

Master

Maintenance facilities and equipment planning publication MFEP

BD500-3AB48-11000-00
Issue No. 083

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Manufacturer:



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This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Highlights

Issue 083

The listed changes are introduced in Issue 083, dated 2023-10-19, of this publication.

Data module code	Reason for change
BD500-A-J06-20-04-00AAA-030A-A	Changed Data Module To update figure # 1 sheet # 3.
BD500-A-J10-10-00-01AAA-890A-A	Changed Data Module To change procedure.

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Technical Publications Comment form

AIRBUS A220

TO: MCR FOCAL, TECHNICAL PUBLICATIONS AIRBUS CANADA LIMITED PARTNERSHIP 13100, BOULEVARD HENRI-FABRE MIRABEL, QUEBEC, CANADA, J7N 3C6 E-MAIL ADDRESS: A220_UCFocal@abc.airbus		Name of airline:
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Publication information		
*Aircraft type:	*Aircraft model:	*Publication Module Code (PMC):
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	*Data Module Code (DMC):	
Data module title:	Originator's reference number:	
*Comments:		
Reason for change:		
Reference data provided: <input type="checkbox"/> Yes <input type="checkbox"/> No Description:		

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Issue	Incorporated date	by (signature)	Issue	Incorporated date	by (signature)
001	<u>Jun 08/2012</u>	<u>Initial issue</u>	025-01	<u>Sep 08/2017</u>	<u>Signature on file</u>
002	<u>Apr 19/2013</u>	<u>Signature on file</u>	026	<u>Sep 21/2017</u>	<u>Signature on file</u>
003	<u>Sep 15/2015</u>	<u>Signature on file</u>	027	<u>Sep 28/2017</u>	<u>Signature on file</u>
004	<u>Nov 19/2015</u>	<u>Signature on file</u>	028	<u>Oct 12/2017</u>	<u>Signature on file</u>
005	<u>Feb 10/2016</u>	<u>Signature on file</u>	029	<u>Oct 19/2017</u>	<u>Signature on file</u>
006	<u>Mar 08/2016</u>	<u>Signature on file</u>	030	<u>Oct 26/2017</u>	<u>Signature on file</u>
007	<u>Apr 20/2016</u>	<u>Signature on file</u>	031	<u>Nov 09/2017</u>	<u>Signature on file</u>
008	<u>May 20/2016</u>	<u>Signature on file</u>	032	<u>Nov 30/2017</u>	<u>Signature on file</u>
009	<u>Jun 20/2016</u>	<u>Signature on file</u>	033	<u>Dec 14/2017</u>	<u>Signature on file</u>
010	<u>Aug 19/2016</u>	<u>Signature on file</u>	034	<u>Jan 04/2018</u>	<u>Signature on file</u>
011	<u>Sep 22/2016</u>	<u>Signature on file</u>	035	<u>Jan 11/2018</u>	<u>Signature on file</u>
012	<u>Dec 01/2016</u>	<u>Signature on file</u>	036	<u>Feb 01/2018</u>	<u>Signature on file</u>
013	<u>Dec 15/2016</u>	<u>Signature on file</u>	037	<u>Feb 08/2018</u>	<u>Signature on file</u>
014	<u>Dec 22/2016</u>	<u>Signature on file</u>	038	<u>Feb 15/2018</u>	<u>Signature on file</u>
015	<u>Jan 26/2017</u>	<u>Signature on file</u>	038-01	<u>Feb 22/2018</u>	<u>Signature on file</u>
016	<u>Feb 02/2017</u>	<u>Not released</u>	039	<u>Mar 15/2018</u>	<u>Signature on file</u>
017	<u>Feb 16/2017</u>	<u>Not released</u>	039-01	<u>Mar 22/2018</u>	<u>Signature on file</u>
018	<u>Feb 23/2017</u>	<u>Signature on file</u>	040	<u>Apr 19/2018</u>	<u>Signature on file</u>
019	<u>Mar 09/2017</u>	<u>Signature on file</u>	040-01	<u>May 03/2018</u>	<u>Signature on file</u>
020	<u>Apr 06/2017</u>	<u>Signature on file</u>	041	<u>May 17/2018</u>	<u>Signature on file</u>
021	<u>Apr 20/2017</u>	<u>Signature on file</u>	041-01	<u>May 31/2018</u>	<u>Signature on file</u>
022	<u>May 04/2017</u>	<u>Signature on file</u>	042	<u>Jun 14/2018</u>	<u>Signature on file</u>
023	<u>Jun 15/2017</u>	<u>Signature on file</u>	042-01	<u>Jul 26/2018</u>	<u>Signature on file</u>
024	<u>Aug 17/2017</u>	<u>Signature on file</u>	043	<u>Aug 16/2018</u>	<u>Signature on file</u>
025	<u>Aug 24/2017</u>	<u>Signature on file</u>	043-01	<u>Sep 06/2018</u>	<u>Signature on file</u>

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044	<u>Sep 20/2018</u>	<u>Signature on file</u>	055	<u>Apr 16/2020</u>	<u>Signature on file</u>
044-01	<u>Nov 08/2018</u>	<u>Signature on file</u>	055-01	<u>Apr 30/2020</u>	<u>Signature on file</u>
045	<u>Nov 15/2018</u>	<u>Signature on file</u>	056	<u>May 14/2020</u>	<u>Signature on file</u>
046	<u>Dec 22/2018</u>	<u>Signature on file</u>	056-01	<u>May 28/2020</u>	<u>Signature on file</u>
047	<u>Jan 17/2019</u>	<u>Signature on file</u>	056-02	<u>Jun 04/2020</u>	<u>Signature on file</u>
047-01	<u>Feb 21/2019</u>	<u>Signature on file</u>	057	<u>Jun 18/2020</u>	<u>Signature on file</u>
047-02	<u>Feb 28/2019</u>	<u>Signature on file</u>	057-01	<u>Jun 25/2020</u>	<u>Signature on file</u>
048	<u>Mar 14/2019</u>	<u>Signature on file</u>	058	<u>Jul 16/2020</u>	<u>Signature on file</u>
048-01	<u>May 23/2019</u>	<u>Signature on file</u>	058-01	<u>Aug 13/2020</u>	<u>Signature on file</u>
048-02	<u>Jun 06/2019</u>	<u>Signature on file</u>	059	<u>Aug 20/2020</u>	<u>Signature on file</u>
048-03	<u>Jun 13/2019</u>	<u>Signature on file</u>	059-01	<u>Aug 27/2020</u>	<u>Signature on file</u>
049	<u>Jun 20/2019</u>	<u>Signature on file</u>	060	<u>Sep 17/2020</u>	<u>Signature on file</u>
049-01	<u>Aug 01/2019</u>	<u>Signature on file</u>	061	<u>Oct 15/2020</u>	<u>Signature on file</u>
050	<u>Aug 15/2019</u>	<u>Signature on file</u>	061-01	<u>Nov 12/2020</u>	<u>Signature on file</u>
050-01	<u>Aug 22/2019</u>	<u>Signature on file</u>	062	<u>Nov 19/2020</u>	<u>Signature on file</u>
050-02	<u>Sep 05/2019</u>	<u>Signature on file</u>	063	<u>Jan 14/2021</u>	<u>Signature on file</u>
051	<u>Sep 19/2019</u>	<u>Signature on file</u>	063-01	<u>Jan 28/2021</u>	<u>Signature on file</u>
051-01	<u>Oct 31/2019</u>	<u>Signature on file</u>	063-02	<u>Feb 04/2021</u>	<u>Signature on file</u>
051-02	<u>Nov 07/2019</u>	<u>Signature on file</u>	064	<u>Feb 18/2021</u>	<u>Signature on file</u>
052	<u>Nov 10/2019</u>	<u>Signature on file</u>	064-01	<u>Mar 11/2021</u>	<u>Signature on file</u>
053	<u>Jan 16/2020</u>	<u>Signature on file</u>	065-00	<u>Mar 18/2021</u>	<u>Signature on file</u>
053-01	<u>Feb 06/2020</u>	<u>Signature on file</u>	065-01	<u>Mar 25/2021</u>	<u>Signature on file</u>
054	<u>Feb 20/2020</u>	<u>Signature on file</u>	065-02	<u>Apr 01/2021</u>	<u>Signature on file</u>
054-01	<u>Mar 26/2020</u>	<u>Signature on file</u>	065-03	<u>Apr 08/2021</u>	<u>Signature on file</u>
054-02	<u>Apr 09/2020</u>	<u>Signature on file</u>	066	<u>Apr 15/2021</u>	<u>Signature on file</u>

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066-01	<u>May 06/2021</u>	<u>Signature on file</u>	078	<u>Dec 15/2022</u>	<u>Signature on file</u>
66-02	<u>May 13/2021</u>	<u>Signature on file</u>	78-01	<u>Mar 09/2023</u>	<u>Signature on file</u>
067	<u>May 20/2021</u>	<u>Signature on file</u>	79-00	<u>Mar 16/2023</u>	<u>Signature on file</u>
67-01	<u>May 27/2021</u>	<u>Signature on file</u>	79-01	<u>Apr 06/2023</u>	<u>Signature on file</u>
068	<u>Jun 17/2021</u>	<u>Signature on file</u>	80-00	<u>Apr 20/2023</u>	<u>Signature on file</u>
069	<u>Jul 15/2021</u>	<u>Signature on file</u>	080-01	<u>May 11/2023</u>	<u>Signature on file</u>
069-01	<u>Oct 07/2021</u>	<u>Signature on file</u>	081-00	<u>May 18/2023</u>	<u>Signature on file</u>
070	<u>Oct 14/2021</u>	<u>Signature on fire</u>	81-01	<u>Jul 27/2023</u>	<u>Signature on file</u>
071	<u>Dec 16/2021</u>	<u>Signature on file</u>	82-00	<u>Aug 17/2023</u>	<u>Signature on file</u>
71-01	<u>Feb 03/2022</u>	<u>Signature on file</u>	082-01	<u>Sep 21/2023</u>	<u>Signature on file</u>
072	<u>Feb 17/2022</u>	<u>Signature on file</u>	082-02	<u>Oct 12/2023</u>	<u>Signature on file</u>
72-01	<u>Jun 02/2022</u>	<u>Signature on file</u>	83-00	<u>Oct 19/2023</u>	<u>Signature on file</u>
073	<u>Jun 16/2022</u>	<u>Signature on file</u>	000		
73-01	<u>Jun 23/2022</u>	<u>Signature on file</u>	000		
073-02	<u>Jun 30/2022</u>	<u>Signature on file</u>	000		
73-03	<u>Jul 07/2022</u>	<u>Signature on file</u>	000		
074	<u>Jul 14/2022</u>	<u>Signature on file</u>	000		
74-01	<u>Jul 28/2022</u>	<u>Signature on file</u>	000		
075	<u>Aug 18/2022</u>	<u>Signature on file</u>	000		
75-01	<u>Aug 25/2022</u>	<u>Signature on file</u>	000		
076	<u>Sep 15/2022</u>	<u>Signature on file</u>	000		
76-01	<u>Nov 10/2022</u>	<u>Signature on file</u>	000		
77-00	<u>Nov 17/2022</u>	<u>Signature on file</u>	000		
077-01	<u>Dec 01/2022</u>	<u>Signature on file</u>	000		
077-02	<u>Dec 08/2022</u>	<u>Signature on file</u>	000		

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List of effective data modules

The listed documents are included in Issue 083, dated 2023-10-19, of this publication.

C = Changed data module

N = New data module

Document title	Data module code	Issue date	No. of pages	Applicable to
Maintenance facilities equipment planning publication - Introduction	BD500-A-J00-00-00-01AAA-018A-A	2019-08-12	3	50001-54999, 55001-59999
Aircraft data - Technical data	BD500-A-J00-00-00-04AAA-030A-A	2021-12-06	2	50001-54999, 55001-59999
Conversion tables - General	BD500-A-J00-40-03-00AAA-028A-A	2016-01-12	3	50001-54999, 55001-59999
Aircraft dimensions - Technical data	BD500-A-J06-10-00-00AAA-030A-A	2021-03-18	12	50001-54999, 55001-59999
Aircraft scaled down dimensions - Technical data	BD500-A-J06-10-00-01AAA-030A-A	2019-10-21	3	50001-54999, 55001-59999
Principal dimensions, landing gear footprint - Technical data	BD500-A-J06-10-32-00AAA-030A-A	2016-05-02	3	50001-54999, 55001-59999
Ground clearances - Technical data	BD500-A-J06-11-00-01AAA-030A-A	2019-08-07	4	50001-54999, 55001-59999
Door clearances and clear opening dimensions - Technical data	BD500-A-J06-11-00-02AAA-030A-A	2021-09-29	23	50001-54999, 55001-59999
Frame stations and fuselage stations - Technical data	BD500-A-J06-20-01-00AAA-030A-A	2022-10-28	20	50001-54999, 55001-59999
Empennage stations - Technical data	BD500-A-J06-20-02-00AAA-030A-A	2022-10-28	10	50001-54999, 55001-59999
Nacelle and pylon stations - Technical data	BD500-A-J06-20-03-01AAA-030A-A	2014-11-13	3	50001-54999, 55001-59999
Wing stations - Technical data	BD500-A-J06-20-04-00AAA-030A-A	C 2023-09-14	6	50001-54999, 55001-59999
Weights and center of gravity limits - Technical data	BD500-A-J08-41-00-00AAA-030A-A	2020-07-08	8	50001-54999, 55001-59999
Emergency exits and evacuation - Technical data	BD500-A-J15-41-00-01AAA-030A-A	2019-11-05	4	50001-54999, 55001-59999
Emergency equipment location - General data	BD500-A-J25-61-00-00AAA-010A-A	2019-09-11	30	50001-54999, 55001-59999

Applicable to: All

Document title	Data module code	Issue date	No. of pages	Applicable to
Terminal servicing - Technical data	BD500-A-J00-00-05-00AAA-030A-A	2019-10-22	13	50001-54999, 55001-59999
Jacking of the aircraft - Jacking	BD500-A-J07-11-01-01AAA-172A-A	2022-11-30	12	50001-54999, 55001-59999
Lowering of the aircraft - Lowering	BD500-A-J07-11-02-01AAA-176A-A	2022-07-21	9	50001-54999, 55001-59999
Towing of the aircraft with towbar - Towing	BD500-A-J09-11-00-01AAA-174A-A	2021-04-07	11	50001-54999, 55001-59999
Towing safety precautions - General maintenance safety procedure	BD500-A-J09-11-00-01AAA-913G-A	2021-07-01	9	50001-54999, 55001-59999
Towing of the aircraft without towbar - Towing	BD500-A-J09-11-00-02AAA-174A-A	2023-07-17	11	50001-54999, 55001-59999
Ground maneuvering, turning radii - Technical data	BD500-A-J09-20-01-00AAA-030A-A	2018-02-05	4	50001-54999, 55001-59999
Ground maneuvering, visibility from flight compartment - Technical data	BD500-A-J09-20-01-01AAA-030A-A	2016-01-13	3	50001-54999, 55001-59999
Parking (Maximum 15-days) - Parking procedure	BD500-A-J10-10-00-01AAA-890A-A	C 2023-10-04	13	50001-54999, 55001-59999
Wet wash - Clean and apply surface protection	BD500-A-J12-00-00-01AAA-250A-A	2022-08-18	6	50001-54999, 55001-59999
Fuel specifications - Technical data	BD500-A-J28-00-00-00AAA-030A-A	2023-03-28	1	50001-54999, 55001-59999
Line and hangar maintenance - Technical data	BD500-A-J00-00-00-02AAA-030A-A	2019-08-12	2	50001-54999, 55001-59999
Aircraft grounding - General maintenance procedure	BD500-A-J10-10-02-01AAA-913A-A	2017-08-08	5	50001-54999, 55001-59999
Maintenance facility - Facilities	BD500-A-J00-00-00-00AAA-915A-A	2015-09-15	2	50001-54999, 55001-59999
Airborne software - General data	BD500-A-J00-00-00-02AAA-010A-A	2019-08-12	8	50001-54999, 55001-59999
Aircraft components - General data	BD500-A-J00-00-00-03AAA-010A-A	2019-08-12	3	50001-54999, 55001-59999
Analysis of necessary equipment - Technical data	BD500-A-J00-00-00-03AAA-030A-A	2019-08-12	4	50001-54999, 55001-59999
Aircraft network access points - General data	BD500-A-J00-00-00-04AAA-010A-A	2019-08-13	9	50001-54999, 55001-59999

Applicable to: All

Document title	Data module code	Issue date	No. of pages	Applicable to
Ground Support Equipment (GSE) - General data	BD500-A-J00-00-00-05AAA-010A-A	2017-12-07	5	50001-54999, 55001-59999
Necessary hangar space - Technical data	BD500-A-J00-00-00-05AAA-030A-A	2016-04-14	4	50001-54999, 55001-59999
Ground support information systems - General data	BD500-A-J00-00-00-06AAA-010A-A	2019-08-13	15	50001-54999, 55001-59999
Equipment needs - Technical data	BD500-A-J00-00-00-06AAA-030A-A	2019-08-13	24	50001-54999, 55001-59999
Utilities - Technical data	BD500-A-J00-00-00-07AAA-030A-A	2019-08-13	4	50001-54999, 55001-59999
Minimum GSE list - Technical data	BD500-A-J00-00-00-08AAA-030A-A	2019-08-13	1	50001-54999, 55001-59999
Aircraft Security Program (ASP) - General data	BD500-A-J00-00-00-09AAA-010A-A	2019-08-13	5	50001-54999, 55001-59999
Operator personnel training - General data	BD500-A-J00-00-00-12AAA-010A-A	2019-08-27	5	50001-54999, 55001-59999
Aircraft network security - General data	BD500-A-J00-00-00-13AAA-010A-A	2017-09-21	8	50001-54999, 55001-59999
Facility and equipment suppliers - Technical data	BD500-A-J00-00-00-09AAA-030A-A	2016-02-03	1	50001-54999, 55001-59999

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Table of contents

The listed documents are included in Issue 083, dated 2023-10-19, of this publication.

Document title	Data module code	Issue date	Applicable to
Introduction			
Maintenance facilities equipment planning publication - Introduction	BD500-A-J00-00-00-01AAA-018A-A	2019-08-12	50001-54999, 55001-59999
Aircraft data			
Aircraft data - Technical data	BD500-A-J00-00-00-04AAA-030A-A	2021-12-06	50001-54999, 55001-59999
Conversion tables - General	BD500-A-J00-40-03-00AAA-028A-A	2016-01-12	50001-54999, 55001-59999
Aircraft dimensions - Technical data	BD500-A-J06-10-00-00AAA-030A-A	2021-03-18	50001-54999, 55001-59999
Aircraft scaled down dimensions - Technical data	BD500-A-J06-10-00-01AAA-030A-A	2019-10-21	50001-54999, 55001-59999
Principal dimensions, landing gear footprint - Technical data	BD500-A-J06-10-32-00AAA-030A-A	2016-05-02	50001-54999, 55001-59999
Ground clearances - Technical data	BD500-A-J06-11-00-01AAA-030A-A	2019-08-07	50001-54999, 55001-59999
Door clearances and clear opening dimensions - Technical data	BD500-A-J06-11-00-02AAA-030A-A	2021-09-29	50001-54999, 55001-59999
Frame stations and fuselage stations - Technical data	BD500-A-J06-20-01-00AAA-030A-A	2022-10-28	50001-54999, 55001-59999
Empennage stations - Technical data	BD500-A-J06-20-02-00AAA-030A-A	2022-10-28	50001-54999, 55001-59999
Nacelle and pylon stations - Technical data	BD500-A-J06-20-03-01AAA-030A-A	2014-11-13	50001-54999, 55001-59999
Wing stations - Technical data	BD500-A-J06-20-04-00AAA-030A-A	2023-09-14	50001-54999, 55001-59999
Weights and center of gravity limits - Technical data	BD500-A-J08-41-00-00AAA-030A-A	2020-07-08	50001-54999, 55001-59999
Emergency exits and evacuation - Technical data	BD500-A-J15-41-00-01AAA-030A-A	2019-11-05	50001-54999, 55001-59999
Emergency equipment location - General data	BD500-A-J25-61-00-00AAA-010A-A	2019-09-11	50001-54999, 55001-59999
Ramp operation			
Terminal servicing - Technical data	BD500-A-J00-00-05-00AAA-030A-A	2019-10-22	50001-54999, 55001-59999
Jacking of the aircraft - Jacking	BD500-A-J07-11-01-01AAA-172A-A	2022-11-30	50001-54999, 55001-59999

Applicable to: All

Document title	Data module code	Issue date	Applicable to
Lowering of the aircraft - Lowering	BD500-A-J07-11-02-01AAA-176A-A	2022-07-21	50001-54999, 55001-59999
Towing of the aircraft with towbar - Towing	BD500-A-J09-11-00-01AAA-174A-A	2021-04-07	50001-54999, 55001-59999
Towing safety precautions - General maintenance safety procedure	BD500-A-J09-11-00-01AAA-913G-A	2021-07-01	50001-54999, 55001-59999
Towing of the aircraft without towbar - Towing	BD500-A-J09-11-00-02AAA-174A-A	2023-07-17	50001-54999, 55001-59999
Ground maneuvering, turning radii - Technical data	BD500-A-J09-20-01-00AAA-030A-A	2018-02-05	50001-54999, 55001-59999
Ground maneuvering, visibility from flight compartment - Technical data	BD500-A-J09-20-01-01AAA-030A-A	2016-01-13	50001-54999, 55001-59999
Parking (Maximum 15-days) - Parking procedure	BD500-A-J10-10-00-01AAA-890A-A	2023-10-04	50001-54999, 55001-59999
Wet wash - Clean and apply surface protection	BD500-A-J12-00-00-01AAA-250A-A	2022-08-18	50001-54999, 55001-59999
Fuel specifications - Technical data	BD500-A-J28-00-00-00AAA-030A-A	2023-03-28	50001-54999, 55001-59999
Line and hangar maintenance			
Line and hangar maintenance - Technical data	BD500-A-J00-00-00-02AAA-030A-A	2019-08-12	50001-54999, 55001-59999
Aircraft grounding - General maintenance procedure	BD500-A-J10-10-02-01AAA-913A-A	2017-08-08	50001-54999, 55001-59999
Maintenance facility			
Maintenance facility - Facilities	BD500-A-J00-00-00-00AAA-915A-A	2015-09-15	50001-54999, 55001-59999
Airborne software - General data	BD500-A-J00-00-00-02AAA-010A-A	2019-08-12	50001-54999, 55001-59999
Aircraft components - General data	BD500-A-J00-00-00-03AAA-010A-A	2019-08-12	50001-54999, 55001-59999
Analysis of necessary equipment - Technical data	BD500-A-J00-00-00-03AAA-030A-A	2019-08-12	50001-54999, 55001-59999
Aircraft network access points - General data	BD500-A-J00-00-00-04AAA-010A-A	2019-08-13	50001-54999, 55001-59999
Ground Support Equipment (GSE) - General data	BD500-A-J00-00-00-05AAA-010A-A	2017-12-07	50001-54999, 55001-59999
Necessary hangar space - Technical data	BD500-A-J00-00-00-05AAA-030A-A	2016-04-14	50001-54999, 55001-59999
Ground support information systems - General data	BD500-A-J00-00-00-06AAA-010A-A	2019-08-13	50001-54999, 55001-59999

Applicable to: All

Document title	Data module code	Issue date	Applicable to
Equipment needs - Technical data	BD500-A-J00-00-00-06AAA-030A-A	2019-08-13	50001-54999, 55001-59999
Utilities - Technical data	BD500-A-J00-00-00-07AAA-030A-A	2019-08-13	50001-54999, 55001-59999
Minimum GSE list - Technical data	BD500-A-J00-00-00-08AAA-030A-A	2019-08-13	50001-54999, 55001-59999
Aircraft Security Program (ASP) - General data	BD500-A-J00-00-00-09AAA-010A-A	2019-08-13	50001-54999, 55001-59999
Operator personnel training - General data	BD500-A-J00-00-00-12AAA-010A-A	2019-08-27	50001-54999, 55001-59999
Aircraft network security - General data	BD500-A-J00-00-00-13AAA-010A-A	2017-09-21	50001-54999, 55001-59999
Facility and equipment suppliers			
Facility and equipment suppliers - Technical data	BD500-A-J00-00-00-09AAA-030A-A	2016-02-03	50001-54999, 55001-59999

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Aircraft Characteristics Publication (ACP)

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This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Introduction

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

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This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Maintenance facilities equipment planning publication - Introduction

Applicability: 50001-54999, 55001-59999

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Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 General

The Maintenance Facilities and Equipment Planning Publication (MFEPP), prepared by Airbus, contains general data on service/maintenance facilities for the Airbus aircraft models BD-500-1A10 (A220-100) and BD-500-1A11 (A220-300). This publication agrees with the international specification for technical publications (S1000D) issue 4.0.1 dated 2009-05-12 and is written in Simplified Technical English (STE).

If there is a difference between the data contained in this publication and that given by the local regulatory authority, the data from the local regulatory authority must be obeyed.

2 Organization of the publication

The MFEPP is divided into sections that follow:

- 1 Aircraft data
- 2 Ramp operations

- 3 Line and hangar maintenance
- 4 Maintenance facilities
- 5 Facility and equipment suppliers

The content of this publication will change as options and aircraft changes occur. Make sure that you refer to the latest release of this publication.

2.1 Aircraft data

This section gives data on the aircraft. It includes the aircraft dimensions and weights.

2.2 Ramp operations

This section contains data necessary for line maintenance functions.

2.3 Line and hangar maintenance

This section gives general information about the various aircraft systems.

2.4 Maintenance facilities

This section gives data on the minimum equipment that is necessary to operate a maintenance facility.

2.5 Facility and equipment suppliers

This section gives general information about suppliers (Ground Support Equipments, parts and consumable).

3 Related publications

For specific information concerning aircraft ground operations and maintenance, refer to the publications that follow:

- Aircraft Maintenance Publication (AMP) (BD500-3AB48-10200-00)
- Airport Planning Publication (APP) A220-100: (BD500-3AB48-22000-00)
- APP A220-300: (BD500-3AB48-32000-00)
- Weight and Balance Manual (WBM) A220-100: (BD500-3AB48-22100-00)
- WBM A220-300: (BD500-3AB48-32100-00)

4 Dimensions and weight

Linear dimensions given in this publication are in inches (or feet) with the metric equivalents in parentheses ().

Weight measures is given in pound (lb) with the metric equivalent in parentheses ().

5 Correspondence

Send all correspondence about this publication to:

Airbus

13100 boul. Henri-Fabre, Mirabel, Quebec

Canada J7N 3C6

6 Translation of publication

If all or part of this publication is translated, the official version is the English language version produced by Airbus.

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

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This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Aircraft data

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This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Aircraft data - Technical data

Applicability: 50001-54999, 55001-59999

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Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 General

The aircraft is a swept-wing monoplane with a pressurized cabin that accommodates the following:

- Two (2) pilots;
- One (1) flight observer;
- Three (3) cabin attendants;
- One hundred and twenty (120) passengers seated in certified seats for the BD-500-1A10 (A220-100).
- One hundred and forty (140) passengers seated in certified seats for the BD-500-1A11 (A220-300).

The aircraft is fitted with two (2) turbofan engines.

The aircraft is pressurized for operation up to an altitude of 41,000 ft. (12 497 m) with a cabin pressure altitude not exceeding 8,000 ft. (2 438 m).

The aircraft is certified for take-off and landing at airfields up to 10,000 ft. (3 048 m) pressure altitude.

The aircraft incorporates design features to allow for an optional take-off and landing envelope at high altitude airfields up to 14,500 ft. (4 420 m) pressure altitude.

2 Extended operations

The aircraft and its systems are designed to meet Extended Operations (ETOPS) requirements, up to the 180-minute diversion limit as an option, as defined in various regulatory publications. Any modification(s) required to achieve ETOPS operational approval, such as cargo fire extinguishing capacity, are available via one or more optional feature.

3 Engines

The aircraft is equipped with two (2) high bypass Pratt & Whitney PurePower™ engines, enclosed by nacelles and mounted on pylons under the wing.

The engine has a 73" fan and a bypass ratio of 12:1 at cruise conditions.

The engine is designed to allow for "on condition" operation.

Emissions met the latest ICAO standards at the time of engine certification.

3.1 Engine thrust

The certified sea level static thrust of the engine for the aircraft is listed in the table below:

Table 2 Engine thrust ratings

	Thrust rating at sea level static ISA + 15°C	Thrust rating at sea level static ISA + 15°C	Pratt & Whitney engine reference
	Imperial (lbf)	Metric (kN)	
A220-100	18,900	84.1	PurePower™ PW1519G
A220-300	21,000	93.4	PurePower™ PW1521G

4 Materials

The aircraft structure, in general, is fabricated from advanced weight-saving materials (Carbon Fibre reinforced Plastic (CFRP) and advanced aluminium). Alloy steels, stainless steels and titanium will also be used. Drainage is provided at points in the structure where liquids and/or condensation may collect. Attention is given to surface finish, corrosion protection, and to external surface smoothness.

Materials used are in accordance with standard U.S. specifications for aircraft quality material. Materials and processes providing protection against corrosion, as defined in A220 Material Specification (A2MS) and A220 Process Specification (A2PS), are used.

Insofar as is practicable, standard parts such as rivets, bolts, nuts, washers, hoses, clamps and fittings, complying with MS, NAS and other North American Aircraft Standards, are used throughout the aircraft.

Conversion tables - General

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Unit of measure conversions

Metric and imperial are the two standards used in the Aircraft Recovery Publication (ARP) for different types of unit of measurement.

For the conversion factors from metric to imperial, refer to Table 2 .

Table 2 Conversion table (Metric to imperial)

Type of measurement	From metric	To imperial
Length	1 millimeter (mm)	0.0394 inch (in.)
	1 centimeter (cm)	0.3937 inch (in.)
	1 meter (m)	3.2808 feet (ft)
Area	1 square centimeter (cm ²)	0.1550 square inch (in ²)
	1 square meter (m ²)	10.7639 square feet (ft ²)
Volume	1 cubic meter (m ³)	61023.74 cubic inch (in ³)
	1 cubic meter (m ³)	35.31467 cubic feet (ft ³)
Weight	1 gram (g)	0.0353 ounce (oz)

Type of measurement	From metric	To imperial
	1 kilogram (kg)	2.2046 pound (lb)
Force	1 newton (N)	0.2248 pound-force (lbf)
Torque	1 newton meter (Nm)	8.8508 pound-force inch (lbf-in)
	1 newton meter (Nm)	0.7376 pound-force feet (lbf-ft)
	1 kilogram meter (kgm)	86.8056 pound-force inch (lbf-in)
Pressure	1 pascal (Pa)	0.000145 pound per square inch (lb/in ²)
	1 kilopascal (kPa)	0.1450 pound per square inch (psi)
Flow rate	1 kilogram per minute (kg/min)	2.2046 pound per minute (lb/min)
	1 liter per minute (L/min)	0.2642 U.S. gallon per minute (U.S. gal/min)
Capacity	1 liter (L)	0.2642 U.S. gallon (U.S. gal)
Temperature	1 degree Celsius (°C)	$9/5 (°C) + 32 =$ degree Fahrenheit (°F)

For the conversion factors from imperial to metric, refer to Table 3 .

Table 3 Conversion table (Imperial to metric)

Type of measurement	From imperial	To metric
Length	1 inch (in.)	25.4 millimeter (mm)
	1 inch (in.)	2.54 centimeter (cm)
	1 feet (ft)	0.3048 meter (m)
Area	1 square inch (in ²)	6.4516 square centimeter (cm ²)
	1 square feet (ft ²)	0.0929 square meter (m ²)
Volume	1 cubic inch (in ³)	0.000016 cubic meter (m ³)
	1 cubic feet (ft ³)	0.028317 cubic meter (m ³)
Weight	1 ounce (oz)	28.3495 gram (g)
	1 pound (lb)	0.4536 kilogram (kg)
Force	1 pound-force (lbf)	4.4482 newton (N)
Torque	1 pound-force inch (lbf-in)	0.1130 newton meter (Nm)
	1 pound-force inch (lbf-in)	0.01152 kilogram meter (kgm)
	1 pound-force feet (lbf-ft)	1.3558 newton meter (Nm)

See applicability on the first page of the DM
BD500-A-J00-40-03-00AAA-028A-A

BD500-A-J00-40-03-00AAA-028A-A

Type of measurement	From imperial	To metric
Pressure	1 pound per square inch (psi)	6.8948 kilopascal (kPa)
	1 inch of mercury (inHg)	3.3864 kilopascal (kPa)
Flow rate	1 pound per minute (lb/min)	0.4536 kilogram per minute (kg/min)
	1 U.S. gallon per minute (U.S. gal/min)	3.7853 liter per minute (L/min)
Capacity	1 fluid ounce (fl oz)	29.574 milliliter (mL)
	1 U.S. gallon (U.S. gal)	3.7854 liter (L)
Temperature	1 degree Fahrenheit (°F)	$5/9 (°F - 32) = \text{degree Celsius (°C)}$

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

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This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Aircraft dimensions - Technical data

Applicability: 50001-54999, 55001-59999

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7 Pilots eye position (A220-100).....	10
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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

This data module contains general data about the aircraft dimensions and clearances. The structural weight limits, such as maximum ramp weight, landing weight and zero fuel weight are dependent on configuration. Refer to Weight and Balance Manual (WBM) BD500-3AB48-22100-00 (A220-100), BD500-3AB48-22100-00 (A220-300) and weight and balance report for structural limits and other weight information.

2 General aircraft dimensions

Applicability: 50001-54999

Table 2 General aircraft dimensions (A220-100)

Locator (refer to Fig. 1)	Value in. (cm)
A	1377.0 (3497.58)
B	146.500 (372.11)
C	463.800 (117805)
D	482.800 (1226.31)
E	Baseline 1377.300 (3498.34)
	Fuel loaded 1381.300 (3508.50)
F	873.500 (2218.69)
G	773.200 (1963.93)
H	1341.000 (3406.14)
J	698.900 (1775.21)
K	395.000 (1003.30)
L	87.800 (223.01)
M	429.400 (1090.68)

See applicability on the first page of the DM
BD500-A-J06-10-00-00AAA-030A-A

BD500-A-J06-10-00-00AAA-030A-A

Locator (refer to Fig. 1)	Value in. (cm)
P	263.000 (668.02)
Q	96.500 (245.11)
R	103.800 (263.65)
S	134.900 (342.65)
T	267.900 (680.47)
U	98.300 (249.68)
V	193.500 (491.49)
W	135.200 (343.40)
X	27.200 (69.09)
Y	265.000 (673.10)
Z	515.700 (1309.87)
AA	0.38 Deg Nose down
BB	138.000 (350.52)

Note

The values given change due to the variation of aircraft weight and gravity.

Applicability: 55001-59999

Table 3 General aircraft dimensions (A220-300)

Locator (refer to Fig. 1)	Value in. (cm)
A	1523.2 38689.28
B	146.500 (372.11)
C	461.9 (1173.23)
D	482.800 (1226.31)
E	Baseline 1377.300 (3498.34)
	Fuel loaded 1381.300 (3508.50)
F	961.4 (2441.96)
G	857.9 (2179.01)
H	1489.2 (3782.57)
J	783.2 (1989.33)
K	479.0 (1216.66)
L	172.4 (437.90)
M	513.3 (1303.78)
P	262.9 (667.77)

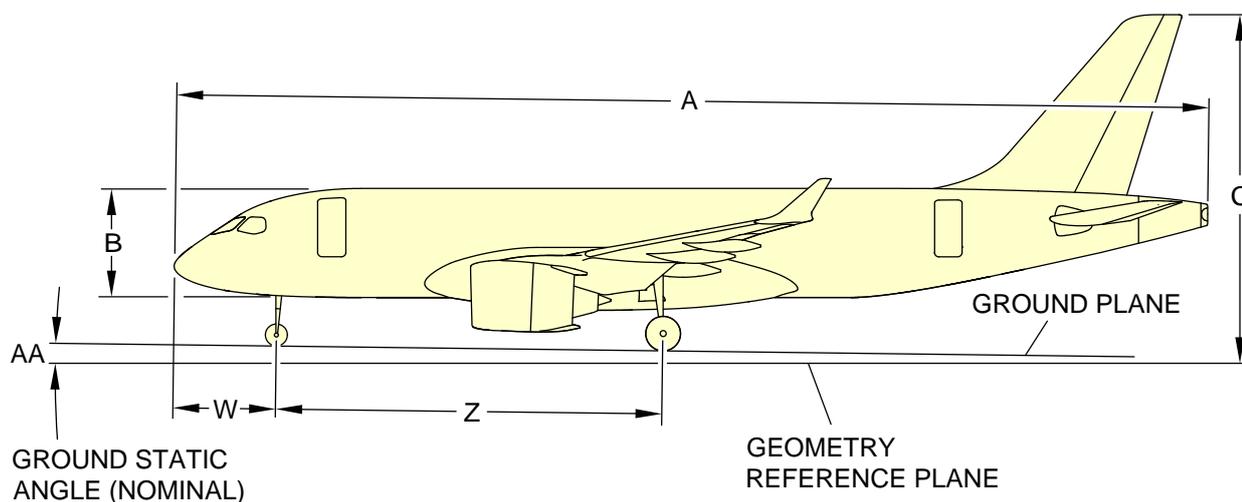
This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Locator (refer to Fig. 1)	Value in. (cm)
Q	96.500 (245.11)
R	162.2 (411.99)
S	198.5 (504.19)
T	268.0 (680.72)
U	97.7 (248.16)
V	194.6 (494.28)
W	133.4 (338.83)
X	27.200 (69.09)
Y	265.000 (673.10)
Z	602.6 (1530.60)
AA	0.477 Deg Nose down
BB	138.000 (350.52)

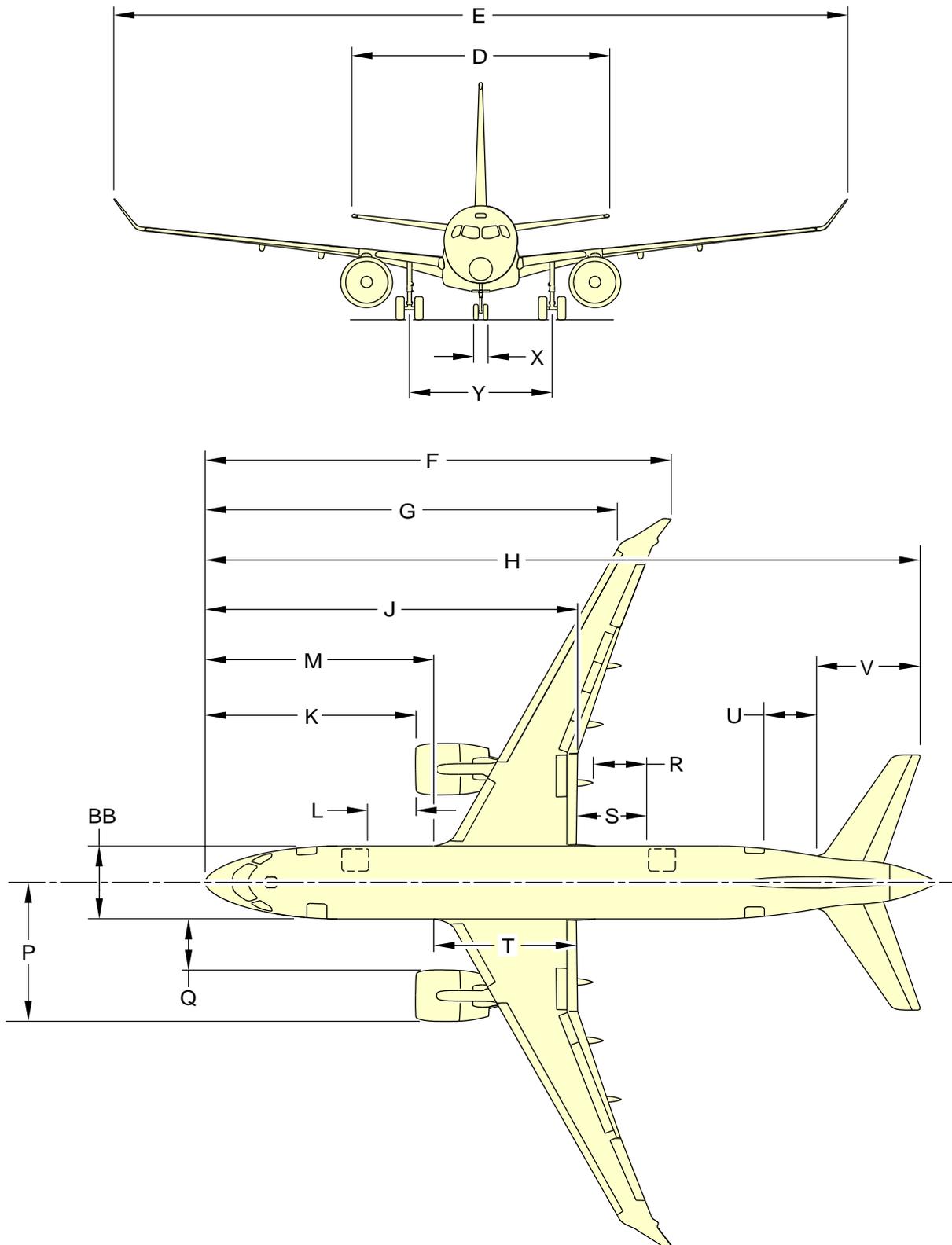
This data module contains data on the landing gear footprint.

Note

The values given change due to the variation of aircraft weight and gravity.



ICN-BD500-A-J061000-A-3AB48-00005-A-001-01
Figure 1 General aircraft dimensions - (Sheet 1 of 2)



ICN-BD500-A-J061000-A-3AB48-00004-A-003-01

Figure 1 General aircraft dimensions - (Sheet 2 of 2)

3 Landing gear footprint dimensions

This data module contains data on the landing gear footprint.

Applicability: 50001-54999

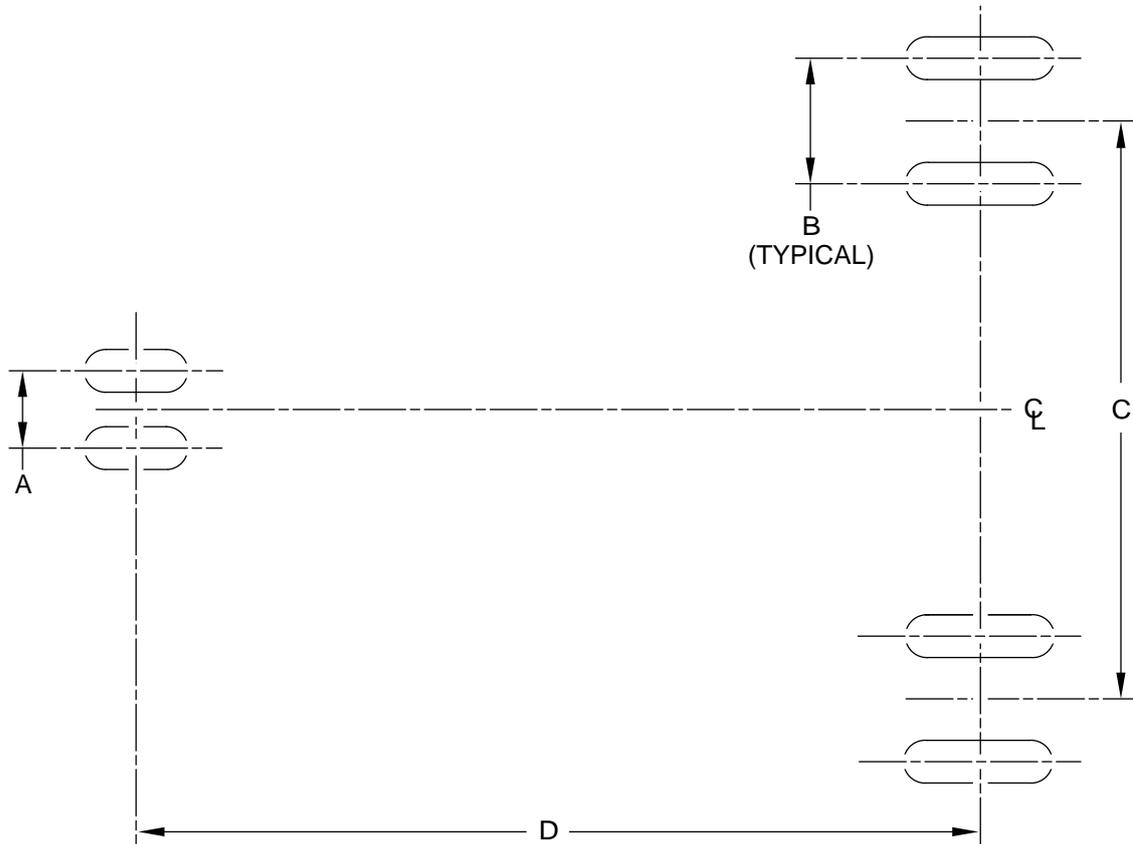
Table 4 Landing gear footprint dimensions (A220-100)

Locator	Value in. (cm)
A	18.571 (47.17)
B	35.000 (88.90)
C	265.000 (673.10)
D	515.7 (1309.87)

Applicability: 55001-59999

Table 5 Landing gear footprint dimensions (A220-300)

Locator	Value in. (cm)
A	18.571 (47.17)
B	35.000 (88.90)
C	265.000 (673.10)
D	602.6 (1530.60)



NOTE

Not to scale.

ICN-BD500-A-J061032-A-3AB48-00118-A-001-01

Figure 2 Landing gear footprint dimensions

4 General aircraft area

Table 6 General aircraft area

Description	Value sq. ft. (sq. m)
ESDU wing area (including ailerons, flaps, spoilers and area within the fuselage)	1208.880 (112.31)
Total horizontal stabilizer area (horizontal tail area and elevator area)	313.500 (29.13)
Total vertical stabilizer area (vertical tail area and rudder area)	223.600 (20.77)

5 Pressure refueling and pilots eye position

Applicability: 50001-54999

Table 7 Pilots eye position (A220-100)

Locator (refer to Fig. 3)	Value in. (cm)
A	FS = 354 (899.16) BL ± 20.00 (50.80) WL = 196.00 (497.80)
D	29.60°
E	17.65°

Applicability: 50001-54999

Table 8 Pressure refueling connection position (A220-100)

Locator (refer to Fig. 3)	Value in. (cm)
B	615.9

See applicability on the first page of the DM
BD500-A-J06-10-00-00AAA-030A-A

BD500-A-J06-10-00-00AAA-030A-A

Locator (refer to Fig. 3)	Value in. (cm)
	(1564.39)
C	600.21 (1524.53)

Applicability: 55001-59999

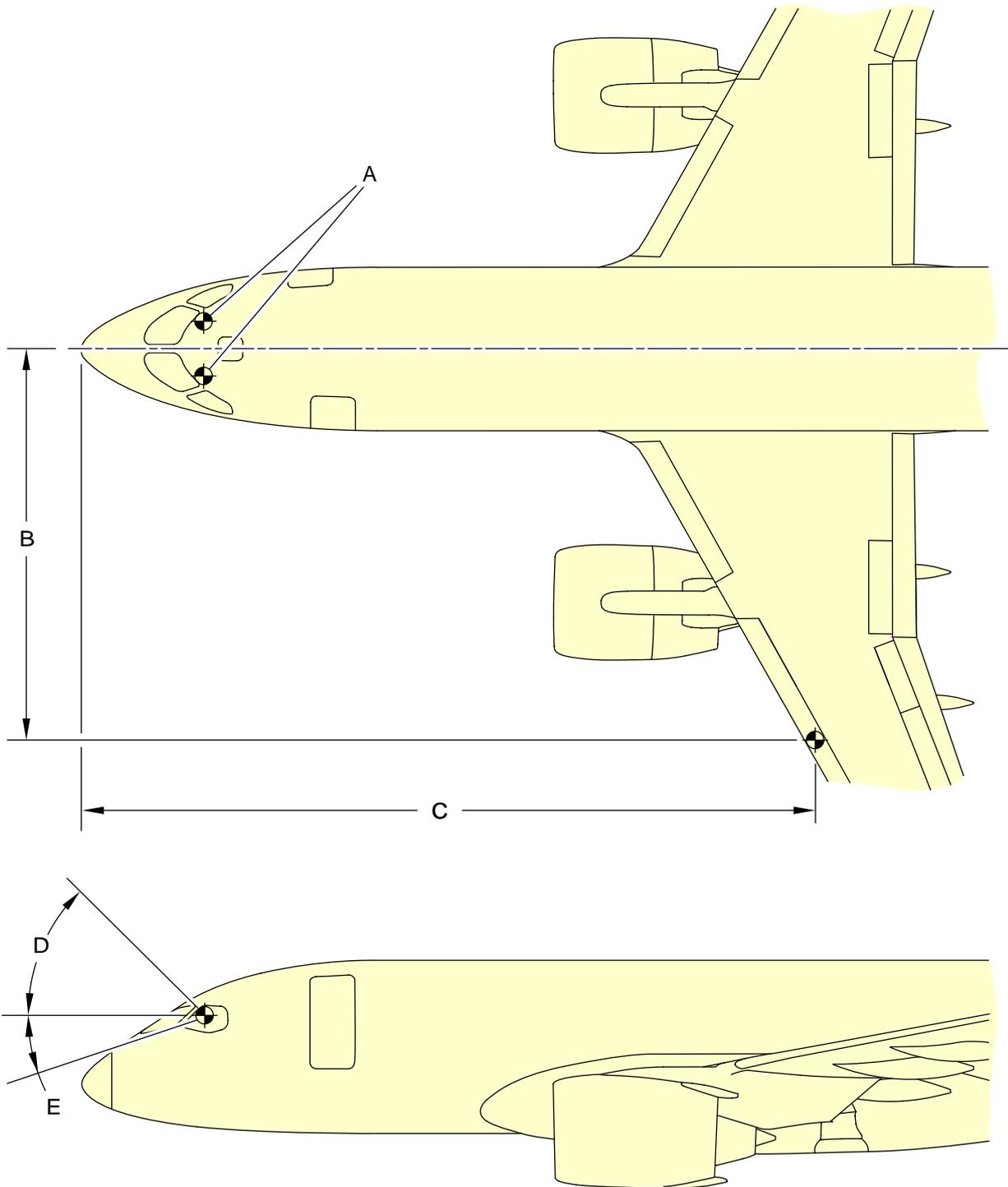
Table 9 Pilots eye position (A220-300)

Locator (refer to Fig. 3)	Value in. (cm)
A	FS = 270 (685.80) BL ± 20.00 (50.80) WL = 196.00 (497.80)
D	29.60°
E	17.65°

Applicability: 55001-59999

Table 10 Pressure refueling connection position (A220-300)

Locator (refer to Fig. 3)	Value in. (cm)
B	615.9 (1564.39)
C	684.21 (1737.89)



ICN-BD500-A-J061000-A-3AB48-10809-A-001-01

Figure 3 Pressure refueling and pilots eye position

Aircraft scaled down dimensions - Technical data

Applicability: 50001-54999, 55001-59999

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Table 1 References

Data Module/Technical Publication	Title
None	

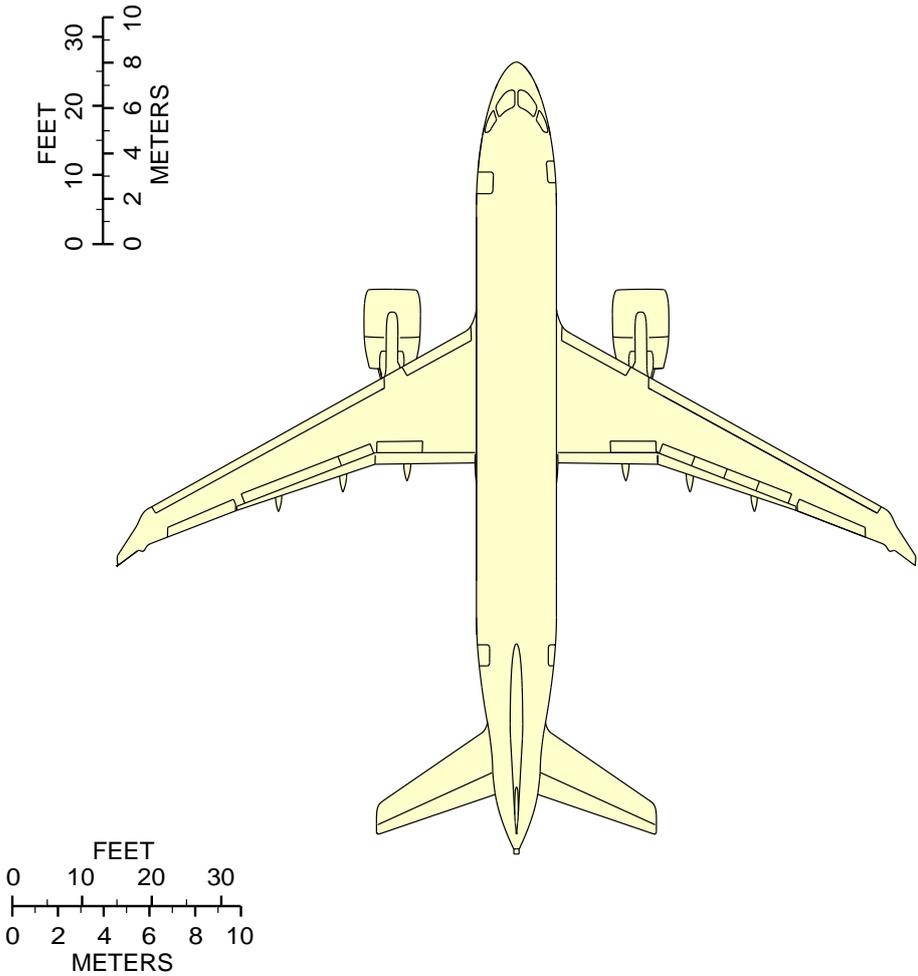
Description

1 Introduction

This data module contains the scaled drawing for the Airbus A220. It can be used to plan and to verify runway, ramp, and maintenance facility layouts.

Refer to Fig. 1

(Sheet) Applicability: 50001-54999

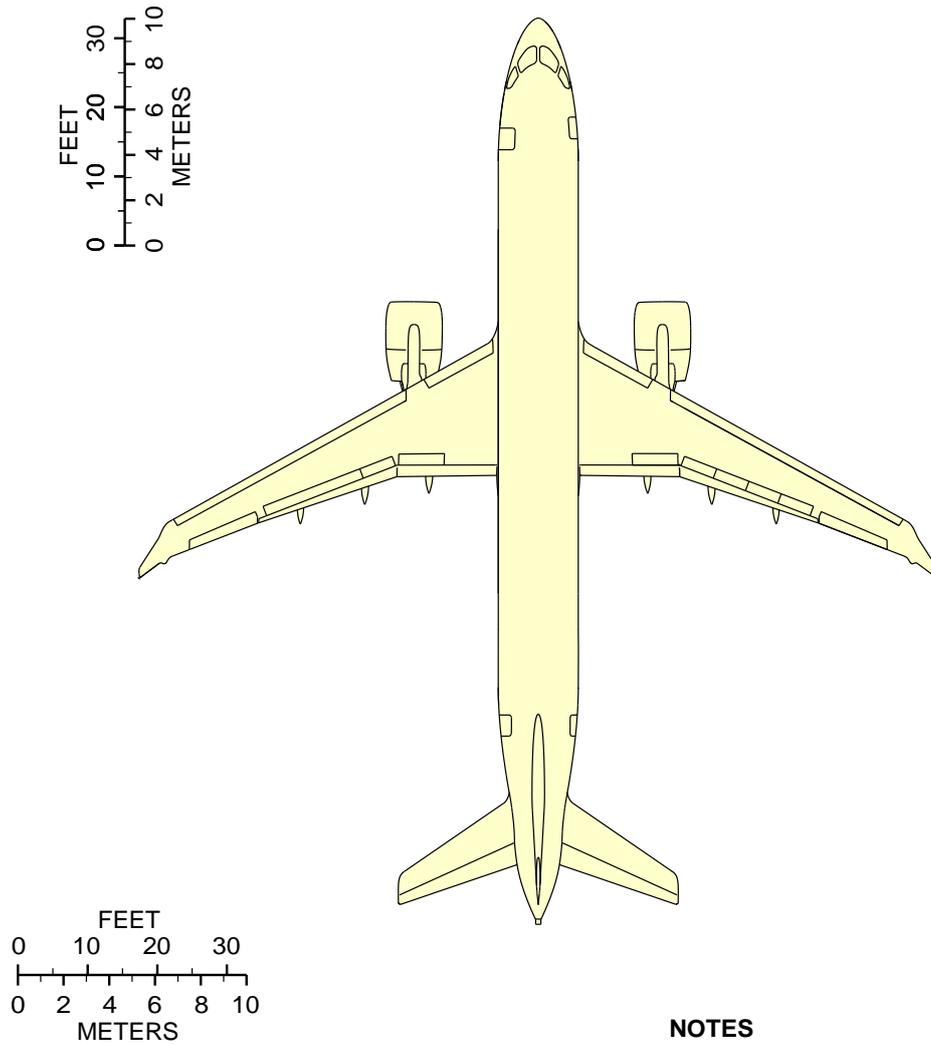


NOTES

- 1. Scale: 1 in. = 25 ft (1 cm = 3 m)
- 2. When printing this illustration, make sure to adjust for proper scaling.

ICN-BD500-A-J061000-A-3AB48-00006-A-001-01
Figure 1 Scaled drawing - (Sheet 1 of 2)

(Sheet) Applicability: 55001-59999



NOTES

1. Scale: 1 in. = 25 ft (1 cm = 3 m)
2. When printing this illustration, make sure to adjust for proper scaling.

ICN-BD500-A-J061000-A-3AB48-25078-A-001-01

Figure 1 Scaled drawing - (Sheet 2 of 2)

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This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Principal dimensions, landing gear footprint - Technical data

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

This data module contains data on the landing gear footprint.

Applicability: 50001-54999

Table 2 Landing gear footprint dimensions

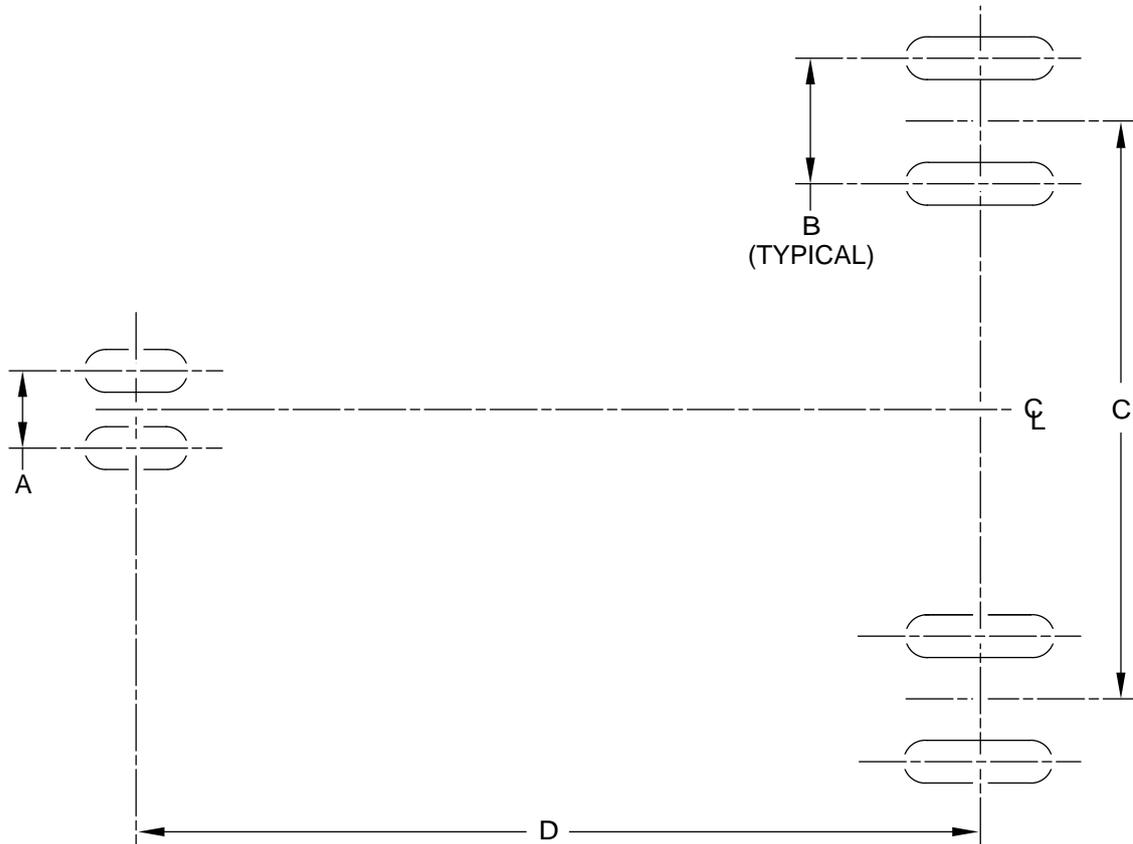
Locator	Value
A	18.57 in. (47.17 cm)
B	35.00 in (88.90 cm)
C	22.08 ft. (6.73 m)
D	42.98 ft (13.10 m)

Applicability: 55001-59999

Table 3 Landing gear footprint dimensions

Locator	Value
A	18.57 in. (47.17 cm)
B	35.00 in (88.90 cm)
C	22.08 ft. (6.73 m)
D	49.98 ft (15.23 m)

This publication has been superseded by the Aircraft Characteristics Publication (ACP).



NOTE

Not to scale.

ICN-BD500-A-J061032-A-3AB48-00118-A-001-01

Figure 1 Landing gear footprint

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This publication has been superseded by the
Aircraft Characteristics Publication (ACP).

Ground clearances - Technical data

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

This data module contains the ground clearances.

2 Ground clearances

Table 2 Ground Clearances

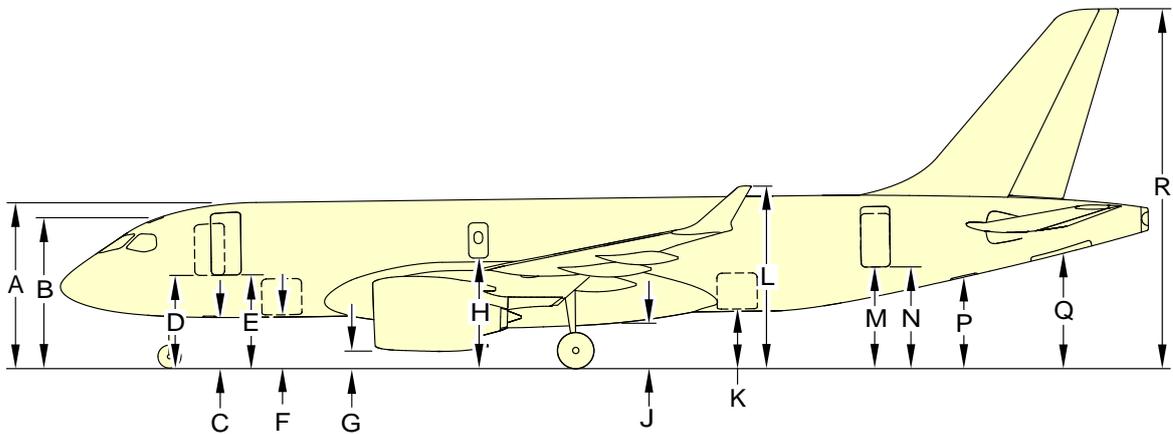
Locator	Description	Minimum in. (cm)	Maximum in. (cm)
A	Fuselage top	209.3 (531.62)	214.2 (544.07)
B	Flight Crew Emergency Escape (FCEE) door	188.2 (478.03)	193.4 (491.24)
C	Forward avionics compartment door	63.2	67.7

Locator	Description	Minimum in. (cm)	Maximum in. (cm)
		(160.53)	(171.96)
D	Forward service door	117.5 (298.45)	122.6 (311.40)
E	Forward passenger door	117.8 (299.21)	122.8 (311.912)
F	Forward cargo compartment door	66.8 (169.67)	71.7 (182.118)
G	Nacelle	19.7 (50.03)	24.0 (60.96)
H	Overwing Emergency Exit Door (OWEED)	138.6 (352.04)	143.1 (363.47)
J	Mid avionics compartment door	56.2 (142.75)	61.6 (156.46)
K	Aft cargo compartment door	72.9 (185.17)	79.8 (202.69)
L	Wing tip (no deflection)	229.2 (582.17)	236.2 (599.95)
M	Aft passenger door	126.2 (320.55)	134.7 (342.14)
N	Aft service door	126.2 (320.55)	134.7 (342.14)
P	Aft equipment bay door	111.7 (283.72)	121.3 (308.10)
Q	Auxiliary Power Unit (APU) door	140.5 (356.87)	151.2 (384.05)
R	Tail	452.7 (1149.86)	463.8 (1178.05)

Note

Vertical clearances shown are the greatest possible variations in attitude due to the variation of aircraft weight and center of gravity.

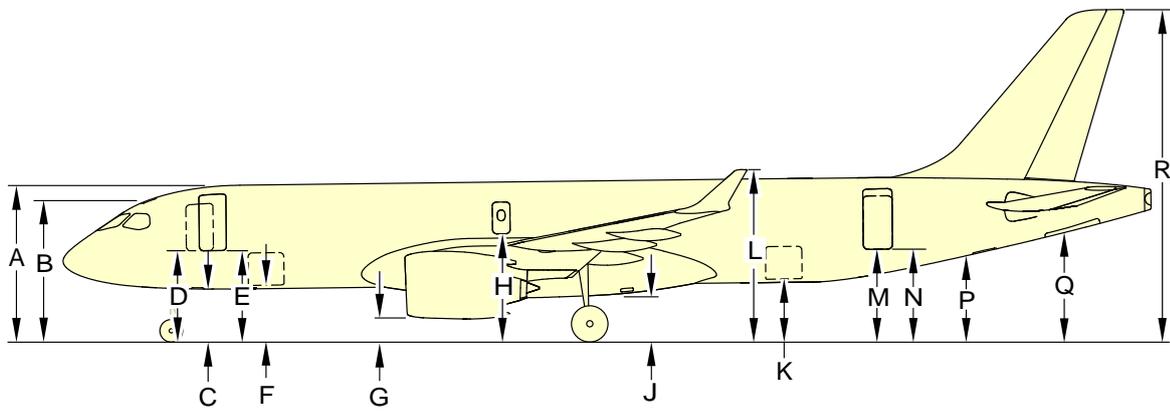
Applicability: 50001-54999



ICN-BD500-A-J000000-A-3AB48-21709-A-003-01

Figure 1 Ground clearances (A220-100)

Applicability: 55001-59999



ICN-BD500-A-J000000-A-3AB48-21710-A-003-01
Figure 2 Ground clearances (A220-300)

See applicability on the first page of the DM
BD500-A-J06-11-00-01AAA-030A-A

End of data module

BD500-A-J06-11-00-01AAA-030A-A

Door clearances and clear opening dimensions - Technical data

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

This data module contains data on the aircraft door clearances and clear opening dimensions.

2 General

A general description of the doors is as follows:

2.1 Forward Passenger Door (FPD), Aft Passenger Door (APD)

The two (2) semi-plug type doors on the left side of the aircraft provide access for passengers and crew. Door 1L is considered the primary entrance, located at the front of the aircraft, while door 2L, rear of the aircraft, provides a secondary entrance for passengers and ground servicing crew to board/de-board the aircraft.

Each door is classified as a type C floor-level exit. Due to the sill height, each door incorporates an emergency escape slide system.

Each door translates outwards from the closed position, supported by a hinged arm and stabilizer bars, to rest parallel to the fuselage in the open position.

Each door is operable from the exterior and interior of the aircraft and features an inspection window to allow verification of the outside conditions from the interior. The exterior operating handle has a linear motion and is interconnected to a vent flap system to provide pressure equalization between the aircraft and the ambient air prior to be opened.

Each door is fully lined and insulated to meet thermal and noise performance requirements.

Each door handle feature provision for a lock barrel.

For both passenger doors distance from the nose, refer to Table 2 (A220-100), Table 3 (A220-300) and Fig. 1 . For both doors dimensions, refer to Table 4 . For the Forward Passenger Door (FPD) opening and clearances, refer to Fig. 3 . For the Aft Passenger Door (APD) opening and clearances, refer to Fig. 4 .

2.2 Overwing Emergency Exit Door (OWEED)

The two Overwing Emergency Exit Door (OWEED)s are type III semi-plug type doors.

The exits are provided with an operating handle with removable cover and are fitted with a standard sized passenger compartment window. Each door is fully lined and insulated to meet thermal and noise performance requirements.

The door rotates upwards from the closed position, supported by an hinged arm to rest in open position. The sequence to open the door is automatically supported by the energy stored in its own mechanism.

For emergency access to the passenger compartment, the doors may be opened from an exterior handle.

Due to the exit path height from the ground, an off wing emergency escape slide system is provided.

For the OWEEDs distance from the nose, refer to Table 2 (A220-100), Table 3 (A220-300) and Fig. 1 . For both doors dimensions, refer to Table 4 . For the OWEEDs opening and clearances refer to Fig. 9 .

2.3 Flight Crew Emergency Escape (FCEE) hatch

The flight compartment is outfitted with a single, inward-opening overhead escape hatch.

For the Flight Crew Emergency Escape (FCEE) hatch distance from the nose, refer to Table 2 (A220-100), Table 3 (A220-300) and Fig. 1 . For the FCEE hatch dimensions, refer to Table 4 . For FCEE hatch opening and clearances refer to Fig. 10 .

2.4 Forward Cargo Compartment Door (FCCD), Aft Cargo Compartment Door (ACCD)

The two doors are provided to allow cargo compartment to be loaded and unloaded.

The semi plug forward and aft cargo doors are identical components, each hinged along the top edge of its frame.

Each door incorporates an exterior lock/unlock handle with linear motion that is interconnected to a vent flap system and provide pressure equalization between the aircraft and the ambient air prior to be opened.

An actuation system with a switch panel is provided to facilitate the operation of the doors to open or close.

Each door is fully lined and insulated to meet thermal and noise performance requirements.

Each door handle feature provision for a lock barrel.

For both cargo doors distance from the nose, refer to Table 2 (A220-100), Table 3 (A220-300) and Fig. 1 . For the doors dimensions, refer to Table 4 . For the Forward Cargo Compartment Door (FCCD) opening and clearances, refer to Fig. 5 . For the Aft Cargo Compartment Door (ACCD) opening and clearances, refer to Fig. 6 .

2.5 Forward Service Door (FSD), Aft Service Door (ASD)

The two (2) semi-plug type doors are provided on the right side of the aircraft to provide access for the forward (door 1R) and aft (door 2R) galley service areas.

Each door is classified as a type C floor level exit. Due to the sill height, each door incorporates an emergency escape slide system.

Each door translates outwards from the closed position, supported by a hinged arm and stabilizer bars, to rest parallel to the fuselage in the open position.

Each door is operable from the exterior and interior of the aircraft and features an inspection window to allow verification of the outside conditions from the interior. The exterior operating handle has a linear motion and is interconnected to a vent flap system to provide pressure equalization between the aircraft and the ambient air prior to be opened.

Each door is fully lined and insulated to meet thermal and noise performance requirements.

For both service doors distance from the nose, refer to Table 2 (A220-100), Table 3 (A220-300) and Fig. 1 . For the service doors dimensions, refer to Table 4 . For the Forward Service Door (FSD) opening and clearances, refer to Fig. 7 . For the Aft Service Door (ASD) opening and clearances, refer to Fig. 8 .

2.6 Forward Avionics Bay (FAB) door

A plug type door is provided in the forward fuselage to gain access to the pressurized forward equipment compartment.

The door is fitted with a stowable operating handle.

For the Forward Avionics Bay (FAB) door distance from the nose, refer to Table 2 (A220-100), Table 3 (A220-300) and Fig. 1 . For dimensions, refer to Table 4 . For the FAB door opening and clearances, refer to Fig. 11 .

2.7 Mid Avionics Bay (MAB) door

A plug type door is provided in the mid fuselage to gain access to the pressurized mid equipment compartment.

The door is fitted with a stowable operating handle.

For the Mid Avionics Bay (MAB) door distance from the nose, refer to Table 2 (A220-100), Table 3 (A220-300) and Fig. 1 . For dimensions, refer to Table 4 . For the MAB door opening and clearances, refer to Fig. 12 .

2.8 Aft Equipment Bay (AEB) door

A door is provided in the aft fuselage to gain access to the non pressurized aft equipment compartment.

The door is fitted with a stowable operating handle.

For the Aft Equipment Bay (AEB) door the distance from the nose, refer to Table 2 (A220-100), Table 3 (A220-300) and Fig. 1 . For dimensions, refer to Table 4 . For the AEB door opening and clearances, refer to Fig. 13 .

2.9 Auxiliary Power Unit (APU) doors

A two clam-shell type doors are provided in the aft fuselage to gain access to the non pressurized, fireproof enclosure of the Auxiliary Power Unit (APU).

For the APU door the distance from the nose, refer to Table 2 (A220-100), Table 3 (A220-300) and Fig. 1 . For dimensions, refer to Table 4 . For the APU doors opening and clearances, refer to Fig. 14 .

3 Doors distance from nose

Applicability: 50001-54999

Table 2 Doors distance from nose (A220-100)

Locator (refer to Fig. 1)	Value in. (cm)
A - APU doors	1227.6 (3118.10)
B - AEB door	1126.2 (2860.55)
C - APD, ASD	1012.0 (2570.48)
D - ACCD door	832.1 (2113.53)

See applicability on the first page of the DM
BD500-A-J06-11-00-02AAA-030A-A

BD500-A-J06-11-00-02AAA-030A-A

Locator (refer to Fig. 1)	Value in. (cm)
E - MAB door	695.6 (1766.82)
F - OWEED left and right side	516.1 (1310.89)
G - FCCD	256.2 (650.75)
H - FPD	190.0 (482.60)
J - FAB door	180.0 (457.20)
K - FSD	171.2 (434.85)
L - FCEE hatch	110.2 (279.91)

Applicability: 55001-59999

Table 3 Doors distance from nose (A220-300)

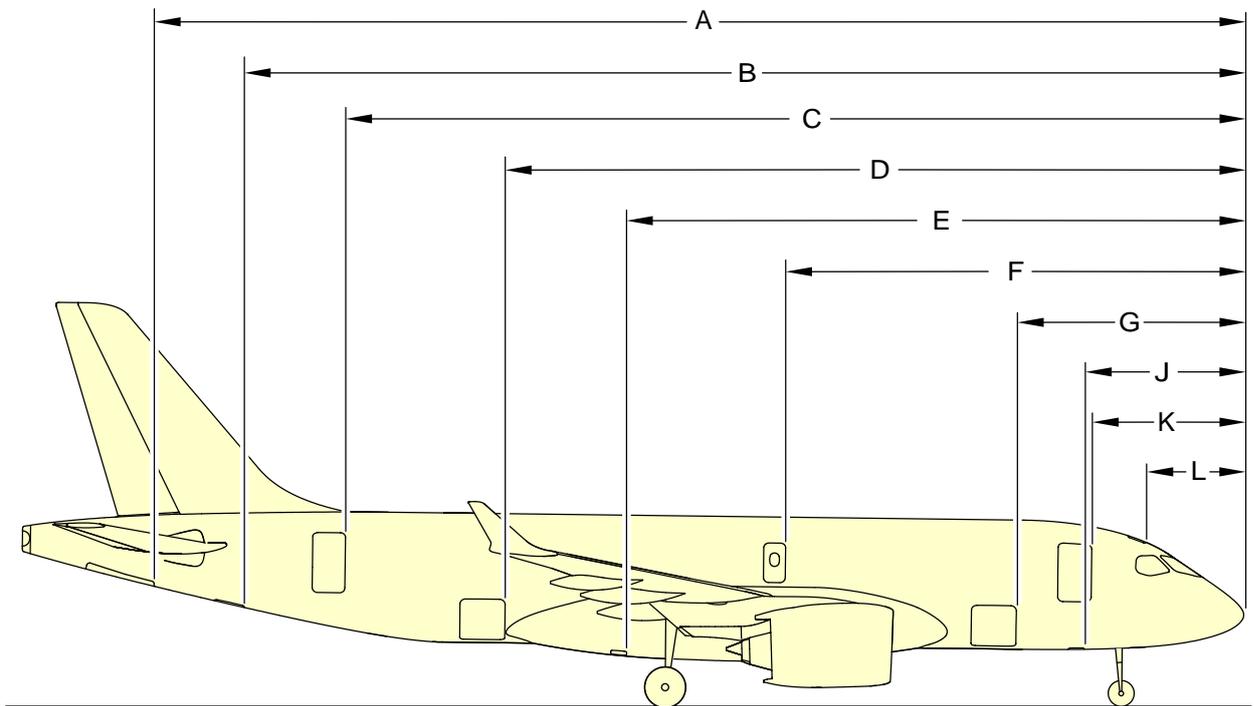
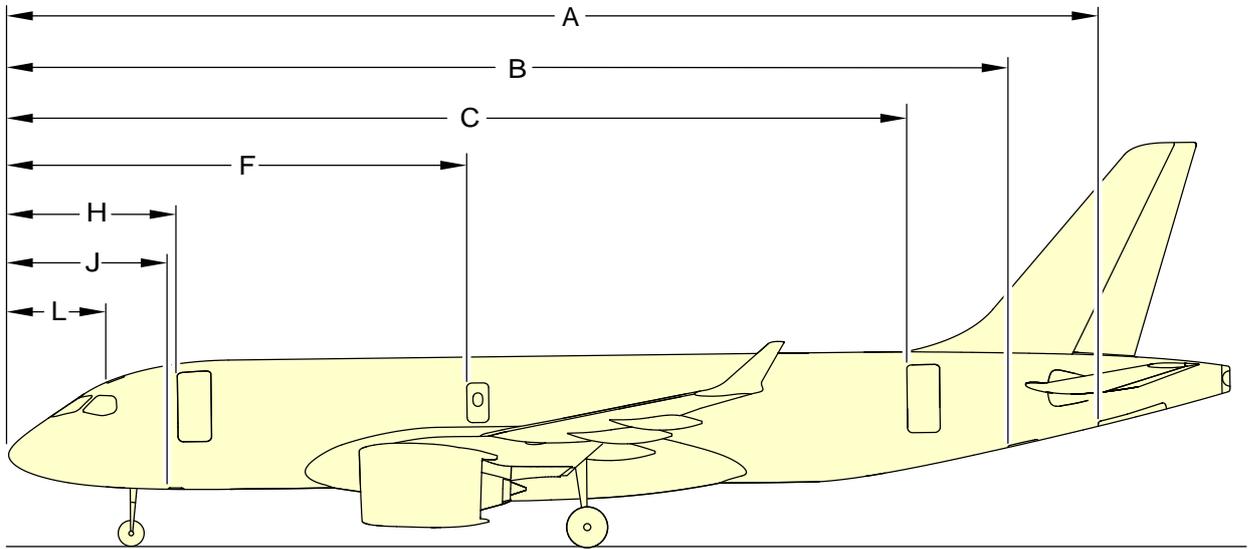
Locator (refer to Fig. 1)	Value in. (cm)
A - APU doors	1374.8 (3491.99)
B - AEB door	1273.2 (3233.92)
C - APD, ASD	1159.5 (2945.13)
D - ACCD door	979.4 (2487.66)
E - MAB door	779.4 (1979.67)

Locator (refer to Fig. 1)	Value in. (cm)
F - OWEED left and right side	600.5 (1525.27)
G - FCCD	256.4 (651.25)
H - FPD	190.3 (483.36)
J - FAB door	179.8 (456.69)
K - FSD	171.5 (435.61)
L - FCEE hatch	140.5 (280.67)

Note

The values shown are the greatest possible variations in attitude due to the variation of aircraft weight and gravity.

This publication has been superseded by the Aircraft Characteristics Publication (ACP).



ICN-BD500-A-J061100-A-3AB48-00013-A-001-01
 Figure 1 Door distance from nose (A220-100 and A220-300)

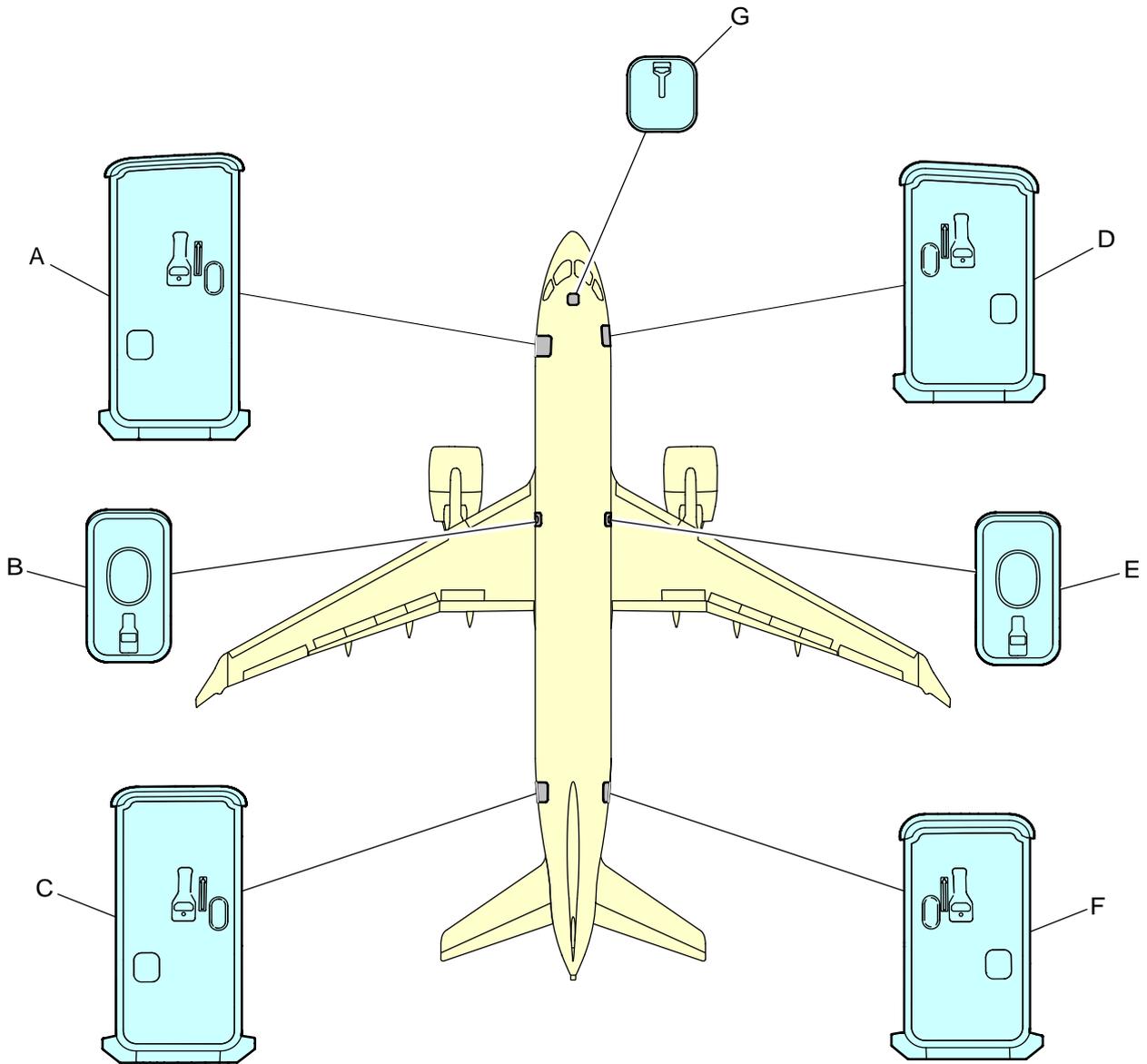
4 Aircraft doors dimensions

Table 4 Aircraft doors dimensions (A220-100 and A220-300)

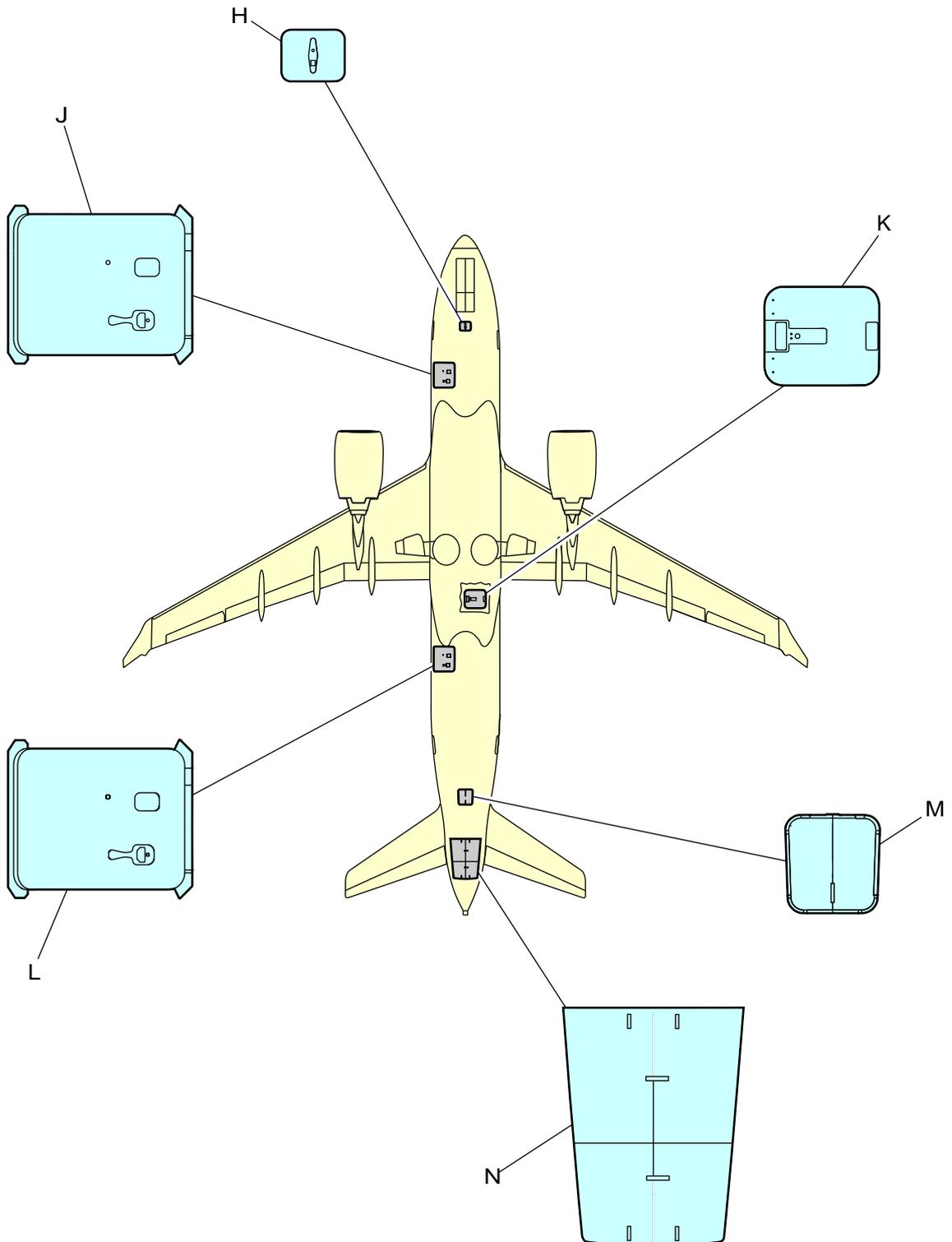
Doors Locator (refer to Fig. 2 thru Fig. 14)	Height in. (cm)	Width in. (cm)
A - FPD - type C exit (door 1L)	74.000 (187.96)	33.250 (84.46)
B - OWEED left side	36.000 (91.44)	20.000 (50.80)
C - APD - type C exit (door 2L)	72.000 (182.88)	30.00 (76.20)
D - FSD - type C exit (door 1R)	60.000 (152.40)	30.000 (76.20)
E - OWEED right side	36.000 (91.44)	20.000 (50.80)
F - ASD - type C exit (door 2R)	60.000 (152.40)	30.000 (76.20)
G - FCEE hatch	22.000 (55.88)	20.000 (50.80)
H - FAB door	17.900 (45.47)	21.800 (55.37)
J - FCCD	33.000 (83.82)	46.750 (118.75)
K - MAB door	21.586 (54.83)	17.80 (45.21)
L - ACCD	33.000 (83.82)	46.750 (118.75)
M - AEB door	28.600 (72.64)	26.90 (68.33)
N - APU doors	D - 79.78 (202.69)	A - 58.77 (149.29)
	E - 80.43 (204.29)	B - 52.86 (134.28)

Doors Locator (refer to Fig. 2 thru Fig. 14)	Height in. (cm)	Width in. (cm)
		C - 46.41 (117.89)

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

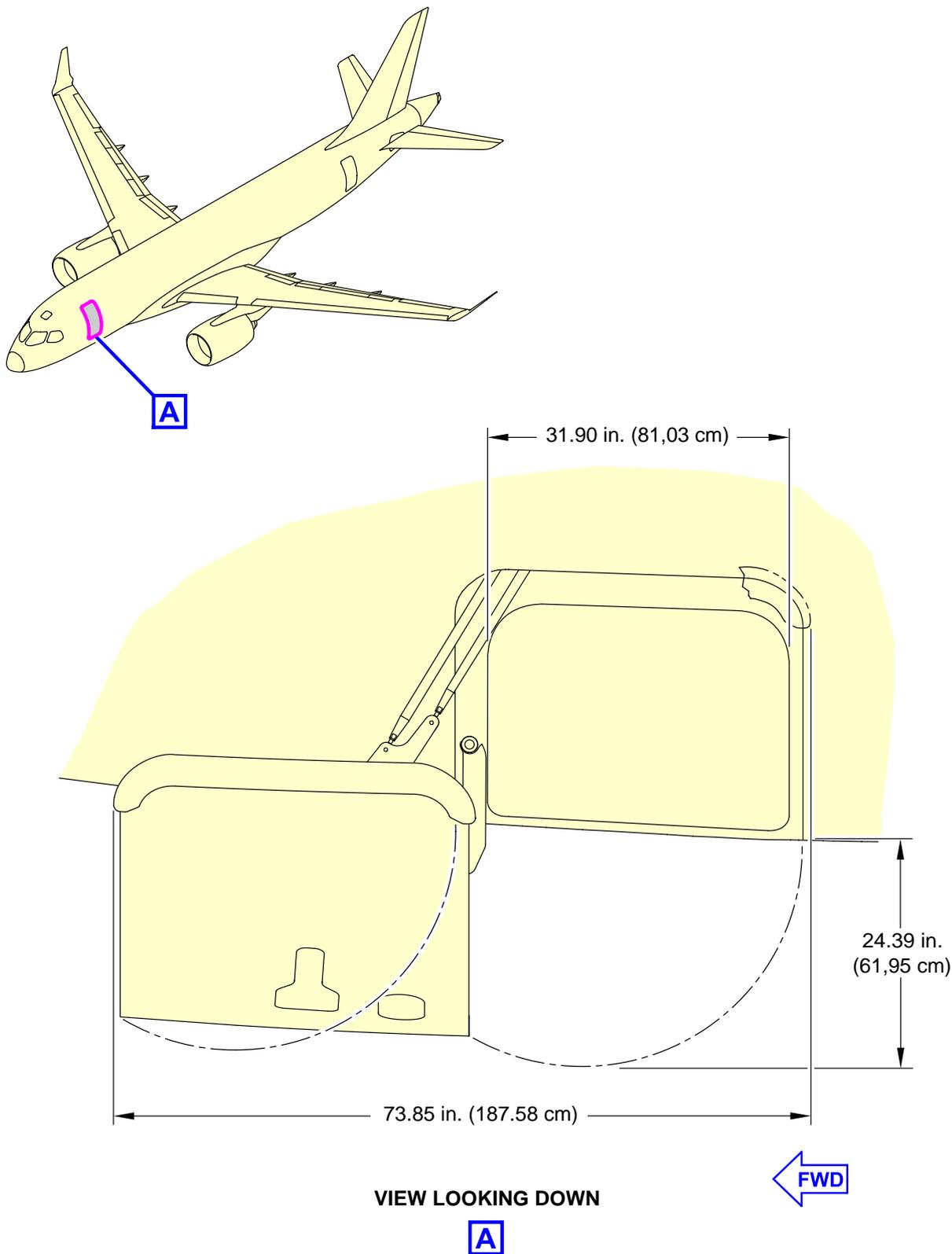


ICN-BD500-A-J061000-A-3AB48-20825-A-002-01
Figure 2 Aircraft doors dimensions - (Sheet 1 of 2)



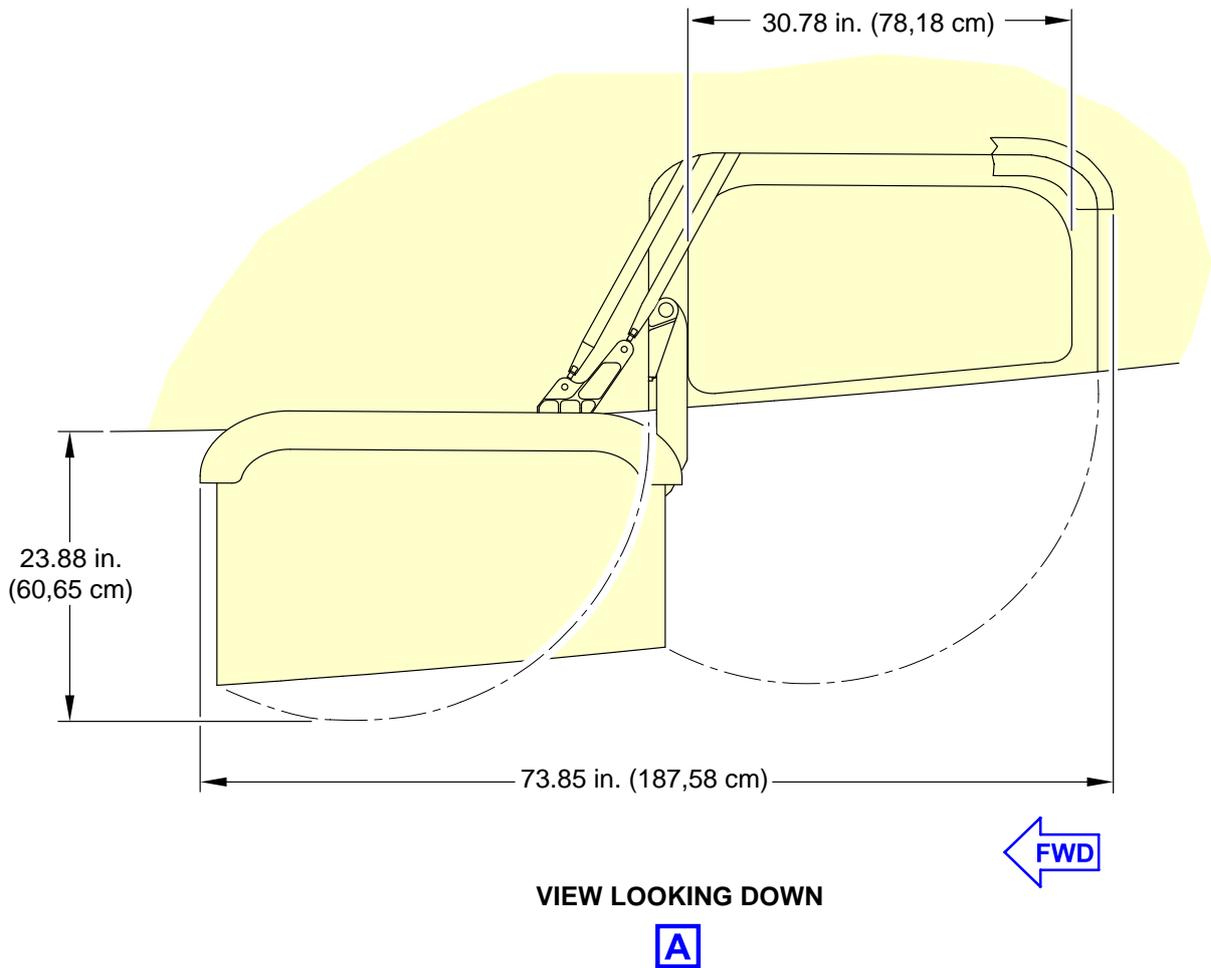
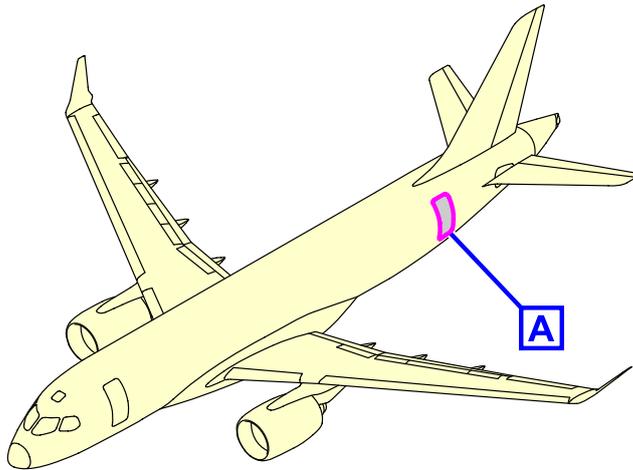
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Figure 2 Aircraft doors dimensions - (Sheet 2 of 2)



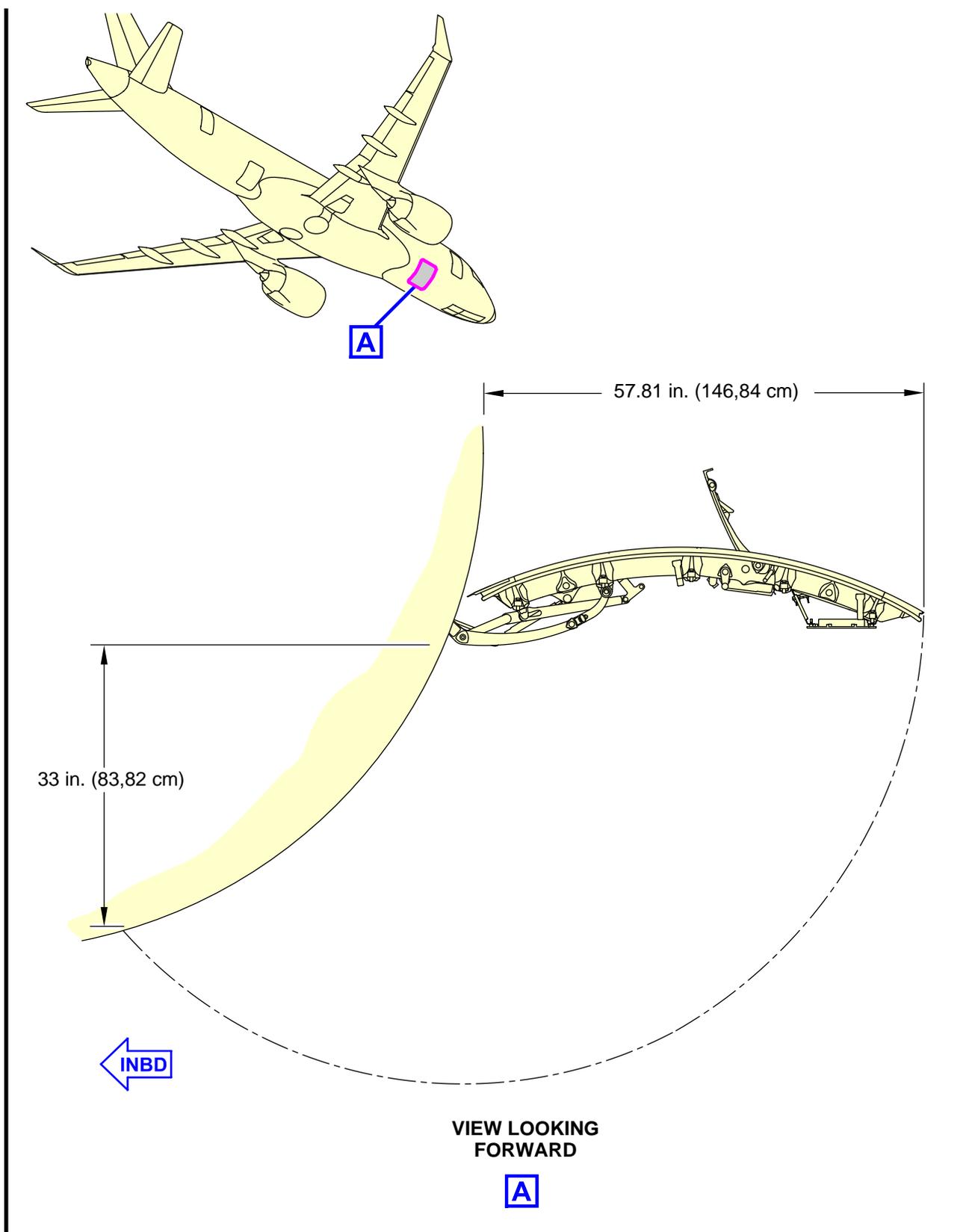
ICN-BD500-A-J061100-A-3AB48-00103-A-004-01

Figure 3 Forward passenger door opening and clearances



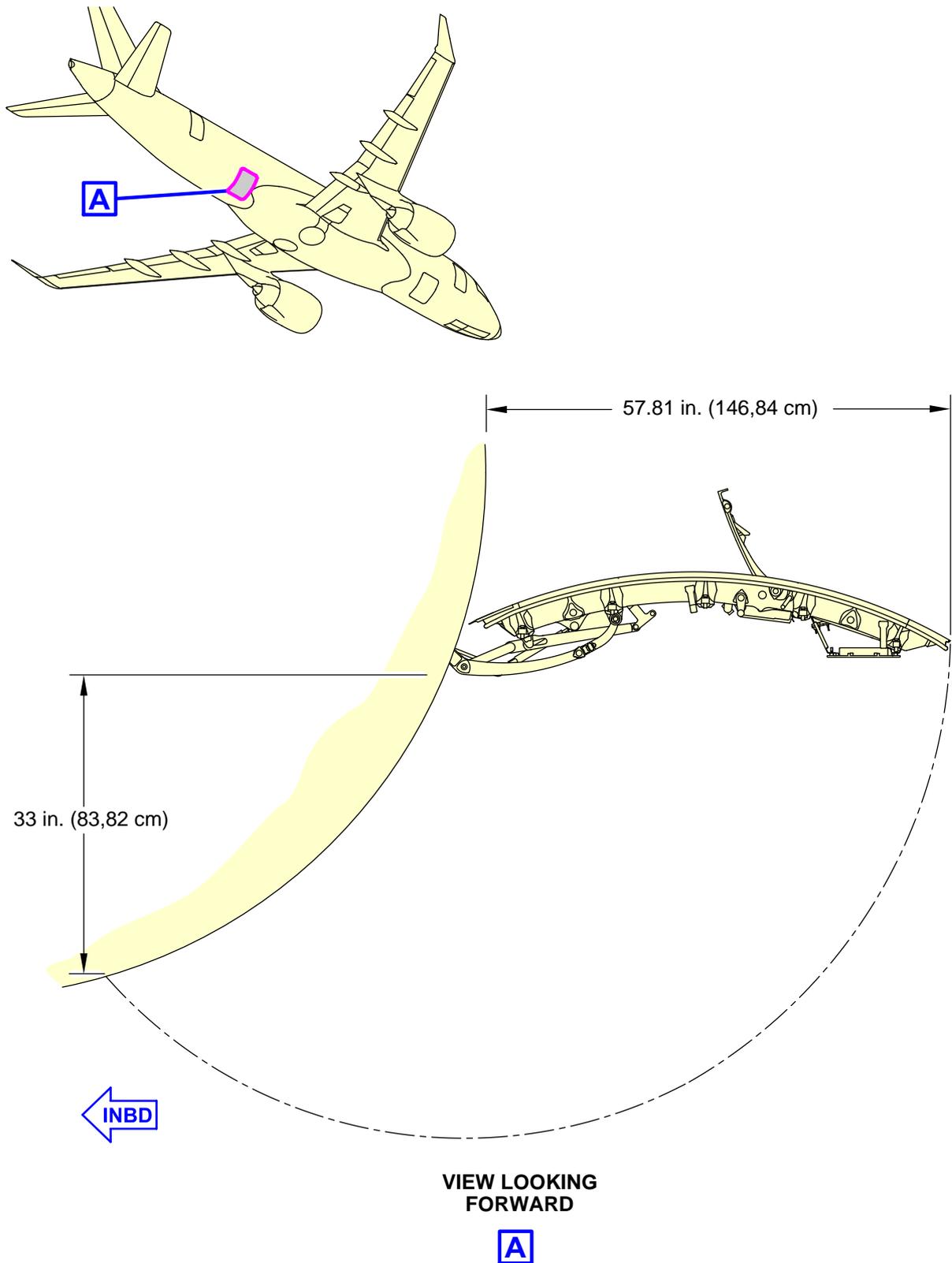
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Figure 4 Aft passenger door opening and clearances



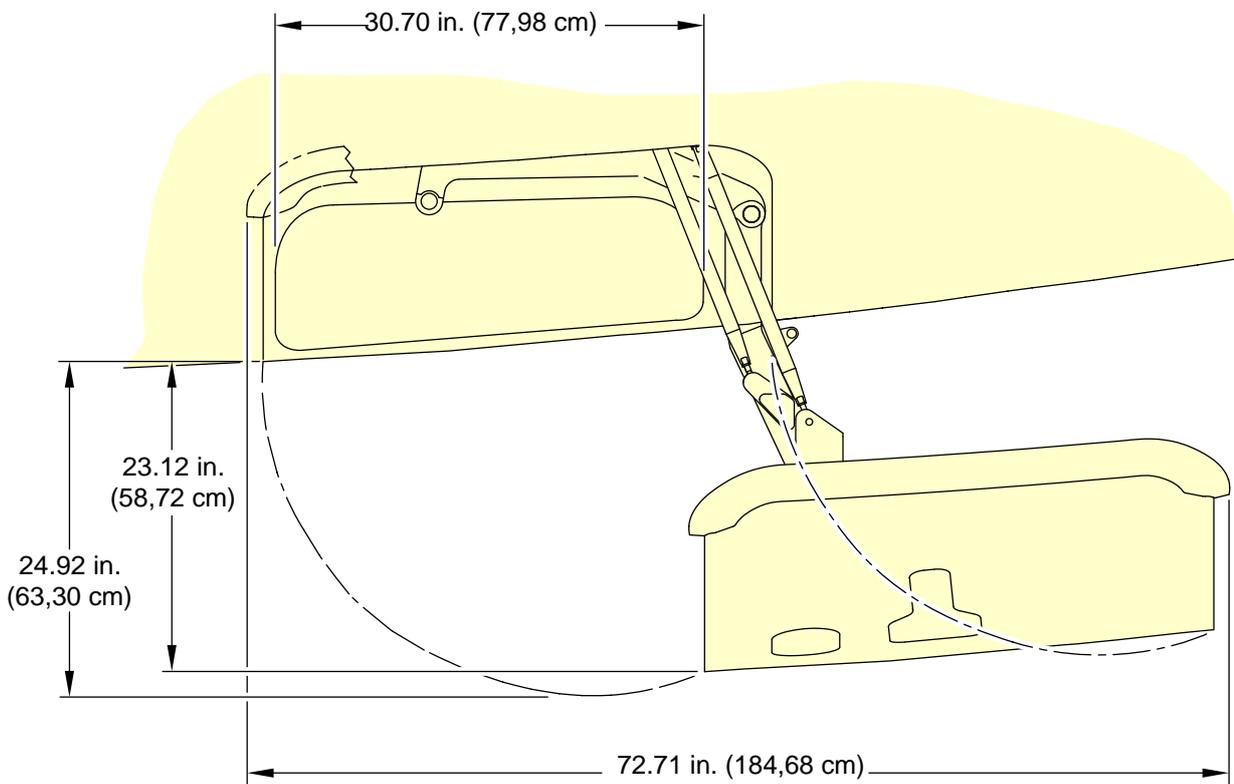
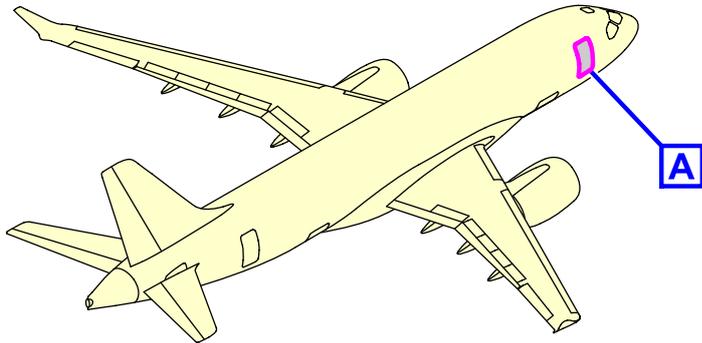
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Figure 5 Forward cargo compartment door opening and clearances



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Figure 6 Aft cargo compartment door opening and clearances

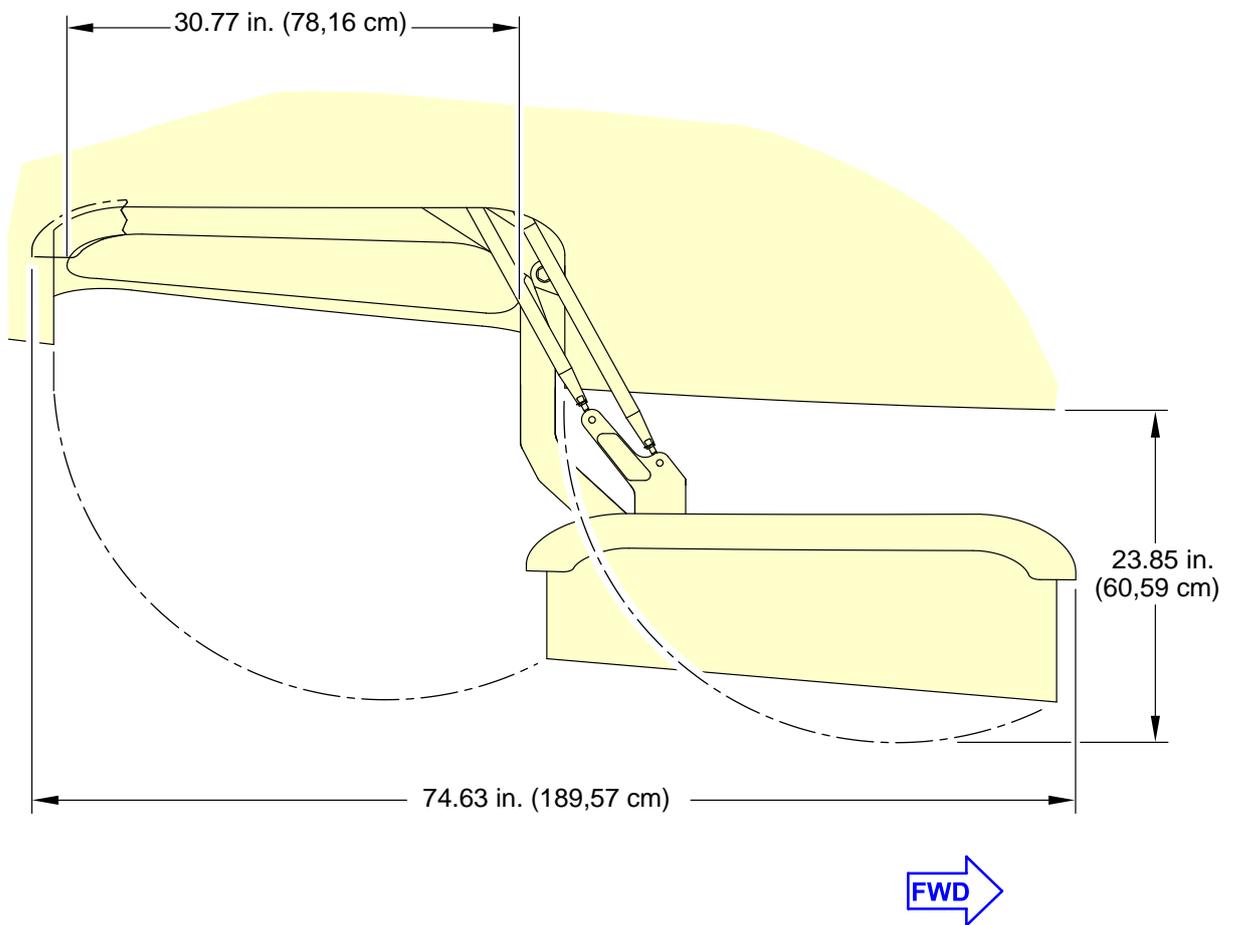
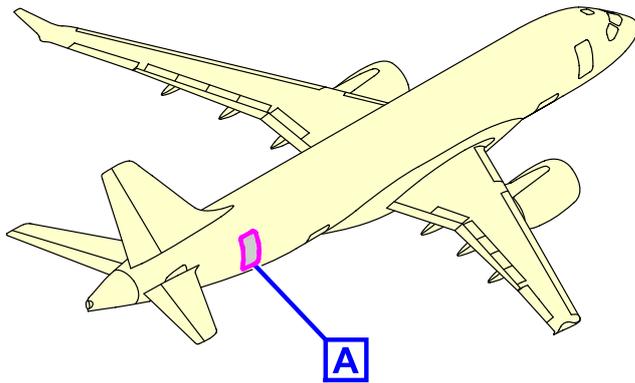


VIEW LOOKING DOWN



ICN-BD500-A-J061100-A-3AB48-00106-A-003-01

Figure 7 Forward service door opening and clearances

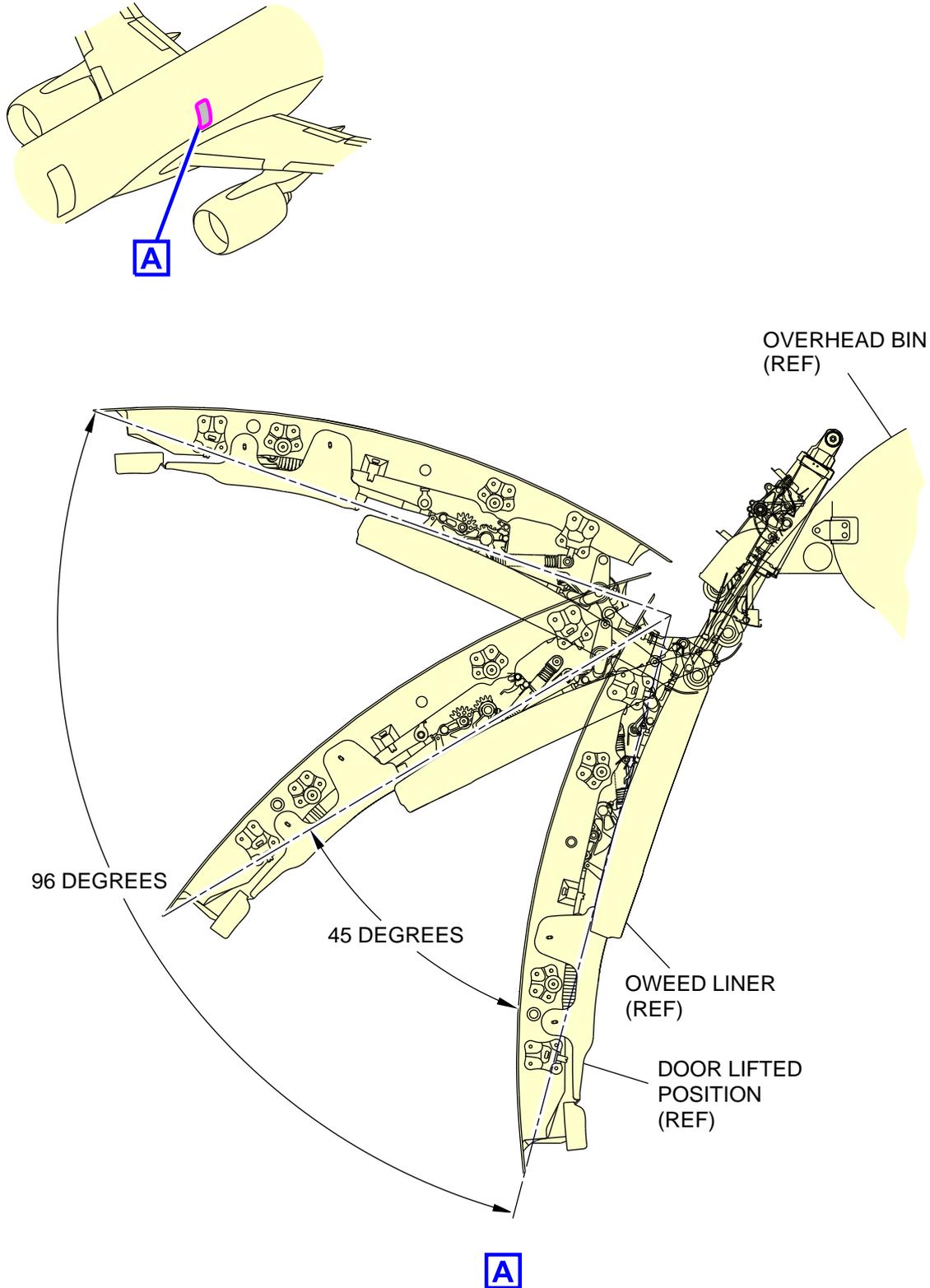


VIEW LOOKING DOWN



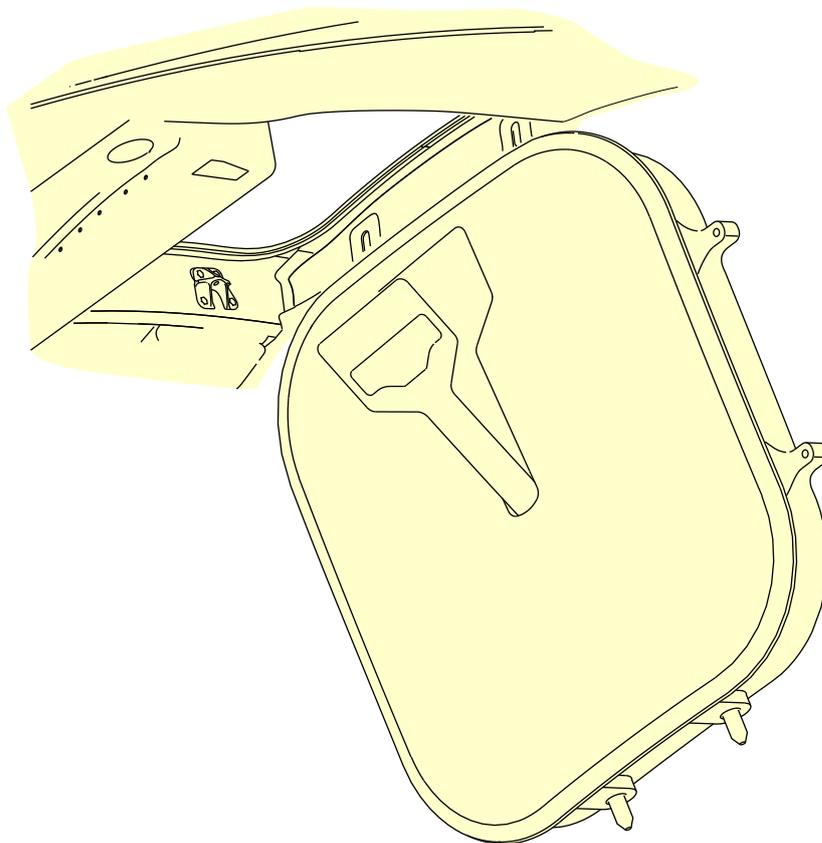
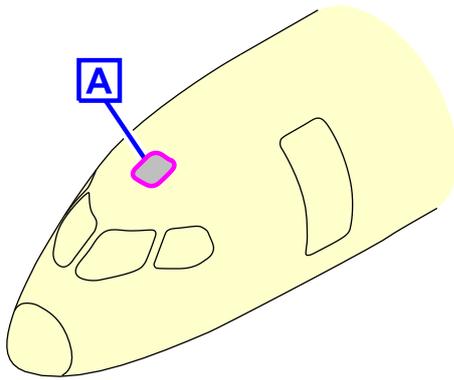
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Figure 8 Aft service door opening and clearances

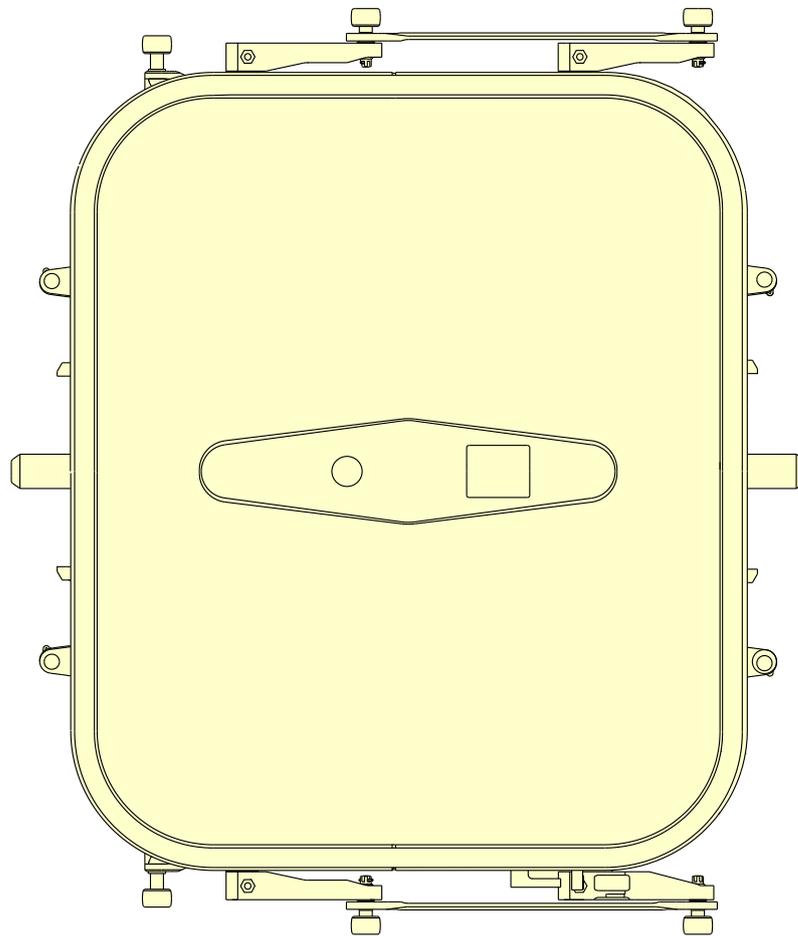
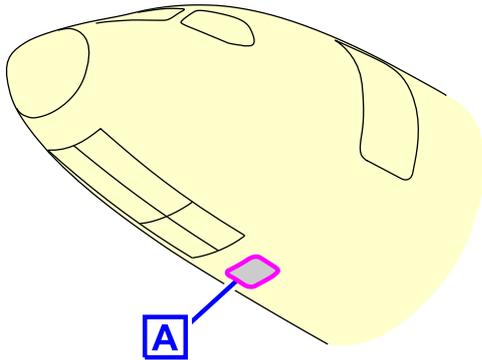


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Figure 9 Overwing emergency exit door (OWEED)

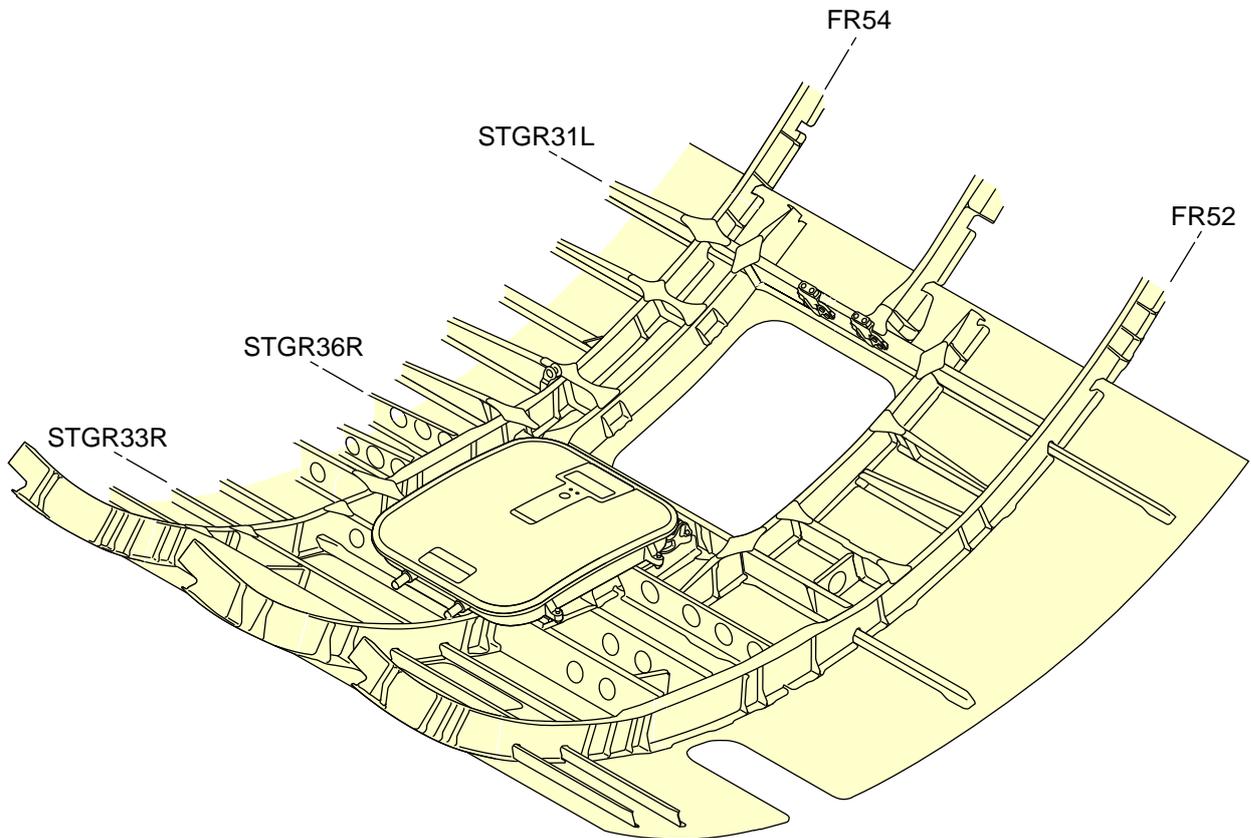
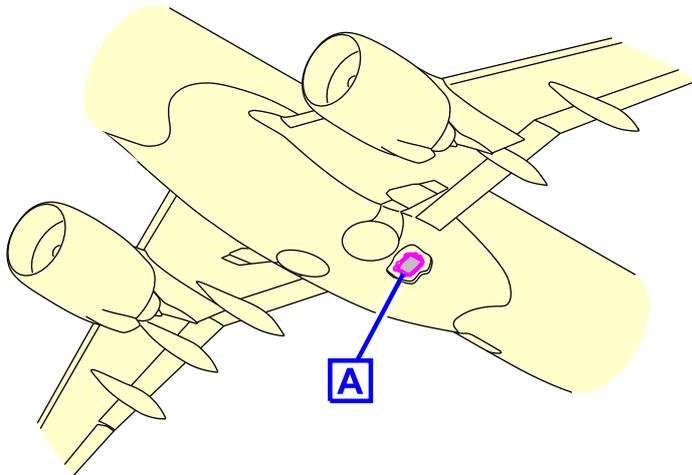


ICN-BD500-A-J061100-A-3AB48-48188-A-001-01
Figure 10 Flight crew emergency escape hatch (FCEE)



A

ICN-BD500-A-J061100-A-3AB48-48189-A-001-01
Figure 11 Forward avionics bay door (FAB)

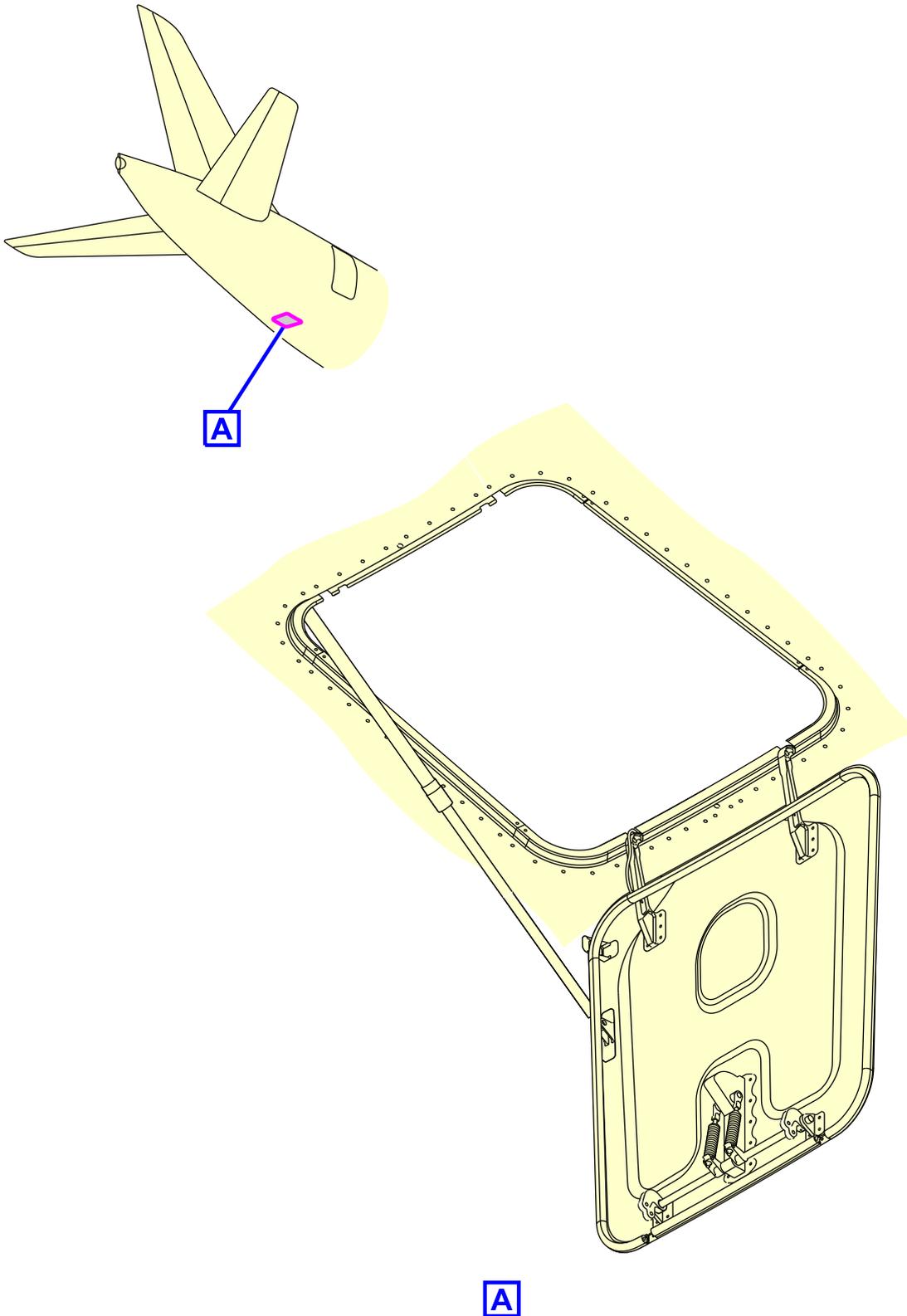


DOOR IN OPEN CONDITION

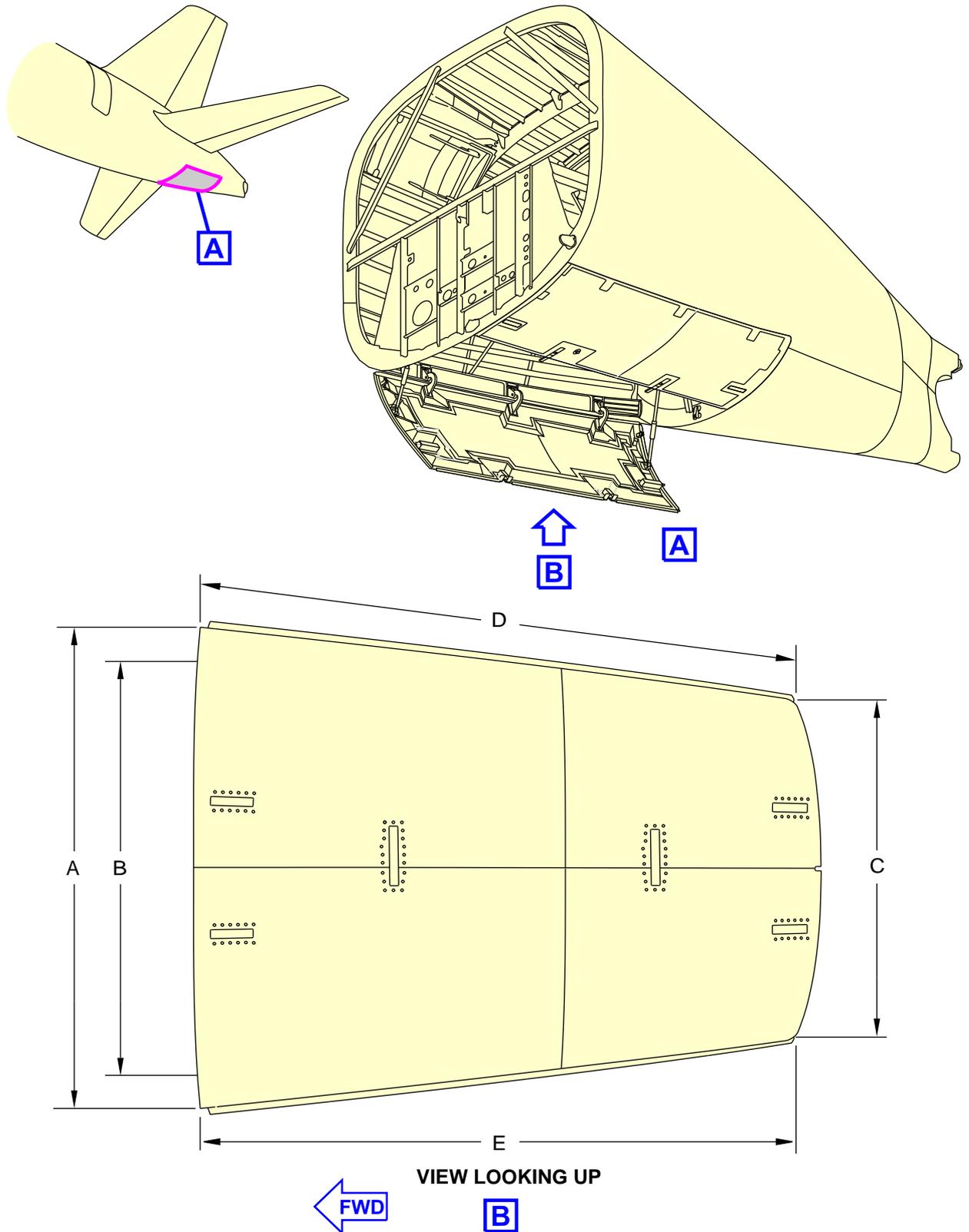


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Figure 12 Mid avionics bay door (MAB)



ICN-BD500-A-J061100-A-3AB48-48191-A-001-01
Figure 13 Aft equipment bay door (AEB)



ICN-BD500-A-J061100-A-3AB48-48192-A-001-01

Figure 14 Tailcone door opening

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Frame stations and fuselage stations - Technical data

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
BD500-A-J06-20-03-00AAA-030A-A	Engine/nacelle and pylon stations - Technical data

Description

1 Introduction

The frames represented as FR on Fig. 1 and Fig. 2 are reference planes found at right angles to the fuselage center line.

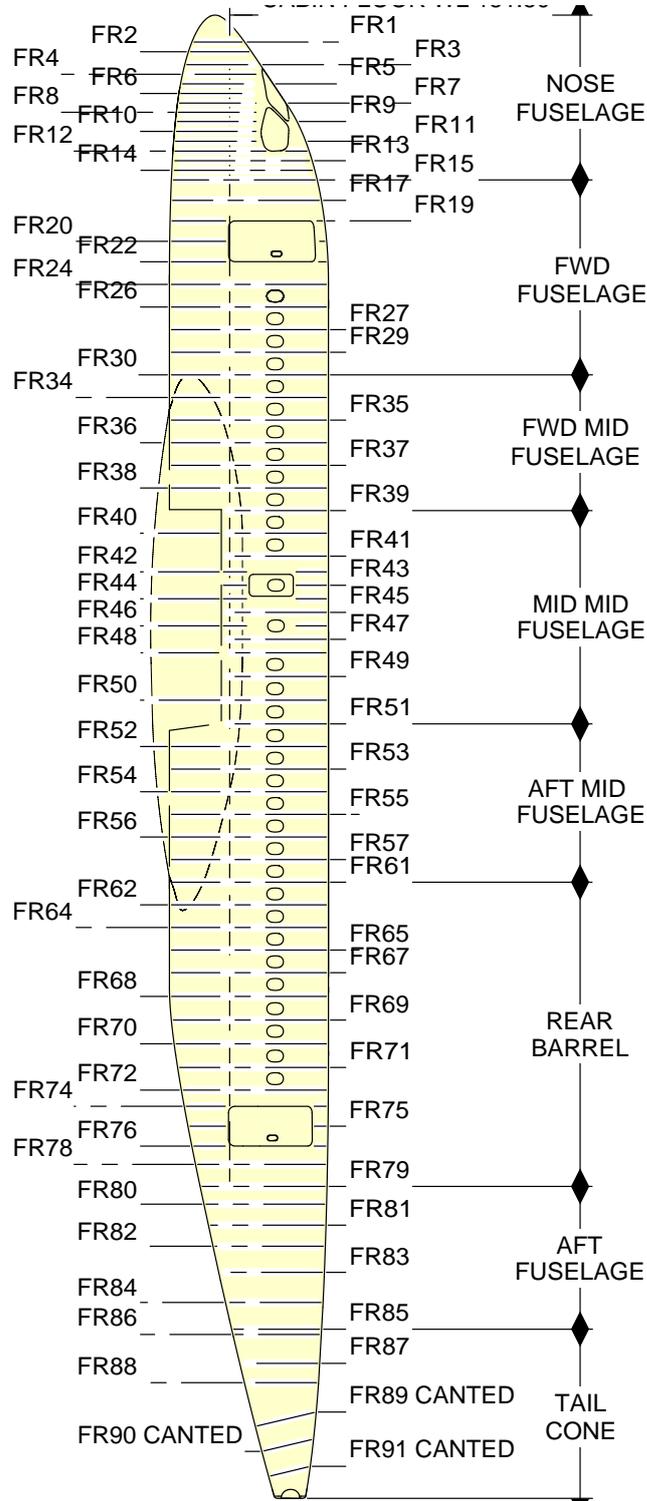
Refer to Table 2 and Table 3 for frame station and Fuselage Station (FS) cross-reference.

For engine/nacelle and pylon frame station, refer to BD500-A-J06-20-03-00AAA-030A-A.

Note

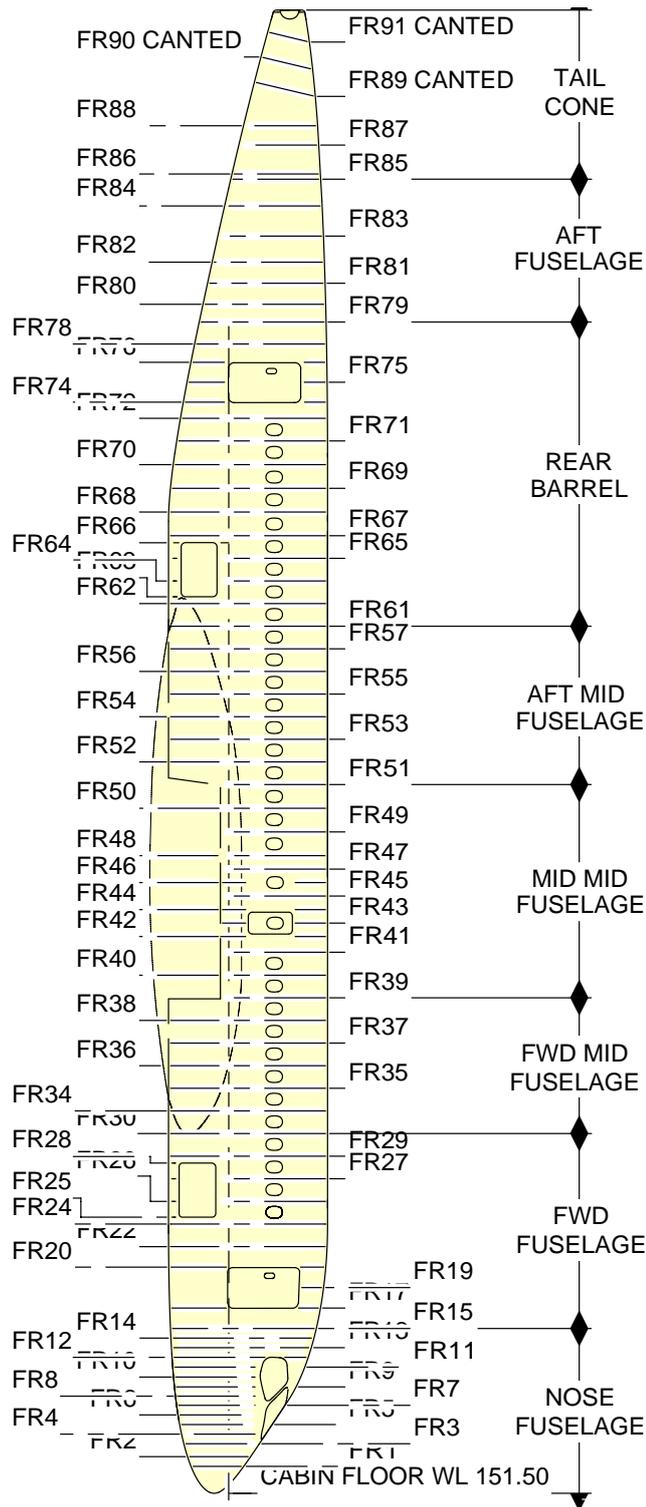
All datums shown are for reference and approximate.

Applicability: 50001-54999



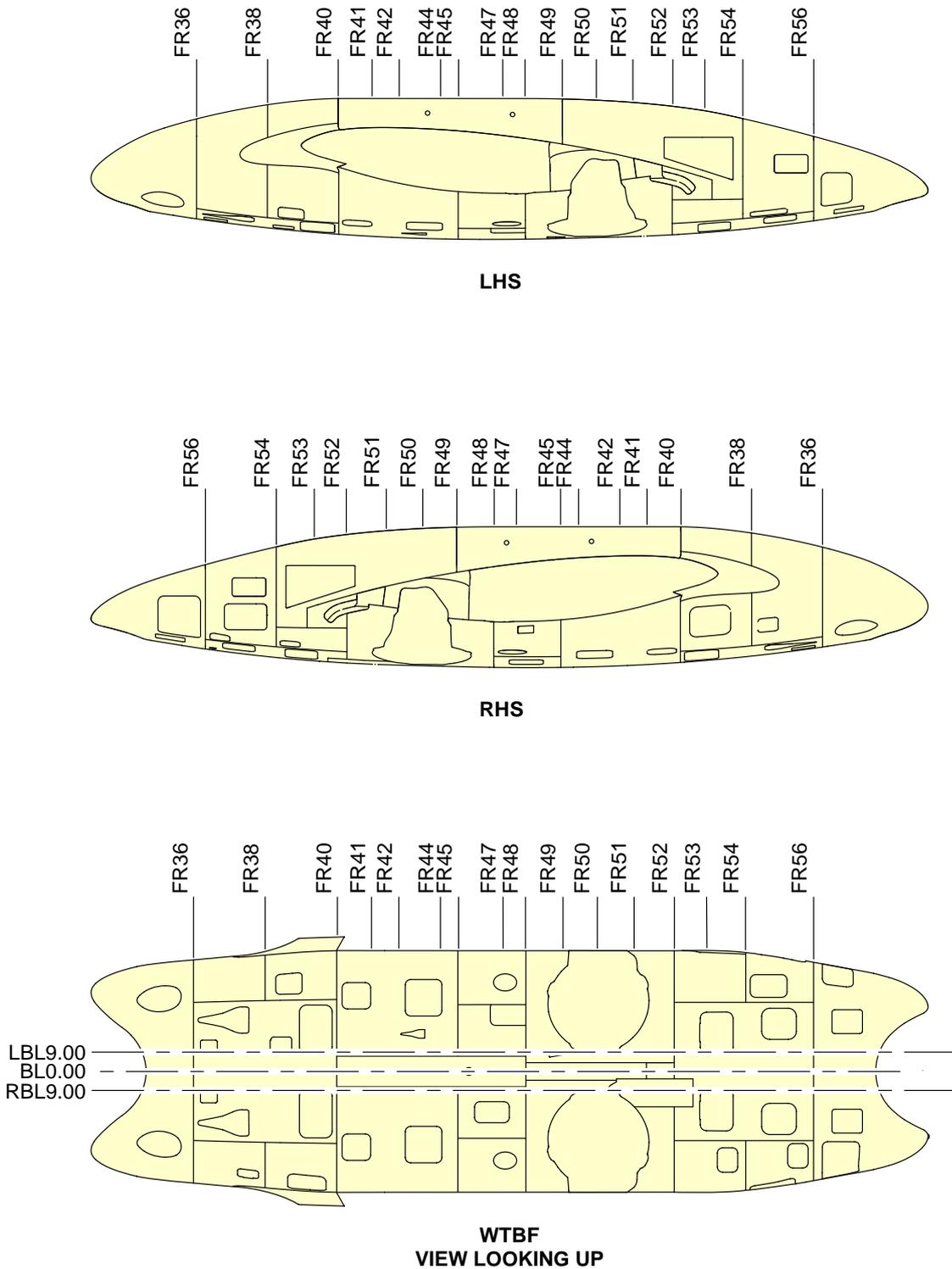
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Figure 1 Frames A220-100 - (Sheet 1 of 3)



ICN-BD500-A-J062001-A-3AB48-76839-A-001-01

Figure 1 Frames A220-100 - (Sheet 2 of 3)



ICN-BD500-A-J062001-A-3AB48-76842-A-001-01

Figure 1 Frames A220-100 - (Sheet 3 of 3)

The primary FS datum line (FS 0.0) is 252.0 inches (640.08 cm) forward of the aircraft nose. Refer to Table 2 .

Applicability: 50001-54999

Table 2 Frame and Fuselage station cross-reference to A220-100

Frame station	Fuselage station in. (cm)
FR1	277.000 (703.58)
FR2	286.000 (726.44)
FR3	298.000 (756.92)
FR4	306.917 (779.57)
FR5	315.833 (802.22)
FR6	324.749 (824.86)
FR7	333.666 (847.51)
FR8	342.208 (869.21)
FR9	350.749 (890.90)
FR10	359.939 (914.25)
FR11	369.129 (937.59)
FR12	378.249 (960.75)
FR13	387.166 (983.40)
FR14	396.083 (1006.05)

See applicability on the first page of the DM
BD500-A-J06-20-01-00AAA-030A-A

BD500-A-J06-20-01-00AAA-030A-A

Frame station	Fuselage station
	in.
	(cm)
FR15	405.000 (1028.70)
FR17	424.000 (1076.96)
FR19	443.000 (1125.22)
FR20	462.000 (1173.48)
FR22	481.000 (1221.74)
FR24	502.000 (1275.08)
FR25	508.000 (1290.32)
FR26	523.000 (1328.42)
FR27	544.000 (1381.76)
FR28	559.000 (1419.86)
FR29	565.000 (1435.10)
FR30	586.000 (1488.44)
FR34	607.000 (1541.78)
FR35	628.000 (1595.12)
FR36	649.000 (1648.46)

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Frame station	Fuselage station in. (cm)
FR37	670.000 (1701.80)
FR38	691.000 (1755.14)
FR39	712.000 (1808.48)
FR40	733.000 (1861.82)
FR41	754.300 (1915.92)
FR42	768.850 (1952.88)
FR43	781.350 (1984.63)
FR44	793.850 (2016.38)
FR45	806.500 (2048.51)
FR46	819.000 (2080.26)
FR47	831.500 (2112.01)
FR48	844.000 (2143.76)
FR49	866.000 (2199.64)
FR50	888.000 (2255.52)
FR51	910.000 (2311.4)

Frame station	Fuselage station in. (cm)
FR52	931.000 (2364.74)
FR52A	945.000 (2400.30)
FR53	952.000 (2418.08)
FR53A	967.000 (2456.18)
FR54	978.000 (2471.42)
FR55	994.000 (2524.76)
FR56	1015.000 (2578.10)
FR57	1036.000 (2631.44)
FR61	1057.000 (2684.78)
FR62	1078.000 (2738.12)
FR63	1084.000 (2753.36)
FR64	1099.000 (2791.46)
FR65	1120.000 (2844.8)
FR66	1135.000 (2882.90)
FR67	1141.000 (2898.14)

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

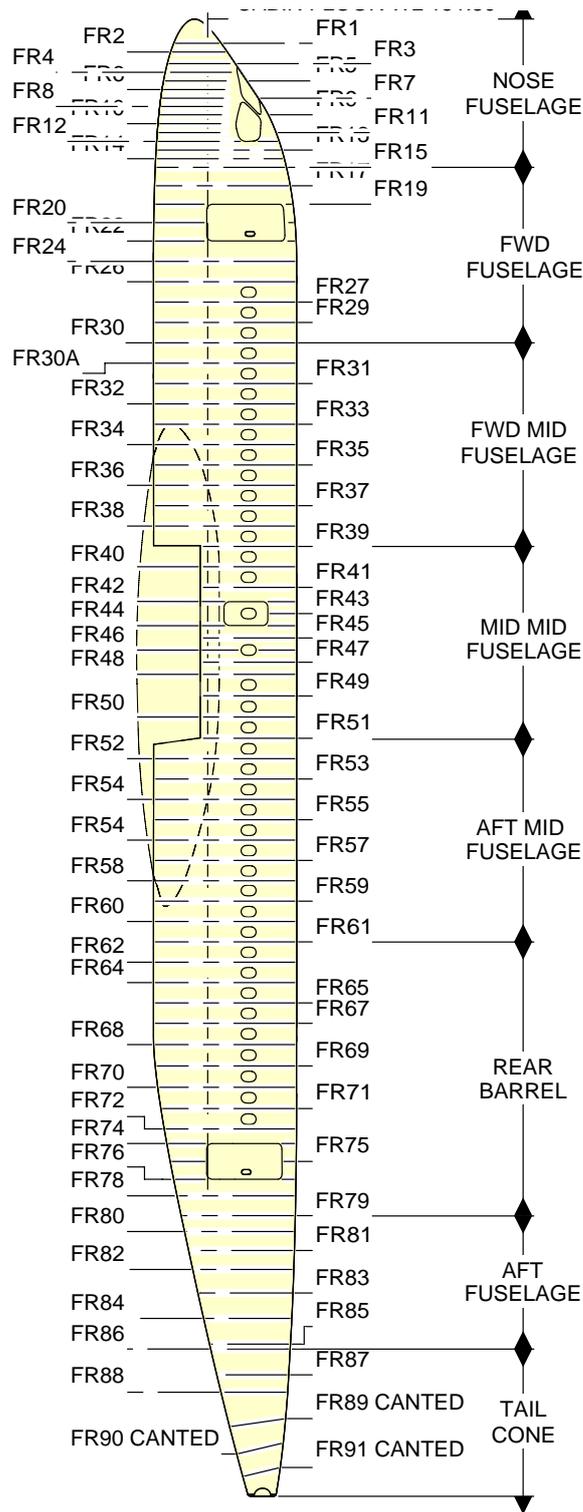
Frame station	Fuselage station in. (cm)
FR68	1163.000 (2954.02)
FR69	1185.000 (3009.90)
FR70	1207.000 (3065.78)
FR71	1229.000 (3121.66)
FR72	1250.000 (3175.00)
FR74	1265.000 (3213.10)
FR75	1283.500 (3260.09)
FR76	1302.000 (3307.08)
FR78	1319.000 (3350.26)
FR79	1339.400 (3402.08)
FR80	1355.860 (3443.88)
FR81	1375.410 (3493.54)
FR82	1394.970 (3543.22)
FR83	1419.170 (3604.69)
FR84	1445.460 (3671.47)

Frame station	Fuselage station in. (cm)
FR85	1472.000 (3738.88)
FR86	1477.000 (3751.58)
FR87	1503.676 (3819.34)
FR88	1521.606 (3864.87)

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

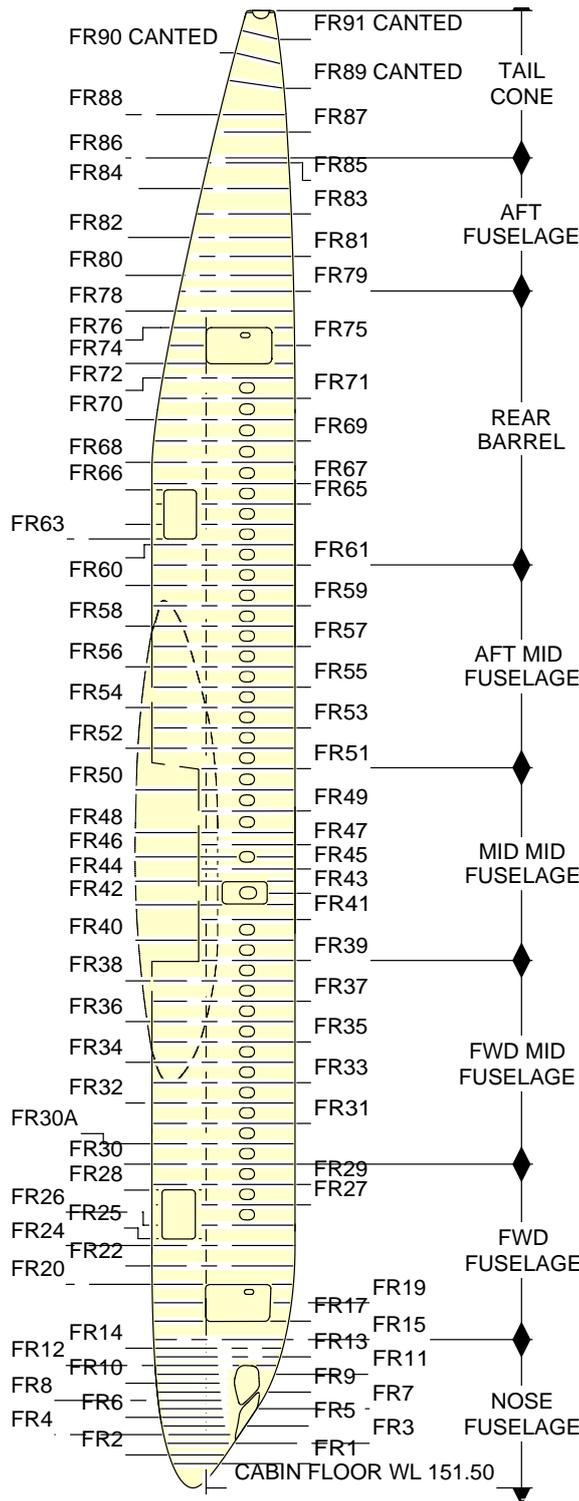
Applicability: 55001-59999

This publication has been superseded by the Aircraft Characteristics Publication (ACP).



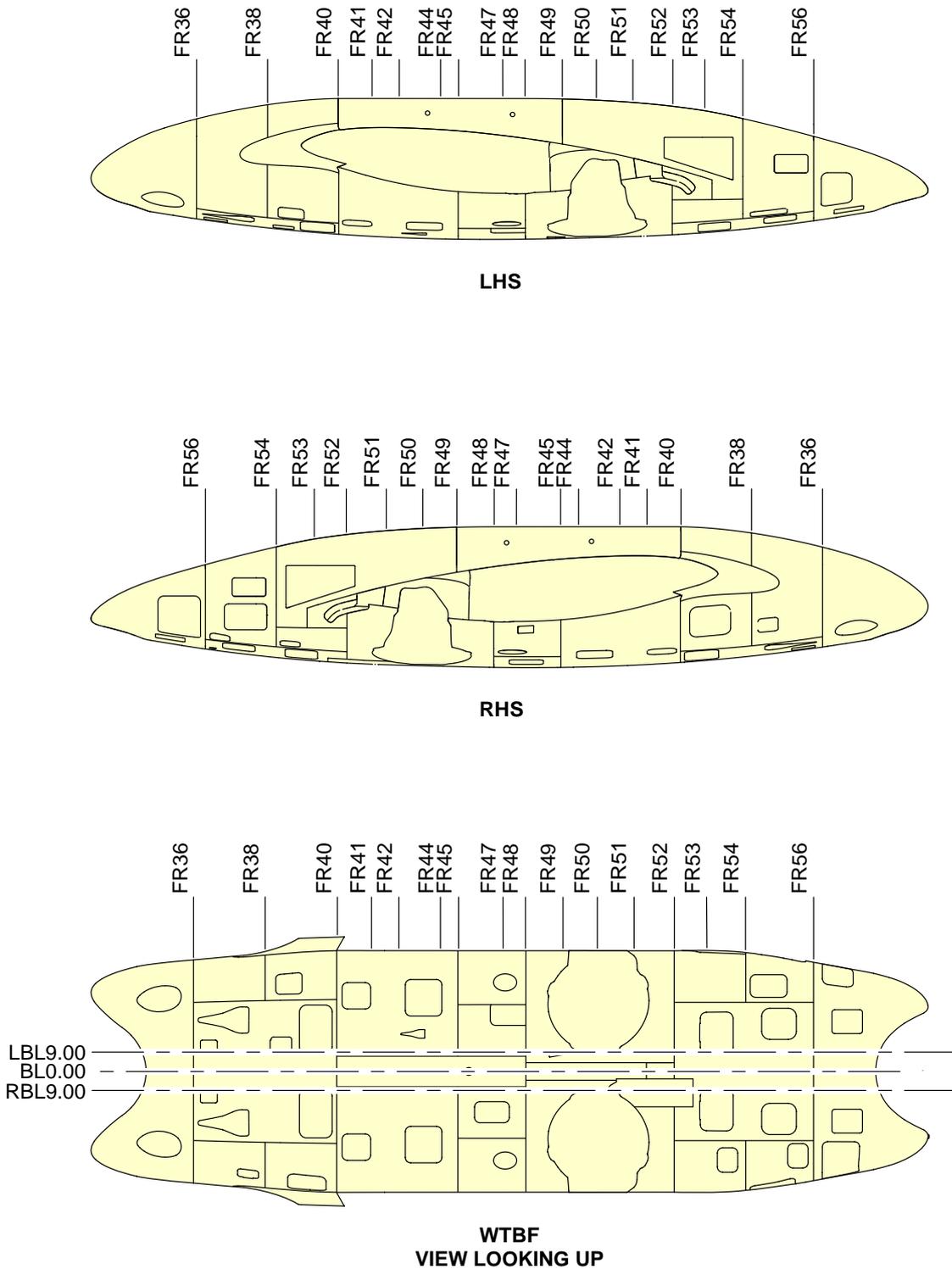
ICN-BD500-A-J062001-A-3AB48-76840-A-001-01

Figure 2 Frames A220-300 - (Sheet 1 of 3)



ICN-BD500-A-J062001-A-3AB48-76841-A-001-01

Figure 2 Frames A220-300 - (Sheet 2 of 3)



ICN-BD500-A-J062001-A-3AB48-76842-A-001-01
 Figure 2 Frames A220-300 - (Sheet 3 of 3)

The primary FS datum line (FS 0.0) is 168.0 inches (426.72 cm) forward of the aircraft nose.
 Refer to Table 3 .

Applicability: 55001-59999

Table 3 Frame and Fuselage station cross-reference to A220-300

Frame station	Fuselage station in. (cm)
FR1	193.000 (490.22)
FR2	202.000 (513.08)
FR3	214.000 (543.56)
FR4	222.917 (566.21)
FR5	231.833 (588.56)
FR6	240.749 (611.50)
FR7	249.666 (634.15)
FR8	258.208 (655.85)
FR9	266.749 (677.54)
FR10	275.939 (700.89)
FR11	285.129 (724.23)
FR12	294.249 (747.39)
FR13	303.166 (770.04)
FR14	312.083 (792.69)

See applicability on the first page of the DM
BD500-A-J06-20-01-00AAA-030A-A

BD500-A-J06-20-01-00AAA-030A-A

Frame station	Fuselage station in. (cm)
FR15	321.000 (815.34)
FR17	340.000 (863.60)
FR19	359.000 (911.86)
FR20	378.000 (960.12)
FR22	397.000 (1008.38)
FR24	418.000 (1061.72)
FR25	424.000 (1076.96)
FR26	439.000 (1115.06)
FR27	460.000 (1168.40)
FR28	475.000 (1206.50)
FR29	481.000 (1221.74)
FR30	502.000 (1275.08)
FR30A	523.000 (1328.42)
FR31	544.000 (1381.76)
FR32	565.000 (1435.10)

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Frame station	Fuselage station in. (cm)
FR33	586.000 (1488.44)
FR34	607.000 (1541.78)
FR35	628.000 (1595.12)
FR36	649.000 (1648.46)
FR37	670.000 (1701.80)
FR38	691.000 (1755.14)
FR39	712.000 (1808.48)
FR40	733.000 (1861.82)
FR41	754.300 (1915.92)
FR42	768.850 (1952.88)
FR43	781.350 (1984.63)
FR44	793.850 (2016.38)
FR45	806.500 (2048.51)
FR46	819.000 (2080.26)
FR47	831.500 (2112.01)

Frame station	Fuselage station in. (cm)
FR48	844.000 (2143.76)
FR49	866.000 (2199.64)
FR50	888.000 (2255.52)
FR51	910.000 (2311.40)
FR52	931.000 (2364.74)
FR52A	945.000 (2400.30)
FR53	952.000 (2418.08)
FR53A	967.000 (2456.18)
FR54	973.000 (2471.42)
FR55	994.000 (2524.76)
FR56	1015.000 (2578.10)
FR57	1036.000 (2631.44)
FR58	1057.000 (2684.78)
FR59	1078.000 (2738.12)
FR60	1099.000 (2791.46)

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Frame station	Fuselage station in. (cm)
FR61	1120.000 (2844.80)
FR62	1141.000 (2898.14)
FR63	1147.000 (2913.38)
FR64	1162.000 (2951.48)
FR65	1183.000 (3004.82)
FR66	1198.000 (3042.92)
FR67	1204.000 (3058.16)
FR68	1226.000 (3114.04)
FR69	1248.000 (3169.92)
FR70	1270.000 (3225.80)
FR71	1292.000 (3281.68)
FR72	1313.000 (3335.02)
FR74	1328.000 (3373.12)
FR75	1346.500 (3420.11)
FR76	1365.000 (3467.10)

Frame station	Fuselage station in. (cm)
FR78	1382.000 (3510.28)
FR79	1402.400 (3562.10)
FR80	1418.860 (3603.90)
FR81	1438.410 (3653.56)
FR82	1457.970 (3703.24)
FR83	1482.170 (3764.71)
FR84	1508.460 (3831.49)
FR85	1535.000 (3898.90)
FR86	1540.000 (3911.60)
FR87	1567.506 (3981.47)
FR88	1584.606 (4024.90)

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Empennage stations - Technical data

Applicability: 50001-54999, 55001-59999

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1.2 Rudder Tail Stations (ZVS).....	2
1.3 Horizontal Empennage Stations (HSS).....	2
1.4 Elevator reference lines.....	2

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

1.1 Vertical Empennage Stations (ZV)

The vertical empennage stations are reference planes found at right angles to the center line of the vertical stabilizer rear spar.

The vertical empennage stations are measured from a point that aligns with WL102.50 and the datum line of the vertical stabilizer rear spar.

Each vertical empennage station corresponds to a rib datum

The vertical empennage stations are defined at the intersection of rib datum and front spar datum at the vertical stabilizer reference plan (Refer to Fig. 1).

1.2 Rudder Tail Stations (ZVS)

The rudder tail stations are reference plans perpendicular to the projection of the rudder hinge line on plane $Y=0$. The plans are measured from the intersection of the projection of the rudder hinge line with the fuselage centerline, where $ZVS=0$.

Each vertical tail station corresponds to a rib datum. (Refer to Fig. 2).

1.3 Horizontal Empennage Stations (HSS)

The horizontal empennage stations are reference planes found at right angles to the center line of the horizontal stabilizer rear spar. The horizontal empennage stations are measured from the horizontal stabilizer center line.

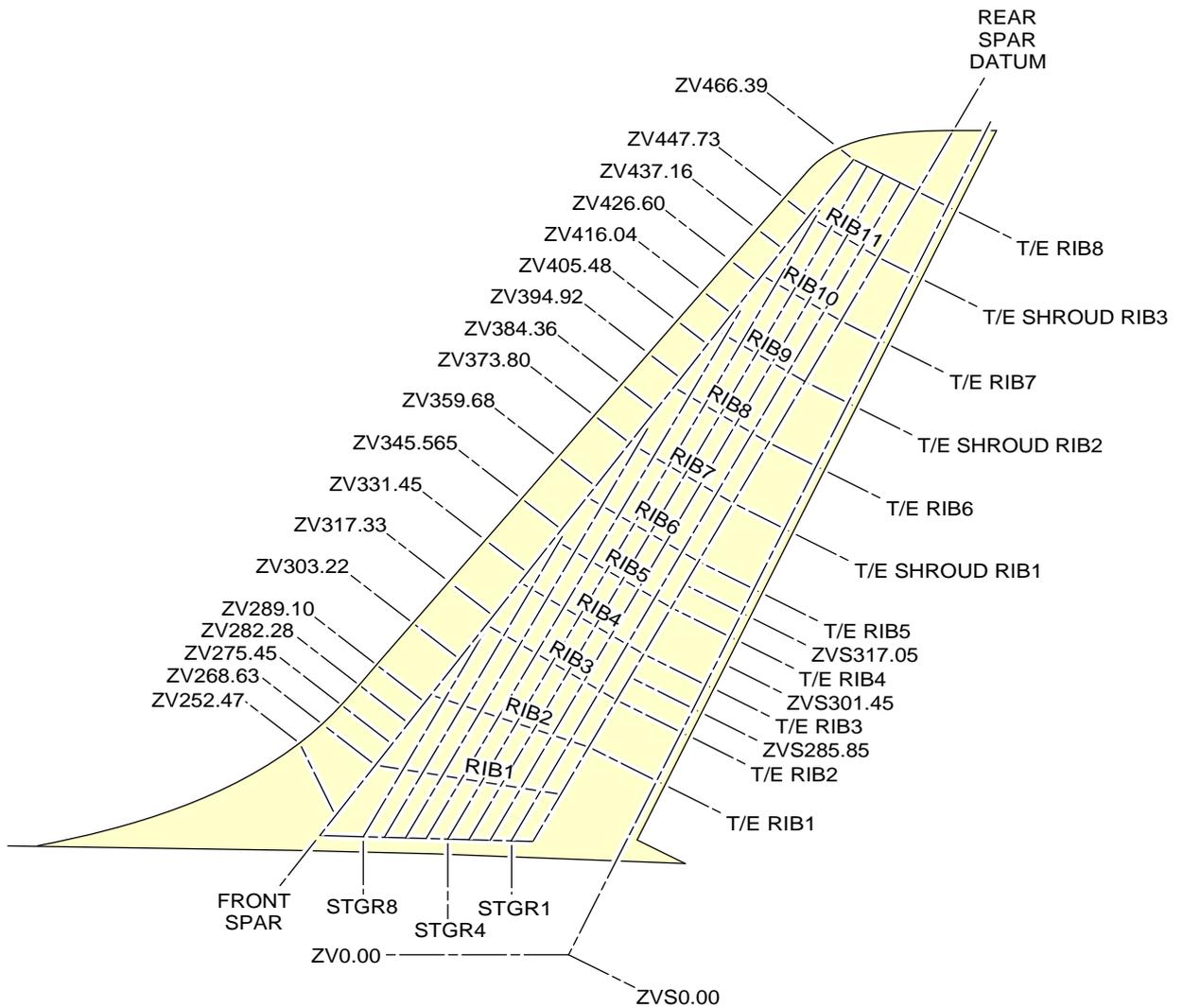
Each horizontal empennage station corresponds to a rib datum.

The horizontal empennage stations are defined at the intersection of rib datum and front spar datum at the horizontal stabilizer reference plan (Refer to Fig. 3).

1.4 Elevator reference lines

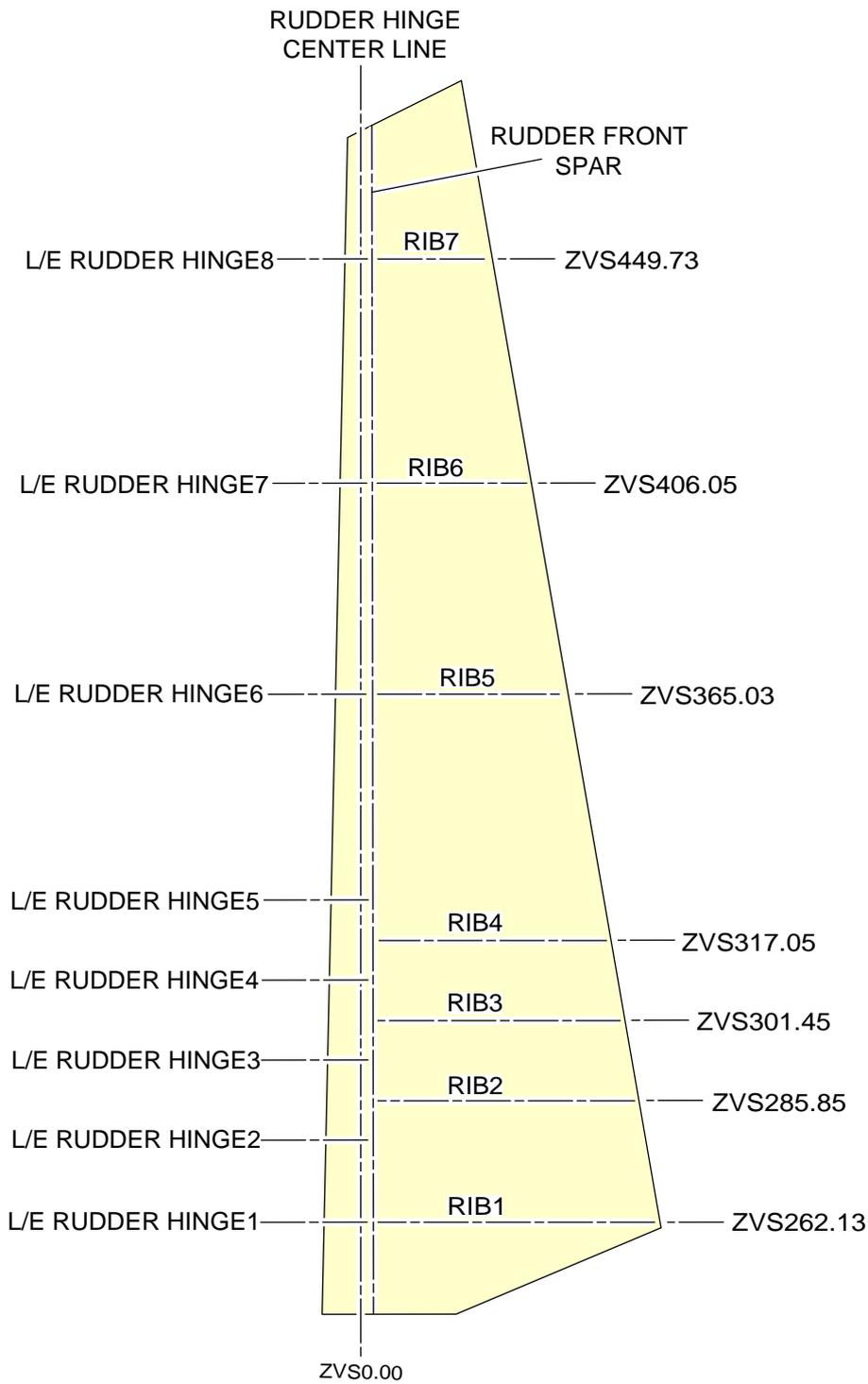
For the elevator, instead of stations, rib datum reference lines are used as reference lines (Refer to Fig. 4).

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

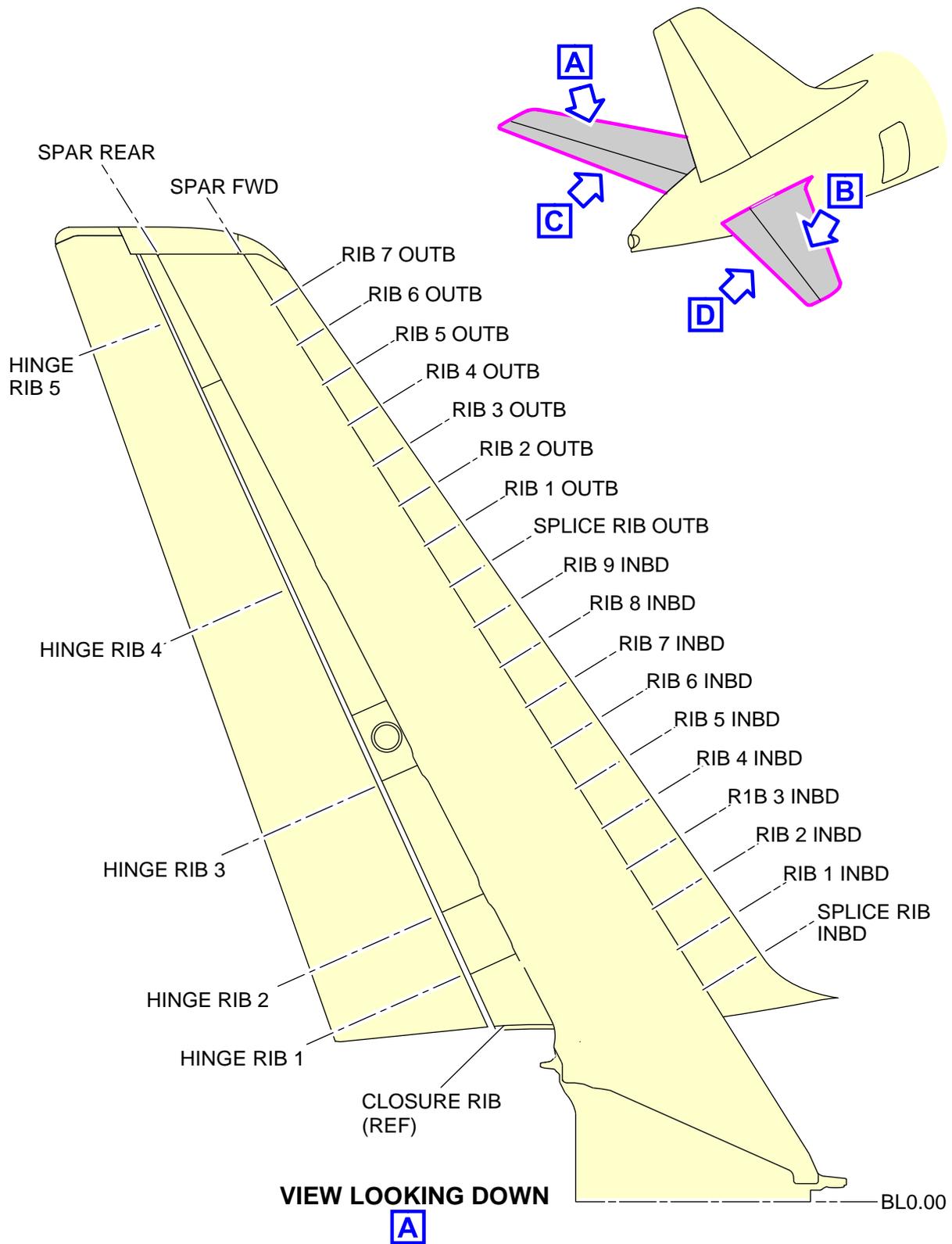


ICN-BD500-A-J062002-A-3AB48-01101-A-001-01

Figure 1 Vertical empennage stations

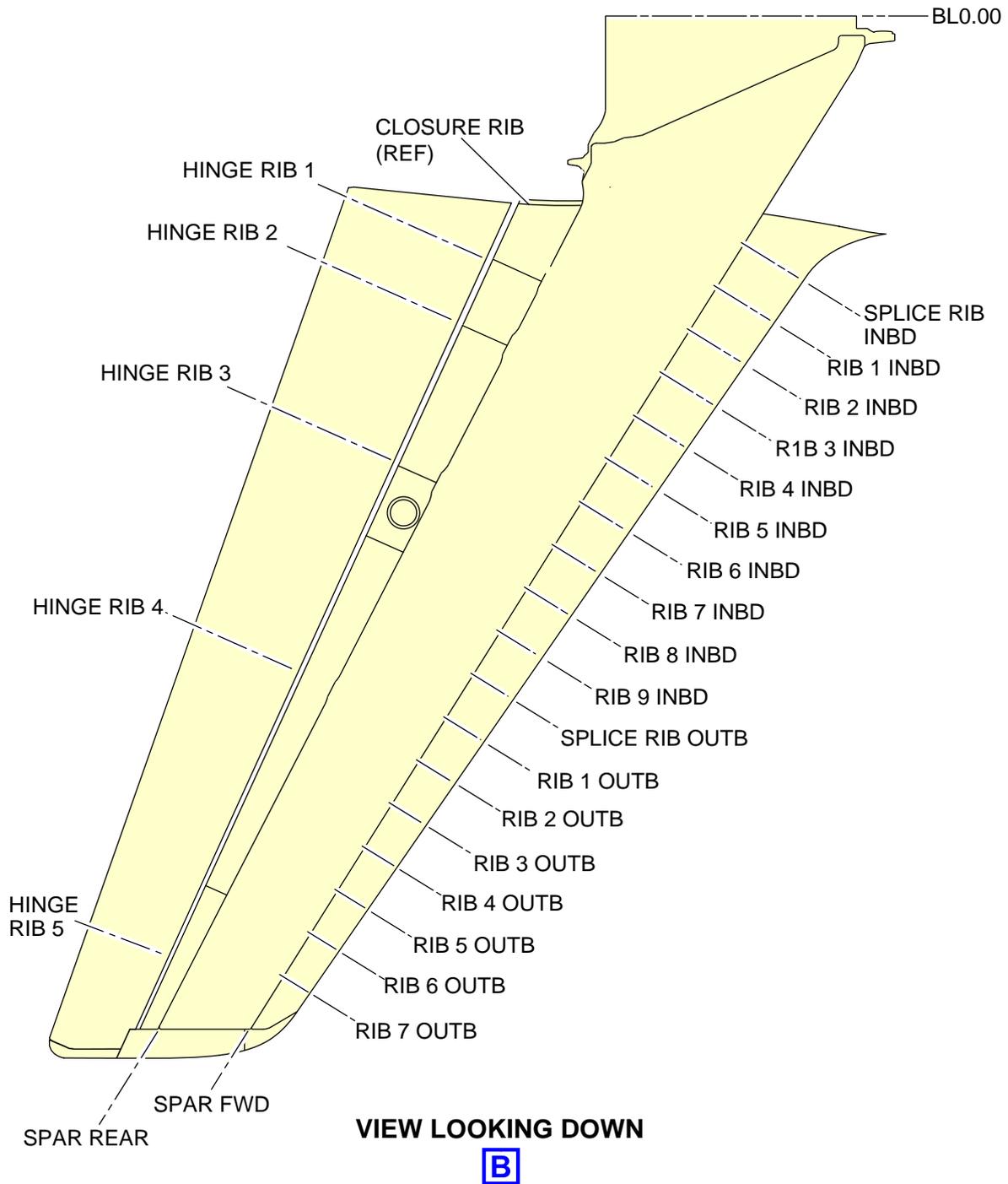


ICN-BD500-A-J062002-A-3AB48-01102-A-001-01
Figure 2 Rudder tail stations

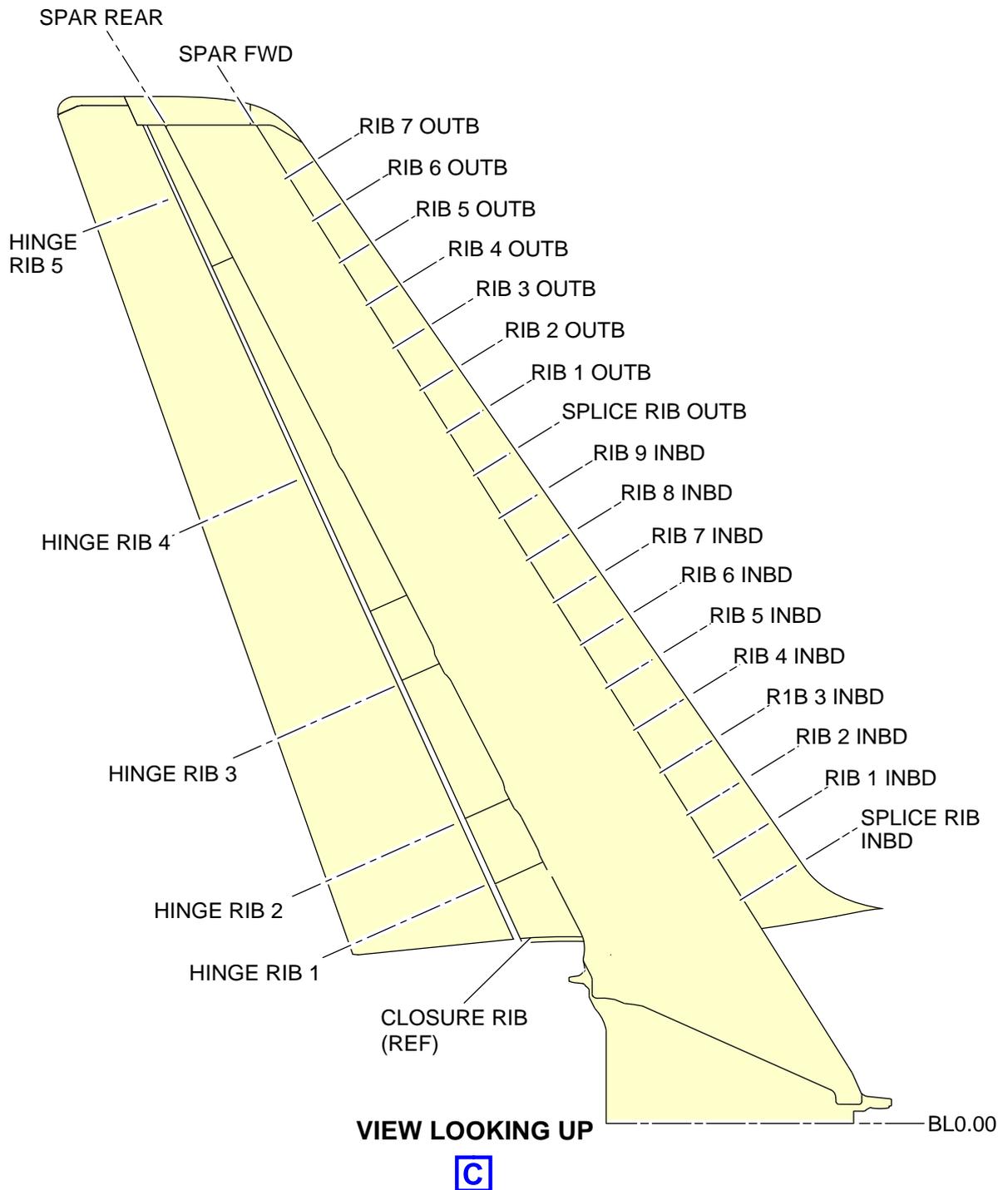


ICN-BD500-A-J062002-A-3AB48-76794-A-001-01

Figure 3 Horizontal empennage stations - (Sheet 1 of 5)

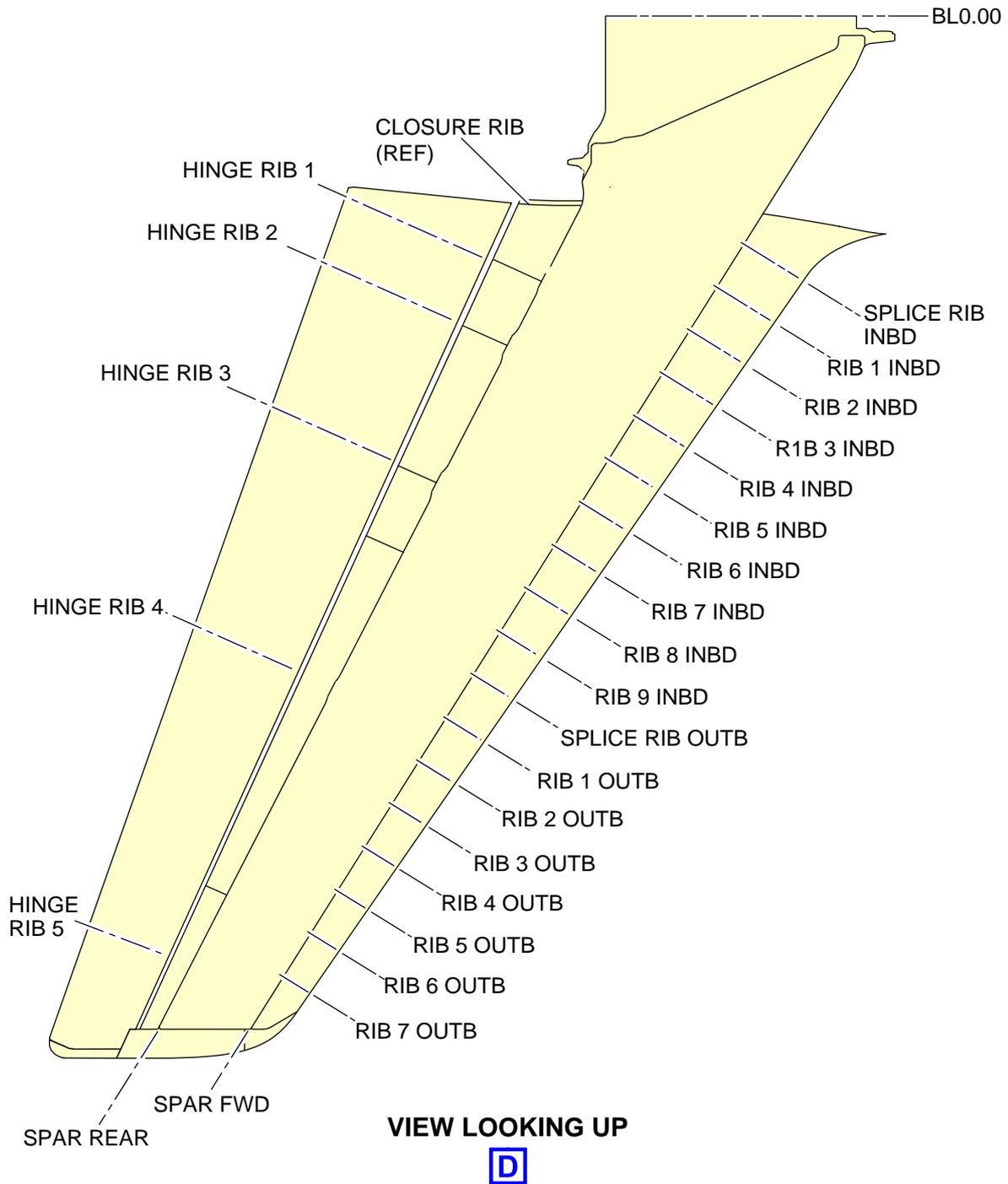


ICN-BD500-A-J062002-A-3AB48-76795-A-001-01
Figure 3 Horizontal empennage stations - (Sheet 2 of 5)

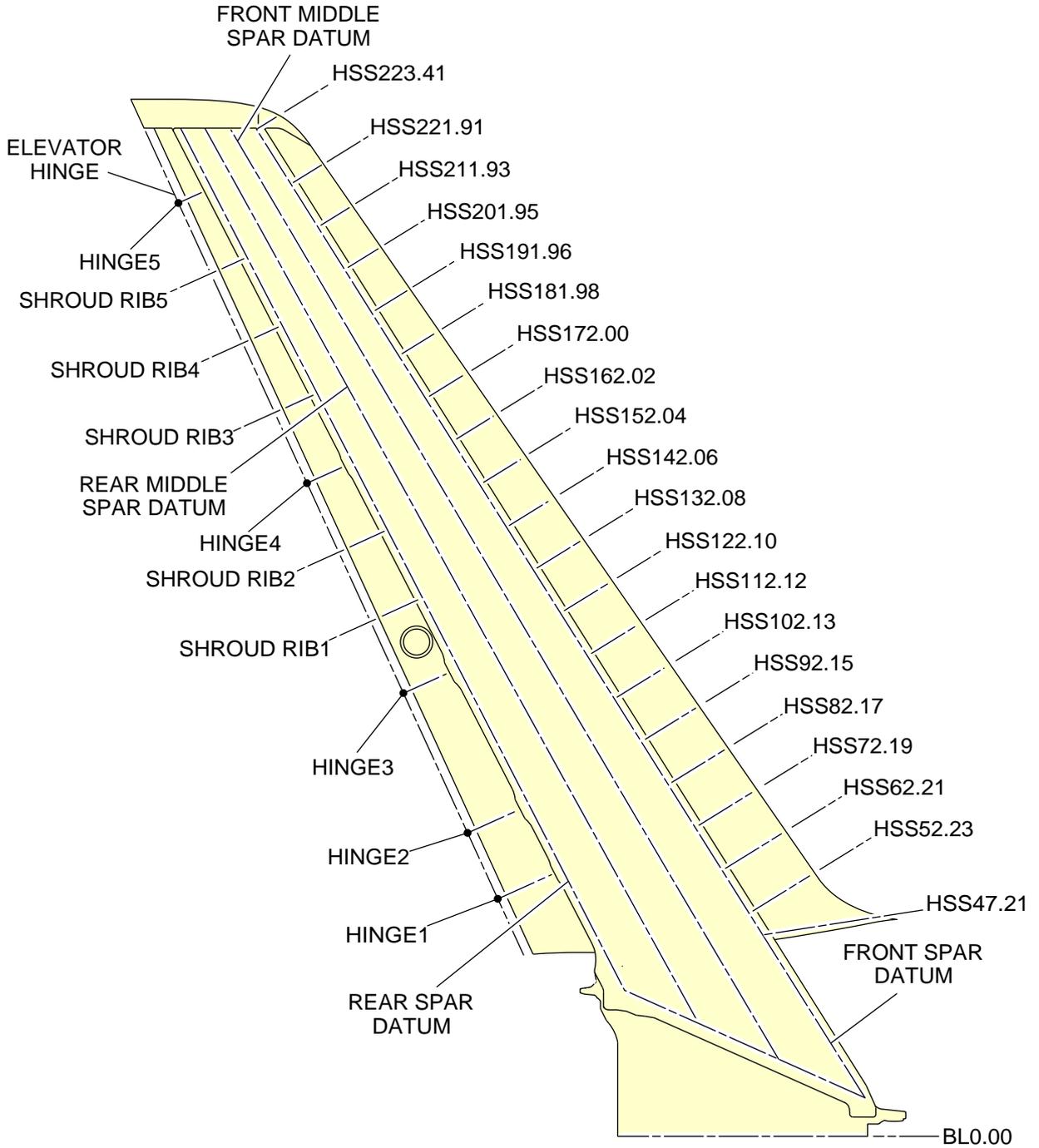


ICN-BD500-A-J062002-A-3AB48-76796-A-001-01

Figure 3 Horizontal empennage stations - (Sheet 3 of 5)

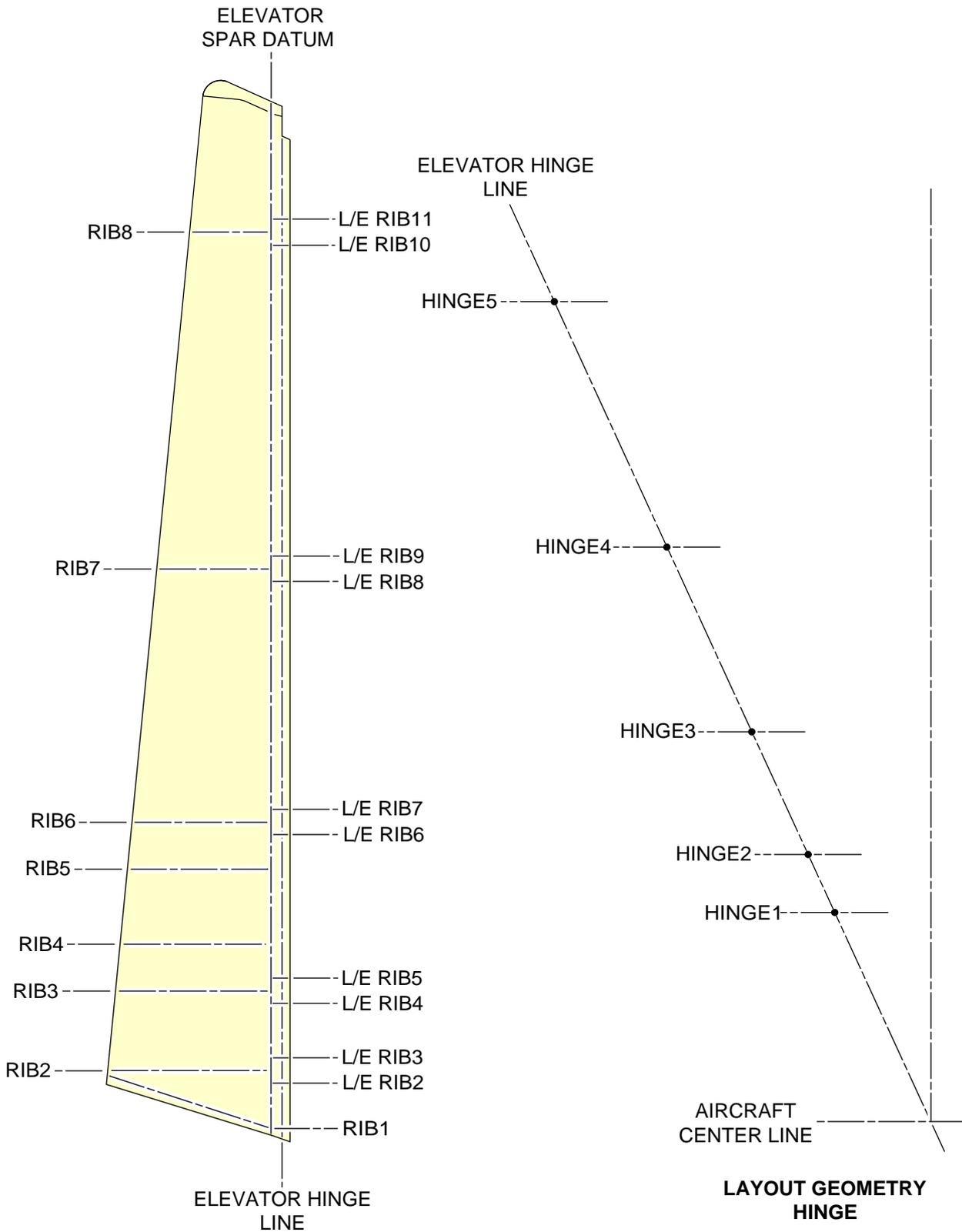


ICN-BD500-A-J062002-A-3AB48-76797-A-001-01
Figure 3 Horizontal empennage stations - (Sheet 4 of 5)



ICN-BD500-A-J062002-A-3AB48-01103-A-001-01

Figure 3 Horizontal empennage stations - (Sheet 5 of 5)



ICN-BD500-A-J062002-A-3AB48-01104-A-001-01

Figure 4 Elevator reference lines

Nacelle and pylon stations - Technical data

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 General

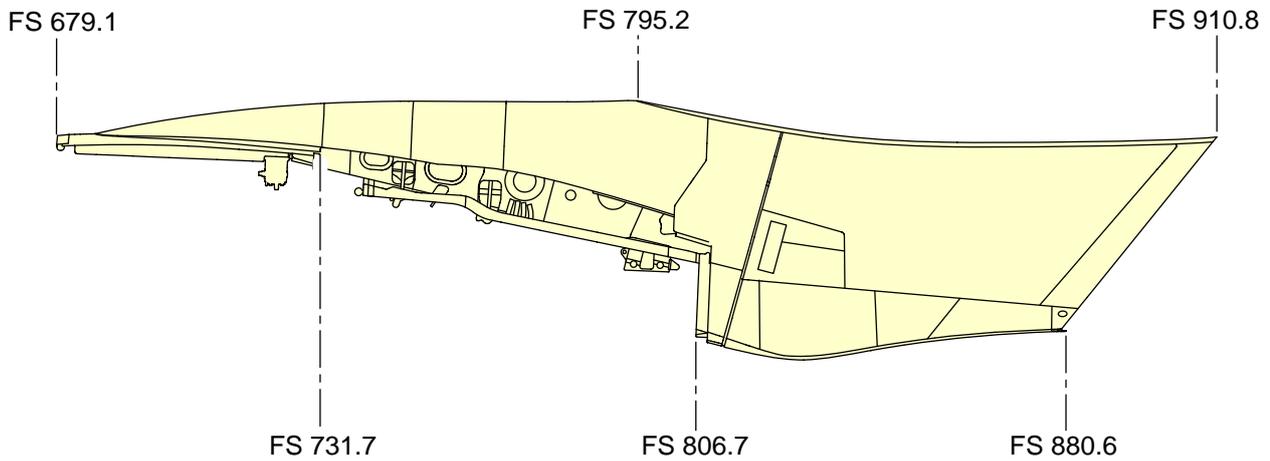
- This section shows the stations along the pylon and the nacelle.

2 Pylon stations

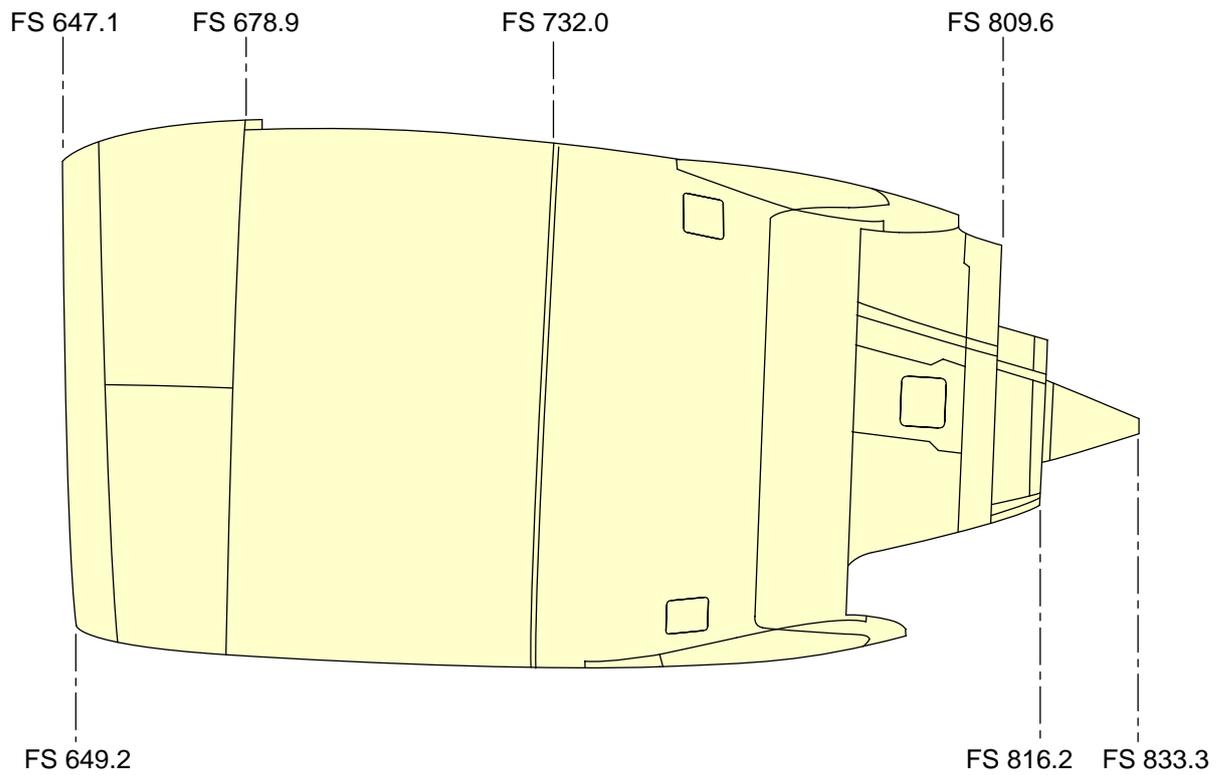
- Fig. 2 shows the pylon with reference to the Fuselage Station (FS).
- The FS references in this manual are used to measure or specify distances along the pylon.

3 Nacelle stations

- Fig. 1 shows the nacelle with reference to the FS.
- The FS references in this manual are used to measure or specify distances along the nacelle.



ICN-BD500-A-J062003-A-3AB48-11221-A-001-01
Figure 1 Pylon stations



ICN-BD500-A-J062003-A-3AB48-11220-A-001-01

Figure 2 Nacelle stations

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This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Wing stations - Technical data

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

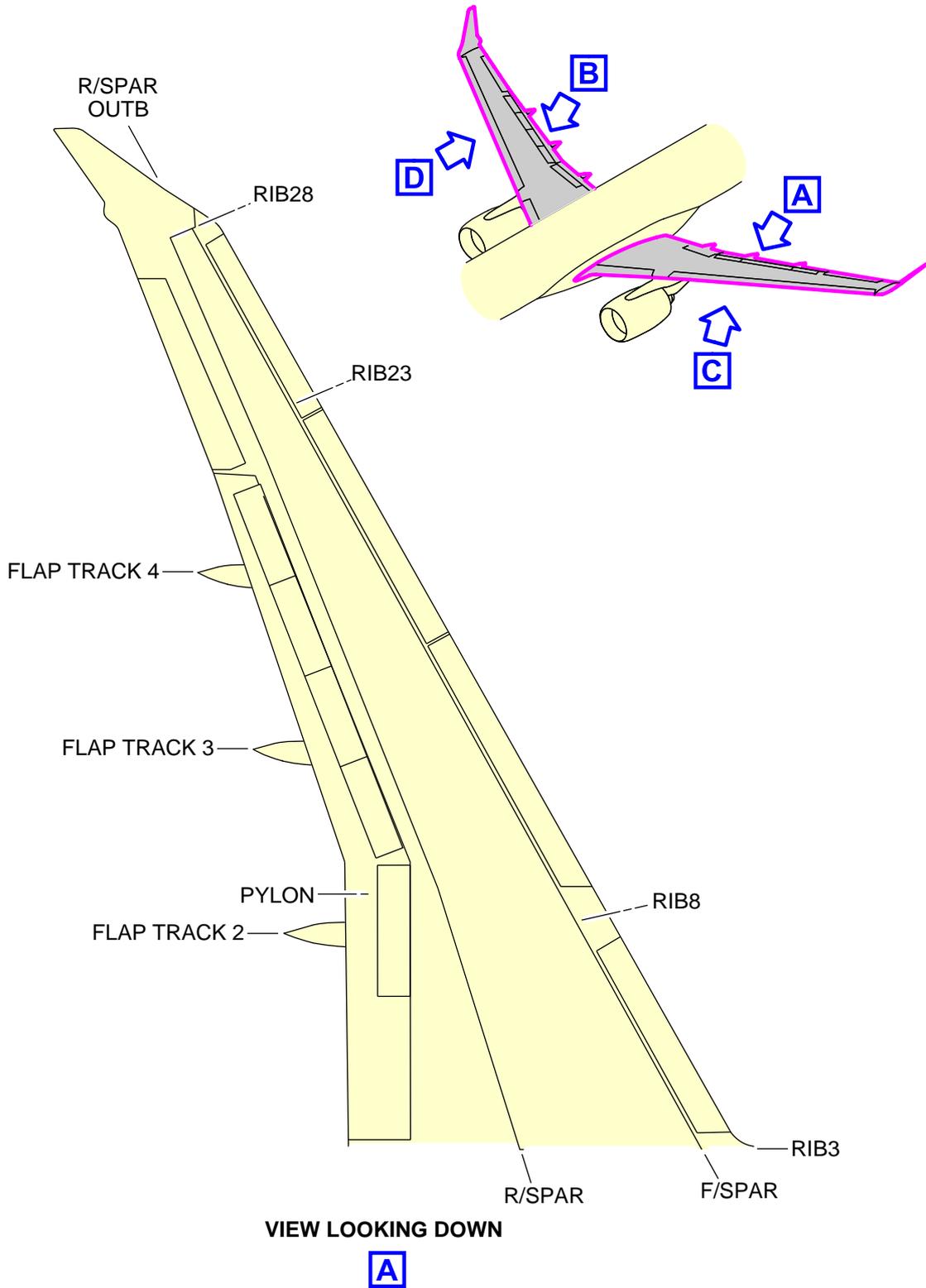
Data Module/Technical Publication	Title
None	

Description

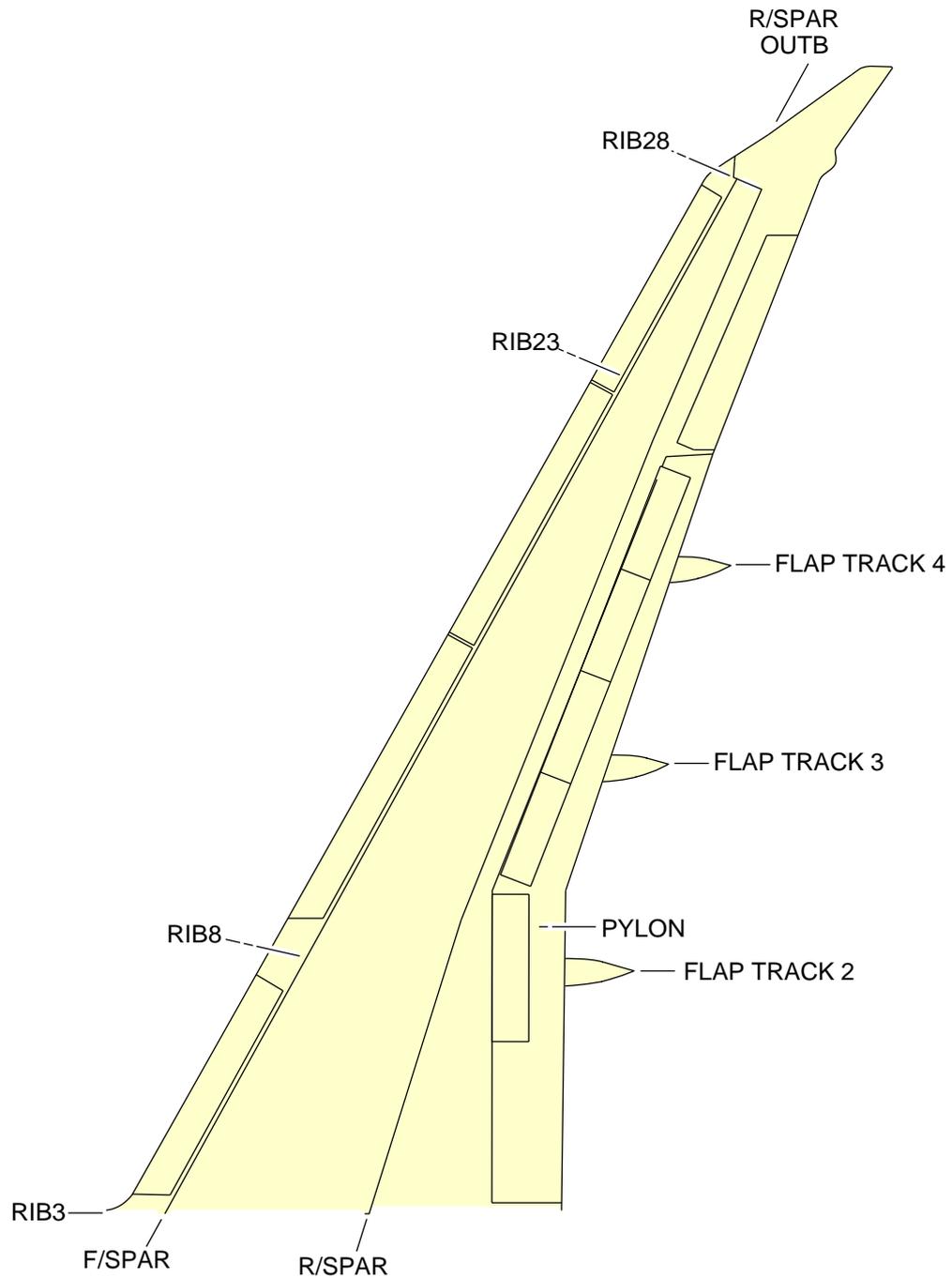
1 Introduction

The Wing Station (WS) are reference planes found at right angles to the wing center line. The primary WS datum line (WS0.00) is 630.51 in. inboard of the wingtip (WS630.51) (Refer to Fig. 1).

This publication has been superseded by the Aircraft Characteristics Publication (ACP).



ICN-BD500-A-J062004-A-3AB48-76850-A-001-01
Figure 1 Wing stations - (Sheet 1 of 5)

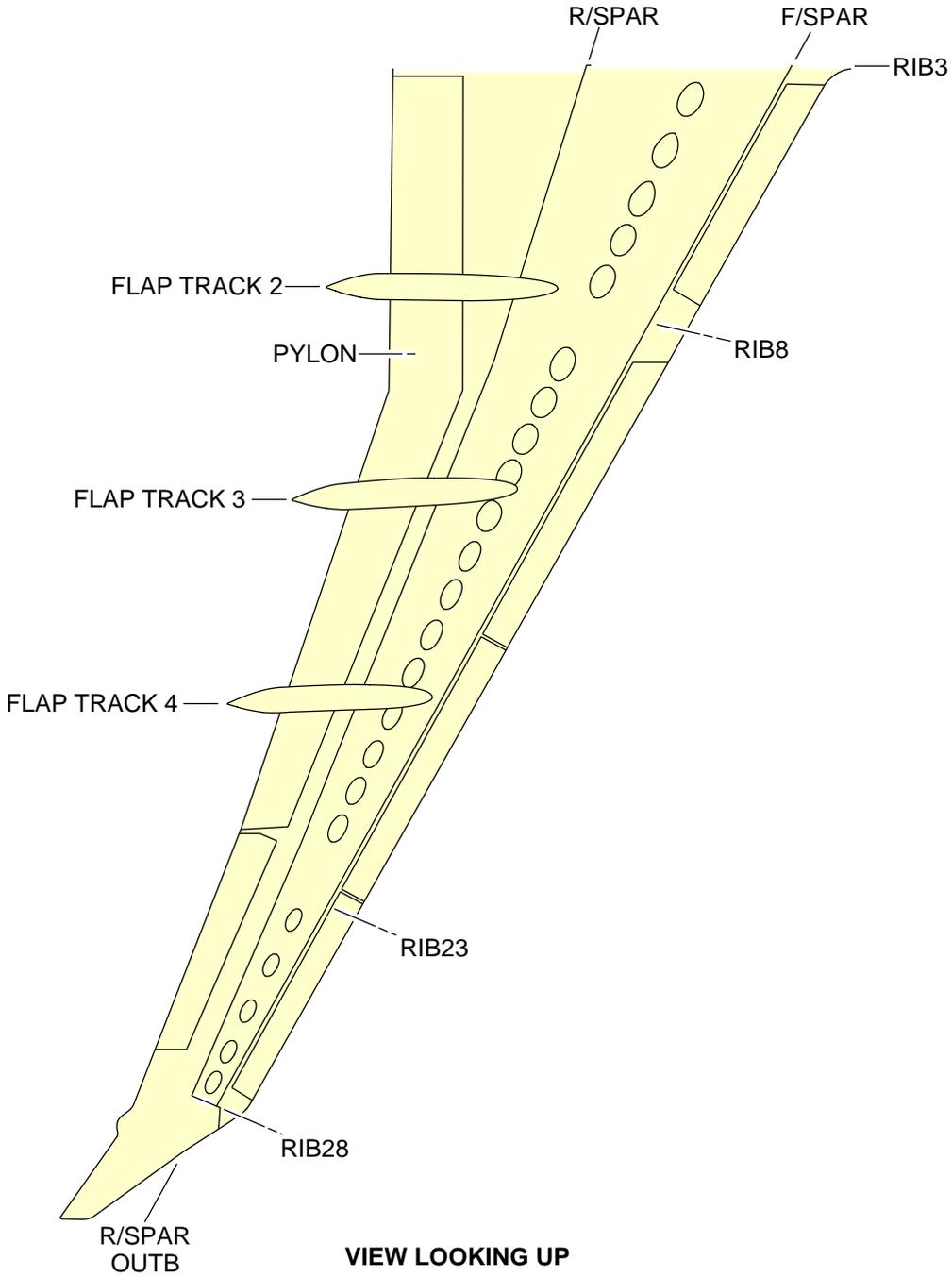


VIEW LOOKING DOWN

B

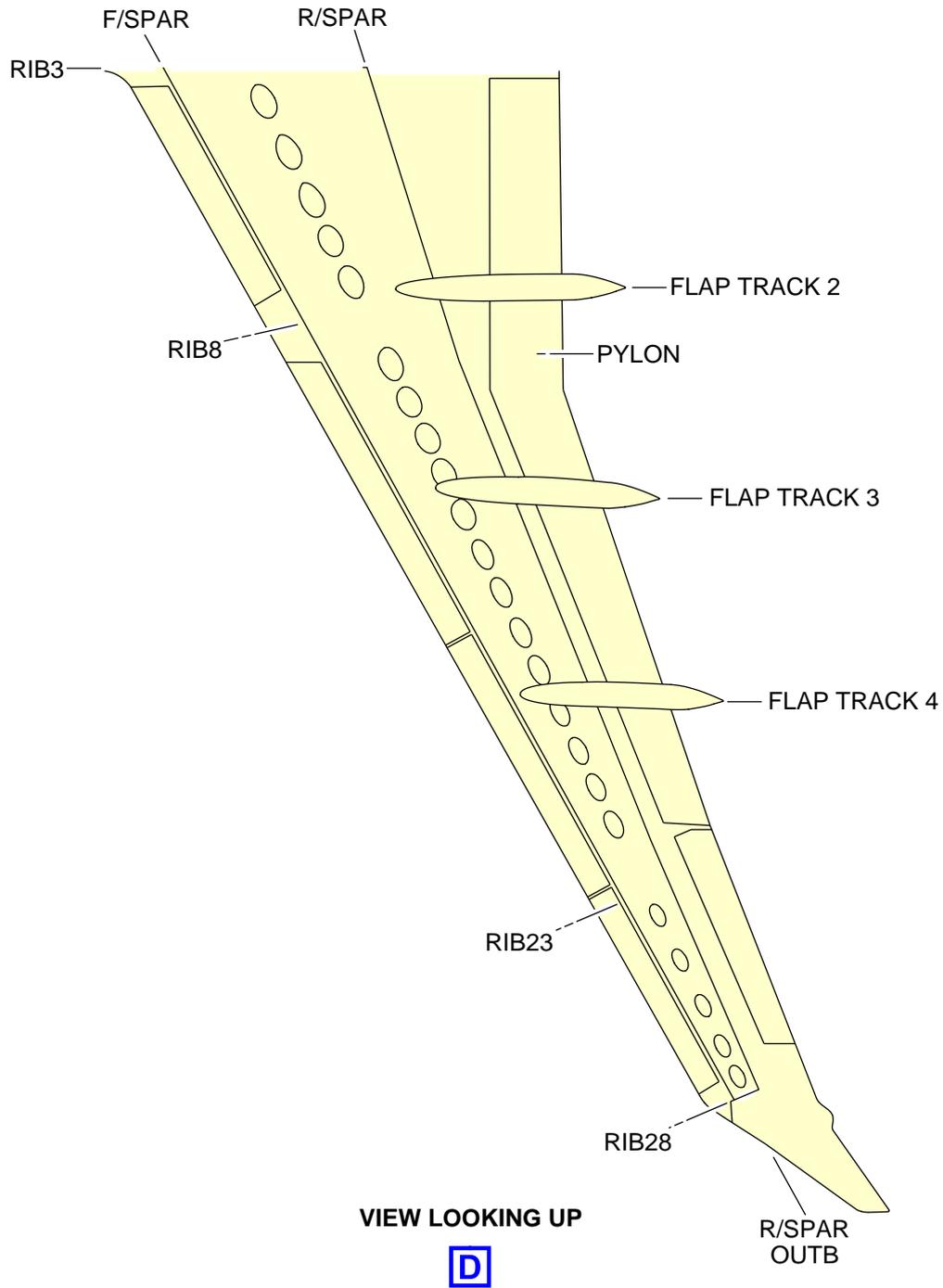
ICN-BD500-A-J062004-A-3AB48-76852-A-002-01

Figure 1 Wing stations - (Sheet 2 of 5)

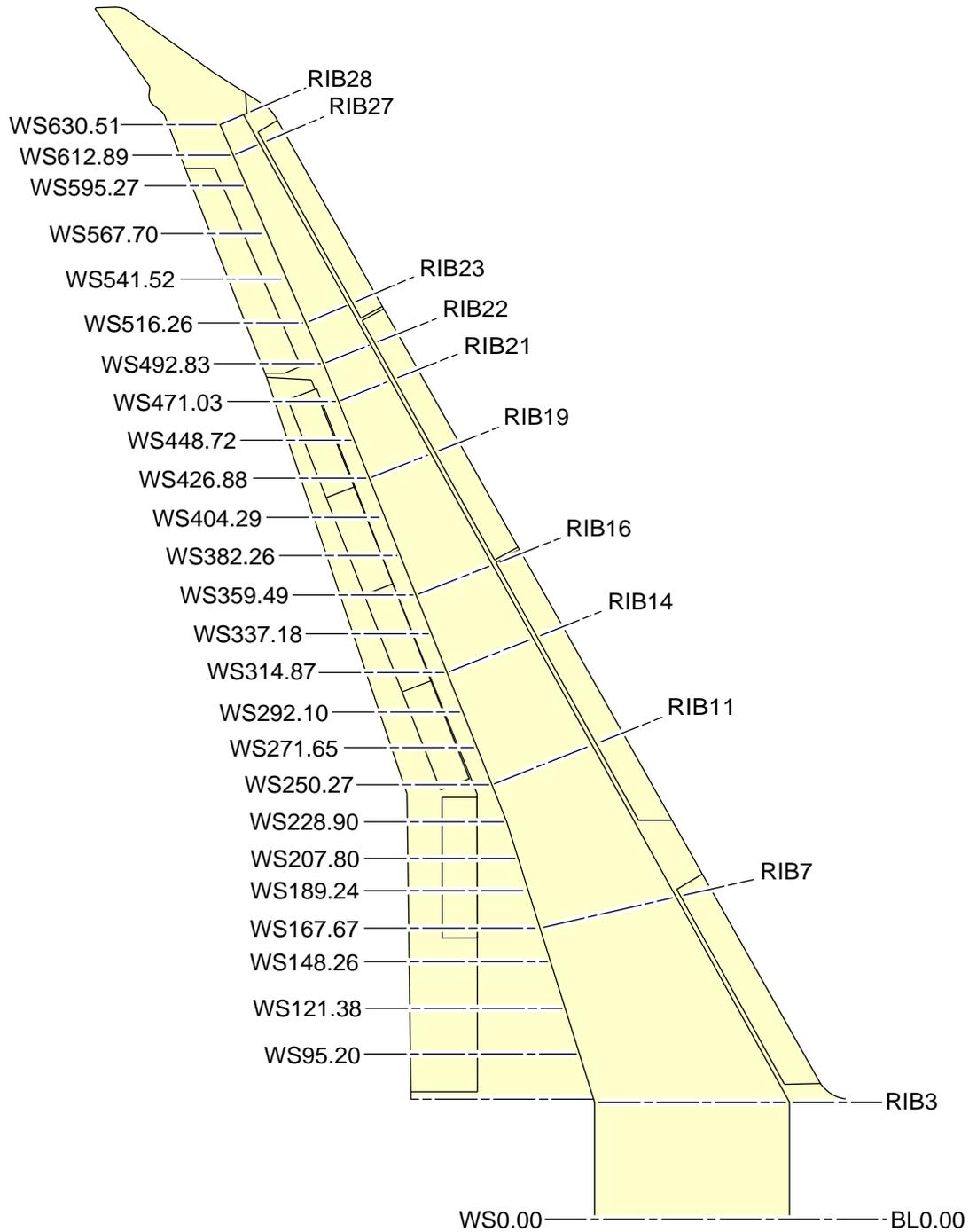


ICN-BD500-A-J062004-A-3AB48-76851-A-002-01

Figure 1 Wing stations - (Sheet 3 of 5)



ICN-BD500-A-J062004-A-3AB48-76853-A-001-01
Figure 1 Wing stations - (Sheet 4 of 5)



ICN-BD500-A-J062004-A-3AB48-01100-A-001-01
Figure 1 Wing stations - (Sheet 5 of 5)

Weights and center of gravity limits - Technical data

Applicability: 50001-54999, 55001-59999

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2 A220-300 Longitudinal center of gravity envelope.....	8

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Structural design weights

The structural design weights for the aircraft are as listed in Table 2 . It should be noted that these design weights are independent of the selected aircraft operational weights. Increased operational weights are available as optional increments up to the structural design weights.

Table 2 Aircraft design weights

	A220-100 (lb.)	A220-100 (kg)	A220-300 (lb.)	A220-300 (kg)
Maximum Zero Fuel Weight (MZFW)	111,000	50 349	123,000	55 792
Maximum Landing Weight (MLW)	115,500	52 390	129,500	58 740
Maximum Take Off Weight (MTOW)	134,000	60 781	149,000	67 585

See applicability on the first page of the DM
BD500-A-J08-41-00-00AAA-030A-A

BD500-A-J08-41-00-00AAA-030A-A

	A220-100 (lb.)	A220-100 (kg)	A220-300 (lb.)	A220-300 (kg)
Maximum Ramp Weight (MRW)	135,000	61 235	150,000	68 039

2 Longitudinal center of gravity envelope

The envelope shows the weight and Center of Gravity (CG) for takeoff, flight and landing.

To use the longitudinal CG envelope Fig. 1 , refer to Table 3 and Table 4 for aircraft model BD-500-1A10 (A220-100) and Fig. 2 , refer to Table 5 and Table 6 for the aircraft model BD-500-1A11 (A220-300).

Table 3 FS to % MAC (Imperial units)

FS (in)	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
835	10.7	10.8	10.9	10.9	11.0	11.1	11.2	11.2	11.3	11.4
836	11.4	11.5	11.6	11.6	11.7	11.8	11.8	11.9	12.0	12.0
837	12.1	12.2	12.2	12.3	12.4	12.4	12.5	12.6	12.6	12.7
838	12.8	12.8	12.9	13.0	13.0	13.1	13.2	13.2	13.3	13.4
839	13.4	13.5	13.6	13.6	13.7	13.8	13.8	13.9	14.0	14.0
840	14.1	14.2	14.2	14.3	14.4	14.4	14.5	14.6	14.6	14.7
841	14.8	14.8	14.9	15.0	15.0	15.1	15.2	15.2	15.3	15.4
842	15.5	15.5	15.6	15.7	15.7	15.8	15.9	15.9	16.0	16.1
843	16.1	16.2	16.3	16.3	16.4	16.5	16.5	16.6	16.7	16.7
844	16.8	16.9	16.9	17.0	17.1	17.1	17.2	17.3	17.3	17.4
845	17.5	17.5	17.6	17.7	17.7	17.8	17.9	17.9	18.0	18.1
846	18.1	18.2	18.3	18.3	18.4	18.5	18.5	18.6	18.7	18.7
847	18.8	18.9	18.9	19.0	19.1	19.1	19.2	19.3	19.3	19.4
848	19.5	19.5	19.6	19.7	19.8	19.8	19.9	20.0	20.0	20.1
849	20.2	20.2	20.3	20.4	20.4	20.5	20.6	20.6	20.7	20.8
850	20.8	20.9	21.0	21.0	21.1	21.2	21.2	21.3	21.4	21.4
851	21.5	21.5	21.5	21.7	21.8	21.8	21.9	22.0	22.0	22.1
852	22.2	22.2	22.3	22.4	22.4	22.5	22.6	22.6	22.7	22.8
853	22.8	22.9	23.0	23.0	23.1	23.2	23.2	23.3	23.4	23.4
854	23.5	23.6	23.6	23.7	23.8	23.8	23.9	24.0	24.0	24.1
855	24.2	24.3	24.3	24.4	24.5	24.5	24.6	24.7	24.7	24.8

FS (in)	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
856	24.9	24.9	25.0	25.1	25.1	25.2	25.3	25.3	25.4	25.5
857	25.5	25.6	25.7	25.7	25.8	25.9	25.9	26.0	26.1	26.1
858	26.2	26.3	26.3	26.4	26.5	26.5	26.6	26.7	26.7	26.8
859	26.9	26.9	27.0	27.1	27.1	27.2	27.3	27.3	27.4	27.5
860	27.5	27.6	27.7	27.7	27.8	27.9	27.9	28.0	28.1	28.1
861	28.2	28.3	28.3	28.4	28.5	28.6	28.6	28.7	28.8	28.8
862	28.9	29.0	29.0	29.1	29.2	29.2	29.3	29.4	29.4	29.5
863	29.6	29.6	29.7	29.8	29.8	29.9	30.0	30.0	30.1	30.2
864	30.2	30.3	30.4	30.4	30.5	30.6	30.6	30.7	30.8	30.8
865	30.9	31.0	31.0	31.1	31.2	31.2	31.3	31.4	31.4	31.5
866	31.6	31.6	31.7	31.8	31.8	31.9	32.0	32.0	32.1	32.2
867	32.2	32.3	32.4	32.4	32.5	32.6	32.6	32.7	32.8	32.8
868	32.9	33.0	33.1	33.1	33.2	33.3	33.3	33.4	33.5	33.5
869	33.6	33.7	33.7	33.8	33.9	33.9	34.0	34.1	34.1	34.2
870	34.3	34.3	34.4	34.5	34.5	34.6	34.7	34.7	34.8	34.9
871	34.9	35.0	35.1	35.1	35.2	35.3	35.3	35.4	35.5	35.5
872	35.6	35.7	35.7	35.8	35.9	35.9	36.0	36.1	36.1	36.2
873	36.3	36.3	36.4	36.5	36.5	36.6	36.7	36.7	36.8	36.9
874	36.9	37.0	37.1	37.1	37.2	37.3	37.4	37.4	37.5	37.6
875	37.6	37.7	37.8	37.8	37.9	38.0	38.0	38.1	38.2	38.2
876	38.3	38.4	38.4	38.5	38.6	38.6	38.7	38.8	38.8	38.9

Example: FS 850.4 in = 21.1 % MAC

Table 4 FS to % MAC (SI units)

FS (m)	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
21.2	10.5	10.8	11.0	11.3	11.6	11.8	12.1	12.4	12.6	12.9
21.3	13.2	13.4	13.7	13.9	14.2	14.5	14.7	15.0	15.3	15.5
21.4	15.8	16.1	16.3	16.6	16.9	17.1	17.4	17.7	17.9	18.2
21.5	18.4	18.7	19.0	19.2	19.5	19.8	20.0	20.3	20.6	20.8

FS (m)	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
21.5	21.1	21.4	21.5	21.9	22.1	22.4	22.7	22.9	23.2	23.5
21.7	23.7	24.0	24.3	24.5	24.8	25.1	25.3	25.6	25.9	26.1
21.8	26.4	26.6	26.9	27.2	27.4	27.7	28.0	28.2	28.5	28.8
21.9	29.0	29.3	29.6	29.8	30.1	30.3	30.6	30.9	31.1	31.4
22.0	31.7	31.9	32.2	32.5	32.7	33.0	33.3	33.5	33.8	34.0
22.1	34.3	34.6	34.8	35.1	35.4	35.6	35.9	36.2	36.4	36.7
22.2	37.0	37.2	37.5	37.8	38.0	38.3	38.5	38.8	39.1	39.3
22.3	39.6	39.9	40.1	40.4	40.7	40.9	41.2	41.5	41.7	42.0

Example: FS 21.93 m = 29.8 % MAC

Table 5 FS to %MAC (Imperial units)

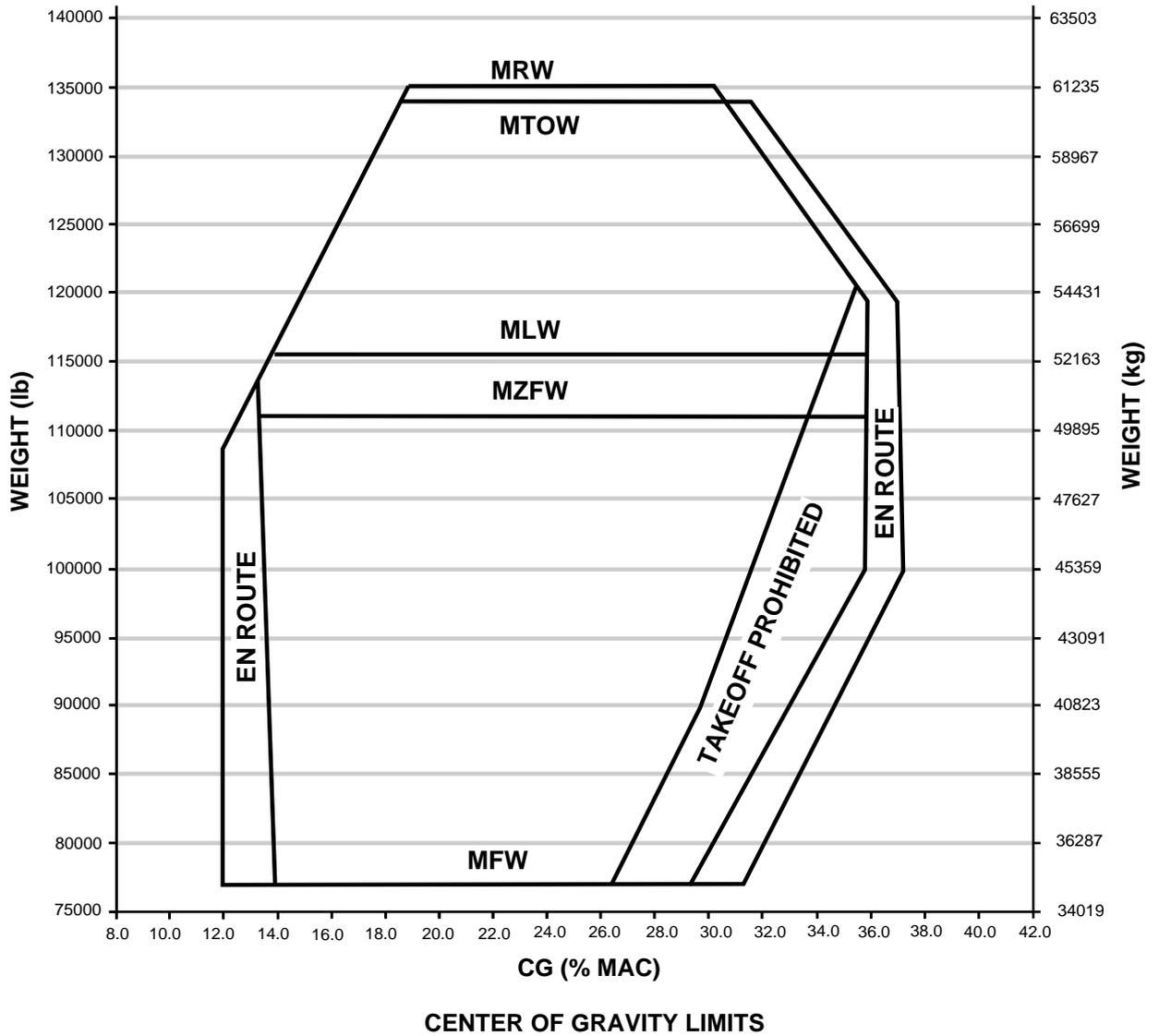
FS (in.)	0.0	.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
835	10.7	10.8	10.9	10.9	11.0	11.1	11.2	11.2	11.3	11.4
836	11.4	11.5	11.6	11.6	11.7	11.8	11.8	11.9	12.0	12.0
837	12.1	12.2	12.2	12.3	12.4	12.4	12.5	12.6	12.6	12.7
838	12.8	12.8	12.9	13.0	13.0	13.1	13.2	13.2	13.3	13.4
839	13.4	13.5	13.6	13.6	13.7	13.8	13.8	13.9	14.0	14.0
840	14.1	14.2	14.2	14.3	14.4	14.4	14.5	14.6	14.6	14.7
841	14.8	14.8	14.9	15.0	15.0	15.1	15.2	15.2	15.3	15.4
842	15.5	15.5	15.6	15.7	15.7	15.8	15.9	15.9	16.0	16.1
843	16.1	16.2	16.3	16.3	16.4	16.5	16.5	16.6	16.7	16.7
844	16.8	16.9	16.9	17.0	17.1	17.1	17.2	17.3	17.3	17.4
845	17.5	17.5	17.6	17.7	17.7	17.8	17.9	17.9	18.0	18.1
846	18.1	18.2	18.3	18.3	18.4	18.5	18.5	18.6	18.7	18.7
847	18.8	18.9	18.9	19.0	19.1	19.1	19.2	19.3	19.3	19.4
848	19.5	19.5	19.6	19.7	19.8	19.8	19.9	20.0	20.0	20.1
849	20.2	20.2	20.3	20.4	20.4	20.5	20.6	20.6	20.7	20.8
850	20.8	20.9	21.0	21.0	21.1	21.2	21.2	21.3	21.4	21.4
851	21.5	21.5	21.5	21.7	21.8	21.8	21.9	22.0	22.0	22.1

FS (in.)	0.0	.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
852	22.2	22.2	22.3	22.4	22.4	22.5	22.6	22.6	22.7	22.8
853	22.8	22.9	23.0	23.0	23.1	23.2	23.2	23.3	23.4	23.4
854	23.5	23.6	23.6	23.7	23.8	23.8	23.9	24.0	24.0	24.1
855	24.2	24.3	24.3	24.4	24.5	24.5	24.6	24.7	24.7	24.8
856	24.9	24.9	25.0	25.1	25.1	25.2	25.3	25.3	25.4	25.5
857	25.5	25.6	25.7	25.7	25.8	25.9	25.9	26.0	26.1	26.1
858	26.2	26.3	26.3	26.4	26.5	26.5	26.6	26.7	26.7	26.8
859	26.9	26.9	27.0	27.1	27.1	27.2	27.3	27.3	27.4	27.5
860	27.5	27.6	27.7	27.7	27.8	27.9	27.9	28.0	28.1	28.1
861	28.2	28.3	28.3	28.4	28.5	28.6	28.6	28.7	28.8	28.8
862	28.9	29.0	29.0	29.1	29.2	29.2	29.3	29.4	29.4	29.5
863	29.6	29.6	29.7	29.8	29.8	29.9	30.0	30.0	30.1	30.2
864	30.2	30.3	30.4	30.4	30.5	30.6	30.6	30.7	30.8	30.8
865	30.9	31.0	31.0	31.1	31.2	31.2	31.3	31.4	31.4	31.5
866	31.6	31.6	31.7	31.8	31.8	31.9	32.0	32.0	32.1	32.2
867	32.2	32.3	32.4	32.4	32.5	32.6	32.6	32.7	32.8	32.8
868	32.9	33.0	33.1	33.1	33.2	33.3	33.3	33.4	33.5	33.5
869	33.6	33.7	33.7	33.8	33.9	33.9	34.0	34.1	34.1	34.2
870	34.3	34.3	34.4	34.5	34.5	34.6	34.7	34.7	34.8	34.9
871	34.9	35.0	35.1	35.1	35.2	35.3	35.3	35.4	35.5	35.5
872	35.6	35.7	35.7	35.8	35.9	35.9	36.0	36.1	36.1	36.2
873	36.3	36.3	36.4	36.5	36.5	36.6	36.7	36.7	36.8	36.9
874	36.9	37.0	37.1	37.1	37.2	37.3	37.4	37.4	37.5	37.6
875	37.6	37.7	37.8	37.8	37.9	38.0	38.0	38.1	38.2	38.2
876	38.3	38.4	38.4	38.5	38.6	38.6	38.7	38.8	38.8	38.9
Example: FS850.4 in. = 21.1 %MAC										

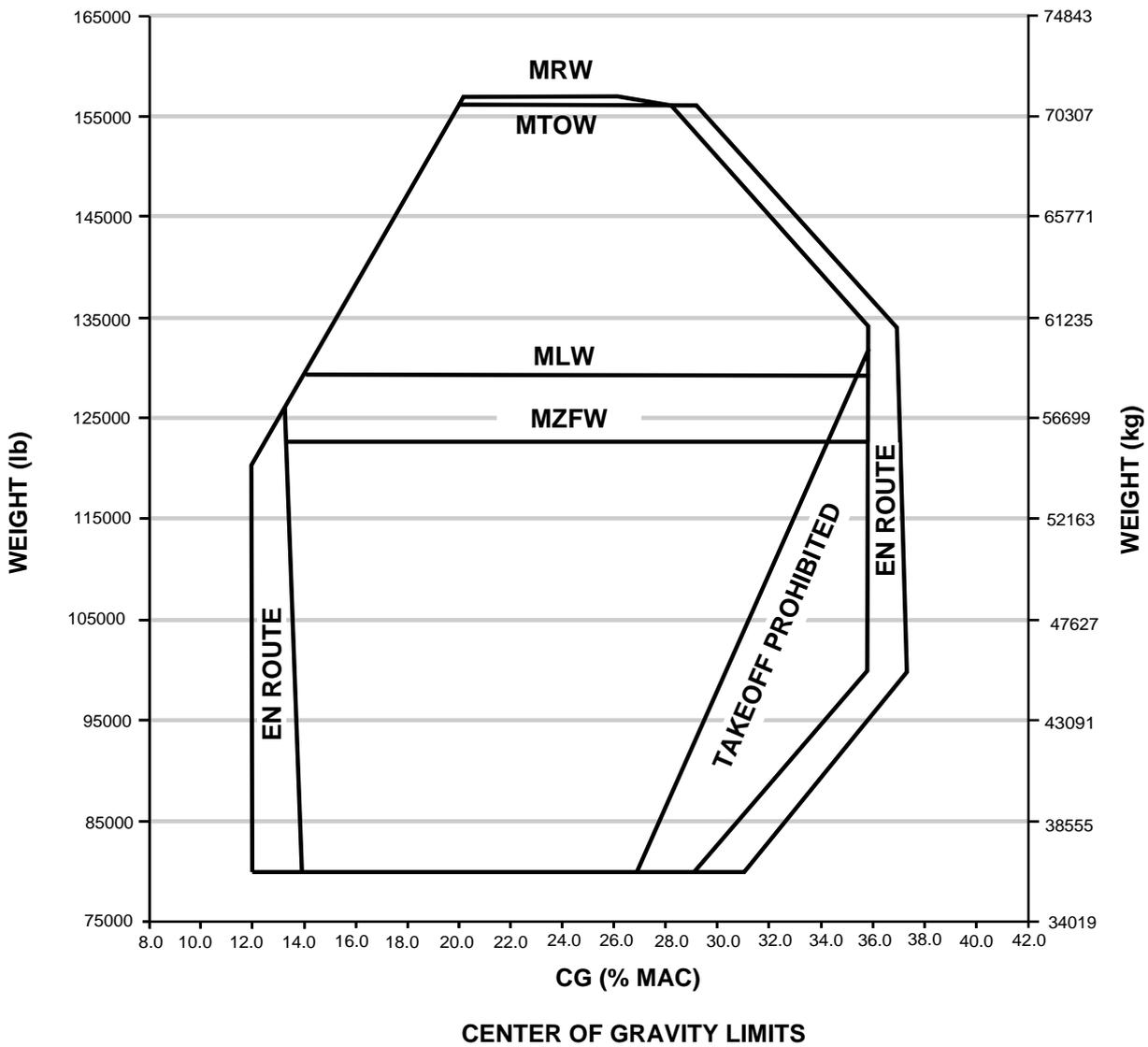
Table 6 FS to %MAC (SI units)

FS (m)	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
21.2	10.5	10.8	11.0	11.3	11.6	11.8	12.1	12.4	12.6	12.9
21.3	13.2	13.4	13.7	13.9	14.2	14.5	14.7	15.0	15.3	15.5
21.4	15.8	16.1	16.3	16.6	16.9	17.1	17.4	17.7	17.9	18.2
21.5	18.4	18.7	19.0	19.2	19.5	19.8	20.0	20.3	20.6	20.8
21.5	21.1	21.4	21.5	21.9	22.1	22.4	22.7	22.9	23.2	23.5
21.7	23.7	24.0	24.3	24.5	24.8	25.1	25.3	25.6	25.9	26.1
21.8	26.4	26.6	26.9	27.2	27.4	27.7	28.0	28.2	28.5	28.8
21.9	29.0	29.3	29.6	29.8	30.1	30.3	30.6	30.9	31.1	31.4
22.0	31.7	31.9	32.2	32.5	32.7	33.0	33.3	33.5	33.8	34.0
22.1	34.3	34.6	34.8	35.1	35.4	35.6	35.9	36.2	36.4	36.7
22.2	37.0	37.2	37.5	37.8	38.0	38.3	38.5	38.8	39.1	39.3
22.3	39.6	39.9	40.1	40.4	40.7	40.9	41.2	41.5	41.7	42.0
Example: FS21.93 m = 29.8 %MAC										

This publication has been superseded by the Aircraft Characteristics Publication (ACP).



ICN-BD500-A-J083000-A-3AB48-00928-A-006-01
 Figure 1 Longitudinal center of gravity envelope



ICN-BD500-A-J084103-C-3AB48-58006-A-002-01
 Figure 2 A220-300 Longitudinal center of gravity envelope

Emergency exits and evacuation - Technical data

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 General

This section contains general data about the BD-500-1A10 (A220-100) and BD-500-1A11 (A220-300) aircraft emergency exits and evacuation procedures.

1.1 Emergency exits and evacuation

The emergency exits give the passengers and crew more exits which let them go out of the aircraft more quickly during an emergency. Seven exits are available if an emergency occurs, as follows

- Two passenger doors (front and aft, left side of the aircraft);
- Two service doors (front and aft, right side of the aircraft);
- Two Overwing Emergency Exit Door (OWEED) (one in each side of the aircraft);
- One Flight Crew Emergency Escape (FCEE) door (flight compartment).

Refer to Fig. 1 .

1.1.1 Passenger doors

Two semi-plug type doors on the left side of the aircraft give access to the passengers and the crew. Door 1L is the primary entrance while door 2L gives a secondary entrance available for passenger and ground servicing.

Each door is classified as a type C floor level exit. Because of the sill height, each door has an emergency evacuation slide system. The door moves out from the closed position, supported by a hinged arm to stay in the open position.

The door can be operated externally or internally and has an inspection window to let the crew examine the external condition. The external handle is connected to a vent flap system to equalize the pressure between the aircraft and the ambient air.

Door opening procedure (from the external side):

Note

Before you open the doors, make sure that you fully release the pressure from the aircraft. The CABIN PRESSURE warning light panel is installed in the door window.

- 1 Push the flap (Fig. 1) to hold the external handle (Fig. 1).
- 2 Pull the external handle (Fig. 1) up to lift the door.
- 3 Pull the door outwards in forward direction.
- 4 Make sure that the hold open mechanism locks the door in the open position.

1.1.2 Service doors

Two semi-plug type doors on the right side of the aircraft give access to the forward and aft galley servicing area.

Each door is classified as a type C floor level exit. Because of the sill height, each door has an emergency evacuation slide system. The door moves out from the closed position, supported by a hinged arm to stay in the open position.

The door can be operated externally or internally and has an inspection window to let the crew examine the external condition. The external handle is connected to a vent flap system to equalize the pressure between the aircraft and the ambient air.

Door opening procedure (from the external side):

Note

Before you open the doors, make sure that you fully release the pressure from the aircraft. The CABIN PRESSURE warning light panel is installed in the door window.

- 1 Push the flap (Fig. 1) to hold the external handle (Fig. 1).
- 2 Pull the external handle (Fig. 1) up to open the door.
- 3 Pull the door outwards in forward direction.
- 4 Make sure that the hold open mechanism locks the door in the open position.

1.1.3 Overwing Emergency Exit Door (OWEED)

The OWEED are type III semi-plug type doors.

The exits are provided with an operating handle with removable cover and are fitted with a standard sized passenger compartment window. Each door is fully lined and insulated to meet thermal and noise performance requirements.

The door opens out and up from the closed position, supported by a hinged arm to stay in the open position. An actuator automatically helps the door opening sequence.

For emergency access to the passenger compartment, the doors can be opened from the external side. Escape ropes are available to help the evacuation.

Because of the height from the ground, an emergency evacuation slide system is given.

Note

The evacuation slide system is automatically operated when the OWEED is opened from the external side. Remove all equipment and personnel from the area where the emergency evacuation slide will be open.

OWEED opening procedure (from the external side):

- 1 Push the flap (Fig. 1) to hold the external handle (Fig. 1).
- 2 Pull the external handle (Fig. 1) up to open the door.
- 3 Pull the door outwards.
- 4 Make sure that the hold open mechanism locks the door in the open position.

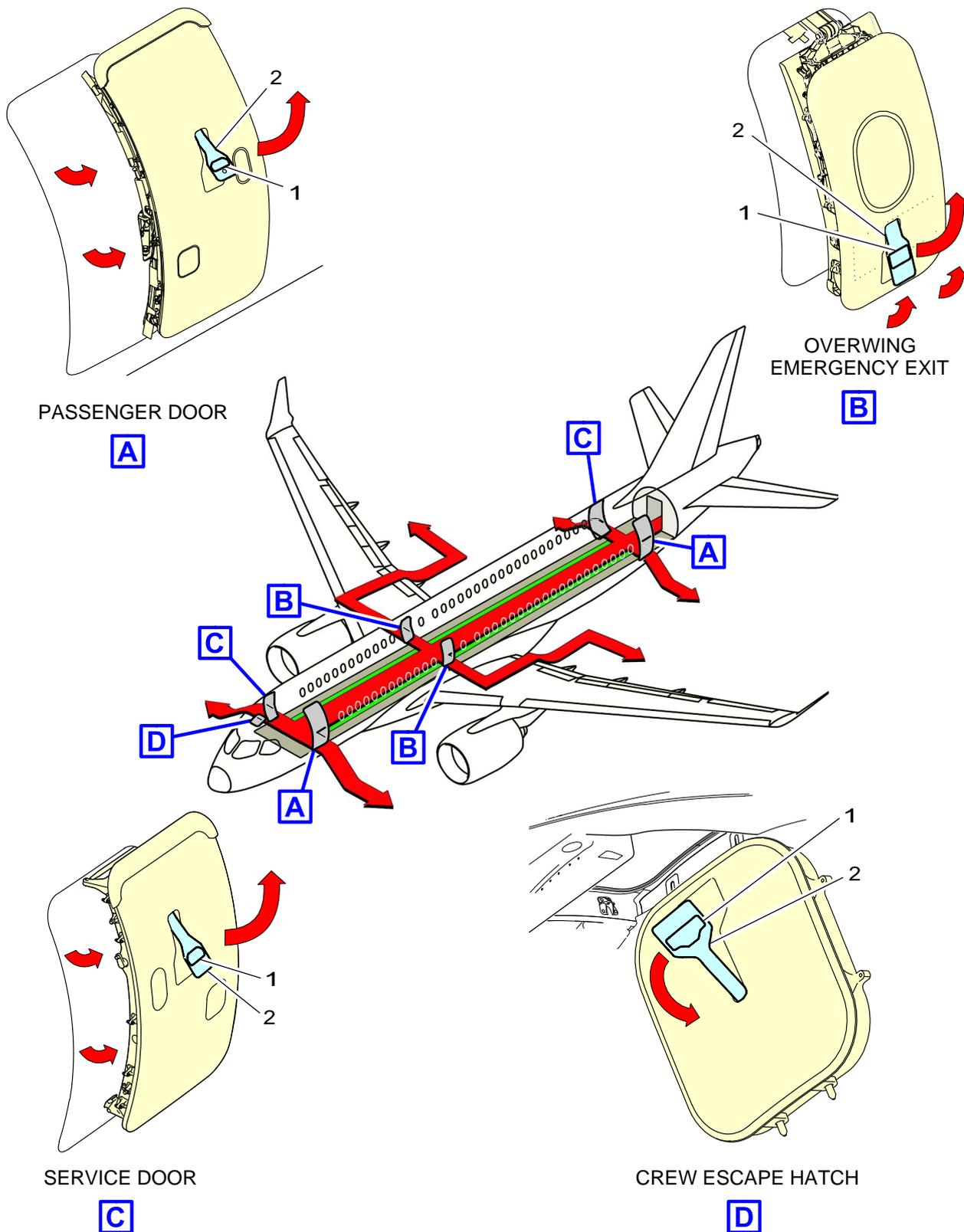
1.1.4 Flight Crew Emergency Escape (FCEE) door

The FCEE door is on the fuselage centerline at the top of the fuselage, forward of the flight compartment bulkhead. It is a plug type door that has two hook type hinges on the aft edge.

The FCEE door opens in and can be removed from its hinges when it is fully open. The door can be operated externally or internally through its inner and outer handles.. A escape rope is available in the area to help the evacuation.

FCEE door opening procedure (from the external side):

- 1 Push the flap (Fig. 1) to hold the external handle (Fig. 1).
- 2 Pull the external handle (Fig. 1) up to open the door.
- 3 Push the door in.



ICN-BD500-A-J154100-A-3AB48-24914-A-001-01

Figure 1 Emergency exits and evacuation

Emergency equipment location - General data

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 General

1.1 Emergency equipment

- The emergency equipment installed in the aircraft is for the safety of the passengers and the crew. The emergency equipment is made of components for use in emergencies such as crashes and fires.
- The components of the emergency equipment include as follows:
 - Halon fire extinguishers (one in the flight compartment and four in the passenger compartment).

Applicability: 50020-50061, 50063-50065, 55067, 55076, 55078-55079, 55082-55083, 55088, 55090, 55092-55093, 55097-55098, 55100, 55102-55103, 55105, 55109, 55111-55112, 55117-55119, 55122-55123, 55138, 55147, 55152, 55161, 55166, 55169, 55179, 55190, 55205, 55306

- Protective Breathing Equipment (PBE) (one in the flight compartment and three in the passenger compartment).

Applicability: 50010-50018, 55003-55016, 55020-55021, 55023, 55025, 55027, 55029-55030, 55032-55034, 55036, 55038-55048, 55050-55066, 55068, 55071-55074, 55077, 55081, 55086-55087, 55091, 55094, 55110

- PBE (one in the flight compartment and four in the passenger compartment).

Applicability: 55017-55019, 55022, 55024, 55026, 55028, 55031, 55035, 55037, 55049

- PBE (one in the flight compartment and five in the passenger compartment).

- Crash axe (one in the flight compartment).

Applicability: 55067, 55076, 55078-55079, 55082-55083, 55088, 55090, 55092-55093, 55097-55098, 55100, 55102-55103, 55105, 55109, 55111-55112, 55117-55119, 55122-55123, 55138, 55147, 55152, 55161, 55166, 55169, 55179, 55190, 55205, 55306

- Life vests for the crew (three in the flight compartment and three in the passenger compartment).

Applicability: 50010-50018, 50020-50061, 50063-50065, 55003-55016, 55020-55021, 55023, 55025, 55027, 55029-55030, 55032-55034, 55036, 55038-55048, 55050-55066, 55068, 55071-55074, 55077, 55081, 55086-55087, 55091, 55094, 55110

- Life vests for the crew (three in the flight compartment and four in the passenger compartment).

Applicability: 55017-55019, 55022, 55024, 55026, 55028, 55031, 55035, 55037, 55049

- Life vests for the crew (three in the flight compartment and five in the passenger compartment).

Applicability: 55067, 55076, 55078-55079, 55082-55083, 55088, 55090, 55092-55093, 55097-55098, 55100, 55102-55103, 55105, 55109, 55111-55112, 55117-55119, 55122-55123, 55138, 55147, 55152, 55161, 55166, 55169, 55179, 55190, 55205, 55306

- Flashlights (two in the flight compartment and three in the passenger compartment).

Applicability: 50010-50018, 50020-50061, 50063-50065, 55003-55016, 55020-55021, 55023, 55025, 55027, 55029-55030, 55032-55034, 55036, 55038-55048, 55050-55066, 55068, 55071-55074, 55077, 55081, 55086-55087, 55091, 55094, 55110

- Flashlights (two in the flight compartment and four in the passenger compartment).

Applicability: 55017-55019, 55022, 55024, 55026, 55028, 55031, 55035, 55037, 55049

- Flashlights (two in the flight compartment and five in the passenger compartment).

Applicability: 55047-55048

- Crew/Therapeutic and portable oxygen cylinders for crew (three in the passenger compartment).

Applicability: 50020-50061, 50063-50065, 55056-55063, 55065-55068, 55072-55074, 55076-55079, 55081-55083, 55087-55088, 55090-55093, 55097-55098, 55100, 55102-55103, 55105, 55109, 55111-55112, 55117-55119, 55122-55123, 55138, 55147, 55152, 55161, 55166, 55169, 55179, 55190, 55205, 55306

- Crew/Therapeutic and portable oxygen cylinders for crew (four in the passenger compartment).

Applicability: 55003-55009, 55016-55019, 55022, 55024, 55026, 55028, 55031, 55034-55035, 55037-55039, 55041-55043, 55049-55055, 55064, 55071, 55086, 55094

- Crew/Therapeutic and portable oxygen cylinders for crew (six in the passenger compartment).

Applicability: 50010-50018, 55010-55015, 55020-55021, 55023, 55025, 55027, 55029-55030, 55032-55033, 55036, 55040, 55044-55046, 55110

- Crew/Therapeutic and portable oxygen cylinders for crew (seven in the passenger compartment).

- Two oxygen masks per cylinder.

Applicability: 55017-55019, 55022, 55024, 55026, 55028, 55031, 55035, 55037, 55049

- First aid kit (three in the passenger compartment).

Applicability: 50010-50018, 50020-50061, 50063-50065, 55003-55016, 55020-55021, 55023, 55025, 55027, 55029-55030, 55032-55034, 55036, 55038-55048, 55050-55068, 55071-55074, 55076-55079, 55081-55083, 55086-55088, 55090-55094, 55097-55098, 55100, 55102-55103, 55105, 55109-55112, 55117-55119, 55122-55123, 55138, 55147, 55152, 55161, 55166, 55169, 55179, 55190, 55205, 55306

- First aid kit (two in the passenger compartment).

- Megaphones (two in the passenger compartment).

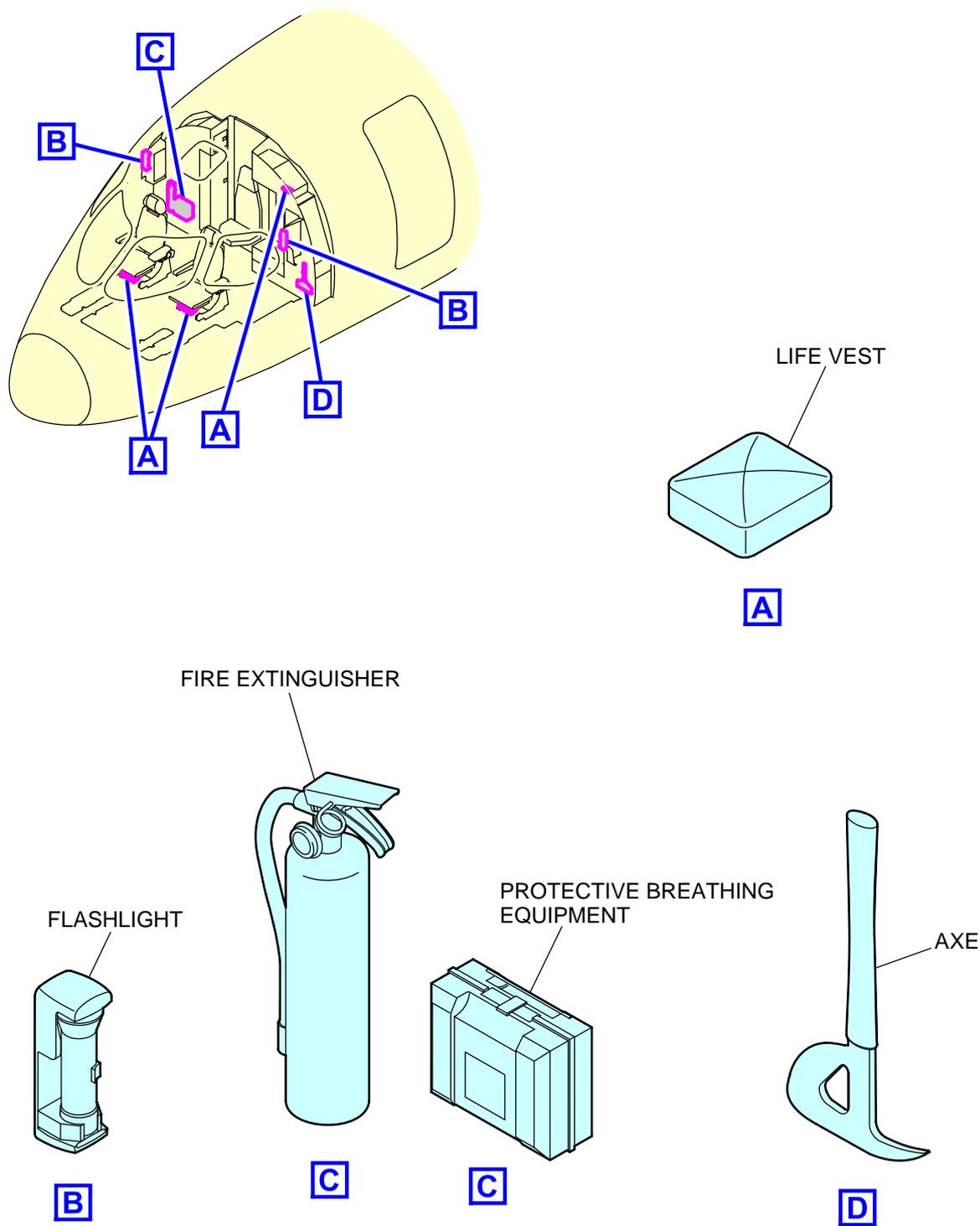
- Emergency Locator Transmitter (ELT).

• The locations of the emergency equipments are inside flight deck, galley, lavatory, forward stowage, forward windscreens, aft windscreens, aft passenger compartment, and emergency doors, are respectively shown in the Fig. 1 and Fig. 2.

• The ELT, ELT antenna and aim 3 are installed in the rear barrel of the aircraft. Refer to Fig. 3.

Note

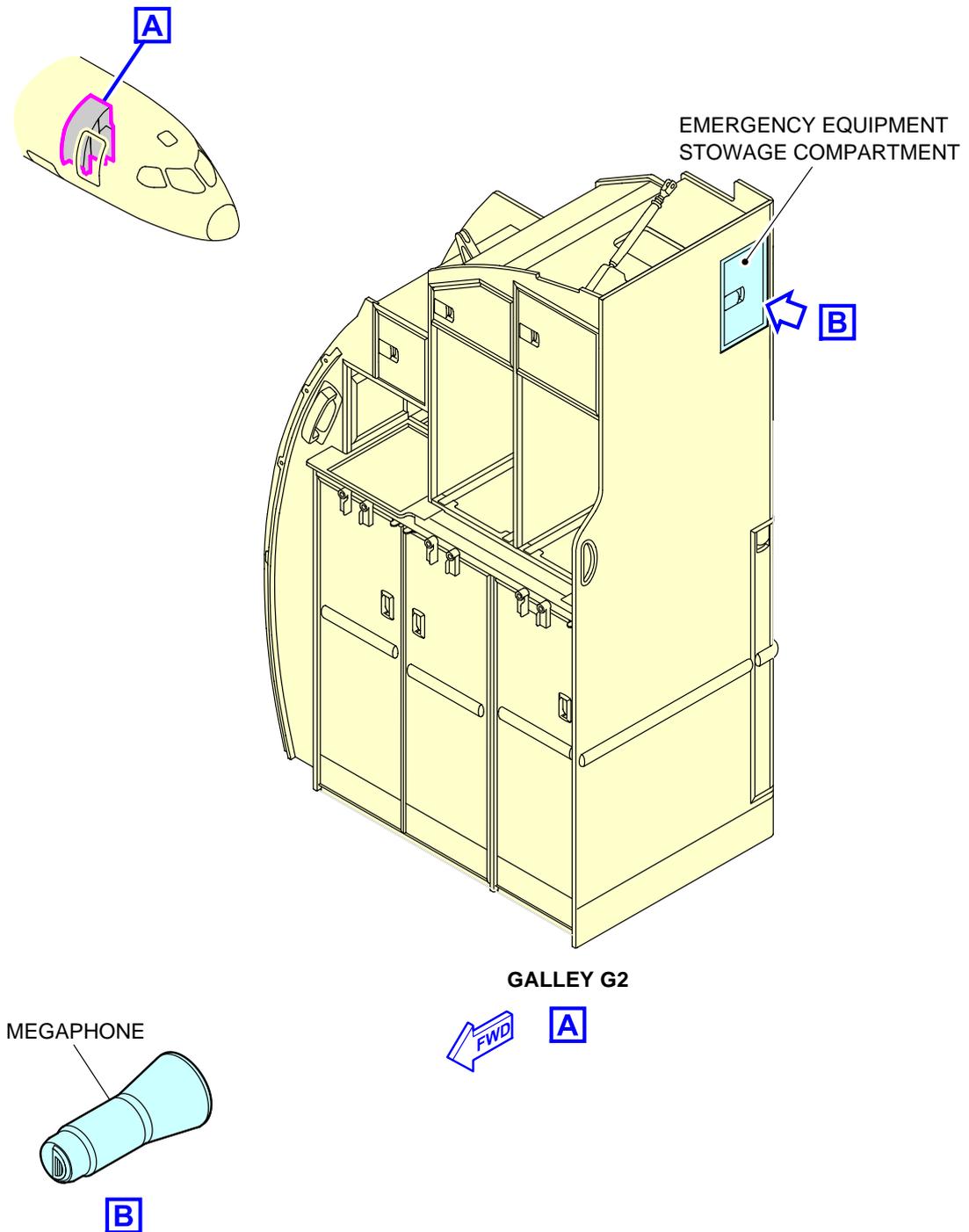
The function of the ELT is to give the aircraft location and make the aircraft search and rescue operations easier.



ICN-BD500-A-J154100-A-3AB48-01118-A-002-01

Figure 1 Flight deck - Emergency equipment

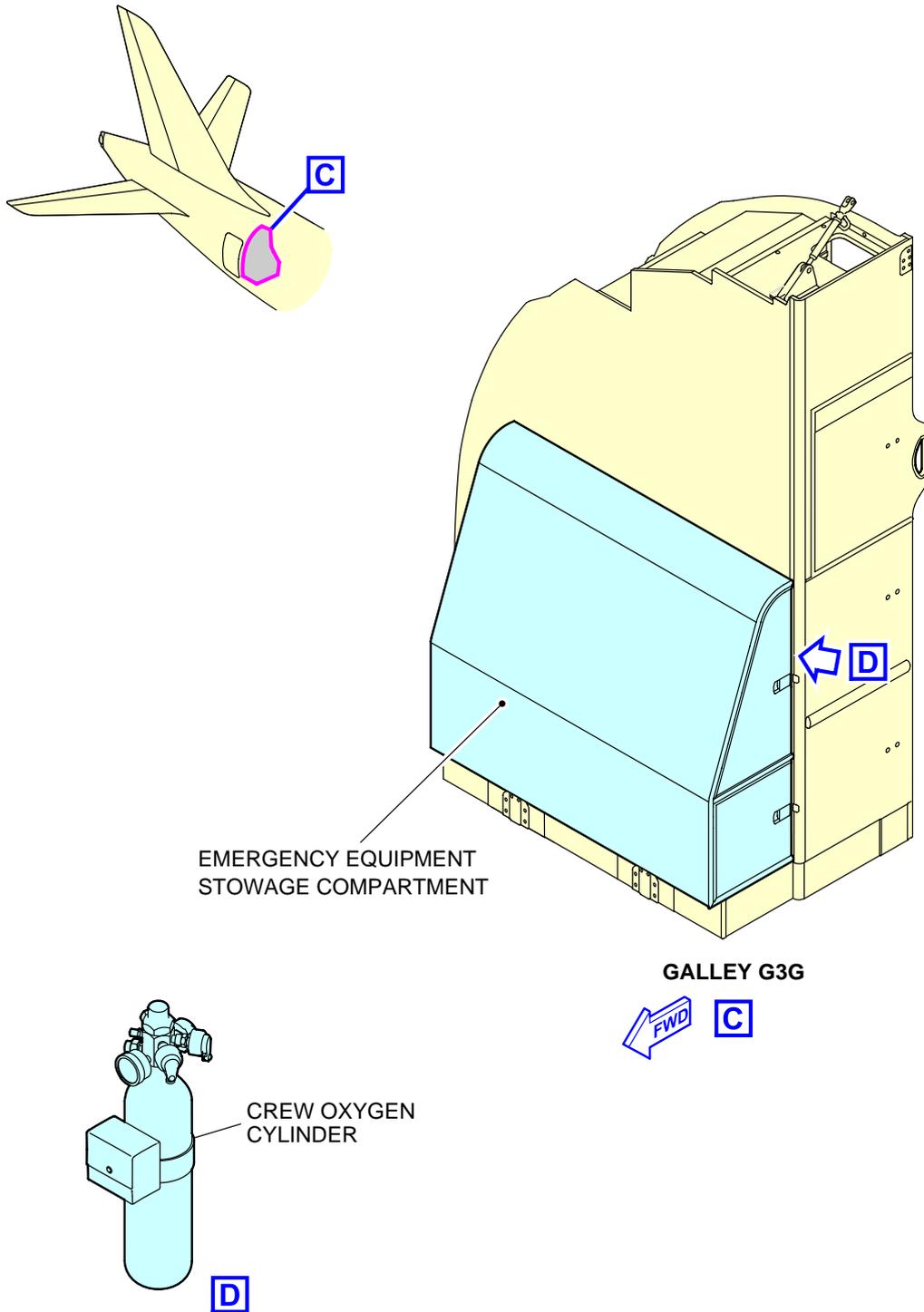
(Sheet) Applicability: 50010-50018, 55010-55015, 55017-55033, 55035-55037, 55040, 55044-55049, 55056-55063, 55065-55066, 55068, 55072-55074, 55077, 55081, 55087, 55091, 55110



ICN-BD500-A-J256100-C-3AB48-60702-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 1 of 25)

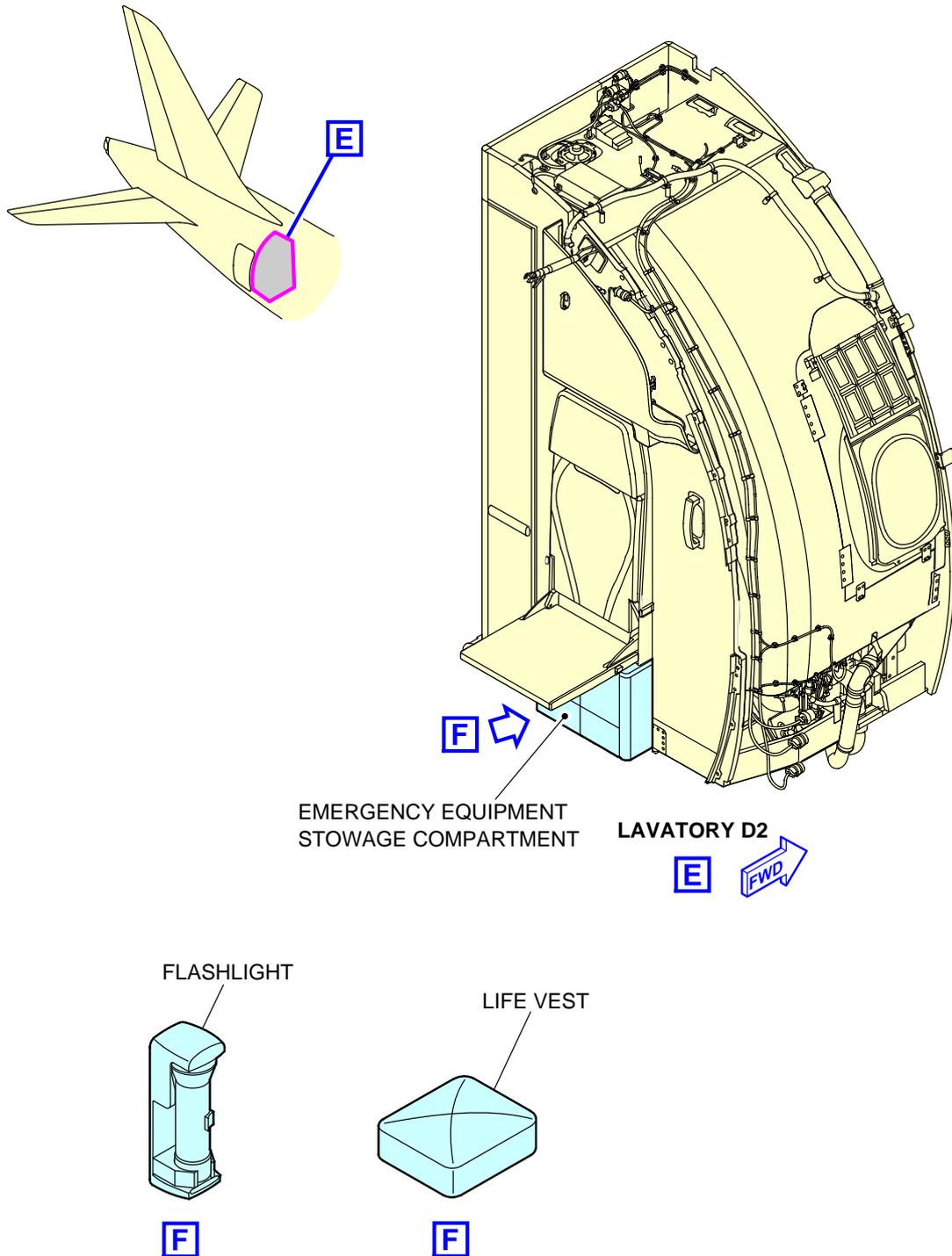
(Sheet) Applicability: 55010-55015, 55020-55021, 55023, 55025, 55027, 55029-55030, 55032-55033, 55036, 55040, 55044-55046, 55110



ICN-BD500-A-J256100-C-3AB48-60703-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 2 of 25)

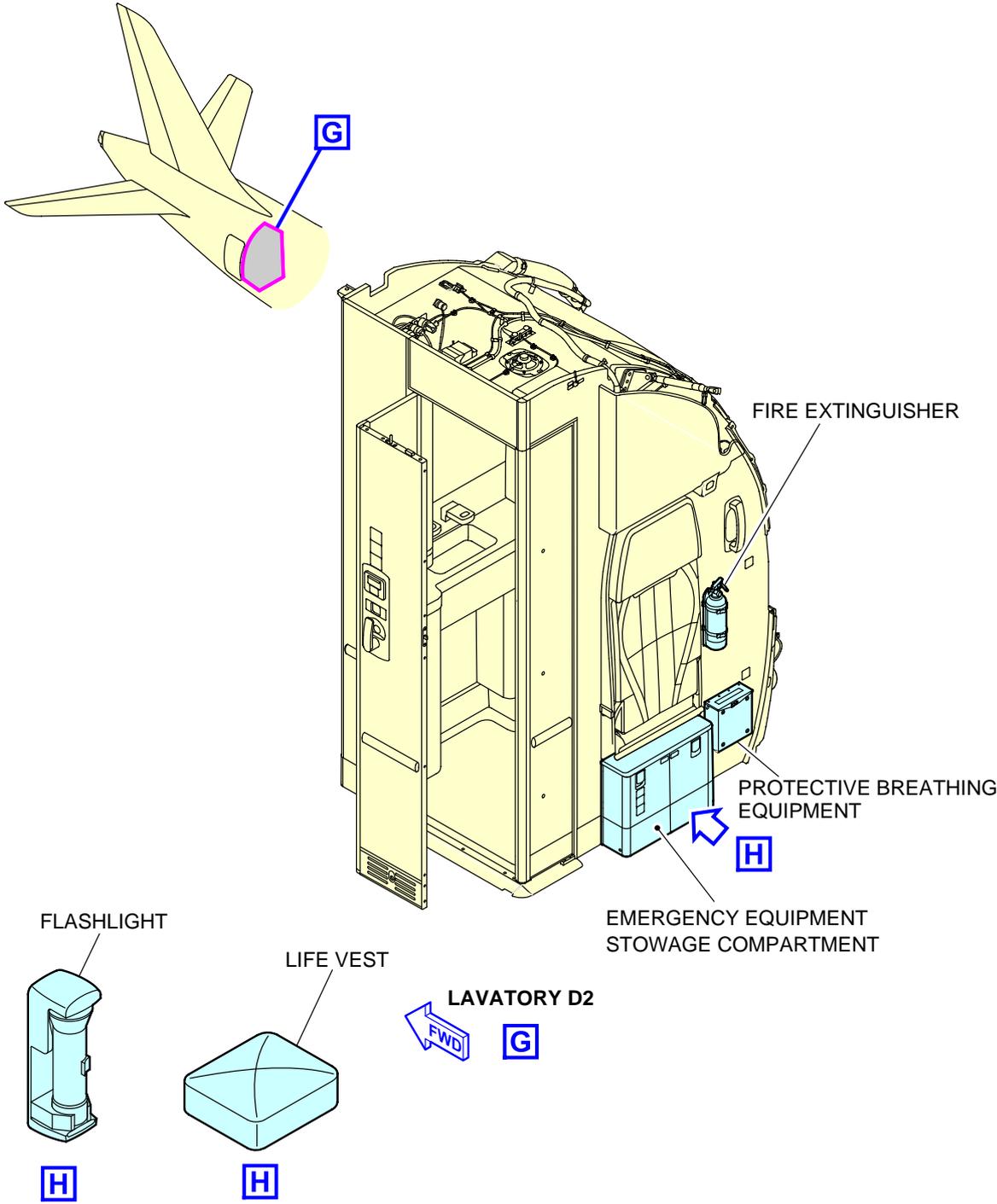
(Sheet) Applicability: 55047-55048



ICN-BD500-A-J256100-C-3AB48-60704-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 3 of 25)

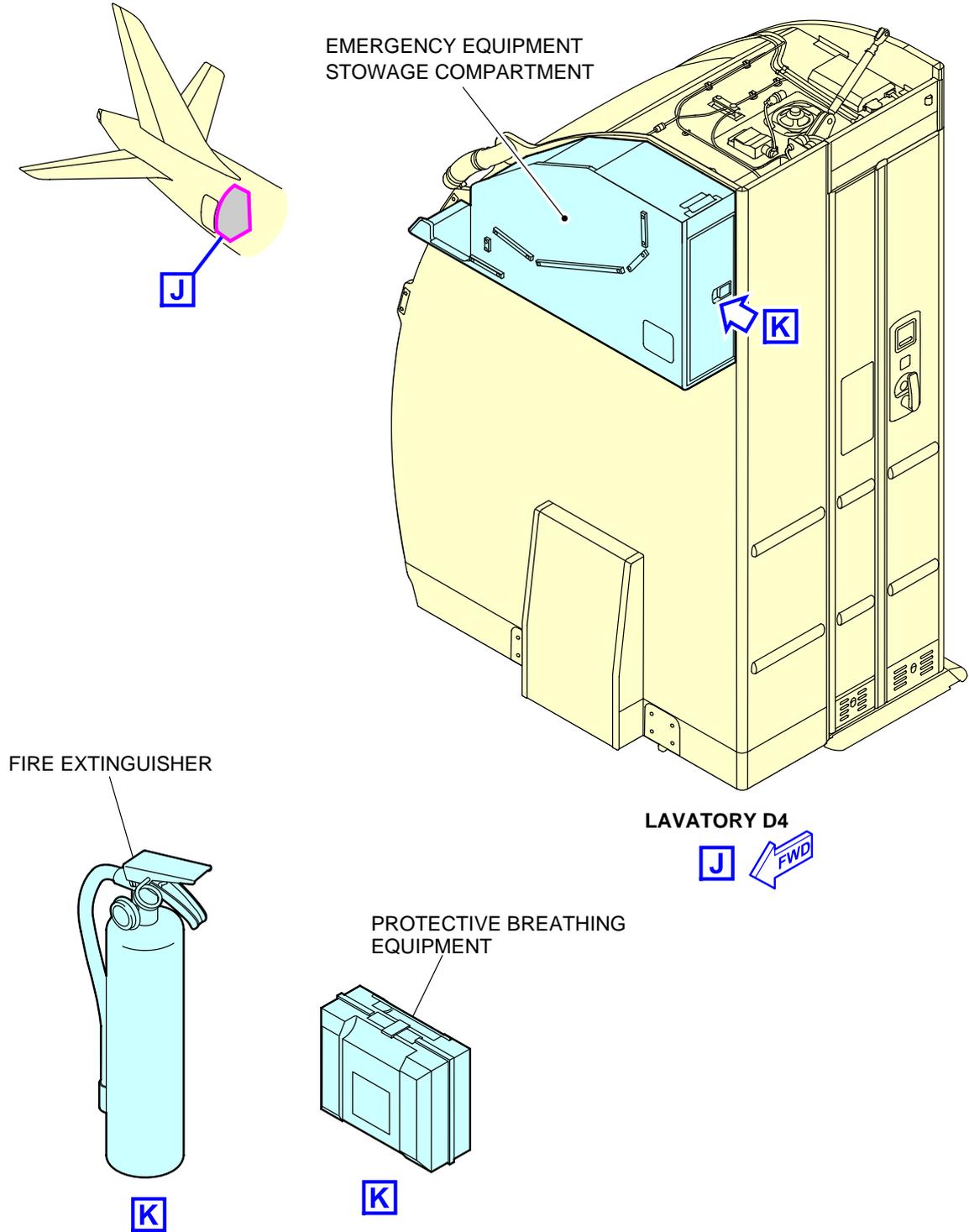
(Sheet) Applicability: 55017-55019, 55022, 55024, 55026, 55028, 55031, 55035, 55037, 55049, 55056-55063, 55065-55066, 55068, 55072-55074, 55077, 55081, 55087, 55091



ICN-BD500-A-J256100-C-3AB48-60705-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 4 of 25)

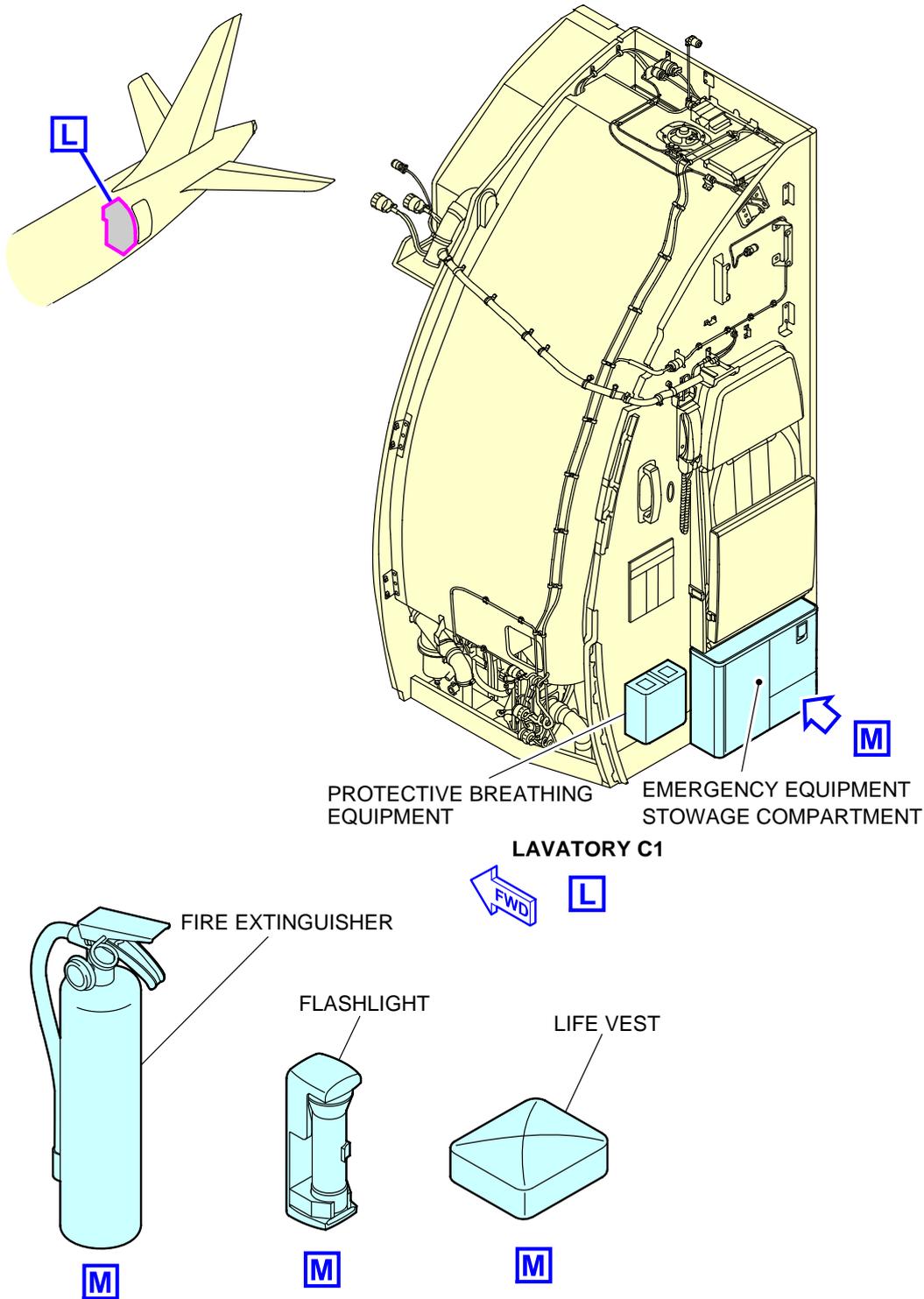
(Sheet) Applicability: 50020-50061, 50063-50065



ICN-BD500-A-J256100-C-3AB48-60706-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 5 of 25)

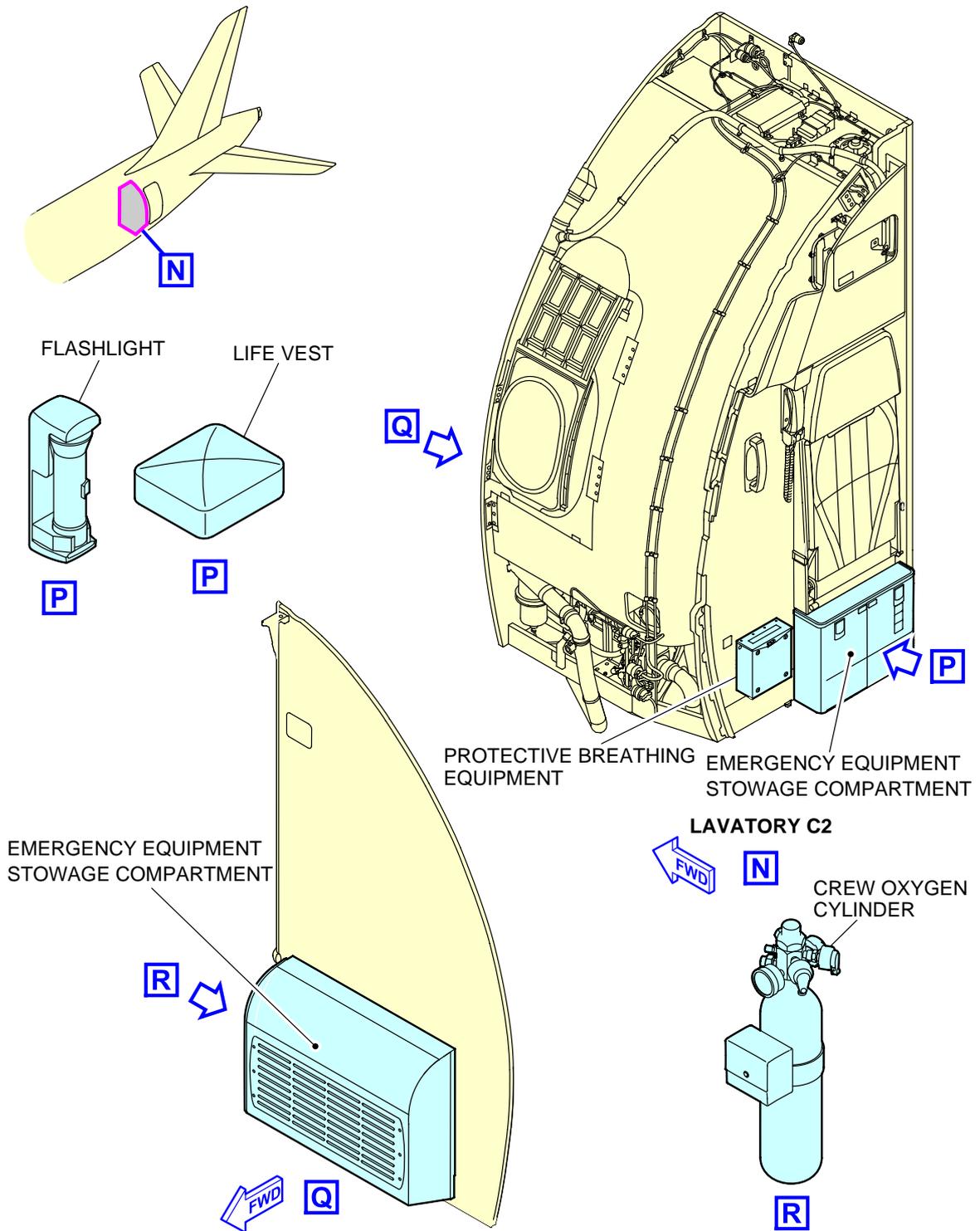
(Sheet) Applicability: 55010-55015, 55020-55021, 55023, 55025, 55027, 55029-55030, 55032-55033, 55036, 55040, 55044-55046, 55110



ICN-BD500-A-J256100-C-3AB48-60707-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 6 of 25)

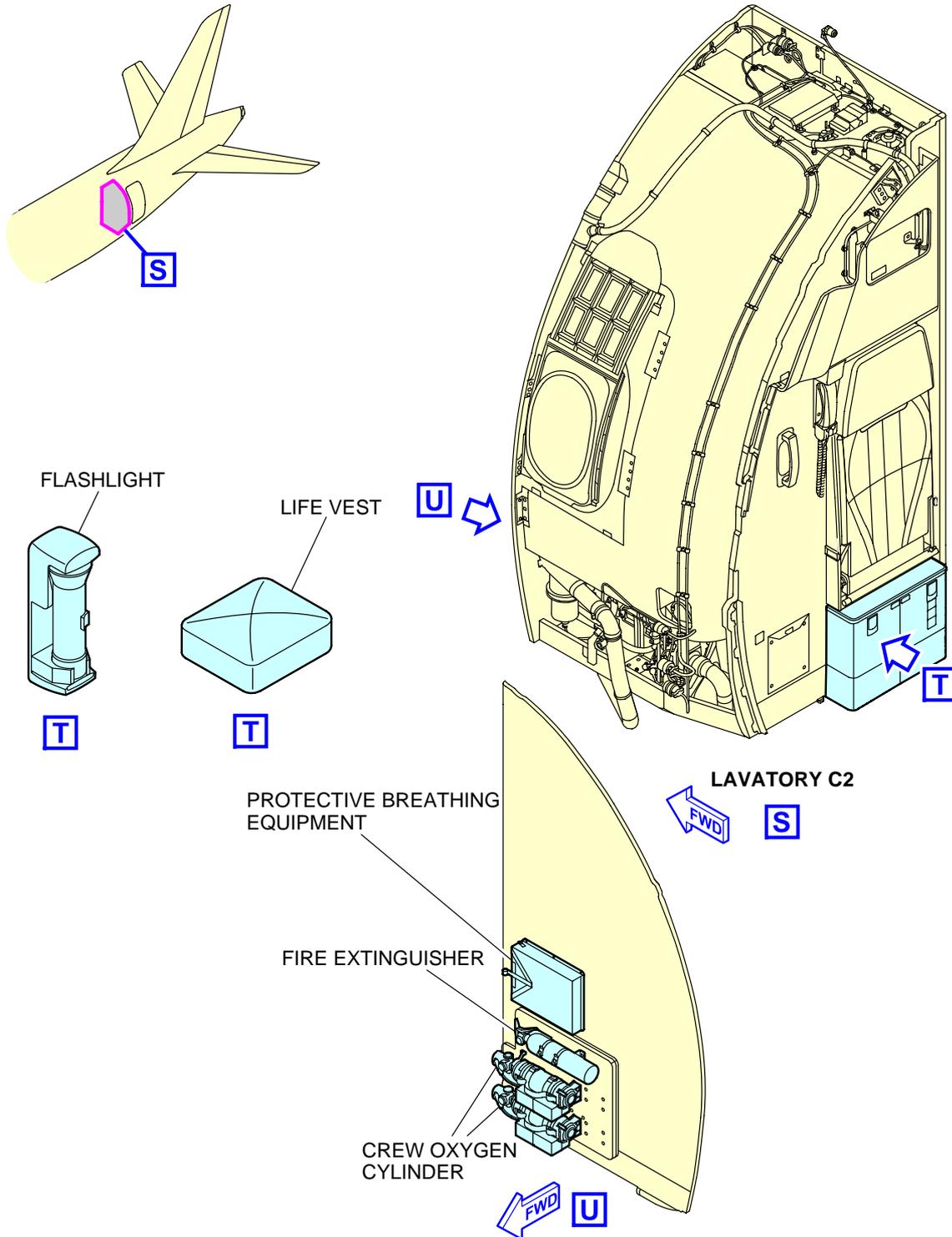
(Sheet) Applicability: 55017-55019, 55022, 55024, 55026, 55028, 55031, 55035, 55037, 55049



ICN-BD500-A-J256100-C-3AB48-60708-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 7 of 25)

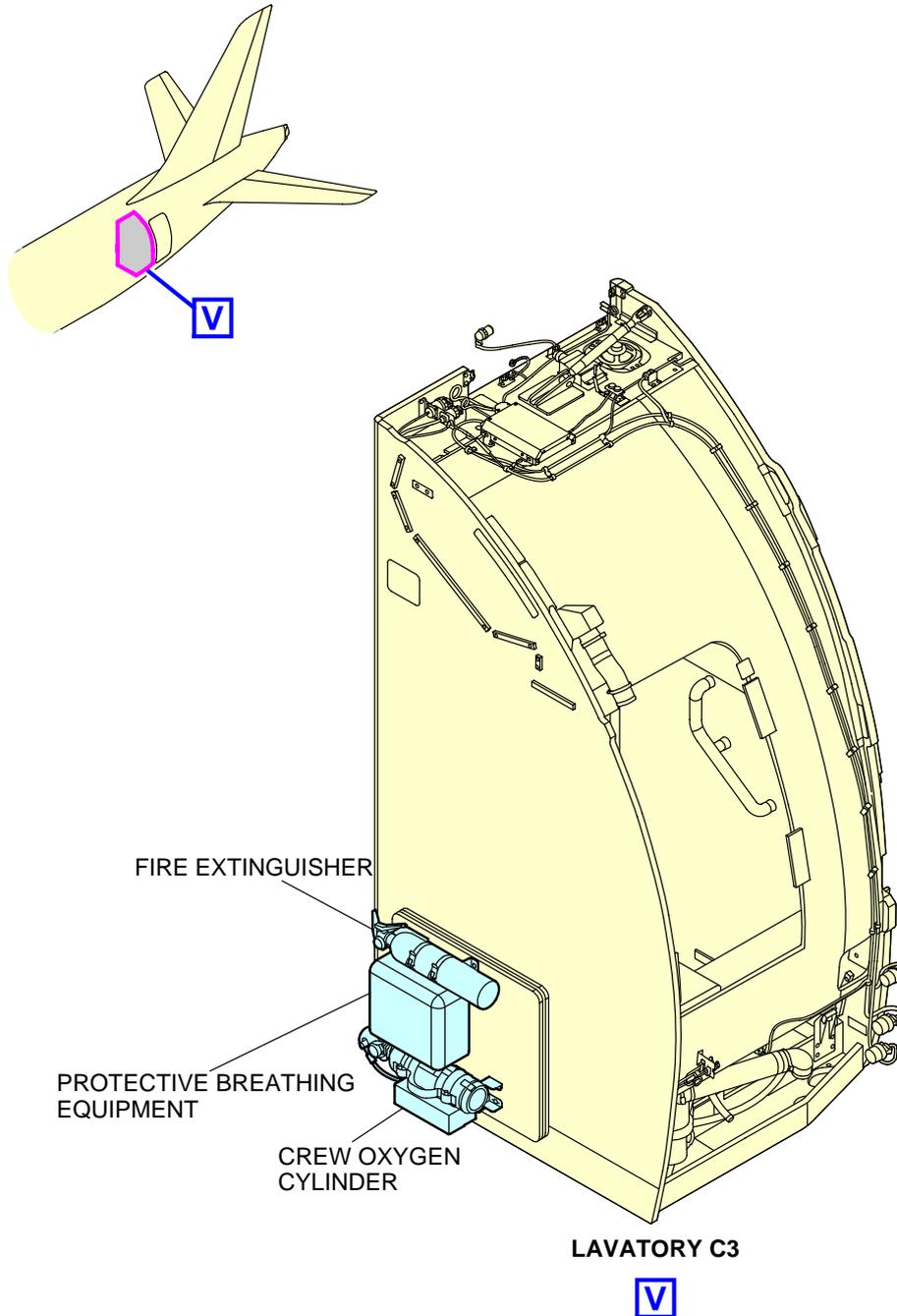
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ICN-BD500-A-J256100-C-3AB48-60709-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 8 of 25)

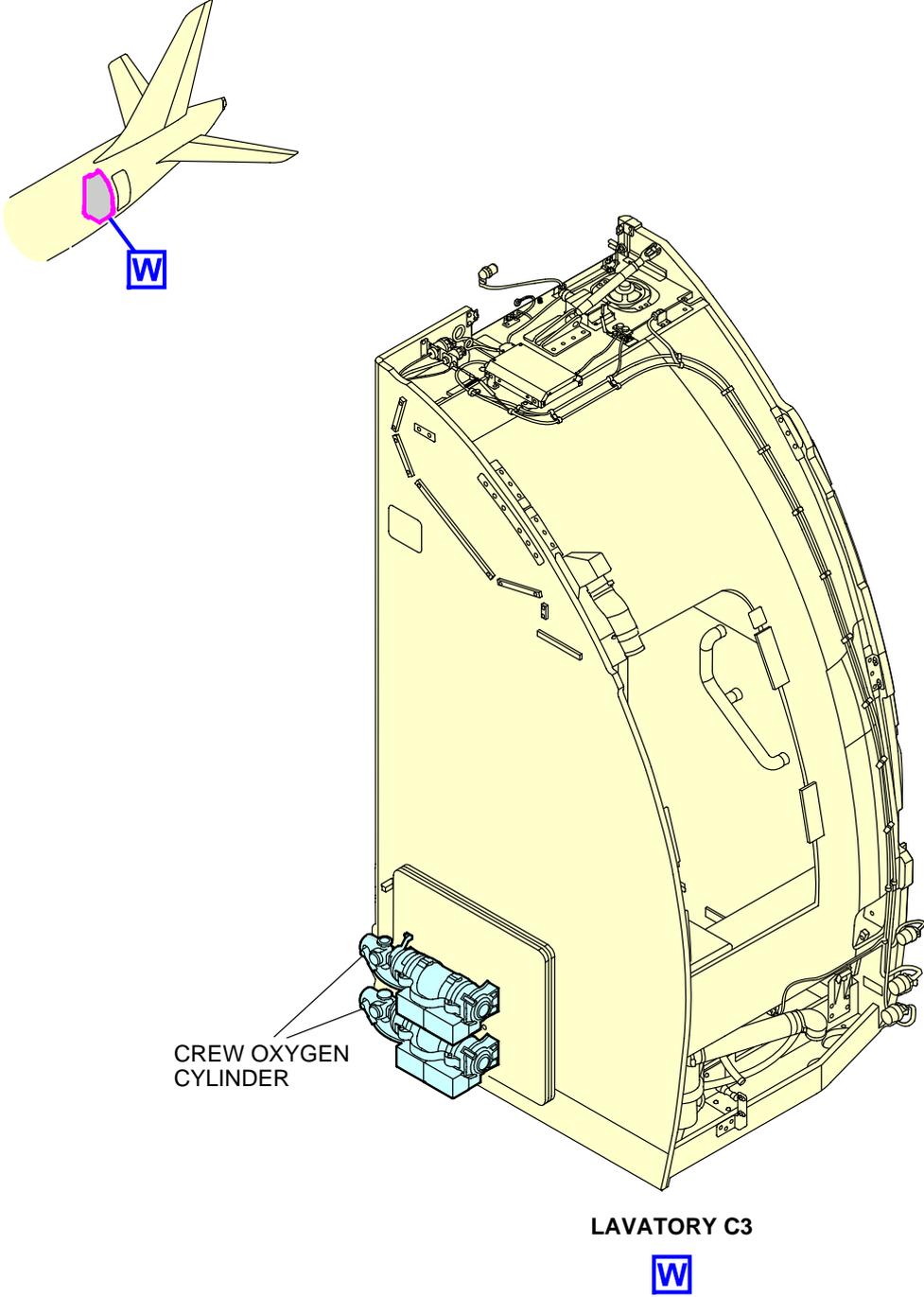
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ICN-BD500-A-J256100-C-3AB48-60710-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 9 of 25)

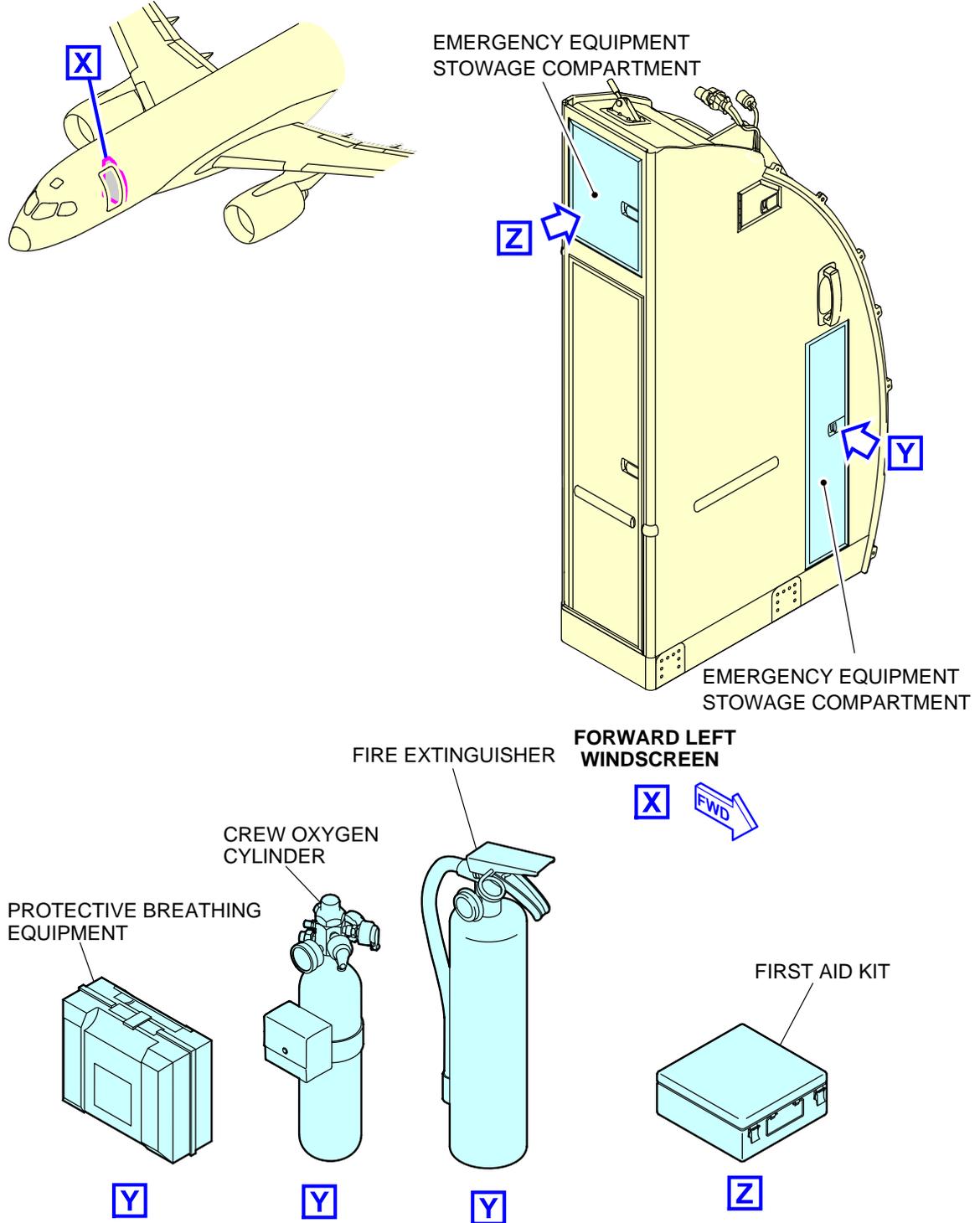
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ICN-BD500-A-J256100-C-3AB48-60711-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 10 of 25)

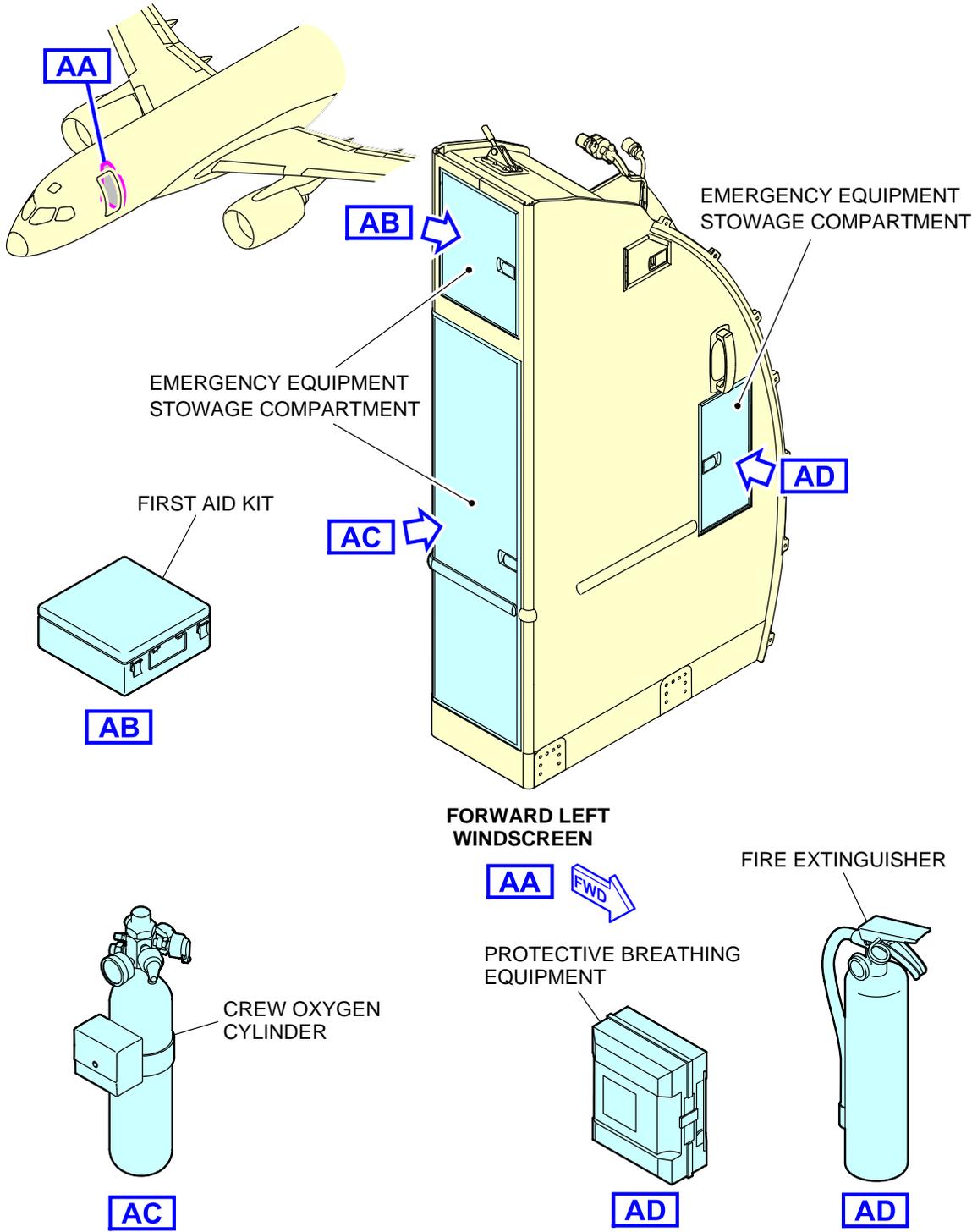
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ICN-BD500-A-J256100-C-3AB48-60712-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 11 of 25)

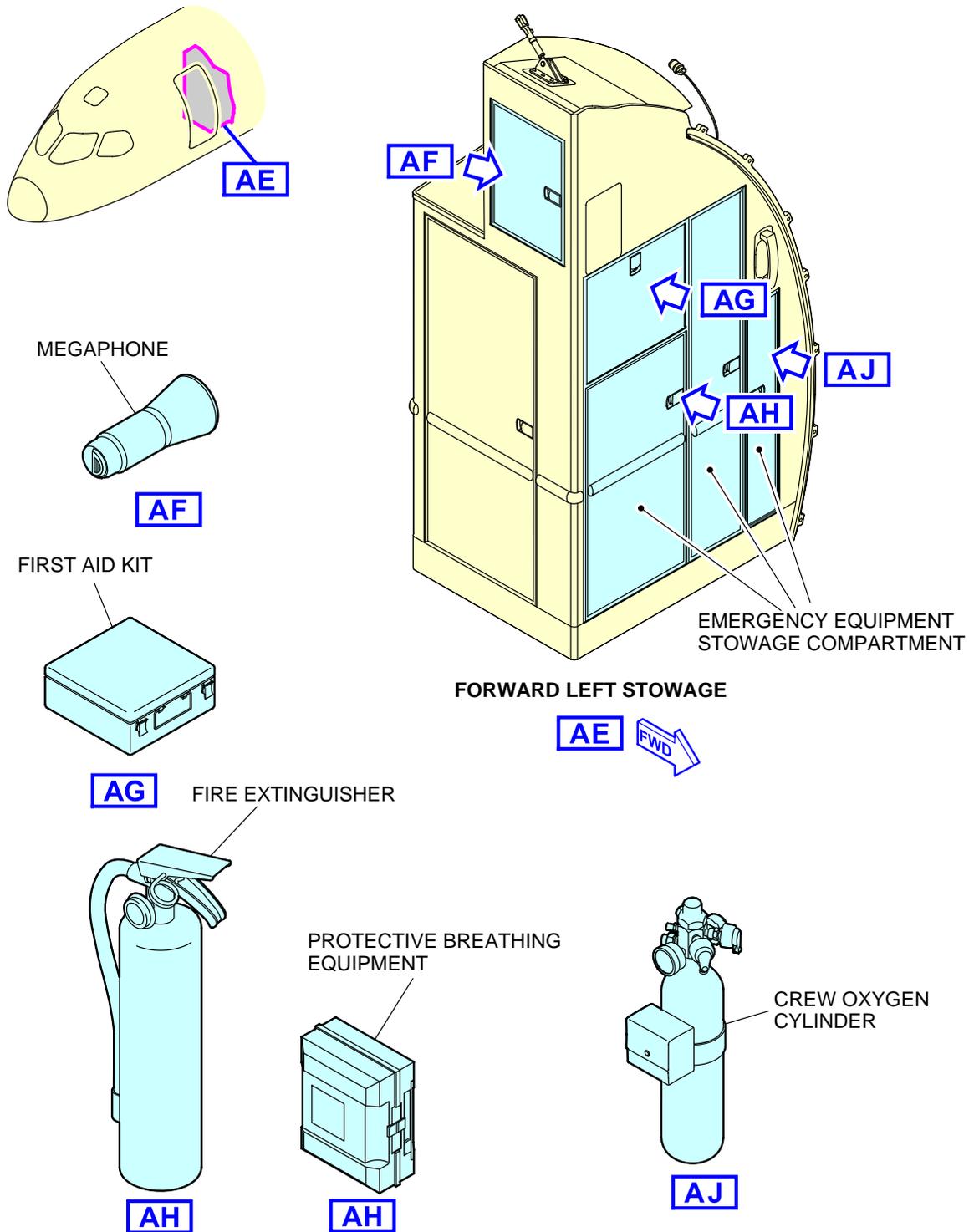
(Sheet) Applicability: 55017-55019, 55022, 55024, 55026, 55028, 55031, 55035, 55037, 55049



ICN-BD500-A-J256100-C-3AB48-60713-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 12 of 25)

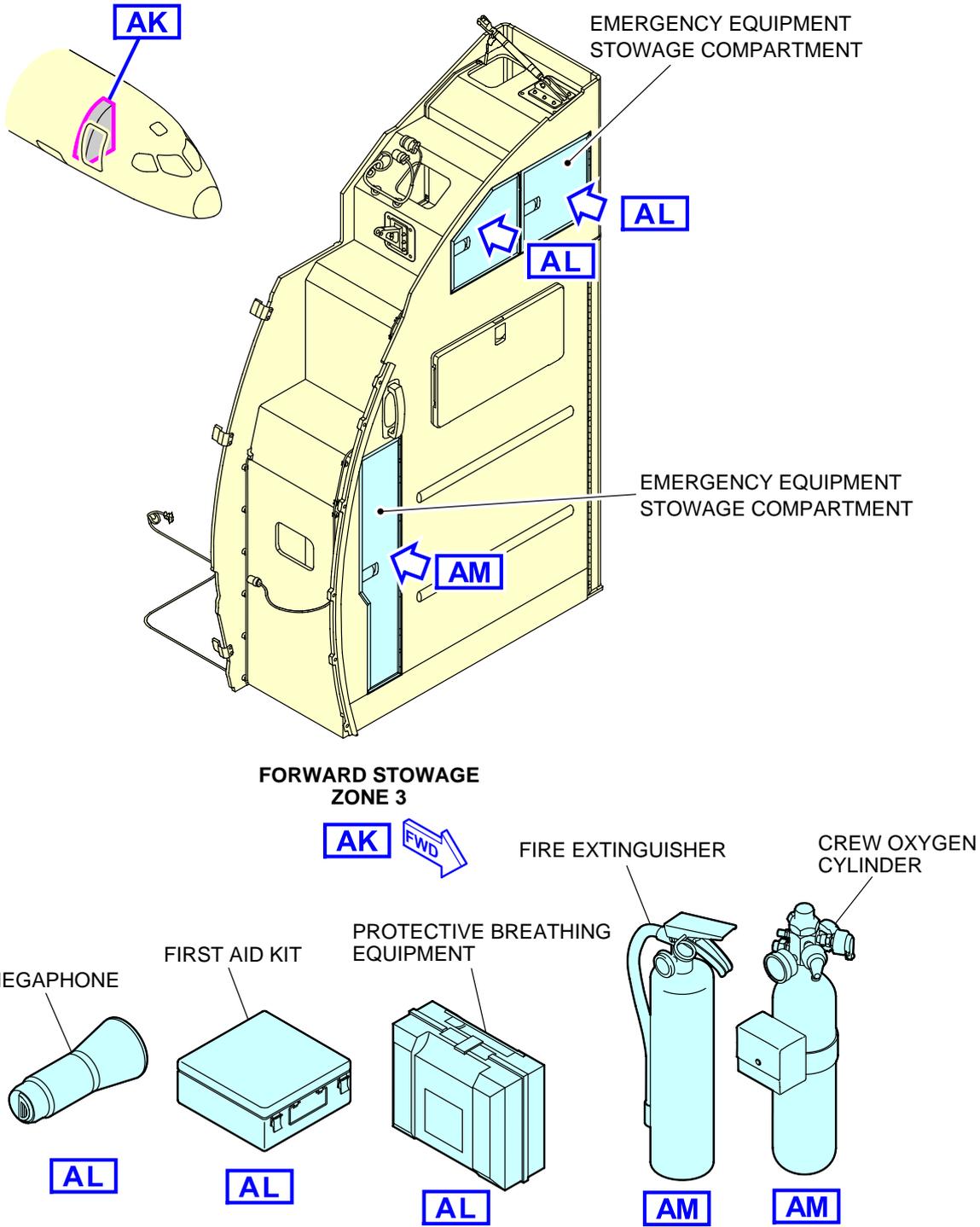
(Sheet) Applicability: 55003-55009, 55016, 55034, 55038-55039, 55041-55043, 55050-55055, 55064, 55071, 55086, 55094



ICN-BD500-A-J256100-C-3AB48-60499-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 13 of 25)

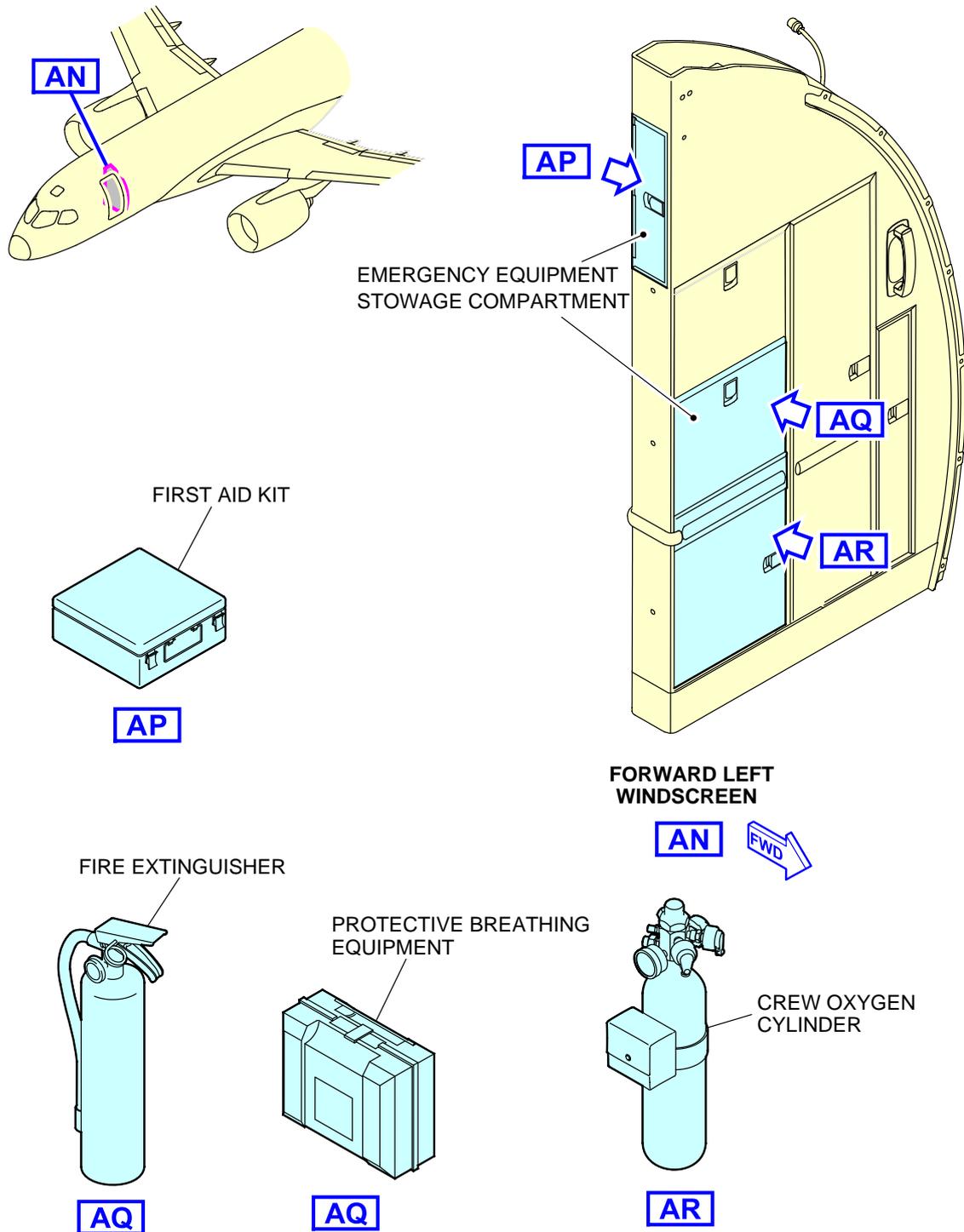
(Sheet) Applicability: 50020-50061, 50063-50065



ICN-BD500-A-J256100-C-3AB48-60714-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 14 of 25)

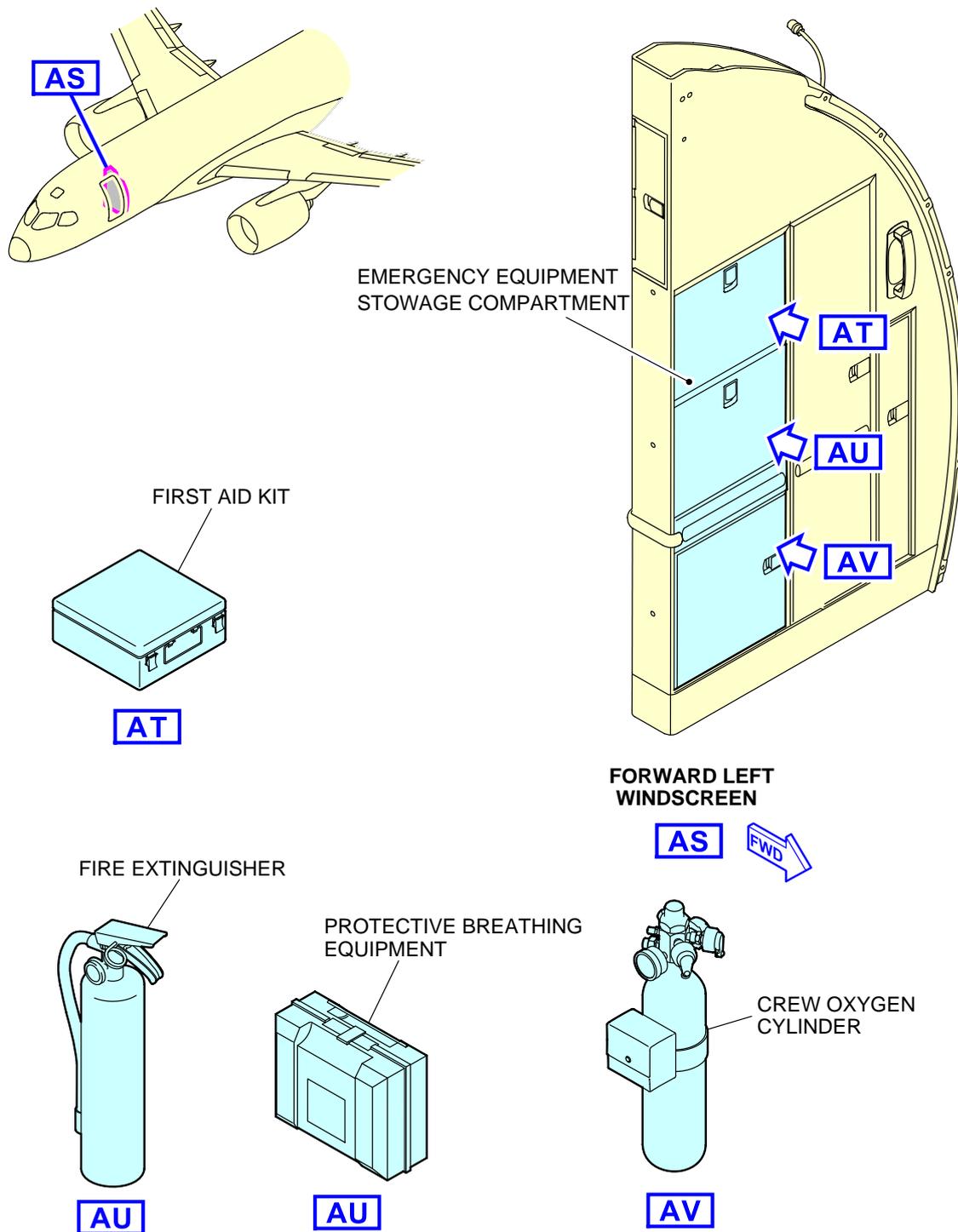
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ICN-BD500-A-J256100-C-3AB48-60715-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 15 of 25)

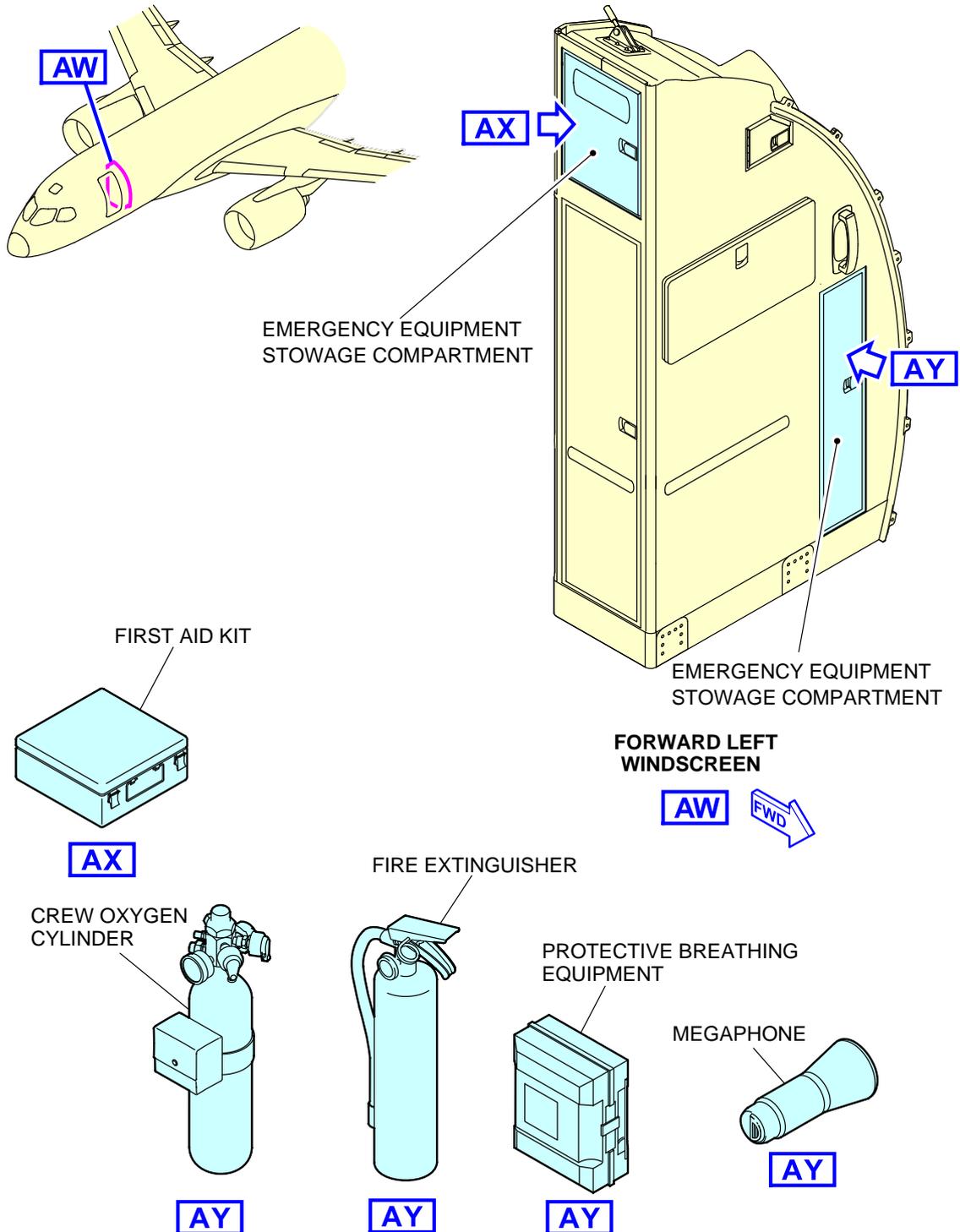
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ICN-BD500-A-J256100-C-3AB48-60802-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 16 of 25)

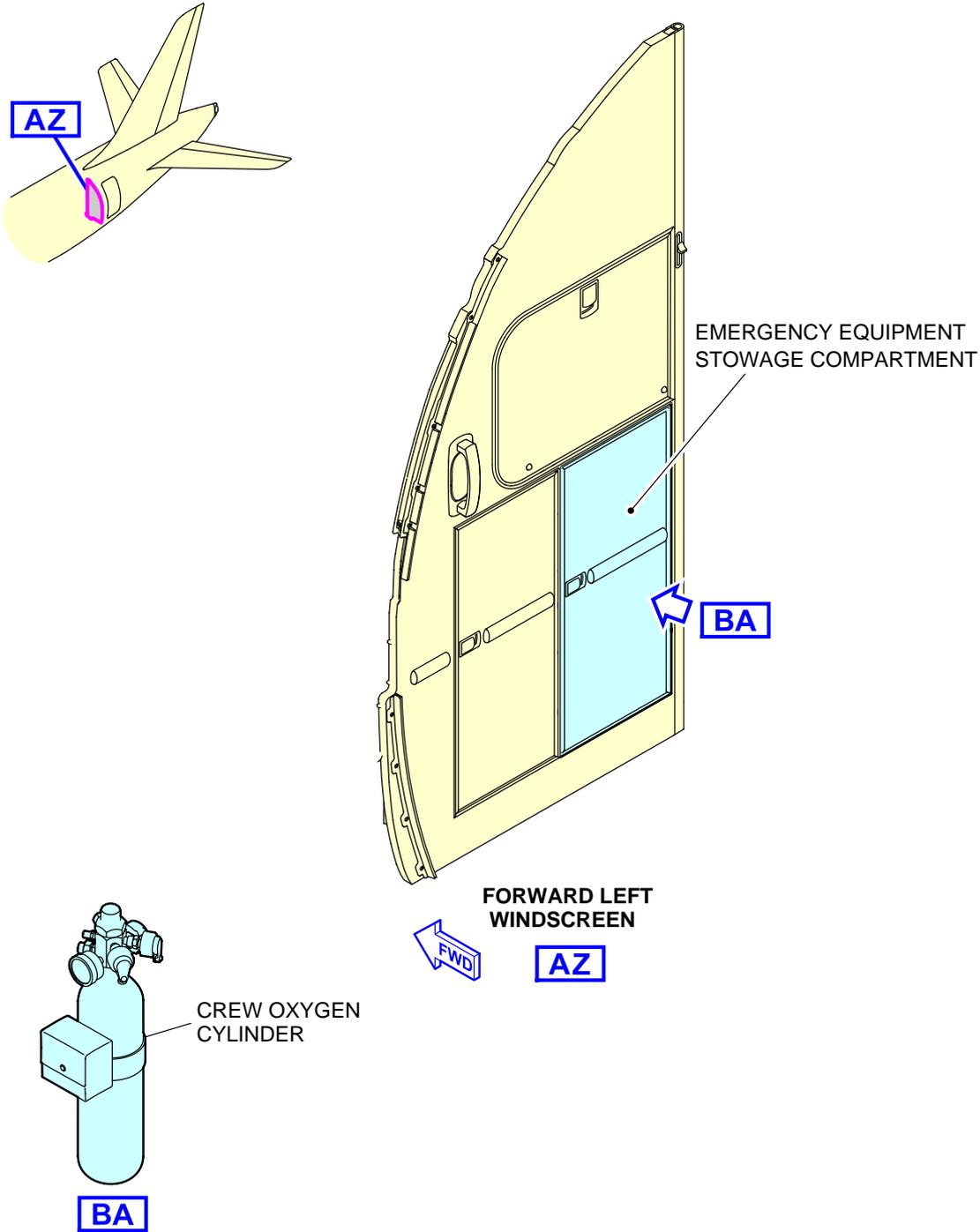
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ICN-BD500-A-J256100-C-3AB48-60716-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 17 of 25)

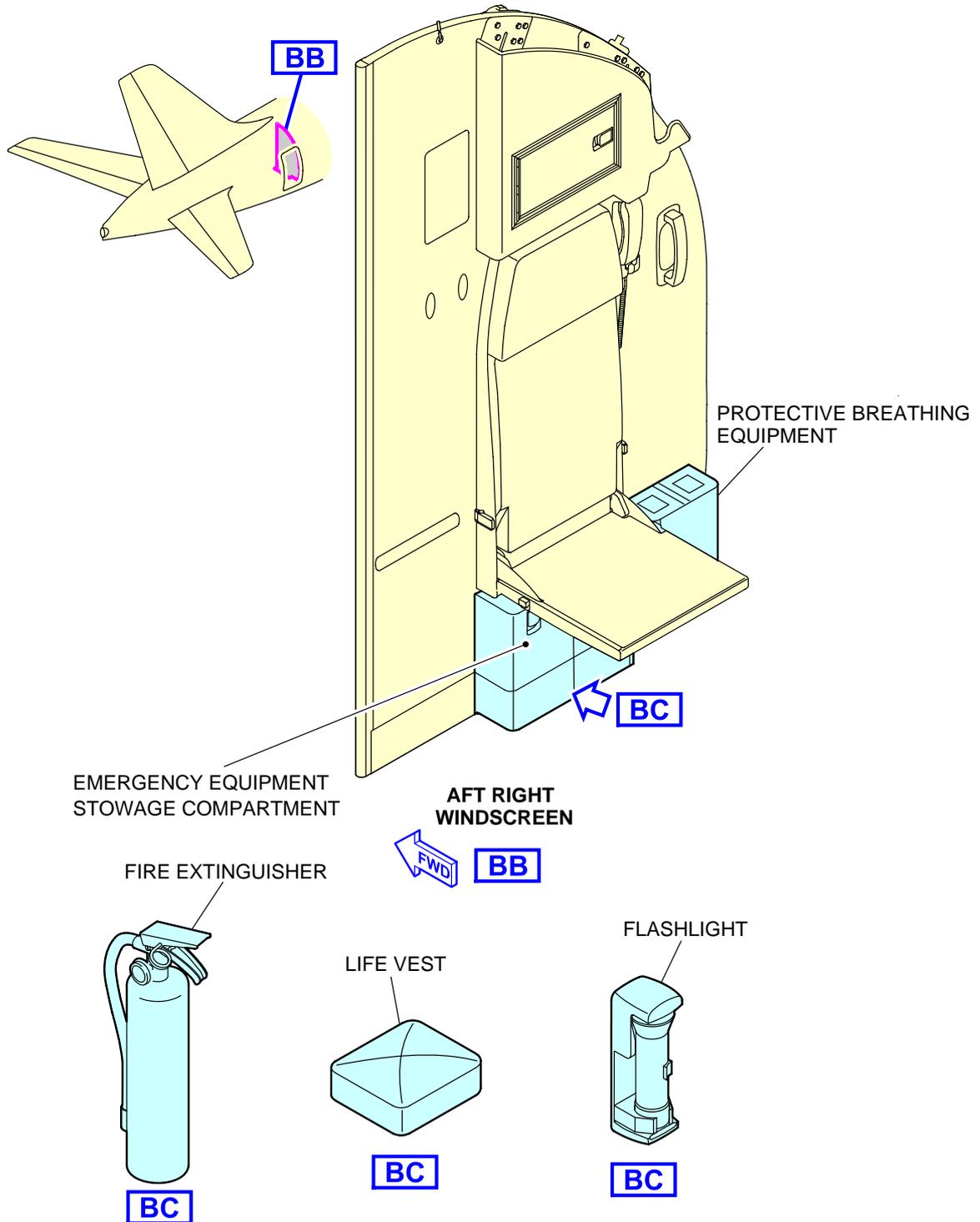
(Sheet) Applicability: 50010-50018



ICN-BD500-A-J256100-C-3AB48-60717-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 18 of 25)

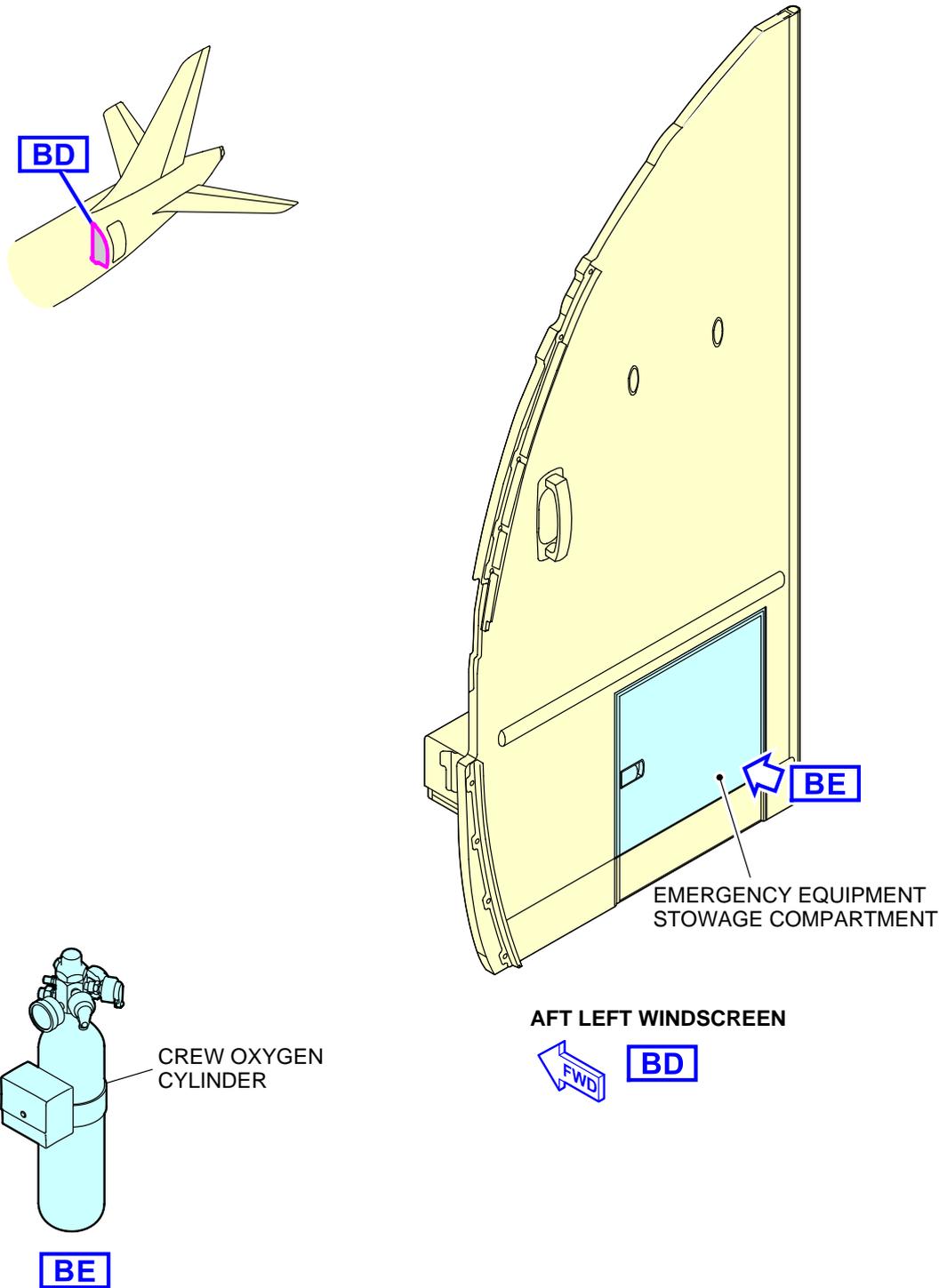
(Sheet) Applicability: 50010-50018



ICN-BD500-A-J256100-C-3AB48-60718-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 19 of 25)

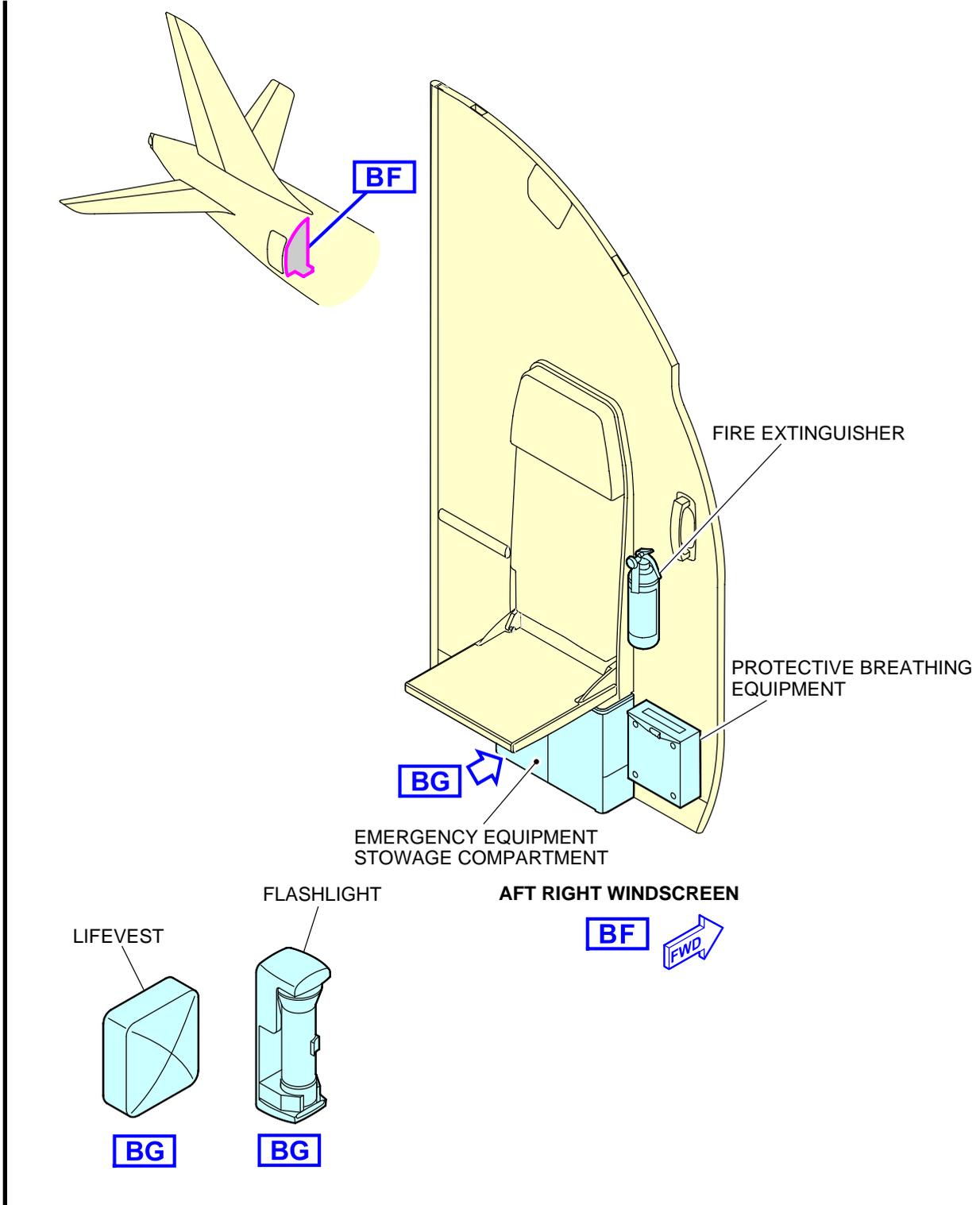
(Sheet) Applicability: 55003-55009, 55016, 55034, 55038-55039, 55041-55043, 55050-55055, 55064, 55071, 55086, 55094



ICN-BD500-A-J256100-C-3AB48-60719-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 20 of 25)

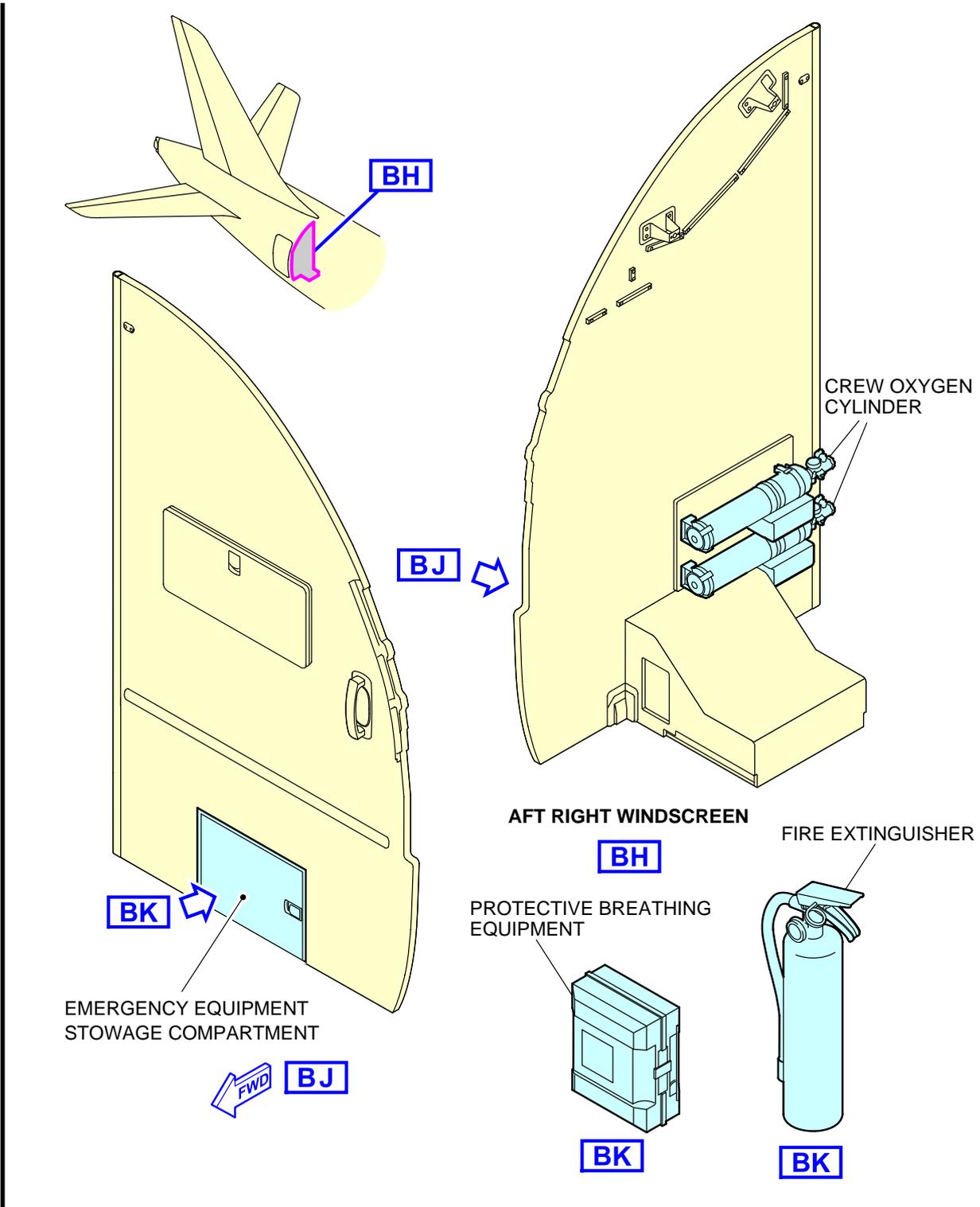
(Sheet) Applicability: 55003-55009, 55016, 55034, 55038-55039, 55041-55043, 55050-55055, 55064, 55071, 55086, 55094



ICN-BD500-A-J256100-C-3AB48-60730-A-001-01

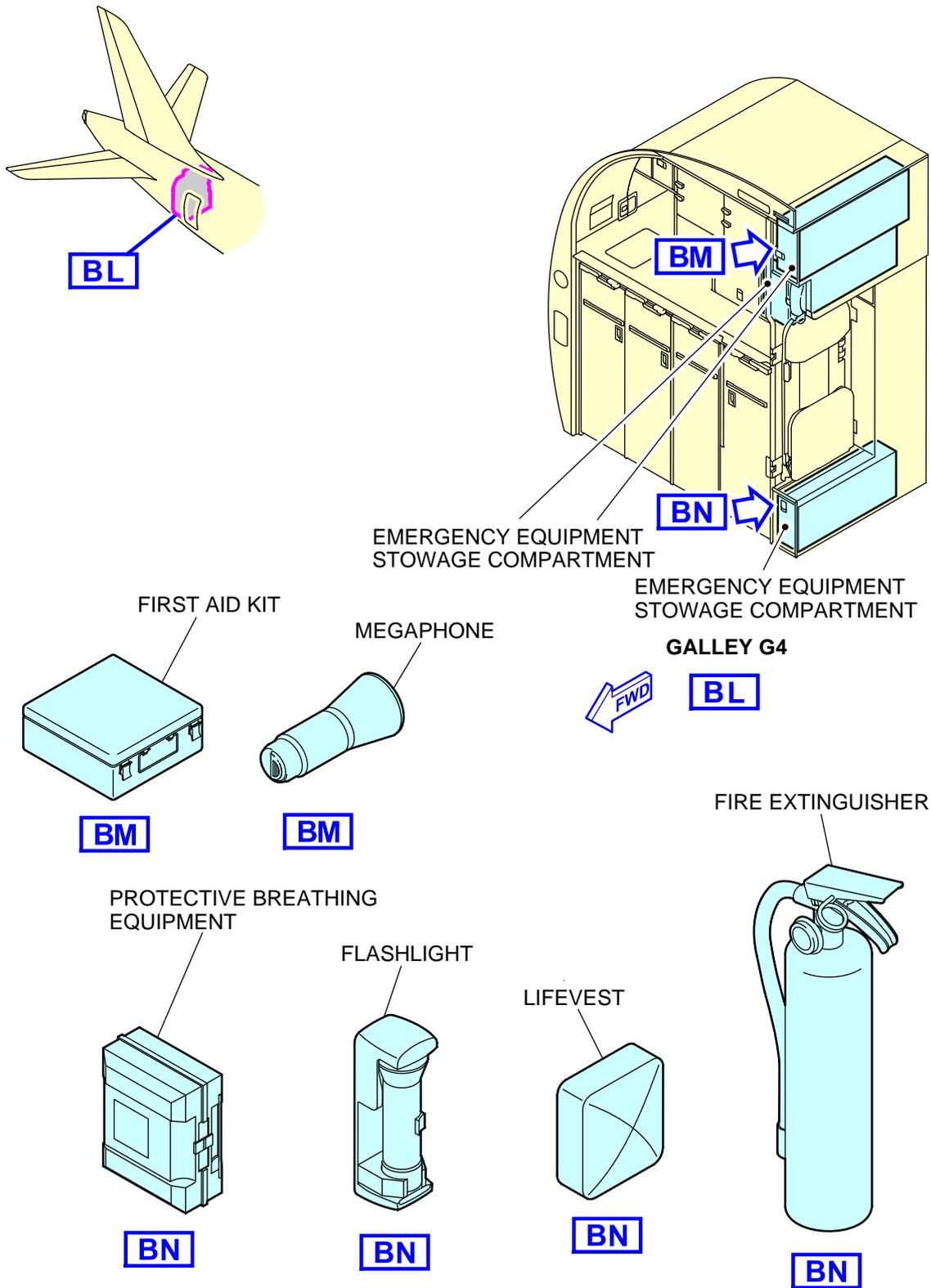
Figure 2 Emergency equipment location - General data - (Sheet 21 of 25)

(Sheet) Applicability: 55067, 55076, 55078-55079, 55082-55083, 55088, 55090, 55092-55093, 55097-55098, 55100, 55102-55103, 55105, 55109, 55111-55112, 55117-55119, 55122-55123, 55138, 55147, 55152, 55161, 55166, 55169, 55179, 55190, 55205, 55306



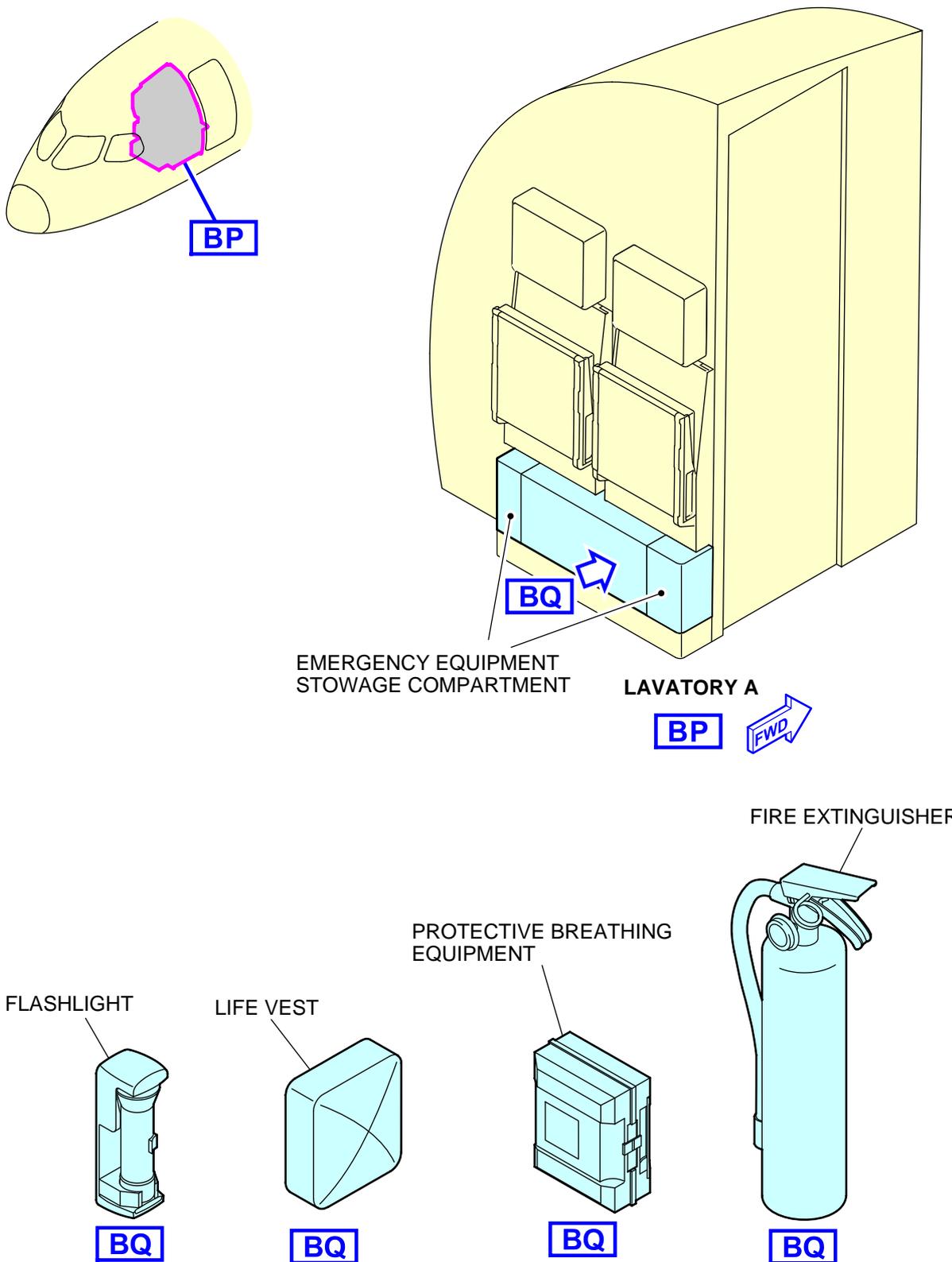
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Figure 2 Emergency equipment location - General data - (Sheet 22 of 25)



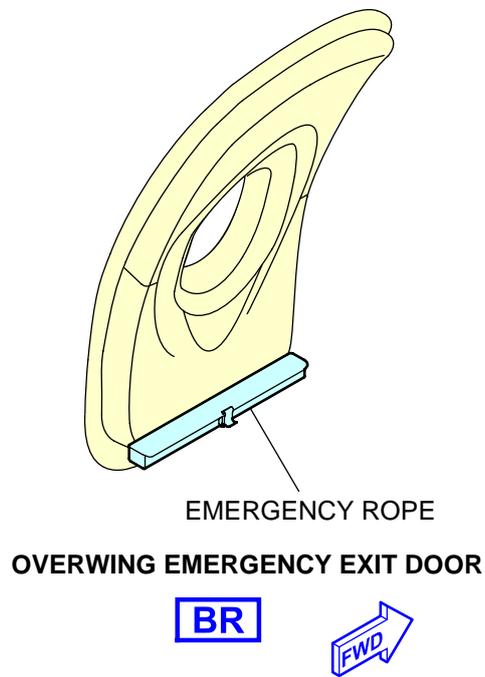
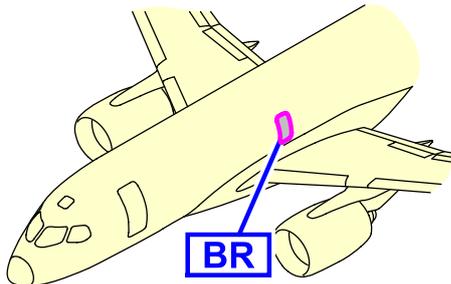
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Figure 2 Emergency equipment location - General data - (Sheet 23 of 25)



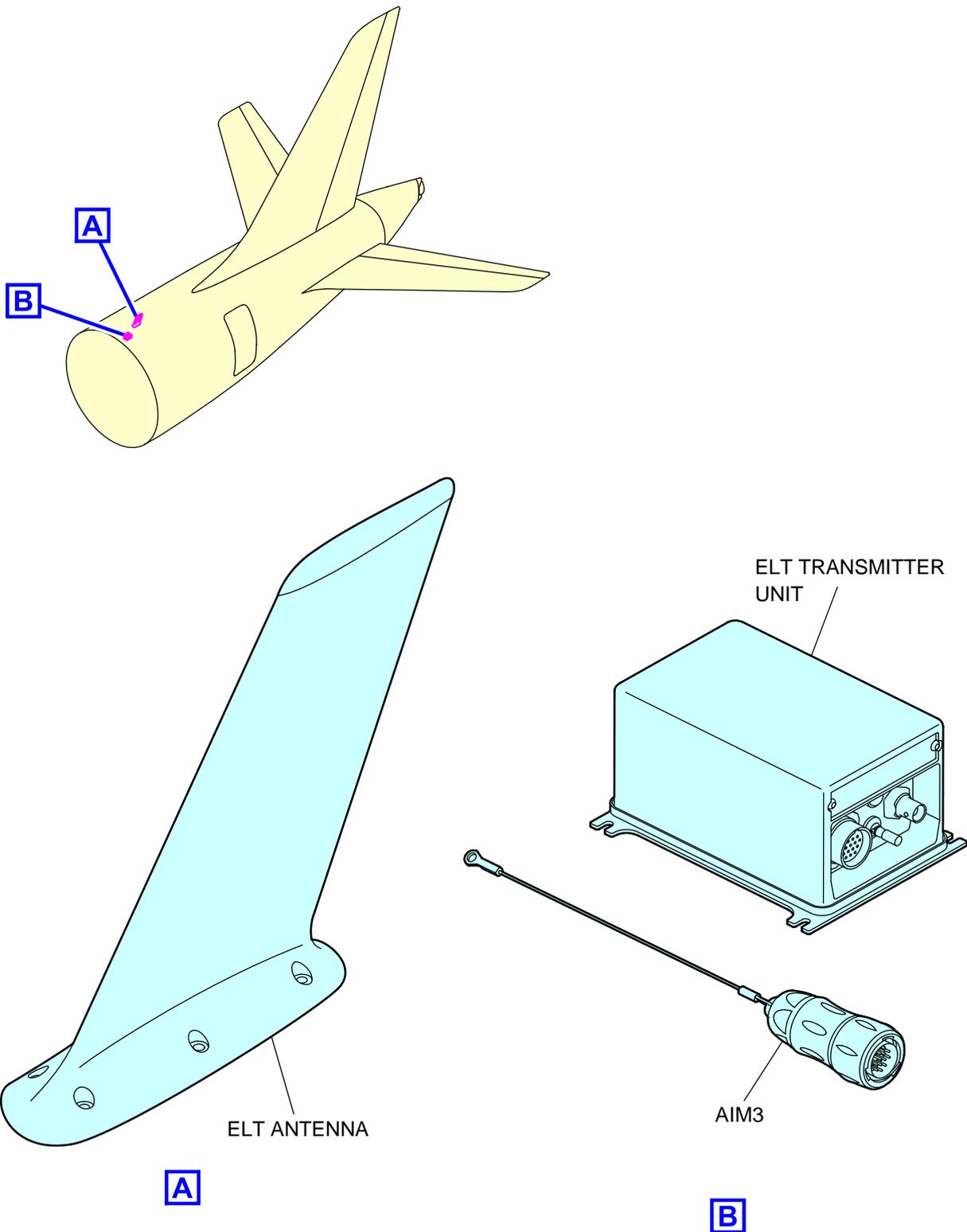
ICN-BD500-A-J154100-A-3AB48-01121-A-002-01

Figure 2 Emergency equipment location - General data - (Sheet 24 of 25)



ICN-BD500-A-J256100-C-3AB48-60824-A-001-01

Figure 2 Emergency equipment location - General data - (Sheet 25 of 25)



ICN-BD500-A-J154100-A-3AB48-01122-A-001-01

Figure 3 Emergency Locator Transmitter (ELT)

Ramp operation

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

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This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Terminal servicing - Technical data

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

This data module contains the data related to the preparation of an aircraft for flight from a terminal. This data is provided to show the general types of tasks involved in terminal operations.

Each airline has different operating conditions and practices, which can result in changes in the operating procedures and time intervals to do the tasks specified. Because of this, requirements for ground operations should be approved with the specified airline(s) before ramp planning is started. This section presents the following topics:

- Ground towing requirements
- Ground servicing connections
- Aircraft servicing arrangement
- Terminal operations
- Ground electrical power requirements
- Preconditioned airflow requirements – Air conditioning
- Ground pneumatic power requirements – Engine starting.

2 General

All applicable procedures and limitations are provided in the Aircraft Maintenance Publication (AMP) BD500-3AB48-10200-00.

3 Ground handling requirements

The Aircraft is designed for towing and pushing with a tractor and tow bar as well as with select-ed tow bar-less ground handling vehicles.

For towing and pushing operations, controls are provided to accommodate the following condi-tions:

- Aircraft not powered (see note below).
A control panel is provided on the left side of the aircraft by the nose landing gear (NLG). A push-button on the control panel can be toggled to engage power to begin the towing se-quence (Navigation lights are lit automatically). The parking brake can be deactivated by way of a switch located on this panel. Annunciation lights on the NLG indicate when the parking brake is deactivated and the aircraft is ready for towing.

Note

Availability of the controls to facilitate towing the aircraft with the flight deck vacant does not constitute an approval to conduct such operations.

- Aircraft powered, and flight deck occupied:
Two separate controls, one to deactivate the nose wheel steering, and one to deactivate the parking brake, are located in both the flight deck and on the control panel located in the vicinity of the nose landing gear. Headset jacks are provided on this control panel to allow for communication between personnel on the flight deck and on the ground. Annunciation lights on the control panel indicate when the aircraft is ready for towing.

With the torque links connected, towing up to $\pm 130^\circ$ nose wheel angle is possible.

The ground towing requirements for the A220 aircraft are as follows:

- The maximum towing load for the conventional towbar is 17400 lbf (77399.06 N)
- The maximum towing load for the towbarless towing is 10875 lbf (48374.40 N).

For more information related to towing, refer to the Illustrated Tool and Equipment Publication (ITEP) BD500-3AB48-11600-00 and to the Aircraft Maintenance Publication (AMP) BD500-3AB48-10200-00.

3.1 Towing capabilities

Nose Landing Gear (NLG)/Main Landing Gear (MLG) pushing without a ground lock mechanism.

The system is compatible with an aircraft mounted MLG pushing device.

The NLG incorporates detection that provides Engine Indication and Crew Alerting System (EICAS) indication for over steer events occurring while the aircraft is powered or not powered.

It is possible to turn the nose wheel steering off from the vicinity of the NLG for towing.

Indication of the steering system's on/off status is displayed in the vicinity of the NLG in the same location as the "Brake On" status Indication.

Over-steering protection provided by a visual indicating witness pin located in the gear.

The NLG incorporates Nose Wheel Steering (NWS) and "Brake On" indication on the side of the fuselage and a towing indication unit located in the NLG (exact location under evaluation) that is visible from a tow truck driver position.

External panel shall have:

- One towing power switch
- One parking brake switch
- One navigation lights switch
- Jack for headphone connection

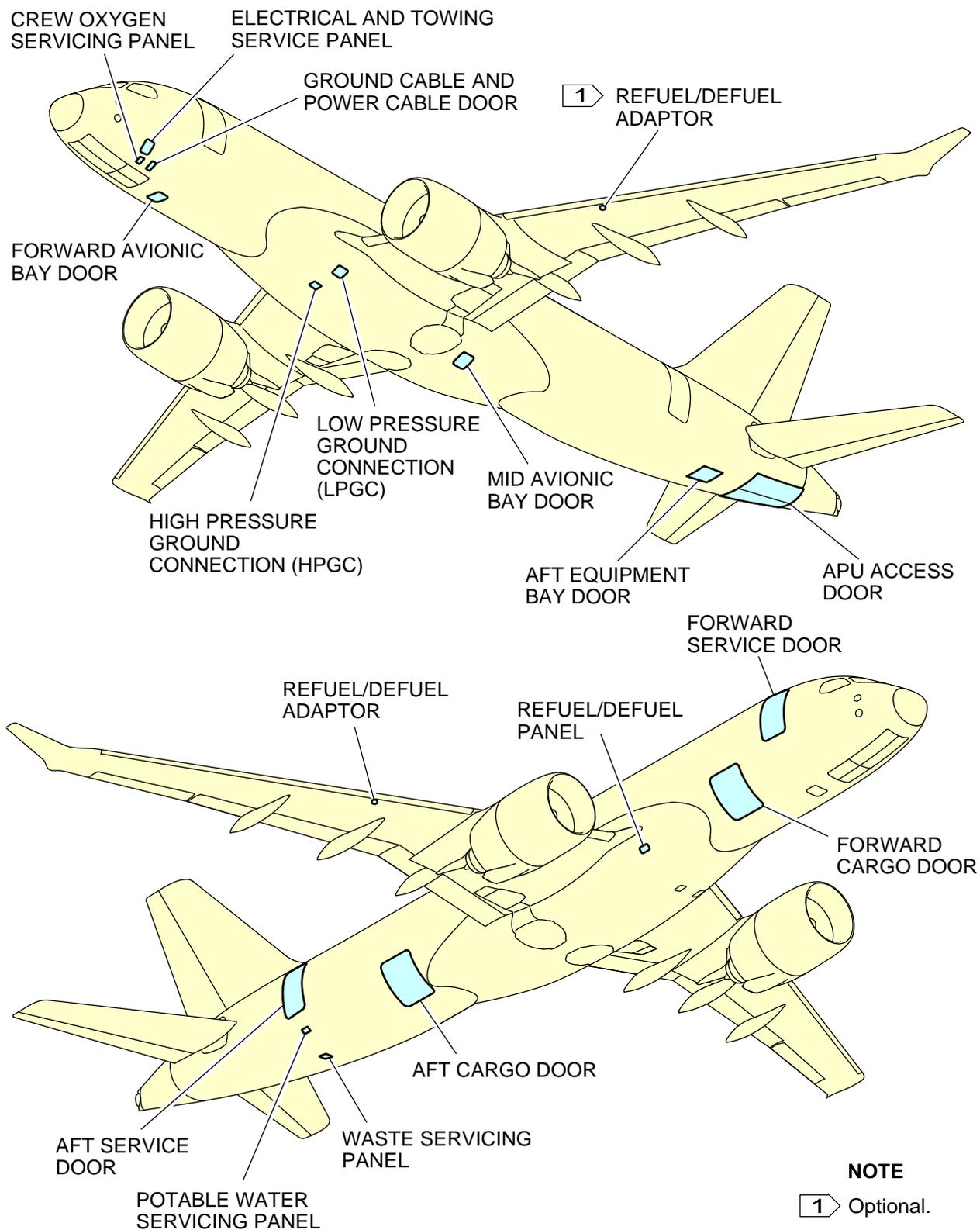
The "Brake On" indication will be continuously available regardless of aircraft power.

The NLG incorporates NWS and "Brake On" indication on the side of the fuselage and a towing indication unit located in the NLG that is visible from a tow truck driver position.

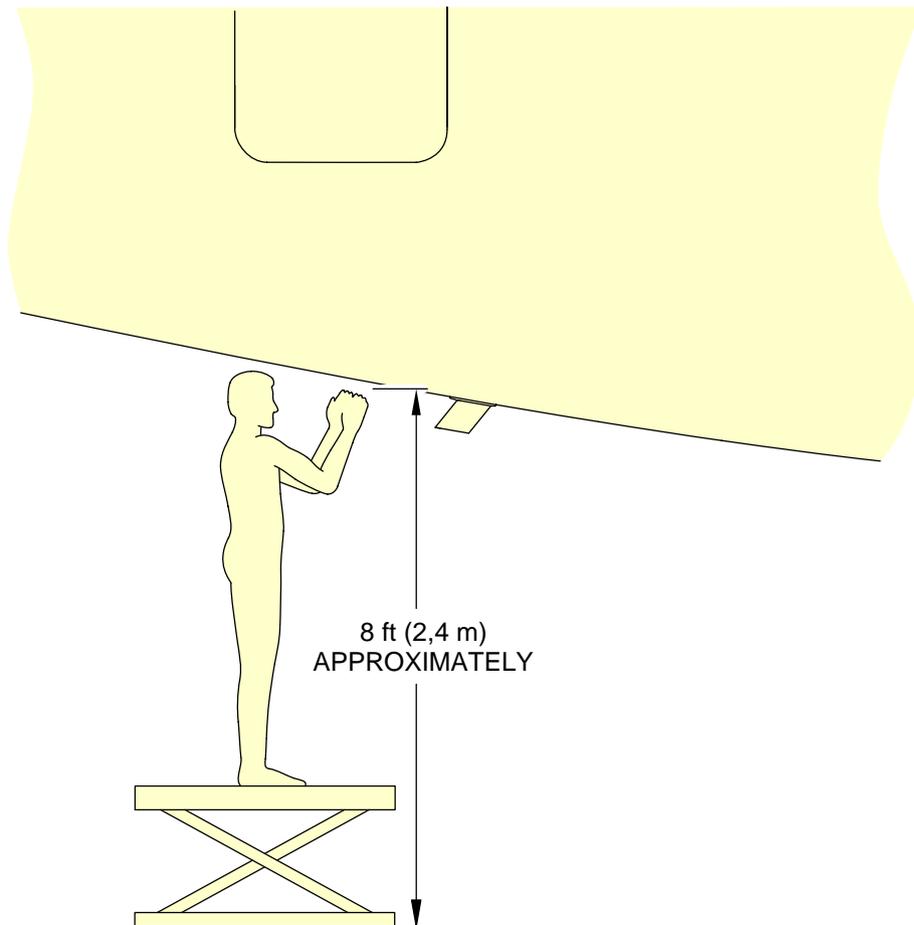
4 Ground servicing connections

Refer to Fig. 1 for the ground servicing connection points. For servicing procedures, refer to the AMP.

All servicing points are designed and positioned to consider accessibility and compatibility with industry standard vehicles and other Ground Support Equipment (GSE). All applicable procedures and limitations are provided in the AMP.



ICN-BD500-A-J000005-A-3AB48-00002-A-003-01
 Figure 1 Ground servicing connections - (Sheet 1 of 2)



WATER AND WASTE SERVICING

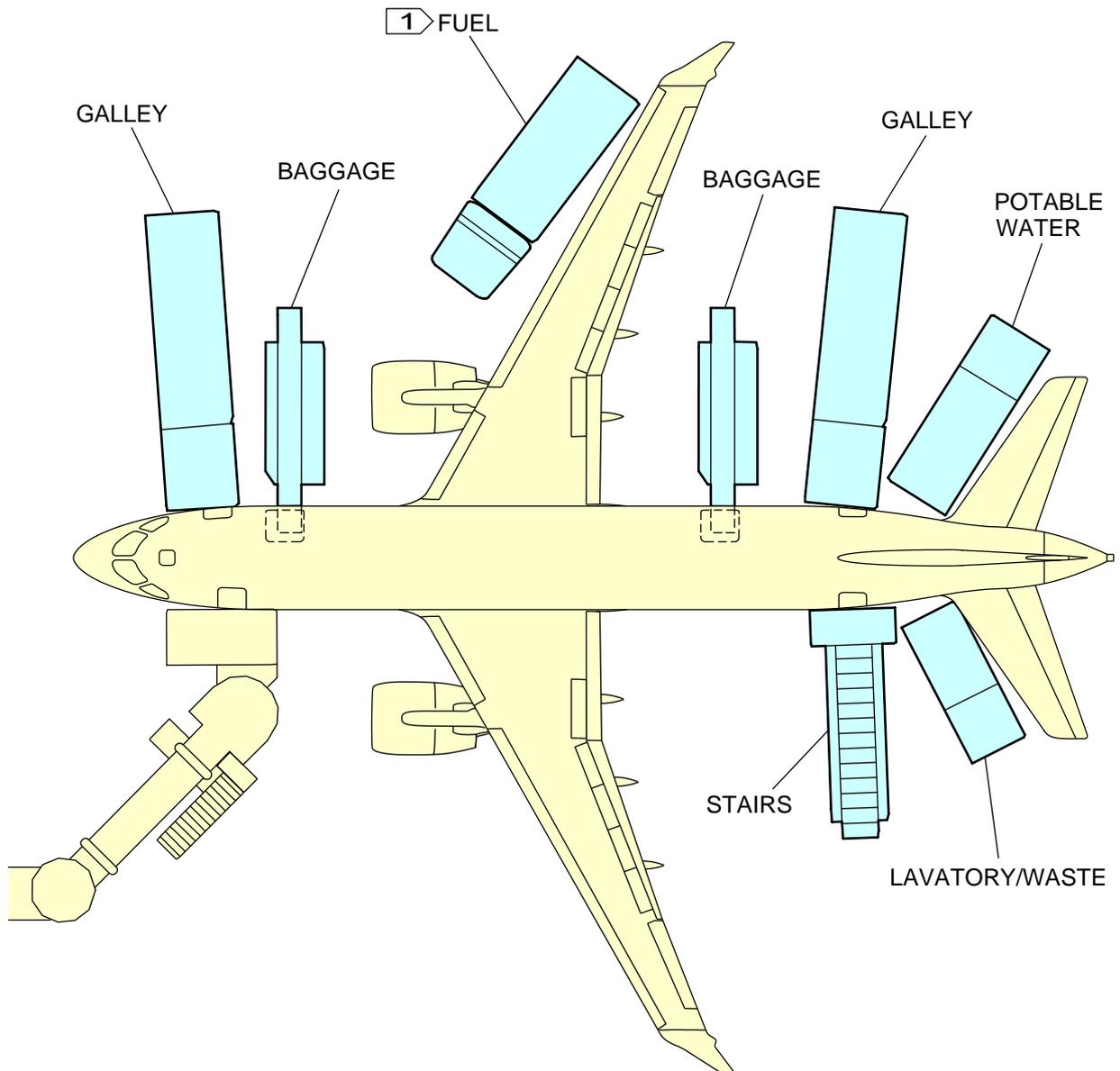
ICN-BD500-A-J000005-A-3AB48-00001-A-001-01

Figure 1 Ground servicing connections - (Sheet 2 of 2)

5 Aircraft servicing arrangement

Refer to Fig. 2 for the aircraft servicing arrangement.

*This publication has been superseded by the
Aircraft Characteristics Publication (ACP).*



NOTE

① Left side optional.

ICN-BD500-A-J000005-A-3AB48-00003-A-002-01

Figure 2 Aircraft servicing arrangement

6 Terminal operations

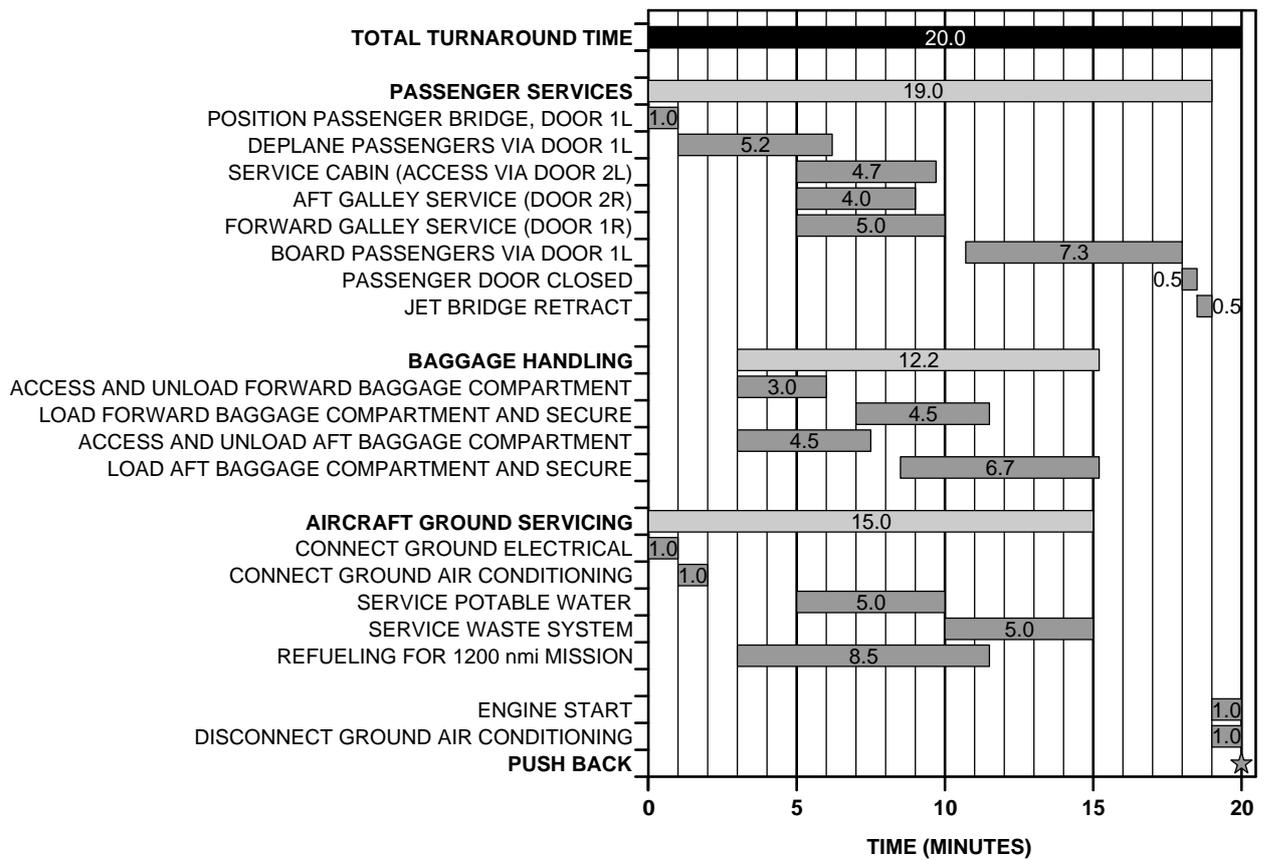
Refer to Fig. 3 for the turnaround station operations for the BD-500-1A10 (A220-100) and refer to Fig. 4 for the turnaround station operations for the BD-500-1A11 (A220-300).

The turnaround time analysis is based on the following parameters (the values are for both models of aircraft except where indicated):

- 100% Pax/baggage exchange
- 94 passengers (A220-100) / 115 passengers (A220-300) (85% load factor) / 1 class / 1 door
- 2 Galley service trucks
- Water/Waste servicing is sequential
- Cabin servicing during available time
- Passenger deplane rate is 18 per minute per door
- Passenger boarding rate is 12 per minute per door
- 2 bulk-loading belt-loaders
- 45 bags forward (A220-100) / 59 bags forward (A220-300), 67 bags aft (A220-100) / 79 bags aft (A220-300) (1.2 x 4 ft³ (1.2 X 0.11 m³) per passenger)
- Bag loading/unloading rates are 10 and 15 bags per minute
- Fuel loaded via one refuel/defuel adapter
- Refuel adapter rate at 50 psi (344.74 kPa) is as follows:
 - 1 When refueling three (3) tanks simultaneously (the center tank and two wing tanks), the refuel rate is 260 gpm (984 L/min).
 - 2 When refueling two (2) wing tanks, the refuel rate is 140 gpm (530 L/min).
 - 3 When refueling the center tank only, the refuel rate is 140 gpm (530 L/min).
- Mission range is 1200 NM (2222.4 km)
- Refueling performed while deplaning/boarding.

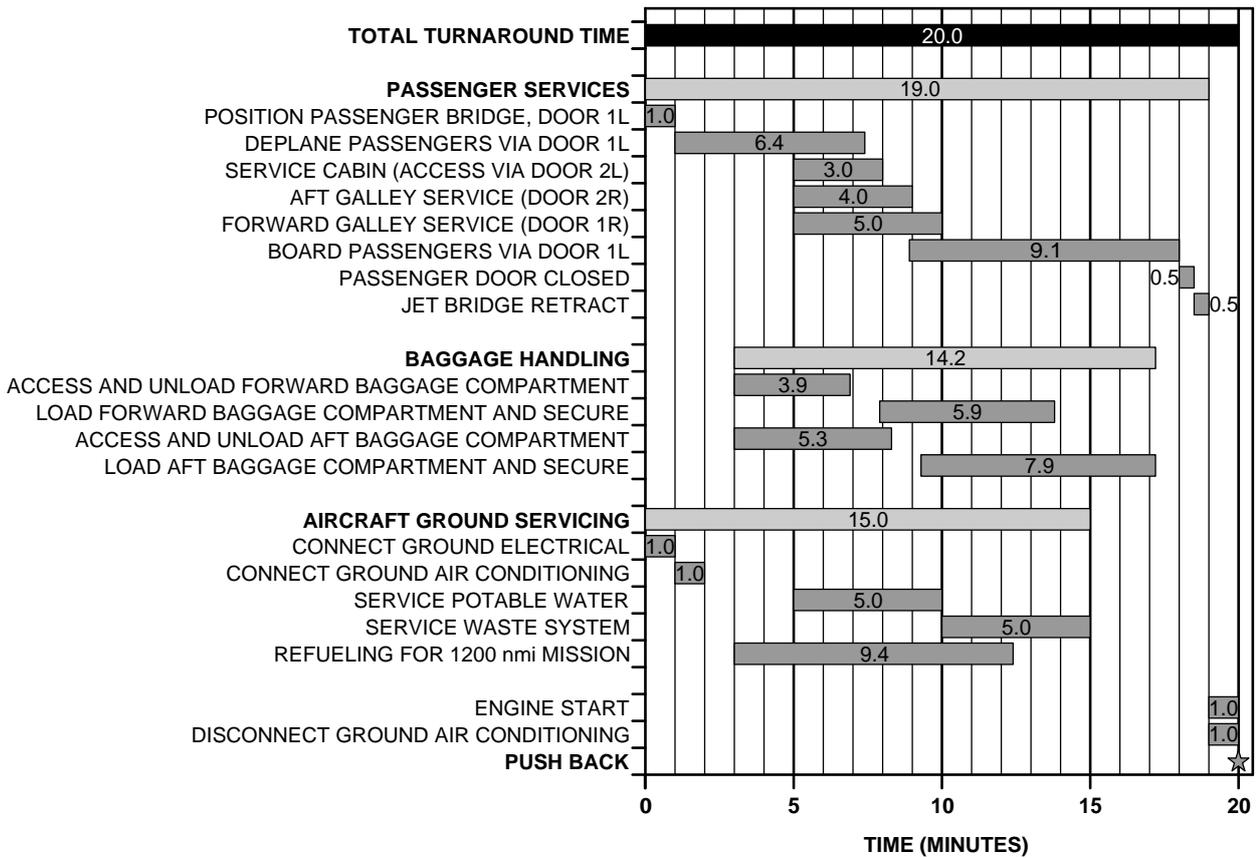
Note

All equipment is assumed to function properly and weather condition to be normal. This data is provided to illustrate the general scope and type of operations involved in a terminal gate environment. Varying operating practices and circumstances may result in different task sequences and durations.



ICN-BD500-A-J000005-A-3AB48-00066-A-001-01

Figure 3 Turnaround time analysis (A220-100)



ICN-BD500-A-J000005-A-3AB48-00067-A-001-01

Figure 4 Turnaround time analysis (A220-300)

7 Ground electrical power requirements

The external power system is used to connect AC electrical power from a ground cart. There are no provisions to connect DC power from an external ground cart. External AC can be used to power the complete AC distribution system or only those buses that provide power to the passenger compartment.

Refer to Table 2 for the external AC power requirements data.

Refer to Table 3 for the external power quality limitations data.

Refer to Table 4 for overcurrent protection ampere versus time delay.

Refer to Table 5 for overvoltage protection versus time delay.

Table 2 External AC power requirements

Voltage	Frequency
115 ±5 V	400 ±15 Hz

Table 3 External power quality limitations

Parameter	Setting limit	Response time
Overcurrent		Table 4
Overvoltage (highest phase)		Table 5
Redundant Overvoltage (highest phase)	130 ±3.3 V	0.75 ±0.055 sec
Undervoltage	107 ±2.0 V (lowest phase) or 108.5 ±2.0 V (3-phase average)	4.5 ±0.5 sec
Overfrequency	418 ±2 Hz	4.5 ±0.5 sec
Underfrequency	382 ±2 Hz	4 ±0.5 sec
Phase sequence	A-B-C	0.1 sec
Open sequence	Lowest phase 15 ±5 A and other phase greater than 30 ±5 A	2.0 ±0.5 sec

Table 4 Overcurrent protection ampere versus time delay

Current (A)	
230 ±12	
336 ±12	
337 ±12	
346 ±12	
355 ±12	

Current (A)	
370 ±12	
380 ±12	

Table 5 Overvoltage protection versus time delay

Voltage (V)	
123	
124	
132	
141	
146	
151	

8 Preconditioned airflow requirements – Air conditioning

The ground air supply requirements for air conditioning and airflow requirements are shown in Table 6 for the High Pressure Ground Cart (HPGC), in Table 7 for the A220-100 Low Pressure Ground Cart (LPGC) , and in Table 8 for the for the A220-300 LPGC.

Table 6 HPGC - Ground air supply requirements for cooling and heating

Requirements	Pressure	Airflow	Temperature
To cool cabin to 75.2 °F (24 °C)	40 psig (276 kPa)	140 lb/min (63.5 kg/min)	400 °F (204 °C)
To heat cabin to 75.2 °F (24 °C)	25 psig (173 kPa)	140 lb/min (63.5 kg/min)	400 °F (204 °C)

Table 7 LPGC – A220-100 Ground air supply requirements for cooling and heating

Requirements	Pressure	Airflow	Temperature
To cool cabin to 75.2 °F (24 °C) (recirculation fan on)	0.6 psig (4.1 kPa)	120 lb/min (54.4 kg/min)	41 °F (5 °C)
To heat cabin to 75.2 °F (24 °C) (recirculation fan on)	0.9 psig (6.2 kPa)	120 lb/min (54.4 kg/min)	104 °F (40 °C)

Table 8 LPGC – A220-300 Ground air supply requirements for cooling and heating

Requirements	Pressure	Airflow	Temperature
To cool cabin to 75.2 °F (24 °C) (recirculation fan on)	0.6 psig (4.1 kPa)	135 lb/min (61 kg/min)	41 °F (5 °C)
To heat cabin to 75.2 °F (24 °C) (recirculation fan on)	0.9 psig (6.2 kPa)	135 lb/min (61 kg/min)	104 °F (40 °C)

9 Ground pneumatic power requirements – Engine starting

The ground air supply requirements for engine starting are shown in Table 9 .

Conditions:

- Time allowed during start (to starter cutout) is 90 seconds
- Time-to-IDLE on ground is 45 seconds minimum
- No bleed air extraction is permitted during start sequence

Table 9 Ground pneumatic power requirements – Engine starting

Requirements	Pressure	Airflow	Temperature
To provide starter air pressure	TBD	TBD	TBD

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

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This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Jacking of the aircraft - Jacking

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
BD500-A-J32-21-00-01AAA-720A-A	Nose Landing Gear (NLG) lock pin - Install procedure
BD500-A-J32-11-00-01AAA-720A-A	Main Landing Gear (MLG) lock pin - Install procedure
BD500-A-J12-30-32-01AAA-913A-A	Release park brake - General maintenance procedure
BD500-A-J08-20-00-01AAA-913A-A	Leveling of the aircraft - General maintenance procedure
BD500-A-J24-00-00-01AAA-761A-A	Electrical power - General - Energize electrical network
BD500-A-J24-00-00-01AAA-561A-A	Electrical power - General - De-Energize electrical network
BD500-A-J10-20-00-01AAA-912A-A	Mooring - Handling procedure

Common information

This data module gives the procedure to lift the aircraft. Jacking limits are specific to each operator's data.

- For evident lateral imbalance, refer to Reference Instruction Letter (RIL) A220-RIL-07-11-001 in the service document library on the customer support portal.

- For A220-100, Refer to BD500-A-J08-80-02-00AAA-030A-A in the Weight and Balance Manual (WBM).
- For A220-300, Refer to BD500-A-J08-80-02-00AAB-030A-A in the WBM.

Note

These reference of the WBM are not hyperlinked. You must copy and paste the reference to WBM to find your specific reference.

Preliminary requirements

Required conditions

Table 2 Required conditions

Action/Condition	Data Module/Technical publication
Make sure the aircraft is on hard level surface.	
Make sure that the Nose Landing Gear (NLG) lock pin are installed.	BD500-A-J32-21-00-01AAA-720A-A
Make sure that the Main Landing Gear (MLG) lock pin are installed.	BD500-A-J32-11-00-01AAA-720A-A
If necessary, make sure that the nose mooring bracket (3AB48, Pt. No. CG9000034-0003) is installed hand tight.	BD500-A-J10-20-00-01AAA-912A-A
Make sure the jack pads are secure hand tight.	
Release the parking brake.	BD500-A-J12-30-32-01AAA-913A-A
Make sure there is proper clearance around the aircraft (ex. wings, doors, horizontal-stabilizer).	
Make sure there are no targets or anti-targets installed on the NLG.	
Make sure there are no targets or anti-targets installed on the MLG.	
Do the leveling of the aircraft.	BD500-A-J08-20-00-01AAA-913A-A
Energize the aircraft.	BD500-A-J24-00-00-01AAA-761A-A

Action/Condition

Data Module/Technical publication

Make sure that the thermal circuit breakers that follow are opened:

Name	CB Number/Location
L WSHLD HTR	EPC1-D14
R WSHLD HTR	EPC2-C2
ADS3 INVERTER IN	EPC3-A2
ADS4 INVERTER IN	EPC3-A3
INVERTER 1	EPC3-A4
INVERTER 2	EPC3-B4
L ENG IGN A	L-CBP-F5
L TAT HEAT	L-CBP-G1
ADS PROBE HEAT 3A	L-CBP-G2
R TAT HEAT	L-CBP-H1
ADS PROBE HEAT 4A	L-CBP-H2
L WINDOW HTR	L-CBP-H4
ATC 1	R-CBP-A4
R ENG IGN A	R-CBP-F5

Make sure that the electronic circuit breaker that follows are OUT on the circuit breaker synoptic page.

Name	CB Number/Location
L ENG IGN B	CDC1-7-1
R ENG IGN B	CDC2-7-1
TCAS - ATC 2	CDC2-9-2
L AOA CASE HEAT	CDC3-5-2
L AOA VANE HEAT	CDC3-6-4
ADS PROBE HEAT 1A	CDC3-14-1
ADS PROBE HEAT 2B	CDC3-14-2
WXR	CDC4-4-1

Action/Condition	Data Module/Technical publication	
	Name	CB Number/Location
	R AOA CASE HEAT	CDC4-4-2
	R AOA VANE HEAT	CDC4-6-1
	ADS PROBE HEAT 1B	CDC4-9-1
	ADS PROBE HEAT 2A	CDC4-9-2
	R WINDOW HTR	CDC4-10-1
De-energize the aircraft	BD500-A-J24-00-00-01AAA-561A-A	

Support equipment

Table 3 Support equipment

Name	Identification/Reference	Quantity	Remark
Rear fuselage support	03A5846C0100	1	
Wheel chocks	99-9028-6000	3	
Wing jack	725A 72500A-6 02A7945C0100 D03034 FEN301 1481.90	2	
Forward fuselage jack	714A 71400A-14 02A7922C0100 D01258 FEN122 1287.50	1	
Jacking pad kit	CG9000054-0001	1	
Nose anchor	CG9000034-0003	1	

Consumables, materials, and expendables

Table 4 Consumables, materials, and expendables

Name	Identification/Reference	Quantity	Remark
None			

Spares

Table 5 Spares

Name	Identification/Reference	Quantity	Remark
None			

Safety conditions

WARNINGS

- **Make sure that the locking pins are installed on all the landing gear. Without the locking pins, the landing gear could retract and cause injuries to persons and damage to equipment.**
 - **Release the parking brake before you jack or lower the aircraft. If you do not obey this warning, the aircraft can move off the jacks during the procedure.**
 - **Obey the precautions that follow when you put the aircraft on jacks outdoors:**
 - **Make sure that the wind speed is not more than 46.3 km/h (28.8 mph).**
 - **Make sure that you continuously monitor the wind speed.**
 - **Make sure the aircraft Center of Gravity (CG) is within the approved allowable limits, when the aircraft is on jacks.**
 - **Make sure that the weight of the fuel is equally distributed between left and right wing tank, before jacking the aircraft.**
 - **If possible, jack the aircraft in headwind.**
- If you do not obey, you can cause injury to persons and/or damage to equipment.**

CAUTIONS

- **Release the parking brakes before the aircraft is on jacks. This prevents damage to the parking brakes.**
- Before you lift or you lower the aircraft make sure that there is no equipment adjacent to it that can cause damage. Make sure that no other work is being done.**

Procedure

- 1 Make sure that you have:
 - One technician at the forward fuselage jack.
 - One technician at each wing jack.
 - One technician to make sure that all personnel hear and speak clearly during the task.

- 2 Make sure that the aircraft Center of gravity (CG) is within the approved allowable limits, before jacking the aircraft.
 - For evident lateral imbalance, refer to RIL A220-RIL-07-11-001 in the service document library on the customer support portal.
 - For A220-100, Refer to BD500-A-J08-80-02-00AAA-030A-A in the WBM.
 - For A220-300, Refer to BD500-A-J08-80-02-00AAB-030A-A in the WBM.

Note

These reference of the WBM are not hyperlinked. You must copy and paste the reference to WBM to find your specific reference.

- 3 Put the forward fuselage jack (94861, Pt. No. 714A) under the nose jacking pad, (98441, Pt. No. CG9000054-0001).
 - 3.1 Remove the nylon cap from the forward fuselage.
 - 3.2 Install the forward fuselage jacking pads (98441, Pt. No. CG9000054-0001)

Note

Make sure you added the three washers provided in the jacking pads kit.

- 3.3 Make sure the forward fuselage jack (94861, Pt. No. 714A) is leveled.
- 3.4 Extend the forward fuselage jack (94861, Pt. No. 714A) until it touches the nose jack pad, (98441, Pt. No. CG9000054-0001).
- 4 Seat the nose jack (94861, Pt. No. 714A) under the nose jacking pad.
 - 4.1 Make sure the nose jack is leveled.
 - 4.2 Move the wheel chocks away from the NLG tires.
 - 4.3 Raise the forward fuselage jack (94861, Pt. No. 714A) slowly until the aircraft is approximately leveled.

Note

To level the aircraft, it is possible to use plumb bob, inclinometer, on board cockpit computer or visually, refer to BD500-A-J08-20-00-01AAA-913A-A.

- 4.4 Secure the nose jacks (94861, Pt. No. 725A) using locking ring at approximately every two inches (5.0 centimeter).
- 5 Install the wing jacking pads (98441, Pt. No. CG9000054-0001) as follow:
Refer to Fig. 2.
 - 5.1 Remove the screws (1).
 - 5.2 Remove the cover (2) and the shim (3).
 - 5.3 Remove the bolt (4).
 - 5.4 Remove the washer (5).
 - 5.5 Remove the plug (6).
 - 5.6 Install the wing jack pads (98441, Pt. No. CG9000054-0001).

Note

Make sure you added the washer provided in the jacking pads kit.

- 6 Seat the wing jacks (94861, Pt. No. 725A) under the wing jacking pads, (98441, Pt. No. CG9000054-0001).
 - 6.1 Make sure the wing jacks, (94861, Pt. No. 725A) are leveled.
 - 6.2 Extend the wing jacks (94861, Pt. No. 725A) until they make contact with the jacking pads.
 - 6.3 Move the wheel chocks away from the MLG tires. Move the wheel chocks away from the MLG tires.

-
- 7 Raise aircraft evenly until all the wheels are clear from the ground.
- 7.1 Secure the nose and wing jacks using locking ring at approximately every two inches (5.0 centimeter).

Note

Clear the aircraft tires from the ground to a minimum of 6 inches (15 centimeter) if required, to proceed to a gear swing.

- 8 Level the aircraft as follows:
- For A220-100, Refer to BD500-A-J08-80-02-00AAA-030A-A in the WBM.
 - For A220-300, Refer to BD500-A-J08-80-02-00AAB-030A-A in the WBM.

Note

These reference of the WBM are not hyperlinked. you must copy and paste the reference to WBM to find your specific reference.

- 8.1 When jacking is completed, secure lock rings.
- 8.2 Release hydraulic pressure from the jacks.
- 8.2.1 Make sure the lock rings hold the aircraft.

CAUTIONS

- **Make sure that the rear fuselage support is directly below the rivet line at FR 79 junction between rear barrel and aft fuselage. If the rear fuselage support is not below the rivet line, damage to the fuselage can occur.**
 - **Rear fuselage support must be removed during jacking operations or a person must monitor the movement of the aircraft. Do not lift or lower the aircraft to prevent damage to the fuselage.**
- 8.3 It is highly recommended to install the rear fuselage support (59603, Pt. No. 03A5846C0100) during maintenance once the aircraft is jacked and leveled.

Note

In the following conditions, if the rear fuselage support is not available, it is allowed to complete maintenance activities without installing the rear fuselage support.

- 8.3.1 The limits and requirements described in the Weight and Balance manual.
- For A220-100, Refer to BD500-A-J08-80-02-00AAA-030A-A in the WBM.
 - For A220-300, Refer to BD500-A-J08-80-02-00AAB-030A-A in the WBM.

Note

These reference of the WBM are not hyperlinked. you must copy and paste the reference to WBM to find your specific reference.

- 8.3.2 Aircraft CG is monitored during the maintenance including workers/ tools movements on aircraft and any weight additions and removals form the aircraft.

Note

It is necessary to remove the rear fuselage support to prevent damage to the aircraft during the maintenance procedures that follow:

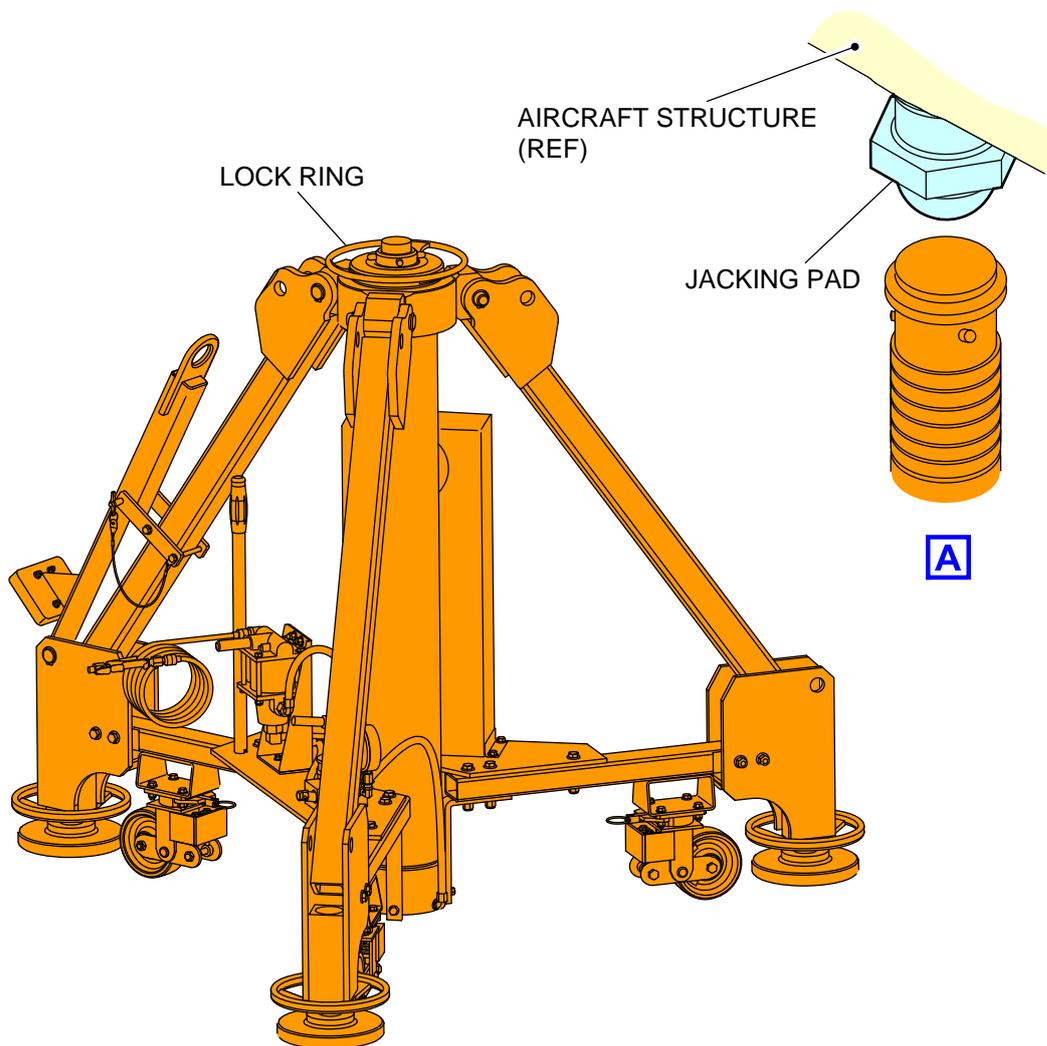
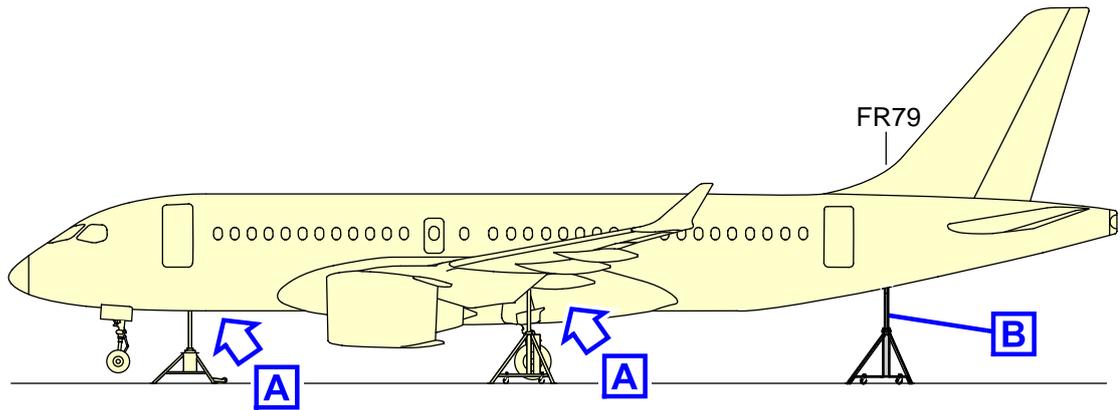
- Landing gears extension and retraction.
- Weighing of aircraft.

- 8.4 If necessary, Install the tie down in the nose mooring bracket (3AB48, Pt. No. CG9000034-0003). Refer to BD500-A-J10-20-00-01AAA-912A-A.

Note

The tie down at the nose mooring bracket (3AB48, Pt. No. CG9000034-0003) is not necessary when the aircraft engines are installed and the detail inspection started.

This publication has been superseded by the Aircraft Characteristics Publication (ACP).



**LIFTING JACK
TYPICAL**

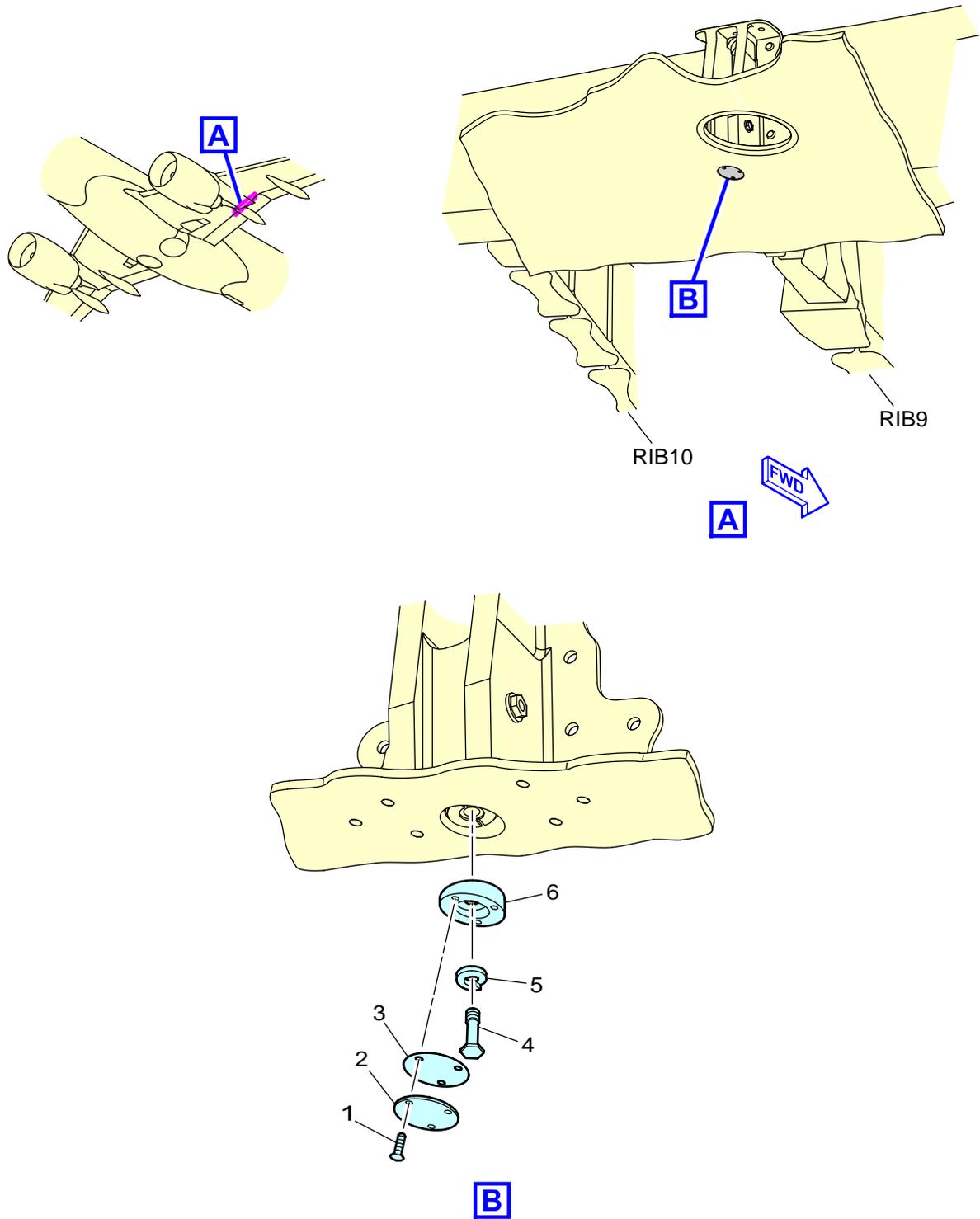
ICN-BD500-A-J071102-A-3AB48-25019-A-002-01

Figure 1 Jacking/Lowering of the aircraft - (Sheet 1 of 2)



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ICN-BD500-A-J071101-C-3AB48-44571-A-001-01
Figure 1 Jacking/Lowering of the aircraft - (Sheet 2 of 2)



ICN-BD500-A-J071101-A-3AB48-45852-A-001-01

Figure 2 Jacking/Lowering of the aircraft

Requirements after job completion

Required conditions

Table 6 Required conditions

Action/Condition	Data Module/Technical publication
None	

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Lowering of the aircraft - Lowering

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
BD500-A-J32-21-00-01AAA-720A-A	Nose Landing Gear (NLG) lock pin - Install procedure
BD500-A-J32-11-00-01AAA-720A-A	Main Landing Gear (MLG) lock pin - Install procedure
BD500-A-J24-00-00-01AAA-761A-A	Electrical power - General - Energize electrical network
BD500-A-J53-21-27-04AAA-720A-A	Jack fitting plug, forward fuselage - Install procedure
BD500-A-J57-51-02-03AAA-720A-A	Jack fitting plug, left and right wing - Install procedure
BD500-A-J12-30-32-01AAA-913A-A	Release park brake - General maintenance procedure

Preliminary requirements

Required conditions

Table 2 Required conditions

Action/Condition	Data Module/Technical publication
Aircraft area clear of Ground Support Equipment (GSE).	
Release the parking brake.	BD500-A-J12-30-32-01AAA-913A-A
Make sure that the Nose Landing Gear (NLG) lock pin is installed.	BD500-A-J32-21-00-01AAA-720A-A
Make sure that the Main Landing Gear (MLG) lock pins are installed.	BD500-A-J32-21-00-01AAA-720A-A
Make sure that the floor under the tires is clear of Foreign Object Damage (FOD).	

Support equipment

Table 3 Support equipment

Name	Identification/Reference	Quantity	Remark
Rear fuselage support	03A5846C0100	1	Used to prevent the aircraft tail from tilting.
Wheel chocks	99-9028-6000	3	Used to prevent the parked aircraft from roll.
Jacking pad kit	CG9000054-0001	1	Used to jack the aircraft.
Wing jack	725A 72500A-6 02A7945C0100 D03034 FEN301 1481.90	2	Used to jack the aircraft.
Forward fuselage jack	714A 71400A-14 02A7922C0100 D01258 FEN122 1287.50	1	Used to jack the aircraft.

Consumables, materials, and expendables

Table 4 Consumables, materials, and expendables

Name	Identification/Reference	Quantity	Remark
None			

Spares

Table 5 Spares

Name	Identification/Reference	Quantity	Remark
None			

Safety conditions

WARNINGS

- **Make sure that the personnel and the equipment are away from the area below the wing before you deflate the shock strut. When you deflate one shock strut, the wingtip can move down. This can cause injuries to personnel or damage to equipment.**
- **Make sure the brake and the wheel/tire assembly are cool before you go near the landing gear. The assembly can be hot and cause injury to persons.**
- **Make sure the downlock pins are installed on all the landing gear. Without the downlock pins, the landing gear could retract and cause injuries to persons and damage to equipment.**
- **Make sure a warning placard is installed on the landing gear Alternate Extension Switch (AES). If you operate the switch, the nose and main landing gear will retract. This can cause injury to persons and/or damage to equipment.**
- **Release the parking brake before you jack or lower the aircraft. If you do not obey this warning, the aircraft can move off the jacks during the procedure.**

CAUTIONS

- **Before you lift or you lower the aircraft make sure that there is no equipment adjacent to it that can cause damage. Make sure that no other work is being done.**
- **Release the parking brakes before the aircraft is on jacks. This prevents damage to the parking brakes.**

Procedure

- 1 Remove the rear fuselage support (59603, Pt. No. 03A5846C0100)(59603, Pt. No. 03A5846C0100) .
- 2 Lowering of the aircraft (with a manual jack):
 - 2.1 Remove tie down from nose jacking point, if applicable.

Note

The tie down, at the nose bracket, is not necessary when the aircraft engine and interior are installed.

- 2.2 Make sure that you have:

- One technician at the nose jack.
- One technician at each wing jack.
- One technician to help the communication between all personnel.

- 2.3 In the jacks, lift the lock ring approximately 2 in. (5 cm).

Note

Keep the lock ring at this position (no more than 2 inches) while you lower the aircraft.

- 2.4 Lower the aircraft equally until it is fully lowered.
- 2.5 Install the wheel chocks (59603, Pt. No. 99-9028-6000)(59603, Pt. No. 99-9028-6000) .
- 2.6 Remove the wing jacks (94861, Pt. No. 725A)(94861, Pt. No. 725A) .
- 2.7 Remove the nose jack (94861, Pt. No. 714A)(94861, Pt. No. 714A) .
- 2.8 Remove jacking pad kit (98441, Pt. No. CG9000054-0001)(98441, Pt. No. CG9000054-0001) from the area.

Refer to Fig. 2.

- 2.8.1 From the wing, remove jacking pad (98441, Pt. No. CG9000054-0001)(98441, Pt. No. CG9000054-0001) .

- 2.8.1.1 Install the plug (6).

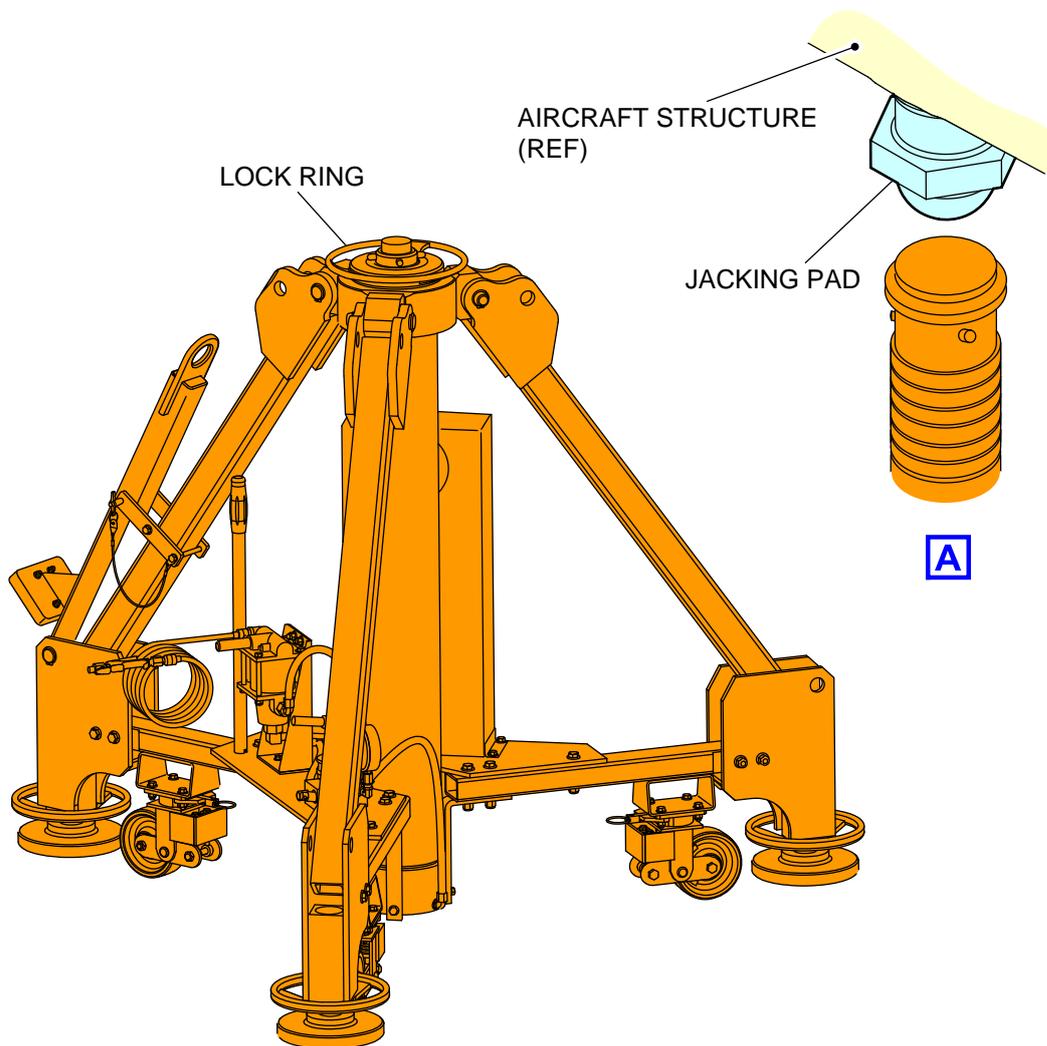
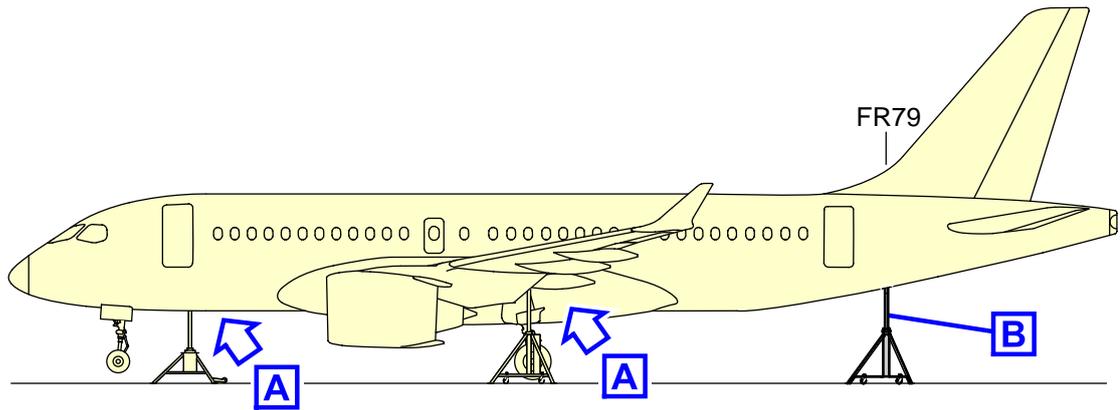
- 2.8.1.2 Install the bolt (4) and washer (5).

- 2.8.1.3 Put in position the cover (2) and the shim (3).

- 2.8.1.4 Install the screws (1).

- 2.8.2 From the forward fuselage, remove the jacking pad (98441, Pt. No. CG9000054-0001)(98441, Pt. No. CG9000054-0001) .

- 2.8.2.1 Install the nylon cap.



**LIFTING JACK
TYPICAL**

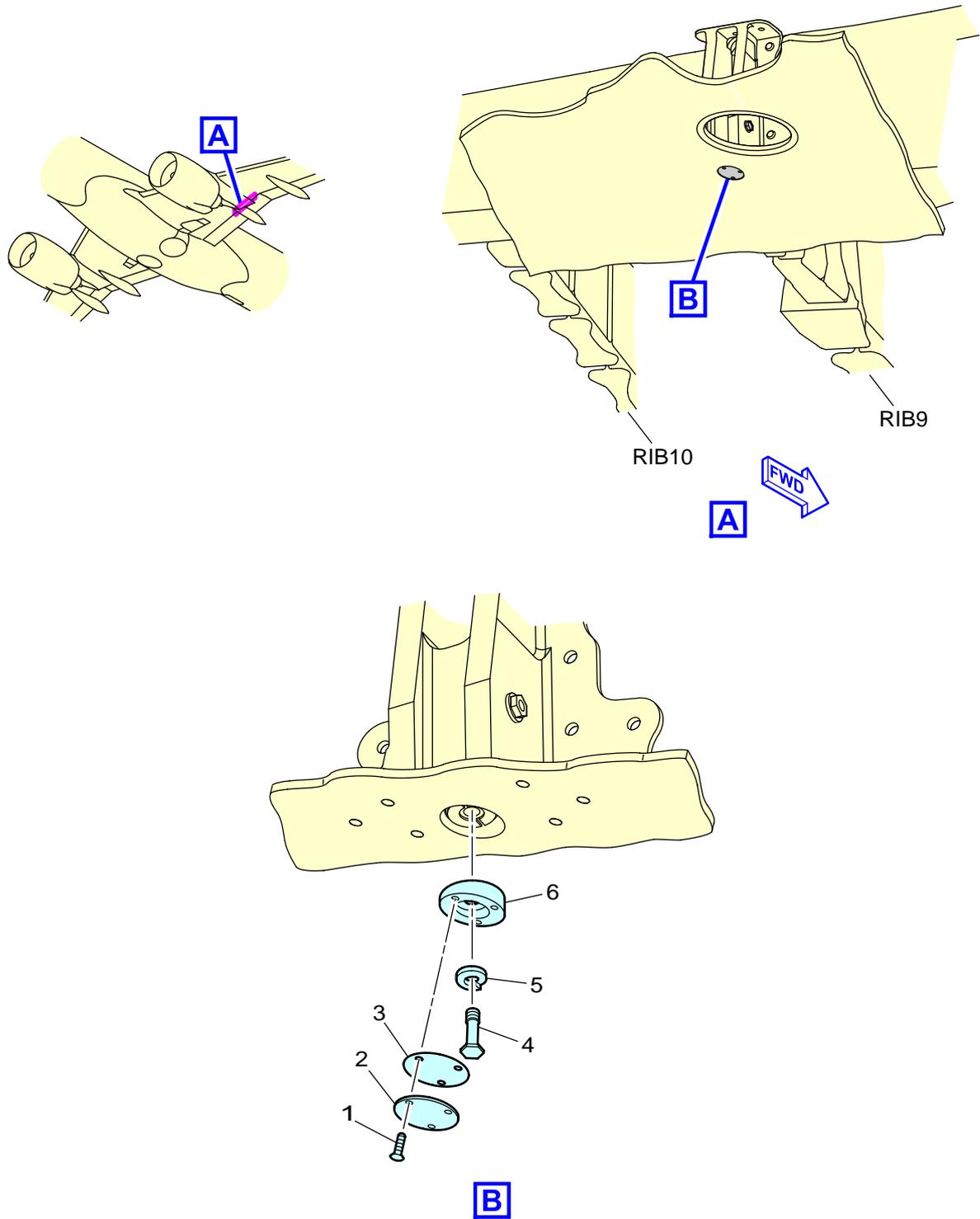
ICN-BD500-A-J071102-A-3AB48-25019-A-002-01

Figure 1 Jacking/Lowering of the aircraft - (Sheet 1 of 2)



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ICN-BD500-A-J071101-C-3AB48-44571-A-001-01
Figure 1 Jacking/Lowering of the aircraft - (Sheet 2 of 2)



ICN-BD500-A-J071101-A-3AB48-45852-A-001-01

Figure 2 Jacking/Lowering of the aircraft

Requirements after job completion

Required conditions

Table 6 Required conditions

Action/Condition	Data Module/Technical publication																														
Apply the parking brakes.																															
Install the jack fitting plug, forward fuselage.	BD500-A-J53-21-27-04AAA-720A-A																														
Install the jack fitting plug, wing Left (side) (L) and Right (side) (R).	BD500-A-J57-51-02-03AAA-720A-A																														
Remove all tools, equipment, and unwanted materials from the work area.																															
Energize the aircraft.	BD500-A-J24-00-00-01AAA-761A-A																														
Make sure that the thermal circuit breakers that follow are closed:																															
	<table border="1"> <thead> <tr> <th>Name</th> <th>CB Number/Location</th> </tr> </thead> <tbody> <tr> <td>L WSHLD HTR</td> <td>EPC1-D14</td> </tr> <tr> <td>R WSHLD HTR</td> <td>EPC2-C2</td> </tr> <tr> <td>ADS3 INVERTER IN</td> <td>EPC3-A2</td> </tr> <tr> <td>ADS4 INVERTER IN</td> <td>EPC3-A3</td> </tr> <tr> <td>INVERTER 1</td> <td>EPC3-A4</td> </tr> <tr> <td>INVERTER 2</td> <td>EPC3-B4</td> </tr> <tr> <td>L ENG IGN A</td> <td>L-CBP-F5</td> </tr> <tr> <td>L TAT HEAT</td> <td>L-CBP-G1</td> </tr> <tr> <td>ADS PROBE HEAT 3A</td> <td>L-CBP-G2</td> </tr> <tr> <td>R TAT HEAT</td> <td>L-CBP-H1</td> </tr> <tr> <td>ADS PROBE HEAT 4A</td> <td>L-CBP-H2</td> </tr> <tr> <td>L WINDOW HTR</td> <td>L-CBP-H4</td> </tr> <tr> <td>ATC 1</td> <td>R-CBP-A4</td> </tr> <tr> <td>R ENG IGN A</td> <td>R-CBP-F5</td> </tr> </tbody> </table>	Name	CB Number/Location	L WSHLD HTR	EPC1-D14	R WSHLD HTR	EPC2-C2	ADS3 INVERTER IN	EPC3-A2	ADS4 INVERTER IN	EPC3-A3	INVERTER 1	EPC3-A4	INVERTER 2	EPC3-B4	L ENG IGN A	L-CBP-F5	L TAT HEAT	L-CBP-G1	ADS PROBE HEAT 3A	L-CBP-G2	R TAT HEAT	L-CBP-H1	ADS PROBE HEAT 4A	L-CBP-H2	L WINDOW HTR	L-CBP-H4	ATC 1	R-CBP-A4	R ENG IGN A	R-CBP-F5
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Action/Condition	Data Module/Technical publication																												
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R WINDOW HTR	CDC4-10-1																												

This publication has been superseded by the Aircraft Characteristics Publication (ACP)

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This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Towing of the aircraft with towbar - Towing

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
BD500-A-J09-11-00-01AAA-913G-A	Towing safety precautions - General maintenance safety procedure
BD500-A-J09-11-00-02AAA-174A-A	Towing of the aircraft without towbar - Towing
BD500-A-J32-00-00-01AAA-913G-A	Landing gear safety precautions - General maintenance safety procedure

Common information

This data module gives the procedure to do the towing of the aircraft with towbar. The towbar attachment point is on the Nose Landing Gear (NLG) axle. Towing controls and indications are installed in the flight compartment and the NLG. A trained towing crew is required to perform this procedure.

Preliminary requirements

Production maintenance data

Zones	115		Lower nose fuselage above and outboard of nose wheel well, left side
	211		Flight compartment, left side
	212		Flight compartment, right side
	530		Wing tip, left side
	630		Wing tip, right side
	711		Nose landing gear
Access points	115DL	Door	

Required conditions

Table 2 Required conditions

Action/Condition	Data Module/Technical publication
Make sure that the aircraft is safe for maintenance.	
Obey all the towing safety precautions.	BD500-A-J09-11-00-01AAA-913G-A
Obey all the landing gear safety precautions.	BD500-A-J32-00-00-01AAA-913G-A
Make sure that the access door is open. Refer to the access points table above for details.	
Make sure that the minimum weight is 4000 lb (1814 kg) on the NLG or the shock strut extension must be at a maximum of 15 in. (38 cm).	

Support equipment

Table 3 Support equipment

Name	Identification/Reference	Quantity	Remark
Headset extension cord	CIX213G/25-51	1	or equivalent equipment.
Headset, or equivalent	H10-30	AR	or equivalent equipment.

Name	Identification/Reference	Quantity	Remark
Tow bar assembly	TOWCS300S20SH1 TOWCS300S20RH1 TOWCS300S21SH1 01B1387-0100 J-TOWc100 APATB235 J-TOWbiz3 15F3381 1791.12 201A17X3000	AR	or equivalent equipment.
Tow bar assembly	TOWCS300-C-2	AR	Superseded by P/ N:TOWCS300S20SH1
Wheel chocks	99-9028-6000	AR	or equivalent equipment.

Consumables, materials, and expendables

Table 4 Consumables, materials, and expendables

Name	Identification/Reference	Quantity	Remark
None			

Spares

Table 5 Spares

Name	Identification/Reference	Quantity	Remark
None			

Safety conditions

None

Procedure

CAUTION

During maneuvers make sure that the Nose Wheel Steering (NWS) does not exceed the 130° from the centerline. When the NWS angle reaches the 135° or more, the over travel target will be shear and a fault message will indicate "32 NOSE STEER FAULT - OVERTRAVEL DET INOP".

Note

- 1 During towing operations, a person must be in the aircraft cockpit to activate the aircraft park brake when necessary and to respond appropriately to unforeseen operating conditions.
- 2 Make sure that ground locking pins are installed on all landing gears.

- 1 Do the towing operation of the aircraft as follows:

Refer to Fig. 1 and Fig. 2 .

- 1.1 Make sure that the members of the towing crew are in position at the locations that follows:

- Flight compartment
- Towing vehicle
- Electrical/towing service panel
- Left wing tip
- Right wing tip.

Note

Light wands can be used to give signals in low visibility conditions.

- 2 If the aircraft is energized (attended cockpit) do as follows:

- 2.1 Before towing or pushing the aircraft, if the aircraft is energized, do as follows:

- 2.1.1 On the gear and brakes panel, push IN the NOSE STEER Push Button Annunciator (PBA) to the OFF position.
- 2.1.2 Make sure that the NOSE STEER PBA OFF light comes on.
- 2.1.3 On the PARK BRAKE control panel, pull and turn the parking brake switch to the ON position.
 - 2.1.3.1 On the NLG towing control box, make sure that the NO TOWING (red) indicator light is ON.
- 2.1.4 On the electrical/towing service panel, open access panel, connect the headset (71483, Pt. No. H10-30) with the extension (04UP0, Pt. No. CIX213G/25-51) and establish communication ground to cockpit.
- 2.1.5 Connect the towbar assembly to the NLG towing fixture.
- 2.1.6 Move the towing vehicle into position to connect the towbar assembly.

Note

Refer to the applicable towbar user manual for details on the operations.

- 2.1.7 Remove all the wheel chocks (59603, Pt. No. 99-9028-6000) .
- 2.1.8 On the PARK BRAKE control panel, pull and turn the parking brake switch to the OFF position.
- 2.1.9 On the NLG towing control box, make sure that the NO TOWING (red) indicator light changes to the TOWING (green) indicator light.
- 2.1.10 In the cockpit, set the NAV light switch to ON.

Note

Local regulations are applicable when you use the external lighting. BEACON and LOGO lights maybe required to be ON.

- 2.2 Move the aircraft at a speed of not more than it is described in the general maintenance safety procedure. Refer to BD500-A-J09-11-00-01AAA-913G-A. Control the towing speed with the towbar towing vehicle only.

- 2.3 When the aircraft is in position, stop the aircraft with the towbar towing vehicle.

Note

If the aircraft is turned before it is parked, move the aircraft forward or rearward in a straight line for a short distance. This is to remove twisting forces from the landing gear before the aircraft comes to the stop position.

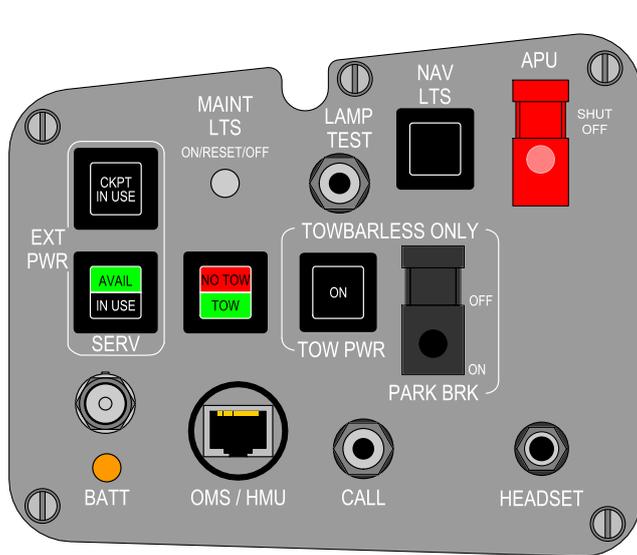
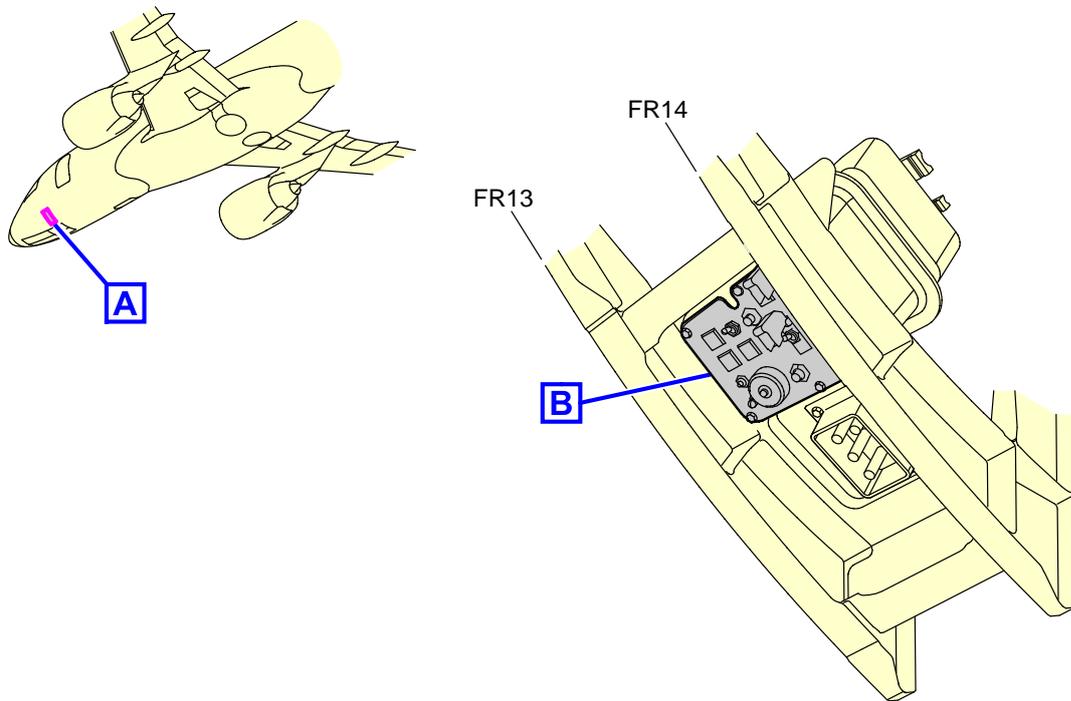
- 2.4 On the PARK BRAKE control panel, pull and turn the parking brake to the ON position.
- 2.5 On the NLG towing control box, make sure that the NO TOWING (red) indicator light is ON.
- 2.6 If necessary, install the wheel chocks (59603, Pt. No. 99-9028-6000) .
- 2.7 Disconnect the towbar assembly from the towing vehicle.
- 2.8 Disconnect the towbar assembly from the NLG towing fixture.
- 2.9 In the cockpit, set the NAV light switch to OFF.
- 2.10 On the electrical/towing service panel, disconnect the headset (71483, Pt. No. H10-30) with the extension (04UP0, Pt. No. CIX213G/25-51) .

Note

Markings present on the NLG strut at 130 degrees from the center line are available to let the tug operator clearly see the NLG turn limits. If the steering angle exceeded the maximum acceptable steering range during a towing operation, INFO message 32 NOSE STEER FAULT – OVERTRAVEL DET INOP will appear on the Engine Indication and Crew Alerting System (EICAS) after aircraft power and superseded by NOSE STEER FAIL caution message EICAS after hydraulic system 2 is pressurized. This will require special irregular inspection prior aircraft dispatch.

- 3 If the aircraft is NOT energized (Unattended cockpit). Do towing of the aircraft without towbar - Towing, Refer to BD500-A-J09-11-00-02AAA-174A-A.

(Sheet) Applicability: not applicable



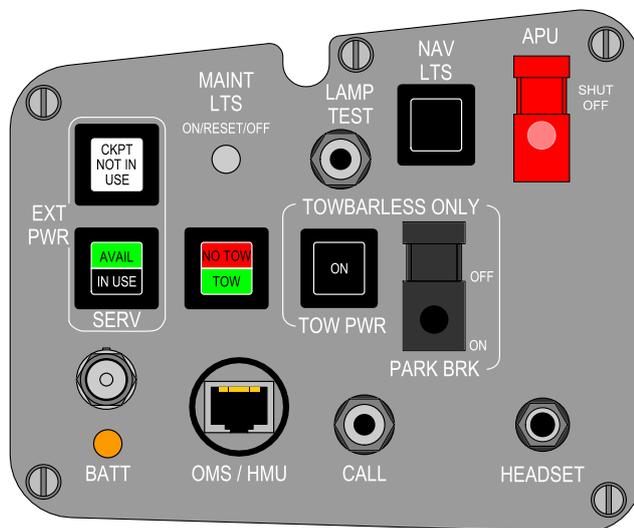
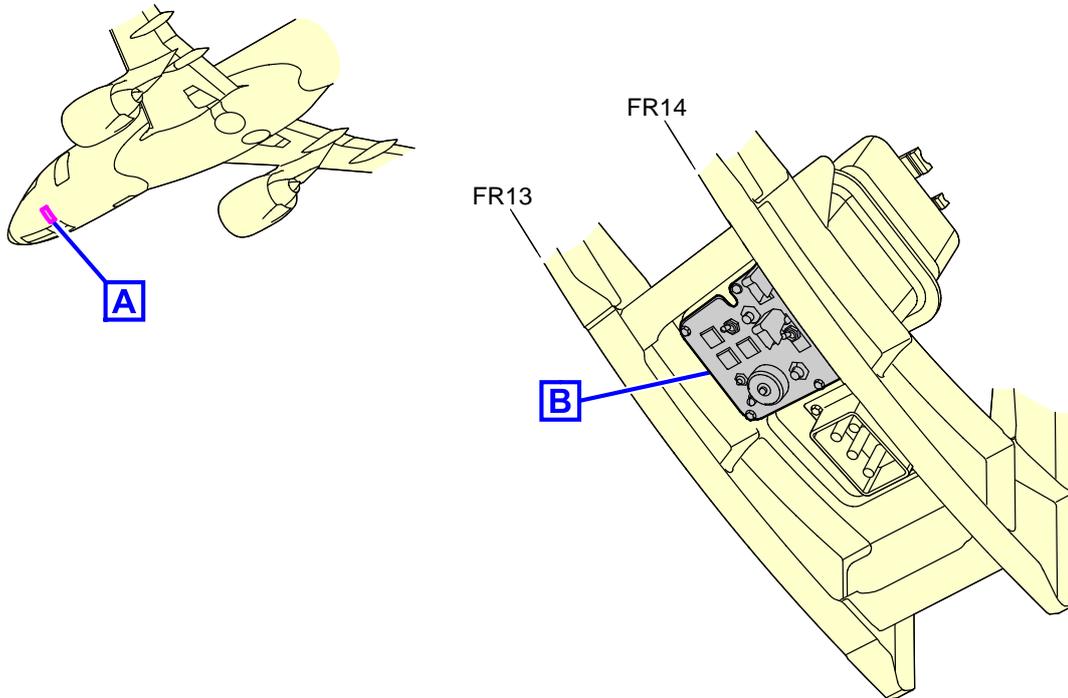
ELECTRICAL/TOWING SERVICE PANEL



ICN-BD500-A-J242401-C-3AB48-41646-A-001-01

Figure 1 Towing of the aircraft with towbar - (Sheet 1 of 2)

(Sheet) Applicability: 50018-50019, 50030, 50032-54999, 55017, 55053-59999 and 50010-50017, 50020-50029, 50031, 55003-55016, 55018-55052 POST BD500-240006

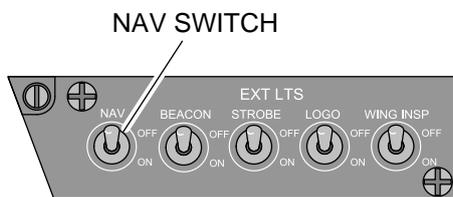
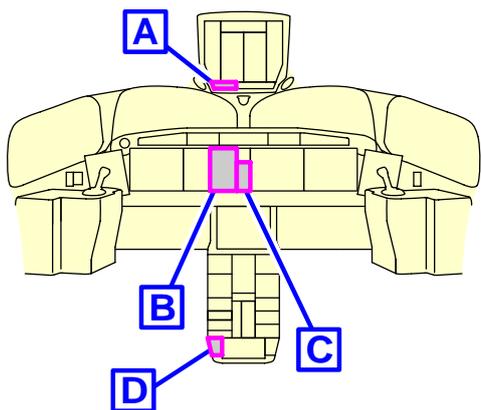


ELECTRICAL/TOWING SERVICE PANEL



ICN-BD500-A-J240209-C-3AB48-58774-A-001-01

Figure 1 Towing of the aircraft with towbar - (Sheet 2 of 2)



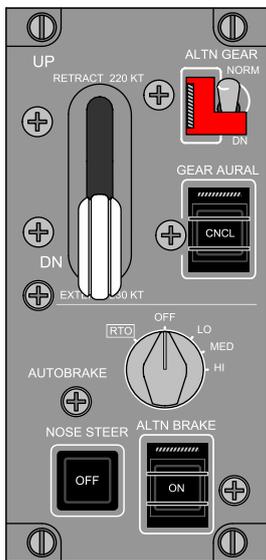
EXT LTS CONTROL PANEL

A



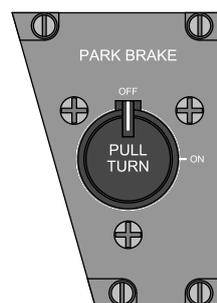
EICAS DISPLAY

B



LANDING GEAR CONTROL PANEL

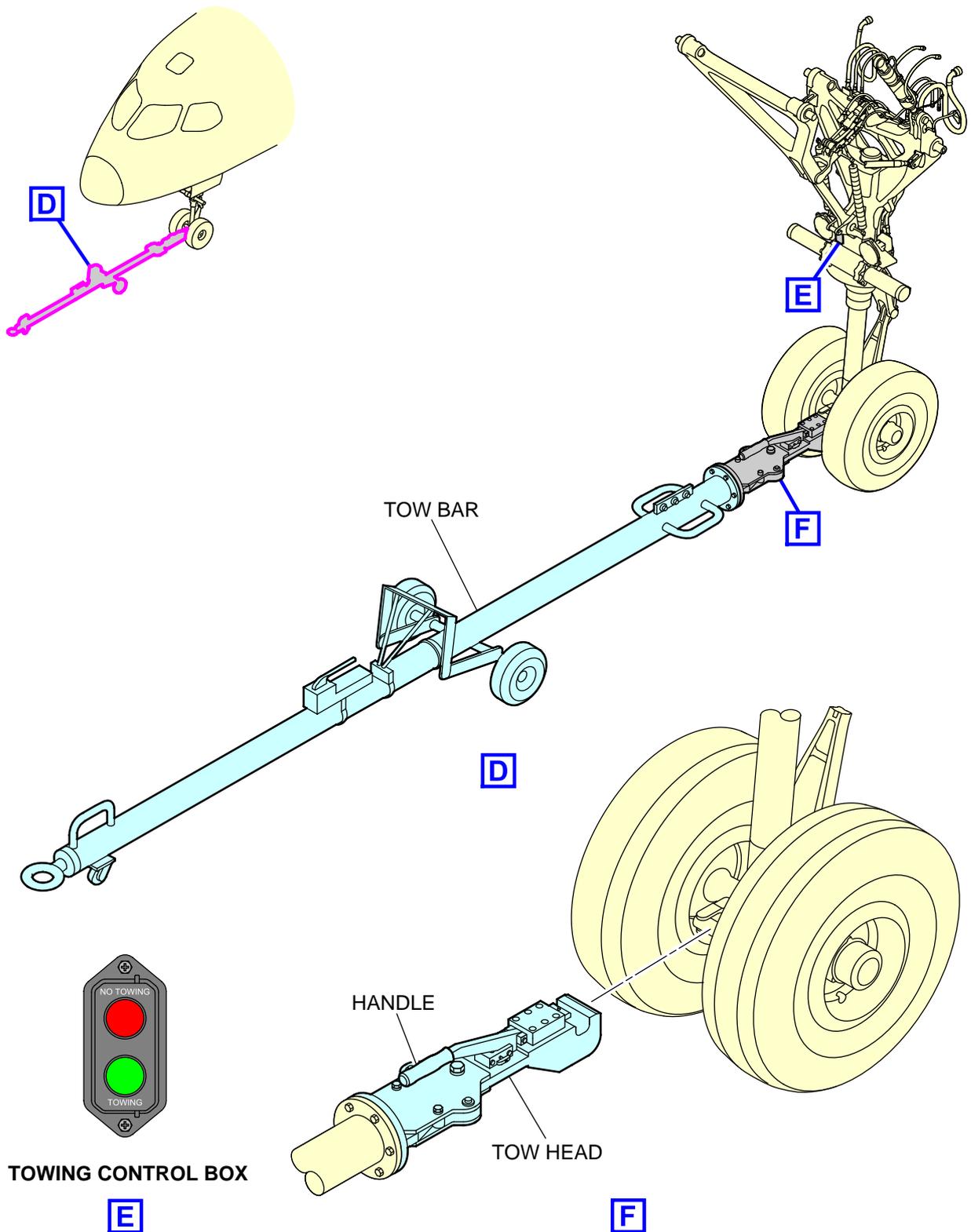
C



PARK BRAKE CONTROL PANEL

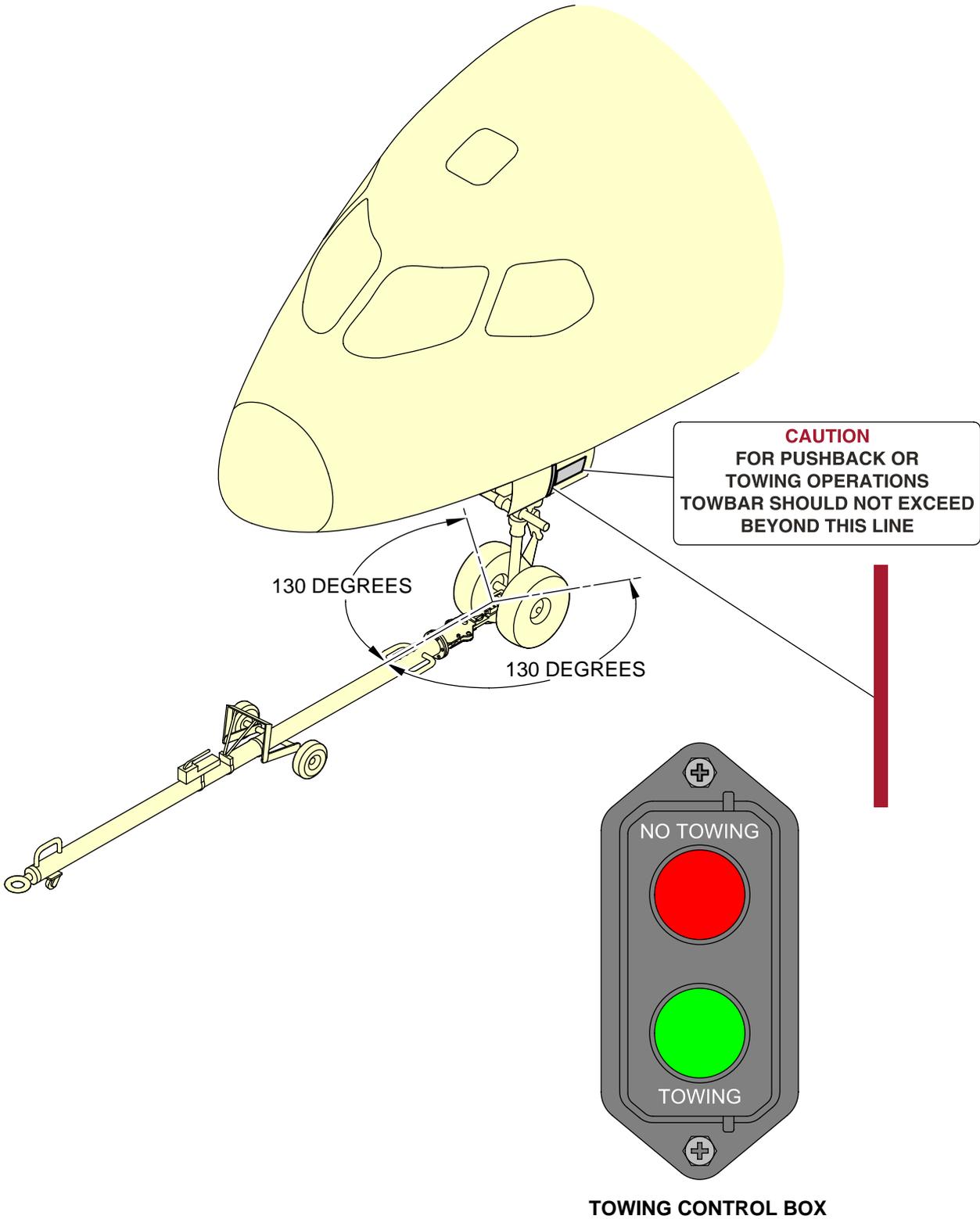
D

ICN-BD500-A-J091100-C-3AB48-19967-A-003-01
Figure 2 Towing of the aircraft with towbar - (Sheet 1 of 3)



ICN-BD500-A-J091100-C-3AB48-19968-A-002-01

Figure 2 Towing of the aircraft with towbar - (Sheet 2 of 3)



ICN-BD500-A-J091100-C-3AB48-19969-A-002-01
Figure 2 Towing of the aircraft with towbar - (Sheet 3 of 3)

Requirements after job completion

Required conditions

Table 6 Required conditions

Action/Condition	Data Module/Technical publication
Remove all tools, equipment, and unwanted materials from the work area.	
Make sure that the access door is closed. Refer to the access points table above for details.	

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

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This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Towing safety precautions - General maintenance safety procedure

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
BD500-A-J52-11-00-01AAA-740A-A	Forward Passenger Door (FPD) - Close after access procedure
BD500-A-J52-12-00-01AAA-740A-A	Aft Passenger Door (APD) - Close after access procedure
BD500-A-J52-45-00-01AAA-740A-A	Forward Service Door (FSD) - Close after access procedure
BD500-A-J52-46-00-01AAA-740A-A	Aft Service Door (ASD) - Close after access procedure
BD500-A-J52-21-00-01AAA-740A-A	Overwing Emergency Exit Door (OWEED) - Close after access procedure
BD500-A-J52-30-00-01AAA-740A-A	Cargo compartment door - Close after access procedure
BD500-A-J05-51-17-01AAA-284A-A	Nose Landing Gear (NLG) towing angle exceeded - Special irregular inspection

Common information

This data module gives the technical precautions that you must follow when you do the towing operation of the aircraft.

To ensure clarity in the procedure, refer to towing definitions that follow:

Pushback towing	Moving a fully loaded aircraft (passengers, cargo and fuel) from the parking position to the taxiway. Movement includes; pushback with turn, a stop, and short tow forward to align aircraft nose wheels. Engines may, or may not, be operating.
Maintenance towing	The movement of an aircraft for maintenance/remote parking purposes. Maintenance towing consists typically of many starts, stops, turns, accelerations and braking. Aircraft is typically unloaded.
Dispatch towing	Towing a revenue aircraft, loaded with passengers, fuel and cargo up to Maximum Ramp Weight (MRW), from the terminal gate/remote parking area, to a location near the active runway, or conversely. The movement may cover several kilometers (miles) with speed up to 32 km/h (20 mph), with several starts, stops and turns. It replaces typical taxiing prior to take-off and landing. Tow bar and towbarless towing are allowed for pushback and maintenance towing and not accepted for dispatch towing.
Hangar/ Parking towing	Hangar/Parking towing consists typically in small and accurate displacements aircraft for hangar storage and space saving purpose. Aircraft is typically unloaded and manipulated at low speed on short distances.

The steering ranges are the following:

- Active steering range is ± 80 degrees
- Passive steering range is ± 130 degrees.

A NOSE STEER MISALGN caution message will appear on the Engine Indication and Crew Alerting System (EICAS), if the steering angle exceeds the active steering range of ± 80 degrees providing indication that steering is not in position to initiate taxi operation.

A NOSE STEER FAIL caution message will appear on the EICAS if the over steer target is broken while towing. This condition is the consequence of a steering angle that exceeds the passive steering range of ± 130 degrees. The rupture of the proximity sensor target occurs when the steering angle exceeds approximately ± 135 degrees.

Preliminary requirements

Required conditions

Table 2 Required conditions

Action/Condition	Data Module/Technical publication
Make sure that the aircraft is safe for maintenance.	
Make sure that the Forward Passenger Door (FPD) is closed	BD500-A-J52-11-00-01AAA-740A-A
Make sure that the Aft Passenger Door (APD) is closed	BD500-A-J52-12-00-01AAA-740A-A
Make sure that the Forward Service Door (FSD) is closed	BD500-A-J52-45-00-01AAA-740A-A
Make sure that the Aft Service Door (ASD) is closed	BD500-A-J52-46-00-01AAA-740A-A
Make sure that the Overwing Emergency Exit Door (OWEED) is closed	BD500-A-J52-21-00-01AAA-740A-A
Make sure that the cargo compartment doors are closed.	BD500-A-J52-30-00-01AAA-740A-A

Support equipment

Table 3 Support equipment

Name	Identification/Reference	Quantity	Remark
None			

Consumables, materials, and expendables

Table 4 Consumables, materials, and expendables

Name	Identification/Reference	Quantity	Remark
None			

Spares

Table 5 Spares

Name	Identification/Reference	Quantity	Remark
None			

Safety conditions

None

Procedure

- 1 Obey all the towing safety precautions that follow:
 - 1.1 For a safer towing operation, five persons are recommended at positions that follow:
 - One person in the flight compartment to operate the aircraft brakes when uncoupling of the towing vehicle or aircraft occurs.
 - One person to operate the towing vehicle.
 - One person on the left wing tip and one person on the right wing tip to monitor clearance at turns.
 - One person behind the tail to monitor clearance at turns.
 - 1.2 All doors (FPD, APD, FSD, ASD, OWEED, cargo and avionics compartment doors) to be closed.
 - If the aircraft is towed for maintenance with a door, that can not be closed due to malfunction, reduce the towing speed to minimum.
 - 1.3 Obey the precautions that follow when towing without tow bar:
 - 1.3.1 Towbarless towing is allowed for pushback and maintenance towing and not accepted for dispatch towing.

Note

Refer to the common information section above for the different towing type definitions.

- 1.3.2 The towbarless vehicles must be approved by the Airbus.
- 1.3.3 Towing on uneven pavement is not permitted (step must not exceed 1 inch).
- 1.3.4 The towing vehicle must be in good condition before towing operation.
- 1.3.5 Before towing, the Nose Landing Gear (NLG) shock strut must be confirmed to be in a serviceable condition (towing with a deflated shock strut might cause damage to the NLG).
- 1.3.6 Before towing, make sure that the tires are correctly inflated.

Note

- It is not permitted to tow an aircraft with a towbarless vehicle with any flat tire on the NLG.

- One flat tire per Main Landing Gear (MLG) is acceptable.

- 1.3.7 During towing operations, each person in the aircraft must be in a seat with seat belt fastened.
- 1.3.8 Be careful when you install the NLG into the towbarless vehicle clamping device.
- 1.3.9 The clamping device of the towing vehicle must be aligned with the NLG axis to avoid contact with the NLG torque links during aircraft capture.
- 1.3.10 Before installation of the strut-strap or installation of the NLG into the towbarless vehicle clamping device, make sure the aircraft is stable with aircraft park brake applied and/or main gear chocks.
- 1.3.11 During towing operation, keep turns as large as possible and make all changes to speed or direction slowly.
- 1.3.12 During towing operation, aircraft brakes or park brake must not be used to stop the aircraft unless there is an emergency. Aircraft braking can result in damage to the NLG and/or aircraft structure.
- 1.3.13 During towing operations, do not turn the NLG more than 130 degrees left or right of the center.

Note

Refer to the common information section above for the possible indications while towing and turning.

- 1.3.14 There are markings present on the NLG strut at 130 degrees from the center line to let the tug operator to clearly see the NLG turn limits.
- 1.3.15 If you turn the NLG 135 degrees and more, the over steering sensor will be activated and an EICAS message "NOSE STEER FAIL" caution and an INFO message "32 NOSE STEER FAULT - OVERTRAVEL DET INOP" will appear.
- 1.3.16 On the above condition, you must do a steering inspection/repair. Refer to BD500-A-J05-51-17-01AAA-284A-A.
- 1.3.17 The towbarless vehicle operator must obey all aural and visual warnings set by the vehicle in accordance with the manufacturer operating manual.
- 1.3.18 During towing, no abnormal vibration/instability should be induced on the NLG. If any occur, reduce towing speed as required.
- 1.3.19 Install ground lockpins for maintenance towing.

Note

Lockpins must be installed on the NLG and MLG.

- 1.3.20 Maximum speed for towing on forward direction is described in appendix for each tug. This maximum speed has to be lower depending the runway condition and taxiway condition.
- 1.3.21 Maximum speed for towing on rearward direction is 5 km/h (3 mph). This maximum speed has to be lower depending the runway condition and taxiway condition.
- 1.4 Obey the precautions that follow during towing with tow bar:
 - 1.4.1 The aircraft must be towed with a tow bar only from the NLG towing fixture, the tow bar lug dimensions is per the standard AS1614 category I.
 - 1.4.2 Tow bar towing is allowed for pushback and maintenance or hangar parking towing and not accepted for dispatch towing.

Note

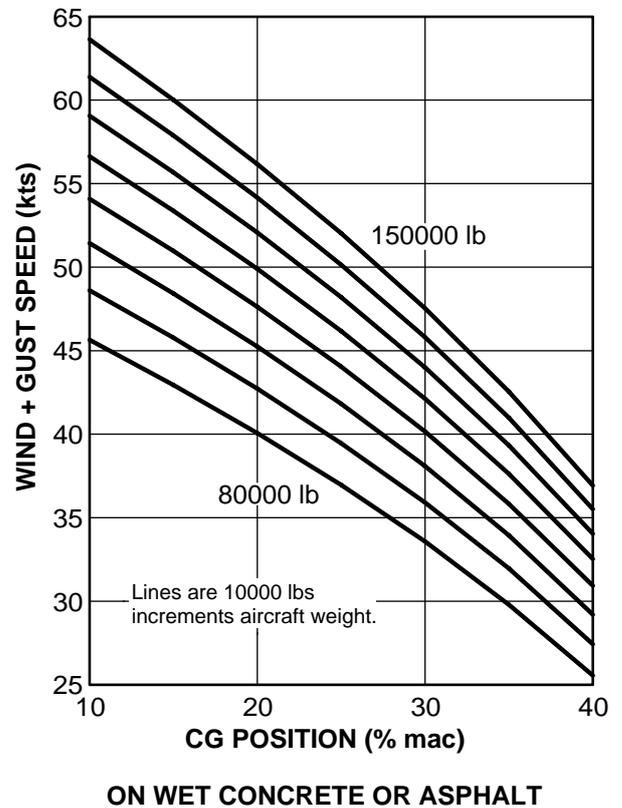
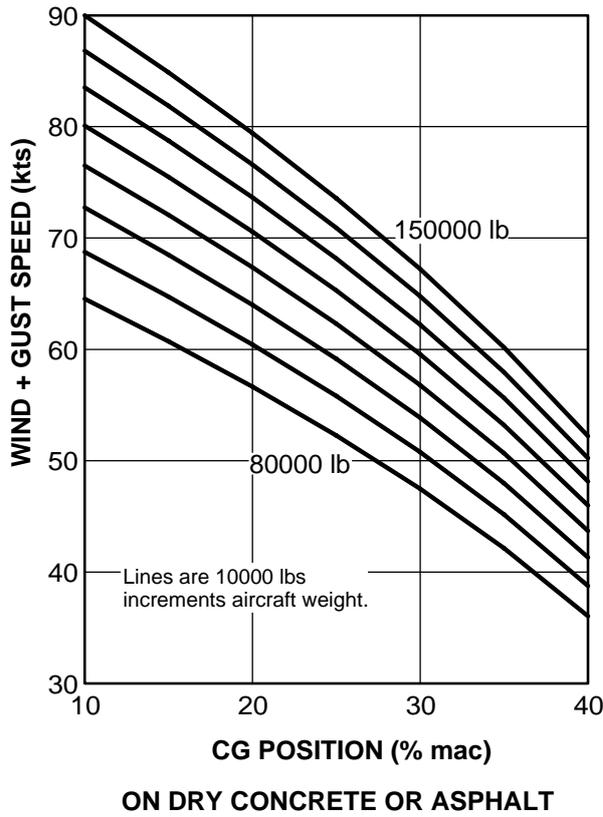
Refer to the common information section above for the different towing type definitions.

- 1.4.3 Towing on uneven pavement is not permitted (step must not exceed 1 inch).
- 1.4.4 During towing operations, each person in the aircraft must be in a seat and the seat belt must be fastened.
- 1.4.5 During towing operation, aircraft brakes or park brake must not be used to stop the aircraft unless there is an emergency. Aircraft braking can result in damage to the NLG and/or aircraft structure.
- 1.4.6 Make sure that the flight compartment crew and ground crew or the tractor personnel can speak to each other.
- 1.4.7 During towing operation, keep turns as large as possible and make all changes to speed or direction slowly.
- 1.4.8 There are markings present on the NLG strut at 130 degrees from the center line to let the tug operator to clearly see the NLG turn limits.
- 1.4.9 If you turn the NLG 135 degrees and more, the over steering sensor will be activated and an EICAS message "NOSE STEER FAIL" caution and an INFO message "32 NOSE STEER FAULT - OVERTRAVEL DET INOP" will appear.
- 1.4.10 On the above condition, you must do a steering inspection/repair. Refer to BD500-A-J05-51-17-01AAA-284A-A.
- 1.4.11 During towing, no abnormal vibration/instability should be induced on the NLG. If any occur, reduce towing speed as required.
- 1.4.12 Install ground lockpins for maintenance towing.

Note

Lockpins must be installed on the NLG and MLG.

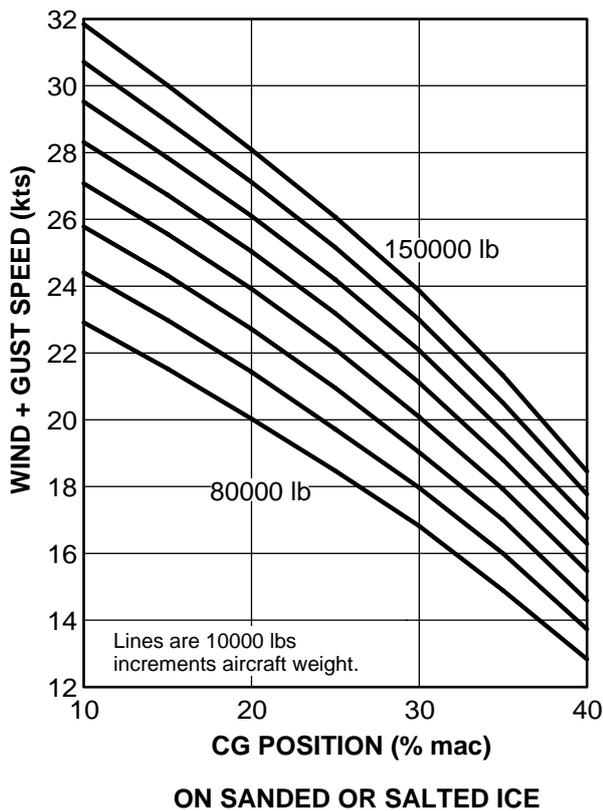
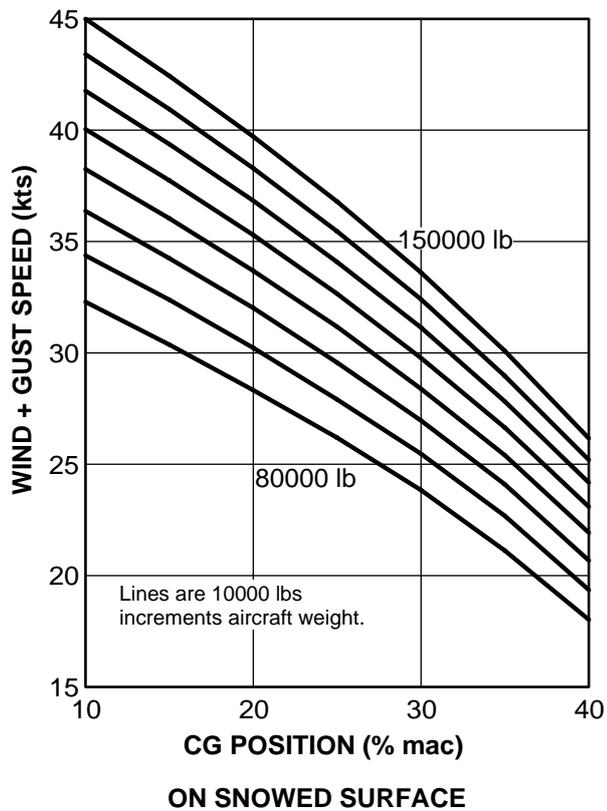
- 1.4.13 Maximum speed for towing on forward direction is 24 km/h (15 mph). This maximum speed has to be lower depending the runway condition and taxiway condition.
- 1.4.14 Maximum speed for towing on rearward direction is 5 km/h (3 mph). This maximum speed has to be lower depending the runway condition and taxiway condition.
- 1.4.15 Before towing, the NLG shock strut must be confirmed to be in a serviceable condition (towing with a deflated shock strut might cause damage to the NLG).
- 1.4.16 Tow bar towing is allowed with one flat tire per gear.
- 1.4.17 While towing the aircraft in wind conditions, obey the "Towing with tow bar - Wind speed limitations" based on the ground quality. Refer to Fig. 1 .



MAXIMUM WIND + GUST FOR TOWING

ICN-BD500-A-J091100-C-3AB48-48150-A-001-01

Figure 1 Towing safety precautions - General maintenance safety procedure - (Sheet 1 of 2)



MAXIMUM WIND + GUST FOR TOWING

ICN-BD500-A-J091100-C-3AB48-48151-A-001-01

Figure 1 Towing safety precautions - General maintenance safety procedure - (Sheet 2 of 2)

Requirements after job completion

Required conditions

Table 6 Required conditions

Action/Condition	Data Module/Technical publication
Remove all tools, equipment, and unwanted materials from the work area.	

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

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This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Towing of the aircraft without towbar - Towing

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
BD500-A-J09-11-00-01AAA-913G-A	Towing safety precautions - General maintenance safety procedure
BD500-A-J32-00-00-01AAA-913G-A	Landing gear safety precautions - General maintenance safety procedure

Common information

This data module gives the procedure for towing of the aircraft without the towbar vehicle. The approved vehicles for this procedure are the vehicles that have an automated tractive and braking load limiting device. The towing controls and indications are installed in the flight compartment and the Nose Landing Gear (NLG).

Preliminary requirements

Production maintenance data

Zones	115	Lower nose fuselage above and outboard of nose wheel well, left side
--------------	-----	--

	211		Flight compartment, left side
	212		Flight compartment, right side
	711		Nose landing gear
Access points	115DL	Door	

Required conditions

Table 2 Required conditions

Action/Condition	Data Module/Technical publication
Make sure that the aircraft is safe for maintenance.	
Obey all of the towing safety precautions.	BD500-A-J09-11-00-01AAA-913G-A
Obey all the landing gear safety precautions.	BD500-A-J32-00-00-01AAA-913G-A
Make sure that the access door is open. Refer to the access points table above for details.	
Make sure that the minimum weight is 4000 lb (1814 kg) on the NLG or the shock strut extension must be at a maximum of 15 in. (38 cm).	

Support equipment

Table 3 Support equipment

Name	Identification/Reference	Quantity	Remark
Headset, or equivalent	H10-30	AR	or equivalent equipment
Headset extension cord	CIX213G/25-51	1	or equivalent equipment
Wheel chocks	99-9028-6000	AR	or equivalent equipment

Consumables, materials, and expendables

Table 4 Consumables, materials, and expendables

Name	Identification/Reference	Quantity	Remark
None			

Spares

Table 5 Spares

Name	Identification/Reference	Quantity	Remark
None			

Safety conditions

None

Procedure

CAUTION

During maneuvers make sure that the **Nose Wheel Steering (NWS)** does not exceed the 130° from the centerline. When the NWS angle reaches the 135° or more, the over travel target will be shear and a fault message will indicate “32 NOSE STEER FAULT - OVERTRAVEL DET INOP“.

Note

- The towbarless vehicles must be approved by Airbus for dispatch towing.
 - During (attended cockpit) towing operations, a person must be in the aircraft cockpit to activate the aircraft park brake when necessary and to respond appropriately to unforeseen operating conditions.
 - Make sure that ground locking pins are installed on all landing gears.
- 1 Do the (attended cockpit) towing operation of the aircraft as follows:
Refer to Fig. 1 and Fig. 2 .
- 1.1 Make sure that the members of the towing crew are in position at the locations that follows:
- Flight compartment
 - Towing vehicle
 - Electrical/towing service panel
 - Left wing tip
 - Right wing tip.

Note

Light wands can be used to give signals in low visibility conditions.

- 2 If the aircraft is energized (attended cockpit) do as follows:
- 2.1 Before towing or pushing the aircraft, if the aircraft is energized, do as follows:
- 2.1.1 On the gear and brakes panel, push IN the NOSE STEER Push Button Annunciator (PBA) to the OFF position.
- 2.1.2 Make sure that the NOSE STEER PBA OFF light comes on.

- 2.1.3 On the PARK BRAKE control panel, pull and turn the parking brake switch to the ON position.
 - 2.1.3.1 On the NLG towing control box, make sure that the NO TOWING (red) indicator light is ON.
- 2.1.4 On the electrical/towing service panel, open access panel, connect the headset (71483, Pt. No. H10-30) with the extension (04UP0, Pt. No. CIX213G/25-51) and establish communication ground to cockpit.
- 2.1.5 Move the towbarless towing vehicle into position to capture the NLG.

Note

Refer to the towbarless towing vehicle operating manual for details on the operations.

- 2.1.6 Clamp the nose wheels on the towbarless towing vehicle as per the operating manual.
- 2.1.7 Remove all the wheel chocks (59603, Pt. No. 99-9028-6000) .
- 2.1.8 On the PARK BRAKE control panel, pull and turn the parking brake switch to the OFF position.
- 2.1.9 On the NLG towing control box, make sure that the NO TOWING (red) indicator light changes to the TOWING (green) indicator light.
- 2.1.10 In the cockpit, set the NAV light switch to ON.

Note

Local regulations are applicable when you use the external lighting. BEACON and LOGO lights maybe required to be ON.

- 2.2 Move the aircraft at a speed of not more than that is described for the respective vehicle. Refer to BD500-A-J09-11-00-01AAA-913G-A. Control the towing speed with the towbarless towing vehicle only.
- 2.3 When the aircraft is in position, stop the aircraft with the towbarless towing vehicle.

Note

If the aircraft is turned before it is parked, move the aircraft forward or rearward in a straight line for a short distance. This is to remove twisting forces from the landing gear before the aircraft comes to the stop position.

- 2.4 On the PARK BRAKE control panel, pull and turn the parking brake to the ON position.
- 2.5 On the NLG towing control box, make sure that the NO TOWING (red) indicator light is ON.
- 2.6 If necessary, install the wheel chocks (59603, Pt. No. 99-9028-6000) .
- 2.7 Release the aircraft from the towbarless vehicle, refer to the vehicle operating manual.
- 2.8 In the cockpit, set the NAV light switch to OFF.
- 2.9 On the electrical/towing service panel, disconnect the headset (71483, Pt. No. H10-30) with the extension (04UP0, Pt. No. CIX213G/25-51) .

Note

Markings present on the NLG strut at 130 degrees from the center line are available to let the tug operator clearly see the NLG turn limits. If the steering angle exceeded the maximum acceptable steering range during a towing operation, INFO message 32 NOSE STEER FAULT – OVERTRAVEL DET INOP will appear on the Engine Indication and Crew Alerting System (EICAS) after aircraft power and superseded by

NOSE STEER FAIL caution message EICAS after hydraulic system 2 is pressurized. This will require special irregular inspection prior aircraft dispatch.

- 3 If the aircraft is NOT energized (Unattended cockpit) do as follows:
- 3.1 Before towing or pushing the aircraft, if the aircraft is NOT energized, do as follows:
- 3.1.1 On the electrical/towing service panel, open access panel, push IN the TOW PWR PBA to the ON position and confirm that the PARK BRK toggle switch is in the ON position.
- 3.1.2 Make sure that the TOW PWR PBA white light comes ON.
- Note**
The NLG steering is off when the aircraft is not energized.
- Note**
- Applicability:** 50010-50019, 55010-55016, 55020-55021, 55023, 55025, 55027, 55029-55030, 55032-55033, 55036, 55040, 55044-55046, 55089, 55110, 55253, 55269, 55288, 55298, 55312
- The beacon lights will come on.
- 3.1.3 On the electrical/towing service panel, make sure that the NO TOW (red) indicator light is ON and, on the NLG towing control box, make sure that the NO TOWING (red) indicator light is ON.
- 3.1.4 Move the towbarless towing vehicle into position to capture the NLG.
- Note**
Refer to the towbarless towing vehicle operating manual for details on the operations.
- 3.1.5 Clamp the nose wheels on the towbarless towing vehicle as per the operating manual.
- 3.1.6 Remove all the wheel chocks (59603, Pt. No. 99-9028-6000) .
- 3.1.7 On the electrical/towing service panel, push IN the TOW PWR PBA if not already done, and select the PARK BRK toggle switch to the OFF position.
- 3.1.8 On the electrical/towing service panel, make sure that the TOW (green) indicator light is ON.
- 3.1.9 On the NLG towing control box, make sure that the NO TOWING (red) indicator light changes to the TOWING (green) indicator light.
- 3.1.10 On the electrical/towing service panel, set the NAV LTS switch to ON.
- Note**
Local regulations are applicable when you use the external lighting. BEACON and LOGO lights may be required to be ON.
- 3.2 Move the aircraft at a speed of not more that it is described for the respective vehicle. Refer to BD500-A-J09-11-00-01AAA-913G-A. Control the towing speed with the towbarless towing vehicle only.
- 3.3 When the aircraft is in position, stop the aircraft with the towbarless towing vehicle.

Note

If the aircraft is turned before it is parked, move the aircraft forward or rearward in a straight line for a short distance. This is to remove twisting forces from the landing gear before the aircraft comes to the stop position.

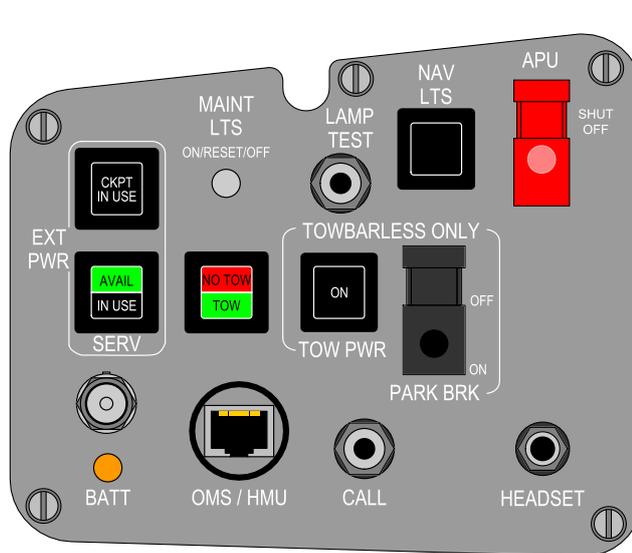
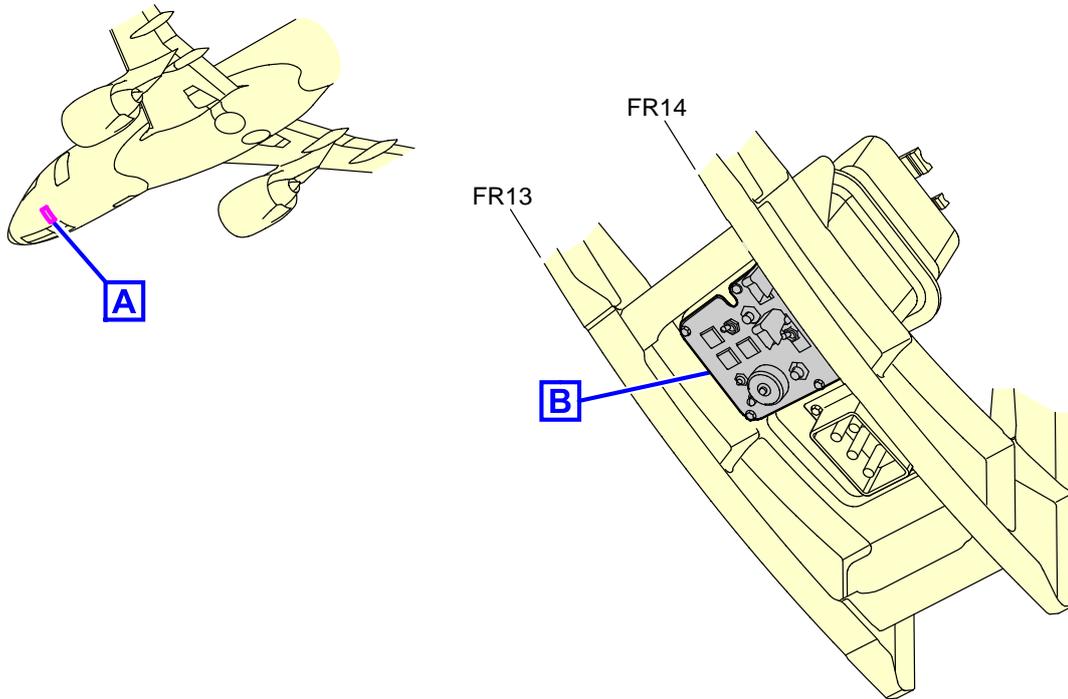
- 3.4 On the electrical/towing service panel, select the PARK BRK toggle switch to the ON position.
 - 3.4.1 On the electrical/towing service panel, make sure that the NLG NO TOW (red) indicator light is ON and, on the towing control box in the NLG make sure that the NO TOWING (red) indicator light is ON.
 - 3.4.2 On the electrical/towing service panel, set the NAV LTS switch to OFF.
 - 3.4.3 On the electrical/towing service panel, push out the TOW PWR PBA.
- 3.5 If necessary, install the wheel chocks (59603, Pt. No. 99-9028-6000).
- 3.6 Release the aircraft from the towbarless vehicle, refer to the vehicle operating manual.

Note

Markings present on the NLG strut at 130 degrees from the center line are available to let the tug operator clearly see the NLG turn limits. If the steering angle exceeded the maximum acceptable steering range during a towing operation, INFO message 32 NOSE STEER FAULT - OVERTRAVEL DET INOP will appear on the EICAS after aircraft power and superseded by NOSE STEER FAIL caution message EICAS after hydraulic system 2 is pressurized. This will require special irregular inspection prior aircraft dispatch.

This publication has been superseded by the Aircraft Characteristics Handbook (ACP).

(Sheet) Applicability: not applicable



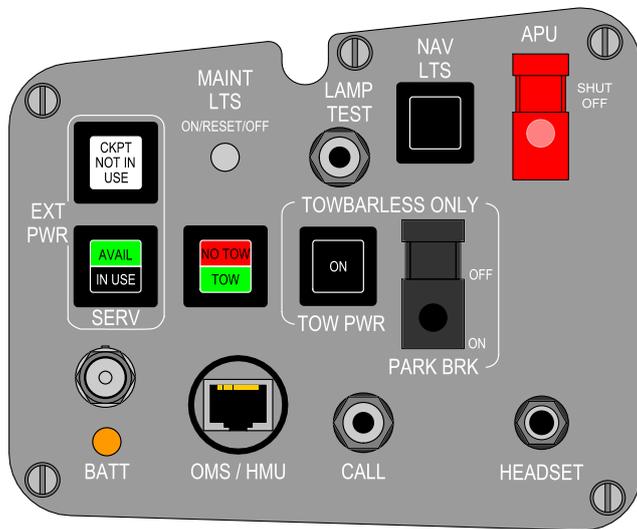
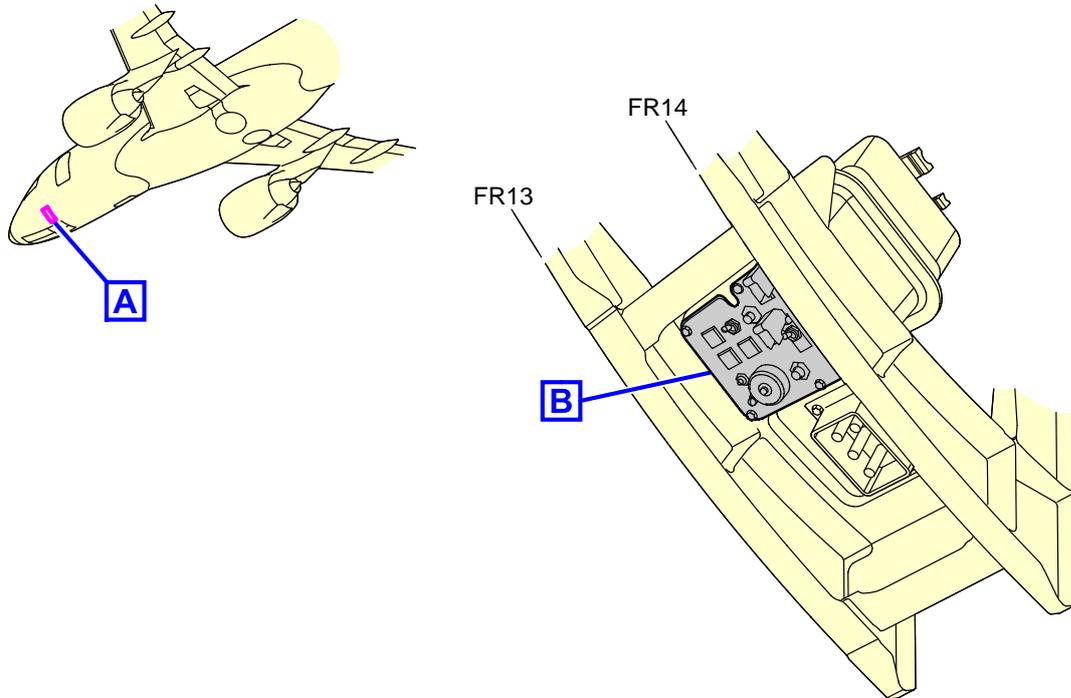
ELECTRICAL/TOWING SERVICE PANEL



ICN-BD500-A-J242401-C-3AB48-41646-A-001-01

Figure 1 Towing of the aircraft without towbar - (Sheet 1 of 2)

(Sheet) Applicability: 50018-50019, 50030, 50032-54999, 55017, 55053-59999 and 50010-50017, 50020-50029, 50031, 55003-55016, 55018-55052 POST BD500-240006

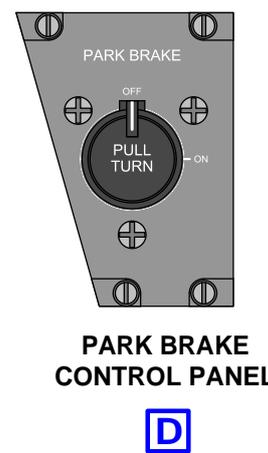
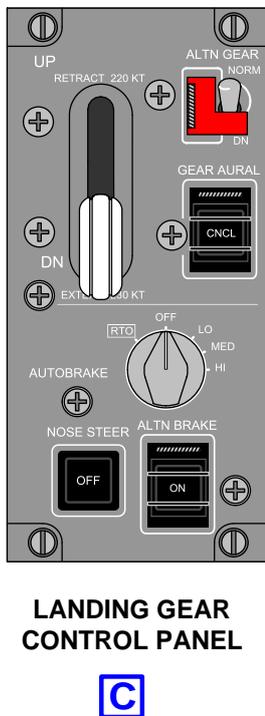
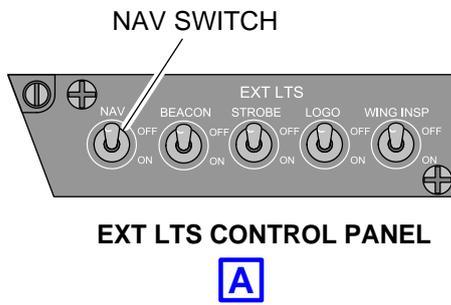
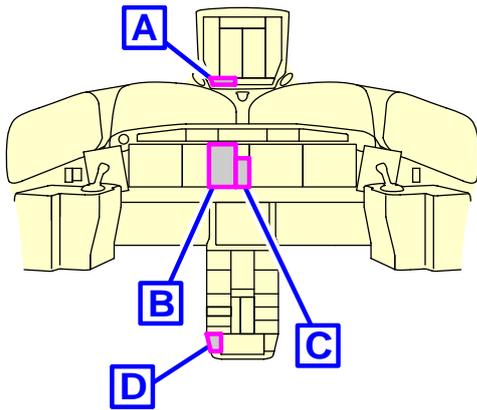


ELECTRICAL/TOWING SERVICE PANEL

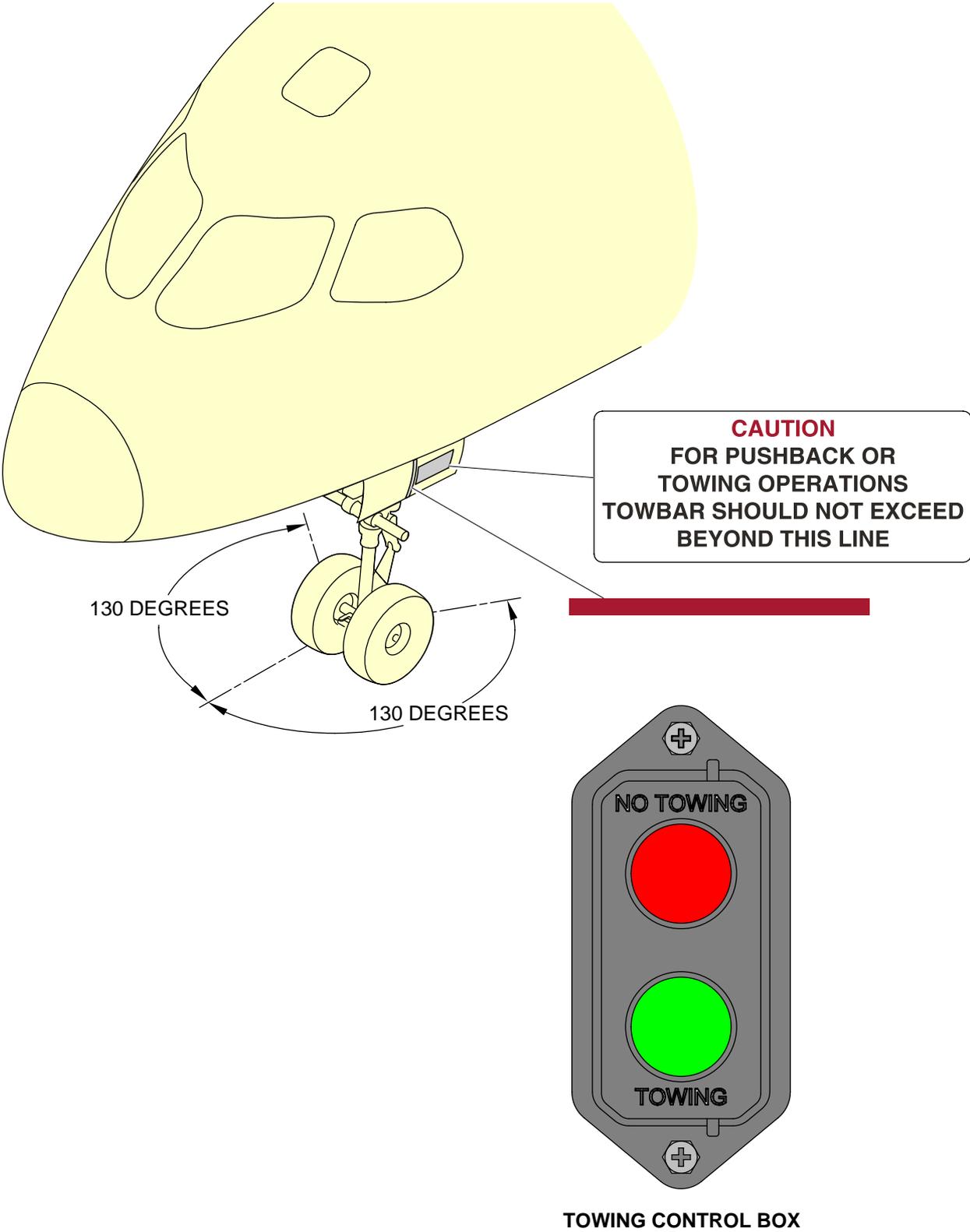


ICN-BD500-A-J240209-C-3AB48-58774-A-001-01

Figure 1 Towing of the aircraft without towbar - (Sheet 2 of 2)



ICN-BD500-A-J091100-C-3AB48-19967-A-003-01
 Figure 2 Towing of the aircraft without towbar - (Sheet 1 of 2)



ICN-BD500-A-J091100-A-3AB48-33621-A-002-01

Figure 2 Towing of the aircraft without towbar - (Sheet 2 of 2)

Requirements after job completion

Required conditions

Table 6 Required conditions

Action/Condition	Data Module/Technical publication
Remove all tools, equipment, and unwanted materials from the work area.	
Make sure that the access door is closed. Refer to the access points table above for details.	

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

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This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Ground maneuvering, turning radii - Technical data

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

This data module contains data about the aircraft turning capability and maneuvering characteristics on the ground. The data is based on aircraft performance in good conditions of operation. Thus, the values must be considered theoretical and used only as an aid. Refer to Table 2 and Table 3 for the values to use with Fig. 1 for the turn radii with 3 degree slip angle.

2 Landing gear turning radii, including minimum turning radii

Applicability: 50001-54999

Table 2 Turning radii for various nose wheel angles

Turning angle (in degrees) with 3 degree tire slip	Turning center to aircraft center line (D)	Nose tip (R1)	Nose gear outside face (R2)	Main gear outside face (R3)	Wing tip (R4)	Empennage tip (R5)	Minimum theoretical pavement width for 180 degrees turn (Tw= R2+ R3)
17	1686.8 in. (4284.47 cm)	1807.5 in. (4591.05 cm)	1776.3 in. (4511.80 cm)	1845.6 in. (4687.82 cm)	2385.4 in. (6058.91 cm)	2046.7 in. (5198.61 cm)	3621.9 in. (9199.62 cm)
27	1012.1 in. (2570.73 cm)	1202.7 in. (3054.85 cm)	1148.4 in. (2916.93 cm)	1171.0 in. (2974.34 cm)	1715.0 in. (4356.1 cm)	1430.1 in. (3632.45 cm)	2319.4 in. (5891.27 cm)
37	684.4 in. (1738.37 cm)	943.6 in. (2396.74 cm)	869.3 in. (2208.02 cm)	843.2 in. (2141.72 cm)	1390.8 in. (3532.63 cm)	1154.2 in. (2931.66 cm)	1712.6 in. (4350.00 cm)
47	480.9 in. (1221.48 cm)	808.3 in. (2053.08 cm)	717.6 in. (1822.70 cm)	639.8 in. (1625.09 cm)	1190.6 in. (3024.12 cm)	998.9 in. (2537.20 cm)	1357.3 in. (3447.54 cm)
57	334.9 in. (850.64 cm)	730.9 in. (1856.48 cm)	627.9 in. (1594.86 cm)	493.2 in. (1252.72 cm)	1047.6 in. (2660.90 cm)	899.3 in. (2284.22 cm)	1121.1 in. (2847.59 cm)
67	218.9 in. (556.00 cm)	685.5 in. (1741.17 cm)	572.7 in. (1454.65 cm)	377.8 in. (959.61 cm)	934.7 in. (2374.13 cm)	830.1 in. (2108.45 cm)	950.4 in. (2414.01 cm)
77	119.1 in. (302.51 cm)	660.04 in. (1667.41 cm)	541.7 in. (1375.91 cm)	277.9 in. (705.86 cm)	838.2 in. (2129.02 cm)	779.4 in. (1979.67 cm)	819.6 in. (2081.78 cm)

Applicability: 55001-59999

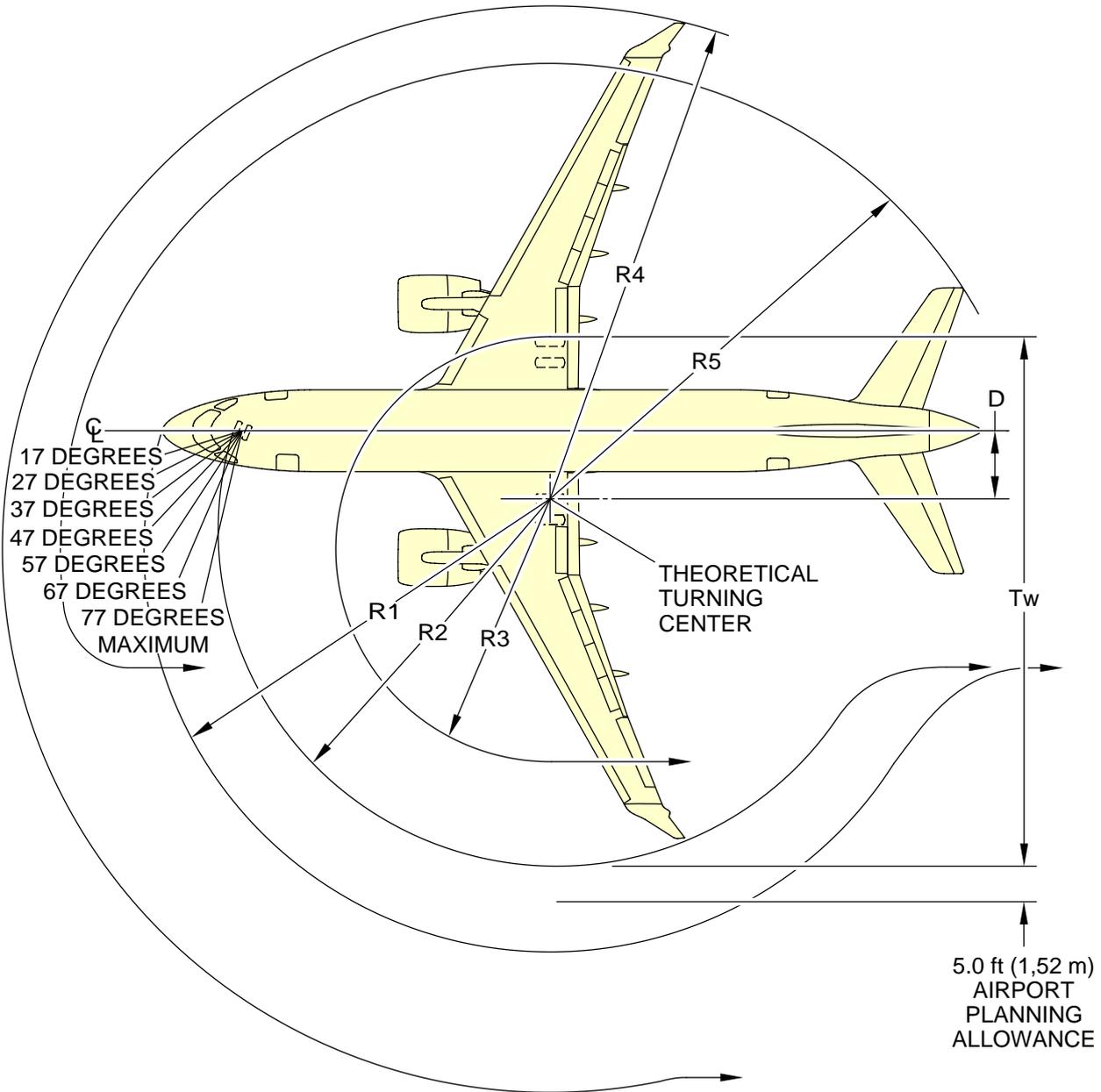
Table 3 Turning radii for various nose wheel angles

Turning angle (in degrees) with 3 degree tire slip	Turning center to aircraft center line (D)	Nose tip (R1)	Nose gear outside face (R2)	Main gear outside face (R3)	Wing tip (R4)	Empennage tip (R5)	Minimum theoretical pavement width for 180 degrees turn (Tw= R2+ R3)
17	1961.5 in. (4982.21 cm)	2094.2 in. (5319.26 cm)	2063.6 in. (5241.54 cm)	2120.4 in. (5385.81 cm)	2659.0 in. (6753.86 cm)	2307.1 in. (5860.03 cm)	4148.0 in. (10535.92 cm)

See applicability on the first page of the DM
BD500-A-J09-20-01-00AAA-030A-A

BD500-A-J09-20-01-00AAA-030A-A

Turning angle (in degrees) with 3 degree tire slip	Turning center to aircraft center line (D)	Nose tip (R1)	Nose gear outside face (R2)	Main gear outside face (R3)	Wing tip (R4)	Empennage tip (R5)	Minimum theoretical pavement width for 180 degrees turn (Tw= R2+ R3)
27	1177.0 in. (2989.58 cm)	1386.9 in. (3522.72 cm)	1333.4 in. (3386.83 cm)	1335.8 in. (3392.93 cm)	1878.6 in. (4771.64 cm)	1576.4 in. (4004.05 cm)	2669.2 in. (6779.76 cm)
37	795.8 in. (2021.33 cm)	1082.4 in. (2749.29 cm)	1008.9 in. (2562.60 cm)	954.7 in. (2424.93 cm)	1500.9 in. (3812.28 cm)	1245.2 in. (3162.80 cm)	1963.6 in. (4987.54 cm)
47	559.2 in. (1420.36 cm)	922.5 in. (2343.15 cm)	832.4 in. (2114.29 cm)	718.1 in. (1823.97 cm)	1267.5 in. (3219.45 cm)	1056.8 in. (2684.27 cm)	1550.5 in. (3938.27 cm)
57	389.4 in. (989.07 cm)	830.6 in. (2109.72 cm)	727.5 in. (1847.85 cm)	548.3 in. (1392.68 cm)	1100.9 in. (2796.28 cm)	935.1 in. (2375.15 cm)	1275.8 in. (3240.53 cm)
67	254.6 in. (646.68 cm)	776.5 in. (1971.04 cm)	663.9 in. (1686.30 cm)	413.4 in. (1050.03 cm)	969.4 in. (2462.27 cm)	850.3 in. (2159.76 cm)	1077.4 in. (2736.59 cm)
77	138.5 in. (351.79 cm)	746.6 in. (1896.36 cm)	627.9 in. (1594.86 cm)	297.3 in. (755.14 cm)	856.9 in. (2176.52 cm)	788.5 in. (2002.79 cm)	925.2 in. (2350.00 cm)



ICN-BD500-A-J092001-C-3AB48-45815-A-001-01
 Figure 1 Ground maneuvering, turning radii - Technical data

Ground maneuvering, visibility from flight compartment - Technical data

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

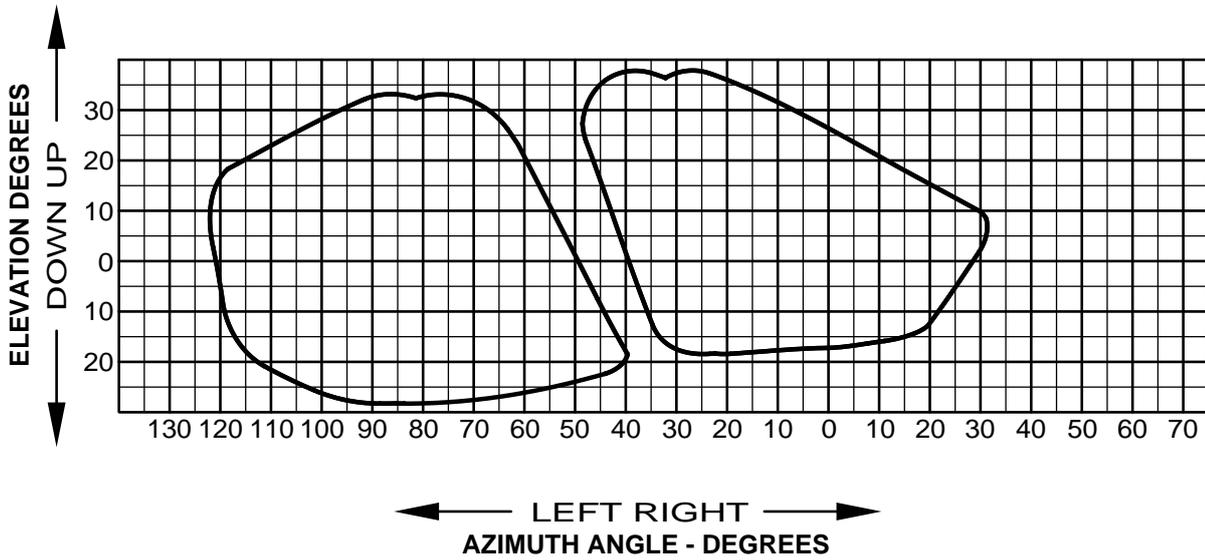
This data module contains data about the visibility from the flight compartment.

2 Clear areas of vision

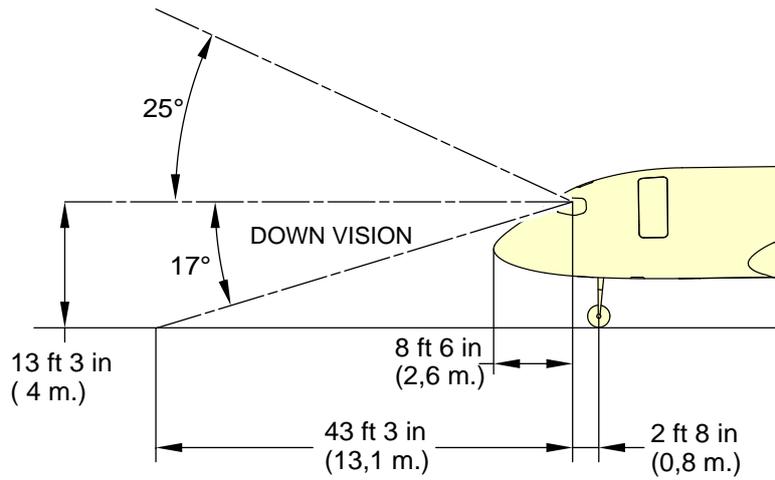
To see the diagram, refer to Fig. 1

3 Visibility from cockpit in static position

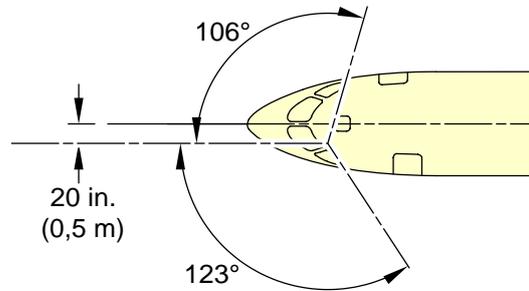
This section contains data about the visibility from cockpit in static position. Refer to Fig. 2



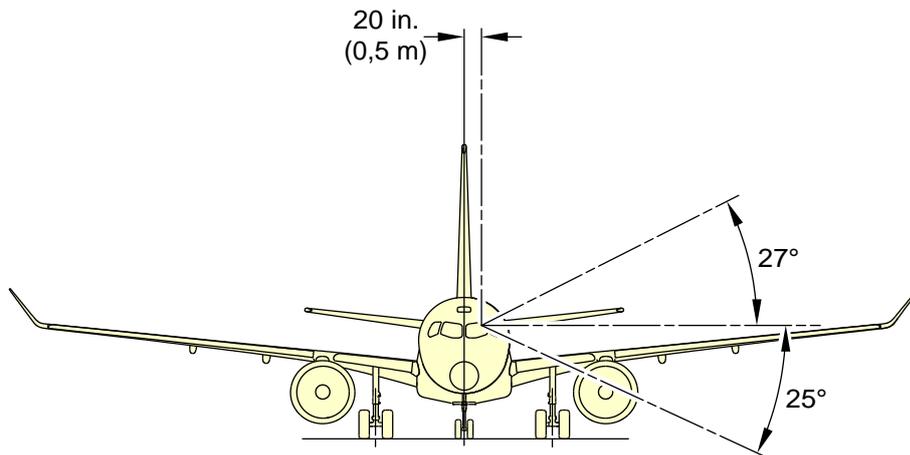
ICN-BD500-A-J092001-A-3AB48-00119-A-001-01
Figure 1 Clear areas of vision



VISUAL ANGLES IN VERTICAL PLANE THROUGH PILOT'S EYE POSITION



VISUAL ANGLES IN HORIZONTAL PLANE THROUGH PILOT'S EYE POSITION



VISUAL ANGLE IN A PLANE PERPEDNDICULAR TO LONGITUDINAL AXIS THROUGH PILOT'S EYE POSITION

NOTES

1. Not to be used for landing approach visibility.
2. Not scale.

ICN-BD500-A-J000000-A-3AB48-22579-A-001-01

Figure 2 Visibility from cockpit in static position

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This publication has been superseded by the
Aircraft Characteristics Publication (ACP).

Parking (Maximum 15-days) - Parking procedure

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
BD500-A-J10-13-00-01AAA-850A-A	Parking ground check (7 day interval) - Procedure to keep item serviceable when in parking
BD500-A-J24-00-00-01AAA-761A-A	Electrical power - General - Energize electrical network
BD500-A-J24-00-00-01AAA-913G-A	Electrical/Electronic safety precautions - General maintenance safety procedure
BD500-A-J29-00-00-00AAA-913G-A	Hydraulic safety precautions - General maintenance safety procedure
BD500-A-J32-00-00-01AAA-913G-A	Landing gear safety precautions - General maintenance safety procedure
BD500-A-J10-12-00-01AAA-720A-A	Aircraft protection equipment - Install procedure
BD500-A-J34-11-01-01AAA-310A-A	Air Data System Probe (ADSP) - Visual examination
BD500-A-J10-08-00-01AAA-890A-A	Freezing or below freezing temperature - Parking procedure
BD500-A-J51-26-00-02AAA-251A-A	Detergent (alkaline) cleaning - Clean with chemical agent

Data Module/Technical Publication	Title
BD500-A-J24-00-00-00AAA-913A-A	Aircraft grounding - General maintenance procedure
BD500-A-J10-20-00-01AAA-912A-A	Mooring - Handling procedure
BD500-A-J32-21-00-01AAA-720A-A	Nose Landing Gear (NLG) lock pin - Install procedure
BD500-A-J32-11-00-01AAA-720A-A	Main Landing Gear (MLG) lock pin - Install procedure
BD500-A-J12-30-32-02AAA-913A-A	Apply park brake - General maintenance procedure
BD500-A-J12-10-32-02AAA-214A-A	Main Landing Gear (MLG) tire - Fill with nitrogen
BD500-A-J12-10-32-01AAA-214A-A	Nose Landing Gear (NLG) tire - Fill with nitrogen
BD500-A-J27-53-00-02AAA-913A-A	Flap and slat retraction - General maintenance procedure
BD500-A-J27-63-00-02AAA-913A-A	Ground spoilers retraction - General maintenance procedure
BD500-A-J27-66-00-02AAA-913A-A	Multi-Function Spoilers (MFS) retraction - General maintenance procedure
BD500-A-J28-00-00-02AAA-374A-A	Fuel tank water contamination check - Fuel analysis
BD500-A-J12-10-38-01AAA-226A-A	Potable water system - Drain water
BD500-A-J12-10-38-02AAA-228A-A	Water Waste System (WWS) - Drain other liquid
BD500-A-J71-00-00-00AAA-810A-A	Power plant - Engine - Preservation procedure (general)
BD500-A-J12-10-35-01AAA-223A-A	Crew oxygen system - Release oxygen pressure
BD500-A-J49-10-01-01AAA-810A-A	Auxiliary Power Unit (APU) - Preservation procedure
BD500-A-J27-24-01-02AAA-722A-A	Rudder lockout tool - Install support equipment/Install on support equipment
BD500-A-J12-10-29-01AAA-762A-A	Hydraulic systems No. 1 or No. 2 - Pressurize hydraulics
BD500-A-J12-10-29-02AAA-762A-A	Hydraulic system No. 3 - Pressurize hydraulics
BD500-A-J05-51-32-01AAA-284A-A	Severe winds on the ground - Special irregular inspection
BD500-A-J24-00-00-01AAA-561A-A	Electrical power - General - De-Energize electrical network

Common information

This data module gives the procedure to park the aircraft in ready-to-fly condition (fifteen days or less). The procedure will prevent the deterioration of the aircraft structure, airborne

equipment/furnishing and system components when the aircraft is parked in an open area. During the parking period of 15 days following periodic ground checks must perform:

- 7-day parking ground check. Refer to BD500-A-J10-13-00-01AAA-850A-A.

Note

After the parking or storage period and prior to aircraft return to service, all due & overdue scheduled maintenance task need to be performed.

Note

The parking or storage period starts at the end of the last flight cycle.

Note

An aircraft out of service for maintenance (e.g. heavy check, working party, modification or repair after an incident) is not in parked or stored condition.

Note

It is recommended do not cannibalize or remove primary parts during this parking period. If there is cannibalization or removal of non-primary parts from the aircraft during the parking period, install them again before the periodic ground-check and return-to-service procedure.

Note

A parking procedure can be replaced by a storage procedure at all times taking in consideration the following:

- Must do all the steps applicable to the new selected storage procedure that you did not do in the previous parking procedure. It is not necessary to do the return-to-service procedure.
- Must do the periodic ground checks applicable to the storage procedure.
- Do not do the re-initialization of the start date of the storage procedure. The start date of the storage procedure remains the start date of the initial parking procedure (e.g. last flight date).

Preliminary requirements

Required conditions

Table 2 Required conditions

Action/Condition	Data Module/Technical publication
Make sure that the aircraft is safe for maintenance.	
Energize the aircraft.	BD500-A-J24-00-00-01AAA-761A-A
Obey all the electrical/electronic safety precautions.	BD500-A-J24-00-00-01AAA-913G-A

Action/Condition	Data Module/Technical publication
Obey all the hydraulic safety precautions.	BD500-A-J29-00-00-00AAA-913G-A
Obey the landing gear safety precautions.	BD500-A-J32-00-00-01AAA-913G-A
Install the aircraft protection equipment.	BD500-A-J10-12-00-01AAA-720A-A

Support equipment

Table 3 Support equipment

Name	Identification/Reference	Quantity	Remark
Wheel chocks	99-9028-6000	AR	

Consumables, materials, and expendables

Table 4 Consumables, materials, and expendables

Name	Identification/Reference	Quantity	Remark
Hydraulic fluid, petroleum base, aircraft, missile, and ordnance	02-002	AR	
05RNN1, Adhesive film tape surface protection PVC film	05-917	AR	
Aluminum foil tape acrylic adhesive	05-634	AR	

Spares

Table 5 Spares

Name	Identification/Reference	Quantity	Remark
None			

Safety conditions

None

Procedure

- 1 Do the parking preparation as follows:

Refer to Fig. 1 and Fig. 2 .

- 1.1 Do an inspection/check of the probes. Refer to BD500-A-J34-11-01-01AAA-310A-A.
- 1.2 Monitor wind during the time the aircraft is parked. If the winds or gusts are expected to be above 65 knots. Park the aircraft in a closed hangar or ferry fly the aircraft to a secure location.
- 1.3 Park the aircraft with the nose in the direction of the wind ± 20 degrees. Control surfaces are downwind. Refer to Fig. 2.
- 1.4 If the aircraft is parked in the cold weather condition, do the cold weather parking. Refer to BD500-A-J10-08-00-01AAA-890A-A.
- 1.5 For long-term parking or storage, you must attach the flags of the protective covers/devices with the adhesive tape (05-917) or (05-634) to prevent paint damage.
- 1.6 Clean the external surface of the aircraft. Refer to BD500-A-J51-26-00-02AAA-251A-A.
- 1.7 Install the grounding wires. Refer to BD500-A-J24-00-00-00AAA-913A-A.
- 1.8 If required, moor the aircraft. Refer to BD500-A-J10-20-00-01AAA-912A-A.
- 1.9 Make sure that the Nose Landing Gear (NLG) lock pin are installed. Refer to BD500-A-J32-21-00-01AAA-720A-A.
- 1.10 Make sure that the Main Landing Gear (MLG) lock pin are installed. Refer to BD500-A-J32-11-00-01AAA-720A-A.
- 1.11 Install the wheel chocks (59603, Pt. No. 99-9028-6000) at the MLG and NLG.

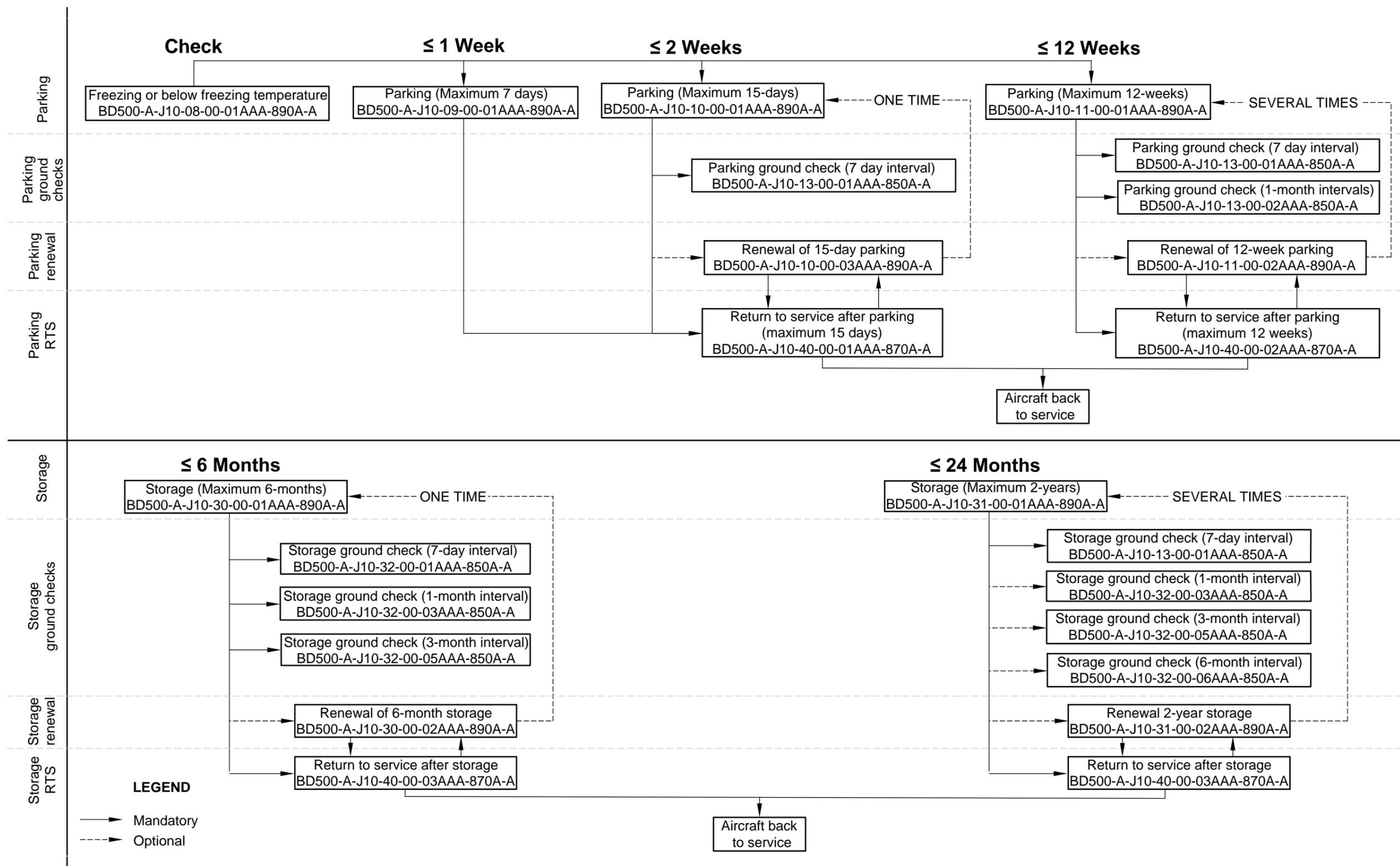
Note

Make sure that the brakes are clean of water and/or ice contamination.

- 1.12 Apply the parking brake. Refer to BD500-A-J12-30-32-02AAA-913A-A.
- 1.13 Do the MLG tire pressure check. If necessary, do the servicing. Refer to BD500-A-J12-10-32-02AAA-214A-A.
- 1.14 Do the NLG tire pressure check. If necessary, do the servicing. Refer to BD500-A-J12-10-32-01AAA-214A-A.
- 1.15 On the PRESSURIZATION control panel, lift the guard and push the DITCHING Push Button Annunciator (PBA).
 - 1.15.1 Make sure that all the ventilation skin valves and outflow valve are closed and make sure that there are no failure message related to Forward (FWD) Avionics Exhaust Valves (AEV), MID AEV, ground valve and outflow valve.
- 1.16 Put the flight controls (Horizontal Stabilizer Trim Actuator (HSTA), ailerons, rudder, flaps and slats, spoilers and Multi Function Spoiler (MFS)) to the neutral or retracted position:
 - For the HSTA, adjust the STAB trim indication position of 5 units (± 0.1) or aligned with the reference mark in fuselage
 - For the flaps and slats. Refer to BD500-A-J27-53-00-02AAA-913A-A
 - For the spoilers. Refer to BD500-A-J27-63-00-02AAA-913A-A
 - For the MFS. Refer to BD500-A-J27-66-00-02AAA-913A-A.

- 1.17 Drain the water contamination from the fuel tanks. Refer to BD500-A-J28-00-00-02AAA-374A-A.
- 1.18 Drain and flush the Potable Water System (PWS). Refer to BD500-A-J12-10-38-01AAA-226A-A.
- 1.19 Drain and flush Water Waste System (WWS). Refer to BD500-A-J12-10-38-02AAA-228A-A.
- 1.20 Do the preservation of the engine. Refer to BD500-A-J71-00-00-00AAA-810A-A.
- 1.21 Close crew oxygen cylinder. Refer to BD500-A-J12-10-35-01AAA-223A-A.
- 1.22 During winter cold weather condition, it is recommended to perform the Auxiliary Power Unit (APU) preservation. Refer to BD500-A-J49-10-01-01AAA-810A-A.
- 1.23 If the aircraft will be parked outside and expected wind gust are more than 30 knots (56 Km/h) and less than 65 knots (120 Km/h), install the rudder lockout tool per BD500-A-J27-24-01-02AAA-722A-A or pressurize the hydraulic systems No. 1, No. 2, and No. 3 every 12 hours per BD500-A-J12-10-29-01AAA-762A-A and BD500-A-J12-10-29-02AAA-762A-A.
- 1.24 If the rudder lockout tool is not installed and the hydraulic systems are not pressurized every 12 hours, monitor the wind during the time aircraft is parked outside and do the special irregular inspection of the primary flight control section per BD500-A-J05-51-32-01AAA-284A-A during return to service procedure.
- 1.25 Install the aircraft protection equipment. Refer to BD500-A-J10-12-00-01AAA-720A-A.
- 1.26 During this parking procedure, ensure to perform the parking ground check (7 day interval) - Procedure to keep item serviceable when in parking. Refer to BD500-A-J10-13-00-01AAA-850A-A.

This publication has been superseded by the Aircraft Characteristics Publication (AC)

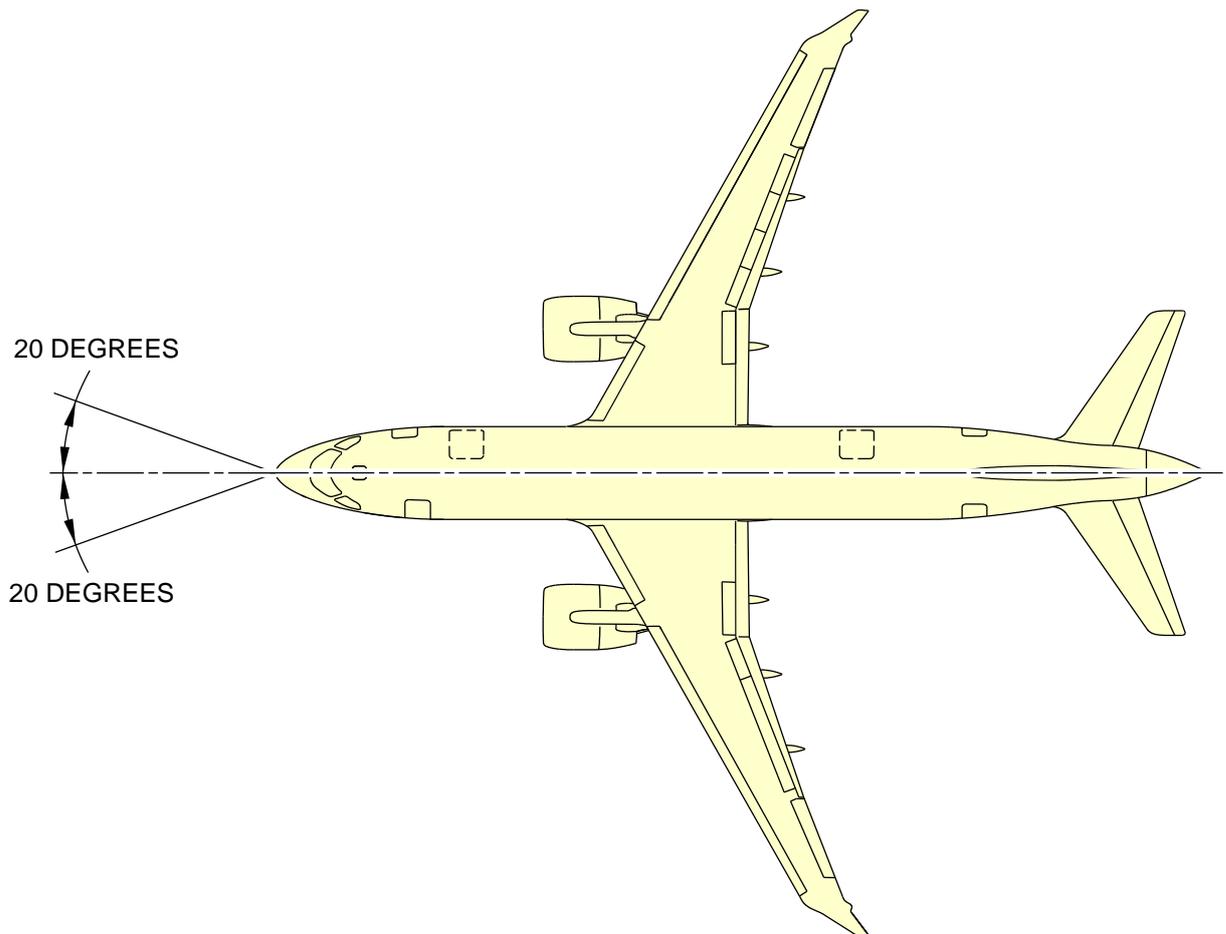


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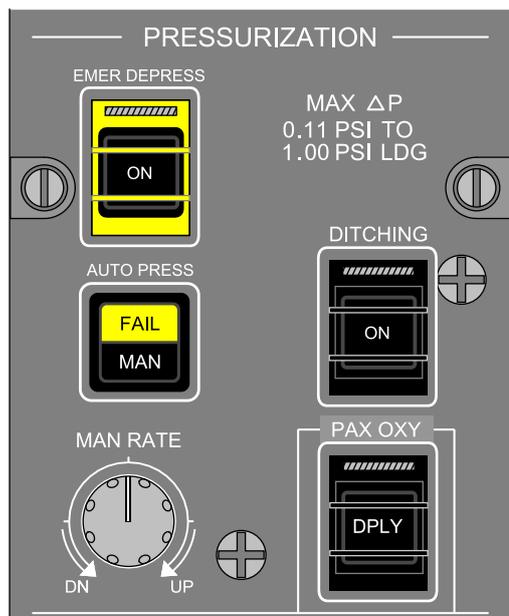
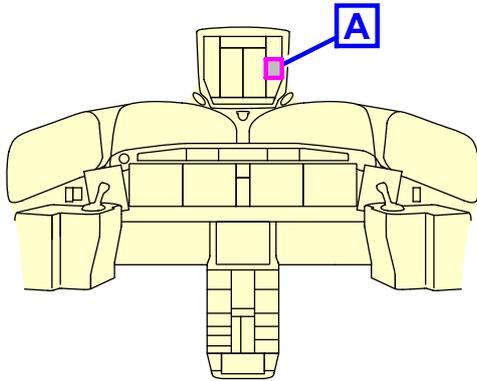
Figure 1 Parking/storage workflow - Parking procedure

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This publication has been superseded by the
Aircraft Characteristics Publication (ACP).



ICN-BD500-A-J101000-A-3AB48-33919-A-001-01
Figure 2 Parking (Maximum 15-days) - Parking procedure - (Sheet 1 of 4)

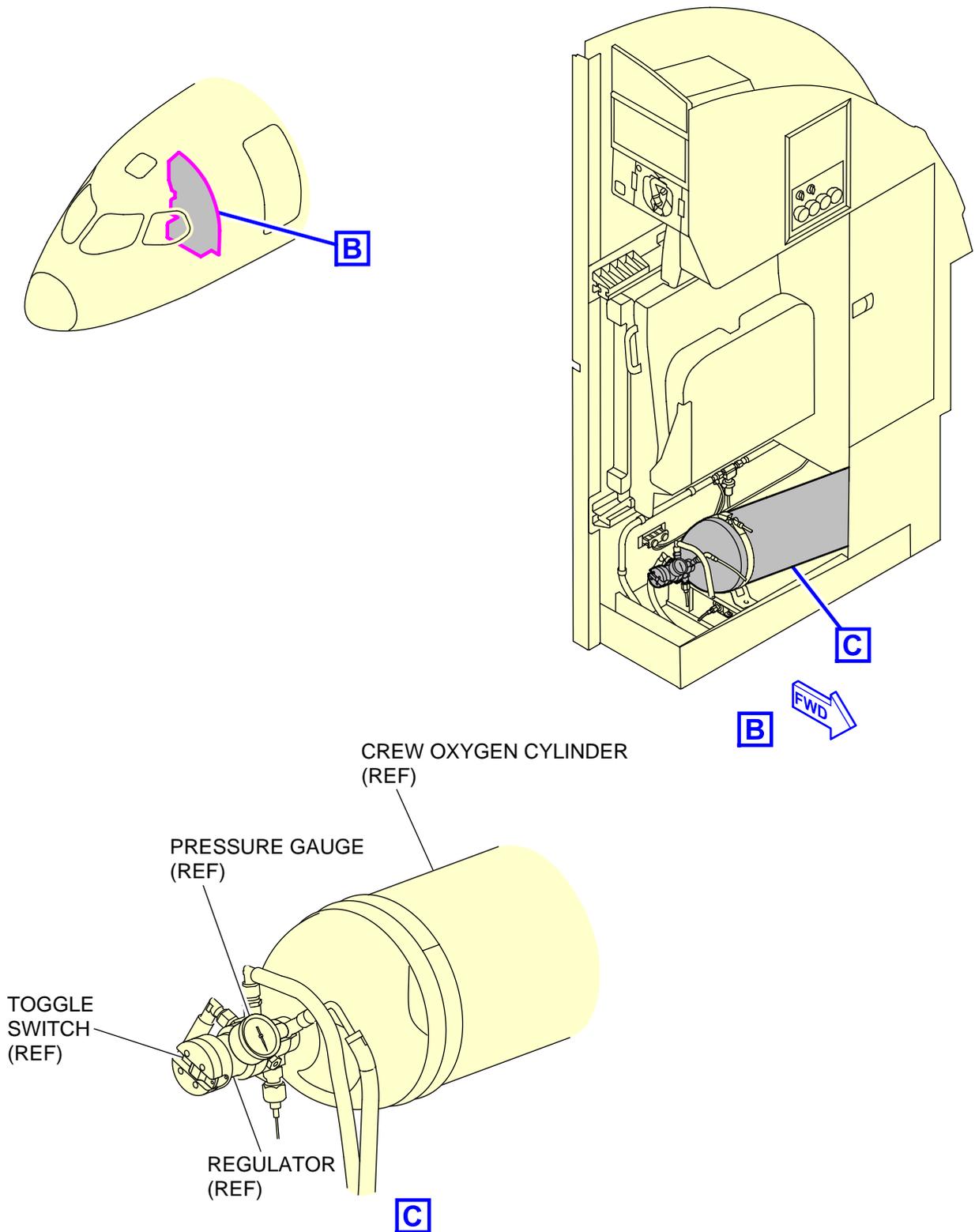


PRESSURIZATION PANEL



ICN-BD500-A-J104000-C-3AB48-41893-A-002-01

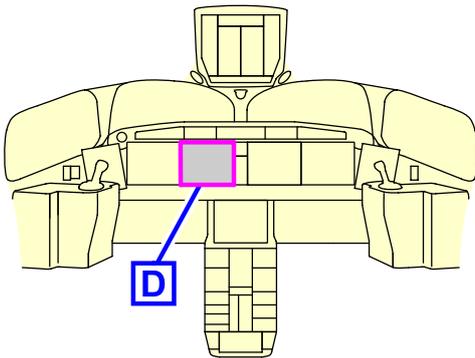
Figure 2 Parking (Maximum 15-days) - Parking procedure - (Sheet 2 of 4)



ICN-BD500-A-J101000-C-3AB48-52034-A-001-01

Figure 2 Parking (Maximum 15-days) - Parking procedure - (Sheet 3 of 4)

A220



EICAS DISPLAY



ICN-BD500-A-J101400-C-3AB48-55131-A-001-01

Figure 2 Parking (Maximum 15-days) - Parking procedure - (Sheet 4 of 4)

Requirements after job completion

Required conditions

Table 6 Required conditions

Action/Condition	Data Module/Technical publication
Remove all tools, equipment, and unwanted materials from the work area.	
De-energize the electrical network.	BD500-A-J24-00-00-01AAA-561A-A
Attach the warning notice(s) to the CAPT side stick to tell the crew that protection covers/devices are installed.	
Make an entry in the aircraft log book.	

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

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This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Wet wash - Clean and apply surface protection

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
BD500-A-J10-12-00-01AAA-720A-A	Aircraft protection equipment - Install procedure
BD500-A-J24-00-00-01AAA-561A-A	Electrical power - General - De-Energize electrical network
BD500-A-J10-12-00-01AAA-520A-A	Aircraft protection equipment - Remove procedure

Common information

This data module gives the procedure to clean and remove the contamination on the external surfaces of the aircraft. This is required to prevent the deterioration of the paint and to decrease the risk of corrosion. It is recommended to clean the aircraft frequently.

Preliminary requirements

Required conditions

Table 2 Required conditions

Action/Condition	Data Module/Technical publication
Make sure the aircraft is safe for maintenance.	

Action/Condition	Data Module/Technical publication
Make sure the aircraft is de-energized.	BD500-A-J24-00-00-01AAA-561A-A
Install the aircraft protection equipment.	BD500-A-J10-12-00-01AAA-720A-A

Support equipment

Table 3 Support equipment

Name	Identification/Reference	Quantity	Remark
None			

Consumables, materials, and expendables

Table 4 Consumables, materials, and expendables

Name	Identification/Reference	Quantity	Remark
Lint free, cotton cloth, cleaning for aircraft primary and secondary structural surfaces	05-425	AR	
Sponge	05-042	AR	
Compound, hand dish-washing (synthetic detergent, liquid form)	11-001	AR	
Isopropyl alcohol (IPA)	11-004	AR	
Special Cleaning Concentrate	11-109	AR	
Cleaning agent	11-127	AR	
Cleaner	11-128	AR	
Water-based cleaning concentrate	11-129	AR	

Spares

Table 5 Spares

Name	Identification/Reference	Quantity	Remark
None			

Safety conditions

None

Procedure

WARNINGS

- Obey the precautions that follow when you do work on or near the windshield or the windows:
 - Be careful because the window surfaces have high levels of static voltage for many hours after flight.
 - Make sure that you use only approved tools that cannot scratch the surfaces.
 - Make sure that you do not have jewelry or other sharp objects on you.
 - Use only approved cleaning agents. Other solvents can cause damage to acrylic surfaces. The liquid used in this procedure can cause injury to your skin and eyes.
 - Do not use too much force on the surface. The surface can become hot and have deformation.

You can cause injury to persons and damage to the equipment.

- Obey the precautions that follow when you use cleaning agents:
 - Use approved eye, mouth, and body protection
 - Do the work in an area that has a good flow of clean air or use a breathing apparatus
 - Make sure that the area has no sparks, flames, or hot surfaces
 - Obey the manufacturer's instructions
 - Do not let the cleaning agent touch your skin, eyes, or mouth
 - If irritation occurs, get medical aid immediately.

Cleaning agents can be flammable, poisonous, and can cause corrosion.

- **Obey the precautions that follow when you use solvents:**
 - Use approved eye, mouth, and body protection
 - Do the work in an area that has a good flow of clean air
 - Make sure that the area has no sparks, flames, or hot surfaces
 - Obey the manufacturer's instructions
 - Do not let the solvent touch your skin, eyes, or mouth
 - If irritation occurs, get medical aid immediately.

Solvents are poisonous and can cause injury.
- **Do not stand on aircraft surfaces that are wet. Wet surfaces can cause you to fall. This can cause injury to persons.**

CAUTIONS

- **Do not clean the aircraft when the temperature is less than 41 degree Fahrenheit (5 degree Celsius). Ice can form on the surfaces of the aircraft.**
- **Use appropriate cleaning materials to avoid damaging the window surface.**
- **When cleaning the view ports use correct cleaner to avoid damaging crystal view protection.**
- **Do not wash parts if water can go in them and you cannot dry them satisfactorily. Water that stays in parts can cause damage.**
- 1 Clean the external surface of radome, painted fuselage, wings, horizontal stabilizer, vertical stabilizer, Wing To Body Fairing (WTBF), cockpit windshield, or side window as follows:

Note

Before you clean, make sure that all repairs were done and that there is no damaged area that is not repaired.

- 1.1 Wash the external surface of radome, painted fuselage, wings, horizontal stabilizer, vertical stabilizer and WTBF as follows:

- 1.1.1 Prepare the cleaning solution (11-001) .

Note

Follow the manufacturer's instructions written on the detergent container.

Note

Recommended water qualities are as follow:

- pH between 5 and 8.5
- Chlorine level less than 100 ppm

- 1.1.2 With a wet sponge (05-042) , rub the cleaning solution (11-001) over small area at a time.

Note

Do not let the cleaning solution dry on the external surface.

- 1.1.3 Flush the cleaning solution (11-001) from the external surface with a continuous flow of clear water.
- 1.2 If you can still see stains after the wash, remove all stains as follows:
 - 1.2.1 Apply the cleaning solution (11-001) to the external surfaces with a wet sponge (05-042) .
 - 1.2.2 Leave the cleaning solution (11-001) soak for five minutes.
 - 1.2.3 Apply the cleaning solution (11-001) again if necessary to keep the surface wet.
 - 1.2.4 With the wet sponge (05-042) , lightly rub the external surface to loosen the stains.
 - 1.2.5 Rinse the external surface, keep a continuous flow of water until the cleaning solution (11-001) is flushed away.

Note

Hot water at 140 degree Fahrenheit (60 degree Celsius) maximum is recommended.

- 1.2.6 Lightly rub the external surface with a clean and dry low-lint cloth (05-425) .
- 1.2.7 Repeat the procedure until the external surface is completely dry.
- 1.3 Wash the windshield or side window of the cockpit as follows:
 - 1.3.1 Use a clean water spray to clean the glass surface.
 - 1.3.2 If clean water spray is not possible, clean the glass surface with the clean sponge (05-042) or clean cloth (05-425) .

Note

This will remove the dirt and other unwanted and abrasive materials.

- 1.3.3 Prepare the cleaning solution as follows:
 - 1.3.3.1 Mix equal amounts of water and Isopropyl Alcohol (IPA) (11-004) and 2 to 5 % of detergent (11-001) .
- 1.3.4 Apply the cleaning solution on the glass surface with the wet sponge (05-042) .

Note

Do not let the cleaning solution dry on the external surface.

- 1.3.5 Rinse the glass surface with the continuous flow of water, until the cleaning solution is flushed away.
 - 1.3.6 Dry the glass surface with the clean sponge (05-042) or dry cloth (05-425) .
- 2 Clean dirt, oil, grease or stubborn stains on the external surfaces (except windshield and windows) as follows:
 - 2.1 Dilute the cleaning concentrate (11-109) with water as per manufacturer's instructions.
 - 2.2 Apply the cleaning solution prepared in Step 2.1 to the applicable external surface and rub small areas at a time.
 - 2.3 Rinse the surface with fresh water.
 - 2.4 Dry the applicable surface with a clean and dry cloth (05-425) .
 - 3 Clean the external surfaces (except windshield) as follows:

- 3.1 Dilute the cleaning concentrate (11-128) , (11-129) with water (refer to the instructions of the manufacturer). For the cleaning agent gel (11-127) , obey the instructions of the manufacturer for the cleaning gel preparation.
- 3.2 Apply the cleaning solution prepared in Step 3.1 to the applicable external surface and gently rub small areas at the time.
- 3.3 Rinse the external surfaces with fresh water. Make sure that all of the cleaning product was removed.
- 3.4 Dry the applicable surface with a clean and dry cloth.

Requirements after job completion

Required conditions

Table 6 Required conditions

Action/Condition	Data Module/Technical publication
Remove all tools, equipment, and unwanted materials from the work area.	
Remove the aircraft protection equipment.	BD500-A-J10-12-00-01AAA-520A-A
Return the aircraft to the operating configuration.	
If necessary, clean the applicable area by hand.	

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Fuel specifications - Technical data

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Fuel system compatibility

Fuels conforming to any of the specifications listed in Table 2 are approved for use with the aircraft.

Table 2 Aviation fuel specification equivalents

Canadian	American	British	Other
CAN 2 - 3.23-M81	ASTM D1655 - JET A	Defence Standard 91-91	** GOST 10227 – TS-1, RT ¹
CAN 2 - 3.23-M81	ASTM D1655 - JET A1	—	GB6537-2018-No. 3 Jet Fuel (China)
—	MIL-T-83133D - JP-8, JP-8+100	—	—
—	—	—	—
1 Use of Russian Fuel "GOST" 10227 TS-1 will be approved for restricted use.			

Mixing of these fuels will be permitted.

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Aircraft Characteristics Publication (ACP).

Line and hangar maintenance

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Line and hangar maintenance - Technical data

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 General

Refer to the Systems Description and Function Publication (SDFP); BD500-3AB48-13200-00 to get the information about the various systems on the A220 aircraft. The SDFP is organized in accordance with the S1000D, issue 4.0.1, standard numbering systems (SNS). Some information can be shown in more than one chapter. The lists of the SNS chapters that are covered in this publication are as follows:

- SNS 21 - Environmental control
- SNS 22 - Auto flight
- SNS 23 - Communications
- SNS 24 - Electrical power
- SNS 25 - Equipment/furnishings
- SNS 26 - Fire protection
- SNS 27 - Flight controls
- SNS 28 - Fuel
- SNS 29 - Hydraulic power
- SNS 30 - Ice and rain protection
- SNS 31 - Indicating/Recording system
- SNS 32 - Landing gear
- SNS 33 - Lights
- SNS 34 - Navigation
- SNS 35 - Oxygen

- SNS 36 - Pneumatic
- SNS 38 - Water/Waste
- SNS 44 - Cabin systems
- SNS 45 - Central maintenance system
- SNS 46 - System integration and display
- SNS 47 - Liquid nitrogen
- SNS 49 - Airborne auxiliary power
- SNS 50 - Cargo and accessory compartment
- SNS 52 - Doors
- SNS 53 - Fuselage
- SNS 54 - Nacelles/Pylons
- SNS 55 - Stabilizers
- SNS 56 - Windows and canopies
- SNS 57 - Wings
- SNS 71 - Powerplant
- SNS 72 - Engine
- SNS 73 - Engine fuel and control
- SNS 74 - Ignition
- SNS 75 - Air
- SNS 76 - Engine controls
- SNS 77 - Engine indicating
- SNS 78 - Exhaust
- SNS 79 - Oil
- SNS 80 - Starting

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Aircraft grounding - General maintenance procedure

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
BD500-A-J24-00-00-01AAA-913G-A	Electrical/Electronic safety precautions - General maintenance safety procedure
BD500-A-J24-00-00-02AAA-913G-A	Electrostatic discharge safety precautions - General maintenance safety procedure

Common information

This data module gives the procedure to ground the aircraft. The grounding points are located on the landing gears.

Preliminary requirements

Production maintenance data

Zones	711	Nose landing gear
	731	Main landing gear, left side
	741	Main landing gear, right side

Required conditions

Table 2 Required conditions

Action/Condition	Data Module/Technical publication
Obey all the electrical/electronic safety precautions.	BD500-A-J24-00-00-01AAA-913G-A
Obey all the electrostatic discharge safety precautions.	BD500-A-J24-00-00-02AAA-913G-A

Support equipment

Table 3 Support equipment

Name	Identification/Reference	Quantity	Remark
None			

Consumables, materials, and expendables

Table 4 Consumables, materials, and expendables

Name	Identification/Reference	Quantity	Remark
None			

Spares

Table 5 Spares

Name	Identification/Reference	Quantity	Remark
None			

Safety conditions

None

Procedure

WARNINGS

- **When the aircraft is parked for maintenance or during bad weather, make sure that it is grounded. Static electrical charges in the aircraft can cause injury to persons and/or damage to equipment.**

It is not mandatory to ground the aircraft if you do not do maintenance, there is no bad weather and the tires are in direct contact with the ground. Some airports can apply non-conductive coating on the ramp, which can prevent release of the static charges to the ground. In such conditions, you must ground the aircraft.

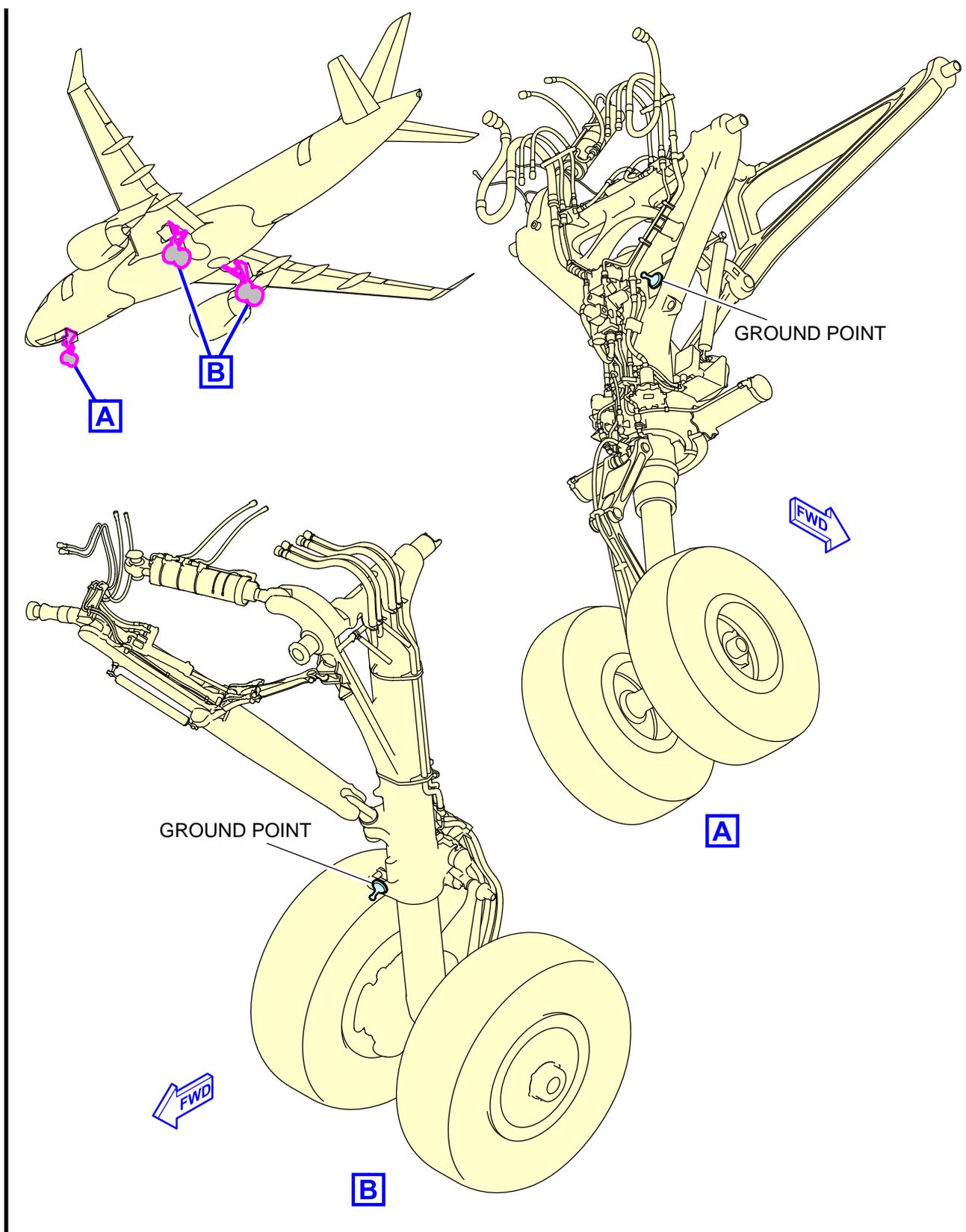
- **Ground the aircraft before you connect the external electrical power. If you do not do this, you can cause injuries to persons and/or damage the equipment.**

- 1 To ground the aircraft do as follows:

Refer to Fig. 1 .

- 1.1 Attach the alligator clamp to one of the grounding points located on the Nose Landing Gear (NLG) or the Main Landing Gear (MLG).
- 1.2 Attach the other end of the wire to a ground point off of the aircraft.

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ICN-BD500-A-J000000-A-3AB48-22049-A-002-01

Figure 1 Landing gears grounding points

Requirements after job completion

Required conditions

Table 6 Required conditions

Action/Condition	Data Module/Technical publication
None	

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Maintenance facility

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Maintenance facility - Facilities

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 General

This section gives data on the minimum equipment and design limits that are necessary to operate a maintenance facility.

During the initial planning stages of a maintenance facility it is important to look at the items that follow:

Maintenance facility – Organization and planning criteria:

- Location in relation to airport facilities, taxiways, and runways
- Quantity and different types of aircraft to be maintained
- Type of maintenance that will be done
- Structural material and building design
- External clearances, such as hangar doors height and width
- Internal clearances necessary when you lift the aircraft on jacks to operate the landing gear
- Internal clearances necessary for support equipment and vehicles
- Environmental control measures for waste management and disposal
- Control and handling procedures for poisonous materials that can be used
- Security measures
- Fire protection and safety measures
- Health, environment, and safety measures
- Available space for administrative offices and repair shops
- Budgetary limits

- Future expansion.

To do maintenance on the aircraft, you must have access to the items that follow as well as the usual mechanic's tool kit(s):

- Work stands
- Cranes and other equipment to lift the aircraft
- Equipment to clean aircraft
- Refinishing shop (paint booth)
- Pneumatic, hydraulic, and electrical equipment
- Fire protection and first aid and/or emergency response procedures
- Drainage

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Airborne software - General data

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 General

The objective of this section is to demonstrate what Airbus has in place to ensure the authenticity and integrity of Loadable Software Airplane Parts (LSAP) and Field Loadable Software (FLS) during reception, creation, modification, storage and distribution on the ground.

2 Operational security measures

The following subsections give an overview of what operational security measures has been taken for secure handling and managing of LSAP and FLS on the ground.

2.1 Creation and modification

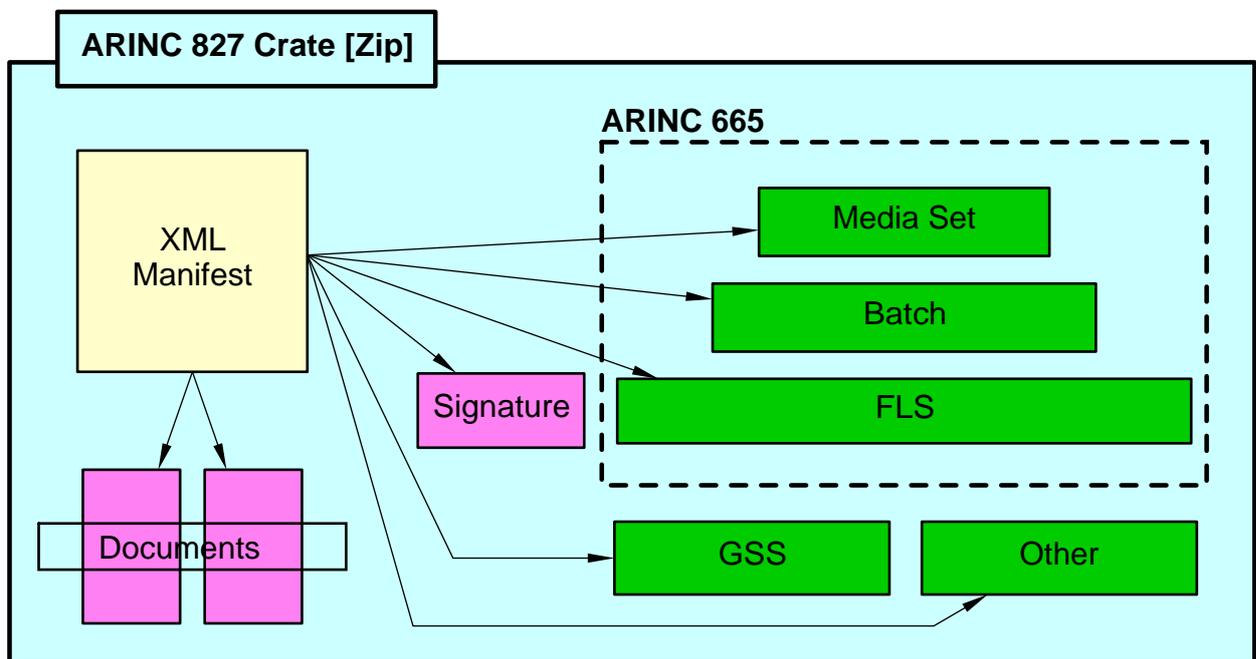
Airbus is dealing with the additional airworthiness risks for the eEnabled aircraft that required the implementation of a Public Key Infrastructure (PKI) to enable digital signature of LSAP. The digital signature is one of the components of the Electronic Distribution of Software (EDS) Crate (Aeronautical Radio Inc. (ARINC) 827).

With digital signature we can provide:

- The system supplier's identity can be validated by the Registration Authority and will instruct the Certificate Authority to issue a digital certificate to the system supplier's employee.
- Using the user's private key (that only this person has in their possession), the system supplier can digitally sign the software package to create the digital signature. The digital certificate (that hold the public key) is bundled with the digital signature and attached to the LSAP.
- After receiving the software package, anyone can validate the integrity of the software by validating the digital signature using the public key (that is embedded with the digital certificate) and validate the origin of the digital signature by validating the digital certificate with the Certification Authority.
- After the digital signature, any attempt to change the software would be detected at the moment of the validation.

LSAP creation follows the ARINC standard 665 and 827 Refer to Fig. 1 .

- *ARINC 665 - Loadable Software Standards*: It describes the common principles and rules to be applied to any part of a data load system, to insure compatibility and inter-operability. It includes part numbering, content, labeling and formatting of an LSP, and a media set containing LSPs.
- *ARINC 827 - Electronic Distribution of Software by Crate (EDS Crate)*: This standard describes the format for electronic distribution of aircraft software parts and other contents between aerospace business partners using a digital container referred to as an EDS crate. This EDS standard is intended to promote consistent, secure distribution of EDS content to any appropriate destination.
- *ARINC 835 - Guidance For Security Of Loadable Software Parts Using Digital Signatures*: This guidance describes the existing way to secure the LSAP.



This Aircraft

ICN-BD500-A-J000000-A-3AB48-28061-A-001-01

Figure 1 ARINC 827 Crate (.ZIP)

A crate is, in fact, a zip file (.zip) that contains:

- An eXtensible Markup Language (XML) index of the crate content;
- LSAP software (using ARINC 665 Standard);
- Digital signature for crate contents.

Note

LSAP has its own part number. An LSAP that has been updated will be assigned a new part number.

2.1.1 Procedure to prepare and sign the crate

Note

LSAP crate are built using the online tool provided by Airbus, refer to Fig. 2. A signed LSAP cannot be modified.

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

- 1 Authorized user accesses the LSAP crating portal through the Airbus portal.
- 2 User uploads software parts and documentation on the Crating portal over a secure channel;
- 3 Crating tool extracts LSAP information and calculate hash value of each element uploaded (parts and documentation) to be included in the signature file;
- 4 Crating tool retrieves user's LSAP signing credential;
- 5 Crating tool performs validation checking of user's LSAP signing credential using Server-based Certificate Validation Protocol (SCVP) to be included in the signature file;
- 6 Crating tool calculates the overall hash value (digest value) to be used as the input for the signature.
- 7 Crating tool inserts the signing time and signer's certificate in the signature file.
- 8 Crating tool signs the crate using the private key corresponding to the LSAP signing certificate.
- 9 Finalized crate is presented to the user for download and transmission to Airbus Vault.

2.2 Reception and storage

- 1 The signed LSAP crate is received in the Airbus vault over a secure channel;
- 2 The Airbus Vault validates the digital signature and attributes of the crate.
- 3 The Airbus Vault stores the crate in appropriate part object.
- 4 Authorized users process the part object and create the delivery package within the Airbus Vault.
- 5 Delivery package is made available for download to the operators.

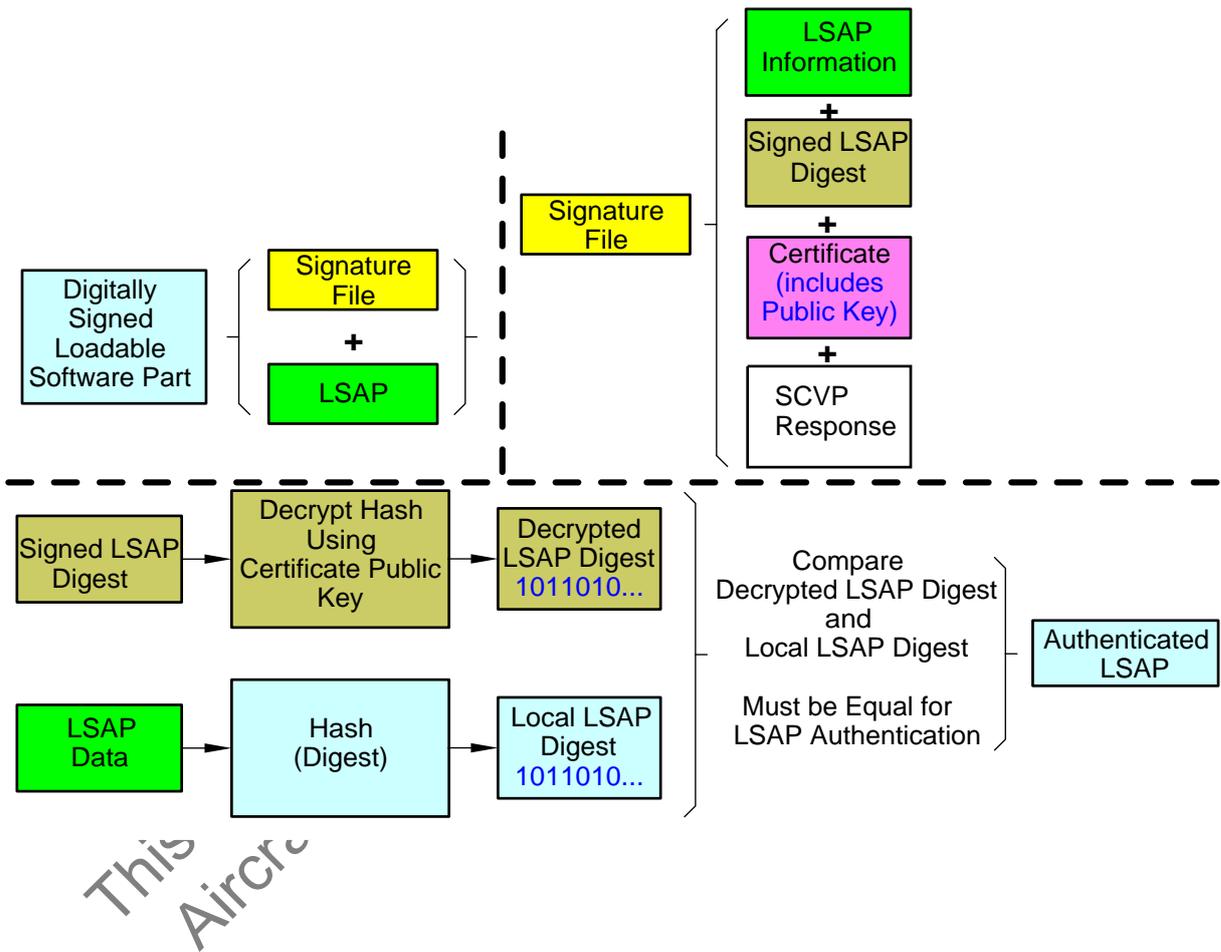
The delivery package is as follow:

- The LSAP is distributed to the operator in a LSAP delivery package format. The LSAP delivery package is a zip file that contains the crate and its corresponding Transport Canada Civil Aviation (TCCA) authorized release certificate (Form One).

If the authenticity or integrity of the LSAP is invalid, CS&S shall be notified.

Note

LSAP shall be verified on reception for authenticity and integrity. Airbus provides a standalone tool to validate the authenticity and the integrity.



ICN-BD500-A-J000000-A-3AB48-28062-A-003-01

Figure 3 Verify digitally signed loadable software parts

Security requirements are put in place in order to prevent and detect unauthorized access to protect the confidentiality, integrity and availability of the LSAP.

2.3 Software distribution to operator

Transfer of LSAP shall be done by personnel authorize to access, manage, and store the LSAP.

Steps shall be taken to ensure the integrity and authenticity of airborne software during transfer, both physical and logical, between entities.

A chain of custody shall be put in place for transporting LSAP in order to detect security events.

2.4 Media

Media use for storing LSAP shall be:

- Free of malicious code before LSAP is stored on it;
- Protected of malicious code during it lifecycle;
- Labeled with the part number, version and date;

2.5 Software tools

Airbus provides a software (standalone tool) to validate the integrity of the LSAP. The tool validates the crate signature and that the hash value of each LSAP element matches the information from the signature file. The tool also validates the timestamp, the certificate and the SCVP response included in the signature file. Refer to Fig. 3.

2.6 Data loading

The loading of LSAP on the A220 aircraft is described in the A220 Aircraft Maintenance Publication (AMP) or applicable service bulletin.

3 Guidance for operator

The operator shall document how:

- To create and modify a LSAP and a FLS.
- To receive and store a LSAP and a FLS.
- To distribute to personnel a LSAP and a FLS.

Aircraft components - General data

Applicability: 50001-54999, 55001-59999

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Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 General

The section gives operational security measures to protect the aircraft components during repair and maintenance, on what concerns the aircraft information security, from unauthorized access.

The A220 aircraft is equipped with components that require specific handling during transport, storage, repair and decommissioning, as these components can contain confidential information. Unauthorized access to the information is considered a threat and would have an impact to confidentiality, integrity and availability of the aircraft.

2 Operational security measures

Follow the operational security measures below to secure handling and managing of aircraft components.

2.1 Storage

- Keep the loadable components in a security perimeter, with restricted access.
- Security perimeters (barriers such as walls, card controlled entry gates or manned reception desks) should be used to protect areas that contain information and information processing facilities. Secure areas should be protected by appropriate entry controls to ensure that only authorized personnel are allowed access.
- Physical security for offices, rooms, and facilities should be designed and applied.
- Physical protection and guidelines for working in secure areas should be designed and applied.

2.2 Transport

- Protect aircraft components and component interfaces against physical tampering.
- Verify protection means when the aircraft component enters trusted facilities.
- Use a chain of custody (record keeping) for transporting aircraft components.

2.3 Repair

Repair of loadable storage components are done in a security perimeter with restricted access (personnel, tools and infrastructure).

Procedures exist to protect confidential information/data/equipment.

Ensure isolation from potential malicious systems and storage media.

All the Needed information is backed-up prior to repair

2.4 Decommissioning

All items of equipment containing storage media are checked to ensure that any sensitive data and licensed software have been removed or securely overwritten prior to or during disposal procedures. The operators are responsible to take appropriate actions to remove sensitive data from devices.

2.4.1 Health Management Unit (HMU)

Send to Pratt and Whitney (PW) for factory reset. There is no procedure that can be used by an Operator in order to do a factory reset of the operating system of the HMU. An operating system factory reset can only be done by the supplier. If an operating system factory reset is required, the HMU shall be sent to the supplier. The HMU memory card shall be removed or replaced by a blank one for decommissioning.

2.4.2 Onboard Maintenance System (OMS)

The OMS software Onboard Maintenance Software Application(OMSA), consists of a maintenance application which is hosted in a Common Computing Module(CCM). A CCM is a processing platform capable of hosting multiple software applications. The CCM provides the capability for individual software partition to be halted and/or reset without affecting other partitions. Only Rockwell Collins has CCM factory reset capability to blank memory using in house Teraterm tool. If a factory reset is required, the CCM module shall be sent to the supplier.

2.4.3 Information Management System (IMS)

Connecting a Portable Maintenance Access (PMA) device to the IMS allows access to factory reset functions through the web-based IMS Maintenance Portal application.. The following factory reset functions are available:

- As a method to get the IMS to a known state (Factory Reset state)
- As a last resort method to fixing IMS issues.
- Before any activity that causes an Aircraft Serial Number or Aircraft type change such as moving an IMS between Aircraft or rigs.

Step by step instructions related to the reset procedure can be found in the **IMS-6010 Maintenance Portal User's Guide, section 7.7.4 - Maintenance** (document number : **946-08M3-002**) of Rockwell Collins.

2.4.4 Cabin Management System (CMS)

Send to Panasonic for factory reset.

2.4.5 Aircraft Network Switch (ANS)

Send to CMC for factory reset.

2.5 Summary

Airbus will:

- Provide guidance to the operators to establish policies and associated procedures for the handling and managing of loadable storage components.
- Define processes for off-wing handling and managing of field loadable aircraft components.

3 Guidance for operator

The operator shall define operational security measures for handling and management of aircraft components with respect to::

- Storage;
- Transport;
- Repair;
- Decommissioning.

If the Operator decide to replace the cockpit printer by a different model, testing and a security assessment is required.

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This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Analysis of necessary equipment - Technical data

Applicability: 50001-54999, 55001-59999

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None	

Description

1

General

This section identifies and gives an analysis of the equipment necessary to do maintenance on the A220 aircraft.

Refer to the lists that follow for the equipment and facilities that you must have for aircraft maintenance and servicing. These lists show the different functions that a maintenance or service center (or an approved external subcontractor) must provide to support the operator's aircraft.

Usually, it is best for a maintenance facility to have all the shops and equipment necessary on-site to do maintenance. But, to try to lower repair costs and decrease turnaround times, it can sometimes be more cost-effective to use the facilities and services of approved external vendors as an alternative to your own service or repair facilities.

If an operator decides to use an external service or repair facility, they must first examine how much of the aircraft maintenance to keep on-site and how much to contract out to an external services facility. The operator should first identify what equipment, components, or parts are necessary to do repairs and/or an overhaul at their own maintenance facility. If some of the necessary equipment is not available, or it is not cost-effective to purchase/rent, then the operator should probably use an external (off-site) maintenance or services facility to do these maintenance functions.

During the initial planning stage, it is important that the operator look at the type of the maintenance to be done at the operator's facilities and the overhaul equipment that is necessary to do the job. After a check of the work flow processes, the operator must calculate the space allocation necessary and what equipment and supplies for the shop facilities must be purchased, in order to calculate an approximate cost estimate. As the planning stage continues, more accurate costs will become known which will give a more accurate estimate of the total costs necessary in the production of the operator's maintenance facility.

The typical maintenance facility has the areas, shops and rooms that follow, as applicable:

- Hangar areas for maintenance
- Aircraft apron
- Aircraft maintenance support shops
- Component overhaul shops
- Stock rooms
- Administrative offices and auxiliary facilities
- Utilities.

1.1 Hangar areas for maintenance

These are the areas that should be provided:

- Hangar
- Work stands and docks
- Cranes, stands and docks
- Service pits for electricity, air and fuel

1.2 Aircraft apron

These are the areas that should be provided:

- Aircraft maintenance aprons
- Aircraft parking aprons
- Taxiways
- Wash rack
- Blast fences and noise suppressors

1.3 Aircraft maintenance support shops

These are the areas that should be provided:

- Wheels, brakes and tires
- Power plant and Auxiliary Power Unit (APU) (quick engine change)
- Sheet metal/composites
- Avionics
- Interiors and seats
- Aircraft cleaners

1.4 Component overhaul shops

These are the areas that should be provided:

- Sheet metal
- Composite structures
- Parts cleaning
- Painting
- Plating
- Welding
- Heat treating
- Machining
- Engine / power plant
 - Module replacement
 - Module overhaul
 - Test cell
- Auxiliary power unit
- Hydraulic
- Pneumatic
- Mechanical accessories
- Fuel components
- Battery
- Electrical
- Landing gear
- Wheels, brakes and tires
- Avionics
 - Communications
 - Navigation
- Instruments, electrical
- Instruments, mechanical
- Bottled gas (O₂, N₂, CO₂)
- Seats and interiors
- Galley refrigeration
- Non-destructive testing and laboratories

1.5 Stock rooms

These are the areas that should be provided:

- Aircraft spares
- Consumable materials
- Combustible materials

- Tool cribs
- Receiving and shipping
- Quarantine area (for faulty or rejected items)

1.6 Administrative offices and auxiliary facilities

These are the areas that should be provided:

- Maintenance administration office
- Maintenance support office
- Quality control and reliability
- Engineering
- Manufacturer's representatives
- Computer services
- Medical station
- Security
- Cafeteria
- Toilets, washrooms, and lockers
- Building maintenance

1.7 Utilities

These are the areas that should be provided:

- Electricity (main and emergency)
- Water
- Sewage and wastewater
- Telephone
- Heating, ventilation, and air conditioning
- Compressed air

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Aircraft network access points - General data

Applicability: 50001-54999, 55001-59999

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Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 General

This section gives guidance for the A220 operators to establish policies and associated procedures for the secure management of network access points.

The Airbus A220 (A220-100 and A220-300) allow connectivity to external computer systems and networks. This connectivity may result in the exploitation of security vulnerabilities to the aircraft systems.

All wired network access points are located in restricted areas (includes the aircraft vicinity and areas inside the aircraft where access is restricted to authorized personnel only). Wireless access is also considered a network access point. Those connected to the aircraft network are disabled once the aircraft is in flight.

Restricted areas are those that include the aircraft vicinity (area around and adjacent to the aircraft) and areas inside the aircraft where is restricted to authorized personnel only.

The Ethernet interfaces on board the aircraft are in the following locations:

1 RJ45 access points:

- Two RJ45 port in the cockpit (HUM/Cockpit Maintenance Panel) - Pilot side bulkhead. Refer to Fig. 1 .
- One RJ45 port on the Electrical Towing Service Panel - Electrical/Towing service panel. Refer to Fig. 2 .
- One RJ45 port in the forward avionics bay - Forward equipment bay service panel. Refer to Fig. 3 .
- One RJ45 port in the mid avionics bay - Mid avionics bay service panel. Refer to Fig. 3 .
- One RJ45 port in the aft avionics bay - Aft avionics bay service panel. Refer to Fig. 3 .
- One RJ45 port on the Refuel/Defuel panel - Refuel/Defuel control panel. Refer to Fig. 4 .
- One RJ45 port on the front panel of the Information Management System (IMS) located in the cockpit.
- Two RJ45 port on the Aircraft Information Server (AIS) (option).

2 Universal Serial Bus (USB) access points:

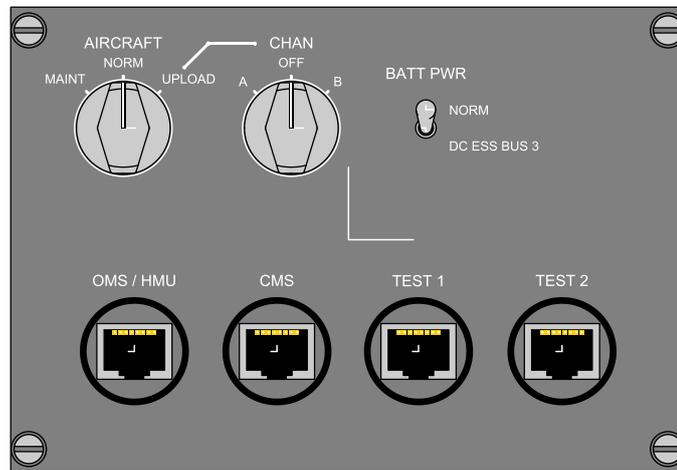
There are eight USB interfaces onboard the aircraft in the following locations:

- One USB port on the front panel of the IMS located in the cockpit.
- Two USB ports, one on the front panel of each Electronic Flight Bag (EFB) Electronic Display Unit (EDU) located besides each pilot. (optional)
- One USB port on the front panel of the Health Management Unit (HMU) located in the forward avionics bay. (This USB is disabled).
- One USB port on the Cabin Management System (CMS).
- One USB port on the printer located in the cockpit pedestal.
- Two USB ports on the AIS (option).

3 Wireless access points

There are four wireless interfaces onboard the aircraft in the following locations:

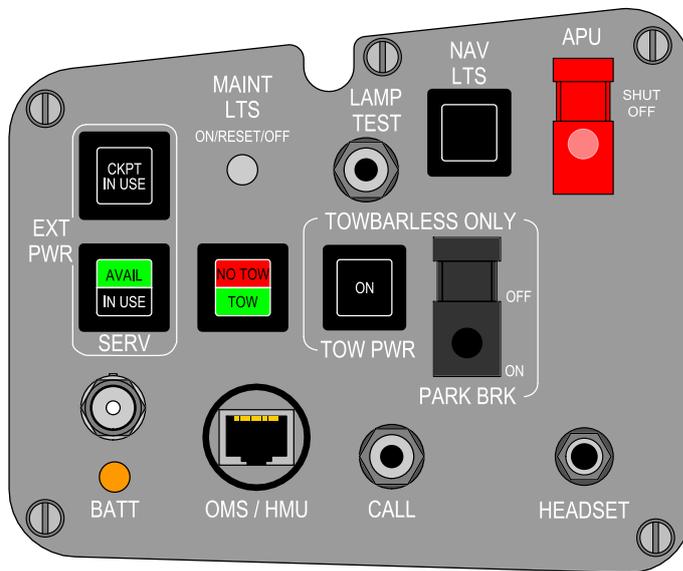
- HMU WI-FI network access point (optional)
- HMU cellular network access point (optional)
- EFB crew terminal wireless LAN Unit (cTWLU) (optional)
- EFB cabin wireless LAN Unit (CWLU) (optional)



**COCKPIT HEALTH MANAGEMENT UNIT
MAINTENANCE PANEL**

ICN-BD500-A-J000000-A-3AB48-46814-A-001-01

Figure 1 Cockpit health management unit maintenance panel



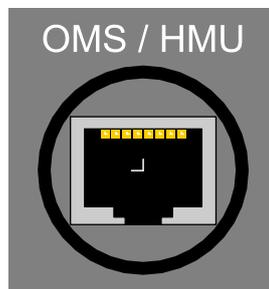
ELECTRICAL/TOWING SERVICE PANEL

ICN-BD500-A-J000000-A-3AB48-46815-A-001-01

Figure 2 Electrical/Towing service panel



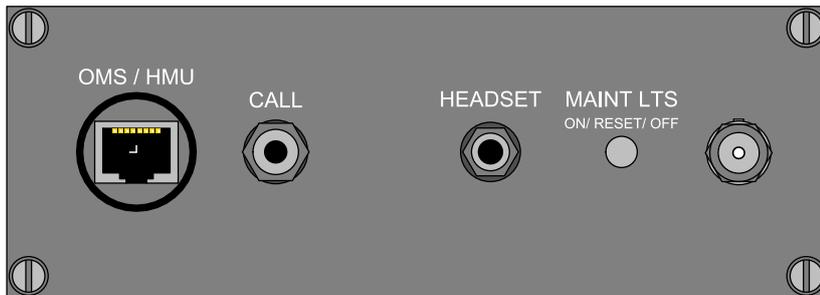
BAY SERVICE PANEL



OMS/HMU PORT

ICN-BD500-A-J000000-A-3AB48-46816-A-001-01

Figure 3 Bay Service Panel



REFUEL/DEFUEL CONTROL PANEL

ICN-BD500-A-J000000-A-3AB48-46817-A-001-01

Figure 4 Refuel/defuel control panel

2 Operational security measures on the aircraft

2.1 Operational security measures for Ethernet network

The following list gives an overview of what operational security measures may be taken for secure managing of aircraft access points:

- Identification and indication of network access points and restricted areas in the aircraft documentation
- Monitoring, protecting and securing of network access points and restricted areas
- Reporting and investigating security issues (breaches and weaknesses) so safety impacts can be properly understood and so security can be improved in the future
- Disable network access point when aircraft is flying
- Identify and document which personnel have authorization to access network access points and restricted areas.
- Review applicable system security log files for unauthorized access attempts.

2.2 Operator security measures for Wi-Fi network

The following list gives the operational security measures to be taken for secure management of the C Series aircraft Wi-Fi access points:

- Identify and document which Wi-Fi access point the HMU has authorization to access
- Configure to initiate and establish a secure wireless connection with an authorized ground station
- Review ground systems logs to identify Wi-Fi threats to the aircraft
- Connection to a Wi-Fi network shall be for business purposes only.

2.3 Operator security measures for cell network

The following list gives the operational security measures to be taken for secure managing the C Series aircraft cellular access points.

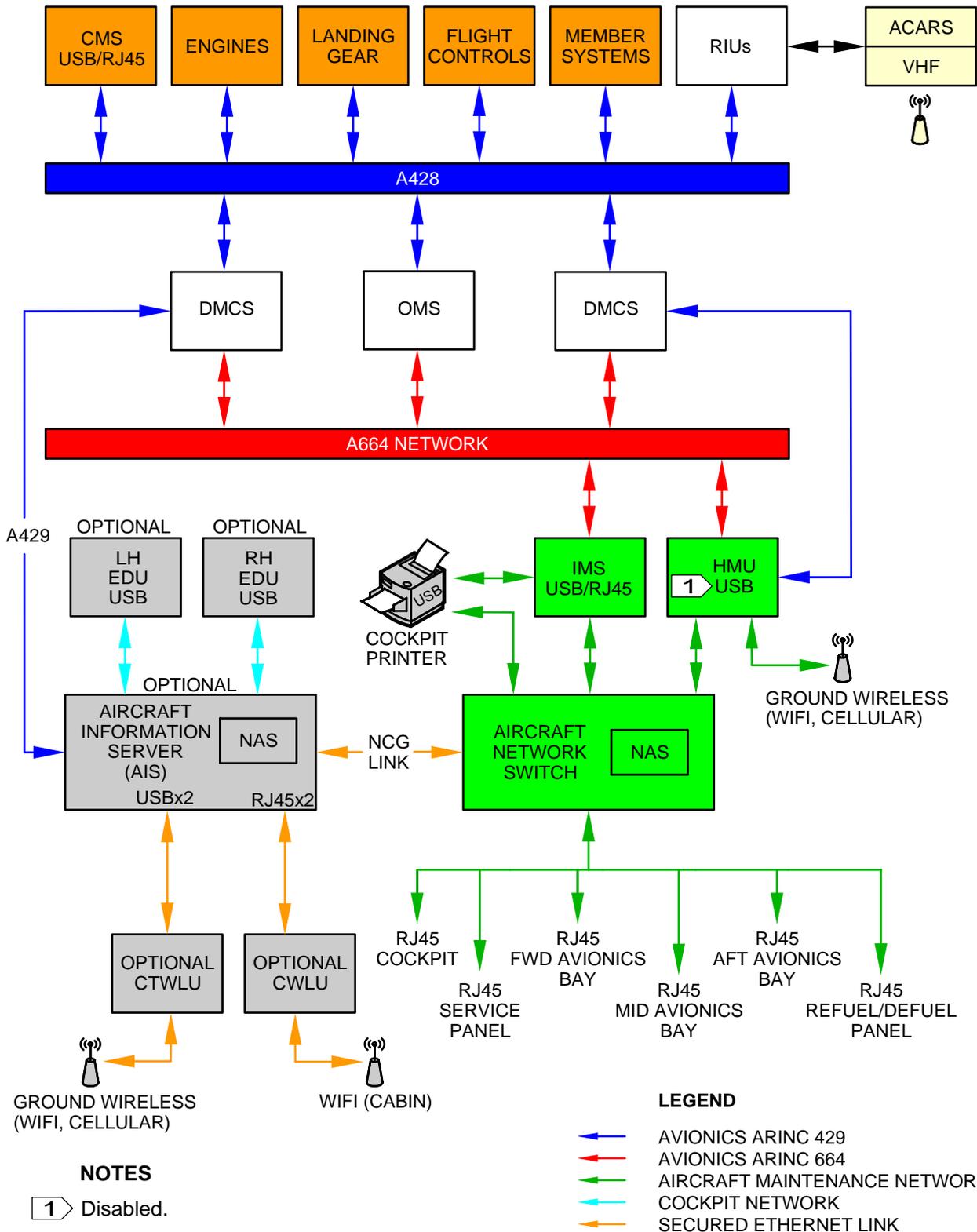
- Identify and document which cellular access point the HMU has authorization to access,
- Configured to initiate and establish a secure cellular connection with an authorized cellular network,
- Connection to a cellular network shall be for business purposes only.

2.4 Operator security measures for USB ports

The USB key use to connect to the ports shall be:

- Approved by the business or IT department
- Used only for transport of aircraft related files (e.g. Loadable Software Aircraft Parts (LSAP)/Field Loadable Software (FLS))
- Available from a known source (e.g. part store)
- Free of virus and malware
- Read-only mode for file upload (e.g. LSAP/FLS)

A220



ICN-BD500-A-J000000-A-3AB48-39913-A-003-01

Figure 5 Access Point

3 Guidance for operator

The operator should document and implement policies and procedures for the secure management of network access points regarding information security.

The policies and procedures should be based on:

- The operational security measures listed above.
- Applicable civil aviation regulations.
- The ground systems operational environment.
- Identify and document which personnel have authorization to access network access points and restricted areas.

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

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This publication has been superseded by the
Aircraft Characteristics Publication (ACP).

Ground Support Equipment (GSE) - General data

Applicability: 50001-54999, 55001-59999

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Data Module/Technical Publication	Title
None	

Description

1 General

This section provides guidance related to computer-based Ground Support Equipment (GSE). The term GSE, used in this section, refers to GSE that digitally connects to the aircraft system at any time during ground or maintenance operations for the purpose of data loading and downloading or as an enhancement or replacement of the onboard maintenance terminal. The following items are examples of computer-based GSE:

- Portable Maintenance Access Terminal (PMAT).
- Portable Data Loader (PDL).
- System specific maintenance and troubleshooting tools and data loaders.

Note

Mobile devices (like tablets and laptops) used for flight operational purposes are out of scope of this section.

The usage of this GSE could potentially impair the aircraft security when the associated risks are not properly managed.

Example risks are:

- The exploitation of software vulnerabilities can compromise aircraft computers and software.
- GSE interfaces to the maintenance environment (e.g. Universal Serial Bus (USB), WiFi, and Ethernet) can be used as a relay to get access to aircraft computers/software when connecting the GSE to aircraft equipment.

2 Operational security measures

The following subsections give an overview of what operational security measures shall be taken for secure handling and managing of GSE.

2.1 Connection and network

- A secure means of data transfer between GSE and aircraft is used.
- Wireless and Ethernet network cards are used on trusted secured access points.

2.2 Configuration and hardening

- Secure procedures for the delivery of data to and from the GSEs and storage of the GSEs are defined.
- Ensure that only operator accepted mobile maintenance devices or mobile maintenance device software are used (e.g. through Tool Equipment Manual).
- Manage software and hardware configuration of GSE.
- Access to GSE is restricted to authorized personnel only (physical and logical including repair).
- GSE are protected against hardware and software corruption.
- Harden the system base to the standard of a known security organization. The baseline hardening requirements should include::
 - Removal of unnecessary software, unnecessary usernames or logins.
 - Disabling or removal of unnecessary services and protocol.
 - Using antivirus and antispysware protection.
 - Disabling unneeded software and applications.
 - Limit network connection to the minimum needed.
 - Disable "Auto start" and similar behavior of USB and other removable media.
 - Prevent booting from external media as well as unauthorized configuration modification on boot sequence.
 - Use the least privilege principle (restrict access to minimum needed).
 - Prevent unauthorized software being installed.

- Up to date anti-virus, anti-malware anti-spyware software.
- All confidential data stored on mobile storage devices is encrypted through acceptable processes.
- All mobile equipment used for aircraft maintenance is configured to meet the security criteria or templates established or approved by the Information Security department and the Aircraft Security department.
- The control policy is enforced to block access to confidential resources for non-compliant devices.

2.3 Access control

- A user management process and service is defined.
- Roles for administrators and maintenance personnel on GSE are defined related to their tasks.
- Remote accesses to GSE are disabled.
- Access to the configuration of security mechanisms is restricted to the administrator.
- Identification and authentication of each GSE administrator is validated prior to any administration task performed.
- Ensure password strength based on:
 - Complexity.
 - Expiration period.
 - Limitation of reuse.

2.4 Usage

- Aircraft maintenance activities are performed only with GSE that is authorized for this purpose.
- Usage of the GSE is restricted to maintenance purposes only.
- GSE connections are restricted only to networks and media that are authorized for maintenance purposes.
- GSE is only used by authorized personnel.
- Processes are in place to report when GSE is lost, damaged, stolen or left unattended in a place that is not secure.
- Employees keep mobile computing devices in their possession at all times unless the mobile devices are deposited in a secure location such as a locked cabinet.
- If any alteration is suspected, all employees have their laptops and other mobile computing devices inspected by the Information Security department before connecting to the company network.
- Remote access tokens are not stored in the same briefcase or suitcase as mobile computers used to remotely access networks.

2.5 Storage

- The GSE is stored in the maintenance organization secured zone (e.g. tool store area).

- The access to the GSE is restricted to authorized personnel only.
- The transfer of GSE between maintenance personnel and the tool storage area is recorded.
- The GSE does not leave the controlled premises.
- If required, when traveling with GSE containing confidential information:
 - Protect GSE against tempering.
 - Verify protection means when the GSE enters trusted facilities.
 - Use a chain of custody (record keeping) for transporting GSE.

2.6 Repair

- A secure environment (personnel, tools and infrastructure) for repair of equipment is defined (e.g. documented access controls to Ground Support Information Systems (GSIS) equipment and network logins).
- Procedures exist to protect confidential information/data/equipment.
- Needed information is backed-up prior to repair.

2.7 Decommissioning

The disposal procedure must ensure that all confidential and aircraft-related information is securely deleted from the GSE before disposal.

- Equipment or parts of them (e.g. hard disk) that cannot be repaired is disposed in a way that no confidential data can be recovered from them.
- A tool that will guarantee 100% destruction of data on the equipment is used (a full repeated overwrite with random characters operation to obliterate or physically destroy the sensitive information in such a way that the data cannot be reconstructed).

2.8 Vulnerability management

- Vulnerability audits are performed regularly.
- Effective technical vulnerability management to identify, assess and respond in good time to vulnerabilities are in place.
- Processes to detect and manage vulnerabilities are defined (with ground support information system provider liaison).
- Processes for security updates of the operating system and applications are defined.
- Threats due to technical obsolescence are monitor.

2.9 Return of assets

The moment an employee terminates his or her relationship with the company, all property (including, but not limited to, mobile devices, computers, books, documentation, building keys, badges and magnetic access cards) that give access to GSE are returned.

3 Guidance for operator

The operator should be aware of all GSE that are used to connect to the aircraft and the guidance that is provided with it. The operator should document and implement policies and proce-

dures for secure handling and managing of GSE. The policies and procedures should address the following items:

- Connection and network;
- Configuration and hardening;
- Access control;
- Usage;
- Storage;
- Repair;
- Decommissioning;
- Vulnerability management;
- Return of assets.

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

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This publication has been superseded by the
Aircraft Characteristics Publication (ACP).

Necessary hangar space - Technical data

Applicability: 50001-54999, 55001-59999

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BD500-A-J06-10-00-00AAA-030A-A	Aircraft dimensions - Technical data

Description

1 General

The first facility an operator may want to consider is the maintenance hangar. The number of hangar positions is dependant on the number of aircraft types, the number of aircraft per type, aircraft utilization, maintenance check frequency (scheduled, unscheduled, equalized), the elapsed time required to perform maintenance checks, and the number of working hours available per day.

Hangar proposed arrangement is provided in Fig. 1 to assist in determining location, size, and clearance requirements for Ground Support Equipment (GSE), tools and workstands, refer to Table 2 for a legend. Aircraft parking space requirements can also be determined from Fig. 1 and to BD500-A-J06-10-00-00AAA-030A-A for aircraft dimensions.

Table 2 Hangar arrangement legend for Ground Support Equipment (GSE) and tools.

Reference letter	Description
A	Desks and reference tables
B	Tool boxes
C	Eye wash station
D	Spill kit

Reference letter	Description
E	Main Landing Gear (MLG) ladder station
F	Avionic station
G	Garbage and recycling station
H	Ladder storage/parking
J	Mule
K	Ladders parking
L	Oxygen/nitogen
M	Racks and shelves
N	Carts and charging stations
P	Sanding room
Q	Used oil tank
R	Oil warehouse
S	Store office
T	Rack and shelves
U	Kitchen
V	Office
W	Washrooms
X	Sprinkler room
Y	Nacelles parking
Z	Electrical room
AA	Conference room
AB	Avionic lab
AC	Service desk
AD	Lockers
AE	Printing room
AF	Ground Power Unit (GPU)
AG	Hydraulic cart
AH	Latchways vaccuum anchor

Reference letter	Description
AJ	Supports and jacks
AK	Coffee area
AL	Cleaning room
AM	Air conditioning room
AN	Servicing carts
AP	Drop area for parts
AQ	Oxygen and nitrogen

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Ground support information systems - General data

Applicability: 50001-54999, 55001-59999

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None	

Description

1 General

This section gives information about Ground Support Information Systems (GSIS).

GSIS are ground systems that are used to accomplish the process of data distribution and storage of airborne software and data. Systems for creation and modification of User Modifiable Software(UMS) and User Certifiable Software(UCS) are also in the scope of GSIS.

The objective of secure handling and managing of GSIS is to ensure sufficient security for all information transferred between aircraft and GSIS to prevent security incidents such as unwanted access, intrusions or service interruptions.

The implementation of adequate security for the transmission of data between ground base and aircraft helps prevent security incidents from happening. Some examples of the exchange of software and data are:

- Airbus and other airborne software supplier to operators.
- Operator's software vault to or from Portable Data Loader (PDL) mass storage.
- Operator's software vault to or from aircraft on-board mass storage.
- PDL mass storage to or from aircraft on-board mass storage.
- Systems involved in shop loading.

GSIS can also include airport (e.g. wireless connectivity), Maintenance, Repair and Overhaul(MRO) and others.

2 Information security requirements

The Airbus information security department provides security requirements to projects by using the ISO/IEC 27002 standard. ISO/IEC 27002 provides best practice recommendations on information security management for use by those responsible for initiating, implementing or maintaining Information Security Management Systems (ISMS). Information security is defined within the standard in the context of the C-I-A triad, the preservation of:

- Confidentiality (ensuring that information is accessible only to those authorized to have access),
- Integrity (safeguarding the accuracy and completeness of information and processing methods), and
- Availability (ensuring that authorized users have access to information and associated assets when required).

2.1 Asset management

2.1.1 Responsibility for assets

- All assets should be clearly identified and an inventory of all important assets drawn up and maintained.
- All information and assets associated with information processing facilities should be owned by a designated part of the organization.
- Rules for the acceptable use of information and assets associated with information processing facilities should be identified, documented, and implemented.

2.1.2 Information classification

- Information should be classified in terms of its value, legal requirements, sensitivity, and criticality to the organization.

- An appropriate set of procedures for information labeling and handling should be developed and implemented in accordance with the classification scheme adopted by the organization.

2.2 Physical and environmental security

2.2.1 Secure areas

- Security perimeters (barriers such as walls, card controlled entry gates or manned reception desks) should be used to protect areas that contain information and information processing facilities.
- Secure areas should be protected by appropriate entry controls to ensure that only authorized personnel are allowed access.
- Physical security for offices, rooms, and facilities should be designed and applied.
- Physical protection against damage from fire, flood, earthquake, explosion, civil unrest, and other forms of natural or man-made disaster should be designed and applied.
- Physical protection and guidelines for working in secure areas should be designed and applied.
- Access points such as delivery and loading areas and other points where unauthorized persons may enter the premises should be controlled and, if possible, isolated from information processing facilities to avoid unauthorized access.

2.2.2 Equipment security

- Equipment should be sited or protected to reduce the risks from environmental threats and hazards, and opportunities for unauthorized access.
- Equipment should be protected from power failures and other disruptions caused by failures in supporting utilities.
- Power and telecommunications cabling carrying data or supporting information services should be protected from interception or damage.
- Equipment should be correctly maintained to ensure its continued availability and integrity.
- Security should be applied to off-site equipment taking into account the different risks working outside the organization's premises.
- All items of equipment containing storage media should be checked to ensure that any sensitive data and licensed software has been removed or securely overwritten prior to disposal.
- Equipment, information or software should not be taken off-site without prior authorization.

2.2.3 Communications and operations management

2.2.3.1 Operational procedures and responsibilities

- Operating procedures should be documented, maintained, and made available to all users who need them.
- Changes to information processing facilities and systems should be controlled.
- Duties and areas of responsibility should be segregated to reduce opportunities for unauthorized or unintentional modification or misuse of the organization's assets.

- Development, test, and operational facilities should be separated to reduce the risks of unauthorized access or changes to the operational system.

2.2.3.2 Third party service delivery management

- It should be ensured that the security controls, service definitions and delivery levels included in the third party service delivery agreement are implemented, operated, and maintained by the third party.
- The services, reports and records provided by the third party should be regularly monitored and reviewed, and audits should be carried out regularly.
- Changes to the provision of services, including maintaining and improving existing information security policies, procedures and controls, should be managed, taking account of the criticality of business systems and processes involved and re-assessment of risks.

2.2.3.3 System planning and acceptance

- The use of resources should be monitored, tuned, and projections made of future capacity requirements to ensure the required system performance.
- Acceptance criteria for new information systems, upgrades, and new versions should be established and suitable tests of the system(s) carried out during development and prior to acceptance.

2.2.3.4 Protection against malicious and mobile code

- Detection, prevention, and recovery controls to protect against malicious code and appropriate user awareness procedures should be implemented.
- Where the use of mobile code is authorized, the configuration should ensure that the authorized mobile code operates according to a clearly defined security policy, and unauthorized mobile code should be prevented from executing.

2.2.3.5 Backup

- Backup copies of information and software should be taken and tested regularly in accordance with the agreed backup policy.

2.2.3.6 Media handling

- There should be procedures in place for the management of removable media.
- Media should be disposed of securely and safely when no longer required, using formal procedures.
- Procedures for the handling and storage of information should be established to protect this information from unauthorized disclosure or misuse.
- System documentation should be protected against unauthorized access.

2.2.3.7 Network security management

- Networks should be adequately managed and controlled, in order to be protected from threats, and to maintain security for the systems and applications using the network, including information in transit.

- Security features, service levels, and management requirements of all network services should be identified and included in any network services agreement, whether these services are provided in-house or outsourced.

2.2.3.8 Exchange of information

- Formal exchange policies, procedures, and controls should be in place to protect the exchange of information through the use of all types of communication facilities.
- Agreements should be established for the exchange of information and software between the organization and external parties.
- Media containing information should be protected against unauthorized access, misuse or corruption during transportation beyond an organization's physical boundaries.
- Information involved in electronic messaging should be appropriately protected.
- Policies and procedures should be developed and implemented to protect information associated with the interconnection of business information systems.

2.2.3.9 Electronic commerce services

- Information involved in electronic commerce passing over public networks should be protected from fraudulent activity, contract dispute, and unauthorized disclosure and modification.
- Information involved in online transactions should be protected to prevent incomplete transmission, misrouting, unauthorized message alteration, unauthorized disclosure, unauthorized message duplication or replay.
- The integrity of information being made available on a publicly available system should be protected to prevent unauthorized modification.

2.2.3.10 Monitoring

- Audit logs recording user activities, exceptions, and information security events should be produced and kept for an agreed period to assist in future investigations and access control monitoring.
- Procedures for monitoring use of information processing facilities should be established and the results of the monitoring activities reviewed regularly.
- Logging facilities and log information should be protected against tampering and unauthorized access.
- System administrator and system operator activities should be logged.
- Faults should be logged, analyzed, and appropriate action taken.
- The clocks of all relevant information processing systems within an organization or security domain should be synchronized with an agreed accurate time source.

2.2.4 Access control

2.2.4.1 Business requirements for access control

- An access control policy should be established, documented, and reviewed based on business and security requirements for access.

2.2.4.2 User access management

- There should be a formal user registration and de-registration procedure in place for granting and revoking access to all information systems and services.
- The allocation and use of privileges should be restricted and controlled.
- The allocation of passwords should be controlled through a formal management process.
- Management should review users' access rights at regular intervals using a formal process.

2.2.4.3 User responsibilities

- Users should be required to follow good security practices in the selection and use of passwords.
- Users should ensure that unattended equipment has appropriate protection.
- A clear desk policy for papers and removable storage media and a clear screen policy for information processing facilities should be adopted.

2.2.4.4 Network access control

- Users should only be provided with access to the services that they have been specifically authorized to use.
- Appropriate authentication methods should be used to control access by remote users.
- Automatic equipment identification should be considered as a means to authenticate connections from specific locations and equipment.
- Physical and logical access to diagnostic and configuration ports should be controlled.
- Groups of information services, users, and information systems should be segregated on networks.
- For shared networks, especially those extending across the organization's boundaries, the capability of users to connect to the network should be restricted, in line with the access control policy and requirements of the business applications.
- Routing controls should be implemented for networks to ensure that computer connections and information flows do not breach the access control policy of the business applications. Routing controls should be implemented for networks to ensure that computer connections and information flows do not breach the access control policy of the business applications.

2.2.4.5 Operating system access control

- Access to operating systems should be controlled by a secure log-on procedure.
- All users should have a unique identifier (user ID) for their personal use only, and a suitable authentication technique should be chosen to substantiate the claimed identity of a user.
- Systems for managing passwords should be interactive and should ensure quality passwords.
- The use of utility programs that might be capable of overriding system and application controls should be restricted and tightly controlled.
- Inactive sessions should shut down after a defined period of inactivity.
- Restrictions on connection times should be used to provide additional security for high-risk applications.

2.2.4.6 Application and information access control

- Access to information and application system functions by users and support personnel should be restricted in accordance with the defined access control policy.
- Sensitive systems should have a dedicated (isolated) computing environment.

2.2.4.7 Mobile computing and teleworking

- A formal policy should be in place, and appropriate security measures should be adopted to protect against the risks of using mobile computing and communication facilities.
- A policy, operational plans and procedures should be developed and implemented for teleworking activities.

2.2.5 Information systems acquisition, development and maintenance

2.2.5.1 Security requirements of information systems

- Statements of business requirements for new information systems, or enhancements to existing information systems should specify the requirements for security controls.

2.2.5.2 Correct processing in applications

- Data input to applications should be validated to ensure that this data is correct and appropriate.
- Validation checks should be incorporated into applications to detect any corruption of information through processing errors or deliberate acts.
- Requirements for ensuring authenticity and protecting message integrity in applications should be identified, and appropriate controls identified and implemented.
- Data output from an application should be validated to ensure that the processing of stored information is correct and appropriate to the circumstances.

2.2.5.3 Cryptographic controls

- A policy on the use of cryptographic controls for protection of information should be developed and implemented.
- Key management should be in place to support the organization's use of cryptographic techniques.

2.2.5.4 Security of system files

- There should be procedures in place to control the installation of software on operational systems.
- Test data should be selected carefully, and protected and controlled.
- Access to program source code should be restricted.

2.2.5.5 Security in development and support processes

- The implementation of changes should be controlled by the use of formal change control procedures.
- When operating systems are changed, business critical applications should be reviewed and tested to ensure there is no adverse impact on organizational operations or security.
- Modifications to software packages should be discouraged, limited to necessary changes, and all changes should be strictly controlled.
- Opportunities for information leakage should be prevented.
- Outsourced software development should be supervised and monitored by the organization.

2.2.5.6 Technical vulnerability management

- Timely information about technical vulnerabilities of information systems being used should be obtained, the organization's exposure to such vulnerabilities evaluated, and appropriate measures taken to address the associated risk.

2.2.6 Information security incident management

2.2.6.1 Reporting information security events and weaknesses

- Information security events should be reported through appropriate management channels as quickly as possible.
- All employees, contractors and third party users of information systems and services should be required to note and report any observed or suspected security weaknesses in systems or services.

2.2.6.2 Management of information security incidents and improvements

- Management responsibilities and procedures should be established to ensure a quick, effective, and orderly response to information security incidents.
- There should be mechanisms in place to enable the types, volumes, and costs of information security incidents to be quantified and monitored.
- Where a follow-up action against a person or organization after an information security incident involves legal action (either civil or criminal) evidence should be collected, retained, and presented to conform to the rules for evidence laid down in the relevant jurisdiction(s).

2.2.7 Business continuity management

2.2.7.1 Information security aspects of business continuity management

- A managed process should be developed and maintained for business continuity throughout the organization that addresses the information security requirements needed for the organization's business continuity.
- Events that can cause interruptions to business processes should be identified, along with the probability and impact of such interruptions and their consequences for information security.

- Plans should be developed and implemented to maintain or restore operations and ensure availability of information at the required level and in the required time scales following interruption to, or failure of, critical business processes.
- A single framework of business continuity plans should be maintained to ensure all plans are consistent, to consistently address information security requirements, and to identify priorities for testing and maintenance.
- Business continuity plans should be tested and updated regularly to ensure that they are up to date and effective.

2.2.8 Compliance

2.2.8.1 Compliance with applicable requirements (regulatory guidance materials Transport Canada (TC), Federal Aviation Administration (FAA), European Aviation Safety Agency (EASA))

- All relevant statutory, regulatory, and contractual requirements and the organization's approach to meet these requirements should be explicitly defined, documented, and kept up to date for each information system and the organization.
- Appropriate procedures should be implemented to ensure compliance with legislative, regulatory, and contractual requirements on the use of material in respect of which there may be intellectual property rights and on the use of proprietary software products.
- Important records should be protected from loss, destruction, and falsification, in accordance with statutory, regulatory, contractual, and business requirements.
- Data protection and privacy should be ensured as required in relevant legislation, regulations, and, if applicable, contractual clauses.
- Users should be deterred from using information processing facilities for unauthorized purposes.
- Cryptographic controls should be used in compliance with all relevant agreements, laws, and regulations.

2.2.8.2 Compliance with security policies and standards and technical compliance

- Managers should ensure that all security procedures within their area of responsibility are carried out correctly to achieve compliance with security policies and standards.
- Information systems should be regularly checked for compliance with security implementation standards.

2.2.8.3 Information systems audit considerations

- Audit requirements and activities involving checks on operational systems should be carefully planned and agreed to minimize the risk of disruptions to business processes.
- Access to information systems audit tools should be protected to prevent any possible misuse or compromise.

2.3 Ground information system security requirements

The following are specific security requirements for the ground systems:

- The system shall offer external users a selection of secure industry standard file transfer technologies for file transfers between Airbus and their network.

- The system shall provide a secure means of two-way data transfer between Airbus and the external user.
- The system shall provide a means for mutual recognition and authentication for secured communication between Airbus and the external user.
- The system shall provide a positive confirmation of file integrity upon successful file transfer between Airbus and the external user.
- The system shall provide a confirmation method for file integrity, at a minimum making use of a secure hashing algorithm (ex. SHA-512) with a digital signature.
- The system shall be flexible enough to make use of future secure hash algorithms as they evolve.
- Use of an alternate file integrity verification method shall be submitted to Airbus for review and approval prior to implementation.
- The system shall provide a secure transfer method(s) that prevents third parties from being able to inject unauthorized data into a transmission, or change the contents of a transmission en-route.
- The system shall provide a secure transfer method(s) that recognizes receipt of unauthorized data, rejects it and reports it.
- The system shall provide secure transfer method(s) that work with the external user information systems to prevent acceptance of unauthorized data by the external users, where "transfer method" is inclusive of the end point security hardware and processes that are implemented in the system.
- The system shall have a means to filter out duplicate data to insure data integrity due to Airborne Communications Addressing and Reporting System (ACARS) messaging errors, reports uploaded via physical memory transfer.
- The system shall report any duplicate data that are filtered.
- The system shall protect original data from any modifications, intentional or otherwise.
- The system shall have the capability to flag and report corrupt ACARS messages that might affect data integrity.
- The system shall report any occurrence of unrecoverable modification of original data - (related to BR4-3 & SRx-x).
- The tool shall have sufficient security controls to prevent unauthorized access.
- The tools shall report any attempt to circumvent / bypass established access controls.
- The system shall provide several levels of user access rights (ex. admin, user1, user2, etc.) with different access privileges based on Role Based Access Control (RBAC).
- A single system user log-in shall be used for the system and Airbus web portal log in.
- The user can select and define who has access to files with the ability to de-identify some elements of the data.
- The Tool shall have sufficient security to prevent a customer from accessing another customer data.
- Airbus, as the subscription administrator, shall have supervisory administrative control of subscription-user access privileges to the system.
- All functions of the system shall be access controlled (RBAC / DAC).
- Access control shall be configurable by the external user for access to their own data.
- Remote access to display screens (computer/Parts Manufacturer Approval (PMA)) shall be controlled by specific remote access rights initiated by the computer/PMA user.
- Access control shall, at a minimum, cover the following:

- Define which subscription-user is authorized to access data.
 - Define which subscription-user is authorized to upload and/or download data to/from the SDC.
 - Define for each subscription-user, what type of data access is granted (read, write, modify, etc.).
 - Define which subscription-user is authorized to use functions.
 - Define which subscription-user is authorized to modify the access control lists.
 - The system shall maintain a log of all transactions and access to the system.
- All access control functions shall have flexible logging capabilities based on established minimum requirements covered by external agreement with ground station.
 - Monitoring and Logs management. Required for assisting in future investigations and access control monitoring. This includes network Behavior Analysis (NBA) and Intrusion Detection System (IDS)/Intrusion Prevention System (IPS).
 - Public Key Infrastructure (PKI). Required for mutual recognition during data exchange and for compliance.
 - Penetration testing, scanning and audit. The process involves an active analysis of the system for any potential vulnerabilities that could result from poor or improper system configuration, both known and unknown hardware or software flaws, and operational weaknesses in process or technical countermeasures.
 - User's management and role-based access control (RBAC). Without users management and RBAC (role-based access control), users will have full access to all assets. Assign access rights to specific users.
 - Incident/Event Response. All activities involved with eServices need to be monitored. Requirements for reporting bad messages, bypassing of access control and unauthorized user access. Immediate action must be taken. Security related events and incidents must be reported to regulatory authorities.
 - Physical and environmental security. Access to assets should be limited in order to have confidentiality, availability and integrity.
 - Network security (segregation and redundancy). Without redundancy, assets may not be available on physical failure. Network segregation (zones) is a function of the final design.
 - Policies, directives, documents and processes. Documentation and processes will need to be updated or written for all systems. Policies and directives will need to be updated and written to support the design.
 - Virus and malware detection.
 - Database audit trail.
 - Critical data shall be identified and encrypted in storage.
 - Hardening of operating system.
 - Data exchange (internal and external) shall be encrypted.
 - System administrator audit trail.
 - Operating system access control (files and utilities/applications).
 - ARMS shall be used for user management.
 - Data shall be encrypted per customer.
 - User login for systems and applications shall use a centralized authentication system.
 - Backup shall be encrypted.

- A test/QA environment (with no production data) will be used for testing.
- A data/information flow diagram is available.
- All applicable legislations are identified.
- A BCP/DRP is defined.
- Tools shall be in place to validate integrity of data during input, transport, storage and output/display.

2.4 Operational security measures on the ground system

Wi-Fi access points use the following security requirements:

- The procured Wireless Access Point (WAP) shall be controllable and configurable through centralized management systems.
- The procured WAP shall provide integration with centralized authentication and authorization mechanisms.
- The procured WAP shall log security events and forward them to a remote audit server in real time.
- The WAP shall be:
 - 1 Hardened against discovery and attack, through:
 - 1.1 Change of default passwords;
 - 1.2 Periodic change of all passwords;
 - 1.3 Deployment of software patches and upgrades on a regular basis;
 - 1.4 Disabling of all unnecessary applications, ports, and protocols;
 - 2 Maintained in compliance with current information security standards, guidelines, and procedures;
 - 3 WAP are not to be installed in locations that make them easy for someone to steal or access by unauthorized individuals. It's recommended to locate WAP in locked wiring closets and connect them to antennas mounted in ceilings or on walls. If for other reasons it is not possible to locate the WAP in a locked wiring closet, the WAP should be hidden from sight (e.g., above ceiling tiles), placed in lockable enclosures or bolted down such that removing them would damage them.
 - 4 Deployed to minimize signal coverage beyond the intended service area
 - 5 Separated from the company internal network by a firewall denying or controlling any traffic (if such traffic is necessary for business purposes) from the wireless environment into the company environment;
 - 6 Managed only by authorized and trained technical staff required to use strong authentication and encrypt all communications to access WAP.
- Wireless Intrusion Detection Systems/Intrusion Prevention Systems (IDS/IPS) shall be deployed to detect suspicious or unauthorized activity.
- The company networks shall be monitored for unauthorized installations of WLANs (rogue wireless APs) by using a wireless analyzer or deploying a wireless IDS/IPS to identify all wireless devices in use.
- WLAN security assessments shall be performed at regular and random intervals to detect security weaknesses, identify WLAN installations non compliant with the requirements in this document, and plan corrective actions.

- Unauthorized and non compliant WLAN installations shall be immediately disconnected from the Company network.
- Change the Simple Network Management Protocol (SNMP) community name
- SNMPv3 or later as the minimum requirement for monitoring purposes
- Access Point should be connected to the wired network via switches, not hubs.
- Use a separate Dynamic Host Configuration Protocol (DHCP) address range for WAP and clients. This range can be used by a firewall, or Virtual Private Network (VPN) concentrator, to apply a distinct policy to wireless users and devices.
- Disable any Access Point management consoles via the wireless interface, and any unnecessary service.
- Maintain an inventory of the Access Point and Device unique identifiers, such as service set identifiers(SSIDs) and media access control(MAC) addresses. These can be used to identify rogue access points, or devices quickly.
- Broadcast of Production SSID should be enabled for setup and ease of use by end users.
- All wireless infrastructure devices that connect to an Airbus network or provide access to Airbus Confidential, Airbus Highly Confidential, or Airbus Restricted information must:
 - 1 Use Extensible Authentication Protocol-Fast Authentication via Secure Tunneling (EAP-FAST), Protected Extensible Authentication Protocol (PEAP), or Extensible Authentication Protocol-Translation Layer Security (EAP-TLS) as the authentication protocol.
 - 2 Use Temporal Key Integrity Protocol (TKIP) or Advanced Encryption System (AES) protocols with a minimum key length of 128 bits.
 - 3 Users will authenticate at the access points, (Radius), or use IP Forwarding to send all traffic directly to an authentication source.
 - 4 Support strong user authentication such as token, or certificate base, which checks against a database such as Radius Server.
 - 5 Explicitly deny via windows group policy, "bridging", or "Internet Connection sharing" on the client to prevent clients with both a wireless network card and wire network card inside the same device from connecting the two network together.
 - 6 Users of wireless devices, external to the Local Area Network (LAN), are subject to the same restrictions as a remote access user; Individual connections subject to authentication before access is granted through the firewall to the LAN.
 - 7 Maintain a hardware address that can be registered and tracked (ie. Mac address)

3 Operational security measures

The following subsections give an overview of what operational security measures can be taken for secure handling and managing of GSIS:

- Prevent exposure to potentially malicious systems

Note

Using digital signature methods (e.g. ARINC 827 signed crates) to verify authenticity and integrity can reduce opportunities for tampering with airborne software.

3.1 Connection

Ensure security for the exchange of data between Ground Support Information Systems and aircraft.

3.2 Access control

Define access rights for administrators and maintenance personnel on GSIS related to their tasks

- Restrict and protect all remote accesses to GSIS.
- Restrict access to the configuration of security mechanisms to the administrator.
- Ensure the identification and authentication of each GSIS administrator, prior to any administration task performed.
- Use technical means to restrict access based on pre-defined rights. This may include 2-factor authentication. If passwords are used then ensure their strength based on:
 - Balance of complexity and usability
 - Expiration period
 - Limitation of reuse.

3.3 Data exchange

Ensure the integrity and authenticity of the information using established standards (e.g. ARINC 823, ARINC 827 and ARINC 835).

3.4 Configuration/hardening

Harden the system, for example through:

- Removal of unnecessary software, unnecessary usernames or logins.
- Disabling or removal of unnecessary services and protocol.
- Using antivirus and antispysware protection.
- Disabling unneeded software and applications.
- Limit network connection to the minimum needed.
- Disable "Auto start" and similar behavior of Universal Serial Bus (USB) and other removable media.
- Prevent booting from external media as well as unauthorized configuration modification on boot sequence.
- Use the least privilege principle (restrict access to minimum needed).

3.5 Repair

- Ensure a secure environment (personnel, tools and infrastructure) for repair of equipment, (e.g. documented access controls to GSIS equipment and network logins).
- Ensure procedures exist to protect confidential information/data/equipment.
- Ensure that needed information is backed-up prior to repair.

3.6 Decommissioning

- The disposal procedure must ensure that all confidential and aircraft-related information is securely deleted from the GSIS before disposal or before send to repair.
- Dispose equipment or parts of them (e.g. hard disk) that cannot be repaired in a way that no confidential data can be recovered from them.
- Use a tool that will guarantee 100% destruction of data on the equipment.

3.7 Vulnerability management

- Perform internal network vulnerability audit regularly
- Perform effective technical vulnerability management to identify, assess and respond in good time to vulnerabilities
- Establish a process to detect and manage vulnerabilities (with ground support information system provider liaison)
- Installation of security updates of the operating system and applications
- Monitor threats due to technical obsolescence

4 Guidance for operator

The operator should be aware of all GSIS that are related to the aircraft information system and the associated guidance documentation.

The operator should document and implement policies and procedures for secure handling and managing of GSIS.

The policies and procedures should be based on:

- The operational security measures listed above.
- The GSIS supplier guidance.
- The risk associated with the functionality and connectivity of the GSIS.
- Applicable civil aviation regulations.
- The operational environment.

The operator should implement technical security measures for the applicable GSIS as necessary (e.g. meeting all applicable regulatory and other industry requirements).

If third party service providers are involved, the operator should ensure that the service provider complies with the above mentioned policies, procedures and technical security requirements and specifications.

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This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Equipment needs - Technical data

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 General

This section describes the equipments you need for the hangar, with its support shops. The support shops can be divided into the three groups that follow:

- Technical group;
- Technical support group;
- Administrative group.

2 Technical group

There are certain repair and support shops which are closely related to line maintenance. Storage areas for repairable items and consumable materials as well as tool cribs are all necessary elements of the repair facilities.

The level of maintenance work to be done by the line maintenance shops and the availability of fully equipped shops to assist in the more extensive maintenance tasks are necessary when you plan the size and functions of the line maintenance shops. The line maintenance shops can be housed in the overhaul facilities if the hangar and the overhaul shops are closely attached.

Any level of maintenance facility should integrate a guide for effective and efficient workplaces and instructions to promote continued safety and efficiency. The health and safety of their employees at their respective work stations, laboratories and office space is also a factor to consider as necessary elements of the facility.

Maintenance facilities must be capable of changing avionics, components, engine/APU and wheels as necessary, with shop tasks such as the overhaul of these units or components which can be contracted to approved outside service facilities. Heat treating, plating/coating, some non-destructive testing/inspection, and other such special work is usually given to external contractors unless the maintenance facilities are sufficiently equipped or are too far from an approved external service facility.

The technical group has the shops that follow:

- Maintenance shop
- Battery shop
- Tire/Wheel shop
- Tube shop
- Refinishing shop (paint/composites)
- Avionics/Electrical laboratory/shop
- Engine build-up shop
- Hydraulic shop
- Composite clean room
- Non-destructive test shop.

2.1 Maintenance shop

The primary function of this shop is to make some parts (approved by Engineering), repairs, install pins and bearings, and to do small welding repairs.

Table 2 Maintenance shop

Nomenclature	Quantity
Work benches	3
Vises	3
Drill press	1
Cabinet for metal sheet	1
Metal shears (heavy duty)	1
Metal shears (light duty)	1
Band saw	1
Grinder/Buffer	1
Buffer	1
Disc and belt sander	1
Welder (dial arc)	1
Welder (tungsten arc)	1
Welding screen (portable)	1
Welding gas for the TIG welder	A/R
Storage cabinet (wall) for fasteners, bolts, and washers	1
Desk	1
Chair	1

Nomenclature	Quantity
Storage cabinet that is resistant to explosions	1
Alodine bath (for small parts)	1
Wash tank 20 gallons (75.70 l) capacity	1
Storage rack for sheet metal	1
Sandblaster	1
Dry ice container (to freeze bearings)	1
Smoke detector	A/R
Metal break	1
Slip roll (forming machine)	1
Small press	1
Flypress (hand)	1
Small lathe	1
Stand for lathe tools	1
Spot welder	1
Sheet metal shrinker/spreader	1
Tool box with cabinet (fully equipped for the mechanic)	1
Right angle guillotine	1
Milling machine	1
Honing machine	1
Fire extinguishers 150 lb (68.2 kg) purple K, with wheels	2
Hot and cold water supply	A/R
Drinking water fountain	1
Central vacuum line attached to the grinder and sander	1
Vacuum pump	1
Rivet guns (air-operated)	2
Hand router (air-operated)	1
Metal spreader roller	1 set
Metal stamps (numbers/letters) 1/16 in. (1.6 mm) high	1 set

See applicability on the first page of the DM
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Nomenclature	Quantity
Etching tool (electrical vibrator)	1
Stand for milling machine tools	1
Stand for honing machine tools	1
Garbage containers	2
Eye bath	1
First aid kit	1

Maintenance shop dimensions: 32.5 ft x 32.5 ft (10.0 m x 10.0 m). Total area 1056.25 ft² (100.0 m²)

2.2 Battery shop

WARNINGS

- **When you do maintenance on the battery, make sure that you have a good flow of air. Explosive gases can be released. A concentration of these gases can cause injury to persons and/or damage to equipment.**
- **Be careful when you do work with a Ni-Cad battery. A solution of potassium hydroxide and water makes electrolyte in Ni-Cad batteries. To make the electrolyte of a Ni-Cad battery neutral, use a 3% solution of acetic acid, vinegar, or lemon juice, or a 10% solution of boric acid. The electrolyte in a Ni-Cad battery is very corrosive and can cause burns.**

The battery shop is a part of the "Component repair and overhaul shops". Also in the "Component repair and overhaul shops" are the tube shop, the composite shop, and the throttle quadrant shop.

The battery shop must have a non-slip floor surface treated with epoxy. Also, it must have good airflow with no acidic fumes.

The shop does maintenance on Nickel-Cadmium (Ni-Cad) batteries. It has the necessary equipment to make an analysis of these batteries, to deep cycle and also to charge them.

Note

A solution of potassium hydroxide and water makes the electrolyte in Ni-Cad batteries. Make this electrolyte neutral with a 3% solution of acetic acid, vinegar, lemon juice, or a 10% solution of boric acid.

Make sulfuric acid neutral with baking soda before you discard unserviceable batteries. Also, obey the local environmental regulations when you discard these or other dangerous materials.

Make sure to keep lead-acid and Ni-Cad batteries isolated. The fumes from lead-acid batteries can cause contamination of Ni-Cad batteries and decrease their efficiency.

Table 3 Battery shop

Nomenclature	Quantity
Air conditioner	1
Battery wash through (alkali resistant) with hot/cold water	1
Wooden benches with cupboards (alkali resistant)	2
Portable battery chargers/analyzers	2
Wooden shelf unit to keep various parts	1
Plastic containers (with covers)	2
Container for potassium hydroxide	1
Container for sulfuric acid	1
Water filter	1
Cart to move the batteries	1
Cabinet for tool storage	1
Water heater	1
Battery charger/analyzer	1
Desk	1
Chair	1
Shelf unit to charge batteries installed in place	1
Ventilation fan	1
Plastic bottles 1 qt. US (946.3 ml)	2
Container to make potassium hydroxide neutral (3% solution of acetic acid, vinegar, lemon juice, or a 10% solution of boric acid)	1
Container for baking soda (to neutralize acid)	1
Container for pure water 60 gal US (227.1 l)	1
Emergency shower	1
Eye bath	1
First aid kit	1

Battery shop dimensions: 19.5 ft x 9.75 ft (6.0 m x 3.0 m). Total area 190.12 ft² (18.0 m²)

2.3 Tire/Wheel shop

The tire/wheel shop replaces tires and does the maintenance, servicing and repairs to aircraft wheels and brakes. To do an overhaul of brake assemblies, refer to the brake manufacturer's procedures.

Table 4 Tire/Wheel shop

Nomenclature	Quantity
Steel work bench	1
Vise	1
Safety cage to inflate tires	1
3-shelf racks	2
Fire extinguisher	1
Wash tank for wheel bearings	1
Work bench	1
Portable eddy current tester	1
Wall storage cabinet for tools	1
Tire bead breaker	1
Varsol wash tank	1
Nitrogen gas cart	1
Plastic containers for solvent, leak detector	A/R
Desk	1
Chair	1
Paint stripper (plastic medium)	1
Ventilation fan	1
Hydraulic press	1
Caustic or steam cleaner for brakes	1
Cart to move the wheels	1
Shop air supply (regulated)	A/R

Tire/wheel shop dimensions: 13.0 ft x 9.75 ft (4.0 m x 3.0 m). Total area 126.75 ft² (12.0 m²)

2.4 Tube shop

The tube shop can make and repair tubes and hoses for the aircraft.

It is recommended to put the tube shop near the hydraulic shop. This makes it easier to do tests on new or repaired tubes and hoses.

Table 5 Tube shop

Nomenclature	Quantity
Rack to hold tubes of different dimensions	1
Steel work bench 3.0 x 6.0 ft (0.92 x 1.85 m)	1
Vise	1
Tool to bend tubes	1
Tube bending/flaring machine	1
Wiggins tool to swage tubes	1
Harrison tool to swage tubes	1
Tool to bend pipes	1
Emergency Shower	1
Desk	1
Chair	1
Peg Board	1
Telephone	1
Shop air supply (regulated)	A/R
First aid kit	1

Tube shop dimensions: 26.0 ft x 19.5 ft (8.0 m x 6.0 m). Total area 507.0 ft² (48.0 m²)

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

2.5 Refinishing shop (paint/composites)

WARNINGS

- Obey the precautions that follow when you do work with composite materials:
 - Do the work in an area that has a good flow of clean air
 - Use approved eyes, mouth, and body protection. Small particles can go through usual clothing
 - Do not let the materials touch your eyes, mouth, or skin
 - If irritation occurs, get medical aid immediately
 - Make sure that the area has no sparks, flame, or hot surfaces
 - Make sure that you have sufficient fire protection available
 - Obey the manufacturer's instructions
 - Do not use chemical paint removers. To remove paint from composites that have resin, use abrasive materials
 - Do not use abrasive materials on composite cloth that has no resin
 - When you remove a glossy finish from the surface of a composite, make sure that you remove only the minimum amount necessary. You must not touch the cloth below the resin
 - Do not use power tools to make a surface rough.

Some composite materials are poisonous, flammable and/or irritating to the skin. Some procedures can make composite parts weak. If you do not follow this precautions, you can cause injury to persons or damage to equipment.

- Obey the precautions that follow when you use resins:
 - use safety glasses
 - put on protective clothing
 - do not let the resins or solvents touch your skin, eyes, and mouth
 - work in an area that has good flow of clean air
 - do not work in an area that has sparks, flame, and hot surfaces
 - obey the manufacturer's instructions
 - get medical aid if irritation occurs

many resins are poisonous and can cause injury to persons.

Sanding/machining/cutting of the component will give off dust that can cause skin irritations. Do not breathe this dust.

- Epoxy resins or solvents contain dangerous ingredients.
- Have plenty of clean air ventilation and use respiratory protection when using these materials in a confined area.
- Make sure these materials do not get into your skin, eyes or clothing.
- Wear rubber gloves along with cotton gloves to protect your hands and wear protective clothing.
- If skin touches with uncured resins or curing agent, clean with warm water and soap.
- Do not use solvent to clean the skin.

The refinishing shop does repairs to the painted surfaces of composite parts (fairings, flight control surfaces, or access panels) that are installed or removed from the aircraft.

The shop also does repairs to composite fairings, detail parts and sub-assemblies.

Table 6 Refinishing shop

Nomenclature	Quantity
Paint booth with regulated air, filters, and exhaust fan 8.0 x 6.0 x 8.0 ft (2.46 x 1.85 x 2.46 m)	1
Holder for paper (used to mask parts)	1
Flame-proof paint lockers	2
Holder for masking tape	1
Respirators	2
Machine to shake paint cans	1
Paint spray guns (# 3 to # 13 patterns)	2
Paint spray gun to airbrush parts	1
Air gun	1
Explosion-proof lighting	A/R
Equipment to clean paint guns	A/R
Overhead chains to hang parts	A/R
Wooden work bench on which to paint parts	1
Fire extinguishers	2
Orbital sanders	2
Flame-proof locker for flammable liquids	1
Air operated sanders to polish parts	2
Shelves 3.0 x 1.5 x 6.0 ft (0.92 x 0.46 x 1.85 m)	4
Heat lamps to cure parts	10
Vacuum dust collectors – 1 outlet for each work bench	2
Work benches	2
Vises	2
Eye bath	1
Desk	1
Chair	1
Locker to keep supplies	1

Refinishing shop dimensions: 26.0 ft x 19.5 ft (8.0 m x 6.0 m). Total area 507.0 ft² (48.0 m²)

2.6 Avionics/Electrical laboratory shop

The avionics/electrical laboratory must have a clean room (with a controlled environment) to do repairs and tests of some instruments such as gyros and air data sensors. Also, the laboratory must have the correct equipment to touch and move Electrostatic-Discharge Sensitive (ESDS) devices.

The avionics/electrical shop does the troubleshooting of the avionics system. This shop makes, identifies, and repairs the wiring and services and inspects the avionics and electrical systems of the aircraft.

Such items as tools that crimp, heat guns, and other approved electrical equipment must be in the avionics/electrical shop's usual inventory.

Table 7 Avionics/Electrical laboratory shop

Nomenclature	Quantity
Work bench	1
Vent fan and filter	1
Shelves for test equipment	A/R
Fire-proof lamp	1
Lock-up cabinet	1
Filtered shop air	2 outlets
Stools	2
Protective clothing: face shield, gloves, and coveralls	2 sets
Eye bath	1
Anti-static mats	A/R
Vacuum dust collectors	2 outlets
Electrical ground facilities	A/R
Fire extinguisher	1
Work bench lights	A/R
Different types of test equipment	A/R
Bench light with magnifying glass	1
Telephone	1
Desk	1
Chair	1
Vacuum pump	1

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Nomenclature	Quantity
Plastic containers (with covers)	A/R
Garbage containers	2

Avionics/Electrical laboratory/shop dimensions: 13.0 ft x 13.0 ft (4.0 m x 4.0 m). Total area 169.0 ft² (16.0 m²)

2.7 Engine Build-Up (EBU) shop

WARNING

Do the borescope inspection in an area which has protection from the weather. If a borescope inspection is done in wet conditions, use sufficient protection to prevent possible electrical shock to the operator or damage to the equipment.

CAUTION

Make sure the temperature in the engine is less than 140° f (60° c) before you install the flexible borescope in the engine. If the engine is hotter than 140° f (60° c), the flexible borescope can melt.

The shop must have a large entry door (approximately 19.5 ft (6.0 m) wide) to receive such large components as engines.

The engine build-up shop has three horizontal work stations, two engine staging areas, and the equipment area. For on-line maintenance, the shop can do servicing on the Pratt & Whitney engines, engine nacelles, and thrust reversers. Other tasks that the shop can do are as follows:

- Borecope checks
- Replace external Line Replaceable Units (LRU).

Table 8 Engine build-up shop

Nomenclature	Quantity
Engine stands	3
Work benches	3
Shipping stand	1
Vises	3
Bench light with magnifying glass	1
Overhead crane	1
Step ladders (3 step)	3
Borecope equipment	1
Regulated shop air supply	A/R

Nomenclature	Quantity
Drip trays	A/R
Solvent cleaning area	1
Fire extinguishers	3
Eye bath	1
Protective clothing (face shield, gloves, and coveralls)	2 sets
Garbage containers	3
Explosion-proof lamps	A/R
Test equipment of different types	A/R
Telephone	1
Desk	1
Chairs	2
Inspection chairs (low)	3
Storage cabinet	1
First aid kit	1

Engine build-up shop dimensions: 32.5 ft x 39.0 ft (10.0 m x 12.0 m). Total area 1267.5 ft² (120.0 m²)

2.8 Hydraulic shop

WARNINGS

- **Make sure that the work area has a good flow of air. Hydraulic fumes and spray are poisonous and can cause injury to persons and damage to equipment if used in a closed area.**
- **Do not get hydraulic fluid on your skin, in your mouth or in your eyes. Hydraulic fluid is poisonous and can go through your skin and into your body. Flush hydraulic fluid from your eyes, mouth or skin with water. Get medical aid if you get hydraulic fluid in your eyes or mouth.**
- **Do not breathe the hydraulic fluid fumes. Do not let hydraulic fluid touch your eyes or stay on your skin. Hydraulic fluid is poisonous and can cause injury to persons.**
- **Put barrier cream on your hands and arms and use protective clothing when you do work on the hydraulic systems. Hydraulic fluid on the skin is poisonous and can cause injury to persons.**

- Catch the hydraulic fluid in a container or cloth when you disconnect the hydraulic lines. Immediately clean all surfaces that hydraulic fluid falls on. Hydraulic fluid causes damage to equipment.
- Clean hydraulic fluid leakage from the workarea. Hydraulic fluid is dangerous and can cause injury to persons and damage to equipment.

CAUTION

Make sure that you always use the same type of hydraulic fluid. If you mix hydraulic fluids, you can cause contamination of the system and/or damage to the equipment.

The hydraulic shop does the maintenance and tests of hydraulic pumps, motors, tubes, hoses, and other hydraulic components and their related parts. The shop must be clean because you must have a clean environment to do the build-up or overhaul of hydraulic components.

Table 9 Hydraulic shop

Nomenclature	Quantity
Hydraulic test stand	1
Work bench	1
Tool board	1
Storage cabinet	1
Special tools	A/R
Filtered shop air	A/R
Desk	1
Chair	1
Telephone	1
Filing cabinet	1
Stools	2
Bench light with magnifying glass	1
Protective clothing (face shield, gloves, and coveralls)	2 sets
Solvent wash tank	1
Eye bath	1
First aid kit	1

Hydraulic shop dimensions: 13.0 ft x 16.25 ft (4.0 m x 5.0 m). Total area 211.25 ft² (20.0 m²)

2.9 Composite clean room

WARNINGS

- Obey the precautions that follow when you do work with composite materials:
 - Do the work in an area that has a good flow of clean air
 - Use approved eyes, mouth, and body protection. Small particles can go through usual clothing
 - Do not let the materials touch your eyes, mouth, or skin
 - If irritation occurs, get medical aid immediately
 - Make sure that the area has no sparks, flame, or hot surfaces
 - Make sure that you have sufficient fire protection available
 - Obey the manufacturer's instructions
 - Do not use chemical paint removers. To remove paint from composites that have resin, use abrasive materials
 - Do not use abrasive materials on composite cloth that has no resin
 - When you remove a glossy finish from the surface of a composite, make sure that you remove only the minimum amount necessary. You must not touch the cloth below the resin
 - Do not use power tools to make a surface rough.

Some composite materials are poisonous, flammable and/or irritating to the skin. Some procedures can make composite parts weak. If you do not follow this precautions, you can cause injury to persons or damage to equipment.

- Obey the precautions that follow when you use resins:
 - use safety glasses
 - put on protective clothing
 - do not let the resins or solvents touch your skin, eyes, and mouth
 - work in an area that has good flow of clean air
 - do not work in an area that has sparks, flame, and hot surfaces
 - obey the manufacturer's instructions
 - get medical aid if irritation occurs

many resins are poisonous and can cause injury to persons.

Sanding/machining/cutting of the component will give off dust that can cause skin irritations. Do not breathe this dust.

- Epoxy resins or solvents contain dangerous ingredients.
- Have plenty of clean air ventilation and use respiratory protection when using these materials in a confined area.
- Make sure these materials do not get into your skin, eyes or clothing.
- Wear rubber gloves along with cotton gloves to protect your hands and wear protective clothing.
- If skin touches with uncured resins or curing agent, clean with warm water and soap.
- Do not use solvent to clean the skin.

The composite clean room must have a controlled atmosphere. This room is where technicians do the lay-up of fabric layers and mix and apply resins to the fabric layers to make composite panels and/or fairings for the aircraft.

To dispose leftovers or rolls of composite materials use the appropriate disposal bins.

Table 10 Composite clean room

Nomenclature	Quantity
Stands to hold fabric rolls	A/R
Large table	1
Tool board	1
Storage cabinet	1
Special tools	A/R
Vent fan and filter	1
Filtered and regulated shop air supply	A/R
Computer	1
Fire extinguishers	2
Desk	1
Chair	1
Telephone	1
Eye bath	1
Waste paper basket	2

Composite clean room dimensions: 26.0 ft x 19.5 ft (8.0 m x 6.0 m). Total area 507.0 ft² (48.0 m²)

2.10 Non-Destructive Test (NDT) shop

WARNING

Obey all the X-ray safety precautions when you use X-ray equipment. X-rays are very dangerous and can cause injury or death to personnel and/or damage to equipment.

The Non-Destructive Test (NDT) shop has the equipment to do special inspections such as prism inspections, dye-penetrant, eddy current, and ultrasonic tests and X-rays.

Put the NDT shop near the hydraulic and tire shops. That makes it easier to do Brinell and crack tests on wheels and other parts.

Note

To do NDT inspections on the engines, Pratt & Whitney can recommend more inspection equipment when you send them your inspection plans.

Table 11 Non-destructive test shop

Nomenclature	Quantity
Baths for Liquid Penetrant Inspection (LPI)	2
Solvent cleaning area	1
Vent fan and filter	1
Blackout curtain	1
Work bench	1
Light with magnifying glass	1
Stool	1
Storage cabinet	1
Filing cabinet	1
Specialized equipment	A/R
Tool board	1
Regulated shop air supply	A/R
Desk	1
Chairs	2
Telephone	1
Fire extinguisher	1
First aid kit	1
Protective clothing: face shield, gloves, and coveralls	2 sets

Composite clean room dimensions: 9.75 ft x 13.0 ft (3.0 m x 4.0 m). Total area 126.75 ft² (12.0 m²)

3 Technical support group

The technical support group does not have a direct role in the service/maintenance functions of the maintenance facility. This group has the shops that follow:

- Petroleum, Oil, and Lubricants (POL) store
- Ground Support Equipment (GSE) repair shop
- Tool and GSE store
- Spare parts store (shipping/receiving).

3.1 Petroleum, Oil, and Lubricants (POL) store

The POL store has four qualities:

- Good air supply and ease of movement
- Good ventilation
- Good fire alarm/suppression system
- The POL store, and its electrical power and heating systems, must be explosion-proof.

For safety, the POL store must be isolated from the maintenance hangar.

Keep dangerous waste in safe containers before you discard them.

Table 12 Petroleum, oil, and lubricants store

Nomenclature	Quantity
Vapor-Proof Lights	3
Storage Cabinet	1
Metal Shelves (Grounded)	A/R
Ground Wire	A/R
Fire Extinguisher	1
Vapor-Proof Ventilation Fan	1

POL store dimensions: 22.75 ft x 13.0 ft (7.0 m x 4.0 m). Total area 295.75 ft² (28.0 m²)

3.2 Ground Support Equipment (GSE) repair shop

The GSE shop can do repairs to or overhaul aircraft GSE and also to hangar equipment.

Table 13 Ground support equipment repair shop

Nomenclature	Quantity
Arc welder	1
Gas welding (acetylene, mig, tig)	1
Vent fan and filter	A/R
Work bench	1
Fire extinguisher	1
Lift (1 ton capacity)	1
Vise	1
Locked area that is safe	1
Oil waste container	1
Solvent wash tank	1
Parts shelves that are divided	1 set

Nomenclature	Quantity
Drip trays	A/R
Protective clothing: face shield, gloves, and coveralls	2 sets
Eye bath	1
Welding mask	1
Welding goggles	1
Garbage container	1
Desk	1
Chairs	2
First aid kit	1
Telephone	1

GSE repair shop dimensions: 26.0 ft x 19.5 ft (8.0 m x 6.0 m). Total area 507.0 ft² (48.0 m²)

3.3 Tool and GSE store

The tool and GSE store keeps a master inventory of all the equipment in the hangar, the support shops, and the administrative departments.

The store must be able to do the functions that follow:

- Distribute, monitor, and replace lost or worn tools for the support departments
- Do the maintenance of tools and/or GSE spares.

Make sure to keep the tool and GSE store safely locked.

Table 14 Tool and GSE store

Nomenclature	Quantity
Work bench	1
Storage cabinets	A/R
Tool boards	2
Desks	2
Chairs	2
Telephone	1
Filing cabinet	1
Hardware bin	1
Holder for bubble wrap	1

Nomenclature	Quantity
Shelves	A/R
Garbage container	1
Fire extinguisher	1

Tool and GSE store dimensions: 26.0 ft x 22.75 ft (8.0 m x 7.0 m). Total area 591.5 ft² (56.0 m²)

3.4 Spare parts store (shipping/receiving)

The spare parts store receives parts, consumable items, and fasteners for aircraft maintenance.

The spare parts store keeps the spares inventory to operate the line maintenance functions for the aircraft. The spares inventory includes items for the aircraft structure, systems, power plant, and the APU.

The store also sends spare parts to customers.

Table 15 Spare parts store

Nomenclature	Quantity
Work bench	1
Storage cabinets	A/R
Shelves for parts	A/R
Desks	2
Chairs	2
Telephone	1
Filing cabinets	2
Hardware bin	1
Holders for bubble wrap	2
Shelves	A/R
Garbage containers	2
Waste paper containers	2
Photocopier	1
First aid kit	1

Spare parts store dimensions: 58.5 ft x 26.0 ft (18.0 m x 8.0 m). Total area 1521.0 ft² (144.0 m²)

4 Administrative group

The primary functions of the administrative group are to schedule the operations of the service departments. In addition, a function of the administrative group is to keep records for the maintenance facility, and to be the liaison with Airbus for technical data.

The administrative group has the offices/departments that follow:

- Human resources/administration office
- Waste management office
- Hazardous material management office
- Documentation control office
- Documentation library
- Maintenance supervisor's office
- Quality Control (QC) inspection office
- Training classroom
- Customer service representative's office
- Cafeteria
- Planning/scheduling
- Sales office
- Finance department
- Telecommunications/copy room
- Information service's office
- Main entrance
- Customer lounge
- Building maintenance office.

4.1 Human resources/administration office

This office keeps personnel records, hires new employees as necessary, and administers employee benefits.

4.2 Waste management office

WARNINGS

- **Every component removed from the waste system should be considered as a biohazard. Obey the local handling procedures for biohazard. Components exposed to waste water can be poisonous and/or abrasive and can cause sickness to persons and damage to equipment.**
- **Waste water should be considered as a biohazard. Obey the local health and safety precautions when working in the waste system. Waste water can be poisonous and/or abrasive and can cause sickness to persons and damage to equipment.**
- **When you do the servicing of the waste water system, use rubber gloves. Waste water can get on your hands and cause an infection.**

CAUTIONS

- **Make sure that there is no leakage of the cleaning agent from the waste system during this procedure. To prevent leakage, a person must have access to the waste system area. Leakage of the toilet cleaning agent can cause damage to the interior of the aircraft.**
- **Make sure that the container used to collect the drained lubrication oil is 10 quarts (9,5 liters) or more, and is safety-approved for waste collection and storage.**

The waste management office has a minimum of one employee with a primary function of waste management. The tasks of the office include:

- To know and apply all the regulations that tell how to control and treat waste material
- To make sure that there is a program to recycle or safely discard all waste products (e.g. plastic sheeting, oil, fuel, and Skydrol).

4.3 Hazardous materials management office

The hazardous materials management office is considered isolated work areas. To work in one of these areas, an individual must abide by the isolated work policy of the maintenance shop.

The hazardous materials office include the following four (4) rooms:

- Chemical storage room
- Part storage room
- Storage containers
- Freezer

The hazardous materials management office has a minimum of one employee with a primary function of store and handle hazardous materials management. The tasks of these rooms include:

- To train personnel on how to treat dangerous material
- To ensure the material to be stored is tagged
- To archive laboratory reports
- To store the material in their dedicated spaces
- To ensure the requests for the retrieval of storage container is filled
- To maintain track of the products stored
- To order the products
- To update the chemical inventory list on a monthly basis
- To discard expired products.

4.4 Documentation control office

This office writes and keeps the documents that are necessary for the continued airworthiness of the aircraft. Some of the documents the documentation control office is responsible for includes:

- Service orders

- Technical reports on component conditions
- Reports on errors/omissions in technical manuals
- Service parts tags
- Daily turnover log
- Final inspection status
- Completing Airbus and vendor forms
- Flight logs and aircraft roadblock entries.

4.5 Documentation library

The primary function of the documentation library is as a storage facility, where the aircraft technicians can have fast access to reference material. The documentation library has all Airbus and vendor manuals that apply to the aircraft. There is a viewer/reproduction machine or computer terminals for the technicians to look at Engineering drawings and often printers to make hard copies of drawings and reports.

The documentation library also receives, sorts, and supplies new data to Quality Control (QC) and other sections/departments.

4.6 Maintenance supervisor's office

The maintenance supervisor's office has easy access to the maintenance hangar. The maintenance supervisor can keep copies of the aircraft maintenance planning documents in the office.

4.7 Quality Control (QC) inspection office

The QC supervisor and the inspector(s) share the QC inspection office. This office also has easy access to the hangar. The office has the quality documents that inspectors use to make sure that maintenance/repairs done on the aircraft are correct.

The QC supervisor also keeps records of the snags, rejected items, and repairs to the aircraft systems and equipment in the QC inspection office.

4.8 Training classroom

The training classroom is used to give refresher courses to service/maintenance technicians.

4.9 Customer service representative's office

Three or four service representatives can use this office. They are the liaison between the maintenance facility and its customers.

4.10 Cafeteria

The employees of the maintenance facility use the cafeteria for coffee breaks and at meal times. Employees usually eat and drink only in the cafeteria. Thus, the cafeteria must have sufficient space to let all the employees on a given shift to be together at the same time.

4.11 Planning/Scheduling

The planning and scheduling department has two main functions. To control the flow of work on maintenance tasks and to make a schedule of the future maintenance tasks. The department also makes sure that the technical and non-technical groups have the correct technical forms and documentation.

4.12 Sales office

One or more salespersons use this office. Their task is to find new customers who must have maintenance work done on their aircraft.

4.13 Finance department

The finance department does the Accounts Receivable, Accounts Payable, and Payroll functions.

4.14 Telecommunications/Copy room

Put the facsimile and telecopier machines in the telecommunications/copy room.

4.15 Information service's office

This is the office of the maintenance facility's computer system administrator. The system administrator does the maintenance of the computer system and also makes sure that the system security is correct. Additional computer personnel are sometimes necessary for a larger hangar when there are many on-line computer terminals installed at various locations in the facility.

4.16 Main entrance

Customers, visitors, vendors, and other personnel come into the maintenance facility at the main entrance. The receptionist is found in this area.

4.17 Customer lounge

The customer lounge is for the aircraft operators, which can be designed to not be attached to the hangar.

The lounge has comfortable chairs, a number of tables, and two or three telephone booths for private conversations.

4.18 Building maintenance office.

The maintenance facility has a building maintenance supervisor who makes sure that the maintenance facility stays in good repair.

This publication has been superseded by the Aircraft Characteristics Publication (ACP)

Utilities - Technical data

Applicability: 50001-54999, 55001-59999

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Data Module/Technical Publication	Title
None	

Description

1 General

A full range of utilities are necessary to do the maintenance of the A220 aircraft. When you design a maintenance facility, it is important to include the utilities that follow:

- Electrical power
- Lighting
- Heating, ventilation, and air conditioning

- Compressed air
- Fuel
- Vacuum
- Telecommunications.

In addition to the utilities necessary to operate the maintenance facility, you should also include the fire safety, environmental and health safety concerns that follow:

- Fire protection
- Water, sewage and drainage
- Removal of hazardous waste.

1.1 Electrical power

A supply of both 115 volts AC and 220/240 volts AC, 60/50 Hz, or as locally applicable, should be made available. Portable power units in the shops should supply both 28 volts DC and 200/115 volts AC, 400 Hz aircraft power. Electrical power outlets shall be provided at all aircraft positions (voltage and current contingent upon site standards and equipment requirements) :

- One (1) quad outlet (115 VAC 60 HZ 20 amp)
- One (1) 600 VAC 60 Hz 30 amp
- One (1) 220 VAC 60 Hz 30 amp
- One 220 VAC 60 Hz 10 amp
- One (1) 220 VAC 3 phase outlet for avionics/instrumentation
- One (1) standard 200/230/460/575 volt single phase power for welding equipment

If possible, the hangars should be equipped with 200/115 volts AC, 400 Hz underground cables leading to electrical outlets in the hangar floor and/or walls. Although expensive to install, this type of setup will help keep the area clear around the aircraft.

1.2 Lighting

1.2.1 Hangar lighting

It is recommended that hangars have 75 footcandles (fc) (807 lumens/meter²) lighting levels. The near natural color spectrum and high efficiency of the metal halide lamps makes them highly recommended. The light from high pressure sodium lamps makes it impossible to have proper color discrimination and thus the use of these lamps is not recommended. Mercury lamps are also not recommended because of their low efficiency as well as the cold color spectrum that they give.

1.2.2 Shop lighting

It is recommended that shops have 50 fc (538 lumens/meter²) lighting levels with local lighting of 100 fc (1076 lumens/meter²) for detailed work and inspection. An equal distribution of light (without local hot spots) is only possible with the correct lighting system.

1.3 Heating, ventilation, and air conditioning

1.3.1 Heating

Where necessary, there must be heating in the hangar and in areas where dusty conditions can occur the hangar must have a positive-pressure ventilation system.

1.3.2 Air conditioning

Air conditioning is necessary in some repair shops, such as the avionics and electronics shops, which are temperature controlled. Instrument shops also need a supply of clean, filtered air and the main entrance, the offices, and the cafeteria should also have air conditioning for employee comfort.

1.3.3 Ventilation

Instrument shops need a supply of clean, filtered air and the main entrance, the offices, and the cafeteria must also have sufficient ventilation to make sure that you keep a safe and healthy working environment. It is recommended that a composite fiber venting system be installed in the composite room, if applicable.

1.4 Fuel

The hangar must have a minimum of one fuel venting/purging system equipped with a large blower and explosimeter. It is recommended that the size of the blower outlet is a minimum of 8 in. to 14 in. (203 mm to 355 mm). It is recommended that a fuel disposal pit with the capacity for the A220 full fuel load be planned.

1.5 Compressed air

A supply of 100 psig (689.5 kPa) shop air should be provided along with 100/250 psig (689.5/1724.7 kPa) clean, dry pneumatic test air for the overhaul shops. The mass-air flow of the compressor should be sufficient to meet or exceed the air requirements of the air tools. This will depend on the rating of the tool, the quantity of tools used at any one time and the frequency of use.

1.6 Vacuum

A vacuum source of 20 inches of Mercury (Hg) (67.73 kPa) is necessary for an overhaul shop.

1.7 Telecommunications

Separate line, cable or satellite connections are usually necessary for communication equipment such as telephone, fax machines and computers.

1.8 Fire protection

The hangar, repair shops, storage areas, offices, and all other areas of the maintenance facilities must have an approved fire alarm and fire control system. The hangars should be equipped with a deluge-type of fire extinguishing system which includes under-aircraft water cannons.

1.9 Water, sewage and drainage

1.9.1 Water

A pressurized water supply is necessary for washrooms and hangar use. If kitchen facilities are also necessary, the supplied water must be potable.

1.9.2 Sewage

Oil separation and wastewater treatment facilities are sometimes necessary to agree with the local waste management laws. Special handling procedures are necessary for the disposal of plating shop waste fluids and materials. Washrooms must have sewage disposal facilities, which usually includes a connection to the local municipal sewage system.

1.9.3 Drainage

It is recommended that floors be designed with a gentle slope to a sewer drain, usually located in the middle of a hangar. The hangar floor is usually higher than the immediate surrounding land to prevent possible flooding in the event of a heavy rain or melting snow.

1.10 Removal of hazardous waste

Discard hazardous waste material in agreement with local environmental regulations. The waste management supervisor is responsible for correct removal procedures.

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Minimum GSE list - Technical data

Applicability: 50001-54999, 55001-59999

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Description

1 General

When planning a maintenance facility, special consideration should be given to the level of maintenance required. This will determine if specialized tools and equipment, such as aircraft tooling, cranes, hoisting devices and work stands, are necessary.

Airbus has an Illustrated Tool and Equipment Publication (ITEP) that gives details on the tools and equipment that are necessary to the aircraft maintenance.

The aircraft operator must make sure that there is a tool crib to keep these maintenance tools. Each tool must have its own identification mark with a calibration stamp where applicable (e.g. torque wrenches, pressure gauges, scales, and other tools and gauges). With proper test equipment calibration and control (TEC) procedures (with applicable TEC stickers), this will keep the tools in good condition and thus, help make sure that the aircraft operates in a safe and serviceable condition.

Refer to the ITEP (BD500-3AB48-11600-00) for the GSE that are necessary to do maintenance on the A220 aircraft.

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This publication has been superseded by the
Aircraft Characteristics Publication (ACP).

Aircraft Security Program (ASP) - General data

Applicability: 50001-54999, 55001-59999

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Description

1 General

This section presents the Aircraft Security Program (ASP) implemented by Airbus.

The A220 with his level of digital information connectivity, network systems, and automation has introduced vulnerabilities to the aircraft information systems. Airbus and regulation authorities have identified the need of an Aircraft Security Program (ASP).

Airbus provides:

- Assistance and guidance to the operator in developing their ASP if requested.
- Expertise as an aircraft subject matter expert during Entry Into Service (EIS) of an operator new aircraft.

- Aircraft security guidance documentation to the operators to support the development and implementation of the ASP and notify the operators of new revisions.
- A service to assist operators in the implementation of the recommended security measures and collect feedback for program improvements.

1.1 ASP relation to Information Security (IS)

Airbus has his own Information Security department answering to the Information Technology (IT) department. The Information Security (IS) conforms to the ISO 27002 standard. The IS is concerned with business information security for the whole organization while the ASP is concerned with aircraft security. The IS is providing consulting services to the ASP.

2 Aircraft security communication chart

The ASP is working closely with other teams in order to identify vulnerabilities, risks and to develop mitigation plans.

- Information Security: Provide consulting services as needed to the AS.
- Supplier: Provide aircraft components that answer the security requirements from AS.
- Aircraft Health Management System (AHMS) security: Responsible for defining security requirements for the IT solution of the aircraft.
- DAD avionics: Responsible for interfacing with Transport Canada Civil Aviation (TCCA) in order to get the type certificate of the aircraft.
- AHMS Ground Infrastructure Security: Responsible for defining security requirements for the IT ground solution of the aircraft.
- TCCA: Responsible for giving the type certificate of the aircraft.

3 Aircraft security team description

The ASP will offer three services to the A220 program: governance, security engineering and in-service engineering.

3.1 Governance

The roles of the governance team are:

- Prioritize information assets based on business risks: Provide organization with sufficient insight into the precise information assets they need to protect and how to assign priorities to these assets.
- Develop deep integration of security into the technology environment: Impact of technology on the organization and its ability to protect itself.

The following are position in the governance team:

- Projects manager: Responsible for IT solution deployment on both the aircraft and ground system.
- Strategy: Define strategies and standards to be use in design of IT systems in aircraft.
- Communication: Responsible to communicate to engineers information that will be used in order to make aircraft secure.
- Training (internal/external): Responsible to define training materials for operators and Airbus engineers.

- IT security intelligence collection: Responsible to collect evidences of an incident on an aircraft.
- Airbus technical publication: Responsible to write new procedures in order to assist in future aircraft design.

3.2 Security engineering

The roles of the security engineering team are:

- Define security requirements
- Identify vulnerabilities and risks

The following are descriptions of position in the security engineering team:

- IT cyber security specialist: Responsible to define security requirements and mitigation plan in order to have the aircraft computer information system secure.
- Aircraft (A/C) security (physical) specialist: Responsible to define security requirements and mitigation plan in order to have the physical access to the aircraft secure.
- IT security tests and audits: Responsible for certification audit of the aircraft in order to confirm that security requirements are enforce, and to identify remaining vulnerabilities and risks.

3.3 In service

The roles of the in service team are:

- Work with the operators to provide continuous airworthiness.
- Identify new vulnerabilities and risks on existing designs.
- Manage security incidents.

The following are descriptions of position in the in-service team:

- Security handbook specialist: Write and provide documentation for operator for continuous airworthiness of the aircraft.
- Specialist for validation of security measures: Proceed with audit of IT systems the aircraft in order to identify vulnerabilities, risks and mitigation plans for continuous airworthiness.
- Incident and vulnerability management specialist: Responsible for managing incidents and identifying new vulnerabilities and risks on in service aircraft.

4 Guidance for operator

4.1 Introduction

Operators should develop, document and implement an Aircraft Security Program (ASP) related to the aircraft. This program should cover the elements described in the following section and, if desired by the operator, may be common across multiple aircraft fleets. It should be noted that the ANSP does not make an assumption about the size of any group or team. Depending on the operator and the needs, it may involve only a very small group.

4.2 Governance

Operators should implement a governance team for the ASP with responsibilities similar to those defined in section 3.1 above. The team should be composed of personnel with various expertise related to the cyber security of the aircraft. The team may comprise personnel from security, engineering maintenance and in-service support. The team should work closely, or include, experts from the Information Security organization. The team may regularly interface with the Airbus Security Governance team

The operator should ensure that the roles and responsibilities are documented as part of the ASP and in place to address all operational security measures defined in the ANSP.

4.3 Requirements Definition

Operators should review, or define, their security requirements in order to make the aircraft secure. The review of operator existing requirements should be based on the recommendations of this ANSP and on other good practices in the aviation industry. There should be a review of these requirements as the security environment evolves with changes in technology, and with changes in the knowledge on vulnerabilities and threats.

4.4 Assets Identification

Operators should identify the assets that need to be protected, covering the aircraft, aircraft data ground stations and maintenance equipment (that digitally connects to the aircraft). This information should be communicated to the relevant personnel.

4.5 Communication and training

It is necessary for the operators to ensure that all personnel who are assigned responsibilities defined in the ANSP are competent to perform the required tasks, and are well informed of the requirements, processes, and procedures applicable to the operator ASP.

When required, the operator should train its personnel on the requirements of the ASP. The operator should also communicate to its staff the necessary information required to make the aircraft secure, and to maintain the level of security of the aircraft.

The operator should establish handoff and communication processes for each role. Each operator's organization will develop their own specific process.

4.6 Logs and Audits

This section applies where required by local or national authorities, or when specifically requested by the Airbus and/or by the governance team.

The operator shall download security log files from the aircraft using the recommended tools, either maintenance laptop, or other designated equipment. The operator should provide the necessary infrastructure to enable the download of security logs through the automatic download of aircraft systems.

In addition to log downloads, the operator shall perform aircraft audits when appropriate, in particular:

- When a preliminary assessment of an incident indicate a risk to security
- On recommendation from Airbus, the Authorities or the operator's own security governance team.

An aircraft audit consists in downloading security logs and sent them for analysis.

4.7 Collaboration with Authorities

As appropriate and when required, the operator should collaborate with the various local and international Authorities on airworthiness, physical security and cyber security.

This publication has been superseded by the Aircraft Characteristics Publication (ACP).

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This publication has been superseded by the
Aircraft Characteristics Publication (ACP).

Operator personnel training - General data

Applicability: 50001-54999, 55001-59999

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Data Module/Technical Publication	Title
None	

Description

- 1 General**
This chapter guides the A220-100 and A220-300 operators to establish personnel training on aircraft information security aspects.
- 2 Operational security measures**
- 2.1 Training, awareness, and competence**
It is necessary to ensure that all personnel who are assigned responsibilities defined in the Aircraft Security Program(ASP) are able to perform the required tasks by:
 - Determining the necessary requirements for personnel performing work related to maintaining the information security of the aircraft.

- Providing training and documentation for each specific task that is to be performed relating to maintaining the information security of the aircraft.
- Evaluating the effectiveness of the actions taken
- Maintaining records of education, training, skills, experience and qualifications. Control of these records should be implemented according to applicable regulatory requirements.

All relevant personnel need to be aware of the relevance and importance of their information security activities and how they contribute to the achievement of the Aircraft Security Program(ASP) objectives

- All employees of the organization, contractors and third party users should receive appropriate awareness training and regular updates in organizational policies and procedures, as relevant for their job function.

2.2 Education and certification

There is no one source of international education or certification that applies to all of the elements of the skill set needed for aircraft information security. Each organization should choose personnel based on their mixture of education, training, experience, and evidence of didactic pursuits.

Training requirements for each security related job role should be set by each operator and included in their Aircraft Security Program(ASP) document.

3 Guidance for operator

The A220-100 and A220-300 operator should ensure that all personnel who are assigned responsibilities defined in this publication are qualified to perform the required task. It is the operators responsibility to provide internal training for its personnel on aircraft information security aspects, as well as define training material and coverage.

3.1 Training organization

The operator may have an internal training resources department within their organization that can develop aircraft information security training within a scope that is specific to each class of job role that require it. If the operator does not have a training resource department, or chooses not to develop training internally, training resources may be solicited from an outside source that is capable of supplying adequate training.

This section describes elements of training that should be required for both internal and external training resources.

3.2 Scope of training (general and specific)

Training programs should be developed to cultivate awareness of aircraft information security within the operator organization. Information security procedures should be clearly defined and associated with all relevant job roles. Operators can request additional guidance from BA when necessary.

Two general categories of training should be made available within the operator organization: General security training or specific security training. General training is for fostering the awareness of aircraft information security issues within the industry for a wider group of personnel than specific training. This group includes personnel that work with security sensitive ground systems and with aircraft, but who do not have a job function that is directly related to aircraft information security.

Specific training is designed for various specific job roles directly related to aircraft information security. It is for conveying policies, procedures, technical information, and job role goals to personnel with specific security related job functions. When the organization has training resources, they may choose to develop courses internal to the organization. However, operators may use training that has been developed by an external outside source.

Training can be delivered through various methods that make use of available technology and resources. The following is a partial list of training course delivery methods.

- Internally or externally developed training classroom mode courses
- Internally or externally developed Computer Based Training (CBT)
- Any other adequate mode of training making use of available technology, personnel, and resources

3.3 General training

General training for all personnel within the organization that are exposed to equipment (aircraft, Ground Support Equipment (GSE), Ground Support Information Systems (GSIS), etc.) that have information security issues should include the following:

- The need to foster a culture of information security awareness within the operator's organization
- Awareness training of information security risks and how they relate to aircraft safety
- Physical Security related to information security
 - Access to digital access ports on aircraft that involve physical locks.
- Physical protection of digital assets/equipment.
 - Storage of equipment such as GSE in secure areas. Such equipment should be tracked through a process of checking in and out of the equipment storehouse.
- Restricted access to sensitive areas
 - Only personnel with proper credentials presented should be allowed access to areas exposed to digital security risks. For example, IDs must be visible.
- Why it is necessary to worry about aircraft information security.
 - Show examples of how security violations can cause concerns about willful tampering with proper operation of aircraft.
 - In today's information technology environment, much of the sensitive aircraft related information that was once secured by controlling paper media is now potentially exposed to a broader range of personnel if security measures are not in place.
 - Malware can be expected to become ever more sophisticated and dangerous.

Examples of current security issues to support the general training may be acquired from different sources:

- News
Some information on attacks on Information Technology (IT) systems or industrial control systems with criminal, espionage or terrorist intent are publicly available in mass media or specific security-related news channels.

- Special Interest Groups
Information Sharing and Analysis Centers, Working Groups, forums or associations of incident response and security teams provide relevant information to their members.
- Design Approval Holder
Information and guidance provided by the Design Approval Holder contains information related to the product.
- Corporate Security
Reported security incidents and results of risk assessments contain information that is directly related to the operational environment.
- Governmental Agencies
Providing alerts, advisories and bulletins

Note

Before using information related to security risks or issues in training material, confidentiality aspects should be considered to ensure that security is not jeopardized by disclosing this kind of information to a broader audience.

Training should include guidance for maintaining security in different areas of the organization. These areas include:

- On board aircraft
 - Operator personnel should be aware of vulnerable data load access points
- At workstations that store, send or receive software or data that is transferred to or from the aircraft
 - Enforce limited access to workstation
 - Log off or lock workstations when not present
- GSE
 - Explain what types of GSE digitally interface to the aircraft and why they should be monitored.
 - Make sure equipment is electronically secure by logging off if appropriate
 - Keep a log of equipment's location and report if missing.
- Communicate that there are specified personnel who have been granted access to security sensitive systems or processes. They are assigned to perform specific security management tasks. Identify which digital security aspects (especially related to physical security) fall within those person's job roles. Show that everyone within the organization should be alert to possible security violations and should be aware of how to recognize them.

3.4 Specific training

Specific training is applicable to roles identified in section 2.3 of BD500-A-J00-00-00-11AAA-010A-A and training listed in table.

3.5 Security Incident Management Training

Operators should have training specific to aircraft information security incident management. This includes training for necessary skills specific to log analysis, incident evaluation, incident escalation process, and security process development and planning.

- Some of the in-depth analysis, planning, and evaluation should be done by personnel that have a substantial background in information technology security, aircraft avionics systems, civil aviation regulations, and commercial transport aircraft operations. They should also have knowledge of software programming and general algorithms, encryption methods and algorithms, and digital signature methods and algorithms. Such a person would be considered an Aircraft Information Security Specialist.
- One of the goals of specific training is to train personnel to assess aircraft security log files, looking for possible security threats or issues. If a maintenance action is deemed necessary, it should be according to the operator's policy which is compliant with applicable regulatory requirements. Actions might include downloading of security log files, reporting of the incident, verification of aircraft software configuration to determine no unwanted software is loaded into the aircraft operational system, action per the Fault Isolation/Trouble Shooting Manual, or no action.
- Personnel responsible for aircraft log file analysis and security event analysis should have a background and training that combines IT security and aircraft avionics disciplines. Knowledge, education, and training for both of these subjects create a special combination of expertise required to ensure the proper security analysis and handling of aircraft information security issues.
- Log analysis can also be done by Line Replaceable Unit (LRU) manufacturer or Airbus. The preceding applies to the operator that chooses to perform the analysis themselves.

3.6 Training records

Training records should be maintained, retained, and kept up to date for all personnel that receive security training according to applicable regulatory requirements.

3.7 Regulatory requirements for operator training

Communicate all regulatory requirements that may apply to all specific job roles.

Training requirements for some specific job roles may be defined in regulatory documents such as the following:

- CFR 121.375, EU PART-147, -66

3.8 Recurrent training

Establish and document recurrent training policies that apply to each specific job role and for general category of job role. Be sure to comply with all regulatory requirements for operator training.

Recurrent training for aircraft information security should include new technologies, system installations, new identified threats, new company procedures, etc.

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This publication has been superseded by the Aircraft Characteristics Publication (ACP).

Aircraft network security - General data

Applicability: 50001-54999, 55001-59999

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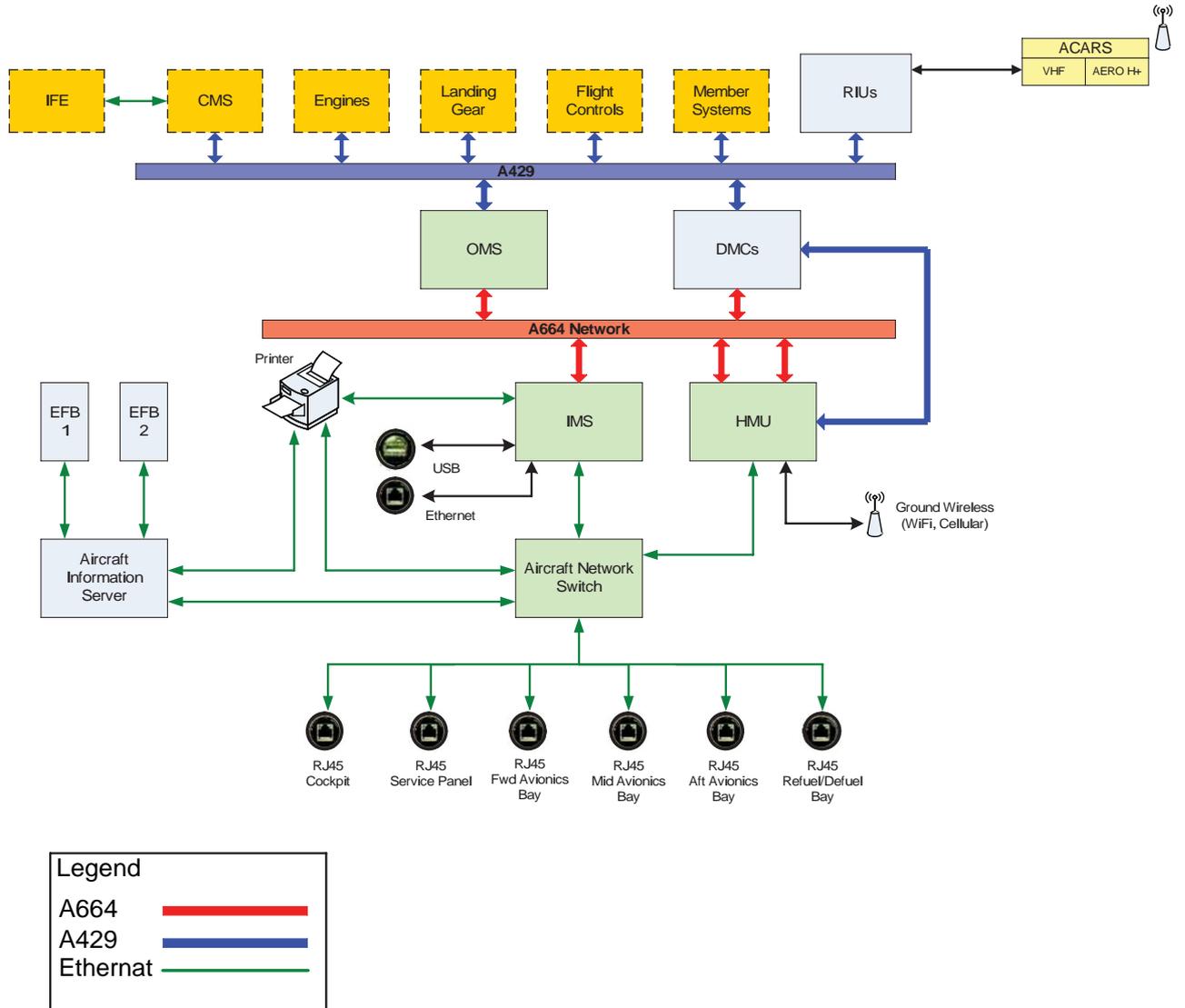
Table 1 References

Data Module/Technical Publication	Title
None	

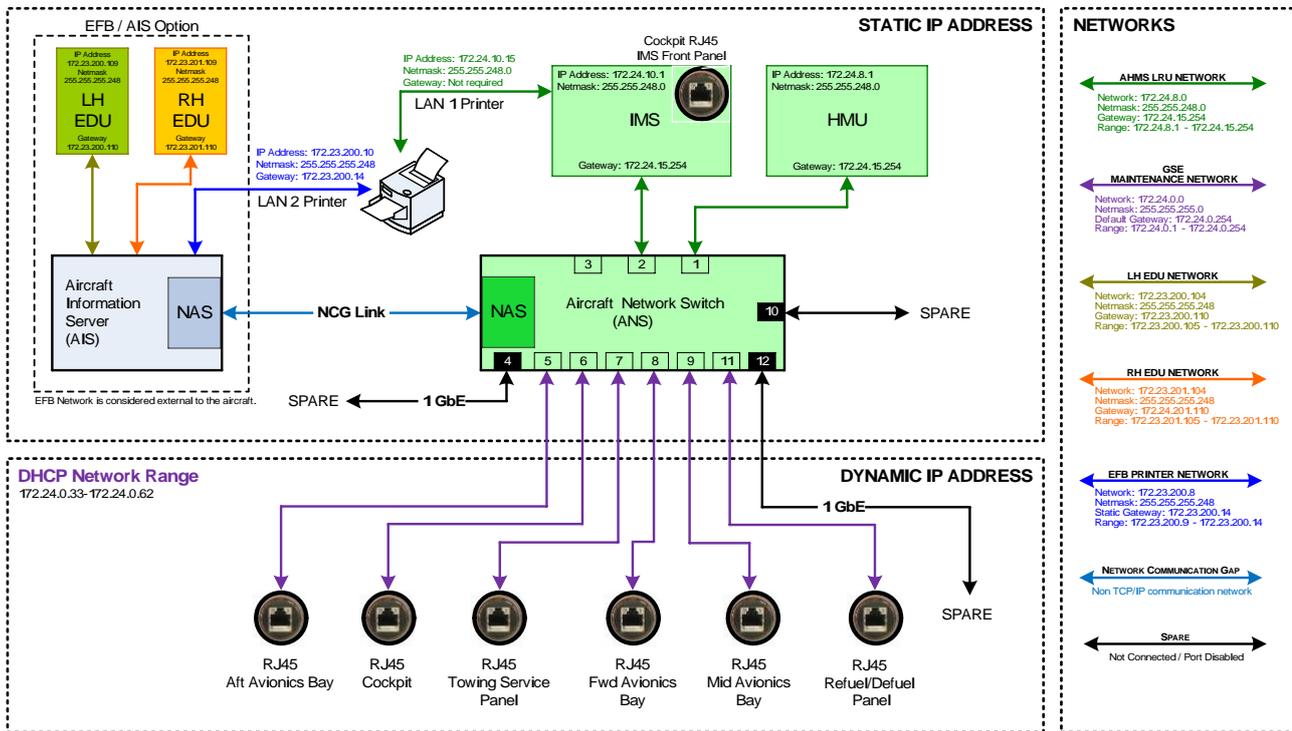
Description

1 System security architecture

The aircraft security architecture is composed of multiple internal and external components. The first component is the aircraft security environment; the security environment is comprised of all relevant components contained within the aircraft and any device that may connect directly to the aircraft system data network.



ICN-BD500-A-J000000-A-3AB48-45057-A-002-01
 Figure 2 AIRCRAFT NETWORK ARCHITECTURE



ICN-BD500-A-J000000-A-3AB48-45058-A-001-01

Figure 3 Ethernet network architecture

2 Security environment definition

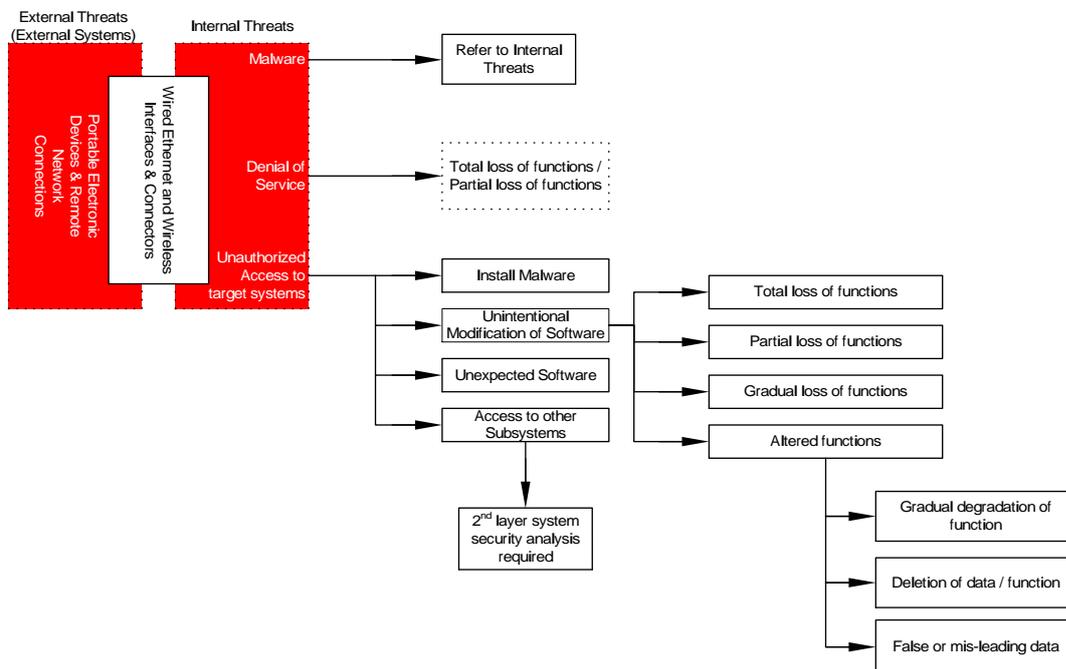
The aircraft security environment is the security context in which an asset performs its designed function. The security environment is bound and determined the connection interface between the system and the external world, the connection to the external world may comprised of a fixed hardwired or wireless connection; this constitutes the security perimeter.

On a system level, the security environment of system needs to take into account everything outside the system security perimeter. The security environment on a system level is always composed of two sets of assumptions:

- The assumptions of the aircraft security environment about the world outside the aircraft.
- The assumptions about the security environment external to the system but internal to the aircraft. This part of the system security environment “starts” at the system security perimeter and “ends” at the aircraft security perimeter, including the internal security contexts of all upper (system, aircraft) levels. Interactions between this system and other aircraft systems need to be considered here.

A security environment specification will include assumptions about:

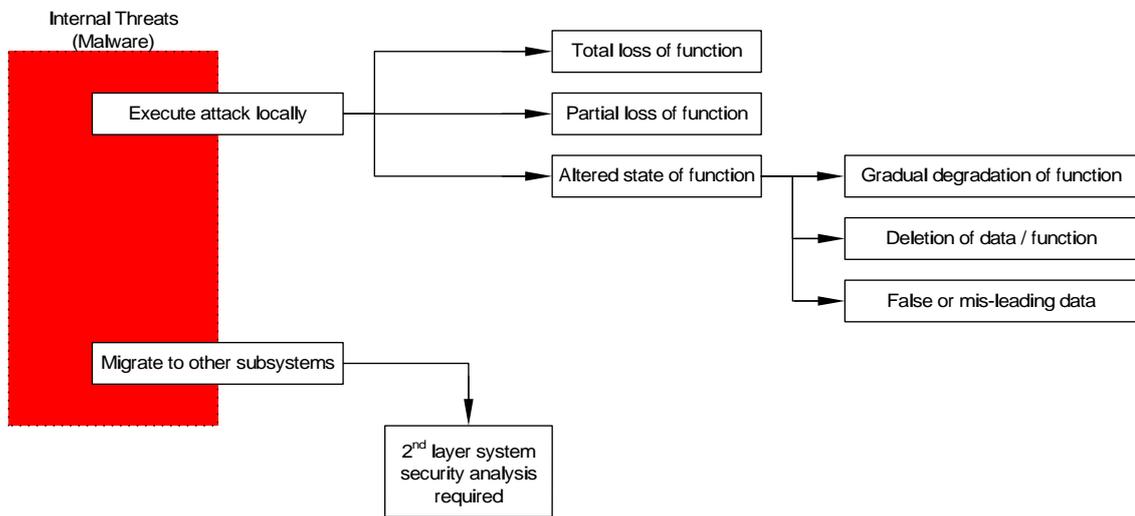
- Roles & entities - defining the roles and organizations of all actors who interact with the aircraft/system.
- Trust & risk related to
 - Roles & entities (e.g. their responsibilities and access to the aircraft/system)
 - External tools and systems (e.g. airport IT network)
 - External security controls
 - Operational Controls
 - External dependencies (e.g. regulations, national laws)
 - External agreements (e.g. contracts between operator and MRO)
 - Threat vectors
 - Threat list classification



This Aircraft

ICN-BD500-A-J000000-A-3AB48-45074-A-001-01

Figure 4 External Threat Considerations



This Aircraft

ICN-BD500-A-J000000-A-3AB48-45075-A-001-01

Figure 5 Internal Threat Considerations

3 Security perimeter definition

The security perimeter is the boundary that exists between an asset's internal security context and its security environment.

The security perimeter is under the control of the asset owner, everything outside the security perimeter is out of control of the asset owner. The asset owner may be able to influence assets outside of the security perimeter, or establish communications with assets outside of the security perimeter. These communications are still outside of the asset owners' direct control, and therefore remain outside of the security perimeter.

Supporting assets under the control of the same owner are located in the internal security context of the primary asset.

The security perimeter itself includes no functionality. It should be thought of as an imaginary line rather than an asset.

The security perimeter is specified by the complete set of logical and physical interfaces, possible interactions and information exchanges between contained assets and the world outside (that is documented in the security environment).

An aircraft or system is exposed to threats from systems or persons outside its security perimeter.

This publication has been superseded by the Aircraft Characteristics Publication (ACP)

Facility and equipment suppliers

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Facility and equipment suppliers - Technical data

Applicability: 50001-54999, 55001-59999

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None	

Description

1 General

Refer to the latest revision of the publications below to find the suppliers for Ground Support Equipment (GSE), expendables, parts and consumable:

- Illustrated Tools and Equipment Publication (ITEP), publication code BD500-3AB48-11600-00, for the GSE suppliers
- Illustrated Parts Data Publication (IPDP), publication code BD500-3AB48-11300-00, for the parts and expendables suppliers.
- Aircraft Maintenance Publication (AMP), publication code BD500-3AB48-10200-00, for the consumable suppliers.

There are a number of publications available to assist the operator when they need to find the latest information on a wide variety of locally available products and services related to the aircraft industry, which includes:

World Aviation Directory
 Suite 900, 1200 G-St, NW
 Washington, DC 20005
 Phone: 800-525-5003

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Aircraft Characteristics Publication (ACP).