) 2-3 hours delay - issue £5.00 (for each subsequent 2 hour delay after 3 hours, issue a further £5.00
EU 2-4 hours delay – issue €11.00
(b) 3-4 hours delay - issue £7.50
(c) 5 hours + delay - issue £12.50 **OR** the option of lounge access (where available) instead of LRV.
EU 5+ hours delay – issue €15.00
(d) LRV amounts will be notified by T3 Operations.
(e) Cancellations – passengers who take rebooking the same day will be issued LRV based upon the above wait time. i.e. SOU-LBA @ 1630 cancelled and passenger offered SOU – MAN @ 1955 issue £7.50

1.5.2.2 Delay Known Before Check-In

(a) Update revised times in the DCS.
(b) Follow any disruption procedure as issued from T3 Operations

1.5.2.3 Delay Known Before Boarding

(a) Reconfirm the departure gate and time, and update the revised times in the DCS.
(b) Follow any disruption procedure as issued from T3 Operations

1.5.3 Misconnections/Cancellations/Diversions

Handle misconnections in accordance with Eastern Airways General Conditions of Carriage.

1.5.4 Involuntary Change of Class

Involuntary changes of class must be handled as per Eastern airways policy.

1.5.5 Denied Boarding due to Unavailability of Seats

1.5.5.1 General

(a) Passengers holding a confirmed reservation may be denied boarding due to irregularity reasons, for example:
1. Overbooking of the flight.
2. Reduced aircraft seating capacity due to unserviceable equipment (cabin doors, slides, etc.).
3. Reduced weight/seat capacity due to a payload restriction.
4. Change of aircraft or version.
(b) Apply the following policy for denied boarding:
1. Offload staff pax if confirmed by T3 Operations.
2. Seek voluntary offload.
3. Involuntary deny the last checked in passenger/s, irrespective of class booked.

Voluntary compensation is equivalent of GBP100 maximum. Involuntary compensation is GBP100 minimum. Passenger to contact Eastern Airways Customer Relations for full claim details.
In addition to the above, the passenger is entitled to one of the following options:

(a) Rebooking for the next available service irrespective of fare class availability.
(b) Rebooking at a later date, subject to original fare class availability and conditions.
(c) A full refund of any unused Eastern sectors.

The reservation will need to be altered to enable them to be checked in for the next available flight. Also issue the passenger with refreshments vouchers or arrange hotel accommodation and transfers if the next available service means an overnight stay.

1.5.5.2 Over weight and offload priorities

Aircraft weight restrictions may lead to offload situations.
Offload priorities are;

(a) Company Stores (unless AOG).
(b) Staff and third parties travelling on rebated tickets.
(c) Unaccompanied baggage and Rush Bags.
(d) Excess Baggage.
(e) Revenue Freight.
(f) Courier Mail.
(g) Voluntary offload passengers and their baggage.
(h) Last passenger checked in to flight and their baggage.
(i) AOG Stores.

Note: *The following classes of passenger should never be offloaded*
(a) Unaccompanied Minors
(b) Wheelchair passengers or Passengers requiring assistance

1.5.5.3 Disruption announcements

For disruption announcements refer to 1.5.2.1

1.6 Passenger Care Post Incident

1.6.1 General

Incidents involving Eastern Airways Aircraft can be defined as but not limited to;

(a) Return to stand due to technical problem
(b) Return from airborne
(c) Emergency

The primary focus must always be on welfare, care and service delivery, derived primarily from effective communications and a coordinated plan of action.
Whilst this additional passenger care may be as a result of an operational incident this care should not be limited to an on board experience.
Appointed handling agents act as representatives of Eastern Airways in the delivery of passenger care.

All operational staff and handling agents are responsible for the implementation of the procedure.

1.6.2 Flight crew

The Captain of the inbound flight will;

(a) Inform the ground handling agent that passenger care is required.
(b) At the earliest opportunity contact Humberside Operations and advise the reason for the return to stand or diversion.
(c) Will confirm the information provided to the passengers and any other considerations such as UNMINS, children or other 'specials' on board.

1.6.3 Eastern Airways Operations

On receiving the brief from the flight crew, Humberside Operations will communicate with the handling agent;

1. Nature of the incident
2. How the incident was handled by the crew
3. What information was passed to the passengers by the crew
4. Additional 'Special' information

The flight recovery plan should not be time driven to the detriment of passenger care.

1.6.4 Handling Agent

The most senior member of staff present on shift is to;

(a) Communicate with the Captain to establish that both parties agree with the information and instruction received from Humberside Ops Following passenger disembarkation,
(b) Reassure and managing the welfare of the passengers.
(c) Assemble the passengers together in a suitable area and

1. Obtain the passenger flight list and take note of any specials such as UNMINS, mother and child, WCHR pax etc and contact next of kin.
2. Offer regular information updates.

3. Offer care and assistance and arrange rebooking / refund options in accordance with Eastern Airways guidelines for delays and cancellations.
4. Any special requests should not be ruled out – liaise with Eastern Airways and Customer Relations.
5. Offer assistance with calls and messages. Offer of drinks and snacks.
6. Agent to remain visual to the passengers at all times.

In the case of a full emergency situation, refer to 'Annex O' from the following link;
http://ops.easternairways.com/login.asp

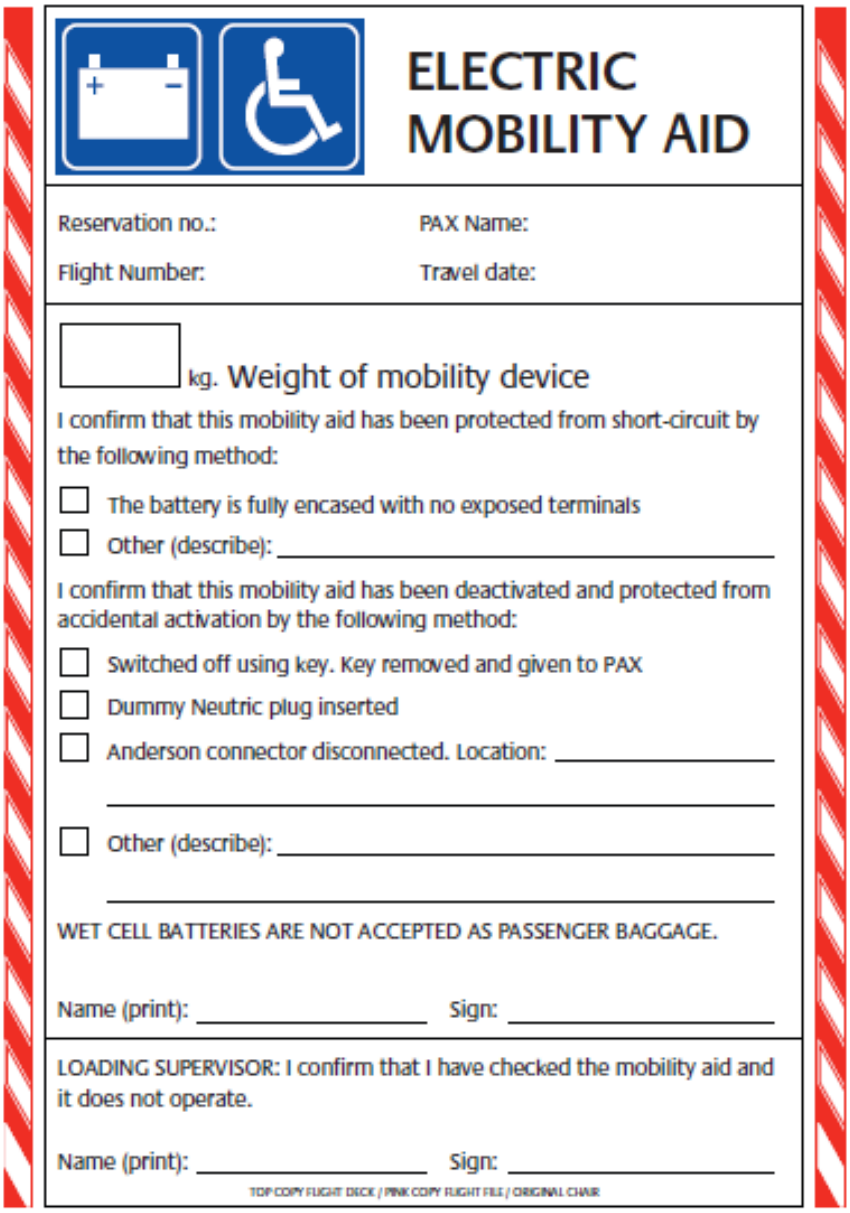
1.7 Check-in Quick Reference Card

1.7.1 General

In order to assist check-in agents with specific questions and product information relating to Eastern Airways Operations, a quick reference card has been created to cover the essential questions and check-in desk requirements. The quick reference cards are recommended for use as part of check-in operations for all Eastern Airways operated flights. See Appendix C.

INTENTIONALLY LEFT BLANK

Appendix A
Electric Mobility Aid Tag



ELECTRIC MOBILITY AID

Reservation no.: PAX Name:

Flight Number: Travel date:

☐ kg. Weight of mobility device

I confirm that this mobility aid has been protected from short-circuit by the following method:

☐ The battery is fully encased with no exposed terminals

☐ Other (describe): _____

I confirm that this mobility aid has been deactivated and protected from accidental activation by the following method:

☐ Switched off using key. Key removed and given to PAX

☐ Dummy Neutric plug inserted

☐ Anderson connector disconnected. Location: _____

_____

☐ Other (describe): _____

_____

WET CELL BATTERIES ARE NOT ACCEPTED AS PASSENGER BAGGAGE.

Name (print): _____ Sign: _____

LOADING SUPERVISOR: I confirm that I have checked the mobility aid and it does not operate.

Name (print): _____ Sign: _____

TOP COPY FLIGHT DECK / PINK COPY FLIGHT FILE / ORIGINAL CHAIR

INTENTIONALLY LEFT BLANK

Appendix B
Check-in Quick Reference Card

Quick Reference Card

Desk signage to be in place (GOM 1.1.2)

- DG prohibited article list
- CAA prohibited article list
- J41 valet cart (if applicable)

Questions to ask (GOM 1.1.3.2)

- Are you carrying spare lithium batteries?
- Are you carrying e-cigarettes or spare refills?
- Carriage of prohibited articles/liquids etc?
- Are you carrying lithium powered devices in your hold baggage?
- Are PED's in hold bags switched off and protected?

Hand baggage process (J41)

- Hand baggage weighed?
- Hand baggage tagged?
- AAA process applied?

Information to passengers

- Known delay information
- Fast track access
- Lounge access

Front

Quick Reference Card

Contact details

T3 Ops HUY	+44 (0)1652 681 046
	ops1@easternairways.com
	SITA HUYOOT3
Reservations	+44 (0)1652 680 600

Safety and instructions

GOM link:
http://ops.easternairways.com/login.asp
Password: as issued
File a company safety report for any safety events and send to;
DLGroundOps@easternairways.com

Strength In Safety
EASTERN AIRWAYS ZERO COMPROMISE On Safety, Values & Reputation

Back

INTENTIONALLY LEFT BLANK

SECTION 2: BAGGAGE HANDLING PROCEDURES

2.1 Cabin Baggage

2.1.1 Definition

Cabin baggage is baggage that is carried and stowed in the cabin under the passengers' control and custody.
It is commonly referred to as hand baggage, carry-on baggage or unchecked cabin baggage. Each operator sets their standards for size, weight and number of pieces permitted as cabin baggage.

2.1.2 Types of Cabin Baggage

Cabin baggage includes:
(a) Baggage carried within the Eastern Airways free carry-on baggage allowance.
(b) Free carry-on items permitted by the operator in addition to the standard allowance (e.g. duty free item, winter coat,etc).
(c) Special items permitted by Eastern Airways that may require prior arrangement, notification and/or specialized screening or additional charges (e.g., urns containing human remains, pets, medical equipment and valuables).
(d) For items of dangerous goods permitted in cabin baggage including those items that require prior approval by Eastern Airways, see IATA Dangerous Goods Regulations (DGR).

2.1.3 Cabin Baggage Acceptance

2.1.3.1 Acceptance

(a) One standard Cabin Bag can only be accepted if it:
1. Weighs no more than 10kgs and a maximum size of 55cm x 35cm x 20cm
2. Can fit under the seat or be stowed in the overhead compartment.
3. Is suitably packed.
4. Conforms with airport security and safety procedures.
(b) Restrictions:
1. Certain items, because of their weight, size or nature are only accepted with the consent of Eastern Airways, e.g musical instruments.
2. For security reasons, many countries restrict the carriage of liquids, aerosols and gels in cabin baggage.
3. Items refused by security screening shall be hold-checked as per operating airline procedures or refused from transport completely if not allowed in checked baggage.
4. For Dangerous Goods items that are permitted or excluded from cabin baggage, refer to IATA Dangerous Goods Regulations (DGR) in addition refer to operator's procedures.

2.1.3.2 Procedures at Check-In

Assess the size, weight and intended number of pieces of cabin baggage as per the operating airline procedures.

(a) Weigh cabin bags if they appear to exceed the specified weight/size limit (weighing of all cabin baggage may not be systematically required unless mandated by the operator).
(b) Refer the passenger to the baggage gauge, if available.
(c) Attach an "approved cabin baggage" tag, if applicable.
(d) If the cabin baggage exceeds the free allowance size and/or weight, it shall be checked in, with applicable charges, if the free baggage allowance is exceeded.
(e) Be aware of dangerous goods that may be commonly carried, but are not permitted. Ask the passenger if they have any of these items by using the Dangerous Goods displays for visualization.

2.1.3.3 Jetstream 41

The Jetstream 41 aircraft does not contain overhead cabin bins. Therefore, cabin baggage larger than stated below, must be treated as checked in baggage for stowage in hold 4 ('POD').

(a) Weigh the cabin baggage and record the actual weight.
(b) Apply cabin baggage or valet cart tags.
(c) Record the baggage ID number on a hold baggage manifest.
(d) Record the passenger name on the hold baggage manifest
(e) Record the baggage weight on the hold baggage manifest.
(f) Ensure the passengers boarding card contains the baggage ID number

Note: *For J41 operations, the check-in agent must advise the passenger that their hand baggage will be placed into a valet cart at the aircraft steps so they will need to remove anything that they may wish to take on board.*

The maximum weight of the J41 POD (Hold 4) is 158kgs. Should the loadsheet indicate that the combined weight of the hand baggage is more than 158kgs, it will be necessary to move a number of bags to hold 6.
In order to ensure the hand baggage to be moved to hold 6 is correctly reconciled with the weights recorded in the check-in system, the following must be done;

(a) Identify the passenger bags to be moved to hold 6 to ensure the POD weight is below 158kgs
(b) Cross check the passenger name from the check-in system with that recorded on either the bingo sheet or on the hand baggage tag to ensure the correct baggage is identified
(c) Ensure the loading team identify the correct bags to be loaded into hold 6
(d) Ensure that the loadsheet and the bingo sheets for each hold are correctly amended

The items below are <u>examples</u> of the size of baggage permitted in the cabin and those that are not. Passengers must be advised that if their bag is tagged,

it must be placed into the valet cart at the aircraft. Passengers are to be advised to remove any PED's, valuables or fragile items.

The same Dangerous Goods questions for hold baggage must be asked either at check-in or the gate for on line checked in pax (*GOM 1.1.3.2*).

Staff need to use their discretion when assessing each item and ensure consistency as much as possible.

Permitted

Small shoulder bag/ soft rucksack/ handbag

A4 portfolio folder

Open tote bag

Bags permitted to be carried in the cabin must be able to fit under a single seat in front without protruding or causing an obstruction.

Not permitted

Travel case (tote) bag

Briefcase/ laptop bag

Rucksack

Large shoulder

2.1.3.4 On-line Check-in

Passengers who have checked in on-line and are carrying hand baggage only, will likely proceed straight to the boarding gate and bypass check-in. The process for weighing, tagging and manifesting Cabin/DAA baggage must therefore also be carried out at the boarding gate as well as at check-in. The following procedures must be followed to ensure that this process is carried out as quickly as possible so as not to impact the on time departure.

(a) Each station must ensure they have a set of calibrated scales for weighing hand baggage at the gate.

Note: *For scales provided by Eastern Airways, responsibility for arranging annual calibration checks will be that of Eastern Airways. All scales will have an asset number assigned to them.*

(b) The station is responsible for the scales and must inform Eastern Airways if they become damaged or defective.

(c) Following closure of check-in (STD -30), the hand baggage manifest must be passed to the gate to capture any remaining un-manifested hand baggage.

(d) Gate staff should make a PA to inform passengers to come forward for boarding no less than STD -25. This will provide 15 minutes for gate staff to queue comb to weigh, tag and manifest any remaining hand baggage.

(e) Passengers must be asked the following set of questions contained in GOM *1.1.3.1.*

(f) Final pieces and weights for hold 4 must be passed to the crew as soon as possible for them to complete a manual loadsheet. Automated loadsheets will not be provided due to the time frame of collating the pieces and weights close to STD.

(g) Autoboard must be carried out at STD -10, STD –15 for ATR.

(h) Passengers whose hand baggage is larger than the permitted dimensions or above the permitted weight must be advised that their bag will be placed in the main hold (hold 6) and should reclaim it from the baggage reclaim belt. These bags must be tagged and manifested accordingly for hold 6 and the crew informed of the change to hold 6 pieces and weights.

Note: *Passengers must be reminded of the hand baggage limitations and charges applicable for hold baggage in order to deter this behaviour at the gate.*

(i) Should hold 4 become overweight (max 158kgs), remaining hand baggage must be accommodated in hold 6 and the paperwork and LDM messages annotated accordingly. Crew must be advised.

(j) Any passenger no shows must be offloaded as soon as possible so as not to impact OTP.

(k) Any discrepancies must be resolved as soon as possible so as not to impact OTP.

(l) If portable scales are not available at the gate, the handling agent must provide other means to provide actual weights using a calibrated weighing system.

(m) Handling agents must ensure adequate stock of hand baggage tags at the departure gate.

2.1.3.5 Procedures at Boarding Gate

Check for items that are unacceptable, oversized and/or overweight or exceed the number of pieces as free cabin baggage, using the cabin baggage gauge if applicable. Collect any cabin baggage that cannot be accommodated on board due to these reasons or due to limited storage space. When accepting cabin-baggage into the hold:

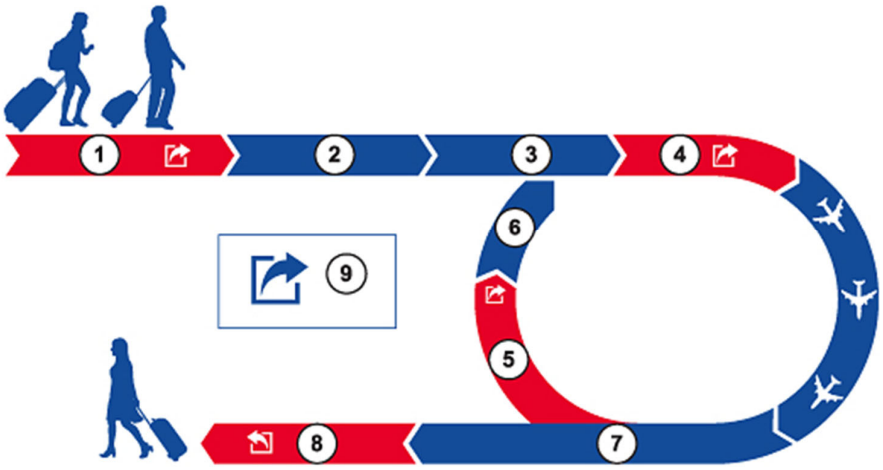
(a) Check with the passenger that the baggage contents comply with the IATA DGR and Eastern Airways procedures. Verify whether the passenger has removed any items specifically prohibited in hold baggage (such as lithium batteries, etc.).
(b) Advise the passenger to remove any personal documents or medications, valuables and sensitive or fragile objects.
(c) Accept, with applicable charges as per operating airline procedures.
(d) Tag gate-checked bags in line with the through check-in procedures using a limited release tag, in accordance with operating airline procedures.
(e) Ensure the baggage tagged at the gate is considered for load control by adding the information in the DCS (number of pieces and weight) or use DAA labels and processes if applicable as described in 2.8.3 depending of aircraft type.
(f) Inform the passenger to pick up their gate-checked bags either at the baggage claim area, final destination or at the aircraft door (Delivery At Aircraft, DAA), if applicable.
(g) Inform ramp staff and/or load control of the gate baggage to be loaded.

INTENTIONALLY LEFT BLANK

2.2 Checked Baggage

2.2.1 The Baggage Journey

The diagram below shows the Generic flow of checked baggage, from acceptance of the bag through to the return of the baggage to the passenger.



NUMBER	DESCRIPTION
1	Departing Baggage
2	Security
3	Sort
4	Baggage Build
5	Transfer Baggage
6	Security
7	Unload
8	Arrival
9	Information Sharing

Note: *INFORMATION SHARING: Airlines should share tracking information with interline partners as needed.*

2.2.2 Definition and General Terms

Checked baggage is baggage for which the operator takes custody and issues, validates or updates a baggage tag:

(a) Checked baggage is carried in the hold of the aircraft on which the passenger is travelling but remains inaccessible to the passenger during the flight.

(b) The operator may refuse to carry checked baggage that is likely to endanger the aircraft or persons or property on board the aircraft, is inadequately packed or unsuitable for air carriage due to its weight, size or nature or forbidden by law, regulations, security standards or safety standards of any state to be flown from, to or over.

(c) Every piece of checked baggage shall have a baggage tag attached showing the tag number, flight number, appropriate destination, and the passenger's name.

(d) Unaccompanied baggage is baggage that is traveling without the passenger being onboard the aircraft.

The most common reason for this is in order to repatriate the baggage to the passenger after a mishandling.

Note: *Under certain circumstances concerning local authorities and airline restrictions it maybe possible not to offload the checked baggage from the subsequent leg in case of a misconnection.*

(e) A maximum single item weight is applicable as per operating airlines procedures.

Note: *Certain items, because of their weight, size or nature, are only accepted with consent of the operator. For example, musical instruments such as cello.*

2.2.3 Bulky and Oversized Baggage

2.2.3.1 General

Baggage is considered bulky or oversized as defined by Eastern Airways and/or its weight exceeds regulatory limits. For example, in general baggage accepted in European airports may not exceed 32 kgs in weight, although exceptions may exist e.g., check-in of wheelchairs.

2.2.3.2 Maximum Single Item Weight

Eastern Airways has determined a maximum single item weight for checked baggage of 20kgs.

2.2.3.3 Maximum Single Item Dimension

Each operator shall determine maximum single item dimensions for checked baggage that considers:

(a) Any local legislation or health and safety requirements.
(b) Any other applicable limits for transfer baggage.

Specific rules may apply as per operating airline procedures for certain items e.g., Animals Vivant in Hold (AVIH), wheelchairs (WCH), musical instruments, media equipment and large sports equipment.

2.2.4 Checked Baggage Allowances

Passengers are entitled to a predetermined checked free baggage allowance that can vary based on the fare paid, passenger category, routing, group status or class.

Note: *Some fares do not include any free checked baggage allowance.*

There are two standard checked free baggage allowance concepts:
(a) Weight Concept: measured by the total weight of checked baggage, which is shown as a weight amount on the ticket (e.g., 20 kg or 45 lb.).

(b) Piece Concept: measured by the number of pieces of checked baggage (shown as PC on the ticket).

Note: *Some operators procedures may combine both concepts, such as 2 pieces not weighing more than 32 kg in total or per piece.*

2.2.5 Excess Baggage

In case the free checked baggage allowance is exceeded; chargeable excess baggage handling applies as per Eastern Airways procedures and applicable baggage rules. Excess baggage fees (per kilogram or piece or for special items) may be prepaid, collected at the check-in, collected at a sales desk or at the boarding gate.

2.2.6 Checked Baggage Acceptance

2.2.6.1 Standard Baggage Acceptance

The check-in agent should only accept checked baggage that is appropriately packaged and has passenger identification label.
(a) Ensure dangerous goods notifications are on display and verify with the passenger that the checked baggage does not contain any forbidden dangerous goods.
(b) Review weight and pieces information for recording in the DCS and for applying appropriate fees.
(c) If applicable or required according to the airline procedures, ask the passenger security-related questions.
(d) Be aware of items that, due to their nature, may contain dangerous goods. Refer to the IATA DGR and GOM *2.5.7*.
(e) Ensure that the number and weight of each piece of checked baggage has been transferred automatically or manually to the load control process. When special baggage is accepted, ensure that the person in charge of weight and baance calculation task is informed accordingly.
(f) Attach appropriate baggage tag for the journey.

2.2.6.2 Baggage Drop-Off and Self-Service Devices

Baggage self-service drop off is becoming more prevalent. Where baggage self-service devices are in use, please observe the following:
(a) Follow the operating airlines' procedures or SLA agreement for the number of staff per machine undertaking assistance and supervision activities.
(b) Proactively guide passengers to self-service options to manage waiting times.

2.2.6.3 Baggage Pooling

As per IATA Resolution 746, when passengers baggage is pooled, each passenger in a non-family group should be given their own individual baggage claim check/receipt.
Subject to operating airline procedures, baggage may be pooled between registered groups of travelers or travelers flying together, such as families. In this situation the baggage allowances for each passenger are combined to make a group total.

A registered group of 10 passengers may each have an individual allowance of 1 piece weighing up to 20 kg.

Pooling the allowance would allow 10 pieces with 20 kg each for the entire group in total. Therefore, if one group member has 2 bags, and another has no checked baggage, the pooled allowance allows the additional bag for this group member to be carried without penalty.
A couple traveling together may have individual allowances of 2 bags weighing 32 kg and 1 bag weighing 20 kg. Pooling these allowances would enable the couple to carry 3 bags weighing no more than 84 kg in total with no individual bag weighing more than 32 kg.

Note: *Where applicable the maximum single item weight restrictions shall be observed.*

2.2.6.4 Baggage Tags

(a) Remove all old tags and baggage reconciliation (mini or stub tags).
(b) Attach appropriate baggage tag for the journey.
(c) Place tags in an easily readable location and where they will not be easily torn off.
(d) Follow tag instructions and do not stick glue directly onto passenger baggage.
(e) Use limited release tags as per operating airline procedures.
(f) Subject to operating airline procedures, supplementary tags (handling tags) may be attached to baggage items, if they are not printed on the baggage tag, such as:

1. Priority Tag–to identify priority baggage to be offloaded first and segregated as per operating airline procedures
2. Short Connection Tag
3. Limited Release Tag–used on fragile or unsuitably packaged items
4. Fragile Sticker–for items that require extra care in handling
5. Heavy Tag–placed on items that exceed regular handling limits (this varies according to local legislation).
6. Security Tag (e.g. weapons)

2.2.6.5 Types of Baggage Tags

(a) **Manual Baggage Tag**

In case of manual baggage tag as per IATA Resolution 740:
1. Complete any hand-written portions of the manual tag, writing legibly in permanent, water proof pen.
2. When needed due to the number of transfer legs:
   (i) Prepare a second tag by striking out the baggage identification number
   (ii) Remove the barcode section
   (iii) Attach the transfer part of the tag below the transfer line on the initial tag
   (iv) Mark the 2nd tag as a conjunction tag
3. Record the baggage identification number in the operating carrier's departure control system if possible.

4. Inform the Ramp Agent when checked cabin baggage is accepted at the gate.

(b) **Electronic Baggage Tag**

Some operators have implemented Electronic Baggage Tag in line with IATA Recommended Practice 1754. These tags have a display that shows the baggage journey and are normally set to display the current journey during the passenger self-check-in process. Whilst the display of these tags does not use power to be shown, a battery is normally used to allow the display to be updated. In general, these batteries are of the AA type and can be left in the baggage. The IATA DGR (Dangerous Goods Regulation) Manual has details for dealing with lithium ion batteries.

1. Check the quality of the display, as the barcodes shall be readable.
2. Check that the baggage information displayed matches the passenger itinerary, including the baggage license plate number shown for the bag.
    (i) If the details are incorrect, ask the passenger to blank their baggage tag.
    (ii) After the tag is blanked, generate and attach a normal baggage label and any other identifying labels as per 2.2.6.4. Ensure that the bag tag number(s) are "active", in the check-in system as per operating airline procedures.

(c) Home Printed Baggage Tag

Where allowed by operating airline procedures and local regulations, passengers may have printed their own baggage details remotely. Home printed baggage tags, HPBT,show the baggage journey as a normal baggage label does and are folded to fit into a plastic holder and attached within the baggage:

1. Check that the baggage information is clearly displayed. If the baggage label is illegible for any reason (poor printing, incorrect folding, not matching the itinerary data, etc.) destroy the HPBT and cancel the HPBT number in the DCS, then generate and attach a normal baggage label and any other identifying labels as per 2.2.6.4

2. Check that the baggage information displayed matches the passenger itinerary, including the baggage license plate number shown for the bag. If the details are incorrect then destroy the HPBT and cancel the HPBT number in the DCS, then generate and attach a normal baggage label and any other identifying labels as per 2.2.6.4

3. Ensure that the bag tag number(s) are 'active' in the check-in system as per operating airline procedures

(d) **Fallback Baggage Tags**

If in use, fallback baggage tags are issued when the baggage handling system at the airport is not able to process baggage messages, and therefore cannot work with demand baggage tags. These baggage tags are specific to the

airport. These tags have an airline code and 2-digit pier, chute or lateral indicator.

When using manual tags:
1. Generate a normal on-demand baggage tag or manual tag and affix to the baggage
2. Ensure that the appropriate airline identifier code is shown on the tag
3. Ensure that the appropriate pier/chute/lateral information is shown for the designated flight build
4. Firmly attach the fallback tag to the bag
5. Ensure that the persons responsible for building and loading baggage tasks, are aware that the fallback tags are in use

2.2.7 Checked Baggage Destination

Follow operating airline procedures and through-label baggage to one of the following points, whichever occurs first:

(a) The first stopover point of the passenger.
(b) The point to which transportation has been confirmed (OK in ticket), requested (RQ in ticket) or listed (SA in ticket).
(c) The point where a change of airport is involved.
(d) The final destination specified in the ticket, including any tickets issued in conjunction with this ticket.
(e) In addition, observe the following:

1. The Minimum Connecting Time (MCT) is respected.
2. Unless subject to specific agreement between airlines, through check-in baggage on separate tickets is prohibited.
3. If allowed by airline operating procedures then baggage may be labeled to a transfer destination on the ticket.
4. Specific rules of the operating airline may apply for Animals Vivant In Hold (AVIH).

2.2.8 Transfer Baggage–Special Cases

Case	Through-labeling	Remark
Customs clearance required at the transfer point	Yes	Advise passenger to pick up baggage at the transfer point. Refer to *TIM/TIMATIC* for country rules.
The passenger specifically wants his baggage at a transfer point	No	Inform the passenger about the risk of missing the connecting flight.
Animals in hold	Yes	Only permitted if the continuing carrier has confirmed acceptance. Within permissible MCT.

2.2.9 Dangerous Goods in Baggage

(a) Dangerous goods are articles or substances which are capable of posing a hazard to health, safety, property or to the environment and which are shown in the list of dangerous goods in the IATA Dangerous Goods Regulations or which are classified according to these Regulations.

(b) In principle, dangerous goods are forbidden to be carried by passengers and crew, except as otherwise provided in Table 2.3.A of the IATA DGR and in line with Eastern Airways Passenger Provisions Guide.

Specific transport conditions are applicable, defined items that:

1. Require the approval of the operator prior to the acceptance
2. Are permitted in or as checked baggage
3. Are permitted in or as cabin baggage
4. Have to be carried on one's person only
5. Require notification of the pilot-in-command (NOTOC) on their location on the aircraft

(c) All persons tasked with passenger and baggage acceptance shall:

1. Be trained according to the training requirements in the IATA DGR.
2. Have to verify with the passengers that they are not carrying forbidden dangerous goods during the check-in and baggage acceptance process.
3. Be aware of commonly carried items and question passengers where there is a suspicion of their carriage (e.g., camping equipment, hunters).
4. Handle and report any dangerous goods occurrences, e.g. forbidden dangerous good identified in checked baggage, in line with the operating airline procedures.

For details refer to the IATA DGR and Eastern Airways Passenger Provisions Guide.

INTENTIONALLY LEFT BLANK

2.3 Baggage Security

2.3.1 General

Each piece of Domestic & International hold baggage shall be screened and protected against unauthorized access from the point it is accepted for carriage up to the point of departure (including off-airport check-in) or screened, whichever is earlier. Security measures shall be implemented for screening, storage, reconciliation, handling reconciliation, handling systems and loading to ensure prevention of unauthorized access, tampering or introduction of prohibited articles into the hold baggage in line with the operating airline procedures. Screened hold baggage should always be kept under surveillance (i.e., CCTV, physical presence).

Subject to local regulations and operating airline procedures, baggage may only be transported when;

(a) The respective passenger is on board, the baggage shall then be considered as 'accompanied checked baggage'.
(b) The baggage has been identified as 'unaccompanied' checked baggage and authorized for carriage in accordance with local security procedures and Eastern Airways procedures (refer to 2.3.6).
(c) All checked baggage is subjected to the appropriate screening and security controls in accordance with local security procedures and operating airline procedures prior to being loaded into and transported on the operating carrier.

2.3.2 Handling of Checked Baggage

If passengers and crew members are required to personally identify their checked baggage before loading, do not load any baggage not identified. Ensure there is no opportunity for passengers to remove items from checked baggage, which are prohibited in the aircraft cabin and could be used to commit an act of unlawful interference.

When screening of checked baggage gives rise to suspicion regarding the contents, the local screening authority will proceed as per local regulations.

2.3.3 Carriage of FireArms

2.3.3.1 General

Firearms are among the articles prohibited for carriage in the aircraft cabin. The only exemption is for persons specifically authorized to carry a firearm in the cabin. Refer to OM-A1 Section 9 for Eastern Airways procedures.

2.3.3.2 Carriage of Fire Arms On-Board

Airline procedures are in place in case person(s) authorized to carry a firearm on a commercial flight in the passenger cabin to ensure that the pilot-in-command is notified prior to the commencement of the flight. The notification shall include the seat number(s) of authorized armed person(s) when allowed by local regulations.

2.3.3.3 Carriage of Fire Arms In The Aircraft Hold

When a firearm and ammunition is carried in the hold, the procedures shall ensure:

(a) Firearm is not loaded and there is no ammunition in the chamber, and ammunition is carried separately from the firearm.
(b) Firearm and ammunition is stowed in a place that is inaccessible to any unauthorized person during the flight. Firearms are not to be carried in the flight deck or retained by any crew member.
(c) Carriage of firearms is permitted by all states involved (including the state of departure, transit, arrival).
(d) Pilot-in-command is notified prior to a commencement of the flight.

Note: *In the event a weapon or any item suspected to be an unauthorized weapon is discovered, follow operating airline procedures and local security regulations.*

2.3.4 Security Removed Items

Items not permitted in cabin baggage that are removed by security screening personnel may only be accepted in checked baggage, as per operating airline handling and acceptance procedures.

2.3.5 Transfer and Connecting Baggage

When passengers shall collect their checked baggage during the transfer process (because of immigration or security policies of a State), treat checked baggage as originating baggage.

1. If baggage is collected landside, submit it to screening before loading on the aircraft.
2. If baggage is collected and transferred in the sterile area, rescreening may not be necessary.

Interline, transfer and connecting baggage must follow the reconciliation procedures as originating baggage as per operating carrier procedures and national regulations.

All Domestic and International transfer hold baggage shall be subject to screening prior to loading and has been screened at the point of origin and subsequently protected from unauthorised interference until departure.

2.3.6 Unaccompanied Baggage

Any item of hold baggage travelling unaccompanied must be subject to additional security screening methods.

(a) A certificate of security measures (example *appendix A*) for unaccompanied baggage must be completed by the carrier appointed handling agent for each bag.
(b) The form must be presented to the security agent responsible for screening for them to confirm the method of screening and sign.
(c) The completed form must
1. Remain with the flight file – x1 copy.
2. Provided to the operating crew for their paperwork – x1 copy.
3. Provided to operating crew for the arrival destination – x1 copy.
4. Remain with the unaccompanied bag – x1 copy.

(d) The unaccompanied bag details must be included on the baggage manifest separate from other hold baggage and must include the description 'unaccompanied bag'.

INTENTIONALLY LEFT BLANK

2.4 Baggage Sortation

Baggage sortation is required in line with the operating airline procedures to facilitate further baggage processing and is based on the airport facilities.

2.4.1 IATA Resolution 753

IATA Resolution 753 introduces baggage tracking for all airlines. The resolution requires that all baggage is tracked through the baggage journey and specifies mandatory points for this tracking. These are:

(a) check-in, where the Baggage Service Message (BSM) is evidence of tracking,
(b) aircraft loading,
(c) placing the bag into a transfer process/system,
(d) arrival at the baggage reclaim.

For the last 3 activities there may be a system that allows baggage labels to be scanned, or manual processes may be used. In addition to the actual tracking of the bags, Resolution 753 demands that the data collected should be shared with interline partners as needed.

Operating airline procedures shall be followed regarding conformance with IATA Resolution 753.

2.4.2 System Output Allocation

Baggage systems are designed to route baggage from the check-in areas (including baggage drops) to a specific point at which the bags will be collected together for the flight. There may be several of these points, each used for different flight segregations (such as business class and economy) or for the different onward flights (such as LHR – SIN – KUL, LHR – SIN – PER).

These specific points and segregations need to be configured in the baggage handling system, and this is done is conjunction with the baggage handling system operator. There will be a control room for the baggage handling system and staff there will know the procedures for output allocation and any constraints placed upon the allocation of outputs. Note that it may be possible to select system outputs that can result in shorter driving distances and driving times to flights when an airport stand or zone is habitually allocated for a specific flight.

2.4.3 Designation of Containers and Carts

Eastern Airways do not currently operate aircraft that carry ULD’s.

All baggage handling systems suffer from “system jitter” and unknown bags. This means that occasionally baggage will be directed to either a default output point or arrive at the wrong output point. Obviously, without human action, these bags will miss their intended flight. Therefore based on the local provider and/or airport authority, and subject to airline and ground handler’s agreement, it is advised to have baggage teams that can take these bags from the incorrect output location to their intended location or flight.

INTENTIONALLY LEFT BLANK

2.5 Baggage Preparation for Loading

2.5.1 General

Sorted baggage is prepared for loading in line with the operating airlines procedures and/or aircraft type, either on baggage carts or in containers. The baggage room shall prepare a sufficient and predetermined number of baggage carts and containers in accordance with the expected passenger load for a flight.

2.5.2 Unit Load Device Preparation and Build-up

Eastern Airways does not operate aircraft with ULDs.

2.5.3 Baggage Reconciliation

Baggage reconciliation ensures that only accompanied or authorized unaccompanied checked baggage is loaded and transported. Baggage reconciliation procedures, either manually or automated, shall be in place where required by local regulations and operating airline procedures.

(a) Maintain passenger/baggage reconciliation as required, including:

1. Standby passengers
2. Off-airport and group check-in passengers
3. Voluntary or involuntary deplaning
4. Transit passengers

(b) Checked baggage of any passenger who is withdrawn from flight or didn't board (no-show) is to be considered unaccompanied and handled in accordance with airline procedures and local regulations, which may include off-loading and additional security controls.

(c) Once a flight has been closed for check-in, the baggage room flight lead, or the baggage supervisor will:

1. Review total pieces of baggage.
2. Pass on all baggage figures so that the total load summary can be prepared.
3. Conduct a baggage room sweep to ensure there are no left-behind bags.

(d) If baggage is left behind, report to Baggage Services. Appropriate messages shall be sent to the downline station and arrangements made to expedite the return of the bag to the passenger.

INTENTIONALLY LEFT BLANK

2.6 Offloading of Checked Baggage

(a) If instructed to offload checked baggage, obtain the name, security number, baggage tag number(s) and number of pieces of baggage requiring removal.

(b) Once the baggage is offloaded, it shall be handled in accordance with operating airline procedures and/or local security procedures.

(c) Always communicate with gate or operator staff with respect to the addition or removal of any checked baggage.

(d) Maintain baggage reconciliation records (e.g. BRS/Bingo cards) in accordance with regulatory/customer airline requirements, as applicable.

INTENTIONALLY LEFT BLANK

2.7 Baggage Arrival and Transfer

During passenger disembarkation, check if any Delivery At Arrival, DAA items have been loaded for the passengers.
For details on aircraft unloading procedures, refer to 4.5.4

2.7.1 Baggage Delivery

Unloaded checked baggage shall be prepared for delivery to the passengers in line with the priority concept as per operating airlines procedures.

Checked baggage shall be delivered to the passengers in the designated baggage claim area of the airports.
Depending on airport layout specific delivery points may be applicable for bulky luggage, live animals and weapons.

Gate-checked bags or items accepted as 'delivery at aircraft' are either returned in the baggage claim area or at the aircraft door.

2.7.2 Transfer Baggage

2.7.2.1 General

Transfer baggage is baggage for passengers arriving on a feeder flight and continuing on an onward flight.
The baggage is through checked and transferred to the connecting flight observing the local regulations and operating airline procedures.

Preparation for Transfer Baggage

Ensure the baggage handling team knows of storage locations for baggage that has arrived prior to departing flight opening so that they can collect the transfer baggage, as necessary.
Dispatch the baggage team and any necessary GSE as per their allocated tasks (e.g., collection, delivery).

Transfer baggage may be identified by a remark on the baggage tag and/or by a separate short connection tag or sticker.

2.7.2.2 Transfer Segregation and Prioritization

Connection baggage may have different handling requirements at the transfer point. It may:
(a) Be Time-bound e.g. Short/Long
(b) Have a requirement to be processed in a specific way e.g. Stored for later processing
(c) Have a requirement to be processed at specific location e.g. Terminal
This is defined by the operating airline procedures.

Note: *The handler shall apply local knowledge of the Airfield, GSE road network and BHS to best achieve the intent of the operating airline and within the terms of the SGHA.*

Transfer baggage may be identified by a remark on the baggage tag and/or by a separate short connection tag or sticker.

2.7.2.3 Short Connection Baggage

Short connection baggage is baggage of passengers having an onward connection out of a hub with a short scheduled connecting time as defined by the operating airline procedures.

This baggage is of interest for the transfer process because it is most at risk from delayed flights or handling processes. Identifying these bags allows handlers to more readily process the bags rapidly when needed.

Short connection baggage may be identified by a remark on the baggage tag and/or by a separate short connection tag or sticker.

Handling

Identifying these bags allows handlers to more readily process the bags rapidly when needed. The handler shall be aware of the presence of Short Connection Baggage For an arriving aircraft, the handler shall ensure its preparedness to perform its handling processes expediently to best achieve the intent of the operating airline and within the terms of the SGHA.

The handler shall apply local knowledge of the Airfield, GSE road network and BHS to best achieve the intent of the operating airline and within the terms of the SGHA. The handler shall react appropriately to schedule variation and airport conditions and apply local knowledge of the SGHA.

Apply the following short connection baggage procedure at outstations:
(a) Identify all short connections out of the hub airport
(b) Handle and prioritize as per operating airline procedures

2.7.2.4 Long Connection Baggage

Long connection baggage is baggage for which the connection time is above an operating airline defined period for the connection. These bags are of interest because they are often at risk of mishandling due to storage issues and shift changes.

2.8 Special Baggage

2.8.1 Cabin Seat Baggage

(a) Definition

Cabin Seat Baggage (CBBG) is baggage not usually suitable for loading in the aircraft hold and thus requested for transport on an extra seat. Such baggage may include:

1. Musical instruments
2. Works of art
3. Electronic equipment
4. Diplomatic baggage
5. Valuable baggage

(b) Loading and Lashing Cabin Seat Baggage

These items must be declared at the time of booking.

Musical Instruments & Fragile Equipment;

In many cases extra seat(s) will have been booked. The item must adhere to the following:-

1. To be secured in the seat using seatbelt, and if required extension seat belts, to ensure that the item is secure under all normal anticipated flight and ground conditions.
2. To be packaged or covered in such a way to avoid any possible injury to passengers or crew.
3. The item will be weighed at check in and must not be greater than 80kg in weight.
4. The item must only be placed in a window seat and not located adjacent to an emergency exit.
5. The item should be of a size that when placed on the seat it does not obscure any passengers view of the seat belt sign, no smoking sign or exit sign.
6. The item must only be handled by the passenger.

2.8.2 Crew Baggage

Crew baggage may be presented at check-in or airside and should be clearly identified with a crew label as well as all flight details. It is a mandatory requirement to manifest all crew bags being loaded into the aircraft hold.
For all crew bags being loaded into the hold, the dispatcher must ensure that all bags are tagged with a bag tag number, full crew name and annotate 'crew' on the tag.

This information must be replicated on a separate section of the baggage manifest to clearly identify crew bags.
The nominal weight of the crew bag is already included in the nominal crew weight (85kgs flight deck / 75kgs cabin crew).

The crew will be responsible for ensuring that any crew bag(s) requiring loading into the hold is brought to the attention of the dispatcher so the manifesting process can take place.

Note: *To ensure that the max hold weight is not exceeded with the inclusion of crew bags, for each crew bag placed in the hold, 6kgs must be theoretically added to the hold weight (although in practice, the actual crew bag weight for the load sheet is included in the nominal crew weight).*

2.8.3 Delivery at Aircraft

2.8.3.1 Applicability

As per operating airline procedures, the Delivery at Aircraft (DAA) procedure may be applied for:

(a) Fully collapsible baby strollers and pushchairs (larger baby carriages/prams shall be checked in).

(b) Wheelchairs and mobility aids that are not needed during the flight and cannot be stored in the cabin.

(c) Regular cabin baggage on small aircraft with limited stowage space in the cabin.

Note 1: *Do not use the DAA procedure for valuable items (e.g., laptop computers, large video cameras, important documents) as such items should remain with the passenger.*

Note 2: *Observe local restrictions for DAA delivery at arrival stations and inform passengers accordingly.*

Note 3: *Verify with the passenger that any dangerous goods items which are only permitted in cabin baggage are removed before DAA acceptance.*

2.8.3.2 Procedure at Boarding Gate

(a) Inform the person responsible for loading and supervision task to ensure the loading of DAA and WCH are noted on the Load Message (LDM) under SI–Remark.

(b) If applicable, inform the flight crew of the number of DAA bags.

(c) Inform the passenger to leave or hand-over the DAA-item in the designated area

2.8.4 Sporting Equipment

Generally, sporting equipment will be presented as separate pieces of checked baggage.

The acceptance of sporting equipment is on a first come first served basis depending on aircraft type and subject to the non refundable fees payable by telephone on +44 (0) 1652 680600.

Accept sporting equipment as per operating airline procedures.

(a) Apply procedures for special handling charges, if required.

(b) Load as per Eastern Airways instructions.

2.8.4.1 Water Sports Equipment

Eastern Airways may accept certain water sports equipment such as Windsurf boards, surfboards, and body boards for carriage (depending on operating aircraft) provided that:

1. Item not exceeding 2.0 metres in length and 75cm wide limited to one item per passenger. Maximum depth per protective bag, 20 cm.
2. 10 kgs standard weight to be used per board.
3. Subject to available space, a maximum of 2 surf boards permitted.
4. Surf boards to be loaded into the FWD right hold of the ATR aircraft.
5. Item contained in a protective bag or carry-case and clearly labelled.

A maximum of 5 singular or a mixture of sporting items can be carried per flight. E.g., 2 sets golf clubs, 1 bicycle and 2 surfboards or 5 sets of golf clubs.

2.8.5 Wheelchairs and Mobility Aids

Wheelchairs and Mobility Aids are crucial to passengers who own them, and shall be treated with care. Mobility devices such as wheelchairs, rolling walkers, segways or swiss tracs may be operated with manual or electric power and have to be handled accordingly. There are specific rules and concerns when handling such aids, especially when they have batteries that also need special handling.

In addition to Eastern Airways operating procedures, refer to the current IATA DGR and IATA Recommended Practice 1708 which can be found in the IATA Passenger Services Conference Resolution Manual.

It is the airport operator/PRM service provider's responsibility, in conjunction with the PRM, to ensure that the EMA is properly prepared for carriage however Eastern Airways is ultimately responsible for the safety of the EMA once loaded onto the aircraft.

The person responsible for protecting the device from short circuit / inhibiting the electrical circuits will confirm this by signing the relevant section of the mobility aid tag.

Prior to loading an electric mobility aid, the loading supervisor must check that inadvertent operation of the device has been prevented. This can be achieved by placing the device into drive mode (i.e. not freewheel mode), seeing if the mobility aid will power up, and if so whether use of the joystick results in the mobility aid moving. A quick check should also be made that batteries are securely attached to the mobility aid and battery terminals are protected from short circuit.

There are a number of ways in which an EMA can be protected from unintentional operation and in the first instance the passenger should be asked how this can be achieved. This may involve the following actions:

- Removing a key
- Deactivation using the joystick

- Deactivation of electric plugs or cables
- Insertion of an inhibiting plug

If it is evident that an electric mobility aid has not been made safe, it must not be loaded and it will be necessary to refer to personnel tasked with making the device safe.

Once the mobility aid has been made safe the item should be loaded and secured individually in order to prevent movement and damage from other baggage.

2.8.5.1 Handling Wheelchairs / Mobility Aids

In order to prevent damage to aircraft and to ensure flight safety, power driven wheelchairs or mobility aids may be carried as checked baggage on passenger aircraft with the approval of the carrier(s) provided Wheelchairs or other battery-powered mobility aids powered by non-spillable wet batteries or dry batteries as specified in the IATA Dangerous Goods Regulations (DGR).

(a) For a wheelchair or mobility aid with an installed battery, inform the pilot in command of the location.
(b) When the battery is removed from the wheelchair or mobility aid, inform the pilot in command of the location of the battery.
(c) Stow and secure the wheelchair/mobility aid to prevent unintentional operation and ensure it is protected from being damaged by the movement of baggage, mail or cargo.
(d) Ensure load control are aware of the carriage of electric mobility aids.
(e) A message shall be sent to the destination or transfer station to ensure the availability of the wheelchair to the passenger as soon as possible. The message should indicate the passenger's name and seat number and the location of the wheelchair and the battery, separated from the wheelchair.

2.8.5.2 Wheelchairs or other Battery Operated Mobility Aids

There are two main types of batteries used with wheelchairs or mobility aid devices:

Type of battery	Description
Non-spillable battery	Dry battery (including integrated battery) Gel type battery Wet (sealed, non-spillable) battery
Spillable battery	*Wet battery (*check operator policy)
Lithium battery	Lithium ion battery

2.8.5.3 Accepting Wheelchairs / Mobility Aids with Non-Spillable Batteries

Wheelchairs / Mobility Aids with Non-spillable Wet Batteries or with Batteries which Comply with Special Provision A123.

(a) Non spillable batteries must comply with Special Provision A67 or the vibration and pressure differential tests of Packing Instruction 872;
(b) the operator must verify:
- the battery terminals are protected from short circuits; e.g by being

enclosed within a battery container
- the battery is securely attached to the wheelchair or mobility aid
- electrical circuits have been inhibited

(c) the wheelchair/battery-powered mobility aid must be secured against movement in the cargo hold and must be carried such that it is protected from being damaged by the movement of baggage, mail or cargo;

(d) where a battery-powered or other similar mobility aid is specifically designed to allow its battery(ies) to be removed by the user (e.g collapsible);
- the battery(ies) must be removed. The wheel chair mobility aid may then be carried as checked baggage without restriction;
- the removed battery(ies) must be carried in strong rigid packagings which must be carried in the cargo compartment
- the battery(ies) must be protected from short circuit;
- the pilot-in-command must be informed of the location of the packed battery.

(e) it is recommended that passengers make advance arrangements with each operator.

2.8.5.4 Accepting Wheelchairs / Mobility Aids with Spillable Batteries

Pre-notification is required and acceptance is subject to operator approval.

(a) Packing rules:
1. wheelchair must be loaded, stowed, secured and unloaded while maintaining an upright position.
2. battery terminals must be insulated to prevent accidental short circuits, e.g. by being enclosed within a battery container.
3. battery must be securely attached to the wheelchair.
(b) Alternatively, battery must be carried in strong, rigid packaging as follows:
1. the outside packaging must be leak-tight, impervious to battery fluid and protected against spilling by securing to pallets or by securing them in cargo compartments using appropriate means of such as restraining straps, brackets or holders.
2. the battery terminals must be protected against short circuits.
3. the battery must be secured upright in the packaging and be surrounded by compatible absorbent material sufficient to absorb its total liquids.
4. the outside packaging must be marked "battery–wet–with wheelchair".
5. the outside packaging must be labeled with the "corrosive" label. (c) Battery must not be loaded if not packaged appropriately.

2.8.5.5 Accepting Wheelchairs / Mobility Aids with Lithium Batteries

Pre-notification is required and acceptance is subject to operator approval.

(a) The batteries must be of a type which meets the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection 38.3.
(b) The operator must verify:
1. the battery terminals are protected from short circuits, e.g. by being enclosed within a battery container
2. the battery is securely attached to the wheelchair or mobility aid

3. electrical circuits have been inhibited.
(c) Mobility aids must be secured against movement in the cargo hold and must be carried in a manner so that they are protected from being damaged by the movement of baggage, mail or other cargo;
(d) Where a battery-powered wheelchair or other similar mobility aid is specifically designed to allow its battery(ies) to be removed by the user (e.g. collapsible):
1. the battery(ies) must be removed. The wheelchair/mobility aid may then be carried as checked baggage without restriction.

2.8.6 Handling of Animals

2.8.6.1 General

Handling of animals is required in accordance with operating airline procedures and Live Animals Regulations (LAR). The acceptance of pets is also subject to the respective country regulations.

Eastern Airways do not accept carriage of live animals on our scheduled network, however live animals can be accepted for travel if agreed within a third party contract.

The procedure for carriage will be defined within a published Ground Handling Instructions (GHI).

This exception excludes Jetstream 41 and ERJ135/145.

There are two methods of carriage:
(a) Pets in Cabin (PETC)
Subject to operating airline procedures defined animal species like cats and dogs may be accepted as pets in cabin, PETC, either securely leashed or in an approved container for carriage in the passenger cabin.

(b) Animals in Hold
Animals Vivant in Hold (AVIH) that is live animals, may be transported as checked baggage in the aircraft hold in accordance with IATA Live Animal Regulations and operating airline procedures. Ensure that the flight crew are informed of AVIH loading to ensure sufficient heat and airflow are maintained. Domestic animals such as dogs, cats, and if applicable, other defined animal species by the operating airline may be carried as AVIH.

Note: *Domestic animals of unusual size or wild animals, reptiles and rodents must be transported as cargo.*

2.8.6.2 Service Animals and Emotional Support Animals

Service animals are individually trained animals to perform functions to assist their owners, e.g. guide dogs.

Emotional support animals are usually untrained animals and mainly provide support, well-being and comfort to their owners through companionship, non-judgmental positive regard and affection.

Eastern Airways permits the carriage of PETC on flights operated by the carrier subject to the following criteria;

The pet is a Guide/Assistance dog

1. Prior notification is received for carriage.
2. Passenger is seated as per *1.1.6.2*.

The pet is restrained during take off, landing and turbulence using a suitable harness.

Eastern Airways does not permit the carriage of Animals in the hold or emotional support animals.

INTENTIONALLY LEFT BLANK

2.9 Mishandled or Unclaimed Baggage

2.9.1 General

Mishandled or unclaimed baggage include one or more of the following baggage disruption incidents:

(a) Delay of checked baggage
(b) Loss of checked baggage
(c) Damage or partial loss of checked baggage
(d) Pilferage of baggage or items from baggage

Enter mishandled or unclaimed found baggage details into the tracing system as defined by the operating airlines procedures.

Legal time limits apply to the reporting of loss, delay, damage or pilferage of baggage, see operating airline policy and applicable conventions.

2.9.2 Storage of Mishandled Baggage

Store mishandled baggage in a safe and secure area where access is controlled. Where required, make sure such baggage is subject to security controls before being loaded into an aircraft in line with the security requirements of the forwarding carrier, receiving carrier and relevant authorities.

2.9.3 Handling of Mishandled Baggage

(a) Mishandling baggage shall be forwarded without any charge by the fastest possible means using the services of any Member airline, to the airport nearest to the passenger's address
(b) Ensure that the number of unaccompanied bags is included in the baggage counts for load control
(c) Use a "RUSH" indicator (manual and/or electronic), when applicable

2.9.4 Delivery of Mishandled Baggage

Previously mishandled baggage shall be delivered in the most appropriate and fastest way and in line with the operating airlines procedures.

2.9.5 On-Hand Baggage

On-hand baggage or unclaimed found baggage is baggage that has missed the flight upon which it was intended to travel. The station/handling agents that created the on-hand file are responsible for the tracing for the first 5 days. Then it is sent to secondary/central tracing for further actions. Delayed Checked Baggage/Missing Baggage.

A delayed bag is checked baggage not available to the passenger when he presents the baggage identification tag at the point of stopover or destination. For the first 5 days the station which created the tracing file is responsible for primary tracing and information to the passenger about the status of the file. The tracing period should be 21 days (as per the Montreal Convention) but may be longer based upon the operating airline procedures.

Baggage that has missed the flight upon which it was intended to travel should be considered to be on-hand.

2.9.6 Secondary Tracing

Secondary tracing is the process of taking over the responsibility and further actions for open mishandled baggage tracing files by the department as defined by the operating airlines procedures.

2.9.7 Mishandled Mobility Aids

Damaged, delayed or missing mobility aids should be handled as a priority:
(a) Provide a suitable equivalent loaned item or replacement, as needed and as per operating airline procedures.
(b) Arrange for the repair or replacement of the item, if needed.

2.9.8 Mishandled Live Animals

Delay of or injury to AVIH should be handled as a priority.

2.10 IATA Annexes for Baggage

(a) For IATA Resolution 753 refer to 2.4.1
(b) IATA Resolution on Wildlife and wildlife Products

The trade of wildlife is the sale or exchange of animal and plant resources. It can involve live animals and plants or their parts and products. The domestic or international trade in wildlife is illegal if it contravenes either domestic or international laws or both. Trade in CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) protected species and their parts and products is illegal if it violates the provisions of the Convention.

Transnational criminal gangs are exploiting the increasingly interconnected air transport systems to trade wildlife illegally. This illegal trade in wildlife is not only driving many endangered species towards extinction but strengthens criminal networks, poses risks to global health, and threatens nature-based tourism and the communities who depend on it.

INTENTIONALLY LEFT BLANK

SECTION 3:-AIRCRAFT GENERAL SAFETY/SERVICING OPERATIONS

3.1 Ramp Safety in Aircraft Handling

3.1.1 Introduction

Ramp safety rules and procedures promote safe ground handling. Therefore, the minimum safety rules and procedures defined in this section shall always be applied and understood by all personnel working on the ramp.
Aircraft damage can endanger passengers, employees and aircraft. Disruptions may also negatively impact safe airline operations.
Even a slight scratch or dent on an aircraft may result in a serious accident. Any aircraft damage discovered or caused shall be reported. Refer to operating airline procedures regarding reporting of aircraft damage and the local authority.
It is not permitted to smoke or to use lighters/matches/e-cigarettes airside unless in a designated area defined by the local airport operator/regulator.

3.1.2 General Ramp Safety

3.1.2.1 Engine Danger Areas

There is a particular risk of injury or damage in areas affected by aircraft engine intakes, exhausts and propellers. The risk is further increased if for any reason an aircraft stops and then applies the additional thrust required to "break away" and continue the manoeuvre.

Vehicles and personnel must remain clear of aircraft danger areas when aircraft engines are running and/or the anti collision lights are on.

(a) In order to prevent incidents and accidents caused by aircraft engines, you must never position yourself or equipment in the following critical areas before or during aircraft departure and arrival:

1. engine Intake Area.
2. engine Blast Area.
3. propeller Rotation Area (where applicable).

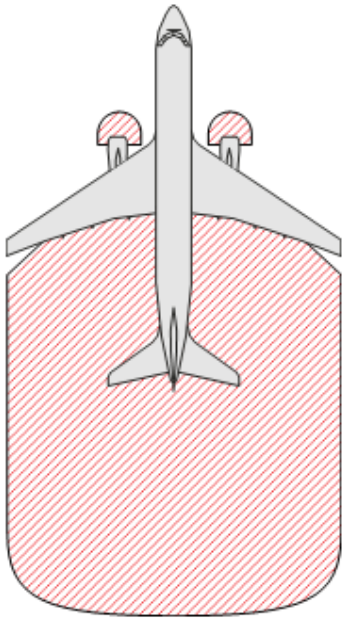
(b) Make sure the engine intake/propeller rotation area is clear at all times when engines are running or the engine start is about to start.

(c) It is forbidden to pass through the blast area while the engines are running.

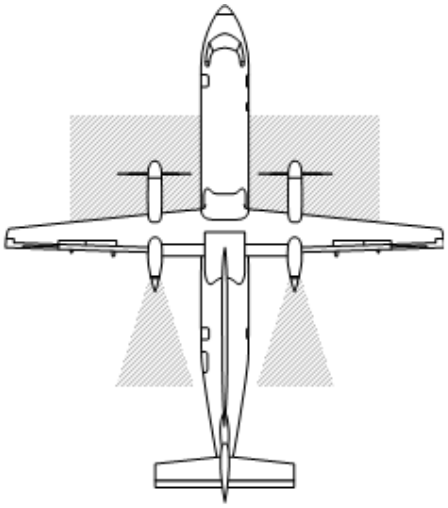
3.1.2.2 Engine Danger Area Diagrams

Note: *The extent of these areas vary for each aircraft type as well as whether the engines are at IDLE or BREAKAWAY thrust. Refer to each aircraft type specific manual (GOM appendix A-E)*

EXAMPLE OF ENGINE DANGER AREA - JET AIRCRAFT



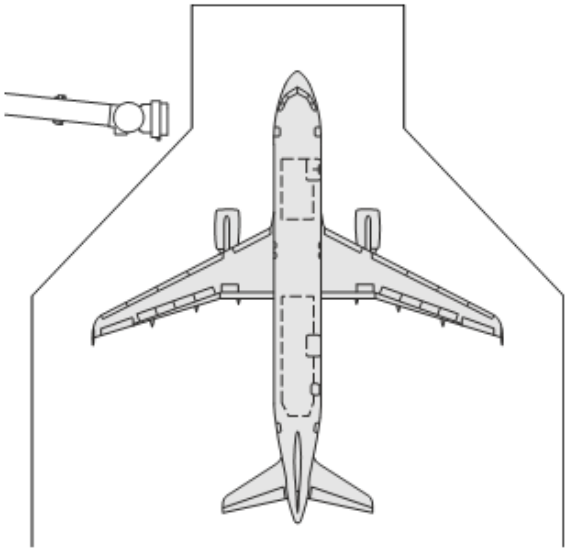
EXAMPLE OF ENGINE DANGER AREA - PROPELLER AIRCRAFT



3.1.2.3 Equipment Restraint Area & Equipment Restraint Line

The Equipment Restraint Area (ERA) is defined as the area of the apron in which an aircraft is parked during ground operations. It may be indicated by a painted line. If no markings exist, local procedures must establish safe parking areas, etc. The illustration below provides an example of the markings used at some locations.

The ERA must be free of obstructions and Foreign Object Debris (FOD) before and during aircraft arrival and departure.



3.1.2.4 FOD–Foreign Object Debris

Foreign Object Debris (FOD) is a general term which applies to all loose objects which are a danger to the safety and integrity of an aircraft or personnel and which, therefore, must not be left in any area where they would constitute a hazard.

Every individual has a responsibility to ensure that the risk of damage to aircraft from FOD is minimized. All waste material must be properly disposed of such that it does not become FOD and all FOD must be removed and properly disposed of as soon as it is discovered.

Often the presence of FOD is due to the carelessness of personnel working airside and their lack of understanding of its consequences, or the movement of FOD into airside locations during high winds.

Examples of FOD:

Plastic and paper, bags/sheets, rags
Metal: nuts and bolts, empty oil and hydraulic fluid cans, tools and equipment
Natural objects: rocks, pebbles and wood
Other debris: burst ballast bags, luggage handles and luggage wheels, etc.

Caution:

Results of FOD:

Foreign object debris may be sucked into aircraft engines causing damage leading to engine failure. This is especially critical if it occurs in flight, particularly during the take-off phase.

In addition, FOD can damage tires, the undercarriage, control systems and other parts of the airframe which can lead to in-flight failures.

FOD Checks

The following checks must be conducted prior to any aircraft movement and after servicing operations:

(a) Check ground equipment staging and parking areas in proximity to area of operation.
(b) Do routine checks of ground equipment (including floors of enclosed cabins) to ensure that everything is secure and operational and not about to fall off and become FOD.
(c) In ramp areas ensure that anything carried in or on a vehicle is secured.
(d) Before aircraft arrival, conduct a FOD walk-around of the aircraft parking stand, removing all FOD found.
(e) Pick-up and dispose all FOD in designated garbage bins, where provided.

3.1.2.5 Personal Protective Equipment (PPE)

All personnel shall be issued with and wear appropriate PPE as required for their role and as per local regulations to include:

a) Safety Footwear
b) Hearing Protection

c) High Visibility Clothing
d) Gloves
e) Any other specified PPE as per local requirements for example safety glasses to be worn during Powerbacks if applicable.

Note: Neckties or other loose hanging accessories which may pose risk shall be of the quick release type (clip)

3.1.3 Safety Instructions for Operating and working with Ground Support Equipment (GSE) on the Ramp

3.1.3.1 General Safety Instructions

Apply these procedures whenever operating GSE on the ramp.
Only drive or operate GSE if you are trained and authorized for that specific equipment type.

GSE must not be moved or driven across the path of:
(a) Taxing aircraft
(b) Embarking and disembarking passengers on the ramp.
(c) Emergency vehicles

When operating any GSE:

(a) check the aircraft for possible damage in the equipment contact zone before positioning and after removal of GSE to/from the aircraft.
(b) Immediately report any damage found, or where contact has taken place or suspected to have taken place, especially for composite aircraft.
(c) Where damage has been found or where contact has taken place or is suspected to have taken place, do not move any GSE to/from the aircraft in the area where damage has been found until inspection is completed, and clearance given to proceed.
(d) F Personnel working with and around vehicles and equipment must protect themselves from loose clothing, long hair, and/or hanging accessories/jewellery from becoming a hazard, e.g., caught or trapped in equipment.

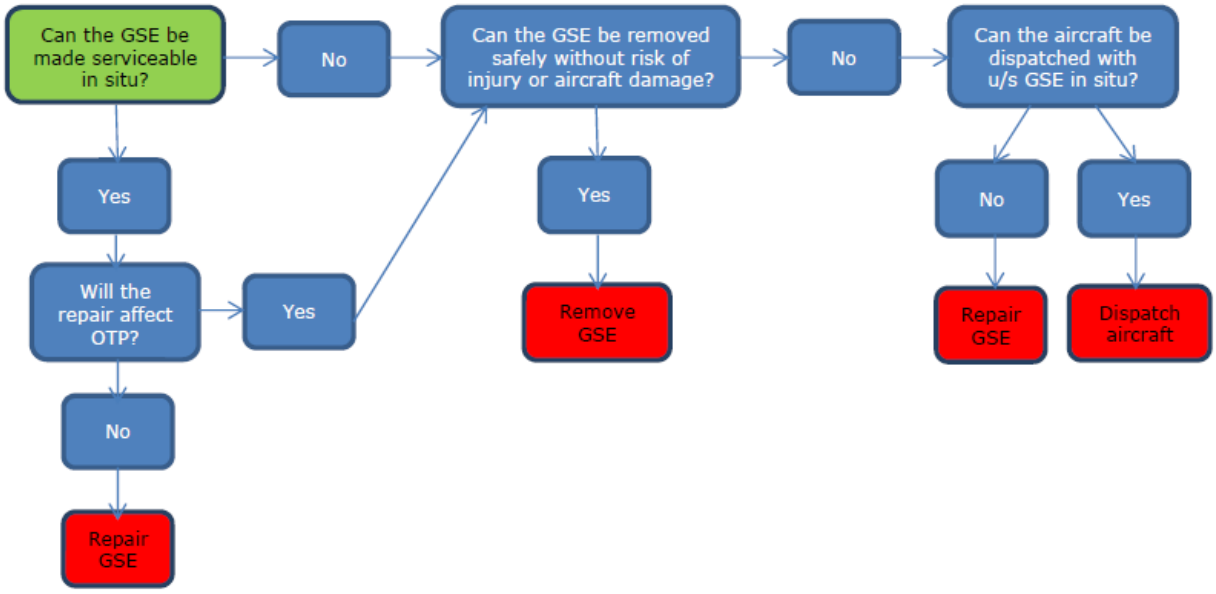
Caution:
When operating any GSE:

(a) Check the aircraft for possible damage in the equipment contact zone before bringing the GSE up to the aircraft.
(b) Immediately report any damage found.
(c) Do not continue to approach the aircraft with any GSE in the area where damage has been found.
(d) Use all safety devices fitted on GSE (e.g., proximity sensors, bumpers, handrails, stabilizers) during aircraft handling and servicing.
(e) Ensure protective rubber bumpers are not compressed against the aircraft fuselage.

Should an item of GSE being used to service company aircraft become unserviceable at the aircraft resulting in the item becoming stranded, it is important that ground staff assess the situation and determine how the GSE can be removed in a safe manner that does not injury to staff or damage to aircraft.

In all cases OPT shall be secondary to ensuring that removal of stranded unserviceable ground equipment is performed in a controlled and safe manner. Whenever this situation arises following actions must be taken:

- Cease activity and inform supervisor / manager
- Inform aircraft crew of the situation
- Inform Airport operations
- Inform T3 Operations if impact to OTP is expected
- Assess the situation and how the equipment can be safely removed using the flow chart below.



3.1.3.2 Basic Operating Requirements for GSE

(a) Operators shall check the GSE assigned to them prior to initial use, in particular the "parking" brakes, rubber protective bumpers, safety systems and record on daily check sheets.
If found to be defective, the GSE shall be reported, tagged as "Out of Service" and removed from operations, when applicable.

(b) Operators must also check that all areas of GSE are free of contamination, FOD and safe for use prior to and throughout the operation.

(c) Do not carry extra personnel during GSE movement without an approved seat–apply the "no seat–no ride" principle.

(d) Do not operate vehicles or equipment while using hand-held portable electronic devices (PEDs)

(e) GSE shall only be used for its intended purpose.

(f) GSE shall not impede the accomplishment of other aircraft handling operations in progress unless there is an important reason to do so.

(g) Do not drive or tow GSE with lifting devices in the raised position, except for final positioning onto the aircraft.

(h) Do not operate the platform while in motion.

(i) Do not allow any GSE (e.g, tractors, pallet transporters, baggage/cargo carts and dollies) to move or be positioned under the aircraft fuselage.

(j) Once motorised GSE is in its servicing position at or near the aircraft;
1. Apply the parking brake with the gear selector in park or neutral.
2. Turn off the engine, unless required when in operating/service mode.
3. Install GSE wheel chocks, where equipped.
4. If equipped with stabilisers, ensure they are deployed before the GSE is used for servicing. Deploy other safety devised, if fitted.
5. When motorised GSE is in operating/service mode, remain in a position whereby the emergency controls can be promptly accessed. This includes the immediate vicinity of the controls or an immediately and adjacent and accessible location, e.g. the cargo hold in the case of a ULD loader, where required to operate the aircraft cargo loading system, restraints and/or nets.
6. If motorised GSE is not fitted with external emergency controls, the operator shall remain in the operating position and in control of the equipment when in operating/servicing mode.
7. Ensure the GSE is positioned to avoid any risk of passengers or personnel coming in the path of exhaust stream and discharges.

(k) When unattended motorised GSE/vehicle is positioned in or adjacent to the ERA (other than as described in 3.1.3.2 (i));
1. Do not leave the engine running. In extreme cold weather conditions where local procedures permit engines running unattended, the motorised GSE/vehicle shall be chocked.
2. Apply the parking brake with the gear selector in park or neutral and, where equipped, install wheel chocks.

(l) The Ground Power Unit (GPU) and Pre-Conditioned Air (PCA) may be left running unattended when connected to the aircraft, provided the serviceability and fuel levels are checked periodically.

(m) A "No Touch" policy,(i.e. the GSE shall not touch the aircraft) shall be employed for all GSE types except passenger loading devices.

(n) When positioning GSE, ensure that a clearance is maintained between all GSE and the aircraft to allow for vertical movement of the fuselage during the entire ground handling process.

(o) All safety rails must be fully retracted/lowered during positioning and removal where possible).

(p) After positioning equipment on the aircraft, raise or extend all safety rails on conveyor belts, loaders and other elevated devices, except where restricted by aircraft type.

(q) GSE shall be parked in the designated airside equipment parking areas when not in use.

(r) Do not obstruct access to firefighting equipment or to the fuel hydrant emergency stop switch.

(s) Securely stow GSE cables and hoses where fitted prior to transportation and when not in use.

(t) Ensure GSE has serviceable & non-serviceable labels displayed as appropriate.

(u) GSE must be serviceable and in good mechanical condition with maintenance records.

Before moving any GSE/Vehicle ensure all its doors are closed, where fitted.

(v) GSE must be operated by qualified/authorised personnel.

(w) As applicable to equipment type, GSE is operated with a load that is securely locked.

(x) Positioned so as not to obstruct an aircraft evacuation or the free movement of other GSE.

(y) GSE must be subject to a preventative maintenance program that covers each type of equipment and is recorded.

(z) Use a guide person when vision is restricted. The guide person shall be able to accurately judge clearances and communicate signals to the driver/operator. Stop immediately if visual contact with the guide person is lost. Movement shall not continue until visual contact is re-established.

3.1.3.3 Non-Motorized GSE

The follow precautions must be taken when operating non-motorized GSE:

(a) When parked and/or when not connected to motorized vehicles, all non-motorized GSE shall have brakes set or chocks in place with the exception of aircraft towbars.

(b) Pallet and container dollies may only be towed with the turntables in the locked position ("straight ahead") and rotated only when at the loader platform.

(c) The number of carts and dollies allowed is usually limited by the local airport authority or ground service provider, however, in critical conditions (e.g., slippery surface conditions,
congested facilities, low visibility) this number should be re-evaluated and might be reduced to ensure safe operations on the ramp.

(d) During transportation with carts and dollies, the load shall be properly secured by using appropriate locks, stops, rails, curtains and straps.
1) Know the dolly types as some dollies are not compatible with others. Follow the recommended towing combinations when transferring dollies from one place to another. Do not tow more units than the recommended sets or combinations.
2) When connecting or disconnecting dollies/carts to/from the tow bar, hold only the tow bar handle and tow pin of the dollies/carts. Do not hold the tow eye when connecting or disconnecting.
3) Position oneself beside the tow bar when connecting or disconnecting dollies/trolleys ensuring the tow-pin is properly inserted before towing and use the tow bar handle to connect and or disconnect dollies/trolleys.

(e) The overall height of loads shall permit safe lifting of each piece of the load during loading and offloading of carts by personnel standing on the ground.

(f) Light packages shall not be wedged between heavier items.

(g) When using tarpaulins, all straps shall be securely fastened to the baggage cart

(h) If equipped with stabilisers, ensure they are deployed before the GSE is used for servicing. Deploy other safety devices, if fitted.

(i) When not in use, the braking system shall be engaged on all strings of baggage carts.

(j) If using access steps to open and close cargo hold doors, position and remove the steps in a straight line. Do not move or re-position the steps while a staff member is on the steps.
Stairs shall be fitted with safety rails to prevent falls.

1 Maintenance stairs should be facing towards the panel which is being accessed. Retractable/extendable safety rails shall be lowered or retracted during positioning.
2 Raise or extend retractable/extendable safety rails prior to any personnel accessing the stairs.

(k) Towable Air Start Units (ASU), PCA and GPU shall not be connected to the tow vehicle and aircraft at the same time, if possible. Before towing the unit away, the operator shall make sure the unit is disconnected from the aircraft.

Danger:
While the movement of carts and dollies by hand is very simple, it can result in injuries. Therefore, additional care shall be taken.

3.1.3.4 Safely Driving and Parking Ground Support Equipment Inside the Equipment Restraint Area

To verify serviceability of GSE and to test the apron surfaces, operators shall apply the following precautions when driving or parking GSE within the ERA:

(a) Make of one complete stop with all motorized vehicles/equipment prior to entering the ERA or at 5 m from the aircraft. This action must be carried out even if there is no Equipment Restraint Line marked on the apron.
(b) Do not drive GSE faster than walking speed.
(c) Manoeuvre GSE carefully in order to prevent personnel injury and/or aircraft damage.
(d) Avoid performing any sharp turns near the aircraft, particularly when towing equipment.
(e) When GSE is being moved near the aircraft, and when the vision of the GSE operator is or might be restricted, the GSE operator must be:
1. guided by a guide person using standard IATA signals. if visual contact with the guide person(s) is lost, the GSE operator must stop movement of the GSE immediately. Movement shall not restart until visual contact is re-established.
2. assisted by means of appropriate proximity sensing and warning systems and/or visual aids such as cameras and mirrors.

(f) GSE that are not directly involved in the handling or servicing of the aircraft shall not be driven through or parked within the ERA.
(g) Do not drive or park under the aircraft fuselage and/or wing. Exceptions due to aircraft type or local restrictions may apply. Prior operator approval must be given.
(h) Any GSE (e.g., tractors, pallet transporters, carts and dollies) shall not be driven or positioned under the aircraft fuselage unless specifically

required e.g., lavatory servicing, aircraft maintenance, towbarless tractor etc

3.1.3.5 Passenger Boarding Bridge

The operator of the PBB must be trained and authorized to operate the boarding bridge.

(a) Check that the boarding bridge is serviceable before use.
(b) Report any malfunction of the boarding bridge to the appropriate person/authority.
(c) Check that the walking surfaces are free of FOD, obstacles and safe for use.
(d) Only personnel required for the boarding bridge operation shall be in the bridge while it is moving.
(e) The boarding bridge must be fully retracted or parked in its safe designated parking position prior arrival and departure.
(f) The safety barrier must be in place whenever the boarding bridge is not at the aircraft.
(g) Make sure the movement path is clear of personnel, equipment/vehicles and all other obstacles before moving the boarding bridge.
(h) When positioning boarding bridge at the cabin access doors and driver/operator vision is restricted, use a guide person.
(i) Make sure the guide person is in a position to accurately judge clearances and communicate signals to the driver/operator. Stop immediately if visual contact with the guide person is lost.

Note: *A guide person is not required if the PBB is fitted with systems (e.g. sensors) that enable the operator to accurately judge clearances and properly position it to and from the aircraft.*

(j) Move the PBB slowly towards the aircraft, avoiding any aircraft sensors or protrusions, until either the protective bumpers just touch the aircraft or the PBB's proximity sensors stop the movement.
When not equipped with self levelling device, maintain a gap in accordance with No-Touch policy
(k) Make sure the boarding bridge does not contact the wing root leading edge fairing that extends under certain cabin access doors and any other sensors or fairings.
(l) Make sure any sliding rails and canopies on the boarding bridge are fully retracted during positioning, and fully extended only once the equipment is in position.
(m) Maintain adequate clearance between boarding bridge and the bottom of the door, or as directed by the cabin door markings. This reduces the possibility that the aircraft door will rest on the boarding device in the event that the aircraft settles during loading and unloading
(n) Engage any safety systems and auto-leveler features if applicable. If the boarding bridge is not equipped with an auto-leveler the boarding bridge must be attended by an operator whenever it is positioned at an aircraft.
(o) Do not leave gaps between the boarding bridge and the aircraft that would allow a person or large piece of equipment to fall through.
(p) Ensure that the cabin door is closed before removing the boarding bridge.

(q) Where integrated with the boarding bridge, ensure ground power cables and PCA hoses are disconnected from the aircraft prior to moving the bridge unless required for operational purposes.
(r) When positioning is complete, the bridge controls must be isolated as applicable to prevent movement from non-authorised persons.

Danger:
There is a risk of fall from height and distraction to operator.

3.1.3.6 Passenger Stairs

The following precautions must be taken when operating passenger stairs;
(a) Check that the passenger stairs are serviceable before use.
(b) Check that the walking surfaces are free of contamination and safe for use.
(c) Passenger stairs must be outside the ERA before aircraft arrival and departure.
(d) Make sure the movement path is clear of personnel, equipment/vehicles and all other obstacles before moving the passenger stairs.
(e) Move the passenger stairs slowly towards the aircraft, avoiding any aircraft sensors or protrusions, until either the protective bumpers just touch the aircraft or the equipment's proximity sensors stop the movement.
When not equipped with self levelling device, maintain a gap in accordance with No-Touch policy
(f) When positioning passenger stairs at doors and driver/operator vision is restricted, use a guide person.
(g) Make sure the guide person is in a position to accurately judge clearances and communicate signals to the driver/operator. Stop immediately if visual contact with the guide person is lost.

Note: *A guide person is not required if the passenger stair is fitted with either systems (e.g. sensors) that enable the operator to accurately judge clearances and properly position it to and from the aircraft or systems which automatically dock and undock the stairs at the aircraft.*

(h) If passenger stairs are towed, disconnect them from the tractor and then manually position at the aircraft. Ensure brakes are engaged once stairs are positioned to the aircraft.
(i) Maintain adequate clearance between the passenger stairs and the underside of the cabin door, or as directed by the cabin door markings to prevent damage.
(j) Engage any safety systems and auto-leveler features if applicable. If the passenger stairs are not equipped with an auto leveler, the level of the passenger stairs must be monitored and adjusted as required
(k) Deploy stabilizers if fitted. Do not allow anyone (except the operator) to use the stairs until the stabilizers are deployed.
(l) Make sure any sliding rails and canopies on the passenger step platform are fully retracted during positioning.
(m) Extend side rails after the cabin door has been opened.

(n) Make sure passenger stairs are positioned so that the cabin door can be used as an unobstructed escape route in the event of an emergency/evacuation.

(o) Where doors are required to be opened from inside the aircraft, confirmation that equipment is in position, in the form of 'two knocks' by hand on the outside of the aircraft door must be given.
Cabin Crew **MUST** give a slow count of 10, to allow ground staff time to retreat to a safe position before doors are opened.

(p) Close the cabin door before removing the passenger stairs.

(q) After the cabin door has been closed, confirm there is no staff on the stairs prior to retracting stabilizers.

(r) If the stairs are not positioned on the aircraft, they must be pulled back sufficiently to allow the deployment of slides in case of emergency.

(s) Aircraft stairs must remain in position whilst the aircraft door is open unless a fall prevention device is in place.

(t) Aircraft stairs must be removed immediately after the door is closed.

Danger:
Cabin doors shall only be in open position if there is any GSE or boarding device positioned at the door. Cabin doors may never be opened without any equipment positioned at the aircraft.
There is a risk of falling while operating cabin doors.
Slide deployments can be fatal. If an armed door begins to open, do not attempt to hold the door, as you risk being seriously injured or killed by doing so.

3.1.3.7 Belt Loader

The following precautions must be taken when operating a belt loader:

(a) Do not sit or stand on a conveyor belt while it is in operation (up or down).

(b) The boom of the belt loader shall never be positioned inside the cargo hold of any aircraft. Exception for specially designed belt loaders (e.g. Ramp Snake or Powerstow) that require the equipment to be positioned inside the cargo hold.

(c) Position and remove a belt loader in a straight line.

(d) Position the boom at an angle to the cargo hold doorsill that will:
1. allow tractors/trailers to access the belt loader without impeding slide deployment areas and passenger evacuation routes.
2. prevent items and personnel from falling between the boom and doorsill.

(e) The rubber bumpers on a conveyor belt loader must never make contact with the aircraft. Maintain clearance between the belt loader and the aircraft at all times

(f) Always raise side safety rails as soon as belt loader is positioned. Make sure they do not touch the aircraft fuselage.

(g) The safety rail shall also be deployed when a belt loader is used to gain access to aircraft cargo holds; however, caution shall be exercised where there is restricted clearance with the aircraft fuselage or engines.

(h) Ensure proper separation between articles on the conveyor belt to avoid jamming.

(i) Adjust and control the back of the conveyor belt correctly to avoid dropping goods from the belt

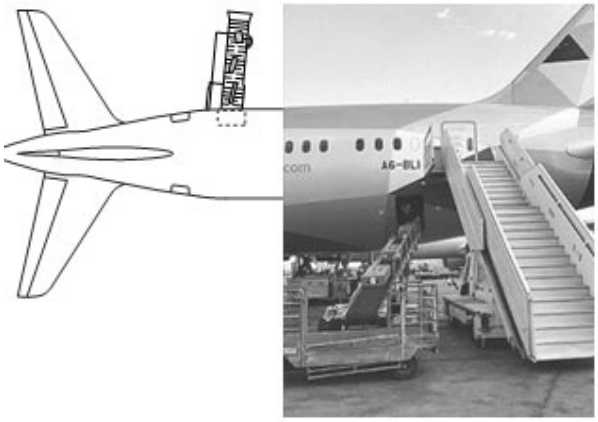
(j) The safety rail may be lowered to accommodate large items during loading and offloading.

(k) Do not stand or walk on the conveyor belt when the handrail is lowered.

(l) Ensure the boom is clear of the aircraft or other obstacles before making a turn.

(m) Belt loaders shall not be used to transport baggage, cargo or other items across the ramp.

(n) When unloading or loading items between the belt and aircraft cargo hold, ensure items do not come into contact with aircraft fuselage/cargo hold door.



3.1.3.8 ULD Loader

Eastern Airways does not operate aircraft with ULDs.

3.1.3.9 Elevating Equipment

The following precautions must be taken when operating elevating equipment;

(a) For elevating equipment with a rear access platform, ensure all safety barriers/rails are secured in place prior to vertical movement of the platform.

(b) Ensure the load is properly secured (e.g., cart brakes, stretchers, wheelchairs) and all access doors and shutters are closed prior to raising or lowering the vehicle.
(c) Any elevating equipment doors not being used for servicing at the aircraft shall be closed and latched.
(d) The positioning of the elevating equipment shall allow the loading platform to be perpendicular and at the same level to the aircraft doorsill.
(e) The final position of the elevating equipment shall allow for a safe working area and minimize the length of the walking surface between the aircraft and the elevating equipment while in the raised position.
(f) Before accessing the platform at the front or the rear of the elevating equipment, ensure the platform is at the same level as the equipment cabin.
(g) Carefully place the portable ramp/bridge on the doorsill from the platform side, as necessary.
(h) Equipment (e.g., catering carts) and passengers in wheelchairs shall be pushed on and off the aircraft. Always ensure a hand-to-hand exchange. No elevating equipment is to be staged on the platform, and no loose items are to be transported on top of carts (e.g., catering equipment).
(i) Continually observe and be aware of the clearance between the aircraft door and the elevating equipment platform.
(j) When the servicing is finished, carefully remove the portable ramp/bridge from the platform side and stow securely. Close the cabin access door as per GOM 4.4.2.7.
(k) The passengers and/or load shall be secured properly inside the elevating equipment. Passengers shall be seated and wearing seat belts. Passengers seated in wheelchairs shall have the wheelchair secured during elevating equipment movement.
(l) Visually check for any obstructions over both sides of the elevating equipment before lowering.
(m) Lower the truck body into the fully lowered position.
(n) Close and secure all the doors of the elevating equipment when the servicing is finished.
(o) Perform a walkaround to check for FOD and clearance around elevating equipment stabilizers.
(p) All elevating equipment shall stop operation when the wind speed reaches 40 knots (gusting).

Danger: Do not enter or place any part of the body inside the 'scissor' area beneath the elevating equipment.

3.1.3.10 Tractor/Electric Baggage Tug

The following precautions shall be taken when operating a tractor or an electric baggage tug (EBT) and towing dollies/baggage carts:

(a) Take care to avoid sudden sharp turns, jerks and stops.
(b) Prior to moving with towed load, ensure there are no personnel between or near the towed load.
(c) Only transport baggage, cargo, or other items in the designated areas, if equipped.

(d) Use the remote push button control (inching operation) to connect dollies, carts, or towed load, where fitted.
(e) When Tractor/EBT is near the belt loader during aircraft handling, a gap of at least 1 m (3 ft.) shall be maintained.

Note: Where necessary to position carts/dollies within 1 m (3 ft.) of the belt loader, adjust the position of the carts/dollies by hand.

(f) When removing carts during the loading on or unloading from smaller aircraft or aircraft with low wings, the tractor shall be positioned pointing away from the aircraft wing and the cart maneuvered by hand to the tractor, as required.
(g) Ensure where possible dollies/carts are connected as a chain, apply brake, and insert chocks where applicable, to avoid the movement.

3.1.4 Fire

3.1.4.1 Fire Prevention and Protection

Personnel must always be vigilant for fire hazards and potential sources of fires in their areas of operation and try to mitigate or eliminate them during the operations (e.g., fueling and defueling operations, open wires, dangerous goods handling, GPU connections and use of electrical equipment). To eliminate conditions that may lead to fire:

(a) Personnel must never smoke airside except in a designated smoking area.
(b) All personnel shall be familiar with the location and use of firefighting equipment, fire alarms, fuel hydrant emergency shut-off valve, etc.
(c) All personnel must be familiar with assembly points.
(d) Emergency exits must be kept clear/unobstructed at all times.
(e) Exercise good housekeeping in the airside areas to eliminate the risk of fire.
(f) Dispose of garbage into the designated waste bin and do not allow garbage to accumulate.
(g) All fuel/oil leakages must be contained as soon as possible, and the area cordoned off. (e.g., using safety cones, caution tape).
(h) Smoke from GSEs/vehicles must be reported immediately.
(i) Do not refuel any GSE/equipment while the engine is running any GSE/equipment while the engine is running or while using electronic devices.
(j) GSEs/vehicles should only be parked as follows:
1 Within the defined equipment parking areas;
2 In a manner that does not obstruct access to firefighting equipment and the fuel hydrant emergency shut-off valve.

3.1.4.2 Actions in The Event of a Fire

In the event of a fire, carry out the immediate actions specified in IGOM 6.5.2. In event of GSE/vehicle fire, additionally, carry out an assessment and only if considered safe to do so:

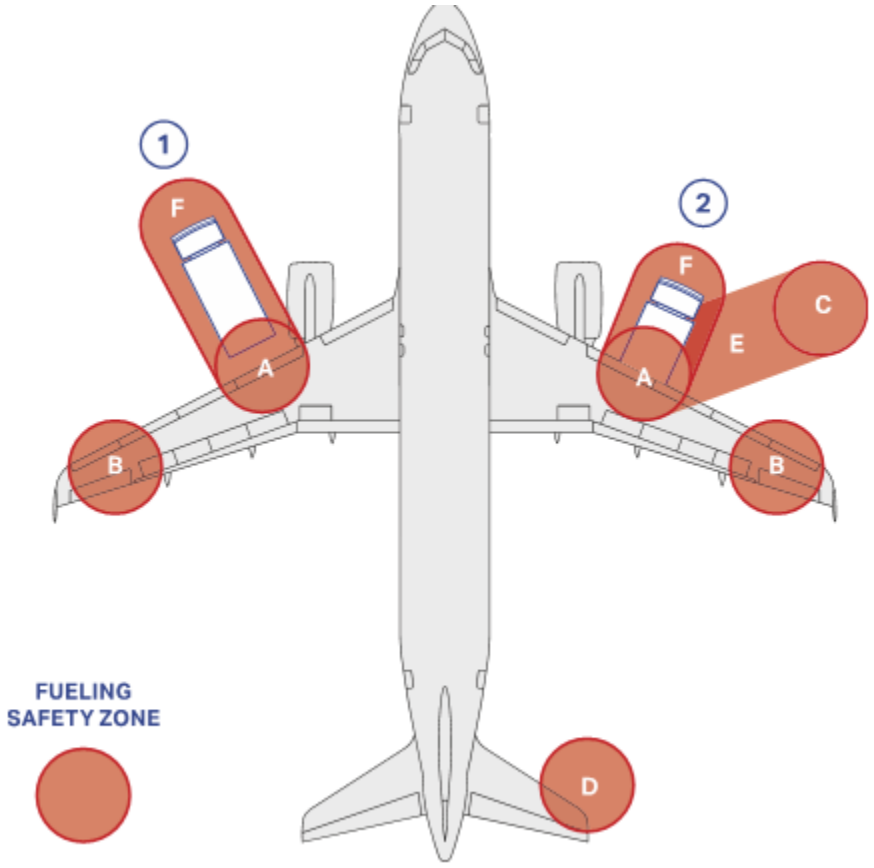
(a) Fight the fire using available fire extinguishers.
(b) Move affected GSEs/vehicles away from the aircraft and operational area to the extent practical.
(c) In case the affected GSEs/vehicles cannot be moved, move adjacent GSEs/vehicles away to avoid spreading the fire.

3.2 Safety During Fueling / Defueling

3.2.1 Fueling Safety Zone

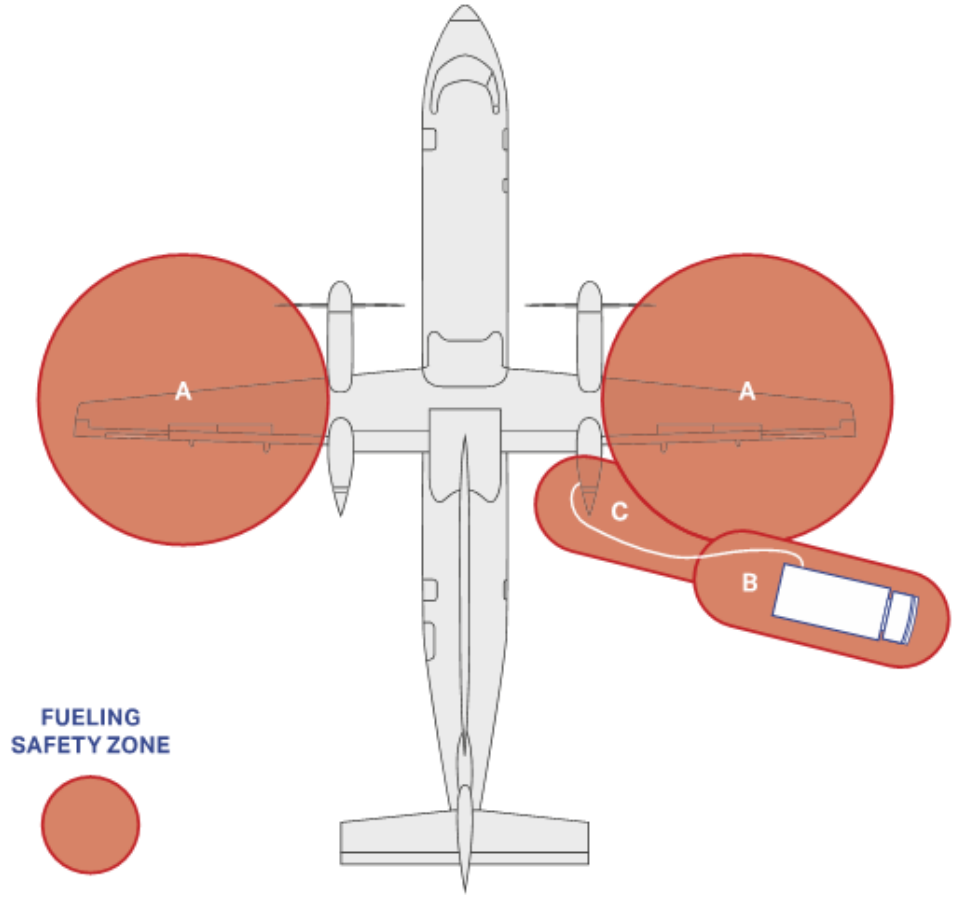
The Fueling Safety Zone (FSZ) is defined as an area of at least 3 m (10 ft) in any direction from the centre- point of all fuel vent exits, refueling plugs, aircraft refueling ports, fuel hydrants, fuel hoses and fueling vehicles. This distance may be further increased as required by local airport or civil aviation regulations.

EXAMPLE OF FUELING SAFETY ZONE JET AIRCRAFT



REFERENCE	DESCRIPTION
A	Aircraft refuelling port/plug
B	Fuel vent exit
C	Fuel hydrant pit
D	Fuel vent exit (according to the aircraft type)
E	Hoses
F	Fuel truck or hydrant dispenser
1	Fuel Truck
2	Hydrant Dispenser

EXAMPLE OF FUELING SAFETY ZONE PROPELLER AIRCRAFT



REFERENCE	DESCRIPTION
A	Aircraft refuelling port/plug/fuel vent exit
B	Fuel truck or hydrant dispenser
C	Hoses

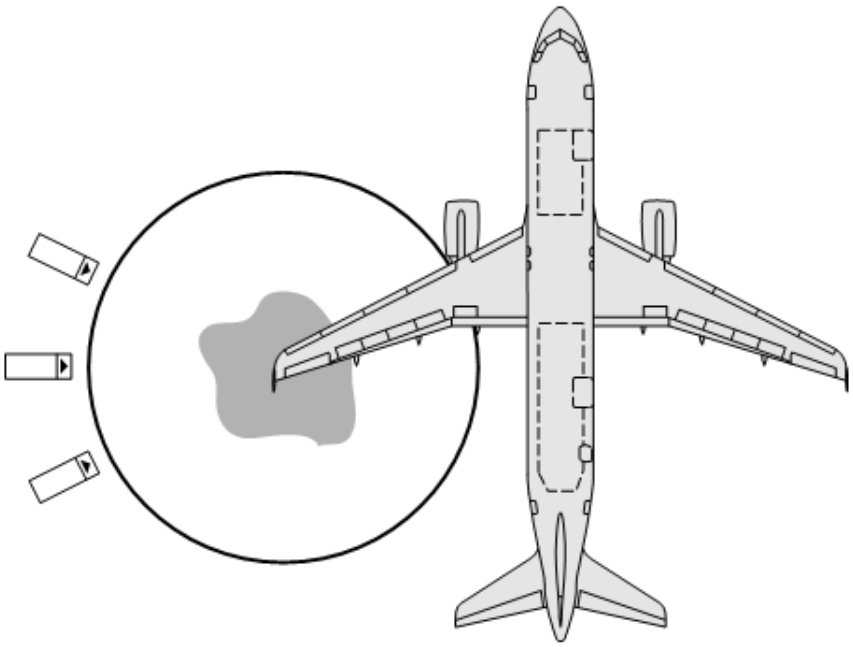
Within the Fueling Safety Zone (FSZ), all personnel shall ensure that they:

(a) Do NOT smoke.
(b) Do not use any handheld portable electronic devices including cellphones, portable music player, portable game units or earpiece or headset.
(c) Enter the FSZ only when required by your present job task responsibility.
(d) Assume that fueling is taking place anytime a fuel vehicle is on the stand during aircraft servicing and fuel hoses connected.
(e) Do not leave vehicle engines running unnecessarily.
(f) Position all GSE and vehicles so they do not obstruct the fuelling vehicles' escape route, this is not a mandatory requirement for hydrant type fuelling vehicles but every effort should be made to ensure a clear exit pathway.
(g) Do not allow any passengers to enter the FSZ.
(h) Avoid the use of motorized GSE within the FSZ.
(i) Do not park any equipment in the FSZ.
(j) Ensure fuel hoses are protected and all ground equipment is kept a minimum of 1 m (3 ft) away from any fuel hose on the stand that is connected between a fuel truck and an aircraft.

3.2.2 Fuel Spillage

Take the following safety measures whenever a fuel spill occurs:

(a) Activate the emergency shut-off valve where installed.
(b) Alert the person in charge of fueling and/or the Pilot in Command of the spillage.
(c) Contact the local fire service if not already done.
(d) Verify with authorities/supervisor whether to stop all activity around the aircraft.
(e) As far as possible, restrict all activities inside and outside the spill area to prevent access and to reduce the risk of ignition



3.2.3 Fueling / Defueling with Passengers on Board

When fueling/defueling with passengers onboard and /or during their boarding or disembarking the following must apply;

(a) Only pressure fuelling is to be used
(b) If required by the Airport Authority, ATC and RFFS are to be advised.
(c) A flight crew member or suitably qualified engineer must remain on the flight deck during refuelling/de-fuelling.
(d) Crew, staff and passengers are to be advised that refuelling and or de-fuelling is about to take place.
(e) Passengers embarking/disembarking must be under the control of customer service staff.
(f) 'Fasten seatbelt' signs are to be OFF. 'No Smoking' signs are to be ON. Interior lighting to enable emergency exits to be identified are to be ON.
(g) The PA system must be serviceable within the limitations of the MEL.
(h) Passengers are to be advised;

1. Not to smoke at anytime on the ground
2. To remain seated with their seatbelts unfastened until the procedure is complete
3. All individual items of electronic equipment must be switched off during the procedure (especially mobile phones)

(i) A crew member is to be stationed at the main exit door to assist the evacuation if an emergency should occur and should the presence of fuel vapour be detected inside the aircraft or any other hazard becomes apparent, will be responsible for notifying the fueller that refuelling/de-fuelling must be stopped immediately
(j) The position of the fuel installation/bowser relative to the aircraft must not impede an emergency evacuation
(k) Keep designated escape exits clear. An escape exit may either be a bridge into a terminal building, a cabin door or a passenger stair truck positioned on an open cabin door.
(l) Ensure that all areas on stand below designated escape exits are kept free of any equipment and vehicles which would impede the deployment of an escape slide.
(m) Not hinder escape routes of passengers on board by ensuring that passenger stairs and bridges are clear of FOD.
(n) A 50kg dry chemical or 90L foam fire extinguisher or suitable equivalent should be deployed close to where the fuelling/defuelling operation is taking place. (This need not be on the stand on which the aircraft is parked)
(o) Wheelchair passengers are not to be embarked/disembarked during refuelling/defuelling. They should remain onboard until the procedure is complete
(p) Stretcher cases should remain onboard. The patient securing straps must be released and a rapid means of communication with the ATC/RFFS established
(q) Notwithstanding the above, no aircraft may be refuelled with AVGAS or WIDECUT fuel (Jet B or equivalent) or when a mixture of these types of fuel might occur when passengers are onboard, embarking or disembarking.

3.3 Adverse Weather Conditions

3.3.1 General

Airside operational staff should follow these procedures during adverse or poor weather conditions which may have a negative impact on aircraft handling activities and ground safety. In the event that additional information is required, refer to supervisory staff.

3.3.2 Winter or Slippery Apron Conditions

Winter weather brings extra hazards, which require awareness and more care on the part of personnel working on the apron to prevent accidents. The following precautions to reduce accident risk must be taken:

(a) Plan additional time for all ramp activities and take extra care when walking across apron surfaces, which can be slippery.
(b) Take extra care when driving, especially when approaching the aircraft. Remember that GSE require greater distances to stop safely on slippery surfaces.
(c) Operators of potable water tankers and toilet servicing units must be vigilant that there is no spillage or leakage that can lead to subsequent freezing. Care must be taken to keep spillage and overflow to a minimum.
(d) If apron conditions are hazardous, contact the competent authority to mitigate the hazard. In the event the hazard cannot be mitigated, suspend the affected operations.
(e) Close all entrance and cargo hold doors as soon as possible and keep them closed to avoid precipitation entry into the aircraft.
(f) Ensure parking stand clear of all obstacles for aircraft.

Caution: Reduce speeds on slippery roads in slippery apron conditions. Adjust all activities and operations on the ramp to suit the conditions at the time.

3.3.3 Storms–Lightning Work Instructions

LEVELS	ACTION
Amber–ALERT Lightning activity is detected at a distance in excess of 8 km (5 miles) from your operation.	Disseminate lightning warning to airside operating staff so they can prepare and plan their activities to be ready in case of a Red Alert in accordance with local regulatory requirements.
Red–STOP/SUSPEND Lightning activity is detected within 5 km (3 miles) of your operation.	Disseminate the order to stop all airside activities and seek shelter to all airside operating staff.
Green–ALL CLEAR Lightning activity has moved beyond 5 km (3 miles) and is heading away from your operation.	Disseminate the order to resume normal activities to all airside operating staff.

The distances referred to above may vary depending on local climatic parameters.

3.3.3.1 Storm-Lightning Work Instructions

On receipt of an ALERT:

(a) Make preparations for the STOP phase.

1. Suspend non-essential activities in open areas and ensure any staff using or about to use headsets are informed of the alert.
2. Fueling operations can continue, however the proximity of the thunderstorm/lightning should be continually monitored.
3. Avoid using highly conductive equipment.

(b) On receipt of STOP

1. Stop fueling. Fueling hoses cannot be left attached to the aircraft during any Thunderstorm/Lighting event
2. Discontinue aircraft communication by head set.
3. Stop all ramp activity and clear ramp.
4. Personnel should seek shelter inside buildings or inside metal bodied vehicles. No one should seek shelter under any part of the aircraft, loading bridge, near light poles, fences, under trees.

5. In accordance with local procedures, the aircraft may come on stand but the aircraft doors should remain closed and ground servicing suspended.

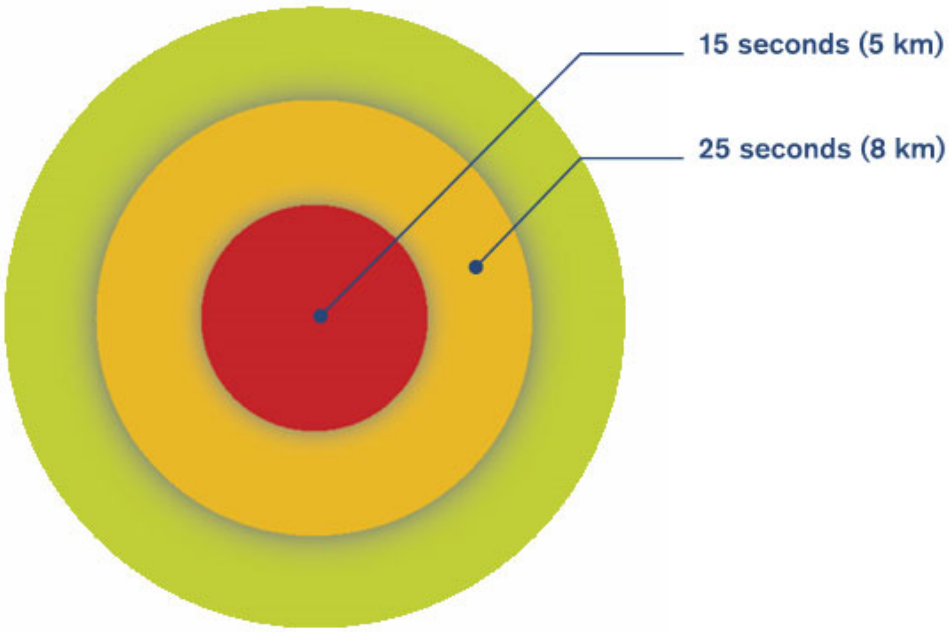
3.3.3.2 Lightning Alert Callout

In the absence of an integrated airport notification system, all airside operating staff shall be aware of the following procedures:

(a) Use the counting method to detect/predict lightning activity. Determine the corresponding level based on the counting method diagram, see 3.3.3.3.
(b) The responsible person notifies all airside operating staff of the lightning alert level. If the person responsible is not available, the counting method should be used by all airside operating staff for self-protection.
(c) In case of a Red Alert, proceed to a designated shelter.

3.3.3.3 Counting Method

The counting method is used when an integrated airport notification system is absent. It is used to estimate the level of lightning activity.
Counting Method Chart:



Note: *The time indicated is the time between the lightning and the sound of thunder.*

1. If the counted time is less than 15 seconds, the lightning activity is less than 5 km from the airport.

2. If the counted time is between 15 seconds and 25 seconds, the lightning activity is between 5 and 8 km from the airport.

3.3.4 High Wind Conditions Work Instructions

High winds pose a great risk of damage and the following minimum precautions should be taken:

(a) Ensure the safety of the aircraft by installing additional chocks and removing all equipment from around the aircraft.
(b) Take extreme care when opening or closing any aircraft doors.
(c) Make sure parking brakes are set on all parked GSE.
(d) Set parking brakes and secure by additional means if necessary, all non-motorized ramp equipment. (i.e. baggage carts and ULD dollies)
(e) Remove all non essential service equipment from the ERA
(f) Any service equipment needed for the servicing of aircraft, where possible shall be positioned as far from the aircraft as possible.

3.3.5 High Winds Activity Table

High Winds Activity Table

The following actions shall be taken when sustained winds and/or gusts of wind 25 kts or greater are predicted however it is the actual wind speed at the aircraft parking position, which constitutes the risk for injuries and damages.

Staff Actions	25 to 39 kt 46 to 72 km/h	40 to 59 kt 73 to 110 km/h	Above 60 kt Above 111 km/h
Chock aircraft landing gear as per Aircraft Out of Service/Night–Stop/High Wind, see 4.2.2.	✓	✓	✓
Remove safety cones	✓	✓	✓
Secure PCA hoses	✓	✓	✓
Remove FOD	✓	✓	✓
Secure ULDs	✓	✓	✓
Secure rolling stock	✓	✓	✓
Strap all propellers on propeller aircraft	✓	✓	✓
Secure PBB and position to minimize surface exposed to the direct force of the wind		✓	✓
Close cargo hold, passenger doors and access panels		✓	✓
Do not initiate the elevation of high-lift equipment and stairs		✓	✓
Park GSE closely together, and adjacent to a building, if possible			✓
Retract PBB			✓

Danger:
High winds pose a great risk of damage and injury.

3.3.6 Sandstorms and Low Visibility

The following minimum precautions should be taken:

(a) Issue appropriate Personal Protective Equipment (PPE) such as googles, masks, covered clothing.
(b) Ensure the provision of shelter, as required.

3.3.7 Intense Heat

The following minimum precautions should be taken:

(a) Issue appropriate PPE (i.e., covered clothing)
(b) Ensure the provision of rehydration for staff
(c) Ensure the provision of a temperature-controlled environment during rest breaks

3.4 Hand Signals

3.4.1 Introduction

In order to standardize "ground staff—ground staff" communication and/or "ground staff–flight crew" communication, the following hand signals are defined:

(a) **Guide Person Hand Signals**–to be used by a specific guide person in direct liaison with the equipment operator to facilitate movements of any type of GSE.

(b) **Marshalling Hand Signals**–to be used by ground staff, to assist the flight crew during manoeuvring of the aircraft and engine starting.

(c) **Technical/Servicing Hand Signals**–to be used by ground staff to communicate technical/servicing information to flight crew, and by flight crew to communicate technical/servicing information to ground staff.

(d) **Aircraft Movement Hand Signals**–to be used during the tractor/towbar connection/disconnection process, and at the start and end of the ground movement operation.

3.4.2 Conditions for Using Hand Signals

The person giving the hand signals must:

(a) Use only approved hand signals.

(b) Wear a high visibility vest.

(c) Maintain the same role throughout the procedure.

(d) Keep in constant, visual contact with the other ground staff and flight crew throughout the maneuver. If visual contact is lost, the operation must stop and not re-commence until visual contact is re-established.

(e) Remain clear of the intended pathway of the vehicle/aircraft where possible.

3.4.3 Guide Person Hand Signals (for GSE)

3.4.3.1 To Attract Operator's Attention and Take Command:

Arms held above head in vertical position with palms, facing forward.
Meaning: I am in charge of this maneuver. You will take orders only from me.

3.4.3.2 Forward Movement (toward person):

3.4.3.3 Backward Movement:

Arms by sides, palms facing forward, swept forward and upwards repeatedly.

3.4.3.4 Turn Right:

Left arm downward, hand extended, right arm repeatedly moved upwards towards the Guideman's left. Speed of arm movement indicating rate of turn.

3.4.3.5 Turn Left:

Right arm downward, hand extended, left arm repeatedly moved upwards towards the Guideman's right. Speed of arm movement indicating rate of turn.

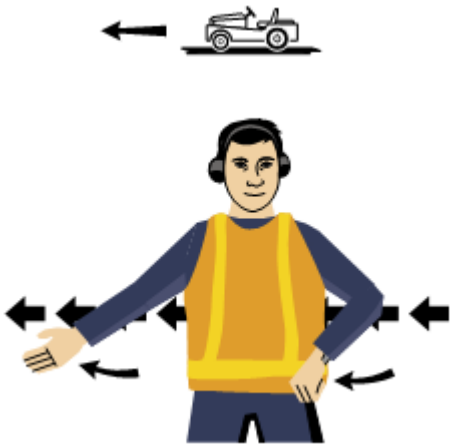
3.4.3.6 Lift:

Stretch both arms toward load or equipment, palm up, hand movement in upward direction.

3.4.3.7 Lower:

Stretch both arms toward load or equipment, palm down, hand movement in downward direction.

3.4.3.8 Accompanied Movement:



Come with load or equipment. Maintain eye to eye contact with operator or driver. Swing down opposite arm.

3.4.3.9 Indicate Distance:

Distance shown between hands must correspond exactly with existing margin.

3.4.3.10 Stop:

Arms raised and crossed over head.

Immediate stop: Hands cross over head with clenched fists.

3.4.3.11 OK. All is Clear or continue on Your Own or Drive Away:

Lift stretched right arm, hand closed, thumb raised.

3.4.3.12 Chocks Inserted; Stabilizers On:

Arms down, hand closed facing inward, thumbs extended, move arms inwards.

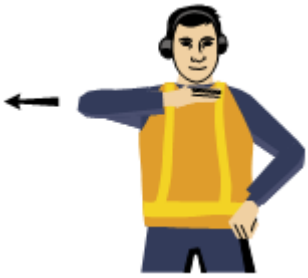
3.4.3.13 Chocks Removed; Stabilizers Off:

Arms down, hands closed facing outward, thumbs extended, move arms outward.

3.4.3.14 To Interrupt Power Source (electricity, fuel, air):

Right arm and hand level with shoulder, palm downward horizontally swinging from extended arm to throat.

3.4.3.15 Stop Engine:



Right arm and hand level with shoulder, palm downward, hand on throat making horizontal move to the right, passing hand across throat.

3.4.3.16 To Connect or Disconnect:

Raise left arm and hand, with fingers extended horizontally

Connect: Right hand with clenched fist moving upward to contact left palm

Disconnect: Right hand with clenched fist leaving left palm downward.

3.4.3.17 Brakes On / Off:

Right arm and hand raised horizontally in front of body.

Release brakes: With fist clenched, then extend fingers, palm inward.

Engage brakes: With extended fingers, palm inward, then clench fist.

3.4.4 Pushback Hand Signals–Headset Operator to Tug Driver

3.4.4.1 Vehicle Brakes Off

Raise hand just above shoulder height with closed fist and ensuring eye contact with tug driver open palm.

3.4.4.2 Clear to Push

Hold arm straight out at a 90° angle from the shoulder and display hand with thumb up. This indicates to the tug driver that all equipment is clear of the aircraft, the chocks have been removed, the aircraft brakes are off and the flight crew has given clearance to commence pushback.

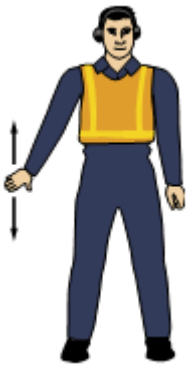
3.4.4.3 Negative / Hold

Hold arm straight out at 90° angle from the shoulder and display hand with thumb down. This indicates to the tug driver that the aircraft is not ready for pushback and to hold position.

3.4.4.4 Vehicle Brakes On / Stop

Raise hand just above shoulder height with open palm and **ensuring eye contact with tug driver** close into a fist. At the end of the pushback also indicates to tug driver that aircraft brakes have been set. Tug driver should return the signal to the Headset operator to confirm vehicle brakes set.

3.4.4.5 Slow Down



With hand at a 45° angle downward to the side make a "patting" motion.

3.4.4.6 Change of Pushback Direction

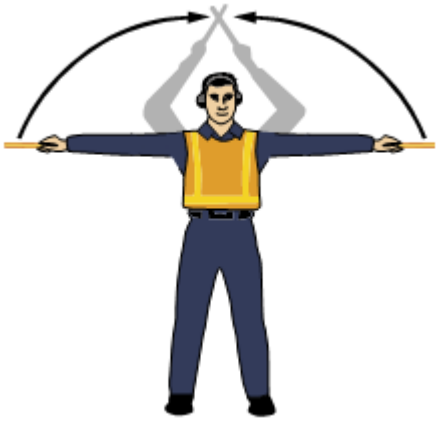
Touch nose with finger and with arm at a 90° angle to the shoulder, point in the direction that the aircraft needs to be turned to.

3.4.5 Pushback Hand Signals–Wingwalker to Headset Operator/Tug Driver

3.4.5.1 Clear to Move Aircraft

Raise one fully extended arm with wand straight above head and with the other arm and wand at a 45° angle downward to the side.

3.4.5.2 Stop Movement of Aircraft



Fully extend arms and wands to cross above the head.

3.4.5.3 Hold Movement of Aircraft

Fully extend arms and wands downwards at a 45° angle to the sides. Hold this position until it is clear for the aircraft to move.

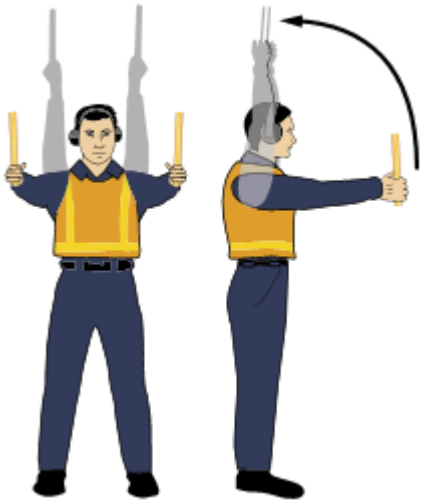
3.4.6 Marshalling Hand Signals (for aircraft)

(a) Do not perform aircraft marshalling unless it is permitted by the local airport authority and you have been trained and authorized.
(b) Give marshalling hand signals from a position forward of the aircraft while facing and within view of the pilot.
(c) Wear high visibility vest.
(d) Use illuminated torch lights/wands to improve the visibility of the hand signals in the following situations:
1. insufficient apron lighting.
2. poor visibility.
3. night conditions.
4. when required by local Airport Authorities or regulations.

Caution:
To avoid any possible confusion by the Flight Crew, do not use guide man hand signals for equipment until all aircraft marshalling has been completed.

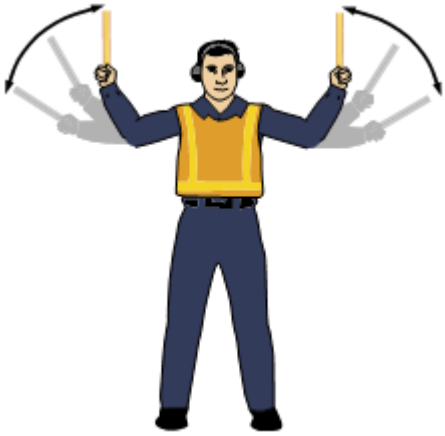
Note:
(a) The hand signals printed on the following pages are illustrated with the use of wands. The meaning of the signals remains the same when bats, gloves or illuminated torch lights are used.
(b) It is not possible to give signals for engaging/releasing parking brakes with the use of bats or illuminated torch lights.

3.4.6.1 Identify Gate



Raise fully extended arms straight above head with wands pointing up, move hands fore and aft to keep from blending into background.

3.4.6.2 Continue to Taxi Straight Ahead



Bend extended arms at elbows and move wands up and down from waist to head.

3.4.6.3 Slow Down

Move extended arms downwards in a "patting gesture", moving wands up and down from waist to knees.

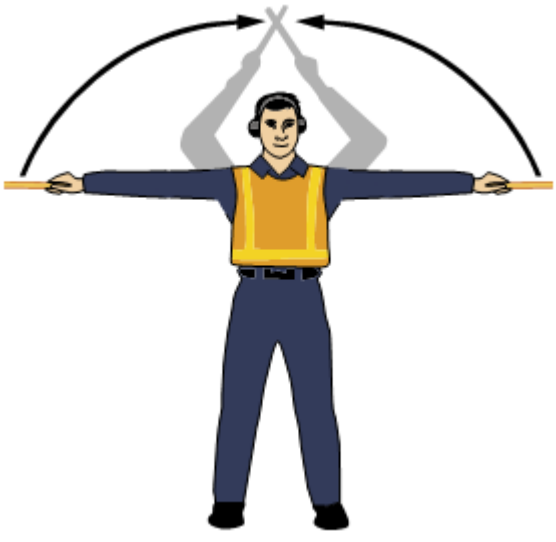
3.4.6.4 Turn Right (from the pilot's point of view)

With left arm and wand extended at a 90° angle to the body, right hand makes the come ahead signal. The rate of signal motion indicates to the pilot the rate of aircraft movement desired.

3.4.6.5 Turn Left (from the pilot's point of view)

With right arm and wand extended at a 90° angle to the body, left hand makes the come ahead signal. The rate of signal motion indicates to the pilot the rate of aircraft movement desired.

3.4.6.6 Stop/Emergency Stop



Fully extend arms and wands to cross above the head.

3.4.6.7 Hold Position / Stand-by

Fully extend arms and wands downwards at a 45° angle to the sides. Hold the position until the aircraft is clear for the next maneuver.

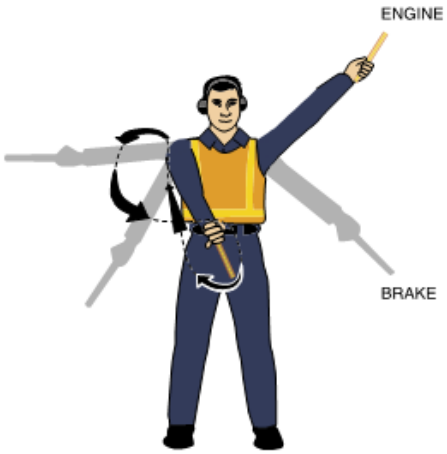
3.4.6.8 Proceed to Next Marshaller or as Directed by Tower / Ground Control

Point both arms upward, move and extend arms outward to side of body and point with wands to direction of next marshaller or taxi area.

3.4.6.9 Dispatch Aircraft

Perform a standard military salute with right hand and/or wand to dispatch the aircraft. Maintain eye contact with the flight crew until the aircraft has begun to taxi.

3.4.6.10 Fire



Fire–Move right hand in an exaggerated figure of eight (8), or a fanning type motion, from the shoulder to the knee, while at the same time pointing with the left-hand wand to the area of the fire.

3.4.6.11 Set Brakes

Raise hand just above shoulder height with open palm. Ensuring eye contact with the flight crew, close hand into a fist. DO NOT move until receipt of thumbs up acknowledgment from the flight crew.

3.4.6.12 Release Brakes

Raise hand just above shoulder height with hand closed in a fist. Ensuring eye contact with the flight crew, open palm. DO NOT move until receipt of thumbs up acknowledgment from the flight crew.

3.4.6.13 Chocks Inserted

With arms and wands fully extended above head, move wands inward in a "jabbing" motion until the wands touch.

3.4.6.14 Chocks Removed

With arms and wands fully extended above head, move wands outward in a "jabbing" motion. **DO NOT** remove chocks until authorised by the flight crew.

3.4.6.15 Start Engines

Raise right arm to head level with wand pointing up and start a circular motion with hand, at the same time with the left arm raised above head level point to aircraft.

3.4.6.16 Emergency Engine Shut Down

Extend arm with wand forward of body at shoulder level, move hand and wand to top of left shoulder and draw wand to top of right shoulder in a slicing motion across throat.

3.4.7 Technical / Servicing Hand Signals–Ground Staff to Flight Crew

(a) Only use manual signals when verbal communication is not possible.
(b) Make sure acknowledgement is received from the flight crew on all occasions.

3.4.7.1 Connect Towbar:

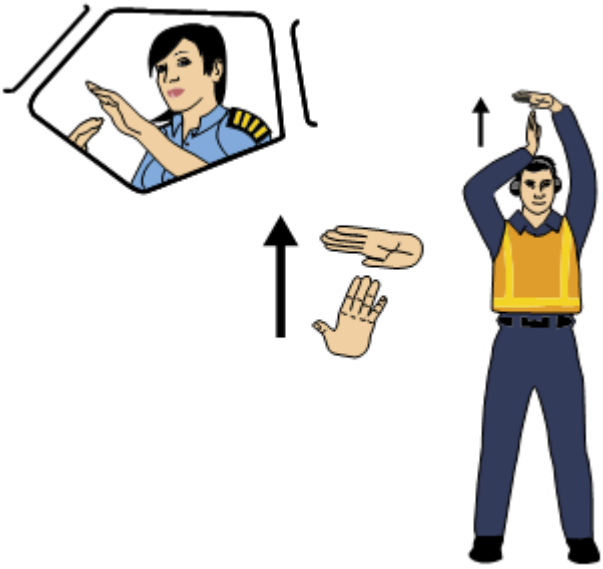
Bring arms above the head and grasp forearm with opposite hand.

3.4.7.2 Air Up (supply pressurised air for engine start):

Wave arms up & down from thigh to waist with palms up.

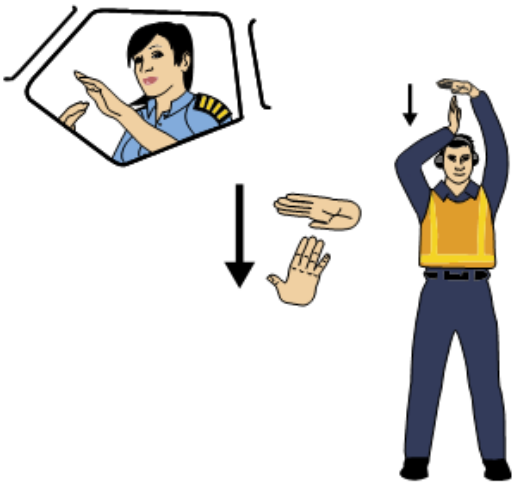
3.4.7.3 Connect / Disconnect Ground Power

To connect ground power:



Hold arms fully extended above head, open left hand horizontally and move finger tips of right hand into and touch the open palm of left hand (forming a "T"). At night, illuminated wands can also be used to form the "T" above the head.

To disconnect power:

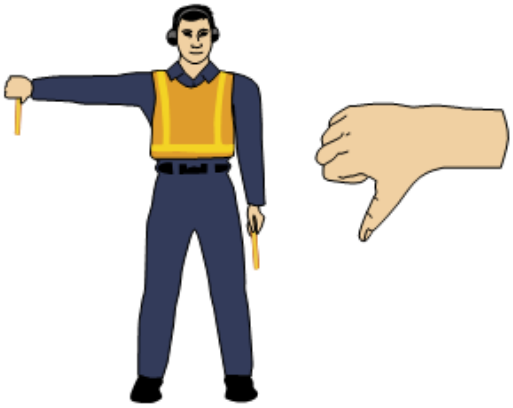


Hold arms fully extended above head with finger tips of right hand touching the open horizontal palm of the left hand (forming a "T"), then move right hand away from the left. DO NOT disconnect power until authorised by the flight crew. At night, illuminated wands can also be used to open the "T" above the head.

3.4.7.4 Affirmative / All Clear

Raise right arm to head level with wand pointing up or display hand with thumbs up, left arm remains at side by knee.

3.4.7.5 Negative



Hold right arm straight out at 90° from shoulder and point wand down to ground or display hand with thumbs down, left hand remains at side by knee.

3.4.7.6 Interphone

Extend both arms at 90° from body and move hands to cup both ears.

3.4.7.7 Do not Touch Controls

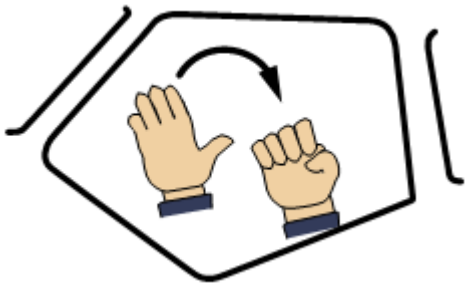
Raise right hand above head level and close fist or hold wand in horizontal position, left arm remains at side by knee.

3.4.7.8 Open/Close Stairs

With right arm at side and left arm raised above head at a 45° angle, move right arm in sweeping motion towards top of left shoulder.

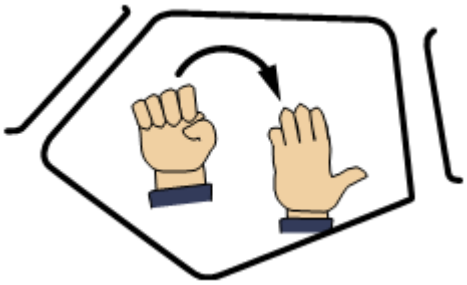
3.4.8 Technical/Servicing Hand Signals–Flight Crew to Ground Staff

3.4.8.1 Brakes Engaged:



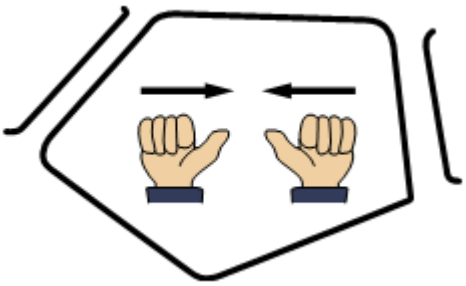
Raised arm and hand, with fingers extended, horizontally in front of face. Hand is then closed to a fist.

3.4.8.2 Brakes Released:



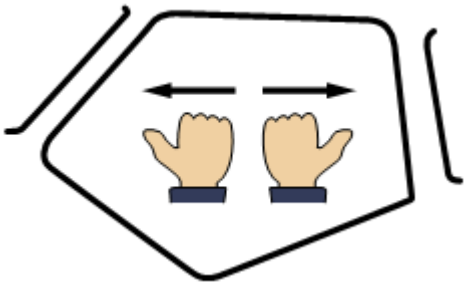
Raised arm, with fist clenched, horizontally in front of face. Hand is then opened to an open palm.

3.4.8.3 Insert Wheel Chocks



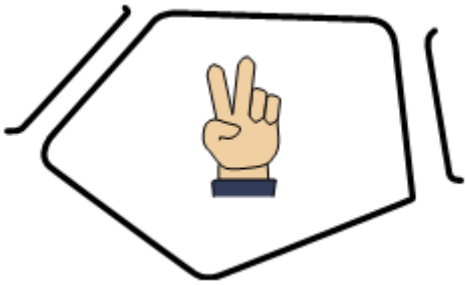
Arms extended, palms outwards, and hands moving inwards.

3.4.8.4 Remove Wheel Chocks:



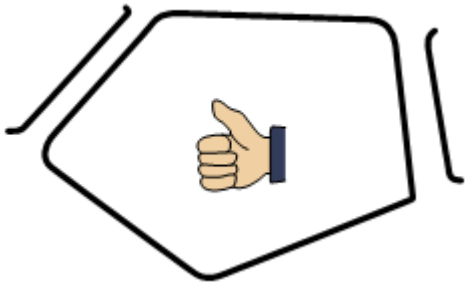
Hands crossed in front of face, palms inwards, and arms moving outwards.

3.4.8.5 Ready to Start Engine(s):



One hand raised with the appropriate number of fingers stretched indicating the number of the engine to be started.

3.4.8.6 All Clear:



Acknowledgement of all ground actions.

3.5 Toilet Servicing

3.5.1 Introduction

The complete procedure for servicing the aircraft toilet waste tank consists of the following 3 steps:

(a) Draining of the waste tank(s);
(b) Flushing of the waste tank(s);
(c) Adding an amount of pre-charge and/or a concentrated deodorant precharge product–as applicable.

Caution:
Toilet fluids are corrosive.
Prior to servicing, inspect the toilet servicing panel on the aircraft for signs of leakage. If any horizontal blue streaks are observed, the blue streak must be cleaned prior to servicing. After cleaning, look again for signs of leakage.
Blue ice build-up in higher altitudes may influence airworthiness. In case of a possible leak, immediately inform the airline representative, ground engineer, or advise the flight crew.

3.5.2 Hygiene Precautions

(a) Wear heavy rubber gloves, full face protection and protective clothing against harmful wastes when performing toilet servicing.
(b) Do not park the toilet service unit in the same area as the water service unit nor at the water filling point.

Caution:
Once an agent has performed toilet servicing on an aircraft, the same agent cannot perform water servicing during the same task.

3.5.3 Toilet Servicing Procedure

3.5.3.1 General

Each aircraft type has specific requirements for toilet servicing and the amount of precharge and/or concentrated deodorant precharge product. Refer to the GOM appendix A-E for aircraft type specific instructions for more details.

(a) Prior to opening a toilet service panel, check for stains around the panel.
(b) While opening the service panel, stay clear and watch for signs of leakage.
(c) Stay clear of the drain fitting cap while opening, and watch for signs of leakage.
(d) Make sure the drain hose Y-fitting coupling is connected correctly, before a drain valve handle is pulled.
(e) Empty the waste tank(s).
(f) Flush the waste tank(s) in accordance with GOM appendix A-E.
(g) Precharge the tank(s) with the correct quantity of water and disinfectant–as applicable.
(h) Fill the waste tank(s) with the correct amount of water and concentrated deodorant precharge packets or pre-mixed fluid as applicable. For aircraft equipped with a conventional toilet system, fill the waste tank(s) with the correct amount of water and precharge, or concentrated deodorant precharge.
(i) After servicing ensure that there are no leaks at the drain fitting cap and the end of the drain hose Y-fitting coupling.

(j) Close the nozzle tightly in order to prevent the accumulation of ice during flight and wipe off residual water and disinfectant.
(k) Check for possible leakage.
(l) After servicing close and latch the fitting caps and service panel door.

Note: *Inform aircraft maintenance or flight crew, if:*
1. Fluid leakage is observed.
2. The drain valve will not open or the waste tank cannot be drained.
Report any spillage of waste to the supervisor

3.5.3.2 Draining

(a) Drain the aircraft waste system into the waste tank of a Toilet Service Unit.
(b) Observe the waste drain hose during draining to confirm that the waste tank is completely emptied. The hose will also vibrate for a few seconds as the contents of the waste tank pass into the waste tank of a Toilet Service Unit.

Note: *Drain the waste tanks one at a time for optimal results.*

3.5.3.3 Servicing During Freezing Conditions

Take the following measures to prevent freezing of the fluid in the aircraft toilet tanks and lines during freezing conditions:

(a) Drain the waste tanks if the aircraft is parked in the open for several hours without electrical power supply and the temperature is, or is expected to be, below the freezing point.
(b) Fill the aircraft toilet system only after electrical power supply has been restored, and as close to flight departure time as possible.
(c) Ensure the fill line is fully drained before closing the cap to prevent freezing of fluid in the fill line.

Caution:
Do not attempt to remove the frozen substance in the fill lines or connections or on the service panels. Contact maintenance immediately.

3.5.3.4 Inoperative Toilet Systems

If defects of the toilet system prevent regular servicing, ask qualified technical staff–if available–for assistance (e.g. removal of panels, etc.).
If no technical staff is available, inform the Flight Crew or an airline representative.

3.6 Potable Water Servicing

3.6.1 General

(a) The water used for uplift shall fully meet the hygiene and testing requirements detailed in AHM 440 and those detailed in section 3.6.3.
(b) Equipment used shall fully comply with the specifications detailed in AHM 970 for water servicing vehicles, or AHM 981 for towed service carts.
(c) All equipment shall be serviced according to the manufacturer's recommendations. Records shall be kept of all servicing, cleaning, disinfection and maintenance tasks performed.
(d) All equipment and facilities used shall be maintained to the highest possible hygienic standard.
(e) Only uplift water to aircraft if authorized or requested by the operating airline.
(f) Replenish the aircraft tank according to the GOM App A-E. Any deviation shall be reported to the supervisor or airline representative.
(g) Airline representatives shall be informed of any issue that may affect (or may have affected) the standard of water uplifted to their aircraft, including contamination incidents, maintenance findings and test failures.

3.6.2 Potable Water Servicing Procedures

3.6.2.1 Filling Aircraft Water Tanks

(a) Before connecting the aircraft filling hose to the aircraft, flush the hose.
(b) Do not place hose ends on the ground
(c) Do not service the toilet and water on the aircraft at the same time. Certain aircraft types are exempted from this rule. (For exceptions, refer to the operating airline's GOM)
(d) Clean the aircraft coupling with disinfectant before connecting.
(e) Fill the water tank(s) to the required level.
(f) Each aircraft type has specific requirements for filling and draining. Refer to the operating airline's GOM for specific servicing instructions.
(g) When not in use, hose-ends shall be:
    1. Kept capped or;
    2. Attached to a dummy connector or;
    3. Kept in a container filled with disinfectant solution or;
    4. Treated with disinfectant before use.

3.6.2.2 Water Servicing During Freezing Conditions

The following actions shall be followed to prevent freezing of the water in the aircraft water tanks and lines during freezing conditions:

(a) Drain the aircraft water tanks if instructed by the operating airline, as per the operating airline procedures. Dispose of water in accordance with airport operator requirements.
(b) Ensure the fill line is fully drained before closing the cap to prevent freezing of fluid inside.

Caution:
Keep aircraft cargo doors closed to prevent water lines from freezing when the cargo compartments are not being loaded or unloaded.
Do not attempt to remove the frozen substance in the fill lines or connections or on the service panels. Contact maintenance immediately.

3.6.3 Potable Water Hygiene Requirements

3.6.3.1 Fill Points and Water Cabinets

(a) Hoses, connectors and water quality shall meet AHM 440 specifications and hygiene requirements.
(b) The water shall only be used as potable water for aircraft.
(c) The area around the fill point/water cabinet shall be kept clean and free from rubbish.
(d) When not in use, all fill point hoses shall be secured and locked in a metal pest proof enclosure. Fill points without attached hoses shall be capped.
(e) When not in use, hose-ends shall be:
    1. Kept capped or;
    2. Attached to a dummy connector or;
    3. Kept in a container filled with disinfectant solution or;
    4. Treated with disinfectant before use.
(f) Do not place hose ends on the ground

3.6.3.2 Water Service Vehicles & Towed Service Carts

The water service vehicles and towed service carts shall:
(a) Only be filled at a designated potable water fill point using approved hoses and couplings.
(b) Only be used to fill aircraft potable water tanks.
(c) Be parked in a clean and secure area, away from toilet servicing vehicles.
(d) Not be positioned close to toilet servicing units at any time, particularly when toilet servicing or toilet waste disposal is taking place.

Note 1: The water service vehicles and towed service carts should be parked in a shaded area during hot sunny weather, particularly if filled.
Note 2: The tank shall be drained completely at least once per calendar day.

3.6.3.3 Water Servicing Staff

The water servicing staff shall:
(a) Wear clean clothing; in particular, they shall change into clean external clothes/overalls and PPE if these items have previously been worn during toilet servicing.
(b) Clean and disinfect their hands before carrying out each water servicing or food grade gloves shall be worn and changed between each aircraft service.

3.6.3.4 Water Treatment Chemicals (Sanitiser)

Water uplifted to aircraft potable water tanks shall contain a low concentration of disinfectant chemical (sanitiser), of a type suitable for potable water. The most common sanitisers are based on chlorine or hydrogen peroxide. Refer to AHM 440 for details

3.6.3.5 Water Service Vehicle Cleaning and Disinfection

Water service vehicles, towed service cart tanks and hoses shall be checked every day, disinfected at least once per week and 'deep' cleaned at least once per month. Refer to AHM 440 for details.

3.6.3.6 Fill Point and Water Cabinet Cleaning and Disinfection

(a) Fill points, hose cabinets and their surroundings shall be checked daily for general cleanliness.

(b) Fill points and hoses shall be disinfected at least once a week. Refer to AHM 440 for details.

INTENTIONALLY LEFT BLANK

3.7 Aircraft Cabin Servicing

3.7.1 Aircraft Dressing and Cleaning

Clean and prepare these areas as per the standards contained in the Eastern Airways Aircraft Cleaning Specification Manual.

INTENTIONALLY LEFT BLANK

3.8 Catering of Aircraft

3.8.1 General

Catering uplifts can be defined as hot water and galley cart changes.
Upon arrival on stand, after passengers have disembarked, the catering staff will be given the catering uplift sheet prepared by the incoming Cabin Crew.

The Cabin Crew will be responsible for bringing the catering trolley to the front of the aircraft for the catering staff to re-cater. Catering staff must not manoeuvre the trolley themselves.
The trolley will be placed at the front of the aircraft in the aisle only while re-fuelling is not taking place.

Should the aircraft refuel, the seat belt signs will be illuminated by the flight deck. At this point, the Cabin Crew will remove the catering trolley from the aisle and return it to the galley to enable a means of accessing the exits during the refuel process.

The means of accessing the aircraft should be by the forward main passenger door. Should any other service door be required, the Cabin Crew will open them see GOM 4.4. The catering staff must not operate the doors.

The catering company must have their own Risk Assessment for the task based on this procedure.

3.8.2 Hot water uplift

It is the responsibility of the catering staff to remove and replace the urns from/to the galley for replenishment.

The urns must be replenished off of the aircraft. The urns must not be replenished on board the aircraft. Each urn is secured in place via **red** latches. Communication must be made with the Cabin Crew to advise them that urns have been replenished and replaced.

The urns in the galley are assigned to the airframe. Under no circumstances must the urns be permanently removed or swapped by catering staff. The location and numbers of urns can be found in the GOM Appendix A-E.

Note: *Urns push onto electrical fitments so every care must be taken on their fitment and removal so as not to damage the socket.*

3.8.3 Operation of red latches

The layout of galleys may vary from aircraft to aircraft. It is the responsibility of catering staff to familiarize themselves with the location of all trollies, urns and latches. If staff are unsure of galley layouts or location of latches, they must consult a member of the Cabin Crew for clarification.
Catering staff must ensure that following any activity of removing and replacing urns and trollies, the red latches are left secure so as to secure the equipment in place.
The catering company must have their own written procedure in place based on the content of this Section and ensure that staff receive internal training.

3.8.4 Offloading of catering trollies

There are occasions where catering trollies may need to be offloaded by catering staff. It is important that catering staff follow the procedures below.

The removal of trollies from the rear aircraft door is prohibited without the use of access equipment Doors must only be operated by crew.

Manual offload of the trollies by hand must only take place from the front door. Prior to the offload;

(a) All trays and content of the trolley must be removed.
(b) The door must be secured using the door latch. The trolley must be offloaded with the door facing skyward.
(c) The offload of a trolley is to be conducted using no less than three people. The third person must be placed at the bottom of the aircraft steps to provide guidance on foot position to the person walking backwards and control the speed of the operation.
(d) All staff must wear appropriate PPE.
(e) The catering company must ensure that they have completed their own risk assessment based on this procedure and that staff have received training.

Note: *This instruction is applicable to re-catering the aircraft via the rear door.*

SECTION 4: AIRCRAFT TURN-AROUND

4.1 Aircraft Arrival

4.1.1 Actions Prior to Aircraft Arrival

(a) Ensure all persons involved with the aircraft arrival and post-arrival handling/servicing are briefed on safety and operational requirements relevant to their functions, e.g., aircraft defects that may affect ground handling operations, specific unloading, equipment positioning and operating requirements.

(b) Conduct FOD check on entire stand removing all debris just prior to arrival.

(c) Make sure the stand surface condition is sufficiently free of ice, snow and contamination if it could be hazardous to aircraft movement.

(d) Make sure all required Ground Support Equipment (GSE), chocks and safety cones are available and serviceable, and are positioned well clear of the aircraft path, outside the Equipment Restraint Area (ERA).

(e) Make sure the aircraft path and ramp area is free of objects and obstacles which the aircraft may strike or endanger others due to jet blast effects.

(f) Make sure aircraft docking guidance system is operating, or marshalling staff is present.

(g) Make sure additional ground personnel (such as wing walkers) are present (if required).

(h) All personnel shall remain well clear of the arriving aircraft and its manoeuvring path, outside the ERA, other than those whose functions require them to be inside the ERA during aircraft arrival, e.g., marshaller(s) and/or wing walker(s).

Danger:

All persons not responsible for the aircraft arrival operation shall stay well clear of the arriving aircraft and shall not approach the aircraft until:

(a) The engines have been shut down and are spooling down.
(b) The anti-collision lights have been switched off.
(c) The main gear wheel chocks are positioned.
(d) Clearance to approach the aircraft has been given by the agent responsible for the arrival operation, if applicable.

4.1.2 Actions During Aircraft Arrival

4.1.2.1 Aircraft Arrival at a Gate or Open Ramp

(a) For a standard arrival procedure at a stand without an automated guide-in system or at an open ramp:

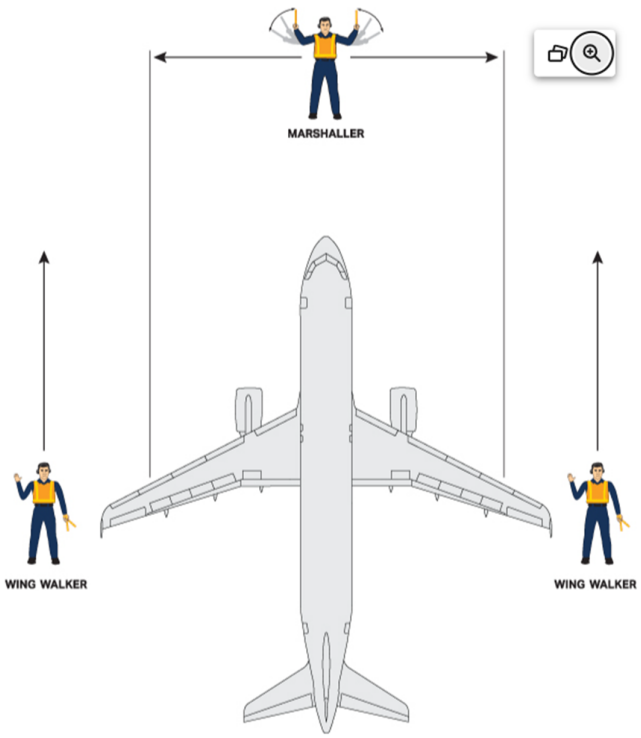
1. as the aircraft approaches the stand area, the marshaller points to the guide-in line on the ramp to be followed by the aircraft by standing at the top of the guide-in line and giving the "IDENTIFY STAND" signal. Wing walkers, if required, will be positioned approximately 1 m (3 ft.) outside the path of the wingtips. Wingwalkers shall maintain visual contact with the Marshaller until the aircraft has come to a complete stop.

2. while the aircraft taxies along the guide-in line, the marshaller gives the "Continue to Taxi ahead" signal with marshalling wands.
3. the nose wheel should follow the guide-in line all the way to the appropriate stop point. Use the "Turn Left" or "Turn Right" signals to correct the track of the aircraft as required.
4. if at any time during aircraft movement the marshaller is unsure or identifies an imminent danger, STOP the aircraft.
5. if at any time during aircraft movement, the wingwalkers are unsure or identify an imminent danger, signal the marshaller with the "STOP" signal.
6. as the aircraft approaches the stop position, use the "Slow Down" signal if required. As the nose wheel reaches the stop point slowly cross the wands in the "Stop" signal.

(b) For a standard arrival procedure at a stand with an automated guide-in system:

1. As the agent responsible for the arrival, the marshaller shall verify that the correct aircraft has been selected for the arrival and the equipment is operational.
2. The agent responsible for manning the emergency stop button shall be positioned with an unobstructed view of the arriving aircraft and within reach of the system to stop the aircraft in the event it is needed. It is essential to maintain a continuous unobstructed view between the agent responsible for manning the emergency stop button and the ground personnel ensuring clearance (e.g. wing walker).
3. If the emergency stop is activated, and only after a check by the ground staff operating the guidance system that the risk is no longer there, the aircraft docking guidance system can be reactivated. If not standard aircraft arrival procedures shall be used.
4. Wing walkers, if required, will be positioned approximately 1 m (3 ft.) outside the path of the wingtips. Wingwalkers shall maintain visual contact with the Marshaller until the aircraft has come to a complete stop.

See diagram for position of Wingwalkers during aircraft arrival on stand.



4.1.2.2 Actions After Aircraft Arrival

Should an aircraft have an unserviceable APU, there will be a requirement to keep engine No.1 (left engine) running with the anti-collision light on. The crew will carry out a single engine taxi onto stand. The crew will advise ahead of arrival of this requirement. Follow the steps in (a) and (b). For standard arrival, follow the steps in (b).

(a) Upon aircraft stopping:
1. position wheel chocks at nose landing gear wheels as per GOM 4.2.1.
2. position and connect the Ground Power Unit, if required, before engine shut down.

(b) After the engines have been shut down, are spooling down and anti-collision lights have been switched off:

1. position wheel chocks at the main landing gear (MLG) wheels and verbal/visual confirm to flight crew.
2. confirm there is no damage on the cabin door area prior to positioning the passenger boarding bridge (PBB).
3. position the safety cones.
4. conduct an arrival walkaround to inspect for damage on the following parts of the aircraft before positioning GSE:
(i) all cargo doors and door surround frames
(ii) all access panels and servicing access points
(iii) visible parts of the aircraft fuselage, engines, propellers (if applicable), landing gears(iv) all cabin doors and door surround/frames
(c) Position GSE so as not to obstruct an aircraft evacuation or the free movement of other GSE.

Note 1: *If any damage is found, report it immediately to supervisor and do not approach the aircraft with any GSE in the area where the damage has been found.*

Note 2: *"Spooling down" of engine can be identified as follows: reduced engine noise, visible fan or propeller speed reduction, lack of exhaust heat/thrust plume.*

Danger:
If notified of a brake overheat do not approach the main gear.

Caution:
If an aircraft arrives with an unserviceable anti-collision light, do not approach the aircraft until headset communication has been established with the flight crew.

4.1.2.3 Escorting of Passengers

During the boarding and disembarkation process, the ground staff are responsible for passenger safety whilst passengers are moving between the terminal building and the door of the aircraft. Passengers must be escorted at all times and protected from hazards.

Local procedures must clearly identify responsible persons.
The boarding/disembarkation process will vary between airports, but particular attention is drawn to the following:

(a) Passengers walking on the ramp must be guided and supervised to ensure they keep clear of all areas of danger.
(b) Passengers must be guided around the wingtip of the aircraft and are not permitted to approach the engine area or the baggage pod area.
(c) The use of cones or guidance chains/rails is encouraged, (subject to local procedures), to assist in passenger guidance on the ramp. However, the use of such devices must be in addition to, and not as a replacement for, adequate supervision of passengers.
(d) Ensure a visual signal (i.e. thumbs up) is received from cabin crew to indicate all pax have disembarked.

When Cabin Crew are operating on-board an aircraft, be it on the ground or in the air they are entirely responsible to the aircraft commander for the safety and security of the aircraft cabin, in order to allow them to perform their duties no agent shall enter the aircraft cabin unless specifically authorised by the Cabin Crew Member.

Agents needing to board the aircraft in the course of their duties shall wait at the foot of the aircraft steps until authorised to board by a member of the operating crew. The Fwd hold of the ATR shall not be accessed via the cabin unless specifically authorised by the Cabin Crew.

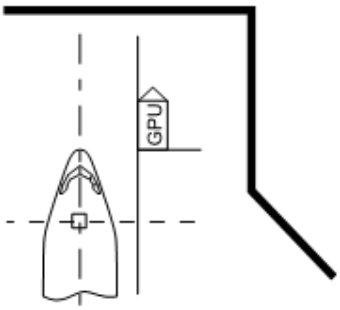
Only persons deemed essential to the servicing of the aircraft will be allowed on board. Crew will challenge persons entering the cabin.

4.1.3 Ground Support Equipment on Arriving Aircraft

4.1.3.1 Ground Power Unit and Fixed Power Unit

(a) It is permitted to pre-position a GPU inside the ERA provided there is a marked GPU parking position.
(b) Position the GPU on the appropriate side of the aircraft as shown below.
(c) Set parking brake/chock the GPU.
(d) Ensure the GPU, while in operation, is positioned a minimum of 3m (10ft) from any fuelling vehicles and aircraft fuel vent exits.
(e) Fixed Power Units (FPU) and leads shall be fully stowed/retracted during aircraft arrival as per the system design.
(f) Only connect GPU(s)/FPU(s) if required/requested by the operating airline.
(g) Before connecting to the aircraft, check the aircraft receptacles, lead(s) and plug(s) are clean and undamaged with no sign of excessive wear or electrical burning to the contacts.
(h) Do not energise the GPU/FPU power output until the unit is connected to the aircraft.
(i) Connect the external power sources according to the operating airline manual, including number of supplies, required output, sockets to be used, etc. Advise the flight crew of any discrepancies.
(j) Attach the power lead lanyards to the aircraft attachment point (where fitted).
(k) Request approval from flight deck before turning off and disconnecting the GPU/FPU cables.
(l) Turn off the GPU/FPU power output before disconnecting the cable(s).
(m) Always disconnect and stow the GPU power cables BEFORE connecting a tow tractor to the GPU.

Example of GPU positioning:



Ground power, where required, should be made available immediately upon arrival. Unless requested by crew or engineers, ground power should only be used for the duration of the turnaround.
For guidance on locations for connecting ground power for aircraft types, refer to GOM Appendix A-E.

Ground power units must not be left running whilst unattended. Any units being used to provide power to aircraft, must only be removed upon the confirmation of the crew to disconnect.

4.1.3.2 Cooling/Heating Units/Pre-Conditioned Air (PCA)

Danger:
Before supplying air by external source make sure that at least one cabin door is open and remains open during air unit operation as per operating airline procedure.
Make sure that a motorized ground air supply unit is not near the aircraft. The engine exhaust pipe of the unit must point away from the aircraft. Heat from the unit's exhaust can cause damage to the aircraft structure.

Refer to the GOM Appendix A-E for aircraft type requirements.

Note: *Make sure there is no blockage of the hose.*

(a) To connect PCA:
1. open access panel.
2. connect ground pre-conditioned air unit to aircraft.
3. start up ground pre-conditioned air unit.
4. on the ground pre-conditioned air unit, select the desired cooling or heating settings (air temperature and flow rate) or position the selector in the appropriate position.

(b) To disconnect PCA:
1. shut down ground pre-conditioned air unit.
2. disconnect ground pre-conditioned air unit from aircraft.
3. close the access panel.
4. retract the PCA hose to the fully stowed and secured position.

4.2 Aircraft Chocking

4.2.1 Wheel Chock Placement

(a) Make sure the required number of serviceable chocks are available taking account of the aircraft type and/or weather conditions.

(b) Chocks must be kept clear of the lead-in line and kept in a safe area away from arriving aircraft and engine danger areas.

(c) Do not approach the aircraft to position chocks until the aircraft has come to a complete stop.

(d) One designated member of the ground staff immediately places chocks forward and aft of the nose gear (if aircraft type allows and according to options listed in 4.2.2). This is the first action to take place around the arriving aircraft, and shall be completed before any other activity may take place.

(e) Before approaching the main gear, wait until:
1. engines have been shut down and are spooling down.
2. anti-collision lights are switched off.
3. Clearance to approach the aircraft has been given by the personnel responsible for the arrival operation.

(f) Walk towards the main gear in a path parallel to the fuselage, avoiding engine intake areas.

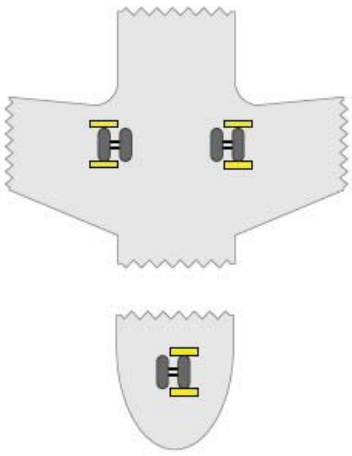
(g) Place chocks forward and aft of the main gear in accordance with the applicable normal chock placement diagram.

(h) Notify the flight deck crew that the chocks are inserted.

Danger:
For propeller aircraft with a nose-engine, the nose gear cannot be chocked until the engine has been shut down and the propellers have come to a complete stop.

4.2.2 Chock Placement Diagrams

The following chocking diagram applies to Eastern Airways Aircraft in normal operations;



Note: *For chocking of the ATR 72 in HOTEL mode, refer to the GOM Appendix E*

If for any reason the nose wheel is not centred after shutdown chocks **must not** be inserted at the nose wheel as the nose gear may move unexpectedly with the potential to cause serious injury. In this case handling agents must advise the flight crew that the nose wheel is not centred and must place chocks at both sets of main gear wheels.

Chocks must only be removed following the tug being connected to the aircraft and upon closure of all aircraft doors.

4.3 Aircraft Coning

Safety Cones

4.3.1 Safety Cone Placement and Removal

Safety cones are a caution sign for drivers to maintain required safety clearances. Cones protect parts of the aircraft against collision by GSE. Subject to operational requirements or local regulations;

(a) Prior to arrival of the aircraft, make sure there are sufficient serviceable safety cones to protect the aircraft type to be handled.

(b) Do not approach the aircraft to position cones unless all of the following criteria are met:
1. aircraft has come to a complete stop.
2. engines have been shut down and are spooling down (or) propellers completely stopped.
3. anti-collision lights are switched off.
4. aircraft has been chocked.

Note: *"Spooling down" of engine can be identified as follows: reduced engine noise, visible fan or propeller speed reduction, lack of exhaust heat/thrust plume.*

(c) Place safety cones on the ground in accordance with the following diagrams–within a maximum of 1 m (3 ft) outward from the point of the aircraft being protected. Cones must not be placed in high wind conditions.

(d) Additional safety cones may be needed as per operational requirements or local regulations.

(e) GSE must not approach the aircraft until all safety cones have been placed (not applicable for the PBB or GPU, if required subject to weather conditions (strong winds) or airport authority instructions).

(f) All required safety cones shall remain in place until GSE and vehicle activities around the aircraft have ceased prior to departure of the aircraft. (Except for GPU or ASU required for aircraft engine start up)

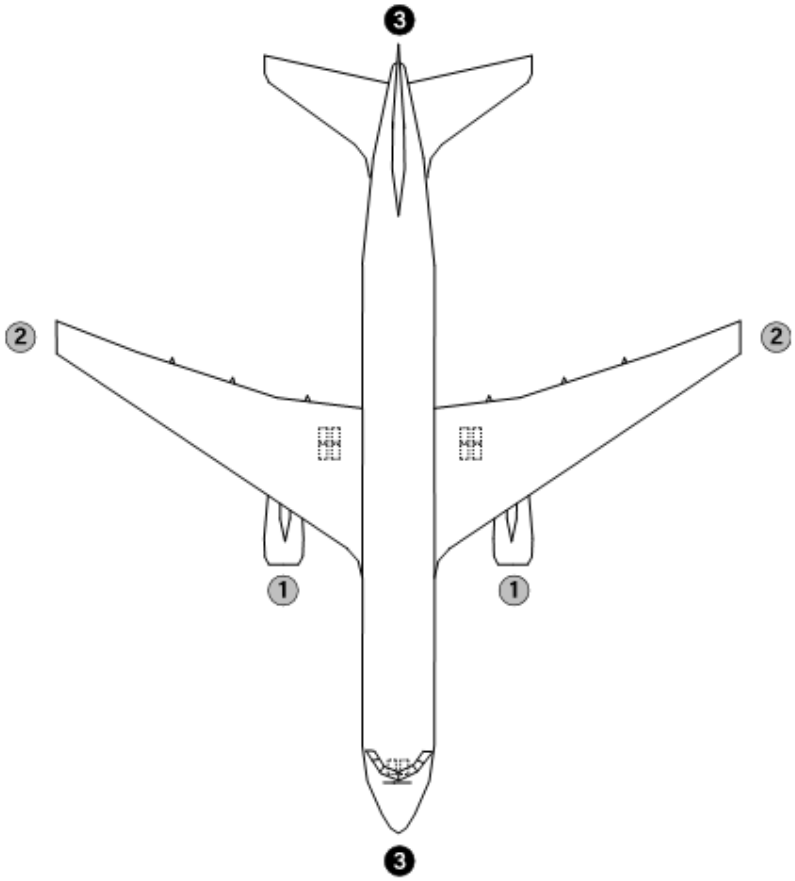
Note: *In some situations it may be necessary to re-position cones to allow GSE to be positioned. Cones must not be placed under engines. Reposition the cones when the GSE is removed.*

(g) Ensure all vehicles have been removed from the ERA, except GSE required for the departure operation, e.g., ASU, GPU/FPU and pushback tractor, as applicable.

(h) Remove the safety cones from around the aircraft.

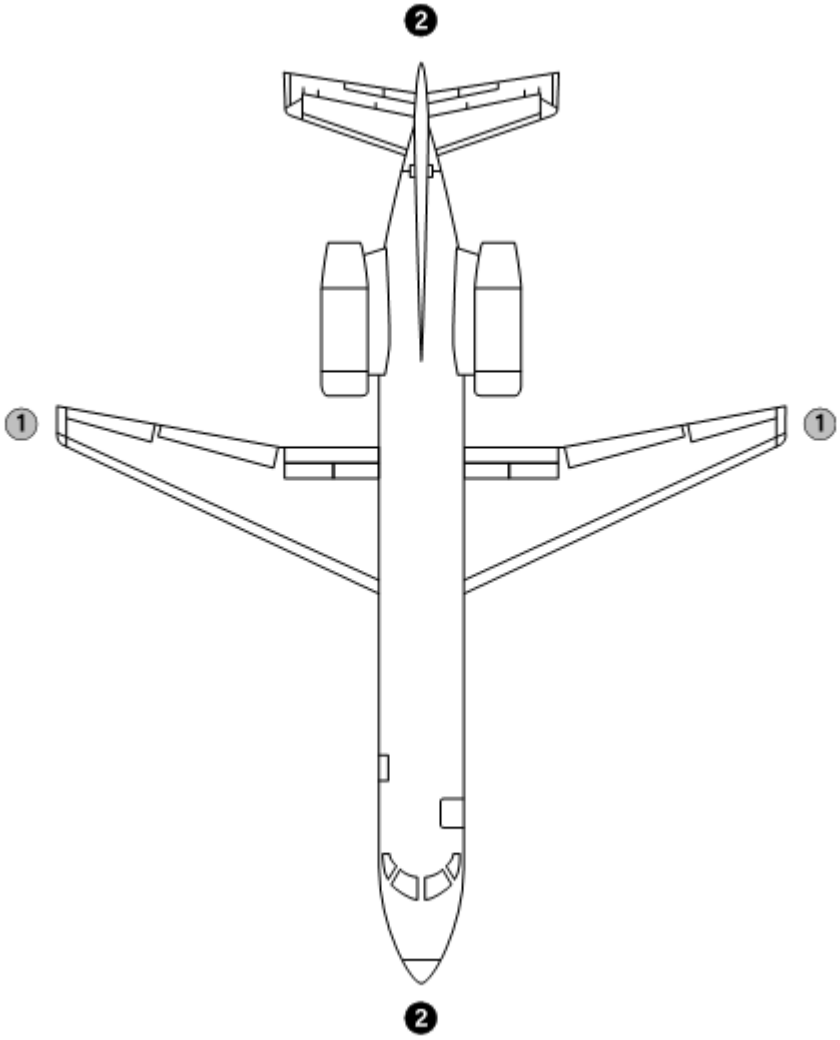
(i) When not in use, place the safety cones in the designated storage area.

4.3.2 Cone Placement for Wing-Mounted Twin Engine Jet Aircraft



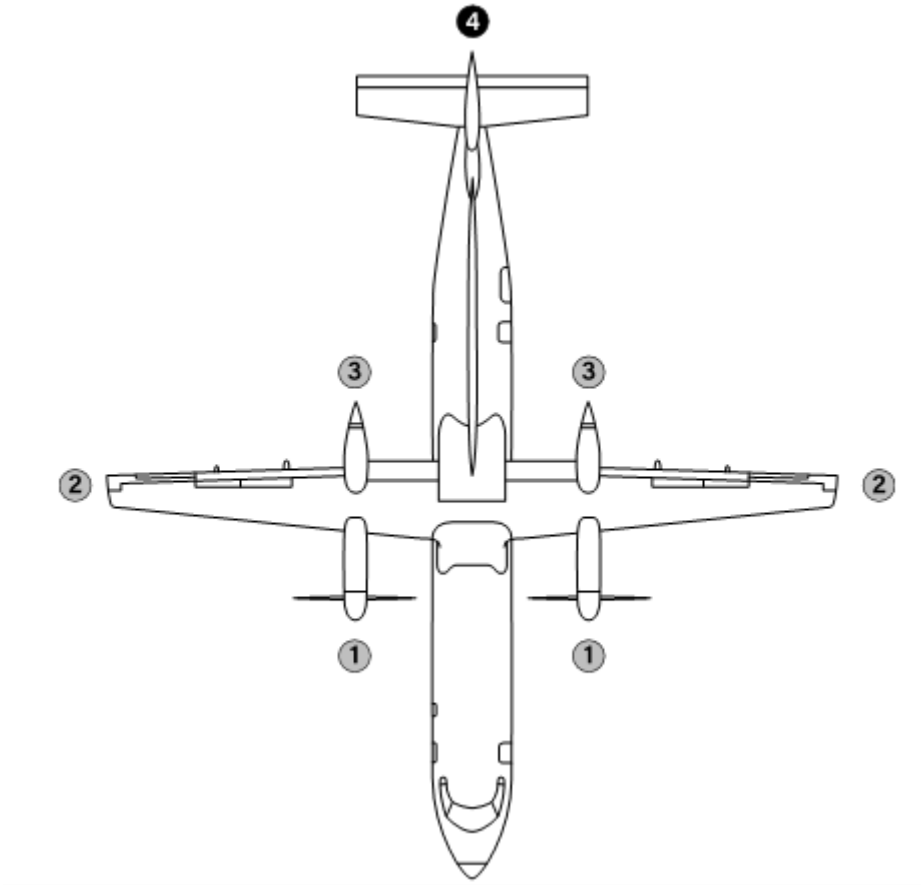
CONE NUMBER	DESCRIPTION
1	Cones max. 1 m in front of engine
2	Cones max. 1 m from wingtip
3	Additional cones to be placed at the applicable end(s) of the aircraft where immediately adjacent to a service road.

4.3.3 Cone Placement for Fuselage-Mounted Twin Engine Jet Aircraft



CONE NUMBER	DESCRIPTION
1	Cones max. 1 m from wingtip
2	Additional cones to be placed at the applicable end(s) of the aircraft where immediately adjacent to a service road, and always on aircraft with low ground clearance (e.g. CRJ100/200/700/900/1000, ERJ-135/145).

4.3.4 Cone Placement for Wing-Mounted Twin Propeller Aircraft



CONE NUMBER	DESCRIPTION
1	Cones max. 1 m in front of engine
2	Cones max. 1 m from wingtip
3	Cones max. 1 m behind engine
4	Additional cones to be placed at the applicable end(s) of the aircraft where immediately adjacent to a service road, and always on aircraft with low ground clearance (e.g. ATR 42/72, DHC-8, Q300/400).

4.4 Aircraft Access Doors

4.4.1 General Safety Requirements

This section Provides generic precaution and does not constitute training on opening/closing of aircraft doors.
Do not operate ANY aircraft access doors unless you have been trained and authorized to do so.

For aircraft type specific information see GOM Appendix A-E.
Seek assistance from maintenance personnel if any difficulty is experienced during normal door operation.
If damage or irregularity is discovered, immediately report it to the supervisor, aircraft maintenance personnel and if available, flight crew.

Caution:
Do not operate or leave doors open in winds exceeding those indicated in the manufacturer's limitations.

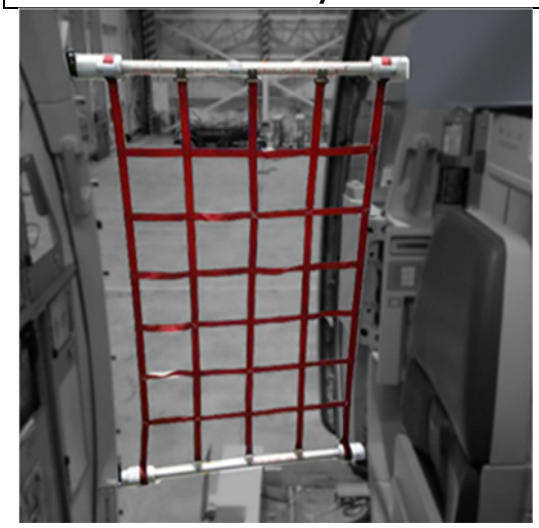
4.4.2 Cabin Access Doors

4.4.2.1 General

There are variances between airlines regarding responsibility for operating cabin access doors. Eastern Airways has determined that only cabin crew are authorized to operate cabin access doors during turnarounds –all ground personnel must follow procedures as set in the GOM Appendix A-E.
Cabin access doors shall only be operated or left in the open position if there is a GSE or a PBB with platform at its final height positioned at the door or if an appropriate fall prevention device is placed across the door.

Notes:

1) An appropriate fall prevention device consists of equipment or material, or a combination of both, that is designed to stop or prevent the fall of a person from an open door (e.g., an industrial safety net, catch platform or safety harness system) see below image as an example.
2) The cabin door strap installed in aircraft doors is not considered an appropriate fall prevention device.
3) GSE or PBB shall be removed after the cabin access door is closed and acknowledged by cabin crew or by other authorized person.
4) If a cabin access door is found open without a GSE or PBB positioned at the door, personnel shall immediately notify a supervisor or the airline representative.
5) Before allowing passenger/crew embarkation or disembarkation via a cabin access door, ensure the boarding device is properly positioned at the door. If stairs or integral airstairs are to be used, ensure both guard rails are extended, if applicable.



Danger:

1. Cabin access doors shall only be in the open position if there is an appropriate boarding device or appropriate equipment positioned at the door
2. There is a risk of falling while operating cabin doors
3. Slide deployments can be fatal. If an armed door begins to open, do not attempt to hold the door, as you risk being seriously injured or killed.

If a cabin access door is found open without a boarding device positioned at the door you must immediately notify a supervisor or the airline representative.

(a) Do not attempt to close the cabin access door unless trained and qualified.
(b) Guard the cabin access door until a qualified person is present to close it.

4.4.2.2 Opening Cabin Access Doors from Inside by Trained Crew

Ground staff should:

(a) Knock twice on the door from outside to indicate that a boarding device is properly positioned outside a door to be opened and that the door swing area is free of obstructions.
(b) Stand clear of the door and wait 10 seconds for the cabin crew to open.
(c) (As applicable) Assist cabin crew with moving the door to the fully opened position and engaging the gust lock as necessary.

4.4.2.3 Opening of Cabin Access Doors from Inside by Authorized and Trained Ground Personnel

(a) Check that the door is disarmed.
(b) Check that all indicators show that it is safe to open the door.
(c) Check visually that a boarding device is positioned at the door.
(d) The door shall be fully opened and the gust lock engaged.

Note: *Should there be a need to partially open a door solely for the purpose of galley trash bin servicing, an external boarding device need not be in position. Do not move the door more than is required for the removal and refit of the bin.*

(e) Open the door slowly and carefully in accordance with the instructions and markings labelled on the door, and the respective aircraft type specific instructions, and/or your training.

4.4.2.4 Opening Cabin Access Doors from Outside with Crew/Ground Personnel on Board

(a) Look for indications that the door is disarmed and visually inspect the cabin access door and the surrounding fuselage for signs of damage.
(b) Check that all indicators show that it is safe to open the door.
(c) If there is no indication from the cabin crew that the door is disarmed, knock twice on the door and repeat the previous step.
(d) If there is still no indication from the cabin crew that the door is disarmed, contact the Pilot-in-Command via an open cockpit window or the aircraft interphone system.
(e) If there is no cabin crew on board and the red/orange streamer is visible across the interior of the door window, then do not open the door. Instead, seek assistance from airline personnel.
(f) If you cannot confirm that the door is disarmed, DO NOT OPEN THE DOOR.
(g) Once you confirm that the door is disarmed, open the door slowly and carefully in accordance with the instructions and markings labelled on the door, and the respective aircraft type specific instructions.
(h) If integral airstairs (other than those permanently affixed to a boarding door) are to be used, fully extend the airstairs prior to opening the door.
(i) If integral airstairs permanently affixed to a boarding door, stand clear of the door and slightly open the door until the airstairs are fully extended.
(j) Move the door to the fully opened position and engage the gust lock.

4.4.2.5 Opening Cabin Access Doors from Outside with no Crew/Ground Personnel on Board

(a) Visually inspect the cabin access door and the surrounding fuselage for signs of damage and look for indications that the door is disarmed.
(b) Check that all indicators show that it is safe to open the door.
(c) If you cannot confirm that the door is disarmed, DO NOT OPEN THE DOOR.
(d) Once you confirm that the door is disarmed, then open the door slowly and carefully in accordance with the instructions and markings labelled on the door, and the respective aircraft type specific instructions.
(e) If integral airstairs (other than those permanently affixed to a boarding door) are to be used, fully extend the airstairs prior to opening the door.
(f) If integral airstairs permanently affixed to a boarding door, stand clear of the door and slightly open the door until the airstairs are fully extended.
(g) Move the door to the fully opened position and engage the gust lock.

4.4.2.6 Embarkation or Disembarkation Through Cabin Access Doors

Before allowing passengers or crew embarkation or disembarkation via a cabin access door, ensure that the boarding device is properly positioned at the door, and if stairs or integral airstairs are to be used, that both guard rails (if applicable) are extended.

4.4.2.7 Closing Cabin Access Doors

(a) Make sure cabin access doors are closed immediately after servicing is completed.

(b) Receive confirmation from the crew that the cabin access door(s) may be closed for departure.

(c) Before removing the last boarding device from an aircraft, inform any ground staff onboard the aircraft that the last cabin access door is being closed and the last boarding device is being removed from the aircraft.

(d) Look for any possible obstructions around the door area and remove them.

(e) Make sure the door gust lock is released and assist the person closing the door by moving it to the ajar position.

Caution:
If the cabin access door cannot be closed with the boarding device connected, then the operation must be performed from inside the aircraft with extra vigilance and without assistance of ground staff outside the aircraft.

(f) The intention to remove the boarding device shall be communicated to cabin crew or any other operational personnel on board. Do not remove the boarding device from the aircraft until the door is fully closed and locked.

(g) If stairs were used at a cabin access door, then retract the stair handrails if necessary to close the door. Remain at the top of the stair platform until the door is fully closed, and then descend the stairs before they are moved.

(h) Close the door slowly and carefully in accordance with the instructions and markings labeled on the door, and the respective aircraft type specific instructions.

(i) Before leaving the vicinity of the door, confirm that the door is properly seated flush with the surrounding airframe and that the exterior door handle is flush with the surface of the door.

(j) Seek assistance from aircraft maintenance personnel any time a door malfunction occurs.

(k) Do not retract equipment stabilizers in advance of the cabin door being fully closed.

(l) Before retracting equipment from the door, check to ensure the manoeuvring area is clear of all obstructions and personnel.

(m) If a passenger boarding stairs unit is used, then retract the passenger stairs canopy. Move the equipment to its approved parking position and engage any applicable restraints (such as closing the door on the passenger boarding stairs opening).

(n) Visually inspect the cabin access door and the surrounding fuselage for signs of damage, particularly in any areas where the boarding device was in contact with the aircraft. If damage is discovered then immediately report it to aircraft maintenance personnel, and if available, the Pilot-in-Command.

4.4.2.8 Re-Opening Cabin Access Doors

If a cabin access door is not closed properly then it must be re-opened and re-closed. Other situations when cabin access doors may need to be re-opened include the following operational situations:

(a) Subsequent delivery of catering and/or supplies, after the passenger boarding devices have been removed,

OR

(b) Re-connecting of passenger boarding devices after the initial removal. If there is no crew on board the aircraft, follow the applicable Opening Cabin Access Doors procedures in the GOM Appendix A-E.

(c) Once the cabin access door has been closed in preparation for departure, do not attempt to re-open any aircraft door without the authorization of the flight crew.

(d) If you believe a door must be re-opened, you must notify the flight crew through an open cockpit window or use the flight interphone system.

(e) If the crew requires a door to be re-opened, they will notify ground staff.

(f) Regardless of which party requested that the door be re-opened, once the flight crew gives clearance for the door to be re-opened, follow the actions/steps in: Opening Cabin Access Doors.

(g) If authorization to re-open the door is not granted, do not attempt to re-open the door unless clearance given by the flight crew.

4.4.3 Cargo Hold Access Doors

4.4.3.1 Opening Cargo Hold Access Doors

(a) Do not operate cargo hold access doors unless trained and authorized.

(b) Manual operation of an electrically or hydraulically operated cargo hold access door may only be performed by trained personnel.

(c) Do not open the cargo hold access doors until the aircraft engines have been shut down and the anti-collision lights have been switched off.

(d) Before positioning loading equipment or any other ground support equipment at cargo hold access doors and opening cargo hold access doors, perform a visual check for any signs of damage to the hold access doors or surrounding areas. If any irregularities are discovered during this visual check, report them to aircraft maintenance personnel and, if available, the Pilot-in-Command.

(e) Cargo hold access doors must be opened using technical steps or belt loaders equipped with raised safety rails to reach the cargo hold access doors while personnel are accessing, opening and closing ULD loaders must not be used. (Not applicable to main deck cargo hold access doors).

(f) Open the cargo hold access doors in accordance with the respective aircraft type specific instructions in the GOM Appendix A-E.

(g) Allow adequate space for door clearance to avoid equipment obstructing the free passage of the door:

1. most aircraft lower compartment cargo hold access doors hinge upwards. Be aware that when opening or closing cargo hold access doors, the lower edge of the door will swing down before going upward.
2. for main deck cargo hold compartment doors, remove safety barrier once the main deck loader is in position.

(h) If the cargo hold access door will not open, do not use excessive force, tools or ground support equipment to push or pull on the door to open it. Contact aircraft maintenance personnel for assistance.

4.4.3.2 Closing Cargo Hold Access Doors

(a) Do not operate cargo access doors unless you have first been trained and authorized.

(b) Manual operation of an electrically or hydraulically operated cargo access door may only be performed by trained personnel:
1. before closing the cargo access doors, ensure: that load restraint and door protection nets are properly fitted.
2. that the cargo compartment lights have been switched off unless required for carriage of AVI.
3. that the door area including the door sill and frame are free of gravel, water, ice and other foreign substances or obstructions.
4. that the door and door frame show no visible signs of damage.
5. that any damage discovered during the inspection of the cargo access doors and surrounding areas/frames is immediately reported to aircraft maintenance personnel and the Pilot-in-Command.

(c) All cargo access doors must be closed using technical steps or belt loaders equipped with raised safety rails to reach the cargo access doors. ULD loaders must not be used. (Not applicable to main deck cargo doors).

(d) Check that door lock indicators are engaged/properly set as applicable and that the door is properly locked, handles are stowed flush and panels are properly closed.

(e) If a cargo compartment door is not closed properly, it must be re-opened and re-closed.

Caution:
If a cargo door must be re-opened prior to aircraft movement, approval from the flight crew via the ground staff responsible for the departure must be obtained.

4.4.3.3 Re-Opening of Cargo Hold Access Doors

(a) If a cargo hold access door is not closed properly, it must be re-opened and re-closed.

(b) Once the pre-departure walkaround has taken place, do not attempt to re-open any aircraft door without the authorization of the flight crew.

(c) If you believe a door must be re-opened, you must notify the flight crew through an open cockpit window or use the flight interphone system.

(d) If the flight or cabin crew requires a door to be re-opened, they will notify ground staff.

(e) Regardless of which party requested that the door be re-opened, if the flight crew gives clearance for the door to be re-opened, follow the actions/steps in: 4.4.3.2

(f) If authorization to re-open the door is not granted, do not attempt to re-open the door.

(g) If authorisation to re-open the door is granted by the flight crew, repeat the pre-departure walk round checks according to 4.6.3.1 for this door area.

4.5 Aircraft Loading and Unloading

4.5.1 Supervision of Aircraft Loading and Unloading

The person performing the aircraft loading supervision task is responsible for the safe and efficient loading and unloading of the aircraft as well as the protection of the loads carried. The task will ensure the aircraft is loaded as specified by the weight and balance calculation task 5.4.3, in accordance with the corresponding loading instruction report, LIR 5.4.1.2.

Note: Any aircraft loading/unloading operation shall only start in the presence of the person responsible for the aircraft supervision task.

4.5.1.1 Communication

When Verbal communication is used it is critical that combination of letters and numbers are pronounced and understood by those who transmit and receive voice messages by radio or telephone, regardless of their native language. The ICAO phonetic alphabet and numbering system shall be used by all parties when involved in aircraft turn-around.

4.5.1.1.1 Actions During Unloading

During unloading, the person responsible for the aircraft loading supervision task shall:

(a) Cross-check the load against the CPM/LDM/OIR as the unloading progresses to ensure the correct sequence of unloading takes place in accordance with the specified timelines.

(b) For bulk unloading:

1 Perform a visual inspection of all items during unloading to ensure no damage/leakage.

2 Ensure the load distribution is in accordance with the LDM.

(c) Ensure special equipment (e.g., tie-down straps, load spreaders, plastic sheeting for wet cargo) is unloaded, as required.

(d) Log any irregularities in the unload sequence noted during unloading and report as per operating airline procedures.

(e) Ensure, where applicable, transit loads are not offloaded or over-stowed.

(f) If required, Delivery at the Aircraft (DAA) bags/items shall be delivered as per operating airline requirement.

(g) If possible, organize immediate transportation of arriving carts containing baggage, cargo and/or mail (see GOM 4.5.6.2 and as per specified timelines.

4.5.1.1.2 Actions After Unloading

After unloading has been completed, the person responsible for the aircraft loading supervision task shall:

(a) Carry out a hold inspection, in accordance with GOM 4.5.5.1 and action issues accordingly.

(b) Ensure the nets and straps are properly stowed and cargo access door checks are performed in accordance with GOM 4.4.3 in case the cargo access doors need to be closed.

(c) Sign the OIR if applicable, (See AHM 514 and AHM 515) and in doing so confirm that:

1 Aircraft has been unloaded in accordance with OIR

2 Load was unloaded in a manner that prevents damage or spillage

(d) Close the cargo access doors if the aircraft is to be left unattended (see GOM 4.4.3.2).

(e) If irregularities are reported during the unload sequence report in accordance with operating airline procedures.

4.5.1.2 Actions Prior to Loading

Prior to loading, the person responsible for aircraft loading supervision task shall:

(a) Verify the aircraft registration with the registration on the LIR.

(b) Carry out a hold inspection once unloading is complete or prior to commencing loading, in accordance with the requirements detailed in 4.5.5 and action issues accordingly.

(c) Assemble and check the load against the LIR in order to ensure compliance
1. Carry out a visual inspection prior to loading according to 4.5.9.3
2. Special handling codes and complimentary information
3. Destination airport
4. Preliminary Notification to the Captain (NOTOC) as per AHM 381 (where applicable).

(d) For bulk loading, confirm:
1. Carts identification labels are correctly filled in
2. Loose pieces/weight information is correct (where applicable)

(e) Ensure LIR is received and understood by the persons responsible for aircraft loading task, including details and requirements of special load (e.g. Dangerous Goods).

(f) Ensure special equipment (e.g. tie-down straps, load spreaders, plastic sheeting for wet cargo) is available, as required.

(g) If possible, organise and position baggage, cargo and/or mail in hold and load order.

(h) Ensure the load is protected from adverse weather conditions if applicable.

4.5.1.3 Actions During Loading

During loading, the person responsible for the aircraft loading supervision task shall:

(a) Crosscheck the load against the LIR, as the loading progresses to ensure the correct sequence of loading takes place in accordance with the specified timelines.

(b) Regularly check with loading agents who are physically loading the aircraft and in particular, attend to any issues raised concerning loading.

(c) Liaise with the person responsible for weight and balance calculation task and receive authorization for any deviations including any last-minute changes as documented in 5.4.3.2 to the LIR. The weight and Balance Calculation task shall check the deviation and confirm if possible or give an alternative solution.

(d) If an authorised change of load order occurs, provide confirmation of change to the persons responsible for aircraft loading task prior to recommencing loading in the hold.

(e) Ensure that where applicable, transit loads are not over-stowed for transit stations.
(f) At the completion of loading, receive confirmation of the following from the persons responsible for aircraft loading task:
1. The loading status of the aircraft holds and compliance with the latest edition of the LIR
2. Confirmation that loads are secured and that all locks, stops, nets, net stanchions, fire blankets are raised, closed, locked or installed and that load securing is correctly applied.
(g) Undertake a final visual inspection of the aircraft holds to ensure compliance and that no item of FOD have been left in the aircraft holds.
(h) Load and restraints (including correct restraint settings at NIL/NOFIT positions) that are visible are properly secured and/or raised.
(i) Protect all loads from adverse weather
(j) If required Delivery at the Aircraft (DAA) bags/items shall be loaded as per operating airline procedures.

4.5.1.4 Actions After Loading

After loading has been completed the person responsible for aircraft loading supervision task shall:
(a) Perform a final hold check to ensure:
1. The cargo doors have not been damaged during loading
2. The doors are closed and locked properly
(b) Sign the LIR, and in doing so, confirm that:
1. The aircraft has been loaded in accordance with the LIR and the LIR edition number.
2. That the load is secured and locks, stops, nets, fire blankets etc. are correctly installed, raised, locked etc.
3. If applicable, the aircraft has been unloaded as per the OIR
(c) Confirm the final actual loading is in accordance to final LIR, in order to finalise the weight and balance calculation.
(d) Where the operating airline requires additional signature fields to be completed on the LIR (e.g., by the person performing the loading of each hold), ensure the applicable person(s) have signed the required fields in accordance with operating airline requirements.
(e) If applicable, sign a NOTOC to confirm or otherwise state that:
1 There was no evidence of leakage from the package(s) or any leakage loaded on the aircraft.
2 The package is loaded in the designated position and secured.

Note: The LIR and the NOTOC shall be retained in accordance with applicable regulations.

(f) If irregularities are reported during the load sequence report in accordance with operating airline procedures
(g) Ensure cargo hold access door checks are performed in accordance with GOM 4.4.3.2

Note: The person responsible for the aircraft loading supervision task still maintains overall responsibility for the loading of the aircraft.

4.5.2 Aircraft Ground Stability

Unloading or loading may cause the aircraft to become unstable or could cause tipping. For some aircraft types, a tail post or nose tether is available and shall be used according to operator's specific procedures.

Unloading sequence may be reported in the offloading instructions report, OIR/CPM/LDM and loading sequence in the LIR. In case detailed information of the unloading and loading sequence are not available, as a general principle for cargo aircraft and passenger aircraft sensitive to tail tipping, ensure the sequence below is
adhered to:

(a) Unload the aft hold first.
(b) Unload the main deck in sequence to always have more load in front of the wing box than aft of the wing box.
(c) Unload the forward hold last.
(d) Load the forward hold first.
(e) Load the main deck in sequence to always have more load in the front of the wing box than aft of the wing box.
(f) Load the aft hold and bulk last. If this sequence cannot be followed, check with the operator for instructions about the correct unloading/loading sequence

4.5.3 Safety Requirements Specific to Aircraft Loading and Unloading

4.5.3.1 General

(a) Holds and compartments shall only be entered or exited by using the appropriate loading equipment, which shall be positioned and secured at the aircraft access door.
(b) Carts shall not be used to gain access to cargo compartments.
(c) Loading equipment shall not be removed from the aircraft when personnel are still in the cargo hold.
(d) Equipment operators shall ensure that other personnel are not entrapped by movement of loads, pallets and/or containers, either in the aircraft or on the loading equipment.
(e) Personnel shall not walk between carts and dollies even when they are stationary on the ramp.
(f) Hinged side gates of loaded carts should be lowered carefully in case loads fall out and cause injury.
(g) Extreme caution shall be used when using covered carts.
(h) Take care when pulling or pushing carts especially when ramp conditions are slippery. When necessary, obtain assistance.
(i) Protect all loads from adverse weather attention should be given to live animals.
(j) Use tarpaulins or covered carts during adverse weather.
(k) Use correct manual handling techniques and practices when handling heavy items. Get assistance when moving heavy articles.

(l) When loading has been completed, equipment operators shall move all loading equipment to the designated parking location outside of the ERA.

4.5.3.2 Unit Load Device Loading and Unloading

Eastern Airways does not operate aircraft with ULDs.

4.5.3.3 Main Deck Loading of Freighter Aircraft

Eastern Airways do not operate freighter aircraft.

4.5.3.4 Bulk Loading and Unloading

(a) To prevent damage to aircraft or collisions with the belt loader, keep a gap of at least 1 m (3 ft) between carts/dollies and the belt loader when towing.

(b) When unloading or loading items onto a belt loader, ensure that they are stable, and correctly positioned on the belt to avoid items falling off.

(c) Stabilize irregularly shaped items to prevent falling from the conveyor belts during loading and unloading.

(d) Do not place any loads directly on the ramp, especially if the ramp is contaminated.

(e) When loading or unloading smaller aircraft, or aircraft with low wings:
1. Tractors shall stop approximately 1 m (3 ft) from the belt loader to unhook carts. Move the tractor away and position carts by hand as required.
2. When removing carts, the tractor shall be positioned pointing away from the aircraft wing and the cart pulled to the tractor as required.

(f) When loading aircraft directly without the use of equipment
1. Always drive parallel to the fuselage, maintaining a gap of 1m (3ft) when positioning carts
2. Always turn away from the aircraft.
3. Use belt loaders if the door sill height does not allow items to be passed into the doorway without
undue lifting. Always consider the use of belt loaders for heavy items over 23 kg (50 lbs).

(g) Ground personnel carrying out bulk loading task shall:
1 Use the right lifting techniques to reduce on the risk of injury
2 Be accounted for once inside the aircraft hold and after completion of loading for safety reasons

Danger:
There is a risk of suffocation due to poor ventilation in the holds.

4.5.3.5 Shipments Requiring Special Handling

(a) **General**
1. All shipments requiring special handling will be identified on the Load Message (LDM) or Container Pallet Message (CPM) for an arrival flight or under a NOTOC for departing flights.
2. Comply with any special handling requirements. Be alert for special load and/or dangerous goods shipments.

3. Always follow the orientation markings and/or special handling instructions as applicable while handling.
4. Make sure that packages with directional handling labels are kept in the correct orientation (e.g. THIS WAY UP).
5. Always observe the specific instruction labels and markings (i.e., Cargo Aircraft Only (CAO), FRAGILE, TOP, THIS SIDE UP).
6. Always handle fragile items with care.
7. Ensure shipments labelled 'Cargo Aircraft Only' are not loaded into a passenger aircraft.

(b) **Dangerous Goods**

Transportation shall be in accordance with the IATA Dangerous Goods Regulations (DGR) Manual. Refer to OM-A1 Section 9 for airline specific restrictions.

(c) **Live Animals**

Transportation shall be in accordance with the IATA Live Animals Regulation (LAR). Also, check operator's manuals corresponding sections, for aircraft specific limitations, which may apply.

(d) **Wet Cargo**

The following types of cargo, if not subject to the IATA Dangerous Goods Regulations (DGR), shall be considered as wet cargo:
1. Liquids in watertight containers;
2. Wet materials not packed in watertight containers, e.g. fish packed in wet ice, fresh or frozen meat, casings (fresh animal guts), wet hides, skins, etc.;
3. Goods which by their nature may produce liquid, e.g. larger live animals (usually mammals) where presence of faeces and urine is likely;
4. Fruits/vegetables with high moisture, e.g. berries.

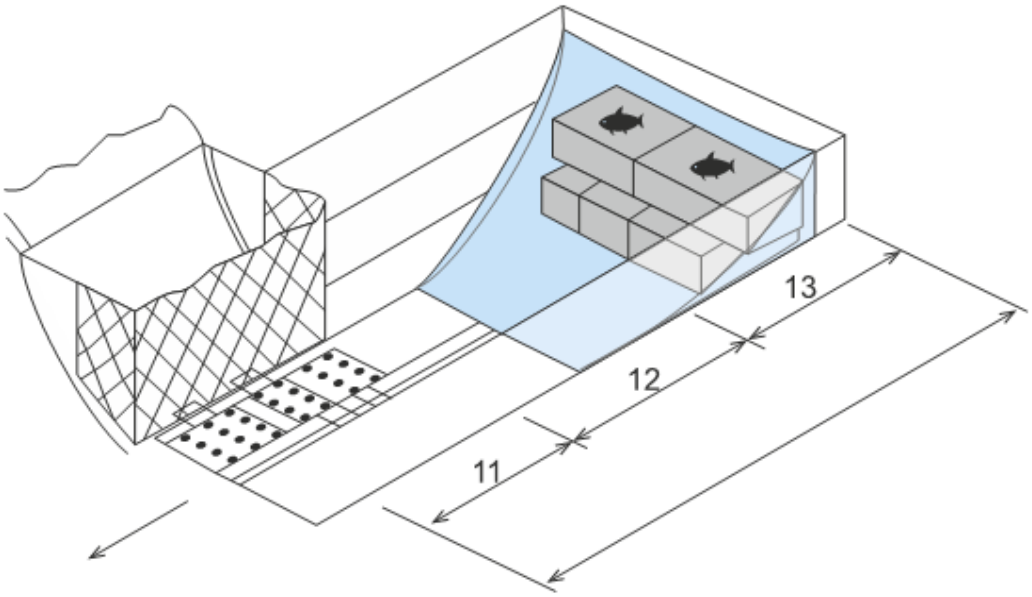
Note: *Live animals such as birds, reptiles, insects and certain mollusks (terrestrial) in appropriate animal containers do not pose a higher risk for corrosion than normal baggage/cargo and are therefore excepted. Refer to IATA Live Animals Regulations (LAR).*

Caution:
Spillage or leakage during carriage by air could lead to corrosion or other damage to the aircraft structure or its components, or damage to other loads.

5. The person responsible for the aircraft loading supervision task shall ensure the wet cargo is properly packed and free of leakage. Do not load damaged or leaking packages.

6. Loading precautions:
(i) Spread plastic sheets or tarpaulins to protect the aircraft floor and walls and catch any spillage or leakage. Use absorbent material as required by the operator.
(ii) Check ULD floors and side walls have had plastic sheets or tarpaulins spread, as applicable, in order to catch any spillage or leakage.
(iii) For wet cargo in containers which are not watertight: follow the instructions of the operating airline.

(iv) Load packages in accordance with orientation labels (e.g., This-way-up).



Note: *When wet or damp, the strength of some packaging can be considerably reduced. Special attention shall be given to avoid crushing of the packages when stacking to several levels.*

For reference regarding packing of wet cargo and temperature sensitive packaging refer to IATA.
Cargo Regulations (PCR) and IATA Temperature Control Regulations (TCR).

(e) Temperature-sensitive healthcare products
During transportation, loading and unloading of temperature-sensitive healthcare products, ensure that they are:
1 Handled in a manner to minimize the waiting period
2 Not exposed to adverse environmental conditions

(f) Dry ice (solid carbon dioxide) is used as a refrigerant for temperature sensitive health care products e.g., vaccines and other life sciences products to ensure that they are maintained at the required temperature throughout the supply chain.
1 Where dry ice is present in the cargo being loaded or unloaded the ramp, staff must be aware of the precautions required to ensure that there is no risk of suffocation from elevated CO2 levels from sublimating dry ice.
2 Verify the documentation for the presence of dry ice as a refrigerant (code ICE) and instruct the personnel that the cargo compartment shall be allowed to vent after the cargo access door is opened and before entering the cargo compartment.
3 Open the cargo compartment door and stand back. No person shall enter the hold. Cargo compartment where dry ice is present must be allowed to vent after cargo compartment door is opened.

4 Cargo access doors shall remain open to clear dry ice vapors before you enter the hold or compartment.

Danger:
There is a risk of suffocation when entering a compartment containing dry ice. Anyone entering a cargo compartment before the dry ice vapor has dispersed may be overcome with dizziness and shortage of breath due to lack of oxygen. In such circumstances the person should be removed immediately to fresh air and, if his breathing is seriously affected, call a doctor.

4.5.4 Unloading
4.5.4.1 Scaling Process
If the flight crew experiences a handling irregularity on take-off, the flight crew may request aircraft scaling (weighing of all baggage and cargo on board) at the arrival station. The aircraft shall not be unloaded when a scaling has been requested until the process has been initiated.

4.5.4.2 Safety Precautions for Unloading
(a) Before positioning GSE and/or opening cargo hold access doors, perform a visual check for any signs of damage to the doors or surrounding areas and check to ensure that the aircraft hold load has not shifted during the flight.
(b) Check for damage to the aircraft hold as the unload progresses and also after completion of unloading.
(c) Take care if load has shifted during flight, a check to verify the contour of the cargo loads passing through the doorway shall be made to ensure, sufficient space between the doorway depressor seals and cargo load is assured. Contact the person responsible for aircraft loading supervision task if shifted load will not safely exit the door.

Note 1: *Report any discrepancies e.g. spills, unusual fumes or smells, etc. prior to or during the unloading process to the person responsible for aircraft loading supervision task or as required by the operator or authority, immediately.*

Note 2: *Offloading Instructions Report, OIR, which is a systematic plan for unloading, may be issued prior to aircraft arrival. For transit flights, an OIR as defined in 5.4.1.3 may be issued.*

4.5.5 Cargo Hold Inspection
4.5.5.1 General
(a) A cargo hold inspection shall be performed:
1. After aircraft unload is complete
2. Prior to loading if this does not follow immediately after unloading is complete
3. In case the aircraft was unattended between unloading and loading; or
4. There was a change of persons responsible for the aircraft loading and supervision task.

(b) The person undertaking the cargo hold inspection shall perform a visual check of all cargo holds to ensure:
1. No damage of compartment floors, walls, ceiling, door frames, panels, door.
2. No missing, damaged or malfunctioning floor locks, load restraints or nets.
3. No spills.
4. No Loads other than transit loads have been left on-board the aircraft.
5. Any other items that should not be present in the hold have been unloaded.

(c) The person responsible for undertaking the cargo hold inspection shall provide positive confirmation that the inspection has been carried out to the person responsible for the aircraft loading supervision task prior to the commencing loading of the aircraft, if appropriate.

(d) Any damage or discrepancies observed shall be reported to the person responsible for the aircraft loading supervision task or the weight and balance calculation task as a minimum.

Note: *A check shall be conducted in a hold even if on arrival the hold was reported as being empty.*

(e) Any other items that should not be present in the hold.

4.5.5.2 Cargo Hold Damage

Any damage such as holes, tears or detachment to compartment liners may reduce their effectiveness, permitting air to enter the compartment and fire suppression agent to escape, reducing the capability to handle a fire event that may lead to specific loading limitations, therefore:

(a) Any technical malfunction or damage shall be reported to the Captain, Company Representative and/or Station Engineer for further action as applicable.

(b) Adhere to any resulting load limitations according to the operator's instructions.

(c) Inform the onward stations of the load limitations according to the instructions of the operator's representative, if the defect cannot be rectified before departure.

4.5.5.3 Spills in Cargo Holds

(a) Spills can occur in cargo holds during unloading and/or loading and in flight due to:
1. Improper packaging
2. Damage due to mishandling prior to loading
3. Improper loading in the compartment

(b) Spills can be from liquids, gels, or material in a powdered or granulated form.

(c) Spills can be hazardous, corrosive, flammable, explosive, toxic, poisonous, etc. Even water can cause serious damage to electrical components and systems.

(d) Spills can be corrosive to the aircraft structure. Mercury spills are particularly corrosive to the extent that the affected aircraft structure may have to be completely replaced if the spill is not cleaned up quickly.
(e) It is essential that any spill is reported immediately so that corrective action can be taken.
(f) Initiate the local spill response plan for spill events.
(g) Request information from the respective Cargo Terminal Operator about the nature of what has leaked as well as the Safety Data Sheet, if applicable.

4.5.6 Loading

4.5.6.1 Load Handover

The handover process between cargo handling (cargo warehouse), baggage handling (baggage make-up area) and ground handling (ramp) departments shall be done systematically to ensure a safe departure.
Depending on the airport infrastructure and/or local agreements, the handover of cargo, mail and baggage to the ramp should be done at a dedicated handover point.

4.5.6.2 Load Transportation

Prior to transporting cargo and/or mail from the cargo warehouse or baggage from the baggage make-up area or baggage claim area, the equipment operator shall ensure that:
(a) The GSE used for transportation is serviceable for both loose loads
(b) Baggage carts appear to be serviceable and gates/covers/doors are correctly closed/installed prior to transportation
(c) They comply with any limitations regarding the maximum number of dollies in a 'train of dollies' as per local requirements.
(d) An inspection of all loads is carried out to ensure that:
1. The cargo, mail and/or baggage for transport is the correct load for the departing/arriving flight(s).
2. No nets, ropes, straps, protective materials, can drag on the ground or get jammed in rollers, ball-mats or wheels.
3. All built-up cargo/mail/baggage is safe to move and will not shift, roll or topple
(e) They receive all documentation, pouches and special instructions for the applicable flight, as per operating airlines procedures.
(f) There is no damage to the load.
(g) All loads are protected from adverse weather via use of tarpaulins or covered carts. When using tarpaulins, all straps shall be securely fastened to the cart.

4.5.6.3 Load Delivery for Departure

Depending on the location of the handover point the person responsible for aircraft loading supervision task or the person responsible for receiving the load shall:
(a) Receive all documentation, pouches and special instructions for the specific flight, if applicable
(b) Carry out an inspection of all the load to ensure that:

1. The load is correct for the departing flight(s).
2. No damage has occurred during the transport process.
3. There is no evidence of tampering with the load (e.g cuts, tears to plastic foil etc.)
4. No nets, ropes, straps, protective materials, etc. should drag on the ground or get jammed in rollers, ball-mats or wheels whilst manoeuvring or whilst being loaded onto aircraft.
5. All items of load are properly packed and will not damage nor contaminate the aircraft.
6. Container curtains, door(s), nets are fully closed/latched and secure in preparation for loading.
7. All items of load are fit to be loaded on the aircraft.

(c) Ensure the load is protected from adverse weather conditions, if applicable.

(d) Report any damage to the load/s, whether it discovered when the load arrives on stand or occurs during handling/loading, immediately.

(e) Report torn or missing baggage tags and cargo labels, and do not load unless corrected.

Note: Report any discrepancies e.g. spills, unusual fumes or smells, etc. prior to or during the loading to
the person responsible for aircraft loading supervision task or the weight and balance calculation task or
flight crew or local authorities as required, immediately.

4.5.6.4 Loading Process

(a) General
1 Loading shall not commence if there is no LIR (electronic or hard copy), unless otherwise specified by operating airline procedures.
2 Prior to loading commencing, a cargo hold inspection shall be performed (see GOM 4.5.5).
3 Carry out a visually detectable damage check prior to loading.
4 Carry out a visual inspection of all items of bulk load prior to loading to ensure no damage/leakage.

(b) Report any issues, errors, changes or other loading matters to the person responsible for the aircraft loading supervision task immediately.

(c) Any signs of hold damage must be reported immediately.

Notes:
1 A tactile check shall be performed by checking the security of each lock to ensure serviceability. A systematic double-check of the restraint system and of special loads (e.g., heavy (HEA), AVIH, human remains (HUM), etc.) before departure is recommended.
2 If applicable, ensure fire barriers are installed as the hold is loaded.

(e) While loading into bulk holds, the person carrying out the loading of baggage/cargo/mail shall:
1 Load in accordance with LIR requirements.
2 Cross-check cart labels to ensure the load is correct.

3 Check cargo, mail and baggage labels to ensure correct destination/flight number.
4 Ensure any leaking or damaged loads are not loaded and the supervisor is informed immediately. Any contaminated load is kept separately.
5 Ensure applicable special load items are tied down (see GOM 4.5.7) or otherwise secured in accordance with operating airline requirements.
6 Install/close/secure compartment/bay divider nets, barrier nets, fire curtains, door nets and stanchions, as applicable.
7 Ensure light packages are not loaded or wedged between heavier items.
8 Ensure the necessary clearance between the load and aircraft hold ceiling is achieved to avoid any obstruction or damage to aircraft smoke detector/fire suppression system. Specific requirements given by the operating airline shall be followed.
9 Loads shall be correctly stacked to achieve maximum volume.
10 Confirm the final loading status to the person responsible for the aircraft loading supervision task.

Notes:
1 Between unload and onload, compartment nets shall be secured inside aircraft compartments and not left hanging outside to avoid clips and attachment points striking the fuselage, especially during adverse weather.
2 Ensure the ramp area is clear of all wooden and/or plastic pallets and other load related material after completion of loading or unloading.

4.5.7 Securing of Load

4.5.7.1 General Rules

When transporting a load in an aircraft, it shall be secured such that:

(a) It shall not move during the flight, which could dangerously affect the weight distribution and balance of the aircraft.
(b) It shall not cause damage to the aircraft structure or other important parts of the aircraft.
(c) It shall not cause damage to another load or become damaged itself.
(d) In case of an emergency landing, neither passengers nor crew are injured by the load.
(e) Cause injury to ground handling personnel during loading and unloading.

4.5.7.2 Bulk Compartments

(a) The Load in bulk compartments is generally secured by door nets and net sector divider nets. Ensure that following items are always secured:
    1. Barrels or drums filled with liquids
    2. Cages or boxes with live animals (AVI)
    3. Heavy pieces (HEA) weighing 150 kg (330 lb) or more
    4. Coffins with human remains (HUM)
    5. Dangerous Goods (see 4.5.7.7)
    6. Powered mobility devices
    7. Load which needs spreading
    8. Fragile loads

(b) The following loads shall not move vertically upward or horizontally during flight. If the available volume of the compartment or net section is not volumetrically filled (three quarters of the height) with load, additional securing is necessary for:
1. Load which is sensitive against shocks or tilting
2. Wet cargo
3. High density packages
4. Pipes, tubes, bars, beams, planks, poles or other objects of a penetrating nature

(c) If long pieces do not fit into one net section and the divider net cannot be closed correctly, check with the operator's manual for load restrictions. Refer to operating airline procedures for further requirements.

(d) For battery-powered wheelchair and mobility devices ensure:
1 It is loaded/unloaded in such a manner that prevent unintentional activation during transport and the battery terminals shall be protected from short circuits (refer to IATA DGR).
2 The battery is either adequately protected against damage by the design of the mobility aid and securely attached to the device with the electrical circuits being isolated following the manufacturer's instructions, or
3 Removed from the mobility aid following the manufacturer's instructions.

Note: Battery-powered wheelchairs or mobility devices for use by passengers are classified in three main categories based on the battery type that powers the device as defined in DGR Manual 2.3.2.2-2.3.2.4

4 It does not roll when moving up the loading belt in an upright position. If tilting is necessary, ensure the passenger has consented and can only be done on the side without the device controls.
5 It shall be secured against movement in the cargo compartment, by use of straps, tie-downs, or other restraint devices.
6 The mobility aid, including batteries, electrical cabling and controls shall be protected from damage, including damage caused by the movement of baggage, mail, and cargo.
7 Any battery-powered mobility aid shall not be stowed together with loose loaded (bulk) items within a unit load device (ULD) or other loads loaded on top.

Notes:
1 When securing use tie-down points, keep the mobility aid in an upright position where possible, secure the mobility aid using the base frame, avoid unnecessary tilting of the mobility aid, ensure adequate clearance when loading/unloading, avoid over-tightening tie-down straps or other securing devices, load last when possible.
2 The pilot-in-command shall be informed of the location of the mobility aid with installed batteries, removed batteries and spare batteries.

4.5.7.3 Securing of ULDs

Eastern Airways does not operate aircraft accommodating ULD's.

4.5.7.4 Tie-Down

Definition of forces

Tie-down load on board of the aircraft properly to withstand the following different forces during take-off, flight and landing.

Force	Definition
Forward	Horizontal forces effective during landing and steep angles of descent
Backward	Horizontal forces effective during take-off and steep angles of climb
Sideward	Horizontal forces effective during rough landing, turbulence and close turns
Upward	Vertical forces effective during landing and heavy turbulence in flight

Depending on the flight situation, the ultimate forces can be stronger than the normal gravity force of 1 g.

Secure all loads against the different forces according to the gravity factor (‘g-factor’).
In general the ULD build up is done with a net which restraints the load against all forces.

Tie-down of load with straps or ropes

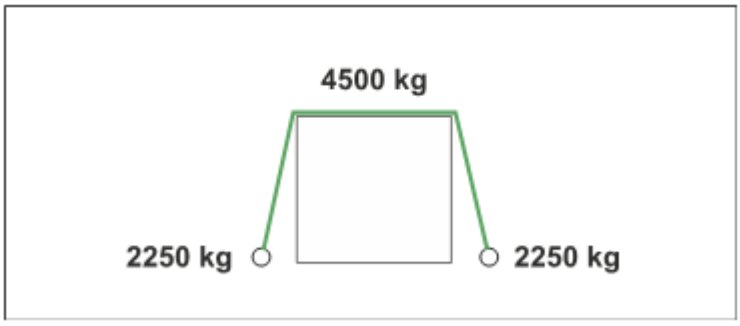
If the primary restraint of the load is done by straps, tie-down must be carried out according to AHM 311 or ULDR (OS 6/07)

The usage of tie-down material with different capacities is not allowed.

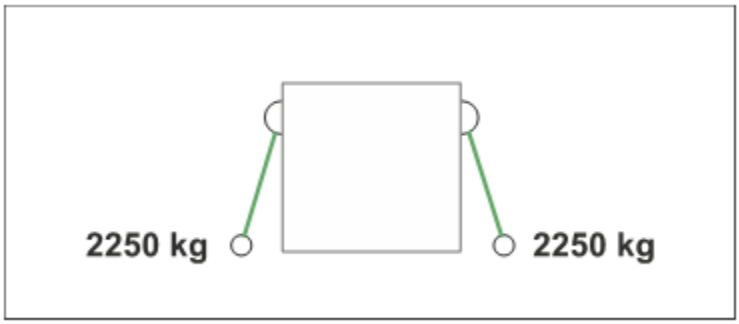
There are two ways to secure a package with tie-down ropes or tie-down straps:

(a) Lashing across or around a package (embraced lashing)
The embraced lashing method with tie-down straps or tie-down ropes is to fasten the strap or rope from one tie-down fitting across or around the load to a second tie-down fitting on the opposite side.

A strap attached to the fittings on opposite sides of the load is rated for twice its ultimate load capacity, e.g. an ETSO/TSO-C172 strap with 2,250 kg (5000 lb) rated restraint capacity will provide up to maximum 4,500 kg (10000 lb) ultimate load for standard lashing.



(b) Lashing directly fastened to the package (direct lashing)
If a tie-down strap is directly fastened to the load with one tie-down fitting, the ultimate restraint capacity of the strap, e.g. an ETSO/TSO-C172 strap with 2,250 kg (5000 lb) ultimate load, will apply.

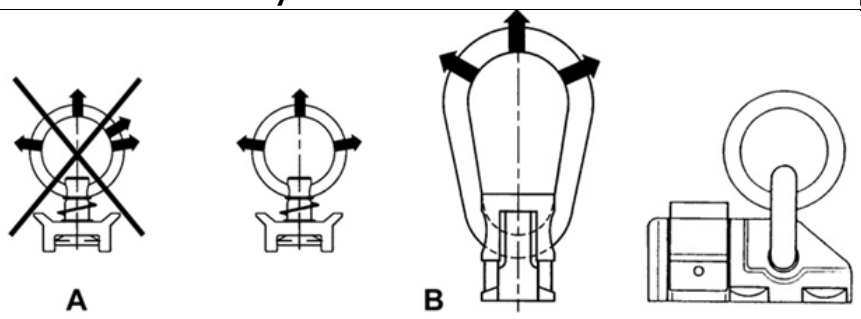


4.5.7.5 Use of Tie Down Material

Make sure that tie-down material is in a serviceable condition.

(a) Tie down ropes
1. Fix tie-down ropes to the aircraft floor tracks or tie-down fittings.
2. Make sure that the overlapping ends of the tie-down ropes are long enough and will not loosen in the case of sudden stress.
3. Fix the tie-down ropes to the tie-down rings in a way that they may be easily loosened for unloading.
4. Do not fix tie-down ropes to other parts of the aircraft.
5. Do not use the same attachment points for lashing, which are used to secure the net sector divider nets.

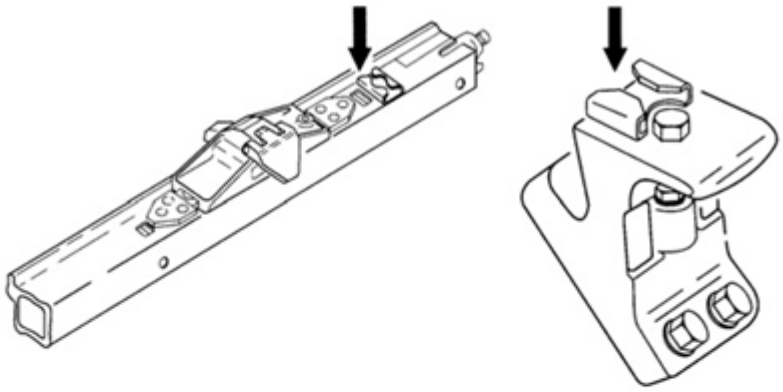
(b) Tie down fittings
A single tie-down fitting may receive up to three straps/ropes in three different restraint directions (one up and two opposite horizontal directions). Forces generated by the load can never act in more than one direction at the same time; thus, the fitting will never be pulled by more than one strap/rope at the same time. Therefore, a fitting may never receive more than one strap/rope in the same direction.



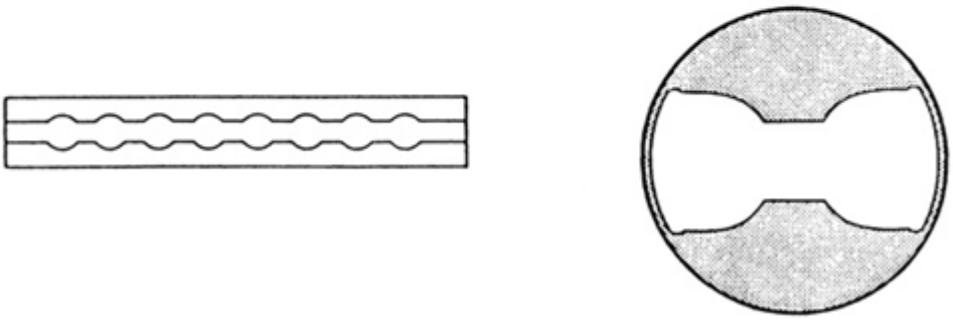
Alpha -Numeric	DESCRIPTION
A	Forbidden
B	Allowed

Fix tie-down rings to the aircraft floor only at tie-down points or tie-down tracks
Distribute the attachment points of the tie-down rings evenly (nearly equal distances) over the length of
the piece

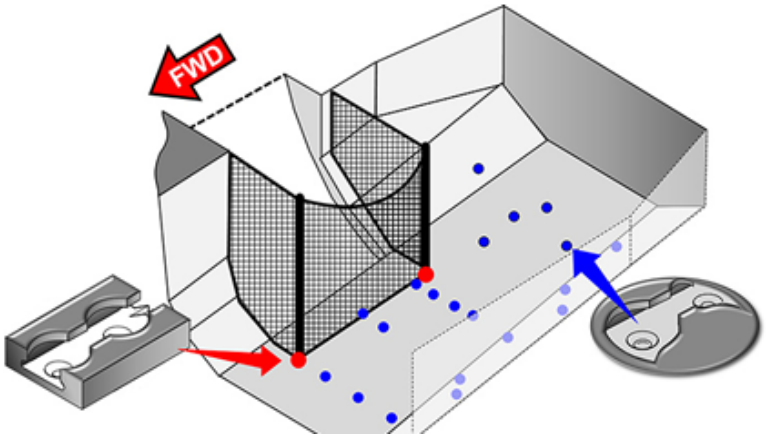
Example of tie down attachment points on outboard side lock and side guide



Example of tie down attachment points on track and anchor plate



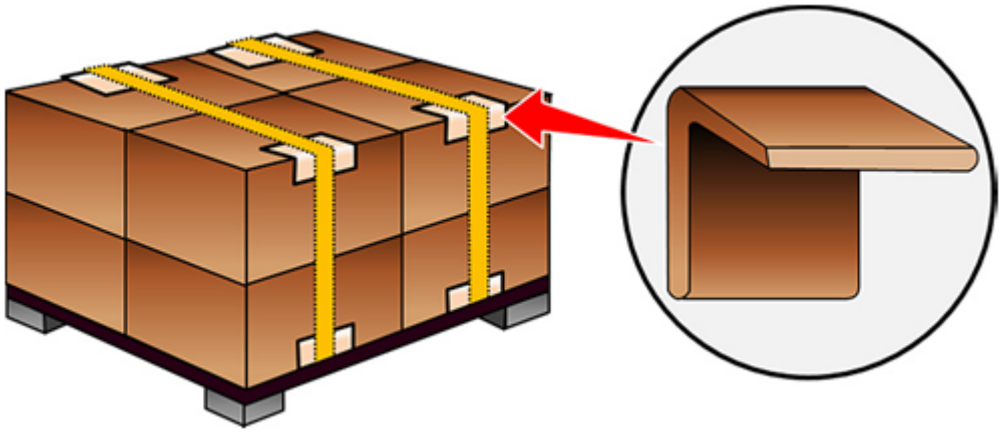
Example of tie down attachment points in the bulk compartment



(c) Tie down straps
Use only certified ETSO/TSO C172 tie-down straps
Fix tie-down straps to the aircraft with their fixed tie-down rings only at tie-down points or tie-down tracks

(d) Tightening
1. Tighten the lashing strongly, but not so strong that load or tie-down material is damaged
2. Make sure that all tie-down ropes or tie-down straps used for lashing the same piece have the same tension
3. To protect fragile or sensitive cargo or dangerous goods, use cloth, cardboard or similar material for edge protection

(e) Sharp edges
To avoid cutting or grinding of tie-down ropes or tie-down straps smoothen sharp edges with a piece of soft materials (e.g. cloth, cardboard, plank or similar)



4.5.7.6 Standard Lashing

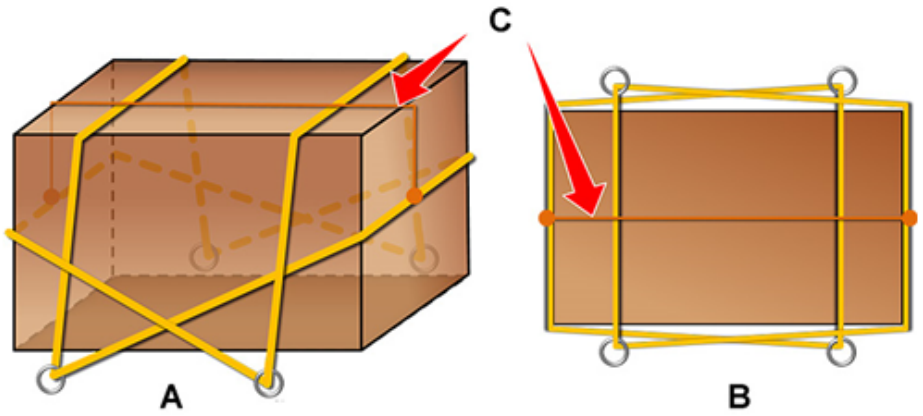
For standard lashing use:

(a) 4 tie-down rings

(b) 4 tie-down ropes or tie-down straps

1. 2 against upward forces
2. 1 against forward forces
3. 1 against backward forces
4. 1 safety rope

The safety rope prevents the tie-down ropes or tie-down straps used against forward and backward forces from sliding down.



Alpha-Numeric	DESCRIPTION
A	Isometric View
B	Top View
C	Safety Rope

Sideward forces

Sideward forces are normally covered by the standard lashing for upward, forward and aft, but the rope/straps shall be close to the pieces.

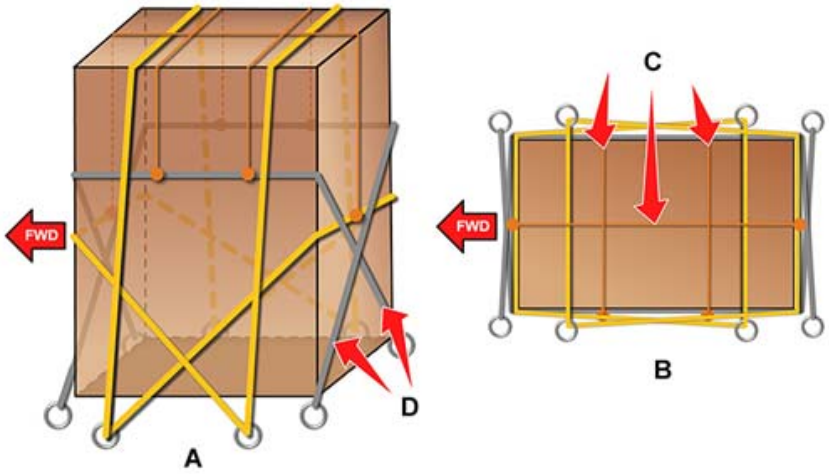
Exception

If a piece is more than twice as high as wide:

(a) Tie-down against sideward forces additionally to the standard lashing

(b) Place this additional lashing between half and two third of the height

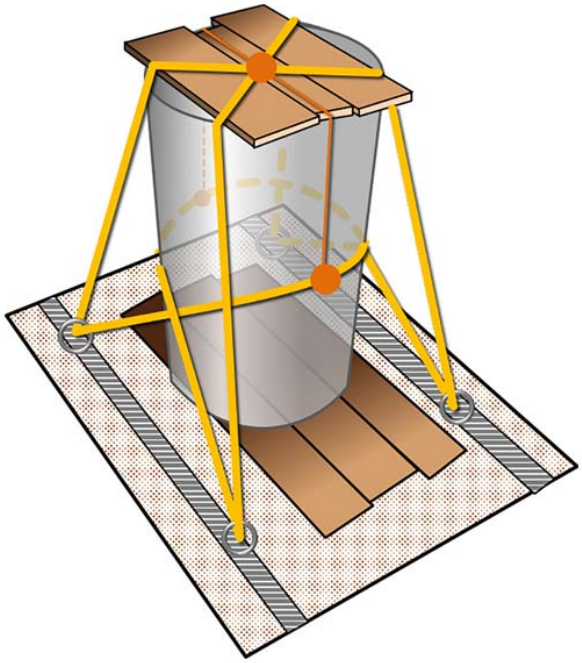
(c) Secure this lashing by two safety ropes to prevent them from sliding down



Alpha-Numeric	DESCRIPTION
A	Isometric View
B	Top View
C	Safety Rope
D	Additional Lashing

Barrels

Barrels are difficult to lash because of their round shape and mostly sharp rims. Use supporting planks for a safe lashing.



4.5.7.7 Securing of Dangerous Goods

(a) Handle dangerous goods with utmost care to prevent any damage to persons or goods

(b) Strictly observe all special handling instructions, labels or imprints (e.g. 'This Way Up!' or arrows showing the proper orientation of the package)

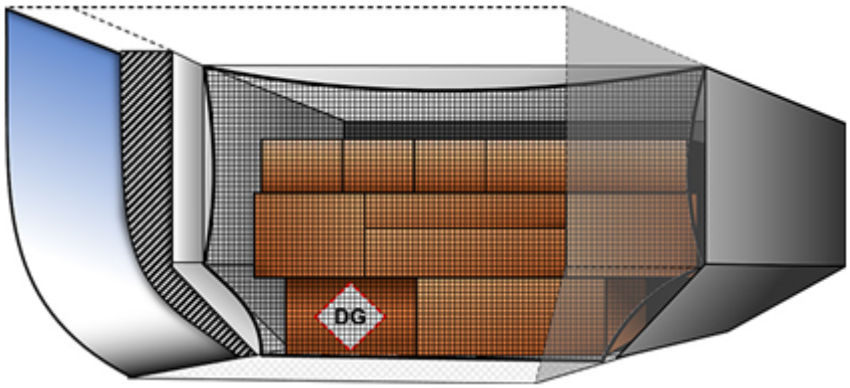
(c) On a pallet, securing by tie-down is not necessary if all load on the pallet including the dangerous goods package is secured by the pallet net

(d) In a bulk compartment or a container securing by tie-down is not necessary if the package cannot move horizontally or vertically. The net section or container must be volumetrically full (three-quarters of the height) and the entire floor area must be covered

Observe the securing requirements as shown below:

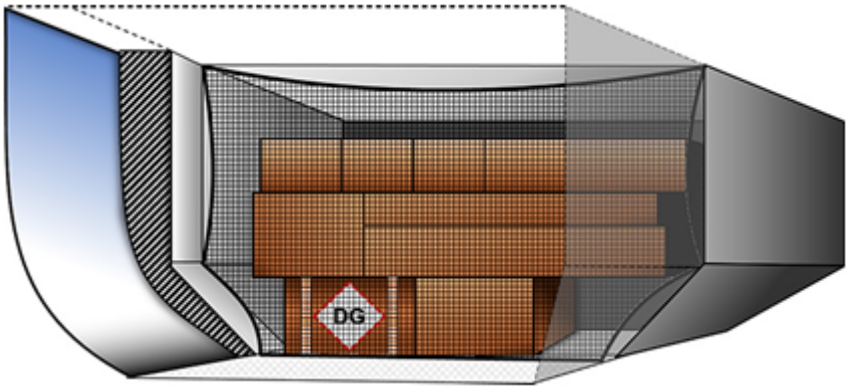
Example 1.

When the net sector in the bulk compartment or a lower deck aircraft container is volumetrically full including the entire floor area, securing by tie down is not necessary.



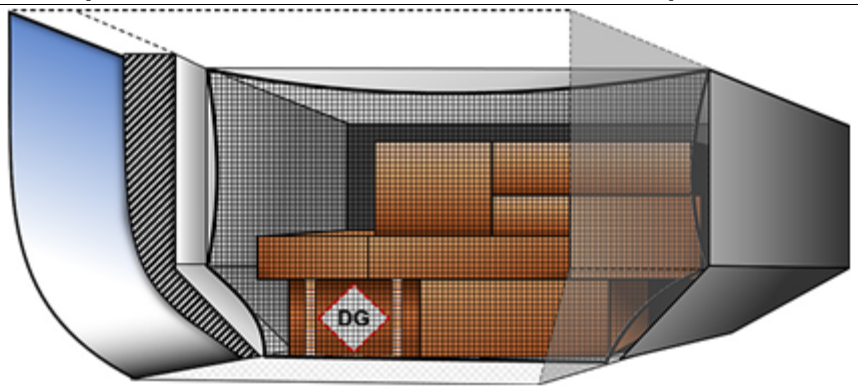
Example 2.

The entire floor area of a container or lower deck aircraft container is not filled completely with another load, tie-down the dangerous goods package to prevent any movement.



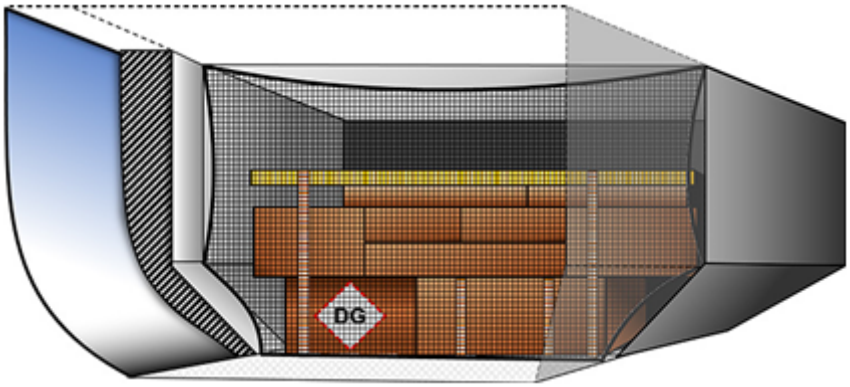
Example 3.

If the net-sector in the bulk compartment or container, which is not volumetrically full, tie-down the dangerous goods package to prevent any movement.



Securing of small DG packages
If securing by tie down in a net sector or container is not possible because of the small size of the package:
Fill the net sector or container as shown above (see Example 1), or
Put planks on top of the package (see Example 4) to make securing by tie down possible
If neither is possible, do not load the package

Example 4.
The net-sector in the bulk or a container is not volumetrically filled; tie down of all items is required.



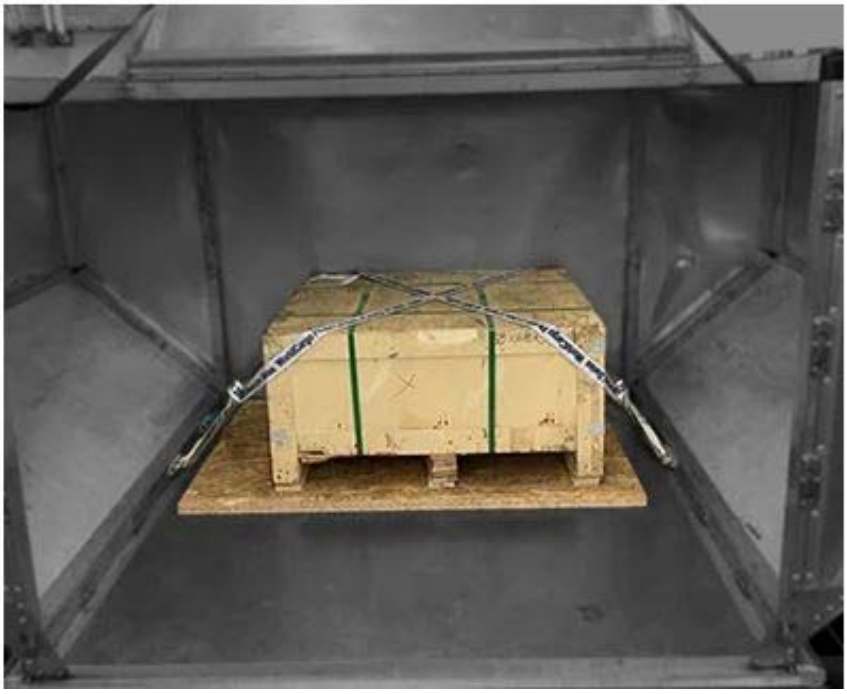
4.5.8 Load Spreading

When the weight of item(s) to be loaded exceeds the maximum floor load per square meter or the maximum floor load per running meter of a compartment, the weight must be spread to prevent damage to the compartment floor. This applies to Heavy Loads (HEAs), but may also apply to smaller items weighing less than 150 kg (330 lb). The item must be fully restrained (see example below) and can be spread by making use of wooden boards or beams.

Caution:
Overloading can cause damage to aircraft frames and ribs and consequently can have serious implications for the safety of the aircraft.

The weight can be spread by making use of spreading wood, in which case:
(a) The surface to support the weight will be enlarged.
(b) The length will be enlarged.

The Load Agent or Cargo Agent will advise the spreading requirements for each item. The information will be notified on the LIR.



4.5.9 Unit Load Devices

Eastern Airways does not operate aircraft requiring ULD's.

4.6 Aircraft Departure

4.6.1 Release of Aircraft by the Dispatcher

The Dispatcher must be responsible for coordinating all ground activities for an aircraft turnaround. The role of the dispatcher is to;

(a) Oversee and control handling activities and to ensure a safe and timely dispatch of the aircraft.
(b) Communicate effectively with the loading team concerning the loading of baggage and freight and ensure that all documentation for the flight is present and completed correctly (LIRF, PNL, Loadsheet etc).
(c) Inform the Aircraft Commander when the aircraft turnaround is complete and is ready to depart.
(d) Ensure that a minimum 10% of hold bags (including J41 cabin baggage) are randomly selected and cross checked to ensure correct baggage is loaded for the flight.
(e) Record on the flight file;
1. Bag tag number

For stations that use the automated baggage scanning system at the aircraft as they are being loaded are 100% reconciled by the system and therefore a 10% baggage cross check is not required by the dispatcher.

4.6.1.1 Introduction

A departure is normally conducted with a dialogue between flight crew and ground staff in charge of the departure via an interphone. This procedure ensures the highest level of safety during departures based on a precise exchange of information. The ground person in charge of the departure operation shall maintain continuous contact with the flight crew and is responsible for the ground manoeuvre.
The scope of this departure procedure is limited to conventional towbar and towbarless pushback operation.

Note: *The term "headset" also applies where an interphone system is used.*

4.6.2 Action Prior to Departure

Prior to departure of the aircraft, make sure that:

(a) The ramp area is clear of all FOD and any equipment.
(b) The apron surface condition is sufficiently free of ice, snow, etc., to ensure safe aircraft movement.
(c) The ramp area is free of objects/obstacles which may be impacted by the aircraft or may endanger others due to jet blast effects.
(d) All persons not involved in the aircraft departure operation must remain clear of the departing aircraft, behind the ERA.
(e) Additional ground staff such as Wing Walkers are present (if applicable/required).
(f) Verbal communication with flight crew is established by means of an interphone system, departures using marshalling hand signals without any headset communication are only conducted in exceptional cases.
(g) In the event an ASU is required for engine start, communicate with the flight deck crew on ASU positioning and engine start sequence.

Note: *Prior to connecting the tractor to the aircraft, the tractor may be parked in front of the aircraft or outside of the ERA, but never behind the wings.*

4.6.3 Pre-Departure Check

4.6.3.1 Pre-Departure Walk Around Check

The walk around should start as soon as possible after all ground servicing activities have been completed.

Walk around the entire aircraft at a normal walking pace. The check shall start as close as possible to departure time. If any part of the aircraft still has GSE engaged at the time of the check, or if GSE re-engages with the aircraft after the check, the applicable area(s) must be re-inspected.
The pre-departure walk around check shall include the following:

(a) The apron is clear of all FOD items that may cause aircraft damage or pose a risk.
(b) All GSE and passenger boarding devices are detached.
(c) The stand area is clear of obstructions. GSE and vehicles are positioned clear of the aircraft path.
(d) Adequate clearance exists between the aircraft and facilities or fixed obstacles along the aircraft movement path.
(e) All aircraft servicing panels and/or hatches are closed and secured (except - external power and headset panels).
(f) Cabin/cargo access doors are closed and:
1. handles are flush with the fuselage and where applicable all other visible indicators confirm that the doors are correctly locked;
2. there is no visible damage on the aircraft, particularly around cabin and cargo access doors.
(g) Any abnormalities on the aircraft observed (e.g. obvious damage, fluid leakage, unremoved pitot covers) are immediately brought to the attention of the flight crew and maintenance.
(h) Items such as propeller straps ad tail stands are removed.
(i) Landing gear safety pins are removed.
(j) There are no obvious signs of unmarked dents or other skin panel damage.
(k) Ensure equipment used is suitable for the aircraft type.

Note 1: *In the event of the aircraft returning to stand, the pre departure walk around check must be repeated.*

Note 2: *It is essential to have adequate lighting when doing the walk around check. If the lighting is insufficient, use a torch.*

Caution:
If any of the above conditions or actions are not met, inform your supervisor, maintenance and the pilot in command. This may affect the safety of the intended flight.

4.6.4 Wheel Chock Removal

(a)Headset Operator:
(a) via the interphone, confirm the aircraft parking brakes are set.
(b) check all GSE have been disconnected from the aircraft.
(c) check the passenger boarding stairs have been retracted from the aircraft, if applicable.

(d) check the tow tractor and tow bar are fully secured to the nose gear and parking brakes are set on the tractor, if applicable.
(e) for towbarless tractor operation, check that equipment is fully secured to the applicable landing gear and parking brakes are set on the tractor, if applicable:

(1) remove chocks at applicable gear only and leave remaining chocks in place until departure
(2) nose gear wheel chocks may be removed without notification for the purpose of tractor connection provided the main gear wheel chocks are still positioned (except for main gear towbarless tractor).
(f) give clearance to ground staff to remove chocks.

Note 1: *If a chock is stuck, the responsible personnel removes it by tapping it with a spare chock or moving the aircraft after the aircraft brakes have been released.*

Note 2: *Responsible personnel stow chocks in their designated stowage place.*

Note 3: *Nose gear wheel chocks may be removed without notification provided the main gear wheel chocks are still positioned.*

Note 4: *Once high wind or icy conditions have passed, any additional chocks that were added to the aircraft may be removed so that chock placement reverts to that for normal conditions.*

Note 5: *If hand signals are used (i.e. aircraft interphone system is inoperative) the person performing the hand signal shall:*
(i) Display the 'Set Brakes' hand signal
(ii) Receive confirmation from the flight crew when they display the 'Set brakes' hand signal in response
(iii) Remove chocks.

Caution:
Do not remove the MLG chock until:

(a) All GSE (with the exception of the PBB, passenger stairs(s), GPU and ASU) is removed from the aircraft;
(b) The pushback vehicle is connected to the aircraft;
(c) The parking brakes of both the pushback vehicle and the aircraft are set.

4.6.5 Pre-Departure Table

Pre-Departure Table printable version General

Prior to aircraft movement, the responsible ground staff (headset operator) must ascertain that the following requirements are met:

Legend: **TT**–towbar tractor **TBL**–towbarless tractor **PPU**–powered push unit

ACTION	APPLICABLE TO				
	PUSHBACK		TOWING		TAXI OUT
	TWT	TWL	TWT	TWL	
The required predeparture servicing checks are completed.	✓	✓	✓	✓	✓
Fire protection devices are available and correctly positioned (as per local rules).	✓	✓	✓	✓	✓
The tractor and towbar combination, if applicable, are suitable for the operation, considering the aircraft type and weight as well as weather and surface conditions.	✓	✓	✓	✓	
The nose gear steering bypass pin is installed correctly, or the nose gear steering torque links are disconnected, if applicable, or the nose gear steering mechanisms are set as required for pushback (as applicable to the aircraft type).	✓	✓	✓	✓	
Communication with flight crew/brake operator and responsible ground staff member is established via interphone system.	✓	✓	✓	✓	✓
Aircraft main landing gear (MLG) chocks are installed, and nose gear chocks are removed, if applicable.	✓	✓	✓	✓	
Aircraft nose gear chocks are installed and MLG chocks removed, if applicable.					
Additional staff, such as wing walkers, are present, if applicable/required.	✓	✓	✓	✓	
If an air start unit (ASU) is required, check the equipment is correctly positioned and suitable for the operation.	✓	✓			
If an ASU engine start is undertaken, communicate to confirm ASU positioning and engine start sequence with the flight crew.	✓	✓			
All persons not involved in the aircraft departure operation are clear of the departing aircraft, outside the ERA, and remain clear of the aircraft and pushback equipment throughout the pushback maneuver.	✓	✓	✓	✓	✓
The GSE is parked in designated locations outside the ERA, and the intended path of the aircraft remains clear of equipment and other obstacles throughout the pushback maneuver.	✓	✓	✓	✓	✓
The PBB is fully retracted and parked in its designated parking location, if applicable.	✓	✓	✓	✓	✓
The ERA and the path/area that the aircraft will move toward is clear of FOD, and remains so throughout the pushback maneuver, ensuring safe aircraft movement.	✓	✓	✓	✓	✓
The stand surface condition is sufficiently free of ice, snow, etc., to ensure safe aircraft movement.	✓	✓	✓	✓	✓

ACTION	APPLICABLE TO				
	PUSHBACK		TOWING		TAXI OUT
	TWT	TWL	TWT	TWL	
The ramp area is free of objects/obstacles that may be impacted by the aircraft or may endanger others due to jet blast effects.	✓	✓	✓	✓	✓
The air intake and blast areas of the aircraft engines are clear of persons and obstacles, such as GSE.	✓	✓			
All persons involved in the aircraft movement stay well clear of the danger areas around the tractor, landing gear and aircraft engines.	✓	✓	✓	✓	
Flight crew/brake operator confirm that the aircraft parking brake is set.	✓	✓	✓	✓	
Completion of the predeparture table is indicated to the flight crew.	✓	✓	✓	✓	
A qualified brake operator is in the cockpit, where required by operating airline procedures.			✓	✓	
Cross-reference with *IGOM*	*4.6.4.2*	*4.6.4.3*			

Note: *Where a remote-controlled pushback tractor connected to the nose gear is used, TWL predeparture activities shall apply.*

Danger:
It is critical that the responsible ground staff member (headset operator) establishes verbal communication with the flight crew via the aircraft interphone system, as departures using marshalling hand signals without headset communication shall only be conducted in exceptional cases.

4.6.6 Engine Start using Air Start Unit (ASU)

(a) Only personnel and equipment involved in engine starting or aircraft pushback are permitted within the ERA during engine start.

(b) Personnel and equipment involved in the engine start shall remain clear of engine danger areas.

(c) Establish communications with the flight crew and confirm the total number of engines to be started, the engine start sequence to be used, the number of ASUs being used and their positioning.

(d) Advise the engine start sequence to the ASU operator(s) and any other ground staff.

(e) Where possible, the ASU should be positioned on the opposite side of the aircraft to the engine being started.

(f) The ASU shall be positioned in accordance with the following to prevent damage to the aircraft and personal injury.

1. It will not hamper other ramp operations, such as loading and fuelling.
2. It is parked outside the engine danger areas (if possible).
3. It is parked at least 2 metres from the aircraft.
4. The towbar is directed away from the aircraft and coupled to the tractor to simplify its removal after engine start-up (towed ASU).
5. It could be easily removed after engine start-up, avoiding the engine danger areas.
6. The exhaust pipe of the unit is directed away from the aircraft fuselage and wing.

(g) When connecting the air supply hose to the aircraft, ensure that:

1. The air supply hose is laid in such a way as to avoid any twists that could affect the air flow.
2. The aircraft receptacle is free from FOD or any fluid.
3. Ensure that the air supply hose coupling is firmly attached to the aircraft connector and pressurize the ASU after consulting the flight crew.

***Caution**: If the ASU is positioned within an engine danger area, ensure that this engine will only be started after disconnection/removal of the ASU.*

(h) If the aircraft is to be pushed back, connect the pushback tractor and set the tractor's parking brake, where this is possible without disconnecting ground electrical power.

(i) If a pushback tractor is not connected, position a chock in front of the nose wheel.

(j) Confirm with the flight crew that the aircraft parking brake is set, then remove main gear chocks.

(k) The ASU operator shall ensure the unit is ready to supply air pressure.

(l) The headset operator shall inform the flight crew that the ground crew are ready for engine start.

(m) Prepare for engine(s) start (see IGOM 4.6.6.2 Departure Communication Dialogue and Signals, for communication requirements).

(n) When engine start is complete, the headset operator shall signal the ASU and ground power operator(s) to disconnect the ASU and remove ground power.
(o) Disconnect the ASU hose(s).
(p) Close and latch external air start and electrical panels.

***Note**: Some aircraft types may require other equipment such as GPU to start engine in case of APU failure. Refer to operating airline procedures.*

Danger:
When connecting and disconnecting ASU hose(s), walk directly underneath the fuselage, or close alongside it, keeping clear of engine danger areas.

4.6.7 Communication Requirements

4.6.7.1 Communication During Engine Start

Coordinate the engine starting sequence with the flight crew by conducting a pre-departure briefing and refer to the GOM Appendix A-E for any specific engine start procedures.

(a) During the engine start communicate with the flight crew only if you observe circumstances that require immediate notification and action by the flight crew.
(b) In case of starting up with an ASU, supply the pressure at the request of the flight crew.
(c) If ramp conditions are below standard for a normal pushback (e.g., hazards, obstacles, slippery, icy), the in charge of pushback will inform the flight crew that engine start clearances will not be given until either:
1 The aircraft is moving over an area of the ramp where the conditions are safe for an engine start, or
2 The pushback has been completed, the aircraft has come to a complete stop and the parking brake has been set.

***Note:** From the captain's seat facing forward, engine on his/her left is referenced as engine number one.*

4.6.7.2 Communication During Engine Fire

Engine Fire

The Flight Crew normally detects an engine or APU fire and will take action using the engine fire extinguishing system. However, alert the flight crew immediately via the headset if flames are noticed from the engine or engine pylon.
In the event that a headset is not available, the appropriate "Fire" hand signal must be used. (Refer
to the Marshalling Hand Signals section in this chapter)

Tailpipe/Exhaust Fire

If you notice flames from the engine tailpipe during engine starting, alert the flight crew immediately, as such a fire might not be detectable via temperature sensors and/or fire warning systems in the aircraft.

Caution:
Do not fight engine fires with fire extinguishers on the ground when the flight crew is in the flight deck. The flight crew will take all necessary action.

4.6.7.3 Staff Safety During Pushback Maneuver

A Tow Bar/TWL Tractor Operations

1Throughout the pushback operation, all staff walking on the ramp (including the headset operator when the aircraft is moving) shall remain clear of:

i. The area on the ground directly under any part of the aircraft (including, but not limited to, the fuselage, wings, stabilizer, engines, nose gear)
ii. The aircraft's path
iii.The tractor's path
iv. Engine danger areas

2 The headset operator shall:

i. Be in visual contact with the tractor driver throughout the pushback
ii. Avoid walking backwards and maintain situational awareness to reduce the possibility of tripping
iii. Use a headset cable long enough to operate safely and be allowed freedom of movement while not posing a trip or tangle hazard (not applicable when a wireless headset is used)
iv. Ensure the headset cable remains clear of aircraft/pushback wheels

3 If the responsible ground staff member is too close to the nose gear or pushback equipment, the tractor driver shall stop the pushback and review the required safety clearance conducted.

B Remote-Controlled Pushback Operations

When pushback operations are undertaken using remote-controlled pushback equipment connected to the NLG, the responsible ground staff member shall:

1 Stand forward of the aircraft
2 Follow its movements and always be in sight of the flight crew
3 Stay outside the engine's intake/suction area and wheel path of the aircraft during the entire pushback maneuver
4 Maintain sufficient clearance between the equipment and themselves throughout the pushback maneuver, where the pushback equipment is connected to the NLG
5 Be in continuous communication with the flight crew via the interphone system

4.6.8 Departure Communication

4.6.8.1 General

Departure communication outlined in this section is a basic standard for both pushback and open ramp (taxi out) departures.
This specific dialogue does not forbid the exchange of additional important information between flight crew and ground staff using non-standard phraseology (e.g. request for authorization to disconnect ground support units etc.).

Note: *If the pushback must be stopped, the following call will be made: STOP PUSH BACK.*
Where applicable, use "pull out" instead of "pushback".
Only engage the towbarless tractor and lift the aircraft once the passenger boarding device has been
removed from the aircraft and the flight crew has requested for pushback.

4.6.8.2 Departure Communication Dialogue

Departure Communication Dialogue

In case of an aircraft taxi-out, "Pushback" and "Pushback completed" phases are not applicable. The dialogue is a sample communication to be used for a departure:

Dialogue between Ground Staff and Flight Crew				
Phase	**Ground Staff**		**Flight Crew**	
Preparation		Inform the Flight Crew about the use of a towbar or towbarless tractor (if applicable)		
	Call:	CONFIRM PARKING BRAKE SET		
			Reply:	PARKING BRAKES SET
			Call:	CONFIRM BYPASS PIN INSERTED/NOSE WHEEL STEERING DEACTIVATED (if applicable)[1]
	Reply:	BYPASS PIN INSTALLED/NOSE WHEEL STEERING DEACTIVATED (if applicable)[1]		
			Call:	CONFIRM CLEAR TO PRESSURIZE? (if applicable)
	Reply:	CLEAR TO PRESSURIZE (if required)		
After completion of the pre-departure servicing checks	**Call:**	PRE-DEPARTURE CHECKS COMPLETED		
	Call:	ELEVATING AIRCRAFT[2]		
	Call:	READY FOR PUSHBACK[1]		
			Reply:	STANDBY
Pushback			**Call**	PUSH-BACK APPROVED (MENTION AIRCRAFT NOSE DIRECTION, START-UP POINT, PULL FORWARD, ETC.)
	Call:	CONFIRM PARKING BRAKE RELEASED?		
			Reply:	PARKING BRAKE RELEASED
	Call:	COMMENCING PUSHBACK (MENTION AIRCRAFT NOSE DIRECTION, START-UP POINT, PULL FORWARD, ETC.).		
Engine start	**Call:**	CLEAR TO START ENGINES.		
			Reply:	STARTING ENGINES (MENTION ENGINE START-UP SEQUENCE)
Pushback completed	**Call:**	PUSHBACK COMPLETED, SET PARKING BRAKE.		
			Reply:	PARKING BRAKE SET.
Disconnecting			**Call:**	CLEAR TO DISCONNECT.
	Reply:	DISCONNECTING, HOLD POSITION AND WAIT FOR HAND SIGNAL ON YOUR LEFT/FRONT/RIGHT (DISPLAY THE STEERING BYPASS PIN (IF APPLICABLE TO THE AIRCRAFT TYPE) TO THE FLIGHT CREW		
			Reply:	HOLDING POSITION AND STANDING BY FOR HAND SIGNAL ON THE LEFT/FRONT/RIGHT

1 Applicable to departures with towbar and towbarless tractor.

2 If required, applicable to towbarless tractors.

4.6.8.3 Items to be Communicated between Ground Staff and Flight Crew

Phase	Task	Ground Staff Action
Departure Preparation	GPU removal	When instructed by flight crew, remove GPU.
	Towbar/Towbarless Tractor connection	(a) Get confirmation that the aircraft's parking brake is set. (b) Get confirmation that the nose wheel steering is depressurized or advise flight crew that the bypass pin is inserted (if applicable). (c) Connect the Towbar. (d) Connect the Towbarless tractor.
	Chock removal	(a) Get confirmation from flight crew that aircraft parking brakes are set. (b) Remove chocks.
	Pre-departure check	Advise the flight crew that the pre-departure check has been completed or communicate any discrepancies.
Engine Start	Starting engines	When requested by the flight crew, advise when the engines may be started and the start sequence.
	ASU	When requested by the flight crew, signal to the ASU operator to supply the required pressure.
Pushback [and engine start]	Brakes	Get confirmation that aircraft's parking brakes have been released.
	Movement of the aircraft (pushback/ pull out)	Get permission from flight crew, to commence the pushback.
	Direction of push/nose	If applicable, ask in which direction the aircraft has to pushed/in which direction the nose should point after pushback.
	Engine start	When requested by the flight crew, advise when the engines may be started.
Pushback completed & Engine start completed	Towbar/Towbarless Tractor disconnect	(a) Get confirmation that the aircraft's parking brake is set. (b) Disconnect. (c) Remove the steering bypass pin–where applicable.
	Headset removal	(a) Get permission from flight crew to disconnect the headset. (b) Advise flight crew to hold position and wait for visual signal at left/right of the aircraft.
Departure	"All Clear" signal	(a) Ensure verification of pin removal has been completed–if applicable. (b) Give the "All Clear" signal when the path of the aircraft is clear of all obstacles. (c) Get acknowledgement of "All Clear" signal.

4.6.8.4 Departure Communication without Interphone

An aircraft departure shall always be conducted using interphone communications. Wireless headsets should not be used.

If the interphone becomes unserviceable or under extreme circumstances where the interphone is not available, you must use conventional hand signals (see GOM 3.4.6 and 3.4.7) for the departure and be in continuous visual communication with the flight crew. (not applicable to main gear pushback unit departures).

Prior to departure a briefing must be held between the Captain and the ground agent responsible for the departure, including:

(a) Review of departure specifics, e.g. direction of movement, final positioning, and taxi out direction;
(b) The hand signals to be used, including emergency signals.

Caution:
Read back all given instructions or acknowledge them in a manner clearly indicating that they have been understood and will be complied with.

4.6.9.5 Re-Establishing Communication After Departure

This procedure is to be used in case the ground staff or flight crew wishes to re-establish interphone communication after it has been disconnected.

4.6.9.5.1 Initiated from the Cockpit

The flight crew sets the parking brake and re-establishes communication with ground staff via company channel or ATC.
If visual communication with responsible ground agent is still established then visual signals may be used.

4.6.9.5.2 Initiated from the Ground

If ground staff needs to re-establish communication with the aircraft after dispatch, do NOT approach the aircraft. If communication cannot be established using hand signals, make contact via company channel or through ATC.
When preparing to re-establish communication with aircraft, take the following precautions:

(a) Make sure you have been seen by the flight crew and the intention to approach the aircraft to re-establish interphone communication is understood.
(b) Approach the aircraft from the direction where visual contact with the flight crew is maintained as long as possible.
(c) Only the person establishing the interphone communication shall approach the aircraft.
(d) Stay outside the aircraft's engine danger area when approaching the aircraft.
(e) If possible, position pushback tractor in front of aircraft in clear view of flight crew to act as a safety barrier and prevent premature movement of the aircraft.

Caution:
For safety reasons, the interphone communication system cannot be used when there is thunderstorm activity over the airport as there is a risk of electrical discharges between the aircraft and the interphone system. Under these conditions communication headsets cannot be worn.

4.6.9.6 Interphone Communication Failure

Aircraft pushback requires a communication interphone. In the event the interphone becomes unserviceable or communications is lost, the following procedure must be followed:

(a) In case of a single person operation and if no other means of communication are available, stop the movement (depending on local situations and regulations) and immediately request assistance to continue the movement.
(b) In case of multiple person operation then communication with the flight crew will be established using hand signals as described in this chapter. The tractor driver must be able to receive the visual signals as relayed from the flight crew. Once hand signal communication has been established the pushback can resume.
(c) Notify ATC (if radio available) and continue the movement in co-operation with ATC, depending on local regulations.

4.6.10 Preparation for Pushback

(This section is also applicable to pull-out using appropriate equipment)

4.6.10.1 Pre Departure Communication

An aircraft departure must always be conducted using interphone communications. In the event that the interphone becomes is unserviceable, you must use conventional hand signals see GOM 3.4.6 and GOM 3.4.7 for the departure (not applicable to main gear pushback unit departures).

(a) Connect the Interphone and:
1 Verify the communication system is functional
2 Update flight crew on the progress of the ramp operation
(b) Prior to departure a briefing must be held between the Captain and the ground agent responsible for the departure, including:
(1) Review of departure specifics, e.g. direction of movement, final positioning, and taxi out direction.
(2) The hand signals to be used, including emergency signals.

Caution:
Repeat all given instructions or acknowledge them in a manner clearly indicating that they have been understood and will be complied with.

(c) Request permission to disconnect ground power, if applicable.
(d) Disconnect GPU/FPU after approval is received from flight crew.

Note: The ground personnel responsible for departure should be in continuous communication with flight crew by interphone.

4.6.10.3 Connecting the Pushback Vehicle

The pushback vehicle is connected as follows:

(a) Aircraft main gear chocks installed, nose gear chocks removed–if applicable;

(b) Ensure that the nose gear steering bypass pin is installed prior to towbar/towbarless connection to aircraft and/or ensure the nose gear steering mechanisms are set as required for pushback (as applicable to aircraft type);

(c) Use a spotter to assist in the final approach to nose gear:

1. tractor & towbar:

(i) connect towbar to nose gear first.

(ii) raise towbar so that its head is at same height as the tractor connection.

(iii) approach slowly until connection aligns and secure connection to tractor. Driver must remain seated and in control of the vehicle.

(iv) raise towbar wheels.

(v) select "Neutral" or "Park" and set parking brake of tractor.

2. towbarless tractor:

(i) on final approach to aircraft, the tractor must be properly aligned and correctly positioned.

(ii) position towbarless tractor to standby for lifting and wait for approval from flight deck to lift, if applicable.

(iii) select "Neutral" or "Park" and set the parking brake.

The above, where possible, must be carried out prior to engine start. Where the pushback vehicle is needed to remove the GPU/APU following engine start and then connect to the towbar, the procedure is as follows;

(a)Ensure the flight crew and ground staff conducting the start are aware that the pushback vehicle will be connecting to the towbar after engine start.
(b)Connect the towbar to the aircraft as described in *Appendix A-E (Connecting /disconnecting towbar).*
(c) Via the interphone, request main gear chock removal approval from the flight crew, and confirm the aircraft parking brakes are set.
(d)Ensure nose gear chocks remain in place.
(e)Conduct the aircraft start as described in *Appendix A-E (Aircraft Start Procedures)*.
(f) Connect the pushback vehicle to the towbar (refer to 4.6.10.3 (b) onwards).
(g)Following engine start, inform crew of nose gear chock removal and continue with standard pushback procedures (GOM 4.6.11).

Caution: Where possible, start only one engine until after pushback. Head set operator should position themselves to avoid stepping over the towbar.
At all times, ensure ground personnel and equipment remain outside of the engine danger areas.

Ensure clear communication exists between the head set operator and the crew and the head set operator and the pushback driver.

Caution:
Do not remove the main landing gear chocks until:
all GSE–with the exception of the boarding passenger stairs(s), GPU, PCA, and ASU is removed from the aircraft, the pushback vehicle is connected to the aircraft and the parking brakes of both the pushback vehicle and the aircraft are set.

4.6.11 Aircraft Pushback

(This section is also applicable to pull-out using applicable equipment)

4.6.11.1 Pushback Requirements

(a) Prior to the aircraft movement, make sure the parking brake is released and the anti-collision lights are switched on, in accordance with local airport regulations.

(b) Headset operator shall signal "Clear to Push" to the pushback tractor driver and wing walkers (if applicable) once advised by the flight crew that the aircraft brakes have been released and approval for pushback is given by the flight crew.

Note: In case of single person pushback operation, the pushback operator performs headset functions.

(c) Select the appropriate gear on the tractor and slowly begin movement. Start the pushback operation in a straight line.

(d) Carry out the pushback maneuver at a pace no greater than 5 km/h or 3 mph (walking speed) and where required, apply the vehicle brakes gently.

(e) During the maneuver, the pushback tractor driver shall ensure the taxiway (including other movement areas in the intended aircraft path) is free of other aircraft/equipment/obstacles. If an obstacle is identified, the pushback shall stop immediately until the obstacle is clear.

(f) During pushback, ensure the steering turn limits are not exceeded and advise the flight crew if any are exceeded. Damage may occur to the nose gear. Refer to the operating airline's GOM Appendix A-E for the specific limits and how they are marked on the aircraft.

Caution: The flight crew shall be notified immediately in the event any connection between the tractor and the aircraft is lost during aircraft movement.

(g) At the end of the maneuver, the aircraft/pushback tractor set shall be correctly aligned with the taxiway centerline.

(h) When the pushback maneuver is complete, headset operator will receive the "Vehicle Brakes On/Stop" signal (see GOM 3.4.4.4) from the tractor driver to confirm that the tractor parking brake is set. Prior to the disconnection of the tow bar or towbarless tractor from the aircraft nose gear, headset operator:
1 Request flight crew to set the aircraft parking brake and hold the existing position until final clearance signal to taxi.
2 When confirmation that the aircraft brakes have been set is received from the flight crew:

(i) Give the "Vehicle Brakes On/Stop" signal as per IGOM 3.4.5.4 to the tractor driver and wing walkers, if applicable. Tractor driver releases the tractor parking brake and puts the gear in neutral to release any pressure on the towbar.

(j) Give authority to disconnect pushback equipment.

All staff walking on ramp must remain clear of:

(a) Aircraft nose gear throughout the pushback operation;
(b) The tractor's path;
(c) Engine danger areas.

AHM 955 defines pushback tugs in categories as follows;
Category 1 – Aircraft less that 50,000kg (110,000lb)
Category 2 – Aircraft less than 150,000kg (330,690lb)

Where possible, Category 1 tugs must be used for Eastern Airways Aircraft. Where a Category 1 tug is unavailable, a Category 2 tug may be used but the upmost care must be taken to ensure a smooth pushback.

Pushback limitations
For all aircraft types, the maximum pushback speed limitation is **3 mph**. Adequate communication must be maintained with the crew/brake rider.

4.6.11.2 Pushback & Pull Forward

If an aircraft is to be pulled forward after pushback and engines started, care and special precautions must be taken to reduce the risk of the aircraft's engine thrust causing damage to the nose gear and towbar when stopping the aircraft at completion of manoeuvre.

If the requirement of pull forward is known in advance, consider not starting the engines until the pull forward manoeuvre is completed.
Special Precautions include gentle application of brake, engine at idle thrust, towing operation at lowest gear available.

Caution:
When using a towbarless tractor:
Do not lift the aircraft when loading equipment and/or a passenger boarding device is still connected to the aircraft.

4.6.11.3 Ground Crew in Charge of Pushback

Ground Crew Responsibility
The responsible ground crew is defined as the person performing the communications with the flight crew.
A responsible ground crew must be in charge of each aircraft pushback. This function can be performed by different agents in different roles and positions.
Responsible ground crew for the departure will:

(a) Be in charge of the entire pushback, once clearance to begin pushback has been given by the flight crew;
(b) Ensure that the towbar/shear pin/towbarless tractor is suitable for the specific aircraft type;
(c) Conduct briefings with all persons involved in the aircraft movement to review and confirm how the aircraft will be maneuvered;

(d) Be in continuous communication with flight crew by interphone;
(e) Have ultimate responsibility to review pushback procedures based on conditions he/she observes and must inform the flight crew;
(f) If ramp conditions are below standard for a normal pushback (e.g. hazards, obstacles, slippery or icy) then:
1. he/she will inform the flight crew that engine start clearances will not be given until either:
(i)The aircraft is moving over an area of the ramp where the conditions are considered to be safe for an engine start;

OR

(ii) the pushback has been completed, the aircraft has come to a complete stop and the parking brake has been set;
(g) Ensure that the nose gear steering bypass pin is installed prior to towbar/towbarless connection to aircraft and/or ensure the nose gear steering mechanisms are set as required for pushback (as applicable to aircraft type);
(h) Connect the interphone and conduct a communication check to:
1. verify the communication system is functional;
2. update flight crew on progress of the ramp operation;
3. request permission & disconnect ground power after verbal approval is received from flight crew.
(i) Conduct a Pre-Departure walkaround;
(j) Signal "All Clear" to pushback tractor driver and wingwalkers (if applicable) once advised by flight crew that the aircraft brakes have been released and approval for pushback given by Flight Crew;
(k) Be positioned walking on apron at a safe distance from the nose gear and tractor.

Danger:
If walking adjacent to nose gear: walker and tug driver must be in visual contact throughout the pushback. After approval of flight crew, the tug driver must always assure taxiway is free of other aircraft/equipment/obstacles.

(l) Monitor the interphone during the pushback and communicate with the flight crew as required;
(m) Advise the flight crew if for any reason it is not safe to start an engine and stop the engine start (the flight crew may advise as each engine is being started);
(n) Advise the flight crew to set aircraft brakes at end of pushback. Once confirmation from the flight crew has been received, give the brakes set signal to the tractor driver and wingwalkers (if applicable).
(o) Give "Brakes On" hand signal to indicate to the tractor driver and wingwalkers (if applicable) that it is clear to disconnect pushback equipment. Remove the nose gear steering bypass pin and/or ensure the nose gear steering mechanisms are set to normal position for taxiing (as applicable to aircraft type).

NOTE: If the aircraft type does not use a gear/steering bypass pin for pushback, when disconnecting the towbar, the agent must check to ensure a gear pin has not been left in situ. If it has, the crew must be alerted before taxi.

For clarity, only the JS41 and S20 aircraft types use a steering bypass pin for pushback operations.

(p) Ensure the tow bar is disconnected from the tractor before disconnecting from the aircraft (except where tow bar is specifically designed to be disconnected from the aircraft first).(q) After the towbar/towbarless tractor has been disconnected, complete the headset communication. After the flight crew approval, disconnect the headset and close the access panel, if applicable to the aircraft type.(r) Close and latch all access panels and then move clear of the aircraft to a safe position visible to the flight crew. If the torque link has been disconnected it shall be re-connected and flight crew informed.

(s) Display the steering bypass pin (if applicable to the aircraft type) to the flight crew.

(t) Give the "All Clear to Taxi" signal once eye contact has been made with the flight crew and they are expecting the signal. In low-light conditions the flight crew will turn on the interior lights of the flight deck.

(u) Remain in position until an acknowledgement from the flight crew is received.

Caution:
The flight crew (or brake operator) must be notified immediately:
in the event any connection between the tractor and the aircraft is lost during aircraft movement;
to stop the aircraft movement using gentle brake application if the aircraft is about to overtake the tractor while towing.

Danger:
If the nose wheels are not in the centered position, they can turn quickly to their centered position when the bypass pin is removed. Personnel injury or aircraft damage could result.
Do not disconnect the interphone communication cable until the towbar (or towbarless tractor) has been disconnected from the nose gear.

4.6.11.4 Wingwalker

Where applicable, wingwalker or other assist personnel must:

(a) Be under the direction of the responsible ground crew at all times.

(b) Use 2 marshalling wands, either day-wands or illuminated wands for low visibility operations.

(c) Be positioned before and during movement of aircraft as follows where applicable and/or permitted:
1. approximately 1 m (3 ft) outboard of the wingtip.
2. in line with the rearmost main gear wheel.
3. must maintain visual contact with person responsible for pushback/towing.

(d) Ensure the aircraft movement path is clear of any obstructions, other aircraft, vehicles etc.

(e) Provide "Safe to Proceed" clearance signals at all times to the person responsible for pushback by using a distinct "Pendulum" motion of the arm.

(f) Continue to monitor the aircraft path until the aircraft is stopped at the departure point.

(g) If at any time during aircraft movement, the wingwalkers are unsure or identify an imminent danger, signal the marshaller with the "STOP" signal.

(h) Position themselves either at the "11 o'clock or 1 o'clock" position in clear visibility of the flight crew on the terminal side at a safe distance away from the aircraft. Give the "AIRCRAFT HOLD" signal to the flight crew when the visual
"Brakes Set" signal has been received from the person responsible for pushback (crossed wands may be over head or in front of chest).

Aircraft Hold / Normal Stop

(i) Remain in position until the responsible ground crew walks over to take over the marshalling clearance of the aircraft.

(j) Return to terminal once marshalling duty has been transferred.

4.6.11.5 Tractor Driver

The pushback tractor driver shall:

(a) Align the tractor or tractor/towbar combination with the center line of the aircraft gear at the end of the aircraft movement.

(b) Completely raise the towbar wheels before the start of the aircraft movement (if used).

(c) Standby for clearance to push communication from flight crew or responsible ground crew.

(d) Select appropriate gear on tractor and slowly begin movement.

(e) Prior to the aircraft movement, make sure that the parking brakes are released and the anti-collision lights are switched on (depending on the local airport regulations).

(f) Start the pushback operation on a straight line.

(g) Keep the maneuvering speed to a minimum, and apply the vehicle brakes gently.

(h) Scan the apron during pushback, monitor clearances and wingwalkers (if applicable) to ensure that aircraft is moving clear of all obstructions. Be prepared to stop.

(i) Ensure during pushback the steering turn limits are not exceeded and advise flight crew if any are exceeded. Damage may occur to the nose gear. Refer to the GOM Appendix A-E for the specific limits and how they are marked on the aircraft.

(j) If responsible ground crew on interphone is walking on ramp, maintain visual contact and ensure a safe distance is maintained from the nose gear during entire pushback.

(k) If the responsible ground crew is too close to the nose gear, the pushback must be stopped and a review of the required safety clearance conducted.

(l) Set brakes on the tractor once pushback is completed.

(m) Maintain the brakes on the pushback until the release signal is received from the flight crew or responsible ground crew on interphone.
(n) Wait for flight crew or responsible ground crew on interphone to give the "Aircraft Brakes Set" signal.
(o) Release the tractor brakes and put the gear selector in "Neutral" after aircraft brakes have been set, to release any pressure on the towbar.
(p) Position the tractor in the aircraft's path and be visible to the flight crew (if possible) after the towbar has been disconnected from the tractor.
(q) Remain in position visible to the flight crew until the headset operator has disconnected and is in view of the flight crew.
(r) Drive tractor back to terminal or appropriate parking position.

Note: *In areas where the ramp/taxiway is intersected by drainage gullies (or similar) the aircraft wheels should be clear of these areas before the tug is disconnected.*
The last few feet of any pushback or towing operation should be in a straight line to ensure that the aircraft wheels and towbar are straight. Failure to comply may lead to the towbar swinging into a straight position once it is disconnected from the tug, which may cause injury.

Caution:
If the nose wheels are not in the centered position, they can turn quickly to their centered position when the bypass pin is removed. Personnel injury could result.

4.6.11.6 Brake Operator

Where applicable in accordance with local procedures, the brake operator shall:
(a) Ensure all aircraft doors are closed by authorized personnel.
(b) Apply the 'brakes on' and 'brakes off' procedures in coordination with the headset operator.
(c) Position the seat in such a way that the brakes can be easily applied where required.
(d) Inform the headset operator immediately if potential contact with any objects is detected.
(e) Only apply the brakes during the tow where instructed by the headset operator or where it is clear that the aircraft has become separated from the tractor.

4.6.12 Jetstream 41 Powerback

The Jetstream 41 aircraft, where local procedures allow, can use reverse thrust from the engines to powerback from stand.

Goggles/protective eyewear must always be worn by the individual facing the aircraft & conducting a powerback manoeuvre, irrespective of weather conditions or proximity to the aircraft. If it is wet or light snow covered ground, it is recommended that the individual carrying-out the powerback signalling stands off centre, level with the wingtip to the captain's side. Advise the operating crew that this is the case so they know where to view signals.

(a) The marshaller is the responsible person for controlling the powerback.
(b) A banksman must be located on the port side of the aircraft at the rear of stand (this will enable the Captain to use the banksman as a point of reference).
(c) Remove the chock aft of the nose wheel before the powerback commences.
(d) Marshal the aircraft back from a safe distance at no more than a 'brisk' walking pace.
(e) Once the aircraft main gear wheels have reached the taxiway centre line, the 'come forward' signal is to be given.
(f) Once the aircraft has achieved forward momentum, the 'stop' signal is to be given followed by the direction of taxi.

4.6.13 Maneuvering During Adverse Weather Conditions

4.6.13.1 General

During adverse weather conditions (fog, rain, etc.) visibility and traction will be affected.

(a) Airport operators are responsible for developing low-visibility procedures that are relevant for the airport.
(b) Ground handling personnel shall be trained/authorized, as appropriate, prior to undertaking low-visibility aircraft ground movement operations.
(c) Ground handling personnel shall observe the movement limitations and other regulations applicable to the airport's low-visibility procedures at all times.
(d) Pushback tractors should be equipped with an airfield map, where this is available.
(e) If there is any doubt as to the exact position of the pushback tractor/aircraft, the tractor driver shall stop the tractor/aircraft and inform air traffic controller (ATC) immediately.

Caution:
The responsible for the departure (headset operator) should be positioned outside the tractor at safety distance (refer to IGOM 4.6.7.3) during:

1. Low-visibility conditions (heavy rain, fog, bad lighting)
2. Lack of sufficiently visible markings
3. Obstructions behind the pushback (e.g., GSE, light post)

The Tractor Driver must reduce and adapt vehicle speed as required by the present conditions.

4.6.13.2 Maneuvering during Wintery or Slippery Conditions

When manoeuvring the aircraft on slippery apron surfaces, extreme caution is required to avoid losing control of the tractor due to skidding which may also lead to jack-knifing (where the tractor is pushed around by the aircraft in an uncontrolled movement). Many elements can contribute to the hazards involved such as strong winds, slippery road surfaces, pavement slopes etc.

Observe the following minimum precautions:

(a) Avoid sudden turns, deceleration or acceleration.
(b) Except when using an Air Start Unit, do not start aircraft engines unless:
1. the condition of the pavement is such that reasonable traction is ensured.
2. the aircraft parking brakes are set and the aircraft is disconnected from tow tractor/towbarless tow tractor.

4.6.14 Nose Gear Steering

4.6.14.1 General

Each aircraft type has specific requirements for the bypass of the nose gear steering mechanism. Refer to the GOM Appendix A-E for nose gear steering bypass pin details.

Danger:
The bypass pin must be:
labeled with the specific aircraft type(s) for which it can be used;
identified with a "Remove Before Flight" streamer;
checked regularly for proper technical condition, or as per manufacturer instructions.

4.6.14.2 Nose Gear Protection and Steering Angles

In order to protect the nose gear from damage, visual turning limit markings indicate the aircraft's maximum nose gear steering angles. Refer to the GOM Appendix A-E for details.

Danger:
In the event of exceeding the maximum nose gear steering angle, inform the maintenance department and flight crew, if applicable, and request a technical inspection. The aircraft must return to the parking stand in order to check whether the gear is damaged.
When using a towbarless tow tractor equipped with either an over steer warning or over steer protection device, verify the visual turning limit markings at all times to prevent exceeding the maximum nose gear steering angle.
When using a towbarless tractor on an aircraft, the "over steering" or "over torque" system of the tractor must be operative.

4.6.15 Anti-Collision Lights

On a standard departure, once all aircraft doors are closed, the flight crew requests pushback clearance from ATC. Once clearance is obtained the flight crew will switch on the aircraft's anti-collision lights.

Caution:
Anti-collision lights that are switched on are a visual indication to ground staff of imminent engine start-up or aircraft movement. Vehicle traffic must stop until the aircraft has departed from the area.

Caution:
In case the anti-collision lights are switched on unexpectedly (other than in preparation for the departure or towing operation). Ground personnel shall move away and remain outside the ERA checks with personnel in the flight deck before resuming ground handling activities.

Caution:
If the anti-collision lights are switched on unexpectedly (other than in preparation for the departure or towing operation), ground staff shall move away and remain outside the ERA. The responsible ground staff member shall check with the flight crew before resuming ground handling activities.

4.6.16 Engine Cross Bleed Start

Engine start using cross bleed can only be performed once the pushback has been completed, the aircraft brakes have been engaged, and the area around the aircraft is clear.

Caution:
With engine(s) above idle thrust, blast and suction effects are greater.

4.7 Power Push Unit (PPU)—(Main Gear Towbarless Tractor)

4.7.1 PPU Specifics and Safety Measures

(a) Before connecting the PPU to the aircraft, it can be parked in front of the aircraft or outside of the ERA, but never behind the wings. Ensure the remote control system is functioning at normal operating distances.

(b) It is imperative that the driver seat is pulled up, whenever the PPU is connected to the aircraft.

(c) Pushback with a PPU is not permitted in case of an interphone failure.

(d) The agent in charge of the departure operation must be in permanent intercommunication with the cockpit crew. He must stand forward of the aircraft, follow its movements and always be in sight of the cockpit crew. He must stay outside the engines intake/suction area and wheel path of the aircraft during the entire pushback manoeuvre.

(e) In case of overpowering the rollers jacks' resistance of the PPU, due to failure at the end of the pushback operation, it is mandatory:
(i) To ask the material maintenance department for intervention on the PPU.
(ii) To ask the aircraft maintenance department for an inspection of the aircraft.

4.7.2 Actions before Pushback with a PPU

4.7.2.1 PPU Connection

Before connecting the PPU:

(a) Inform the flight crew that a PPU will be used.

(b) Refuelling must be completed.

(c) Make sure the nose landing gear is chocked

(d) Make sure the aircraft parking brake is set

(e) Remove the main gear chocks.

4.7.2.2 Engine Start-up when a PPU is Used

The start-up of engine #2 takes place in the normal sequence at the parking stand.

Start-up of the engine #1 must be performed after pushback, with parking brake set, when the agent in charge of the departure operation has moved the PPU to the back of the aircraft stabiliser.

Caution:
In some cases (e.g. start-up with an external air supply), start-up of all engines can take place at the parking stand, provided that:

- It has been agreed upon beforehand by the flight crew and the agent in charge of the departure operation.
- The hazardous areas around the engines are clear.

4.7.3 Pushback with a PPU

Caution:

- An aircraft pushback by using a PPU must be finished by a straight-line length of at least 5 m (16 ft). If this instruction cannot be complied with, it is forbidden to perform an aircraft "pull".
- Likewise, an aircraft pull forward must be finished by a straight-line length of 5 m (16 ft).

Emergency braking during pushback can be performed by:

(a) PPU engine stop (remotely controlled), or

(b) Brake application by the flight crew

4.7.4 Departure Dialogue when Using a PPU

Dialogue between the Ground Staff and the Flight Crew (PPU)		
Phase	**Ground Staff**	**Flight Crew**
Preparation (before positioning the PPU)	**Call:** CONFIRM PARKING BRAKE SET. *Check that the steering bypass pin is not installed.* *Position the PPU.*	**Reply:** PARKING BRAKE SET.
After completion of the pre-departure servicing checks	**Call:** PRE-DEPARTURE SERVICING CHECKS COMPLETED.	**Reply:** Roger
Engine No. 2 start	**Call:** CLEAR TO START ENGINE NO. 2 *Remove the aft chock of the nose gear.*	**Reply:** STANDBY **Call:** STARTING ENGINE NO. 2
Pushback	*Remove the forward chock of the nose gear.* **Reply:** COMMENCING PUSHBACK (+ ACKNOWLEDGEMENT OF ANY SPECIFIC PUSHBACK REQUIREMENT). *Activates the PUSH function of the PPU and gives the cockpit crew the guidance instructions:* • steering on left or on right • a little bit more or less • straight on	**Call:** PARKING BRAKE RELEASED. CLEARED TO PUSH (+ ANY SPECIFIC PUSHBACK REQUIREMENT). *The flight crew steers the aircraft according to the guidance instructions provided by the agent in charge of the departure operation.*
Pushback completed	**Call:** PUSHBACK COMPLETED, SET PARKING BRAKE. *The PPU is moved back below the tail (beyond the rear cabin door).*	**Reply:** PARKING BRAKE SET.
Engine No. 1 start	**Call:** AIRCRAFT CLEAR, CLEAR TO START ENGINE NO. 1	**Reply:** STARTING ENGINE NO.1
Disconnecting	**Reply:** DISCONNECTING, HOLD POSITION AND WAIT FOR VISUAL SIGNAL ON YOUR LEFT/FRONT/RIGHT.	**Call:** CLEAR TO DISCONNECT. **Reply:** HOLDING POSITION AND STANDING BY FOR VISUAL SIGNAL ON THE LEFT/FRONT/RIGHT.

4.7.5 Actions after a PPU Pushback

4.7.5.1 Power Push Unit Disconnection

(a) Once the aircraft parking brake is applied, with the remote control, the agent in charge of the departure operation controls the opening of the rollers.

(b) With the remote control, the agent in charge of the departure operation controls the move back of the PPU until at least below the tail (beyond the rear cabin door).

(c) Once the aircraft has taxied and, the blast risk has disappeared, the agent in charge of the departure operation withdraws the PPU from the taxiway.

4.7.6 Incidents During Pushback with PPU

4.7.6.1 Instructions in Case of PPU Fire During Pushback

(a) Aircraft on the parking stand, interphone connected.
The agent in charge of the departure operation must:
1. Warn the flight crew via the ground/aircraft interphone. The flight crew warns the Fire Brigade using VHF.
2. Controls the release of rollers
3. If PPU's engine is on:
(i) Remove the PPU by remote control.
(ii) Remain in contact with the flight crew.
(iii) Stop the PPU's engine by remote control, if not automatically.
(iv) Leave the interphone contact after consent from the flight crew to fight the fire and report to the flight crew about the on-going situation.
4. If PPU's engine is off:

(i) Leave the interphone contact after consent from the flight crew to fight the fire.
(ii) Press one of the three emergency stop buttons (the most accessible)
(iii) Make tow the tractor away from the aircraft and report to the flight crew about the on-going situation.

(b) Pushback in progress

The agent in charge of the departure operation must:

1. Inform the flight crew via ground/aircraft interphone. The flight crew warns the Fire Brigade using VHF.
2. Stop the pushback.
3. Request setting of the aircraft parking brake.
4. Control the release of rollers and remove the PPU by remote control.
5. Stop the PPU's engine by remote control, if not automatically.
6. Report to the flight crew about the on-going situation.

4.7.6.2 PPU Incidents Checklist

Flight Crew	Ground Staff
Aircraft unable to move alone—PPU removed	
Asks for aircraft inspection.	• Informs the flight crew that the rollers are open and the PPU is removed. • Leaves the interphone contact after consent from the flight crew.
Aircraft unable to move alone—PPU not removed	
If the engine on the opposite side of the PPU is running: Shuts down the engine.	Informs the flight crew that the PPU is not removed.
• Forbids the evacuation of passengers via the wing emergency exit on the PPU side. • Asks for aircraft inspection.	• Leaves the interphone contact after consent from the flight crew. • Fights the fire.
Aircraft able to move alone—PPU removed	
Asks for aircraft inspection.	• Informs the flight crew that the rollers are open and the PPU is removed. • Leaves the interphone contact after consent from the flight crew. • Guides the flight crew to move the aircraft forward.
Aircraft able to move alone—PPU not removed	
If the engine on the opposite side of the PPU is running: Does not shut down the engine.	Informs the flight crew that the PPU is not removed.
	• Leaves the interphone contact after consent from the flight crew. • Presses the most accessible stop button.
• Guided by the agent in charge of the departure operation, moves the aircraft forward with engine thrust overpowering the rollers jacks resistance. • Asks for aircraft inspection.	Re-establishes the interphone contact and reports to the flight crew.

4.8 Open Ramp Departure

An open ramp is a taxi-in and taxi-out operation area. In some locations, the aircraft may be towed from an open ramp to a taxiway, prior to engine start.

(a) Complete all pre-departure checks.
(b) Refer to departure communication section and follow required phases of dialogue.
(c) Ensure all staff and equipment is clear of the aircraft behind the ERA.
(d) Position for marshalling in an area behind the ERA while being in clear view of the flight crew on either side of the aircraft (depending on facility).

INTENTIONALLY LEFT BLANK

4.9 Aircraft Towing

4.9.1 Aircraft Towing Requirements

The following requirements must be met to perform an aircraft tow:

(a) Ensure hydraulic system pressure for aircraft braking and/or the brake accumulator is within required pressure range. Refer to the GOM Appendix A-E for each aircraft type for more detail.
(b) Ensure any required electrical systems for towing are energized.
(c) Ensure all gear safety pins/sleeves are installed, and after tow, ensure all pins are removed and stowed.
Refer to the GOM Appendix A-E for procedures regarding gear lock pin responsibilities and requirements.
(d) Make sure a qualified brake operator is in the cockpit.
(e) Establish communication with the brake operator.
(f) Make sure wheel chocks are positioned at the end of the maneuver, prior to disconnecting the towbarless tow tractor or towbar.

Caution:
Inform the brake operator/flight crew and/or contact the maintenance department for technical inspection if you:
observe any type of excessive fluid leakage;
notice any signs of unmarked aircraft damage;
observe any fault, failure, malfunction or defect which you believe may affect the safe operation of the aircraft for the intended flight.

4.9.2 Towing Manoeuvring

4.9.2.1 General

The towing manoeuvring procedure is similar for all aircraft types. The following minimum safety precautions and procedures must be followed prior to and during aircraft towing operations:

(a) Align the tractor or tractor and towbar combination with the center line of the aircraft before the aircraft movement.
(b) Completely raise the towbar wheels before the start of the aircraft movement (if used).
(c) Prior to the aircraft movement, make sure that the parking brakes are released and the anti-collision lights are switched on (depending on local airport regulations).
(d) Wait for the authorization of the flight crew or brake operator before moving the aircraft.
(e) Start the pushback operation on a straight line.
(f) Keep the manoeuvring speed to a minimum, and apply the vehicle brakes gently.
(g) Do not exceed the towing speed limit as regulated by the towing equipment, aircraft and/or airport.
(h) Use relevant apron lines as guidance during manoeuvring to ensure safe obstacle clearance.
(i) Keep a minimum safety distance between vehicles sufficient in which to stop.
(j) Stop 50 m/55 yd before a taxiway intersection, if a stop is required.
(k) Avoid sharp turns, which results in excessive tire scrubbing.
(l) Make all stops smoothly.

(m) When arriving at the allocated position, move the aircraft in a straight line for a few meters to ensure that the nose wheels are in the straight ahead position. This relieves any torsional stress applied to landing gear components and tires.

(n) Apply the tractor parking brake after a complete stop.

Note: *Some of these precautions may not be applicable to towbarless vehicles.*

Windspeed limitations for towing (Knots)

Surface Condition	Aircraft Type				
	JS41	S20	ERJ145	E70	ATR 72
Dry Concrete / Tarmac Surface	35	30	50	60	50
Wet Concrete / Tarmac Surface	35	30	45	58	50
Snow Covered Surface	30	30	30	50	30
Ice Covered Surface	10	10	10	29	10

Towing limitations

For all aircraft types, the maximum towing speed limitation is **5mph**. Adequate communication must be maintained with the brake rider should an event occur where the aircraft is needed to be brought to a stop.
Caution must be used when towing on wet or slippery surfaces.

4.9.2.2 Towing Preparation

The following checklist is to be used in preparation for an aircraft tow.

Action	Performed by	
	Brake Operator	Tractor Driver
Apply the cockpit checklist for towing. Refer to the operating airline's GOM for details.	✓	
Connect and test the interphone link.	✓	
Insert the bypass pin.	✓	✓
Give permission to connect the towbar and tractor or towbarless tractor after applying the aircraft parking brake.	✓	
Install the gear safety pins (if required by the airline's GOM)	✓	✓
Connect the towbar; first to the aircraft, then to the tractor.		✓
Before connecting the towbarless tractor, ensure the aircraft main landing gears are symmetrically chocked.		✓
Connect the tractor or towbarless tractor and set the parking brake.		✓
Once all GSE has been cleared away from the aircraft, remove or check removal of aircraft chocks.		✓
Switch on the external and anti-collision lights of the aircraft.	✓	
Contact the Control Tower for clearance to start moving the aircraft (depending on local regulations).	✓	✓
After receiving the clearance, release the aircraft parking brake.	✓	
Give clearance to the Tractor Driver to start moving the aircraft.	✓	
Request confirmation from the Brake Operator that the aircraft parking brake has been released.		✓
Conduct tow.		✓

4.9.2.3 Towing Completion

The following checklist is to be used at the end of an aircraft tow.

Action	Performed by	
	Brake Operator	Tractor Driver
Set tractor parking brake.		✓
Request Brake Operator to set the aircraft parking brake.		✓
Inform the Control Tower that towing is completed and the frequency will be left (depending on local regulations).	✓	✓
Set the aircraft parking brake and check the pressure. Inform the Tractor Driver: PARKING BRAKE SET, PRESSURE CHECKED.	✓	
Chock the aircraft main landing gear.		✓
Switch off the external and anti-collision lights of the aircraft.	✓	
Inform Brake Operator: AIRCRAFT CHOCKED.		✓
Request permission from Brake Operator to disconnect the towbar or towbarless tractor.		✓
Give permission to disconnect the towbar or towbarless tractor.	✓	
Disconnect the towbar or towbarless tractor and remove the bypass pin.		✓
Chock the aircraft.		✓
Inform: TOWBAR/TRACTOR DISCONNECTED.		✓
Release the aircraft parking brake and inform: PARKING BRAKE OFF.	✓	
Check and inform: AIRCRAFT STABILIZED.		✓
After permission from the Brake Operator, shut down and disconnect the tractor GPU.		✓
Install and connect a GPU.		✓
Remove and stow gear safety pins in the dedicated location.	✓	

4.9.3 Incidents During Towing

Brake Operator	Tractor Driver
VHF Communication Failure	
	(a) Stop aircraft/tractor set immediately; unless crossing a runway, in which case clear the runway, then stop. (b) Apply tractor parking brake. (c) Advise Towing Regulation and wait for assistance (Follow me before completing the towing).
Tractor Failure	
(a) Inform ATC. (b) Apply parking brake. (c) Listen to VHF and wait for assistance.	(a) Stop aircraft/tractor set. (b) Inform ATC (towbarless towing with one man operation). (c) Apply tractor parking brake. (d) Chock the aircraft. (e) Listen to VHF (towbarless towing with one man operation).
Coupling Break Off	
(a) Brake the assembly by stepping on both brake pedals progressively. (b) As soon as the aircraft is at a standstill, apply the parking brake before releasing the pedal.	(a) Do not apply tractor brakes. (b) Follow the aircraft path attentively and stop the tractor according to the aircraft position. (c) Chock the aircraft.
Tractor Fire	
(a) Inform ATC. (b) Apply parking brake.	(a) Inform the Brake Operator. (b) Stop aircraft/tractor set immediately. (c) Move tractor away as rapidly as possible. (d) Fight the fire, using the fire extinguisher. (e) Chock the aircraft.
Aircraft Fire	
(a) Inform ATC. (b) Apply the parking brake. (c) Fight fire with the on board fire extinguisher. (d) Evacuate the aircraft using on-board means, if required.	(a) Stop aircraft/tractor set immediately. (b) Move tractor away as rapidly as possible. (c) Chock the aircraft.
Accident with Other Aircraft or Vehicle	
(a) Contact the Control Tower stating position and nature of trouble. (b) Listen to VHF and wait for assistance.	(a) Stop aircraft/tractor set immediately. (b) Apply tractor parking brake. (c) Advise towing regulation. (d) Do not unload or disconnect the aircraft. (e) Chock the main landing gear.
Interphone Communication Failure	
If during the tow the interphone fails, the tow must immediately be stopped and an alternate means of communication established before continuing. If this is not possible, assistance must be requested.	

The Tractor Driver and Brake Operator must continuously keep each other informed.

Visual Contact with Wing Walkers and/or Marshaller Is Lost (if used)
In the event that the tractor driver is unable to establish visual contact with one or both of the wing walkers or the marshaller, when required, the towing maneuver shall be stopped and not recommenced until visual contact is reestablished.

4.9.4 Towing Limits

(a) Fuel and other loads can affect an aircraft's balance. To avoid "tail tipping" during towing, ensure that the actual centre of gravity of the aircraft is forward of the critical centre of gravity. If you are unable to determine this, then you must request assistance from a qualified weight and balance agent.

(b) Refer to the GOM Appendix A-E for respective aircraft type specific instructions for further details.

INTENTIONALLY LEFT BLANK

SECTION 5:-LOAD CONTROL

5.1 Introduction

Load control is a function which ensures the production of all applicable documentation to comply with Eastern Airways and regulatory authorities for an individual flight.

This includes planning, reporting and recording the loading of the aircraft.

The Load Control process comprises of the following tasks:

(a) Load planning
    1. Production of a Loading Instruction Report (LIR)
    2. Weight and balance calculation

(b) Aircraft loading and unloading supervision
    1. Verification and recording of aircraft loading
    2. Communicating final loading figures

(c) Weight and balance calculation
    1. Loadsheet production
    2. Other loading documents such as Notice to Captain (NOTOC), if applicable

(d) Post-departure messages
    1. Transmission of messages
    2. Document retention, as applicable

The scope of this chapter is to establish standard procedures for the Load Control process that meet the minimum standards established in the IATA Airport Handling Manual (AHM)–Section 500 "Load Control" and the operator's requirements.

INTENTIONALLY LEFT BLANK

5.2 Load Control Principles

Load Control is an essential process with the purpose of ensuring that the aircraft is safely loaded within operational limits, considering both the weight and center-of-gravity parameters.

To ensure flight safety, all items to be loaded into an aircraft must be precisely planned, documented and filed. Documented communication is required to guarantee accurate weight and balance calculations for the pilot in command (PIC) prior to an aircraft's departure.

Therefore, the Load Control process shall ensure that for each flight:
(a) Aircraft weight and balance conditions are correct and within limits.
(b) Aircraft is loaded in accordance with the specific loading instructions.
(c) Information about dangerous goods and other special loads is taken into account.
(d) The loadsheet reflects the actual loading of the aircraft, including last minute changes (LMC).
(e) Operational messages are dispatched to relevant bodies.
(f) All approved documentation is filed for retention.

INTENTIONALLY LEFT BLANK

5.3 Regulatory Requirements

5.3.1 General Requirements

Load control function can be carried out by Eastern Airways or a third party. It can be performed locally or remotely. Load control may be performed manually or with a computerised departure control system (DCS).

INTENTIONALLY LEFT BLANK

5.4 Load Control Tasks

5.4.1.1 General

The Load Planning task shall ensure loads are planned safely and distributed in the aircraft compartments and/or holds considering all aircraft limits.
The Load Planner shall:

(a) Check aircraft basic weight/index (BW/BI).
(b) Check all items to be included in the dry operating weight/index, (DOW/DOI).
(c) Check operational messages from the previous flight or leg, including any special loads, if applicable.
(d) Check aircraft operational limitations or any other restrictions that may limit load planning.
(e) Calculate expected traffic load.
(f) Check any other dangerous goods and special loads (DGSL) that require special handling and segregation.
(g) Allocate loading positions for all traffic load and special loads, if applicable, taking into consideration all flight legs.
(h) Calculate the estimated zero fuel (EZFW) and transmit to flight dispatch, as applicable, for flight planning purposes.
(i) EZFW should be communicated every time there is a significant difference from the previous calculation, as per operator requirements.
(j) Check fuel load and distribution.
(k) Perform a pre-calculation of the aircraft weight and balance should be done to ensure that the aircraft operational limits are not exceeded.
(l) Give consideration to aircraft ground stability to avoid tail tipping, as per operator requirements and aircraft specifications.
(m) Produce a LIR.

5.4.1.2 Loading Instructions Report

(a) A LIR shall be issued for each departing flight, to ensure all safety parameters specific to each flight are adhered to.
(b) Complete load distribution for the departing flight, using provisional data and adhering to the segregation policy, as per AHM514 to AHM515 and operator requirements.
(c) Indicate all information that could affect loading in the Supplementary Information (SI) section.
(d) Refer to AHM514 for Electronic Data Processing (EDP) LIR and AHM515 for Manual LIR.
(e) LIR revisions shall be immediately communicated via appropriate means to loading staff

A LIRF must be completed by each station for all positioning/charter and scheduled flights with loading instructions and is required to include any ballast or catering on-board to be recorded.

Should a flight be operating through a transit station, transit bags are to be included on the LIRF to provide oversight as to what bags/materials are actually on-board.

It is important that all the contents of the hold are documented and accounted for, should there be any uncertainty of the items on board or weights, this should be discussed and obtained from the crew.

For a copy of the Eastern Airways LIR (EA231A), access the following link: http://ops.easternairways.com/login.asp password can be obtained from the Ground Operations Manager.

5.4.1.3 Offloading Instructions

(a) Off-Loading instructions may be issued prior to aircraft arrival.
(b) For transit flights, produce offloading instructions as per AHM514 to AHM515, where transit load, off-load and all positions are reported.
(c) Consideration shall be given to ensure aircraft stability during the offloading process and passenger disembarkation process.

5.4.1.4 Notification to the Captain

The Notification to the captain (NOTOC) is used to inform the PIC of DGSL carried as cargo or mail.
The cargo department is responsible for providing DGSL information in legible written, printed or digital form and transmitting it to the person charged with load planning task. The Load Planner shall produce LIR taking into consideration DGSL information, their compatibility and segregation criteria.
The information contained in the NOTOC shall be made available to the person charged with aircraft loading and supervision task. The person shall:

(a) Verify that DGSL are not damaged or leaking.
(b) Ensure the correct positioning of DGSL as per the LIR and NOTOC.
(c) Report actual loading position.
(d) Signs the NOTOC.
(e) Deliver the signed NOTOC to PIC for signature.

The NOTOC must be issued in adequate number of copies, in order to provide information to all concerned and for file retention.
DGSL information shall be made available to the next downline airport before the flight arrives.
For NOTOC refer to AHM381 and the current DGR.

5.4.2 Aircraft Loading and Supervision Task

For this task refer to 4.5.1 Supervision of Aircraft Loading.

5.4.3 Weight and Balance Calculation Task

5.4.3.1 General

The objective of the weight and balance calculation task is to ensure that a final and accurate load sheet is issued and this has been crosschecked with:

(a) Final LIR from the person in charge of the Loading Supervision task.
(b) Final passenger close-out data.
(c) Final fuel figures.
(d) All aircraft operational and structural limitations for the appropriate aircraft registration.

Note 1: If a preliminary loadsheet is produced, one or more criteria may not have been finalized.

Note 2: The person designated with the weight and balance calculation task shall ensure all data is finalized or confirmed for manual or electronic load sheet production

(e) Loadsheet accuracy check will continuously be performed prior to production or transmission of the final loadsheet:

1. Correct flight number and date (flight identifier).
2. Correct aircraft registration.
3. Correct DOW/DOI used according to aircraft type, registration, version, number of crew and pantry.
4. Underload (total traffic load not exceeding allowed traffic load).
5. Correct entry of final fuel figures.
6. Correct entry of transit load data from incoming load-message/loadsheet.
7. Correct passenger close out data.
8. If containerized aircraft, ULD tare weight is added.
9. Hold baggage weight and gate delivery items shall be added.
10. Actual loading positions of dangerous goods and other special load indicated on the NOTOC, if applicable.
11. Balance calculation and conditions of loaded aircraft, including LMCs, are within prescribed limits.
12. The loadsheet must be checked against the final LIR and other information related to the actual load.
13. Any operator-specific requirements are adhered to, if applicable.
14. All specified documents shall be signed by means of manual or electronical identifiers.

(f) Loadsheet format and contents shall meet the minimum criteria set in AHM 516, AHM 517, AHM 518.

(g) The loadsheet shall then be delivered to PIC either as a hard copy (manual or digital) or ACARS format.

(h) Any changes occurring after the final loadsheet has been produced must be accounted for by either production of a new edition of Loadsheet or via documented Last Minute Change process as per the operator's requirement.

(i) If a discrepancy is discovered after the aircraft push-back, the PIC must be informed immediately to prevent an unsafe take off.

Any discrepancy in weight and balance documentation shall be reported to the person responsible for the weight and balance calculations and to the customer airline using agreed reporting methods as required by customer airline procedures.

5.4.3.2 Last Minute Changes

(a) Standard procedure: The load sheet presented to the PIC must include all LMCs. These will be shown as entries in the LMC box and, if required, as corrections to gross weights, fuel figures and balance conditions.

(b) Alternative procedure: Operators may allow the load sheet to be handed over to the PIC before any last minute adjustments are made.

Note: Where local regulations require LMCs to be included in the load sheet, it may be possible for operators to seek the consent of their authorities for use of the alternative procedure.

(c) If LMCs are conveyed to the PIC separately, this may be done by the responsible person in writing. In cases where no changes have to be reported,

the responsible person must confirm to the PIC that the data recorded on the load sheet copy already handed over remains unchanged.
(d) LMCs are to be communicated to the PIC only after the responsible person has entered all changes and corrections on the load sheet copies retained on the ground, and after he/she has carried out the checks.
(e) If the PIC is informed verbally of LMCs, either directly or by using the internal communication facilities of the aircraft (interphone, intercommunication system, ACARS), or by radio communication, the following details must be recorded in writing:

1. Name of agent
2. Time of transmission
3. Confirmation that the flight crew has acknowledged the changes
4. This record must be kept in the flight file

(f) To inform the PIC about LMCs, either verbally or in writing, when the responsible person is not including the LMCs on the load sheet, a special LMC slip should be used. The information to be recorded on this form may be limited to the following:

1. Total weight of all LMCs
2. Total number of LMC passengers
3. Corrected balance conditions–even if it is not allowed by the operator (e.g., "BAL not corrected")
4. This record must be kept in the flight file.

(g) Details of any last minute changes in the load must be passed to the Commander and entered in the Loadsheet/Loadmessage as Last Minute Change (LMC). Only one LMC, [for type specific limitation refer to relevant OM-B1] is permitted. If a further change is required a new load sheet must be produced. This is to ensure that the load sheet is accurate, legible and clear.

5.4.3.3 Information Exchange

All data pertaining to aircraft weight and balance calculations shall be communicated to the person charged with the load planning task; this information shall be documented and filed using one of the following methods:
(a) Digitally
(b) Written via documentation
(c) Verbal communication; in this case, the person receiving the information must assure that one of the following is applied:

1. Read back all information received by radio or telephone to guarantee accuracy of the data.
2. Record all verbal transmissions in written format (manually or digitally) to be able to clarify all discrepancies before the final load sheet is transmitted.
3. Digitally record all verbal communications.
4. A written transmission is always the recommended method. If it is necessary to use verbal communication, ensure that the following details are recorded:

(i) Name of the agent
(ii) Time of transmission
(iii) Confirmation that the receiving party has acknowledged the changes
This record must form part of the flight file for retention.

5.4.3.3.1 Communication of Aircraft Loading to Load Control

Where the communication of aircraft loading, including loading changes and discrepancies, is not carried out by the Loading Supervisor for the flight, but by a designated person, the following requirements apply:

(a) Person responsible for communication of aircraft loading shall be trained in accordance with AHM 1110 RMP 18 Turnaround Coordination

(b) Direct communication with the person charged with the supervision of aircraft loading and unloading task shall be established.

(c) A direct communication means shall be established with the person charged with the load planning and weight and balance calculation task.

(d) Communication protocol, as described in IGOM 4.5.1.2 Communication, shall be used.

(e) Written communication methods are recommended, as per IGOM 5.3.3.1.

(f) When verbal communication is used, a readback of all weight and balance load control information received shall be carried out.

Note: For the task of supervision of aircraft loading and unloading, refer to GOM 4.5.1.

5.4.3.4 Remote Load Control

Remote Load Control is a process of performing the load planning task and/or weight and balance calculation task for a departing flight in a remote location.

(a) The key roles of remote Load Control are:

1. To perform the load planning task.
2. To compute the weight and balance calculation task in liaison with the departure station.

(b) The key roles of the departure station are:

1. Aircraft loading and supervision task as defined in 4.5.1
2. Communicate to remote Load Control any discrepancies and/or deviations during the loading/offloading process.
3. Report final loading of the aircraft to the remote Load Control.

Information exchange is essential for a safe remote Load Control process. Data shall be transmitted between remote Load Control, departure station and cockpit crew either directly or indirectly, using predetermined means of communication as established by the operator.

5.4.4 Post-departure Messages Task

All post-departure messages and any other relevant messages pertaining to flight handling shall be sent to the defined stations as per Eastern Airways requirements. Such messages may include, but are not limited to:

(a) Load Departure Message (LDM)
(b) Container Pallet Message (CPM)
(c) ULD Control Message (UCM)
(d) Statistical Load Summary (SLS)

Messages shall be produced and delivered in accordance with respective AHM chapters.

A flight file shall be maintained for each departing flight in a secure location according to local regulations and/or operator requirements.

All movement messages are to be sent to the following Humberside Operations email address:
ops1@easternairways.com

INTENTIONALLY LEFT BLANK

5.5 Load Control Task Job Responsibility

Responsibilities of persons performing the Load Control task may vary depending on the organizational set up. It is recommended that:

(a) The load planning task and weight and balance calculation task may be performed by the same person.
The person performing these two tasks should not combine with the responsibility for aircraft loading and unloading supervision task.

(b) The aircraft loading and unloading supervision task, the weight and balance calculation task and the post- departure message task may all be performed by the same person. However the person performing these three tasks should not include the responsibility for the load planning task as well.

(c) At a station where ACARS is used, finalization of the weight and balance calculation task actions may differ.

(d) When Load Control processes are centralized, the person performing aircraft loading and the supervision task is charged with transmitting all final data to the remote control center.

INTENTIONALLY LEFT BLANK

5.6 Qualification Requirements

Personnel performing Load Control tasks shall be duly qualified. Training must be in accordance with AHM591 and AHM1110 (see GOM Section 0.5).

Training for the Load Control task shall be performed by a qualified instructor authorized by the operator.

Load Control licensing, training and documentation shall be in compliance with regulations and operator's policies.

INTENTIONALLY LEFT BLANK

5.7 Documentation

The operator is responsible for providing all relevant documentation for load planning and weight and balance calculations.

The person issuing the loadsheet shall accurately reflect all received data on documents, reports and messages produced for each flight, as per AHM590.

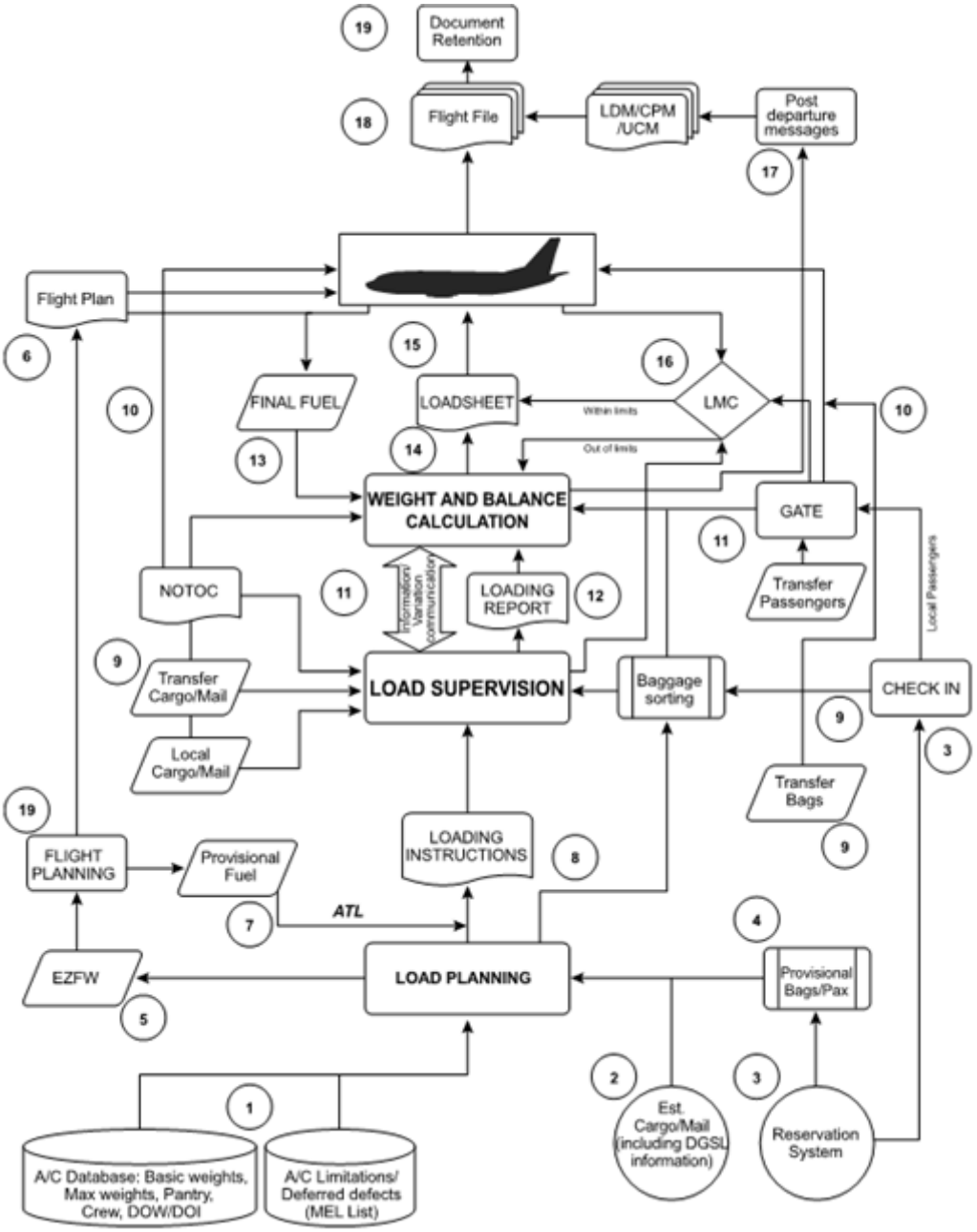
Relevant documents shall be manually or electronically issued and signed as per regulatory requirements.

Specified documents shall be retained for a period not less than three months. As a minimum, the documentation for each departing flight shall include:
(a) Final LIR signed by the responsible person.
(b) NOTOC (when applicable).
(c) Fuel figures confirmation (when applicable).
(d) Final loadsheet and trim sheet, including LMC, signed by PIC.
Disposal of documents may also be subject to regulation.

INTENTIONALLY LEFT BLANK

5.8 Load Control Process Flow

5.8.1 Load Control Process Flow Schema



5.8.2 Load Control Process Flow Legend

CIRCLE #	ACTION
1	Aircraft designation: access to permanent and semi-permanent data as per AHM565 and maintenance data related to limitations that could affect loading and weight and balance.
2	Estimated/Provisional cargo and mail, data including DGSL information, to load planning.
3	Data from reservation system to capacity calculation (passenger and bag counts) and check in (SSR).
4	Provisional passengers sorted by class and provisional bags according to operator policy to load planning.
5	Provide EZFW, to flight planning system.
6	Operational flight plan to PIC.
7	Provisional fuel, to calculate the allowed traffic load and verify that load planning is within limits.
8	Loading Instruction to Load Supervision and loading team. Segregation plan to sorting area.
9	Actual data flowing from check-in (passenger number, baggage pieces and weight, special load information), cargo and mail warehouse (special load information), transfer load.
10	Load to aircraft.
11	Load info and variation communication between Load Control and Load Supervision: discrepancies between planned and real load weight, nature and distribution.
12	Final data confirmation from Loading Supervision and Gate (gate collected items).
13	Final fuel figures communication from the flight planning system or PIC.
14	Loadsheet verification and release.
15	Loadsheet to aircraft.
16	Last minute changes.
17	Post-departure load messages and DGSL information to station of arrival.
18	Signed documents verification and collection.
19	File archiving and retention.

5.9 Passenger and Baggage Masses

The following may be used to establish masses for a loadsheet throughout the fleet.

Eastern Airways have agreed with the CAA for the purposes of accuracy on its BAe Jetstream 41 fleet to use revised passenger weights that allow for all hold baggage & passenger hand baggage to be weighed at the point of check-in and recorded as actual weights. This removes the traditional "standard" of allowing 6 kilos for hand baggage.

The consequence of this is that you **MUST** ensure all hand baggage is weighed and recorded accurately.

Passenger including cabin / hand baggage weights:

All weights KILOS	Standard weights	J41 ONLY weights
Males (12 years or over) all flights except charter	88	82
Females (12 years or over) all flights except charter	70	64
Males (12 years or over) charter flights	83	77
Females (12 years or over) charter flights	69	63
Child (age 2-11 include)	35	35
Infant (under 2)	0	0
Baggage:		
Hand Baggage	Above	Actual
Hold Baggage		Actual
Each piece - scheduled flights Domestic	11	
Each piece - scheduled flights European	13	

Eastern Airways has CAA approval to reduce the notional weight of J41 male passenger to 82 kilos and that of females to 64 kilos – i.e. to remove the 'hand baggage' element.

The CAA has granted this dispensation on the understanding that hand baggage is weighed, and the actual total weight is included on both manual and automatic/auto loadsheets. Provided that the total actual hand baggage weight is recorded on the manual or automatic loadsheet, captains and dispatchers can assume a notional weight of 82Kgs and 64 Kgs for male and female passengers respectively.

INTENTIONALLY LEFT BLANK

5.10 Ballast Control

If ballast is requested by the crew to be carried in the hold of the aircraft for trim purposes, this ballast may have been loaded at another departure station or may be requested prior to departure.

All ballast already in the hold, or loaded must be recorded on the load form. If no ballast is loaded, then NIL/0/strike through must be entered on the load form.

No ballast must be removed from the hold without authorisation from the crew.

INTENTIONALLY LEFT BLANK

5.11 Jetstream 41

5.11.1 Limitations

Mass and Centre of Gravity;

Maximum Landing Mass ..... 10569 kg
Maximum ramp Mass..... 10936 kg
Maximum Take-Off Mass ..... 10886 kg
Maximum Zero Fuel Mass ..... 9707 kg

Maximum Compartmental Masses;

Maximum Pod Mass ..... 158 kg
Maximum Rear Hold Mass ..... 330 kg
Maximum Wardrobe Mass ..... 68 kg

5.11.2 Passenger Weight and Balance

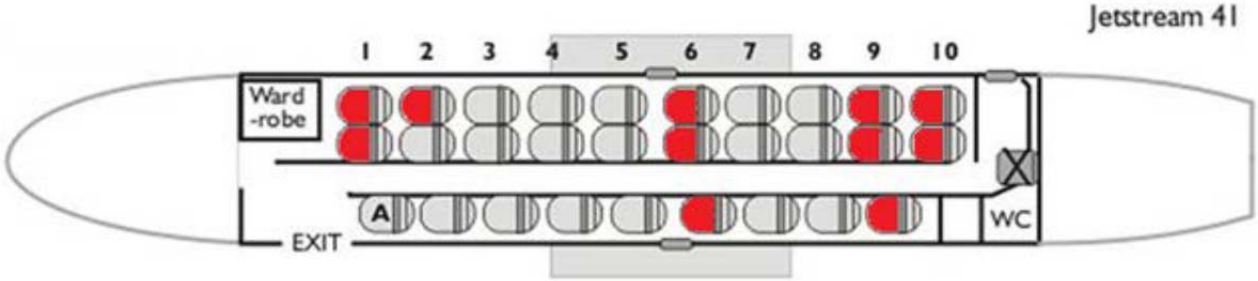
The following is the procedure for allocating passenger seats for trim purposes.

When the aircraft has low passenger numbers (i.e. 1-10 pax) seated at the rear of the cabin, this causes the trim of the aircraft to be towards the forward operating limit.

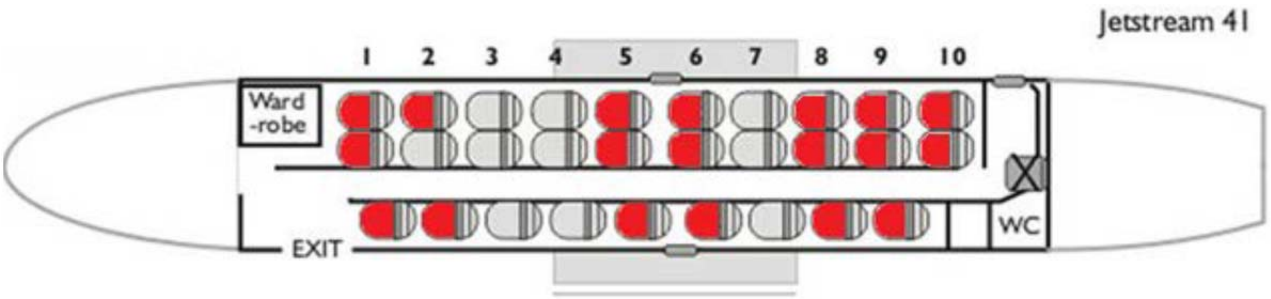
In order to help the trim of the aircraft in flight, handling agents are instructed to distribute passengers more evenly in the cabin rather than starting from the rear of the cabin and working forwards.

Regardless of the passenger load on the flight, passengers must be checked in to allow a more even spread throughout the cabin.

Example seating plan with 11 pax



Example seating plan with 19 pax



NOTE: *There must still be a slight bias in terms of seating pax towards the rear of the aircraft*

SECTION 6: AIRSIDE SAFETY & OPERATIONAL OVERSIGHT

6.1 Introduction

To ensure ground operational safety, all station activities, including, if applicable, those outsourced to an external third-party ground service provider or its subcontractors, shall be conducted under the direct oversight of supervision personnel.

6.1.1 Operational Requirements

(a) Supervision personnel must be trained and qualified to perform the assigned functions.
(b) Assigned individuals will provide oversight of personnel conducting, airside operations.
(c) An assigned individual will oversee the airside operational activities ensuring the aircraft is handled and serviced according to IGOM or the Operator's specific requirements, these duties may be combined with another function/role.
(d) If applicable checklists are provided, they should be completed as required by the individual assigned to provide oversight. See 6.3 as an example.
(e) Individuals assigned to oversee ground handling operations must have oversight on airside operations, ground safety and flight schedule.

INTENTIONALLY LEFT BLANK

6.2 Supervision Scope

Oversight for an airside operational activity includes, but is not limited to the following activities:

(a) Aircraft, vehicles and GSE operations and parking.
(b) Arrival.
(c) Baggage handling.
(d) Cabin Equipment.
(e) Catering ramp handling.
(f) De-icing/anti-icing services and snow/ice removal.
(g) Departure.
(h) Exterior cleaning.
(i) Interior cleaning.
(j) Load control document accuracy:
    1. LIR.
    2. Loadsheet.
    3. NOTOC.
    4. Other documents as applicable.
(k) Load control and flight operations.
(l) Marshalling.
(m) Moving of aircraft.
(n) Passenger services.
(o) PRM.
(p) Ramp fuelling/de-fuelling operations.
(q) Ramp regulations.
(r) Ramp services.
(s) Ramp to flight-deck communications.
(t) Staff conduct, behaviour and operational practice, PPE.
(u) Toilet services.
(v) Towing cargo and baggage.
(w) ULD and bulk loading and unloading of baggage and cargo.
(x) Water service.

INTENTIONALLY LEFT BLANK

6.3 Turnaround Coordination / Supervision Requirements

	ACTION	✓	REMARKS
1.	Pre-flight brief conducted regarding flight requirement(s) and services as needed		
2.	Pre-arrival check parking position free of Foreign Object Damage (FOD), obstacles and/or spillage		
3.	Personnel wearing PPE available and ready		
4.	All GSE and personnel positioned outside the Equipment Restraint Area (ERA)		
5.	Ensure guidance system is activated and marshaller(s)/wing walkers correctly positioned as applicable		
6.	Personnel must stay clear of the aircraft, until anti-collision lights have been switched off (exception applies if APU is not operational)		
7.	Ensure aircraft chocked and coned		
8.	Ensure an arrival external check prior to approach of any ground support equipment is done		
9.	Ensure equipment is properly positioned and operated (e.g. guide rails)		
10.	Ensure cargo holds are offloaded and commodities correctly handled as required		
11.	Ensure all cargo holds offloaded according to LIR and inspected for damage		
12.	Passenger Bridge and/or Steps set to correct height before opening cabin access doors and all safety devices are installed		
13.	Aircraft cabin access door operation by authorized and qualified person		
14.	During passenger (dis)-embarkation, passenger movement protected and guided in walkways between the aircraft and bus or terminal		
15.	Passenger walkways clean of obstacles and free of undesired contaminated substances		
16.	Fuel bowser/tank is properly positioned and escape route not obstructed		
17.	Ensure FUEL SAFETY ZONES are respected		
18.	Ensure safety precautions for fuelling with passengers on board or boarding are adhered to as applicable		
19.	Ensure on-load started and the person responsible for loading oversight, such as a Load Master in possession of the LIR		
20.	Ensure condition of load inspected prior to loading		
21.	Ensure baggage and cargo loaded and handled in accordance with the LIR		
22.	Ensure DG correctly handled, segregated, secured and stowed		
23.	Ensure holds are checked to verify load and locks/nets configuration		
24.	Ensure Load information is exchanged with all deviations noted		
25.	Ensure final load information provided to Flight crew as required		
26.	Ensure GSE removal procedures followed		
27.	Ensure final ramp inspection and aircraft walk-around check performed		
28.	Chocks and cones removal procedures followed		
29.	Ensure departure sequence conducted as required		
30.	Ensure post departure activities conducted as required with appropriate document retention		

INTENTIONALLY LEFT BLANK

6.4 Auditing

6.4.1 General

Auditing the appointed or prospective Eastern Airways ground handling agents & associated service providers is an essential element of the continuous improvement in safety and efficiency of the operation. As well as identifying potential problems that could result in injury or loss to individuals as well as loss to Eastern Airways, it also allows each ground handling provider to share information and implement best practice procedures to improve performance of both parties together.

The audit will be conducted by the Eastern Airways Ground Operations department who will be responsible for advising audit schedules, specific requirements for the audit and access requirements while ensuring the audit is conducted correctly and efficiently on the agreed date with the minimum disturbance to the handling agent or service provider. All records will be distributed with appropriate actions and rectifications.

Any necessary re-audits or return visits will be arranged in conjunction with the ground handling agent.

Non-scheduled inspections may be applicable if felt necessary by Eastern Airways and recommended by the Ground Operations Manager.

6.4.2 Audit Programme

Eastern Airways will carry out regular audits of its Handling Agents and key suppliers.

Station audits for all Schedule Service stations will be carried out at least once in every 24 month period. Audit for charter destinations will be carried out on a frequency compatible with the number of flights operated to that station.

Eastern Airways will contact the handling agent (Station Manager or senior station official) to pre-arrange the audit for a mutually agreeable date.

For new stations, where possible, a pre-start audit will be conducted to establish areas requiring improvement before the start of operations.

6.4.3 Frequency of Audit

At least once every 24 months (As required for Charter stations).
Annual postal audits for on going compliance.

6.4.4 Publication of Audit Report

Eastern Airways aim to send the completed Audit report within 14 days of completion of the audit. (Serious concerns or deficiencies with a Perceived safety implication will be raised as soon as possible).

6.4.5 Handling Agent Response

A formal response from the Handling Agent to any deficiencies highlighted by the report should be received by Eastern no later than twenty one (21) days after publication of the report. Depending on the nature of the deficiencies

highlighted, this may be an interim report with any further follow-up action and timescales to be mutually agreed with Eastern.

6.5 Reporting–Incidents, Accidents and Near-Misses

Eastern Airways actively promotes incident and accident reporting as part of our Just Culture.

Where an event has occurred involving any aspect of the handling of an Eastern Airways flight or disruptive passenger behaviour or interference, that has either caused or has the potential to cause an accident or incident, it must be reported.

Service providers have a responsibility to report these events through your own SMS reporting system. A copy of that report must be sent to the following recipients;

DLGroundOps@easternairways.com

Your report will then be logged on our system for action.

The Eastern Airways General Safety Report form (GSR) must only be used by Eastern Airways employees to report incidents and events.

Eastern Airways will, on a quarterly basis, submit applicable aircraft ground damage reports to IATA for inclusion in the Ground Damage Database (GDDB).

INTENTIONALLY LEFT BLANK

6.6 Airside Safety Investigation Procedure

6.6.1 General

The investigation process will be conducted in a logical way by collecting and analysing factual information in order to identify root causes, contributing and human factors.

6.6.2 Factual Information

In general:

(a) Gather factual information including photographs, testimonials, reports, sketches, video footage, maps and any other relevant information.
(b) Determine the level of investigation:
1. Basic investigation–an inquiry to identify the key elements that led to the event.
2. Formal investigation–a formal inquiry with all involved and legally required internal and external parties.

6.6.3 Investigation Procedure

In general:

(a) Gather all information available about the event:
1. Identify the circumstances leading up to the event.
2. Review all reports pertaining to the event.
3. Collect all available data (CCTV and other video footage, photographs, objects, testimonials, sketches, maps).
4. Identify the people involved and any witnesses.
5. Gather all relevant factual information concerning the people involved (roster, training records, medical information related to the event if possible, employee records, assigned task, all reports, any other).
6. Gather all relevant factual information concerning the technical, environmental and infra structural conditions.

(b) Conduct interviews with all individuals involved and any witnesses.
(c) Conduct a confirmation site visit if possible.
(d) Confirm whether a SOP is published and available for the task being performed.
(e) Identify human factors:
1. Communication.
2. Stress and timing.
3. Fatigue.
4. Loss of situational awareness.
5. Health condition.
6. Use of available resources.
7. Staff feedback related to the SOP.
8. Teamwork.
9. Knowledge retention and competence.

(f) Technical factors:
1. Use of a GSE.
2. Preventive and Corrective maintenance records.
3. Current technical condition.
4. Suitability for the task.

6.6.4 Analysis

Analyse the event by:

(a) Describing the sequence of events as they occurred for each person/element involved.
(b) Identifying any failures in the tasks performed in relation to written instructions.
(c) Identifying any causal links between events.
(d) Documenting a chronological sequence of events that led to the incident/accident supported by factual information.
(e) Determining which failures contributed to the accident based on factual evidence in relation to the sequence of events.
(f) Identifying pre-existing and/or new hazards that contributed to the event.

6.6.5 Conclusion and Causes

Specify:

(a) Root causes.
(b) Contributing factors.
(c) Human factors.

6.6.6 Investigation Follow-up

Follow-up the investigation by:

(a) Establishing the following for each root cause:

1. corrective action requests.
2. preventive actions requests.

(b) Making safety recommendations that:

1. address the root causes, contributing and human factors identified as a part of the investigation.
2. ensure corrective and preventive action requests will be issued to the line management.
3. provides line management with corrective action plans to address the root causes, contributing and human factors for approval.
4. ensure that an Action plan implementation is confirmed through a monitoring/audit process.
5. ensure that the Human factors in Airside Safety Investigations form is completed.

6.7 Monitoring Procedures

Safety performance monitoring is important in order to enable management to identify trends that could have a negative effect on safety.
The following checklists should be used to monitor safety performance in the operations:

STATION: DATE: FLIGHTS: EVALUATED BY:		COMPLIANCE			
		Y	N	RA	REMARKS
A. AIRCRAFT ARRIVAL/OFFLOAD					
1	Proper hearing protection is used by all employees.				
2	Proper safety footwear is worn by all employees.				
3	High visibility /reflective clothing is worn				
4	An FOD inspection has been made, FOD removed and properly disposed.				
5	All equipment is positioned outside aircraft clearance lines.				
6	The gate area is clear.				
7	The bridge is fully retracted. If driveable type it is parked within its "Ramp Box"				
8	The bridge operator makes a visual check for clearance and the area beneath and within the travel of the boarding bridge is clear				
9	The gate and bridge areas are ready for arrival				
10	The bridge operator uses hearing protection				
11	There are not any obstructions present in the bridge				
12	Fall protection devices (doors/barriers) are utilized on the bridge				
13	The proper hand signals are used by marshaller, if marshaller is used				
14	Wands are used for marshalling and all signalling (illuminated in low visibility)				
15	Aircraft chocks are properly installed according to airline procedures				
16	The grounding cable is connected to grounding point on Nose Leg (where available)				
17	Personnel wait until the aircraft has stopped, is chocked, anti-collision light off, engines shut down and "all clear" given by marshaller before approaching				
18	Wingtip/engine cones are properly positioned according to airline procedures				
19	The bridge operator is alert to devices on the fuselage				

STATION: DATE: FLIGHTS: EVALUATED BY:		COMPLIANCE			
		Y	N	RA	REMARKS
A. AIRCRAFT ARRIVAL/OFFLOAD					
20	Bridge warning devices operate (beacon, bell, etc.)				
21	The bridge auto levelling system is deployed and operating				
22	The boarding bridge is properly lighted				
23	The bridge is properly aligned to the aircraft				
24	The weather canopy is deployed to the aircraft				
25	Employees observe ramp safety rules (no horseplay, no smoking, etc.				
26	Employees adhere to the "no seat, no ride rule"				
27	Employees walk rather than run on the ramp				
28	Local speed limits are observed by all drivers				
29	Roadways are used by equipment operators				
30	A guide-person is used when positioning equipment in confined areas				
31	A guide-person is used when backing equipment to the aircraft				
32	A guide-person is used when positioning high-reach trucks				
33	After positioning elevated units to the aircraft, stabilizers are immediately deployed				
34	All vehicles make a stop for a brake check at the distance from the aircraft required by the airline				
35	The areas around cargo/passenger doors are visually checked for existing damage (dents, scratches, etc.) before ground equipment approaches				
36	Personnel check clearances when opening cargo/passenger doors				
37	Cargo/passenger doors are opened and secured properly by authorized personnel using required signals				
38	When mobile passenger steps are used, they are properly positioned to the aircraft. Stabilizers are deployed				
39	Personnel refrain from "Horseplay"				
40	The beltloader is in the full down position with handrail stowed when approaching the aircraft, when possible				
41	The beltloader front bumper is positioned below and away from the cargo door sill				
42	The beltloader handrail is raised when up to a wide body aircraft				

STATION: DATE: FLIGHTS: EVALUATED BY:		COMPLIANCE			
		Y	N	RA	REMARKS
A. AIRCRAFT ARRIVAL/OFFLOAD					
43	Employees refrain from walking, standing or sitting on a moving conveyor belt				
44	Safety rails on wide body loaders are down upon approach to aircraft				
45	The container loader is properly positioned to the aircraft with stabilizers deployed				
46	Loader guardrails are installed for off/on load and stowed when cargo door is closed				
47	Employees use the ladder rather than riding up or down the loader platform				
48	Brakes are set on vehicles				
49	Where equipped, chocks are used on vehicles				
50	When carts/dollies are dropped off, the tractor comes to a complete stop, the hand brake is engaged and the driver dismounts to engage the brakes				
51	Locks on dollies are properly set prior to approach to container loader				
52	The operator's arms and legs are within the profile of vehicle at all times when moving				
53	Employees use correct body mechanics when loading/unloading or lifting				
54	Baggage is properly handled				
55	All container/cart doors or curtains are closed and fastened after loading				
56	Baggage tractor hood/fender/seat or top of containers are free of baggage/cargo/mail				
57	All employees avoid driving equipment under the aircraft wing and fuselage				
58	Employees wear protective gloves when servicing lavatories				
59	The plug (donut) is properly installed and all access panels secured when lavatory servicing is finished				
60	A guide-person is used when backing high-reach trucks away				

STATION: DATE: FLIGHTS: EVALUATED BY:		COMPLIANCE			
		Y	N	RA	REMARKS
B. AIRCRAFT ONLOAD/DEPARTURE					
1	The bridge is properly aligned to the aircraft				
2	The bridge auto-levelling system is deployed and operating				
3	The bridge weather canopy is deployed to the aircraft				
4	The bridge is properly lighted				
5	Proper hearing protection is used by all employees				
6	Proper safety footwear is worn				
7	Employees walk rather than run on the ramp				
8	Local speed limits are observed by all drivers				
9	Roadways are used by equipment operators				
10	Operator's arms and legs are within the profile of vehicle at all times when moving				
11	All vehicles make a stop for a brake check				
12	All container/cart doors or curtains are closed and fastened during transport				
13	Before entering cargo compartment, all containers checked for safe condition				
14	When mobile passenger steps are used, they are properly positioned to the aircraft door. Stabilizers are deployed				
15	Personnel refrain from "Horseplay"				
16	All employees avoid driving ground equipment under the aircraft wings and fuselage				
17	Baggage tractor hood/fender/seat or top of containers are free of baggage/cargo/mail				
18	The beltloader front bumper is positioned below and away from the cargo door sill				
19	The beltloader handrail is raised when up to a wide body aircraft				
20	Employees refrain from walking, standing or sitting on a moving conveyor belt				

STATION: DATE: FLIGHTS: EVALUATED BY:		COMPLIANCE			
		Y	N	RA	REMARKS
B. AIRCRAFT ONLOAD/DEPARTURE					
21	The container loader is properly positioned to the aircraft with stabilizers deployed				
22	Loader guardrails are installed for off/on load and stowed when cargo door is closed				
23	Employees use the ladder rather than riding up or down the loader platform				
24	Locks on dollies are properly set prior to approach to container loader				
25	Brakes are set on vehicles				
26	A guide-person is used when backing equipment to the aircraft				
27	A guide-person is used when positioning equipment in confined areas				
28	When carts/dollies are dropped off, the tractor comes to a complete stop, the hand brake is engaged and the driver dismounts to engage the brakes				
29	Baggage is properly handled				
30	Employees use correct body mechanics when loading/unloading or lifting				
31	All required locks set/cargo nets/barriers are installed and secured before cargo doors are closed				
32	Personnel check clearances when closing cargo/passenger doors				
33	The correct size of tractor is used for pushback				
34	A complete walk-around inspection is done to check that cargo/access doors are closed and secured, that there is no visible damage to the aircraft and that the gate area is clear of equipment				
35	Ground equipment is parked to avoid jet blast/prop wash/engine ingestion				
36	The loading bridge is retracted before start of pushback				
37	The agent checks for clearances before retracting the bridge				
38	The bridge operator is alert to devices on the fuselage				

STATION: DATE: FLIGHTS: EVALUATED BY:		COMPLIANCE			
		Y	N	RA	REMARKS
B. AIRCRAFT ONLOAD/DPARTURE					
39	Bridge warning devices operate (bell, beacon, etc.				
40	The weather door is closed when the bridge is stowed				
41	The agent remains on the bridge until the aircraft has pushed back				
42	Wingtip clearance cones are removed and correctly stowed (if applicable)				
43	If the headset operator is not in the tractor they are clear of the nose gear when the aircraft is moving				
44	When utilized, Wing walkers are in position and using proper hand signals				
45	Wing walkers are aware of engine hazard zones				
46	Employees understand the meaning of aircraft rotating beacons				
47	Wands are used for marshalling and all signalling (illuminated in low visibility)				
48	Employees avoid walking under the fuselage or stepping across the tow bar				
49	The marshaller is at the correct position to hold the aircraft brakes				
50	The tow bar is disconnected properly				
51	Chocks removed and correctly stowed.				

STATION: DATE: FLIGHTS: EVALUATED BY:		COMPLIANCE			
		Y	N	RA	REMARKS
C. EQUIPMENT					
1	Vehicles are properly maintained				
	a) Parking Brake - Foot Brake				
	b) Windshield Mirrors, Windows Cracked/dirty				
	c) Windshield wipers				
	d) Wheels/tires				
	e) Lights/reflectors				
	f) Horn/back-up alarms				
	g) No evidence of fluid leakage				
	h) Cleanliness - interior and exterior				
	i) Functional operating controls (levers, switches, etc.)				
	j) Functional operating features (belts, casters, hoses, etc.)				
2	All vehicles requiring them have chocks				
3	The brake systems on carts/dollies operate properly				
4	There is a complete complement of locks on all dollies				
5	Brakes are set on all carts/dollies				
6	Seats are provided for any passengers riding on equipment				
7	All safety devices are functional				
8	Fire extinguishers are installed on specified vehicles. Inspection tags are current				
9	Baggage containers are checked for serviceability prior to being loaded				
10	Sides on carts are in the up position; curtains closed during transport. Container doors are securely closed				
11	The beltloader is in the full down position when parked or moving on the ramp				
12	Rear doors of trucks are closed at all times when elevated and during movement on the ramp				
13	Trucks are driven with body lowered				
14	Vehicle doors are closed after the driver leaves				

STATION: DATE: FLIGHTS: EVALUATED BY:		COMPLIANCE			
		Y	N	RA	REMARKS
D. HOUSEKEEPING					
1	The ramp is free of items which could cause FOD				
2	The ramp is swept regularly				
3	The ramp area is free of any fluid spillage				
4	The ramp area is free of unnecessary congestion				
5	Gates are clear of equipment which may block the arrival or departure of an aircraft				
6	Ramp markings (taxi lines, etc.) are clearly identified				
7	Ground equipment is parked within marked areas				
8	All motorized vehicles are backed into parking spaces				
9	When not in use, all vehicles are shut off with parking brake on and transmission in park or neutral				
10	Aircraft chocks are properly stored when not in use				
11	There are sufficient numbers of trash cans, and they are emptied regularly				
12	All vehicles are free of any debris which could interfere with the safe operation of the vehicle or cause FOD				
13	Vehicles are free of evidence of smoking				
14	Towbars are disconnected from tugs when not in use				
15	Pallets/containers are stored off the ground and secured				
16	Emergency exits and equipment access is kept clear				

STATION: DATE: FLIGHTS: EVALUATED BY:		COMPLIANCE			
		Y	N	RA	REMARKS
E. FUELING					
1	Fuel truck approach procedures followed				
2	Fuel truck positioning procedures followed				
3	Fuel truck operating procedures followed				
4	Fueling apparatus operating procedures followed				
5	Fueling clear zone requirements followed				
	Fuel Warning flag, cone, sign, etc. in place at fuel pit				
6	Post fueling inspection walk around completed				
	Personnel				
8	PPE worn				
9	Personnel exhibit appropriate work behavior (e.g., no "horseplay")				
10	Personnel use correct manual handling, ergonomics (e.g., proper lifting techniques)				
11	Personnel avoid walking where not authorized (e.g., under the fuselage, stepping over towbar, or between carts)				
12	All traffic regulation procedures followed				

STATION: DATE: FLIGHTS: EVALUATED BY:		COMPLIANCE			
		Y	N	RA	REMARKS
F. CATERING					
1	Catering truck approach procedures followed				
2	Catering truck positioning procedures followed				
3	Catering truck operating procedures followed				
4	Engine inlet plugs used as required				
5	Catering truck removal procedures followed				
6	Catering truck is free of FOD; any FOD/garbage dropped on ramp removed				
	Truck operated safely (e.g., speed, safety zones, reckless)				
8	Truck properly configured prior to removing from A/C				
	Personnel				
9	PPE worn				
10	Personnel exhibit appropriate work behavior (e.g., no "horseplay")				
11	Personnel use correct manual handling, ergonomics (e.g., proper lifting techniques)				
12	Personnel avoid walking where not authorized (e.g., under the fuselage, stepping over towbar, or between carts)				
13	All traffic regulation procedures followed				

STATION: DATE: FLIGHTS: EVALUATED BY:		COMPLIANCE			
		Y	N	RA	REMARKS
G. LAVATORY/POTABLE WATER SERVICE					
1	Lavatory vehicle operating procedures followed				
2	Lavatory servicing procedures followed				
3	PPE worn				
4	Personnel exhibit appropriate work behavior (e.g., no "horseplay")				
5	Personnel use correct manual handling, ergonomics (e.g., proper lifting techniques)				
6	Personnel avoid walking where not authorized (e.g., under the fuselage, stepping over towbar, or between carts)				
7	All traffic regulation procedures followed				
	Potable Water Service				
8	Water vehicle operating procedures followed				
9	Water servicing procedures followed				
10	Potable water units kept away from lavatory units or other sources of contamination				
11	PPE worn				
12	Personnel exhibit appropriate work behavior (e.g., no "horseplay")				
13	Personnel use correct manual handling, ergonomics (e.g., proper lifting techniques)				
14	Personnel avoid walking where not authorized (e.g., under the fuselage, stepping over towbar, or between carts)				
15	All traffic regulation procedures followed				

STATION: DATE: FLIGHTS: EVALUATED BY:		COMPLIANCE			
		Y	N	RA	REMARKS
H. CABIN SERVICE					
1	Cleaning vehicles approach procedures followed				
2	Personnel pay attention to operating A/C beacons				
3	Cleaning vehicles positioning procedures followed				
4	Cleaning vehicles operating procedures followed				
5	All cabin cleaning safety procedures (e.g., biohazard, needle sticks) followed				
6	Cabin personnel support a FOD-free ramp/airside (e.g., pick up FOD)				
7	A/C door(s) operational procedures followed				
	Personnel				
8	PPE worn				
9	Personnel exhibit appropriate work behavior (e.g., no "horseplay")				
10	Personnel use correct manual handling, ergonomics (e.g., proper lifting techniques)				
11	Personnel avoid walking where not authorized (e.g., under the fuselage, stepping over towbar, or between carts)				
12	All traffic regulation procedures followed				

STATION: DATE: FLIGHTS: EVALUATED BY:		COMPLIANCE			
		Y	N	RA	REMARKS
I DE-ICE / ANTI-ICE					
1	De-ice/anti-ice truck approach procedures followed				
2	De-ice/anti-ice truck positioning procedures followed				
3	De-ice/anti-ice truck operating procedures followed				
	Personnel				
1	PPE Worn				
2	Communication between bucket and cab established (e.g., headset worn)				
3	Personnel exhibit appropriate work behavior (e.g., no "horseplay")				
4	Personnel use correct manual handling, ergonomics (e.g., proper lifting techniques)				
5	Personnel avoid walking where not authorized (e.g., under the fuselage, stepping over towbar, or between carts)				
6	All traffic regulation procedures followed				

STATION: DATE: REVIEWED BY:				
		Y	N	REMARKS
1	Are airside performance evaluations conducted?			
2	Is there a set frequency for airside performance evaluations?			
3	Are findings of airside performance evaluations recorded?			
4	Are findings of airside performance evaluations reviewed and assigned?			
5	Are airside performance targets/goals established and communicated?			
6	Are airside performance targets/goals measured?			
7	Are shortfalls of airside performance targets/goals analyzed?			
8	Do records indicate that all personnel are trained for the tasks being performed?			

INTENTIONALLY LEFT BLANK

6.8 Emergency Response Procedures

The following actions are to be carried out in the event of an emergency in accordance with airline and, or the Ground Service Provider's procedures and local regulations.

Aircraft evacuation

Following an event which results in an aircraft evacuation, the handling agent is to;

(a) Contact Eastern Airways Operations and inform them of the event providing as much detail as possible
(b) Provide appropriate numbers of ground staff to escort pax into the terminal and where possible to an area away from other passengers
(c) Cross reference passengers on board with the PNL
(d) Offer welfare assistance to those that require it
(e) Liaise with Eastern Airways Operations regarding any disruption arrangements that may be offered
(f) Confirm with passengers that they are satisfied with the information they have been provided and if passengers are not, obtain their contact details and provide to Eastern Airways Customer Service department, should the event be upgraded to an aircraft incident, follow the procedures as detailed in Annex 'O' of the Carrier incident manual.

INTENTIONALLY LEFT BLANK

6.9 Adverse Weather Oversight Procedures

6.9.1 General

Oversight for an aircraft arrival/departure during adverse weather includes, but is not limited to the activities listed below. Some examples of adverse weather include winter or slippery apron conditions, storms/lightning, lightning alert callout, sandstorms, high winds, hurricanes/typhoons, tornadoes and intense heat

(a) Activities:

1. Aircraft, vehicles and GSE operations and parking
2. Arrival
3. Baggage handling
4. Cabin equipment
5. Catering ramp handling
6. Departure
7. Exterior cleaning.
8. Interior cleaning
9. Load control document accuracy:
   (i) LIR
   (ii) Loadsheet
   (iii) NOTOC
   (iv) Other documents as applicable
10. Load control and flight operations
11. Marshaling.
12. Moving of aircraft.
13. Passenger services
14. PRM
15. Ramp fueling/de-fueling operations
16. Ramp regulations
17. Ramp services
18. Ramp to flight-deck communications
19. Staff conduct, behavior and operational practice, PPE
20. Toilet services.
21. Towing cargo and baggage.
22. ULD and bulk loading and unloading of baggage and cargo
23. Water services

(b) Process:

1. Receive notification of adverse weather
2. Acknowledge notification of adverse weather
3. Identify the threat
4. Take action according to established procedures
5. Communicate to all affected parties
6. Ensure compliance with local regulations

6.9.2 Winter or Slippery Apron Conditions

Winter weather brings extra hazards which require awareness and more care on the part of personnel working on the aprons to prevent accidents. The following precautions to reduce accident risk must be taken:

(a) Plan additional time for all ramp activities and take extra care when walking across apron surfaces which can be slippery.
(b) Take extra care when driving, especially approaching the aircraft. Remember that vehicles require greater distance to stop safely.
(c) Operators of potable water tankers and toilet servicing vehicles must be vigilant that there is no spillage or leakage that can lead to subsequent freezing. Care must be taken to keep spillage and overflow to a minimum.
(d) If the apron conditions are hazardous, contact the competent authority to mitigate the hazard. In the event the hazard can not be mitigated, suspend the affected operations.
(e) Close all entrance and cargo hold doors as soon as possible and keep them closed to avoid precipitation or snow entry into the aircraft.
(f) Reduce speeds in slippery apron conditions. Adjust all activities and operations on the ramp to suit the conditions at the time.

6.9.3 Storms–Lightning

6.9.3.1 Notification Levels

LEVELS	ACTION
Green–Possibility of Lightning or Thunderstorm activity outside of 8 kilometers (5 miles) radius of the airport	Disseminate lightning warning to airside operating staff
Amber Alert–Lightning activity within an 8 kilometers (5 miles) radius of the airport	Disseminate lightning warning to airside operating staff so they can prepare and plan their activities to be ready in case of a Red Alert in accordance with local regulatory requirements.
Red-Stop/Suspend–Lightning activity within a 5 kilometers (3 miles) radius of the airport	Disseminate the order to stop all airside activities and seek shelter to all airside operating staff

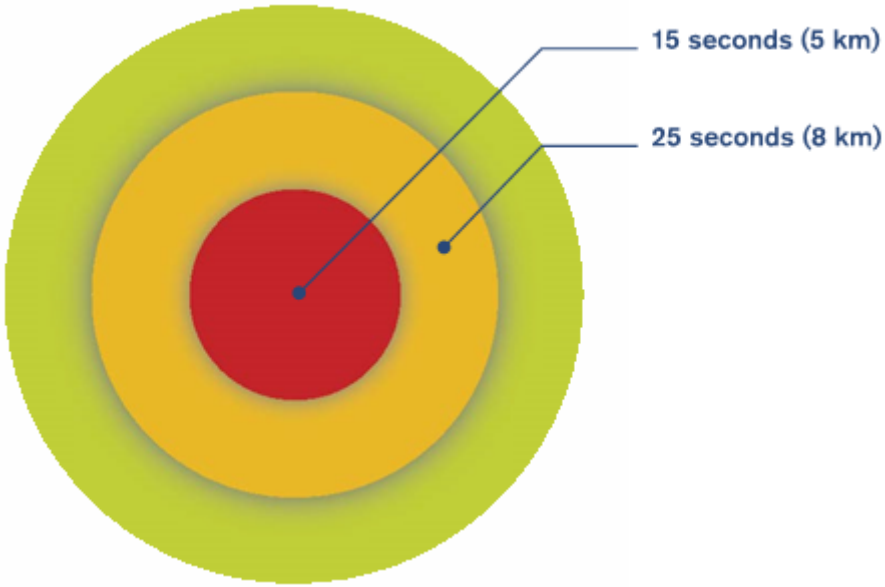
6.9.3.2 Lightning Alert Callout

In absence of an integrated airport notification system all airside operating staff shall be aware of the following procedures:

(a) Use Counting Method (see IGOM 6.8.3.3) to detect/predict lightning activity. Determine the corresponding level based on the Count Method diagram below.
(b) The responsible person notifies all airside operating staff of lightning level. If the person responsible is not available the Counting Method should be used by all airside operating staff for self-protection.
(c) In case of level 3 proceed to designated shelter.

6.9.3.3 Counting Method

The Counting Method is used when an integrated airport notification system is absent. It is used to estimate the level of lightning activity.
Counting Method Chart:



Note 1: *The time indicated is the time between the lightning and the sound of thunder.*

Note 2: *If the counted time is less than 15 seconds, the lightning activity is less than 5 km from the airport.*

Note 3: *If the counted time is between 15 seconds and 25 seconds, the lightning activity is between 5 and 8 km from the airport.*

6.9.4 High Wind Conditions

High winds pose a great risk of damage and the following minimum precautions should be taken:

(a) Ensure the safety of the aircraft by installing additional chocks and removing all equipment from around the aircraft.
(b) Take extreme care when opening or closing aircraft hold doors
(c) Make sure parking brakes are set on all parked GSE.
(d) Set parking brakes and secure by additional means if necessary, all non-motorized ramp equipment. (i.e. baggage carts and ULD dollies).

6.9.5 Sandstorms/Low Visibility

(a) Issue appropriate PPE (such as goggles, mask, covered clothing)
(b) Ensure the provision of shelter, as require

6.9.6 Intense Heat

(a) Issue appropriate PPE (such as covered clothing)
(b) Ensure the provision of re hydration for staff
(c) Ensure the provision of a temperature controlled environment, during rest breaks

INTENTIONALLY LEFT BLANK

SECTION 7: WINTER OPERATIONS

7.1 Scope

7.1.1 Field of Application

The Winter Operations Manual establishes the minimum requirements for ground based aircraft de-icing/anti-icing methods and procedures to ensure the safe operation of Eastern Airways aircraft during icing conditions on the ground.

The Winter Operations Manual does specify the requirements for particular Eastern Airways operated aircraft types.

NOTE: *Refer to particular aircraft manufacturers published manuals and procedures, for further guidance.*

The application of the procedures specified in this manual are intended to effectively remove and/or prevent the accumulation of frost, snow, slush or ice contamination which can seriously affect the aerodynamic performance and/or the controllability of an aircraft.

The principal method of treatment employed is the use of fluids qualified to AMS1424 and AMS1428 (Type I, II, III, and IV fluids).

All guidelines referred to herein are applicable only in conjunction with the applicable documents. Due to aerodynamic and other concerns, the application of de-icing/anti-icing fluids shall be carried out in compliance with engine and aircraft manufacturers' recommendations.

7.1.2 Agreements and Contracts

7.1.2.1 De-icing Supplier Selection

Prior to a new station commencing operations, Eastern Airways Ground Operation shall carry out a station pre-start assessment. Part of this assessment must include de-icing/anti-icing capabilities available at the station.

Where available, Ground Operations shall review previous DAQCP reports on the supplier as part of the Management of Change process.

If recent DAQCP reports for the supplier are unavailable, Ground Operations shall ensure that the de-icing supplier is audited at the earliest opportunity during their winter season.

7.1.3 Hazardous Materials

While the materials, methods, applications, and processes referenced to, or described in this specification may involve the use of hazardous materials, this manual does not address the hazards which may be involved in their use. It is the sole responsibility of the De-icing Provider to ensure their familiarity with the safe and proper use of any hazardous materials and processes and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

7.1.4 General Precautions

[CAT.OP.MPA.250] [GM1-3 CAT.OP.MPA.250] [CAT.OP.MPA.255][AMC1 CAT.OP.155]

Eastern Airways aircraft will be de-/anti-iced at the various bases through which the company operates, only by approved contractors using trained personnel.

Training should be carried out by approved DI-L40 instructors & trainer's & certificates retained.

Training should delivered in accordance with the latest AS 6286 standard, training records should be maintained including live operational assessments.

Eastern Airways aircrew are not trained to undertake aircraft de-icing.

Early de-icing should be carried out where possible in order to minimise delays. Handling agents must follow a pre-defined criteria that has been agreed with Eastern Airways

Commanders may be required to confirm adequate de-icing operations and below is guidance of what items and areas require attention. Care should be taken to ensure that whether removed by broom, squeegee or the application of fluid spray, deposits are swept away from control surface hinge areas and system intakes, and that the sprays themselves are not directed to these areas.

Since the de-icing fluid may be further diluted by the melting deposits which it is designed to remove, refreezing may occur if the solution runs onto other parts of the aeroplane, and close attention should be paid to this possibility.

Care should be taken to prevent de-icing fluid from accumulating around cockpit transparencies, on which it may cause smearing and loss of vision as speed is increased during a subsequent take-off.

When de-icing operations have been completed, ideally as close to the Eastern airways Operations Manual scheduled departure time as possible, a careful walk-round inspection of the aeroplane should be completed in order to confirm that flying and control surfaces have been cleared of deposits, and that intake and drain holes are free of any obstruction. If possible, control surfaces should be moved over their full range, and jet engine compressors rotated by hand to ensure that they have not become frozen in position. An inspection of propeller aircraft spinners should be made to check for trapped snow or moisture, which could subsequently refreeze and cause propeller imbalance or malfunction.

7.1.5 De-Icing Fluid Volumes

The nominal values for de-icing aircraft types are:

(a) 200 litres – J41
(b) 250 litres – EMB ERJ
(c) 350 litres – EJET E70
(d) 400 litres – EJET E90
(e) 350 litres – ATR 72 (fluid sprayed under 150ltrs will trigger the crew to confirm sufficient de-icing fluid has been applied).

Any amounts that are expected to far exceed the above values must be authorised by the crew or Eastern Airways Operations first.

7.1.6 General Safety

Ground handling staff should check passenger walkways and paths to the aircraft to ascertain the condition and request treatment if needed before passengers are allowed to transit the area.

Boarding announcements should be made informing passengers of any surfaces that have been treated and are likely to be slippery.

INTENTIONALLY LEFT BLANK

7.2. References

7.2.1 Applicable Documents

The following publications form a part of this document to the extent specified herein.
Ground Operations Manual Appendices A – E Aircraft Handling Guides
Aircraft Manufacturer Manuals

Specific de-icing information relating to aircraft type for handling agents/de-icing companies can be found on the company's ground handling webpage:

http://ops.easternairways.com/login.asp

Password: Ea5tern

The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

7.2.2 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001,
Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS1424 De-icing/Anti-Icing Fluid, Aircraft SAE Type 1
AMS1428 Fluid, De-icing/Anti-Icing, Non-Newtonian (Pseudo plastic), SAE Types II, III, IV
ARP1971 Aircraft De-icing Vehicle – Self-Propelled
ARP5058 Enclosed Operator's Cabin for Aircraft Ground De-icing Equipment
AS5116 Minimum Operational Performance Specification for Ground Ice Detection Systems
ARP5660 De-icing Facility Operational Procedures
AS5681 Minimum Operational Performance Specification for Remote On-Ground Ice Detection Systems
AS5900 Standard Test Method for Aerodynamic Acceptance of SAE AMS1424 and SAE AMS1428 Aircraft De-icing/Anti-icing Fluids
AIR6232 Aircraft Surface Coating Interaction with Aircraft De-icing/Anti-icing Fluids
AIR6284 Forced Air or Forced Air/Fluid Equipment for Removal of Contaminants
AS9968 Laboratory Viscosity Measurement of Thickened Aircraft De-icing/Anti-icing Fluids with the Brookfield LV Viscometer

7.2.3 Abbreviations and Definitions

7.2.3.1 Abbreviations

ACARS Aircraft Communications Addressing and Reporting System
ATC Air Traffic Control
APU Auxiliary Power Unit
CDF Central De-icing Facility

DDF Designated De-icing Facility
º C Degrees Celsius
º F Degrees Fahrenheit
EFB Electronic Flight Bag
EMB Electronic Message Board
FAA Federal Aviation Administration
FP Freezing Point
h Hours
LOUT Lowest Operational Use Temperature
min Minutes
OAT Outside Air Temperature
SDS Safety Data Sheet
TC Transport Canada

7.2.3.2 Definitions

For the purpose of this Winter Operations Manual, the following definitions apply.
Advisory Word Definitions: The following advisory words used are defined as:

MAY: This advisory word definition describes that the practice is encouraged and/or is optional.
SHALL: This definition means that the described practice is mandatory.
SHOULD: This definition means that the practice described is recommended or strongly encouraged.

Words and phrase Definitions: The following words and phrases are to be used as defined:

ACTIVE FROST: Active frost is a condition when frost is forming. Active frost occurs when aircraft surface temperature is at or below 0 °C (32 °F) when the humidity of the air is at or below dew point.

ANTI-ICING: Procedure by which fluid is applied to provide protection against the formation of frost or ice or the accumulation of snow or slush on treated surfaces of an aircraft for a limited period of time (Holdover Time).

ANTI-ICING FLUID:
(a) Mixture of water and Type I fluid;
(b) Premix Type I fluid;
(c) Type II fluid, Type III fluid, or Type IV fluid;
(d) Mixture of water and Type II fluid, Type III fluid, or Type IV fluid.

NOTE: Fluids in (a) and (b) shall be heated to ensure a temperature of 60 °C (140 °F) minimum at the nozzle.
SAE Type II and IV fluids for anti-icing are normally applied unheated on clean aircraft surfaces but may be applied heated. SAE Type III fluids for anti-icing may be applied heated or unheated on clean aircraft surfaces.

ANTI-ICING CODE: This code is given to the flight crew/Pilot in Command that de-icing/anti-icing has been carried out and the details of the anti-icing treatment that was applied.

BUFFER (FREEZE POINT BUFFER): The difference between the Outside Air Temperature (OAT) and the of the fluid used.

CHECK: The examination of an aircraft item against a relevant standard by a trained and qualified person.

COLD-SOAK EFFECT: The wings of an aircraft are said to be "cold-soaked" when they contain very cold fuel as a result of having just landed after a flight at high altitude or from having been refuelled with very cold fuel.

Whenever precipitation falls on a cold-soaked aircraft on the ground, clear icing may occur. Even in ambient temperatures between -2 and +15 °C (28 and 59 °F), ice or frost can form in the presence of visible moisture or high humidity if the aircraft structure remains at 0 °C (32 °F) or below.
Clear ice is very difficult to detect visually and may break loose during or after take-off. The following factors contribute to cold-soaking: temperature and quantity of fuel in fuel cells, type and location of fuel cells, length of time at high altitude flights, temperature of refuelled fuel, and time since refuelling.

COLD SOAKING: Ice can form even when the outside air temperature (OAT) is well above 0 °C (32 °F). An aircraft equipped with wing fuel tanks may have fuel that is at a sufficiently low temperature such that it lowers the wing skin temperature to below the freezing point of water. If an aircraft has been at a high altitude, where cold temperature prevails, for a period of time, the aircrafts' major structural components such as the wing, tail, and fuselage will assume the lower temperature, which will often be below the freezing point. This phenomenon is known as cold soaking. While on the ground, the cold soaked aircraft will cause ice to form when liquid water, either as condensation from the atmosphere or as rain, comes in contact with cold soaked surfaces.

COLD SOAKED CLEAR ICE: This is the formation of ice, normally in the area of the wing fuel tanks, caused by the cold soak effect. Clear ice is very difficult to be detected visually and may break loose during or after take-off, and poses a hazard particularly to aircraft with rear fuselage mounted engines.

COLD SOAKED FUEL FROST: This is the formation of frost, normally in the area of the wing fuel tanks, caused by the cold soak effect.

COLD SOAKED WING ICE/FROST: Water, visible moisture, or humidity forming ice or frost on the wing surface, when the temperature of the aircraft wing surface is at or below 0 °C (32 °F).

CONTAMINATION: Contamination is defined as all forms of frozen or semi-frozen deposits on an aircraft, such as frost, snow, slush, or ice.

CONTAMINATION CHECK: A check of aircraft surfaces and components for contamination to establish the need for de-icing.

DE-ICING: Procedure by which frost, snow, slush, or ice is removed from an aircraft in order to provide clean surfaces and components.

DE-ICING/ANTI-ICING: Combination of or referring to both of the procedures for 'de-icing' and 'anti-icing'. It may be performed in one or two steps.

DE-ICING SERVICE PROVIDER: The company responsible for the aircraft de-icing/anti-icing operations on an airfield.

DE-ICING FLUID:
(a) Heated water;
(b) Heated mixture of water and Type I fluid;
(c) Heated premix Type I fluid;
(d) Heated Type II, Type III, or Type IV fluid;
(e) Heated mixture of water and Type II, Type III, or Type IV fluid.

NOTE: The effect of unheated de-icing fluid is minimal.

FREEZING DRIZZLE: Fairly uniform precipitation composed exclusively of fine drops [diameter less than 0.5 mm (0.02 inch)] very close together which freeze upon impact with the ground or other exposed objects.

FREEZING FOG: A suspension of numerous very small water droplets which freeze upon impact with the ground or other exposed objects; generally reduces the horizontal visibility at the earth's surface to less than 1 km (5/8 mile).

FROST/HOAR FROST: Frost is the tiny solid deposition of water vapour from saturated air which occurs when the temperature of a surface is below 0 °C (32 °F). Frost generally occurs generally with clear skies at temperatures below freezing the point.

FREEZING RAIN (LIGHT): Precipitation of liquid water particles which freezes upon impact with the ground or other exposed objects, either in the form of drops of more than 0.5 mm (0.02 inch) or smaller drops which, in contrast to drizzle, are widely separated. Measured intensity of liquid water particles is up to 2.5 mm/hour (0.10 inch/hour) or 25 grams/dm2/hour with a maximum of 0.25 mm (0.01 inch) in 6 minutes.

HAIL: Precipitation of small balls or pieces of ice with a diameter ranging from 5 to 50 mm (0.2 to >2.0 inches) falling either separately or agglomerated

HOLDOVER TIME: Estimated time for which an anti-icing fluid will prevent the formation of frost or ice and the accumulation of snow on the treated surfaces of an aircraft.

ICE PELLETS: Precipitation of transparent (grains of ice), or translucent (small hail) pellets of ice, which are spherical or irregular, and have a diameter of 5 mm (0.2 inch) or less. Ice pellets usually bounce when hitting hard ground.

LOCAL FROST: The limited formation of frost in localized wing areas cooled by cold fuel or large masses of cold metal in the wing structure; this type of frost does not cover the entire wing.

LOWEST OPERATIONAL USE TEMPERATURE (LOUT): The higher (warmer) of:

• The lowest temperature at which the fluid meets the aerodynamic acceptance test (according to AS5900) for a given type (high speed or low speed) of aircraft, or,
• The freezing point of the fluid plus the buffer of 10 °C (18 °F) for Type I fluid and 7 °C (13 °F) for Type II, III, or IV fluids.
For applicable values, refer to the fluid manufacturer's documentation.

MODERATE AND HEAVY FREEZING RAIN: Precipitation of liquid water particles which freezes upon impact with the ground or other exposed objects, either in the form of drops of more than 0.5 mm (0.02 inch) or smaller drops which, in contrast to drizzle, are widely separated. Measured intensity of liquid water particles is more than 2.5 mm/hour (0.10 inch/hour) or 25 grams/dm2/hour.

NEGATIVE BUFFER: A negative buffer exists when the freezing point of a de-icing fluid is above the OAT (see Tables 1 or 2 for "first step" application limits).

PROXIMITY SENSOR: A proximity sensor is a safety feature on some models of de-icing equipment, that upon activation disengages relevant systems, preventing equipment movement and damage from occurring due to physical contact between equipment components (e.g., spray nozzle, forced air nozzle, operator basket, etc.,) and aircraft surfaces. As a safety mechanism, the proximity sensor is designed to prevent damage from occurring to aircraft surfaces, normally while the equipment chassis is in a stationary position (not manoeuvring). Where equipped, the type of sensor used may vary by design, and may activate either by physical contact (e.g., a proximity switch with contact mechanism), or by non-physical activation (e.g., infrared, radar, etc.).

REFRACTIVE INDEX: Refractive index is the comparative speed of light in different transparent media. The difference in this speed leads to refraction (bending of the light) which can be used to measure the composition of the media. In the case of water and glycol mixture, this refraction can be used to accurately determine the percentage of glycol in the water.

QUALIFIED STAFF: Trained staff who have passed theoretical and practical training tests and have been certified for performing this type of job, see AS6286 training and qualification program.

REFRACTOMETER: An optical instrument designed to measure the refractive index of water soluble fluids.

RESIDUE/GEL: A build-up of dried out thickened fluids typically found in aerodynamically quiet areas of the aircraft.

RIME ICE: Small, frozen, spherical water droplets, opaque/milky and granular in appearance, which looks similar to frost in a freezer; typically rime ice has low adhesion to the surface and its surrounding rime ice particles.

SLUSH: Slush is snow or ice that has been combined with water.

SNOW: Snow is a precipitation of ice crystals, most of which are branched, star-shaped or mixed with unbranched crystals. At temperatures higher than -5 °C (23 °F), the crystals are generally agglomerated into snowflakes.

SNOW GRAINS: Precipitation of very small white and opaque particles of ice that are fairly flat or elongated with a diameter of less than 1 mm (0.04 inch); when snow grains hit hard ground, they do not bounce or shatter.

NOTE: For holdover time purposes, treat snow grains as snow.

SNOW PELLETS: Precipitation of white, opaque particles of ice; the particles are round or sometimes conical; their diameters range from approximately 2 to 5 mm (0.08 to 0.2 inch); they are brittle and easily crushed; they do bounce and may break upon contact with hard ground.

NOTE: For holdover time purposes, treat snow pellets as snow.

STORAGE TANK: A vessel for holding fluid that can be fixed, or mobile; includes rolling tanks (ISO tanks), totes, trailers, or drums.

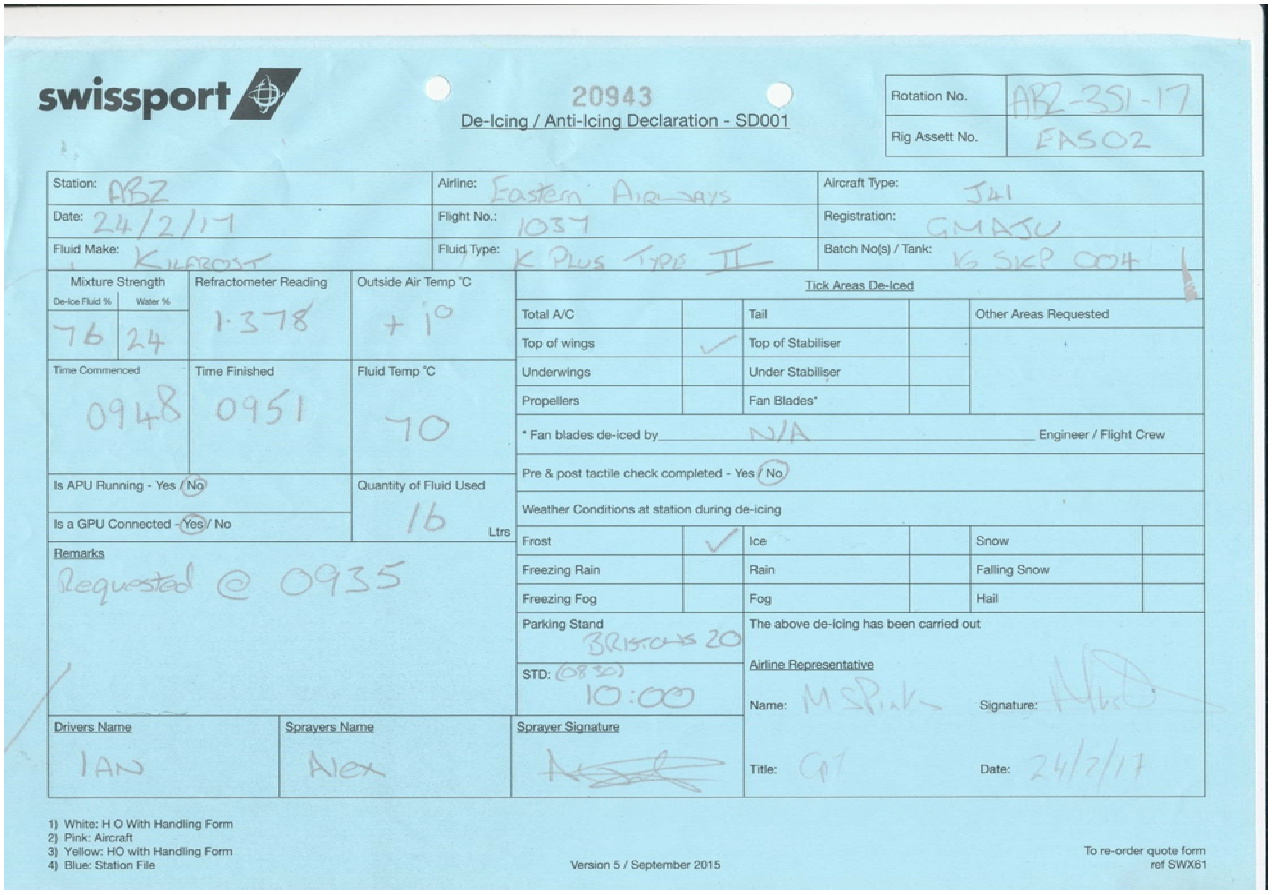
TACTILE CHECK: A tactile check requires a person to touch specific aircraft surfaces. Tactile checks, under certain circumstances, may be the only way of confirming the critical surfaces of an aircraft are not contaminated. For some aircraft, tactile checks are mandatory as part of the de-icing/anti-icing check process to ensure the critical surfaces are free of frozen contaminants.

7.3 Roles and responsibilities

In relation to the ground de-ice and anti-icing of aircraft:-

1. The Managing Director is the "Accountable Manager" detailed in the Operations Manual Part A and is ultimately responsible for ensuring that:- "All operations activities can be financed and carried out to the standard required by the authority".
2. The Ground Operations Manager is the nominated post holder for ground operations as detailed in Eastern Airways Operations Manual Part OM-A1, and is responsible for de-icing/anti-icing procedures established in accordance with EASA CAT.OP.MPA.250.
3. The Technical Manager detailed in the Operations Manual Part A is responsible for:-
   "Establishing procedures to be followed when ground de-icing and anti-icing and related inspections of the aeroplane(s) are necessary".
4. The Flight Crew Training Manager is the nominated post holder for crew training detailed in the Operations Manual Part OM-A1 and is responsible for ensuring that:-
   "Flight crews are qualified as required" in the procedures developed to comply with EASA CAT OP MPA 250."
5. The person responsible for the safety and quality of a flight is the Head of Compliance Monitoring detailed in the Operations Manual Part OM-A1 and is responsible for:-
   "Verifying that all operations are being conducted in accordance with all applicable requirements, standards and procedures".
6. Persons responsible for carrying our de-icing duties;
   (a) DI-L10 De-icing vehicle driver
   (b) DI-L20 De-icing operator
   (c) DI-L30 Supervision of de-icing/anti-icing
   (d) DI-L30B Pre-/Post de-icing/anti-icing inspector
   (e) DI-L40 De-icing instructor
   (f) DI-L50 De-icing coordinator
   (g) DI-L60 Fluid Quality Inspector (Laboratory staff)
   (h) DI-L70 Head of de-icing training

A signature or acceptance from an Eastern Airways captain or Engineer should always be obtained following application & inspection.



swissport

20943

De-Icing / Anti-Icing Declaration - SD001

Rotation No.	ABZ-351-17
Rig Assett No.	EAS02

Station: ABZ	Airline: Eastern Airways	Aircraft Type: J41
Date: 24/2/17	Flight No.: 1037	Registration: GMAJU
Fluid Make: KILFROST	Fluid Type: K PLUS TYPE II	Batch No(s) / Tank: K SKP 004

Mixture Strength De-Ice Fluid %	Mixture Strength Water %	Refractometer Reading	Outside Air Temp °C
76	24	1.378	+1°

Time Commenced	Time Finished	Fluid Temp °C
0948	0951	70

Is APU Running - Yes / (No)

Is a GPU Connected - (Yes) / No

Quantity of Fluid Used: 16 Ltrs

Remarks: Requested @ 0935

Tick Areas De-Iced

Total A/C		Tail		Other Areas Requested	
Top of wings	✓	Top of Stabiliser			
Underwings		Under Stabiliser			
Propellers		Fan Blades*			

* Fan blades de-iced by N/A Engineer / Flight Crew

Pre & post tactile check completed - Yes / (No)

Weather Conditions at station during de-icing

Frost	✓	Ice		Snow	
Freezing Rain		Rain		Falling Snow	
Freezing Fog		Fog		Hail	

Parking Stand: BRISTOWS 20

STD: (0830) 10:00

The above de-icing has been carried out

Airline Representative

Name: M SPINK Signature:

Title: QT Date: 24/2/17

Drivers Name	Sprayers Name	Sprayer Signature
IAN	Alex	

1) White: H O With Handling Form
2) Pink: Aircraft
3) Yellow: HO with Handling Form
4) Blue: Station File

Version 5 / September 2015

To re-order quote form ref SWX61

Example of De-icing / Anti-icing Declaration form

De-icing Providers are responsible for ensuring that appropriately trained persons in de-icing operations are assigned to de-icing duties.

7.4 Quality

7.4.1 Quality Assurance

To meet Quality Assurance (QA) requirements, the de-icing provider must provide evidence that the rules and instructions in any specific field are followed correctly and that it has a proper and efficient Quality Control Programme.

All Eastern Airways handling partners that provide de-icing/anti-icing services shall have a Quality Programme that is aligned with SAE standards (AS6285). The purpose of the programme is to ensure that de-icing/anti-icing of aircraft on the ground is accomplished in accordance with regulatory requirements and guidance, industry standards and Eastern Airways programme. To verify effectiveness of the de-icing /anti-icing of aircraft on the ground, the Quality Program should include both Quality Assurance (QA) and Quality Control (QC) processes and procedures.

7.4.2 Eastern Airways Ground Operations Winter Readiness Review

(a) In order to ensure that the necessary infrastructure is in place to maintain safe winter operations, a "Winter Readiness Review" shall be completed for all Stations where Eastern Airways aircraft are de-/anti-iced by the approved contracted de-icing provider.

(b) Form EA Winter Readiness Checklist shall be distributed by Eastern Airways Ground Operations team to be completed by the contracted de-icing provider.

(c) The Eastern Airways Ground Operations Manager(s) shall ensure that the check is completed and that copies are distributed to the addressees detailed on the checklist by the 01st of October each year.

(d) Any discrepancies identified shall be addressed without delay.

(e) Discrepancies shall be resolved before the start of winter operations if possible or in any case within 21 days.

(f) A copy is of the Winter Readiness Review may be retained within the Station De-icing Folder.

(g) All checklists shall be returned to the carrier before the end of the winter season. Any forms not returned may affect the carriers use of the service provider.

7.4.3 Station De-icing/Anti-icing Inspection Programme

The Quality Assurance provisions of EASA OPS require that each of Eastern Airways providers of de-icing/anti-icing services be inspected annually, to ensure that acceptable and consistent standards are maintained.

Eastern Airways fulfils this requirement through the IATA De-icing/Anti-icing Quality Control Pool (DAQCP). Each of Eastern Airways de-icing providers are inspected annually by a DAQCP auditor. This includes Eastern Airways self-handling stations performing de-icing/anti-icing operations or post de-icing/anti-icing checks.

7.4.3.1 Completion of Inspections

The Ground Operations Manager ensures that all suppliers at each Eastern Airways Station are included on the DAQCP inspection schedule.

7.4.3.2 Notification of Inspection Results

The notifications will detail any discrepancies identified.
A copy of the notification shall be placed in the station de-icing folder.

7.4.3.4 Handling Procedure for Open DAQCP Discrepancies

Eastern Airways Ground Operations Department shall monitor the closure of all DAQCP discrepancies, and will update the Ground Operations Post Holder accordingly.

If local action is required pending the closure of a discrepancy, the Standards Owner will contact the
Designated Manager, and recommend suitable actions.

Any supplier failing to close all DAQCP Safety Related discrepancies within a reasonable timescale will have their supplier status reviewed. In the case of suppliers with discrepancies still open at the end of the winter season (1st May), alternative local suppliers (where available) will be assessed.

7.4.4 Station De-icing Folder

7.4.4.1 General

A Station De-icing Folder shall be maintained at all Eastern Airways stations to make sure that the local de-/anti-icing procedures are fully detailed and that all information necessary for incident investigations, audits and station inspections is readily available.

7.4.4.2 Folder Contents (Eastern Airways stations)

(a) Copies of any DAQCP reports received during the current winter season, together with copies of DAQCP reports for the previous two winter seasons.
(b) Records of all de-icing/anti-icing operations carried out on Eastern Airways aircraft at the station during the current and the previous winter seasons.
(c) Local procedures detailing local de-icing/anti-icing procedures and responsibilities.
(d) Training records for all staff qualified to carry out de-icing/anti-icing procedures or checks.
(e) Material Safety Data Sheets (MSDS) for all de-/anti-icing fluids used locally on Eastern Airways aircraft.
(f) Results of daily de-icing/anti-icing fluid concentration checks for all Eastern Airways operated de-icing/anti-icing vehicles.
(g) Results of periodic de-icing/anti-icing fluid laboratory checks for all Eastern Airways operated de-icing/anti-icing vehicles.

7.4.4.3 Station Quality Control Program

A Quality Control Programme shall cover all aspects of aircraft ground de-icing/anti-icing and shall include, but is not limited to, the following checks:

(a) Procedures and instructions up-to-date

NOTE: *This document constitutes as procedures for Eastern Airways self-handling stations that provide De-icing/Anti-icing provisions.*

(b) Responsibilities and tasks clearly defined and up-to-date
(c) Communication procedures/protocols up-to-date
(d) All personnel trained and qualified
(e) The quality of de-icing/anti-icing fluid from all storage tanks, all equipment tanks and all spray nozzles are within limits
(f) Correct and safe functioning of de-icing/anti-icing spray equipment
(g) Correct and safe functioning of (remote/centralised) de-icing/anti-icing facility if applicable.
(h) Reporting methods and reports up-to-date

NOTE: *Prior to the start of each winter, perform all above listed checks.*

NOTE: *During each winter season perform quality control checks on de-icing/anti-icing fluids from all spray nozzles at operational settings on a regular basis and file test results till the start of the next winter period.*

7.4.4.4 Fluid Quality Control Checks

To ensure the necessary safety margins are maintained in the de-icing/anti-icing operation, the fluid used to both de-ice and anti-ice aircraft surfaces, must meet specification and be at the correct concentration. Factors like pumping, storing, heating, and spraying may cause degradation/contamination of de-icing /anti-icing fluids. To assure the correct quality of these fluids, follow fluid manufacturer's recommendations and perform the following checks. Results of all testing shall be recorded

7.4.4.5 Fluid Delivery/Acceptance Check

7.4.4.5.1 Check of documentation on each delivery.

Check that the fluid delivered corresponds to the fluid ordered.

(a) Make sure the brand name and concentration of the product specified in the delivery documents corresponds to the delivered fluid.
(b) Each container/tank truck shall be checked.
(c) Make sure that the brand name and the concentration of the delivered fluid corresponds to the brand name and the concentration of the storage or equipment tanks.
(d) Verify each delivery (container/tank truck) has an associated fluid certificate of conformity (C of C). The C of C, at a minimum shall include test results conforming to the three (four for thickened fluids) items listed directly below. Additionally, the fluid manufacturer shall give assurances on the condition of each container and/or bulk loaded delivery tanker trailer. This should be through cleaning certification documentation or previous load documentation.
(e) The Fluid Delivery Check record shall be completed and filed.

Check that the fluid delivered corresponds to the fluid ordered. This check shall be performed for each delivery of aircraft de-icing and anti-icing fluids before the first use of the delivered fluid for filling a storage tank of de-icing vehicle tank.

Note: Fluid handling & Compatibility of fluids
Fluids should conform to AMS 1424 & 1428. Two different manufacturers fluids would never be mixed together in the same tank / rig. Note: If a different manufacturer was used then the tanks /rig should be completely emptied / cleaned & laboratory results obtained of samples taken, before use.

DE-ICING FLUID DELIVERY AND ACCEPTANCE CONTROL FORM

FLUID ORDER	
STATION	
ORDER No / REF	
FLUID ORDER DATE	
FLUID ORDER TIME	
FLUID TYPE (I OR II)	
MANUFACTURER	
BRAND	
AMOUNT OF FLUID ORDERED (LITRES)	
CONCENTRATION (FLUID / WATER) %	

FLUID RECEIVED			
FLUID DELIVERY DATE (DD/MM/YY)			
FLUID DELIVERY TIME (LOCAL TIME)			
DELIVERY NOTE NUMBER			
BATCH NUMBER			
THE FOLLOWING DETAILS SHOULD BE MATCH ORDER - TICK YES OR NO	YES	NO	IF NO - STATE WHAT WAS RECEIVED
FLUID TYPE (I OR II)			
MANUFACTURER			
BRAND			
AMOUNT OF FLUID RECEIVED (LITRES)			
CONCENTRATION (FLUID / WATER) %			

FLUID DELIVERY ACCEPTANCE CHECKS - DOCUMENTATION	CHECKED?			ACCEPTABLE?		
TICK YES / NO BOXES AS APPLICABLE	YES	NO		YES	NO	REMARKS
DELIVERY NOTE, CERTIFICATE OF ANALYSIS/CONFORMITY HANDED OVER						
DOES THE CERTIFICATE OF CONFORMITY (C of C) INCLUDE TEST RESULTS CONFORMING TO THE THREE (FOUR FOR THICKENED FLUIDS) ITEMS LISTED BELOW.						
1. Test Result: Visual examination for colour and foreign body contamination						
2. Test Result: Concentration by a Refractive Index check						
3. Test Result: pH						
4. Test Result: Viscosity check for thickened (Type II, III, and IV) fluids						
The fluid manufacturer assurance certificate on the condition of each container and/or bulk loaded delivery tanker trailer						
ALL DELIVERY CONTAINERS CHECKED AND SEALED?						

NOTE: IN THE ABSENSE OF THESE ITEMS (C of C & CONTAINER / TRAILER STATUS) THE FOLLOWING CHECKS SHALL BE PERFORMED.

FLUID DELIVERY ACCEPTANCE CHECKS - FLUID SAMPLING	CHECKED?			RESULTS
TICK YES / NO BOXES AS APPLICABLE	YES	NO		
1. Visual examination for colour and foreign body contamination				
2. Concentration by a Refractive Index check				
3. pH				
4. Viscosity check for thickened (Type II, III, and IV) fluids				
The fluid manufacturer assurance certificate on the condition of each container and/or bulk loaded delivery tanker trailer				
FLUID HAS BEEN ACCEPTED INTO STOCK?				

DECLARATION & SIGNATURE			
I (NAME AS BELOW) DECLARE THAT THE ABOVE DETAILS ARE CORRECT AND THAT I AHAVE RECEIVED TRAINING TO CARRY OUT THE ABOVE CHECKS			
NAME (BLOCK CAPITALS)		SIGNATURE	

In the absence of these items (C of C and container/ trailer status) the receiving organization shall perform the following checks.

7.4.4.5.2 Fluid sample checks

Before the first use of the delivered fluid for filling a storage tank or equipment tank, take a sample from the container/tank truck (each separate compartment if applicable) and perform the following checks:

1. Visual examination for colour and foreign body contamination
2. Concentration by a Refractive Index check

3. pH (*)
4. Viscosity check for thickened (Type II, III, and IV) fluids

All results shall be within the limits set by the applicable fluid manufacturer.

* Perform this check if it is suitable to detect degradation of the fluid used.

A fluid sample shall be taken from the delivery vessel.
a. For bulk shipping containers a sample from each separate compartment is required if applicable.
b. For deliveries of multiple containers (e.g. totes or drums), only one sample from a common production lot or batch is required.

7.4.4.5.3 Fluid Sample Checks

a. The following checks shall be performed on each sample;
1. Visual examination for;
a. Colour
b. Foreign body contamination (e.g. rust particles, debris, etc.)
2. Refraction Check (refractive index or freezing point) to verify fluid concentration
b. The following checks shall be performed on each sample;
1. pH check
2. Field viscosity check or laboratory viscosity test for Type II, III or IV fluids.
c. All check results shall be within the fluid manufacturers' specifications.

7.4.4.5.4 Nonconformities or Discrepancies

a. Service providers shall have a documented procedure in place on the appropriate action to be taken when irregularities or discrepancies are identified during the fluid delivery documentation checks and fluid sample checks.
b. Fluid manufacturers should have information contained within their documentation outlining specific procedures and/or contact information to assist and provide support to service providers in such occurrences.

7.4.4.6 Fluid Pre-Season and Within-Season Checks

7.4.4.6.1 Type I Fluid

De-icing / Anti-icing Fluids

Checks shall be performed:

- At the start of the de-icing season
- For each vehicle, at least one within-season nozzle sample check should be done.
- On any vehicle or storage tank when fluid contamination or degradation is suspected

Type I

Fluid samples shall be taken from all de-icing/anti-icing fluid spray nozzles of all de-icing/anti-icing spraying equipment in the most common concentrations used for de-icing/anti-icing and from all storage tanks in use. For vehicles without a mixing system, the sample may be taken directly from the vehicle pre-mix tank after ensuring that the fluid is at a uniform mixture. Perform the following checks on the fluid samples:

- Visual examination
- Refractive Index
- pH (*)

* Perform this check if it is suitable to detect degradation of the fluid used.

7.4.4.6.2 Type II, Type III, and Type IV Fluids

Checks shall be performed:

- At the start of the de-icing season
- For each vehicle, at least one within-season nozzle sample check should be done
- On any vehicle or storage tank when fluid contamination or degradation is suspected
- Event Driven - After equipment maintenance on the fluid pump and spray system that has the potential to affect the quality of the fluid (e.g., pumps, nozzles, etc.).

Type II Type III Type IV

Fluid samples shall be taken from all de-icing/anti-icing fluid spray nozzles of all de-icing/anti-icing spraying equipment for all of the concentrations used for anti-icing and from all storage tanks in use. Perform the following checks:

- Visual examination
- Refractive Index
- pH (*)
- Laboratory viscosity

* Perform this check if it is suitable to detect degradation of the fluid used.

7.4.4.7 Fluid Sample Check Requirements

- Results of the visual, refractive index, and pH checks shall be within the limits set by the applicable fluid manufacturer.
- Results of viscosity checks on samples from spray nozzles shall be within the limits set for use of the applicable holdover time table and for aerodynamic acceptance (Lowest On-Wing Viscosity and Highest On-Wing Viscosity).
- Results of viscosity checks on samples from storage tanks shall be within the limits needed to ensure fluid viscosity will meet applicable holdover time table requirements taking into account any expected degradation during the use of fluid application equipment and to ensure aerodynamic acceptance (Lowest On-Wing Viscosity and Highest On-Wing Viscosity).

7.4.4.8 Daily Concentration Checks

Fluids or fluid/water mixture samples shall be taken from the de-icing/anti-icing equipment nozzles on a daily basis when the equipment is in use. Perform a refractive index check on the samples taken. The sample shall be protected against precipitation. Combustion heaters and trucks shall not be operated in confined or poorly ventilated areas to prevent asphyxiation. Requirements for suitable equipment are described in ARP1971.

NOTE 1: *Equipment without a mixing system: samples may be taken from the mix tank instead of the nozzle. Ensure the fluid is at a uniform mix.*

NOTE 2: *Equipment with proportional mixing systems: operational setting for the flow and pressure shall be used. Allow the selected fluid concentration to stabilize before taking a sample.*

NOTE 3: *Equipment with automated fluid mixture monitoring system: the interval for refractive index checks has to be determined by the handling company in accordance with the system design.*

Daily concentration checks (when the equipment is in use) shall be recorded.

RIG DAILY CHECKS REGISTER

Eastern airways

STATION: **RIG / ASSET NUMBER:**

DATE	RIG STATU	TYPE I FLUID REFRACT INDEX (RI)	OAT FREEZ. POINT	TYPE II FLUID REFRACT INDEX (RI)	HARNESS & LANYARD CHECK	COMMENTS PASS / FAIL	SIGNATURE

TYPE II FLUID CONCENTRATION LIMITS

CONCENTRATION	ACTUAL	RI UPPER LIMIT
50 / 50		
75 / 25		
100		

7.4.4.9 Type I Fluid from Nozzles

- Maximum permitted concentration shall not be exceeded.

- For use in a 1-step method and in the 2nd step of a 2-step method, the concentration shall be such that the fluid is at least 10 °C (18 °F) below the OAT.
- For use in the 1st step of a two-step method, the concentration shall be such that the freezing point of the fluid is at the OAT or below.

7.4.4.10 Type I Fluid in Tanks

- The concentration shall be within the 'in-service' limits published by the manufacturer for fluid at the applicable concentration

7.4.4.11 Type II, III, and IV Fluid

- For fluids from nozzles and in tanks, the concentration shall be within the 'in-service' limits published by the manufacturer for fluid at the applicable concentration.
- For Type II, III, and IV fluid/water mixtures (50/50 or 75/25) a tolerance range of 0 to +7% from the setting may apply, depending on the product.

7.4.4.12 Check on Directly or Indirectly Heated Type II, III, or IV Fluids

SAE Type II, III, and IV de-icing/anti-icing fluids, if heated (directly or indirectly), shall be heated in a manner to preclude fluid degradation in storage or application. The integrity of the fluid following heating shall be checked periodically. Factors like heating rate and heating time cycles should be considered in determining the frequency of fluid inspections. Refer to the fluid manufacturers' recommendations.

7.4.5 Fluid Check Methods

The following checks may be performed by any equivalent method.

a. Visual Contamination Check

- Put fluid from the sample into a clean glass bottle
- Check for any kind of contamination (e.g. rust particles, debris, rubber or discoloration, etc.)

b. Refractive Index Check

Equipment required: Field refractometer, plastic pipettes, tissue paper.1. Perform a functionality test on the Refractometer.

- Lift the cover flap and place a small amount of distilled water on the prism.
- Close the flap, hold the instrument up to the light and look through the eyepiece.
- Rotate the eyepiece to focus the scale.
- Check that the RI reads as 1.333 (+/- 0.002). This reading indicates that the instrument is accurate over the entire scale.
- The functionality test / calibration of the Refractometer shall be recorded onto the Refractometer test record.
- Refractometers shall be re-calibrated at least once every 12 months. Records must be kept.
- As an alternative to re-calibration, a functional check, using demineralised water, can be performed in accordance to the manufacturer's instructions.

REFRACTOMETER TEST RECORD

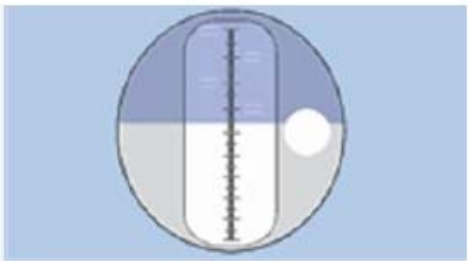
STATION: **REFRACTOMETER SERIAL NUMBER:**

MONTH	DATE	READING	PASS / FAIL	ACTION REQUIRED	COMMENTS	SIGNATURE
SEPTEMBER						
OCTOBER						
NOVEMBER						
DECEMBER						
JANUARY						
FEBRUARY						
MARCH						
APRIL						
MAY						

ANNUAL CHECK		CHECK REPORT ID	COMMENTS	SIGNATURE

2. Put a fluid drop taken from the sample or from the nozzle onto the test screen of the refractometer and close the cover plate

3. Read the value on internal scale and use the correction factor given by the manufacturer of the fluid in case the temperature of the Refractometer is not 20 ºC (68 °F)



4. Compare the value with the refractive index limits to determine concentration.

5. Clean the Refractometer and return it into the protective cover

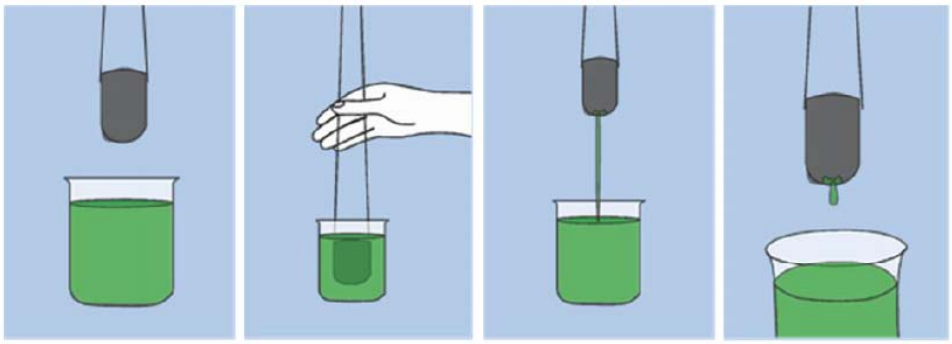
c. pH Value Check
This check may be performed either with pH indicator paper (litmus paper) or with a calibrated or functionally tested pH meter. Read the value and compare with the limits for the fluid.

NOTE: In the laboratory this pH check shall be performed with a calibrated or functionally tested pH meter.

d. Field viscosity check
This check may be performed using the fluid manufacturers recommended method, like a falling ball or the Stoneybrook device. Read the value and compare with the limits for the fluid.

Viscosity determination for Kilfrost fluid.
Equipment required: Kilfrost flow cup, sample container, thermometer, stopwatch, flow cup chart.

1. Ensure the viscometer is clean, dry and contamination-free prior to use.
2. Pour a minimum of 400 ml / 14 ounces of fluid into a container with an opening not less than 50 mm / 2 inches.
3. Immerse the cup in the fluid and leave for around 1 minute in order to reach thermal equilibrium.
4. Determine the temperature of the fluid using the thermometer.
5. Raise the cup vertically out of the fluid in a quick and steady motion. As the top edge of the cup breaks the surface of the fluid, start the stopwatch.
6. During the time the liquid flows out of the cup, hold it no more than 15 cm / 6 inches from the fluid surface.
7. Stop the stopwatch when the continuous flow from the bottom of the cup breaks down.
8. Check the flow time from the stopwatch against the limits provided by Kilfrost for the specific fluid type and dilution for the temperature measured.



e. Laboratory viscosity test
- Perform the viscosity test using AS9968
- Compare the viscosity values with the applicable limits

7.4.6 Fluid Sampling Procedure for Type II, Type III, or Type IV Fluids

To ensure that the necessary safety margins are maintained between the start of the de-icing/anti-icing operation and take-off, the fluid used to both de-ice and anti-ice aircraft surfaces must meet specification and be at the correct concentration. Due to the possible effect of vehicle/equipment heating and/or delivery system components on fluid condition, it is necessary for the sampling method to simulate typical aircraft application. This section describes some methods for collecting samples of Type II, III, and IV fluids, sprayed from operational aircraft de-icing/anti-icing vehicles and equipment, prior to the necessary quality control checks being carried out.

a. Method using a purpose built stand

Spray the fluid onto a purpose built stand, consisting of a suitable plate (for application) and an associated fluid collection system. In the absence of such a stand, a suitable apparatus can be used. The distance between the spray nozzle and the surface shall be approximately 1 to 3 m and the fluid shall be sprayed perpendicular to the surface. By following this simple procedure, a representative nozzle sample can be obtained. If there are any questions about the de-icing fluid, contact and consult the fluid manufacturer. If there are any questions about the de-icing vehicle or unit, pump, pump pressure, etc., consult the ground service equipment shop or the vehicle manufacturer.

1. Select the required flow rate/spray pattern for the fluid to be sampled simulating routine operations.

2. Spray the fluid to purge the lines and check the concentration of a sample, taken from the gun/nozzle after purging.

3. Should the refractive index indicate that the lines have not been adequately purged, repeat the previous step until the concentration is correct for the fluid to be sampled (on certain vehicles it may be necessary to spray more than 50 litres of fluid, before the lines are completely purged).

4. Direct the fluid onto the sampling surface and spray an adequate amount of fluid to allow for a 1 litre sample to be taken.

b. Trash can method: items required:
- Large garbage cans, buckets, or 55 gallon drums
- Large trash can liners
- Sample bottle that is clean and dry

Procedure for nozzle sample:
1. Set trash cans out and put 2 liners in each trash can
2. Weigh the trash can down with sand or blocks
3. Stand about +1 to 3 meters or 4 to 10 feet away from the cans

4. Open the nozzle and spray into 1 of the trash cans so that the lines are purged of any old fluid
5. When the line has been purged, move the nozzle to the next trash can, keeping the nozzle open
6. Do not close the nozzle and restart as that will shear the fluid
7. Spray 2 to 3 gallons (8 to 12 litres) into the second trash can
8. Pull the liner out and put a small hole in bottom of bag to fill the sample bottle.

c. Sample Identification

Attach a label to each sample bottle providing the following data:

a. Manufacturers' brand name and full name and Type of the fluid (e.g., Kilfrost ABC-3/Type II)
b. Identification of deicing/anti-icing equipment (e.g., Global T1200, EA01 etc.)
c. Detail where the sample was taken from (e.g., nozzle, storage tank, or equipment tank)
d. Mixture strength (e.g., 100/0, 75/25, etc.)
e. Station (e.g., LSI, etc.)
f. Date sample was taken

Manufacturers' brand name: Kilfrost

Fluid name: ABC K Plus

Type of the fluid: Type II

Identification of de-icing/anti-icing equipment: Global T1200, EA01

Detail where the sample was taken from: Equipment tank

Mixture strength: 75/25

Station: Eastern Airways Station Sumburgh LSI

Date sample was taken: 15th September 2017

7.5 Communications

7.5.1 Communication Procedures

Persons communicating with the flight crew shall have a basic knowledge of the English language (operational level or equivalent according to the current version of the Training Document AS6286). For local flights involving local flight and ground crews, local language may be used by them (see the current version of training document AS6286).

Communication between the flight crew and the de-icing crew will usually be achieved using a combination of printed forms and verbal communication. For treatments carried out after aircraft doors are closed, the use of flight interphone (headset) or VHF radio will usually be required. Electronic message boards may also be used in 'off stand' situations. Use of hand signals is not recommended except for the final 'all clear' signal.

7.5.2 Communication Prior to Starting De-icing/Anti-Icing Treatment

a. Before starting de-icing/anti-icing, ground staff must ask the flight crew to confirm the treatment required (i.e., surfaces and components to be de-iced, anti-icing requirements, plus any special de-icing procedures).

b. Before fluid treatment starts, the flight crew shall be requested to configure the aircraft for de-icing/anti-icing (surfaces, controls, and systems as per aircraft type requirements or recommended procedures). The de-icing crew shall wait for confirmation that this has been completed before commencing the treatment.

c. For treatments conducted without the flight crew present, suitably Qualified Staff shall be nominated by the aircraft operator to confirm the treatment required (when applicable) and to confirm the correct configuration of the aircraft.

7.5.3 Post De-icing/Anti-Icing Communication

An aircraft shall not be dispatched for departure after a de-icing/anti-icing operation until the flight crew has been notified of the type of de-icing/anti-icing operation performed (i.e., the Anti-Icing Code). The Anti-Icing Code (see 5.4) shall be provided by Qualified Staff upon completion of the treatment, indicating that the checked surfaces (see section 7.3) are free of frost, snow, slush, or ice; that de-icing/anti-icing is complete, that equipment is cleared from the area; and in addition, providing the necessary information for the flight crew to estimate the appropriate holdover time for the prevailing weather conditions when anti-icing fluid has been used. When a treatment is interrupted for a significant period of time (e.g., truck runs out of fluid) the flight crew shall be informed stating the reason, the action to be taken and the estimated time delay. When continuing the treatment, the previously treated surfaces must be fully de-iced and anti-iced again, when the holdover time of the treatment from before the interruption is not sufficient.

7.5.4 The Anti-Icing Code

The following elements comprising the Anti-Icing Code shall be recorded and be communicated to the flight crew by referring to the final step of the fluid de-

icing/anti-icing treatment procedure; it shall be provided in the sequence given below:

NOTE: This information shall not be communicated in circumstances where anti-icing holdover times do not apply, e.g., local frost prevention in cold-soaked wing areas, symmetrical local area de-icing, or de-icing of specific surfaces only (such as leading edges for removal of impact ice), etc. In these circumstances, upon completion of the treatment, the flight crew shall be provided with the de-icing fluid type applied (e.g., "Type I"); a statement that holdover time does not apply (e.g., "no holdover time applies"); and confirmation that the post-de-icing check has been completed (e.g., "post de-icing check completed").

a. The fluid type (i.e., Type I, II, III, or IV);

b. The fluid name (manufacturer and brand/trade name) of the Type II, III, or IV anti-icing fluid, if applicable;

NOTE: Communication of this element is not required for Type I fluid.

c. The concentration of fluid (dilution) within the neat fluid/water mixture, expressed as a percentage by volume for Type II, III, or IV (i.e., 100% ("neat") = 100% fluid, 75% = 75% fluid and 25% water, 50% = 50% fluid and 50% water);

NOTE: Communication of this element is not required for Type I fluid.

d. The local time (hours and minutes), either:

- For a one-step de-icing/anti-icing operation: at the start of the final treatment; or
- For a two-step de-icing/anti-icing operation: at the start of the second step (anti-icing);

e. The date in the following format: day, month, year (DDMMMYY (e.g., 28JAN15 = January 28, 2015));

NOTE: This element is required for record keeping and is optional for flight crew notification.

f. The statement, "Post-de-icing/anti-icing check completed."

NOTE: For specific aircraft types, additional requirements exist, e.g., tactile checks for clear ice on wing surfaces. Additional confirmation for these checks may be required.

EXAMPLE:
The last step of a de-icing/anti-icing procedure is the application of a mixture of 75% Type II fluid and 25% water, made by the Manufacturer as Brand X, commencing at 13:35 local time on 20 February 2016, is reported and recorded as follows:

"TYPE II / 75% / MANUFACTURER, BRAND X / 1335 / 20FEB16 / POST DEICING/ANTI-ICING CHECK COMPLETED"

NOTE: An alternative means of visual communication of the anti-icing code to the flight crew can be used (e.g., written on paper, EMBs, ACARS, EFBs, etc.)

7.5.5 Post-De-icing/Anti-Icing Check and Transmission of the Anti-Icing Code to the Flight Crew

It shall be clearly defined by the aircraft operator which company is responsible for conducting the post-de-icing/anti-icing check and providing the flight crew with the Anti-Icing Code. If two different companies are involved in the de-icing/anti-icing treatment and post-de-icing/anti-icing check, it must be ensured that the Anti-Icing Code is not given before the post-de-icing/anti-icing check has been completed.

The company conducting the de-icing/anti-icing treatment shall be responsible for the treatment and transmit all information about the treatment to the company conducting the post-de-icing/anti-icing check. The company conducting the post-de-icing/anti-icing check shall have overall responsibility for the performance of the company conducting the de-icing/anti-icing treatment.

7.5.6 All Clear Signal

The flight crew shall receive a confirmation from the ground crew that all de-icing/anti-icing operations are complete and that all personnel and equipment have been removed from the area before reconfiguring or moving the aircraft.

7.5.7 Off-Gate Communications

During de-icing/anti-icing, a two-way communication between the flight crew and the de-icing/anti-icing operator/supervisor must be established prior to the de-icing/anti-icing treatment. This may be done either by interphone or by VHF radio. Alternate means of communication may be the use of ACARS, EFBs, and EMBs.

In the event of conflict, verbal communication shall take precedence.

During treatment, all necessary information must be transmitted to the flight crew, including the beginning of treatment, treatment of the sections requiring de-activation of aircraft systems, the Anti-Icing Code, etc., (using standardized de-icing/anti-icing phraseology). Communication contact with the flight crew may be concluded after transmission of the Anti-Icing Code and readiness for taxi-out has been announced. During de-icing/anti-icing operations with engines running, both verbal and visual communications shall be utilized and positive control maintained during the de-icing/anti-icing operation in accordance with ARP5660.

a. General instructions: The de-icing/anti-icing operator and/or airport authority must ensure that all necessary information regarding operation of the off-gate/CDF/DDF site is published and available to flight crews. This information shall be included within the de-icing/anti-icing operator's and/or airport authority's local procedures documentation and be made available to air operators and flight crews (e.g., it can be included as part of flight release documentation, etc.). This information should also be

published in applicable state aeronautical navigation documents/publications. This information shall include, at a minimum:

- The location of and standard taxi routing to, within, and from the de-icing/anti-icing site;
- The means by which to coordinate the de-icing/anti-icing operation;
- The means by which to communicate before, during, and after the de-icing/anti-icing operation;
- The means by which taxi-and-stop guidance is provided to the flight crew (e.g., VHF, EMB's, etc.); and,
- Any unique requirements or procedural differences affecting the flight crew and/or flight crew/ground crew interface.

b. Responsibilities: The responsibility to conduct a Contamination Check before dispatch rests with trained and qualified personnel. The results of the Contamination Check must be provided to the flight crew via verbal or visual (written or electronic) means. Subsequently, the flight crew is responsible for acquiring the proper treatment. After treatment, the treated surfaces and components must be checked by a trained and Qualified Staff (see Section 11) and the Anti-Icing Code must be given to the flight crew (see 5.4). Subsequently, the flight crew is responsible for the airworthiness of the aircraft.

c. Emergency procedures: Whether conducting de-icing/anti-icing operations at a remote location or at a centralized de-icing/anti-icing facility, local procedures shall be established to ensure that both aircraft and ground emergencies are handled safely, expeditiously, and are coordinated with the local emergency plan.

7.5.8 Scripts

Following standard communication terminology is recommended during off-gate de-icing/anti-icing procedures:

- (DIS = De-icing/anti-icing supervisor)
- (COMMANDER = Pilot in command)

DIS: "Set parking-brake, confirm the airplane is ready for treatment, inform on any special requests."

After the airplane is configured for treatment:

COMMANDER: "Parking brake rakes is set, you may begin treatment and observe…(any special requests like: ice under wing/flaps, clear-ice on top of wing, snow on fuselage, ice on landing-gear, anti-ice with Type IV fluid, etc.)".

DIS: "The treatment will begin now…(special request given, like "ice under wing", etc.) I will call you back when ready".

Only after all equipment is cleared from the airplane and all checks are completed:

DIS: "De-icing/anti-icing completed, Anti-icing Code is: …….. (plus any additional info needed). I am disconnecting. Standby for clear signal at right/left and/or contact ground/tower for taxi clearance."

COMMANDER: "De-icing/anti-icing completed, Anti-icing code is ……."

7.5.9 Phraseology

Guidelines for establishing clear concise standardized communication and phraseology between aircraft flight and ground crews during aircraft de-icing operations is contained in ARP6257. It is very important that both parties communicate fully about contact requirements, aircraft configuration, de/anti-icing treatment needed, and post de-icing reporting requirements

7.5.10 Communication for Proximity Sensor Activation by Physical Contact

For equipment types furnished with a proximity sensor requiring physical contact in order to activate (refer to 8.7.19 for further information), and, in the event of sensor contact, the Pilot in Command shall be informed using the following phraseology:

Ground Crew to Flight Crew:

"A safety proximity sensor (identify location on the de-icing equipment) has been activated on the (specify specific location on the aircraft). (Name third party title that performed inspection) has performed a visual inspection on the affected area. Provide results of the third party inspection (e.g., there is no visual damage detected or damage is suspected or present). Advise your intentions."

INTENTIONALLY LEFT BLANK

7.6 Aircraft requirements after de-icing/anti-icing

Following the de-icing/anti-icing procedures and prior to take-off, the critical aircraft surfaces shall be free of all frost, snow, slush, or ice accumulations in accordance with the following requirements.

7.6.1 Wings, Tails, and Control Surfaces

Wings, tails, and control surfaces shall be free of frost, snow, slush, or ice unless the aircraft manufacturer and state regulatory authority permits that a coating of frost may be present on wing lower surfaces in areas cold soaked by fuel between forward and aft spars; and/or on upper wing surfaces within defined areas, in accordance with the aircraft manufacturer's published documentation.

NOTE: Except for frost due to cold-soaked fuel as mentioned above, and unless otherwise specified in the Aircraft Flight Manual or other aircraft manufacturer's documentation, contamination is not acceptable on: the upper or lower surfaces of the horizontal stabilizer and elevator/tab; strakes; inboard, outboard, upper, and lower surfaces of the wing and wing tip devices; and either side of the vertical stabilizer and rudder.

7.6.2 Pitot Tubes, Static Ports, and All Other Air Data Sensing Devices

Pitot tubes, static ports, and other air data sensing devices shall be free of frost, snow, slush, ice, and fluid.

Note: Ice ridges can form on the nose of the fuselage while on the ground. These ridges will disrupt air flow into the pitot tubes, and which can result in false measurements. All contamination shall be removed from this area.

7.6.3 Engines

Engine inlets (including the leading edge), exhaust, cooling intakes, control system probes, and ports shall be free of frost, snow, slush, or ice. Engine fan blades, propellers (as appropriate), and spinner cones shall be free of frost, snow, slush, or ice, and shall be free to rotate.

7.6.4 Air Conditioning Inlets and Outlets, APU

Air inlets, outlets, pressure-release valves, and outflow valves shall be free of frost, snow, slush, or ice, and shall be unobstructed.

7.6.5 Landing Gear and Landing Gear Doors

Landing gear and landing gear doors shall be unobstructed and free of frost, snow, slush, or ice. Do not spray de-icing/anti-icing fluids directly onto wiring harnesses and electrical components (receptacles, junction boxes, etc.,) brakes, wheels, exhausts, or thrust reversers.

7.6.6 Fuel Tank Vents

Fuel tank vents shall be free of frost, snow, slush, or ice.

7.6.7 Fuselage

The fuselage shall be free of ice, slush, and snow. In accordance with the aircraft manufacturer's documentation, frost may be present on the fuselage for take-off within specified amounts provided that no other forms of contamination are present, and inlets, outlets, and other devices (as identified by the aircraft manufacturer) are free of contamination.

7.6.8 Flight Deck Windows and Nose or Radome Area

Any significant deposits of frost, snow, slush, or ice on the windscreens or on areas forward of the windscreens shall be removed prior to departure. Heated flight deck windows will not normally require de-icing. Any forward area from which fluid may flow back onto windscreens during taxi or subsequent take-off shall be free of fluid prior to departure.

Ice ridges can form on the nose of the fuselage while on the ground. These ridges will disrupt air flow into the pitot tubes and which can result in false measurements. All contamination shall be removed from this area.

Aeroplane Types – 'No Spray' areas

The general restrictions below apply to all Eastern Airways aeroplane types. The list below states the requirements and the associated symbols, which are then used on the aeroplane type diagrams on the following pages to indicate (where necessary) the locations of 'no spray' areas, for each of the aeroplane types illustrated.


Do not spray into engine openings.


Do not spray flight deck windows or windscreens.


Do not spray main cabin windows.


Do not spray directly at or into pitot probes, TAT probes, or angle of attack sensors.


Do not spray directly at static ports.


Do not spray into APU inlet.


Do not spray into APU exhaust.


Do not apply fluid to aircraft brakes.


Do not spray into engine exhaust.


Do not spray into aircraft exhaust or intake vents.

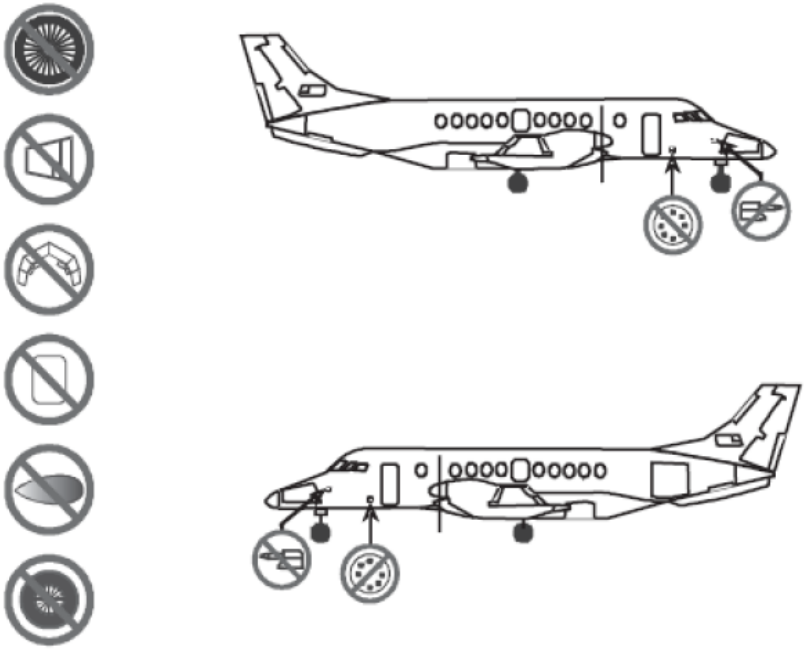

Do not spray into avionic vents.


Do not apply 100% Type II or IV to radome.

Apply deicing fluids at angles below 45 degrees.

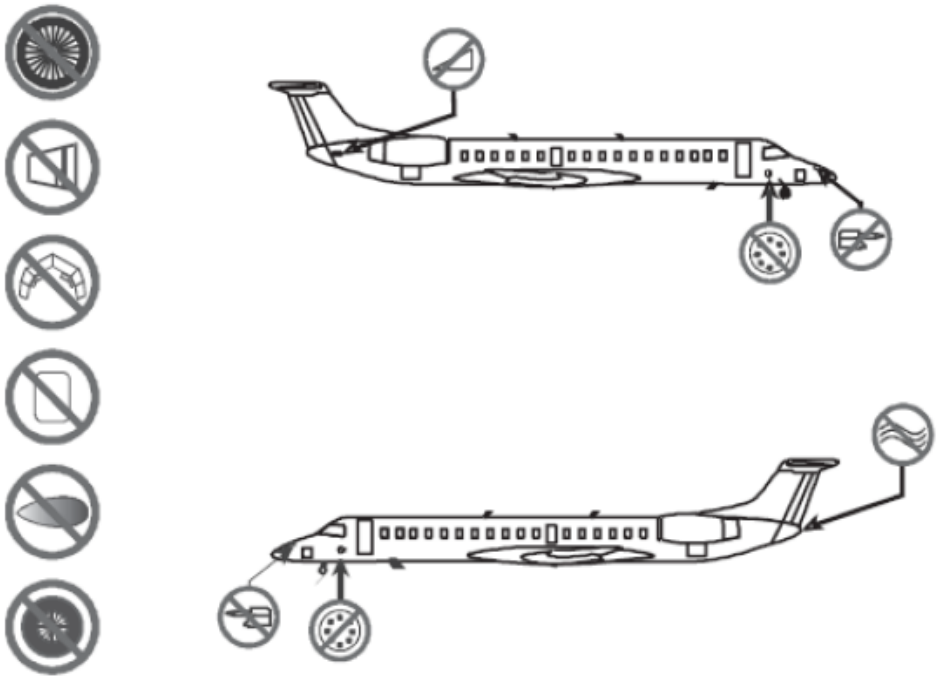

Do not spray onto propellor blades and into engine openings.

Jetstream 31/41



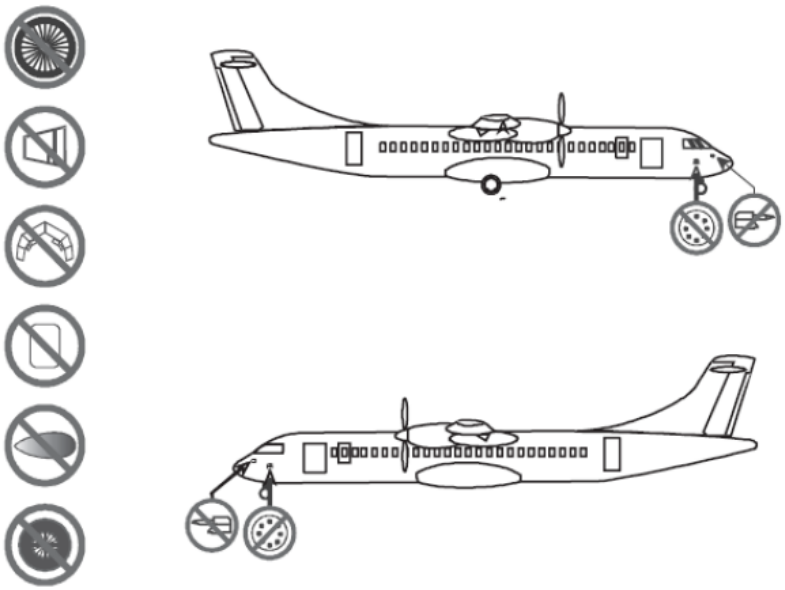
No Direct Application of De-icing/Anti-icing fluid allowed

Embraer 135/145



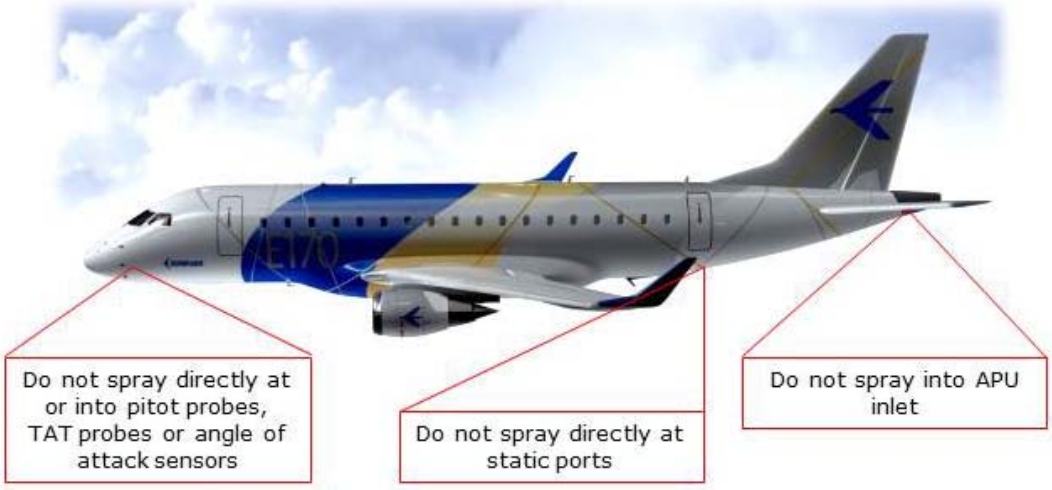
No Direct Application of De-icing/Anti-icing fluid allowed

ATR-72



No Direct Application of De-icing/Anti-icing fluid allowed

No Spray Areas – EJET



General Limitations

Do not spray into engine openings
Do not spray into engine exhaust
Do not spray flight deck windows or windscreens
Do not spray main cabin windows
Do not spray into aircraft exhaust or intake vents
Do not apply fluids to aircraft brakes

WARNING: Prior to the commencement of de-icing, ground staff must confirm with the flight deck if the APU will be running. A de-ice start time must be agreed in order to allow the flight deck to switch off the APU before de-icing commences.

7.7 Checks

The decision that de-icing/anti-icing is required may be determined when one or more of the following circumstances is applicable:

- An aircraft is parked overnight and subjected to ice or snow conditions
- When ice has accumulated in flight (inflight ice)
- During taxi to the gate occurring in icing and/or snow conditions
- Following an inspection or check by the flight crew at a gate
- As indicated by a check by a qualified de-icing/anti-icing person
- Active frozen or freezing falling precipitation is occurring
- When cold soaked fuel has created ice or frost on critical surfaces or components
- When aircraft has been de-iced/anti-iced some time prior to flight crew arrival

7.7.1 Contamination Check to Establish the Need for De-icing

A Contamination Check shall include all areas mentioned in 6.1 through 6.8 and any other surfaces and components of the aircraft as indicated by the aircraft manufacturer and shall be performed from points offering sufficient visibility of these parts (e.g., from the de-icing/anti-icing vehicle, a ladder or any other suitable means of access as necessary). Any contamination found on the surfaces or components of the aircraft that are critical to safe flight shall be removed by a de-icing treatment; this shall be followed by anti-icing treatment when required.

Where an aircraft has been de-iced and/or anti-iced some time prior to the arrival of the flight crew, an additional 'Contamination Check' shall be carried out prior to departure, in order to establish whether further treatment is required. Requests for de-icing/anti-icing shall specify the parts of the aeroplane requiring treatment.

NOTE: For specific aeroplane types additional requirements exist e.g., special clear ice checks, such as tactile checks on wings. These special checks are not covered by the contamination check. Aeroplane operators shall make arrangements for suitably qualified personnel to meet these requirements.

7.7.2 Tactile Check

The need for a tactile check shall be determined by the aircraft manufacturer.

7.7.3 Post De-icing/Anti-Icing Check

An aircraft shall not be dispatched after a de-icing/anti-icing treatment until the aircraft has received the following visual check by Qualified Staff. This check shall include wings, horizontal stabilizers (both lower and upper surfaces), vertical stabilizer, and fuselage, including pitot heads, static ports temperature and angle of attack sensors. This check shall also include any other parts of the aircraft on which a de-icing/anti-icing treatment was performed according to the requirements identified during the contamination check.

The post de-icing/anti-icing check shall be performed from points offering sufficient visibility of all treated surfaces (e.g., from a de-icing/anti-icing vehicle, ladder, or other suitable means of access). Any contamination found

shall be removed by further de-icing/anti-icing treatment, and the post de-icing/anti-icing check shall be repeated. Before take-off, the flight crew must ensure that they have received confirmation that this post de-icing/anti-icing check has been accomplished.

NOTE: For specific aircraft types, additional requirements exist, e.g., special clear-ice checks, such as tactile checks on wings. These special checks are not covered by the Post De-icing/Anti-icing Check. Aircraft operators shall make arrangements for suitably Qualified Staff to meet any special check requirements.

When the de-icing/anti-icing service provider performs the de-icing/anti-icing treatment as well as the Post De-icing/Anti-icing Check, it may either be performed as a separate check or incorporated into the de-icing/anti-icing operation as specified below. The de-icing/anti-icing service provider shall specify the method used in his winter procedures, by customer where necessary:

a. As the de-icing/anti-icing treatment progresses, the de-icing/anti-icing sprayer will closely monitor the surfaces receiving treatment in order to ensure that all forms of frost, snow, slush, or ice (with the exception of cold-soaked fuel frost on the lower surface of wings and light frost on the fuselage, which may be allowed per the aircraft manufacturer and state regulatory authority) are removed and that upon completion of anti-icing treatment, these surfaces are fully covered with an adequate layer of anti-icing fluid.

b. When the request for de-icing/anti-icing did not specify the fuselage, a visual check of the fuselage shall be performed at this time, in order to confirm that it has remained free of contamination (with the possible exception of light frost, which may be allowed as per the aircraft manufacturer and state regulatory authority).

c. Any evidence of contamination that is outside the defined limits shall be reported to the flight crew immediately and be removed by further de-icing/ anti-icing treatment. Then the post de-icing/anti-icing check shall be repeated.

Note: Any damage or anything out of the ordinary noticed during the checks should also be communicated immediately to the flight crew.

d. Once the treatment has been completed, the De-icing Operator will conduct a close visual check of the surface where the treatment commenced, in order to ensure that it has remained free of contamination (this check is not required for 'frost only' conditions).

7.7.4 Pre Take-off Check

The flight crew shall continually monitor the weather conditions after the de-icing/anti-icing treatment. Prior to take-off a flight crew member shall assess whether the applied holdover time is still appropriate and/or if untreated surfaces may have become contaminated. This check is normally performed from inside the flight deck.

Information relating to the holdover times for de-icing fluid can be found on the Transport Canada website. The web link for the 2017-2018 winter season is:

http://176.62.164.158/tables/HOT_Guidelines_2017-18_EN_Original.pdf

7.7.5 Pre Take-off Contamination Check

This is a check of the critical surfaces for contamination. This check shall be performed when the condition of the critical surfaces of the aircraft cannot be effectively assessed by a pre-take-off check or when the holdover time has been exceeded. This check is normally performed outside of the aircraft. The alternate means of compliance for a pre-take-off contamination check is to perform a complete de-icing/anti-icing re-treatment of the aircraft.

7.7.6 Flight Control Check

A functional flight control check using an external observer may be required after de-icing/anti-icing depending upon aeroplane type (see relevant manuals). This is particularly important in the case of an aeroplane that has been subjected to an extreme ice or snow covering.

INTENTIONALLY LEFT BLANK

7.8 Aircraft Ground De-icing/anti-icing methods

7.8.1 Aircraft Ground De-icing/Anti-Icing Methods, General Comments

These procedures specify the methods for de-icing and anti-icing of aircraft on the ground to provide safe take-off. When aircraft surfaces are contaminated by frozen moisture, they shall be de-iced prior to dispatch with fluids, mechanical methods, alternative technologies, or combinations thereof. When freezing precipitation exists and the precipitation is adhering to the surfaces at the time of dispatch, aircraft surfaces shall be de-iced/anti-iced with fluids. If both de-icing and anti-icing are required, the procedure may be performed in one or two steps The selection of a one- or two-step process depends upon weather conditions, available equipment, available methods (generally the use of de-icing and anti-icing fluids), and the holdover time needed. If a one-step procedure is used, then both 8.4 and 8.5 apply for guidance regarding fluid limitations.

CAUTION: Slippery conditions can exist on the ground or equipment following the de-icing/anti-icing treatment.

7.8.2 Pre-De-icing Process to Be Done Prior to De-icing/Anti-Icing

Companies may employ a pre-de-icing process prior to the main de-icing process, in order to remove large amounts of frozen contamination (e.g., snow, slush, or ice), in order to reduce the quantity of glycol-based de-icing fluid that is needed. This pre-de-icing process may be performed with various means (e.g., infrared technology, brooms, forced air, fluid injected into forced air, heat, heated water, heated fluids with negative buffer). If the pre-step process is used, make sure that the subsequent de-icing process removes all frozen contamination including the contamination that may have formed on surfaces and/or in cavities due to the pre-step process.

7.8.3 Infrared De-icing

This sub-section establishes the procedures for the removal of frozen precipitation by using infrared de-icing technology. Specific information on facility requirements, as well as their inclusion in aircraft ground de-icing programs, can be found in publications listed in Section 2 of this document.

a. **General requirements:** Frost, snow, slush, or ice shall be removed from aircraft surfaces prior to dispatch from the facility or prior to anti-icing.

b. **De-icing:** De-icing using infrared energy is accomplished through heat that breaks the bond of adhering frozen contamination. The application of infrared energy may be continued to melt and evaporate frozen contaminants. Wet surfaces require an application of heated de-icing fluids to preclude refreezing after removal of infrared energy source. When required, for operations other than frost or leading edge ice removal and when OAT is at or below 0 °C (32 °F), an additional treatment with hot de-icing fluid shall be performed within the facility to prevent re-freezing of water which may remain in hidden areas.

CAUTION: If the aircraft requires re-de-icing and de/anti-icing fluids had been applied before flight, conventional de/anti-icing with fluids shall be performed.

c. **Inspection:** The aircraft shall be inspected in accordance with the requirements of Section 6.

d. **Anti-icing:** If anti-icing is required, it shall be accomplished in accordance with 8.7.2. If anti-icing is performed inside the facility, infrared power levels must be adjusted as required during the anti-icing process to prevent the re-accumulation of frozen contamination due to the effect of snow blowing through the facility and to maintain fluid integrity for the time the aircraft is in the facility. Dehydration of the fluid can negatively impact the fluid performance.

7.8.4 De-icing by Fluids

Frost, snow, slush, or ice may be removed from aircraft surfaces by the use of de-icing fluids. It is the responsibility of the De-icing Service Provider to ensure that all frozen deposits (with the possible exception of frost which may be allowed as described in Section 6) are removed from the specified surfaces during the de-icing process.

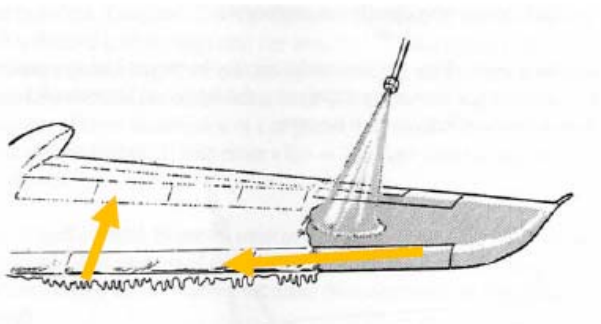
CAUTION: Consult aircraft maintenance manuals for limitations for the maximum application pressure and temperature.

7.8.4.1 Removal of Contaminants

For maximum effect, fluids shall be applied close to the surface to minimise heat loss. Fluid temperature and pressure should not exceed aircraft maintenance manual requirements. The heat in the fluid effectively melts any frost, as well as light deposits of snow, slush, and ice. Heavier accumulations require the heat to break the bond between the frozen deposits and the structure; the hydraulic force of the fluid spray is then used to flush off the contamination. The de-icing fluid will prevent re-freezing for a period of time depending on aircraft skin and OAT, the fluid used, the mixture strength, and the weather.

7.8.4.2 Removal of Frost and Light Ice

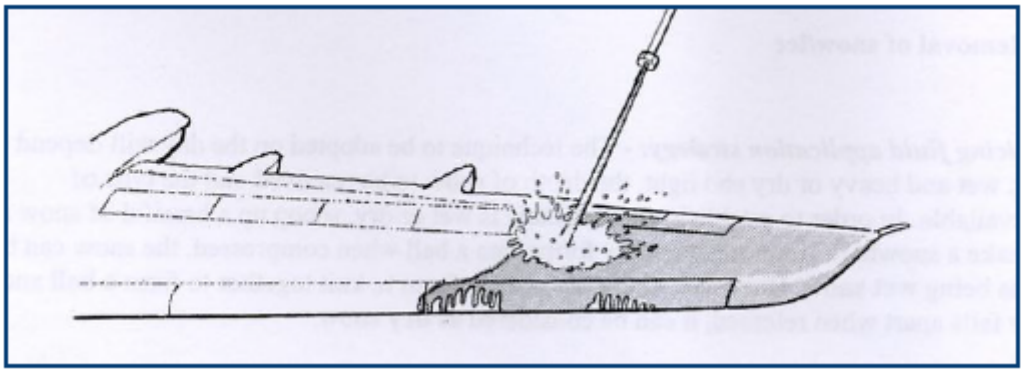
A general procedure consisting of a nozzle setting that gives a solid cone (fan) spray should be used. This ensures the largest droplet pattern available, thus retaining the maximum heat in the fluid. Providing the hot fluid is applied close to the aircraft skin, a minimal amount of fluid will be required to melt the deposit.



Spray pattern for frost and light snow and ice.

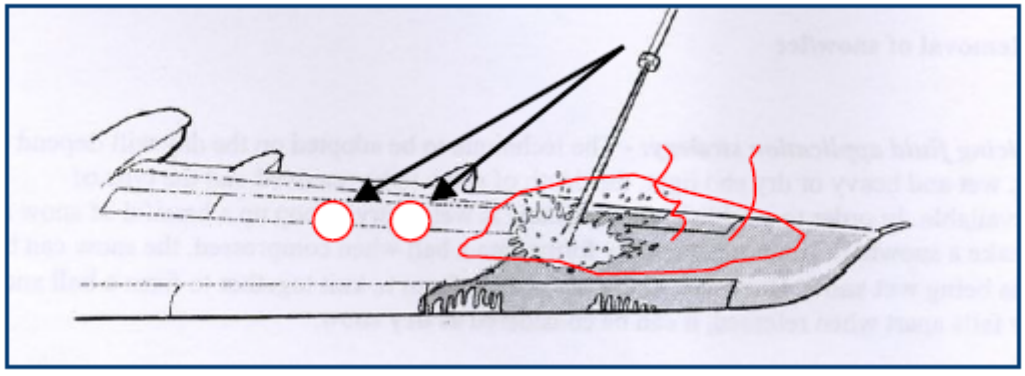
7.8.4.3 Removal of Snow

A nozzle setting sufficient to flush off deposits and minimise foam production is recommended. Foam could be confused as snow. The method adopted will depend on the equipment available and the depth and type of snow; i.e., light and dry or wet and heavy. In general, the heavier the deposits of snow or ice, the heavier the fluid flow that will be required to remove it effectively and efficiently from the aircraft surfaces. For light deposits of both wet and dry snow, similar procedures as for frost removal may be adopted.



Spray pattern for moderate accumulations of snow & ice

Wet snow is more difficult to remove than dry snow and unless deposits are relatively light, the selection of a high fluid flow will be found to be more effective. Under certain conditions it will be possible to use the heat, combined with the hydraulic force of the fluid spray, to melt and subsequently flush off frozen deposits. However, where snow has bonded to the aircraft skin, the procedures detailed in 8.4.4 should be utilised. Heavy accumulation of snow will always be difficult to remove from aircraft surfaces and vast quantities of fluid will invariably be consumed in the attempt. Under these conditions, serious consideration should be given to removing the majority of the snow using a pre-step process before attempting a normal de-icing process.



For frozen deposits that have bonded to the aircraft, the bond is broken by concentrating the spray in various spots, until the aircraft surface is exposed, the heat will then be conducted along the wing

7.8.4.4 Removal of Ice

Heated fluid shall be used to break the ice bond. The high thermal conductivity of metal skin is utilized when a stream of hot fluid is directed at close range onto one spot, until the surface is just exposed. This will then transmit the heat

laterally in all directions raising the temperature above the freeze point and thereby breaking the adhesion of the frozen mass with the aircraft surface. Non-metallic surfaces (e.g., composites) have a lower heat transfer than metallic surfaces. De-icing may take longer and more fluid may be needed. By repeating this procedure a number of times the adhesion of a large area of frozen snow or glazed ice can be broken. The deposits can then be flushed off with either a low or high flow, depending on the amount of the deposit.

7.8.4.5 General De-icing Fluid Application Strategy

For effective removal of snow and ice the following techniques should be adopted. Aircraft may require unique procedures to accommodate design differences; aircraft manufacturer's instructions should be consulted. Ice, snow, or frost dilutes the fluid. Apply enough hot de-icing fluid to ensure that re-freezing does not occur and all contaminated fluid is driven off. The application of de-icing fluid must be done in a pattern that ensures all contaminants on the aircraft are removed. The preferred method is to spray the aircraft from top to bottom

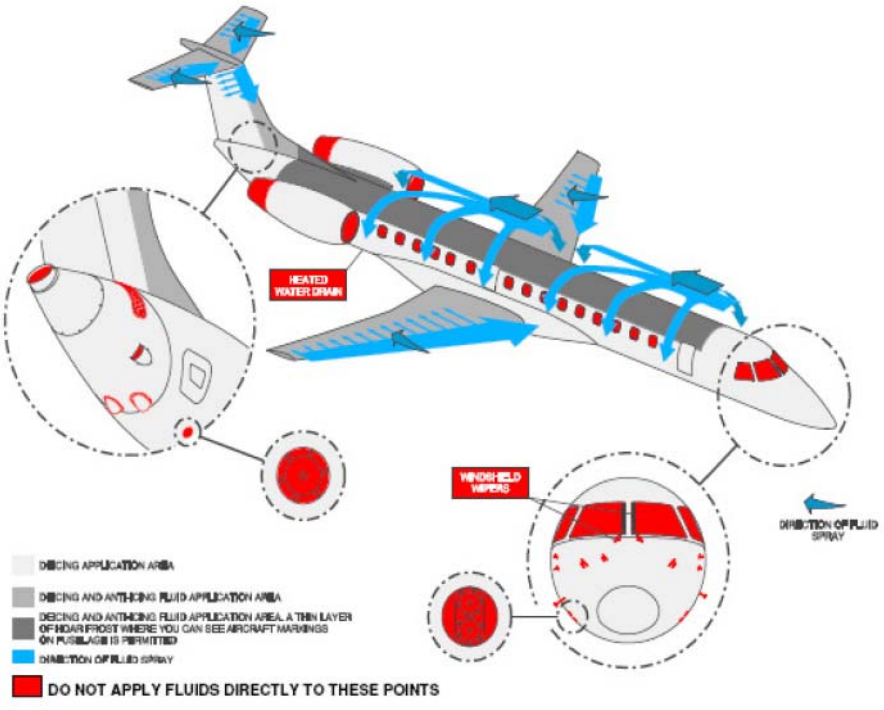
7.8.4.5.1 ERJ

Fuselage: Spray along the fuselage top centreline and then outboard, letting the fluid cascade down and across the windows.

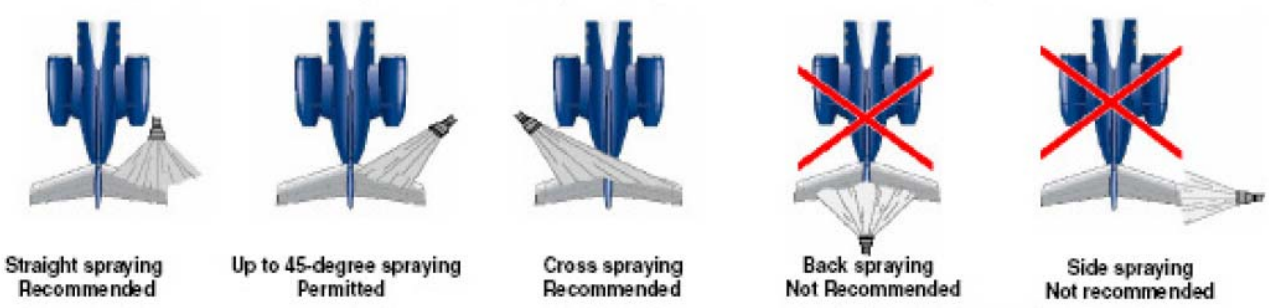
Wings: Spray the fluid from the wing tip inboard to the root, sweeping from the leading edge to the trailing edge.

Tactile Inspection: Inspection by touch is required if it is not possible to be certain that all forms of snow and ice have been removed by making a visual inspection.

NOTE: Early de-icing on the ERJ145 is not permitted.



Tail & Elevator: Spray fluid from the surface tip inboard to the root, sweeping from the leading edge to the trailing edge. Refer to the figures below for proper spray direction to avoid APU fluid ingestion.

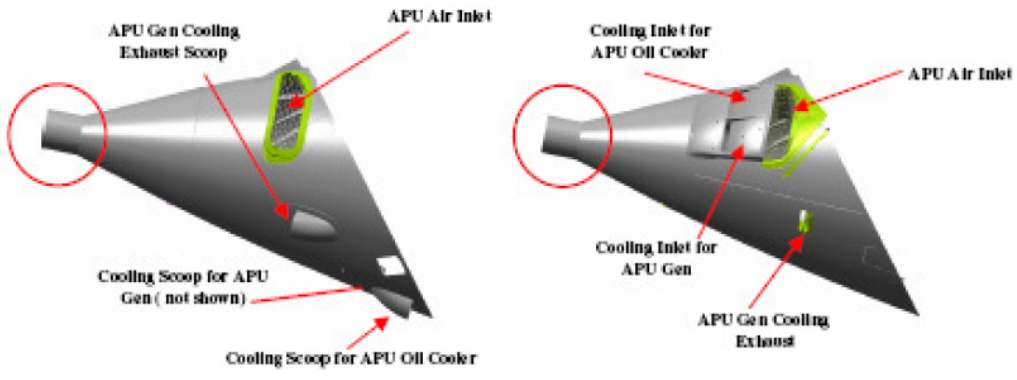


Vertical Surfaces / Winglets: Start at the top and then work down. Apply the fluid at an angle of less than 45 degrees (Reference: Fuselage centreline)

Engine and APU: Do not point the spray of de-icing/anti-icing fluid directly into the engine or APU inlets, exhausts, engine thrust reversers, scoops, vents, and drains.

CAUTION: Make sure the APU inlet area is clear before the start-up of the APU.

APU operation is not recommended during the aeroplane de-icing/anti-icing procedure.



Depending on the design of the tailcone installed on the aircraft, the APU air inlet may differ.

7.8.4.5.2 ATR 72

De/Anti-icing Location

When possible, and practical, de/anti-icing should be carried out on stand whilst the aircraft is still powered by a GPU.

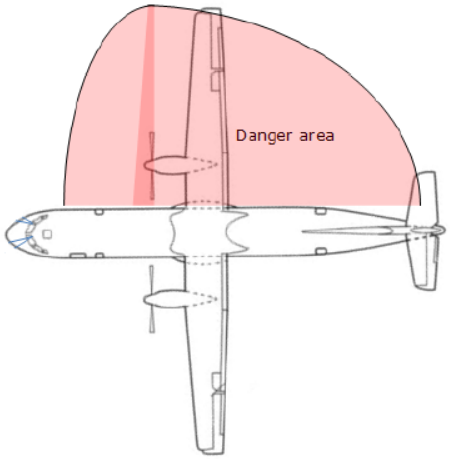
However at those airports where only remote de/anti-icing areas are used, de/anti-icing with engine No. 2 in HOTEL mode is permitted**.**

Engine No. 1 must be shut down. In these circumstances it is the responsibility of flight crew to advise the de-icing team that engine No.2 is running (in Hotel Mode) and to explain the concept of Hotel mode to the team if they are unfamiliar with ATR aircraft.

For de/anti-icing with a gantry system both engines must be shut down.

If de/anti-icing fluid covers the windshield, clean water and a cloth should be used to remove any de/anti-icing fluid on the windshield prior to departure. The de/anti-icing team may be ask to perform this task if the crew request it.

De-icing teams must be aware of the danger area when HOTEL mode is running. **Under normal circumstances, ground staff are not permitted within this area,** however the de-icing rig will need to enter this area to carry out de-icing of wings and tail. The de-icing rig driver should position the vehicle as far away from the propeller and engine/exhaust as possible without compromising de-icing duties.

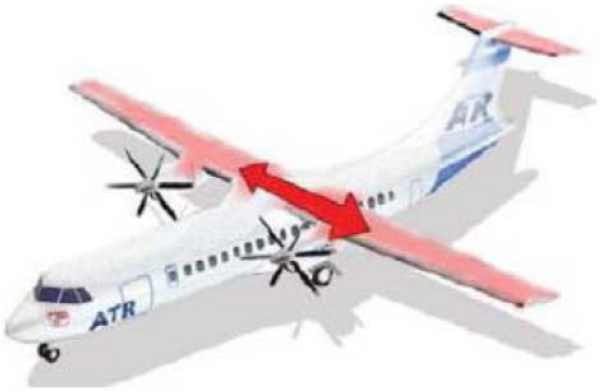


Care must be taken when spraying fluid near the intake of the running engine.

ATR 72 Aircraft Dimensions & Fluid Use Levels

The below nominal fluid amount should be used as a cross check against actual usage in order to satisfy de-icing crew that the aircraft has been adequately de-iced.

Type: ATR 72 Wing area: 61 m² Horizontal stabiliser area: 12 m² Total surface area: 73 m² Height overall: 8 m Wingspan: 28 m Fuselage, 1/3 surface area: 66 m²
Nominal fluid amounts 350 litres Fluid usage of less than 150ltrs will trigger a question from flight deck to confirm adequate de-icing



De/Anti-Icing Procedures (ATR)

Snow Removal

Before any de/anti-icing process starts all excess snow should be removed by sweeping or blowing off the snow layer. This should start at control surface hinge points and move away from the hinge to avoid accumulation in the aerodynamic gaps.

De-icing staff must pay attention to;

(a) Antennas, probes and vortex generators.
(b) Start from the various hinge points to avoid snow accumulation.
(c) Removes snow from engine air intakes, propeller blades, landing gears and brakes.

Propeller / Engine

All treatment to propellers must be done with both engines shut down taking care that no fluid is sprayed towards the engine intake. For all fluids applied to the propellers the temperatures should not exceed 60°C.

When fluids are being applied to any part of the aircraft the application angle should be less than 45°. On fairings and fillets the application pressure should be less than 1.5 psi.

De-icing or anti-icing of the fuselage

Avoid as much as possible direct spraying on the windshields and windows. Special precautions shall be taken to prevent fluid spraying onto the ADC probe and sensors (pitot probes, statics sensors, TAT probes). Any contaminants enter these probe/sensors may lead to erroneous flight parameters while in flight.

De-icing of the elevator must be performed from underneath and then from above with the elevator in the full up and then full down position to ensure the leading edged is completely treated.

Anti-icing of the elevator must be performed with the elevator in the full down position to allow evacuation of excess anti-icing fluid.

De-icing or anti-icing of airfoil and control surfaces.

De/anti-icing of flying control surfaces should be started by filling the gap with fluid to avoid accumulation of contaminant in the aerodynamic gap.

Special care must be paid to the gaps between:

(a) Wings, ailerons and tabs
(b) Horizontal stabiliser, elevator and tabs
(c) Rudder, vertical stabiliser and tab

These gaps must be clear of any contamination and must be checked after any de-icing or anti-icing process.

De-icing of landing gear

Prevent fluid contact with shock absorbers.
Avoid de-icing or anti-icing fluid entering brake unit.
Pay particular attention to proximity switches.

De-icing of propellers

Propeller covers should be used when possible. In order to avoid any de-icing fluid ingress in the engine air intakes, no propeller blade should be in front of the air intake or the air intake cover should be installed. In case of air intake de-icing fluid ingestion, the area must be wiped up. The fluid sprayed on the blades shall not exceed 60 degrees C.

Hotel mode

Hotel mode is specific to ATR. It allows the aircraft to be de-iced while the right engine is running with the propeller stopped and bleed air valve off. Thus the ATR could be de-iced and anti-iced like jet aircraft at the holding point.

Air intake and wing snow removal, and propeller de-icing must be performed prior to hotel mode activation, "hotel mode" de-icing/anti-icing procedures can be conducted provided:

(a) De-icing/anti-icing gantry is not used.
(b) Manual procedures are applied (with a de-icing nozzle from a moveable platform) to avoid any inadvertent entry of fluid into engines, naca ports, air conditioning inlets, static ports, pitot probes, temperature sensors, and engine 2 bled air valves off.

Fluid Residues (ATR)

Thickened fluids (Type II & IV) can leave residues on the airframe which accumulates over time. These residues can re-hydrate after contact with water to a gel like substance which may freeze during flight with obvious implication if the accumulation is in a critical area such as a hinge point or aerodynamic gap between control surfaces.

Note: If an aircraft is anti-iced with a thickened fluid and then has to anti-ice a second time because the hold-over time has been exceeded then prior to the second treatment the aircraft must be "cleaned" using a hot water or Type I fluid.

WARNING: Prior to the commencement of de-icing, ground staff must confirm with the flight deck that the aircraft is ready for de-/anti-icing. A de-ice start time must be agreed in order to allow the flight deck to configure the aircraft.

7.8.4.5.3 Jetstream J41

WARNING: Prior to the commencement of de-icing, ground staff must ensure that all doors and holds are closed and secure and that all unnecessary ground equipment has been removed.

Cleaning of propeller blades

Prior to the application of de-icing fluid, it is important that any build-up of snow is removed. This should be done using either a soft bristled brush or squeegee so as not to damage the propeller blades.

De-icing fluid is to be applied using either a cloth or sponge soaked in de-icing fluid. Ground staff should wear PPE appropriate for the application.

De-icing fluid is not to be applied using a de-icing hose due to the potential for the fluid to enter the engine intakes.

Please note the direction of rotation of the propeller blades as below:

The no1 propeller (i.e. the propeller on the aircraft's left wing) rotates anti-clockwise (facing the nose of the aircraft, looking aft)

The no2 propeller rotates clockwise (facing the nose of the aircraft, looking aft)

In order to access each propeller blade, the propellers are to be turned in the direction as indicated above only.

All ports and vents must be checked to ensure that they are clear of fluid or frozen contamination. If found, report contamination to the Engineer or Captain.

7.8.5 Wings, Horizontal Stabilizers, and Elevators

The direction of the spray shall be from the leading edge to the trailing edge.

NOTE: There is an exception: On aircraft with no leading edge devices (i.e., hard wing and/or propeller driven), de-icing/anti-icing fluid may be sprayed from highest point of the wing surface camber to the lowest, flowing forward over the leading edge of the wing ensuring sufficient rollover, and over the trailing edge. Caution must be used to ensure fluid is not sprayed directly into any wing openings.

7.8.6 Lower Wing Surface (under side of wing) De-icing Procedures

Treatments must be symmetrical and may include flaps and lower surfaces. Spray the affected areas with a heated fluid/water mixture suitable for a one-step procedure as required, (see caution below), and then spray the same areas under the other wing. Both wings must be treated identically (same areas, same amount and type of fluid, same mixture strength), even if the frozen contamination is only present under one wing. Holdover times do not apply to underwing treatments.

It is the responsibility of the De-icing Service Provider to ensure that the treatment is performed symmetrically and that on completion all frozen deposits (with the possible exception of frost, which may be allowed), have been removed. When it is confirmed that the treated areas are clean, the following statement shall be given to the flight crew: "Underwing de-icing only, holdover times do not apply"

CAUTION: Underwing frost and ice are usually caused by very cold fuel in the wing tanks. Use a fluid/water mixture with a higher concentration of glycol than is usually required by the OAT to prevent re-freezing.

7.8.7 Removal of Local Area Contamination

When no precipitation is falling or expected, and when there is no active frost a "local area" de-icing may be carried out under the below mentioned or similar conditions. In some cases a full or complete de-icing is not necessary. When the presence of frost and/or ice is limited to localised areas on the surfaces of the aircraft and no holdover time is applicable, only the contaminated areas will require treatment.
This type of contamination will generally be found on the wing and/or stabilizer leading edges or in patches on the wing and/or stabilizer upper surfaces. Spray the affected area(s) with a heated fluid/water mixture suitable for a one-step procedure. Both sides of the wing and/or stabilizer upper surfaces shall receive the same amount and type of fluid at the same concentration; the same area in the same location on each wing/stabilizer shall be sprayed including when conditions would not indicate the need for treatment of both wings/stabilizers.

It is the responsibility of the De-icing Service Provider to ensure that the treatment is performed symmetrically and that on completion all frozen deposits have been removed. After this check has confirmed that the areas are clean the following statement shall be given to the flight crew: "Local area de-icing only. Holdover times do not apply"

7.8.8 Vertical Surfaces

Start at the top and work down to the base of any vertical surfaces.

7.8.9 Fuselage

Spray the fluid along the top centreline and then towards the outboard of the fuselage. Ensure that it is clear of ice, snow, and slush in accordance with the aircraft manufacturers' manuals. Hoarfrost may be allowed in accordance with the aircraft manufacturers' manuals.

7.8.10 Nose/Radome Area and Flight Deck Windows

Type I fluid/water mixture or manual methods of removal (such as squeegees or brushes) are recommended.

When thickened fluids are used, avoid spraying near the flight deck windows, as fluid can cause a severe loss of visibility. Any thickened fluid remaining on the nose areas where it could blow back onto the windscreens should be removed prior to departure, using a diluted type I fluid, squeegees or equivalent. If flight deck windows are contaminated with thickened fluids use water or an approved windshield cleaner (use of a low windscreen washing fluid is recommended when OAT is at or below 0 °C (32 °F)).

CAUTION: Prior to cleaning of the flight deck windows ensure that the window heating system is switched off.

7.8.11 Landing Gear and Wheel Bays

Do not spray de-icing fluid directly onto wheels and brakes. Remove all ice and snow from the landing gear; paying particular attention to uplocks, downlocks, sensors, door mechanisms, and steering systems.

NOTE: *It may be possible to mechanically remove accumulations such as blown snow, however, where deposits have bonded to surfaces they can be removed by the application of hot air.*

7.8.12 Engines

Deposits of snow should be mechanically removed from engines prior to departure. Any frozen deposits that may have bonded to either the lower surface of the intake or the fan blades including the rear side, or propellers, may be removed by hot air or other means recommended by the engine manufacturer. If use of de-icing fluid is permitted, do not spray directly into the engine core.

7.8.13 Anti-Icing by Fluids

Eastern Airways does advocate the practice of ANTI-ICING upon its aircraft fleet wherever practicable. However, this should not simply be carried out without consultation with the Eastern Airways Operations Department.

As a guide, certain criteria should be applied before anti-icing is applied:

- The aircraft has become wet-soaked prior to forecasted freezing conditions
- A period of freezing conditions is forecast to be followed by snowfall
- Snowfall is forecast followed by freezing conditions
- Application will reduce operational disruption for the next operational day
- or period of operation later the same day

Frost, snow, slush, or ice will, for a period of time, be prevented from adhering to or accumulating on aircraft surfaces by the application of anti-icing fluids. This section provides procedures for the use of anti-icing fluids.

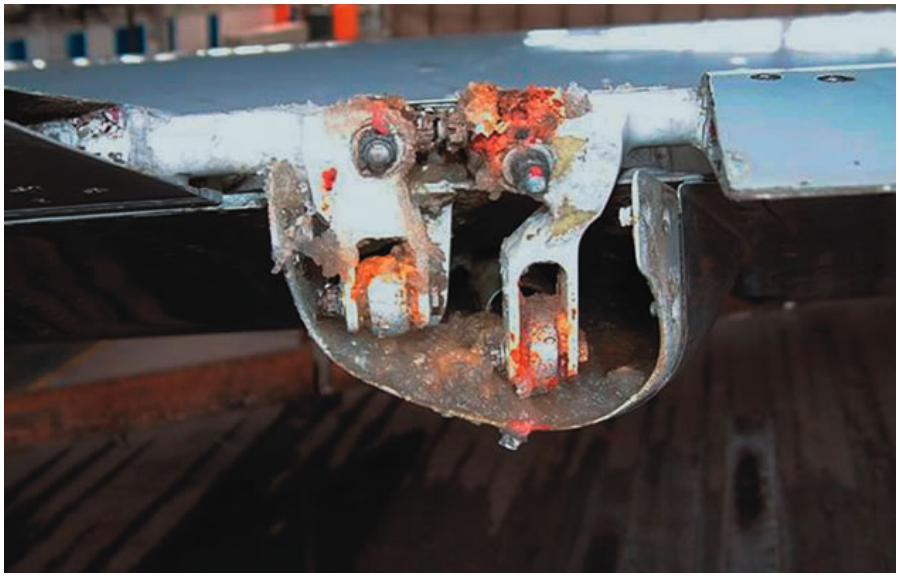
a. Required Usage: Anti-icing fluid shall be applied to the aircraft surfaces when freezing rain, snow, or other freezing precipitation may adhere to the aircraft at the time of dispatch.

b. Optional Usage: Anti-icing fluid may be applied to clean aircraft surfaces at the time of arrival (preferably before unloading begins) on short turnarounds during freezing precipitation, and on overnight aircraft. This will minimize ice accumulation prior to departure and often makes subsequent de-icing easier.

CAUTION: This practice has the potential to build up dried residues. An appropriate inspection and cleaning program shall be established.

In anticipation of weather conditions that require de-icing, anti-icing fluid may be applied to clean aircraft surfaces prior to aircraft being exposed to the freezing precipitation. This will minimize the possibility of snow and ice bonding or reduce the accumulation of frozen precipitation on aircraft surfaces and facilitate subsequent de-icing.

CAUTION: Acetate- or formate-based fluids when used for aircraft de-icing may significantly shorten the Holdover Times of Type II, III, and IV fluids when used thereafter, and may also cause corrosion of aircraft materials.



Prior to flight, the aircraft must be de-iced, unless the integrity of the fluid can be ensured. De-ice in accordance with 8.8, Table 1, whenever possible, to reduce the potential for dried residue build up.

NOTE: Dehydration water evaporation of Type II, III, and IV fluid can negatively impact the fluid performance.

Type II fluid dried residue build up

For effective anti-icing an even layer of sufficient thickness of fluid is required over the prescribed aircraft surfaces which are free of frozen deposits. For maximum anti-icing protection, undiluted SAE Type II, III, or IV fluid should be used. The high fluid flow pressure and flow rates normally associated with de-icing are not required. When possible, pump speeds and nozzle spray patterns should be adjusted accordingly.

NOTE: SAE Type I fluids provide limited holdover effectiveness when used for anti-icing purposes.

INTENTIONALLY LEFT BLANK

7.9.1 Anti-Icing Fluid Application Strategy

The process should be continuous and as short as possible. Anti-icing should be carried out as near to the departure time as possible in order to utilize available holdover time. The anti-icing fluid shall be distributed uniformly and with sufficient thickness over all surfaces to which it is applied. In order to control the uniformity, all aircraft surfaces shall be visually checked during application of the fluid. For a Type I fluid, a minimum of 1 litre/square metre shall be used, with a nozzle temperature of at least 60 oC (140 oF). For Type II, III, or IV fluids which flow readily over surfaces, the correct amount is indicated by fluid just beginning to run off the leading and trailing edges.

For fluids which form a more static layer, the minimum quantity required will typically be 1 litre/square metre applied in an even layer across the surface. For further guidance on the amount of fluid, refer to AS6286 training documentation and/or the fluid manufacturer's documentation. Spray from the leading edge to the trailing edge on wings, horizontal and vertical stabilisers. The following surfaces shall be treated as specified by the aircraft manufacturer's documentation:

- Wing upper surfaces including leading edges and upper control surfaces
- Wing tip devices
- Both sides of vertical stabilizer and rudder to receive anti-ice protection when freezing precipitation conditions exist
- Horizontal stabilizer upper surfaces including leading edges and elevator upper surfaces;
- When necessary fuselage upper surfaces dependent upon the amount and type of freezing precipitation (this is especially important on centre-line engine aircrafts).

CAUTION: Anti-icing fluids may not flow evenly over wing leading edges, horizontal and vertical stabilizers. These surfaces should be checked to ensure that they are properly coated with fluid.
It is the responsibility of the De-icing Service Provider to ensure that the surfaces mentioned above are free of frost, snow, slush, or ice prior to the start of the anti-icing treatment and that on completion of the treatment these surfaces are fully covered with an adequate layer of anti-icing fluid.

7.9.2 Local Frost Prevention in Cold Soaked Wing Areas

Wing surface temperatures can be considerably below OAT due to contact with cold fuel and/or close proximity to large masses of cold soaked metal in the wing structure. In these areas frost can build up on wing surfaces and may result in the entire wing needing to be deiced and anti-iced prior to the subsequent departure. This section provides standards for the prevention of local frost formation in cold soaked wing tank areas during transit stops in order to make deicing and anti-icing of the entire wing unnecessary under such circumstances. This procedure does not, however, supersede standard deicing and anti-icing procedures in accordance with 8.4 and 8.5, and it shall be applied in coordination with these subsections. This procedure also does not relieve the user from any requirements for treatment and checks in accordance with aircraft manufacturer manuals.

NOTE: this section is also applicable to other surfaces of the aircraft (e.g., stabilizers)

a. **Procedure**

Using suitable spray equipment, apply a proper coating of undiluted SAE Type II, III, or IV fluid to the wings in the limited cold soaked areas where the formation of frost may be expected due to contact of the wing with cold fuel or masses of cold metal.

NOTE: A proper coating completely covers the treated area with visible fluid.

b. **Limits/Precautions for Local Frost Prevention**

- Procedure Limitation: This local frost prevention procedure is not a substitute for standard de-icing and anti-icing procedures in accordance with sections 9.4.1 and 9.5.1, clear ice checks or any other aircraft manufacturer requirement, nor a substitute for the requirement that aircraft surfaces shall be clear of frost, snow, slush or ice accumulations.
- Operator Approval: This procedure shall only be carried out if approved by the operator of the aircraft to be treated.
- Training: This procedure shall only be carried out by trained and qualified personnel (reference AS 6286).

c. **Application limits**

This local frost prevention procedure shall be applied to clean wings immediately following arrival of the aircraft. Application is acceptable at the latest when frost just starts to form, but in this case the fluid shall be applied at a minimum temperature of 50 °C (122 °F). If precipitation occurred between application of the fluid and dispatch of the aircraft and/or if precipitation is expected before take-off, a two-step de-icing/anti-icing procedure shall be performed (refer to 8.4 and 8.5).

d. **Symmetrical treatment requirement**

Wings shall receive the same and symmetrical treatment; the same area in the same location on each wing shall be sprayed including when conditions would not indicate the need for treatment of both wings.

CAUTION: Aerodynamic problems could result if this requirement is not met.

e. **Holdover time**

A holdover time shall not be assigned to local frost prevention since this treatment does not cover the entire aircraft or wing surface respectively.

f. **Final check - local frost prevention**

A tactile (by touch) check of treated areas and a visual check of untreated areas of both wings shall be performed immediately before the aircraft leaves the parking position. These checks are conducted to ensure that both wings are clean and free of frost. The applied anti-icing fluid shall remain in a liquid state and shall show no indication of failure (e.g., color change to white, a loss of gloss, or the presence of ice crystals in the fluid film).

g. **Flight crew information - local frost prevention**
The following information shall be provided to the flight crew: "Local frost prevention was accomplished, no holdover times applies."

7.9.3 Holdover Time

Holdover time is obtained by anti-icing fluids remaining on the aircraft surfaces. With a one-step de-icing/anti-icing process the holdover time begins at the start of the treatment and with a two-step de-icing/anti-icing process at the start of the second step (anti-icing) Holdover time will have effectively run out when frozen deposits start to form/accumulate on treated aircraft surfaces. Due to their properties, Type I fluids form a thin liquid wetting film, which provides limited holdover time, especially in conditions of freezing precipitation. With this type of fluid no additional holdover time would be provided by increasing the concentration of the fluid in the fluid/water mixture. Type II, III, and IV fluids contain a pseudo plastic thickening agent, which enables the fluid to form a thicker liquid wetting film on external aircraft surfaces. This film provides a longer holdover time especially in conditions of freezing precipitation. With this type of fluid, additional holdover time will be provided by increasing the concentration of the fluid/water mixture, with a maximum holdover time available typically from undiluted fluid.

Holdover time guidelines give an indication as to the time frame of protection that could reasonably be expected under conditions of precipitation. However, due to the many variables that can influence holdover time, these times should not be considered as minima or maxima as the actual time of protection may be extended or reduced, depending upon the particular conditions existing at the time. Holdover time guidelines are established and published by the FAA and TC. The responsibility for the application of this data remains with the user.

CAUTION: Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may also be reduced when aircraft skin temperature is lower than OAT. Therefore, the indicated times should be used only in conjunction with a pre-take-off check.

CAUTION: Surface coatings are currently available that may be identified as ice phobic or hydrophobic, enhance the appearance of aircraft external surfaces and/or lead to fuel savings. Since these coatings may affect the fluid wetting capability and the resulting fluid thickness of de-icing/anti-icing fluids they have the potential to affect holdover time and aerodynamics. For more information see AIR6232 and consult the aircraft manufacturers.

Information relating to the holdover times for de-icing fluid can be found on the Transport Canada website.

INTENTIONALLY LEFT BLANK

7.10 Limits

7.10.1 Fluid Related Limits

Temperature Limits (see appropriate tables): When performing two-step de-icing/anti-icing, the freeze point (FP) of the fluid used for the first step shall be at or below the OAT.

SAE Type I Fluids: The FP of the SAE Type I fluid mixture used for either one-step de-icing/anti-icing or as a second step in the two-step operation shall be at least 10 °C (18 °F) below the OAT. In no case shall this temperature be lower than the LOUT.

CAUTION: All Type I fluids supplied as concentrates for dilution with water prior to use shall not be used undiluted. For exceptions refer to fluid manufacturer's documentation.

CAUTION: All Type I fluids have a maximum concentration mix related to the aerodynamic acceptability. Refer to fluid manufacturer's documentation.

SAE Type II, III, and IV Fluids: The freeze point of SAE Type II, III, IV fluids used for either one-step de-icing/anti-icing or as the second step in a two-step treatment shall be at least 7 ºC (13 ºF) below OAT and not lower than the aerodynamic acceptability lower limit of the fluid.

NOTE: These fluids shall not be used below -25 °C (-13 °F) in active frost conditions.
Frost, snow, slush, or ice dilutes the fluid. Apply enough hot de-icing fluid to ensure that refreezing does not occur and all contaminated fluid is driven off.

7.10.2 Application Limits (see also the Application Tables 1 and 2 in 8.8)

Under no circumstances shall an aircraft that has been anti-iced receive a further coating of anti-icing fluid directly on top of the contaminated film. If an additional treatment is required before flight, a complete de-icing/ anti-icing shall be performed (see Application Tables 1 and 2). Ensure that any remaining fluid from any previous treatment is flushed off. Anti-icing only is not permitted.

CAUTION: The application of Type II, III, and IV fluid, especially when used in a one-step process or in the first step of a two-step process, may cause fluid to collect in aerodynamically quiet areas, cavities, and gaps which can dry out and leave dried residues. Dried residues may rehydrate and freeze following a period of high humidity and/or rain conditions. This may cause flight control problems. These dried residues may require removal. Consult the aircraft manufacturer with regard to inspection methods and frequency, related maintenance requirements and aircraft washing recommendations.

The application of hot water or heated Type I fluid in the first step of a two-step process will minimize the formation of residues. Dried residues may rehydrate and freeze under certain temperature, high humidity and/or rain conditions and may block or impede critical flight control systems. If a Type II, III, or IV fluid is used in a one-step process or in the first step of a two-step

process, then an appropriate inspection and cleaning program shall be established dependent on the operator's experience and fleet type. Whenever suitable, deice and anti-ice with only Type I to help avoid these residue issues.

Flight control problems associated with frozen or unfrozen residues have been observed to be particularly prevalent when thickened fluids are used to remove frost during a period of dry weather followed by hydration of the dried residues by water from rain, condensation, cleaning, or wet snow in flight.

NOTE: In order to detect dried residues, it may help to spray a water mist onto the affected surfaces. This causes the dried residues to rehydrate and swell into a gel.

NOTE: If removal of contamination is required on the lower side of the wings and the horizontal stabilizer and elevator, de-icing/anti-icing fluid shall be applied sparingly to minimise fluid flow into drain holes. Whenever possible, use Type I only. Consult the aircraft manufacturer's documentation.

7.10.3 Aircraft Related Limits

The application of de-icing/anti-icing fluid shall be in accordance with the requirements of the airframe/engine manufacturers and local procedures.

7.11 Procedure Precautions

7.11.1 One-Step De-icing/Anti-Icing

This is performed using heated de-icing/anti-icing fluids (see 8.4.1). The correct fluid concentration is chosen with regard to desired holdover time, dictated by OAT and weather conditions (see application Tables 1 and 2). The fluid used to de-ice the aircraft remains on the aircraft surfaces to provide limited anti-ice capability.

CAUTION: Wing skin temperature may differ and in some cases may be lower than OAT. A mix with higher glycol concentration can be used under the latter condition to ensure a sufficient buffer.

CAUTION: The application of Type II, III, or IV fluid, especially when used in a one-step process, may cause fluid to collect in aerodynamically quiet areas, cavities and gaps which can dry out and leave dried residues. Dried residues may rehydrate and freeze following a period of high humidity and/or rain conditions. This may impede flight control systems. These dried residues may require removal. Consult the aircraft manufacturer with regard to inspection methods and frequency, related maintenance requirements and aircraft washing recommendations.

NOTE: If a Type II, III, or IV fluid is used in a one-step process, then an appropriate inspection and cleaning program shall be established. Whenever suitable, de-ice and anti-ice with only Type I.

NOTE: In order to detect dried residues, it may help to spray a water mist onto the affected surfaces. This causes the dried residues to rehydrate and swell into a gel.

NOTE: If removal of contamination is required on the lower side of the wings and the horizontal stabilizer and elevator, de-icing/anti-icing fluid shall be applied sparingly to minimise fluid flow into drain holes. Whenever possible, use Type I only. Consult the aircraft manufacturer's documentation.

7.11.2 Two-Step De-icing/Anti-Icing when the First Step Is Performed with De-icing Fluid (see 8.5.1)

The correct fluid(s) shall be chosen with regard to OAT (see application Tables). The second step is performed with anti-icing fluid to protect the surfaces. This fluid and its concentration are chosen with regard to desired holdover time, which is dictated by OAT and weather conditions (see application Tables). The second step shall be performed before the first step fluid freezes if necessary area by area.

Service providers shall ensure the first step fluid and the second step fluid used on aircraft are compatible. This can be accomplished by contacting the respective fluid manufacturer(s).

Use a second step spraying technique to cover completely the first step fluid (for example using the method described in 8.5.1) with a sufficient amount of second step fluid. For guidance on the amount of fluid refer to the document AS6286. Where re-freezing occurs following the initial treatment, both the first and second step must be repeated.

CAUTION: Wing skin temperature may differ and in some cases may be lower than OAT. A mix with higher glycol concentration can be used under these conditions to ensure a sufficient buffer.

CAUTION: The application of Type II, III, or IV fluid, especially when used in a one-step process or in the first step of a two-step process, may cause fluid to collect in aerodynamically quiet areas, cavities, and gaps, which can dry out and leave dried residues. Dried residues may rehydrate and freeze following a period of high humidity and/or rain conditions. This may impede flight control systems. These dried residues may require removal. Consult the aircraft manufacturer with regard to inspection methods and frequency, related maintenance requirements and aircraft washing recommendations. The use of hot water or heated mixture of Type I fluid/water for the first step of a two-step de-icing/anti-icing process will minimise the formation of dried residues.

NOTE: If a Type II, III, or IV fluid is used in the first step of a two-step process, then an appropriate inspection and cleaning program shall be established. Whenever suitable, de-ice and anti-ice with only Type I.

NOTE: In order to detect dried residues, it may help to spray a water mist onto the affected surfaces. This causes the dried residues to rehydrate and swell into a gel.

NOTE: Anti-icing of the lower side of the wings and/or horizontal stabilizer and elevator is normally not foreseen. However, if these surfaces must be de-iced, the of the de-icing fluid must be low enough to prevent refreezing.

7.11.3 With regard to holdover time provided by the applied fluid, the objective is that it is equal to or greater than the estimated time from the start of anti-icing to the start of take-off based on existing weather conditions.

7.11.4 Aircraft shall be treated symmetrically, that is, left hand and right hand side shall receive the same and complete treatment, even when only one side of the aircraft needs treatment.

WARNING: This is a regulatory requirement. The aircraft is considered UNSAFE if this requirement is not met.

7.11.5 During anti-icing and de-icing, the moveable surfaces shall be in a position as specified by the aircraft manufacturer.

7.11.6 Engines shall remain shut down during de-icing/anti-icing operations. Air conditioning and/or APU bleed air shall be selected OFF, or as recommended by the airframe and engine manufacturer. Avoid spraying de-icing/anti-icing fluid directly into the engine inlet core.
Refer to aircraft differences procedures.
Where possible, Flight Deck crews will shut down the APU prior to de-icing taking place. Therefore prior to de-icing, the de-icing crew must speak with the flight deck and establish the following;

- Will the APU be left running during de-icing?

- When de-icing will commence, in order to allow crew time to shut down the APU if possible.

In the event that the APU is to be left running, extreme care must be taken to avoid spraying directly or in-directly into the APU inlet. Ingestion of fluid can cause damage to the impeller blades.

Any fluid that has been ingested into the APU must be reported to the flight deck immediately and a safety report filed.

7.11.6.1 ERJ

Use of APU and ECS Packs during De-icing / Anti-icing.
The APU and the ECS packs must be switched off during ground de-icing to avoid fluid ingestion. Sufficient time must be allowed for fluid run-off before starting the APU or ECS packs.

WARNING: APU operation should not be used during the aircraft de-icing/anti-icing procedure, as damage may occur to the APU. If APU operation is absolutely necessary, make sure that the APU bleed Air valve is closed, packs are set to off, and the de-icing/anti-icing fluid is not applied directly to, or near the APU air inlet.

Ground crew must be briefed.

CAUTION: Due to the position of the APU air intake, de-icing fluid can enter the APU intake during horizontal stabiliser de-icing. APU bleed must not be used for air conditioning during the subsequent take-off following de/anti-icing.

7.11.6.3 Propeller cleaning

Prior to the application of de-icing fluid, it is important that any build-up of snow is removed. This should be done using either a soft bristled brush or squeegee so as not to damage the propeller blades.
De-icing fluid is to be applied using either a cloth or sponge soaked in de-icing fluid.
Ground staff should wear PPE appropriate for the application.
De-icing fluid is not to be applied using a de-icing hose due to the potential for the fluid to enter the engine intakes.

Please note the direction of rotation of the propeller blades as below:

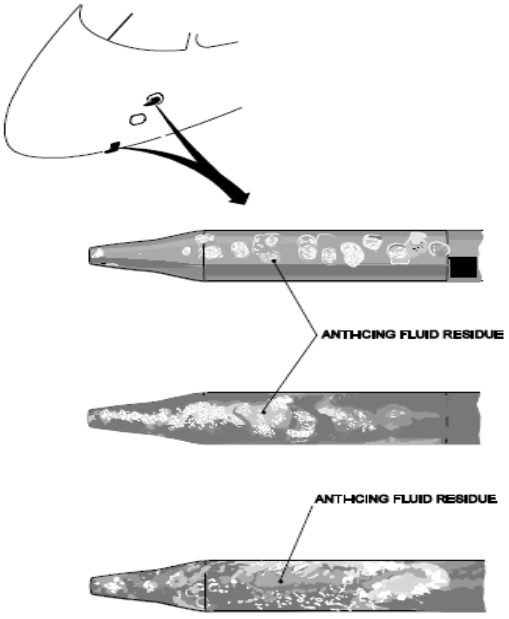
7.11.6.4 J41

The no1 propeller (i.e. the propeller on the aircraft's left wing) rotates anti-clockwise (facing the nose of the aircraft, looking aft)
The no2 propeller rotates clockwise (facing the nose of the aircraft, looking aft)
In order to access each propeller blade, the propellers are to be turned in the direction as indicated above only.

7.11.7 Do not spray de-icing/anti-icing fluids directly onto wiring harnesses and electrical components (receptacles, junction boxes, etc.) brakes, wheels, exhausts, or thrust reversers.

De-icing/anti-icing fluid spray shall not be directed into the orifices of pitot tubes (heads), static ports/vents, or directly onto air stream direction detectors probes/angle of attack airflow sensors. This includes all openings.

Sample of Smart Probe Anti-Ice Fluid Contamination



Ice ridges (all aircraft types) can form on the nose of the fuselage while on the ground. These ridges will disrupt air flow into the pitot tubes, and which can result in false measurements. All contamination shall be removed from this area.

7.11.8 Reasonable precautions shall be taken to minimize fluid entry into engines, APU, other intakes/outlets, and control surface cavities. Refer to manufacturer documentation. De-icing/anti-icing fluid spray shall not be directed into engine core or directly onto engine probes/sensors**.**

Do not direct fluid spray onto the flight deck or cabin windows as this can cause crazing of the acrylic or penetration of the window seals. Fluid spray may be directed above these surfaces and allowed to flow over.

7.11.9 If SAE Type II, III, or IV fluids are used, all traces of the fluid on flight deck windows shall be removed prior to departure, with particular attention being paid to windows fitted with wipers. Any forward area from which fluid may blow back onto windscreens during taxi or subsequent take-off shall be free of fluid prior to departure. Failure to do so may result in obscured visibility.

NOTE: *De-icing/anti-icing fluid can be removed by rinsing with an approved cleaner and a soft cloth or flushing with Type I fluid.*

Landing gear and wheel bays shall be kept free from the build-up of slush, ice, or accumulations of blown snow.

When removing ice, snow, or slush from aircraft surfaces care shall be taken to prevent it entering and accumulating in auxiliary intakes and control surface balance bays, gaps, or hinge areas.

Contamination build up on and within aircraft lift devices and other critical surfaces can form in flight or when on the ground. During icing conditions, when flaps and slats are retracted, contamination may not be visible. Conditions where this can occur may include but are not limited to the accumulation of impact ice in flight; the splash up of slush onto the underwing and flaps during ground manoeuvring; and flap track contamination where snow and/or other contaminants may blow and compact within these openings. As the possibility exists that this could remain undetected, it is important that when these conditions are present or suspected, these areas be inspected and any frozen deposits removed prior to departure.

7.11.10 Under the conditions of freezing fog, or other freezing precipitation conditions, it is necessary for the front and rear side on the fan blades to be checked for ice build-up prior to start-up. Any deposits discovered are to be removed by directing air from a low flow hot air source, such as a cabin heater, onto the affected areas or other means recommended by the aircraft operator based on information from the aircraft and engine manufacturers.

After frequent applications of de-icing/anti-icing fluids it is advisable to inspect aerodynamically quiet areas and cavities for dried residues of thickened de-icing/anti-icing fluid. For these inspections it may be necessary to open access panels. Consult airframe manufacturers for inspection and cleaning details and procedures.

7.11.11 A de-icing/anti-icing treatment should be continuous and as short as possible. If a treatment is interrupted (for example a truck running out of fluid), the cockpit crew shall be immediately informed stating:

(a) The reason for the interruption;
(b) Actions to be taken (in consultation with the cockpit crew);
(c) Expected time of delay.

Before continuing the treatment:

(a) Inform the cockpit crew;
(b) Establish in consultation with the cockpit crew, the further treatment to be carried out, including any surfaces requiring re-treatment in relation to holdover time.
(c) Carry out the treatment as agreed.

7.11.12 Clear Ice Precautions

Clear ice can form on aircraft surfaces below a layer of snow or slush. It is therefore important that surfaces are closely examined following each de-icing operation, in order to ensure that all deposits have been removed. Significant deposits of clear ice can form in the vicinity of the fuel tanks, on wing upper surfaces as well as underwing. Aircraft are most vulnerable with regard to this type of build-up when one or more of the following conditions exist:

- Wing temperatures remain well below 0 °C (32 °F) during the turnaround/transit.
- Ambient humidity is high and/or Precipitation occurs while the aircraft is on the ground.

- When frost or ice is present on lower surface of either wing.
- Ambient temperatures between -2 °C (28 °F) and +15 °C (59 °F) are experienced, although clear ice may form at other temperatures if the other three conditions listed above exist.

Clear ice formation is extremely difficult to detect. Therefore, when the above conditions prevail, or when there is otherwise any doubt that clear ice may have formed, a close examination shall be made visually and/or physically prior to departure, in order to ensure that surfaces are free of clear ice. If clear ice is believed to be present, de-icing is required.

NOTE: Low wing temperatures associated with this type of build-up normally occur when large quantities of cold fuel remain in wing tanks during the turnaround/transit and any subsequent refuelling is insufficient to cause a significant increase in fuel temperature.

7.11.13 Proximity Sensor Activation Reporting Procedures

An operational procedure shall be in place in circumstances where a proximity sensor on the de-icing equipment is activated and/or comes into contact with an aircraft surface. For equipment types furnished with a proximity sensor requiring physical contact in order to activate, in the event of sensor contact, the pilot in command shall be informed immediately, and be provided with specific information pertaining to the location on the aircraft where contact was made. The equipment involved shall remain in position until investigation can occur to inspect the affected area for damage.

A third party shall visually inspect the affected area for any signs of visual damage. If no visible damage is observed, the de/anti-icing process may continue at the discretion of the pilot in command. If damage is suspected or detected, the pilot in command shall be notified and the de/anti-icing process shall cease. Further inspection of the affected area should be performed by an individual deemed qualified under the air operators program to determine the aircraft's airworthiness.

NOTE: By design, this type of proximity sensor normally will not cause damage to an aircraft surface if contact is made to a fixed aircraft surface, while the equipment chassis is stationary. In certain circumstances however, damage may occur outside of the sensors design limitations. This includes but is not limited to:

(a) Contact with an aircraft surface while the equipment chassis is manoeuvring;
(b) Contact with an aircraft surface while the aircraft is manoeuvring;
(c) Contact with a moving/rotating aircraft surface (i.e. propeller, engine fan blade, etc.); and/or
(d) Contact is made or suspected to have been made between a component of the de-icing vehicle and aircraft.

In these circumstances, the procedures mentioned above this note shall apply. Should a proximity sensor be activated, all pertinent and relevant details shall be documented, including (at a minimum):

(a) Date
(b) Time
(c) Vehicle operator name(s)
(d) Vehicle identification (e.g., number)
(e) Flight number
(f) Aircraft registration and/or air operator fleet identification (e.g., fin/tail/ship number, etc.)
(g) De-icing location (e.g., bay or gate number)
(h) Location on the aircraft where the contact was made, including specifics (e.g., side, aircraft part, etc.)
(i) Proximity sensor location on the vehicle and point where the contact was made (e.g., nozzle, left side of sensor, etc.)
(j) Name and job title of the third party individual that performed inspection
(k) Third party company name (not required if third party is from the de/anti-icing company)
(l) Result of the third party inspection (e.g., no visual damage detected or damage suspected/present).

Ground crew involved in the de/anti-icing operation shall be trained on the operation of the proximity sensor (including equipment reactivation) and procedures in the event of contact. In addition, for those personnel deemed qualified to perform the third party inspection, they shall also be trained on visual inspection requirements and procedures.

7.11.14 Fluid Application Tables

Table 1 - Guidelines for the application of Type I fluid/water mixtures (minimum concentrations) as a function of OAT

OAT	One-Step Procedure	Two-Step Procedure	
	Deicing/Anti-icing	First step: Deicing	Second step: Anti-icing [1]
0 °C (32 °F) **and above**	Heated fluid/water mixture with a freezing point of at least 10 °C (18 °F) below OAT	Heated water or a heated fluid/water mixture	Heated fluid/water mixture with a freezing point of at least 10 °C (18 °F) below OAT
below 0 °C (32 °F) **down to LOUT**		Heated fluid/water mixture with a freezing point at OAT or below	

[1] To be applied before first step fluid freezes.

NOTE 1: Temperature of water or fluid/water mixtures shall be at least 60 °C (140 °F) at the nozzle. Upper temperature limit shall not exceed fluid and aircraft manufacturer's recommendations.

NOTE 2: This table is applicable for the use of Type I Holdover Time Guidelines. If holdover times are not required, a temperature of 60 °C (140 °F) at the nozzle is desirable.

NOTE 3: To use Type I Holdover Time Guidelines, at least 1 litre/m^2 (approximately 2 Gals/100ft^2) must be applied to the de-iced surfaces.

CAUTION: Wing skin temperatures may be lower than OAT. If this condition is identified, a stronger mixture (more glycol) may need to be used to ensure a sufficient buffer.

Table 2 -Guidelines for the application of Type II and Type IV fluid/water mixtures (minimum concentrations) as a function of OAT

Table 2 - Guidelines for the application of Types II and IV fluids (fluid concentrations in % volume)

Outside Air Temperature (OAT)[1]	One-Step Procedure De/Anti-Icing	Two-Step Procedure	
		First Step: Deicing	Second Step: Anti-Icing[2]
0 °C (32 °F) and above	100/0, 75/25, or 50/50 Heated[3] Type II or IV fluid/water mixture	Heated water or a heated Types I, II, III, or IV fluid/water mixture	100/0, 75/25, or 50/50 Heated or unheated Type II or IV fluid/water mixture
Below 0 °C (32 °F) to -3 °C (27 °F)	100/0, 75/25, or 50/50 Heated[3] Type II or IV fluid/water mixture	Heated Types I, II, III, or IV fluid/water mixture with a freezing point at OAT or below	100/0, 75/25, or 50/50 Heated or unheated Type II or IV fluid/water mixture
Below -3 °C (27 °F) to -14 °C (7 °F)	100/0 or 75/25 Heated[3] Type II or IV fluid/water mixture	Heated Types I, II, III, or IV fluid/water mixture with a freezing point at OAT or below	100/0 or 75/25 Heated or unheated Type II or IV fluid/water mixture
Below -14 °C (7 °F) to LOUT	100/0 Heated[3] Type II or IV fluid/water mixture	Heated Types I, II, III, or IV fluid/water mixture with a freezing point at OAT or below	100/0 Heated or unheated Type II or IV fluid/water mixture

NOTES:

[1] One-step or two-step fluids must not be used at temperatures below their lowest operational use temperature (LOUT). First-step fluids must not be used below their freezing points. Consideration should be given to the use of Type I/III fluid when Type II/IV fluid cannot be used due to LOUT limitations. The LOUT for a given Type II/IV fluid is the higher (warmer) of:

a. The lowest temperature at which the fluid meets the aerodynamic acceptance test (according to AS5900) for a given aircraft type; or

b. The actual freezing point of the fluid plus its freezing point buffer of 7 °C (13 °F).

Although some LOUTs are lower than the temperatures stated in the HOT table, holdover times do not apply when anti-icing below the lowest temperature stated in the band.

[2] To be applied before first step fluid freezes, typically within 3 minutes. (This time may be longer than 3 minutes in some conditions, but potentially shorter in heavy precipitation, in colder temperatures, or for critical surfaces constructed of composite materials. If necessary, the second step shall be applied area by area.)

[3] Clean aircraft may be anti-iced with unheated fluid.

CAUTIONS:

- For heated fluids, a fluid temperature not less than 60 °C (140 °F) at the nozzle is desirable.
- Upper temperature limit shall not exceed fluid and aircraft manufacturers' recommendations.
- Wing skin temperatures may differ and, in some cases, may be lower than the OAT. A stronger mix (more glycol) may be needed under these conditions.
- Whenever frost or ice occurs on the lower surface of the wing in the area of the fuel tank, indicating a cold-soaked wing, the 50/50 dilutions of Types II or IV shall not be used for the anti-icing step because fluid freezing may occur.
- An insufficient amount of anti-icing fluid may cause a substantial loss of holdover time. This is particularly true when using a Type I.
- Fluid mixture for the first step in a two-step procedure.

INTENTIONALLY LEFT BLANK

7.12 Ground Equipment

7.12.1 De-icing Units

Combustion heaters and trucks shall not be operated in confined or poorly ventilated areas to prevent asphyxiation. Requirements for suitable equipment are described in ARP1971.

- Motorized/trucks (see ARP1971 + ARP5058)
- Non-motorized (tower/gantry/carts)
- Forced air or forced air/fluid equipment for the removal of frozen contaminants (see AIR6284)

7.12.2 Ice Detection Equipment (see AS5116 and AS5681)

7.12.3.1 General

No aircraft shall attempt takeoff when frozen or freezing contamination is present on or adhering to the wings, propellers, control surfaces or other critical surfaces. This is known as the ICAO 'Clean Aircraft Concept'.

Compliance with this requirement can be achieved by appropriate use of antiicing or deicing procedures, or where necessary a combination of both. Detailed procedures and requirements for deicing and anti-icing can be found in SAE AS 6285 "Aircraft Ground De-icing/Anti-Icing Processes" and other relevant SAE documents. This section provides general guidelines for safe ground deicing/anti-icing operations.

The term deicing will be used throughout this section, but should also be considered to refer to the anti-icing process.
Deicing operations must be performed with extreme caution to prevent injury to personnel and damage to aircraft and equipment. Deicing is not permitted during the fueling process.

7.12.3.2 Personnel Safety

The safety factors given below are designed to ensure that in the performance of deicing an aircraft, the safety of personnel performing the task is not compromised.
(a) Appropriate PPE should be checked for serviceability and worn by all personnel engaged in deicing operations.
(b) Cones should be removed as necessary to allow access to the aircraft surfaces. Replace the cones on completion of the deicing operation, if the aircraft is not departing.
(c) To prevent injury, caution must be taken when filling deicing vehicles with hot fluid.
1. When handling deicing fluids, personnel should understand and follow the precautions contained in the fluid manufacturer's Safety Data Sheets.
2. Before deicing operations start, deicing should be coordinated between the deicing and ground handling personnel.
3. Deicing/anti-icing fluids may be very hot; 60°C/140°F or even warmer. To prevent injuries, ground personnel, passengers and flight

crew shall be prevented from walking near an aircraft that is being deiced.
4. Slippery conditions can exist on the ground and on the equipment surfaces during and following the deicing processes. Caution should be exercised, particularly in low humidity or nonprecipitating weather conditions, due to increased slipperiness following the use of glycol that is not diluted by the weather element.
5. When deicing on a stand, all ramp equipment, including steps, should be clear of the area to be sprayed to avoid contamination by fluid.
6. Care should be taken to prevent the transfer of fluid by foot onto GSE (e.g., steps, jet bridges), interiors of aircraft and aircraft cargo holds.
Refer to 3.3.2 for detailed safety precautions for ramp operations in winter conditions.

7.12.3.3 Open Basket Operations

The following minimum precautions should be taken when deicing from an open basket:
(a) Ensure that the fall restraint device is securely anchored and the safety harness is always worn when deicing from an open basket.
(b) Ensure that the basket door or safety chain is securely latched.
(c) Caution should be taken to avoid exposure to a running Auxiliary Power Unit (APU).

7.12.3.4 Closed Basket Operations

The following minimum precautions should be taken:
(a) Ensure the seat belt is always worn.
(b) Ensure the windows of the cabin are clean. Check wiper(s) for condition and check window washer fluid level.
(c) Ensure the door of the cabin is securely closed.
(d) Ensure there are no obstructions to the cabin heater/ventilation system.

7.13 Fluids

7.13.1 Fluid Storage and Handling

De-icing/anti-icing fluid is a chemical product with an environmental impact. During fluid handling avoid any unnecessary spillage, comply with local environmental and health laws and the manufacturer's safety data sheet (SDS). Different products shall not be mixed without additional qualification testing. Consult with the fluid manufacturers. Slippery conditions may exist on the ground or equipment following the de-icing/anti-icing procedure. Caution should be exercised, particularly under low humidity or non-precipitation weather conditions.

Tanks shall be dedicated to the storage of the de-icing and/or anti-icing fluid to avoid contamination with other fluids. Storage tanks shall be constructed of materials compatible with the de-icing/anti-icing fluid, as specified by the fluid manufacturer. Care should be taken to avoid using dissimilar metals in contact with each other, as galvanic corrosion may form and degrade thickened fluids. Tanks shall be conspicuously labelled to avoid contamination. As a minimum, the following information must be identified:

(a) Type of fluid SAE I, II, III, or IV
(b) Fluid Product Name,
(c) Fluid Concentration or mixture
(d) e.g., SAE TYPE I Fluid Manufacturer, Product Name, Concentrate Aircraft De-icing Fluid
(e) e.g., SAE TYPE I Fluid Manufacturer, Product Name, Dilute Aircraft De-icing Fluid
(f) e.g., SAE Type IV Fluid Manufacture, Product Name, "undiluted", 75/25 or 50/50

The condition of the tanks shall be examined annually for corrosion, contamination, and/or leaks. If corrosion or contamination is evident, tanks shall be repaired or replaced. Corrosion in tanks most often occurs in the vapour space of partially empty tanks by evaporation and subsequent condensation of water from the de-icing fluid. To reduce corrosion, keep tanks containing aircraft de-icing fluid full during summer or periods of low use.

***NOTE**: If the quality of the fluids is checked in accordance with 4.3.2, the tank inspection interval may be longer than one year.*

***NOTE:** Although de-icing/anti-icing fluids are generally noncorrosive, their vapour can be corrosive.*
Storage temperature limits for the fluid shall comply with the manufacturer's requirements.

7.13.2 Fluid Transfer Systems

The performance characteristics of SAE Type II, III, and IV de-icing/anti-icing fluids may be degraded by excessive mechanical shearing or chemical contamination. Therefore, only compatible pumps, control valves, piping, hoses, and application devices (nozzles) shall be used. The design of fluid transfer systems shall be in accordance with the fluid manufacturers' recommendations. Fluid transfer systems shall be dedicated to the specific fluid

being handled to prevent inadvertently mixing fluids of different types or manufacturers. All fill ports and discharge points shall be clearly labelled to prevent inadvertent product mixing. All fill ports must be protected to prevent foreign contamination.

7.13.3 Heating

De-icing/anti-icing fluids shall be heated according to the fluid manufacturer's guidelines, and the heated fluids shall be checked periodically.

(a) For Type I fluids, water loss may cause undesirable aerodynamic effects.
(b) For Type II / III / IV fluids thermal exposure and/or water loss may cause degradation making them not usable.

CAUTION: Avoid unnecessary heating of fluid in vehicle tanks. Prolonged or repeated heating of fluids (directly or indirectly) may result in loss of water or oxidation which can lead to the performance degradation of the fluid, and may cause viscosity degradation in Type II, III, and IV fluids leading to shorter holdover times. Any of the following situations or a combination of them can accelerate the fluid performance degradation:

(a) Low fluid usage (turnover);
(b) Trucks being in standby mode with heating system on for extended periods of time;
(c) High temperatures in the fluid tanks;
(d) High temperatures in water tanks which are in direct contact with the fluid tanks (no insulation between tanks).

The integrity of the fluid following heating shall be checked periodically. Factors like heating rate, time, and temperature cycling should be considered in determining the frequency of fluid inspections. Refer to the fluid manufacturers' recommendations.

7.13.4 Application Equipment

Check with the fluid manufacturer's recommendations for filling and fluid transitions in order to prevent fluid contamination and degradation. Requirements for suitable equipment are described in ARP1971. Application equipment shall be clean before being initially filled with de-icing/anti-icing fluid in order to prevent fluid contamination.

7.14 Staff Training and Qualification

De-icing/anti-icing procedures must be carried out exclusively by personnel trained and qualified on this subject. Companies providing de-icing/anti-icing services shall have both a Qualification Programme and a Quality Control Programme to monitor and maintain an acceptable level of competence.

De-icing/anti-icing training shall be conducted by personnel whom are trained, qualified, and proficient within relevant subjects applicable to the personnel they are designated to instruct (Flight; Dispatcher; and/or Ground); and/or by other personnel or through other means under the oversight of such qualified individuals.

Training programs shall follow the guidelines and recommendations published in AS6286.

7.14.1 Levels of Qualification

The qualification level shall be clearly defined. Qualified people shall be fully aware of their approved functions. A suggested structure for levels of qualifications is listed below. A person may hold several approvals depending on the job function.

Levels are divided into the following groups:

(a) DI-L10 De-icing vehicle driver
(b) DI-L20 De-icing operator
(c) DI-L30 Supervision of de-icing/anti-icing
(d) DI-L30B Pre-/Post de-icing/anti-icing inspector
(e) DI-L40 De-icing instructor
(f) DI-L50 De-icing coordinator
(g) DI-L60 Fluid Quality Inspector (Laboratory staff)
(h) DI-L70 Head of de-icing training

Initial qualification is performed after a successful theoretical part including exam and a practical training including assessment where relevant.

Each qualification shall be renewed annually with a theoretical part including a written examination. The training subjects do not need to be covered repeatedly for each initial level of qualification if the same person is performing several duties.

In order to maintain each qualification, it is highly recommended that the company keep records of the experience of each individual.

The level of experience is recommended to be such that each individual is familiar with all relevant elements of the qualification responsibilities and can perform the task in a safe manner. The program and records shall reflect experience in performing the tasks of the relevant qualification in actual conditions. If the experience is limited after the winter season it is recommended that the recurrent training reflects this lack of adequate experience in order to have all relevant operational topics refreshed more thoroughly.

7.14.2 Training organisations

Training organisations shall have in place within their management plan/organizational structure descriptions of key personnel (i.e., Program Manager, Training Manager/Head Trainer, De/anti-icing Training Instructor, etc.,) and their duties pertaining to training, qualification, and oversight responsibilities.

The organisations management plan/organizational structure shall specify the individual who are responsible for the organizations de/anti-icing training program. The individual specified with this responsibility shall have sufficient knowledge in de-icing/anti-icing operations and training to be qualified for this position. Although this qualification can be renewed annually pending the responsibilities lie with the same individual, it is recommended that the responsible individual complete training and qualification on an annual basis through self-study, under the oversight of their superior or responsible designee (where applicable), as specified within the organizations management plan/organizational structure.

Individuals designated to develop and/or facilitate de-icing/anti-icing training should have some familiarization, background, and training in the area of education and facilitation techniques, through relevant experience and/or education. This training may be performed as part of a train-the-trainer program.

Individuals designated to conduct de-icing/anti-icing training within an organization's management plan/organizational structure shall be required to complete initial and subsequent annual recurrent training in order to maintain their qualification. This training shall be facilitated internally within an organization by an individual responsible for this function as specified within the organizations management plan/organizational structure (i.e. Training Manager/Head Trainer) or other personnel as designated; and/or by a third party organization (i.e. Air Carrier, contracted de-icing/anti-icing training vendor, etc.).

7.14.3 Training program

A de-icing training program shall be introduced and the areas of de-icing training shall be divided into the following parts:

- Theoretical,
- Practical, and
- Annual Recurrent

This training program shall include all elements of training, levels of qualifications, verification of success, functions, duties, responsibilities, quality control, regular overview of instructing and records kept. The program shall be under constant review to make sure it covers all new aspects of operation. The head of de-icing training is responsible to build up such a program. Up to date standards and recommendations shall be referred to. The Head of Training may also be the actual instructor and in that case previous de-icing experience is recommended.

Theoretical and practical skills training shall be conducted by qualified personnel who have demonstrated the skills to deliver the training and who have competence (knowledge, skill, and experience) in the subjects to be instructed. Assessments shall be conducted by persons who have appropriate knowledge, skills, and experience in the functions being assessed. Training shall be a combination of theoretical (suitable and sufficient information and instruction relating to the topic being trained) and practical skills training to verify the learners understanding of, and ability to complete, the task being trained. Changes to methods and processes shall be communicated to relevant personnel and appropriate additional information and training shall be delivered.

Training programs must include a detailed description of initial and annual recurrent ground training and qualification concerning the specific requirements of the program and the duties, responsibilities, and functions detailed in the program.
They shall have a Quality Control Program to monitor and maintain a high level of competence.

An ongoing review plan is advisable to evaluate the effectiveness of the de-icing/anti-icing training received. The program shall have a tracking system that ensures all required personnel have been satisfactorily trained. Records of personnel training and qualification shall be maintained for proof of qualification.

7.14.4 Training Session content

The content and length of theoretical and practical training depends on the level of qualification. The most in depth training is performed for the de-icing crew and de-icing instructors. Others receive a basic knowledge of de-icing/anti-icing and relevant subjects concerning their particular area of operation. Subjects mentioned below are headlines only and a more detailed content shall be included for the instruction of each particular task. Both initial and recurrent training shall include these subjects.

The content of de-icing training shall cover the following, but are not limited to:-

- Common standards, regulations, and recommendations
- Basic knowledge of aircraft performance
- Effects of frost, ice, snow, slush, and fluids on aircraft performance
- Meteorological considerations on ice formation
- Basic characteristics of aircraft de-icing/anti-icing fluids, including causes and consequences of fluid remaining on surfaces, and dried and/or rehydrated residues
- General techniques for removing deposits of frost, ice, slush, and snow from aircraft surfaces and for anti-icing
- De-icing/anti-icing procedures in general and specific measures to be performed on different aircraft types and de-icing using hot air
- Aircraft in general and common critical areas
- Types of checks required

- De-icing/anti-icing equipment and facilities operating procedures including actual operation
- Safety precautions and human factors
- Emergency procedures
- Fluid application and limitations of holdover time tables
- De-icing/anti-icing codes and communication procedures, knowledge of the English language
- Special provisions and procedures for contract de-icing/anti-icing
- Environmental considerations (e.g., where to deice, spill reporting, hazardous waste control, etc.)
- New procedures, new development and alternative technology, lessons learned from previous winters
- Conditions which can lead to the formation of ice on the aircraft
- Local rules and restrictions
- Airport operational procedures and ATC
- Quality control
- Company and customer procedures
- De-icing coordination procedures in general
- Instructional procedures in general

7.14.5 Training categories

Initial qualification - The final qualification shall be accomplished on live aircraft during live de-icing/anti-icing operations, which allows trainees to be familiarised with the relevant typical aircraft surfaces/components and identification of no spray areas. However these individuals may participate in de-icing/anti-icing operations, under strict supervision of a qualified individual, until such time that the final qualification can be achieved, pending they have satisfactorily completed all simulated practical evaluations and demonstrations of skills required as part of the training and qualification program.

Recurrent qualification - Practical evaluation and demonstration of skills should be performed; however, where new equipment and/or operational methods are utilized, practical training and demonstration of knowledge/skills shall be performed.

Initial and annual recurrent - Shall be conducted to ensure that all such crews obtain and retain a thorough knowledge of aircraft ground de-icing/anti-icing policies and procedures, including new procedures and lessons learned.

7.14.6 Length of theoretical training

When considering the length of theoretical training to cover all of these subjects, it is recommended that it be performed in about 14 hours (i.e. around two days of training).

The practical parts shall cover the relevant operational procedures and considerations and be performed preferably in about 21 hours (i.e. around three days). The length and scope for different levels is explained in 3.6.5.3. Initial training is recommended to be held as classroom training. Recurrent training can be performed either in the classroom or as a "distance learning"

(e.g., computer based training). All training shall include an examination that covers all relevant subjects.

The length and content of the recurrent training must take into account all changes for the coming winter season (e.g., operational changes, new fluids, equipment, infrastructure, customer procedures, lessons learned etc.). This theoretical training must cover the basic elements for the qualification level reflected and additionally successfully performing a theoretical exam. Practical recurrent training shall be performed as locally required based on all changes for the coming winter season that reflect the qualification level and necessity for practical training.

7.14.7 Qualification level details

7.14.7.1 De-icing Vehicle Driver, DI-L10

The de-icing vehicle driver qualification (DI-L10) qualifies the person to manoeuvre the vehicle and perform the communication procedures but it does not include any other de-icing levels. There shall be a note of restriction to this qualification if some of the duties are not performed as mentioned. The driver shall receive training covering relevant parts mentioned in AS6286. Local procedures shall be taken into account and emphasized more than others where relevant.

The theoretical and practical training should be considered to be covered in about 7 hours (e.g., one day, including a written exam). The practical part shall cover all different vehicles and types of operation that can be in use and it shall include an assessment. The length of training depends largely on the type of operation and amount of different vehicles but practical training shall not be shorter than the theoretical part. Local settings may demand a more extensive training and these recommendations are not binding. The qualification has to be renewed annually with a theoretical part including a written exam. However, all new equipment and operational changes need a practical training as well.

7.14.7.2 De-icing Operator, DI-L20

The de-icing operator qualification (DI-L20) includes the contamination check (check for the need to deice), performance of de-icing/anti-icing and post de-icing/anti-icing check. This level of qualification includes driving the de-icing vehicle (DI-L10) and the qualification level DI-L30B. There shall be a note of restriction to this qualification if some of the duties are not performed as mentioned. The de-icing operator shall receive training covering all parts in detail mentioned in AS6286 (except coordination and instructional procedures). Local procedures shall be taken into account and emphasized more than others where relevant (e.g., some airports perform only centralized de-icing and some perform a mix operation etc.).

The theoretical training should be considered to be covered in about 14 hours (approximately two days) of training including a written exam. The practical part should be considered to be covered in about 21 hours (approximately three days). Local settings may demand a more extensive training and these recommendations are not binding. It is recommended that the practical part be

adapted according to local requirements and operational needs. A qualified instructor shall assess the practical part with the student performing "a demonstration of skill" during actual operation on an aircraft. The student shall receive sufficient practical training in order to be able to perform de/anti-icing in a safe manner, prior to practical assessment. The qualification has to be renewed annually with a theoretical part including a written exam. However, all new equipment and operational changes may require additional practical training as well.

7.14.7.3 Supervision of De-icing/Anti-Icing, DI-L30

This level of qualification includes the performance of the post de-icing/anti-icing check, driving the de-icing vehicle (DI-L10) and the de-icing operator qualification (DI-L20). There shall be a note of restriction to this qualification if some of the duties are not performed as mentioned. The person supervising the de-icing/anti-icing and performing the required checks shall receive training covering relevant parts mentioned in AS6286. Local procedures shall be taken into account and emphasized more than others where relevant.

The theoretical training should be considered to be covered in about 14 hours, e.g., two days, of training including a written exam. The practical part should be considered to be covered in about 21 hours, e.g., three days. This training is similar to the DI-L10 and there is therefore no need to hold two separate courses in order to be qualified for both levels. Local settings may demand a more extensive training and these recommendations are not binding. It is recommended that the practical part be adapted according to local requirements and operational needs. A qualified instructor shall assess the practical part with the student performing "a demonstration of skill" during actual operation involving an aircraft. The qualification has to be renewed annually with a theoretical part including a written exam.

7.14.7.4 Pre-/Post De-icing/Anti-Icing Inspector, DI-L30B

This level of qualification includes the determination of the need for de-icing/anti-icing and the performance of the pre/post de-icing/anti-icing check. This level is more limited than the DI-L30 and is only focused on duties to determine the need for de-icing/anti-icing and for the checking procedures. There shall be a note of restriction to this qualification if some of the duties are not performed as mentioned. The person determining the need for de-icing/anti-icing and performing the required checks shall receive training covering relevant parts mentioned in AS6286. Local procedures shall be taken into account and emphasized more than others where relevant.

The theoretical training should be considered to be covered in about 4 hours, e.g., a half day, of training including a written exam. The practical part should be considered to be covered in about 4 hours (e.g., a half-day). Practical training for licensed technical staff (e.g., aircraft mechanics) is not required. Theoretical and practical parts can be combined where relevant. This training is similar to the DI-L30 and there is therefore no need to hold two separate courses if the initial training is for DI-L30. Local settings may demand a more extensive training and these recommendations are not binding. It is

recommended that the practical part be adapted according to local requirements and operational needs. A qualified instructor shall assess the practical part with the student performing "a demonstration of skill" (excluding above mentioned licensed technical staff) during actual operation on an aircraft. The qualification has to be renewed annually with a theoretical part including a written exam.

7.14.7.5 De-icing Instructor, DI-L40

Training shall be conducted by personnel who have demonstrated competence in the de/anti-icing subjects to be instructed and who have the skills to deliver the training effectively. The instructor shall have received the proper training for a DI-L20 qualification that includes the performance of de-icing/anti-icing, supervision of de-icing/anti-icing (DI-L30) and driving the de-icing vehicle (DI-L10). The instructor shall have proper training in instructional methods and sufficient knowledge of the training subject (e.g., aircraft critical areas, systems, fluid types, de-icing vehicles etc.). It is also recommended that the instructor attends or performs practical training and de-icing on an annual basis in order to maintain de-icing experience and knowledge. There shall be a note of restriction to this qualification if some of the duties are not performed as mentioned. The de-icing instructor shall receive training covering all parts in detail mentioned in AS6286. Local procedures shall be taken into account and emphasized more than others where relevant. There may be cases where specialists in their own field (e.g., a meteorologist, ATC staff, etc.) are used as instructors for a particular subject. These specialists do not need to be qualified in de-icing.

The initial theoretical training (DI-L20) should be considered to be covered in about 14 hours, e.g., two days, of training including a written exam. The practical part should be considered to be covered in about 21 hours, e.g., three days. If the instructor has previously had basic practical training, there is no need for a practical part unless there are changes in the procedures or the operation. The training for de-icing instructors should be considered to be held as a separate session where subjects are covered in an instructional way. The length of this training may be adjusted according to local demands. Local settings may also demand a more extensive training and these recommendations are not binding. The de-icing instructor is qualified to assess any demonstration of skill where needed. The qualification is renewed annually with a theoretical part including a written exam. The recurrent training will renew all previous qualifications (DI-L10-40).

7.14.7.6 De-icing Coordinator, DI-L50

The de-icing coordinator qualification (DI-L50) entitles the person to coordinate and manage the de-icing operation and/or work as a team leader in de-icing. This qualification is intended for coordinating de-icing operations mainly at remote and/or centralized de-icing facility areas or for other similar de-icing coordination functions at an airport. The qualification includes the performance of de-icing/anti-icing (DI-L20), supervision of de-icing/anti-icing (DI-L30), and driving the de-icing vehicle (DI-L10). There shall be a note of restriction to this qualification if some of the duties are not performed as mentioned. The de-icing

coordinator shall receive training covering all parts in detail mentioned in AS6286. Local procedures shall be taken into account and emphasized more than others where relevant.

The initial theoretical training should be considered to be covered in about 14 hours, e.g., two days, of training including a written exam. The practical part should be considered to be covered in about 21 hours, (e.g., three days). Local settings may demand a more extensive training and these recommendations are not binding. The training for de-icing coordinators should be considered to be held as a separate session where subjects are covered regarding the appropriate way of coordination, management and/or team leadership. The basic part of the training can otherwise be held together with the de-icing training (DI-L20). The length of this training may be implemented according to local demands. The qualification is renewed annually with a theoretical part including a written exam. The recurrent training will renew all previous qualifications (DI-L10-30B and DI-L50) unless specified otherwise (e.g., limited level).

7.14.7.7 Fluid Quality Inspector (Laboratory Staff), DI-L60

The fluid quality inspector – (laboratory) qualification (DI-L60) includes the performance of quality control of fluids. The qualification shall include training covering related parts mentioned in AS6286. Local procedures shall be taken into account. International standards and auditing requirements, regarding fluid quality, shall be taken into account. Fluid specific procedures shall be noted. This qualification can in some cases be included in DI-L10 if local procedures so demand. However, appropriate training for quality inspection and procedures shall be performed in any case.

A theoretical and practical training shall be performed. Local settings may demand a more extensive training and these recommendations are not binding. The qualification is renewed annually with a theoretical part including a written exam. Any new fluid- and/or procedural requirements need special attention.

7.14.7.8 Head of De-icing Training, DI-L70

The head of de-icing training is responsible for the de-icing training program. The head of de-icing training shall have sufficient knowledge in de-icing operations and training to be qualified for this position. The head of de-icing training qualification covers all other levels of qualification (DI-L10-60). The qualification is renewed annually automatically as long as the responsibilities remain with the same person. This responsibility includes keeping up-to-date with the latest recommendations and standards involving relevant de-icing/anti-icing issues.
The head of training shall have received de-icing instructor training and sufficient knowledge in basic instructional methods (e.g., train the trainer) for this level of qualification. Annual refresher is recommended but keeping up to date with de-icing industry news and operational elements as well as preparing the training program (and/or acting as an instructor), is sufficient.
The Head of Training may also be the actual Instructor and therefore previous de-icing experience is recommended. The company shall evaluate and approve

the head of training for the task. This approval shall be documented. It is the responsibility of the head of training to review all relating standards and recommendations in order to have the most up to date information at hand. All material used for training shall be reviewed and approved by the head of training. All different training sessions shall receive an appropriate material content according to the appropriate qualification. Any company standard training material shall be under revision control and appropriate standards and recommendations shall be referred to.

7.14.7.9 Flight Crew - Winter Operations, DI-L80

The flight crew is not normally engaged in daily ground de-icing procedures but knowledge of the process should be in place. The flight crew may have their own training regarding winter operations. This training should be implemented to cover all relevant aspects of the ground process. This is an important factor in order to be able to communicate with the ground crew about proper treatment procedures and in general have a sufficient knowledge of these subjects. Responsible for de-icing/anti-icing training for flight crews is the Postholder Training. The Postholder Training should harmonize the training with the head of de-icing training and operation. The qualification is renewed annually with a theoretical part including an examination.

7.14.7.10 Cabin Crew – Icing Awareness, DI-L80B

Cabin crews are required to have training in the awareness of the effects of frozen surface contaminants and the need to inform the flight crew of any observed surface contamination. The cabin crew is not normally engaged in daily de-icing procedures but an awareness of the process should be in place. The cabin crew may have their own company training regarding winter operations. Identifying icing is an important factor in order to be able to communicate with the flight crew about the ice contamination before and during flight.

7.14.8 Other Training Qualification(s)

There may be other tasks that are performed where de-icing elements are involved but do not directly fall under a specific category of a de-icing qualification (e.g., performing de-icing of engines, propellers, aircraft instruments, sensors, probes etc., using hot air).

Other tasks that involve "alternative" de-icing should also be considered to require a proper training suitable for that task. These tasks may be performed by personnel such as mechanics, engineers, de-icing operators, etc.

7.14.9 Subject examinations

Training success shall be proven by an exam that shall cover all training subjects contained in this document. Each part shall have a test to verify the correct procedures. Only persons passing the exam can be qualified. Where an individual has passed an examination, however not achieved a perfect grade, it is recommended that incorrect answers are reviewed with the individual to promote error free learning.

The training shall be divided into different groups according to levels of qualification/operation.

7.14.10 Examination Process

The examination process contains a theoretical exam where a minimum pass rate of 75% is required. The practical part (where applicable) only contains a fail/approve determination. Even though 75% will approve the theoretical part, 25% was still misunderstood. This "gap" shall be noted and wrong answers corrected with the student to 100% in order to secure the safe de-icing operation. The written exam can be performed as an open book exam where pertinent holdover time tables and quality indexes can be referred. Normal de-icing procedures should be common knowledge and there should not be any material available during the test explaining these subjects. Note that de-icing operations should be based on safety and not based on things remembered (regarding holdover timetables and quality).

The examination for any particular course should be built so that all relevant subjects are covered by the questions. The level of difficulty per question should reflect the level of qualification and the relevance of the subject for that particular qualification. As a rule of thumb, a minimum of one question per subject relating to the qualification level should be included in the written exam. The minimum amount of questions shall reflect the qualification level and may vary accordingly; however, this minimum amount should not be less than 15 questions (starting with the least demanding level of qualification/training hours). The theoretical examination shall be in accordance with EASA Part-66 or any equivalent requirement. The questions should be multiple choice questions containing a minimum of three possible answers per question. If there are clearly differing procedures from normal de-icing operation, then written answers can be used to explain this. The exam questions shall be periodically reviewed and updated to cover all current standards and regulations.

It is up to the head of de-icing training to include these elements in the training program. The questions shall always be based on facts and not perceptions. The question shall not be misleading or be possible to be interpreted wrongly. This misconception may lead to remembering the subject in a false way. The question series should cover all aspects of operation and include the local arrangements (if any). Practical evaluation should include an oral quizzing where practical items are covered (e.g., reading holdover timetables and/or refractive index limits etc.).

7.14.11 Practical Assessment

A practical assessment shall be performed as applicable for the qualification to be applied. The practical assessment shall be performed in actual operational conditions involving an actual aircraft (as applicable) before initial qualification. Further evaluations may be performed as applicable for the local demands and/or company requirements. The practical assessment shall include a verbal assessment of the trained theoretical topics as well as the practical parts trained. It is recommended that the assessment is performed by another

qualified instructor than the instructor that has trained the student in order to have an "independent" evaluation.

The parts to be covered during the practical assessment shall cover all that is included for the qualification level at hand. These are to demonstrate (as applicable):

- Competence in driving
- Positioning equipment
- Quality control and fluid handling
- Pre-/post inspection
- Communication
- Reporting and documentation
- Spraying (as applicable)
- No spray areas
- Local operational requirements

Students shall also be tested on the operation of the vehicle, in particular, safety aspects and features (as applicable). The practical assessment should focus on the most common operational aspects that are locally experienced (e.g. typical aircraft at the station and typical de-icing/anti-icing operations).

The training syllabus under AS6286 describes the practical training in more detail and the assessment shall reflect those parts that are concerned.

7.14.12 Training records

Training sessions shall be recorded and kept for verification of qualifications. Records of theoretical sessions and exams as well as on-job-training records (where applicable) must be retained for each person qualified. The record shall clearly show that instruction has been given and received (signed documents are preferred).

A training schedule for each qualified person shall be maintained. The record shall identify the date when the particular subject matter has been delivered to the learner. The trainer will sign or initial that they have delivered the training. The learner will, as acknowledgement and understanding of the training, sign or initial the appropriate subject matter on the training record form.

Training content and records shall be made available for review by an authorized air carrier representative and/or regulatory authority. Where electronic or computer based training record systems are maintained, the content shall include, as a minimum, the learner's name, test mark achieved, date of training and course reference. The same procedure shall be followed where contract de-icing is used. Names, dates, and the scope of training must be clearly stated.

Practical evaluation and demonstration of skills for ground crew personnel shall be performed as part of a ground crew training and qualification program.

Records shall be kept of all tests and scores, both theoretical exam and practical assessment. The record must indicate what the qualification is going

to be, who is doing the test, who is the evaluating instructor, the score and the date. A failed examination can be retaken but this must be noted for future reference. If a person does not pass the examination a re- evaluation should be made and additional training considered if necessary.

The evaluation process must lead to a qualification. Any restriction to the qualification shall be documented. A certificate should be given to the person for verification of the successful training. A copy of the certificate should be kept. Any documentation should be easily at hand for verification of approved de-icing staff.

7.14.13 Training System and Renewal

All training should be performed according to a pre-assigned training program. This program should include all levels of training and their relevant requirements. The theoretical part should be assorted according to the qualification and thus divide the training sessions from each other. This training system will easily identify what course is leading to which qualification. A recurrent course should be presented as a training session that renews previous qualifications. This numbering system does not need to be the same for every company but a logical sequence to follow is desired. When qualified to perform certain de-icing duties an annual recurrent training is demanded. This recurrent training does not have to be performed exactly or before the date of the previous qualification. This would lead to a never-ending advancement of training, which is not possible. The qualification will stay valid for the beginning of the season but needs to be renewed before the years' end. As an example: if qualified on November 1st 2015, a renewal is forthcoming in November 2016, but at latest by December 31st. This flexibility eases the burden of training large groups in the beginning of the season. However, it is highly recommended that the training be performed as early in the season (or before the beginning of the season) as practicable.

7.14.14 Quality of Training

Trained and qualified persons shall only perform de-icing/anti-icing procedures. This relates to both ground- and flight crew. The operator is responsible to perform, evaluate, and record any and all training performed for the personnel and subcontractors. The training shall cover all relevant areas and qualifications shall be issued accordingly. Material used shall be of the latest edition of any relevant subject. Material used for reference or training only shall be marked accordingly. Customer manuals used shall be of the latest edition and a system of revision shall be established with the company concerned. Training subjects shall include those mentioned in Section 3 of this manual. Both initial and annual training is required, including practical training where applicable.
The quality program should include an area of monitoring training success and the effectiveness of de-icing/anti-icing training received. A periodical review of the training should be established. The training should be recorded and tracked in a manner that is easily retrievable by responsible persons involved. Records shall be available at all stations (or retrievable) for proof of qualification.

7.14.15 Training Content

At a minimum, training and qualification shall cover the following subjects:

7.14.15.1 Clean Aircraft Concept (effects of frost, ice, snow, and slush on aircraft surfaces)

This discussion is intended to provide an understanding of the critical effect of the presence of frost, ice, or snow on flight surfaces and should include, but is not limited to, the following:

- Loss of Lift.
- Increased drag and weight.
- Decreased control.
- Tendency for rapid pitch-up and wing roll off during rotation. (Flight and Dispatcher only)
- Stall occurs at lower-than-normal angle of attack. (Flight and Dispatcher only)
- Buffet or stall occurs before activation of stall warning. (Flight and Dispatcher only)
- Aircraft specific areas.
- Engine foreign object damage potential.
- Ram air intakes.
- Instrument pickup points.
- Leading edge device (LED) aircraft (aircraft that have slats or leading edge flaps) and non-LED aircraft.

7.14.15.2 Aircraft Ground Icing Conditions

Describe conditions that cause implementation of de-icing/anti-icing procedures.

7.14.15.3 In-Flight Ice Accumulation

-Certificate holders should have procedures for flight crews of arriving flights to report occurrences of in-flight icing to the personnel responsible for executing the certificate holder's de-icing/anti-icing program. In-flight ice accumulation could result in a ground de-icing situation when flights are scheduled for short turnaround times; that is, for 30 minutes or less, and when ambient temperatures on the ground are at or below freezing.

- Frost, including hoarfrost.
- Freezing Precipitation. Snow, freezing rain, freezing drizzle, or hail that could adhere to aircraft surfaces.
- Freezing Fog.
- Rain or High Humidity on Cold Soaked Wing.
- Rain or High Humidity on Cold Soaked Wing Fuel Tanks.
- Under Wing Frost (may not require de-icing/anti-icing within certain limits).

7.14.15.4 “Location Specific” De-icing/Anti-Icing Procedures

Local differences concerning equipment, fluids used, fluid handling, de-icing/anti-icing procedures, aircraft operated and communication procedures shall be incorporated and be pointed out on the particular station during the training.

7.14.15.5 Communications Procedures between the Flight Crew, Ground Personnel, ATC, and Company Station Personnel

Proper communication procedures shall make sure that all required information concerning requests for de-icing/anti-icing and various check results are communicated between the flight crew and the de-icing/anti-icing personnel. Communications with ATC should include coordinating de-icing/anti-icing of the aircraft with any proposed ATC push back time and coordinating any other special requirements needed for accomplishing required aircraft de-icing/anti-icing checks.

7.14.15.6 Means for Obtaining Most Current Weather Information

7.14.15.7 Characteristics and Capabilities of Fluids Utilized

- General fluid descriptions, composition, and appearance.
- Differences between Type I and Type II/III/IV de-icing/anti-icing fluids.
- Purpose and capabilities for each type of de-icing/anti-icing fluids.
- De-icing fluids
- Anti-icing fluids
- Approved de-icing/anti-icing fluids for use (SAE, ISO, etc.)
- Fluid specific information provided by fluid or aircraft manufacturer.

7.14.15.8 Fluid Storage and Handling (reference AS6286/3)

- Fluid storage
- Fluid handling
- Fluid sampling
- Fluid testing

7.14.15.9 De-icing/Anti-Icing Facilities and Equipment Operation Procedures (reference AS6286/1)

This subject promotes an understanding of the capabilities of the de-icing equipment and the qualifications for operation. The equipment portion of the training program should include the following:

- Description of various equipment types.
- Operation of the equipment.
- Emergency procedures.

7.14.15.10 Health, Safety and First Aid

See document AS6286/5.

7.14.15.11 Environmental Considerations

See document AS6286/1.

7.14.15.12 Fluid Selection (reference AS6286/1)

This subject describes the correct decision on which fluid mixture rate is appropriate for de-icing/anti-icing under given conditions.

7.14.16 Contractor De-icing/Anti-icing

7.14.16.1 Methods/Procedures (reference AS6286/1)

- Inspection of critical surfaces
- Clear ice precautions
- Flight crew/Ground crew preflight check requirement
- Deice/anti-ice determination

This subject describes the need for proper determination of which procedure is appropriate (one-step, two-step, preventive anti-icing) for de-icing/anti-icing under consideration of given aircraft surface contamination, temperature and weather conditions, and available fluids.

- Deice/anti-ice location
- Communication prior to de-icing/anti-icing
- General deice/anti-ice precautions
- Aircraft specific requirements
- De-icing
- Requirements
- Effective removal or frost, snow, and ice
- Anti-icing
- Requirements
- Preventative anti-icing (Ground only)
- Application (Ground only)
- De-icing/Anti-icing
- One-step
- Two-step
- Guidelines for the Application of De-icing/Anti-icing Fluids
- Post De-icing/Anti-icing Checks Requirement
- Flight Control Check
- Communications After De-icing/Anti-icing

7.14.16.2 The Use of Holdover Times (HOT)

- Definition of HOT.
- When HOT begins and ends.
- Limitations and cautions associated with the use of HOTs.
- Source of HOT data.
- Relationship of HOT to particular fluid concentrations and for different types of fluids.
- Precipitation category (for example, fog, drizzle, rain, or snow).
- Precipitation intensity.
- How to determine a specific HOT from the HOT range that accounts for "heavy", "medium", or "light" weather conditions.
- Adjusting HOT for changing weather conditions.

7.14.16.3 Pre-Takeoff Check Requirement

- Identification of representative surfaces.

7.14.16.4 Pre-Takeoff Contamination Check Requirement (where approved by regulatory authority)

- Communications

7.14.16.5 Aircraft Surface Contamination Recognition

- Recognition of contamination on representative surfaces.

7.14.17 Computer Based Training (CBT)/e-Learning/distant learning and Computer Based De-icing Simulators (CBDS)

This may be utilized in place of traditional instructor facilitated training for theoretical training components, and limited practical training components (dependent on CBDS Level utilized (reference 3.20.)). It is recommended that CBT/e-Learning/distant learning and/or CBDS training be facilitated and administered under the oversight of qualified training personnel.

To simulate classroom interactivity, it is recommended where a student requires assistance and/or may have a question, there be various means in place so that the assistance can be obtained and/or question can be answered prior to completion of the course and pursuant exams/evaluation. This may include the use of poll questions, email/online assistance, etc.

It is recommended that should CBT/e-Learning and/or CBDS be used as part of the examination and/or evaluation process, effective measures be in place to prevent academic dishonesty and plagiarism (i.e., individual login/password, random questions drawn from a question pool, measures to prevent skipping/fast-tracking of training, oversight by a proctor, etc.).

It is the responsibility of the CBT/e-Learning and/or CBDS manufacturer/developer and user to ensure that all applicable requirements are met, as applicable to the personnel they are intended to instruct.

7.14.18 Computer Based De-icing Simulator Standards (CBDS)

This part describes the minimum requirements for qualifying Computer Based De-icing Simulators (CBDS) that may be used in conjunction with a Ground Crew de-icing training curriculum.

As CBDS systems are commonly used as part of de/anti-icing training programs, this appendix shall determine which components of a practical training curriculum CBDS systems may be used in lieu of as part of a Ground Crew practical training curriculum. Due to their current limitations, CBDS systems cannot fully replicate all aspects of de-icing vehicle familiarity training, and thus the use of CBDS systems shall not replace the requirement to perform hands-on training on the actual de-icing vehicle type for training aspects not encompassed within a CBDS's capabilities.

Simulator capabilities are defined in order to determine and qualify a particular CBDS's capabilities based on "Level". Levels A, B, C, and D (ranked generic purpose/realism to full scale replica) CBDS systems are defined, and de-icing training capabilities shall be categorized based on the capabilities of each "Level" of simulator.

Table 15 defines the minimum operational/functional requirements for each CBDS Level.

Table 16 defines training requirements that CBDSs may be used to complement and/or be used in place of. Once a CBDS has been evaluated and qualified, based upon the operational/functional requirements specified in Table 15, and the CBDS Level has been established, Table 16 may then be utilized to determine the components of a training program that the CBDS may be used in place of traditional real world practical training. Regardless of level, a CBDS system may be used to complement theoretical, practical, and de-icing vehicle familiarity training. Where a CBDS system is designed based on a specific equipment manufacturer's vehicle type, this system can still be utilized to complement some elements of training where other equipment types may be utilized, as they have the capability to demonstrate generic de-icing and anti-icing requirements.

7.14.19 Records/Documentation

Records shall be kept of all tests and scores, both theoretical exam and practical assessment.

The record must indicate the following data fields:

(a) what the qualification is going to be,
(b) who is doing the test,
(c) who is the evaluating instructor,
(d) the score
(e) the date.

A failed examination can be retaken but this must be noted for future reference. If a person does not pass the examination a re-evaluation should be made and additional training considered if necessary.

The evaluation process must lead to a qualification. Any restriction to the qualification shall be documented.
A certificate should be given to the person for verification of the successful training. A copy of the certificate should be kept. Any documentation should be easily at hand for verification of approved de-icing staff.

7.14.20 Training System and Renewal

All training should be performed according to a pre-assigned training program. This program should include all levels of training and their relevant requirements. The theoretical part should be assorted according to the qualification and thus divide the training sessions from each other. This training system will easily identify what course is leading to which qualification. A recurrent course should be presented as a training session that renews previous qualifications. This numbering system does not need to be the same for every company but a logical sequence to follow is desired. When qualified to perform certain de-icing duties an annual recurrent training is demanded. This recurrent training does not have to be performed exactly or before the date of the previous qualification. This would lead to a never-ending advancement of training, which is not possible. The qualification will stay valid for the beginning of the season but needs to be renewed before the years' end. As an example: if qualified on November 1st 2017, a renewal is forthcoming in November 2018,

but at latest by December 31st. This flexibility eases the burden of training large groups in the beginning of the season. However, it is highly recommended that the training be performed as early in the season (or before the beginning of the season) as practicable.

7.14.21 Quality of Training

Trained and qualified persons shall only perform de-icing/anti-icing procedures. The Eastern Airways Ground Operations is responsible to perform, evaluate, and record any and all training performed for the personnel and subcontractors. The training shall cover all relevant areas and qualifications shall be issued accordingly. Material used shall be of the latest edition of any relevant subject. Material used for reference or training only shall be marked accordingly. Training subjects shall include those mentioned within this manual. Both initial and annual training is required, including practical training where applicable.

The quality program should include an area of monitoring training success and the effectiveness of de-icing/anti-icing training received. A periodical review of the training should be established.

The training should be recorded and tracked in a manner that is easily retrievable by responsible persons involved.

Records shall be available at all Eastern Airways stations (or retrievable) for proof of qualification.

7.14.22 Contractor delivered training

Eastern Airways own ground operations that deliver De-icing / Ant-icing services receive training from approved De-icing/Anti-icing training provider.

The training contractors training programme shall meet the requirements as documented within AS6286 Training and Qualification Program for De-icing/Anti-icing of Aircraft on the Ground.

As part of the quality program, Eastern Airways Ground Operations shall perform annual internal audits/inspections on all approved training providers.

CHECKLIST FOR CONTRACTED DE-ICING / ANTI-ICING TRAINING PROGRAMME

(Categories of Personnel as Identified in AS6286)

Training Provider:	
Location:	
Date of Check:	
Instructor(s)	

Categories of De-icing / Anti-icing Staff

The qualification level shall be clearly defined. Qualified people shall be fully aware of their approved functions. A suggested structure for levels of qualifications is listed below. A person may hold several approvals depending on the job function. Levels are divided into the following groups:

- DI-L10 De-icing vehicle driver
- DI-L20 De-icing operator
- DI-L30 Supervision of de-icing/anti-icing
- DI-L30B Pre-/Post de-icing/anti-icing inspector
- DI-L40 De-icing instructor
- DI-L50 De-icing coordinator

De-icing Forms

Listed below are Eastern Airways forms to be used by the company's own self-handling stations (e.g. LSI).

Name of Form	Description
De-Icing Unit / Rig Fill Register	
Refractometer Test / Calibration Record	
Nozzle Temperature Check Sheet	
Rig Daily Checks Register	A record of daily checks carried out on de-icing vehicle / fluid / Equipment
De-icing Fluid Delivery & Acceptance Control Form	A record of fluid delivery check for acceptance
De-icing Declaration Form	Confirmation that the aircraft has been de / anti-iced
Winter Readiness Review	
Contracted training checklist	

SECTION 8: CARGO

8.1 Organisation

8.1.1 Purpose of the Cargo Section

The Eastern Airways Cargo section is published in order to provide clear cargo warehouse handling Instructions and standards for Eastern Airways services for its appointed Cargo Handling Agents, and must be held, maintained and complied with by holders. In addition copies are forwarded to other interested parties such as Handling Agents.

This section is a working document and should contain clear, legible and accurate information and be presented in a usable format and will be supported by a specific safety risk assessment. It must be accessible at each station where flown Eastern Airways cargo is handled and available to all appropriate office and warehouse personnel handling cargo with a read and sign process in place.

8.1.2 Control of the Section

The section is issued to organisations carrying out cargo handling procedures on behalf of Eastern Airways. It will be amended when there are any changes to procedures or governing legislation and any significant changes to the section will be communicated out to holders.
Upon receipt of the new version of the section or updates, stations must confirm receipt of the amendment to publications and maintain a read and sign process.

The section will be issued in a format suitable for use by agents, depending on their specified requirements.

The distribution lists are maintained by Eastern Airways and updated any time the service provider is changed.

8.1.3 Temporary Revisions and Notices

Temporary revisions are used as an interim means of amending the Cargo section. Where it is deemed necessary to issue temporary revisions with urgent new Instructions to Handling Agents, Eastern Airways will issue numbered Cargo Handling Instructions (CHI) and such amendments will be included in the next edition. The Manual holder must record receipt of the CHI and ensure staff awareness through a read and sign process.

8.1.4 Amendment Procedures

Amendments to this section will only be by the authority of the Eastern Airways Cargo Manager, or in his absence, his appointed deputy. All amendments will be communicated.

8.1.5 Legibility

The Cargo section & Cargo Handling Instructions are available in an electronic format, and it is the responsibility of the owner of the cargo section to ensure it contains clear, legible and accurate information.

INTENTIONALLY LEFT BLANK

8.2 Cargo Handling Procedures

8.2.1 Overview

The Cargo section gives guidance on what types of cargo Eastern Airways will accept and how it must be handled.

It should be noted that Eastern Airways do not operated any cargo or combi aircraft, only passenger aircraft which will carry secured cargo in the baggage compartment(s). The cargo accepted will be bulk loaded as none of the aircraft in the fleet utilise Unit Loading Devices (ULDs) for the purposes of deadload loading/carriage.

Staff carrying out any duties involved in the acceptance of cargo must have received appropriate training for the tasks they perform (including Dangerous Goods, Security and any role specific modules – see GOM Section 0.5). If staff are required to operate equipment to carry out their duties, they must only do so after having been given training on the equipment.

All cargo must be weighed using scales that are calibrated no less than annually.

Calibration records are to be retained for auditing purposes.

8.2.2 Emergency response

Procedures relating to detection of a prohibited article (including IEDs and IIDs) in an item of general cargo are detailed in part 8.5.9 of this section. For emergency response for situations involving Dangerous Goods, please refer to OM A1 Section 9.5.

8.2.3 Type of cargo accepted

For general cargo (non-revenue), usually only AOG spares, company mail and material are carried rather than commercial cargo. Revenue and interline cargo are not accepted for carriage.

"High risk" cargo

This category of cargo is not accepted for carriage on Eastern Airways flights

Dangerous goods

Carriage is limited to between ABZ – LSI. Conditions for carriage of Dangerous Goods are covered in OM A1 Section 9.

Appointed Cargo agents who accept Dangerous Goods must have access to the latest version of the IATA Dangerous Goods Regulations (DGRs) and its addendums in either a paper or electronic format. This must be available to staff at all times.

For acceptance use of an acceptance checklist must be made and the completed checklist must be held on file for a minimum of 3 months. This includes completed checklists where a shipment has failed the acceptance checks.

Live animals

This category of cargo is not accepted for carriage on Eastern Airways flights.

Perishable cargo

This category of cargo is not accepted for carriage on Eastern Airways flights

Outsized and heavy cargo and Human Remains
Refer to appropriate Ground Operations Manual Appendix for each aircraft. These categories of cargo can be accepted subject to being within floor loading limits and hold door opening clearances.
J41 – OMA Appendix A
ERJ – OMA Appendix C
EJET – Appendix D
ATR 72 – Appendix E

Fragile goods
Commercial fragile goods are not permitted for carriage. Occasionally AOG parts which are fragile in nature may be carried but these will be properly packaged by Engineering before acceptance.

Mail
Commercial mail or postal items (other than company mail) is not permitted for carriage on Eastern Airways flights.

Valuable cargo
This category of cargo is not accepted for carriage on Eastern Airways flights.

Time & temperature sensitive Healthcare
This category of cargo is not accepted for carriage on Eastern Airways flights.

8.2.4 Specific cargo acceptance procedures
Although this section deals with acceptance of cargo, certain principles must be applied to all cargo in order to maintain the safety and security aspects of cargo carriage.
All cargo should be inspected at the time of acceptance for any signs of leakage or damage, and again during;

(a) Transport to/from the warehouse from the aircraft
(b) Loading or unloading

Documentation and any required labelling should also be checked to ensure that there are no documentation discrepancies and that all labels are present and correct as required (including shipper/consignee information where appropriate) and that any corrections or replacement of damaged or missing labels is completed before the cargo is accepted for carriage.

NOTE: Eastern Airways does not transport cargo in the passenger seats of the aircraft cabin.

8.2.5 AOG Spares
Eastern Airways Stores department will prepare the freight for shipping. This will include packaging and preparation of the paperwork.

(a) Six delivery notes (EA form 418) will be raised will all entries completed.
(b) Six 'certificate of security measures' forms (EA form 406, Appendix A) will be produced for freight that can be screened by airport security points. Stores will enter the following details;

1. Date
2. Flight number

3. A/C registration
4. Description of freight
5. Destination
6. Tag No (this will be the delivery note number)
7. Weight of item
8. Total weight of consignment (Separate certificate of security measures forms will be used for each final destination. Only one destination per form will be allowed)

(a) The security agent must complete the method of screening completed and sign the form. The person observing the screening must counter sign.

(b) For freight screened by external cargo screening companies, they will produce the appropriate screening certificates. Appendix B contains a list of external cargo screening agents.

(c) A component identification label (EA form 419) will be attached to each item. The bag tag number will be the delivery note number.

The six certificate of security measures forms will be distributed as follows;

(1) One copy for the agent dispatching the freight
(2) One copy attached to the freight consignment
(3) One copy for the departure handling agent (forms must be kept on file for a minimum of seven (7) days)
(4) One copy for the crew flight paperwork
(5) One copy for the destination handling agent (forms must be kept on file for a minimum of seven (7) days)
(6) One copy for the recipient of the freight

(d) All copies of the delivery note and the certificate of security measures will be placed into a large documents envelope which will be marked 'Onwards Docs'.

(e) Additional delivery notes and security forms will be needed if the freight is due to operate via transfer flights.

8.2.6 Company mail and material

All company mail will be transported in red or blue mail bags. These bags, if travelling unaccompanied, must be screened and the certificate of security measures form (EA form 406) completed. All mail bags must be assigned a bag tag number and recorded on the hold baggage bingo sheet as 'Unaccompanied Bag'.

Four copies are to be produced and distributed as follows;

(a) One copy for the departure handling agent (forms must be kept on file for a minimum of seven (7) days)
(b) One copy for the flight crew paperwork
(c) One copy to travel with the mail bag
(d) Once copy for the destination handling agent (forms must be kept on file for a minimum of seven (7) days)

The handling agent shall be informed at the earliest opportunity if there is an item of cargo or company mail/material to travel. The number of pieces and weight of all freight and company mail/material must be recorded on the load report form and entered onto the load sheet.

8.3 - Security

8.3.1 Introduction

These instructions detail the security measures which must be applied to any cargo, courier material and mail (hereinafter referred to as "cargo") on an Eastern Airways aircraft. This is intended to give an overview of Eastern Airways security policy to ensure that cargo loaded on an Eastern Airways aircraft does not contain any prohibited articles that could pose a danger or threat to the aircraft, crew or passengers.

Note: This section cannot cater for all eventualities and is not intended to detail and cover all Government, International or company rules and regulations covering cargo security matters

8.3.2 Security Programmes

Service providers must, as a minimum requirement, meet all the requirements and procedures in acceptance of cargo within their own country's National Security programme and ensure security measures are implemented in cargo facilities in accordance with requirements of the applicable civil aviation security program. Eastern Airways will conform to security measures issued by the Department for Transport and adopt measures issued under Eastern Airrways security procedures and seek to enhance the security of its operations at each airport to which Eastern Airways operate. In order to achieve this Eastern Airways will maintain a dialogue with Service Providers to seek enhancements to security practices and procedures.
Eastern Airways will ensure cargo is not accepted for transport on an aircraft unless the application of screening or other security controls is confirmed and accounted for by a regulated agent or an entity approved by the relevant authority in applicable states. The measures detailed have been created by reference to and are in accordance with the following "references":-

Reference A - DfT Single Consolidated Direction (SCD) (Aviation) 2016 and its relevant variations

Reference B – DfT Recommended Measures for UK Airlines at Overseas Airports. This recommends that the standards required at British Airports and for operations in the UK are applied at overseas stations. This includes the appropriate training of staff and requires all staff who have access to the restricted area of an airport to have appropriate security training.

Reference C – EU Aviation Security Regulation EC300: Sections 6 and 7. This requires all EU member States to develop their own National Aviation Security Programmes and to adopt the standard security baselines given in the document throughout the European Union (EU). Eastern Airways cargo policy is to apply UK Department for Transport regulations at all operational locations. This may require additional security measures to those legally required in some countries and particular note should be made to Section 9.9 of this Manual where shipments are being transferred from another airline to a Eastern Airways service.
When operating outside the United Kingdom, the requirements of any local National Security Programme must be adhered to as a minimum requirement.

Where is it considered that any security program does not conform to UK DfT requirements, Eastern Airways requires cargo and mail to be subject to additional screening by x-ray or other agreed screening methods. In case of any doubt, stations can contact Eastern Airways to confirm the minimum requirements to be applied

Reference D – Eastern Airways Air Carrier Security Programme.

8.3.3 UK Air Cargo Security Regime - definitions

Regulated Agent (RA) – An RA is an air cargo agent under the Aviation Security (Air cargo Agents) Regulations 1993.
The agent is responsible for deciding the level of security control to be employed on any particular item and how that decision is made and by whom. The agent is required by the Regulations to carry out appropriate screening to the required standard, and satisfy themselves that the level of screening is acceptable.

Aircraft Operator – Any person who operates aircraft registered to operate in the UK.

Known Consignor (KC) – A KC is always the originator of cargo who could be a manufacturer and/or distributor whose arrangements meet the Department for Transports criteria for consignment security having been validated by a DfT accredited Cargo Security Validator. This process certificates the supplier for a period of 12 Months placing them on a register as a known consignor with a unique alphanumeric identifier (UAI). The UAI can be checked by regulated agents or aircraft operators against the register via the DfT website.

8.3.4 Carriage of shipments from and within the United Kingdom

The full procedures that must be followed concerning cargo security procedures in the United Kingdom are issued by the DfT and these instructions, along with any issued/updated bulletins or local DfT instructions must be followed by UK Handling Agents appointed by Eastern Airways. The procedures shown are not intended to cater for all eventualities or cover all the latest measures covering the security regulations.

The Aviation Security Act 1982, Aviation and Maritime Security Act 1990 and Anti-terrorism, Crime and Security Act 2001 gives the Department for Transport (DfT) the authority from the Secretary of State for Transport to introduce additional regulations and measures to protect international and domestic flights in the UK.
Under Part 1 Section 6, 21 (2) (a) of this Act it enables the maintenance of 'RAs` and 'KCs' who, following validation and approval may present cargo to Eastern Airways that need not normally need any further security screening.

8.3.5 Carriage of shipments from stations outside the United Kingdom

8.3.5.1 Eastern Airways Policy

Eastern Airways will adopt the baseline measures given in Reference B and C and will seek to enhance the security of its operations at each European airport to which Eastern Airways operate. Where it is considered that any National Security programme does not to conform materially to procedures in place at British airports, Eastern Airways shall require additional cargo and mail security measures which might include additional screening by one of the following methods:;

(a) X-ray
(b) Physical examination
(c) Decompression

If required, each station will be advised of the minimum security requirements set by Eastern Airways.

8.3.5.2 EU Airports

The primary and sole objective of the measures detailed, are to provide safety and security to operations. An additional and essential objective of the measures is to ensure compliance with the National and International requirements as set down in recommended practices and law.
All EU member states are required to comply with the Standards and Recommended Practices as set by the International Civil Aviation Organisation (ICAO) under Annex 17 of the Chicago Convention of 1944, the European Civil Aviation Conference (ECAC) policies detailed in Document 30 and European Commission (EC) Regulation (EC) No 300/2008 and other relevant EU Regulations/Decisions.

8.3.5.3 Non-EU Airports

Any RA or KC procedures must first be approved by Eastern Airways before being applied in place of physical screening.
In line with Reference B, all cargo which is to be carried on Eastern Airways flights must be screened to a standard sufficient to reasonably ensure that it does not contain any prohibited article such as an incendiary or explosive device. Screening must be carried out by trained staff who are competent to perform such duties in one of the following ways:;

(a) X-ray
(b) Physical examination, including searching by hand
(c) Any other form of screening approved by Eastern Airways or the DfT

These measures may be used singly or in combination, depending on the nature of the cargo.

8.3.5.4 Staff recruitment

At UK Airports all staff engaged in the reception, processing and handling of secure cargo, or likely to have access to areas where secure cargo is stored, or securing 'insecure' cargo must be recruited in accordance with the criteria set out in EC Regulation 185/2010 Chapter 11.

All staff should receive the appropriate modules of training as detailed before commencing their duties. The training shall be provided only by a company or individual approved and accredited to deliver such relevant training. All duties shall only be performed by properly recruited and trained staff that are competent to carry out those duties.

Outside the UK staff recruitment must comply with local legislation. In some cases Eastern Airways may require staff recruitment to include background checks and a criminal record checks if these do not form part of the recruiment process. Staff training must also comply with local legislation and in some cases Eastern Airways may require specific security training for staff handling or screening Eastern Airways cargo shipments

8.4.1 Classification of cargo

Cargo is subject to the following terms to define how it should be processed for acceptance:

(a) **"SPX" Cargo** - Cargo which is secure for passenger, all-cargo aircraft and all-mail aircraft (for further info see below)
(b) **"Exempt" Cargo** - Cargo that falls within the list of exempt items that do not require screening (for further info see below).
(c) **"Insecure" Cargo** - Any item of cargo that falls outside the definition of SPX cargo, is not exempt from screening and cannot be carried on any qualifying aircraft until screening is completed and has been passed
(d) **"SHR" Cargo** – Cargo which is secure for passenger, all-cargo and all-mail aircraft in accordance with high risk requirements.
(e) **Known Cargo**
(f) **Unknown Cargo**

8.4.2 Further information regardinig SPX/SHR cargo

"SPX/SHR" means cargo secure for passenger, all cargo aircraft and all mail aircraft and such cargo is SPX or SHR cargo but is only designated as such when it;

(a) Originates from a known KC
(b) Has been subjected to appropriate security controls by an RA and subsequently been protected from interference
(c) Is exempt cargo

8.4.3 Validation and Inspection of SPX and SHR Cargo

On receipt of cargo for Eastern Airways flights such steps will be taken as are necessary to be reasonably satisfied that the cargo and supporting air waybill and any required security documentation which accompanies the cargo correspond with each other in all material respects from the point of acceptance.

8.4.4 EU Cargo Database

Where cargo is being presented as "SPX" or "SHR" from a 'RA or KC, it must be verified that their name appears on the EU Cargo Database (RAKC), before the cargo can be accepted for carriage.

8.4.5 Delivery of SPX/SHR

The identity of any RA or KC or any other person who delivers "SPX/SHR" cargo for carriage on Eastern Airways flights will be verified and the identification details and the fact of verification recorded. The person delivering the consignments will be required to present an 'identity card' containing a photograph of the person, which has been issued by or on behalf of the national authorities. The card shall be used to verify the holder's identity. Any of the following will be an acceptable form of identification for operations within Europe.

For operations outside Europe, similar or equivalent identification should be presented;

(a) An identity card issued by an EU Member State.

(b) A passport issued by an EU Member State.
(c) A photographic driving licence issued by an EU Member State.
(d) An identity card issued by the UK Security Industry Authority.
(e) A valid airport identification card, with boundaries of issuing airport.

8.4.6 Known Cargo

For cargo that can be identified as having the application of screening or other security controls confirmed or accounted for by a regulated agent or an entity approved by the relevant authority (known cargo), cargo will be:

(a) Delivered by a regulated agent, a nominated representative of an entity approved by the relevant authority, or a known representative of the operator;
(b) Free from any signs of tampering;
(c) Accompanied by all required information (paper or electronic) corresponding to the cargo being delivered, including documentation that details the security status (e.g. consignment security declaration);
(d) Subjected to additional security controls as required by risk assessment.

8.4.7 Unknown Cargo

For cargo that cannot be identified as having the application of screening or other security controls confirmed or accounted for by a regulated agent or an entity approved by the relevant authority (unknown cargo), cargo will be subjected to screening or other security controls as accepted by the applicable state.

8.4.8 Delivery of general cargo

When cargo is delivered It must be confirmed if;

(a) It is from a 'Regulated Agent' or a 'Known Consignor"
(b) it is accompanied by a valid Consignment Security Declaration

Where the cargo does not conform to the above it must be classified as 'insecure' cargo.

8.4.9 Documentation Discrepancies

In cases where the status of the cargo cannot be confirmed or where there is any discrepancy in security certification that cannot be resolved, the consignment will be classified as 'insecure' cargo.
In such instances the Handling Agent must inform the Forwarding Agent and detail any reason(s) for change of status.

8.4.10 Tampered Consignments

When presnted the exterior of each consignment must be inspected, and where there is any evidence that the consignment may have been tampered with or any suspicious sign(s) are evident the consignment must be classified as 'insecure' cargo.

8.4.11 Exempt cargo

The following commodities are exempt from the screening, but can only be presented by an RA with a accompanpied by a Consignment Security Declaration which has been completed and signed. It must also fall under one of the following specifications;

(a) Consignments which are individually less both than 6 mm in thickness and than 250 grams in total weight and consolidations composed uniquely of such consignments.

(b) Time critical consignments of life saving materials, provided they come from a reliable source and are accompanied by appropriate documentation.

(c) Bio-medical samples which may be damaged if subject to screening provided they come from a reliable source and are accompanied by appropriate documentation.

INTENTIONALLY LEFT BLANK

8.5 – Cargo Screening

8.5.1 Insecure cargo screening

Cargo which is not defined as either 'SPX or Exempt' as defined in earlier in this document, or that has signs of unauthorised interference or tampering, must be subjected to screening using one of the following;

(a) Hand search (PHS)
(b) X-ray equipment (XRY)
(c) EDS (Explosive Detection System)
(d) MDE (Cargo and Mail Metal Detection Equipment)
(e) Visual check (VCK)
(f) REST (Remote Explosive Scent Tracing)
(g) FREDD (Free Running Explosive Detection Dogs)
(h) ETD (Explosive Trace Detection)

This must be carried out to a standard sufficient to reasonably ensure that no prohibited articles areconcealed in the consignment.

8.5.2 Secondary screening required

If a consignment has been screened by either x-ray or physical examination but it still cannot be confirmed as safe to travel, or where the nature or size of the consignment renderds it unable to be x-ray screened, then the cargo must be subjected to any other secondary screening process approved by the UK authorities.
Where a shipment has been screened by another secondary method and it still cannot be determined that it is safe to travel, and if facilities are available, the shipment must be subjected to flight simulation for a period of time equal to the duration of the flight plus two hours, subject to a minimum period of 12 hours.

Note: Any animals used for operational needs such as screening or detection, and which are handled by a person carrying a valid airport identification card shall be subjected to a visual check before access to security restricted areas is granted.

8.5.3 Use of X –ray Screening

X- ray is the preferred screening option as it enables cargo to be screened without the cargo being opened, and permits examination of sealed voids and other inaccessible areas. As far as possible all freight should be X-rayed as it is a method of search that is quicker than other approved methods. By screening cargo with properly trained personnel, the risk is minimised.
It should be used separately or can be in combination with other screening methods as a means of making cargo SPX

A record of items screened has to be maintained for 30 days at the site of the x-ray machine, and shall include the following;

(a) A record of the STP check, and the result.
(b) Date and time of screening.
(c)The name of the x-ray screener.
(d) Number of items.
(e) Air waybill number or other unique reference number.

(f) Confirmation that the item was cleared, having been screened by x-ray equipment.

Where it is not possible to clear the item by x-ray equipment, the reasons must be recorded and retained for 30 days in a format that can be retrieved. This record must include details of which alternative screening method has been applied or by what other means the cargo was handled

(a) A declaration on each sheet that this is a true record.
(b) The name and signature of the person making the declaration.

8.5.4 Images

Where the x-ray machine has an image retention facility, an image of each screened item has to be retained for 30 days in a format that it can be retrieved.

Image quality must comply with the full range of performance requirements. All records of maintenance inspection must be available at all times.

8.5.5 Routine Testing of Machine

Testing requirements – Must be carried out by level E and/or Level F trained staff.

Test procedure – The x-ray machine must be tested each time the machine is switched on before it is used to screen cargo. Where the x-ray machine is in continuous use for more than 24 hours, it should be tested once in every 24 hour period. The test shall be conducted using a Standard Test Piece (STP) and this must be recorded on the appropriate log sheet.

This log sheet must be indpected daily by supervisory staff who compare the recorded performance over time. Where deterioration of the performance of the machine is detected, necessary corrective action must to be taken.

8.5.6 Failed test

In the event that the machine does not pass the test, it must not be used. X-ray equipment should at all times be in proper working order, suitable for the job and adequately maintained. The machine must be serviced at regular intervals to maintain its good working condition and reliability.

8.5.7 Extra Screening Precautions

When the image for an item or is not clearly visible form one angle, it should be re-presented at an alternative angle in order to get the best possible image used. The screener may use any of the enhancements available in order to conduct the screening. Where a number of individually packaged items are x-rayed as a single consignment and the operator is unable to clear them for carriage by air, then the consignment must be broken down to ensure that each item can be screened of a standard sufficient to reasonably ensure that no prohibited articles are concealed in the consignment.

If after breaking down the consignment, the operator is unable to clear items for carriage by air, the operator shall either arrange for the items to be screened in accordance with protocol for an alternative method, or reject the

items. Only when the screener is reasonably certain that the consignment does not contain any prohibited item, may the item be declared as SPX cargo and a Consignment Security Declaration be signed and completed.

8.5.8 Dense materials

Very dense materials, such as lead and large stacks of paper are known as `x-ray opaque` and these are displayed as black on the image. X-ray opaque areas can also exist where numerous less dense items overlap or are packed tightly together. Generally, if there is an x-ray opaque area in an x-ray image, the bag or item will need to be physically searched in order to determine whether a threat is present. If, after the cargo has been screened by any of the means detailed above, there are still doubts or suspicions that the cargo is free from any prohibited article, the cargo shall not be carried by air.

8.5.9 Detection of a prohibited article

Where a prohibited article within a consignment is detected, the following should be followed;

(a) Remain calm.
(b) If identified during x-ray keep item in x-ray tunnel.
(c) Obtain second opinion.
(d) Call Supervisor/Follow company procedure.
(e) The x-ray image should be preserved on screen.
(f) If suspect IED/IID – Do not touch.
(g) Follow the four steps in the order shown;
(1) CONFIRM
(2) CLEAR
(3) CORDON
(4) CONTROL

CONFIRM

(a) Confirm the item found is a suspect IED/IID and its exact location
(b) Make brief notes of its appearance
(c) Mark its position (if necessary) with a distinct item to assist Police/EOD
(d) DO NOT attempt to move it
(e) Eliminate the possibility that the item is private property left unattended by someone in the vicinity.

Assess the validity and likelihood of the suspect item being in that particular location.
Is it in a position to do serious damage or even kill?
Is the target valuable, vital, attractive or under threat from possible attack?
Once satisfied that the suspect item could be an explosive device, take the necessary actions as defined in local contingency plans.

Note: If in any doubt about an item, treat it as suspect.

CLEAR

(a) Evacuate all persons from the immediate area of the suspect device.
(b) Move at least 200 yards away from the suspect device.

CORDON

(a) Establish a cordon to prevent anyone gaining access to the area.
(b) Size of cordon should relate to size of the suspect device.
(c) Establish one cordon entry point.
(d) Police may assist and establish further outer cordons.

CONTROL

(a) Inform local personnel about the suspect device, if not already done.
(b) Staff who discovered the device should stay to assist Police/EOD.
(c) On arrival Police will assume control and dictate further actions.
(d) Follow local procedures/instructions for IED incidents.

Note - Definitions of terminology that may be used in security incidents involving Improvised Explosive Devices (IED) and Improvised Incendiary Devices (IID):
• Bomb warning – The manner in which an IED/IID incident starts, this is usually by telephone, but also covers an alarm raised by the discoverer of a device.
• Bomb scare – The warning has been investigated or assessed and discredited. No device found any precautionary measures have been relaxed and normal activity resumed.
• False alarm – A suspect IED/IID was discovered and EOD resources tasked. Investigation of item by EOD reveals it to be innocent (i.e. left without amlicious intent).
• Hoax – A suspect IED was discovered and EOD resources tasked. Investigation of item reveals it to be constructed to resemble a viable IED/IID but containing no explosive or dangerous substance.

Cargo that has been Subjected to Security Controls following successful screening of cargo;

(a) It may be treated as "SPX" cargo, and;
(b) A 'Consignment Security Declaration' (CSD) with confirmation of screening action must be prepared in relation to each cargo shipment and retained on station for a minimum of thirty days for inspection or audit purposes.

8.6 – Security

8.6.1 Physical security

Once cargo, in-flight supplies, courier and mail for Eastern Airways services has been declared SPX (either at acceptance or after screening) it must be protected from unlawful and unauthorised interference when being stored, until the departure of the flight (this may include physical protection). At no point will cargo be left unattended or unsecure. Should this occur the whole consignment must be re-classified as insecure cargo and re-screened.

Eastern Airways will ensure cargo for transport on any flight is protected from unauthorized interference from the point of acceptance after screening or security controls have been applied until departure of the aircraft.

Eastern Airways will assess each facility to ensure that it is sufficiently equipped with secure dedicated configured storage facilities for each type of the special cargo consignments such as dangerous goods, human remains, etc which could potentially be. Each station will be monitored to ensure compliance can be met and where any area is found to be unsuitable, these types of cargo will be embargoed from carriage on Eastern Airways flights.

Consignments of cargo and mail in a part other than a critical part of a security restricted area shall be protected from unauthorised interference until they are handed over to another regulated agent or air carrier.

Consignments shall be located in the access-controlled parts of a regulated agent's premises or, whenever located outside of such parts, shall be considered as protected from unauthorised interference if;

(a) They are physically protected so as to prevent the introduction of a prohibited article.
(b) They are not left unattended and access is limited to persons involved in the protection and loading of cargo and mail onto an aircraft.

8.6.2 Specific Environment Requirements

Consignments of 'secure' cargo are to be held within an environment that conforms to one of the following options;

Consignment Security - Where the nature of the consignment allows stand-alone security it may be held outside the confines of a cage, building or compound provided it is secured, additionally made tamper-evident and kept under supervision. The means by which the consignment was made tamper-evident is to be checked before loading.

Cage Security - Consignments may be held or stored prior to loading in a cage, compartment or room secured against access by unauthorised persons, and made tamper-evident or fitted with an effective Intruder Detection Alarm System (IDAS).

Building Security - Consignments may be held or stored prior to loading within a building, provided the building is secure against access by unauthorised persons and made tamper-evident or fitted with an effective IDAS.

Compound Security - Consignment may be held or stored prior to loading within a compound provided the compound is secured against unauthorised persons and made tamper-evident or fitted with an effective IDAS.

8.6.3 Dispatch from warehouse

For the purposes of maintaining the security of 'secure' cargo during its transfer to the aircraft the Handling Agent shall ensure that at the time cargo is handed over to the Ramp Movement operator the cargo is inspected to ensure the cargo has not been interfered with in any obvious way as might compromise its security status.

8.6.4 Facility access control

Eastern Airways do not have anyone under direct control. Cargo Handling Agents must ensure security measures are in place to prevent and detect any unauthorised access to restricted areas where cargo is located in warehouses. Where unauthorised access has been detected or is suspected, the cargo is to be re-screened. Other than where Restricted Zone criteria apply, the following access control measures are to be implemented;

(a) Access control should be exercised at specific access control points, there being no other means of access into the premises other than through that point or points.
(b) Each access control point is to be either staffed, effectively monitored, or secured.
(c) Control should normally be exercised by means of a security ID pass system either manually or automated.
(d) Procedures are in place for persons and vehicles with access to security restricted areas in or around any cargo facility to be subjected to security controls.

8.6.5 ID pass system

ID Pass systems used to control access must to meet the following criteria;

(a) Permanent passes should incorporate a photograph of the authorised holder or allow for comparison of image and be valid for a specific period of time. Passes may only be renewed if the holder continues to require legitimate access.
(b) Temporary Passes should normally be valid for no more than 3 days but this may be varied to accord with company practice.
(c) Visitors passes should normally be valid for one day only. The holder, however, must be escorted whilst on the premises.

If a vehicle has an electronic vehicle pass shall, it must either:

(a) Be fixed to the vehicle in a manner which ensures that it is non-transferable.
(b) Be linked to the registered vehicle user through a secure vehicle registration database.

Electronic vehicle passes need not display the areas for which the vehicle is authorised to have access nor the expiry date, provided that this information is

Electronic vehicle passes shall also be electronically readable in security restricted areas.

Passes are only to be issued to persons requiring access for legitimate reasons and who satisfy the issuing Authority that they are suitable persons to be issued with a pass. Eastern Airways require Handling Agents employees to prominently display appropriate security passes at all times within the controlled premises while on duty to ensure clearly visible identification is evident. Loss, misuse or failure to be displayed should be subject to disciplinary action. Each pass is to be recovered when there is no longer legitimate reason for access. The issuing authority has the right to withdraw a pass.

8.6.6 Suspicious signs to look for in cargo or documentation

Air Waybill (AWB)

Box 1 – Shipper's Name and Address

- Is the name vague, possibly mis-typed or incomplete (PO Box, hotel etc)?
- Is the address the registered address of the broker or freight agent?
- Is the shipper and consignee one of the same?

Box 2 – Consignee's Name and Address

- Is this a legitimate company?
- Is it a first time exporter (does address appear to be a private dwelling)?
- Is the consignee and importer the same person?
- Is the address vague, possibly mis-typed, mis-spelt or incomplete?
- Does the telephone number quoted on the documents correspond to the area of the address?

Box 3 – Issuing Carrier's Agent, Name and City

- Check that the information is not the same as in Box 1. If it is, try to ascertain who the shipper is.

Box 4 – Airport of Departure

- Is the airport a major transhipment point?
- Is the source country clearly stated?

Box 5 – Routing

- Is a specific day or flight demanded? (e.g. goods must travel as booked)
- Is the route unusual?

Box 6 – Handling Information

- Are there any unusual special instructions?

Box 7 – Number of pieces, weight, commodity, descriptions, etc

- Excessive weight for the commodity?
- High risk goods?
- Description of goods is vague, insufficient or evasive.
- Goods not logical for types of business or economical.
- Have goods potential for concealment?

Box 8 Accounting and Payment

- Prepaid and/cash payment is suspect.

Box 10/11 – Declared Value/Insurance

- Where there are no insurance details, declared values or a value for Customs, check the export further

Box 12 – Other Charges

- Any charge quoted should be reviewed for necessity.

Box 13 – Shipper's Signature

- Is there a signature?
- Use of an "X", swirl or other mark in place of a signature – possibility of persons trying to maintain anonymity.

Circumstances

- The consignment has passed through, originated in, or is destined for a listed country.
- Consignment sent by private persons.
- Consignment sent be unknown intermediary (e.g. taxi driver, cash customer, haulage contractor, etc).
- The originator insists that the consignment is placed on a specific flight in circumstances giving rise to security concern.
- Nature of Consignment
- The consignment comprises personal effects or unaccompanied Baggage.

External signs

- There is evidence of tampering sufficient to suggest that the consignment has been opened and re-closed.
- There is evidence that the consignment has been forcibly opened.
- The packaging of the consignment is inappropriate for the declared contents.
- There are wires, oil stains or other indications that the consignment may contain an explosive charge.

Example of form EA 406

AIRCRAFT PARTS / UNACCOMPANIED HOLD BAGGAGE
CERTIFICATE OF SECURITY MEASURES

DATE	FLIGHT No.	A/C REG

I CONFIRM THAT THE BAGS DETAILED BELOW, HAVE BEEN SUBJECT TO AT LEAST ONE OF THE FOLLOWING SECURITY CONTROLS;

	TICK APPROPRIATE BOX
METHOD 1 SEARCHED BY HAND	
METHOD 2 X-RAY SCREENED FROM 2 SEPARATE BAG ORIENTATIONS BY THE SAME X-RAY OPERATOR AT THE SAME LOCATION	
METHOD 3 X-RAY SCREENED USING AN AUTHORISED (STANDARD 2) EXPLOSIVE DETECTION SYSTEM (WHERE THE IMAGE IS ASSESSED BY AN X-RAY OPERATOR)	

FREIGHT	DESTINATION	ORIGINAL TAG No	WEIGHT	
				TOTAL WEIGHT

THE NAME OF THE PERSON PROVIDING THE INFORMATION AND/OR THE PERSON UNDERTAKING/WITNESSING THAT THE SECURITY CONTROLS TAKEN ARE IN ACCORDANCE WITH EASTERN PROCEDURES

Handling Agent Signature (person witnessing screening process)	Security Officer Signature (person carrying out screening process)
Print.....	Print.....
Sign.....	Sign.....
Date.....	Date.....

CAPTAINS SIGNATURE.....

Completed form must remain accessible at departure airport for seven days

Form EA 406 Version 3 11/03/15

INTENTIONALLY LEFT BLANK

SECTION 9 - DANGEROUS GOODS AND WEAPONS

Refer to "Eastern Airways OM-A1 Section 9 Dangerous Goods and Weapons" and the Dangerous Goods section on the intranet at:

http://ops.easternairways.com/login.asp

Password: As issued

INTENTIONALLY LEFT BLANK

SECTION 10 - SECURITY

Refer to "Eastern Airways OM-A1 Section 10 Security "and the Security Management System (SeMS) on the intranet at:

http://ops.easternairways.com/login.asp

Password: As issued

INTENTIONALLY LEFT BLANK

SECTION 11:-FUELLING OPERATIONS & PROCEDURES

11.1 Introduction

11.1.1 Purpose

It defines the general safety precautions of aviation fuel handling, fuel quality assurance, the fuel quality control program and the correct refuelling / defuelling procedures for the whole Eastern Airways fleet. This is intended to guarantee clean and "on specification" fuels for a safe operation, and takes into consideration all EASA Subpart C Continuing Airworthiness Regulatory Requirements.

11.1.2 Regulatory Compliance

EASA Subpart C - AMC Part M.A.301-1(c), Maintenance Responsibility requires "a control that consumable fluids, gases etc. uplifted prior flight are of the correct specification, free from contamination, and correctly recorded". This Manual complies with the above-mentioned documents and applies to all certified and operationally approved Eastern Airways aircraft.

11.1.3 Responsibilities

These can be found in Eastern Airways CAMOE (Continuing Airworthiness Maintenance Organisation Exposition).

INTENTIONALLY LEFT BLANK

11.2 Safety Precautions

11.2.1 Regulation for Handling Aviation Fuel

1) Smoking is prohibited under all circumstances when handling aviation fuels.

2) All rags or other materials containing aviation fluids must be disposed of properly by placing them in available fire proof containers.

11.2.2 Safety Precautions for Refuelling and Defueling

11.2.2.1 Fundamental Safety Precautions

1) Refuelling may only be performed after permission has been given by the responsible personnel or their authorised representative, except where other arrangements have been made (i.e. the use of start/don't fuel signs - these are red for don't fuel and green for ok to fuel, and should be displayed in the cockpit DV windows (side windows) on the same side as fuelling will take place)

Note: If signs are not available then it is the responsibility of the flight deck to instruct the refueller or designate a competent person to give permission to start refuelling, if for any reason fuelling should not commence then the red sign should be displayed and the responsible person should ensure the refueller is informed of the situation.

When obtaining fuel figures from flight crew/engineer/dispatcher etc, always repeat the figure back to him/her and receive confirmation that it is correct, this will help prevent any misunderstanding. When verbal communication is not possible, writing the figure down and showing the figures can assist in confirming the correct fuel uplifts for refuelling personnel.

Caution - When refuelling is carried out during a night stop or day stop period with no passengers or crew on board, refuelling staff should ensure that any service providers (cleaners, caters etc) who may be on board are made aware refuelling is about to commence and inform them they should be vigilant and observe the normal fuelling precautions (i.e. no mobile phone use, etc).

2) Refuelling has to be performed in conformance with the general refuelling regulations of the Company.

3) The Fire Protection Rules / Airport Usage Rules existing at the respective airport shall be adhered to.

4) The definition of the responsibilities for refuelling has been arranged between Eastern Airlines and the Company, as set forth in the MPM 3-6

5) No refuelling or defuelling of neither flammable aviation fuels, nor any other such fluids except for lubricants may be performed in aircraft hangars or other buildings (exception - see 11.2.3)

6) Prior to refuelling or defuelling the aircraft engines must be shut down, wheel chocks must be placed, and suitable fire extinguishers (see 11.2.8) must be placed nearby.

7) The hose connection through which the fuel flows may not be left unattended

8) When a fuel spill occurs, a senior representative of the fuel supplier must be notified immediately. Spilled fuels must be safely removed immediately in accordance with the local regulations, or must be firstly completely covered with sand, saw dust or any other suitable material and then removed immediately.

9) If an auxiliary power unit (APU) is required to operate during the fuelling operation should be started before filler caps are removed or fuelling connections are made. If the APU stopped for any reason during a fuelling operation, it shall not be restarted until the flow of fuel has ceased and there is no risk of igniting fuel vapours or fuel spray. If the APU exhaust discharges across the up-per surface of an aircraft wing, overwing fuelling must not be carried out while the APU is running.

If the APU exhaust discharges to the side or rear of the aircraft, fuelling vehicles should be positioned to avoid any risk of coming in the path of the exhaust stream.

In the event of a fire in an APU, the unit shall be stopped, the APU fire extinguishing system activated, and the flight crew and/or cabin crew and the Airport Fire Services shall be alerted.

In the event of a fuel spillage, fuelling shall be stopped and the airline representative or aircraft crew informed immediately. It is not generally recommended that the APU be shut down, however depending on the size and extent of the spillage, consideration may need to be given, by the airline representative, as to whether the APU should be shut down due to the proximity and danger from flammable vapours or fuel spray.

a) An APU start is not permitted during a refuel/defuel procedure if the APU has failed to start or an automatic shutdown has occurred

b) Normal APU shutdown must be completed if a fuel spill has occurred during the refuel / defuel procedure.

10) Ground power units (GPUs) should not be positioned within 6 metres of fuelling equipment and vent points

11) One escape route for the fuel truck must be available at all times.

12) The refuelling hoses may not be driven over / damaged.

13) Refuelling or defuelling may not take place during thunderstorms / lightening over the airport.

14) Refuelling or defuelling may not take place while oxygen bottles are being filled or changed at the aircraft

15) Regulations for handling electrical equipment and units:

a) The use of electrical power, particularly the actuation of switches, in and on the aircraft should be restricted to the units necessary to execute the fuelling procedure or to operate the loading/ unloading of the aircraft during refuelling or defuelling of aviation fluids (except lubricants)

b) During refuelling or defuelling by means of the pressurised fuelling system, the electrical / electronic systems, except weather radar, may be switched on and off when necessary for testing or for flight preparation

Exception - During refuelling after overhaul or intermediate layover, prior to handing over an aircraft to the maintenance or flight operation the weather radar may be switched on and off, provided the fuel truck and the fuel hose are located behind the wing leading edge or the line formed by its extension.

The push-to-talk button of the HF-equipment should not be operated.

16) Additional safety measures for over wing refuelling:-

a) Only the filler port through which refuelling takes place may be open.

b) The nozzle must not be left unattended.

c) The filler port shall be covered during rain, snow, or dust.

d) Ground and on board equipment shall be connected and started prior to refuelling and defuelling, and shall not be switched off or disconnected during the refuelling and defuelling procedure. Switch on electrical consumers prior to refuelling, and do not switch them off during refuel-ling, except those components that are required for performing the refuelling procedure.

11.2.3 Use of Flammable Fuels on aircraft in hangers or other Facilities

11.2.3.1 General Safety Precautions

The following safety precautions shall be observed when using flammable fuels on aircraft in hangars or other facilities:

1) Sufficient suitable and operational fire extinguishers (see 11.2.8) of the fire brigade or with trained personnel must be available for immediate use in the vicinity of the parking positions of the aircraft and particularly in the vicinity of each fuel tank vent outlet of the aircraft and the refuelling or defuelling equipment or container.

2) If leakages or spills occur during refuelling or defuelling, fuel transfer or pressurising the refuel-ling process must be stopped at once. Any fuel spilled must be removed immediately and generation of sparks be avoided. The refuelling process must not be continued until the cause of the leakage has been eliminated

11.2.3.2 Draining

The surrounding area of the respective drain point shall be considered as a dangerous area.

A dangerous area exists when:-

1) A combustible gas or vapour mixture or a flammable mist from a sealed container can exist

2) A combustible gas or vapour mixture escapes from an open container or area

The following are not allowed in a dangerous area:-

1) Open fire
2) Electricity (exception - tools running on electricity, which are identified as explosion proof)
3) Any activity that can produce sparks
4) Running a radar transmitter on a distance less than 100 meters
5) Operating the push to talk switch of the HF equipment within 30 meters

The general safety precautions listed in 11.2.3 shall be observed.

11.2.3.3 Fuel Transfer

The fuel dump / jettison valves must be closed.

11.2.3.4 Pressurisation of Fuel Pipes with Fuel

During the pressurisation of fuel pipes heat or spark producing activity (e.g. grinding, polishing, drilling, milling) should not be performed on an affected aircraft component. If a leakage is discovered, pressurisation must be stopped at once.

The leakage point or, if the leakage is located within an open tank, the open access panel shall be considered as dangerous area (see 11.2.3.2). The safety precautions for the dangerous area also listed in 11.2.3.2 shall be observed.

The affected tank must be cleared for entering (in writing). The general safety precautions listed in 11.2.3 shall be observed.

11.2.3.5 Refuelling and Defuelling

Refuelling and defuelling of up to 600 litres maximum will only be permitted for performing special checks by observing the following safety precautions:

1) The electrical supply must be disconnected from the aircraft power supply.
2) During refuelling or defuelling electrical circuits of the hangar or dock power supply must not be opened or closed in the dock area.
3) Aircraft refuelling or defuelling equipment must be properly bonded.
4) The fuel dump valves must be closed.
5) During refuelling or defuelling the aircraft and the hangar must be left by all persons except those absolutely required for refuelling or defuelling.

In addition, the general safety precautions listed in 11.2.3 shall be observed.

11.2.4 Bonding

Trucks, from which the aviation fuels are loaded into the aircraft or into which such fuels are drained from the aircraft must be bonded to the aircraft to conduct away static electricity. Furthermore, containers (except tins or cans of lubricant and lubrication cart) must be bonded to the aircraft.

Grounding is no longer required, but in the case of building up grounding connections the following aspects have to be considered:-

- If special grounding lug connections exist on an airport or hangar apron the aircraft, fuel truck or container must be connected to the same grounding lug connections.
- Grounding of fuel trucks / dispensers by way of sliding contacts is not necessary, because tires - by adding of appropriate material - are electrically conductive

The bonding must be established as follows and disconnected again in the reverse order.

1) Bond fuel truck or container to the aircraft. Connect the bonding cable from the fuel truck or container to the connection point on the aircraft.
2) Connect fuel hose to the aircraft.
3) Connect bonding cable from the fuel hose to aircraft ground (for overwing refuelling only). For Details, please refer to the IATA Guidance Material on Standard Into-plane fuelling procedures Chapter 3 of each individual aircraft type.

Information on the location of bonding points on the Eastern Airlines aircraft fleet are shown in Appendix D of this section Aircraft specific fuelling procedures.

11.2.5 Safety Measures to be observed by Fuel Truck Operators

The definition for the responsibility has been established in such a way that the Company is fully responsible for refuelling.

Therefore, refuelling is to be carried out in conformance with the general refuelling regulations of the Company, and with the following:

1) Fuel trucks should not be backed towards the aircraft, except when accompanied.
2) The truck must be positioned in such a manner that the aircraft cannot be damaged when the truck drives away.
3) Fuel truck operators should check before refuelling with the flight deck / engineer / fuel overseer and bonding shall be established between the fuel truck & aircraft before fuelling takes place.
4) Eastern Airways have arranged fuel supervision and this is completed by Eastern pilots / engineers. It is the responsibility of the refueller to ask for supervision (flight deck, engineer etc) in the event of the usual Eastern Airways fuel overseer not being present before the start of refuelling (with crew or passengers on board).

5) Fuel trailers, which cannot be easily moved by hand, must not be disconnected from the truck.

6) One escape route of the truck must be available at all times.

7) Fuel hoses must not be driven over.

8) The fuel hoses should be placed in the most direct manner to the refuelling connection, and a minimum clearance of 1 metre must be maintained between the aircraft's wheel brakes and the fuel hoses.

9) The safety equipment of the refuelling system must be properly operated. The following equipment should be available:-
   a. Fuel truck with deadman control
   b. The refuelling operator shall be positioned within the range of the deadman control in such a manner that gauges, levers, etc of the fuel truck / fuel hoses and transfer couplings can be observed without being obstructed. If the refuelling operator moves outside of the deadman control range, refuelling must stop
   c. Dispenser with deadman control
   d. See above operating instructions for fuel truck with deadman control.
   e. Hydrant-pit or Inlet coupling with deadman control
   f. See above operating instructions for fuel truck with deadman control.
   g. Quick disconnect valve in hydrant-pit
   h. To be able to shutoff the valve in the case of leakage's without interference a pull rope must be attached to the quick disconnect lever. The pull rope shall be laid out in such a manner that it can be easily reached in case of emergency.
   I. Fuel spill kits should be available in all fuel trucks & dispensers and if a major fuel spill / fire occurs the airport fire service should be requested using airport stand / ramp emergency phones / aircraft communications / radios. Fuelling should be immediately stopped and the refuel overseer (pilot) should inform the flight crew and boarding ceased

10) If either (a) or (b) or (c) and (d) are unavailable or if they are unserviceable, the refuelling must be carried out by two refuelling operators. In this case one refuelling operator must be permanently positioned at the control station of the fuel truck.

If in a special case (safety equipment not available / unserviceable) where only one refuelling operator is present, an airline mechanic or one cockpit member shall assist the refuelling.

Note - The person to be assigned for this task depends on the relevant situation and co-ordination between the above mentioned persons is required.

11) Additional safety precautions for over wing refuelling
    (a) Refuelling ladders must be padded at the point where they are in contact with the aircraft
    (b) If refuelling or defuelling hoses are not placed over a ladder onto the wing, a protective mat must be positioned between hose and wing.
    (c) Personnel performing or supervising refuelling or defuelling must wear special slip-proof and spark-proof safety shoes, which also do not damage the wing upper skin.

12) At the finish of refuelling the final fuel chitty (receipt) should be delivered by the refueller to the flight deck / agreed company representative which indicates the finish of the refuelling process, and the refueller should carry out a 360 degree walk round of the fuel equipment/area too ensure all hoses, cables etc, are re-stowed and pit covers etc are in place before safely driving away. Note: Any verbal fuel figures must be repeated back to confirm correct figures are understood by flight deck / engineer / dispatcher / fuel staff

11.2.6 Fuelling Supervision

At each airport there must be a designated person with responsibility for providing notification to the flight crew or other qualified personnel onboard the aircraft when a fuelling-related hazardous condition or situation has been determined to exist, e.g. spillage or fire.

This "responsible person" is to have a clear understanding of required communication procedures and have the ability to execute such procedures in an expeditious manner should a dangerous situation develop.

Suitable means of communication with the flight crew or other qualified persons onboard the aircraft includes use of the aircraft inter-communication system, direct person-to-person contact or other methods that ensure direct and timely communication. Use of the aircraft inter- communication system to maintain continuous two-way communication during fuelling operations is not a requirement.

Note:
If a major fuel spill (*one that cannot be contained by fueling personnel present*) or fire occurs (all fires are major) the airport fire service should be requested using airport stand / ramp emergency phones /aircraft communications / radios. Fuelling should be immediately stopped and the refuel overseer (pilot) should inform the flight crew in order that boarding is ceased and passengers evacuated.
Eastern Airways achieve this fuelling supervision using their pilots.

11.2.6.1 Fuel Safety Checks

At each airport there must also be a designated person with responsibility for making fuel safety checks (pilot) at one point during the fuelling process. Checks include:-

- The hydrant vehicle or bowser must have a clear exit path and not be blocked in by other equipment
- The hydrant vehicle or bowser must be bonded to the aircraft; this is to prevent the build up of static electricity and the danger of a spark
- During refuelling the fuel operator should be holding the dead-man's-handle which will stop fuelling the moment it is released
- There are emergency stop buttons located both on the fuelling vehicle and, if using a hydrant system, at the head of stand. The areas round these
- emergency stop buttons must be kept clear
- The area round the hydrant pit (where the hydrant connects to the fuel supply) or bowser should be kept clear of vehicles and equipment. Unauthorised vehicles should not park under the aircraft wings particularly below the fuel vents
- Sources of ignition – Lighters, matches, mobile phones, two-way radios and personal music devices are all sources of ignition and should not be within the refuelling safety zone

Caution - In the event of a fuel spill, all equipment must be shut down – Spilled fuel and hot engines do not mix!

Eastern Airways achieve these fuel safety checks using their pilots.

Pictorial example of terms shown in fuel checks

Bonding cable	Dead mans handle	Emergency stop	Hydrant pit/safety zone
			

INTENTIONALLY LEFT BLANK

11.2.7 Refuelling/Defuelling with Customers on-board

Fuelling with customers on board is permitted within the United Kingdom, although detailed regulations may vary at individual airports. It is not permitted if the fuel has no anti-static additive.

Occasionally it may be necessary for refuelling to take place with customers on board the aeroplane. In these circumstances, the following precautions must be observed:-

- One qualified person must remain at a specified location during fuelling operations with customers on board. This qualified person, normally one of the aircraft flight crew, must be capable of handling emergency procedures concerning fire protection and fire-fighting, handling communications and initiating and directing an evacuation. They must also ensure a fuelling zone is established (minimum of 3 metre radius) and all personnel/GSE/other equipment (e.g. mobile phones etc) must operate safely within this zone. Other qualified personnel (see "minimum crew complement",) must be on board, and prepared, for an immediate evacuation. All crew and staff must be made aware when re/defuelling is imminent and when has been completed.
- Airstairs, steps or jetty should be available at the main cabin door used for boarding/disembarking, and manned by a cabin crew member. A further cabin crew member is to be positioned in the vicinity of each other pair of doors, to enable the automatic inflatable slide to be armed if an evacuation is required (the slides should not be armed at this stage). The ground area beneath the selected door/exit is to be kept clear and if a passenger boarding bridge is in use it should be ensured that a clear path is available back into the terminal building at all times. This may involve asking the caterers to move the truck away from the aircraft to allow slide deployment if required. Other doors, when open, must have steps in position
- Customers must be advised via the P.A. that refuelling is to take place and that they must not smoke, operate electrical switches, strike matches or use lighters.
- Customers should be advised to unfasten seat belts while refuelling takes place. The seat belt sign must be switched off. Customers must remain seated whilst the aeroplane is being refuelled. All available cabin crew should be distributed throughout the cabin to ensure regulations are complied with.
- The aircraft `no smoking` signs are to be on throughout the refuelling together with sufficient interior lighting to enable the emergency exits to be identified.
- Ground servicing activities and work within the aircraft should be conducted in such a manner that no hazard or obstruction is created. The exits and aisle must remain clear at all times.
- If the presence of fuel vapour is detected inside the aeroplane, or any other hazard arises during re/defuelling, the operation must be stopped immediately.

- The Captain shall ensure that a qualified person is stationed on the ramp in order to act as a liaison between the refueller and the flight deck in the event that a fuelling related incident occurs. The qualified person may be the Engineer, the Load Controller or the First Officer. Communication with the flight deck can be initiated by use of the cockpit call button at the external power panel or any other suitable visual or aural signal.
- Mobile telephone use by customers onboard by customers while refuelling/defuelling, may be permitted, although this may vary at each individual airport. Staff should familiarise themselves with the local regulations/restrictions.
- However, notwithstanding the foregoing, an operator shall ensure that no aircraft is refuelled/defuelled with Avgas or widecut fuel (e.g. Jet-B or equivalent) or when a mixture of these types of fuel might occur, when customers are embarking, on board or disembarking.

Customers boarding/disembarking during refuelling

In addition to the restrictions above:-

1. Customers must be kept clear of aeroplane wings, tank vents and refuelling equipment & any fuelling zones.
2. Customers should be escorted through the refuelling zone under the supervision of customer service staff and not be allowed to linger. The 'no smoking' rule must be enforced during such movements.
3. Before boarding customers, the Captain should liaise with the customer service staff to ensure all the requirements for refuelling with customers on board are met.
4. With the exception of steps and jetties, ground equipment drivers must be instructed in the event of fire that they must be prepared, on their own initiative, to immediately drive/tow unnecessary equipment from the aeroplane.
5. Procedures outside of the United Kingdom may vary from the above. If any doubt exists guidance must be sought from the company’s local agent.

11.2.8 Regulation for using & handling fire extinguishers

1) Fire extinguishers to be used must at least contain a mass of 9 kg for the fire category "BC". All refuelling vehicles should be equipped with two of these fire extinguishers. At least one extinguisher shall be readily accessible from either side of the vehicle. Extinguishers containing Type A powder should be avoided because they can cause corrosive damage to aircraft structure.

2) Personnel dealing with aviation fluids must be familiar with handling and usage of available fire extinguishers.

3) Fire extinguishers must be checked at regular intervals. The checks must be recorded. Metal tags or other markings showing the checking dates must be attached to the equipment.

4) Fire extinguishers must be refilled or replenished at certain periodic intervals as required (see manufacturer's instructions).

5) Spare fire extinguishers or refills must be available at all times.

6) Since no fire extinguisher is adaptable for fighting all types of fires, the fire extinguisher must be selected according to the type of the fire to be extinguished (Liquid Fire Extinguisher)

INTENTIONALLY LEFT BLANK

11.3 Storage and Quality Control of Jet Fuel

To guarantee a flawless operation of the aircraft systems it is essential to maintain and clean any equipment which is used to store or to dispense jet fuel or lubricants. In the same way extreme care must be taken during filling or draining procedures to insure jet fuel or lubricants do not become contaminated.

11.3.1 Jet Fuel

11.3.1.1 Quality Control performed by the company

(1) Release certificates (fuel passports) which contain the quality and specification records have to be kept available at the fuel station or fuel depot by the Company as evidence for the airline.

(2) The fuel storage and fuelling systems are to be equipped with filter elements and water separators that have to be monitored periodically (at least once a day) by trained personnel. The Company itself should carry out regular inspections of the water content the findings of which must be put down in writing and shown on request.

(3) The date of the last change of the filter elements as well as the fuel water samples and other maintenance steps has to be proved.

(4) Upon request the Company shall make available water detection syringes and capsules to the air-lines in order to let them carry out independent checks.

(5) The fuel supplied to an aircraft must the correct grade and sampled and tested for water /dirt / contamination. It is accepted that there are wide discrepancies among oil companies regarding at what point of the refuelling procedure such sampling and testing should be conducted. The details of the sampling and testing must:-

- be conducted in a manner which ensures that any contamination by free water is discovered
- be conducted timely enough to preferably prevent contaminated fuel from entering the aircraft tanks, or, if any contaminated fuel has entered the aircraft tanks, at least to ensure that Eastern Airways is informed of the fuel contamination before the aircraft has left its position.
- with reference to IATA Guidance Material For Aviation Turbine Fuels Quality Control & Operating Procedures, Incorporating Joint Inspection Group Guidelines latest Issue – Joint Airport Depots and Joint Into-Plane: The quality control before (bowser) or during (dispenser) refuelling shall at least consist of taking a sample, which is visually checked for dirt, appearance and free water, including a test for dissolved water, using one of the following approved chemical detectors:-

- Shell Water Detector
- Velcon Hydrokit
- Mobil Water Indicator
- Aqua-Glo
- POZ-T device

11.3.2 Inspection of Companies/fuelling equipment at Eastern airways stations by Eastern airways personnel/IFQP inspector

11.3.2.1 Responsibility

The Eastern Airways Quality & Ground Ops Departments are responsible for the conducting, quality control inspections and their documentation. Eastern Airways are members of the IATA Fuel Quality Pool (IFQP) and complete IFQP inspections on behalf of Eastern Airways and the remaining pool members. The inspection result should be recorded on the airport fuel quality and safety checklist (see Appendix A) and documented at the station where Eastern Airways is the responsible IFQP airline according to Eastern Airways Quality Assurance Program Fuel. The first and the last page of the inspection record shall be entered into the FQPS internet software tool. The FQPS report should be issued within 14 days.

An alert letter should be sent to the Eastern Airways Quality Department and IFQP airlines flying to related destination within 24 hours after a safety related finding was noticed which requires immediate action by each individual IFQP member.

11.3.2.2 Inspection Interval

In the case of contracts with new Companies, the requirements described above (see 11.3.1.1) have to be checked by the Eastern Airways Fuel Procurement and Quality Department / Ground Ops.

Otherwise, considering the result of the last inspection according to 11.3.2.1, the subsequent inspection period has to be specified by the Eastern Airways Quality Department, but in no event should the period exceed 24 months.

11.3.2.3 Extent of Inspection Procedure

Inspections being performed by other airlines pursuant to co-operation agreements could be accepted in lieu of a Eastern Airways inspection under the following circumstances:

(1) Inspection procedures correspond with the Eastern Airways-standard in scale and intensity

(2) Inspection records are provided in an English version

The Eastern Airways Quality Department will decide whether an inspection by other airlines can be accepted or not.

The result of this inspection has to be reported in writing by the Eastern Airways Quality Department. In addition, if there are any complaints or good reasons to doubt adherence to the quality controls specified in 11.3.1.1 the station manager will be obliged to investigate provided this is possible under the local circumstances.

11.3.3 Fuel Quality Control by taking a fuel sample

In a situation where the conclusion is reached that the fuel quality does not correspond to the Eastern Airways demands, and an on-site inspection is not possible, a fuel sample has to be taken out of the fuel stream prior to aircraft entry (downstream sample: behind the fuelling vehicle filter element, upstream sample: prior to the fuelling vehicle filter element) and sent back according to the corresponding form sheet of the fuel sample kit. The sample should be analysed in a laboratory according to 11.3.3.5.

11.3.3.1 Equipment

In the normal case the fuel sample equipment is packed into an aluminium-box serving as a fuel sample kit. The kit should contain:-

(1) One sampling adapter being placed between the fuelling station of the aircraft and the connecting adapter of the fuelling equipment in order to take fuel samples
(2) One thin sampling tube.
(3) Two labelled tinplate drums (5 litre) serving as fuel sample containers (the label to clearly identify the fuel sample is shown below) including the cardboard box which belongs to the tin-plate drums
(4) One drain tool and one drain bucket to take the fuel quantity needed to rinse the tinplate drums as well as the fuel quantity arising from the sampling adapter
(5) One bonding wire to bond the tinplate drum to the fuelling equipment during the sampling process
(6) Seals
(7) One fuel sample identification form
(8) Package of bonding agent.

Following forms should also included:-

(9) Air waybill
(10) Shippers declaration for Dangerous Goods
(11) Dangerous Goods Notification to Captain
(12) Dangerous Goods acceptance check sheet for non Radioactive Material
(13) Fuel sample identification form and tinplate drum label
(14) E.I.C. decal
(15) Placard stating "Flammable Liquid Class 3"

In the case of Eastern Airways personnel taking fuel samples at several stations on one trip the above mentioned kit does not include the sampling adapter and the drain bucket, which then have to be transported by the Eastern Airways personnel in a separate aluminium-box.

In the case of an additionally required upstream fuel sample 2 additional tinplate drums (5 litre) labelled "upstream" and packed into suitable boxes have to be sent to the respective station.

In special cases requested by Eastern Airways MCC the tinplate drum (1 litre) has to be used.

11.3.3.2 Sampling Procedure

Instructions for taking fuel samples

Caution - During each sampling procedure the involved tinplate drum has to be bonded to the fuelling equipment by using the bonding wire of the fuel sample kit.

(1) Install the sampling adapter between the fuel nozzle of the aircraft and the connecting adapter of the fuelling equipment.

(2) After 2000 litres have refuelled, rinse the tinplate drums three times with the fuel to be sampled. (The needed fuel quantity has to be emptied into the drain bucket of the fuel sample kit.)

(3) Take the fuel samples by filling the two tinplate drums with fuel to be sampled.

(4) Seal the filled tinplate drums.

(5) Complete the tinplate drum labels (see 11.3.3.1)

(6) Complete the fuel sample identification form of the fuel sample kit correctly and completely (see 11.3.3.1).

(7) Disconnect the sampling adapter and drain it into the drain bucket after the refuelling procedure is finished.

(8) One of the two fuel samples serves as a reference sample and has to be given to the Company.

In the case of an additionally required upstream fuel sample this sample has to be taken out of a position before the filter element - the drain port of the fuel truck/ dispenser should not be used. Two separately supplied tinplate drums labelled "Upstream "should serve as sample containers. The sample taking procedure is analogous to the taking of the downstream fuel sample described above (except that no sampling adapter is involved)

11.3.3.3 Shipment of the Fuel Sample

Note - The shipment of the fuel sampling kit has to meet the valid DGR rules.

(1) The person who issues the DGR shippers declaration must not complete the acceptance check sheet.

(2) After the fuel sample have been packed and prior to loading into the aircraft, the acceptance check sheet must be filled out.

(3) A copy of the shippers declaration and the acceptance check sheet must accompany the fuel kit.

(4) If a Eastern Airways cargo office is available, it has to be informed of the fuel sample kit shipment.

(5) The person responsible for packing, marking, labelling and declaration must have a valid DGR staff category 1 qualification.

(6) The person completing the acceptance check sheet must have a valid DGR staff category 6 qualification.

11.3.3.4 Fuel Sample Specification

(1) Each time an inspection according to 11.3.2 is conducted a 5 litre downstream fuel sample has to be taken

Note - An additional upstream fuel sample may be requested.

(2) In the case of fuel samples additionally requested a 5 litre fuel sample has to be taken downstream and - if necessary - upstream.

11.3.3.5 Lab Test of the Fuel Sample

(1) Execution of the tests at the laboratory in charge. The results have to be in writing.

(2) Test parameters according to the specification ASTM D 1655, DEF STAN 91-91/1 or equivalent

Description	Test Method	
	ASTM	IP
appearance	visually	visually
thermal stability IFTOT)	D 3241	323
density	D 1298 / D 4052 (IP 365)	160
flash point	D 56 / D3828	170 / 303
millipore test	D 2276 / IP 216	-
electrical conductivity	D 2624	274

11.3.4 The Presence of Water in Fuel

In the fuel system and engines of a jet aircraft only a limited amount of fuel/water content can be tolerated. With an integrated fuel heater, the maximum fuel/water content which can be tolerated without affecting the operation is up to 0.025 volume percentage. This value contains the normal quantity of dissolved water, which can amount to 0.02 volume percentage depending on fuel temperature and atmospheric conditions. Therefore it is essential to take strict pre-cautions to guarantee the supply of fuel not being contaminated during the operation of the aircraft. In this context the ST weekly has to inspect the result of at least one fuel water detection test (see 11.3.1.1).

Fuel contamination can be caused by particulate matter as well as water or other liquids. The following types of water in fuel are possible:

11.3.4.1 Undissolved Water

(1) Free Water

This type of fuel water easily separates from the fuel and forms drops or bubbles that can be easily seen. Free water can also be detected by means of chemicals, including the following:

(a) A normally brown paper indicating the presence of free water by the disappearance of the brown dye and a residual white paper surface; reaction time about 10 seconds.

(b) A normally green paste indicating the presence of free water by a colour change to a lavender blue colour; reaction time 5 to 10 seconds.

(2) Suspended Water

This type of fuel water is so finely dispersed that it forms a haze remaining in the fuel for a long time. Suspended water can be discovered by visual or chemical detection. Normally clear and colourless fuel turns to a milky hue in the presence of suspended water.

The presence of suspended water also causes a change in the colour of chemical detectors. One of the detectors being applied in addition to the visual control has been developed by Shell in the form of a disposable capsule containing a disk of filter paper treated with water- sensitive chemicals. This capsule can be fitted to a normal syringe. If there is suspended water in the fuel sample the open inner portion of the paper disk will undergo a chemical reaction changing its colour and resulting in a difference in colour between the protected outer portion and the inner portion.

This change in colour depends on the water contamination level of the sample and the display covers the range from 0.003 weight percentage up to 0.01 weight percentage, where the dye is saturated

11.3.4.2 Dissolved Water

This type of fuel water is in solution in the fuel and can only be detected by lab-examination. Water in solution, this is water which is dissolved in the fuel and as such not visible, the amount the fuel can retain being a function of temperature. If the fuel is cooled the dissolved water will be released as water in suspension, which will eventually settle to the bottom of the tank. This phenomenon occurs in airfield storage tanks or vehicles when there is a temperature drop, particularly. Therefore the cooling of water- saturated fuel can lead to a separation of water.

11.3.5 Instructions for using the Shell Water Detector

(1) A detector capsule has to be taken out of the capsule container and examined to confirm that the paper is a uniform yellow colour. This capsule has to be fed to a clean syringe with a fully forwarded plunger.

(2) The syringe with the integrated detector capsule has to be immersed into the fuel sample.

(3) The syringe plunger has to be slowly withdrawn until the fuel sample reaches the 5 ml mark. After-wards the detector capsule has to be removed in order to examine the paper disk in this capsule for any change in colour.

(4) It should be absolutely guaranteed that the detector capsules are used once only and that the capsule container is kept closed. The capsule container also contains some Silica gel, to indicate the state of the capsules. If the Silica gel shows any change in colour, the capsules will have to be destroyed. Some of the capsule containers are marked with the service life.

Note - The date marked on the capsule container is the expiration date (month/year). Shell water detectors can be stored up to approximately 9 months. Shell water detectors Mat.- Nr. 452402650 Syringe detectors Mat-Nr. 532830011

11.4 Refuelling / Defueling

11.4.1 Aircraft Refuel Sheet (Fuel Order)

The Aircraft refuel sheet is a standardised IATA form sheet, issued for all aircraft models by the flight operation management. The sheet is used for recording of the required and replenished quantities of aircraft fuel and also serves as a document for the fuel loading of the aircraft.

Details with respect to the individual aircraft type aircraft refuel sheet and its handling are found in the IATA guidance material on standard into-plane fuelling procedures (Chapter 4).

11.4.2 General Refuelling Instructions

The following shall be observed for any refuelling or defuelling:

Before Refuelling:

(1) Provide fire extinguishers (see 11.2.8).

(2) Connect bonding connections according to 11.2.4.

(3) Install and lock refuelling connections, etc.

(4) Ensure that the specified aviation fuel is going to be fuelled.

(5) Ensure that the aircraft fuel will not be contaminated during refuelling

After Refuelling

(1) Close refuelling shutoff valves.

(2) Disconnect refuelling connections, etc.

(3) Install and lock filler caps, etc.

(4) Disconnect bonding connections according to 11.2.4.

(5) Safely remove spilled aviation fuel immediately in accordance with all local regulations or completely cover the spilled fuel with sand, saw dust or any other suitable material and dispose it of as soon as possible.

(6) Complete fuelling order or make entry in the TLB.

Note - Fuelling procedures must be carried out in accordance with AMM procedures

11.4.3 Additional/extended Fuelling procedures/Fuel Company Training Documentation

The so-called extended / additional wing refuel service includes simplified refuel Instructions for each individual Eastern Airways aircraft type. The detailed refuel Instructions can be found in the IATA guidance material on standard into-plane fuelling procedures".

11.4.3.1 Fuelling Procedure- Documentation

The fuelling of any listed Eastern Airways aircraft types shall be performed either by the valid aircraft manufacturers AMM procedures or by the simplified procedures of the IATA guidance material on standard into-plane fuelling procedures" for third parties. The IATA procedures are approved by the

respective aircraft manufacturer. The individual refuel procedure for each Eastern Airways aircraft type can be found in the IATA guidance material on standard into-plane fuelling procedures (Chapter 3

11.4.3.2 Fuel Company Training

The training of the personnel of a fuel company is based on the train the trainer principle. The training will be performed by an experienced engineer / fuel trainer / flight deck, who needs to have formal approval from Eastern Airways.

Trainers that have been trained will be provided with a certificate indicating the date and location of the training.

In house, initial training will be completed by all staff and refresher training will take place within a period of 36 months, if not sooner (training will be covered in the IFQP checklist).

The training documentation is based on the IATA guidance material on standard into-plane fuelling procedures.

11.4.4 Defueling

It may be necessary either to off-load fuel from an aircraft after the completion of the fuelling operation, for aircraft fuel load adjustment, or to off-load (normally) large quantities, usually at the airline overhaul base, to permit maintenance work to be carried out.

Both operations are designated defuelling and the procedures to be followed during defuelling are similar to those, which apply to fuelling.

Note - Before defuelling into a truck through a hose starts, the strainer in the hose end pressure controller (HEPC) must be reversed, in order to protect delicate parts, such as ball valves and meter gears.

To protect the quality of the fuel in the fuelling equipment from getting contaminated by the fuel off-loaded from the aircraft, the following procedures shall be adopted before defuelling begins:-

(a) The grade of fuel contained in the aircraft tank must be established by

(i) taking samples for a control check and, water check by chemical detector and determination of microbiological activity.

(ii) checking the grade of fuel previously supplied (aircraft flight logbook).

(b) If the aircraft is found to contain a mixture of Jet A-1 with Jet A or Jet B or jet fuel of East European origin, or there is any reason to suspect the quality of the fuel, any fuel off- loaded shall be segregated and subjected to a certificate of analysis test, which it must pass, and a test on microbiological activity, before returning to operating storage or to another aircraft of another airline

(c) If the check in (a) is satisfactory:

- Up to 10% of the fueller contents may be defuelled and a delivery made to any customer after carrying out circulation and sampling for visual check including, water control with chemical detector, all of which must be satisfactory.
- Larger quantities up to 10% of the fueller capacity may also be defuelled. The vehicle should then be fully loaded from depot storage and product circulated.
- Subject to a satisfactory check, as mentioned in (a), delivery may be made to any customer.
- Defuelled fuel in excess of these limits must be received into an empty fueller or defuelling unit and held, preferably for redelivery to the aircraft concerned.
- If this is not possible, the fuel must be segregated and subjected to a Certificate of Analysis test and test for microbiological activity, which it must both pass before returning to operating storage.

The product which has been defuelled for load adjustment purposes should, whenever possible, be returned to an aircraft of the same airline.

(d) Defuelled fuel may be received into segregated storage until redelivery to the aircraft concerned or to an aircraft of the same airline

11.4.4.1 Fuel from other aircraft Fuel Tank(s)

(a) Fuel which has been de-fuelled from other aircraft fuel tank(s) can contain Microbiological contamination. Microbiological contamination of fuels can cause operational problems such as corrosion of metallic structures, fuel quantity indication problems, blocking of the scavenge systems and fuel filters during flight. To protect Eastern Airways aircraft from microbiological contamination therefore fuel from other aircraft fuel tank(s) can be used if one of the following items is applied:-

(1) Fuel which has been de-fuelled out of an Eastern Airways aircraft, and is free of microbiological contamination, can be immediately refuelled to any Eastern Airways aircraft.

(2) Fuel, which have been de-fuelled out of an Eastern Airways aircraft and who is treated with an approved biocide, but is free from microbiological contamination, can be refuelled to any Eastern Airways aircraft after the operator have been informed.

(b) Due to the fact that fuel, which is loaded on aircraft tanks from other carriers than Eastern Airways, is from an unknown source (unknown specification) the de- fuelled fuel only can be refuelled to any Eastern Airways aircraft if the fuel is free from contamination and certified to fulfil the fuel specification standard according Def. Stan 91-91, by an approved laboratory (fuelling receipts from the last 3 refuels are insufficient).

11.4.5 Aircraft to aircraft Fuel Transfer

It should only be utilised in the case where no other source of fuel for refuelling is available.

11.4.5.1 Equipment

The aircraft-to-aircraft fuel transfer can only be executed by a mechanic familiar with this procedure, and who should be flown in together with the equipment, if necessary.

The complete equipment has to be packed into an aluminium-box serving as a fuel transfer kit. The kit should contain:-

(1) 2 hoses each one having a length of 15 m, further 2 couplings to connect the hoses to the Fuelling Station of an aircraft and 2 couplings to connect them to the interconnect adapter

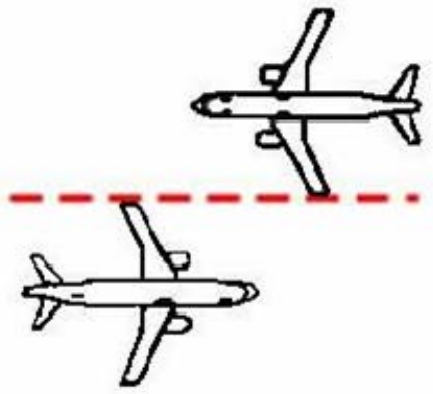
(2) 1 interconnect adapter consisting of a zinced steel tubing with two ports fitting to the corresponding couplings of the two hoses

(3) 1 drain adapter to drain the hoses

(4) 1 grounding cable of about 40 m length having usual connections

11.4.5.2 Fuel Transfer

(1) Parking of the aircraft: nose to nose with a lateral displacement



Aircraft having fuelling stations placed at both wings may also be parked side by side. In any case the fuel transfer hose has to be routed in the shortest possible manner.

(2) The bonding connection between the aircraft has to be installed. Connecting point positions are specified in Appendix A (the same as in the case of a normal refuelling procedure).

(3) The hoses have to be interconnected by means of the interconnect adapter and connected to the fuelling stations.

(4) The indicated fuel quantities of the single fuel tanks of each aircraft have to be entered into the TLB.

(5) The valves of the aircraft which has to be refuelled should be switched as in the case of a normal refuelling procedure.

(6) The valves of the aircraft that has to be defuelled should be switched as in the case of a normal pressure defuelling procedure.

Caution - Before switching over to another fuel tank or from another fuel tank the delivered/ received quantity must be recorded.

(7) The boost pumps of the fuel tank that has to be defuelled should be switched on.

(8) After having finished the fuel transfer the indicated fuel quantity of each single fuel tank of the participating aircraft has to be entered into the TLB.

(9) The indicated quantity of the defuelled aircraft has to correspond to the indicated quantity of the re-fuelled aircraft with a maximum tolerance of 300 kg. In the case of higher differences the remaining fuel quantity of both aircraft's has to be checked by using drip sticks/ MLI and entered into the TLB.

11.4.5.3 Post Fuelling Procedures

(1) The hoses have to be disconnected from both aircraft

(2) The bonding connection between the aircraft has to be disconnected.

(3) The hoses have to be drained as follows, as both hoses together with the interconnect adapter will contain about 40 litres of fuel:-

(a) Disconnect the hose from the interconnect adapter and place the adapter into an appropriate container.

(b) Connect the drain adapter to one coupling of the disconnected hose and manually open the check valve.

(c) Open the vent valve of the coupling of the opposite hose end in order to drain the hose.

(d) Check that no fuel remains in the hose.

(4) The complete equipment has to be packed into the aluminium-box. Hoses have to be packed separately.

11.4.6 Jet Fuel Quantity Check

11.4.6.1 Registration of the remaining fuel

(1) After having shut down the engines the arriving crew verifies the indicated value of the totaliser respectively the sum of the single fuel tank indications with the calculated fuel consumption and enters the result into the Flight Log as "Remaining Fuel on blocks".

(2) Every fuel consumption owing to a run-up as well as every tow-fuelling has to be noted in the TLB and the resulting new remaining fuel figure has to be entered into the TLB as "Remaining fuel after run-up" or "Remaining fuel after tow-fuelling"

11.4.6.2 Check at each Refuelling

11.4.6.2.1 Determination of the required volume

(1) Remaining Fuel

The FO/SW adds the single indications and compares the resulting quantity with the indication of the totaliser (except B737) / FOB. The reading of the indications should be done before the refuelling. Unusual high differences between the indications of fuel tanks being symmetrically placed to each other should be checked by means of drip sticks/ MLI if applicable.

(2) Supplied fuel – see indication of the fuel truck

(3) Total fuel

The total fuel indication should be used. Otherwise the total fuel should be determined by adding the single tank indications.

Caution - The determination of the actual density is needed for an exact control of the fuel quantity; it is essential in the case of an exceeded limit according to 11.4.6.2.2 / 11.4.6.2.3.

(4) Density of the supplied fuel

In the case of an aircraft being equipped with density measuring gauges the value indicated by the aircraft's instruments (ACARS) has to be taken as accurate.

In the case of an aircraft with low fuel tank capacity without a density measuring gauge
(e.g. B737) the standard value of 0.8 kg/l should be taken as the actual density.

It is now a requirement in the EU to ask for specific gravity at each uplift and the options for determining fuel density used for fuel uplifts and fuel in tanks as follows:-

1. Actual density of measured fuel in tanks using on-board measurement systems;
2. Actual density of each fuel uplift as recorded on the fuel invoice or delivery note;
3. Actual density determined from the temperature of fuel during fuel uplift. The temperature is being provided by the supplier or specified for the aerodrome where the uplift took place. The actual density is determined using standard density-temperatures correction tables;
4. The use of a standard density factor of 0.8 kg/litre only in cases where the actual values are not available

Caution - In the event steps 1, 2 and 3 cannot be achieved then step 4 is the last option

11.4.6.2.2 Reference Calculation

The Flight Engineer, Captain or First Officer will compare the value of the total fuel minus remaining fuel with the supplied fuel according to the fuel truck indication. The following equation should be set up:-

(1) Total fuel - remaining fuel = supplied fuel (cockpit)
(2) Supplied fuel (fuel truck) - supplied fuel (calculated) = difference

11.4.6.2.3 Tolerance Ranges

The tolerances should be in accordance with the latest AMMs Example for Airbus:

Part A extract:

Departure Fuel

Determine calculated fuel uplift by subtracting TOTAL (a) from DEPARTURE FUEL (b). Enter this figure (kg) in the CALC. UPLIFT block.

Gross Error Checks Short Range Flight

This procedure is used when the required fuel amounts to less than full wing tanks.

1) Use standard S.G. of 0.80 for conversion between kg and litres. enter 'STD' in the "ACTUAL S.G." block and the uplift so calculated in the "REQD. UPLIFT" block.
2) Load fuel until the "DEPARTURE FUEL" (b) is indicated on the aeroplane fuel gauges. Enter actual uplift in the "ACTUAL UPLIFT" block.
3) The "ACTUAL UPLIFT" should be within 3% or 250 litres (whichever is the greater) of "REQD. UPLIFT". Any discrepancy outside these limits must be resolved, if necessary by using the aeroplane wing mechanical indicators.

Part A - General

Appendix D FUEL
D REV 0
P 8

4) Under the following circumstances actual S.G. obtained from the bowser operator should be used for calculating the REQD. UPLIFT:-

a) For long range flights when the fuel load is large (when the required fuel amounts to full wing tanks or more)
b) When necessary to resolve a gross error discrepancy.

Long Range Flight

This procedure is used when the required fuel amounts to full wing tanks or more

1) Divide the CALC. UPLIFT by the actual S.G. obtained from the bowser operator. This is the required uplift in litres and is entered in the REQD. UPLIFT block with the S.G. entered in the ACTUAL S.G. block.
2) Load the REQD. UPLIFT as calculated above with delivery controlled by the bowser gauges.
3) The aeroplane fuel gauge TOTAL should be within 3% or 200 kg (whichever is the greater) of the DEPARTURE FUEL (b). Any discrepancy outside these limits must be resolved, if necessary by using the aeroplane wing mechanical indicators

11.4.6.2.4 Excess of the Tolerance Range

The first step should be a repetition of the density measuring procedure in order to improve the accuracy of the supplied density value. In the case of the original result being confirmed, the following steps should be executed:

(1) Excess of more than double the tolerance level
A written objection has to be entered into the TLB and refuelling volume has to be checked using drip sticks/ MLI until the discrepancy is corrected.

(2) Excess of less than double the tolerance level

(a) For the present no objection has to be written. Verification by using drip sticks/ MLI is required. The indicated fuel tank quantities have to be entered into the TLB as an information item.

(b) At the next refuelling the difference again has to be determined according to the reference calculation of 11.4.6.2.2.

- In the case of a difference exceeding the permissible tolerance range a check by using drip sticks/ MLI is required and the indicated fuel tank quantities have to be entered into the TLB as an information item.
- In the case of a difference not exceeding the permissible tolerance range the fact has to be entered into the TLB as an information item and a refuelling by using drip sticks/ MLI is not required.

(c) In the case of three successive refuelling leading to an excess of the permissible tolerance range a written objection has to be entered into the TLB and quantities have to be verified by using drip sticks/ MLI until the discrepancy is corrected.

Note - In the case of a difference (even if it is less than the value specified in 11.4.6.2.3) being considered to be critical by the crew, it is always within the crew's direction to verify the refuelling volume by using drip sticks/ MLI

11.4.6.3 Comparison Fuel Quantity – Fuel used Indication

The indication systems for fuel quantity and fuel used are two systems working independently of each other, which can serve as a comparison for the purpose of cross- referencing.

It should be pointed out that both systems can be affected by tolerances. According to the error propagation law a tolerance for the maximum difference between these two systems can be calculated.

In the case of a discrepancy being too high this fact has to be reported in the TLB. Maximum tolerance levels will be published later.

11.4.7 Jet Fuel Specifications

11.4.7.1 Use of Jet Fuel containing an Anti-Static Additive

(1) An anti-static additive is a static dissipater additive increasing electrical conductivity of jet fuel in order to avoid the danger of a spark discharge resulting from static electrical charges that can build up in the fuel during normal fuel handling practices.

(2) Aircraft being serviced according to the Eastern Airways instructions are allowed to be refuelled with jet fuel containing an anti-static-additive approved in the aviation turbine fuel specification.

11.4.7.2 Use of Jet fuel containing a Corrosion-inhibitor / lubricity-improver

(1) A corrosion-inhibitor or lubricity-improver is an additive preventing corrosion or improving the fuel's feature of lubrication.

(2) Aircraft being serviced according to the Eastern Airways instructions are allowed to be refuelled with jet fuel containing a corrosion-inhibitor / lubricity-improver approved in the aviation turbine fuel specification.

Type of fuel	**Kerosene**		
Description	Jet A-1*	Jet-A**	JP-8
Specification	ASTM D-1655 latest issue	ASTM D-1655 latest issue	MIL-T-83133
Old description	JP-1-A	JP-1	-
NATO description additional specification	F-35	F-30	F-34
British	DEF STAN 91-91 latest issue	DEF STAN 91-91 latest issue	-
IATA guidance material	Kerosene	Kerosene	-
United States	-	-	MIL-T-83133
Canada	3-GP-23	-	-
France	DCSEA 134	-	-
Fuel in and from far eastern countries	The fuel specification in and from all far eastern countries offered fuels are tested and checked by Eastern Airways FCC. The tested fuels are approved (but may not be specified on the OEMs) and can be used in Eastern Airways aircraft. The following are some fuel names types:- **China** – Jet Fuel no. 3 **CIS** – TS-1 (Cyrillic letters TC-1), RT (Cyrillic letter PT) Jet A-1 in Russia is GOST R 52050-2006		

Type of fuel	High flash kerosene
Description	JP-5, JP-6
Specification	MIL-DTL-5624T (JP-5) DEF STAND 91-86 (JP-6) Latest issue
Old description	JP-5, JP-6
NATO description	F-44
Additional specification	
British	DEF STAN 91-86 latest issue
IATA guidance material	-
United States	MIL-T-5624
Canada	-
France	-
application	Military aircraft For Eastern Airways – 3. Substitute fuel

11.5 Abbreviations

ACARS	Aircraft Communication and Reporting System
FQPS	Fuel Quality Pool Software
IFQP	IATA International Fuel Quality Pool
JIG	Joint Inspection Group
MLI	Magnetic Level Indicator
TLB	Technical Logbook

INTENTIONALLY LEFT BLANK

Appendix A to Section 11 - IATA/IFQP (International Fuel Quality Pool)

1) Fuel Quality Control and Fuelling Service Checklist & Procedures

Procedures to be followed to ensure that aircraft fuel quality and fuelling safety standards are maintained.

As an assurance that fuel suppliers are maintaining acceptable standards, it is essential that fuelling facilities be inspected at regular intervals. In general, the major fuel companies' operating regulations establish acceptable standards of quality and safety. Experience has shown that these standards are not always adhered to and that there are an increasing number of national companies where it may not be possible to obtain contractual agreements that would establish even minimum standards.

This procedure will detail typical quality and safety procedures that should be regularly performed by the fuel companies and for which records should be readily available. Also suggested, are typical levels of performance. The airfield inspection should ensure that similar procedures are performed regularly and efficiently and that suitable records are retained.

Where discrepancies are found that do not present a hazard to aircraft, agree remedial action and time-scale with local fuel company management. If the discrepancies present a hazard, do not accept fuel until a thorough investigation is carried out in conjunction with a representative of the fuel supplier, to ensure an acceptable grade of fuel. In this case take action as per Appendix "A" of this section paragraph 3 Reporting.

At a number of airfields the fuelling installation is jointly owned / operated and the fuel co-mingled. One of the suppliers is usually designated as the managing company and is responsible for the operational standards, which may be their own, if issued by that companies Head Office and is available to Airline customers or to Guidelines for Aviation Fuel Quality Control and Operating Procedures for Jointly Operated Systems. Any deviations from the above should be listed. The partners and their controlling interest in the various parts of the fuel system should be identified. In North America in particular, the contracted fuel supplier will generally only deliver fuel to the airfield boundary or into storage. Into plane agents are then responsible for the airfield operation. Their operating standards are generally to Air Transport Association of America, specification ATA103. In some respects ATA103 do not meet that which is required. The Joint Industry Guidelines (JIG), latest issue, is fully in line with this issue 5 of the IATA Fuel Quality Pool Procedures.

Delivery to the airfield can be by tanker / barge, road bridger, railcar, pipeline or various combinations of each. Establish the supply pattern, distance from the refinery/main installation and frequency of delivery. Assess the supplier's ability to maintain adequate airfield stocks and fuel settling time at the airfield.

Ensure that fuel supplied corresponds to the Specification and Grade of product ordered and to the Refinery Certificate or the last Full Specification test. Approved fuel specifications are listed in the aircraft manuals.

Defuelling of aircraft tanks may become necessary for operational or maintenance reasons. The product which has been defuelled should be received into an empty fueller and kept in segregated storage until redelivery to the aircraft concerned or to an aircraft of the same airline. If this is not possible, the fuel must pass a Certificate of Analysis test before returning to operative storage. Establish if the service of defuelling is offered by the fuel company.

Checklist

At a large installation/airfield the amount of equipment will render it impossible to carry out a complete check on every item at each inspection. One or perhaps two storage tanks, filters or vehicles should be picked at random, but in the event of not being satisfied, deeper probing will be required and remedial action agreed.

Dependent on the frequency of inspection, different tanks or vehicles can be chosen on each occasion, which should enable a very large cross section of the equipment to be checked annually.

Mobile phones at airport depots only approved intrinsically safe mobile phones may be used within the depot. Normal mobile phones may only be used in the office building and shall remain in the office or other safe area.

2) Responsibilities

These are to be issued by each individual member airline - see Appendix "B" of this section Responsibilities.

3) Reporting

To be issued by each individual member airline - see Appendix "C" of this section Reporting.

4) Fuel Samples

a) Fuel samples that may be required from a fuel supplier should be mutually agreed and taken from the hose end or after filter. A lined 5 litre container should be used, and flushed with fuel before use. The fuel supplier should retain a sample at the same time. The fuel grade, point of sampling and date should be noted on each can. A fuel passport or certificate of quality should also be requested. Shipping should be done in accordance with the latest IATA Dangerous Goods Regulations.

b) On receipt, fuel samples will be recorded, noting the action taken and results of tests, if applicable. Fuel samples will be stored in a suitable metal cupboard and contained in a drip tray.

c) Fuel samples taken as part of the eastern European programme should be tested for the following :-

description	notes	ASTM test method (state which used if applicable)
appearance	-	visually
density	-	D1298 / D4052
Flashpoint	-	D56 / D3828 / IP170
thermal stability	JFTOT dP (mm Hg) tube colour code	D3241*

Millipore	Gravimetric colour	D5452 / D2276

*__Note__ - First JFTOT test should be performed at 260ºC. If test fails then retest at 245ºC (ASTM D1655) If the test passes 260ºC all other tests can be done at 260ºC. If test fails at 260ºC all other tests should be done at 245ºC

5) Checklist Items

Airfield receipt

For optimum quality standards, pipelines should be non-ferrous or suitably internally lined with an epoxy material approved as being compatible with aviation fuels and its approved additives, dedicated to the distribution of jet fuel.

No copper, cadmium alloys, cadmium plating or galvanised steel should be in contact with fuel, nor should zinc material coatings or plastic material be used.

All transportation vehicles / vessels used should be segregated for the transport of aviation kerosene only. A sample taken downstream of the filter / separator into the storage should be checked on the commencement of pumping and at regular intervals thereafter to ensure water free and clean fuel.

Ship / barge deliveries should also be checked for bulk water in each compartment with water finding paste or paper. If water is found, as much as possible should be removed prior to discharging the fuel into storage.

5a) Details on the release certificate should correspond to the product and total quantity ordered. The Release Certificate contains at least the following information: Date and time of loading Grade of fuel Batch number and batch density (at 15°C) of the product in the tank from which it originated "water free" certification If required, the density and the temperature of the product after loading may be entered. It is dated and signed by an authorised signatory.

5b) Fire extinguishers should be marked with identity numbers. A record showing location and all inspections and maintenance for each extinguisher should be kept up to date. They should be in good condition and indicate on an attached label or tag the last service date, which should be no more than annually by an approved contractor. Inspection of the condition should be carried out monthly. These inspections should ensure that extinguishers are in their specified places and are readily accessible. The condition of the hose and nozzle should be checked. The pressure gauge should be tapped to check that the pointer is not stuck and is within the safe zone. Dry powder extinguishers should be inverted and shaken at least every six month to prevent powder from caking

5c) Fuel should preferably be delivered into storage through a filter/separator. Some systems only incorporate a microfilter on the inlet side whilst others incorporate a microfilter and filter / separator.

The microfilter in this instance is generally used to remove the bulk of the sediment, thus prolonging the life of expensive filter/separator elements. The addition of dehydrator vessels (hay packs) and clay filters can sometimes be found, mainly in the USA, for the removal of water and surfactants (see App "A", sect 5f)

Filter vessels shall be of stainless steel, anodised aluminium or carbon steel construction. Carbon steel vessels shall be internally coated. They should also be fitted with a pressure relief valve, for thermal expansion of the fuel, an air eliminator at the highest point of the filter system, a differential pressure gauges, filter membrane sampling ports on the inlet and outlet side of the vessel, suitable drain points and Manufacturer's nameplate containing all relevant information.

Filter/separators are used to remove solids and water from fuel. They contain 2 types of elements:-

- coalescers (1st stage, material type, in to out)
- separators (2nd stage, Teflon coated type, out to in)

Some vessels may be fitted with a flow control valve (or slug valve) to stop the flow of fuel when bulk water in the filter sump reaches a predetermined level.

5d) Filter life and pressure differentials

Filter life and pressure differentials should not exceed the fuel company's or manufacturer's recommended maxima. Findings should always be recorded. Typical values are:

filter type	**life**	**maximum pressure differential**	
		bars (kg/cm2)	**psi (lb/in2)**
microfilter	3 years	manufacturer recommended maximum	
filter / separator	3 years	1.0	15.0
CDFX / water barrier (dp limiter) & dirt defence (free water electronic sensors & PLC)	manufacturer recommended life	manufacturer recommended maximum	manufacturer recommended maximum

5e) All filter vessels should be subjected to regular weekly pressure differential checks. Refer to App "A", sect 6p & sect 8b.

5f) Fuel Appearance

a) Samples

i) Samples should be taken in a suitable, clean dry container, such as white enamel or a clear glass jar. Ensure that the sample drain pipework is first flushed to obtain a representative sample. Stainless Steel buckets should not be used for a cleanliness check.

Note - Metal containers used for sampling should be bonded to the vehicle or pipework during draining operations.

ii) Allow the sample to settle in the container to ensure freedom from entrained air. Inspect in a good light. For the fuel to be acceptable it should be the correct colour, visually clear, bright and free from solid matter and not dissolved water. Ensure the sample is fuel, not water, by the use of a hydrometer, water finding paste / paper or potassium dichromate crystals. Aviation kerosene is normally water white but can have a pale colour tint. Any deviation in colour from that normally found warrants further investigation.

b) Water is present in fuel in two ways:-

i) Water in solution - this is water which is dissolved in the fuel and as such not visible. The amounts of water that fuel can retain being a function of temperature. If the fuel is cooled the dissolved water will be released as water in suspension, which will eventually settle to the bottom of the tank. This phenomenon occurs in airfield storage tanks or vehicles when there is a temperature drop, particularly overnight

ii) Free water – this occurs in two ways:-

- Bulk water, which readily settles out and is easily visible as droplets or a layer on the bottom of the container.
- Water in suspension, which if in sufficient quantities can appear as a haze but in general, will be invisible. Water in suspension is not acceptable in quantities in excess of 30 ppm. Chemical detector kits are available for this purpose and those approved are described below. Ensure that they are not timing expired.

iii) Sources of free water are normally water used in some refinery processes, leaks, condensation in tanks and vehicles, moisture drawn through vents and dissolved water dropping out of solution.

iv) Free water is removed mainly by settling and mechanical separation (i.e. filter / separators). The action of these units is:-

- Firstly to condense minute droplets of water into larger droplets that will fall by gravity to the sump.
- Secondly to resist the passage of any remaining droplets on the separator elements, which are constructed of water repellent material. These droplets will also fall to the sump.

c) Particulates

i) Particulates (solid matter) appear as flakes, specks or fibres suspended in the fuel or settled out at the bottom. Examination can be facilitated by swirling the sample to form a vortex, any solid matter concentrating itself at the centre. Sources of solid contaminants are normally:-

- Rust and scale from inside pipes and tanks
- Rubber particles from hoses and gaskets
- Dust, dirt and sand drawn in through vents
- Fibres from rags and filters
- Wear particles from pumps and meters

ii) Settling will remove the larger particles and filtration by microfilters or the coalescer elements in the filter / separator the remaining material down to about one micron in diameter.

d) Surfactants

i) Surfactants (surface active agents) usually occur in minute quantities. They assist water to stay in suspension for prolonged periods by reducing the interfacial tension i.e., water droplets are prevented from coalescing. They also plate out on the coalescer elements of the filter / separator and destroy its ability to function. A hazy sump sample is indication that the coalescer has disarmed.

ii) Aviation fuel can become contaminated with surfactants by certain refinery processes, those occurring naturally in the crude oil, from being transported in pipes or vehicles that have previously borne motor gasoline or diesel fuels and certain fuel additives.

iii) Removal can be effected at the airport by clay filtration

e) Micro-organisms

i) Although there are hundreds of thousands of types of micro-organisms, one of particular interest in aviation is the fungus, Hormoconis Resinae (formerly known as Cladosporium Resinae). Since its spores are airborne, they can easily enter fuel storage tanks and vehicles but are too small to be removed by filtration.

ii) The interface between fuel and free water affords an ideal site for their growth, hence the need to limit the accumulation of bulk free water. This is particularly so in warm climates as the growth rate of the spores increases rapidly.

iii) If the conditions are suitable, the fungus can multiply rapidly to block filters screens or pipes. It is difficult to dislodge and can form barriers, which prevent water draining to the sump of tanks. Within these areas, corrosion can take place.

iv) Indications of microbial growth are discoloured or murky water and sometimes, murky fuel. Scum will float at the fuel/water interface and with heavy contamination a fungal mat is formed, generally brown/black in colour but in some cases red, grey or white.

Reference material: IATA guidance material on microbiological contamination in aircraft fuel tanks.

f) Chemical checks for water in suspension

The commercial testing kits described below have been approved to check for water in suspension, and it is likely that one or more of these will be used by the fuel supplier.

i) Shell Water Detector - This is the preferred and probably the most widely used. It consists of a small piece of sensitised filter paper mounted in a detector head, which fits the standard taper on hypodermic syringes. A 5 ml sample is sucked through the detector head into the syringe. The outer edges of the filter paper are sealed off from the passage of fuel so that when a 'wet' fuel is drawn through it, any resultant colour change is sharply contrasted. Any colour change indicates the presence of suspended water. An initial indication occurs at about 5/10 ppm when the capsule turns a pale yellow/green. The colour deepens to a distinct green, indicating a limiting water content of 30 ppm. At higher levels of contamination, the colour further deepens to a blue/green and finally a blue/black. It has a relatively short shelf life with the expiry date stamped on the bottom of each container and box.

ii) Velcon Hydrokit - The product is a white powder mixture and a water-sensitive, organic dye indicator that gives a distinct colour change in the presence of free water. It is designed as a "go-no-go" test, calibrated to indicate free water in excess of approximately 30 ppm. It is packaged under vacuum in test tubes and has a shelf life of 4 years. Half fill the sample bottle with fuel. Insert plastic needle holder into sample bottle. Insert glass vial with stopper pointer down onto needle in plastic needle holder. Press vial firmly onto needle forcing needle to penetrate through the stopper. Hold until the fuel ceases to flow, about 1/2 to 3/4 inch from the vial top. Remove the plastic needle from the stopper and shake the vial for about 15 seconds. Compare any powder colour change against the colour card. If the powder changes colour within two minutes of the fuel contacting it and matches or is darker than the dark colour card, the fuel sample contains 30 ppm or more of free water. If there is no colour change within two minutes, the fuel is considered acceptable. Any colour change occurring after two minutes should be ignored.

iii) Mobil Water Indicator/Metrocator - Prepare the test vial by introducing directly into it one dye pellet/powder from its capsule and by placing the paper disc in the vial cap. Fill vial to graduation mark with fuel sample. Cap the vial tightly, invert and shake vigorously for two minutes until the dye pellet is completely dispersed as a powder. Remove the cap and examine the paper disc. Bright purplish blue spots indicate suspended free water. Compare the disc with the reference photographs to determine the water content.

iv) POZ-T Device - (Used in Russia and C.I.S.) - The device consists of a 50ml stainless steel syringe incorporating a plastic clamp, which clamps the Indicator of Fuel Quality (IKT) used to determine the contamination level of mechanical impurities (solid matter) and emulsified (free) water in aviation kerosene and Avgas. The IKT consists of two layers of a chemically treated pad which change colour when contamination is detected. The mechanical impurities are filtered on a white indicator layer first and develop dark grey brown spots. The impurities are determined by the colour intensity of these spots. By passing through the indicator any emulsified water develops blue spots on the yellow layer. The number of spots determines the water content in the fuel.

v) Aqua Indica (Indian) - The contents of a gelatin capsule are shaken with 100 ml of the fuel, contained in the glass bottle or graduated glass cylinder for 30 seconds as per given instructions. The powder particles react with the water droplets uniformly dispersed in the fuel and indicate colour change as they precipitate at the bottom of the bottle/cylinder. The intensity of the colour changes with the quantity of aqueous dispersion in the fuel. Indications:

at 0 and 5 ppm	greyish powder / grains
at 10 ppm	appearance of a few pink particles
at 15 ppm	distinct pink colour indication
at 20 and 25 ppm	pink colour further increases
at 30 ppm	distinct pink colour further intensified

vi) Aquadis (Indian) - 100 Ml of sample is poured into a dry and clean tube. Ensure no discoloration of Aquadis capsule. Empty the contents of one capsule in sample, close tube with stopper and shake for 5 / 10 seconds. Stand the sample for 2 minutes and assess sample as follows:-

- White, light grey or dusty grey - No water present
- Faint pink precipitate - Moisture 10-15 ppm or move

vii) Pasta Wladikina - This paste detects free water in fuel. The colour of the paste is originally light brown to yellow. The colour change into pink if the fuel contains free water. Only used for water tests of rail cars and/ or storage tanks (Note - Only used in C.I.S.).

5g) Prior to delivery anti-tamper seals should be unbroken on all discharge and filling connections.

5h) Grade plates should be clearly displayed on each side amd outlets of the vehicle.

5i) Fuel sample

a) Visual Check - A sample from the sump of each compartment should be checked to be clean and water free (Clear and Bright). If particulate matter or water is detected, fuel should settle during 10 minutes and another sample taken. If water is still present in quantities more than 2 litres, the source supply and the installation Manager should be notified. Using one of the Chemicals kits, described in App "A" sect 5f), check fuel for water in suspension.

b) Control Check - Fuel is accepted for control check, after visual check has been accepted. The fuel relative density should not vary by more than 0.003, after appropriate correction for temperature, to that recorded on the release certificate. If the difference is greater than 0.003 and after investigation no satisfactory explanation can be found, the product should not be discharged. Where a contractor is used to bridge fuel, this should be noted and special attention paid to equipment condition and quality standards.

5j) Electrical bonding between road vehicles and loading rack should be made before connection of hoses (Rail tank wagons are earthed through the track). Clips and cable should be checked visually and for continuity with a suitable meter which should read less than 10 ohms. If the cable is stowed on a reel, this should also be checked for continuity whilst being rotated. Ensure continuity between vehicle and loading rack and that the loading stand is suitably earthed. Refer also to App "A" sect 13q.

5k) Railcar and road bridger discharge (suction) hoses may be of any suitable type, their condition should be checked visually during use.

5l) Hose end dust caps should be fitted when the hoses are not in use. Hose ends and dust caps should be kept clean.

6) Airfield Storage

6a) General cleanliness and tidiness of the storage area is often a guide to good housekeeping.

Storage tanks, pipework, walkways and handrails should be re-painted regularly. Tank bound areas should be kept free of vegetation and basin drain valves kept closed and secure.

6b) Tanks should have the fuel grade displayed and all pipe work should be colour coded to API 1542 as to the fuel grade and flow direction arrows (should be white on black for Jet A -1 / Jet A).

6c) Each tank should be clearly identified with a number, marked with grade according API.

6d) after receipt of fuel, tanks fitted with floating suctions should be allowed to settle as follows:-

i) Horizontal tanks – 1 hour minimum.

ii) Vertical tanks – 2 hours minimum.

Tanks without floating suctions should be allowed to settle for 3 hours per metre depth or 24 hours, whichever is less.

6e) Date of last inspection/cleaning and internal lining should be stencilled on the tank shell. Tanks should be inspected annually from outside through a suitable manhole. They should be internally inspected and cleaned within twelve months of commissioning and subsequently every three years. Inspection and cleaning intervals may be extended to the maximum interval shown below. Provided the tanks have conical type floors and the tank cleaning and inspection records shows that the tanks were found relatively clean when opened and inspected internally.

	maximum interval (years)	
full internal epoxy lining (minimum – floor and full height of walls)	**internal visual inspection without entry**	**internal inspection and cleaning**
no	2	4
yes	3	5

6f) All tanks should have conical type floors and be fitted with a sump drain from which daily visual checks for water and sediment are made. At some installations, the drains are all fed through a manifold to a common small tank for sampling purposes. Any tank exhibiting a positive reaction to a chemical water detection kit or containing large quantities of bulk water or sediment should not be used.

Flat-bottomed tanks are not recommended for delivery tanks but are common in Russia and the C.I.S.

Large variations in temperature or humidity will very often cause the tank to exhibit water- though this can usually be readily drained off.

6g) Jet fuel should contain static dissipater additive to reduce static electricity hazards. Depending on the delivery system, conductivity at the storage tanks should be approximately 70 / 80 pS/m to achieve 50 pS/m at the aircraft. Fuel conductivity should be measured after settling time of the receiving tank. Static dissipater additive shall not be added to fuelling equipment. If jet fuel without static dissipater additive has to be received into storage tanks, either adequate relaxation time (30 seconds minimum), must be provided between the filter and the inlet to the storage tank, or reduced (50%) loading / filling rates observed.

6h) The storage tank venting system should preclude the ingress of dirt, water and foreign objects.

6i) Tank floating suctions ensure fuel is drawn off the top, well away from any possible dirt or water. These shall be checked monthly for free operation. This can sometimes be achieved by pulling the attached cable or by some form of flotation indicator. Stand pipes are sometimes used in place of floating suctions. This type of system takes fuel from approximately from 40cm to 1 metre from the tank bottom direct into the supply line. This system is not recommended.

6j) Increasingly, internal floating roofs (floating pans) are being used in conjunction with floating suctions for environmental reasons. This makes checking more difficult, ensure the height of the floating suction and floating roof correspond to each other. Tanks with open floating roofs should be noted on the check list. This system is not recommended.

6k) New tanks should be fitted with high level alarm systems. For the existing storage tanks, consideration should also be given regarding installation of this system.

6l) Should a leak detection system be installed in the storage tank area the requirement here is to note and indicate, on the checklist, the type of "leak detection or tightness" control system.

6m) An acceptable emergency device should be clearly identified and easily accessible to stop fuel transfer in case of a hose breakage/leak.

6n) Fuel should be delivered from storage via a filter/separator. The filter sump should be checked for water and sediment daily. Refer also to App "A" sect 5c.

6o) For filter life refer to App "A" sect 5d.

6p) The filter differential pressure should be checked during all pumping operations. A graph shall be prepared showing the weekly recorded dP at, or corrected to, maximum flow rate.

6q) For filter sump sample, refer to App "A" sect 5f.

6r) Product obtained by draining and sampling shall be returned to the depot for removal of any water and sediment before recovery into a receiving tank or downgrading as appropriate. A sample collecting procedure, which ensures no mixing of grades, should be established for this purpose. The sample-receiving vessel must be allowed to settle and any water removed as soon as possible. The product should then be returned immediately to the storage tank or recovery facility.

6s) Fire extinguishers refer to App "A" sect 5b.

6t) Security arrangements have to be adequate to protect the personnel, assets and operation of the facility.

7) Airfield Receipt Records

7a) Each batch of fuel should be accompanied by a Refinery Certificate of Quality and a Certificate of Analysis if relevant. These documents should show the grade (Jet-A/A1/TS-1 etc.): and confirm that the batch conforms to the relevant specification (JFSCL, DEF STAN 91-91, ASTM D1655, GOST 10227, etc.). Where applicable, a re- certification and / or a release certificate shall also accompany each delivery proving that the product quality has not changed in transit.

7b) For bonding cable check refer to App "A" sect 5j. & sect 13p.

7c) Railcar and road bridger discharge (suction hoses should be checked monthly visually for external damage, leakage and other signs of weakness during use. Hoses used for receipt of fuel are not generally subjected to a six monthly pressure test as with aircraft fuelling hoses unless they are pressure hoses, i.e. hydrant pit cleaning vehicle hoses.

7d) Regular filter membrane tests shall be made downstream of receipt microfilters or filter/separators, on each filter every month, to assess their effectiveness. A colour rating greater than 3 (dry) or an increase of 2 above the normal value should be investigated. In case of unsatisfactory results, additional filter membrane tests may be necessary. All results shall be recorded and the colourimetric membranes retained for three years. Refer also to App "A" sect 14f.

7e) Fire extinguishers refer to App "A" sect 5b.

8) Airfield Storage Records

8a)

i) Filter sumps should be checked daily for water and sediment. It should be borne in mind that a filter/separator functioning normally could well have droplets of water in the sump. Check records of the daily tasks.

ii) If required, on-line tank sample(s) should be taken daily and retained for 7 days.

8b) The filter pressure differential should be checked weekly at maximum rated flow or a correction applied to simulate that condition. The results should be recorded graphically. Sudden increases or decreases as well as no increase in pressure differential over a prolonged period of time, should be the subject of further investigation as they could indicate a sudden release of dirt into the filter, or failure of the element causing the release of dirt into the downstream fuel. On differential gauges with a three- way valve, the valve in the OFF position isolates the gauge.

8c)

i) For floating suction, refer to App "A" sect 6i.

ii) The conductivity of fuel containing a static dissipater Additive (Stadis 450) should be checked after each delivery into storage. Where the period between product receipts into a tank exceeds one month, the conductivity shall be checked at monthly intervals and recorded with temperature. Conductivity should be within the range 50-600 pico Siemens / metre (pS/m). Depending on the delivery system, conductivity at the storage tanks should be approximately 70-80 pS/m in order to achieve a minimum 50 pS/m at the aircraft.

iii) Free vents and mesh screens, should be checked monthly. Pressure/vacuum relief valves, where fitted, should be checked and serviced in accordance with manufactures recommendations.

iv) For hose inspections refer to App "A" sect 7c.

v) Hose end strainers / screens should be checked as in App "A" sect 9e.

vi) Regular filter membrane tests shall be made downstream of receipt, delivery into- hydrant microfilters or filter/separators. Tests shall be performed monthly for product receipt and fueller loading filters and at least on one into-hydrant filter each month in rotation such that every into-hydrant filter is checked quarterly, to assess their effectiveness. A colour rating greater than 3 (dry) or an increase of 2 above the normal value should be investigated. In case of unsatisfactory results, additional filter membrane tests may be necessary. All results shall be recorded and the colourimetric membranes retained for three years. Refer also to App "A" sect 14f. For Fire extinguishers refer to App "A" sect 5b.

8d) Emergency shutoff system must be quarterly checked and results should be recorded.

8e)

i) All differential pressure gauges shall be tested every six months. For piston type gauges, a check for correct zero reading and free movement throughout the full piston travel is adequate. A record of all checks shall be maintained and all inaccurate or defective gauges must be replaced.

ii) For gauge accuracy checks refer to App "A" sect 14f.

iii) The applicable standard for hydrometers is BS 718: 1960 (types M50SP and L50SP). For Thermometers, it is IP 64C/ASTM E1 No. 12C. Where alternative types of instruments are used for field tests, the thermometers should have scale increments of no greater than 0.5 degrees C and hydrometers of no greater than 0.0005. In such cases, it is a requirement that the accuracy of these instruments be checked at least once every six months against reference instruments meeting the above standards or sending it to a laboratory.

iv) 4. Hoses refer to App "A" sect 7c.

8f)

i) For tank inspection / cleaning intervals refer to App "A" sect 6e. A detailed record of the types and quantity of sediment found, and of the condition of the tank interior fittings and coatings shall be maintained.

Tank inspection records shall be retained for five years

ii) Tank high level control, must be annually checked and results should be recorded.

iii) Every twelve month all filters shall be opened and inspected internally for cleanliness of vessel, element appearance, proper fitting of elements and condition of internal lining and cover seal. Teflon coated and synthetic separator elements shall be inspected and tested in accordance with manufacturer's recommendations. During inspection, any elements found to show signs of microbiological growth, or gross surfactant contamination, or to be ruptured or seriously damaged shall be replaced. The result shall be recorded.

For filter life refer to App "A" sect 5d.

iv) Some filter vessels may be fitted with a discharge valve (or slug valve) to stop the flow of fuel when bulk water in the filter sump reaches a predetermined level. Whenever the filter/separator is opened, the float assembly should be removed and its buoyancy checked by verifying that it will rise in water and sink in jet fuel. This may be accomplished by testing in a container.

8g) Records shall be kept of all filter maintenance showing at least the following:

- Number and type of new elements installed
- Differential pressure before and after change
- Throughput since previous change
- Reason for change and any relevant details.

8h) Filter / separators meeting the performance requirements of API 1581: All new vessel and element combinations shall meet the latest edition of API/IP Specification 1581. For existing vessels, element conversions should meet the latest edition of API/IP 1581 requirements as soon as practicable and in any case within five years of its publication (December 2005). New edition elements should be purchased as soon as practicable

9 Mobile Fueller Loading Rack

Mobile fuellers are normally replenished via bottom loading hoses through a filter / separator but increasingly some now self load from a hydrant system through a hydrant inlet hose and the vehicle's own filter.

9a) If more than one grade of fuel is available, selective couplings should be employed to ensure only the correct hoses appropriate to the fuel grade in the vehicle can be connected.

9b) All pipe-work should be colour coded as in App "A" sect 6b.

9c) Hose end dust caps should be clean, in good condition and replaced when hoses are not in use.

9d) Fueller loading hoses and other hoses such as hydrant low point flushing hoses, which may be subjected to pressure, must be pressure tested.

9e) A hose-end strainer, not coarser than 60 mesh shall be fitted. It should be checked and cleaned monthly. Metal chips and/or rubber particles indicate damage to the system downstream of the final filter and should be recorded.

9f) For filters, refer to App "A" sect 5c. & sect 6n.

9g) For filter life, refer to App "A" sect 5d.

9h) The filter / separator pressure differential should be checked

9i) The sump should be checked for water and sediment daily.

9j) Fire extinguishers should be easily accessible, in good condition and indicate the last inspection date, which should be no more than annually.

9k) A deadman system or emergency stop button should be installed in the event of a hose leakage / failure.

9l) A bonding connection between the loading rack and the vehicle should be made before hoses are connected and should not be removed until after hose disconnection. The bonding cable and clips should be checked as in App "A" sect 5j. & 13p.

10 Mobile Fueller Loading Rack Records

10a) For bonding cable check, refer to App "A" sect 5j & 13p.

10b) For filter pressure differential, refer to App "A" sec 8b.

10c) For hose inspections refer to App "A" sec 7c. & 9e.

10d) For nozzle screen / strainer refer to App "A" sec 9d.

10e) Regular filter membrane tests shall be made downstream of loading microfilters or filter / separators, on each filter every month, to assess their effectiveness. A colour rating greater than 3 (dry) or an increase of 2 above the normal value should be investigated. In case of unsatisfactory results, additional filter membrane tests may be necessary. All results shall be recorded and the colourimetric membranes retained for three years.

10f) For fire extinguishers, refer to App "A" sec 5b.

10g) The emergency shutdown system must be functionally tested quarterly, and results of the test recorded. Refer also to App "A" sec 9k.

10h) For filter records refer to App "A" sec 8g, for API / IP 1581 requirements refer to App "A" sec 8h.

11 Hydrant System

11a) A series of pumps will deliver fuel to a hydrant through filter / separators. The associated pipe line should be lined and protected from corrosion by a cathodic protection system, for which a maintenance programme shall be in place. Record type or manufacture specification.

11b) Increasingly hydrant systems are being fitted with leak detection or tightness control systems. All new systems should have a means of pressure testing and tightness integrity (leak detection) incorporated in the design. Checks in accordance with written procedures should be carried out on a regular basis. Annotate the checklist with type and manufacturer if fitted. Record type or manufacture specification.

11c) The hydrant pit covers should be secured to pits by suitable means. This is particularly important where pit covers may be exposed to direct engine blast. Pits shall be clearly identified and, where more than one grade of fuel is available, grade marked.

11d) The pits should be maintained clean and dry.

Some systems have pressure control valves and/or air operated deadman valves incorporated in the hydrant pit valve. It should be ensured that they are checked regularly, with the deadman closing in about 2 to 5 seconds. All new hydrant systems should be equipped with air operated dual pilot pit valves. Consideration should also be given to fitting dual pilot valves to existing 4" lanyard operated pit valves.

11e) A hydrant valve dust cap should be present, tethered and in good condition.

11f) Emergency stop buttons should be clearly identified, have free access and regularly checked for effectiveness.

11g) All hydrant lines shall incorporate low points to facilitate the removal of water and sediment. The low point drains should be marked.

All low points shall be flushed at a high velocity thoroughly once a week, with the line under pressure to ensure removal of any water or sediment until a clear sample is obtained.

11h) High point vents should be occasionally bled of entrapped air and after hydrant works or modifications which allow air to enter the system.

11i) Surge absorbers, where installed, should be checked for general condition and operating pressure.

12 Hydrant System Records

12a) Adequate regular hydrant pit cleaning and at least weekly inspections shall be carried out and recorded.

12b) Low points in the system should be flushed weekly and samples checked for water and cleanliness with a chemical water detector.

12c) Pit valves should be checked regularly and valve closing time recorded. Refer to App "A" sec 11d.

12d) Emergency stop buttons (ESB) must be clearly identified and in a way, that it remains visible at all times. A monthly check for the effectiveness of the hydrant emergency shut down system shall be performed. Procedure shall ensure that each ESB is checked at least twice per year. Results of each monthly test, including details of the location of the ESB checked, shall be recorded. A written procedure, detailing the method of checking should be available.

12e) For cathodic protection, refer to App "A" sec 11a.

12f) Pit dynamic testing shall be performed under pressure, at the highest achievable flow rate, by pulling the lanyard. Valve closure time must be between 2 and 5 seconds. Pit Valves with butterfly or flapper type valves cannot be tested under flow conditions, but can only be tested statically.

12g) For surge absorbers refer to App "A" sec 11i.

12h) For high point vents refer to App "A" sec 11h.

12i) For hydrant leak detection system, refer to App "A" sec 11b.

12j) Each station should have a hydrant flushing procedure

13 Mobile Fuellers

13a) Vehicles should be identifiable by a fleet number and Company name.

13b) Vehicles should be maintained to a generally accepted standard of mechanical reliability, safety and should be leak free. This will cover all daily and weekly serviceability checks through to periodic preventative maintenance of engine, chassis and pumping/fuelling equipment.

13c) Correct grade plates should be displayed on each side of the vehicle, at the control panel and at all fill points. Other applicable placards should also be fitted.

13d) - Removed

13e) The filter housing should have a placard attached, which should contain the filter element information and change dates. For filter life refer to App "A" sec 5d.

13f) Filter differential pressure should be checked weekly at maximum flow and subjected to daily scrutiny whilst fuelling to ensure that the maximum limit is not exceeded. It is recommended that for fuelling carried out by hydrant servicer, the flow rate and differential pressure are noted on a daily basis to ensure that dP, when corrected to the maximum achievable flow rate for the vehicle, does not exceed 15 psi. Sudden pressure variations should be reported and investigated. Differential pressure test should be performed preferably, at the test rig.

13g & h) All samples should be clear and bright (C & B) and visually free from solid matter and/or undissolved water at ambient temperature. It is normal practice to carry out a chemical water detector test at this time (see paragraphs App "A" sec 5f and sec 17j for further information on this subject).

Draining shall be carried out at full flow from the low point of the vehicle tank and under pressure from filter separator and microfilter sumps, into a clean, clear glass jars. Equipment shall be drained of water and sediment as follow:-

- Daily at the start of the morning shift
- After filling operation (Vehicle tanks only)
- After defueling
- After heavy rain (Vehicle tanks only)
- After Vehicle washing or maintenance of tank, filter or fuelling system

13i) A flow control valve may be fitted to stop the flow of fuel when water reaches a pre-determined level in the filter / separator sump. Or an automatic water dump valve may be fitted which can actuate the deadman system. Basically there are two systems, a float type or electrical probe type.

13j) Hoses should be type 'C' to BS 3158/API 1529. The maximum shelf storage life shall be two years and the maximum overall life shall be limited to ten years.

13k) A dual pressure control system should be fitted to all vehicles capable of delivery rates greater than 220 litres/min per hose. Maximum fuelling pressure should not exceed 50 psi downstream of the fuelling nozzle as checked on a test rig or from the records. When testing vehicles equipped with dual pressure control systems, each system must be tested individually and without interference from the other pressure control valve system. Both systems must be checked quarterly and a monthly functional check of the deadman control system is also advised. Vehicle gauges may read higher than this during refuelling depending on the sense point and compensation system. The use of hose end pressure controllers (HEPC), which are accurate to within +/-10% is recommended.

13l) A functional monthly check of the deadman should be performed preferably at the test rig, to ensure flow ceases within a minimum of 2 seconds, measured from when the valve starts to close (as indicated by a change in the rate of the flow meter) and a maximum of approximately 5 seconds. Check that the volume delivered does not exceed 200 litres/ 5% of the flow rate from the moment of release. If a deadman override switch is fitted, it should be sealed if not of the preferred push button type.

Externally mounted emergency engine stop controls shall be provided and must be clearly identified with a label explaining their purpose. Consideration should be given to using a system where the emergency engine stop also closes the deadman control system.

13m) Brake interlocks should be fitted and checked weekly to vehicles to prevent the vehicle moving until the hoses are properly stowed or while the platform, if fitted, is still elevated. An emergency override is generally fitted, which should have a breakable seal, as on occasions this has been found to be permanently in the override position for ease of crew operation.

13n) Selective couplings should be used where more than one grade of fuel is available. This may be achieved by the use of selective pins in the nozzle or by differing coupling diameters and, in the case of mobile fuellers, the bottom loading coupling should be of a selective type.

13o) Hose end strainers / screens should be checked as in App "A" sec 9e.

13p) All electrical bonding wires including clips and reels should be checked daily for general condition and for firm attachment of the bonding clip. They should be checked weekly for electrical continuity (typically there should be less than ten ohms resistance) between the bonding wire clip and vehicle chassis. Electrical continuity should be checked over several revolutions of the reel whilst unreeling the bonding wire slowly. Refer also to App "A" sec 5j.

13q) Meters should be calibrated and sealed every 6 months against a certificated master meter or proving tank as appropriate. Limitations should be within +/- 0.1% but may be the subject of local customs and excise regulations.

13r) On bottom loaded fuellers, annual visual checks are carried out from the lid on top of the tank. For bottom loaded fuellers the maximum interval between tank entry and cleaning is two years. This may be extended to a maximum of five years if, the entire interior can be observed from the tank top lid(s), annual inspections results confirm that the internal condition is good and historical cleaning records show that only small amounts of contamination have been found.

13s) All vehicles equipped for bottom loading shall have an automatic high level shut-off which shall incorporate a pre-check device. High level shut-off shall be set at safe levels taking account of the maximum flow rate that may be achieved during fueller loading and the time taken to stop the flow.

13t) Check tank roof area water drains are clear.

13u) Check tank lids / dome cover gaskets and proper operation of tank vents.

13v) All fuelling vehicles and trailers shall carry at least two 9 kilo dry chemical type fire extinguishers. At least one extinguisher shall be readily accessible from either side of the vehicle. BC dry powder chemical extinguishers should be used. Extinguishers containing Type A powder should be avoided because they can cause corrosive damage to aircraft.

13w) Vehicles should be in a roadworthy condition. See also App "A" sec 13b.

14 Vehicle Records: Mobile Fueller

14a) Log books and inspection records must be kept to ensure vehicles are maintained in good condition for safe and reliable service. All maintenance work should be scheduled in accordance with the equipment manufacturer's instructions. The logbook should record details of work carried out, including servicing, repairs and replacement parts fitted.

14b)

Type of check	notes / details
Maintenance checks	Ensure the vehicle is serviceable and past faults rectified.
Bonding cable	Check it is serviceable and firmly attached.
Fire extinguishers	Check correct number is fitted and serviceable.
Meter seals	Check they are unbroken.
Clean sample bottles	Check sample bottles are on the vehicle and clean (or the visijar is clean, if fitted).
Water detector kit	Check it is available and capsules are in date.
Water check all points	Fuelling equipment shall be drained of water and sediment from all low points daily, after rain and vehicle washing. After loading, the vehicle should be allowed to stand for about 10 minutes for the fuel to settle. A cargo tank sump sample should then be drawn and checked for water and sediment (also trailers where available). Ensure all low points are drained and samples are C&B.
Dust caps	Should be replaced on all sampling points.
Interlock seals	Check they are unbroken.
Deadman	Check it is serviceable.

14c)

i) A weekly functional testing of interlocks should include a check of each item that is interlocked. Failure and corrective action should be recorded.

ii) A check of bonding cables and clips should be recorded, with failures and corrective action taken. Refer to App "A" sec 5j and sec 13p.

iii) Filter differential pressures should be recorded at each refuelling, the highest of the week should then be transferred to the weekly record, which should be recorded together with the actual flow rate and, if possible, the throughput. The actual flow rate should then be corrected for the filter rated flow rate to ensure that the maximum permissible dP has not been exceeded.

14d)

i) For membrane filtration tests refer to App "A" sec 14f

ii) All vehicle hoses shall be inspected monthly under maximum operating pressure for abrasion, cuts, blisters and kinks.

iii) Hose end strainers / screens should be checked as in App "A" sec 9e.

iv) For deadman check refer to App "A" sec 13l.

v) For fire extinguisher check, refer to App "A" sec 5b.

14e) For pressure control, refer to App "A" sec 13k.

14f)

i) Membrane monitoring is used as a cleanliness control.

Double 0.8 micron membranes are used for gravimetric tests. Colourimetric tests are normally performed with a single membrane, but double colourimetric membranes may also be used. All fuelling vehicles should be checked at the hose end or after filter for a visual colour rating monthly and after changing filter elements and after changing a vehicle delivery hose (maximum 3 or a colour difference of 2). Either a double membrane colourimetric test or a gravimetric test shall also be carried out on each vehicle at least every six months (Notification limit 0.2 mg/litre, Rejection limit 1.0 mg/litre). In a well run system average contamination levels should be below 0.1 mg/litre.

A Gravimetric test may not be required at regular intervals provided the following conditions are met:

a) When fixed inbound and outbound filtration is by API 1581 qualified filtration, Storage Tanks are fully epoxy lined, have coned down bottoms and Floating suctions and into plane filtration also meets API 1581 .

b) A colour rating of 3 or less. If a colour rating of 4 -dry or greater or an increase of 2 above the previous months is observed, proceed as follows: (A colour rating of 4-dry or greater may indicate a particulate contamination problem).

c) Perform a subsequent particulate test consisting of two membranes in the plastic holder to compare colour differences between top and bottom membranes. If top and bottom membranes have a colour rating difference of 2 or less, fuel is to be considered clean and acceptable. If difference is 3 or greater, conduct a gravimetric analysis. Fuel is acceptable if less than 0.20 mg/l. Above 0.20mg/l further investigation is required and if above 1 mg/l the fuel should be rejected.

d) A Gravimetric must be carried out on all new or re-commissioned vehicles and on new hydrant lines and storage tanks before commissioning.

ii) Each hose shall be given a permanent identification when first received, either on a new fuelling vehicle or into stock, and a hose inspection record started. The date of manufacture, date when put into service and details of all testing shall be recorded. A pressure test, using a hydrostatic test pump, shall be carried out when commissioning new vehicles, whenever couplings are attached or re-attached to hoses, when accidental damage to a hose is suspected, and routinely every six months

Recommended test pressures are:-

- 20 bar for commissioning and after attachment of couplings
- 15 bar for routine testing of fueller delivery hoses hydrant servicer hoses and other hoses that may be subjected to hydrant pressure.
- 10bar for hoses of less than 2” (50mm) diameter

The test pressure should be maintained for not less than 3 minutes and only as long as necessary for the hose inspection.

iii) For meter calibration refer to App “A “sec 13q.

iv) Gauges should be checked for accuracy six monthly against a certificated master gauge. Limitations depend on the type of gauge.

v) Piston type gauges do not require to be checked for accuracy, only a check for freedom of movement and correct zeroing.

14g)

i) For fire extinguisher inspections refer to App "A" sec 5b.

ii) For filters refer to App "A" sect 8g. & sec 8f number .iii.

iii) If fitted, details of water defence (slug valve) testing should be kept, which should identify whether water is used to test these, and then to note if all the water put in was also removed.

iv) For tank inspection, refer to App "A" sec 13r

v) For tank cleaning, refer to App "A" sec 13r

15 Hydrant Dispensers

The checks required for mobile fuellers equally apply to hydrant dispensers, and stationary hydrant carts, except paragraphs App "A" sec 13g and sect 13r through to sect 13u.

15a) Refer to sect 13a

15b) Refer to sect 13b

15c) Refer to sect 13c

15d) Refer to sect 13d

15e) Refer to sect 13e

15f) Refer to sect 13f

15g) Refer to sect 13g

15h) Draining shall be carried out from the filter separator and microfilter sumps until the line content has been displaced. A sample of at least one litre shall then be taken for a visual check. Where it is not possible to obtain a one-litre sample under pressure off-ramp, this check shall be performed under pressure at the start of the first fuelling of the day. Equipment shall be drained of water and sediment as Follows: - Daily at the start of the morning shift - After maintenance of filter or fuelling system App "A" sect 15h. Refer to sect 13i.

15i) Refer to sect 13j.

Where more than one fuel grade is available from a hydrant system, the connection to the hydrant pit should be selective.

Selective couplings, where used, should be checked for wear or absent selector pins

Note - Some tests require a purpose built test rig.

15j) Refer to sect 13k

15k) Refer to sect 13l

15l) Refer to sect 13m

15m) Refer to sect 9e

15n) Refer to sect 5j and sect 13p

15o) Lanyards for hydrant pit valve shall be manufactured from fire resistant material in a highly visible colour such as red. There should be no electrical connection between the fuelling vehicle and the hydrant pit. If lanyards are attached to the vehicle-mounted reels, the reels should be electrically isolated from the vehicle. Electrical isolation of the reels should be checked weekly with an electrical meter.

15p) Refer to sect 13q

15q) Lift platforms, if fitted, should be checked for safe and dependable operation, including the emergency let down system.

15r) See section 13v, in the USA dispensers may only carry one larger capacity extinguisher.

15s) Refer to sect 13b and sect 13w

16 Vehicle Records: Hydrant Dispensers

16a) Refer to sect 14a

16b) Refer to sect 14b, daily water checks should include the dump tank, if fitted.

16c) Refer to sect 14c

16d) Refer to sect 14d

16e) Refer to sect 14e

16f) Refer to sect 14f

16g) Refer to sect 14g

17 Aircraft Fuelling Fuel Grade

Where more than one fuel grade is available on the airfield (e.g. Jet A/A-1, Jet B or Aviation gasoline) the following safeguards should be made to ensure the correct fuel grade is delivered to the aircraft.

i) Check the fuelling vehicle and hydrant pit grade plates and colour coding.
ii) Check a sample of fuel from the fuelling vehicle for density and colour and be aware of the typical jet fuel odour.

It is impossible to tell the difference between Jet A and Jet A-1 in this way but with any other product this is a useful guide, although not foolproof.

(1) Smell - each product, Jet A/A-1, Jet B and aviation gasoline has a distinctive odour, although care should be taken, since dependent on the refinery process and source of crude oil, some fuels, even of the same grade, have their own distinctive smell. This is particularly so of some Eastern European fuels.
(2) Colour - as distinct from aviation turbine fuels (all aviation fuels except Mogas are coloured by use of dyes).
(3) Relative Density - aviation gasoline and Jet B usually have lower densities than Jet A/JetA-1. It is obviously not possible to be specific, since within the specification range of each product there are large variations, with the density at the top of one grade overlapping the lower densities of the next.

If a density is obtained which is far removed from that which is normally obtained on a daily basis, this should be considered cause for further investigation.

Before fuelling commences, perform the following:-

- Check vehicle grade plates and hydrant pit grade designation as necessary, to ensure fuel of the correct grade will be delivered.
- Check that private mobile phones have not been taken out to the aircraft, and are left in the cab of the fuelling vehicle throughout the fuelling operation.
- Check the vehicle delivery meter has been set to zero.

17a) As soon as practicable after leaving the parking stand, brakes shall be tested to ensure satisfactory operation. The approach to the aircraft shall be in a way that if a brake failure occurs, collision will be avoided.

The use of mobile phone whilst driving a fuelling vehicle is strictly prohibited. Vehicle(s) should be stopped prior to engagement to an aircraft, to test the brakes and then be positioned safely and correctly and an unobstructed exit maintained at all times for a refueller, but not necessarily for a dispenser, if agreed by the Airport Authority. Vehicles should not be reversed onto or from the aircraft unless marshalled.

17b) A bonding connection between the vehicle and the aircraft should be made prior to hose connection and be the last thing to be removed at the end of the fuelling operation.

17c) Hoses shall be run out on selected routes, which should prevent them from being run over by aircraft-servicing vehicles. Kinking and twisting of hoses shall be avoided. Pressure fuelling couplings and overwing nozzles shall not be dragged over the ground.

For hydrant servicer, connect hydrant coupler to hydrant pit valve and delivery hose(s) to aircraft. Each joint operation must have only one sequence, which will be agreed by participants and incorporated in a written fuelling procedure.

Hoses shall be connected to the fuelling point without exerting any sideways pressure, which could damage the aircraft adapters. Once connected, hoses should hang freely and vertically from the fuelling point.

The pit valve should not be opened until all hose connections are made.

17d) The deadman control should be held down by hand whilst fuelling is in progress. Valve opening time should be at least 5 seconds. From maximum flow conditions, the valve should close within 2 seconds measured from when the valve starts to close (as indicated by a change in the rate of flow meter) and a maximum of approximately 5 seconds. Fuel delivered indicated on the vehicle meter should not exceed 200 litres from the moment that deadman is released.

17e) Prior to refuelling from a hydrant system, a Lanyard should be fitted to manual or dual pilot operated hydrant pit shut-off valves. The lanyard should be extended on the apron such that it is free of obstructions and readily accessible to the fuelling operator and other apron personnel for use in an emergency. See also App "A" sect 15o. The hydrant connections should have clear identification and protection. For testing see App "A" sect 12f.

Note - The valve should not be opened until all hose connections are made.

17f) Each vehicle should be fitted with gauges to ensure that the vehicle is operating correctly. A fuelling pressure gauge senses pressure at or downstream of the venturi; this may be compensated, semi-compensated for further pressure losses downstream of the sense point or can read direct venturi pressure. Which system is employed should be ascertained before taking the gauge reading. Air is required to open most inline or pit coupler pressure controllers and the air reference pressure gauge senses this pressure. A mobile fueller should also be fitted with a filter differential pressure gauge, a pump and a defuel pressure gauge.

On hydrant dispensers, an inlet pressure gauge is fitted to show that hydrant pressure is available. The sense point is normally situated on the inlet side of the filter.

Fuelling pressure should be monitored throughout the refuelling operation. If indicated fuelling pressure exceeds 55 psi, check the vehicle on test rig or vehicle records, to ensure downstream pressure does not exceed 50 psi.

Check that the filter differential pressure does not exceed the company's or manufacturer's recommended maxima. Record the reading and note the flow rate.

Note - Zero reading might indicate filter perforation or that the test valve is shut.

17g) Check vehicle, hydrant pits, couplings, pipework, joints, fittings and hoses for leaks during fuelling.

17h) Check the unrolled hoses during fuelling for leaks, abrasion, cuts, blisters and kinks.

Hoses shall be kept under observation during the fuelling operation and if a weakness or defect is observed, delivery through the defective hose must be stopped and the hose replaced.

17i) Fuel samples should be taken as in App "A" section 5f.

At each fuelling, request the supplier to provide a fuel sample as follows:

i) Mobile Fueller - After the fuel contained in the vehicle delivery pipework and filter vessel has been displaced, a one litre sample shall be taken downstream (outlet side) of the filter for visual examination including chemical water detector. This sampling procedure shall apply as follows:-

- First Fueller of the day
- The first fuelling after the fueller leaves the depot
- The first fuelling after loading or topping up the fueller
- During an inspection

ii) Hydrant Dispenser - Samples shall be taken at every operation for visual examination. At least one (jet fuel) sample from each fuelling shall be checked with a chemical water detector.

(a) With filter separator, it is mandatory to take a one-litre sample from the filter sump or inlet (upstream) side of the monitor vessel under pressure immediately after each fuelling for visual examination.

Sampling	(a) during fuelling	(b) after fuelling
Servicers with FWS	After 1000 litres from downstream of FWS	From FWS sump (mandatory)
CDFX / water barrier (dp limiter required) & dirt defence (free water electronic sensors & PLC required)	As per manufacturer requirements	As per manufacturer requirements

iii) Dual Purpose Fueller

(a) If operating as a Mobile Fueller, take samples as per i)
(b) If operating as a Hydrant dispenser, take samples as per ii)

Note - Many vehicles are now being fitted with inline Visual Sampling Vessels (Visijars). Ensure samples taken originate from sampling points stated above.

Check each sample for density [except for sample ii(b) above] and ensure that it is clear and bright. Also, check colour, smell and particulates (solid matter). Perform a chemical water detector test supplied by the Fuelling Company to detect the presence of suspended water to a maximum allowable of 30 parts per million (ppm). The following are approved for this purpose:-

(1) Shell Water Detector
(2) Velcon Hydrokit
(3) Mobil Water Indicator
(4) POZ-T
(5) Aqua Indica and Aquadis (Indian

These kits are either capsule or powder and will change colour if water is present. The fuel company personnel should carry the appropriate equipment and perform the checks on request.

Note - The fuel company's quality procedures will normally incorporate checks such as those detailed above but they may not necessarily be performed at the aircraft unless requested by the Airline, who should be satisfied that they meet the above requirement. This procedure should be carried out at each refuelling, including alternates, to the satisfaction of the Captain of the aircraft if there is no engineer-in-charge.

The action which should be taken in the event of an unsatisfactory result of the above checks shall be as follows:-

1) Mobile Fueller

(a) Fuel grade suspect – do not commence fuelling.

(b) Particulate contamination - small quantities that can be removed by two or three flushes will be acceptable, although they should be brought to the notice of the supplier. Large quantities are unacceptable and the fuel should be rejected (see procedure if contamination is confirmed, below).

(c) Water - bulk water in the form of a few droplets, provided clean, can be flushed from the vehicle. Large quantities will require rejection of the fuel load including water in suspension in excess of 30 ppm (see procedure if contamination is confirmed, below)

(d) Other contamination - anything unusual, such as coloured water, slime etc. will require rejection of the fuel load (see procedure if contamination is confirmed, below).

2) Hydrant dispenser

(a) Fuel grade suspect - cease fuelling immediately and investigate as for mobile fueller operation (see procedure if contamination is confirmed, below)

(b) Particulates, water or any other form of contamination will require fuelling to cease immediately and follow the procedure for if contamination is confirmed performed, shown below.

(c) If more than a trace of bulk free water or a positive indication on the chemical detector is found, the procedure outlined in procedure if contamination is confirmed (hydrant dispenser 2), should be performed.

Mobile Fueller

1) Fuel grade suspect - do not accept fuel from the suspect vehicles until a thorough investigation, in conjunction with a senior representative of the fuel supplier, ensures the correct grade.

2) Contamination of small quantities of water or particulates can be drained from the vehicles, but if contamination of this nature is found to be a regular occurrence, action as per Appendix "C" of this section Reporting. Anything unusual should be retained for laboratory analysis and a thorough investigation made of all vehicles and the installation to determine the contamination sources. Effective remedial action should be taken prior to accepting further fuel.

Hydrant Dispenser

1) A thorough investigation of the complete airfield fuelling operation should be carried out to determine the source of contamination and to effect remedial action prior to further fuelling. Samples, as necessary, should be retained for laboratory analysis (see Appendix "A" of this section paragraph 3 Reporting.)

2) Since aircraft fuelling will have commenced or even have been completed when contamination is established in the vehicles, the extent to which the aircraft might have been contaminated should also be determined. Drain from all aircraft fuel system water drain points until the fuel is clean. If it were suspected that fuel with water in suspension in excess of 30 ppm has been delivered to the aircraft, it should be remembered that the action of mixing relatively warm fuel with cold aircraft fuel will cause dissolved water to go into suspension. Drain samples subsequently drawn from the aircraft could possibly be cloudy (hazy) and not pass a water in suspension chemical check. To determine whether the fuel in the aircraft is acceptable, warm a sample to ambient temperature, then carry out the check for water in suspension. Should this prove to be positive, the aircraft should be defuelled

Airfield Fuelling Facilities

It is not possible to be specific as to what checks should be made of the fuelling facilities, as it is dependent on the type of contamination encountered. The recommended procedure will be to work backwards through the delivery system from the fuelling vehicles to the tank farm taking samples from each drain point and checking in accordance with App "A" sect 5f in order to determine where the fuel company quality control procedures have broken down.

Aircraft Water Contamination Check

(1) The final assurance that contaminated fuel has not been delivered to the aircraft is to perform a post refuelling aircraft water sump drain check.

(2) Jet fuel can become contaminated with water due to atmospheric dampness, condensation etc. Periodic draining of fuel tank sumps is essential for the removal of bulk free water, a natural phenomenon in aircraft tanks is that water which readily settles out and is easily visible as droplets or a layer at the bottom of a container.

(3) Hazy fuel in aircraft fuel tanks is due to water in suspension, caused by cooling the fuel either by mixing cold residual fuel with warmer uplift fuel, or when there is a temperature drop, particularly overnight. This can only be removed by long settling times and for this reason water drain checks should be carried out after fuelling. There is no point though, in draining aircraft tanks until the fuel is no longer hazy.

(4) Samples should be checked for freedom of particulates, contaminated fuel or water, or clean bulk free water. If contamination is found to be present, samples (1 litre minimum in clean, clear containers) from each tank should be kept for laboratory analysis and draining continued until clean fuel is observed or in the event of gross contamination the aircraft defuelled. After defuelling, flush the tanks with clean fuel and further defuel. After refuelling, check the fuel tank water drains to ensure they are contamination free. It may also be necessary for LP fuel filters to be inspected / changed and engines run in accordance with the particular aircraft type operations / maintenance manual instructions. Further action shall be in accordance with Appendix "A" of this section paragraph 3 Reporting.

(5) Aircraft water drain checks shall be performed at time intervals detailed in the aircraft maintenance schedule, normally at ramp 1 (daily) interval.

17j) Check that the interlock status warning light in the vehicle cab - amber in colour - lights whenever an interlock protected component is removed from its normally stored position.

Check that an emergency override status warning light (red in colour) which lights whenever the override mechanism is moved from its normal operating position, is fitted in a prominent position on the dashboard refer also to sect 13m.

17k) Check that the bonding and fuelling connections are disconnected in the reverse order of connection (first hoses – last bonding cables).

Pressure fuelling couplings shall not be dragged over the ground.

17l) Check that the fuel slip is properly filled in and that delivered value noted in slip complies with the reading on fuel meter.

17m) Refer to sect 13v.

Fire extinguishers may remain on the fuelling vehicle provided they are carried in open housings or in racks with quick opening fastenings.

17n) Before leaving the aircraft at the completion of the fuelling, the operator should make a final check to ensure that the:-

- aircraft fuel caps have been re-fitted
- fuelling vehicle is properly disconnected from the aircraft
- platform is down and that all equipment is stowed correctly

Fuelling vehicles shall be driven away from the aircraft slowly in a forward direction.

18 Miscellaneous Records

18a) In order to maintain a quality standard, all tasks should be performed in accordance with the fuel companies Quality Control Manual. Note the title of the Quality Control Manual used and check if it is the latest issue.

Each fuelling company should have these manuals. Where these are based on Joint Inspection Guidelines (JIG) any variations from JIG should be identified.

18b) If airline fuel manuals are available, note the titles. Check if amendments have been received and manuals amended, if not inform the relevant airline.

18c) When a fuel company is requested by an airline customer to carry out additional services, for example tank valve switch operation, the company must obtain from the airline, a written request detailing the extent of the work required and details of the training and certification that will be provided by the airline.

Training, written procedures in the local language and certification shall be provided by the airline to personnel nominated by the fuel company. This will include retraining on an annual or other agreed frequency. All training given shall be recorded.

18d) Training records should be maintained for airline, operational, refuelling, safety, fire and driver training. An employee training record must be maintained for every employee, and this should show:-

- Which tasks' training has been given and the date of such training.
- The signature of the trainer.
- A "yes/no" assessment of whether the trainee demonstrated satisfactory understanding of the training.
- The signature of the trainee

18e) Incidents and accidents should be reported immediately. This applies to:-

- Major accidents.
- Fatal or serious injury to personnel.
- Excessive damage to property, plant and equipment including aircraft.
- Major spills. Breaches of security due to criminal or malicious action.
- Incidents where fuel could be a contributory factor.
- Minor Incidents and Accidents
- A near miss which might otherwise have resulted in any of the above

Detailed reporting and investigation procedures including forms for reporting and investigating incidents should be included in the procedure manual of the operation. Forms should be readily available locally so that staff can get familiar with accident reporting procedures.

18f) Spillage and leakage shall be avoided at all times. Any uncontrolled release of product represents a fire hazard as well as an environmental accident. Even the smallest of drips from a leaking valve or flange may eventually result in environmental damage unless appropriate action is taken to stop the leak and clean up the affected area. Any activity involving the handling of fuel is a potential source of spillage and it is important that care is taken during all product-handling procedures to avoid spilling any product.

It is the responsibility of all employees to report, immediately, any observed spillage or leakage as a matter of urgency. Each fuel spill presents a different situation involving many variables, such as size of spill, weather conditions and location of spill, etc. action required will depend on particular situations.

The operator is fully responsible for meeting the local and national regulations relating to environmental pollution. He should have a Spillage Emergency Plan, covering all possible situations and ensures that all staff are aware of the plan and what must be done should a spill occur. The Plan should be kept up-to-date.

Prompt action, good judgement and initiative by well-trained personnel are of major importance to prevent hazards arising from fuel spills.

18g) A system should be established which ensures that airline customers are notified of any impending risk of fuel supply being disrupted. Whatever the reason, be it staff industrial action, breakdown of equipment, fire, financial or political, the airlines should be informed in good time to be able to make alternative arrangements for fuel uplift.

In addition, if any damage to a fuelling vehicle is discovered after an aircraft refuelling, such that there is a possibility that parts may have entered an aircraft fuel system, or have damaged aircraft fuelling connectors, the Airline should be notified immediately. This action may prevent further damage incurred to the aircraft at the next refuelling, in flight fuel system blockages or a fuelling accident. It is important to first check that missing parts have not fallen onto the apron, but that the Airline is notified as soon as possible and in any event, if possible, before the next refuelling on the aircraft involved in the incident. Observed damage to the aircraft fuelling connectors should also be reported to the airline.

This is done either by direct contact with the local representatives of the airlines or via the airport authority or through the fuel suppliers.

INTENTIONALLY LEFT BLANK

Appendix B to Section 11 - Responsibilities

NOTE: When a responsibility is delegated by a manager, such delegation does not relieve that manager of the overall responsibility, nor does it preclude a superintendent, foreman, or any subordinates from being responsible if the delegated person answers to them in the course of his/her normal duties.

1.1 Fuel into aircraft responsible person

- Fuel Quality Manager
- Fuel Inspector

2.1.1 Action the Annual Station Fuel Quality & Safety inspections for contracted suppliers.

2.1.2 Carry out fuel installation spot checks. This includes any agent operating part of the service on behalf of a contracted supplier.

2.1.3 If required, inspect an installation operating under the International Airlines Fuel Quality Control Pool.

2.1.4 Inspect stations nominated as an alternate. Subsequent visits will depend on their frequency of use but in any event the elapsed time between checks should not exceed three years.

2.1.5 Ensure copies of inspection reports are forwarded to Eastern Airways MCC.

2.1.6 Where discrepancies are found that do not present a hazard to aircraft, agree remedial action and timescale with local fuel company management.

2.1.7 Where discrepancies present a hazard, do not accept fuel until a thorough investigation is carried out in conjunction with a representative of the fuel supplier, to ensure an acceptable grade of fuel.

NOTE:-In this case take action as per Appendix "A" of this section paragraph 3 Reporting.

2.1.8 Ensure that fuel supplied corresponds to the specification and grade of product ordered and to the refinery certificate or the last full specification test. Approved fuel specifications are listed earlier in this manual.

2.1.9 In the event of fuel contamination forward samples to Eastern Airways MCC and advise of dispatch details by signal or telephone as page

1.2 Fuel quality inspector of Eastern Airways

2.2.1 Approve new fuel suppliers and/or into plane agents on request from the fuel purchasing depart.

2.2.2 Approve new installations.

2.2.3 Monitor the activities of the international Airlines Fuel Quality Control Audit Pool (IFQP)

Note: An agreement, known as the International Airlines Fuel Quality Pool, exists amongst a number of airlines within IATA for an exchange of information on fuel quality inspections. An inspecting airline will examine the fuel installation at nominated airfields and advise interested airlines of the results. A list of stations concerned will be published at regular intervals.

2.2.4 Monitor outstation inspection reports and action as appropriate.

2.2.5 Ensure that when a discrepancy report is received, that it is actioned as appropriate.

2.2.6 On receipt of fuel samples, evaluate and action as appropriate.

Appendix C to Section 11 – Reporting

1.1 When contamination is established in fuelling vehicles or during aircraft post refuelling water drain checks, a senior representative of the fuel supplier must be notified immediately, with subsequent confirmation in writing, with a copy sent to Eastern Airways Operations. Action should also be taken.

1.2 At all stations Signal Eastern Airways Operations with details of the problem and rectification action.

1.3 In the event that fuel contamination is established during and aircraft post refuelling water drain check, all stations where fuel had been uplifted on that aircraft since the previous certified water drain check must also be notified.

NOTE 1: Engineers in charge should ensure suitable containers are readily available. Each sample must be labelled with the station of origin, source, date and time and be designated as being of no commercial value.

NOTE 2: Advise Eastern Airways Operations of despatch by signal or telephone.

Airport:	**Date**:		
Country:	**Inspected By:**		
Inspected Company:	**Title:**		
Type of company (into plane-storage-hydrant)			
Airlines using the into plane agent			
Fuel supplier using the into plane agent			
Fuel grades available			
Fuel specification			
Additives- Static dissipater additive, Lubricity improver etc.			
Refinery(s):-			
Supply route to airfield			
Typical distances			
Posted hours of operation			
Airport storage owner			
Airport storage operator			
Q.C. authority – storage			
Number storage tanks			
Volumetric capacity (the # days stock)			
If joint system – suppliers			
Is fuel co-mingled			
Hydrant system owner			
Hydrant system operator			
Q.C authority – Hydrant system			
Owner of vehicles			
Operator of vehicles			
Q.C authority – vehicles			
Number of vehicles – dispensers			
Number of carts			
Refuellers (bowsers) capacity			
Maximum height supplier can refuel			
Test rig available		Yes	No
Defuelling storage procedure available		Yes	No
Company mobile phone policy			

Quality / safety checklist

Items should be marked as follows:-

- "S" if satisfactory
- "N/A" if not applicable
- "X" if unsatisfactory
- "C" if requiring comments (with comments recorded)
- "N/O" if not observed (may depend on the frequency of the operation)

Certain other items will require specific values, which should be recorded.

Records

The records listed represent the minimum set that should be retained. The frequency of checking will vary slightly with each fuel company. The frequency tabulated below is suggested as an acceptable minimum but the companys quality control manual should set the standard. Forms should be properly completed. Within the USA, records and forms may be to ATA103 or equivalent.

A. Airfield receipt:	S / X / C	Results / comments
All supply routes:-		
01. Documentation (release certificate)		
02. Fire extinguishers		
03. Inlet filter type:-		Clay. Micronic. Filter / separator
04. Date elements changed:-		Filter No: Date: Interval:
05. Filter pressure differential:-		Record value: _____ lpm: _____
06. Sample (visual & chemical):-		
Road / Rail / Barge only:-		
07. Anti-tamper seals		
08. Product grade plates		
09. Control check		
10. Bonding procedure &		
Cable check		
11. Hose condition		
12. Hose end dust caps		

B. Airfield storage		
01.General cleanliness/housekeeping		
02.Fuel grade/colour coding to API 1542		
03.Identification of tank (s)		
04.Tank settling time		Record time ————————
05.Date of last tank clean/inspection		Tank no: date: Interval:
06.Tank sump sample		
07.Fuel conductivity :Range 50-600 ps/m		Record value ps/M:
08.Tank vent system		
09.Tank floating suction		
10.Tank floating roof (if fitted)		
11.Tank high level control system	yes / no	Type:
12 Leak detection system	yes / no	Type:
13.Emergency Shut-off		
14.Outlet filter type:-		Micronic. Filter / separator
15.Date elements changed:-		Filter no: Date: Interval:
16.Filter pressure differential:-		Record value: ——————— lpm: ————————
17.Outlet filter sump sample		
18.Sump draining disposal system		
19.Fire extinguishers		
20.Security		

C. Airfield receipt records		
	S / X / C	**Results / comments**
01.Documentation: Fuel refinery certificate		If available
Re-certification/Release Certificate		
02.Bonding cable check (If applicable		

03.Hose records (if applicable)		
04.Membrane filtration tests		
05.Fire extinguishers (Monthly & Annual check)		

D. Airfield Storage Records		
01.Daily		
Water checks: (tank & filter sumps)		
Fuel sample retentation		
02.Weekly		
Filter differential pressure		
03.Monthly		
Floating Suction		
Fuel Conductivity: Range 50-600 ps/m		
Tank Free vent 7 Mesh Screens condition		
Hoses & couplings (if applicable)		
Hose end strainers/screens (if applicable)		
Membrane filtration		
Fire Extinguishers (Monthly & Annual check)		
04.Quarterly Checks		
Emergency shutoff system		
05.Six Monthly		
Filter differential gauge check.		(check for free movement of piston/zero)
Gauge accuracy checks		
Thermometers & hydrometers accuracy check		
Hose Records (If applicable)		
06.Annual		
Tank Cleaning / Inspection (checks with B05)		
Tank High Level Control System (if fitted)		
Filter change / Inspection		
Water Defence System (Slug valve)		

07.Filter information :- Note Type		
Checks with: Inlet filters:- A.03, 04, 05.		
Outlet filters: - b.14, 15, 16.		
08.Filter / separators meet api /ip 1581.		

E. Mobile Fueller Loading Rack		
	S / X / C	Results / comments
01.Selective couplings (if applicable)		
02.Colour coding to API 1542		
03.Dust caps		
04.Hose & nozzle condition		
05.Nozzle screen / strainer		
06.Filter type:- Note: may use same filtration as storage area		Micronic Filter / separator
07.Date elements changed:-		Filter no.: date: Interval:
08.Filter pressure differential		Record value: _____ lmp: _____
09.Filter sump sample		
10.Fire extinguishers		
11.Deadman / emergency shut-off		
12.Bonding cable and clamps		

F. Mobile Fueller Loading Rack Records	S / X / C	Results / comments
Weekly		
01.Bonding cable and clamps		
02.Filter pressure differential Note: may use same filtration as storage area.		
Monthly		
03.Hose records (mothly and six monthly)		
04.Nozzle screen / strainer		

05.Membrane filtration tests		
06.Fire Extinguishers		
Quarterly		
07.Deadman / emergency shut off		
General		
08. Filter information:-Checks with E 06 / 07 / 08		
09.Filter / separators meet API/IP 1581		

G. Hydrant System		
	S / X / C	**Results / comments**
01.Cathodic Protection		Type:
02.Leak Detection System		Type:
03.Hydrant Pit Cover		
04.Hydrant Pit and Valves condition		
05.Hydrant Dust Caps		
06.Emergency shut – off (E.S.B/EFSO)		Test / clear I.D /access
07.Low Points		
08.High Point vents *		
09.SURGE ABSORBERS (if applicable) *		

*Also an ATA 103 item

H. Hydrant System Records		
	S / X / C	**Results / comments**
Weekly		
01.Pit inspection / Cleaning		
02.Low Point Drains		
Monthly		
03.PIT VALVE or DEADMAN CHECK		
04.Emergency shutoff & test frequency		
05.Cathodic Protection		
Six Monthly		
06.Pit Dynamic Testing		
07.SURGE ABSORBERS (if applicable)		
Yearly		
08.High Points Vents *		
09.Leak Detection System		
General		
10.Flushing Procedures		

I. Mobile Fuellers		
01.Identification of vehicle(s)		Fleet number checked
02.Vehicle condition (Including Leaks etc)		
03.Grade Plates & Placards		Grade/flammable/no smoking/emergency shutoff clear exit
04.Filter type:-		Micronics , filter/seperators, **CDFX / water barrier (dp limiter required) & dirt defence (free water electronic sensors & PLC required)**
05.Date filter changed:-		Date: Interval:
06.Filter pressure differential:- (preferably at test rig)		Record Value _____ lpm: _____
07.Filter sump sample		
08.Tank sump sample		
09.Water Defence System (if fitted)		
10.Hoses & nozzles:- condition Hoses: Date manufactured Record: brand/type		
Overwing nozzles should be selective		(67mm diameter for Jet fuel)
11.Pressure control: Primary:- Type		Hose end / inline (perform spot check of pressure regulation)
Secondary:- Type		2 x hose end / inline
12.Deadman & Emergency shut off (preferably at test rig)		Time: closing;____ Opening ____ Volume _____Flow rate _____
13.Brake interlocks: override & seal		
14.Fuel grade selective couplings		
15.Nozzle screen / strainer		
16.Bonding cable & clamps		
17.METER : Calibration placards & seals		
18.Tank interior		
19.High -.level shutoff system & pre-check		
20.Roof area water drains		
21.Lid/dome cover gasket & vent		

22.Fire extinguishers		Nbr: 1 or 2 date: interval
23.Exhaust system, tyres & brakes etc		

J. Vehicle Records: Mobile Fuellers		
	S / X / C	**Results / comments**
01.Vehicle log books/inspection records		
02.Daily Checks:		
Maintenance checks, bonding cable, fire extinguishers		
Meter seals, clean sample bottles, water detector kit,		
Water check ALL points, interlock seals, deadman.		
03.Weekly Checks:		
Interlocks		
Bonding cables/clips (continuity) Check		
Filter differential Pressures		
04.Monthly Checks:		
Colour Membrane Filtration tests		
Hose Visual Check		
Hose – End Strainers		
Deadman, (opening/closure/volume)		
Fire Extinguisher (Condition)		
05.Quarterly Checks:		
Pressure & Surge Controller		
06.Six Monthly Checks:		
Gravimetric Membrane or Double membrane colourimetric tests		
Hose Records:-Record date:		
(a) Manufactured : (b) Fitted		
Pressure tested to (Record Pressure)		
Meter Calibrations		
Gauge accuracy tests		

Differential pressure gauge		(Free movement of piston and zeroing)
07.Annual Checks:-		
Fire Extinguisher inspections		
Filter inspections / change check with 1.04, 05, 06.		Record filter life:
Water defence (Slug Valve) if applicable		
Fueller tank inspection (annually from the lid on top of the tank)		
Fueller tank , draining, inspecting, cleaning (every two years)		

K. Hydrant Dispensers		
	S / X / C	**Results / Comments**
01.Identification of Vehicle(s)		Fleet number checked:
02. Vehicle condition (Including leaks etc.)		
03.Grade plates & placards		Grade/flammable/no smoking/emergency shutoff.
04.Filter type:-		Filter/separators, **CDFX / water barrier (dp limiter required) & dirt defence (free water electronic sensors & PLC required)**
05.Date filter changed:-		Date: Interval:
06.Filter pressure differential:- (preferably at test rig)		Record value: _____ lmp: _____
07.Filter sump sample		
08.Water defence system (if fitted)		
09.Hoses & nozzles:- Condition		
Hoses: Brand/Type/Date Manufactured record: Pit Hose Deck Left Hose Deck Right Hose Reel Reel Other		
10.Pressure control: Primary :- type		Hose end/inline/pit coupler (perform spot check of pressure regulation)
Secondary:- Type		2 x hose end/inline/pit coupler/pit

11.Deadman & Emergency shut-off (preferably at test rig)		Time: closing_____ Opening ____ Volume _____ flow rate _____
12.Brake interlocks:		
Override & seal		
13.Nozzle screen / strainer		
14.Bonding cable & clamps		
15.Hydrant pit lanyard (if required)		
16.Meter: calibration placards and seals		
17.Lift platform Operation		
18.Fire Extinguishers		Nbr: 1 or 2 date: interval
19.Exhaust system, tyres and brakes etc		

L. Vehicle records: Hydrant Dispensers		
	S / X / C	**Results / comments**
01.Vehicle logbooks / inspection records		
02.Daily Checks:-		
Maintenance checks, bonding cable, fire extinguishers		
Meter seals, clean sample bottles, water detector kit		
Water check ALL points, interlock seals, deadman.		
03.Weekly Checks :-		
Interlocks		
Bonding cables / clips (continuity) check		
Filter differential pressures		
04.Monthly Checks:-		
Membrane Filtration tests		
Hose Visual Check		
Hose- end strainers		
Deadman, (opening / closure / volume)		
Fire Extinguisher (condition)		

05.Quarterly Checks :-		
Pressure & Surge controller		
06.Six Monthly Checks:-		
Gravimetric membrane tests Or Double membrane colourimetric test		
Hose records:-Record date:		
(a)Manufactured: (b) Fitted		
Pressure tested to:- (Record Pressure)		
Meter Calibrations		
Gauge accuracy tests		
Differential Pressure gauge		(Free movement of piston and zeroing)
07.Annual Checks:-		
Fire extinguisher inspections		
Filter inspections / change Check with K.04, 05, 06		Record filter life:
Water Defence (Slug Valve), if applicable		

M. Aircraft Fuelling		
	S / X / C	**Results / comments**
01.Vehicle approach and positioning		
02.Bonding: Vehicle to Aircraft		
03.Hose Coupling Procedures		
04.Refueler Deadman and emergency shut-off operation		Time: closing ____ Opening _____ Volume _____Flow rate _____
Dispenser Deadman and emergency shut-off operation		Time: closing ____ Opening _____ Volume _____Flow rate _____
05.Lanyard operation (hydrant shutoff valve)		
06.Refueller Gauges: (and visible whilst refuelling)		
Fuel pressure / Filter dp-flow / Air reference		Record readings: _____ /_____ _____ /_____
Dispenser Gauges : (and visible whilst refuelling)		
Inlet pressure / Fuel delivery pressure / Filter dp flow / Air reference		Record readings: _____ /_____ _____ /_____
07.Leakage Check		
08.Hose Condition		
09.Fuel sample: (After 1000 litres delivered)		
A.Mobile refueller – after filter		
B.Hydrant dispenser – after filter		
Fuel sample post fuelling:		
Hydrant dispenser – before filter		
10.Brake interlock warning lights		
11.Disconnection procedures:		
Hoses stowed		
Nozzle/coupler dust covers		

12.Fuel receipt (slip) handling		
13.Fire extinguishers: ramp & vehicle		
14.Vehicle correctly driven from the aircraft		

N. Miscellaneous Records		
01.Quality control manuals		
02.Airline fuel manuals (if applicable)		
03.Airline Training/fuel certificates		
04.Training records (Operational, safety and fire)		
05.Accident Reports		
06.Environmental Protection		
07.Airline notification procedure		

Observations / Comments (identified by checklist reference)

Agreed Remedial Action

Local Procedures

Appendix D to Section 11 – Aircraft Specific Fuelling Procedures

This section covers the rules and principles for general fuelling of aircraft.

Specific procedures relating to the aircraft operated by Eastern airways can be found in the following locations:-

- **J41**-Ground Operations Manual Appendix A 1.29
- **EMB135**-Ground Operations Manual Appendix C 1.25
- **EMB145**-Ground Operations Manual Appendix C 1.25
- **EJET**– Ground Operations Manual Appendix D 1.11.20
- **ATR 72** – Ground Operations Manual Appendix E 1.26

INTENTIONALLY LEFT BLANK

Appendix A

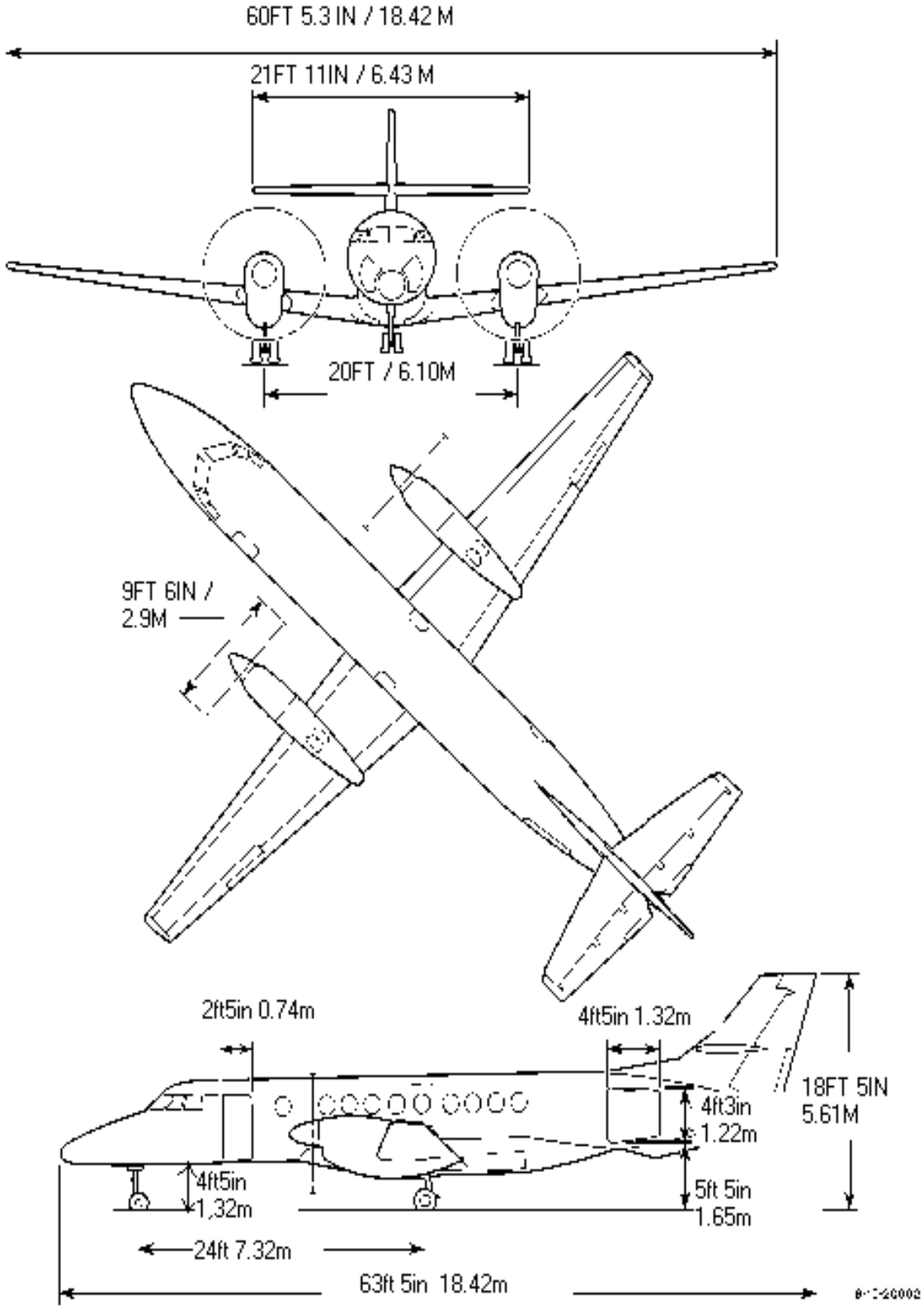
J41

Handling Manual

INTENTIONALLY LEFT BLANK

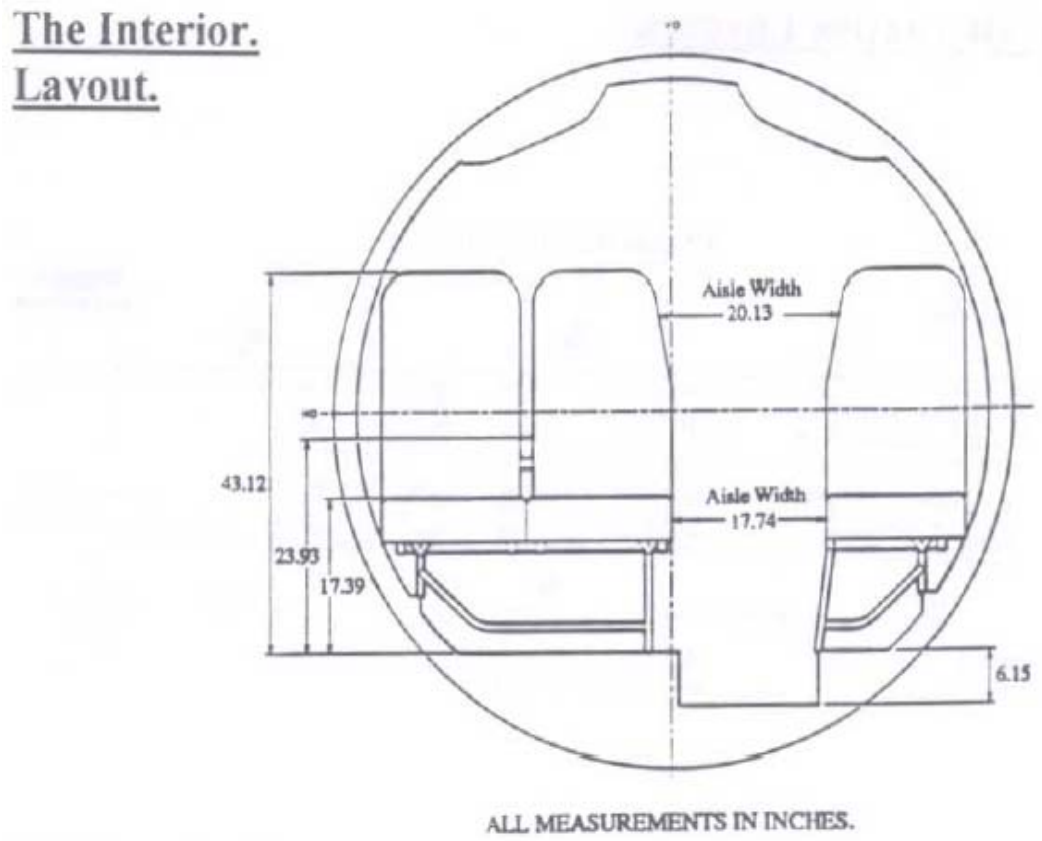
C O N T E N T S

1.1 Aircraft Dimensions

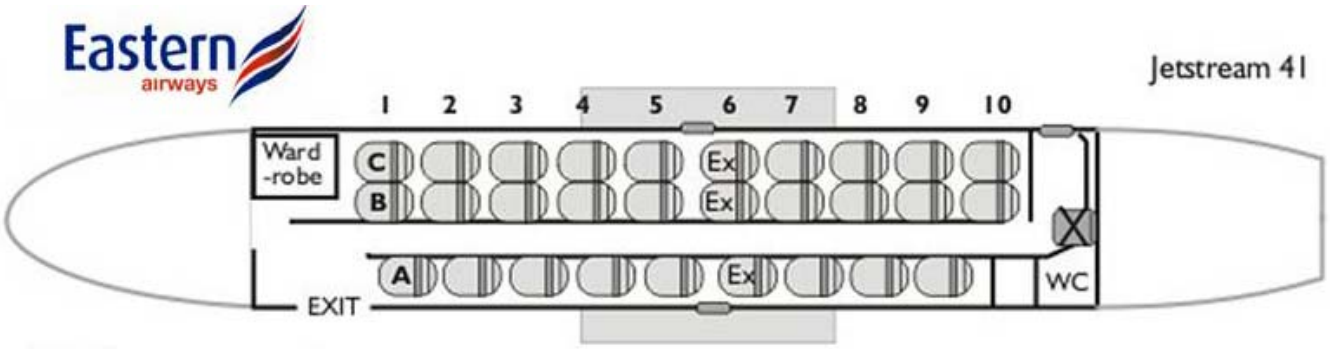


1.2 Aircraft Seating Configuration

Passenger cabin cross section



29 Seats



WCHC pax not accepted
ABLE BODIED pax only - rows 1 and 6 and 10
EXIT Rows - 1 and 6
DO NOT allocate row 1 and row 10 - unless necessary
EXTRA LEG ROOM seats - 1A/6A/6B/6C
Cabin Baggage- Valet Service - No overhead bins

Cabin passenger Capacity: 29
Cabin Crew: 1
Flight Deck: 2

Seat Pitch standard: 77cm (31 inches)
Seat Pitch Emergency exits: 92cm (37 inches)

Cabin Configuration: 1 seat / aisle / 2 seats
No. of Rows: 10 (double seats)
9 (single seats)

Passenger headroom: 1.78m (5ft 10in)
Aisle Width: 0.45m (17.74in)

1.3 Passenger Compartment Limits

Dimensions

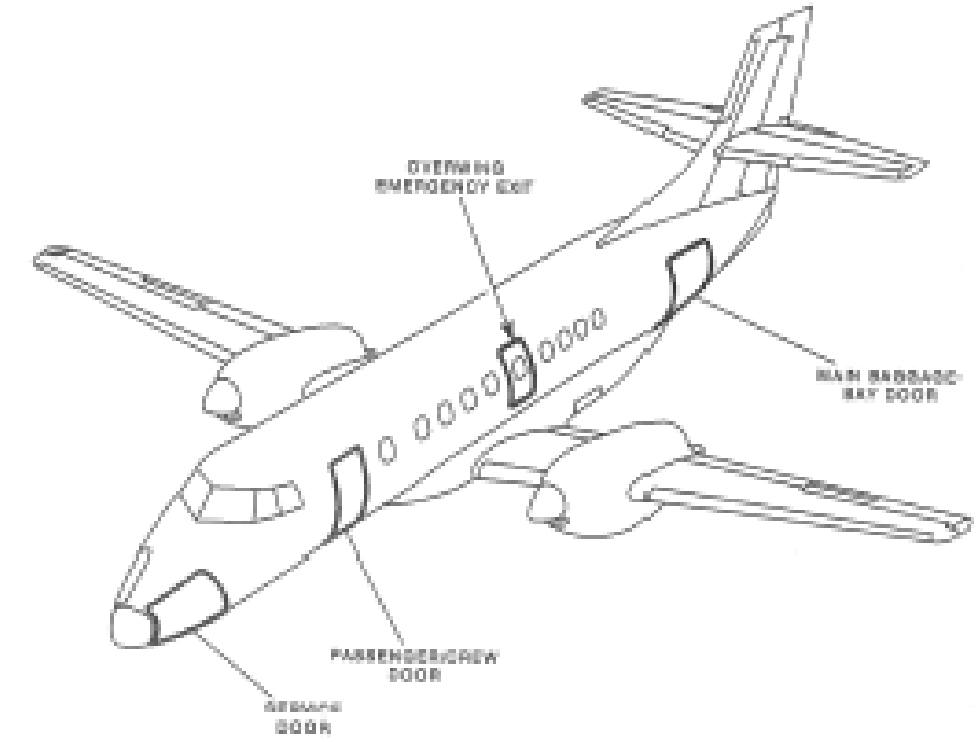
Cabin Doors	Width		Height	
	Ft. In.	Mts.	Ft, In.	Mts.
Front Passenger Door	2’ 5”	0.74	4’.6”	1.42

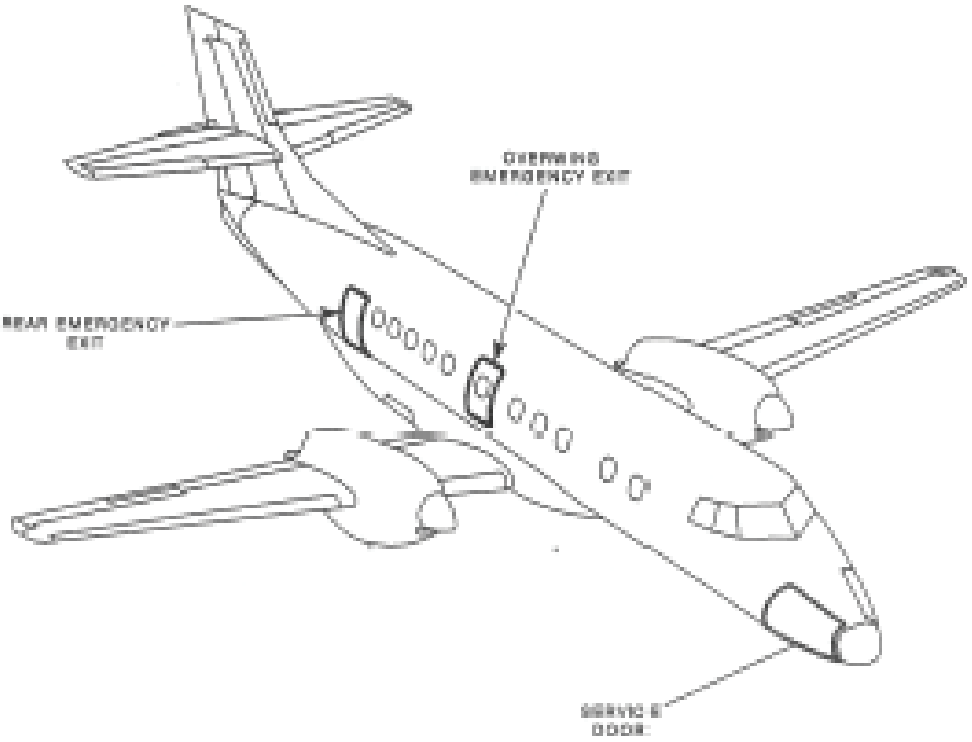
Carry-On Baggage
Carry on baggage is strictly limited to small items such as ladies hand bags or A4 size portfolios.

Overhead Bins
The Jetstream 41 does not have any overhead bins.

1.4 Doors and Holds

Door clearances





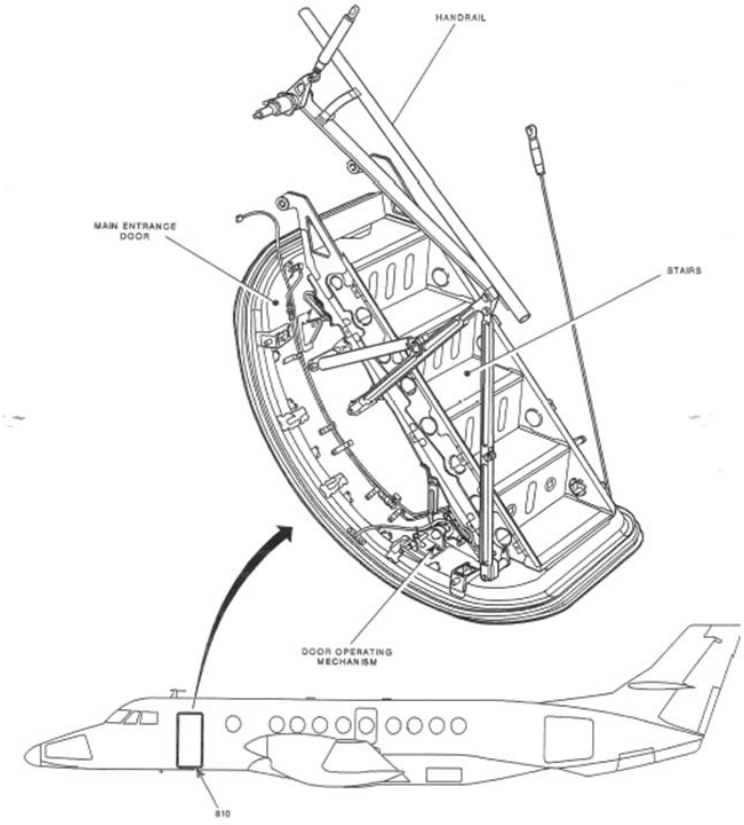
1.5 Main Passenger Door

Jetstream 41 Passenger Boarding Door

All Jetstream 41 aircraft have a main access door situated at the forward left hand side of the aircraft. Instructions for opening are placarded on the external and internal surfaces of the aircraft. No inflatable escape slides are fitted to the aircraft.

This door is hinged at the bottom to open outwards and downwards and contains integral steps.

WARNING: There may be a requirement for the passenger door to be opened or closed by a member of ground crew or engineers. This should only be attempted with proper guidance or training. On arrival on stand, ground staff should never open the passenger door without the prior knowledge or approval of either the Captain or member of flight crew.

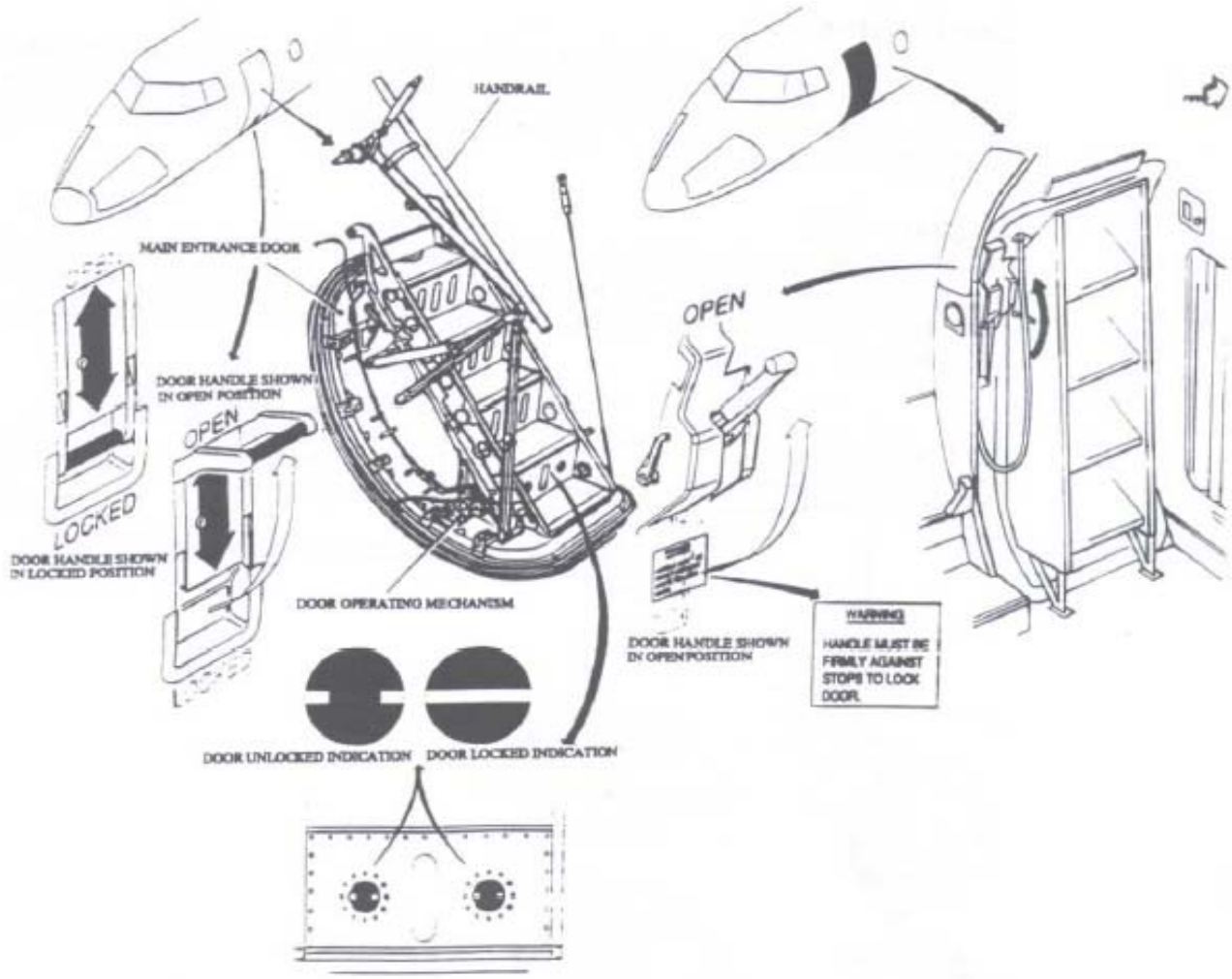


WARNING: It is a requirement that all personnel entering and exiting company aircraft must hold the handrail. If for any reason a person needing to gain access to or exit from our aircraft without being able to hold the handrail [e.g. Caterers or Engineers with large objects] then the requirement must be risk assessed and deemed safe/acceptable in advance by the relevant department.

In order to help reinforce this policy, aircrew are to periodically discuss this requirement as part of their routine pre-flight safety brief.

1.6 Opening of the passenger door

The passenger door is opened by lifting the handle into the upward open position then pulling the door outwards and it should be gently lowered.

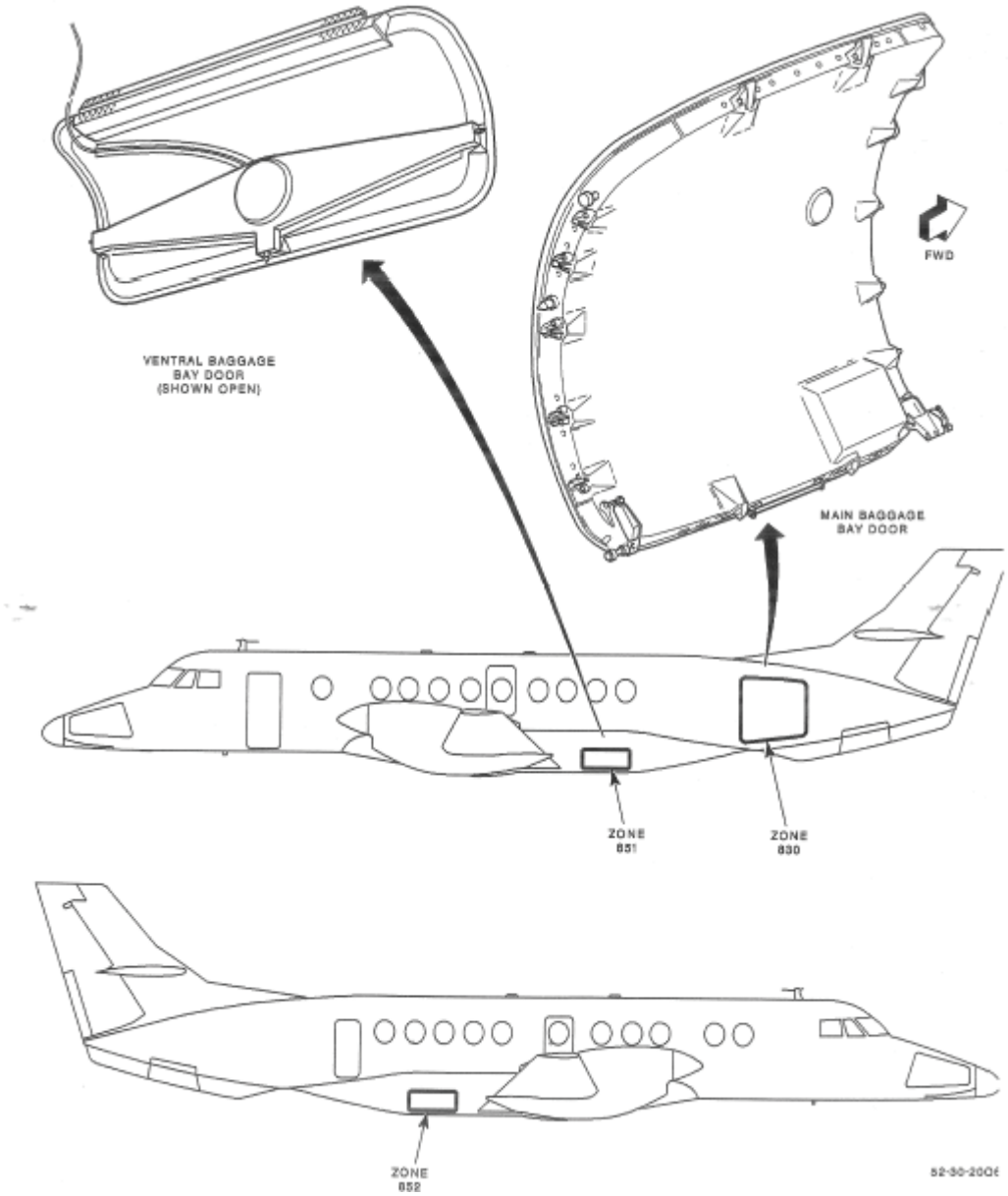


1.7 Cargo Door Locations

The Baggage Hold Doors give access to the main (hold 6) and ventral (hold 4) baggage bays.

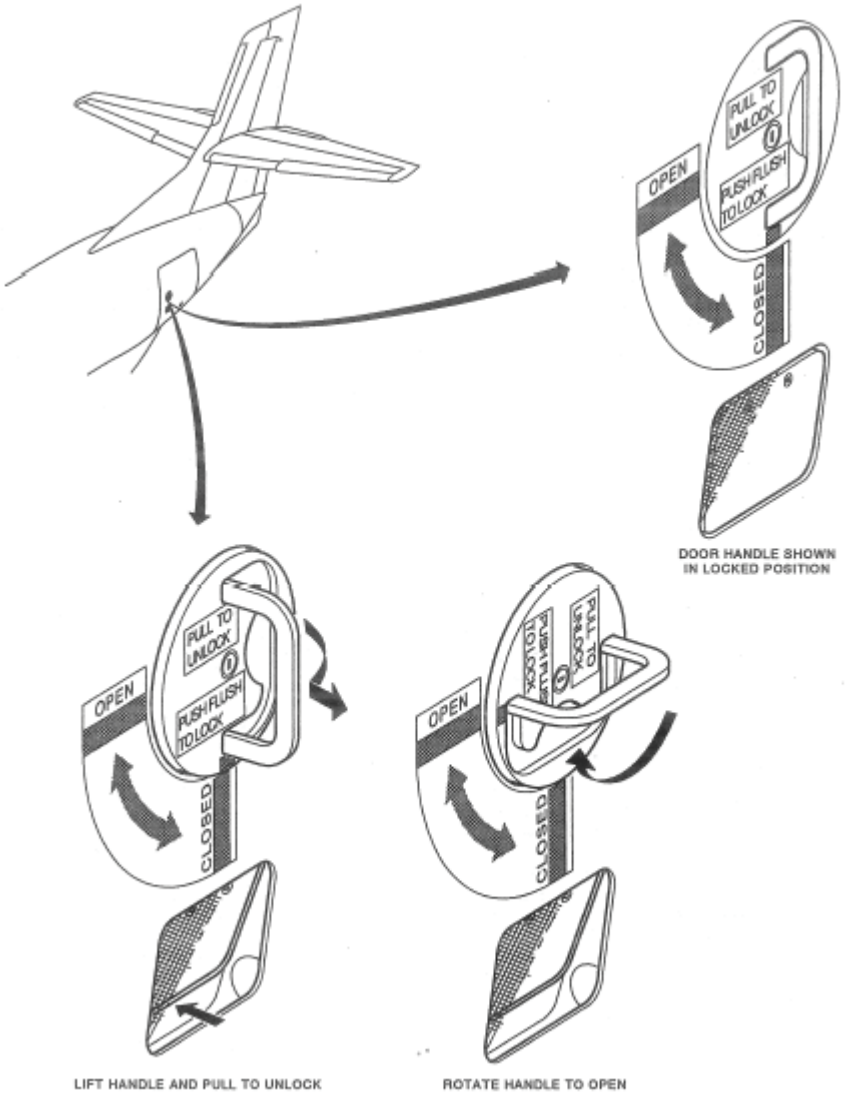
A single door is installed for access to the main baggage bay.

Two doors are installed for access to the ventral baggage bays (POD), one on either side of the aircraft.



1.8 Opening of the Cargo Door (hold 6)

The door handle will be flush with the door when in the locked position. To unlock, lift handle and pull. To open door – rotate handle.



A safety block operated by a red lever situated on the door rear track must be released to allow the door to fully run to the bottom of the track on closing the door.

WARNING: Only persons trained in the operation of the aircraft doors and holds may operate them. Persons operating doors and holds must ensure correct operation and report any damage to the Captain.

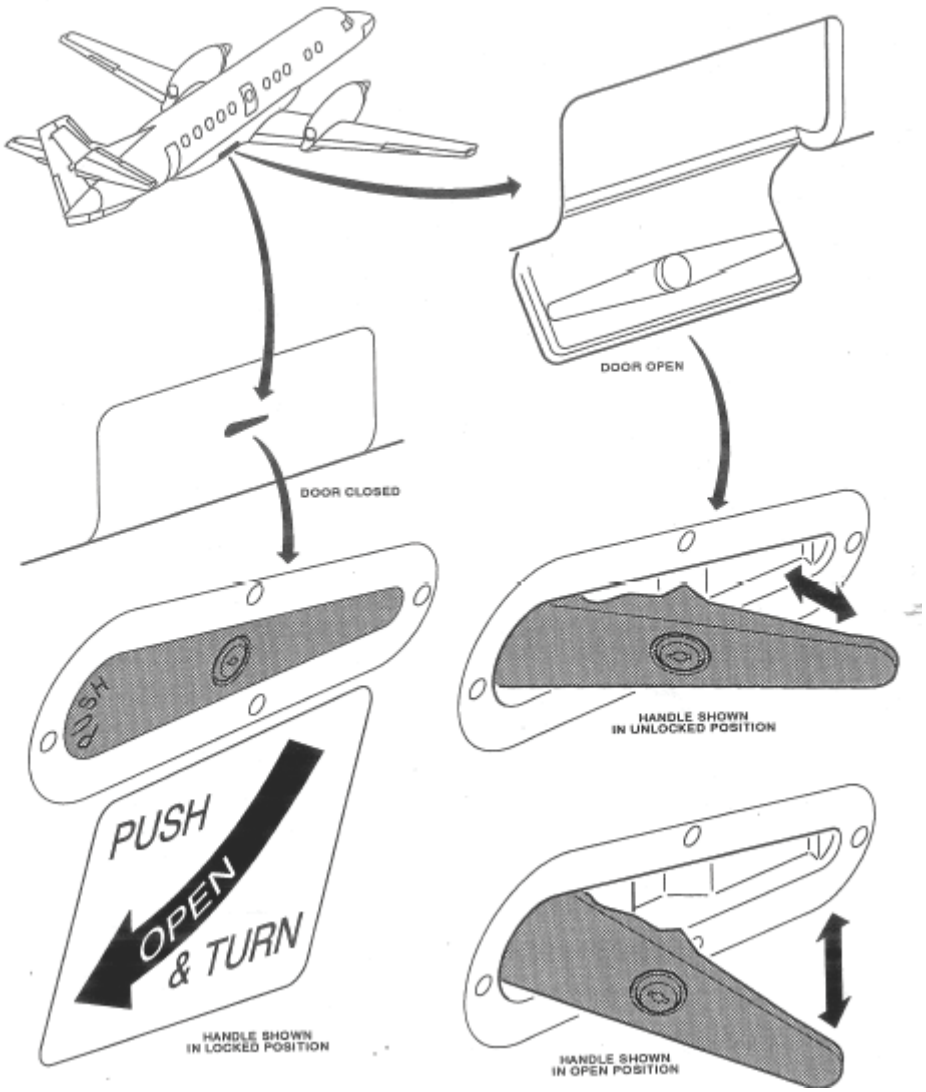
1.9 Opening of the ventral baggage door (hold 4)

A plug type rear baggage bay door is situated on the left hand side of the rear fuselage.

These doors are located to the rear of the wing, slightly forward of the main baggage hold door on the LH and RH side of the ventral pod.

To open this door, lever handle away from door, and pull downwards.

This gives access to an unpressurised compartment.



of 1.35 m3 (47.5 ft3) located aft of the wing. It has a sill height of 1.01m (40 inches) & a MAXIMUM load of 158kg (350lb).

1.10 Cargo Hold Dimensions and Limitations

Hold 6 Compartment Limits

Cargo Compartment Available Volume (useful)	4.81m^3	169.86 ft^3
Cargo door dimensions	1.22 x 1.32m (48" x 52")	
Total Maximum Capacity	**330 kg**	**727 lb**

Hold 4 Compartment Limits

Cargo Compartment Available Volume (useful)	1.35m^3	47.67ft^3
Cargo door dimensions	0.43 x 1.02m (172" x 40")	
Total Maximum Capacity	**158 kg**	**348 lb**

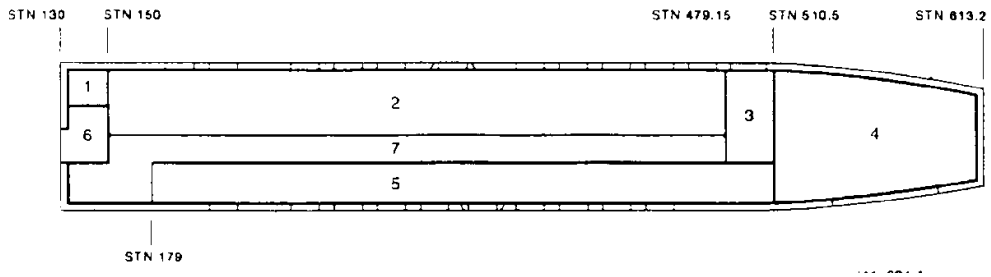
Hold 6 cargo compartment is pressurised. Compartments and have the following systems installed:
- Smoke Detection System

The following nets are installed in the cargo compartment:
- Doors Safety Nets.

1.11 Cargo floor load limits

The maximum permissible loads and intensity of floor loading for the various compartments are shown in the table.

Compartment Areas and Floor Loading



AREAS	FLOOR LOAD LIMITS					
	lb / ft^2	lb / ft Run	kg / ft^2	kg / ft Run	kg / m^2	kg / m Run
1	75.0	86.3	34.0	39.1	366.2	128.4
2	75.0	132.5	34.0	60.1	366.2	197.2
3	60.0	202.2	27.2	91.7	292.9	300.9
4	75.0	136.6	34.0	61.9	366.2	203.2
5	75.0	45.9	34.0	20.8	366.2	68.3
6	60.0	87.5	27.2	39.7	292.9	130.2
7	60.0	87.2	27.2	39.6	292.9	129.8

Baggage Areas	Volume M2	Max. Weight (Kgs)
Forward Right Wardrobe	0.61	45.4

1.12 J41 Baggage and Cargo Loading Procedure

Baggage and cargo should be evenly distributed over the cargo compartment to avoid load concentration.

Baggage/Cargo must not become a hazard to the airplane structure or systems as a result of shifting under operational loads. Therefore, sharp edge volumes (like wooden or metal containers) and/ or dense cargo (objects significantly more dense than typical passenger baggage) must be arranged with adjacent soft volumes or protections thus preventing airplane damage in case of baggage/ cargo shifting due to operational loads

Where possible, the stowage of all cabin baggage will be in the ventral hand baggage pod located aft of the wing. This will be up to a maximum of 158kg (348lb). Beyond this weight any baggage must then be stowed in the main hold.

As passenger hand baggage on Eastern Airways Jetstream 41 aircraft is loaded in the ventral hand baggage pod, a covered baggage trolley must remain at the side of the aircraft so that passengers can place baggage in it when boarding.
Upon arrival, passengers will be held on board the aircraft until the pod has been unloaded and the baggage trolley placed at the front of the aircraft for the passengers' collection.

It is important that handling agents offload the pod baggage without delay

Where Eastern Airways have provided valet trollies, the handling agent must ensure that they are clean and serviceable prior to use. When not in use, covers must be used to protect the interior from being contaminated. Ensure the valet trollies are not left open in the rain, or with the bag collection area left open to the rain or facing into rain/snow and that POD bags are not loaded onto sodden valet trollies.

A tactile check must be done in the POD to ensure there is no contaminant.

1.13 J41 Cargo Nets

Cargo door nets prevent cargo doors from being damaged or jammed. These must be secured and the straps tight. Any defects must be reported to the crew.

1.14 General Loading Restrictions

Dangerous Goods, live animals and human remains are, because of their nature, subject to special instructions, when carried by air. In the interests of flight safety, animal welfare and customer service in general, all staff involved with aircraft handling must comply with the rules in this instruction.

Live Animals

The carriage of live animals in the hold of Eastern Airways aircraft is forbidden.

Guide dogs and hearing dogs may be carried in the cabin.

Human Remains

Ashes in a strong, sealed container may be carried without restriction. Consignments must be carefully handled and must not be stowed under other cargo.

Dangerous Goods

See Dangerous Goods section 9

1.15 Aircraft Movement During Turnaround

Staff should be aware that aircraft may move during a turnaround process as passengers disembark or board, baggage and catering is loaded/offloaded etc.

Whilst not particularly noticeable with a Jetstream aircraft, servicing personnel should be aware that they should not position any unnecessary vehicle or equipment under the fuselage of the aircraft or under the path of the aircraft door. They should exercise extreme caution when removing vehicles or equipment.

1.16 Loading of Electric Mobility Aids (EMAs)

It is vital that all EMAs are handled and loaded correctly so as to:

- Prevent injury to staff and service providers
- Prevent damage to the wheelchair/mobility aid
- Prevent damage to the aircraft and
- Protect the safety of passengers and crew

Additional care should be exercised when handling, maneuvering battery powered wheelchairs, as these can be very heavy (in excess of 100 Kg).

It is the airport operator/PRM service provider's responsibility, in conjunction with the PRM, to ensure that the EMA is properly prepared for carriage but the airline is ultimately responsible for the safety of the EMA once loaded onto the aircraft.

The captain of the aircraft must be informed of the position of the EMA containing a spillable battery, (or the location of the boxed

battery) by a NOTOC entry.

1.17 EMA Loading Limitations

The carriage of EMA is subject to available space in the aircraft hold.

Only 1 EMA 32kg maximum weight can be carried with prior approval.

The EMA must be able to fit through the cargo door

1.18 Lashing Points For EMAs, Dangerous Goods and items over 25kgs in weight

The following process must be followed in order to ensure safe carriage of EMAs, Dangerous Goods and items over 25kgs in weight

The hold of the J41 aircraft contains retaining rings that the ratchet restraints fit into. The ramp agent loading the item(s) must ensure that the retaining rings are free from dirt and debris to ensure correct fitting.

NOTE: At this time only some J41 aircraft have retaining rings. EMA's, Dangerous Goods and items over 25kgs in weight must not be carried on aircraft without retaining rings

J41 retaining rings

The ratchet restraints are slid into place in the restraining ring until they are securely fitted. Ensure that there is no play when fitted otherwise they may come loose in flight.

Ratchet restraints fitted into the retaining ring ⟶

The loader must ensure that the item(s) is kept separate from the hold luggage where possible so as not to become obstructed. It is recommended that the DG is loaded last so as not to cause an obstruction for the loading of hold luggage. There are six retaining rings available for securing.

DG tied down

Adjust the straps to suit the size / number of items(s) being loaded to ensure that there is no movement. Ensure that the tension placed on the straps does not compromise the integrity of the item / packaging

Two retaining straps must be used (corner to corner) to secure the item(s) and must not obscure DG packaging labels.

When not in use, the retaining straps must be stored in the strap bag and kept in the hold of the aircraft (located in the POD). The straps must not be removed from the aircraft as they are considered part of the airframe.

Strap bag

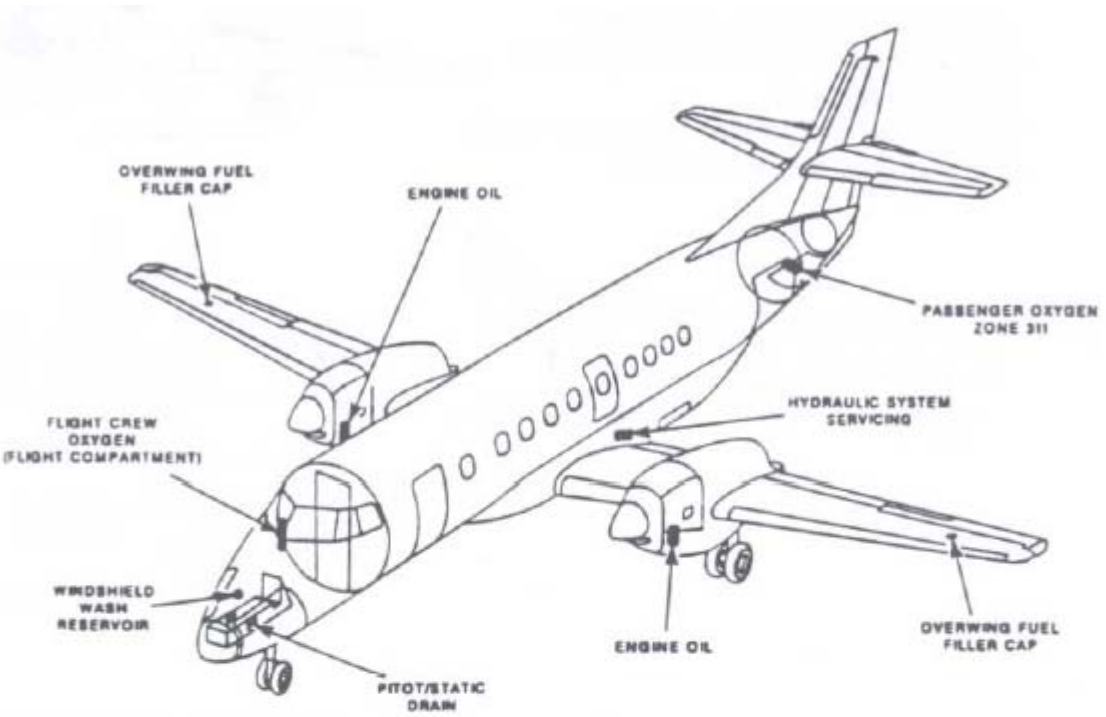
Prior to a handling agent securing any item(s) in the hold of the J41 aircraft, training on the use of the straps and securing locations must have been received from Eastern Airways.

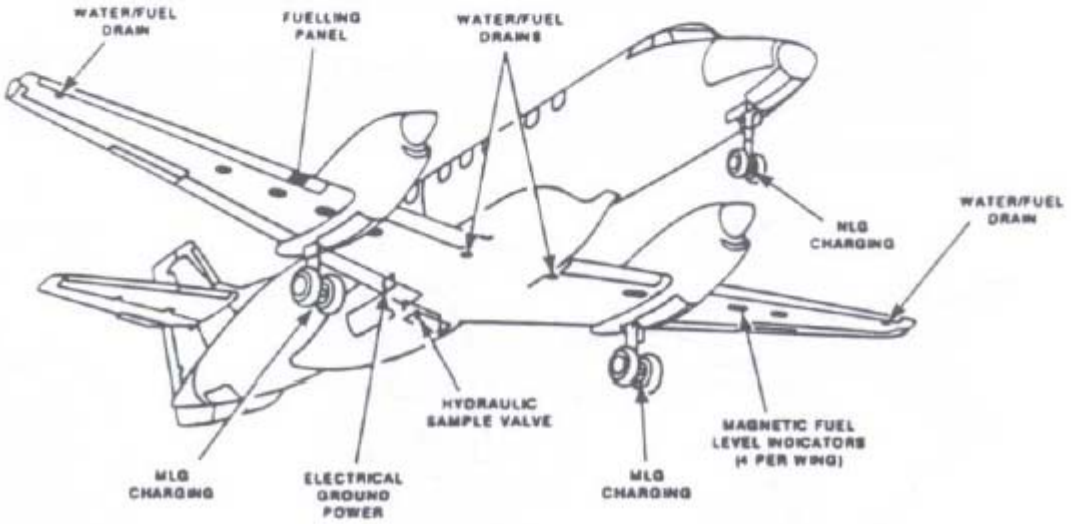
The following checks must be carried out on the straps prior to use:

- A visual check of the straps must be carried out before use to ensure that the straps have not been damaged. If damage is noted, then they must not be used and must be reported to the Captain.
- Check the service date (straps have a 2 year service life from the date on the strap).
- Engineering will be responsible for checking that the correct compliment of straps is in the strap bag on a nightly basis.

1.19 Aircraft Servicing Locations

The diagram below shows the location of various servicing points on the J41 aircraft.

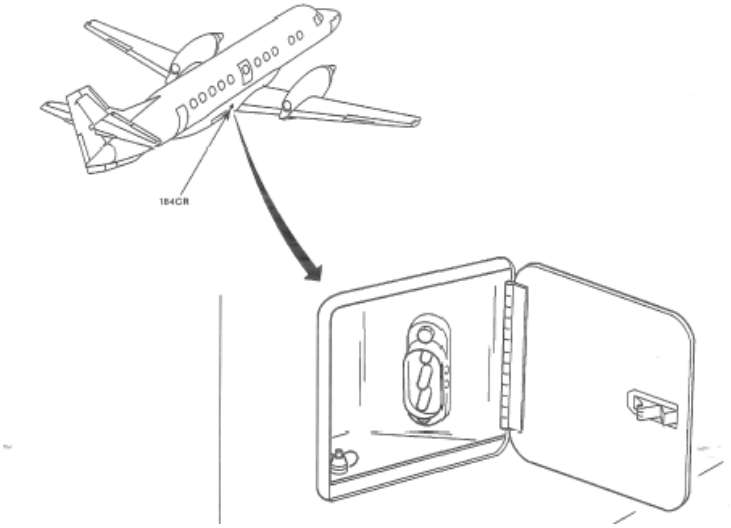




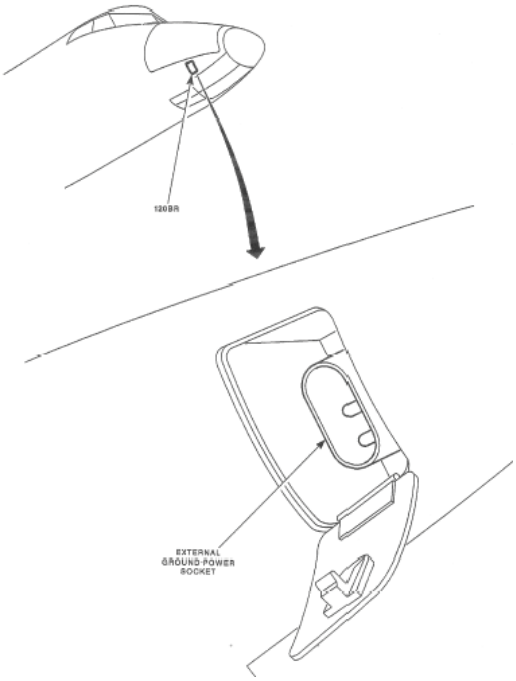
1.20 Ground Power Connection

A 28 V DC ground power unit (GPU) socket is located on the right side of the fuselage adjacent to the nose wheel bay or on specific J41's, aft of the wing.

A GPU capable of sustaining at least 27 volts DC at a peak of 2300 amps must only be used for starting.



GPU socket aft of the aircraft wing (G-JU, JW, JY, JZ)



GPU socket forward of the nose wheel bay (G-JA, JB, JC, JD, JE, JG, JH, JI, JJ, JK, JL)

1.21 Aircraft Start Procedures

The J41 aircraft requires a GPU for start. Depending on the particular aircraft, the GPU port is either forward of the starboard wing or aft.

For aircraft with the GPU port aft of the wing, the GPU must be positioned so that the unit is as far from the engine prop and exhaust area as possible to allow the operator to stand at outer edge of the wing. The GPU operator must be in clear line of sight to both the head set operator and the First Officer.

For aircraft with the GPU port towards the nose of the aircraft, the GPU must be positioned as far forward of the aircraft as possible and away from the engine prop. The operator must be stood away from the aircraft and in line of sight with the First Officer.

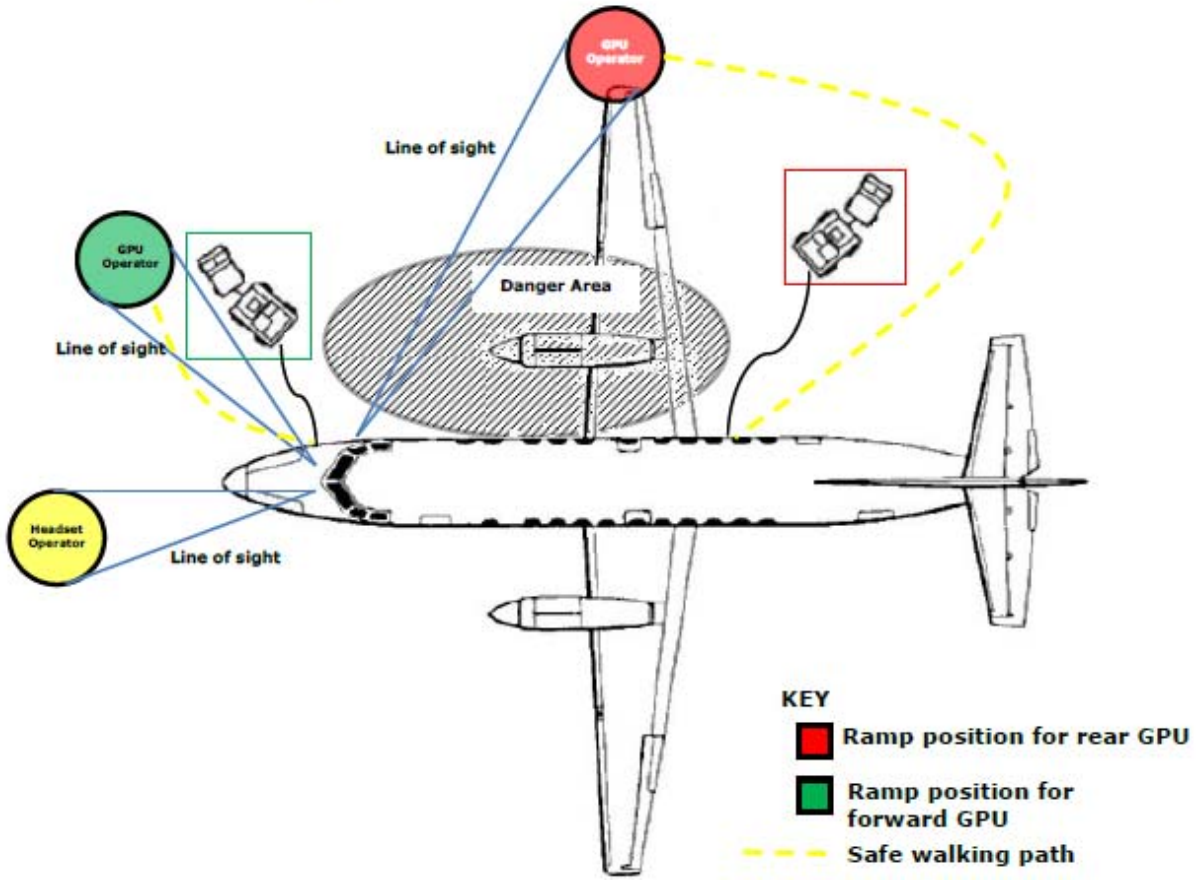
In both scenarios, having the GPU operator in line of sight with the First Officer allows for confirmation that the danger area both fore and aft of the engine is clear of ground personnel.

Only essential persons and equipment needed for the engine start must be within the stand area. All other persons and equipment must be clear. It is the responsibility of the head set person to ensure this happens and to only give the crew clearance to start thereafter.
Only when the headset operator has received verbal instruction from the crew to disconnect the GPU, should the GPU operative approach the aircraft.

Should the wrong engine be started, the actions by the flight deck will be to shut down the engine immediately. Ground staff should remain in direct contact with the crew and should not approach the aircraft until cleared to do so.

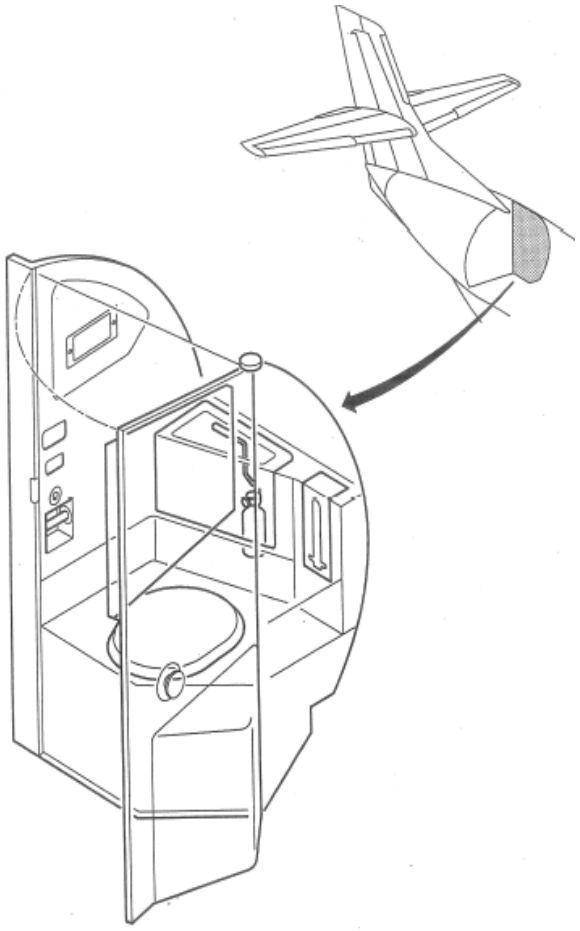
Should a headset start not be possible, prior agreement must take place with the crew to use hand signals. Standard ICAO signals must be used.

Overview of ramp staff positions for engine start;



1.22 Toilet Service Points:

Located to the rear of the wing on the rear left side of the lower external baggage bay fairing is the Toilet Service Panel. This consists of a toilet waste ground draining location and a sluice/charge fluid charging connection.

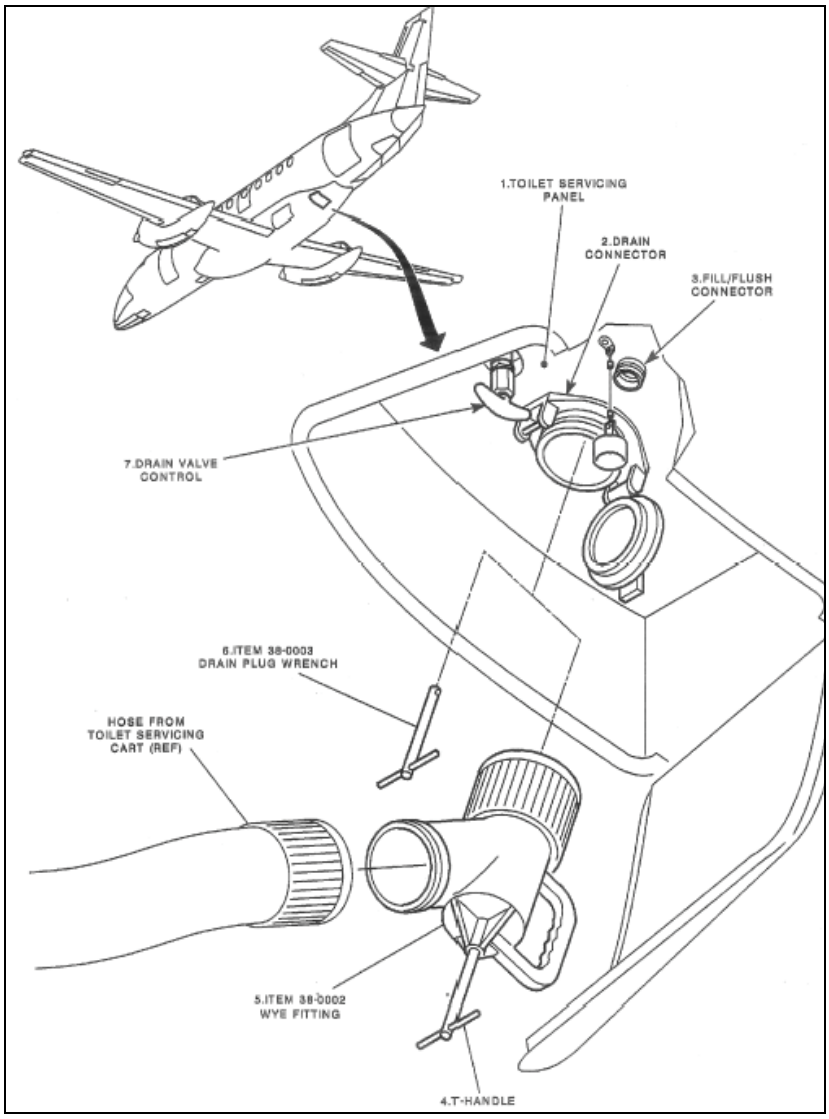


Placard Instructions can be found inside the access panel to assist in toilet servicing.

Do not let the toilet fluid get on the aircraft structure. Remove the leakage of toilet fluid immediately. Toilet fluid can cause corrosion of aircraft structure.

NOTE: This procedure tells you how to drain and fill the toilet, using a Wye fitting. It also tells you how to drain and fill the toilet without using a Wye fitting.

Toilet Servicing Diagram



1.23 Toilet Servicing Procedure

WARNING: DO NOT LET THE TOILET FLUID GET ON THE AIRCRAFT STRUCTURE. REMOVE THE LEAKAGE OF TOILET FLUID IMMEDIATELY. THE TOILET FLUID CAN CAUSE CORROSION OF THE STRUCTURE

(1) Job set-up:
(a) Put the toilet service cart in position at the left rear of the aircraft.

(2) Open the access door.

(3) On the toilet service panel:
(a) Set the lock lever of the fill/flush cap to the not locked position.
(b) Remove the cap from the fill/flush connector

(4) Connect the flush hose of the toilet service cart to the fill/flush connector (3) on the toilet service panel

(5) Release the latch and open the cap of the drain connector on the toilet service panel.

(6) Connect the toilet service cart drain hose to the toilet service panel:

NOTE: This procedure is for a drain hose with a Wye fitting attached to it

(a) On the toilet service panel connect the Wye fitting to the drain connector
(b) Push in the T-handle and engage it in the drain plug
(c) Turn the T-handle counter clockwise to release the drain plug from the drain connector
(d) Pull out the T-handle until it stops, to remove the drain plug from the drain connector

(7) Connect the toilet service cart drain hose to the toilet service panel:

NOTE: This procedure is for a drain hose without a Wye fitting attached to it

(a) Engage the drain plug wrench in the drain plug.
(b) Turn the drain plug wrench counter clockwise to release the drain plug from the drain connector
(c) Pull out the drain plug wrench and remove the drain plug from the drain connector.
(d) Connect the drain hose to the drain connector

(8) Drain the toilet waste tank:
(a) On the toilet service panel

- Pull the drain valve control out
- Turn it clockwise to lock the drain valve in the open position

(b) Let the contents of the toilet waste tank flow to the toilet service cart.
(c) Turn the drain valve control counter clockwise to the not locked position and push it fully in to close the drain valve.

(9) Flush the toilet waste tank:
(a) Operate the pump of the toilet service cart to flush the toilet waste tank with 5 imp gal (6 US gal/23 litres) of water. At the same time:

- Pull and release the drain valve control five times to clean the drain valve

- On the hose which has a Wye fitting, push and pull the T-handle five times to clean the drain plug

(b) Stop the pump of the toilet service cart.

(10) Drain the toilet waste tank:
(a) On the toilet service panel:

- Pull the drain valve control out

- Turn it clockwise to lock the drain valve in the open position

(b) Let the contents of the toilet waste tank flow to the toilet service cart.
(c) Turn the drain valve control counter clockwise to the not locked position and push it in to close the drain valve.

(11) Disconnect the drain hose from the toilet service panel:

NOTE: This procedure is for a drain hose with a Wye fitting attached to it

(a) Push the T-handle fully in to install the drain plug in the drain connector.
(b) Turn the T-handle clockwise until you feel a click, the drain plug is in its locked position.
(c) Pull the T-handle fully out.
(d) Disconnect the Wye fitting from the drain connector.

(12) Disconnect the drain hose of the toilet service cart from the drain connector of the toilet service panel.

NOTE: This procedure is for a drain hose without a Wye fitting attached to it

(13) Install the drain plug:
  (a) Use the drain plug wrench and install the drain plug in the drain connector.
  (b) Turn the drain plug wrench clockwise until you feel a click, the drain plug is in its locked position.
  (c) Remove the drain plug wrench from the drain plug.

(14) Clean the drain connector (2) with a cloth moist with disinfectant.

(15) Make sure the seal of the cap on the drain connector is serviceable. Close the cap and engage the latch.

(16) Disconnect the flush hose of the toilet service cart from the fill/flush connector

(17) Connect the hose of the chemical tank on the toilet service cart to the fill/flush connector.

(18) Fill the toilet waste tank:
  (a) Operate the toilet service cart and put 2.5 imp gal (3 US gal/12 litres) of water in the toilet tank.
  (b) Stop the pump of the toilet service cart
  (c) Put 40 grams of the germicidal deodorant fluid in the toilet tank through the toilet bowl.
  (d) If necessary put the antifreeze fluid in the toilet waste tank through the toilet bowl.

<u>Make sure the total contents of the toilet tank are not more than 3 imp gal (3.6 US gal/13.5 litres)</u>

(19) Disconnect the hose of the toilet service cart from the fill/flush connector.

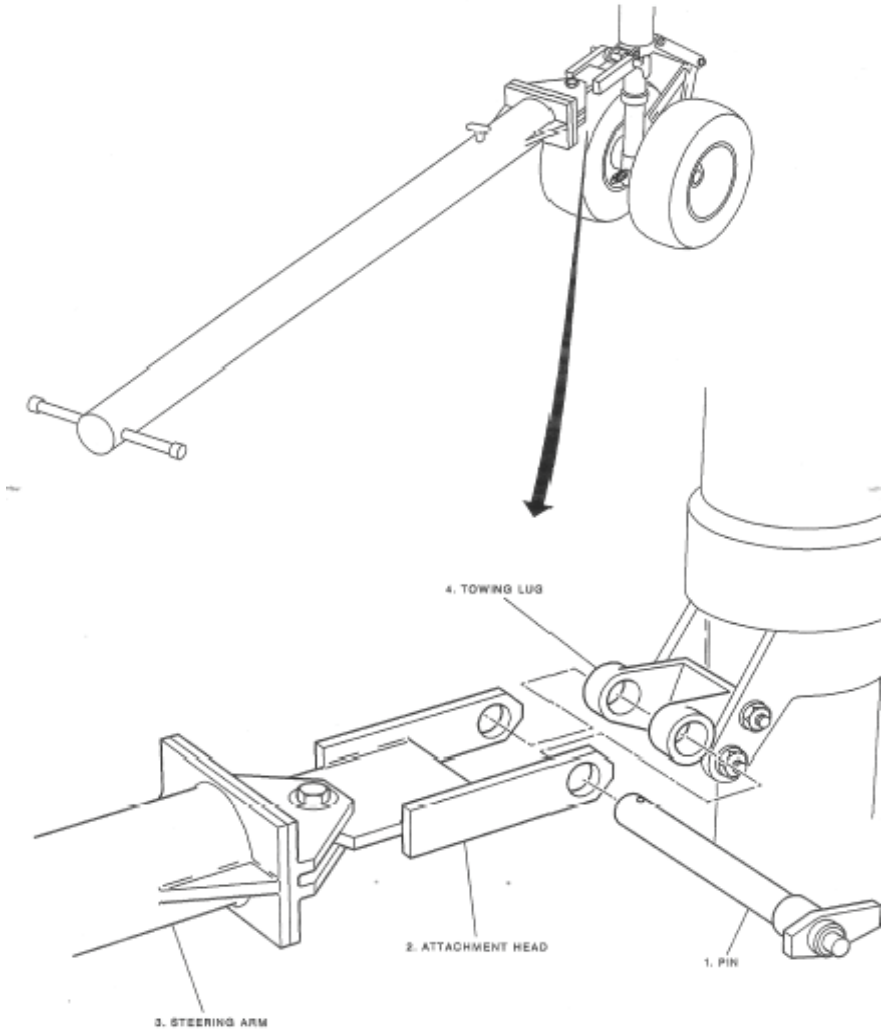
(20) Install the cap on the fill/flush connector and set the lock lever to the locked position.

(21) Remove the unwanted fluid from the toilet service panel and the access

(22) Job close-up.
  (a) Remove all the tools, the materials and the equipment. Make sure the work area is clean.

(23) Close the access door.

1.24 Connecting / Disconnecting Towbar



Install the ground locks and the tow bar:

a) Install the ground locks in the landing gear
b) Put the tow bar in position (3)
c) Put the attachment head in position on the towing lug (4)
d) Install the pin (1)
e) Connect the tow bar to the tractor

Remove the tow bar:

(a) Support the tow bar (3)
(b) Remove the pin (1)
(c) Disconnect the attachment head (2) from the towing lug (4)
(d) Remove the tow bar (3)

Shear Pins

To protect the aircraft legs from being overstressed when connected to pushback tugs, tow bars have 'weak links' incorporated in them called shear pins. Shear pins are designed to break at certain stresses. If a shear pin breaks on pushback and the tow bar remains attached, the tug should be slowed and stopped, and the flight deck informed. A GSR must be completed

1.25 Tow Procedure

WARNING: Do NOT move the aircraft until 15 minutes after the electrical power is removed. The aircraft navigation system contains gyros. You can cause damage to the gyros if the aircraft is moved before the gyros have stopped.

Do NOT move the aircraft with the main entrance door open. The movement of the aircraft when the brakes are on can cause damage to the door.

Do NOT tow the aircraft with a nosewheel steering angle greater than 100 degrees on each side of the aircraft centreline. Damage to the steering housing can be caused.

Only persons trained in brake riding must act as brake riders.

Ensure minimum manpower is available, consisting of tug driver and brake man, and x2 wing men

When towing aircraft into confined spaces such as hangars there are to be 2 wingmen in position. Standard wing tip clearance signals are to be used

Ensure personnel are appropriately qualified with ADP and/or airport security passes.

Ensure personnel are equipped with appropriate personal protection equipment.

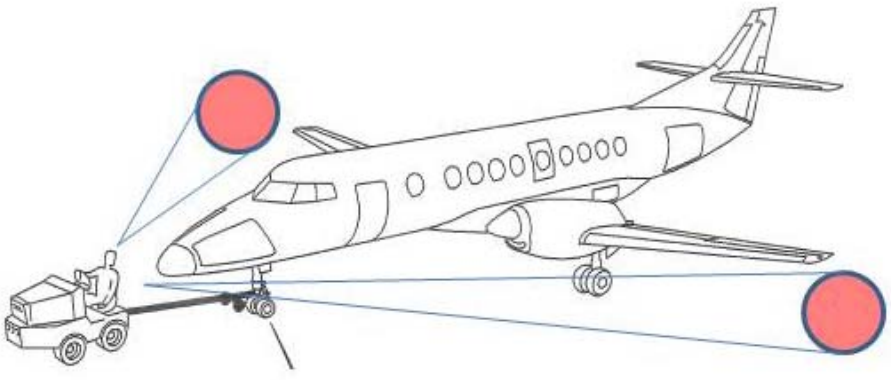
Ensure all pre use inspections have been carried out on towing equipment to include tug AVP and tow bar damage inspection, paying particular attention to shear pins.

Ensure undercarriage ground pins are installed.

All tows must have wing walkers on each wing. Wing walkers must monitor the clearance of the wing tips to obstacles and provide a clear indication (thumbs up or stop aircraft gesture) to the tow driver.

If the tow driver cannot see each wing walker, the tow must stop until visual reference can be established.

<u>Position of wing walkers</u>



1) Connect the tow bar

2) Prepare to tow the aircraft:
   (a) In the flight compartment, on the lower centre panel, make sure the brake pressure gage shows a minimum of 700 PSI
   (b) Put a person in the flight compartment that can operate the brakes
   (c) Make sure there is a voice communication between the:
      - Person that operates the tractor and the person that operates the brakes
      - Person approved for the towing operation and the person that operates the brakes
      - Person approved for the towing operation and the person that operates the tractor
   (d) Make sure there are persons to monitor the clearance at the:
      - Left and the right wing tip
      - Rear of the aircraft fuselage

3) Tow the aircraft:
   (a) Set the PARK BRAKE to OFF and tow the aircraft to its new location
   (b) Make sure the towing speed is not more than 5 mph (8 km/h)
   (c) Make sure the nose landing-gear wheels align with the aircraft
   centre line for the last 15 ft (5 m) of movement
   (d) When the aircraft is at its new location:
      - Make sure the nose landing-gear wheels are in the centre position
      - Set the PARK BRAKE to ON

4) Remove the tow bar:

5) Put the chocks in position, in front of and behind, the main and the nose landing-gear wheels:
   (a) Set the PARK BRAKE to OFF

1.26 Pushback / Powerback

For general ground handling procedures on pushback / towing / powerback see Section 6.13 of the Ground Operations Manual

Precautions during Pushback Procedures

In areas where the ramp / taxiway is intersected by drainage gullies (or similar) the aircraft wheels should be clear of these areas before the tug is disconnected.

The last few feet of any pushback or towing operation should be in a straight line to ensure that the aircraft wheels and tow

bar are straight. Failure to comply may lead to the tow bar swinging into a straight position once it is disconnected from the tug, which may cause injury.
J41 aircraft should only have a straight push back carried out. If a curved pushback it to be carried out, caution must be taken to limit the angle of the push back.

Ground Crew Intercom
A ground crew jack box is located on the nose undercarriage

Powerbacks / Aircraft Reversing Under Own Power
Jetstream 41 aircraft are able to reverse using the reverse thrust facility.

'Power back' operations for our aircraft are only to be carried out:

1. When the option to self manoeuvre forward is not available
2. Subject to local regulations and ATC approval
3. At the discretion of the Captain
4. If the following Marshalling Procedures are applied:

- All communication between the marshaller and the Captain must be by standard hand signals (IATA/ICAO)
- Ground crew should consist of a minimum of 2 persons (i.e. a marshaller and a banksman)
- To terminate the power back, only the 'come straight ahead' signal is to be given to the flight deck. The 'stop' signal must only be given when the aircraft has achieved forward motion.
- Remove the chock aft of the nosewheel & position the chock fore of
the nosewheel approximately 15cm (6 inches) ahead of the wheel before the procedure commences

1.27 J41 Aircraft Manoeuvrability

When taxying with the nosewheel in the MAXIMUM lock of 85°, the aircraft can be turned within a 113ft diameter circle (wing tip).

The nose leg will be steerable through a nominal angle of +/- 85°. The nose wheel will not be free to castor outside this range without disconnecting the steering mechanism. Although 'castoring' is possible it should be avoided; therefore the marshaller must avoid turns which require the nose wheel to turn outside of 45 degrees to the longitudinal axis of the aircraft.

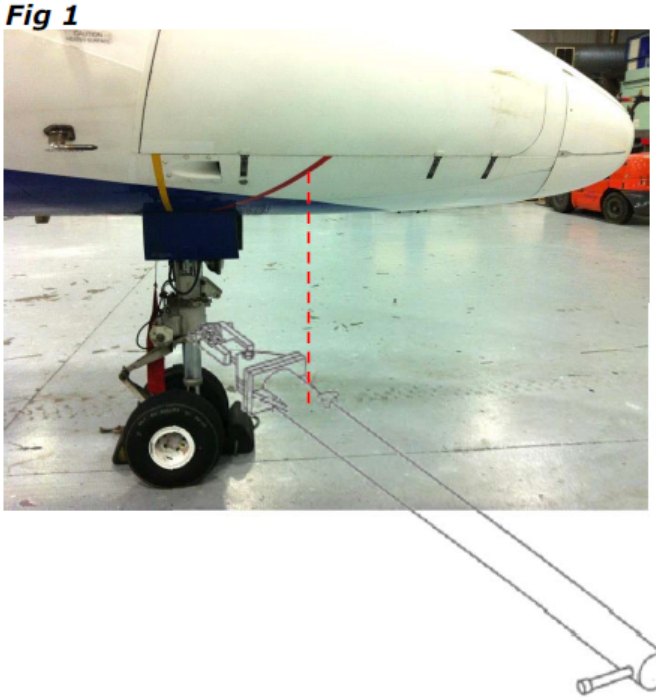
Should the available parking space require a turn in excess of 45 degrees, this should be made aware to the operating crew if possible.

Care should be taken to ensure the space within which an aircraft is being asked to taxy is sufficient to allow such a manoeuvre.

Shear pins on the Jetstream 41 aircraft are susceptible to breaking when lateral loads are placed on the towbar. In general, and with care, shallow and gentle turns can be completed without issue, however, tight turns or juddering from the tug will cause the shear pins to break.

Ground staff must, where possible, carry out straight pushbacks. Where a turn in the pushback or tow is required, this must be done as shallow and as gently as possible.
On the nose of the aircraft (***Fig 1***), guide markers indicate the steering angles;

Fig 1



The RED guidance line indicates a steering angle of 45°. From nose centre to this line is considered a shallow turn.

Steering angles beyond the RED guidance line up to the YELLOW line is considered a 'tight' turn.

Tug drivers must monitor the line of sight down the length of the tow bar to the guidance lines.

When shear pins fail, standard operating procedure requires the aircraft to return to stand to inspect the nose gear for damage before the aircraft is released back to service. This has the obvious impact of delays to the flying program.

Ground staff must file a safety report through their company reporting system for shear pin failures and a copy forward to Eastern Airways.

As a preventative measure, before use the shear pin must be checked for wear and replaced if it is suspected that failure is imminent.
This will prevent shear pins failures through wear and tear of the pin.

Fig2 & ***Fig 3*** below show a new shear pin and a worn shear pin

Fig 2 – New shear pin

Fig 3 – Worn shear pin

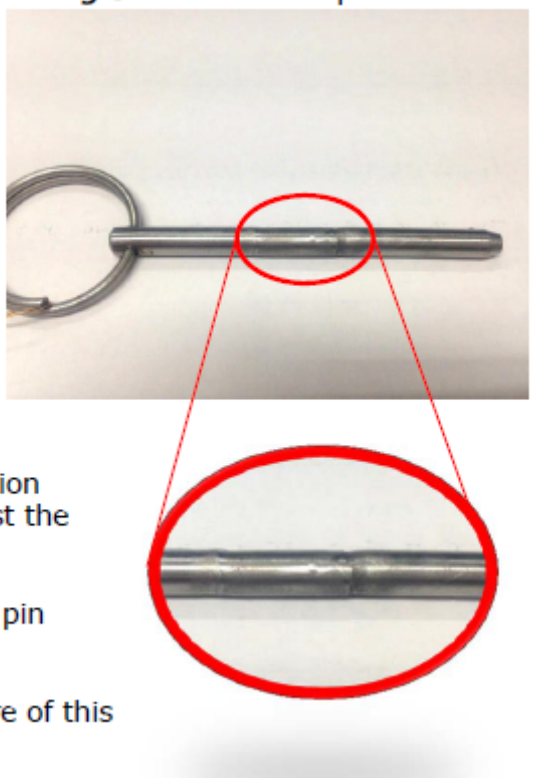


Fig 2 opposite shows the wear and indentation caused by the tow bar head pressing against the shear pin.

Wear such as this would result in the shear pin being replaced

Please ensure that all ground staff are aware of this Safety Advice Notice

1.28 Fueling With Passengers On Board

Eastern Airways policy is that fuelling with passengers on board the Jetstream 41 is allowed. This must comply with the Airfield Operating criteria, however the captain of the aircraft must first be made aware this is the intention & any passengers boarded advised of the situation.
Refer to Section 6.9 of the Ground Operations Manual for the procedure.

1.29 J41 Refuel Panel Operation

Check the quantity of fuel on board using the \magnetic \fuel Level Indicators (MFLI)

(a) Start to measure from the outboard MFLI and move inboard.

(b) Push the latch of the MFLI in and turn it through 90 degrees in a counter clockwise direction.

(c) Release the latch of the MFLI. The fuel level indicator of the MFLI comes into view and connects magnetically to the float in the tank.

(d) If the fuel level indicator does not connect magnetically to the float:
i. Push the fuel level indicator into the wing until you feel it connect magnetically to the float
ii. Release the fuel level indicator

(e) Read the level of the fuel on the fuel level indicator (where it goes into the wing).

Automatic Pressure Refuel

(a) Make sure the bonding lead from the refuel vehicle is attached to the aircraft
(b) Open the refuel/defuel access panel
(c) Remove the dust cap from the refuel/defuel coupling
(d) Connect the coupling of the fuel supply hose to the refuel/defuel coupling
(e) On the automatic refuel panel, set the POWER OFF/ON switch to ON. Make sure the panel does a test of its circuits

NOTE: During the test, the display will show dashes. After the test, the FUEL QUANTITY and TOTAL SELECTED displays show the total fuel on the aircraft.

(f) Press the Auto Refuel, Prestart Button. After 1 second, the system does a test of the refuel valves in this sequence, the:

i. FUEL QUANTITY display shows an increase of 300 lb

ii. Refuel valves open and the REFUEL VALVES LH and the REFUEL VALVES RH indicators come on

iii. Refuel valves let 300 lb of fuel go in to the tanks and then the refuel valves close

iv. REFUEL VALVES LH and the REFUEL VALVES RH indicators go off

v. REFUEL END indicator comes on for a short time and then goes off

vi. TOTAL SELECTED display shows half of the total fuel quantity which is permitted

(g) Set the TOTAL SELECTED display to the necessary total quantity of fuel (use the + and/or - keys). If you push and hold the + or - keys for:

- Less than 5 seconds, the display will change in 20 lb increments
- More than 5 seconds, the display will change in 100 lb increments

(h) Push the AUTO REFUEL START key. Make sure the:

i. Refuel starts automatically

ii. The REFUEL VALVES LH and RH indicators come on

(i) When the FUEL QUANTITY display is the same as the TOTAL SELECTED display, make sure the:

i. REFUEL VALVES LH and RH indicators go off

ii. REFUEL END indicator comes on

(j) On the automatic refuel panel, set the POWER OFF/ON switch to OFF

(k) Remove the bonding lead of the refuel vehicle from the aircraft

(l) Disconnect the fuel supply coupling from the refuel/defuel coupling

(m) Install the dust cap on the refuel/defuel coupling

(n) Close the access panel

Manual Pressure Refuel

(a) Open the Refuel/Defuel Control access panel

(b) Remove the dust cap from the refuel/defuel coupling

(c) Connect the coupling of thefuel supply hose to the refuel/defuel coupling

(d) Lift the guard on the MANUAL LH/OFF/RH switch

(e) Set the MANUAL LH/OFF/RH switch to LH or RH as required

NOTE: The TOTAL SELECTED displays shows--------, and the MANUAL REFUEL LH/RH indicator comes on.

(f) Push the FUEL QUANTITY SELECT display to show the quantity of fuel in the left/right tank. The left tank contents display shows LFT before the quantity, and the right tank contents display shows RGT. TOT is the total quantity of fuel in the tanks

(g) Refuel the aircraft:

i. Start the refuel vehicle

ii. Monitor the increase on the FUEL QUANTITY display

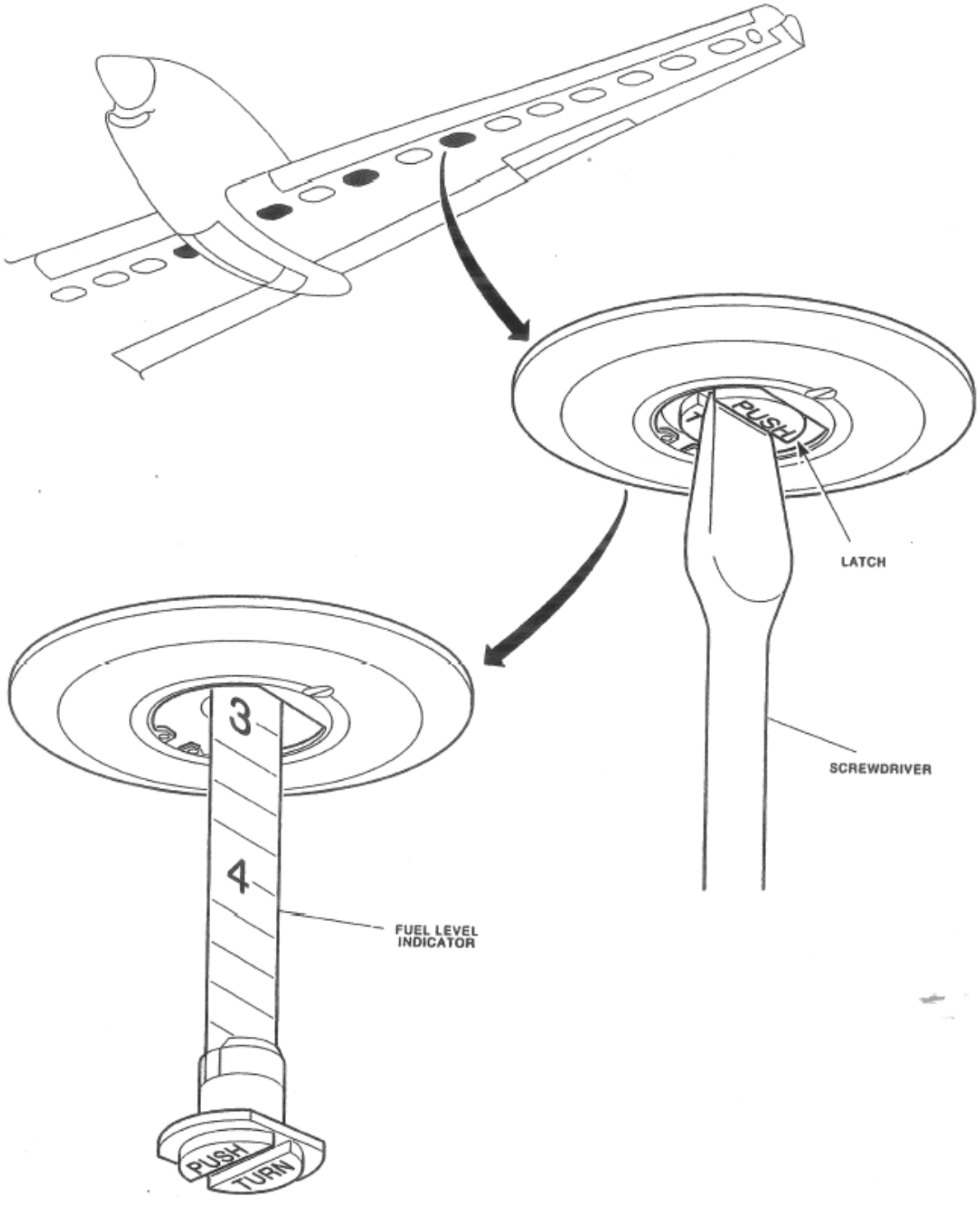
iii. Stop the refuel when the FUEL QUANTITY display shows the necessary quantity of fuel

(h) Set the MANUAL LH/OFF/RH switch to OFF. Make sure the MANUAL REFUEL LH/RH indicator goes off

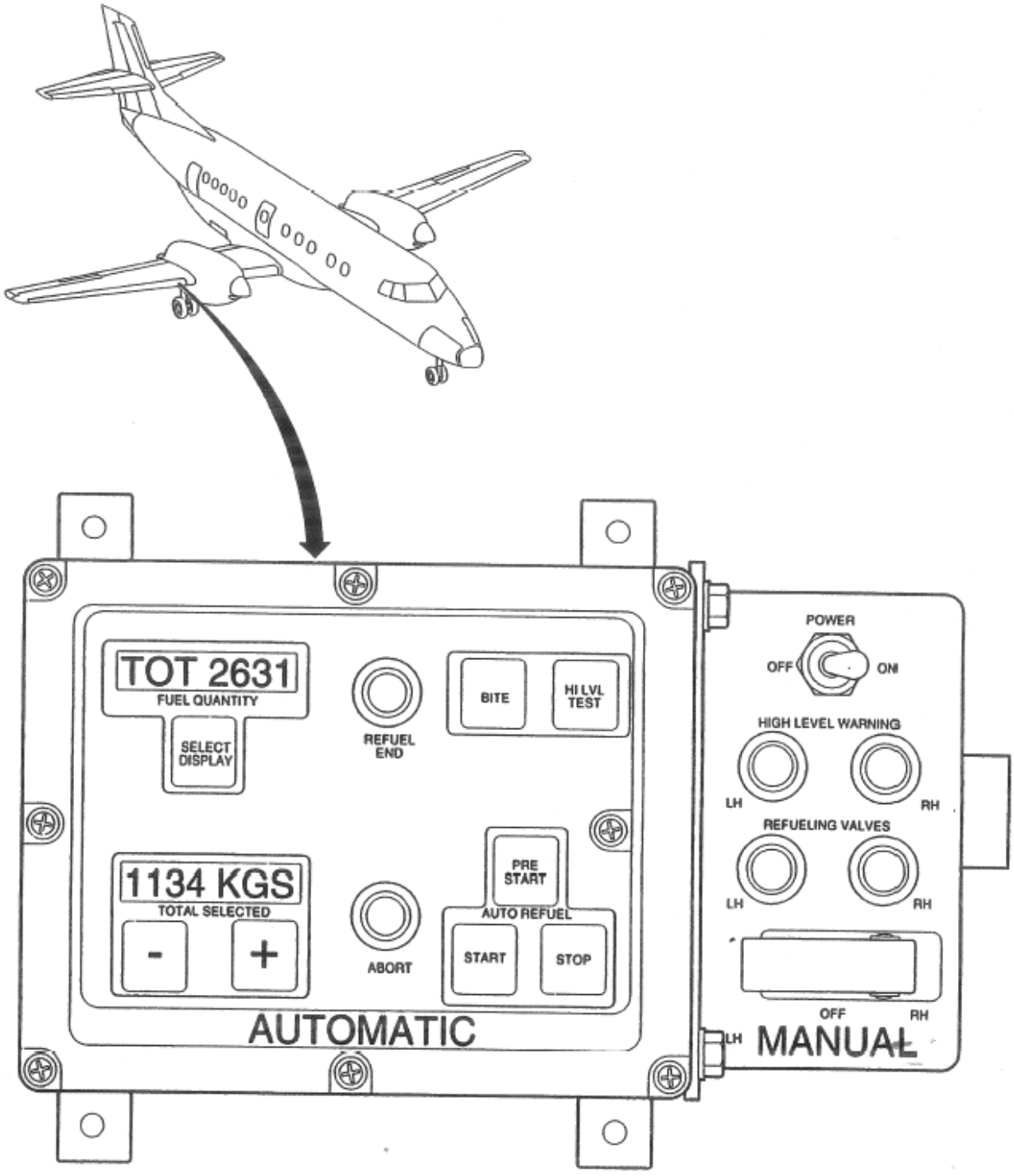
(i) Put the guard on the MANUAL LH/OFF/RH switch

(j) Install the dust cap on the refuel/defuel-coupling and close the access panel

Magnetic Fuel Level Indicator



Refuel / Defuel Control Panel



BAe Jetstream 41 Automatic Pressure Refuelling Procedure

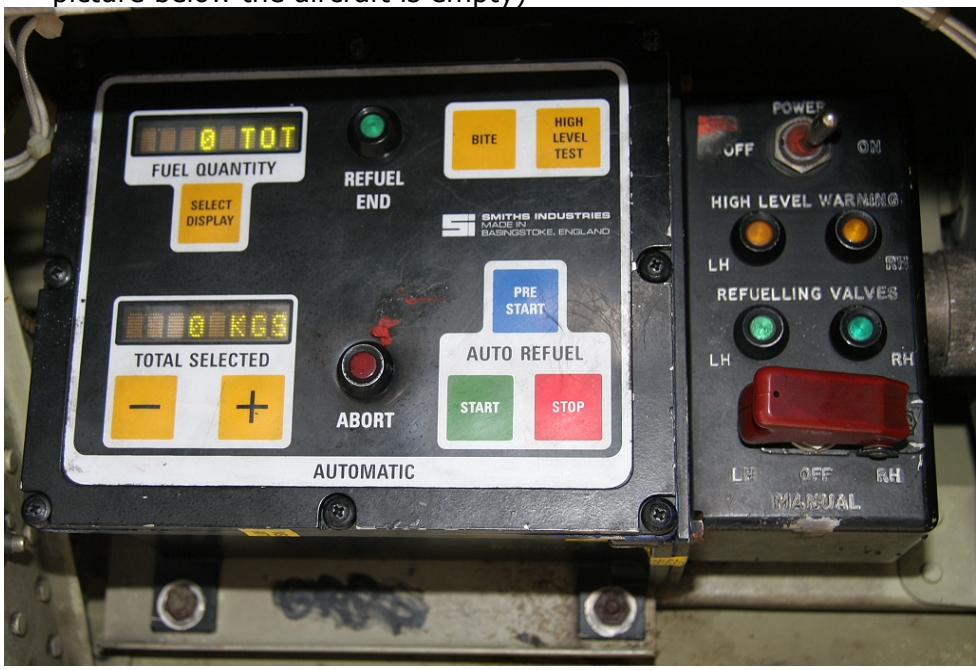
Please read through completely BEFORE beginning refuel:

The refuel panel is located on the leading edge of the Starboard Wing, out board of the Engine Nacelle.

(1) Open the refuel panel using the 3 quick release catches.

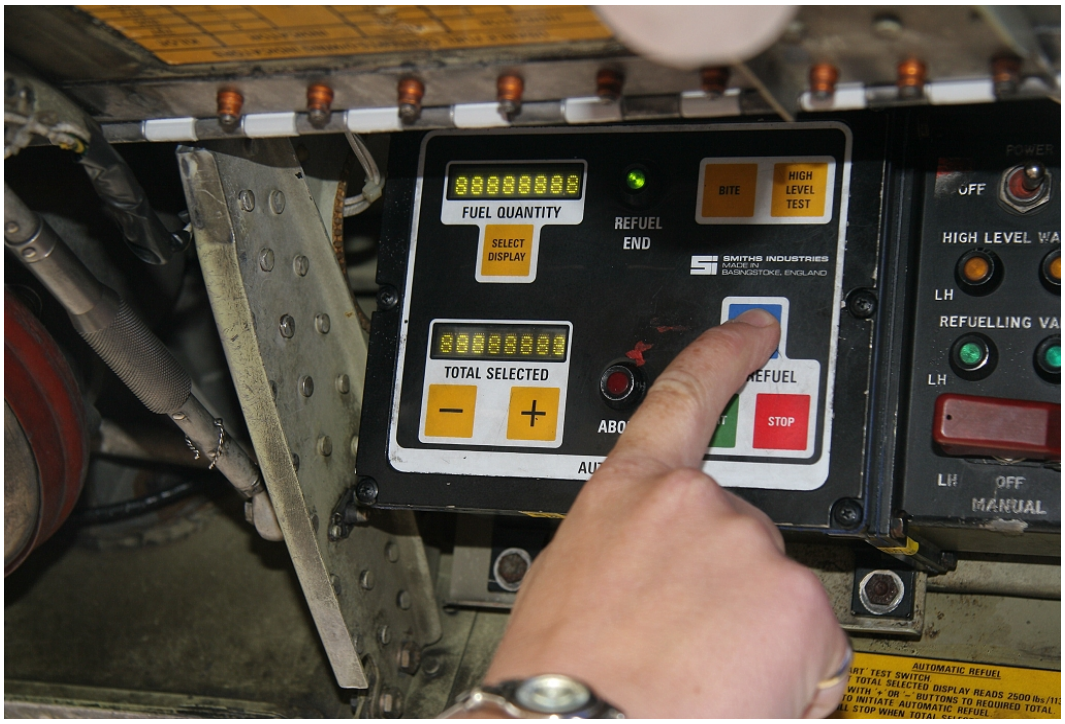
(2) Connect Bonding Lead and Refuel Hose in that order. (Bonding point either by the refuel panel or on Nose undercarriage – depending on aircraft variant)

(3) Set **POWER ON / OFF** switch on the Auto refuel panel to **ON**
Wait until the **FUEL QUANTITY (Top display)** and **TOTAL SELECTED (bottom display)** show the Total Fuel Quantity in **Kilograms** on board the aircraft. (in the picture below the aircraft is empty)



Note: If **REFUEL END** **(Green)** and **ABORT** **(Red)** lamps (next to the displays) are illuminated with both displays showing dashes, a fault has been detected by the power up **BITE** test.
If this happens push **BITE** switch (Next to refuel end light) to determine fault.

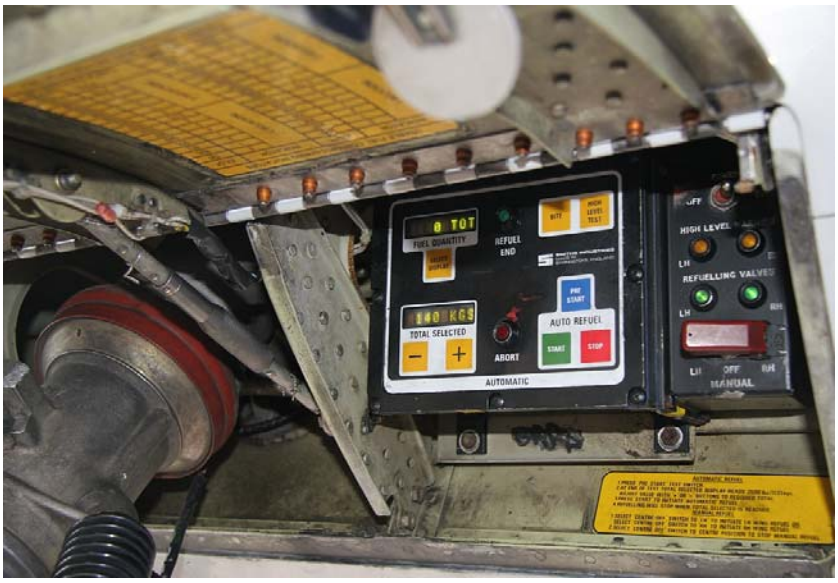
(4) The **PRE-START** test must be carried out before refuelling can begin.
Push the Auto Refuel **PRE START** key: This starts the pre-start test.



REFUEL END and **ABORT** lamps illuminate
Both displays show **"88888888"** for approximately 3 secs
Both displays Blank for approximately 1 sec
Displays then show total fuel quantity

REFUEL END and **ABORT** lamps go out
After approximately 1 sec Valve test starts:

TOTAL SELECT display increases by 140kg – valves open



Bowser then to supply fuel

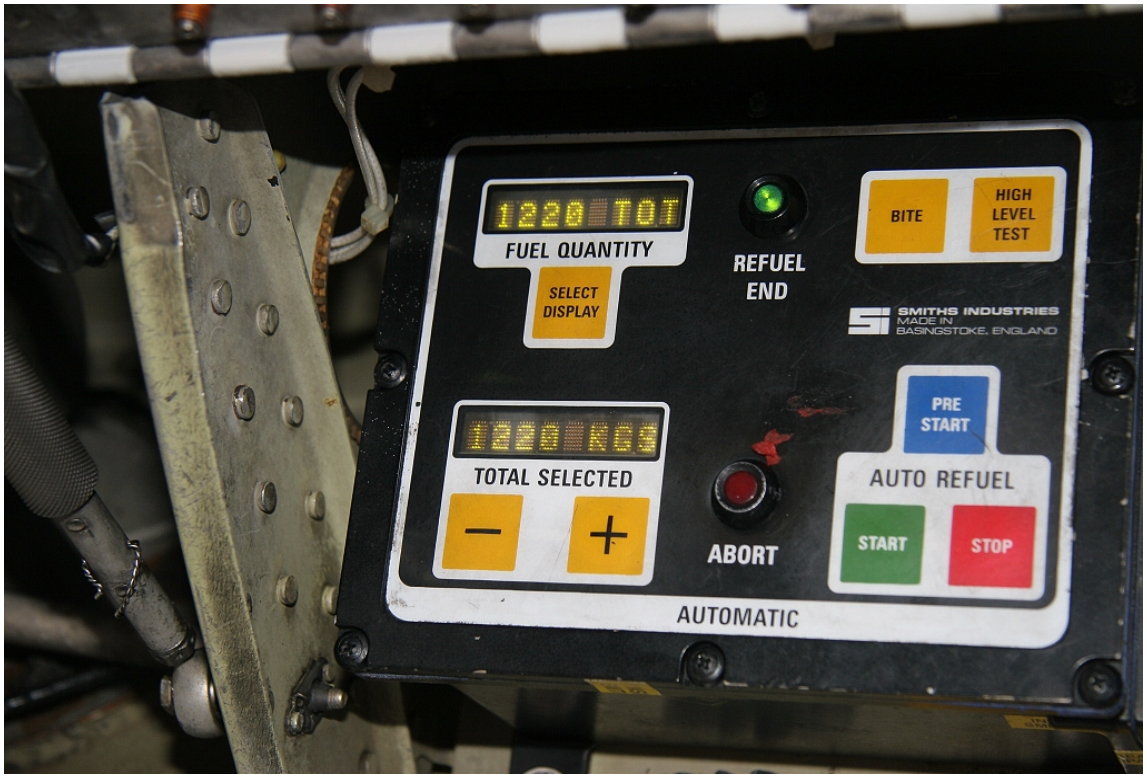
Once 140kg fuel supplied – valves close
REFUEL END lamp illuminates.
REFUEL END lamp then goes off
TOTAL SELECTED display resets to half the permitted quantity (1130kgs)
Stop Bowser Supply

NOTE: Test will not begin if one tank contains more than half the TOTAL SELECTED +70kgs, correct imbalance by Manual Refuel.

(5) Before commencing fuelling select total required by the Captain in **Kilograms** using **TOTAL SELECTED + / -** keys,
Start Bowser supply and press **AUTO REFUEL START** key – Refuelling begins and Refuelling Valves LH and RH green lights illuminate.(below the POWER **OFF/ON** Switch)

(6) When fuelling is complete **FUEL QUANTITY** should read same as **TOTAL SELECTED** and both **REFUELLING VALVES (LH / RH)** lights will be out.

NOTE: The valve lights will extinguish separately as one group of tanks reaches its fill limit.



(7) Turn Bowser Supply off and double check Quantity equals selected value

(8) Press **PRE START** and then the **STOP** straight after. (This relieves hose pressure to enable easy hose removal).

(9) Remove Hose, Refit Cap, Remove Bonding Lead.

(10) Turn Power Switch **OFF**

(11) Close and lock the Refuel Panel with the 3 quick release catches

BAe Jetstream 41 Manual Refuelling Procedure

(1) Open the refuel panel using the 3 quick release catches.

(2) Connect Bonding Lead and Refuel Hose in that order. (Bonding point either by the refuel panel or on Nose undercarriage – depending on aircraft variant)

(3) Set **POWER ON/OFF** switch on the Auto refuel panel to **ON**

(4) Wait until the **FUEL QUANTITY (Top display)** and **TOTAL SELECTED (bottom display)** show the Total Fuel Quantity in **Kilograms** on board the aircraft.

(5) Disengage guard on **MANUAL LH/OFF/RH** switch and select **LH** or **RH.**

(6) **TOTAL SELECTED** display shows dashes **"---------"** and **MANUAL REFUELLING LH** or **RH** lamp illuminates.

(7) Push **FUEL QUANTITY SELECT DISPLAY** key to display appropriate tank contents.

(8) Commence Refuelling.

(9) When the **FUEL QUANTITY** displays the required fuel load for each tank set **MANUAL LH/OFF/RH** switch to **OFF** the **MANUAL REFUELLING LH** or **RH** lamp will go out.

(10) Stop refuelling pressure.

(11) Repeat Manual Refuel Para 5 to Para 10 for the other tank group.

(12) When fuelling is complete switch **POWER** switch to **OFF.**

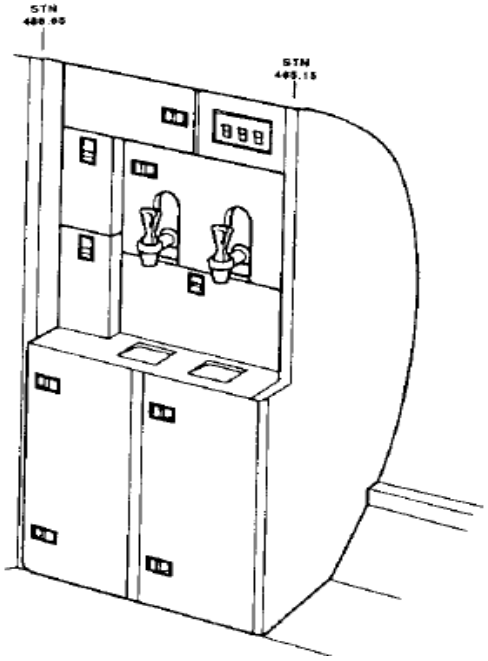
(13) Remove Hose and Bonding lead.

Close panel and secure with 3 catches

1.30 Galley Servicing

A schematic diagram of the Galley structure is shown below. It provides storage facilities for hot & cold drinks plus light snacks.

Stowage for two hot water urns is also located behind a double latched door. These urns are part of the airframe and must not be removed from the aircraft



WARNING: These urns push onto electrical fitments so every care must be taken on their fitment or removal so as not to damage the socket.
Each urn serial number is assigned and considered part of the airframe and if removed, must be returned.

WARNING: During winter months, parked aircraft can experience reduced temperatures within the cabin causing any water in the aircraft urns to freeze. In order to prevent this, any aircraft parked overnight or longer must have any water emptied. Empty urns must remain on the aircraft.

Decals/placards will be used on-board, which will clearly demonstrate the system is in-operative. The decals/placards will be placed in the toilet above the sink, flight deck, galley sink/shut off value area and next to the water indication panel in the galley. The system shall be drained.

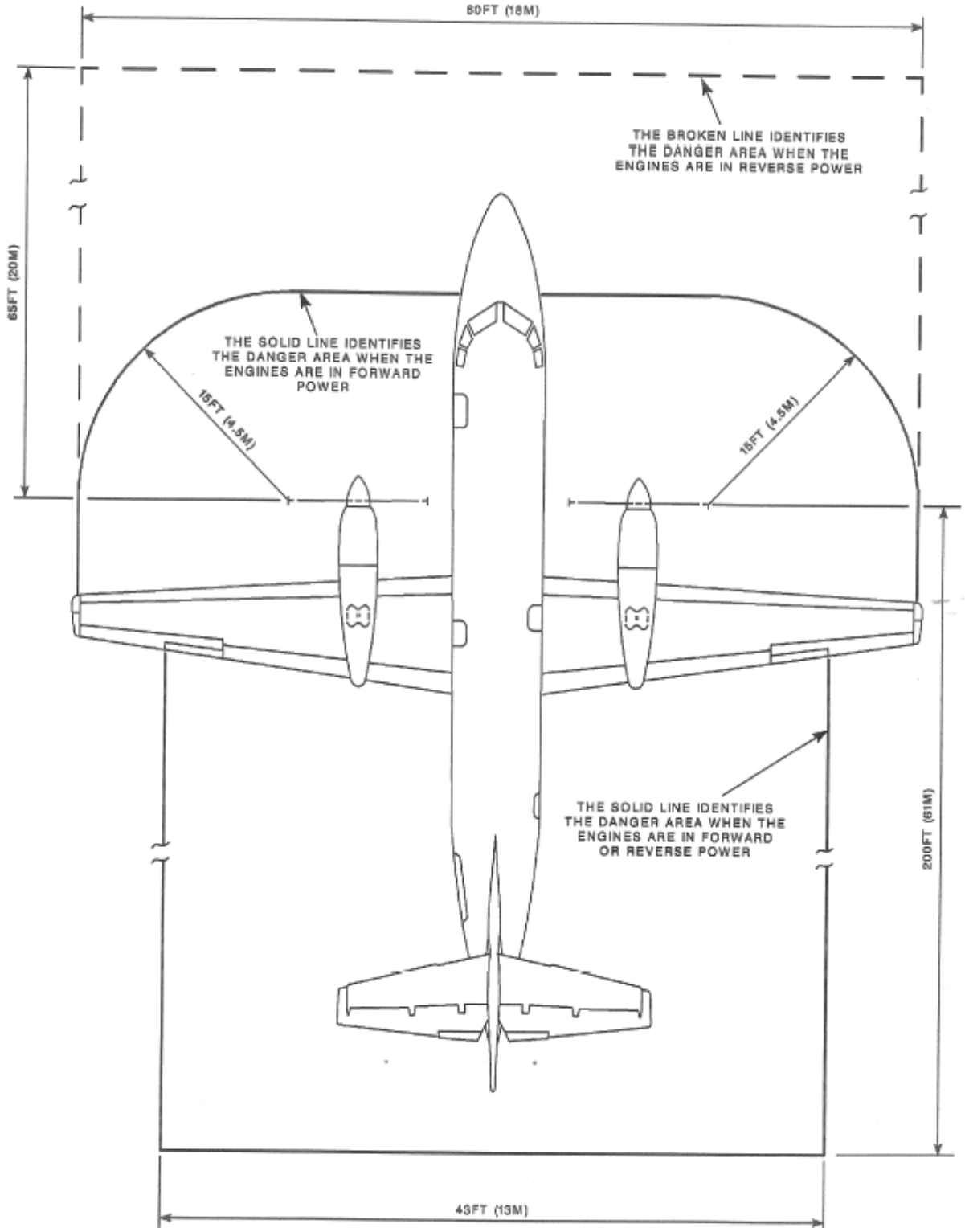
To ensure the on-board service is not affected, Catering suppliers are requested to supply an increased provision of hot water to the SB20 aircraft before departure.

The required uplift is:

1 urn and 4 vacuum flasks (2L) with hot water to cover a 2 sector rotation.

On occasions where the aircraft operates more than 2 sectors before reaching a catering station, the Flight Crew may request additional hot water uplift as required.

1.31 Danger Areas



1.32 Aircraft De-Icing

J41 Nominal Fluid Use Levels
200 litres

WARNING: Prior to the commencement of de-icing, ground staff must ensure that all doors and holds are closed and secure and that all unnecessary ground equipment has been removed.

Cleaning of propeller blades
Prior to the application of de-icing fluid, it is important that any build-up of snow is removed. This should be done using either a soft bristled brush or squeegee so as not to damage the propeller blades.

De-icing fluid is to be applied using either a cloth or sponge soaked in de-icing fluid. Ground staff should wear PPE appropriate for the application.

De-icing fluid *is not* to be applied using a de-icing hose due to the potential for the fluid to enter the engine intakes.

Please note the direction of rotation of the propeller blades as below:

- J41
  - The no1 propeller (ie the propeller on the aircraft's left wing) rotates anti-clockwise (facing the nose of the aircraft, looking aft)
  - The no2 propeller rotates clockwise (facing the nose of the aircraft, looking aft)

In order to access each propeller blade, the propellers are to be turned in the direction as indicated above only.

All ports and vents must be checked to ensure that they are clear of fluid or frozen contamination. If found, report contamination to the Engineer or Captain.

General de-icing information can be found in Section 7 of the Ground Operations Manual

1.33 Weather Precautions

WARNING: IF THE WINDSPEED WILL BE MORE THAN 45 KNOTS (52 MPH/83 KM/H) THE AIRCRAFT ,MUST BE MOORED

This can be done by the handling agent in conjunction with the representative engineering provider if available.

WARNING: IF THE WINDSPEED WILL BE MORE THAN 65 KNOTS (75 MPH/120 KM/H), THE AIRCRAFT MUST BE PARKED IN A HANGAR, SUBJECT TO AVAILABILITY

(1) Find a satisfactory location to park the aircraft

(2) Install the ground locks in the landing gear (Ref. TASK 10-10-00-480-805)

(3) Make sure the nose wheel is aligned with the aircraft centre line.

(4) Put the chocks at the front and at the rear of the main wheels and the nose wheel

(5) Set the parking brake to off

(6) Make sure the aircraft is electrically grounded

(7) Engage the gust locks:

  (a) In the flight compartment, on the centre console (right side), move the GUST LOCKS lever up

  (b) Operate the elevator, the rudder and the aileron controls until the gust locks engage

(8) Make sure the flight compartment windows are closed.

(9) Close the doors and the access panels.

(10) Close the:

  (a) Main entrance door and the type II emergency door

  (b) Main baggage-compartment door

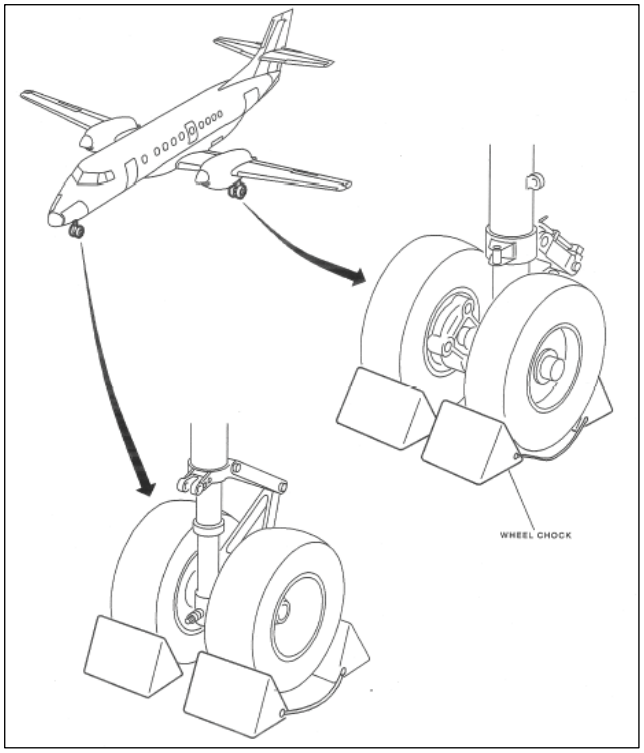
  (c) Ventral baggage-bay doors

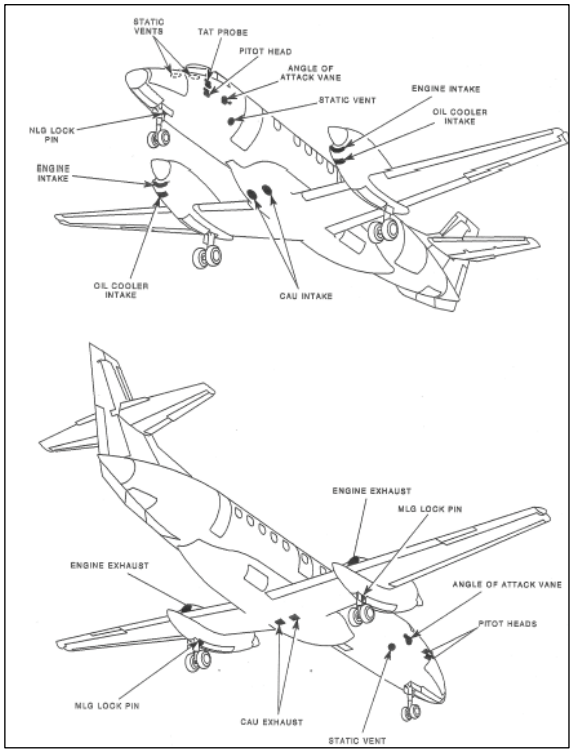
  (d) Refuel/defuel access door

  (e) External electrical-power access-door

  (f) Left and the right nose-equipment doors

Covers and Bungs – J41

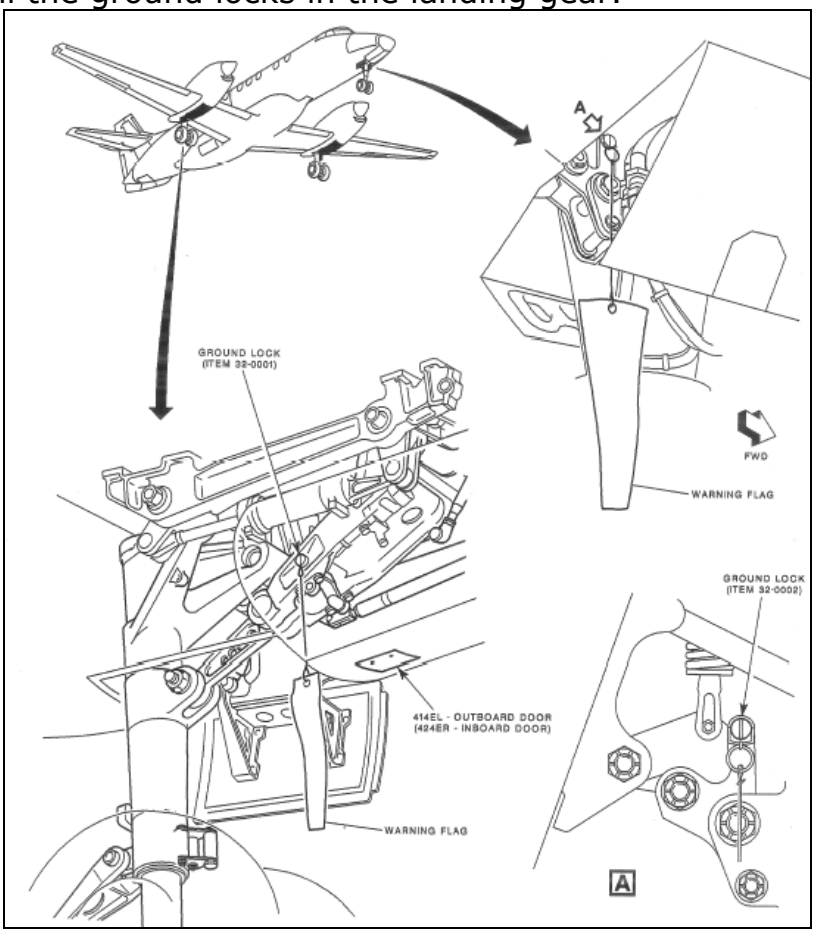




WARNING: ALLOW THE PITOT HEAD TO COOL FOR A MINIMUM OF 10 MINUTES BEFORE INSTALLING THE COVERS
ALLOW THE ENGINES TO COOL FOR A MINIMUM OF 15 MINUTES BEFORE INSTALLING THE COVERS

(1) Install the:
- (a) Pitot/total-air-temperature probe covers.
- (b) Static vent plugs.
- (c) Engine and oil-cooler intake-bungs.
- (d) Engine exhaust covers.
- (e) Cold-air-unit (CAU) intake bungs.
- (f) CAU exhaust bungs.
- (g) Angle-of-attack vane covers.

(2) Install the ground locks in the landing gear.



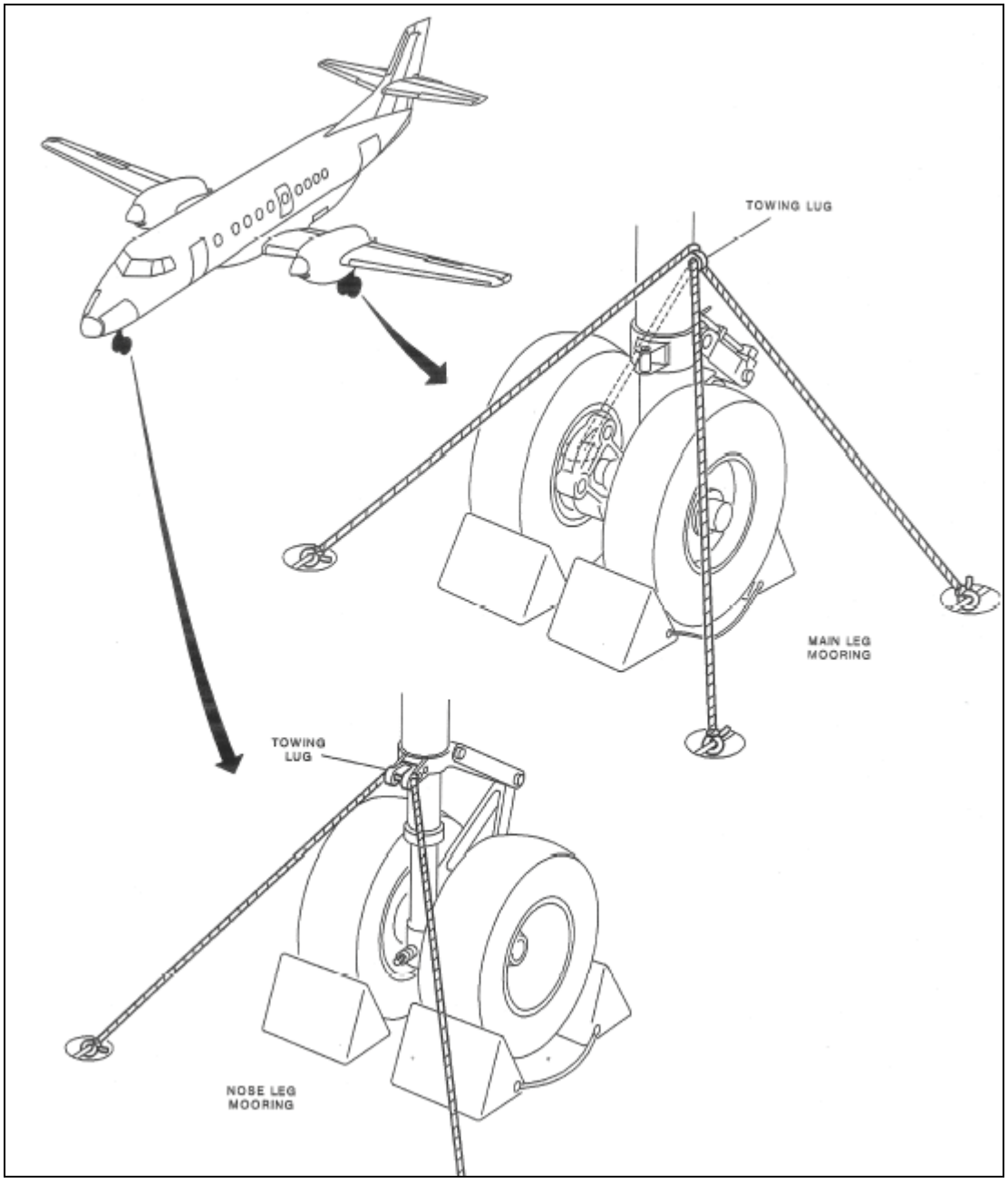
(a) Open the access panels

(b) Install the ground locks in the left and the right main landing gear.

(c) Install the ground lock in the nose landing gear.

(d) Make sure you can see the red warning flags on the ground locks.

Mooring Aircraft - J41



(1) Put nylon ropes (2) through towing lugs (1) on the Main Landing Gear and attach to a related ground mooring attachment.(3)
(2) Put the nylon ropes (5) through the towing lugs (1) on the Main Landing Gear and attach to a related ground mooring attachment (4)
(3) Put the nylon ropes (6) through the towing lugs (8) on the Nose Landing Gear and attach to a related ground mooring attachment (7)

Appendix B

NOT IN USE

INTENTIONALLY LEFT BLANK

Appendix C

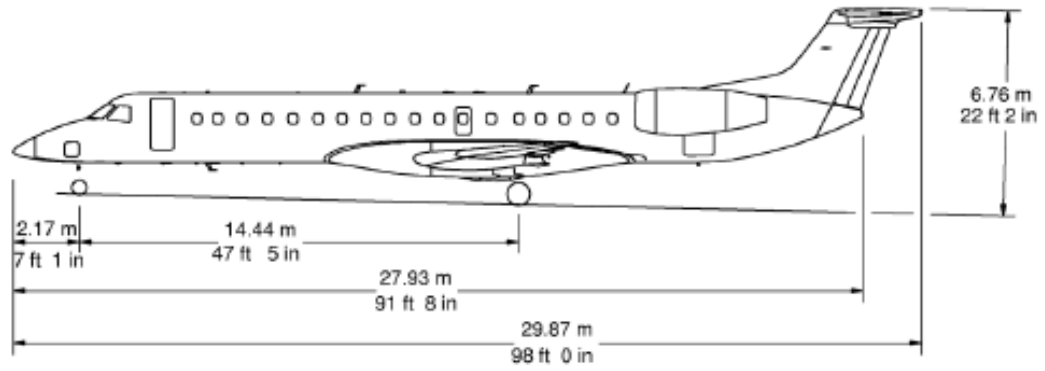
ERJ

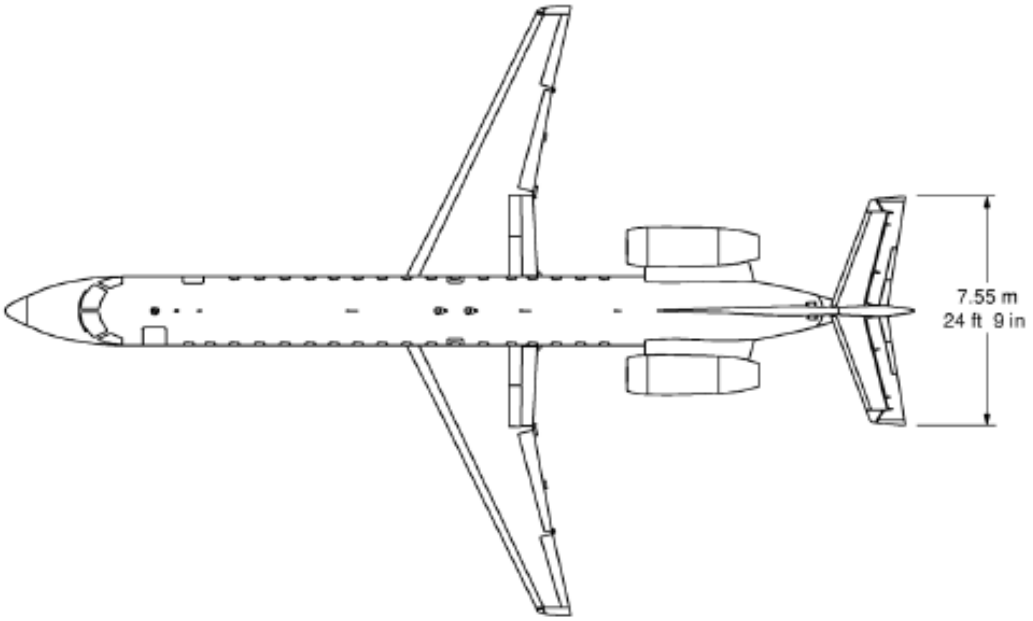
Handling Manual

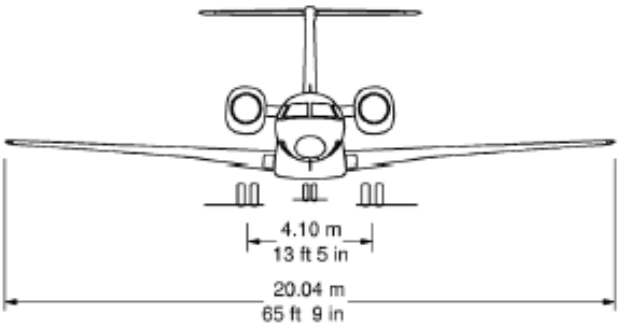
INTENTIONALLY LEFT BLANK

C O N T E N T S

1.1 Aircraft Dimensions

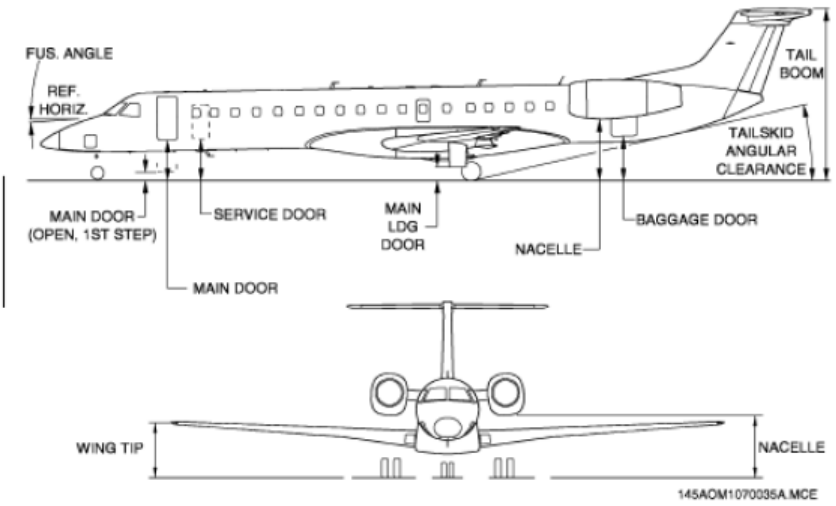






1.2 Aircraft Ground Clearances

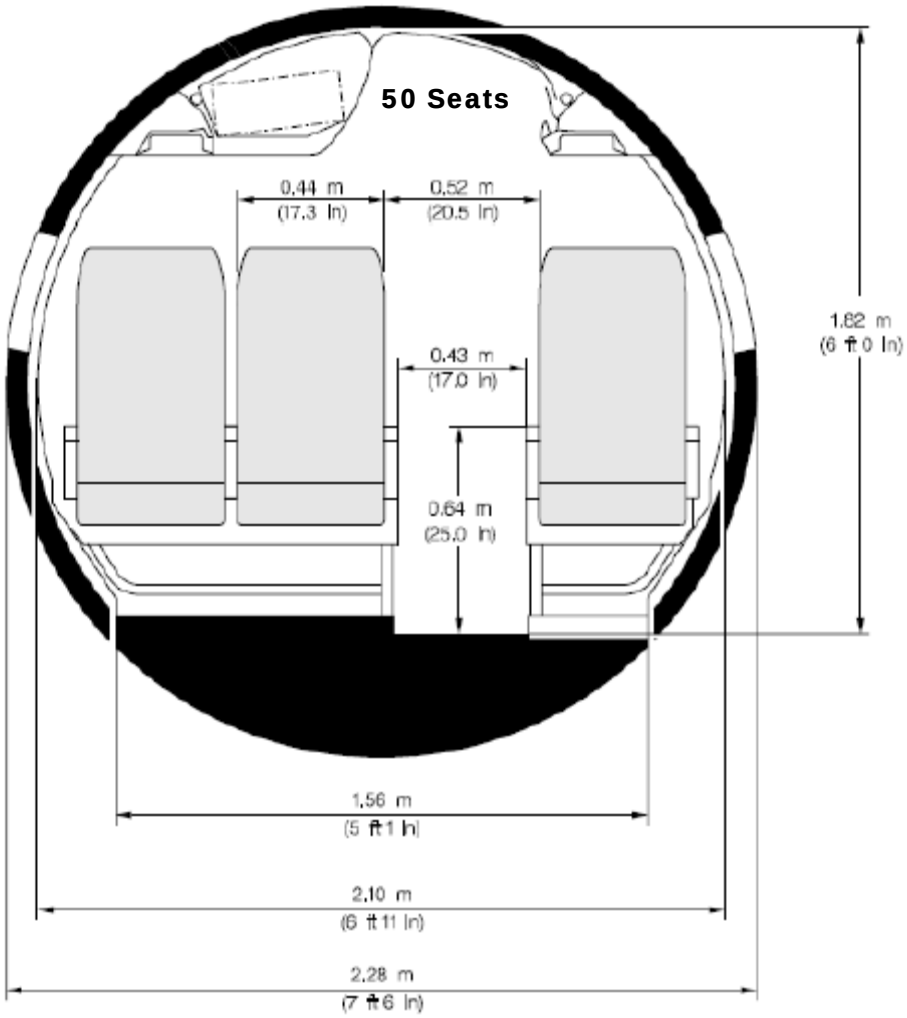
EMB-145 GROUND CLEARANCES

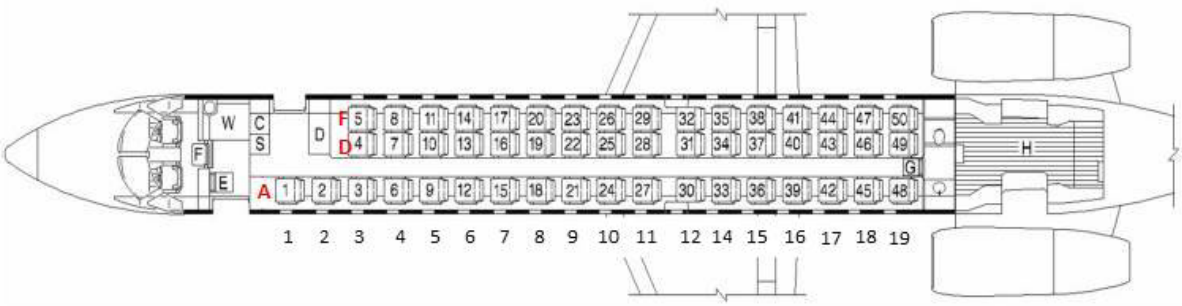


Vertical Clearance	Maximum	Minimum
Fuselage Angle	1° 21' 24"	0° 52' 00"
Main Door	1.598 m 5 ft 3 in	1.481 m 4 ft 10 in
Main Door Open (1st step)	0.480 m 1 ft 7 in	0.360 m 1 ft 2¼ in
Service Door	1.595 m 5 ft 3 in	1.408 m 4 ft 7 in
Main Landing Gear Door	0.471 m 1 ft 6½ in	0.398 m 1 ft 3¾ in
Nacelle	2.425 m 7 ft 11 in	2.315 m 7 ft 7 in
Baggage Door	1.806 m 5 ft 11 in	1.663 m 5 ft 5 in
Tail Boom	6.810 m 22 ft 4 in	6.619 m 21 ft 9 in
Wing Tip	2.022 m 6 ft 8 in	1.920 m 6 ft 4 in
Tailskid Angular Clearance	12° 41' 00"	11° 43' 59"

1.3 Aircraft Seating Configuration

Passenger cabin cross section





ERJ145

Section	Rows	Total
A	1-6	14
B	7-12	18
C	14-19	18
		50

ERJ135

Section	Rows	Total
A	1-4	10
B	5-8	12
C	9-14	15
		37

Cabin passenger Capacity: ERJ135- 37 /ERJ145- 50
Cabin Crew: 1-2
Flight Deck: 2

Seat Pitch standard: 79cm (31 inches)
Seat Pitch Emergency exits: 97cm (39 inches)

Cabin Configuration: 1 seat / aisle / 2 seats
No. of Rows: ERJ135- 12 (double seats) / ERJ145- 16 (double seats)
Row 13 does not exist
ERJ135- 13 (single seats) / ERJ145- 18 (single seats)

Passenger headroom: 1.82m (6ft 0in)
Aisle Width: 0.43m (17in)

1.4 Passenger Compartment Limits

Dimensions

Cabin Doors	**Width**		**Height**	
	In.	**Mts.**	**In.**	**Mts.**
Front Passenger Door	30.3"	0.77	67"	1.7

Carry-On Baggage

Passenger hand baggage is, whenever possible, to be stowed in the overhead bins. Maximum carry on baggage sizes can be found in Section 3 of the Ground Operations Manual

Overhead Bins

The aircraft has 7 standard overhead bin assemblies, one short and one very short overhead bin assembly.

The Maximum Mass carried in the overhead bins is 24.8kg each. Personal items may be placed in the under-seat stowage provided they are restrained to prevent sliding.

1.5 Main passenger door

The Embraer ERJ aircraft have the main access door situated at the forward left side of the aircraft. Instructions for opening are placarded on the external and internal surfaces of the aircraft. No inflatable escape slides are fitted to the ERJ.

The door is hinged at the bottom to open outwards and downwards simultaneously away from the fuselage into a locking position.

The door incorporates folding airstairs which are in place as soon as the door is open and locked into position. Unless requested by the flight deck, the door should ONLY be operated by the crew/cabin crew during ground operations. The door is raised and lowered by two hydraulic door actuators, although the door can also be manually lifted from the outside.

WARNING: Only persons trained in the operation of the aircraft doors and holds may operate them. Persons operating doors and holds must ensure correct operation and report any damage to the Captain.

WARNING: It is a requirement that all personnel entering and exiting company aircraft must hold the handrail. If for any reason a person needing to gain access to or exit from our aircraft without being able to hold the handrail [e.g. Caterers or Engineers with large objects] then the requirement must be risk assessed and deemed safe/acceptable in advance by the relevant department.
In order to help reinforce this policy, aircrew are to periodically discuss this requirement as part of their routine pre-flight safety brief.

1.6 Cargo door locations

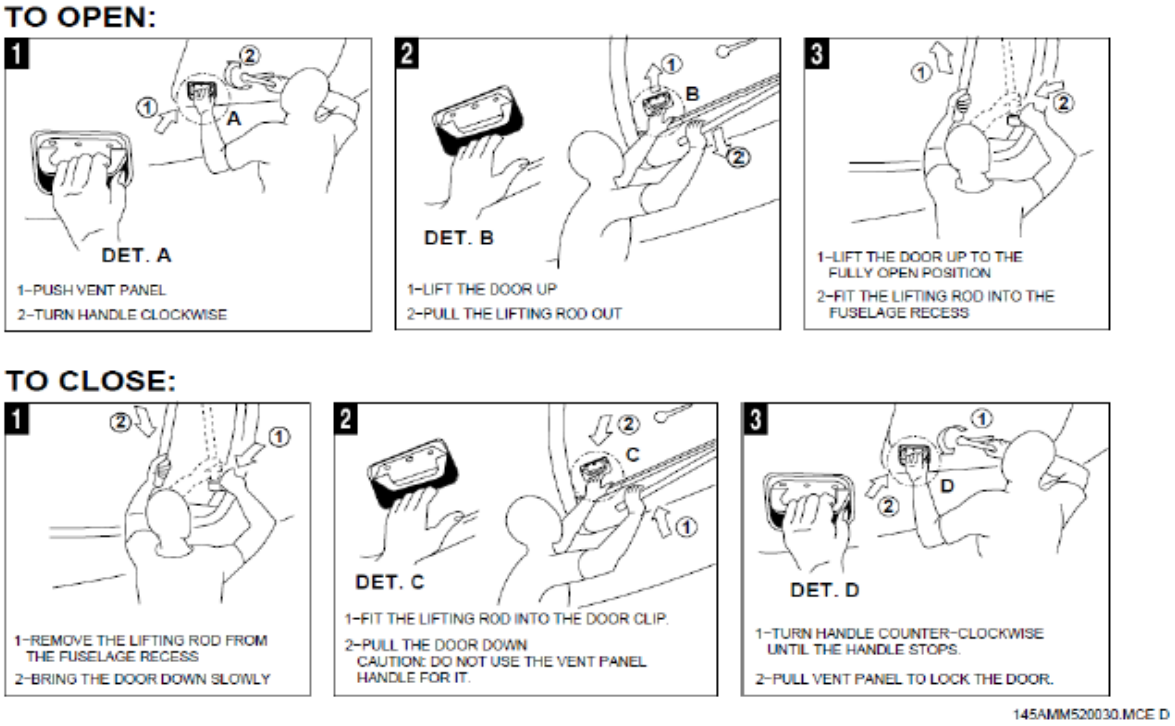
The ERJ has one main cargo door at the rear of the fuselage.

Do NOT load the aircraft with baggage belt loader inside the door or within 7cm (3in) of the sill as this will lead to surface damage.

1.7 Cargo Door Operation

The diagram below shows the opening and closing process.
The main hold door is located at the rear left side of the fuselage. It is manually operated from the outside.

The initial opening movement (displacement of the door inward) and final closing and latching movement (displacement of the door outward) are achieved by means of a door locking mechanism controlled by an external handle which is stowed in the lower half of the door.



BAGGAGE DOOR - OPERATION

WARNING: Only persons trained in the operation of the aircraft doors and holds may operate them. Persons operating doors and holds must ensure correct operation and report any damage to the Captain.

1.8 Cargo Hold Dimensions and Limitations

Passenger baggage and company mail is loaded in the baggage compartment located in the pressurised area of the rear fuselage.

Hold Compartment Limits

Cargo Compartment Available Volume	9.21m³
Cargo door dimensions	1.00 x 1.10m (3’ 3” x 3’ 7”)
Total Maximum load	**1000 kg (ERJ 135)** **1200 kg (ERJ 145)**

The cargo compartments are pressurised. Compartments and have the following systems installed:

- Smoke Detection System

The following nets are installed in the cargo compartment:

- Doors Safety Nets.

1.9 Cargo floor load limits

The floor is designed for 390kg/m2 (80lb/ft2) uniformly distributed loading, which includes anchor plates for high-density load tie-down.

Warning: Cargo and baggage with a total load of up to 990 kg are not required to be tied down. If the baggage compartment is loaded with more than 990 kg (2182lb), only the exceeding load must be tied down with a horizontal net.
Any individual items weighing more then 25kg must be tied down using the tie down straps

1.10 Baggage and Cargo Loading Procedure

Baggage and cargo should be evenly distributed over the cargo compartment to avoid load concentration.

Baggage/Cargo must not become a hazard to the airplane structure or systems as a result of shifting under operational loads. Therefore, sharp edge volumes (like wooden or metal containers) and/ or dense cargo (objects significantly more dense than typical passenger baggage) must be arranged with adjacent soft volumes or protections thus preventing airplane damage in case of baggage/ cargo shifting due to operational loads

During loading and unloading, the aircraft may adopt a tail-down attitude if the rear fuselage is too heavily loaded. Whenever heavy loads are carried in the cargo area, care is to be taken with the embarkation and disembarkation of passengers, and loading and unloading of baggage, to minimise this effect. In such cases passengers should be embarked or disembarked to ensure even distribution throughout the cabin.

Warning: To load the baggage compartment above 800 kg the following conditions should be observed:

- A minimum of 907 kg of fuel shall be on the aircraft
- No more than one person should be in the cone section inside the baggage compartment or the rear electronic compartment

1.11 Cargo Nets

Cargo door nets prevent cargo doors from being damaged or jammed. These must be secured and the straps tight. The load must not be loaded above the hold netting. Any defects must be reported to the crew.

1.12 General Loading Restrictions

Dangerous Goods, live animals and human remains are, because of their nature, subject to special instructions, when carried by air. In the interests of flight safety, animal welfare and customer service in general, all staff involved with aircraft handling must comply with the rules in this instruction.

Live Animals

The carriage of live animals in the hold of Eastern Airways aircraft is forbidden.

Guide dogs and hearing dogs may be carried in the cabin.

Human Remains
Ashes in a strong, sealed container may be carried without restriction. Consignments must be carefully handled and must not be stowed under other cargo.

Dangerous Goods
See Dangerous Goods section 9

1.13 Aircraft Movement During Turnaround

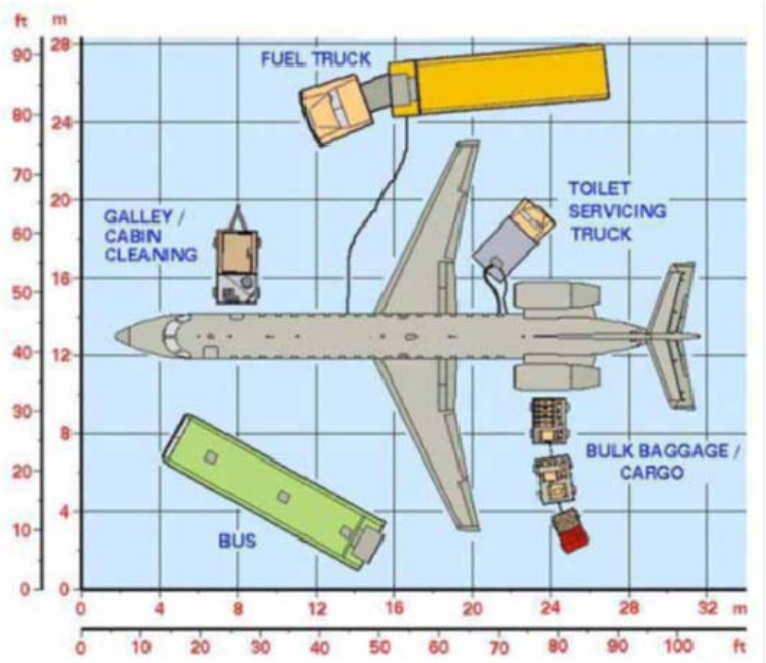
Staff should be aware that aircraft may move during a turnaround process as passengers disembark or board, baggage and catering is loaded/offloaded etc.
Servicing personnel should be aware that they should not position any unnecessary vehicle or equipment under the fuselage of the aircraft or under the path of the aircraft door. They should exercise extreme caution when removing vehicles or equipment.

1.14 Loading of Electric Mobility Aids (EMAs)

The ERJ is unable to carry Electric Mobility Aids.

1.15 Aircraft Servicing Locations

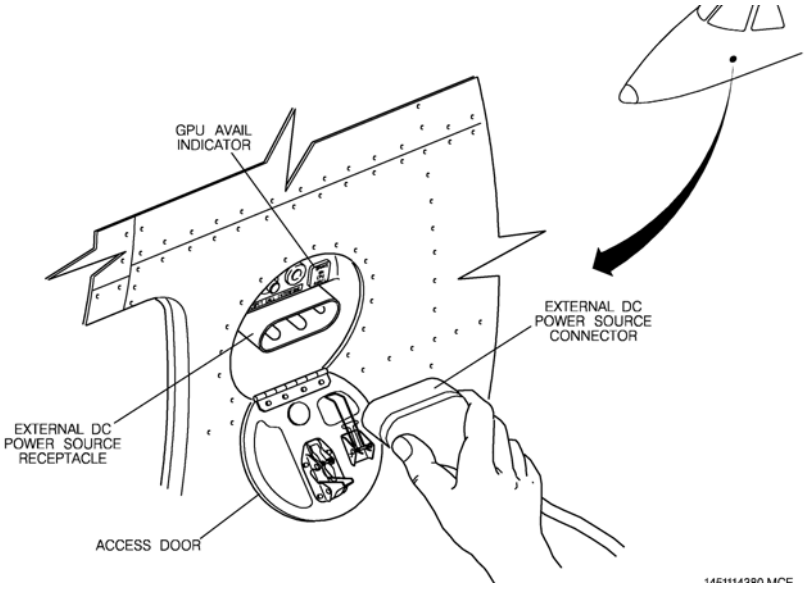
The diagram below shows the location of various servicing points on the ERJ aircraft.



1.16 Ground Power Connection

A 28 V DC external power supply source can be connected to the aircraft through the receptacle installed on the left side of the fuselage nose.

It is recommended that the external power source be capable of supplying at least 300 A, with maximal 1% steady-state voltage deviation. The voltage shown in the MFD electrical page should be 28.0 V (-2.0 V +1.0 V) DC when the GPU status is 'AVAILABLE'. The power source must be able to maintain the voltage within this range when the GPU status is 'IN USE'. Connecting a source out of these specifications may lead to electrical problems and therefore should be avoided.



1.17 Air start Unit

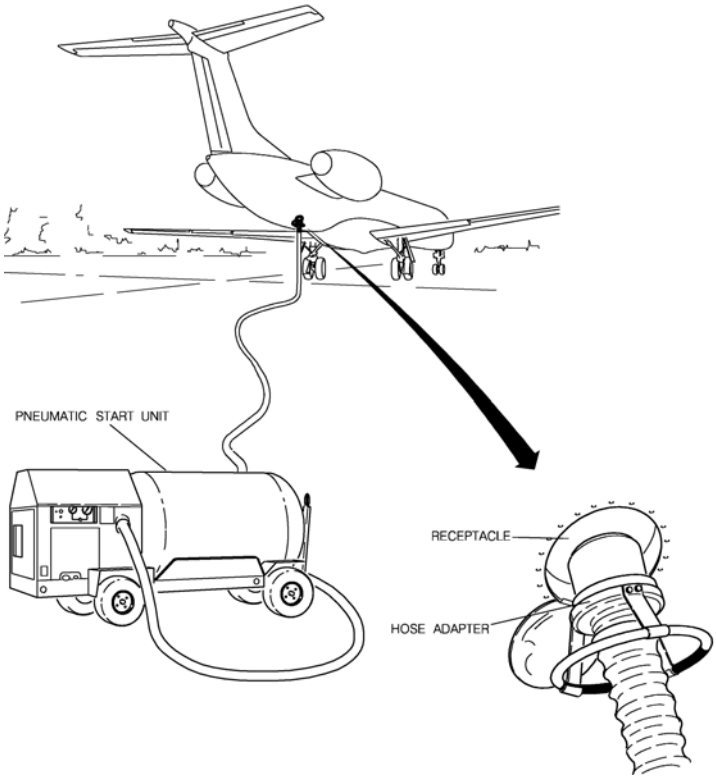
Where an air start unit (ASU) is required it will be positioned at the rear of the aircraft on the right hand side and must be as far away from the aircraft as possible.

The output of the unit must be set between 40 and 45 psi. This pressure allows the opening of the valve to let external air in.

The ground crew must obtain a brief from the Captain prior to engine start. In the event a headset is not available all appropriate hand signals must be discussed.

- Once the ASU has been connected, the crew will signal to the ground crew to "increase the air".
- Once the response "air increased" has been received, the request to start No.1 engine will be made and normal engine starting calls and procedures should be followed.
- Once the engine has stabilized, the request will be made to disconnect the ASU.
- Once the ASU has been removed, the request will be made to start engine No.2 and normal engine starting calls and procedures should be followed.

- Once the second engine has stabilized the signal will be made to disconnect the Ground Power Unit.



WARNING: The ground agent on the headset must ensure that the ASU operator remains in visual contact. If the incorrect engine is started, the head set operator must inform the flight deck immediately.

1.18 Aircraft Start Procedures

Only essential persons and equipment needed for the engine start must be within the stand area. All other persons and equipment must be clear. It is the responsibility of the head set person to ensure this happens and to only give the crew clearance to start thereafter.

If a GPU or ASU is used, only when the headset operator has received verbal instruction from the crew to disconnect the GPU or ASU , should the operative approach the aircraft.

Should the wrong engine be started, the actions by the flight deck will be to shut down the engine immediately. Ground staff should remain in direct contact with the crew and should not approach the aircraft until cleared to do so.

Should a headset start not be possible, prior agreement must take place with the crew to use hand signals. Standard ICAO signals must be used.

1.19 Toilet Service Points:

Located aft of the wing on the right hand side is the toilet (waste) servicing panel. This consists of a toilet waste ground draining location and a sluice/charge fluid charging connection.
Placard instructions can be found inside the access panel to assist in toilet servicing.

Do not let the toilet fluid get on the aircraft structure. Remove the leakage of toilet fluid immediately. Toilet fluid can cause corrosion of aircraft structure.

Prior to servicing, ensure you are wearing appropriate safety items. Operators must ensure that the contents are fully drained prior to replenishment with fluid.

The maximum system capacity is 15 litres.
The maximum permitted pressure is 80 PSI.

Do not let the toilet fluid get on the aircraft structure. Remove the leakage of toilet fluid immediately. Toilet fluid can cause corrosion of aircraft structure.

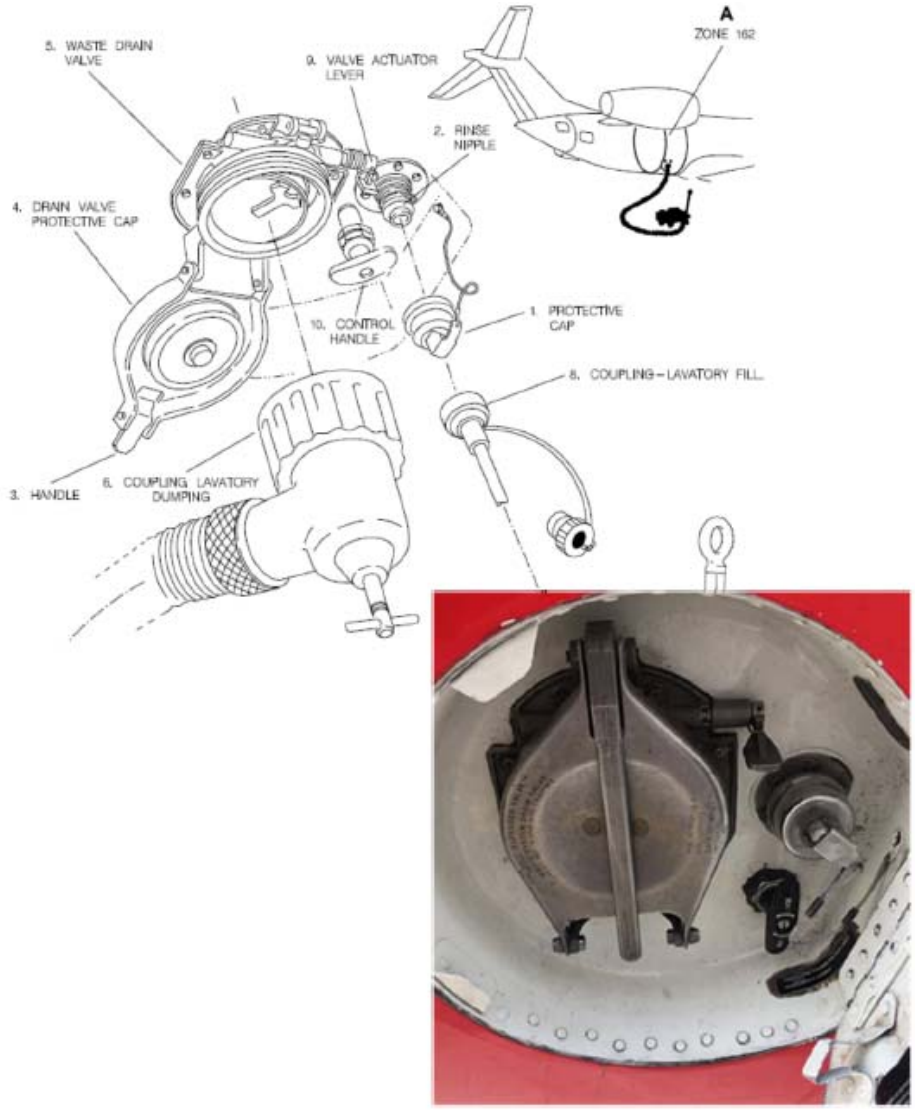
(1) Open waste-service-panel door .
(2) Remove the cap (1) from the toilet rinse nipple (2).
(3) Release the handle (3) and open the cap (4) of the waste drain valve (5).
(4) Connect the lavatory dumping coupling (6) of the lavatory servicing dolly (7) to the waste drain valve (5).
(5) Connect the lavatory filling coupling (8) to the rinse nipple (2).
(6) Push the lever (9) of the waste drain-valve actuator to open its internal flapper valve. Do not operate the coupling handle; its operation is not necessary.
(7) Pull and lock the drain control handle (10) to open the toilet unit drain valve.
(8) Continue the toilet unit drainage until the waste flow stops.
(9) Flush with water through the rinse nipple (2) for approximately 3 minutes.
(10) Release the control cable (10).
(11) Fill the toilet unit with 15 liters (4 gal) of water.
(12) Pull and lock the drain control handle (10) to open the toilet unit drain valve.
(13) Release the drain control handle (10) after all liquid is drained.
(14) Fill the toilet unit:
(a) For aircraft that operate at temperatures below 0°C (32°F) fill the toilet unit with a maximum of 6.7 liters (1.8 gal) of water and 0.8 liters (0.2 gal) of aeroshell compound 07 or equivalent.

For aircraft that operate at temperatures above 0°C (32°F) fill the toilet unit with a maximum of 7.5 liters (2 gal) of water.
(b) Add the following products:
– 170 grams (6 oz.) of Mirabowl "Q" germicidal deodorant, or;
– 8 grams (0.28 oz.) of Celeste Sani-Pak ²SP-77008² germicidal deodorant, or;

– 8 grams (0.28 oz.) of Celeste Sani-Pak ²SP-77080² germicidal deodorant, or;
– 8 grams (0.28 oz.) of Celeste Sani-Pak ²SP-97000² germicidal deodorant.
(15) Disconnect the lavatory dumping (6) and filling (8) couplings.
(16) Close the cap (4) and latch the handle (3) of the waste drain valve (5). The flapper valve will close automatically when the cap is closed.
(17) Install the cap (1) on the toilet rinse nipple (2).

NOTE: The access door will close only if the waste drain valve is correctly closed.

(18) Close waste-service-panel.



WARNING: DO NOT PUT THE WASTE SERVICE CART NEAR THE WATER SERVICING EQUIPMENT. THE CONTAMINATION FROM THE WASTE CAN GET INTO THE POTABLE WATER AND IS DANGEROUS TO THE HEALTH OF PERSONS.

WARNING: THE SAME PERSON MUST NOT SERVICE THE WASTE DISPOSAL SYSTEM AND THEN THE POTABLE WATER SYSTEM AS CONTAMINATION CAN BE TRANSFERRED FROM THE WASTE TO THE POTABLE SYSTEM

1.20 Potable water system

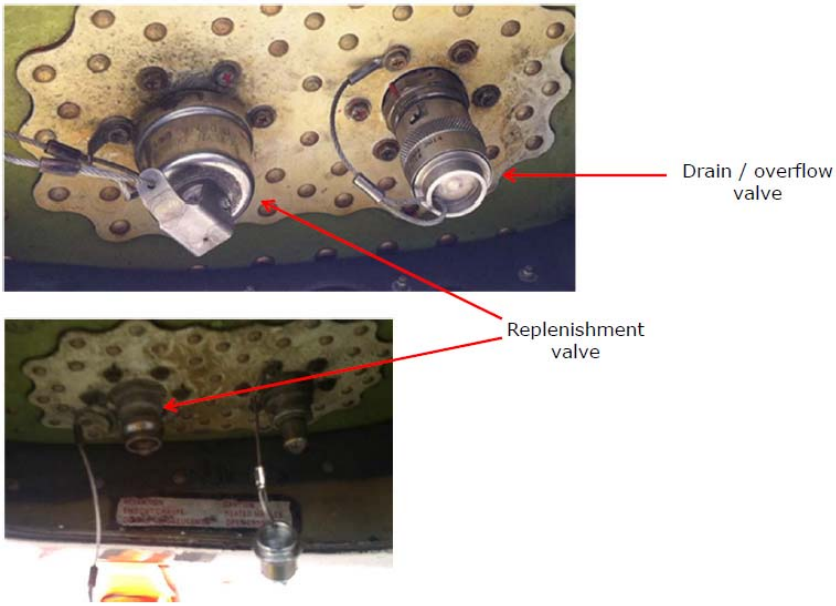
The water service panel connects the water service trolley to the portable water system. It is externally installed in the service hatch located aft of the right wing and under the engine nacelle. It has three components:

- A FILL/DRAIN Connector
- A DRAIN/FILL switch
- A PWR AC/PWR BAT guard switch

CAUTION: OPEN THE WATER SERVICING DOOR CAREFULLY NOT TO DAMAGE IT.

Prior to replenishment, ensure water currently in the system is fully drained.

Once you have emptied the water out you **must** keep the drain valve off. This will insure in the event of an overfill, the water will come out of the overflow valve. If this happens, cease water replenishment.



1) Remove the protection caps from the water filling nipple and from the water overflow nipple.

CAUTION: DO NOT CONNECT THE HOSE OF THE WATER SERVICING CART TO THE WATER OVERFLOW NIPPLE. THERE IS A METAL STOP (TANG) INSTALLED ON THE WATER OVERFLOW NIPPLE.

2) Install the hose of the water servicing cart to the water filling nipple.

THE MAXIMUM FILLING PRESSURE IS 100 PSIG.

THE MAXIMUM SYSTEM CAPACITY IS 15 LITRES.

3) Fill the tank until the water starts to flow out through the overflow nipple.

4) Remove the hose of the water servicing cart from the water filling nipple.

CAUTION: ALLOW ALL EXCESS WATER TO DRAIN OUT BEFORE YOU INSTALL THE PROTECTION CAPS.

5) Install the protection caps to the water filling nipple and to the water overflow nipple.

WARNING: During winter months, parked aircraft can experience reduced temperatures within the cabin causing any water in the aircraft urns to freeze. In order to prevent this, any aircraft parked overnight or longer must have any water emptied. Empty urns must remain on the aircraft.

1.21 Connecting / Disconnecting towbar

1. Install the ground locks and the tow bar
2. Install the ground locks in the landing gear
3. Put the tow bar in position.
4. Put the engagement pins in the axle.
5. Install the pin
6. Connect the tow bar to the tractor

1.22 Tow Procedure

WARNING: Only persons trained in brake riding must act as brake riders.

All tows must have wing walkers on each wing. Wing walkers must monitor the clearance of the wing tips to obstacles and provide a clear indication (thumbs up or stop aircraft gesture) to the tow driver.

If the tow driver cannot see each wing walker, the tow must stop until visual reference can be established.

Ensure minimum manpower is available, consisting of tug driver and brake man, and x2 wing men

When towing aircraft into confined spaces such as hangars there are to be 2 wingmen in position. Standard wing tip clearance signals are to be used

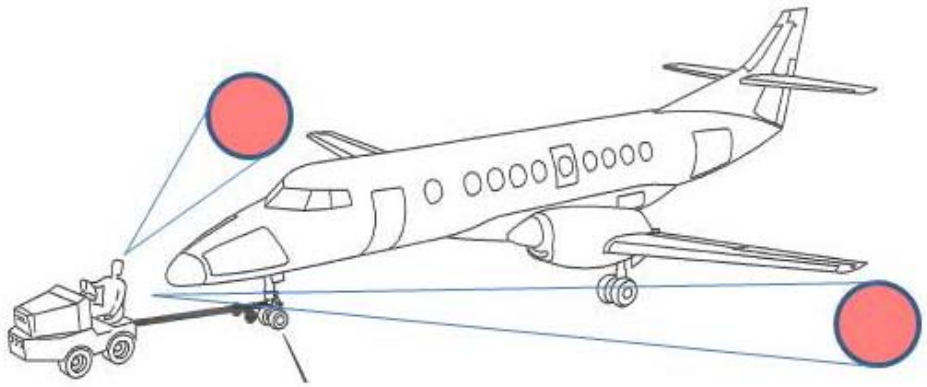
Ensure personnel are appropriately qualified with ADP and/or airport security passes.

Ensure personnel are equipped with appropriate personal protection equipment.

Ensure all pre use inspections have been carried out on towing equipment to include tug AVP and tow bar damage inspection, paying particular attention to shear pins.

Ensure undercarriage ground pins are installed.

Position of wing walkers



1) Connect the tow bar

2) Prepare to tow the aircraft:
   - Aircraft must not be towed until the STEERING CB on the overhead panel has been pulled.
   - If the aircraft is to be towed for any length of time the APU should be powered as batteries have a limited life. CONTACT ENGINEER
   - If the "BRAKE ON" caption is NOT illuminated when batteries are turned on CONTACT ENGINEER
   - Aircraft must only be towed with the full compliment of undercarriage ground pins installed.
   - Aircraft must not be towed with passenger door open.
   - When towing the tow angle must never exceed the red line painted on the aircraft fuselage (AMM states 170 degrees either side of aircraft centre line)
   - Aircraft must not be towed without minimum brake pressure. This is indicated by the "BRAKE ON" caption on the EICAS display.
   - Aircraft parking brake must only be used in case of emergency to prevent aircraft runaway.
   - Aircraft must not be towed if wind speed exceeds 49 knots for dry conditions, 44 knots for wet, 29 knots for snow and 10 knots of ice. (information available from Humberside ground information).
   - Aircraft must not be towed at any higher speed then 15 MPH.
   - Aircraft must not be pushed back at speeds greater than 5 MPH.
   - Never attempt to steer aircraft in the event of a runaway.
   - The park brake should be applied if the aircraft becomes detached from tug during the tow procedure.
   - Apply battery power to aircraft by setting "BATT 1 and BATT 2" switches on the overhead panel to "AUTO"
   - Prior to aircraft movement, "NAV LIGHT and BEACON" switches on overhead panel-select "ON".
   - Parking brake to be released by pressing both pedals and releasing park brake handle. Ensure "BRAKE ON" caption extinguishes on central panel.
   - Brake released indication to clearly be given to tug driver (open hand gesture with palm facing tug driver)
   - Aircraft movement can commence with Air traffic control permission at a maximum speed of 15MPH. Observe wings and at all times.
   - Upon reposition of aircraft, tug driver to indicate to brake man move is complete and to re-apply aircraft brakes (closed fist gesture shown clearly)
   - Brake man to apply aircraft park brake by pressing both pedals and pulling park brake on. Ensure "BRAKE ON" caption is illuminated on the central panel. Confirm brakes applied to tug driver (closed fist gesture shown clearly)
   - NAV LIGHT and BEACON switches on overhead panel-select OFF.
   - Select "BAT 1 and BAT 2" switches on the overhead panel to "OFF"
   - Aircraft to have chocks placed in front and behind nose wheels

- Remove tug from tow bar/aircraft using minimum of two personnel.
- Withdraw pin from towing lug and remove tow bar assembly.

1.23 Pushback

For general ground handling procedures on pushback / towing see Section 6.13 of the Ground Operations Manual

WARNING: For the start-up of any Eastern Airways aircraft, a headset/intercom must be used to ensure a safe & coordinated start of the aircraft. This is especially paramount when a pushback procedure is to be carried out.

- A ground crew jack box is located on the nose undercarriage.
- When ready for pushback and with clearance from ATC, the Captain should say to the Ground Crew:
  1. 'Ready for push-back, call for brake release'
  2. The ground crew should reply with a call for brakes to be released
  3. The Captain should release the park brake and then call 'brakes released, pressure zero'
  4. Push back can commence at a steady walking pace
  5. Wherever possible the duration of any pushback or towing operation should be in a straight line to ensure that the aircraft wheels and towbar are straight
- The pushback must cease if there is any danger to the aircraft, the shear pin breaks or called to do so by ATC or the crew
- Any shear pin breakages must be reported to the crew immediately and a General Safety Report form completed

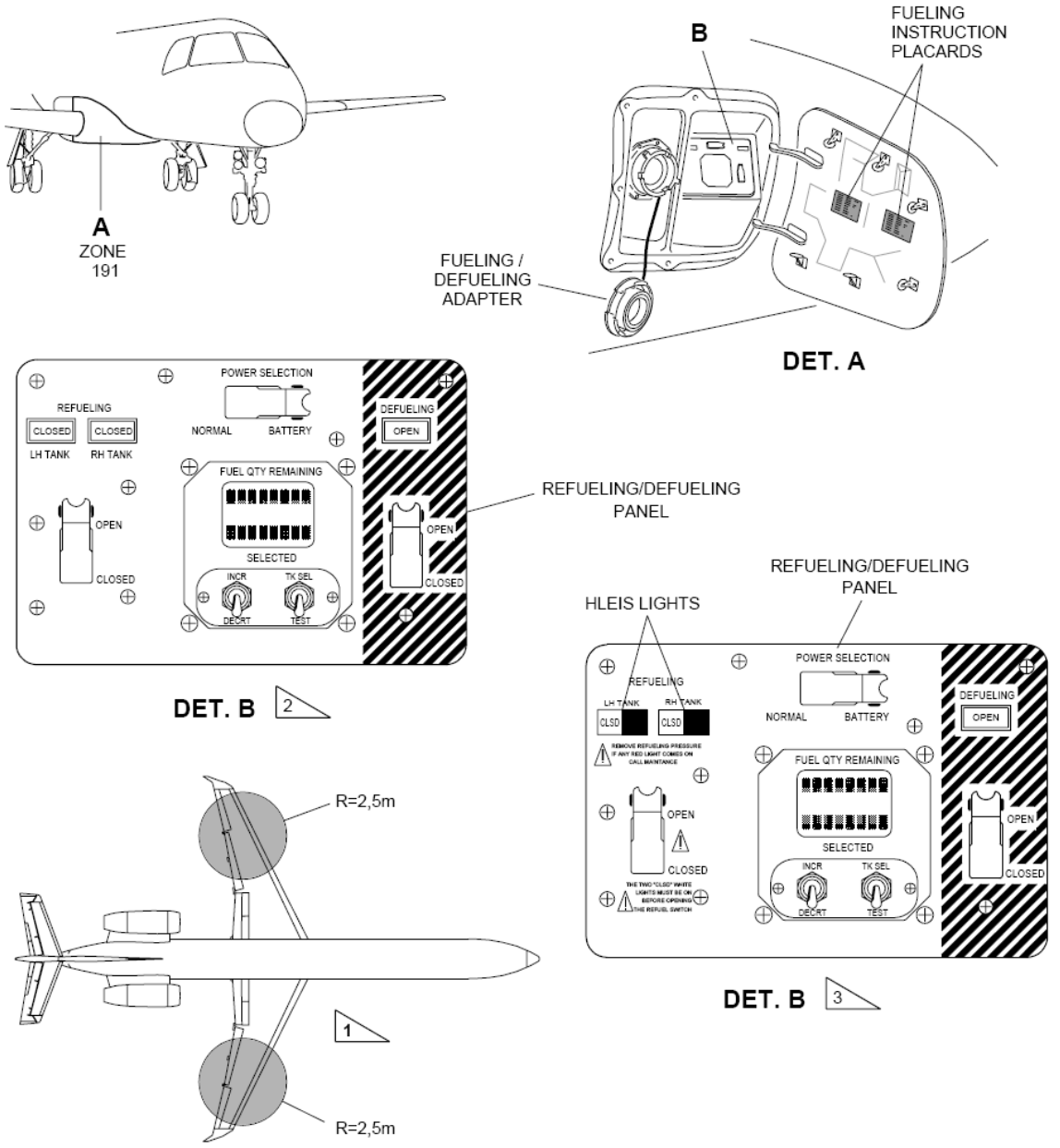
1.24 Fueling With Passengers On Board

Eastern Airways policy is that fuelling with passengers on board the Saab 2000 is allowed. This must comply with the Airfield Operating criteria, however the captain of the aircraft must first be made aware this is the intention & any passengers boarded advised of the situation.
Refer to Section 6.9 of the Ground Operations Manual for the procedure.

1.25 Refuel Panel Operation

1) Make sure that the REFUELLING lights related to the LH and RH tanks are off.
2) Make sure that the DEFUELLING light is off.
3) Make sure that the SELECTED quantity indicator shows zero.

WARNING: Before you set the indicator, make sure of the unit of measurement (pound/Kilogram) that the indicator shows.



1 KEEP FREE OF VEHICLES AND EQUIPMENT THE AREAS AROUND THE FUEL TANK VENTS (HATCHED AREAS) DURING PRESSURE REFUELING OPERATION.

2 AIRCRAFT WITHOUT HLEIS

3 AIRCRAFT WITH HLEIS

145AMM120106.MCE

4) Set the indicator to the necessary fuel quantity.
5) Remove the protection cover from the pressure refuelling adaptor.

WARNING: Make sure that the refuelling adaptor is in good condition. A bad connection of the fuel nozzle can cause fuel spillage, fire, injury to persons and damage to the equipment.

6) Make sure that the refuelling adaptor is in good condition:
   - Do a check for missing or damaged lugs
   - Do a check for signs of cracks and contamination

7) Connect the fuel nozzle to the pressure refuelling adaptor.
8) Pressurize the system (35-50 psig)
9) Make sure that there is no leakage at the fuel nozzle connection.

NOTE: A leakage through the vent valve during the refuelling operation of less than 10 drops/min is permitted if it does not continue for 20 minutes after refuelling operation stops. A leakage between 10 drops/min and 60 drops/min is permitted if the vent valve is replaced at the next time the fuel tank is opened and also it does not continue for 20 minutes after refuelling operation stops.

10) Make sure that the REFUELLING lights related to the LH and RH tanks come on (CLOSED or CLSD as applicable) and the refuelling flow stops.
11) Set the REFULING switch to the OPEN position and make sure that the REFUELLING light related to the LH and RH tanks go off.
12) (For aircraft with HLEIS) If one or more than one of the STOP RFL lights come(s) on, immediately remove the fuel pressure that comes from the refuelling source and stop the refuelling procedure.
13) Make sure that the REFULING lights related to the LH and RH tanks come on (CLOSED or CLSD) when you have set the fuel quantity.
14) Set the RFUELING switch to the CLOSED position.
15) Remove the fuel nozzle from the pressure refuelling adapter.
16) Install the protection cover to the pressure refuelling adapter.

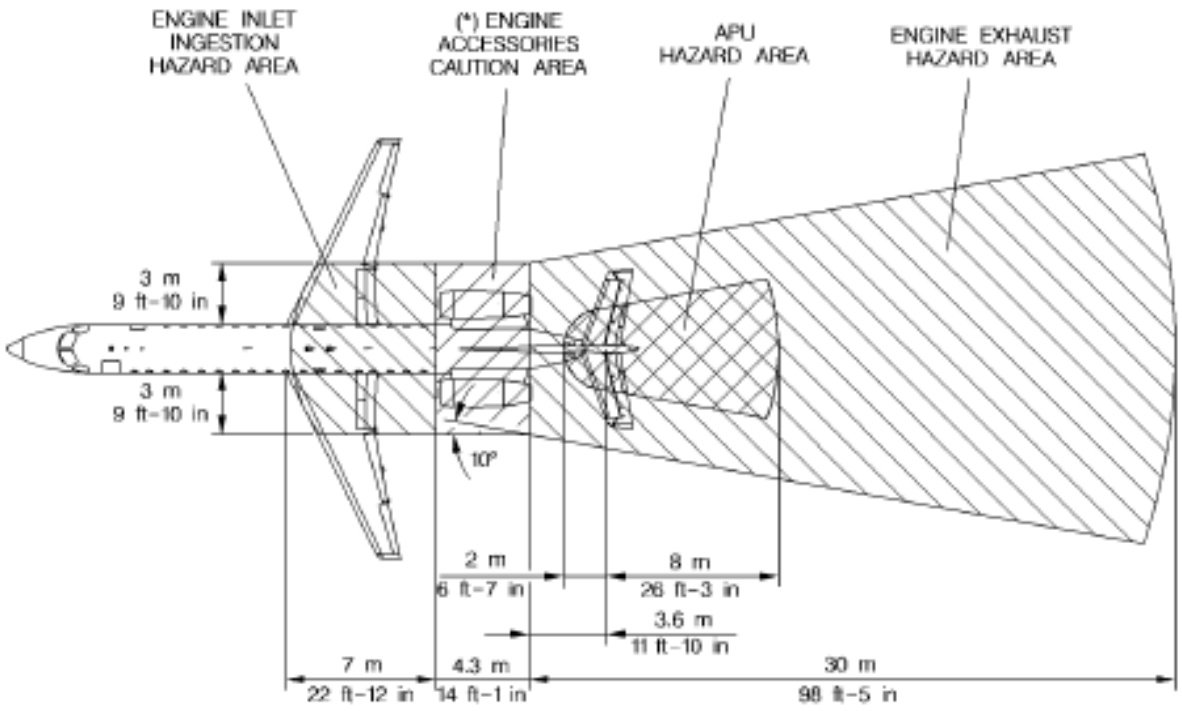
1.26 Galley Servicing

A schematic diagram of the Galley structure is shown below. It provides storage facilities for hot & cold drinks plus light snacks.

WARNING: These urns push onto electrical fitments so every care must be taken on their fitment or removal so as not to damage the socket.
Each urn serial number is assigned and considered part of the airframe and if removed, must be returned.

WARNING: During winter months, parked aircraft can experience reduced temperatures within the cabin causing any water in the aircraft urns to freeze.
In order to prevent this, any aircraft parked overnight or longer must have any water emptied. Empty urns must remain on the aircraft.

1.27 Danger Areas



EMB-145 MODEL

1.28 Aircraft De-Icing

ERJ Nominal Fluid Use Levels
250 litres

WARNING: Prior to the commencement of de-icing, ground staff must ensure that all doors and holds are closed and secure and that all unnecessary ground equipment has been removed.

Where possible, Flight Deck crews will shut down the APU prior to de-icing taking place. Therefore prior to de-icing, the de-icing crew **must** speak with the flight deck and establish the following;

- Will the APU be left running during de-icing?
- When de-icing will commence, in order to allow crew time to shut down the APU if possible.

APU operation

In the event that the APU is to be left running, extreme care must be taken to avoid spraying directly or in-directly into the APU inlet. Ingestion of fluid can cause damage to the impeller blades.
Any fluid that has been ingested into the APU must be reported to the flight deck immediately and a safety report filed.

General de-icing information can be found in Section 7 of the Ground Operations Manual

INTENTIONALLY LEFT BLANK

Appendix D

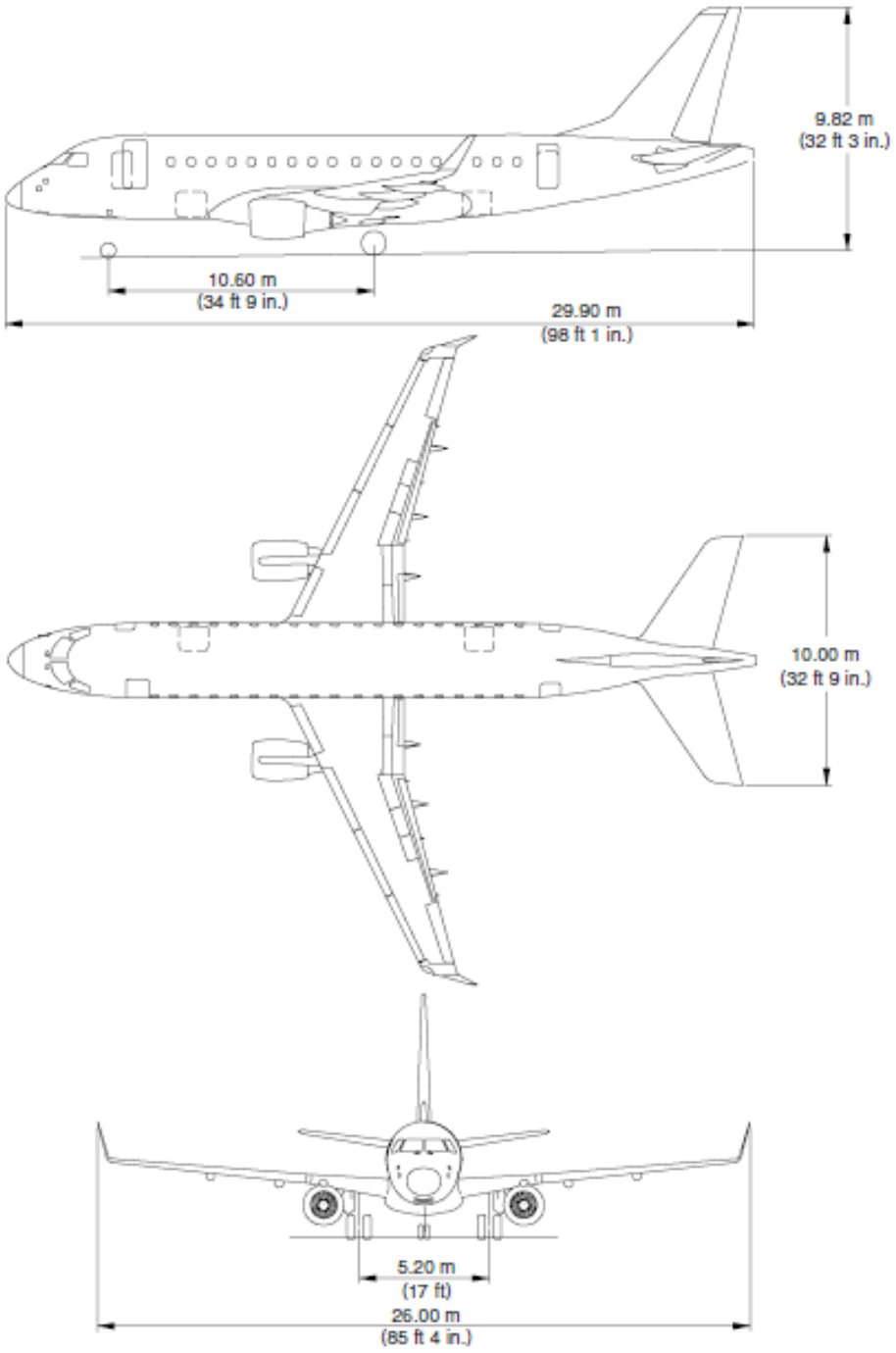
EJET

Handling Manual

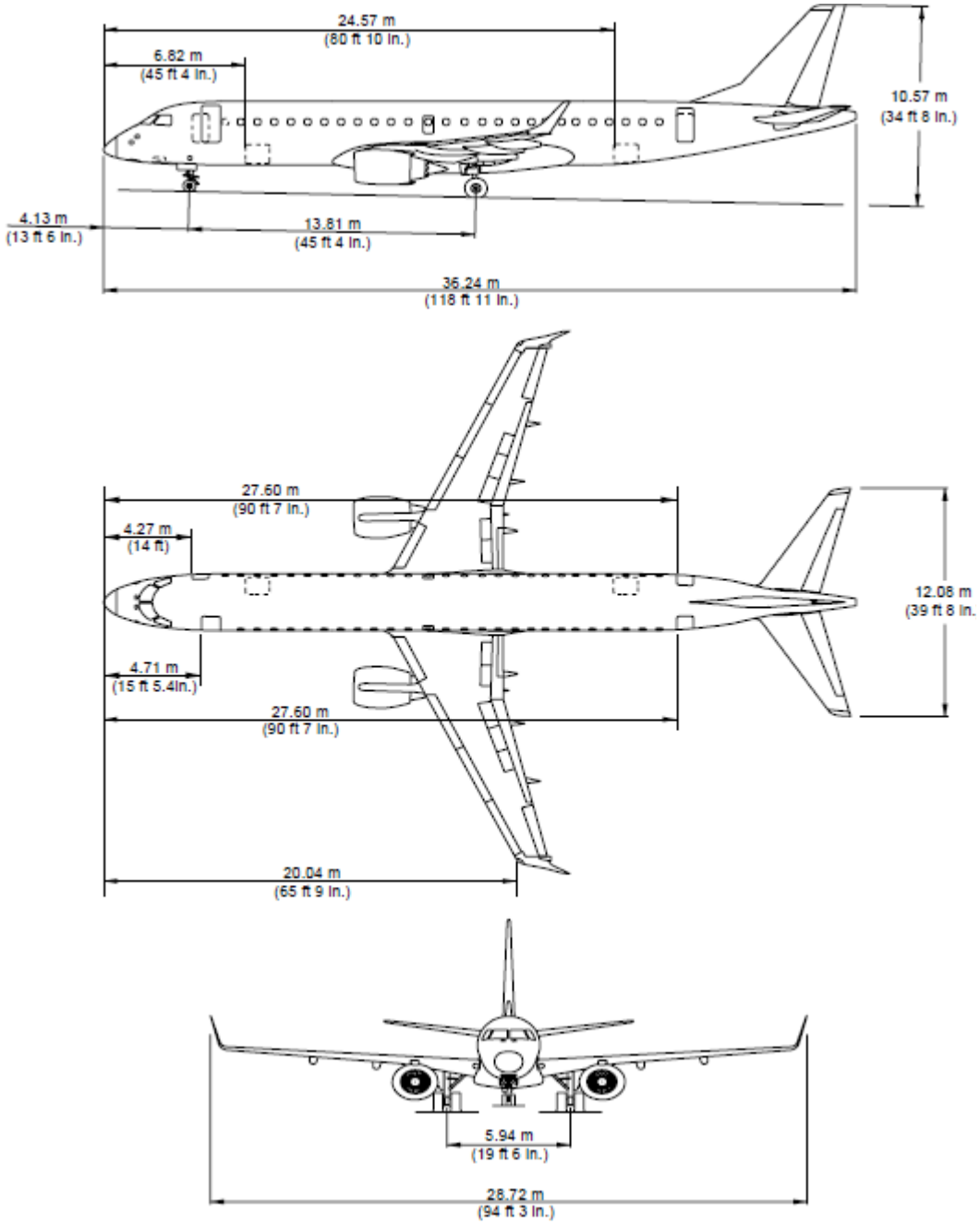
INTENTIONALLY LEFT BLANK

C O N T E N T S

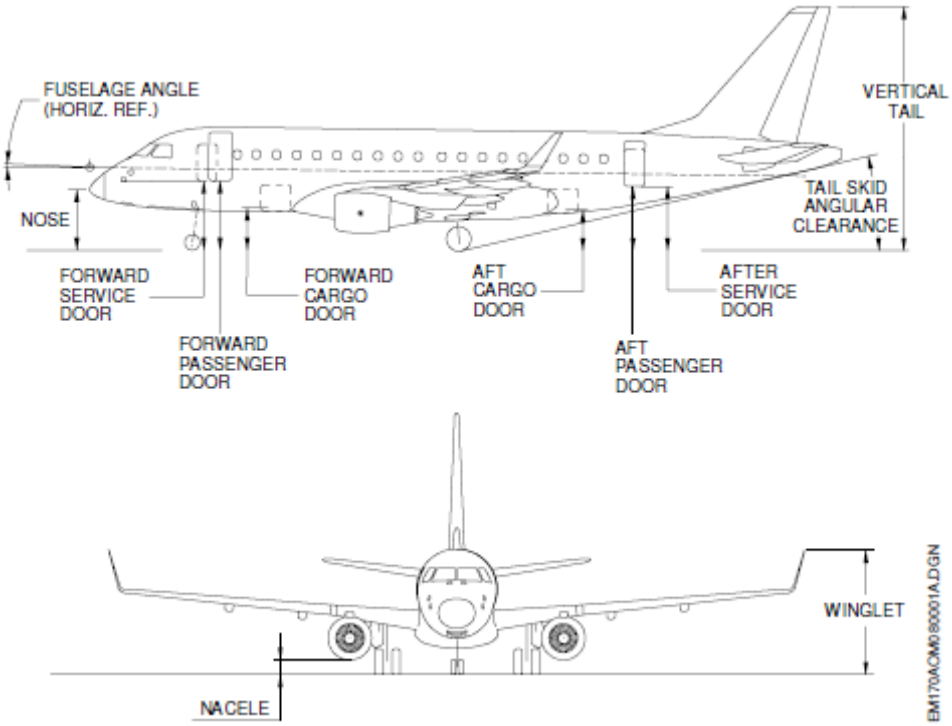
Aircraft Dimensions – E170



Aircraft Dimensions – E190

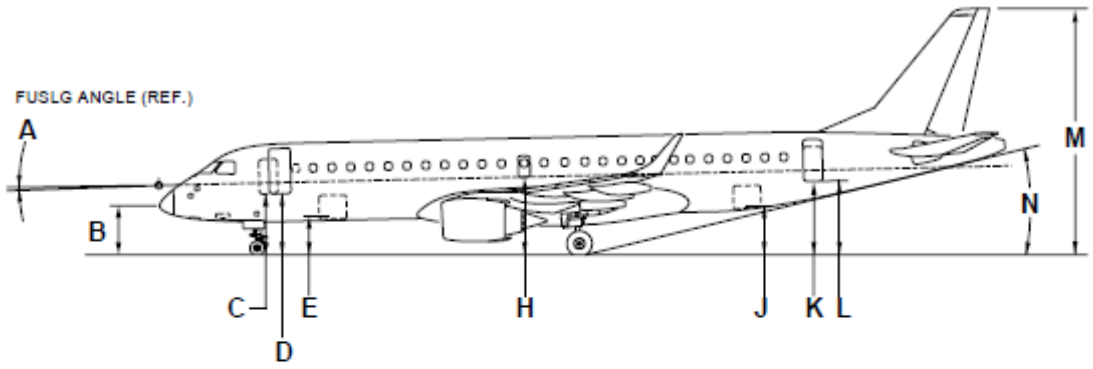


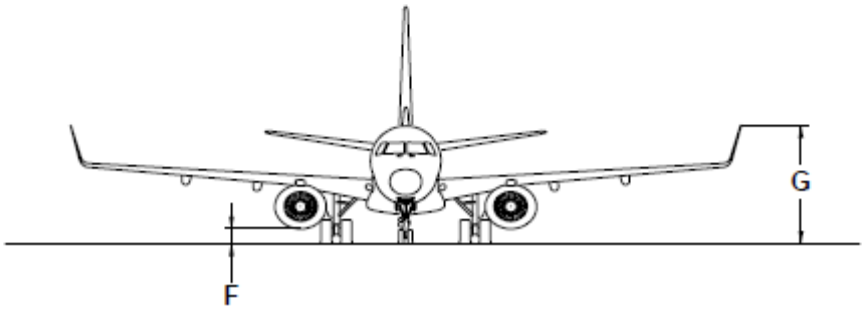
1.1 Ground Clearances – E170



VERTICAL CLEARANCE	MINIMUM	MAXIMUM
Aft Cargo Door	1.44 m (4 ft 9 in)	1.60 m (5 ft 3 in)
Aft Passenger Door	2.40 m (7 ft 10 in)	2.59 m (8 ft 6 in)
Aft Service Door	2.40 m (7 ft 10 in)	2.59 m (8 ft 6 in)
Forward Cargo Door	1.47 m (4 ft 10 in)	1.56 m (5 ft 1 in)
Forward Passenger Door	2.54 m (8 ft 4 in)	2.63 m (8 ft 7 in)
Forward Service Door	2.54 m (8 ft 4 in)	2.64 m (8 ft 8 in)
Fuselage Angle	0°	0.6°
Nacelle	0.48 m (1 ft 6 in)	0.57 m (1 ft 10 in)
Nose	2.13 m (7 ft)	2.24 m (7 ft 5 in)
Tailskid Angular Clearance	12.3°	13.4°
Vertical Tail	9.56 m (31 ft 4 in)	9.83 m (32 ft 3 in)
Winglet	4.47 m (14 ft 8 in)	4.62 m (15 ft 2 in)

Ground Clearances – E190

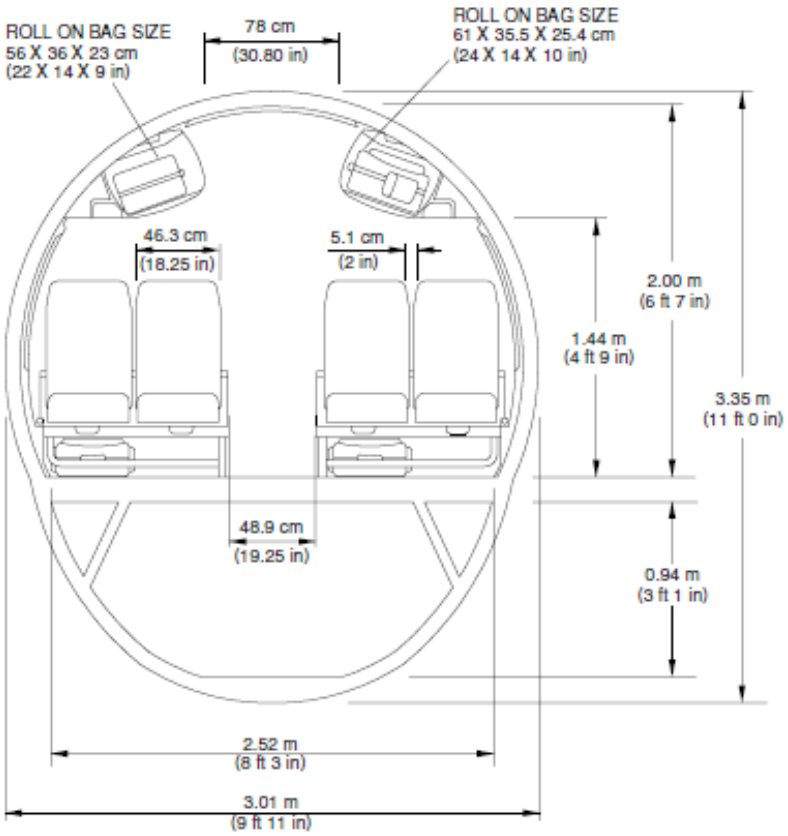




WEIGHT	CG (%MAC)	FUS ANGLE (DEG) (A)	NOSE (B)	FOR-WARD SERVICE DOOR (C)	FOR-WARD PASSEN-GER DOOR (D)	FOR-WARD CARGO DOOR (E)	NA-CELLE (F)	WINGLET (G)	EMER-GENCY EXIT (H)	AFT CARGO DOOR (J)	AFT SERVICE DOOR (K)	AFT PASSEN-GER DOOR (L)	VERTI-CAL TAIL (M)	TAIL SKID ANGU-LAR CLEAR-ANCE (DEG) (N)
47950 kg 105712 lb	6.0	-1.1	2.07 m 6 ft 9 in.	2.58 m 8 ft 5 in.	2.59 m 8 ft 6 in.	1.57 m 5 ft 2 in.	0.49 m 1 ft 7 in.	5.09 m 16 ft 8 in.	3.24 m 10 ft 8 in.	1.99 m 6 ft 5 in.	3.03 m 9 ft 9 in.	3.03 m 9 ft 9 in.	10.40 m 34 ft 2 in.	12.7
47950 kg 105712 lb	28.7	-0.8	2.13 m 7 ft	2.63 m 8 ft 7 in.	2.64 m 8 ft 8 in.	1.61 m 5 ft 3 in.	0.50 m 1 ft 8 in.	5.05 m 16 ft 7 in.	3.24 m 10 ft 8 in.	1.94 m 6 ft 4 in.	2.97 m 8 ft 8 in.	2.97 m 8 ft 8 in.	10.33 m 33 ft 9 in.	12.4
47790 kg 105359 lb	6.0	-1.1	2.05 m 6 ft 9 in.	2.58 m 8 ft 5 in.	2.59 m 8 ft 6 in.	1.57 m 5 ft 2 in.	0.49 m 1 ft 7 in.	5.09 m 16 ft 8 in.	3.24 m 10 ft 8 in.	1.99 m 6 ft 6 in.	3.03 m 9 ft 11 in.	3.03 m 9 ft 11 in.	10.43 m 34 ft 2 in.	12.7
47790 kg 105359 lb	28.7	-0.8	2.13 m 7 ft	2.63 m 8 ft 7 in.	2.64 m 8 ft 8 in.	1.61 m 5 ft 3 in.	0.50 m 1 ft 8 in.	5.06 m 16 ft 7 in.	3.24 m 10 ft 8 in.	1.94 m 6 ft 4 in.	2.97 m 9 ft 8 in.	2.97 m 9 ft 8 in.	10.33 m 33 ft 10 in.	12.3
43000 kg 94799 lb	6.0	-1.1	2.06 m 6 ft 9 in.	2.59 m 8 ft 6 in.	2.60 m 8 ft 6 in.	1.58 m 5 ft 2 in.	0.50 m 1 ft 8 in.	5.12 m 16 ft 9 in.	3.26 m 10 ft 8 in.	2.00m 6 ft 7 in.	3.06 m 9 ft 12 in.	3.06 m 9 ft 12 in.	10.45 m 34 ft 3 in.	12.8
43000 kg 94799 lb	29.0	-0.8	2.14 m 7 ft	2.65 m 8 ft 8 in.	2.66 m 8 ft 9 in.	1.63 m 5 ft 4 in.	0.51 m 1 ft 8 in.	5.08 m 16 ft 8 in.	3.26 m 10 ft 8 in.	1.96 m 6 ft 5 in.	2.99 m 9 ft 9 in.	2.99 m 9 ft 9 in.	10.35 m 33 ft 10 in.	12.4
40800 kg 89949 lb	6.0	-1.1	2.06 m 6 ft 9 in.	2.59 m 8 ft 6 in.	2.60 m 8 ft 6 in.	1.59 m 5 ft 3 in.	0.51 m 1 ft 8 in.	5.13 m 16 ft 10 in.	3.27 m 10 ft 9 in.	2.02 m 6 ft 7 in.	3.07 m 10 ft	3.07 m 10 ft	10.47 m 34 ft 4 in.	12.9
40800 kg 89949 lb	29.0	-0.8	2.15 m 7 ft	2.65 m 8 ft 8 in.	2.66 m 8 ft 9 in.	1.64 m 5 ft 5 in.	0.52 m 1 ft 9 in.	5.09 m 16 ft 8 in.	3.27 m 10 ft 9 in.	1.98 m 6 ft 5 in.	3.00 m 9 ft 10 in.	3.00 m 9 ft 10 in.	10.36 m 33 ft 11 in.	12.5

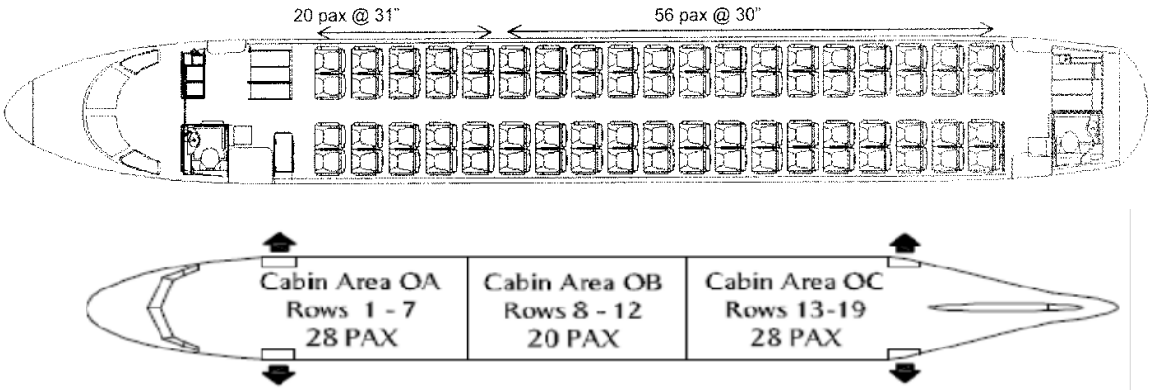
1.2 Aircraft Seating Configuration

Passenger cabin cross section



Cabin/Seating Configuration E170
E170 G-CMLI

The passenger area can accommodate up to 76 passengers with 19 rows of double seats on both the left and right hand side of the aircraft.
Rows 1-19 left hand side are lettered AB. Rows 1-19 right hand side are lettered CD.
Note: There is a row 13



The maximum number of passengers permitted in each section is :

Section	Rows	Totals
A	**1-7**	**28**
B	**8-12**	**20**
C	**13-19**	**28**
		76

Emergency Exit Seats

Row 1	Seats A, B, C, D
Row 19	Seats A, B, C, D

Special Passenger Seating (preferred)

Unaccompanied minors	Row 17 & 18	Seats B, C
Infants	Row 3, 5, 7, 9, 11, 13, 15, 17 (one per row)	Seats C, D
SCP - elderly, disabled & wheelchair passenger	Row 2,3 Row 17,18	Seats A, D Seats A, D

Wardrobe

E170 G-CMLI - There is one wardrobe at the front of the aircraft behind the SCCM Crew Seat.

E170 G-CMPI
The passenger area can accommodate up to 76 passengers with 18 rows of double seats on the left hand side of the aircraft and 20 rows of double seats on the right hand side of the aircraft.
Rows 3 -20 left hand side are lettered AB. Rows 1-20 right hand side are lettered CD.
Note: There is a row 13

The maximum number of passengers permitted in each section is :

Section	Rows	Totals
A	**1-8**	**28**
B	**9-13**	**20**
C	**14-20**	**28**
		76

Emergency Exit Seats

Row 1	Seat C
Row 2	Seat C
Row 3	Seats A, B
Row 20	Seats A, B, C, D

Special Passenger Seating (preferred)

Unaccompanied minors	Row 18 & 19	Seats B, C
Infants	Row 5-18 (only 1 INF per row)	Seats A, B, C, D
SCP - elderly, disabled & wheelchair passenger	Row 5, 6 Row 17,18	Seats A, D Seats A, D

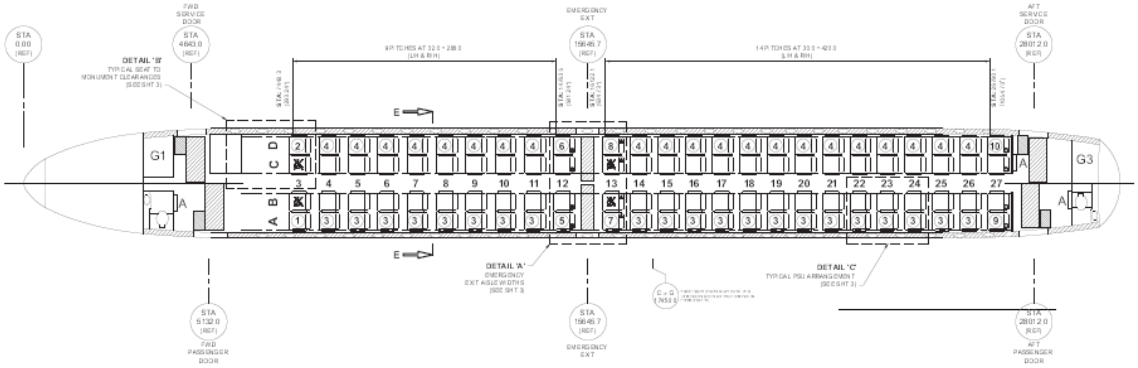
Cabin passenger Capacity: 76
Cabin Crew: 2
Flight Deck: 2

Seat Pitch club: 31”
Seat Pitch standard: 30”

Cabin length: 19.44m (63ft 9.4in)
Passenger headroom: 2.00m (6ft 7in)
Aisle Width: 0.49m (1ft 7in)

Wardrobe
E170 G-CMPI – There is one wardrobe at the front of the aircraft forward of the SCCM Crew Seat.

E190
100 Seats



Cabin passenger Capacity:
Cabin Crew: 2
Flight Deck: 2
Seat Pitch club:
Seat Pitch standard:
Cabin Configuration: 2 seats / aisle / 2 seats
No. of Rows:
Cabin length:
Passenger headroom: 2.00m (6ft 7in)
Aisle Width: 0.49m (1ft 7in)

E190 G-CLSN

The passenger area can accommodate up to 100 passengers with 25 rows of double seats on the left hand side and 25 rows of double seats on the right hand side of the aircraft.
Rows 3-27 left hand side are lettered AB. Rows 3-27 right hand side are lettered CD.

Note: There are no rows 1 and 2
There is a row 13

The maximum number of passengers permitted in each section is :

Section	Rows	Totals
A	3-10	32
B	11-19	36
C	20-27	32
		100

Emergency Exit Seats

Row 3	Seats A,B,C,D
Row 13	Seats A,B,C,D
Row 27	Seats A,B,C,D

Special Passenger Seating (preferred)

Unaccompanied minors	Row 25 & 26	Seats B,C
Infants	Row 5,7,9,11 Row 16,18,20,22,24	Seats C,D Seats C,D
SCP – elderly, disabled, & wheelchair passenger	Row 4,5,6 Row 24,25,26	Seats A,D Seats A,D

Wardrobe
E190 G-CLSN There is no wardrobe.

E190 G-CLYU
The aircraft configuration provides for 100 seats. Rows 1-25 left hand side are lettered AB. Rows 1-25 right hand side are lettered CD.

Note: There is a row 13

Emergency Exit Seats

Row 1	Seats A, B, C, D
Row 12	Seats A, B, C, D
Row 25	Seats A, B, C, D

Only ABP's are to be seated in emergency exit seats.

It is also recommended that wherever possible, ABP's should be re-seated to occupy emergency exit seats.

Special Passenger Seating (preferred)

Unaccompanied minors	Row 23 & 24	Seats B, C
Infants (one per row)	Row 3,5,7,9 Row 14,16,18,20,22	Seats C, D Seats C, D
SCP - elderly, disabled & wheelchair passenger	Row 2,4,5 Row 22,23,24	Seats A, D Seats A, D

Wardrobe
E190 G-CLYU – There is no wardrobe

1.4 Passenger Compartment Limits

Dimensions E170

Cabin Doors	Width Ft. In.	Mts.	Height Ft, In.	Mts.
Front Passenger Door	2′ 6.7″	0.75	5′ 11.6″	1.82
Rear Passenger Door	2′ 0.8″	0.63	5′ 7.3″	1.71
Front Service Door	2′ 0″	0.61	4′ 5.5″	1.36
Rear Service Door	2′ 0.8″	0.63	4′ 5.9″	1.37

Dimensions - 190

Cabin Doors	Width Ft. In.	Mts.	Height Ft. In.	Mts.
Front Passenger Door	2′ 9.5″	0.85	6′ 2.4″	1.89
Rear Passenger Door	5′ 2.2″	0.77	6′ 2.4″	1.89
Front Service Door	2′ 6″	0.76	4′ 7.1″	1.40
Rear Service Door	2′ 6″	0.76	4′ 10″	1.47

Carry-On Baggage

There is no specific requirement for underseat carry-on volumes; however a maximum of 0.04 m³ (1.4 ft³) or 9.0 kg (20 lb) is allowable, provided the volume is properly restrained to avoid sliding.

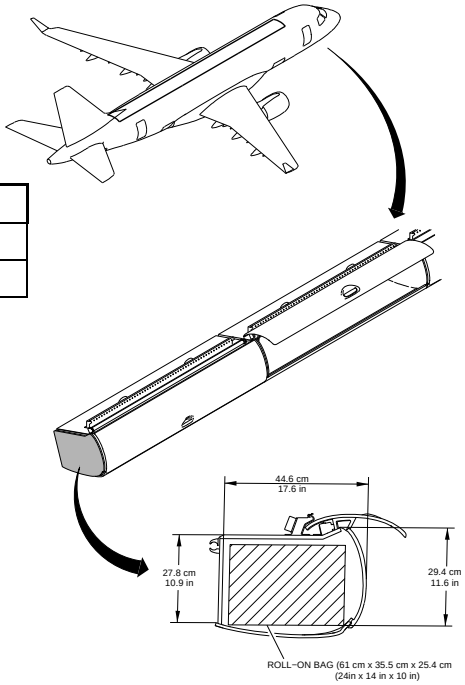
Overhead Bins

The cabin contains Standard & Long overhead bin assemblies on both sides of the passenger cabin. Overhead stowage compartments provide carry-on provisions for roll-on bags (61 cm x 35.5 cm x 25.4 cm or 24 in x 14 in x 10 in size).

The average volume of overhead bins is 0.06 m³ (2.12 ft³) per passenger.

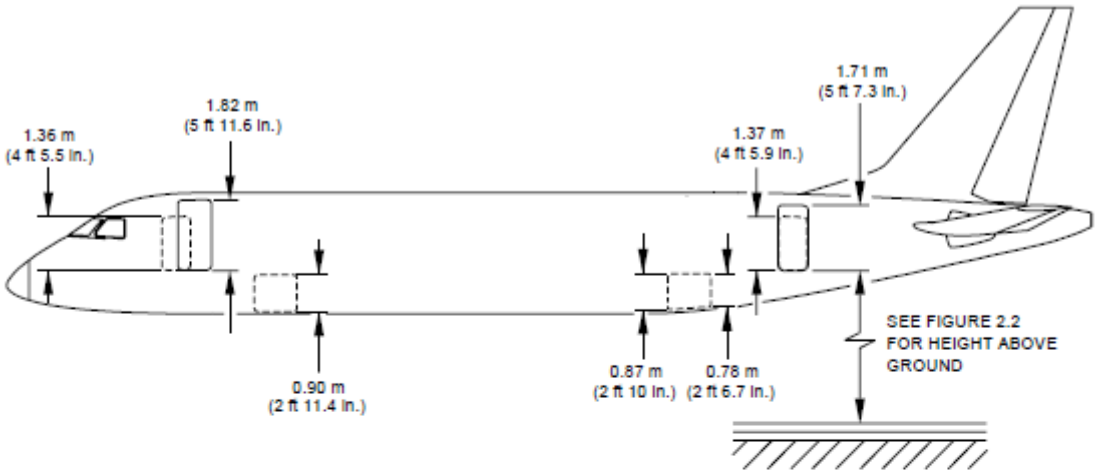
Overhead Bins Capacity And Length

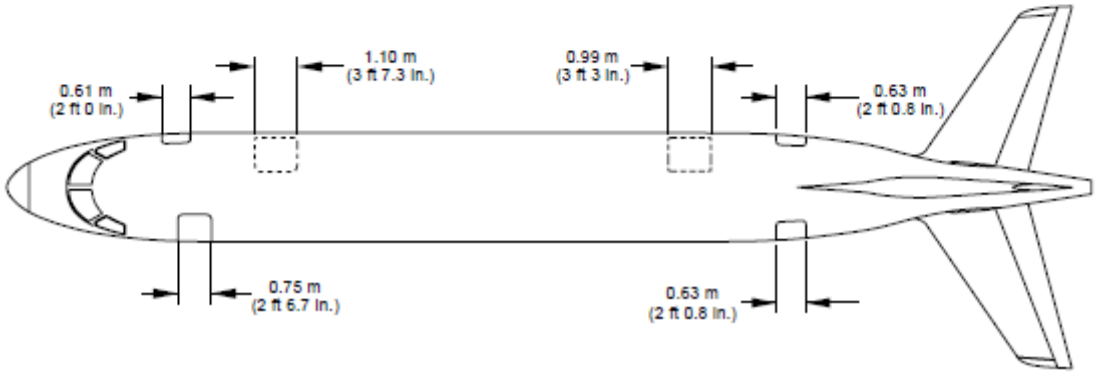
OVERHEAD BIN	LENGTH	CAPACITY
Standard	1.51 m (59 in)	36.3 kg (80 lb)
Long	1.72 m (68 in)	36.3 kg (80 lb)



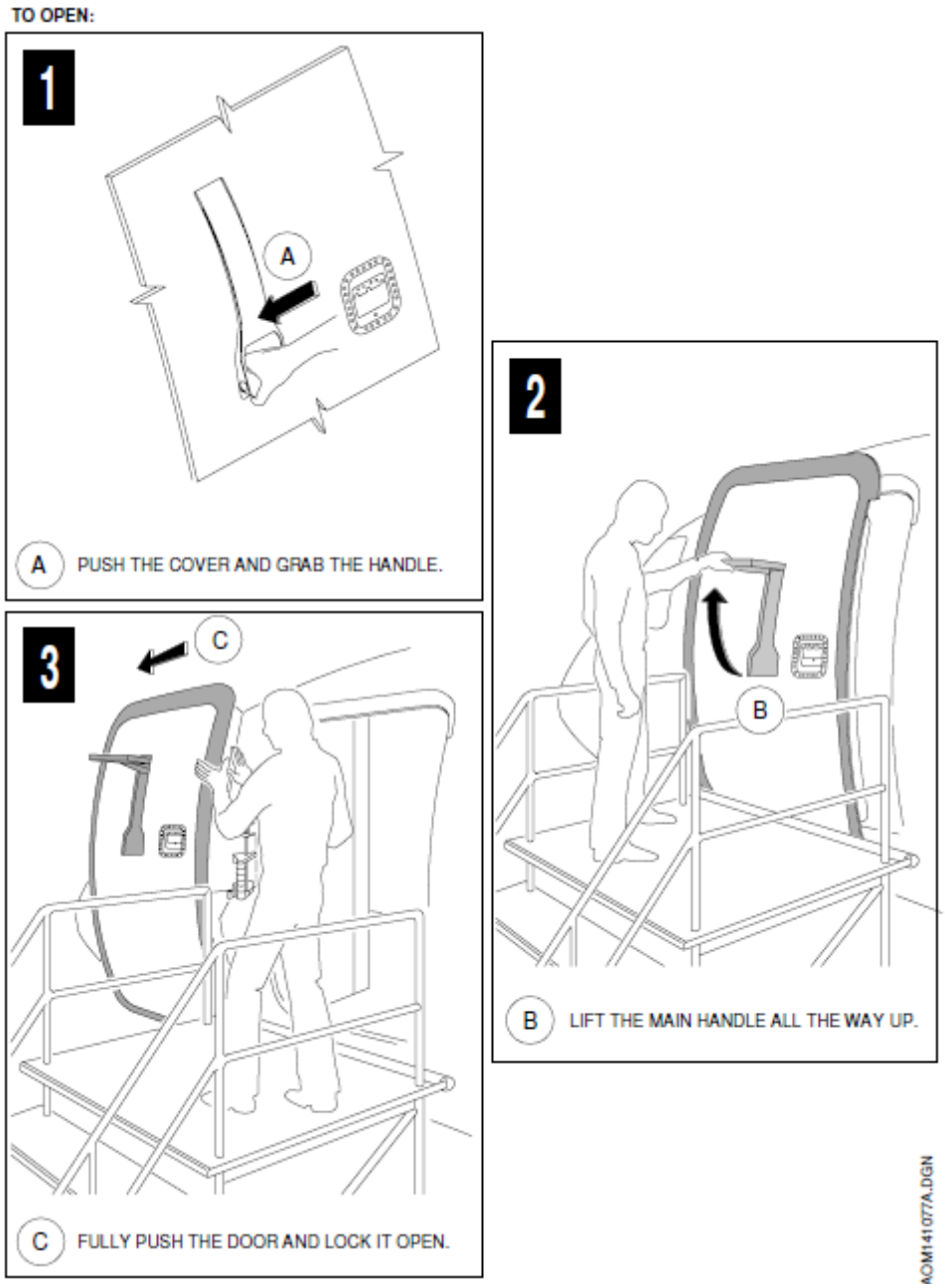
1.5 Doors and Holds

Door clearances



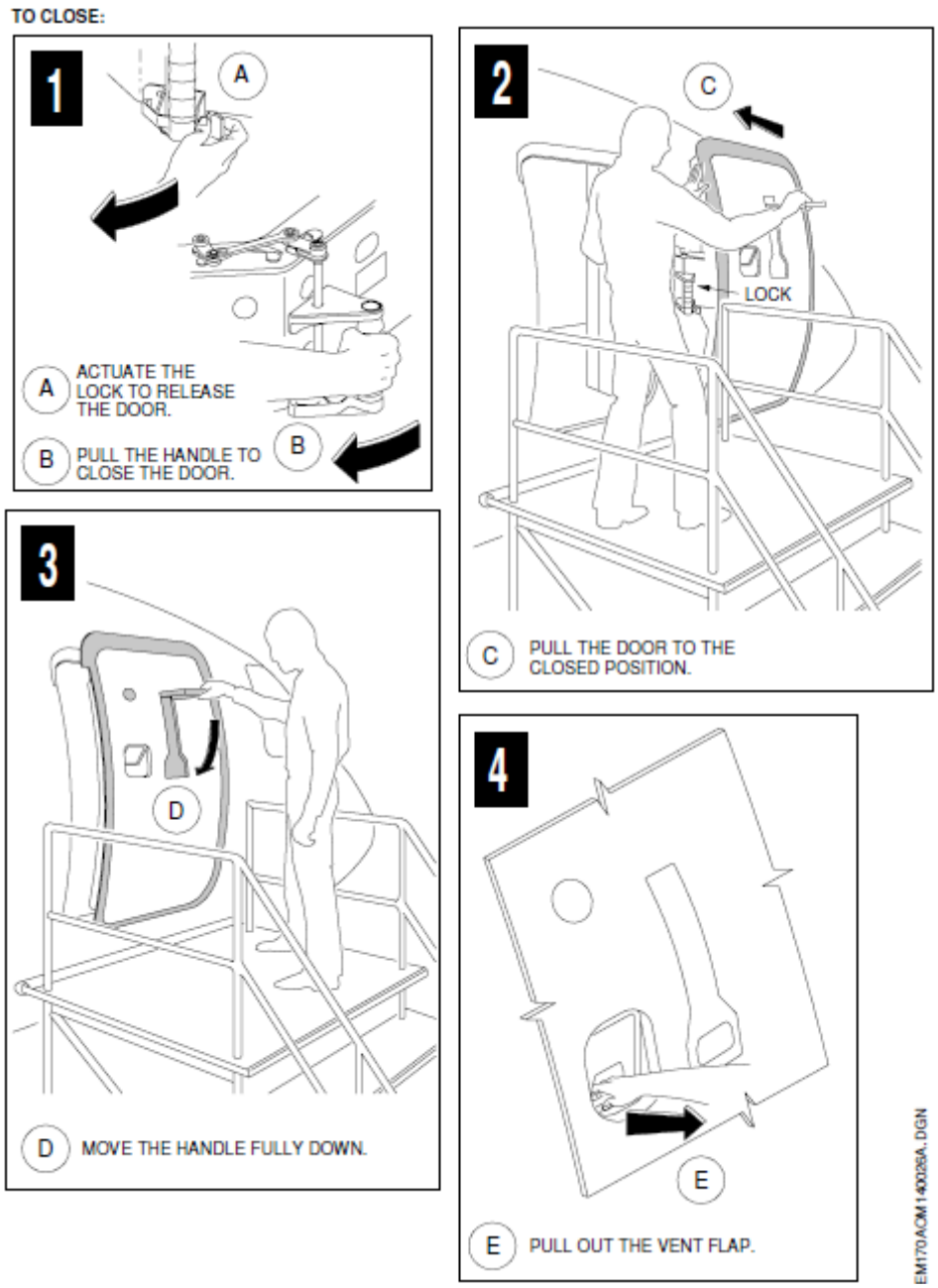


1.5.1 Opening of the passenger door

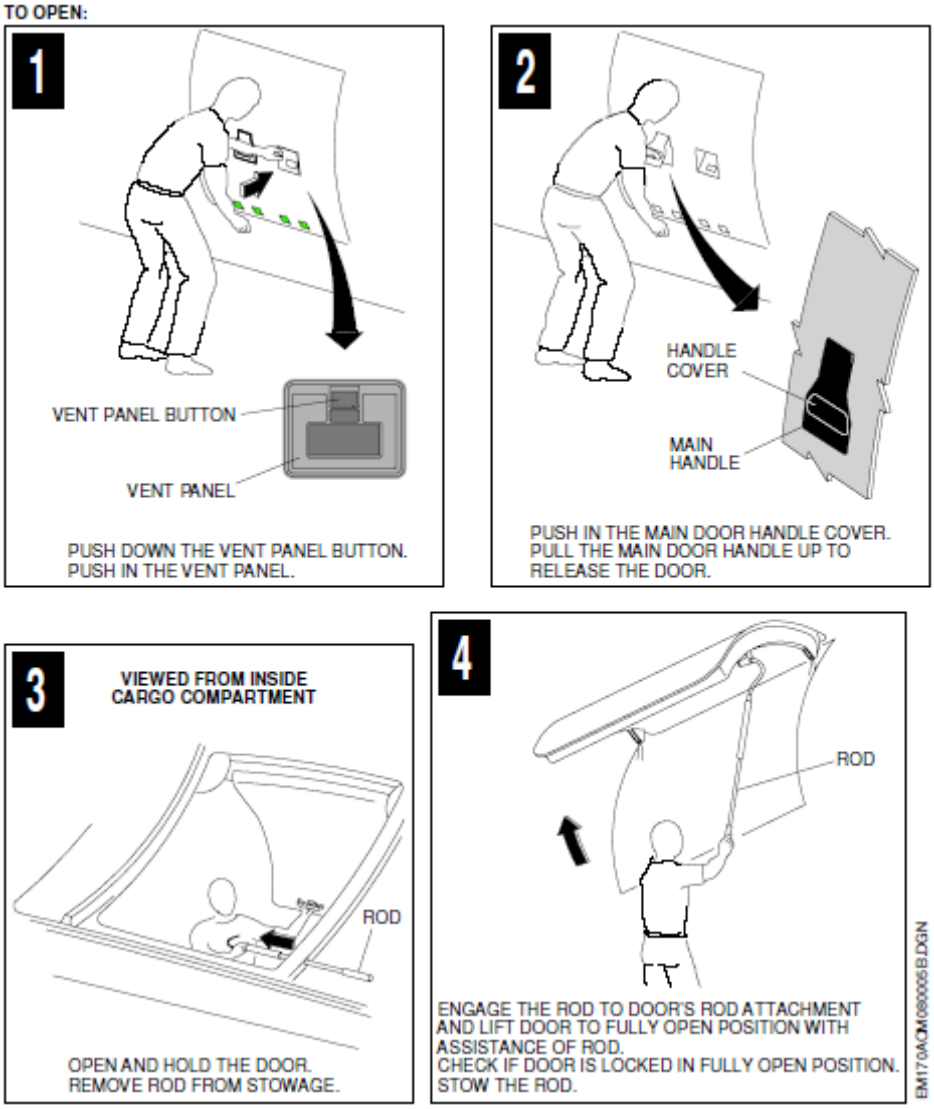


WARNING: Ensure that the vent flap is flush before opening the door.

1.5.2 Closing of the passenger door



1.5.3 Opening of the cargo door



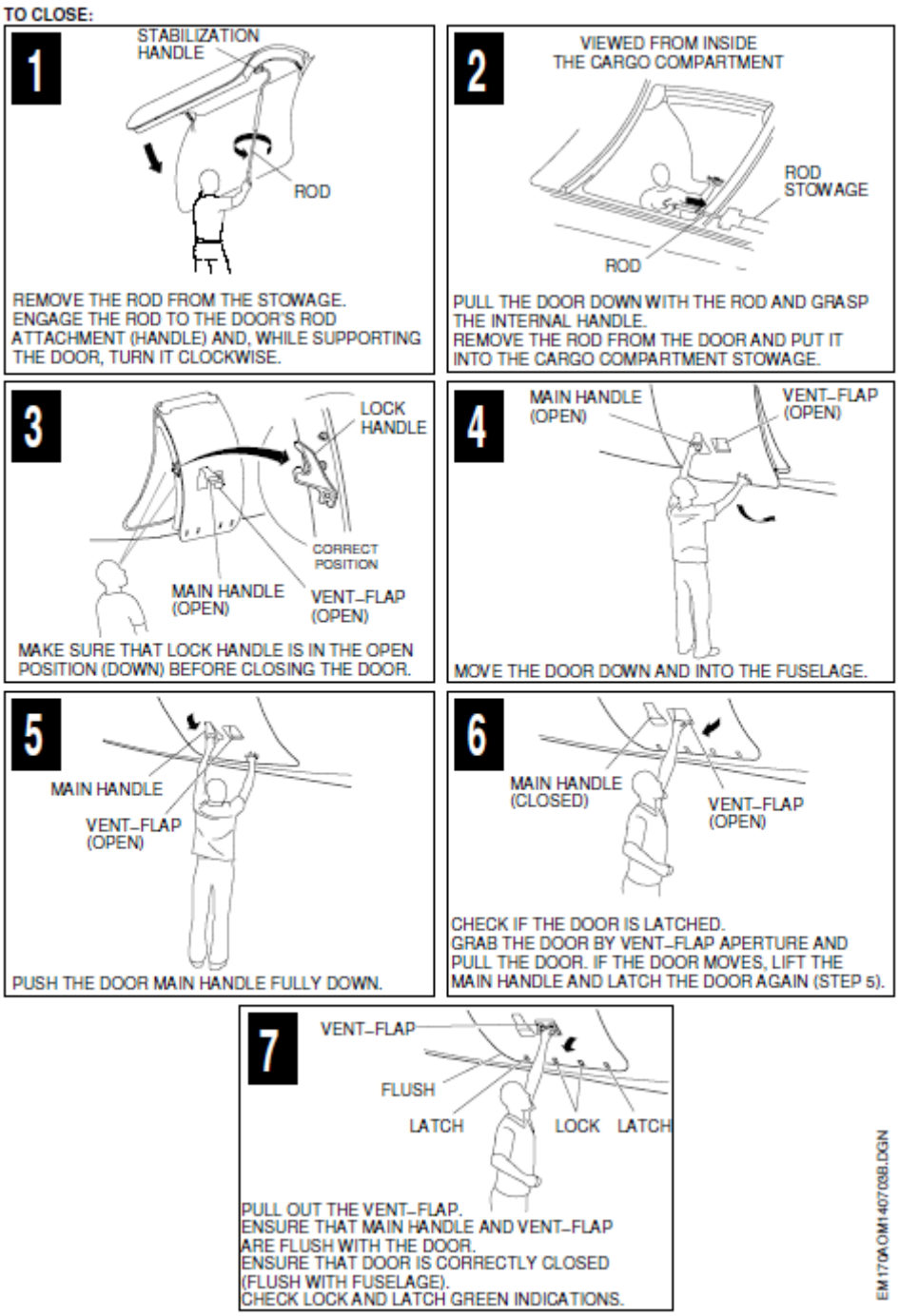
The cargo doors are manually operated from the outside. The initial opening movement (displacement of the door inward) and the final closing and latching movement displacement of the door outwards are achieved by means of a door looking mechanism controlled by external handle.

Two actuators are installed in each cargo door to give assistance in door opening and closing movements. So, the door operator must support the door weight by using the rod during all opening and closing movements.

The forward cargo door is 1.10m (3ft 7.3in) wide and 0.90m (2ft 11.4in) high.

The aft cargo door is a trapezoid 0.99m (3ft 3in) wide and with minor high of 0.78m (2ft 6.7in) and a major high of 0.87m (2ft 10in).

1.5.4 Closure of the cargo door



1.6 Cargo Hold Dimensions and Limitations

Forward Cargo Compartment Limits – E170

Cargo Compartment Available Volume (useful)	7.21m^3	254.60 ft^3
Maximum Floor Distributed Load	488 kg/m^3	100lb/ft^2
Maximum Floor Concentrated Load ψ see note	0.59 kg/cm^2	8.41lb/in^2
Total Maximum Capacity	**1370 kg**	**3016 lb**

Aft Cargo Compartment Limits – E170

Cargo Compartment Available Volume (useful)	4.59m^3	162.10ft^3
Maximum Floor Distributed Load	488 kg/m^3	100lb/ft^2
Maximum Floor Concentrated Load ψ see note	0.70 kg/cm^2	10lb/in^2
Total Maximum Capacity	**1030 kg**	**2267 lb**

Cargo Compartment Limits - E190

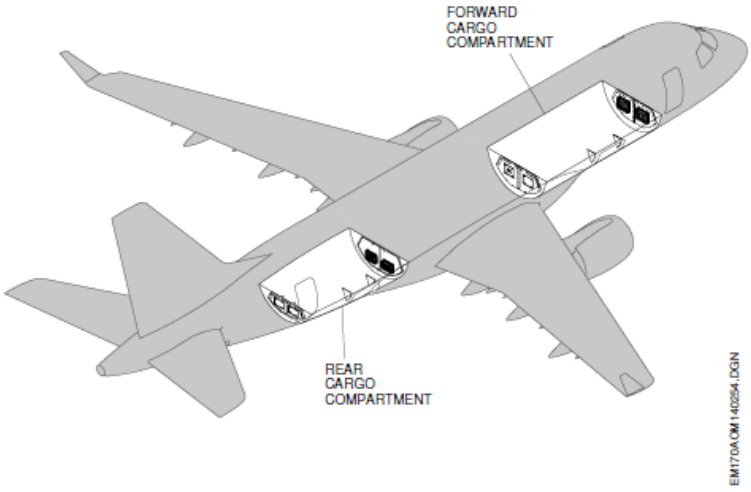
Cargo Compartment	Loading	Volume
FWD	1850 kg (4078 lb)	12.41 m3 (438.26 ft3)
AFT	1650 kg (3638 lb)	10.22 m3 (360.92 ft3)
Total	3500 kg (7716 lb)	22.63 m3 (799.18 ft3)

Cargo compartments are located in the forward and rear parts of the fuselage.

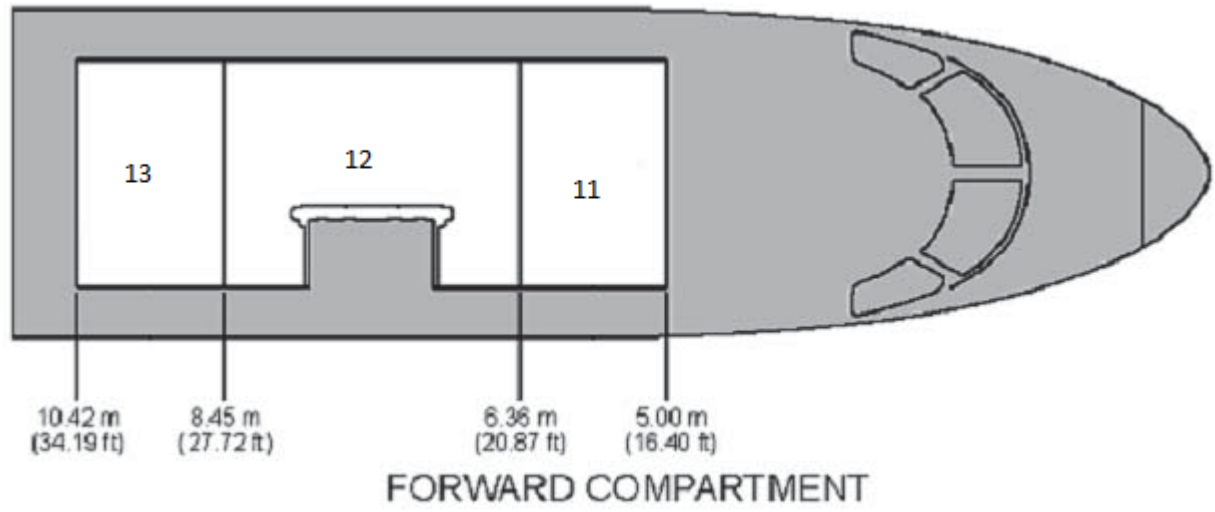
Both Cargo compartments are pressurised. They are "class-C" compartments and have the following systems installed:
- Smoke Detection System
- Fire Extinguishing System.

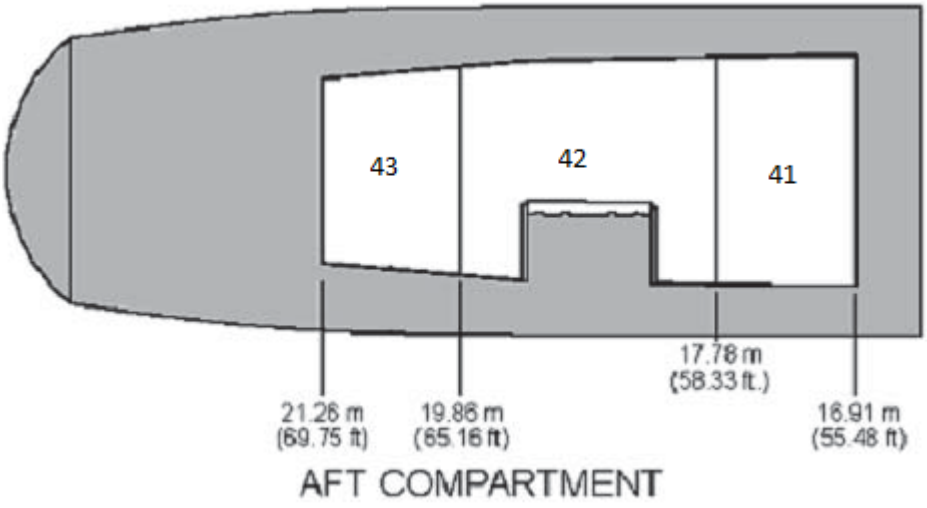
No Dedicated temperature control is available for cargo compartments.

The following nets are installed in the cargo compartment:
- Doors Safety Nets.
- Cargo Barrier Net (vertical net).



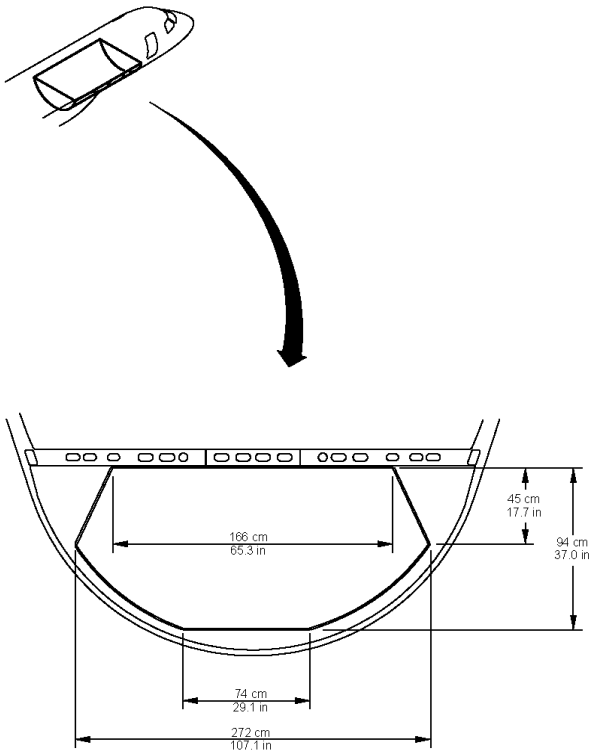
Maximum cargo compartment weights



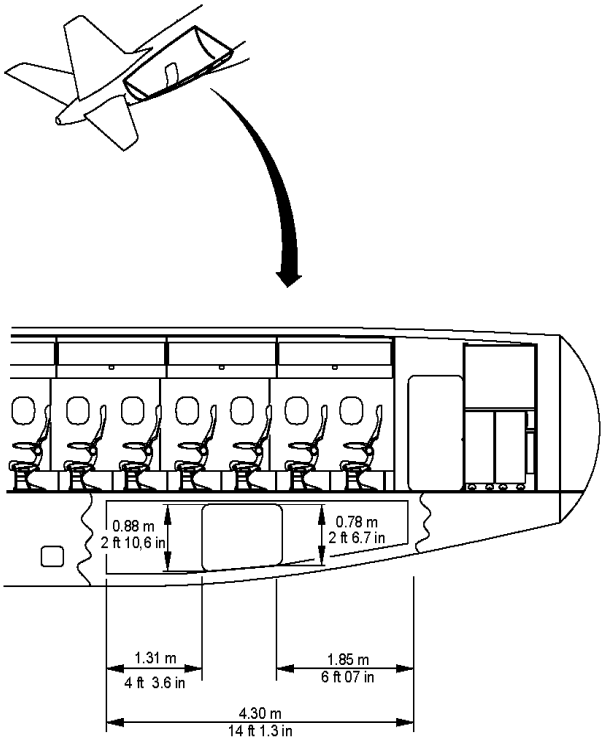


Compartment	Maximum Compartment Weight	
Forward	11	456kg / 1105lb
	12	456kg / 1105lb
	13	456kg / 1105lb
Aft	41	342kg / 754lb
	42	343kg / 756lb
	43	342kg / 754lb

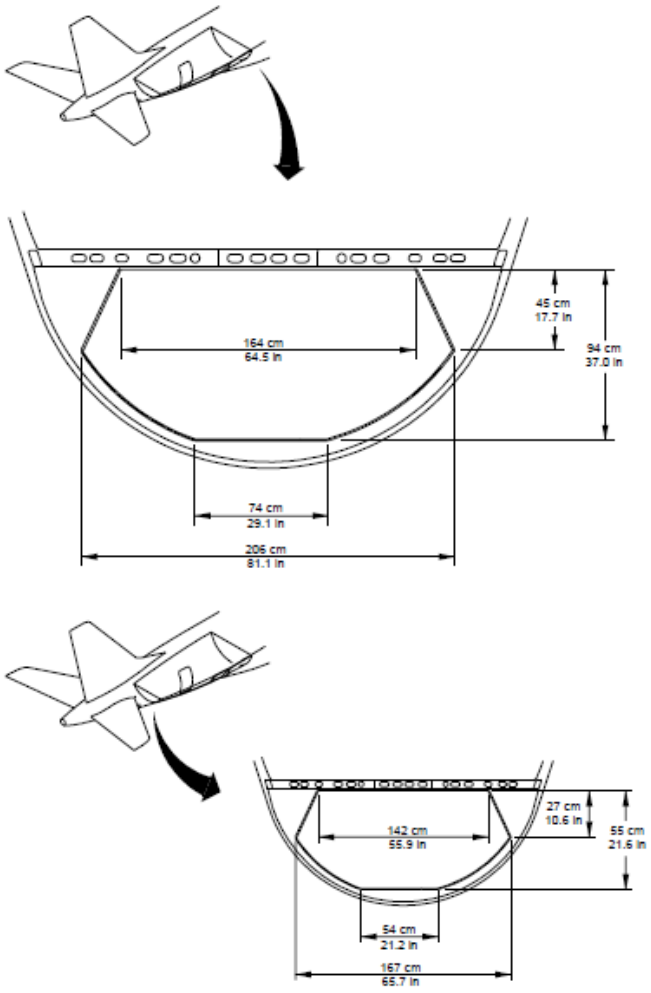
1.6.1 FWD Cargo compartment cross section



1.6.2 AFT Cargo compartment



1.6.3 AFT Cargo compartment cross section



1.7 EJET Baggage and Cargo Loading Procedure

Baggage and cargo should be evenly distributed over the cargo compartment to avoid load concentration.

Baggage/Cargo must not become a hazard to the airplane structure or systems as a result of shifting under operational loads. Therefore, sharp edge volumes (like wooden or metal containers) and/ or dense cargo (objects significantly more dense than typical passenger baggage) must be arranged with adjacent soft volumes or protections thus preventing airplane damage in case of baggage/ cargo shifting due to operational loads

To ensure proper operation of the smoke detection and fire suppression systems under all operating conditions, a placard, located on the inside sidewall panel of the cargo compartment, clearly visible when the cargo door is opened, is installed in the compartment to restrict cargo being loaded to within 2 (inches 951mm) of the cargo compartment ceiling. Cargo loaded up to the ceiling may cause a baffle effect and prevent dispersion of smoke in the compartment, resulting in delays in detection time. The proper dispersion of fire suppression agent in the compartment may also be affected if the cargo is installed in such a manner that it blocks the area surrounding the protection cage of the suppression nozzle.

To load the baggage compartment, the forward cargo compartment must always be loaded before the aft compartment, while the aft cargo compartment should begin to be unloaded before the forward cargo compartment to avoid airplane taildown.

1.8 EJET Cargo Nets

Cargo door nets prevent cargo doors from being damaged or jammed.

Attachments in the forward and aft cargo compartments allow the installation of vertical cargo nets. The vertical cargo nets prevent the luggage shifting and optimises the loading.

Maximum cargo compartment section weights must be observed when using vertical nets.

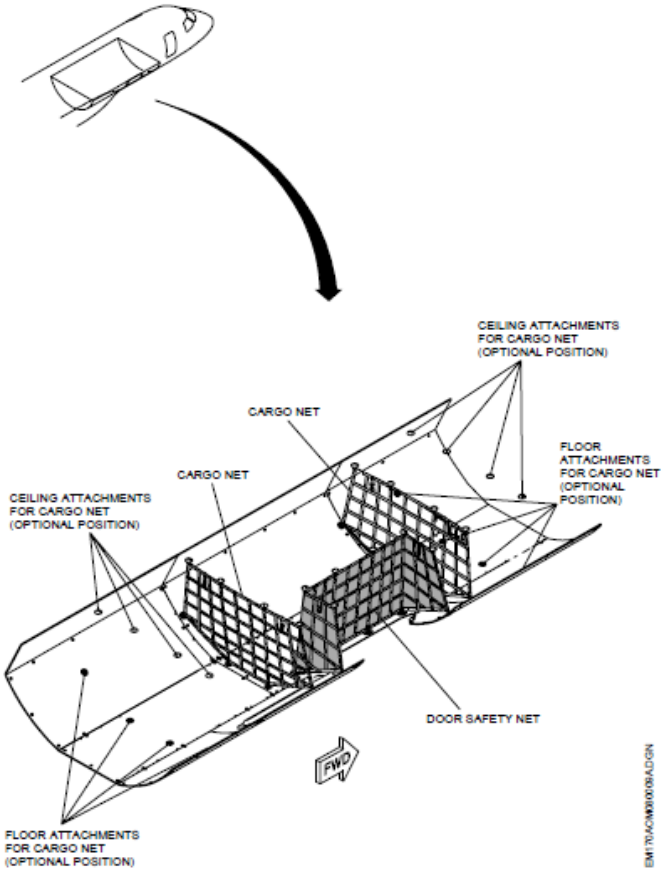
Decals on the net assembly indicate orientation (FWD, AFT, UP or RIGHT/LEFT)

Positioning of Cargo Compartment Divisions and Vertical Cargo Nets Attachments – m (ft)

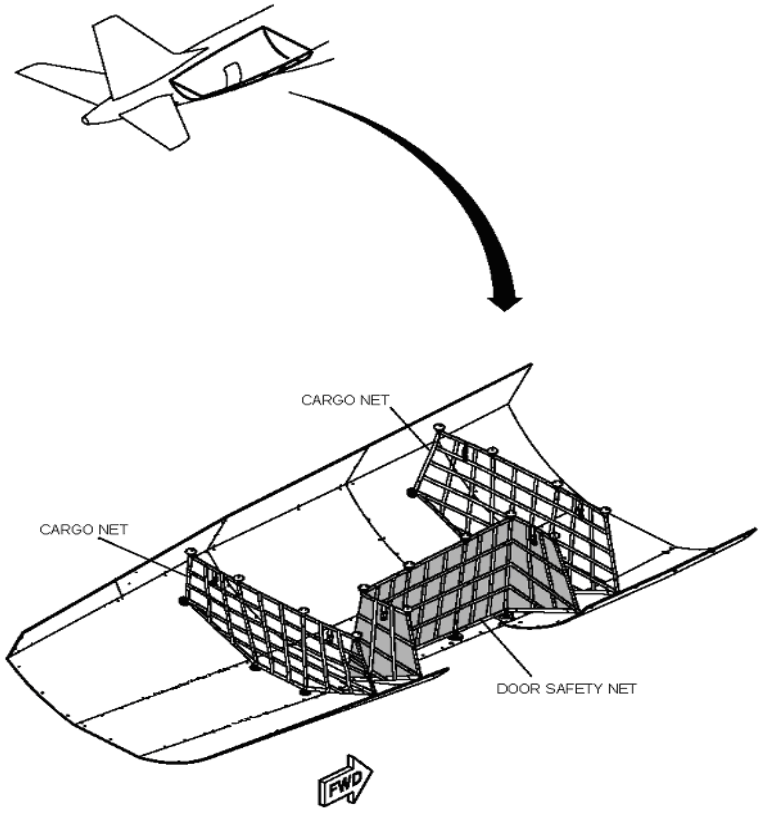
E170

	FORWARD	**AFT**
Forward Bulkhead Position	5.00 m (16.40 ft)	16.91 m (55.48 ft)
1st Vertical Net Attachment Position	Not Used	17.78 m (58.33 ft)
2nd Vertical Net Attachment Position	6.36 m (20.87 ft)	19.86 m (65.16 ft)
3rd Vertical Net Attachment Position	8.45 m (27.72ft)	Not Used
4th Vertical Net Attachment Position	Not Used	N/A
Aft Bulkhead Position	10.42 m (34.19ft)	21.26 m (69.75 ft)

1.8.1 E170 – Forward Cargo Net Locations

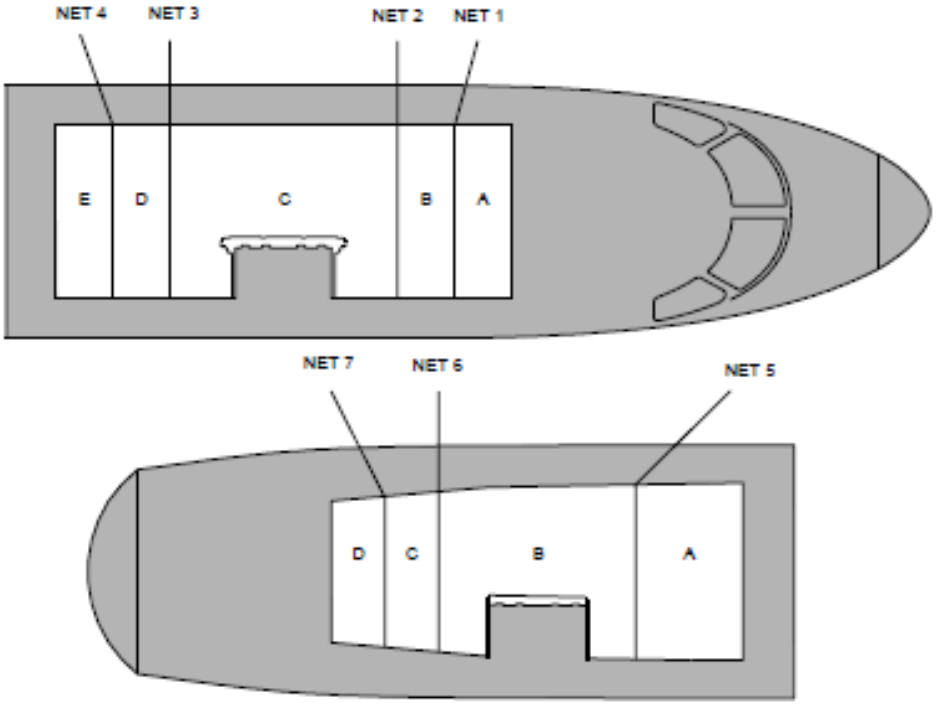


1.8.2 E170 – Aft Cargo Net Locations



1.8.3 Vertical Net and Section Loading

Each vertical net attachment position divides the cargo compartment in different cargo compartment sections as depicted below



1.8.4 Maximum Cargo Compartment Weights

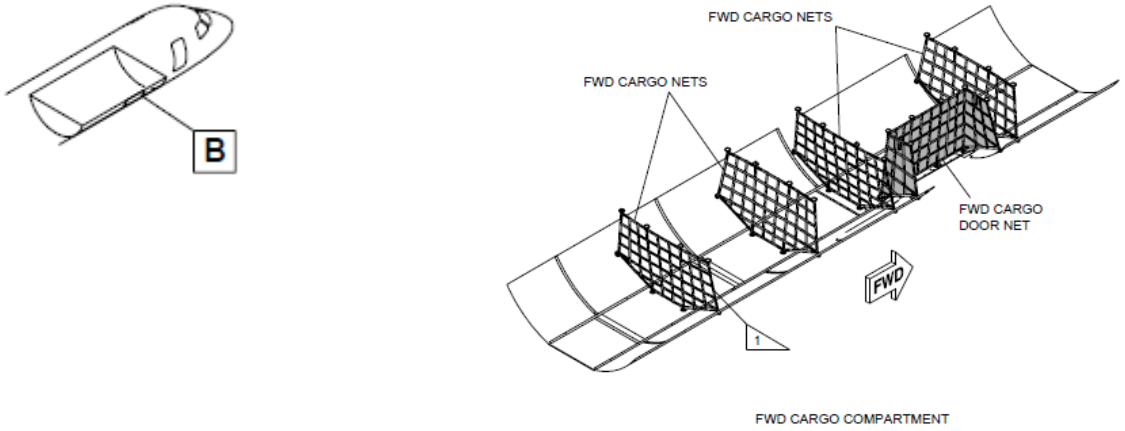
Compartment	Max Compartment Weight	Max Section Weight	
Forward	1370 kg / 3020 lb	A	137kg/302lb
		B	320kg/706lb
		C	457kg/1007lb
		D	240kg/529lb
		E	216kg/476lb
AFT	1030 kg / 2271lb	A	342kg/754lb
		B	344kg/759lb
		C	172kg/379lb
		D	172kg/379lb

1.8.5 Maximum Weights Adjacent to vertical Nets

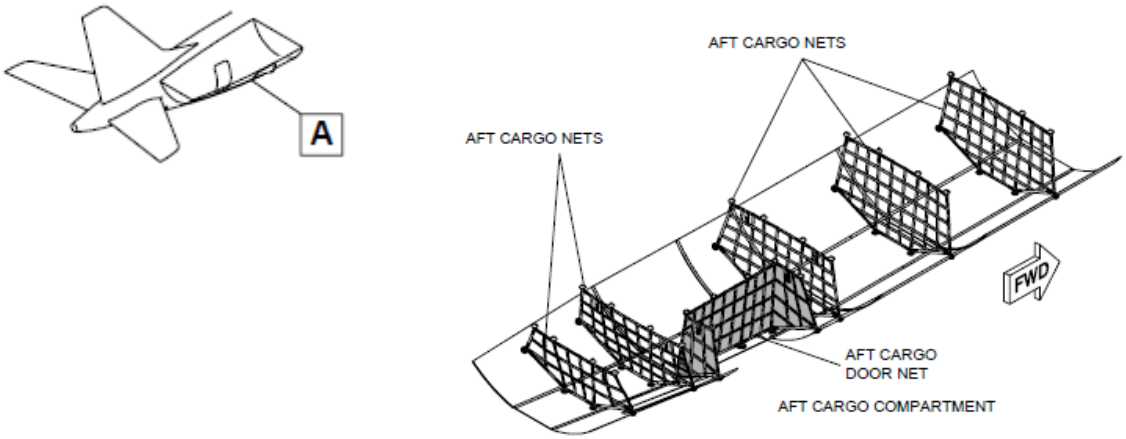
Each Vertical cargo net withstands adjacent weight according to the following table:

		Maximum Allowable Weight	
Compartment	Attachment Position	Fwd (⇒)	Aft (⇐)
Forward	6.36m (20.87ft)	456kg / 1005lb	456kg / 1005lb
	8.45m (27.72ft)	456kg / 1005lb	456kg / 1005lb
Aft	17.78m (58.33ft)	342kg / 754lb	342kg / 754lb
	19.86m (65.16ft)	343kg / 756lb	343g / 756lb

1.8.6 E190 – Forward Cargo Net Locations



1.8.7 E190 – AFT Cargo Net Locations



Note:

- Maximum allowable forward weight is the maximum cargo weight withstood by the vertical net considering a forward acceleration of cargo located behind the net.
- Maximum allowable aft weight is the maximum cargo weight withstood by the vertical net considering an aft acceleration of the cargo located in front of the net.

- Any Individual items weighing more than 25kg must be tied down using the tie down straps.

1.9 General Loading Restrictions

Dangerous Goods, live animals and human remains are, because of their nature, subject to special instructions, when carried by air. In the interests of flight safety, animal welfare and customer service in general, all staff involved with aircraft handling must comply with the rules in this instruction.

Live Animals

Eastern Airways do not accept carriage of live animals on our scheduled network, however live animals can be accepted for travel if agreed within a third party contract.

The procedure for carriage will be defined within a published Ground Handling Instructions (GHI).

Guide dogs and hearing dogs may be carried in the cabin.

Human Remains

Ashes in a strong, sealed container may be carried without restriction. Consignments must be carefully handled and must not be stowed under other cargo.

Dry Ice

The maximum quantity of Dry Ice permitted is 190kgs in the forward hold only.

Dangerous Goods

See Dangerous Goods section 9

1.10 Loading of Electric Mobility Aids (EMAs)

It is vital that all EMAs are handled and loaded correctly so as to:

- Prevent injury to staff and service providers
- Prevent damage to the wheelchair/mobility aid
- Prevent damage to the aircraft and
- Protect the safety of passengers and crew

Additional care should be exercised when handling, maneuvering battery powered wheelchairs, as these can be very heavy (in excess of 100 Kg).

It is the airport operator/PRM service provider's responsibility, in conjunction with the PRM, to ensure that the EMA is properly prepared for carriage but the airline is ultimately responsible for the safety of the EMA once loaded onto the aircraft.

1.10.1 EMA Loading Limitations

The carriage of EMA is subject to available space in the aircraft hold.

Only 2 EMAs 40 kilos maximum weight per EMA can be carried with prior approval.

The EMA must be able to fit through the cargo door on the E-Jet: -

- The forward cargo door is 1.10m (3ft 7.3in) wide and 0.90m (2ft 11.4in) high.
- The aft cargo door is a trapezoid 0.99m (3ft 3in) wide and with minor high of 0.78m (2ft 6.7in) and a major high of 0.87m (2ft 10in).

1.10.2 EMA Loading Locations

The company recommends that the EMAs are loaded in the locations listed below. Nothing else may be loaded in the same compartment as an EMA and the cargo nets must all be securely attached.

E170

Forward Hold
Rear Hold

1.10.3 Lashing Points For EMAs and Other Large Items

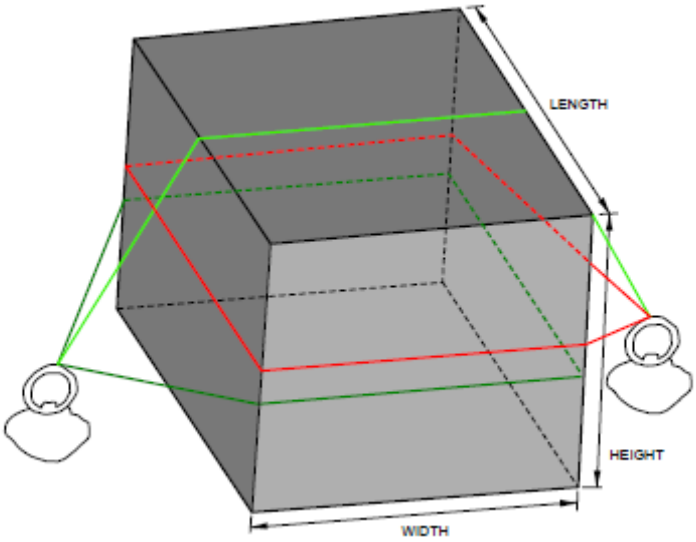
Large items requiring the need to be lashed down, for example electric wheelchairs are to be placed in the doorway of either the forward or rear hold.

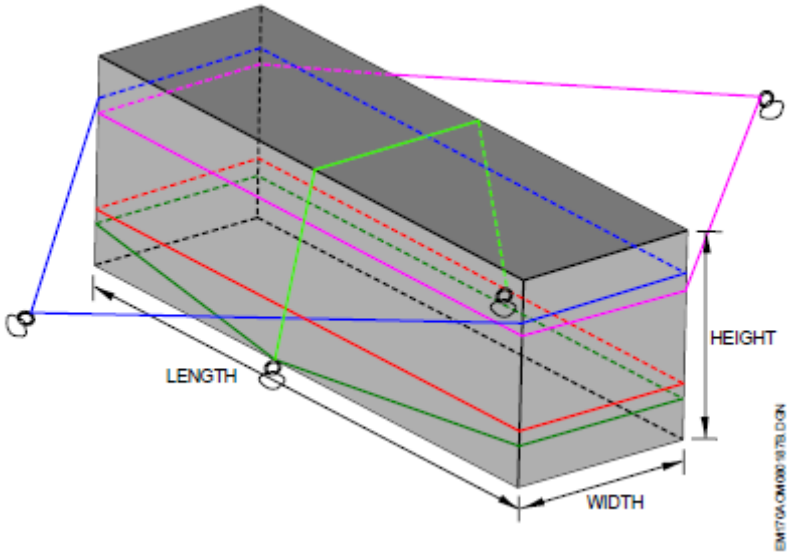
To ensure the structural integrity of the Hold Netting and Fuselage is protected, the items must be lashed using the rings of the existing hold netting as in Fig 2 below.

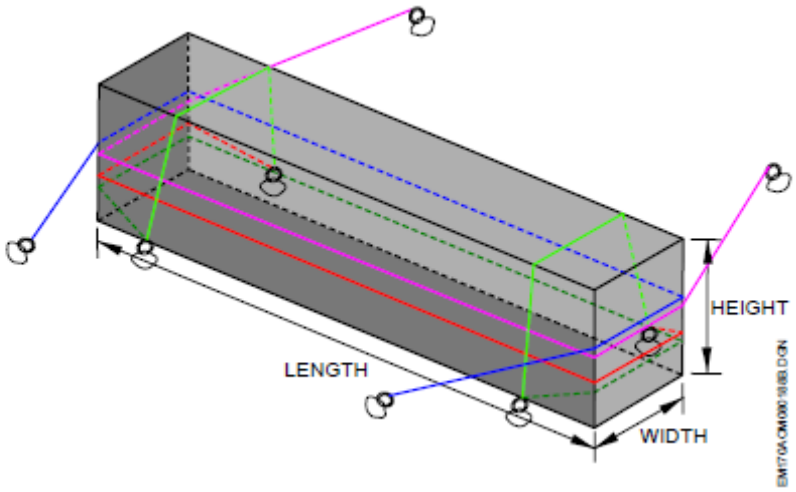
Fig2.

Warning: When securing Electric Wheelchairs or Loads, ensure that the items will not move during flight. When items are tied down, loose volumes are not allowed in the same section.

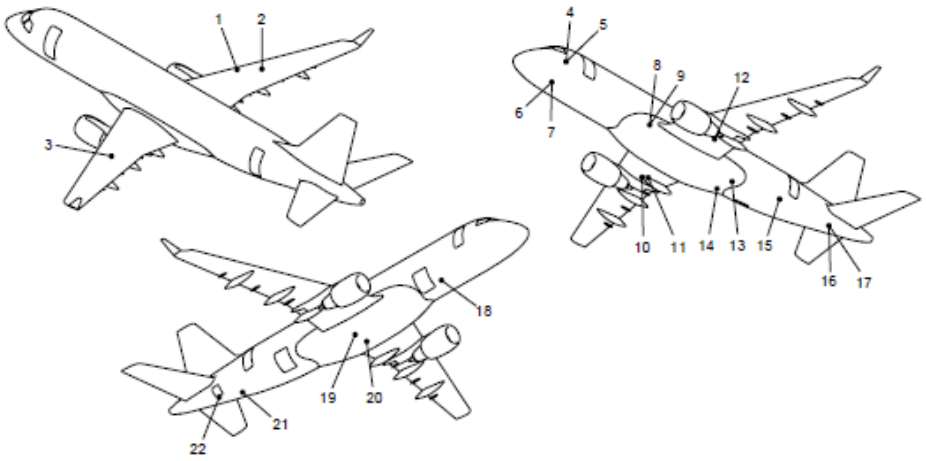
Examples of tied down loads.







1.11 Aircraft Servicing Locations



ITEM	DESCRIPTION	COORD. X (mm)	COORD. Y (mm)	COORD. Z (mm)	HEIGHT ABOVE GROUND (mm)
1	PRESSURE REFUELING PANEL	13491.27	5702.96	-623.30	2469.26
2	GRAVITY REFUELING PORT (RH)	14789.49	7413.99	-243.75	2848.49
3	GRAVITY REFUELING PORT (LH)	14789.49	-7413.99	-243.75	2848.49
4	EXTERNAL POWER SUPPLY 115 VAC	4146.90	-810.70	-1339.53	1755.33
5	FORWARD RAMP HEADSET	4164.44	-936.13	-1262.71	1832.15
6	STEERING SWITCH DISENGAGE	4136.97	-951.46	-1279.29	1815.58
7	WHEEL JACK POINT - NLG	4121.90	0.00	-2877.81	217.06
8	AIR COND. GROUND CONNECTION	10487.32	80.00	-1979.71	1113.60
9	ENGINE AIR STARTING (LOW PRESSURE UNIT)	10778.80	4.28	-2010.20	1083.03
10	GROUNDING POINT (ELECTRICAL)	14592.10	2560.25	-1343.60	1748.70
11	WHEEL JACK POINT- MLG (RH)	14476.67	2600.00	-2679.11	413.20
12	WHEEL JACK POINT- MLG (LH)	14476.67	-2600.00	-2679.11	413.20
13	HYD. SYS # 1 SERVICE PANEL	16560.17	-808.01	-1602.04	1489.76
14	HYD. SYS # 2 SERVICE PANEL	16560.17	808.01	-1602.04	1489.76
15	WATER SERVICING PANEL	21524.83	-329.37	-1178.74	1911.84
16	EXTERNAL POWER SUPPLY 28 VDC	24084.65	-471.73	-605.30	2484.65
17	AFT RAMP HEADSET	24225.26	-449.47	-585.54	2504.39
18	OXYGEN SERVICING PANEL / BOTTLE	6562.14	1159.87	-961.05	2133.22
19	FUEL TANK DRAIN VALVE (RH)	13352.80	398.47	-1413.71	1678.89
20	FUEL TANK DRAIN VALVE (LH)	13352.80	-398.47	-1413.71	1678.89
21	WASTE SERVICING PANEL	22447.01	349.20	-991.80	2098.55
22	HYD. SYS # 3 SERVICE PANEL	24061.86	519.15	-590.09	2499.87

1.11.1 Potable Water Service Point

Located at the rear of the aircraft tail, directly between the rear passenger door and the rear service door. Full instructions for filling and draining potable water are detailed inside the service panel.

The maximum capacity is;

G-CIXW 70 Litres (E170)
G-CLSN 110 Litres (E190)

During winter operations where the aircraft is to be parked overnight or longer in freezing temperatures, it is good practice to drain the water and refill prior to departure to prevent freezing.

1.11.2 Toilet Service Points:

The toilet servicing point is located next to the Potable water point under the tail area between the rear passenger door and the rear service door. Full instructions for filling and draining effluent are detailed inside the service panel.

- All ground handling staff should be familiar with each aircraft type toilet system and have access to the applicable operating instructions.
- Where leaks are found prior to flight to and cannot be rectified, the system should be drained and the toilet placarded 'INOPERATIVE'
- Toilet and water system servicing point sealing arrangements must be maintained serviceable at all times and should receive the same level of attention as afforded to any other aircraft system. All suspected leaks and faulty seals, bungs etc must be reported to engineers or flight deck.
- The system is vacuum operated and does not require fluid replenishment.

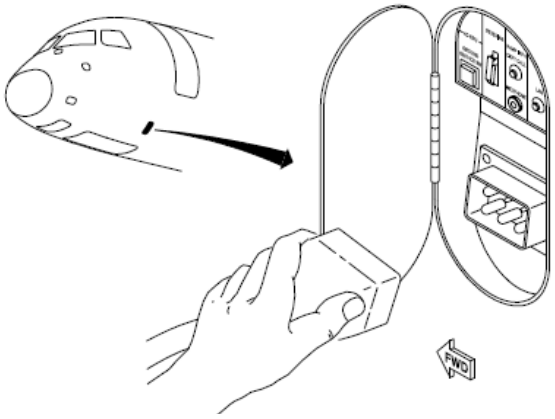
1.11.3 Ground Power / Headset Connection Point:

These points are located on the Left hand side of the fuselage, close to the nose-wheel. 115/200 VAC, three phase, 400 Hz AC external ground Power supply is the standard requirement for an E170 and should be supplied at stations where provision for Ground Power is included within the handling rate.

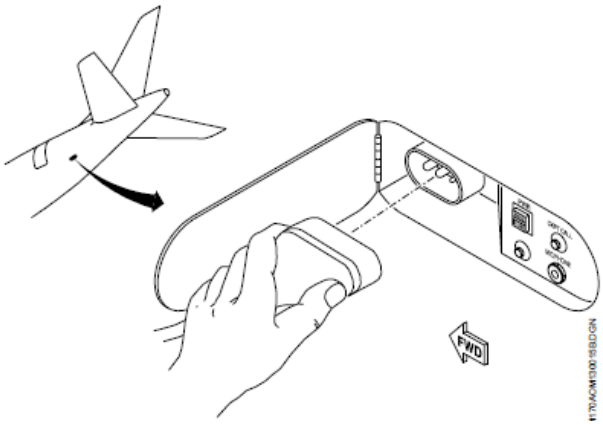
Ground Power is not generally required for normal turnarounds when the APU (Auxiliary Power Unit) can be left running for the duration of the turnaround.

Therefore at stations where provision of ground power is not specifically included within the handling contract, it should only be supplied on request.
(Normally only for extended turnarounds or in the event of APU un-serviceability).

Ground Power Socket



The 28 VDC external power supply is connected to the aircraft through the receptacle installed on the LH side of the rear fuselage. The DC power supply is used to start the APU.



1.11.4 Passenger And Service Doors:

The E-Jet series aircraft have 2 passenger boarding doors on the left hand side of the aircraft, front and rear, and two service doors on the right hand side of the aircraft, again front and rear.

All doors contain Emergency escape slides.

Passenger and service doors on the E-Jet series must NOT be operated by ground personnel unless they have been specifically trained by Eastern Airways and approved and hold appropriate authorisation. These doors are normally only operated by the aircraft crew.

The E-Jet series aircraft does not have integral airstairs fitted.

1.11.5 Doors Opening/Closing Procedure

No passengers/service door shall be opened until appropriate service equipment is in position at that door.

Where doors are required to be opened from inside the aircraft, confirmation that equipment is in position, in the form of 'two knocks' by hand on the outside of the aircraft door must be given.

Note: Before 'two knocks' are given, Agent must visually check the aircraft vent flap is open (see below image) confirming that the aircraft cabin access doors have been disarmed.

Cabin Crew **MUST** give a slow count of 10, to allow ground staff time to retreat to a safe position before doors are opened.

Warning: Unauthorised operation of the cabin doors can result in deployment of the emergency escape chute. As this is designed to inflate in approximately 2 seconds, any unauthorised operation of the doors could result in injury to personnel and damage to aircraft, etc.
Make sure that the vent flap is closed (flush with the door) before opening the door from the outside. If the external handle is used to open the door while the slide is armed and the vent flap is open, door emergency opening operation will occur and the escape slide will deploy.

No operator shall attempt to lower a platform or remove service equipment positioned to passenger/service doors, without first ensuring the door is closed by a trained operator.

No passenger/service door may be left open without any service equipment positioned to the door. In the event that a passenger/service door is found to have been left open without service equipment in position, the appropriate equipment must be replaced before any attempt is made to close the door.

Should service providers need to access the aircraft without crew on board, you must ensure that aircraft doors are closed prior to leaving the aircraft.

External passenger doors have a vent flap integrated within the door. This is designed to remain open until the cabin crew lock the cabin door from the inside, once the cabin doors are locked the vent flap will then pop out and fit snug against the door. During the walkround this is normal to experience these being open. If on engine start or during pushback the vent flaps are noticed to be open then please inform the Captain that they are still open.

1.11.6 Passenger Steps And Loading Bridges - Positioning

The following must be carefully observed when placing passenger steps or loading bridges in position to embark or disembark passengers:

Position steps/loading bridge approximately 4 to 6 inches below sill height to allow adequate clearance for outward opening door, the equipment **MUST** be placed within the raised reinforced area below the door. As the aircraft pitch can vary during refuelling, loading/unloading and embarking/disembarking passengers, take all necessary precautions to maintain adequate clearance. At the same time, ensure the rubber fender

on the platform is approximately 2 inches from the fuselage side. The aircraft is not to be used as a stop for the passenger steps or loading bridge, the equipment is to be stopped short and then positioned slowly to the correct stop point.

As soon as the steps are in position, the stabilisers are to be put in the fully down position and locked. If there is a significant drop from the aircraft door to the top of the steps, cabin crew must be informed so passengers can be advised.

1.11.7 Passenger Steps And Loading Bridges – Retraction

Passenger Steps

After the passengers have embarked and the aircraft door has been closed, the passenger steps can be removed.

Loading Bridge

After the passengers have embarked and the aircraft door has been closed, the loading bridge should be retracted clear of the aircraft to its approved parking position and the shutter closed. Before retracting the loading bridge, check to ensure the manoeuvring area is clear of all obstructions and personnel.

Once the aircraft doors have been closed and the steps and loading bridges have been removed, emergency evacuation is the responsibility of the Crew.

1.11.8 Air Start Unit Procedure

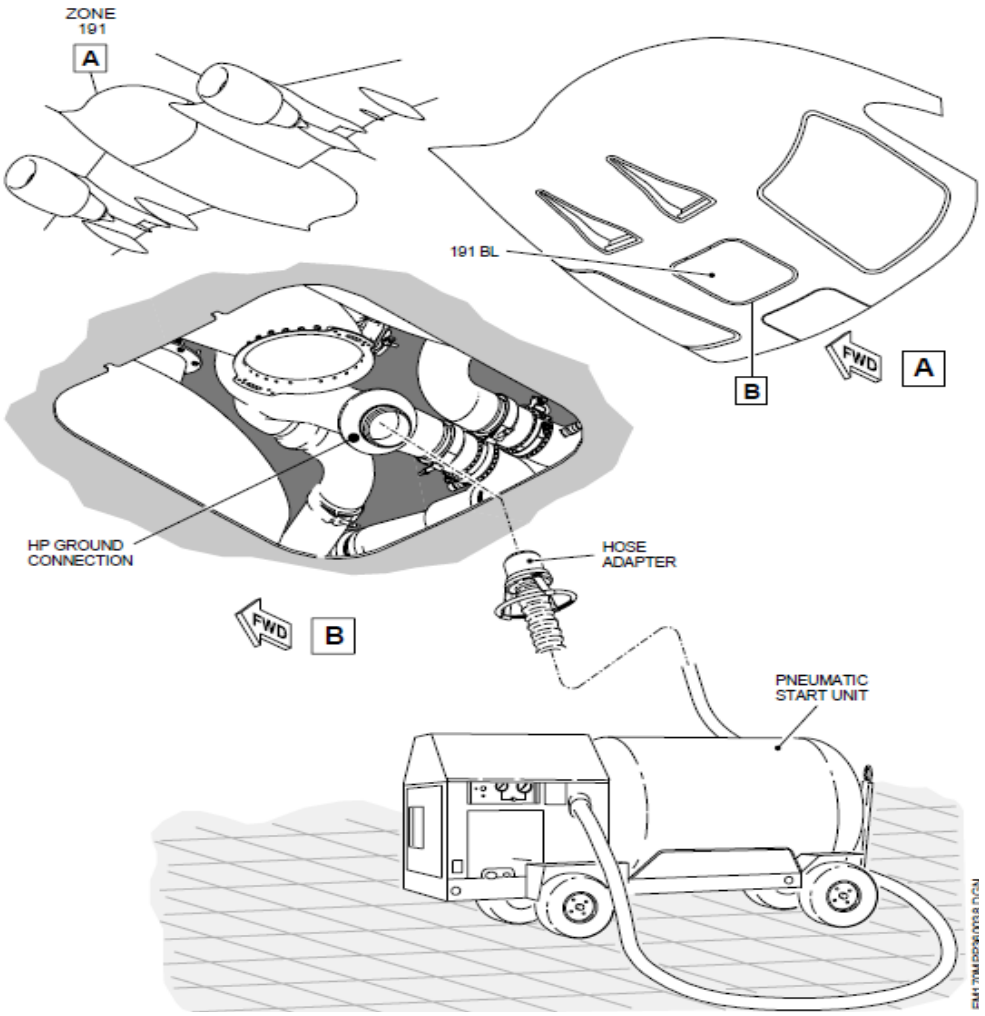
The Air Start Unit (ASU) connects to the aircraft HP ground connection installed on the wing-to-fuselage fairing.

WARNING: Before connecting the ASU, the APU and both engines must not be active in order to prevent damage to the ASU. Only individuals trained in the ASU procedure must carry it out.

Be careful when applying pressure to ensure that maximum pressure is not exceeded (**60psi**). Only apply pressure when confirmed with the flight deck.

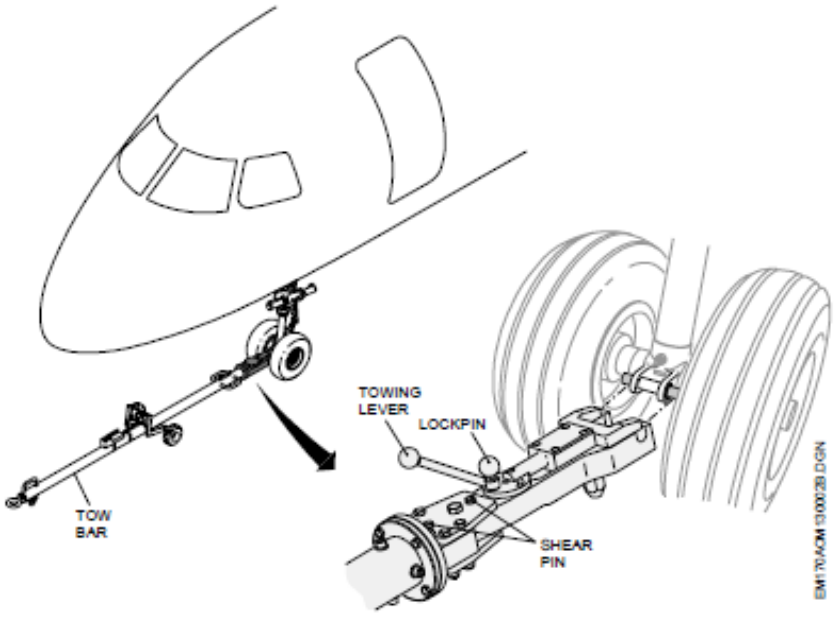
When the start is complete, be sure to switch of the ASU and release any remaining pressure in the system before disconnecting.

Disconnect the hose, secure the external hatch and remove the hose and ASU.



1.11.9 Connecting / Disconnecting towbar

The tow bar incorporates breakable sections with the purpose of causing the tow bar to break in case of any towing abnormality, to protect the aircraft structure or the nose landing gear from damage.



TOWING EQUIPMENT

Connecting;

- Pull the locking pin and set the towing lever to the release position
- Install the tow bar on the towing attachment on the NLG
- Pull the locking pin and set the towing lever to the towing position
- Connect the other end of the tow bar to the tug

Disconnecting;

- Remove the tow bar from the tug
- Pull the locking pin and set the tow bar lever to the released position
- Remove the tow bar from the NLG

1.11.10 Towing Procedure

- Doors and hatches CLOSED
- Trained brake rider IN POSITION
- Emergency / parking brake SET
- Landing gear safety pins INSTALLED
- Landing gear shock struts CHECK (sufficient extension)
- RAT stow lock pin INSTALL
- APU ON
- Emergency / parking brake CHECK (check if emergency/park brake accumulator is pressurised. Pull handle to check if brake light is on)
- Steering system DISENGAGE
- EICAS message CHECK (check the STEER OFF message is displayed)
- Towing indication light RED
- Tow bar INSTALL
- Comms with ground staff ESTABLISHED
- Wheel chocks REMOVE
- Emergency / parking brake RELEASE
- Towing indication light GREEN
- Towing COMENCE

CAUTION: Do not steer the nose landing gear more than the maximum angle permitted (76°)

Towing completed

- Emergency / parking brake SET
- Wheel chocks INSTALL
- Tow bar REMOVE
- Steering system ENGAGE
- EICAS message CHECK (press and release the handwheel in the cockpit and check if the STEER OFF message goes off)
- Towing indication light RED
- APU OFF
- RAT stow lock pin REMOVE
- Landing gear safety pins REMOVE

WARNING: Only persons trained in brake riding must act as brake riders.

All tows must have wing walkers on each wing. Wing walkers must monitor the clearance of the wing tips to obstacles and provide a clear indication (thumbs up or stop aircraft gesture) to the tow driver.

If the tow driver cannot see each wing walker, the tow must stop until visual reference can be established.

Ensure minimum manpower is available, consisting of tug driver and brake man, and x2 wing men

When towing aircraft into confined spaces such as hangars there are to be 2 wingmen in position. Standard wing tip clearance signals are to be used

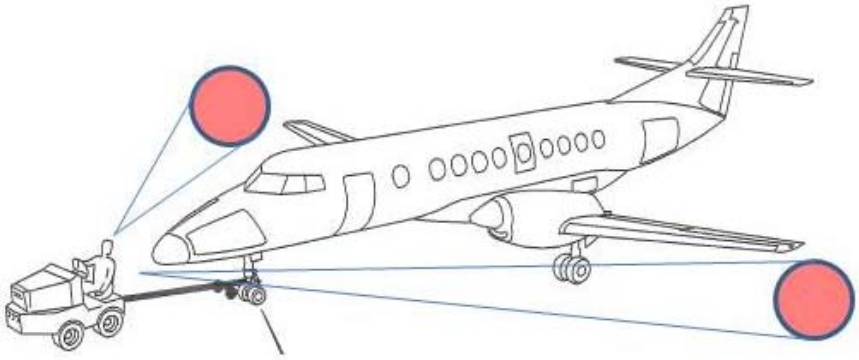
Ensure personnel are appropriately qualified with ADP and/or airport security passes.

Ensure personnel are equipped with appropriate personal protection equipment.

Ensure all pre use inspections have been carried out on towing equipment to include tug AVP and tow bar damage inspection, paying particular attention to shear pins.

Ensure undercarriage ground pins are installed.

Position of wing walkers



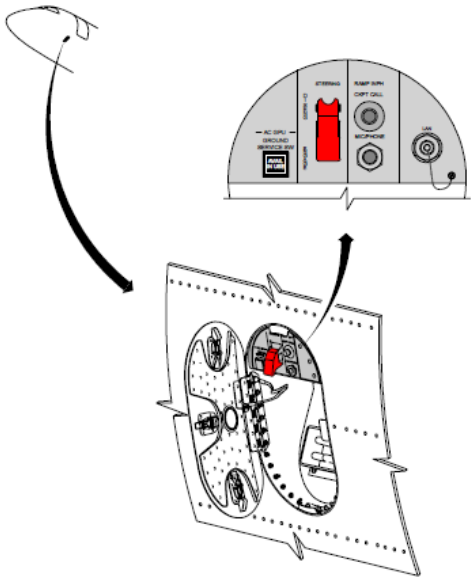
1.11.11 Pushback Procedure

- RAT stow lock pin CHECK (remove from the RAT)
- Landing gear safety pins CHECK (Remove from the undercarriage)
- Wheel chocks INSTALL
- Emergency / parking brake SET
- Towing indication light RED
- Steering system DISENGAGE
- EICAS message CHECK (check the STEER OFF message is displayed)
- Ground equipment CHECK (all equipment is removed)
- Doors and hatches CLOSED
- Tow bar INSTALL
- Wheel chocks REMOVE
- Emergency / parking brake RELEASE
- Towing indication light GREEN
- Pushback COMMENCE

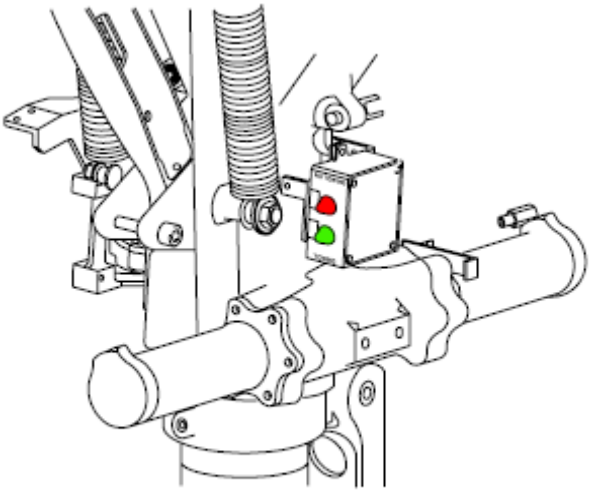
CAUTION: Do not steer the nose landing gear more than the maximum angle permitted. Complete the pushback in a straight line for a minimum of 3m (10ft) to align the steering as close as possible to the zero degree position.

Pushback completed

- Emergency / parking brake SET
- Towing indication light RED
- Tow bar REMOVE
- Flight crew ADVISE (tow bar removed)
- Steering system ENGAGE
- EICAS message CHECK (press and release the handwheel in the cockpit and check if the STEER OFF message goes off)
- Access door CLOSE (close and latch the external steering access door)



EXTERNAL STEERING DISENGAGEMENT SWITCH



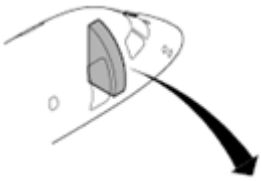
TOWING LIGHTS

WARNING: Eastern Airways E170 aircraft may carry an air portable tow bar in the hold.
These tow bars must be kept restrained and the weight recorded on the manifest

1.11.12 Galley Servicing – E170

The following describes the galley layouts and tray set ups for the aircraft.

FWD Galley (G1)



Forward Galley – Rear facing

Spare bottles of Water

Spare Snacks
Spare Crisps Tray
Spare Biscuits Tray

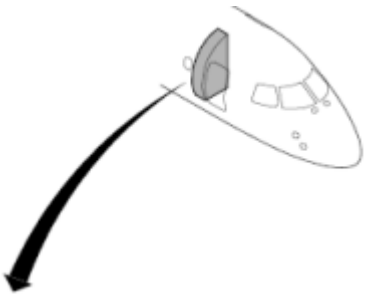
Has a box already installed for spare ice.

Service Trolley 1
(Normal standard eastern service trolley)

Trolley 2
Trolley top

Spare OJ/coke tray
Spare Mineral Tray
Spare Beer Tray
Spare wine Tray

FWD Galley (G2)



Fill with white cups/ plastic glasses/ flight deck cups and lids

Hot Towels x12 stacked at the back
J cloths, EA Napkins , Red/blue Napkins/bin bags

First Overhead locker R/H Side – **ELT, Demo Kit** B3 Manual, six bottles of emergency water, first aid blanket, Clipboard,

Fill with spare water

Pre-recorded annoucement

Side Stowage 1 Fire Retardant Gash Bag

Dry Stores
Tubs x3 -
nescafe,teabags,sugar/sweetex
1 cup plastic spoons
1 tub – milk
Tea pot
Long Spoon
Lemons x2
Wizzle Sticks 2 bundles
Coffee Sachets

Side Stowage 2 – First Aid Kit

Side Stowage 3 – Spare Eastern mags/spectator mags/safety cards/sick bags/timetables

Wardrobe
-Hangars – one with flight deck gash bags
-Dyson Hoover
-Box containing – dettox, eradikit, air freshner, dust pan and brush, air freshner, cuticura hand gel, bacterial wipes
-Absorbent pads/blue roll

Side Stowage 4 – ISB/ESB

Emergency Equipment Stowage

Gash Trolley-
Large Blue Tray
Slop Pot

AFT Galley (G3)

Rear Galley E170

Spare bin bags/ timetable/sick bags, hang gel/ antibacterial wipes/air freshner

Cupboard with installed ice box for spare ice

Dry Stores
Insert an atlas tray with the following:
Tubs x3 - nescafe,teabags,sugar/sweetex
1 cup plastic spoons
1 tub – milk
Tea pot
Long Spoon
Lemons x2
Wizzle Sticks 2 bundles
Coffee Sachets
Spare plastic glasses white cups and flight deck cups and lids if room

L/H Trolleys
Rear Trolley – Empty Food Cart
Forward Trolley –Gash trolley with large blue tray, slop pot, one lined atlas tray at the top of the trolley with sweet tub and spare sweets

Middle Trolleys
Rear Trolley – Empty food cart
Forward Trolley -
Normal standard eastern service trolley

R/H Trolleys
Rear Trolley – Empty food cart
Forward Trolley – 1) trolley top

2) spare crisp tray
3) spare biscuit tray
4)atlas tray with spare water
5) atlas tray with spare napkins, J cloths, hot towels

Rear R/H Overhead locker
ILC x3
ILJ x12
SLJ x7
Eastern Airways demo Kit
Fire retardant bag

Issue 1 – June 16

1.11.12.1 Galley Servicing – E190

There are two galleys on the EJET:

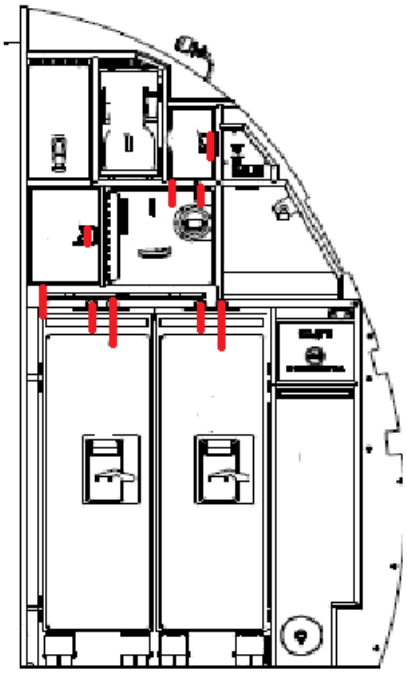
- One Situated at the front of the Aircraft
- One is situated at the rear

The galleys are comprised of:

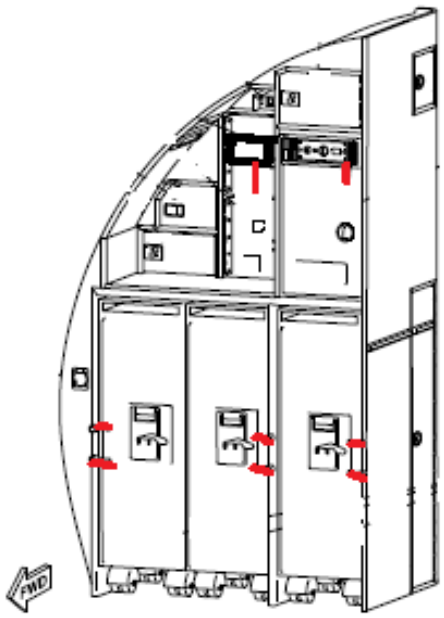
- Trolleys
- Ovens
- Beverage makers
- Sink
- Miscellaneous compartments
- Ice Box

E190

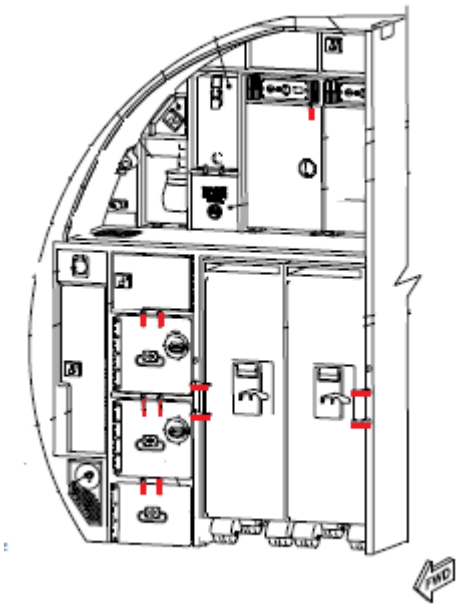
Galley 1 – Forward Galley (forward facing)



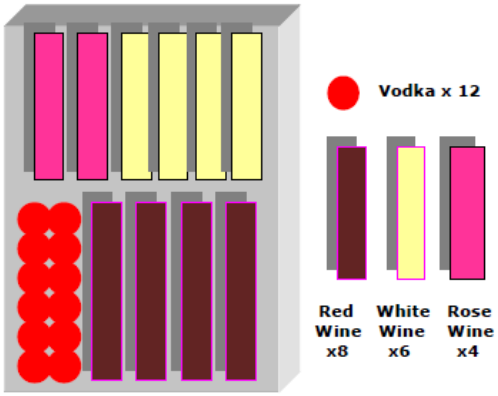
Galley 2 – Forward Galley (Rear facing)

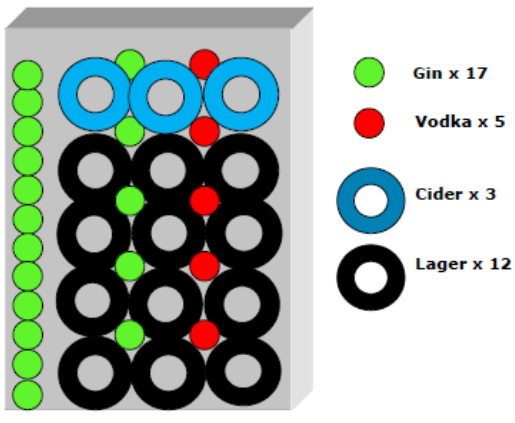


Galley 3 – AFT Galley

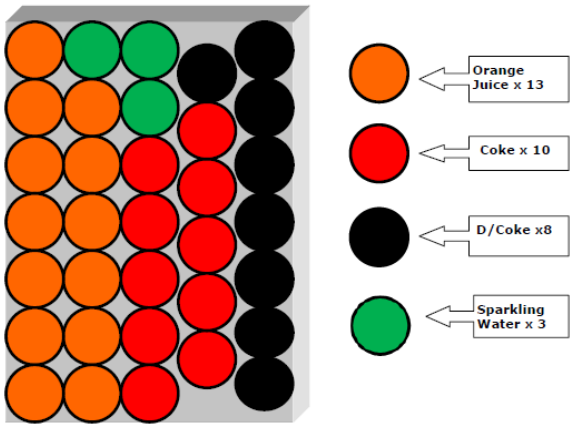


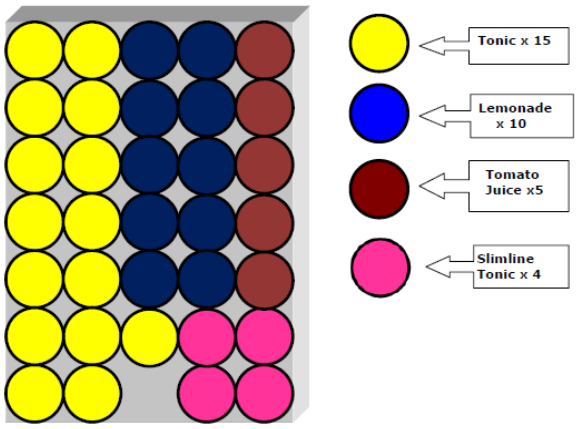
Standard Alcohol Trays



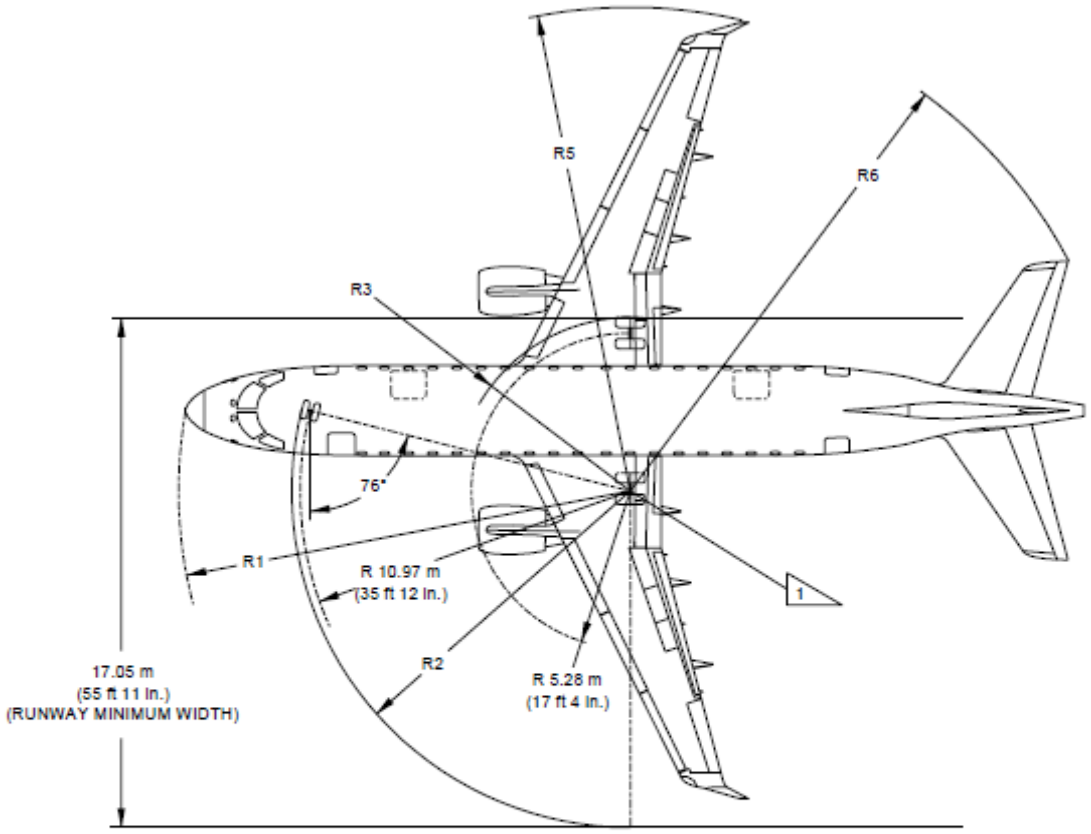


Standard Mineral Trays





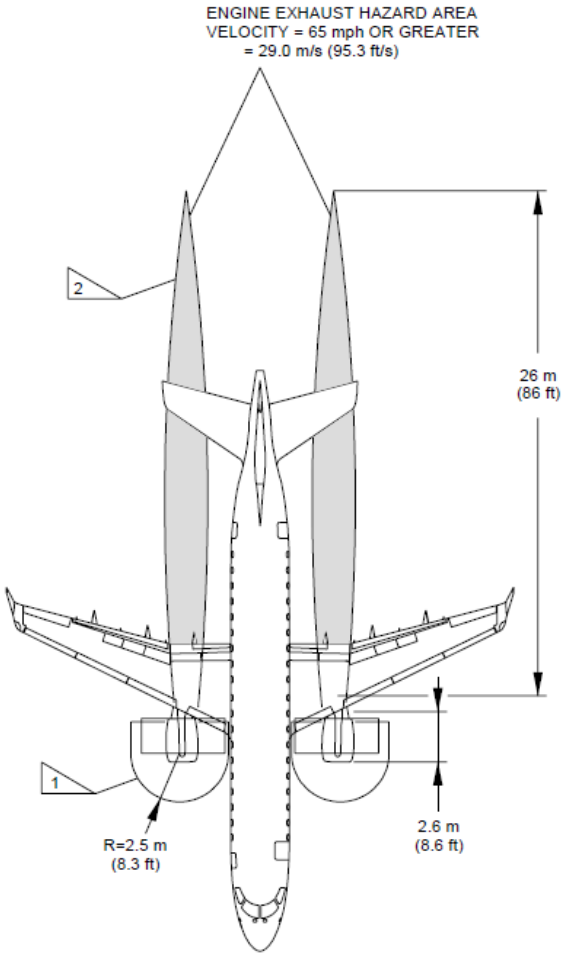
1.11.13 Ground Manoeuvrability



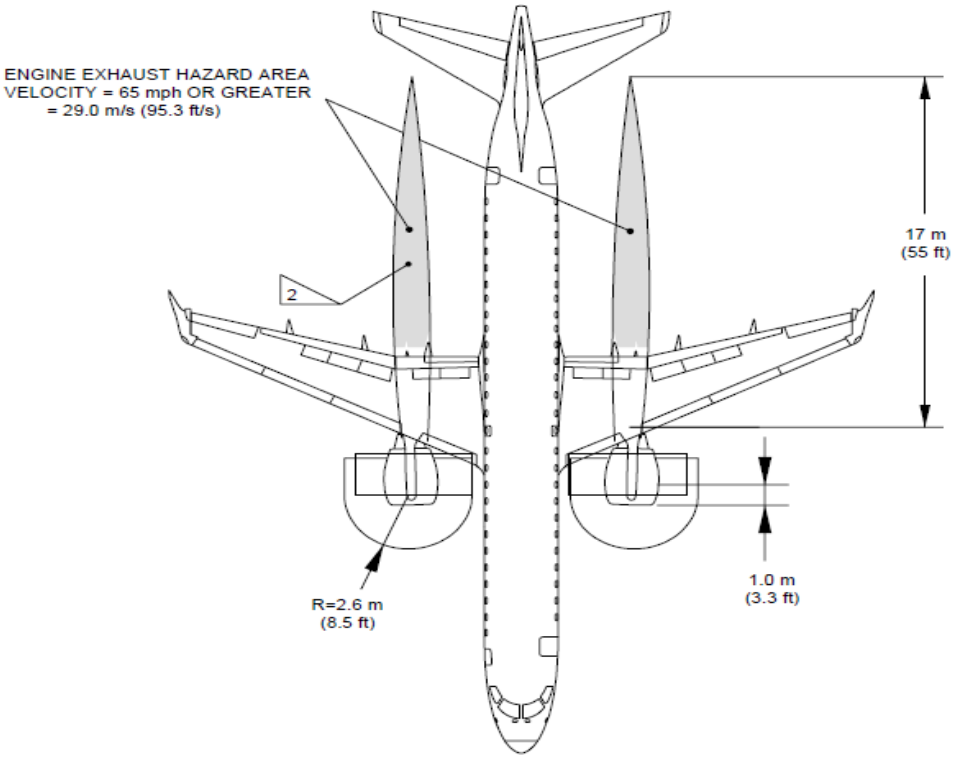
NOTE:
ACTUAL OPERATING DATA MAY BE GREATER THAN VALUES SHOWN
SINCE TIRE SLIPPAGE IS NOT CONSIDERED IN THESE CALCULATIONS.

STEERING ANGLE	NOSE		NOSE LANDING GEAR		OUTBOARD GEAR		RIGHT WINGLET		RIGHT TAILTIP	
	R1		R2		R3		R5		R6	
76°	15.02 m	49 ft 3 in.	11.25 m	36 ft 11 in.	5.80 m	19 ft 0 in.	16.17 m	53 ft 1 in.	16.48 m	54 ft 1 in.

1.11.14 Danger Areas E170



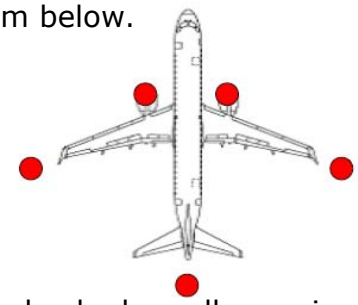
Danger Areas E190



WARNING: All staff must be aware of the underwing engines and your proximity in relation to them.

To prevent damage to aircraft during the ground handling process cones should be used to highlight where areas of the aircraft that exposed to the possibility of ground damage.

Cones should be between 0.75metre and 1metre in height, sufficiently weighted to negate movement by wind and have a reflective band of at least 30cms width around the centre. Cones should be placed approximately 1m clear of the aircraft points indicated in the diagram below.



Aircraft nose wheels must be chocked on all occasions. During strong winds, main wheels must also be chocked.

1.11.15 Servicing Arrangement with Passenger Stairs

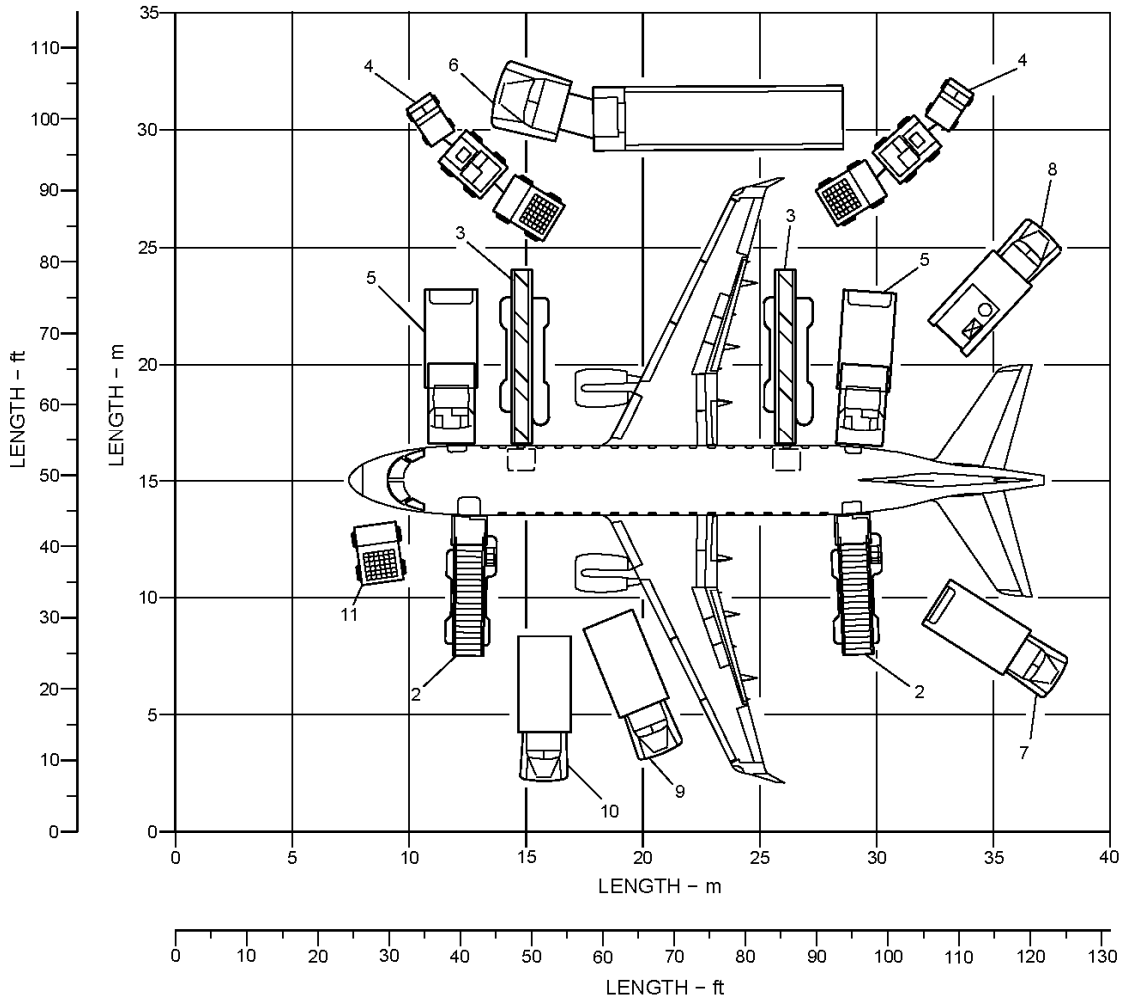


Figure 1
E170 Ground Equipment with Passenger Stairs

Only essential equipment must be used around the aircraft and must be operated by suitably trained personnel. A banksman must be used where equipment is reversing or being placed close to the aircraft.

For turnarounds using external steps, passenger guidance (PIGS) must be used between the wing tip and the forward and/or rear steps.

1.11.16 Servicing Arrangement with Air Bridge

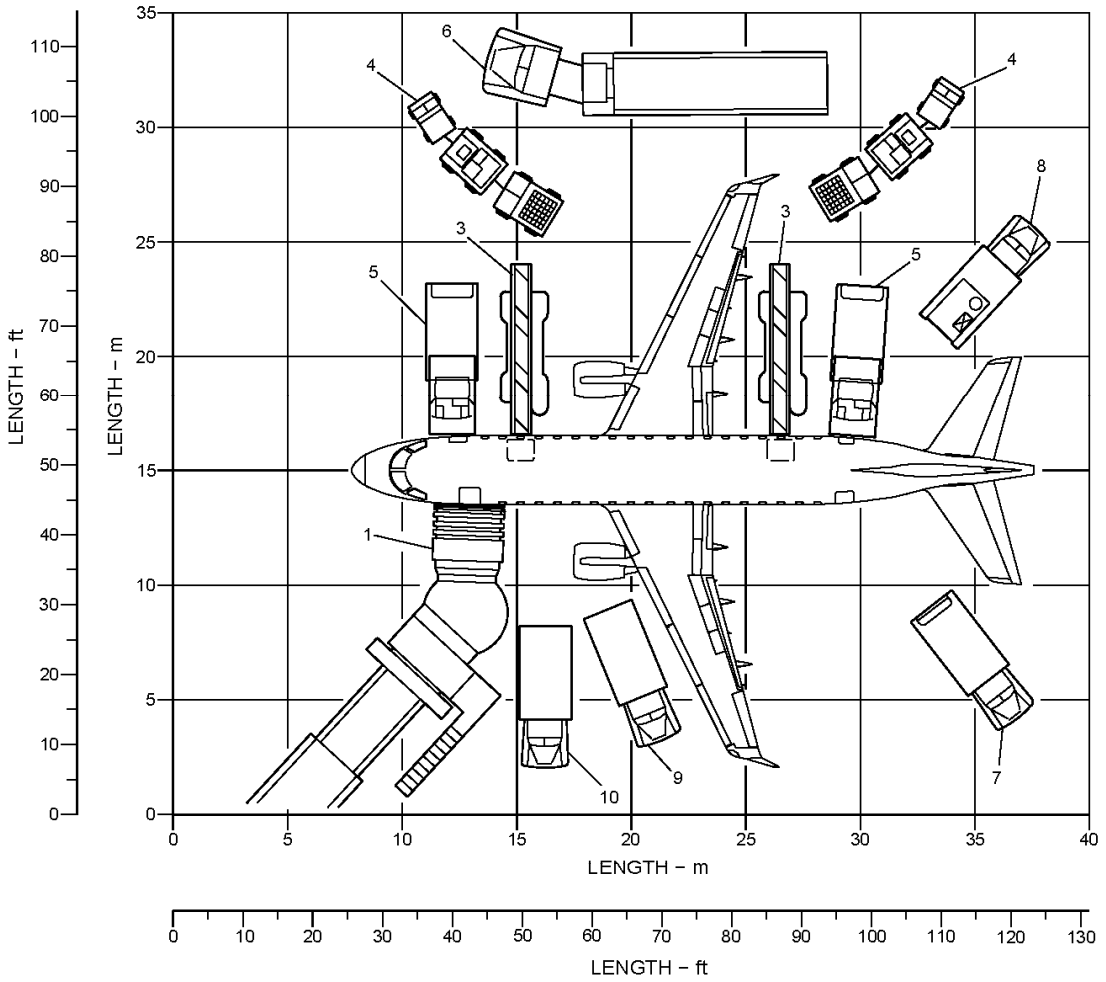
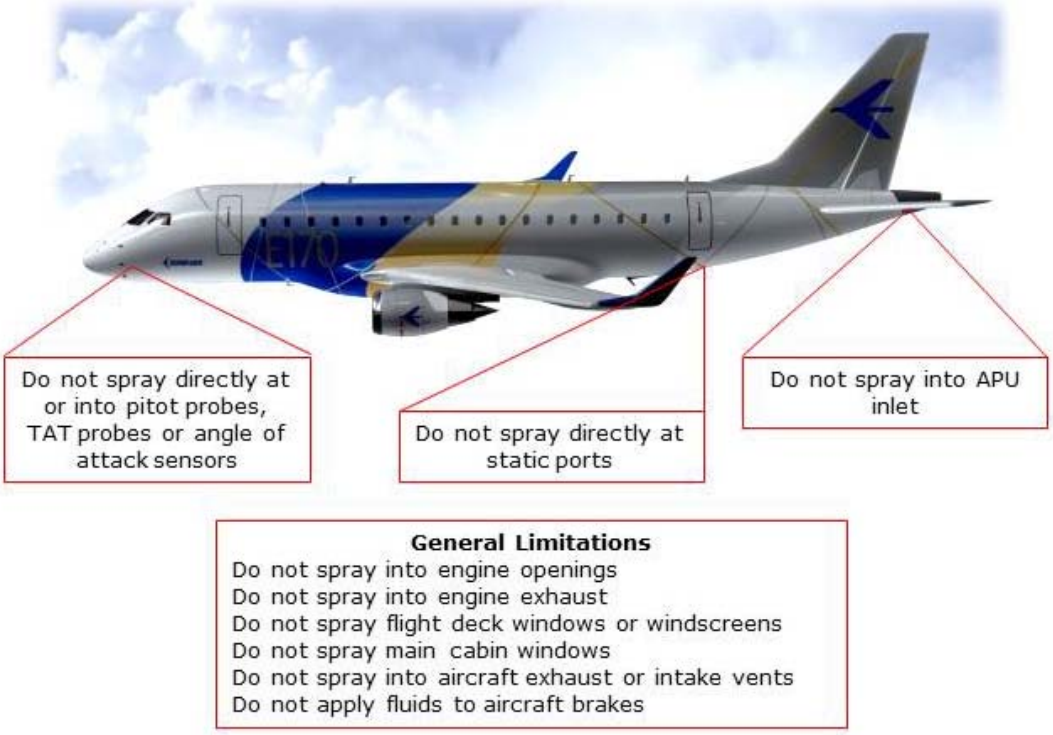


Figure 2
E170 Ground Equipment with Passenger Bridge

1.11.17 Aircraft De-Icing



EJET Fluid Use Levels
Wings only 110 litres
Tail only 40 litres
Wings and Tail 150 litres

WARNING: Prior to the commencement of de-icing, ground staff must confirm with the flight deck if the APU will be running. A de-ice start time must be agreed in order to allow the flight deck to switch off the APU before de-icing commences.

1.11.18 Passenger Seating Requirements

Infants must always be sat aircraft right as they have the extra oxygen masks on the right hand side.

Unmins = 2 per Cabin Crew
Infants = 8 can be carried
PRM = as long as it doesn't exceed the number of ABP's

Passengers should be checked in to allow an even spread throughout the cabin with a slight bias towards the rear to aid C of G.

1.11.19 Passenger boarding

Where separate cabin class seating is used, it may be necessary to board passengers by cabin class .

For the E170 where boarding is to be done via both the front and rear aircraft doors, passengers should be instructed to board via forward steps for rows 1 – 10 and rear steps for rows 11 – 19.

If boarding is to commence via the forward door only, passengers seated in rows 11 – 19 should be invited to come forward for boarding first, followed by those seating in the remaining rows.

For the E190 Where boarding is to be done via both the front and rear aircraft doors, passengers should be instructed to board via forward steps for rows 1 – 14 and rear steps for rows 15-27.
If boarding is to commence via the forward door only, passengers seated in rows 19-27 should be invited to come forward for boarding first, followed by those seating in the remaining rows.

1.11.20 Refuelling Panel Operation

This procedure explains the process of refuelling the aircraft in auto and manual modes. A refuel panel diagram is shown below

Prior to commencing refuelling, ensure that the bonding connections are established.

Ensure that the refuelling truck is positioned so as to have a clear escape route free from obstruction. If this is not possible, refuelling must not take place until an escape route is available.

NOTE: If an external AC power supply is not available, set the POWER SELECTION switch to the BATTERY position on the refuelling panel.

Pressure Refuelling auto mode;

- Commence the fuel-tank pressure refuelling in the auto mode
- Make sure that the REFUELLING switch is in the CLOSE position
- Make sure that the LH and RH refuelling indication lights (3) are off
- Make sure that the defueling indication light (5) is off
- Set the REFUEL SELECTION switch to the AUTO position
- Set the repeater indicator (4) to the necessary fuel quantity
- Remove the cap (2) from the pressure refuelling adaptor assembly (1)

WARNING: Make sure that the refuelling adaptor is in good condition. A bad connection of the fuel nozzle can cause fuel spillage, fire, injury to persons and damage to equipment.

- Make sure that the fuel adaptor is in good condition
  - Check for missing or damaged lugs
  - Check for signs of cracks and contamination
- Connect the fuel nozzle to the pressure refuelling adaptor assembly (1)
- Open the valve handle on the fuel nozzle

WARNING: During the pressure refuelling procedure, make sure that the refuelling pressure is between 35 and 50 PSI. Pressures above the specified limits can cause damage to equipment and injuries to persons. Pressures below the specified limits can cause unsatisfactory operation of the refuelling components.

- Pressurise the fuel system from 241.32 – 344.74 kPa (35 – 50 psig)
- Make sure that the LH and RH refuelling indication lights (3) come on and there is no fuel flow
- Set the REFUELLING switch to the OPEN position and make sure that the LH and RH refuelling indication lights (3) go out

WARNING: Stop the refuelling operation is blackout occurs or any message is displayed on the refuel panel. If you do not obey this precaution, fuel leakage can occur and cause damage to the aircraft.

- If the STOP R OVER, STOP L OVER or STOP L/R OVER message shows on the repeater indicator (4), immediately remove the fuel pressure that comes from the refuelling source and stop the refuelling procedure

WARNING: During the refuelling procedure, look at the pressure relief valve area in the left and right wing tanks to see if there is a fuel overflow. Overfilling causes a fuel overflow through the naca air inlet and pressure relief valve. If an overflow occurs and the pressure relief valve does not open, damage to the aircraft structure can occur.

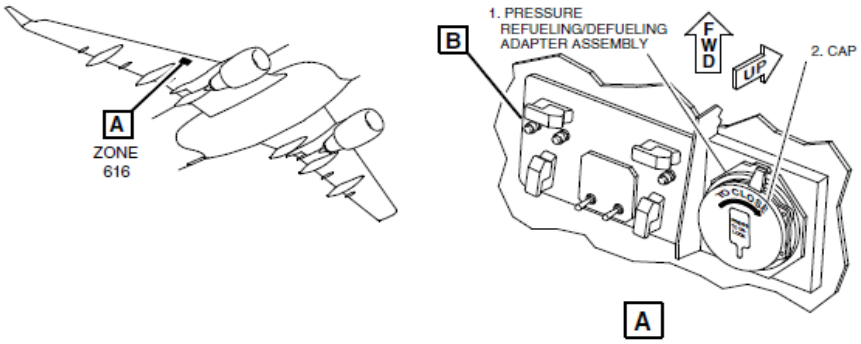
- When you have the necessary fuel quantity, make sure that the LH and RH refuelling indication lights (3) come on and that the fuel flow stops
- Set the REFUELLING switch to the CLOSED position
- Close the valve handle on the fuel nozzle
- Disconnect the fuel nozzle from the pressure refuelling adaptor assembly (1)
- Check the refuelling adaptor assembly (1) for indication of leakage
- Install the cap (2) to the pressure refuelling adaptor assembly (1)
- Secure the refuel panel hatch

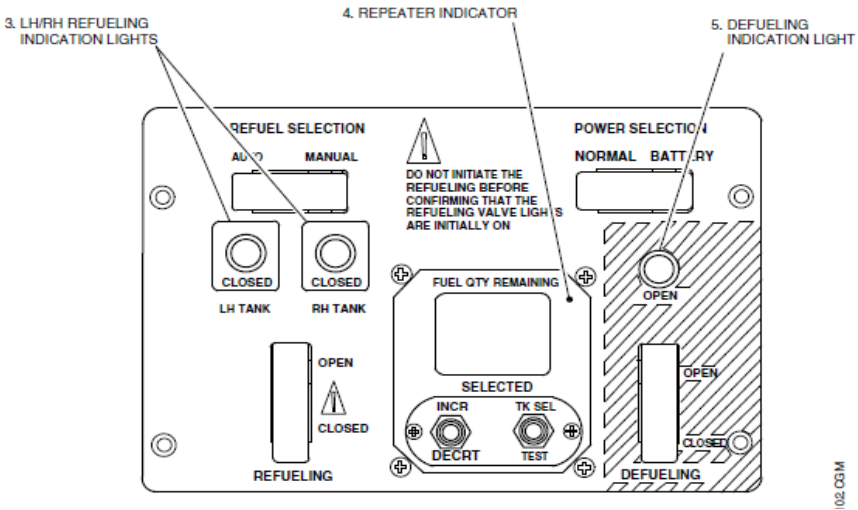
Pressure Refuelling manual mode

- Make sure that the LH and RH refuelling indication lights (3) are off
- Make sure that the defueling indication light (5) is off
- Set the REFUEL SELECTION switch to the MANUAL position
- Remove the cap (2) from the pressure refuelling adapter assembly (1)

WARNING: Make sure that the refuelling adaptor is in good condition. A bad connection of the fuel nozzle can cause fuel spillage, fire, injury to persons and damage to equipment.

- Make sure that the refuelling adapter is in good condition:
  - Do a check for missing or damaged lugs
  - Do a check for signs of cracks and contamination
- Connect the fuel nozzle to the pressure refuelling adapter assembly (1)
- Open the valve handle on the fuel nozzle
- Pressurise the fuel system with 241.32 - 344.74 kPa (35 - 50 psig)
- Make sure that the LH and RH refuelling indication lights (3) are on and there is no fuel flow.
- Set the REFUELLING switch to the OPEN position and make sure that the LH and RH refuelling indication lights (3) go off
- When you have the necessary fuel quantity, set the REFUELLING switch to the
  CLOSED position
- Make sure that the LH and RH refuelling indication lights (3) come on and the fuel flow stops
- Close the valve handle on the fuel nozzle
- Disconnect the fuel nozzle from the pressure refuelling adapter assembly (1)
- Check the refuelling adapter assembly (1) for indication of leakage
- Install the cap (2) to the pressure refuelling adapter assembly (1)
- Close the refuel panel hatch





1.11.21 Refuelling with passengers on board

Re-fuelling of the EJET aircraft can be carried out with passengers embarking, on board or disembarking. The following conditions must be met:

a) Only pressure fuelling is to be used
b) If required by the Airport Authority, ATC and RFFS are to be advised

c) A flight crew member or suitably qualified engineer must remain on the flight deck during refuelling
d) Crew, staff and passengers are to be advised that refuelling and or is about to take place
e) Passengers embarking/disembarking must be under the control of customer service staff
f) 'Fasten seatbelt' signs are to be OFF. 'No Smoking' signs are to be ON. Interior lighting to enable emergency exits to be identified are to be ON.
g) The PA system must be serviceable within the limitations of the MEL
h) Passengers are to be advised;

i. Not to smoke at anytime on the ground
ii. To remain seated with their seatbelts unfastened until the procedure is complete
iii. All individual items of electronic equipment must be switched off during the procedure (especially mobile phones)

i) For the Embraer 170, which is normally boarded/disembarked through two exits, and does not have integral airstairs, portable steps must be placed at two open aircraft exits or the aircraft may also be connected to an airbridge.
j) The position of the fuel installation/bowser relative to the aircraft must not impede an emergency evacuation
k) The ground area below exits intended for any emergency evacuation must be clear of any obstacles
l) A 50kg dry chemical or 90L foam fire extinguisher or suitable equivalent should be deployed close to where the fuelling operation is taking place. (This need not be on the stand on which the aircraft is parked)
m) Wheelchair passengers are not to be embarked/disembarked during refuelling. They should remain onboard until the procedure is complete
n) Stretcher cases should remain onboard. The patient securing straps must be released and a rapid means of communication with the ATC/RFFS established
o) Notwithstanding the above, no aircraft may be refuelled with AVGAS or WIDECUT fuel (Jet B or equivalent) or when a mixture of these types of fuel might occur when passengers are onboard, embarking or disembarking.

1.11.22 Aircraft cleaning specification

The following is a detailed outline of the specific requirements for cleaning & presentation of our fleet from a basic turnaround clean specification through to a full deep-clean specification.

The presentation of our aircraft is of paramount importance to us as the operating airline & from a customer perception perspective. We always aim to deliver to our passengers the highest quality standards in cabin ambience, on-board product & customer service. The cabin forms a very important part of that travel experience & should for every service be clean, tidy & smell-free.

The specification we have laid down should always be met. It is not acceptable to arrive to an aircraft to deliver a cabin tidy without a vacuum, appropriate clothes & fluids or a rubbish bag… to which any such failure to deliver will be met with non-acceptance & as a result non-payment for service provision.

Similarly punctuality in providing the service is vital to the delivery of our schedule. We DO expect you at the aircraft immediately following disembarkation for a turnaround clean, while a night-stop clean needs to be prompt following arrival. Whilst we accept this can become difficult during operations off-schedule, our handling agents have to meet the aircraft irrespective of arrival time & we expect the same from third party-service providers. Again failure to provide this level of service does result in non-payment, as would arrival at an aircraft after it is closed-up.

The following series of forms must be used for each service to ensure all items have been actioned. The forms must be signed by a member of crew to confirm acceptable cleaning standards.

Night-stop clean check-sheet

The following is our specific requirement to be applied on each night-stop or pre-night-stop clean. This includes a comprehensive vacuum & wash as necessary to ready the aircraft. Requirements for each aircraft are applied by a ✓

Aircraft details:

A/C REGISTRATION:			DATE:		
STATION / BASE:			CLEANING CONTRACTOR:		

Flight deck:

Requirement:	J41	S20	ER4	E170	Completed
NEVER MOVE ANY FLIGHT DECK CONTROLS OR OPERATE ANY SWITCHES DURING ANY PART OF THE CLEAN	✓	✓	✓	✓	
Clear any litter/ rubbish from the flight deck floor	✓	✓	✓	✓	
Vacuum seat areas & seat surfaces	✓	✓	✓	✓	
Wipe clean the floor area as necessary	✓	✓	✓	✓	

Main cabin:

Requirement:	J41	S20	ER4	E170	Completed
Remove all surface refuse from the cabin area	✓	✓	✓	✓	
Vacuum all carpeted or hard-floor surface areas thoroughly	✓	✓	✓	✓	
Ensure all seat back pockets are clear of all litter	✓	✓	✓	✓	
Re-sort & replace any necessary seat back reading or safety material – refer to the seat back layout for each aircraft which follows	✓	✓	✓	✓	
Brush down or vacuum all seat areas	✓	✓	✓	✓	
Cross all seat belts ready for next service	✓	✓	✓	✓	
Replace or clean any seat headrest covers as required	✓	✓	✓	✓	
Re-position to open all window blinds (where fitted)	✓	✓	✓	✓	
Wash clean any window surfaces & wash window blinds as necessary	✓	✓	✓	✓	
Wash & sanitise all seat back tables / cup holders	✓	✓	✓	✓	
Remove all finger marks or marks from wall areas, overhead light areas & aisle panels (area where seat numbers displayed)	✓	✓	✓	✓	
Re-position any footrests into the up position	X	✓	X	X	
Ensure all overhead baggage bins are clear & open	X	✓	✓	✓	
Clean inside all aircraft doors	✓	✓	✓	✓	

Eastern Airways - Aircraft Cleaning Specification – Jun 2016
EA Form 510C

Galley & toilet areas:

Requirement: (T=Toilet / G=Galley)	J41	S20	ER4	E170	Completed
T -Empty any refuse containers as appropriate	✓	✓	✓	✓	
T - Ensure all toilet surface areas are cleaned thoroughly	✓	✓	✓	✓	
T - Sanitise the toilet pan as required	✓	✓	✓	✓	
T - Spray air freshener inside the toilet compartment	✓	✓	✓	✓	
T - Ensure toilet roll / wash facilities available	✓	✓	✓	✓	
G - Thoroughly wipe clean & disinfect any visible surface areas	✓	✓	✓	✓	
G - Ensure any litter is removed	✓	✓	✓	✓	
G - Clean any floor areas adjacent to the galley or in the galley area	✓	✓	✓	✓	
G – Empty and clean the slop pots	✓	✓	✓	✓	
G – Remove trollies and clean floor area	✓	✓	✓	✓	

Water service:

Requirement:	J41	S20	ER4	E170	Completed
Ensure all waste water removed from aircraft	✓	✓	✓	✓	
Replenish potable water as required (subject to time of year)	X	✓	✓	✓	

Toilet service:

Requirement:	J41	S20	ER4	E170	Completed
Ensure all waste water removed from the toilet / cartridge	✓	✓	✓	✓	
Replenish toilet water & chemical as required	✓	✓	✓	X	

Sign-off details:

NAME (print):			SIGNATURE:		
COMPANY:			POSITION:		

Please fax this sheet to Eastern Airways Line Maintenance:
+44 1652 680899 or 08703 669670

Deep clean check Sheet

The following is our specific requirement to be applied on each deep clean of an aircraft. This should be a very thorough process returning the cabin into the highest level of condition achievable. Requirements for each aircraft are applied by a ✓

Aircraft details:

A/C REGISTRATION:			DATE:		
STATION / BASE:			CLEANING CONTRACTOR:		

Flight deck:

Requirement:	J41	S20	ER4	E170	Completed
Vacuum / clean floor level on entry to the cockpit area – ensure side & under seat area cleaned	✓	✓	✓	✓	
Clean & vacuum around the rudder pedal area & foot well	✓	✓	✓	✓	
Ensure jump seat is clean including vacuumed	✓	✓	✓	✓	
Thoroughly clean & vacuum the flight deck seats & stays	✓	✓	✓	✓	
Clean side wall areas & windows	✓	✓	✓	✓	

Steps / main cabin door:

Requirement:	J41	S20	EER4	E170	Completed
Ensure each step is washed thoroughly	✓	✓	✓	x	
Clean & polish the hand-rail	✓	✓	✓	x	
Ensure any lighting areas for steps cleaned	✓	✓	✓	x	
Wipe clean the cable stay for the door	✓	✓	✓	x	
Wipe internal doors, indication windows, handles	✓	✓	✓	✓	

Galley area/s:

Requirement:	J41	S20	ER4	E170	Completed
Thoroughly scrub & wash clean any visible surface areas	✓	✓	✓	✓	
Ensure any litter is removed from all bins & stowage's & that each is washed & disinfected	✓	✓	✓	✓	
Ensure any stowage's are washed out having been cleared of cupboard contents (arrange with crew/engineering)	✓	✓	✓	✓	
Clean all ovens ensuring that all burnt deposits are removed & that apertures & oven sides are free from all grease & food remains	x	✓	✓	✓	
Beverage makers. Thorough wipe of units and clean pots	x	x	x	✓	

Eastern Airways - Aircraft Cleaning Specification – Apr 2016
EA Form 510D

Clean all folding tables or fold out additional work areas including sides & supports	✓	✓	✓	✓	
Clean any floor areas adjacent to the galley or in the galley area	✓	✓	✓	✓	
Wash all ceiling & galley side wall areas including outside of the toilet door area	✓	✓	✓	✓	
Fold out & clean the cabin attendant seating area including belts	✓	✓	✓	✓	
Wash & disinfect the crew phone surface areas	✓	✓	✓	✓	
Empty and clean the slop pots	✓	✓	✓	✓	
Descale hot water urns	✓	✓	✓	x	

Main cabin:

Requirement:	J41	S20	ER4	E170	Completed
Remove all surface refuse from the cabin area	✓	✓	✓		
Vacuum all carpeted & hard-floor surface areas	✓	✓	✓		
Lay protective matting before washing areas other than the carpet / galley floor	✓	✓	✓		
Ensure all seat back pockets are clear of all litter	✓	✓	✓		
Re-sort & replace any necessary seat back reading or safety material – refer to the seat back layout for each aircraft which follows	✓	✓	✓		
Brush down & vacuum all seat areas including under seat cushions	✓	✓	✓		
Wash seat surfaces & backrests (use advisable cleaning agents only in case of seat pads) including all frames, arm rest s & seat stays	✓	✓	✓		
Cross all seat belts ready for next service after wash	✓	✓	✓		
Replace all headrest covers with clean	✓	✓	✓		
Wash any window surfaces & ensure no smearing	✓	✓	✓		
wash each window blind (where fitted)	✓	✓	✓		
Re-position to open all window blinds (where fitted)	✓	✓	✓		
Wash & sanitise all seat back tables & cup holders including table arms & locking devices	✓	✓	✓		
Remove all finger marks or marks from wall areas along the cabin, overhead light areas & aisle panels (area where seat numbers displayed)	✓	✓	✓		
Clean all overhead light / call button panels & ensure airflow ventilation nozzle thoroughly cleaned	✓	✓	✓		
Re-position any footrests into the up	x	✓	x		

Eastern Airways - Aircraft Cleaning Specification – Apr 2016
EA Form 510D

position					
Ensure all overhead baggage bins are clear/washed out	x	✓	✓		
Ensure all bulkhead areas are thoroughly cleaned	✓	✓	✓		
Ensure any wardrobes / cupboard area in main cabin are vacuumed & washed including the curtain / door	✓	✓	✓		
Spray cabin throughout with air freshener	✓	✓	✓		

Toilet / washroom:

Requirement:	J41	S20	ER4	E170	Completed
Empty any refuse containers as appropriate	✓	✓	✓		
Scrub & wash all toilet surface areas & toilet seat on both sides & thoroughly clean pan	✓	✓	✓		
Disinfect toilet pan once cleaning is complete	✓	✓	✓		
Ensure any metal surface areas are polished	✓	✓	✓		
Wash & polish any mirrors & toilet door	✓	✓	✓		
Remove & sanitise any waste bins	✓	✓	✓		
Spray air freshener inside the toilet compartment	✓	✓	✓		
Ensure toilet roll / wash facilities available	✓	✓	✓		
Scrub & wash all walls & ceiling areas	✓	✓	✓		
Wash inside any cupboard or storage areas	✓	✓	✓		
Ensure any baby changing table facility thoroughly scrubbed & disinfected	x	✓	✓		

Sign-off details:

NAME (print):			SIGNATURE:		
COMPANY:			POSITION:		

Please fax this sheet to Eastern Airways Line Maintenance:
+44 1652 680899 or 08703 669670

INTENTIONALLY LEFT BLANK

Appendix E

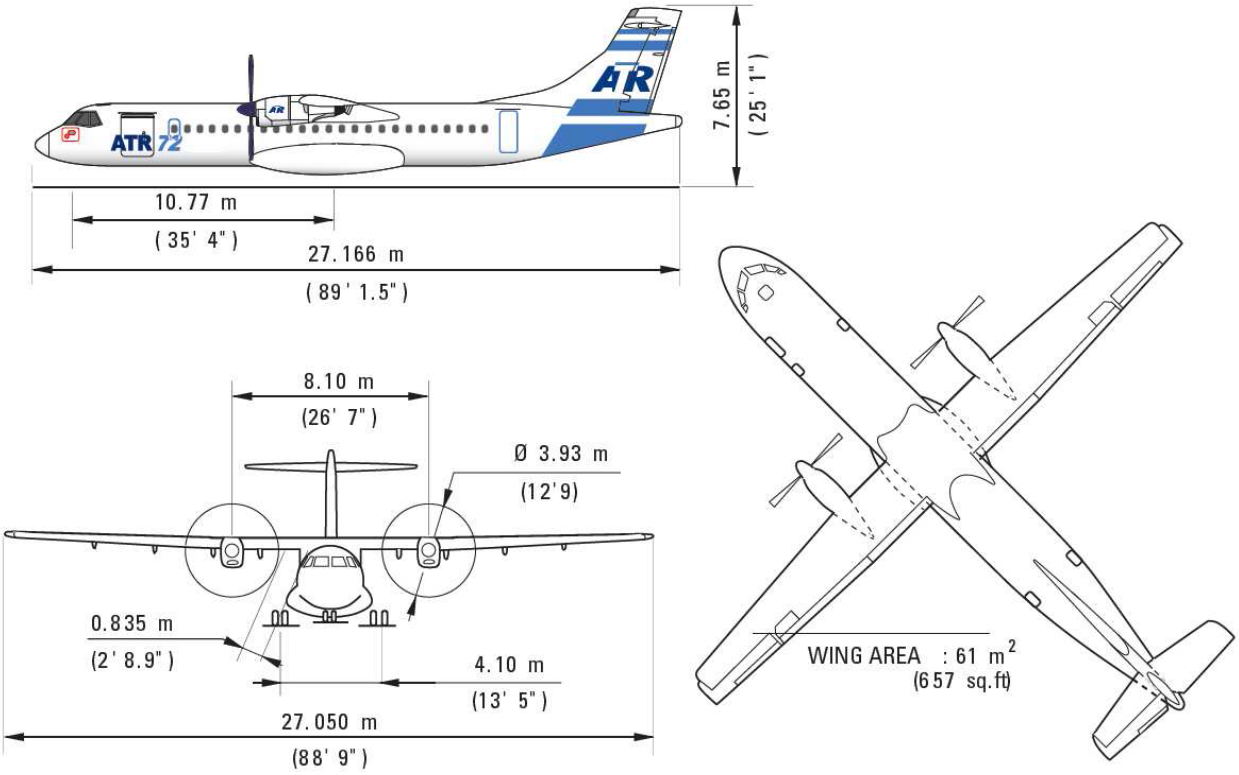
ATR72-600

Handling Manual

INTENTIONALLY LEFT BLANK

C O N T E N T S

1.1 Aircraft Dimensions & Weights

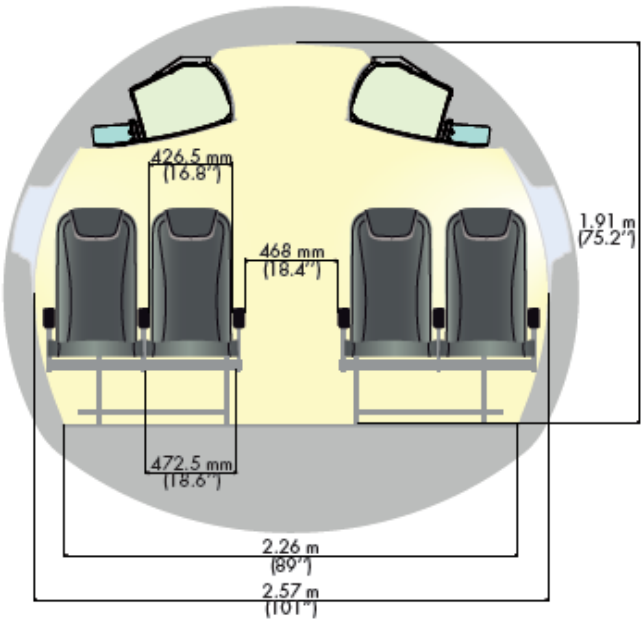


Length	27,166m (89ft 1.5in)
Span	27,050m (88ft 9in)
Height	7,650m (25ft 1in)
Outside fuselage diameter	2,865m (9ft 5in)
Wing surface	61m² (657 sq ft)
Wheel base	10.77m (35ft 4in)
Track	4,100m (13ft 5in)
Propeller diameter	3,960m (13ft)
Clearance fuselage/propeller	0.835m (2ft 8.9in)
Distance between engines	8.10m (26ft 7in)

ATR 72-212A Series	**(Kgs)**
Maximum taxi weight	23,170
Maximum take off weight	23,000
Maximum landing weight	22,350
Maximum zero fuel weight	21,000

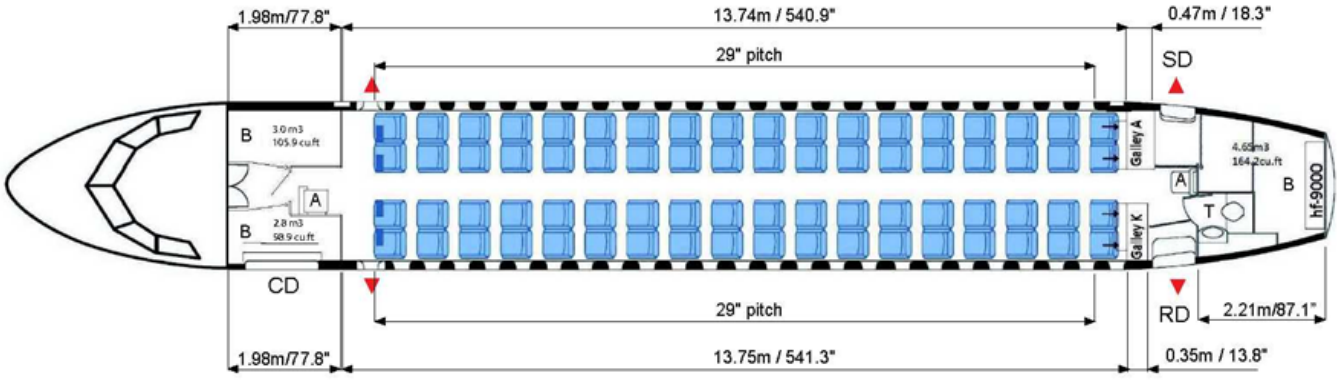
1.2 Aircraft Seating Configuration

Passenger cabin cross section



Aircraft Seating Configuration **G-IACY & G-IACZ**
The passenger area can accommodate up to 72 passengers with 18 rows of double seats on both the left and right hand side of the aircraft.

Note: There is no row 13 on board this aircraft.



Legend:

A	Cabin attendant seat
B	Baggage compartment
CD	Cargo door
▲	Emergency exit
RD	Rear door
SD	Service door
T	Toilet

Cabin passenger Capacity: 72
Cabin Crew: 2
Flight Deck: 2

Seat Pitch standard: 29”

Cabin length: 13.74m (45ft 1in)
Passenger headroom: 1.01m (3ft 3in)
Aisle Width: 0.47m (1ft 5in)

The maximum number of passengers permitted in each section is:

Section	Rows	Totals
A	**1-6**	**24**
B	**7-12**	**24**
C	**14-19**	**24**
		72

EMERGENCY EXIT SEATS

Row 1 Seats A,B,C,D
Row 19 Seats A,B,C,D

Special Passenger Seating (preferred)

Unaccompanied minors	Row 2-3, 17-18	B,C
Infants	Row 3-17	A,D
SCP – elderly, disabled & wheelchair passenger	Rows 2-18	A,D

G-CMEI
The passenger area can accommodate up to 68 passengers with 17 rows of double seats on both the left and right hand side of the aircraft.

Note: There is no row 13 on board this aircraft.

The maximum number of passengers permitted in each section is:

Section	Rows	Totals
A	**1-6**	**24**
B	**7-11**	**20**
C	**12-18**	**24**
		68

EMERGENCY EXIT SEATS

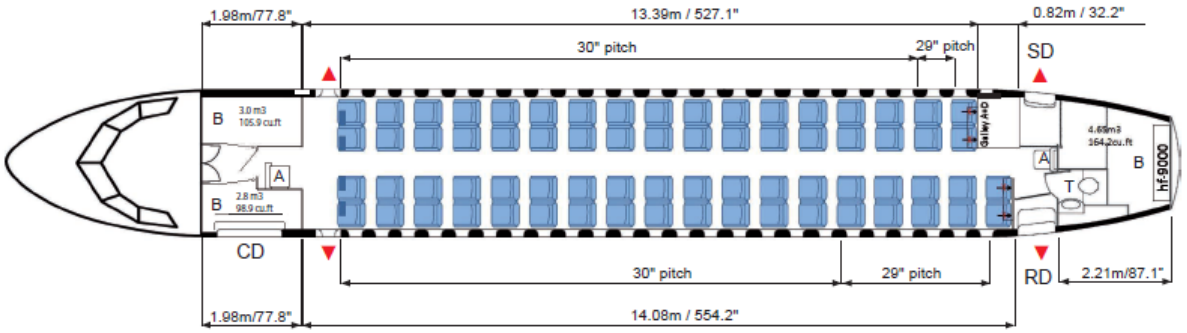
Row 1	Seats A,B,C,D
Row 18	Seats A,B,C,D

Special Passenger Seating (preferred)

Unaccompanied minors	Row 2-3, 15-16	B,C
Infants	Row 3 -16 (only 1 infant per row)	A,D
SCP - elderly, disabled & wheelchair passenger	Rows 2-16	A,D

G-CMFI
The passenger area can accommodate up to 70 passengers with 18 rows of double seats on the left hand side of the aircraft and 17 rows of double seats on the right hand side of the aircraft.

Note: There is no row 13 on board this aircraft



Legend:

A	Cabin attendant seat
B	Baggage compartment
CD	Cargo door
▲	Emergency exit
RD	Rear door
SD	Service door
T	Toilet

Baggage volumes	*cu.m*	*cu.ft*
Baggage compartments	10.45	369.0
Baggage/pax	0.149	5.27
Total baggage (incl. overhead bins)	13.69	483.7
Total baggage/pax	0.195	6.91

The maximum number of passengers permitted in each section is:

Section	Rows	Totals
A	**1-6**	**24**
B	**7-12**	**24**
C	**14-19**	**22**
		70

EMERGENCY EXIT SEATS

Row 1 Seats A,B,C,D
Row 18 Seats C,D
Row 19 Seats A,B

Special Passenger Seating (preferred)

Unaccompanied minors	Row 2-3, 16-17	B,C
Infants	Row 3-16	A,D
SCP - elderly, disabled & wheelchair passenger	Rows 2-17	A,D

1.3 Passenger Compartment Limits

Dimensions

Cabin Doors	Width		Height		Distance from sill to ground
	In.	Mts.	In.	Mts.	
Forward Cargo Door	50.7	1.29	59	1.5	1.35m
Aft Entrance Door	28.5	0.82	68.8	1.75	1.35m
Aft Cargo Door	27	0.69	50	1.27	1.35m

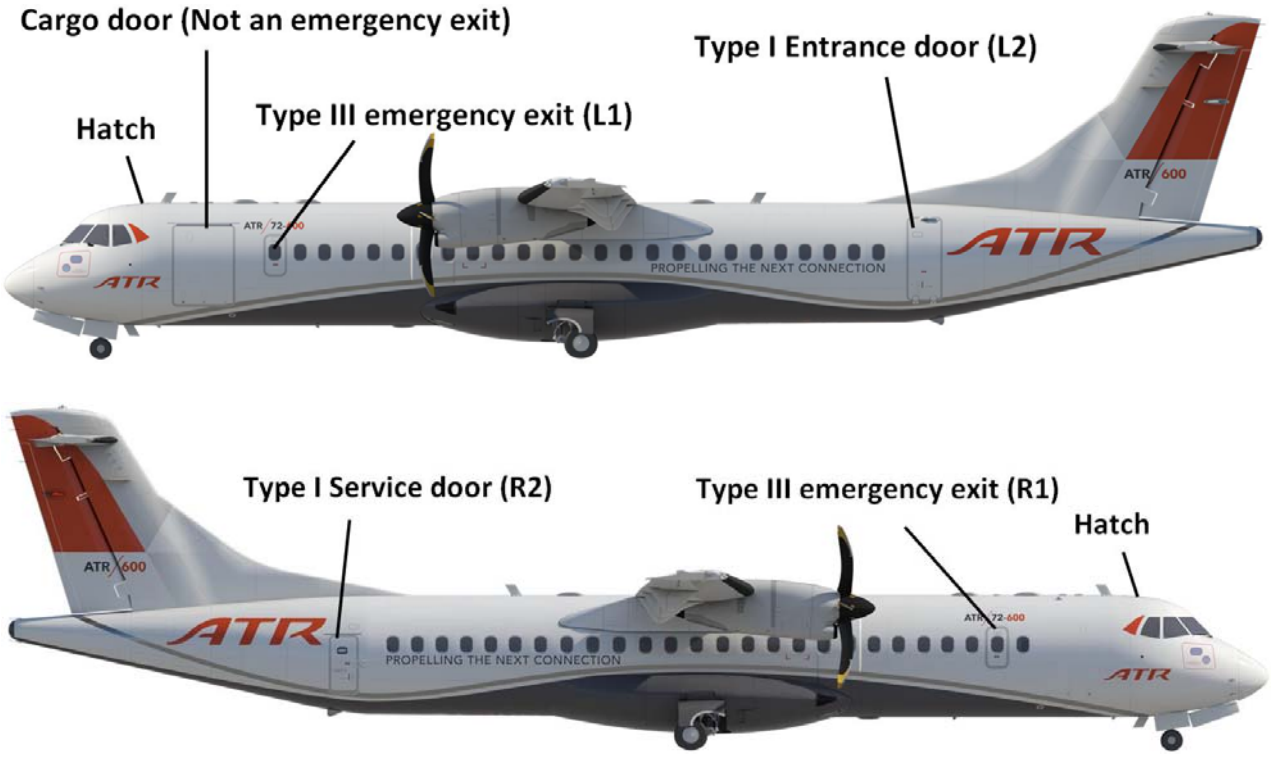
Carry-On Baggage
The carry on-board luggage may be stowed under each seat, in the overhead bins or in the forward section of the rear cargo compartment.

Overhead Bins
Overhead lockers are fitted throughout the cabin above each row of seats. The maximum weight that each overhead locker can support will be indicated on a placard inside the compartment.

1.4 Doors and Holds

There are four emergency exits and one flight deck escape hatch on the ATR 72-600.

1. Aft Entry Door x 1 – Aft left hand side (main passenger door)
2. Aft Service Door x 1 – Aft right hand side
3. Type III Exits x 2 – Fwd left hand side and fwd right hand side
4. Escape Hatch x 1 – Flight Deck Ceiling



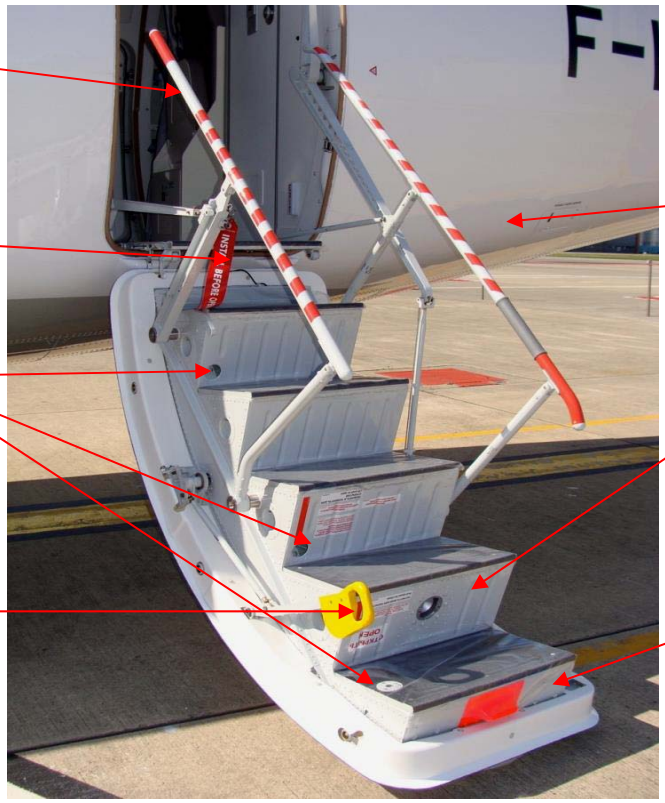
All exits can be opened and closed from inside and outside the aircraft.

1.5.1 Aft Entrance Door

The Aft Entrance Door is the main passenger door used for boarding and disembarkation. It is located at the rear of the aircraft on the left hand side. The door opens outwards and downwards and is spring loaded to assist in its operation. Any damage to AFT entry door must immediately be reported to flight crew.

Attached to the integrated stair structure is a folding handrail which, by means of a linkage to the fuselage structure automatically erects when the door is opened.

A second adjustable handrail erects automatically on opening the door provided that the rail safety pin is in "ground" normal position.



Safety Pin Aft Entrance Door

Safety Pin position on ground

Safety Pin position in flight

On opening the AFT entry door the handrail PIN must be inserted by pushing in the plunger on the head of the pin. Before closing the AFT entry door the PIN must be removed by pulling on the ring attached to the plunger. Ensure the ring is pulled straight out and not at an angle as this may damage the pin.

The passenger door on the ATR 72 aircraft is susceptible to movement. To counteract the movement of the door, a weighted block must be gently placed on the right hand side of the door adjacent to the bottom step. This is to be done in all conditions when the door is open.

On arrival at the destination, when the door is opened, the cabin crew must hand the weighted block to a member of ground staff, who will gently place it on the door as described above prior to allowing passengers to disembark.

Prior to departure, the ground staff are to remove the weighted block and pass to the cabin crew for stowage.

CAUTION: The weighted block must be gently placed in position and not dropped as this may cause damage to the door.

Placement of the weighted block

1.5.2 Operation of the Aft Entrance Door

Open from inside

1. **Inspect and insert safety pin in correct position**
2. **Check safety pin in location**
3. **Lift the door control handle upward**
4. **Push the door outward**
5. **Restrain the door outward movement with the handrail on the LHS of the door**

WARNING: A damaged or incorrectly locked safety pin may result in handrail collapse and subsequent passenger injuries.

Closing from inside

1. **Pull the door upward using the handrail on the LHS of the door**
2. **Push the door control handle downward until the door is completely locked**
3. **Check the 3 green locking indicators to ensure correct locking of the door**
4. **Remove the safety pin from the handrail RHS and stow it in the inflight stowage**

WARNING: It is crucial on all flights to remove the pin after closing the door. If the pin is not removed and the door is opened in an emergency situation, the handrail will not fall to a lower position and the evacuation will be slowed down.

Opening from outside

1. **Pull the door control handle/lever downward, the door locking indicator turns stripy red and white**
2. **Restrain the door falling outward and downward**

Entrance door closed from outside


Entrance door control handle/lever open

Caution on opening the Entrance Door from outside:
Difficulties may be encountered for opening the entrance door from outside. This will arise only, when all aircraft doors and exits are closed, and if:
– First case, GPU connected to the aircraft: A strong extract fan runs automatically in order to cool down the avionic/electric and electronic systems. This fan creates suction in the flight crew compartment, cabin and cargo (deflating) and the aircraft is in fact depressurizing itself on the ground
– Second case, Air Conditioning Unit (ACU) connected to the aircraft: It will slowly pressurize the aircraft on the ground (inflating).

To equalize pressure and release the door:
• Slightly open the service door (from outside). Move the door handle slowly (enough for the vent flap to open and equalize pressure) since opening fully and quickly could make the door popping out fast, with risks of injury for the operator
OR
• Request for ACU/GPU to be switched off and wait 2 to 3 minutes (the pressure will equalize through the doors seals)

Recommendations to avoid these difficulties:
• Always keep the flight crew compartment document door opened (Maintenance or flight crew responsibility)

When opening the main passenger door from inside the aircraft in high winds, that an outwards force has been exerted on the crewmember. This could lead to a potential loss of balance.

Action
On arrival the following procedures **must** be applied when the wind speed **exceeds 40kts.**

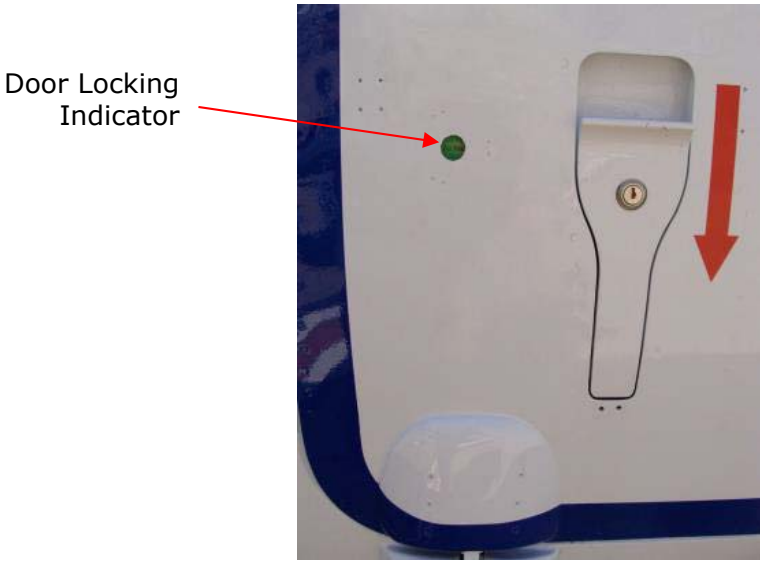
ABZ and LSI only
1. The commander will make the following PA on arrival onto stand "SCCM prepare main door for arrival".
2. Inspect and insert safety pin in correct position.
3. Check safety pin in location.
4. The SCCM should then stand back with hands and feet clear of the door area.
5. The ground crew will knock on the door twice prior to opening.

Please note that when opening the main passenger door from outside, the ground crew will stand immediately forward of the main passenger door, knock twice on the door and wait 10 seconds before opening it. Ground staff must not stand immediately below the door at any time in case it is opened from inside the aircraft without warning.

Airports other than ABZ, and LSI
1. The commander will make a call by the interphone to the SCCM in place of the normal PA ("Cabin crew safe to open main door; passengers remain seated") when it is safe to open the main passenger door, advising of the high wind conditions.
2. Inspect and insert safety pin in correct position.
3. Check safety pin in location.
4. The SCCM should then secure themselves using the galley bulkhead with their right hand.
5. Lift the door control handle upward with left hand.
6. Restrain the door outward movement with the handrail on the left hand side of the door.

Closing from outside

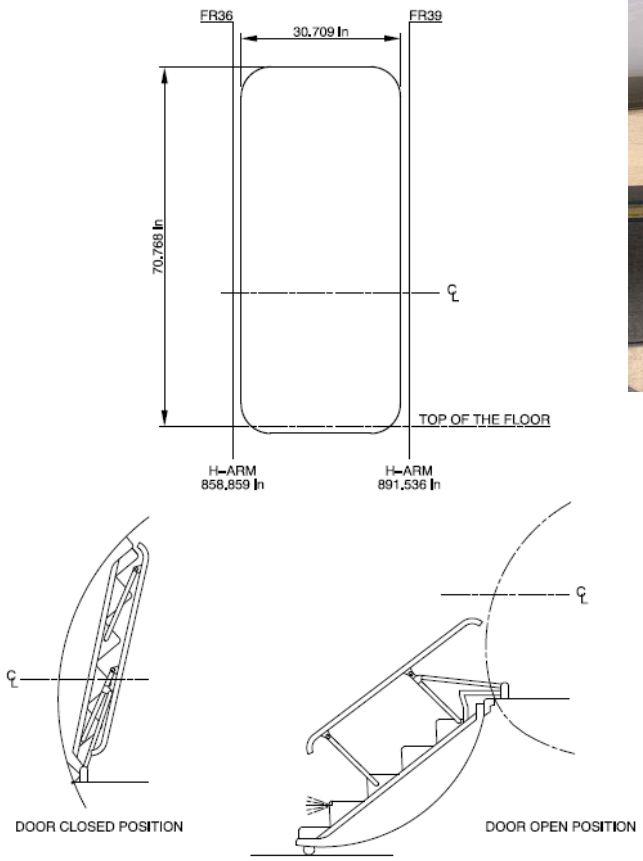
1. **Lift the door and bring it upward against the fuselage**
2. **Push the door control handle/lever upward to lock the door**
3. **Check the green locking indicator to ensure correct locking of the door**



1.5.3 Emergency Mode Operation For Aft Entrance Door

There is no difference in opening the entrance door in emergency mode, as long as the safety pin has been removed from the handrail and placed in its "in flight location".

1. **Lift the door control handle upward**
2. **Push the door outward**
3. **The handrail will lower automatically**



WARNING: Do not operate the external passenger door if wind speeds or wind gust speeds are greater than 65 kts.

Due to the design of the rear passenger door, minimal effort is needed to close it Therefore ground personnel must not assist when crew are closing the door from the cabin

1.5.4 Aft Service Door

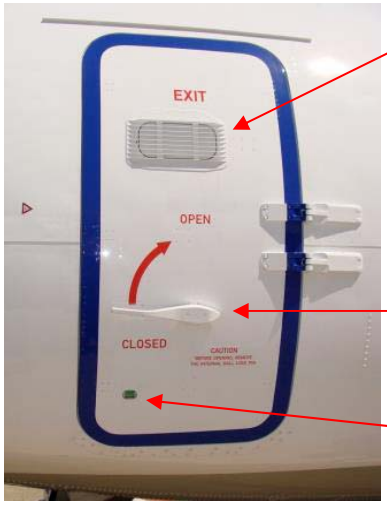
The service door is located at the rear of the aircraft on the right side. It has an operating handle to lock and unlock the door and a gust lock to secure the door open. It is mainly used for loading and unloading of passenger baggage. The Service door can only be opened/closed by operating crew or trained personnel (i.e. engineers, cleaners, baggage handlers and caterers).

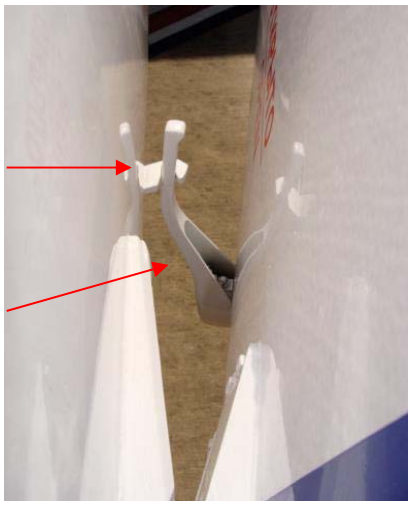
WARNING: A safety pin is available and can be inserted (from inside only) next to the door handle in order to block it. With the pin inserted, the service door cannot be opened from outside.

The pin must be used on ground only and must be removed before flights, so that the door can be opened more rapidly in case of emergency.

Opening from outside:

1. **Rotate the door operating handle forward**
2. **Open the door and rotate it forward**
3. **The door will lock automatically against the fuselage**
4. **When the door is opened, it releases out a fuselage hook in order for the door handle to engage into the hook.**





Closing from inside:

1. **Push the gust lock button to release the door operating handle from the fuselage hook**
2. **Bring the door backward into the door frame**
3. **Rotate the door operating handle rearward**
4. **Check the green locking indicator, to ensure correct locking of the door.**

WARNING: The door vent located on top of the service door (and visible from the outside) prevents the fuselage pressurization to an unsafe level.

Opening from inside:

1. **Remove the safety pin if inserted.**
2. **Secure yourself by holding the door frame securing handle**
3. **Pull the door control handle towards self to allow rotation movement**
4. **Rotate the door control handle forward to unlock the door**
5. **Push the door outward**
6. **To lock the door against the fuselage, engage the door operating handle**
7. **(outside part) into the fuselage hook.**

Closing from inside:

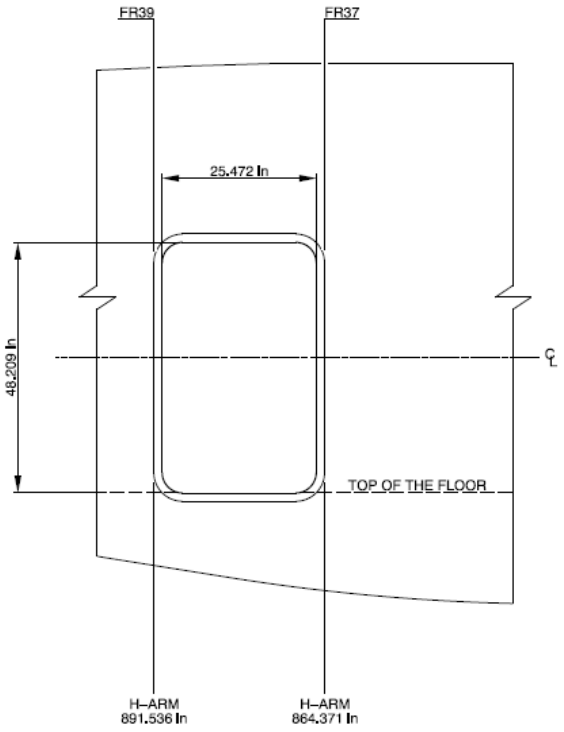
1. **Secure yourself by holding the door frame securing handle**
2. **Push the gust lock button to unlock the door**
3. **Pull the door inward to the door frame**
4. **Rotate the door control handle rearward**
5. **Check the 2 green locking indicators to confirm the correct locking of the door.**

Put back the safety pin if necessary (if leaving the aircraft for instance).

Rear service door emergency mode:

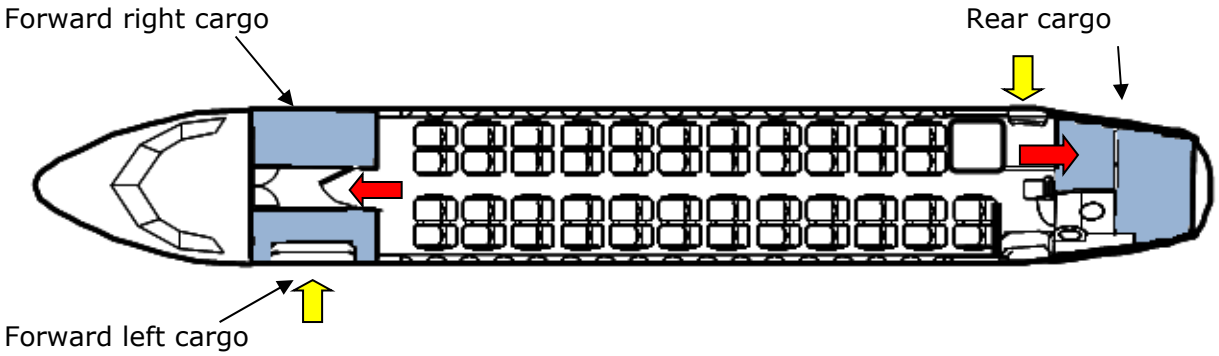
Same as normal opening from inside:
The safety pin has not been inserted since this is an inflight situation.

1. **Secure yourself by holding the door frame securing handle**
2. **Pull the door control handle inward to allow rotation movement**
3. **Rotate the door control handle forward to unlock the door**
4. **Push the door outward**
5. **To lock the door against the fuselage, engage the door operating handle (outside part) into the fuselage hook.**

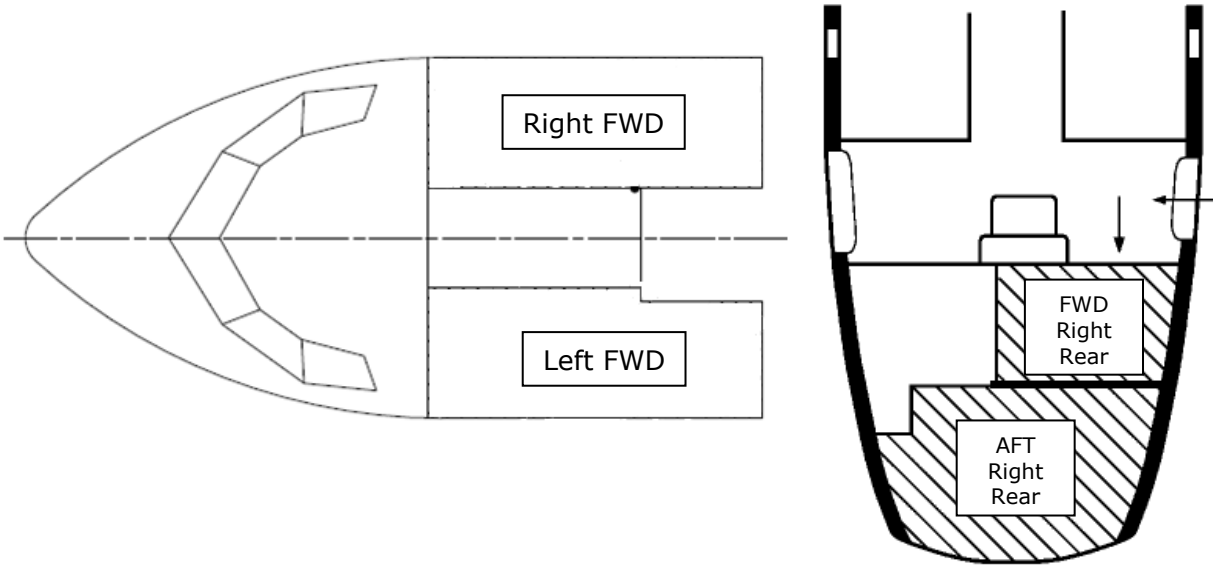


1.6 Cargo Hold Dimensions and Limitations

There are four cargo compartments installed on the ATR. The ATR cargo compartments are all accessible from the cabin.



Cargo area access for the Cabin Crew
Cargo area access for the ground personnel



Cargo Compartment Limits

Maximum Hold Volumes			
Forward Hold		Aft Hold	
Left FWD	Right FWD	FWD Right Rear	AFT Right Rear
2.8m³	3m³	1.9m³	2.8m³

Maximum Hold Weights (Kgs)			
Forward Hold		Aft Hold	
Left FWD	Right FWD	FWD Right Rear	AFT Right Rear
448	480	302	442

1) Right Forward Compartment A

Height (cm)	5 to 143	150	155	165
Width (cm)	Length (cm)			
5	190	185	185	130
10 to 20	185	185	185	130
25 to 35	160	160	160	
40	160			
45 to 70	95			

2) Left Forward Compartment B

Height (cm)	5 to 143
Width (cm)	Length (cm)
5 to 35	160
40 to 50	95

1.6.1 FWD Cargo compartment

This hold is divided into 2 longitudinal compartments with a crew access way between them, this must always be clear and free from any items of baggage or cargo.

When opening the external cargo door cpt 1 is located in the doorway, cpt 2 is located behind the access way.
The door is opened using electrical power, the door controls are located on the fuselage to the lower right hand side of the cargo door. Once the door motor stops the door should be locked by pushing the prop bar into the locked position.

The FWD cargo compartment baggage loading and off-loading is done through the dedicated cargo door, FWD left hand side.

Placement of the hold curtain

If appropriate access equipment is available, best practice is to disconnect the curtain from the top, left and bottom sides and fold to the right hand side.
If appropriate access equipment to access the top of the curtain is not available, then the alternative method is to disconnect the curtain from the left, right and bottom sides, carefully place the netting behind the baggage or rolling the curtain up in the middle.

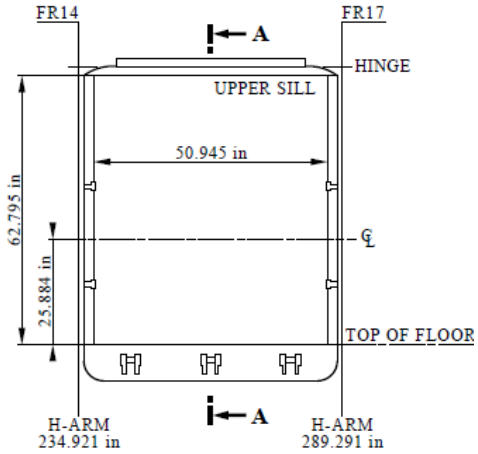
Best practise

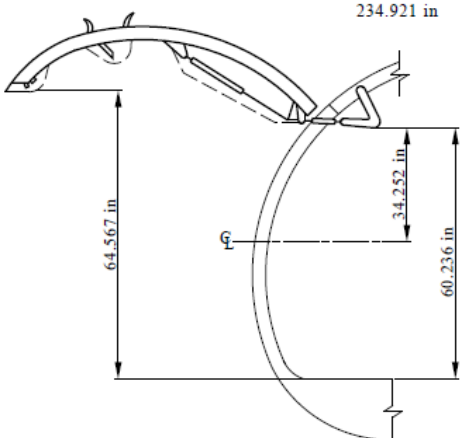
Alternative method

Under no circumstances is the curtain to be rolled up and tucked between the fuselage and the hold door arm as this may cause damage.

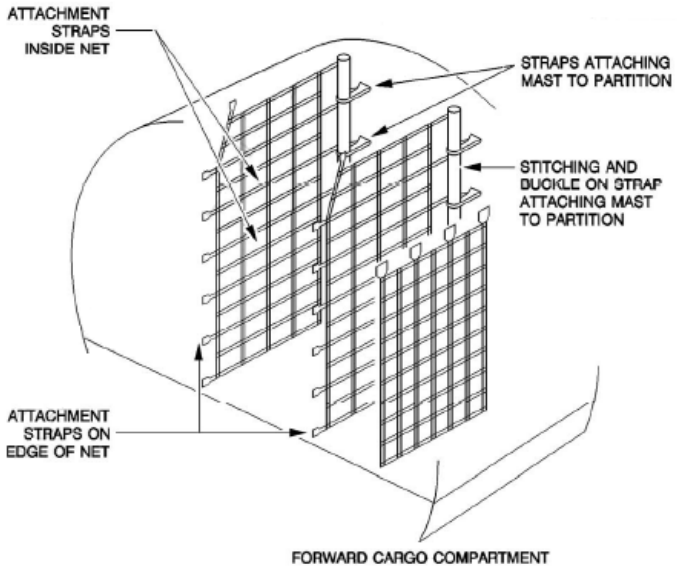
Loading and off-loading tasks fall under ground personnel responsibilities.
The FWD cargo door is NOT an emergency exit.

The FWD cargo area being the separate area between the cabin and the flight crew compartment, cabin crew must ensure they always operate the "cabin to cargo door" with all the necessary precautions.





SECTION A-A



The door nets MUST be secured for EVERY FLIGHT, regardless of load.

Forward cargo door operating panel

ARMED light
–Selector armed green light is ON, when actuator selection switch working conditions are met:
–cover panel opened
–door unlocked by operating handle: all hooks are disengaged and FWD latchlock is unfastened

LCHD light
blue light is ON when all door hooks and latch locks are fully engaged

GND HDL light
Ground handling bus ON BAT red light is ON when ground handling bus is directly supplied by HOT main bat bus: means that the battery is discharging even if the BAT toggle switch is in OFF position (visible even when the cover panel is closed)
This red light is ON when:
– The refueling panel is open
– The cargo door control panel is open
– The passenger door is open and alert, that the battery is discharging before leaving the aircraft

Actuator selection switch
is used to operate the door (**OPEN** or **CLOSE**) when the CARGO DOOR ARMED green light is on

Panel cover switch
connects the ground handling bus on line when the panel cover is opened and allows operation of cargo door. During the opening, a self test of the MFC 1A and 2A is performed to initiate the control system of the cargo door.

CARGO LIGHT switch
allows activation of the cargo bay light from outside

WARNING: Do not operate the forward cargo door if wind speeds or wind gusts are greater than 45 kts

1.6.2 AFT Cargo compartment

Height (cm)	5 to 50	50 to 80	80 to 100	100 to 110
Width (cm)	Length (cm)			
5 to 30	170	160	80	80
35	150	150	80	80
40	150	150	80	80
45	130	130	80	80
50	60	60	60	50

The AFT cargo compartment is divided into two parts. Passenger's checked-in bags are normally loaded in to the rear part (compartment 4) with the forward part (compartment 3) used to store catering.

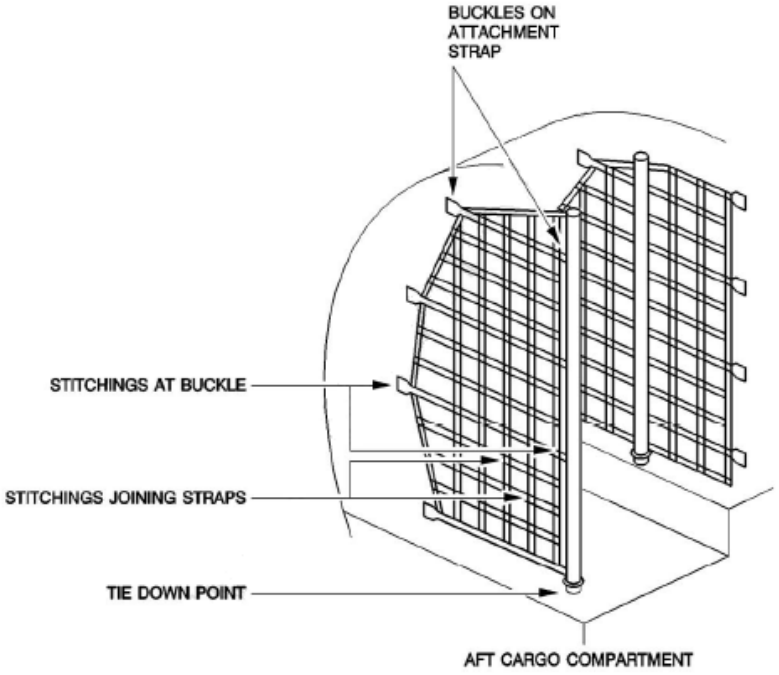
Loading and off-loading of passenger bags is done through R2 service door. Placards placed inside the cargo compartment indicate weight and height limitations, as well as safety net hooking and tightening instructions.
The height limitation must be respected to allow efficient extinguisher gas diffusion in case of fire fighting procedure.

Due to the intercom being situated adjacent to the aft hold access, the handset has frequently been knocked from its cradle by ground staff loading bags into the rear hold. This in turn has caused damage to the handset and replacements required.
When loading / un-loading bags in the aft hold, please do so with care to avoid damaging the intercom handset.

The ATR has a cargo restraint net separating cpt 3 and cpt 4. These nets must be secured for all flights regardless of whether load is present.

It is the Cabin Crews responsibility to check that the safety net is properly hooked and tightened for the flight.

WARNING: Due to the small size of the rear service door, care should be taken when passing baggage and cargo through



1.7 Baggage and Cargo Loading Procedure

Baggage and cargo should be evenly distributed over the cargo compartment to avoid load concentration.

Baggage/Cargo must not become a hazard to the airplane structure or systems as a result of shifting under operational loads. Therefore, sharp edge volumes (like wooden or metal containers) and/ or dense cargo (objects significantly more dense than typical passenger baggage) must be arranged with adjacent soft volumes or protections thus preventing airplane damage in case of baggage/ cargo shifting due to operational loads

Caution is needed to avoid tail tipping and the front hold must be offloaded last and loaded first. Passengers should be boarded by seat row or bay, starting from the front.

Always load the forward hold first and the aft hold second.

If all bags are to be loaded in the aft hold, passengers seated in rows 1 – 10 must be boarded first and then baggage can be loaded to safeguard against tipping of the aircraft.

It is imperative that both holds are checked by Ground Crew prior to loading bags, this is to ensure no bags are left on board the aircraft.

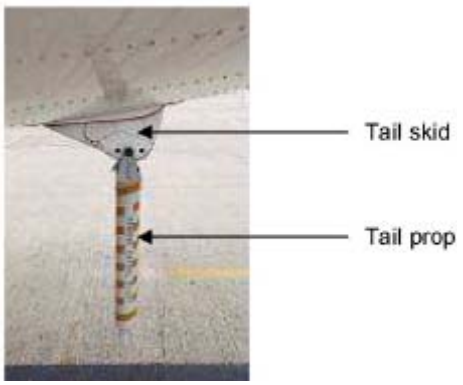
WARNING: Never allow more than 10 passengers to stand in the rear of the cabin aisle or in the entrance area if the aft cargo hold is in excess of 200 kg of the forward cargo hold.

Loading staff must follow the loading plan and note any deviations to the actual load. The person responsible for loading the aircraft must sign the load form.

1.7.1 Tail Prop

The tail prop is a metal rod, which is hung from below the rear fuselage of the aircraft whenever the aircraft is on the ground and stays in this position until the doors are closed prior to departure.

The tail prop is a safety device which must be installed to the aircraft tail skid to prevent the aircraft tipping on to its tail during passenger boarding and disembarkation.



The tail prop is stowed in the galley/rear hold, the Cabin crew must ensure the tail prop is taken in and stowed securely, before closing the main passenger door prior to departure. On arrival at the destination, when the door is opened, the cabin crew must hand the tail prop to a member of ground staff, who will fit it prior to allowing passengers to disembark.
Ground staff must confirm to the cabin crew when the tail prop is in position.

Following boarding of passengers, it may be necessary for cabin crew to re-seat passengers for trim purposes. To prevent any possible aircraft tipping, the tail prop **must** remain in place until the cabin crew have requested it to be removed for stowage.

The tail prop **must not** be removed automatically until crew have confirmed it is ok to remove.

1.7.2 Tail Prop Stowage

The tail prop must be stowed in the rear galley adjacent to the cabin crew seat (see below). The tail prop must be stowed prior to departure.

1.8 General Loading Restrictions

Dangerous Goods, live animals and human remains are, because of their nature, subject to special instructions, when carried by air. In the interests of flight safety, animal welfare and customer service in general, all staff involved with aircraft handling must comply with the rules in this instruction.

Live Animals

Eastern Airways do not accept carriage of live animals on our scheduled network, however live animals can be accepted for travel if agreed within a third party contract.

The procedure for carriage will be defined within a published Ground Handling Instructions (GHI).

Guide dogs and hearing dogs may be carried in the cabin.

Human Remains

Ashes in a strong, sealed container may be carried without restriction. Consignments must be carefully handled and must not be stowed under other cargo.

Dry Ice

The maximum quantity of Dry Ice permitted is 180kgs in the rear hold only.

Dangerous Goods

See Dangerous Goods section 9

1.9 Loading of Electric Mobility Aids (EMAs)

It is vital that all EMAs are handled and loaded correctly so as to:

- Prevent injury to staff and service providers
- Prevent damage to the wheelchair/mobility aid
- Prevent damage to the aircraft and
- Protect the safety of passengers and crew

Additional care should be exercised when handling, maneuvering battery powered wheelchairs, as these can be very heavy (in excess of 100 Kg).

It is the airport operator/PRM service provider's responsibility, in conjunction with the PRM, to ensure that the EMA is properly prepared for carriage but the airline is ultimately responsible for the safety of the EMA once loaded onto the aircraft.

The captain of the aircraft must be informed of the position of the EMA containing a spillable battery, (or the location of the boxed battery) by a NOTOC entry.

1.9.1 EMA Loading Limitations

The carriage of EMA is subject to available space in the aircraft hold.

Only 2 EMAs 40 kilos maximum weight per EMA can be carried with prior approval.

The EMA must be able to fit through the forward cargo door.

1.9.2 EMA Loading Locations

The EMA must be loaded into the forward left cargo compartment. No other baggage may be placed in the same compartment as the EMA.

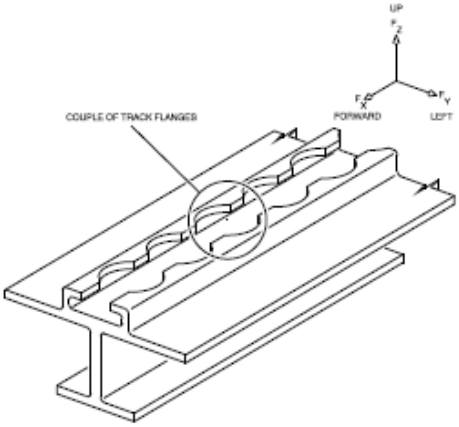
The EMA must be secured in the hold using the adjustable tie down straps which are stored in the red aircraft blanks bag located in the rear cargo compartment. It must be secured in such a way as to prevent both longitudinal and lateral movement.

1.9.3 Lashing Points For EMAs and Other Large Items

The following process must be followed in order to ensure safe carriage of EMAs, Dangerous Goods and items over 25kgs in weight

The hold of the aircraft contains sliding rail retaining rings that the ratchet restraints fit into. The ramp agent loading the item(s) must ensure that the retaining rings are free from dirt and debris to ensure correct fitting.

NOTE: EMA's, Dangerous Goods and items over 25kgs in weight must not be carried on aircraft without being secured.
Any item with sharp edges or individual item loaded that may cause damage through movement should be restrained.



The ratchet restraints are slid into place in the restraining ring until they are securely fitted. Ensure that there is no play when fitted otherwise they may come loose in flight.

Where possible so as not to become obstructed, it is recommended that any DG is loaded last so as not to cause an obstruction for the loading of hold luggage.

Adjust the straps to suit the size / number of items(s) being loaded to ensure that there is no movement. Ensure that the tension placed on the straps does not compromise the integrity of the item / packaging

Two retaining straps must be used (corner to corner) to secure the item(s) and must not obscure DG packaging labels.

When not in use, the retaining straps must be stored in the strap bag and kept in the rear hold of the aircraft. The straps must not be removed from the aircraft as they are considered part of the airframe.

Prior to a handling agent securing any item(s) in the hold of the aircraft, training on the use of the straps and securing locations must have been received from Eastern Airways.

The following checks must be carried out on the straps prior to use:

- A visual check of the straps must be carried out before use to ensure that the straps have not been damaged. If damage is noted, then they must not be used and must be reported to the Captain.
- Check the service date (straps have a 2 year service life from the date on the strap).
- Engineering will be responsible for checking that the correct compliment of straps is in the strap bag on a nightly basis.

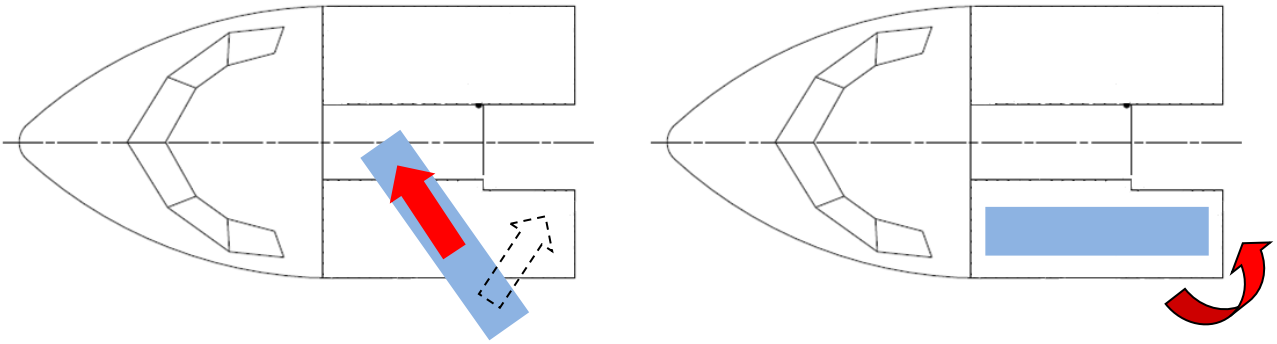
1.10 Loading of Helicopter Tail Rotors

The following procedure is best practice for loading and carriage of S92 tail rotors in the ATR hold.

The weight and dimensions of the packaging for tail rotors is:

Dimensions: 179 x 30 x 73 cm
Weight: 50 kgs

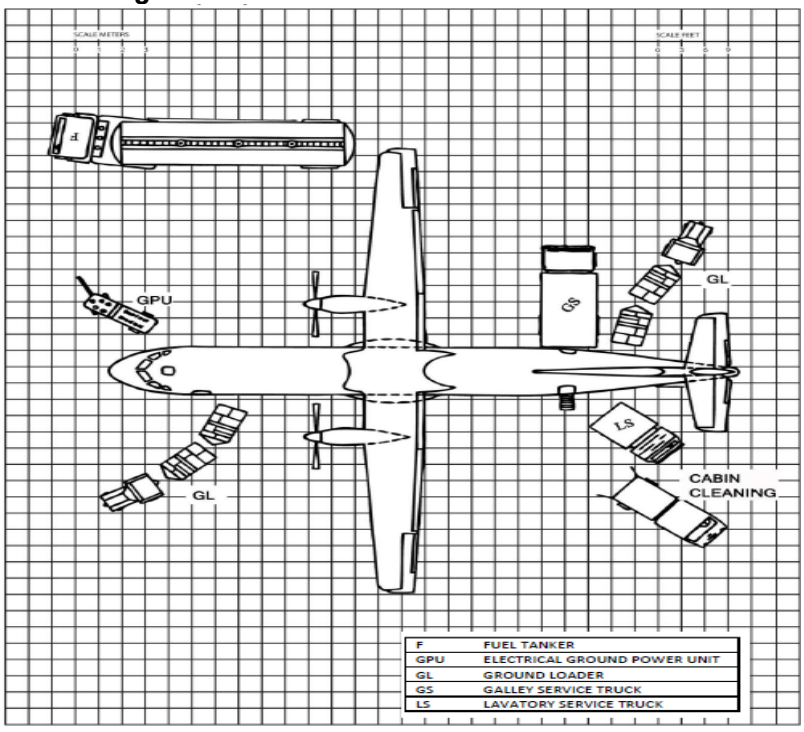
Due to the size of the packaging, carriage can only be in compartment 1 and can only be accommodated by positioning it as demonstrated in the below diagram. The item must be placed encroaching the walkway and rotated inwards on the right hand side. Only one rotor must be carried at a time.



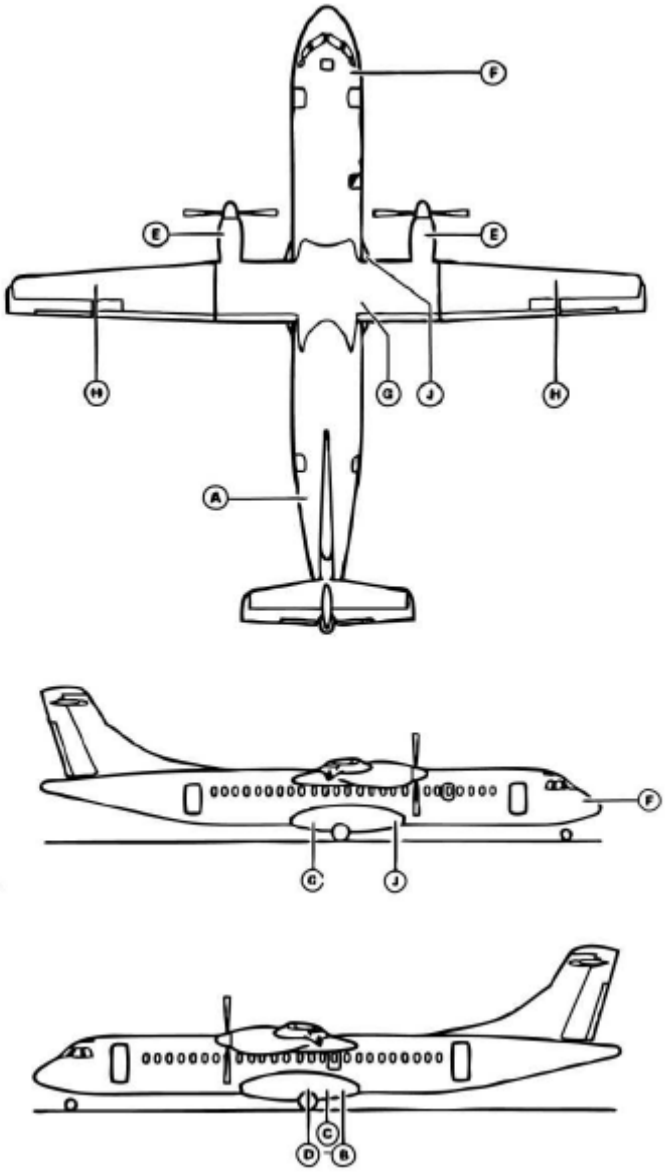
Ramp agents must check the packaging for damage prior to loading.
Loading should be done by way of either a belt loader or by two person lift. Ramp agents should carry out a dynamic risk assessment at the time depending on what equipment is being used for loading.

The tail rotor must not obstruct the securing of the hold netting. Tie down straps must be used to secure the load.

1.11 Aircraft Servicing Locations



The handling agent must ensure that GSE appropriate to the aircraft type is used by trained persons and is good mechanical condition with a clearly identified serviceable/un-serviceable status.



A	LAVATORY SERVICING CONNECTION
B	ACCUMULATOR AIR CHARGING
C	HYDRAULIC POWER GROUND CONNECTION
D	HYDRAULIC TANK FILLING CONNECTION
E	ENGINE OIL FILLING CONNECTION
F	ELECTRICAL GROUND CONNECTIONS
G	PRESSURE FUELING CONNECTION
H	GRAVITY FUELING CONNECTIONS
J	PRE-CONDITIONNG CONNECTION (OPTION)

1.11.1 Potable Water Service Point

Located at the rear of the aircraft tail, directly between the rear passenger door and the rear service door. Full instructions for filling and draining potable water are detailed inside the service panel.

Preparation

(a) Open potable water service panel access door 261 al.
(b) Position service vehicle close to service panel. Activate service vehicle.
(c) On potable water service panel, remove blanking plug (1) from union and connect service vehicle to aircraft connection (1).

Draining

(a) Connect a pipe to overflow port (3) and leading to recovery container.
(b) Place handle (2) in "open" position and drain completely lavatory tank. Actuate galley tank draining valve to drain galley water tank.
(c) During draining keep pushing the faucet lever (5).

Filling

Note: Filling of lavatory fresh water tank is performed simultaneously with galley fresh water tank.

(a) On potable water service panel, with valve handle (2) in "open" position Connect service vehicle to the aircraft connection (1) to fill the water tanks.

Note: To fill the water heater installed on the galley, put the water pump Switch (6) In "on" position. When the "water tank light" (7) comes on the system is completely full (water tank + water heater). Put the water pump switch (6) in "off" position.

(b) Place valve handle (2) in "closed" position.

WARNING: Filling pressure must not exceed 1 bar (14 psi). In the event of topping up operation stop filling when water flows through overflow port (3).

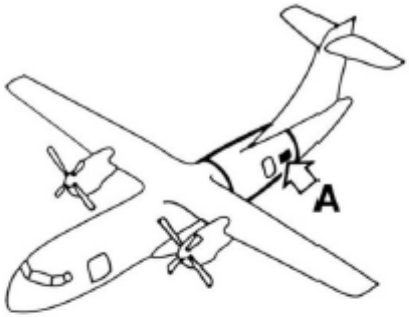
(c) In the event of freezing, perform filling just before the flight.

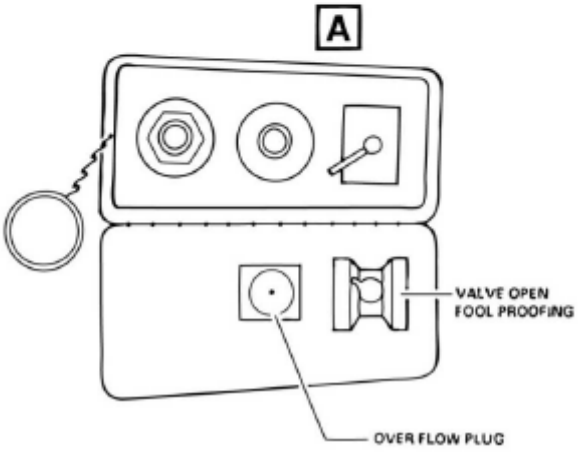
Close-up

(a) Disconnect service vehicle from filling connector (1). Allow aircraft system pipe to drain.
(b) Disconnect valve from galley waste bin compartment.

WARNING: In order to avoid blocking of plugs and valves by ice, thoroughly wipe threads, potable water service panel and access door.

(c) Screw blanking plug (1).
(d) On panel access door, make certain that over flow plug (4) is in correct condition.
(e) Close access door 261al.
(f) Remove recovery container.





WARNING: During winter operations where the aircraft is to be parked overnight or longer in freezing temperatures, it is good practice to drain the water and refill prior to departure to prevent freezing.

1.11.2 Toilet Service Points

Preparation

(a) Open door 141al giving access to service panel.
(b) Position service vehicle close to service panel and activate service vehicle.
(c) On service panel, open cap (6) of flush/fill coupling (5) and connect service vehicle flush/fill hose.
(d) Connect service vehicle drain nose end fitting (3) to drain coupling (1).

Note: Make certain that drain hose end fitting (3) is correctly connected to coupling (1).

Draining

(a) Open drain valve (1) by turning open lever (2) downwards.
(b) On service panel pull handle (7) and turn by a quarter turn to drain toilet tank. Tank capacity: 18.5 us gal (70 l).

Note: In the event of freezing, perform draining after the last flight.
Flushing

(a) Activate service vehicle flushing system, and stabilize:
- Pressure at 2.4 bars (35 psi) maximum,
- Flow rate at 38 l/mn (10 us gal) and

Flush tank until tank is completely clean. Repeat operation if necessary.

(a) On service panel, release control handle (7) of flushing coupling (5).
(b) Close drain coupling (1) by turning opening lever (2) upwards.
(c) Disconnect drain hose (3) from coupling (1).
(d) Check drain coupling (1) for seepage and leakage (leakage is not permissible).

Filling

(a) Transfer 9.5 l (2.5 us gal) of water and disinfecting mixture (14-001) from Service vehicle into toilet tank.
(b) If service vehicle is not equipped with a disinfecting circuit, filling is performed directly from the bowl.

Note: 1) The mixture content is defined by the disinfecting agent manufacturers.

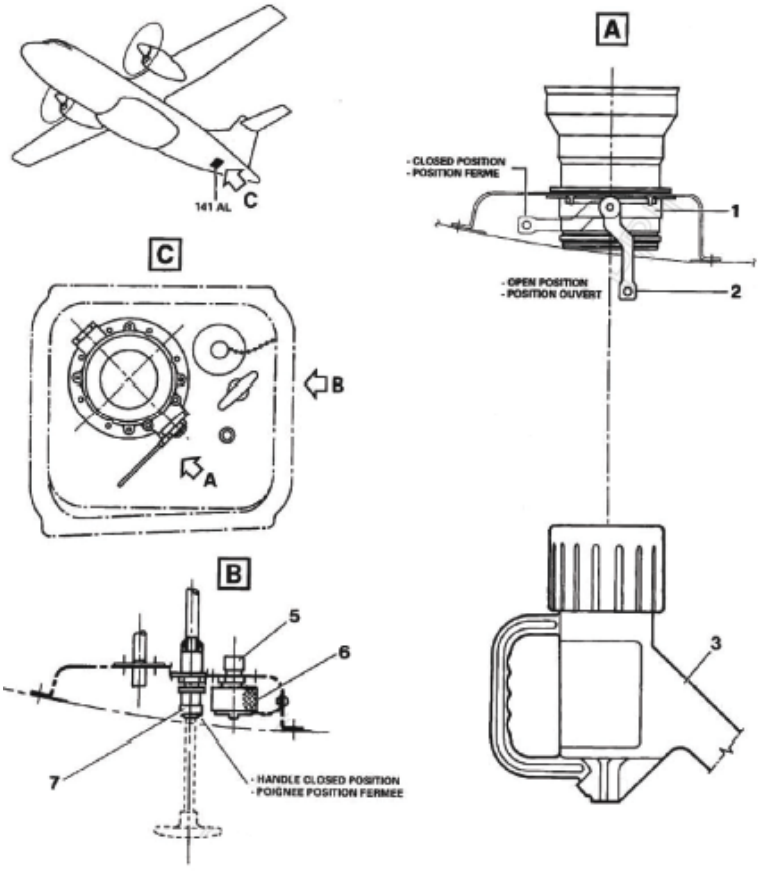
(c) In the event of freezing, perform filling just before the flight.

Close-up

(a) Disconnect flush/fill hose from coupling (5) allow aircraft hose to drain for a Few minutes and fit cap (6).

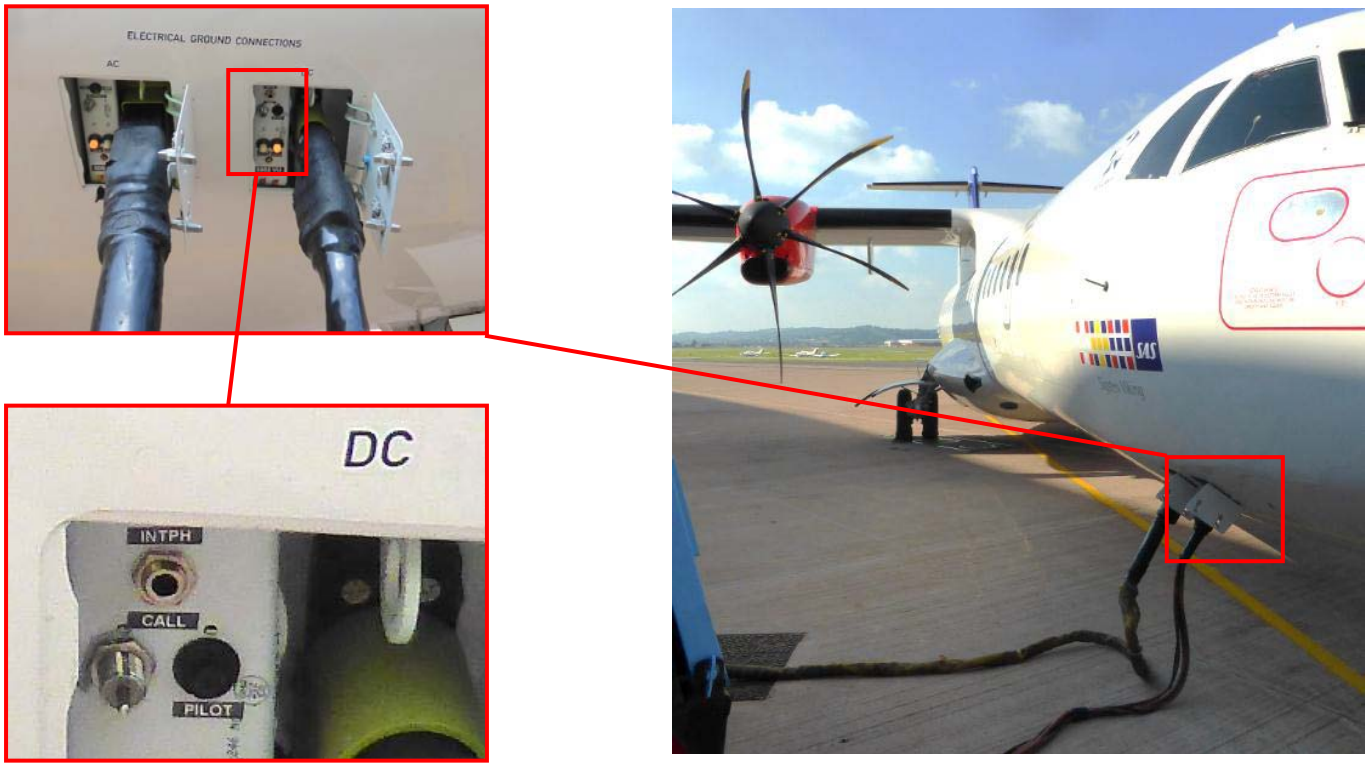
WARNING: To avoid jamming of caps and valves due to formation of ice (in altitude), fully dry service panel and door.

(a) Clean service panel.
(b) Close access door 141al.



1.11.3 Ground Power / Headset Connection Point:
The GPU connection point is located at the front of the fuselage under the first officers window, and accepts 28V DC minimum 300 amp with maximum 1275 amp. The headset intercom plug is also located in the receptacle

A 115v AC connection point is also located to the left of the DC hook-up, this is used during maintenance and not required during a turnaround.



The ATR series a/c do not have a separate APU but are able to supply internal power through the No 2 Engine, the prop is locked to prevent prop rotation. This is known as "H" (Hotel) mode.

Confirmation must be received from the flightdeck that the prop No 2 is braked and it is safe to approach the area of the GPU receptacle, which is located on the s/board (RH) lower fusealge under the F/O's side window.

The nose wheel and starboard main wheel must be chocked to prevent aircraft movement (see section 1.22).

Whenever the number 2 engine is running in hotel mode it must be treated as any other running engine, staff must respect safe distances to the propeller and jet exhaust.

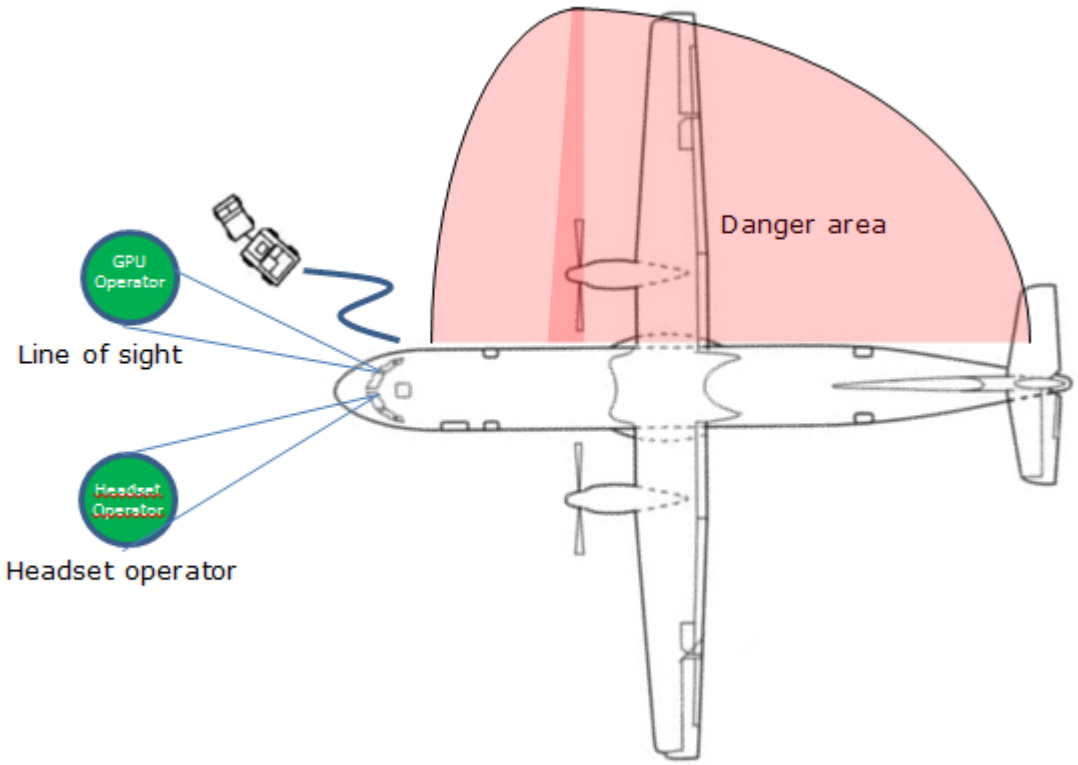
The GPU must be placed as far forward and away from the aircraft as possible and chocked to prevent contact. The GPU operator must be in clear line of sight to both the head set operator and the First Officer.

For departures;

Only essential persons and equipment needed for the engine start must be within the stand area. All other persons and equipment must be clear.

It is the responsibility of the head set person to ensure this happens and to only give the crew clearance to start thereafter.

Only when the headset operator has received verbal instruction from the crew to disconnect the GPU, should the GPU operative approach the aircraft.



1.12 Doors Opening/Closing Procedure

No passengers/service door shall be opened until appropriate service equipment is in position at that door (if required).

Where doors are required to be opened from inside the aircraft, confirmation that equipment is in position, in the form of 'two knocks' by hand on the outside of the aircraft door must be given.

Cabin Crew **MUST** give a slow count of 10, to allow ground staff time to retreat to a safe position before doors are opened.

No operator shall attempt to lower a platform or remove service equipment positioned to passenger/service doors, without first ensuring the door is closed by a trained operator.

No passenger/service door may be left open without any service equipment positioned to the door. In the event that a passenger/service door is found to have been left open without service equipment in position, the appropriate equipment must be replaced before any attempt is made to close the door.

Should service providers need to access the aircraft without crew on board, you must ensure that aircraft doors are closed prior to leaving the aircraft.

1.13 Air Start Unit Procedure

N/A

1.14 Connecting / Disconnecting towbar

Before the towbar is connected / disconnected, ensure that GSE is serviceable and that only trained persons in the procedure carry it out.

Connecting the tow bar

1. Connect the tow bar to the nose landing gear spigot

2. Once located on the spigot, move the red lever forward to lock the mechanism
3. Connect the tow bar to the tug. Ensure correct alignment to allow the pin to be inserted
4. Do not remove the wheel chocks until confirmed by the crew or brake rider

WARNING: Even if the aircraft is connected to the tug via a tow bar, the wheels must still be chocked until the crew or brake rider confirm they can be removed.

1.15 Towing Procedure

WARNING: Only persons trained in brake riding must act as brake riders.

All tows must have wing walkers on each wing within stand / apron areas. Wing walkers must monitor the clearance of the wing tips to obstacles and provide a clear indication (thumbs up or stop aircraft gesture) to the tow driver.

If the tow driver cannot see each wing walker, the tow must stop until visual reference can be established.

Ensure minimum manpower is available, consisting of tug driver and brake man, and x2 wing men (if required).

When towing aircraft into confined spaces such as hangars there are to be 2 wingmen in position. Standard wing tip clearance signals are to be used

Ensure personnel are appropriately qualified with ADP and/or airport security passes.

Ensure personnel are equipped with appropriate personal protection equipment.

Ensure all pre use inspections have been carried out on towing equipment to include tug AVP and tow bar damage inspection, paying particular attention to shear pins.

Ensure undercarriage ground pins are installed.

Monitor the brake accumulator pressure during the tow operation. Ensure that it does not fall below 2000 psi.

If the pressure drops below 2000 psi, stop the tow and press the "Aux Hyd Pump" to pressurise the blue hydraulic system.

Preparation

1. Verify that the pressure of "EMER BRK ACCU" shows at least 2000 psi
2. Select the N/W steering switch in the "OFF" position

WARNING: Towing with the hydraulic steering system pressurised can result in system damage.

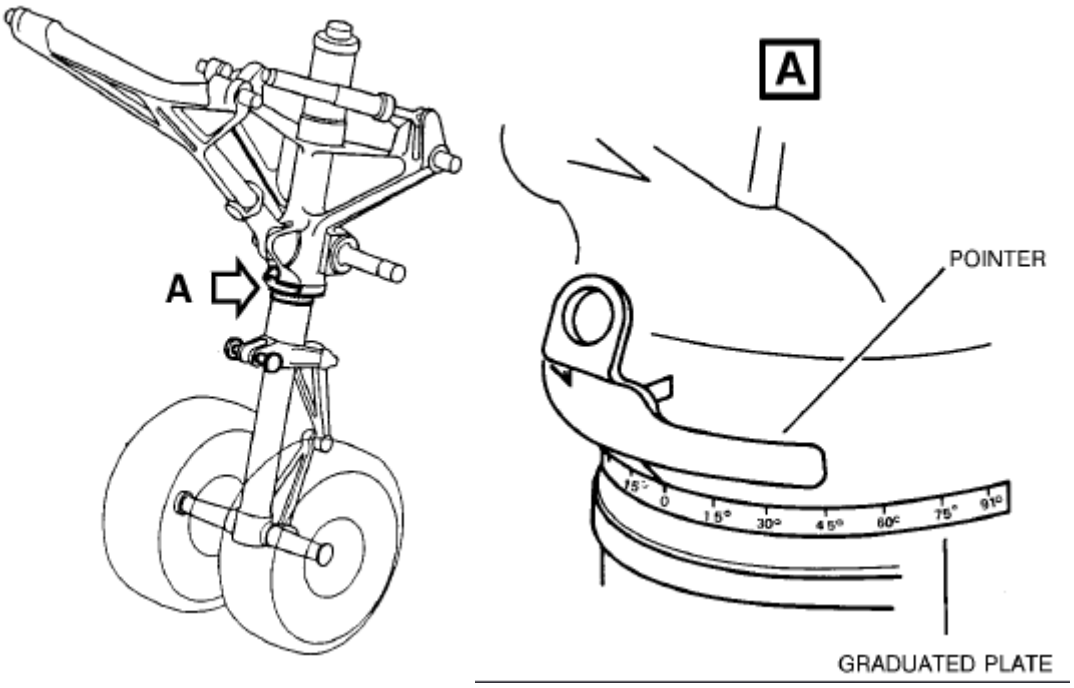
Procedure

1. Check that the landing gear ground locking pins are installed
2. Connect the tow bar to the nose landing gear

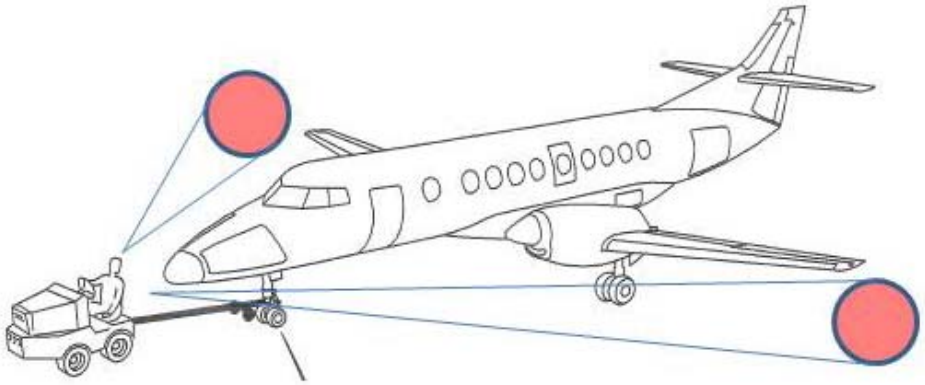
WARNING: Ensure the tow bar is in the horizontal position and that the towing point on the towing vehicle is not higher than 16 inches

3. Connect the tow bar to the tractor
4. Ensure communication with the brake rider
5. Make certain that the personnel in the flight deck is ready to operate the brakes
6. Confirm with the brake rider that the aircraft brakes are applied and remove the chocks
7. Confirm with the brake rider that brakes are released and commence the tow
8. When the tow is complete, centre the nose wheel
9. Confirm aircraft brakes are applied
10. Insert chocks to nose and both main wheels
11. Return the N/W steering switch to its original position

WARNING: Never exceed the maximum turning angle indicated by the pointed and the red graduated plate below.



Position of wing walkers



1.16 Pushback Procedure

Aircraft push-back must be supervised by a ground crew member who is in communication with the flight crew by headset. Under exceptional circumstances push-back may be completed using industry-standard hand signals following prior liaison with the flight crew.

WARNING: In the event that hand signals are used the ground crew member must remain in sight of the flight crew at all times.

At least one ground crew member must be positioned to the side or rear of the aircraft to warn and control vehicular traffic. This ground crew member must remain in visual contact with the supervising ground crew member at all times. Industry-standard push-back phraseology will be used throughout.
In the event of an engine abnormality being observed by the ground crew during start, the flight crew should be informed immediately

When the headset operative signals to the aircraft tug driver "brakes released" the driver must ensure the smooth transition from stationary position to forward motion.

During the pushback operation the aircraft tug driver must observe the following aspects:

- Line of sight to the headset operator & Dispatcher
- Be alert to any relevant hand signals.
- Be aware of aircraft limitations during manoeuvre.
- Be aware of path of travel & position within manoeuvring area. (Alert to unexpected obstructions).

- Be able to project the intended position of the aircraft being manoeuvred & adjust position accordingly.
- Achieve final alignment of aircraft, aircraft tug & tow bar on completion of manoeuvre.
- Headset operator walking in line of sight of the tug driver – no closer to the engine inlets than the nose landing gear.

When completing the pushback manoeuvre it is essential that the aircraft tug, tow bar & aircraft are aligned correctly.
The aircraft tug, tow bar & aircraft must be aligned with the aircraft centre line ensuring the shearing forces on the tow bar are minimised.
The alignment of tug, tow bar & aircraft will also allow for ease of disconnection during removal of the tow bar.
After the successful alignment of the aircraft, tow bar & aircraft tug, the aircraft tug driver must reduce speed allowing the aircraft to slow gently prior to gently depressing the footbrake bringing the aircraft & tug to a gentle, controlled stop.

Once the aircraft tug has come to a complete stop the driver must:
- Depress the foot brake.
- Apply the parking brake.
- Set the gear selector to neutral / park position.
- Signal to the headset operative "brakes on" clenched fist

The tow bar must be disconnected from the tug prior to disconnection from the aircraft.

Shear pin failure
If during the pushback the shear pins were to fail, one of two things may happen.

1. The tow bar head may completely separate from the tow bar. If this happens the tug driver must stop and when the headset man is satisfied the tug has stopped, he must tell the flight deck to apply the brakes.

2. The tow bar head may remain attached to the tow bar, but directional control will be lost. If this happens the tug driver must bring the aircraft to a controlled stop. The headset man will then advise the flight deck of the situation.

It may be necessary to have the nose landing gear inspected for damage by a qualified engineer – the captain should make this decision.

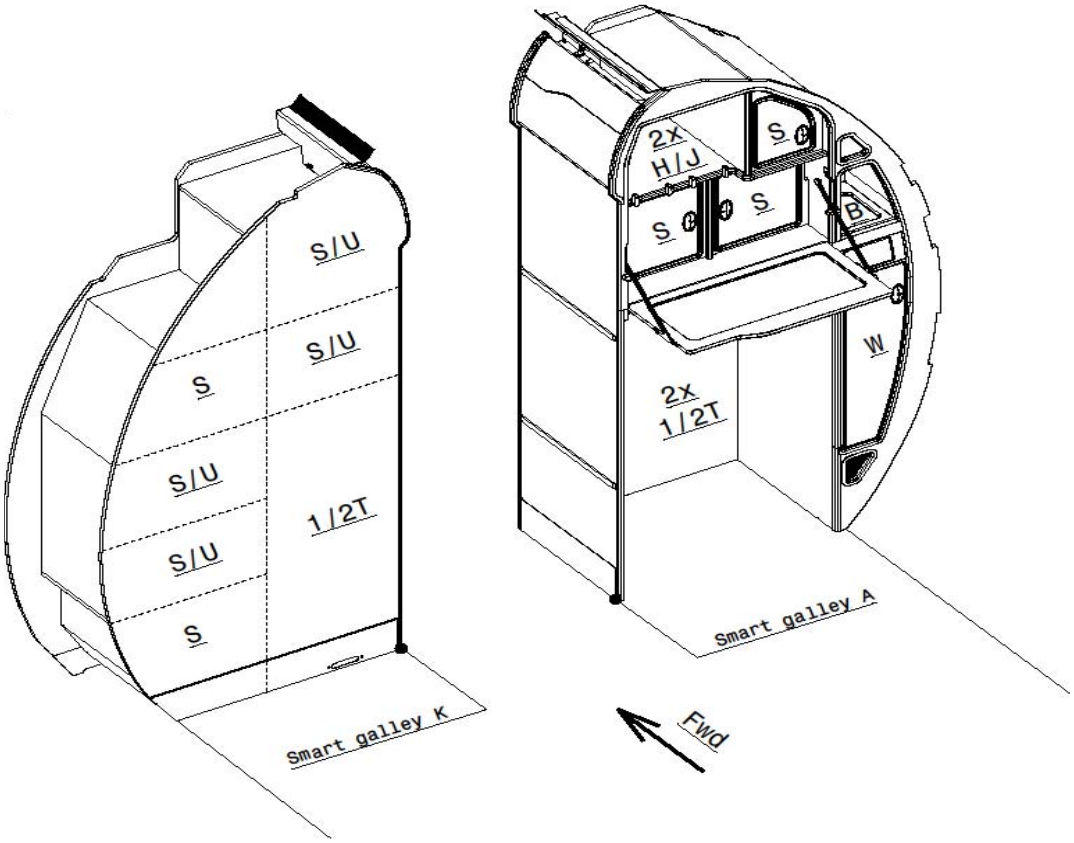
Beware – you will need to take additional care, as the situation is now different to standard operations. If you have to disconnect the tow bar, ensure the flight deck have set the parking brake. As safety report must be completed using your company reporting system and a copy sent to Eastern Airways.

1.17 Galley Servicing

The following describes the galley layouts and tray set ups for the aircraft.

The galley unit is located at the rear of the cabin and is equipped with;

W – A waste bin with flap cover
½ T – Trolleys
S/U – Stowage unit
S – Stowage
H/J – Hot jugs
B – Basin

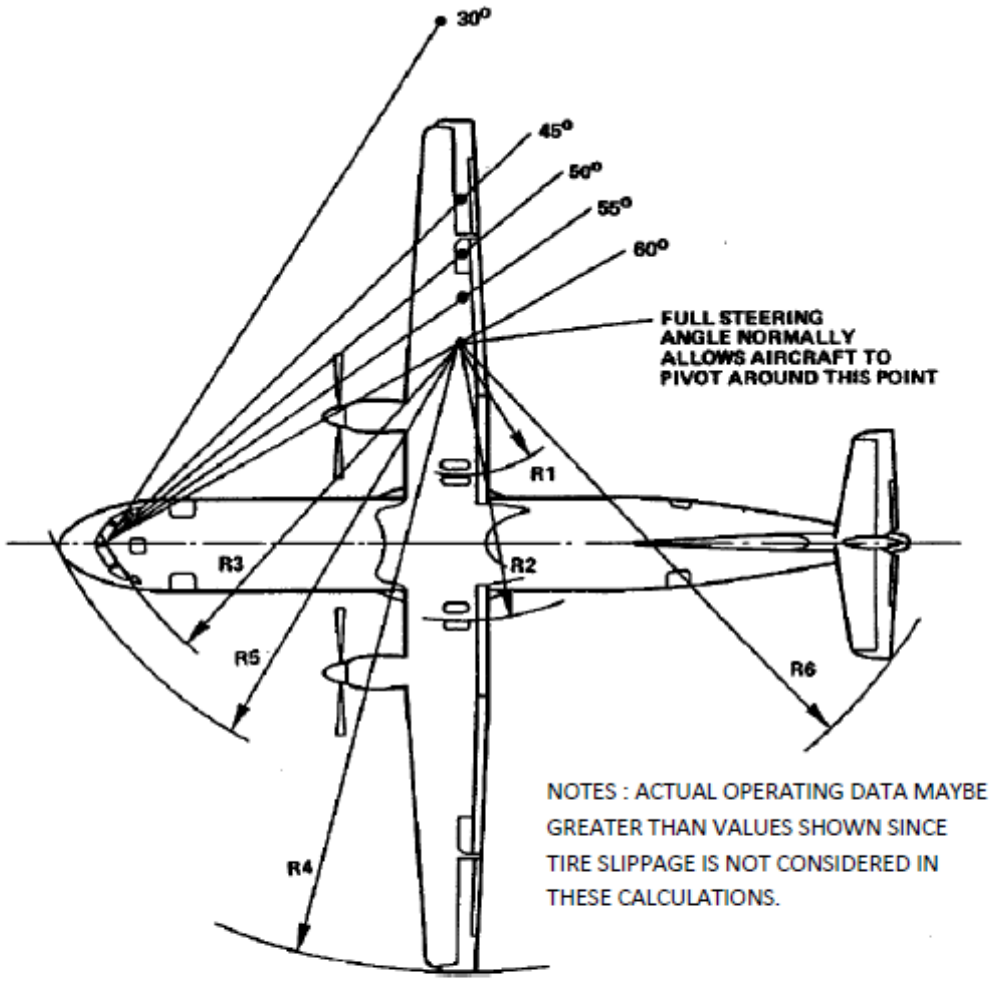


WARNING: Do not dispose beverage through the lavatory and galley sinks. There is the possibility of unwanted fuselage staining and Environmental Control System contamination. The waste container should be used for beverage disposal alternatively. Water can be normally disposed through the lavatory and galley sinks.

1.17.1 Hot Water Urns

The galley is equipment is equipped with 2 x removable hot jugs (28V DV – 125 W – 7.5 litres)

1.18 Ground Manoeuvrability



F4.2.2

STEERING ANGLE (DEGREES)	R1 INNER GEAR		R2 OUTER GEAR		R3 NOSE GEAR		R4 WING TIP		R5 NOSE		R6 TAL	
	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m
30	54	16.60	67	20.70	70	21.53	105	32.18	73	22.45	86	26.27
45	28	8.72	42	12.82	49	15.23	79	24.30	54	16.50	65	20.02
50	22	6.98	36	11.08	46	14.05	74	22.56	50	15.42	61	18.80
55	18	5.49	31	9.59	43	13.14	69	21.07	47	14.60	58	17.83
60	13	4.16	27	8.26	40	12.43	64	19.74	45	13.96	55	17.03

1.19 Safety & Training

Ground handling agents must ensure that staff have training in Airside Safety Awareness and are equipped and use PPE to include but not limited to the following items;

- Safety shoes
- Hi-Vis jacket
- Ear defenders
- Safety glasses

Handling agents are responsible for ensuring that a Risk Assessment is carried out for handling the aircraft type and ensuring that hazards have been identified and appropriate safety measures and training are in place and implemented.

The handling agent must ensure that staff carrying out handling duties are trained on the aircraft type and in accordance with the content of this handling manual to include (but not limited to) the following;

- Operation of aircraft doors (hold and passenger)
- Cargo hold loading and limitations
- Tail prop operation
- Loading of EMA's
- Aircraft servicing locations
- Ground power operation
- Towbar / Towing / Pushback procedures
- Danger areas and HOTEL mode operation
- Aircraft de-icing (including working at height)
- Passenger movement training (including the boarding of pax to maintain trim)

1.20 HOTEL Mode

The ATR has the facility to start and run the number 2 engine with the propeller locked to prevent it spinning, this allows the aircraft to not need ground supplied power and air conditioning, this is known as "hotel mode". Whenever the number 2 engine is running in hotel mode it must be treated as any other running engine, staff must respect safe distances to the propeller and jet exhaust.

Under normal circumstances, a GPU will be provided for all turnarounds and Hotel Mode is only used for relatively short periods of time during engine shut down and start.

Hotel mode has the following disadvantages.

- Noisy – Air and ground crew not very happy to operate in vicinity.
- Hot gases – Ideally the wind should be from the 10 o'clock position. A tailwind can rapidly result in nacelle overheat (requiring immediate shut down) or even an engine fire. A wind from the right hand side may result in fumes in the service door and blistering of fuselage paint.
- When using Hotel Mode, particular attention must be paid to wind speed and direction. The use of Hotel Mode with a tailwind of greater than 10kts is prohibited except for brief periods of time (arriving on stand).

Particular care must be taken during push-back to ensure that the tailwind component of 10kts is not exceeded at any stage while hotel mode is in use or when the propeller is feathered. A tailwind component of 10kts or greater can result in NAC overheat and an Engine Fire warning.

However, in winter conditions and extreme summer conditions the use of Hotel Mode for cabin conditioning is recommended, where possible after any catering and/or rear hold loading is complete.

In normal operations engine # 2 will be started in Hotel Mode just prior to calling for push and start. With DC power available from that engine then the

GPU can be disconnected without either prop rotating which has obvious safety and ergonomic benefits for the ground crew.

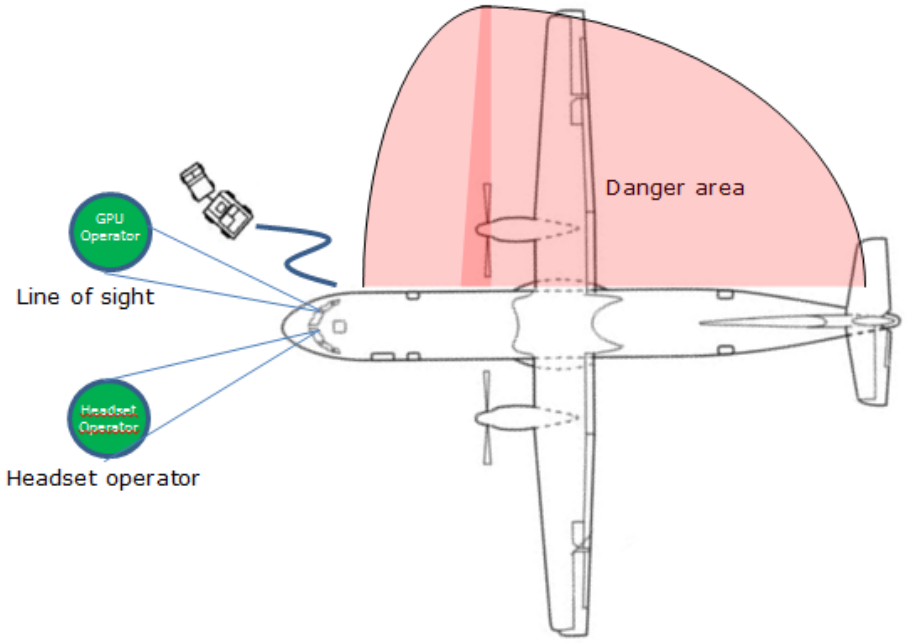
On arrival Hotel Mode will normally be selected once the aircraft is on stand with the Park Brake set. Since the braking effect is almost instantaneous this means the connection of the GPU can be expedited. Once ground power is available engine # 2 will normally then be shut down.

If HOTEL mode is required for any reason then refueling and or the use of the right rear door may not be accomplished.

Prior to starting engine # 2 in Hotel Mode, clearance must be received from ground personnel. In the event that ground personnel are not available, CM1 must ensure that the area around engine # 2 is clear prior to starting the engine. CM2 must be aware that this is taking place.

ATC clearance is not required to run Hotel mode, conventionally the wing lights are On before starting the engine in Hotel mode. The beacon is not required. As per FCOM 2.02.08 & OM B1 2.11.2 aircraft de-icing is permitted with engine # 2 in Hotel mode. Bleed 2 must be turned off and the doors must be closed.

However this option should only be used when "remote" de-icing is required. When de-icing in Hotel mode the de-icing crew must be thoroughly briefed. If de-icing is available on stand with access to ground power then the aircraft should be de-iced before engine # 2 is started.



WARNING: When hotel mode is in operation the servicing side of the aircraft should be treated as LIVE even if the propeller is not spinning.

When hotel mode is operating:

- Ground handling activities which normally are carried out via the aft service door shall be carried out via the use of the aft passenger door.
- Baggage loaded in the aft hold shall be off loaded through the passenger door.
- The Turnaround Coordinator should endeavour to allocate the baggage to the forward hold and to allocate the minimum number of hold items to the aft hold.
- Outbound baggage in the rear hold shall have to be loaded through the passenger door.

- Refuelling shall not be allowed

Once servicing around the right hand side of the aircraft is completed and all ground equipment and personnel are clear of the area, Ground Crew are required to advise the Flight Deck that they have clearance to start hotel mode.

Once the Flight Deck has been advised that the area is clear, Ground Crew shall inform the Flight Deck if they subsequently need to access the right hand side of the aircraft. Ground crew shall ensure they do not approach the right hand side of the aircraft once the aft service door is closed, without permission from the Pilot in Command.

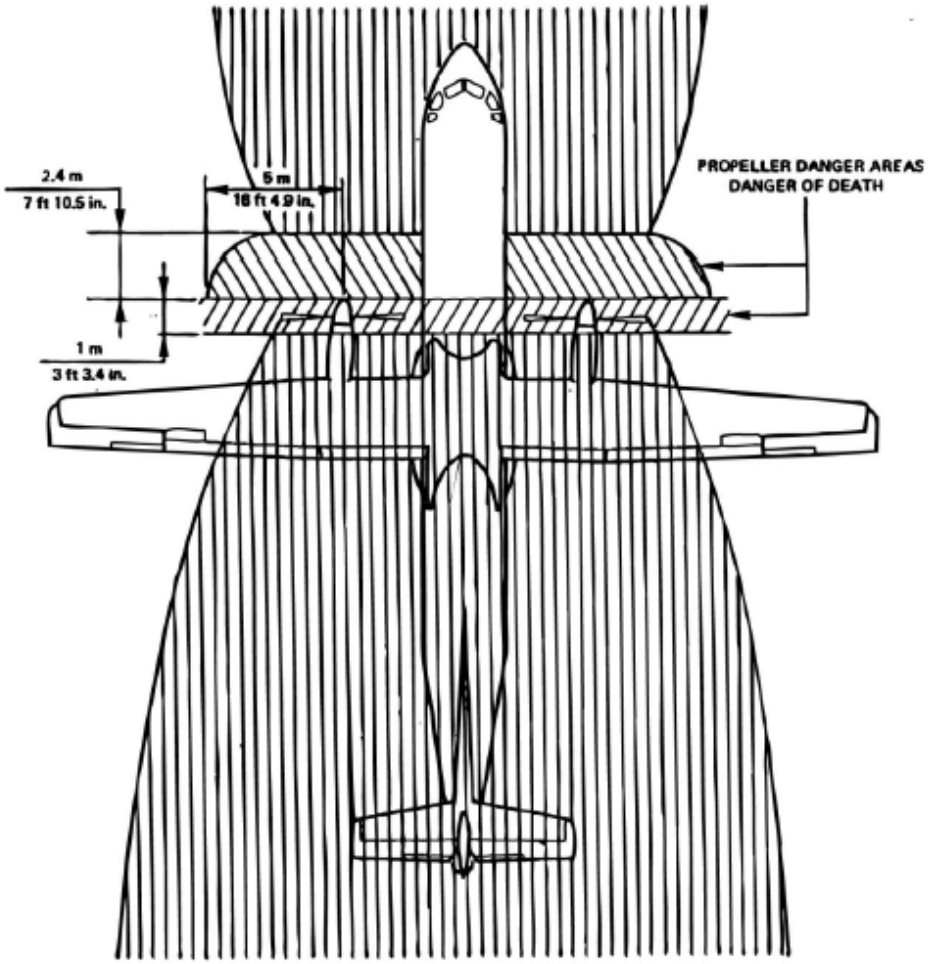
"Hotel mode" **SHUT DOWN**

(Wing Light Off)

"Hotel mode" **RUNNING**

(Wing light Illuminated)

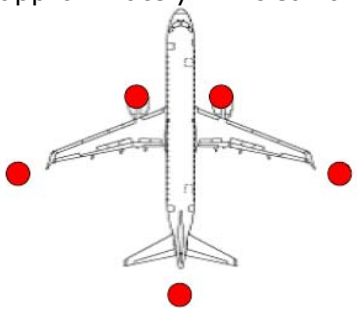
1.21 Danger Areas



WARNING: All staff must be aware of the location of the engines and your proximity in relation to them.

To prevent damage to aircraft during the ground handling process cones should be used to highlight where areas of the aircraft that exposed to the possibility of ground damage.

Cones should be between 0.75metre and 1metre in height, sufficiently weighted to negate movement by wind and have a reflective band of at least 30cms width around the centre. Cones should be placed approximately 1m clear of the aircraft points indicated in the diagram below.



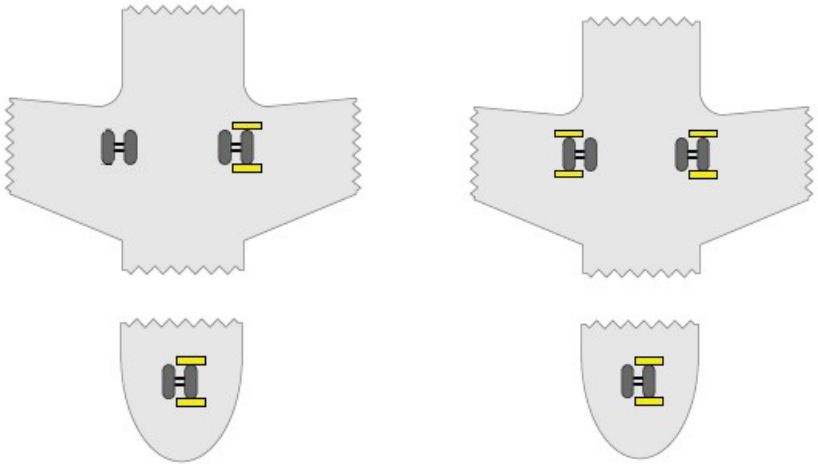
Adequate passenger guidance must be used to keep passengers away from the aircraft danger areas.
For turnarounds adequate passenger guidance must be used to safe guard passengers boarding & disembarking. This can be in the form of sufficient passenger agents escorting passengers or using Passenger Guidance equipment (PIGs)

1.22 Aircraft chocking procedure

On all occasions (except in HOTEL mode), both main gear and nose gear must be chocked as below;

Chocking in HOTEL mode Chocking in all other situations

Plan view from above



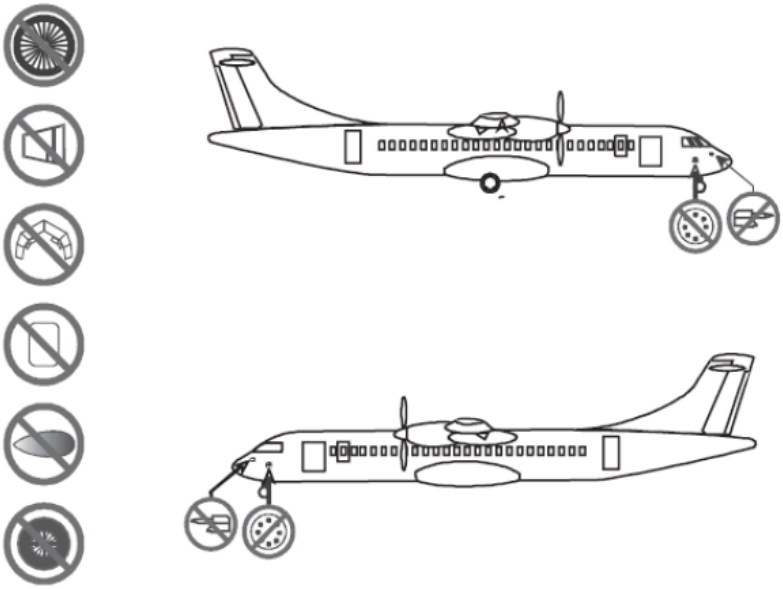
Only essential equipment must be used around the aircraft and must be operated by suitably trained personnel. A banksman must be used where equipment is reversing or being placed close to the aircraft.

The aircraft must be chocked on arrival following the anti-collision light being switched off.

The aircraft must not be left un-chocked at any time. Chocks must only be removed when ready for departure or tow and only when instructed by the crew or brake rider.

1.23 Aircraft De-Icing

ATR-72



No Direct Application of De-icing/Anti-icing fluid allowed

Warning: General Limitations
- Do not spray into engine intakes
- Do not spray into engine exhaust
- Do not spray flight deck windows or windscreens
- Do not spray main cabin windows
- Do not spray into aircraft exhaust or intake vents
- Do not apply fluid to aircraft brakes

Fuselage, wings, tailplane, vertical and horizontal stabilisers, all control surfaces and flaps should be clear of snow, frost and ice before take-off.

Frost is only permitted on the underside of the wing, provided it is confined to the general area of the fuel tanks and that the depth does not exceed 2mm. No contamination, including frost, is permitted on the underside of the stabilisers.

Configuration;
- All flaps/slats fully retracted
- Engine bleed valves closed
- Air conditioning packs off
- Doors and windows closed
- If possible, control column held on the forward (nose down) stop throughout
- Aileron gust lock engaged

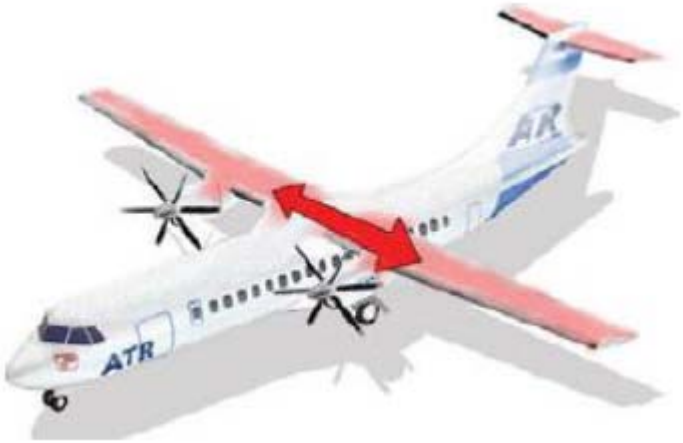
Start de-icing/anti-icing by filling the gap between the fixed and moveable surfaces in order to avoid accumulation of contaminant, then proceed from the leading edge backward. Special care must be paid to the gap between;

- Wings/ailerons/tabs
- Horizontal stabiliser/elevators/tabs

- Rudder/vertical stabiliser/tabs

These gaps must be clear of contamination and must be checked after any de-icing or anti-icing procedure.

WARNING: Aircraft must be de-iced/anti-iced symmetrically, so that the left hand and right hand sides receive the same treatment. Aerodynamic problems could result if this requirement is not met.

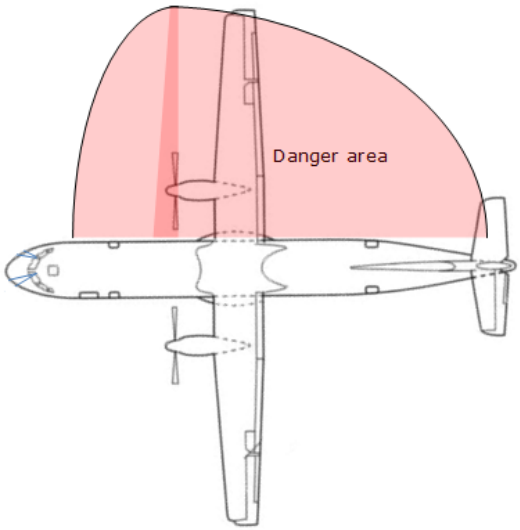


As per FCOM 2.02.08 & OM B1 2.11.2 aircraft de-icing is permitted with engine # 2 in Hotel mode. Bleed 2 must be turned off and the doors must be closed.

However this option should only be used when "remote" de-icing is required.
When de-icing in Hotel mode the de-icing crew must be thoroughly briefed.
If de-icing is available on stand with access to ground power then the aircraft should be de-iced before engine # 2 is started.

If a de-icing gantry is used, both engines must be shut down.

De-icing teams must be aware of the danger area when HOTEL mode is running. Under normal circumstances, ground staff are not permitted within this area, however the de-icing rig will need to enter this area to carry out de-icing of wings and tail.
The de-icing rig driver should position the vehicle as far away from the propeller and engine/exhaust as possible without compromising de-icing duties. Care must be taken when spraying fluid near the intake of the running engine.



For manual propeller de-icing, the engines must be shut down and intake blanked, or precaution taken not to have de-icing fluid in the air intake. No propeller blade should be positioned at 6 o'clock during this procedure

ATR 72 Aircraft Dimensions & Fluid Use Levels

The below nominal fluid amount should be used as a cross check against actual usage in order to satisfy de-icing crew that the aircraft has been adequately de-iced.

Type: ATR 72 Wing area: 61 m² Horizontal stabiliser area: 12 m² Total surface area: 73 m² Height overall: 8 m Wingspan: 28 m Fuselage, 1/3 surface area: 66 m²
Nominal fluid amounts 350 litres Fluid usage of less than 150ltrs will trigger a question from flight deck to confirm adequate de-icing

WARNING: Prior to the commencement of de-icing, ground staff must confirm with the flight deck that the aircraft is ready for de-anti-icing. A de-ice start time must be agreed in order to allow the flight deck to configure the aircraft.

Staff must be trained in accordance with the latest IATA de-icing regulations. All equipment used for de-icing must have a valid LOLER certificate due to the requirement to de-icing at height for the tail surfaces.

1.24 Passenger Seating Requirements

Seating Type	Row	Seats
Emergency Exit Seats	1 19	A, B, C, D A, B, C, D
Unaccompanied Minor	2-3, 17-18	B, C
Infants	2-18	A, B, C, D
SCP – elderly, disabled & wheelchair pax	17-18	A, D

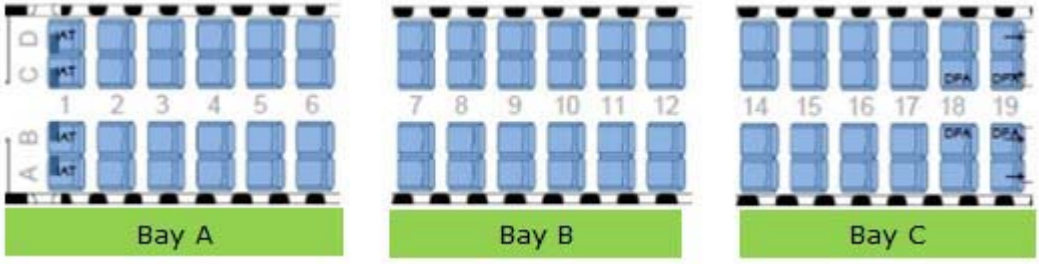
Only ABP's are to be seated in emergency exit seats. It is also recommended that wherever possible, ABP's should be re-seated to occupy emergency exit seats.

Passengers should be checked in to allow an even spread throughout the cabin with a slight bias towards the rear to aid C of G.

Check-in
Point to point sectors – assigned seating
Passengers should be checked in as per the below plan depending on booked numbers (the check-in system will follow this logic for online checked in passengers and is to be followed by check in staff:

- First 12 booked pax – Bay C
- Next 12 booked pax – Bay B
- Next 12 booked pax – Bay A

Remaining pax seated evenly outwards from the centre on available seats.



Multi-leg sectors – assigned seating
Where the ATR is scheduled to operate multi-leg sectors with a transit stop the following is to be applied;
Example: *ABZ-HUY* (sector 1) *HUY-NWI* (sector 2)

Passengers to be checked in at origin station with sector 1 pax seated in rows 1-8 and sector 2 pax in rows 9-19.

Sector 2 bags in the FWD left and right compartments and Sector 1 bags in the aft rear compartment (*ensure MVT messages reflect this.*).

On arrival at Transit station, bags to be offloaded from aft compartment **before** passengers disembark.

1.25 Passenger boarding

Allocated seating
For flights operating allocated seating, boarding announcements must be made to board passengers in the following sequence;

Rows 1-9
Followed by
Rows 10-19

Assigned seating – Preferred scenario
The following preferred seating scenario should be followed where possible at check-in to assist with the trim of the aircraft.

Booked pax Bay split
1-12 pax All in C
13-26 pax Approx 10 pax in C and remainder in B
27-36 pax Approx 50% in C and 25% in B and 25% in A
37+ pax Approx one third in each bay.

Free seating
For flights operating free seating, boarding announcements must be made to inform the passengers to choose available seats at the front of the cabin first.

This is to allow the distribution of weight to be at the forward end of the aircraft to prevent any tail heavy situations.

For flights operating free seating, boarding announcements must be made to board passengers in the following sequence;

Rows 1-6 (Bay A 24 pax)
Rows 7-12 (Bay B 24 pax)
Rows 14-19 (Bay C 24 pax)

Ground staff are to ensure that the boarding call for each group of passengers is done as quickly as possible to aid the efficient boarding of the aircraft. Ideally the dispatcher or passenger agent will hold each bay of passengers at the aircraft steps until the preceding passengers have boarded.

In all cases, the dispatcher must liaise with the crew regarding the loading requirements for hold baggage.

1.25.1 Passenger Loading for Oil/Gas Operations

Due to limitations with the Oil/Gas industry passenger booking system Vantage, it is not possible to allocate seats on Oil/Gas flights that use this system. As a result free seating is the only option for pax boarding on these flights.

This can cause additional aircraft trim issue issues on the ATR72 when compared with the Saab 2000 due to the rear door boarding/disembarking constraints and the use of both forward and aft cargo/baggage holds. In extreme cases the aircraft can tip onto its tail on the ground with an excessive number of passengers in the rear of the cabin and bags/cargo in the rear hold/s hence the requirement for a tail prop [pogo stick] and specific ground handling procedures that require the forward hold/s to be loaded first during loading and to unload the rear hold/s first during unloading.

It is however also possible to get the aircraft out of forward trim so in order to reduce the likelihood of having to reseat pax after boarding the following procedures will be adopted, the premise being that for part loaded flights passengers should be spread as evenly as possible throughout the cabin but biased towards the centre of the aircraft.

During the pre-flight preparation, the pilots will be informed of the expected passenger numbers and weight of baggage and any cargo if carried. The pilots will then inform ground handling how the baggage/cargo will be split [if at all] between the forward and aft holds. The resultant trim with baggage/cargo and fuel on board is known as the 'Dead Load' and gives a dead load index for trim purposes.

Flight Deck Action
Using the passenger seat index card if necessary, the pilots will then estimate how many passengers need to be in each cabin bay [A, B and C] in order to keep the aircraft in trim. When known, this will then be communicated to the cabin crew using the seating plan so that they can direct passengers to the appropriate section of the aircraft on boarding. It is expected that once IAC passengers become accustomed to the fact that the main door is at the rear of the aircraft that those boarding first will be inclined to sit at the rear of the cabin which should be discouraged.

Ground Handing Action
Ground Handling should inform the passengers at the gate or on the bus [as applicable] that upon boarding they should follow cabin crew instructions on board as to where to sit. They will also ensure that any baggage cargo loaded will have been loaded into the forward hold/s before loading the aft hold/s.

Cabin Crew Action
Boarding if full or near full load: When passengers are boarding, the SCCM should direct them to the front of the cabin to occupy a seat. This process should continue with seats being occupied from the front to the rear of the cabin.

Boarding if part load: The Flight Crew will pass a seating plan to CCM which will show how many passengers are required in each bay. Upon boarding the SCCM will direct passengers to the CCM who will ensure the correct number of passengers are seated in each bay. This will be achieved by moving from front to rear ensuring passengers do not pass to take a vacant seat. The SCCM must ensure that passengers continue to move through the cabin until they reach the CCM.

Upon landing and following arrival on stand the Flight Crew will make the following PA. "Cabin Crew clear to open door, passengers remain seated". The SCCM will commence door and tail prop duties as detailed in Cabin Crew Responsibilities.

The CCM should remain seated until seat belt sign has been switched off and complete a PA to the passengers reminding them to remain seated until the seat belt sign has been switched off.

Whilst disembarking the SCCM should be mindful of the number of passengers in the rear galley/door area particularly where disembarkation is paused temporarily for any given reason.

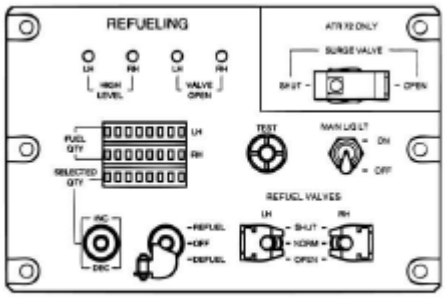
1.26 Refuelling Panel Operation

Prior to commencing refuelling, ensure that the bonding connections are established.

Ensure that the refuelling truck is positioned so as to have a clear escape route free from obstruction. If this is not possible, refuelling must not take place until an escape route is available.

The aircraft pressurised refuelling point is located at the rear of the right hand wheel pod, just behind the right hand main gear.

There are also unpressurised, over-wing refuelling points on the top surfaces of the wings.



600 Series

1.26.1 Refuelling with passengers on board

Refuelling with passengers on board is permitted subject to local Airport restrictions.

1.27 Aircraft cleaning specification

The presentation of our aircraft is of paramount importance to us as the operating airline & from a customer perception perspective. We always aim to deliver to our passengers the highest quality standards in cabin ambience, on-board product & customer service. The cabin forms a very important part of that travel experience & should for every service be clean, tidy & smell-free.

The specification we have laid down should always be met. It is not acceptable to arrive to an aircraft to deliver a cabin tidy without a vacuum, appropriate clothes & fluids or a rubbish bag… to which any such failure to deliver will be met with non-acceptance & as a result non-payment for service provision.

Similarly punctuality in providing the service is vital to the delivery of our schedule. We DO expect you at the aircraft immediately following disembarkation for a turnaround clean, while a night-stop clean needs to be prompt following arrival. Whilst we accept this can become difficult during operations off-schedule, our handling agents have to meet the aircraft irrespective of arrival time & we expect the same from third party-service providers. Again failure to provide this level of service does result in non-payment, as would arrival at an aircraft after it is closed-up.

The following series of forms must be used for each service to ensure all items have been actioned. The forms must be signed by a member of crew to confirm acceptable cleaning standards.

Aircraft cleaning specification sheets can be found on the following link;
http://ops.easternairways.com/login.asp

The aircraft is equipped with a waste bin located in the rear galley. For all night stop and deep cleans it is a requirement for this bin to be emptied.

The waste bin is opened by using a flat head screw driver to open the pop head screws as indicated below.

Ensure that the pop head screws are fastened once the waste bin has been emptied.

INTENTIONALLY LEFT BLANK