A350-900 PRELIMINARY DATA

AIRCRAFT CHARACTERISTICS AIRPORT AND MAINTENANCE PLANNING

AC

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FRANCE

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HIGHLIGHTS

Revision No. 1 - Dec 01/12

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SCOPE

1-1-0 Purpose

**ON A/C A350-900

Purpose

1. General

The A350 AIRCRAFT CHARACTERISTICS AIRPORT AND MAINTENANCE PLANNING (AC) manual is issued for the A350-900 series aircraft to provide necessary data to airport operators and airlines for airport facilities planning.

The data given in this preliminary issue of the A350 AIRCRAFT CHARACTERISTICS AIRPORT AND MAINTENANCE PLANNING (AC) can be subject to change pending completion of the design and flight test phase. It is given for guidance only and does not constitute a contractual commitment.

This non-customized document conforms to NAS 3601 specification.

The A350 XWB is a new family of mid-size medium to long range new technology aircraft that will deliver superior fuel efficiency, passenger comfort, environmental characteristics and economics, with a global market coverage.
The aircraft is designed to offer multiple payload capabilities with a consistant range ability across the family.
The A350 XWB is equipped with two Rolls-Royce Trent XWB engines.
This engine will incorporate the most advanced technologies to provide the best aircraft performance, maintainability, lowest fuel consumption and environmental impact.
Reflecting market needs, the A350 XWB offers a high level of cargo hold capability and flexibility.
Two wide cargo doors and a Cargo Loading System (CLS) compatible with most lower deck cargo containers and pallet standards, allowing interlining operations, ease the loading.
The A350 XWB provides easy and cost effective ground handling minimizing aircraft turn round time.
The innovative A350 XWB design increases planning flexibility to perform maintenance during the aircraft scheduled downtime.

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1-2-0 Glossary

**ON A/C A350-900

Glossary

1. List of Abbreviations

A/C	Aircraft
ACN	Aircraft Classification Number
APU	Auxiliary Power Unit
B/C	Business Class
CBR	California Bearing Ratio
CC	Cargo Compartment
CG	Center of Gravity
E	Young's Modulus
ESWL	Equivalent Single Wheel Load
FAA	Federal Aviation Administration
FDL	Fuselage Datum Line
FR	Frame
FSTE	Full Size Trolley Equivalent
FWD	Forward
GPU	Ground Power Unit
GSE	Ground Support Equipment
ICAO	International Civil Aviation Organisation
ISA	International Standard Atmosphere
L	Radius of relative stiffness
LCN	Load Classification Number
LD	Load Device
LD	Lower Deck
LH	Left Hand
LPS	Last Pax Seating
MAC	Mean Aerodynamic Chord
MAX	Maximum
MIN	Minimum
MLG	Main Landing Gear
MLW	Maximum Design Landing Weight
MRW	Maximum Design Ramp Weight
MTOW	Maximum Design Take-Off Weight
MTW	Maximum Design Taxi Weight
MZFW	Maximum Design Zero Fuel Weight

NLG	Nose Landing Gear
OAT	Outside Air Temperature
PAX	Passenger
PBB	Passenger Boarding Bridge
PCA	Portland Cement Association
PCN	Pavement Classification Number
PRM	Passenger with Reduced Mobility
RH	Right Hand
ULD	Unit Load Device
US	United States
VFG	Variable Frequency Generator
WV	Weight Variant
Y/C	Economic Class

2. Design Weight Terminology

Maximum Design Ramp Weight (MRW):
Maximum weight for ground maneuver (including weight of taxi and run-up fuel) as limited by aircraft strength and airworthiness requirements. It is also called Maximum Design Taxi Weight (MTW).

Maximum Design Landing Weight (MLW):
Maximum weight for landing as limited by aircraft strength and airworthiness requirements.

Maximum Design Takeoff Weight (MTOW):
Maximum weight for takeoff as limited by aircraft strength and airworthiness requirements. (This is the maximum weight at start of the take-off run).

Maximum Design Zero Fuel Weight (MZFW):
Maximum permissible weight of the aircraft without usable fuel.

Maximum Seating Capacity:
Maximum number of passengers specifically certified or anticipated for certification.

Usable Volume:
Usable volume available for cargo, pressurized fuselage, passenger compartment and cockpit.

Water Volume:
Maximum volume of cargo compartment.

Usable Fuel:
Fuel available for aircraft propulsion.

AIRCRAFT DESCRIPTION

2-1-0 General Aircraft Characteristics

****ON A/C A350-900**

General Aircraft Characteristics

1. The following table provides characteristics of the A350–900.

Aircraft Characteristics	
	Basic Weights
Maximum Taxi Weight (MTW) Maximum Ramp Weight (MRW)	268900 kg (592824.0 lb)
Maximum Take Off Weight (MTOW)	268000 kg (590839.0 lb)
Maximum Landing Weight (MLW)	205000 kg (451948.0 lb)
Maximum Zero Fuel Weight (MZFW)	192000 kg (423288.0 lb)

Aircraft Characteristics	
Standard Seating Capacity	315 (2 class)
Usable Fuel Capacity (density = 0.785 kg/l)	138000 l (36456.4 USgal)
	108330 kg (238827.0 lb)
Pressurized Fuselage Volume	971 m3 (34291.0 ft.3)
Cockpit Volume	8.23 m3 (291.0 ft.3)
Passenger Compartment Volume	473.7 m3 (16729.0 ft.3)
Usable Volume, FWD CC (Based on LD3)	89.4 m3 (3157.0 ft.3)
Usable Volume, AFT CC (Based on LD3)	71.5 m3 (2525.0 ft.3)
Usable Volume, Bulk CC	9.12 m3 (322.07 ft.3)
Water Volume, FWD CC	113.4 m3 (4004.7 ft.3)

Aircraft Characteristics	
Water Volume, AFT CC	95.8 m3 (3383.16 ft.3)
Water Volume, Bulk CC	11.4 m3 (402.59 ft.3)

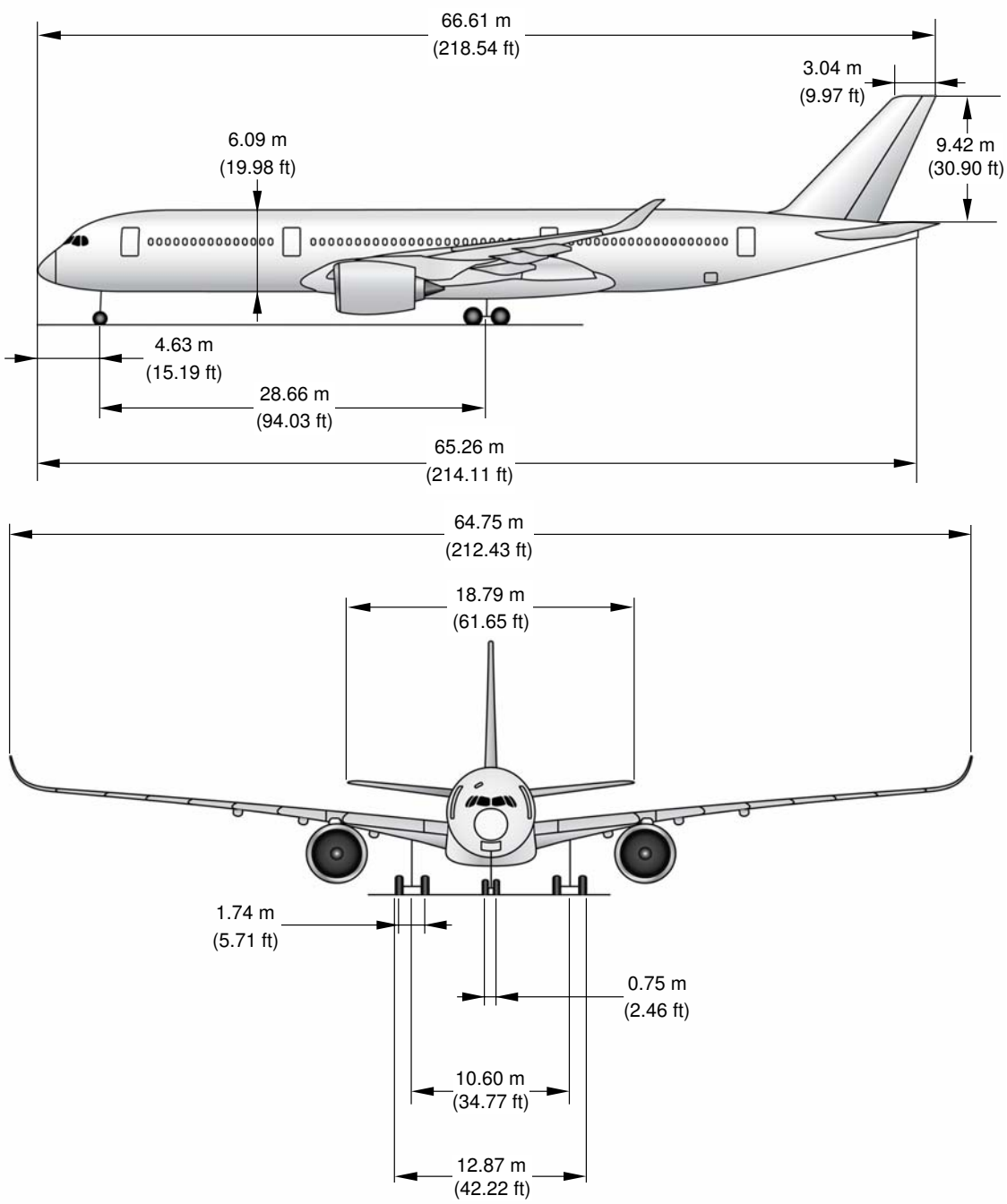
2-2-0 General Aircraft Dimensions

**ON A/C A350-900

General Aircraft Dimensions

1. This section provides general aircraft dimensions.

**ON A/C A350-900



RELATED TO AIRCRAFT ATTITUDE AND WEIGHT

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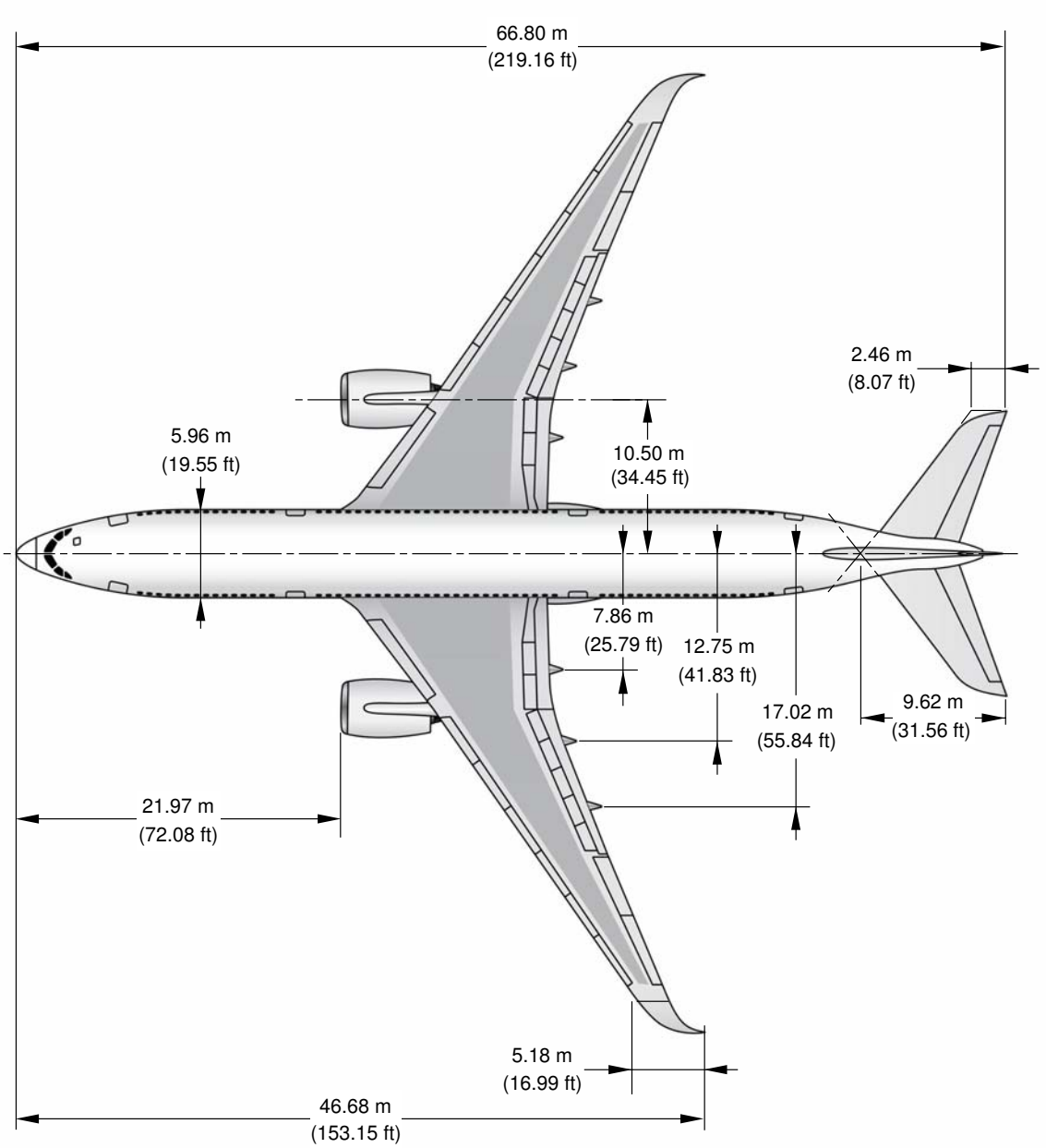
General Aircraft Dimensions
(Sheet 1 of 2)
FIGURE-2-2-0-991-001-A01

**ON A/C A350-900



RELATED TO AIRCRAFT ATTITUDE AND WEIGHT

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General Aircraft Dimensions
(Sheet 2 of 2)
FIGURE-2-2-0-991-001-A01

2-3-0 Ground Clearances

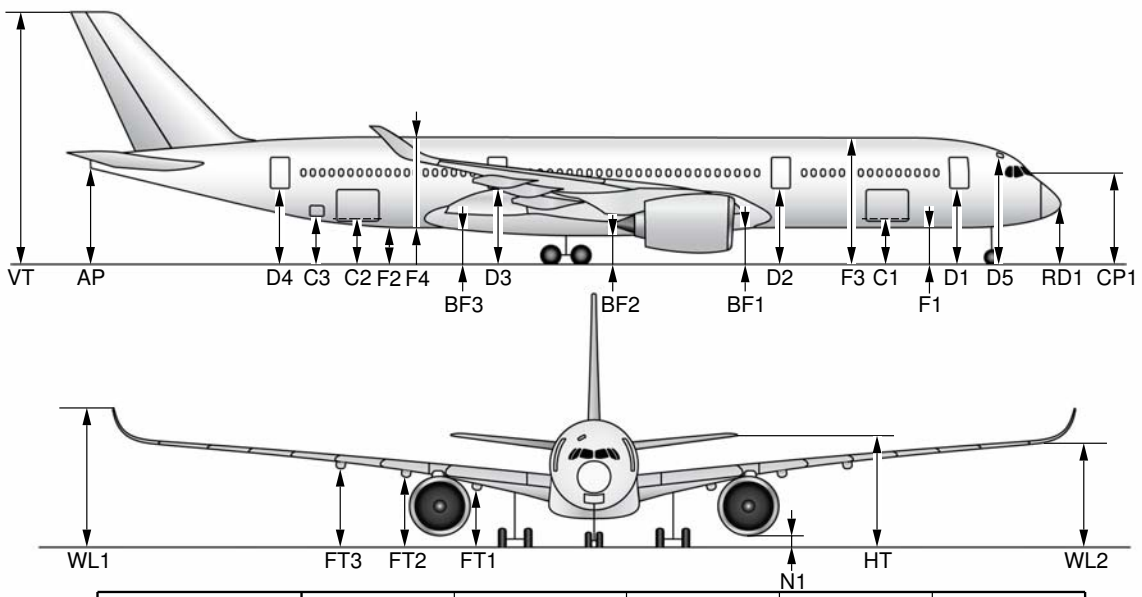
**ON A/C A350-900

Ground Clearances

1. This section gives the height of various points of the aircraft, above the ground, for different aircraft configurations.
   Dimensions in the tables are approximate and will vary with tire type, weight and balance and other special conditions.
   The dimensions are given for:
   - A light weight, for an A/C in maintenance configuration with FWD CG and a AFT CG,
   - The MRW with a FWD CG and a AFT CG,
   - Aircraft on jacks, FDL at6.50 m (21.33 ft.).

   NOTE : Passenger and cargo door ground clearances are measured from the center of the door sill and from floor level.

**ON A/C A350-900



A/C CONFIGURATION	MRW (268 900 kg) FWD CG (26%)		MRW (268 900 kg) AFT CG (33.1%)		(142 000 kg) FWD CG (20%)		(142 000 kg) AFT CG (40%)		A/C JACKED FDL = 6.5 m (21.32 ft)	
	m	ft	m	ft	m	ft	m	ft	m	ft
AP	6.61	21.69	6.55	21.49	6.83	22.41	6.52	21.39	7.72	25.33
BF1	2.44	8.01	2.46	8.07	2.56	8.40	2.66	8.73	3.71	12.17
BF2	1.93	6.33	1.93	6.33	2.07	6.79	2.08	6.82	3.16	10.37
BF3	2.52	8.27	2.50	8.20	2.68	8.79	2.59	8.50	3.71	12.17
C1	3.09	10.14	3.13	10.27	3.19	10.47	3.37	11.06	4.39	14.40
C2	3.25	10.66	3.22	10.56	3.43	11.25	3.29	10.79	4.43	14.53
C3	3.25	10.66	3.21	10.53	3.43	11.25	3.26	10.70	4.41	14.47
CP1	5.84	19.16	5.90	19.36	5.93	19.46	6.20	20.34	7.18	23.56
D1	5.05	16.57	5.10	16.73	5.15	16.90	5.37	17.62	6.37	20.90
D2	5.10	16.73	5.12	16.80	5.22	17.13	5.33	17.49	6.37	20.90
D3	5.17	16.92	5.15	16.90	5.32	17.45	5.27	17.29	6.37	20.90
D4	5.22	17.13	5.18	17.00	5.41	17.75	5.21	17.09	6.37	20.90
D5	7.25	23.79	7.31	23.98	7.33	24.05	7.61	24.97	8.59	28.18
F1	2.41	7.91	2.45	8.04	2.51	8.23	2.70	8.86	3.71	12.17
F2	2.53	8.30	2.50	8.20	2.70	8.86	2.58	8.46	3.71	12.17
F3	8.50	27.89	8.54	28.02	8.61	28.25	8.78	28.81	9.80	32.15
F4	8.41	27.59	8.38	27.49	8.59	28.18	8.45	27.72	9.58	31.43
FT1	3.72	12.21	3.71	12.17	3.87	12.70	3.84	12.60	4.94	16.21
FT2	4.53	14.86	4.52	14.83	4.68	15.35	4.64	15.22	5.74	18.83
FT3	5.17	16.96	5.16	16.93	5.32	17.45	5.27	17.29	6.38	20.93
HT	7.67	25.16	7.60	24.93	7.88	25.85	7.56	24.80	8.77	28.77
N1	0.74	2.43	0.75	2.46	0.87	2.85	0.93	3.05	1.99	6.53
RD1	3.98	13.06	4.04	13.26	4.06	13.32	4.34	14.24	5.32	17.45
VT	17.17	56.33	17.10	56.10	17.39	57.05	17.07	56.00	18.27	59.94
WL1	9.40	30.84	9.37	30.74	9.57	31.40	9.44	30.97	10.57	34.68
WL2	6.98	22.90	6.96	22.84	7.14	23.43	7.04	23.10	8.17	26.80

NOTE: PASSENGER AND CARGO DOOR GROUND CLEARANCES ARE MEASURED FROM THE CENTER OF THE DOOR SILL AND FROM FLOOR LEVEL.

P_AC_020300_1_0010001_01_01

Ground Clearances
FIGURE-2-3-0-991-001-A01

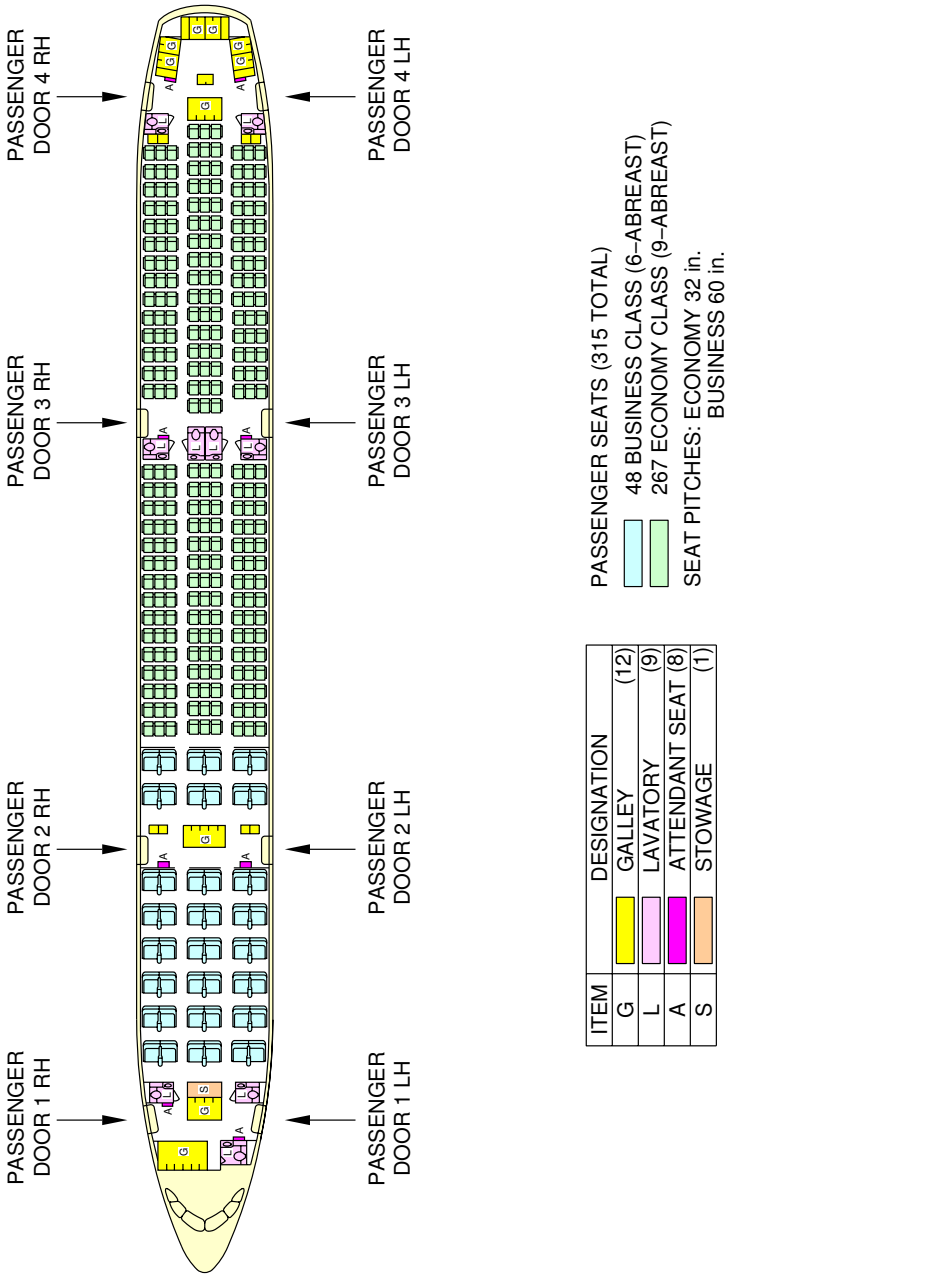
2-4-0 Interior Arrangements - Plan View

**ON A/C A350-900

Interior Arrangements - Plan View

1. This section gives the standard configuration.

**ON A/C A350-900



Standard Configuration
FIGURE-2-4-0-991-001-A01

2-5-0 Interior Arrangements - Cross Section

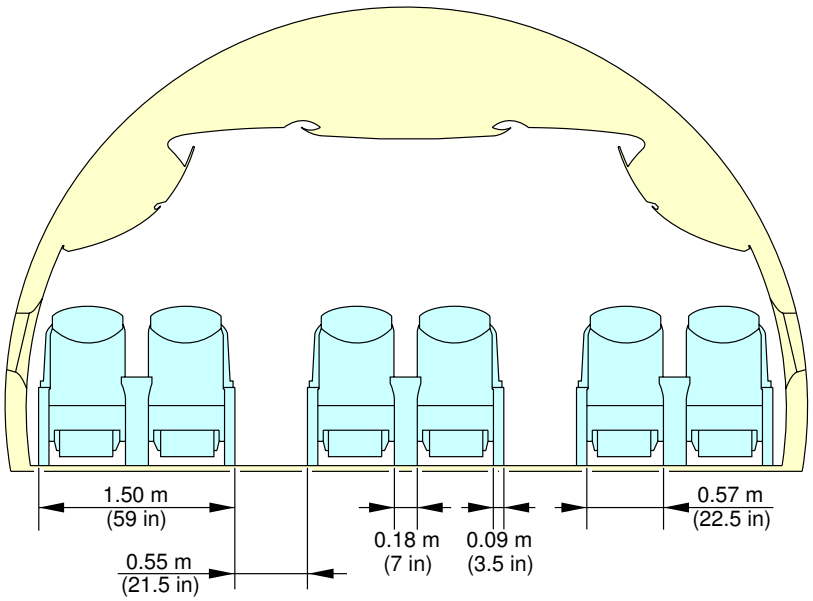
**ON A/C A350-900

Interior Arrangements - Cross Section

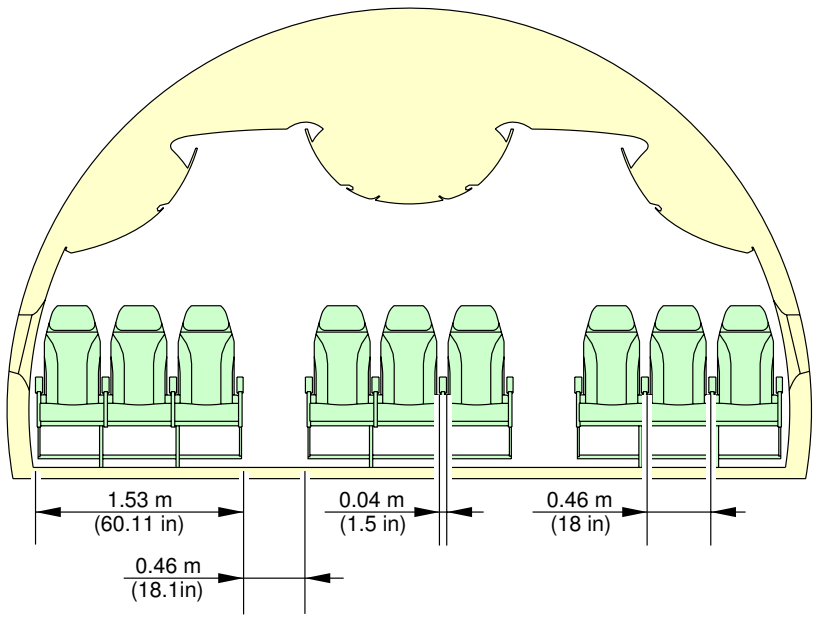
1. This section gives the typical configuration.

**ON A/C A350-900

BUSINESS CLASS / FIRST CLASS 6 ABREAST



BASELINE ECONOMY CLASS 9 ABREAST



NOTE:
AISLE WIDTH MAY VARY DEPENDING ON ACTUAL CABIN CONFIGURATION SELECTED BY CUSTOMER

P_AC_020500_1_0010001_01_01

Typical Configuration
FIGURE-2-5-0-991-001-A01

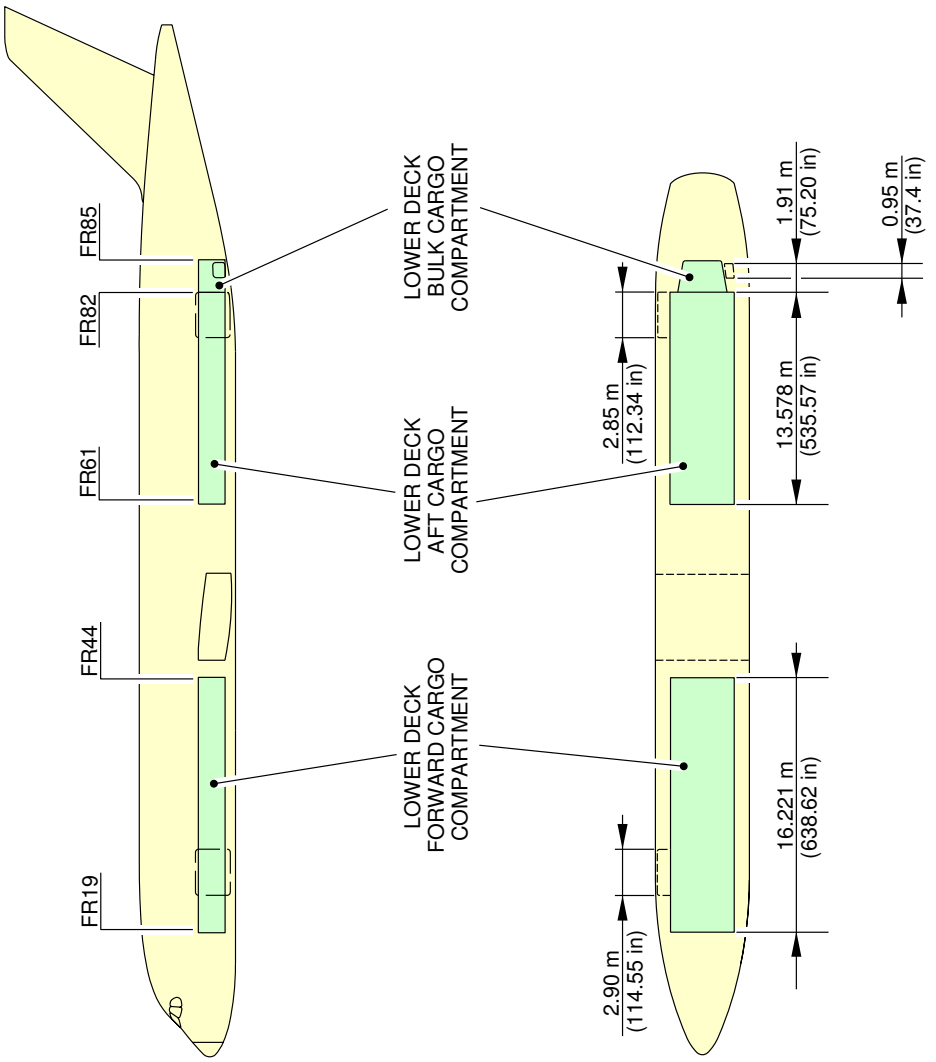
2-6-0 Cargo Compartments

**ON A/C A350-900

Cargo Compartments

1. This section gives cargo compartments :
   - Locations and dimensions,
   - Loading combinations.

**ON A/C A350-900



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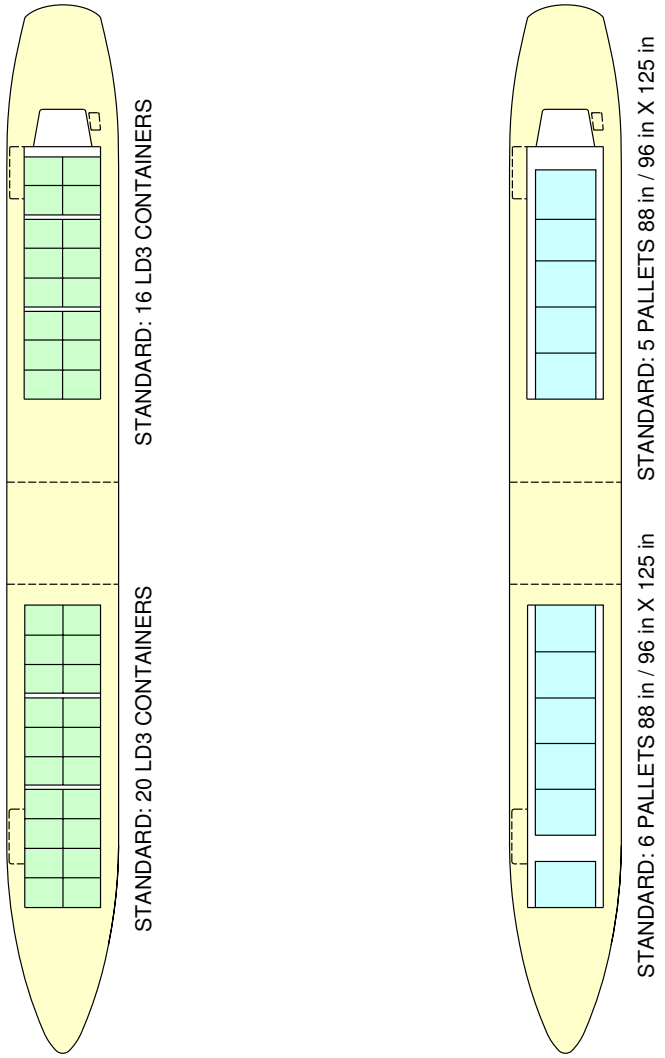
Cargo Compartments
Locations and Dimensions (Sheet 1 of 2)
FIGURE-2-6-0-991-002-A01

**ON A/C A350-900



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Cargo Compartments
Loading Combinations (Sheet 2 of 2)
FIGURE-2-6-0-991-002-A01

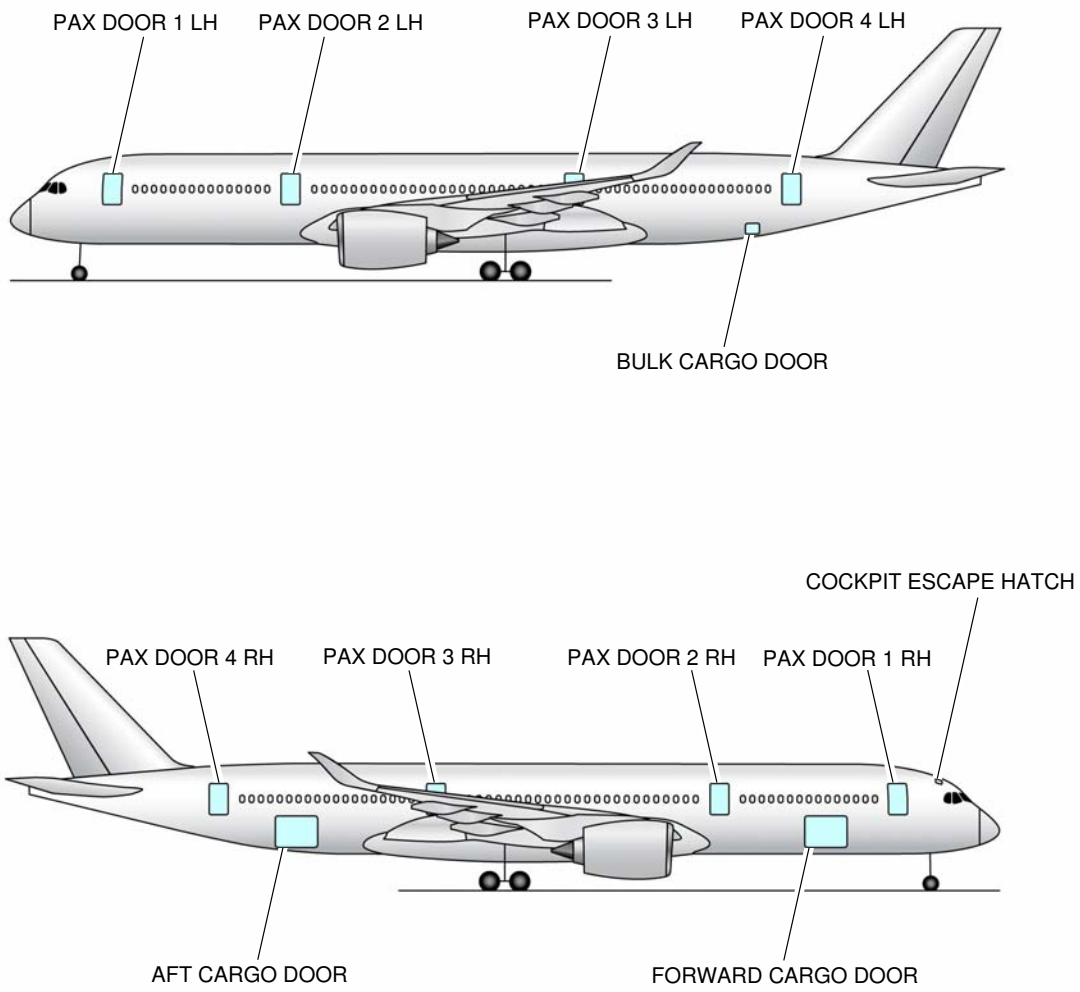
2-7-0 Door Clearances and Location

**ON A/C A350-900

Door Clearances and Location

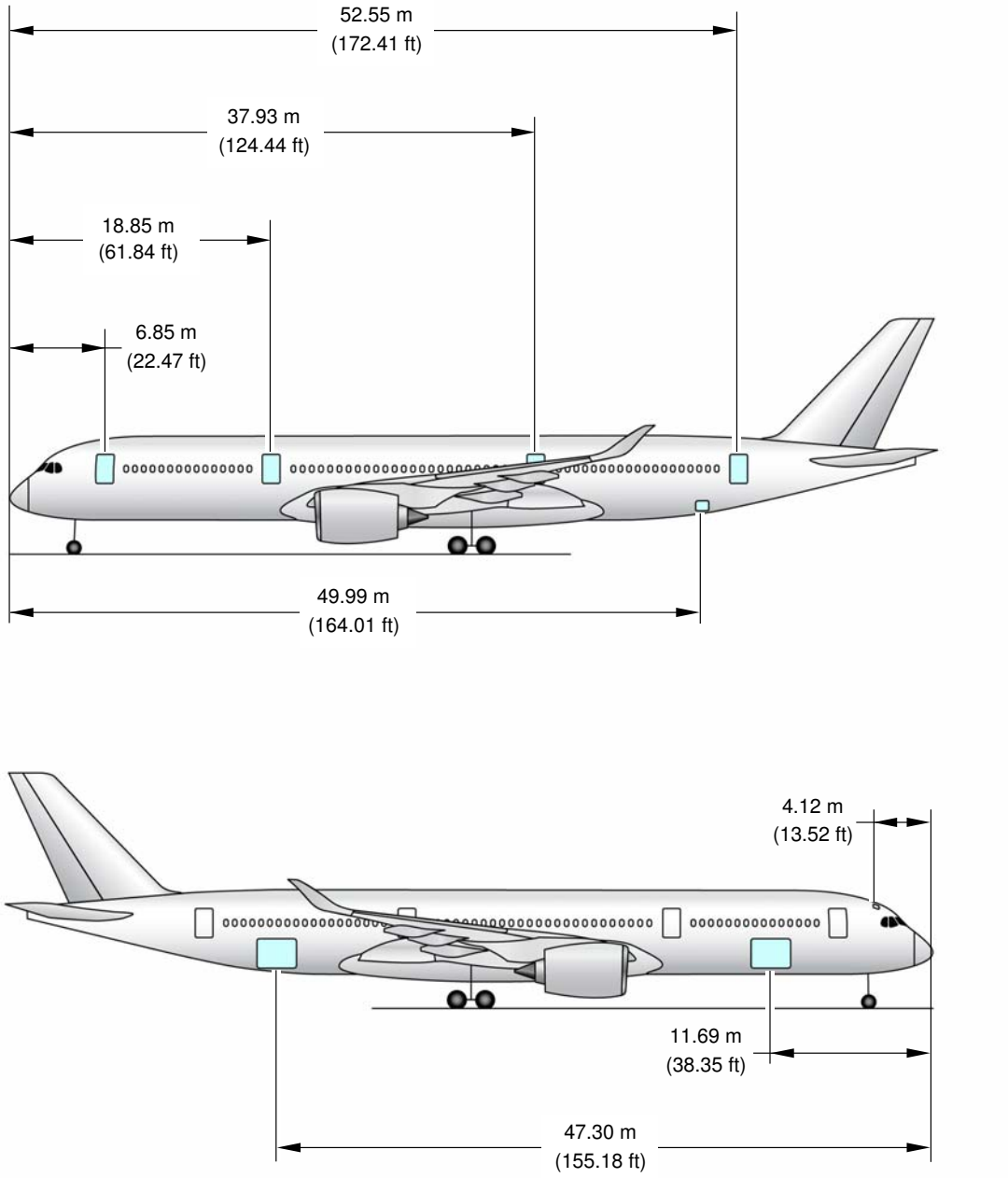
1. This section gives door clearances and location.

**ON A/C A350-900



Door Location
(Sheet 1 of 2)
FIGURE-2-7-0-991-001-A01

**ON A/C A350-900



Door Location
(Sheet 2 of 2)
FIGURE-2-7-0-991-001-A01

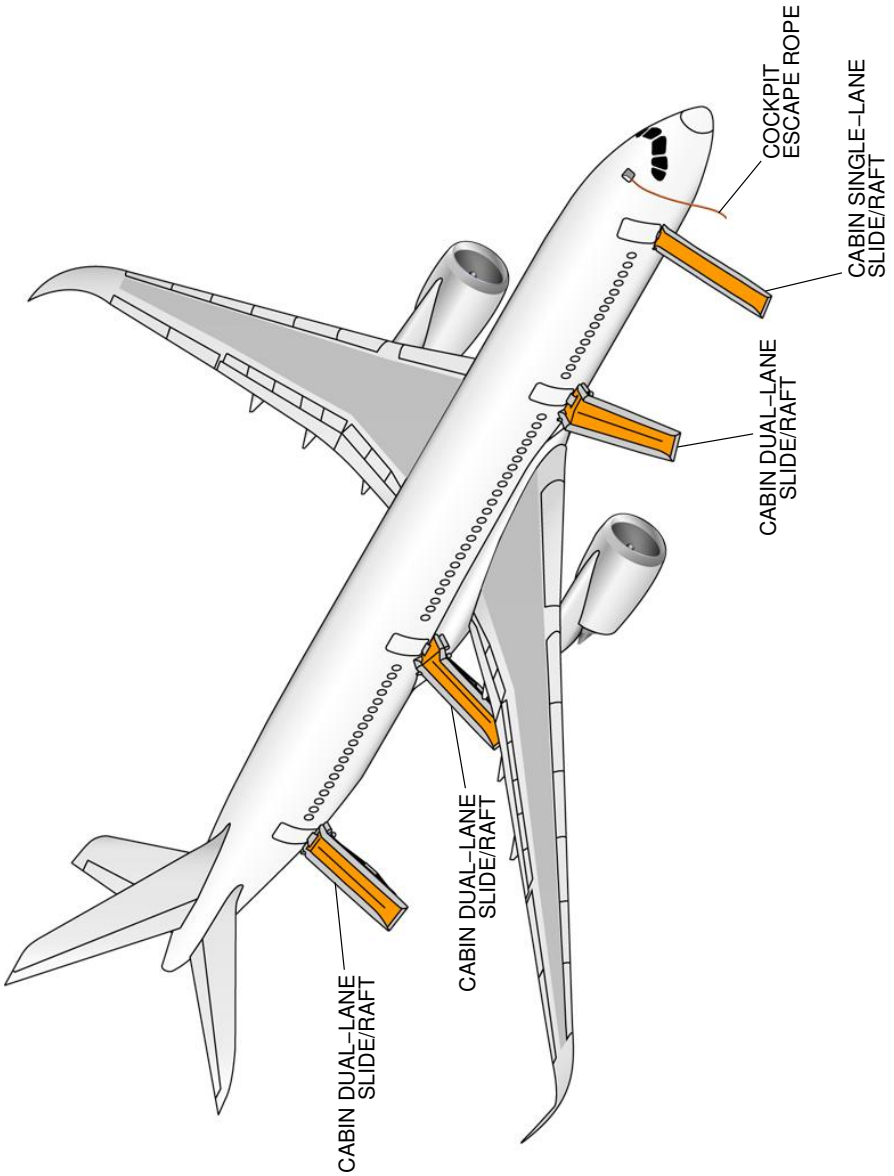
2-8-0 Escape Slides

**ON A/C A350-900

Escape Slides

1. General
   This section gives location of escape facilities and related clearances.
2. Location
   Escape facilities are provided at the following locations:
   - One cockpit escape rope is kept in a dedicated stowage compartment adjacent to the escape hatch,
   - One slide-raft at each passenger/crew door (total eight).

**ON A/C A350-900



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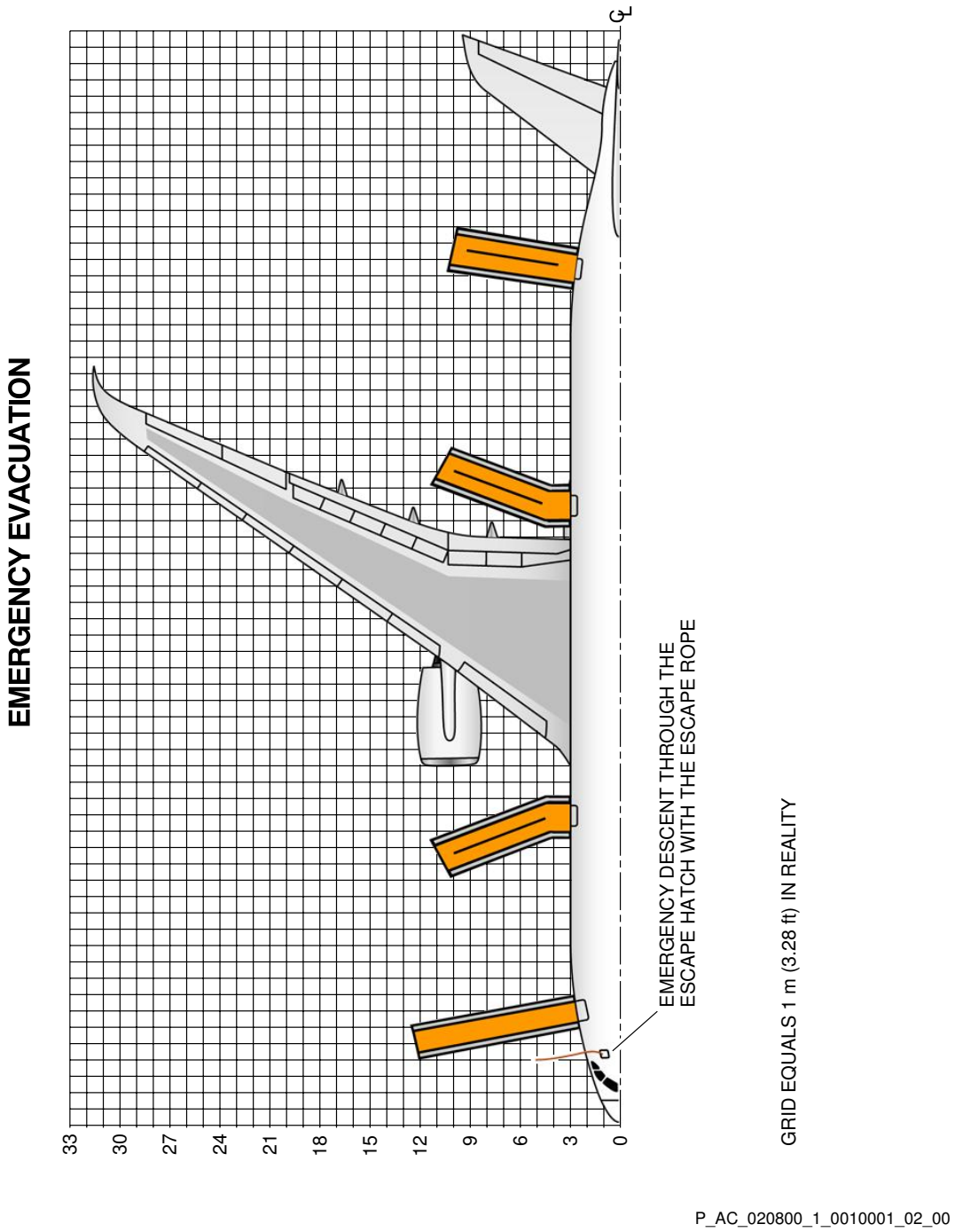
Escape Slides
Location (Sheet 1 of 2)
FIGURE-2-8-0-991-001-A01

**ON A/C A350-900



Escape Slides
Dimensions (Sheet 2 of 2)
FIGURE-2-8-0-991-001-A01

2-12-0 Engine and Nacelle

**ON A/C A350-900

Engine and Nacelle

1. Power Plant
   The A350–900 has two main power plants, one installed under each wing on a pylon.
   Each power plant can be lowered for removal from its pylon.
   The power plant comprises the:
   - Nacelle,
   - Engine.

2. Nacelle
   The nacelle comprises the following assemblies:
   - Air intake,
   - Fan cowls,
   - Thrust reverser,
   - Exhaust system.

   A. Fan Cowl
      A power door opening system is installed to assist in opening the cowls.
      The cowls have access doors for fan case-mounted components.

   B. Thrust Reverser
      The engine thrust reverser consists primarily of a inner fixed structure and an outer translating sleeve.
      The fan exhaust stream is reversed by the cascades and blocker doors, which form part of the translating sleeve actuated by an electrical Thrust Reverser Actuation System (TRAS).
      A power door opening system is used to assist thrust reverser cowl opening.
      The thrust reverser latching system is designed so that the remote latches close only when the hooks are engaged.
      Means are provided to latch and secure a thrust reverser in the stowed position.
      Means are provided to permit actuation of the thrust reversers without engine operation, for maintenance purposes, either using the TRAS powered by the aircraft or by manual drive with external Ground Support Equipment (GSE).

   C. Exhaust System
      The exhaust system consists of a primary nozzle and a center body plug.
      The exhaust system is designed to optimize aerodynamics and acoustic performance.

3. Engine

   A. Ignition
      Each engine is equipped with a dual ignition system controlled by the FADEC.
      Each engine is equipped with an automatic flame-out protection.

B. Cooling System
A nacelle cooling and ventilating system automatically provides the airflow required for cooling engine and nacelle accessories and associated structure.

C. Power Control
Forward thrust of each engine is controlled by a throttle control lever mounted on the center pedestal in the cockpit.
Thrust reverser control is by means of a separate lever for each engine.

D. Engine Master Control
Engine fuel shutoff is controlled by switches installed on the center pedestal.

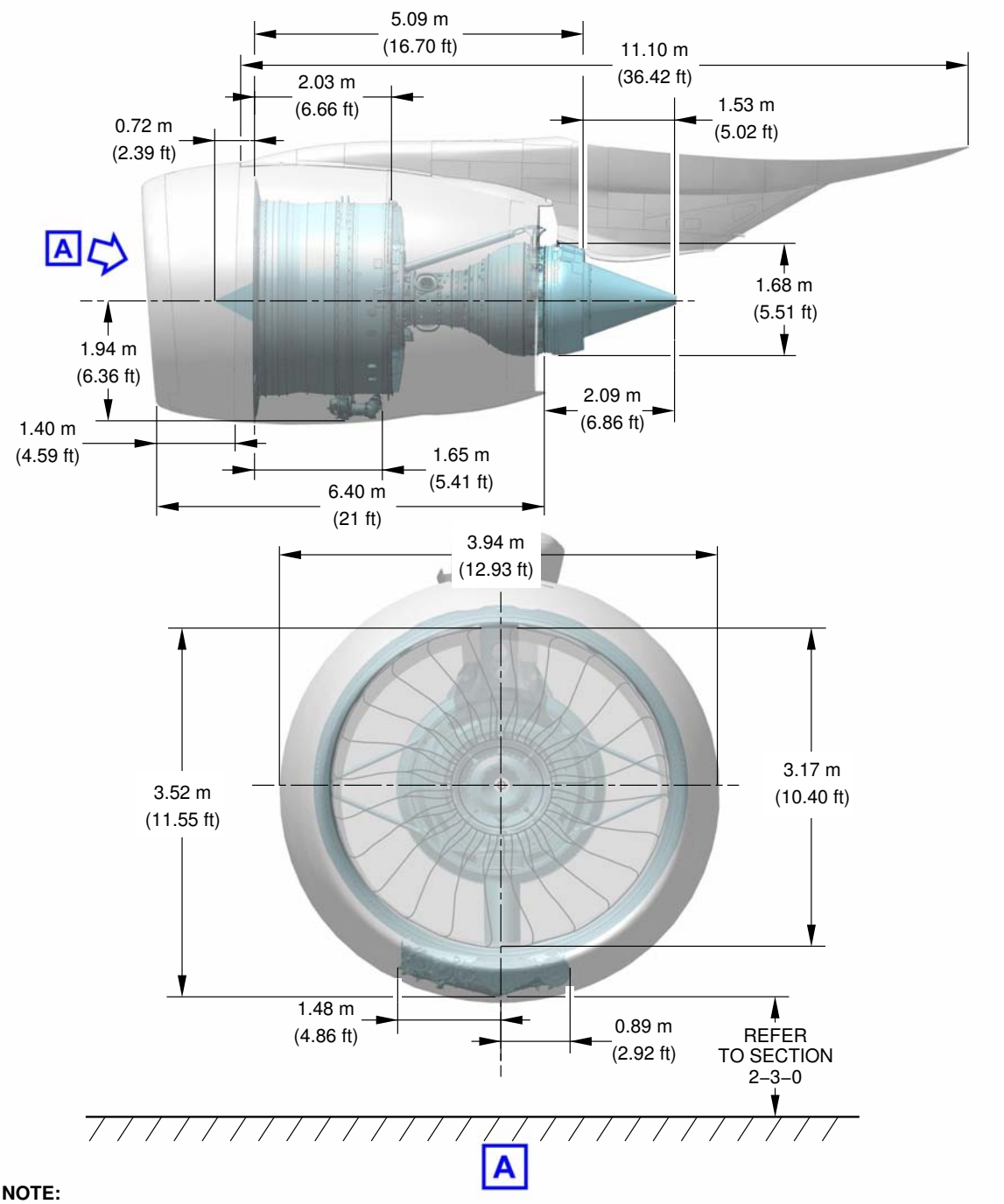
E. Emergency Shutdown
Actuation of the fire controls closes the associated LP valves.

F. Indicating
Indications for each engine are displayed on the Control and Display System (CDS).

G. Oil
The propulsion system has an independent integral oil system that is able to provide the appropriate quantity of oil, at the temperature necessary for continuous propulsion system operation, for all achievable conditions within the propulsion system operating envelope.
Means are provided for gravity filling.
It is possible to visually check and replenish the engine oil level without opening the fan cowl door.
Magnetic chip detectors are installed in the lubrication system.

H. Starting
The engine is equipped with a pneumatic air turbine starter.
The starter can be supplied with air either from the APU, or the other engine, or an Air Start Unit (AS).
Standard types of GSE can be used.

**ON A/C A350-900

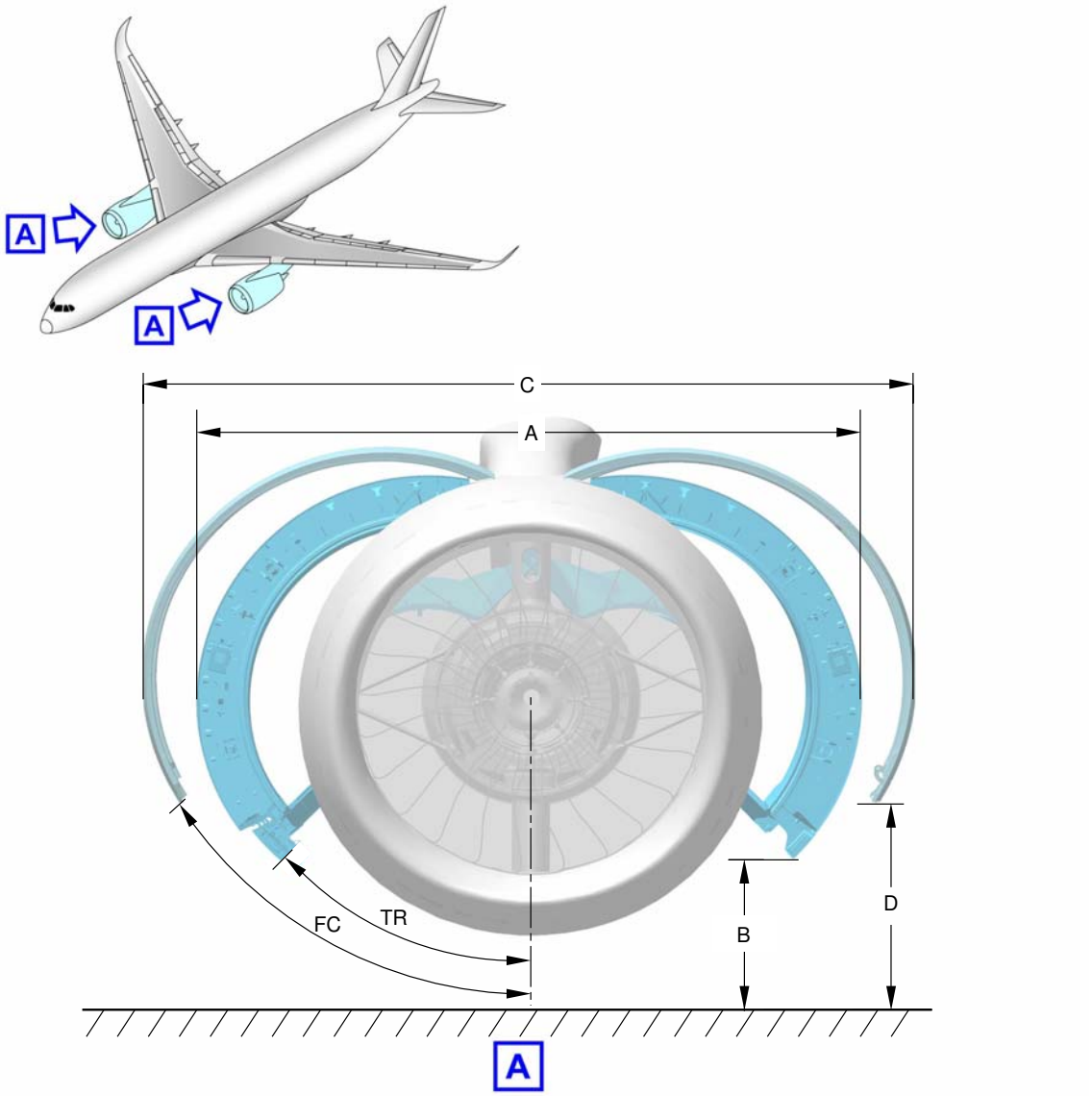


NOTE:
APPROXIMATE DIMENSIONS DEPENDING ON AIRCRAFT CONFIGURATION

P_AC_021200_1_0010001_01_00

Engine and Nacelle
(Sheet 1 of 3)
FIGURE-2-12-0-991-001-A01

**ON A/C A350-900



	A	B
TR=28.5°	5.50 m (18.04 ft)	1.01 m (3.31 ft)

	C	D
FC=37°	6.39 m (20.96 ft)	1.28 m (4.20 ft)

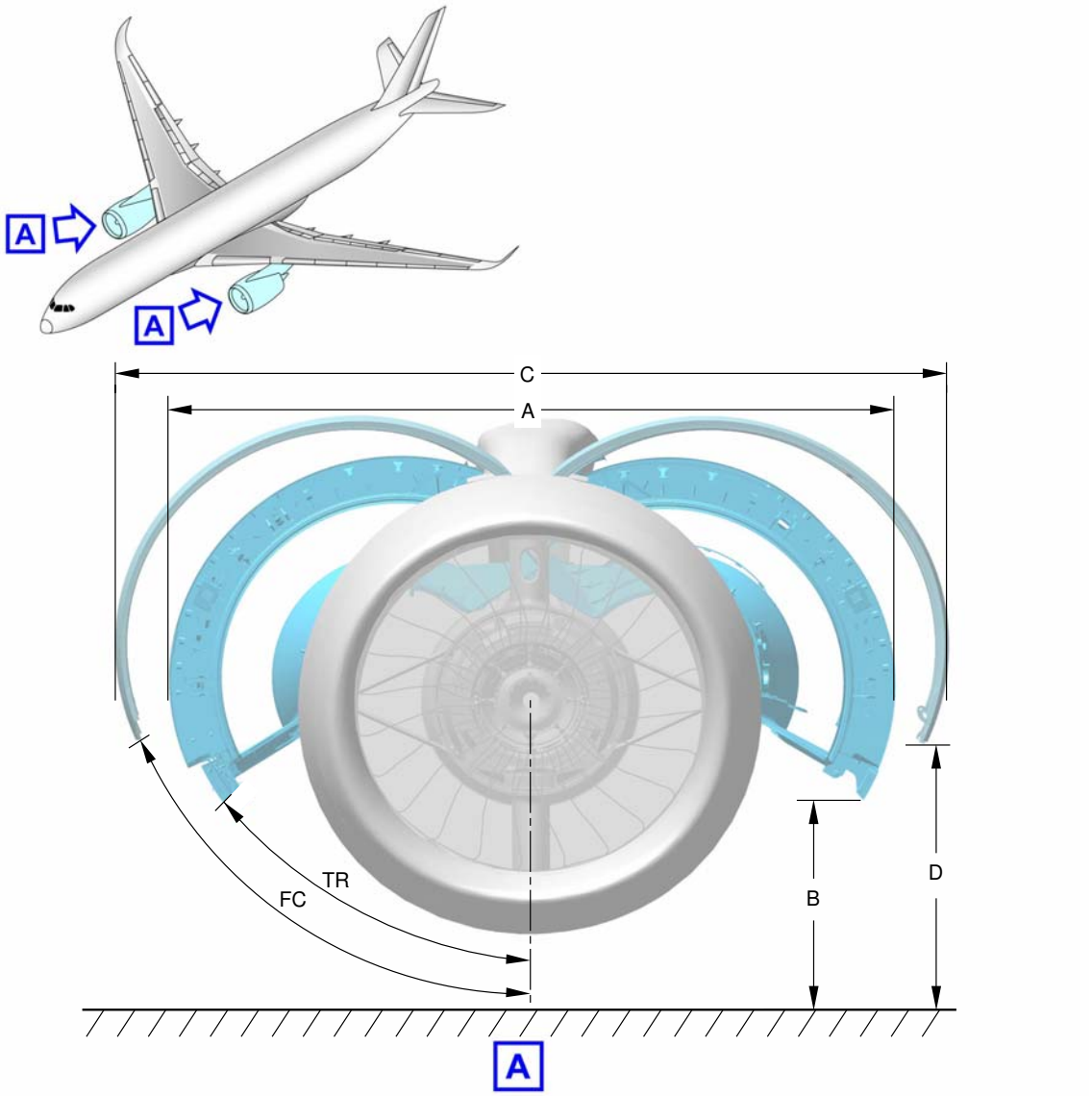
NOTE:
APPROXIMATE DIMENSIONS DEPENDING ON AIRCRAFT CONFIGURATION.

FC: FAN COWL AND TR: THRUST REVERSER

P_AC_021200_1_0010001_02_00

Engine and Nacelle
(Sheet 2 of 3)
FIGURE-2-12-0-991-001-A01

**ON A/C A350-900



	A	B
TR=45°	6.42 m (21.06 ft)	1.51 m (4.95 ft)

	C	D
FC=50°	7.13 m (23.40 ft)	1.81 m (5.94 ft)

NOTE:
APPROXIMATE DIMENSIONS DEPENDING ON AIRCRAFT CONFIGURATION.

FC: FAN COWL AND TR: THRUST REVERSER

P_AC_021200_1_0010001_03_00

Engine and Nacelle
(Sheet 3 of 3)
FIGURE-2-12-0-991-001-A01

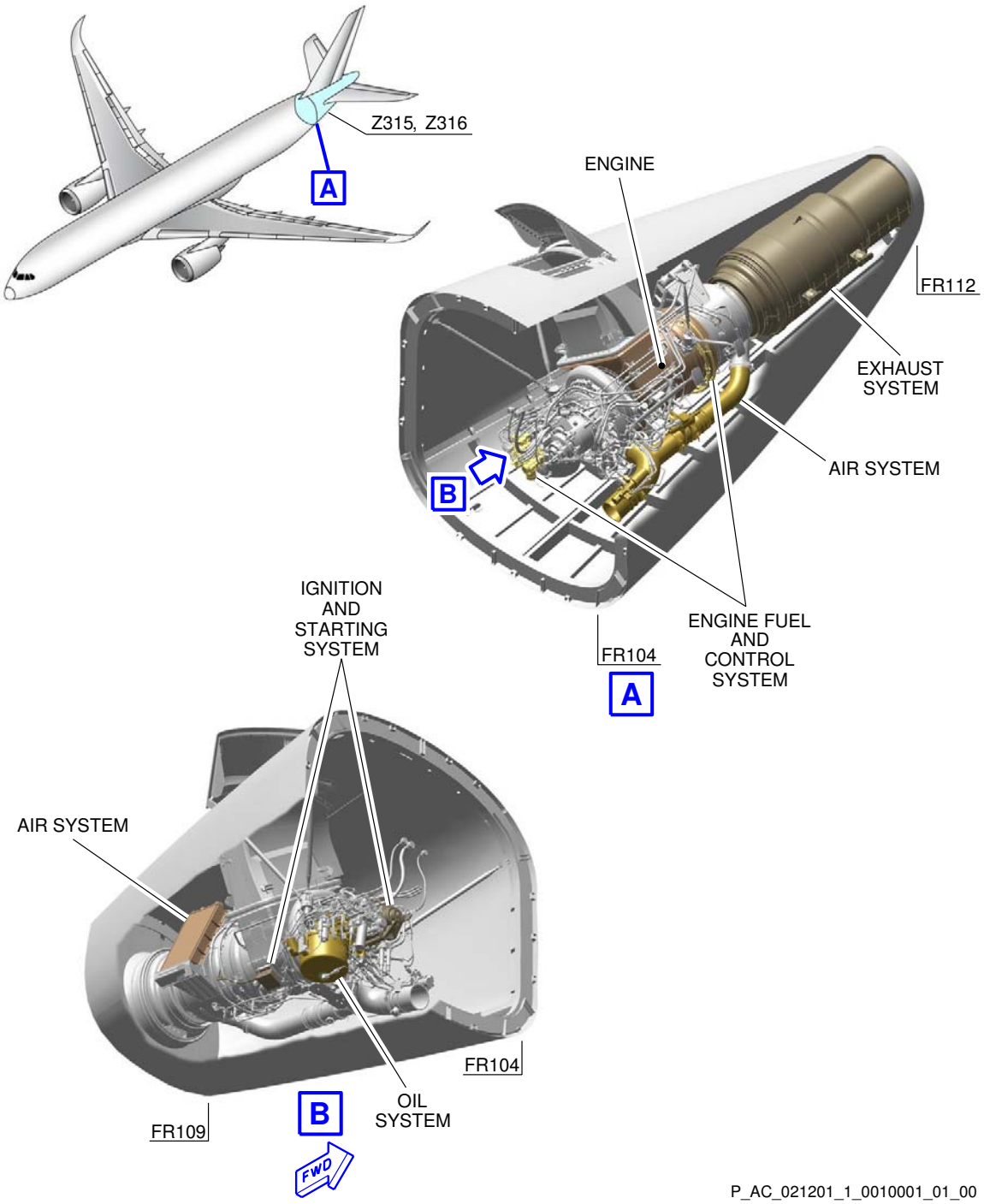
2-12-1 APU

**ON A/C A350-900

APU

1. The APU is installed at the rear part of the fuselage in the tail cone.
   An air intake system with a flap-type door is installed in the top right area of the tail cone.
   The exhaust gases pass overboard at the end of the fuselage cone.

**ON A/C A350-900



APU
FIGURE-2-12-1-991-001-A01

GROUND MANEUVERING

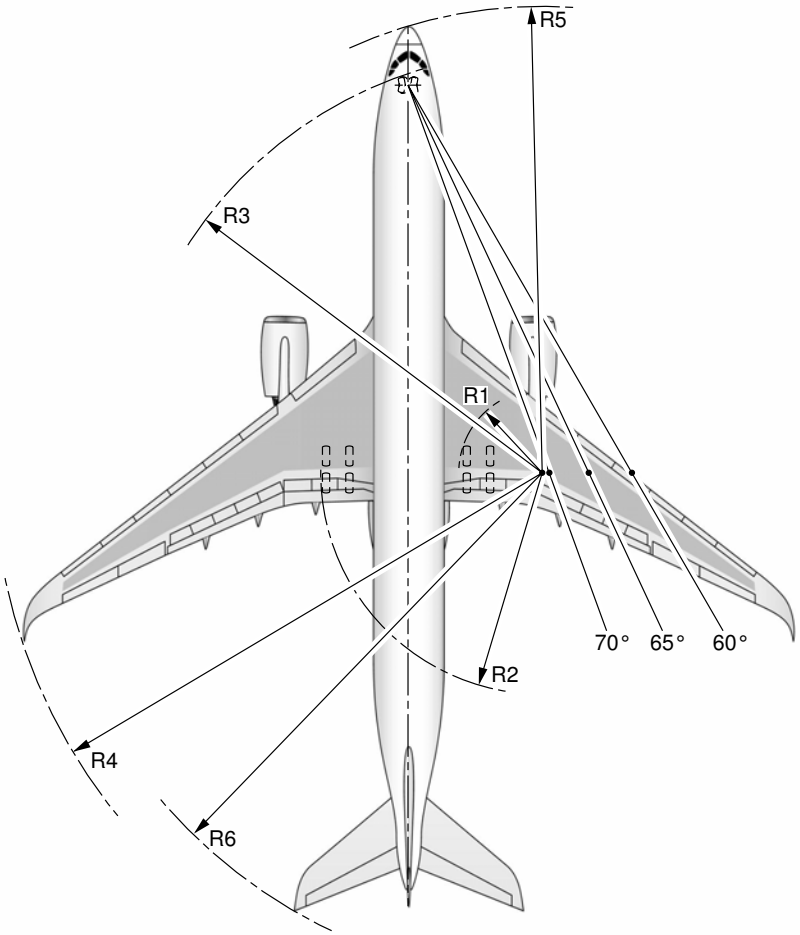
4-2-0 Turning Radii

**ON A/C A350-900

Turning Radii

1. This section gives the turning radii.

**ON A/C A350-900



NOTE:
FOR TURNING RADII VALUES, REFER TO SHEET 2

P_AC_040200_1_0010001_01_00

Turning Radii
(Sheet 1 of 2)
FIGURE-4-2-0-991-001-A01

**ON A/C A350-900

A350–900 TURNING RADII									
TYPE OF TURN	STEERING ANGLE (deg)	EFFECTIVE STEERING ANGLE (deg)		R1 RMLG	R2 LMLG	R3 NLG	R4 WING	R5 NOSE	R6 TAIL
2	20	19.6	m	76.3	86.9	86.0	113.6	87.1	96.0
			ft	250	285	282	373	286	315
2	25	24.5	m	58.7	69.3	69.6	96.2	71.2	79.7
			ft	193	227	228	316	233	262
2	30	29.4	m	46.7	57.3	58.9	84.3	60.8	69.0
			ft	153	188	193	277	199	226
2	35	34.2	m	38.0	48.6	51.5	75.7	53.7	61.5
			ft	125	159	169	248	176	202
2	40	39.1	m	31.1	41.7	45.9	68.9	48.5	55.9
			ft	102	137	151	226	159	183
2	45	43.8	m	25.7	36.3	41.8	63.7	44.7	51.7
			ft	84	119	137	209	147	170
2	50	48.6	m	21.1	31.7	38.6	59.2	41.8	48.3
			ft	69	104	127	194	137	158
2	55	53.1	m	17.4	28.0	36.2	55.5	39.6	45.7
			ft	57	92	119	182	130	150
2	60	57.5	m	14.1	24.7	34.3	52.4	38.0	43.5
			ft	46	81	113	172	125	143
2	65	61.5	m	11.4	22.0	32.9	49.8	36.7	41.9
			ft	37	72	108	163	121	137
2	70	65.0	m	9.2	19.8	31.9	47.7	35.9	40.6
			ft	30	65	105	156	118	133
2	72 (MAX)	66.1	m	8.5	19.1	31.6	47.0	35.6	40.2
			ft	28	63	104	154	117	132
1	50	49.3	m	20.5	31.1	38.2	58.6	41.4	47.8
			ft	67	102	125	192	136	157
1	55	54.1	m	16.6	27.2	35.7	54.8	39.2	45.1
			ft	54	89	117	180	129	148
1	60	58.7	m	13.3	23.9	33.8	51.6	37.6	43.0
			ft	43	78	111	169	123	141
1	65	63.2	m	10.3	20.9	32.4	48.7	36.3	41.2
			ft	34	69	106	160	119	135
1	70	67.5	m	7.7	18.3	31.2	46.2	35.3	39.8
			ft	25	60	103	152	116	130
1	72 (MAX)	69.2	m	6.7	17.3	30.9	45.3	35.0	39.2
			ft	22	57	101	149	115	129

NOTE:
ABOVE 50°, AIRLINES MAY USE TYPE 1 OR TYPE 2 TURNS DEPENDING ON THE SITUATION
TYPE 1 TURNS USE: ASYMMETRIC THRUST DURING THE WHOLE TURN;
AND DIFFERENTIAL BRAKING TO INITIATE THE TURN ONLY
TYPE 2 TURNS USE: SYMMETRIC THRUST DURING THE WHOLE TURN;
AND NO DIFFERENTIAL BRAKING AT ALL IT IS POSSIBLE TO GET LOWER VALUES THAN THOSE
FROM TYPE 1 BY APPLYING DIFFERENTIAL BRAKING DURING THE WHOLE TURN.

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Turning Radii
(Sheet 2 of 2)
FIGURE-4-2-0-991-001-A01

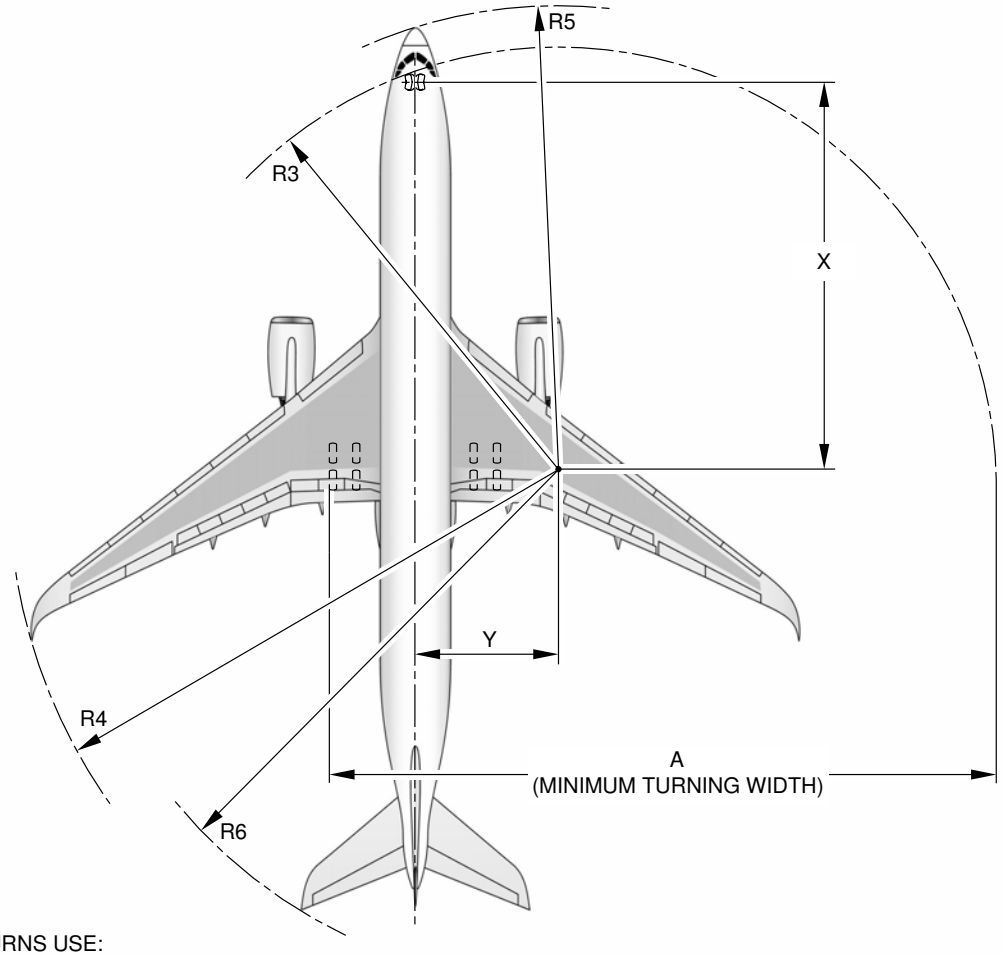
4-3-0 Minimum Turning Radii

**ON A/C A350-900

Minimum Turning Radii

1. This section gives the minimum turning radii.

**ON A/C A350-900



NOTE:
TYPE 1 TURNS USE:
ASYMMETRIC THRUST DURING THE WHOLE TURN; AND DIFFERENTIAL BRAKING TO INITIATE THE TURN ONLY
TYPE 2 TURNS USE:
SYMMETRIC THRUST DURING THE WHOLE TURN; AND NO DIFFERENTIAL BRAKING AT ALL

A350–900 MINIMUM TURNING RADII										
TYPE OF TURN	STEERING ANGLE (deg)	EFFECTIVE STEERING ANGLE (deg)		X	Y	A	R3 NLG	R4 WING	R5 NOSE	R6 TAIL
1	72 (MAX)	69.2	m	28.7	10.9	48.5	30.9	45.3	35.0	39.2
			ft	94	36	159	101	149	115	129
2	72 (MAX)	66.1	m	28.7	12.7	51.1	31.6	47.0	35.6	40.2
			ft	94	42	168	104	154	117	132

NOTE:
IT IS POSSIBLE TO GET LOWER VALUES THAN THOSE FROM TYPE 1 BY APPLYING DIFFERENTIAL BRAKING DURING THE WHOLE TURN.

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Minimum Turning Radii
FIGURE-4-3-0-991-001-A01

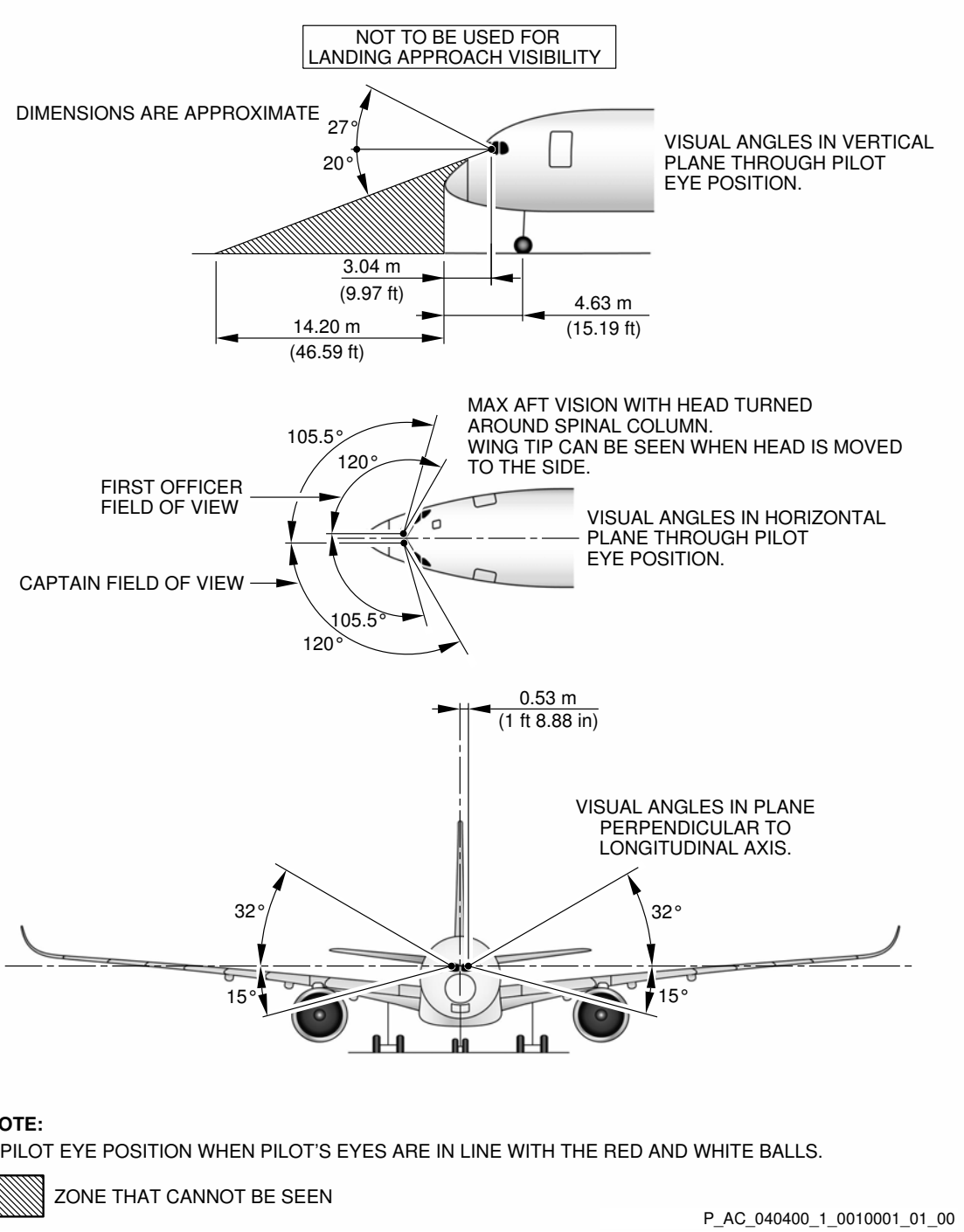
4-4-0 Visibility from Cockpit in Static Position

**ON A/C A350-900

Visibility from Cockpit in Static Position

1. This section gives the visibility from cockpit in static position.

**ON A/C A350-900



NOTE:

- PILOT EYE POSITION WHEN PILOT'S EYES ARE IN LINE WITH THE RED AND WHITE BALLS.

ZONE THAT CANNOT BE SEEN

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Visibility from Cockpit in Static Position
FIGURE-4-4-0-991-001-A01

4-5-0 Runway and Taxiway Turn Paths

**ON A/C A350-900

Introduction

1. This section gives the runway and taxiway turnpaths for the following configurations:
   - 90° Turn – Runway to Taxiway
   - 135° Turn – Runway to Taxiway
   - 180° U-Turn on Runway
   - 90° Turn – Taxiway to Taxiway
   - 135° Turn – Taxiway to Taxiway

   The turnpaths Runway to Taxiway and Taxiway to Taxiway are defined using 2 methods:
   - Oversteering method,
   - Cockpit over centerline method.

   The 180 U-Turn on runway is defined using the following method:
   - U-Turn using edge of runway method.

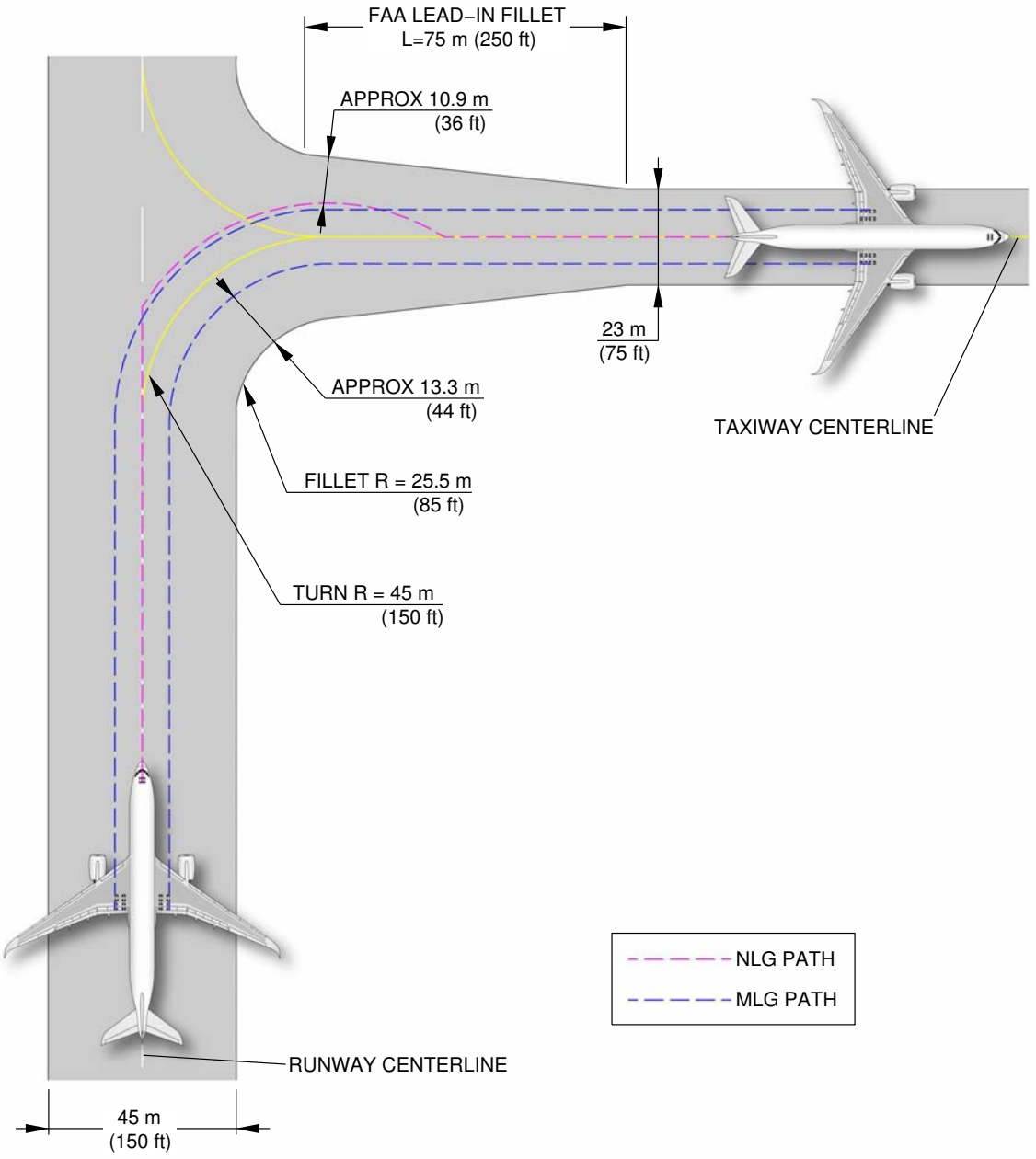
4-5-1 90° Turn - Runway to Taxiway

**ON A/C A350-900

90° Turn - Runway to Taxiway

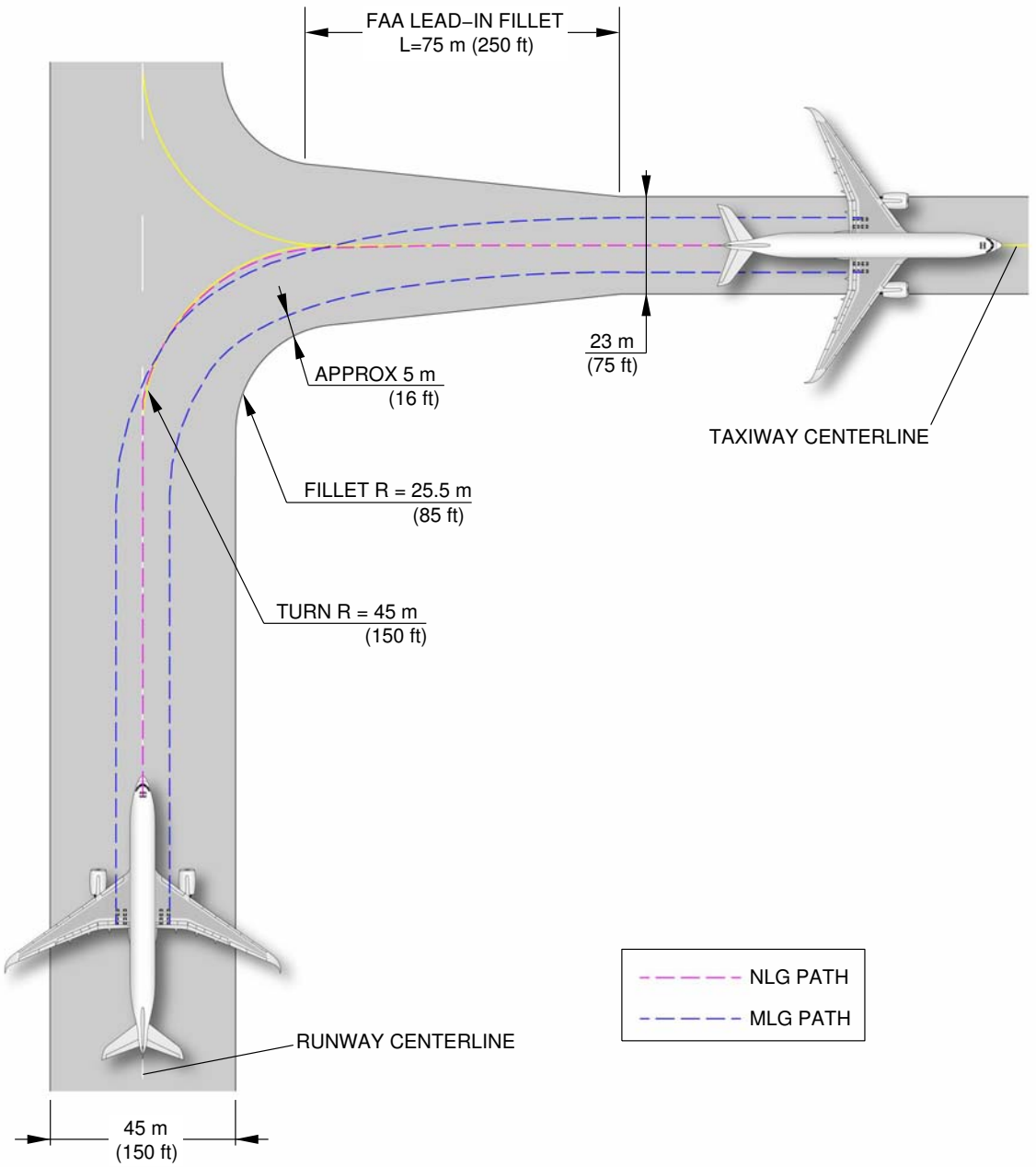
1. This section gives the 90° turn - runway to taxiway.

**ON A/C A350-900



90° Turn - Runway to Taxiway
Oversteering Method (Sheet 1 of 2)
FIGURE-4-5-1-991-001-A01

**ON A/C A350-900



90° Turn - Runway to Taxiway
Cockpit over Centerline Method (Sheet 2 of 2)
FIGURE-4-5-1-991-001-A01

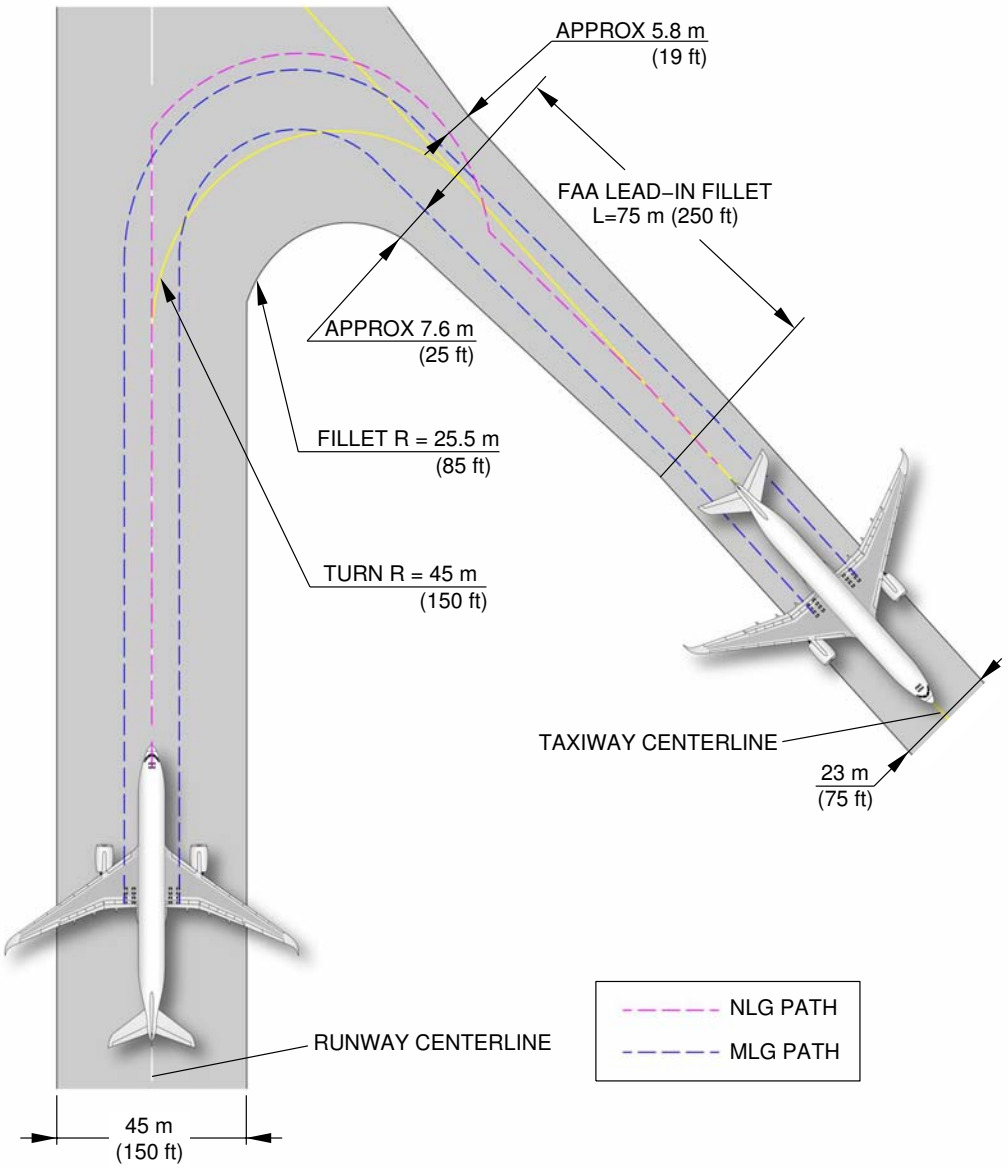
4-5-2 135° Turn - Runway to Taxiway

**ON A/C A350-900

135° Turn - Runway to Taxiway

1. This section gives the 135° turn - runway to taxiway.

**ON A/C A350-900



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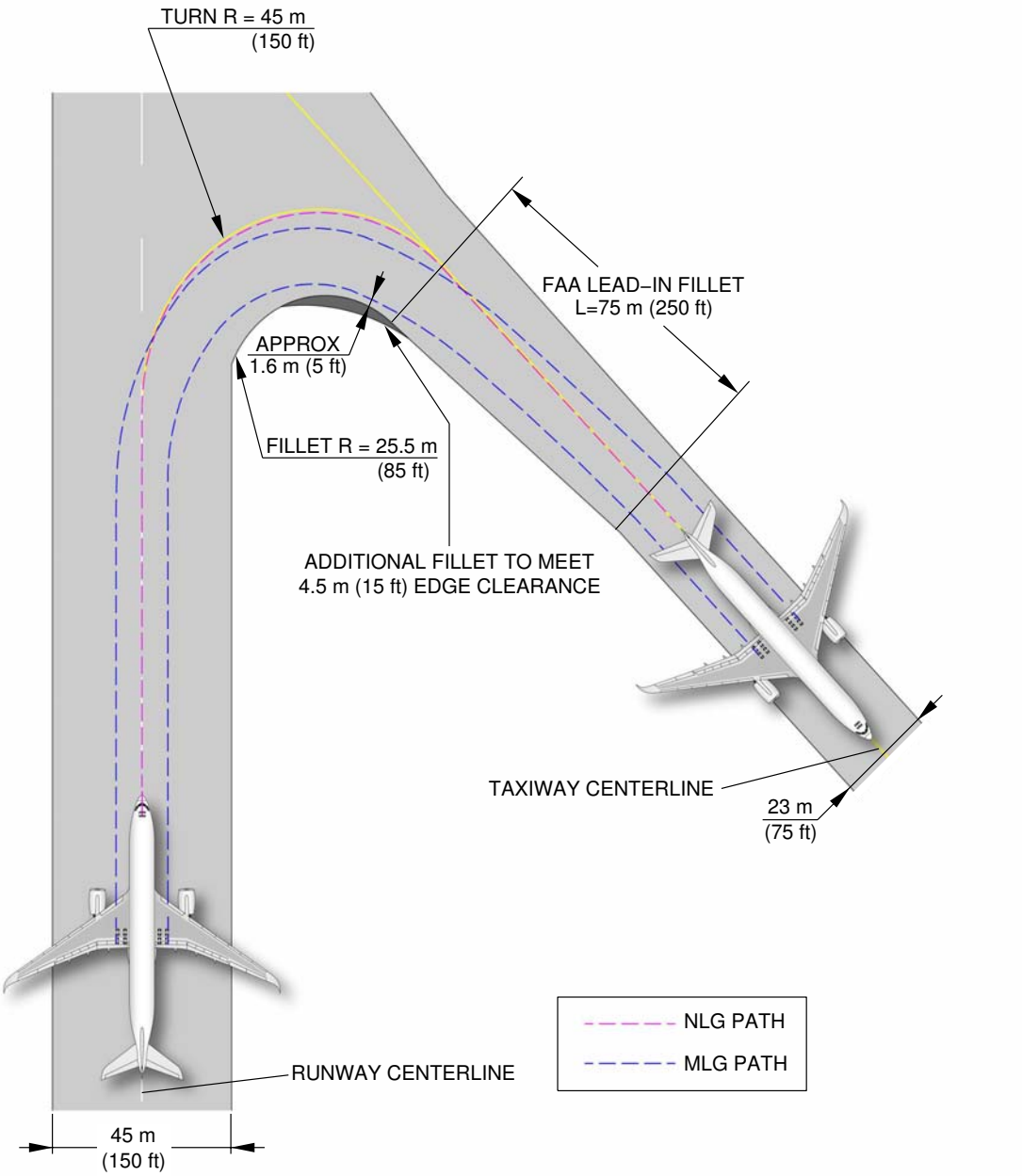
135° Turn - Runway to Taxiway
Oversteering Method (Sheet 1 of 2)
FIGURE-4-5-2-991-001-B01

**ON A/C A350-900



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135° Turn - Runway to Taxiway
Cockpit over Centerline Method (Sheet 2 of 2)
FIGURE-4-5-2-991-001-B01

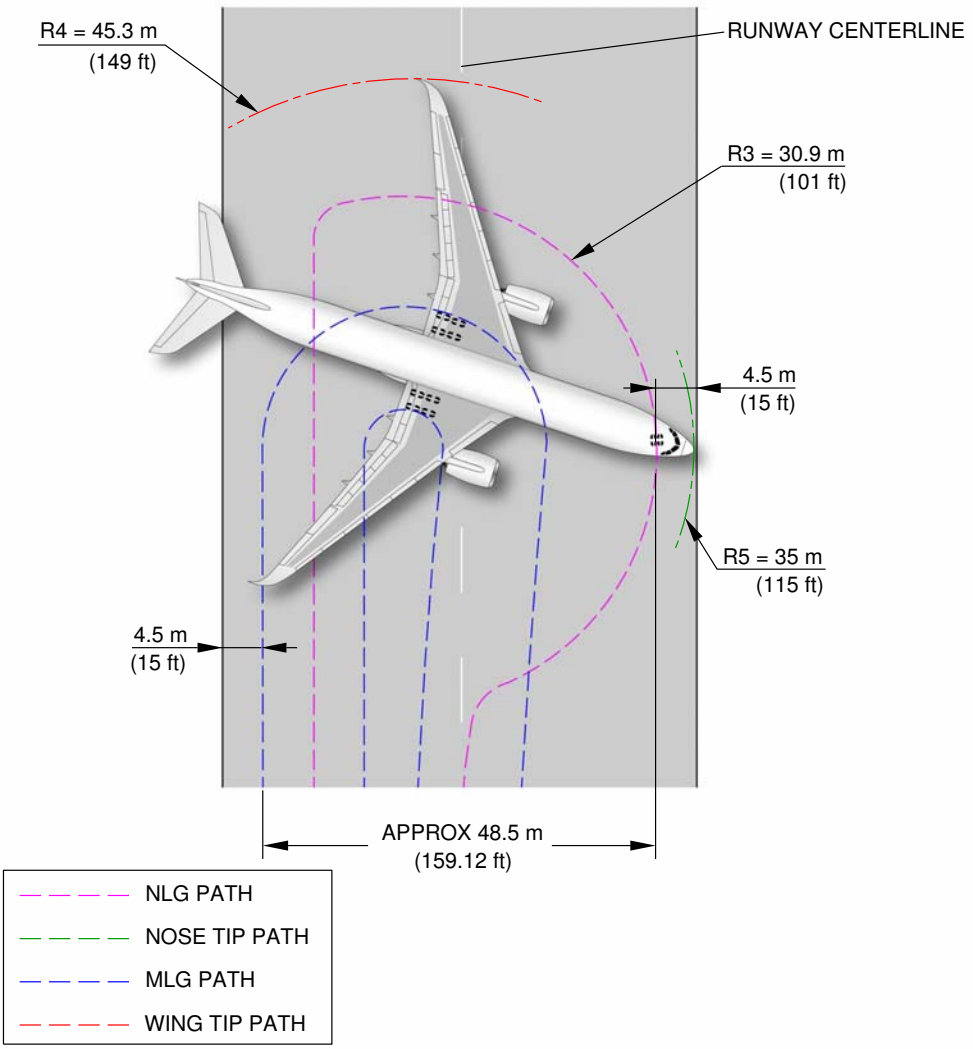
4-5-3 180° Turn on a Runway

**ON A/C A350-900

180° Turn on a Runway

1. This section gives the 180° turn on a runway.

**ON A/C A350-900



NOTE:

TYPE 1 VALUES.
IT IS POSSIBLE TO GET LOWER VALUES THAN THOSE FROM TYPE 1 BY APPLYING DIFFERENTIAL BRAKING DURING THE WHOLE TURN.

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180° Turn on a Runway
FIGURE-4-5-3-991-001-A01

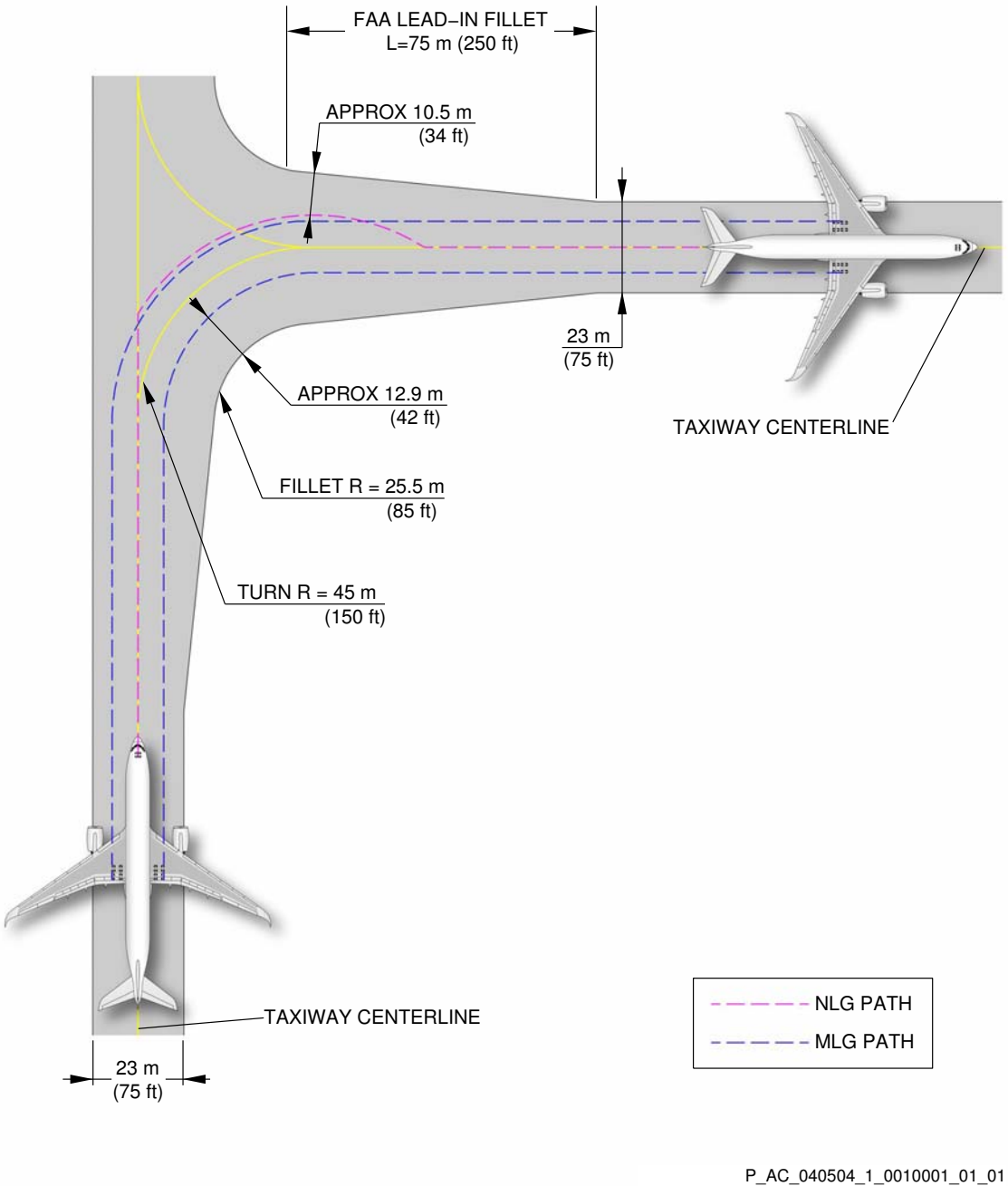
4-5-4 90° Turn - Taxiway to Taxiway

**ON A/C A350-900

90° Turn - Taxiway to Taxiway

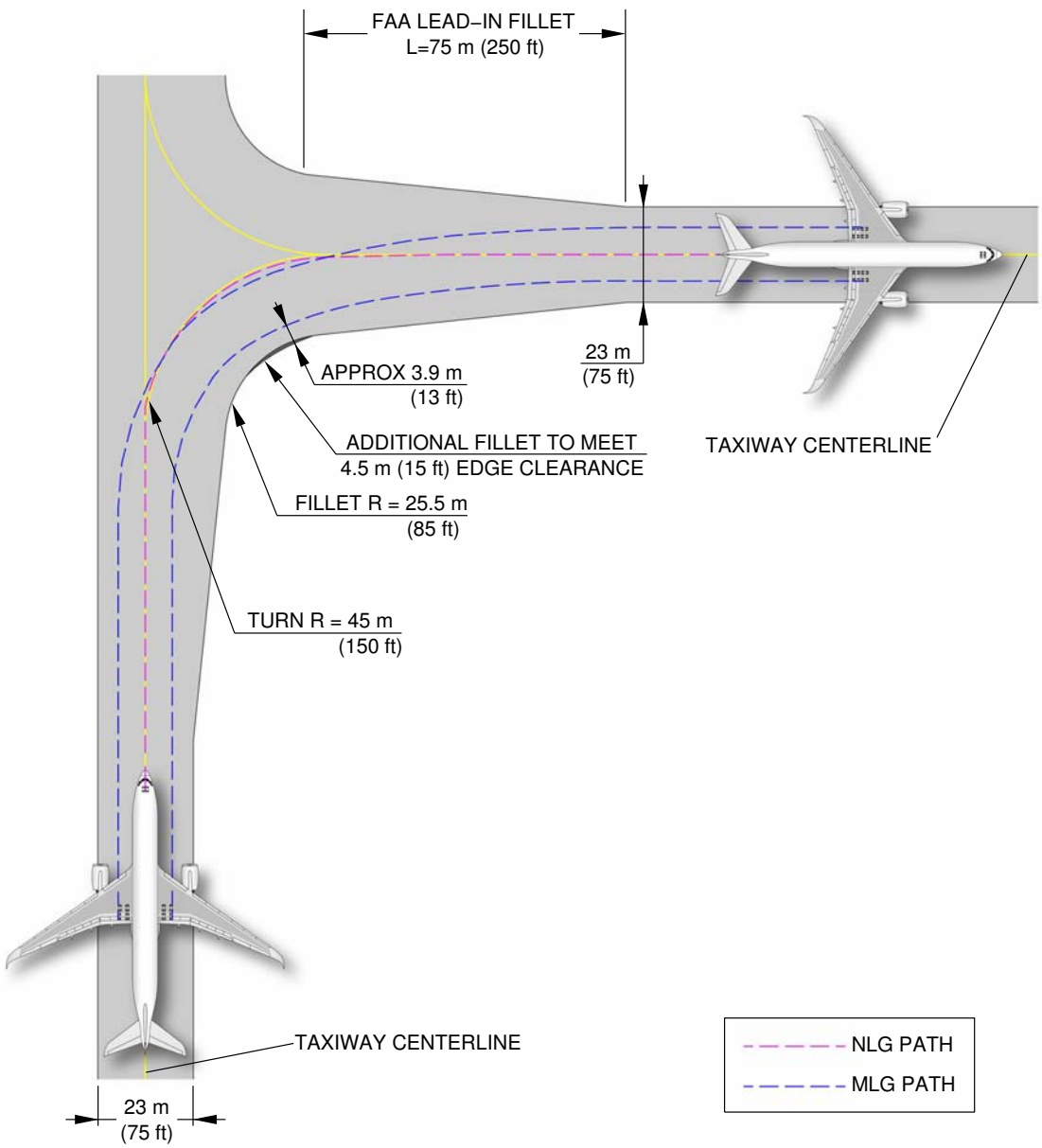
1. This section gives the 90° turn - taxiway to taxiway.

**ON A/C A350-900



90° Turn - Taxiway to Taxiway
Oversteering Method (Sheet 1 of 2)
FIGURE-4-5-4-991-001-A01

**ON A/C A350-900



90° Turn - Taxiway to Taxiway
Cockpit over Centerline Method (Sheet 2 of 2)
FIGURE-4-5-4-991-001-A01

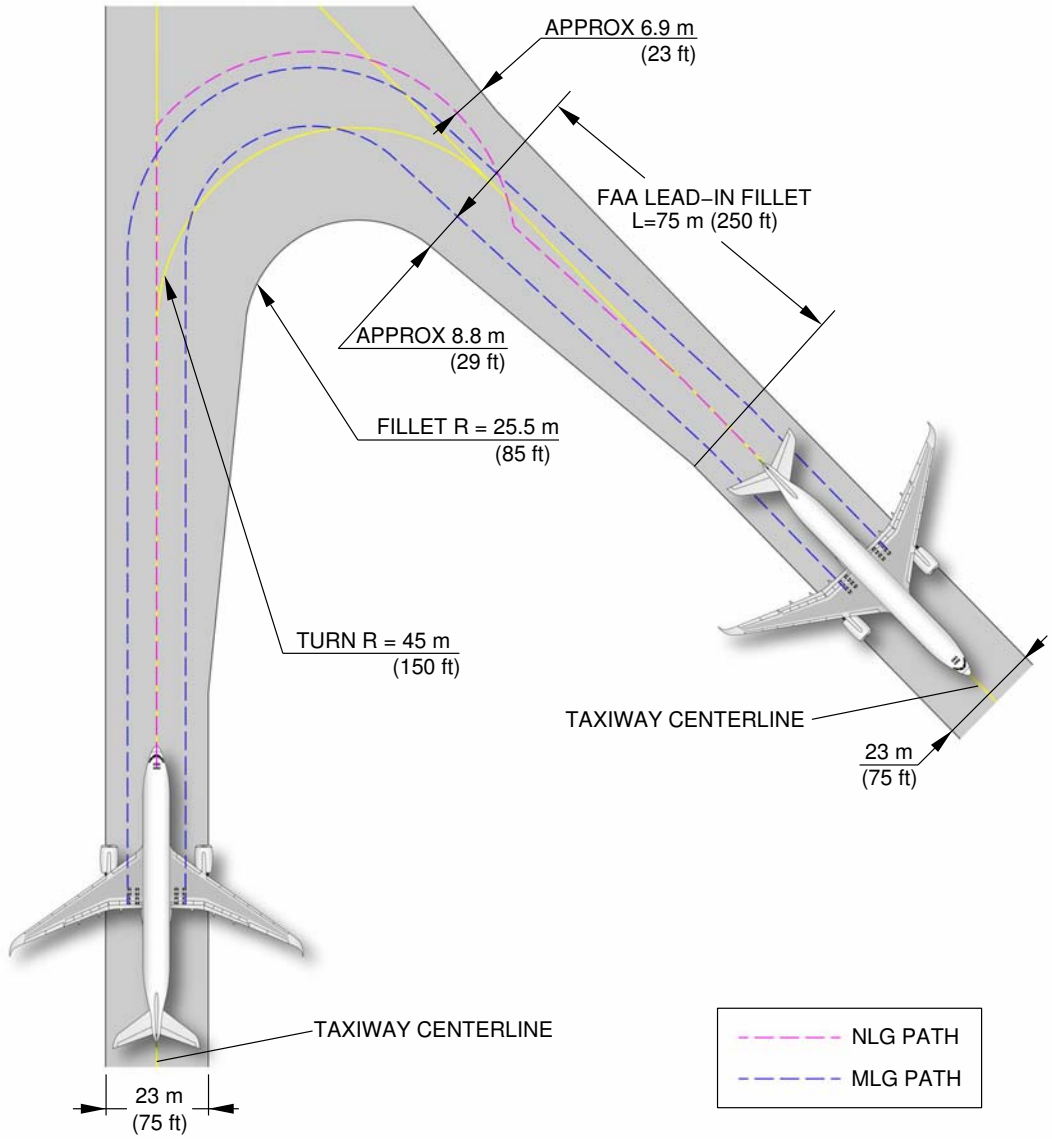
4-5-5 135° Turn - Taxiway to Taxiway

**ON A/C A350-900

135° Turn - Taxiway to Taxiway

1. This section gives the 135° turn - taxiway to taxiway.

**ON A/C A350-900



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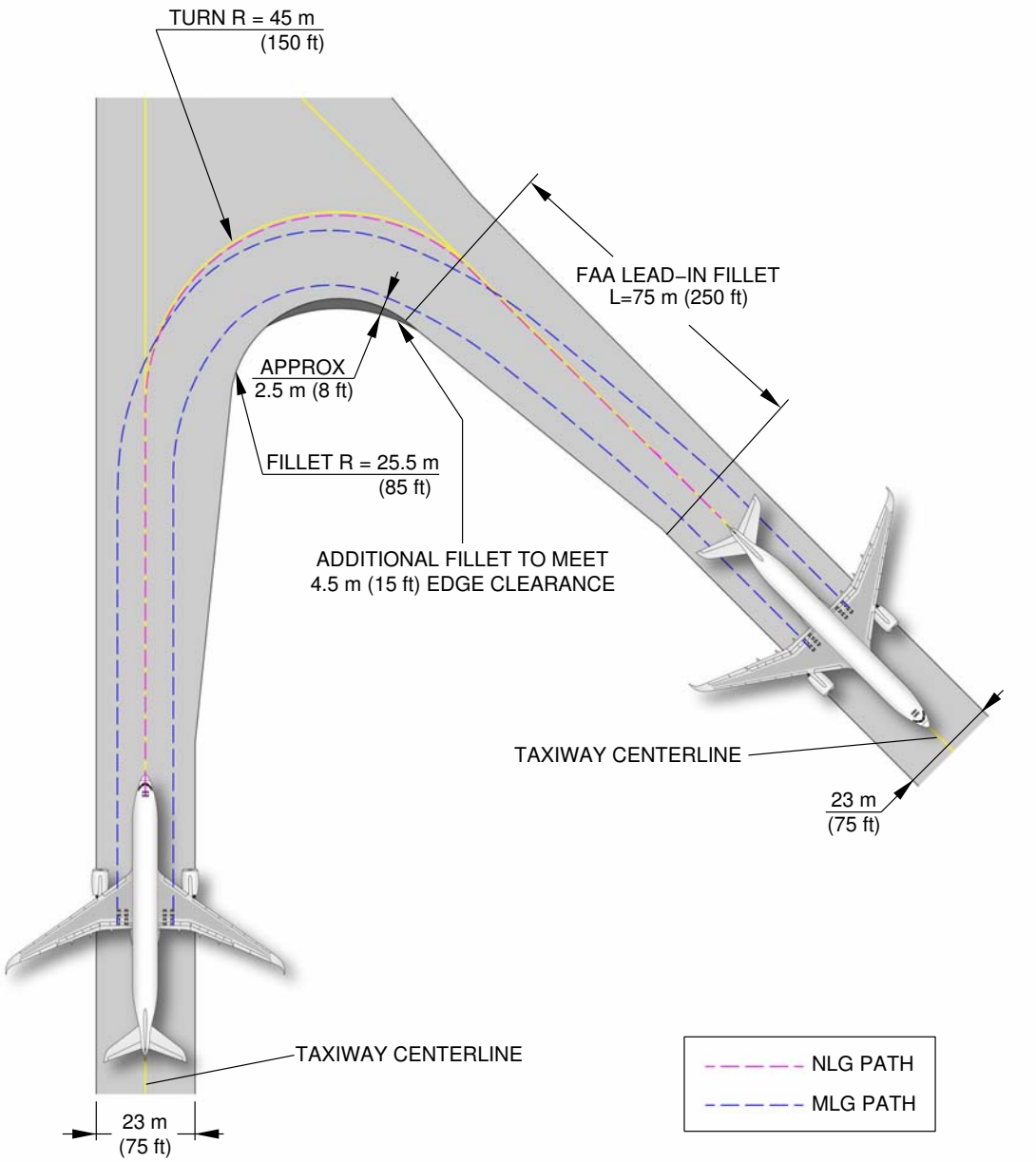
135° Turn - Taxiway to Taxiway
Oversteering Method (Sheet 1 of 2)
FIGURE-4-5-5-991-001-B01

**ON A/C A350-900



135° Turn - Taxiway to Taxiway
Cockpit over Centerline Method (Sheet 2 of 2)
FIGURE-4-5-5-991-001-B01

5-1-0 Aircraft Servicing Arrangements

**ON A/C A350-900

Aircraft Servicing Arrangements

1. This section provides typical ramp layouts, showing the various GSE items in position during typical turn round scenarios.
   These ramp layouts show typical arrangements only. Each operator will have its own specific requirements/regulations for the positioning and operation on the ramp.

   This table gives the symbols used on servicing diagrams.

Ground Support Equipment	
AC	AIR CONDITIONING UNIT
AS	AIR START UNIT
BULK	BULK TRAIN
CAT	CATERING TRUCK
CB	CONVEYOR BELT
CLEAN	CLEANING TRUCK
FUEL	FUEL HYDRANT DISPENSER or TANKER
GPU	GROUND POWER UNIT
LDCL	LOWER DECK CARGO LOADER
LV	LAVATORY VEHICLE
PBB	PASSENGER BOARDING BRIDGE
PS	PASSENGER STAIRS
TOW	TOW TRACTOR
ULD	ULD TRAIN
WV	POTABLE WATER VEHICLE

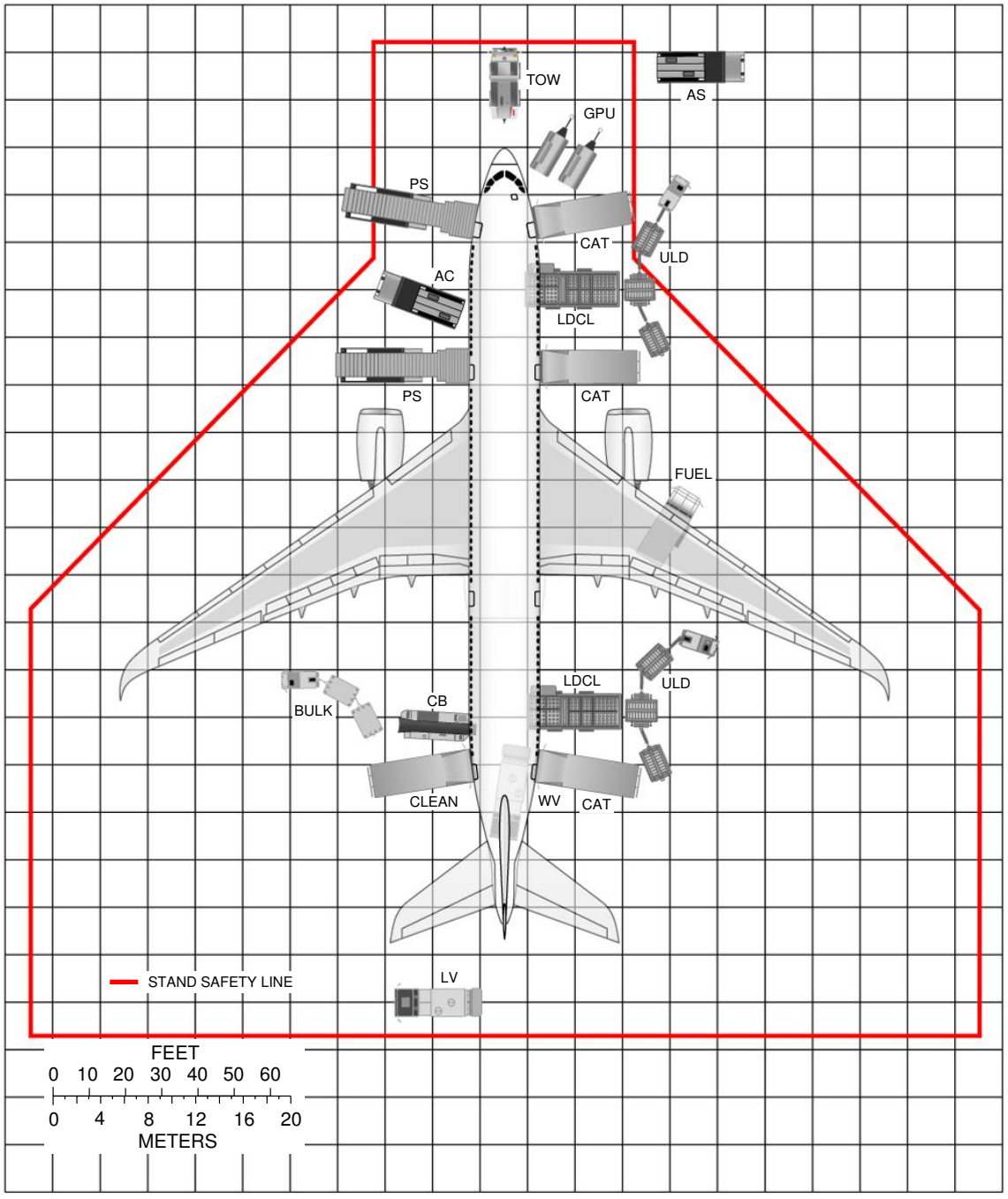
5-1-1 Typical Ramp Layout (Open Apron)

**ON A/C A350-900

Typical Ramp Layout (Open Apron)

1. This section gives the typical ramp layout (open apron).
   The Stand Safety Line delimits the Aircraft Safety Area (minimum distance of7.50 m (24.61 ft.)from the aircraft). No vehicle must be parked in this area before complete stop of the aircraft (wheel chocks in position on landing gears).

**ON A/C A350-900



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Typical Ramp Layout (Open Apron)
FIGURE-5-1-1-991-001-A01

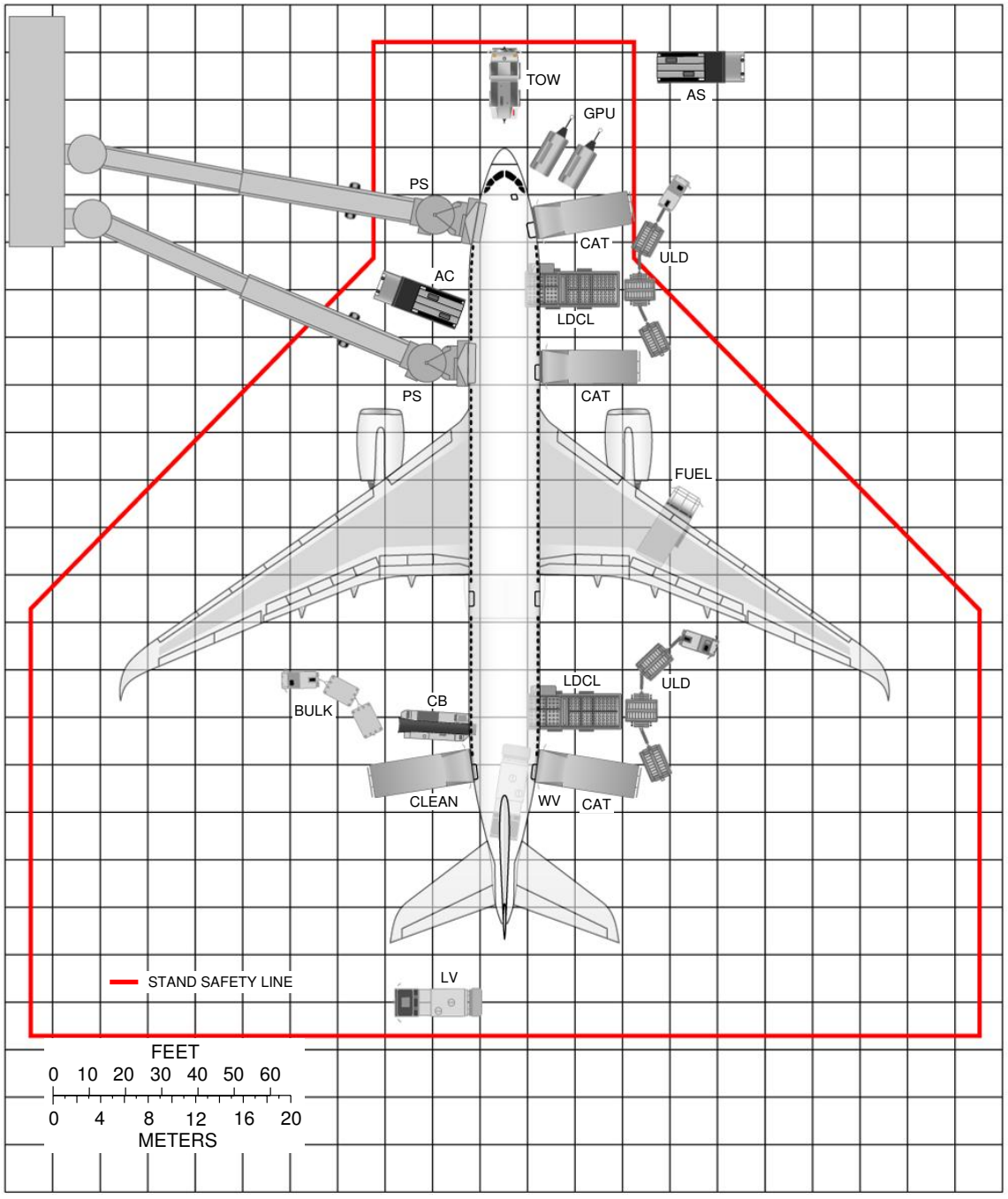
5-1-2 Typical Ramp Layout (Gate)

**ON A/C A350-900

Typical Ramp Layout (Gate)

1. This section gives the baseline ramp layout (gate).
   The Stand Safety Line delimits the Aircraft Safety Area (minimum distance of7.50 m (24.61 ft.)from the aircraft). No vehicle must be parked in this area before complete stop of the aircraft (wheel chocks in position on landing gears).

**ON A/C A350-900



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Typical Ramp Layout (Gate)
FIGURE-5-1-2-991-001-A01

5-2-0 Terminal Operations - Full Servicing Turn Round Time

**ON A/C A350-900

Terminal Operations - Full Servicing Turn Round Time

1. This section provides typical turn round time charts showing the typical times for ramp activities during aircraft turn round.

   Actual times may vary due to each operator's specific practice and operating conditions.

2. Assumptions for full turn round chart

   A. PASSENGER HANDLING

   315 pax (48 B/C + 267 Y/C)
   All passengers deboard and board the aircraft
   2 Passenger Boarding Bridges (PBB) used at doors L1 and L2
   Equipment positioning/removal + opening/closing door = 2 min
   Deboarding:
   - 158 pax at door L1
   - 157 pax at door L2
   - Deboarding rate = 25 pax/min per door
   - No PRM (Passenger with Reduced Mobility)

   Boarding:
   - 158 pax at door L1
   - 157 pax at door L2
   - Boarding rate = 15 pax/min per door
   - Last Pax Seating Allowance (LPS) + headcounting = + 4 min
   - No PRM

   B. CARGO

   2 cargo loaders + 1 belt loader used
   Equipment positioning/removal + opening/closing door = 2.5 min
   Cargo exchange:
   - 4 pallets and 8 LD-3 for FWD cargo compartment
   - 4 pallets and 4 LD-3 for AFT cargo compartment
   - 1 000 kg (2 205 lb) in bulk cargo compartment

   LD-3 off-loading/loading times:
   - Off-loading = 1.2 min/LD-3
   - Loading = 1.4 min/LD-3

   Pallet off-loading/loading times:
   - Off-loading = 2.4 min/pallet
   - Loading = 2.8 min/pallet

   Bulk off-loading/loading times:
   - Off-loading = 9.2 min/tonne

- Loading = 10.5 min/tonne

C. REFUELLING

Block fuel for nominal range thru 2 nozzles
81 000 liters (21398 US gal) at 50 psi
Dispenser positioning/removal = 3 min (fuel truck change, if any = 5 min)

D. CLEANING

Performed in available time

E. CATERING

1 catering truck for servicing galleys at door R1 and R2
1 catering truck for servicing galley at R4
Equipment positioning + door opening = 5 min
Close door + equipment removal = 3 min
42 Full Size Trolleys Equivalent (FSTE) to unload and load:
- 10 FSTE at R1
- 7 FSTE at R2
- 25 FSTE at R4

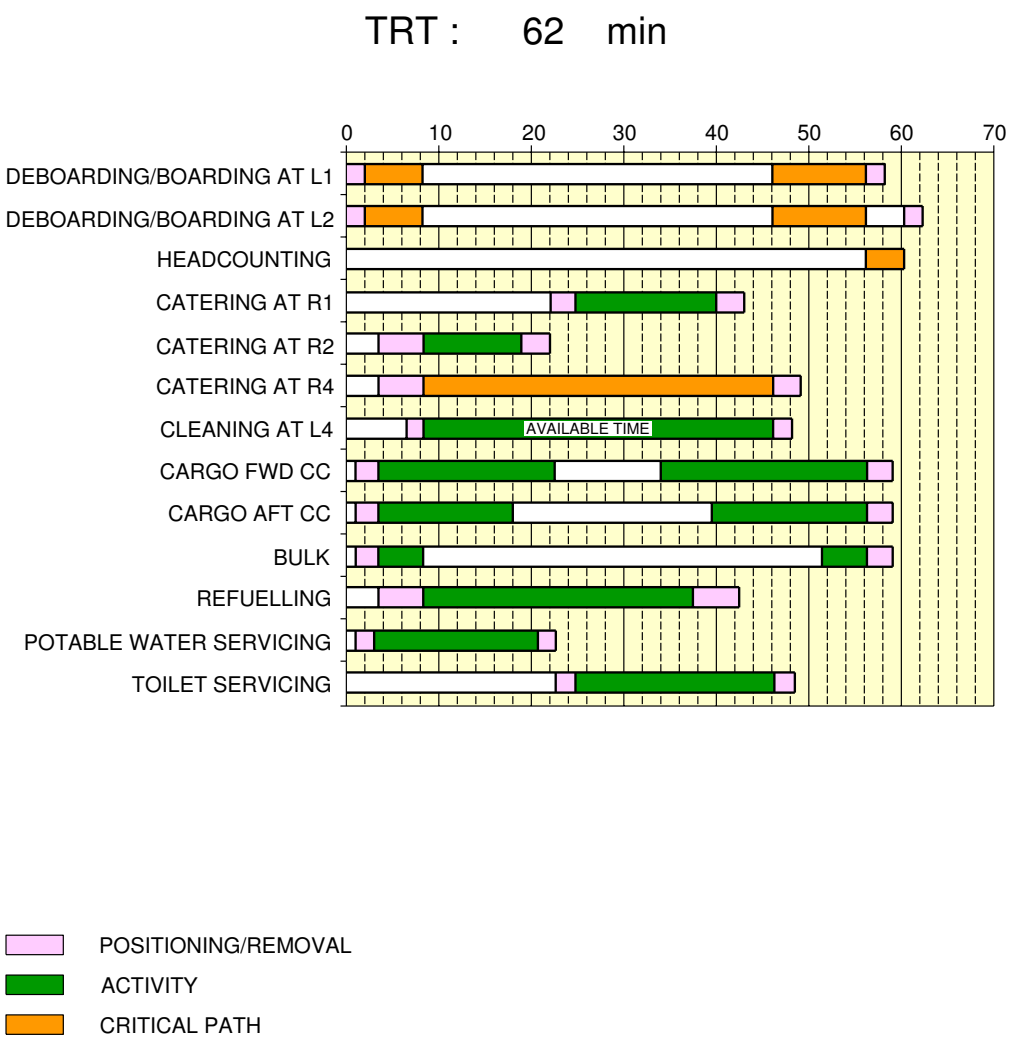
FSTE exchange time = 1.5 min/FSTE

F. GROUND HANDLING / SERVICING

Start of operations:
- Bridges: t0 = 0
- Other equipment: t0 + 1 min

Vehicle positioning/removal = 2 min
Ground Power Unit (GPU): up to 2 × 90 kVA
Air conditioning: two hoses
Potable water servicing: 100% uplift, 1060 l (280 US gal)
Toilet servicing: draining + rinsing

**ON A/C A350-900



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Full Servicing Turn Round Time Chart
FIGURE-5-2-0-991-001-A01

5-3-0 Terminal Operations - Minimum Servicing Turn Round Time

**ON A/C A350-900

Terminal Operations - Minimum Servicing Turn Round Time

1. Assumptions for minimum turn round time

A. PASSENGER HANDLING

157 pax (24 B/C + 133 Y/C)
50% of passengers deboard and board the aircraft
1 Passenger Boarding Bridge (PBB) used at Door L2
Equipment positioning/removal + opening/closing door = 2 min
Deboarding:
- 157 pax at door L2
- Deboarding rate = 25 pax/min per door
- No PRM (Passenger with Reduced Mobility)

Boarding:
- 157 pax at door L2
- Boarding rate = 15 pax/min per door
- Last Pax Seating Allowance (LPS) + headcounting = + 4 min
- No PRM

B. CARGO

2 cargo loaders + 1 belt loader used
Equipment positioning/removal + opening/closing door = 2.5 min
Cargo exchange:
- 4 LD-3 for FWD cargo compartment
- 2 LD-3 for AFT cargo compartment
- 500 kg (1102 lb) in bulk cargo compartment

LD-3 off-loading/loading times:
- Off-loading = 1.2 min/LD-3
- Loading = 1.4 min/LD-3

Pallet off-loading/loading times:
- Off-loading = 2.4 min/pallet
- Loading = 2.8 min/pallet

Bulk off-loading/loading times:
- Off-loading = 9.2 min/tonne
- Loading = 10.5 min/tonne

C. REFUELLING

Block fuel for nominal range thru 2 nozzles
30% of max capacity (Max: 138.000 liters (36456 US gal) at 50 psi)
Dispenser positioning or removal = 3 min (fuel truck change, if any = 5 min)

D. CLEANING

Performed in available time

E. CATERING

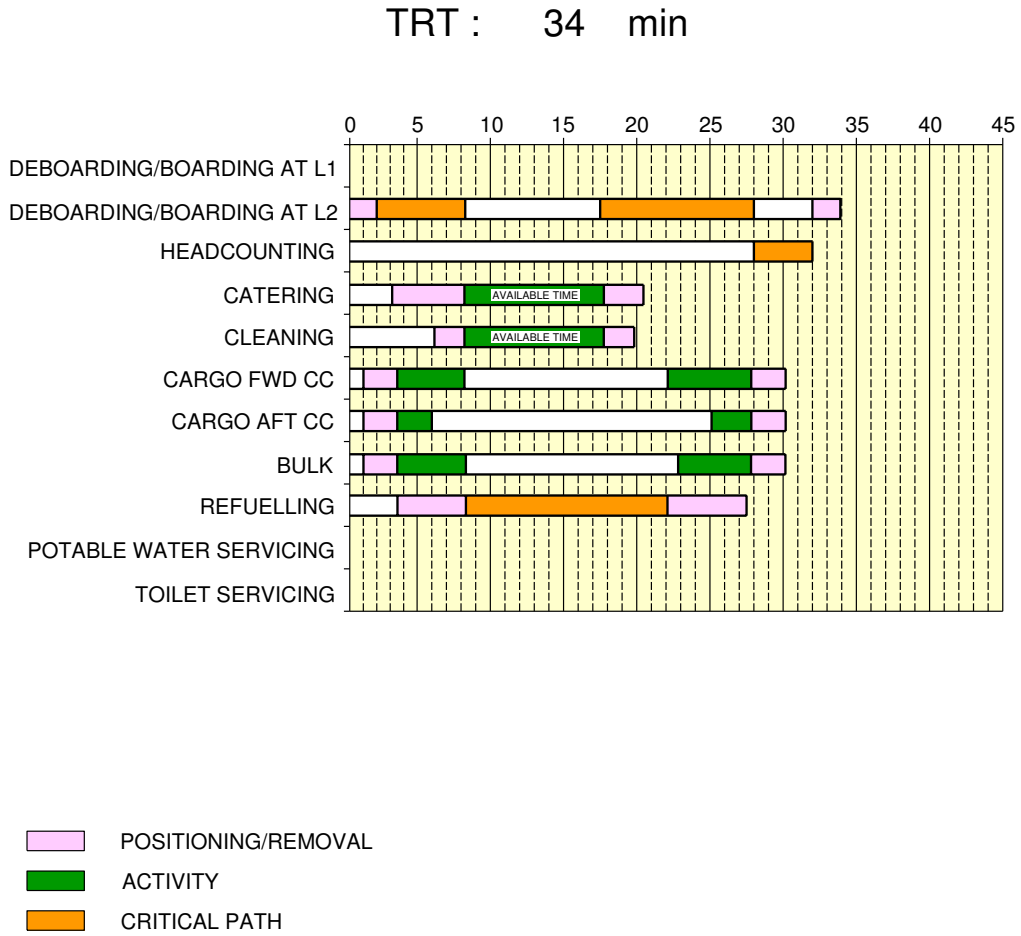
1 catering vehicle for catering uplift as required
Equipment positioning + door opening = 5 min
Performed in available time
FSTE exchange time = 1.5 min/FSTE

F. GROUND HANDLING / SERVICING

Start of operations:
- Bridges: t0 = 0
- Other equipment: t0 + 1 min

Vehicle positioning/removal = 2 min
Ground Power Unit (GPU): up to 2 × 90 kVA
Air conditioning: two hoses
No potable water servicing
No toilet servicing

**ON A/C A350-900



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Minimum Servicing Turn Round Time Chart
FIGURE-5-3-0-991-001-B01

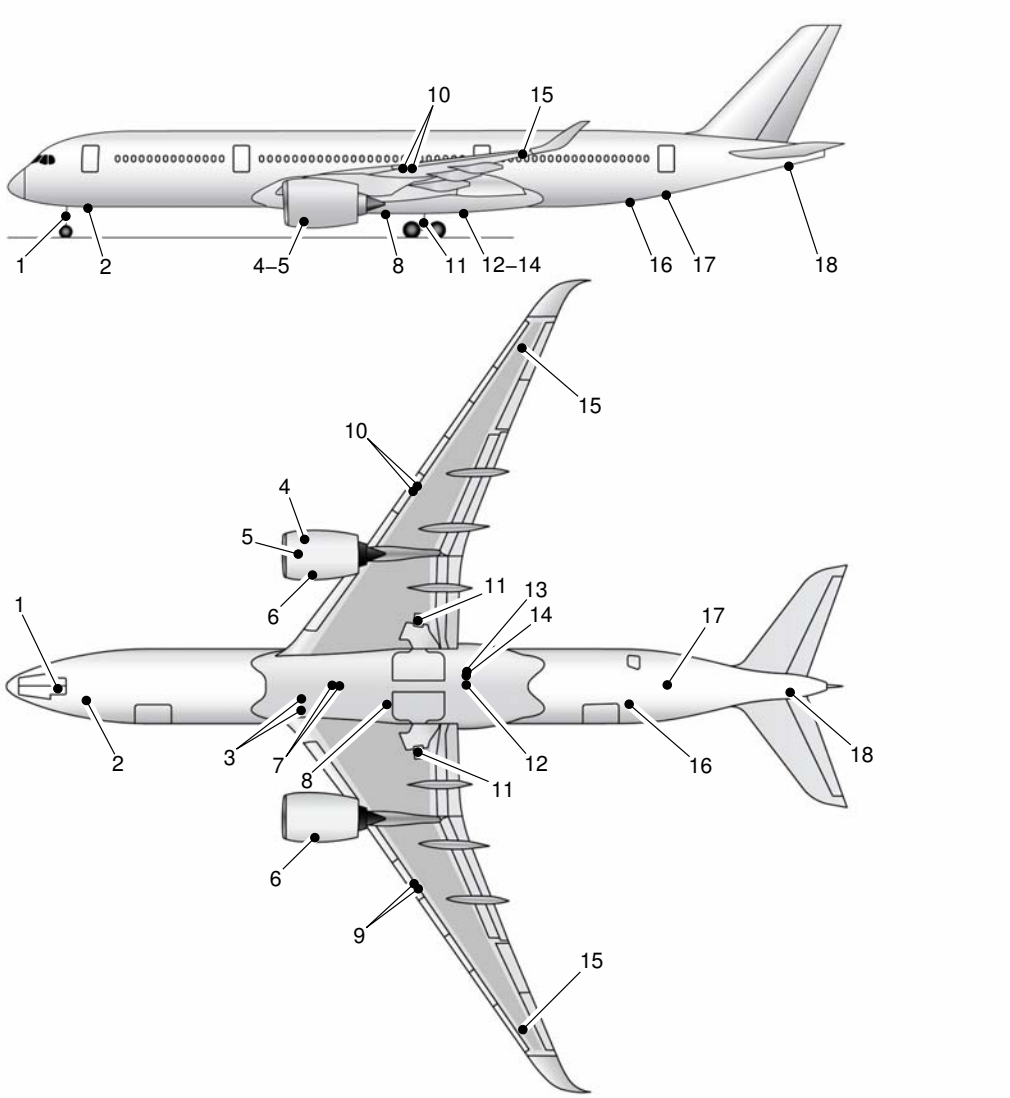
5-4-0 Ground Service Connections layout

**ON A/C A350-900

Ground Service Connections layout

1. This section gives the ground service connections layout.

**ON A/C A350-900



1 – GROUNDING POINT NLG
2 – GROUND ELECTRICAL POWER CONNECTORS
3 – PRE CONDITIONNED AIR CONNECTORS
4 – VFG OIL SERVICING
5 – STARTER OIL SERVICING
6 – ENGINE OIL SERVICING
7 – AIR START UNIT CONNECTORS
8 – YELLOW HYDRAULIC GROUND CONNECTOR
9 – PRESSURE REFUEL CONNECTORS (RH WING)
10 – PRESSURE REFUEL CONNECTORS (LH WING) – OPTION
11 – GROUNDING POINT MLG
12 – REFUEL/DEFUEL CONTROL PANEL
13 – HYDRAULIC SERVICING PANEL
14 – GREEN HYDRAULIC GROUND CONNECTOR
15 – NACA AND OVERPRESSURE PANEL
16 – POTABLE WATER SERVICING PANEL
17 – WASTE WATER SERVICING PANEL
18 – APU OIL SERVICING

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Ground Service Connections layout
FIGURE-5-4-0-991-001-A01

5-4-1 Grounding Points

**ON A/C A350-900

Grounding Points

1. Grounding Point Locations

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		R SIDE	L SIDE	
On Nose Landing Gear	4.42 m (14.5 ft.)	0.07 m (0.23 ft.)		1.06 m (3.48 ft.)
On Left Main Landing Gear Leg	32.95 m (108.1 ft.)		5.59 m (18.34 ft.)	1.55 m (5.09 ft.)
On Right Main Landing Gear Leg	32.95 m (108.1 ft.)	5.59 m (18.34 ft.)		1.55 m (5.09 ft.)

A. The grounding stud on each landing gear is designed for use with a clip-on connector, such as an Appleton TGR.

B. The grounding studs are used to connect the aircraft to approved ground connection on the ramp or in the hangar for:

(1) Refuel/defuel operations

(2) Maintenance operations

(3) Bad weather conditions.

NOTE : In all other conditions, the electrostatic discharge through the tire is sufficient.

5-4-2 Hydraulic System

**ON A/C A350-900

Hydraulic System

1. Ground Service Panel

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		R SIDE	L SIDE	
Green Hydraulic Ground Access Door: 197 LB	36.37 m (119.32 ft.)		0.61 m (2.0 ft.)	2.39 m (7.84 ft.)
Yellow Hydraulic Ground Access Door: 194 KB	30.35 m (99.57 ft.)	1.51 m (4.95 ft.)		2.24 m (7.35 ft.)
Hydraulic Reservoir Servicing Access Door: 197 LB	36.42 m (119.49 ft.)		0.87 m (2.85 ft.)	2.51 m (8.23 ft.)

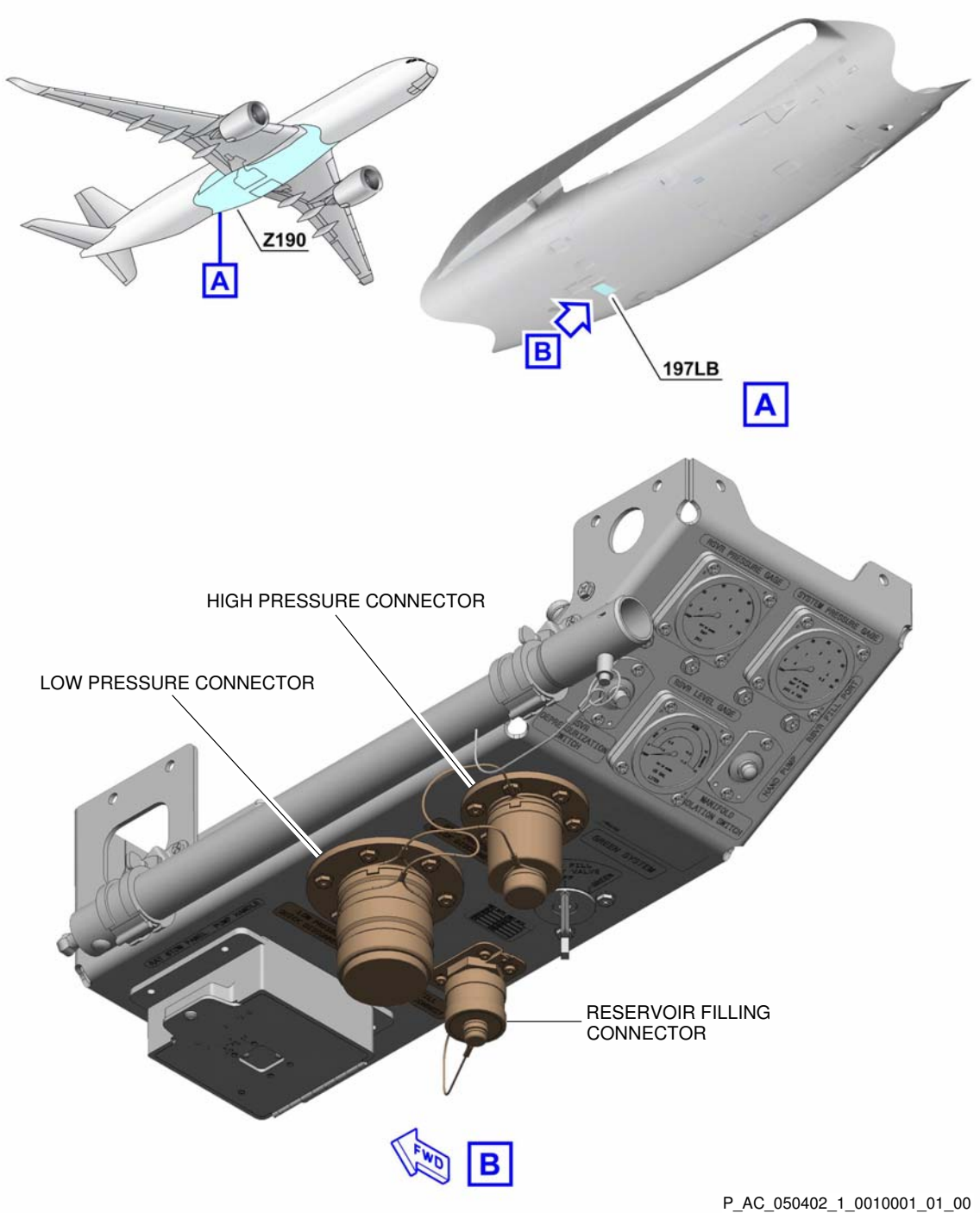
A. Reservoir pressurization

(1) One connector ISO 4570, 1/4 in.

B. Reservoir filling

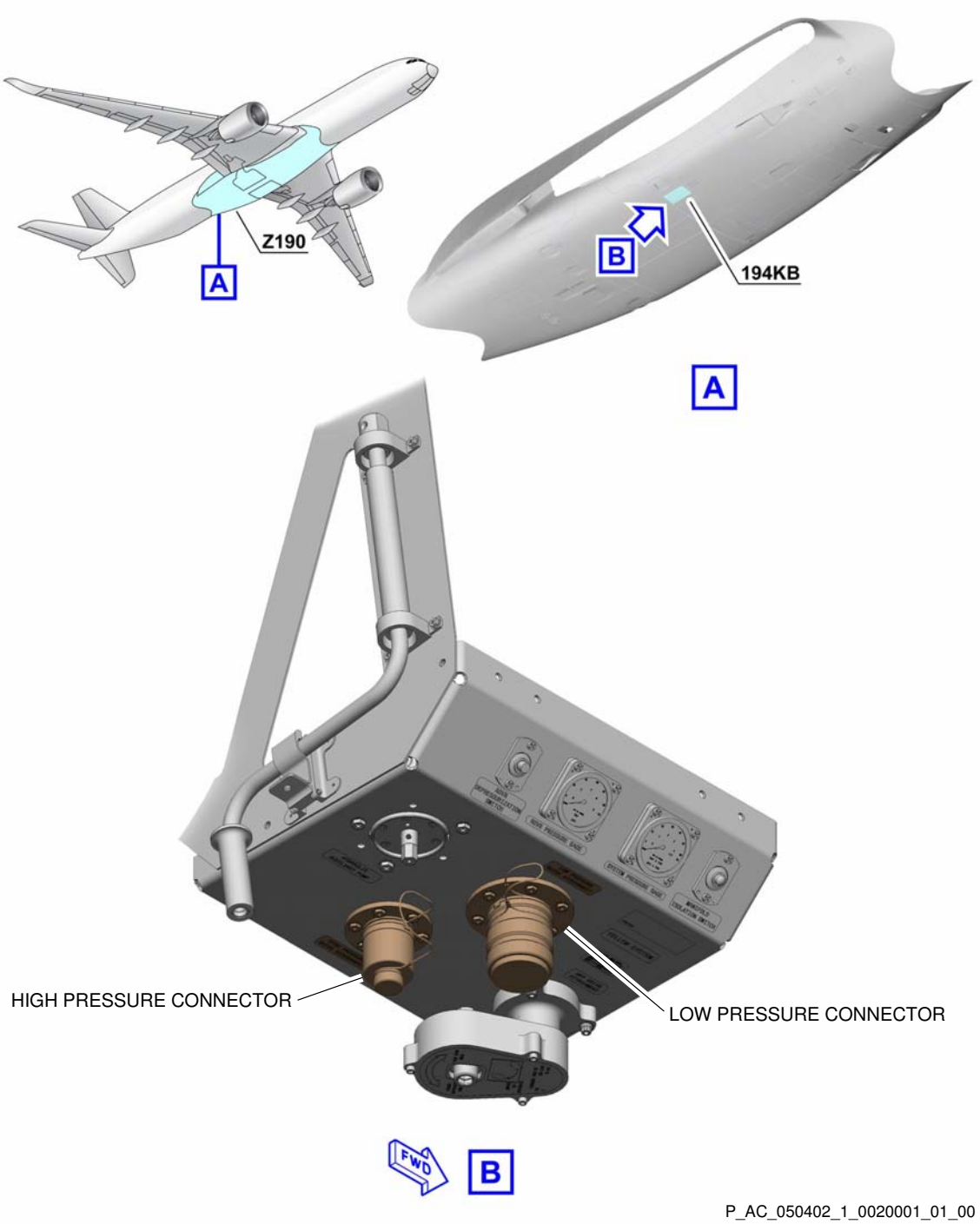
(1) One connector AE96993E, 1/4 in.

**ON A/C A350-900



Green Ground Service Panel
FIGURE-5-4-2-991-001-A01

**ON A/C A350-900



Yellow Ground Service Panel
FIGURE-5-4-2-991-002-A01

5-4-3 Electrical System

**ON A/C A350-900

Electrical System

1. Electrical System

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		R SIDE	L SIDE	
A/C External Power Access Door: 122 AR	6.63 m (21.75 ft.)	0.91 m (2.99 ft.)		2.58 m (8.46 ft.)

A. External power receptacle :

(1) Two standard ISO 461 style 3.

B. Power supply :

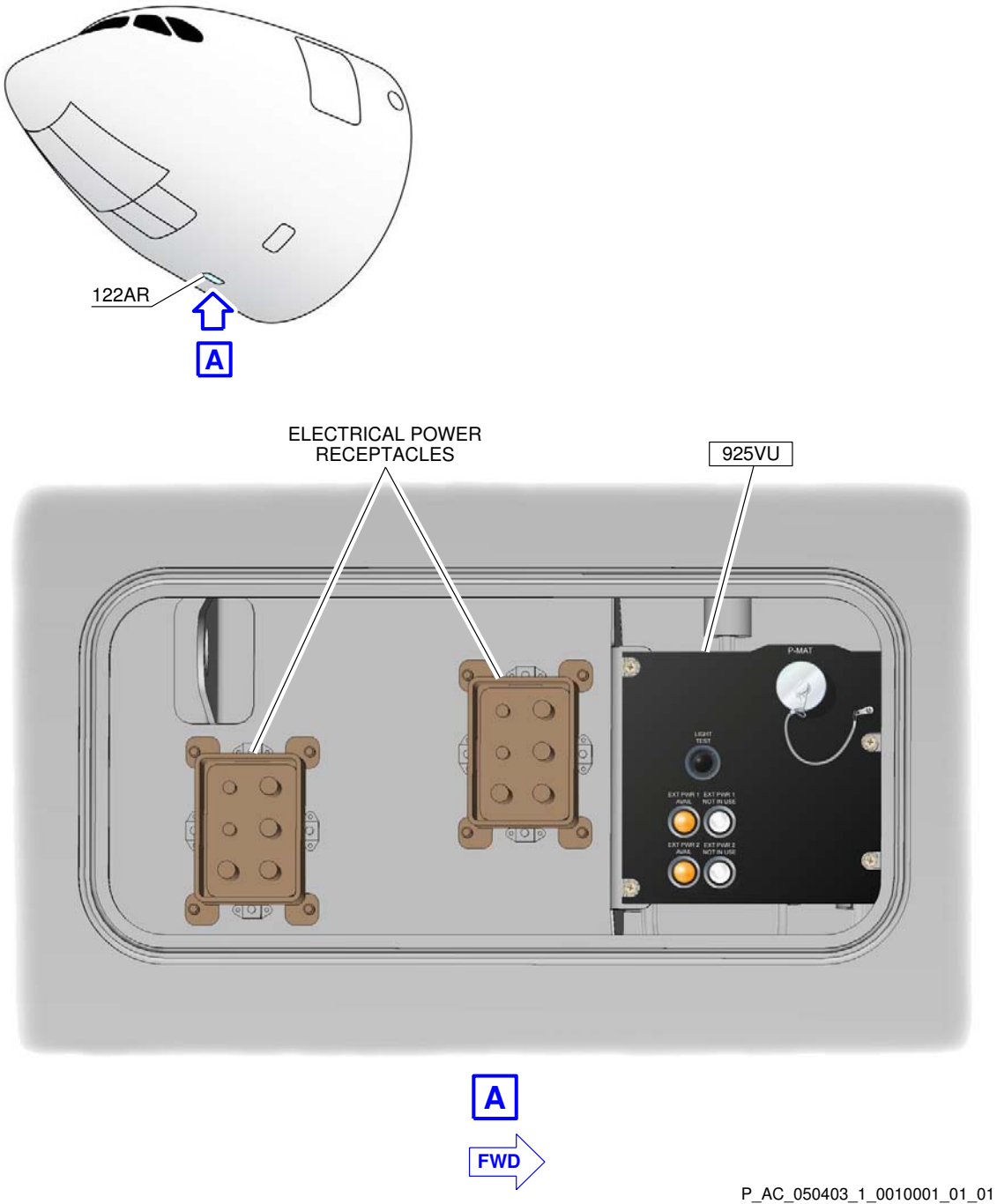
(1) Two times 90 kVA three phase, 115 V, 400 Hz, standard ISO 6858 and SAE ARP 5015A.

C. Electrical connectors for servicing :

(1) AC outlets : HUBBELL 5258

(2) DC outlets : HUBBELL 7472

**ON A/C A350-900



Electrical Service Panel
FIGURE-5-4-3-991-001-A01

5-4-5 Fuel System

**ON A/C A350-900

Fuel System

1. Refuel/Defuel Control Panel and Connectors

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		R SIDE	L SIDE	
Refuel/Defuel Control Panel Access Door: 197 KB	36.30 m (119.09 ft.)	on centerline		2.18 m (7.15 ft.)
Refuel/Defuel Connectors, Left (Optional) Access Door: 523 EB	32.57 m (106.86 ft.)		15.83 m (51.94 ft.)	5.50 m (18.04 ft.)
Refuel/Defuel Connectors, Right Access Door: 623 EB	32.57 m (106.86 ft.)	15.83 m (51.94 ft.)		5.50 m (18.04 ft.)

A. Refuel/defuel connectors:

(1) Two standard ISO 45, 2.5 in. on right wing

(2) Two standard ISO 45, 2.5 in. on left wing (optional).

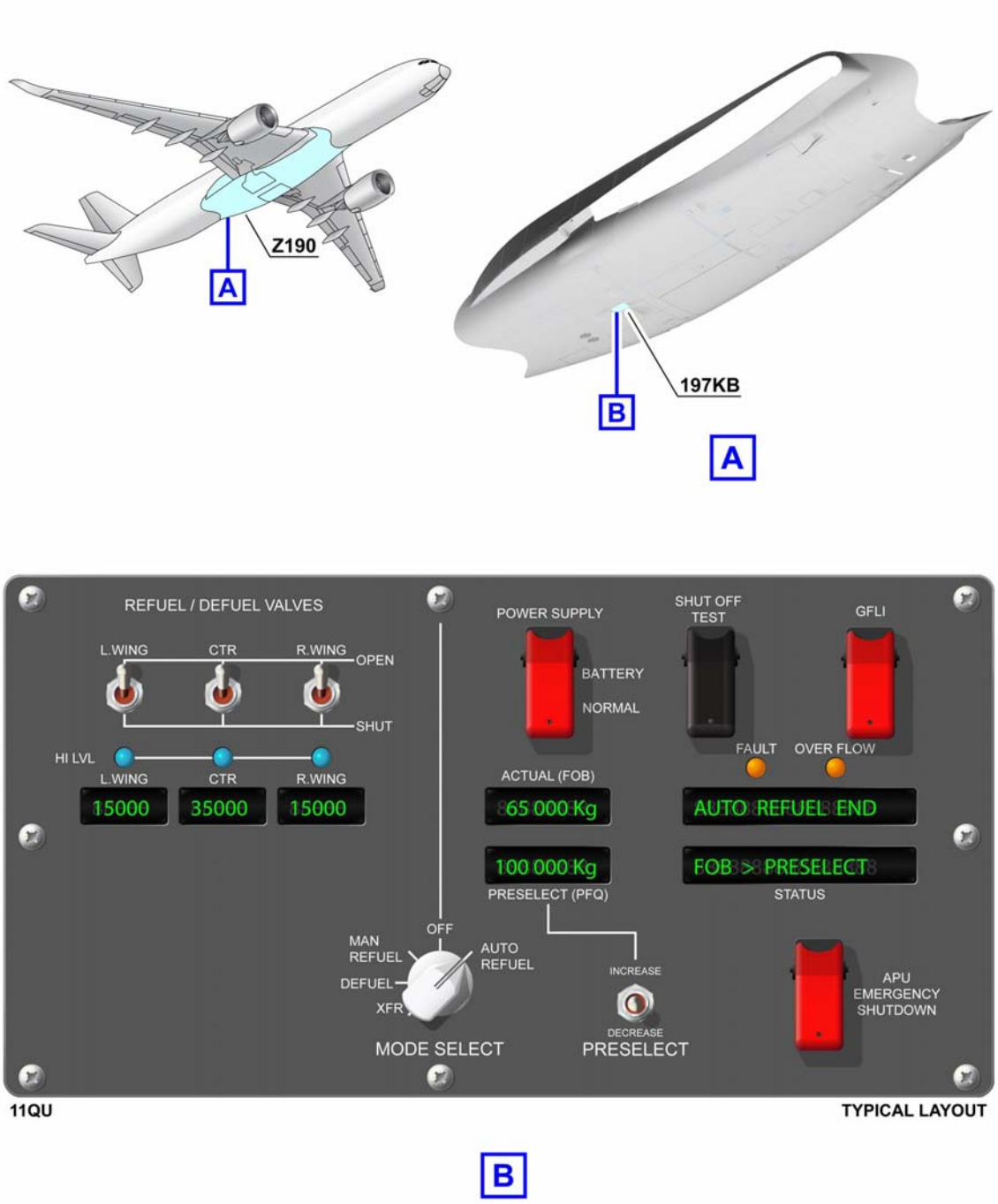
B. Refuel pressure:

(1) Max. pressure : 3.45 bar (50 psi).

2. Overpressure Protector and NACA Intake for Vent Tank

ACCESS	AFT OF NOSE	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Overpressure Protector	38.24 m (125.46 ft.)	22.33 m (73.26 ft.)	22.33 m (73.26 ft.)	6.13 m (20.11 ft.)
NACA Intake for Vent Tank	38.69 m (126.94 ft.)	23.07 m (75.69 ft.)	23.07 m (75.69 ft.)	6.19 m (20.31 ft.)

**ON A/C A350-900



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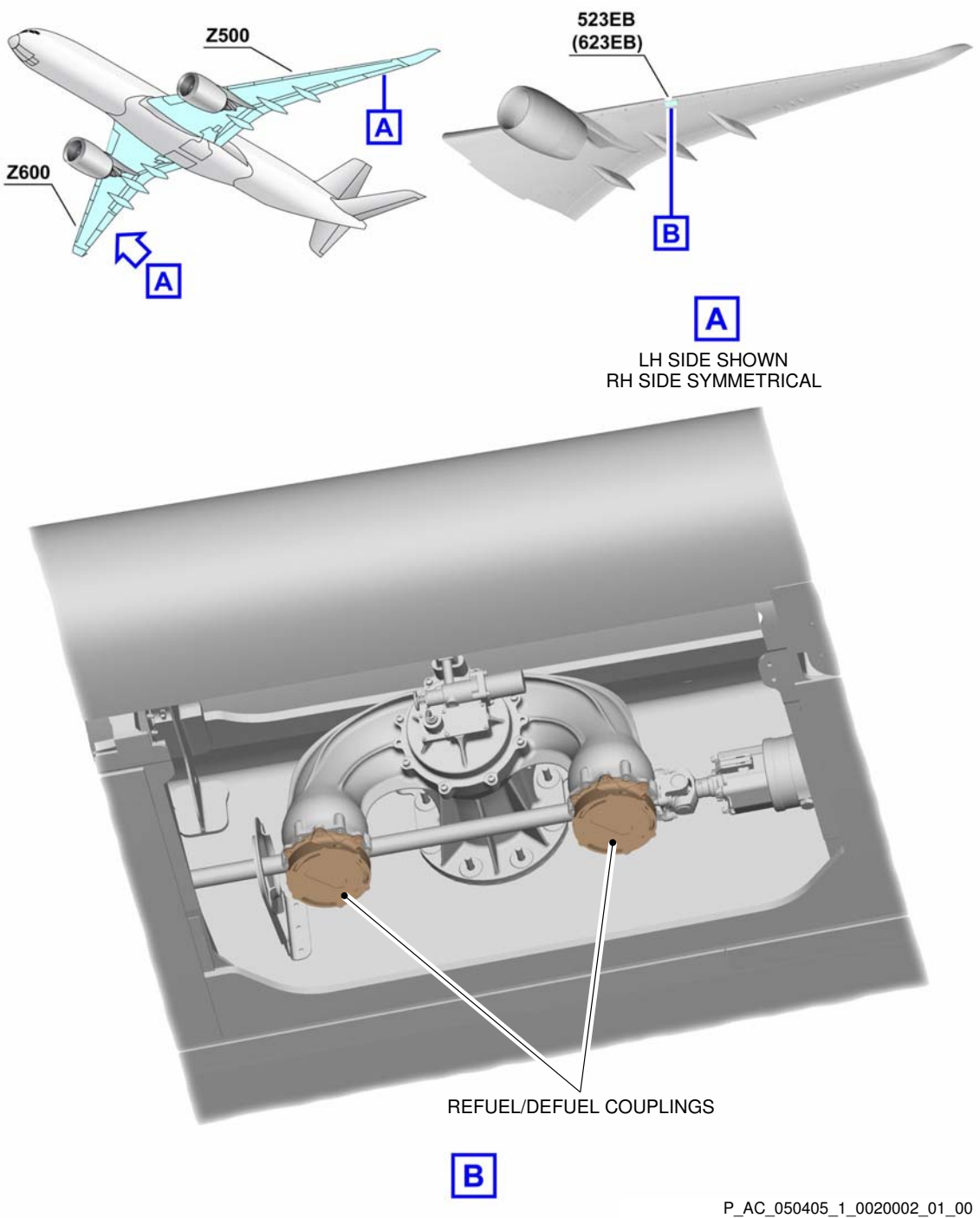
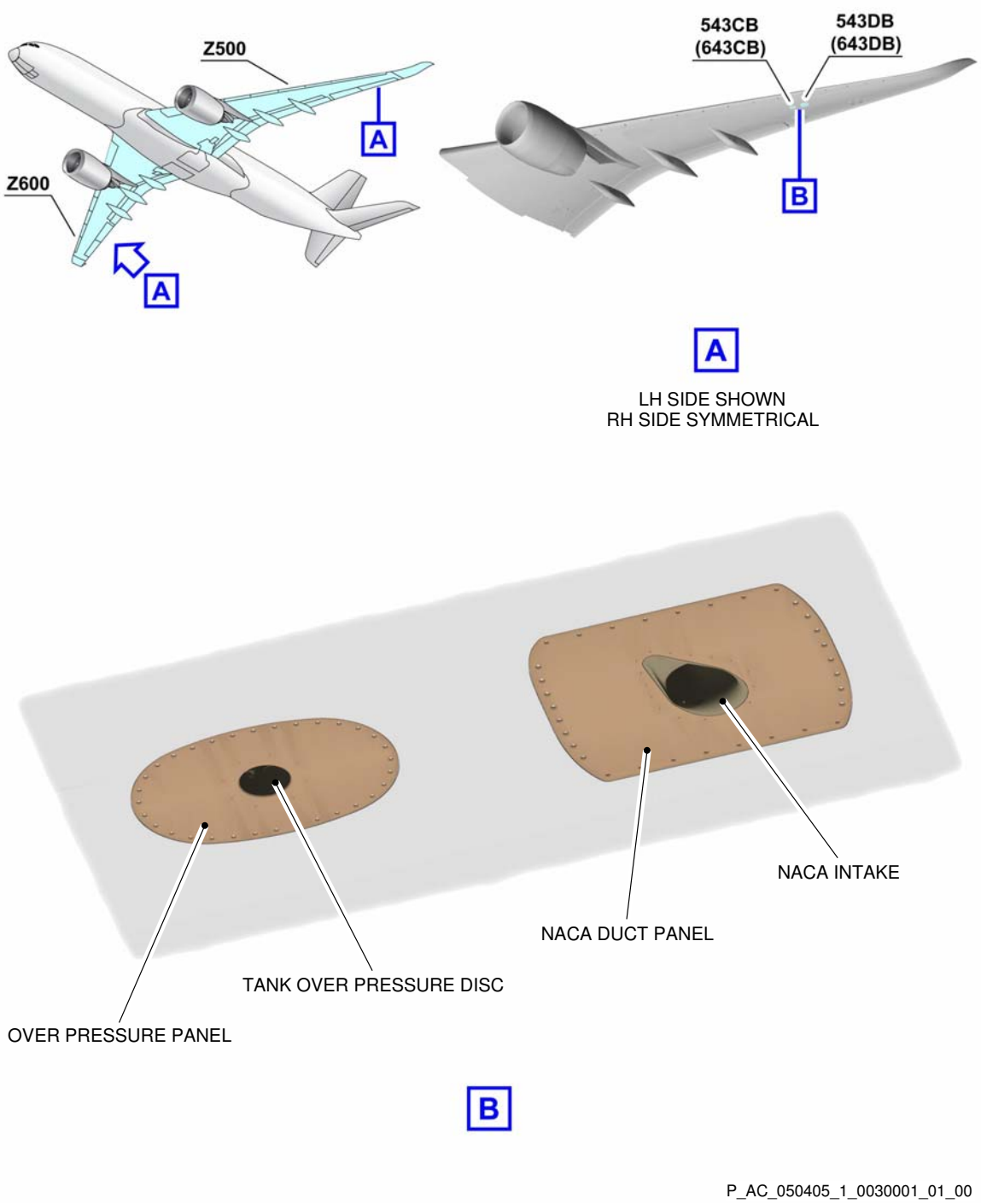
Refuel/Defuel Control Panel
FIGURE-5-4-5-991-001-A01

**ON A/C A350-900



Ground Service Connections
FIGURE-5-4-5-991-002-B01

**ON A/C A350-900



NACA and Overpressure Locations
FIGURE-5-4-5-991-003-A01

5-4-6 Pneumatic System

**ON A/C A350-900

Pneumatic System

1. Low Pressure Connectors

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		R SIDE	L SIDE	
Low Pressure Connector Access Door: 193 CB	23.58 m (77.36 ft.)	1.05 m (3.44 ft.)		2.59 m (8.5 ft.)
Low Pressure Connector Access Door: 194 CR	23.58 m (77.36 ft.)	1.87 m (6.14 ft.)		2.87 m (9.42 ft.)

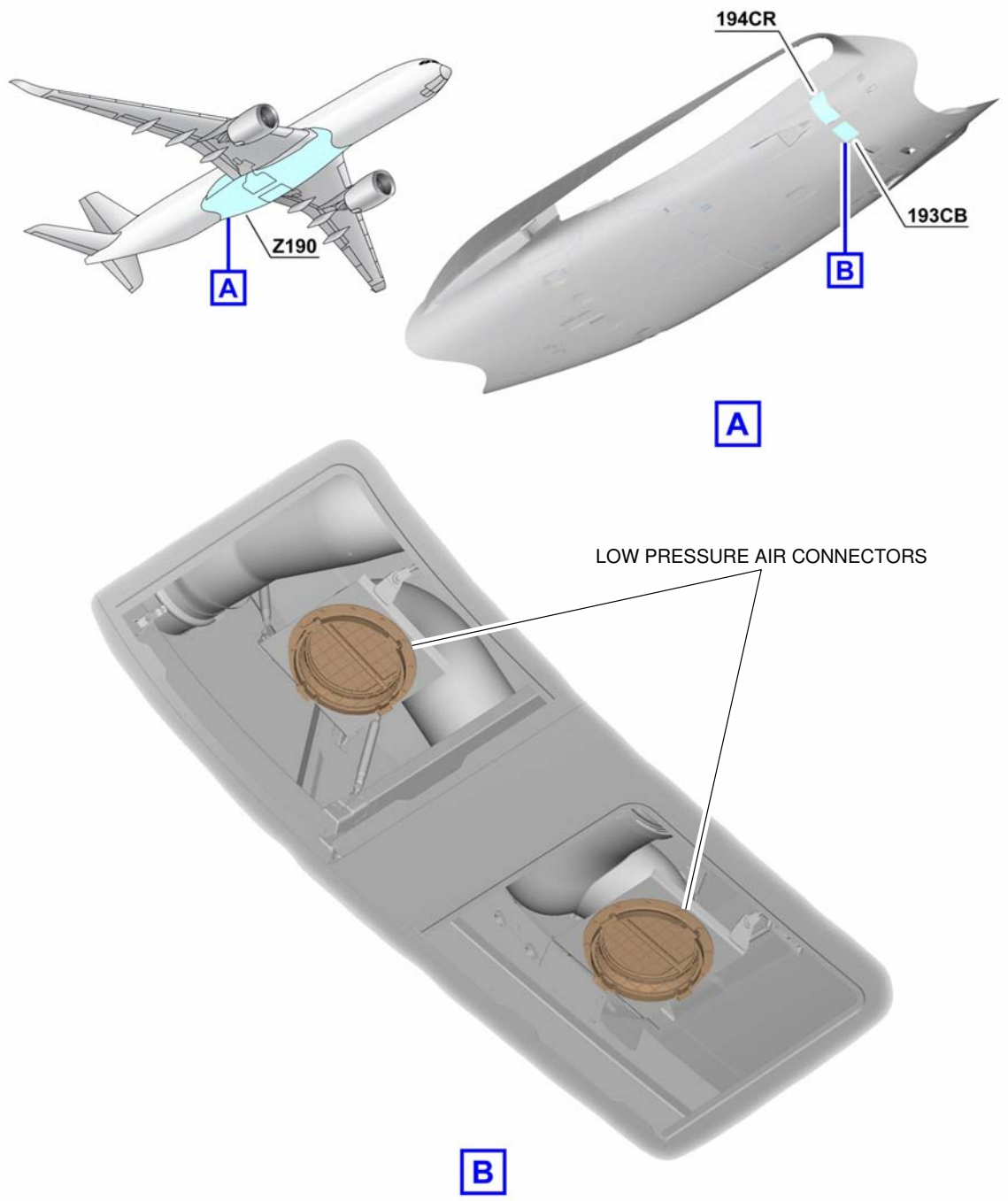
A. Connectors : Two standard ISO 1034, 8 in.

2. High Pressure Connectors

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		R SIDE	L SIDE	
High Pressure Connectors Access door: 193 KB	26.81 m (87.96 ft.)	on centerline		2.06 m (6.76 ft.)

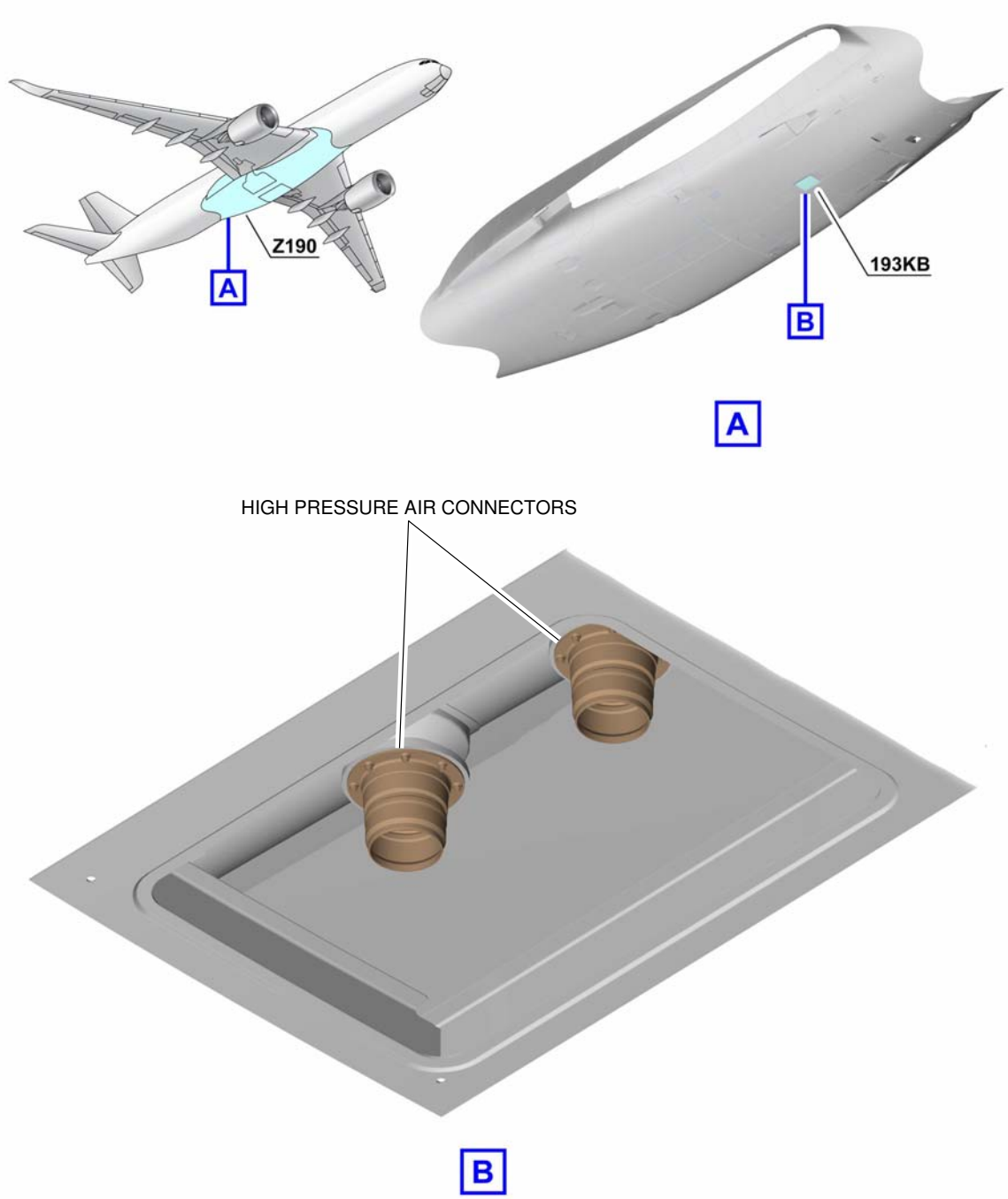
A. Connectors: Two standard ISO 2026, 3 in.

**ON A/C A350-900



Low Pressure Preconditioned Air
FIGURE-5-4-6-991-001-A01

**ON A/C A350-900



High Pressure Preconditioned Air
FIGURE-5-4-6-991-002-A01

5-4-7 Potable Water System

**ON A/C A350-900

Potable Water System

1. Potable Water System

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		R SIDE	L SIDE	
Potable Water Ground Service Access Door: 164 AR	50.2 m (164.7 ft.)	1.6 m (5.25 ft.)		3.3 m (10.83 ft.)

A. Connectors :

(1) Fill/drain nipple, ISO 17775, 3/4 in.

(2) Overflow, SAE AS5132-16

B. Capacity :

(1) Standard configuration – 2 tanks:1060 l (280.03 USgal)

(2) Optional – 2 tanks:1500 l (396.27 USgal)

C. Filling pressure :

(1) Max filling pressure:8.60 bar (124.73 psi)

5-4-8 Oil System

**ON A/C A350-900

Oil System

1. Engine Oil Servicing

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		R SIDE	L SIDE	
Oil Engine 1 Access Door: 415 BR	24.75 m (81.2 ft.)		8.6 m (28.22 ft.)	3.23 m (10.6 ft.)
Oil Engine 2 Access Door: 425 BR	24.68 m (80.97 ft.)	12.29 m (40.32 ft.)		3.23 m (10.6 ft.)

2. VFG Oil Servicing

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		R SIDE	L SIDE	
2 VFG on Engine 1 Fan Cowl: 415 AL	24.32 m (79.79 ft.)		11.02 m (36.15 ft.)	1.22 m (4.0 ft.)
2 VFG on Engine 2 Fan Cowl: 425 AL	24.34 m (79.86 ft.)	9.86 m (32.35 ft.)		1.22 m (4.0 ft.)

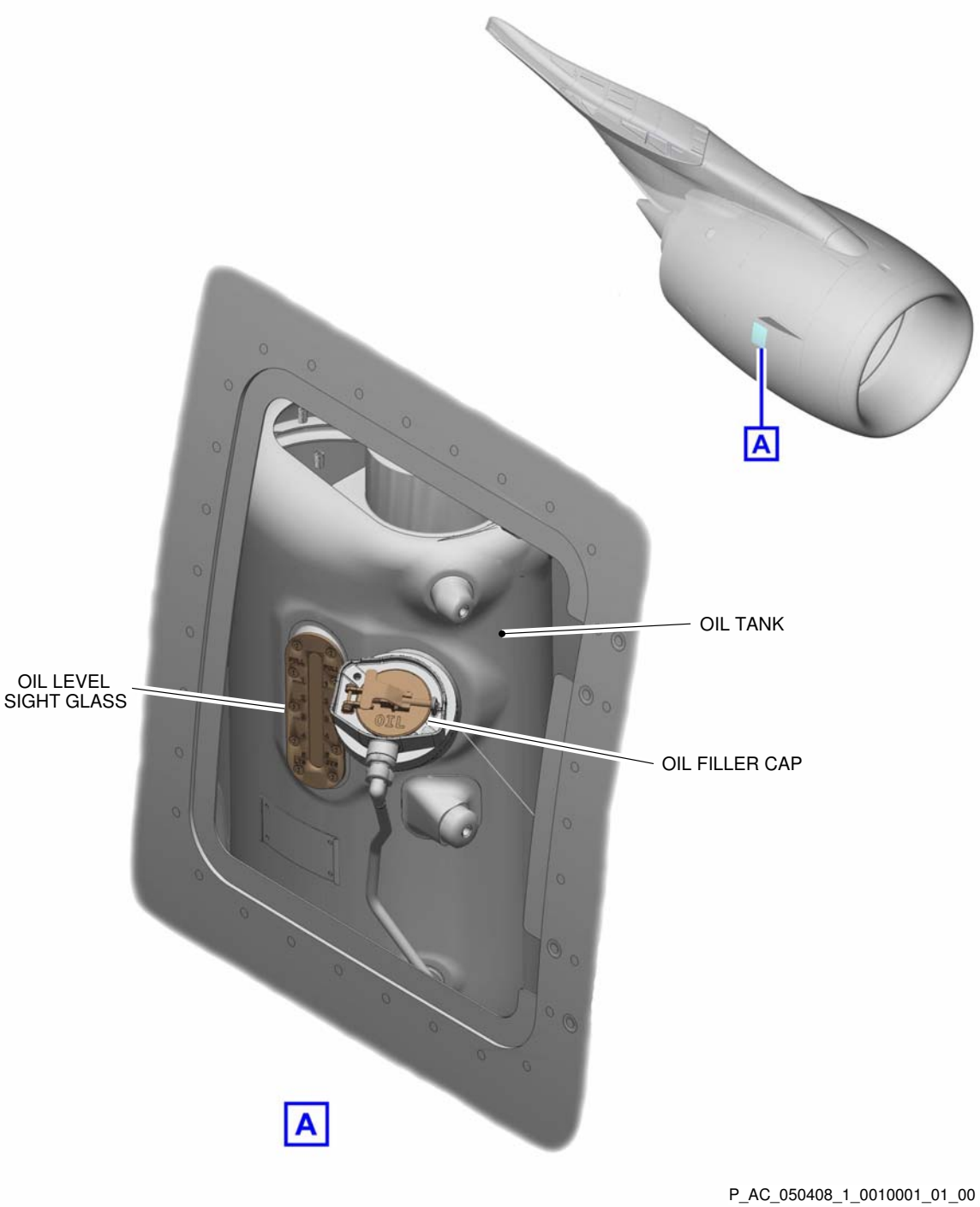
3. Starter Oil Servicing

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		R SIDE	L SIDE	
Starter Engine 1 Fan Cowl: 415 AL	24.6 m (80.71 ft.)		10.57 m (34.68 ft.)	1.08 m (3.54 ft.)
Starter Engine 2 Fan Cowl: 425 AL	24.6 m (80.71 ft.)	10.31 m (33.83 ft.)		1.08 m (3.54 ft.)

4. APU Oil Servicing

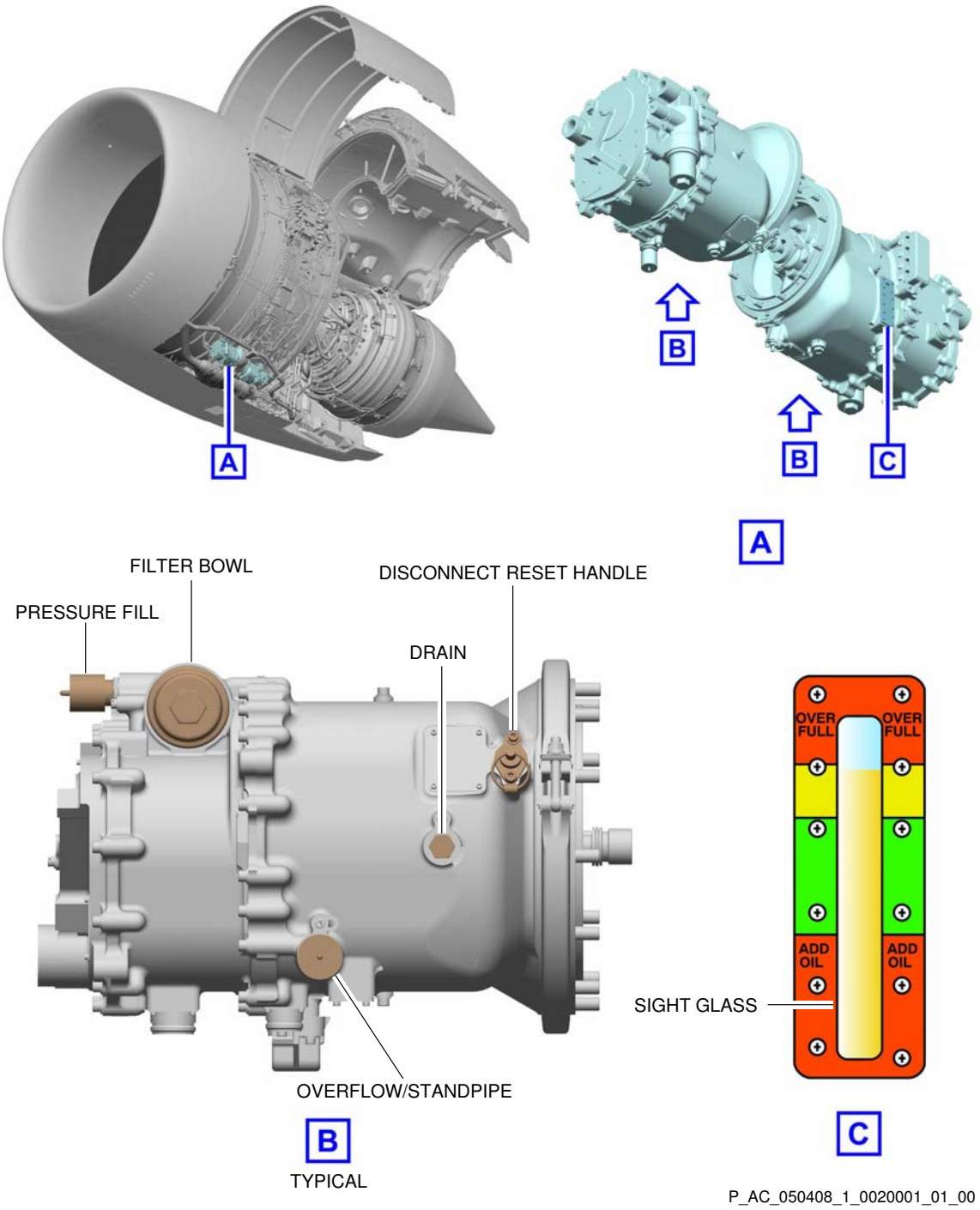
	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		R SIDE	L SIDE	
APU Access Door 316 BR	62.52 m (205.12 ft.)	0.48 m (1.57 ft.)		6.45 m (21.16 ft.)

**ON A/C A350-900



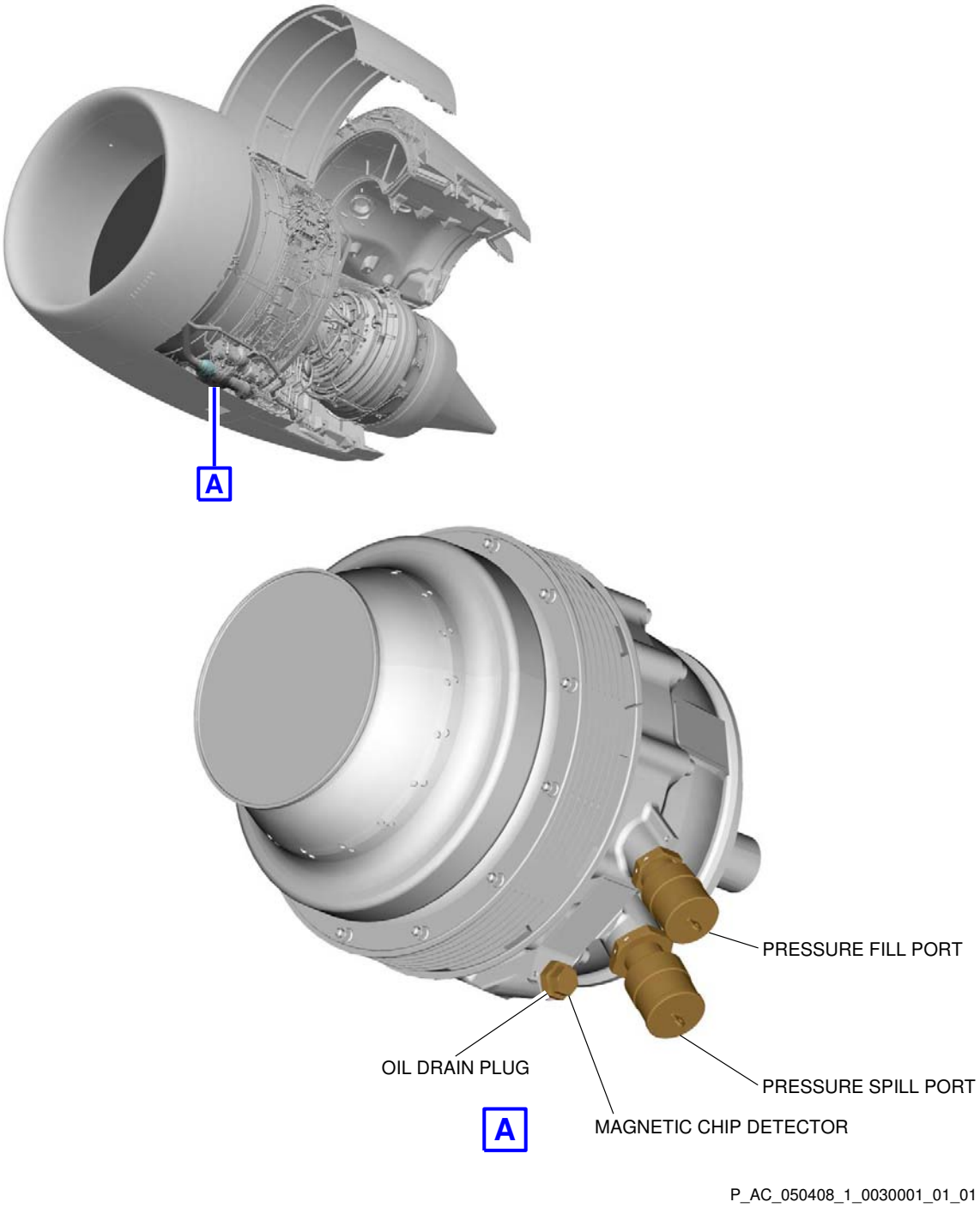
Engine Oil Servicing
FIGURE-5-4-8-991-001-A01

**ON A/C A350-900



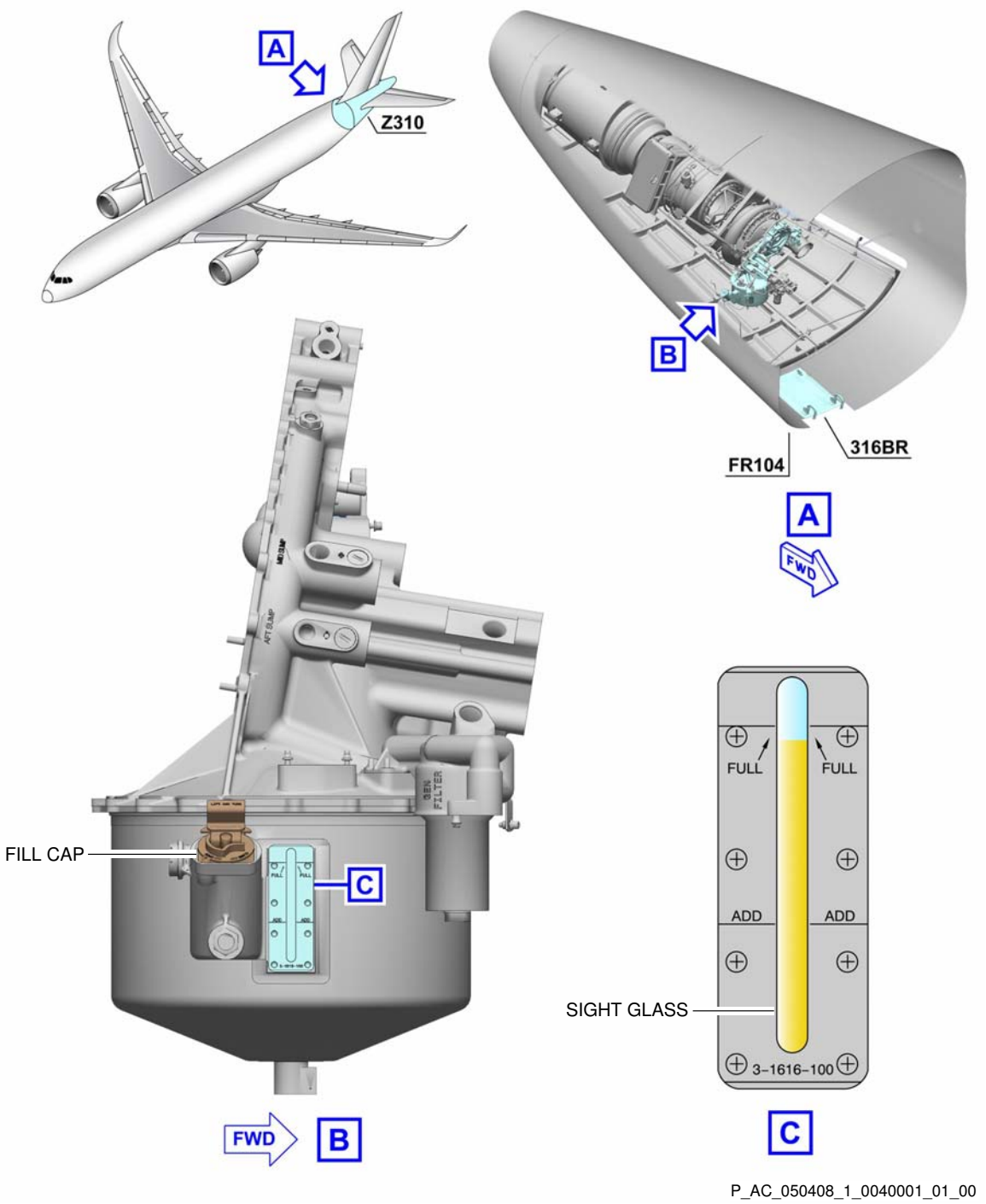
VFG Oil Servicing
FIGURE-5-4-8-991-002-A01

**ON A/C A350-900



Starter Oil Servicing
FIGURE-5-4-8-991-003-A01

**ON A/C A350-900



APU Oil Servicing
FIGURE-5-4-8-991-004-A01

5-4-9 Vacuum Toilet System

**ON A/C A350-900

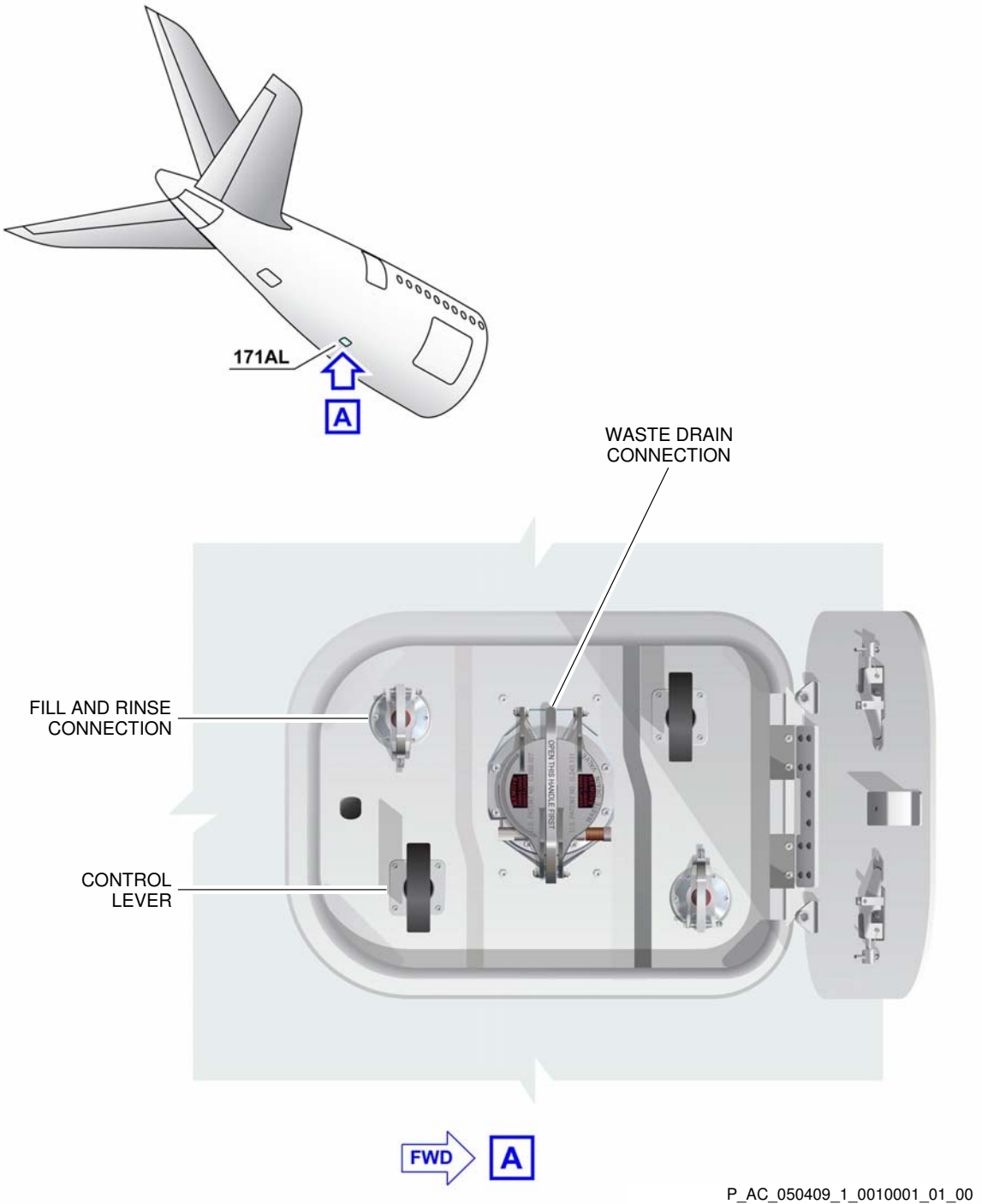
Vacuum Toilet System

1. Waste Water System

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		R SIDE	L SIDE	
Waste Water Ground Service Access Door: 171 AL	52.21 m (171.29 ft.)	on centerline		3.69 m (12.11 ft.)

A. Connectors :
   (1) Draining, ISO 17775, 4 in
   (2) Flushing and Filling, ISO 17775, 1 in
B. Capacity per tank (two tanks),595 l (157.19 USgal)
C. Waste tank – rinsing :
   (1) Operating pressure,3.45 bar (50.04 psi)
D. Waste precharge per tank (two tanks),23 l (6.08 USgal)

**ON A/C A350-900



Ground Service Panel
FIGURE-5-4-9-991-001-A01

5-6-0 Ground Pneumatic Power Requirements

**ON A/C A350-900

Ground Pneumatic Power Requirements

1. This document describes the required performance for the ground equipment to maintain cabin temperature below27 deg.C (80.6 deg.F)when boarding (Section 5.7 - steady state), and provides the time needed to cool down or heat up the aircraft cabin to the required temperature (Section 5.6 - dynamic cases with aircraft empty).

ABBREVIATION	DEFINITION
A/C	Aircraft
AHM	Aircraft Handling Manual
GC	Ground Connection
GSE	Ground Service Equipment
IFE	In-Flight Entertainment
OAT	Outside Air Temperature

   A. The air flow rates and temperature requirements for the GSE, provided in Sections 5.6 and 5.7, are given at A/C ground connection.

   B. The maximum air flow (Max Air Flow) is driven by pressure limitation at the ground connection.

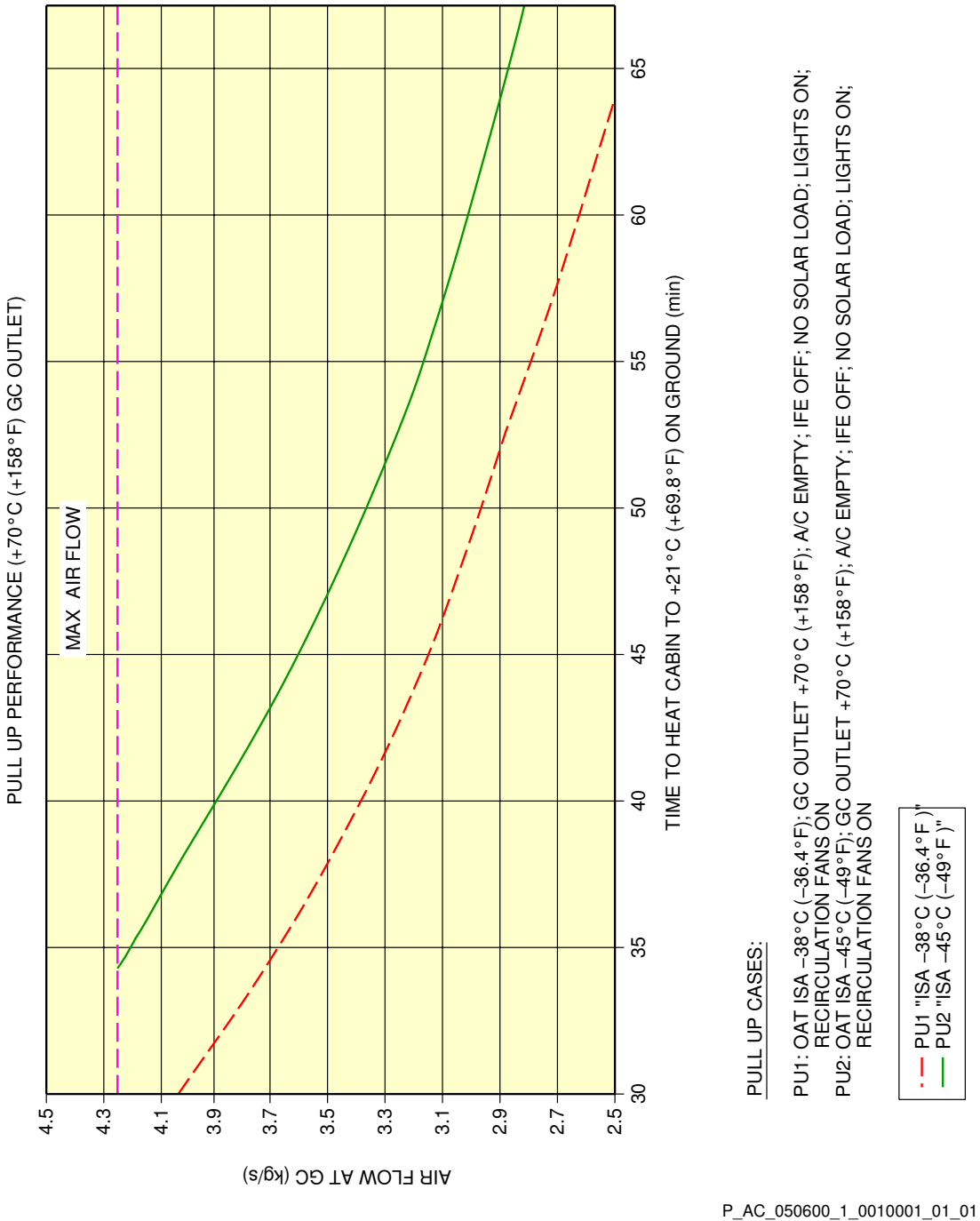
   C. For temperature below2 deg.C (35.6 deg.F), the ground equipment shall be compliant with the Airbus document "Subfreezing PCA Carts – Compliance Document for Suppliers" (contact Airbus to obtain this document) defining all the requirements to which Subfreezing Pre-Conditioning Air equipment needs to comply to allow its use on Airbus aircraft. These requirements come in addition to the functional specifications included in the IATA AHM997.

      NOTE : The cooling capacity of the equipment (kW) is only indicative and is not sufficient by itself to ensure the performance (outlet temperature and flow rate combinations are the requirements needed for ground power).
      An example of cooling capacity calculation is given in Section 5.7.

2. Ground Pneumatic Power Requirements - Heating
   This section provides the ground pneumatic power requirements for heating (pull up) the cabin, initially at OAT, up to21 deg.C (69.8 deg.F).

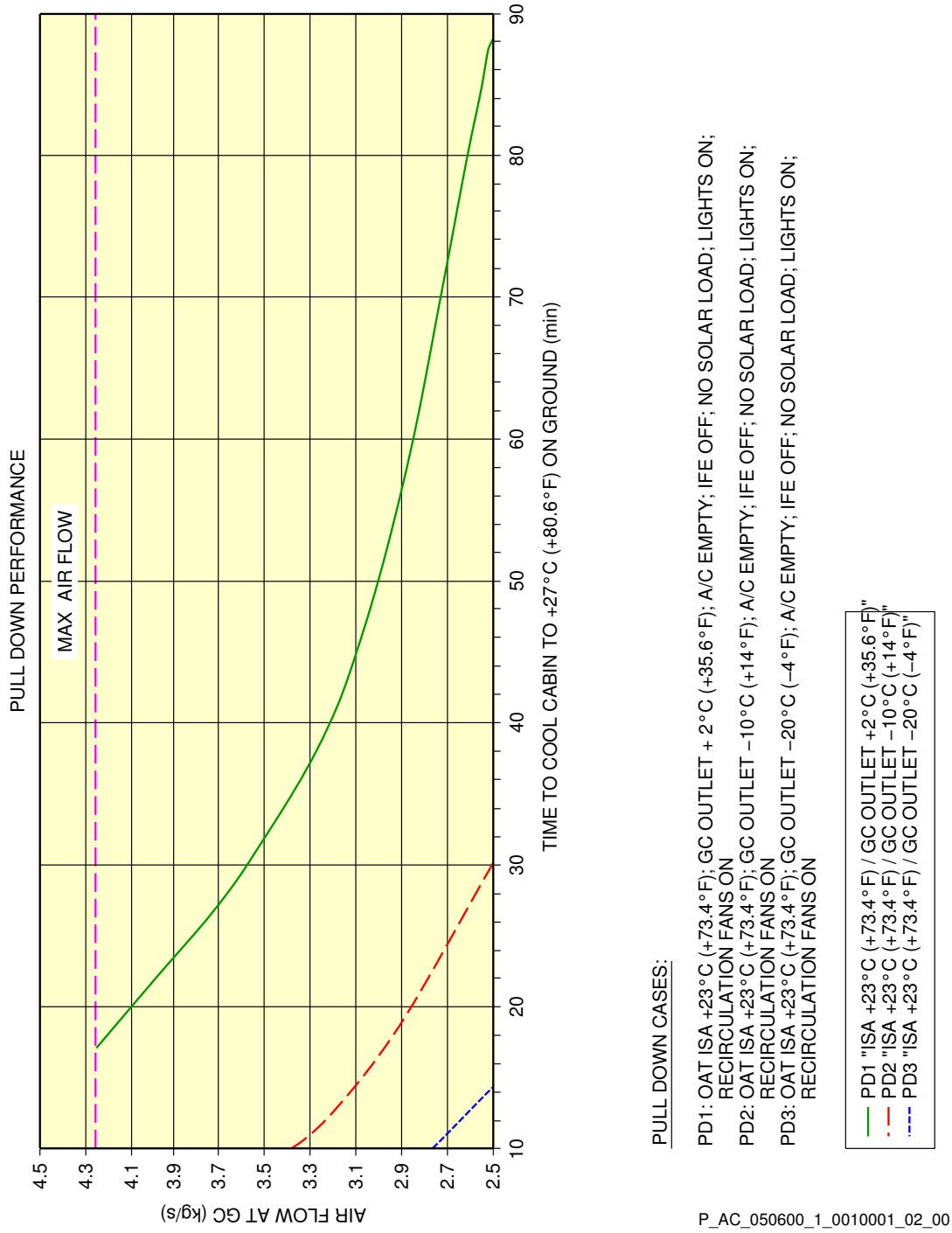
3. Ground Pneumatic Power Requirements - Cooling
   This section provides the ground pneumatic power requirements for cooling (pull down) the cabin, initially at OAT, down to27 deg.C (80.6 deg.F).

**ON A/C A350-900



Ground Pneumatic Power Requirements
Heating (Sheet 1 of 2)
FIGURE-5-6-0-991-001-A01

**ON A/C A350-900



Ground Pneumatic Power Requirements
Cooling (Sheet 2 of 2)
FIGURE-5-6-0-991-001-A01

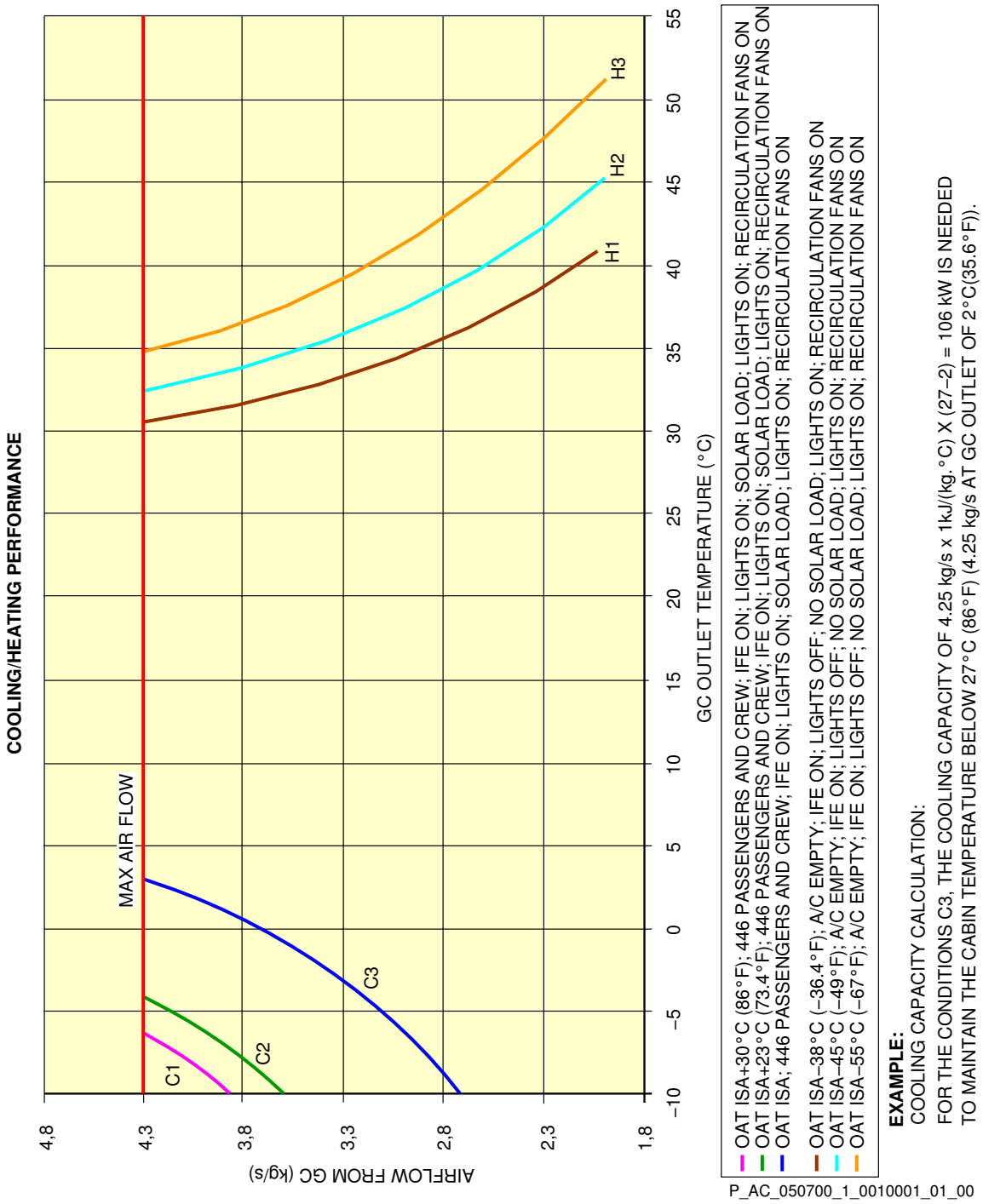
5-7-0 Preconditioned Airflow Requirements

**ON A/C A350-900

Preconditioned Airflow Requirements

1. This section provides the preconditioned air flow rate and temperature needed to maintain the cabin temperature below27 deg.C (80.6 deg.F).

**ON A/C A350-900



Preconditioned Airflow Requirements
FIGURE-5-7-0-991-001-A01

5-8-0 Ground Towing Requirements

**ON A/C A350-900

Ground Towing Requirements

1. This section provides information on aircraft towing.

   The A350 is designed with means for conventional or towbarless towing.

   It is possible to tow or push the aircraft, at maximum ramp weight with engines at zero or up to idle thrust, using a towbar attached to the NLG.
   One tow bar fitting is installed at the front of the leg (optional towing fitting for towing from the rear of the NLG available).

   The first part of this section shows the chart to determine the draw bar pull and tow tractor mass requirements as function of the following physical characteristics:
   - Aircraft weight,
   - Slope,
   - Number of engines at idle.

2. Towbar design guidelines

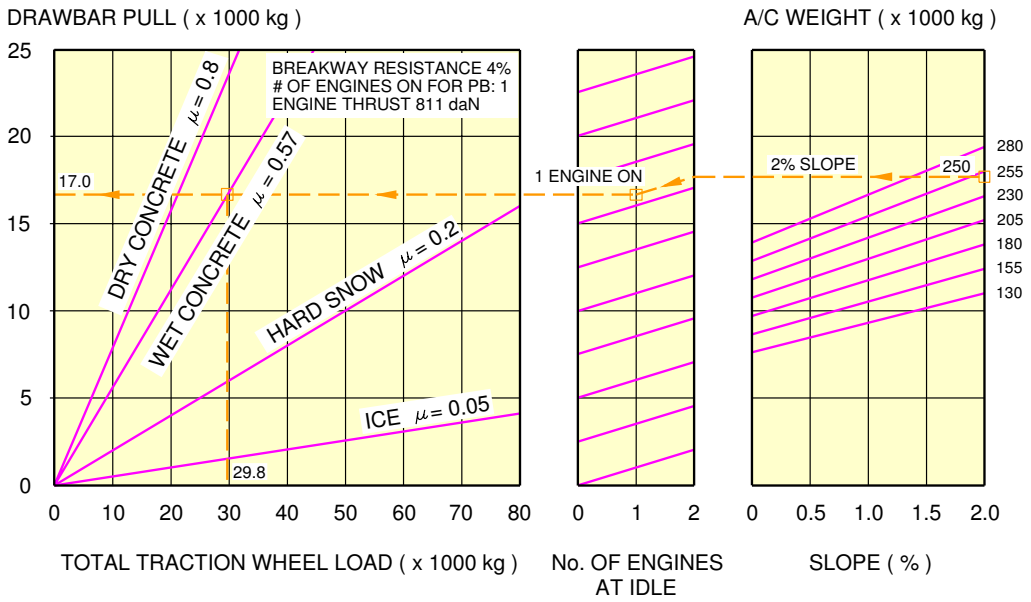
   The A350 towbar requirements are identical to the towbar requirements for the long range aircraft.
   - SAE AS 1614, "Main Line Aircraft Towbar Attach Fitting Interface",
   - SAE ARP1915, "Aircraft Towbar",
   - ISO 8267-1, "Aircraft - Towbar Attachment Fitting - Interface Requirements - Part 1: Main Line Aircraft",
   - ISO 9667, "Aircraft Ground Support Equipment - Towbars",
   - IATA Airport Handling Manual AHM 958, "Functional Specification for an Aircraft Towbar".

   A conventional type towbar is required which should be equipped with a damping system to protect the NLG against jerks and with towing shear pins :
   - A traction shear pin calibrated at 28 620 daN (64 340 lbf),
   - A torsion pin calibrated at 3 130 m.daN (27 7028 lbf.in).

   The towing head is designed according to SAE/AS 1614 (Aircraft Weight Category III)..

   There is a variety of shear pin arrangements and the values of the shear pins depend on them.

**ON A/C A350-900



EXAMPLE HOW TO DETERMINE THE MASS REQUIREMENT TO TOW A A350 AT 250 000 kg, AT 2% SLOPE, 1 ENGINE AT IDLE AND FOR WET TARMAC CONDITIONS:

- ON THE RIGHT HAND SIDE OF THE GRAPH, CHOOSE THE RELEVANT AIRCRAFT WEIGHT (250 000 kg),
- FROM THIS POINT DRAW A PARALLEL LINE TO THE REQUIRED SLOPE PERCENTAGE (2%),
- FROM THIS POINT OBTAINED DRAW A STRAIGHT HORIZONTAL LINE UNTIL No. OF ENGINES AT IDLE = 2,
- FROM THIS POINT DRAW A PARALLEL LINE TO THE REQUESTED NUMBER OF ENGINES (1),
- FROM THIS POINT DRAW A STRAIGHT HORIZONTAL LINE TO THE DRAWBAR PULL AXIS,
- THE Y–COORDINATE OBTAINED IS THE NECESSARY DRAWBAR PULL FOR THE TRACTOR (17 000 kg),
- SEARCH THE INTERSECTION WITH THE "WET CONCRETE" LINE.

THE OBTAINED X–COORDINATE IS THE RECOMMENDED MINIMUM TRACTOR WEIGHT (29 800 kg).

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Ground Towing Requirements
FIGURE-5-8-0-991-001-A01

5-9-0 De-icing and External cleaning

**ON A/C A350-900

De-icing and External cleaning

1. De-Icing and External Cleaning on Ground.
   The mobile equipment for aircraft de-icing and external cleaning must be capable of reaching heights up to approximately17 m (56 ft.).

2. De-Icing

AIRCRAFT TYPE	Wing Top Surface (Both Sides)	Wingtip Devices (Both Inside and (Outside Surfaces) (Both Sides)	HTP Top Surface (Both Sides)	VTP (Both Sides)
A350–900	354 m2 (3810 ft.2)	25 m2 (269 ft.2)	69 m2 (743 ft.2)	102 m2 (1098 ft.2)

AIRCRAFT TYPE	Fuselage Top Surface (Top Third - 120? Arc)	Nacelle and Pylon (Top Third - 120? Arc) (All Engines)	Total De-Iced Area
A350–900	357 m2 (3843 ft.2)	56 m2 (603 ft.2)	962 m2 (10355 ft.2)

NOTE : Dimensions are approximate

3. External Cleaning

AIRCRAFT TYPE	Wing Top Surface (Both Sides)	Wing Lower Surface (Including Flap Track Fairing) (Both Sides)	Wingtip Devices (Both Inside and (Outside Surfaces) (Both Sides)	HTP Top Surface (Both Sides)	HTP Lower Surface (Both Sides)
A350–900	354 m2 (3810 ft.2)	384 m2 (4133 ft.2)	25 m2 (269 ft.2)	69 m2 (743 ft.2)	69 m2 (743 ft.2)

AIRCRAFT TYPE	VTP (Both Sides)	Fuselage and Belly Fairing	Nacelle and Pylon (All Engines)	Total Cleaned Area
A350–900	102 m2 (1098 ft.2)	1073 m2 (11550 ft.2)	166 m2 (1787 ft.2)	2242 m2 (24133 ft.2)

NOTE : Dimensions are approximate

PAVEMENT DATA

7-1-0 General Information

**ON A/C A350-900

General Information

1. A brief description of the pavement charts that follow will help in airport planning.

To aid in the interpolation between the discrete values shown, each aircraft configuration is shown with a minimum range of five loads on the MLG.

All curves on the charts represent data at a constant specified tire pressure with:
- The aircraft loaded to the maximum ramp weight,
- The CG at its maximum permissible aft position.

Pavement requirements for commercial aircraft are derived from the static analysis of loads imposed on the MLG struts.

Landing Gear Footprint.
Section 7-2-0 , presents basic data on the landing gear footprint configuration, maximum ramp weights and tire sizes and pressures.

Maximum Pavement Loads.
Section 7-3-0, shows maximum vertical and horizontal pavement loads for certain critical conditions at the tire-ground interfaces.

Landing Gear Loading on Pavement.
Section 7-4-0 contains charts to find these loads throughout the stability limits of the aircraft at rest on the pavement.
These MLG loads are used as the point of entry to the pavement design charts which follow, interpolating load values where necessary.

Flexible Pavement Requirements - US Army Corps of Engineers Design Method.
Section 7-5-0 uses procedures in Instruction Report No S-77-1 "Procedures for Development of CBR Design Curves", dated June 1977 and as modified according to the methods described in ICAO Aerodrome Design Manual, Part 3.Pavements, 2nd Edition, 1983, Section 1.1 (The ACN-PCN Method), and utilizing the alpha factors approved by ICAO in October 2007. The report was prepared by the U.S. Army Corps Engineers Waterways Experiment Station, Soils and Pavement Laboratory, Vicksburg, Mississippi".
The line showing 10 000 coverages is used to calculate Aircraft Classification Number (ACN).

Flexible Pavement Requirements - LCN Conversion Method.

The flexible pavement charts in Section 7-6-0 show LCN against Equivalent Single Wheel Load (ESWL), and ESWL against pavement thickness.
All LCN curves shown in 'Flexible Pavement Requirements' were developed from a computer program based on data in International Civil Aviation Organisation (ICAO) document 7920-AN/865/2, Aerodrome manual, Part 2, "Aerodrome Physical Characteristics", Second Edition, 1965.

Rigid Pavement Requirements - PCA (Portland Cement Association) Design Method.
Section 7-7-0 gives the rigid pavement design curves that have been prepared with the use of the Westergaard Equation.
This is in general accordance with the procedures outlined in the Portland Cement Association publications, "Design of Concrete Airport Pavement", 1973 and "Computer Program for Airport Pavement Design", (Program PDILB), 1967 both by Robert G. Packard.

Rigid Pavement Requirements - LCN Conversion.
Section 7-8-0 gives the rigid pavement requirements.
All LCN curves shown in 'Rigid Pavement Requirements - Radius of Relative Stiffness (other values of E and μ) - were developed from a computer program based on data in International Civil Aviation Organisation (ICAO) document 7920-AN/865/2, Aerodrome manual, Part 2, "Aerodrome Physical Characteristics", Second Edition, 1965.
The rigid pavement charts in Section 7-8-0 show LCN against ESWL, and ESWL against radius of relative stiffness.

Rigid Pavement Requirements - LCN Conversion - Radius of Relative Stiffness.
Section 7-8-1 allow to find the radius of relative stiffness based on other values of E and μ.

Rigid Pavement Requirements - LCN Conversion - Radius of Relative Stiffness (other values of E and μ).
The rigid pavement charts show LCN in Section 7-8-2 against ESWL and ESWL against radius of relative stiffness affected by the other values of E and μ.

ACN/PCN Reporting System.
Section 7-9 provides ACN data prepared according to the ACN/PCN system as referenced in ICAO Annex 14, "Aerodromes", Volume 1 "Aerodrome Design and Operations." Fourth Edition July 2004, incorporating Amendments 1 to 6.
Fourth Edition July 2004, incorporating Amendments 1 to 6. The ACN/PCN system provides a standardized international aircraft / pavement rating system replacing the various S, T, TT, LCN, AUW, ISWL, etc., rating systems used throughout the world.
ACN is the Aircraft Classification Number and PCN is the corresponding Pavement Classification Number.
An aircraft having an ACN equal to or less than the PCN can operate without restriction on the pavement.
Numerically the ACN is two times the derived single wheel load expressed in thousands of kilograms.

The derived single wheel load is defined as the load on a single tire inflated to 1.25 Mpa (181 psi) that would have the same pavement requirements as the aircraft.
Computationally the ACN/PCN system uses PCA program PDILB for rigid pavements and S-77-1 for flexible pavements to calculate ACN values.
The Airport Authority must decide on the method of pavement analysis and the results of their evaluation shown as follows:

PCN			
PAVEMENT TYPE	SUBGRADE CATEGORY	TIRE PRESSURE CATEGORY	EVALUATION METHOD
R - Rigid	A - High	W - No Limit	T - Technical
F - Flexible	B - Medium	X - To 1.5 Mpa (217 psi)	U - Using Aircraft
	C - Low	Y - To 1 Mpa (145 psi)	
	D - Ultra Low	Z - To 0.5 Mpa (73 psi)	

Section 7-9-0 shows the aircraft ACN values for flexible pavements.
The four subgrade categories are:
- A . High Strength CBR 15
- B . Medium Strength CBR 10
- C . Low Strength CBR 6
- D . Ultra Low Strength CBR 3

Section 7-9-1 shows the aircraft ACN values for rigid pavements.
The four subgrade categories are:
- A . High Strength Subgrade k = 150 MN/m3 (550 pci)
- B . Medium Strength Subgrade k = 80 MN/m3 (300 pci)
- C . Low Strength Subgrade k = 40 MN/m3 (150 pci)
- D . Ultra Low Strength Subgrade k = 20 MN/m3 (75 pci)

7-2-0 Landing Gear Footprint

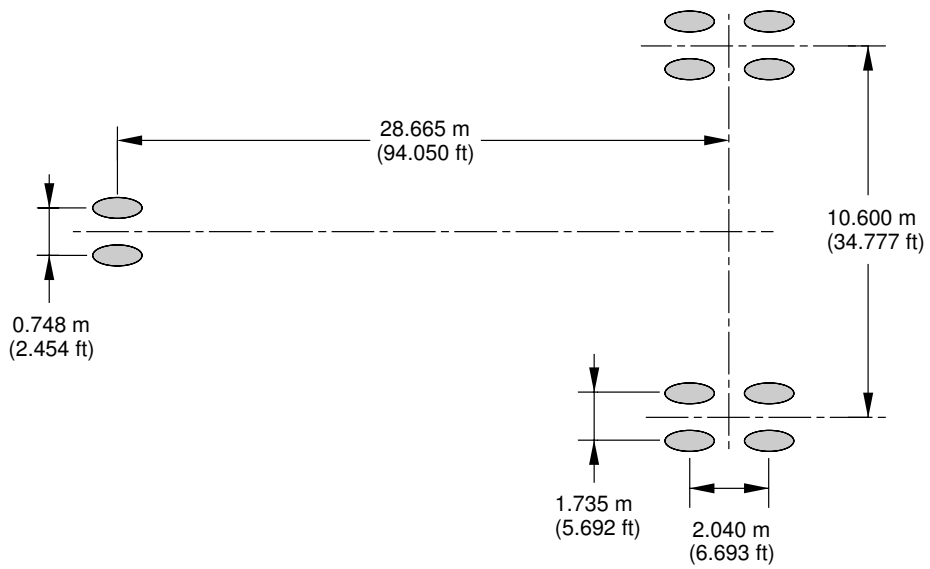
**ON A/C A350-900

Landing Gear Footprint

1. This section gives data about the landing gear footprint in relation with the aircraft MRW and tire sizes and pressures.

**ON A/C A350-900

MAXIMUM RAMP WEIGHT	268 900 kg (592 825 lb)
PERCENTAGE OF WEIGHT ON MAIN GEAR GROUP	SEE SECTION 7–4–0
NOSE GEAR TIRE SIZE	1050x395R16 28PR
NOSE GEAR TIRE PRESSURE	12.2 bar (177 psi)
MAIN GEAR TIRE SIZE	1400x530R23 42PR
MAIN GEAR TIRE PRESSURE	16.6 bar (241 psi)



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Landing Gear Footprint
FIGURE-7-2-0-991-001-A01

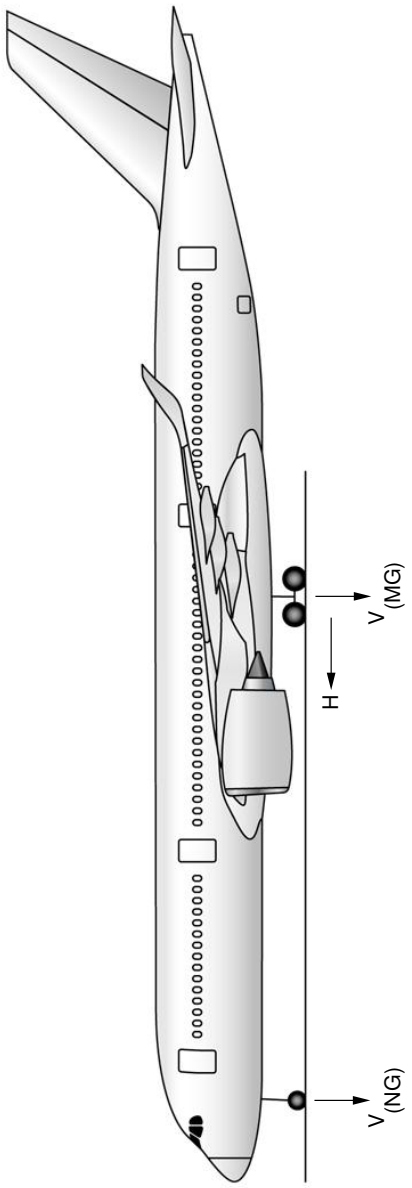
7-3-0 Maximum Pavement Loads

**ON A/C A350-900

Maximum Pavement Loads

1. This section shows maximum vertical and horizontal pavement loads for some critical conditions at the tire-ground interfaces.

**ON A/C A350-900



1	2		3		4		5		6			
			VNG				VMG (PER STRUT)		H (PER STRUT)			
MODEL	MAXIMUM RAMP WEIGHT		STATIC LOAD AT MOST FWD C.G. (1)		STATIC BRAKING @ 10 ft/s² DECELERATION		STATIC LOAD AT MAX AFT C.G. (2)		STEADY BRAKING @ 10 ft/s² DECELERATION		AT INSTANTANEOUS BRAKING COEFFICIENT = 0.8	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
–900	592 825	268 900	51 575	23 400	85 500	38 780	277 700	125 960	92 125	41 790	222 150	100 770

$V_{(NG)}$ MAXIMUM VERTICAL NOSE GEAR GROUND LOAD AT MOST FORWARD CG
$V_{(MG)}$ MAXIMUM VERTICAL MAIN GEAR GROUND LOAD AT MOST AFT CG
H MAXIMUM HORIZONTAL GROUND LOAD FROM BRAKING
(1) MRW = 268 900 kg FWD CG = 25.5 % MAC AT A/C WEIGHT=268 900 kg
(2) MRW = 268 900 kg AFT CG = 33 % MAC AT A/C WEIGHT=268 900 kg

NOTE: ALL LOADS CALCULATED USING AIRCRAFT MAXIMUM RAMP WEIGHT

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Maximum Pavement Loads
FIGURE-7-3-0-991-001-A01

7-4-0 Landing Gear Loading on Pavement

**ON A/C A350-900

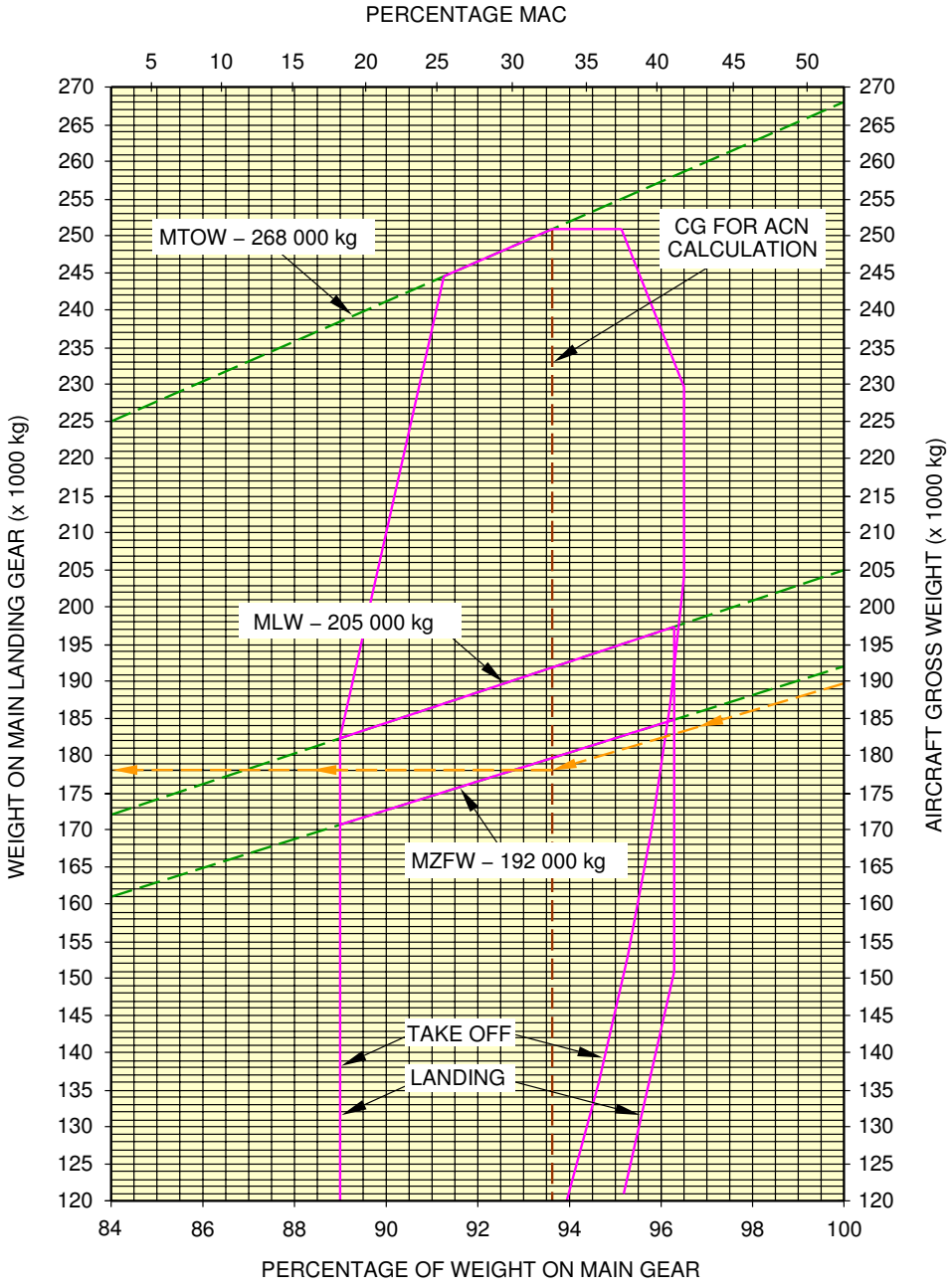
Landing Gear Loading on Pavement

1. This section gives data about the landing gear loading on pavement.

   Example, see FIGURE 7-4-0-991-001-A, calculation of the total weight on the MLG for:
   - An aircraft with a MTOW of268000 kg (590839 lb)
   - The aircraft gross weight is190000 kg (418879 lb)
   - A percentage of weight on the MLG of 93.68 %.

   The total weight on the MLG group is178000 kg (392423 lb).

**ON A/C A350-900



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Landing Gear Loading on Pavement
MTOW 268 000 kg
FIGURE-7-4-0-991-001-A01

7-5-0 Flexible Pavement Requirements - US Army Corps of Engineers Design

**ON A/C A350-900

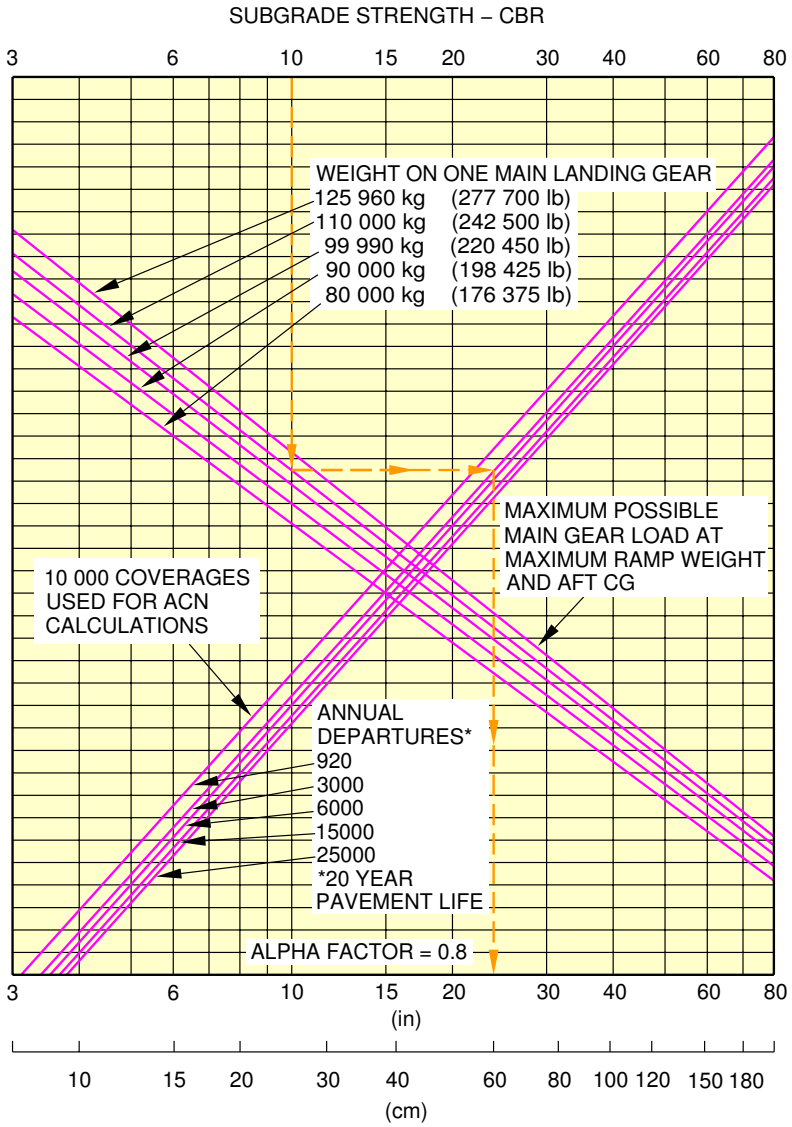
Flexible Pavement Requirements - US Army Corps of Engineers

1. This section gives data about the flexible pavement requirements.
   They are calculated with the US Army Corps of Engineers Design Method.
   To find a flexible pavement thickness, you must know the Subgrade Strength (CBR), the annual departure level and the weight on one MLG.
   The line that shows 10 000 coverages is used to calculate the Aircraft Classification Number (ACN).
   The procedure that follows is used to develop flexible pavement design curves:
   - With the scale for pavement thickness at the bottom and the scale for CBR at the top, a random line is made to show 10 000 coverages,
   - A plot is then made of the incremental values of the weight on the MLG,
   - Annual departure lines are made based on the load lines of the weight on the MLG that is shown on the graph.

   Example, see FIGURE 7-5-0-991-001-A, calculation of the thickness of the flexible pavement for:
   - An aircraft with a MTOW of268000 kg (590839 lb),
   - A CBR value of 10,
   - An annual departure level of 3 000,
   - The load on one MLG of110000 kg (242509 lb).

   The required flexible pavement thickness is593 mm (23 in.).

**ON A/C A350-900



FLEXIBLE PAVEMENT THICKNESS

1400x530R23 42PR TIRES
TIRE PRESSURE CONSTANT AT 16.6 bar (241 psi)

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Flexible Pavement Requirements
MTOW 268 000 kg
FIGURE-7-5-0-991-001-A01

7-6-0 Flexible Pavement Requirements - LCN Conversion

**ON A/C A350-900

Flexible Pavement Requirements - LCN Conversion

1. This section gives data about the flexible pavement requirements for Load Classification Number (LCN) conversion.
They are calculated with the LCN conversion method.
To find the aircraft weight that a flexible pavement can support, you must know the LCN of the pavement and the thickness.
Example, see FIGURE 7-6-0-991-001-A, calculation of the thickness of the flexible pavement for:
- An aircraft with a MTOW of268000 kg (590839 lb)
- The flexible pavement thickness is1397 mm (55 in.)with a related LCN of 154.

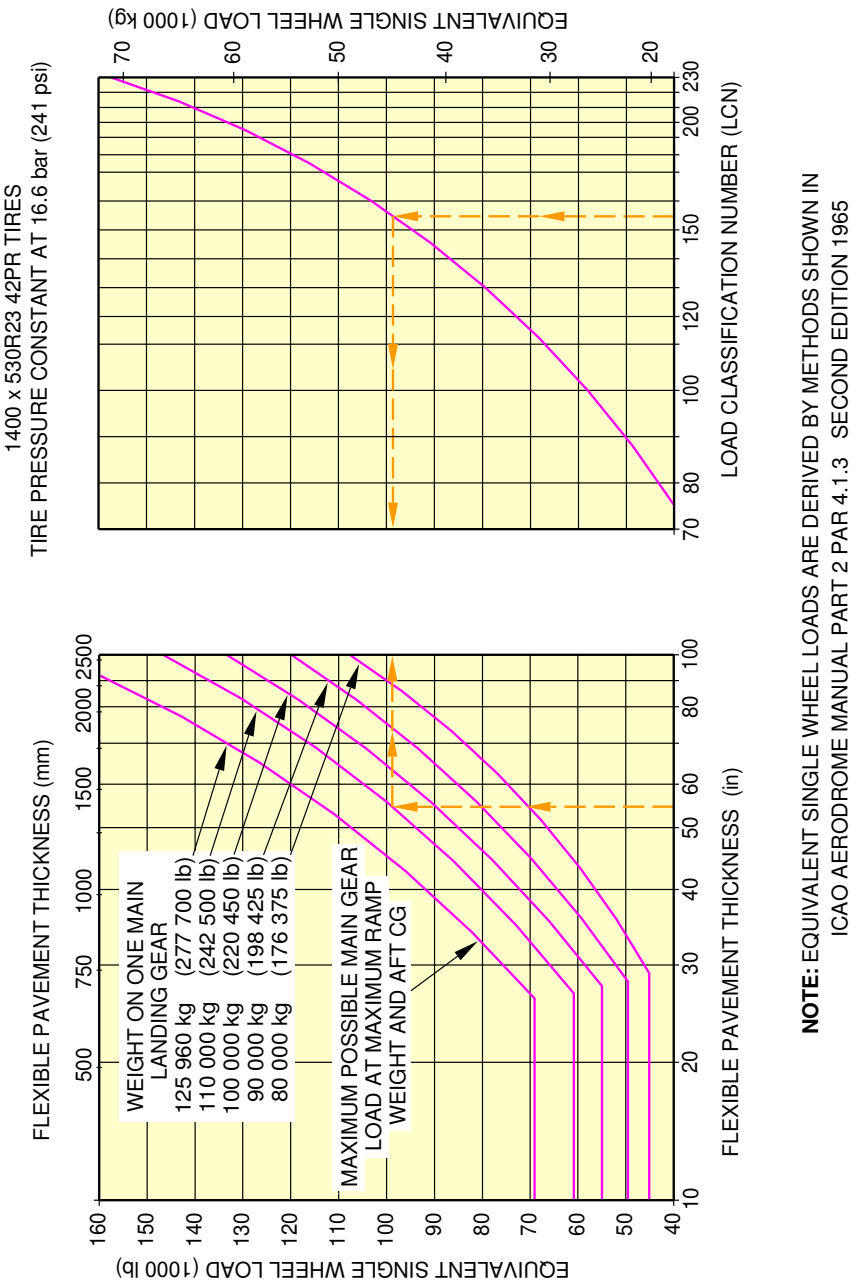
The weight on one MLG is110000 kg (242509 lb).

The following table provides LCN data in tabular format similar to the one used by ICAO in the "Aerodrome Design Manual Part 3, Pavements - Edition 1977".
In order to use the system accurately you should know the total pavement thickness for flexible pavement.
However, the pavement thickness for a particular runway are not frequently published in the standard airport information sources (Jeppesen, AERAD, DOD, etc.).
Therefore it is common practice to use a standard thickness (20 inches) when determining the LCN and the ESWL of the aircraft.

If the LCN for an intermediate weight between MRW and the empty weight of the aircraft is required or if the real thickness is known, refer to charts in FIGURE 7-6-0-991-001-A.

AIRCRAFT TYPE	WEIGHT	LOAD ON ONE MLG LEG (%)	TIRE PRESSURE (Mpa)	FLEXIBLE PAVEMENT		
				ESWL		LCN
				x 1000 kg	x 1000 lb	
				h = 510 mm (20 in.)		
A350–900	268900 kg (592824 lb)	46.8	1.66	31	69.4	116
A350–900	142000 kg (313057 lb)	46.8		17	36.7	68

**ON A/C A350-900



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Flexible Pavement Requirements - LCN
MTOW 268 000 kg
FIGURE-7-6-0-991-001-A01

7-7-0 Rigid Pavement Requirements - Portland Cement Association Design Method

**ON A/C A350-900

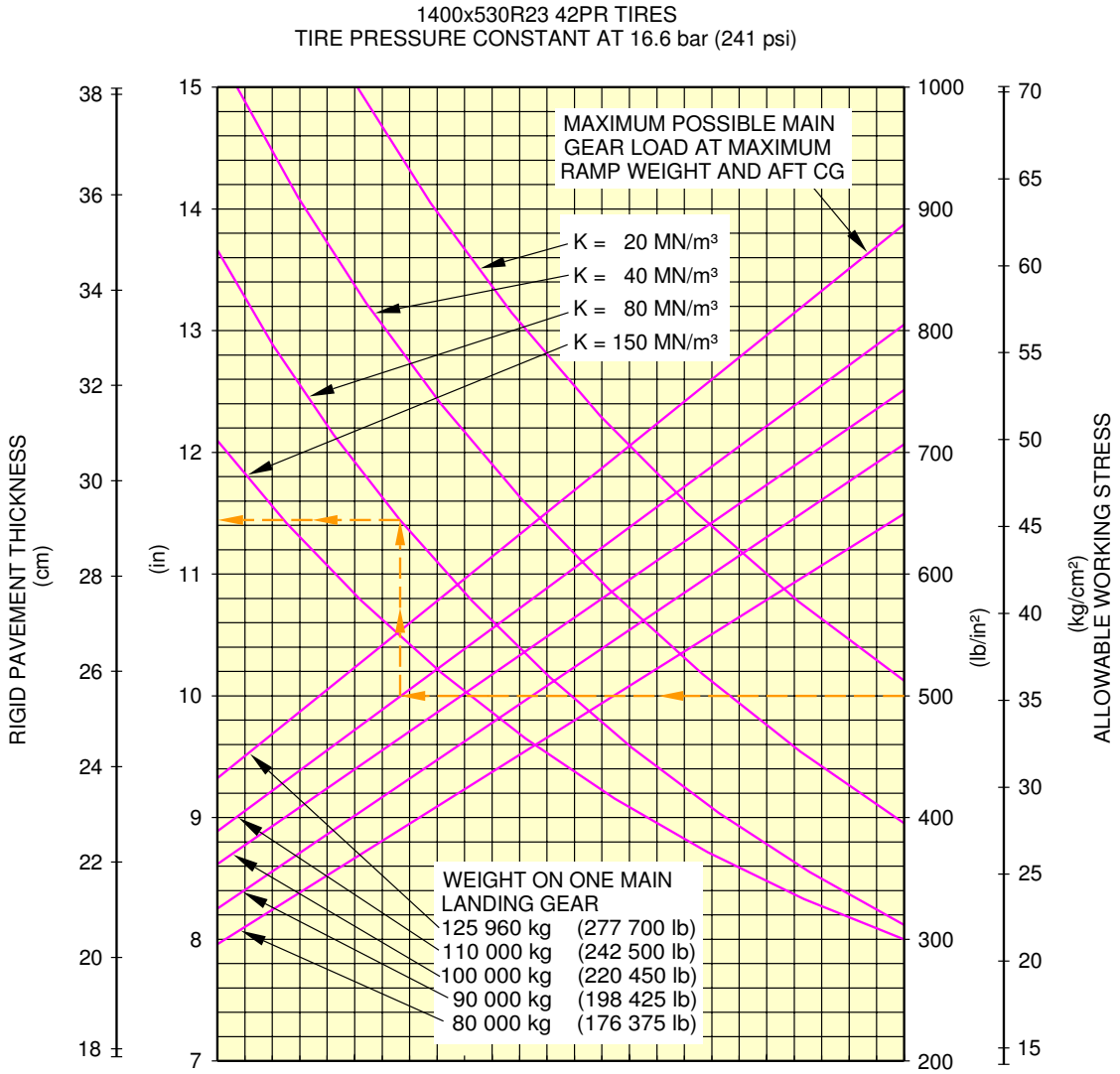
Rigid Pavement Requirements - Portland Cement Association Design Method

1. This section gives data about the rigid pavement requirements for the PCA (Portland Cement Association) design method.
   They are calculated with the PCA design method.
   To find a rigid pavement thickness, you must know the Subgrade Modulus (K), the permitted working stress and the weight on MLG.
   The procedure that follows is used to develop rigid pavement design curves:
   - With the scale for pavement thickness on the left and the scale for permitted working stress on the right, a random load line is made. This represents the MLG maximum weight to be shown,
   - A plot is then made of all values of the subgrade modulus (k values),
   - More load lines for the incremental values of weight on the MLG are made based on the curve for k= 80MN/m3 already shown on the graph.

   Example, see FIGURE 7-7-0-991-001-A, calculation of the thickness of the flexible pavement for:
   - An aircraft with a MTOW of268000 kg (590839 lb),
   - A k value of 80 MN/m3 (300 lbf/in3),
   - A permitted working stress of 35.15 kg/cm2 (500 lb/in2),
   - The load on one MLG of110000 kg (242509 lb).

   The required rigid pavement thickness is290 mm (11 in.).

**ON A/C A350-900



NOTES:
THE VALUES OBTAINED BY USING THE MAXIMUM LOAD REFERENCE LINE AND ANY VALUES FOR K ARE EXACT. FOR LOADS LESS THAN MAXIMUM, THE CURVES ARE EXACT FOR K = 80 MN/m³ BUT DEVIATE SLIGHTLY FOR ANY OTHER VALUES OF K

REFERENCE:
"DESIGN OF CONCRETE AIRPORT PAVEMENTS" AND "COMPUTER PROGRAM FOR AIRPORT PAVEMENT DESIGN – PROGRAM PDILB" PORTLAND CEMENT ASSOCIATION

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Rigid Pavement Requirements
MTOW 268 000 kg
FIGURE-7-7-0-991-001-A01

7-8-0 Rigid Pavement Requirements - LCN Conversion

**ON A/C A350-900

Rigid Pavement Requirements - LCN Conversion

1. This section gives data about the rigid pavement requirements for the Load Classification Number (LCN) conversion (radius of relative stiffness).
   - For the radius of relative stiffness, see Section 7–8–1,
   - For the radius of relative stiffness (other values of E and μ), see Section 7–8–2.

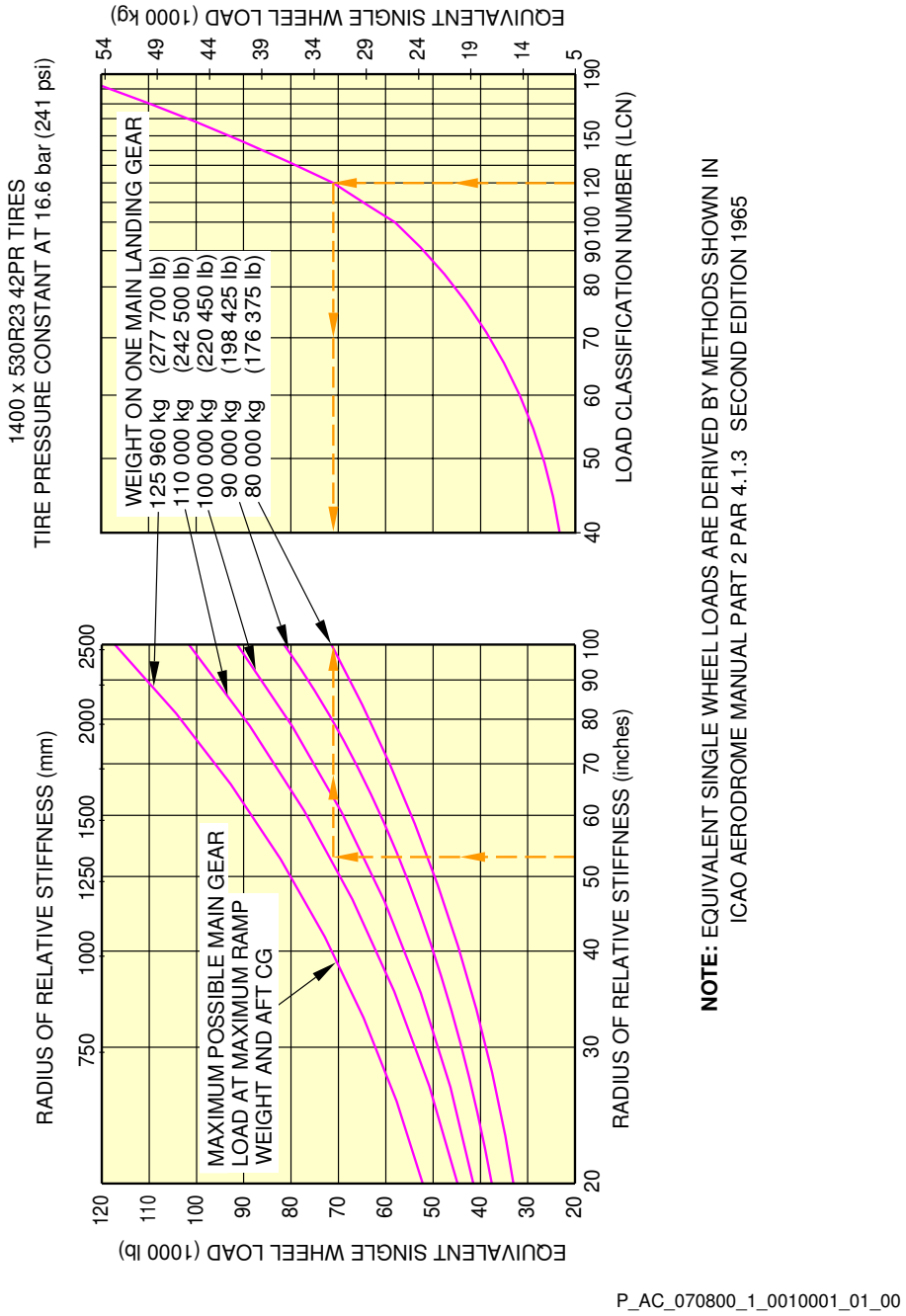
   Example, see FIGURE 7-8-0-991-001-A, calculation of the aircraft weight with the thickness of the rigid pavement for:
   - An aircraft with a MTOW of268000 kg (590839 lb),
   - The radius of relative stiffness is shown at1143 mm (45 in.)with a related LCN of 119.

   The weight on one MLG is110000 kg (242509 lb).

   The following table provides LCN data in tabular format similar to the one used by ICAO in the "Aerodrome Design Manual Part 3, Pavements - Edition 1977".
   In order to use the system accurately you should know the total pavement radius of relative stiffness (L-value) for rigid pavement.
   However, the pavement radius of relative stiffness for a particular runway are not frequently published in the standard airport information sources (Jeppesen, AERAD, DOD, etc.).
   Therefore it is common practice to use a standard radius of relative stiffness (30 inches) when determining the LCN and the ESWL of the aircraft.
   If the LCN for an intermediate weight between maximum ramp weight and the empty weight of the aircraft is required or if the real thickness is known, refer to charts FIGURE 7-8-0-991-001-A.

AIRCRAFT TYPE	WEIGHT	LOAD ON ONE MLG LEG (%)	TIRE PRESSURE (Mpa)	RIGID PAVEMENT		
				ESWL		LCN
				x 1000 kg	x 1000 lb	
				L = 760 mm (30 in.)		
A350–900	268900 kg (592824 lb)	46.8	1.66	28	62	107
A350–900	142000 kg (313057 lb)	46.8		15	33	59

**ON A/C A350-900



Rigid Pavement Requirements - LCN
MTOW 268 000 kg
FIGURE-7-8-0-991-001-A01

7-8-1 Radius of Relative Stiffness (L)

**ON A/C A350-900

Radius of Relative Stiffness (L)

1. This section gives the radius of relative stiffness.

**ON A/C A350-900

RADIUS OF RELATIVE STIFFNESS (L)
VALUES IN INCHES

$$L = \sqrt[4]{\frac{Ed^3}{12\,(1-\mu^2)\,k}} = 24.1652\ \sqrt[4]{\frac{d^3}{k}}$$

WHERE E = YOUNG'S MODULUS = 4×10^6 psi
k = SUBGRADE MODULUS, lb/in^3
d = RIGID PAVEMENT THICKNESS, (in)
μ = POISSON'S RATIO = 0.15

d	k=75	k=100	k=150	k=200	k=250	k=300	k=350	k=400	k=550
6.0	31.48	29.30	26.47	24.63	23.30	22.26	21.42	20.72	19.13
6.5	33.43	31.11	28.11	26.16	24.74	23.64	22.74	22.00	20.31
7.0	35.34	32.89	29.72	27.65	26.15	24.99	24.04	23.25	21.47
7.5	37.22	34.63	31.29	29.12	27.54	26.32	25.32	24.49	22.61
8.0	39.06	36.35	32.85	30.57	28.91	27.62	26.58	25.70	23.74
8.5	40.88	38.04	34.37	31.99	30.25	28.91	27.81	26.90	24.84
9.0	42.67	39.71	35.88	33.39	31.58	30.17	29.03	28.08	25.93
9.5	44.43	41.35	37.36	34.77	32.89	31.42	30.23	29.24	27.00
10.0	46.18	42.97	38.83	36.14	34.17	32.65	31.42	30.39	28.06
10.5	47.90	44.57	40.28	37.48	35.45	33.87	32.59	31.52	29.11
11.0	49.60	46.16	41.71	38.81	36.71	35.07	33.75	32.64	30.14
11.5	51.28	47.72	43.12	40.13	37.95	36.26	34.89	33.74	31.16
12.0	52.94	49.27	44.52	41.43	39.18	37.44	36.02	34.84	32.17
12.5	54.59	50.80	45.90	42.72	40.40	38.60	37.14	35.92	33.17
13.0	56.22	52.32	47.27	43.99	41.61	39.75	38.25	36.99	34.16
13.5	57.83	53.82	48.63	45.26	42.80	40.89	39.35	38.06	35.14
14.0	59.43	55.31	49.98	46.51	43.98	42.02	40.44	39.11	36.12
14.5	61.02	56.78	51.31	47.75	45.16	43.15	41.51	40.15	37.08
15.0	62.59	58.25	52.63	48.98	46.32	44.26	42.58	41.19	38.03
15.5	64.15	59.70	53.94	50.20	47.47	45.36	43.64	42.21	38.98
16.0	65.69	61.13	55.24	51.41	48.62	46.45	44.70	43.23	39.92
16.5	67.23	62.56	56.53	52.61	49.75	47.54	45.74	44.24	40.85
17.0	68.75	63.98	57.81	53.80	50.88	48.61	46.77	45.24	41.78
17.5	70.26	65.38	59.08	54.98	52.00	49.68	47.80	46.23	42.70
18.0	71.76	66.78	60.34	56.15	53.11	50.74	48.82	47.22	43.61
19.0	74.73	69.54	62.84	58.48	55.31	52.84	50.84	49.17	45.41
20.0	77.66	72.27	65.30	60.77	57.47	54.91	52.84	51.10	47.19
21.0	80.55	74.96	67.74	63.04	59.62	56.96	54.81	53.01	48.95
22.0	83.41	77.63	70.14	65.28	61.73	58.98	56.75	54.89	50.69
23.0	86.24	80.26	72.52	67.49	63.83	60.98	58.68	56.75	52.41
24.0	89.04	82.86	74.87	69.68	65.90	62.96	60.58	58.59	54.11
25.0	91.81	85.44	77.20	71.84	67.95	64.92	62.46	60.41	55.79

REFERENCE: PORTLAND CEMENT ASSOCIATION

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Radius of Relative Stiffness (L)
FIGURE-7-8-1-991-001-A01

7-8-2 Radius of Relative Stiffness (Other values of E and μ)

**ON A/C A350-900

Radius of Relative Stiffness (Other values of E and μ)

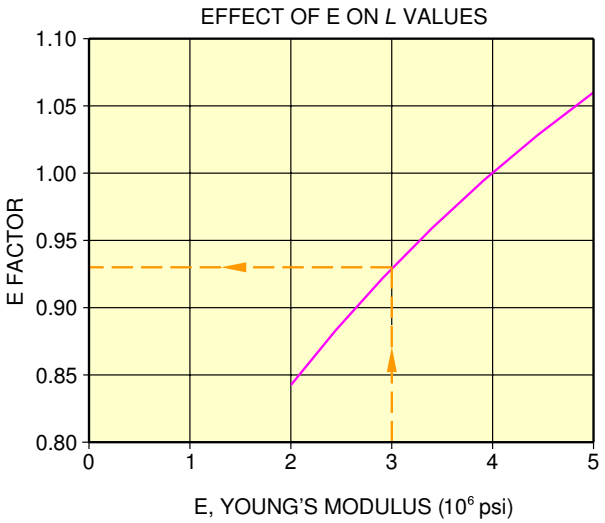
1. The table of Section 7–8–1 radius of relative stiffness, presents L values based on young's modulus (E) of 4 000 000 psi and poisson's ratio (μ) of 0.15.

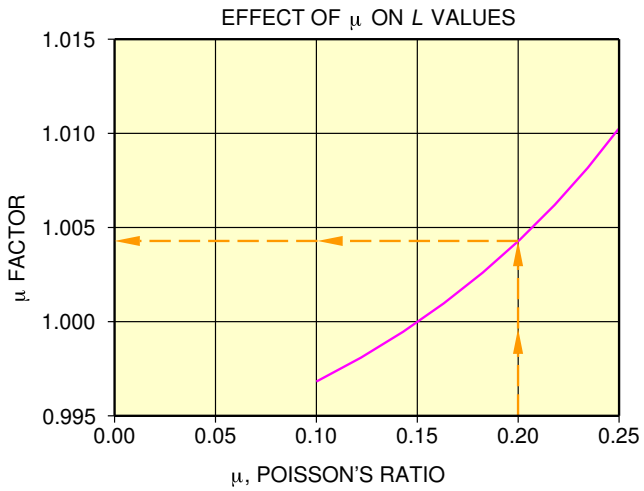
   To find L values based on other values of E and μ, see FIGURE 7-8-2-991-001-B.

   For example, to find an L value based on an E of 3 000 000 psi, the "E" factor of 0.931 is multiplied by the L value found in the table of Section 7-8-1 radius of relative stiffness.

   The effect of variations of μ on the L value is treated in a similar manner.

**ON A/C A350-900





NOTE: BOTH CURVES ON THIS PAGE ARE USED TO ADJUST THE *L* VALUES OF TABLE 7–8–1

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Radius of Relative Stiffness (Effect E and μ ON "L" values)
FIGURE-7-8-2-991-001-B01

7-9-0 Aircraft Classification Number - Flexible Pavement

**ON A/C A350-900

Aircraft Classification Number - Flexible Pavement

1. This section gives data about the Aircraft Classification Number (ACN) for flexible pavement for an aircraft gross weight in relation with a subgrade strength value.
   To find the ACN of an aircraft on flexible pavement, you must know the aircraft gross weight and the subgrade strength.

   NOTE : An aircraft with an ACN equal to or less than the reported PCN can operate on that pavement, subject to any limitation on the tire pressure (Ref: ICAO Aerodrome Design Manual Part 3 Chapter 1 Second Edition 1983).

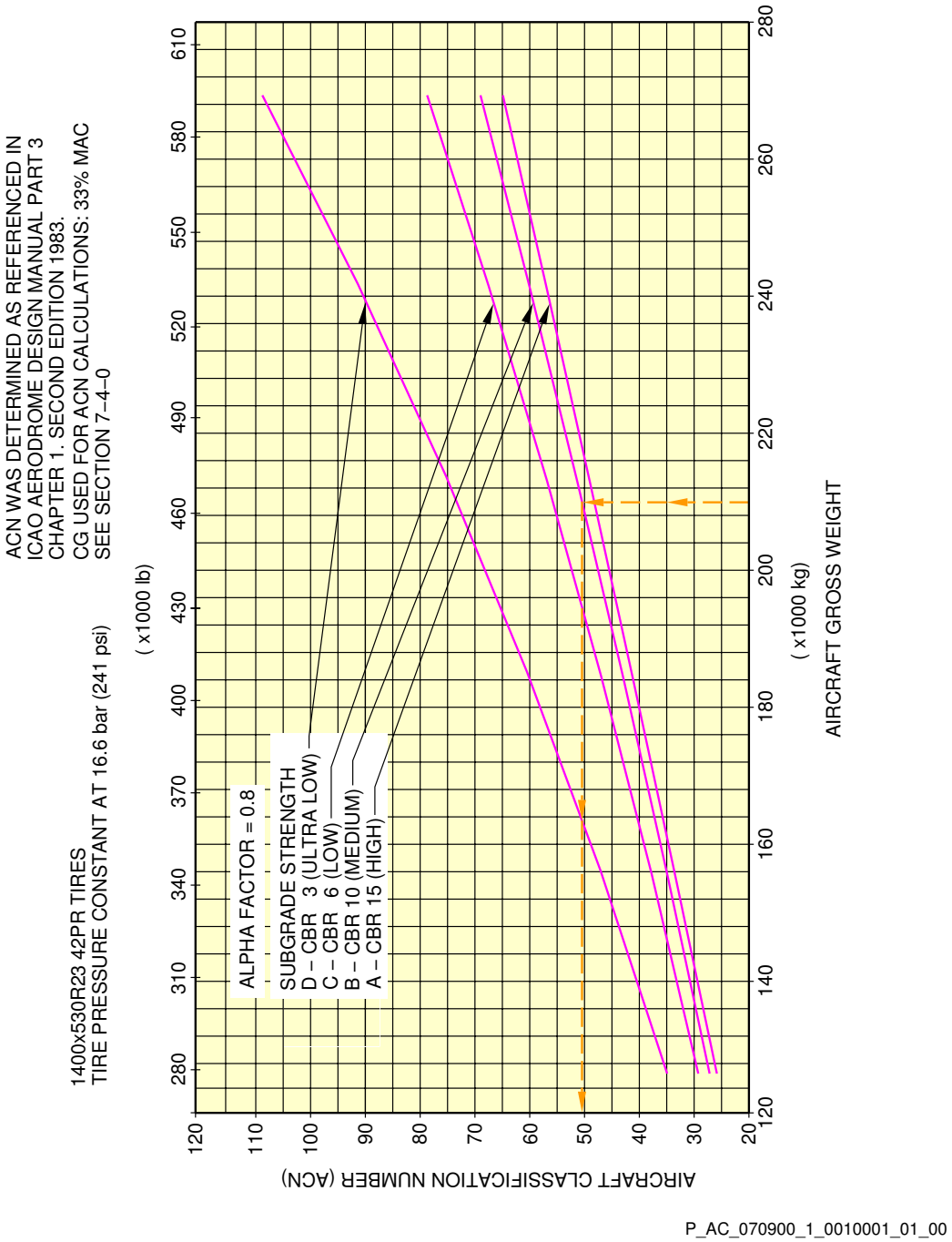
   Example, see FIGURE 7-9-0-991-001-A, calculation of the ACN for flexible pavement for:
   - An aircraft with a MTOW of268000 kg (590839 lb),
   - An aircraft gross weight of210000 kg (462971 lb),
   - A medium subgrade strength (code B).

   The ACN for flexible pavement is 51.

2. Aircraft Classification Number - ACN Table
   The following table provides ACN data in tabular format similar to the one used by ICAO in the "Aerodrome Design Manual Part 3, Pavements - Edition 1983". If the ACN for an intermediate weight between maximum ramp weight and the empty weight of the aircraft is required, refer to chart FIGURE 7-9-0-991-001-A.

AIRCRAFT TYPE	WEIGHT	LOAD ON ONE MLG LEG (%)	TIRE PRESSURE (Mpa)	ACN FOR FLEXIBLE PAVEMENT SUBGRADES - CBR			
				High 15	Medium 10	Low 6	Ultral-low 3
A350–900	268900 kg (592824 lb)	46.8	1.66	66	70	80	110
A350–900	142000 kg (313057 lb)	46.8		31	32	34	41

**ON A/C A350-900



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Aircraft Classification Number - Flexible Pavement
MTOW 268 000 kg
FIGURE-7-9-0-991-001-A01

7-9-1 Aircraft Classification Number - Rigid Pavement

**ON A/C A350-900

Aircraft Classification Number - Rigid Pavement

1. This section gives data about the Aircraft Classification Number (ACN) for rigid pavement for an aircraft gross weight in relation with a subgrade strength value.
   To find the ACN of an aircraft on rigid pavement, you must know the aircraft gross weight and the subgrade strength.

   NOTE : An aircraft with an ACN equal to or less than the reported PCN can operate on that pavement, subject to any limitation on the tire pressure. (Ref: ICAO Aerodrome Design Manual Part 3 Chapter 1 Second Edition 1983).

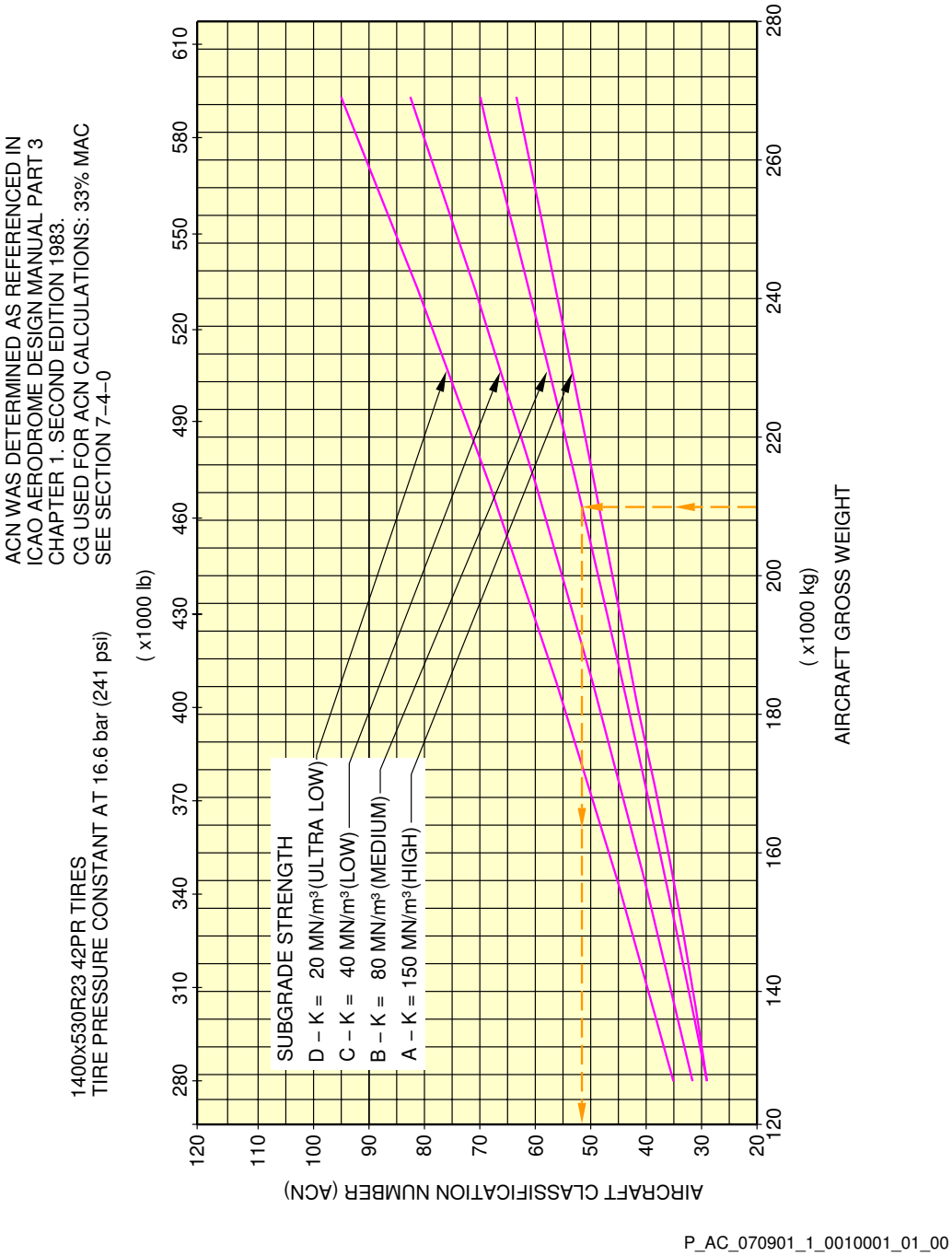
   Example, see FIGURE 7-9-1-991-001-A, calculation of the ACN for rigid pavement for:
   - An aircraft with a MTOW of268000 kg (590839 lb),
   - An aircraft gross weight of210000 kg (462971 lb),
   - A medium subgrade strength (code B).

   The ACN for rigid pavement is 52.

2. Aircraft Classification Number - ACN Table
   The following table provides ACN data in tabular format similar to the one used by ICAO in the "Aerodrome Design Manual Part 3, Pavements - Edition 1983". If the ACN for an intermediate weight between maximum ramp weight and the empty weight of the aircraft is required, refer to chart FIGURE 7-9-1-991-001-A.

AIRCRAFT TYPE	WEIGHT	LOAD ON ONE MLG LEG (%)	TIRE PRESSURE (Mpa)	ACN FOR RIGID PAVEMENT SUBGRADES - MN/m3			
				High 150	Medium 80	Low 40	Ultral-low 20
A350–900	268900 kg (592824 lb)	46.8	1.66	64	71	83	96
A350–900	142000 kg (313057 lb)	46.8		32	33	36	41

**ON A/C A350-900



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Aircraft Classification Number - Rigid Pavement
MTOW 268 000 kg
FIGURE-7-9-1-991-001-A01

SCALED DRAWINGS

8-0-0 Scaled Drawings

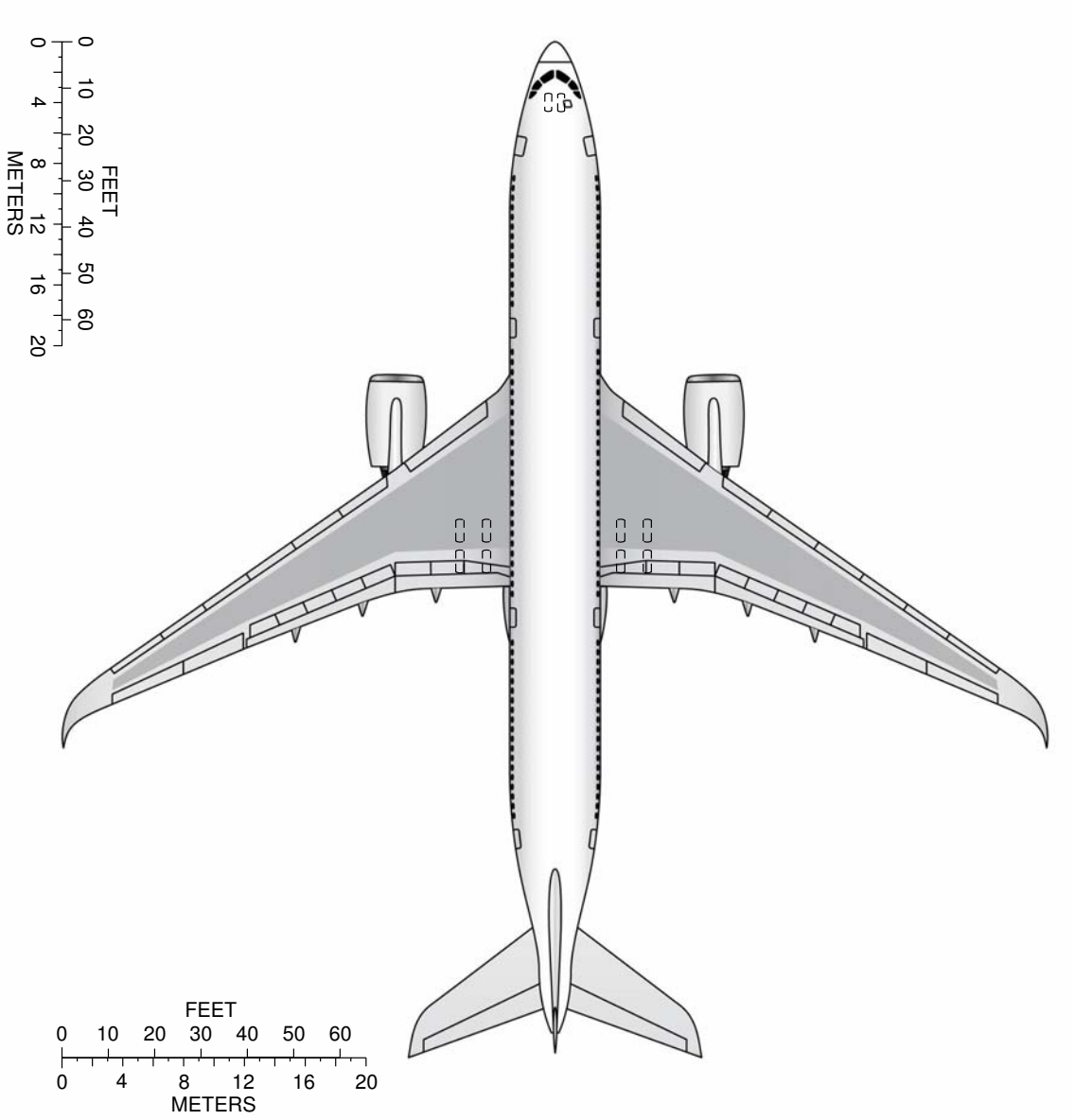
****ON A/C A350-900**

Scaled Drawings

1. This section provides the scaled drawings.

NOTE : When printing this drawing, make sure to adjust for proper scaling.

**ON A/C A350-900



NOTE:
WHEN PRINTING THIS DRAWING, MAKE SURE TO ADJUST FOR PROPER SCALING

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Scaled Drawings
FIGURE-8-0-0-991-001-A01

AIRCRAFT RESCUE AND FIRE FIGHTING

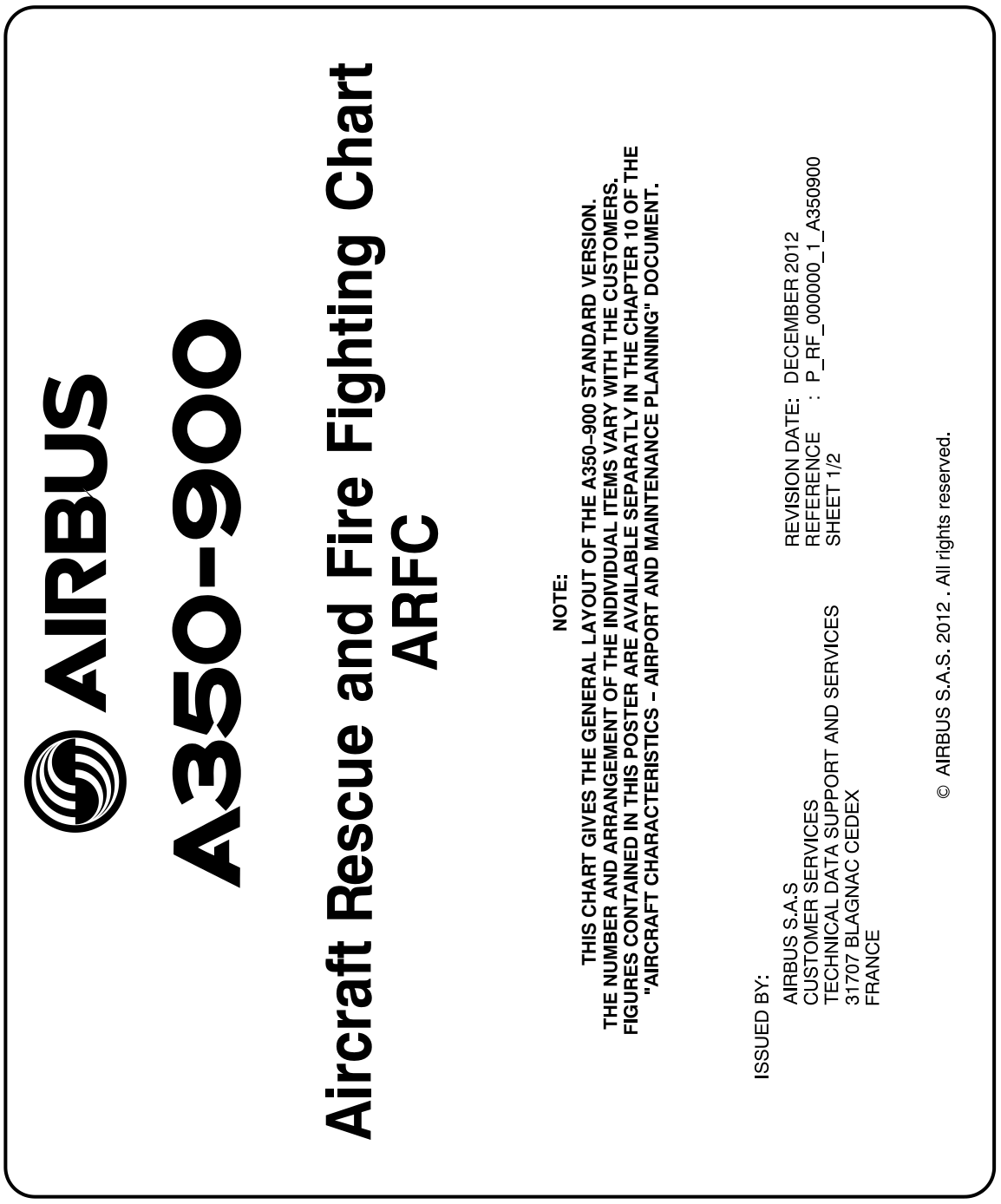
10-0-0 Aircraft Rescue and Fire Fighting

****ON A/C A350-900**

Aircraft Rescue and Fire Fighting

1. This sections gives data related to aircraft rescue and fire fighting.
   The figures contained in this section are the figures that are in the Aircraft Rescue and Fire Fighting Charts poster available for download on AIRBUSWorld and the Airbus website.

**ON A/C A350-900



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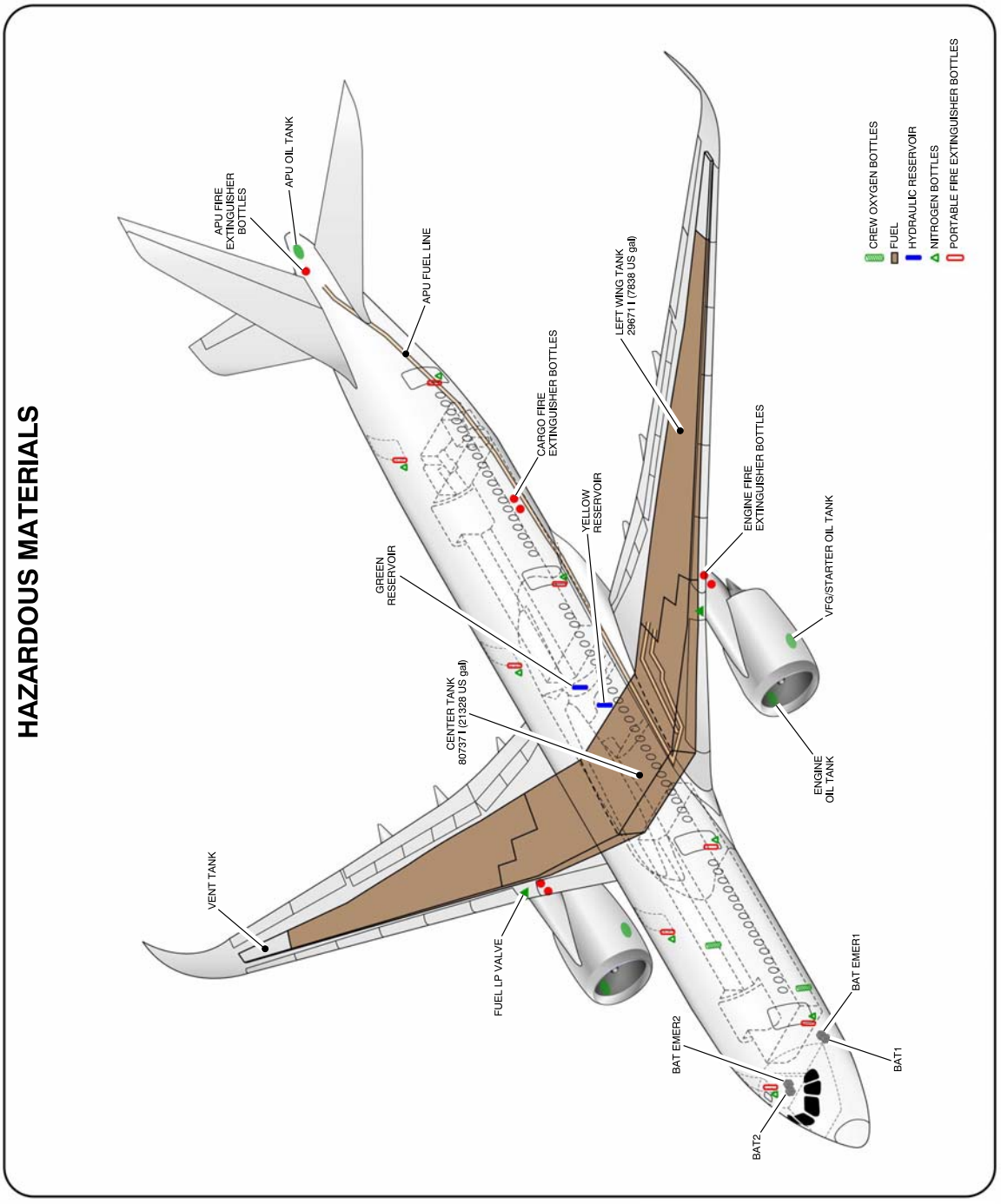
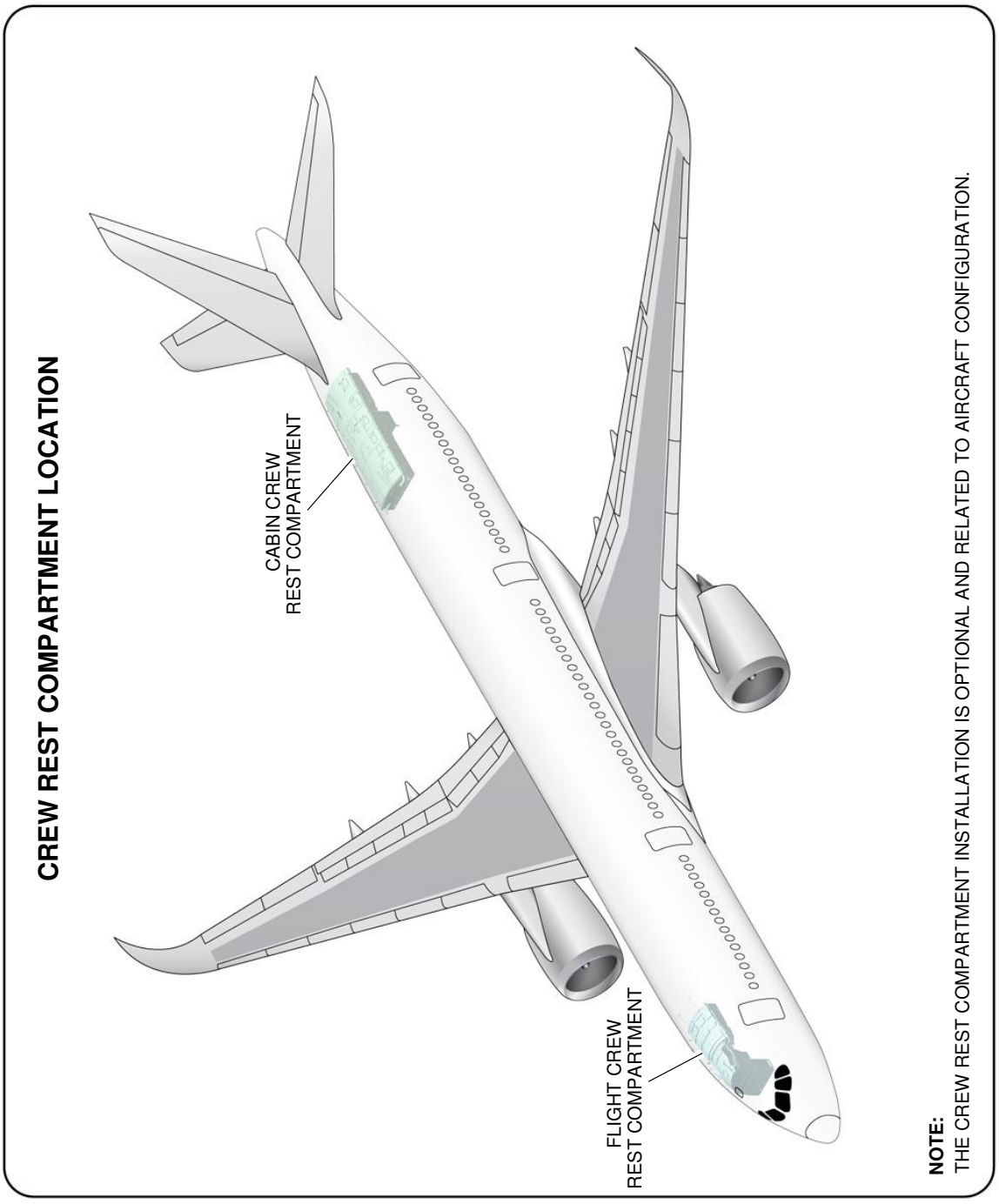
Front Page
FIGURE-10-0-0-991-001-A01

**ON A/C A350-900



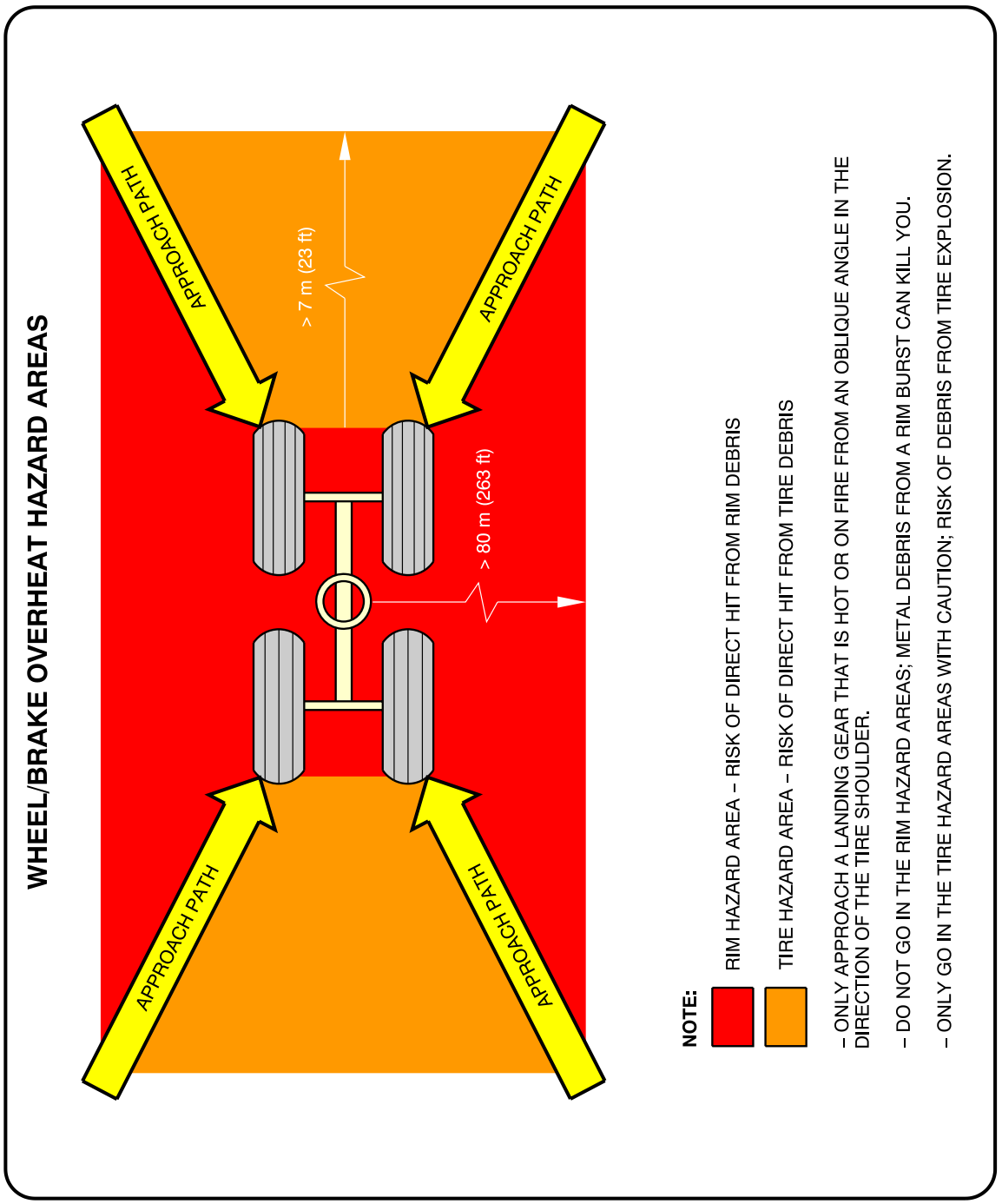
Highly Flammable and Hazardous Materials and Components
FIGURE-10-0-0-991-003-A01

**ON A/C A350-900



Crew Rest Compartments Location
FIGURE-10-0-0-991-004-A01

**ON A/C A350-900



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Wheel/Brake Overheat
Wheel Safety Area (Sheet 1 of 2)
FIGURE-10-0-0-991-005-A01

**ON A/C A350-900

BRAKE OVERHEAT AND LANDING GEAR FIRE

WARNING: BE VERY CAREFUL WHEN THERE IS A BRAKE OVERHEAT AND/OR LANDING GEAR FIRE.
THERE IS A RISK OF TIRE EXPLOSION AND/OR WHEEL RIM BURST THAT CAN CAUSE DEATH OR INJURY.
MAKE SURE THAT YOU OBEY THE SAFETY PRECAUTIONS THAT FOLLOW.

THE PROCEDURES THAT FOLLOW GIVE RECOMMENDATIONS AND SAFETY PRECAUTIONS FOR THE COOLING OF VERY HOT BRAKES AFTER ABNORMAL OPERATIONS SUCH AS A REJECTED TAKE–OFF OR OVERWEIGHT LANDING.
FOR THE COOLING OF BRAKES AFTER NORMAL TAXI–IN, REFER TO YOUR COMPANY PROCEDURES.

BRAKE OVERHEAT:

1 – GET THE BRAKE TEMPERATURE FROM THE COCKPIT OR USE A REMOTE MEASUREMENT TECHNIQUE.
THE REAL TEMPERATURE OF THE BRAKES CAN BE MUCH HIGHER THAN THE TEMPERATURE SHOWN ON THE ECAM.
NOTE: AT HIGH TEMPERATURES (>800°C), THERE IS A RISK OF WARPING OF THE LANDING GEAR STRUTS AND AXLES.

2 – APPROACH THE LANDING GEAR WITH EXTREME CAUTION AND FROM AN OBLIQUE ANGLE IN THE DIRECTION OF THE TIRE SHOULDER. DO NOT GO INTO THE RIM HAZARD AREA AND ONLY GO IN THE TIRE HAZARD AREA WITH CAUTION. (REF FIG. WHEEL/BRAKE OVERHEAT HAZARD AREAS). IF POSSIBLE, STAY IN A VEHICLE.

3 – LOOK AT THE CONDITION OF THE TIRES:
IF THE TIRES ARE STILL INFLATED (FUSE PLUGS NOT MELTED), THERE IS A RISK OF TIRE EXPLOSION AND RIM BURST.
DO NOT USE COOLING FANS BECAUSE THEY CAN PREVENT OPERATION OF THE FUSE PLUGS.

4 – USE WATER MIST TO DECREASE THE TEMPERATURE OF THE COMPLETE WHEEL AND BRAKE ASSEMBLY.
USE A TECHNIQUE THAT PREVENTS SUDDEN COOLING. SUDDEN COOLING CAN CAUSE WHEEL CRACKS OR RIM BURST.
DO NOT APPLY WATER, FOAM OR CO2. THESE COOLING AGENTS (AND ESPECIALLY CO2, WHICH HAS A VERY STRONG COOLING EFFECT) CAN CAUSE THERMAL SHOCKS AND BURST OF HOT PARTS.

LANDING GEAR FIRE:

CAUTION: AIRBUS RECOMMENDS THAT YOU DO NOT USE DRY POWDERS OR DRY CHEMICALS ON HOT BRAKES OR TO EXTINGUISH LANDING GEAR FIRES. THESE AGENTS CAN CHANGE INTO SOLID OR ENAMELED DEPOSITS.
THEY CAN DECREASE THE SPEED OF HEAT DISSIPATION WITH A POSSIBLE RISK OF PERMANENT STRUCTURAL DAMAGE TO THE BRAKES, WHEELS OR WHEEL AXLES.

1 – IMMEDIATELY STOP THE FIRE:

A) APPROACH THE LANDING GEAR WITH EXTREME CAUTION FROM AN OBLIQUE ANGLE IN THE DIRECTION OF THE TIRE SHOULDER. DO NOT GO INTO THE RIM HAZARD AREA AND ONLY GO IN THE TIRE HAZARD AREA WITH CAUTION. IF POSSIBLE, STAY IN A VEHICLE.

B) USE LARGE AMOUNTS OF WATER, WATER MIST; IF THE FUEL TANKS ARE AT RISK, USE FOAM.
USE A TECHNIQUE THAT PREVENTS SUDDEN COOLING. SUDDEN COOLING CAN CAUSE WHEEL CRACKS OR RIM BURST.

C) DO NOT USE FANS OR BLOWERS.

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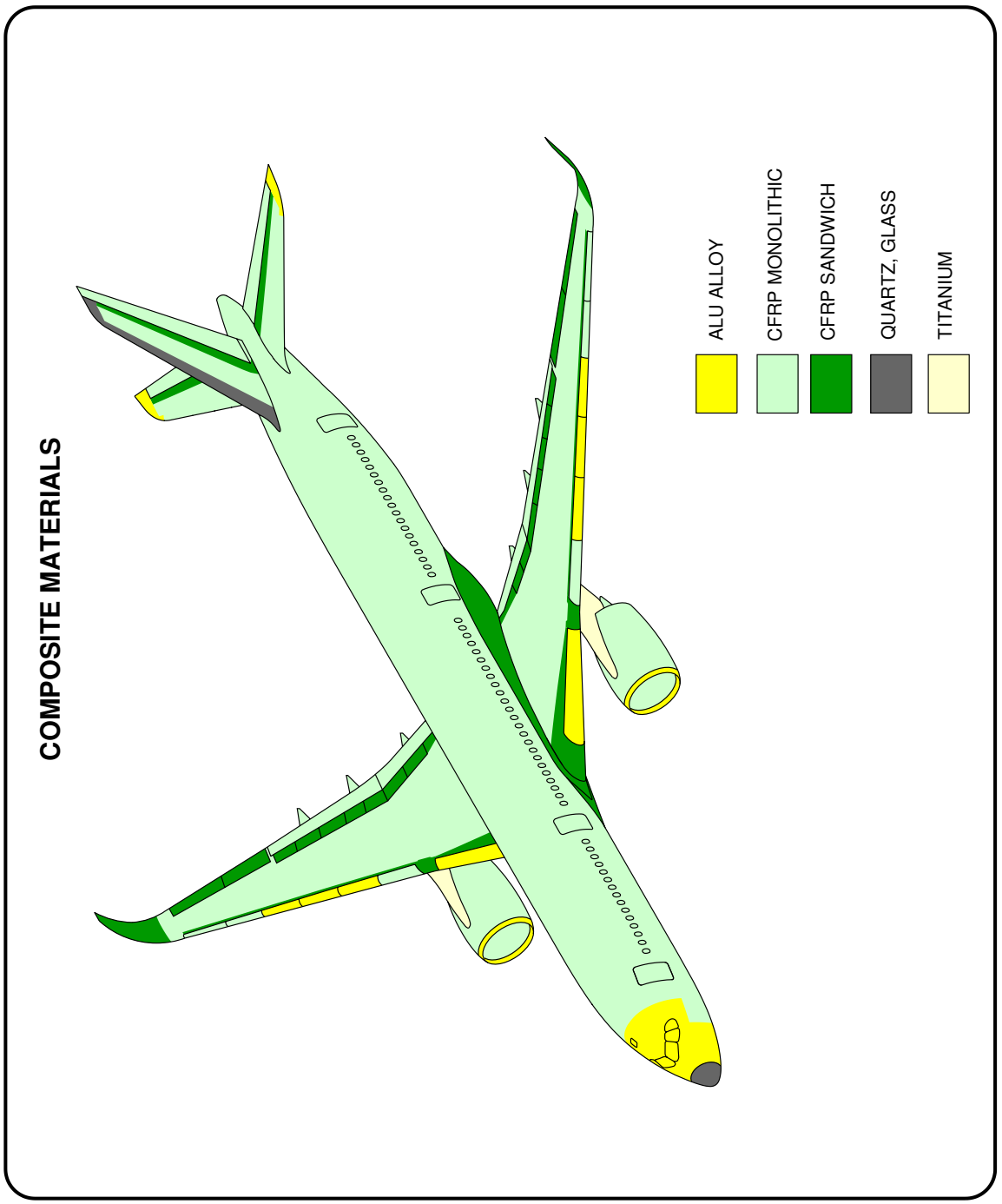
Wheel/Brake Overheat
Recommendations (Sheet 2 of 2)
FIGURE-10-0-0-991-005-A01

**ON A/C A350-900



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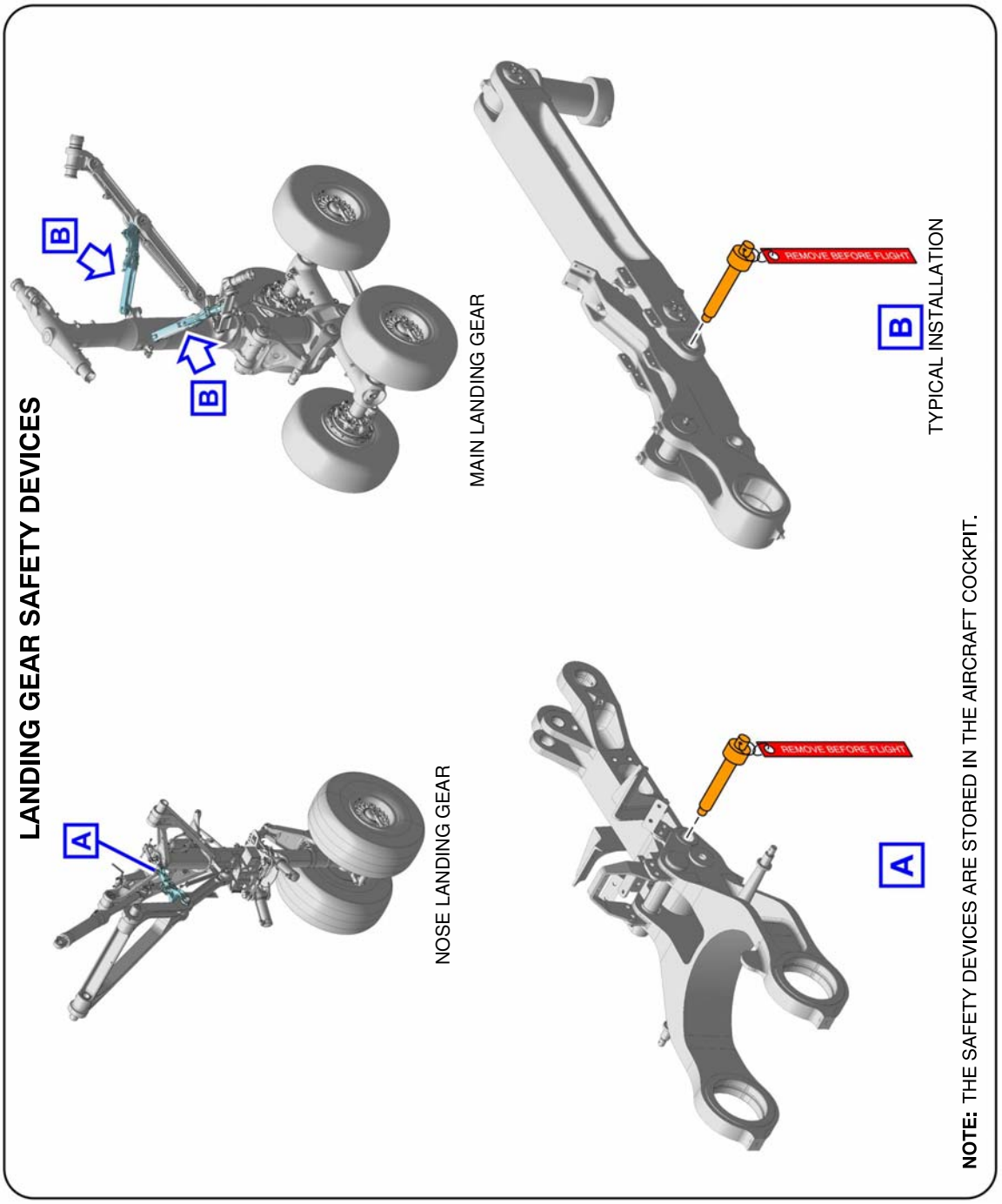
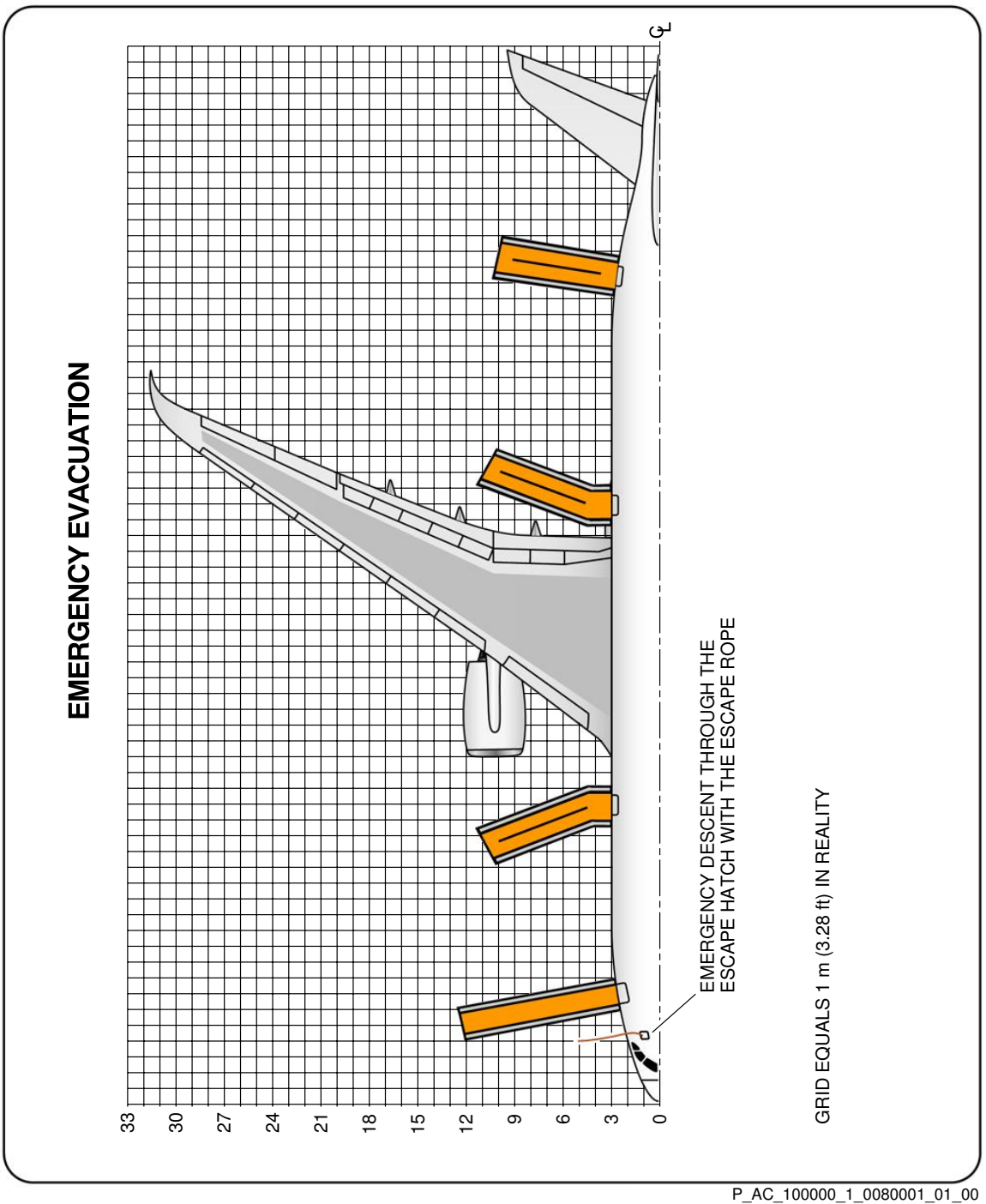
Composite Materials Location
FIGURE-10-0-0-991-006-A01

**ON A/C A350-900



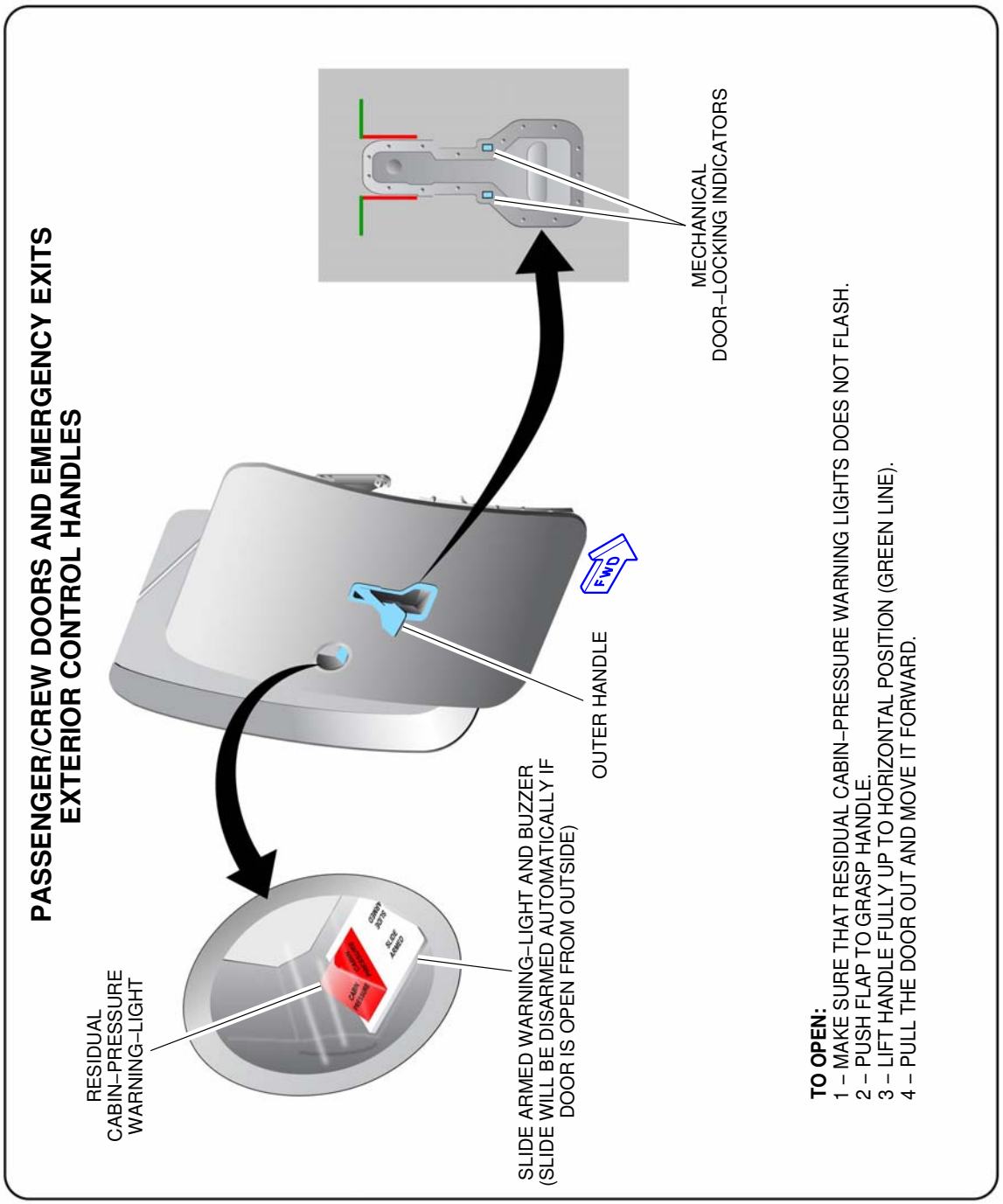
Ground Lock Safety Devices
FIGURE-10-0-0-991-007-A01

**ON A/C A350-900



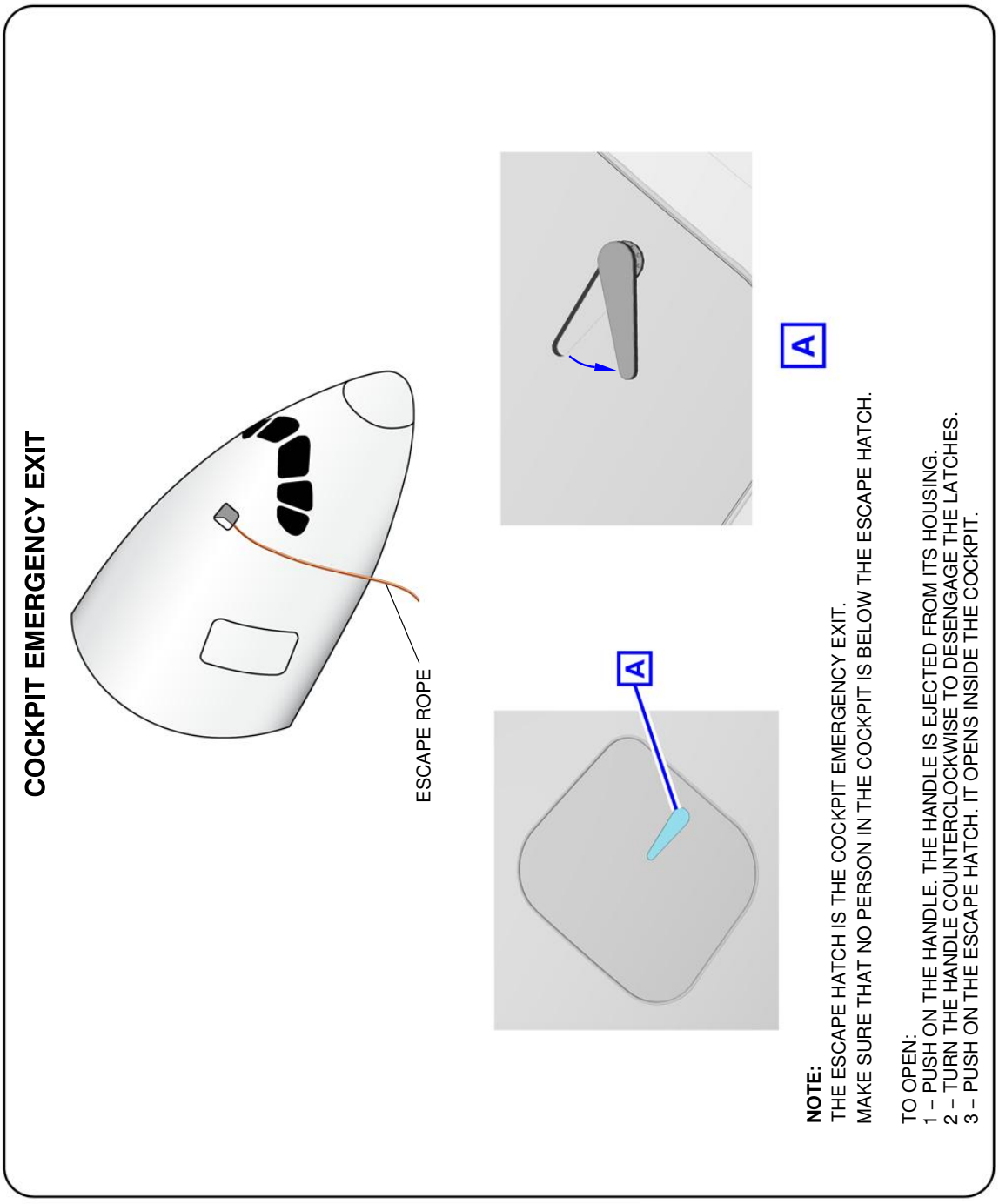
Emergency Evacuation Devices
FIGURE-10-0-0-991-008-A01

**ON A/C A350-900



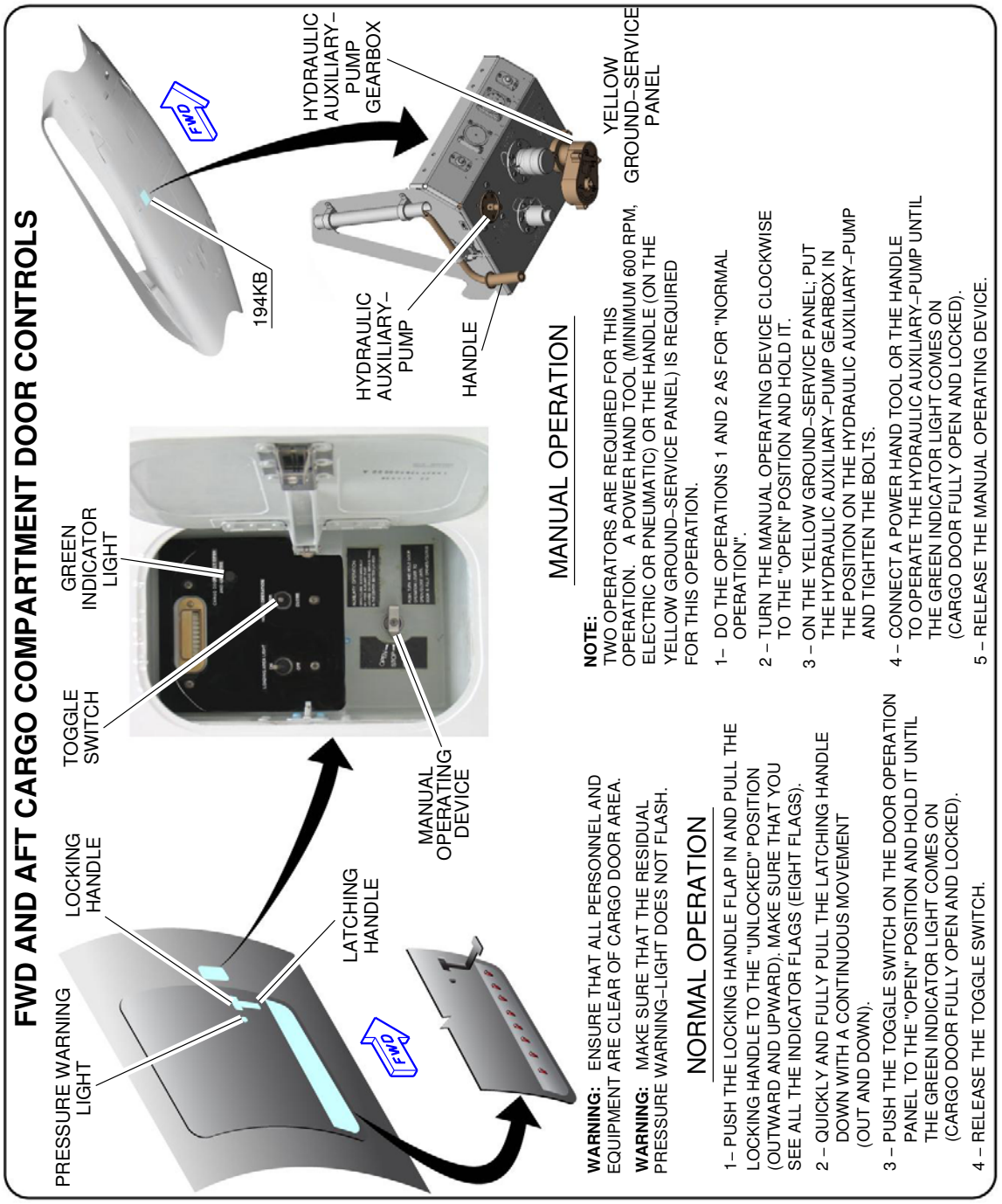
Pax/Crew Doors and Emergency Exits
FIGURE-10-0-0-991-009-A01

**ON A/C A350-900



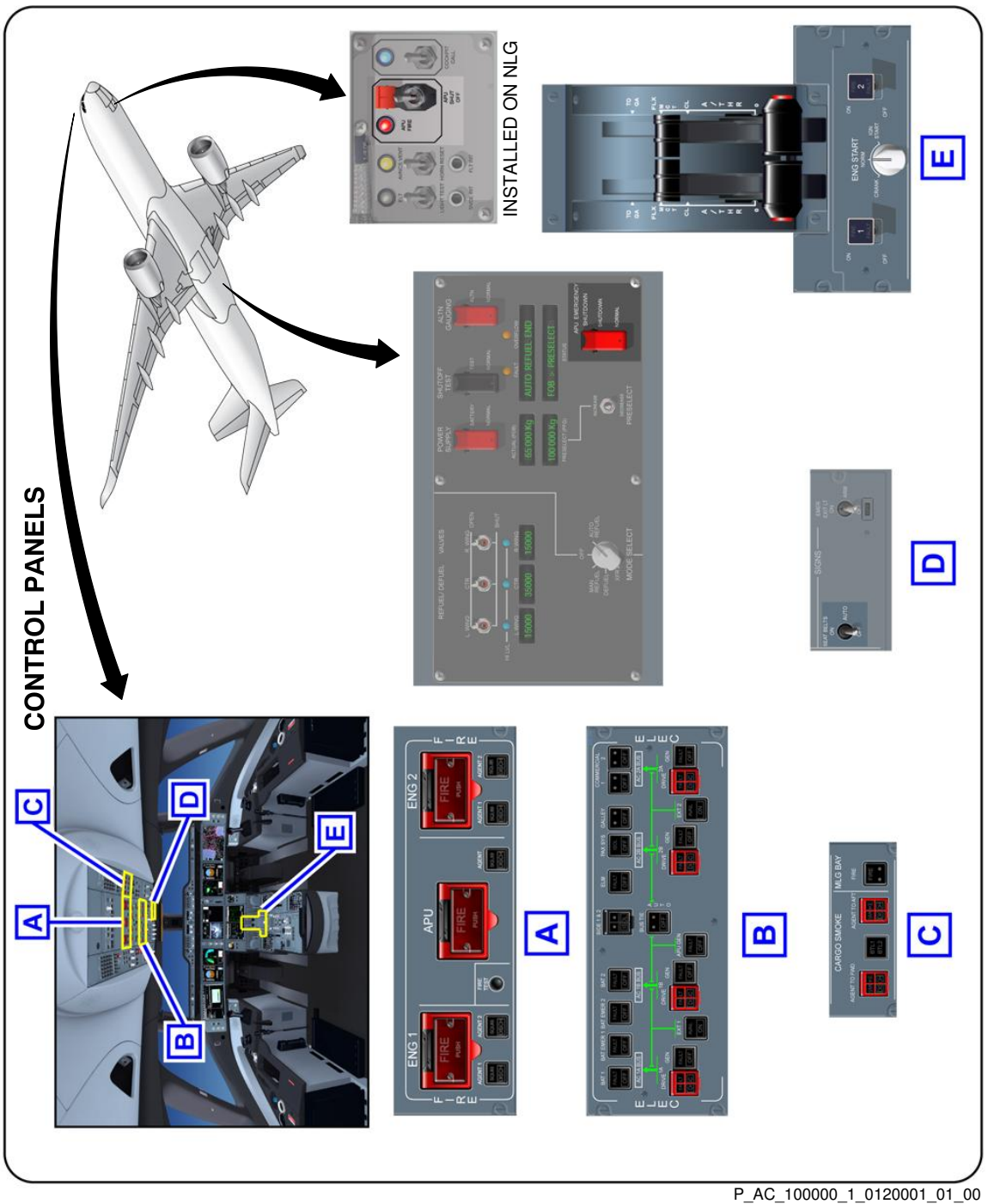
Cockpit Emergency Exit
FIGURE-10-0-0-991-010-A01

**ON A/C A350-900



FWD and AFT Lower Deck Cargo Doors
FIGURE-10-0-0-991-011-A01

**ON A/C A350-900



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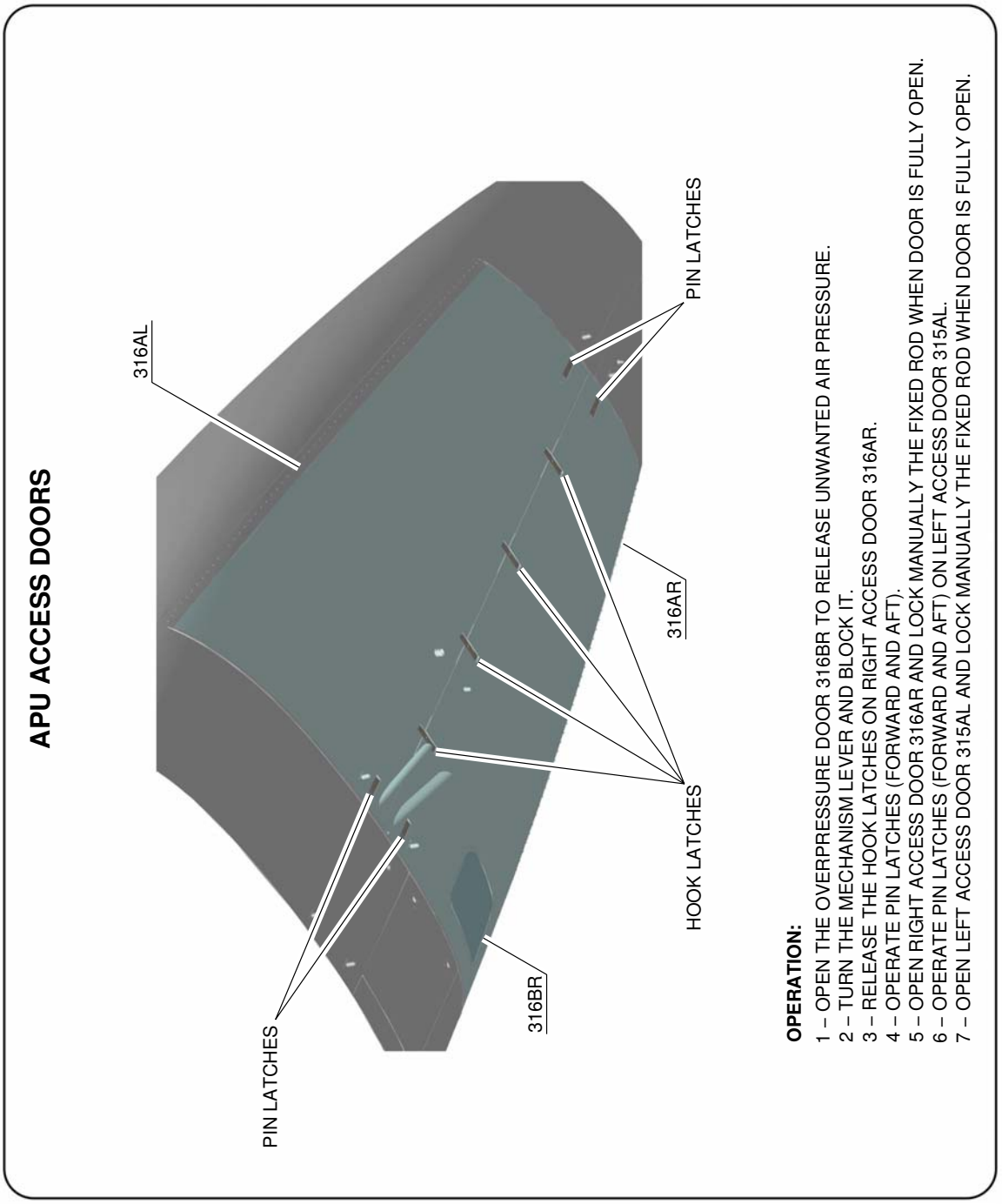
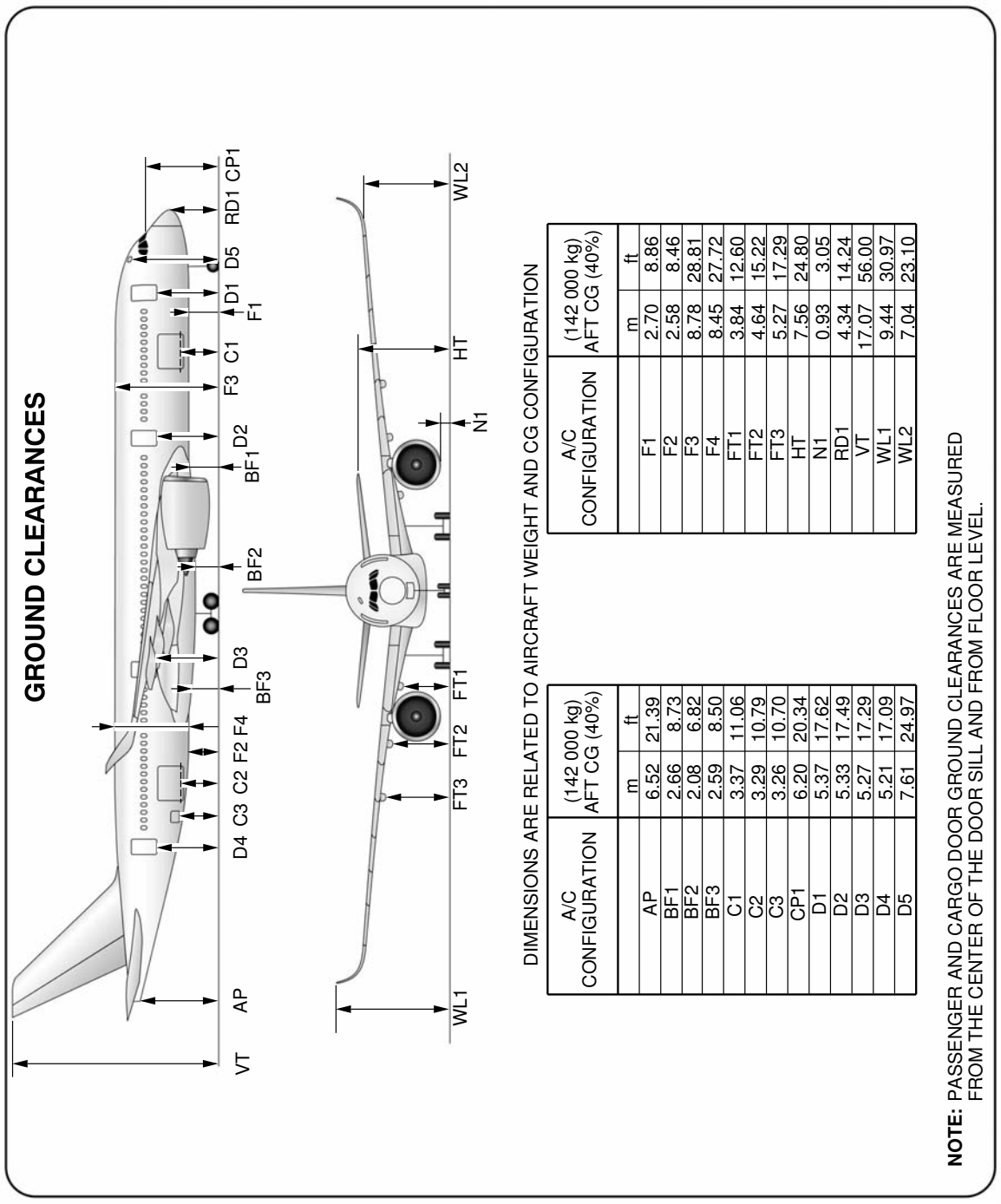
Control Panels
FIGURE-10-0-0-991-012-A01

**ON A/C A350-900



APU Compartment Access
FIGURE-10-0-0-991-015-A01

**ON A/C A350-900



DIMENSIONS ARE RELATED TO AIRCRAFT WEIGHT AND CG CONFIGURATION

A/C CONFIGURATION	(142 000 kg) AFT CG (40%)	
	m	ft
AP	6.52	21.39
BF1	2.66	8.73
BF2	2.08	6.82
BF3	2.59	8.50
C1	3.37	11.06
C2	3.29	10.79
C3	3.26	10.70
CP1	6.20	20.34
D1	5.37	17.62
D2	5.33	17.49
D3	5.27	17.29
D4	5.21	17.09
D5	7.61	24.97

A/C CONFIGURATION	(142 000 kg) AFT CG (40%)	
	m	ft
F1	2.70	8.86
F2	2.58	8.46
F3	8.78	28.81
F4	8.45	27.72
FT1	3.84	12.60
FT2	4.64	15.22
FT3	5.27	17.29
HT	7.56	24.80
N1	0.93	3.05
RD1	4.34	14.24
VT	17.07	56.00
WL1	9.44	30.97
WL2	7.04	23.10

NOTE: PASSENGER AND CARGO DOOR GROUND CLEARANCES ARE MEASURED FROM THE CENTER OF THE DOOR SILL AND FROM FLOOR LEVEL.

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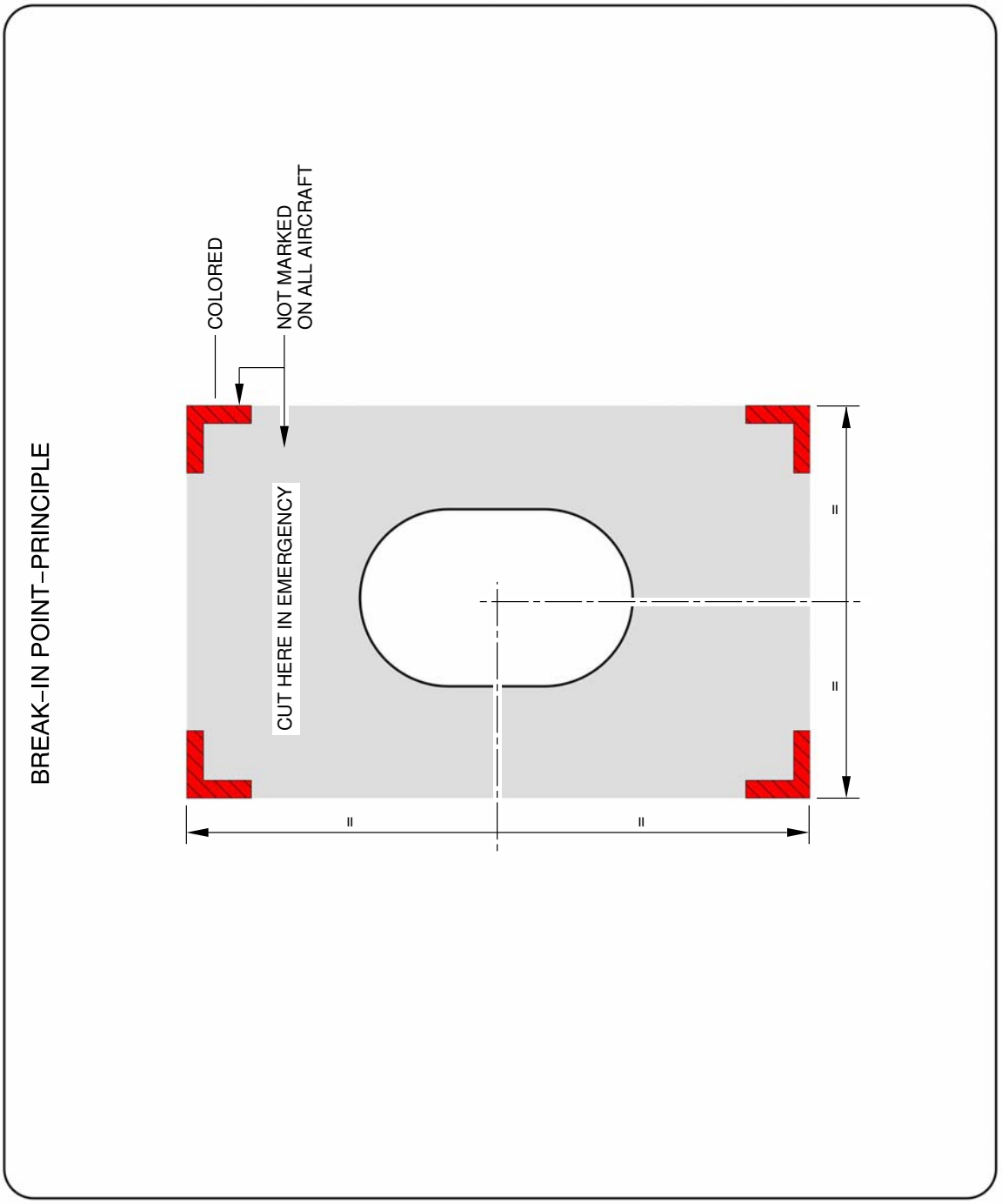
Aircraft Ground Clearances
FIGURE-10-0-0-991-016-A01

**ON A/C A350-900



Structural Break-in Points
FIGURE-10-0-0-991-017-A01