AIRBUS

A330

AIRCRAFT CHARACTERISTICS
AIRPORT AND MAINTENANCE PLANNING

AC

AIRBUS S.A.S.
Customer Services
Technical Data Support and Services
31707 Blagnac Cedex
FRANCE

Issue: Jan 01/93 Rev: Apr 01/13

HIGHLIGHTS

Revision No. 21 - Apr 01/13

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
CHAPTER 1		
Section 1-1		
Subject 1-1-0		
Purpose	R	PURPOSE CHANGED DUE TO MERGING OF THE MFP AND AC MANUALS.
Section 1-2	R	
Subject 1-2-1	N	
Glossary	N	
Subject 01-02-00	D	
CHAPTER 2	R	
Section 2-1	R	
Subject 02-01-00	D	
Subject 2-1-1	R	
General Aircraft Characteristics Data	R	DESCRIPTION TITLE UPDATED NOTE AMENDED
General Aircraft Characteristics Data	R	DESCRIPTION TITLE UPDATED
Section 2-2	R	
Subject 2-2-0	R	
General Aircraft Dimensions	R	DESCRIPTION TITLE UPDATED
FIGURE General Aircraft Dimensions	R	ILLUSTRATION REVISED
FIGURE General Aircraft Dimensions - (Pre Mod 48979)	R	ILLUSTRATION REVISED
General Aircraft Dimensions	R	DESCRIPTION TITLE UPDATED
FIGURE General Aircraft Dimensions	R	ILLUSTRATION REVISED
Section 2-3		
Subject 2-3-0		

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
Ground Clearances	R	ADDED GROUND CLEARANCES FOR FLIGHT CONTROLS UPDATED FIGURES LAYOUT. PART EFFECTIVITY ADDED/REVISED/DELETED NOTE AMENDED
FIGURE Ground Clearances	R	
FIGURE Ground Clearances	N	ILLUSTRATION ADDED
FIGURE Ground Clearances	N	ILLUSTRATION ADDED
FIGURE Ground Clearances - Ailerons Up	N	ILLUSTRATION ADDED
FIGURE Ground Clearances - Ailerons Down	N	ILLUSTRATION ADDED
FIGURE Ground Clearances - Spoilers Extended	N	ILLUSTRATION ADDED
FIGURE Ground Clearances - Slats Fully Extended	N	ILLUSTRATION ADDED
FIGURE Ground Clearances - Flaps Fully Extended	N	ILLUSTRATION ADDED
FIGURE Ground Clearances - Flaps-Tracks Fully Extended	N	ILLUSTRATION ADDED
Section 2-4	R	
Subject 02-04-00	D	
Subject 2-4-1	R	
Interior Arrangements - Plan View	R	DESCRIPTION TITLE UPDATED
FIGURE Interior Arrangements - Plan View - Typical Configuration	R	ILLUSTRATION REVISED
FIGURE Interior Arrangements - Plan View - Typical Configuration	R	ILLUSTRATION REVISED
Section 2-5	R	
Subject 2-5-0	R	
Interior Arrangements - Cross Section	R	REVISED TITLE TO "INTERIOR ARRANGEMENTS - CROSS SECTION". DESCRIPTION TITLE UPDATED
FIGURE Interior Arrangements - Cross Section - Typical Configuration	R	ILLUSTRATION REVISED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
Section 2-6	R	
Subject 02-06-00	D	
Subject 2-6-1	R	
Lower Deck Cargo Compartments	R	
FIGURE Lower Deck Cargo Compartments - Location and Dimensions	R	
FIGURE Lower Deck Cargo Compartments - Loading Combinations	R	ILLUSTRATION REVISED
FIGURE Lower Deck Cargo Compartments - Loading Combinations	N	ILLUSTRATION ADDED
Subject 2-6-2	R	
Main Deck Cargo Compartment	R	DESCRIPTION TITLE UPDATED
FIGURE Main Deck Cargo Compartment - Location and Dimensions	N	ILLUSTRATION ADDED
FIGURE Main Deck Cargo Compartment - Loading Combinations	R	ILLUSTRATION REVISED
FIGURE Main Deck Cargo Compartment - Loading Combinations	R	ILLUSTRATION REVISED
FIGURE Main Deck Cargo Compartment - Loading Combinations	R	ILLUSTRATION REVISED
FIGURE Main Deck Cargo Compartment - Loading Combinations	R	ILLUSTRATION REVISED
Section 2-7		
Subject 2-7-0		
Door Clearances	R	DESCRIPTION TITLE UPDATED
FIGURE Door Identification and location - Door Identification	N	ILLUSTRATION ADDED
FIGURE Door Identification and Location - Door Identification	N	ILLUSTRATION ADDED
FIGURE Door Identification and Location - Door Identification	N	ILLUSTRATION ADDED
Section 2-8	N	
Subject 2-8-0	N	
Escape Slides	N	

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Escape Slides - Location	N	ILLUSTRATION ADDED
FIGURE Escape Slides - Location	N	ILLUSTRATION ADDED
FIGURE Escape Slides - Location	N	ILLUSTRATION ADDED
Section 2-9	N	
Subject 2-9-0	N	
Landing Gear Maintenance Pits	N	
FIGURE Landing Gear Maintenance Pits - Maintenance Pit Envelopes	N	ILLUSTRATION ADDED
FIGURE Landing Gear Maintenance Pits - Maintenance Pit Envelopes	N	ILLUSTRATION ADDED
Landing Gear	N	
FIGURE Main Landing Gear - General	N	ILLUSTRATION ADDED
FIGURE Nose Landing Gear - General	N	ILLUSTRATION ADDED
Section 2-10	N	
Subject 2-10-0	N	
Exterior Lighting	N	
FIGURE Exterior Lighting	N	ILLUSTRATION ADDED
FIGURE Exterior Lighting	N	ILLUSTRATION ADDED
FIGURE Exterior Lighting	N	ILLUSTRATION ADDED
Section 2-11	N	
Subject 2-11-0	N	
Antennas and Probes Location	N	
FIGURE Antennas and Probes - Location	N	ILLUSTRATION ADDED
FIGURE Antennas and Probes - Location	N	ILLUSTRATION ADDED
FIGURE Antennas and Probes - Location	N	ILLUSTRATION ADDED
Section 2-12	N	
Subject 2-12-0	N	
Engine and Nacelle	N	
FIGURE Engine and Nacelle - Engine Dimensions - PW 4000	N	ILLUSTRATION ADDED
FIGURE Engine and Nacelle - Nacelle Dimensions - PW 4000	N	ILLUSTRATION ADDED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Engine and Nacelle - Fan Cowls - PW 4000	N	ILLUSTRATION ADDED
FIGURE Engine and Nacelle - Thrust Reverser Cowls - PW 4000	N	ILLUSTRATION ADDED
FIGURE Engine and Nacelle - Engine Dimensions - TRENT 700	N	ILLUSTRATION ADDED
FIGURE Engine and Nacelle - Nacelle Dimensions - TRENT 700	N	ILLUSTRATION ADDED
FIGURE Engine and Nacelle - Fan Cowls - TRENT 700	N	ILLUSTRATION ADDED
FIGURE Engine and Nacelle - Thrust Reverser Cowls - TRENT 700	N	ILLUSTRATION ADDED
FIGURE Engine and Nacelle - Engine Dimensions - GE CF6-80E1	N	ILLUSTRATION ADDED
FIGURE Engine and Nacelle - Nacelle Dimensions - GE CF6-80E1	N	ILLUSTRATION ADDED
FIGURE Engine and Nacelle - Fan Cowls - GE CF6-80E1	N	ILLUSTRATION ADDED
FIGURE Engine and Nacelle - Thrust Reverser Cowls - GE CF6-80E1	N	ILLUSTRATION ADDED
Subject 2-12-1	N	
Auxiliary Power Unit	N	
FIGURE Auxiliary Power Unit - Access Doors	N	ILLUSTRATION ADDED
Section 2-13	N	
Subject 2-13-0	N	
Leveling, Symmetry and Alignment	N	
FIGURE Location of Leveling Points	N	ILLUSTRATION ADDED
FIGURE Location of Leveling Points	N	ILLUSTRATION ADDED
FIGURE Location of Leveling Points	N	ILLUSTRATION ADDED
Section 2-14	N	
Subject 2-14-0	N	
Jacking for Maintenance	N	
FIGURE Jacking for Maintenance - Jacking Points Location	N	ILLUSTRATION ADDED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Jacking for Maintenance - Jacking Points Location	N	ILLUSTRATION ADDED
FIGURE Jacking for Maintenance - Jacking Points Location	N	ILLUSTRATION ADDED
FIGURE Jacking for Maintenance - Forward Jacking Point	N	ILLUSTRATION ADDED
FIGURE Jacking for Maintenance - Forward Jacking Point	N	ILLUSTRATION ADDED
FIGURE Jacking for Maintenance - Wing Jacking Points	N	ILLUSTRATION ADDED
FIGURE Jacking for Maintenance - Wing Jacking Points	N	ILLUSTRATION ADDED
FIGURE Jacking for Maintenance - Auxiliary Jacking Point - Safety Stay	N	ILLUSTRATION ADDED
FIGURE Jacking for Maintenance - Auxiliary Jacking Point - Safety Stay	N	ILLUSTRATION ADDED
FIGURE Jacking for Maintenance - Auxiliary Jacking Point - Safety Stay	N	ILLUSTRATION ADDED
FIGURE Jacking for Maintenance - Specific Jack-Nose Dimensions	N	ILLUSTRATION ADDED
FIGURE Jacking for Maintenance - Jacking Dimensions	N	ILLUSTRATION ADDED
FIGURE Jacking for Maintenance - Jacking Dimensions	N	ILLUSTRATION ADDED
FIGURE Jacking for Maintenance - Jacking Dimensions	N	ILLUSTRATION ADDED
FIGURE Jacking for Maintenance - Load at the Aircraft Jacking Points	N	ILLUSTRATION ADDED
FIGURE Jacking for Maintenance - Load at the Aircraft Jacking Points	N	ILLUSTRATION ADDED
Subject 2-14-1	N	
Jacking for Wheel Change	N	
FIGURE Jacking for Wheel Change - MLG Jacking Point Heights	N	ILLUSTRATION ADDED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Jacking for Wheel Change - Jacking of the NLG	N	ILLUSTRATION ADDED
FIGURE Jacking for Wheel Change - MLG Jacking Point Loads	N	ILLUSTRATION ADDED
FIGURE Jacking for Wheel Change - MLG Jacking Point Loads	N	ILLUSTRATION ADDED
FIGURE Jacking for Wheel Change - NLG Jacking Point Loads	N	ILLUSTRATION ADDED
FIGURE Jacking for Wheel Change - NLG Jacking Point Loads	N	ILLUSTRATION ADDED
Subject 2-14-2	N	
Support of Aircraft	N	
FIGURE Support of Aircraft - Location of Shoring Cradles	N	ILLUSTRATION ADDED
FIGURE Support of Aircraft - Location of Shoring Cradles	N	ILLUSTRATION ADDED
FIGURE Support of Aircraft - Location of Shoring Cradles	N	ILLUSTRATION ADDED
<u>CHAPTER 3</u>	R	
Section 3-5	R	
Subject 3-5-0		
Final Approach Speed	R	PART EFFECTIVITY ADDED/REVISED/DELETED NOTE AMENDED
Subject 03-05-01	D	
<u>CHAPTER 4</u>		
Section 4-2		
Subject 4-2-0		
FIGURE Turning Radii - (Sheet 1)	R	
FIGURE Turning Radii - (Sheet 2)	R	
FIGURE Turning Radii - (Sheet 2)	R	
Section 4-3		

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
Subject 4-3-0		
FIGURE Minimum Turning Radii	R	
FIGURE Minimum Turning Radii	R	ILLUSTRATION REVISED
Section 4-4		
Subject 4-4-0		
Visibility from Cockpit in Static Position.	R	
FIGURE Visibility from Cockpit in Static Position	R	
FIGURE Visibility from Cockpit in Static Position	R	
FIGURE Binocular Visibility Through Windows from Captain Eye Position	N	ILLUSTRATION ADDED
Section 4-5		
Subject 4-5-3		
FIGURE 180° Turn on a Runway	R	ILLUSTRATION REVISED
FIGURE 180° Turn on a Runway	R	ILLUSTRATION REVISED
Section 4-7	R	
Subject 4-7-0	R	
CHAPTER 5	R	
Section 5-1	R	
Subject 5-1-0	R	
Subject 5-1-1		
Symbols Used on Servicing Diagrams	R	ADDED "BULK TRAIN".
Subject 5-1-2	R	
Typical Ramp Layout - Open Apron	R	ADDED "STAND SAFETY LINE" DEFINITION. DESCRIPTION TITLE UPDATED
FIGURE Typical Ramp Layout - Open Apron	R	ILLUSTRATION REVISED
FIGURE Typical Ramp Layout - Open Apron	R	ILLUSTRATION REVISED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
Typical Ramp Layout - Open Apron	R	ADDED "STAND SAFETY LINE" DEFINITION. DESCRIPTION TITLE UPDATED
FIGURE Typical Ramp Layout - Open Apron	R	ILLUSTRATION REVISED
Subject 5-1-3	R	
Typical Ramp Layout - Gate	R	ADDED "STAND SAFETY LINE" DEFINITION. DESCRIPTION TITLE UPDATED
FIGURE Typical Ramp Layout - Gate	R	ILLUSTRATION REVISED
FIGURE Typical Ramp Layout - Gate	R	ILLUSTRATION REVISED
Section 5-2	R	
Subject 5-2-0	R	
Terminal Operations – Full Servicing Turn-Round Time	R	DESCRIPTION TITLE UPDATED
FIGURE Full Servicing Turn-Round Time Chart	N	ILLUSTRATION ADDED
Terminal Operations – Full Servicing Turn-Round Time	N	
FIGURE Full Servicing Turn-Round Time Chart	N	ILLUSTRATION ADDED
Terminal Operations - Full Servicing Turn-Round Time	N	
FIGURE Full Servicing Turn-Round Time Chart	N	ILLUSTRATION ADDED
Subject 05-02-01	D	
Section 5-3	R	
Subject 5-3-0	R	
Terminal Operations - Minimum Servicing Turn-Round Time	R	DESCRIPTION TITLE UPDATED
FIGURE Minimum Servicing Turn-Round Time	N	ILLUSTRATION ADDED
Terminal Operations - Minimum Servicing Turn-Round Time	N	

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Minimum Servicing Turn-Round Time	N	ILLUSTRATION ADDED
Subject 05-03-01	D	
Section 5-4	R	
Subject 05-04-00	D	
Subject 5-4-1		
Ground Service Connections Layout	R	
FIGURE Ground Service Connections Layout	R	ILLUSTRATION REVISED
Ground Service Connections Layout	R	
FIGURE Ground Service Connections Layout	R	ILLUSTRATION REVISED
Subject 5-4-3		
Hydraulic System	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Service Connections - Green System Ground Service Panel	N	ILLUSTRATION ADDED
FIGURE Ground Service Connections - Blue System Ground Service Panel	N	ILLUSTRATION ADDED
FIGURE Ground Service Connections - Yellow System Ground Service Panel	N	ILLUSTRATION ADDED
Subject 5-4-4		
Electrical System	R	NOTE AMENDED
FIGURE Ground Service Connections - Electrical Service Panel	N	ILLUSTRATION ADDED
FIGURE Ground Service Connections - Electrical Service Panel	N	ILLUSTRATION ADDED
Subject 5-4-5		
Oxygen System	R	PART EFFECTIVITY ADDED/REVISED/DELETED NOTE AMENDED
FIGURE Ground Service Connections - Oxygen System	N	ILLUSTRATION ADDED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Ground Service Connections - Oxygen System	N	ILLUSTRATION ADDED
Subject 5-4-6		
Fuel System	R	
Subject 5-4-7		
Pneumatic System	R	
FIGURE Ground Service Connections - LP and HP Ground Connectors	N	ILLUSTRATION ADDED
Subject 5-4-8		
Potable Water System	R	PART EFFECTIVITY ADDED/REVISED/DELETED NOTE AMENDED
FIGURE Ground Service Connections - Potable-Water Ground Service Panels	N	ILLUSTRATION ADDED
Potable Water System	N	
FIGURE Ground Service Connections - Potable-Water Ground Service Panels	N	ILLUSTRATION ADDED
Potable Water System	N	
FIGURE Ground Service Connections - Potable-Water Ground Service Panel	N	ILLUSTRATION ADDED
Subject 5-4-9		
APU Oil System	R	ADDED ACCESS DOORS FOR "APU OIL SERVICING".
FIGURE Ground Service Connections - APU Oil Servicing	R	
Subject 5-4-10		
Vacuum Toilet System	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Service Connections - Waste Water Ground Service Panel	N	ILLUSTRATION ADDED
FIGURE Ground Service Connections - Waste Water Ground Service Panel	N	ILLUSTRATION ADDED
Section 5-5	R	
Subject 5-5-0		

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
Engine Starting Pneumatic Requirements	R	ADDED PERFORMANCE REQUIREMENTS FOR PNEUMATIC ENGINE STARTING. CROSS REFERENCED DOCUMENTARY UNIT ADDED/REVISED/DELETED
FIGURE Example for Use of the Charts	R	ILLUSTRATION REVISED
FIGURE Engine Starting Pneumatic Requirements - GE CF6-80E1 Series Engine	N	ILLUSTRATION ADDED
FIGURE Engine Starting Pneumatic Requirements - Rolls Royce Trent 700 Series Engine	N	ILLUSTRATION ADDED
FIGURE Engine Starting Pneumatic Requirements - Pratt & Whitney PW4000 Series Engine	N	ILLUSTRATION ADDED
Subject 05-05-01	D	
Subject 05-05-02	D	
Subject 05-05-03	D	
Section 5-6	R	
Subject 5-6-0		
Ground Pneumatic Power Requirements	R	ADDED PERFORMANCE REQUIREMENTS OF THE GROUND PNEUMATIC SERVICE EQUIPMENT FOR HEATING AND COOLING OF THE CABIN. NOTE AMENDED
FIGURE Ground Pneumatic Power Requirements - Heating	N	ILLUSTRATION ADDED
FIGURE Ground Pneumatic Power Requirements - Cooling	N	ILLUSTRATION ADDED
Subject 05-06-01	D	
Subject 05-06-02	D	
Section 5-7		
Subject 5-7-0		
Preconditioned Airflow Requirements	R	UPDATED REQUIREMENTS FOR PRECONDITIONED AIRFLOW AT THE GROUND CONNECTION.

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Preconditioned Airflow Requirements	R	
Section 5-8		
Subject 5-8-0		
Ground Towing Requirements	R	
Section 5-9	N	
Subject 5-9-0	N	
De-Icing and External Cleaning	N	
CHAPTER 7		
Section 7-1		
Subject 7-1-0		
General Information	R	TEXT UPDATED
Section 7-2		
Subject 7-2-0		
Landing Gear Footprint	R	ILLUSTRATIONS UPDATED
FIGURE Landing Gear Footprint	R	ILLUSTRATION REVISED
FIGURE Landing Gear Footprint	R	
FIGURE Landing Gear Footprint	R	ILLUSTRATION REVISED
Section 7-3		
Subject 7-3-0		
Maximum Pavement Loads	R	ILLUSTRATIONS UPDATED
FIGURE Maximum Pavement Loads	R	ILLUSTRATION REVISED
FIGURE Maximum Pavement Loads	R	
FIGURE Maximum Pavement Loads	R	ILLUSTRATION REVISED
Section 7-4	R	
Subject 7-4-0		
Landing Gear Loading on Pavement	R	ILLUSTRATIONS AND EXAMPLE UPDATED.
FIGURE Landing Gear Loading on Pavement - WV026, MRW 192 900 kg	N	ILLUSTRATION ADDED
FIGURE Landing Gear Loading on Pavement - WV001, MRW 227 900 kg	N	ILLUSTRATION ADDED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Landing Gear Loading on Pavement - WV001, MRW 184 900 kg	N	ILLUSTRATION ADDED
Subject 07-04-01	D	
Section 7-5	R	
Subject 7-5-0		
Flexible Pavement Requirements - US Army Corps of Engineers Design Method S-77-1	R	ILLUSTRATIONS AND EXAMPLE UPDATED. DESCRIPTION TITLE UPDATED
FIGURE Flexible Pavement Requirements - WV026, MRW 192 900 kg, CG 38.8 %	N	ILLUSTRATION ADDED
FIGURE Flexible Pavement Requirements - WV001, MRW 227 900 kg, CG 37.6 %	N	ILLUSTRATION ADDED
FIGURE Flexible Pavement Requirements - WV001, MRW 184 900 kg, CG 40.1 %	N	ILLUSTRATION ADDED
Subject 07-05-01	D	
Section 7-6	R	
Subject 7-6-0		
Flexible Pavement Requirements - LCN Conversion	R	TEXT, ILLUSTRATIONS AND EXAMPLE UPDATED.
FIGURE Flexible Pavement Requirements - LCN table	N	ILLUSTRATION ADDED
FIGURE Flexible Pavement Requirements - LCN - WV026, MRW 192 900 kg, CG 38.8 %	N	ILLUSTRATION ADDED
FIGURE Flexible Pavement Requirements - LCN table	N	ILLUSTRATION ADDED
FIGURE Flexible Pavement Requirements - LCN - WV001, MRW 227 900 kg, CG 37.6 %	N	ILLUSTRATION ADDED
FIGURE Flexible Pavement Requirements - LCN table	N	ILLUSTRATION ADDED
FIGURE Flexible Pavement Requirements - LCN - WV001, MRW 184 900 kg, CG 40.1 %	N	ILLUSTRATION ADDED
Subject 07-06-01	D	

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
Section 7-7	R	
Subject 7-7-0		
Rigid Pavement Requirements - Portland Cement Association Design Method	R	TEXT, ILLUSTRATIONS AND EXAMPLE UPDATED. NOTE AMENDED
FIGURE Rigid Pavement Requirements - WV026, MRW 192 900 kg, CG 38.8 %	N	ILLUSTRATION ADDED
FIGURE Rigid Pavement Requirements - WV001, MRW 227 900 kg, CG 37.6 %	N	ILLUSTRATION ADDED
FIGURE Rigid Pavement Requirements - WV001, MRW 184 900 kg, CG 40.1 %	N	ILLUSTRATION ADDED
Subject 07-07-01	D	
Section 7-8	R	
Subject 7-8-0		
Rigid Pavement Requirements - LCN Conversion	R	TEXT, ILLUSTRATIONS AND EXAMPLE UPDATED.
FIGURE Rigid Pavement Requirements - LCN table	N	ILLUSTRATION ADDED
FIGURE Rigid Pavement Requirements - LCN table	N	ILLUSTRATION ADDED
FIGURE Rigid Pavement Requirements - LCN table	N	ILLUSTRATION ADDED
FIGURE Radius of Relative Stiffness (L)	N	ILLUSTRATION ADDED
FIGURE Rigid Pavement Requirements - LCN - WV026, MRW 192 900 kg, CG 38.8 %	N	ILLUSTRATION ADDED
FIGURE Rigid Pavement Requirements - LCN - WV001, MRW 227 900 kg, CG 37.6 %	N	ILLUSTRATION ADDED
FIGURE Rigid Pavement Requirements - LCN - WV001, MRW 184 900 kg, CG 40.1 %	N	ILLUSTRATION ADDED
FIGURE Radius of Relative Stiffness (Effect E and μ ON "L" values)	N	ILLUSTRATION ADDED
Subject 07-08-01	D	

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
Subject 07-08-02	D	
Subject 07-08-03	D	
Subject 07-08-04	D	
Section 7-9	R	
Subject 7-9-0		
Aircraft Classification Number - Flexible and Rigid Pavement	R	TEXT, ILLUSTRATIONS AND EXAMPLE UPDATED. DESCRIPTION TITLE UPDATED NOTE AMENDED
FIGURE Aircraft Classification Number - ACN Table	N	ILLUSTRATION ADDED
FIGURE Aircraft Classification Number - Flexible Pavement - WV026, MRW 192 900 kg, CG 38.8 %	N	ILLUSTRATION ADDED
FIGURE Aircraft Classification Number - Flexible Pavement - WV058, MRW 238 900 kg, CG 31.3 %	N	ILLUSTRATION ADDED
FIGURE Aircraft Classification Number - ACN Table	N	ILLUSTRATION ADDED
FIGURE Aircraft Classification Number - Flexible Pavement - WV001, MRW 227 900 kg, CG 37.6 %	N	ILLUSTRATION ADDED
FIGURE Aircraft Classification Number - Flexible Pavement - WV000, MRW 233 900 kg, CG 37.4 %	N	ILLUSTRATION ADDED
FIGURE Aircraft Classification Number - ACN Table	N	ILLUSTRATION ADDED
FIGURE Aircraft Classification Number - Flexible Pavement - WV001, MRW 184 900 kg, CG 40.1 %	N	ILLUSTRATION ADDED
FIGURE Aircraft Classification Number - Flexible Pavement - WV054, MRW 235 900 kg, CG 35.7 %	N	ILLUSTRATION ADDED
Subject 07-09-01	D	
Subject 07-09-02	D	

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
CHAPTER 8	R	
Section 8-0	N	
Subject 8-0-0	N	
Scaled Drawings	N	
FIGURE Scaled Drawing	N	ILLUSTRATION ADDED
FIGURE Scaled Drawing	N	ILLUSTRATION ADDED
FIGURE Scaled Drawing	N	ILLUSTRATION ADDED
Section 08-01	D	
CHAPTER 10	N	
Section 10-0	N	
Subject 10-0-0	N	
Aircraft Rescue and Fire Fighting	N	
FIGURE Front Page	N	ILLUSTRATION ADDED
FIGURE Highly Flammable and Hazardous Materials and Components	N	ILLUSTRATION ADDED
FIGURE Crew Rest Compartments Location	N	ILLUSTRATION ADDED
FIGURE Wheel/Brake Overheat - Wheel Safety Area	N	ILLUSTRATION ADDED
FIGURE Composite Materials Location	N	ILLUSTRATION ADDED
FIGURE Ground Lock Safety Devices	N	ILLUSTRATION ADDED
FIGURE Emergency Evacuation Devices	N	ILLUSTRATION ADDED
FIGURE Pax/Crew Doors and Emergency Exits	N	ILLUSTRATION ADDED
FIGURE FWD and AFT Lower Deck Cargo Doors	N	ILLUSTRATION ADDED
FIGURE Control Panels	N	ILLUSTRATION ADDED
FIGURE APU Compartment Access	N	ILLUSTRATION ADDED
FIGURE Ground Clearances	N	ILLUSTRATION ADDED
FIGURE Structural Break-in Points	N	ILLUSTRATION ADDED
Aircraft Rescue and Fire Fighting	N	
FIGURE Front Page	N	ILLUSTRATION ADDED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Highly Flammable and Hazardous Materials and Components	N	ILLUSTRATION ADDED
FIGURE Wheel/Brake Overheat - Wheel Safety Area	N	ILLUSTRATION ADDED
FIGURE Composite Materials Location	N	ILLUSTRATION ADDED
FIGURE Ground Lock Safety Devices	N	ILLUSTRATION ADDED
FIGURE Emergency Evacuation Devices	N	ILLUSTRATION ADDED
FIGURE Crew Doors and Emergency Exits	N	ILLUSTRATION ADDED
FIGURE Cargo Doors - FWD and AFT Lower Deck Compartments	N	ILLUSTRATION ADDED
FIGURE Control Panels	N	ILLUSTRATION ADDED
FIGURE APU Compartment Access	N	ILLUSTRATION ADDED
FIGURE Ground Clearances	N	ILLUSTRATION ADDED
FIGURE Structural Break-in Points	N	ILLUSTRATION ADDED

LIST OF EFFECTIVE CONTENT

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CONTENT	CHG CODE	LAST REVISION DATE
Subject 2-4-1		
Interior Arrangements - Plan View	R	Apr 01/13
FIGURE Interior Arrangements - Plan View - Typical Configuration	R	Apr 01/13
FIGURE Interior Arrangements - Plan View - Typical Configuration	R	Apr 01/13
Subject 2-5-0		
Interior Arrangements - Cross Section	R	Apr 01/13
FIGURE Interior Arrangements - Cross Section - Typical Configuration	R	Apr 01/13
Subject 2-6-1		
Lower Deck Cargo Compartments	R	Apr 01/13
FIGURE Lower Deck Cargo Compartments - Location and Dimensions	R	Apr 01/13
FIGURE Lower Deck Cargo Compartments - Loading Combinations	R	Apr 01/13
FIGURE Lower Deck Cargo Compartments - Loading Combinations	N	Apr 01/13
Subject 2-6-2		
Main Deck Cargo Compartment	R	Apr 01/13
FIGURE Main Deck Cargo Compartment - Location and Dimensions	N	Apr 01/13
FIGURE Main Deck Cargo Compartment - Loading Combinations	R	Apr 01/13
FIGURE Main Deck Cargo Compartment - Loading Combinations	R	Apr 01/13
FIGURE Main Deck Cargo Compartment - Loading Combinations	R	Apr 01/13
FIGURE Main Deck Cargo Compartment - Loading Combinations	R	Apr 01/13
Subject 2-6-3		
Main and Lower Deck Cross-sections		Feb 01/09
FIGURE Main and Lower Deck Cross-sections		Jan 01/12
Subject 2-7-0		
Door Clearances	R	Apr 01/13
FIGURE Door Identification and location - Door Identification	N	Apr 01/13
FIGURE Door Identification and Location - Door Identification	N	Apr 01/13
FIGURE Door Identification and Location - Door Identification	N	Apr 01/13
Subject 2-7-1		

CONTENT	CHG CODE	LAST REVISION DATE
Main Landing Gear Doors		May 01/07
FIGURE Main Landing Gear Doors		May 01/07
Main Landing Gear Doors		Feb 01/09
FIGURE Main Landing Gear Doors		Feb 01/09
Subject 2-7-9		
Radome		Feb 01/09
FIGURE Radome		Feb 01/09
Subject 2-7-10		
APU and Nose Landing Gear Doors		May 01/07
FIGURE APU and Nose Landing Gear Doors		May 01/07
APU and Nose Landing Gear Doors		Feb 01/09
FIGURE APU and Nose Landing Gear Doors		Feb 01/09
Subject 2-8-0		
Escape Slides	N	Apr 01/13
FIGURE Escape Slides - Location	N	Apr 01/13
FIGURE Escape Slides - Location	N	Apr 01/13
FIGURE Escape Slides - Location	N	Apr 01/13
Subject 2-9-0		
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****ON A/C A330-200 A330-200F A330-300**

Purpose

1. General

   The A330 AIRCRAFT CHARACTERISTICS - AIRPORT AND MAINTENANCE PLANNING (AC) manual is issued for the A330-200, A330-200F and A330-300 basic versions to provide necessary data to airport operators, airlines and Maintenance/Repair Organizations (MRO) for airport and maintenance facilities planning.

   This revision is now a merging of the Maintenance Facility Planning (MFP) document and the Airplane Characteristics for Airport Planning (AC). This document has been renamed Aircraft Characteristics - Airport and Maintenance Planning (AC) to reflect this change.
   Additionally, a chapter 10 "Aircraft Rescue and Fire Fighting" has been added to the AC. This chapter contains the illustrations of the Aircraft Rescue and Fire fighting Charts poster and replaces the PDF document that was available for download.

   This document is not customized and must not be used for training purposes.

   The A330 Family – with Passenger, Freighter, VIP and Military Transport/Tanker variants - is one of the most widely-used, versatile and economic wide-bodies in service and has nearly 100 operators and customers flying to more than 300 airports every week.

   The A330-200 and A330-300 offer several payload capabilities ranging from 200 passengers in a high comfort multi-class layout, up to 440 passengers in a high efficiency configuration. The new-generation mid-size freighter, the A330-200F, has up to 70 t (154 324 lb) payload and a range up to 4 000 nm (7 408 km). It offers better payload, range and economics than previous-generation freighters.
   The ACJ330 offers true space and comfort whilst delivering a "non-stop to the world" range for corporate, VIP and government operators.
   The A330 MRTT is the most capable in-flight refueling platform available.

   The A330 combines maturity and reliability with the most up-to-date technology. It consistently achieves an average dispatch reliability of over 99% and annual utilization of up to 5 500 Flight Hours. At the same time it is continuously improved by incorporating the latest technologies, to lower operating costs, increase efficiency, improve safety and enhance the passenger product – pioneering 240 minutes ETOPS, introducing RNP to wide-bodies and being the first aircraft to have line-fit total connectivity for passengers.

The latest improvement is an increase to 242t (533 519 lb) MTOW adding even more range – 2 100 nm (3 889 km) more range since the A330-300 EIS – with lower fuel burn. In the meantime the A330 engine manufacturers - General Electric, Pratt & Whitney and Rolls-Royce - have recently introduced features to further reduce fuel burn, maintenance costs and improve performance.

This document does not include the latest A330 at 242t (533 519 lb) MTOW which is under development.

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1-2-1 Glossary

****ON A/C A330-200 A330-200F A330-300**

Glossary

1. List of Abbreviations

A/C	Aircraft
ACN	Aircraft Classification Number
AMM	Aircraft Maintenance Manual
APU	Auxiliary Power Unit
B/C (except A330-200F)	Business Class
C/L	Center Line
CBR	California Bearing Ratio
CC	Cargo Compartment
CG	Center of Gravity
CKPT	Cockpit
E	Young's Modulus
ELEC	Electric, Electrical, Electricity
ESWL	Equivalent Single Wheel Load
F/C (except A330-200F)	First Class
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
HYD	Hydraulic
ICAO	International Civil Aviation Organisation
IDG	Integrated Drive Generator
ISA	International Standard Atmosphere
L	Radius of relative stiffness
LCN	Load Classification Number
LD	Load Device
LD	Lower Deck
L/G	Landing Gear
LH	Left Hand
LPS (except A330-200F)	Last Pax Seating
MAC	Mean Aerodynamic Chord

MAX	Maximum
MD	Main Deck
MDCC (A330-200F only)	Main Deck Cargo Compartment
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 (except A330-200F)	Passenger
PB/D (except A330-200F)	Passenger Boarding/Deboarding
PBB	Passenger Boarding Bridge
PCA	Portland Cement Association
PCN	Pavement Classification Number
PRM (except A330-200F)	Passenger with Reduced Mobility
RH	Right Hand
ULD	Unit Load Device
US	United States
WV	Weight Variant
Y/C (except A330-200F)	Economy 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 Take-Off Weight (MTOW):
     Maximum weight for take-off 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.

2-1-1 General Aircraft Characteristics Data

****ON A/C A330-200 A330-300**

General Aircraft Characteristics Data

****ON A/C A330-300**

1. The following table provides characteristics of A330-300 Models, these data are specific to each Weight Variant:

Aircraft Characteristics				
	WV000	WV001	WV002	WV003
Maximum Taxi Weight (MTW) Maximum Ramp Weight (MRW)	212 900 kg (469 364 lb)	184 900 kg (407 635 lb)	212 900 kg (469 364 lb)	215 900 kg (475 978 lb)
Maximum Take-Off Weight (MTOW)	212 000 kg (467 380 lb)	184 000 kg (405 650 lb)	212 000 kg (467 380 lb)	215 000 kg (473 994 lb)
Maximum Landing Weight (MLW)	174 000 kg (383 604 lb)	174 000 kg (383 604 lb)	177 000 kg (390 218 lb)	177 000 kg (390 218 lb)
Maximum Zero Fuel Weight (MZFW)	164 000 kg (361 558 lb)	164 000 kg (361 558 lb)	167 000 kg (368 172 lb)	167 000 kg (368 172 lb)

Aircraft Characteristics				
	WV004 *	WV010	WV011	WV012
Maximum Taxi Weight (MTW) Maximum Ramp Weight (MRW)	209 900 kg to 215 900 kg (462 750 lb to 475 978 lb)	217 900 kg (480 387 lb)	212 900 kg (469 364 lb)	218 900 kg (482 592 lb)
Maximum Take-Off Weight (MTOW)	209 000 kg to 215 000 kg (460 766 lb to 473 994 lb)	217 000 kg (478 403 lb)	212 000 kg (467 380 lb)	218 000 kg (480 608 lb)
Maximum Landing Weight (MLW)	182 000 kg to 177 000 kg (401 241 lb to 390 218 lb)	179 000 kg (394 627 lb)	177 000 kg (390 218 lb)	182 000 kg (401 241 lb)
Maximum Zero Fuel Weight (MZFW)	172 000 kg to 167 000 kg (379 195 lb to 368 172 lb)	169 000 kg (372 581 lb)	167 000 kg (368 172 lb)	172 000 kg (379 195 lb)

NOTE : * Linear MTOW/MZFW trade-off relationship.

Aircraft Characteristics					
	WV013	WV014	WV020	WV022	WV024
Maximum Taxi Weight (MTW) Maximum Ramp Weight (MRW)	215 900 kg (475 978 lb)	205 900 kg (453 932 lb)	230 900 kg (509 047 lb)	233 900 kg (515 661 lb)	205 900 kg (453 932 lb)
Maximum Take-Off Weight (MTOW)	215 000 kg (473 994 lb)	205 000 kg (451 948 lb)	230 000 kg (507 063 lb)	233 000 kg (513 677 lb)	205 000 kg (451 948 lb)
Maximum Landing Weight (MLW)	177 000 kg (390 218 lb)	182 000 kg (401 241 lb)	185 000 kg (407 855 lb)	187 000 kg (412 264 lb)	185 000 kg (407 855 lb)
Maximum Zero Fuel Weight (MZFW)	167 000 kg (368 172 lb)	172 000 kg (379 195 lb)	173 000 kg (381 400 lb)	175 000 kg (385 809 lb)	173 000 kg (381 400 lb)

Aircraft Characteristics					
	WV025	WV050	WV051	WV052	WV053
Maximum Taxi Weight (MTW) Maximum Ramp Weight (MRW)	217 900 kg (480 387 lb)	230 900 kg (509 047 lb)	212 900 kg (469 364 lb)	233 900 kg (515 661 lb)	205 900 kg (453 932 lb)
Maximum Take-Off Weight (MTOW)	217 000 kg (478 403 lb)	230 000 kg (507 063 lb)	212 000 kg (467 380 lb)	233 000 kg (513 677 lb)	205 000 kg (451 948 lb)
Maximum Landing Weight (MLW)	179 000 kg (394 627 lb)	185 000 kg (407 855 lb)	187 000 kg (412 264 lb)	187 000 kg (412 264 lb)	185 000 kg (407 855 lb)
Maximum Zero Fuel Weight (MZFW)	169 000 kg (372 581 lb)	173 000 kg (381 400 lb)	175 000 kg (385 809 lb)	175 000 kg (385 809 lb)	173 000 kg (381 400 lb)

Aircraft Characteristics			
	WV054	WV055 **	WV056
Maximum Taxi Weight (MTW) Maximum Ramp Weight (MRW)	235 900 kg (520 070 lb)	235 900 kg (520 070 lb)	205 900 kg (453 932 lb)
Maximum Take-Off Weight (MTOW)	235 000 kg (518 086 lb)	235 000 kg (518 086 lb)	205 000 kg (451 948 lb)
Maximum Landing Weight (MLW)	187 000 kg (412 264 lb)	187 000 kg (412 264 lb)	187 000 kg (412 264 lb)
Maximum Zero Fuel Weight (MZFW)	173 000 kg (381 400 lb)	173 000 kg to 175 000 kg (381 400 lb to 385 809 lb)	175 000 kg (385 809 lb)

NOTE : ** Dynamic Payload between WV052 and WV054.

2. The following table provides characteristics of A330-300 Models, these data are common to each Weight Variant:

Aircraft Characteristics	
Standard Seating Capacity (Single-class)	335

Aircraft Characteristics	
Usable Fuel Capacity (density = 0.785 kg/l)	97 530 l (25 765 US gal)
	76 561 kg (168 787 lb)
Pressurized Fuselage Volume (A/C non equipped)	1 056 m^3 (37 292 ft^3)
Passenger Compartment Volume	372 m^3 (13 137 ft^3)
Cockpit Volume	12 m^3 (424 ft^3)
Usable Volume, FWD CC (Based on LD3)	78 m^3 (2754 ft^3)
Usable Volume, AFT CC (Based on LD3)	60.7 m^3 (2 142 ft^3)
Usable Volume, Bulk CC	19.7 m^3 (695 ft^3)
Water Volume, FWD CC	107 m^3 (3 789ft^3)
Water Volume, AFT CC	85.7 m^3 (3 026ft^3)
Water Volume, Bulk CC	22.7 m^3 (802 ft^3)

****ON A/C A330-200**

3. The following table provides characteristics of A330-200 Models, these data are specific to each Weight Variant:

Aircraft Characteristics					
	WV020	WV021	WV022	WV023	WV024
Maximum Taxi Weight (MTW) Maximum Ramp Weight (MRW)	230 900 kg (509 047 lb)	230 900 kg (509 047 lb)	233 900 kg (515 661 lb)	233 900 kg (515 661 lb)	202 900 kg (447 318 lb)
Maximum Take-Off Weight (MTOW)	230 000 kg (507 063 lb)	230 000 kg (507 063 lb)	233 000 kg (513 677 lb)	233 000 kg (513 677 lb)	202 000 kg (445 334 lb)
Maximum Landing Weight (MLW)	180 000 kg (396 832 lb)	182 000 kg (401 241 lb)	182 000 kg (401 241 lb)	180 000 kg (396 832 lb)	180 000 kg (396 832 lb)

Aircraft Characteristics					
	WV020	WV021	WV022	WV023	WV024
Maximum Zero Fuel Weight (MZFW)	168 000 kg (370 376 lb)	170 000 kg (374 786 lb)	170 000 kg (374 786 lb)	168 000 kg (370 376 lb)	168 000 kg (370 376 lb)

Aircraft Characteristics					
	WV025	WV026	WV027	WV050	WV051
Maximum Taxi Weight (MTW) Maximum Ramp Weight (MRW)	220 900 kg (487 001 lb)	192 900 kg (425 272 lb)	220 900 kg (487 001 lb)	230 900 kg (509 047 lb)	192 900 kg (425 272 lb)
Maximum Take-Off Weight (MTOW)	220 000 kg (485 017 lb)	192 000 kg (423 287 lb)	220 000 kg (485 017 lb)	230 000 kg (507 063 lb)	192 000 kg (423 287 lb)
Maximum Landing Weight (MLW)	182 000 kg (401 241 lb)	180 000 kg (396 832 lb)	180 000 kg (396 832 lb)	180 000 kg (396 832 lb)	180 000 kg (396 832 lb)
Maximum Zero Fuel Weight (MZFW)	170 000 kg (374 786 lb)	168 000 kg (370 376 lb)	168 000 kg (370 376 lb)	168 000 kg (370 376 lb)	168 000 kg (370 376 lb)

Aircraft Characteristics					
	WV052	WV053	WV054	WV055	WV056
Maximum Taxi Weight (MTW) Maximum Ramp Weight (MRW)	233 900 kg (515 661 lb)	210 900 kg (464 955 lb)	230 900 kg (509 047 lb)	192 900 kg (425 272 lb)	233 900 kg (515 661 lb)
Maximum Take-Off Weight (MTOW)	233 000 kg (513 677 lb)	210 000 kg (462 971 lb)	230 000 kg (507 063 lb)	192 000 kg (423 287 lb)	233 000 kg (513 677 lb)
Maximum Landing Weight (MLW)	182 000 kg (401 241 lb)	180 000 kg (396 832 lb)	182 000 kg (401 241 lb)	182 000 kg (401 241 lb)	180 000 kg (396 832 lb)
Maximum Zero Fuel Weight (MZFW)	170 000 kg (374 786 lb)	168 000 kg (370 376 lb)	170 000 kg (374 786 lb)	170 000 kg (374 786 lb)	168 000 kg (370 376 lb)

Aircraft Characteristics				
	WV057	WV058	WV059	WV060
Maximum Taxi Weight (MTW) Maximum Ramp Weight (MRW)	236 900 kg (522 275 lb)	238 900 kg (526 684 lb)	202 900 kg (447 318 lb)	220 900 kg (487 001 lb)
Maximum Take-Off Weight (MTOW)	236 000 kg (520 291 lb)	238 000 kg (524 700 lb)	202 000 kg (445 334 lb)	220 000 kg (485 017 lb)
Maximum Landing Weight (MLW)	182 000 kg (401 241 lb)	182 000 kg (401 241 lb)	182 000 kg (401 241 lb)	182 000 kg (401 240 lb)
Maximum Zero Fuel Weight (MZFW)	170 000 kg (374 786 lb)	168 000 kg (370 376 lb)	170 000 kg (374 786 lb)	170 000 kg (374 786 lb)

Aircraft Characteristics		
	WV061	WV062 ***
Maximum Taxi Weight (MTW) Maximum Ramp Weight (MRW)	230 900 kg (509 047 lb)	238 900 kg (526 684 lb)
Maximum Take-Off Weight (MTOW)	230 000 kg (507 063 lb)	238 000 kg (524 700 lb)
Maximum Landing Weight (MLW)	182 000 kg (401 240 lb)	182 000 kg (401 241 lb)
Maximum Zero Fuel Weight (MZFW)	168 000 kg (370 376 lb)	168 000 kg to 170 000 kg (370 376 lb to 374 786 lb)

NOTE : *** Dynamic Payload between WV057 and WV058.

4. The following table provides characteristics of A330-200 Models, these data are common to each Weight Variant:

Aircraft Characteristics	
Standard Seating Capacity	303
Usable Fuel Capacity (density = 0.785 kg/l)	139 090 l (36 744 US gal)
	109 185 kg (240 711 lb)
Pressurized Fuselage Volume (A/C non equipped)	950 m^3 (33 548 ft^3)
Passenger Compartment Volume	335 m^3 (11 830 ft^3)
Cockpit Volume	12 m^3 (424 ft^3)

Aircraft Characteristics	
Usable Volume, FWD CC (Based on LD3)	60.7 m^3 (2 142 ft^3)
Usable Volume, AFT CC (Based on LD3)	52 m^3 (1 836 ft^3)
Usable Volume, Bulk CC	19.7 m^3 (695 ft^3)
Water Volume, FWD CC	84.6 m^3 (2 988 ft^3)
Water Volume, AFT CC	71.1 m^3 (2 511 ft^3)
Water Volume, Bulk CC	22.7 m^3 (802 ft^3)

****ON A/C A330-200F**

General Aircraft Characteristics Data

1. The following table provides characteristics of A330-200F Models, these data are specific to each Weight Variant:

Aircraft Characteristics			
	WV000	WV001	WV002*
Maximum Taxi Weight (MTW) Maximum Ramp Weight (MRW)	233 900 kg (515 661 lb)	227 900 kg (502 433 lb)	233 900 kg (515 661 lb)
Maximum Take-Off Weight (MTOW)	233 000 kg (513 677 lb)	227 000 kg (500 449 lb)	233 000 kg (513 677 lb)
Maximum Landing Weight (MLW)	182 000 kg (401 241 lb)	187 000 kg (412 264 lb)	187 000 kg (412 264 lb)
Maximum Zero Fuel Weight (MZFW)	173 000 kg (381 400 lb)	178 000 kg (392 423 lb)	173 000 kg to 178 000 kg (381 399 lb to 392 422 lb)
Estimated Maximum Payload PW 4000	64 742 kg (142 732 lb)	69 742 kg (153 755 lb)	64 742 kg to 69 742 kg (142 732 lb to 153 755 lb)
Estimated Maximum Payload TRENT 700	65 000 kg (143 300 lb)	70 000 kg (154 324 lb)	65 000 kg to 70 000 kg (143 300 lb to 154 324 lb)

NOTE : * Dynamic Payload between WV000 and WV001

2. The following table provides characteristics of A330-200F Models, these data are common to each Weight Variant:

Aircraft Characteristics	
Supernumerary area	6
Usable Fuel Capacity (density = 0.785 kg/l)	139 090 l (36 755 US gal)
Pressurized Fuselage Volume (A/C non equipped)	900 m^3 (31 783 ft^3)
Cockpit Volume	12 m^3 (424 ft^3)

Aircraft Characteristics	
Main Deck Cargo Compartment Usable Volume (Based on 96"x125" pallet)	336.8 m^3 (11 894 ft^3)
Main Deck Cargo Compartment Water Volume	466.5 m^3 (16 474 ft^3)
Usable Volume, FWD CC (Based on LD3)	60.7 m^3 (2 142 ft^3)
Usable Volume, AFT CC (Based on LD3)	52 m^3 (1 836 ft^3)
Usable Volume, Bulk CC	19.7 m^3 (695 ft^3)
Water Volume, FWD CC	84.6 m^3 (2 988 ft^3)
Water Volume, AFT CC	71.1 m^3 (2 511 ft^3)
Water Volume, Bulk CC	22.7 m^3 (802 ft^3)

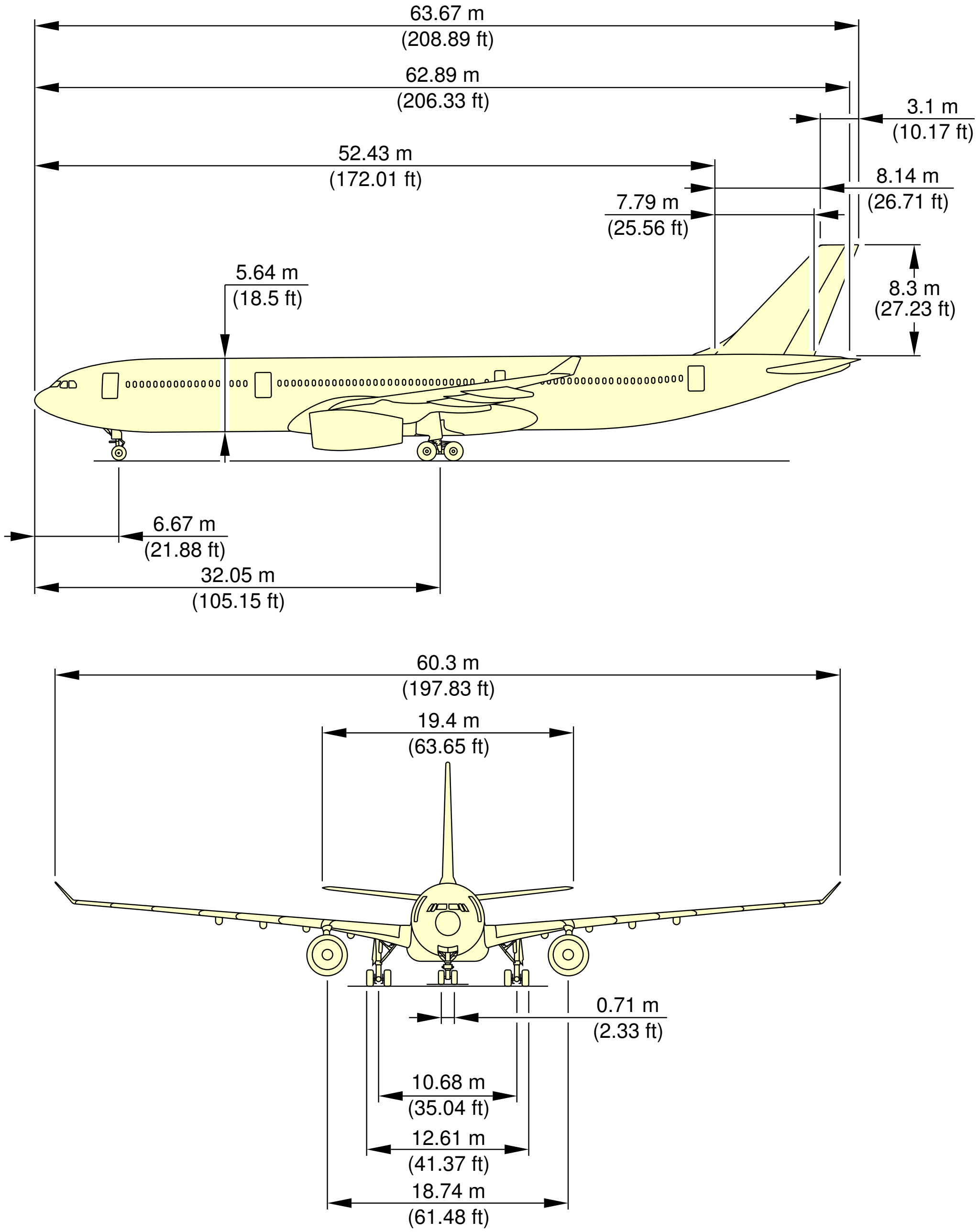
2-2-0 General Aircraft Dimensions

****ON A/C A330-200 A330-300**

General Aircraft Dimensions

1. This section provides General Aircraft Dimensions for pax version.

**ON A/C A330-300

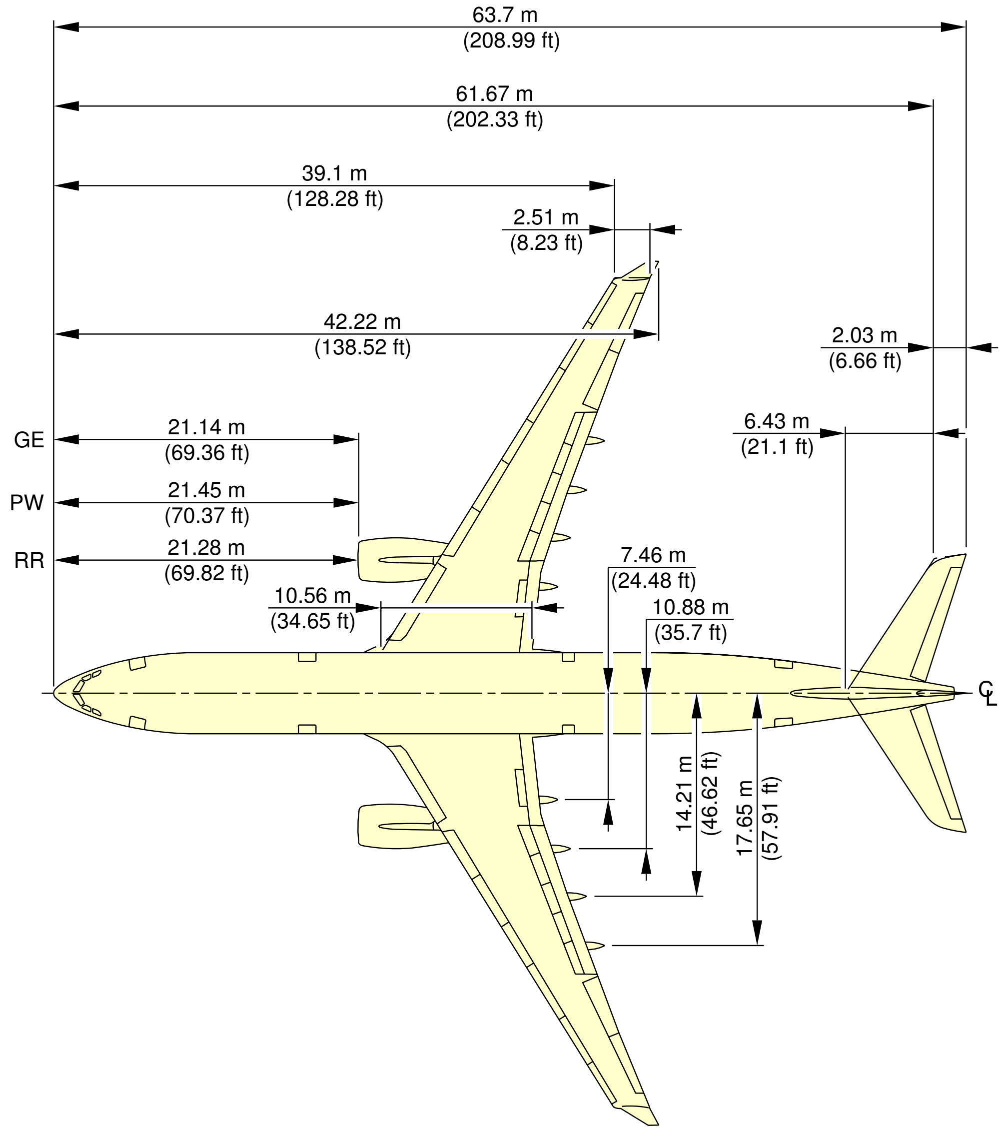


NOTE:
RELATED TO AIRCRAFT ATTITUDE AND WEIGHT.

F_AC_020200_1_0010101_01_02

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

**ON A/C A330-300

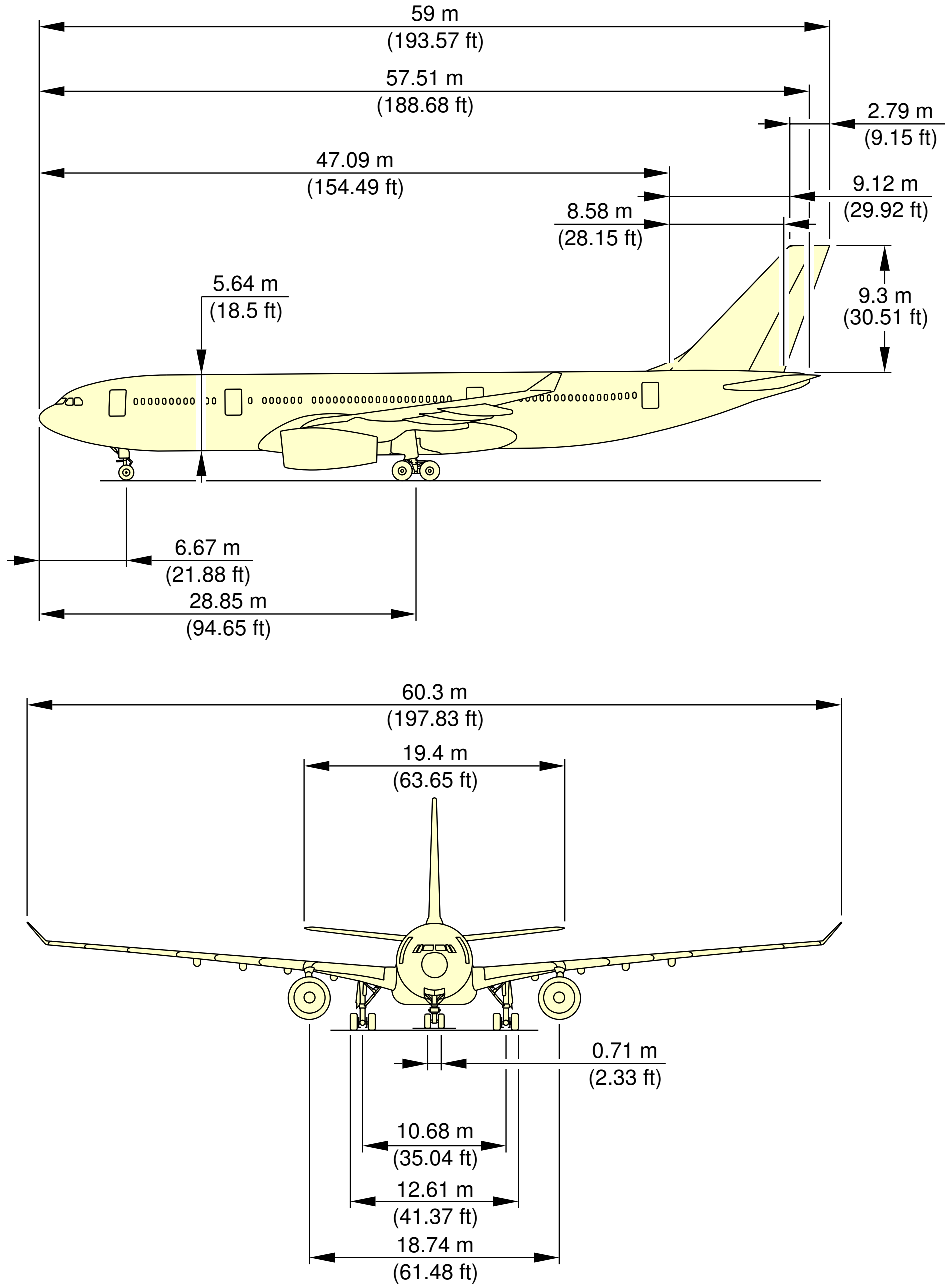


NOTE:
RELATED TO AIRCRAFT ATTITUDE AND WEIGHT.

F_AC_020200_1_0010104_01_00

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

**ON A/C A330-200

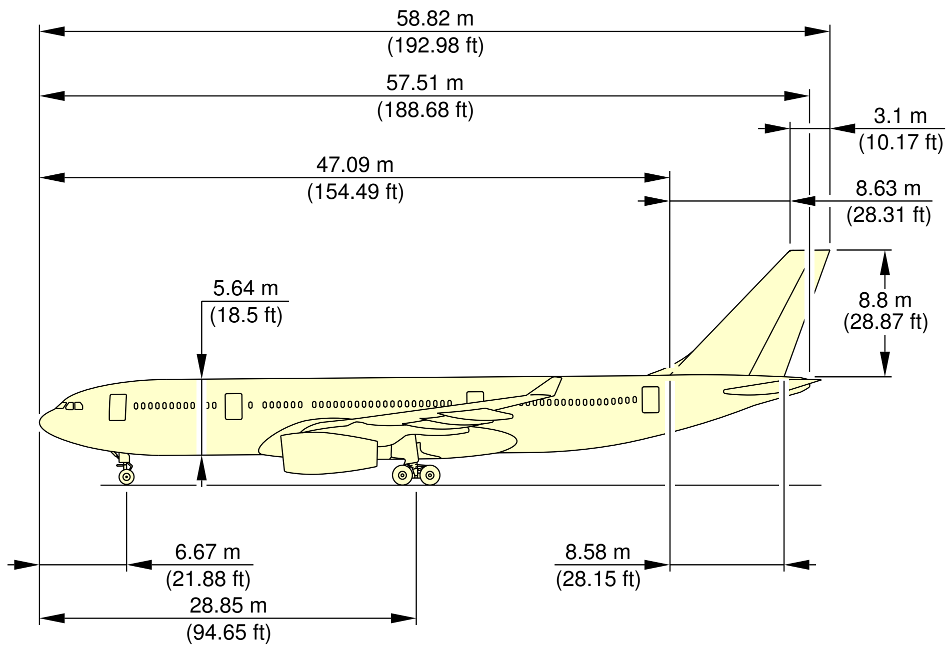


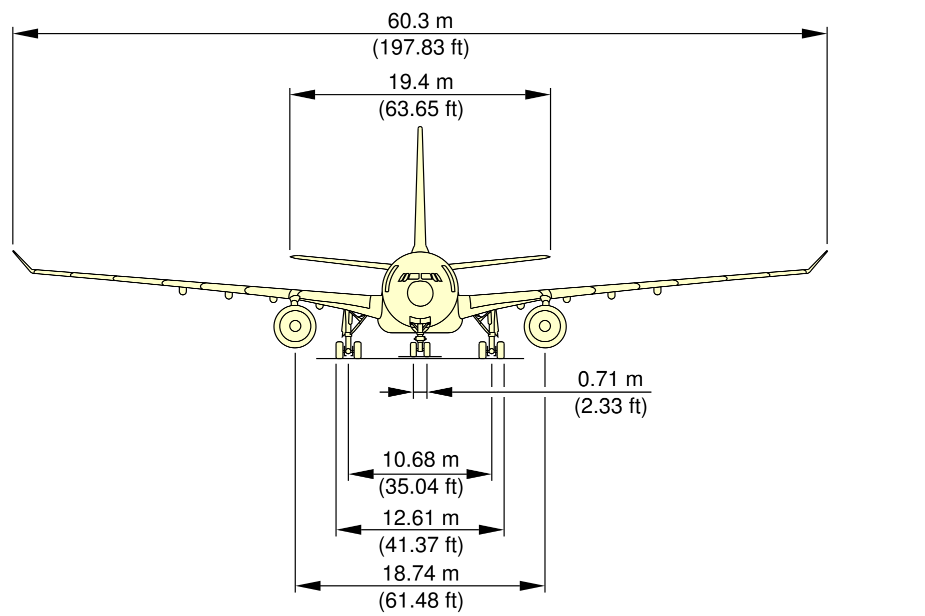
NOTE:
RELATED TO AIRCRAFT ATTITUDE AND WEIGHT.

F_AC_020200_1_0020101_01_02

General Aircraft Dimensions
(Pre Mod 48979) (Sheet 1 of 3)
FIGURE-2-2-0-991-002-A01

**ON A/C A330-200



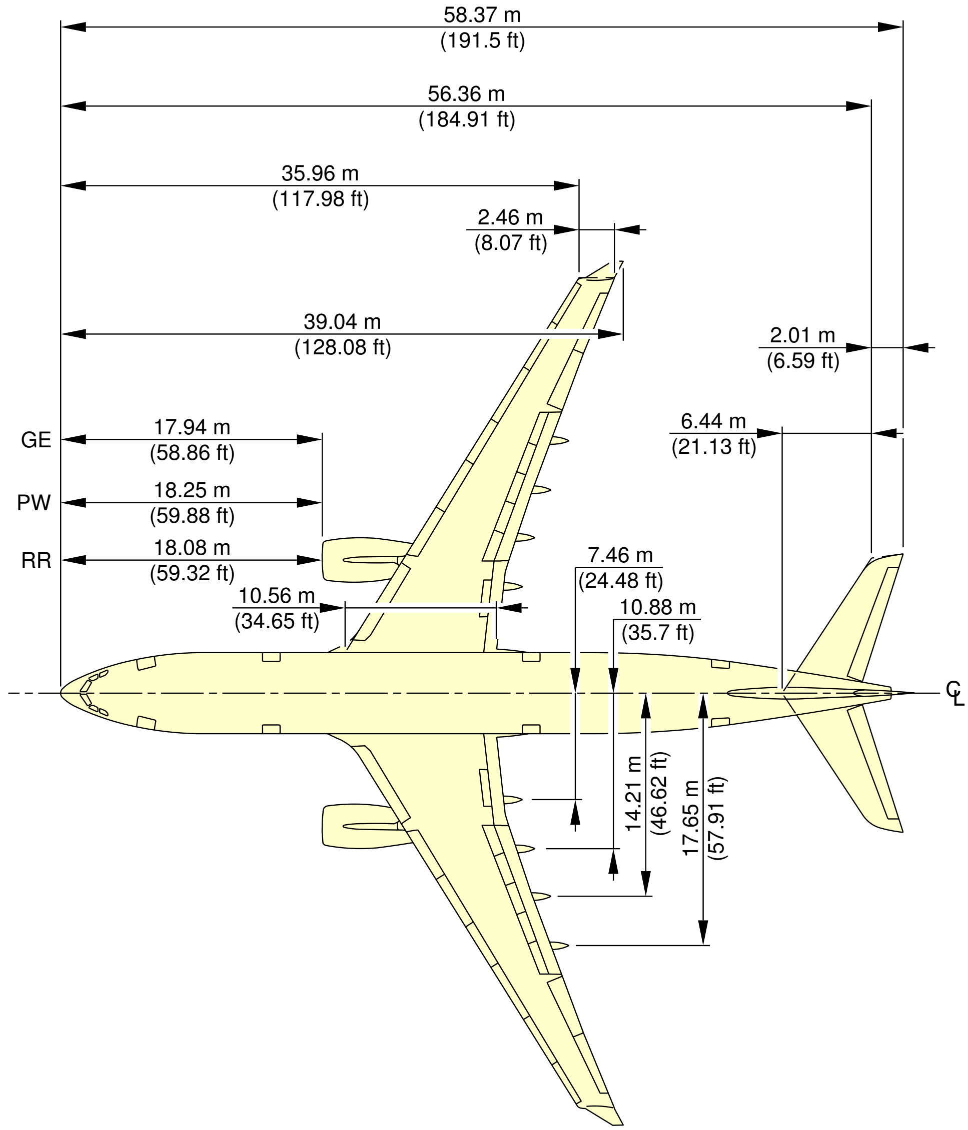


NOTE:
RELATED TO AIRCRAFT ATTITUDE AND WEIGHT.

F_AC_020200_1_0020103_01_00

General Aircraft Dimensions
(Post Mod 48979) (Sheet 2 of 3)
FIGURE-2-2-0-991-002-A01

**ON A/C A330-200



NOTE:
RELATED TO AIRCRAFT ATTITUDE AND WEIGHT.

F_AC_020200_1_0020102_01_00

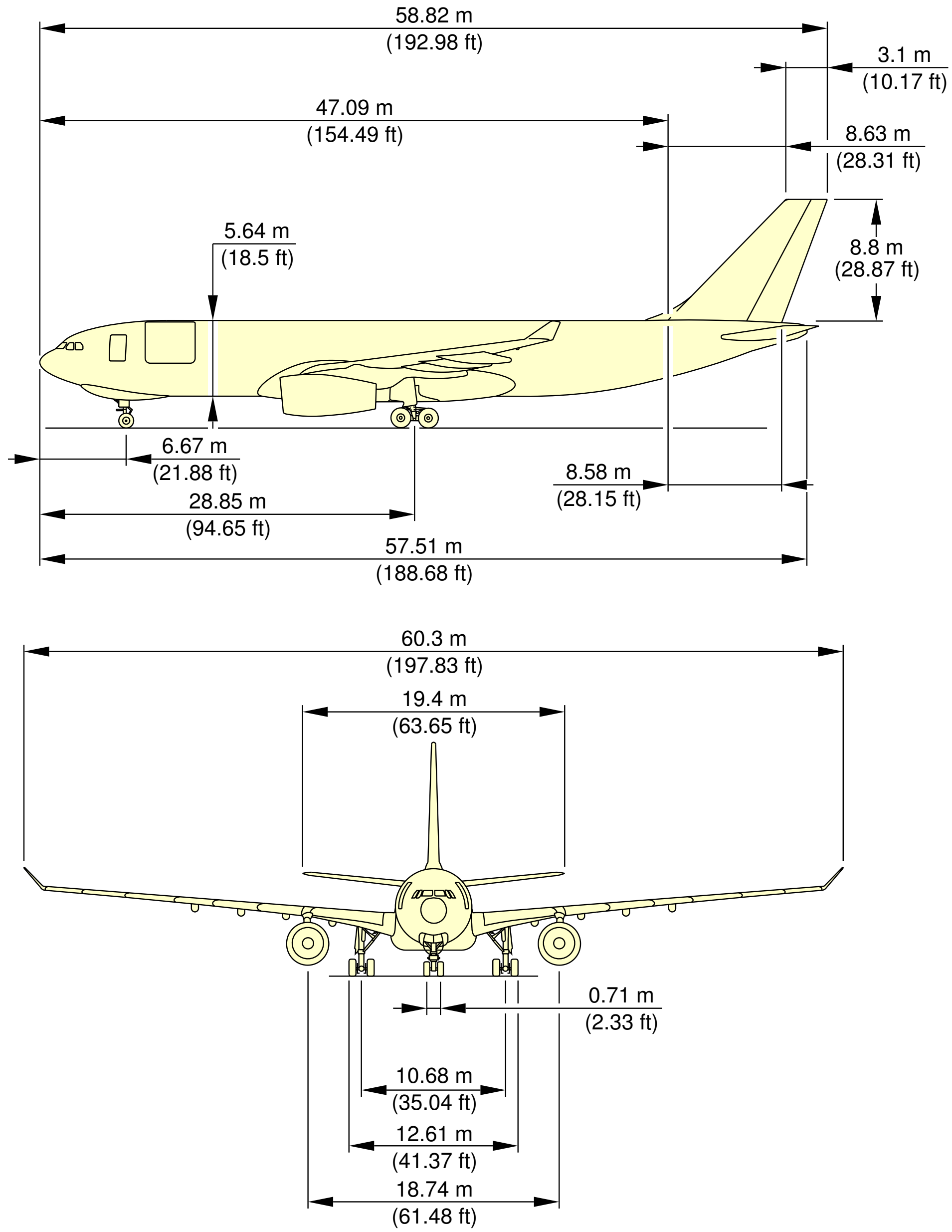
General Aircraft Dimensions
(Sheet 3 of 3)
FIGURE-2-2-0-991-002-A01

**ON A/C A330-200F

General Aircraft Dimensions

1. This section provides General Aircraft Dimensions for cargo version.

**ON A/C A330-200F



NOTE:
RELATED TO AIRCRAFT ATTITUDE AND WEIGHT.

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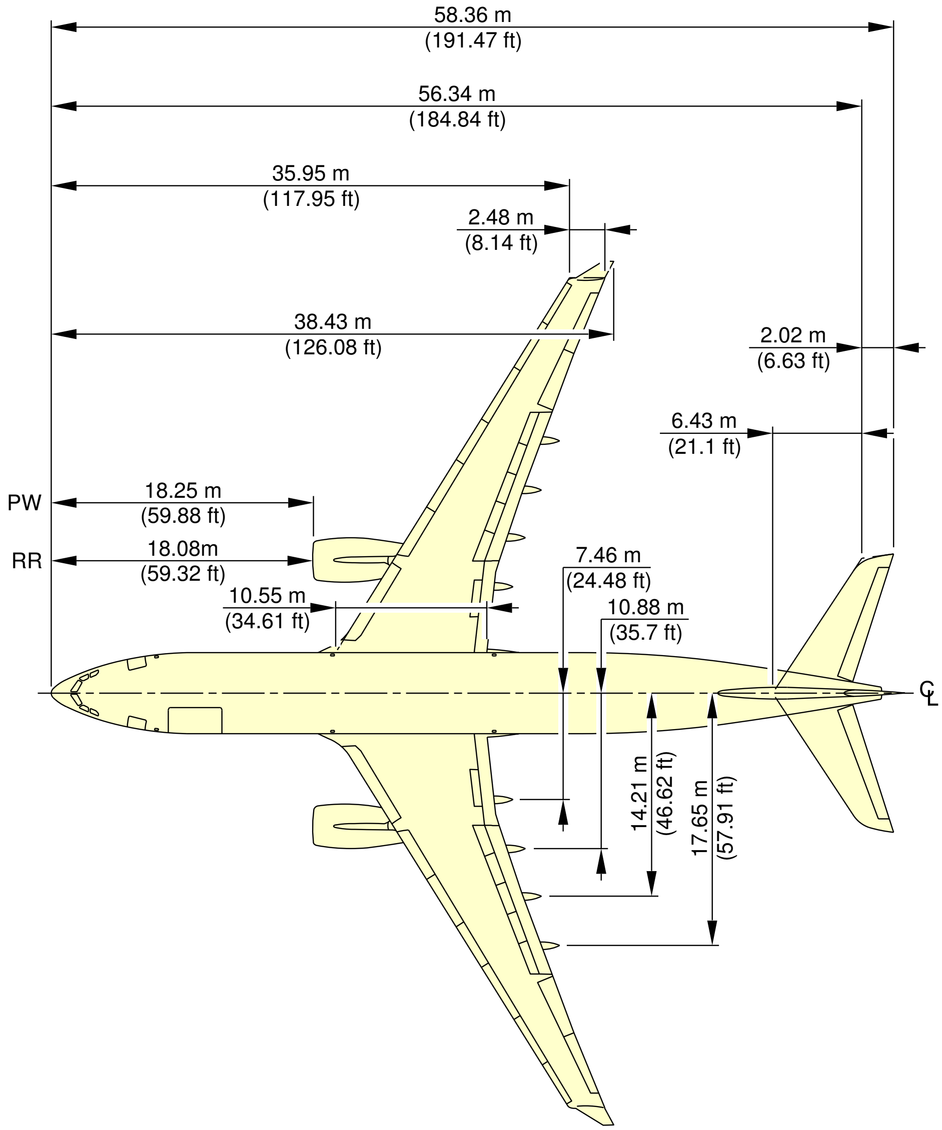
General Aircraft Dimensions
(Sheet 1 of 2)
FIGURE-2-2-0-991-003-A01

**ON A/C A330-200F



NOTE:
RELATED TO AIRCRAFT ATTITUDE AND WEIGHT.

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General Aircraft Dimensions
(Sheet 2 of 2)
FIGURE-2-2-0-991-003-A01

2-3-0 Ground Clearances

****ON A/C A330-200 A330-200F A330-300**

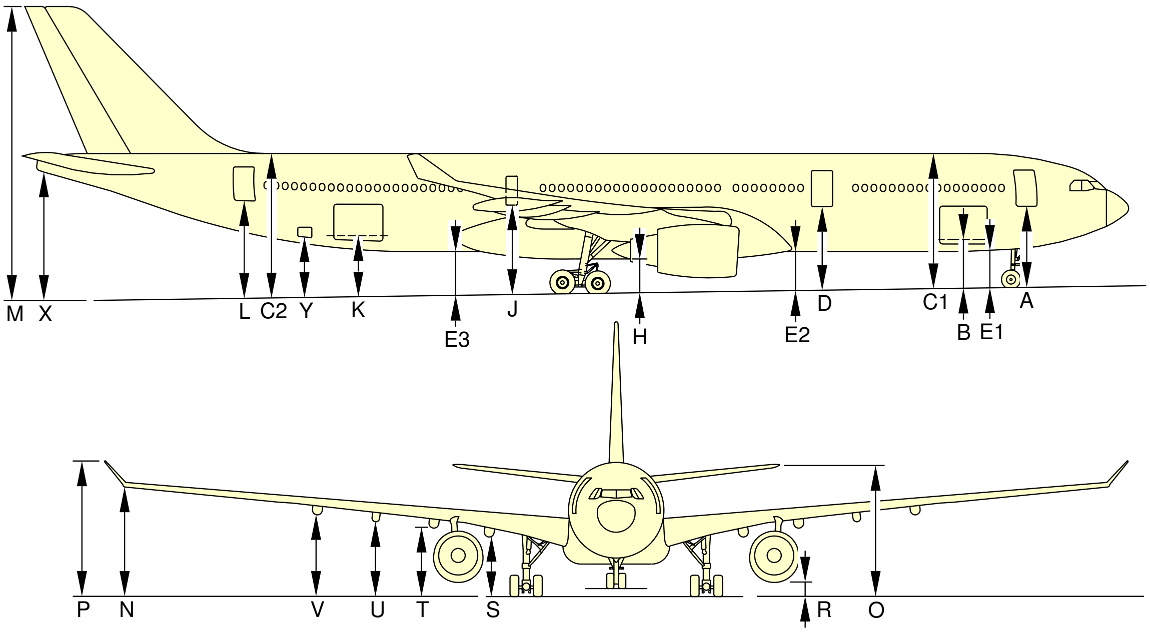
Ground Clearances

1. This section gives the height of various points of the aircraft, above the ground, for different aircraft pax configurations.
   Dimensions in the tables are approximate and will vary with tire type, W&B an others special conditions.

   The dimensions are given for:
   - A light weight for an A/C in maintenance configuration with a mid CG,
   - The MRW for the lightest weight variant with a FWD CG and a AFT CG,
   - The MRW for the heaviest weight variant with a FWD CG and a AFT CG,
   - Aircraft on jacks, FDL at 6.5 m (21.33 ft).

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

**ON A/C A330-300



MRW 212 900 kg 469 360 lb	119 000 kg CG 26.8%		MAXIMUM RAMP WEIGHT CG 15%		MAXIMUM RAMP WEIGHT CG 36.5%		AIRCRAFT ON JACKS	
	m	ft	m	ft	m	ft	m	ft
A	4.55	14.92	4.41	14.46	4.55	14.92	6.32	20.7
B	2.70	8.85	2.55	8.36	2.66	8.72	4.14	13.5
C1	7.74	25.4	7.58	24.86	7.67	25.16	9.32	30.5
C2	8.53	28	8.31	27.26	8.19	26.87	9.32	30.5
D	4.83	15.84	4.67	15.32	4.73	15.51	6.32	20.7
E1	2.10	6.89	1.95	6.39	2.03	6.66	3.68	12
E2	2.28	7.48	2.10	6.88	2.14	7.02	3.68	12
E3	2.74	8.99	2.54	8.33	2.45	8.03	3.68	12
H	2.04	6.7	1.86	6.10	1.85	6.07	3.26	10.7
J	5.34	17.5	5.31	17.4	5.20	17.06	6.43	21.1
K	3.43	11.25	3.22	10.56	3.13	10.27	4.24	13.9
L	5.77	18.93	5.55	18.20	5.41	17.75	6.53	21.4
M	17.18	56.36	16.94	55.58	16.72	54.85	17.62	57.8
N	6.46	21.20	6.13	20.11	6.06	19.88	7.55	24.7
O	8.33	27.32	8.09	26.54	7.88	25.85	9.23	30.2
P	8.05	26.41	7.70	25.26	7.61	24.96	8.96	29.4
GE = R	0.94	3.08	0.76	2.49	0.79	2.59	2.34	7.67
PW = R	0.90	2.95	0.72	2.36	0.75	2.46	2.29	7.51
RR = R	0.87	2.85	0.69	2.26	0.72	2.36	2.21	7.25
S	3.87	12.70	3.68	12.07	3.64	11.94	5.25	17.2
T	4.33	14.20	4.13	13.55	4.11	13.48	5.70	18.7
U	4.64	15.22	4.41	14.46	4.37	14.33	6	19.6
V	4.97	16.30	4.72	15.48	4.67	15.32	6.30	20.6
X	7.48	24.54	7.24	23.76	7.03	23.06	8.10	26.5
Y	3.68	12.07	3.46	11.35	3.35	11	4.39	14.4

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

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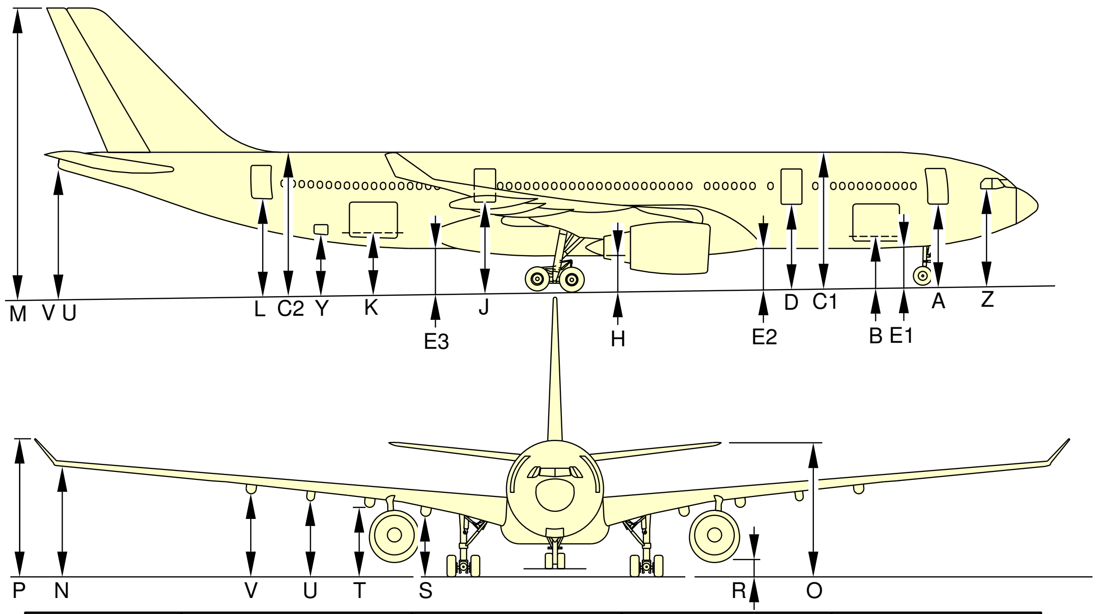
Ground Clearances
FIGURE-2-3-0-991-001-A01

**ON A/C A330-200



MRW 230 900 kg 509 042 lb	176 000 kg MID CG 27.9%		MAXIMUM RAMP WEIGHT CG 21%		MAXIMUM RAMP WEIGHT CG 37.5%		AIRCRAFT ON JACKS	
	m	ft	m	ft	m	ft	m	ft
A	4.63	15.19	4.44	14.56	4.63	15.19	6.32	20.7
B	2.78	9.12	2.58	8.46	2.74	8.99	4.14	13.5
C1	7.75	25.42	7.56	24.80	7.69	25.23	9.32	30.5
C2	8.54	28.02	8.31	27.26	8.16	26.77	9.32	30.5
D	4.86	15.9	4.66	15.3	4.78	15.7	6.36	20.7
E1	2.04	6.7	1.84	6.03	2.01	6.59	3.68	12
E2	2.23	7.31	2.03	6.66	2.12	6.95	3.68	12
E3	2.70	8.86	2.48	8.13	2.40	7.87	3.68	12
H	2.02	6.63	1.81	5.93	1.83	6	3.26	10.7
J	5.36	17.6	5.15	16.9	5.10	16.7	6.46	21.2
K	3.50	11.48	3.27	10.73	3.16	10.36	4.24	13.9
L	5.74	18.83	5.51	18.07	5.35	17.55	6.53	21.4
M	18.23	59.8	17.98	58.99	17.71	58.1	18.62	61.09
M1	17.73	58.17	17.48	57.35	17.21	56.46	18.12	59.45
N	6.48	21.26	6.14	20.14	6.05	19.85	7.55	24.7
O	8.30	27.23	8.05	26.41	7.77	25.49	9.23	30.2
P	8.08	26.51	7.71	25.29	7.61	24.96	8.96	29.4
GE = R	0.94	3.08	0.74	2.42	0.79	2.59	2.34	7.67
PW = R	0.90	2.95	0.70	2.29	0.75	2.46	2.29	7.51
RR = R	0.87	2.85	0.67	2.19	0.72	2.36	2.21	7.25
S	3.89	12.76	3.67	12.04	3.64	11.94	5.25	17.2
T	4.35	14.27	4.13	13.55	4.11	13.48	5.70	18.7
U	4.63	15.19	4.42	14.50	4.37	14.33	6	19.6
V	4.95	16.24	4.73	15.52	4.67	15.32	6.30	20.6
V U	7.47	24.51	7.23	23.72	6.97	22.86	8.10	25.5
Y	3.66	12.01	3.43	11.25	3.30	10.82	4.39	14.4
Z	5.41	17.75	5.22	17.12	5.43	17.81	7.10	23.30

M1 = POST MOD 48979 (SHORTER FIN INSTALLATION).

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

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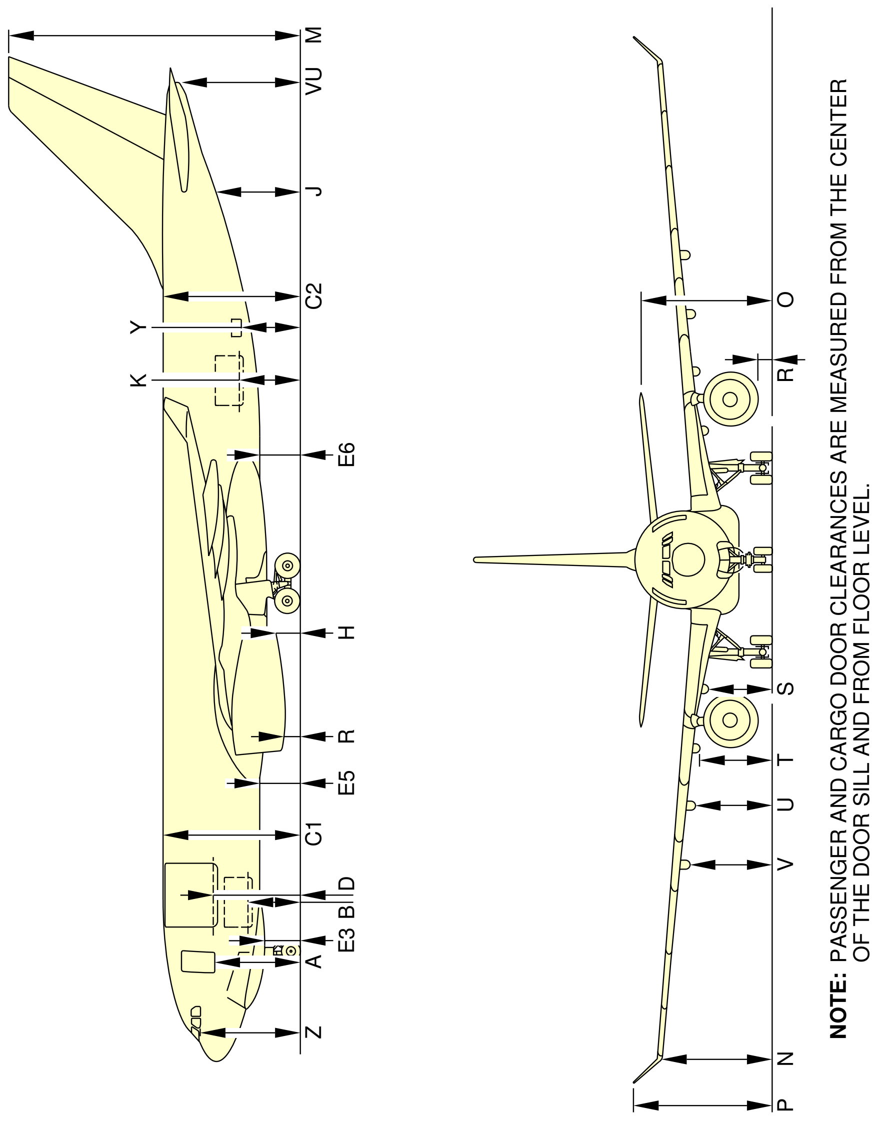
Ground Clearances
FIGURE-2-3-0-991-001-B01

**ON A/C A330-200F



F_AC_020300_1_0010301_01_00

Ground Clearances
(Sheet 1 of 2)
FIGURE-2-3-0-991-001-C01

****ON A/C A330-200F**

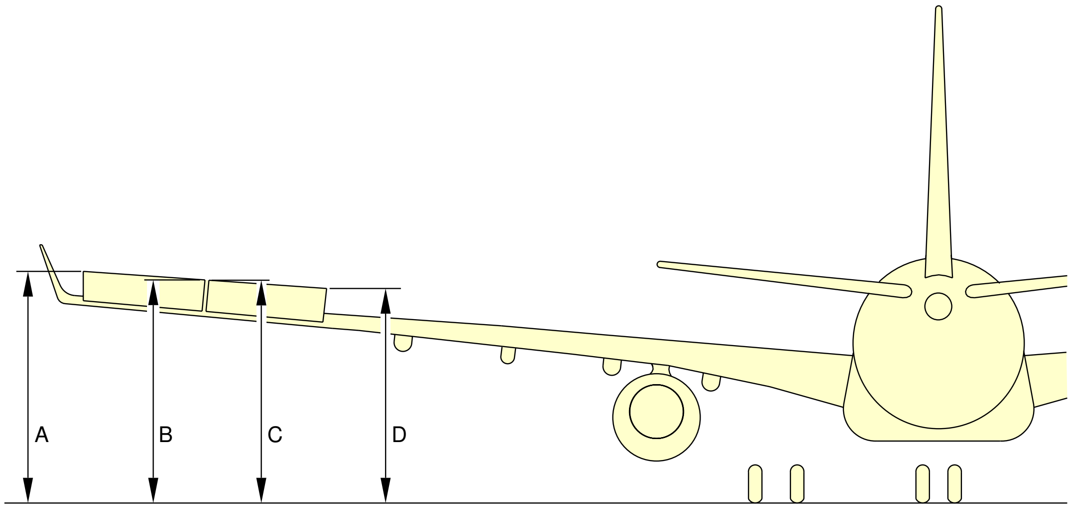
	115 000 kg CG 20%		MRW 233 900 kg CG 20.6%		MRW 233 900 kg CG 37.4%	
	m	ft	m	ft	m	ft
A	4.98	16.34	4.82	15.81	5	16.40
B	3.11	10.20	2.93	9.61	3.08	10.10
C1	8.06	26.44	7.87	25.82	8.01	26.28
C2	8.44	27.69	8.06	26.44	7.91	25.95
D	5.06	16.60	4.88	16.01	5.03	16.50
E3	2.22	7.28	2.06	6.76	2.24	7.35
E5	2.47	8.10	2.26	7.41	2.35	7.71
E6	2.70	8.86	2.37	7.78	2.29	7.51
H	2.16	7.09	1.89	6.20	1.91	6.27
J	5.55	18.21	5.13	16.83	4.91	16.11
K	3.52	11.55	3.15	10.33	3.04	9.97
M	17.41	57.12	16.95	55.61	16.67	54.69
N	7.80	25.59	7.46	24.48	7.36	24.15
O	8.31	27.26	7.85	25.75	7.57	24.84
P	9.23	30.28	8.88	29.13	8.78	28.81
PW R	1.13	3.71	0.89	2.92	0.95	3.12
RR R	1.06	3.48	0.82	2.69	0.87	2.85
S	2.74	8.99	2.44	8	2.41	7.89
T	2.98	9.79	2.69	8.83	2.67	8.75
U	2.92	9.59	2.63	8.62	2.60	8.53
V	3.02	9.91	2.70	8.86	2.64	8.66
VU	7.92	25.98	7.46	24.48	7.19	23.59
Y	3.61	11.84	3.25	10.66	3.12	10.24
Z	6.22	20.41	6.08	19.95	6.29	20.64

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

F_AC_020300_1_0010302_01_00

Ground Clearances
(Sheet 2 of 2)
FIGURE-2-3-0-991-001-C01

**ON A/C A330-200 A330-200F A330-300



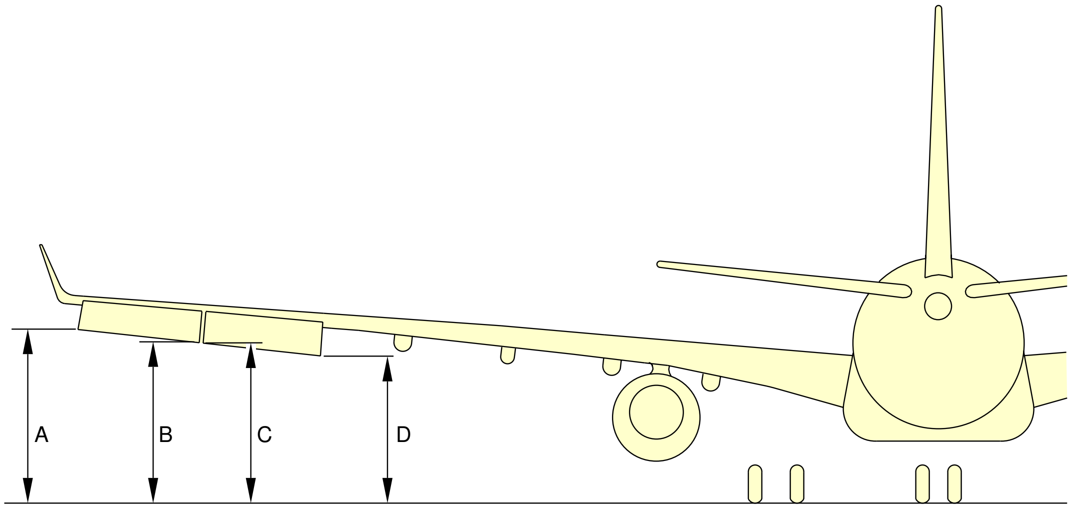
	A/C IN MAINTENANCE CONFIGURATION MID CG 26.8%		MAXIMUM RAMP WEIGHT CG 15.0%		MAXIMUM RAMP WEIGHT CG 36.5%	
	m	ft	m	ft	m	ft
A	6.85	22.47	6.50	21.33	6.42	21.06
B	6.58	21.59	6.26	20.54	6.20	20.34
C	6.58	21.59	6.26	20.54	6.20	20.34
D	6.38	20.93	6.07	19.91	6.02	19.75

AILERONS UP

F_AC_020300_1_0150101_01_00

Ground Clearances
Ailerons Up
FIGURE-2-3-0-991-015-A01

****ON A/C A330-200 A330-200F A330-300**



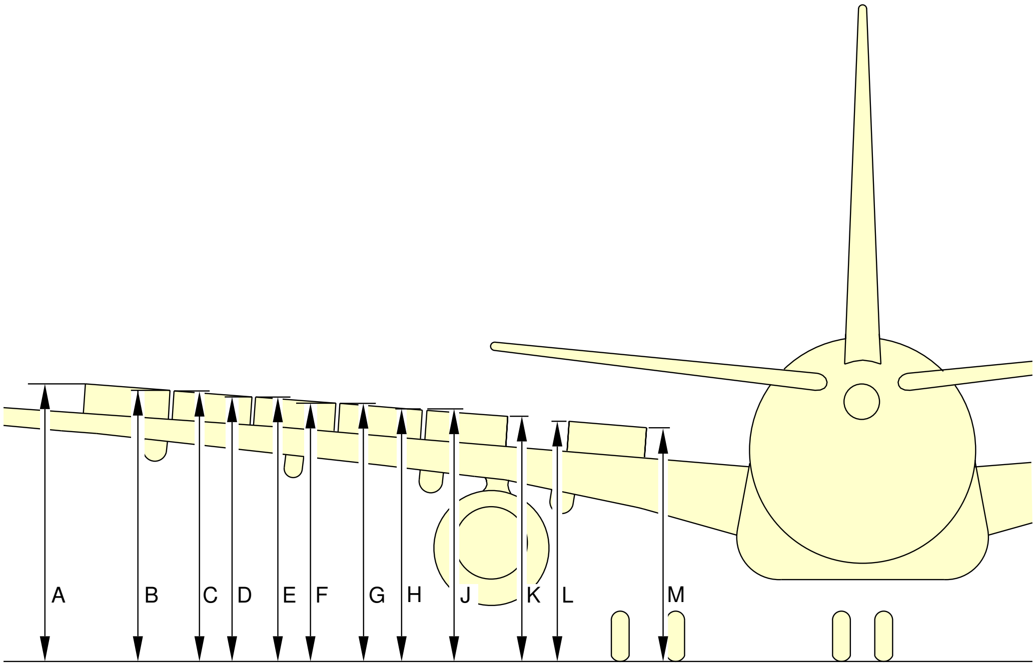
	A/C IN MAINTENANCE CONFIGURATION MID CG 26.8%		MAXIMUM RAMP WEIGHT CG 15.0%		MAXIMUM RAMP WEIGHT CG 36.5%	
	m	ft	m	ft	m	ft
A	6.30	20.67	5.94	19.49	5.87	19.26
B	5.83	19.13	5.51	18.08	5.44	17.85
C	5.83	19.13	5.51	18.08	5.44	17.85
D	5.47	17.95	5.17	16.96	5.11	16.77

AILERONS DOWN

F_AC_020300_1_0160101_01_00

Ground Clearances
Ailerons Down
FIGURE-2-3-0-991-016-A01

****ON A/C A330-200 A330-200F A330-300**



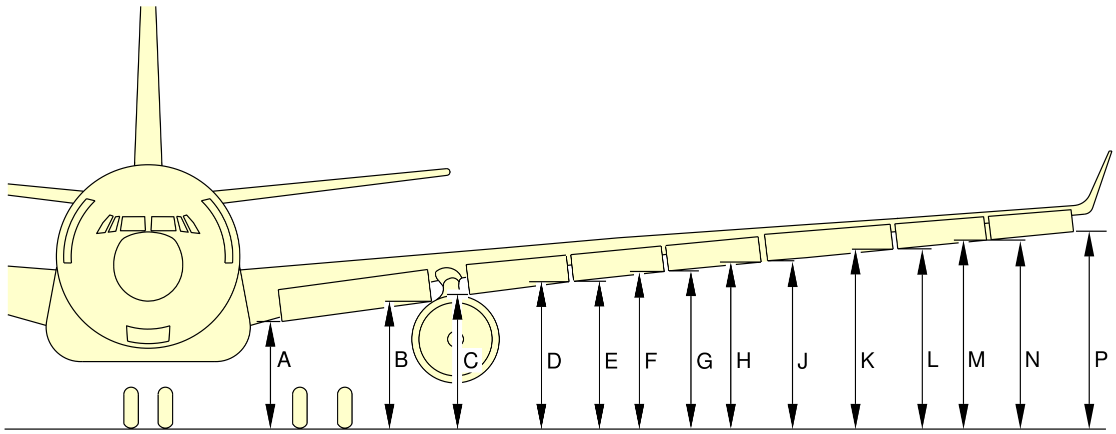
	A/C IN MAINTENANCE CONFIGURATION MID CG 26.8%		MAXIMUM RAMP WEIGHT CG 15.0%		MAXIMUM RAMP WEIGHT CG 36.5%	
	m	ft	m	ft	m	ft
A	6.60	21.65	6.31	20.70	6.26	20.54
B	6.44	21.13	6.18	20.28	6.13	20.11
C	6.44	21.13	6.18	20.28	6.13	20.11
D	6.29	20.64	6.04	19.82	6.00	19.69
E	6.29	20.64	6.04	19.82	6.00	19.69
F	6.12	20.08	5.89	19.32	5.86	19.23
G	6.12	20.08	5.89	19.32	5.86	19.23
H	5.93	19.46	5.71	18.73	5.68	18.64
J	5.93	19.46	5.71	18.73	5.68	18.64
K	5.72	18.77	5.51	18.08	5.48	17.98
L	5.31	17.42	5.10	16.73	5.07	16.63
M	4.76	15.62	4.58	15.03	4.55	14.93

SPOILERS 1 TO 6 EXTENDED

F_AC_020300_1_0170101_01_00

Ground Clearances
Spoilers Extended
FIGURE-2-3-0-991-017-A01

**ON A/C A330-200 A330-200F A330-300



	A/C IN MAINTENANCE CONFIGURATION MID CG 26.8%		MAXIMUM RAMP WEIGHT CG 15.0%		MAXIMUM RAMP WEIGHT CG 36.5%	
	m	ft	m	ft	m	ft
A	3.46	11.35	3.28	10.76	3.31	10.86
B	4.25	13.94	4.09	13.42	4.10	13.45
C	4.28	14.04	4.10	13.45	4.11	13.48
D	4.65	15.26	4.45	14.60	4.45	14.60
E	4.65	15.26	4.45	14.60	4.45	14.60
F	4.99	16.37	4.77	15.65	4.76	15.62
G	4.99	16.37	4.77	15.65	4.76	15.62
H	5.30	17.39	5.06	16.60	5.03	16.50
J	5.37	17.62	5.12	16.80	5.09	16.70
K	5.65	18.54	5.37	17.62	5.33	17.49
L	5.65	18.54	5.37	17.62	5.33	17.49
M	5.91	19.39	5.61	18.41	5.56	18.24
N	5.91	19.39	5.61	18.41	5.56	18.24
P	6.16	20.21	5.82	19.09	5.76	18.90

LEADING EDGE SLATS EXTENDED

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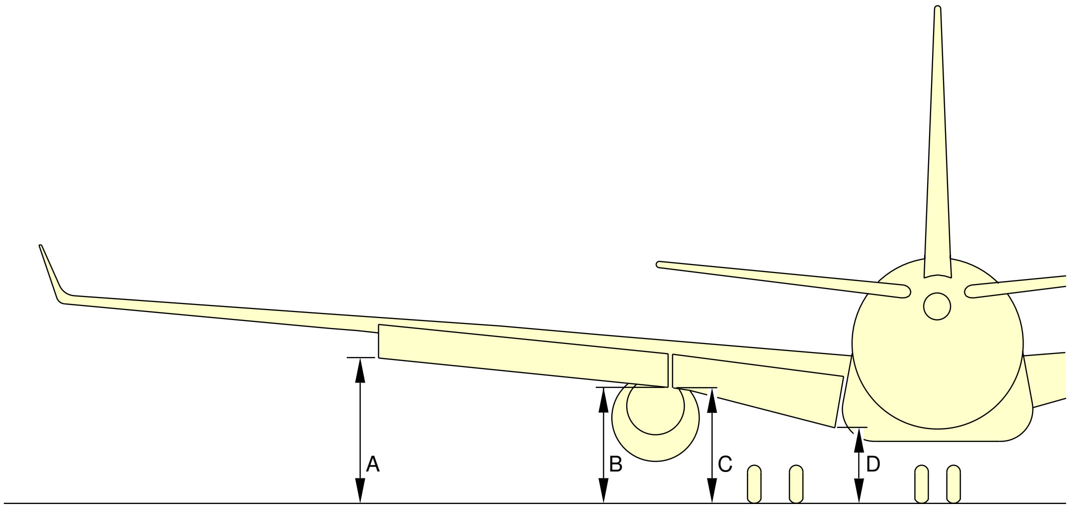
Ground Clearances
Slats Fully Extended
FIGURE-2-3-0-991-018-A01

**ON A/C A330-200 A330-200F A330-300



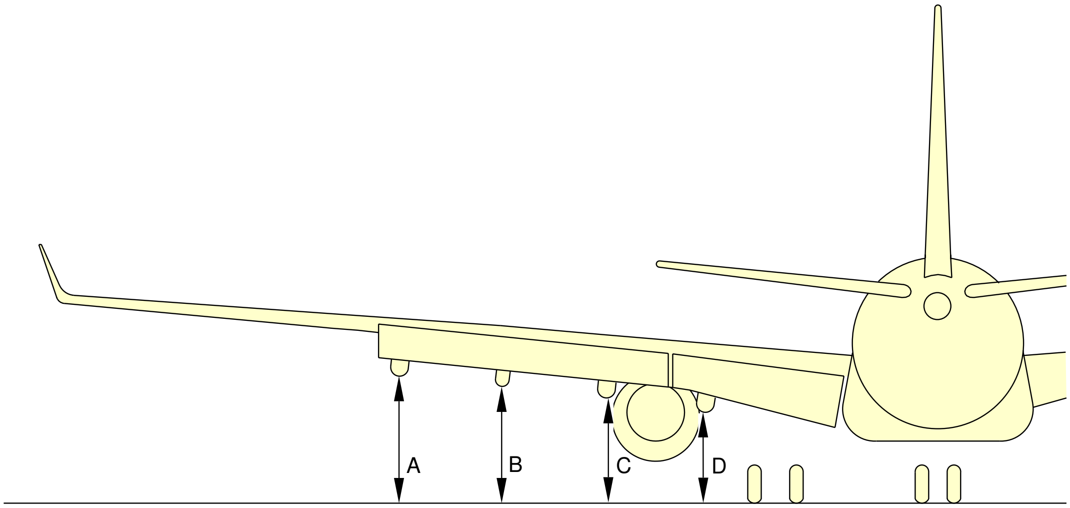
	A/C IN MAINTENANCE CONFIGURATION MID CG 26.8%		MAXIMUM RAMP WEIGHT CG 15.0%		MAXIMUM RAMP WEIGHT CG 36.5%	
	m	ft	m	ft	m	ft
A	5.21	17.09	4.91	16.11	4.85	15.91
B	4.00	13.12	3.79	12.43	3.75	12.30
C	4.00	13.12	3.80	12.47	3.76	12.34
D	2.71	8.89	2.52	8.27	2.49	8.17

INNER AND OUTER FLAPS EXTENDED

F_AC_020300_1_0190101_01_00

Ground Clearances
Flaps Fully Extended
FIGURE-2-3-0-991-019-A01

****ON A/C A330-200 A330-200F A330-300**



	A/C IN MAINTENANCE CONFIGURATION MID CG 26.8%		MAXIMUM RAMP WEIGHT CG 15.0%		MAXIMUM RAMP WEIGHT CG 36.5%	
	m	ft	m	ft	m	ft
A	4.08	13.39	3.88	12.73	3.82	12.53
B	3.73	12.24	3.53	11.58	3.48	11.42
C	3.48	11.42	3.29	10.79	3.24	10.63
D	2.95	9.68	2.75	9.02	2.71	8.89

FLAP TRACKS EXTENDED

F_AC_020300_1_0200101_01_00

Ground Clearances
Flaps-Tracks Fully Extended
FIGURE-2-3-0-991-020-A01

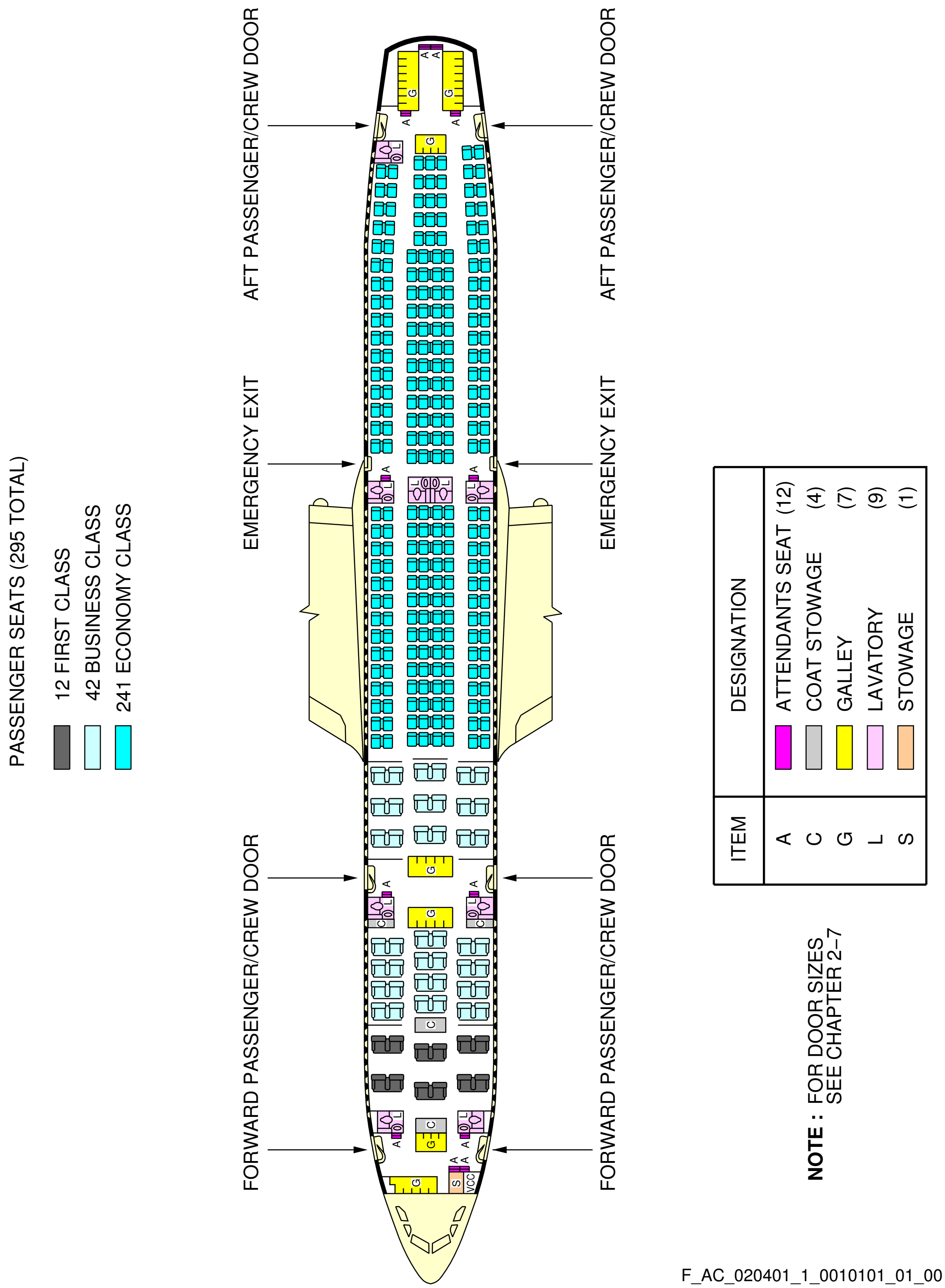
2-4-1 Interior Arrangements - Plan View

****ON A/C A330-200 A330-300**

Interior Arrangements - Plan View

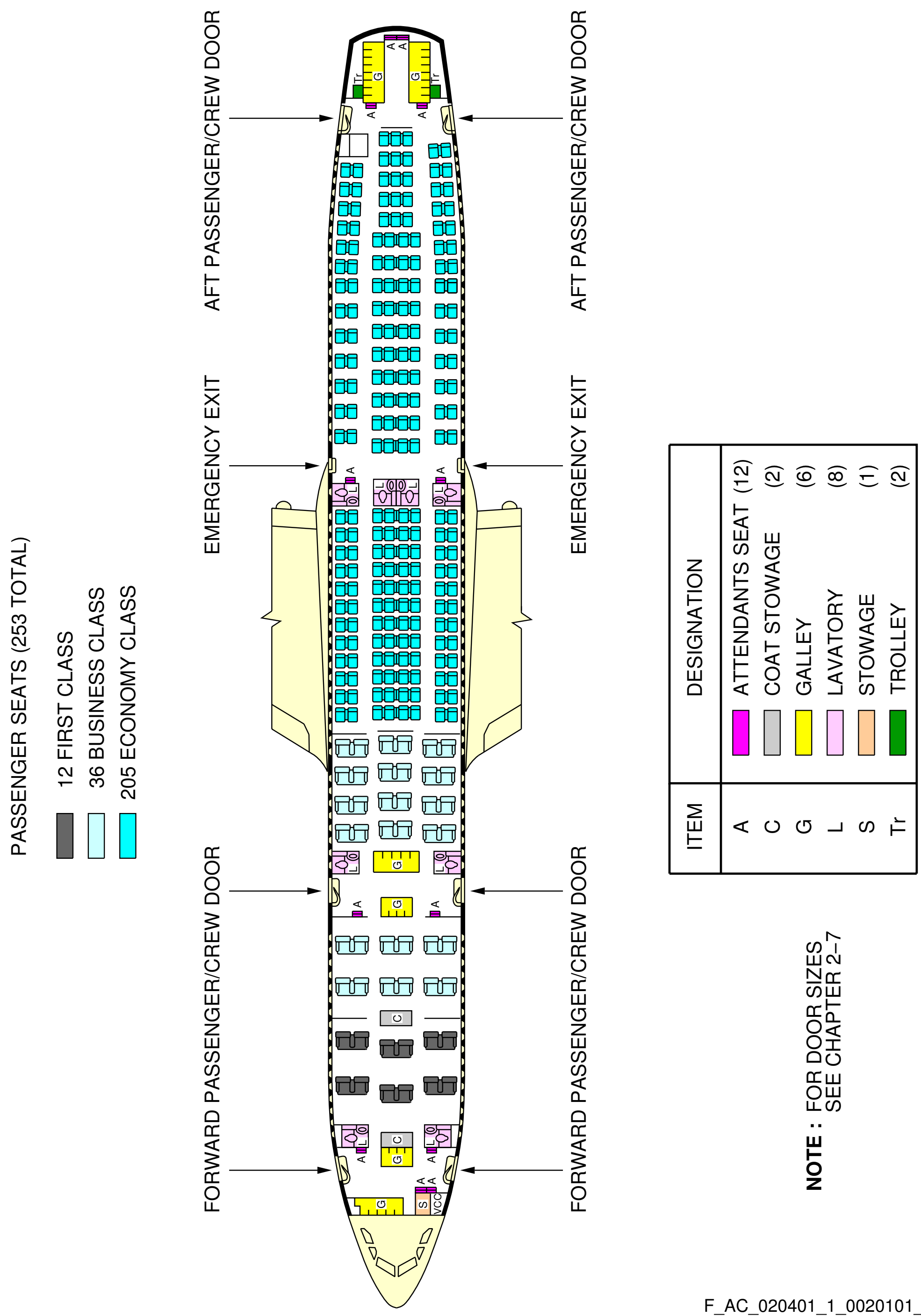
1. This section gives the typical configuration for A330 pax version.

****ON A/C A330-300**



Interior Arrangements - Plan View
Typical Configuration
FIGURE-2-4-1-991-001-A01

**ON A/C A330-200



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Interior Arrangements - Plan View
Typical Configuration
FIGURE-2-4-1-991-002-A01

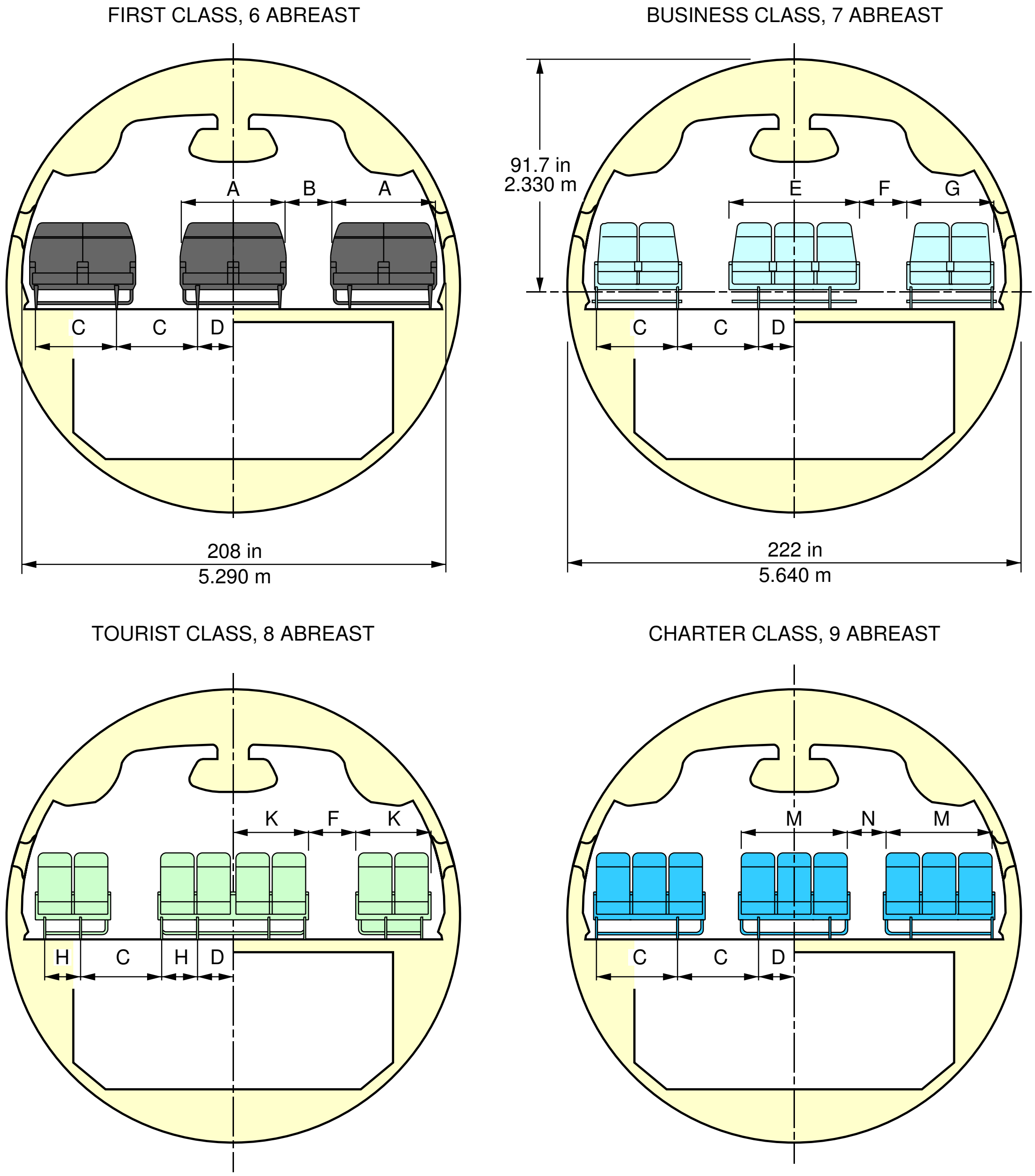
2-5-0 Interior Arrangements - Cross Section

**ON A/C A330-200 A330-300

Interior Arrangements - Cross Section

1. This section gives the typical configuration of A330 pax version.

****ON A/C A330-200 A330-300**



A – 54.0 in (1371.6 mm)
B – 21.0 in (533 mm)
C – 39.6 in (1006 mm)
D – 17.7 in (450 mm)
E – 72.0 in (1829 mm)
F – 19.0 in (483 mm)
G – 48.0 in (1219 mm)
H – 19.8 in (503 mm)
K – 41.5 in (1054.1 mm)
M – 57.1 in (1450 mm)
N – 16.5 in (419 mm)

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Interior Arrangements - Cross Section
Typical Configuration
FIGURE-2-5-0-991-001-A01

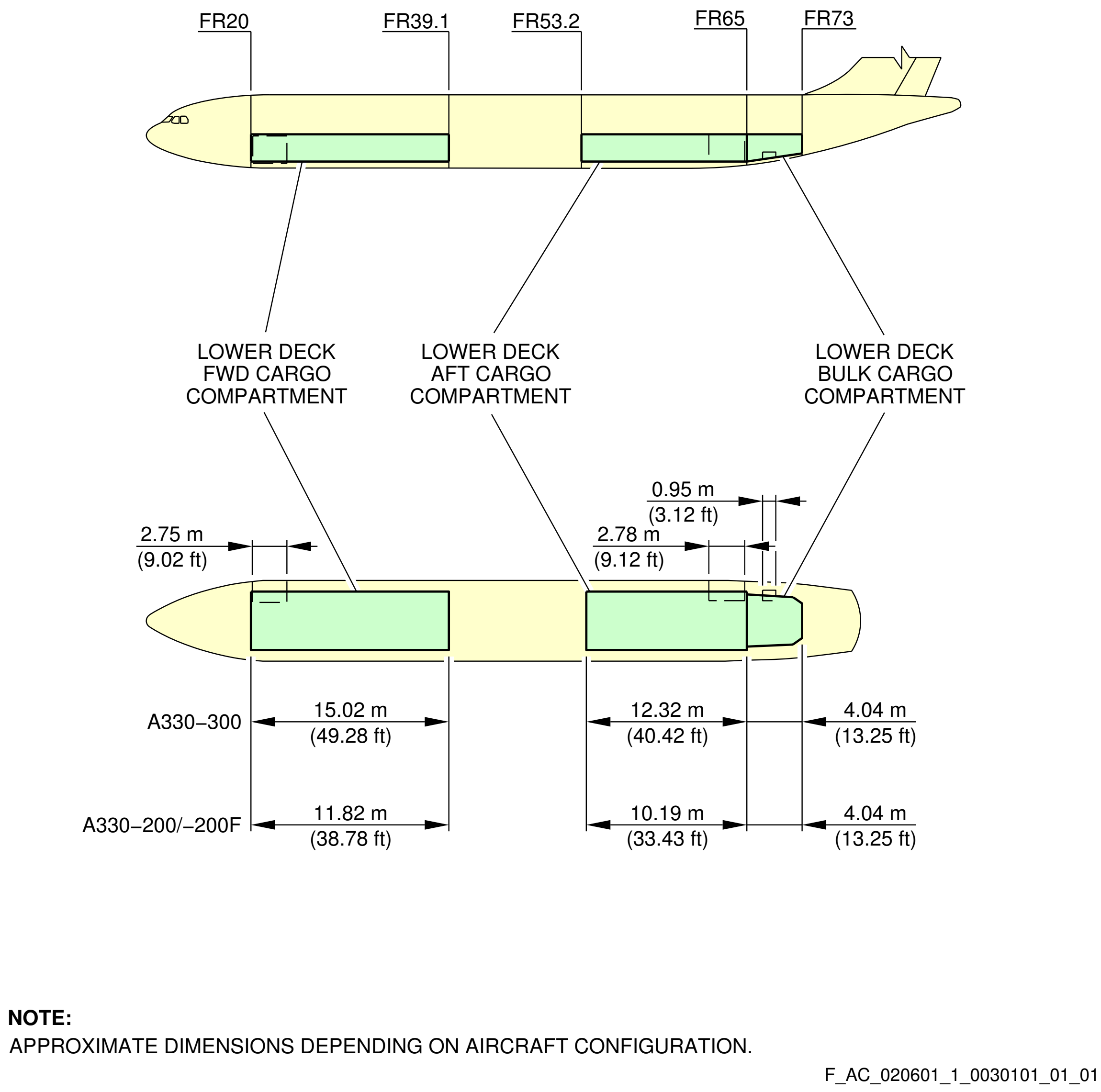
2-6-1 Lower Deck Cargo Compartments

****ON A/C A330-200 A330-200F A330-300**

Lower Deck Cargo Compartments

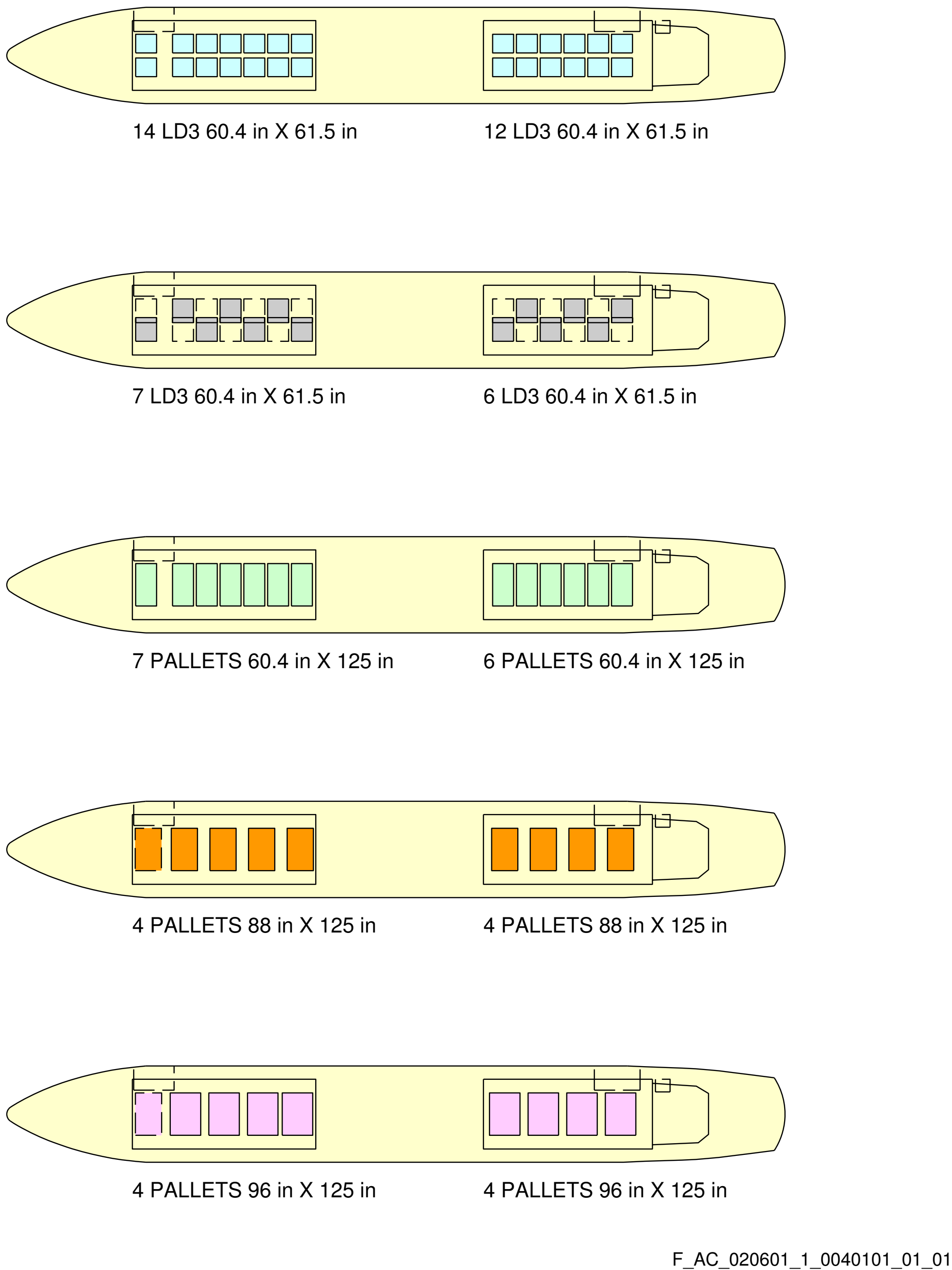
1. This section gives the following data about lower deck cargo compartments:
   - Location and dimensions
   - Loading combinations.

**ON A/C A330-200 A330-200F A330-300



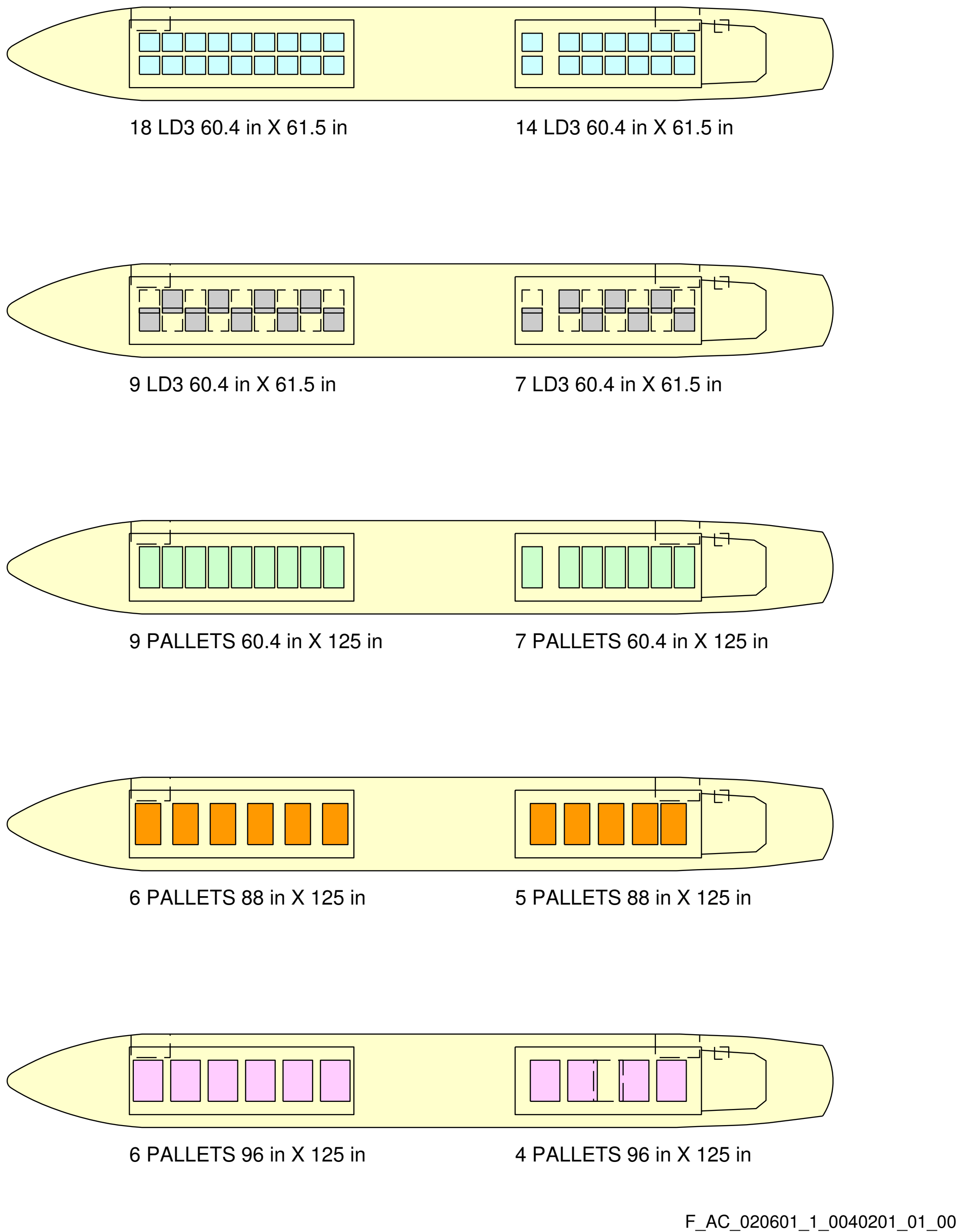
Lower Deck Cargo Compartments
Location and Dimensions
FIGURE-2-6-1-991-003-A01

**ON A/C A330-200 A330-200F



Lower Deck Cargo Compartments
Loading Combinations
FIGURE-2-6-1-991-004-A01

**ON A/C A330-300



Lower Deck Cargo Compartments
Loading Combinations
FIGURE-2-6-1-991-004-B01

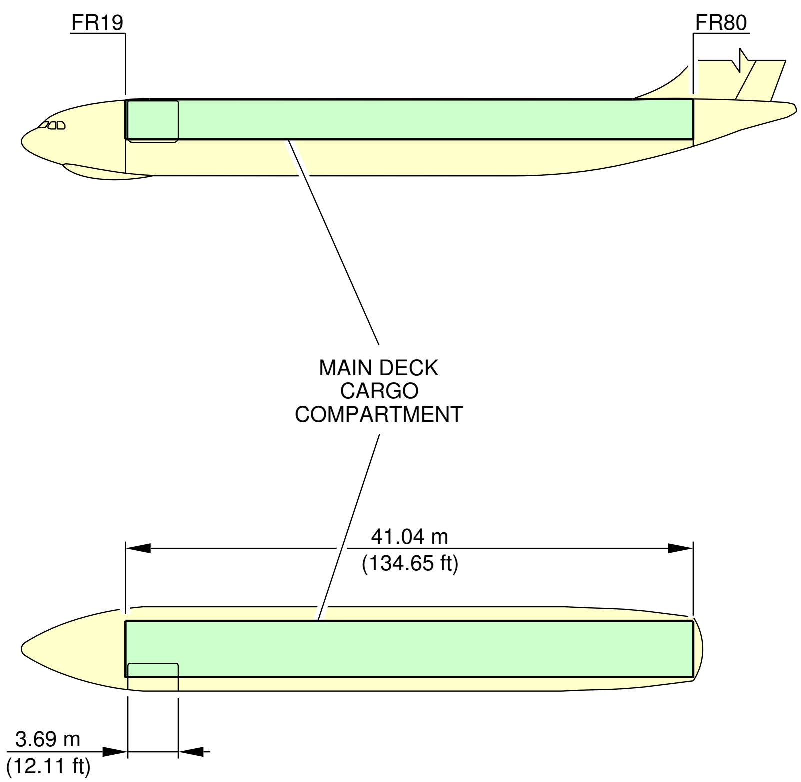
2-6-2 Main Deck Cargo Compartments

****ON A/C A330-200F**

Main Deck Cargo Compartment

1. This section gives the following data about the main deck cargo compartment:
   - Location and dimensions
   - Loading combinations.

**ON A/C A330-200F

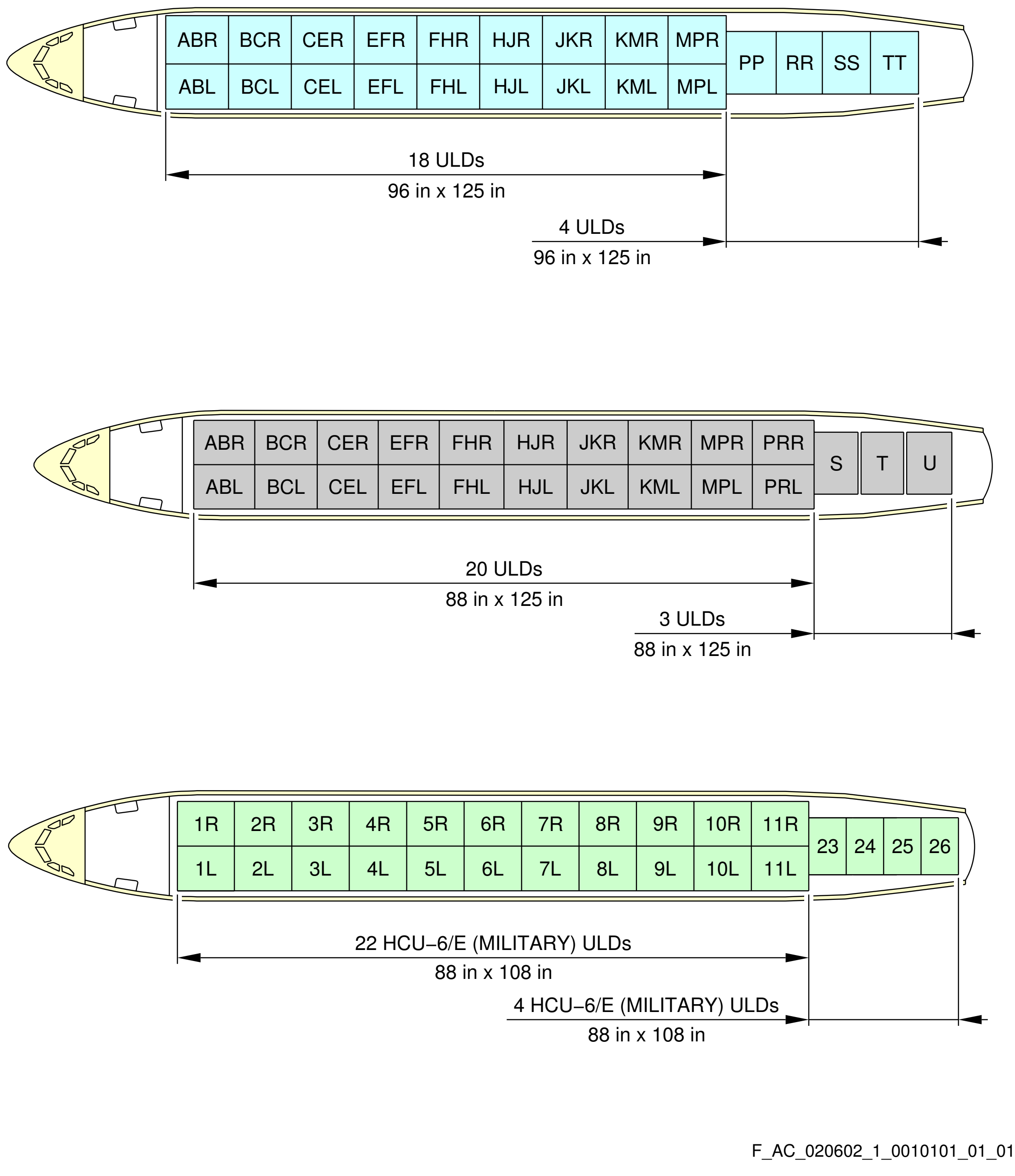


NOTE:
DEPENDING ON A/C CONFIGURATION.

F_AC_020602_1_0060101_01_00

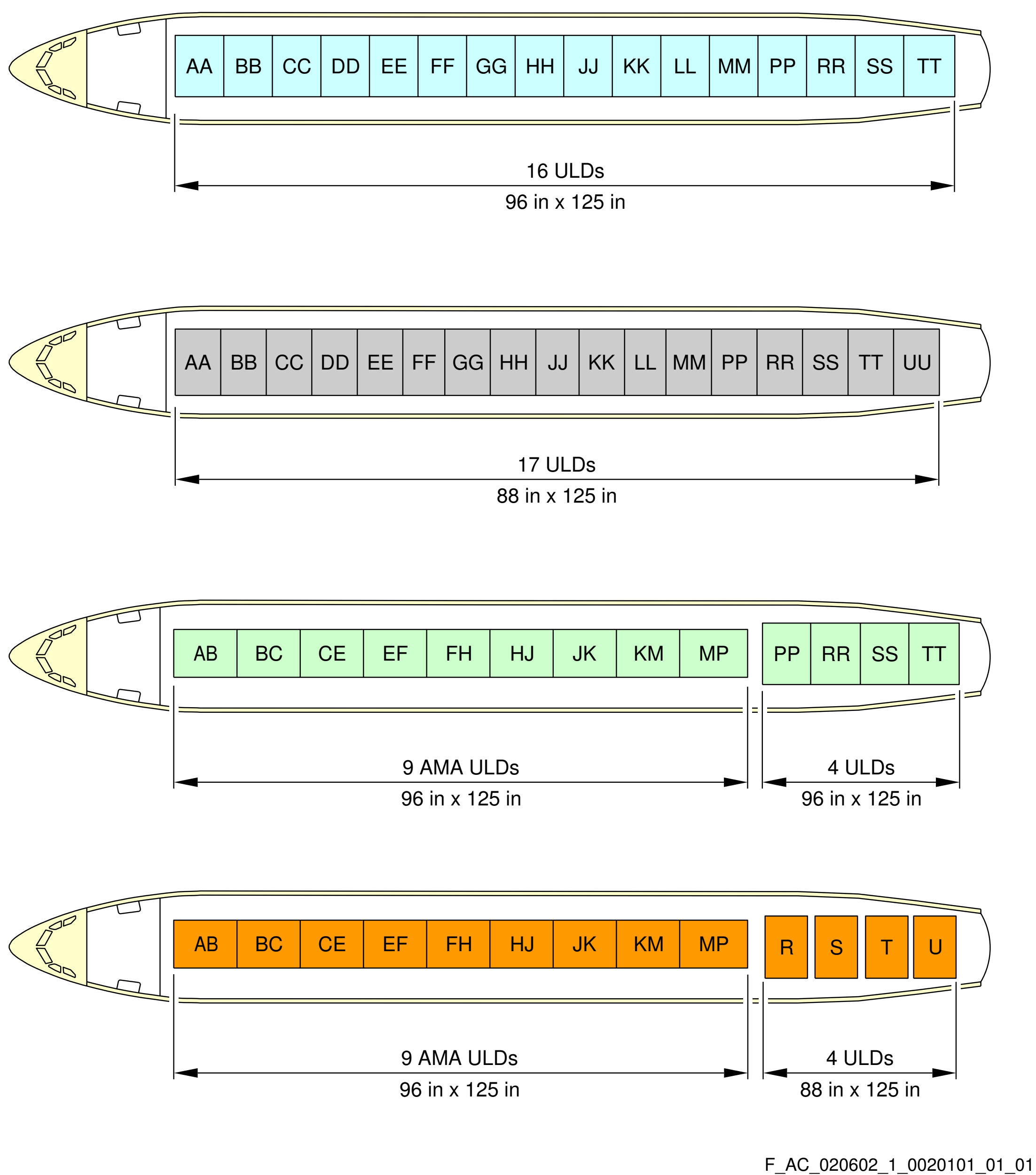
Main Deck Cargo Compartment
Location and Dimensions
FIGURE-2-6-2-991-006-A01

**ON A/C A330-200F



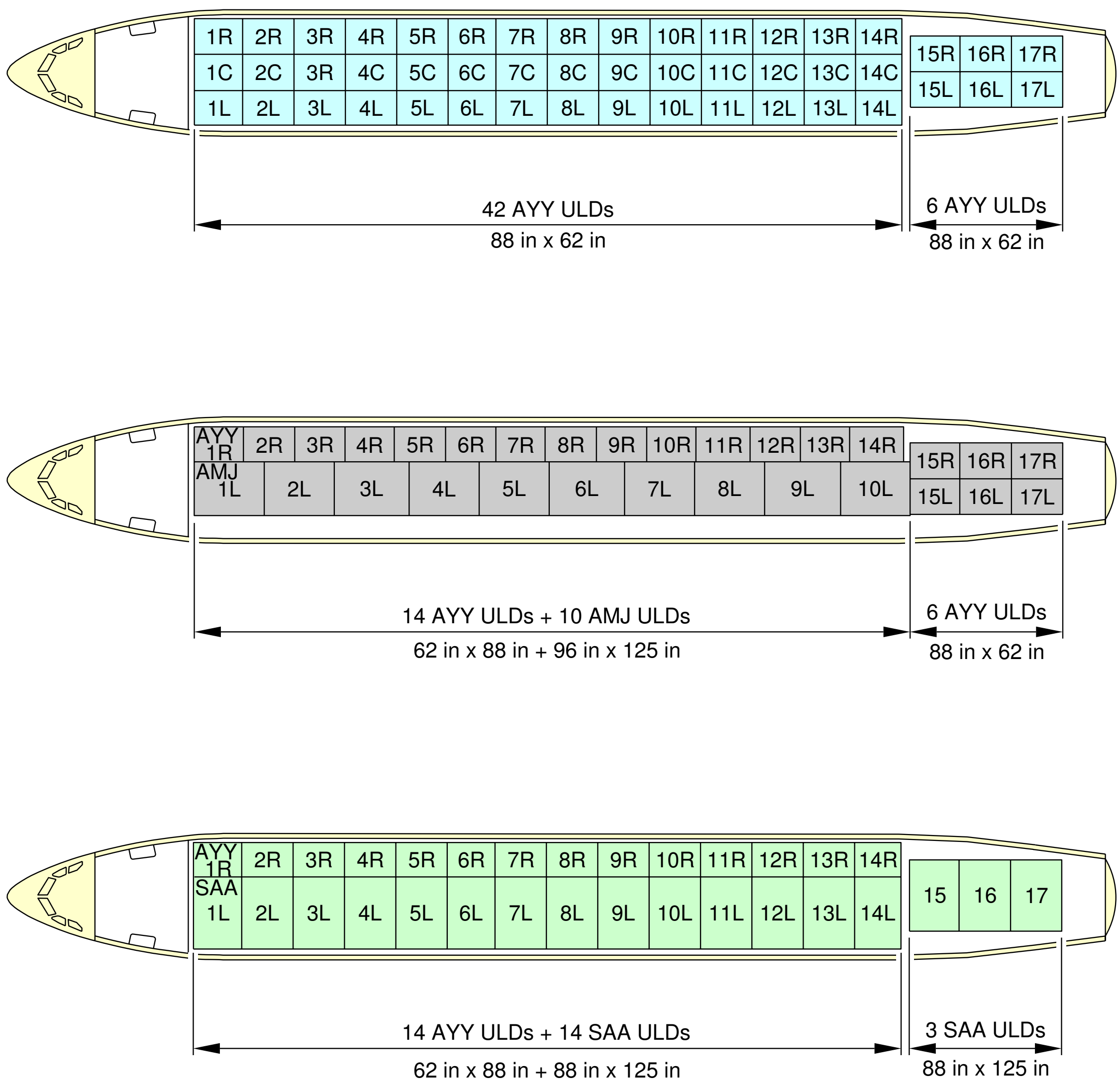
Main Deck Cargo Compartment
Loading Combinations
FIGURE-2-6-2-991-001-A01

**ON A/C A330-200F



Main Deck Cargo Compartment
Loading Combinations
FIGURE-2-6-2-991-002-A01

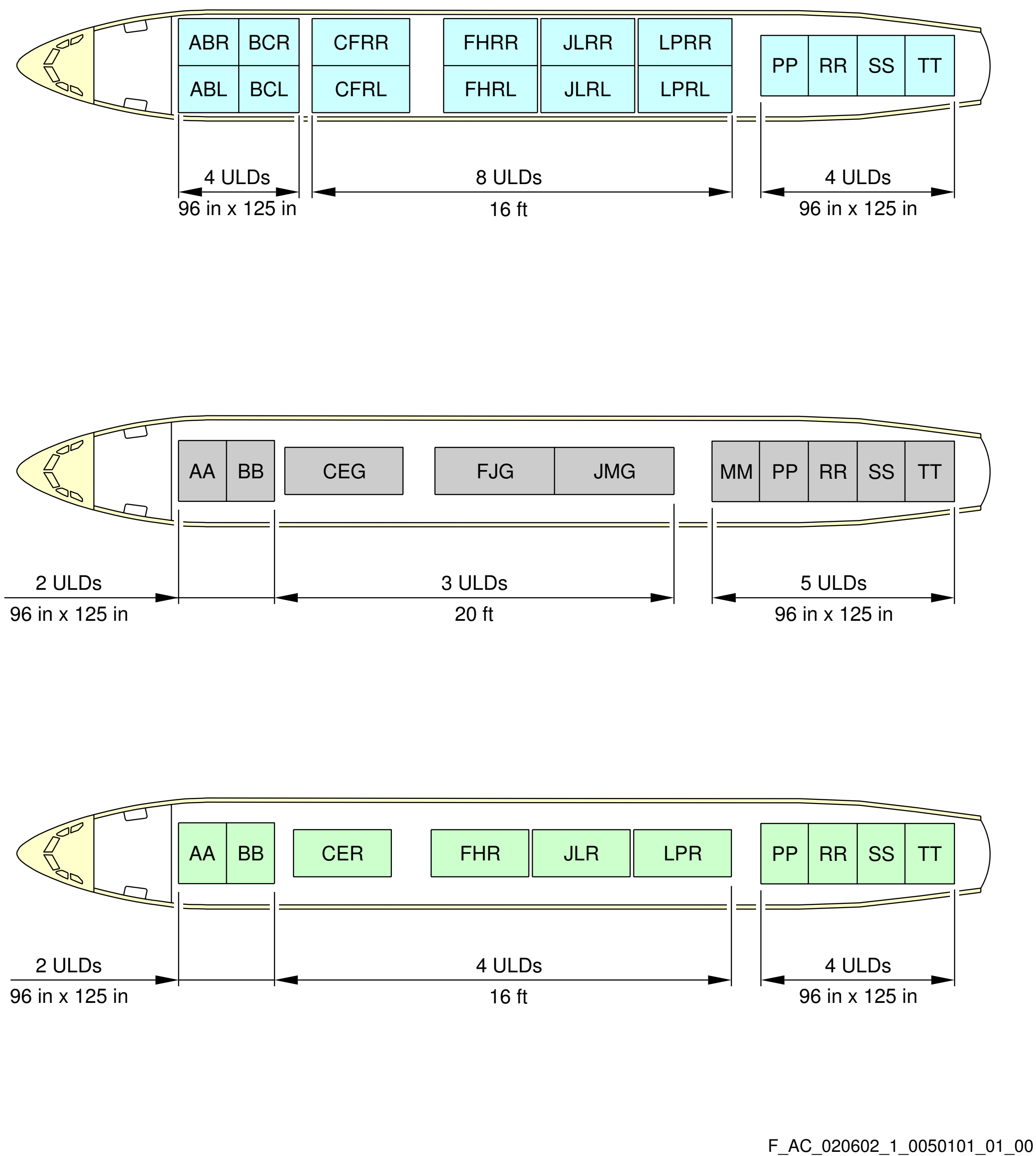
****ON A/C A330-200F**



F_AC_020602_1_0030101_01_02

Main Deck Cargo Compartment
Loading Combinations
FIGURE-2-6-2-991-003-A01

**ON A/C A330-200F



Main Deck Cargo Compartment
Loading Combinations
FIGURE-2-6-2-991-005-A01

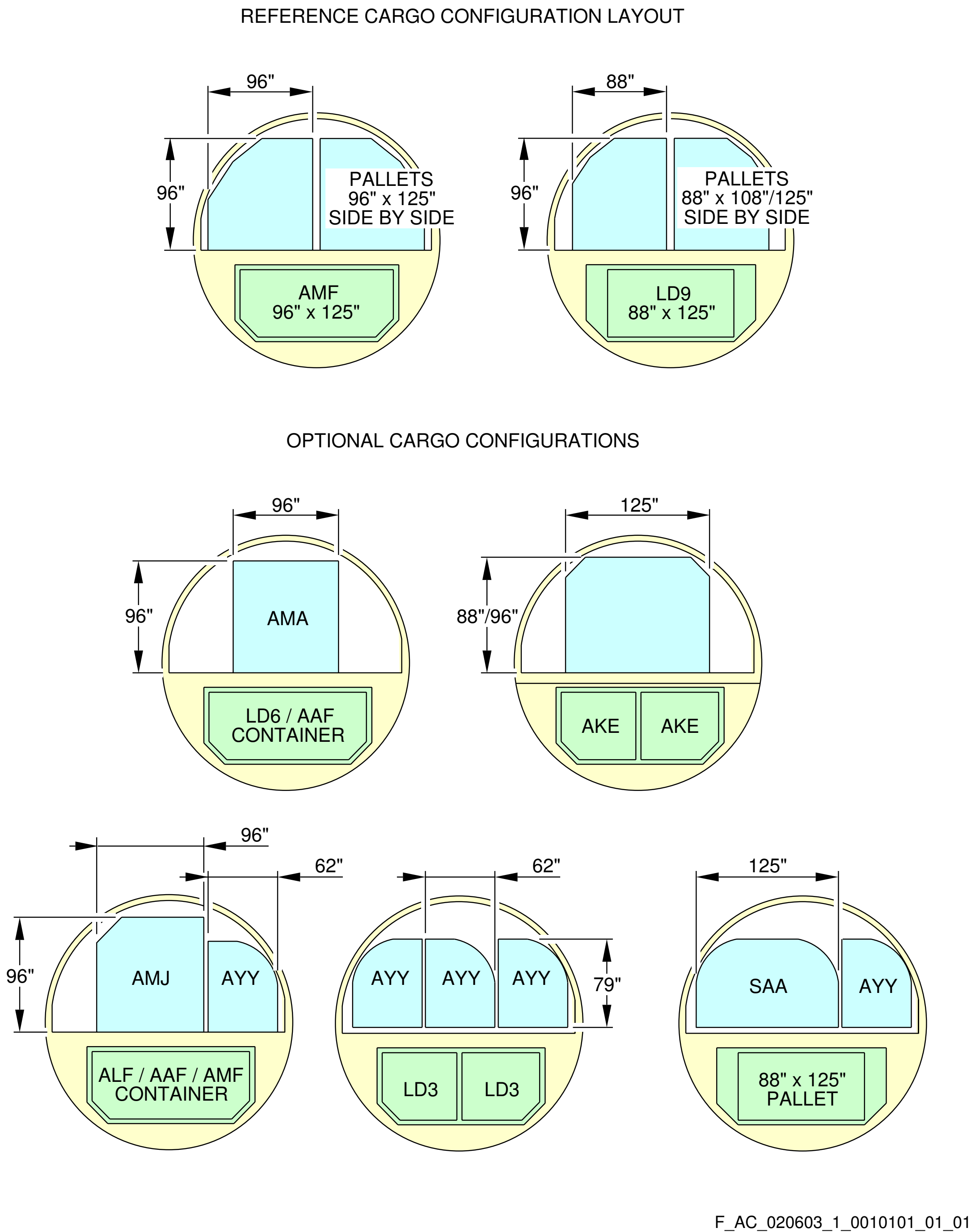
2-6-3 Main and Lower Deck Cross-sections

****ON A/C A330-200F**

Main and Lower Deck Cross-sections

1. This section gives Main and Lower Deck Cross-sections for cargo version.

**ON A/C A330-200F



Main and Lower Deck Cross-sections
FIGURE-2-6-3-991-001-A01

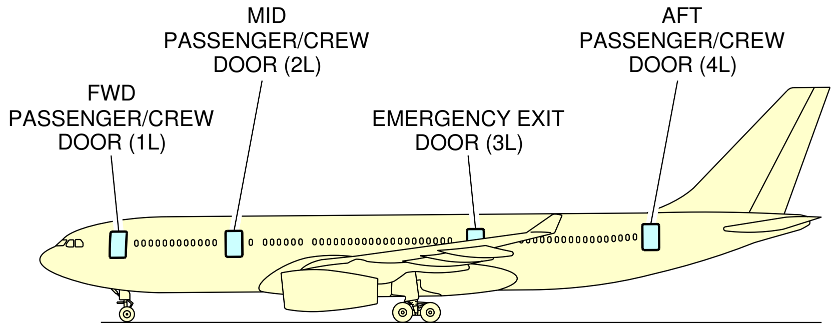
2-7-0 Door Clearances

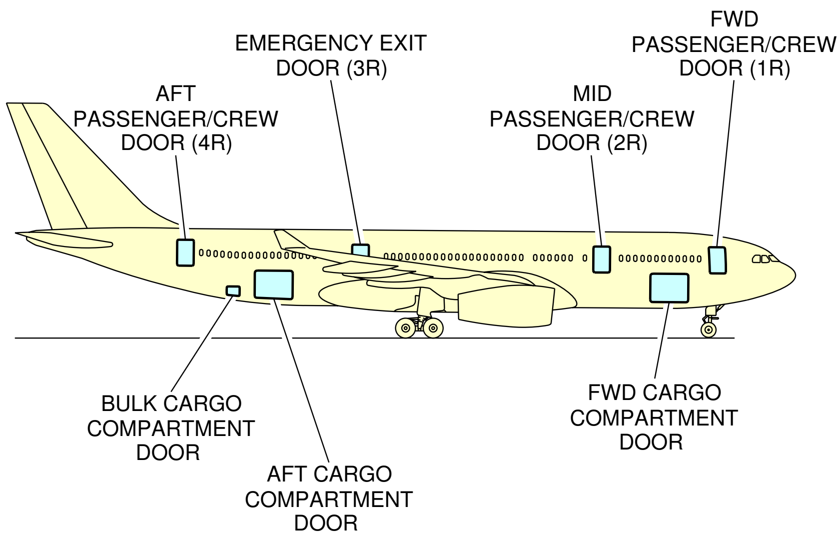
****ON A/C A330-200 A330-200F A330-300**

Door Clearances

1. This section gives door identification and location.

**ON A/C A330-200





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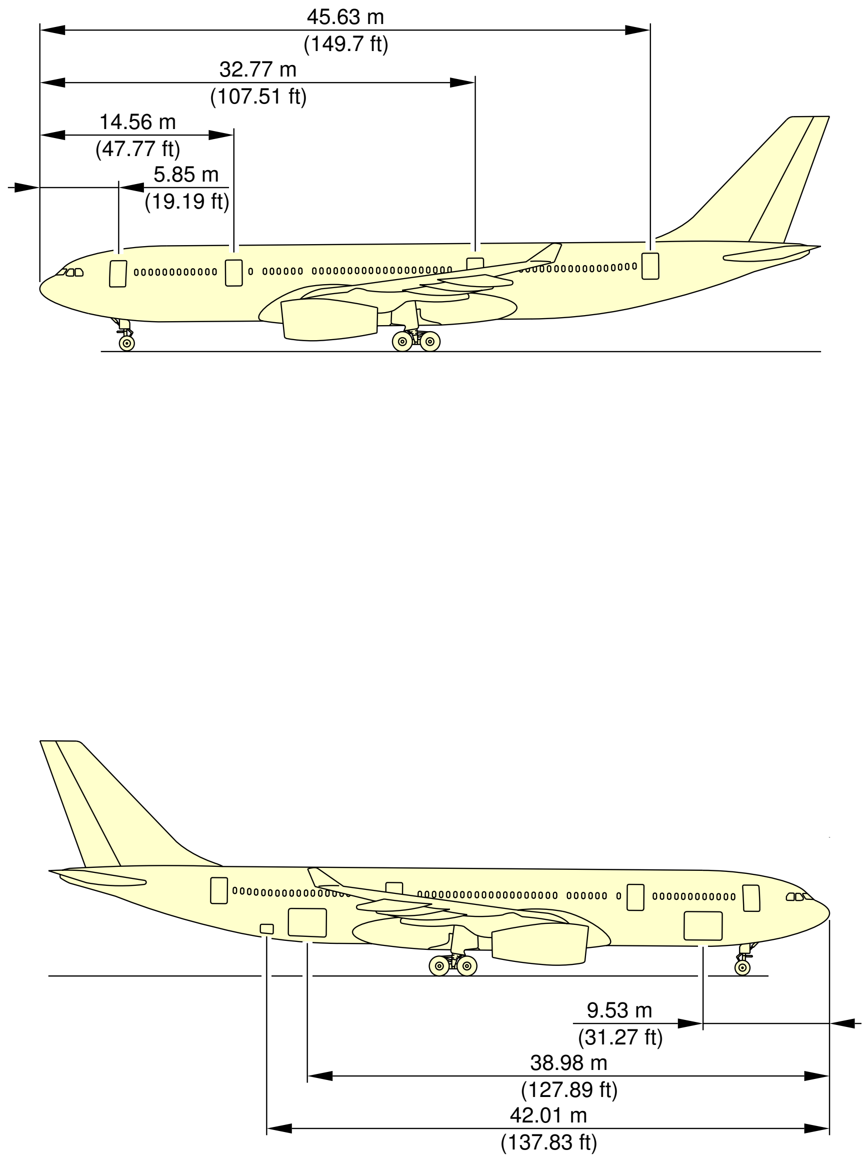
Door Identification and location
Door Identification (Sheet 1 of 2)
FIGURE-2-7-0-991-006-A01

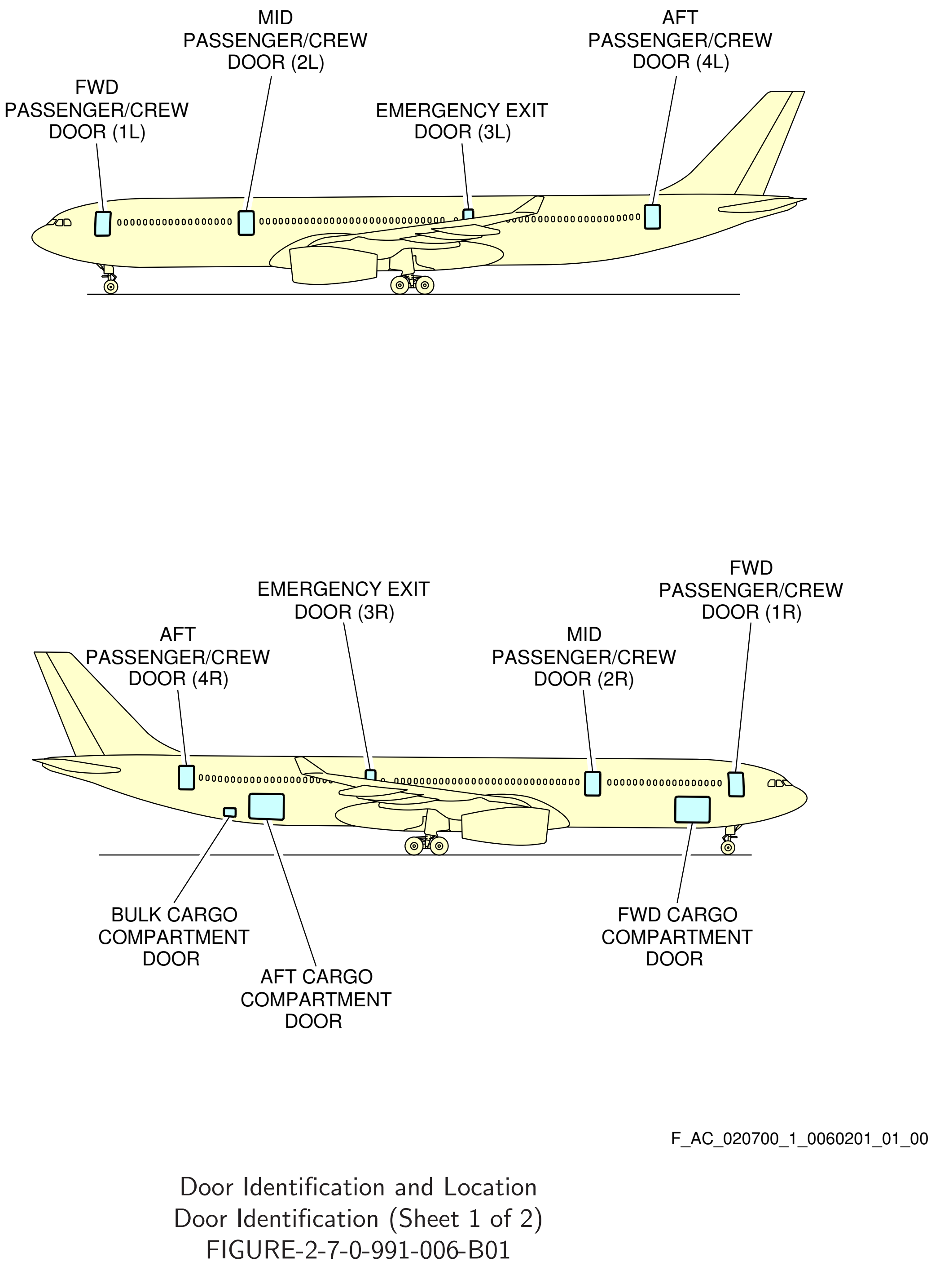
**ON A/C A330-200



F_AC_020700_1_0060102_01_00

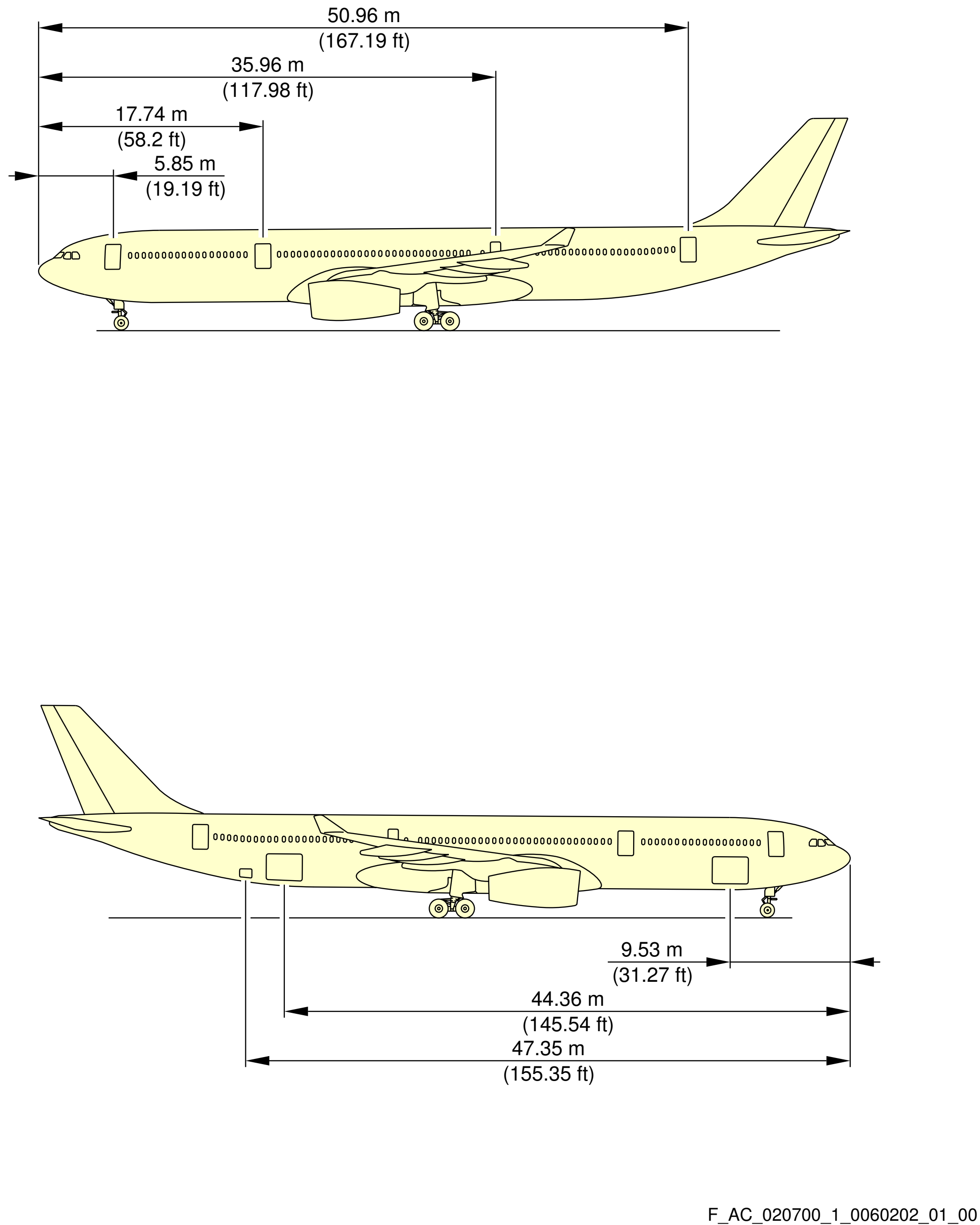
Door Identification and location
Door Location (Sheet 2 of 2)
FIGURE-2-7-0-991-006-A01

**ON A/C A330-300



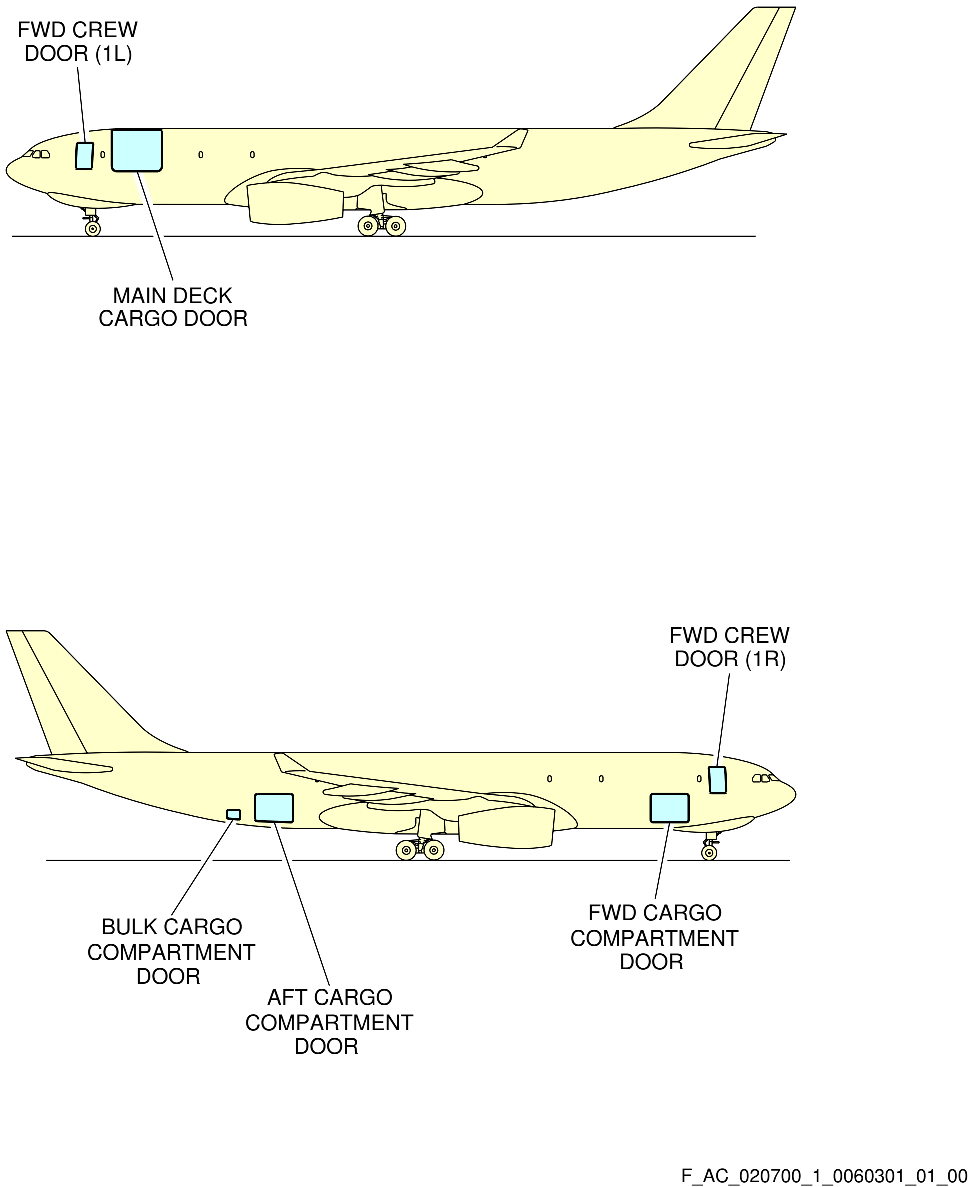
Door Identification and Location
Door Identification (Sheet 1 of 2)
FIGURE-2-7-0-991-006-B01

**ON A/C A330-300



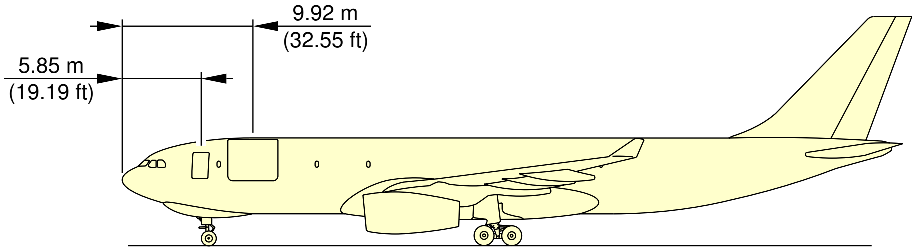
Door Identification and Location
Door Location (Sheet 2 of 2)
FIGURE-2-7-0-991-006-B01

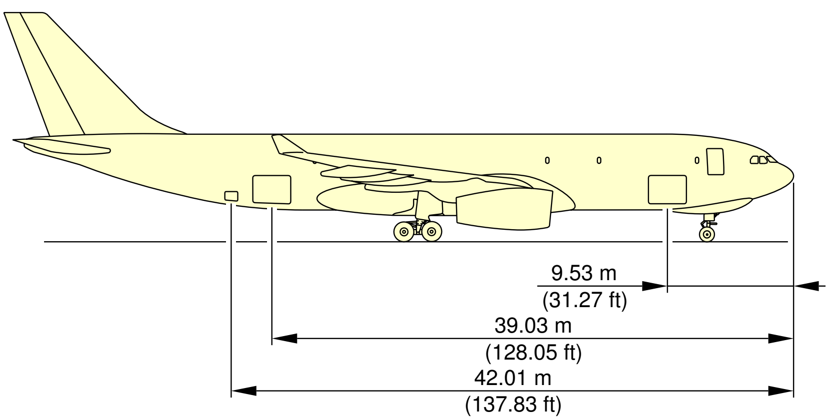
**ON A/C A330-200F



Door Identification and Location
Door Identification (Sheet 1 of 2)
FIGURE-2-7-0-991-006-C01

**ON A/C A330-200F





F_AC_020700_1_0060302_01_00

Door Identification and Location
Door Location (Sheet 2 of 2)
FIGURE-2-7-0-991-006-C01

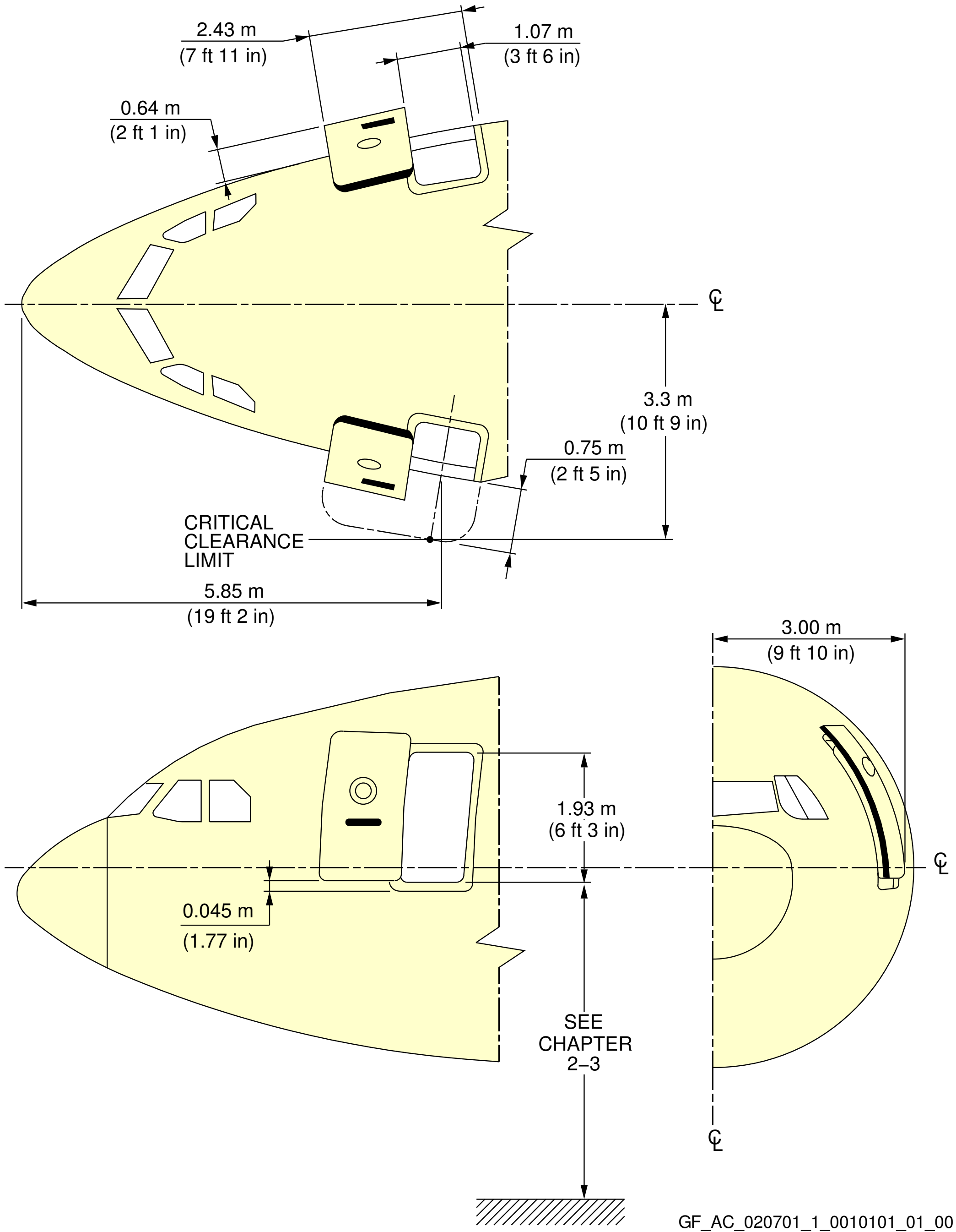
2-7-1 Forward Passenger / Crew Doors

****ON A/C A330-200 A330-200F A330-300**

Forward Passenger / Crew Door

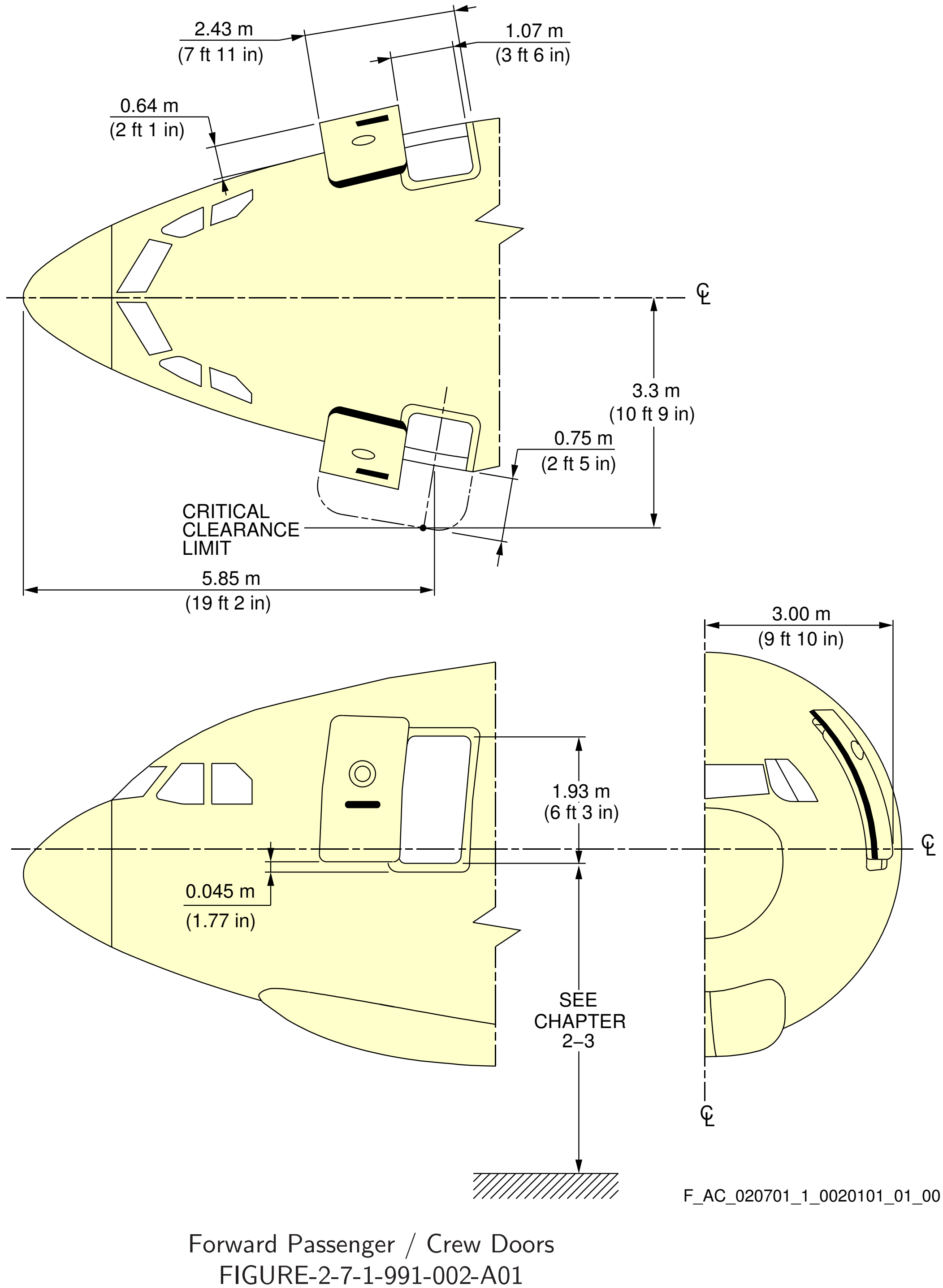
1. This section gives forward passenger / crew doors clearances.

**ON A/C A330-200 A330-300



Forward Passenger / Crew Doors
FIGURE-2-7-1-991-001-A01

**ON A/C A330-200F



Forward Passenger / Crew Doors
FIGURE-2-7-1-991-002-A01

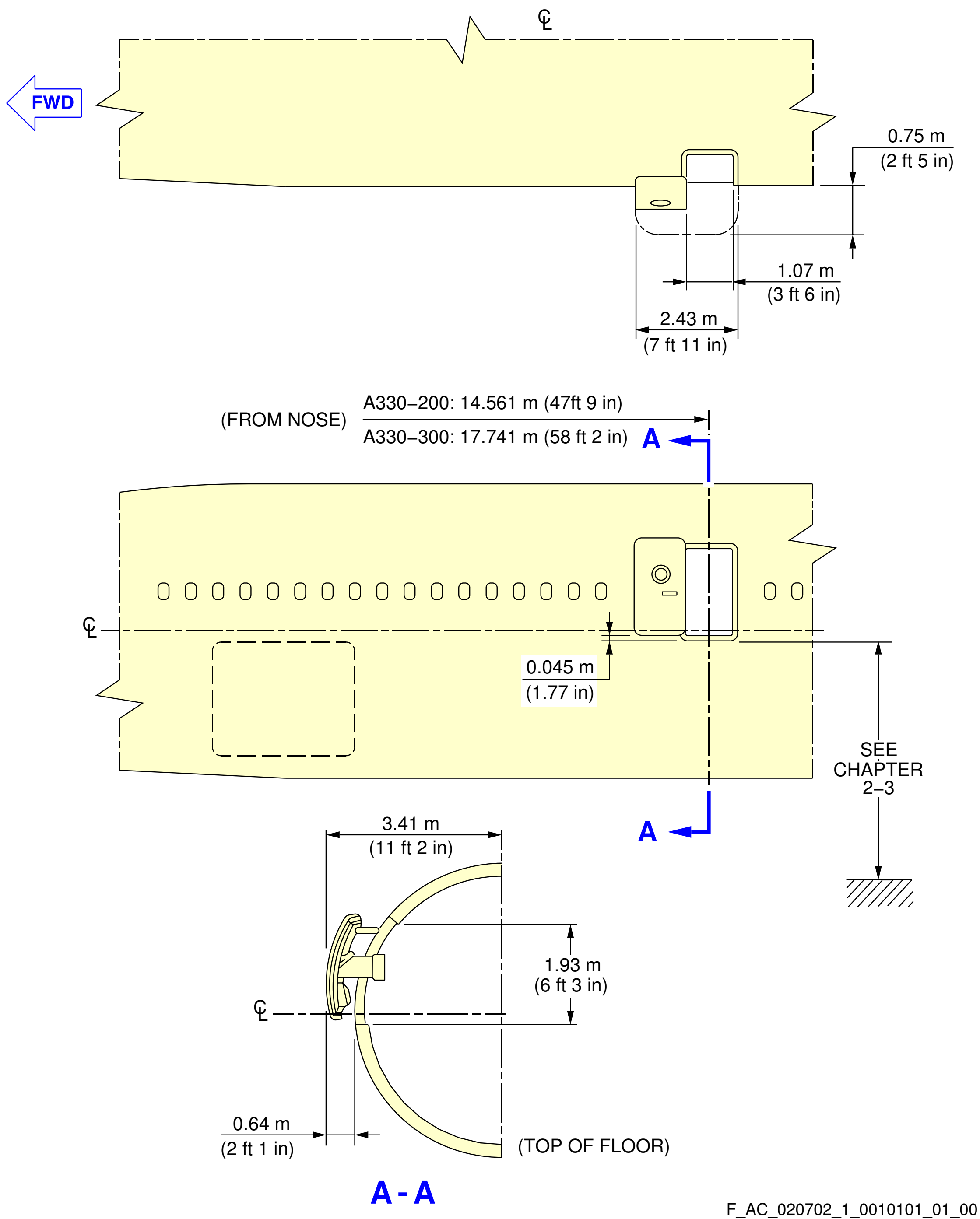
2-7-2 Mid Passenger / Crew Doors

****ON A/C A330-200 A330-300**

Mid Passenger / Crew Door

1. This section gives mid passenger / crew doors clearances.

**ON A/C A330-200 A330-300



Mid Passenger / Crew Door
FIGURE-2-7-2-991-001-A01

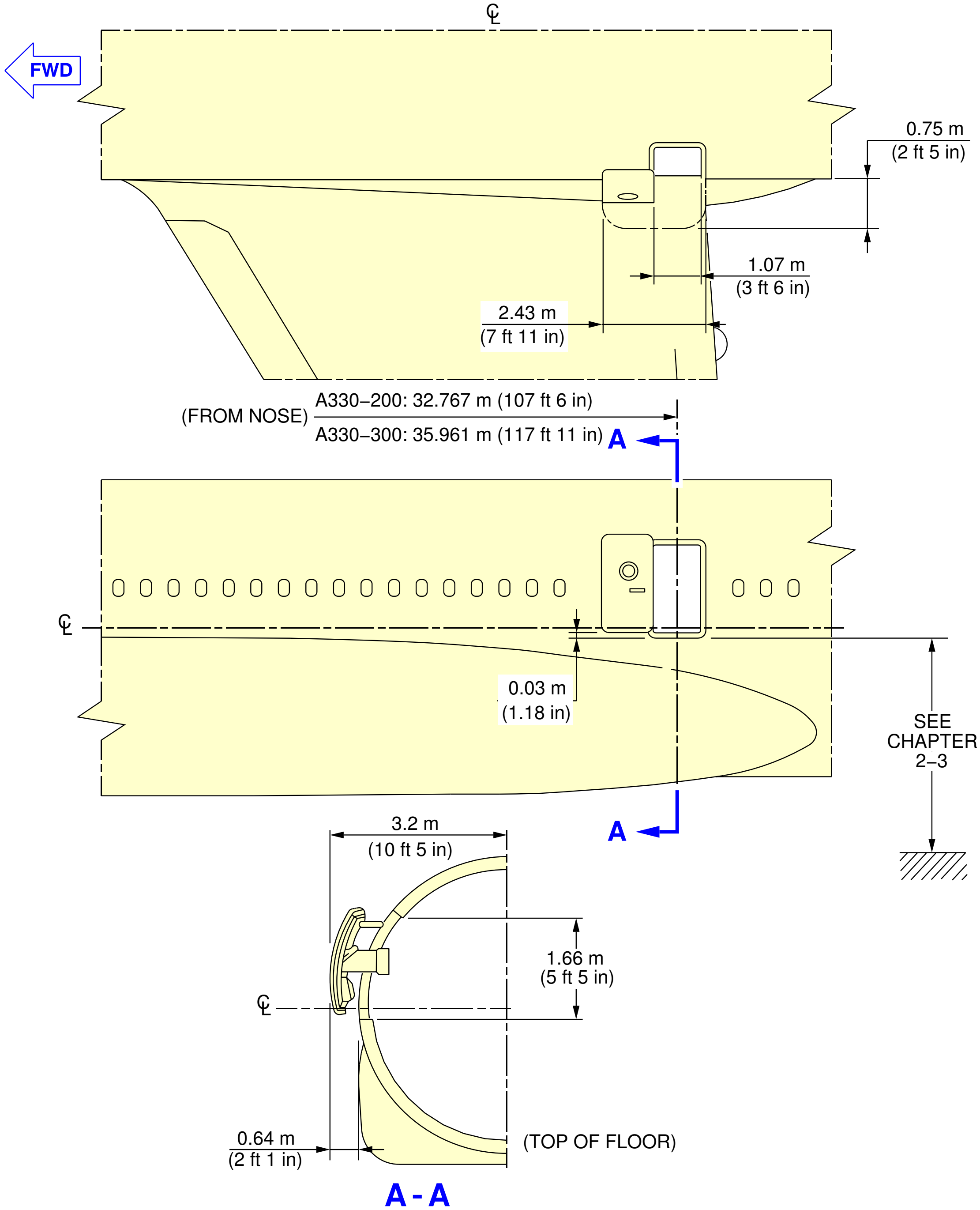
2-7-3 Emergency Exits

****ON A/C A330-200 A330-300**

Emergency Exits

1. This section gives emergency exits doors clearances.

**ON A/C A330-200 A330-300



F_AC_020703_1_0010101_01_00

Emergency Exits
FIGURE-2-7-3-991-001-A01

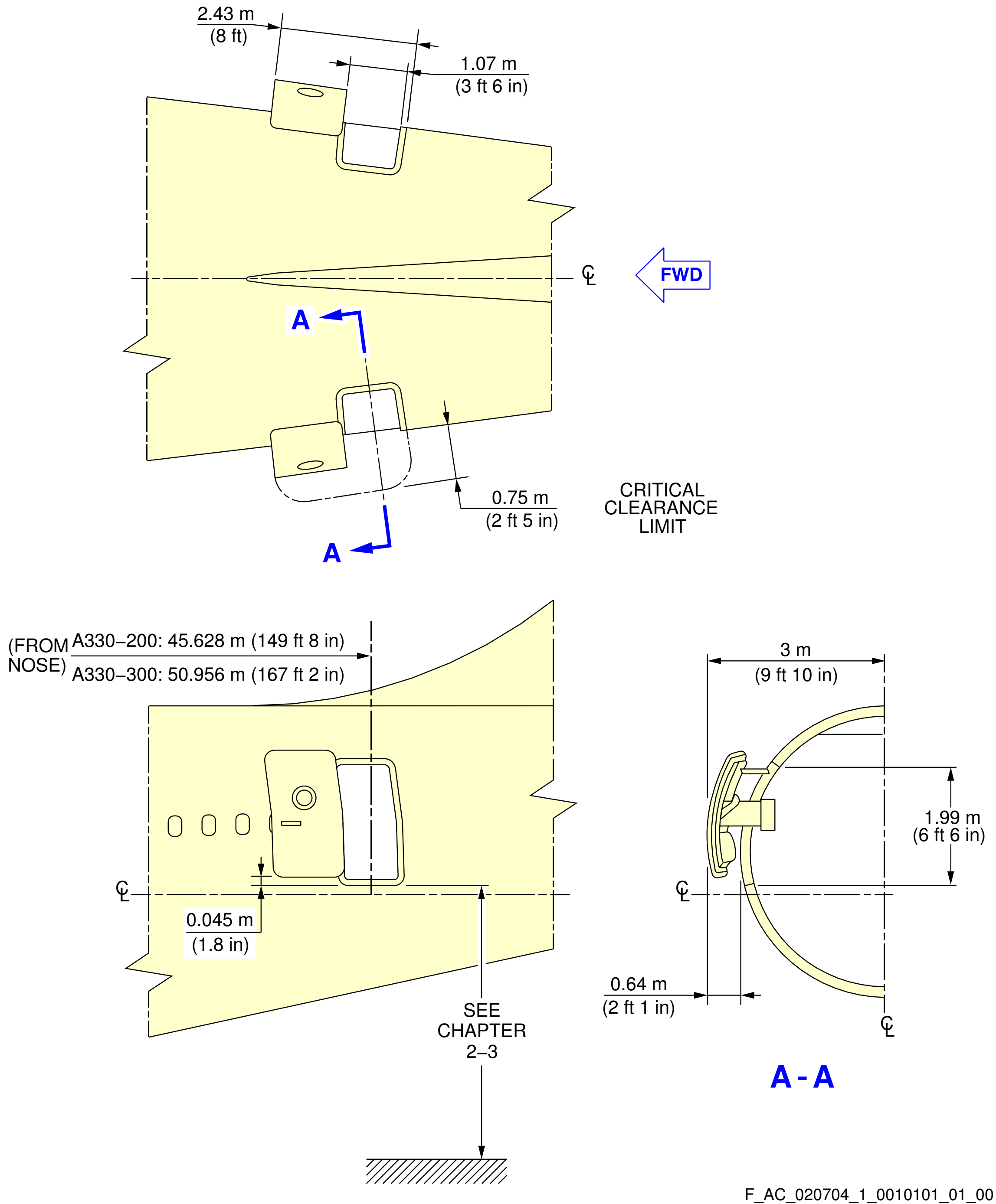
2-7-4 Aft Passenger / Crew Doors

****ON A/C A330-200 A330-300**

Aft Passenger / Crew Doors

1. This section gives Aft passenger / crew doors clearances.

**ON A/C A330-200 A330-300



Aft Passenger / Crew Doors
FIGURE-2-7-4-991-001-A01

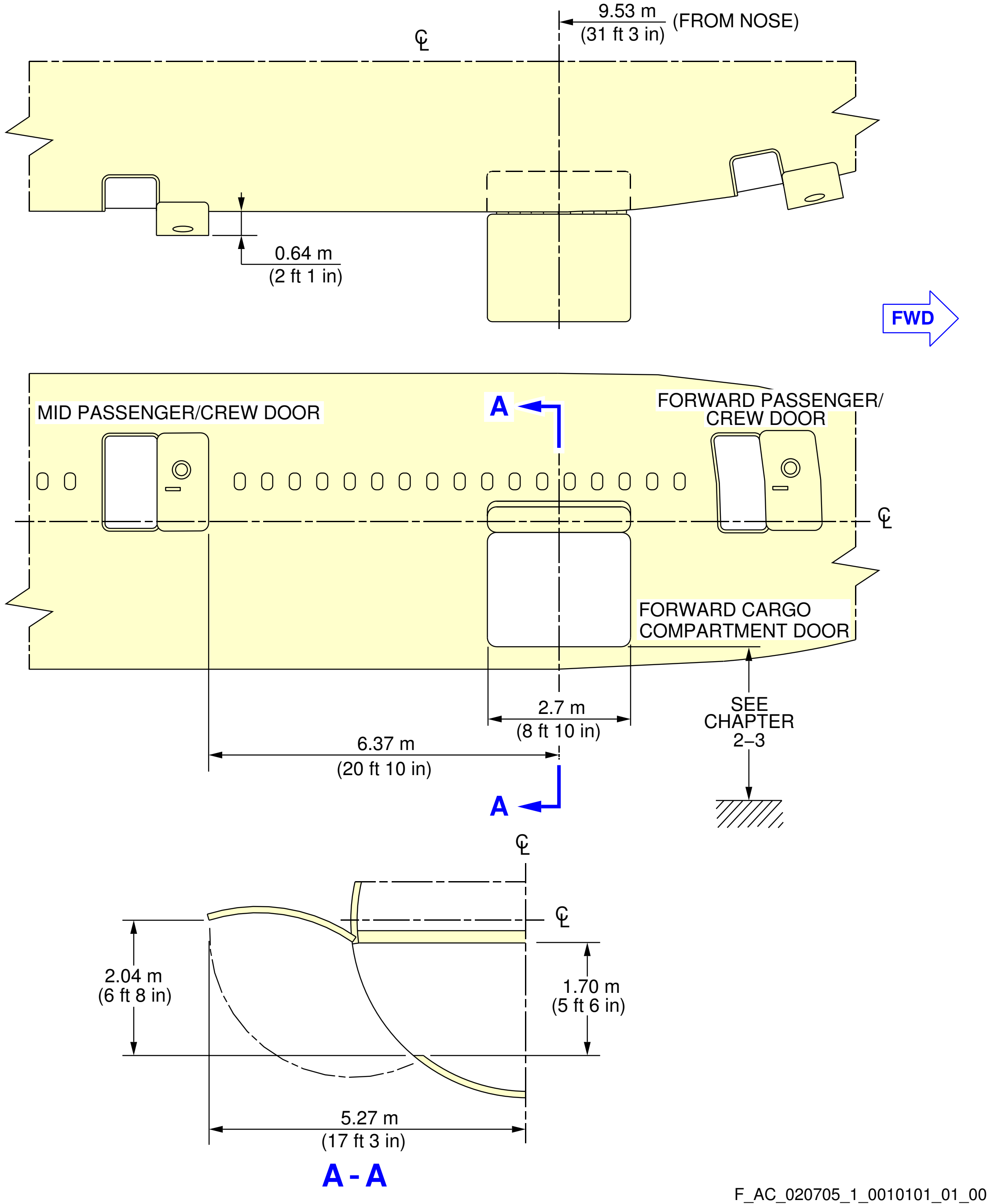
2-7-5 Forward Cargo Compartment Doors

****ON A/C A330-200 A330-300**

Forward Cargo Compartment Doors

1. This section gives forward cargo compartment doors clearances for pax version.

**ON A/C A330-200 A330-300



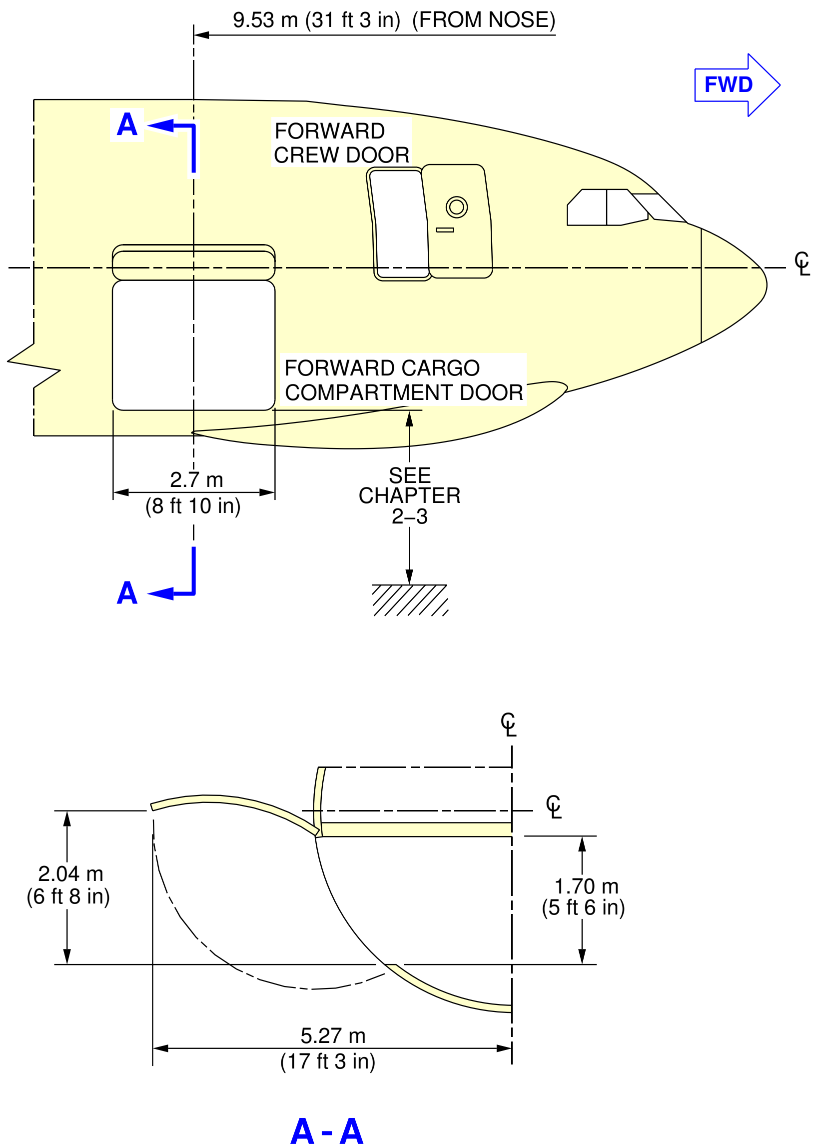
Forward Cargo Compartment Doors
FIGURE-2-7-5-991-001-A01

****ON A/C A330-200F**

Forward Cargo Compartment Doors

1. This section gives forward cargo compartment doors clearances for cargo version.

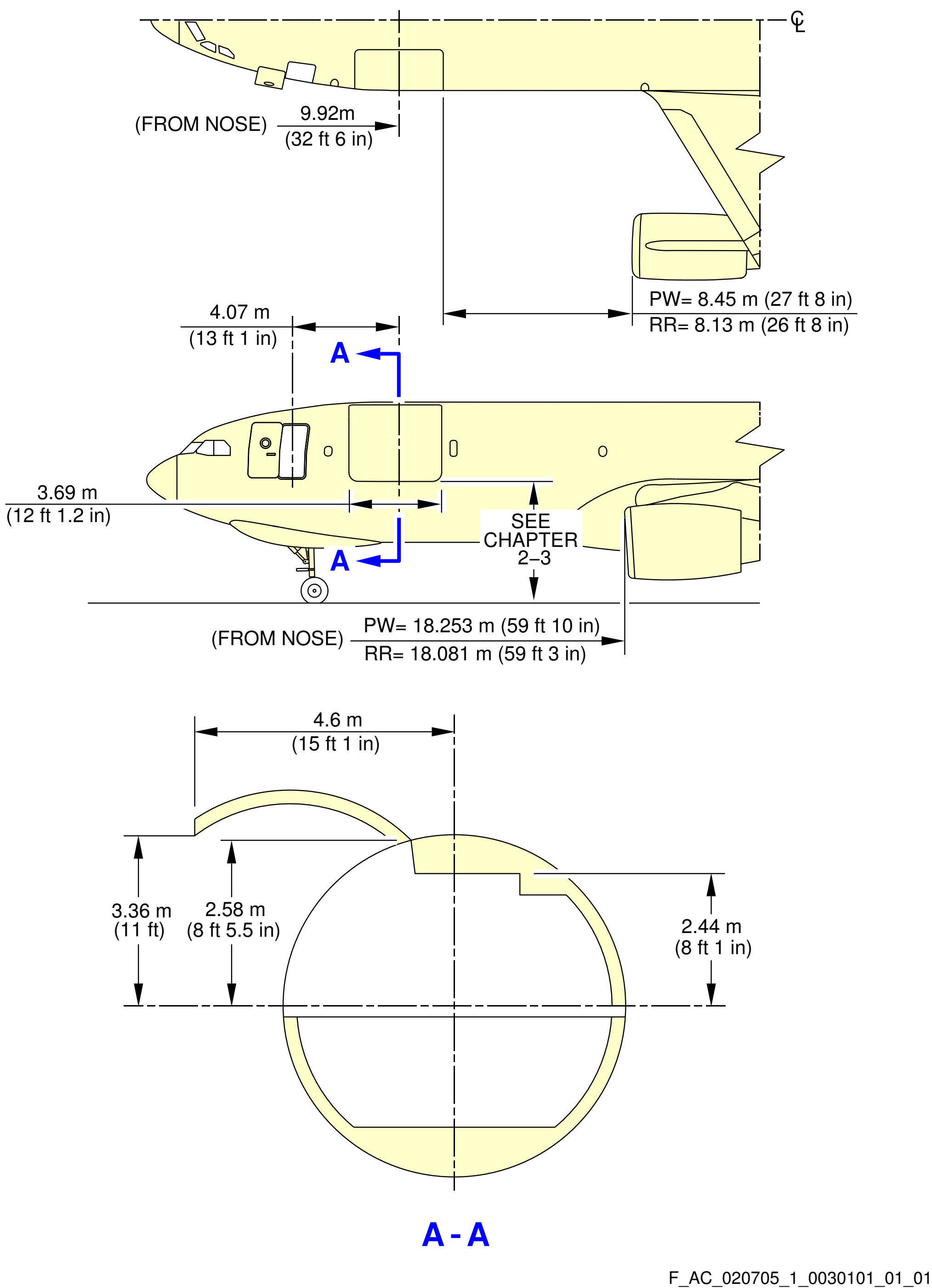
****ON A/C A330-200F**



F_AC_020705_1_0020101_01_01

Forward Cargo Compartment Doors
FIGURE-2-7-5-991-002-A01

**ON A/C A330-200F



Forward Cargo Compartment Doors
FIGURE-2-7-5-991-003-A01

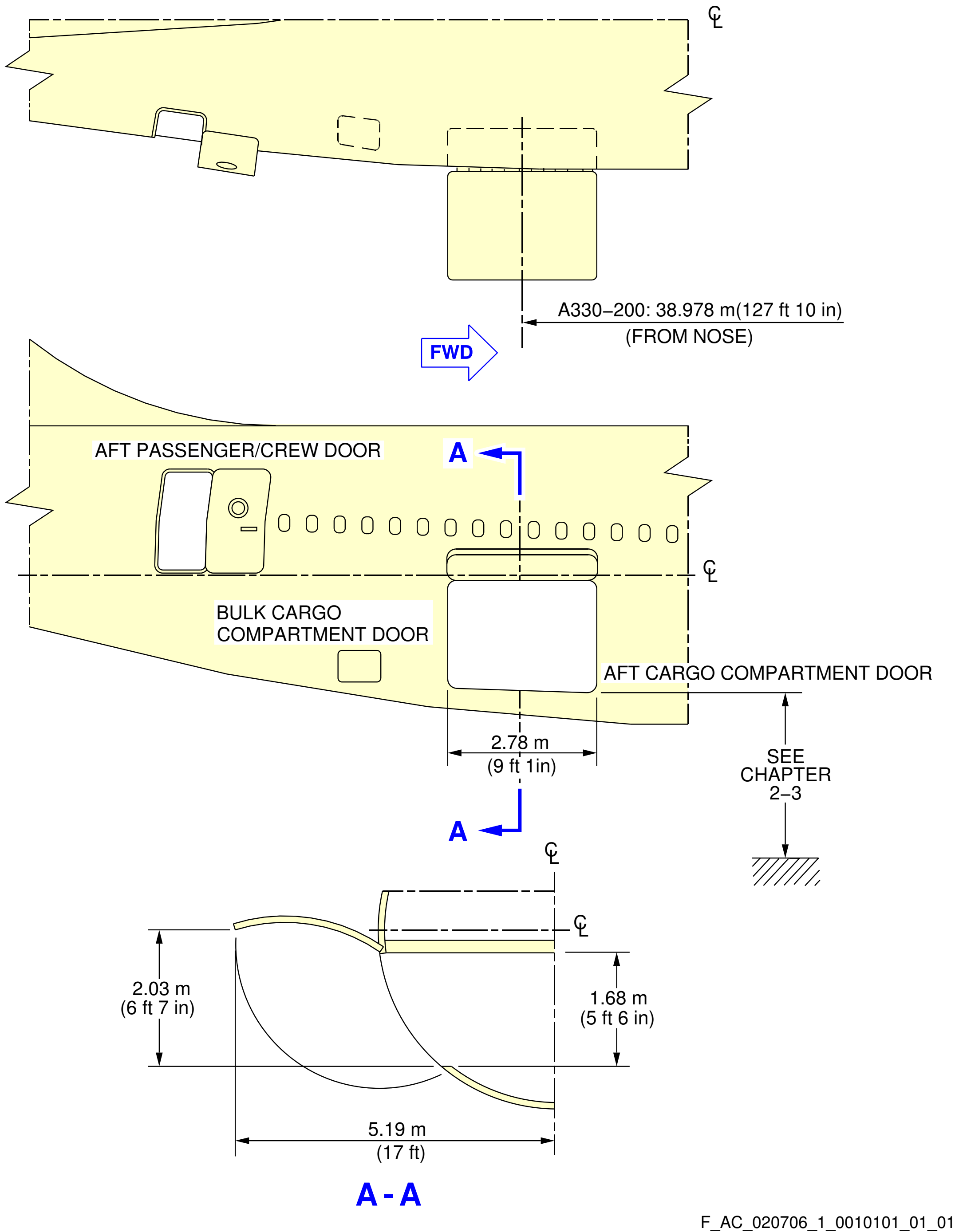
2-7-6 Aft Cargo Compartment Doors

****ON A/C A330-200 A330-200F A330-300**

Aft Cargo Compartment Doors

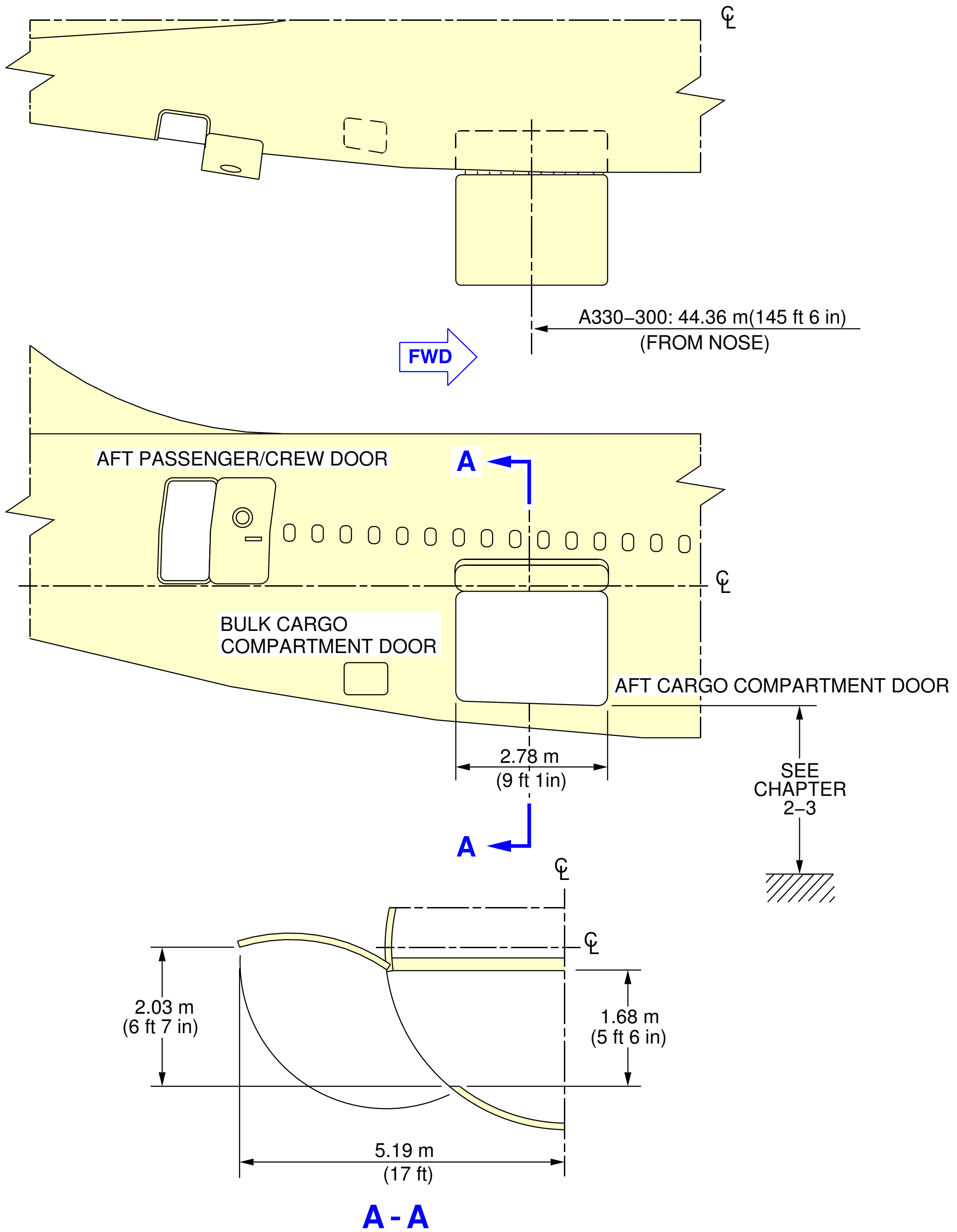
1. This section gives Aft cargo compartment doors clearances.

**ON A/C A330-200



Aft Cargo Compartment Doors
FIGURE-2-7-6-991-001-A01

**ON A/C A330-300



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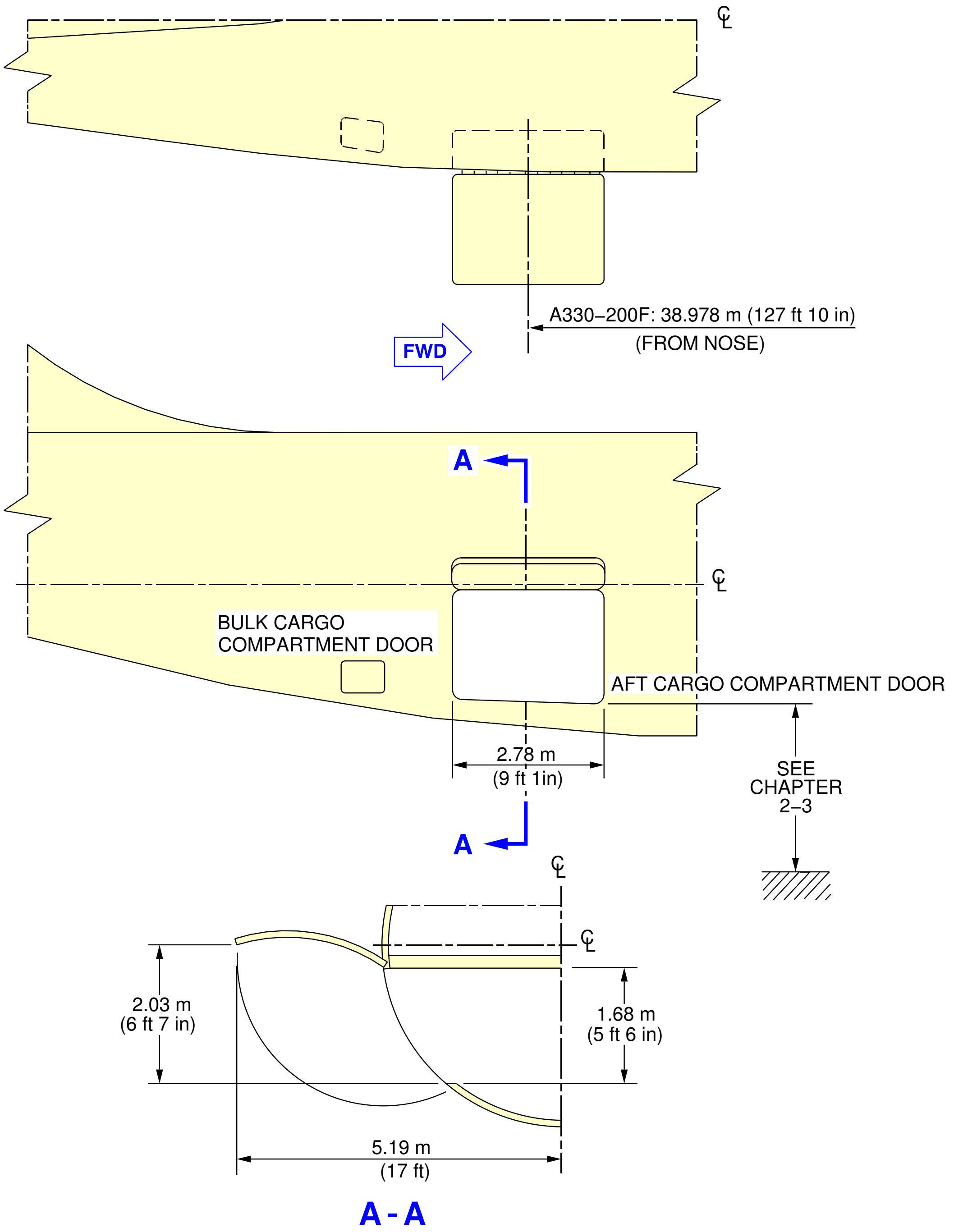
Aft Cargo Compartment Doors
FIGURE-2-7-6-991-003-A01

**ON A/C A330-200F



Aft Cargo Compartment Doors
FIGURE-2-7-6-991-002-A01

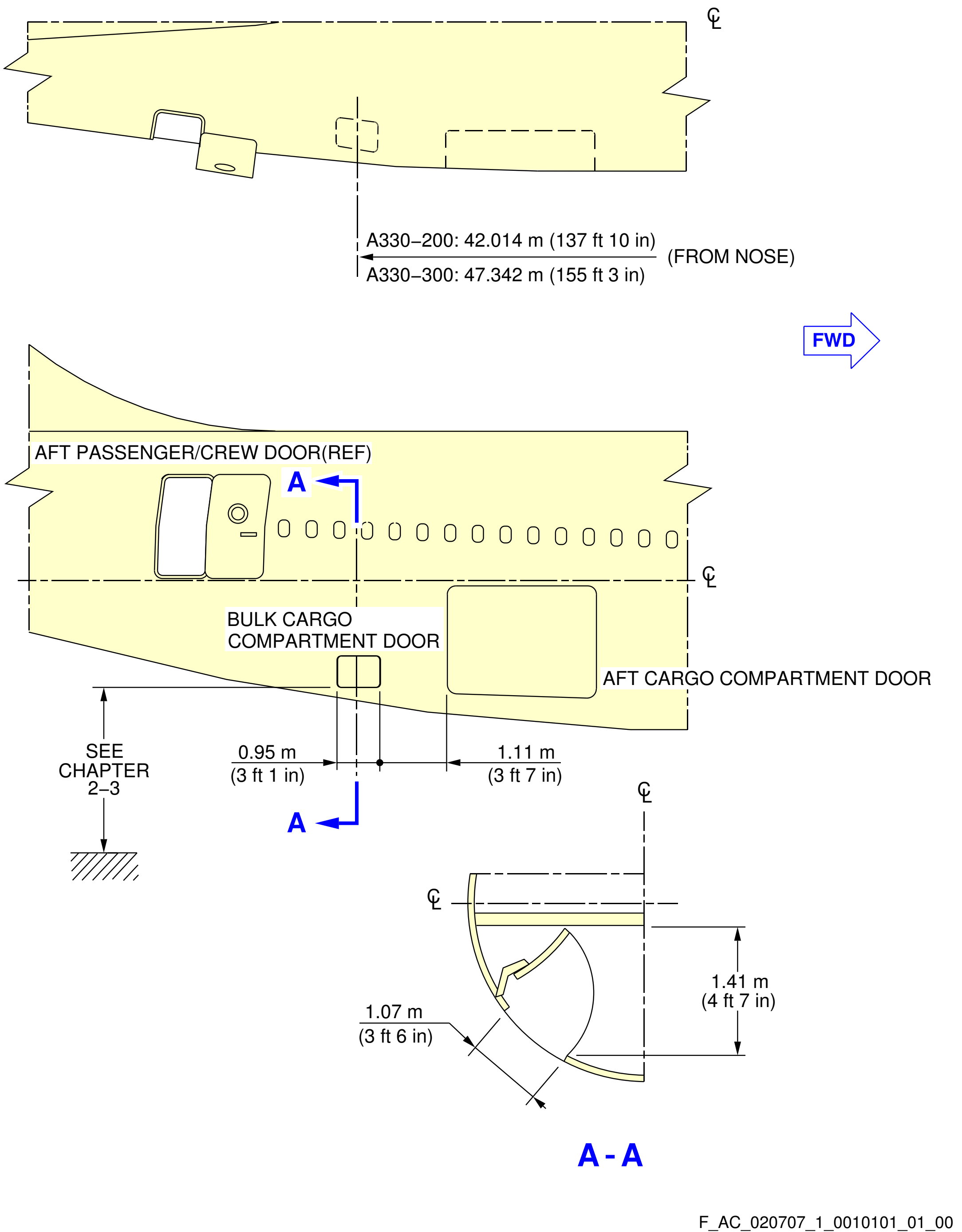
2-7-7 Bulk Cargo Compartment Doors

****ON A/C A330-200 A330-300**

Bulk Cargo Compartment Doors

1. This section gives the bulk cargo compartment doors clearances for pax version.

**ON A/C A330-200 A330-300



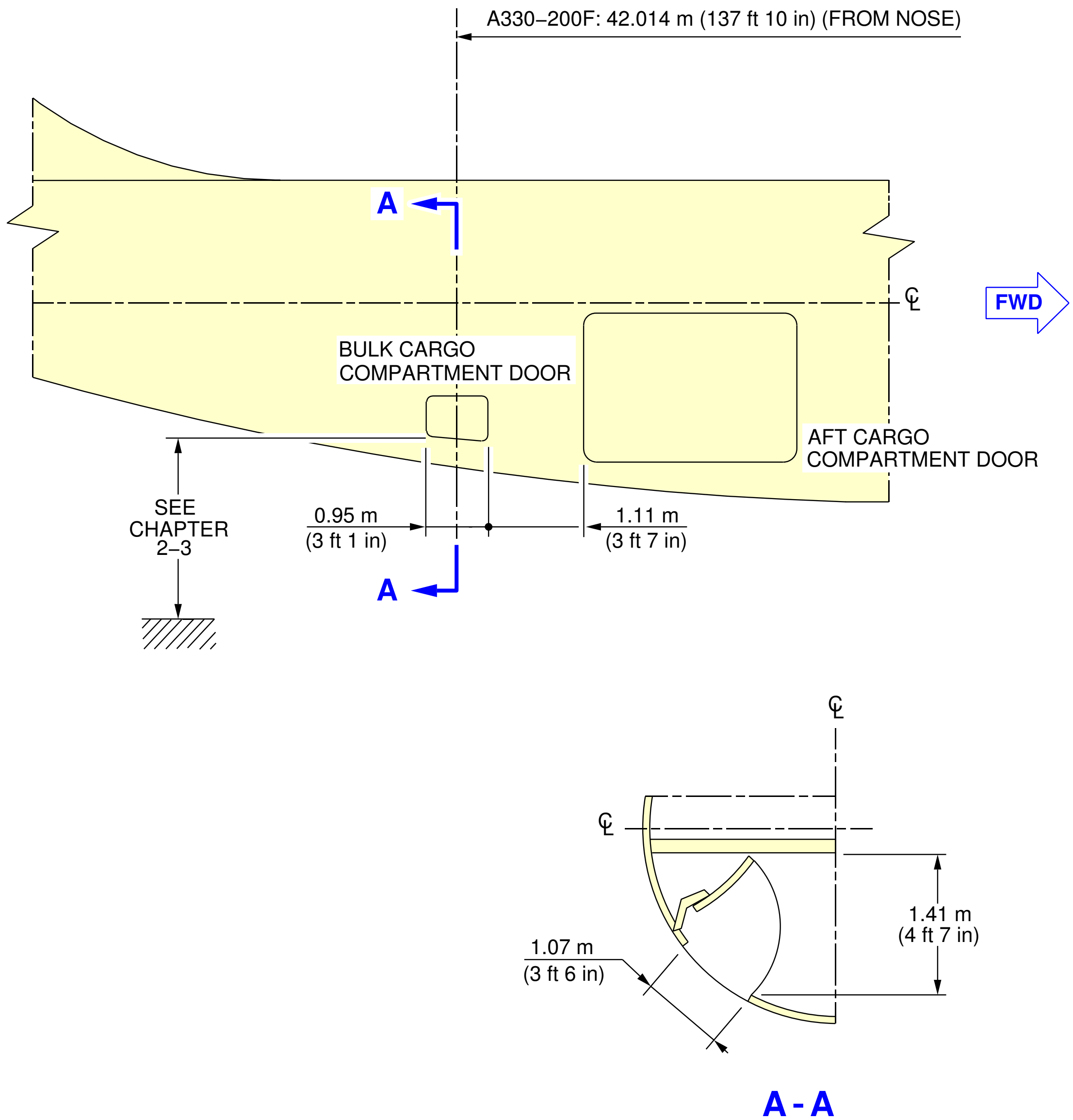
Bulk Cargo Compartment Doors
FIGURE-2-7-7-991-001-A01

****ON A/C A330-200F**

Bulk Cargo Compartment Doors

1. This section gives the bulk cargo compartment doors clearances for cargo version.

**ON A/C A330-200F



Bulk Cargo Compartment Doors
FIGURE-2-7-7-991-002-A01

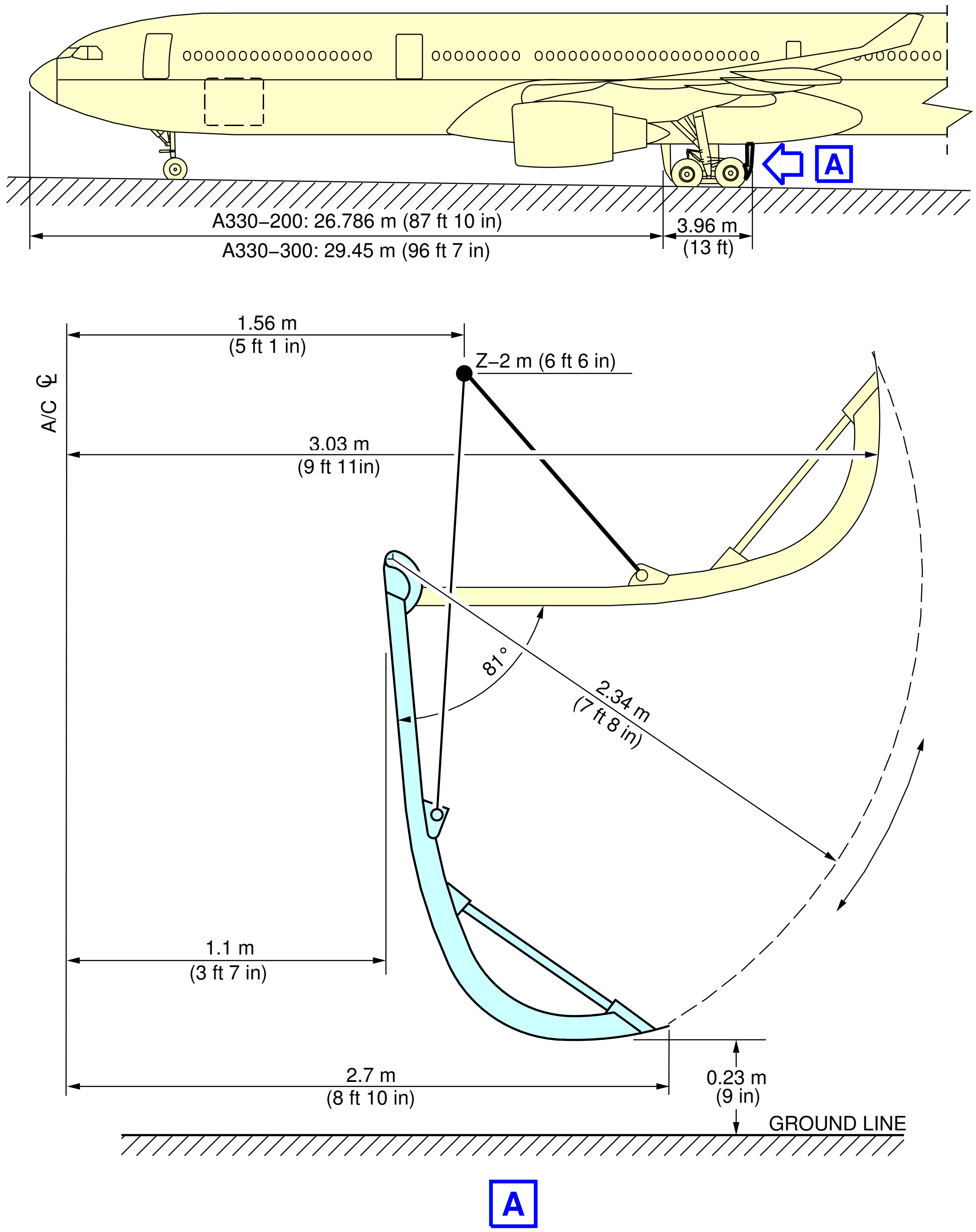
2-7-8 Main and Center Landing Gear Doors

****ON A/C A330-200 A330-300**

<u>Main Landing Gear Doors</u>

1. This section gives the main landing gear doors clearances for pax version.

**ON A/C A330-200 A330-300



F_AC_020708_1_0010101_01_00

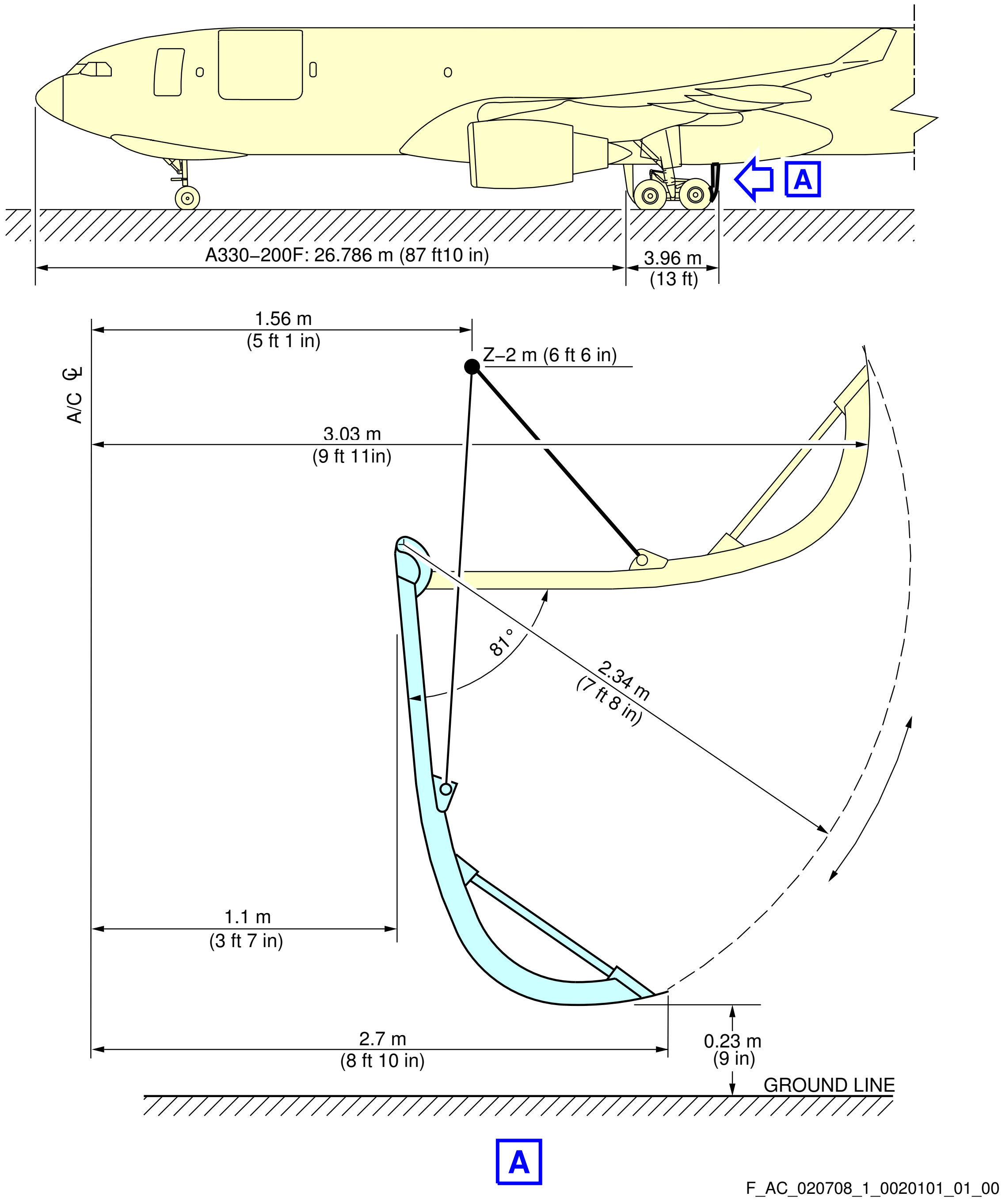
Main Landing Gear Doors
FIGURE-2-7-8-991-001-A01

****ON A/C A330-200F**

Main Landing Gear Doors

1. This section gives the main landing gear doors clearances for cargo version.

**ON A/C A330-200F



Main Landing Gear Doors
FIGURE-2-7-8-991-002-A01

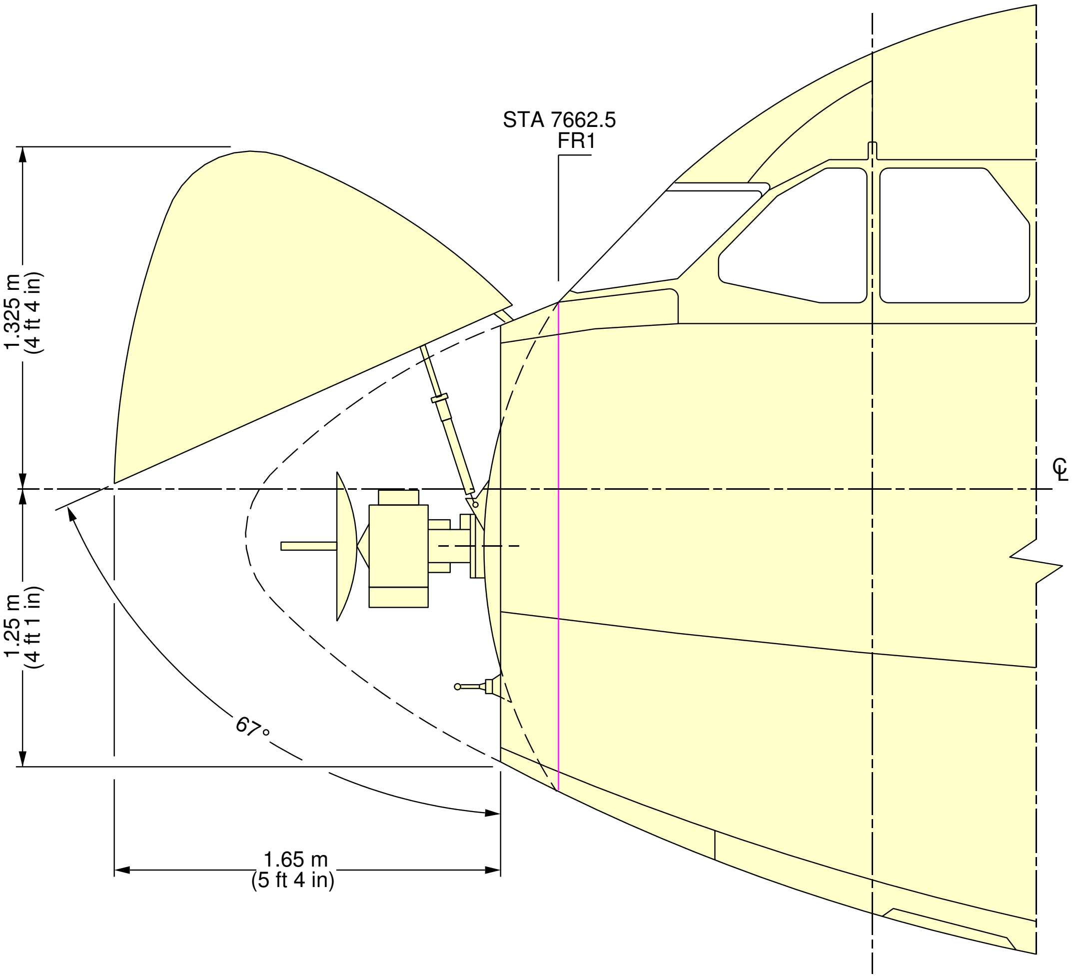
2-7-9 Radome

****ON A/C A330-200 A330-200F A330-300**

Radome

1. This section gives the radome clearances.

****ON A/C A330-200 A330-200F A330-300**



Radome
FIGURE-2-7-9-991-001-A01

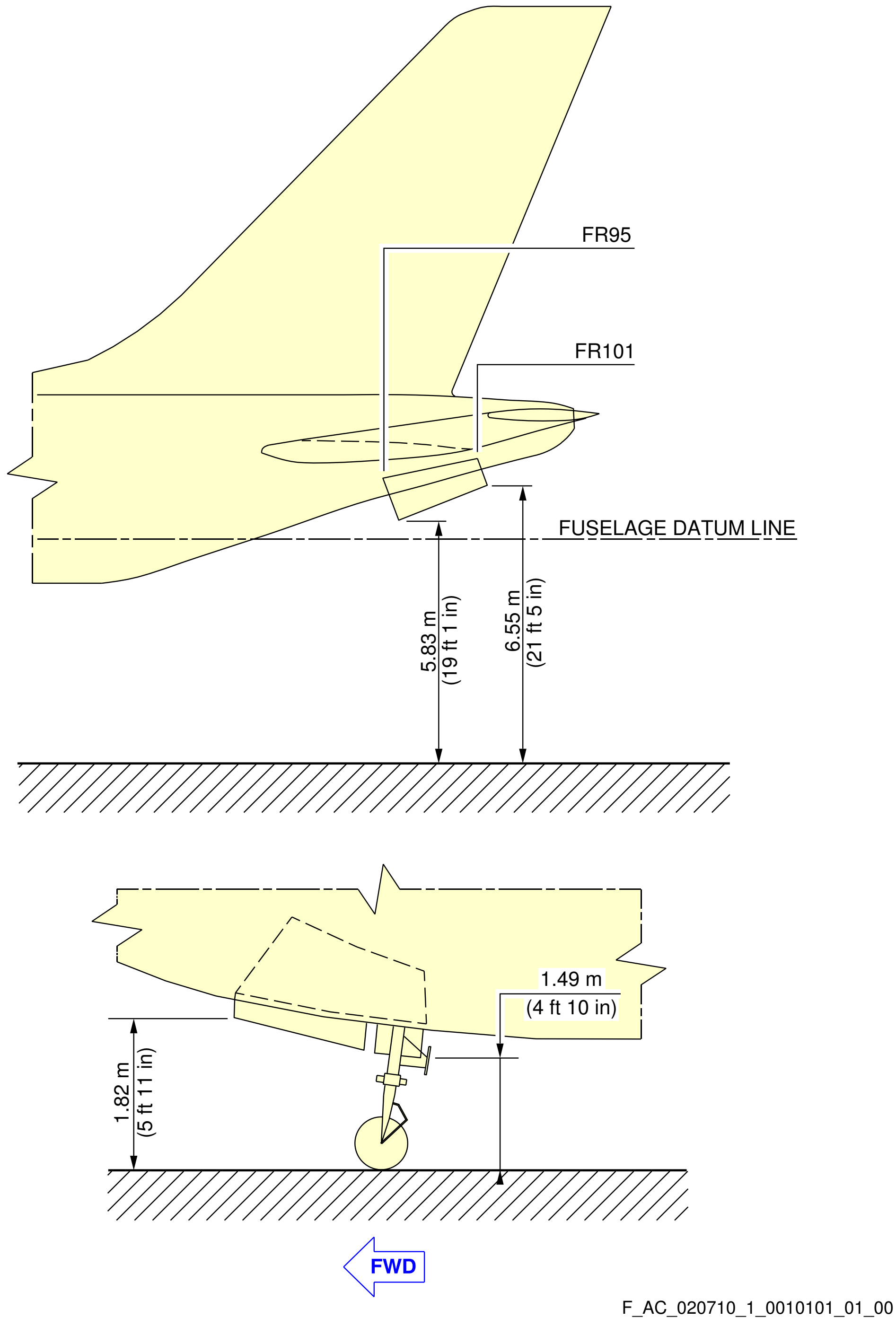
2-7-10 APU and Nose Landing Gear Doors

****ON A/C A330-200 A330-300**

APU and Nose Landing Gear Doors

1. This section gives APU and Nose Landing Gear doors clearances for pax version.

**ON A/C A330-200 A330-300



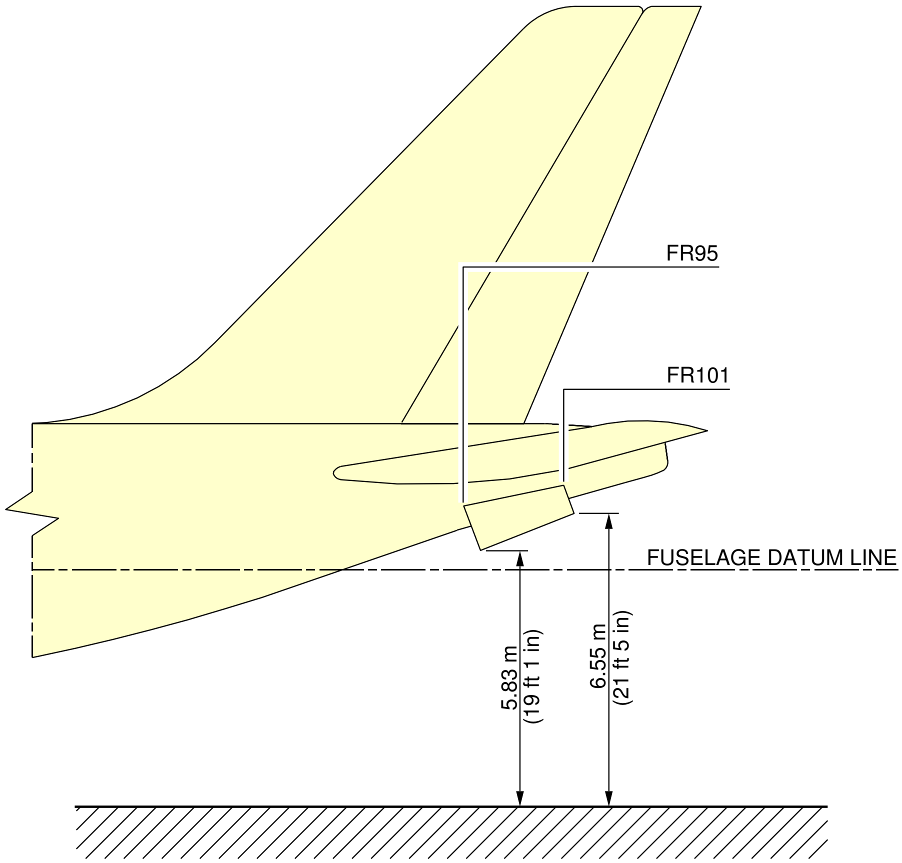
APU and Nose Landing Gear Doors
FIGURE-2-7-10-991-001-A01

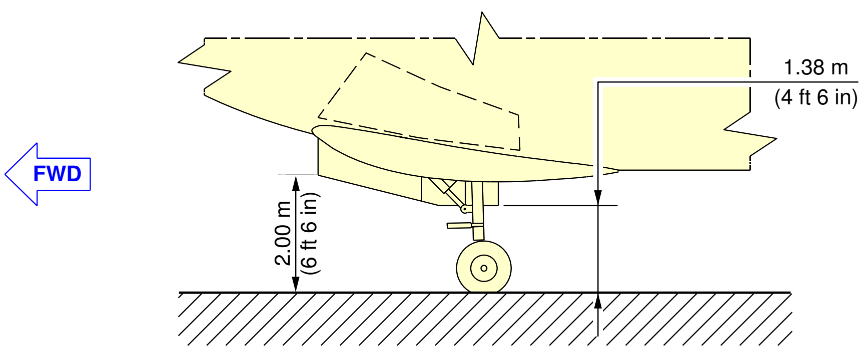
****ON A/C A330-200F**

APU and Nose Landing Gear Doors

1. This section gives APU and Nose Landing Gear doors clearances for cargo version.

**ON A/C A330-200F





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APU and Nose Landing Gear Doors
FIGURE-2-7-10-991-002-A01

2-8-0 Escape Slides

****ON A/C A330-200 A330-200F A330-300**

Escape Slides

1. General

   This section gives the location of the cabin escape facilities and their related clearances.

****ON A/C A330-200 A330-300**

2. Location

   Escape facilities are provided at the following locations:

   A. Door Escape Facility
      - One dual lane escape slide-raft at each passenger/crew door (total six)
      - One single lane escape slide-raft at each emergency exit door (total two).

      The slides are installed in a container in the lower part of the door.

****ON A/C A330-200F**

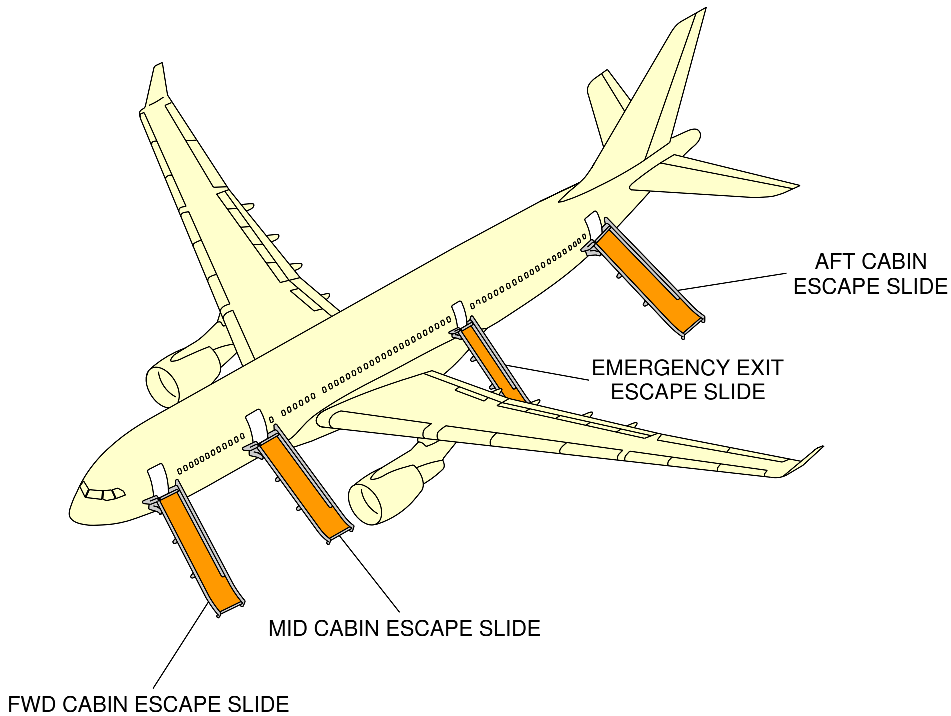
3. Location

   Escape facilities are provided at the following locations:

   A. Door Escape Facility
      - One dual lane escape slide-raft at each FWD cabin door (total two).

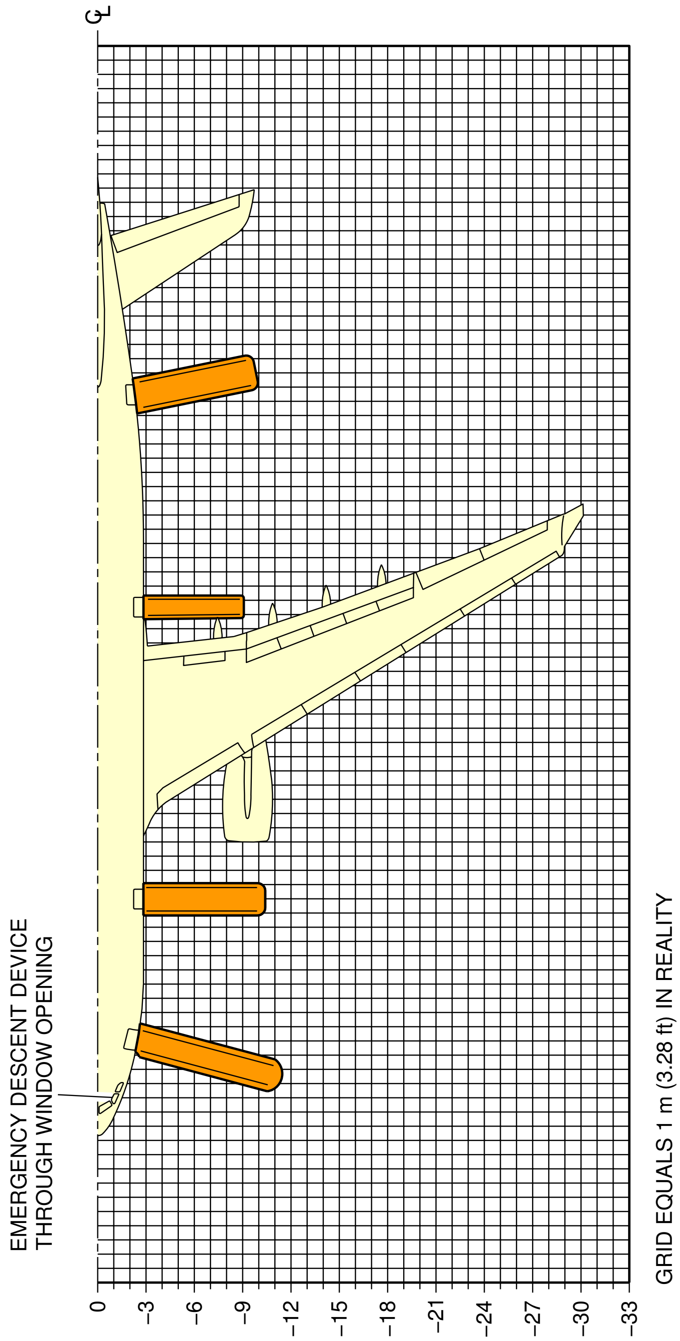
      The slides are installed in a container in the lower part of the door.

**ON A/C A330-200



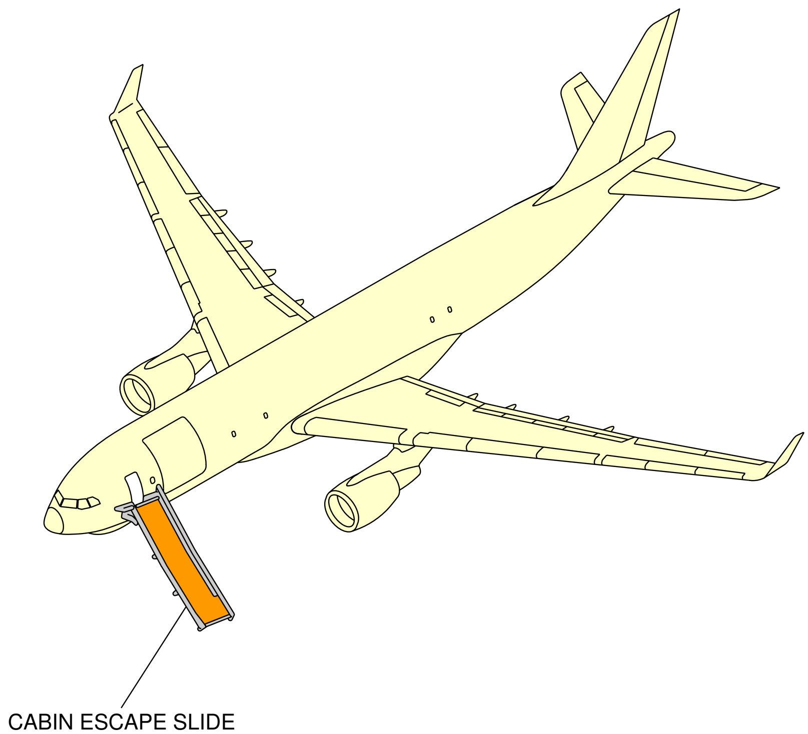
Escape Slides
Location (Sheet 1 of 2)
FIGURE-2-8-0-991-001-A01

**ON A/C A330-200



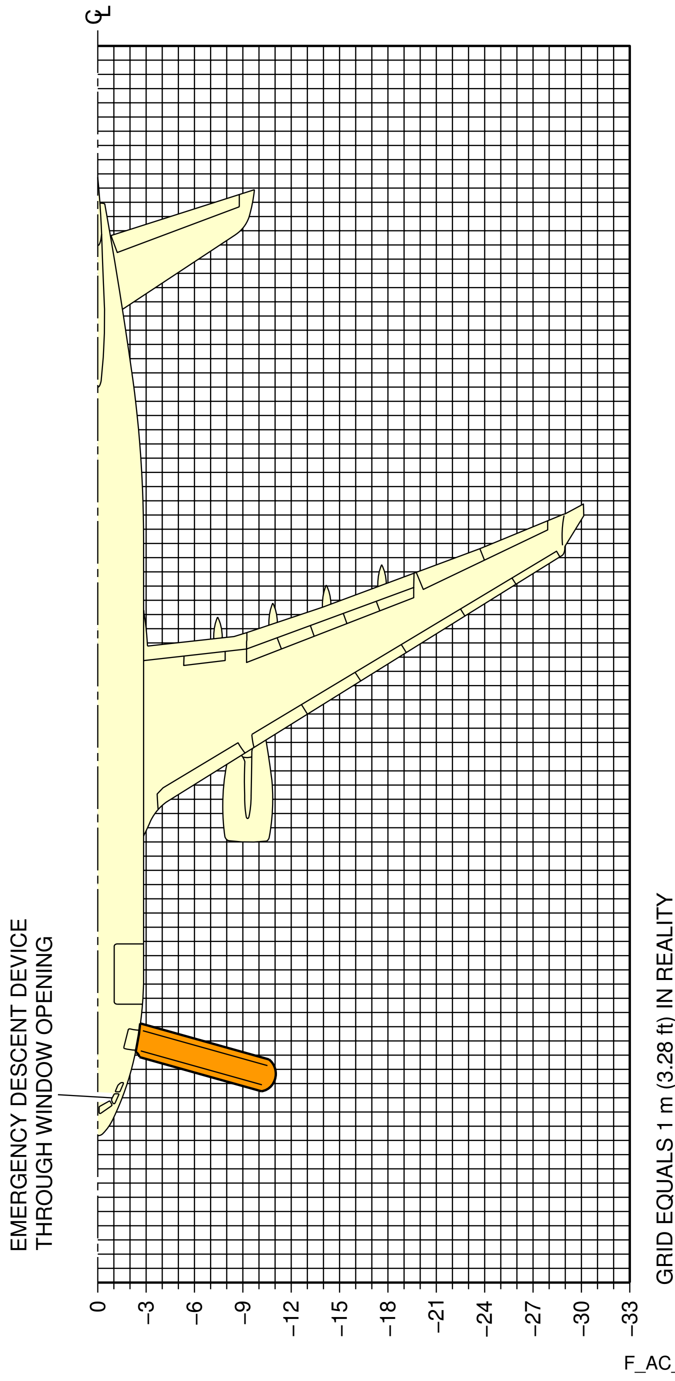
Escape Slides
Dimensions (Sheet 2 of 2)
FIGURE-2-8-0-991-001-A01

****ON A/C A330-200F**



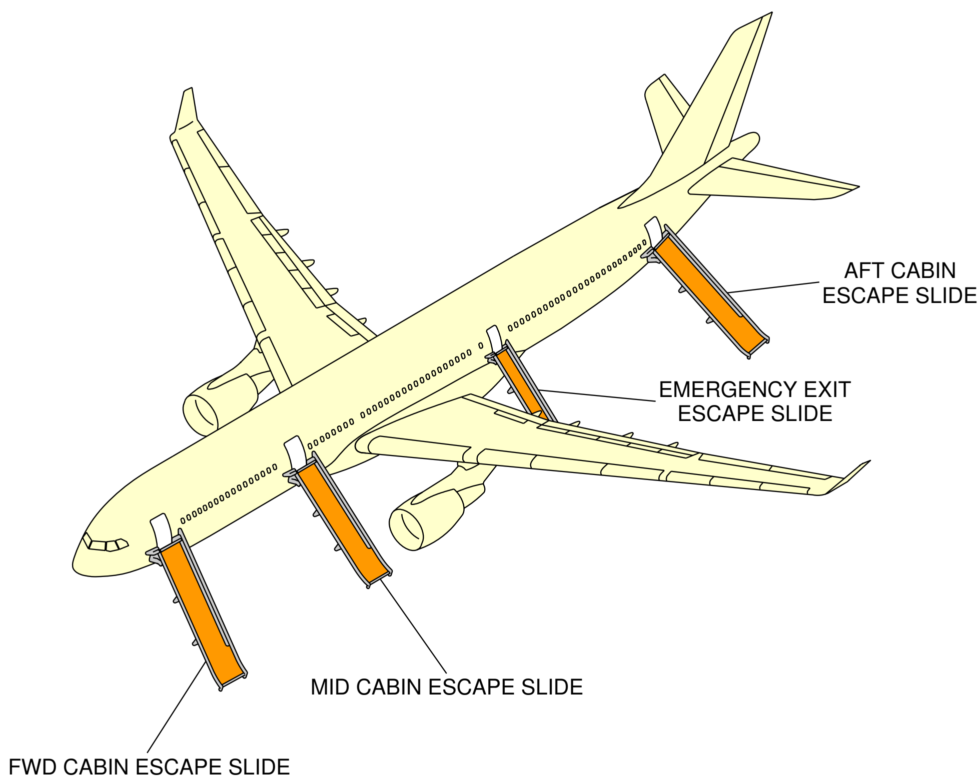
Escape Slides
Location (Sheet 1 of 2)
FIGURE-2-8-0-991-001-B01

**ON A/C A330-200F



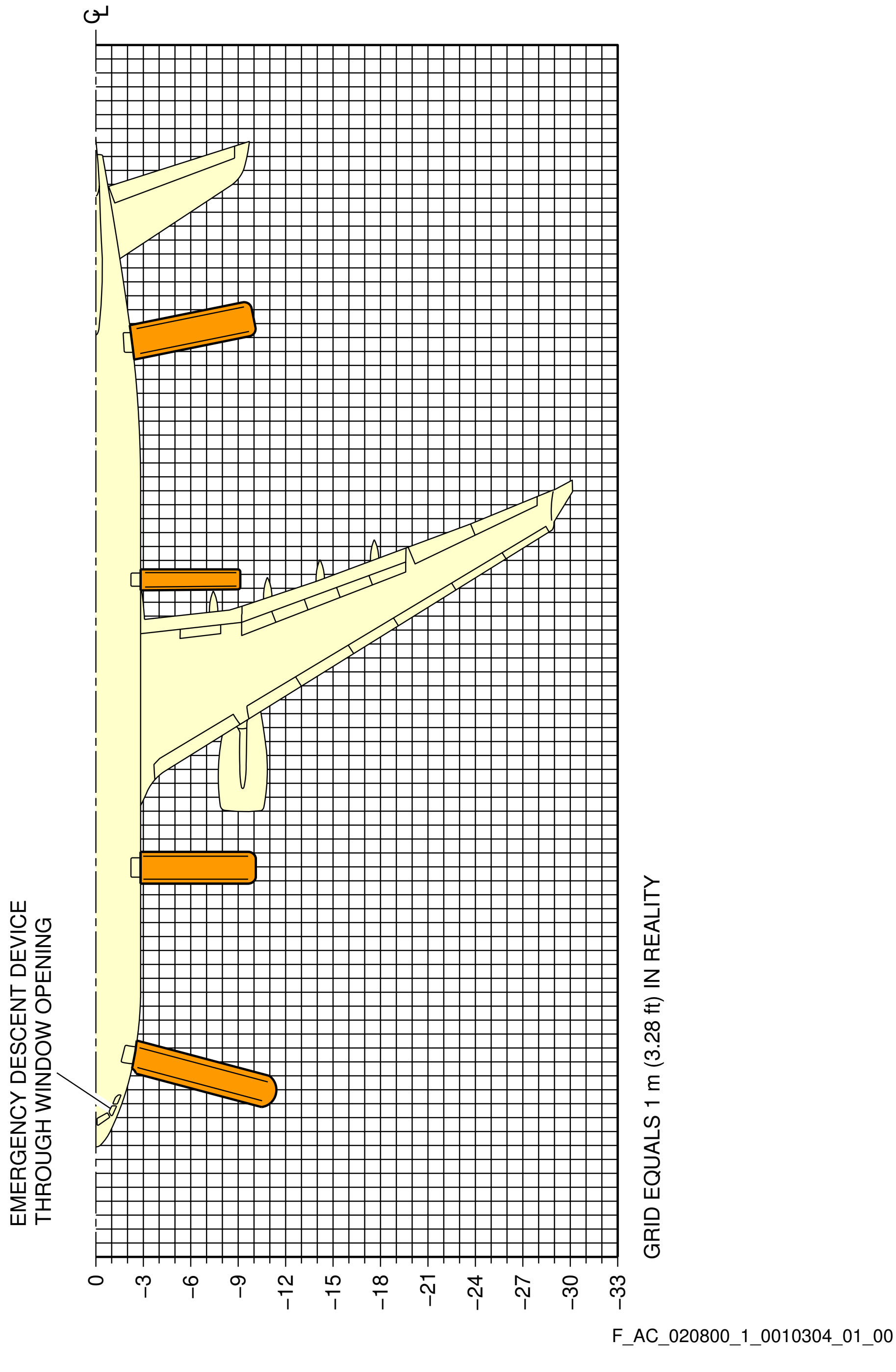
Escape Slides
Dimensions (Sheet 2 of 2)
FIGURE-2-8-0-991-001-B01

**ON A/C A330-300



Escape Slides
Location (Sheet 1 of 2)
FIGURE-2-8-0-991-001-C01

**ON A/C A330-300



Escape Slides
Dimensions (Sheet 2 of 2)
FIGURE-2-8-0-991-001-C01

2-9-0 Landing Gear

****ON A/C A330-200 A330-200F A330-300**

Landing Gear Maintenance Pits

1. General

The minimum maintenance pit envelopes for the main landing gear shock absorber removal are shown in Figures 1 and 2.

All dimensions shown are minimum dimensions with zero clearances.

The dimensions for the pits have been determined for these design factors:

- The length and width of the pits allow the gear to rotate as the weight is taken off the landing gear
- The depth of the pits allow the shock absorber to be removed when all the weight is taken off the landing gear.

Dimensions for elevators and associated mechanisms must be added to those in Figures 1 and 2.

A. Elevators

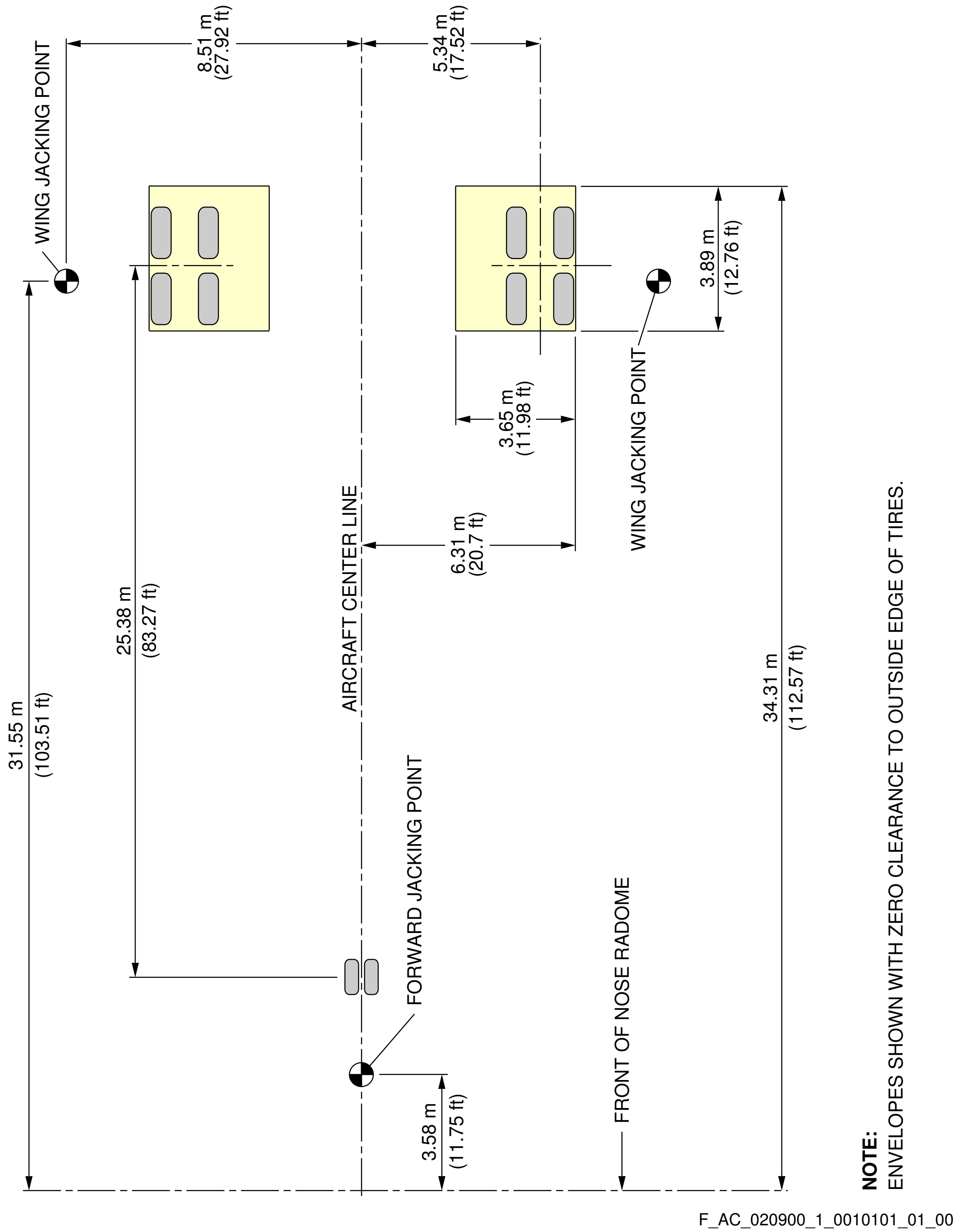
These can be either mechanical or hydraulic. Elevators are used to:

- permit easy movement of persons and equipment around the main landing gears
- lift and remove the landing gear assemblies out of the pits.

B. Jacking

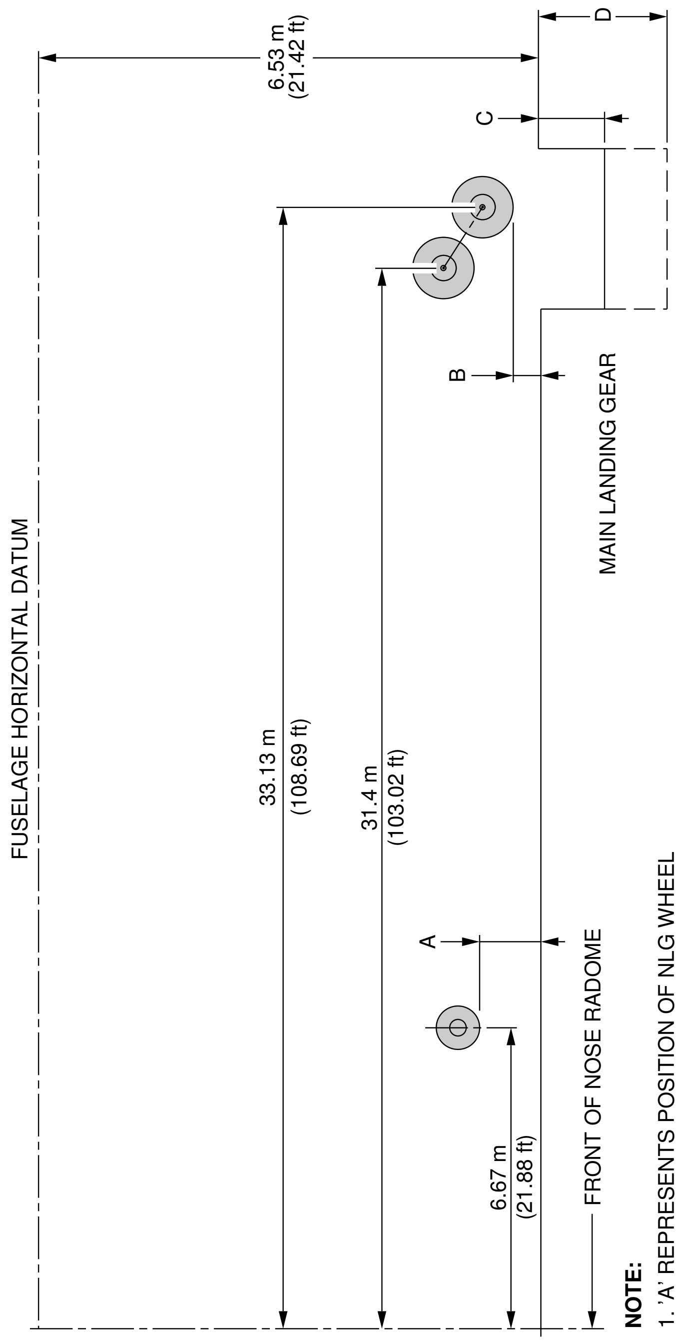
The aircraft must be in position over the pits to put the gear on the elevators. Jacks must be installed and engaged with all the jacking points (Ref. Section 2-14 for Jacking).
Jacks must support the total aircraft weight i.e. when the landing gears do not touch the elevators on retraction/extension tests.
When tripod support jacks are used, the tripod-base circle radius must be limited because the locations required for positioning the jacks are close to the sides of the pits.

**ON A/C A330-300



Landing Gear Maintenance Pits
Maintenance Pit Envelopes (Sheet 1 of 2)
FIGURE-2-9-0-991-001-A01

**ON A/C A330-300



NOTE:
1. 'A' REPRESENTS POSITION OF NLG WHEEL ABOVE STATIC GROUND LINE WITH AIRCRAFT LEVELLED AND JACKED. A PIT IS NOT REQUIRED FOR THE NLG.
2. 'B' REPRESENTS POSITION OF LOWEST MLG MAIN WHEEL ABOVE STATIC GROUND LINE WITH AIRCRAFT JACKED IN TO POSITION ABOVE HYDRAULIC OR MECHANICAL ELEVATOR, FOR RETRACTION/EXTENSION TESTS.
3. 'C' REPRESENTS POSITION OF HYDRAULIC OR MECHANICAL ELEVATOR WITH THE MLG SHOCK ABSORBER IN THE DEFLATED AND COMPRESSED CONDITION FOR SHOCK ABSORBER REMOVAL.
4. 'D' REPRESENTS POSITION OF HYDRAULIC OR MECHANICAL ELEVATOR WITH THE MLG SHOCK ABSORBER IN THE EXTENDED CONDITION FOR SHOCK ABSORBER REMOVAL.

DIMENSIONS							
A		B		C		D	
m	ft	m	ft	m	ft	m	ft
1.56	5.12	0.2	0.66	0.81	2.66	1.53	5.02

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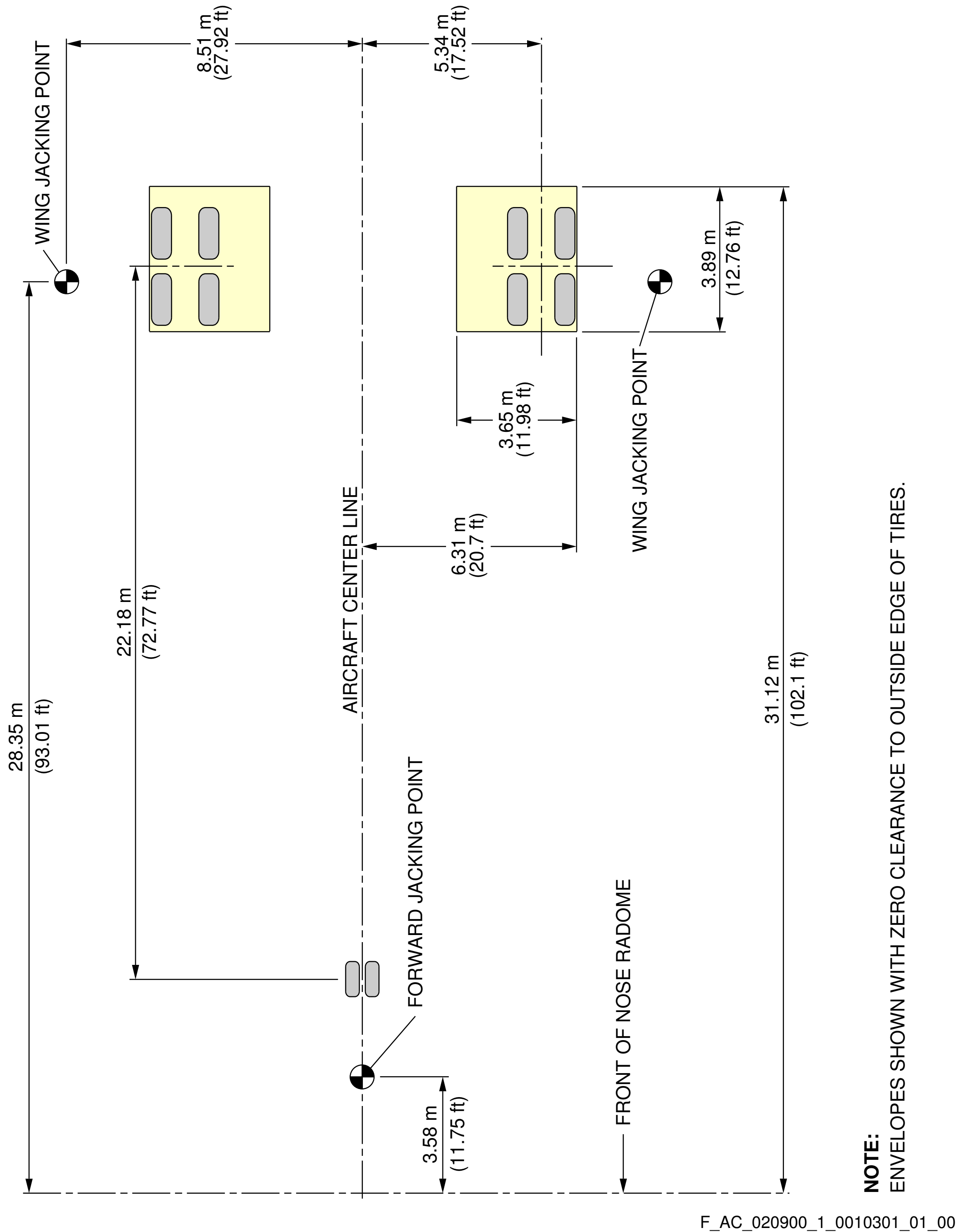
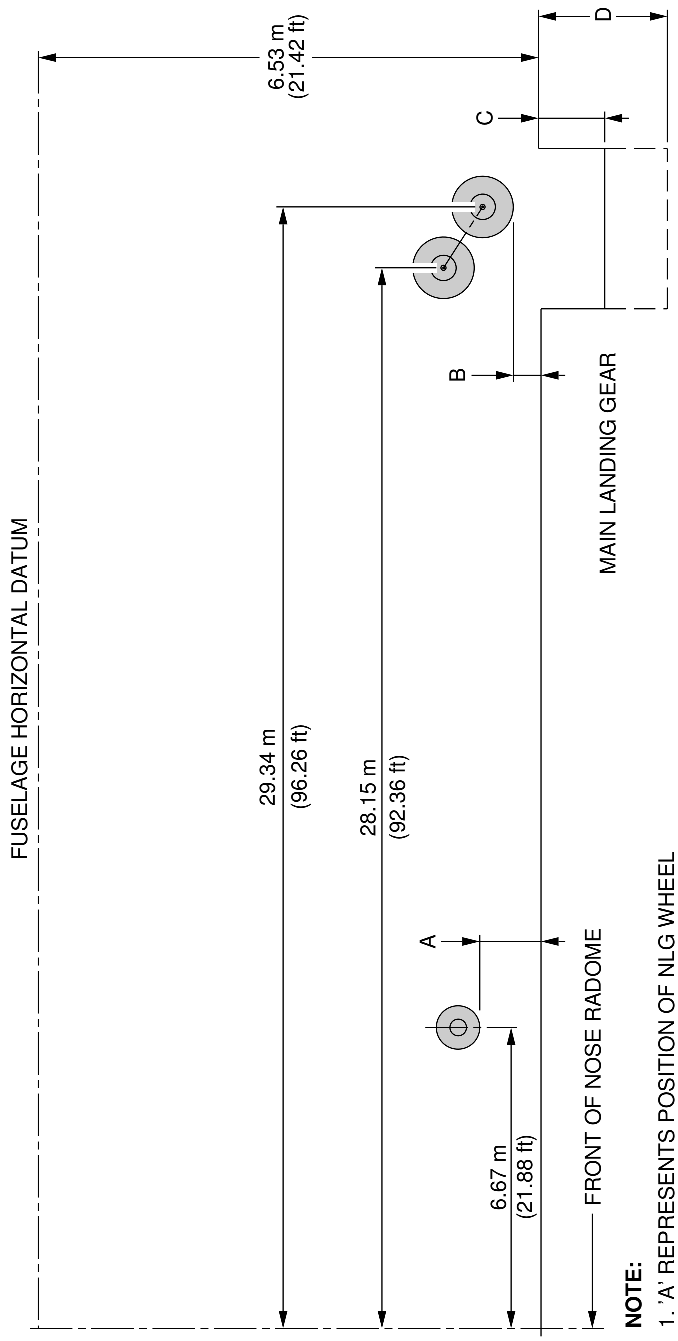
Landing Gear Maintenance Pits
Maintenance Pit Envelopes (Sheet 2 of 2)
FIGURE-2-9-0-991-001-A01

**ON A/C A330-200 A330-200F



Landing Gear Maintenance Pits
Maintenance Pit Envelopes (Sheet 1 of 2)
FIGURE-2-9-0-991-001-C01

**ON A/C A330-200 A330-200F



DIMENSIONS							
A		B		C		D	
m	ft	m	ft	m	ft	m	ft
1.56	5.12	0.2	0.66	0.81	2.66	1.53	5.02

NOTE:

1. 'A' REPRESENTS POSITION OF NLG WHEEL ABOVE STATIC GROUND LINE WITH AIRCRAFT LEVELLED AND JACKED. A PIT IS NOT REQUIRED FOR THE NLG.
2. 'B' REPRESENTS POSITION OF LOWEST MLG MAIN WHEEL ABOVE STATIC GROUND LINE WITH AIRCRAFT JACKED IN TO POSITION ABOVE HYDRAULIC OR MECHANICAL ELEVATOR, FOR RETRACTION/EXTENSION TESTS.
3. 'C' REPRESENTS POSITION OF HYDRAULIC OR MECHANICAL ELEVATOR WITH THE MLG SHOCK ABSORBER IN THE DEFLATED AND COMPRESSED CONDITION FOR SHOCK ABSORBER REMOVAL.
4. 'D' REPRESENTS POSITION OF HYDRAULIC OR MECHANICAL ELEVATOR WITH THE MLG SHOCK ABSORBER IN THE EXTENDED CONDITION FOR SHOCK ABSORBER REMOVAL.

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Landing Gear Maintenance Pits
Maintenance Pit Envelopes (Sheet 2 of 2)
FIGURE-2-9-0-991-001-C01

****ON A/C A330-200 A330-200F A330-300**

Landing Gear

1. General

The aircraft has:
- Two Main Landing Gears (MLG) with four wheel bogie assembly and related doors
- A Nose Landing Gear (NLG) with twin wheel assembly and related doors.

The Main Landing Gears are located under each wing and retract sideways towards the fuselage centerline.
The Nose Landing Gear retracts forward into a fuselage compartment below the cockpit.
The retraction and extension of the landing gears and landing gear doors are operated hydraulically and mechanically. The control, sequence and indication are electrical.
In abnormal operation, the landing gears can be extended by gravity.

For the dimensions of the landing gear footprint and tire size, refer to 7-2-0.

2. Main Landing Gear and Doors

Each Main Landing Gear has a leg assembly and a four-wheel bogie beam. The MLG leg includes a shortening mechanism, a bogie pitch trimmer and an oleo-pneumatic shock absorber. In flight, with the MLG extended, the bogie is held in a trailing condition (rear wheels low) by an articulation linkage and a pitch trimmer. The folding sidestay is locked mechanically by a lockstay (which is operated by the downlock actuator) when the MLG is fully extended.

Each MLG bay has the following doors:
- A hydraulically-operated main door
- A mechanically-operated hinged door
- A fairing door on the MLG leg.

All the doors close when the MLG retracts. When the MLG is extended the main door closes and the hinged door stays open. A manually operated mechanism (for maintenance personnel) lets the main doors be opened for access to the MLG bay when the aircraft is on the ground.

3. Nose Landing Gear and Doors

The NLG includes a twin-wheel axle assembly and an oleo-pneumatic shock absorber. The NLG is supported longitudinally by a two-piece dragstay. The dragstay is locked mechanically by the lock links when the NLG is fully extended.

Each NLG bay has the following doors:
- Two hydraulically-operated FWD doors
- Two mechanically-operated AFT doors
- A fixed fairing door on the NLG leg.

All the doors close when the NLG retracts. When the NLG is extended the FWD doors close and the AFT doors stay open. A door opening mechanism lets the FWD doors be opened on the ground for access to the NLG bay.

4. Nose Wheel Steering

Nose wheel steering system is a computer controlled electro-hydraulic system. The system uses the Green main hydraulic power system to operate the hydraulic components.
The steering is controlled by two hand wheel transmitters in the cockpit, which supply the primary steering inputs to the BSCU (Brake and Steering Control Unit).
A steering disconnection box is installed on the NLG to disconnect the steering for towing.

For the operation and control of nose wheel steering, refer to AMM 32-51-00.
For the steering angle limits, refer to AMM 09-10-00.

5. Landing Gear Servicing Points

A. General
Fluid filling and gas charging of the MLG and NLG shock absorbers are accomplished through MS28889 standard valves.

B. Charging Pressures
For charging of the landing gear shock absorbers, refer to AMM 12-14-32.

6. Landing Gear Control

The landing gear and door operation is controlled electrically by one of the two Landing Gear Control and Interface Units (LGCIU). Control changes from one LGCIU to the other after each extension cycle.
In normal operation, the landing gears and doors are operated by the Green hydraulic system.
In abnormal operation, the landing gears can be extended by the operation of electro-mechanical free-fall system. The related electrical switches in the cockpit disengages the doors and the landing gear uplocks. The landing gears then extend by free-fall and the downlock links of each landing gear (L/G) are locked in position by springs.

7. Braking

A. General
Carbon multi-disc brakes are installed on each wheel of the MLG. Each brake assembly has two wear indicators installed.

The braking system has four braking modes with autobrake and anti-skid systems:
- Normal braking with anti-skid.
- Alternate braking with anti-skid.
- Alternate braking without anti-skid.
- Parking brake with full brake pressure.

B. In-Flight Wheel Braking

Braking occurs automatically during the retraction of the landing gears. This stops the rotation of the MLG wheels before the landing gears go into their related bays.

8. Tire Pressure Indicating System (TPIS)

The TPIS automatically monitors the tire pressures and shows these values on Test Equipment (BITE) and also supplies other data and warnings on the WHEEL page of the System Display (SD).

9. Built In Test Equipment (BITE)

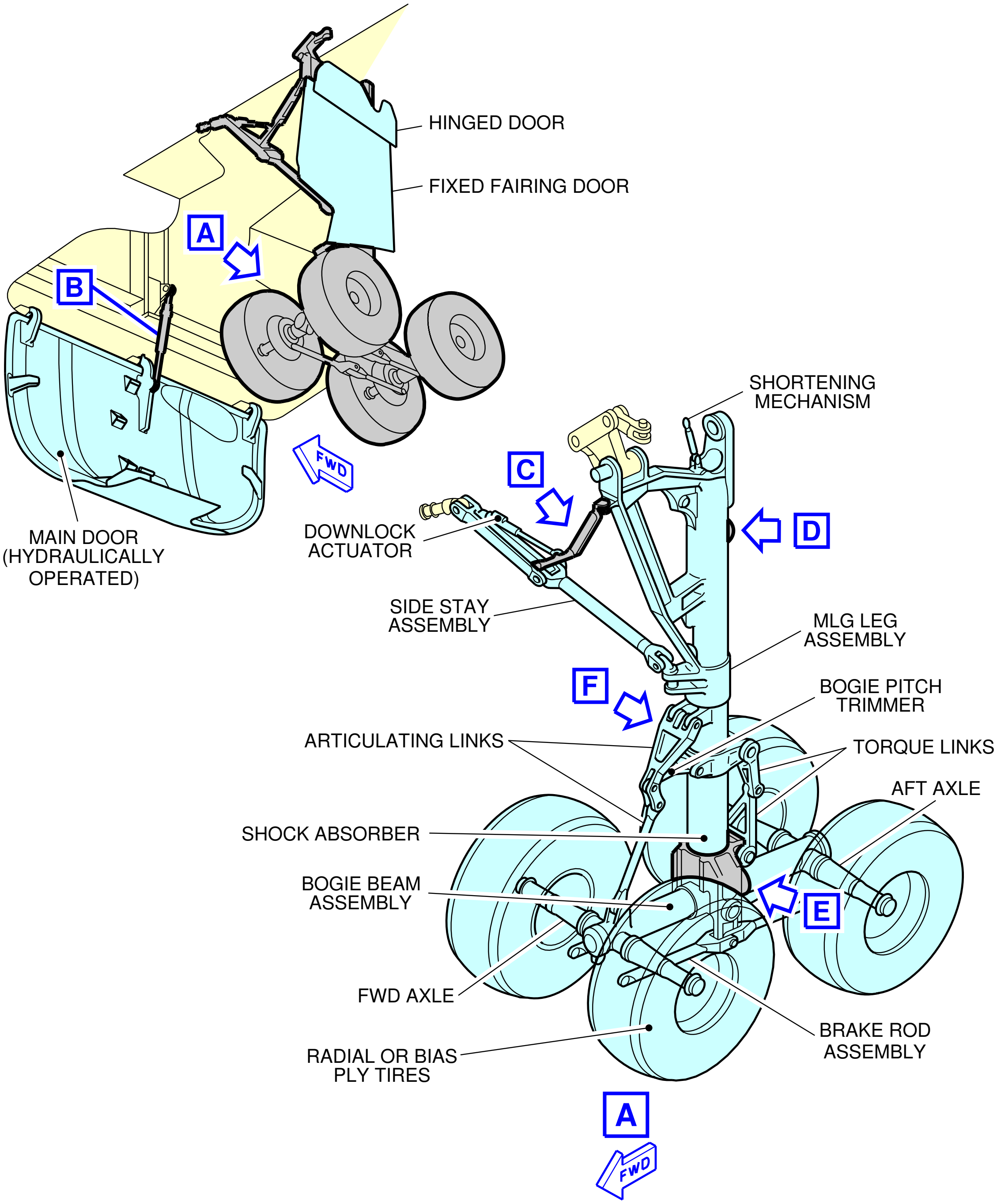
The BITE has hardware and software for these functions:

- to automatically do a self test at power-up
- to continuously monitor the related systems for failures
- to continuously monitor the interface with other specified systems in the aircraft
- to keep a record of each failure and defect and send this data to other systems in the aircraft
- to automatically do a functional test of some related systems before a landing
- to do specified system tests during ground maintenance.

The BITE for the following systems is described in these chapters:

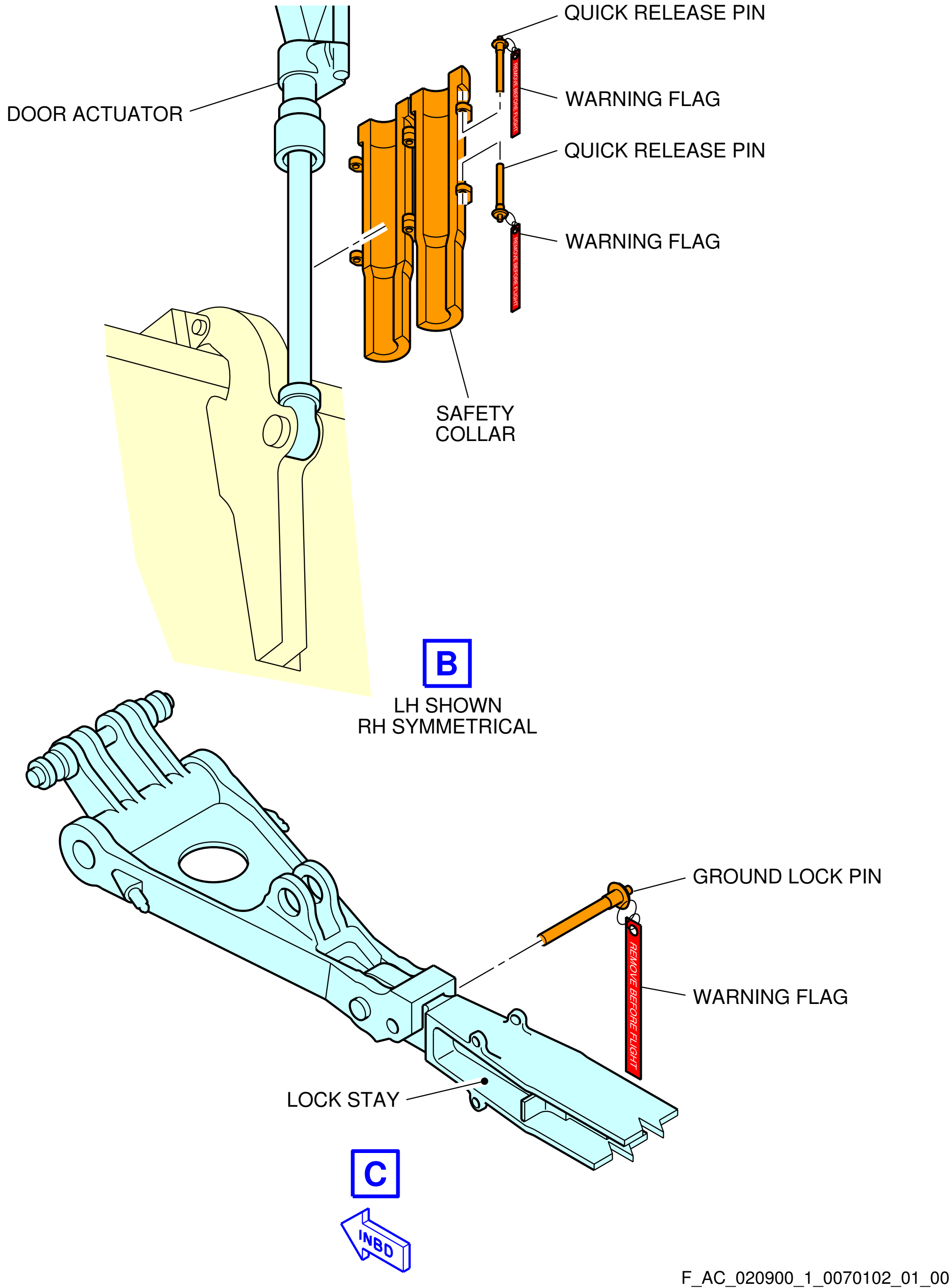
- The Brakes and Steering AMM 32-46-00
- The TPIS AMM 32-49-00
- The Landing GearAMM 32-69-00.

**ON A/C A330-200 A330-200F A330-300



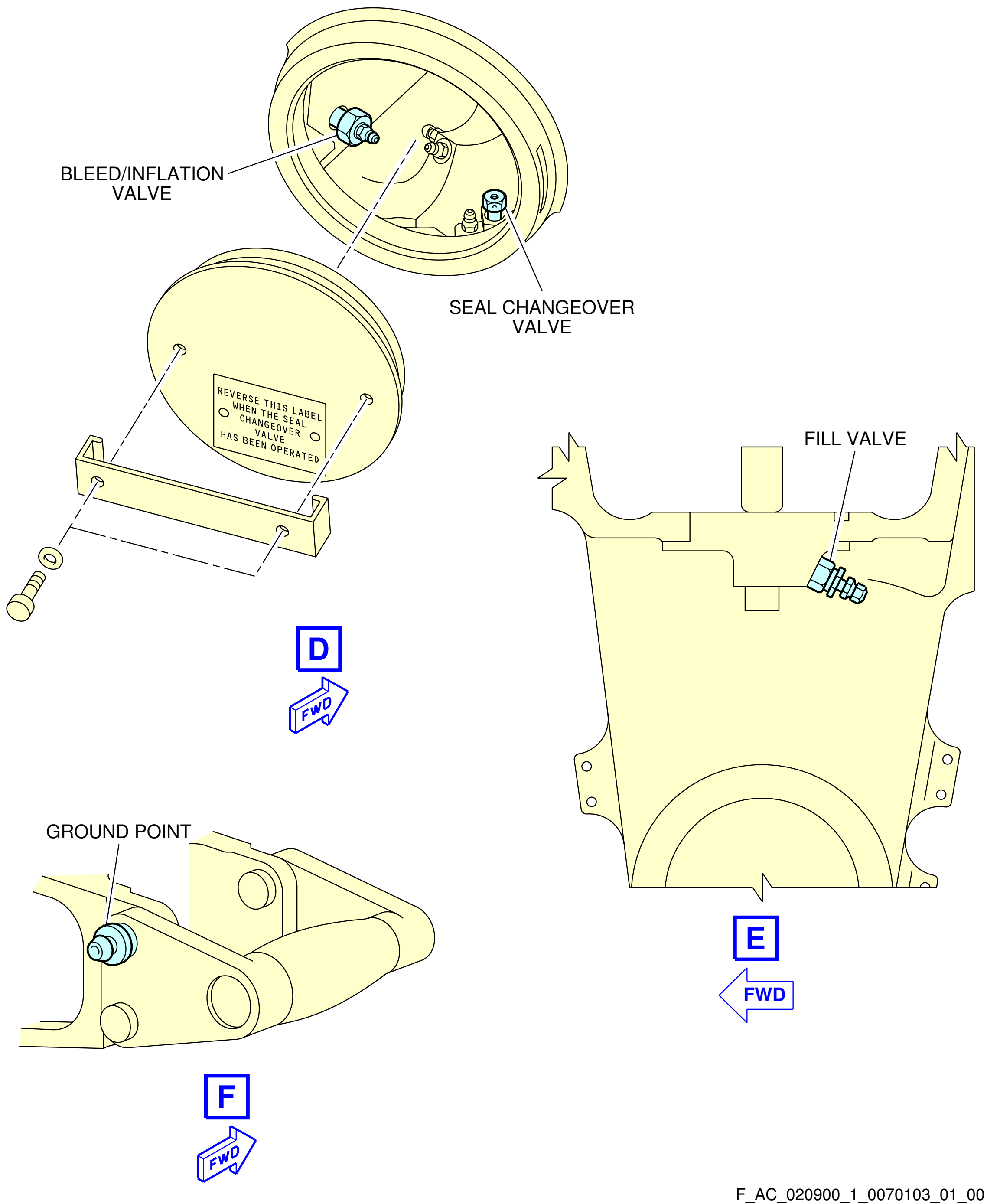
Main Landing Gear
General (Sheet 1 of 3)
FIGURE-2-9-0-991-007-A01

**ON A/C A330-200 A330-200F A330-300



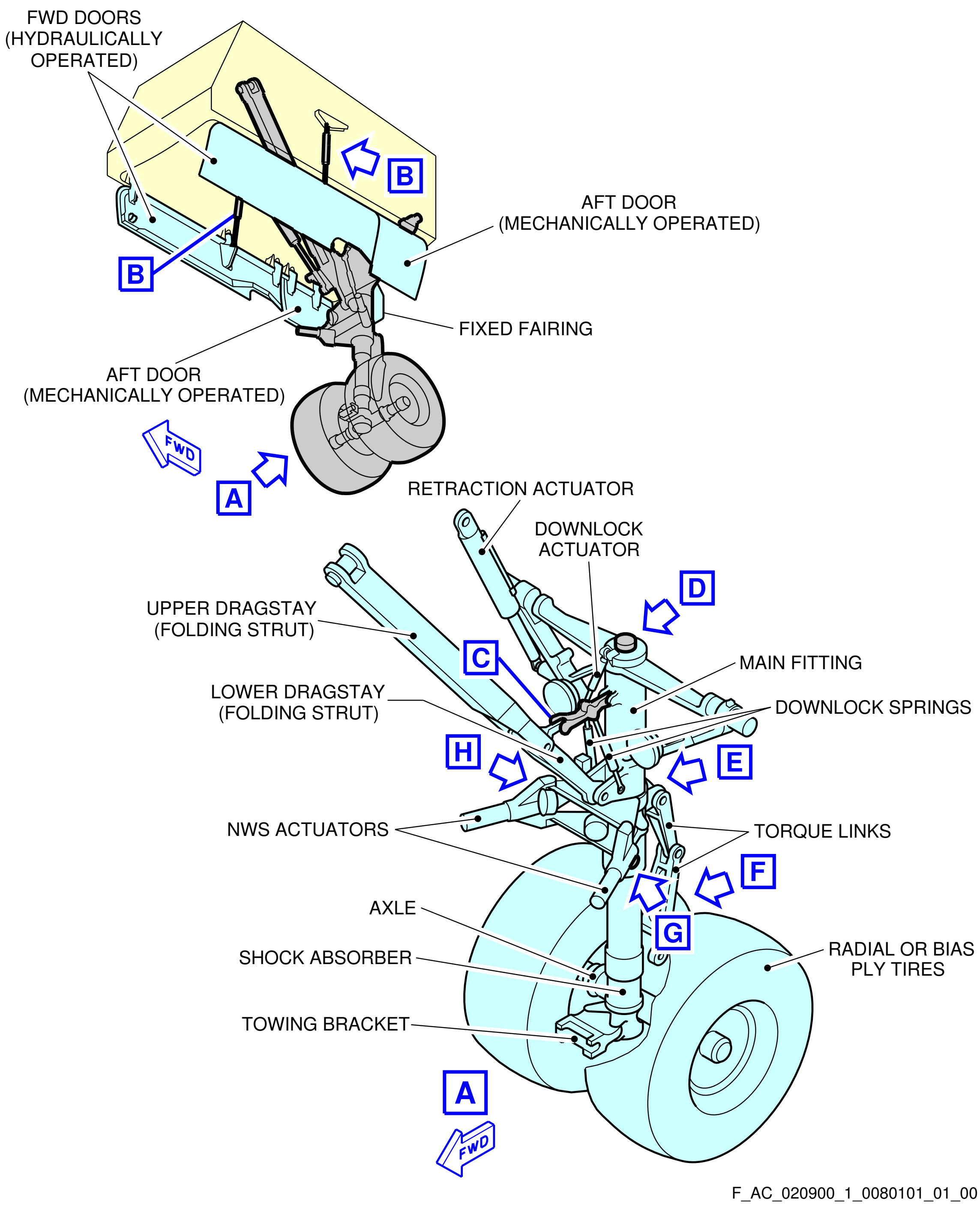
Main Landing Gear
Safety Devices (Sheet 2 of 3)
FIGURE-2-9-0-991-007-A01

**ON A/C A330-200 A330-200F A330-300



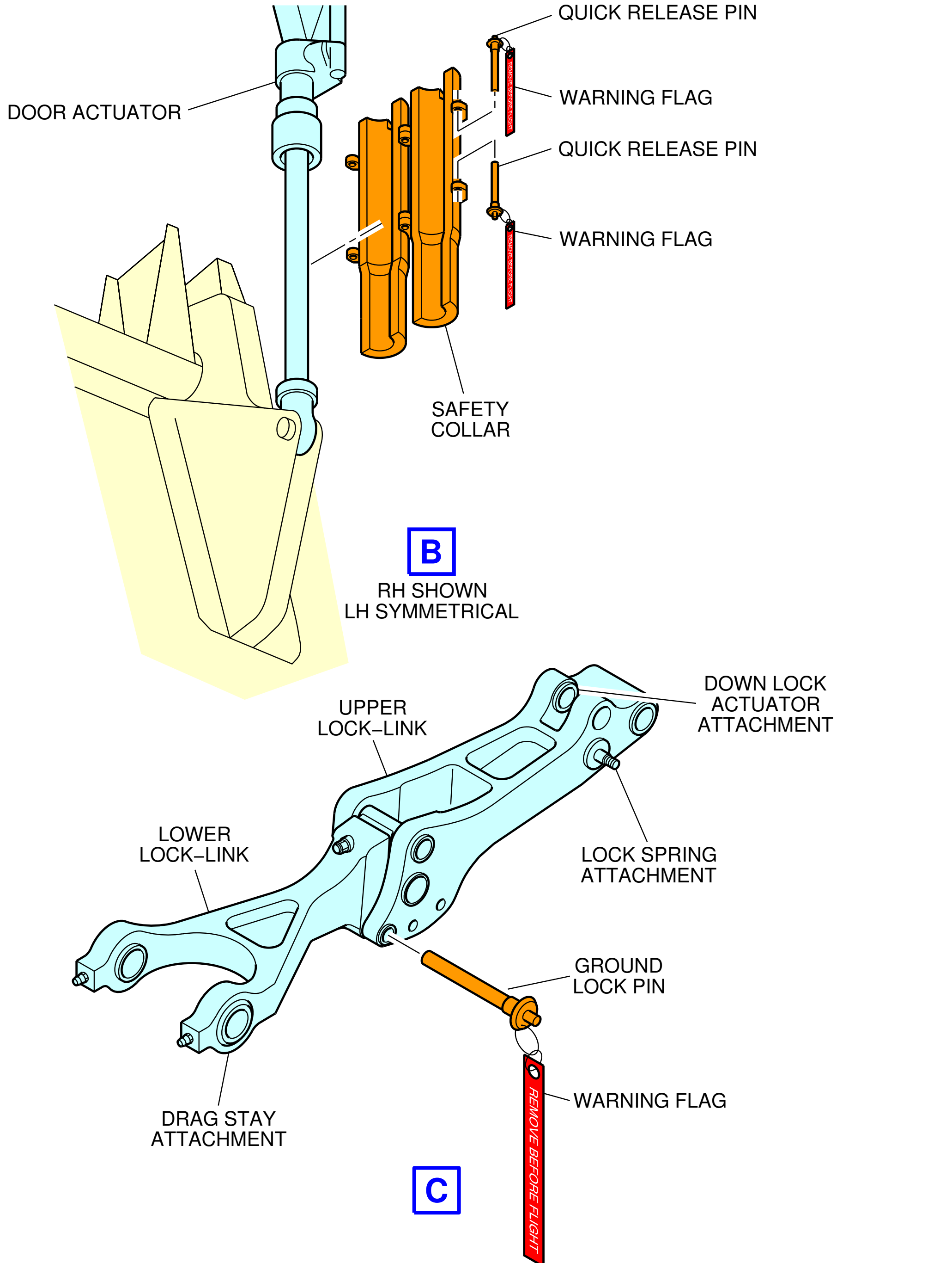
Main Landing Gear
Servicing (Sheet 3 of 3)
FIGURE-2-9-0-991-007-A01

**ON A/C A330-200 A330-200F A330-300



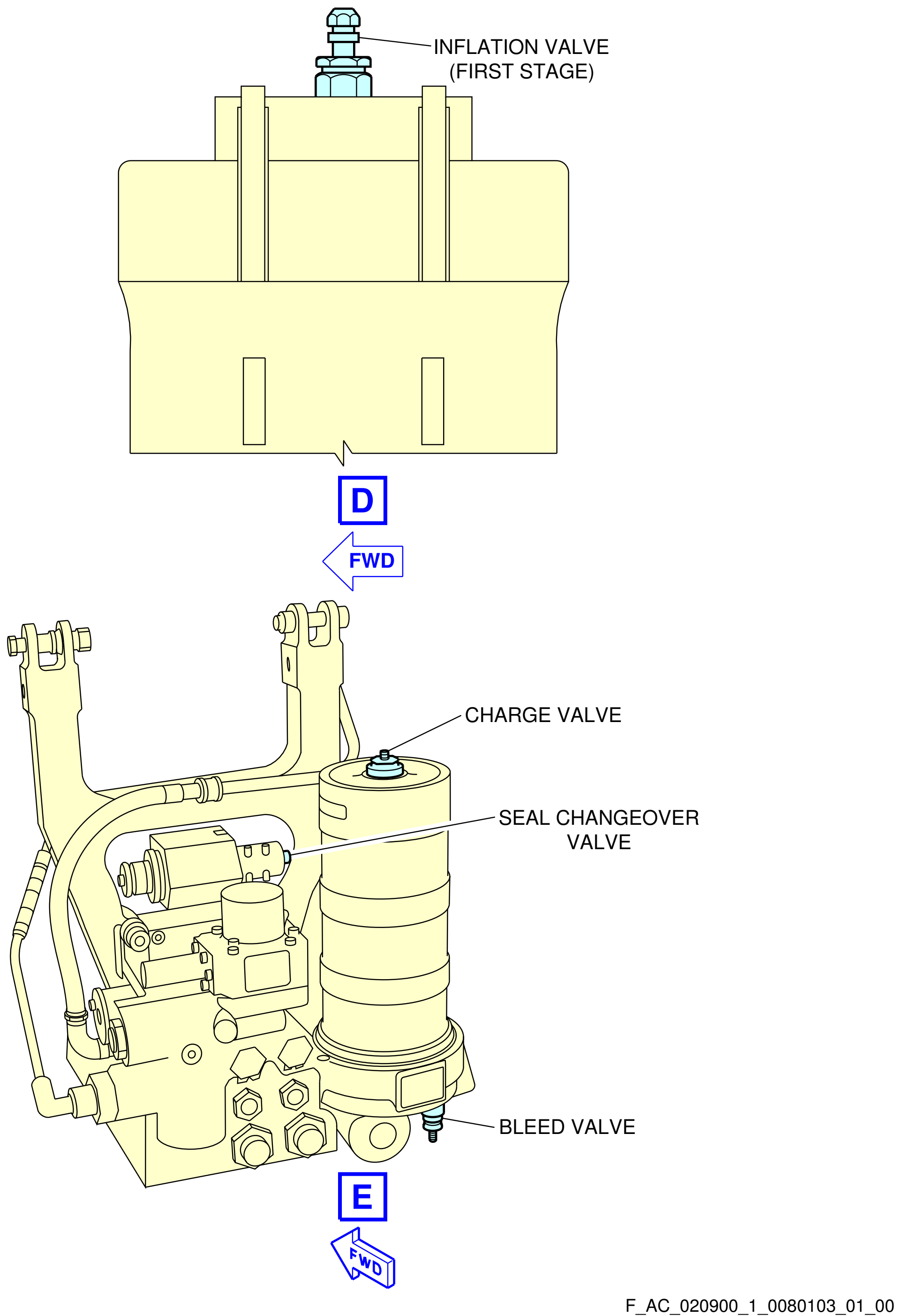
Nose Landing Gear
General (Sheet 1 of 4)
FIGURE-2-9-0-991-008-A01

**ON A/C A330-200 A330-200F A330-300



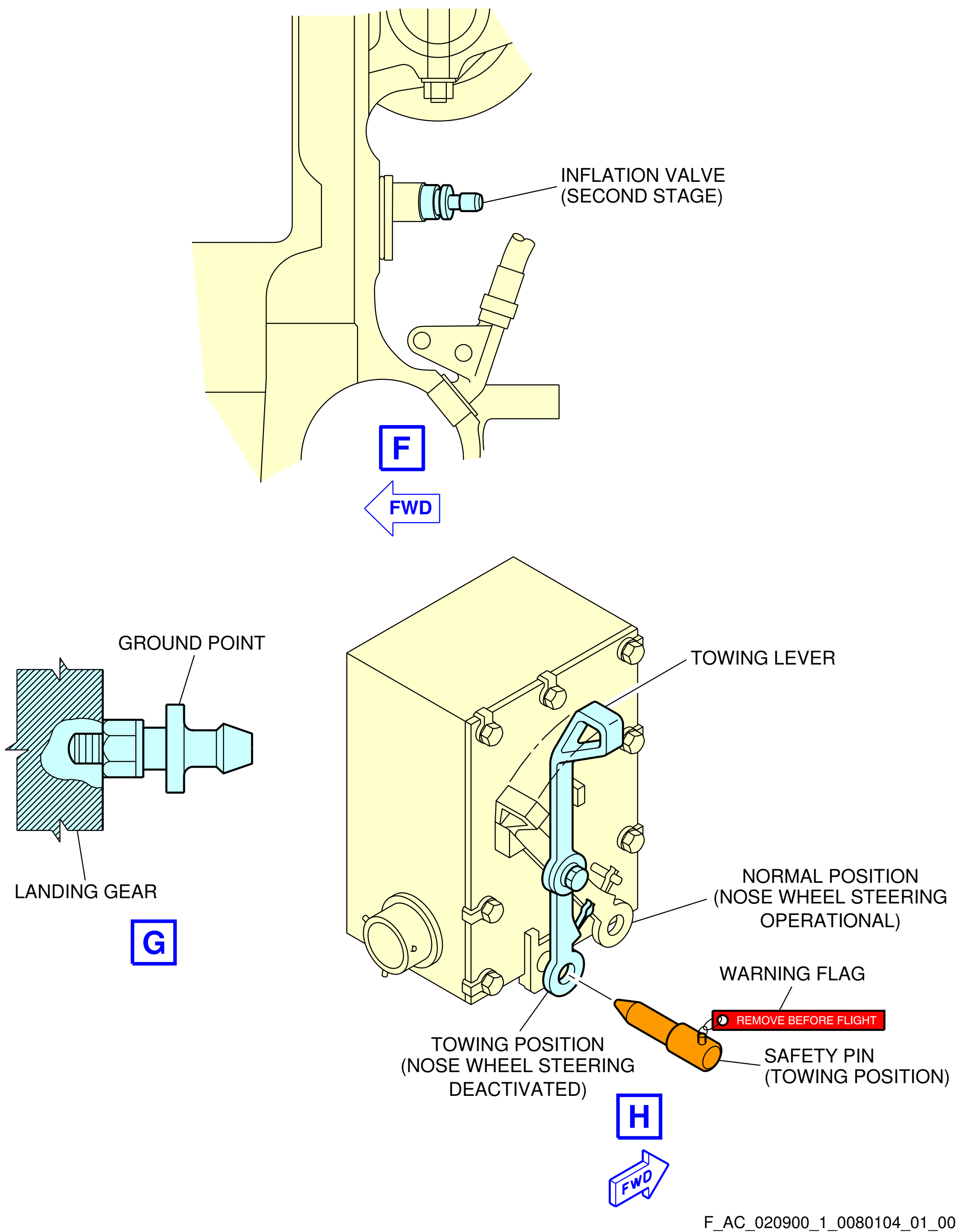
Nose Landing Gear
Safety Devices (Sheet 2 of 4)
FIGURE-2-9-0-991-008-A01

**ON A/C A330-200 A330-200F A330-300



Nose Landing Gear
Servicing (Sheet 3 of 4)
FIGURE-2-9-0-991-008-A01

**ON A/C A330-200 A330-200F A330-300



Nose Landing Gear
Servicing and Steering Disconnection Box (Sheet 4 of 4)
FIGURE-2-9-0-991-008-A01

2-10-0 Exterior Lighting

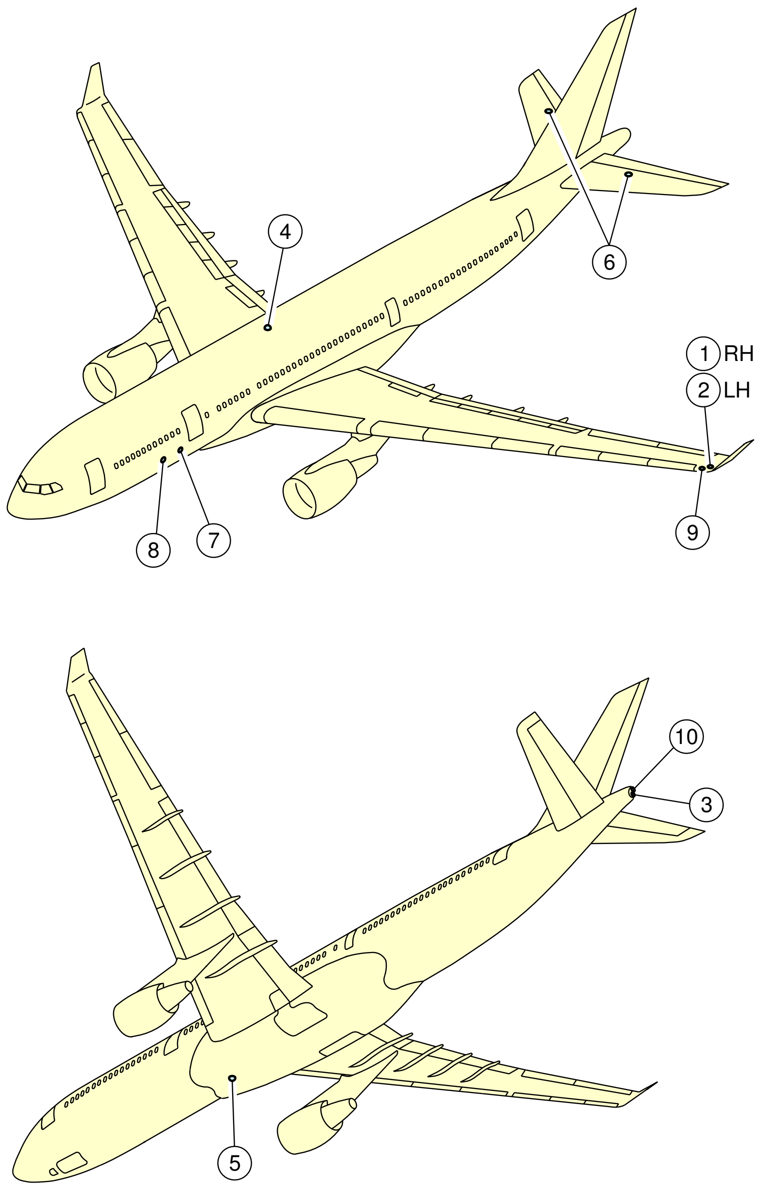
****ON A/C A330-200 A330-200F A330-300**

Exterior Lighting

1. General
   This section gives the location of the aircraft exterior lighting.

EXTERIOR LIGHTING	
ITEM	DESCRIPTION
1	RIGHT NAVIGATION LIGHT (GREEN)
2	LEFT NAVIGATION LIGHT (RED)
3	TAIL NAVIGATION LIGHT (WHITE)
4	UPPER ANTI-COLLISION LIGHT/BEACON (RED)
5	LOWER ANTI-COLLISION LIGHT/BEACON (RED)
6	LOGO LIGHTS
7	ENGINE SCAN LIGHTS
8	WING SCAN LIGHTS
9	WING STROBE LIGHT (HIGH INTENSITY, WHITE)
10	TAIL STROBE LIGHT (HIGH INTENSITY, WHITE)
11	LANDING LIGHTS
12	RUNWAY TURN-OFF LIGHTS
13	TAXI LIGHTS
14	TAKE-OFF LIGHTS
15	CARGO COMPARTMENT FLOOD LIGHTS
16	LANDING GEAR BAY/WELL LIGHTS (DOME)
17 (A330-200F only)	CARGO COMPARTMENT FLOOD LIGHTS - MAIN DECK

**ON A/C A330-200



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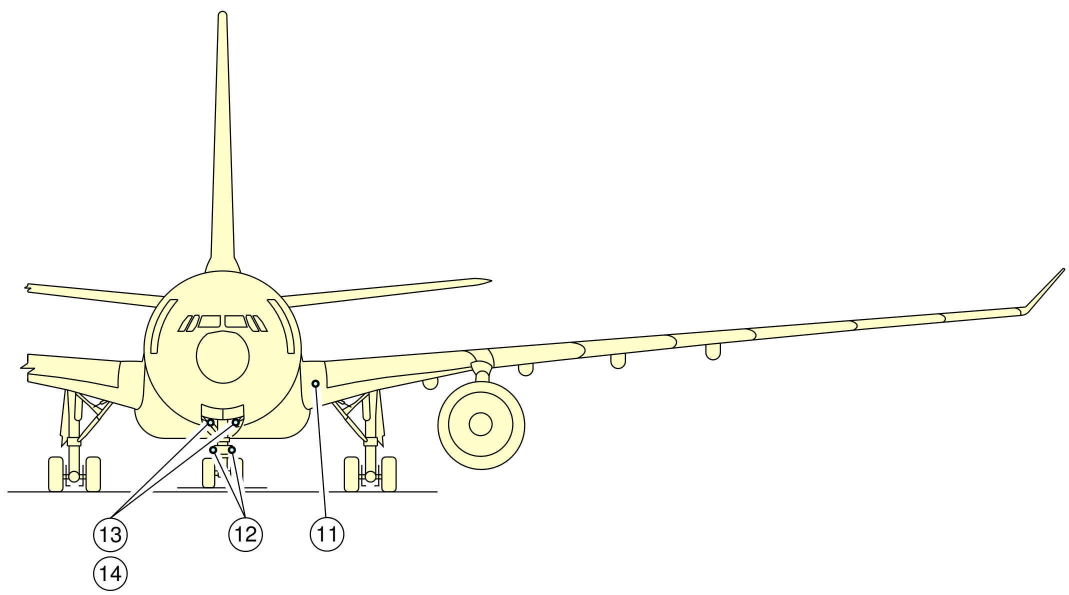
Exterior Lighting
(Sheet 1 of 5)
FIGURE-2-10-0-991-001-A01

**ON A/C A330-200



NOTE:
LIGHTS 13 AND 14 ARE THE SAME, BUT THEY OPERATE WITH DIFFERENT POWER SETTINGS.

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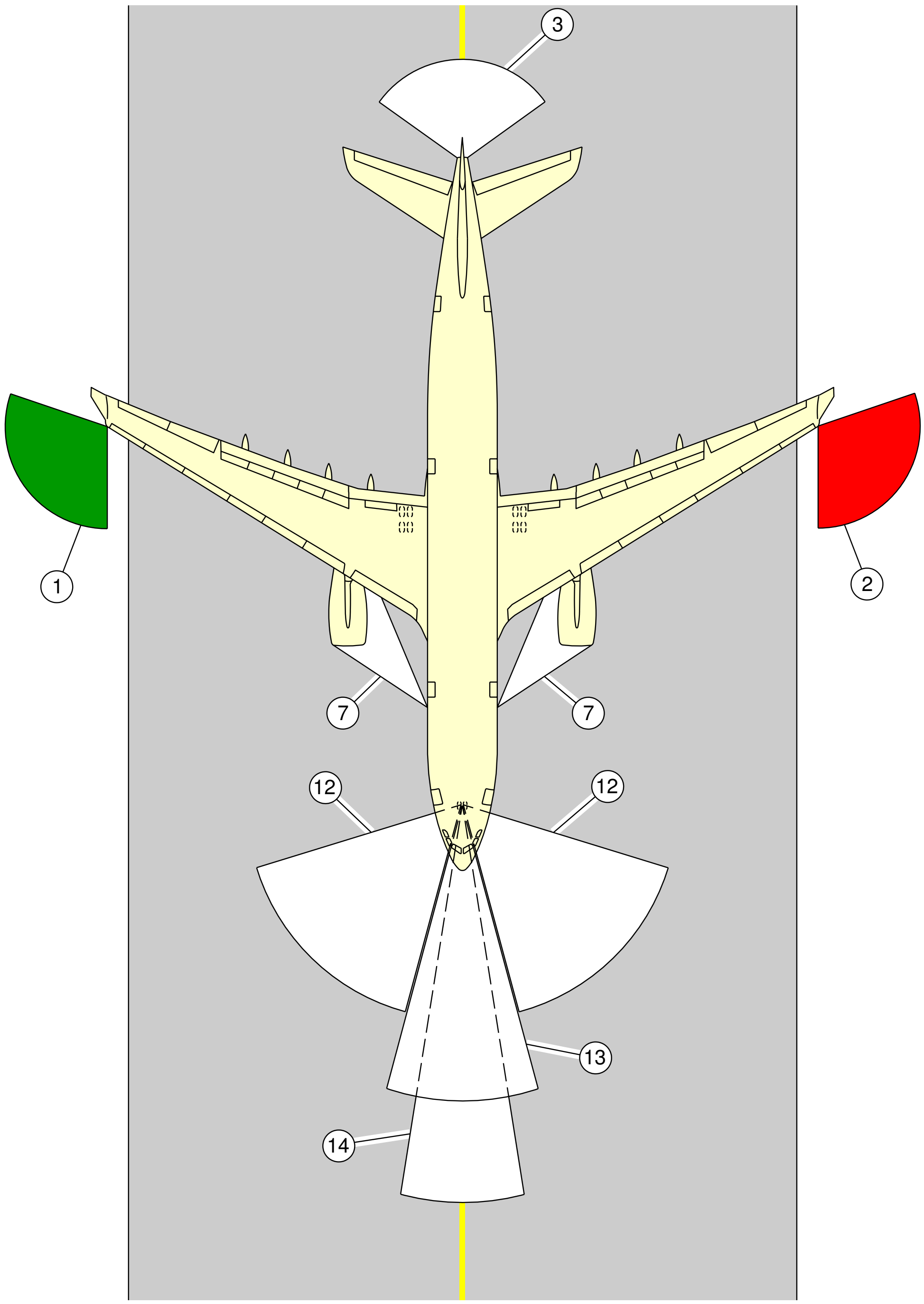
Exterior Lighting
(Sheet 2 of 5)
FIGURE-2-10-0-991-001-A01

**ON A/C A330-200



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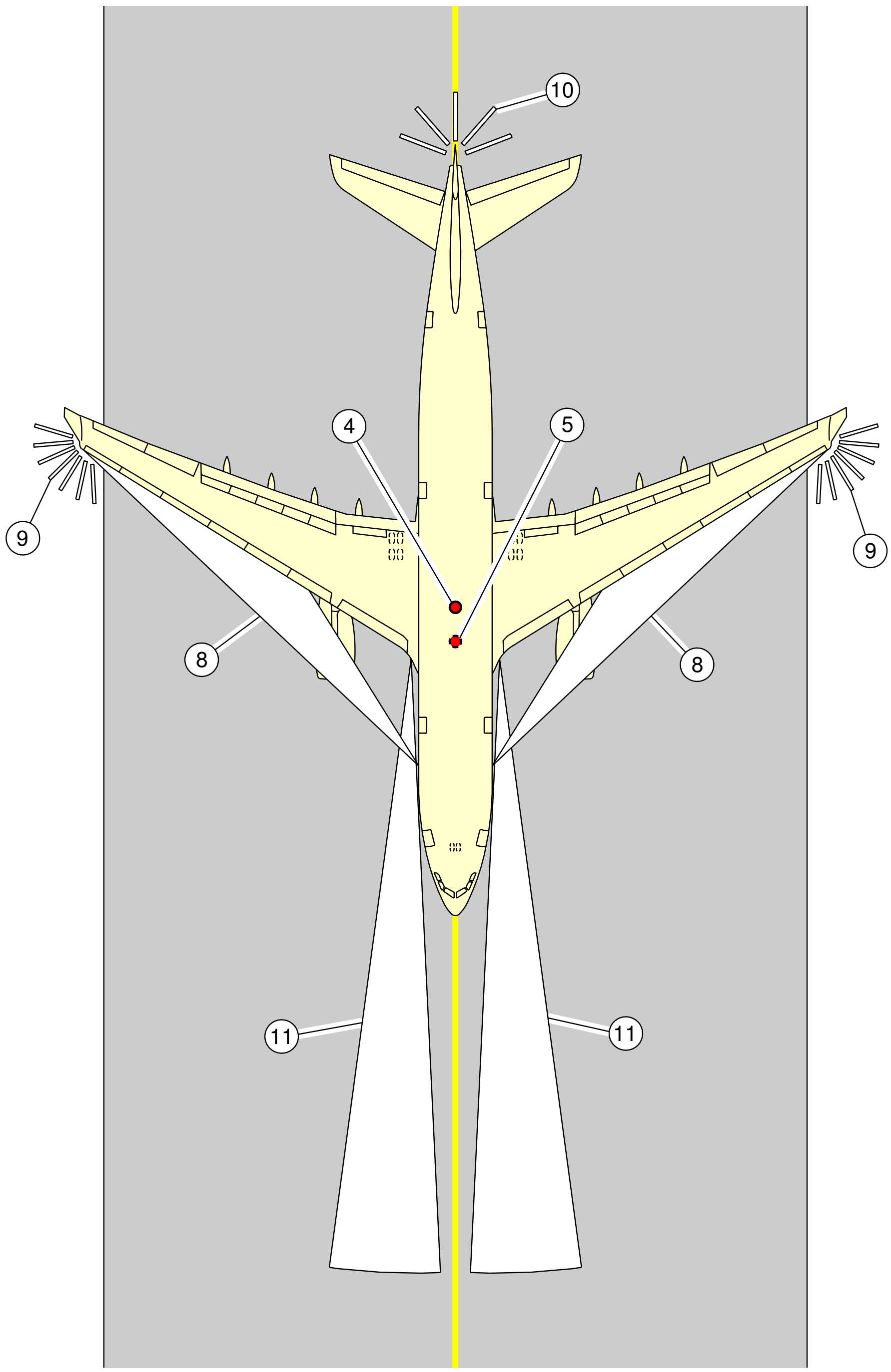
Exterior Lighting
(Sheet 3 of 5)
FIGURE-2-10-0-991-001-A01

**ON A/C A330-200



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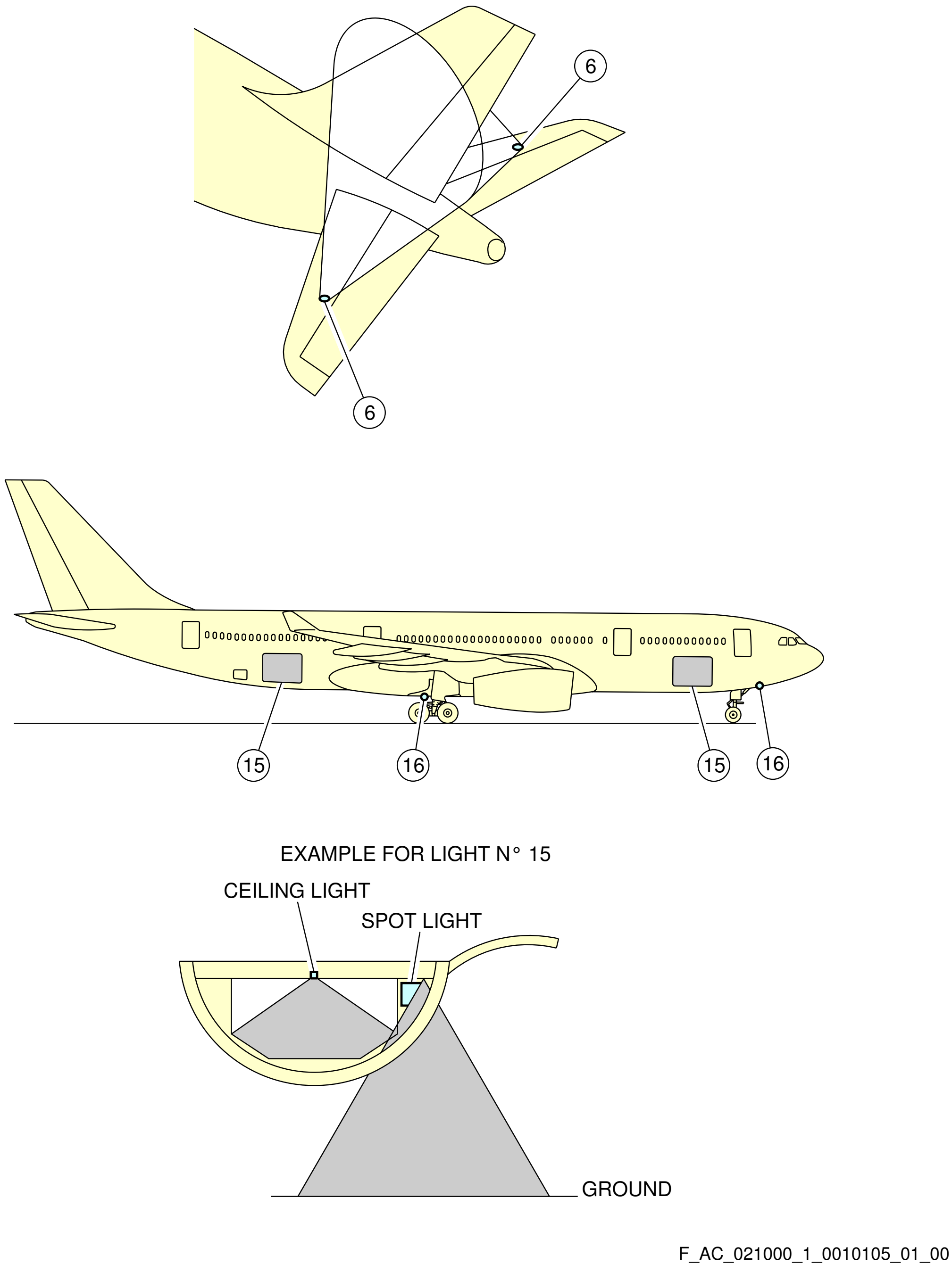
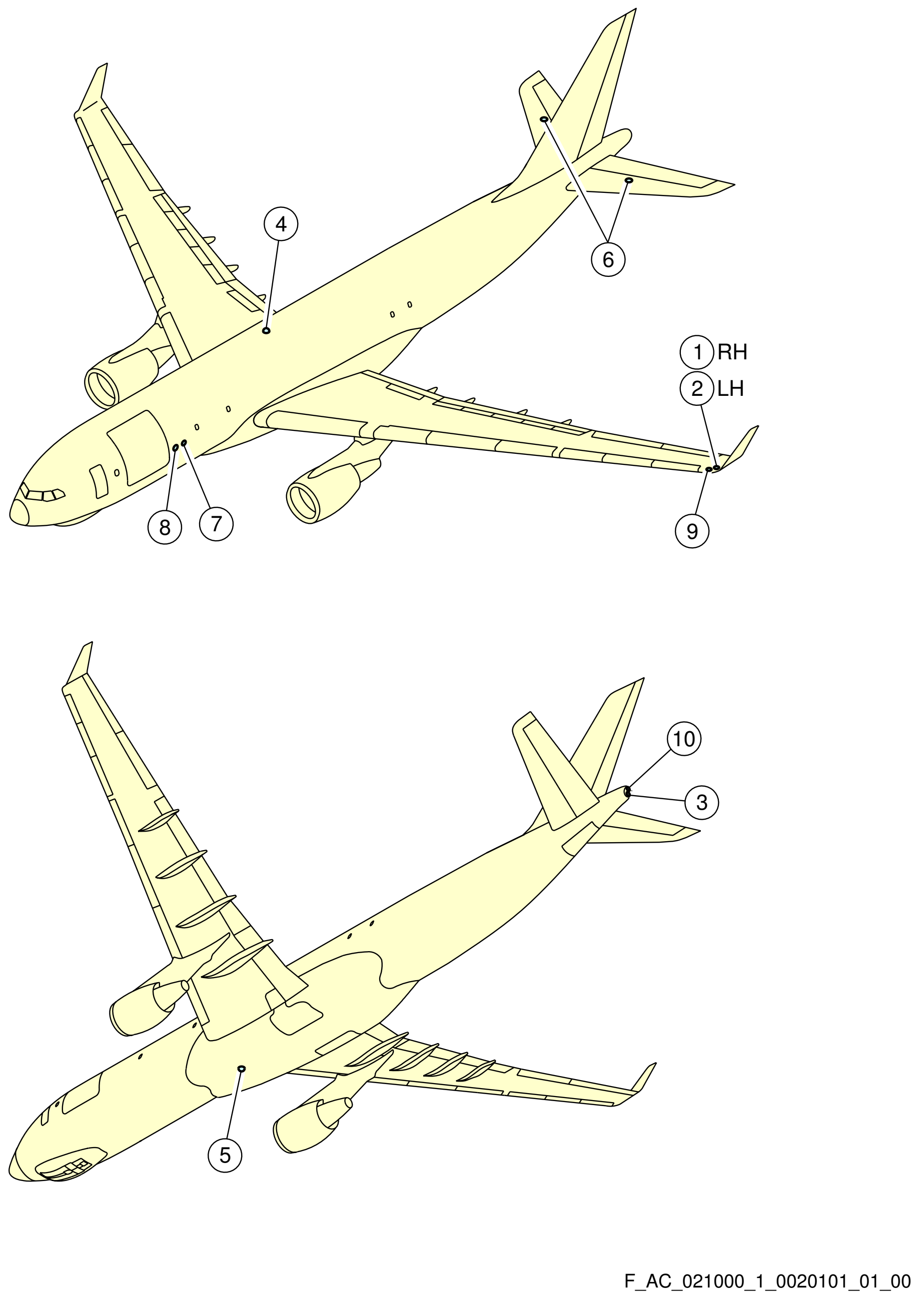
Exterior Lighting
(Sheet 4 of 5)
FIGURE-2-10-0-991-001-A01

**ON A/C A330-200



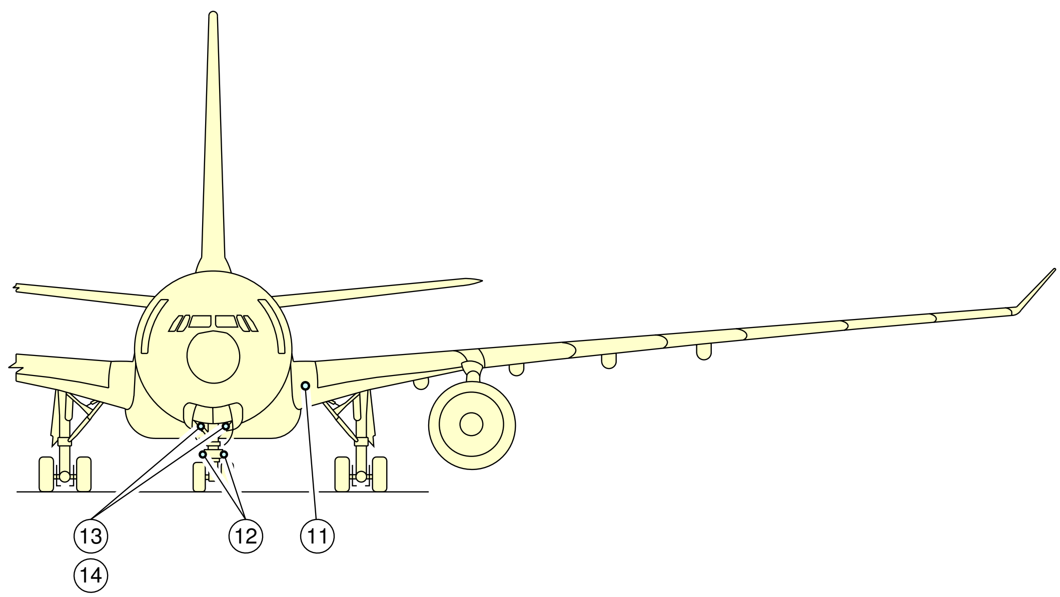
Exterior Lighting
(Sheet 5 of 5)
FIGURE-2-10-0-991-001-A01

**ON A/C A330-200F



Exterior Lighting
(Sheet 1 of 6)
FIGURE-2-10-0-991-002-A01

**ON A/C A330-200F



NOTE:
LIGHTS 13 AND 14 ARE THE SAME, BUT THEY OPERATE WITH DIFFERENT POWER SETTINGS.

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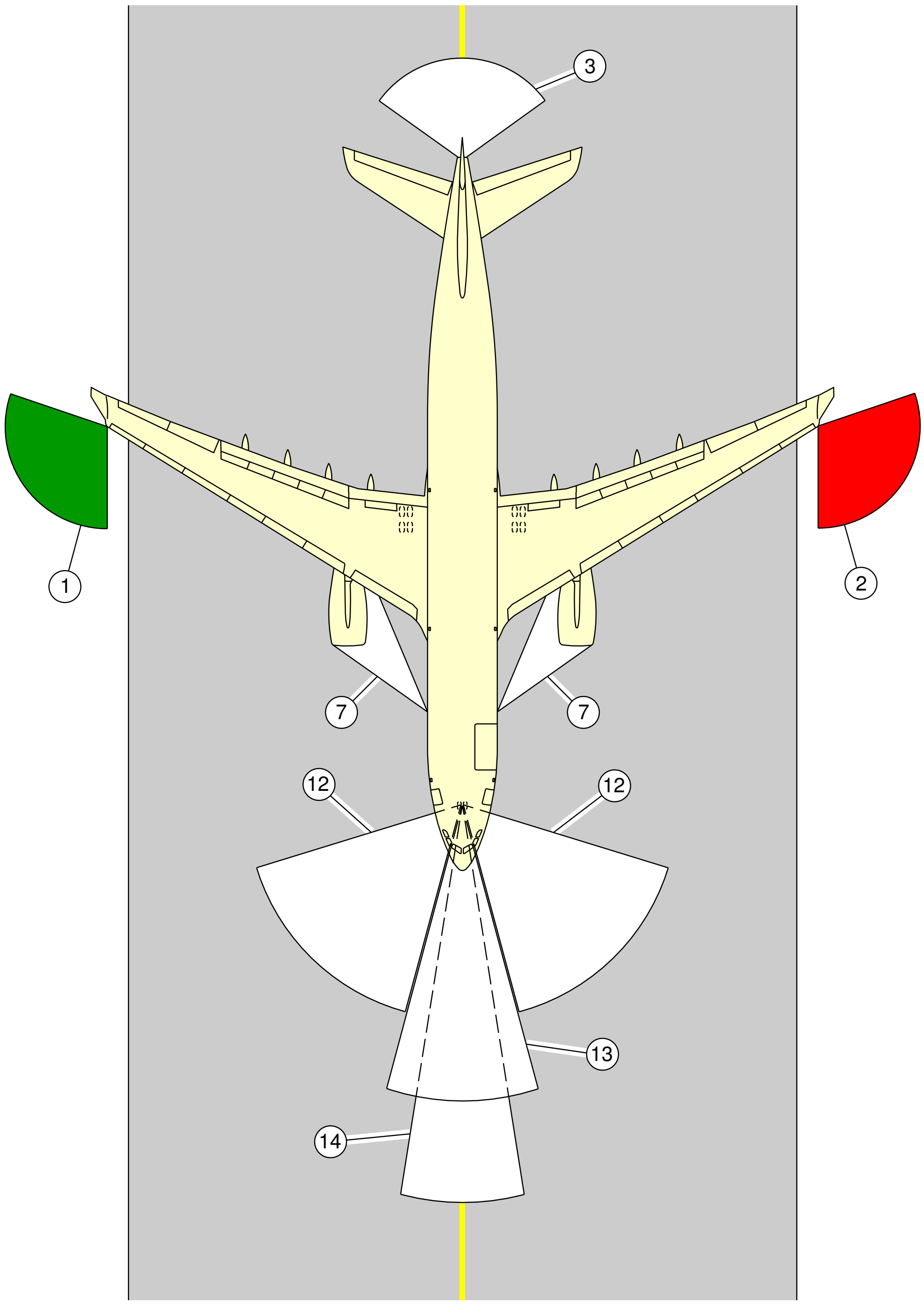
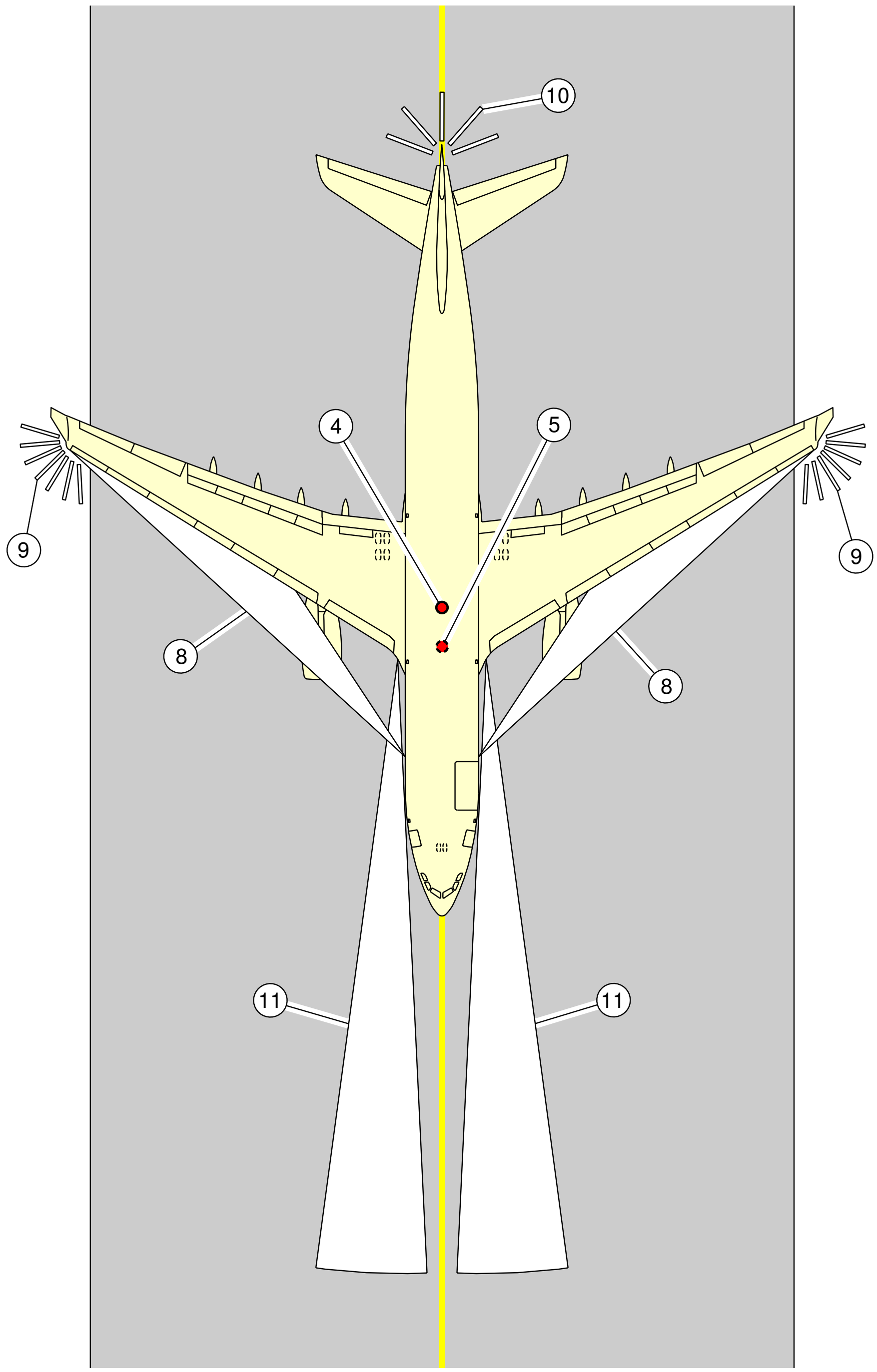
Exterior Lighting
(Sheet 2 of 6)
FIGURE-2-10-0-991-002-A01

**ON A/C A330-200F



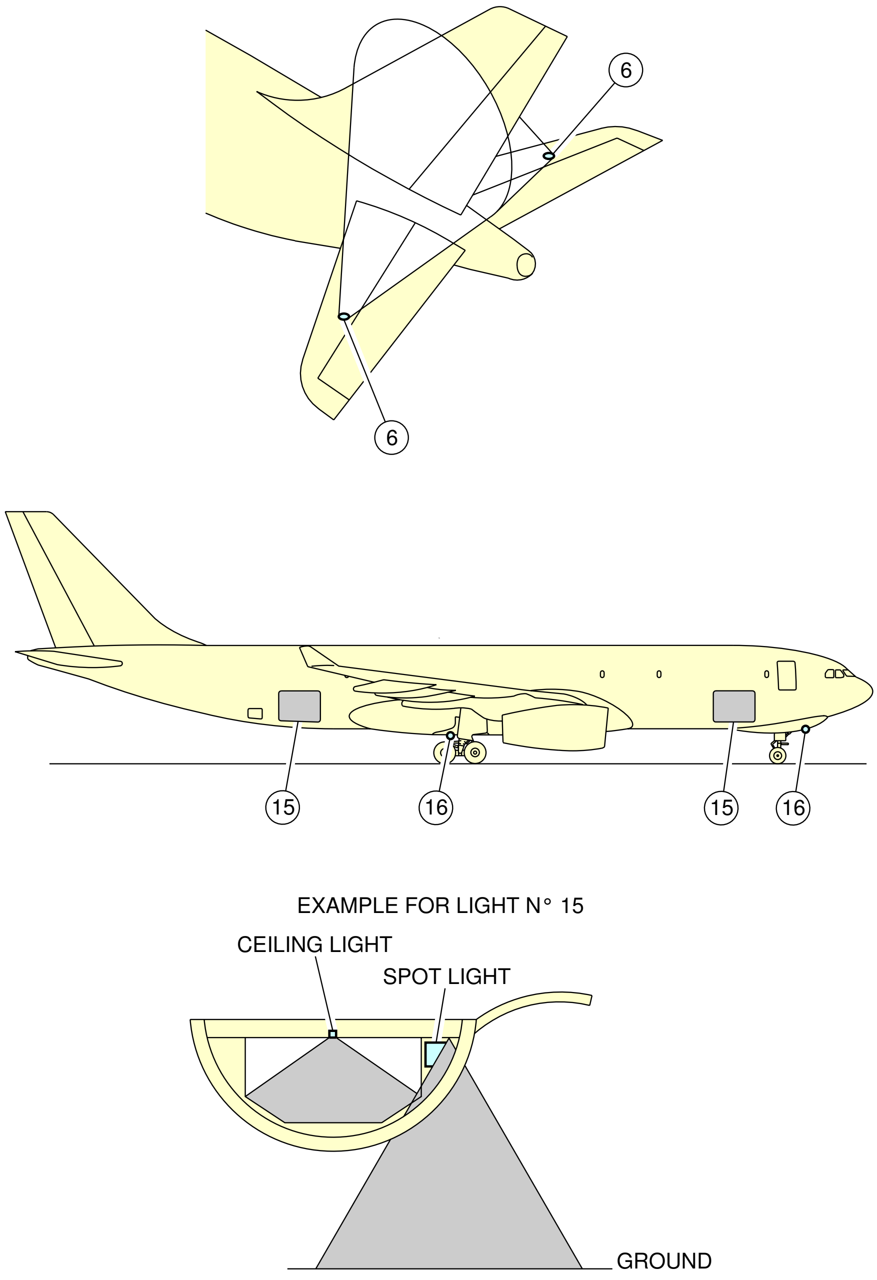
Exterior Lighting
(Sheet 3 of 6)
FIGURE-2-10-0-991-002-A01

****ON A/C A330-200F**



Exterior Lighting
(Sheet 4 of 6)
FIGURE-2-10-0-991-002-A01

**ON A/C A330-200F



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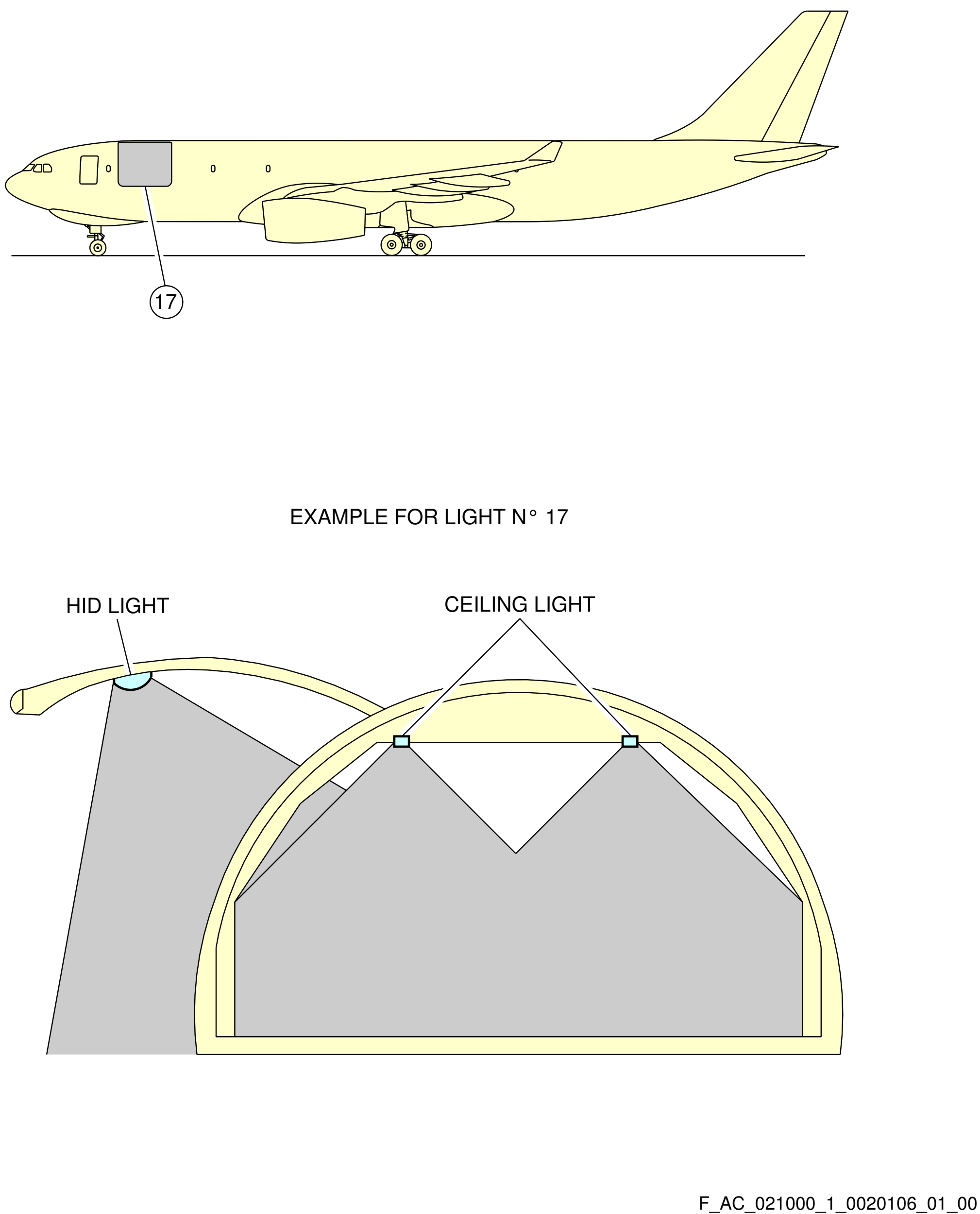
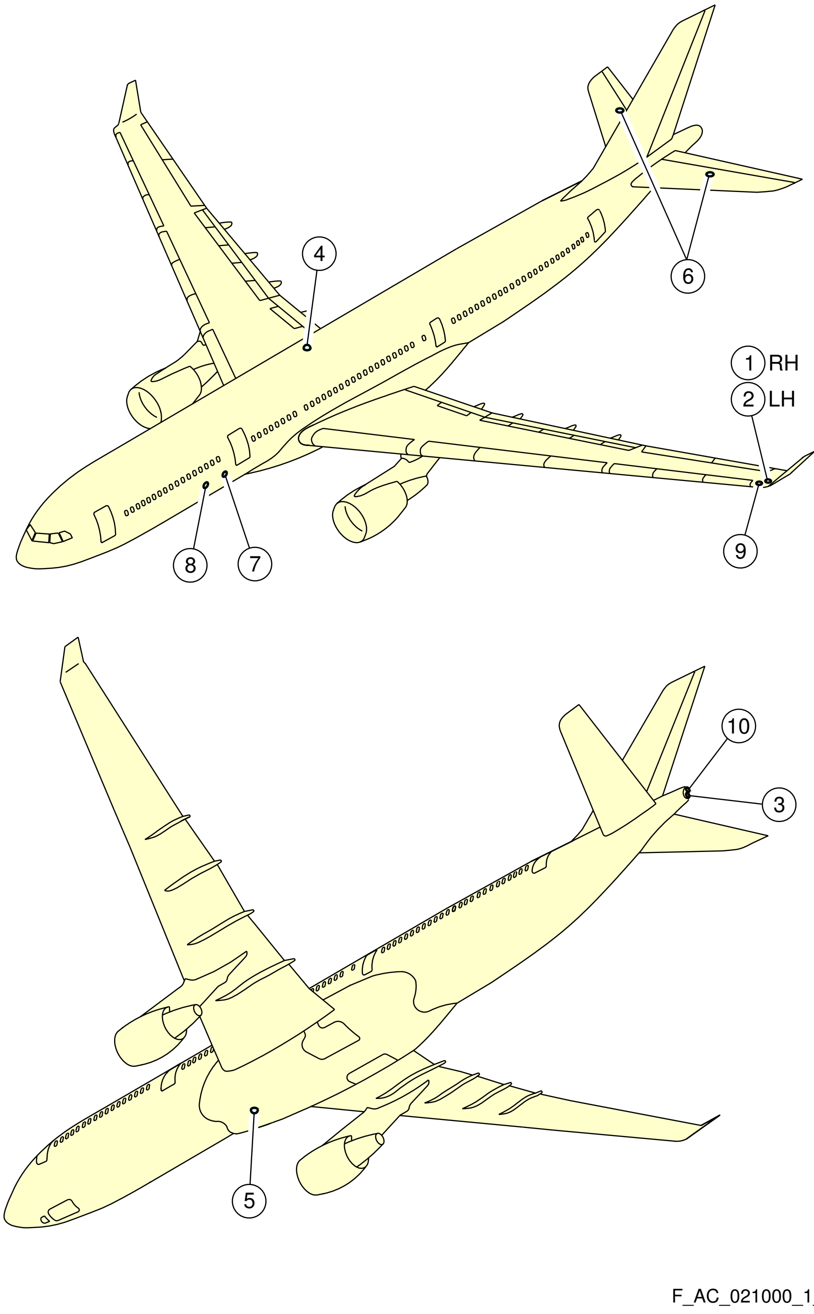
Exterior Lighting
(Sheet 5 of 6)
FIGURE-2-10-0-991-002-A01

**ON A/C A330-200F



Exterior Lighting
(Sheet 6 of 6)
FIGURE-2-10-0-991-002-A01

**ON A/C A330-300



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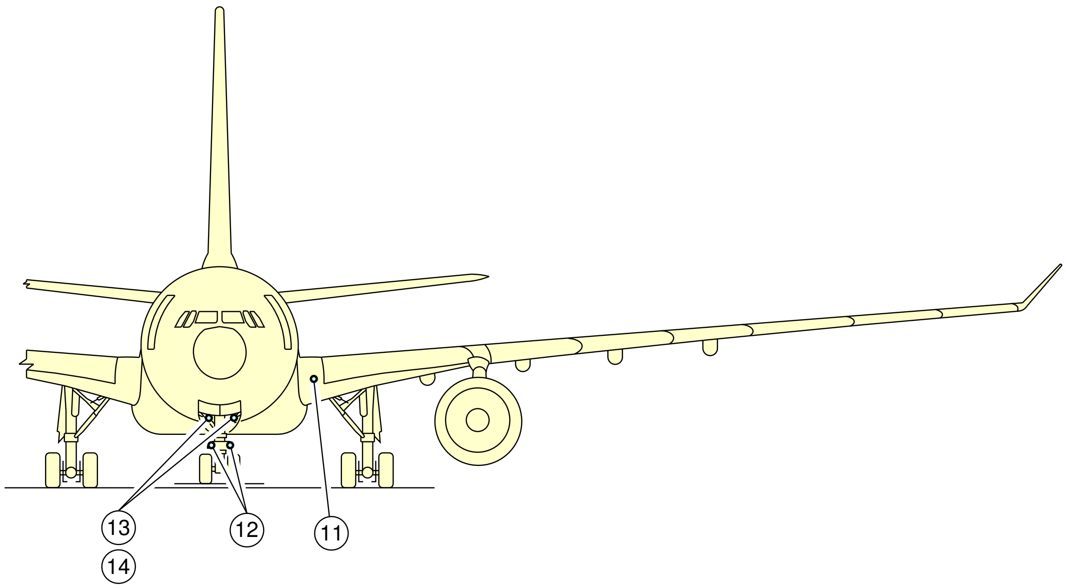
Exterior Lighting
(Sheet 1 of 5)
FIGURE-2-10-0-991-003-A01

**ON A/C A330-300

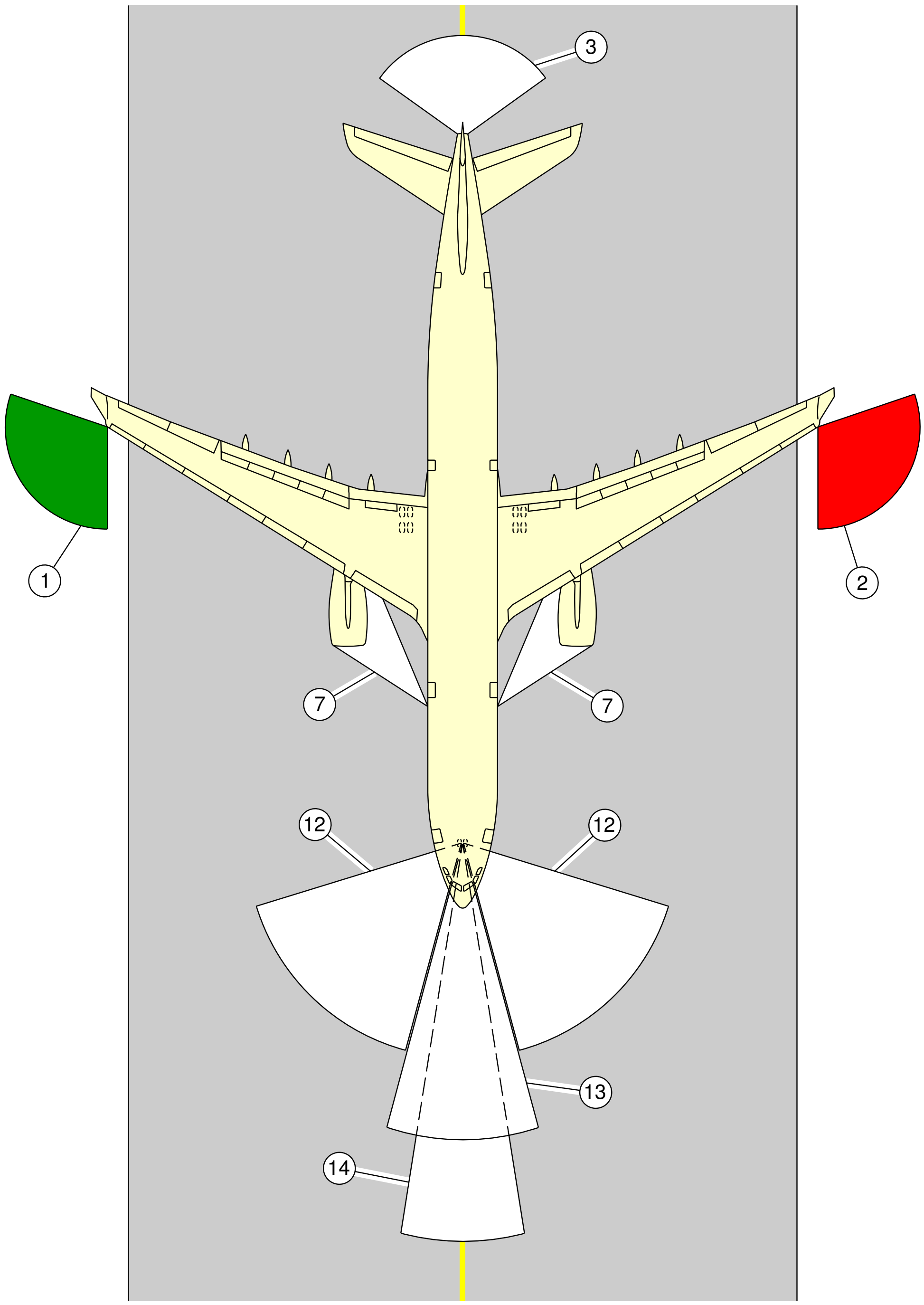


NOTE:
LIGHTS 13 AND 14 ARE THE SAME, BUT THEY OPERATE WITH DIFFERENT POWER SETTINGS.

F_AC_021000_1_0030102_01_00

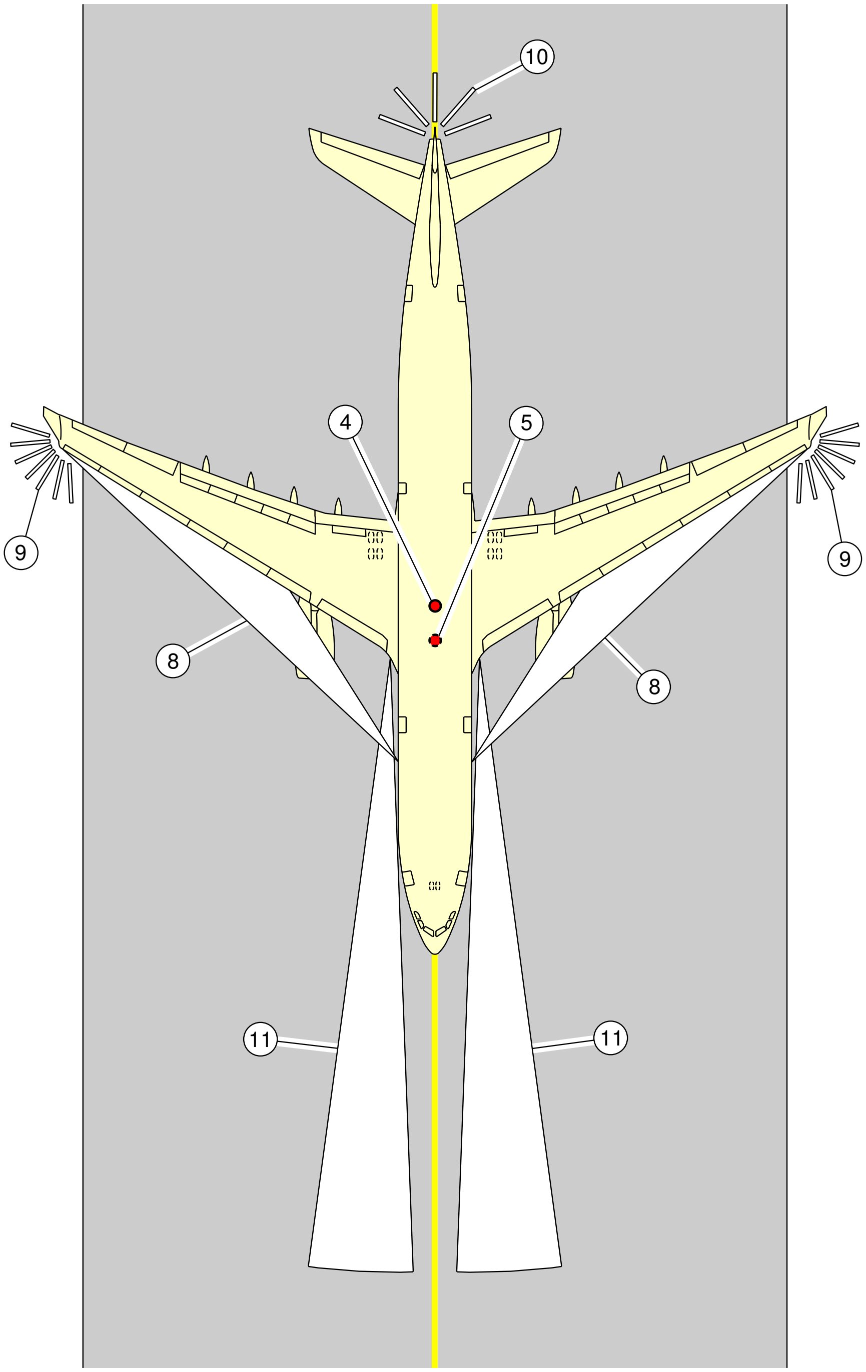
Exterior Lighting
(Sheet 2 of 5)
FIGURE-2-10-0-991-003-A01

**ON A/C A330-300



Exterior Lighting
(Sheet 3 of 5)
FIGURE-2-10-0-991-003-A01

****ON A/C A330-300**



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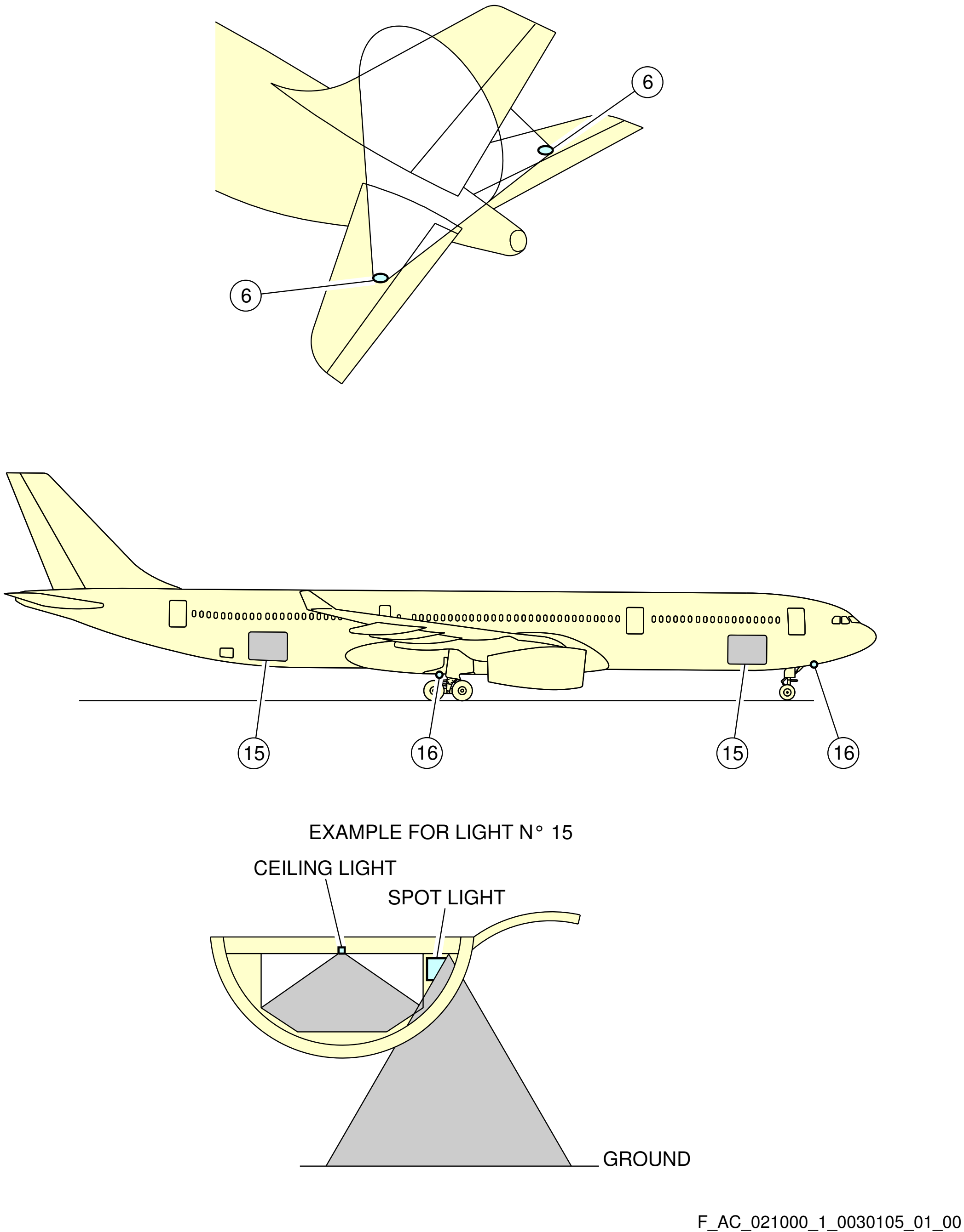
Exterior Lighting
(Sheet 4 of 5)
FIGURE-2-10-0-991-003-A01

****ON A/C A330-300**



Exterior Lighting
(Sheet 5 of 5)
FIGURE-2-10-0-991-003-A01

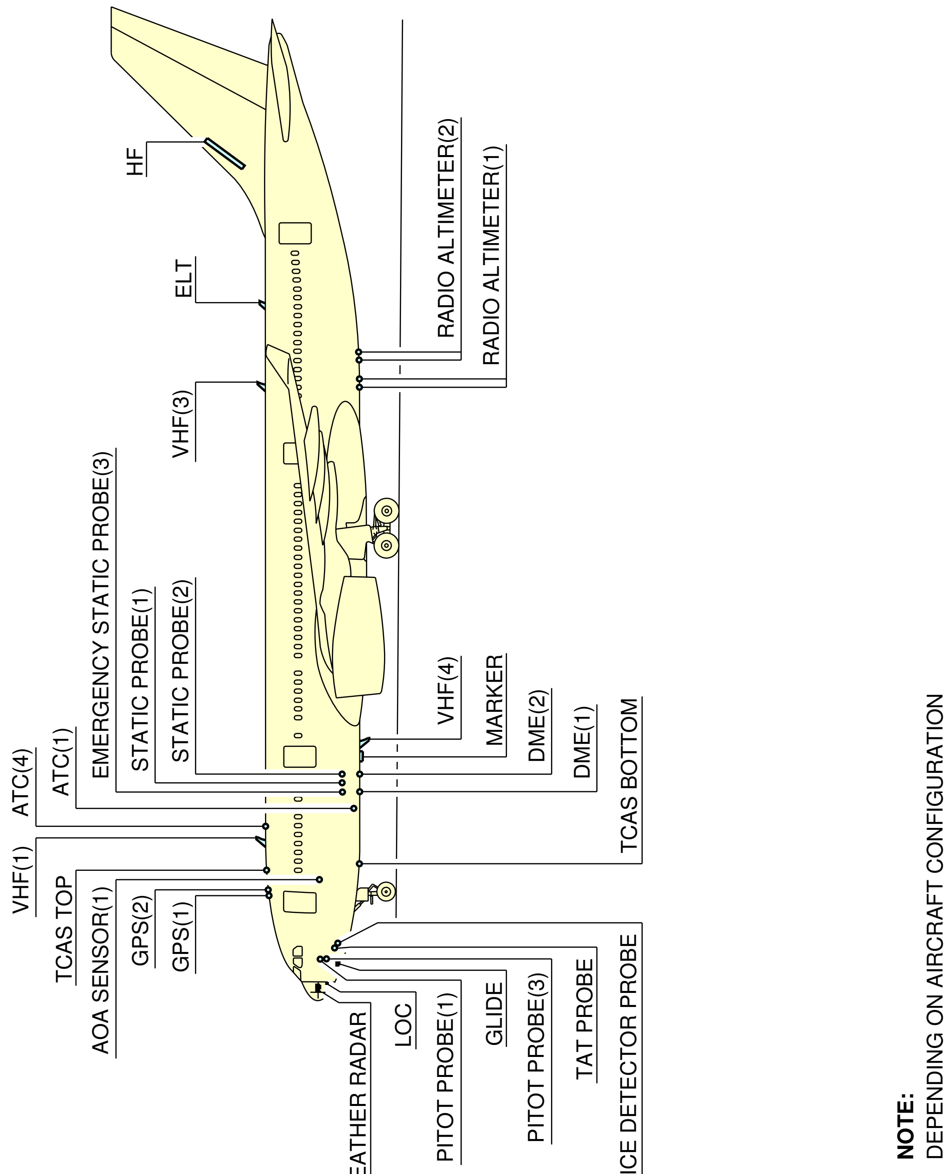
2-11-0 Antennas and Probes Location

****ON A/C A330-200 A330-200F A330-300**

<u>Antennas and Probes Location</u>

1. This section gives the location of antennas and probes.

****ON A/C A330-200**



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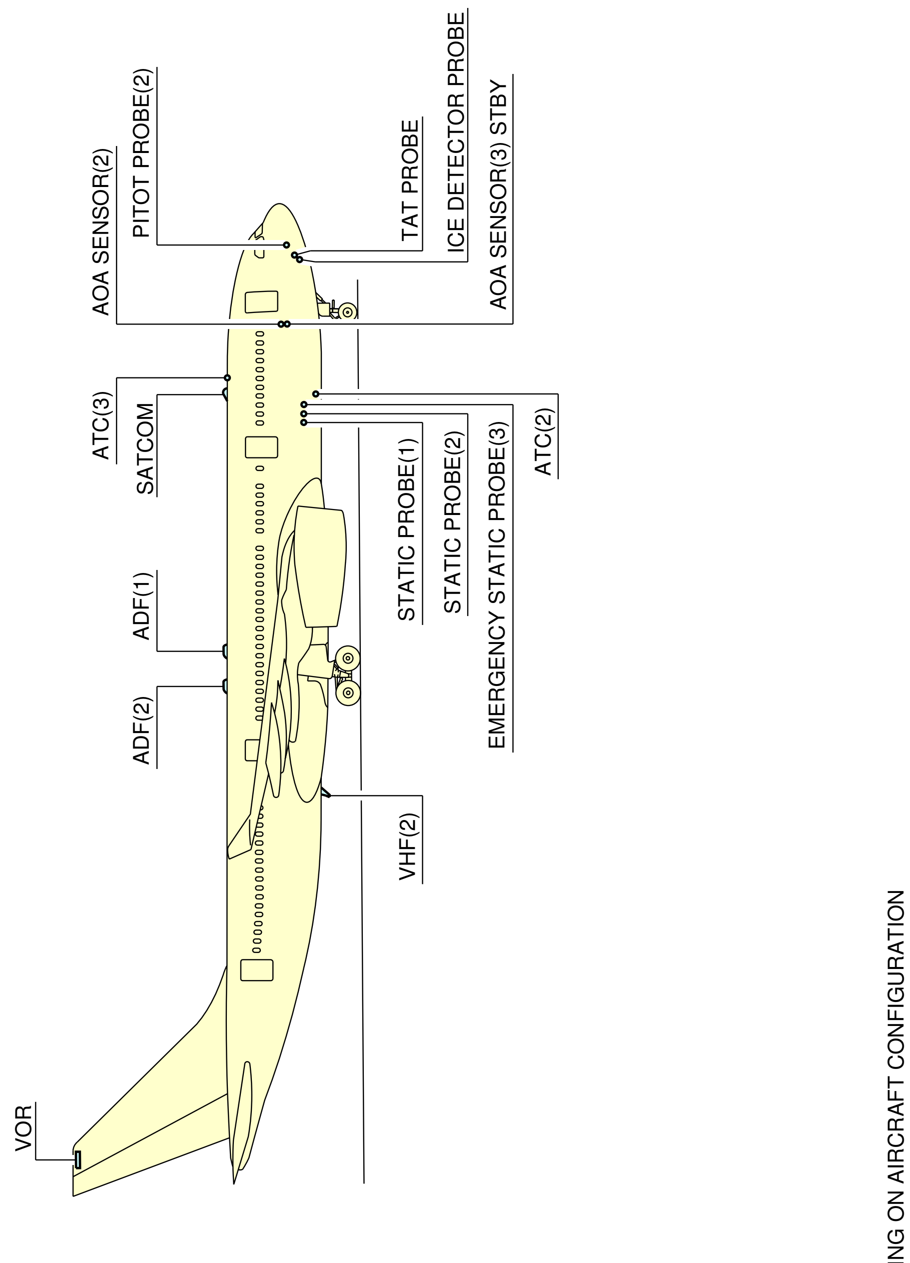
Antennas and Probes
Location (Sheet 1 of 2)
FIGURE-2-11-0-991-001-A01

****ON A/C A330-200**



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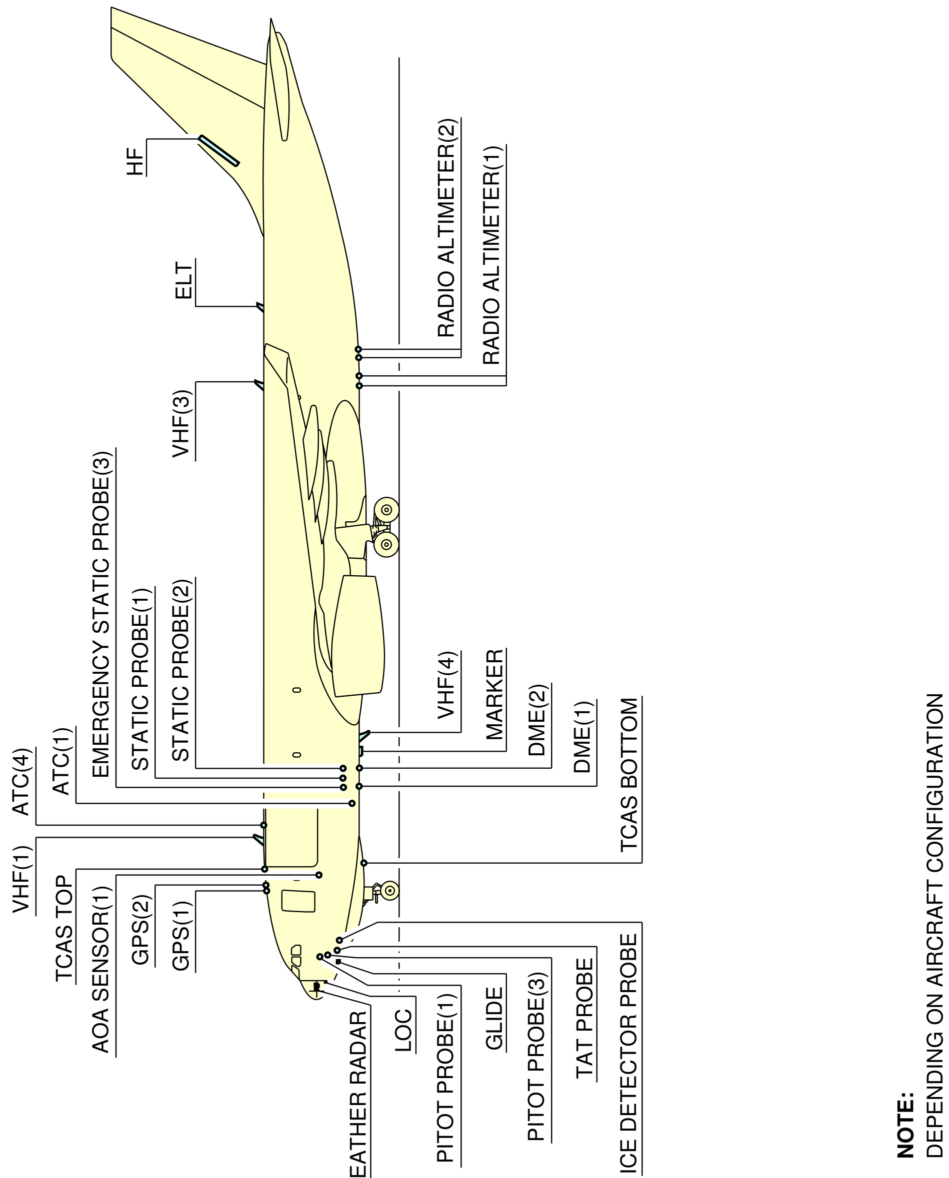
Antennas and Probes
Location (Sheet 2 of 2)
FIGURE-2-11-0-991-001-A01

**ON A/C A330-200F



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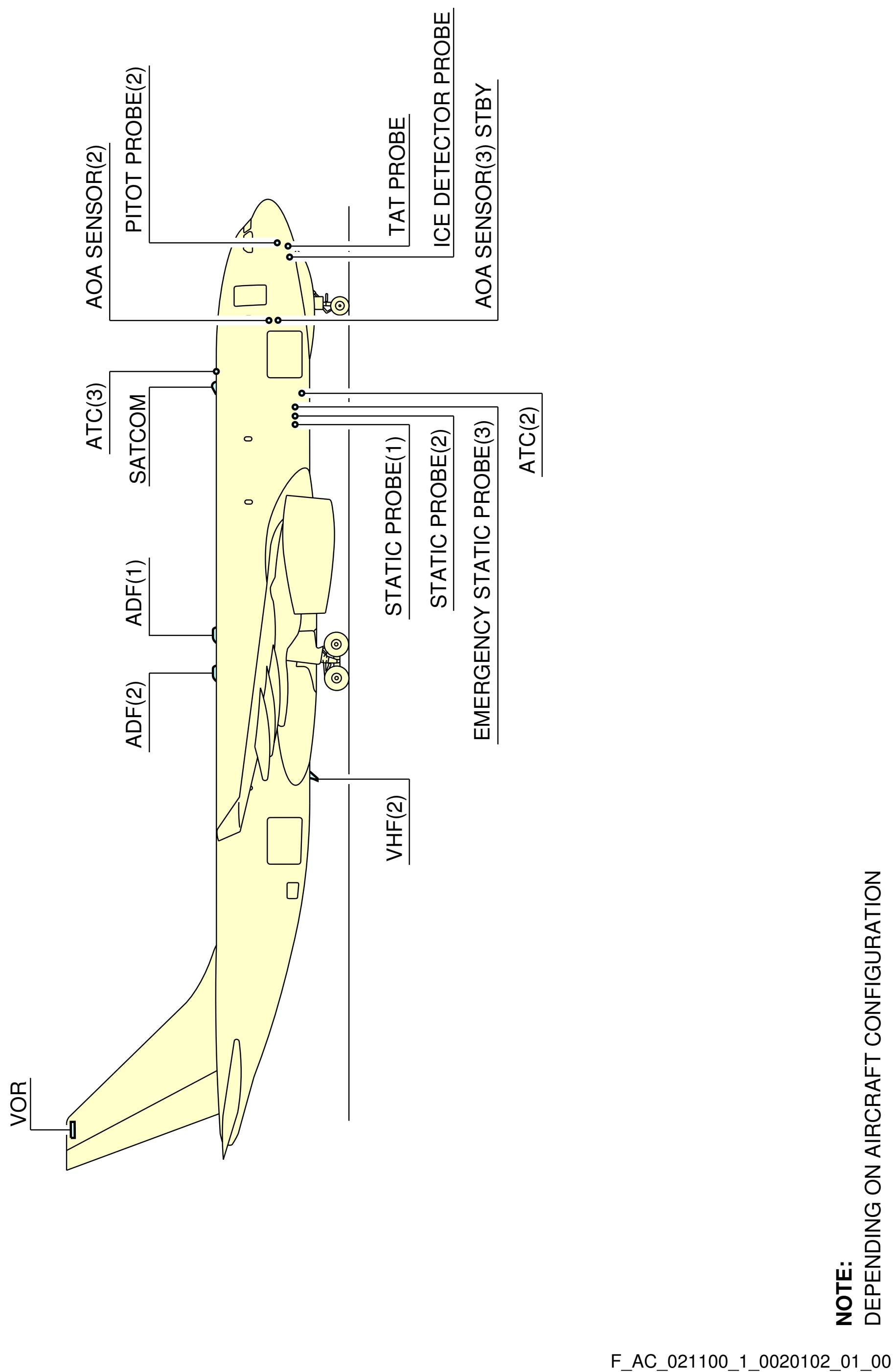
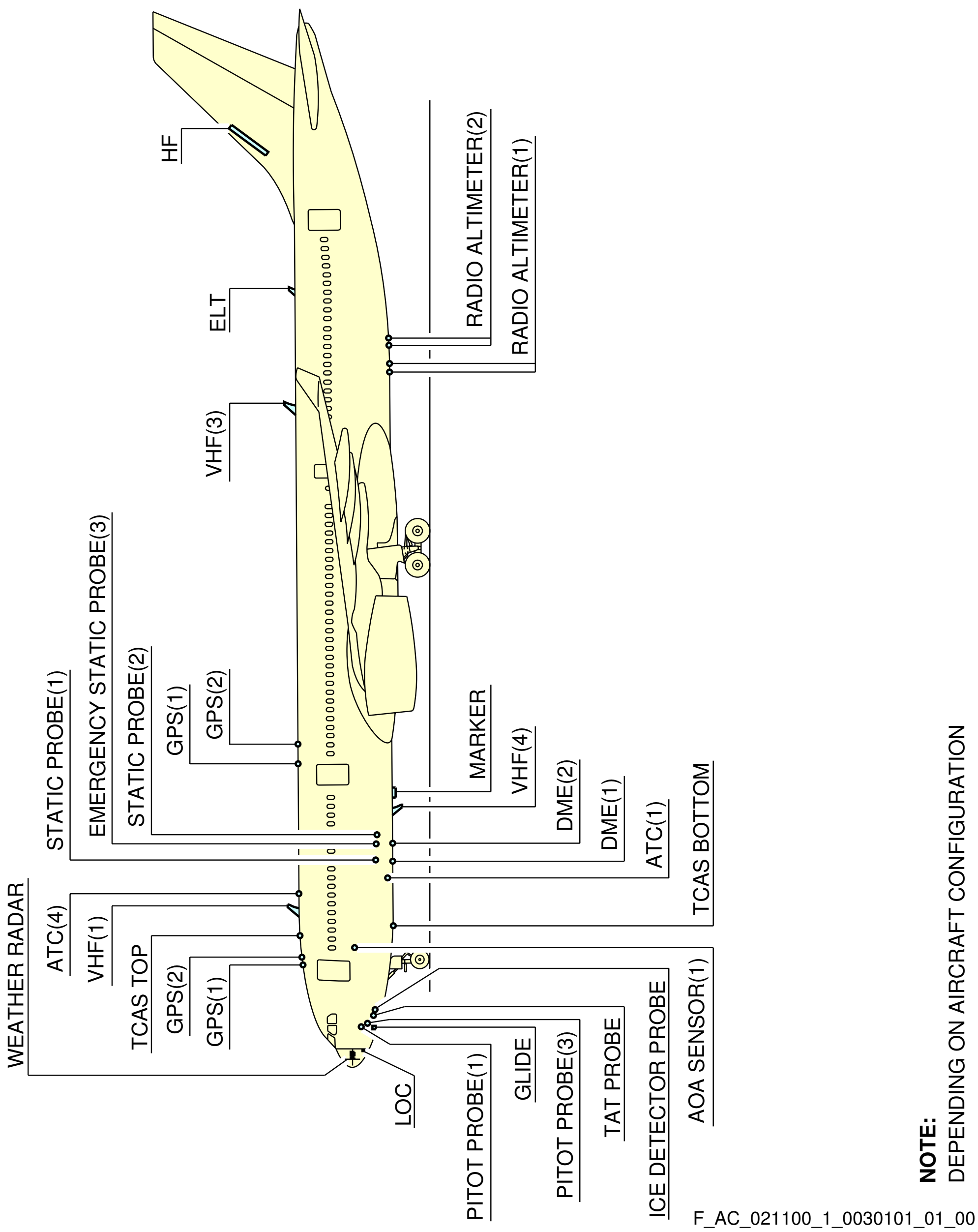
Antennas and Probes
Location (Sheet 1 of 2)
FIGURE-2-11-0-991-002-A01

****ON A/C A330-200F**



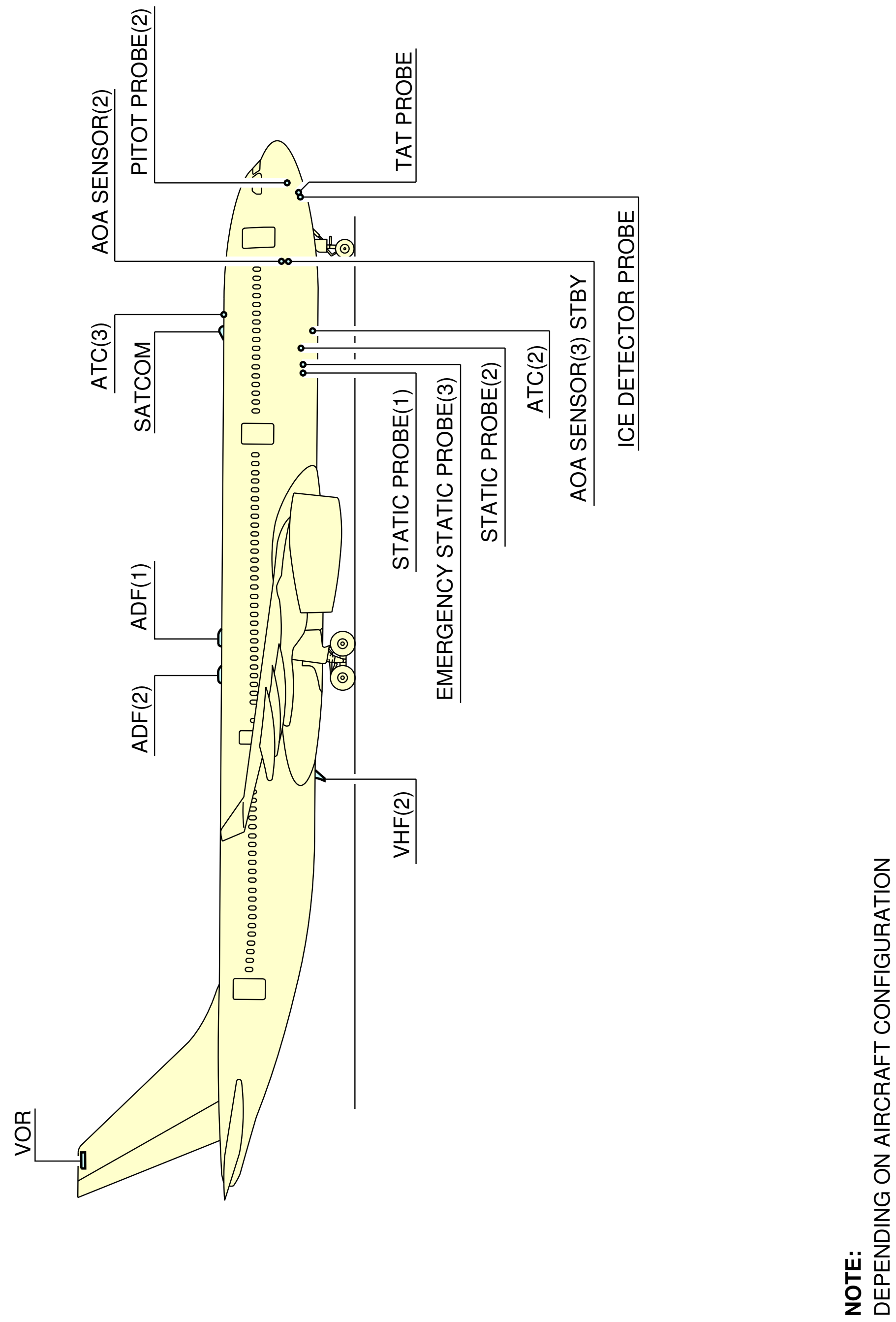
Antennas and Probes
Location (Sheet 2 of 2)
FIGURE-2-11-0-991-002-A01

****ON A/C A330-300**



Antennas and Probes
Location (Sheet 1 of 2)
FIGURE-2-11-0-991-003-A01

****ON A/C A330-300**



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Antennas and Probes
Location (Sheet 2 of 2)
FIGURE-2-11-0-991-003-A01

2-12-0 Engine and Nacelle

****ON A/C A330-200 A330-200F A330-300**

Engine and Nacelle

1. Engine and Nacelle - PW 4000 Engine

A. Engine

The PW 4000 engine is a two spool, axial flow, high bypass ratio turbofan engine.
The engine has four major sections as follows:

- The compressor section
- The combustion section
- The turbine section
- The accessory drive section.

The compressor section has a six-stage low pressure compressor, a fan case, an intermediate case and an eleven-stage high pressure compressor. The 1st stage rotor in the low pressure compressor flows air through both the fan nozzle and the low compressor rotor/stator assemblies to the core of the engine. The high pressure compressor is used to increase the pressure of the primary airflow from the low compressor and send it to the diffuser.
The engine combustion section comprises the diffuser case and a combustion chamber installed in the case. The chamber forms the enclosure where fuel is mixed with air and burned to add energy to the primary gaspath.
The turbine section comprises the rear compressor drive turbine, the front compressor drive turbine and the Turbine Exhaust Case (TEC). The rear compressor drive turbine is the two-stage High Pressure Turbine (HPT) and the front compressor drive turbine is the five-stage Low Pressure Turbine (LPT). The HPT case assembly is air-cooled as part of the Turbine Case Cooling (TCC) system. The LPT rotor and stator assembly includes the front compressor driveshaft, the LPT case and the LPT spool case. The LPT case is externally cooled by turbine case cooling tubes.
The accessory drive section comprises the main gearbox and angle gearbox. The high pressure rotor is used to supply the main gearbox with power to drive the engine and aircraft-supplied accessories. Power comes from the towershaft in the intermediate case which is geared to the front of the high pressure rotor. The towershaft drives the angle gearbox bevel gear set which transmits power through the horizontal driveshaft assembly to the main gearbox group.

B. Nacelle

The nacelle is the aerodynamic structure around the basic engine. The nacelle provides a smooth airflow both around and into the engine to decrease drag and give better engine performance and prevents damage to the external surface of the engine and its accessories. The nacelle consists of the following major components:

(1) Air Intake Cowl
The air intake cowl is an interchangeable aerodynamic fairing assembly that permits smooth airflow to the engine fan and core sections during ground and flight operation. The air intake cowl is attached with bolts to the engine fan case.

(2) Fan Cowls
Fan cowls comprise a forward (fixed) fan cowl panel assembly and an aft fan cowl door assembly. The fan cowl panels and doors protect the engine and its components, and optimize the aerodynamic characteristics of the nacelle.

(3) Thrust Reverser
The thrust reverser system is a component of the aircraft engine nacelle and is used to cancel the forward thrust and to give aerodynamic braking of the aircraft. The principle of the thrust reverser is to procedure forward flow of the fan exhaust by a hydraulically-actuated mechanical system. The system is designed to be used on the ground only.

(4) Exhaust System
The turbine exhaust system has an exhaust nozzle and an exhaust plug. Both system components are acoustically treated and made to resist severe ambient conditions. The exhaust nozzle forms the outer contour of the engine primary exhaust annulus and the inner flow path of the fan airstream. The exhaust plug forms the inner contour of the engine primary exhaust annulus. The exhaust nozzle and exhaust plug are line replaceable units.

2. Engine and Nacelle - TRENT 700 Engine

A. Engine
The RB211-TRENT 700 engine is a high bypass ratio, triple spool turbofan.
The principal modules of the engine are:
- The Low Pressure Compressor (LPC) rotor
- The Intermediate Pressure (IP) compressor
- The intermediate case
- The HP system (this includes the High Pressure Compressor (HPC), the combustion system and the High Pressure Turbine (HPT))
- The Intermediate Pressure Turbine (IPT)
- The external gearbox
- The LPC case
- The Low Pressure Turbine (LPT).

The compressor system has three axial flow compressors in a triple spool configuration. The compressors are turned independently by their related turbines, each at its most satisfactory speed. The LP system has a single-stage compressor installed at the front of the engine. A shaft connects the compressor to a four-stage turbine at the rear of the gas generator. The gas generator also includes an eight-stage IP compressor, a six-stage HPC and a combustion system. Each of the compressors in the gas generator is connected to, and turned by, a different single-stage turbine. Between the HPC and the HPT is the annular combustion system which burns a mixture of fuel and air to supply energy as heat. Behind the LPT there is a common nozzle assembly which mixes the cold air and hot gas exhaust flows. The external gearbox module is installed below the rear case of the fan case. It has a gear train that decreases and increases the speed to meet the specified drive requirements of each accessory.

B. Nacelle

The nacelle gives the engine an aerodynamic shape. Each engine is housed in a nacelle suspended from a pylon attached below the wing. The nacelle consists of the following major components:

(1) Air Intake Cowl

The air intake cowl is attached to the forward flange of the front LPC case. Its function is to supply inlet air in a satisfactory condition for the engine compressors.

(2) Fan Cowl Doors

The fan cowl doors hang on the aircraft wing pylon and are closed around the LPC cases. They can be opened during ground maintenance to give access to the components installed on the cases and to let the thrust reverser cowl doors be opened.

(3) Thrust Reverser

The thrust reverser is a component of the aircraft engine nacelle. The thrust reverser is a twin thrust reverser cowl door ('C' duct) construction providing a fan duct inner wall fairing for the core engine between the top and bottom bifurcation walls. The thrust reverser incorporates hydraulically-powered actuators to operate four pivoting doors which redirect the fan air flow in reverse thrust. Hydraulic power is provided from the aircraft hydraulic system to position the doors in a "stowed" position for forward thrust and "deployed" position for reverse thrust.

(4) Common Nozzle Assembly (CNA)

The CNA is attached to the aft flange of the exhaust case. The function of the CNA is to mix the core engine exhaust with the LPC outlet air.

****ON A/C A330-200 A330-300**

3. Engine and Nacelle - GE CF6–80E1 Engine

A. Engine

The CF6-80E1 engine is a high bypass ratio, dual-rotor, axial-flow turbofan engine.
The major modules of the engine are:

- The fan module
- The core module

- The High Pressure Turbine (HPT)
- The Low Pressure Turbine (LPT)
- The accessory drive modules.

The fan module supplies approximately 80 percent of the total engine thrust through secondary air flow acceleration. The fan module also boosts primary air flow to the high pressure compressor. The fan rotor and booster assembly is part of the fan module. Air, taken in through the fan section, passes through successive stages of compressor rotor blades and compressor stator vanes, being compressed as it passes from stage to stage. The inlet guide vanes and the first five-stages of the stator are variable, and change their angular position as a function of the compressor inlet temperature and corrected engine speed. The combustion of fuel takes place in the combustor installed in the compressor rear frame. The two main modules of the turbine are the HPT and the LPT. The function of the HPT is to drive the high pressure compressor by converting the combustor exhaust gas flow into mechanical force. The LPT subsequently also converts this flow into force to drive the fan and booster assemblies. The HPT rotor is a two-stage air-cooled turbine. The LPT rotor drives the fan and booster rotors through the LPT rotor shaft by extracting energy from the combustion gases leaving the HPT. Power for both engine and aircraft accessories is extracted through a system of gearboxes and shafts. The accessory gearbox assembly is mounted on the compressor casing. The gearbox receives torque from the horizontal drive shaft and distributes the torque through spur gears to drive the gearbox-mounted accessories.

B. Nacelle

The nacelle provides protection for the engine and the engine accessories, and aerodynamic airflow around the engine during operation. Each engine is mounted in a nacelle suspended from a pylon attached to the wing lower surface. The nacelle consists of the following major components:

(1) Air Intake Cowl Assembly

The air intake cowl structure is an interchangeable aerodynamically-faired assembly which supplies the inlet airflow to the fan and core sections of the engine. It is installed on the forward face of the engine fan case.

(2) Fan Cowl Doors

The fan cowl door assemblies are engine-to-engine interchangeable units enclosing the engine fan case between the air intake cowl and thrust reverser cowl doors. Each assembly is supported by three hinges at the pylon and latched along the bottom splitline with three tension hook latches.

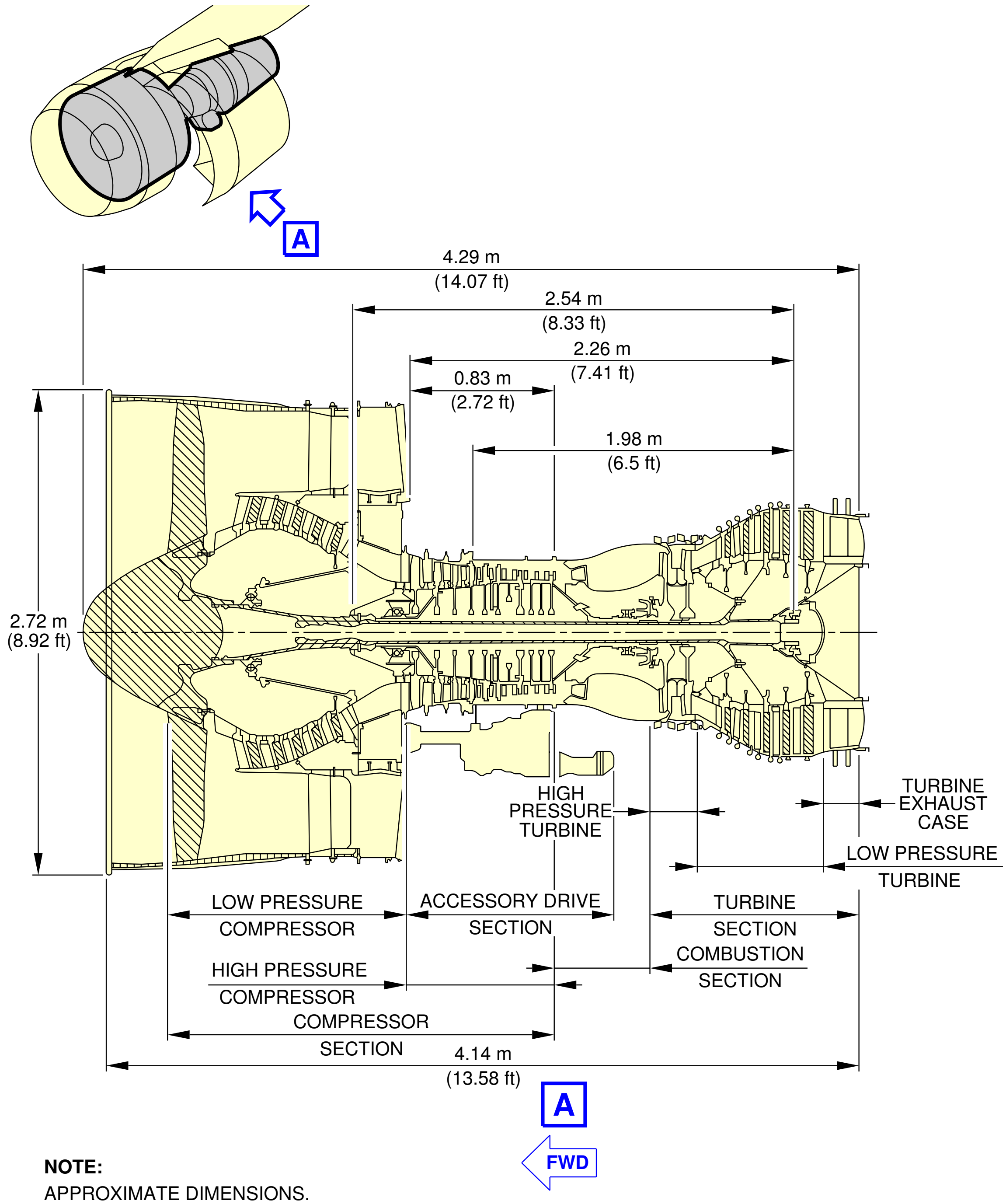
(3) Thrust Reverser

The thrust reverser is a bifurcated assembly of two halves forming the fan exhaust duct and nozzle, enclosing the engine between the fan frame and the core cowling, and containing the mechanism for reversing the fan exhaust flow during aircraft landing.

(4) Core Cowl Doors
The core cowl door assemblies are interchangeable units which enclose the core engine between the thrust reverser cowl doors and the exhaust nozzle. Each assembly is hinged from the pylon in three locations and latched along the bottom splitline with three tension hook latches.

(5) Exhaust Nozzle
The exhaust nozzle, through which all exhaust gases are expelled, is part of the aerodynamically-structured nacelle. The exhaust nozzle provides a fixed area annulus for exhausting the core engine gas stream flow and provides a continuation of the aerodynamic cowling from the core cowl interface.

**ON A/C A330-200 A330-200F A330-300



NOTE:
APPROXIMATE DIMENSIONS.

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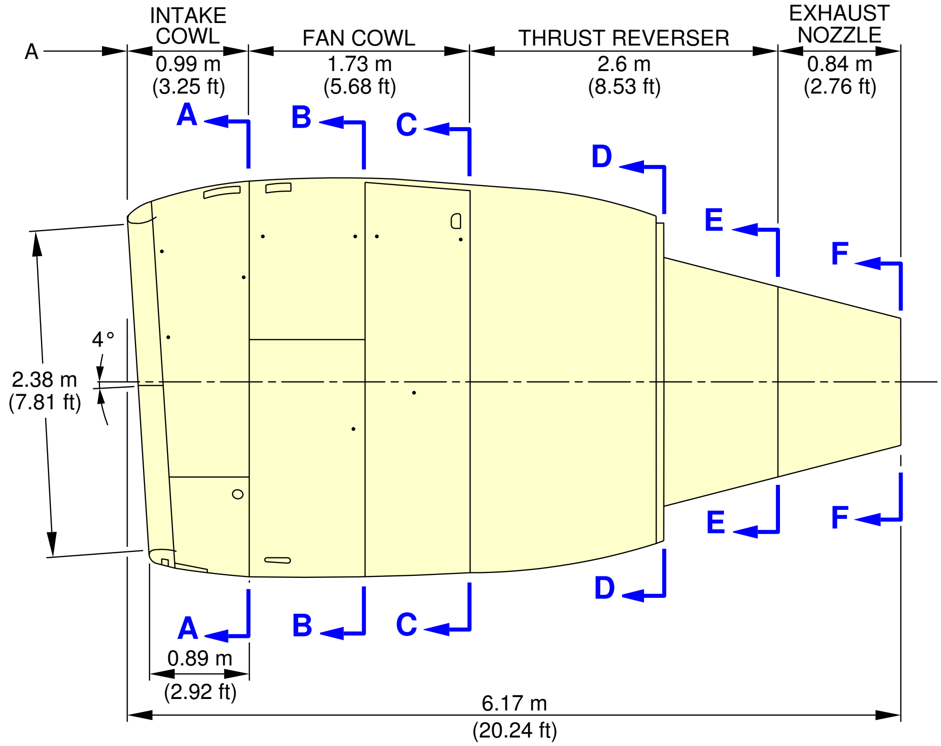
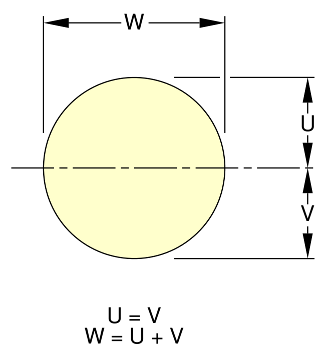
Engine and Nacelle
Engine Dimensions - PW 4000
FIGURE-2-12-0-991-001-A01

**ON A/C A330-200 A330-200F A330-300



DISTANCE FROM NOSE	A330–300	A330–200/ A330–200F
A	21.45 m (70.37 ft)	18.25 m (59.88 ft)

	W	U	V	NAC STA
A–A	3.12 m (10.24 ft)	1.56 m (5.12 ft)	1.56 m (5.12 ft)	0.89 m (2.92 ft)
B–B	3.16 m (10.37 ft)	1.58 m (5.18 ft)	1.58 m (5.18 ft)	1.79 m (5.87 ft)
C–C	3.06 m (10.04 ft)	1.53 m (5.02 ft)	1.53 m (5.02 ft)	2.62 m (8.6 ft)
D–D	2.58 m (8.46 ft)	1.29 m (4.23 ft)	1.29 m (4.23 ft)	4.62 m (15.16 ft) *
E–E	1.42 m (4.66 ft)	0.71 m (2.33 ft)	0.71 m (2.33 ft)	5.23 m (17.16 ft)
F–F	1 m (3.28 ft)	0.5 m (1.64 ft)	0.5 m (1.64 ft)	6.07 m (19.91 ft)



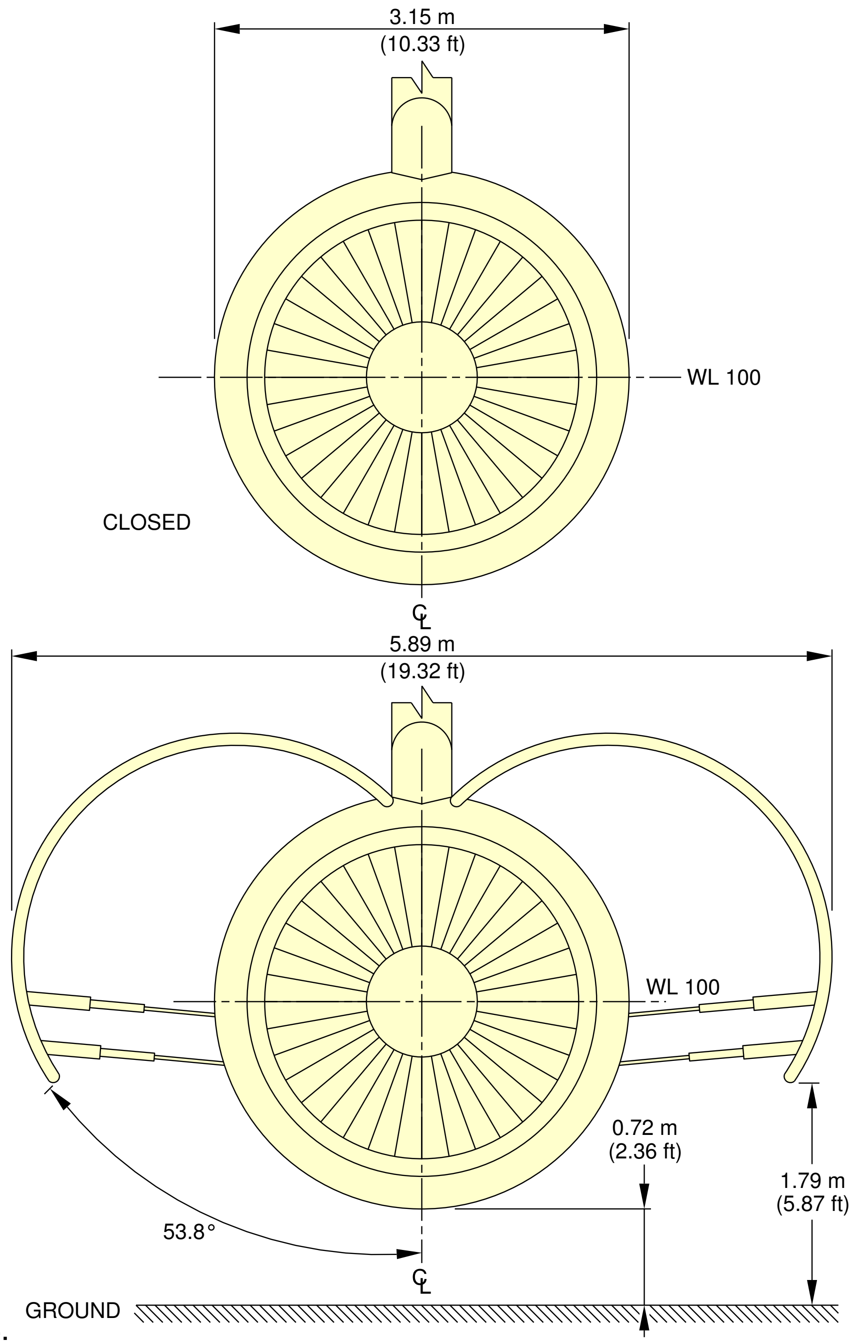
NOTE:
APPROXIMATE DIMENSIONS.

* STOWED POSITION

F_AC_021200_1_0020101_01_00

Engine and Nacelle
Nacelle Dimensions - PW 4000
FIGURE-2-12-0-991-002-A01

**ON A/C A330-200 A330-200F A330-300

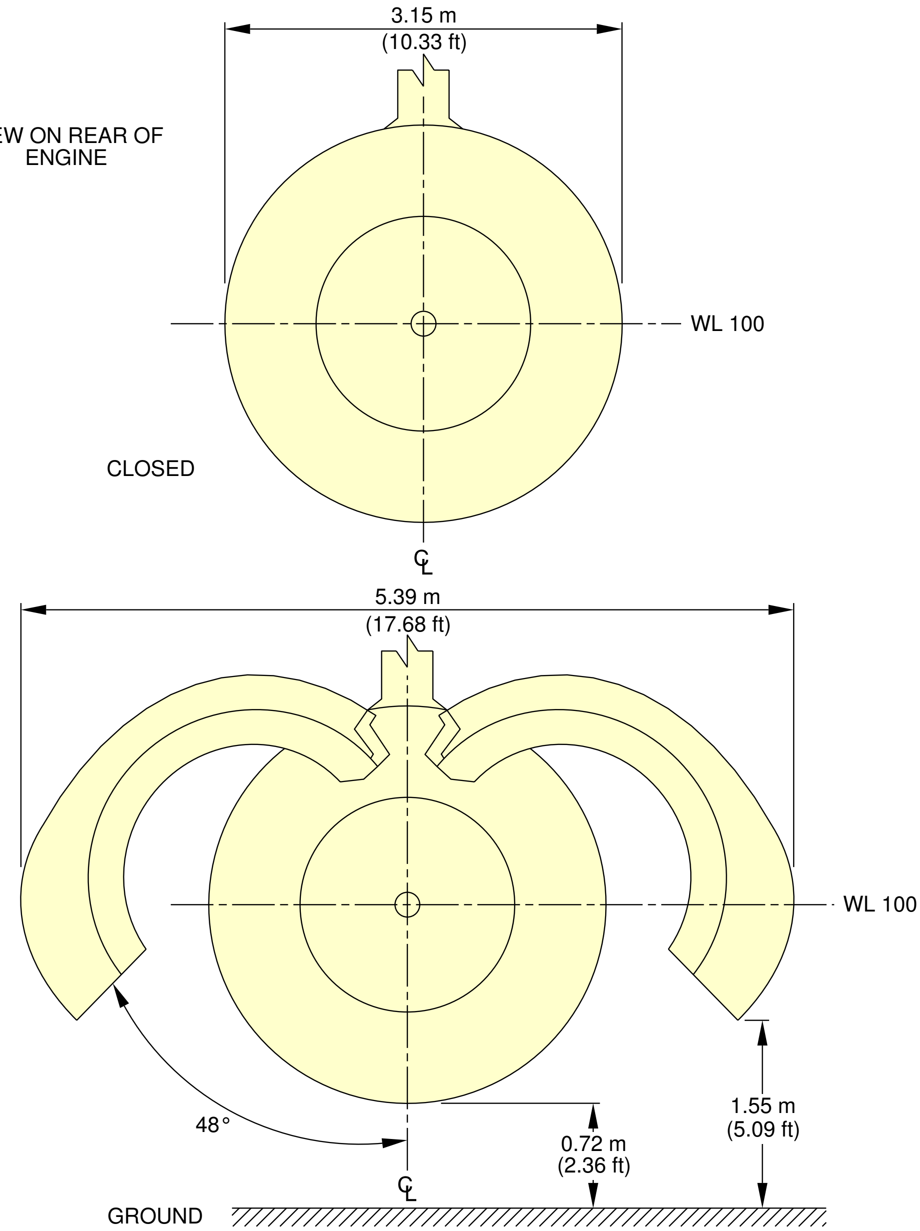


NOTE:
APPROXIMATE DIMENSIONS.

F_AC_021200_1_0030101_01_00

Engine and Nacelle
Fan Cowls - PW 4000
FIGURE-2-12-0-991-003-A01

**ON A/C A330-200 A330-200F A330-300



CAUTION:
DO NOT ACTUATE SLATS WITH THRUST REVERSER COWLS AT 48° OPEN POSITION.

NOTE:
APPROXIMATE DIMENSIONS.

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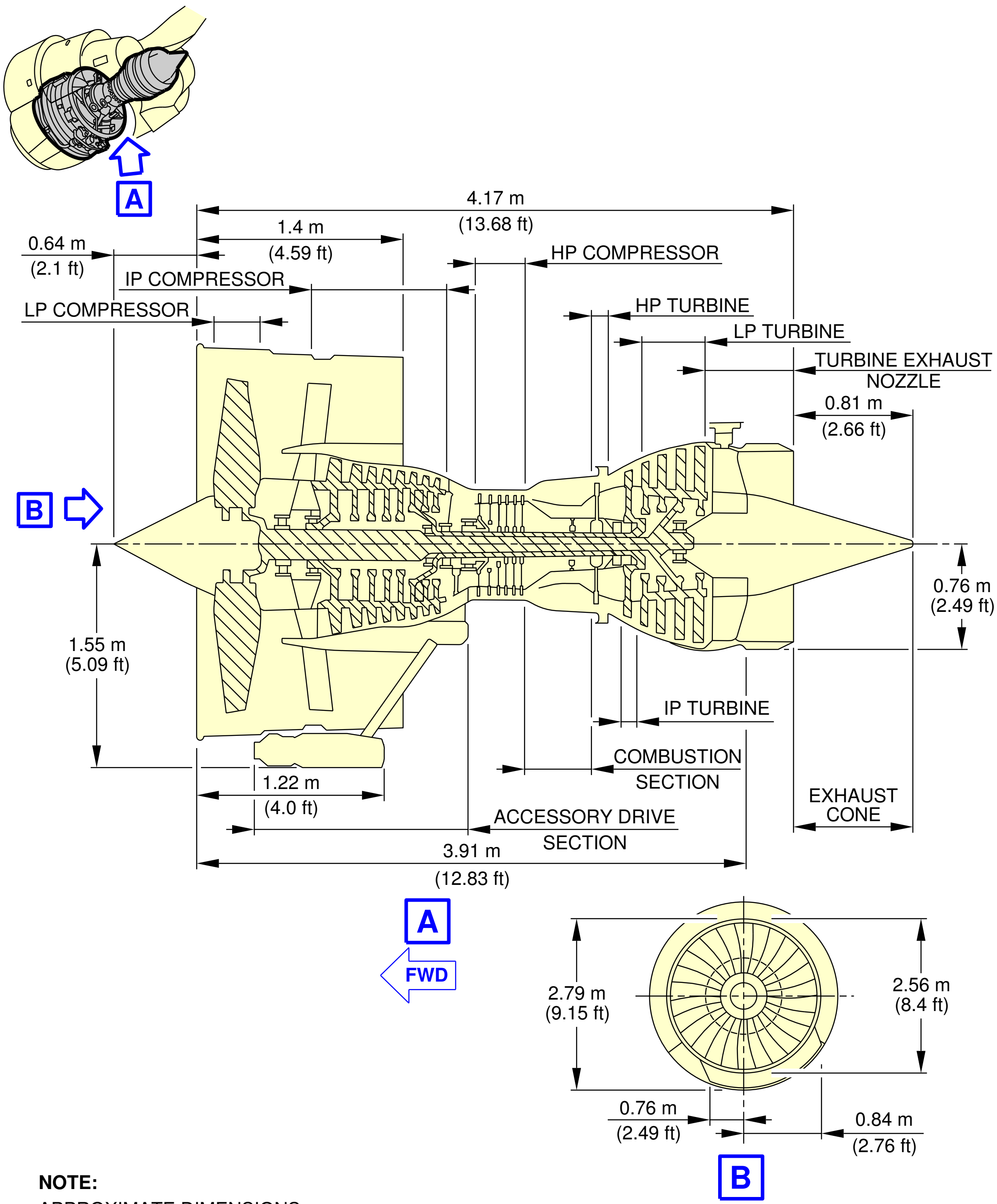
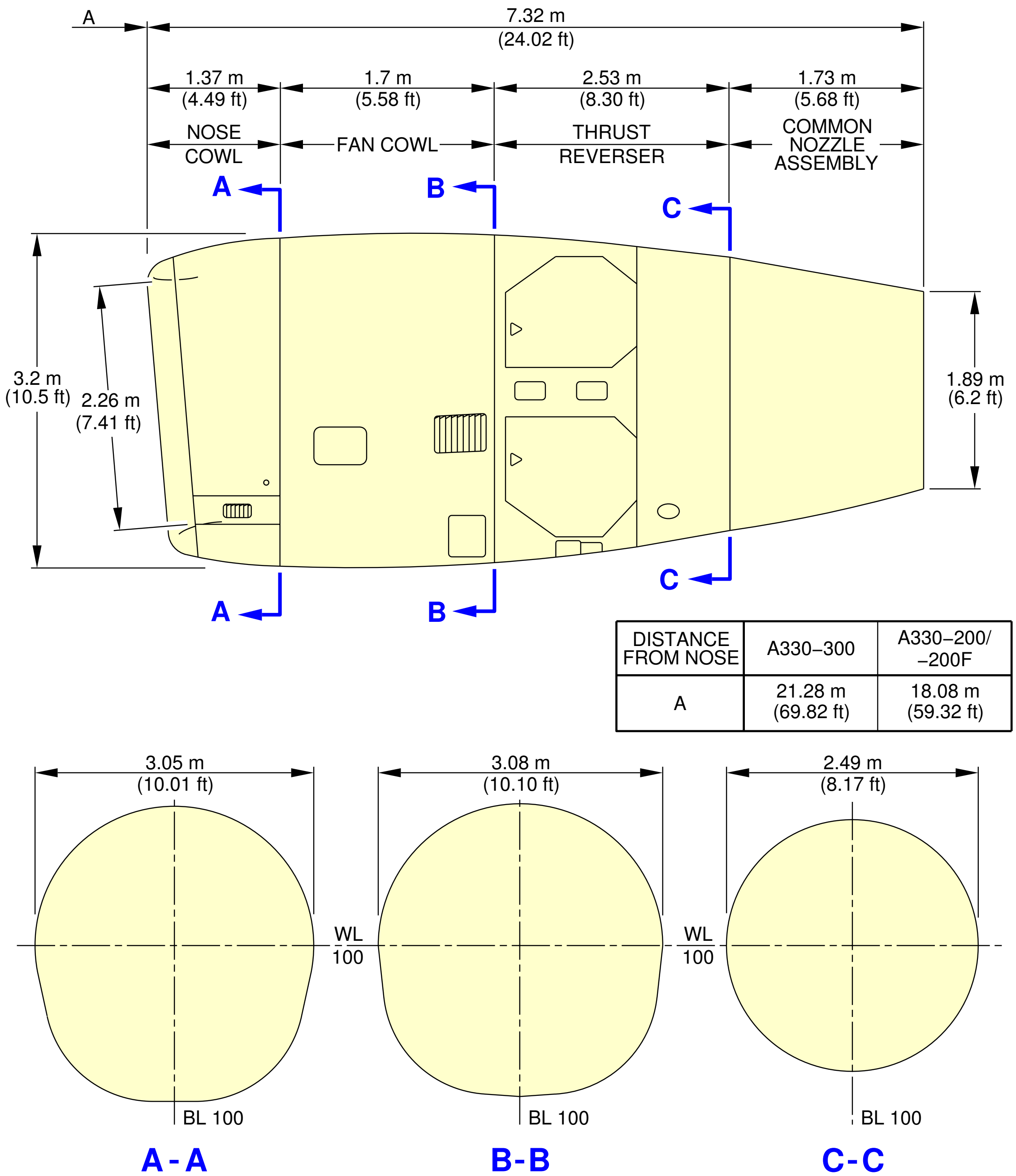
Engine and Nacelle
Thrust Reverser Cowls - PW 4000
FIGURE-2-12-0-991-004-A01

**ON A/C A330-200 A330-200F A330-300



Engine and Nacelle
Engine Dimensions - TRENT 700
FIGURE-2-12-0-991-005-A01

**ON A/C A330-200 A330-200F A330-300



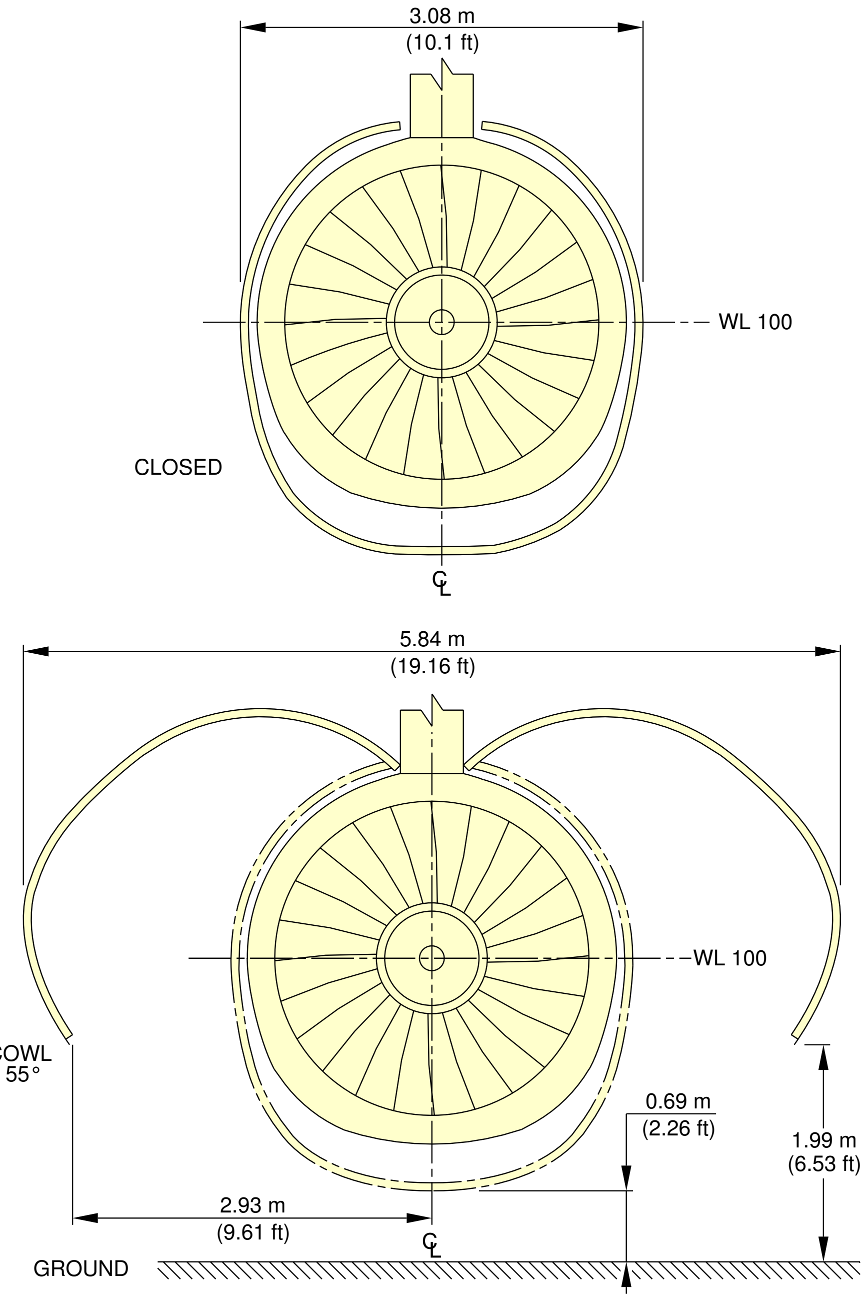
DISTANCE FROM NOSE	A330–300	A330–200/ –200F
A	21.28 m (69.82 ft)	18.08 m (59.32 ft)

NOTE:
APPROXIMATE DIMENSIONS.

F_AC_021200_1_0060101_01_00

Engine and Nacelle
Nacelle Dimensions - TRENT 700
FIGURE-2-12-0-991-006-A01

**ON A/C A330-200 A330-200F A330-300

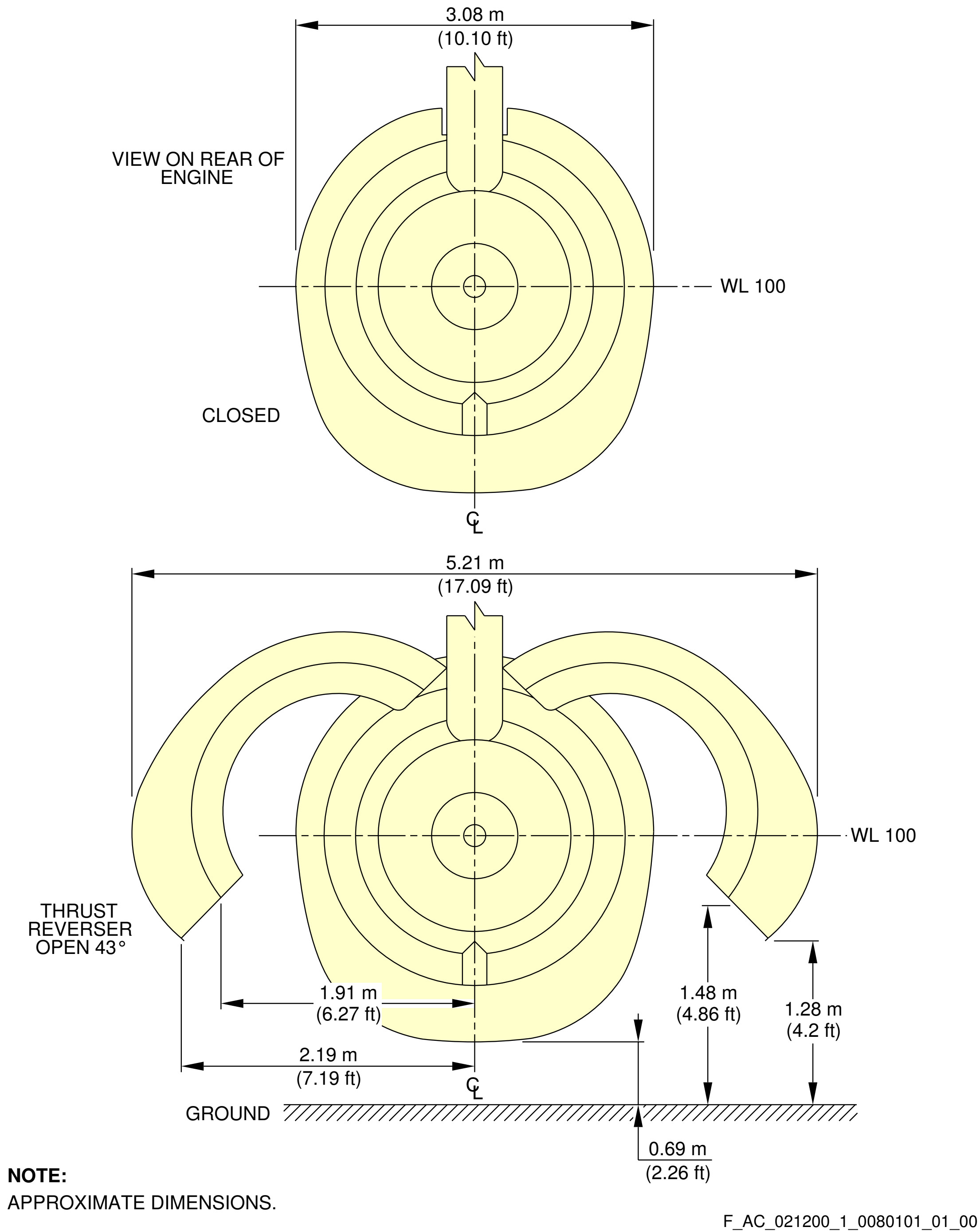


NOTE:
APPROXIMATE DIMENSIONS.

F_AC_021200_1_0070101_01_00

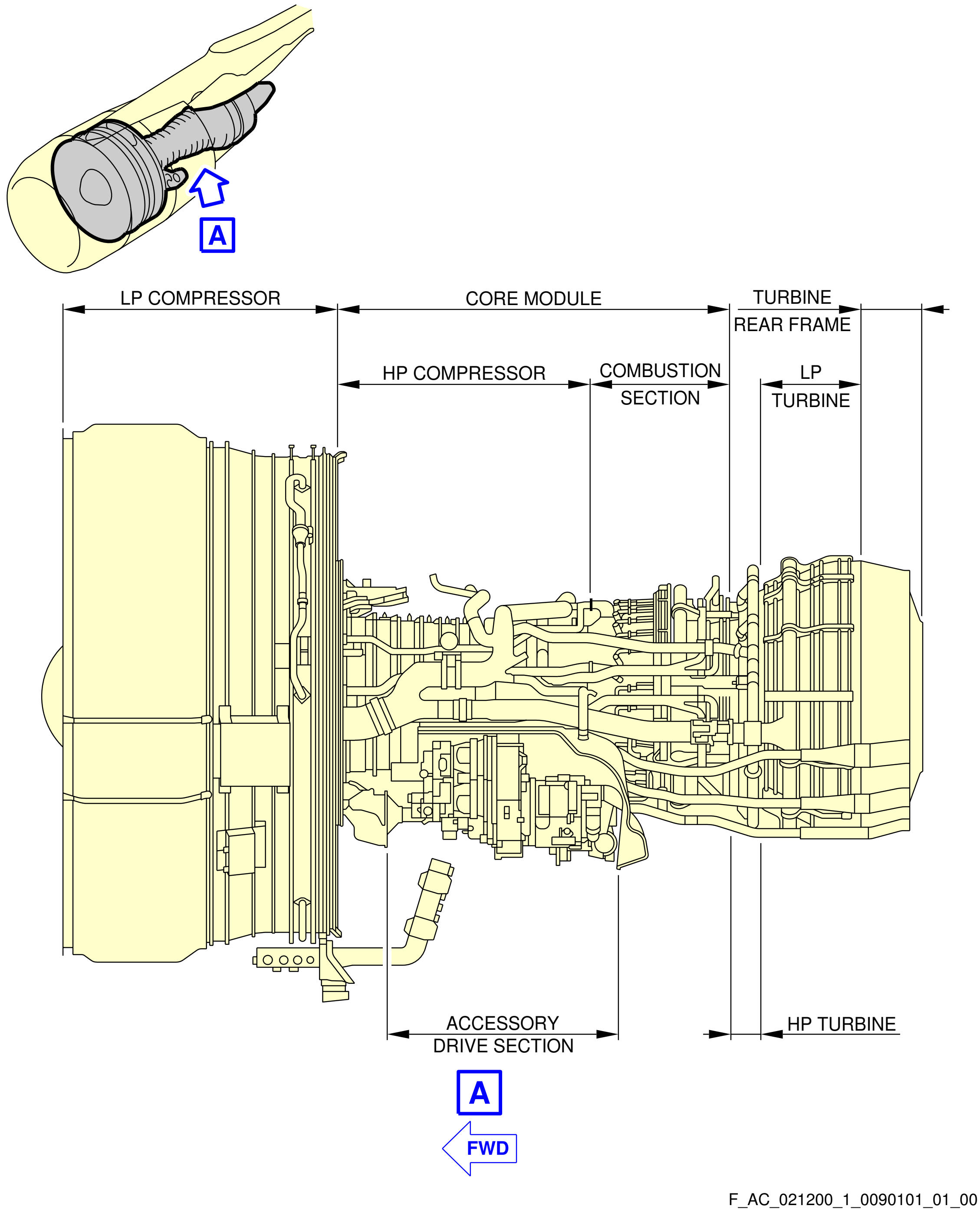
Engine and Nacelle
Fan Cowls - TRENT 700
FIGURE-2-12-0-991-007-A01

**ON A/C A330-200 A330-200F A330-300



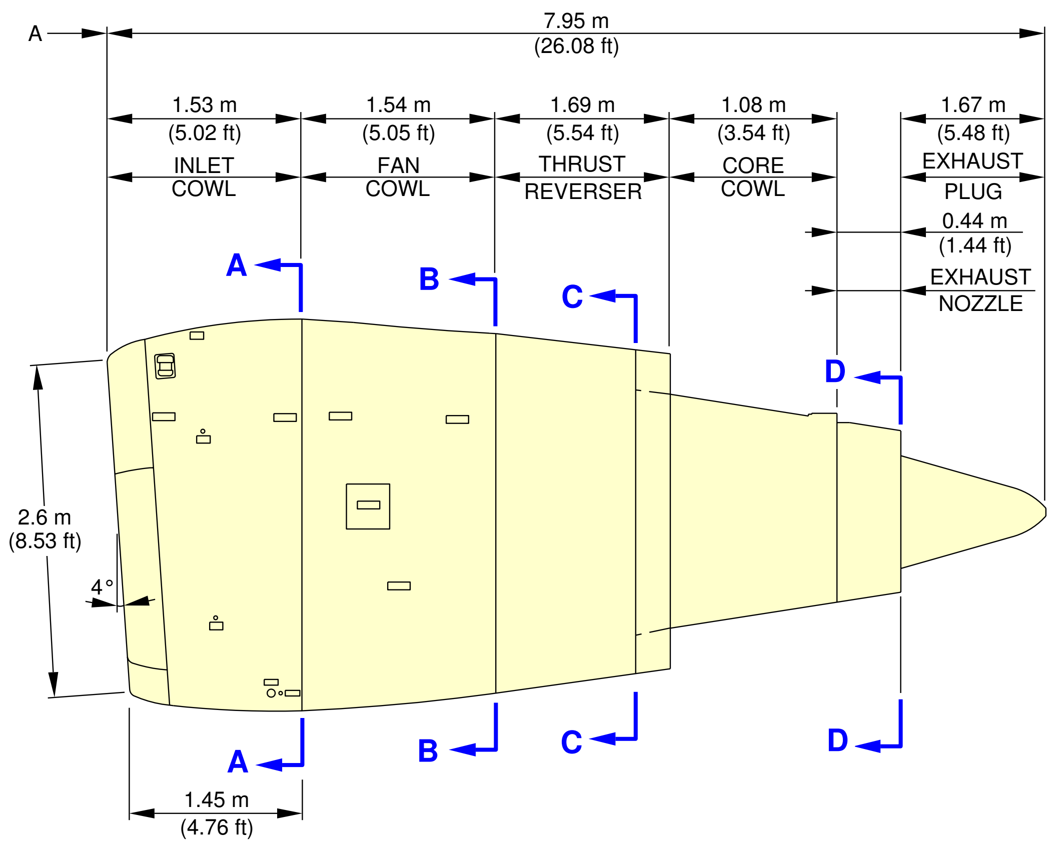
Engine and Nacelle
Thrust Reverser Cowls - TRENT 700
FIGURE-2-12-0-991-008-A01

**ON A/C A330-200 A330-300



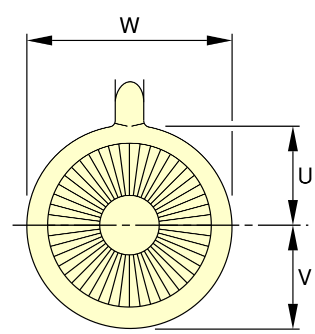
Engine and Nacelle
Engine Dimensions - GE CF6-80E1
FIGURE-2-12-0-991-009-A01

**ON A/C A330-200 A330-300



DISTANCE FROM THE NOSE	A330–300	A330–200
A	21.14 m (69.36 ft)	17.94 m (58.86 ft)

	W	U	V	NAC STA
A–A	3.08 m (10.1 ft)	1.51 m (4.95 ft)	1.59 m (5.22 ft)	3.49 m (11.45 ft)
B–B	2.82 m (9.25 ft)	1.41 m (4.63 ft)	1.41 m (4.63 ft)	5.03 m (16.5 ft)
C–C	2.49 m (8.17 ft)	1.25 m (4.1 ft)	1.25 m (4.1 ft)	6.4 m (21 ft)
D–D	1.28 m (4.2 ft)	0.64 m (2.1 ft)	0.64 m (2.1 ft)	8.24 m (27.03 ft)

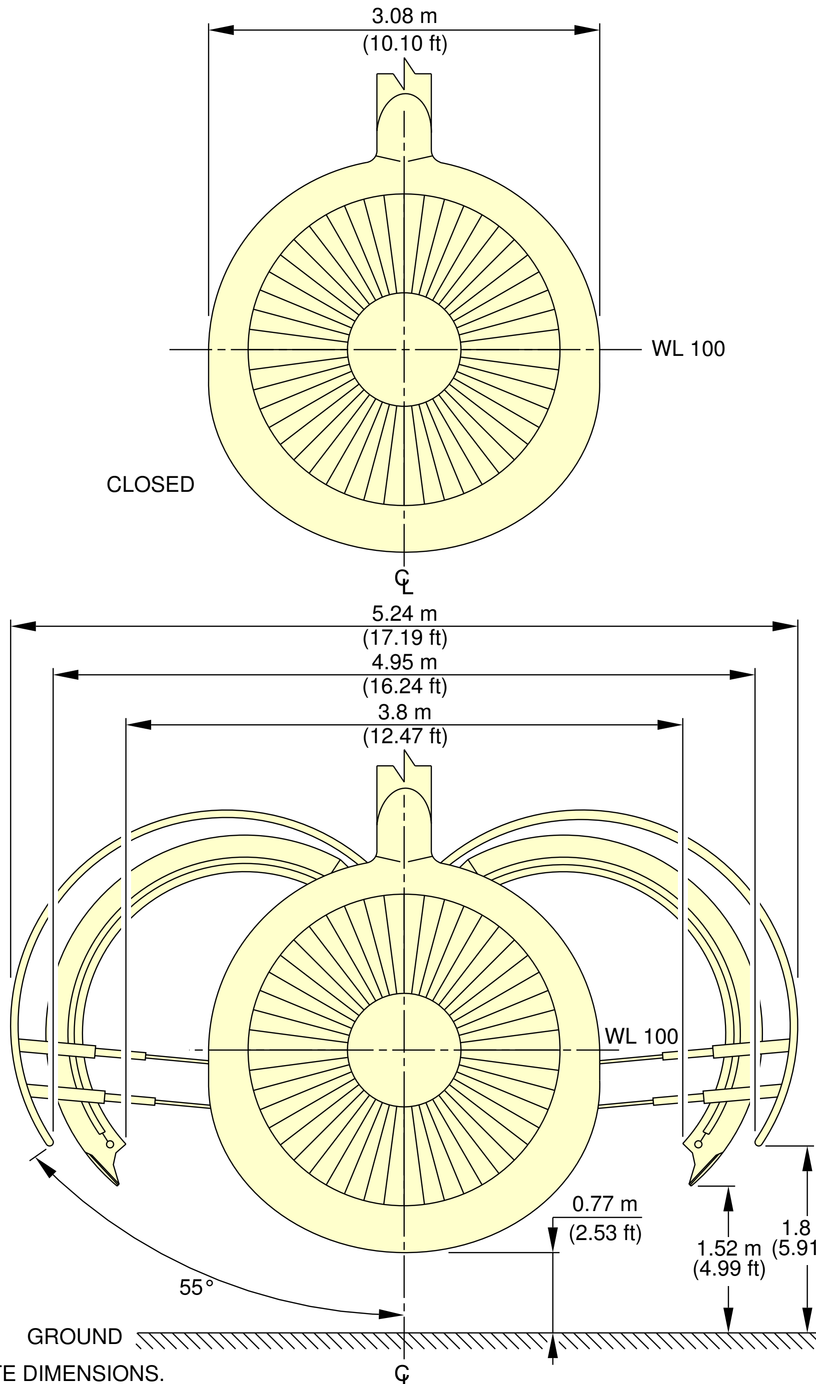


NOTE:
APPROXIMATE DIMENSIONS

F_AC_021200_1_0100101_01_00

Engine and Nacelle
Nacelle Dimensions - GE CF6-80E1
FIGURE-2-12-0-991-010-A01

**ON A/C A330-200 A330-300

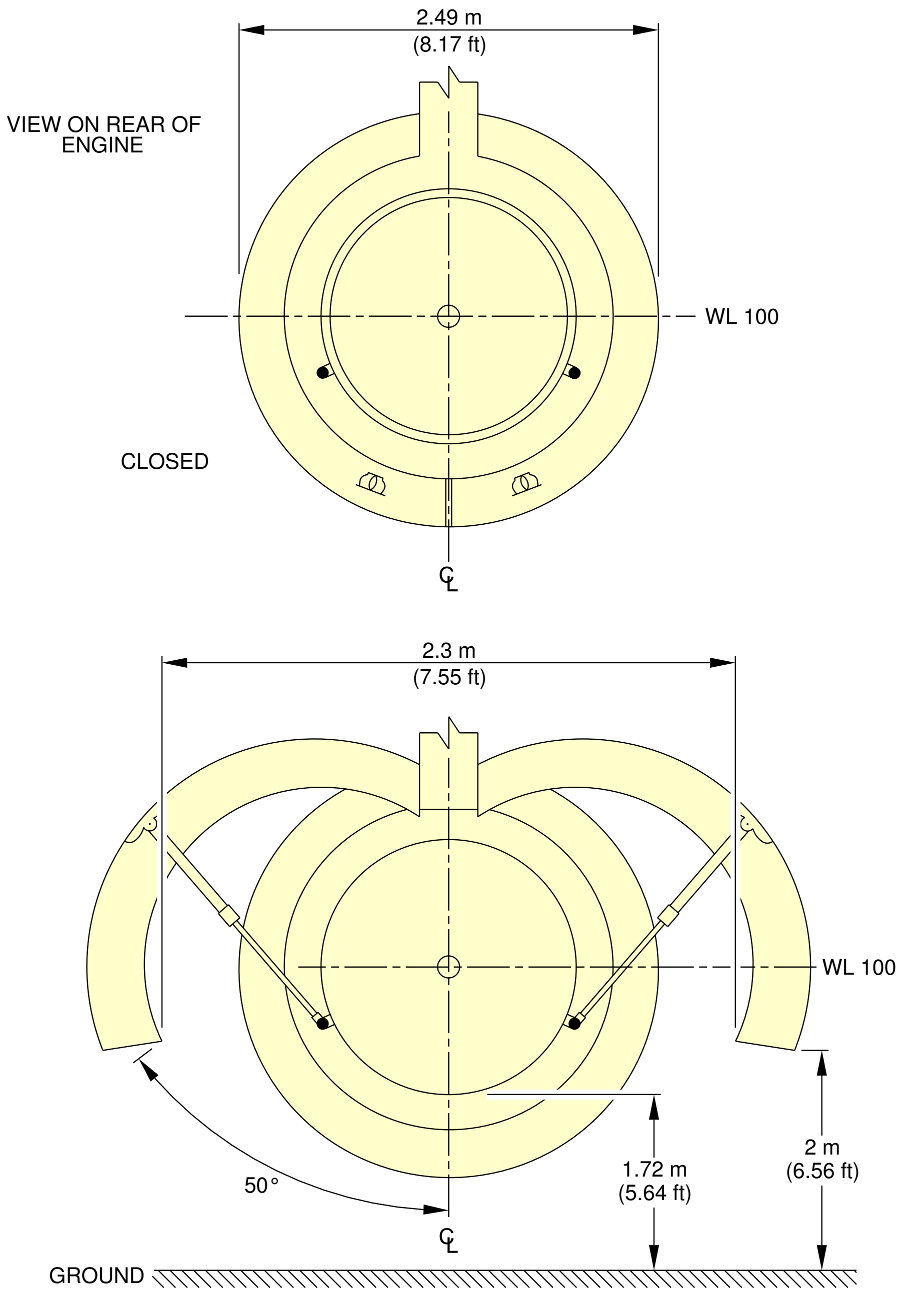


NOTE:
APPROXIMATE DIMENSIONS.

F_AC_021200_1_0110101_01_00

Engine and Nacelle
Fan Cowls - GE CF6-80E1
FIGURE-2-12-0-991-011-A01

**ON A/C A330-200 A330-300



NOTE:
APPROXIMATE DIMENSIONS.

F_AC_021200_1_0120101_01_00

Engine and Nacelle
Thrust Reverser Cowls - GE CF6-80E1
FIGURE-2-12-0-991-012-A01

2-12-1 Auxiliary Power Unit

****ON A/C A330-200 A330-200F A330-300**

Auxiliary Power Unit

1. General

The Auxiliary Power Unit (APU) and its related mechanical components are installed at the rear part of the fuselage in the tailcone section. The APU compartment is a fireproof area (identified as the Fire Zone).
The APU is a pneumatic and shaft-power gas-turbine engine and is used for the ground and in-flight power supply of the aircraft.

The APU supplies:
- mechanical shaft-power to operate a generator
- bleed-air to the Main Engine Start (MES) and the Environmental Control System (ECS).

A part of the automatic system, with the pneumatic and the electromechanical controls, operates the start and the acceleration functions of the APU.
An air intake system with a flap-type door is installed in front of the APU compartment. The exhaust gases pass overboard at the end of the fuselage cone.

2. Powerplant

The APU is the Garrett Gas-Turbine Compressor Power-unit (GTCP) 331-350C with a single shaft engine.

The engine is the primary component of the APU, which is of the modular design. The modules of the engine are:
- The power section
- The load compressor
- The accessory drive gearbox with LRU(s).

The power section has a two-stage centrifugal compressor, a reverse-flow annular combustion chamber and a three-stage axial turbine. The power section directly operates the one-stage centrifugal load-compressor which supplies the bleed-air to the pneumatic system. The inlet guide vanes as part of the load compressor, control the airflow.
The power section also operates the gearbox which is attached to the load compressor. The following LRU's are mounted on the gearbox :
- the APU generator,
- the starter motor,
- the oil pump,
- the Fuel Control Unit (FCU),
- the cooling air fan.

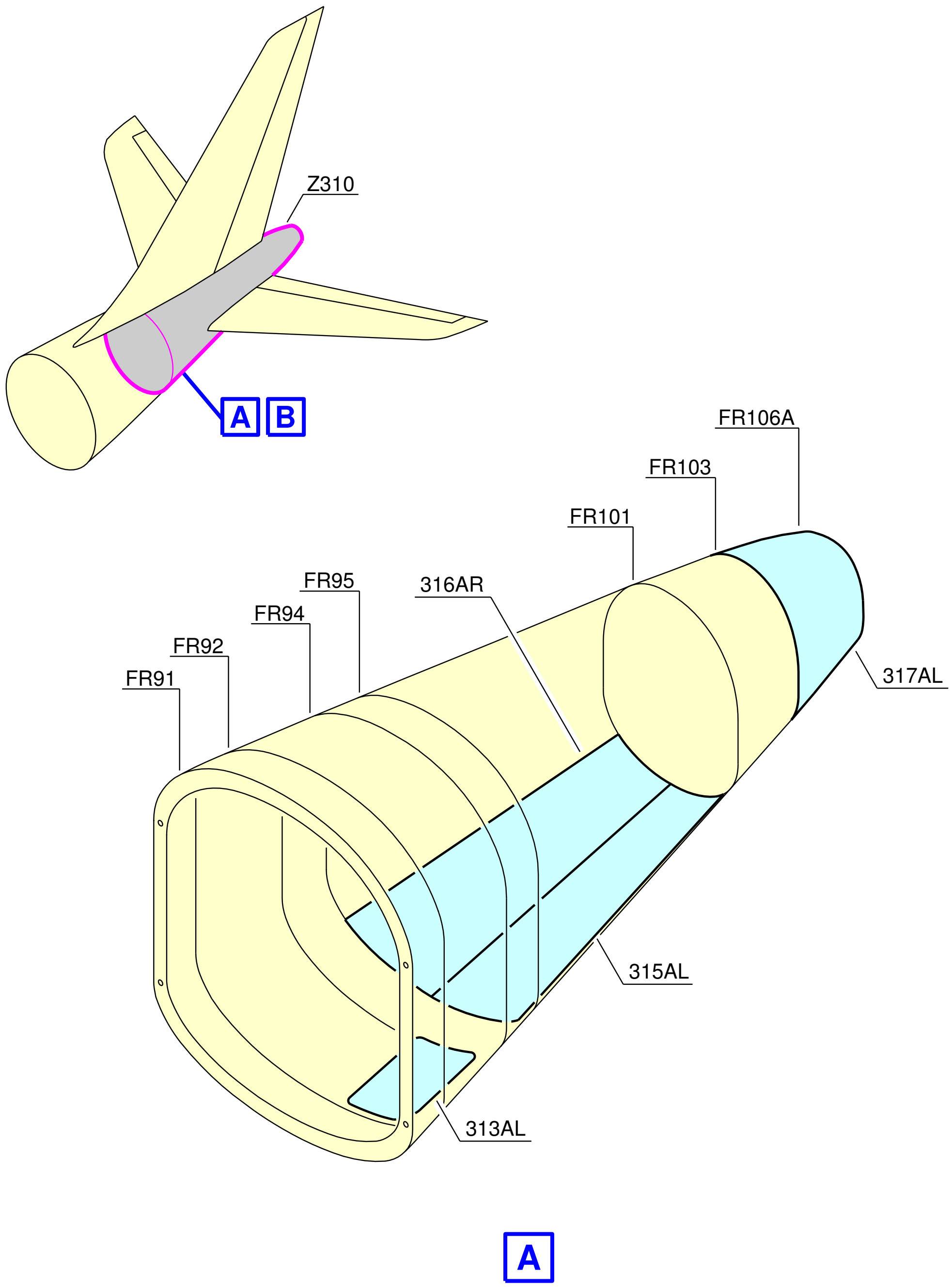
The APU has a gearbox-driven oil-cooled AC generator.

The cooling air and ventilation system of the APU supplies the air for cooling of the APU and the equipment on the APU. It also supplies the air for ventilation of the APU compartment.

3. Control circuit
The Electronic Control Box (ECB), which controls the Fuel Control Unit (FCU) and the Inlet Guide Vanes (IGV), keeps the APU at a constant speed. The control circuit is used to start the APU, to shut it down, to control it and to prevent internal failure.

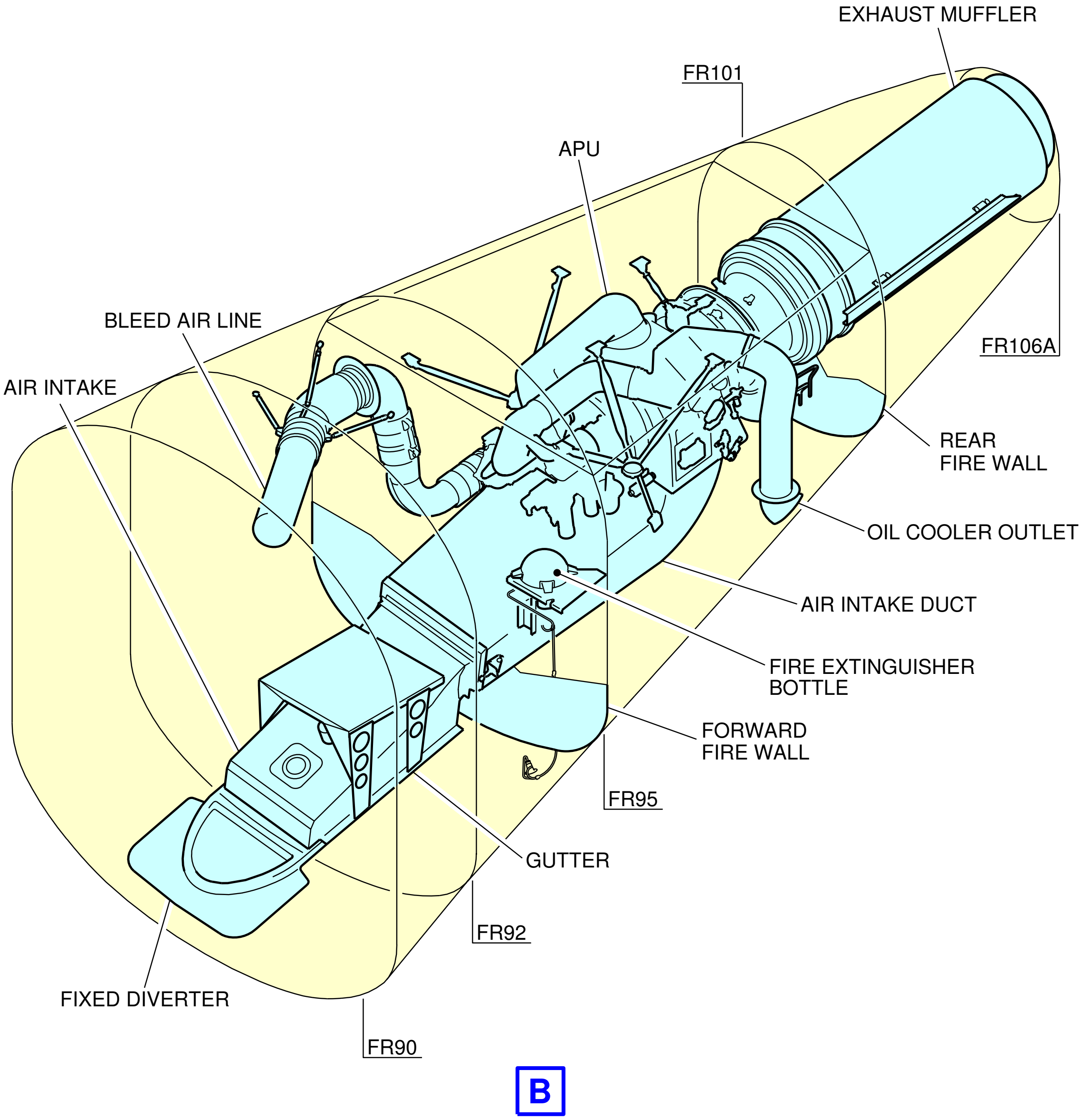
4. Controls and Indication
The primary APU controls and indications are installed in the overhead panel, on the center pedestal panel and on the forward center panel. External APU panels are also installed on the nose landing gear and on the refuel/defuel panel, to initiate an APU emergency shut-down.

**ON A/C A330-200 A330-200F A330-300



Auxiliary Power Unit
Access Doors (Sheet 1 of 2)
FIGURE-2-12-1-991-002-A01

**ON A/C A330-200 A330-200F A330-300



Auxiliary Power Unit
General Layout (Sheet 2 of 2)
FIGURE-2-12-1-991-002-A01

2-13-0 Levelling, symmetry and Alignment

****ON A/C A330-200 A330-200F A330-300**

Leveling, Symmetry and Alignment

****ON A/C A330-200 A330-300**

1. Quick Leveling
   There are three alternative procedures to level the aircraft:
   - Quick leveling procedure with Air Data/Inertial Reference System (ADIRS)
   - Quick leveling procedure with a spirit level in the passenger compartment
   - Quick leveling procedure with a spirit level in the FWD cargo compartment.

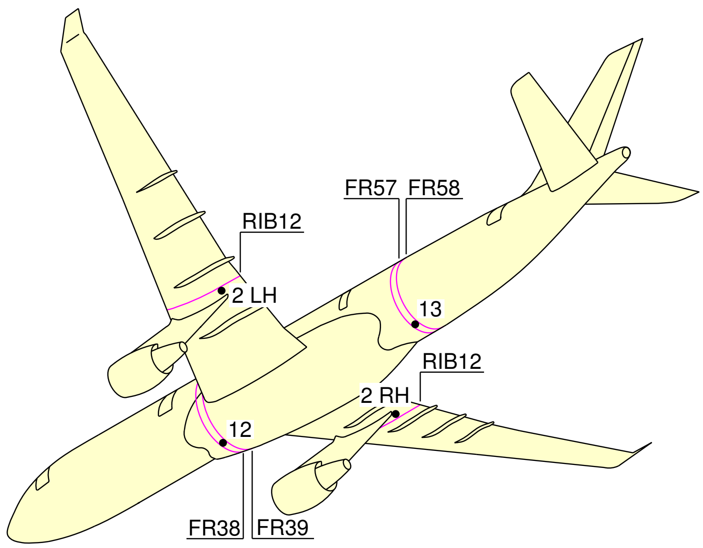
****ON A/C A330-200F**

2. Quick Leveling
   There are three alternative procedures to level the aircraft:
   - Quick leveling procedure with Air Data/Inertial Reference System (ADIRS)
   - Quick leveling procedure with a spirit level in the Main Deck cargo compartment
   - Quick leveling procedure with a spirit level in the FWD cargo compartment.

****ON A/C A330-200 A330-200F A330-300**

3. Precision Leveling
   For precise leveling, it is necessary to install sighting rods in the receptacles located under the fuselage (points 12 and 13 for longitudinal leveling) and under the wings (points 2LH and 2RH for lateral leveling) and use a sighting tube. With the aircraft on jacks, adjust the jacks until the reference marks on the sighting rods are aligned in the sighting plane (aircraft level).
4. Symmetry and Alignment Check
   Possible deformation of the aircraft is measured by photogrammetry.

**ON A/C A330-200



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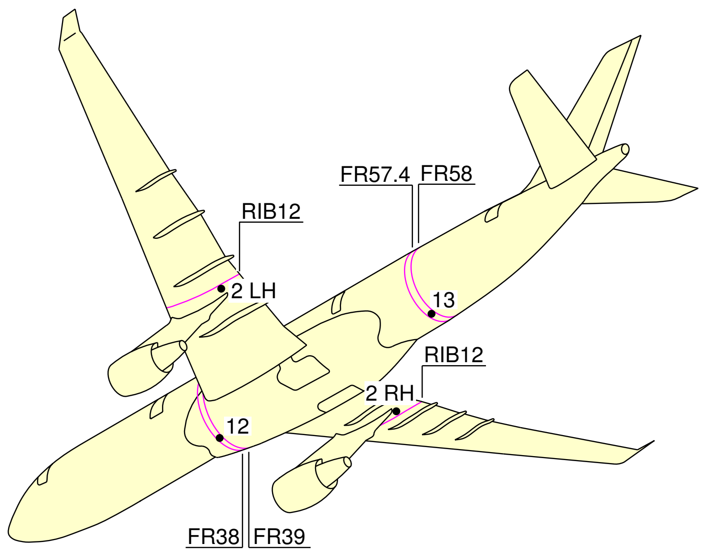
Location of Leveling Points
FIGURE-2-13-0-991-001-A01

**ON A/C A330-300



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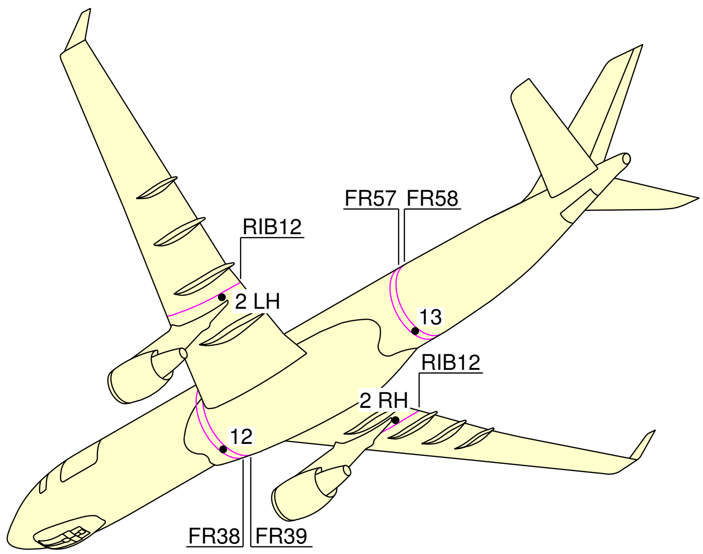
Location of Leveling Points
FIGURE-2-13-0-991-002-A01

**ON A/C A330-200F



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Location of Leveling Points
FIGURE-2-13-0-991-003-A01

2-14-0 Jacking for Maintenance

****ON A/C A330-200 A330-200F A330-300**

Jacking for Maintenance

****ON A/C A330-200**

1. Aircraft Jacking Points for Maintenance

   A. General

      (1) The A330-200 can be jacked:
      - At not more than 152 000 kg (335 103 lb)
      - Within the limits of the permissible wind speed when the aircraft is jacked outside a closed environment.

   B. Primary Jacking Points

      (1) The aircraft is provided with three primary jacking points:
      - One located under the forward fuselage (after FR10A)
      - Two located under the wings (one under each wing), at the intersection of RIB10 and the rear of the spar-datum.

      (2) Three jack adapters (ground equipment) are used as intermediary parts between the aircraft jacking points and the jacks:
      - One male spherical jack adapter at the forward fuselage
      - Two female spherical jack pad adapters at the wings (one at each wing).

   C. Auxiliary Jacking Point (Safety Stay)

      (1) When the aircraft is on jacks, a safety stay is placed under the fuselage at FR87 to prevent tail tipping caused by accidental displacement of the aircraft center of gravity.

      (2) The safety point must not be used for lifting the aircraft.

      (3) One male spherical stay adapter (ground equipment) is used as an intermediary part between the aircraft safety point and the stay.

****ON A/C A330-300**

2. Aircraft Jacking Points for Maintenance

   A. General

      (1) The A330-300 can be jacked:
      - At not more than 152 000 kg (335 103 lb)
      - Within the limits of the permissible wind speed when the aircraft is jacked outside a closed environment.

   B. Primary Jacking Points

      (1) The aircraft is provided with three primary jacking points:
      - One located under the forward fuselage (after FR10A)

- Two located under the wings (one under each wing), at the intersection of RIB10 and the rear of the spar-datum.

(2) Three jack adapters (ground equipment) are used as intermediary parts between the aircraft jacking points and the jacks:
- One male spherical jack adapter at the forward fuselage
- Two female spherical jack pad adapters at the wings (one at each wing).

C. Auxiliary Jacking Point (Safety Stay)

(1) When the aircraft is on jacks, a safety stay is placed under the fuselage at FR85 to prevent tail tipping caused by accidental displacement of the aircraft center of gravity.

(2) The safety point must not be used for lifting the aircraft.

(3) One male spherical stay adapter (ground equipment) is used as an intermediary part between the aircraft safety point and the stay.

****ON A/C A330-200F**

3. Aircraft Jacking Points for Maintenance

A. General

(1) The A330-200F can be jacked:
- At not more than 136 000 kg (299 829 lb)
- Within the limits of the permissible wind speed when the aircraft is jacked outside a closed environment.

B. Primary Jacking Points

(1) The aircraft is provided with three primary jacking points:
- One located under the forward fuselage (at FR10A), covered by nose fairing panel 125AL.
- Two located under the wings (one under each wing), at the intersection of RIB10 and the rear of the spar-datum.

(2) Three jack adapters (ground equipment) are used as intermediary parts between the aircraft jacking points and the jacks:
- One male spherical jack adapter at the forward fuselage
- Two female spherical jack pad adapters at the wings (one at each wing).

C. Auxiliary Jacking Point (Safety Stay)

(1) When the aircraft is on jacks, a safety stay is placed under the fuselage at FR87 to prevent tail tipping caused by accidental displacement of the aircraft center of gravity.

(2) The safety point must not be used for lifting the aircraft.

(3) One male spherical stay adapter (installed on the aircraft) is used as an intermediary part between the aircraft safety point and the stay.

****ON A/C A330-200 A330-300**

4. Jacks and Safety Stay

A. Jack Design

(1) The maximum eligible loads given in the table (Ref. Fig. Jacking Point Location) are the maximum loads applicable on jack fittings.

(2) In fully retracted position (jack stroke at minimum), the height of the jack is such that the jack may be placed beneath the aircraft under the most adverse conditions, namely, tires deflated and shock absorbers depressurized, with sufficient clearance between the aircraft jacking point and the jack upper end.

(3) The lifting jack stroke enables the aircraft to be jacked up so that the Fuselage Datum Line (FDL) may be positioned up to 7.2 m (23.62 ft) from the ground to allow all required maintenance procedures and in particular, the removal/installation of the landing-gear shock absorbers.

B. Safety Stay

The stay stroke enables the aircraft tail to be supported up to the Fuselage Datum Line (FDL) positioned 7.2 m (23.62 ft) from the ground.

****ON A/C A330-200F**

5. Jacks and Safety Stay

A. Jack Design

(1) The maximum eligible loads given in the table (Ref. Fig. Jacking Point Location) are the maximum loads applicable on jack fittings.

(2) In fully retracted position (jack stroke at minimum), the height of the jack is such that the jack may be placed beneath the aircraft under the most adverse conditions, namely, tires deflated and shock absorbers depressurized, with sufficient clearance between the aircraft jacking point and the jack upper end.

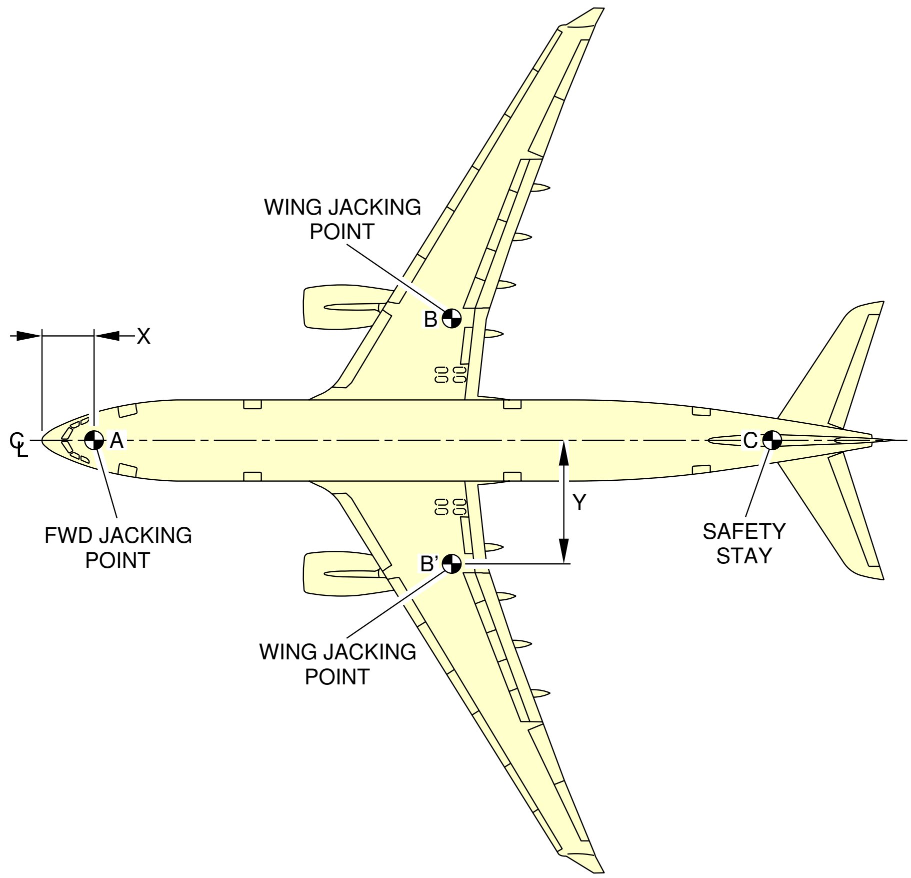
(3) The lifting jack stroke enables the aircraft to be jacked up so that the Fuselage Datum line (FDL) may be positioned up to 7.2 m (23.62 ft) from the ground to allow all required maintenance procedures and in particular, the removal/installation of the landing-gear shock absorbers.

(4) At the forward jacking point, specific jack dimensions are necessary (Ref. Fig. Specific Jack-Nose Dimensions):
- Maximum jack tube diameter 320 mm (12.6 in)
- Maximum threaded rod diameter 160 mm (6.3 in)
- Minimum threaded rod length 250 mm (9.8 in).

B. Safety Stay

The stay stroke enables the aircraft tail to be supported up to the Fuselage Datum Line (FDL) positioned 7.2 m (23.62 ft) from the ground.

**ON A/C A330-200



		X		Y		MAXIMUM LOAD ELIGIBLE
		m	ft	m	ft	daN
FORWARD FUSELAGE JACKING POINT	A	3.58	11.75	0	0	12 300
WING JACKING POINT	B	28.35	93.01	8.51	27.92	81 084
	B'	28.35	93.01	–8.51	–27.92	81 084
SAFETY STAY	C	51.54	169.09	0	0	4 500

NOTE:
SAFETY STAY IS NOT USED FOR JACKING.

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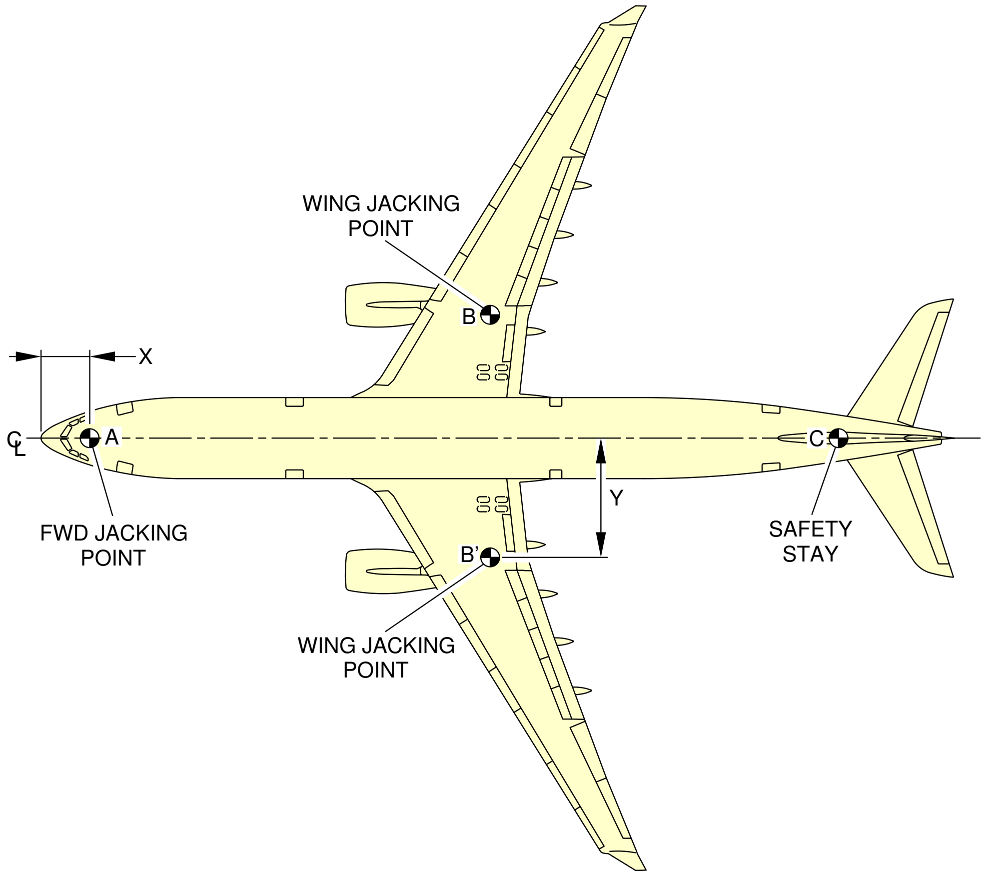
Jacking for Maintenance
Jacking Points Location
FIGURE-2-14-0-991-001-A01

**ON A/C A330-300



	X m	X ft	Y m	Y ft	MAXIMUM LOAD ELIGIBLE daN
FORWARD FUSELAGE JACKING POINT A	3.58	11.75	0	0	12 300
WING JACKING POINT B	31.55	103.51	8.51	27.92	81 084
WING JACKING POINT B'	31.55	103.51	–8.51	–27.92	81 084
SAFETY STAY C	55.81	183.1	0	0	4 500

NOTE:
SAFETY STAY IS NOT USED FOR JACKING.

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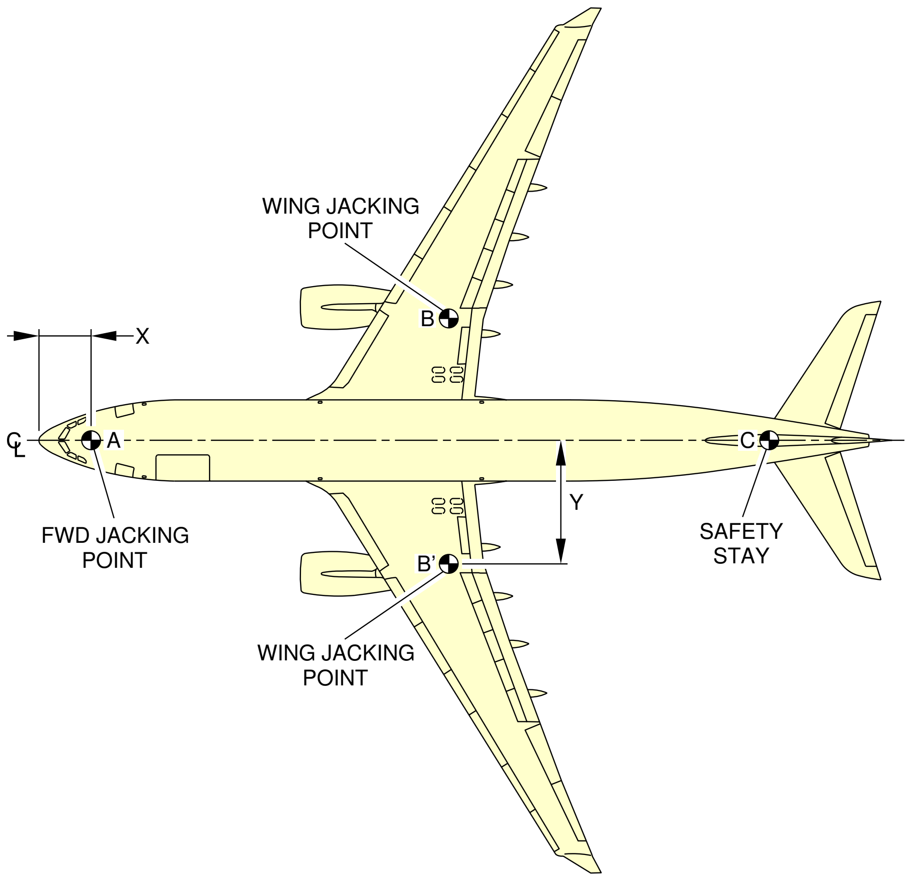
Jacking for Maintenance
Jacking Points Location
FIGURE-2-14-0-991-001-B01

**ON A/C A330-200F



		X		Y		MAXIMUM LOAD ELIGIBLE
		m	ft	m	ft	daN
FORWARD FUSELAGE JACKING POINT	A	3.57	11.71	0	0	11 246
WING JACKING POINT	B	28.35	93.01	8.51	27.92	65 389
	B'	28.35	93.01	–8.51	–27.92	65 389
SAFETY STAY	C	51.54	169.09	0	0	4 500

NOTE:
SAFETY STAY IS NOT USED FOR JACKING.

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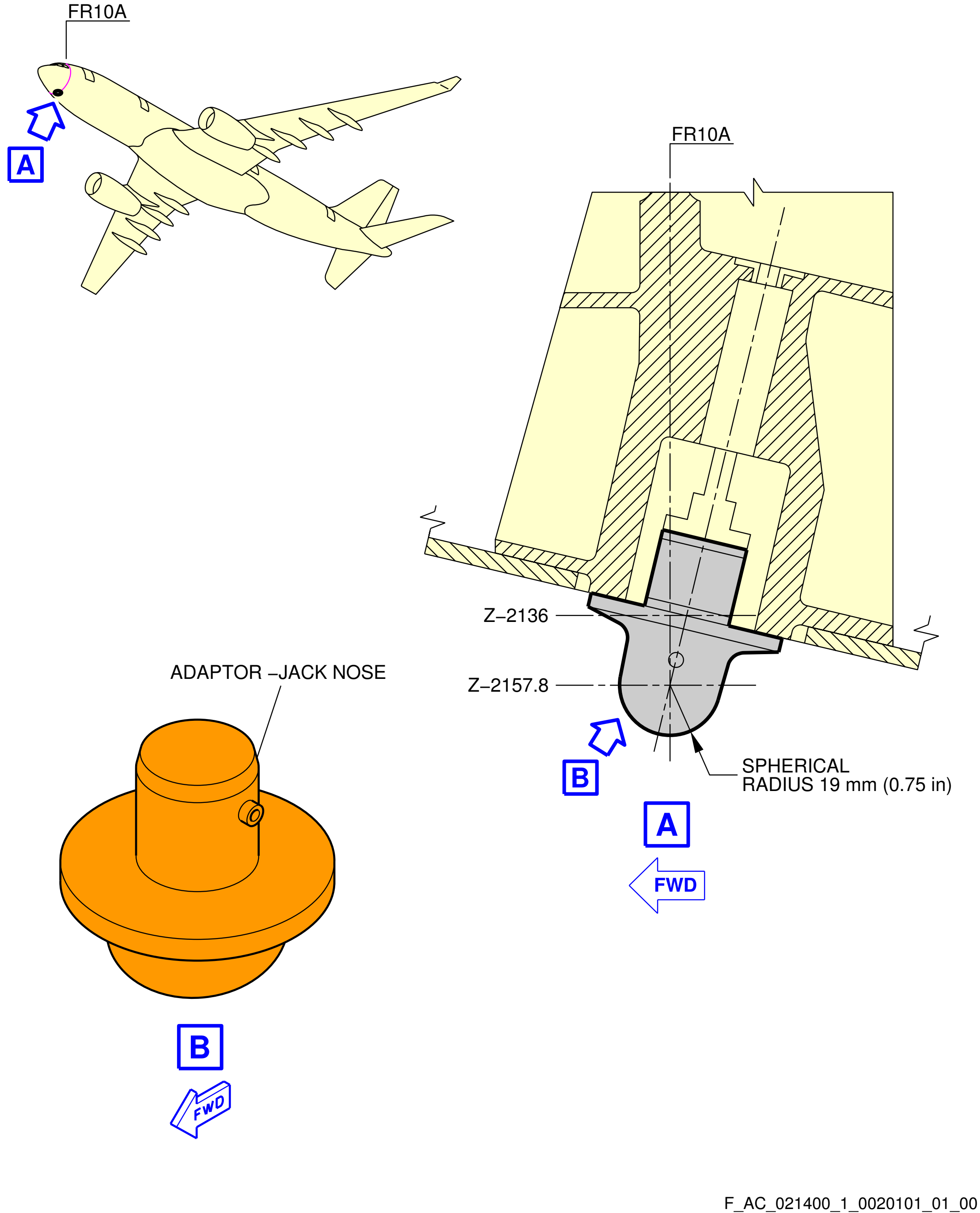
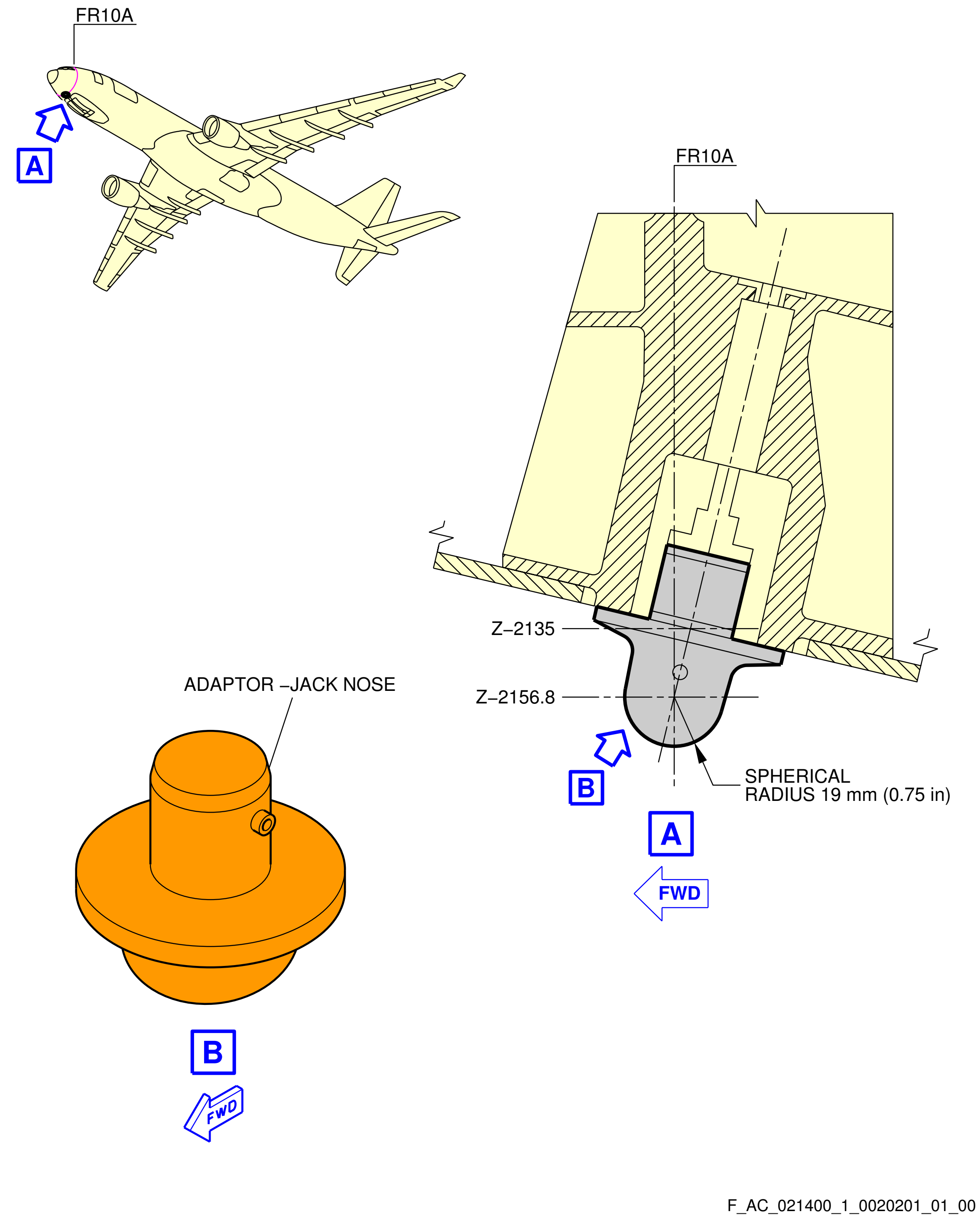
Jacking for Maintenance
Jacking Points Location
FIGURE-2-14-0-991-001-C01

**ON A/C A330-200 A330-300



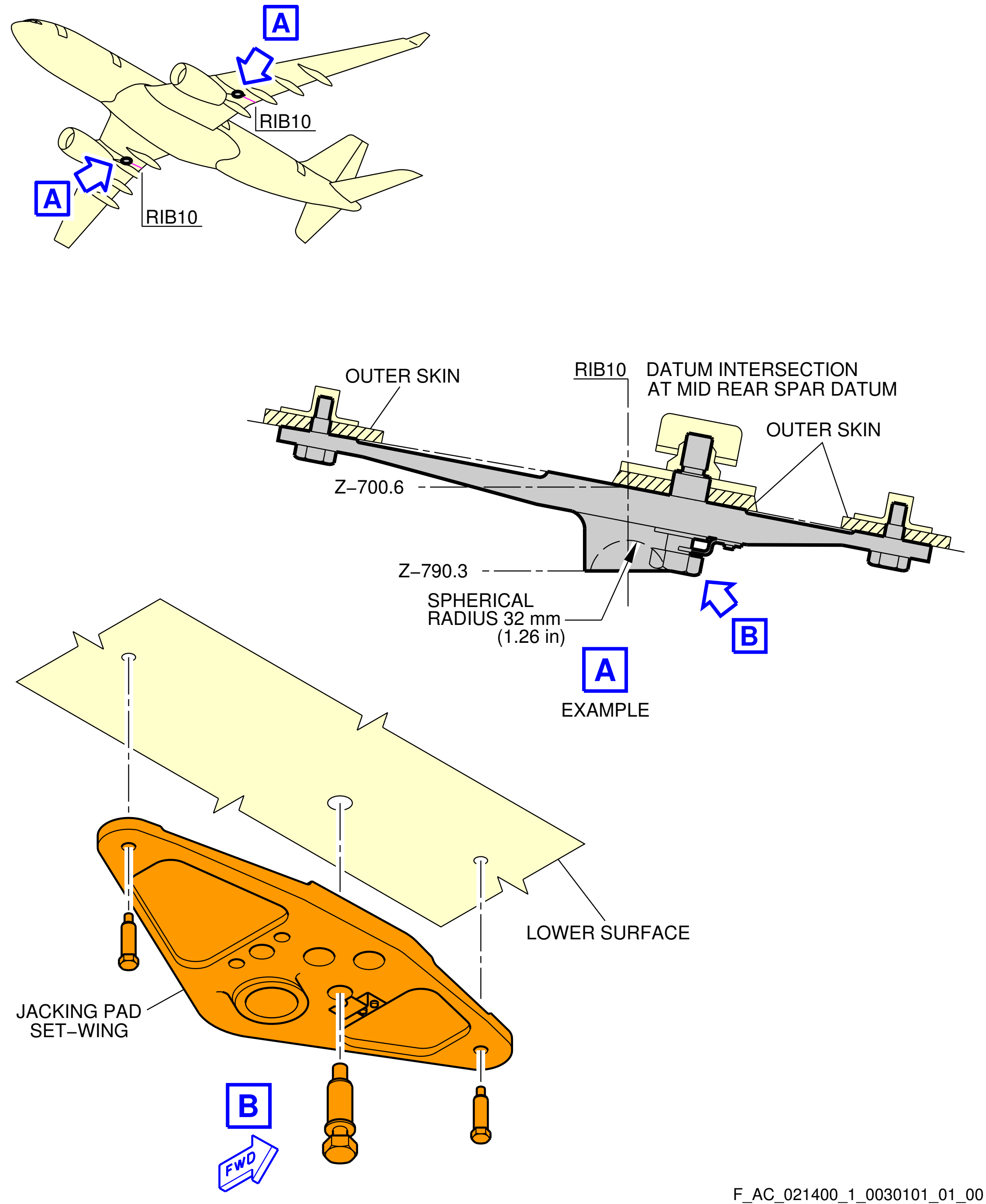
Jacking for Maintenance
Forward Jacking Point
FIGURE-2-14-0-991-002-A01

**ON A/C A330-200F



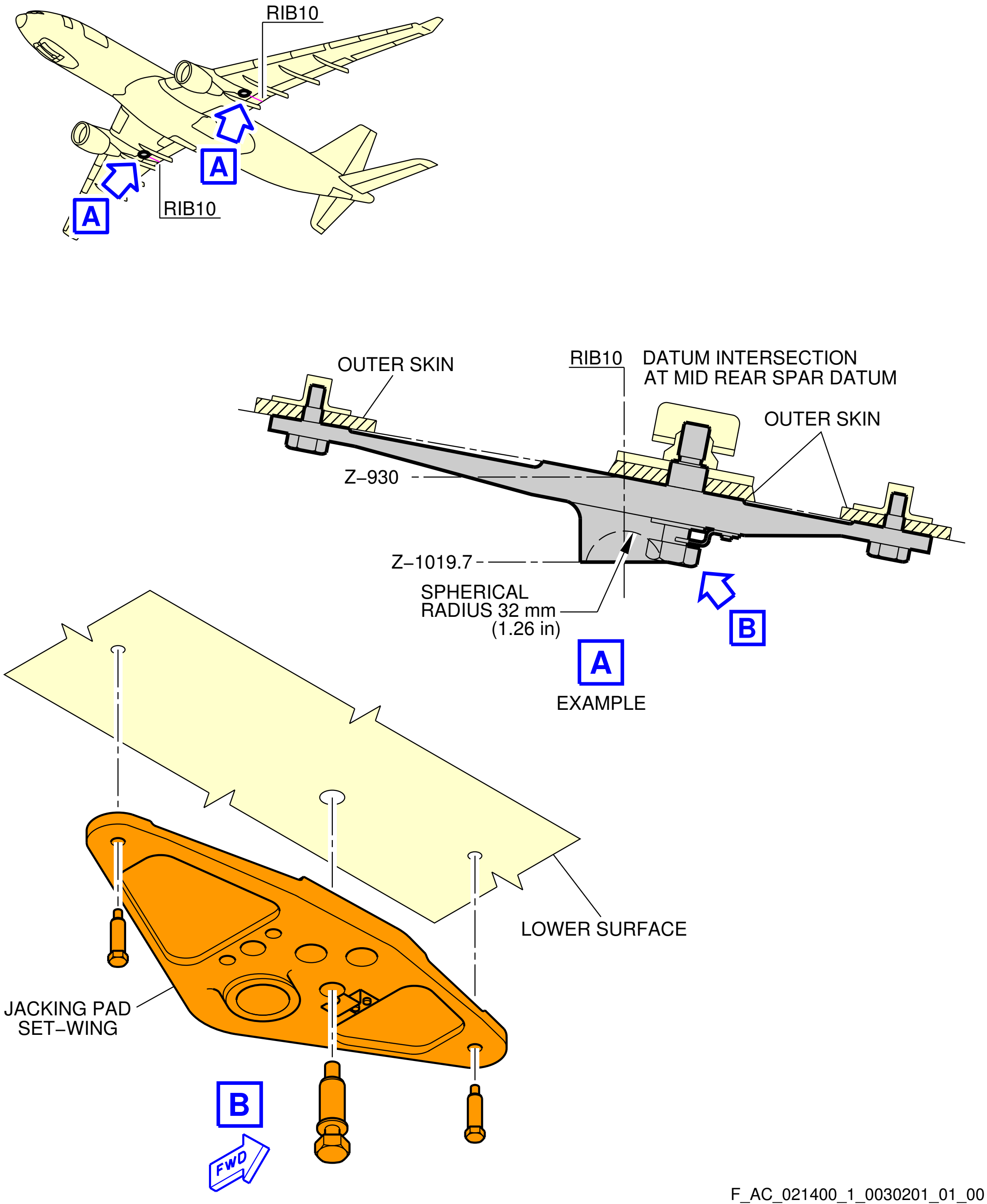
Jacking for Maintenance
Forward Jacking Point
FIGURE-2-14-0-991-002-B01

**ON A/C A330-200 A330-300



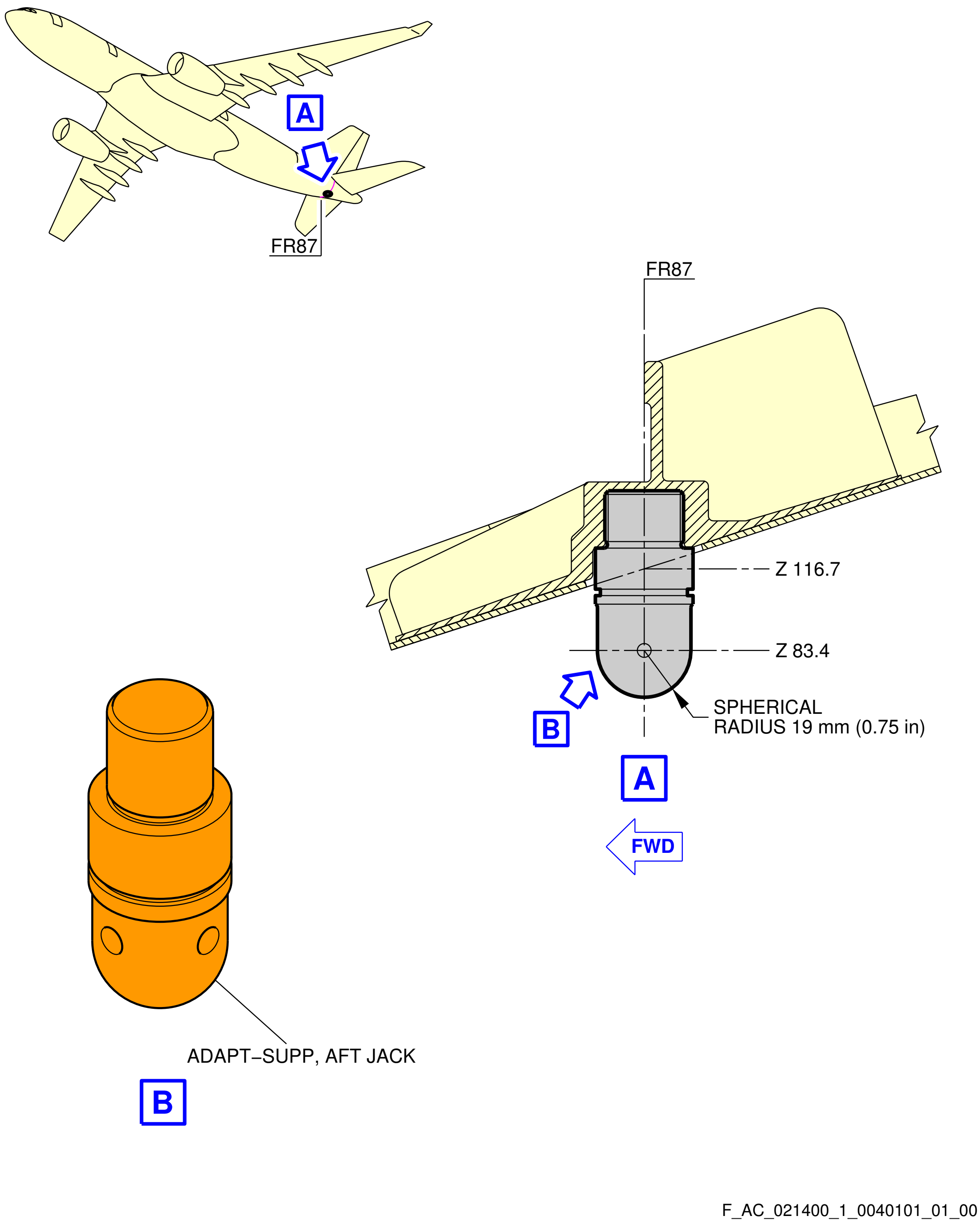
Jacking for Maintenance
Wing Jacking Points
FIGURE-2-14-0-991-003-A01

**ON A/C A330-200F



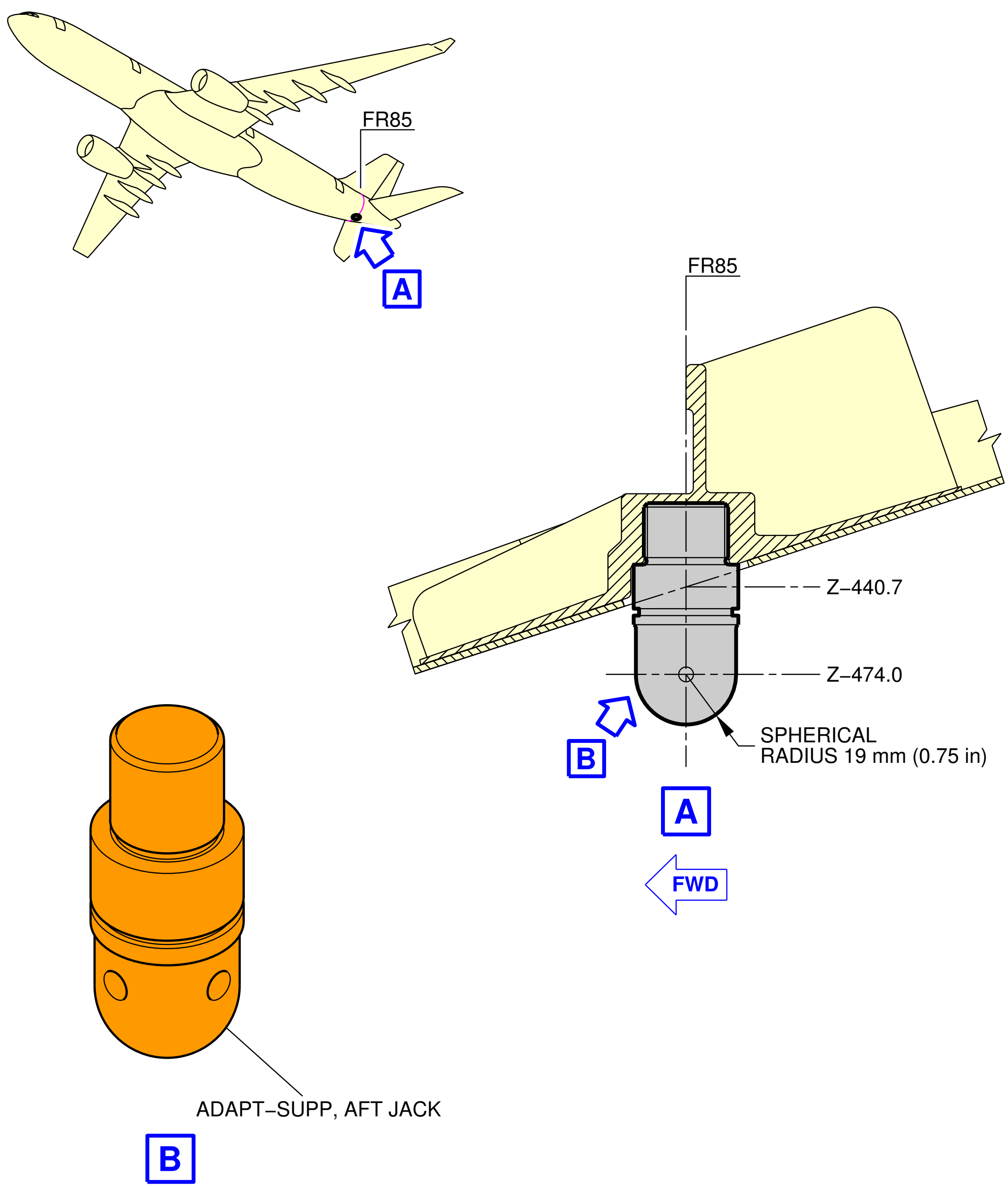
Jacking for Maintenance
Wing Jacking Points
FIGURE-2-14-0-991-003-B01

**ON A/C A330-200



Jacking for Maintenance
Auxiliary Jacking Point - Safety Stay
FIGURE-2-14-0-991-004-A01

**ON A/C A330-300



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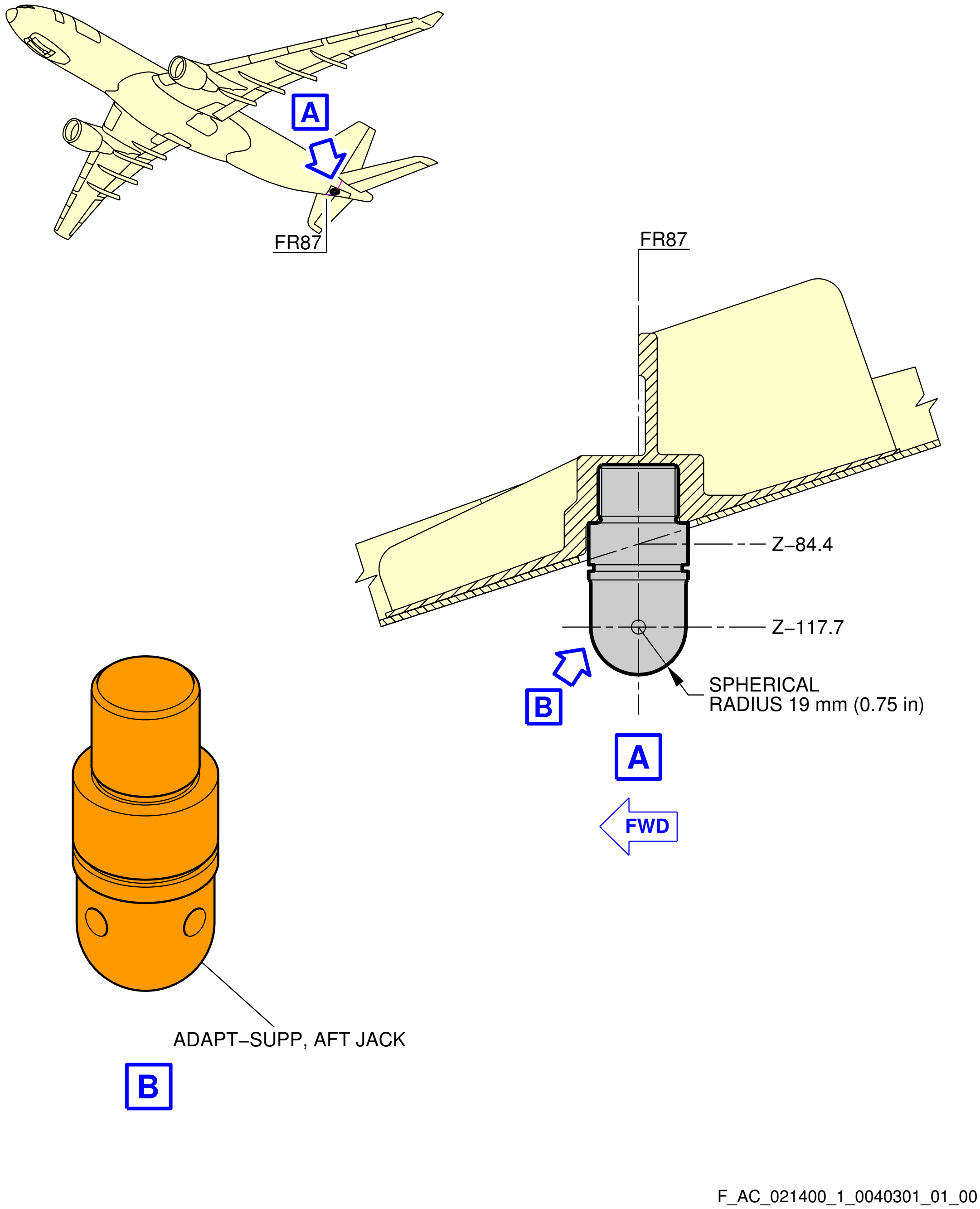
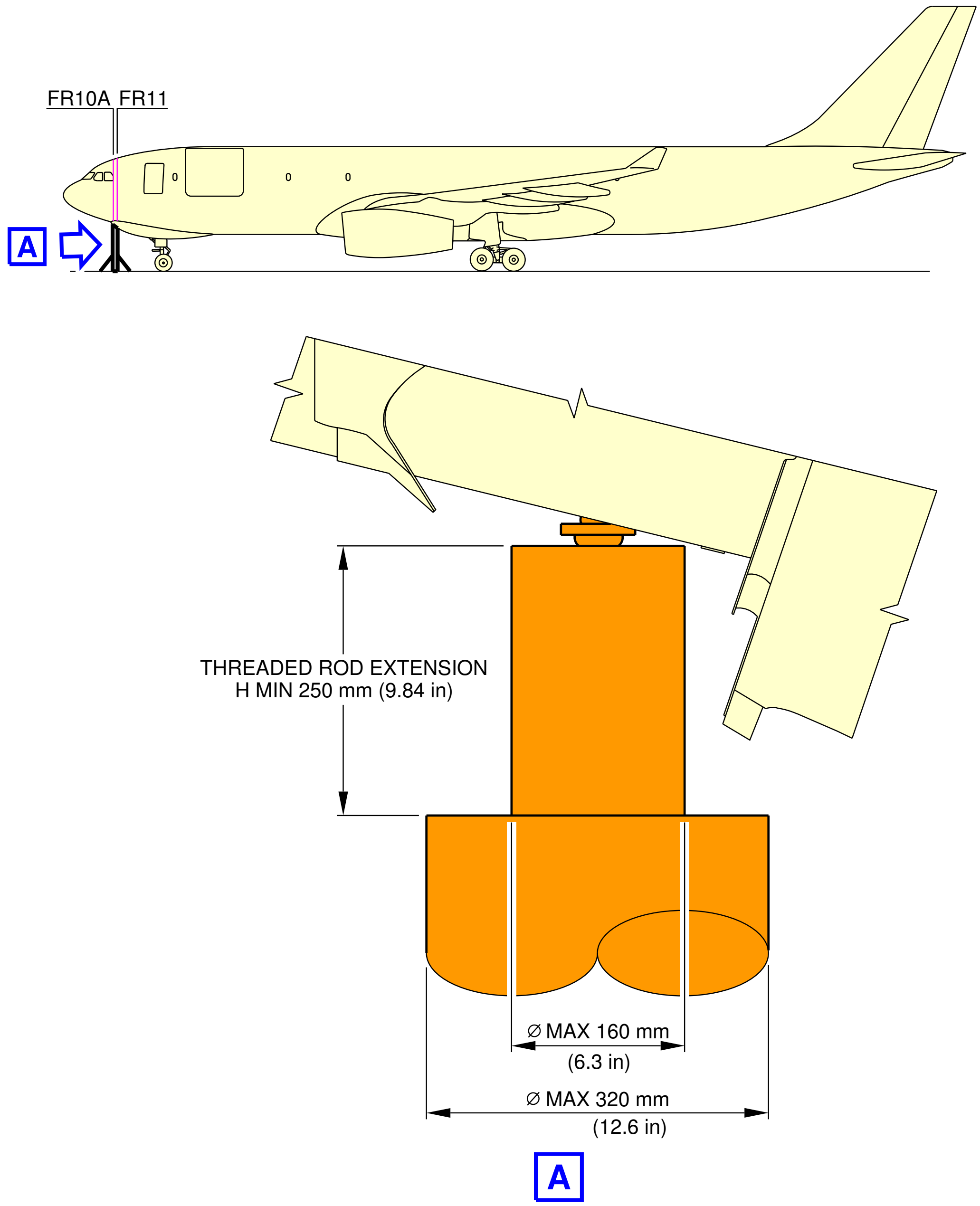
Jacking for Maintenance
Auxiliary Jacking Point - Safety Stay
FIGURE-2-14-0-991-004-B01

**ON A/C A330-200F



Jacking for Maintenance
Auxiliary Jacking Point - Safety Stay
FIGURE-2-14-0-991-004-C01

**ON A/C A330-200F



CAUTION:
MAKE SURE THAT THE JACK YOU USE IS APPLICABLE FOR THIS AIRCRAFT.
IF THE JACK DIMENSIONS ARE NOT IN THE RANGE FOR THIS AIRCRAFT,
DAMAGE TO THE AIRCRAFT STRUCTURE CAN OCCUR.

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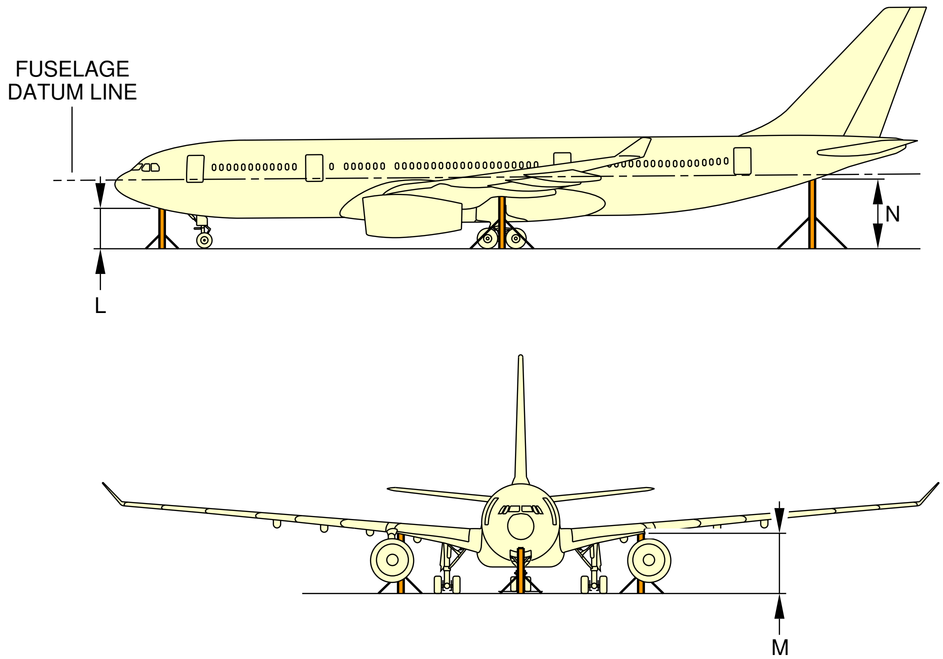
Jacking for Maintenance
Specific Jack-Nose Dimensions
FIGURE-2-14-0-991-022-A01

**ON A/C A330-200



	L	M	N
AIRCRAFT ON WHEELS WITH STANDARD TIRES, MAX. JACK WEIGHT 152 000 kg (335 103 lb)	2.59 m (8.5 ft)	4.46 m (14.63 ft)	5.68 m (18.64 ft)
AIRCRAFT ON WHEELS WITH STANDARD TIRES, OEW 124 500 kg (274 475 lb)	2.61 m (8.56 ft)	4.51 m (14.8 ft)	5.85 m (19.19 ft)
AIRCRAFT ON WHEELS, SHOCK ABSORBERS DEFLATED AND FLAT TIRES	2.26 m (7.4 ft)	4.1 m (13.45 ft)	5.07 m (16.63 ft)
AIRCRAFT ON JACKS, FUSELAGE DATUM LINE PARALLEL TO GROUND AT 6.5 m (21.33 ft) FOR LANDING GEARS EXTENSION/RETRACTION	4.37 m (14.34 ft)	5.8 m (19.03 ft)	6.38 m (20.93 ft)
AIRCRAFT ON JACKS, FUSELAGE DATUM LINE PARALLEL TO GROUND AT 7.2 m (23.62 ft) FOR LANDING GEARS REMOVAL/INSTALLATION	5.07 m (16.63 ft)	6.5 m (21.33 ft)	7.08 m (19.19 ft)

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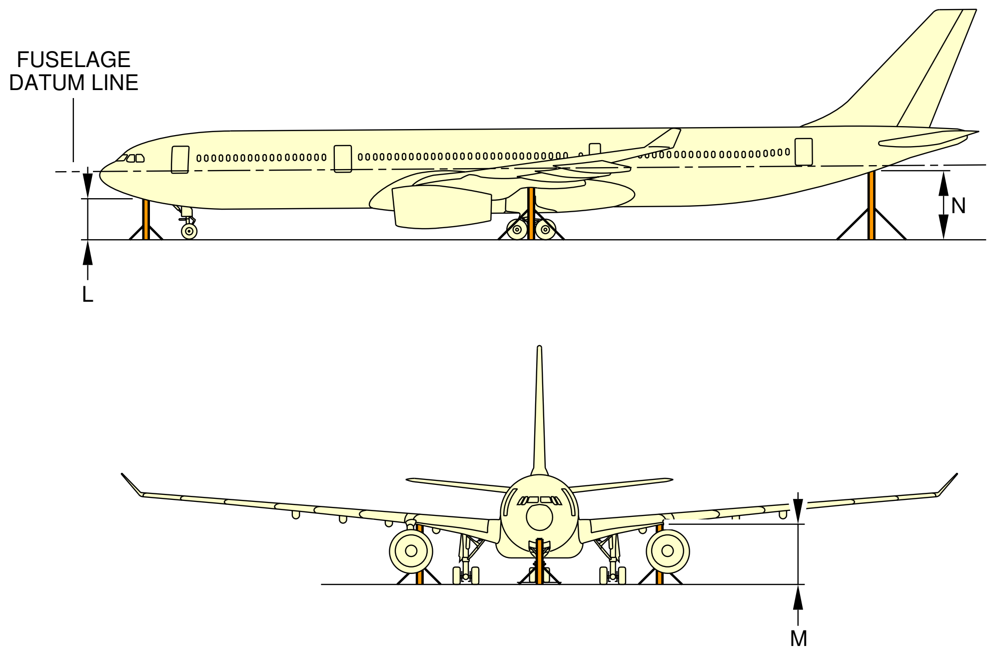
Jacking for Maintenance
Jacking Dimensions
FIGURE-2-14-0-991-005-A01

**ON A/C A330-300



	L	M	N
AIRCRAFT ON WHEELS WITH STANDARD TIRES, MAX. JACK WEIGHT 152 000 kg (335 103 lb)	2.52 m (8.27 ft)	4.46 m (14.63 ft)	5.39 m (17.68 ft)
AIRCRAFT ON WHEELS WITH STANDARD TIRES, OEW 127 000 kg (279 986 lb)	2.5 m (8.20 ft)	4.51 m (14.8 ft)	5.57 m (18.27 ft)
AIRCRAFT ON WHEELS, SHOCK ABSORBERS DEFLATED AND FLAT TIRES	2.2 m (7.22 ft)	4.1 m (13.45 ft)	4.77 m (15.65 ft)
AIRCRAFT ON JACKS, FUSELAGE DATUM LINE PARALLEL TO GROUND AT 6.5 m (21.33 ft) FOR LANDING GEARS EXTENSION/RETRACTION	4.37 m (14.34 ft)	5.8 m (19.03 ft)	6.06 m (19.88 ft)
AIRCRAFT ON JACKS, FUSELAGE DATUM LINE PARALLEL TO GROUND AT 7.2 m (23.62 ft) FOR LANDING GEARS REMOVAL/INSTALLATION	5.07 m (16.63 ft)	6.5 m (21.33 ft)	6.76 m (22.18 ft)

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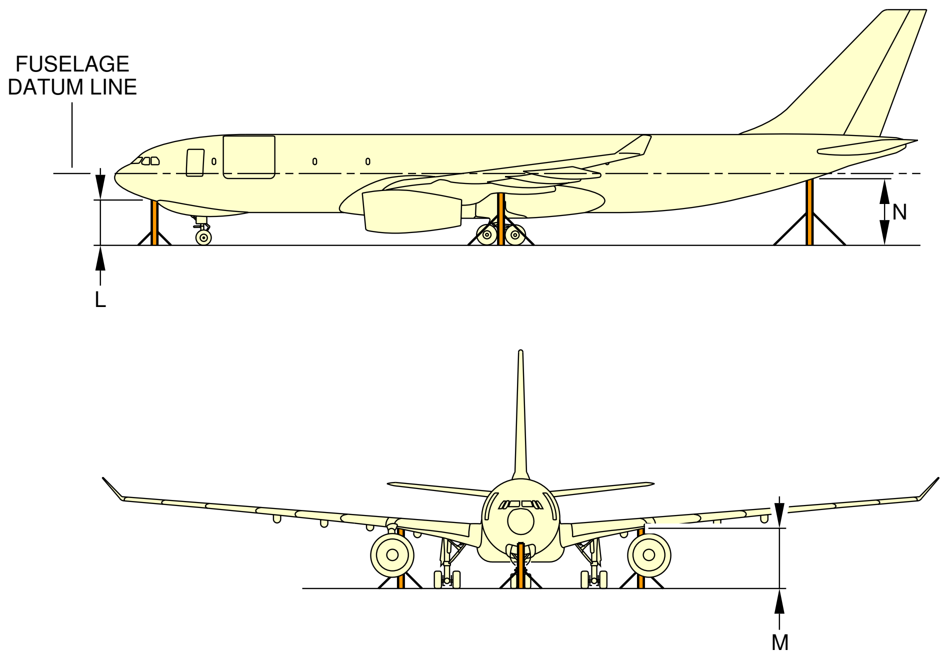
Jacking for Maintenance
Jacking Dimensions
FIGURE-2-14-0-991-005-B01

**ON A/C A330-200F



	L	M	N
AIRCRAFT ON WHEELS WITH STANDARD TIRES, MAX. JACK WEIGHT 136 000 kg (299 829 lb)	3.04 m (9.97 ft)	4.42 m (14.5 ft)	5.39 m (17.68 ft)
AIRCRAFT ON WHEELS WITH STANDARD TIRES, OEW 109 000 kg (240 304 lb)	3.05 m (10.01 ft)	4.53 m (14.86 ft)	5.58 m (18.31 ft)
AIRCRAFT ON WHEELS, SHOCK ABSORBERS DEFLATED AND FLAT TIRES	3.07 m (10.07 ft)	4.54 m (14.9 ft)	4.75 m (15.58 ft)
AIRCRAFT ON JACKS, FUSELAGE DATUM LINE PARALLEL TO GROUND AT 6.52 m (21.39 ft) FOR LANDING GEARS EXTENSION/RETRACTION	4.37 m (14.34 ft)	5.58 m (18.31 ft)	6.38 m (20.93 ft)
AIRCRAFT ON JACKS, FUSELAGE DATUM LINE PARALLEL TO GROUND AT 7.2 m (23.62 ft) FOR LANDING GEARS REMOVAL/INSTALLATION	5.06 m (16.6 ft)	6.26 m (20.54 ft)	7.06 m (23.16 ft)

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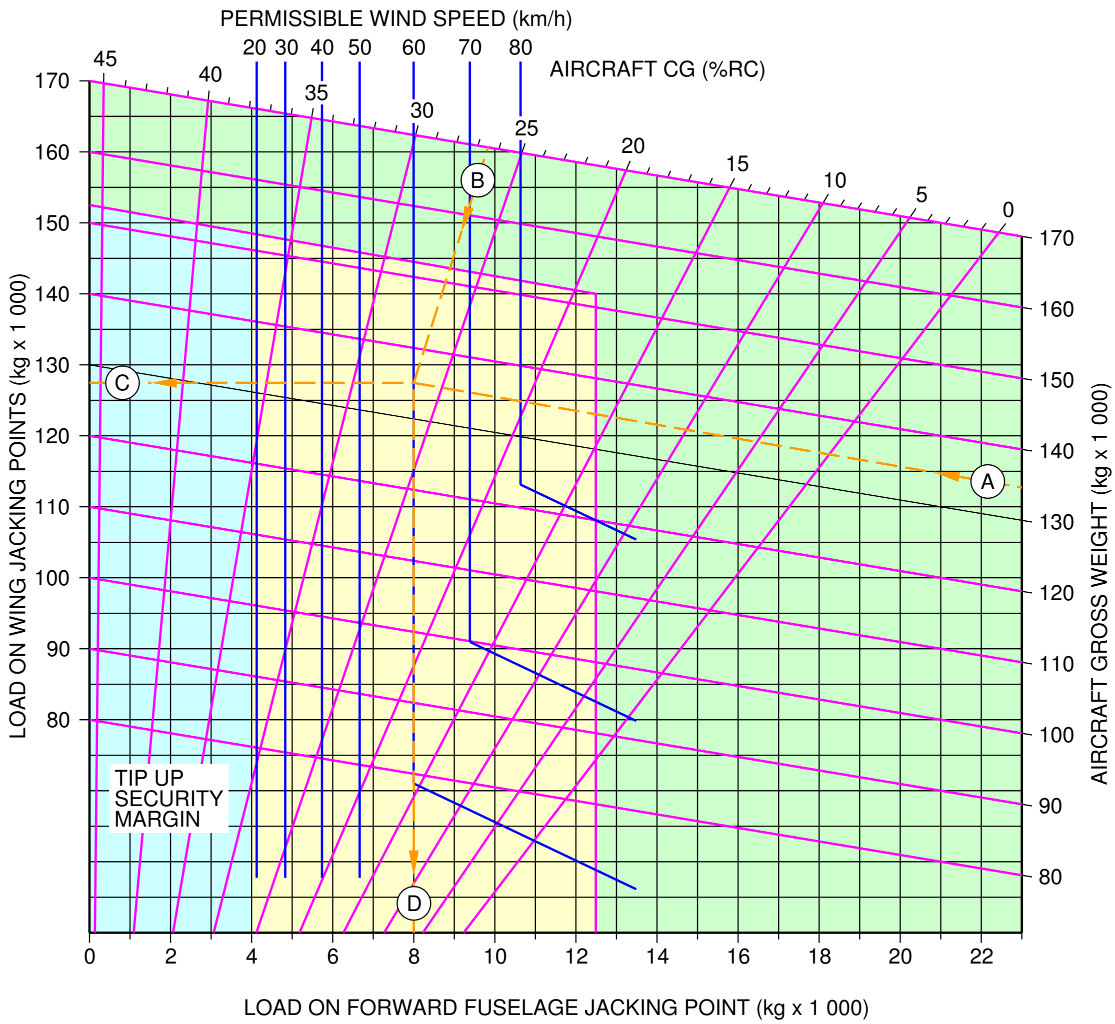
Jacking for Maintenance
Jacking Dimensions
FIGURE-2-14-0-991-005-C01

****ON A/C A330-200 A330-200F**



EXAMPLE:
ASSUME AIRCRAFT WITH A GROSS WEIGHT OF 135 000 kg (A) AND CENTER OF GRAVITY AT 26.5% RC (B). THE REACTION AT THE WING JACKING POINTS IS 127 000 kg (63 500 kg PER SIDE) (C) AND THE REACTION AT THE FORWARD FUSELAGE JACKING POINT IS 8 000 kg (D). IF THE AIRCRAFT MUST BE LIFTED OUTSIDE, THE WIND SPEED MUST NOT BE IN EXCESS OF 60 km/h.

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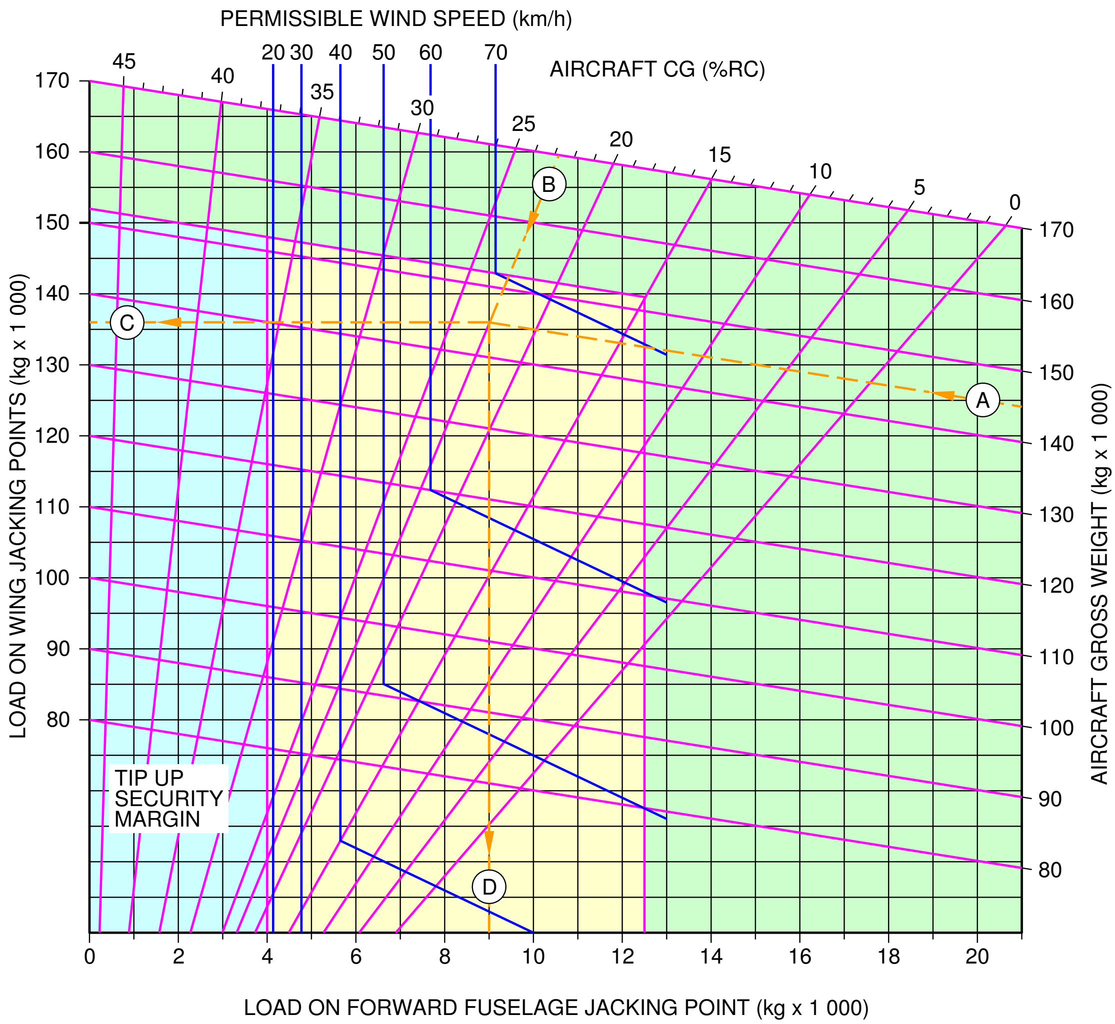
Jacking for Maintenance
Load at the Aircraft Jacking Points
FIGURE-2-14-0-991-006-A01

**ON A/C A330-300



EXAMPLE:
ASSUME AIRCRAFT WITH A GROSS WEIGHT OF 145 000 kg (A) AND CENTER OF GRAVITY AT 22.8% RC (B). THE REACTION AT THE WING JACKING POINTS IS 136 000 kg (68 000 kg PER SIDE) (C) AND THE REACTION AT THE FORWARD FUSELAGE JACKING POINT IS 9 000 kg (D). IF THE AIRCRAFT MUST BE LIFTED OUTSIDE, THE WIND SPEED MUST NOT BE IN EXCESS OF 60 km/h.

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Jacking for Maintenance
Load at the Aircraft Jacking Points
FIGURE-2-14-0-991-006-B01

2-14-1 Jacking for Wheel Change

****ON A/C A330-200 A330-200F A330-300**

Jacking for Wheel Change

1. General
   To replace either the wheel or brake unit assemblies on any of the landing gears, it is necessary to lift the landing gear with a jack.
   The landing gear can be lifted by a pillar jack or with a cantilever jack.
   The possible damage conditions than can be found on the landing-gear wheel units are shown in Figures "MLG Jacking Point Heights" and "NLG Jacking Point Heights".

   NOTE : You can lift the aircraft at the Maximum Take-Off Weight (MTOW).

2. Main Landing Gear (MLG)
   To lift the MLG bogie with jacks, a dome shaped pad (PN MS33559 TYPE IV) is installed below the FWD and AFT ends of each bogie beam. Each pair of wheels and brake units can be replaced on the end of the bogie that is lifted.
   Both FWD and AFT ends of the bogie beam can be lifted together, but the bogie beam must be kept level during the lift to prevent damage.
   The MLG has a pitch trimmer installed. If an MLG has all four tires deflated or shredded, replace the wheel assemblies in this sequence:
   - Replace the wheel assemblies on the AFT axle,
   - Replace the wheel assemblies on the FWD axle.

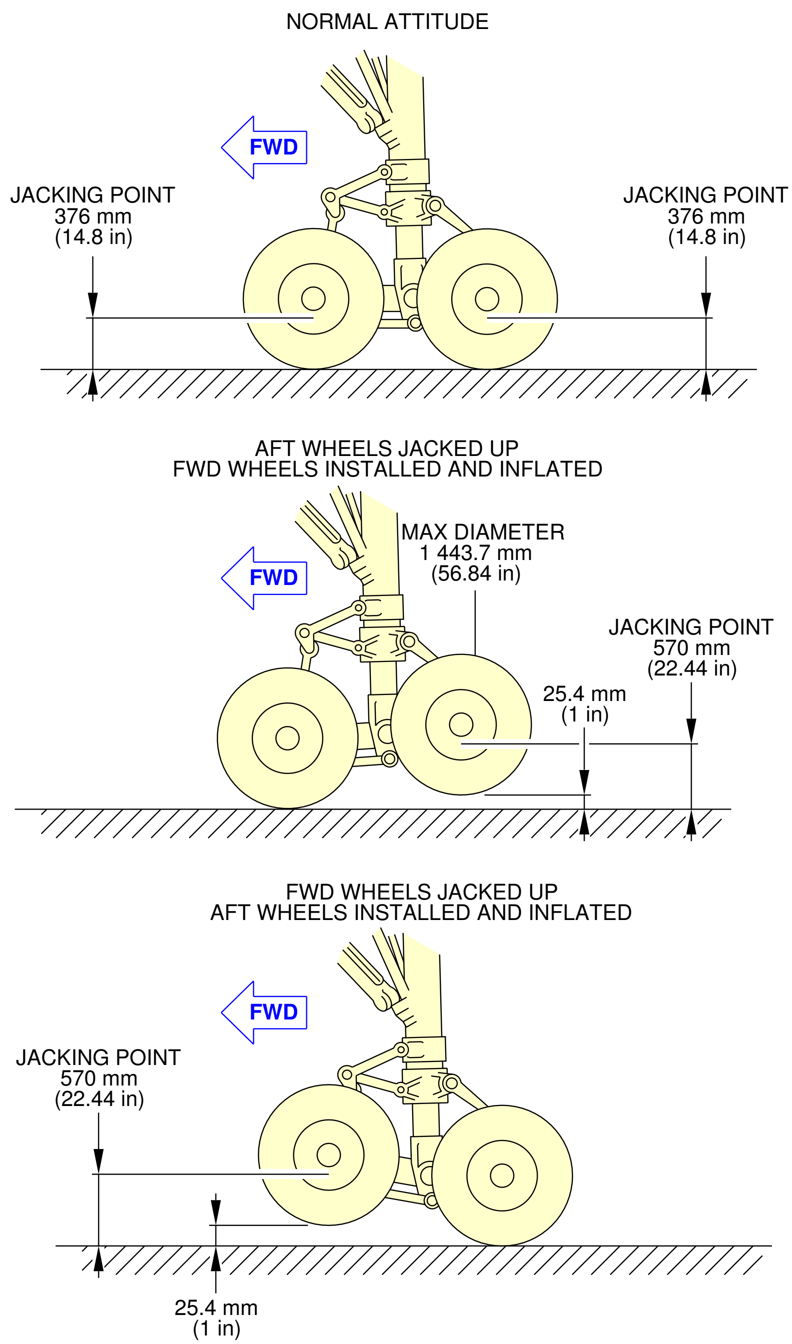
   If the FWD axle is lifted first the pitch trimmer contacts the outstop. Further jacking will cause the whole bogie to be lifted.
   Important dimensions on heights of the MLG when lifted are shown in Figure "MLG Jacking Point Heights".
   The maximum height of the bogie beam when lifted must not exceed 650 mm (25.6 in).
   The reaction loads at each jack position are shown in Figure "MLG Jacking Point Loads".

   NOTE : The load at each jacking position is the load required to give 25.4 mm (1 in) clearance between the ground and the tire.

3. Nose Landing Gear (NLG)
   To lift the NLG axle with a jack, a dome shaped pad (PN MS33559 Type II) is installed between the wheels.
   Important dimensions on heights of the NLG when lifted are shown in Figure "NLG Jacking Point Heights".
   The reaction loads at the jack position are shown in Figure "NLG Jacking Point Loads".

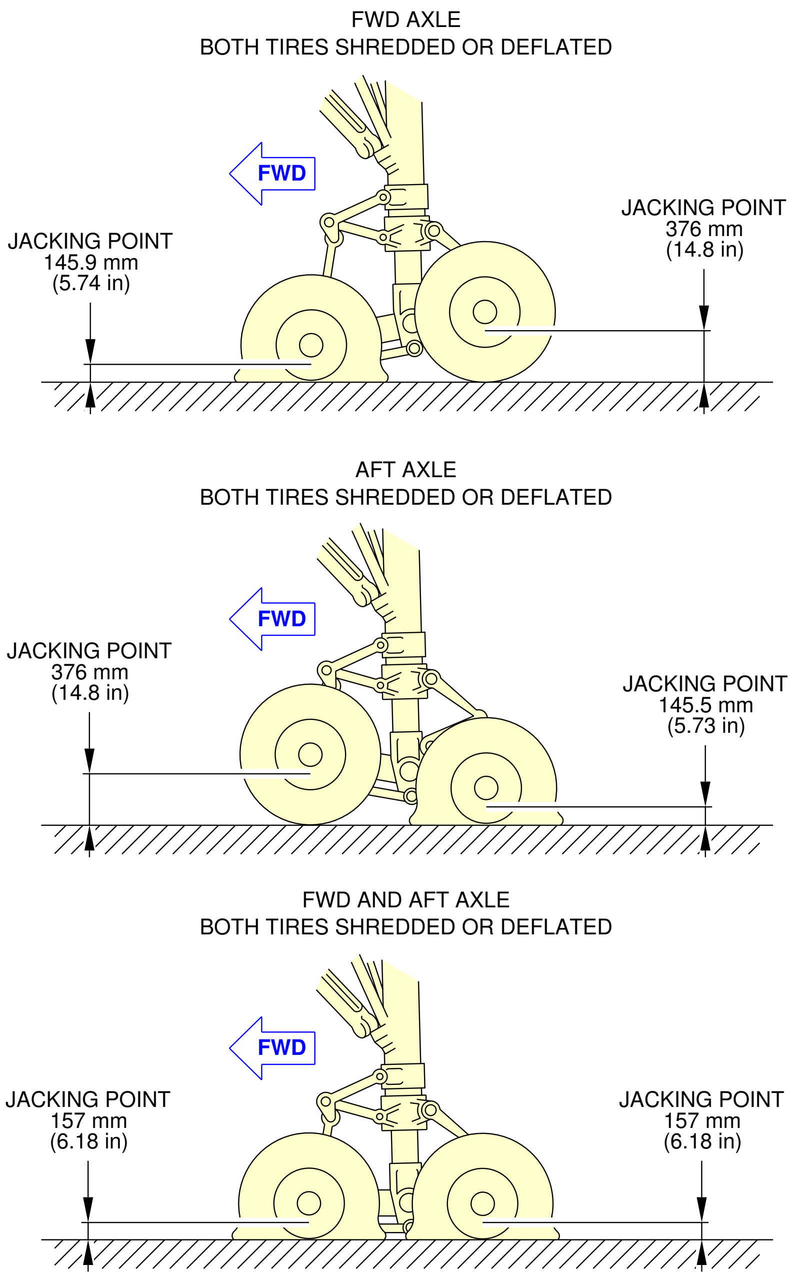
   NOTE : The load at each jacking position is the load required to give 25.4 mm (1 in) clearance between the ground and the tire.

**ON A/C A330-200 A330-200F A330-300



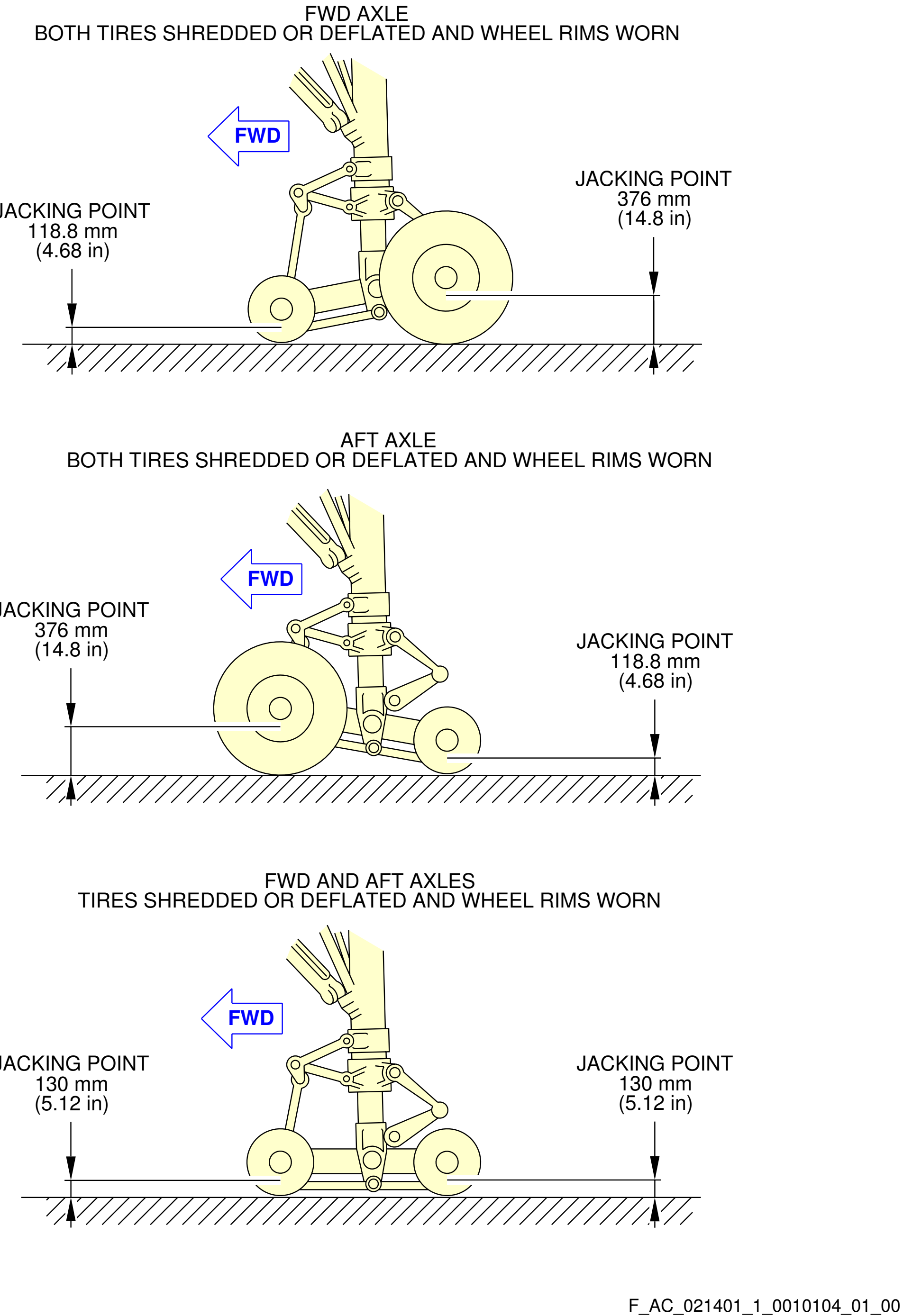
Jacking for Wheel Change
MLG Jacking Point Heights (Sheet 1 of 3)
FIGURE-2-14-1-991-001-A01

**ON A/C A330-200 A330-200F A330-300



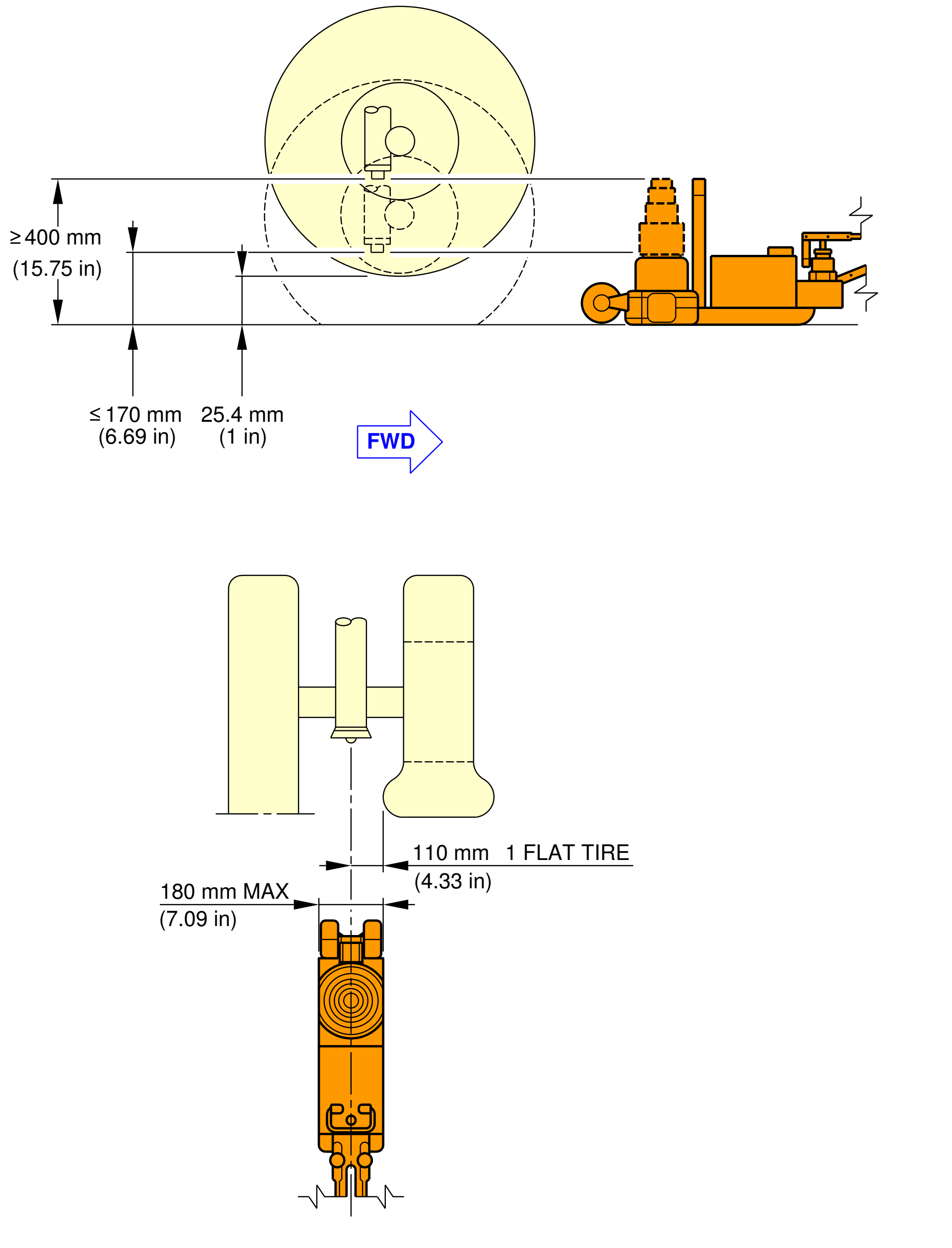
Jacking for Wheel Change
MLG Jacking Point Heights (Sheet 2 of 3)
FIGURE-2-14-1-991-001-A01

**ON A/C A330-200 A330-200F A330-300



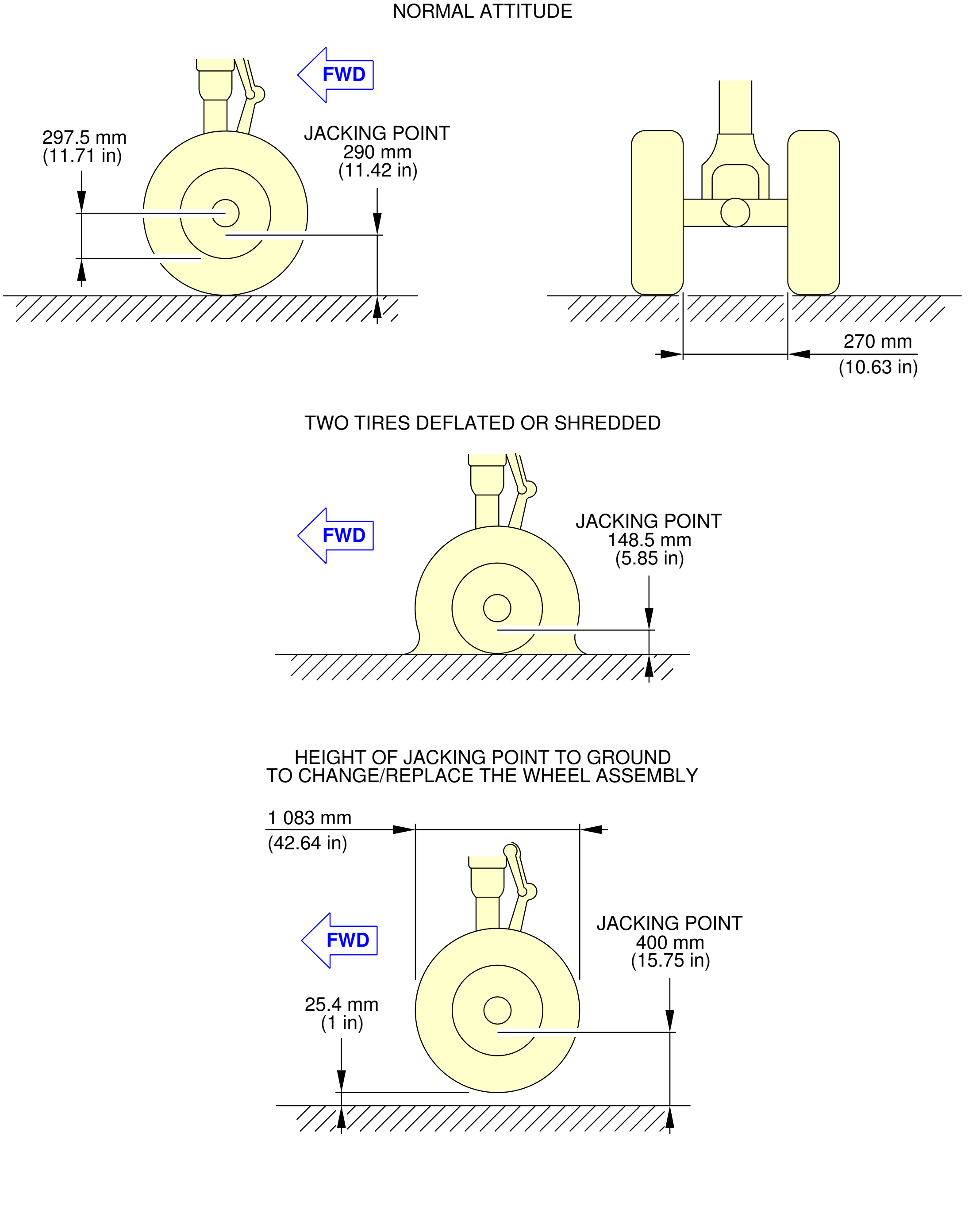
Jacking for Wheel Change
MLG Jacking Point Heights (Sheet 3 of 3)
FIGURE-2-14-1-991-001-A01

**ON A/C A330-200 A330-200F A330-300



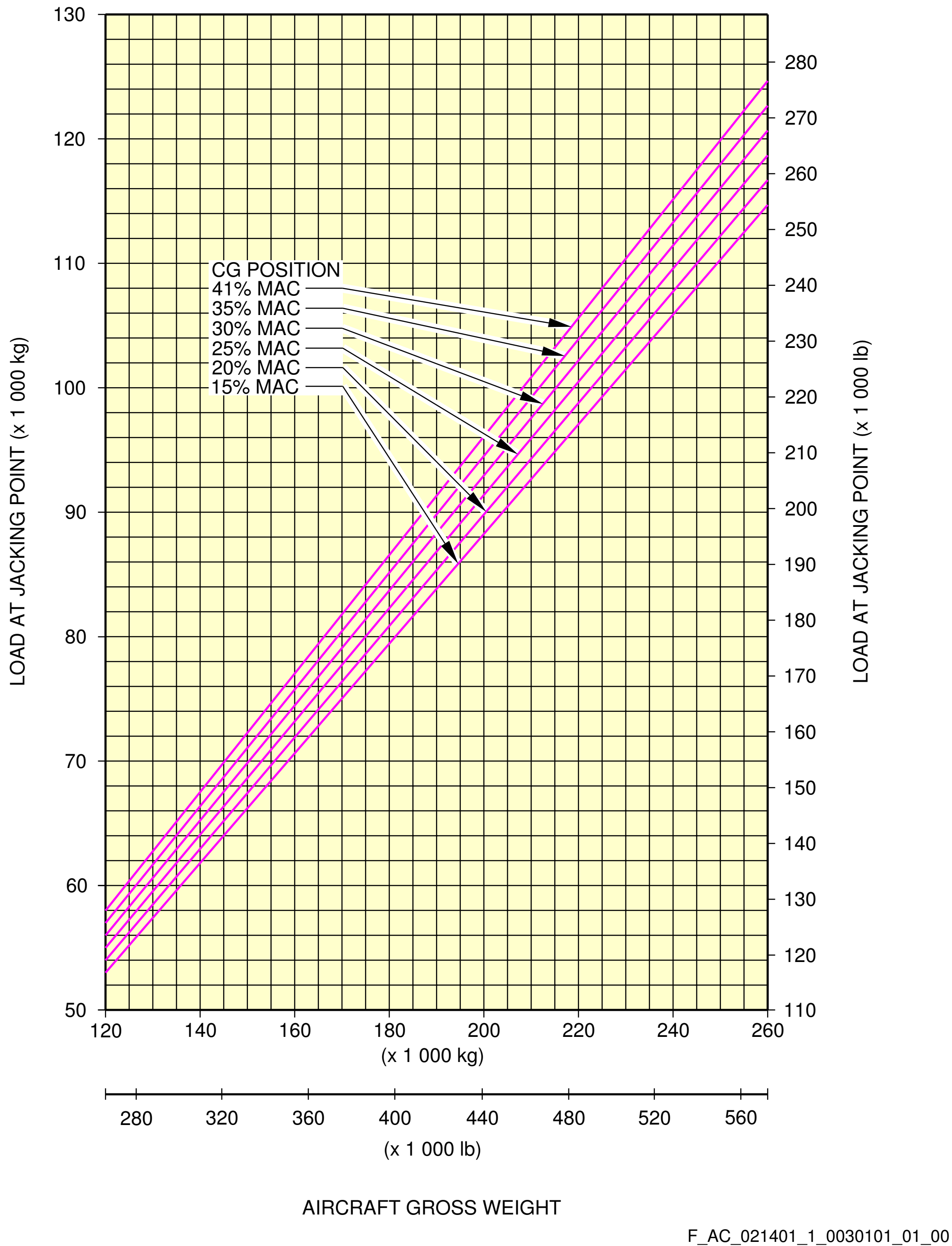
Jacking for Wheel Change
Jacking of the NLG (Sheet 1 of 2)
FIGURE-2-14-1-991-002-A01

**ON A/C A330-200 A330-200F A330-300



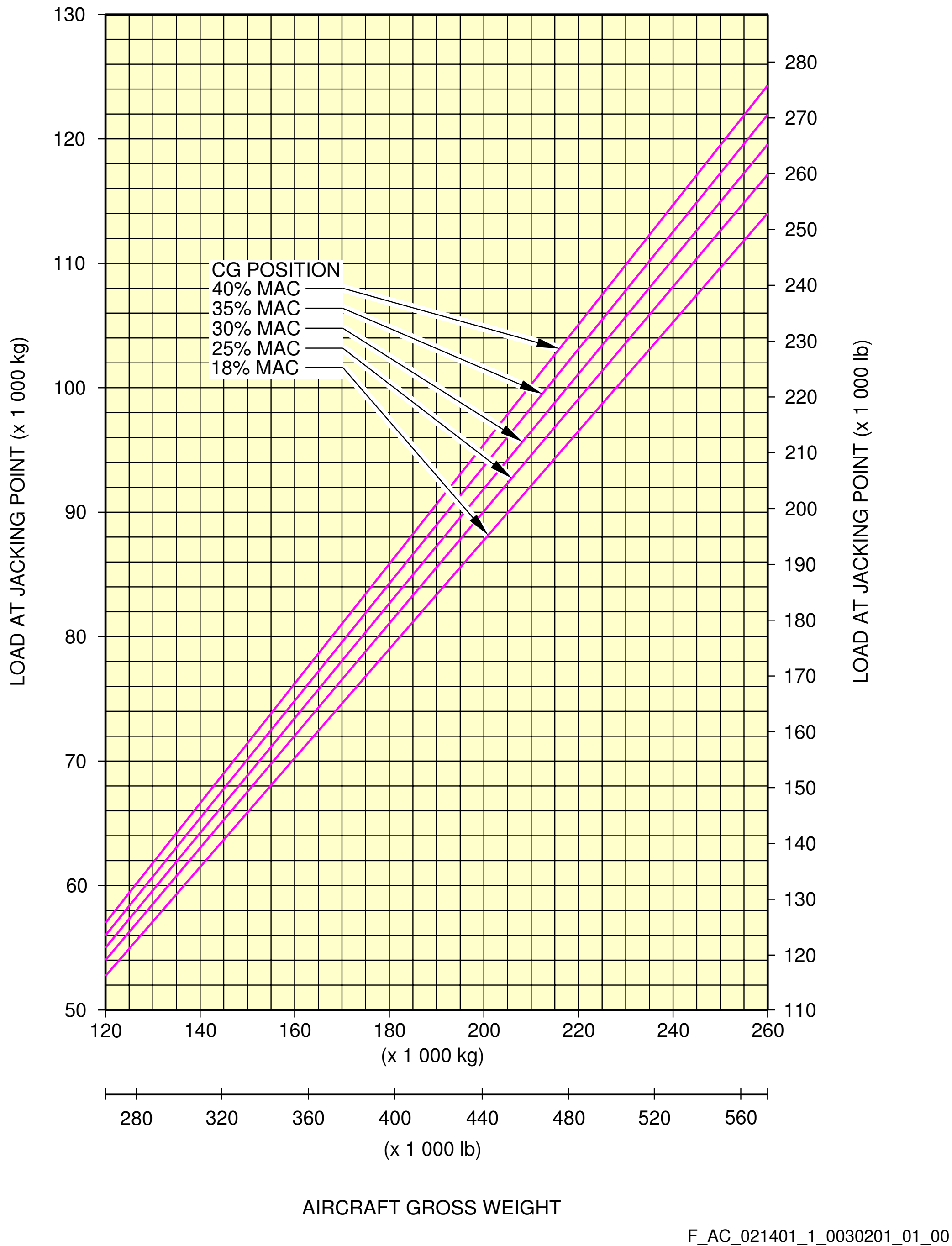
Jacking for Wheel Change
NLG Jacking Point Heights (Sheet 2 of 2)
FIGURE-2-14-1-991-002-A01

**ON A/C A330-300



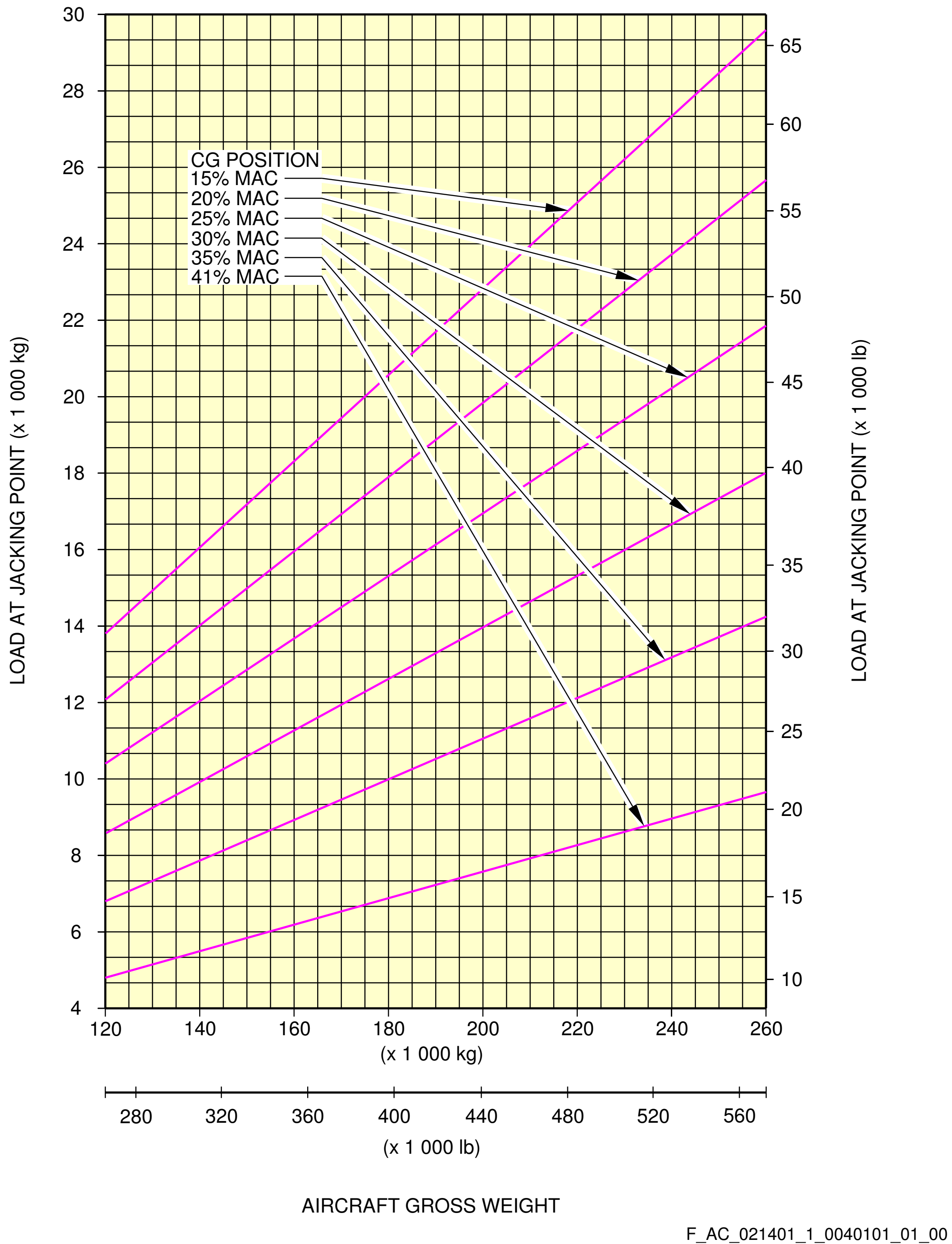
Jacking for Wheel Change
MLG Jacking Point Loads
FIGURE-2-14-1-991-003-A01

**ON A/C A330-200 A330-200F



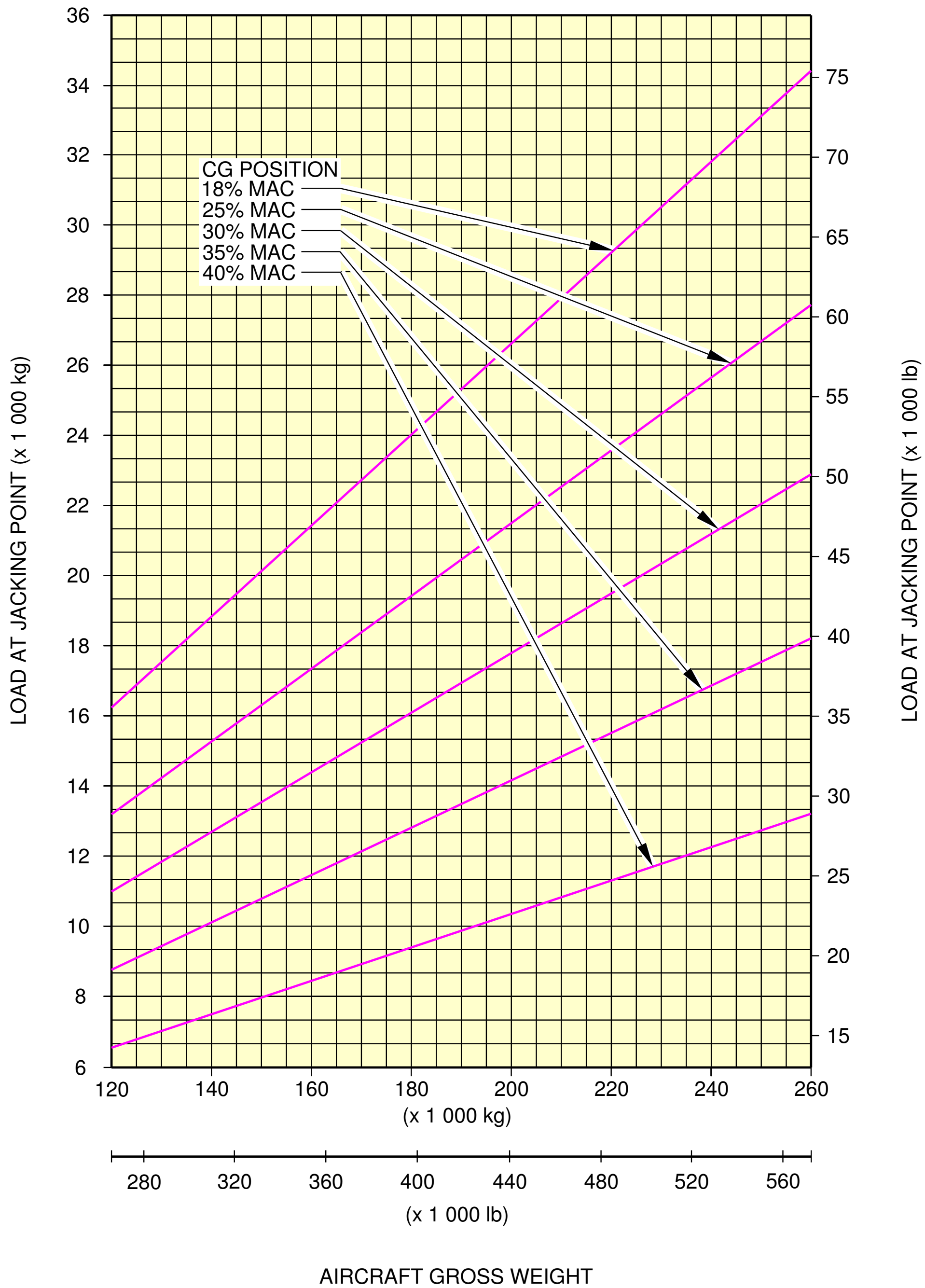
Jacking for Wheel Change
MLG Jacking Point Loads
FIGURE-2-14-1-991-003-B01

****ON A/C A330-300**



Jacking for Wheel Change
NLG Jacking Point Loads
FIGURE-2-14-1-991-004-A01

**ON A/C A330-200 A330-200F



Jacking for Wheel Change
NLG Jacking Point Loads
FIGURE-2-14-1-991-004-B01

2-14-2 Support of Aircraft

****ON A/C A330-200 A330-200F A330-300**

Support of Aircraft

1. Support of Aircraft
   When it is necessary to support the aircraft in order to relieve the loads on the structure for the accomplishment of modifications or major work, it is advisable to provide adapters under the wings and the fuselage for an alternative means of lifting.

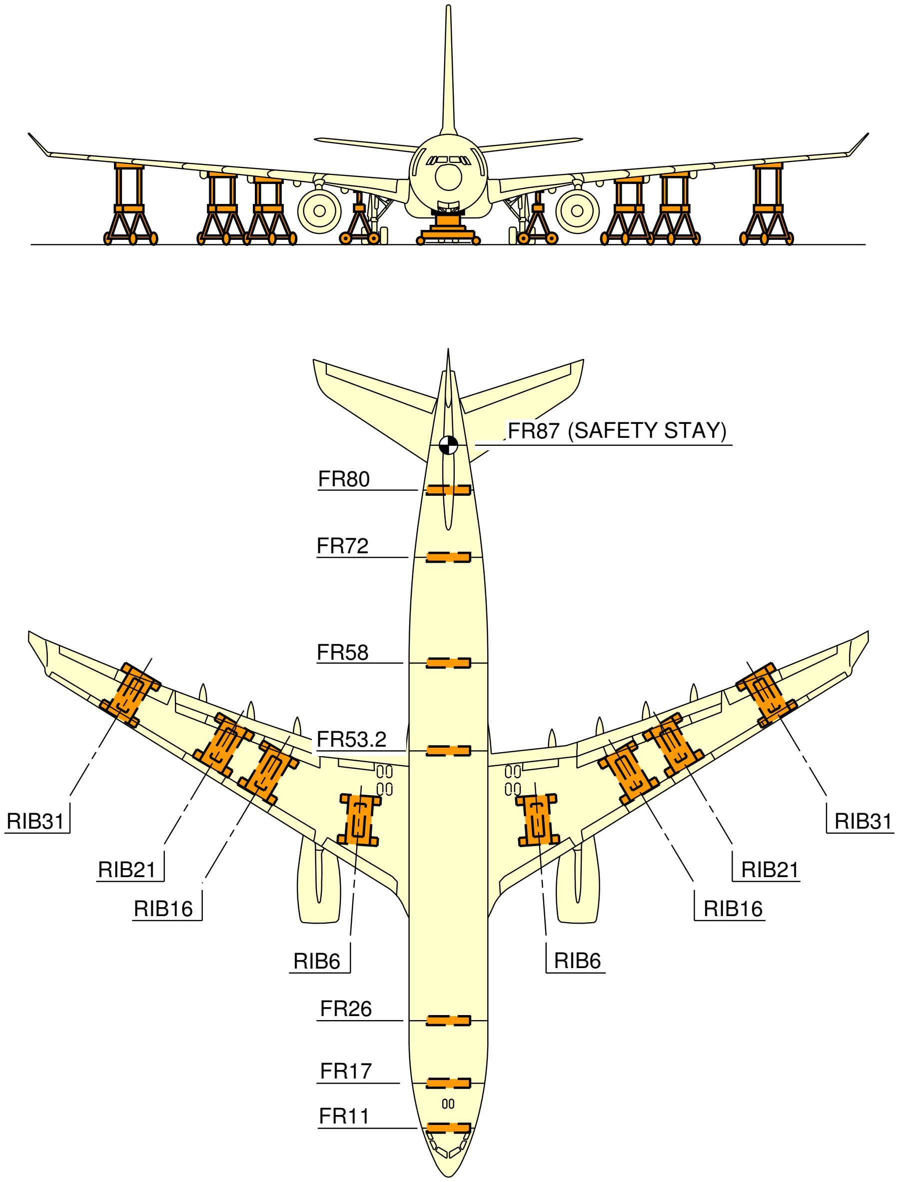
   The aircraft must not be lifted or supported by the wings or fuselage alone. It is important to support the aircraft fuselage and wings at the same time to prevent structural damage.

   A. Shoring Cradles
      Shoring cradles are used when it is necessary to stress-jack the aircraft to carry out maintenance and repair work. These are used to oppose the deflections of the wings and reduce the stresses to an acceptable level at the area of maintenance and repair.

      The shoring cradles, each with two adjustable pads, 152.4 mm (6 in) square, are positioned at four locations under each wing.

      The adjustable pads are faced with thin rubber and are in contact with the wing profile at the datum intersections of the ribs and the front and rear spars (F/S and R/S).

**ON A/C A330-200

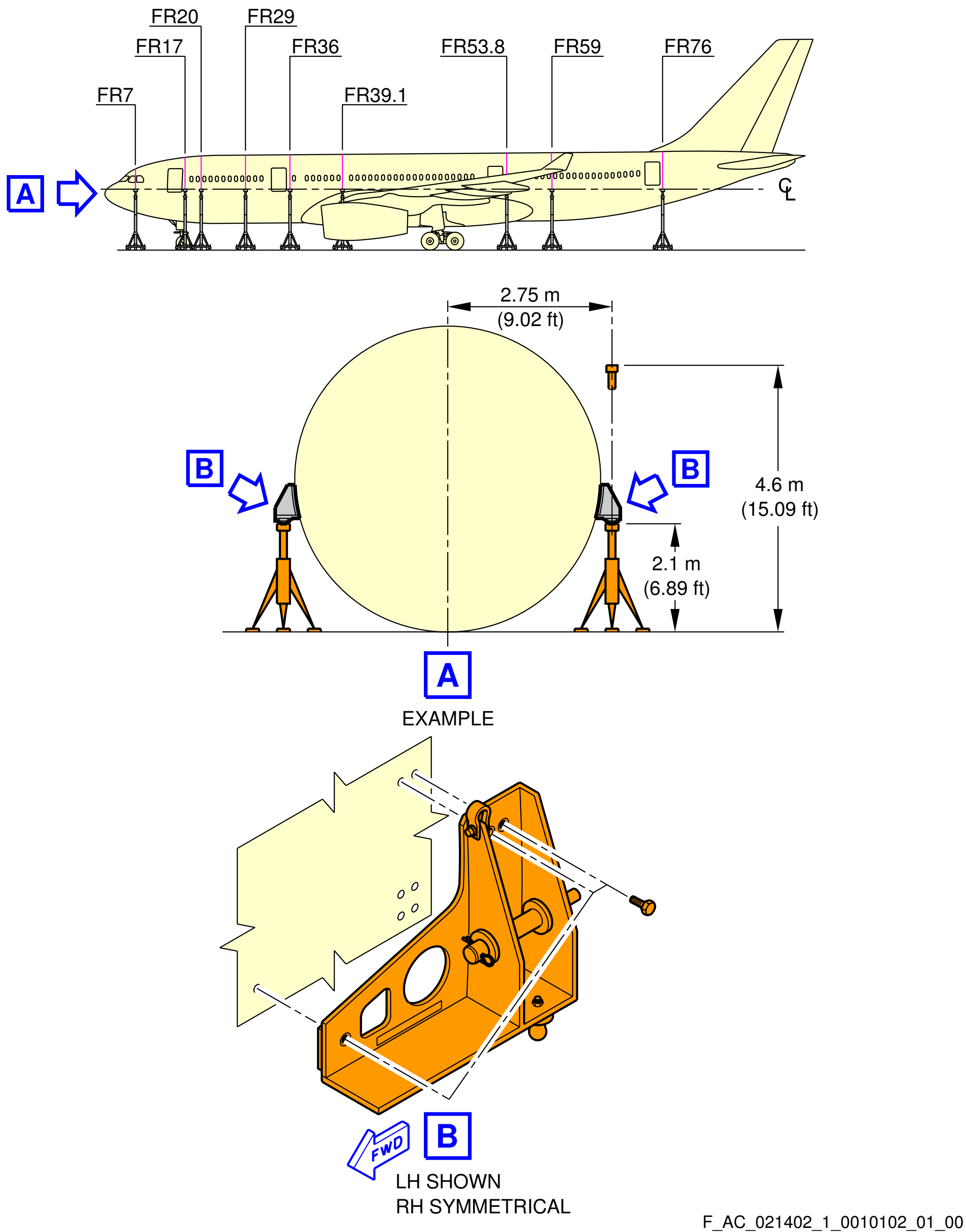


NOTE:
THE SHORING CRADLE MUST BE INSTALLED AT THE EXACT LOCATION OF THE FRAME.

F_AC_021402_1_0010101_01_00

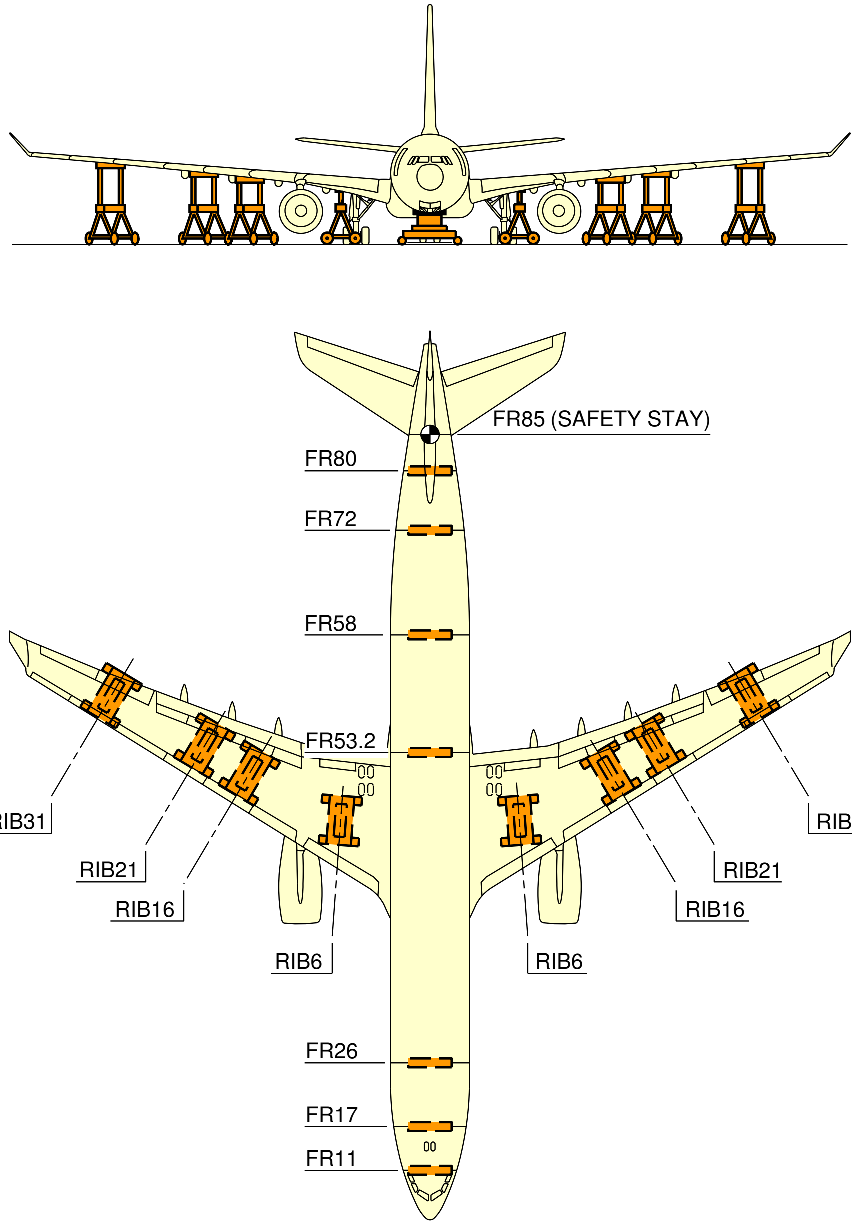
Support of Aircraft
Location of Shoring Cradles (Sheet 1 of 2)
FIGURE-2-14-2-991-001-A01

**ON A/C A330-200



Support of Aircraft
Location of Auxiliary Jacking Points (Sheet 2 of 2)
FIGURE-2-14-2-991-001-A01

**ON A/C A330-300

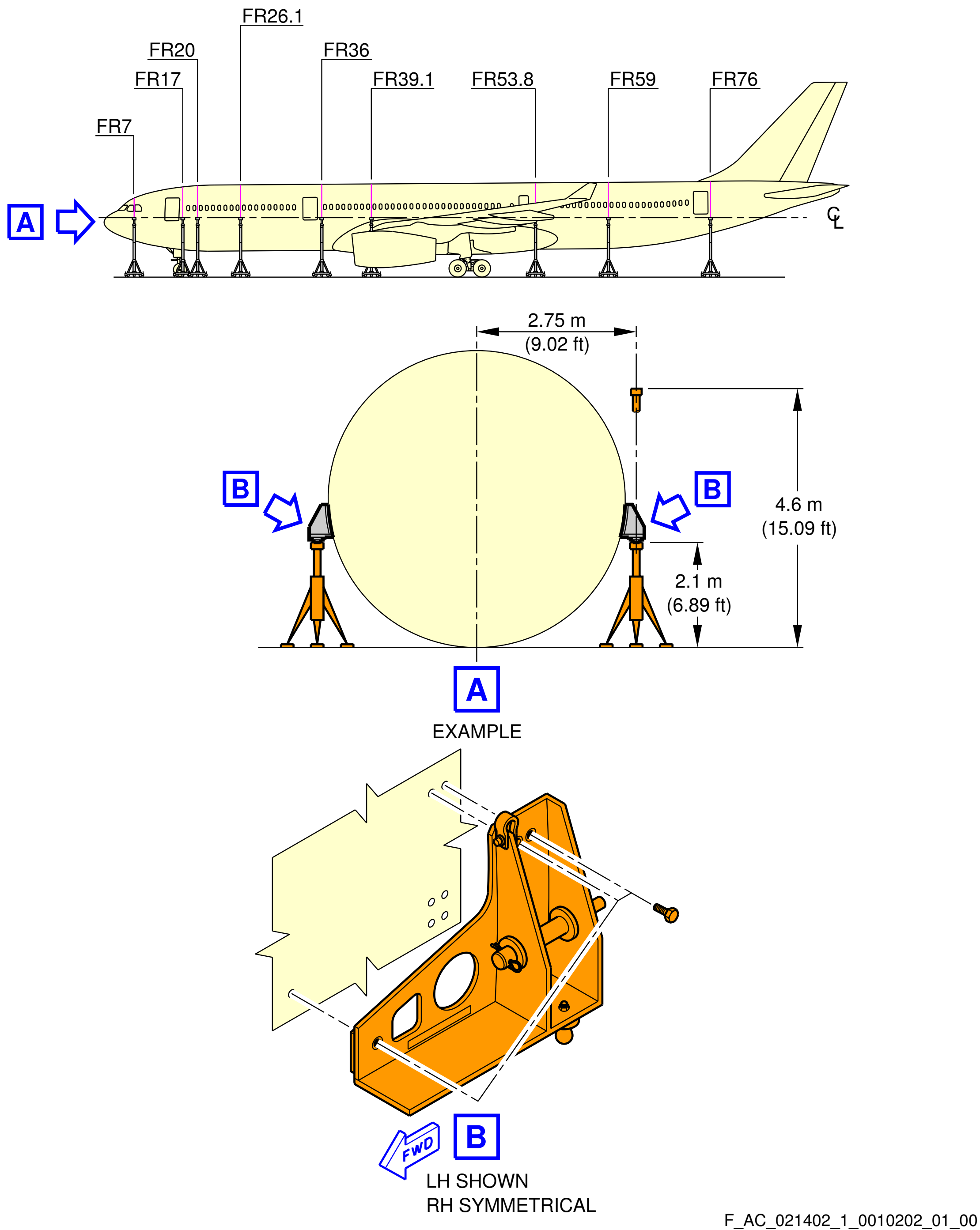


NOTE:
THE SHORING CRADLE MUST BE INSTALLED AT THE EXACT LOCATION OF THE FRAME.

F_AC_021402_1_0010201_01_00

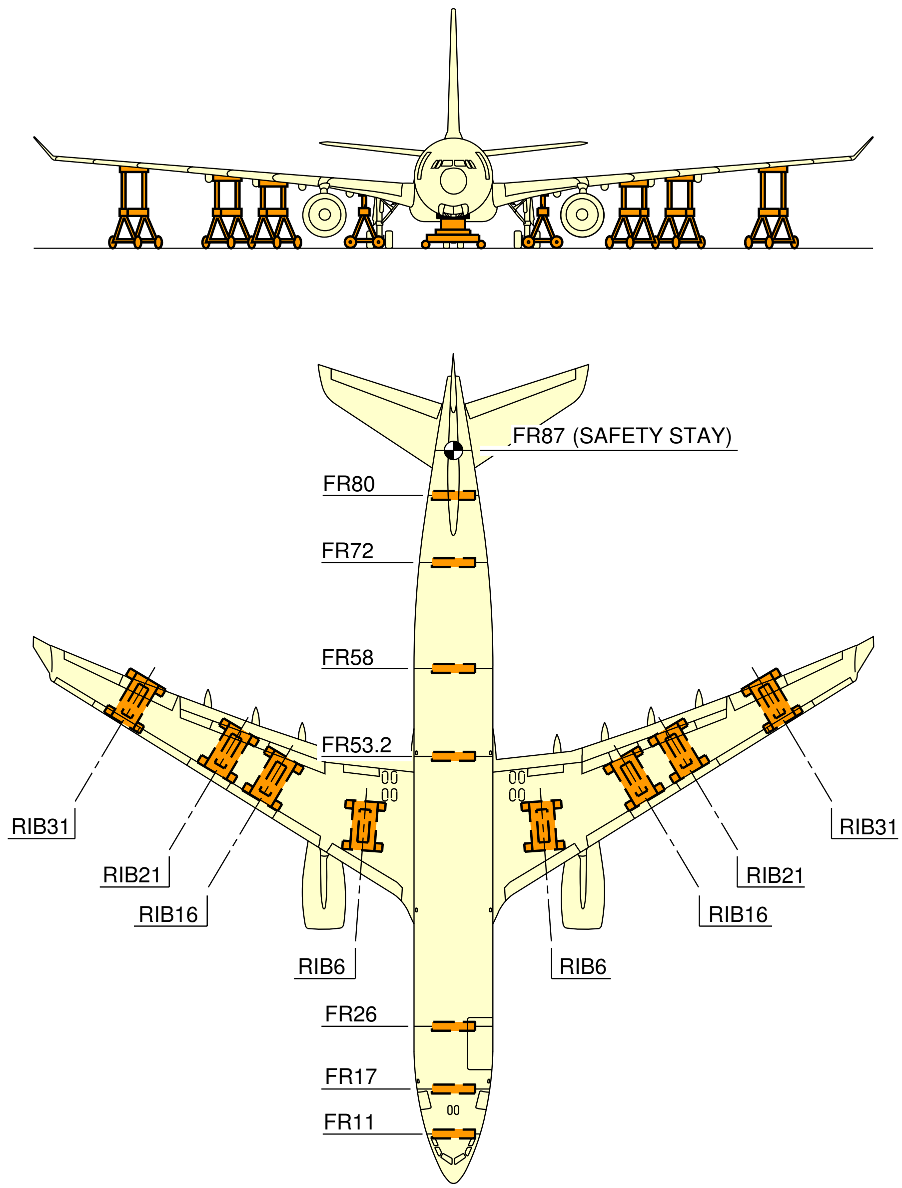
Support of Aircraft
Location of Shoring Cradles (Sheet 1 of 2)
FIGURE-2-14-2-991-001-B01

**ON A/C A330-300



Support of Aircraft
Location of Auxiliary Jacking Points (Sheet 2 of 2)
FIGURE-2-14-2-991-001-B01

**ON A/C A330-200F

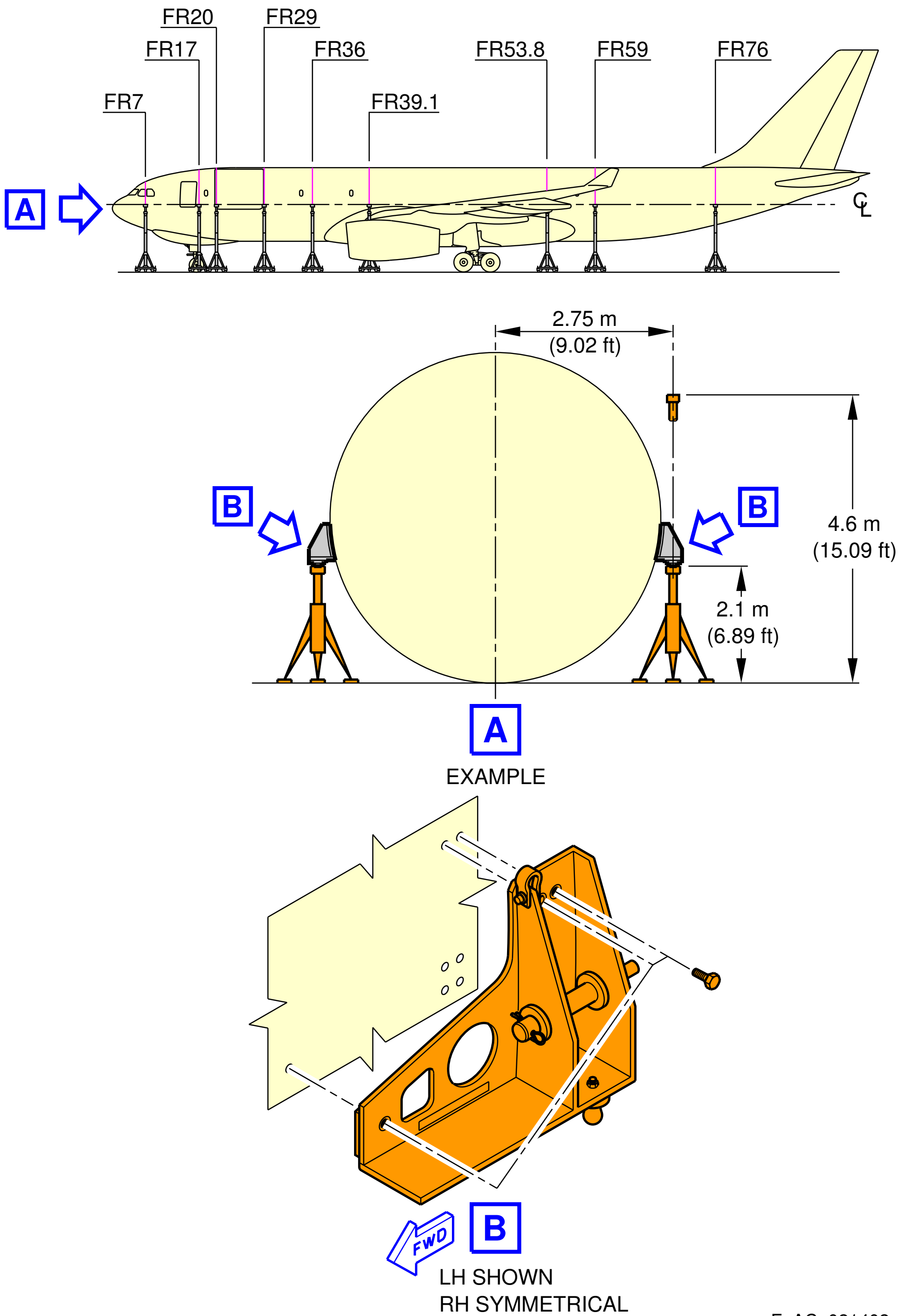


NOTE:
THE SHORING CRADLE MUST BE INSTALLED AT THE EXACT LOCATION OF THE FRAME.

F_AC_021402_1_0010301_01_00

Support of Aircraft
Location of Shoring Cradles (Sheet 1 of 2)
FIGURE-2-14-2-991-001-C01

**ON A/C A330-200F



F_AC_021402_1_0010302_01_00

Support of Aircraft
Location of Auxiliary Jacking Points (Sheet 2 of 2)
FIGURE-2-14-2-991-001-C01

AIRCRAFT PERFORMANCE

3-1-0 General Information

****ON A/C A330-200 A330-200F A330-300**

General Information

1. This section gives standard day temperatures.

   Section 3-2 indicates payload range information at specific altitudes recommended for long range cruise with a given fuel reserve condition.

   Section 3-3 represents FAR/JAR takeoff runway length requirements at ISA and ISA +15°C (+27°F) for engine conditions for FAA/EASA certification :

   - PRATT & WHITNEY (PW 4000).
   - ROLLS-ROYCE (RR Trent 700).
   - GENERAL ELECTRIC (GE CF6-80E1). (A330-200 and A330-300 only)

   Section 3-4 represents FAR/JAR landing runway length requirements for FAA/EASA certification.

   Section 3-5 indicates final approach speeds.

   Standard day temperatures for the altitude shown are tabulated below :

Standard day temperatures for the altitude			
Altitude		Standard Day Temperature	
FEET	METERS	°F	°C
0	0	59.0	15.0
2000	610	51.9	11.1
4000	1219	44.7	7.1
6000	1829	37.6	3.1
8000	2438	30.5	-0.8

3-2-0 Payload / Range

****ON A/C A330-200 A330-200F A330-300**

<u>Payload / Range</u>

1. Payload / Range

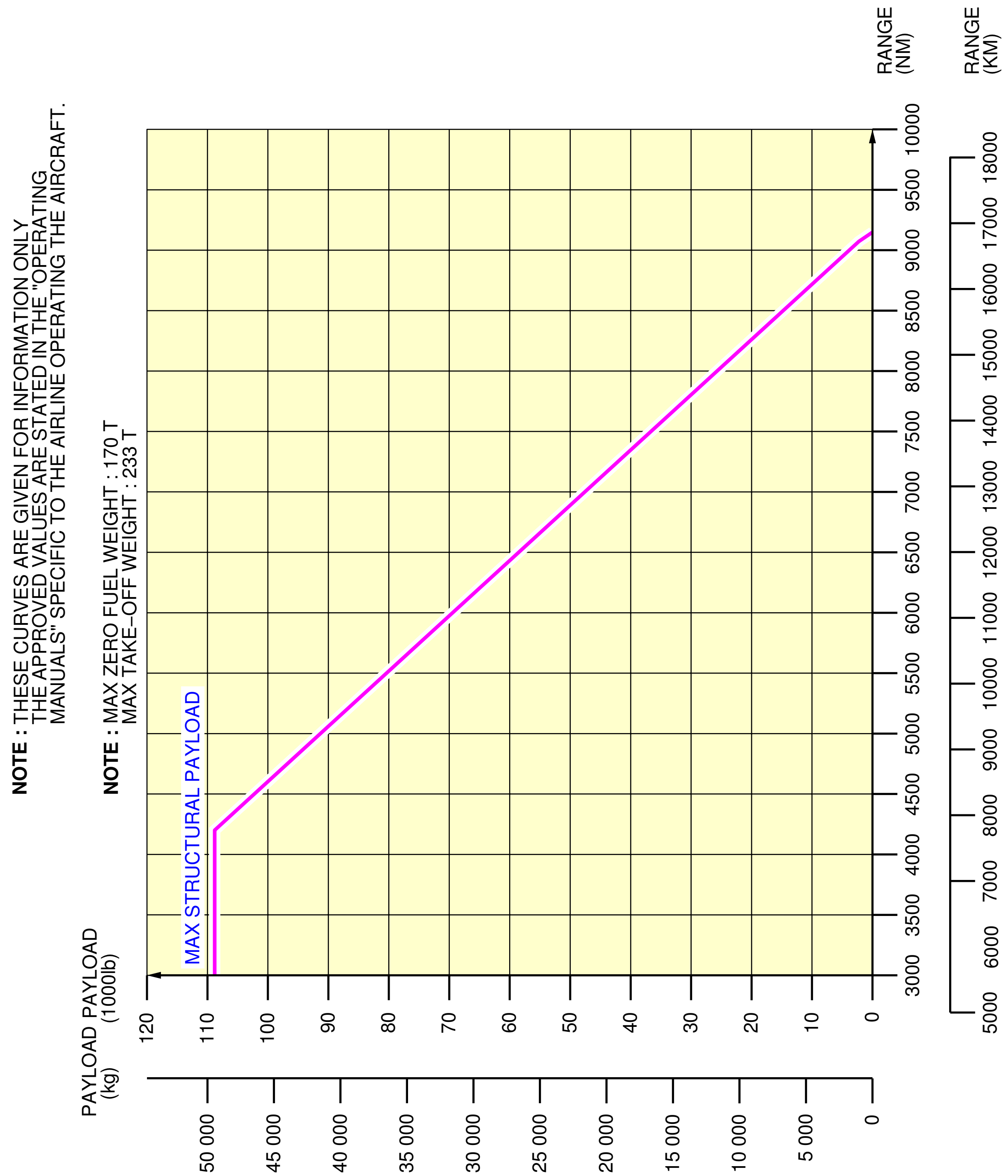
3-2-1 ISA Conditions

****ON A/C A330-200 A330-300**

ISA Conditions

1. This section gives the payload / range at ISA conditions for pax version.

****ON A/C A330-200**



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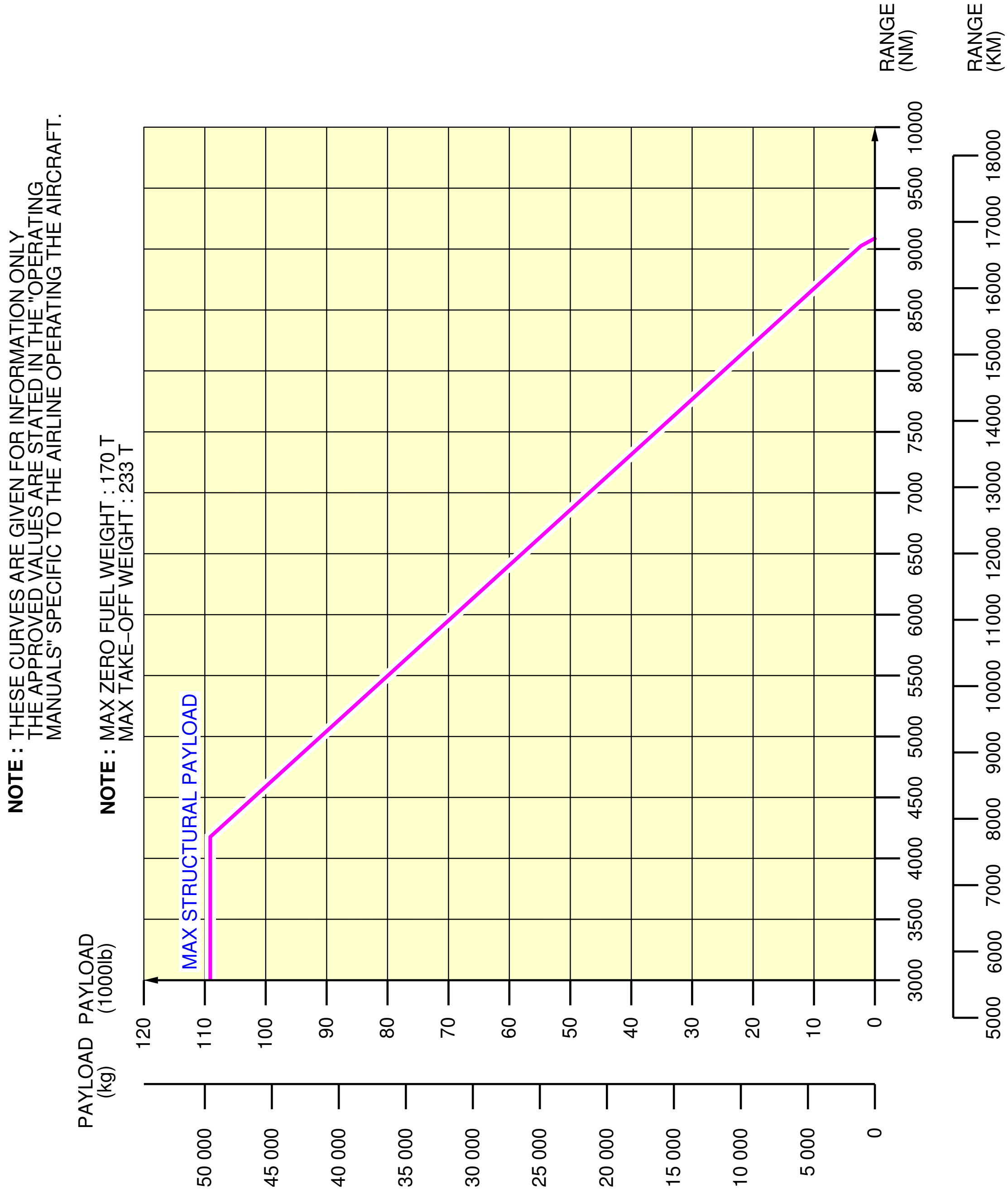
PAYLOAD / RANGE
PW 4000 Series Engine
FIGURE-3-2-1-991-001-A01

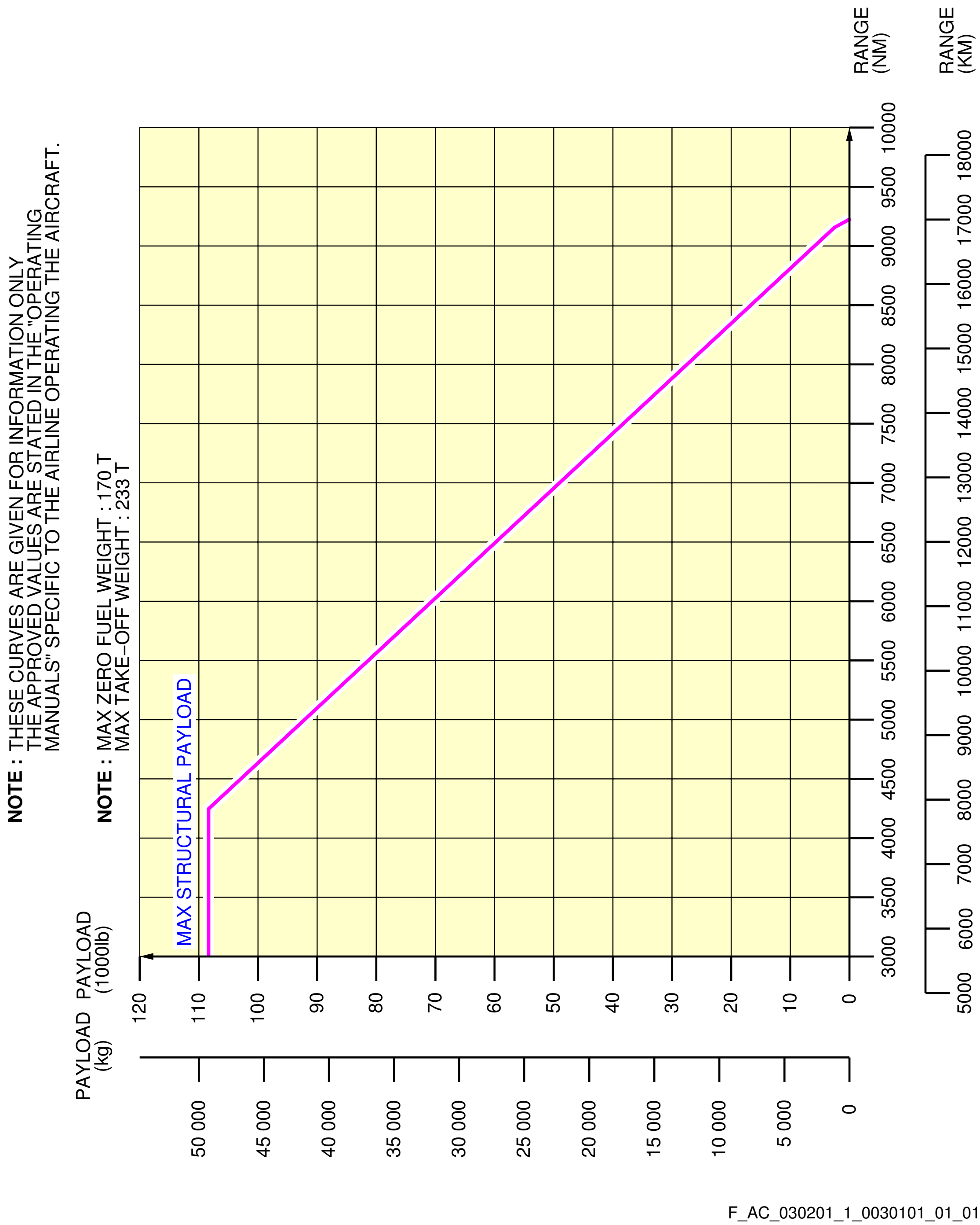
****ON A/C A330-200**



F_AC_030201_1_0020101_01_01

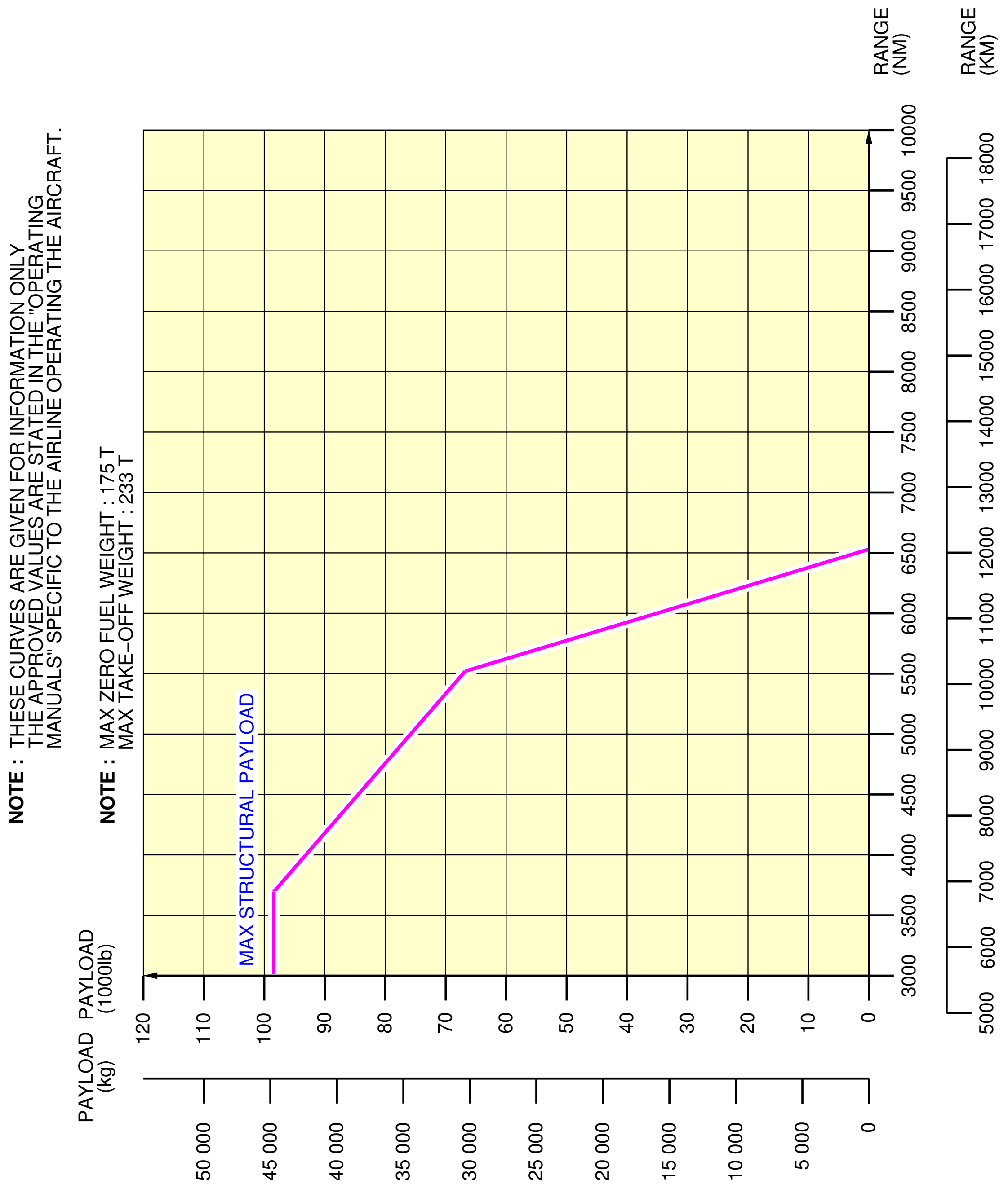
PAYLOAD / RANGE
RR TRENT 700 Series Engine
FIGURE-3-2-1-991-002-A01

**ON A/C A330-200



PAYLOAD / RANGE
GE CF6-80E1 Series Engine
FIGURE-3-2-1-991-003-A01

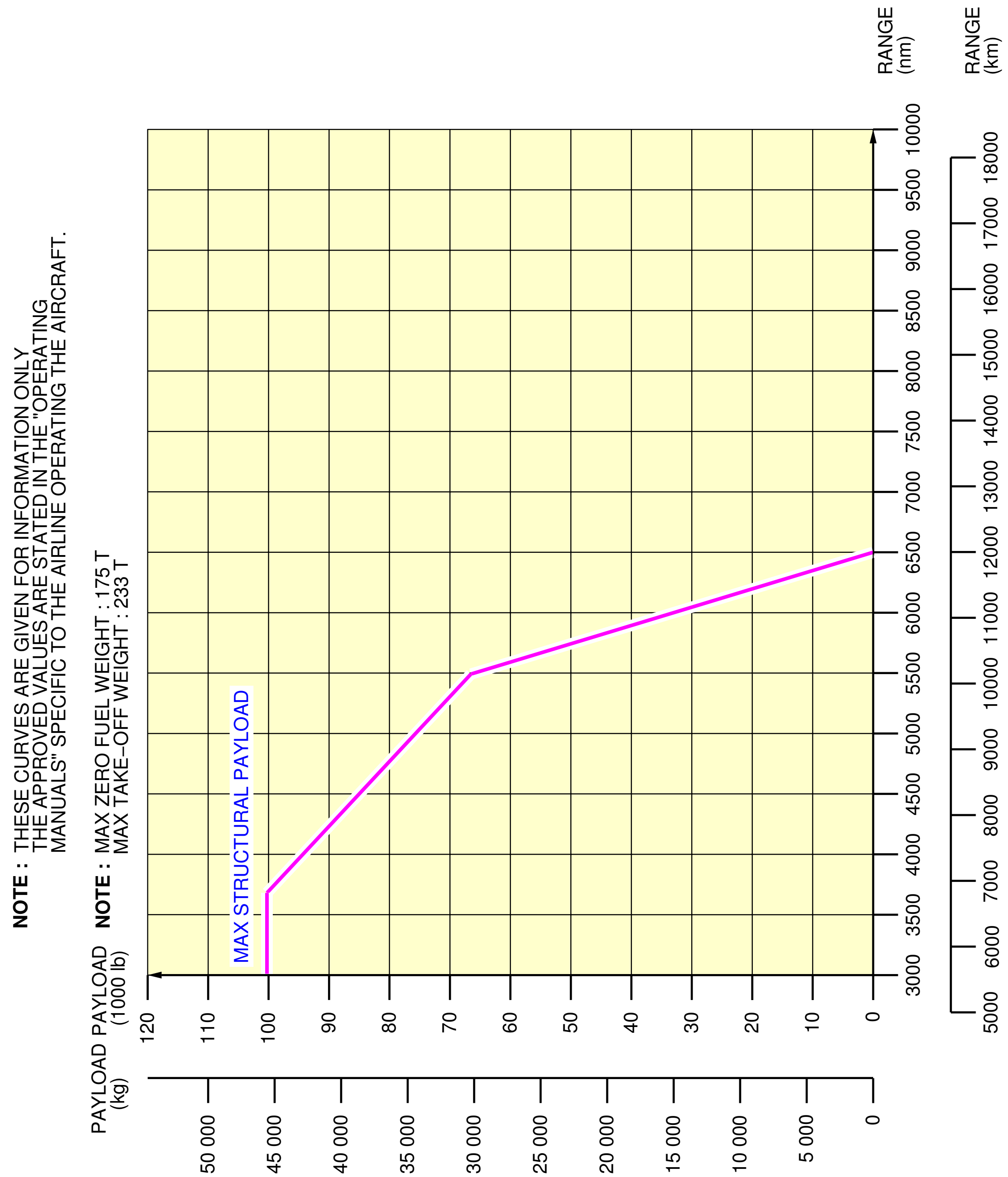
**ON A/C A330-300



F_AC_030201_1_0040101_01_01

PAYLOAD / RANGE
PW 4000 Series Engine
FIGURE-3-2-1-991-004-A01

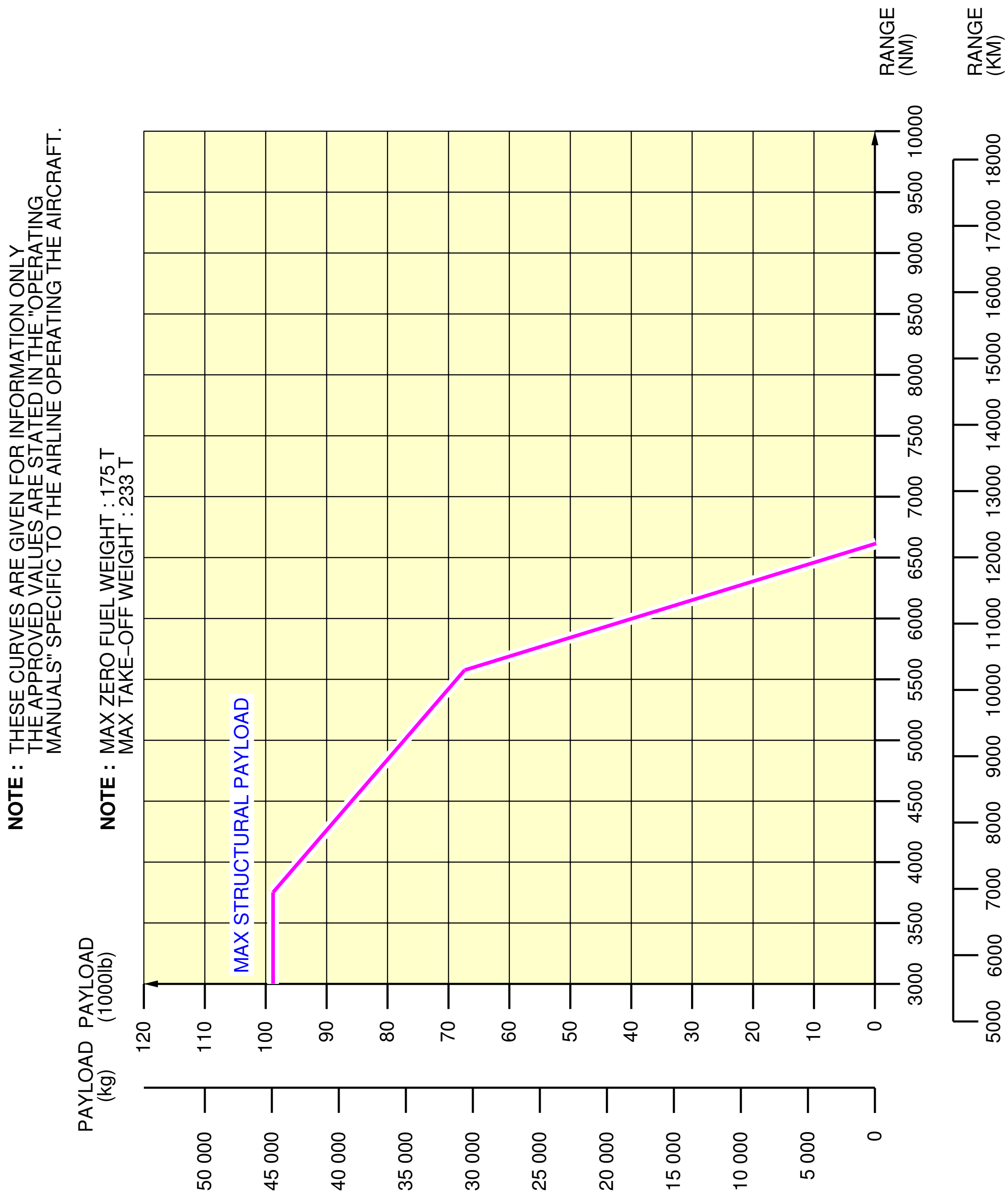
****ON A/C A330-300**



F_AC_030201_1_0050101_01_01

PAYLOAD / RANGE
RR TRENT 700 Series Engine
FIGURE-3-2-1-991-005-A01

**ON A/C A330-300



F_AC_030201_1_0060101_01_01

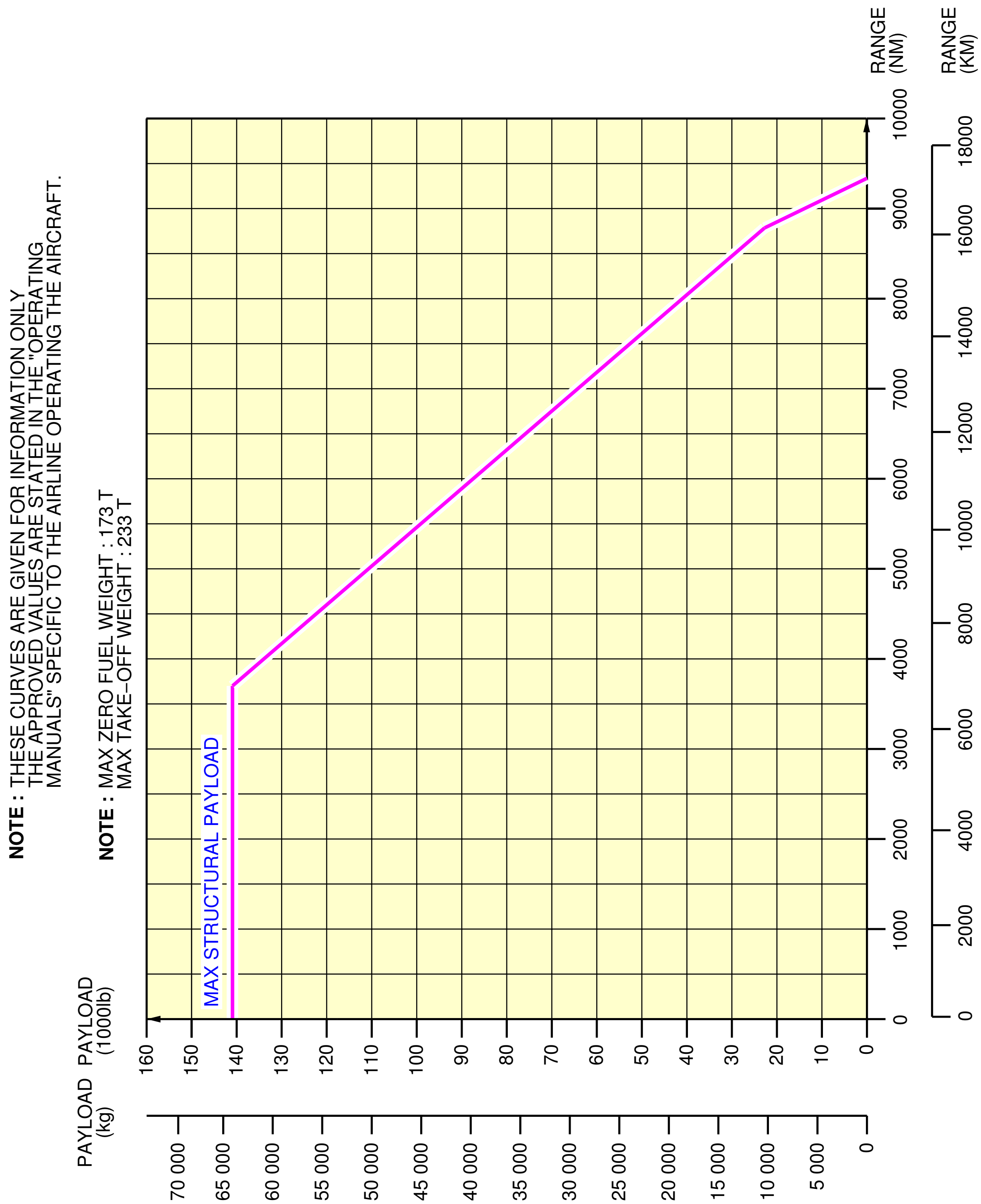
PAYLOAD / RANGE
GE CF6-80E1 Series Engine
FIGURE-3-2-1-991-006-A01

****ON A/C A330-200F**

ISA Conditions

1. This section gives the payload / range at ISA conditions for cargo version.

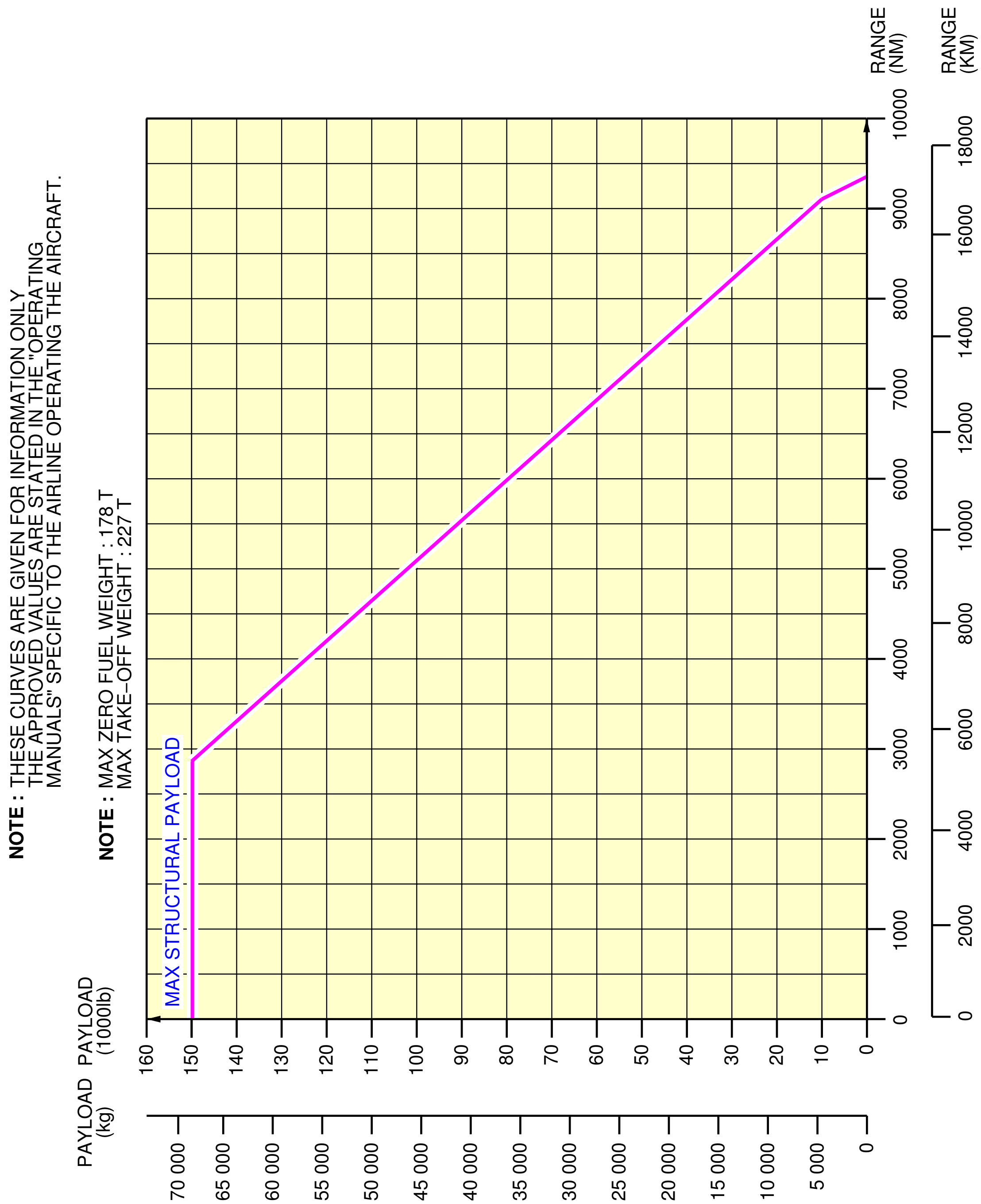
**ON A/C A330-200F



F_AC_030201_1_0070101_01_01

PAYLOAD / RANGE
RR TRENT 700 Series Engine
FIGURE-3-2-1-991-007-A01

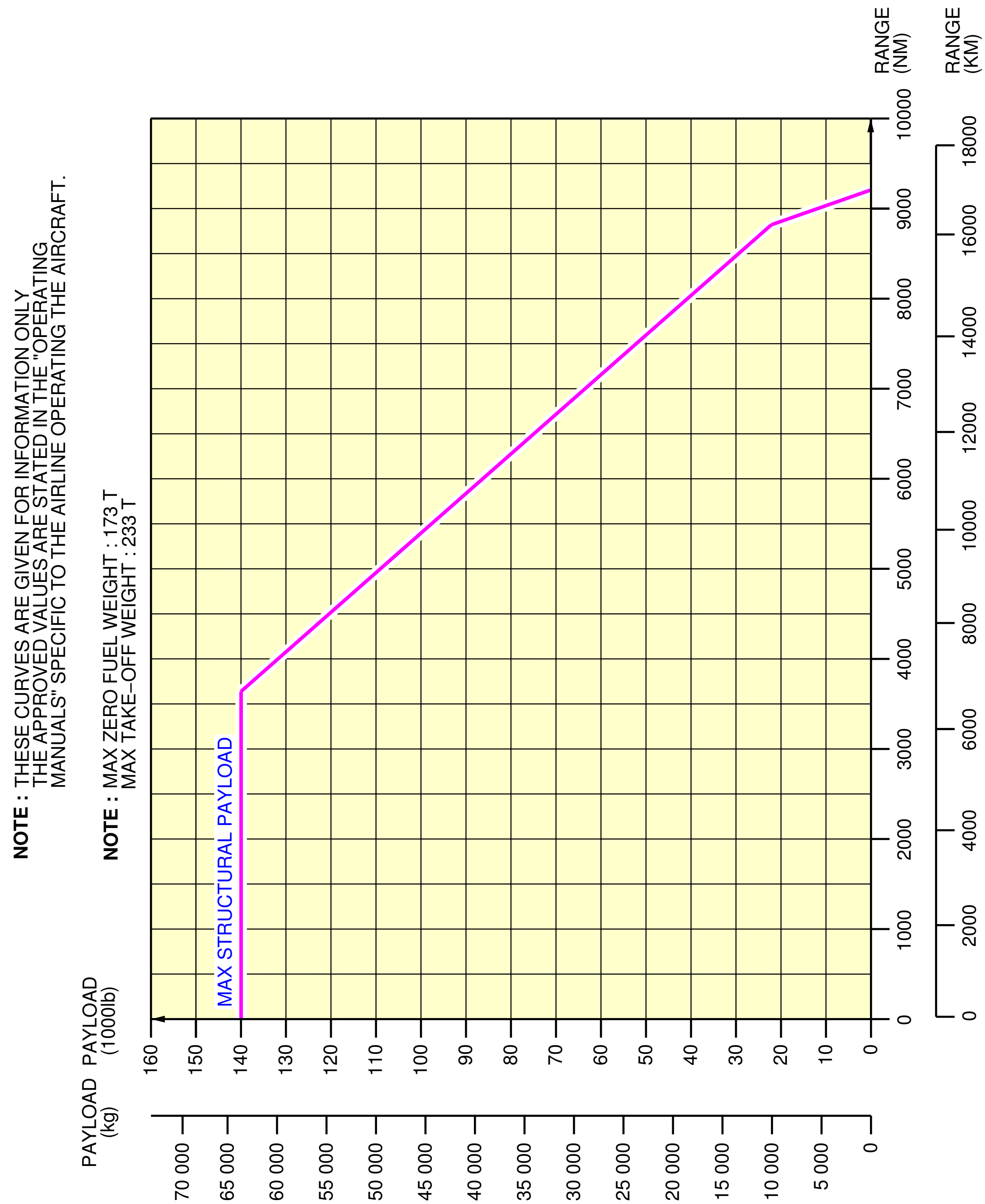
**ON A/C A330-200F



F_AC_030201_1_0080101_01_01

PAYLOAD / RANGE
RR TRENT 700 Series Engine
FIGURE-3-2-1-991-008-A01

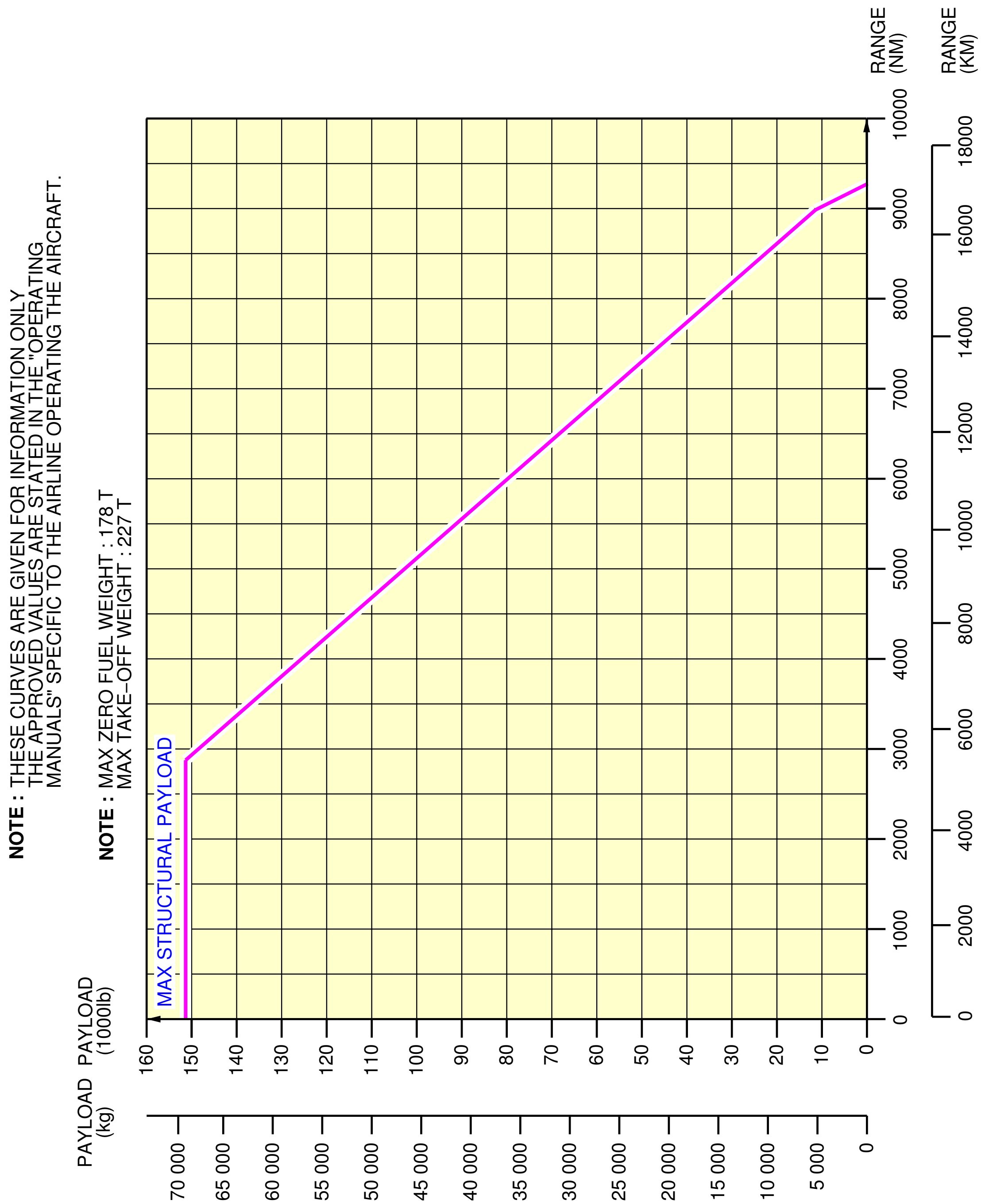
****ON A/C A330-200F**



F_AC_030201_1_0090101_01_01

PAYLOAD / RANGE
PW 4000 Series Engine
FIGURE-3-2-1-991-009-A01

****ON A/C A330-200F**



F_AC_030201_1_0100101_01_01

PAYLOAD / RANGE
PW 4000 Series Engine
FIGURE-3-2-1-991-010-A01

3-3-0 FAR / JAR Takeoff Weight Limitation

****ON A/C A330-200 A330-200F A330-300**

FAR / JAR Takeoff Weight Limitation

1. FAR / JAR Takeoff Weight Limitation

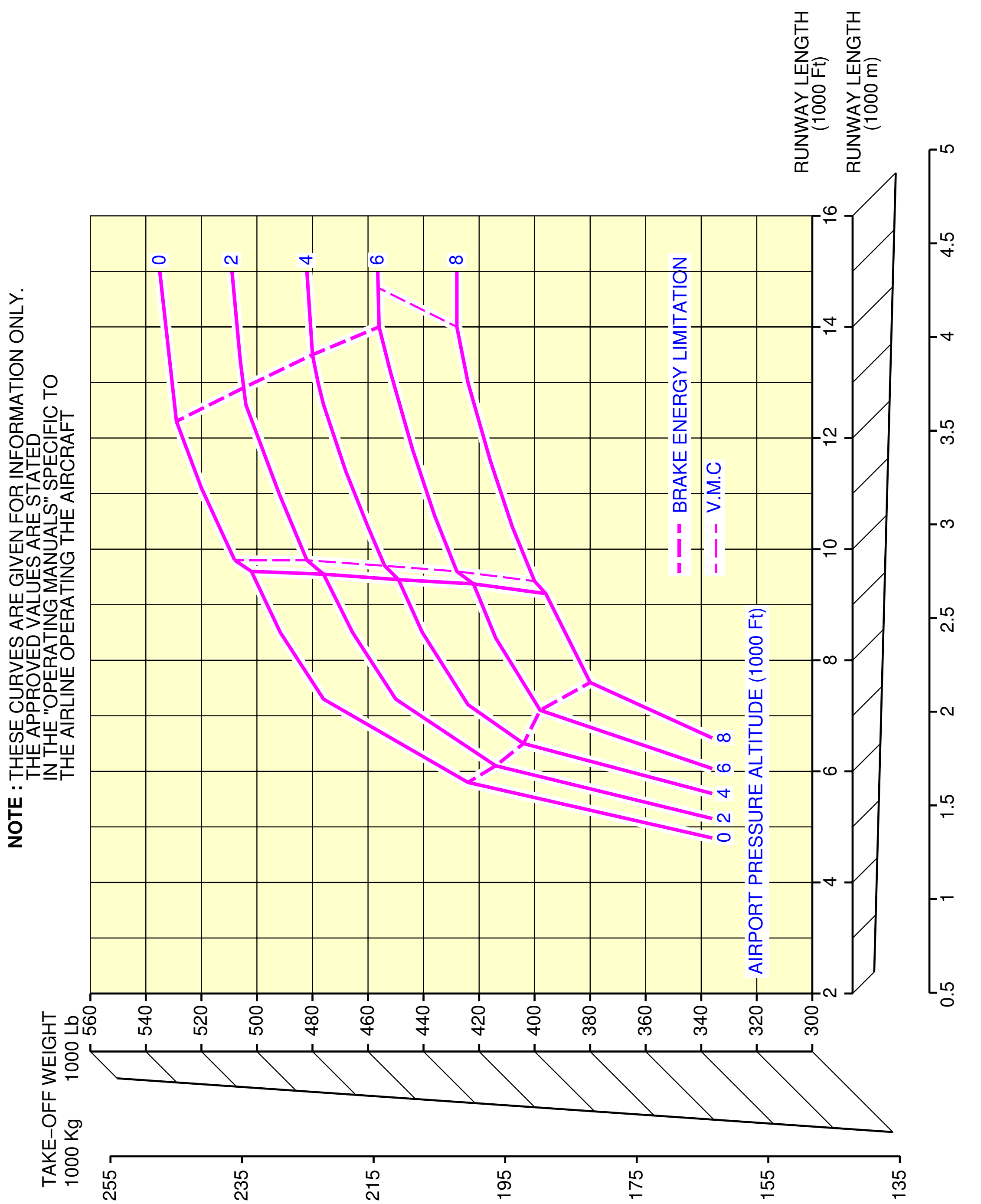
3-3-1 ISA Conditions

****ON A/C A330-200 A330-200F A330-300**

FAR / JAR Takeoff Weight Limitation

1. This section gives the takeoff weight limitation at ISA conditions.

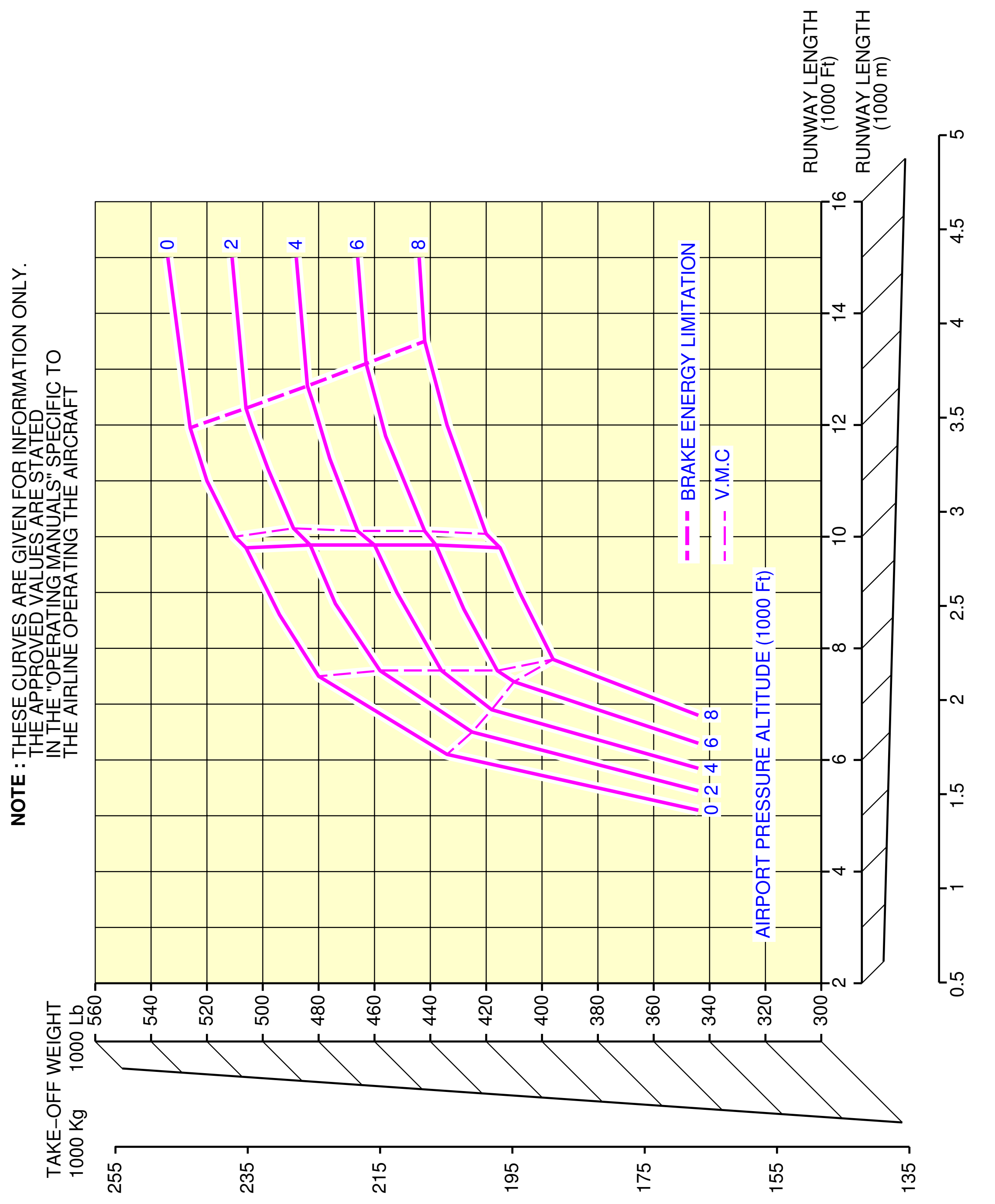
**ON A/C A330-200 A330-200F A330-300



F_AC_030301_1_0010101_01_01

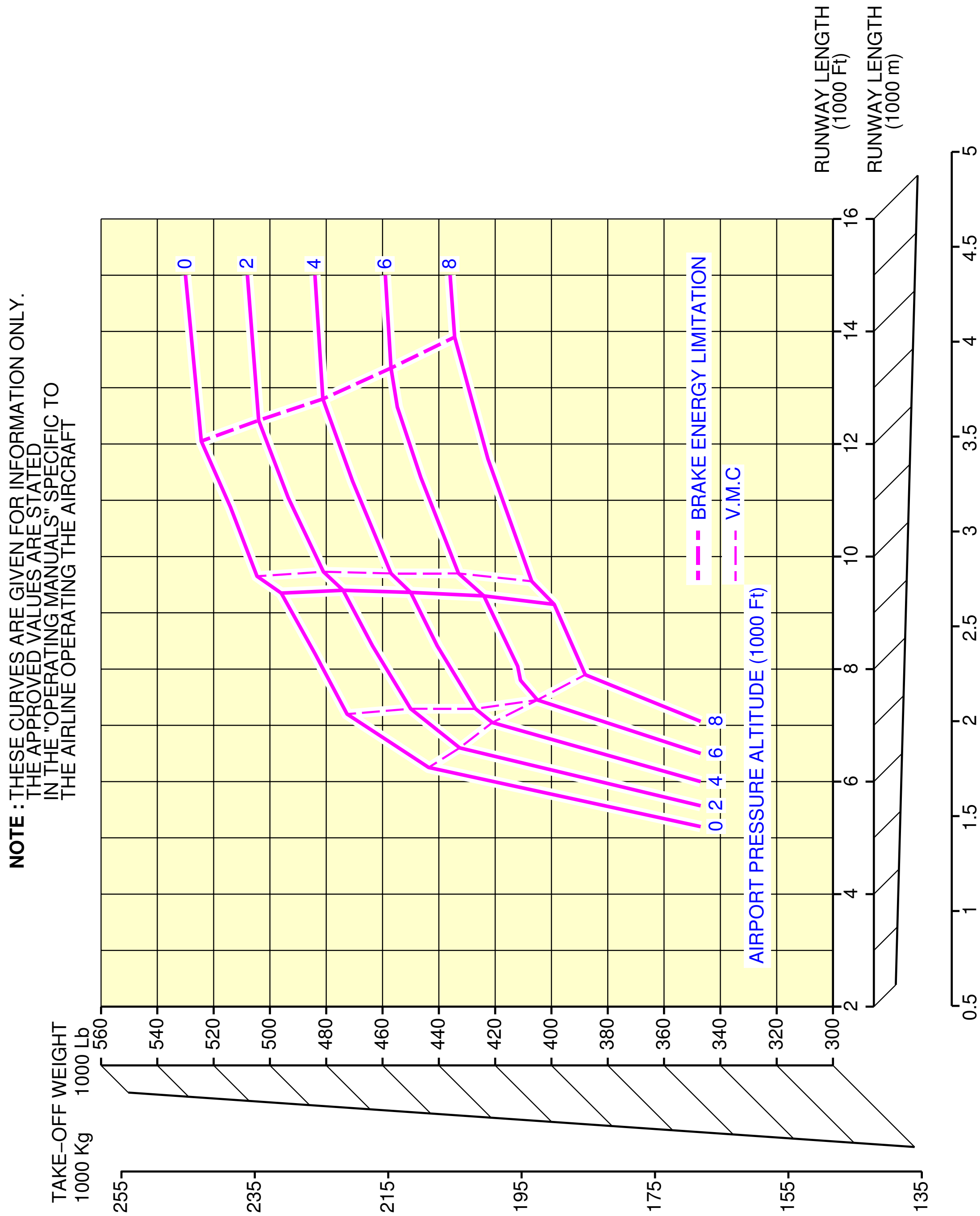
Takeoff Weight Limitation
ISA Conditions - PW 4000 Series Engine
FIGURE-3-3-1-991-001-A01

**ON A/C A330-200 A330-200F A330-300



Takeoff Weight Limitation
ISA Conditions - RR TRENT 700 Series Engine
FIGURE-3-3-1-991-002-A01

**ON A/C A330-200 A330-300



F_AC_030301_1_0030101_01_01

Takeoff Weight Limitation
ISA Conditions - GE CF6-80E1 Series Engine
FIGURE-3-3-1-991-003-A01

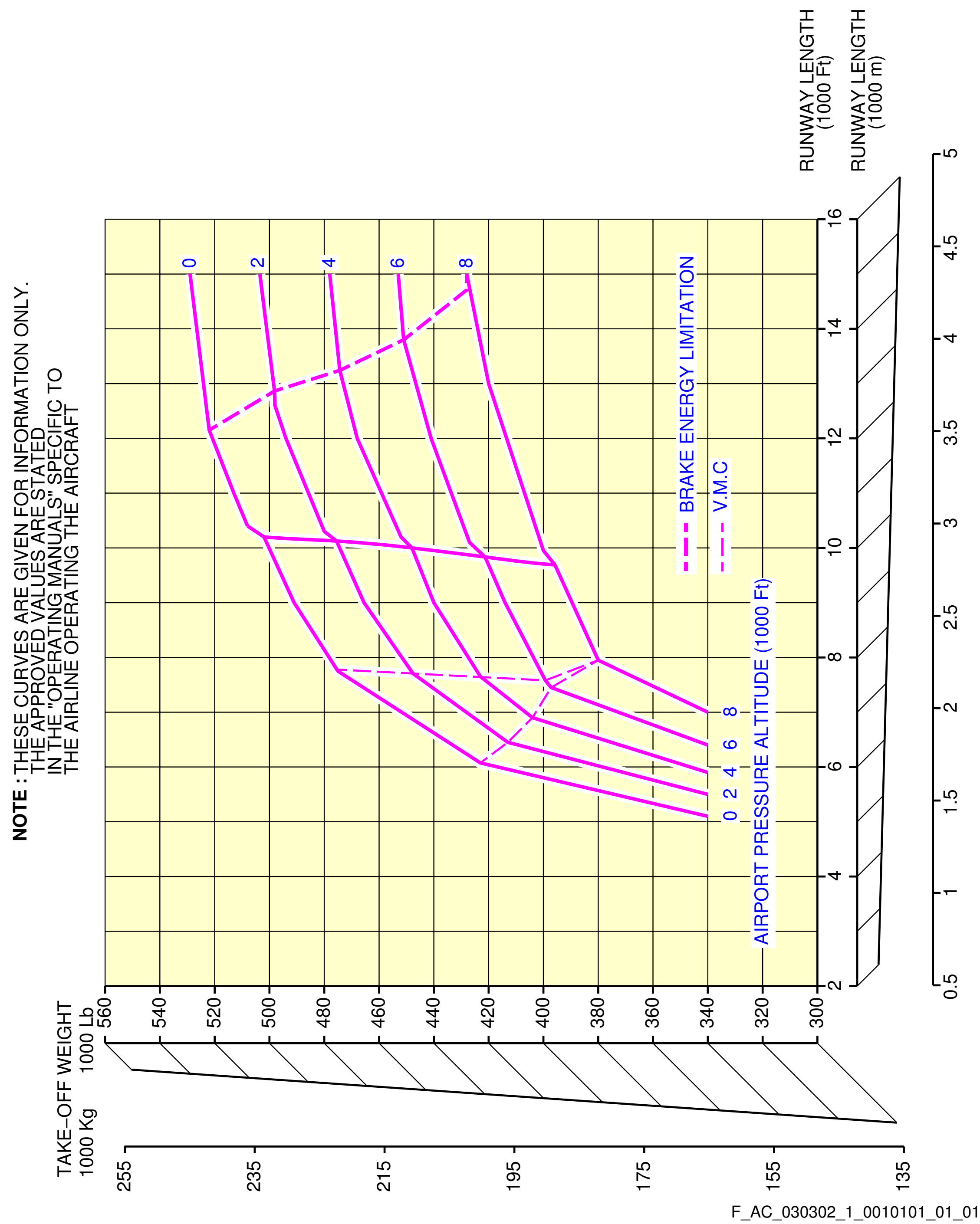
3-3-2 ISA +15°C (ISA +27°F) Conditions

****ON A/C A330-200 A330-200F A330-300**

ISA +15 °C (ISA +27 °F) Conditions

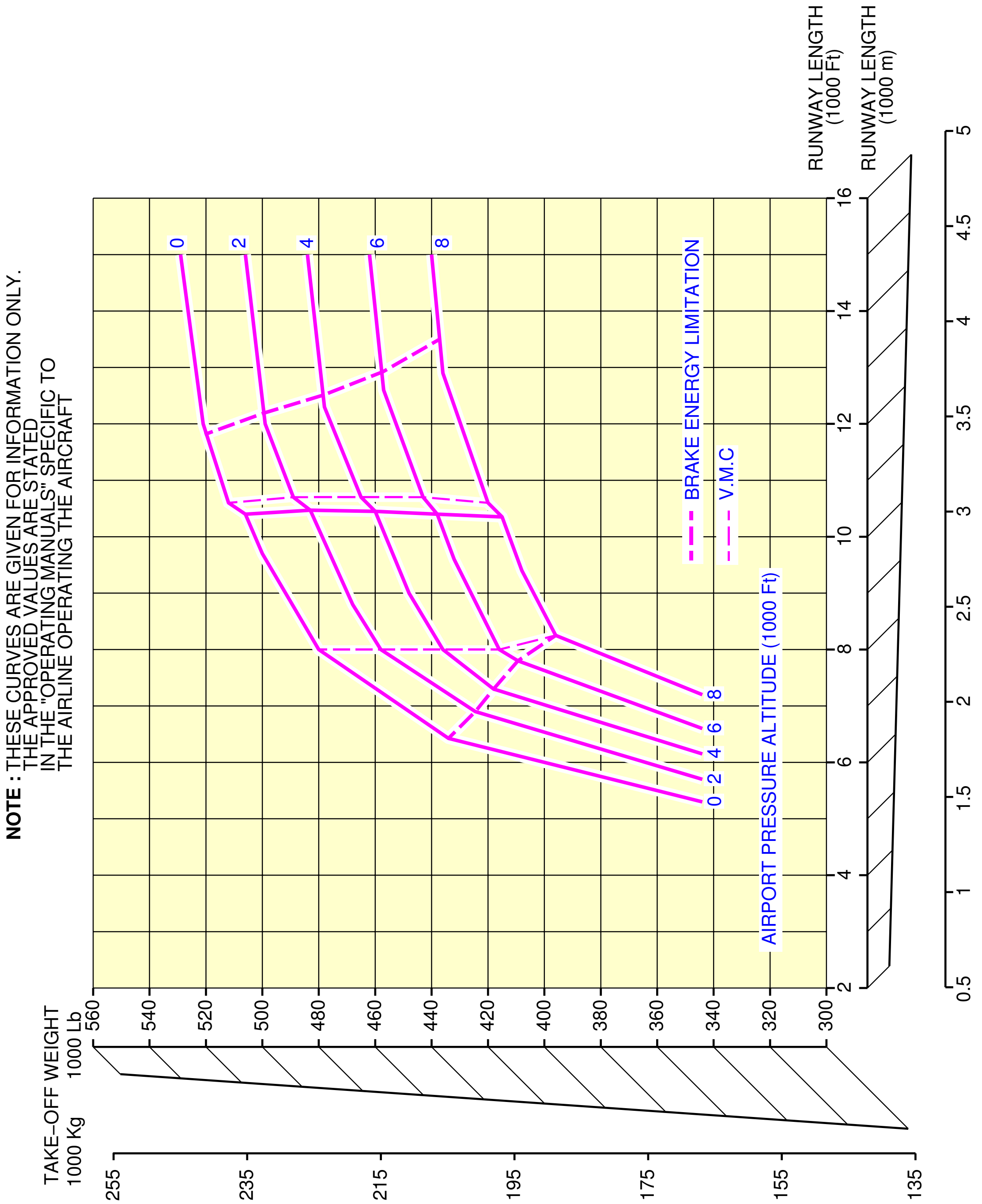
1. This section gives the takeoff weight limitation at ISA +15°C (ISA +27°F) conditions.

****ON A/C A330-200 A330-200F A330-300**



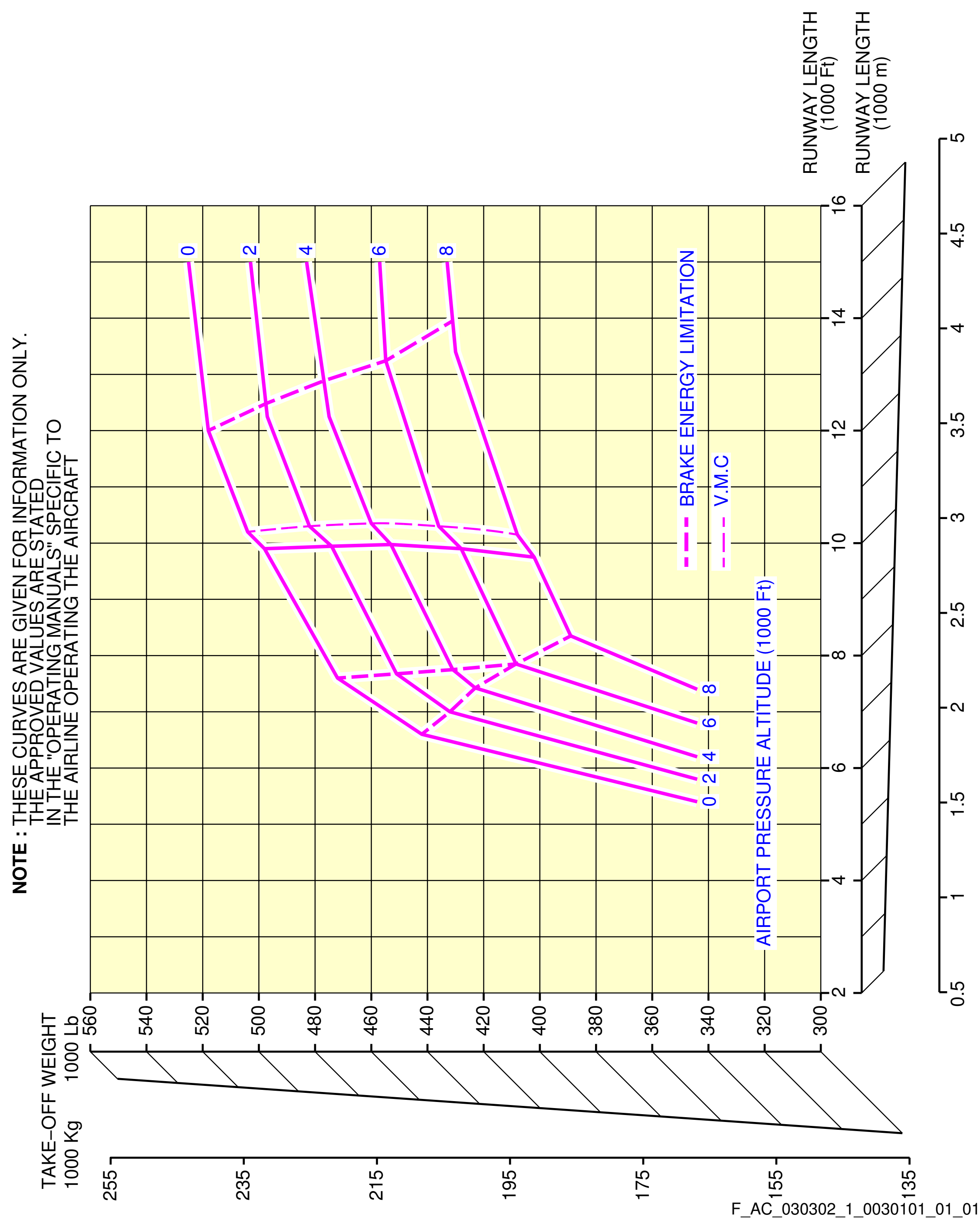
FAR / JAR Takeoff Weight Limitation
ISA +15°C (ISA +27°F) Conditions - PW 4000 Series Engine
FIGURE-3-3-2-991-001-A01

**ON A/C A330-200 A330-200F A330-300



FAR / JAR Takeoff Weight Limitation
ISA +15°C (ISA +27°F) Conditions - RR TRENT 700 Series Engine
FIGURE-3-3-2-991-002-A01

**ON A/C A330-200 A330-300



FAR / JAR Takeoff Weight Limitation
ISA +15°C (ISA +27°F) Conditions - GE CF6-80E1 Series Engine
FIGURE-3-3-2-991-003-A01

3-4-0 FAR / JAR Landing Field Length

****ON A/C A330-200 A330-200F A330-300**

Landing Field Length

1. Landing Field Length

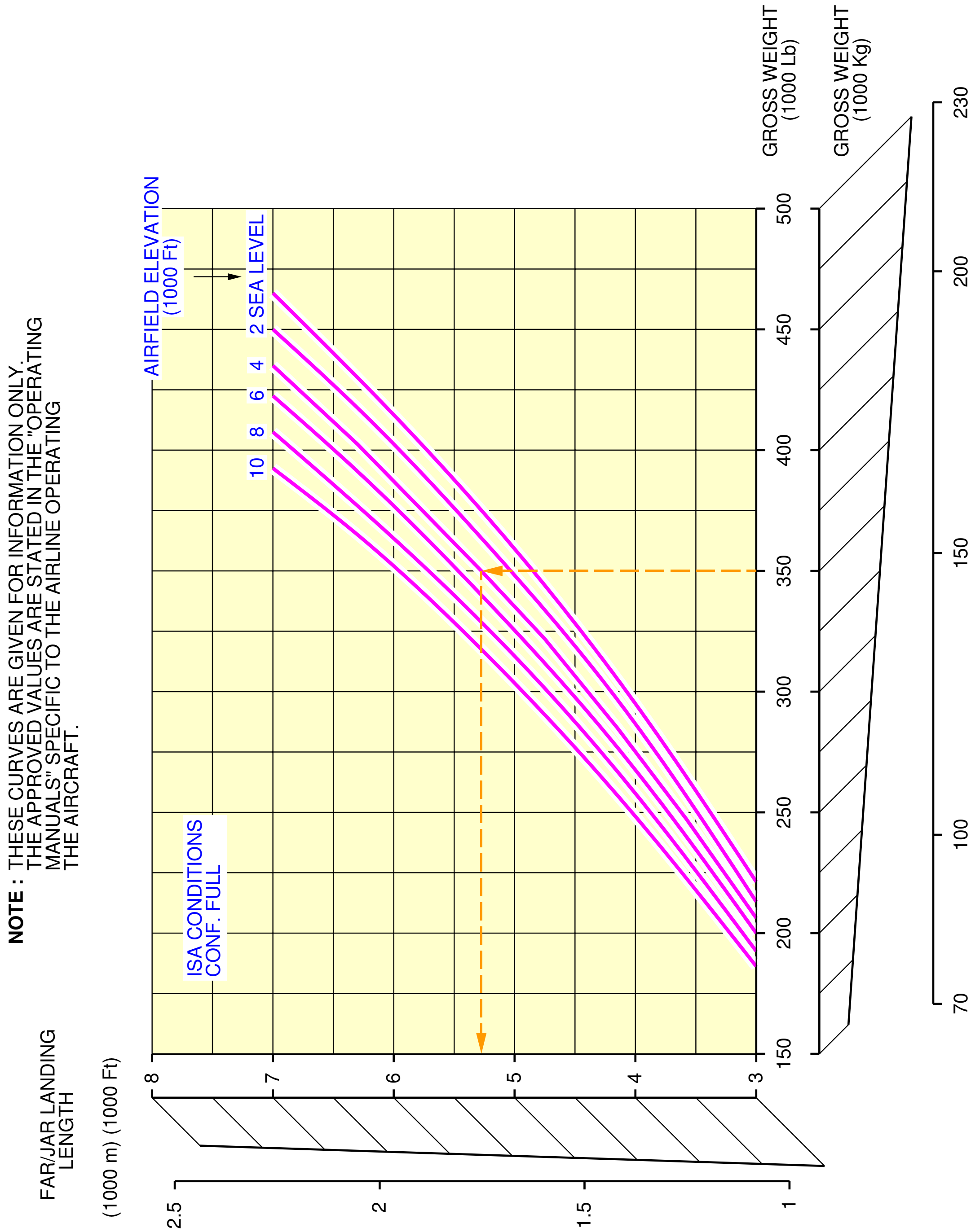
3-4-1 ISA Conditions All series engines

****ON A/C A330-200 A330-200F A330-300**

ISA Conditions All series engine

1. This section gives the landing field length.

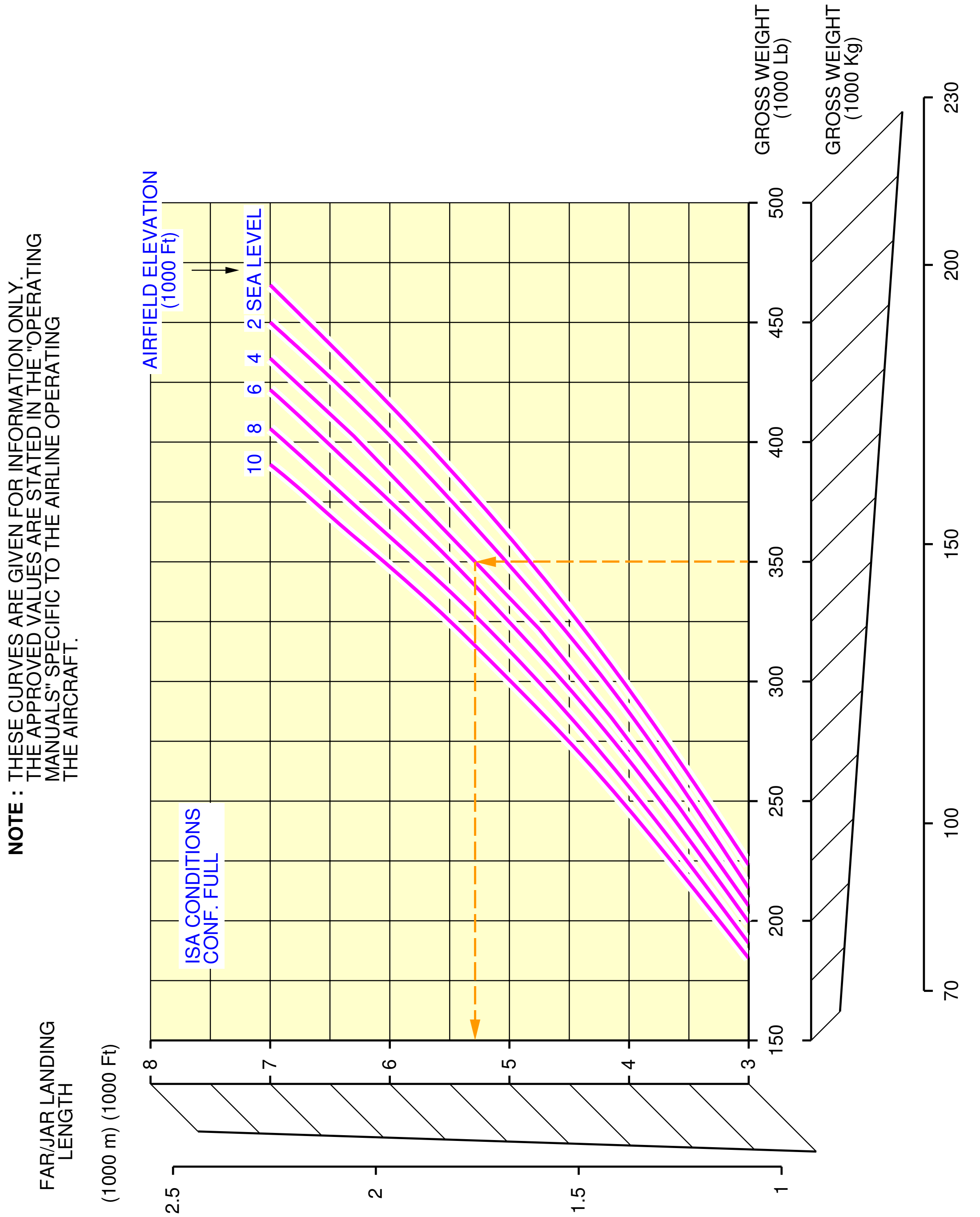
**ON A/C A330-200 A330-200F A330-300



F_AC_030401_1_0010101_01_01

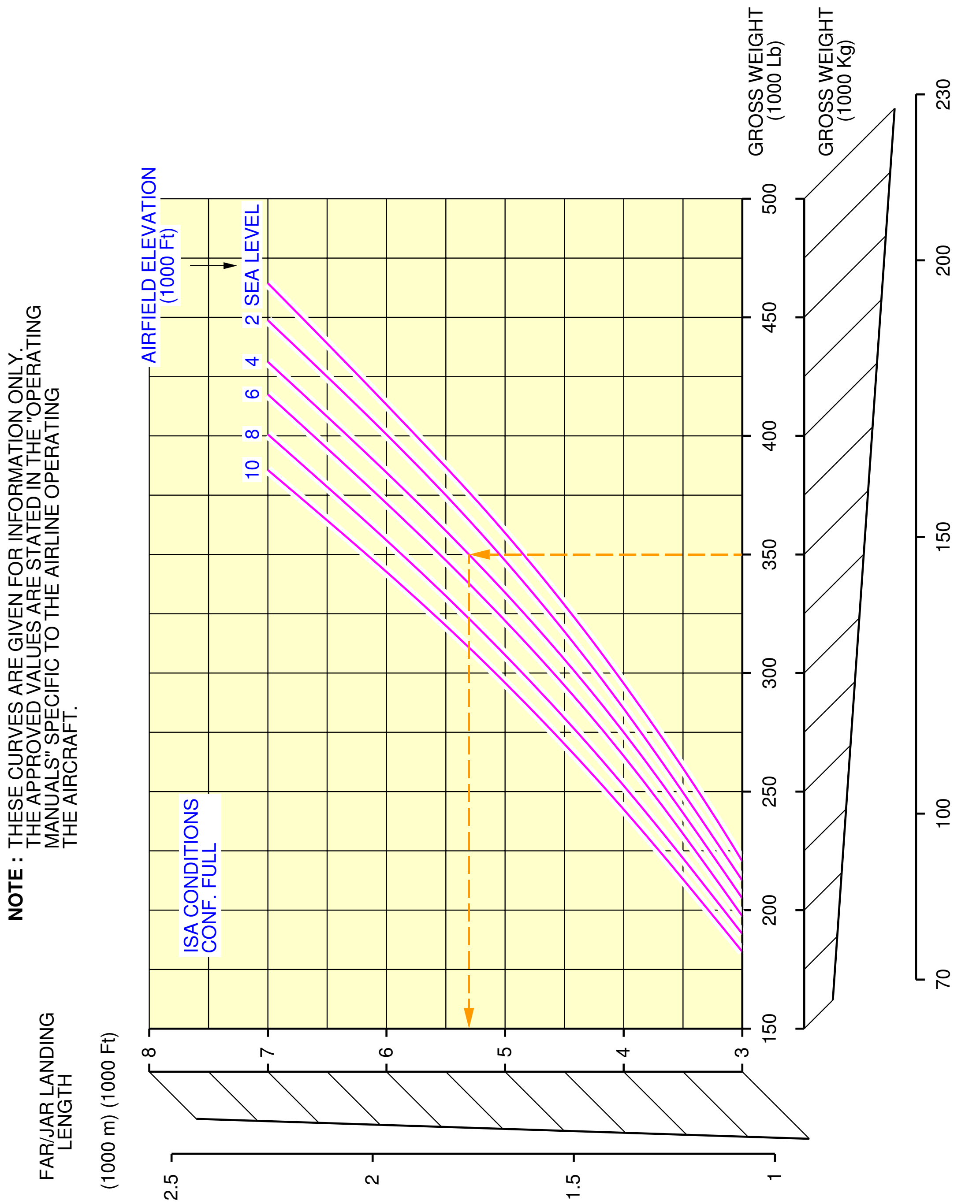
FAR / JAR Landing Field Length
ISA Conditions - PW 4000 Series Engine
FIGURE-3-4-1-991-001-A01

**ON A/C A330-200 A330-200F A330-300



FAR / JAR Landing Field Length
ISA Conditions - RR TRENT 700 Series Engine
FIGURE-3-4-1-991-002-A01

**ON A/C A330-200 A330-300



FAR / JAR Landing Field Length
ISA Conditions - GE CF6-80E1 Series Engine
FIGURE-3-4-1-991-003-A01

3-5-0 Final Approach Speed

****ON A/C A330-200 A330-200F A330-300**

Final Approach Speed

****ON A/C A330-200**

1. Final Approach Speed
   A. This section gives the final approach speed. This is the indicated airspeed at threshold in the landing configuration, at the certificated maximum flap setting and maximum landing weight, in standard atmospheric conditions. The approach speed is used to classify the aircraft into an Aircraft Approach Category, a grouping of aircraft based on the indicated airspeed at threshold.
   B. The final approach speed is 136 kt at a Maximum Landing Weight (MLW) of 182 000 kg (401 241 lb) and classifies the aircraft into the Aircraft Approach Category C.

      NOTE : This value is given for information only.

****ON A/C A330-200F**

2. Final Approach Speed
   A. This section gives the final approach speed. This is the indicated airspeed at threshold in the landing configuration, at the certificated maximum flap setting and maximum landing weight, in standard atmospheric conditions. The approach speed is used to classify the aircraft into an Aircraft Approach Category, a grouping of aircraft based on the indicated airspeed at threshold.
   B. The final approach speed is 139 kt at a Maximum Landing Weight (MLW) of 187 000 kg (412 264 lb) and classifies the aircraft into the Aircraft Approach Category C.

      NOTE : This value is given for information only.

****ON A/C A330-300**

3. Final Approach Speed
   A. This section gives the final approach speed. This is the indicated airspeed at threshold in the landing configuration, at the certificated maximum flap setting and maximum landing weight, in standard atmospheric conditions. The approach speed is used to classify the aircraft into an Aircraft Approach Category, a grouping of aircraft based on the indicated airspeed at threshold.
   B. The final approach speed is 137 kt at a Maximum Landing Weight (MLW) of 187 000 kg (412 264 lb) and classifies the aircraft into the Aircraft Approach Category C.

      NOTE : This value is given for information only.

GROUND MANEUVERING

4-1-0 General Information

****ON A/C A330-200 A330-200F A330-300**

General Information

1. This section provides airplane turning capability and maneuvering characteristics.

   For ease of presentation, this data has been determined from the theoretical limits imposed by the geometry of the aircraft, and where noted, provides for a normal allowance for tire slippage. As such, it reflects the turning capability of the aircraft in favorable operating circumstances. This data should only be used as guidelines for the method of determination of such parameters and for the maneuvering characteristics of this aircraft type.

   In the ground operating mode, varying airline practices may demand that more conservative turning procedures be adopted to avoid excessive tire wear and reduce possible maintenance problems. Airline operating techniques will vary in the level of performance, over a wide range of operating circumstances throughout the world. Variations from standard aircraft operating patterns may be necessary to satisfy physical constraints within the maneuvering area, such as adverse grades, limited area or high risk of jet blast damage. For these reasons, ground maneuvering requirements should be coordinated with the using airlines prior to layout planning.

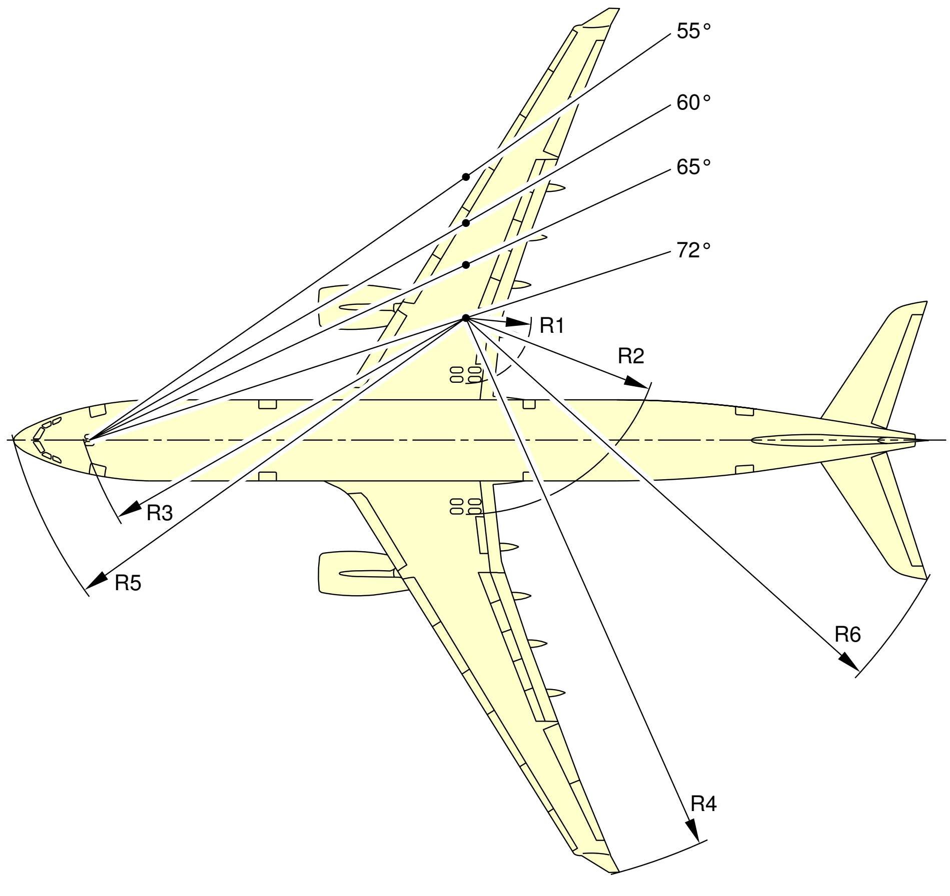
4-2-0 Turning Radii

****ON A/C A330-200 A330-200F A330-300**

Turning Radii

1. This section gives the turning radii.

**ON A/C A330-200 A330-200F A330-300



NOTE:
FOR TURNING RADII VALUES, REFER TO SHEET 2.

F_AC_040200_1_0040101_01_03

Turning Radii
(Sheet 1)
FIGURE-4-2-0-991-004-A01

**ON A/C A330-300

A330–300 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	19.4	m	67.7	78.4	76.9	102.7	78.9	85.9
			ft	222	257	252	337	259	282
2	25	24.2	m	52.1	62.8	62.4	87.1	64.9	71.2
			ft	171	206	205	286	213	234
2	30	29.0	m	41.4	52.1	52.8	76.5	55.9	61.4
			ft	136	171	173	251	183	201
2	35	33.8	m	33.5	44.2	46.1	68.7	49.6	54.4
			ft	110	145	151	225	163	178
2	40	38.6	m	27.4	38.1	41.1	62.7	45.1	49.1
			ft	90	125	135	206	148	161
2	45	43.2	m	22.6	33.3	37.5	58.0	41.9	45.2
			ft	74	109	123	190	137	148
2	50	47.8	m	18.6	29.3	34.6	54.0	39.5	42.0
			ft	61	96	114	177	130	138
2	55	52.2	m	15.3	26.0	32.5	50.7	37.6	39.5
			ft	50	85	107	166	123	130
2	60	56.3	m	12.5	23.2	30.8	48.0	36.2	37.4
			ft	41	76	101	158	119	123
2	65	60.1	m	10.2	20.9	29.6	45.8	35.2	35.8
			ft	33	69	97	150	115	117
2	72	63.8	m	8.1	18.8	28.5	43.7	34.4	34.4
			ft	27	62	94	143	113	113
1	50	48.2	m	18.3	29.0	34.4	53.7	39.3	41.7
			ft	60	95	113	176	129	137
1	55	52.9	m	14.8	25.5	32.2	50.3	37.4	39.1
			ft	49	84	106	165	123	128
1	60	57.6	m	11.7	22.4	30.4	47.2	35.9	36.9
			ft	38	73	100	155	118	121
1	65	62.1	m	9.1	19.7	29.0	44.6	34.7	35.1
			ft	30	65	95	146	114	115
1	72	67.8	m	6.0	16.7	27.6	41.6	33.7	33.1
			ft	20	55	91	136	111	109

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.

F_AC_040200_1_0020101_01_03

Turning Radii
(Sheet 2)
FIGURE-4-2-0-991-002-A01

**ON A/C A330-200 A330-200F

A330–200/–200F 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	19.2	m	59.3	70.0	68.0	94.4	69.9	79.1
			ft	195	230	223	310	229	260
2	25	23.9	m	45.7	56.4	55.3	80.9	57.8	66.6
			ft	150	185	181	265	190	219
2	30	28.6	m	36.3	47.0	46.8	71.6	49.9	58.4
			ft	119	154	154	235	164	192
2	35	33.3	m	29.4	40.1	40.9	64.7	44.4	52.5
			ft	96	132	134	212	146	172
2	40	38.0	m	24.0	34.7	36.5	59.4	40.5	48.2
			ft	79	114	120	195	133	158
2	45	42.5	m	19.8	30.5	33.2	55.3	37.7	45.0
			ft	65	100	109	181	124	148
2	50	46.9	m	16.4	27.1	30.8	51.9	35.5	42.4
			ft	54	89	101	170	116	139
2	55	51.2	m	13.5	24.1	28.8	49.1	33.9	40.4
			ft	44	79	94	161	111	133
2	60	55.1	m	11.1	21.8	27.4	46.8	32.7	38.8
			ft	36	72	90	154	107	127
2	65	59.6	m	8.6	19.3	26.0	44.4	31.6	37.2
			ft	28	63	85	146	104	122
2	72	62.0	m	7.4	18.1	25.4	43.2	31.2	36.5
			ft	24	59	83	142	102	120
1	50	48.4	m	15.3	26.0	30.0	50.9	34.9	41.7
			ft	50	85	98	167	115	137
1	55	52.2	m	12.8	23.5	28.4	48.5	33.6	39.9
			ft	42	77	93	159	110	131
1	60	57.7	m	9.6	20.3	26.5	45.4	32.1	37.9
			ft	31	67	87	149	105	124
1	65	62.2	m	7.3	18.0	25.3	43.1	31.1	36.5
			ft	24	59	83	141	102	120
1	72	68.1	m	4.5	15.2	24.1	40.4	30.2	34.9
			ft	15	50	79	133	99	115

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.

F_AC_040200_1_0030101_01_03

Turning Radii
(Sheet 2)
FIGURE-4-2-0-991-003-A01

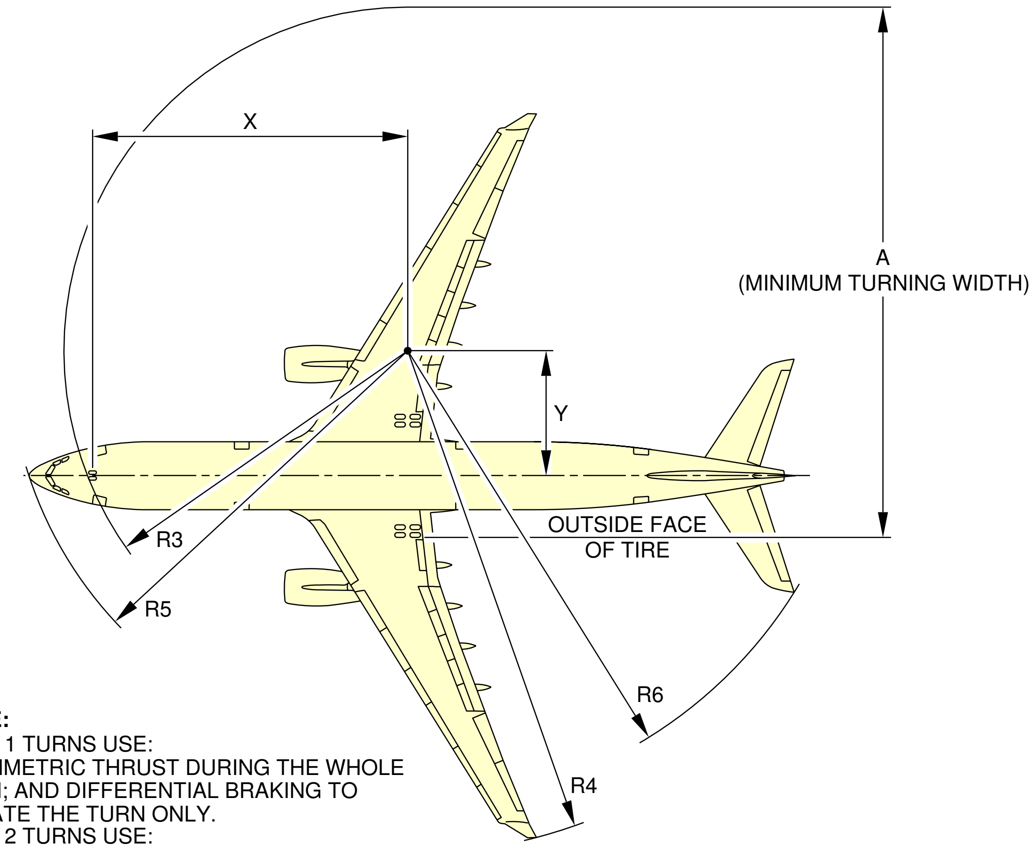
4-3-0 Minimum Turning Radii

****ON A/C A330-200 A330-200F A330-300**

Minimum Turning Radii

1. This section gives the minimum turning radii.

**ON A/C A330-300



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.

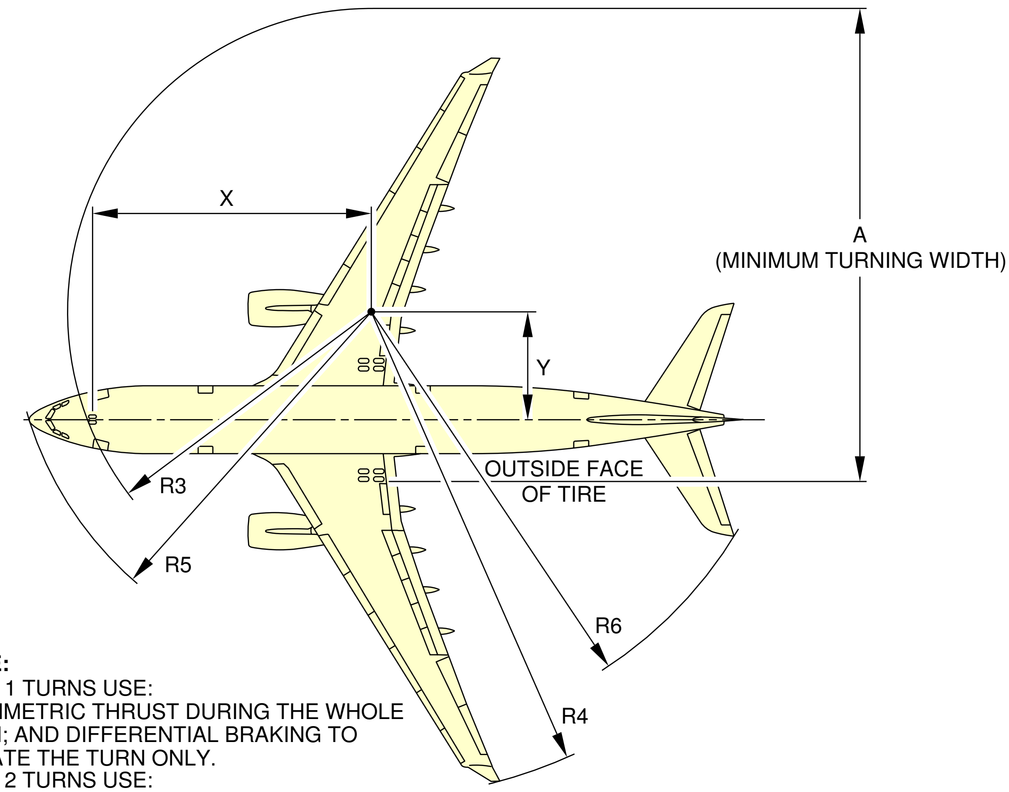
A330–300 MINIMUM TURNING RADII										
TYPE OF TURN	STEERING ANGLE (deg)	EFFECTIVE STEERING ANGLE (deg)		X	Y	A	R3 NLG	R4 WING	R5 NOSE	R6 TAIL
1	72 (MAX)	67.8	m	25.4	10.4	44.6	27.6	41.6	33.7	33.1
			ft	83	34	146	91	136	111	109
2	72 (MAX)	63.8	m	25.4	12.5	47.6	28.5	43.7	34.4	34.4
			ft	83	41	156	94	143	113	113
1	65 (MAX)	62.1	m	25.4	13.4	49.0	29.0	44.6	34.7	35.1
			ft	83	44	161	95	146	114	115
2	65 (MAX)	60.1	m	25.4	14.6	50.7	29.6	45.8	35.2	35.8
			ft	83	48	166	97	150	115	117

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

F_AC_040300_1_0010101_01_05

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

**ON A/C A330-200 A330-200F



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.

A330−200/−200F 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)	68.1	m	22.2	8.9	39.7	24.1	40.4	30.2	34.9
			ft	73	29	130	79	133	99	115
2	72 (MAX)	62.0	m	22.2	11.8	43.8	25.4	43.2	31.2	36.5
			ft	73	39	144	83	142	102	120
1	65 (MAX)	62.2	m	22.2	11.7	43.6	25.3	43.1	31.1	36.5
			ft	73	38	143	83	141	102	120
2	65 (MAX)	59.6	m	22.2	13.0	45.6	26.0	44.4	31.6	37.2
			ft	73	43	150	85	146	104	122

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

F_AC_040300_1_0070101_01_01

Minimum Turning Radii
FIGURE-4-3-0-991-007-A01

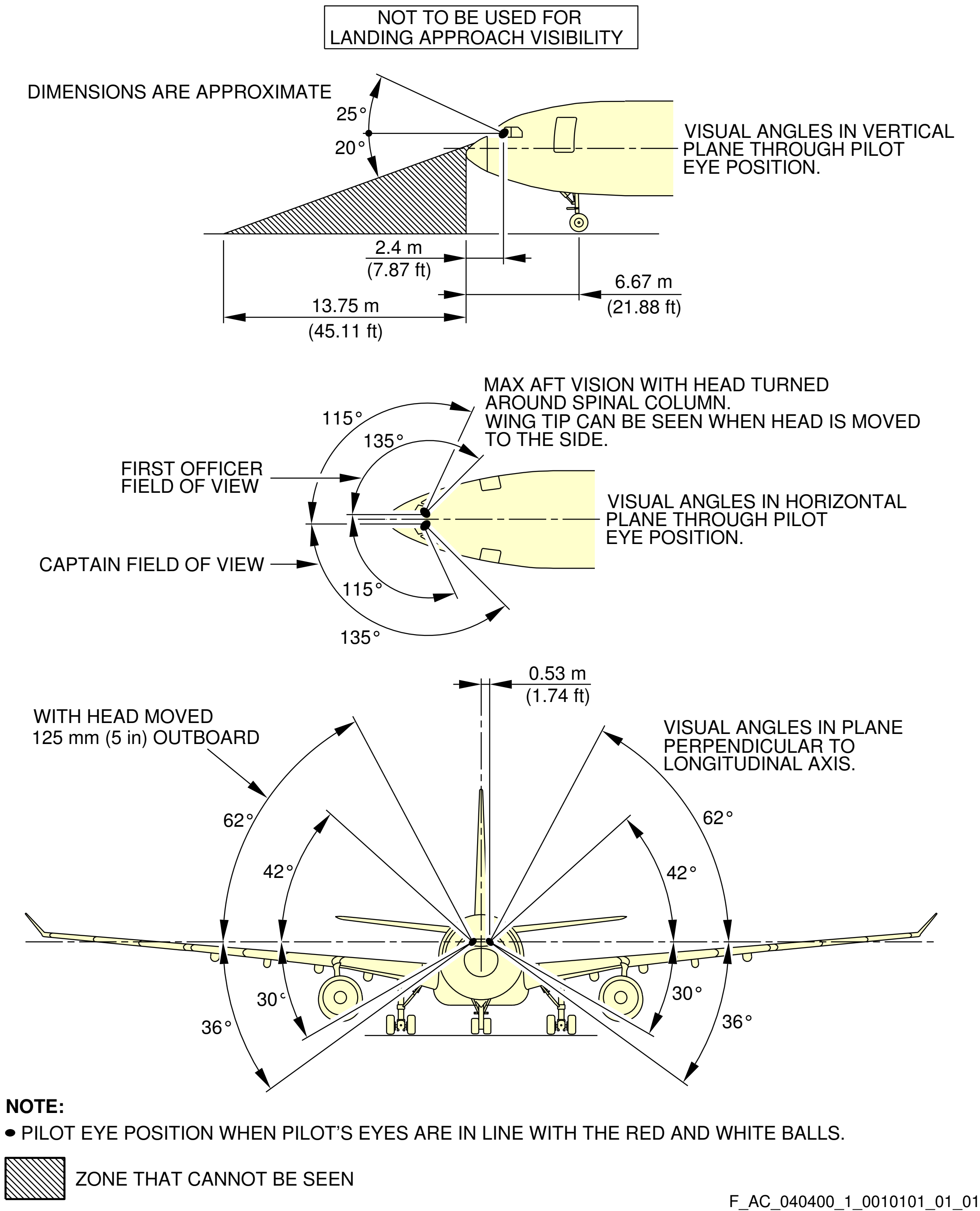
4-4-0 Visibility from Cockpit in Static Position

****ON A/C A330-200 A330-200F A330-300**

Visibility from Cockpit in Static Position.

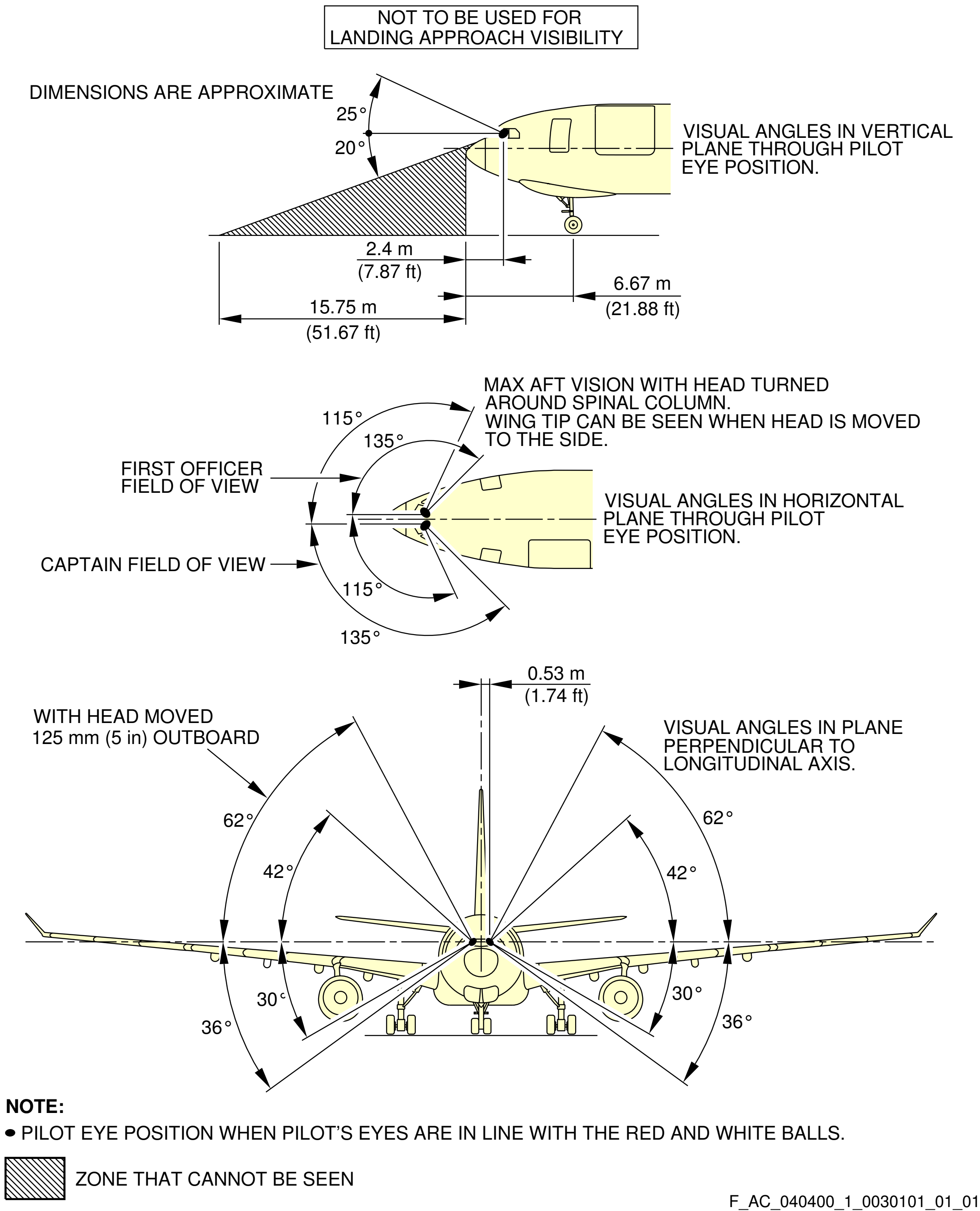
1. This section gives the visibility from cockpit in static position.

**ON A/C A330-200 A330-300



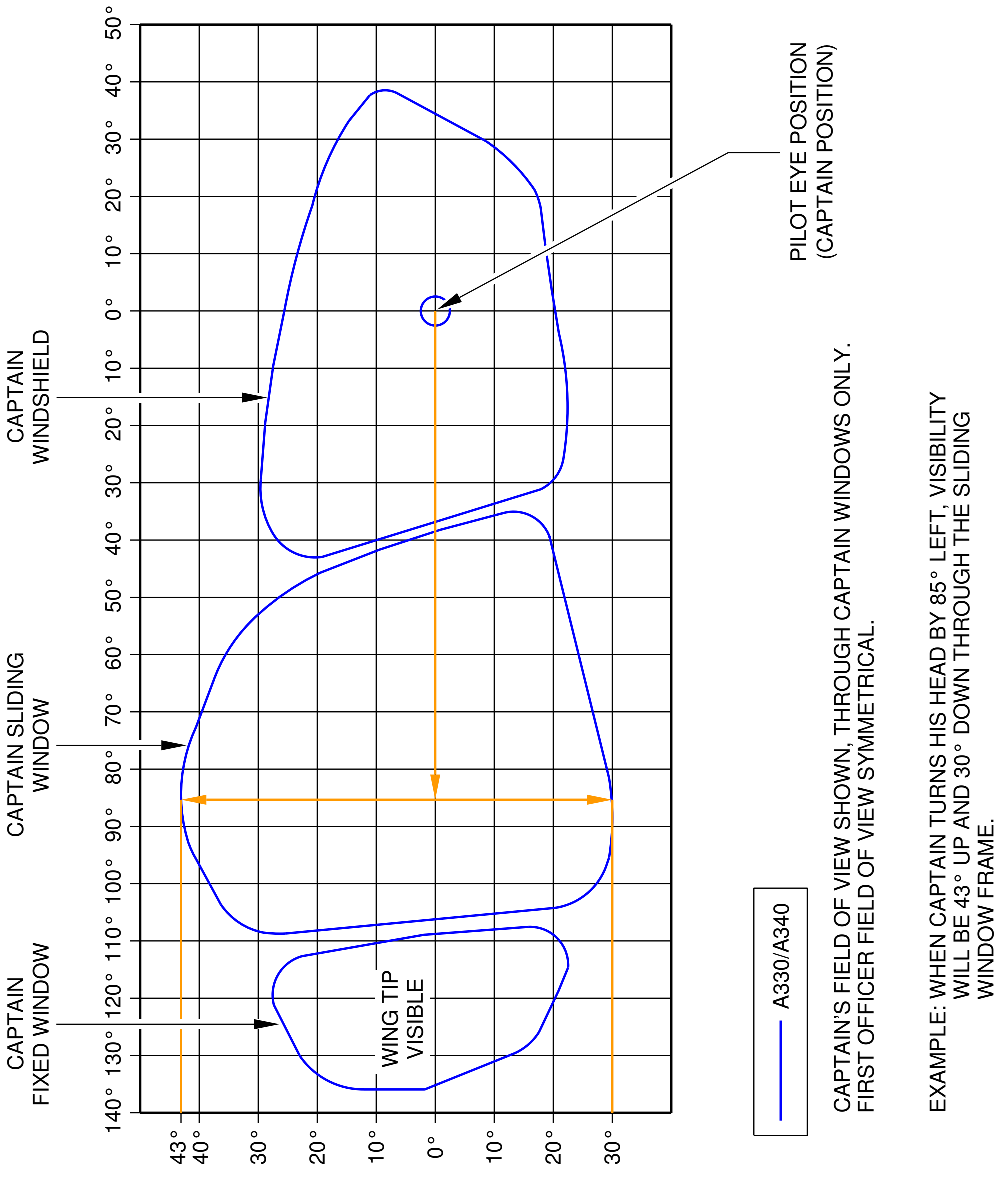
Visibility from Cockpit in Static Position
FIGURE-4-4-0-991-001-A01

**ON A/C A330-200F



Visibility from Cockpit in Static Position
FIGURE-4-4-0-991-003-A01

****ON A/C A330-200 A330-200F A330-300**



F_AC_040400_1_0060101_01_00

Binocular Visibility Through Windows from Captain Eye Position
FIGURE-4-4-0-991-006-A01

4-5-0 Runway and Taxiway Turn Paths

****ON A/C A330-200 A330-200F A330-300**

Runway and Taxiway Turn Paths

1. Runway and Taxiway Turn Paths.

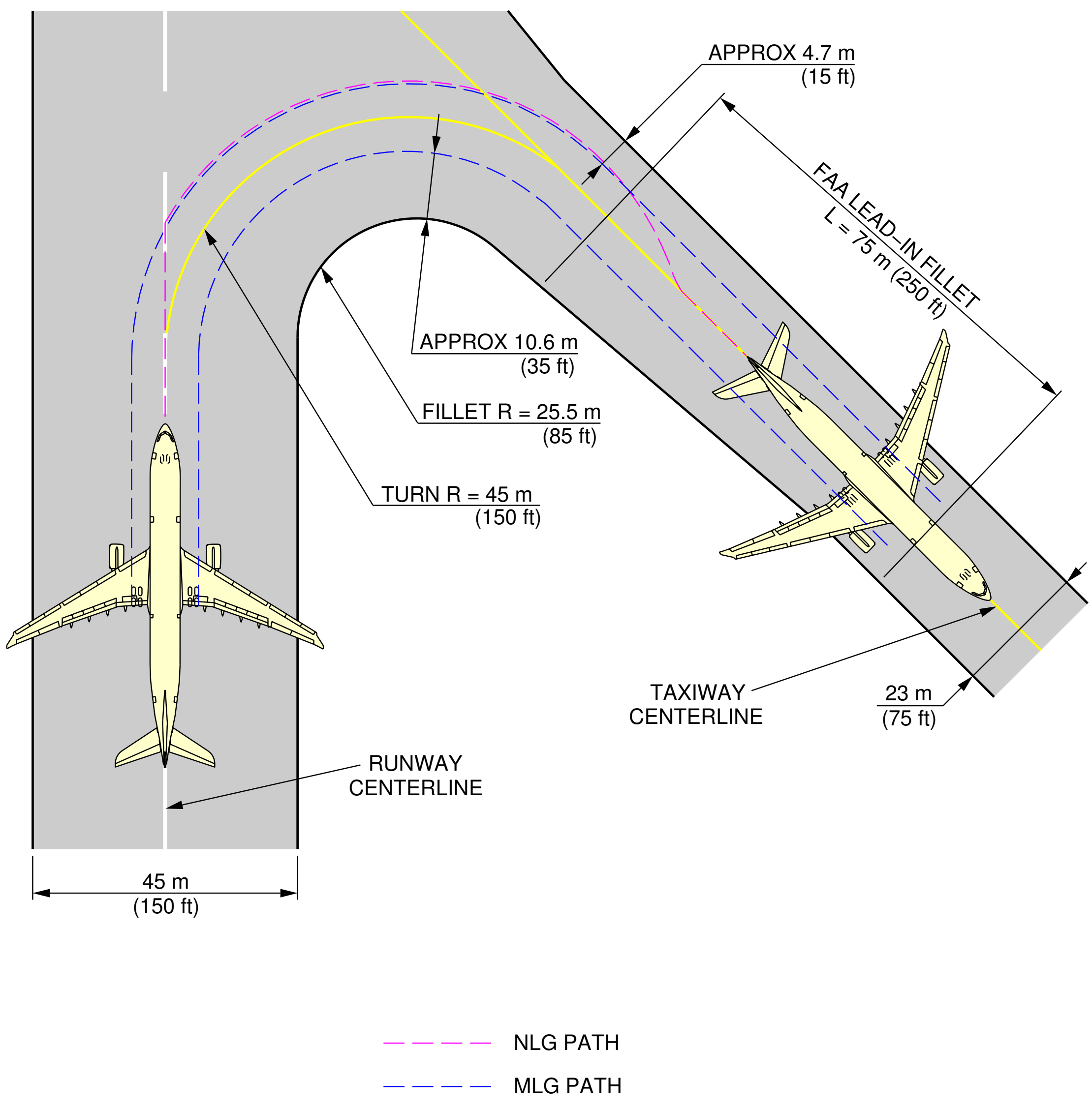
4-5-1 135° Turn - Runway to Taxiway

****ON A/C A330-200 A330-200F A330-300**

135° Turn - Runway to Taxiway

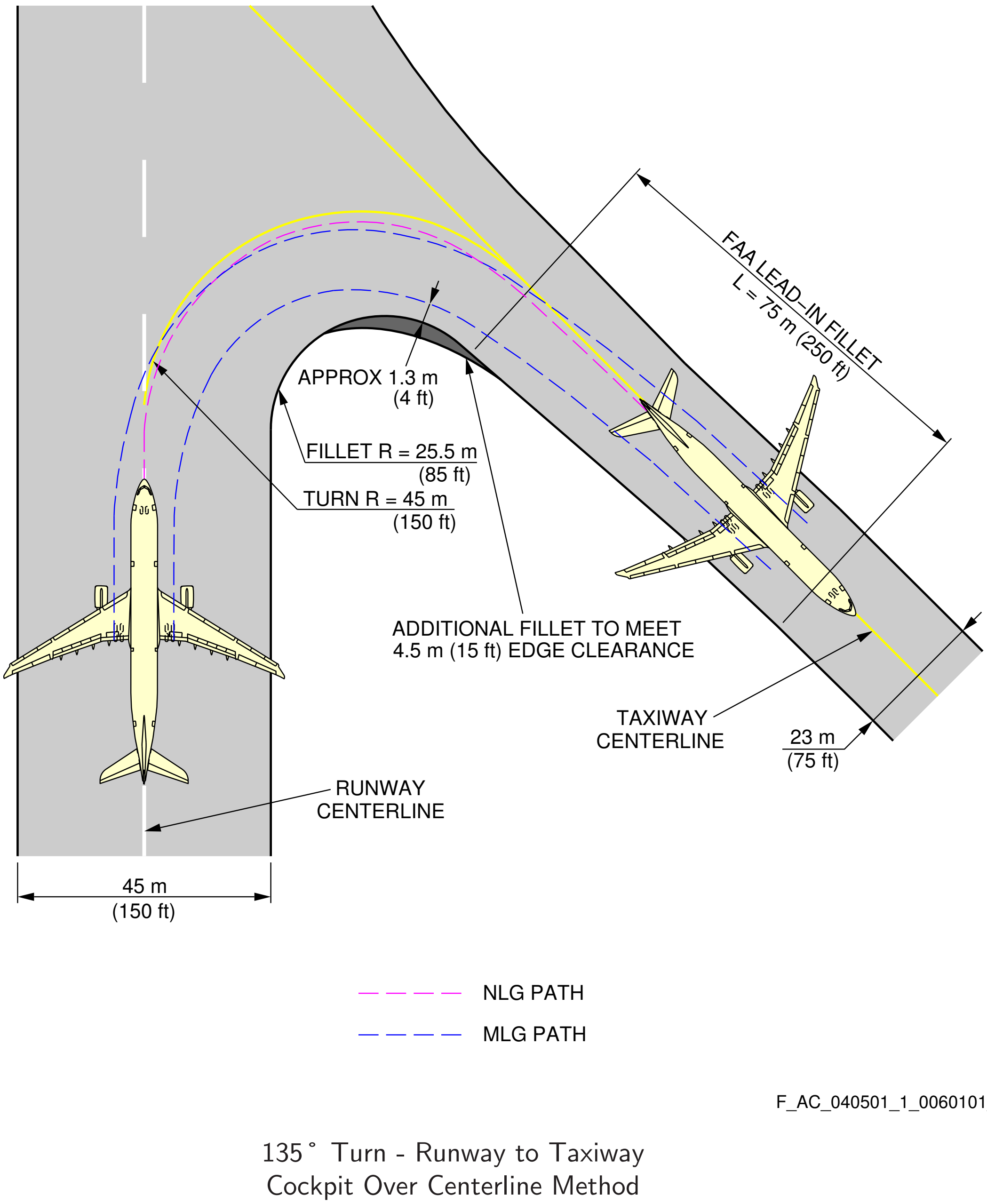
1. This section gives the 135° turn - runway to taxiway.

**ON A/C A330-300



135° Turn - Runway to Taxiway
Judgemental Oversteer Method
FIGURE-4-5-1-991-001-A01

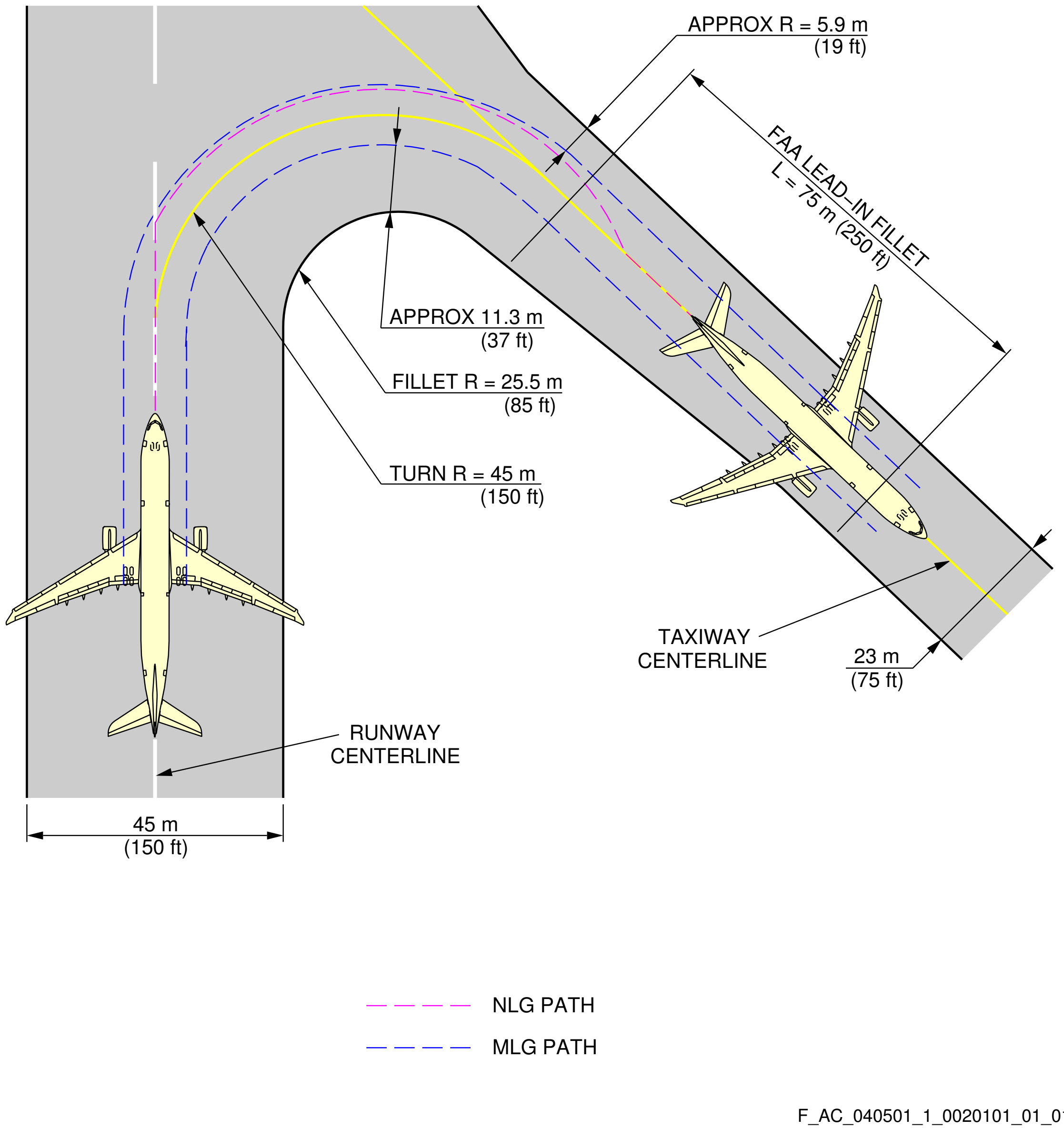
**ON A/C A330-300



F_AC_040501_1_0060101_01_00

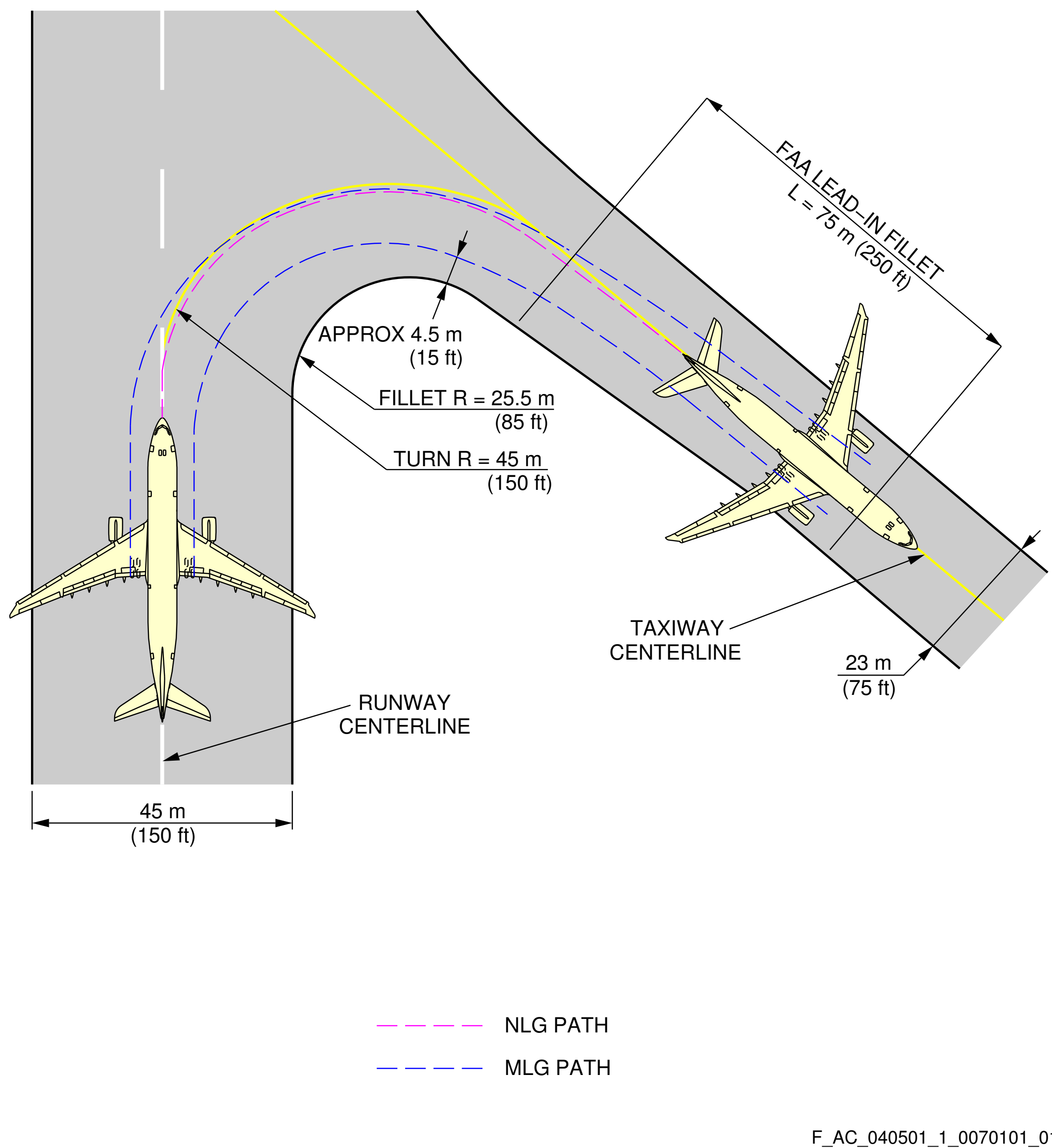
135˚ Turn - Runway to Taxiway
Cockpit Over Centerline Method
FIGURE-4-5-1-991-006-A01

**ON A/C A330-200 A330-200F



135° Turn - Runway to Taxiway
Judgemental Oversteer Method
FIGURE-4-5-1-991-002-A01

****ON A/C A330-200 A330-200F**



135° Turn - Runway to Taxiway
Cockpit Over Centerline Method
FIGURE-4-5-1-991-007-A01

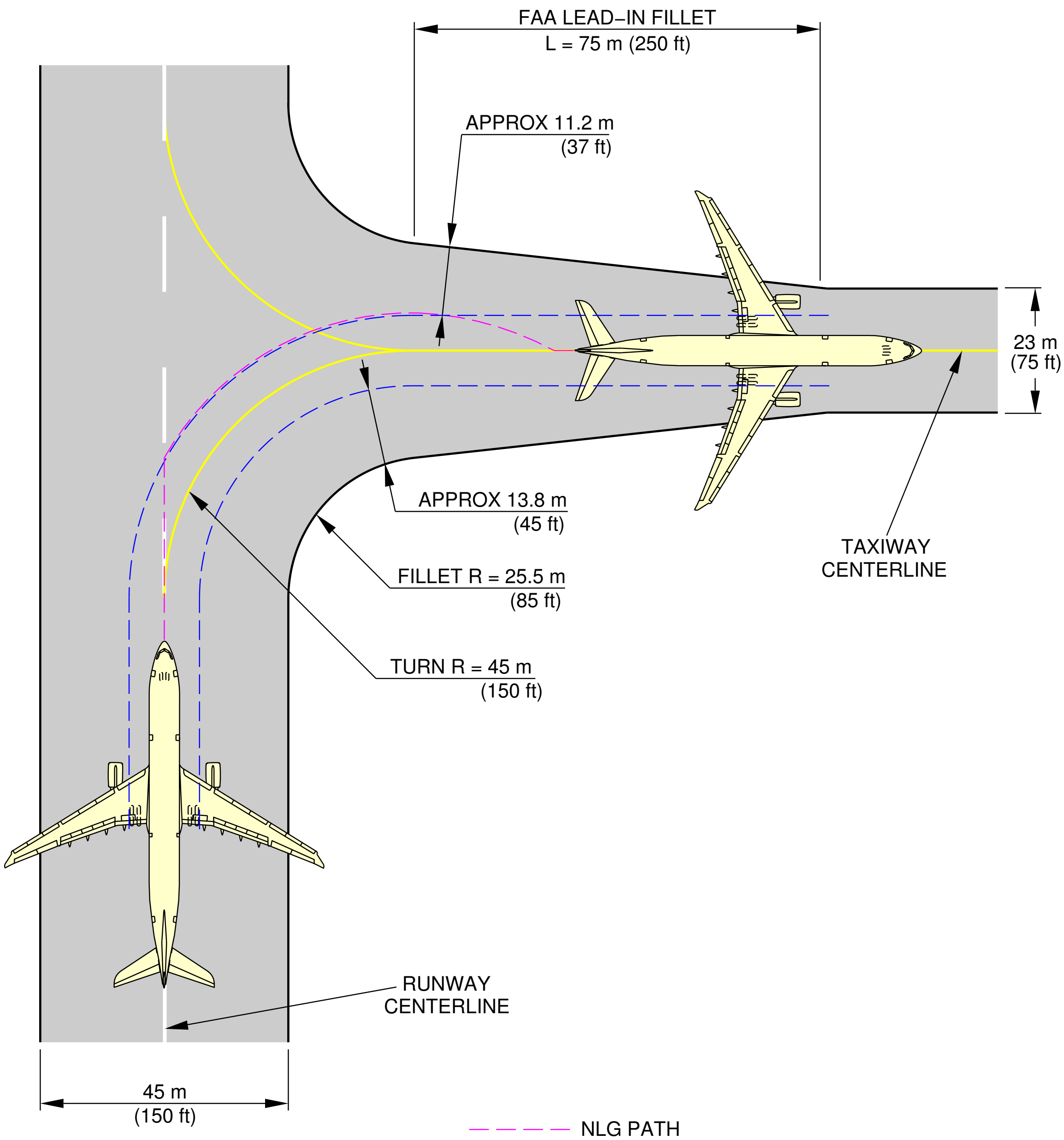
4-5-2 90° Turn - Runway to Taxiway

****ON A/C A330-200 A330-200F A330-300**

<u>90° Turn - Runway to Taxiway</u>

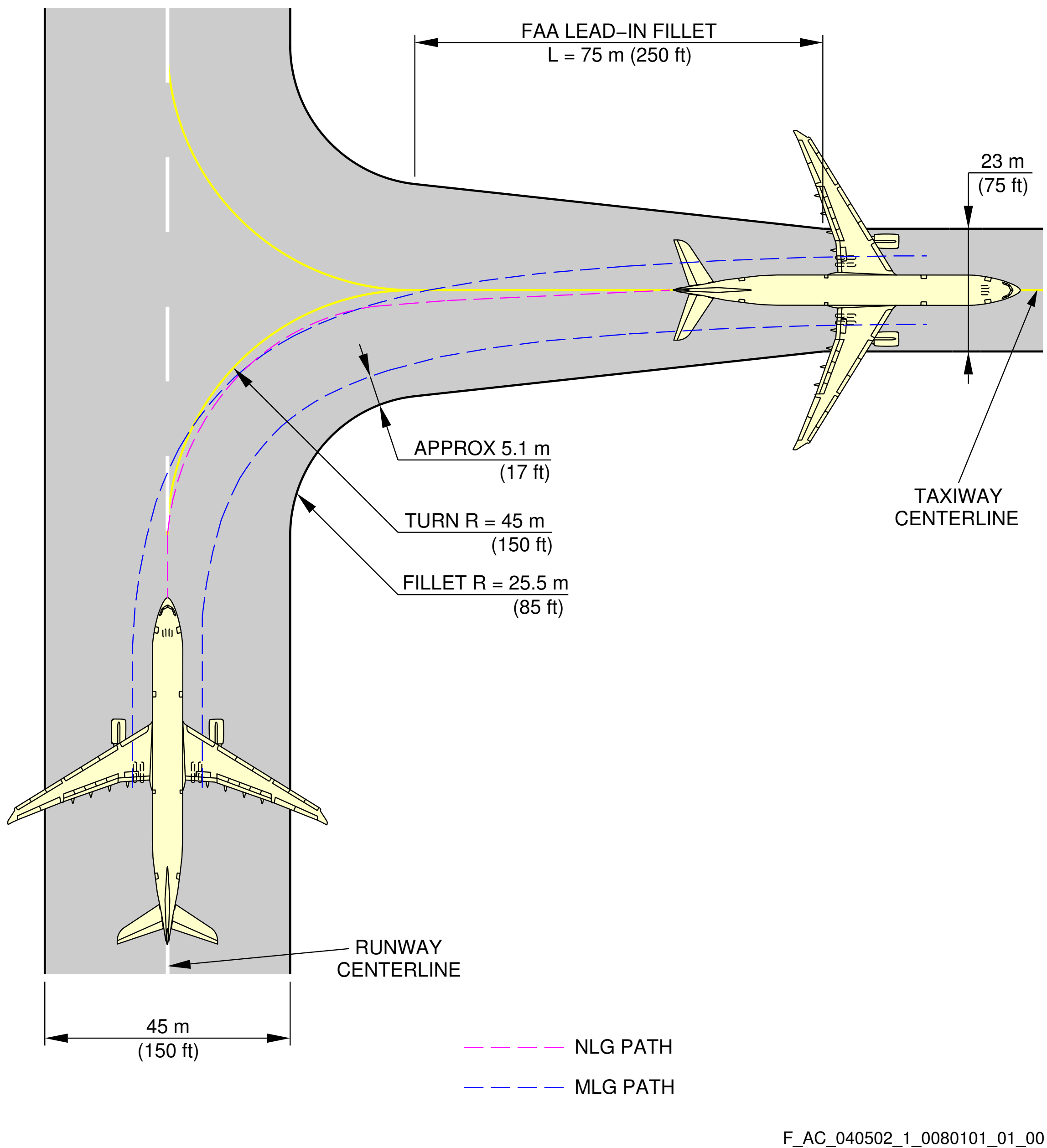
1. This section gives the 90° turn - runway to taxiway.

**ON A/C A330-300



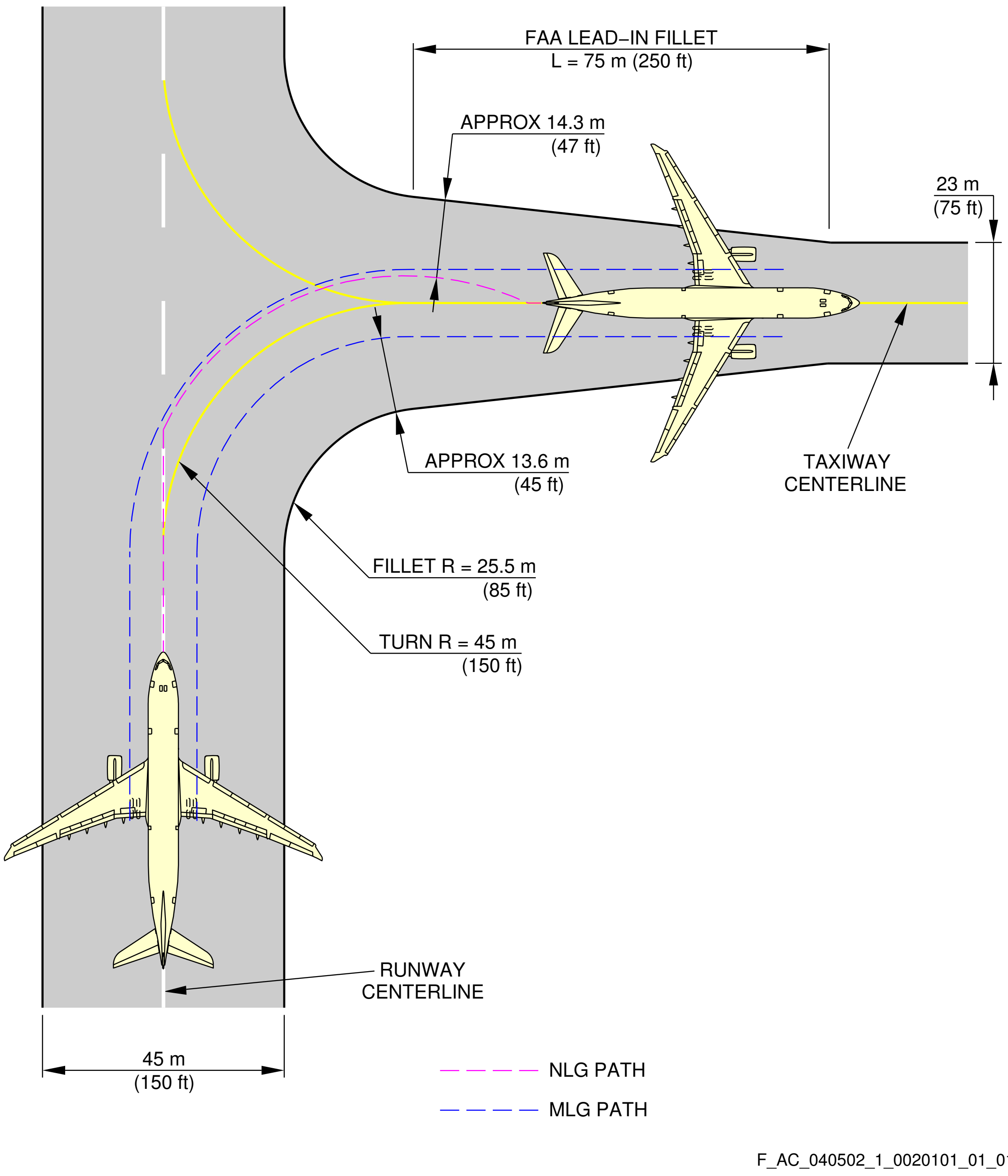
90° Turn - Runway to Taxiway
Judgemental Oversteer Method
FIGURE-4-5-2-991-001-A01

**ON A/C A330-300



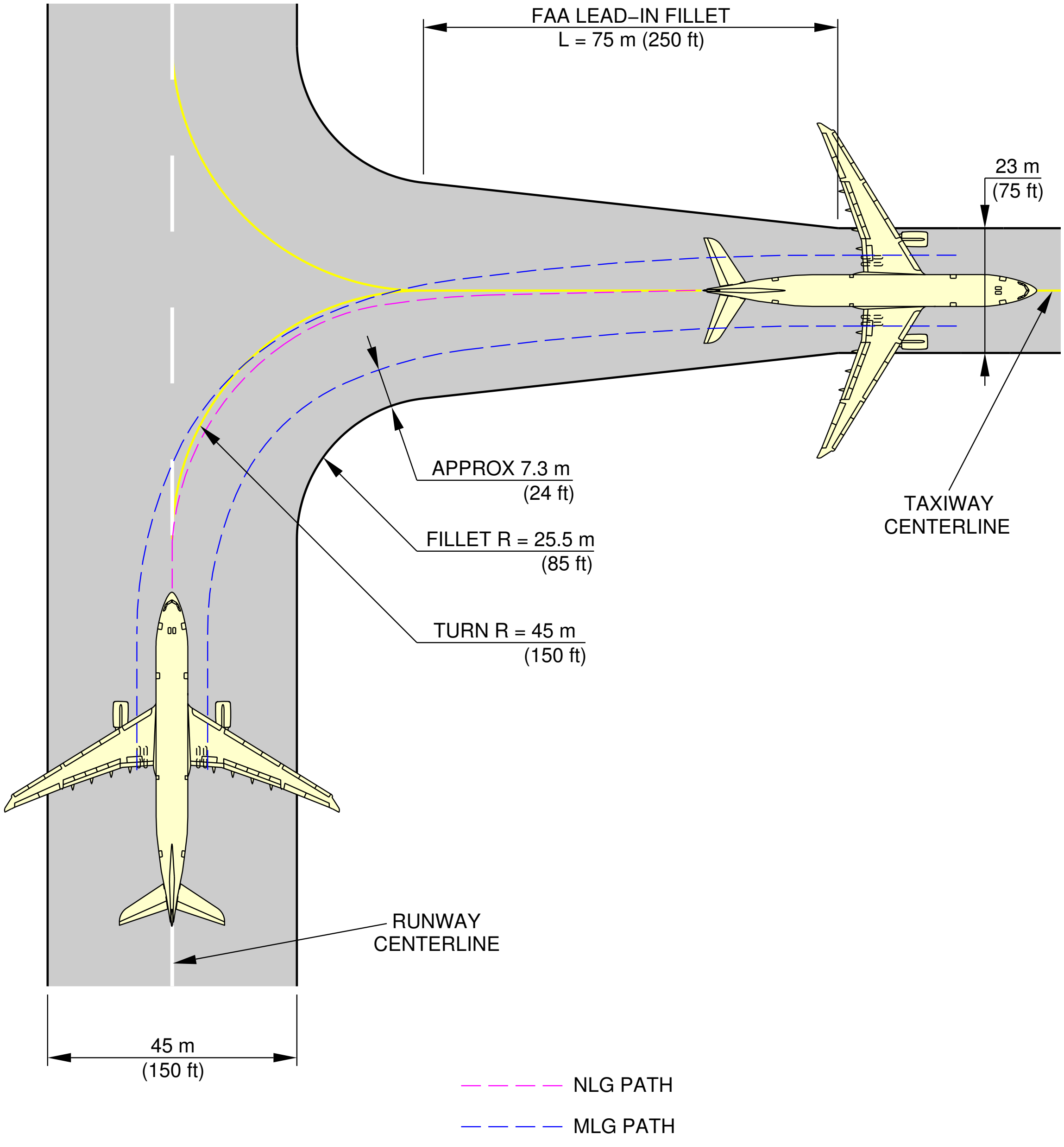
90° Turn - Runway to Taxiway
Cockpit Over Centerline Method
FIGURE-4-5-2-991-008-A01

**ON A/C A330-200 A330-200F



90° Turn - Runway to Taxiway
Judgemental Oversteer Method
FIGURE-4-5-2-991-002-A01

**ON A/C A330-200 A330-200F



90° Turn - Runway to Taxiway
Cockpit Over Centerline Method
FIGURE-4-5-2-991-009-A01

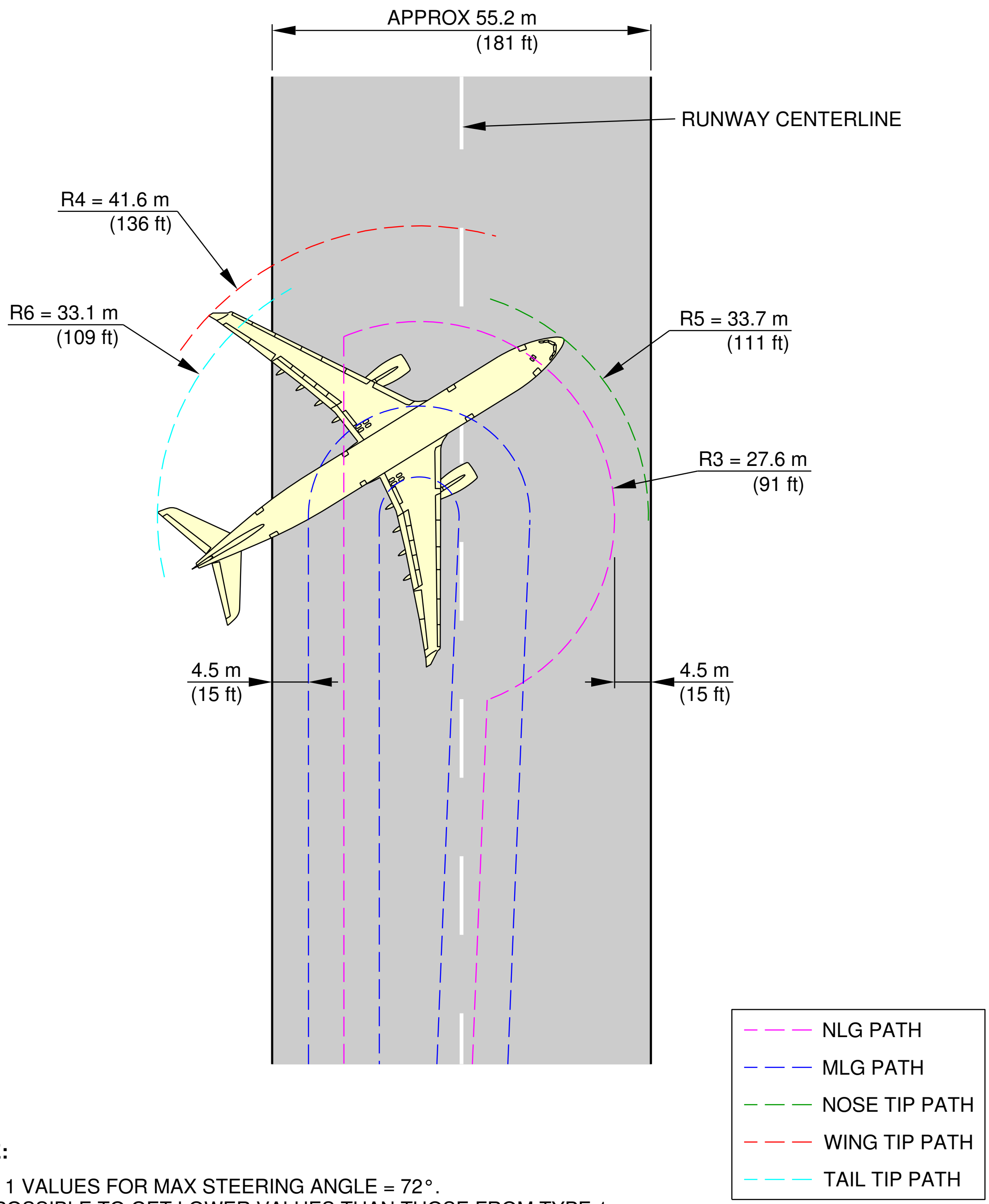
4-5-3 180° Turn on a Runway

****ON A/C A330-200 A330-200F A330-300**

<u>180° Turn on a Runway</u>

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

**ON A/C A330-300



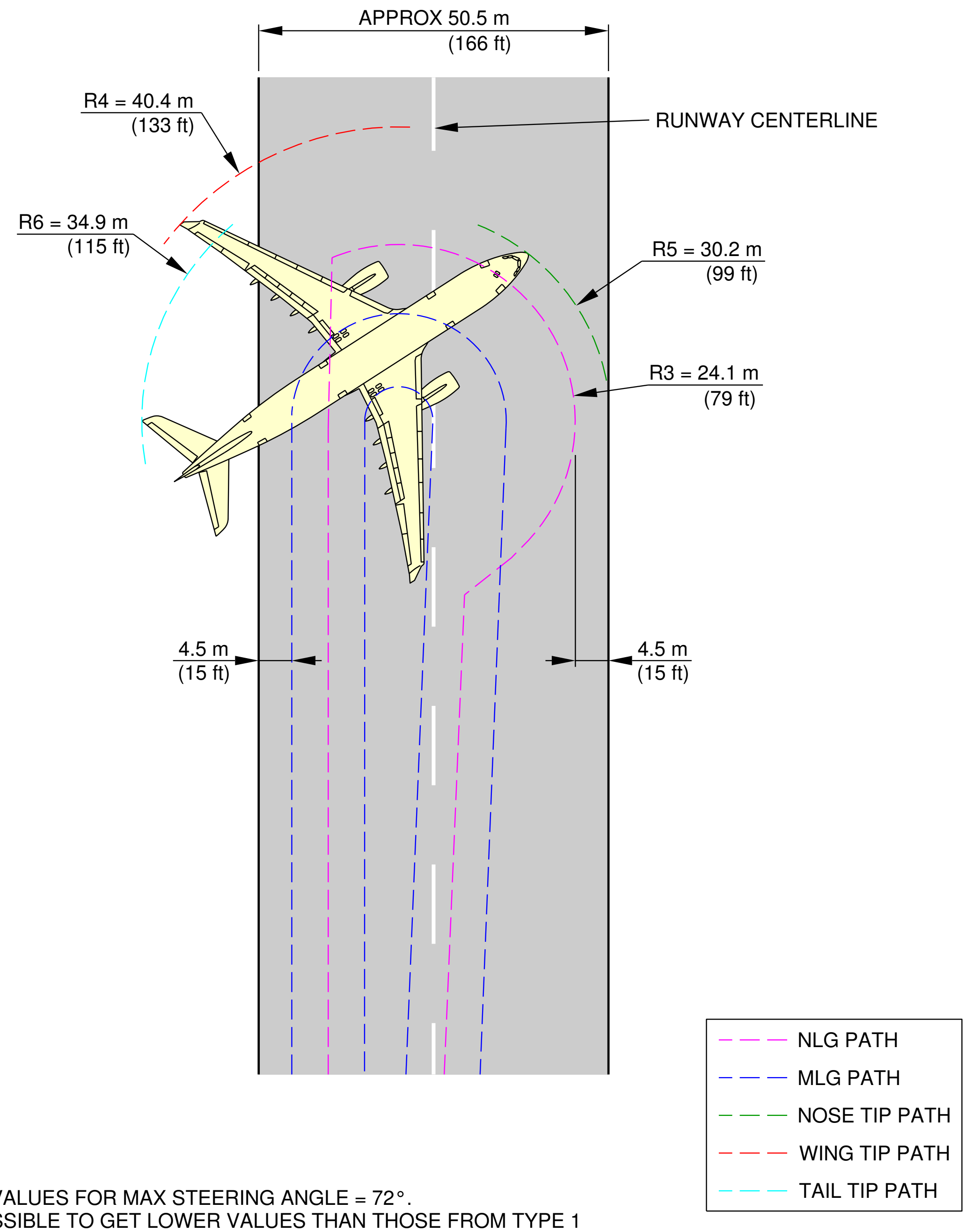
NOTE:

TYPE 1 VALUES FOR MAX STEERING ANGLE = 72°.
IT IS POSSIBLE TO GET LOWER VALUES THAN THOSE FROM TYPE 1 BY APPLYING DIFFERENTIAL BRAKING DURING THE WHOLE TURN.

F_AC_040503_1_0130101_01_01

180° Turn on a Runway
FIGURE-4-5-3-991-013-A01

**ON A/C A330-200 A330-200F



NOTE:

TYPE 1 VALUES FOR MAX STEERING ANGLE = 72°.
IT IS POSSIBLE TO GET LOWER VALUES THAN THOSE FROM TYPE 1 BY APPLYING DIFFERENTIAL BRAKING DURING THE WHOLE TURN.

F_AC_040503_1_0140101_01_01

180° Turn on a Runway
FIGURE-4-5-3-991-014-A01

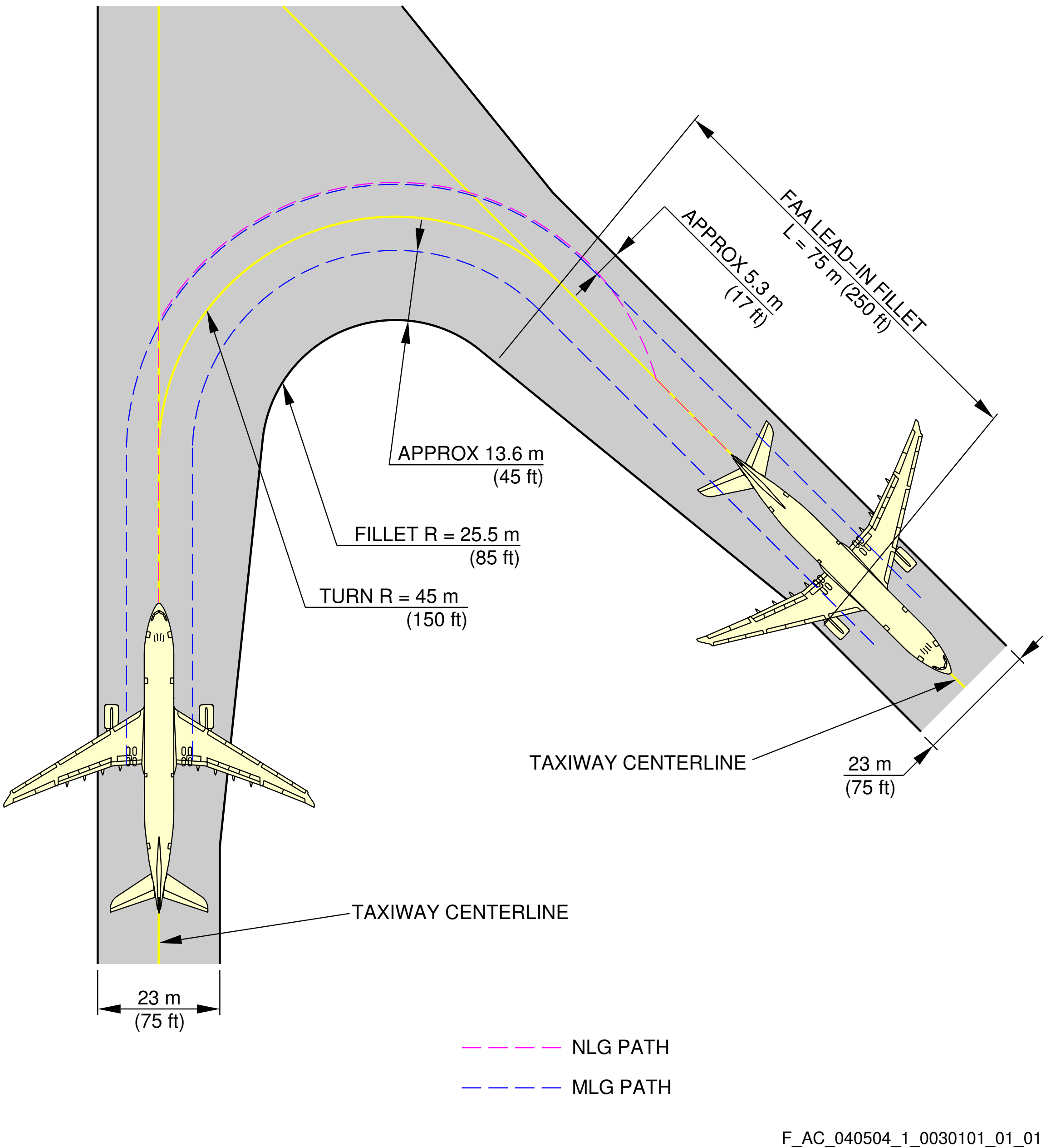
4-5-4 135° Turn - Taxiway to Taxiway

****ON A/C A330-200 A330-200F A330-300**

135° Turn - Taxiway to Taxiway

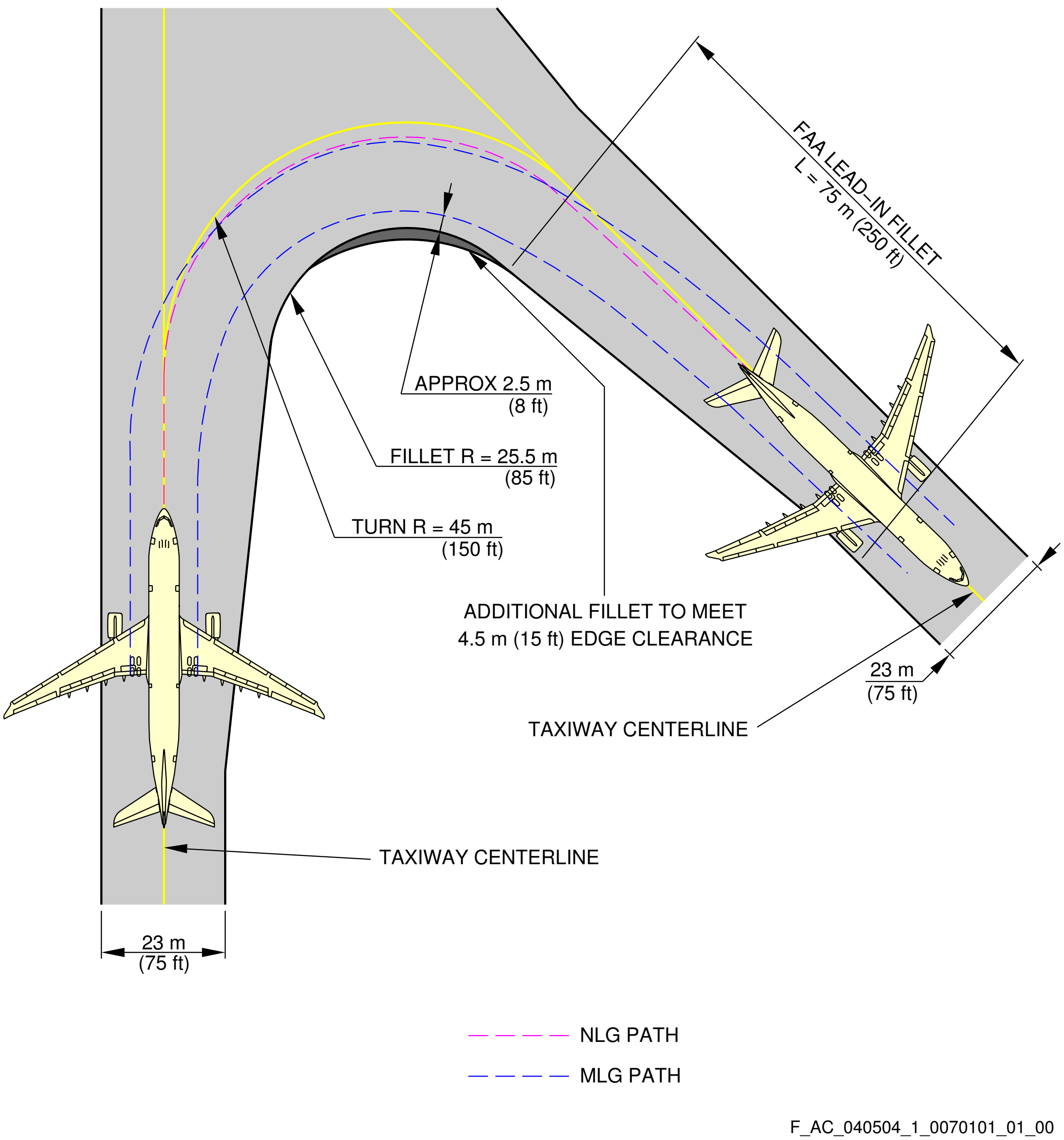
1. This section gives the 135° turn - taxiway to taxiway.

**ON A/C A330-300



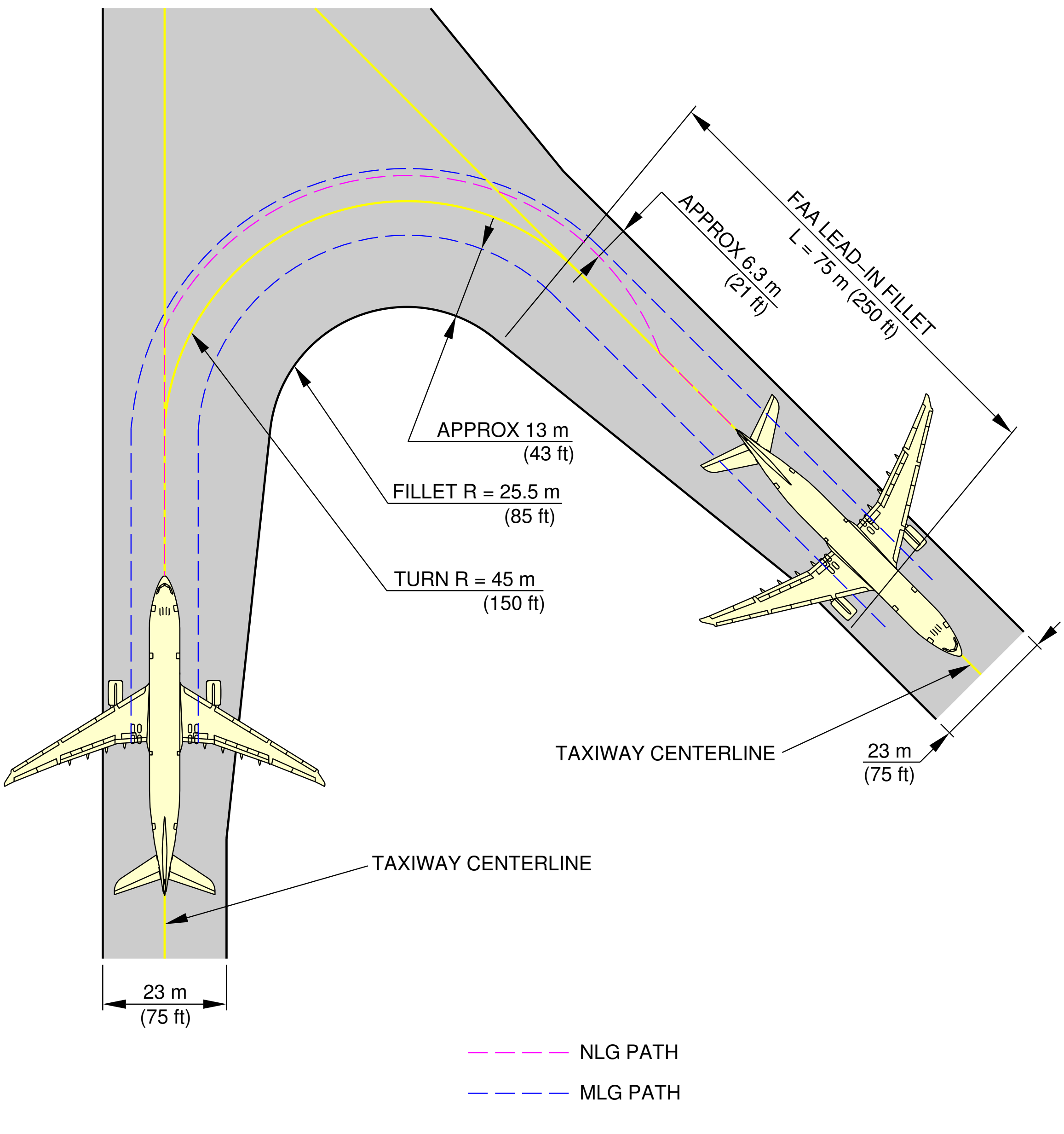
135° Turn - Taxiway to Taxiway
Judgemental Oversteer Method
FIGURE-4-5-4-991-003-A01

**ON A/C A330-300



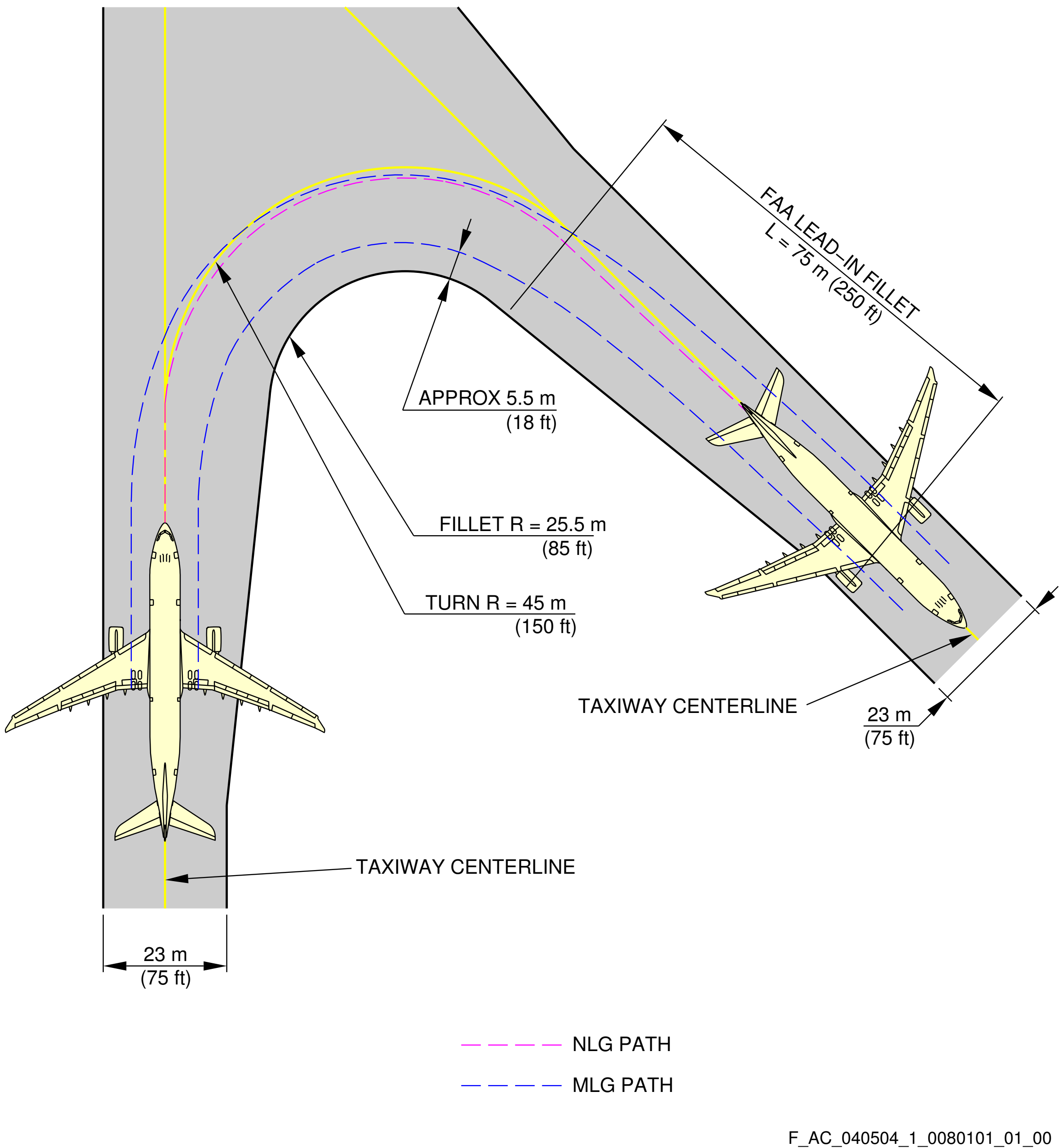
135° Turn - Taxiway to Taxiway
Cockpit Over Centerline Method
FIGURE-4-5-4-991-007-A01

**ON A/C A330-200 A330-200F



135° Turn - Taxiway to Taxiway
Judgemental Oversteer Method
FIGURE-4-5-4-991-004-A01

**ON A/C A330-200 A330-200F



135° Turn - Taxiway to Taxiway
Cockpit Over Centerline Method
FIGURE-4-5-4-991-008-A01

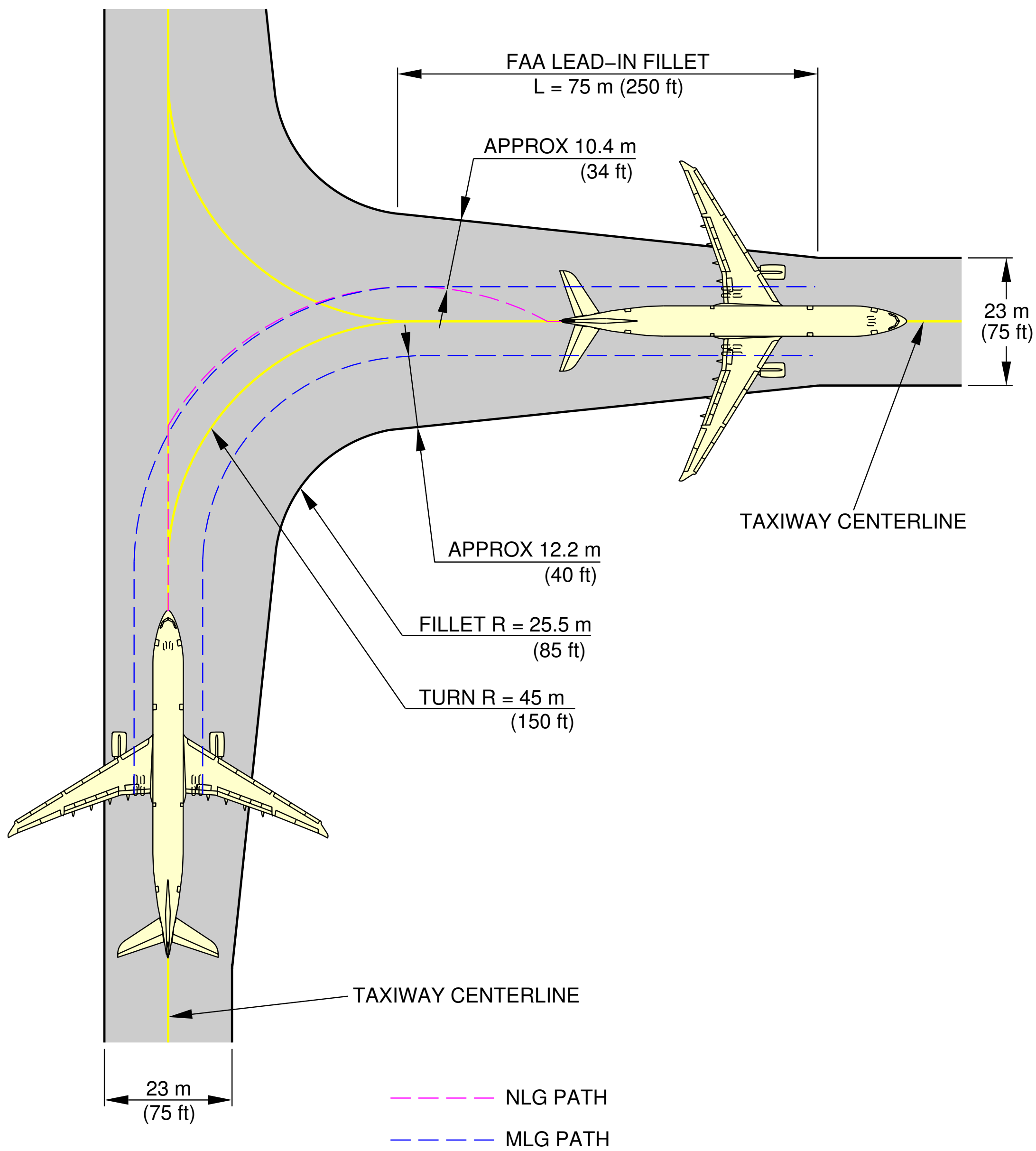
4-5-5 90° Turn - Taxiway to Taxiway

****ON A/C A330-200 A330-200F A330-300**

<u>90° Turn - Taxiway to Taxiway</u>

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

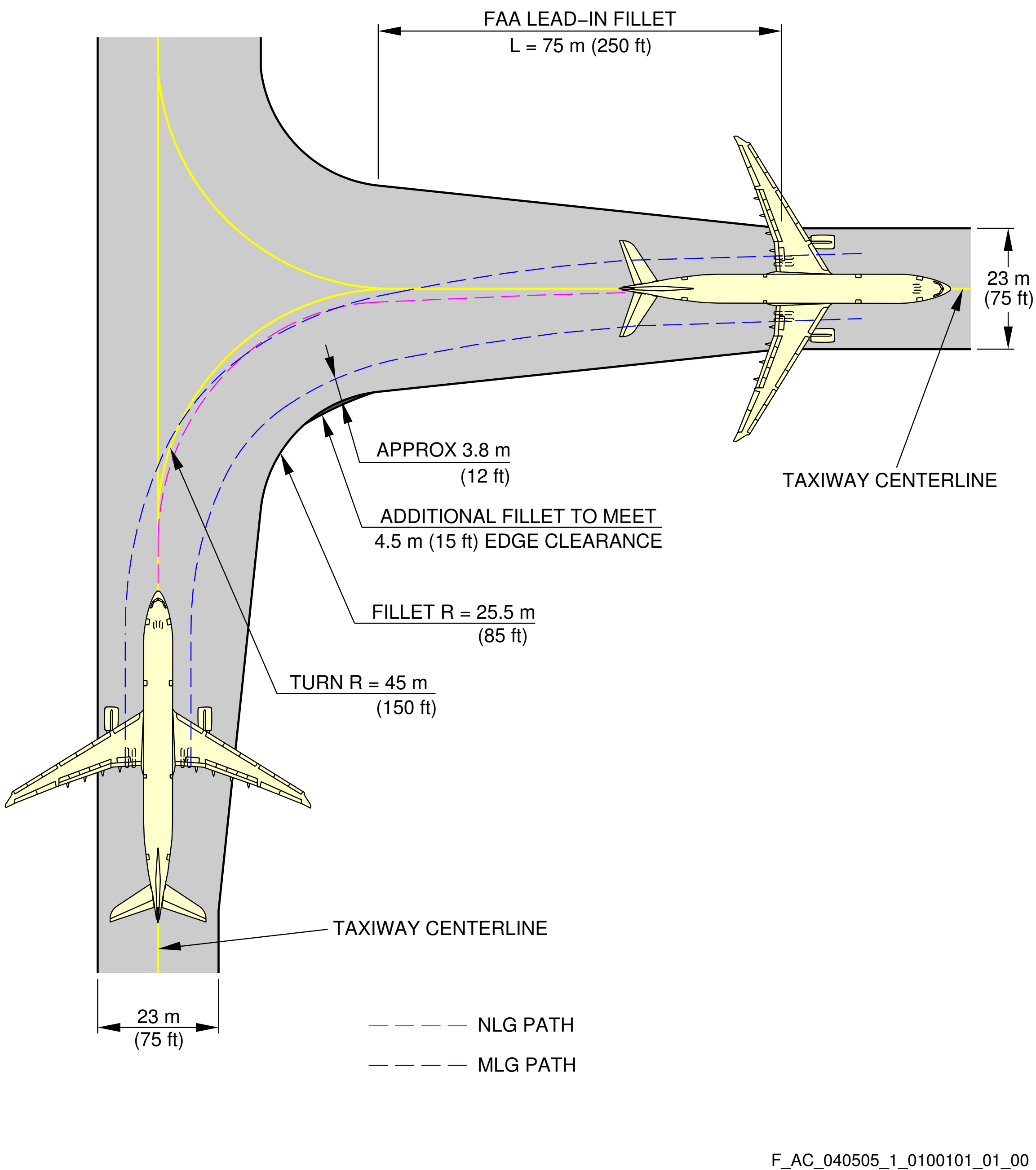
**ON A/C A330-300



F_AC_040505_1_0030101_01_01

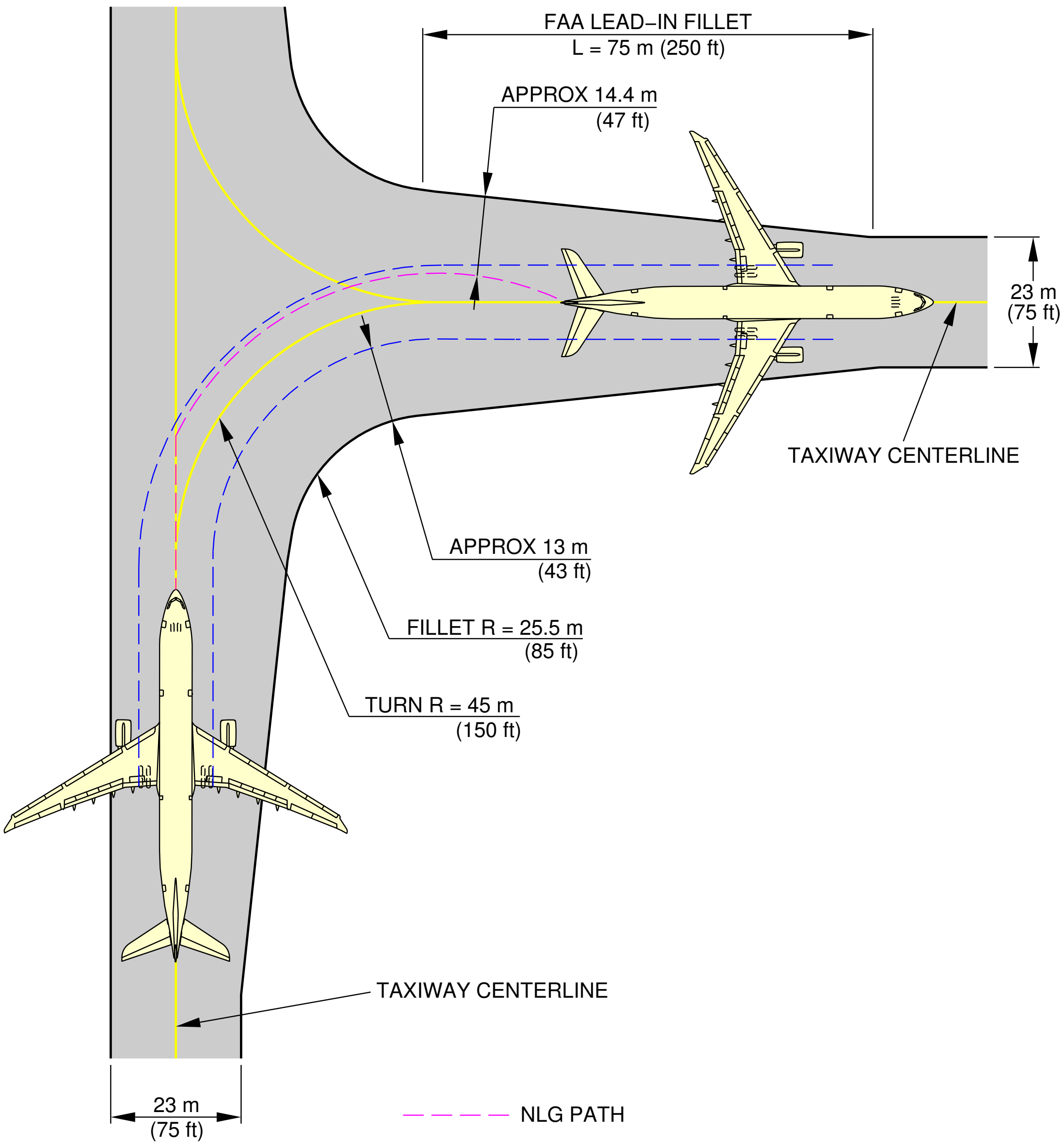
90° Turn - Taxiway to Taxiway
Judgemental Oversteer Method
FIGURE-4-5-5-991-003-A01

**ON A/C A330-300



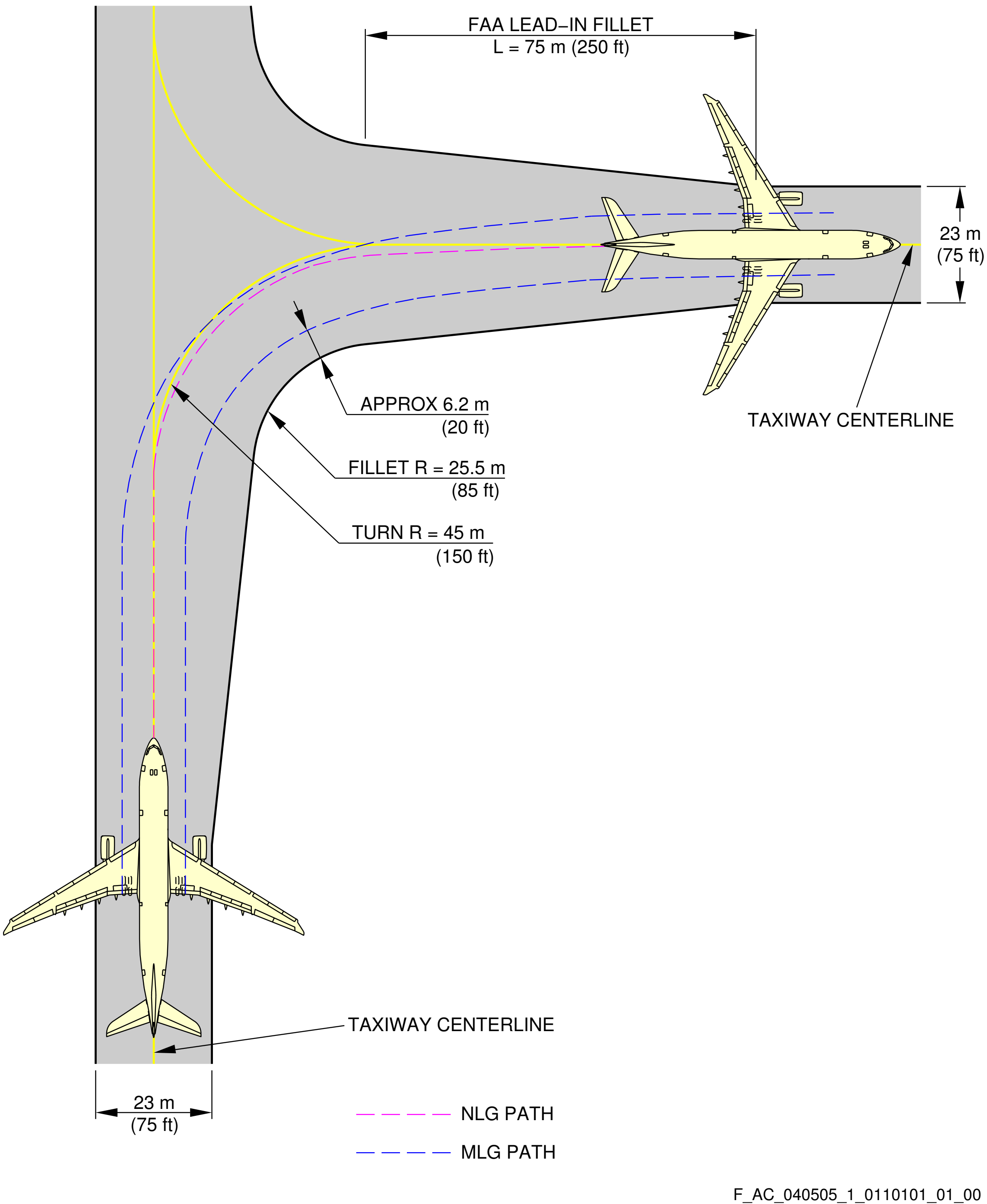
90° Turn - Taxiway to Taxiway
Cockpit Over Centerline Method
FIGURE-4-5-5-991-010-A01

**ON A/C A330-200 A330-200F



90° Turn - Taxiway to Taxiway
Judgemental Oversteer Method
FIGURE-4-5-5-991-004-A01

**ON A/C A330-200 A330-200F



90° Turn - Taxiway to Taxiway
Cockpit Over Centerline Method
FIGURE-4-5-5-991-011-A01

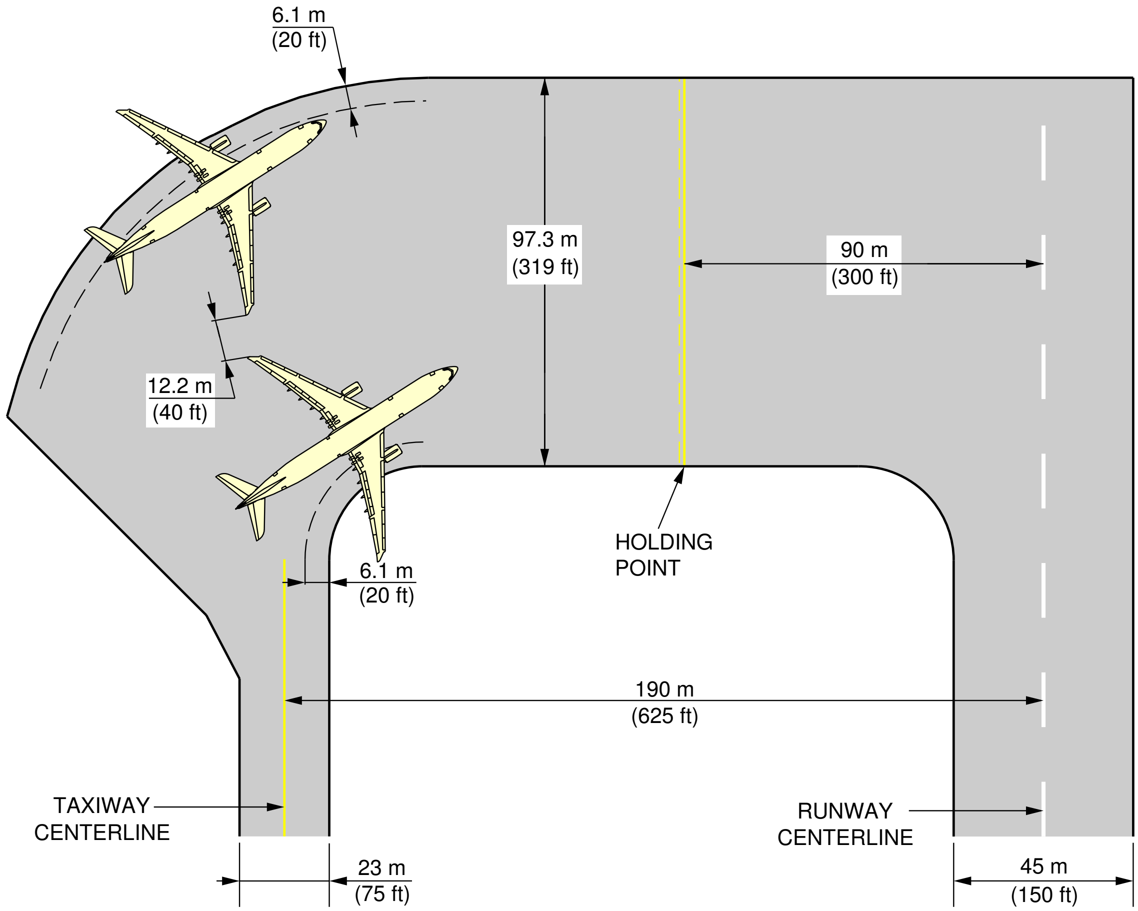
4-6-0 Runway Holding Bay (Apron)

****ON A/C A330-200 A330-200F A330-300**

Runway Holding Bay (Apron)

1. This section gives the runway holding bay (Apron).

**ON A/C A330-200 A330-200F A330-300



NOTES: COORDINATE WITH USING AIRPLANE FOR SPECIFIC PLANNED OPERATING PROCEDURES.

F_AC_040600_1_0010101_01_01

Runway Holding Bay (Apron)
FIGURE-4-6-0-991-001-A01

4-7-0 Aircraft Parking

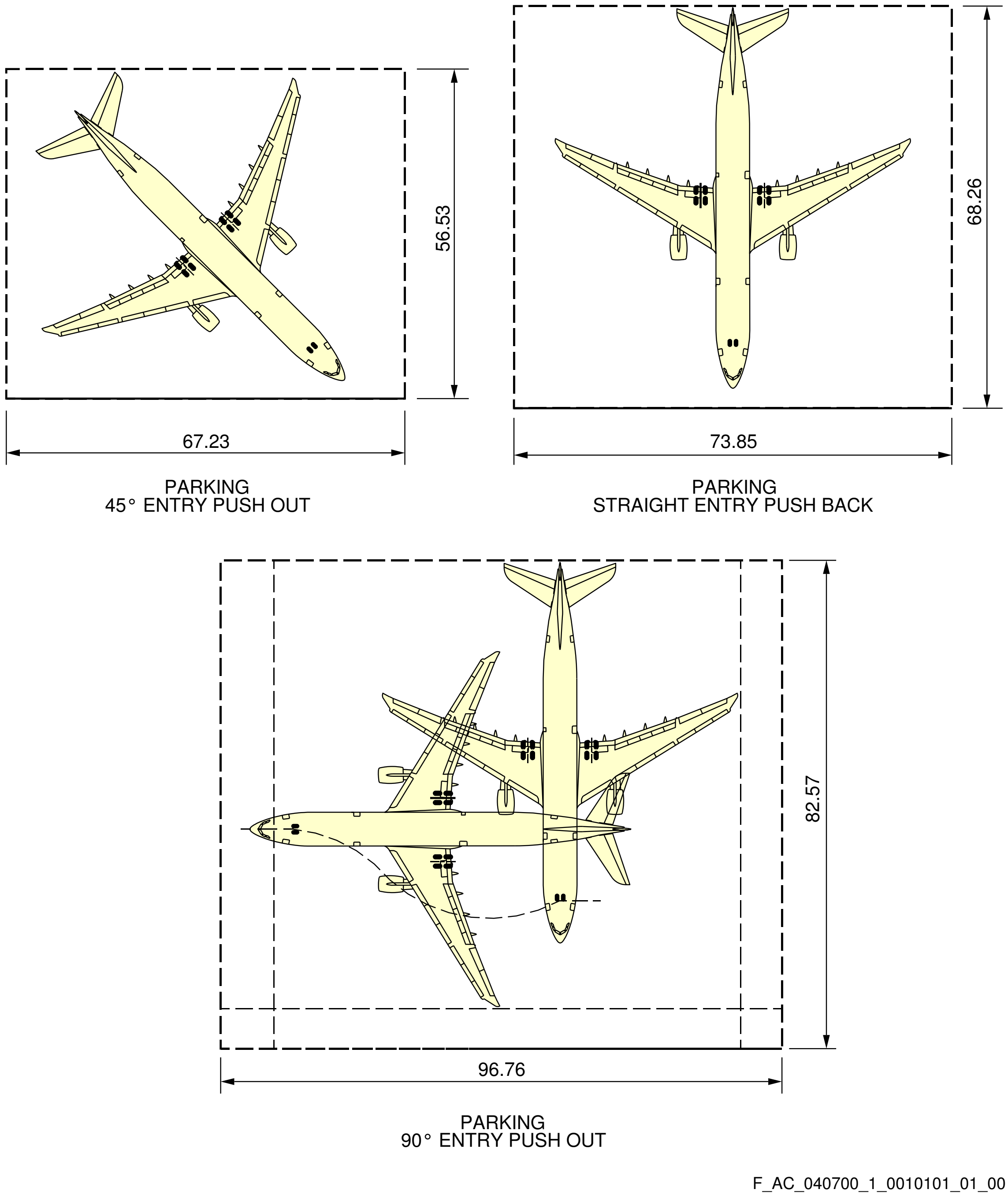
****ON A/C A330-200 A330-200F A330-300**

Airplane Parking

1. The following figures and charts show the rectangular space required for parking against the terminal building.

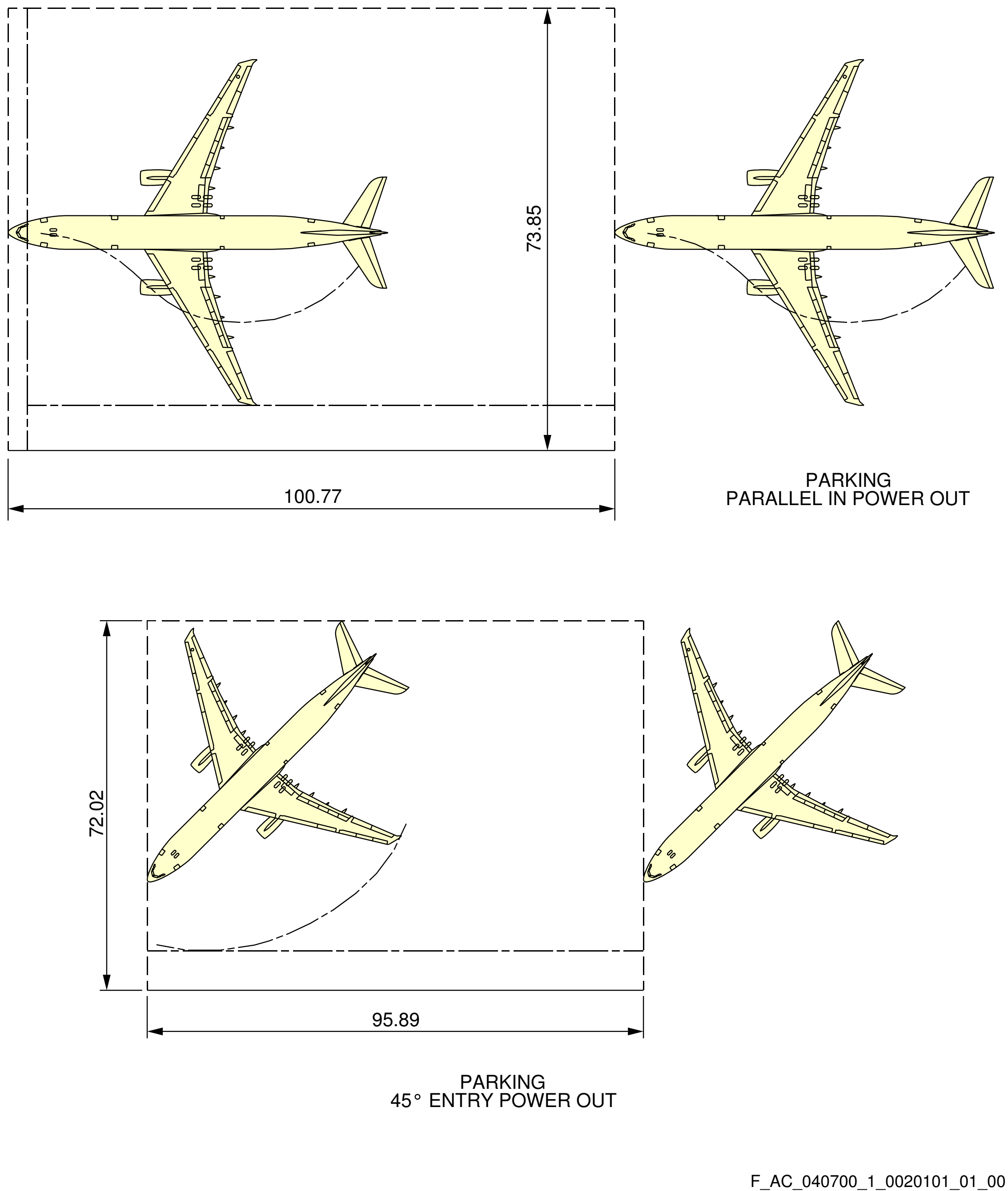
   The rectangle includes allowance for swinging the airplane on arrival and departure.
   - Steering Geometry
   - Minimum Parking Space Requirements

**ON A/C A330-300



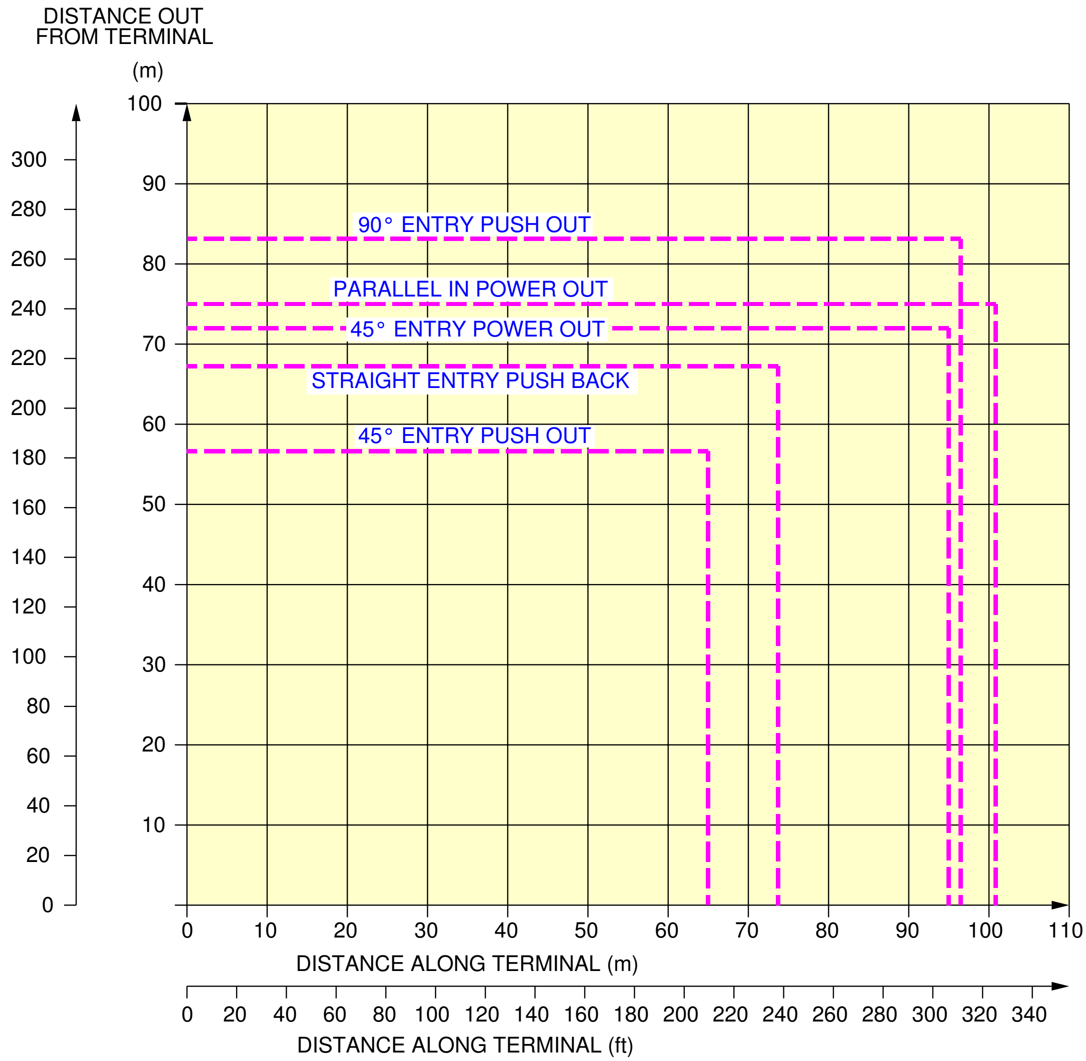
Airplane Parking
Steering Geometry
FIGURE-4-7-0-991-001-A01

****ON A/C A330-300**



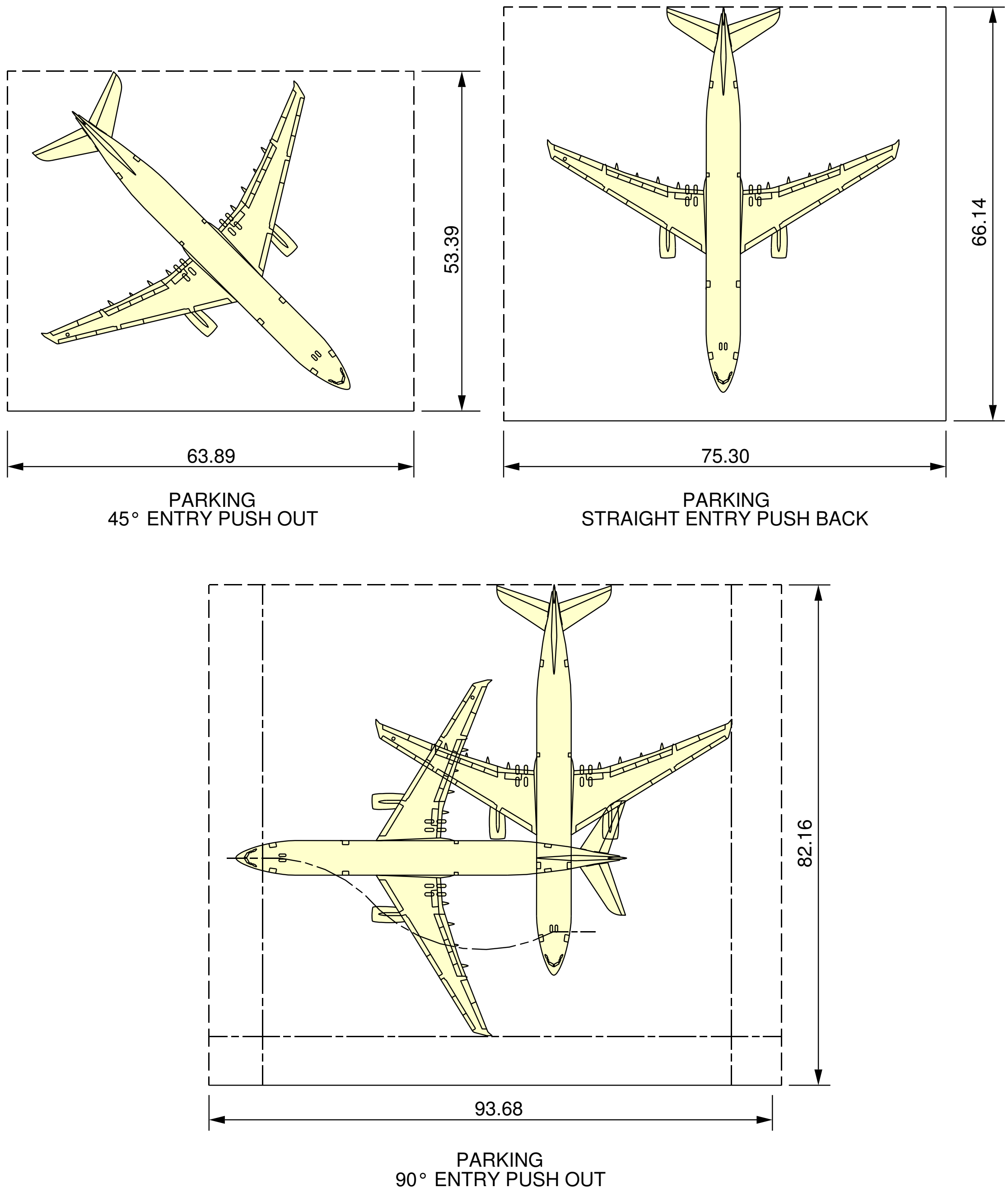
Airplane Parking
Steering Geometry
FIGURE-4-7-0-991-002-A01

**ON A/C A330-300



Airplane Parking
Minimum Parking Space Requirements
FIGURE-4-7-0-991-004-A01

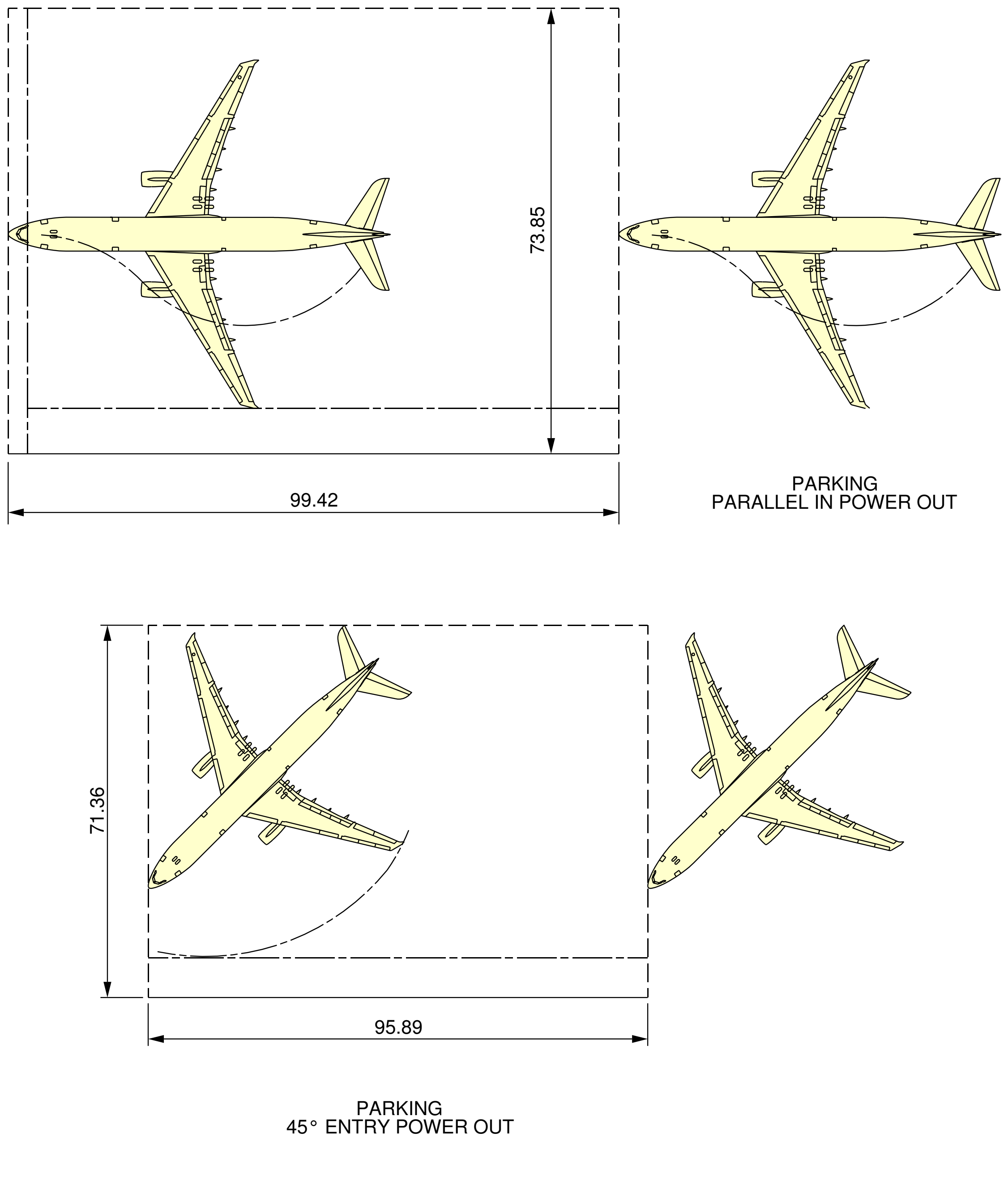
**ON A/C A330-200 A330-200F



F_AC_040700_1_0030101_01_00

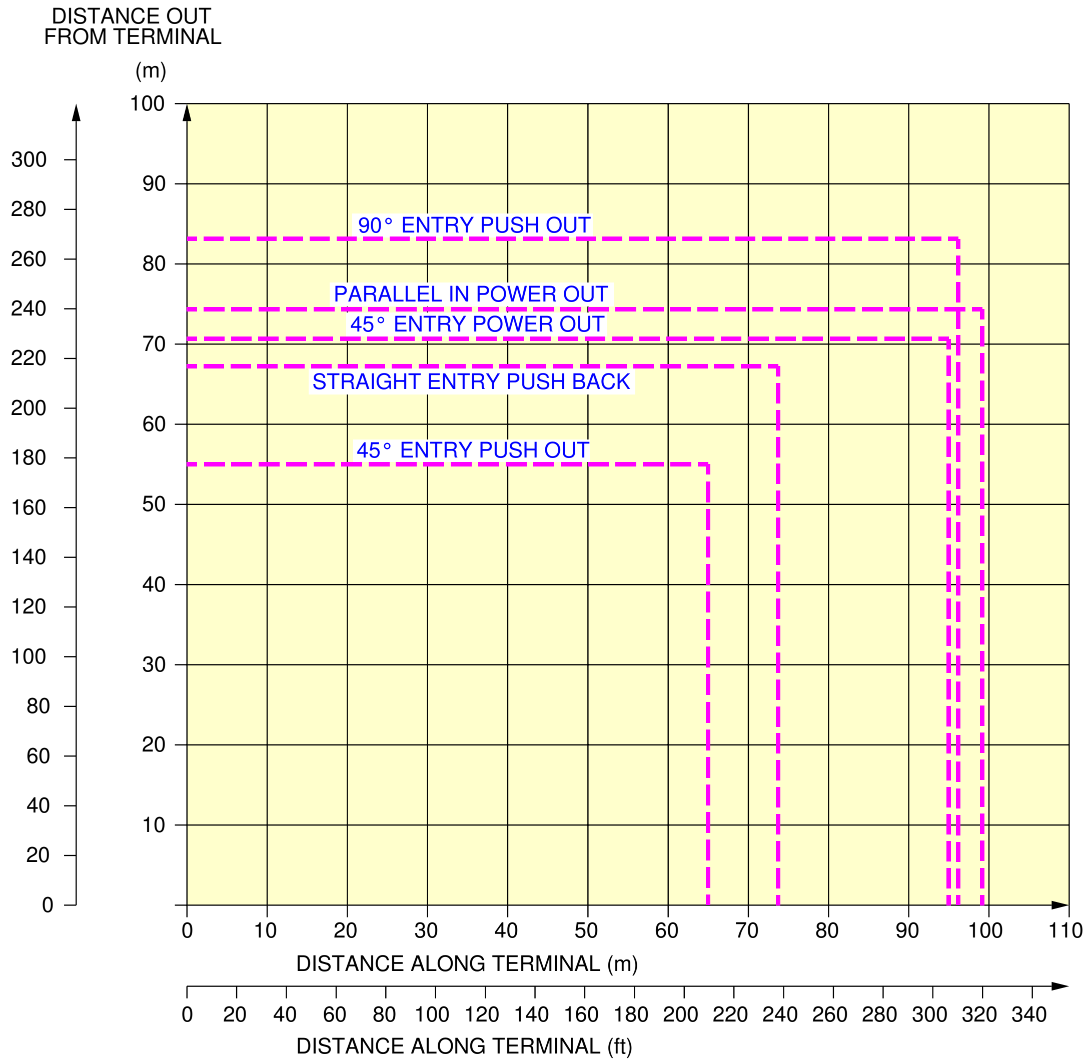
Airplane Parking
Steering Geometry
FIGURE-4-7-0-991-003-A01

**ON A/C A330-200 A330-200F



Airplane Parking
Steering Geometry
FIGURE-4-7-0-991-005-A01

**ON A/C A330-200 A330-200F



F_AC_040700_1_0060101_01_00

Airplane Parking
Minimum Parking Space Requirements
FIGURE-4-7-0-991-006-A01

TERMINAL SERVICING

5-0-0 TERMINAL SERVICING

****ON A/C A330-200 A330-200F A330-300**

TERMINAL SERVICING

1. Terminal servicing

   This chapter provides typical ramp layouts, corresponding minimum turnaround time estimations, locations of ground service points and service requirements.
   The information given in this chapter reflects ideal conditions. Actual ramp layouts and service requirements may vary according to local regulations, airline procedures and the airplane condition.

   Section 5.1 shows typical ramp layouts for passenger aircraft at the gate or on an Open Apron and freighter aircraft on an Open Apron.

   Section 5.2 shows the minimum turnaround schedules for full servicing arrangements (turnround stations).

   Section 5.3 shows the minimum turnaround schedule for reduced servicing arrangements (en route stations).

   Section 5.4 gives the locations of ground service connections, the standard of connections used and typical capacities and requirements.

   Section 5.5 provides the engine starting pneumatic requirements for different engine types and different ambient temperatures.

   Section 5.6 provides the air conditioning requirements for heating and cooling (pull-down and pull-up) using ground conditioned air for different ambient temperatures.

   Section 5.7 provides the air conditioning requirements for heating and cooling to maintain a constant cabin air temperature using low pressure conditioned air.

   Section 5.8 shows the ground towing requirements taking into account different ground surface and aircraft conditions.

5-1-0 Aircraft Servicing Arrangements

****ON A/C A330-200 A330-300**

Airplane Servicing Arrangements

1. This section provides typical ramp layouts, showing the various GSE items in position during typical turnaround scenarios for the passenger aircraft.

   These ramp layouts show typical arrangements only. Each operator will have its own specific requirements/regulations for the positioning and operation on the ramp.

   The associated turnaround station is given in the section 5-2-1 for Full Servicing Turn Round Charts.

   The associated minimum turnaround time for Transit Turn Round Charts is given in a section 5-3-1.

****ON A/C A330-200F**

Airplane Servicing Arrangements

1. Airplane Servicing Arrangements

This section provides typical ramp layouts, showing the various GSE items in position during typical turnaround scenarios for the passenger aircraft.

These ramp layouts show typical arrangements only. Each operator will have its own specific requirements/regulations for the positioning and operation on the ramp.

The associated turnaround station is given in the section 5-2-1 for Full Servicing Turn Round Charts.

5-1-1 Symbols Used on Servicing Diagrams

****ON A/C A330-200 A330-200F A330-300**

Symbols Used on Servicing Diagrams

1. 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
LD CL	LOWER DECK CARGO LOADER
LV	LAVATORY VEHICLE
MD CL (A330-200F only)	MAIN DECK CARGO LOADER
PBB	PASSENGER BOARDING BRIDGE
PS	PASSENGER STAIRS
TOW	TOW TRACTOR
ULD	ULD TRAIN
WV	POTABLE WATER VEHICLE

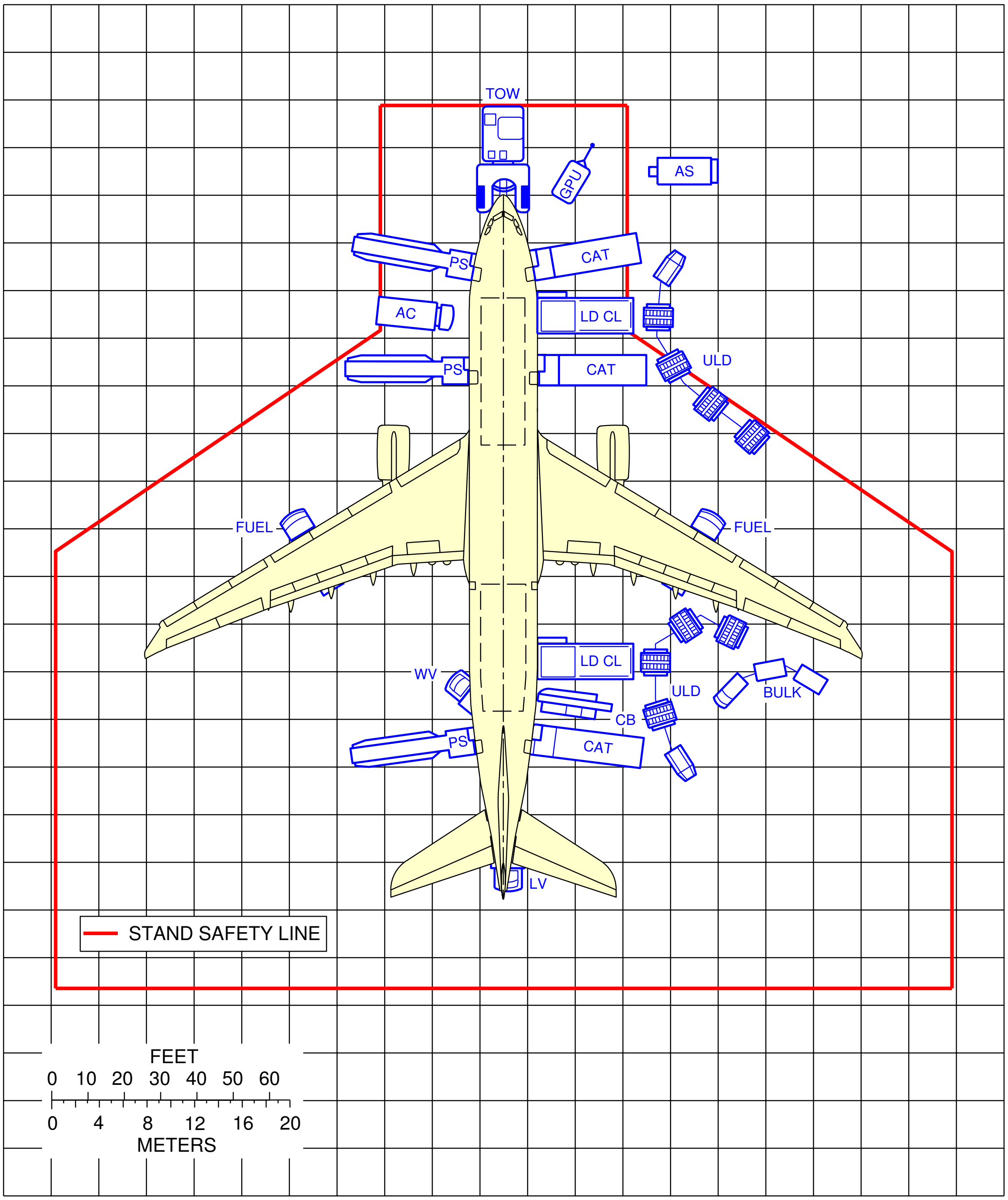
5-1-2 Typical Ramp Layout - Open Apron

ON A/C A330-200 A330-300

Typical Ramp Layout - Open Apron

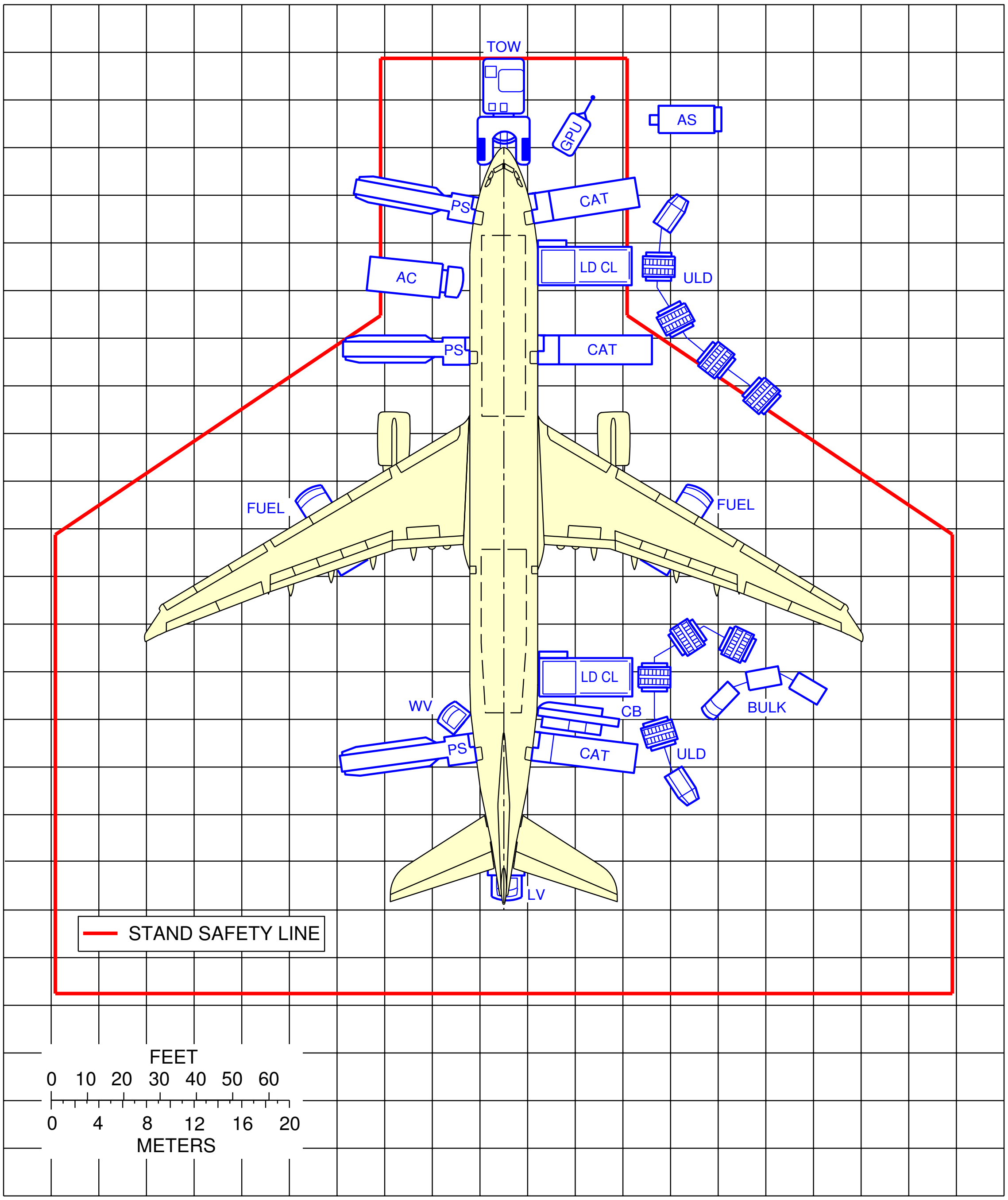
1. This section gives the typical servicing arrangements on the open apron, for the passenger version of the aircraft.
   The Stand Safety Line delimits the Aircraft Safety Area (minimum distance of 7.5 m (24.61 ft) from the aircraft). No vehicle must be parked in this area before complete stop of the aircraft (wheel chocks in position on landing gears).

**ON A/C A330-200



Typical Ramp Layout
Open Apron
FIGURE-5-1-2-991-001-A01

**ON A/C A330-300



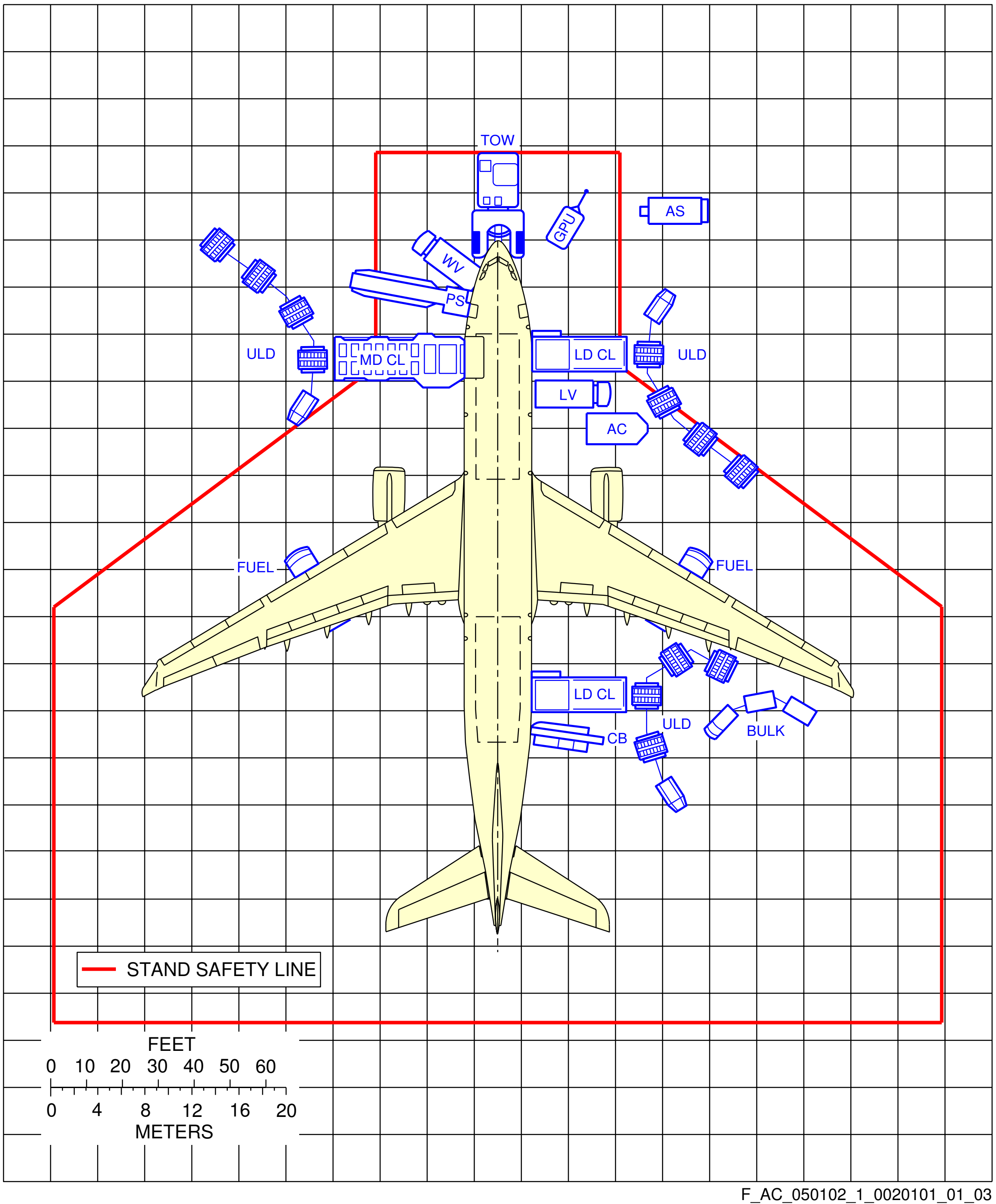
Typical Ramp Layout
Open Apron
FIGURE-5-1-2-991-007-A01

**ON A/C A330-200F

Typical Ramp Layout - Open Apron

1. This section gives the typical servicing arrangements on the open apron, for the cargo version of the aircraft.
   The Stand Safety Line delimits the Aircraft Safety Area (minimum distance of 7.5 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 A330-200F



Typical Ramp Layout
Open Apron
FIGURE-5-1-2-991-002-A01

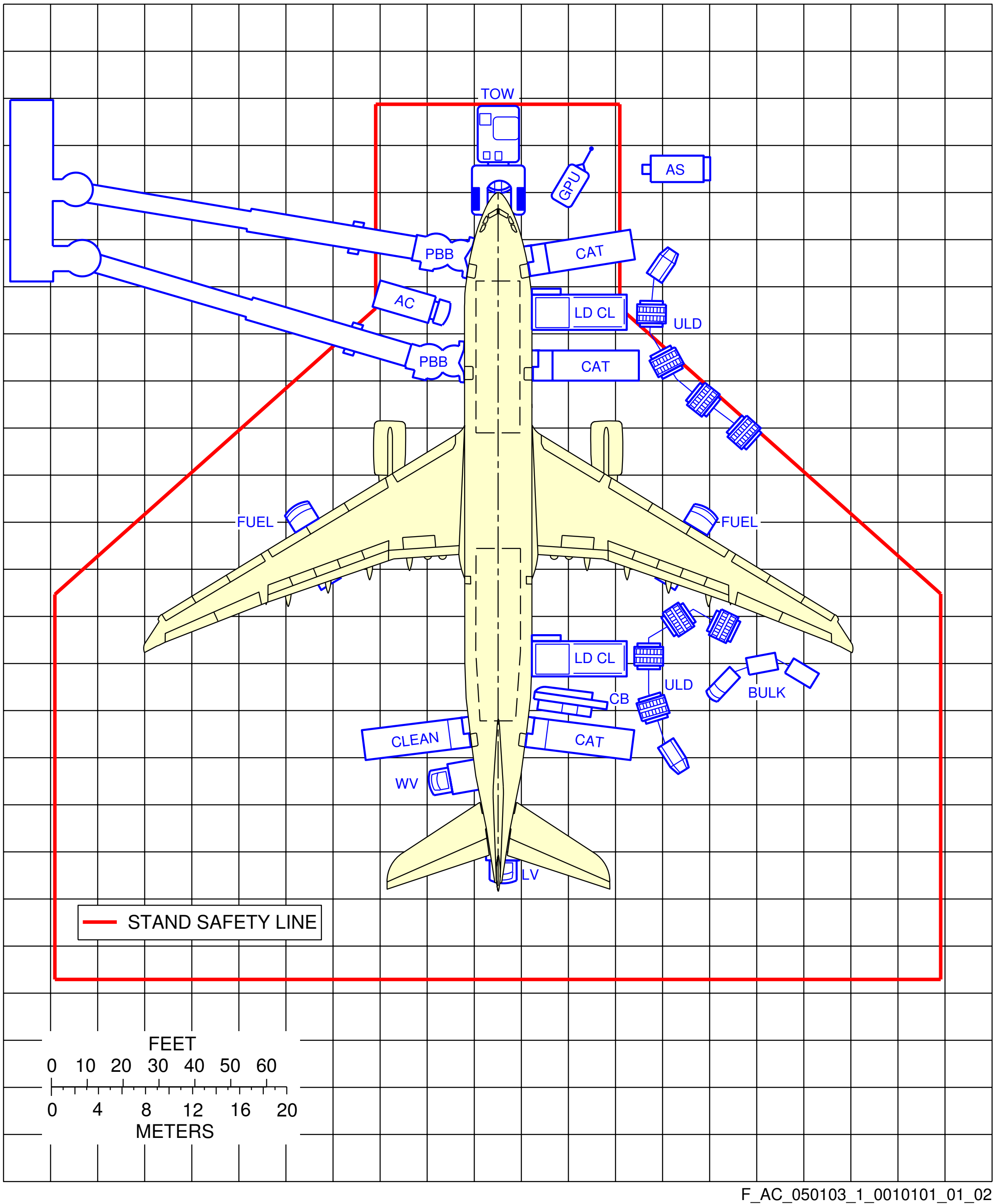
5-1-3 Typical Ramp Layout - Gate

****ON A/C A330-200 A330-300**

Typical Ramp Layout - Gate

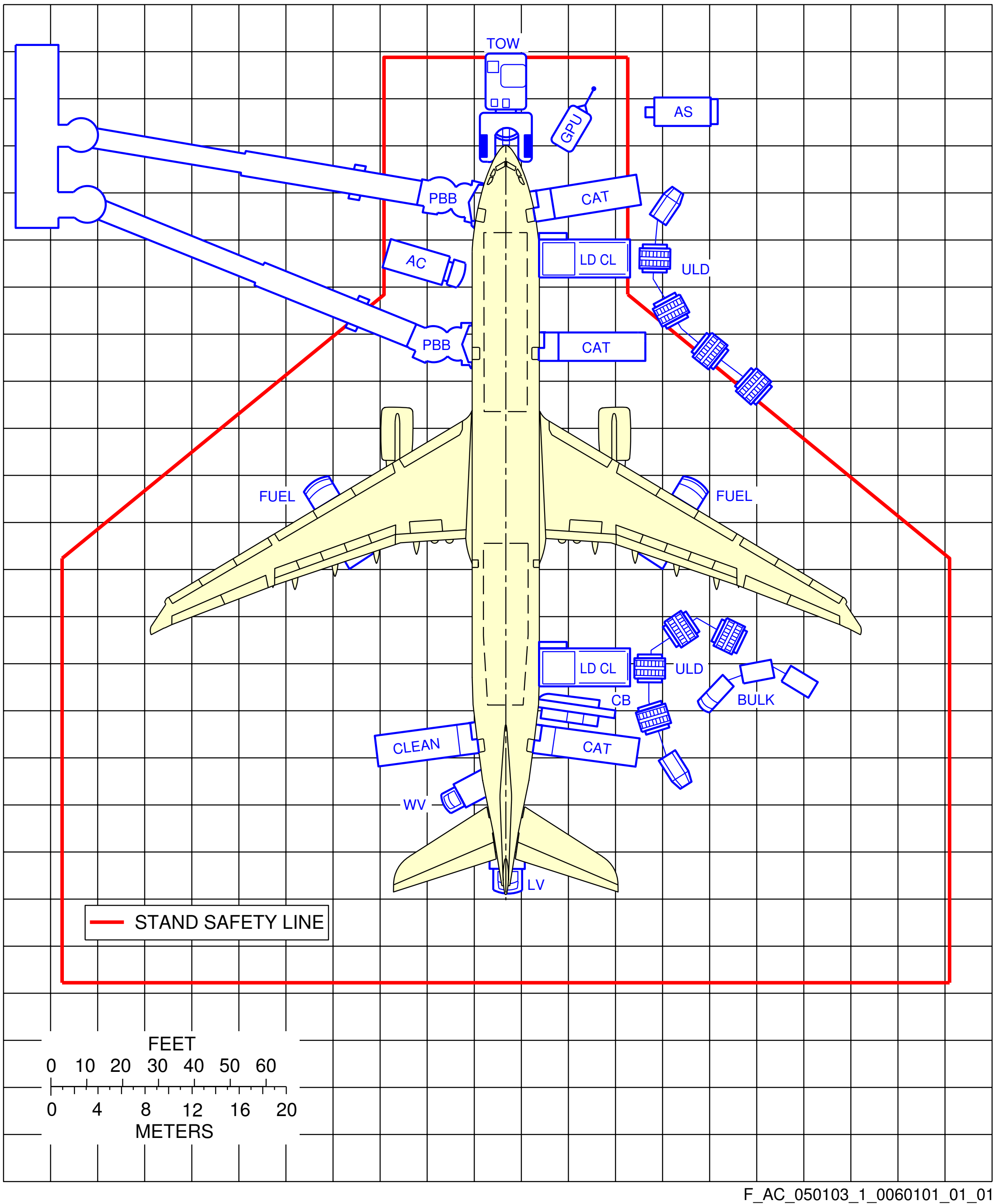
1. This section gives the typical servicing arrangements in the gate area for the passenger version of the aircraft, with two Passenger Boarding Bridges.
   The Stand Safety Line delimits the Aircraft Safety Area (minimum distance of 7.5 m (24.61 ft) from the aircraft). No vehicle must be parked in this area before complete stop of the aircraft (wheel chocks in position on landing gears).

**ON A/C A330-200



Typical Ramp Layout
Gate
FIGURE-5-1-3-991-001-A01

**ON A/C A330-300



Typical Ramp Layout
Gate
FIGURE-5-1-3-991-006-A01

5-2-0 Terminal Operations - Full Servicing

****ON A/C A330-300**

Terminal Operations – Full Servicing Turn-Round Time

1. This section provides typical turn-round time chart 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 servicing turn-round time chart
   A. PASSENGER HANDLING
      332 pax (30 B/C + 302 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 = 3 min
      No Passenger with Reduced Mobility (PRM) on board

      Deboarding:
      - 166 pax at door L1 (30 B/C and 136 Y/C)
      - 166 pax at door L2 (166 Y/C)
      - Deboarding rate = 25 pax/min per door
      - Priority deboarding for premium passengers

      Boarding:
      - 166 pax at door L1 (30 B/C and 136 Y/C)
      - 166 pax at door L2 (166 Y/C)
      - Boarding rate = 15 pax/min per door
      - Last Pax Seating allowance (LPS) + headcounting = +4 min
   B. CARGO
      2 cargo loaders + 1 belt loader
      Equipment positioning/removal + opening/closing door = 2.5 min

      Cargo exchange:
      - 6 LD3 + 2 pallets in AFT cargo compartment
      - 12 LD3 + 2 pallets in FWD cargo compartment
      - 1 000 kg (2 205 lb) in bulk cargo compartment

      LD3 off-loading/loading times:
      - Off-loading = 1.2 min/LD3
      - Loading = 1.4 min/LD3

      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/t
- Loading = 10.5 min/t

C. REFUELLING
Block-fuel quantity for nominal range through 2 nozzles
90 000 l (23 775 US gal) at 50 psi (3.45 bar)
Dispenser positioning/removal = 3 min

D. CLEANING
Performed in available time

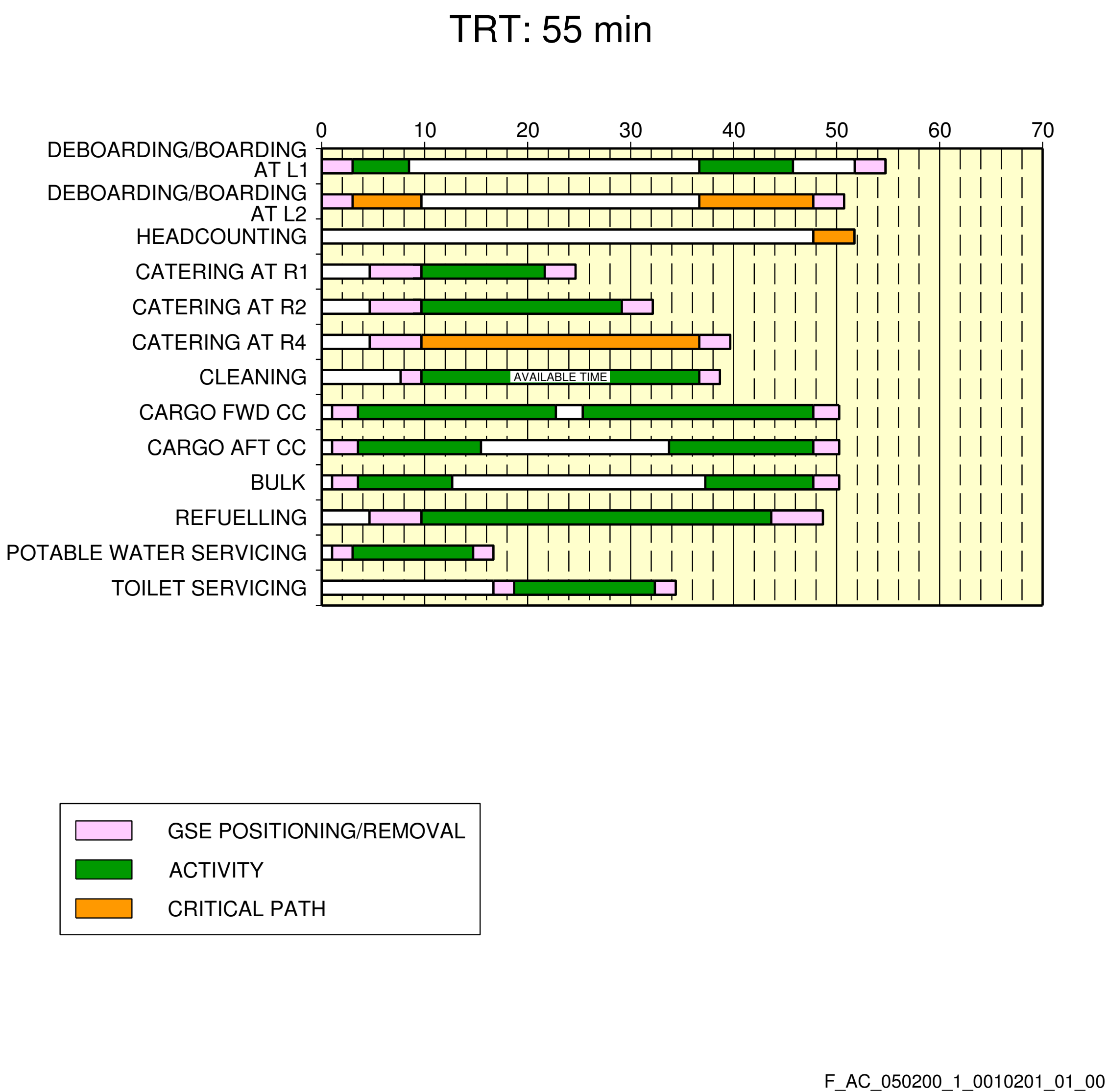
E. CATERING
3 catering trucks for servicing galleys at doors R1, R2 and R4
Equipment positioning + door opening = 5 min
Equipment removal + door closing = 3 min
Full Size Trolley Equivalent (FSTE) to unload and load: 39 FSTE
- 8 FSTE at door R1
- 13 FSTE at door R2
- 18 FSTE at door R4

Time for trolley exchange = 1.5 min per FSTE

F. GROUND HANDLING/SERVICING
Start of operations:
- Bridges: t0 = 0
- Others: t0 + 1 min

Vehicle positioning/removal = 2 min (except for fuel and catering trucks)
Ground Power Unit (GPU): up to 2 × 90 kVA
Air conditioning: two hoses
Potable water servicing: 100% uplift, 700 l (185 US gal) at 60 l/min (15.85 US gal/min)
Toilet servicing: draining + rinsing

****ON A/C A330-300**



Full Servicing Turn-Round Time Chart
FIGURE-5-2-0-991-001-B01

**ON A/C A330-200

Terminal Operations – Full Servicing Turn-Round Time

1. This section provides typical turn-round time chart 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 servicing turn-round time chart

   A. PASSENGER HANDLING
      293 pax (30 B/C + 263 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 = 3 min
      No Passenger with Reduced Mobility (PRM) on board

      Deboarding:
      - 146 pax at door L1 (30 B/C and 116 Y/C)
      - 147 pax at door L2 (147 Y/C)
      - Deboarding rate = 25 pax/min per door
      - Priority deboarding for premium passengers

      Boarding:
      - 146 pax at door L1 (30 B/C and 116 Y/C)
      - 147 pax at door L2 (147 Y/C)
      - Boarding rate = 15 pax/min per door
      - Last Pax Seating allowance (LPS) + headcounting = +4 min

   B. CARGO
      2 cargo loaders + 1 belt loader
      Equipment positioning/removal + opening/closing door = 2.5 min

      Cargo exchange:
      - 6 LD3 + 2 pallets in AFT cargo compartment
      - 8 LD3 + 2 pallets in FWD cargo compartment
      - 1 000 kg (2 205 lb) in bulk cargo compartment

      LD3 off-loading/loading times:
      - Off-loading = 1.2 min/LD3
      - Loading = 1.4 min/LD3

      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/t
- Loading = 10.5 min/t

C. REFUELLING

Block-fuel quantity for nominal range through 2 nozzles
90 000 l (23 775 US gal) at 50 psi (3.45 bar)
Dispenser positioning/removal = 3 min

D. CLEANING

Performed in available time

E. CATERING

3 catering trucks for servicing galleys at doors R1, R2 and R4
Equipment positioning + door opening = 5 min
Equipment removal + door closing = 3 min
Full Size Trolley Equivalent (FSTE) to unload and load: 36 FSTE
- 10 FSTE at door R1
- 9 FSTE at door R2
- 17 FSTE at door R4

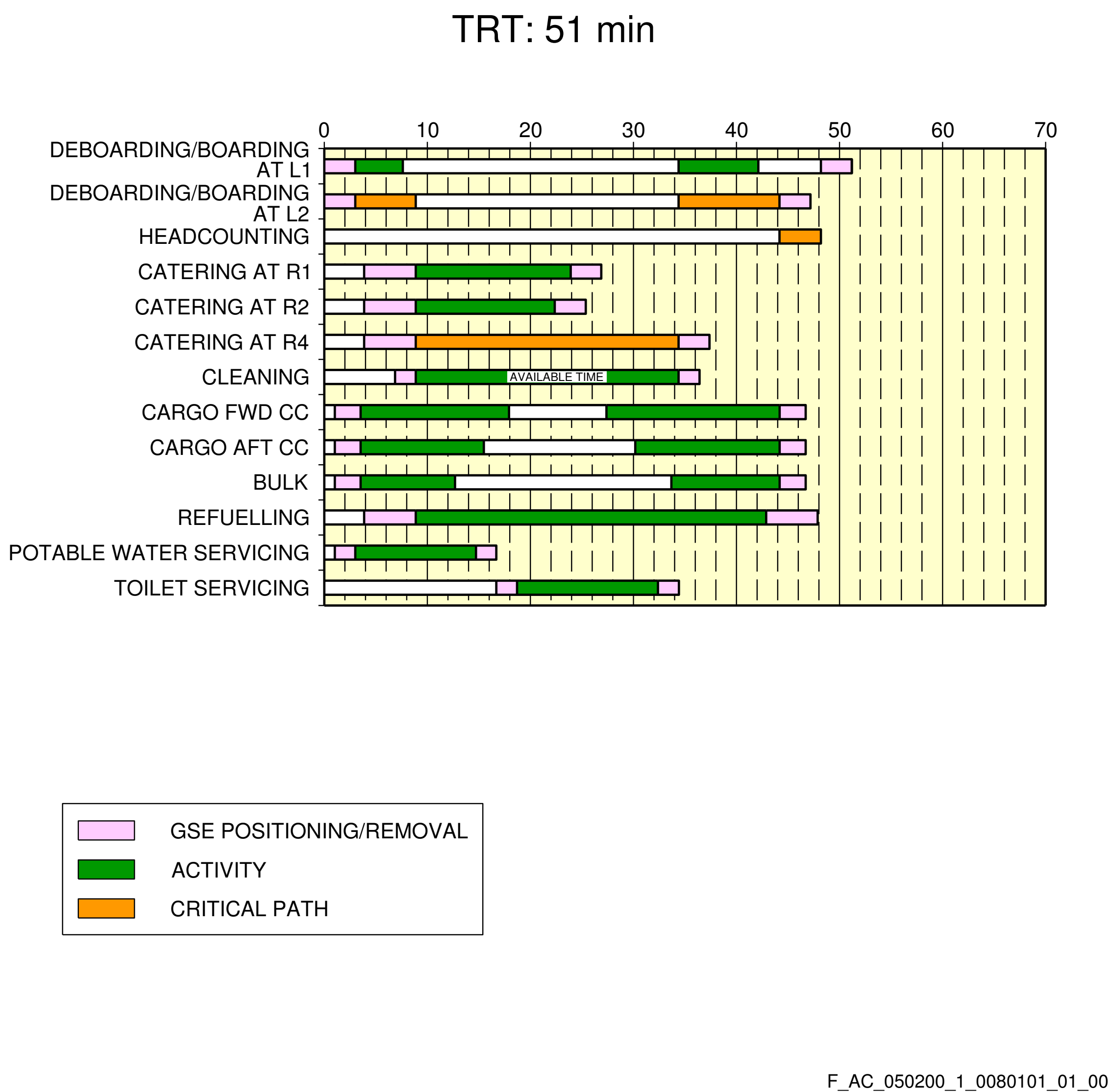
Time for trolley exchange = 1.5 min per FSTE

F. GROUND HANDLING/SERVICING

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

Vehicle positioning/removal = 2 min (except for fuel and catering trucks)
Ground Power Unit (GPU): up to 2 × 90 kVA
Air conditioning: two hoses
Potable water servicing: 100% uplift, 700 l (185 US gal) at 60 l/min (15.85 US gal/min)
Toilet servicing: draining + rinsing

**ON A/C A330-200



Full Servicing Turn-Round Time Chart
FIGURE-5-2-0-991-008-A01

**ON A/C A330-200F

Terminal Operations - Full Servicing Turn-Round Time

1. This section provides typical turn-round time chart 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 servicing turn-round time chart
   A. COURIER HANDLING
      4 Couriers
      Door used: L1
   B. CARGO
      100% cargo exchange
      Main deck cargo compartment: 22 pallets
      Lower deck AFT cargo compartment: 4 pallets
      Lower deck FWD cargo compartment: 2 LD3 + 4 pallets
      Lower deck bulk cargo compartment: 1 000 kg (2 205 lb)

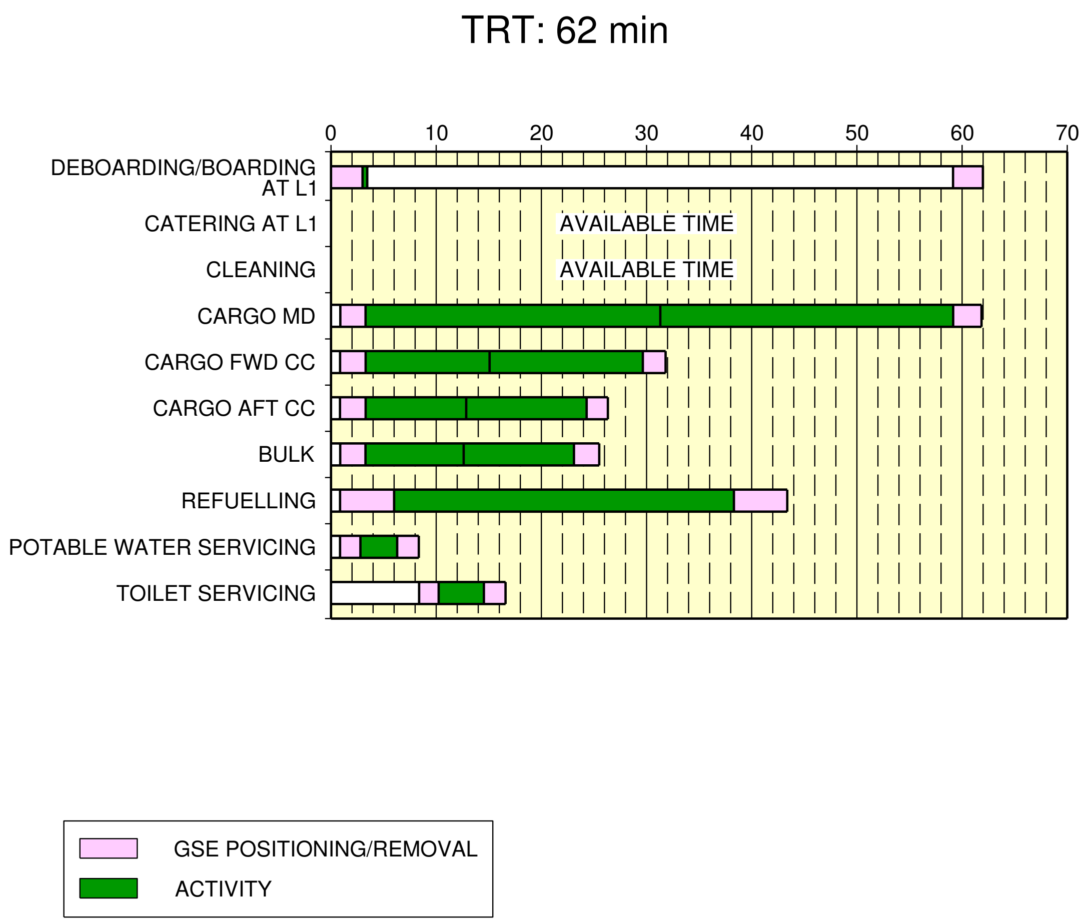
      LD3 off-loading/loading times:
      - Off-loading = 1.2 min/LD3
      - Loading = 1.4 min/LD3

      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/t
      - Loading = 10.5 min/t
   C. REFUELLING
      Block-fuel quantity for nominal range through 2 nozzles
      90 000 l (23 775 US gal) at 50 psi (3.45 bar)
      Dispenser positioning/removal = 3 min
   D. CLEANING
      Performed in available time
   E. CATERING
      Catering of galley (if installed) is performed through door L1 (standard units only) and in available time.
   F. GROUND HANDLING/SERVICING
      Start of operations:
      - Stairs: t0 = 0
      - Others: t0 + 1 min

Vehicle positioning/removal = 2 min (fuel truck excluded)
Ground Power Unit (GPU): up to 2 × 90 kVA
Air conditioning: two hoses
Potable water servicing: 100% uplift, 700 l (185 US gal) at 60 l/min (15.85 US gal/min)
Toilet servicing: draining + rinsing

**ON A/C A330-200F



Full Servicing Turn-Round Time Chart
FIGURE-5-2-0-991-009-A01

5-3-0 Terminal Operations - Transit

****ON A/C A330-300**

Terminal Operations - Minimum Servicing Turn-Round Time

1. This section provides typical turn-round time chart 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 minimum servicing turn-round time chart

   A. PASSENGER HANDLING
      332 pax (30 B/C + 302 Y/C)
      50% of passengers deboard and board the aircraft
      1 Passenger Boarding Bridge (PBB) used at door L1
      Equipment positioning/removal + opening/closing door = 3 min
      No Passenger with Reduced Mobility (PRM) on board

      Deboarding:
      - 166 pax at door L1
      - Deboarding rate = 25 pax/min per door

      Boarding:
      - 166 pax at door L1
      - Boarding rate = 15 pax/min per door
      - Last Pax Seating allowance (LPS) + headcounting = +4 min

   B. CARGO
      1 cargo loader + 1 belt loader
      Equipment positioning/removal + opening/closing door = 2.5 min

      Cargo exchange:
      - 5 LD3 in AFT cargo compartment
      - 500 kg (1 102 lb) in bulk cargo compartment

      LD3 off-loading/loading times:
      - Off-loading = 1.2 min/LD3
      - Loading = 1.4 min/LD3

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

   C. REFUELLING
      Refuelling through 2 nozzles
      30% of max capacity at 50 psi (3.45 bar)

Dispenser positioning/removal = 3 min

D. CLEANING

Performed in available time

E. CATERING

1 catering truck for servicing galleys as required
Equipment positioning + door opening = 5 min
Equipment removal + door closing = 3 min
Performed in available time
Time for trolley exchange = 1.5 min per FSTE

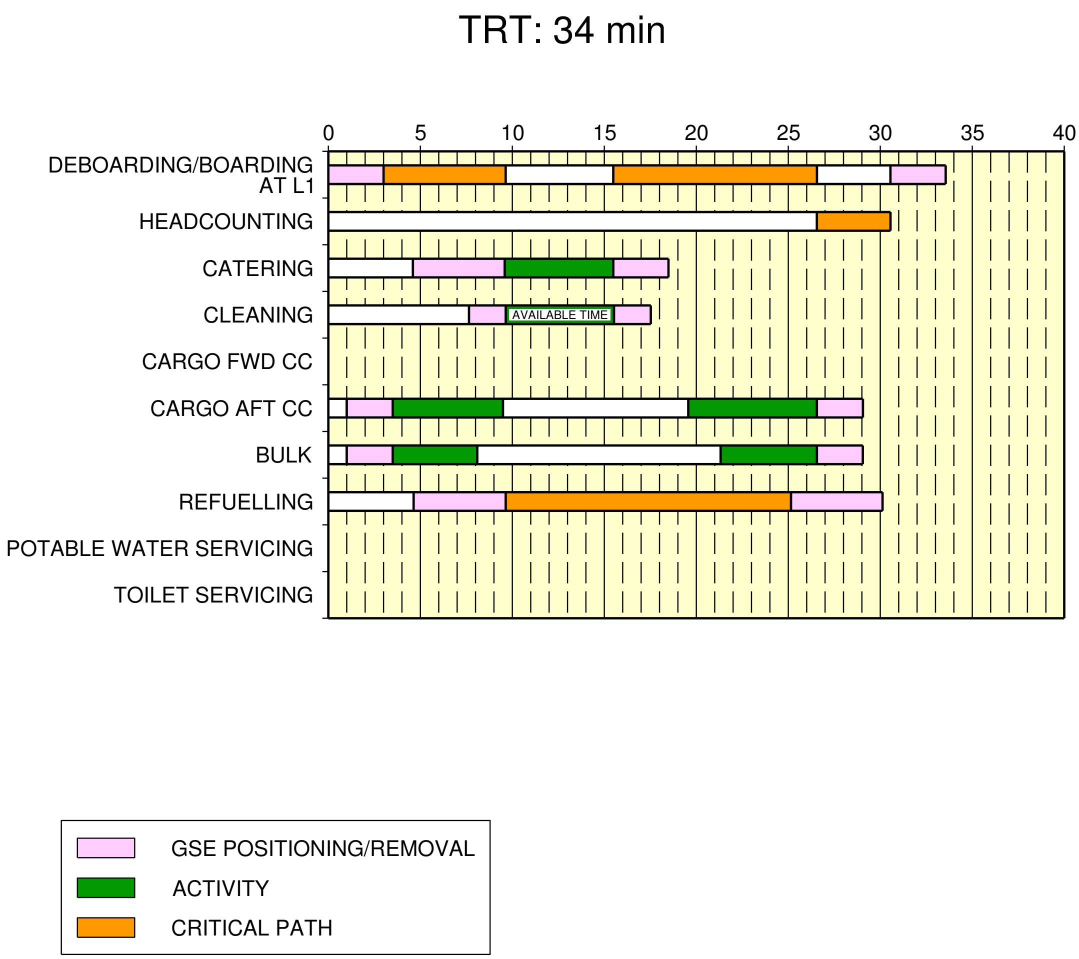
F. GROUND HANDLING/SERVICING

Start of operations:

- Bridges: t0 = 0
- Others: t0 + 1 min

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

**ON A/C A330-300



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

****ON A/C A330-200**

Terminal Operations - Minimum Servicing Turn-Round Time

1. This section provides typical turn-round time chart 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 minimum servicing turn-round time chart
   A. PASSENGER HANDLING
      293 pax (30 B/C + 263 Y/C)
      50% of passengers deboard and board the aircraft
      1 Passenger Boarding Bridge (PBB) used at door L1
      Equipment positioning/removal + opening/closing door = 3 min
      No Passenger with Reduced Mobility (PRM) on board

      Deboarding:
      - 147 pax at door L1
      - Deboarding rate = 25 pax/min per door

      Boarding:
      - 147 pax at door L1
      - Boarding rate = 15 pax/min per door
      - Last Pax Seating allowance (LPS) + headcounting = +4 min
   B. CARGO
      1 cargo loader + 1 belt loader
      Equipment positioning/removal + opening/closing door = 2.5 min

      Cargo exchange:
      - 5 LD3 in AFT cargo compartment
      - 500 kg (1 102 lb) in bulk cargo compartment

      LD3 off-loading/loading times:
      - Off-loading = 1.2 min/LD3
      - Loading = 1.4 min/LD3

      Bulk off-loading/loading times:
      - Off-loading = 9.2 min/t
      - Loading = 10.5 min/t
   C. REFUELLING
      Refuelling through 2 nozzles
      30% of max capacity at 50 psi (3.45 bar)
      Dispenser positioning/removal = 3 min

D. CLEANING

Performed in available time

E. CATERING

1 catering truck for servicing galleys as required
Equipment positioning + door opening = 5 min
Equipment removal + door closing = 3 min
Performed in available time
Time for trolley exchange = 1.5 min per FSTE

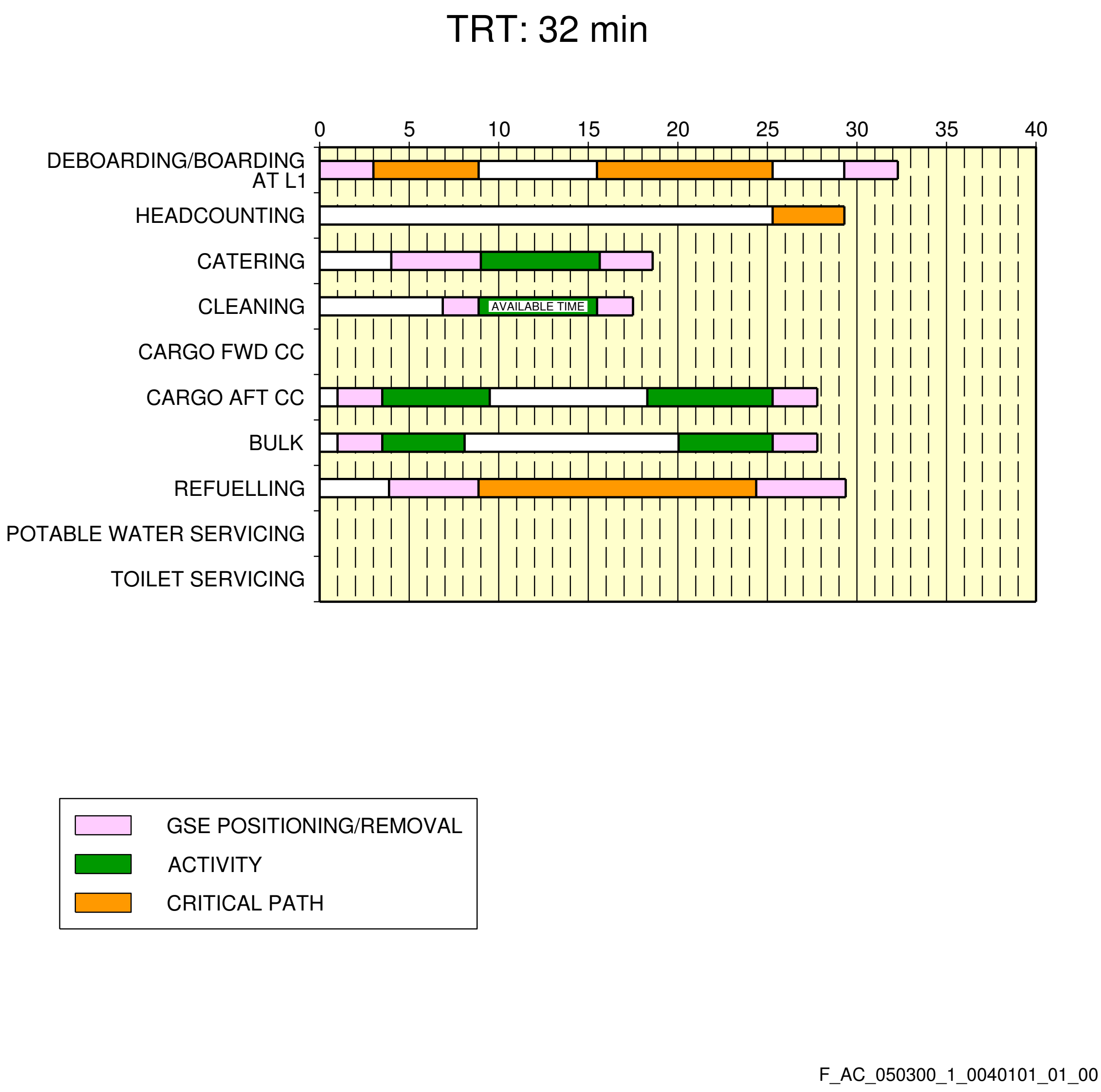
F. GROUND HANDLING/SERVICING

Start of operations:

- Bridges: t0 = 0
- Others: t0 + 1 min

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

**ON A/C A330-200



Minimum Servicing Turn-Round Time
FIGURE-5-3-0-991-004-A01

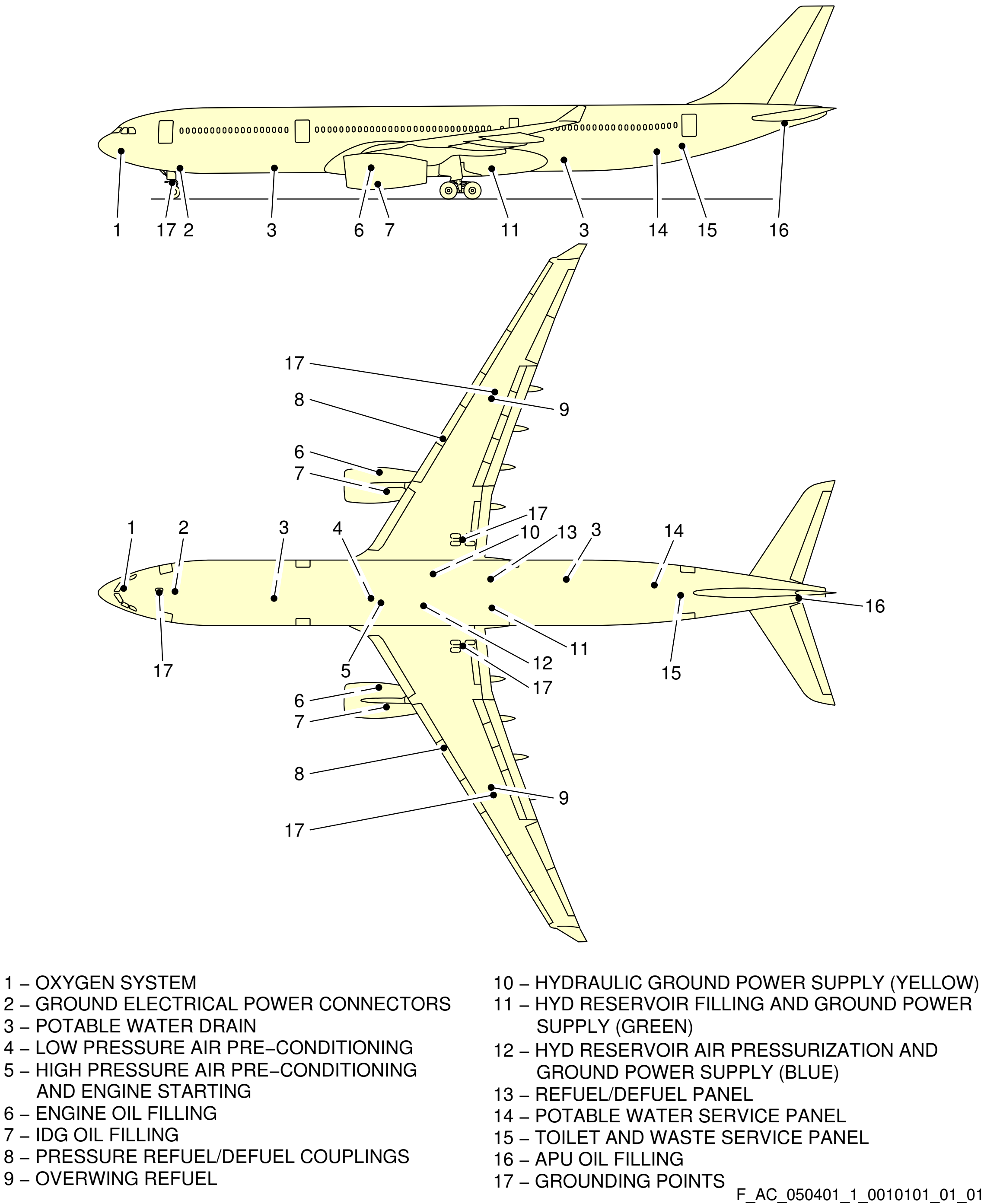
5-4-1 Ground Service Connections Layout

****ON A/C A330-200 A330-300**

Ground Service Connections Layout

1. This section gives the ground service connections layout.

****ON A/C A330-200 A330-300**



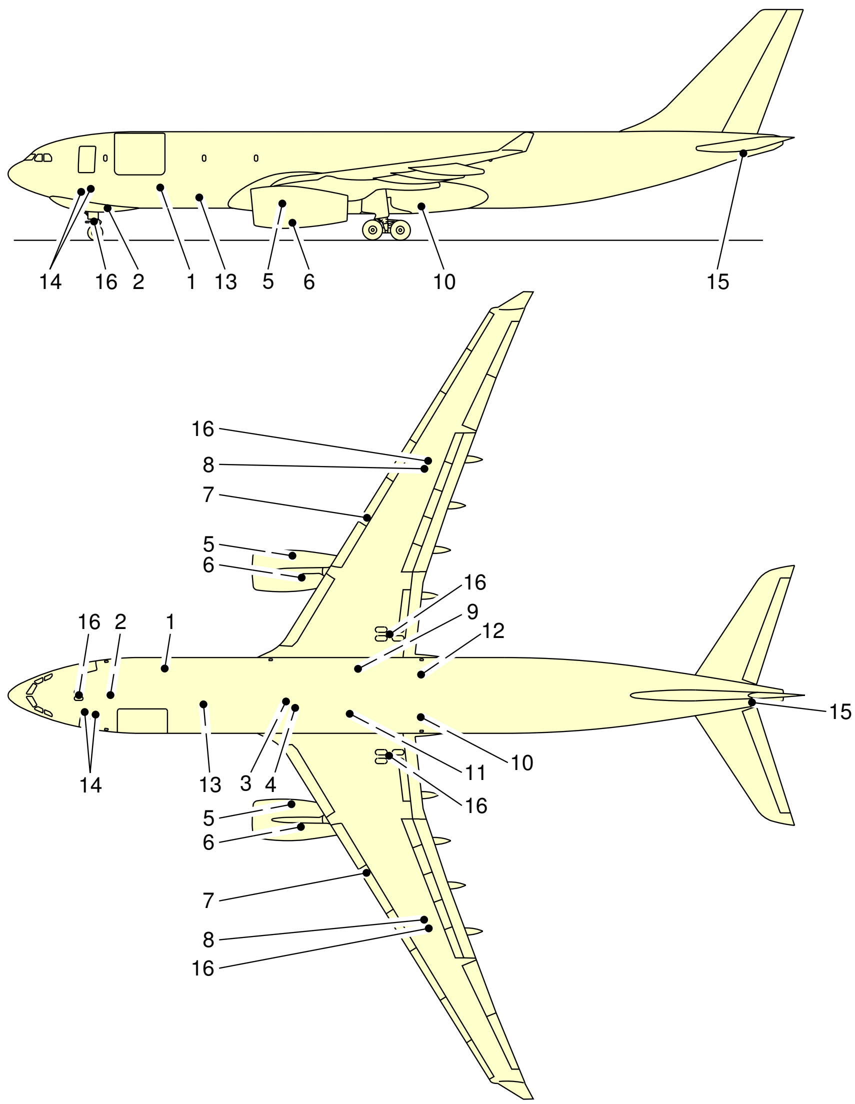
Ground Service Connections Layout
FIGURE-5-4-1-991-001-A01

****ON A/C A330-200F**

Ground Service Connections Layout

1. This section gives the ground service connections layout.

**ON A/C A330-200F



1 – OXYGEN SYSTEM
2 – GROUND ELECTRICAL POWER CONNECTORS
3 – LOW PRESSURE AIR PRE–CONDITIONING
4 – HIGH PRESSURE AIR PRE–CONDITIONING AND ENGINE STARTING
5 – ENGINE OIL FILLING
6 – IDG OIL FILLING
7 – PRESSURE REFUEL/DEFUEL COUPLINGS
8 – OVERWING REFUEL
9 – HYDRAULIC GROUND POWER SUPPLY (YELLOW)
10 – HYD RESERVOIR FILLING AND GROUND POWER SUPPLY (GREEN)
11 – HYD RESERVOIR AIR PRESSURIZATION AND GROUND POWER SUPPLY (BLUE)
12 – REFUEL/DEFUEL PANEL
13 – POTABLE WATER SERVICE PANEL
14 – TOILET AND WASTE SERVICE PANEL
15 – APU OIL FILLING
16 – GROUNDING POINTS

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Ground Service Connections Layout
FIGURE-5-4-1-991-002-A01

5-4-2 Grounding Points

****ON A/C A330-200 A330-200F A330-300**

Grounding Points

****ON A/C A330-200 A330-200F**

1. Grounding Points.

	DISTANCE : Meters (ft)			
	AFT OF NOSE	FROM AIRPLANE CENTERLINE		MEAN HEIGHT FROM GROUND
		R SIDE	L SIDE	
On Nose Landing Gear leg :	6.67 m (21.88 ft)	on centerline		1.40 m (4.59 ft)
On left Main Landing Gear leg :	28.37 m (93.08 ft)		5.34 m (17.52 ft)	1.50 m (4.92 ft)
On right Main Landing Gear leg :	28.37 m (93.08 ft)	5.34 m (17.52 ft)		1.50 m (4.92 ft)

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

B. The grounding studs are used to connect the aircraft to an approved ground connection on the ramp or in the hangar for :
- refuel/defuel operations.
- maintenance operations.
- bad weather conditions.

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

****ON A/C A330-300**

2. Grounding Points.

	DISTANCE : Meters (ft)			
	AFT OF NOSE	FROM AIRPLANE CENTERLINE		MEAN HEIGHT FROM GROUND
		R SIDE	L SIDE	

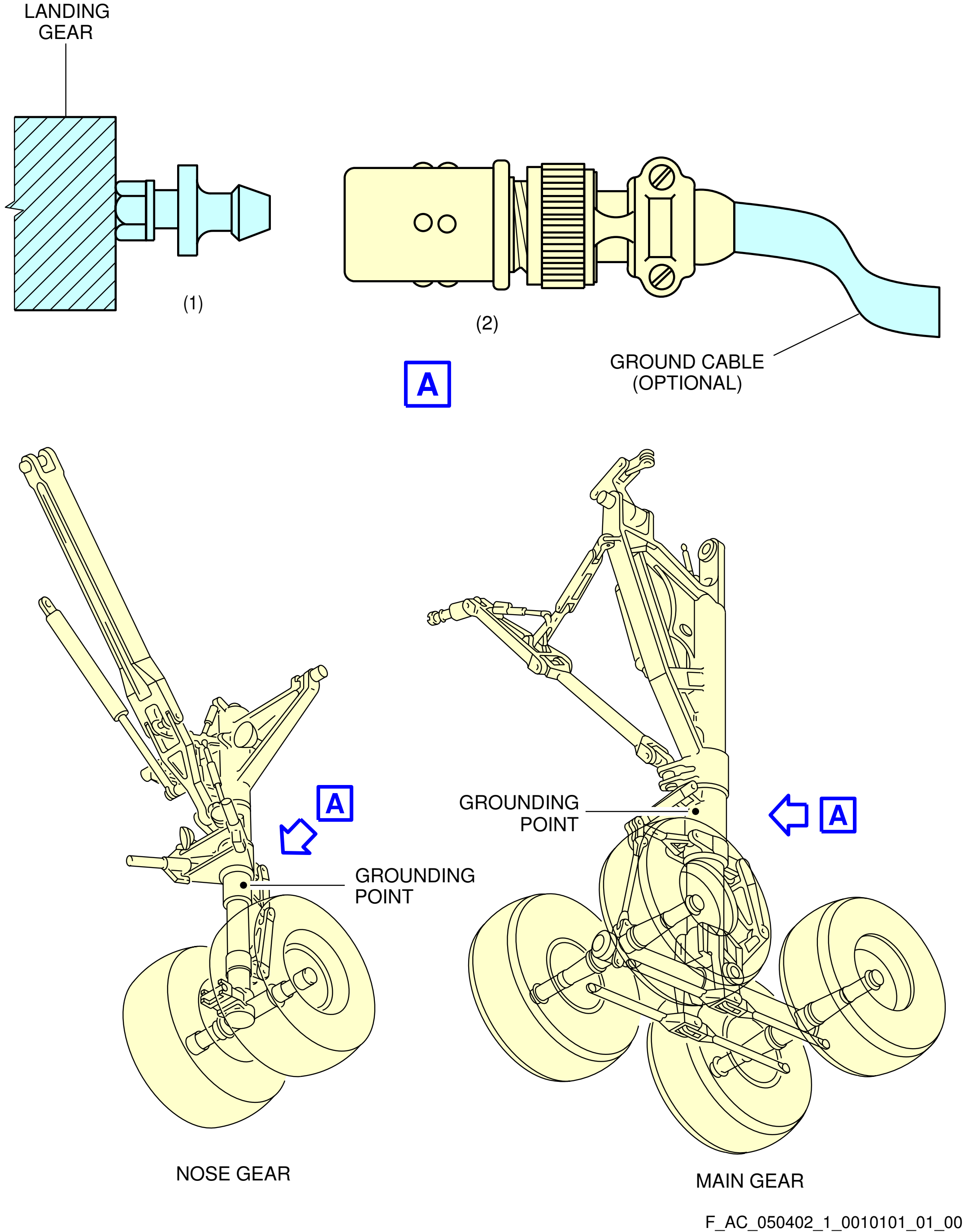
	DISTANCE : Meters (ft)			
On Nose Landing Gear leg :	6.67 m (21.88 ft)	on centerline		1.40 m (4.59 ft)
On left Main Landing Gear leg :	31.53 m (103.44 ft)		5.34 m (17.52 ft)	1.50 m (4.92 ft)
On right Main Landing Gear leg :	31.53 m (103.44 ft)	5.34 m (17.52 ft)		1.50 m (4.92 ft)

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

B. The grounding studs are used to connect the aircraft to an approved ground connection on the ramp or in the hangar for :
- refuel/defuel operations.
- maintenance operations.
- bad weather conditions.

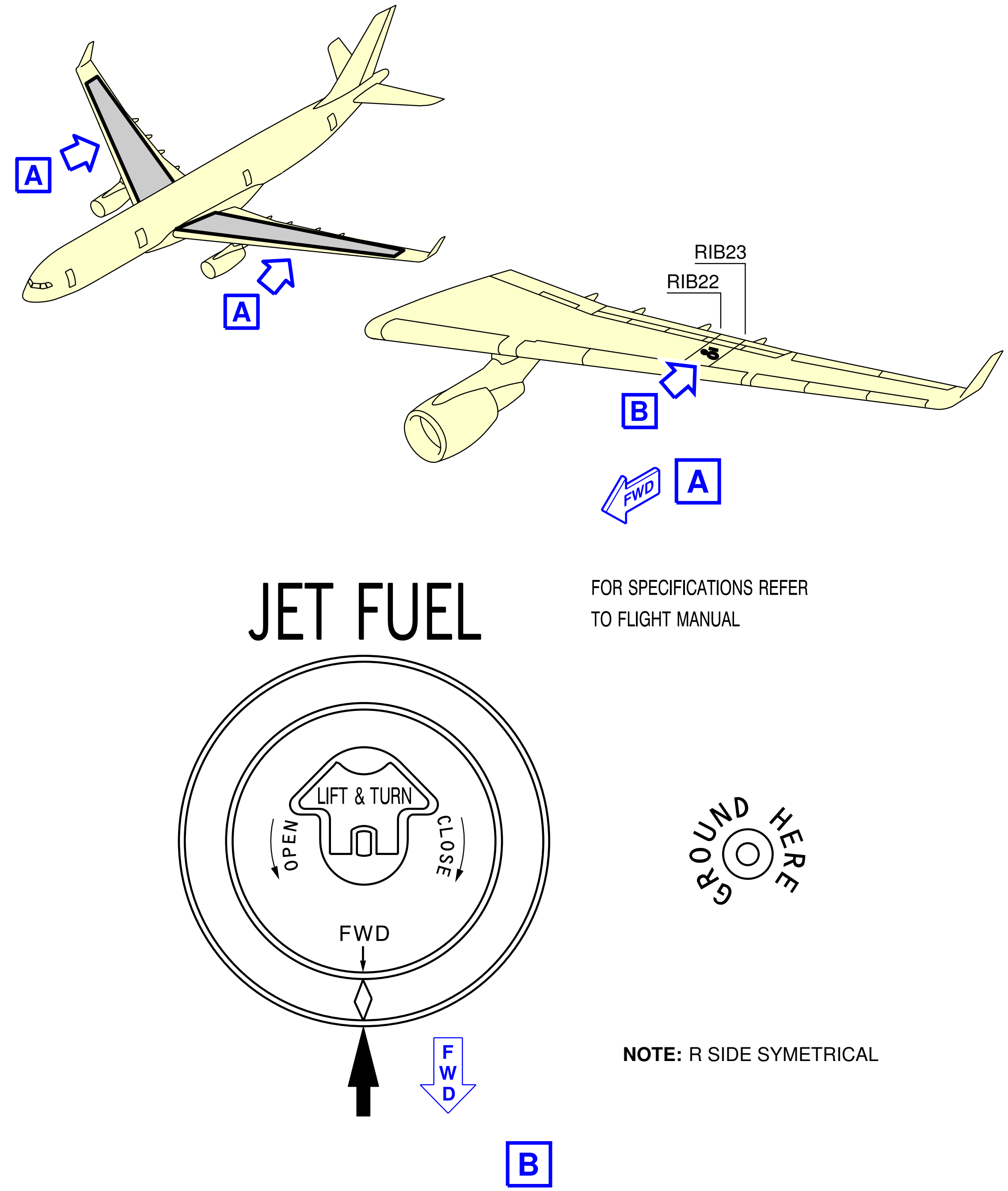
NOTE : In all other conditions, the electrostatic discharge through the tyre is sufficient.

****ON A/C A330-200 A330-200F A330-300**



Ground Service Connections
Grounding Points
FIGURE-5-4-2-991-001-A01

**ON A/C A330-200 A330-200F A330-300



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Ground Service Connections
Grounding Points
FIGURE-5-4-2-991-002-A01

5-4-3 Hydraulic System

****ON A/C A330-200 A330-200F A330-300**

Hydraulic System

1. Ground Service Panels

ACCESS	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Green System: (Access Door 197CB)	41.3 m (135.5 ft)	-	1.34 m (4.4 ft)	2.23 m (7.32 ft)
Yellow System: (Access Door 196BB)	35.4 m (116.14 ft)	1.3 m (4.27 ft)	-	1.95 m (6.4 ft)
Blue System: (Access Door 195BB)	34.41 m (112.89 ft)	-	1.28 m (4.2 ft)	1.94 m (6.36 ft)

2. Reservoir Pressurization

ACCESS	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
One 1/4 in. self-sealing connection common to the 3 reservoirs (Blue System Ground Service Panel): (Access Door 195BB)	34.47 m (113.09 ft)	-	1.41 m (4.63 ft)	1.89 m (6.2 ft)

****ON A/C A330-200 A330-200F**

3. Accumulator Charging

Five connections (one for each accumulator):

ACCESS	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Yellow System Accumulator: (Access Door 196BB)	35.55 m (116.63 ft)	1.43 m (4.69 ft)	-	1.91 m (6.27 ft)
Green System Accumulator: (Access Door 197CB)	41.52 m (136.22 ft)	-	1.33 m (4.36 ft)	2.19 m (7.19 ft)
Blue System Accumulator: (Access Door 195BB)	34.54 m (113.32 ft)	-	1.38 m (4.53 ft)	1.9 m (6.23 ft)
Blue System Brake Accumulator: (Access Door 195BB)	34.54 m (113.32 ft)	-	1.24 m (4.07 ft)	1.9 m (6.23 ft)

****ON A/C A330-300**

4. Accumulator Charging

Five connections (one for each accumulator):

ACCESS	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Yellow System Accumulator: (Access Door 196BB)	35.55 m (116.63 ft)	1.43 m (4.69 ft)	-	1.91 m (6.27 ft)
Green System Accumulator: (Access Door 197CB)	41.52 m (136.22 ft)	-	1.33 m (4.36 ft)	2.19 m (7.19 ft)
Blue System Accumulator: (Access Door 195BB)	34.54 m (113.32 ft)	-	1.38 m (4.53 ft)	1.9 m (6.23 ft)
Blue System Brake Accumulator: (Access Door 195BB)	34.54 m (113.32 ft)	-	1.18 m (3.87 ft)	1.9 m (6.23 ft)

****ON A/C A330-200 A330-200F A330-300**

5. Reservoir Filling

Two connections (one self-sealing connection for pressurized supply on the Green system ground service panel).

ACCESS	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
One handpump filling connection (Access Door 197CB)	41.31 m (135.53 ft)	-	1.3 m (4.27 ft)	2.11 m (6.92 ft)

6. Reservoir Drain

One 3/8 in. self-sealing connection on the reservoir for:

ACCESS	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Yellow System	29.03 m (95.24 ft)	2.12 m (6.96 ft)	-	2.4 m (7.87 ft)
Green System	33.17 m (108.83 ft)	-	0.7 m (2.3 ft)	3.8 m (12.47 ft)
Blue System	29.03 m (95.24 ft)	-	2.12 m (6.96 ft)	2.4 m (7.87 ft)

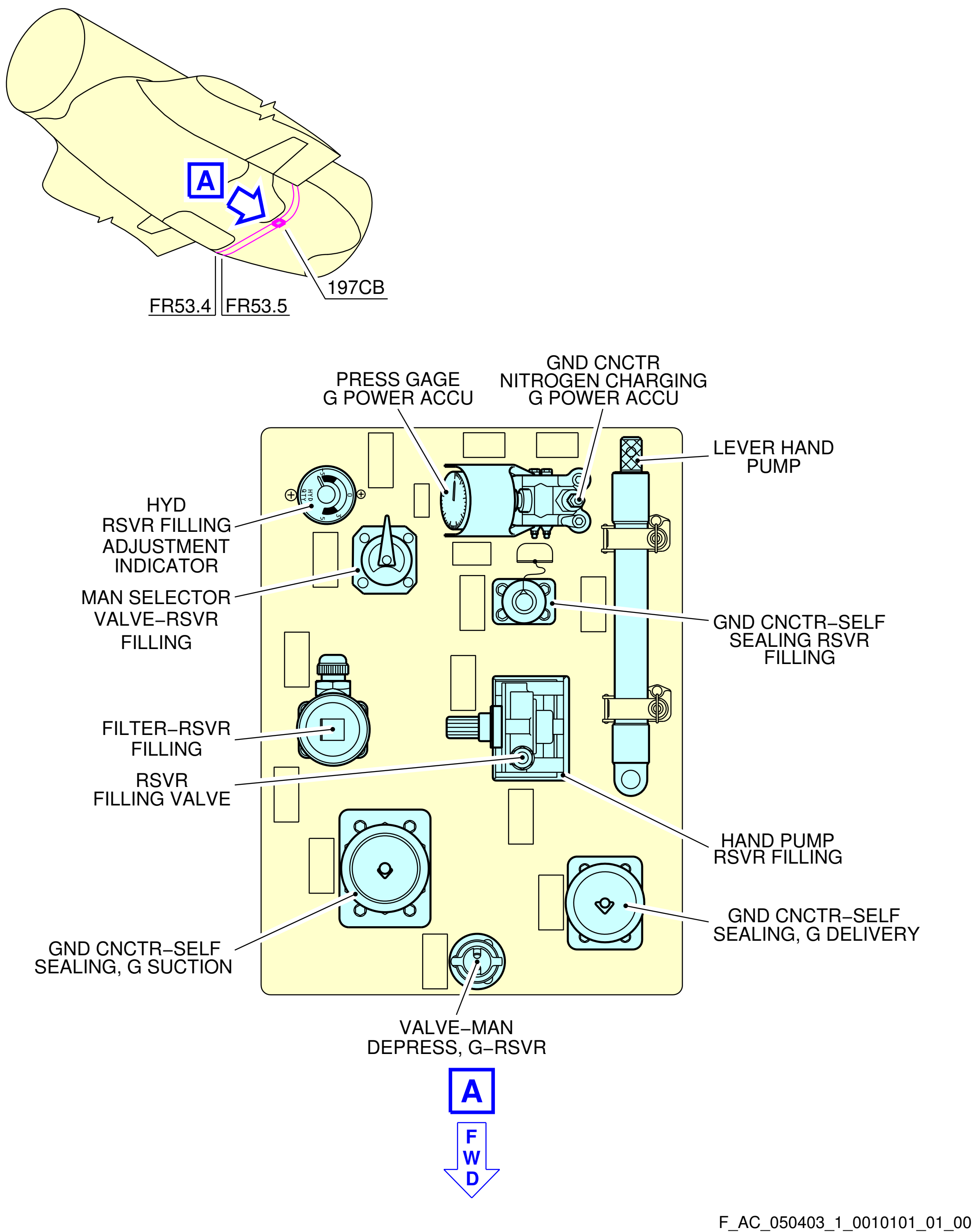
7. Ground Test

Three 1 in. self-sealing connections and three 1-1/2 in. self-sealing connections (one pair per system).

ACCESS	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Green System Ground Service Panel: (Access Door 197CB)	34.92 m (114.57 ft)	-	1.35 m (4.43 ft)	2.2 m (7.22 ft)

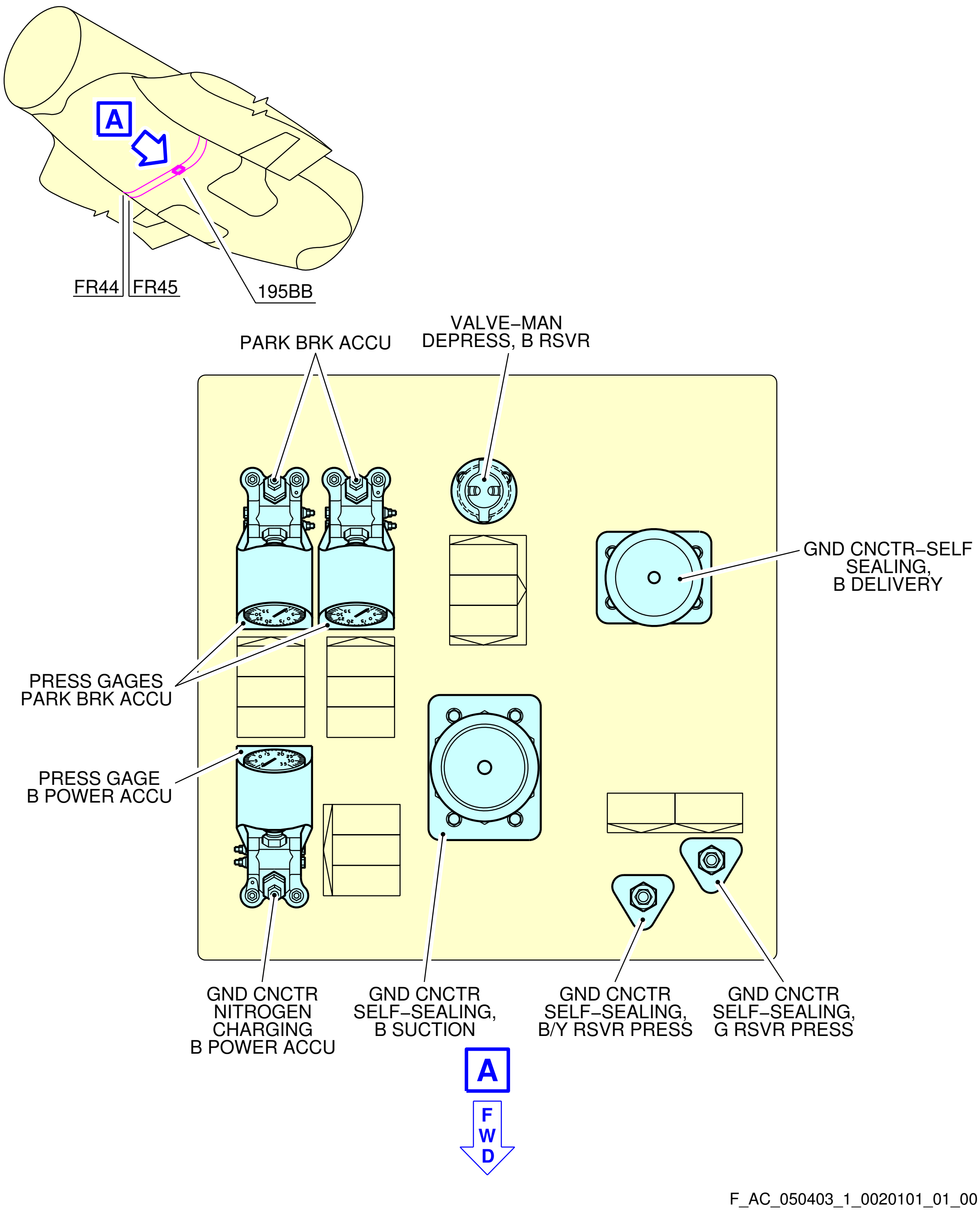
ACCESS	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Yellow System Ground Service Panel: (Access Door 196BB)	29.03 m (95.24 ft)	1.3 m (4.27 ft)	-	2 m (6.56 ft)
Blue System Ground Service Panel: (Access Door 195BB)	28.03 m (91.96 ft)	-	1.28 m (4.2 ft)	2 m (6.56 ft)

**ON A/C A330-200 A330-200F A330-300



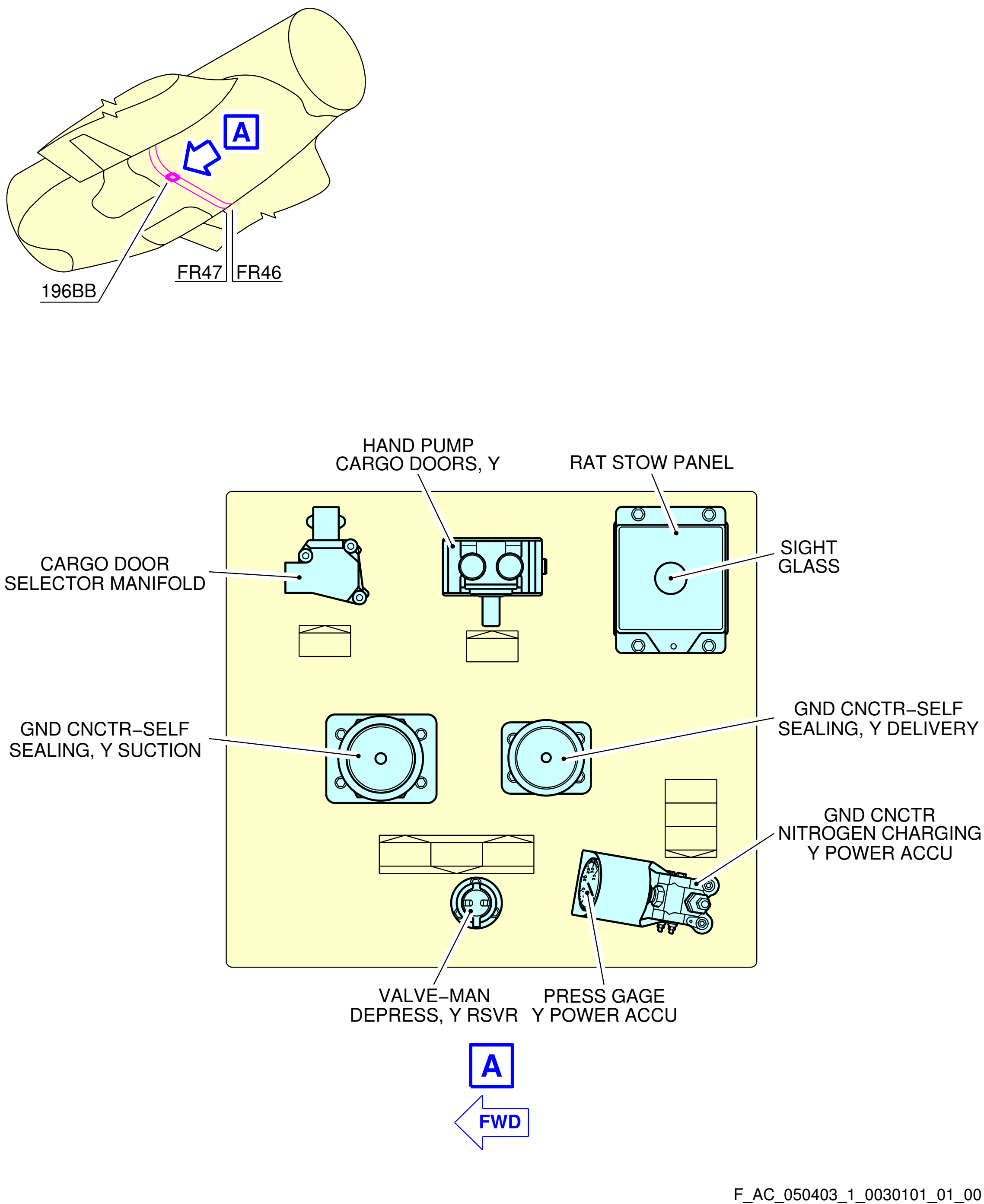
Ground Service Connections
Green System Ground Service Panel
FIGURE-5-4-3-991-001-A01

**ON A/C A330-200 A330-200F A330-300



Ground Service Connections
Blue System Ground Service Panel
FIGURE-5-4-3-991-002-A01

**ON A/C A330-200 A330-200F A330-300



Ground Service Connections
Yellow System Ground Service Panel
FIGURE-5-4-3-991-003-A01

5-4-4 Electrical System

****ON A/C A330-200 A330-200F A330-300**

Electrical System

****ON A/C A330-200 A330-300**

1. Electrical System

ACCESS	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
A/C External Power: Access Door 121EL	7.2 m (23.62 ft)	On centerline		1.98 m (6.50 ft)

NOTE : Distances are approximate.

2. Technical Specifications

A. External Power Receptacles:
- Two standard ISO 461 receptacles - 90 kVA each.

B. Power Supply:
- Three-phase, 115 V, 400 Hz.

C. Electrical Connectors for Servicing:
- AC outlets: HUBBELL 5258
- DC outlets: HUBBELL 7472.

D. Electrical Loads in Ground Configuration
In ground configuration, in addition to the power necessary for maintenance, all the circuits, except those which are directly connected to the engines, are supplied as in flight. In these conditions, the maximum power on the ground is approximately 105 kVA; this value does not take into account the supply of the galleys, which according to the aircraft interior layout, may reach 90 kVA.

E. Electrical Power necessary for Maintenance at Line Stop and Workshops:
- Hydraulic electric-pumps: 20 $\times$ 3 kVA
- Air Conditioning/ventilation: 49.5 kVA
- Fuel pumps: 11.2 kVA
- Lighting (commercial): 13.1 kVA
- Lighting (technical): 2 kVA
- Ice and rain protection: 11.3 kVA
- Cargo loading: 12.6 kVA
- AFS, flight controls, ADS, recorders: 3 kVA
- Communications: 3.2 kVA

- Radio navigation: 1 kVA.

ON A/C A330-200F

3. Electrical System

ACCESS	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
A/C External Power: Access Door 125EL	7.2 m (23.62 ft)	On centerline		2.29 m (7.51 ft)

NOTE : Distances are approximate.

4. Technical Specifications

A. External Power Receptacles:
- Two standard ISO 461 receptacles - 90 kVA each.

B. Power Supply:
- Three-phase, 115 V, 400 Hz.

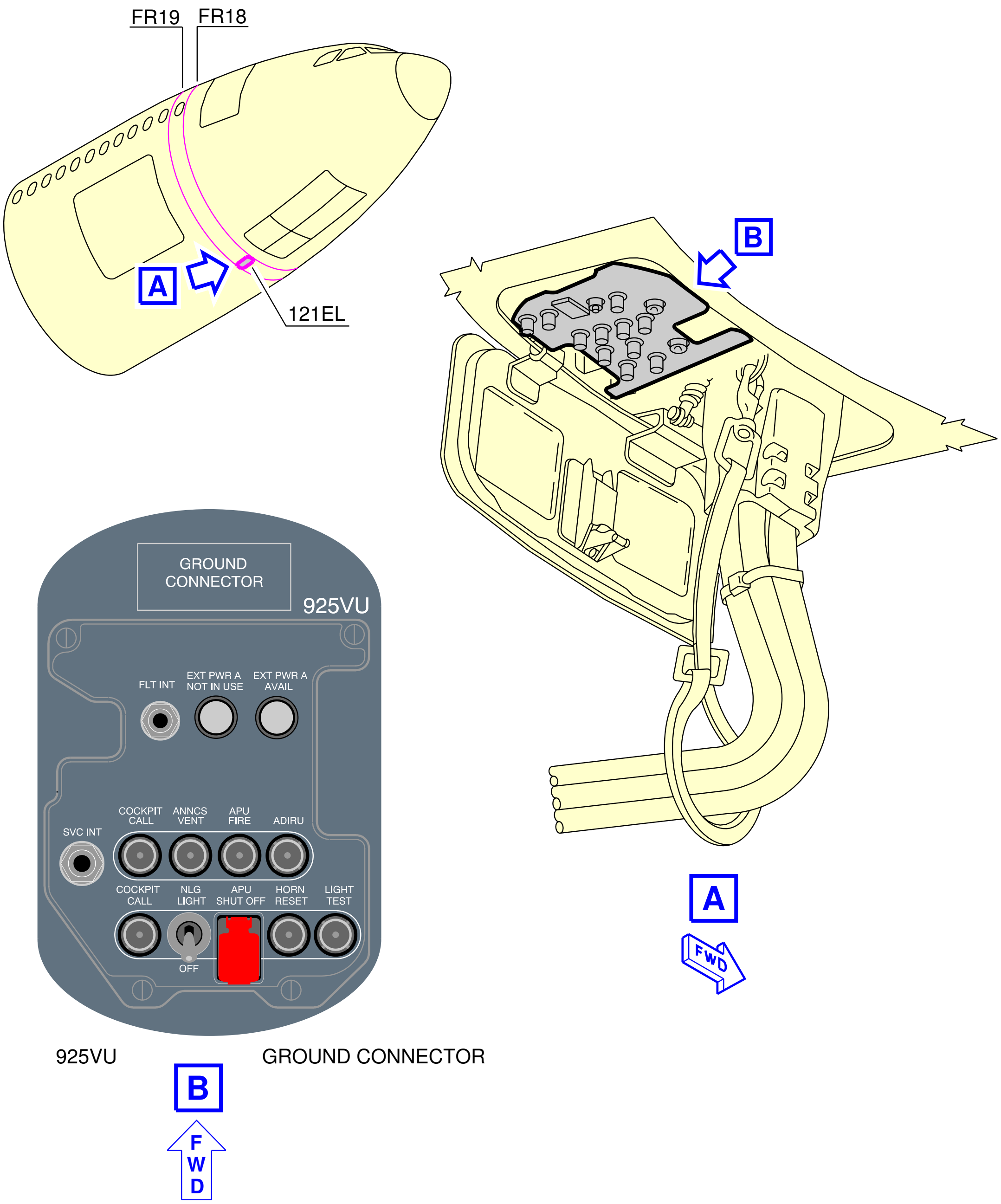
C. Electrical Connectors for Servicing:
- AC outlets: HUBBELL 5258
- DC outlets: HUBBELL 7472.

D. Electrical Loads in Ground Configuration

In ground configuration, in addition to the power necessary for maintenance, all the circuits, except those which are directly connected to the engines, are supplied as in flight. In these conditions, the maximum power on the ground is approximately 105 kVA; this value does not take into account the supply of the galleys, which according to the aircraft interior layout, may reach 90 kVA.

E. Electrical Power necessary for Maintenance at Line Stop and Workshops:
- Hydraulic electric-pumps: 20 × 3 kVA
- Air Conditioning/ventilation: 49.5 kVA
- Fuel pumps: 11.2 kVA
- Lighting (commercial): 13.1 kVA
- Lighting (technical): 2 kVA
- Ice and rain protection: 11.3 kVA
- Cargo loading: 12.6 kVA
- AFS, flight controls, ADS, recorders: 3 kVA
- Communications: 3.2 kVA
- Radio navigation: 1 kVA.

**ON A/C A330-200 A330-300



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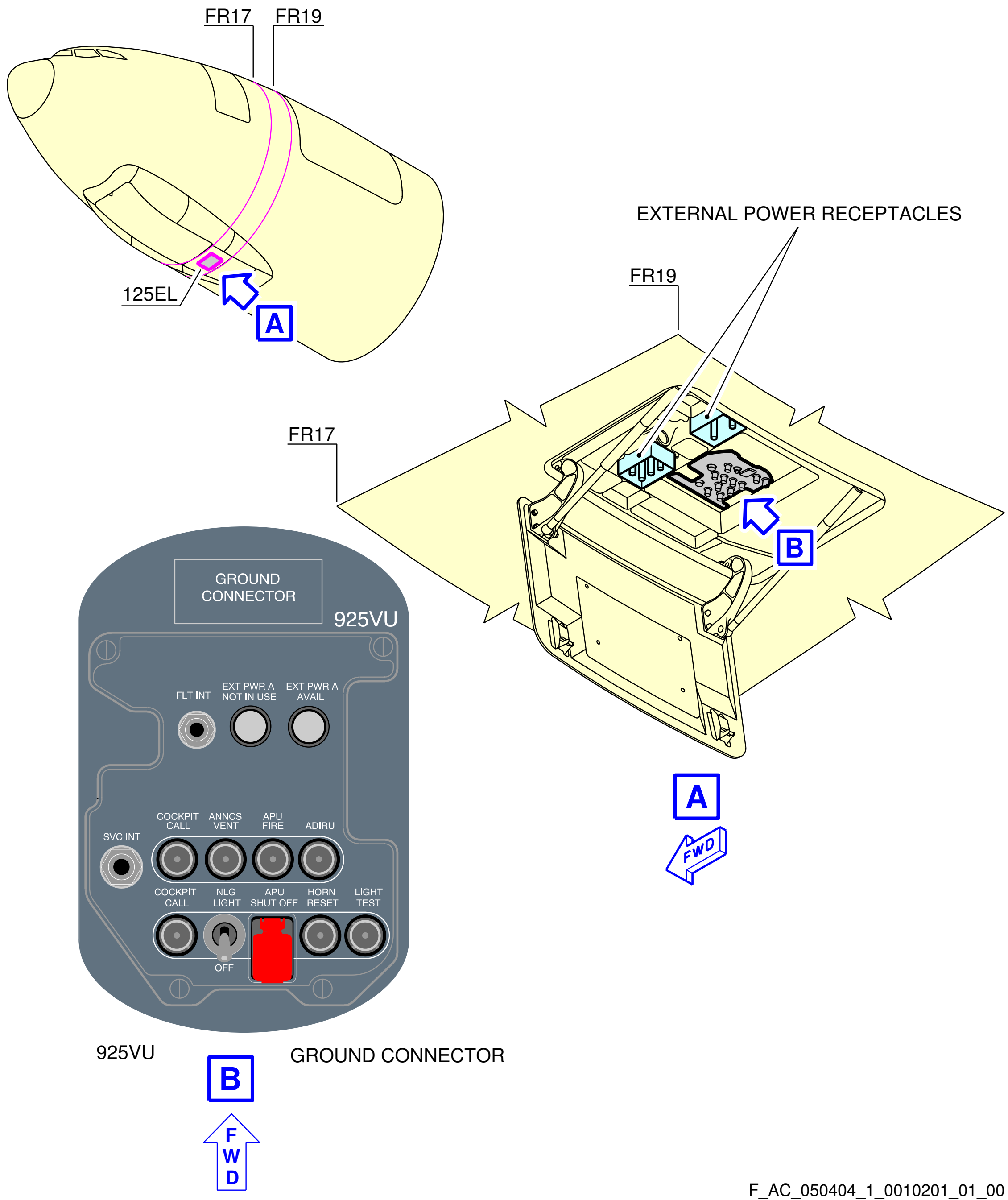
Ground Service Connections
Electrical Service Panel
FIGURE-5-4-4-991-005-A01

**ON A/C A330-200F



Ground Service Connections
Electrical Service Panel
FIGURE-5-4-4-991-001-B01

5-4-5 Oxygen System

****ON A/C A330-200 A330-200F A330-300**

Oxygen System

****ON A/C A330-200 A330-300**

1. Oxygen System

ACCESS	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Oxygen Replenishment (Option 1): Access Door 811	2.5 m (8.2 ft)	0.53 m (1.74 ft)	-	3.2 m (10.5 ft)
Oxygen Replenishment (Option 2): Access Door 811	2.5 m (8.2 ft)	0.68 m (2.23 ft)	-	3.2 m (10.5 ft)

- 0 – Basic: External charging in the avionic compartment
- 1 – Option
- 2 – Option.

Zero, one or two service connections (external charging in the avionics compartment) MS22066 Std.

NOTE : Internal charging connection provided.

****ON A/C A330-200F**

2. Oxygen System

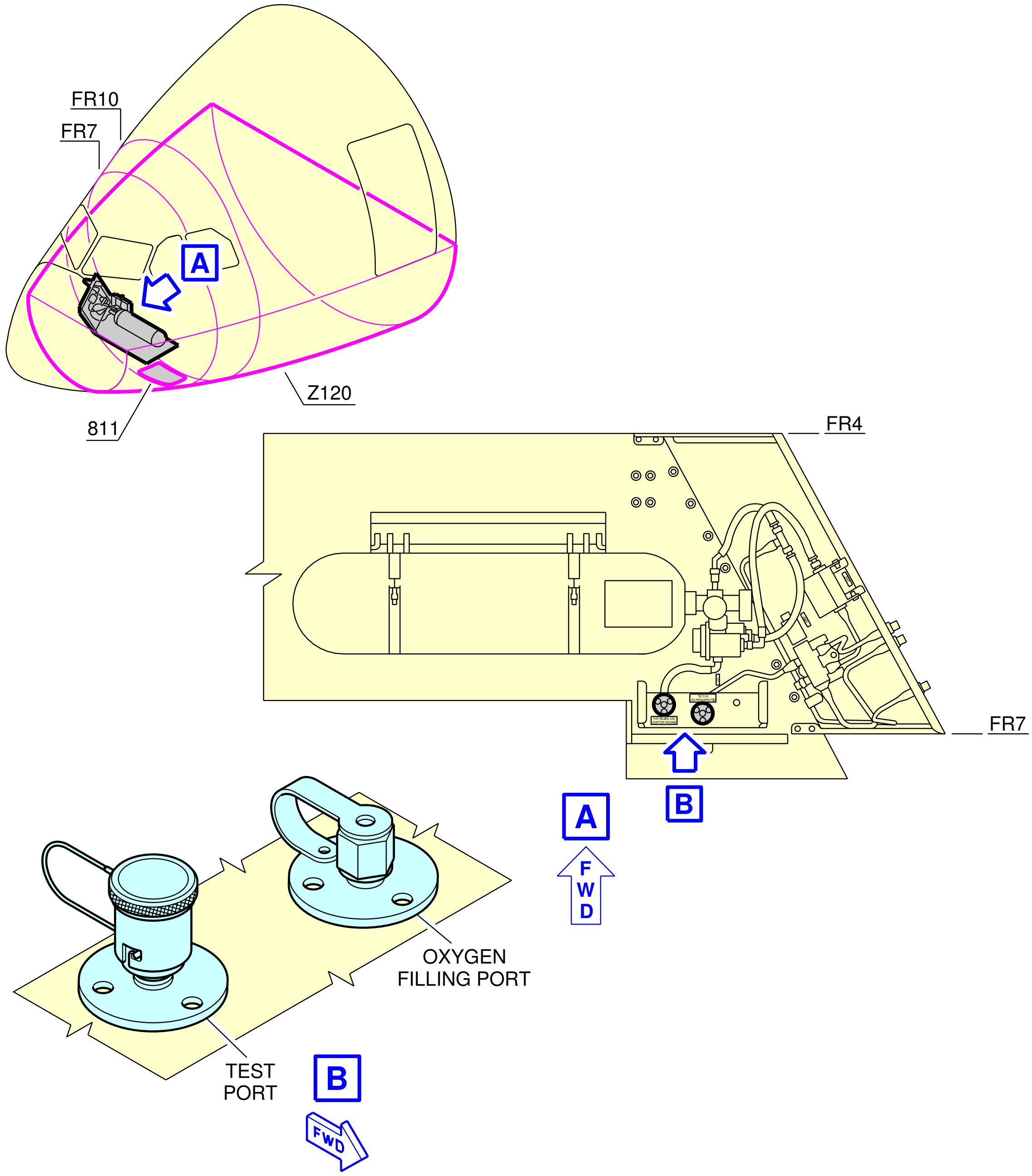
ACCESS	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Oxygen Replenishment: Access Panel 132NW	11.26 m (36.94 ft)	2.5 m (8.2 ft)	-	4.2 m (13.78 ft)

- Basic: External charging in the FWD cargo compartment.

One service connection (external charging in the FWD cargo compartment) MS22066 Std.

NOTE : Internal charging connection provided.

**ON A/C A330-200 A330-300



NOTE:
THE NUMBER OF OXYGEN CYLINDERS DEPENDS ON THE SYSTEM CONFIGURATION.

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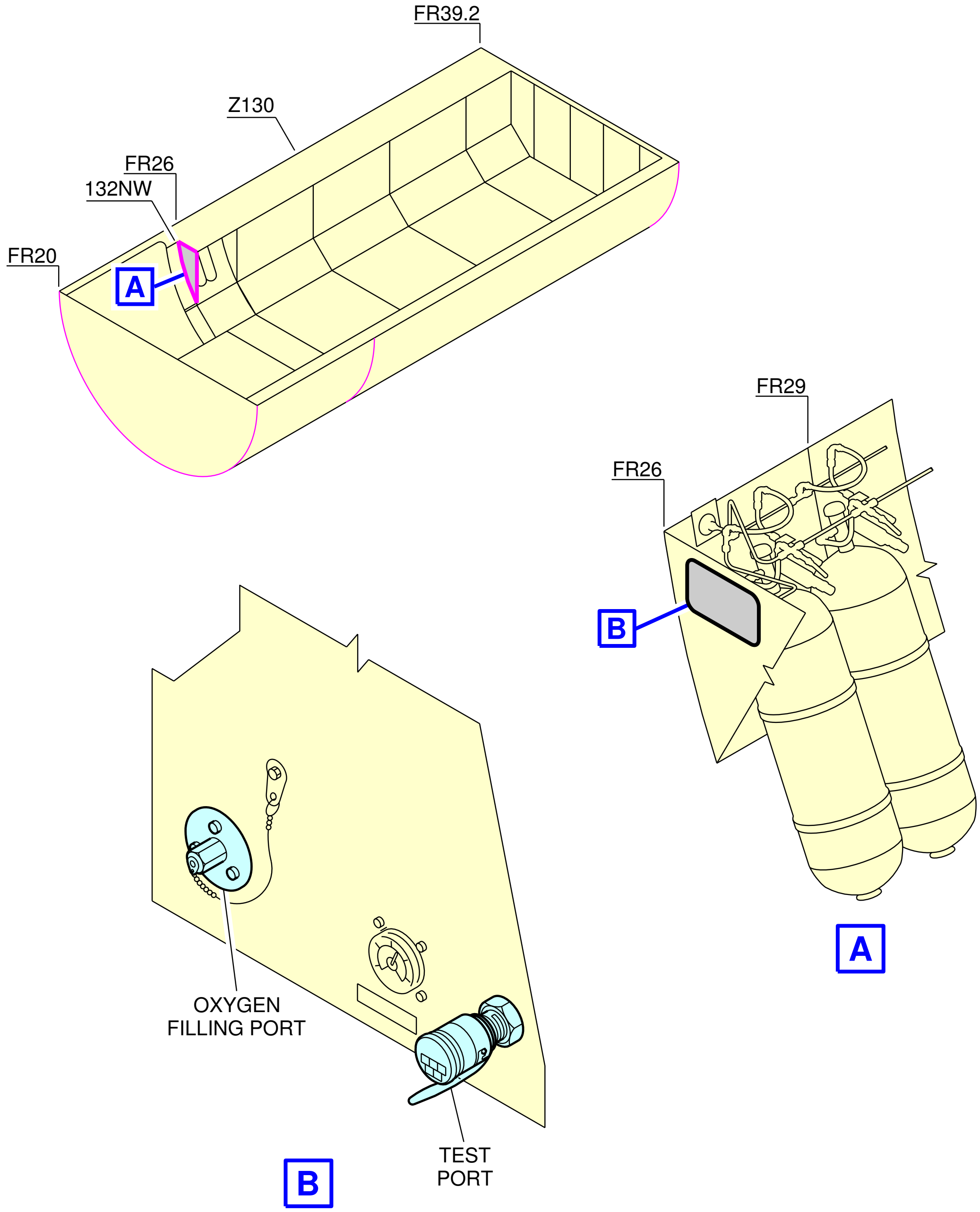
Ground Service Connections
Oxygen System
FIGURE-5-4-5-991-001-A01

**ON A/C A330-200F



NOTE:
THE NUMBER OF OXYGEN CYLINDERS DEPENDS ON THE SYSTEM CONFIGURATION.

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Ground Service Connections
Oxygen System
FIGURE-5-4-5-991-002-A01

5-4-6 Fuel System

****ON A/C A330-200 A330-200F A330-300**

Fuel System

****ON A/C A330-200**

1. Refuel/Defuel Access

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Refuel/Defuel Coupling, Left (Optional): Access Door 522HB	26.8 m (87.93 ft)	-	12.6 m (41.34 ft)	5 m (16.4 ft)
Refuel/Defuel Coupling, Right: Access Door 622HB	26.8 m (87.93 ft)	12.6 m (41.34 ft)	-	5 m (16.4 ft)
Overwing Gravity Refuel Cap	31.3 m (102.69 ft)	17.2 m (56.43 ft)	17.2 m (56.43 ft)	5.8 m (19.03 ft)

A. Four standard 2.5 in. ISO 45 connections.

B. Two service connections (gravity refuel).

2. Refuel/Defuel Control Panel

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Refuel/Defuel Control Panel: Access Door 198DB	31.1 m (102.03 ft)	0.8 m (2.62 ft)	-	1.9 m (6.23 ft)

A. Flow rate: 1580 l/min (417 US gal/min) per connection.

B. Maximum pressure: 50 psi (3.45 bar).

3. Overpressure Protector and NACA Flame Arrestor

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Overpressure Protector	36.3 m (119.09 ft)	27.17 m (89.14 ft)	27.17 m (89.14 ft)	5.75 m (18.86 ft)
NACA Flame Arrestor	35.94 m (117.91 ft)	26.53 m (87.04 ft)	26.53 m (87.04 ft)	5.7 m (18.7 ft)

****ON A/C A330-300**

4. Refuel/Defuel Access

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Refuel/Defuel Coupling, Left (Optional): Access Door 522HB	30 m (98.43 ft)	-	12.6 m (41.34 ft)	5 m (16.4 ft)
Refuel/Defuel Coupling, Right: Access Door 622HB	30 m (98.43 ft)	12.6 m (41.34 ft)	-	5 m (16.4 ft)
Overwing Gravity Refuel Cap	34.5 m (113.19 ft)	17.2 m (56.43 ft)	17.2 m (56.43 ft)	5.8 m (19.03 ft)

A. Four standard 2.5 in. ISO 45 connections.

B. Two service connections (gravity refuel).

5. Refuel/Defuel Control Panel

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Refuel/Defuel Control Panel: Access Door 198DB	34.3 m (112.53 ft)	0.8 m (2.62 ft)	-	1.9 m (6.23 ft)

A. Flow rate: 1580 l/min (417 US gal/min) per connection.

B. Maximum pressure: 50 psi (3.45 bar).

6. Overpressure Protector and NACA Flame Arrestor

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Overpressure Protector	39.48 m (129.53 ft)	27.17 m (89.14 ft)	27.17 m (89.14 ft)	5.75 m (18.86 ft)
NACA Flame Arrestor	39.12 m (128.35 ft)	26.53 m (87.04 ft)	26.53 m (87.04 ft)	5.7 m (18.7 ft)

****ON A/C A330-200F**

7. Refuel/Defuel Access

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Refuel/Defuel Coupling, Left (Optional): Access Door 522HB	26.8 m (87.93 ft)	-	12.6 m (41.34 ft)	5.1 m (16.73 ft)
Refuel/Defuel Coupling, Right: Access Door 622HB	26.8 m (87.93 ft)	12.6 m (41.34 ft)	-	5.1 m (16.73 ft)
Overwing Gravity Refuel Cap	31.3 m (102.69 ft)	17.2 m (56.43 ft)	17.2 m (56.43 ft)	6.1 m (20.01 ft)

A. Four standard 2.5 in. ISO 45 connections.

B. Two service connections (gravity refuel).

8. Refuel/Defuel Control Panel

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Refuel/Defuel Control Panel: Access Door 198DB	31.1 m (102.03 ft)	0.8 m (2.62 ft)	-	1.9 m (6.23 ft)

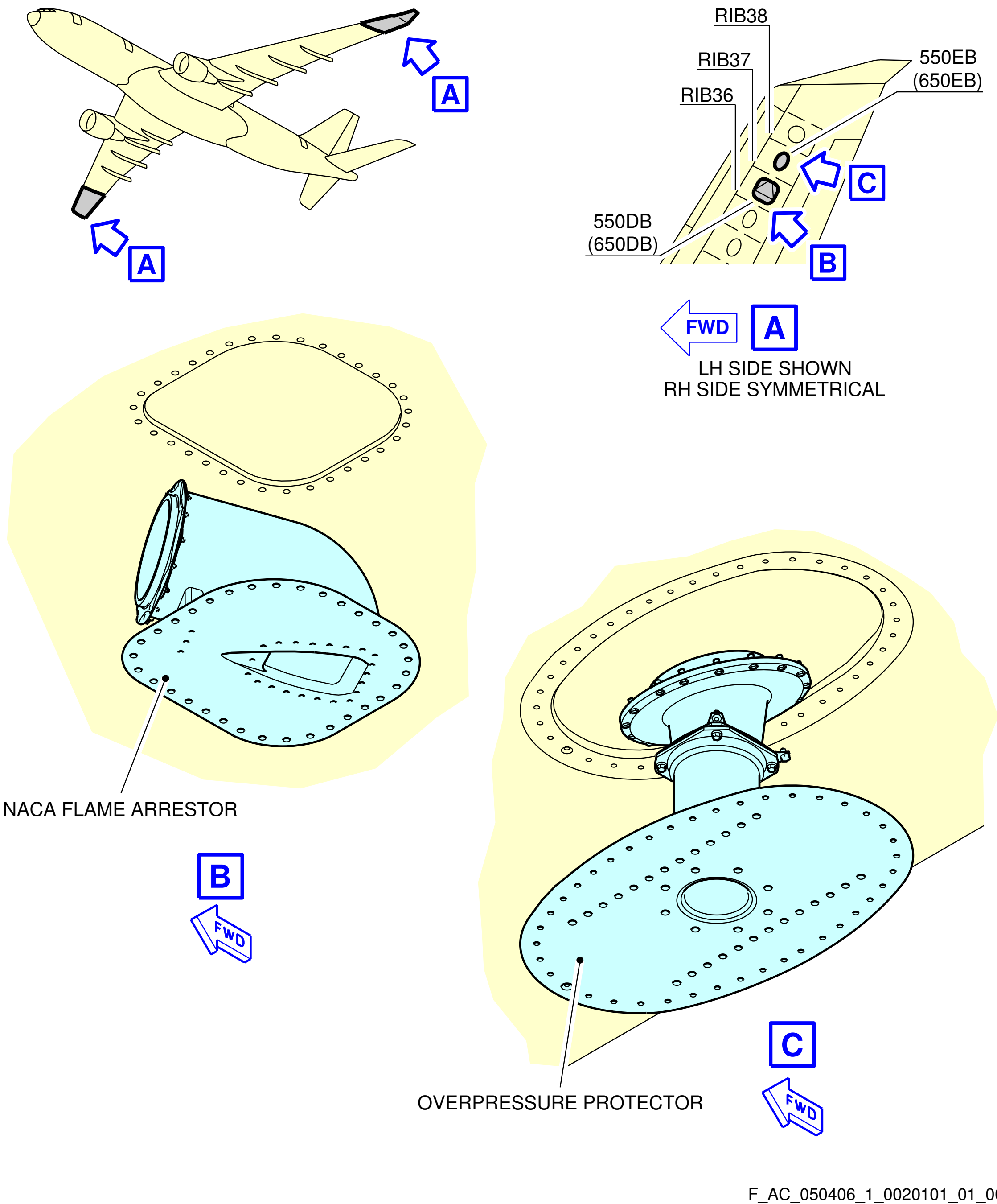
A. Flow rate: 1580 l/min (417 US gal/min) per connection.

B. Maximum pressure: 50 psi (3.45 bar).

9. Overpressure Protector and NACA Flame Arrestor

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Overpressure Protector	36.3 m (119.09 ft)	27.17 m (89.14 ft)	27.17 m (89.14 ft)	5.75 m (18.86 ft)
NACA Flame Arrestor	35.94 m (117.91 ft)	26.53 m (87.04 ft)	26.53 m (87.04 ft)	5.7 m (18.7 ft)

****ON A/C A330-200 A330-200F A330-300**



Overpressure Protector and NACA Flame Arrestor
FIGURE-5-4-6-991-002-A01

5-4-7 Pneumatic System

****ON A/C A330-200 A330-200F A330-300**

Pneumatic System

****ON A/C A330-200 A330-200F**

1. High Pressure Air Connection

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
HP Connectors: Access door 193CB	20.72 m (67.98 ft)	-	0.84 m (2.76 ft)	1.96 m (6.43 ft)
	21.08 m (69.16 ft)	-	0.84 m (2.76 ft)	1.94 m (6.36 ft)

A. Connectors:
- Two standard 3 in. ISO 2026 connections.

2. Low Pressure Air Connection

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
LP Connectors: Access door 191EB	19.29 m (63.29 ft)	-	0.31 m (1.02 ft)	2.08 m (6.82 ft)
	19.29 m (63.29 ft)	-	0.76 m (2.49 ft)	2.11 m (6.92 ft)

A. Connectors:
- Two standard 8 in. SAE AS4262 connections.

**ON A/C A330-300

3. High Pressure Air Connection

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
HP Connectors: Access door 193CB	23.9 m (78.41 ft)	-	0.84 m (2.76 ft)	1.79 m (5.87 ft)
	24.25 m (79.56 ft)	-	0.84 m (2.76 ft)	1.79 m (5.87 ft)

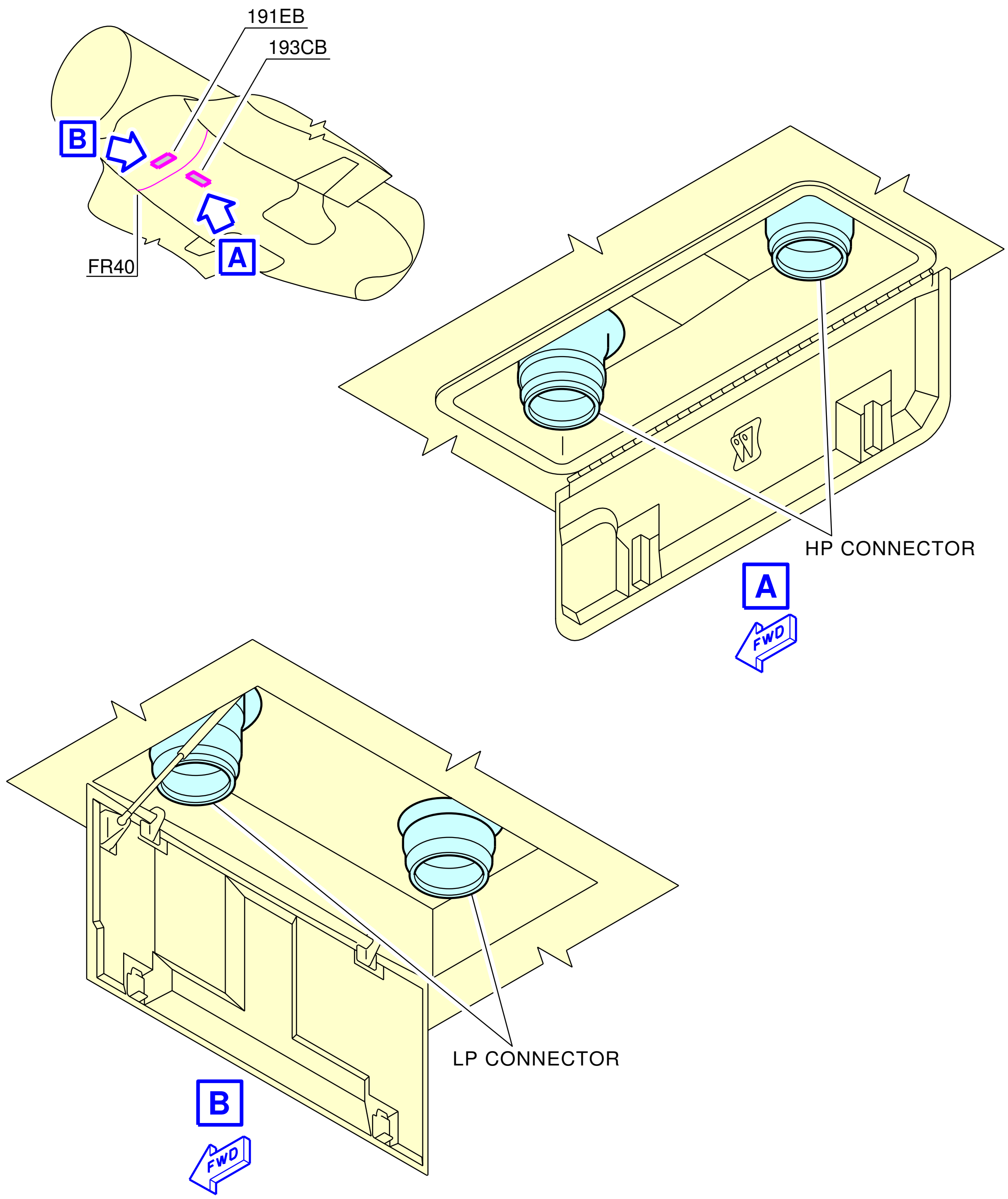
A. Connectors:
- Two standard 3 in. ISO 2026 connections.

4. Low Pressure Air Connection

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
LP Connectors: Access door 191EB	22.48 m (73.75 ft)	-	0.31 m (1.02 ft)	1.86 m (6.1 ft)
	22.48 m (73.75 ft)	-	0.76 m (2.49 ft)	0.76 m (2.49 ft)

A. Connectors:
- Two standard 8 in. SAE AS4262 connections.

**ON A/C A330-200 A330-200F A330-300



Ground Service Connections
LP and HP Ground Connectors
FIGURE-5-4-7-991-001-A01

5-4-8 Potable Water System

****ON A/C A330-300**

Potable Water System

1. Potable Water System

ACCESS	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Potable-Water Service Panel: Access Door 164AR	48.15 m (157.97 ft)	0.51 m (1.67 ft)	-	3.15 m (10.33 ft)
FWD Drain Panel: Access Door 133BL	14.7 m (48.23 ft)	-	0.6 m (1.97 ft)	1.9 m (6.23 ft)
AFT Drain Panel: Access Door 154AR	40.18 m (131.82 ft)	0.72 m (2.36 ft)	-	2.46 m (8.07 ft)

NOTE : Distances are approximate.

2. Technical Specifications

A. Connections

(1) On the potable-water service panel (Access Door 164AR):
- One heated 3/4 in. quick release filling connection
- One heated 3/4 in. overflow and discharge connection
- One ground pressurization connection.

(2) On the FWD drain panel (Access Door 133BL):
- One standard 3/4 in. drain connection with back-up mechanical control.

(3) On the AFT drain panel (Access Door 154AR):
- One standard 3/4 in. drain connection with back-up mechanical control
- One standard 3/4 in. overflow and discharge connection with back-up mechanical control.

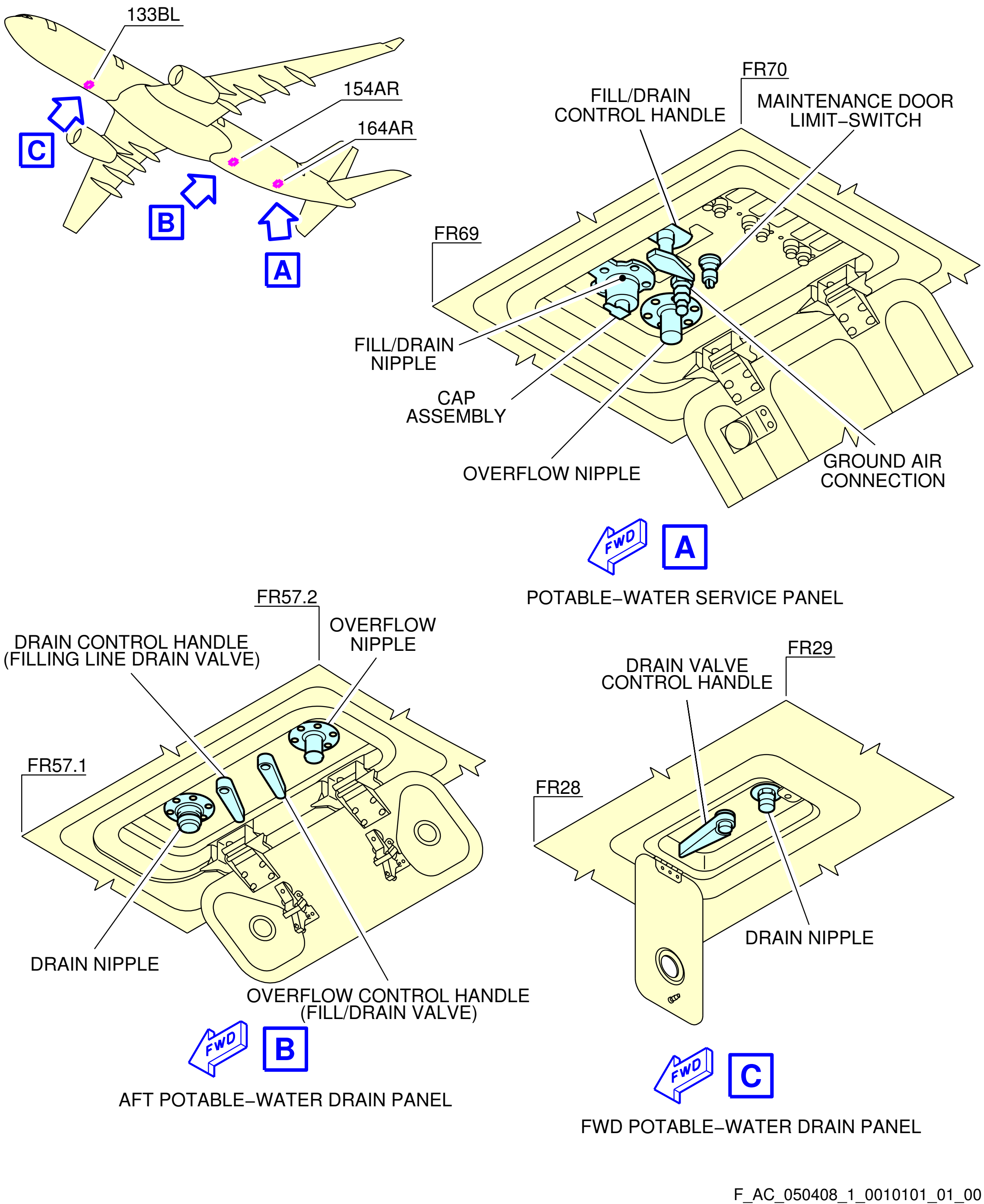
B. Capacity
- 700 l (184.92 US gal) standard
- 1050 l (277.38 US gal) standard option.

C. Filling Pressure and Flow Rate

FWD tank:
- Filling pressure: 50/125 psi (3.45/8.62 bar)
- Flow rate: 45/73 l/min (11.89/19.28 US gal/min).

AFT tank:
- Filling pressure: 50/125 psi (3.45/8.62 bar)
- Flow rate: 56/85 l/min (14.79/22.45 US gal/min).

**ON A/C A330-300



Ground Service Connections
Potable-Water Ground Service Panels
FIGURE-5-4-8-991-001-A01

**ON A/C A330-200

Potable Water System

1. Potable Water System

ACCESS	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Potable-Water Service Panel: Access Door 164AR	48.15 m (157.97 ft)	0.51 m (1.67 ft)	-	3.15 m (10.33 ft)
FWD Drain Panel: Access Door 133BL	14.7 m (48.23 ft)	-	0.6 m (1.97 ft)	1.9 m (6.23 ft)
AFT Drain Panel: Access Door 154AR	40.18 m (131.82 ft)	0.72 m (2.36 ft)	-	2.46 m (8.07 ft)

NOTE : Distances are approximate.

2. Technical Specifications

A. Connections

(1) On the potable-water service panel (Access Door 164AR):
- One heated 3/4 in. quick release filling connection
- One heated 3/4 in. overflow and discharge connection
- One ground pressurization connection.

(2) On the FWD drain panel (Access Door 133BL):
- One standard 3/4 in. drain connection with back-up mechanical control.

(3) On the AFT drain panel (Access Door 154AR):
- One standard 3/4 in. drain connection with back-up mechanical control
- One standard 3/4 in. overflow and discharge connection with back-up mechanical control.

B. Capacity
- 700 l (184.92 US gal) standard
- 1050 l (277.38 US gal) standard option.

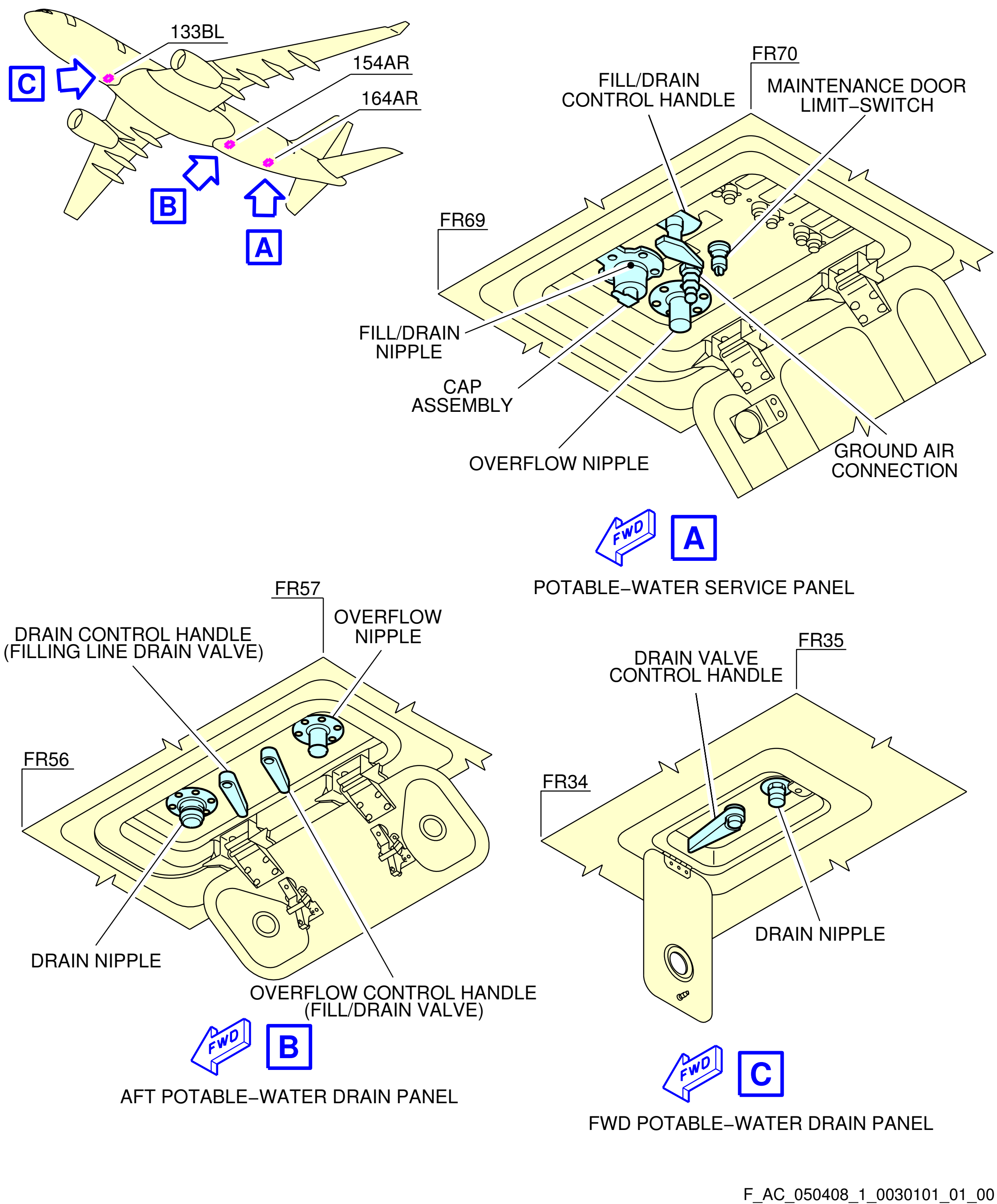
C. Filling Pressure and Flow Rate

FWD tank:
- Filling pressure: 50/125 psi (3.45/8.62 bar)
- Flow rate: 45/73 l/min (11.89/19.28 US gal/min).

AFT tank:

- Filling pressure: 50/125 psi (3.45/8.62 bar)
- Flow rate: 56/85 l/min (14.79/22.45 US gal/min).

**ON A/C A330-200



Ground Service Connections
Potable-Water Ground Service Panels
FIGURE-5-4-8-991-003-A01

****ON A/C A330-200F**

Potable Water System

1. Potable Water System

ACCESS	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Potable-Water Service Panel: Access Door 133BL	14.03 m (46.03 ft)	-	0.76 m (2.49 ft)	2.64 m (8.66 ft)

NOTE : Distances are approximate.

2. Technical Specifications

   A. Connections

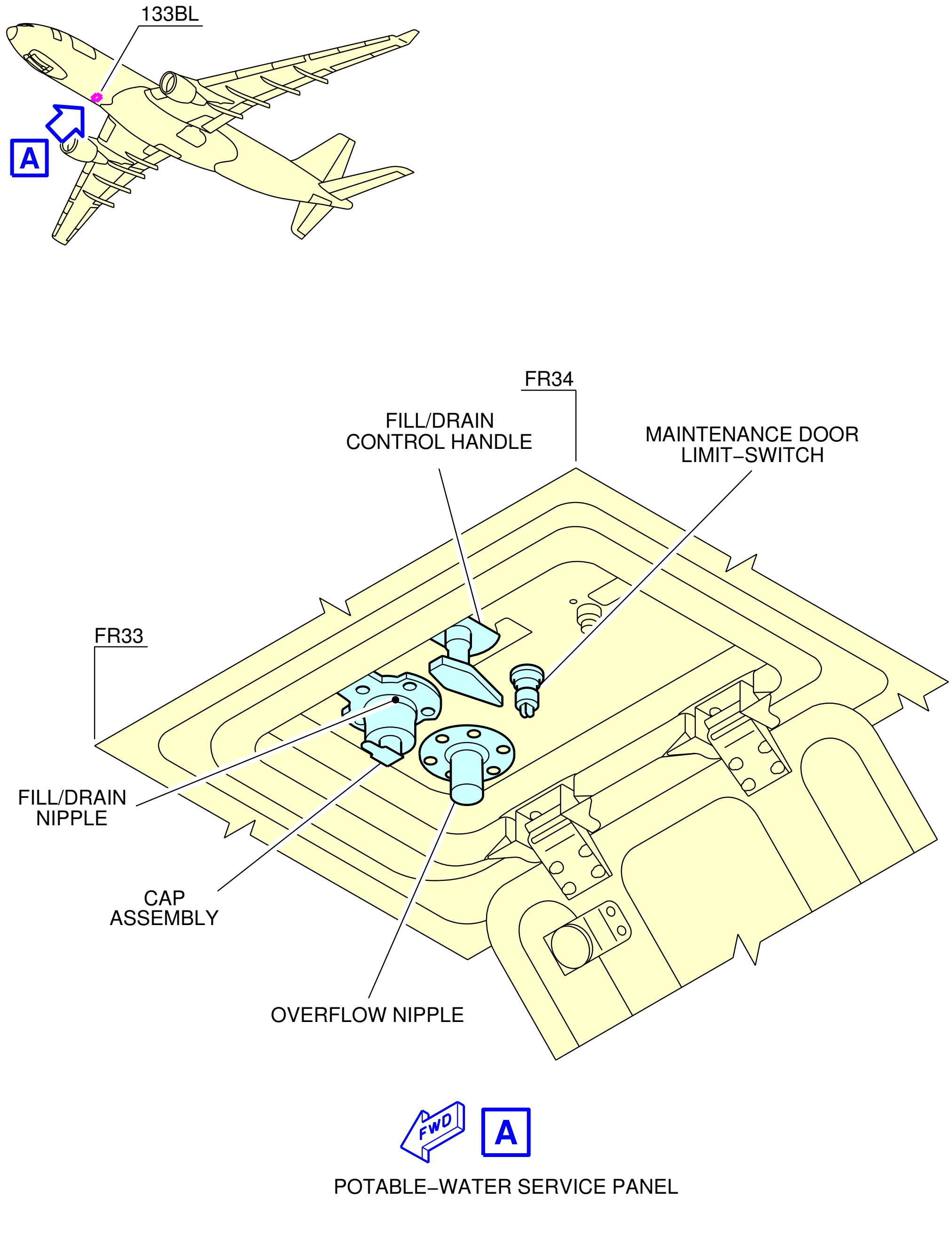
      (1) On the potable-water service panel (Access Door 133BL):
         - One heated 3/4 in. quick release filling connection
         - One heated 3/4 in. overflow and discharge connection
         - One ground pressurization connection.

      (2) On the drain panel (Access Door 133BL):
         - One standard 3/4 in. drain connection with back-up mechanical control.

   B. Capacity
      - 100 l (26.42 US gal).

   C. Filling Pressure and Flow Rate
      - Filling pressure: 50 psi (3.45 bar)
      - Flow rate: 45 l/min (11.89 US gal/min).

**ON A/C A330-200F



Ground Service Connections
Potable-Water Ground Service Panel
FIGURE-5-4-8-991-004-A01

5-4-9 Oil System

****ON A/C A330-200 A330-200F A330-300**

Oil System

1. Engine Oil Tank and IDG for PW 4000 series engine.

   A. Engine Oil Replenishment :

   One gravity filling cap and one pressure filling connection per engine.

	DISTANCE : Meters (ft)			
	AFT OF NOSE	FROM AIRPLANE CENTERLINE		MEAN HEIGHT FROM GROUND
		ENGINE 1 (Left)	ENGINE 2 (Right)	
Engine Oil Filling:	25.7 m (84.32 ft)	10.6 m (34.78 ft)	8.07 m (26.48 ft)	2.23 m (7.32 ft)

   (1) Tank capacity :
   - Full level : 8.00 US gal (30.28 l).
   - Usable : 5.75 US gal (21.77 l).

   B. IDG Oil Replenishment :

   One pressure filling connection per engine.

	DISTANCE : Meters (ft)			
	AFT OF NOSE	FROM AIRPLANE CENTERLINE		MEAN HEIGHT FROM GROUND
		ENGINE 1 (Left)	ENGINE 2 (Right)	
IDG Oil Pressure Filling Connection:	26.16 m (85.83 ft)	10.07 m (33.04 ft)	8.66 m (28.41 ft)	1.50 m (4.92 ft)

   - Max delivery pressure required : 40 psi (2.76 bar).
   - Max OIL capacity of the IDG : 1.1 US gal (4.16 l).

2. Engine Oil Tank and IDG for RR Trent 700 series engine

   A. Engine Oil Replenishment :

   One gravity filling cap.

   One ozone self sealing pressure fill and overfill connector per engine.

	DISTANCE : Meters (ft)			
	AFT OF NOSE	FROM AIRPLANE CENTERLINE		MEAN HEIGHT FROM GROUND
		ENGINE 1 (Left)	ENGINE 2 (Right)	
Engine Oil Filling:	23.9 m (78.41 ft)	7.92 m (25.98 ft)	10.82 m (35.50 ft)	2.05 m (6.73 ft)

(1) Tank capacity :
- Full level : 7.18 US gal (27.18 l.
- Usable : 6.00 US gal (22.71 l).

B. IDG Oil Replenishment :

One ozone self sealing pressure fill and overfill connector per engine.

	DISTANCE : Meters (ft)			
	AFT OF NOSE	FROM AIRPLANE CENTERLINE		MEAN HEIGHT FROM GROUND
		ENGINE 1 (Left)	ENGINE 2 (Right)	
IDG Oil Pressure Filling Connection:	24.38 m (79.99 ft)	9.65 m (31.66 ft)	9.09 m (29.82 ft)	0.8 m (2.62 ft)

- Max delivery pressure required : 40 psi (2.76 bar).
- Max OIL capacity of the IDG : 1.12 US gal (4.24 l).

****ON A/C A330-200 A330-300**

3. Engine Oil Tank and IDG for GE CF6-80E1 series engine

A. Engine Oil Replenishment :

One gravity filling cap and one pressure filling connection per engine.

	DISTANCE : Meters (ft)			
	AFT OF NOSE	FROM AIRPLANE CENTERLINE		MEAN HEIGHT FROM GROUND
		ENGINE 1 (Left)	ENGINE 2 (Right)	
Engine Oil Filling:	24.93 m (81.79 ft)	10.00 m (32.81 ft)	8.73 m (28.64 ft)	1.71 m (5.61 ft)

(1) Tank capacity :
- Full level : 6.49 US gal (24.57 l).
- Usable : 6.09 US gal (23.05 l).

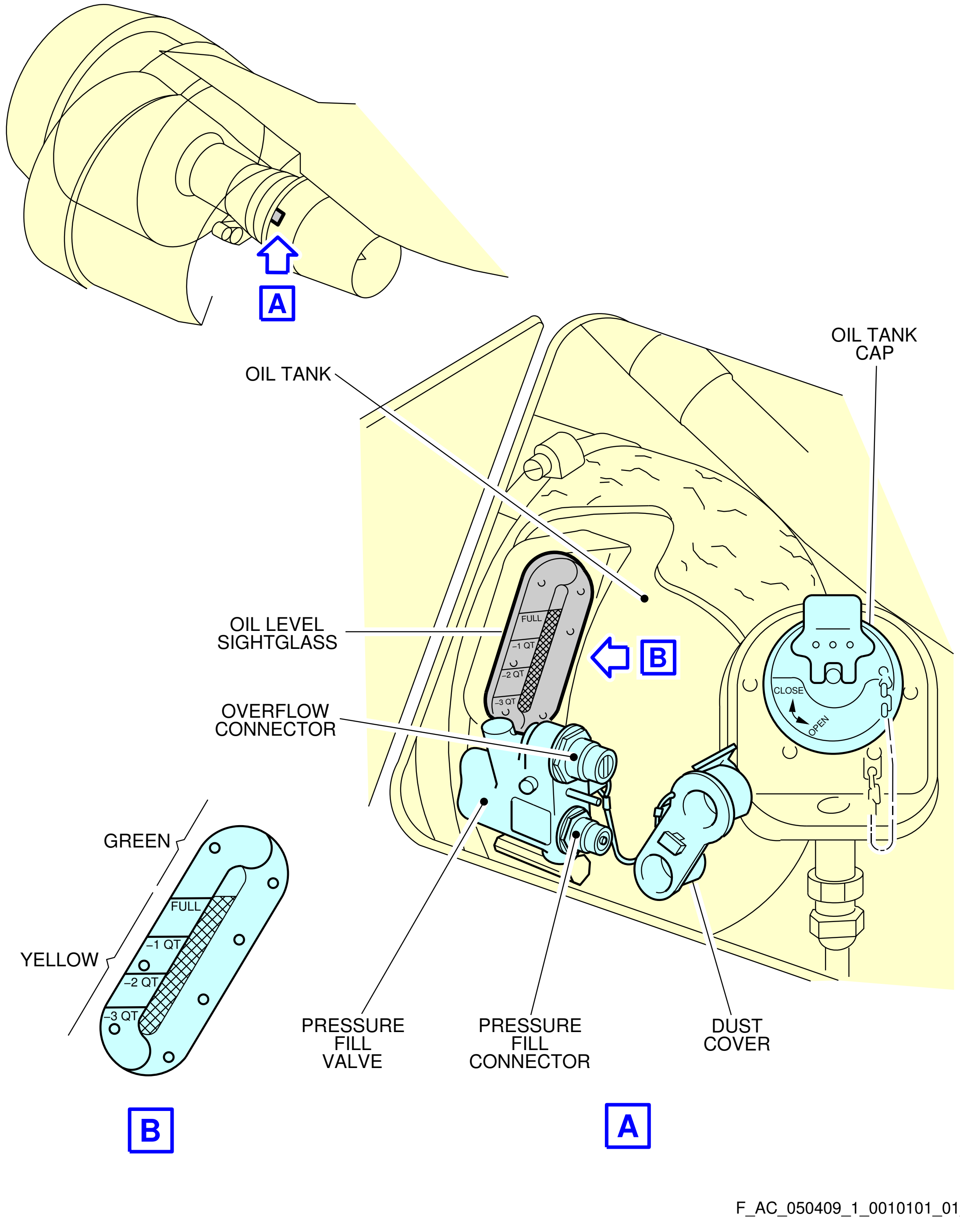
B. IDG Oil Replenishment :

One pressure filling connection per engine.

<table>
<tr><td></td><td colspan="4">DISTANCE : Meters (ft)</td></tr>
<tr><td rowspan="2"></td><td rowspan="2">AFT OF NOSE</td><td colspan="2">FROM AIRPLANE CENTERLINE</td><td rowspan="2">MEAN HEIGHT FROM GROUND</td></tr>
<tr><td>ENGINE 1 (Left)</td><td>ENGINE 2 (Right)</td></tr>
<tr><td>IDG Oil Pressure Filling Connection:</td><td>23.03 m
(75.56 ft)</td><td>7.96 m
(26.12 ft</td><td>10.77 m
(35.33 ft)</td><td>2.35 m
(7.71 ft)</td></tr>
</table>

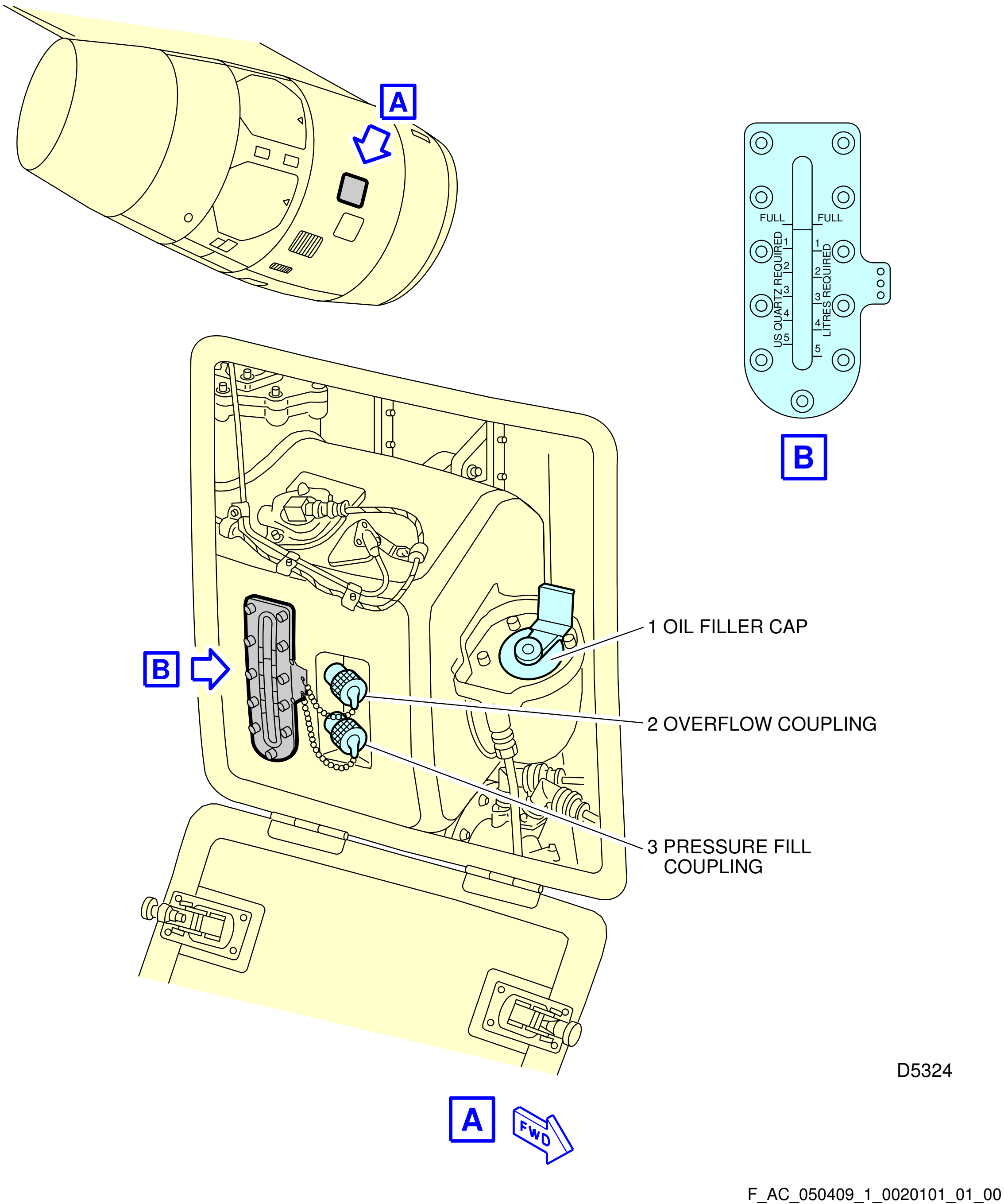
- Max delivery pressure required : 40 psi (2.76 bar).
- Max OIL capacity of the IDG : 1.1 US gal (4.16 l).

**ON A/C A330-200 A330-200F A330-300



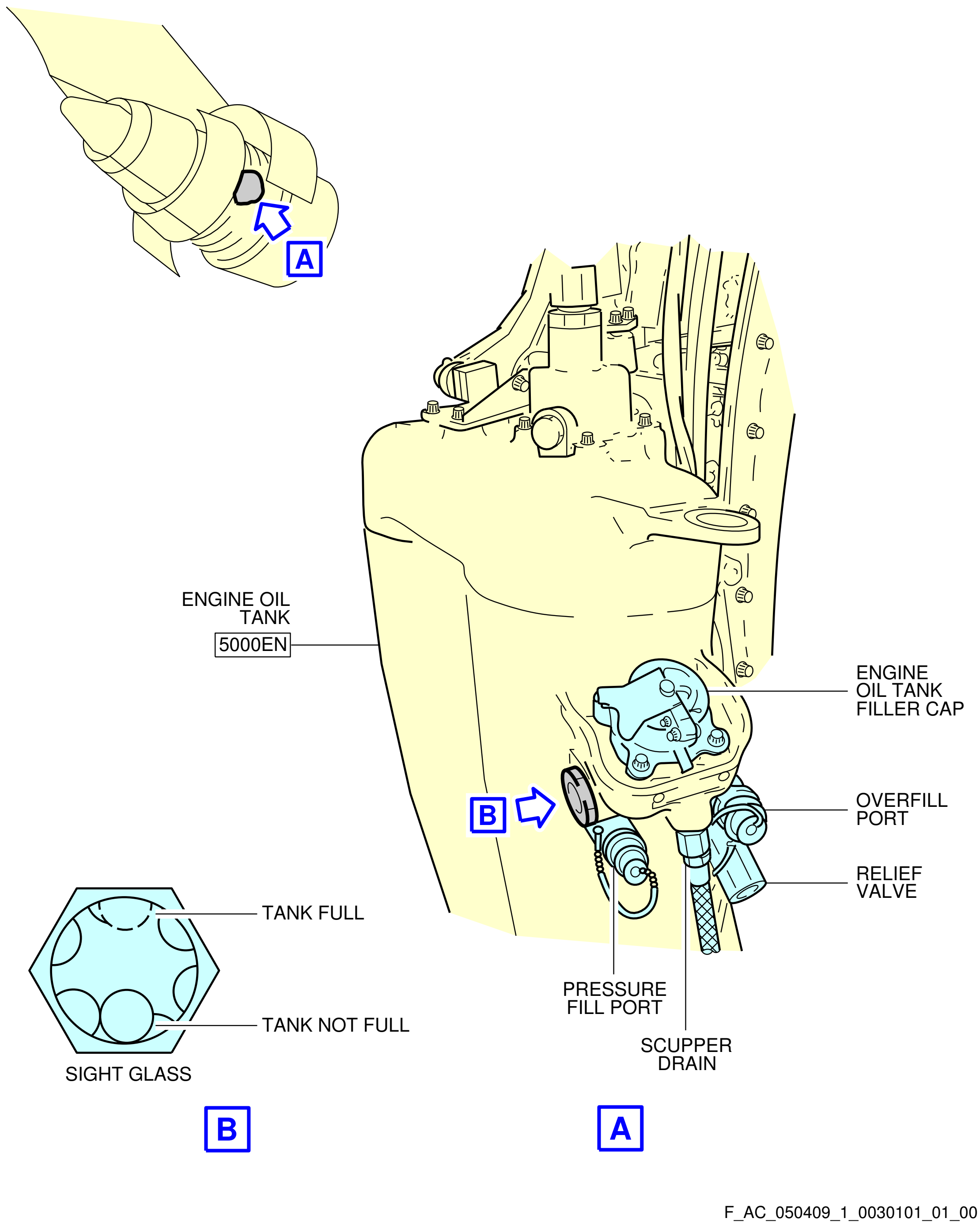
Ground Service Connections
Engine Oil Tank - PW 4000 series engine
FIGURE-5-4-9-991-001-A01

**ON A/C A330-200 A330-200F A330-300



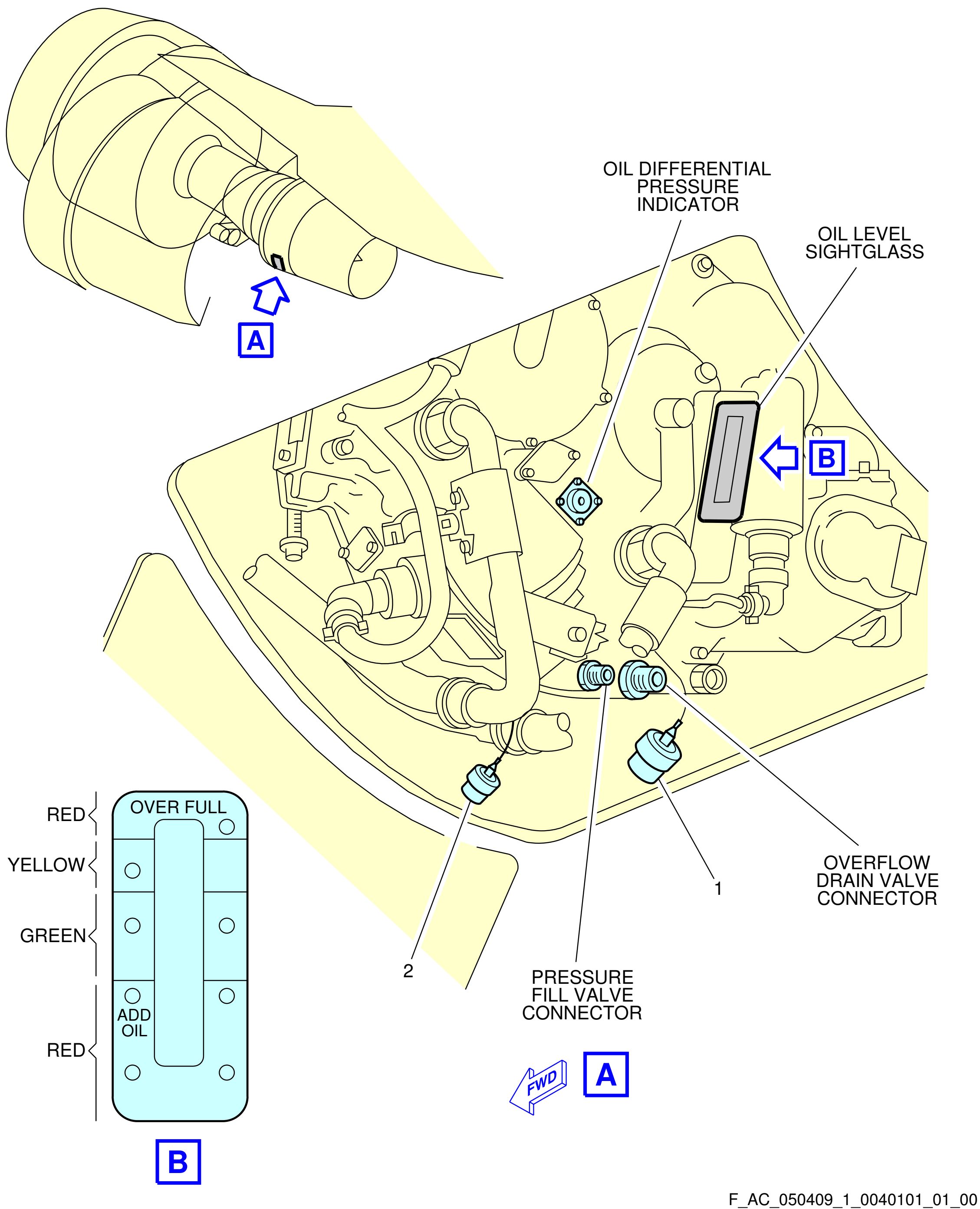
Ground Service Connections
Engine Oil Tank - RR Trent 700 series engine
FIGURE-5-4-9-991-002-A01

**ON A/C A330-200 A330-300



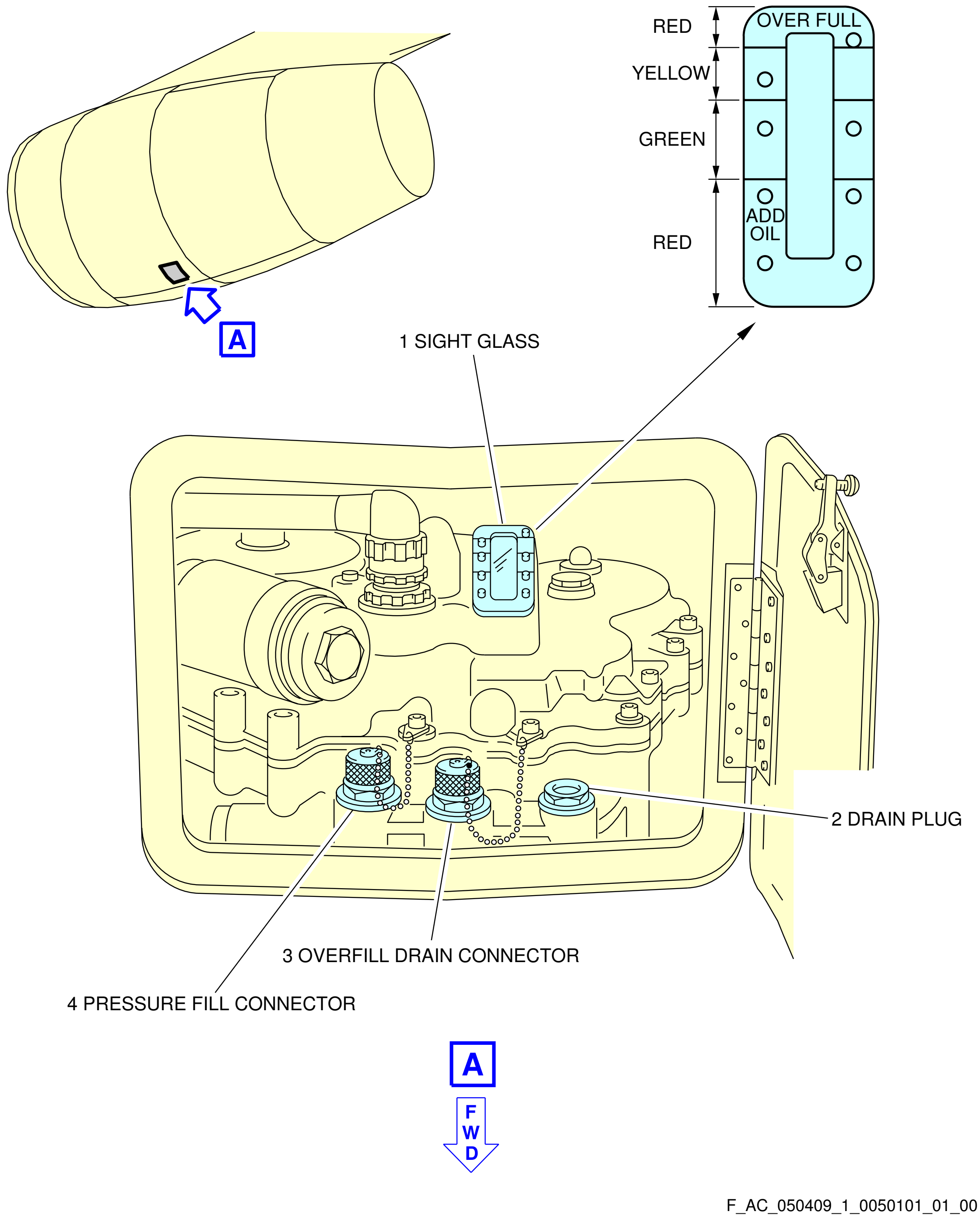
Ground Service Connections
Engine Oil Tank - GE CF6-80E1 series engine
FIGURE-5-4-9-991-003-A01

**ON A/C A330-200 A330-200F A330-300



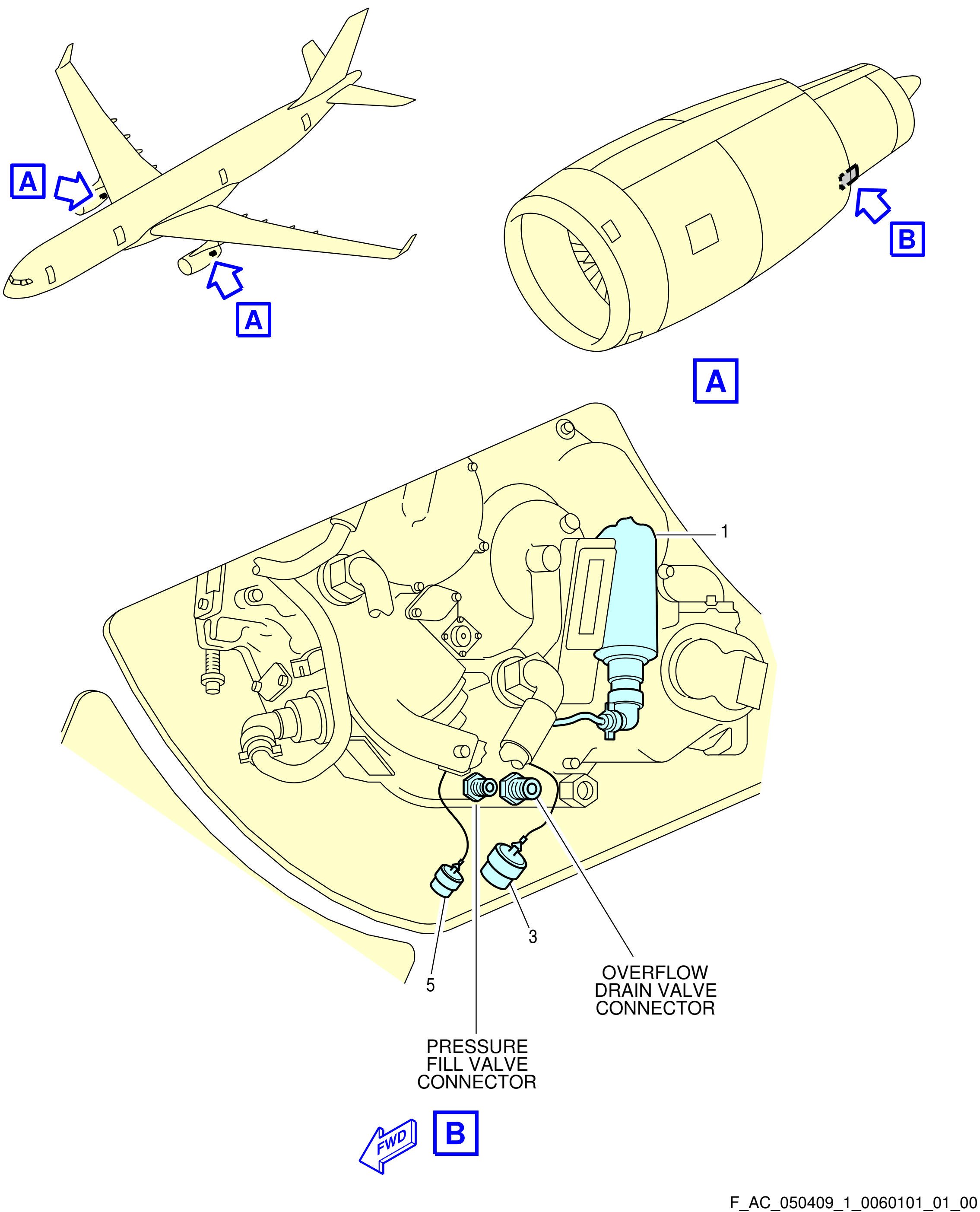
Ground Service Connections
IDG Oil Tank - PW 4000 series engine
FIGURE-5-4-9-991-004-A01

****ON A/C A330-200 A330-200F A330-300**



Ground Service Connections
IDG Oil Tank - RR Trent 700 series engine
FIGURE-5-4-9-991-005-A01

**ON A/C A330-200 A330-300



Ground Service Connections
IDG Oil Tank - GE CF6-80E1 series engine
FIGURE-5-4-9-991-006-A01

****ON A/C A330-200 A330-200F A330-300**

APU Oil System

****ON A/C A330-200 A330-200F**

1. APU Oil System
APU oil gravity filling cap.

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
APU Oil Replenishment: Access Doors 316AR, 315AL	55 m (180.45 ft)	-	0.4 m (1.31 ft)	8 m (26.25 ft)

A. Tank capacity (usable):
- APU Type: 331-350: 7.3 l (1.93 US gal).

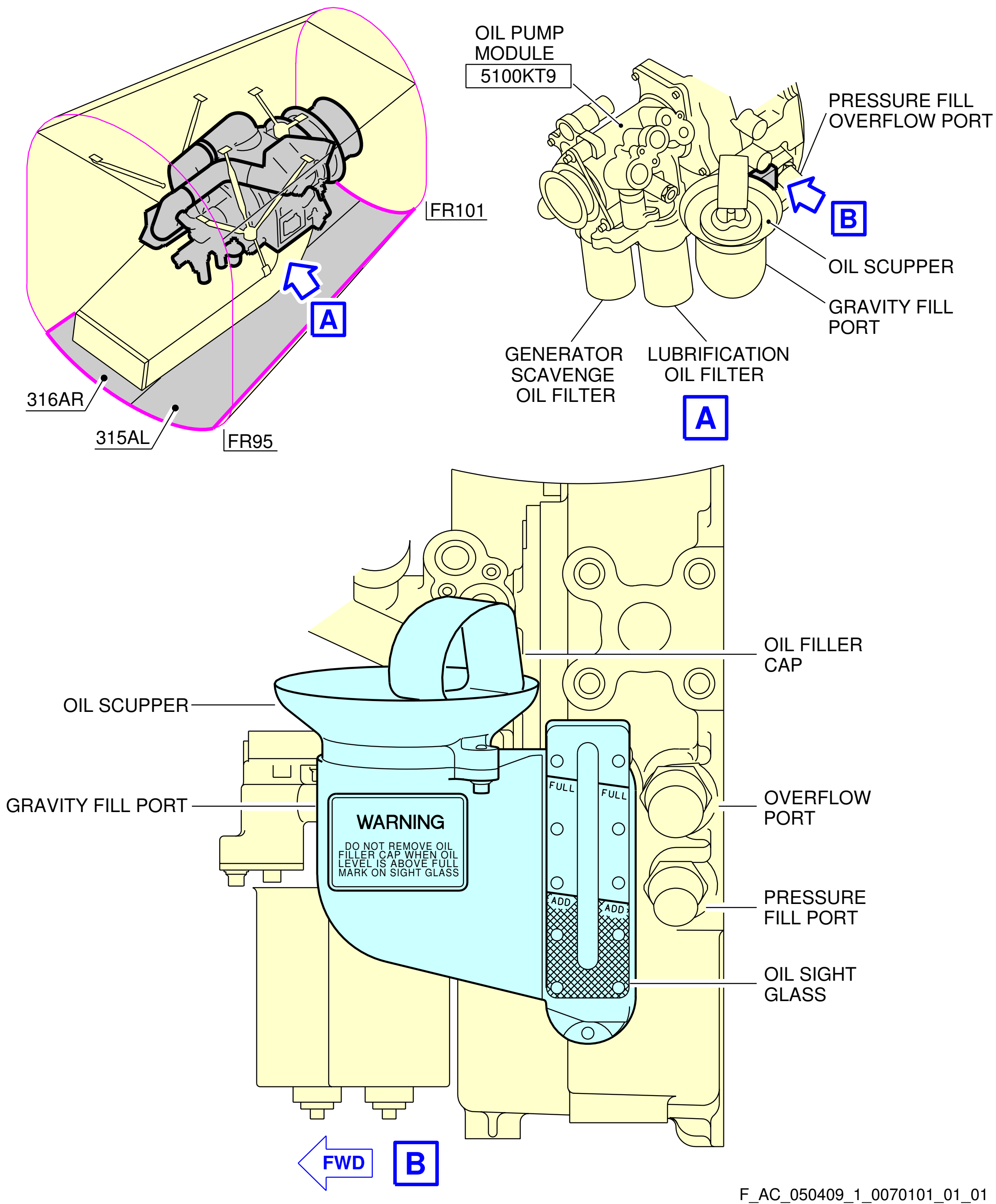
****ON A/C A330-300**

2. APU Oil System
APU oil gravity filling cap.

	DISTANCE			
	AFT OF NOSE	FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
APU Oil Replenishment: Access Doors 316AR, 315AL	60.3 m (197.83 ft)	-	0.4 m (1.31 ft)	8 m (26.25 ft)

A. Tank capacity (usable):
- APU Type: 331-350: 7.3 l (1.93 US gal).

**ON A/C A330-200 A330-200F A330-300



Ground Service Connections
APU Oil Servicing
FIGURE-5-4-9-991-007-A01

5-4-10 Vacuum Toilet System

****ON A/C A330-200 A330-200F A330-300**

Vacuum Toilet System

****ON A/C A330-200**

1. Vacuum Toilet System

	DISTANCE			
	AFT OF NOSE	FROM AIRPLANE CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Waste Water Ground Service Panel: Access Door 171AL	44.66 m (146.52 ft)	-	0.09 m (0.3 ft)	3.6 m (11.81 ft)

A. Waste water ground service panel comprising:
- Standard: One standard 4 in. drain connection and two 1 in. flushing connections
- Standard option: One standard 4 in. drain connection and three 1 in. flushing connections.

B. Capacity waste tanks:
- Standard: 700 l (184.92 US gal)
- Standard option: 1050 l (277.38 US gal).

C. Chemical fluid:
- Standard: 36 l (9.51 US gal)
- Standard option: 54 l (14.27 US gal).

****ON A/C A330-300**

2. Vacuum Toilet System

	DISTANCE			
	AFT OF NOSE	FROM AIRPLANE CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Waste Water Ground Service Panel: Access Door 171AL	50 m (164.04 ft)	-	0.09 m (0.3 ft)	3.6 m (11.81 ft)

A. Waste water ground service panel comprising:
- Standard: One standard 4 in. drain connection and two 1 in. flushing connections
- Standard option: One standard 4 in. drain connection and three 1 in. flushing connections.

B. Capacity waste tanks:
- Standard: 700 l (184.92 US gal)

- Standard option: 1050 l (277.38 US gal).

C. Chemical fluid:
- Standard: 36 l (9.51 US gal)
- Standard option: 54 l (14.27 US gal).

****ON A/C A330-200F**

3. Vacuum Toilet System

	DISTANCE			
	AFT OF NOSE	FROM AIRPLANE CENTERLINE		MEAN HEIGHT FROM GROUND
		RH SIDE	LH SIDE	
Waste Water Ground Service Panel 1: Access Door 121EL	5.49 m (18.01 ft)	-	1.43 m (4.69 ft)	2.95 m (9.68 ft)
Waste Water Ground Service Panel 2: Access Door 121FL	5.98 m (19.62 ft)	-	1.69 m (5.54 ft)	3.15 m 10.33 ft)

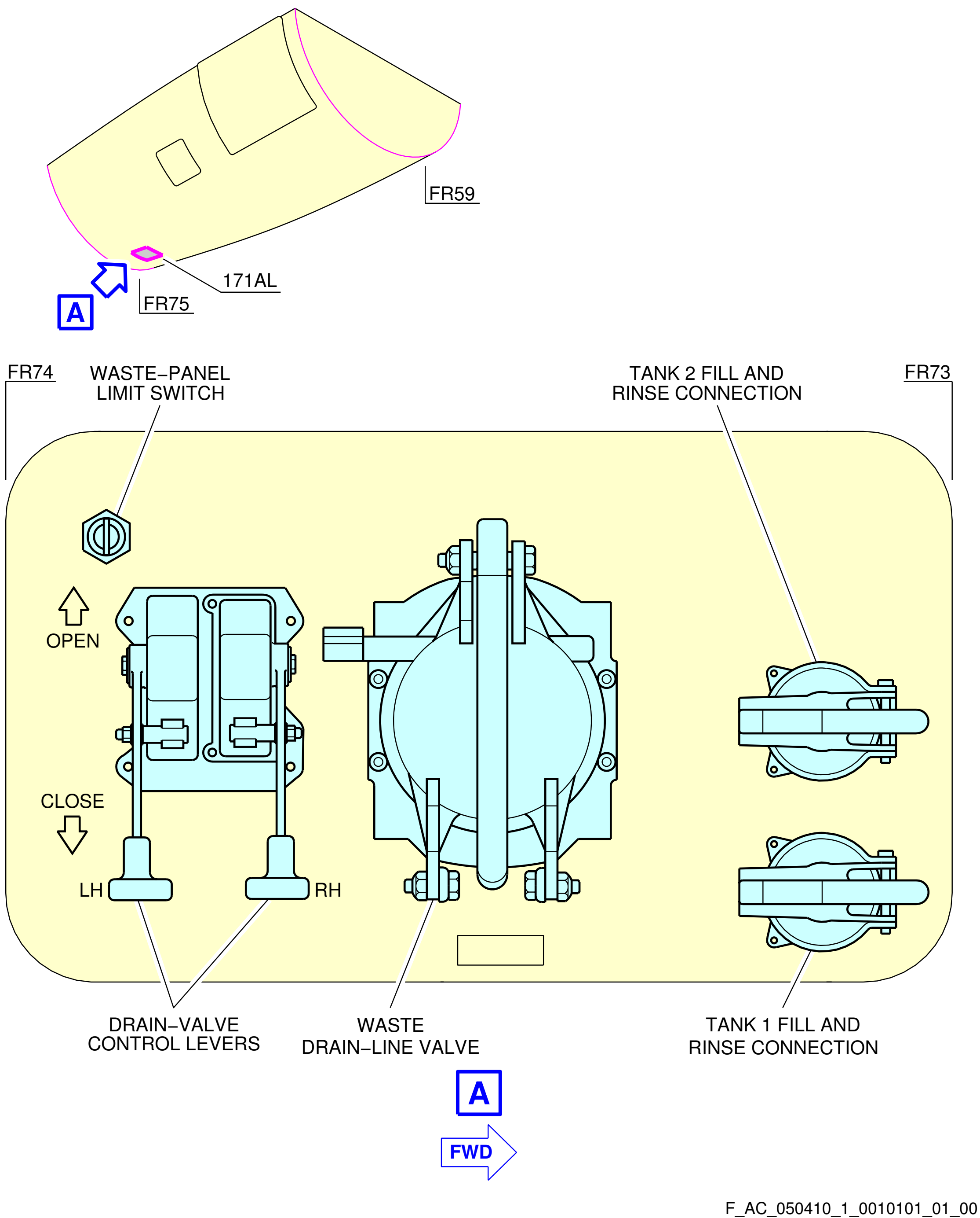
A. There are two waste water ground service panels:
- First panel: One standard connection Roylyn 1 in. for flushing and filling
- Second panel: One standard Taco type valve 4 in. for draining.

NOTE : Handle used for drainage is located on the first panel.

B. Capacity waste tanks:
- Standard: 35 l (9.25 US gal).

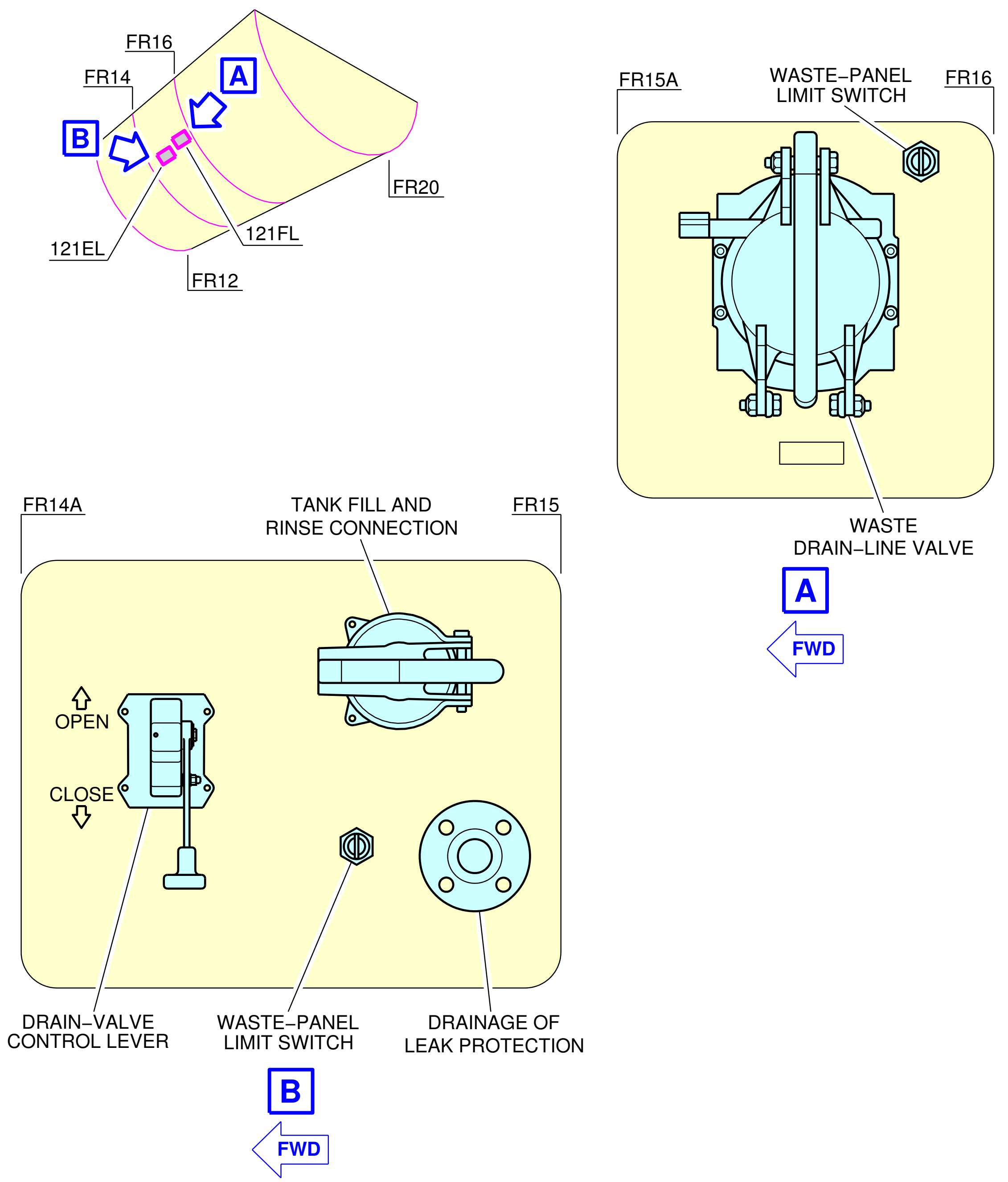
C. Chemical fluid:
- Standard: 9.5 l (2.51 US gal).

**ON A/C A330-200 A330-300



Ground Service Connections
Waste Water Ground Service Panel
FIGURE-5-4-10-991-001-A01

**ON A/C A330-200F



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Ground Service Connections
Waste Water Ground Service Panel
FIGURE-5-4-10-991-004-A01

5-5-0 Engine Starting Pneumatic Requirements

****ON A/C A330-200 A330-200F A330-300**

Engine Starting Pneumatic Requirements

1. The purpose of this section is to provide the minimum air data requirements at the aircraft connection, needed to start the engine within no more than 90 seconds, at sea level (0 feet), for a set of Outside Air Temperatures (OAT).

ABBREVIATION	DEFINITION
A/C	Aircraft
ASU	Air Start Unit
HPGC	High Pressure Ground Connection
OAT	Outside Air Temperature

A. Air data (discharge temperature, absolute discharge pressure) are given at the HPGC.

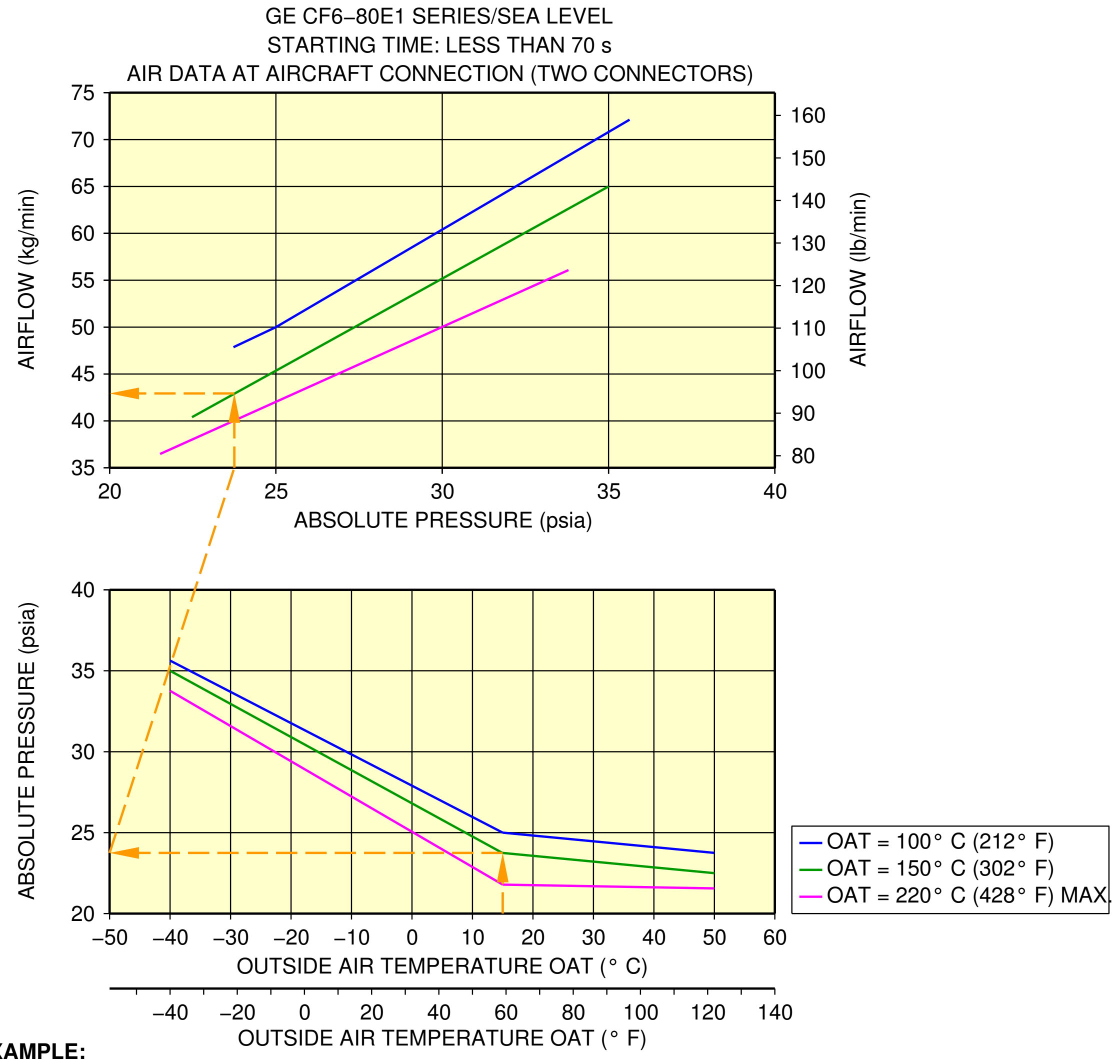
B. For the requirements below, the configuration with two HPGC is used. Using one connector only (for a given mass flow rate and discharge pressure from the ASU) will increase the pressure loss in the ducts of the bleed system and therefore lower the performances at the engine starter.

C. For a given OAT the following charts are used to determine an acceptable combination for air discharge temperature, absolute discharge pressure and mass flow rate.

D. This section is addressing requirements for the ASU only, and is not representative of the start performance of the aircraft using the APU or engine cross bleed procedure.

E. To protect the A/C, the charts feature, if necessary:
- The maximum discharge pressure at the HPGC
- The maximum discharge temperature at the HPGC.

**ON A/C A330-200 A330-200F A330-300



EXAMPLE:

FOR AN OAT OF 15° C (59° F) AND AN ASU PROVIDING A DISCHARGE TEMPERATURE OF 150° C (302° F) AT HPGC:
– THE REQUIRED PRESSURE AT HPGC IS 23.75 psia
– THE REQUIRED AIRFLOW AT HPGC IS 43 kg/min.

NOTE:

IN CASE THE ACTUAL DISCHARGE TEMPERATURE OF THE ASU DIFFERS SUBSTANTIALLY FROM THE ONES GIVEN IN THE CHARTS, A SIMPLE INTERPOLATION (LINEAR) IS SUFFICIENT TO DETERMINE THE REQUIRED AIR DATA.

EXAMPLE:

FOR AN OAT OF 15° C (59° F) AND AN ASU PROVIDING A DISCHARGE TEMPERATURE OF 195° C (383° F) AT HPGC, INTERPOLATING BETWEEN THE LINES 150° C (302° F) AND 220° C (428° F) RESULTS IN:
– A REQUIRED PRESSURE AT HPGC OF 22.5 psia
– A REQUIRED AIRFLOW AT HPGC OF 39.5 kg/min.

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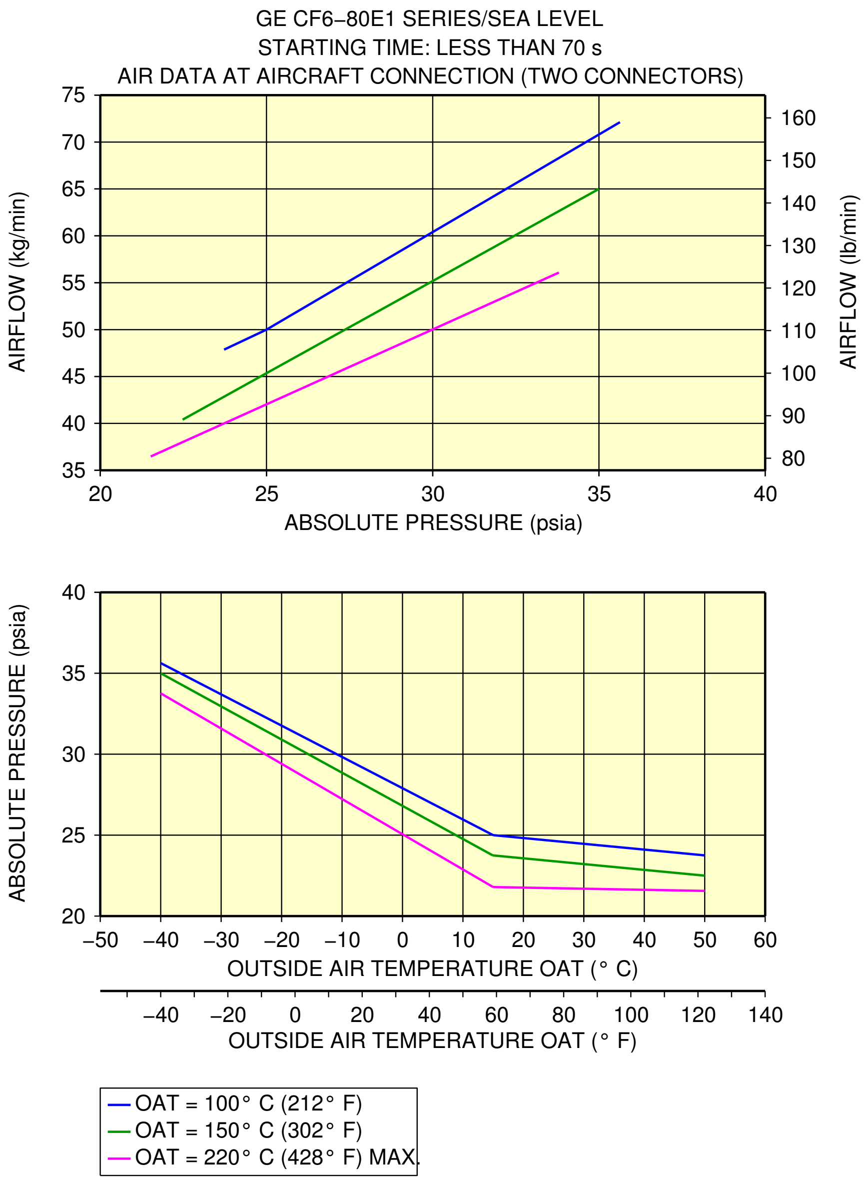
Example for Use of the Charts
FIGURE-5-5-0-991-001-A01

**ON A/C A330-200 A330-300



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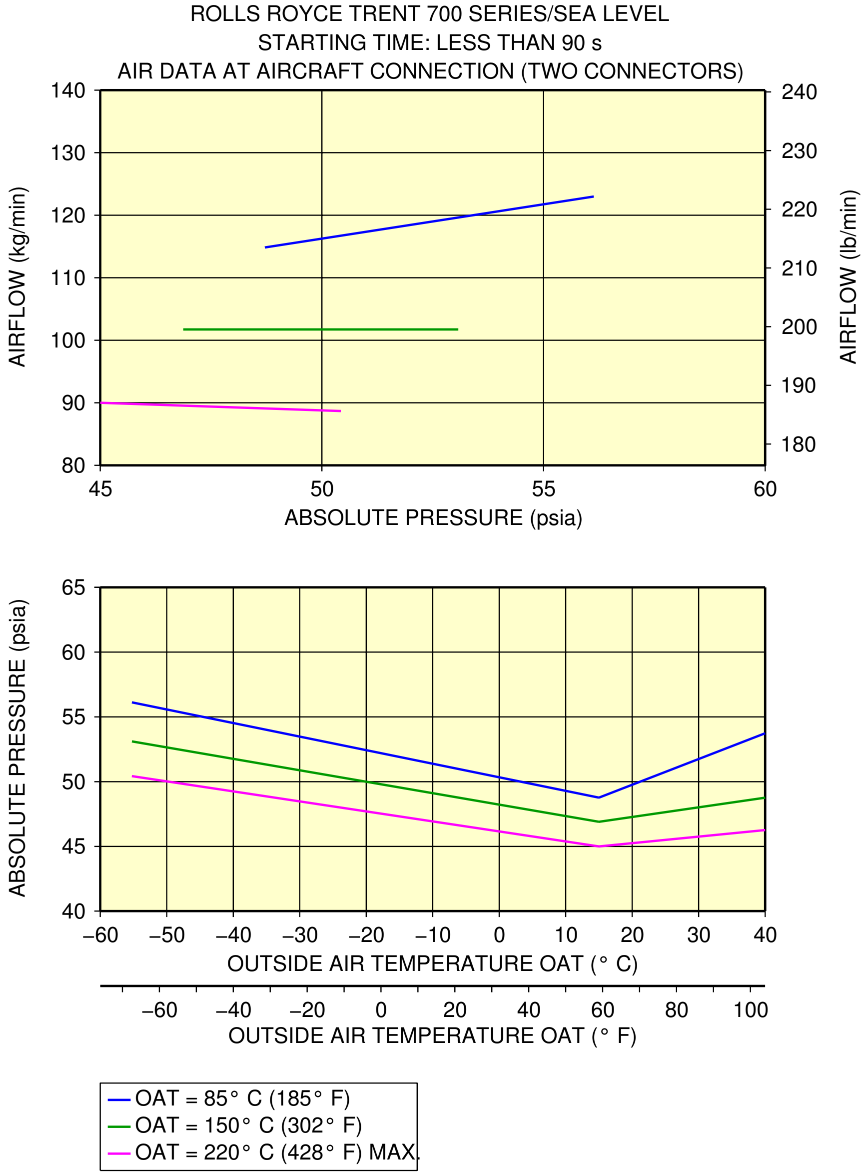
Engine Starting Pneumatic Requirements
GE CF6-80E1 Series Engine
FIGURE-5-5-0-991-004-A01

****ON A/C A330-200 A330-200F A330-300**



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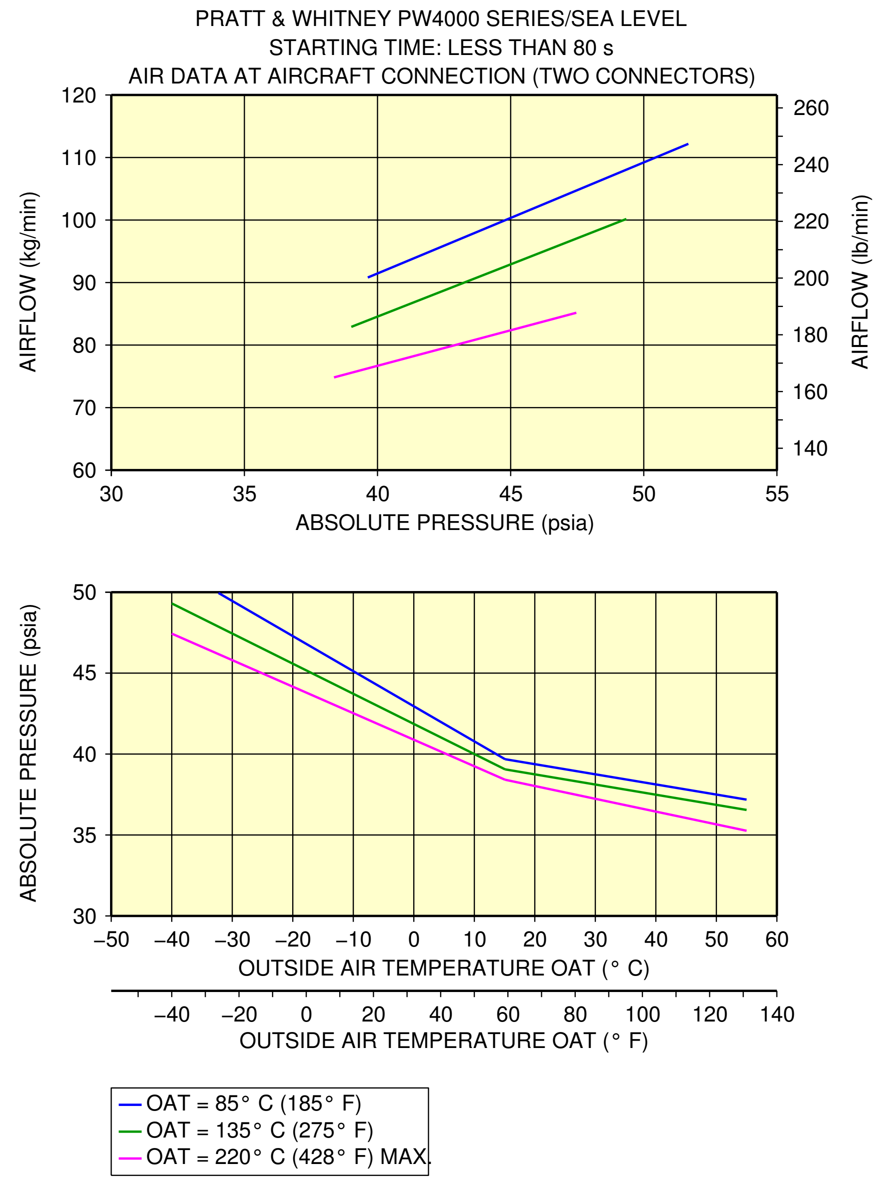
Engine Starting Pneumatic Requirements
Rolls Royce Trent 700 Series Engine
FIGURE-5-5-0-991-005-A01

**ON A/C A330-200 A330-200F A330-300



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Engine Starting Pneumatic Requirements
Pratt & Whitney PW4000 Series Engine
FIGURE-5-5-0-991-006-A01

5-6-0 Ground Pneumatic Power Requirements

****ON A/C A330-200 A330-200F A330-300**

Ground Pneumatic Power Requirements

1. General
This section describes the required performance for the ground equipment to maintain the cabin temperature at 27°C (80.6°F) after 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
LP	Low Pressure
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.

NOTE : The maximum air flow is driven by pressure limitation at the ground connection.

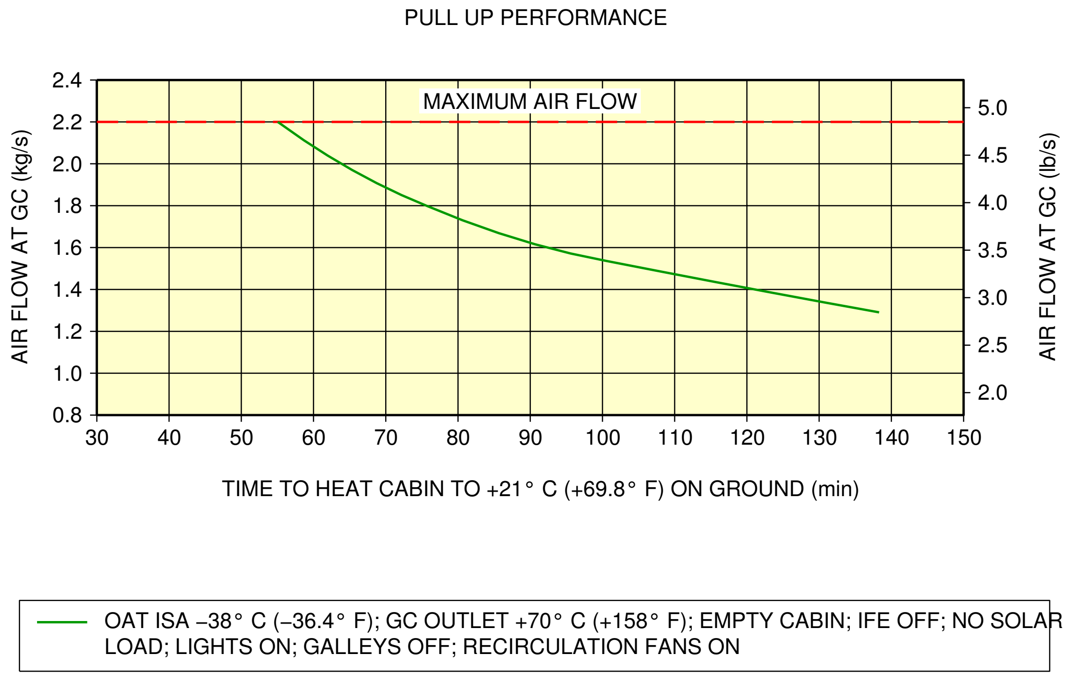
B. The air flow rates and temperature requirements for the GSE are given for the A/C in the configuration "2 LP ducts connected".

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.

C. For temperatures at ground connection below +2°C (+35.6°F) (Subfreezing), 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 with which Subfreezing Pre-Conditioning Air equipment must comply to allow its use on Airbus aircraft. These requirements are in addition to the functional specifications included in the IATA AHM997.

2. Ground Pneumatic Power Requirements
This section provides the ground pneumatic power requirements for:
- Heating (pull up) the cabin, initially at OAT, up to 21°C (69.8°F) FIGURE 5---0-99--001-A
- Cooling (pull down) the cabin, initially at OAT, down to 27°C (80.6°F) FIGURE 5---0-99--003-A.

**ON A/C A330-200 A330-200F A330-300



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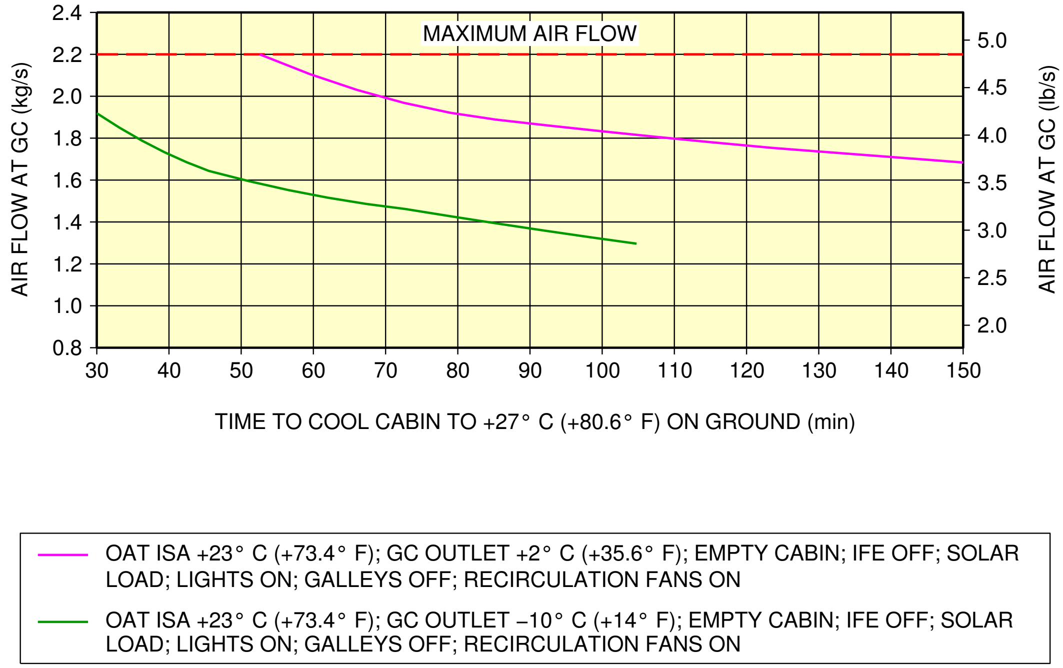
Ground Pneumatic Power Requirements
Heating
FIGURE-5-6-0-991-001-A01

**ON A/C A330-200 A330-200F A330-300

PULL DOWN PERFORMANCE



NOTE:
ONLY SUPPLY TEMPERATURE ABOVE +2° C (+35.6° F) (NO SUBFREEZING) FOR THE A330–200F.

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Ground Pneumatic Power Requirements
Cooling
FIGURE-5-6-0-991-003-A01

5-7-0 Preconditioned Airflow Requirements

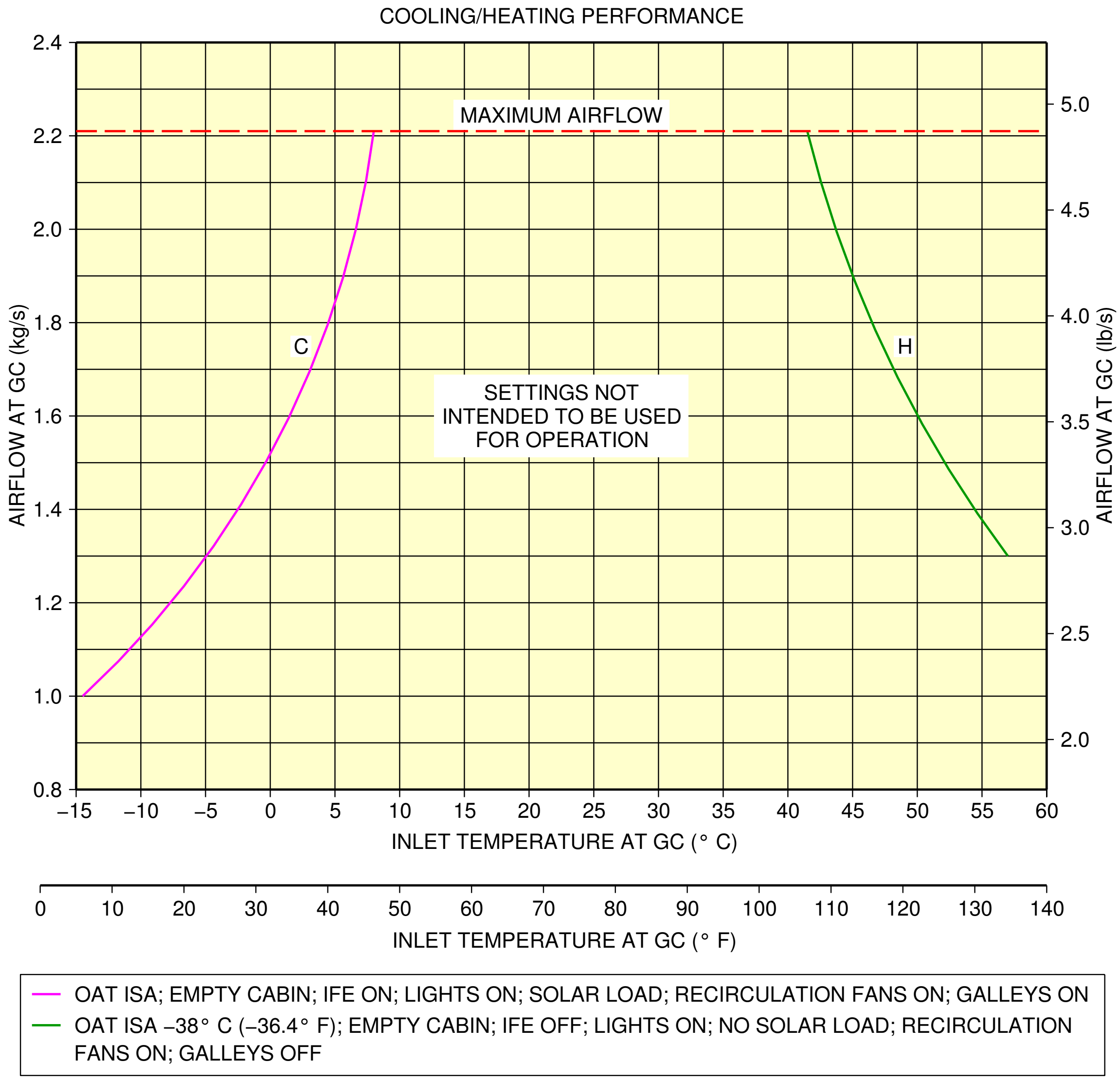
****ON A/C A330-200 A330-200F A330-300**

Preconditioned Airflow Requirements

1. This section provides the preconditioned airflow rate and temperature needed to maintain the cabin temperature at 27 °C (80.6 °F).

   These settings are not intended to be used for operation (they are not a substitute for the settings given in the AMM). They are based on theoretical simulations and give the picture of a real steady state. The purpose of the air conditioning operation (described in the AMM) is to maintain the cabin temperature below 27 °C (80.6 °F) during boarding (therefore it is not a steady state).

**ON A/C A330-200 A330-200F A330-300



EXAMPLE:

COOLING CAPACITY CALCULATION:
FOR THE CONDITIONS "C", THE COOLING CAPACITY OF 1.9 kg/s x 1 kJ/(kg.° C) x (27– 5) = 41.8 kW (OR 12.5 TONS COOLING CAPACITY) IS NEEDED TO MAINTAIN THE CABIN TEMPERATURE AT 27° C (80.6° F) (1.9 kg/s AT 5° C (41° F) FOR AIR AT GC INLET).

NOTE:

ONLY SUPPLY TEMPERATURE ABOVE +2° C (+35.6° F) (NO SUBFREEZING) FOR THE A330–200F.

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

5-8-0 Ground Towing Requirements

****ON A/C A330-200 A330-200F A330-300**

Ground Towing Requirements

1. This section provides information on aircraft towing.

   The A330 is designed with means for conventional or towbarless towing.
   Information/procedures can be found for both in chapter 9 of the Aircraft Maintenance Manual.
   Status on towbarless towing equipment qualification can be found in SIL 09-002.
   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 nose gear leg (refer to AMM chapter 9 for conditions and limitations). One towbar fitting is installed at the front of the leg (optional towing fitting for towing from the rear of the NLG available).
   The Main Landing Gears have attachment points for towing or debogging (for details, refer to chapter 7 of the Aircraft Recovery Manual).

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

   The chart is based on the A330 engine type with the biggest idle thrust.
   The chart is therefore valid for all A330 models.

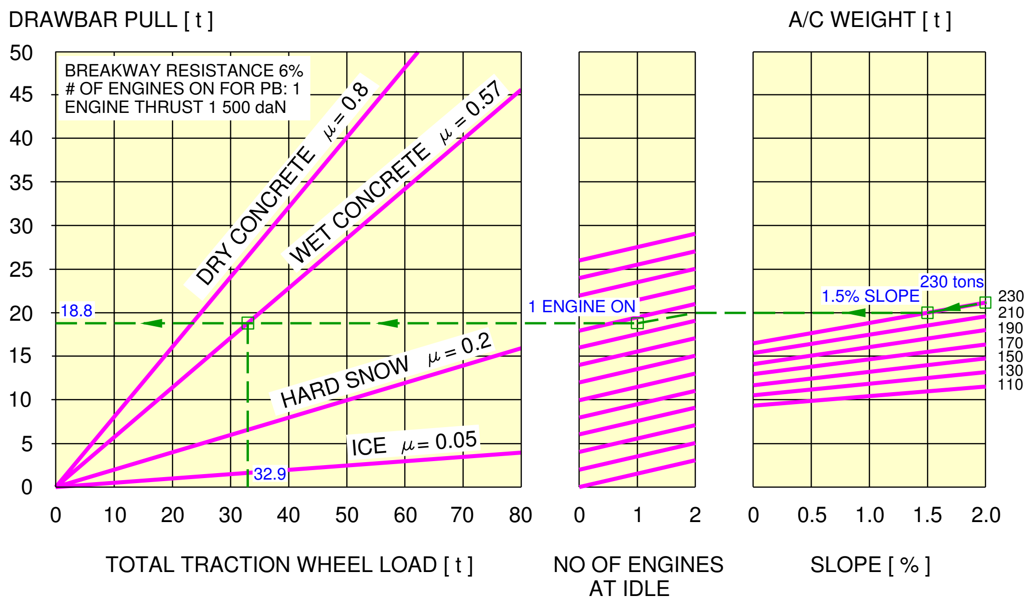
2. Towbar design guidelines

   The aircraft towbar shall comply with the following standards:
   - SAE AS 1614, "Main Line Aircraft TowBar Attach Fitting Interface",
   - SAE ARP 1915, "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 nose gear 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 (276 991 lbf.in).

   The towing head is designed according to SAE AS 1614, cat. III.

**ON A/C A330-200 A330-200F A330-300



EXAMPLE HOW TO DETERMINE THE MASS REQUIREMENT TO TOW A A330 AT 230 t, AT 1.5% SLOPE, 1 ENGINE AT IDLE AND FOR WET TARMAC CONDITIONS:

- ON THE RIGHT HAND SIDE OF THE GRAPH, CHOOSE THE RELEVANT AIRCRAFT WEIGHT (230 t),
- FROM THIS POINT DRAW A PARALLEL LINE TO THE REQUIRED SLOPE PERCENTAGE (1.5%),
- 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 (18.8 t),
- SEARCH THE INTERSECTION WITH THE "WET CONCRETE" LINE.
  THE OBTAINED X−COORDINATE IS THE RECOMMENDED MINIMUM TRACTOR WEIGHT (32.9 t).

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Ground Towing Requirements
FIGURE-5-8-0-991-002-A01

5-9-0 De-Icing and External Cleaning

****ON A/C A330-200 A330-200F A330-300**

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 approximately 17 m (56 ft).

****ON A/C A330-200 A330-200F**

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)	
	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2
A330-200/-200F	306	3 294	11	118	65	700	106	1 141

AIRCRAFT TYPE	Fuselage Top Surface (Top Third - 120° Arc)		Nacelle and Pylon (Top Third - 120° Arc) (All Engines)		Total De-Iced Area	
	m^2	ft^2	m^2	ft^2	m^2	ft^2
A330-200/-200F	288	3 100	46	495	821	8 837

NOTE : Dimensions are approximate.

****ON A/C A330-300**

3. 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)	
	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2
A330-300	306	3 294	11	118	65	700	91	980

AIRCRAFT TYPE	Fuselage Top Surface (Top Third - 120° Arc)		Nacelle and Pylon (Top Third - 120° Arc) (All Engines)		Total De-Iced Area	
	m^2	ft^2	m^2	ft^2	m^2	ft^2
A330-300	319	3 434	46	495	838	9 020

NOTE : Dimensions are approximate.

****ON A/C A330-200**

4. 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)	
	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2
A330-200/-200F	306	3 294	345	3 714	11	118	65	700	65	700

AIRCRAFT TYPE	VTP (Both Sides)		Fuselage and Belly Fairing		Nacelle and Pylon (All Engines)		Total Cleaned Area	
	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2
A330-200/-200F	106	1 141	877	9 440	154	1 658	1 940	20 882

NOTE : Dimensions are approximate.

****ON A/C A330-300**

5. 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)	
	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2
A330-300	306	3 294	345	3 714	11	118	65	700	65	700

AIRCRAFT TYPE	VTP (Both Sides)		Fuselage and Belly Fairing		Nacelle and Pylon (All Engines)		Total Cleaned Area	
	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2
A330-300	91	980	971	10 452	154	1 658	2 016	21 700

NOTE : Dimensions are approximate.

OPERATING CONDITIONS

6-1-0 Engine Exhaust Velocities and Temperatures

****ON A/C A330-200 A330-200F A330-300**

Engine Exhaust Velocities and Temperatures

1. General
   This section shows the estimated engine exhaust efflux velocities and temperatures contours for Ground Idle, Breakaway, Maximum Takeoff conditions.

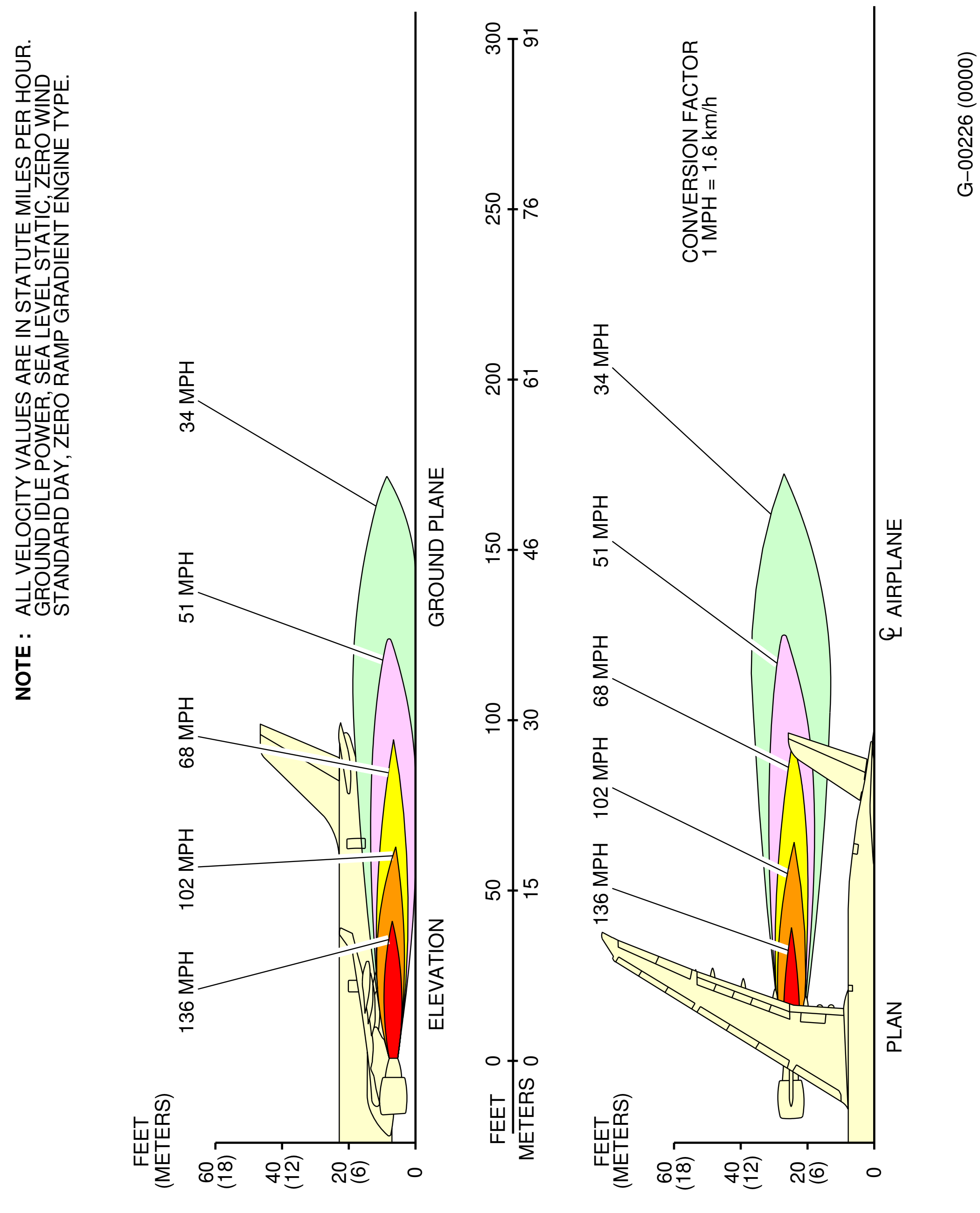
6-1-1 Engine Exhaust Velocities Contours - Ground Idle Power

****ON A/C A330-200 A330-200F A330-300**

Engine Exhaust Velocities Contours - Ground Idle Power

1. This section gives engine exhaust velocities contours at ground idle power

**ON A/C A330-200 A330-200F A330-300



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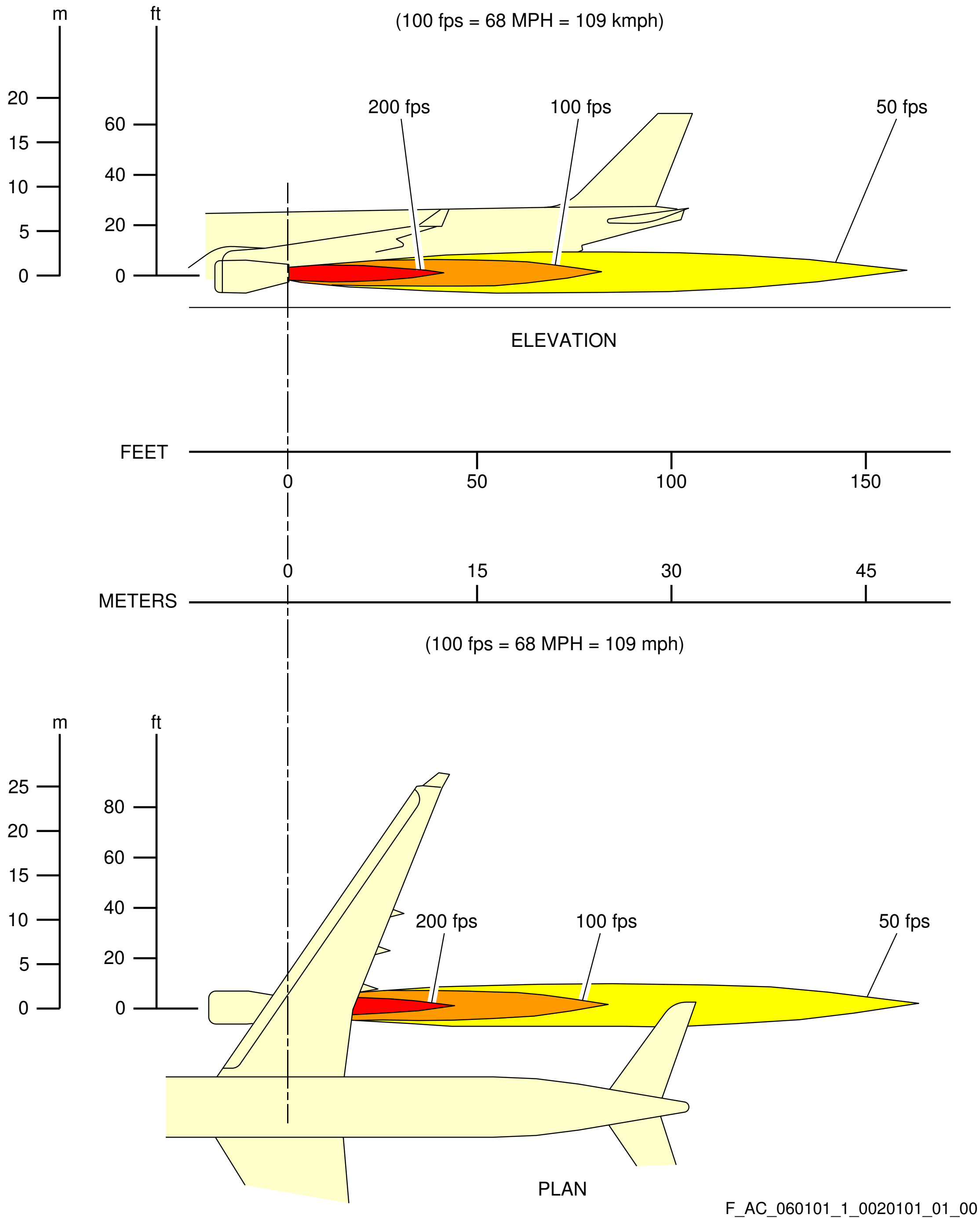
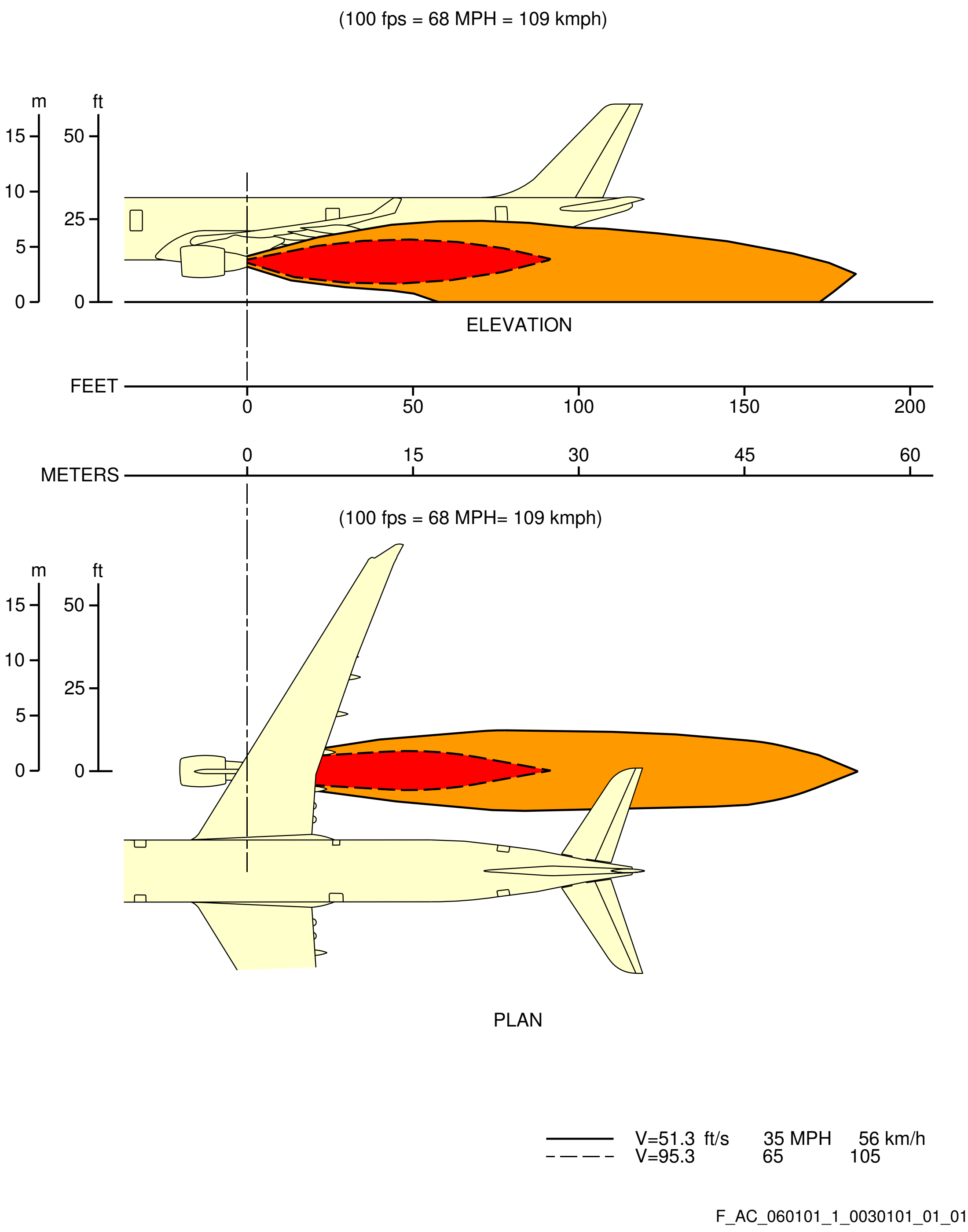
Engine Exhaust Velocities
Ground Idle Power - PW 4000 series engine
FIGURE-6-1-1-991-001-A01

****ON A/C A330-200 A330-200F A330-300**



Engine Exhaust Velocities
Ground Idle Power - RR Trent 700 series engine
FIGURE-6-1-1-991-002-A01

**ON A/C A330-200 A330-300



Engine Exhaust Velocities
Ground Idle Power - GE CF6-80E1 series engine
FIGURE-6-1-1-991-003-A01

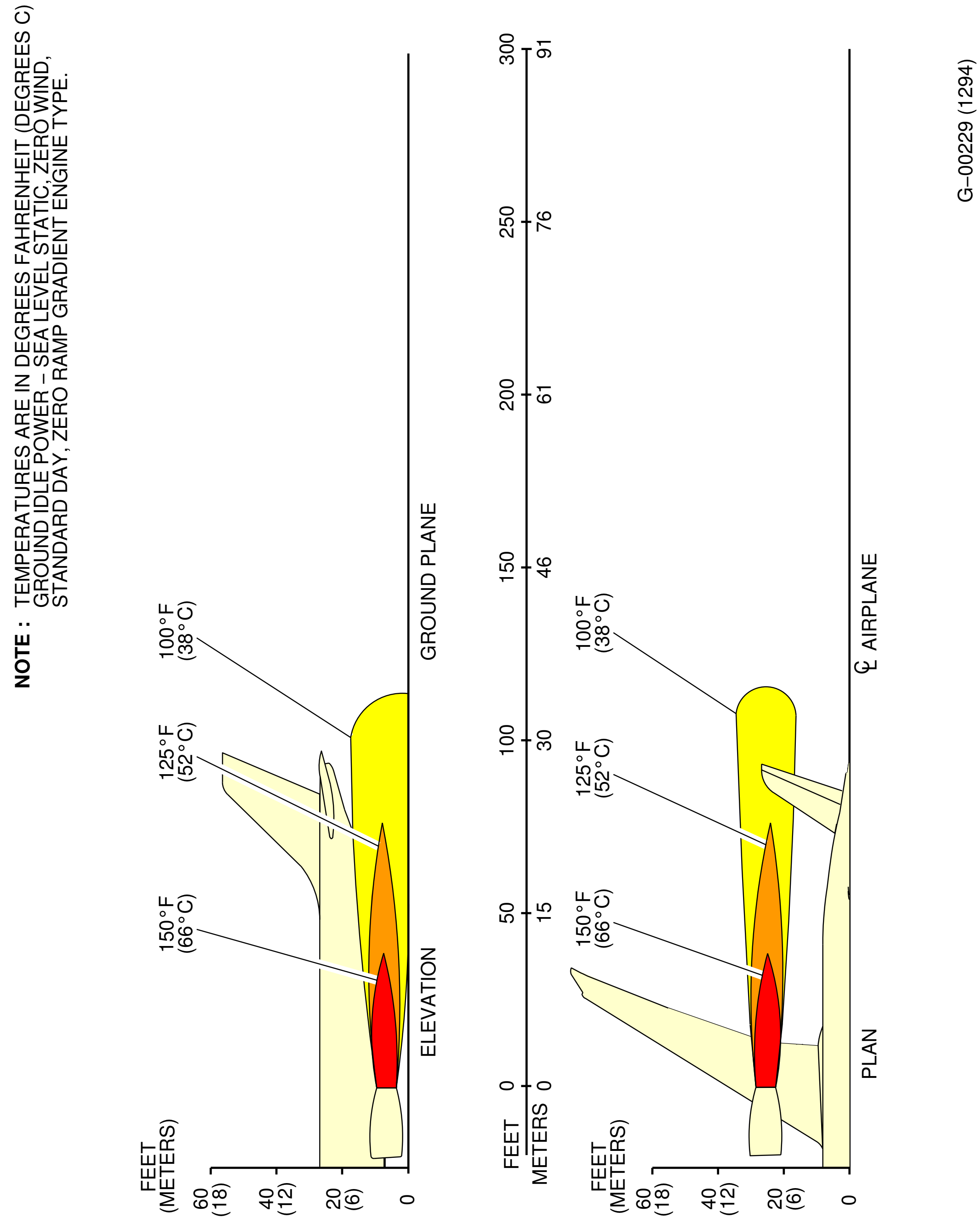
6-1-2 Engine Exhaust Temperatures Contours - Ground Idle Power

****ON A/C A330-200 A330-200F A330-300**

Engine Exhaust Temperatures Contours - Ground Idle Power

1. This section gives engine exhaust temperatures contours at ground idle power.

****ON A/C A330-200 A330-200F A330-300**



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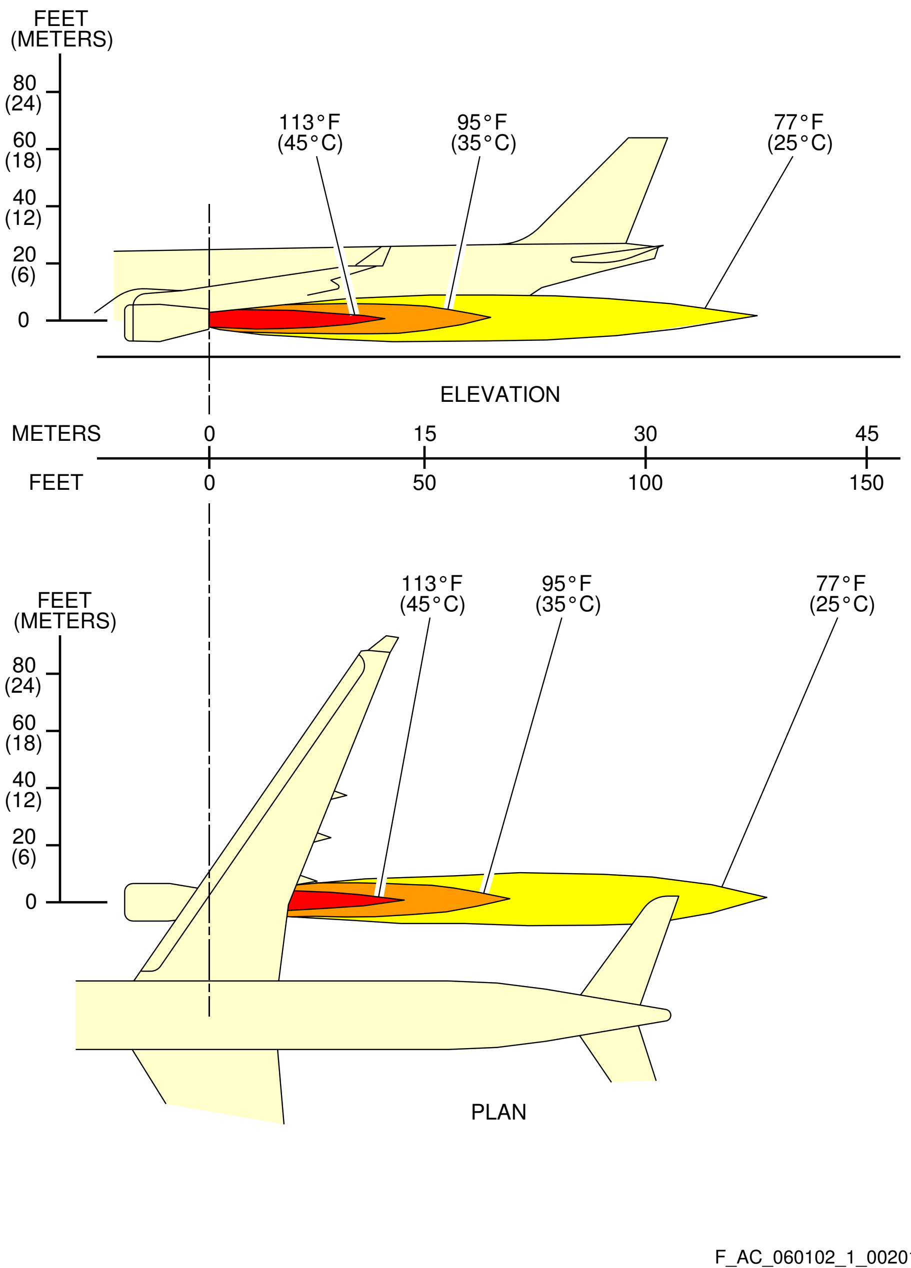
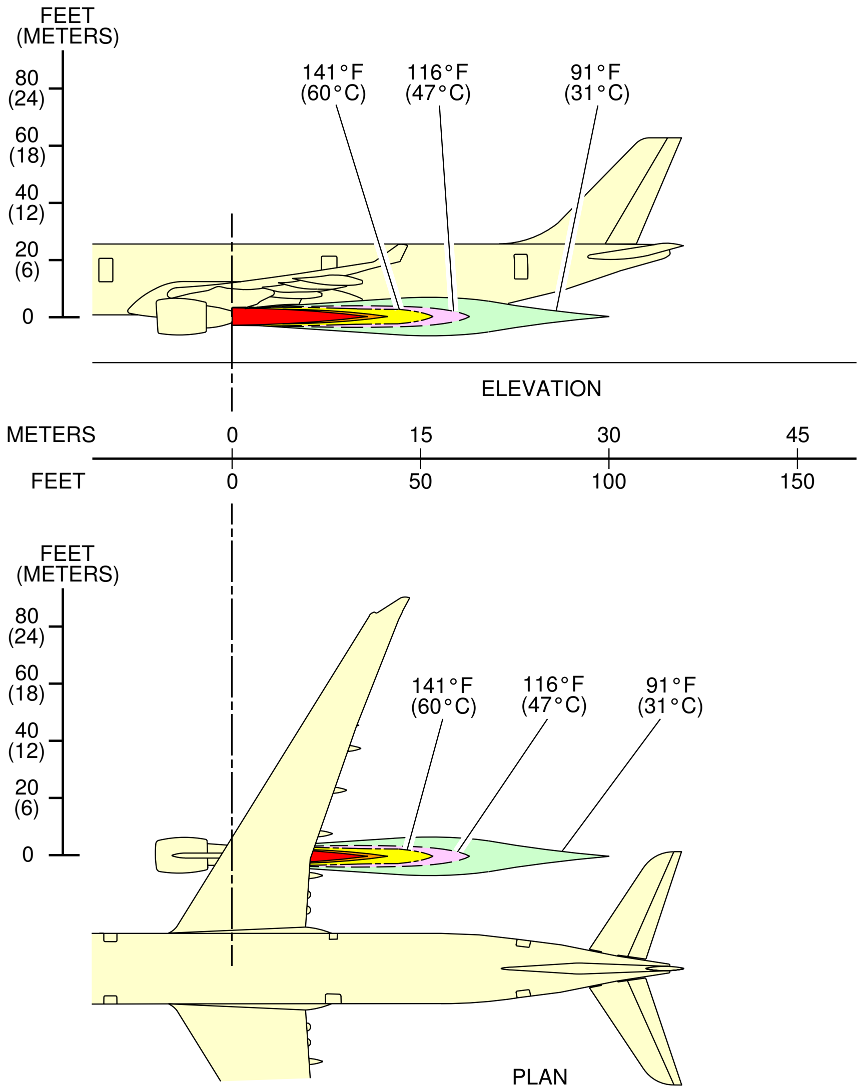
Engine Exhaust Temperatures
Ground Idle Power - PW 4000 series engine
FIGURE-6-1-2-991-001-A01

**ON A/C A330-200 A330-200F A330-300



Engine Exhaust Temperatures
Ground Idle Power - RR Trent 700 series engine
FIGURE-6-1-2-991-002-A01

****ON A/C A330-200 A330-300**



Engine Exhaust Temperatures
Ground Idle Power - GE CF6-80E1 series engine
FIGURE-6-1-2-991-003-A01

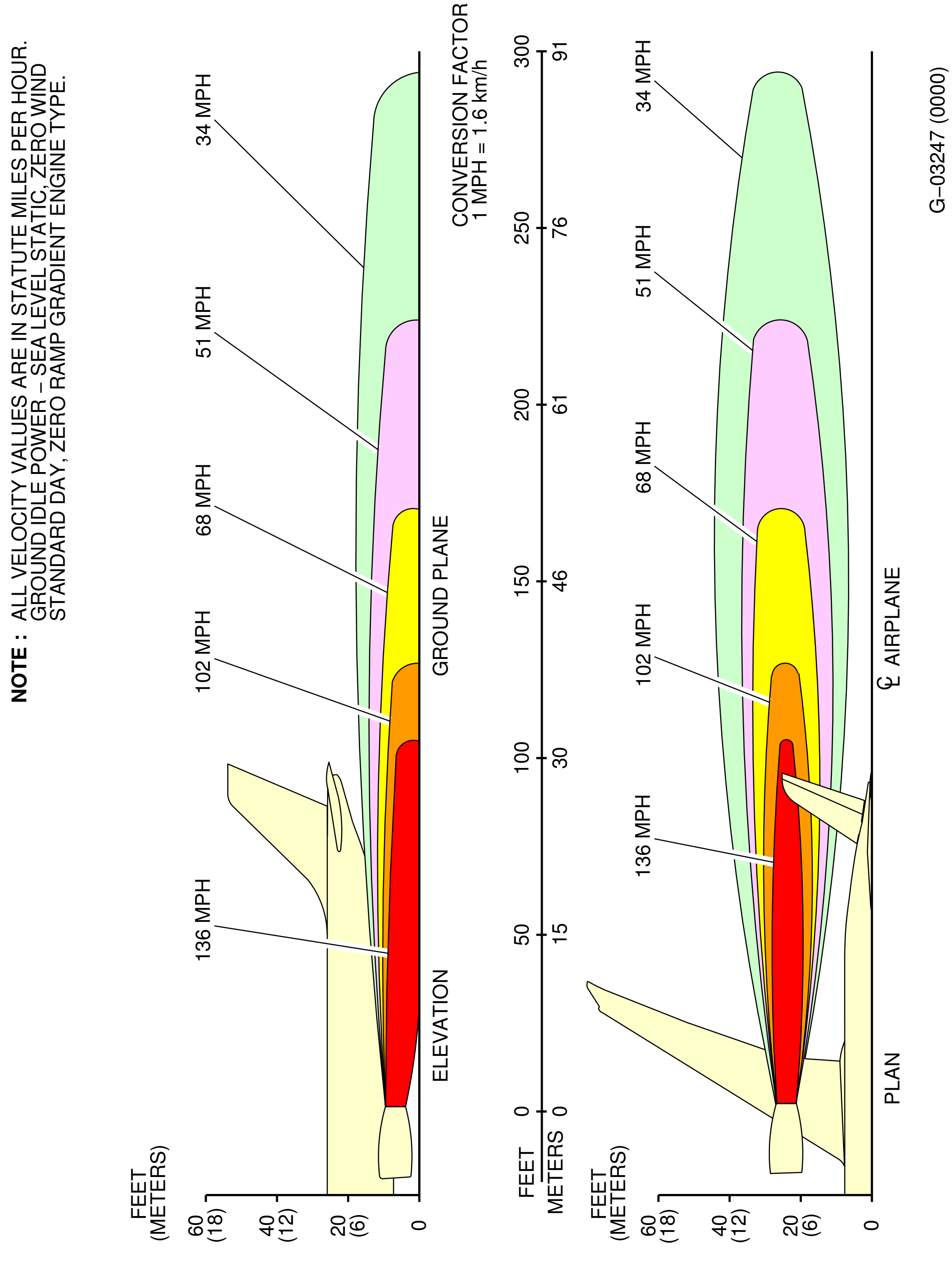
6-1-3 Engine Exhaust Velocities Contours - Breakaway Power

**ON A/C A330-200 A330-200F A330-300

Engine Exhaust Velocities Contours - Breakaway Power

1. This section gives engine exhaust velocities contours at breakaway power

**ON A/C A330-200 A330-200F A330-300



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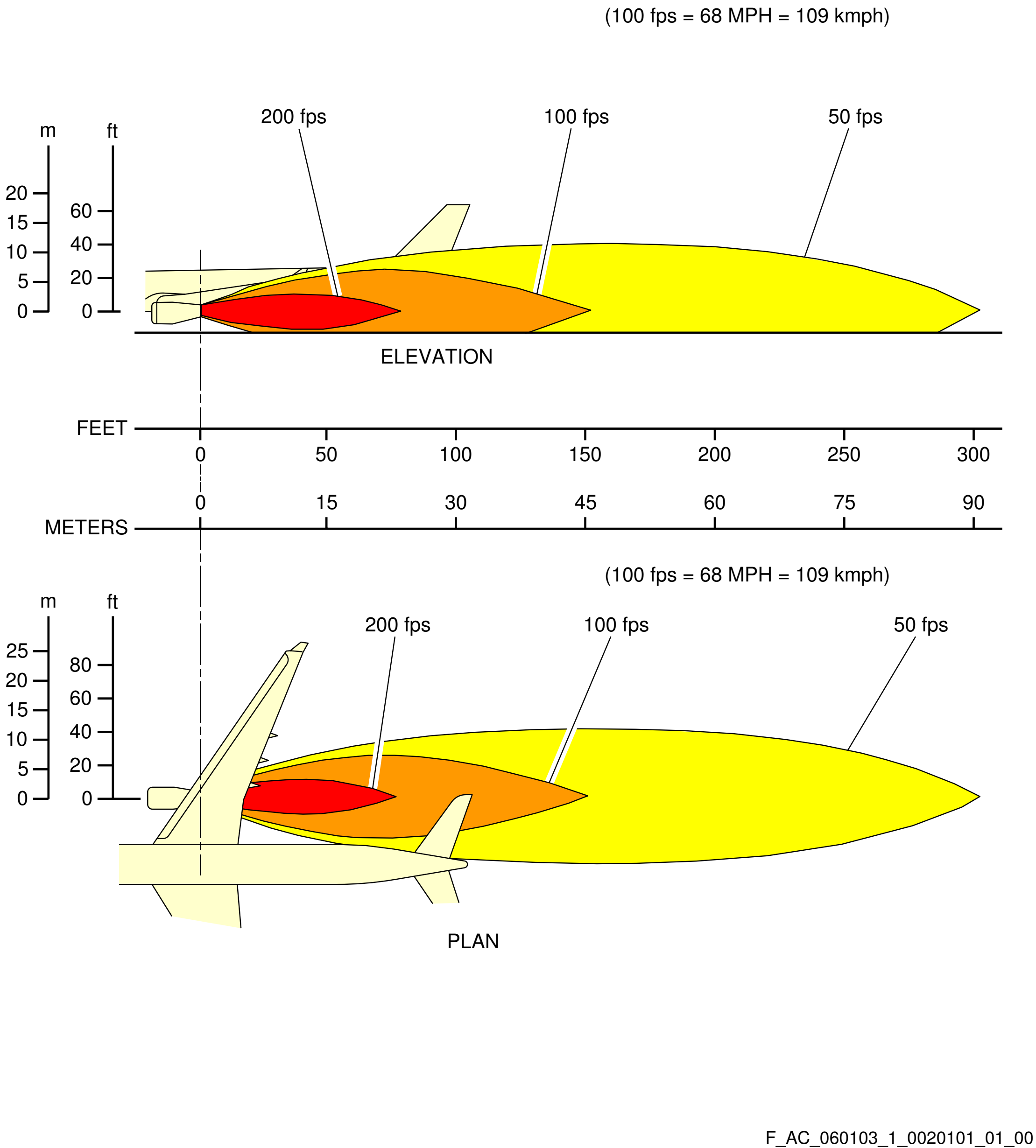
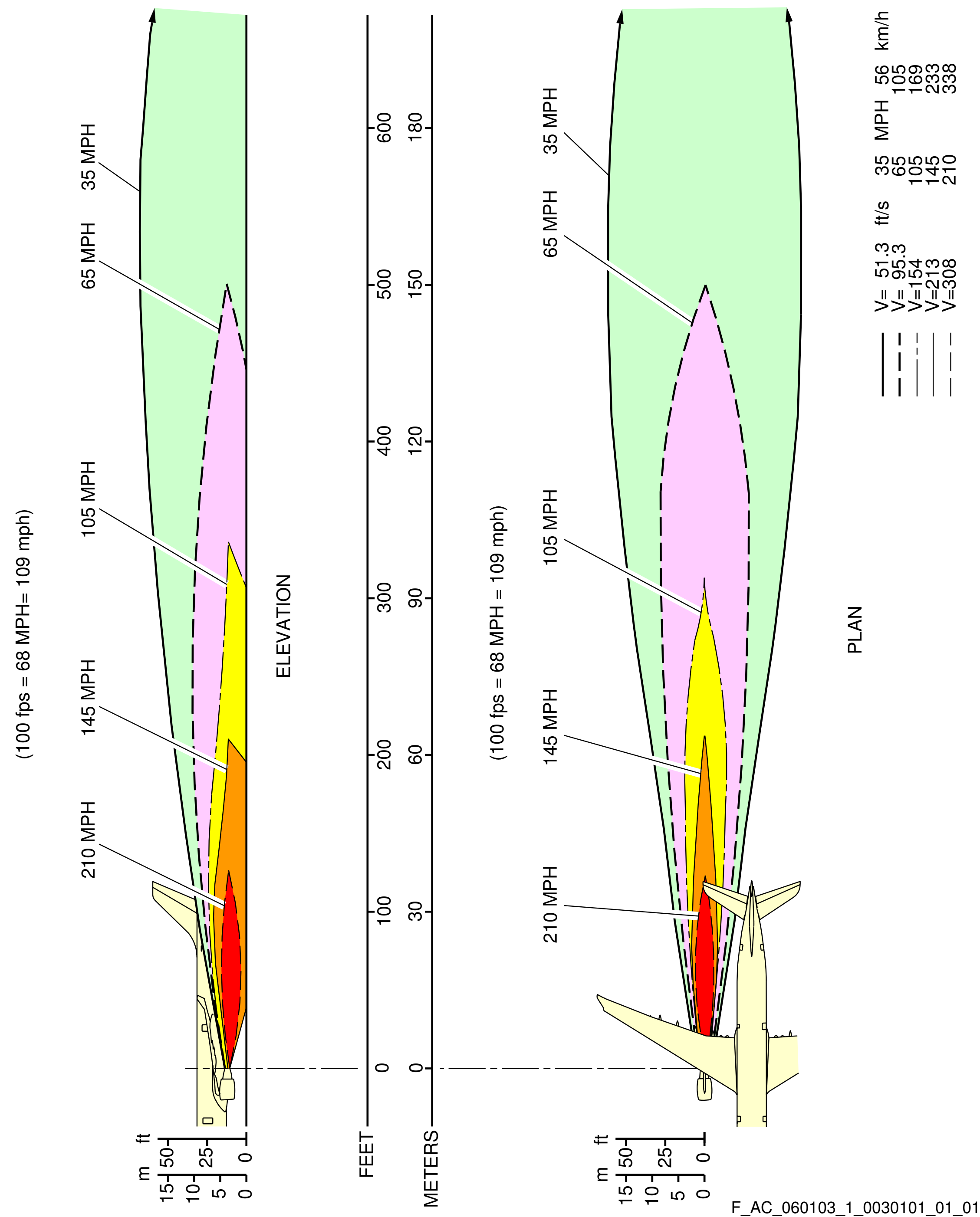
Engine Exhaust Velocities
Breakaway Power - PW 4000 series engine
FIGURE-6-1-3-991-001-A01

****ON A/C A330-200 A330-200F A330-300**



Engine Exhaust Velocities
Breakaway Power - RR Trent 700 series engine
FIGURE-6-1-3-991-002-A01

****ON A/C A330-200 A330-300**



Engine Exhaust Velocities
Breakaway Power - GE CF6-80E1 series engine
FIGURE-6-1-3-991-003-A01

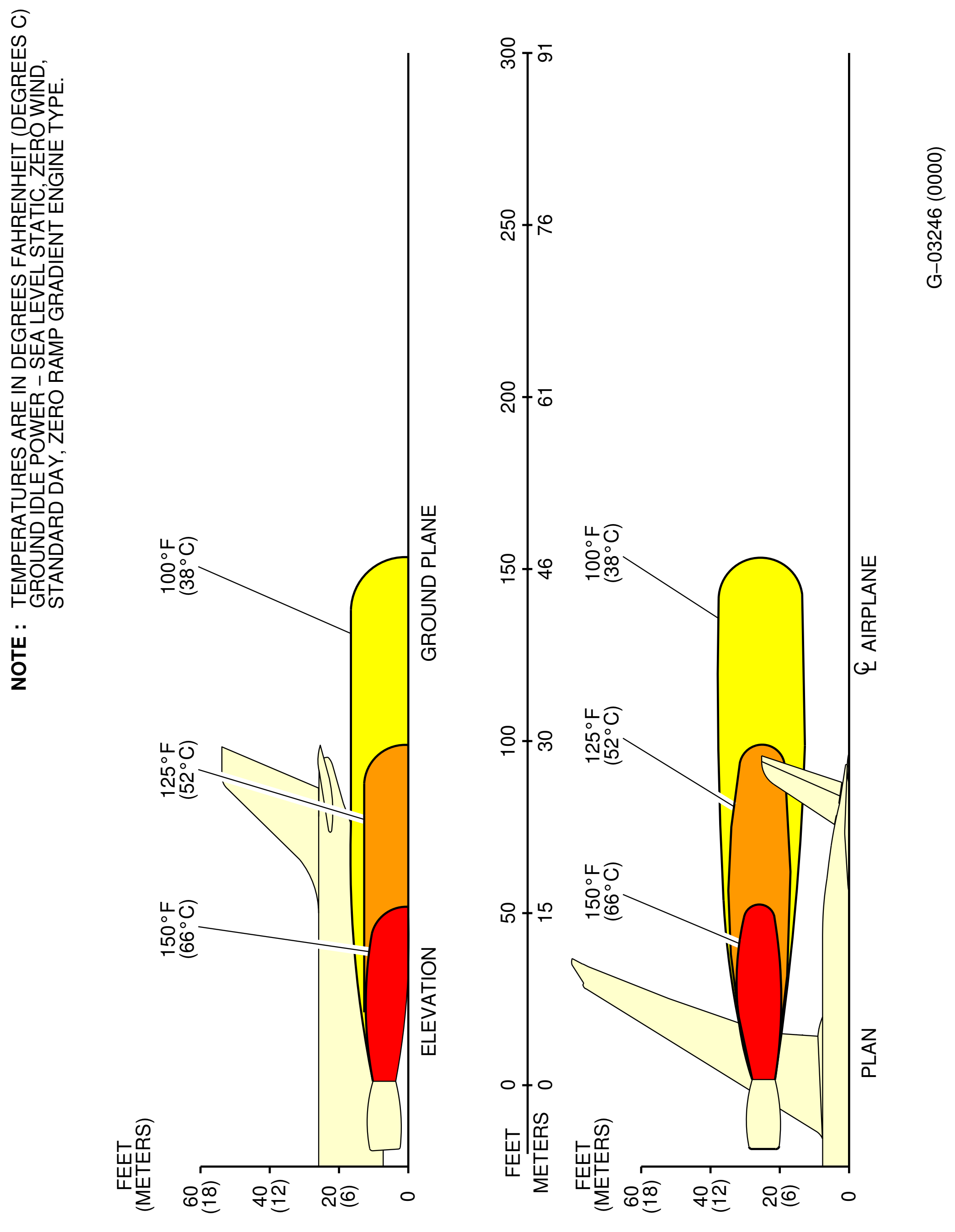
6-1-4 Engine Exhaust Temperatures Contours - Breakaway Power

****ON A/C A330-200 A330-200F A330-300**

Engine Exhaust Temperatures Contours - Breakaway Power

1. This section gives engine exhaust temperatures contours at breakaway power.

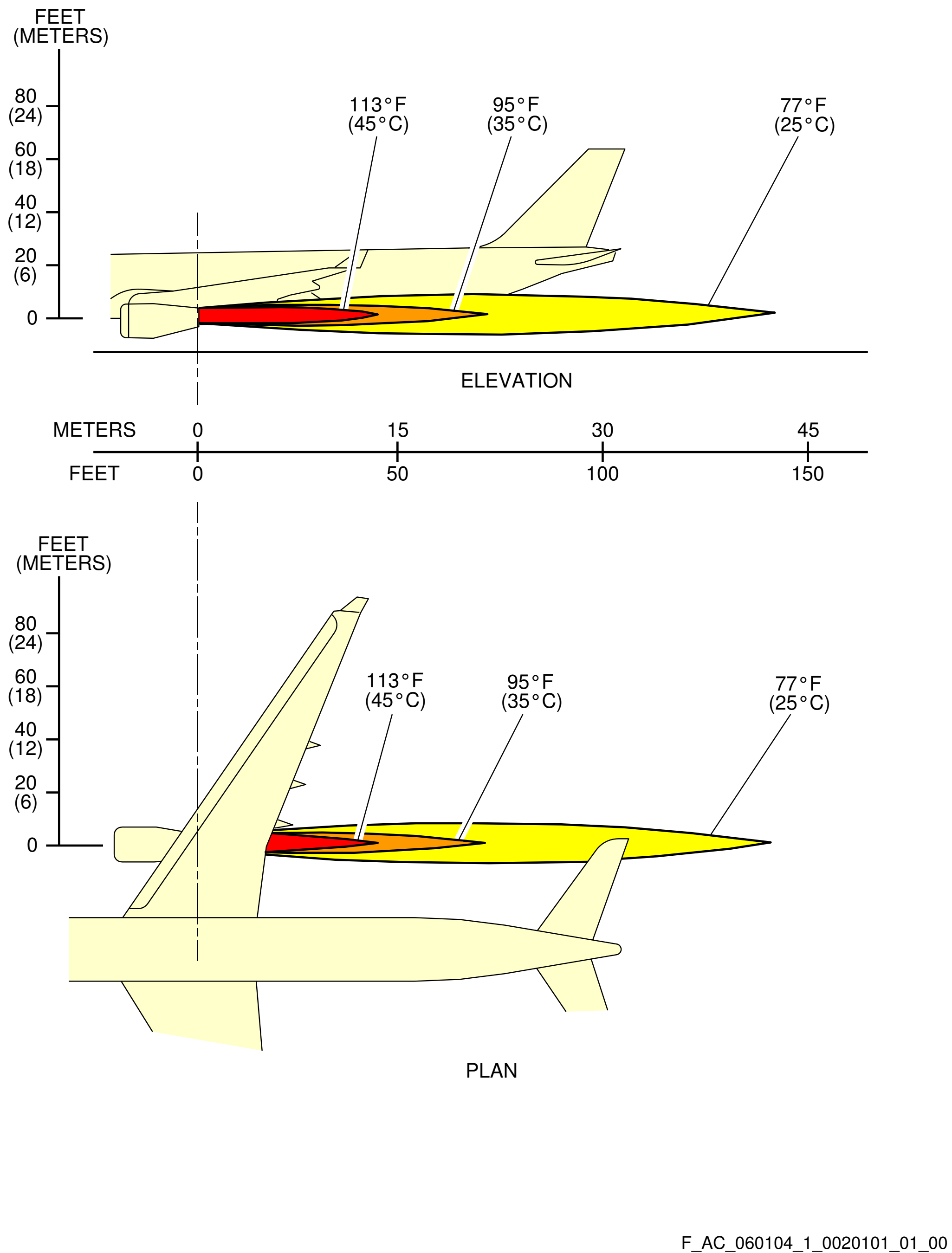
****ON A/C A330-200 A330-200F A330-300**



F_AC_060104_1_0010101_01_00

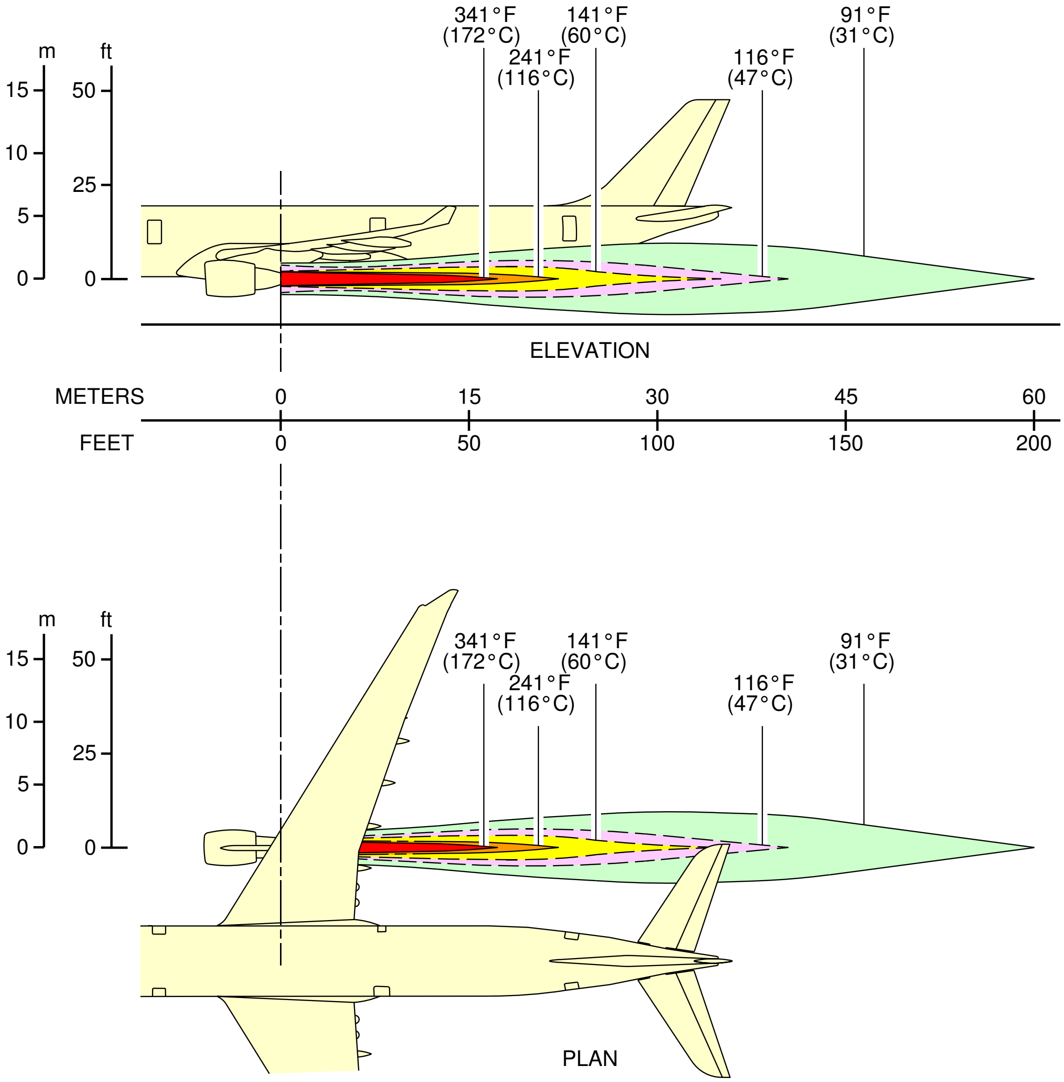
Engine Exhaust Temperatures
Breakaway Power - PW 4000 series engine
FIGURE-6-1-4-991-001-A01

****ON A/C A330-200 A330-200F A330-300**



Engine Exhaust Temperatures
Breakaway Power - RR Trent 700 series engine
FIGURE-6-1-4-991-002-A01

**ON A/C A330-200 A330-300



Engine Exhaust Temperatures
Breakaway Power - GE CF6-80E1 series engine
FIGURE-6-1-4-991-003-A01

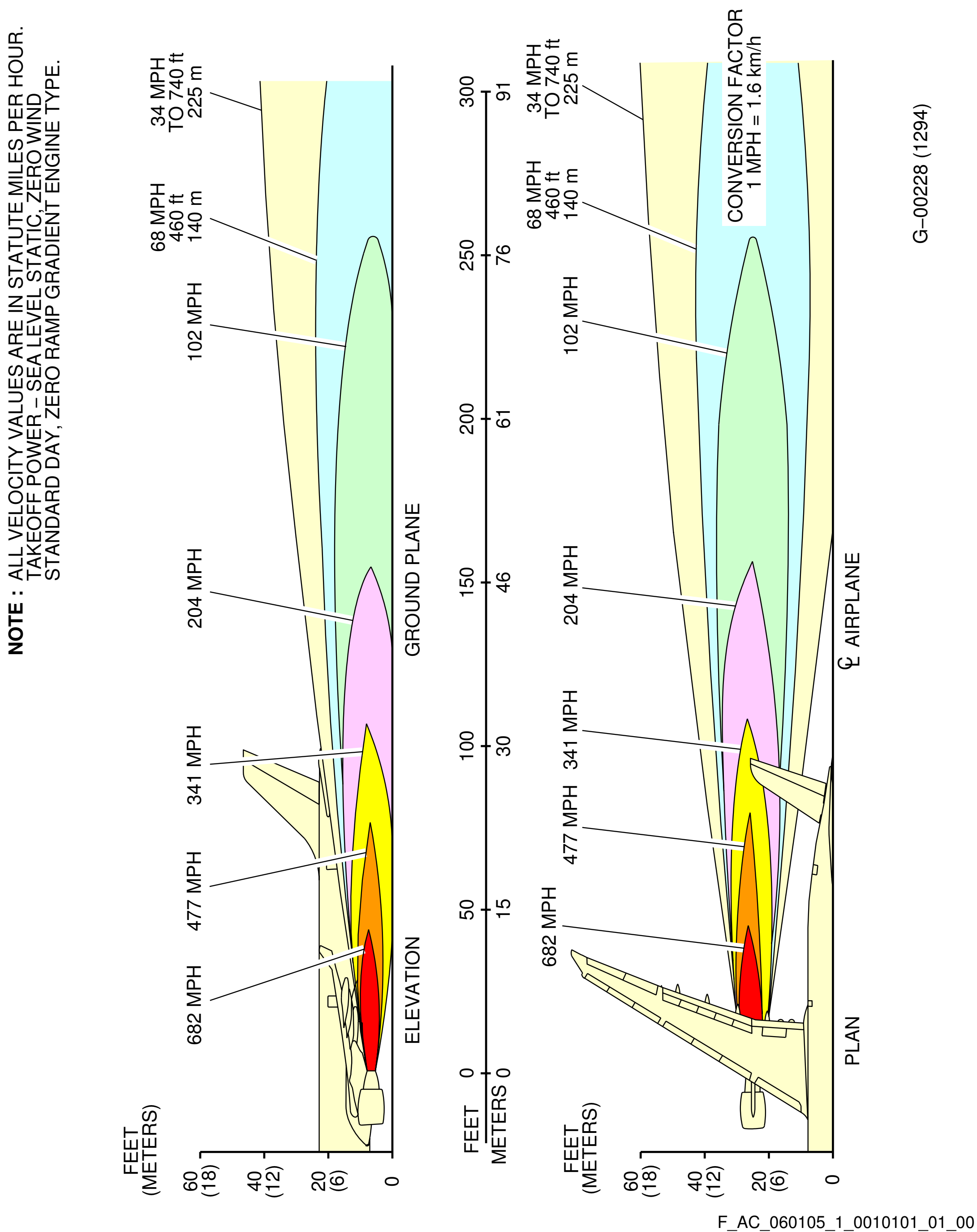
6-1-5 Engine Exhaust Velocities Contours - Takeoff Power

****ON A/C A330-200 A330-200F A330-300**

Engine Exhaust Velocities Contours - Takeoff Power

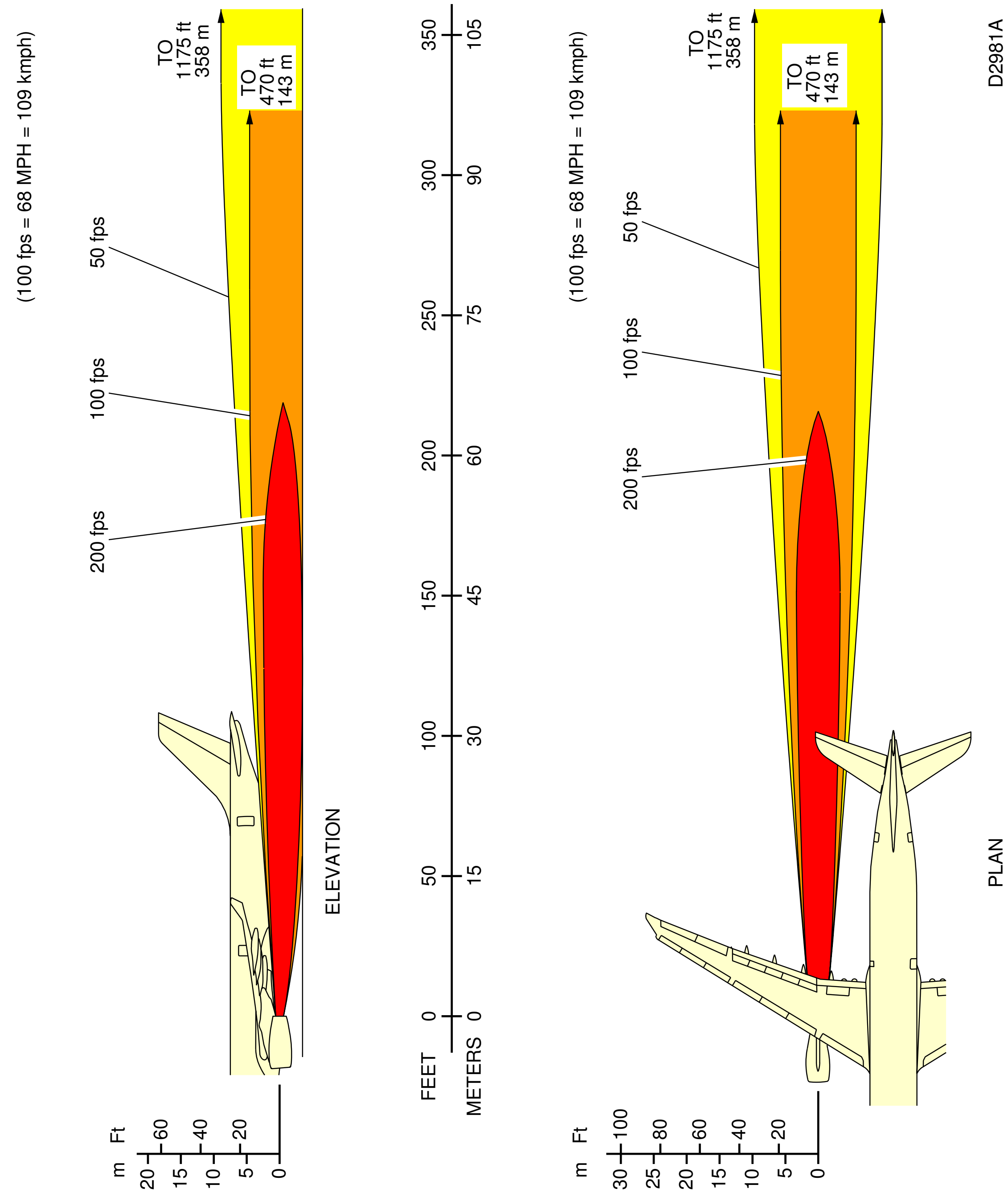
1. This section gives engine exhaust velocities contours at takeoff power

**ON A/C A330-200 A330-200F A330-300



Engine Exhaust Velocities
Takeoff Power - PW 4000 series engine
FIGURE-6-1-5-991-001-A01

****ON A/C A330-200 A330-200F A330-300**



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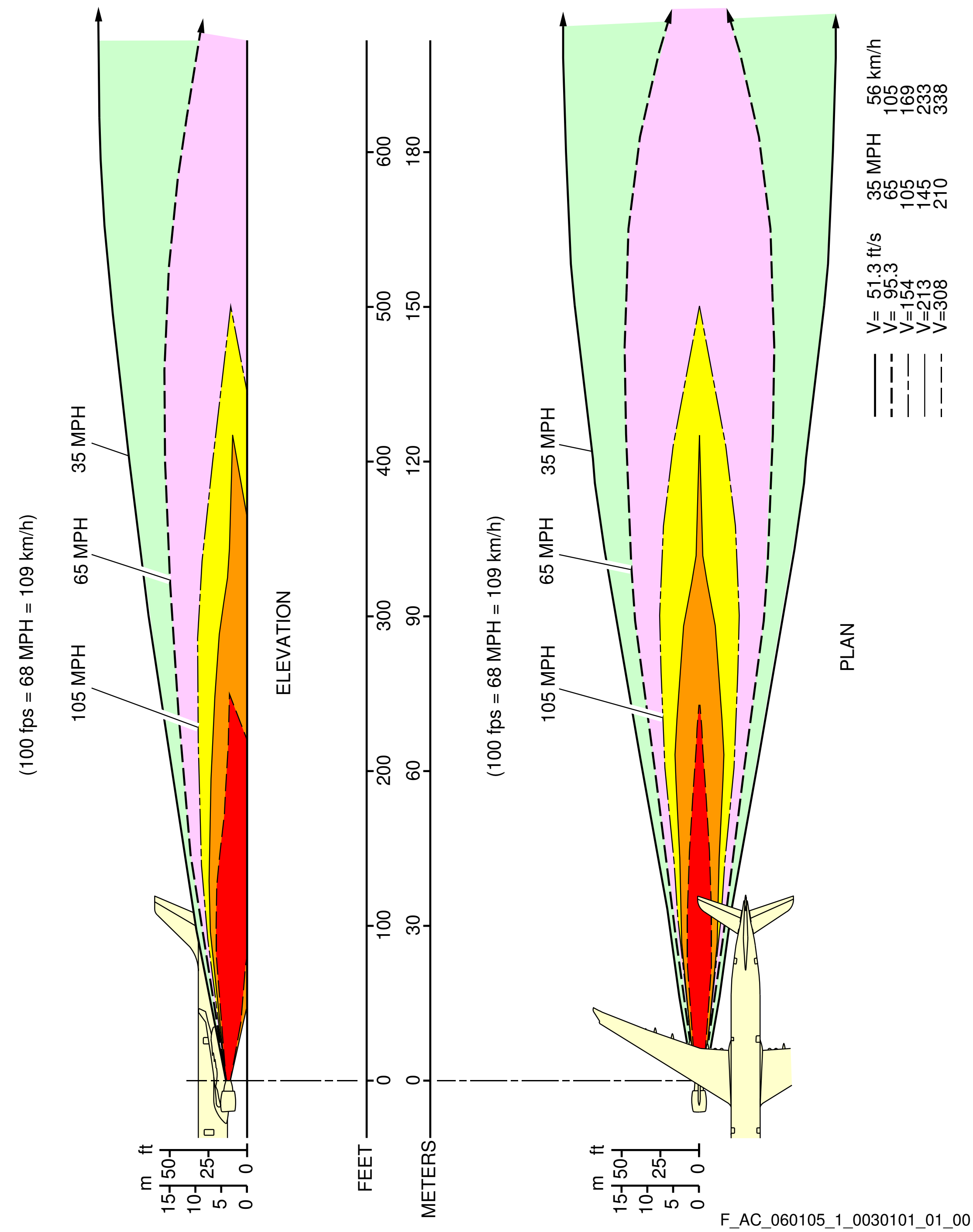
Engine Exhaust Velocities
Takeoff Power - RR Trent 700 series engine
FIGURE-6-1-5-991-002-A01

**ON A/C A330-200 A330-300



Engine Exhaust Velocities
Takeoff Power - GE CF6-80E1 series engine
FIGURE-6-1-5-991-003-A01

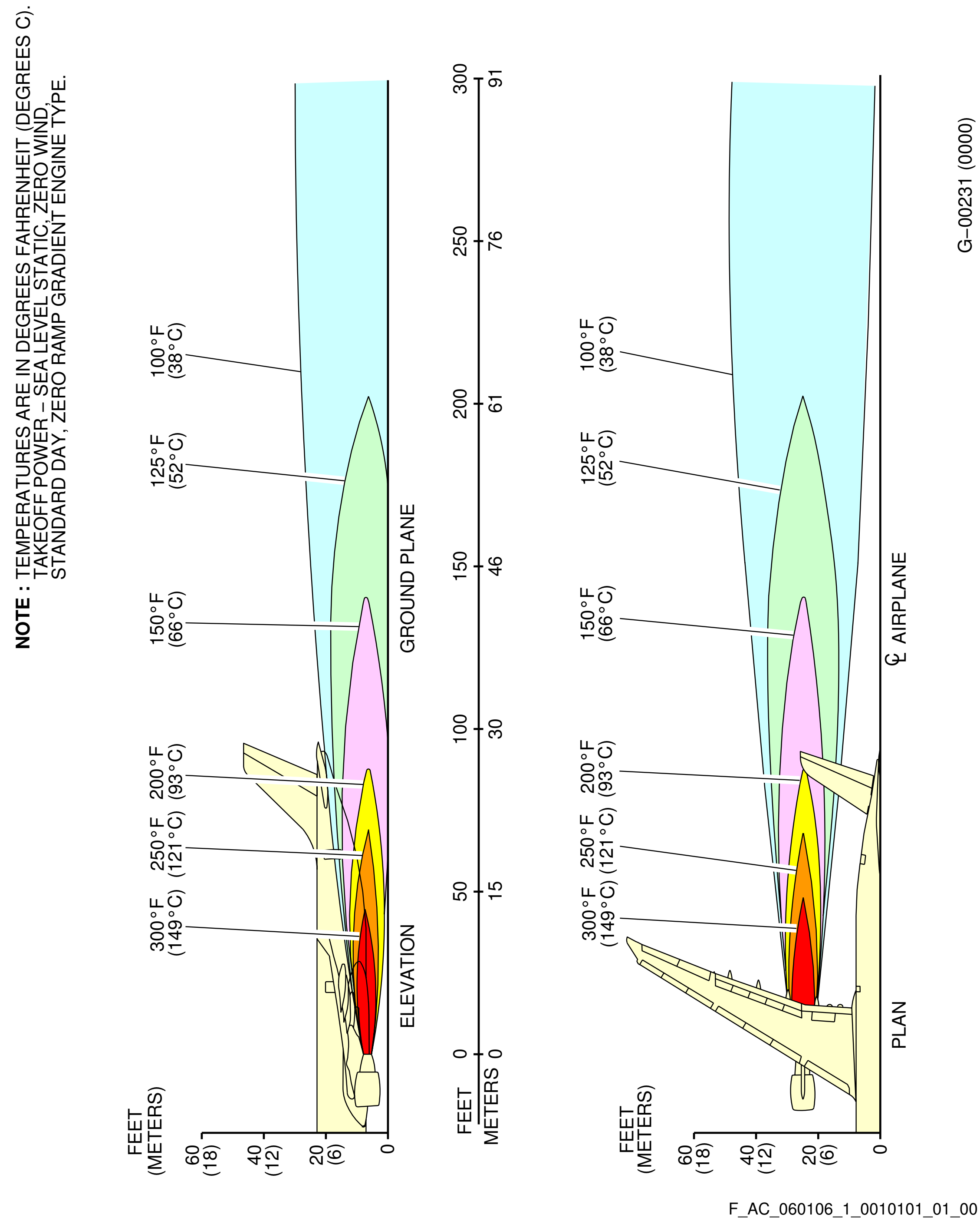
6-1-6 Engine Exhaust Temperatures Contours - Takeoff Power

****ON A/C A330-200 A330-200F A330-300**

Engine Exhaust Temperatures Contours - Takeoff Power

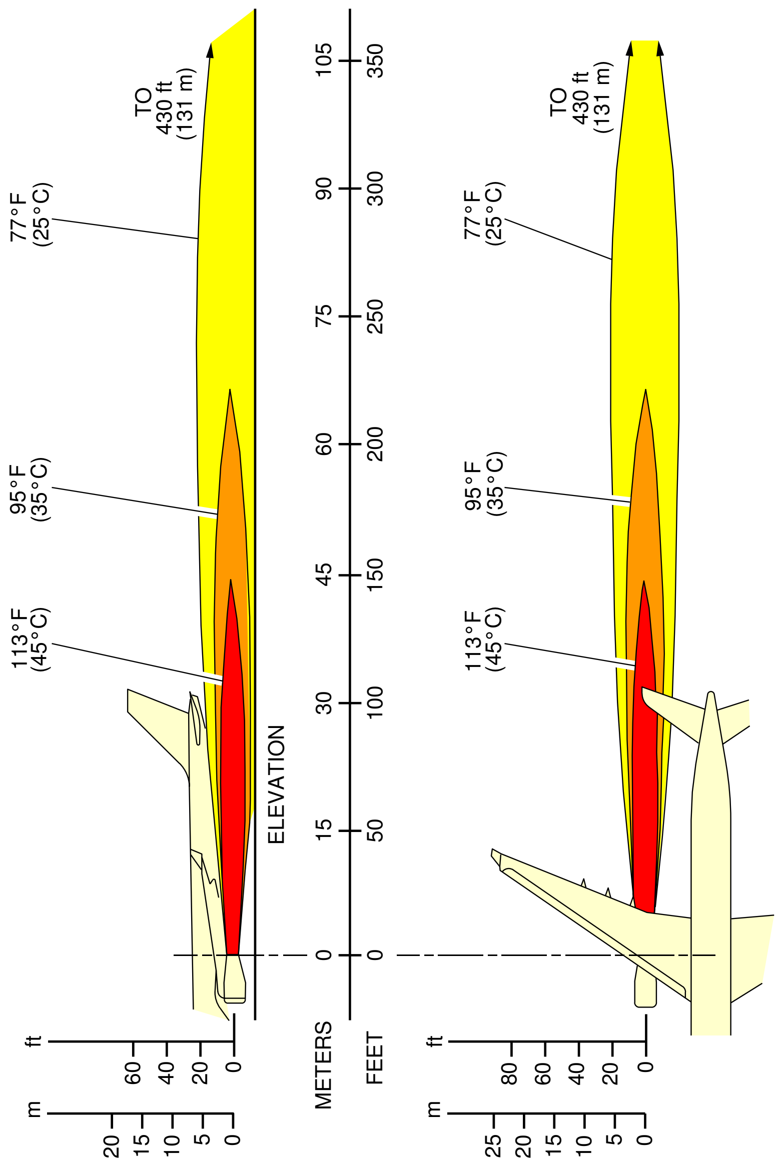
1. This section gives engine exhaust temperatures contours at takeoff power

**ON A/C A330-200 A330-200F A330-300



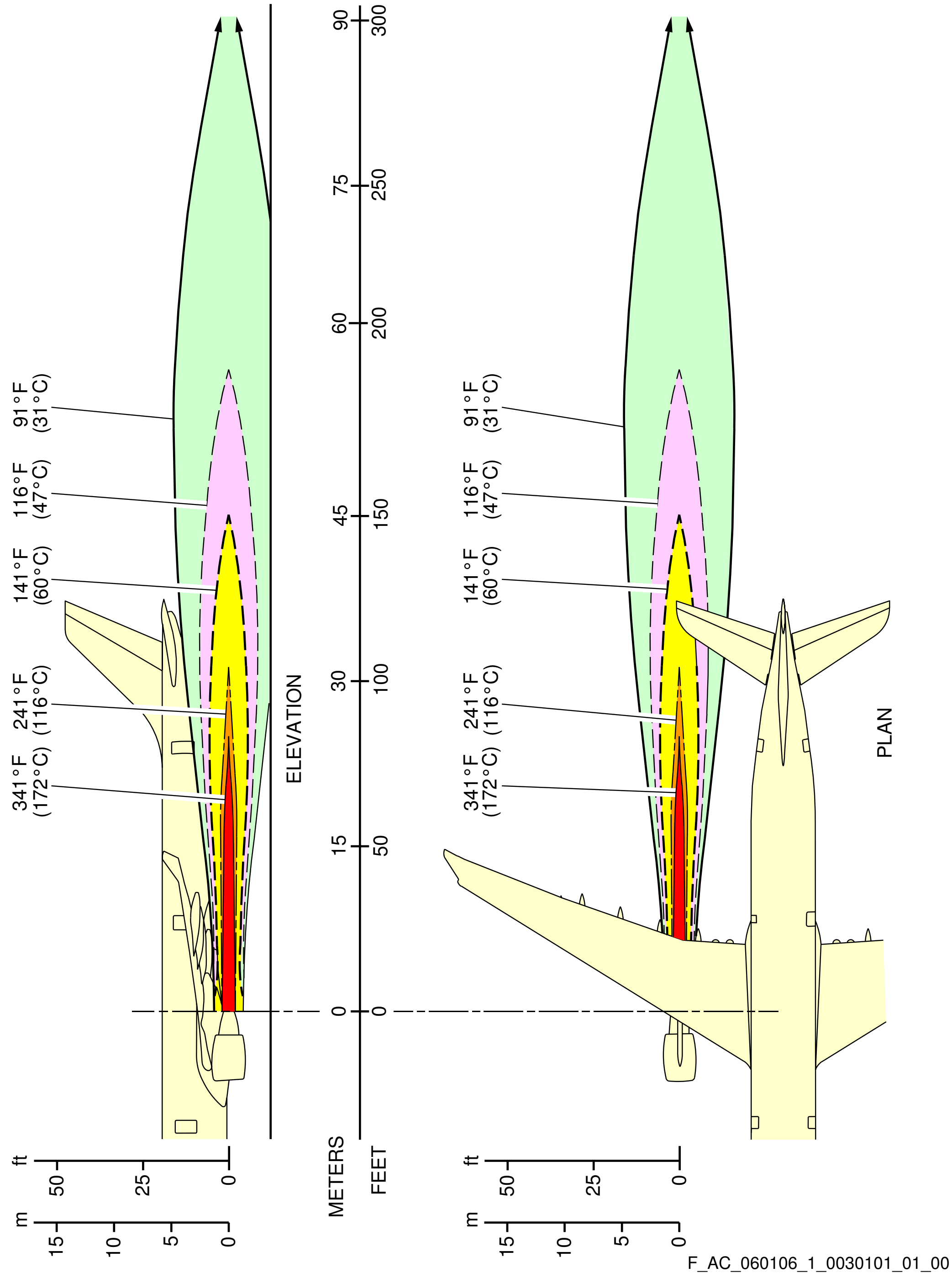
Engine Exhaust Temperatures
Takeoff Power - PW 4000 series engine
FIGURE-6-1-6-991-001-A01

**ON A/C A330-200 A330-200F A330-300



Engine Exhaust Temperatures
Takeoff Power - RR Trent 700 series engine
FIGURE-6-1-6-991-002-A01

**ON A/C A330-200 A330-300



Engine Exhaust Temperatures
Takeoff Power - GE CF6-80E1 series engine
FIGURE-6-1-6-991-003-A01

6-2-0 Airport and Community Noise

****ON A/C A330-200 A330-200F A330-300**

Airport and Community Noise Data

1. Airport and Community Noise Data

   This section gives data concerning engine maintenance run-up noise to permit evaluation of possible attenuation requirements.

6-2-1 Noise Data

****ON A/C A330-200 A330-200F A330-300**

Noise Data

1. Noise Data for PW 4000 series engine

   A. Description of test conditions :

      The arc of circle (radius = 60 m (196.85 ft)), with microphones 1.2 m (3.94 ft) high, is centered on the position of the noise reference point.
      A.P.U. : off ; E.C.S. : Packs off.

   B. Engine parameters : 2 engines running

   C. Meteorological data

      The meteorological parameters measured 1.6 m (5.25 ft) from the ground on the day of test were as follows :
      - Temperature : 24.8 °C (76.64 °F)
      - Relative humidity : 46%
      - Atmospheric pressure : 1000 hPa
      - Wind speed : Negligible
      - No rain

2. Noise Data for RR Trent 700 series engine

   A. Description of test conditions :

      The arc of circle (radius = 60 m (196.85 ft)), with microphones 1.2 m (3.94 ft) high, is centered on the position of the noise reference point.
      A.P.U. : off ; E.C.S. : Packs off.

   B. Engine parameters : 2 engines running

   C. Meteorological data

      The meteorological parameters measured 1.6 m (5.25 ft) from the ground on the day of test were as follows :
      - Temperature : 16.8 °C (62.24 °F)
      - Relative humidity : 70%
      - Atmospheric pressure : 1009 hPa
      - Wind speed : Negligible
      - No rain

****ON A/C A330-200 A330-300**

3. Noise Data for GE CF6-80E1 series engine

   A. Description of test conditions :

      The arc of circle (radius = 60 m (196.85 ft)), with microphones 1.2 m (3.94 ft) high, is centered on the position of the noise reference point.
      A.P.U. : off ; E.C.S. : Packs off.

   B. Engine parameters : 2 engines running

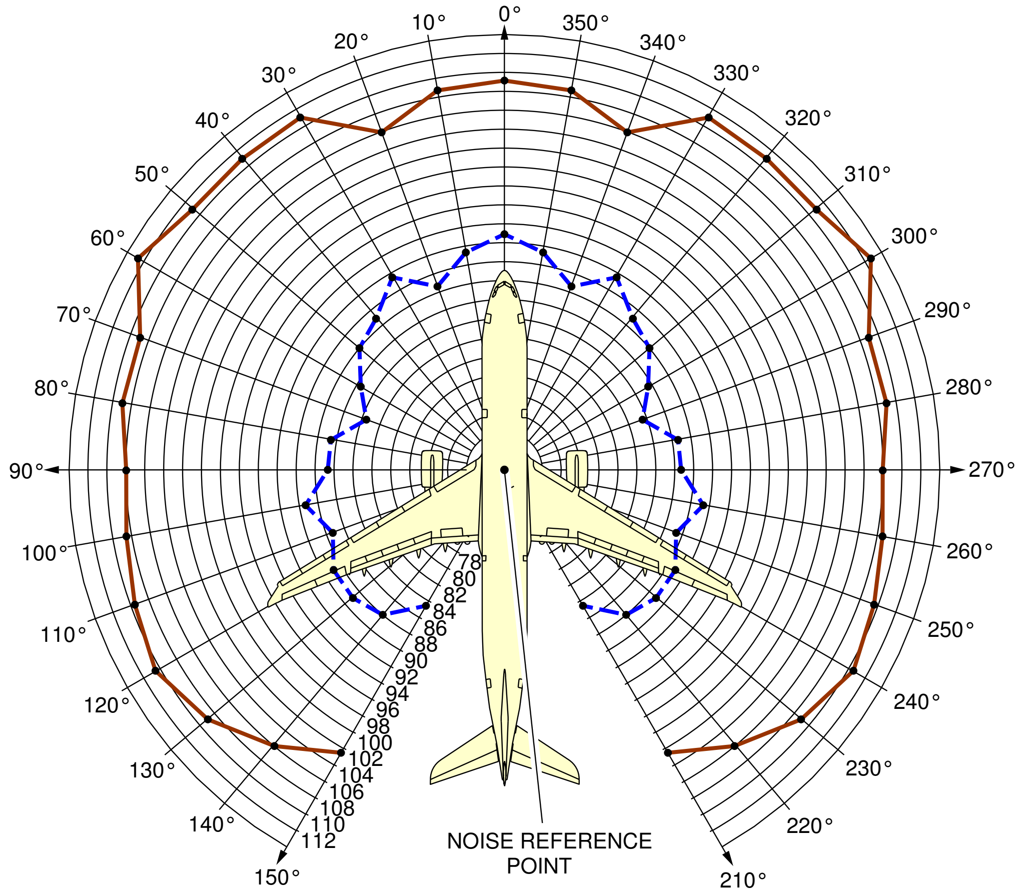
   C. Meteorological data

      The meteorological parameters measured 1.6 m (5.25 ft) from the ground on the day of test were as follows :

      - Temperature : 24.5 °C (76.10 °F)
      - Relative humidity : 47%
      - Atmospheric pressure : 1003.1 hPa
      - Wind speed : Negligible
      - No rain

**ON A/C A330-200 A330-200F A330-300

	GROUND IDLE	MAX THRUST POSSIBLE ON BRAKES
E.P.R.	1.016	1.337
N1	25%	82.4%
CURVE		



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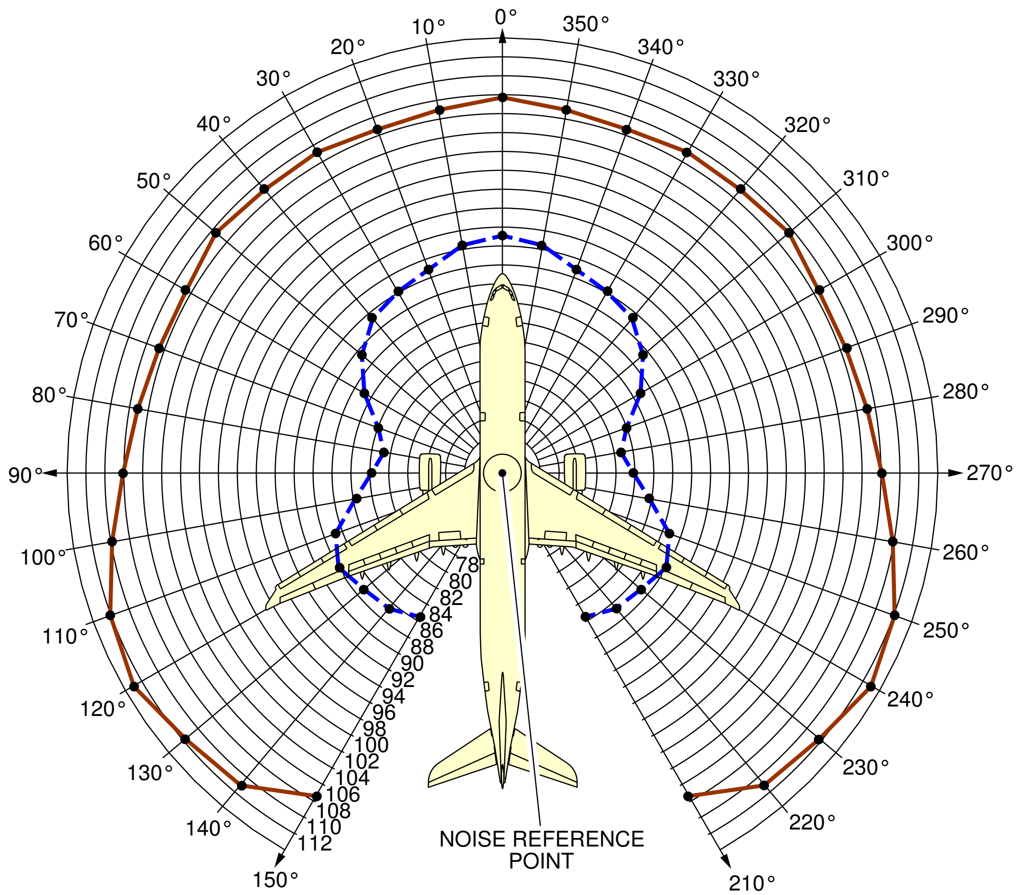
Airport and Community Noise
PW 4000 series engine
FIGURE-6-2-1-991-001-A01

**ON A/C A330-200 A330-200F A330-300

	GROUND IDLE	MAX THRUST POSSIBLE ON BRAKES
E.P.R.	1.017	1.43
N1	23%	79.5%
CURVE		



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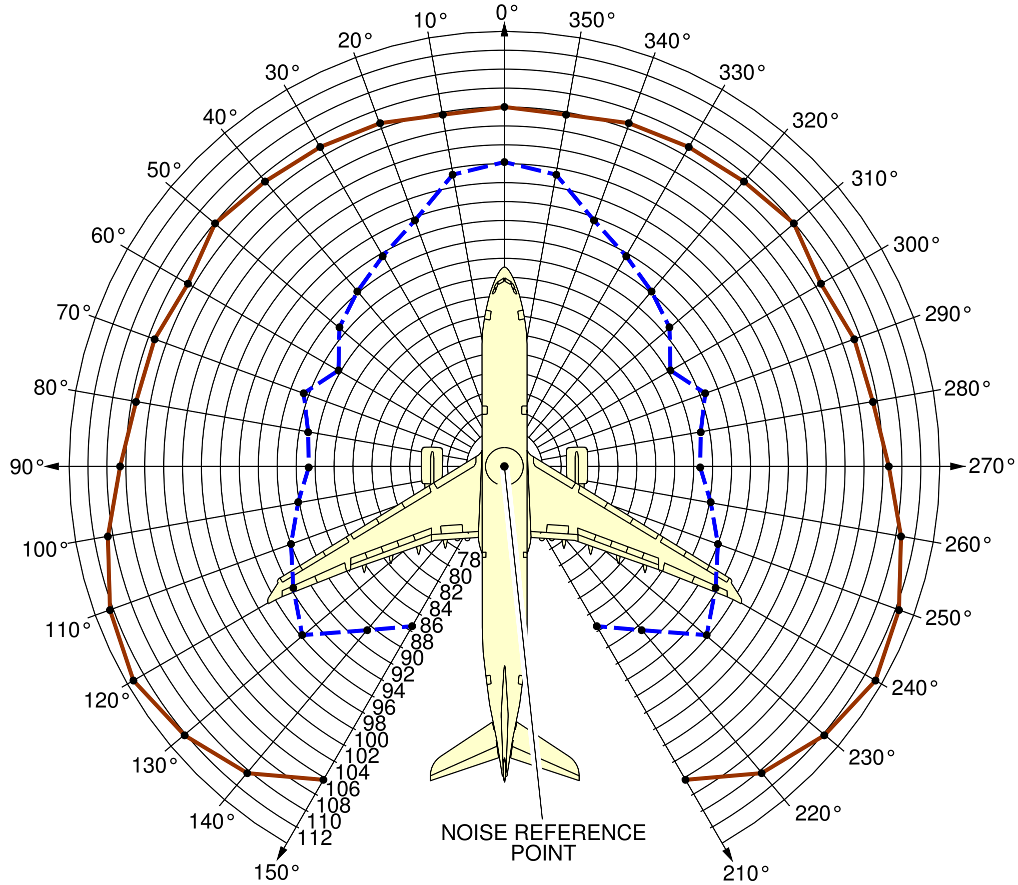
Airport and Community Noise
RR Trent 700 series engine
FIGURE-6-2-1-991-002-A01

****ON A/C A330-200 A330-300**

	GROUND IDLE	MAX THRUST POSSIBLE ON BRAKES
N1	26%	99.5%
CURVE		



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Airport and Community Noise
GE CF6-80E1 series engine
FIGURE-6-2-1-991-003-A01

6-3-0 Danger Areas of Engines

****ON A/C A330-200 A330-200F A330-300**

Danger Areas of Engines

1. Danger Areas of the Engines.

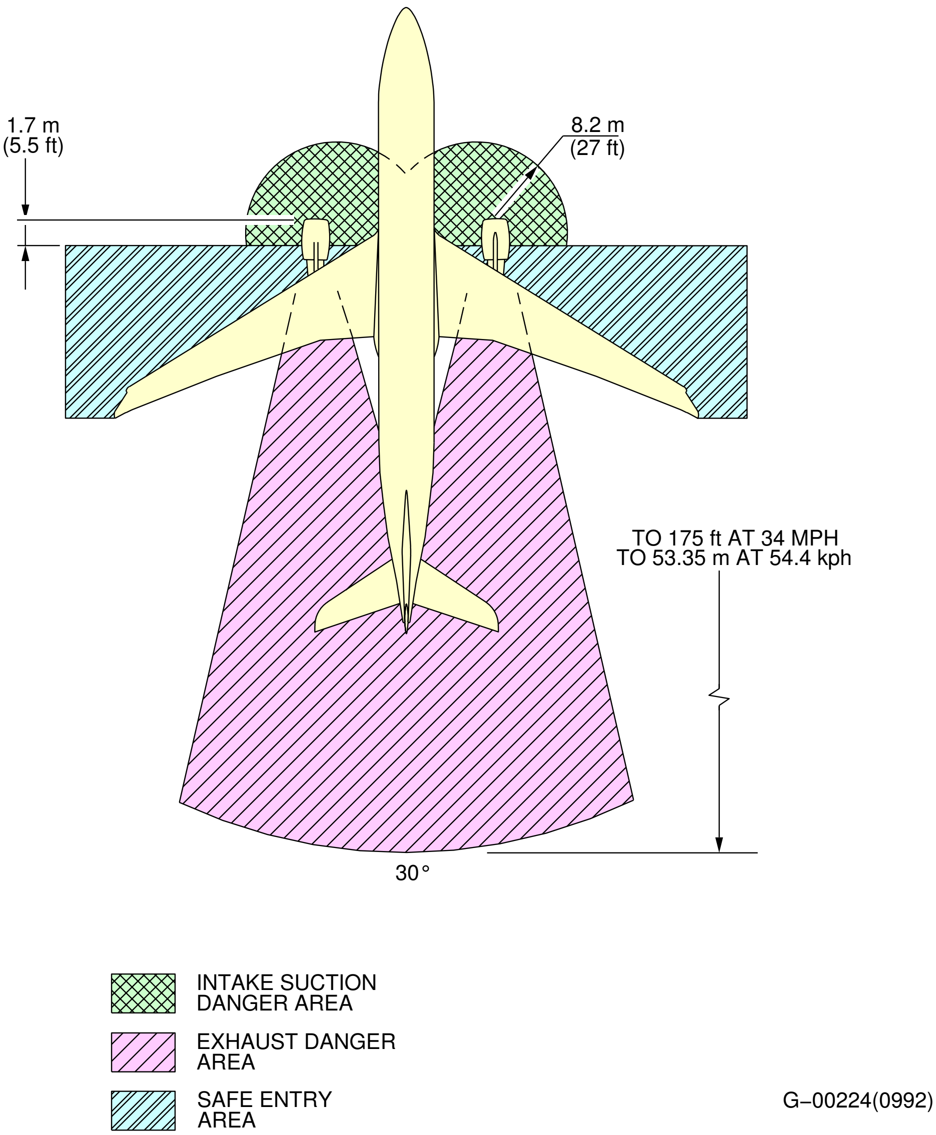
6-3-1 Ground Idle Power

****ON A/C A330-200 A330-200F A330-300**

Ground Idle Power

1. This section gives danger areas of the engines at ground idle power conditions

**ON A/C A330-200 A330-200F A330-300



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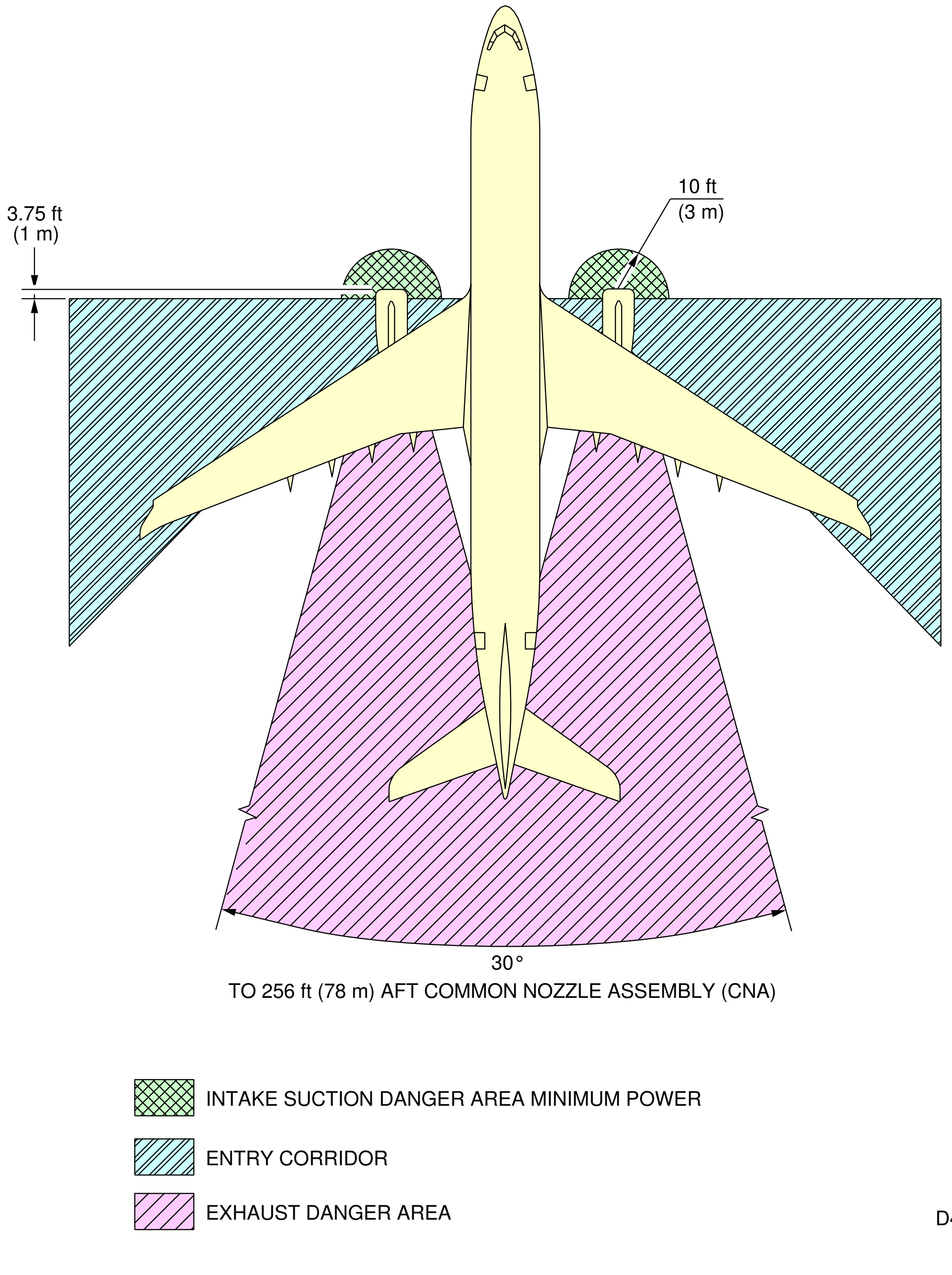
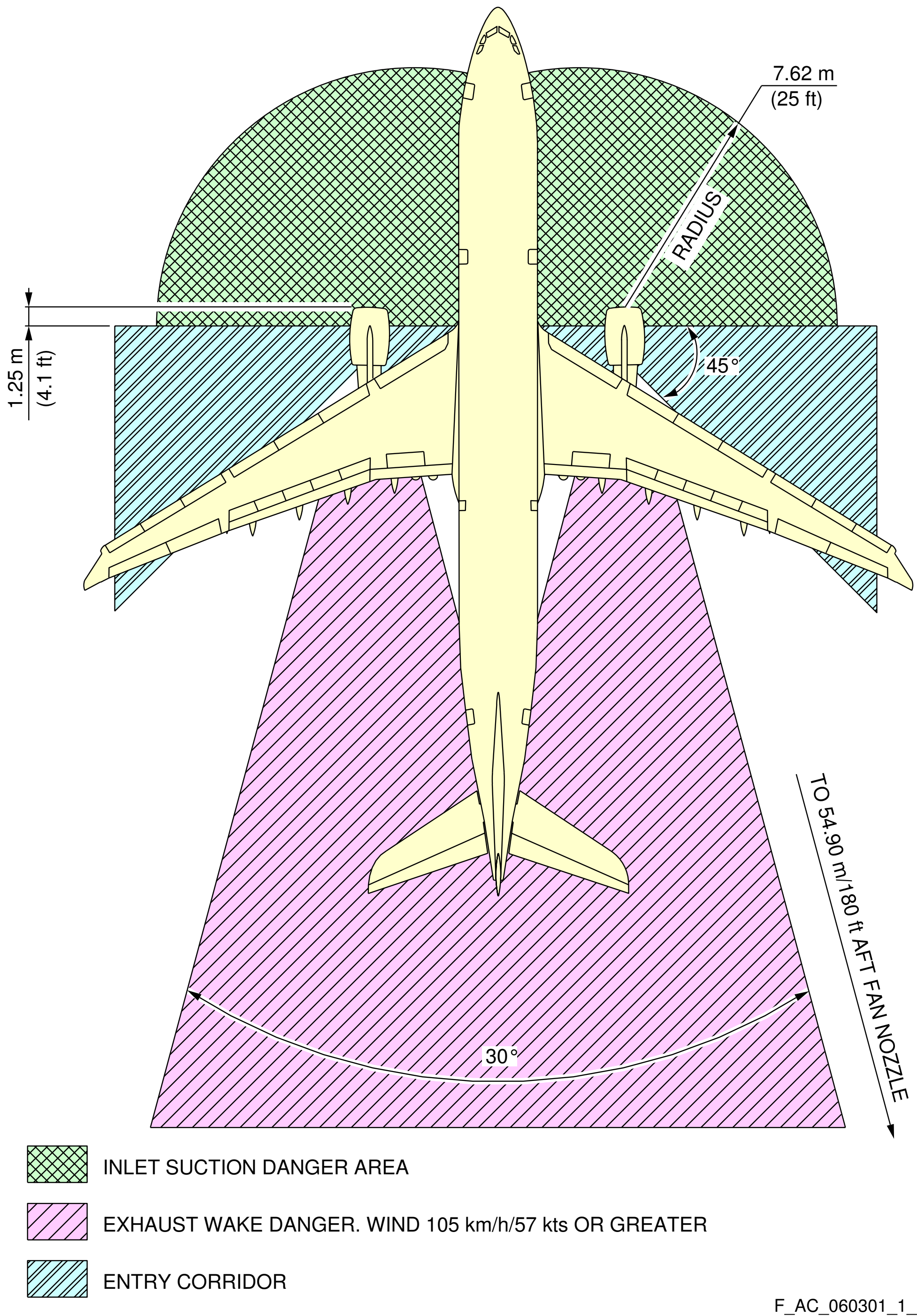
Danger Areas of Engines
PW 4000 series engine
FIGURE-6-3-1-991-001-A01

****ON A/C A330-200 A330-200F A330-300**



Danger Areas of Engines
RR Trent 700 series engine
FIGURE-6-3-1-991-002-A01

****ON A/C A330-200 A330-300**



Danger Areas of Engines
GE CF6-80E1 series engine
FIGURE-6-3-1-991-003-A01

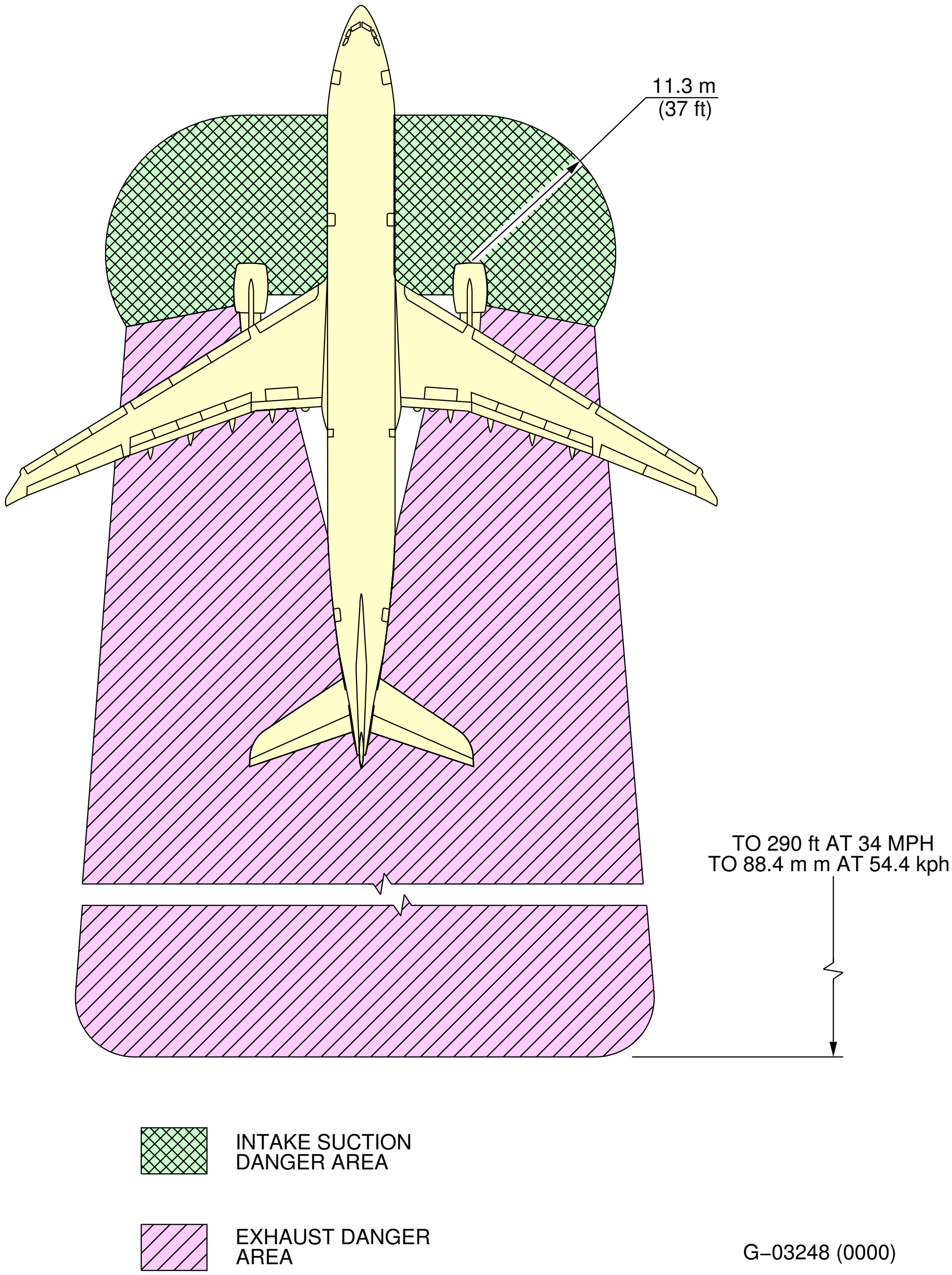
6-3-2 Breakaway Power

****ON A/C A330-200 A330-200F A330-300**

Breakaway Power

1. This section gives danger areas of the engines at breakaway conditions.

****ON A/C A330-200 A330-200F A330-300**



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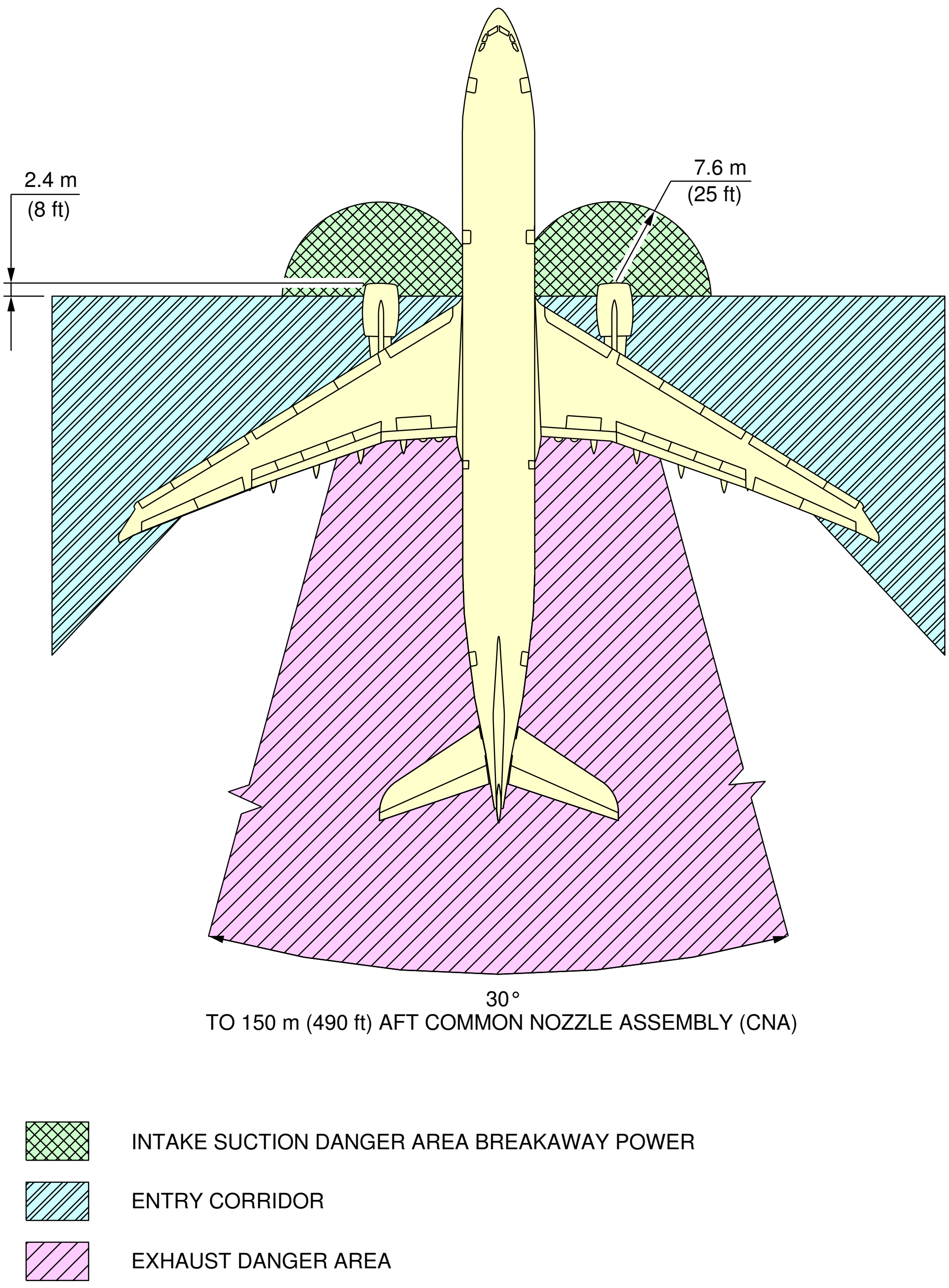
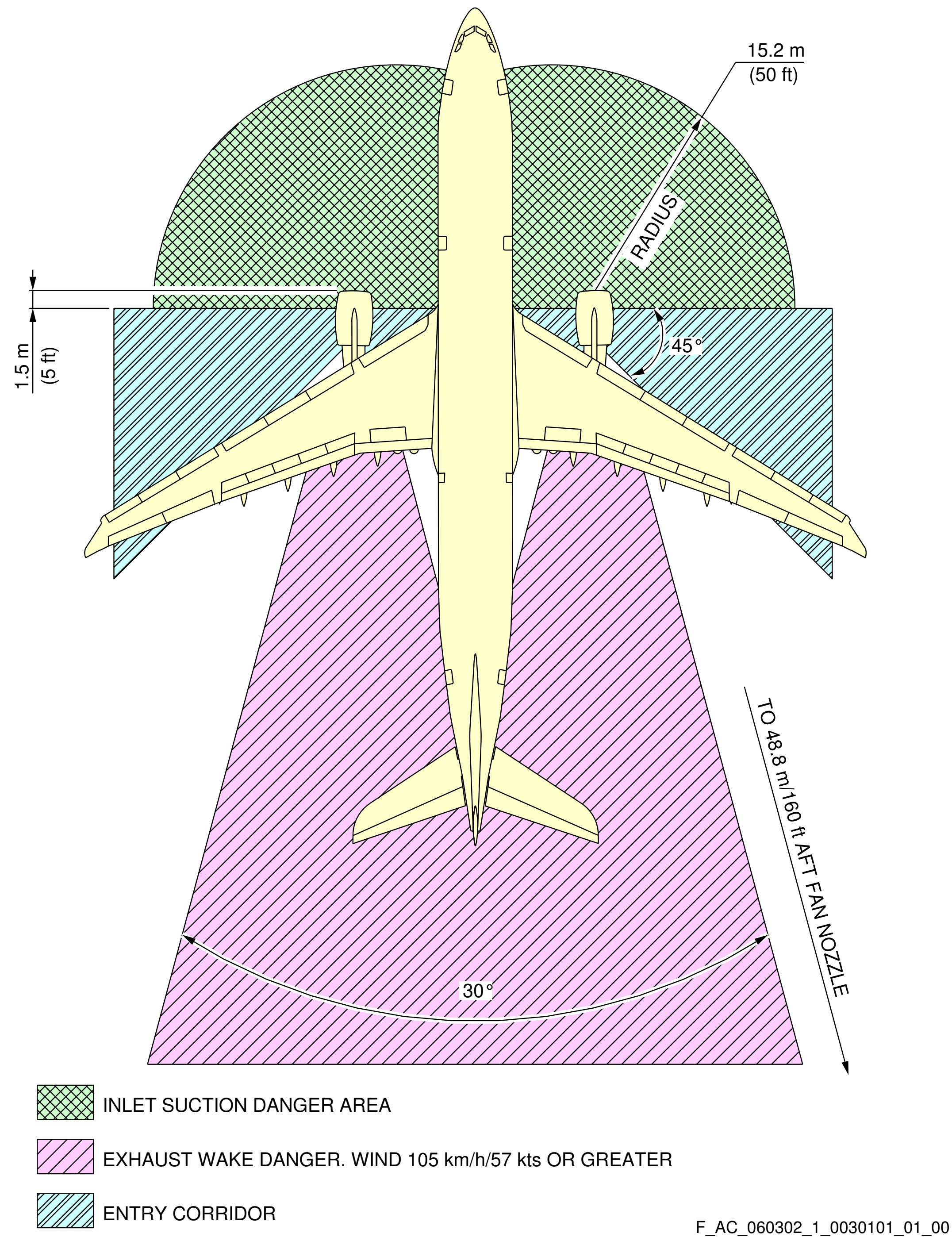
Danger Areas of Engines
PW 4000 series engine
FIGURE-6-3-2-991-001-A01

****ON A/C A330-200 A330-200F A330-300**



Danger Areas of Engines
RR Trent 700 series engine
FIGURE-6-3-2-991-002-A01

**ON A/C A330-200 A330-300



Danger Areas of Engines
GE CF6-80E1 series engine
FIGURE-6-3-2-991-003-A01

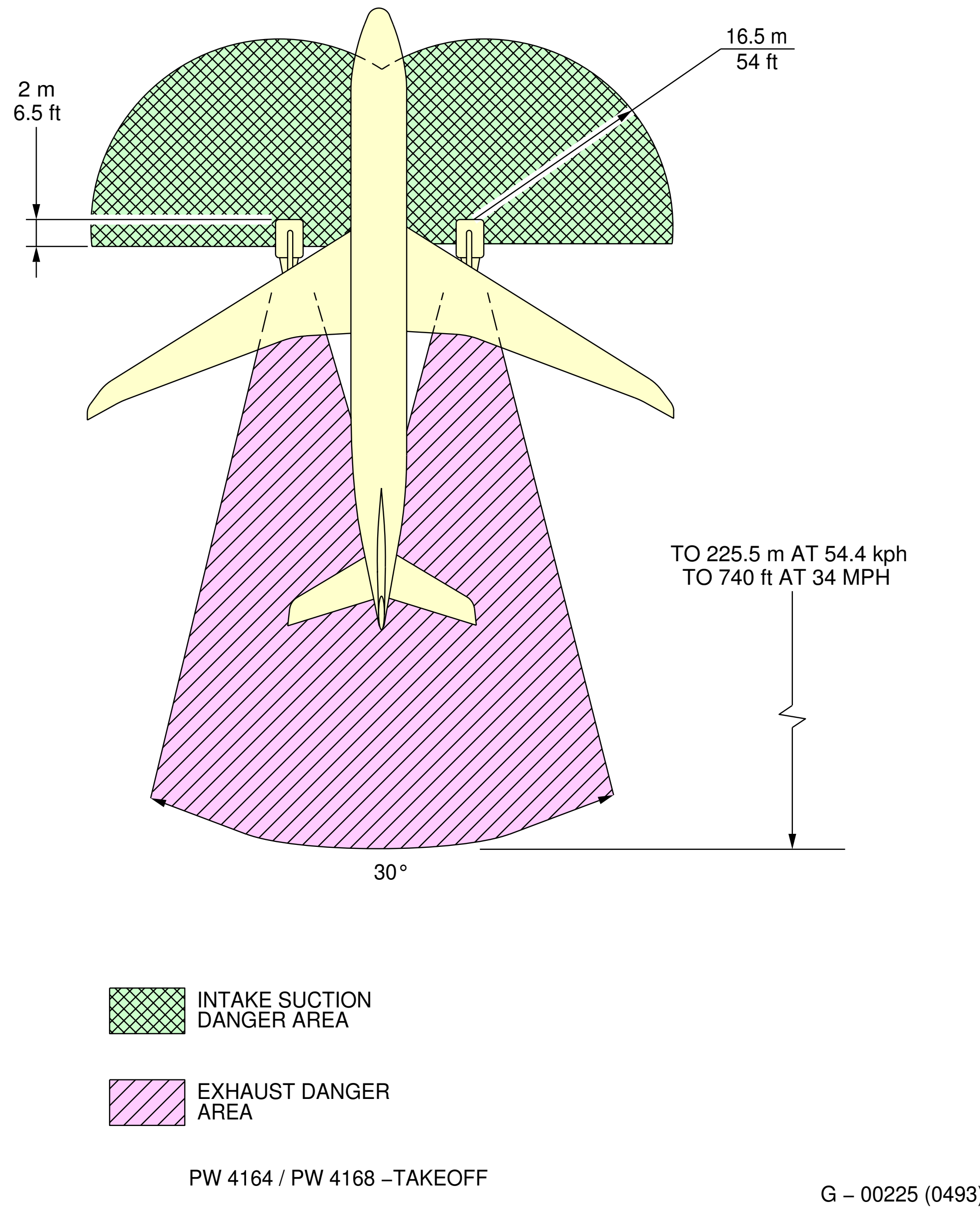
6-3-3 Takeoff Power

****ON A/C A330-200 A330-200F A330-300**

Takeoff Power

1. This section gives danger areas of the engines at max takeoff conditions

****ON A/C A330-200 A330-200F A330-300**



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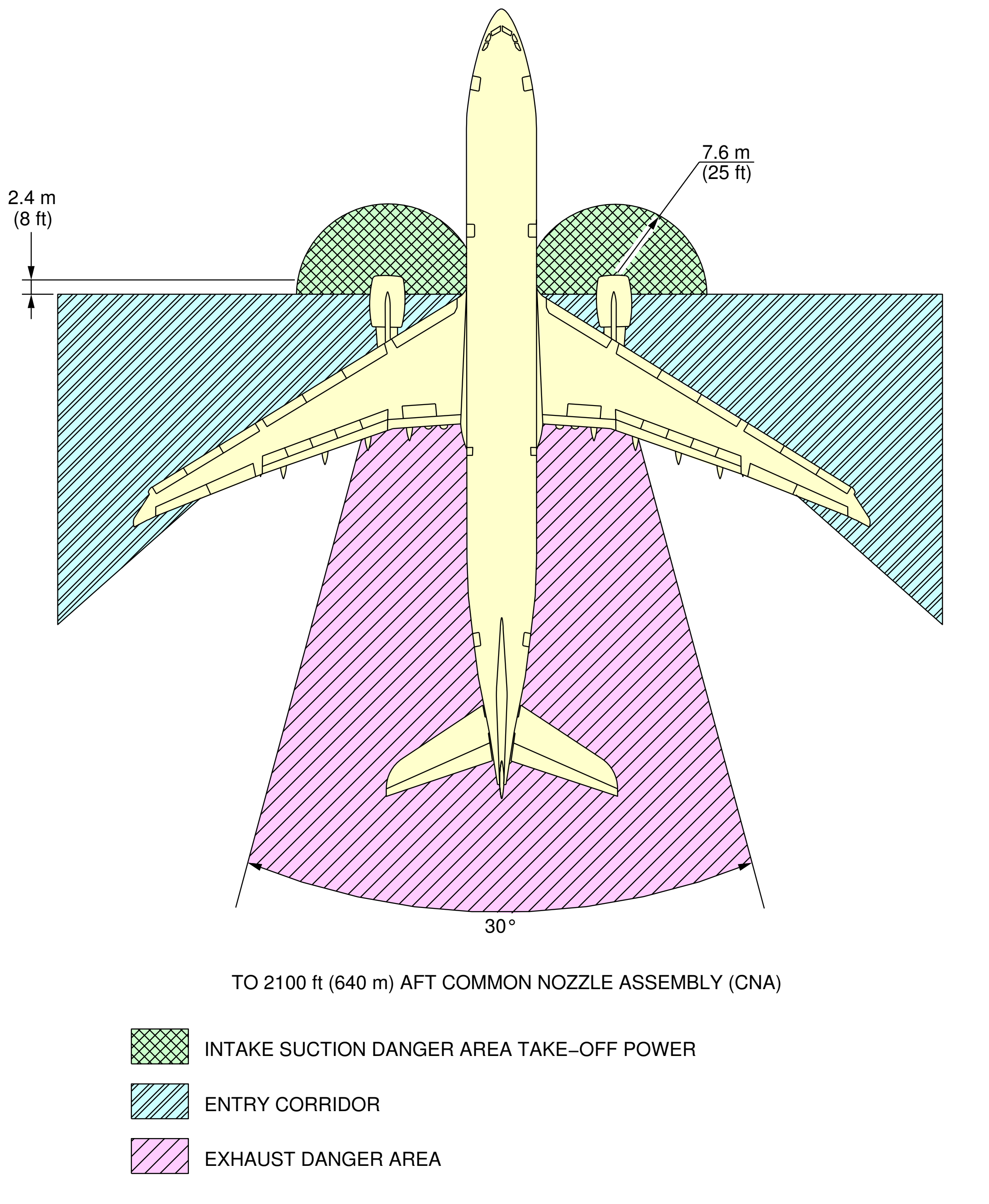
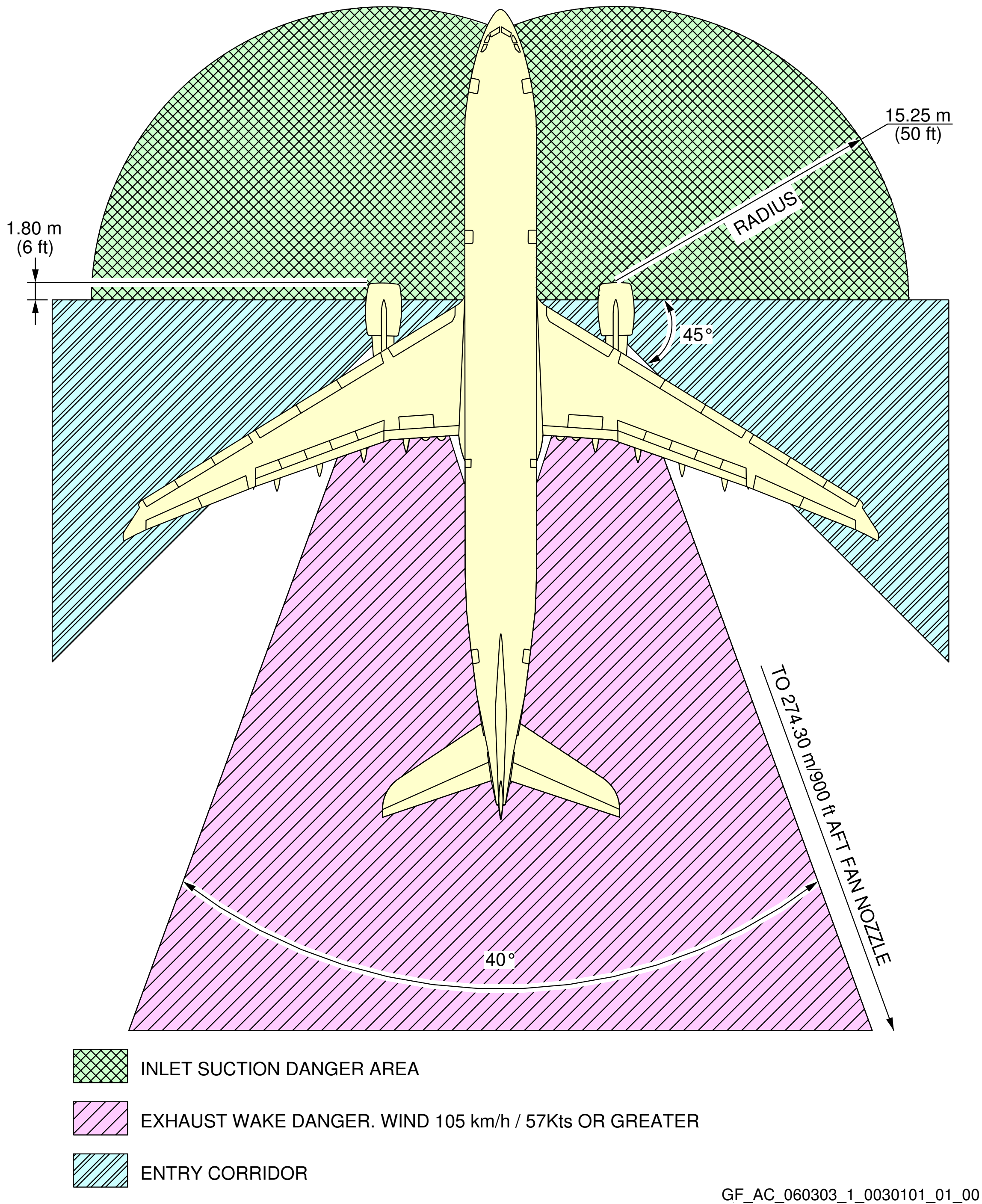
Danger Areas of Engines
PW 4000 series engine
FIGURE-6-3-3-991-001-A01

**ON A/C A330-200 A330-200F A330-300



Danger Areas of Engines
RR Trent 700 series engine
FIGURE-6-3-3-991-002-A01

****ON A/C A330-200 A330-300**



Danger Areas of Engines
GE CF6-80E1 series engine
FIGURE-6-3-3-991-003-A01

6-4-0 APU Exhaust Velocities and Temperatures

****ON A/C A330-200 A330-200F A330-300**

APU Exhaust Velocities and Temperatures

1. APU Exhaust Velocities and Temperatures.

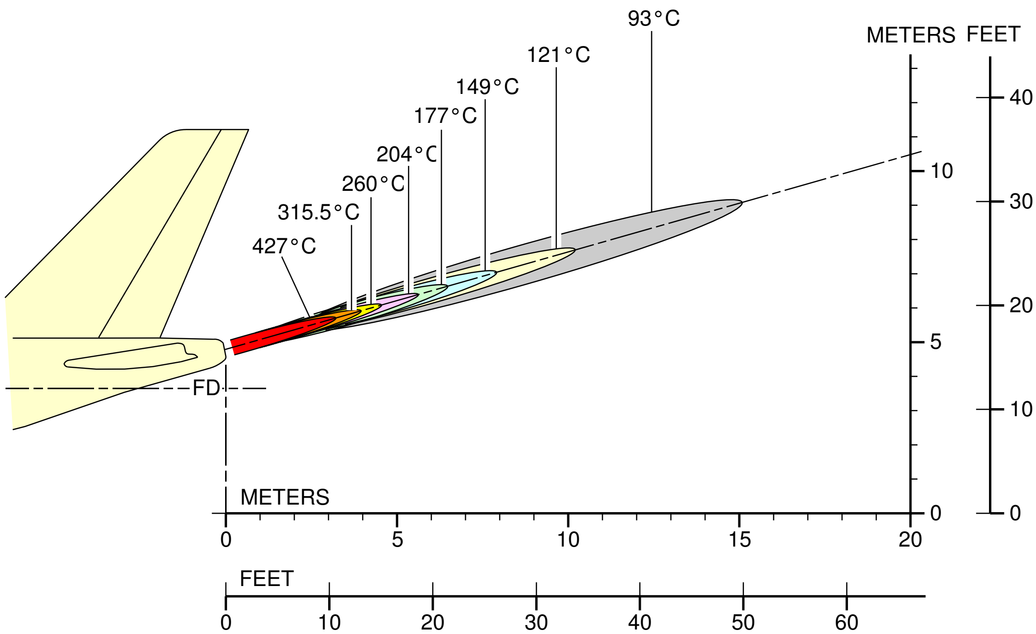
6-4-1 APU

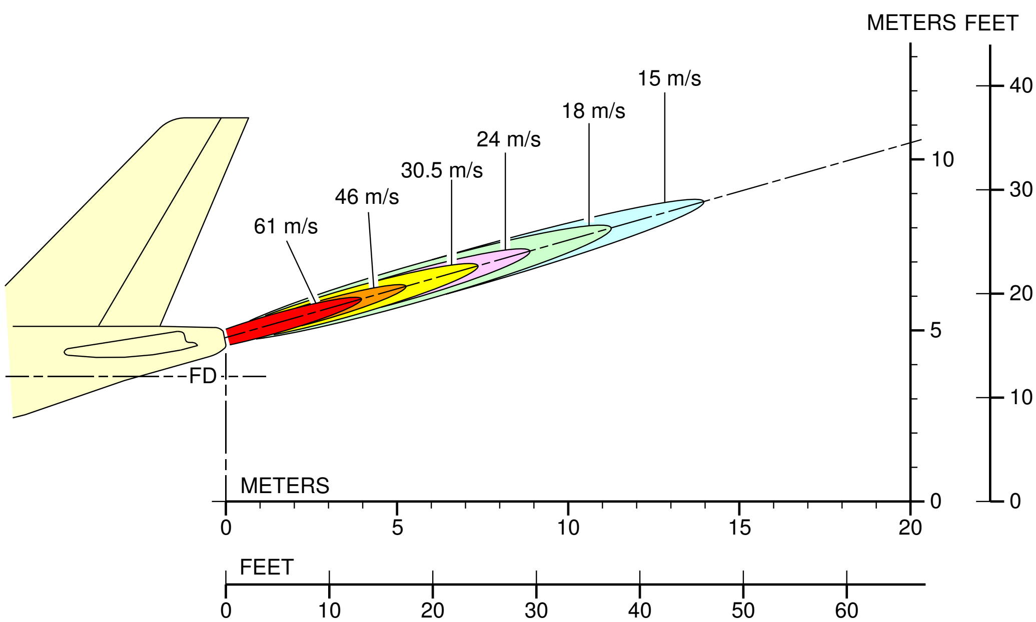
****ON A/C A330-200 A330-200F A330-300**

APU - GARRETT

1. This section gives APU exhaust velocities and temperatures

**ON A/C A330-200 A330-200F A330-300





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Exhaust Velocities and Temperatures
APU – GARRETT GTCP 331-350
FIGURE-6-4-1-991-001-A01

PAVEMENT DATA

7-1-0 General Information

****ON A/C A330-200 A330-200F A330-300**

General Information

1. General Information

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 (MRW),
- 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, MRW and tire sizes and pressures.

Maximum Pavement Loads
Section 7-3-0 shows the 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 Load Classification Number (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 Organization (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 data about the rigid pavement requirements for the LCN Conversion.
- For the radius of relative stiffness,
- For the radius of relative stiffness (other values of E and μ).

All LCN curves shown in Rigid Pavement Requirements - LCN conversion - were developed from a computer program based on data in International Civil Aviation Organization (ICAO) document 7920-AN/865/2, Aerodrome manual, Part 2, "Aerodrome Physical Characteristics", Second Edition, 1965.
Rigid Pavement Requirements - LCN Conversion - Radius of Relative Stiffness.
The rigid pavement charts show LCN against ESWL, and ESWL against radius of relative stiffness.
Rigid Pavement Requirements - LCN Conversion - Radius of Relative Stiffness (other values of E and μ)
The rigid pavement charts show LCN against ESWL and ESWL against radius of relative stiffness affected by the other values of E and μ.
ACN/PCN Reporting System
Section 7-9-0 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.
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 the 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 F – Flexible	A – High B – Medium C – Low D – Ultra Low	W – No Limit X – To 1.5 Mpa (217 psi) Y – To 1.0 Mpa (145 psi) Z – To 0.5 Mpa (73 psi)	T – Technical U – Using Aircraft

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

For rigid pavements, the four subgrade categories are :

- A. High Strength Subgrade k = 150 MN/m^3 (550 pci
- B. Medium Strength Subgrade k = 80 MN/m^3 (300 pci)
- C. Low Strength Subgrade k = 40 MN/m^3 (150 pci)
- D. Ultra Low Strength Subgrade k = 20 MN/m^3 (75 pci)

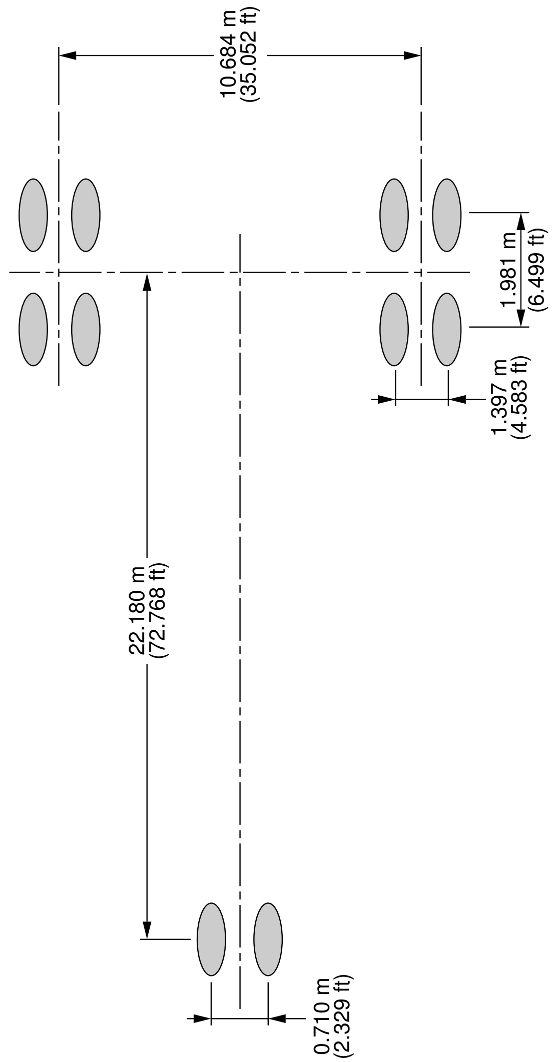
7-2-0 Landing Gear Footprint

****ON A/C A330-200 A330-200F A330-300**

Landing Gear Footprint

1. This section gives data about the landing gear footprint in relation with the aircraft MRW and tire sizes and pressures.
   The landing gear footprint information is given for all the aircraft operational weight variants.

**ON A/C A330-200



WEIGHT VARIANT	MAXIMUM RAMP WEIGHT	PERCENTAGE OF WEIGHT ON MAIN GEAR GROUP	NOSE GEAR TIRE SIZE	NOSE GEAR TIRE PRESSURE	MAIN GEAR TIRE SIZE	MAIN GEAR TIRE PRESSURE
A330−200 WV020	230 900 kg (509 050 lb)	94.7%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200 WV021	230 900 kg (509 050 lb)	94.7%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200 WV022	233 900 kg (515 650 lb)	94.6%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200 WV023	233 900 kg (515 650 lb)	94.6%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200 WV024	202 900 kg (447 325 lb)	94.9%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)

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Landing Gear Footprint
(Sheet 1 of 2)
FIGURE-7-2-0-991-003-A01

**ON A/C A330-200

WEIGHT VARIANT	MAXIMUM RAMP WEIGHT	PERCENTAGE OF WEIGHT ON MAIN GEAR GROUP	NOSE GEAR TIRE SIZE	NOSE GEAR TIRE PRESSURE	MAIN GEAR TIRE SIZE	MAIN GEAR TIRE PRESSURE
A330−200 WV025	220 900 kg (487 000 lb)	94.8%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200 WV026	192 900 kg (425 275 lb)	95.0%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200 WV027	220 900 kg (487 000 lb)	94.8%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200 WV050	230 900 kg (509 050 lb)	94.7%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200 WV051	192 900 kg (425 275 lb)	95.0%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200 WV052	233 900 kg (515 650 lb)	94.6%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200 WV053	210 900 kg (464 950 lb)	94.8%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200 WV054	230 900 kg (509 050 lb)	94.7%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200 WV055	192 900 kg (425 275 lb)	95.0%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200 WV056	233 900 kg (515 650 lb)	94.6%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200 WV057	236 900 kg (522 275 lb)	93.4%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200 WV058	238 900 kg (526 675 lb)	92.7%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200 WV059	202 900 kg (447 325 lb)	94.9%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200 WV060	220 900 kg (487 000 lb)	94.8%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200 WV061	230 900 kg (509 050 lb)	94.7%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)

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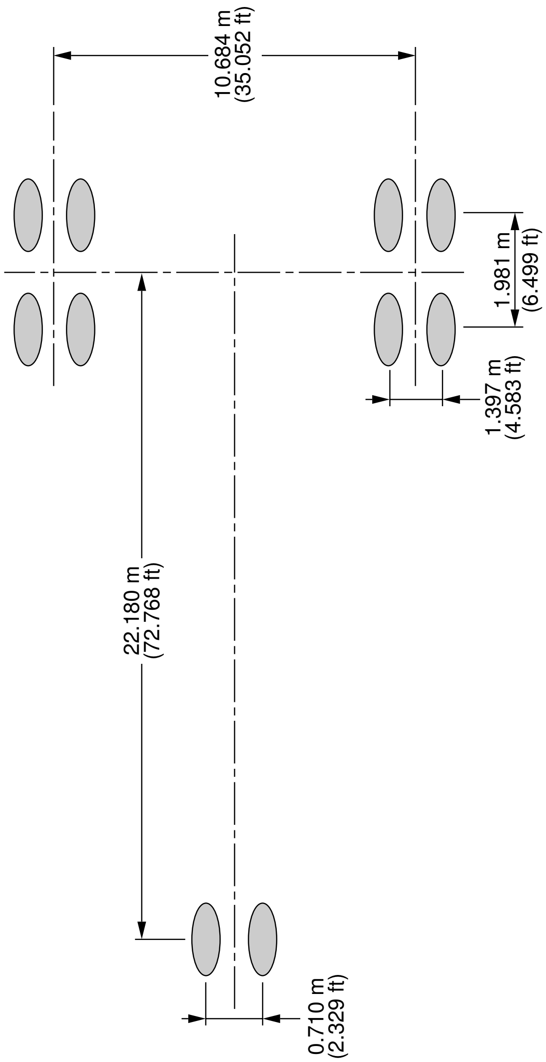
Landing Gear Footprint
(Sheet 2 of 2)
FIGURE-7-2-0-991-003-A01

**ON A/C A330-200F



WEIGHT VARIANT	MAXIMUM RAMP WEIGHT	PERCENTAGE OF WEIGHT ON MAIN GEAR GROUP	NOSE GEAR TIRE SIZE	NOSE GEAR TIRE PRESSURE	MAIN GEAR TIRE SIZE	MAIN GEAR TIRE PRESSURE
A330−200F WV000	233 900 kg (515 650 lb)	94.6%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200F WV001	227 900 kg (502 425 lb)	94.7%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)
A330−200F WV002	233 900 kg (515 650 lb)	94.6%	1050x395R16	12.7 bar (184 psi)	1400x530R23 OR 54x21−23 (bias)	14.2 bar (206 psi)

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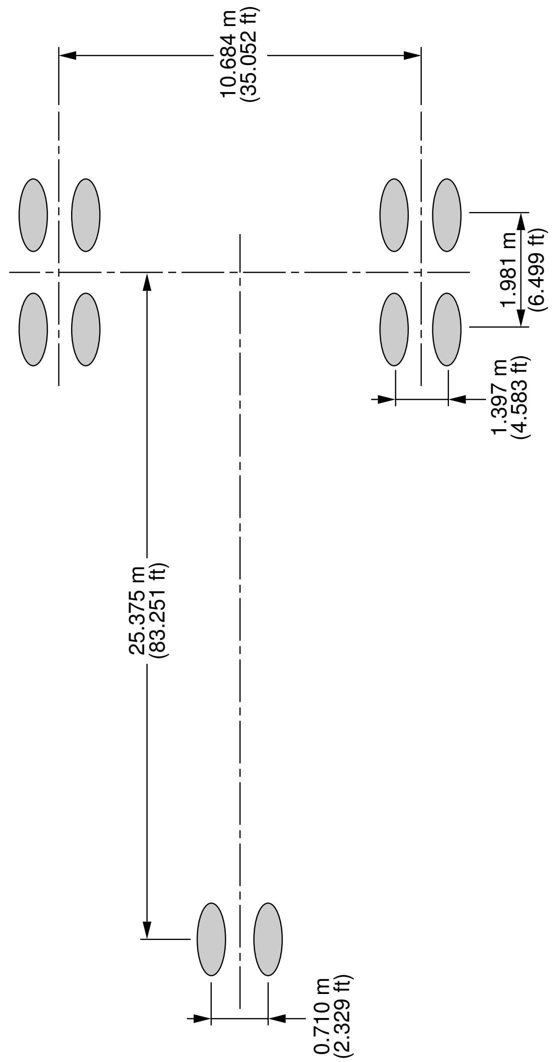
Landing Gear Footprint
FIGURE-7-2-0-991-017-A01

**ON A/C A330-300



WEIGHT VARIANT	MAXIMUM RAMP WEIGHT	PERCENTAGE OF WEIGHT ON MAIN GEAR GROUP	NOSE GEAR TIRE SIZE	NOSE GEAR TIRE PRESSURE	MAIN GEAR TIRE SIZE	MAIN GEAR TIRE PRESSURE
A330−300 WV000	212 900 kg (469 375 lb)	94.9%	1050x395R16	10.7 bar (155 psi)	1400x530R23 OR 54x21−23 (bias)	13.1 bar (190 psi)
A330−300 WV001	184 900 kg (407 625 lb)	95.9%	1050x395R16	10.7 bar (155 psi)	1400x530R23 OR 54x21−23 (bias)	13.1 bar (190 psi)
A330−300 WV002	212 900 kg (469 375 lb)	94.9%	1050x395R16	10.7 bar (155 psi)	1400x530R23 OR 54x21−23 (bias)	13.1 bar (190 psi)
A330−300 WV003	215 900 kg (475 975 lb)	94.4%	1050x395R16	10.9 bar (158 psi)	1400x530R23 OR 54x21−23 (bias)	13.3 bar (193 psi)
A330−300 WV004	209 900 kg (462 750 lb)	95.7%	1050x395R16	10.9 bar (158 psi)	1400x530R23 OR 54x21−23 (bias)	13.3 bar (193 psi)

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Landing Gear Footprint
(Sheet 1 of 2)
FIGURE-7-2-0-991-006-A01

**ON A/C A330-300

WEIGHT VARIANT	MAXIMUM RAMP WEIGHT	PERCENTAGE OF WEIGHT ON MAIN GEAR GROUP	NOSE GEAR TIRE SIZE	NOSE GEAR TIRE PRESSURE	MAIN GEAR TIRE SIZE	MAIN GEAR TIRE PRESSURE
A330–300 WV004	215 900 kg (475 975 lb)	95.6%	1050x395R16	10.9 bar (158 psi)	1400x530R23 OR 54x21–23 (bias)	13.3 bar (193 psi)
A330–300 WV010	217 900 kg (480 375 lb)	94.0%	1050x395R16	10.9 bar (158 psi)	1400x530R23 OR 54x21–23 (bias)	13.3 bar (193 psi)
A330–300 WV010	217 900 kg (480 375 lb)	95.6%	1050x395R16	10.9 bar (158 psi)	1400x530R23 OR 54x21–23 (bias)	13.3 bar (193 psi)
A330–300 WV011	212 900 kg (469 375 lb)	95.7%	1050x395R16	10.9 bar (158 psi)	1400x530R23 OR 54x21–23 (bias)	13.3 bar (193 psi)
A330–300 WV012	218 900 kg (482 600 lb)	95.6%	1050x395R16	10.9 bar (158 psi)	1400x530R23 OR 54x21–23 (bias)	13.3 bar (193 psi)
A330–300 WV013	215 900 kg (475 975 lb)	95.6%	1050x395R16	10.9 bar (158 psi)	1400x530R23 OR 54x21–23 (bias)	13.3 bar (193 psi)
A330–300 WV014	205 900 kg (453 925 lb)	95.7%	1050x395R16	10.9 bar (158 psi)	1400x530R23 OR 54x21–23 (bias)	13.3 bar (193 psi)
A330–300 WV020	230 900 kg (509 050 lb)	95.5%	1050x395R16	11.4 bar (165 psi)	1400x530R23 OR 54x21–23 (bias)	14.2 bar (206 psi)
A330–300 WV022	233 900 kg (515 650 lb)	95.5%	1050x395R16	11.6 bar (168 psi)	1400x530R23 OR 54x21–23 (bias)	14.5 bar (210 psi)
A330–300 WV024	205 900 kg (453 925 lb)	95.7%	1050x395R16	11.4 bar (165 psi)	1400x530R23 OR 54x21–23 (bias)	14.2 bar (206 psi)
A330–300 WV025	217 900 kg (480 375 lb)	95.6%	1050x395R16	11.4 bar (165 psi)	1400x530R23 OR 54x21–23 (bias)	14.2 bar (206 psi)
A330–300 WV050	230 900 kg (509 050 lb)	95.5%	1050x395R16	11.6 bar (168 psi)	1400x530R23 OR 54x21–23 (bias)	14.5 bar (210 psi)
A330–300 WV051	212 900 kg (469 375 lb)	95.7%	1050x395R16	11.6 bar (168 psi)	1400x530R23 OR 54x21–23 (bias)	14.5 bar (210 psi)
A330–300 WV052	233 900 kg (515 650 lb)	95.5%	1050x395R16	11.6 bar (168 psi)	1400x530R23 OR 54x21–23 (bias)	14.5 bar (210 psi)
A330–300 WV053	205 900 kg (453 925 lb)	95.7%	1050x395R16	11.6 bar (168 psi)	1400x530R23 OR 54x21–23 (bias)	14.5 bar (210 psi)
A330–300 WV054	235 900 kg (520 075 lb)	94.7%	1050x395R16	11.6 bar (168 psi)	1400x530R23 OR 54x21–23 (bias)	14.5 bar (210 psi)

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Landing Gear Footprint
(Sheet 2 of 2)
FIGURE-7-2-0-991-006-A01

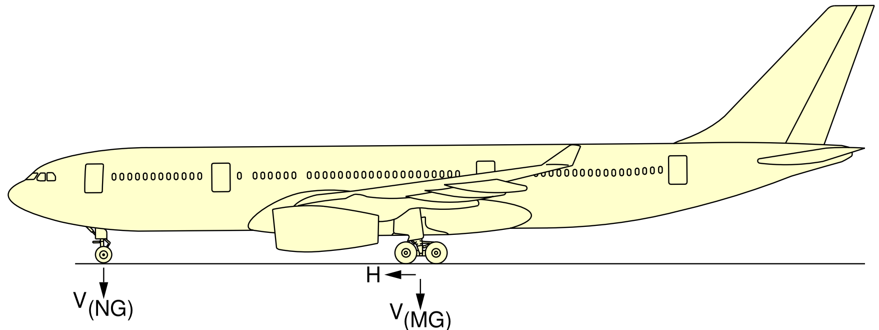
7-3-0 Maximum Pavement Loads

****ON A/C A330-200 A330-200F A330-300**

Maximum Pavement Loads

1. This section shows maximum vertical and horizontal pavement loads for some critical conditions at the tire-ground interfaces.
   The maximum pavement loads are given for all the aircraft operational weight variants.

**ON A/C A330-200



$V_{(NG)}$ 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	2	3		4	5		6	
		VNG			VMG (PER STRUT)		H (PER STRUT)	
MODEL	MAXIMUM RAMP WEIGHT	STATIC LOAD AT MOST FWD C.G.		STATIC BRAKING @ 10 ft/s² DECELERATION	STATIC LOAD AT MAX AFT C.G.		STEADY BRAKING @ 10 ft/s² DECELERATION	AT INSTANTANEOUS BRAKING COEFFICIENT = 0.8
A330−200 WV020	230 900 kg (509 050 lb)	25 170 kg (55 500 lb)	21% MAC (a)	39 570 kg (87 225 lb)	109 290 kg (240 950 lb)	37.5% MAC (a)	35 880 kg (79 100 lb)	87 430 kg (192 750 lb)
A330−200 WV021	230 900 kg (509 050 lb)	25 170 kg (55 500 lb)	21% MAC (a)	39 570 kg (87 225 lb)	109 290 kg (240 950 lb)	37.5% MAC (a)	35 880 kg (79 100 lb)	87 430 kg (192 750 lb)
A330−200 WV022	233 900 kg (515 650 lb)	25 170 kg (55 500 lb)	21.4% MAC (a)	39 750 kg (87 625 lb)	110 670 kg (243 975 lb)	37.4% MAC (a)	36 350 kg (80 150 lb)	88 540 kg (195 200 lb)
A330−200 WV023	233 900 kg (515 650 lb)	25 170 kg (55 500 lb)	21.4% MAC (a)	39 750 kg (87 625 lb)	110 670 kg (243 975 lb)	37.4% MAC (a)	36 350 kg (80 150 lb)	88 540 kg (195 200 lb)
A330−200 WV024	202 900 kg (447 325 lb)	24 220 kg (53 400 lb)	18% MAC (a)	36 990 kg (81 550 lb)	96 300 kg (212 300 lb)	38.4% MAC (a)	31 530 kg (69 500 lb)	77 040 kg (169 850 lb)
A330−200 WV025	220 900 kg (487 000 lb)	25 160 kg (55 475 lb)	19.57% MAC (a)	38 980 kg (85 925 lb)	104 650 kg (230 725 lb)	37.8% MAC (a)	34 330 kg (75 675 lb)	83 720 kg (184 575 lb)
A330−200 WV026	192 900 kg (425 275 lb)	23 050 kg (50 825 lb)	18% MAC (a)	35 240 kg (77 700 lb)	91 670 kg (202 100 lb)	38.8% MAC (a)	29 980 kg (66 100 lb)	73 330 kg (161 675 lb)
A330−200 WV027	220 900 kg (487 000 lb)	25 160 kg (55 475 lb)	19.57% MAC (a)	38 980 kg (85 925 lb)	104 650 kg (230 725 lb)	37.8% MAC (a)	34 330 kg (75 675 lb)	83 720 kg (184 575 lb)

NOTE:
(a) LOADS CALCULATED USING AIRCRAFT AT MRW

F_AC_070300_1_0010101_01_03

Maximum Pavement Loads
(Sheet 1 of 2)
FIGURE-7-3-0-991-001-A01

**ON A/C A330-200

1	2	3		4	5		6	
		VNG			VMG (PER STRUT)		H (PER STRUT)	
MODEL	MAXIMUM RAMP WEIGHT	STATIC LOAD AT MOST FWD C.G.		STATIC BRAKING @ 10 ft/s² DECELERATION	STATIC LOAD AT MAX AFT C.G.		STEADY BRAKING @ 10 ft/s² DECELERATION	AT INSTANTANEOUS BRAKING COEFFICIENT = 0.8
A330−200 WV050	230 900 kg (509 050 lb)	25 170 kg (55 500 lb)	21% MAC (a)	39 570 kg (87 225 lb)	109 290 kg (240 950 lb)	37.5% MAC (a)	35 880 kg (79 100 lb)	87 430 kg (192 750 lb)
A330−200 WV051	192 900kg (425 275 lb)	23 050 kg (50 825 lb)	18% MAC (a)	35 240 kg (77 700 lb)	91 670 kg (202 100 lb)	38.8% MAC (a)	29 980 kg (66 100 lb)	73 330 kg (161 675 lb)
A330−200 WV052	233 900 kg (515 650 lb)	25 170 kg (55 500 lb)	21.4% MAC (a)	39 750 kg (87 625 lb)	110 670 kg (243 975 lb)	37.4% MAC (a)	36 350 kg (80 150 lb)	88 540 kg (195 200 lb)
A330−200 WV053	210 900 kg (464 950 lb)	25 150 kg (55 450 lb)	18% MAC (a)	38 390 kg (84 625 lb)	100 010 kg (220 475 lb)	38.1% MAC (a)	32 770 kg (72 250 lb)	80 010 kg (176 400 lb)
A330−200 WV054	230 900 kg (509 050 lb)	25 170 kg (55 500 lb)	21% MAC (a)	39 570 kg (87 225 lb)	109 290 kg (240 950 lb)	37.5% MAC (a)	35 880 kg (79 100 lb)	87 430 kg (192 750 lb)
A330−200 WV055	192 900 kg (425 275 lb)	23 050 kg (50 825 lb)	18% MAC (a)	35 240 kg (77 700 lb)	91 670 kg (202 100 lb)	38.8% MAC (a)	29 980 kg (66 100 lb)	73 330 kg (161 675 lb)
A330−200 WV056	233 900 kg (515 650 lb)	25 170 kg (55 500 lb)	21.4% MAC (a)	39 750 kg (87 625 lb)	110 670 kg (243 975 lb)	37.4% MAC (a)	36 350 kg (80 150 lb)	88 540 kg (195 200 lb)
A330−200 WV057	236 900 kg (522 275 lb)	25 170 kg (55 500 lb)	21.8% MAC (a)	39 910 kg (87 975 lb)	110 670 kg (243 975 lb)	33.7% MAC (a)	36 820 kg (81 175 lb)	88 540 kg (195 200 lb)
A330−200 WV058	238 900 kg (526 675 lb)	25 170 kg (55 500 lb)	22.06% MAC (a)	40 020 kg (88 225 lb)	110 670 kg (243 975 lb)	31.3% MAC (a)	37 130 kg (81 850 lb)	88 540 kg (195 200 lb)
A330−200 WV059	202 900 kg (447 325 lb)	24 220 kg (53 400 lb)	18% MAC (a)	36 990 kg (81 550 lb)	96 300 kg (212 300 lb)	38.4% MAC (a)	31 530 kg (69 500 lb)	77 040 kg (169 850 lb)
A330−200 WV060	220 900 kg (487 000 lb)	25 140 kg (55 425 lb)	19.6% MAC (a)	38 960 kg (85 900 lb)	104 650 kg (230 725 lb)	37.8% MAC (a)	34 330 kg (75 675 lb)	83 720 kg (184 575 lb)
A330−200 WV061	230 900 kg (509 050 lb)	25 170 kg (55 500 lb)	21% MAC (a)	39 570 kg (87 225 lb)	109 290 kg (240 950 lb)	37.5% MAC (a)	35 880 kg (79 100 lb)	87 430 kg (192 750 lb)

NOTE:
(a) LOADS CALCULATED USING AIRCRAFT AT MRW

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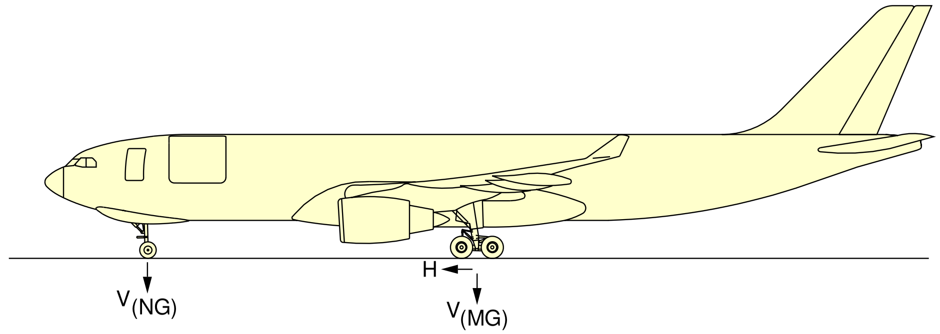
Maximum Pavement Loads
(Sheet 2 of 2)
FIGURE-7-3-0-991-001-A01

**ON A/C A330-200F



$V_{(NG)}$ 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	2	3		4	5		6	
		VNG			VMG (PER STRUT)		H (PER STRUT)	
MODEL	MAXIMUM RAMP WEIGHT	STATIC LOAD AT MOST FWD C.G.		STATIC BRAKING @ 10 ft/s² DECELERATION	STATIC LOAD AT MAX AFT C.G.		STEADY BRAKING @ 10 ft/s² DECELERATION	AT INSTANTANEOUS BRAKING COEFFICIENT = 0.8
A330−200F WV000	233 900 kg (515 650 lb)	25 170 kg (55 500 lb)	21.4% MAC (a)	39 750 kg (87 625 lb)	110 670 kg (243 975 lb)	37.4% MAC (a)	36 350 kg (80 150 lb)	88 540 kg (195 200 lb)
A330−200F WV001	227 900 kg (502 425 lb)	25 150 kg (55 450 lb)	20.6% MAC (a)	39 380 kg (86 825lb)	107 900 kg (237 875 lb)	37.6% MAC (a)	35 420 kg (78 100 lb)	86 320 kg (190 300 lb)
A330−200F WV002	233 900 kg (515 650 lb)	25 170 kg (55 500 lb)	21.4% MAC (a)	39 750 kg (87 625 lb)	110 670 kg (243 975 lb)	37.4% MAC (a)	36 350 kg (80 150 lb)	88 540 kg (195 200 lb)

NOTE:
(a) LOADS CALCULATED USING AIRCRAFT AT MRW

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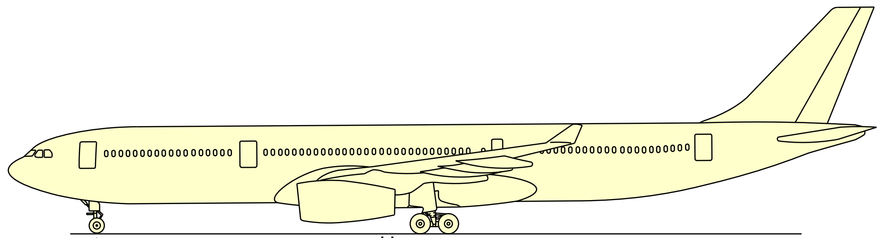
Maximum Pavement Loads
FIGURE-7-3-0-991-006-A01

**ON A/C A330-300



$V_{(NG)}$ 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	2	3		4	5		6	
		VNG			VMG (PER STRUT)		H (PER STRUT)	
MODEL	MAXIMUM RAMP WEIGHT	STATIC LOAD AT MOST FWD C.G.		STATIC BRAKING @ 10 ft/s² DECELERATION	STATIC LOAD AT MAX AFT C.G.		STEADY BRAKING @ 10 ft/s² DECELERATION	AT INSTANTANEOUS BRAKING COEFFICIENT = 0.8
A330−300 WV000	212 900 kg (469 375 lb)	24 340 kg (53 650 lb)	15% MAC (a)	35 930 kg (79 200 lb)	100 970 kg (222 600 lb)	36.5% MAC (a)	33 090 kg (72 950 lb)	80 780 kg (178 100 lb)
A330−300 WV001	184 900 kg (407 625 lb)	21 200 kg (46 750 lb)	15% MAC (a)	31 370 kg (69 150 lb)	88 620 kg (195 375 lb)	40.1% MAC (a)	28 730 kg (63 350 lb)	70 900 kg (156 300 lb)
A330−300 WV002	212 900 kg (469 375 lb)	24 340 kg (53 650 lb)	15% MAC (a)	35 930 kg (79 200 lb)	100 970 kg (222 600 lb)	36.5% MAC (a)	33 090 kg (72 950 lb)	80 780 kg (178 100 lb)
A330−300 WV003	215 900 kg (475 975 lb)	24 670 kg (54 400 lb)	15% MAC (a)	36 410 kg (80 275 lb)	101 860 kg (224 575 lb)	34.8% MAC (a)	33 550 kg (73 975 lb)	81 490 kg (179 650 lb)
A330−300 WV004	209 900 kg (462 750 lb)	24 000 kg (52 900 lb)	15% MAC (a)	35 440 kg (78 125 lb)	100 430 kg (221 400 lb)	39.4% MAC (a)	32 620 kg (71 925 lb)	80 340 kg (177 125 lb)
A330−300 WV004	215 900 kg (475 975 lb)	24 670 kg (54 400 lb)	15% MAC (a)	36 410 kg (80 275 lb)	103 250 kg (227 625 lb)	39.2% MAC (a)	33 550 kg (73 975 lb)	82 600 kg (182 100 lb)
A330−300 WV010	217 900 kg (480 375 lb)	24 900 kg (54 900 lb)	15% MAC (a)	36 740 kg (81 000 lb)	102 390 kg (225 725 lb)	33.5% MAC (a)	33 860 kg (74 650 lb)	81 910 kg (180 575 lb)
A330−300 WV010	217 900 kg (480 375 lb)	24 900 kg (54 900 lb)	15% MAC (a)	36 740 kg (81 000 lb)	104 180 kg (229 675 lb)	39.13% MAC (a)	33 860 kg (74 650 lb)	83 350 kg (183 750 lb)

NOTE:
(a) LOADS CALCULATED USING AIRCRAFT AT MRW

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Maximum Pavement Loads
(Sheet 1 of 2)
FIGURE-7-3-0-991-003-A01

**ON A/C A330-300

1	2	3		4	5		6	
		VNG			VMG (PER STRUT)		H (PER STRUT)	
MODEL	MAXIMUM RAMP WEIGHT	STATIC LOAD AT MOST FWD C.G.		STATIC BRAKING @ 10 ft/s² DECELERATION	STATIC LOAD AT MAX AFT C.G.		STEADY BRAKING @ 10 ft/s² DECELERATION	AT INSTANTANEOUS BRAKING COEFFICIENT = 0.8
A330−300 WV011	212 900 kg (469 375 lb)	24 340 kg (53 650 lb)	15% MAC (a)	35 930 kg (79 200 lb)	101 840 kg (224 525 lb)	39.3% MAC (a)	33 090 kg (72 950 lb)	81 470 kg (179 600 lb)
A330−300 WV012	218 900 kg (482 600 lb)	25 010 kg (55 150 lb)	15% MAC (a)	36 900 kg (81 350 lb)	104 650 kg (230 725 lb)	39.1% MAC (a)	34 020 kg (75 000 lb)	83 720 kg (184 575 lb)
A330−300 WV013	215 900 kg (475 975 lb)	24 670 kg (54 400 lb)	15% MAC (a)	36 410 kg (80 275 lb)	103 250 kg (227 625 lb)	39.2% MAC (a)	33 550 kg (73 975 lb)	82 600 kg (182 100 lb)
A330−300 WV014	205 900 kg (453 925 lb)	23 550 kg (51 925 lb)	15% MAC (a)	34 790 kg (76 700 lb)	98 570 kg (217 300 lb)	39.6% MAC (a)	32 000 kg (70 550 lb)	78 860 kg (173 850 lb)
A330−300 WV020	230 900 kg (509 050 lb)	24 340 kg (53 650 lb)	18% MAC (a)	36 940 kg (81 450 lb)	110 270 kg (243 100 lb)	38.7% MAC (a)	35 880 kg (79 100 lb)	88 220 kg (194 500 lb)
A330−300 WV022	233 900 kg (515 650 lb)	24 380 kg (53 750 lb)	18.4% MAC (a)	37 130 kg (81 850 lb)	111 670 kg (246 200 lb)	38.6% MAC (a)	36 350 kg (80 150 lb)	89 340 kg (196 950 lb)
A330−300 WV024	205 900 kg (453 925 lb)	23 550 kg (51 925 lb)	15% MAC (a)	34 790 kg (76 700 lb)	98 570 kg (217 300 lb)	39.6% MAC (a)	32 000 kg (70 550 lb)	78 860 kg (173 850 lb)
A330−300 WV025	217 900 kg (480 375 lb)	24 190 kg (53 325 lb)	16.11% MAC (a)	36 030 kg (79 425 lb)	104 180 kg (229 675 lb)	39.12% MAC (a)	33 860 kg (74 650 lb)	83 340 kg (183 725 lb)
A330−300 WV050	230 900 kg (509 050 lb)	24 340 kg (53 650 lb)	18% MAC (a)	36 840 kg (81 225 lb)	110 270 kg (243 100 lb)	38.7% MAC (a)	35 880 kg (79 100 lb)	88 220 kg (194 500 lb)
A330−300 WV051	212 900 kg (469 375 lb)	24 130 kg (53 200 lb)	15.33% MAC (a)	35 720 kg (78 750lb)	101 830 kg (224 500 lb)	39.29% MAC (a)	33 090 kg (72 950 lb)	81 470 kg (179 600 lb)
A330−300 WV052	233 900 kg (515 650 lb)	24 380 kg (53 750 lb)	18.4% MAC (a)	37 030 kg (81 625 lb)	111 670 kg (246 200 lb)	38.6% MAC (a)	36 350 kg (80 150 lb)	89 340 kg (196 950 lb)
A330−300 WV053	205 900 kg (453 925 lb)	23 550 kg (51 925 lb)	15% MAC (a)	34 790 kg (76 700 lb)	98 570 kg (217 300 lb)	39.6% MAC (a)	32 000 kg (70 550 lb)	78 860 kg (173 850 lb)
A330−300 WV054	235 900 kg (520 075 lb)	24 380 kg (53 750 lb)	18.7% MAC (a)	37 130 kg (81 850 lb)	111 670 kg (246 200 lb)	35.7% MAC (a)	36 660 kg (80 825 lb)	89 340 kg (196 950 lb)

NOTE:
(a) LOADS CALCULATED USING AIRCRAFT AT MRW

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Maximum Pavement Loads
(Sheet 2 of 2)
FIGURE-7-3-0-991-003-A01

7-4-0 Landing Gear Loading on Pavement

****ON A/C A330-200 A330-200F A330-300**

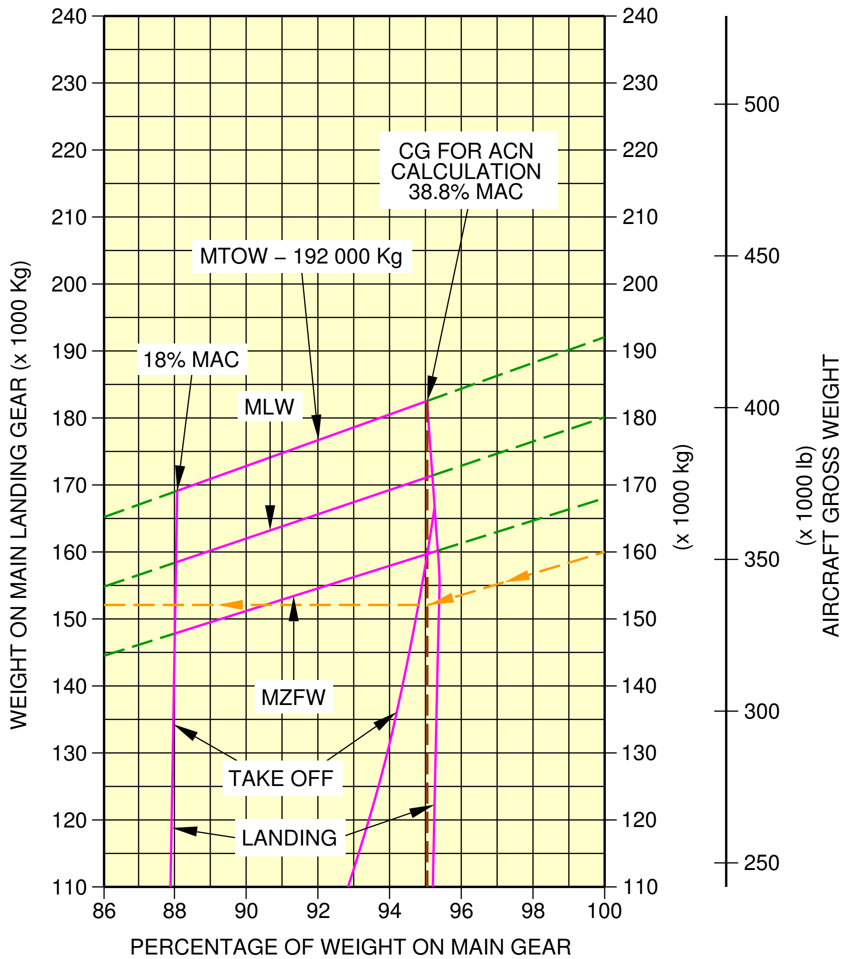
Landing Gear Loading on Pavement

1. This section gives data about the landing gear loading on pavement.
   The MLG loading on pavement graphs are given for the weight variants that produce (at the MRW and max aft CG) the lowest MLG load and the highest MLG load of each A/C type.

   Example, see FIGURE 7---0-99--001-A, calculation of the total weight on the MLG for:
   - An aircraft with a MRW of 192 900 kg (425 275 lb),
   - The aircraft gross weight is 160 000 kg (352 740 lb),
   - A percentage of weight on MLG of 95,0% (percentage of weight on MLG at MRW and CG max aft).

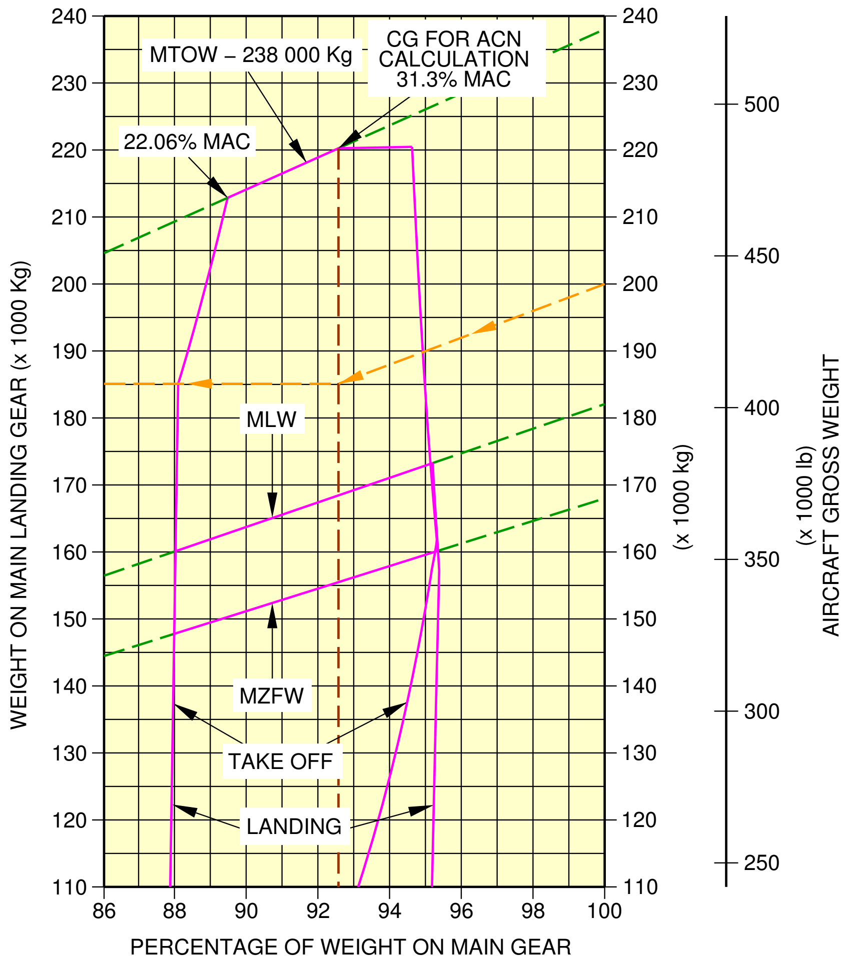
   The total weight on the MLG group is 152 060 kg (335 250 lb).

**ON A/C A330-200



Landing Gear Loading on Pavement
WV026, MRW 192 900 kg (Sheet 1 of 2)
FIGURE-7-4-0-991-001-A01

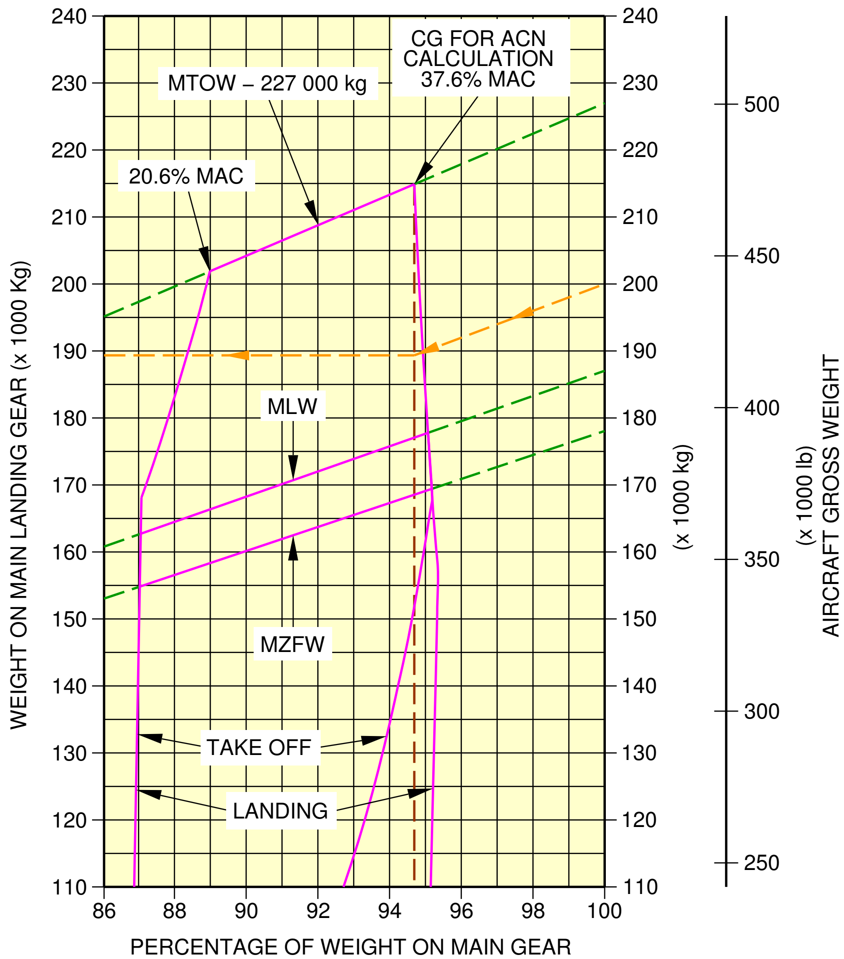
****ON A/C A330-200**



F_AC_070400_1_0010103_01_00

Landing Gear Loading on Pavement
WV058, MRW 238 900 kg (Sheet 2 of 2)
FIGURE-7-4-0-991-001-A01

**ON A/C A330-200F



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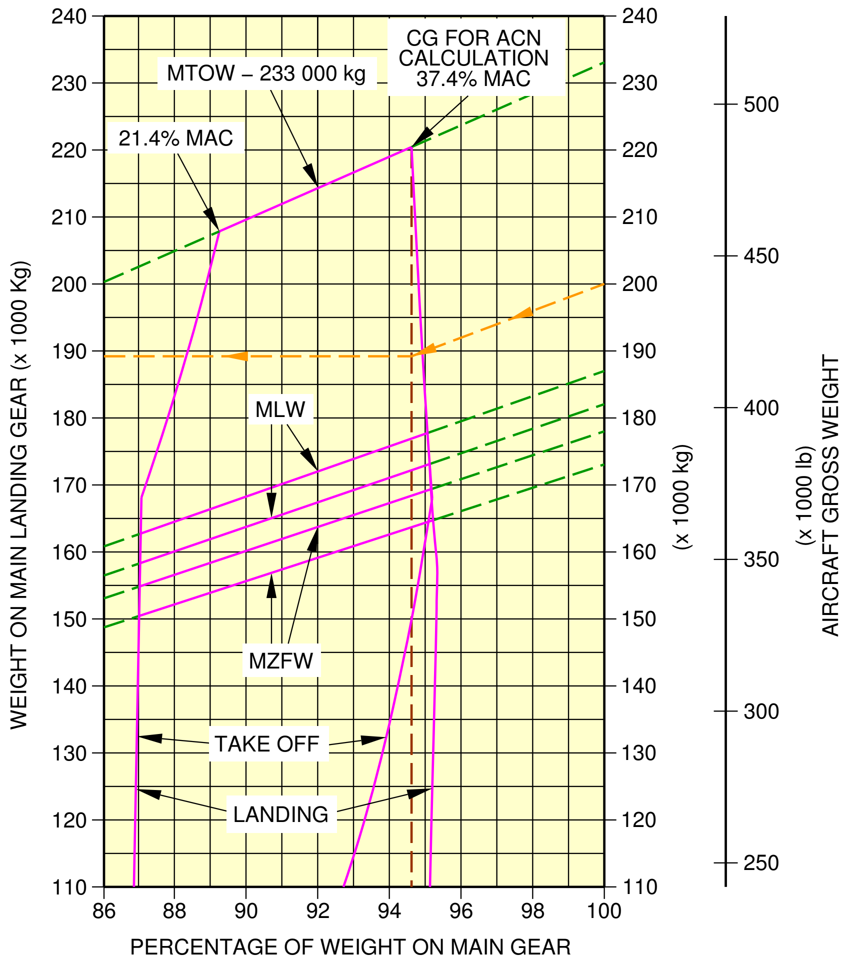
Landing Gear Loading on Pavement
WV001, MRW 227 900 kg (Sheet 1 of 2)
FIGURE-7-4-0-991-003-A01

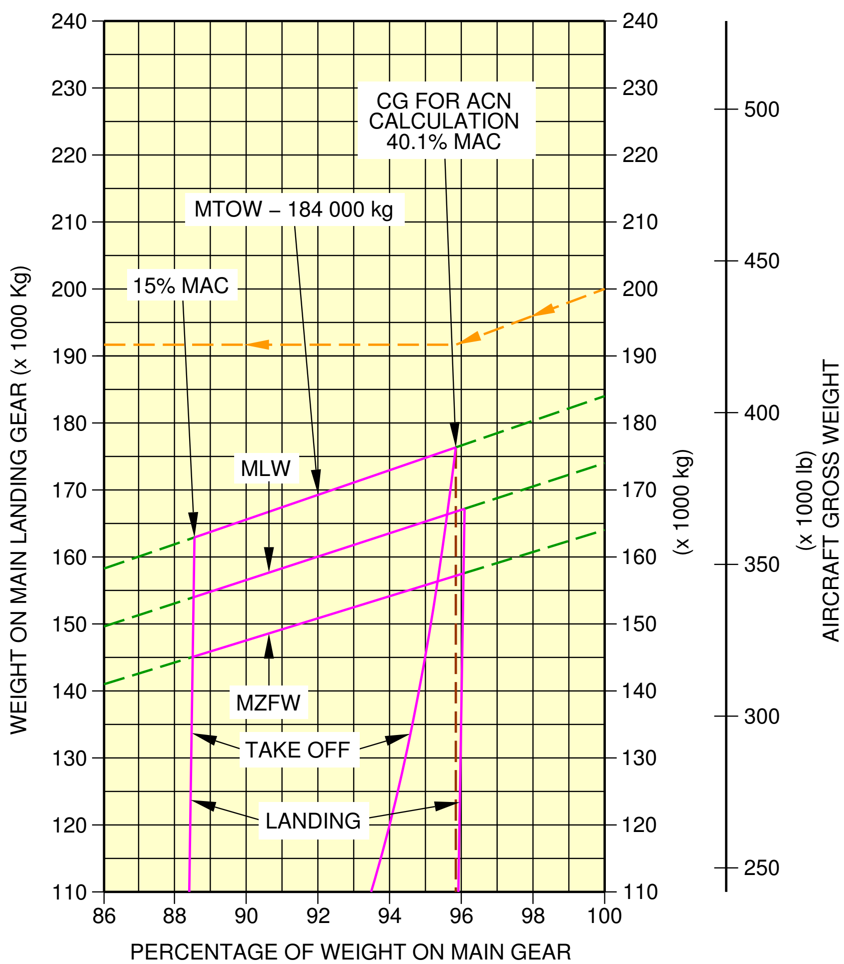
**ON A/C A330-200F



F_AC_070400_1_0030102_01_00

Landing Gear Loading on Pavement
WV000, MRW 233 900 kg (Sheet 2 of 2)
FIGURE-7-4-0-991-003-A01

****ON A/C A330-300**



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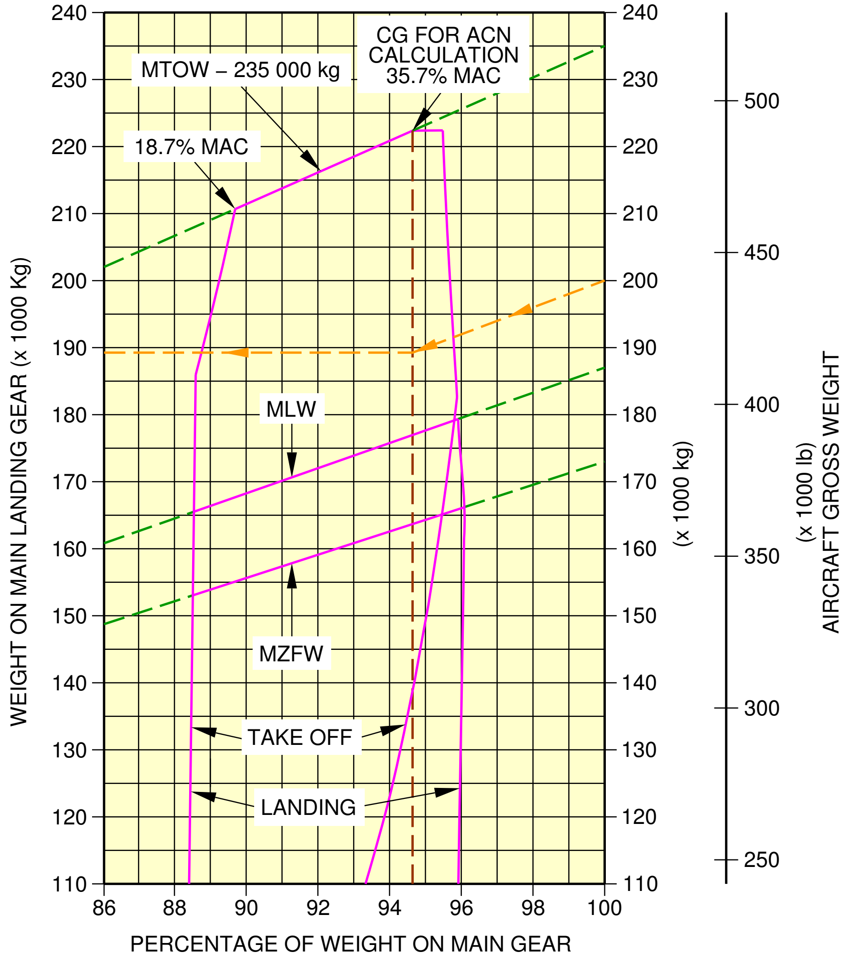
Landing Gear Loading on Pavement
WV001, MRW 184 900 kg (Sheet 1 of 2)
FIGURE-7-4-0-991-004-A01

**ON A/C A330-300



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Landing Gear Loading on Pavement
WV054, MRW 235 900 kg (Sheet 2 of 2)
FIGURE-7-4-0-991-004-A01

7-5-0 Flexible Pavement Requirements - U.S. Army Corps of Engineers Design Method

****ON A/C A330-200 A330-200F A330-300**

Flexible Pavement Requirements - US Army Corps of Engineers Design Method S-77-1

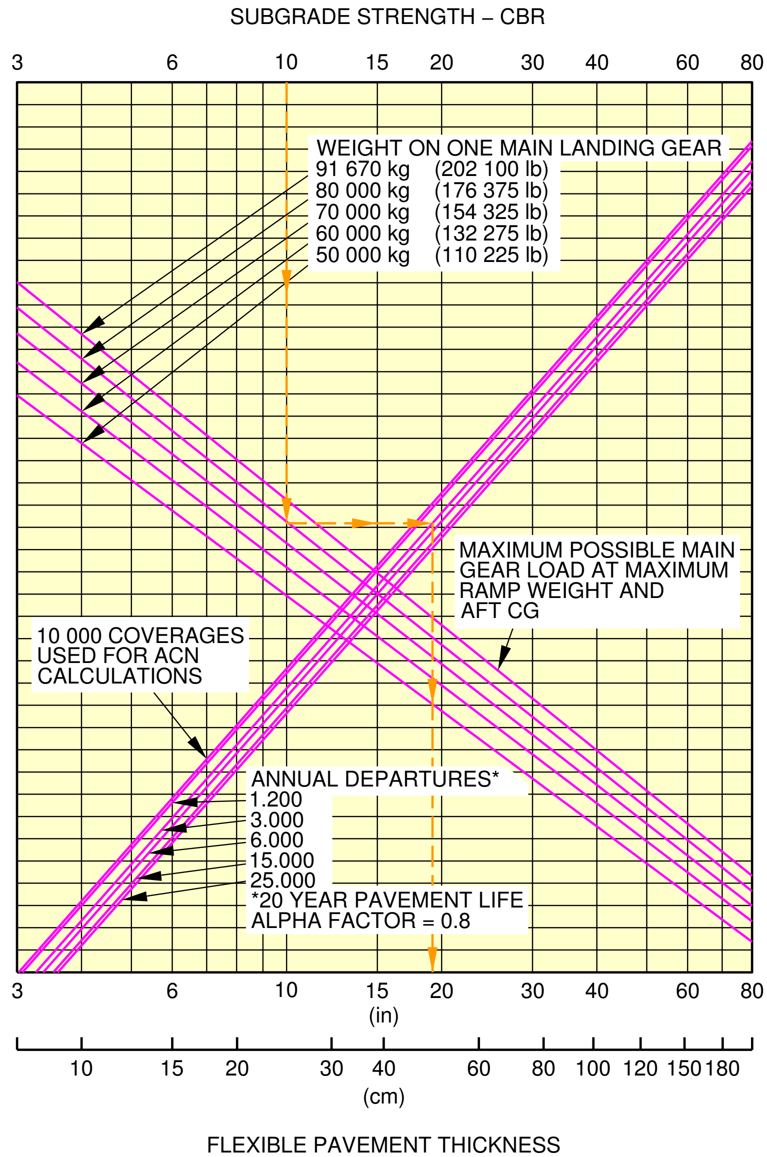
1. This section gives data about the flexible pavement requirements.
   The flexible pavement requirements graphs are given at standard tire pressure for the weight variants that produce (at the MRW and max aft CG) the lowest main MLG and the highest MLG load of each A/C type.
   They are calculated 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---0-99--002-A, calculation of the thickness of the flexible pavement for:
   - An aircraft with a MRW of 192 900 kg (425 275 lb),
   - A "CBR" value of 10,
   - An annual departure level of 3 000,
   - The load on one MLG of 80 000 kg (176 375 lb).

   The required flexible pavement thickness is 48.7 cm (19 in).

   NOTE : The CG in the figure title is the CG used for ACN / LCN calculation

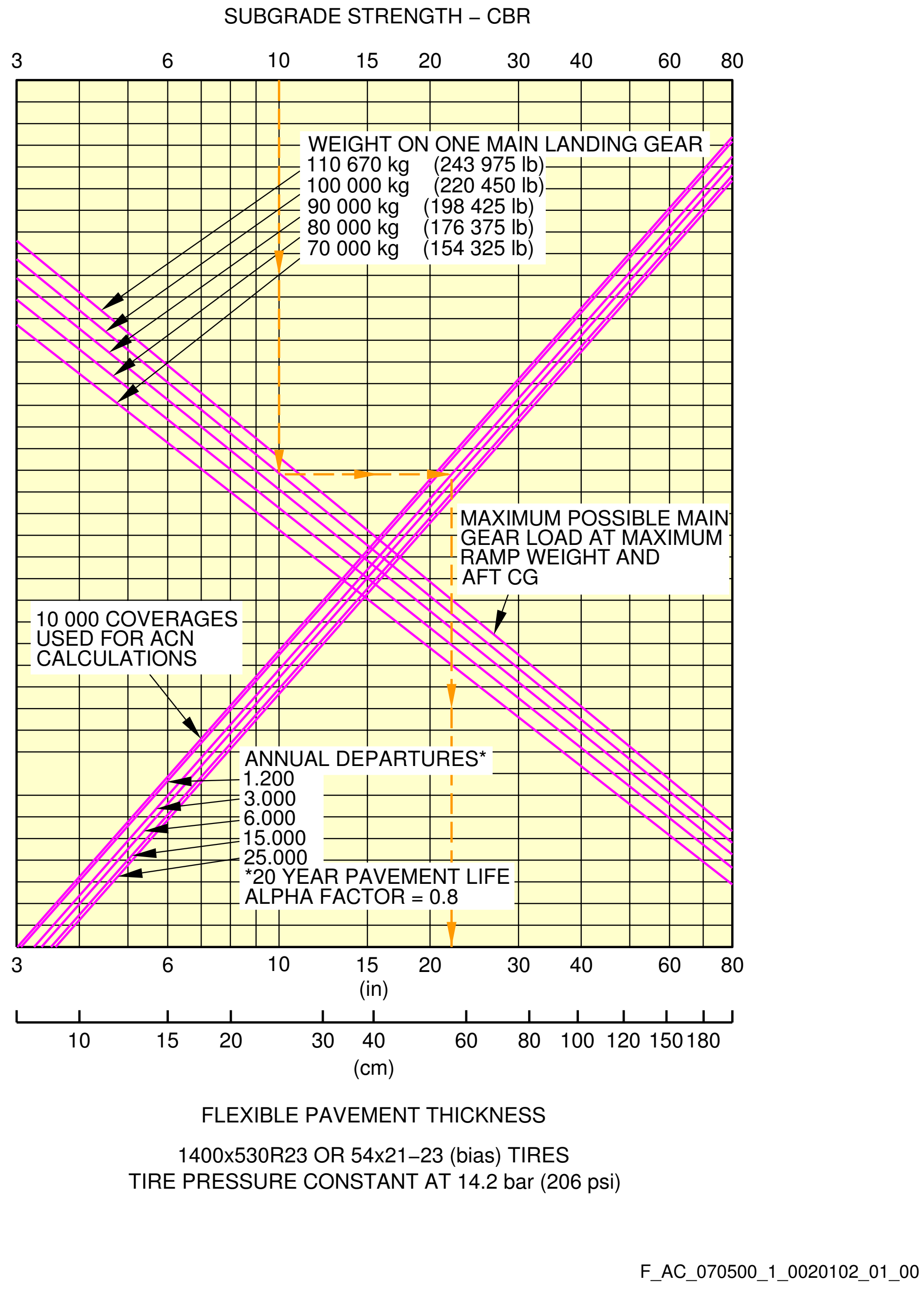
**ON A/C A330-200



F_AC_070500_1_0020101_01_00

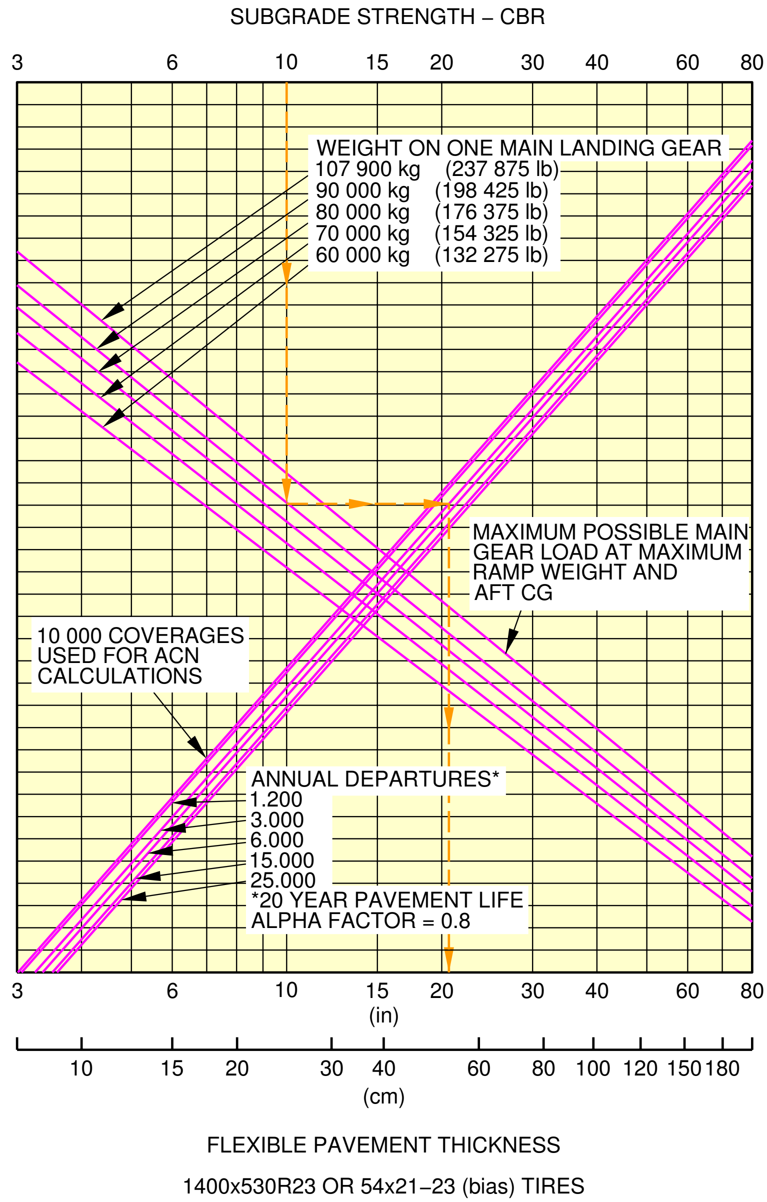
Flexible Pavement Requirements
WV026, MRW 192 900 kg, CG 38.8 % (Sheet 1 of 2)
FIGURE-7-5-0-991-002-A01

**ON A/C A330-200



Flexible Pavement Requirements
WV058, MRW 238 900 kg, CG 31.3 % (Sheet 2 of 2)
FIGURE-7-5-0-991-002-A01

**ON A/C A330-200F



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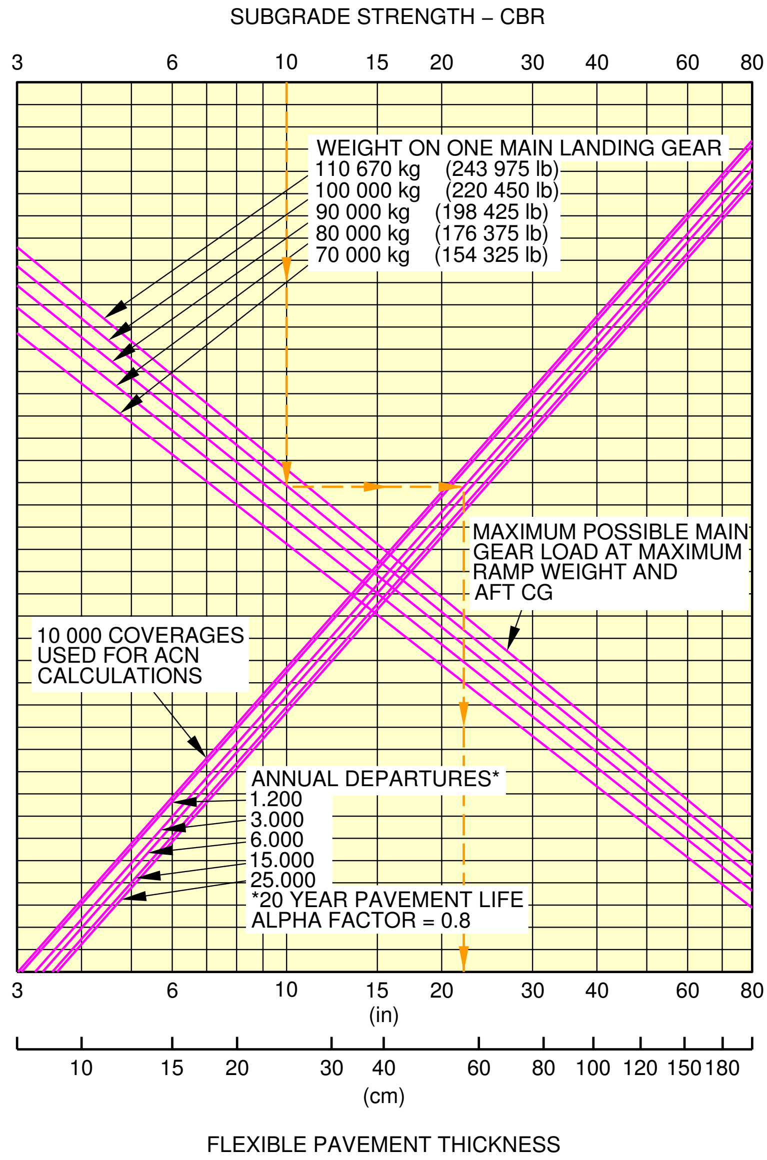
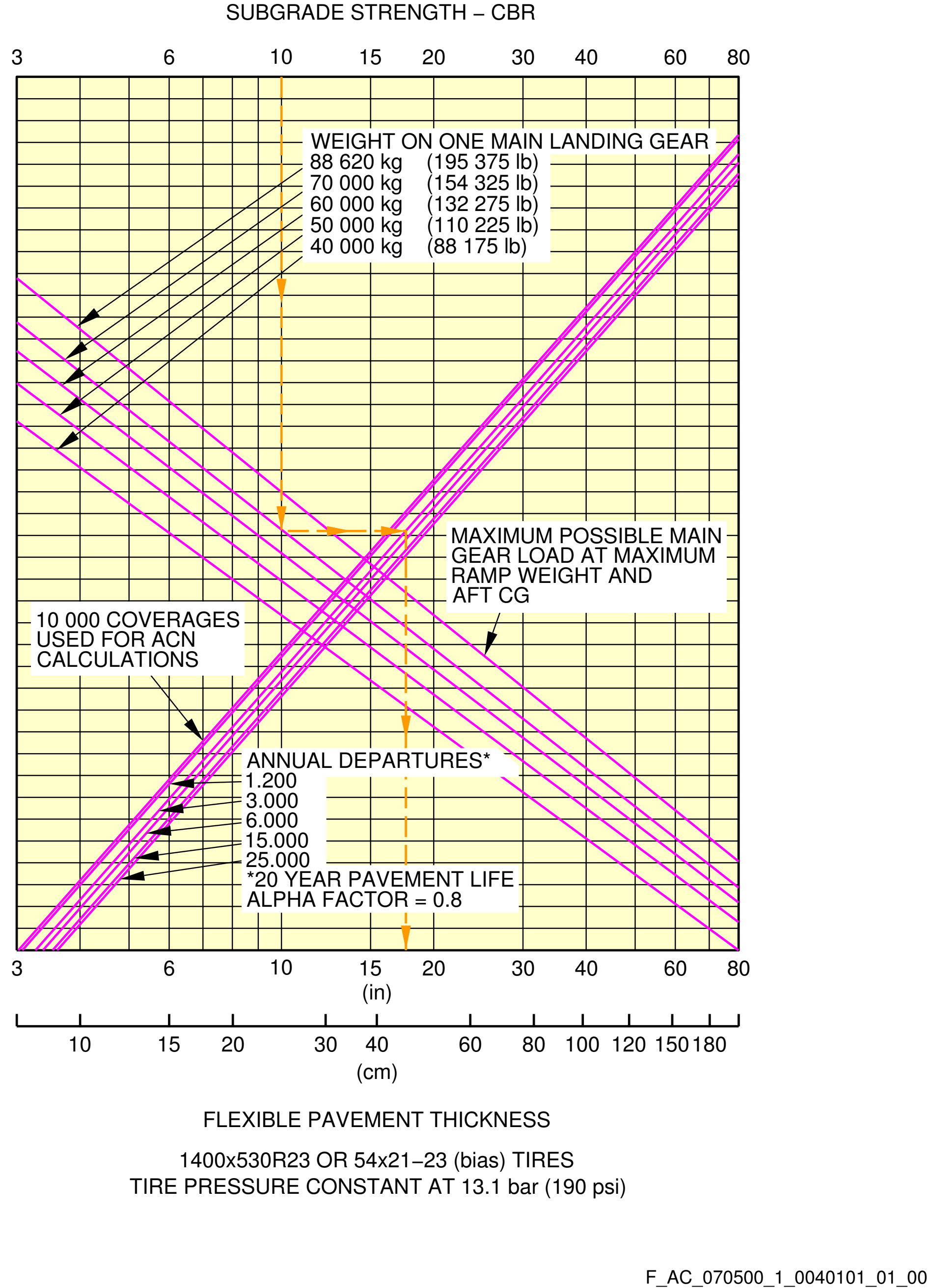
Flexible Pavement Requirements
WV001, MRW 227 900 kg, CG 37.6 % (Sheet 1 of 2)
FIGURE-7-5-0-991-003-A01

**ON A/C A330-200F



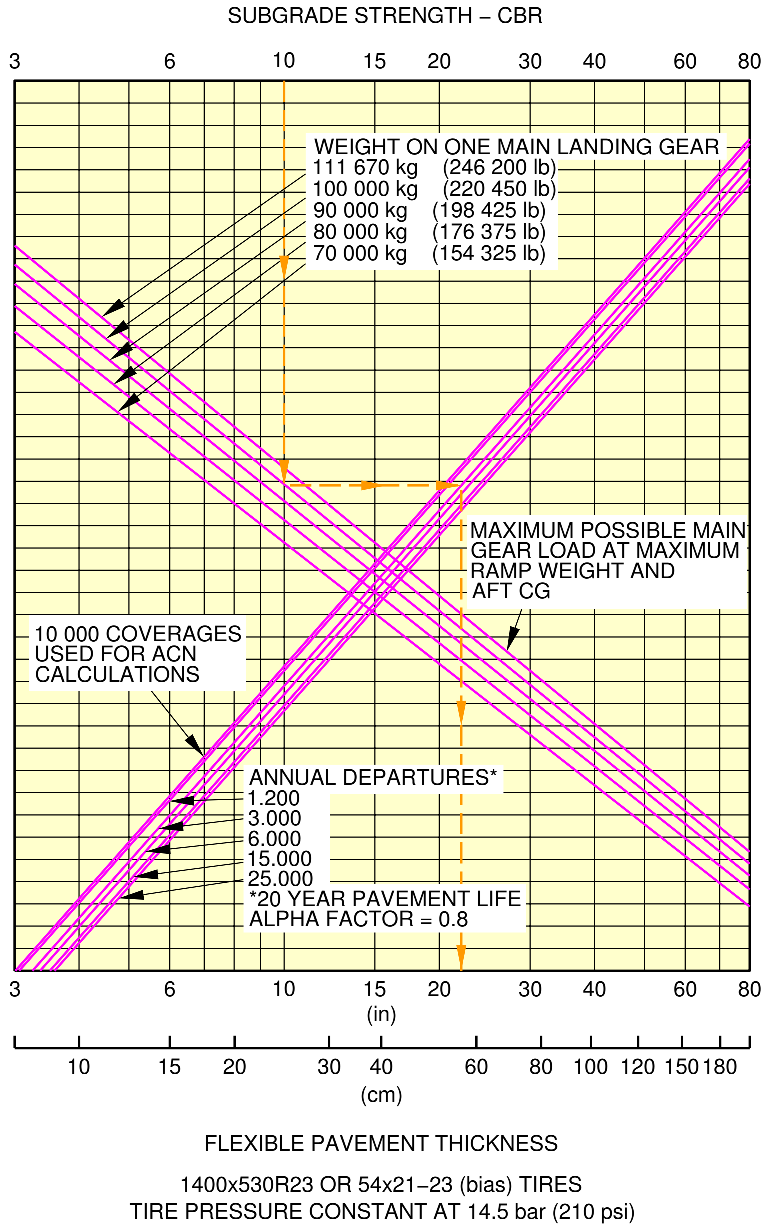
Flexible Pavement Requirements
WV000, MRW 233 900 kg, CG 37.4 % (Sheet 2 of 2)
FIGURE-7-5-0-991-003-A01

**ON A/C A330-300



Flexible Pavement Requirements
WV001, MRW 184 900 kg, CG 40.1 % (Sheet 1 of 2)
FIGURE-7-5-0-991-004-A01

**ON A/C A330-300



Flexible Pavement Requirements
WV054, MRW 235 900 kg, CG 35.7 % (Sheet 2 of 2)
FIGURE-7-5-0-991-004-A01

7-6-0 Flexible Pavement Requirements - LCN Conversion

****ON A/C A330-200 A330-200F A330-300**

Flexible Pavement Requirements - LCN Conversion

1. This section gives data about the flexible pavement requirements for Load Classification Number (LCN) conversion.
   The flexible pavement requirements graphs are given at standard tire pressure for the weight variants producing (at the MRW and max aft CG) the lowest MLG load and the highest MLG load of each A/C type.
   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---0-99--010-A, calculation of the thickness of the flexible pavement for:
   - An aircraft with a MRW of 192 900 kg (425 275 lb),
   - The flexible pavement thickness is 1143 mm (45 in) with a related LCN of 108.

   The weight on one MLG is 80 000 kg (176 375 lb).
2. Flexible Pavement Requirements - LCN table
   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 in) 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 figures that follow.

   NOTE : The CG in the figure title is the CG used for ACN / LCN calculation

**ON A/C A330-200

AIRCRAFT TYPE	ALL UP MASS (kg)	LOAD ON ONE MAIN GEAR LEG (%)	TIRE PRESSURE (Mpa)	FLEXIBLE PAVEMENT		
				ESWL		LCN
				x 1000 kg	x 1000 lb	
				h = 510 mm (20 in)		
A330−200 WV020	230 900	47.3	1.42	28	61	96
	120 000	47.2		14	31	54
A330−200 WV021	230 900	47.3	1.42	28	61	96
	120 000	47.2		14	31	54
A330−200 WV022	233 900	47.3	1.42	28	62	97
	120 000	47.2		14	31	54
A330−200 WV023	233 900	47.3	1.42	28	62	97
	120 000	47.2		14	31	54
A330−200 WV024	202 900	47.5	1.42	24	53	86
	120 000	47.3		14	31	54
A330−200 WV025	220 900	47.4	1.42	27	59	92
	120 000	47.2		14	31	54
A330−200 WV026	192 900	47.5	1.42	23	51	82
	120 000	47.4		14	31	54
A330−200 WV027	220 900	47.4	1.42	27	59	92
	120 000	47.2		14	31	54
A330−200 WV050	230 900	47.3	1.42	28	61	96
	120 000	47.2		14	31	54
A330−200 WV051	192 900	47.5	1.42	23	51	82
	120 000	47.4		14	31	54
A330−200 WV052	233 900	47.3	1.42	28	62	97
	120 000	47.2		14	31	54
A330−200 WV053	210 900	47.4	1.42	25	56	89
	120 000	47.3		14	31	54
A330−200 WV054	230 900	47.3	1.42	28	61	96
	120 000	47.2		14	31	54
A330−200 WV055	192 900	47.5	1.42	23	51	82
	120 000	47.4		14	31	54
A330−200 WV056	233 900	47.3	1.42	28	62	97
	120 000	47.2		14	31	54
A330−200 WV057	236 900	46.7	1.42	28	62	97
	120 000	46.6		14	31	53
A330−200 WV058	238 900	46.3	1.42	28	62	97
	120 000	46.2		14	31	53
A330−200 WV059	202 900	47.5	1.42	24	53	86
	120 000	47.3		14	31	54
A330−200 WV060	220 900	47.4	1.42	27	59	92
	120 000	47.2		14	31	54
A330−200 WV061	230 900	47.3	1.42	28	61	96
	120 000	47.2		14	31	54

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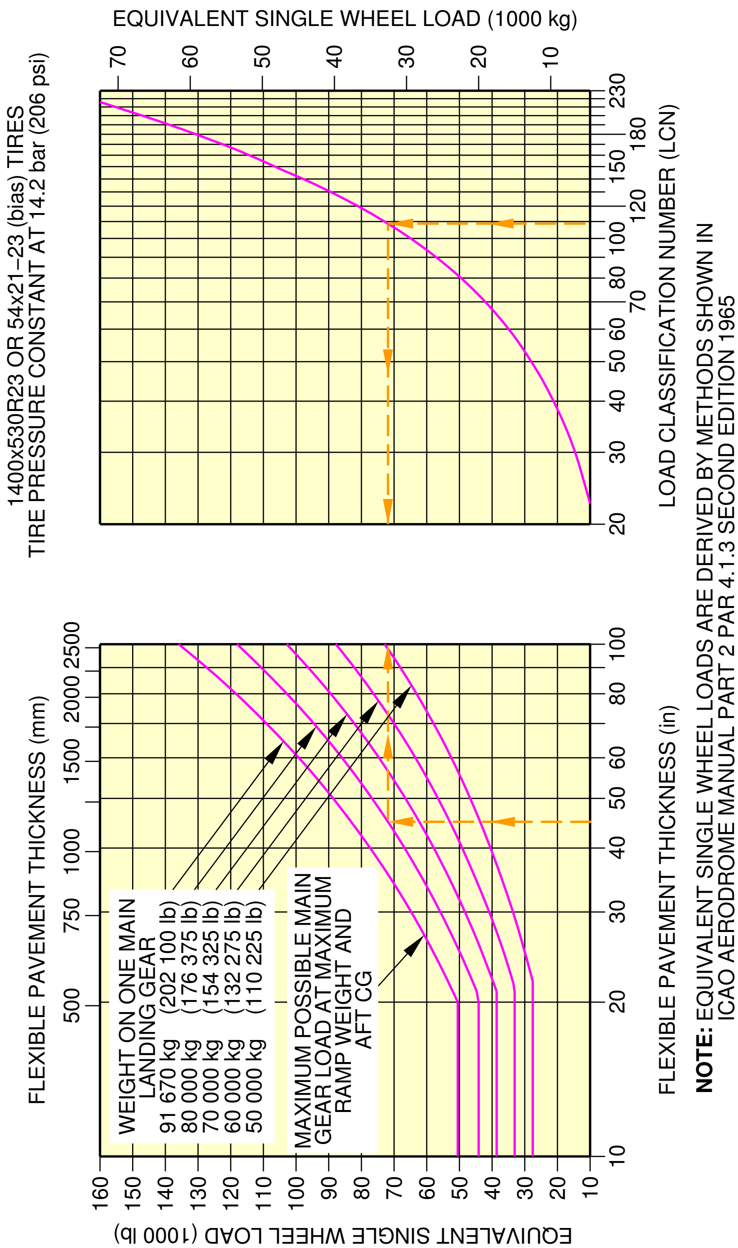
Flexible Pavement Requirements
LCN table
FIGURE-7-6-0-991-010-A01

**ON A/C A330-200



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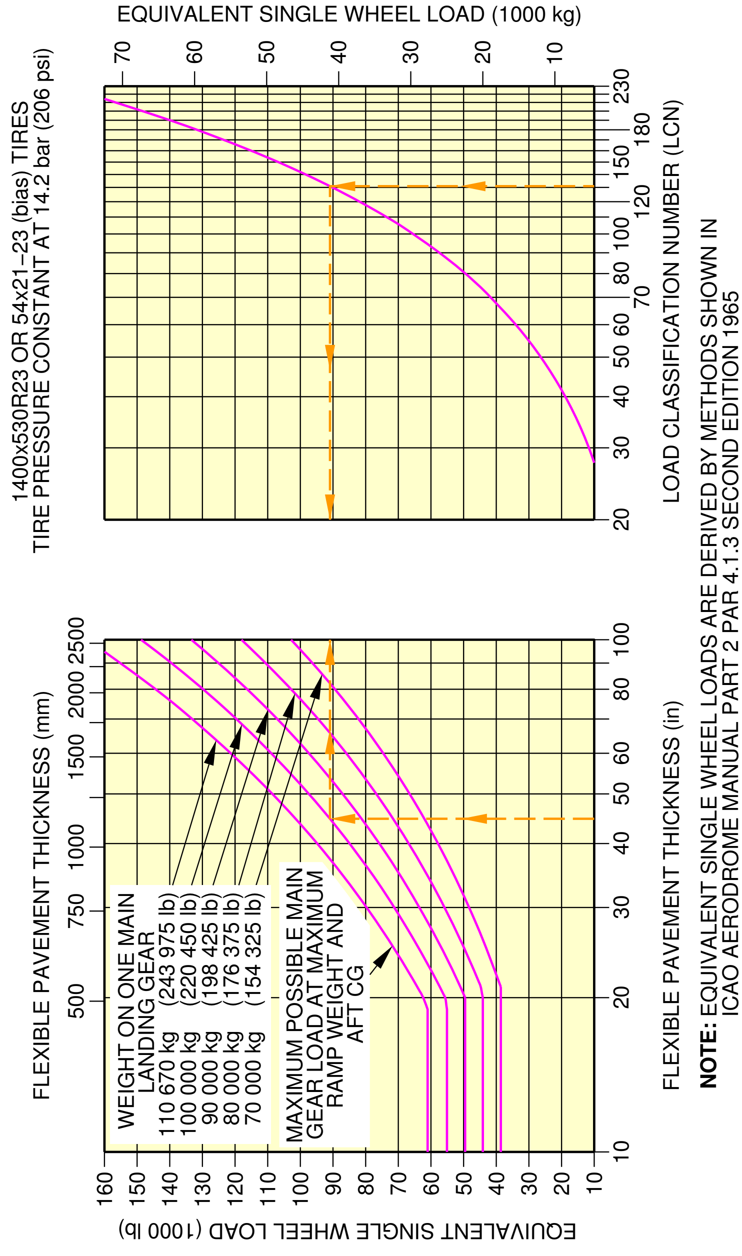
Flexible Pavement Requirements - LCN
WV026, MRW 192 900 kg, CG 38.8 % (Sheet 1 of 2)
FIGURE-7-6-0-991-001-A01

****ON A/C A330-200**



F_AC_070600_1_0010103_01_00

Flexible Pavement Requirements - LCN
WV058, MRW 238 900 kg, CG 31.3 % (Sheet 2 of 2)
FIGURE-7-6-0-991-001-A01

**ON A/C A330-200F

AIRCRAFT TYPE	ALL UP MASS (kg)	LOAD ON ONE MAIN GEAR LEG (%)	TIRE PRESSURE (Mpa)	FLEXIBLE PAVEMENT		
				ESWL		LCN
				x 1000 kg	x 1000 lb	
				h = 510 mm (20 in)		
A330−200F WV000	233 900	47.3	1.42	28	62	97
	120 000	47.2		14	31	54
A330−200F WV001	227 900	47.3	1.42	27	61	95
	120 000	47.2		14	31	54
A330−200F WV002	233 900	47.3	1.42	28	62	97
	120 000	47.2		14	31	54

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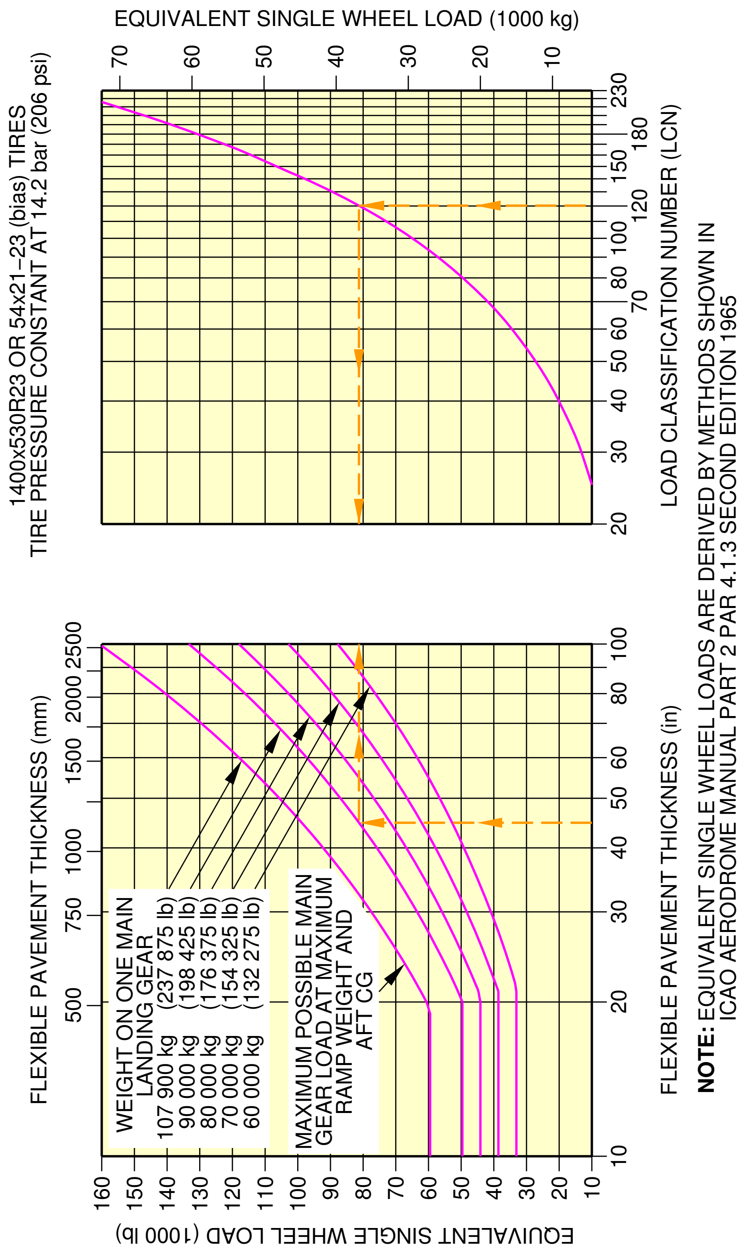
Flexible Pavement Requirements
LCN table
FIGURE-7-6-0-991-011-A01

**ON A/C A330-200F



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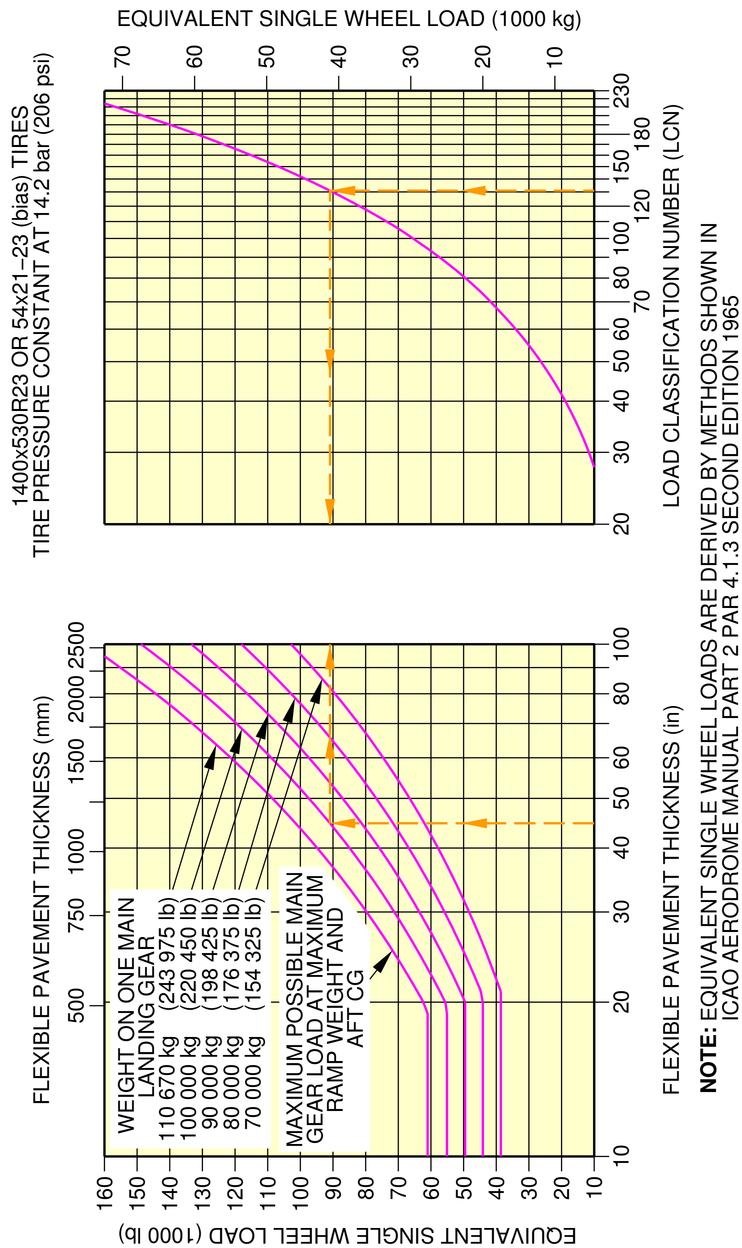
Flexible Pavement Requirements - LCN
WV001, MRW 227 900 kg, CG 37.6 % (Sheet 1 of 2)
FIGURE-7-6-0-991-002-A01

**ON A/C A330-200F



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Flexible Pavement Requirements - LCN
WV000, MRW 233 900 kg, CG 37.4 % (Sheet 2 of 2)
FIGURE-7-6-0-991-002-A01

**ON A/C A330-300

AIRCRAFT TYPE	ALL UP MASS (kg)	LOAD ON ONE MAIN GEAR LEG (%)	TIRE PRESSURE (Mpa)	FLEXIBLE PAVEMENT ESWL x 1000 kg	FLEXIBLE PAVEMENT ESWL x 1000 lb	FLEXIBLE PAVEMENT LCN
				h = 510 mm (20 in)		
A330−300 WV000	212 900	47.4	1.31	26	57	85
	125 000	47.3		15	33	54
A330−300 WV001	184 900	47.9	1.31	22	49	76
	125 000	47.9		15	33	54
A330−300 WV002	212 900	47.4	1.31	26	57	85
	125 000	47.3		15	33	54
A330−300 WV003	215 900	47.2	1.33	26	57	87
	125 000	47.1		15	32	54
A330−300 WV004 (209)	209 900	47.8	1.33	26	56	86
	125 000	47.8		15	33	55
A330−300 WV004 (215)	215 900	47.8	1.33	26	58	88
	125 000	47.7		15	33	55
A330−300 WV010	217 900	47.0	1.33	26	58	87
	125 000	46.9		15	32	54
A330−300 WV010b	217 900	47.8	1.33	27	59	88
	125 000	47.7		15	33	55
A330−300 WV011	212 900	47.8	1.33	26	57	87
	125 000	47.7		15	33	55
A330−300 WV012	218 900	47.8	1.33	27	59	89
	125 000	47.7		15	33	55
A330−300 WV013	215 900	47.8	1.33	26	58	88
	125 000	47.7		15	33	55
A330−300 WV014	205 900	47.9	1.33	25	55	84
	125 000	47.8		15	33	55
A330−300 WV020	230 900	47.8	1.42	28	62	96
	125 000	47.7		15	33	56
A330−300 WV022	233 900	47.7	1.45	28	63	99
	125 000	47.6		15	33	57
A330−300 WV024	205 900	47.9	1.42	25	55	87
	125 000	47.8		15	33	57
A330−300 WV025	217 900	47.8	1.42	26	58	92
	125 000	47.7		15	33	56
A330−300 WV050	230 900	47.8	1.45	28	62	98
	125 000	47.7		15	33	57
A330−300 WV051	212 900	47.8	1.45	26	57	91
	125 000	47.7		15	33	57
A330−300 WV052	233 900	47.7	1.45	28	63	99
	125 000	47.6		15	33	57
A330−300 WV053	205 900	47.9	1.45	25	55	88
	125 000	47.8		15	33	57
A330−300 WV054	235 900	47.3	1.45	28	63	99
	125 000	47.2		15	33	56
A330−300 WV055	235 900	42.1	1.45	25	55	89
	125 000	42.0		13	29	51

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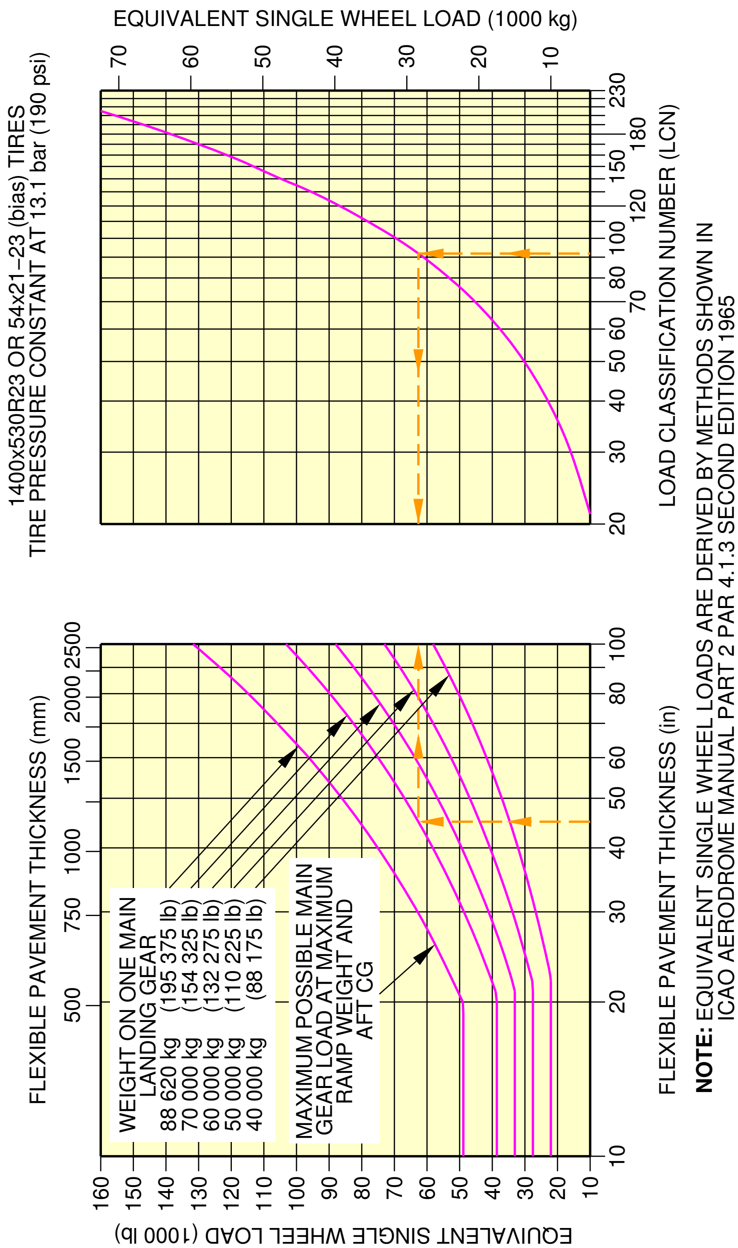
Flexible Pavement Requirements
LCN table
FIGURE-7-6-0-991-012-A01

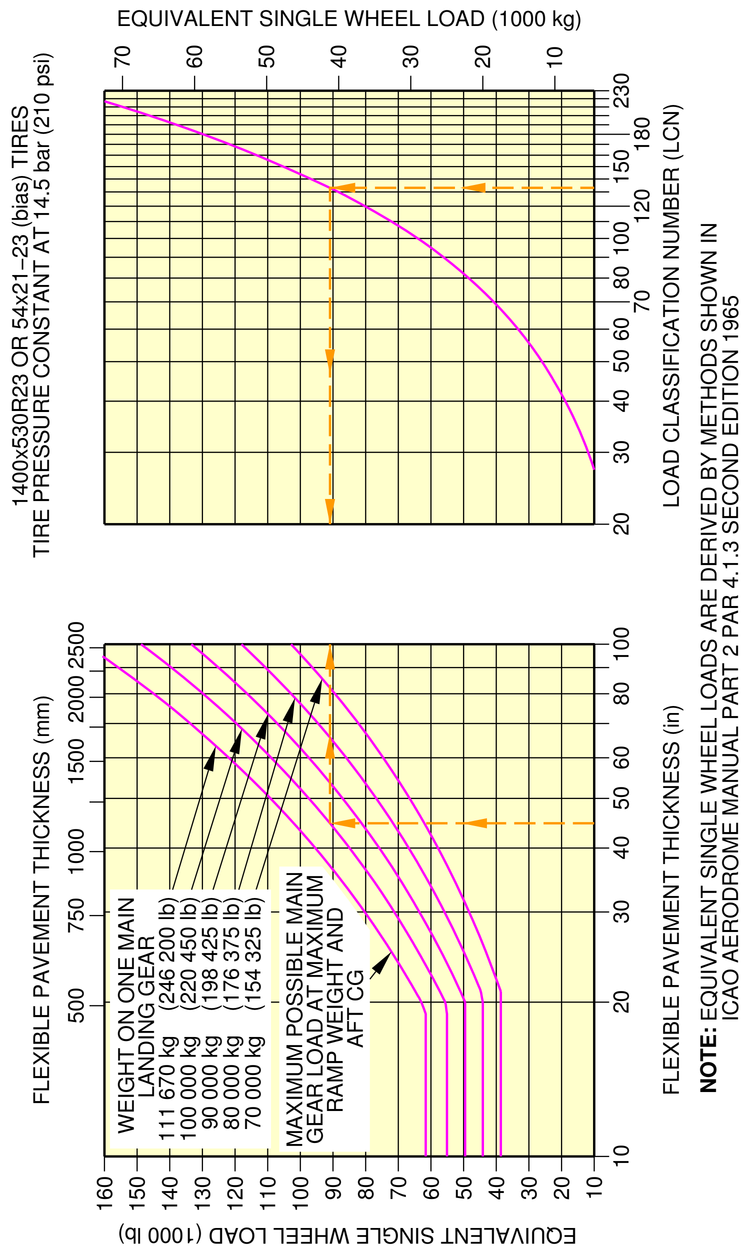
**ON A/C A330-300



F_AC_070600_1_0030101_01_00

Flexible Pavement Requirements - LCN
WV001, MRW 184 900 kg, CG 40.1 % (Sheet 1 of 2)
FIGURE-7-6-0-991-003-A01

**ON A/C A330-300



F_AC_070600_1_0030102_01_00

Flexible Pavement Requirements - LCN
WV054, MRW 235 900 kg, CG 35.7 % (Sheet 2 of 2)
FIGURE-7-6-0-991-003-A01

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

**ON A/C A330-200 A330-200F A330-300

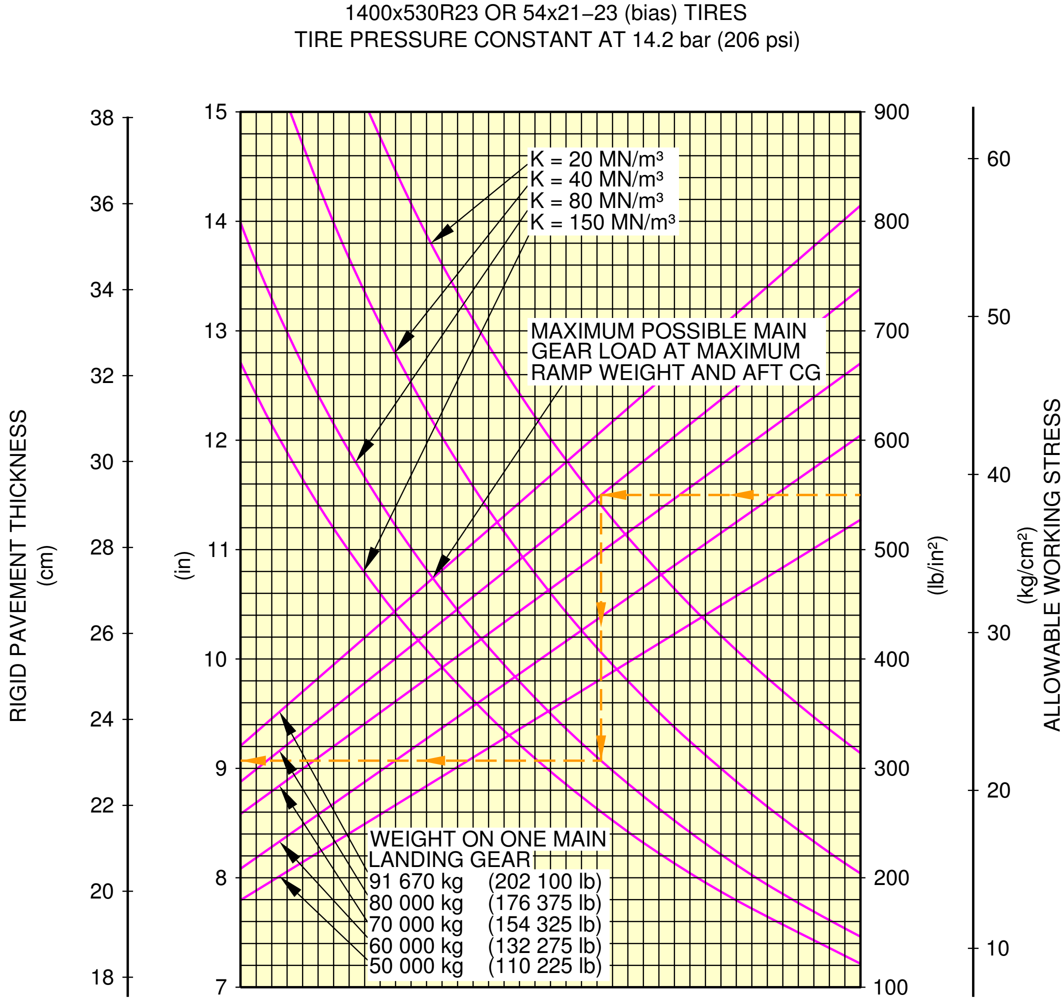
Rigid Pavement Requirements - Portland Cement Association Design Method

1. This section gives data about the rigid pavement requirements for the PCA (Portland Cement Association) design method.
   The rigid pavement requirements graphs are given at standard tire pressure for the weight variants producing (at the MRW and max aft CG) the lowest MLG load and the highest MLG load of each A/C type.
   To find a rigid pavement thickness, you must know the Subgrade Modulus (K), the permitted working stress and the weight on one 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---0-99--001-A, calculation of the thickness of the rigid pavement for:
   - An aircraft with a MRW of 192 900 kg (425 275 lb),
   - A k value of 80 MN/m3 (300 lbf/in3),
   - A permitted working stress of 38.67 kg/cm2 (550 lb/in2),
   - The load on one MLG is 80 000 kg (176 375 lb).
   The required rigid pavement thickness is 230 mm (9 in).

   NOTE : The CG in the figure title is the CG used for ACN / LCN calculation

**ON A/C A330-200



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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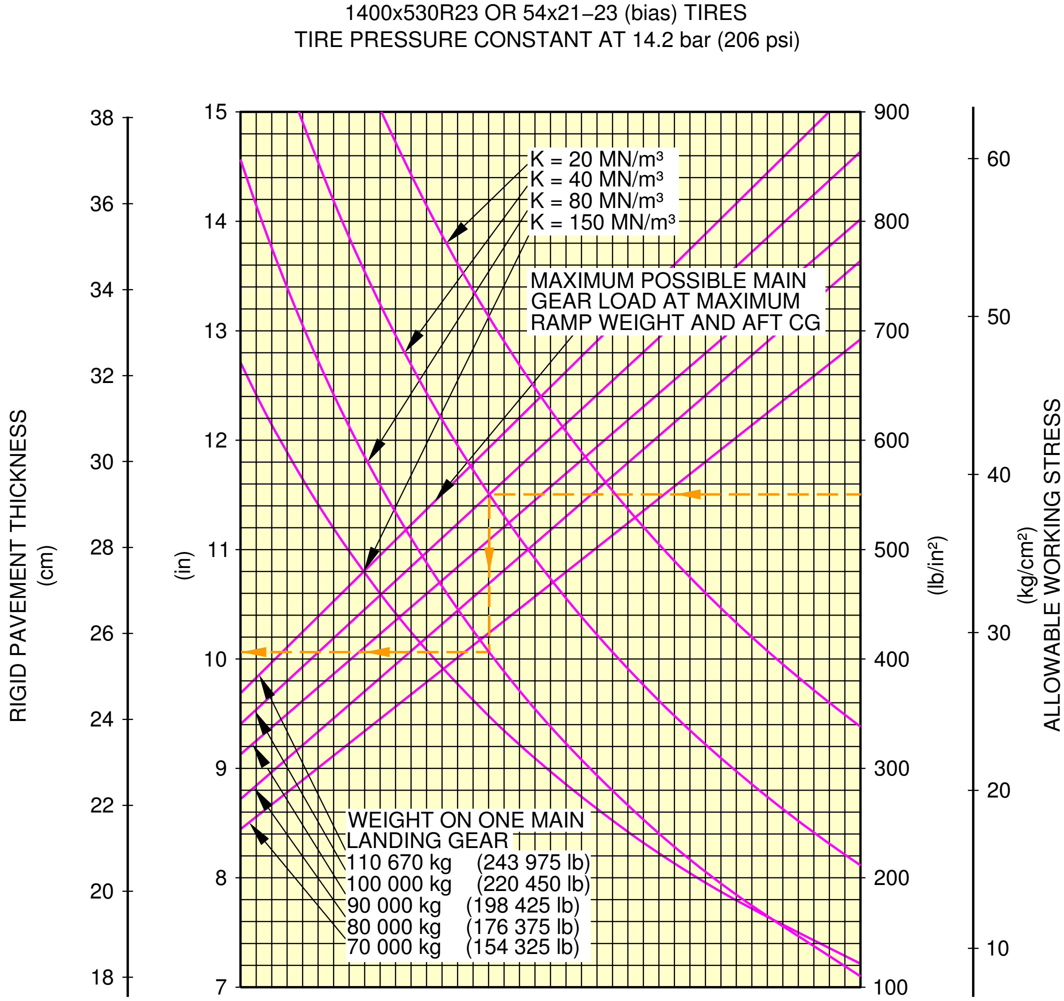
Rigid Pavement Requirements
WV026, MRW 192 900 kg, CG 38.8 % (Sheet 1 of 2)
FIGURE-7-7-0-991-001-A01

**ON A/C A330-200



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.

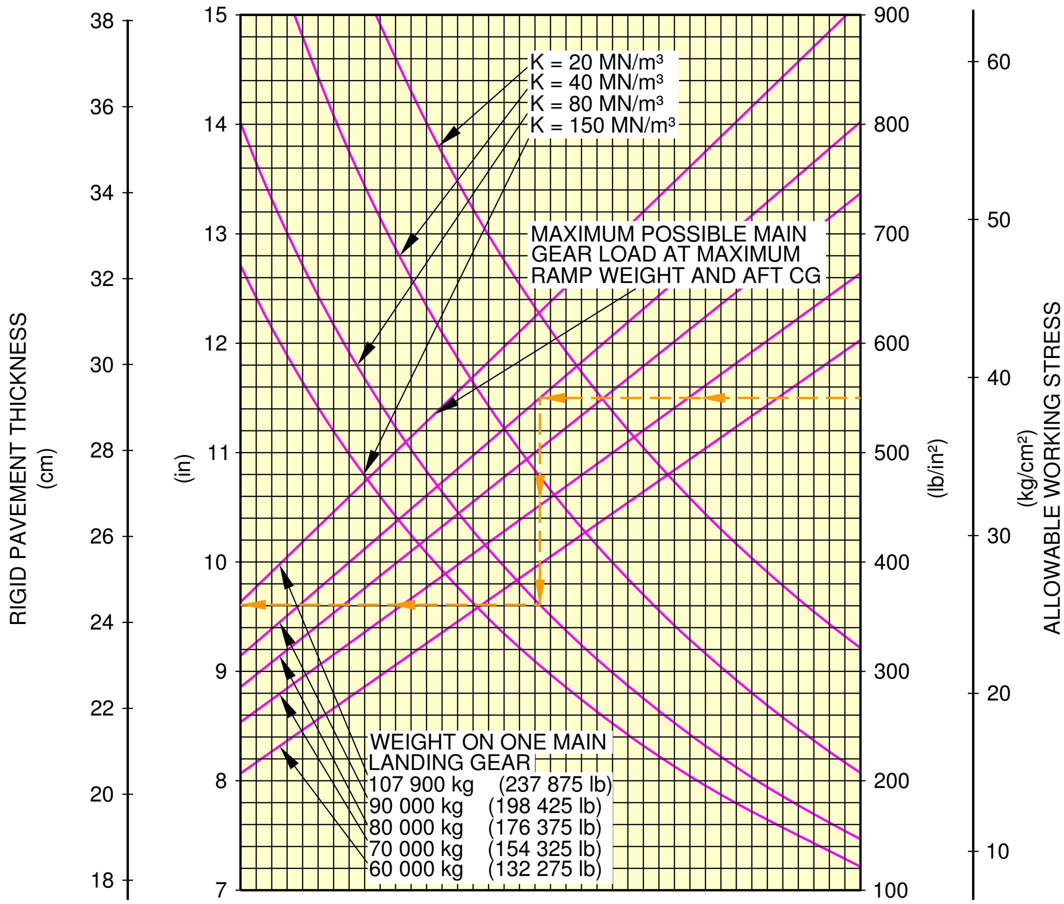
REFERENCE:
"DESIGN OF CONCRETE AIRPORT PAVEMENTS" AND "COMPUTER PROGRAM FOR AIRPORT PAVEMENT DESIGN – PROGRAM PDILB" PORTLAND CEMENT ASSOCIATION.

F_AC_070700_1_0010102_01_00

Rigid Pavement Requirements
WV058, MRW 238 900 kg, CG 31.3 % (Sheet 2 of 2)
FIGURE-7-7-0-991-001-A01

**ON A/C A330-200F

1400x530R23 OR 54x21–23 (bias) TIRES
TIRE PRESSURE CONSTANT AT 14.2 bar (206 psi)



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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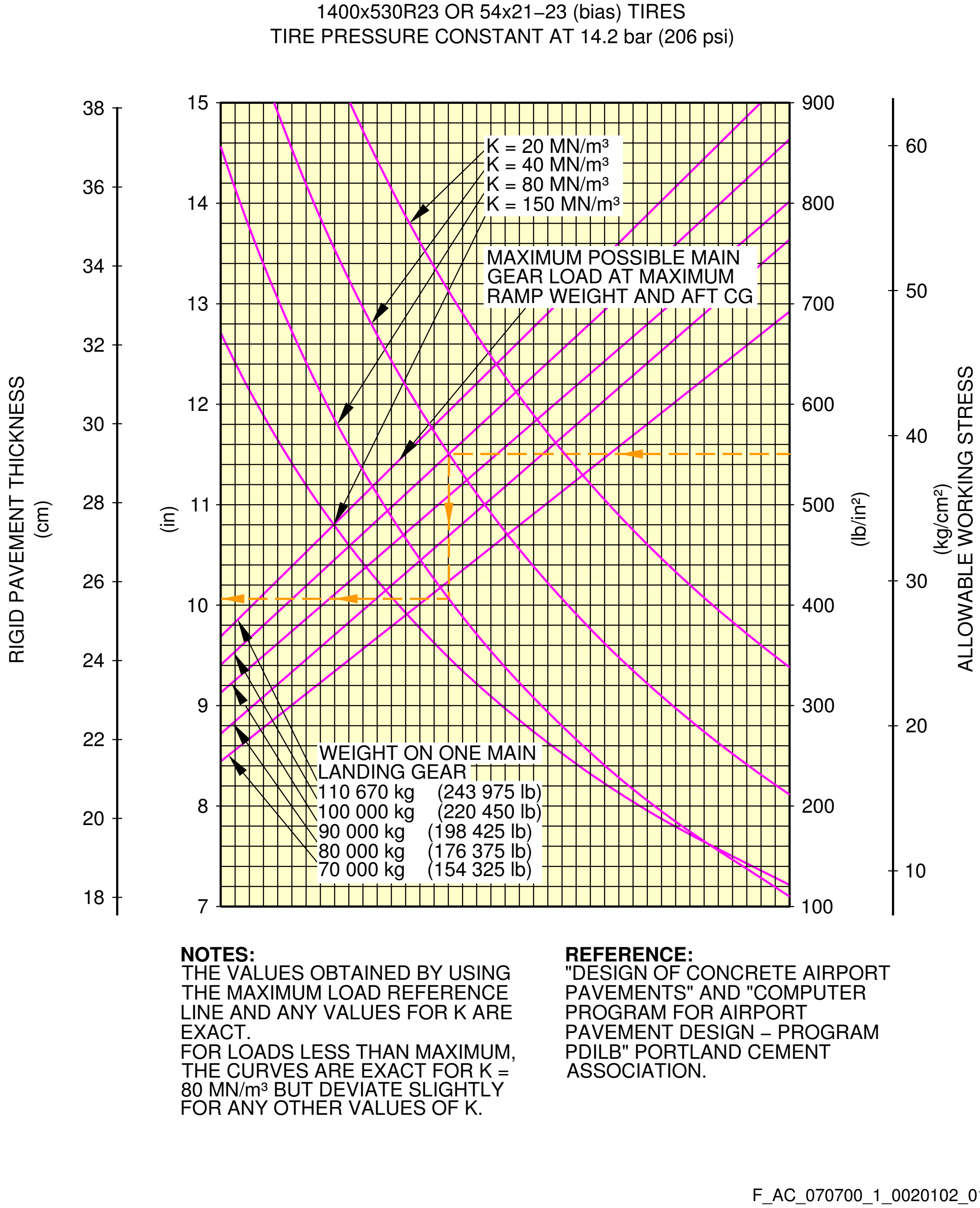
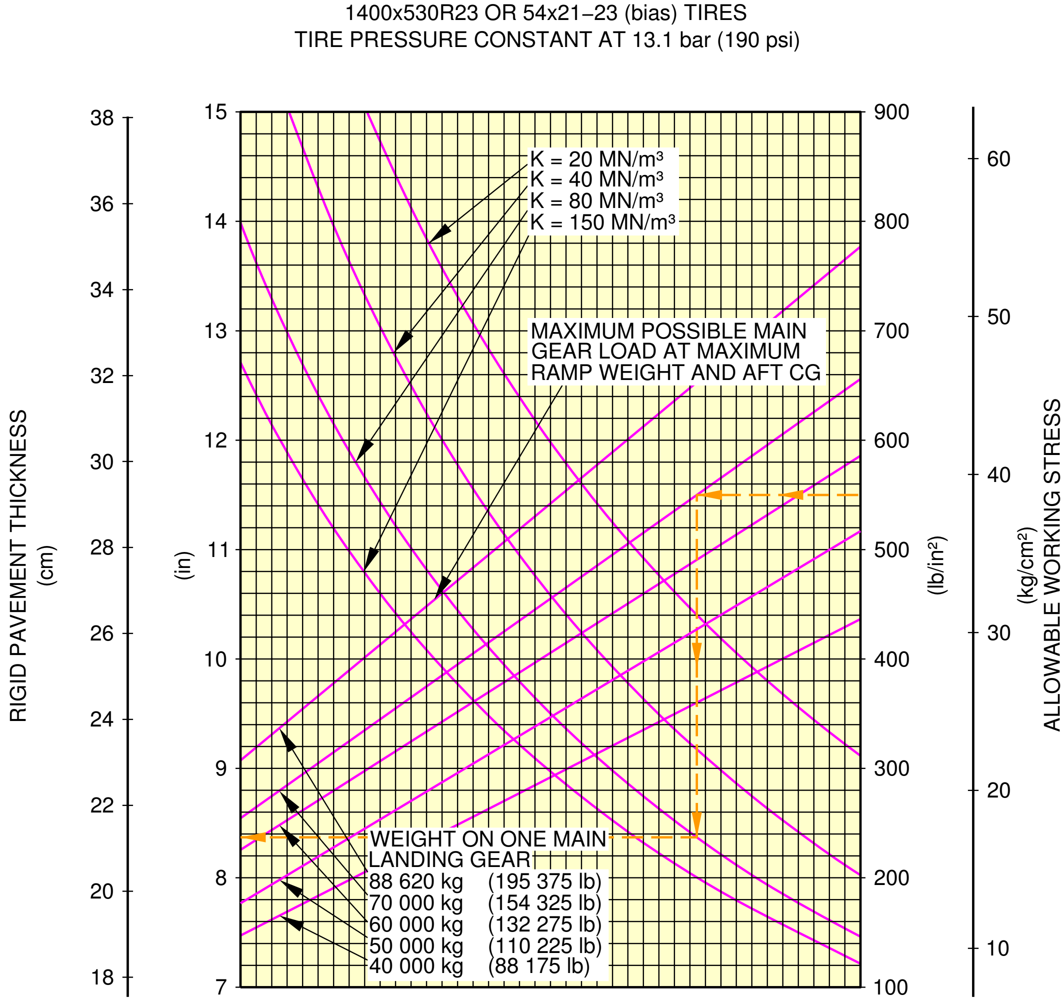
Rigid Pavement Requirements
WV001, MRW 227 900 kg, CG 37.6 % (Sheet 1 of 2)
FIGURE-7-7-0-991-002-A01

**ON A/C A330-200F



Rigid Pavement Requirements
WV000, MRW 233 900 kg, CG 37.4 % (Sheet 2 of 2)
FIGURE-7-7-0-991-002-A01

****ON A/C A330-300**



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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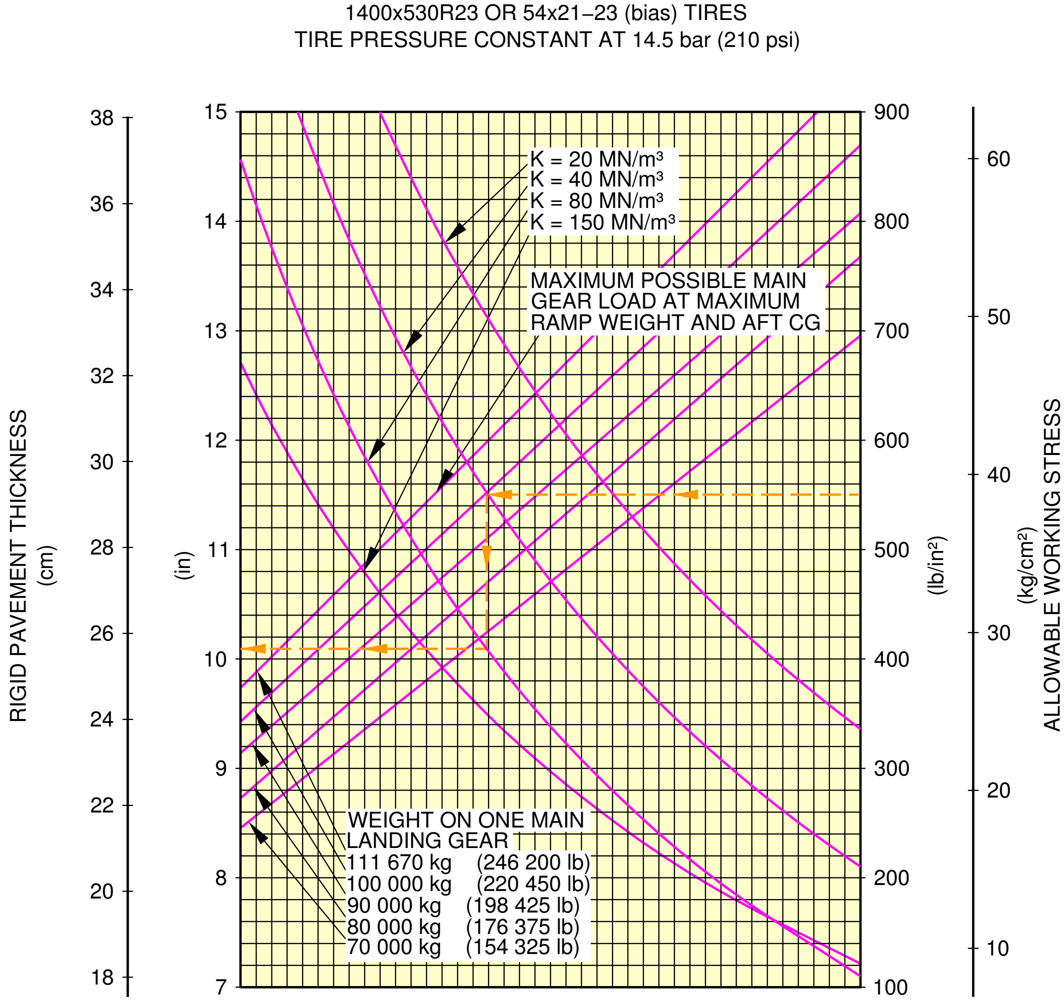
Rigid Pavement Requirements
WV001, MRW 184 900 kg, CG 40.1 % (Sheet 1 of 2)
FIGURE-7-7-0-991-003-A01

**ON A/C A330-300



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.

F_AC_070700_1_0030102_01_00

Rigid Pavement Requirements
WV054, MRW 235 900 kg, CG 35.7 % (Sheet 2 of 2)
FIGURE-7-7-0-991-003-A01

7-8-0 Rigid Pavement Requirements - LCN Conversion

****ON A/C A330-200 A330-200F A330-300**

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).
   The rigid pavement requirements graphs are given at standard tire pressure for the weight variants producing (at the MRW and max aft CG) the lowest MLG load and the highest MLG load of each A/C type.
   To find the aircraft weight that a rigid pavement can support, you must know the LCN of the pavement and the radius of relative stiffness (L).
   The calculation of the radius of relative stiffness (L) is done with the formula and the table given in "Radius of Relative Stiffness" (L values based on Young's Modulus (E) of 4 000 000 psi and Poisson's Ratio (μ) of 0.15), see FIGURE 7---0-99--001-A.

   Example, see FIGURE 7---0-99--004-A, calculation of the aircraft weight through the radius of relative stiffness (L) of the rigid pavement for:
   - An aircraft with a MRW of 192 900 kg (425 275 lb),
   - The radius of relative stiffness is shown at 1143 mm (45 in) with a related LCN of 83.

   The weight on one MLG is 80 000 kg (176 375 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 figures that follows.
2. Radius of Relative Stiffness (Other values of E and μ)
   This section gives data about the rigid pavement requirements for the Load Classification Number (LCN) conversion (radius of relative stiffness with other values of E (Young's modulus) and μ (Poisson's ratio).
   The other values of E and μ have an effect on the radius of relative stiffness value L.
   The effect of E and μ on the radius of relative stiffness value L is shown in the diagrams of FIGURE 7---0-99--014-A.
   The table in FIGURE 7---0-99--001-ARadius of Relative Stiffness, shows values L based on a Young's modulus (E) of 4 000 000 psi and a Poisson's ratio (μ) of 0.15.
   To find values L, you must know the values of E and μ.

Example, see FIGURE 7---0-99--014-A, calculation of values L of the rigid pavement for an E of 3 000 000 psi.
The "E" factor is 0.931.
The radius of relative stiffness value L is the value found in the table FIGURE 7---0-99--001-A multiplied by 0.931.

<u>NOTE</u> : The CG in the figure title is the CG used for ACN / LCN calculation

**ON A/C A330-200

AIRCRAFT TYPE	ALL UP MASS (kg)	LOAD ON ONE MAIN GEAR LEG (%)	TIRE PRESSURE (Mpa)	RGID PAVEMENT ESWL x 1000 kg	RGID PAVEMENT ESWL x 1000 lb	LCN
				L = 760 mm (30 in)		
A330−200 WV020	230 900	47.3	1.42	26	57	90
	120 000	47.2		13	29	49
A330−200 WV021	230 900	47.3	1.42	26	57	90
	120 000	47.2		13	29	49
A330−200 WV022	233 900	47.3	1.42	26	58	91
	120 000	47.2		13	29	49
A330−200 WV023	233 900	47.3	1.42	26	58	91
	120 000	47.2		13	29	49
A330−200 WV024	202 900	47.5	1.42	23	50	82
	120 000	47.3		13	29	50
A330−200 WV025	220 900	47.4	1.42	25	55	87
	120 000	47.2		13	29	49
A330−200 WV026	192 900	47.5	1.42	22	48	78
	120 000	47.4		13	29	50
A330−200 WV027	220 900	47.4	1.42	25	55	87
	120 000	47.2		13	29	49
A330−200 WV050	230 900	47.3	1.42	26	57	90
	120 000	47.2		13	29	49
A330−200 WV051	192 900	47.5	1.42	22	48	78
	120 000	47.4		13	29	50
A330−200 WV052	233 900	47.3	1.42	26	58	91
	120 000	47.2		13	29	49
A330−200 WV053	210 900	47.4	1.42	24	52	84
	120 000	47.3		13	29	49
A330−200 WV054	230 900	47.3	1.42	26	57	90
	120 000	47.2		13	29	49
A330−200 WV055	192 900	47.5	1.42	22	48	78
	120 000	47.4		13	29	50
A330−200 WV056	233 900	47.3	1.42	26	58	91
	120 000	47.2		13	29	49
A330−200 WV057	236 900	46.7	1.42	26	58	91
	120 000	46.6		13	29	49
A330−200 WV058	238 900	46.3	1.42	26	58	91
	120 000	46.2		13	29	48
A330−200 WV059	202 900	47.5	1.42	23	50	82
	120 000	47.3		13	29	50
A330−200 WV060	220 900	47.4	1.42	25	55	87
	120 000	47.2		13	29	49
A330−200 WV061	230 900	47.3	1.42	26	57	90
	120 000	47.2		13	29	49

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Rigid Pavement Requirements
LCN table
FIGURE-7-8-0-991-017-A01

**ON A/C A330-300

AIRCRAFT TYPE	ALL UP MASS (kg)	LOAD ON ONE MAIN GEAR LEG (%)	TIRE PRESSURE (Mpa)	RIGID PAVEMENT ESWL x 1000 kg	RIGID PAVEMENT ESWL x 1000 lb	RIGID PAVEMENT LCN
				L = 760 mm (30 in)		
A330−300 WV000	212 900	47.4	1.31	24	53	81
	125 000	47.3		14	31	50
A330−300 WV001	184 900	47.9	1.31	21	46	73
	125 000	47.9		14	31	51
A330−300 WV002	212 900	47.4	1.31	24	53	81
	125 000	47.3		14	31	50
A330−300 WV003	215 900	47.2	1.33	24	53	82
	125 000	47.1		14	31	50
A330−300 WV004 (209)	209 900	47.8	1.33	24	52	81
	125 000	47.8		14	31	51
A330−300 WV004 (215)	215 900	47.8	1.33	24	54	83
	125 000	47.7		14	31	51
A330−300 WV010	217 900	47.0	1.33	24	53	82
	125 000	46.9		14	30	50
A330−300 WV010b	217 900	47.8	1.33	25	54	83
	125 000	47.7		14	31	51
A330−300 WV011	212 900	47.8	1.33	24	53	82
	125 000	47.7		14	31	51
A330−300 WV012	218 900	47.8	1.33	25	55	84
	125 000	47.7		14	31	51
A330−300 WV013	215 900	47.8	1.33	24	54	83
	125 000	47.7		14	31	51
A330−300 WV014	205 900	47.9	1.33	23	51	80
	125 000	47.8		14	31	51
A330−300 WV020	230 900	47.8	1.42	26	58	91
	125 000	47.7		14	31	52
A330−300 WV022	233 900	47.7	1.45	26	58	93
	125 000	47.6		14	31	53
A330−300 WV024	205 900	47.9	1.42	23	51	83
	125 000	47.8		14	31	52
A330−300 WV025	217 900	47.8	1.42	25	54	87
	125 000	47.7		14	31	52
A330−300 WV050	230 900	47.8	1.45	26	58	92
	125 000	47.7		14	31	53
A330−300 WV051	212 900	47.8	1.45	24	53	86
	125 000	47.7		14	31	53
A330−300 WV052	233 900	47.7	1.45	26	58	93
	125 000	47.6		14	31	53
A330−300 WV053	205 900	47.9	1.45	23	51	84
	125 000	47.8		14	31	53
A330−300 WV054	235 900	47.3	1.45	26	58	93
	125 000	47.2		14	31	52

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Rigid Pavement Requirements
LCN table
FIGURE-7-8-0-991-017-B01

**ON A/C A330-200F

AIRCRAFT TYPE	ALL UP MASS (kg)	LOAD ON ONE MAIN GEAR LEG (%)	TIRE PRESSURE (Mpa)	RIGID PAVEMENT		
				ESWL		LCN
				x 1000 kg	x 1000 lb	
				L = 760 mm (30 in)		
A330−200F WV000	233 900	47.3	1.42	26	58	91
	120 000	47.2		13	29	49
A330−200F WV001	227 900	47.3	1.42	26	56	89
	120 000	47.2		13	29	49
A330−200F WV002	233 900	47.3	1.42	26	58	91
	120 000	47.2		13	29	49

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Rigid Pavement Requirements
LCN table
FIGURE-7-8-0-991-017-C01

**ON A/C A330-200 A330-200F A330-300

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/in³
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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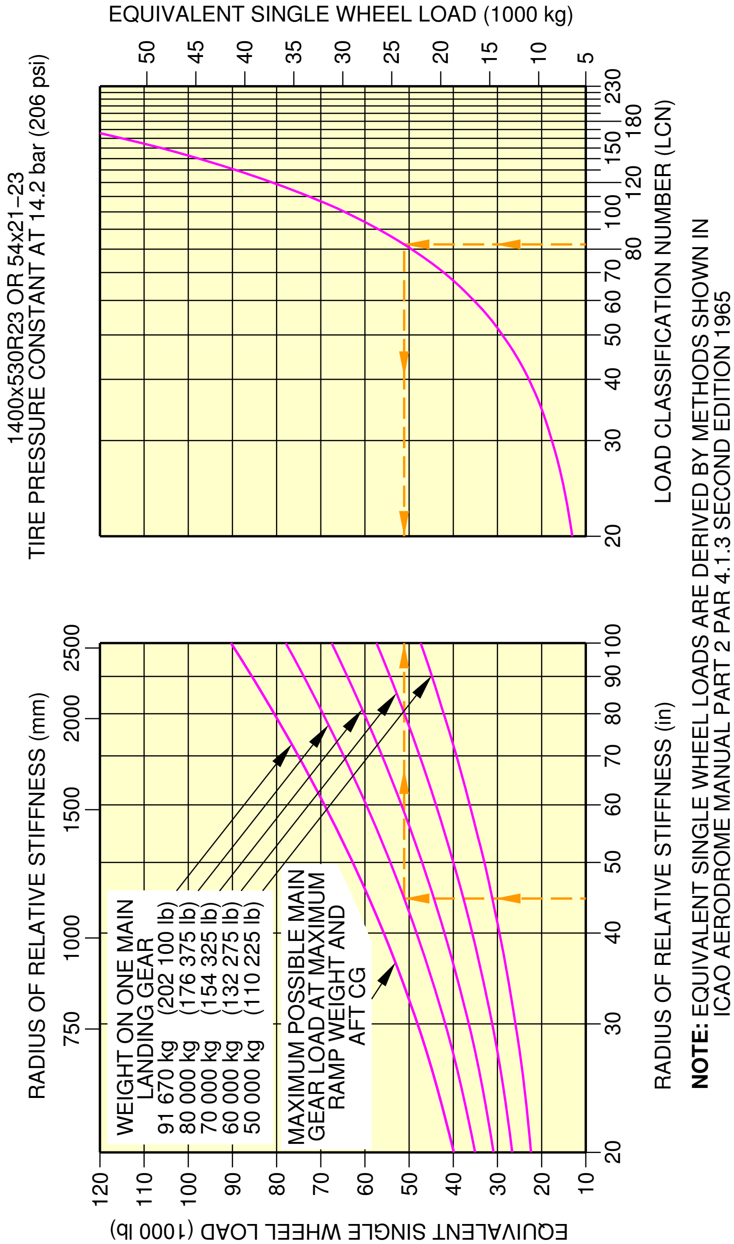
Radius of Relative Stiffness (L)
FIGURE-7-8-0-991-001-A01

**ON A/C A330-200



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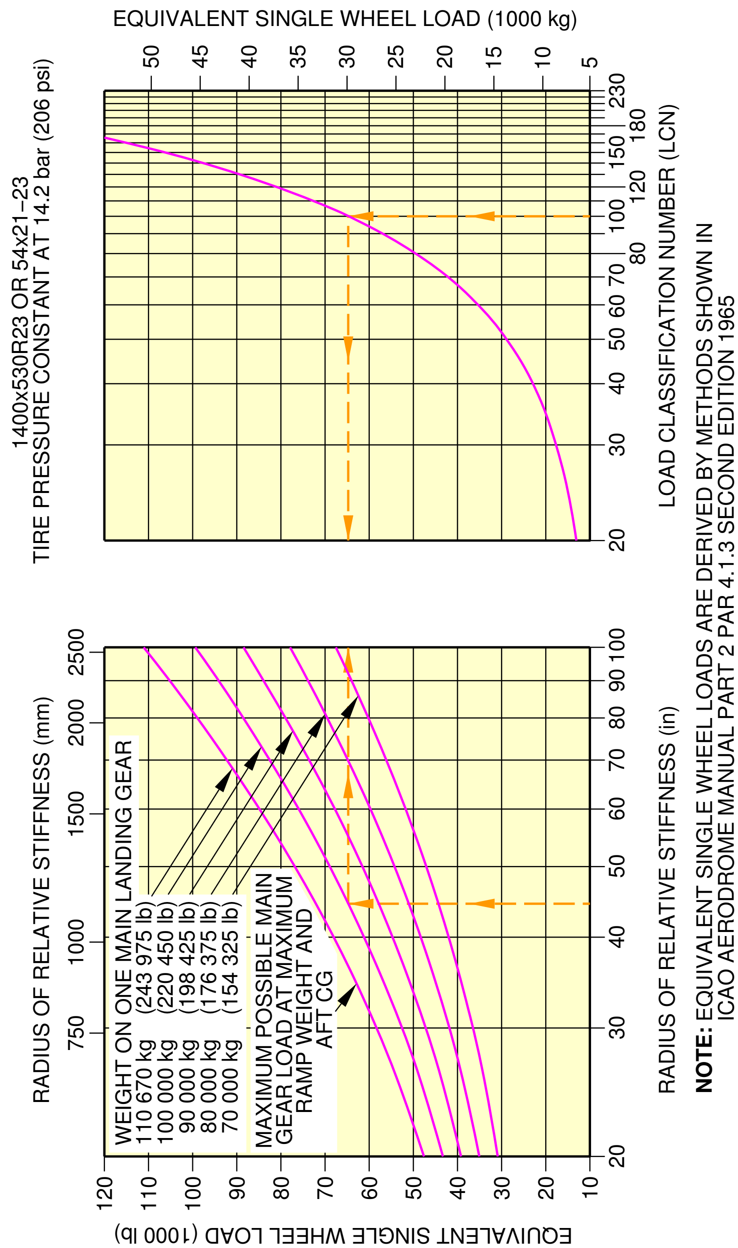
Rigid Pavement Requirements - LCN
WV026, MRW 192 900 kg, CG 38.8 % (Sheet 1 of 2)
FIGURE-7-8-0-991-004-A01

**ON A/C A330-200



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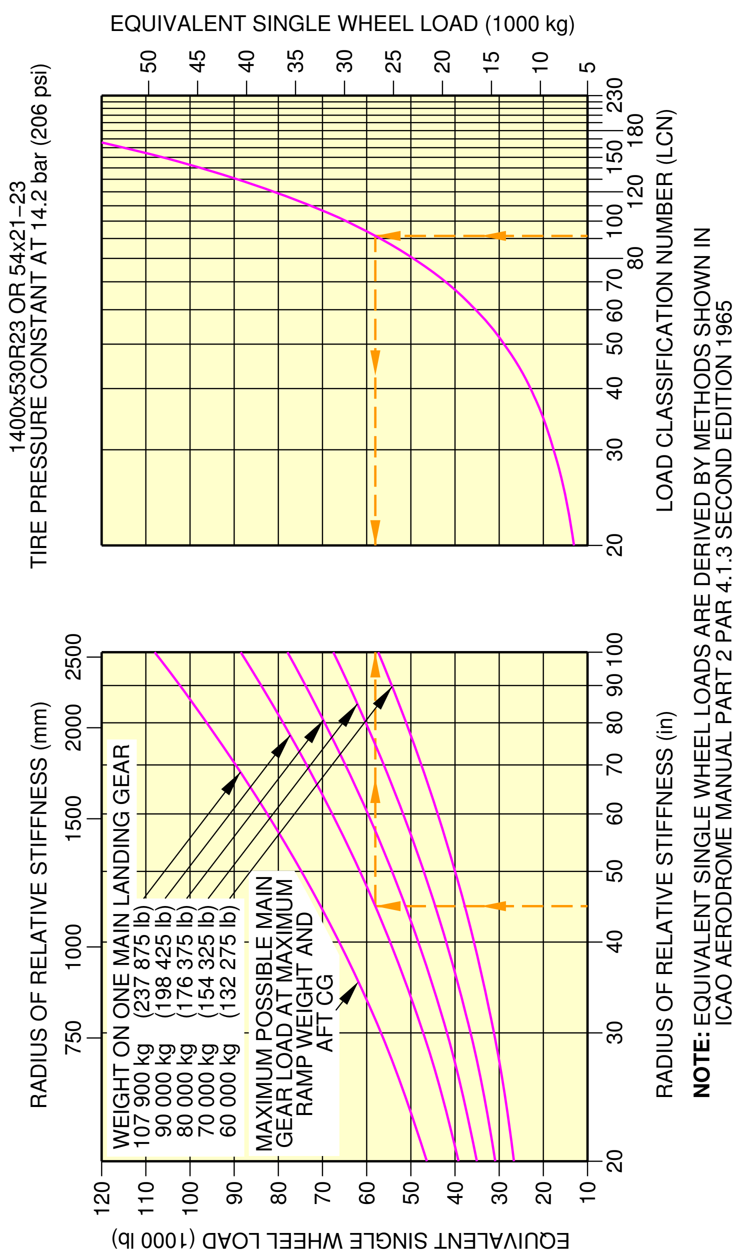
Rigid Pavement Requirements - LCN
WV058, MRW 238 900 kg, CG 31.3 % (Sheet 2 of 2)
FIGURE-7-8-0-991-004-A01

****ON A/C A330-200F**



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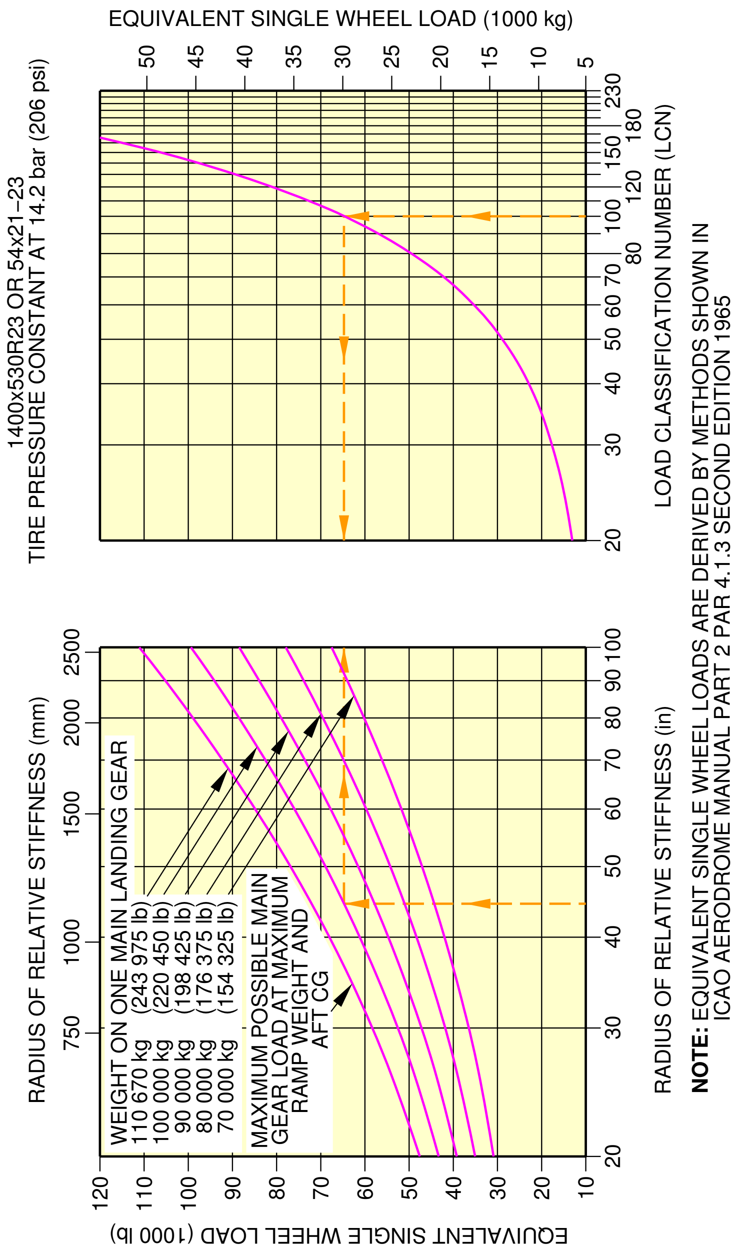
Rigid Pavement Requirements - LCN
WV001, MRW 227 900 kg, CG 37.6 % (Sheet 1 of 2)
FIGURE-7-8-0-991-006-A01

****ON A/C A330-200F**



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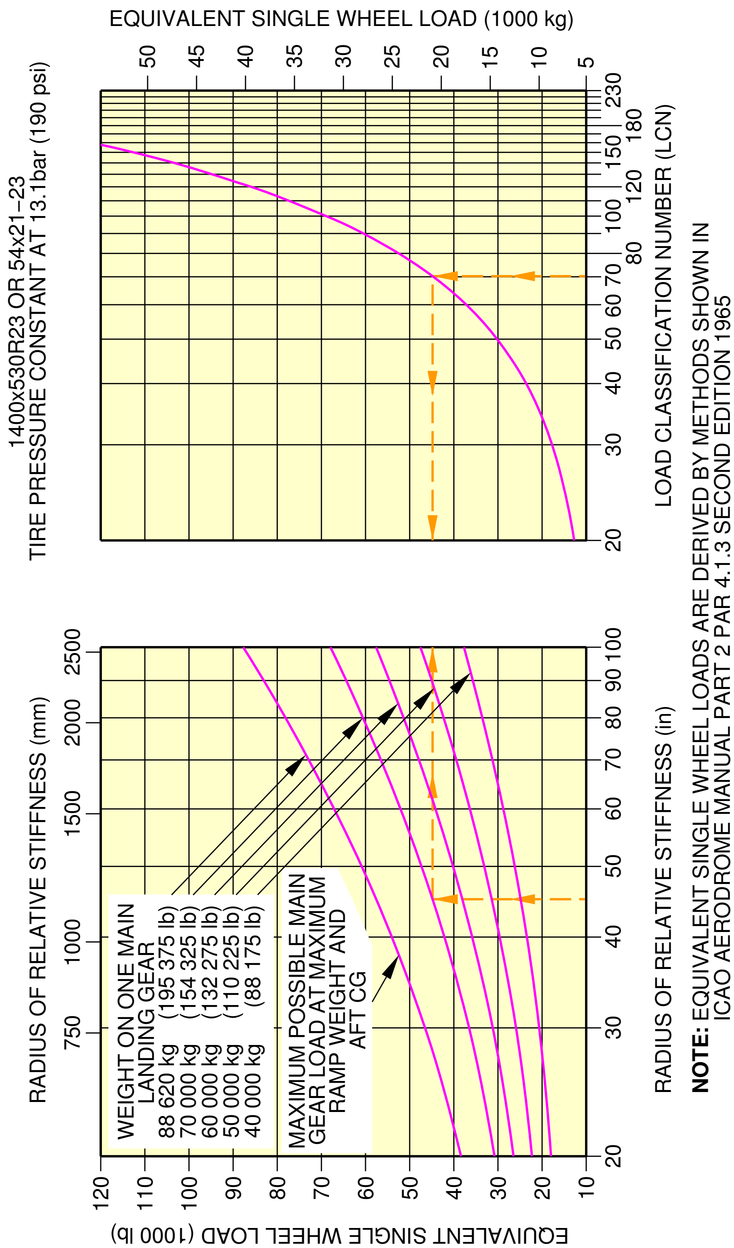
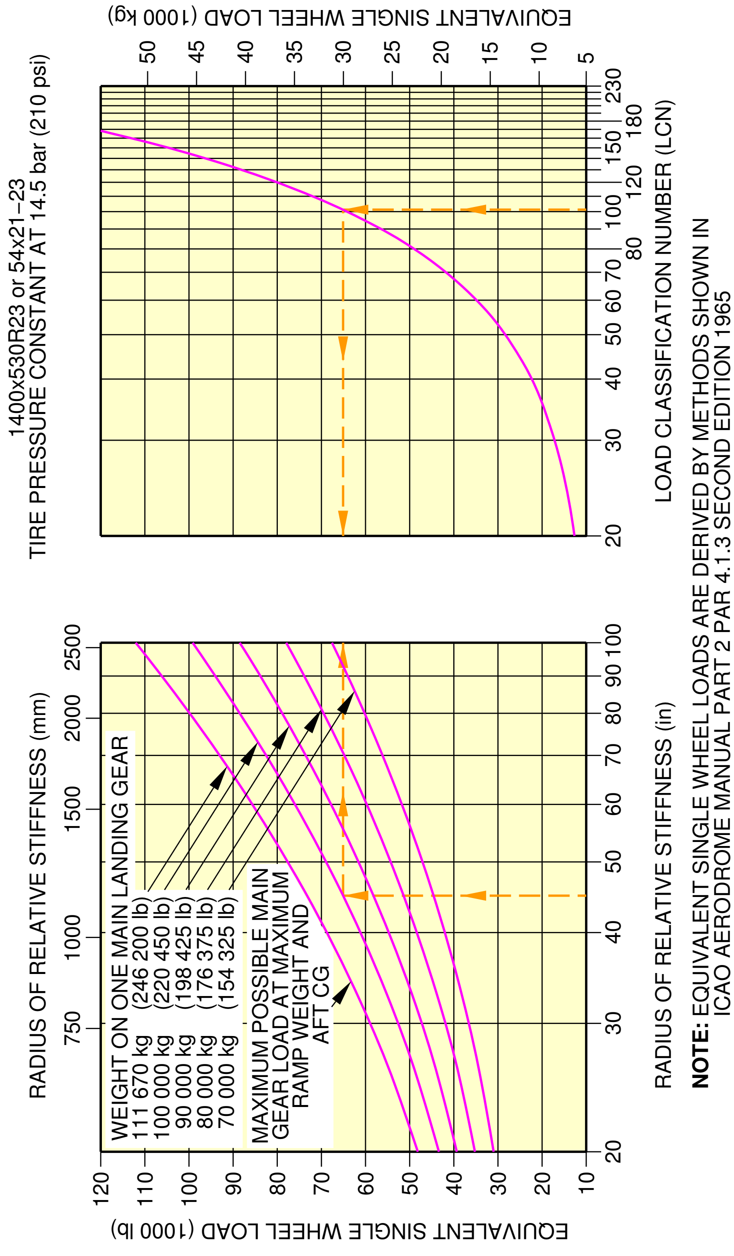
Rigid Pavement Requirements - LCN
WV000, MRW 233 900 kg, CG 37.4 % (Sheet 2 of 2)
FIGURE-7-8-0-991-006-A01

****ON A/C A330-300**



Rigid Pavement Requirements - LCN
WV001, MRW 184 900 kg, CG 40.1 % (Sheet 1 of 2)
FIGURE-7-8-0-991-007-A01

**ON A/C A330-300



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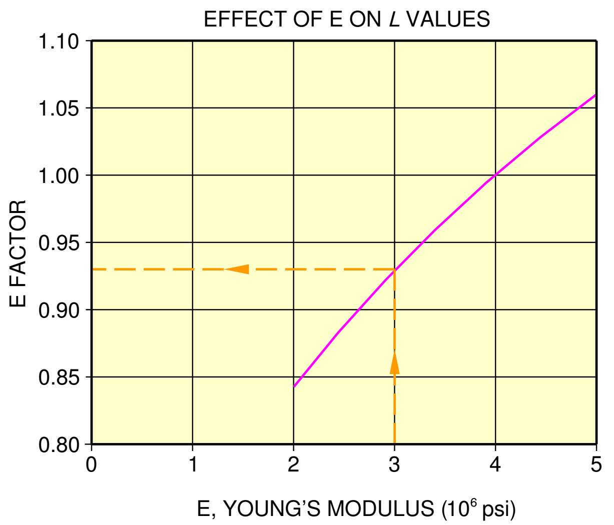
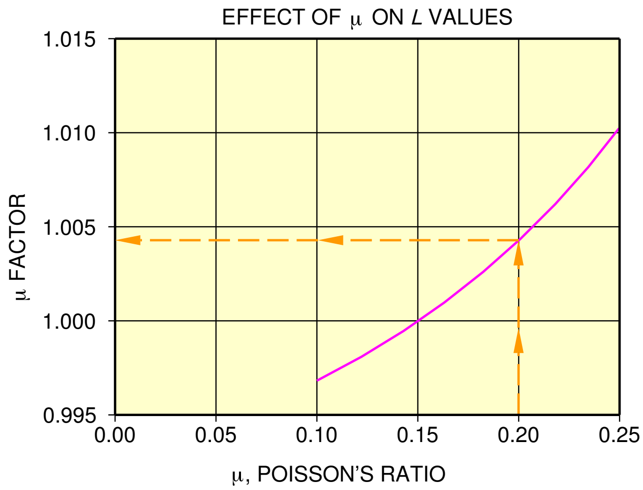
Rigid Pavement Requirements - LCN
WV054, MRW 235 900 kg, CG 35.7 % (Sheet 2 of 2)
FIGURE-7-8-0-991-007-A01

**ON A/C A330-200 A330-200F A330-300





NOTE: BOTH CURVES ON THIS PAGE ARE USED TO ADJUST THE *L* VALUES OF RADIUS OF RELATIVE STIFFNESS (*L*) TABLE

F_AC_070800_1_0140101_01_00

Radius of Relative Stiffness (Effect E and μ ON "L" values)
FIGURE-7-8-0-991-014-A01

7-9-0 ACN/PCN Reporting System - Flexible and Rigid Pavements

****ON A/C A330-200 A330-200F A330-300**

Aircraft Classification Number - Flexible and Rigid Pavement

1. This section gives data about the Aircraft Classification Number (ACN) for an aircraft gross weight in relation with a subgrade strength value for flexible and rigid pavement.
   The flexible and rigid pavement requirements graphs are given at standard tire pressure for the weight variants producing (at the MRW and max aft CG) the lowest MLG load and the highest MLG load of each A/C type.
   To find the ACN of an aircraft on flexible and 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---0-99--008-A (sheet 1), calculation of the ACN for flexible pavement for:
   - An aircraft with a MRW of 192 900 kg (425 275 lb),
   - An aircraft gross weight of 180 000 kg (396 825 lb),
   - A medium subgrade strength (code B).

   The ACN for flexible pavement is 45.

   Example, see FIGURE 7---0-99--008-A (sheet 2), calculation of the ACN for rigid pavement for:
   - An aircraft with a MRW of 192 900 kg (425 275 lb),
   - An aircraft gross weight of 180 000 kg (396 825 lb),
   - A medium subgrade strength (code B).

   The ACN for rigid pavement is 45.

2. Aircraft Classification Number - ACN table
   The table FIGURE 7---0-99--001-A, FIGURE 7---0-99--002-A and FIGURE 7---0-99--003-A provide 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 MRW and the minimum weight of the aircraft is required, refer to figures that follows.

   NOTE : The CG in the figure title is the CG used for ACN / LCN calculation

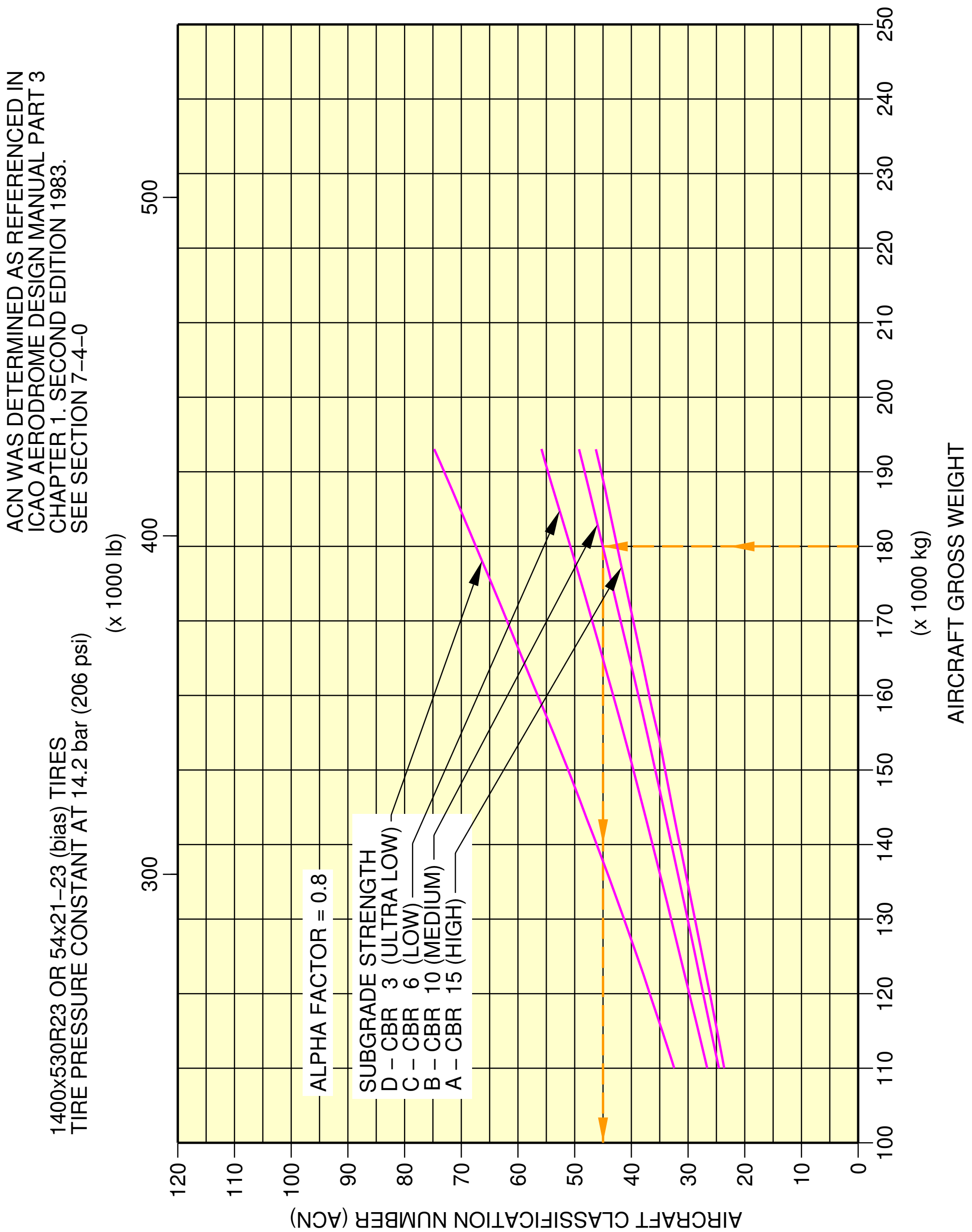
**ON A/C A330-200

AIRCRAFT TYPE	ALL UP MASS (kg)	LOAD ON ONE MAIN GEAR LEG (%)	TIRE PRESSURE (Mpa)	ACN FOR RIGID PAVEMENT SUBGRADES – MN/m³				ACN FOR FLEXIBLE PAVEMENT SUBGRADES – CBR			
				High 150	Medium 80	Low 40	Ultral–low 20	High 15	Medium 10	Low 6	Ultral–low 3
A330–200 WV020	230 900	47.3	1.42	53	61	72	85	57	62	71	97
	120 000	47.2		28	27	30	35	26	27	30	36
A330–200 WV021	230 900	47.3	1.42	53	61	72	85	57	62	71	97
	120 000	47.2		28	27	30	35	26	27	30	36
A330–200 WV022	233 900	47.3	1.42	54	62	74	86	58	63	73	98
	120 000	47.2		28	27	30	35	26	27	30	36
A330–200 WV023	233 900	47.3	1.42	54	62	74	86	58	63	73	98
	120 000	47.2		28	27	30	35	26	27	30	36
A330–200 WV024	202 900	47.5	1.42	45	52	61	71	49	52	60	80
	120 000	47.3		28	27	31	35	26	27	30	37
A330–200 WV025	220 900	47.4	1.42	50	58	68	80	54	58	67	91
	120 000	47.2		28	27	31	35	26	27	30	36
A330–200 WV026	192 900	47.5	1.42	43	49	57	67	46	49	56	75
	120 000	47.4		28	27	31	35	26	27	30	37
A330–200 WV027	220 900	47.4	1.42	50	58	68	80	54	58	67	91
	120 000	47.2		28	27	31	35	26	27	30	36
A330–200 WV050	230 900	47.3	1.42	53	61	72	85	57	62	71	97
	120 000	47.2		28	27	30	35	26	27	30	36
A330–200 WV051	192 900	47.5	1.42	43	49	57	67	46	49	56	75
	120 000	47.4		28	27	31	35	26	27	30	37
A330–200 WV052	233 900	47.3	1.42	54	62	74	86	58	63	73	98
	120 000	47.2		28	27	30	35	26	27	30	36
A330–200 WV053	210 900	47.4	1.42	47	54	64	75	51	55	63	85
	120 000	47.3		28	27	31	35	26	27	30	37
A330–200 WV054	230 900	47.3	1.42	53	61	72	85	57	62	71	97
	120 000	47.2		28	27	30	35	26	27	30	36
A330–200 WV055	192 900	47.5	1.42	43	49	57	67	46	49	56	75
	120 000	47.4		28	27	31	35	26	27	30	37
A330–200 WV056	233 900	47.3	1.42	54	62	74	86	58	63	73	98
	120 000	47.2		28	27	30	35	26	27	30	36
A330–200 WV057	236 900	46.7	1.42	54	62	74	86	58	63	73	98
	120 000	46.6		27	27	30	34	26	27	29	36
A330–200 WV058	238 900	46.3	1.42	54	62	74	86	58	63	73	98
	120 000	46.2		27	26	30	34	25	26	29	35
A330–200 WV059	202 900	47.5	1.42	45	52	61	71	49	52	60	80
	120 000	47.3		27	27	31	35	26	27	30	37
A330–200 WV060	220 900	47.4	1.42	50	58	68	80	54	58	67	91
	120 000	47.2		28	27	31	35	26	27	30	36
A330–200 WV061	230 900	47.3	1.42	53	61	72	85	57	62	71	97
	120 000	47.2		28	27	30	35	26	27	30	36

F_AC_070900_1_0010101_01_00

Aircraft Classification Number
ACN Table
FIGURE-7-9-0-991-001-A01

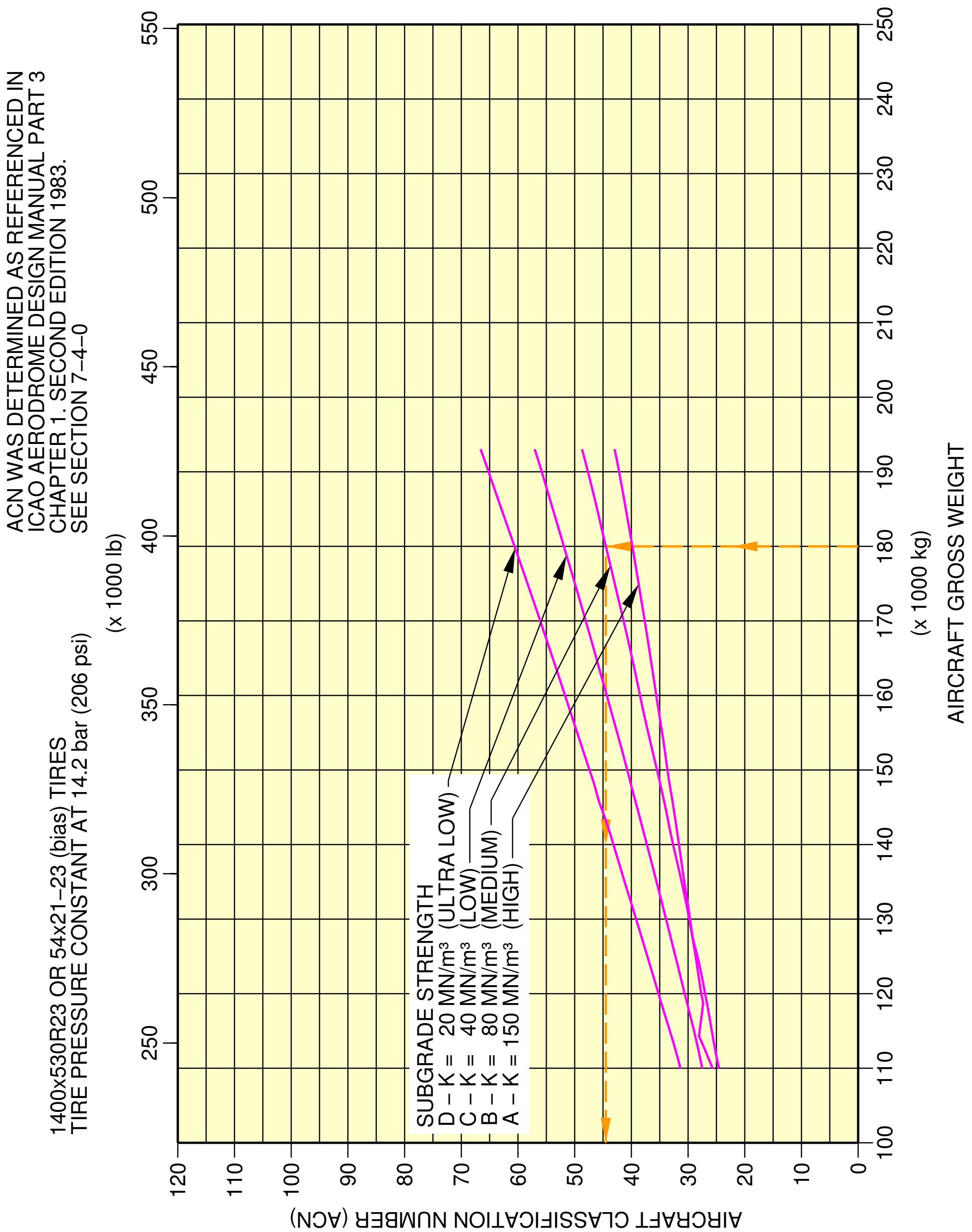
**ON A/C A330-200



F_AC_070900_1_0080101_01_00

Aircraft Classification Number
Flexible Pavement - WV026, MRW 192 900 kg, CG 38.8 % (Sheet 1 of 2)
FIGURE-7-9-0-991-008-A01

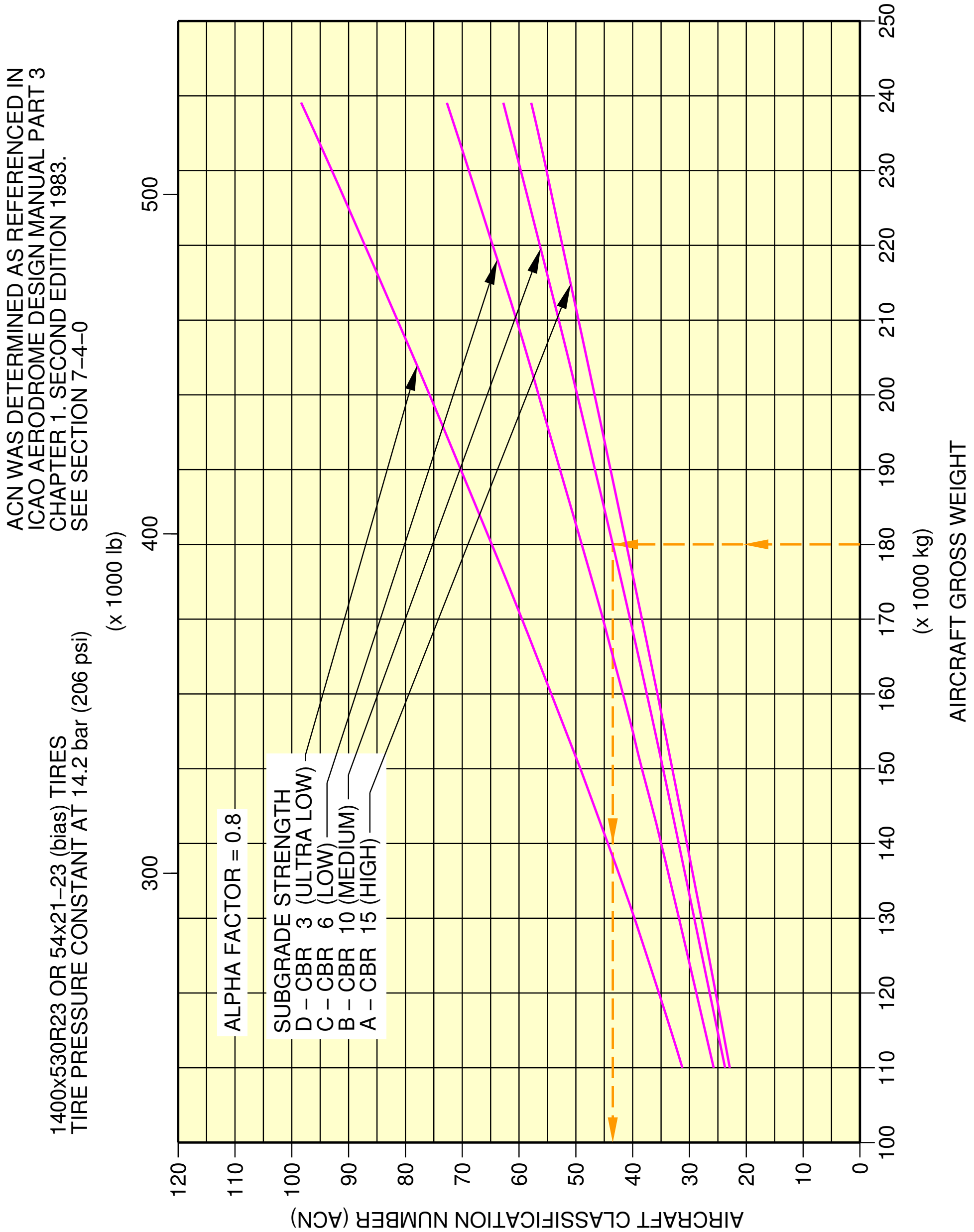
**ON A/C A330-200



F_AC_070900_1_0080102_01_00

Aircraft Classification Number
Rigid Pavement - WV026, MRW 192 900 kg, CG 38.8 % (Sheet 2 of 2)
FIGURE-7-9-0-991-008-A01

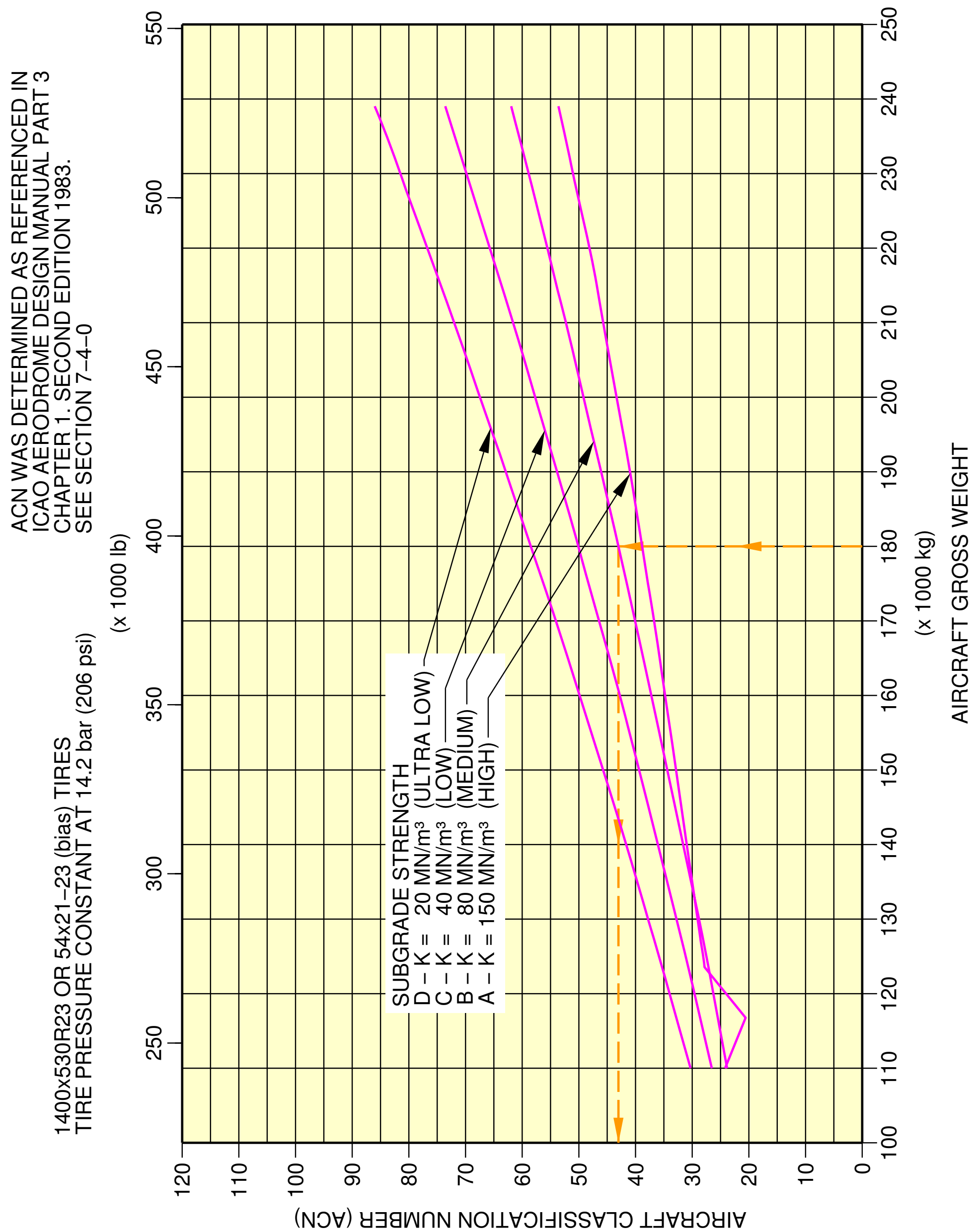
**ON A/C A330-200



F_AC_070900_1_0110101_01_00

Aircraft Classification Number
Flexible Pavement - WV058, MRW 238 900 kg, CG 31.3 % (Sheet 1 of 2)
FIGURE-7-9-0-991-011-A01

****ON A/C A330-200**



Aircraft Classification Number
Rigid Pavement - WV058, MRW 238 900 kg, CG 31.3 % (Sheet 2 of 2)
FIGURE-7-9-0-991-011-A01

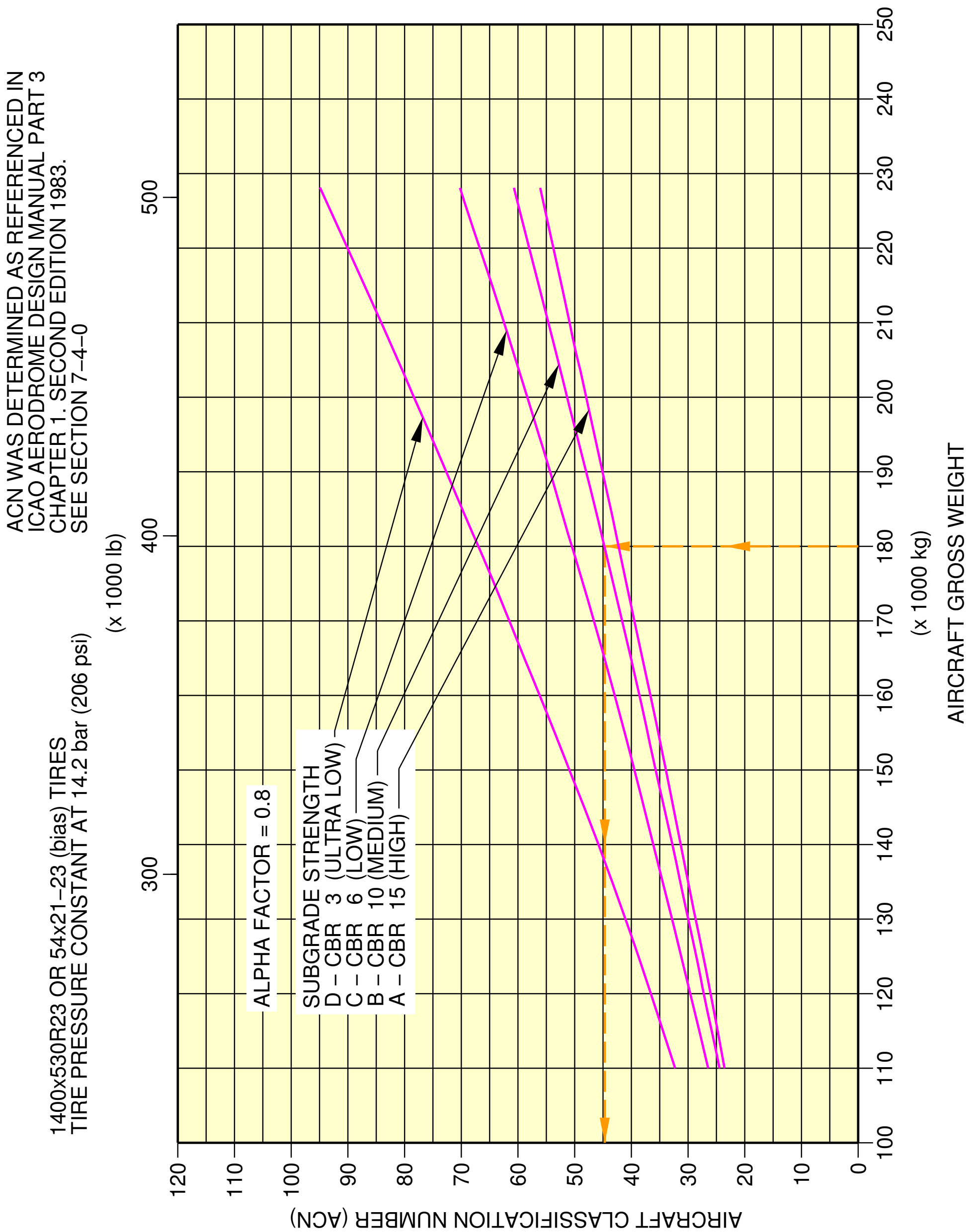
****ON A/C A330-200F**

AIRCRAFT TYPE	ALL UP MASS (kg)	LOAD ON ONE MAIN GEAR LEG (%)	TIRE PRESSURE (Mpa)	ACN FOR RIGID PAVEMENT SUBGRADES – MN/m³				ACN FOR FLEXIBLE PAVEMENT SUBGRADES – CBR			
				High 150	Medium 80	Low 40	Ultral–low 20	High 15	Medium 10	Low 6	Ultral–low 3
A330–200F WV000	233 900	47.3	1.42	54	62	74	86	58	63	73	98
	120 000	47.2		28	27	30	35	26	27	30	36
A330–200F WV001	227 900	47.3	1.42	52	60	71	83	56	61	70	95
	120 000	47.2		28	27	30	35	26	27	30	36
A330–200F WV002	233 900	47.3	1.42	54	62	74	86	58	63	73	98
	120 000	47.2		28	27	30	35	26	27	30	36

F_AC_070900_1_0020101_01_00

Aircraft Classification Number
ACN Table
FIGURE-7-9-0-991-002-A01

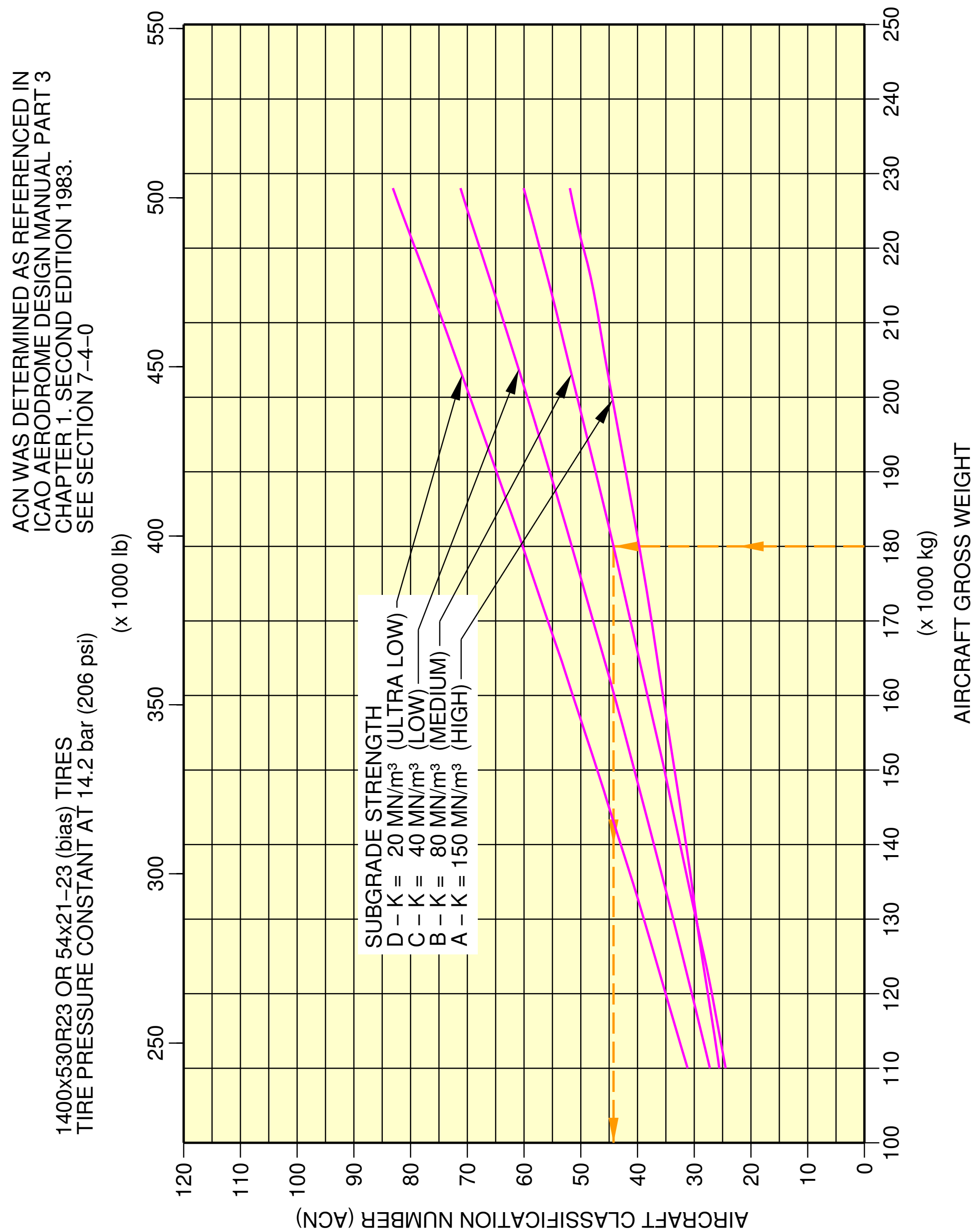
****ON A/C A330-200F**



F_AC_070900_1_0090101_01_00

Aircraft Classification Number
Flexible Pavement - WV001, MRW 227 900 kg, CG 37.6 % (Sheet 1 of 2)
FIGURE-7-9-0-991-009-A01

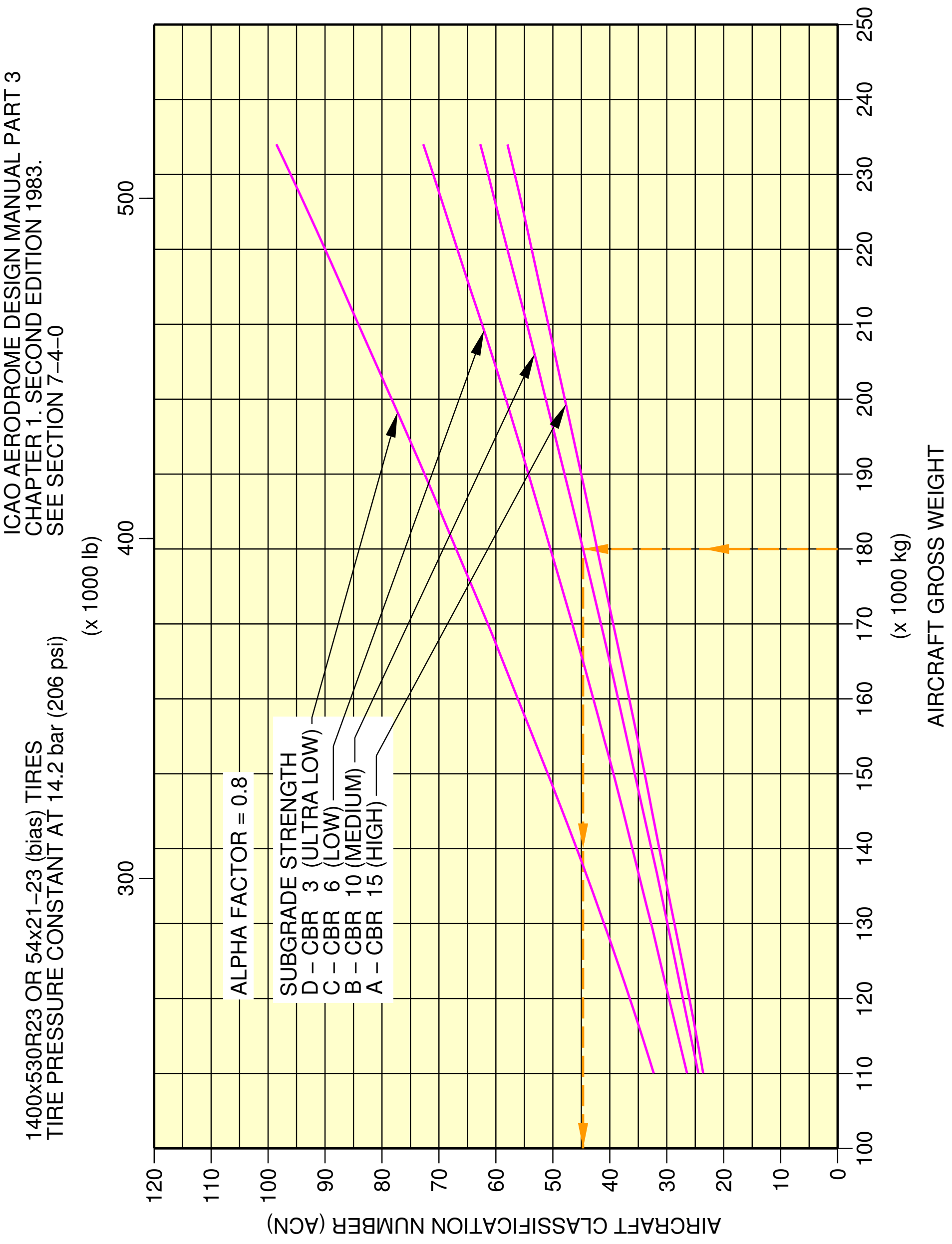
****ON A/C A330-200F**



F_AC_070900_1_0090102_01_00

Aircraft Classification Number
Rigid Pavement - WV001, MRW 227 900 kg, CG 37.6 % (Sheet 2 of 2)
FIGURE-7-9-0-991-009-A01

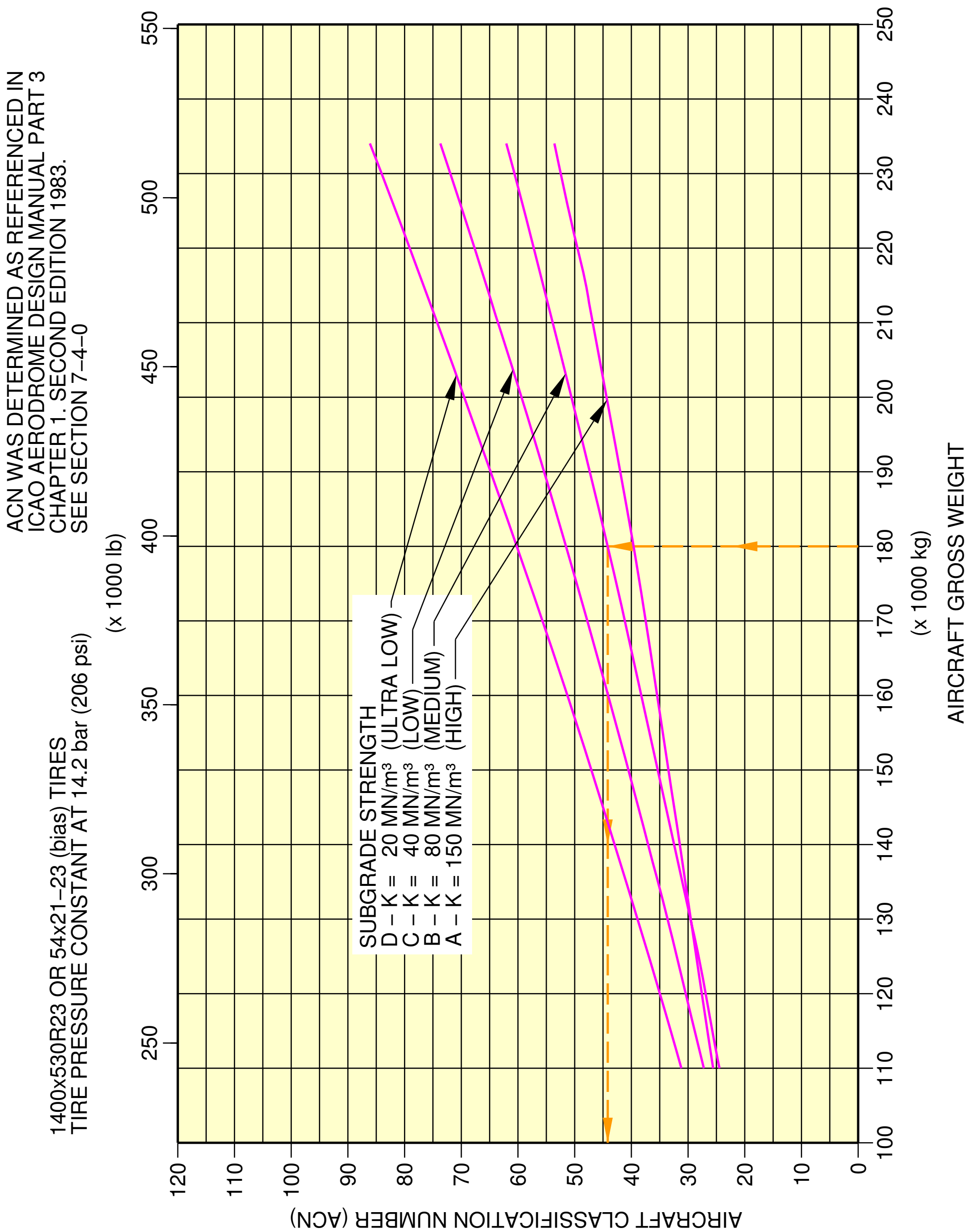
****ON A/C A330-200F**



F_AC_070900_1_0120101_01_00

Aircraft Classification Number
Flexible Pavement - WV000, MRW 233 900 kg, CG 37.4 % (Sheet 1 of 2)
FIGURE-7-9-0-991-012-A01

**ON A/C A330-200F



F_AC_070900_1_0120102_01_00

Aircraft Classification Number
Rigid Pavement - WV000, MRW 233 900 kg, CG 37.4 % (Sheet 2 of 2)
FIGURE-7-9-0-991-012-A01

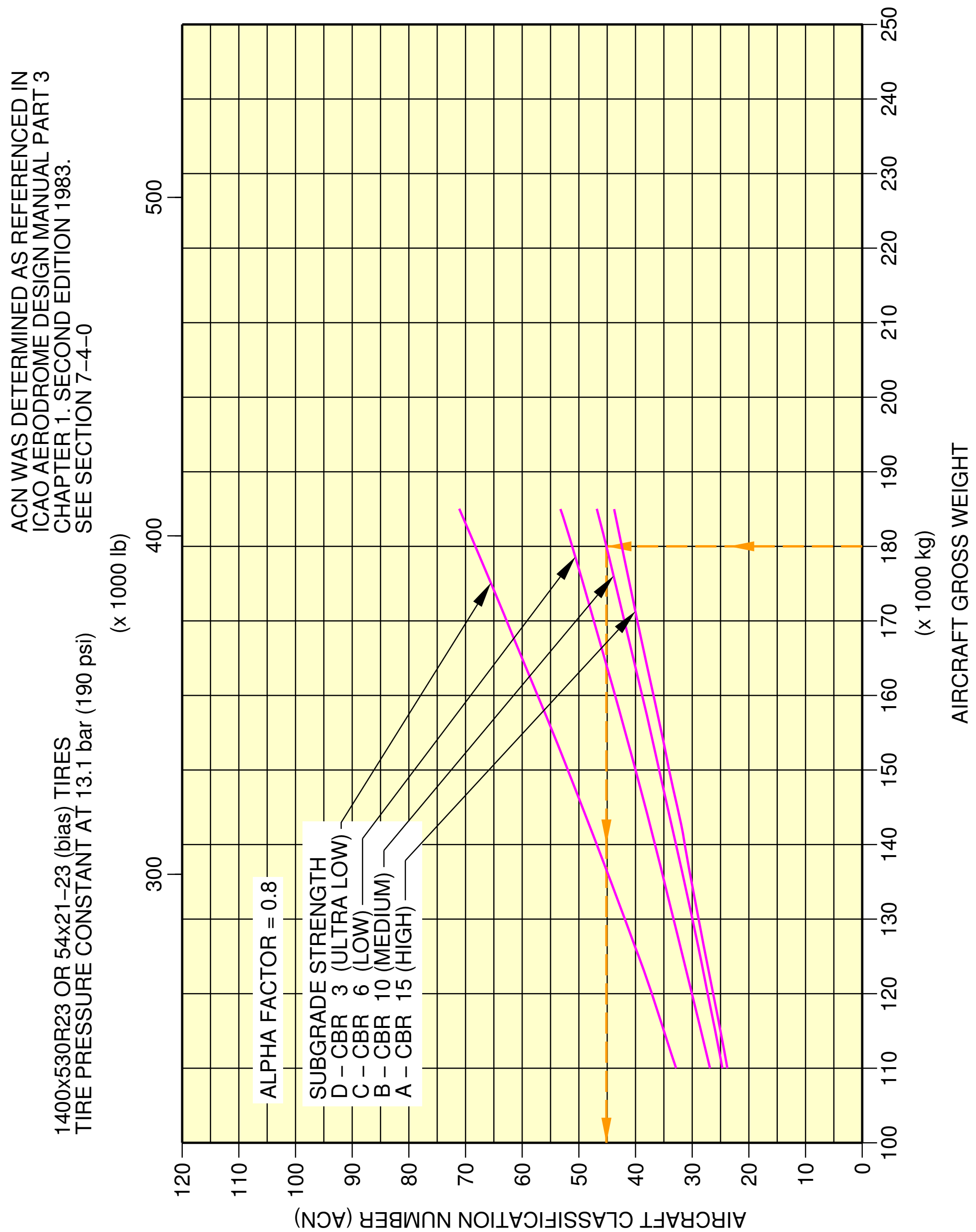
**ON A/C A330-300

AIRCRAFT TYPE	ALL UP MASS (kg)	LOAD ON ONE MAIN GEAR LEG (%)	TIRE PRESSURE (Mpa)	ACN FOR RIGID PAVEMENT SUBGRADES – MN/m³				ACN FOR FLEXIBLE PAVEMENT SUBGRADES – CBR			
				High 150	Medium 80	Low 40	Ultra–low 20	High 15	Medium 10	Low 6	Ultra–low 3
A330–300 WV000	212 900	47.4	1.31	46	53	63	75	51	55	64	86
	125 000	47.3		28	27	31	36	27	28	31	39
A330–300 WV001	184 900	47.9	1.31	40	45	53	62	44	47	53	71
	125 000	47.9		28	28	32	37	28	29	32	39
A330–300 WV002	212 900	47.4	1.31	46	53	63	75	51	55	64	86
	125 000	47.3		28	27	31	36	27	28	31	39
A330–300 WV003	215 900	47.2	1.33	47	54	65	76	52	56	65	87
	125 000	47.1		28	27	31	36	27	28	31	38
A330–300 WV004 (209)	209 900	47.8	1.33	46	53	63	74	51	55	63	85
	125 000	47.8		28	28	32	37	27	29	32	39
A330–300 WV004 (215)	215 900	47.8	1.33	47	55	66	77	53	57	66	89
	125 000	47.7		28	28	32	37	27	29	32	39
A330–300 WV010	217 900	47.0	1.33	47	55	65	76	52	56	65	88
	125 000	46.9		28	27	31	36	27	28	31	38
A330–300 WV010b	217 900	47.8	1.33	48	56	67	78	53	58	67	90
	125 000	47.7		28	28	32	37	27	29	32	39
A330–300 WV011	212 900	47.8	1.33	47	54	65	76	52	56	64	87
	125 000	47.7		28	28	32	37	27	29	32	39
A330–300 WV012	218 900	47.8	1.33	48	56	67	79	54	58	67	91
	125 000	47.7		28	28	32	37	27	29	32	39
A330–300 WV013	215 900	47.8	1.33	47	55	66	77	53	57	66	89
	125 000	47.7		28	28	32	37	27	29	32	39
A330–300 WV014	205 900	47.9	1.33	45	52	62	72	50	54	62	83
	125 000	47.8		28	28	32	37	27	29	32	39
A330–300 WV020	230 900	47.8	1.42	53	62	73	86	58	62	72	98
	125 000	47.7		29	29	32	37	28	29	32	39
A330–300 WV022	233 900	47.7	1.45	55	63	75	87	59	63	74	100
	125 000	47.6		29	29	33	38	28	29	32	39
A330–300 WV024	205 900	47.9	1.42	46	53	63	73	50	54	62	83
	125 000	47.8		29	29	33	38	28	29	32	39
A330–300 WV025	217 900	47.8	1.42	50	57	68	79	54	58	67	90
	125 000	47.7		29	29	33	37	28	29	32	39
A330–300 WV050	230 900	47.8	1.45	54	62	74	86	58	62	72	98
	125 000	47.7		29	29	33	38	28	29	32	39
A330–300 WV051	212 900	47.8	1.45	48	56	66	77	52	56	65	87
	125 000	47.7		29	29	33	38	28	29	32	39
A330–300 WV052	233 900	47.7	1.45	55	63	75	87	59	63	74	100
	125 000	47.6		29	29	33	38	28	29	32	39
A330–300 WV053	205 900	47.9	1.45	47	54	63	74	50	54	62	83
	125 000	47.8		29	29	33	38	28	29	32	39
A330–300 WV054	235 900	47.3	1.45	55	63	75	87	59	63	74	100
	125 000	47.2		29	28	32	37	27	29	31	39

F_AC_070900_1_0030101_01_00

Aircraft Classification Number
ACN Table
FIGURE-7-9-0-991-003-A01

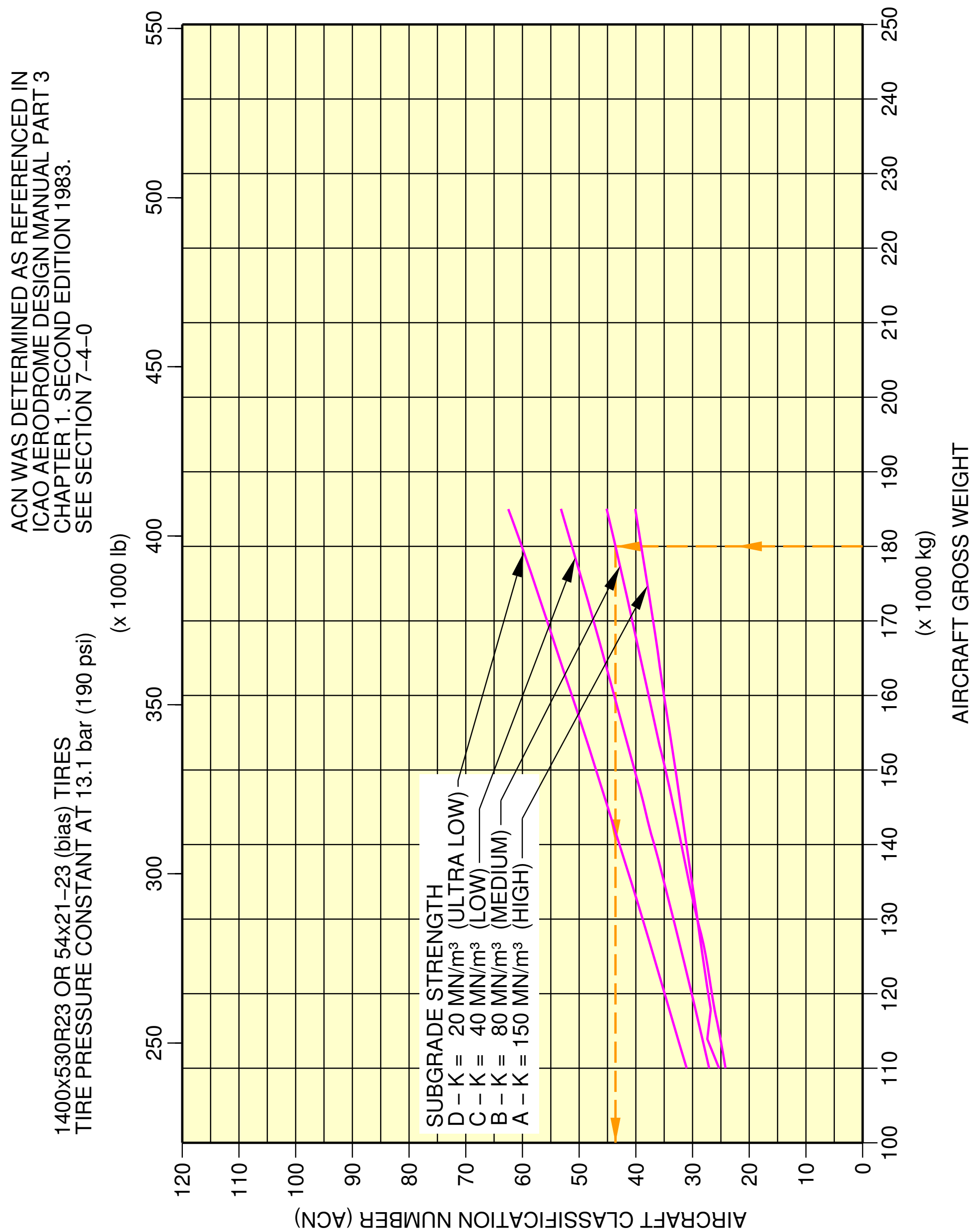
**ON A/C A330-300



F_AC_070900_1_0100101_01_00

Aircraft Classification Number
Flexible Pavement - WV001, MRW 184 900 kg, CG 40.1 % (Sheet 1 of 2)
FIGURE-7-9-0-991-010-A01

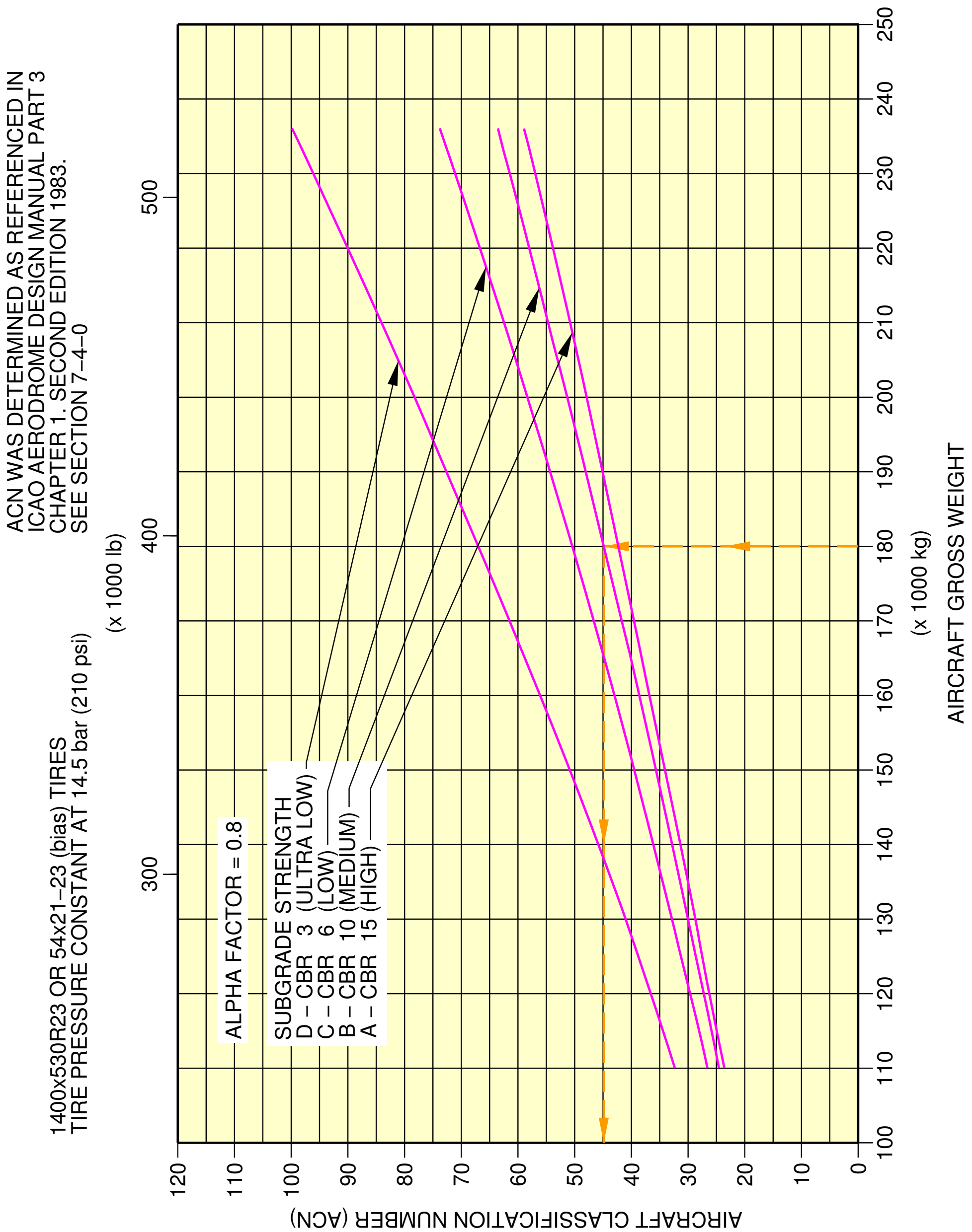
**ON A/C A330-300



F_AC_070900_1_0100102_01_00

Aircraft Classification Number
Rigid Pavement - WV001, MRW 184 900 kg, CG 40.1 % (Sheet 2 of 2)
FIGURE-7-9-0-991-010-A01

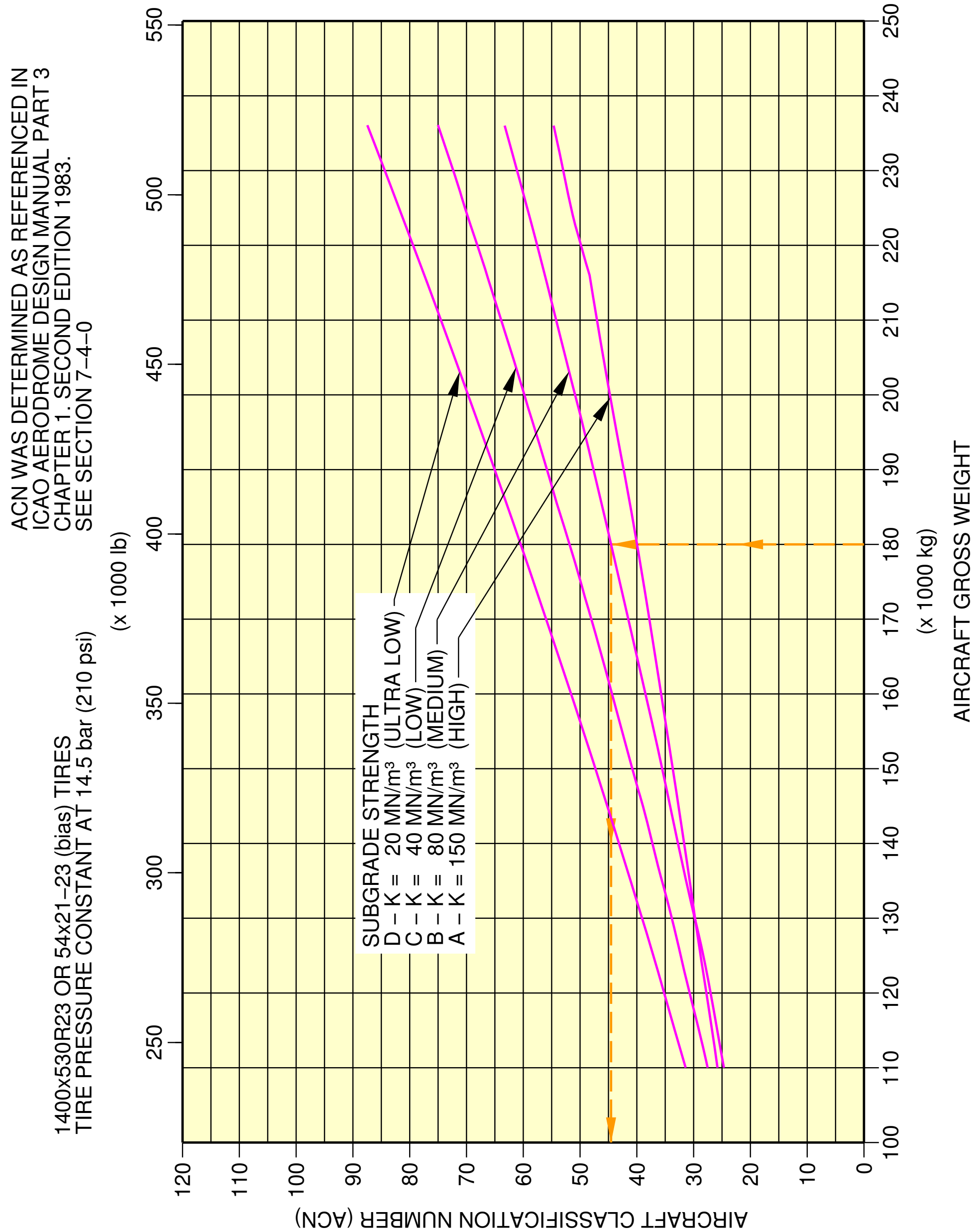
**ON A/C A330-300



F_AC_070900_1_0130101_01_00

Aircraft Classification Number
Flexible Pavement - WV054, MRW 235 900 kg, CG 35.7 % (Sheet 1 of 2)
FIGURE-7-9-0-991-013-A01

**ON A/C A330-300



F_AC_070900_1_0130102_01_00

Aircraft Classification Number
Rigid Pavement - WV054, MRW 235 900 kg, CG 35.7 % (Sheet 2 of 2)
FIGURE-7-9-0-991-013-A01

SCALED DRAWINGS

8-0-0 SCALED DRAWINGS

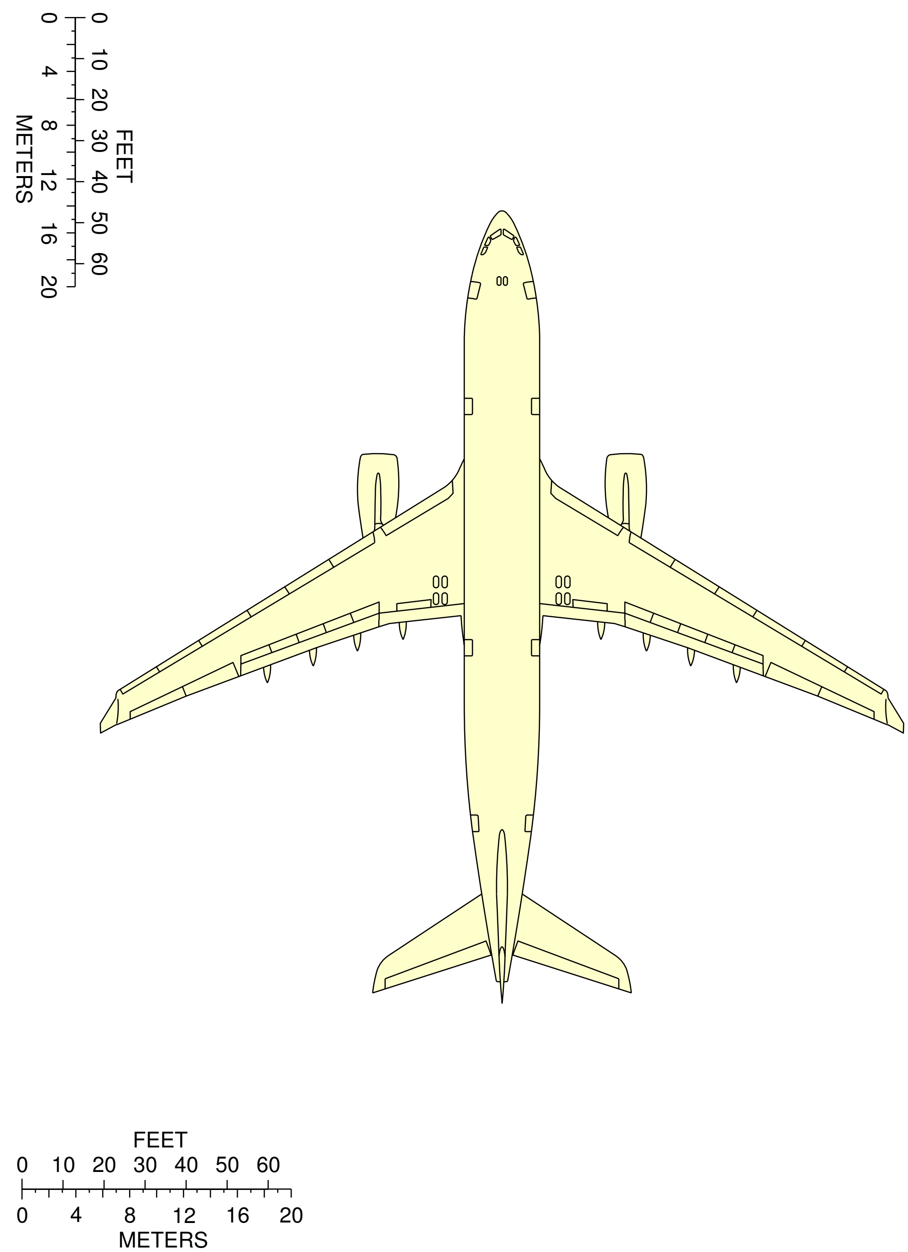
****ON A/C A330-200 A330-200F A330-300**

Scaled Drawings

1. This section provides the scaled drawings.

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

**ON A/C A330-200



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

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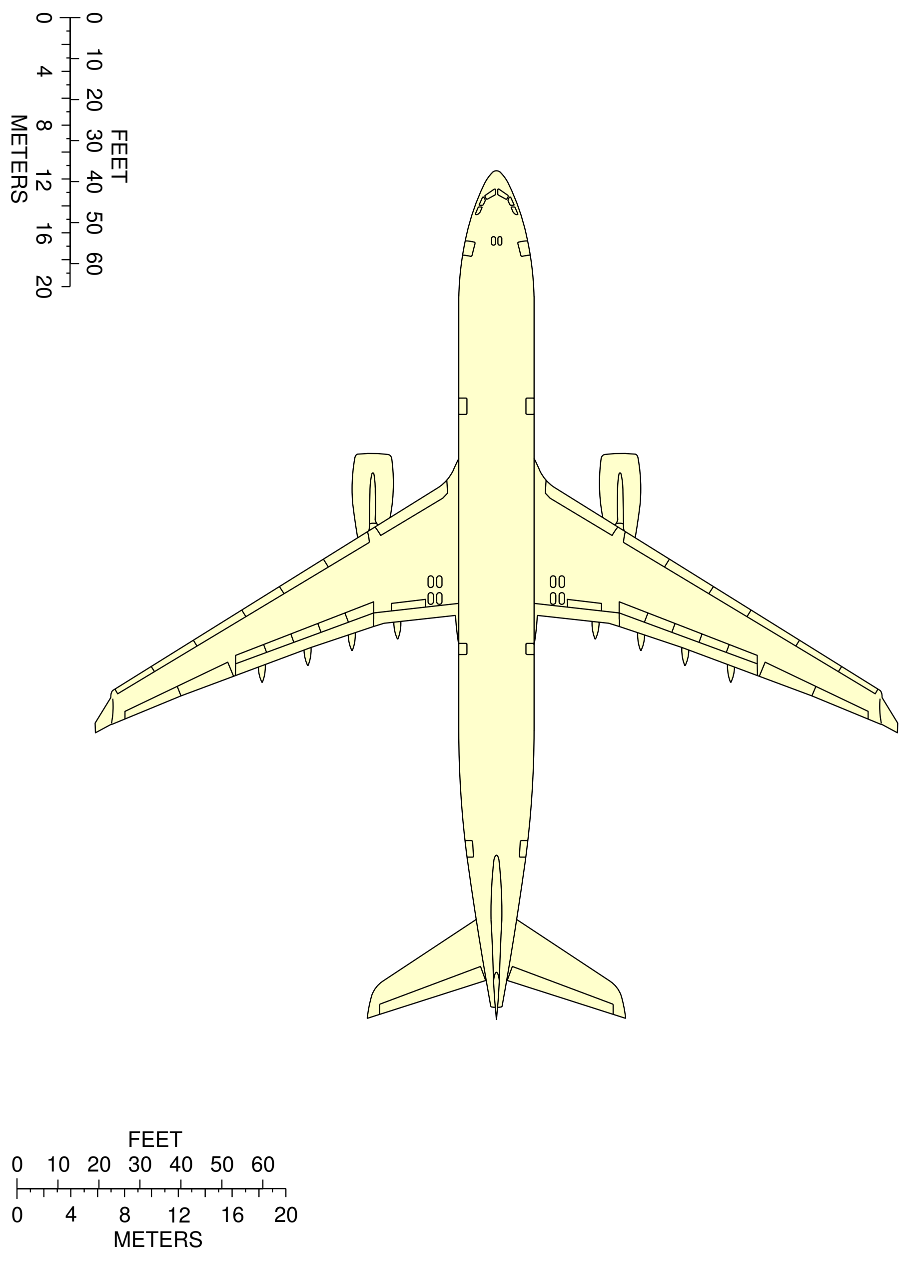
Scaled Drawing
FIGURE-8-0-0-991-002-A01

**ON A/C A330-300



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

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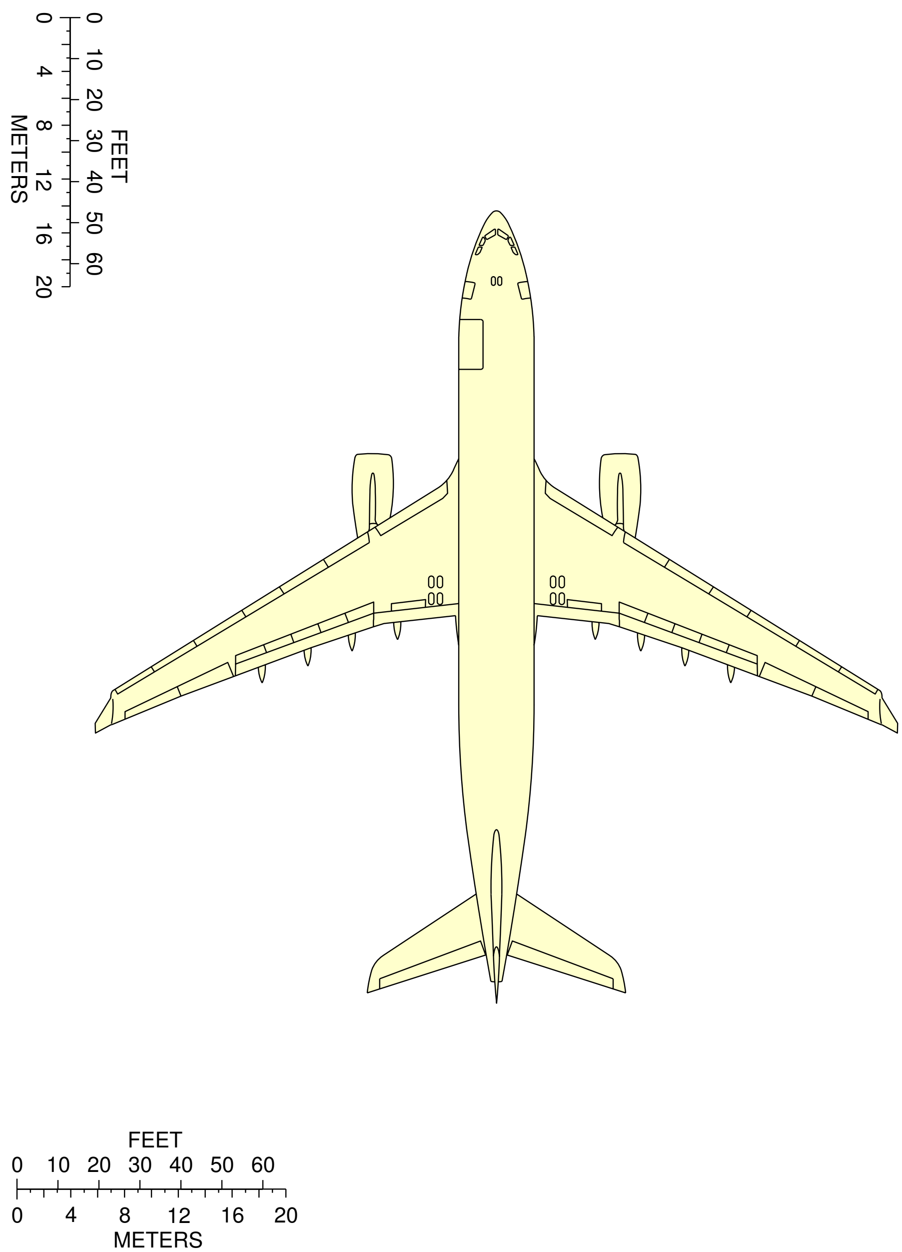
Scaled Drawing
FIGURE-8-0-0-991-002-B01

**ON A/C A330-200F



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

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Scaled Drawing
FIGURE-8-0-0-991-002-C01

AIRCRAFT RESCUE AND FIRE FIGHTING

10-0-0 AIRCRAFT RESCUE AND FIRE FIGHTING

****ON A/C A330-200 A330-300**

Aircraft Rescue and Fire Fighting

1. Aircraft Rescue and Fire Fighting Charts
   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 (ARFC) poster available on AIRBUSWorld and the Airbus website.

**ON A/C A330-200 A330-300

AIRBUS

A330-200/-300

Aircraft Rescue and Fire Fighting Chart
ARFC

NOTE:
THIS CHART GIVES THE GENERAL LAYOUT OF THE A330–200 AND A330–300 STANDARD VERSION. THE NUMBER AND ARRANGEMENT OF THE INDIVIDUAL ITEMS VARY WITH THE CUSTOMERS. FIGURES CONTAINED IN THIS POSTER ARE AVAILABLE SEPARATLY IN THE CHAPTER 10 OF THE "AIRCRAFT CHARACTERISTICS – AIRPORT AND MAINTENANCE PLANNING" DOCUMENT.

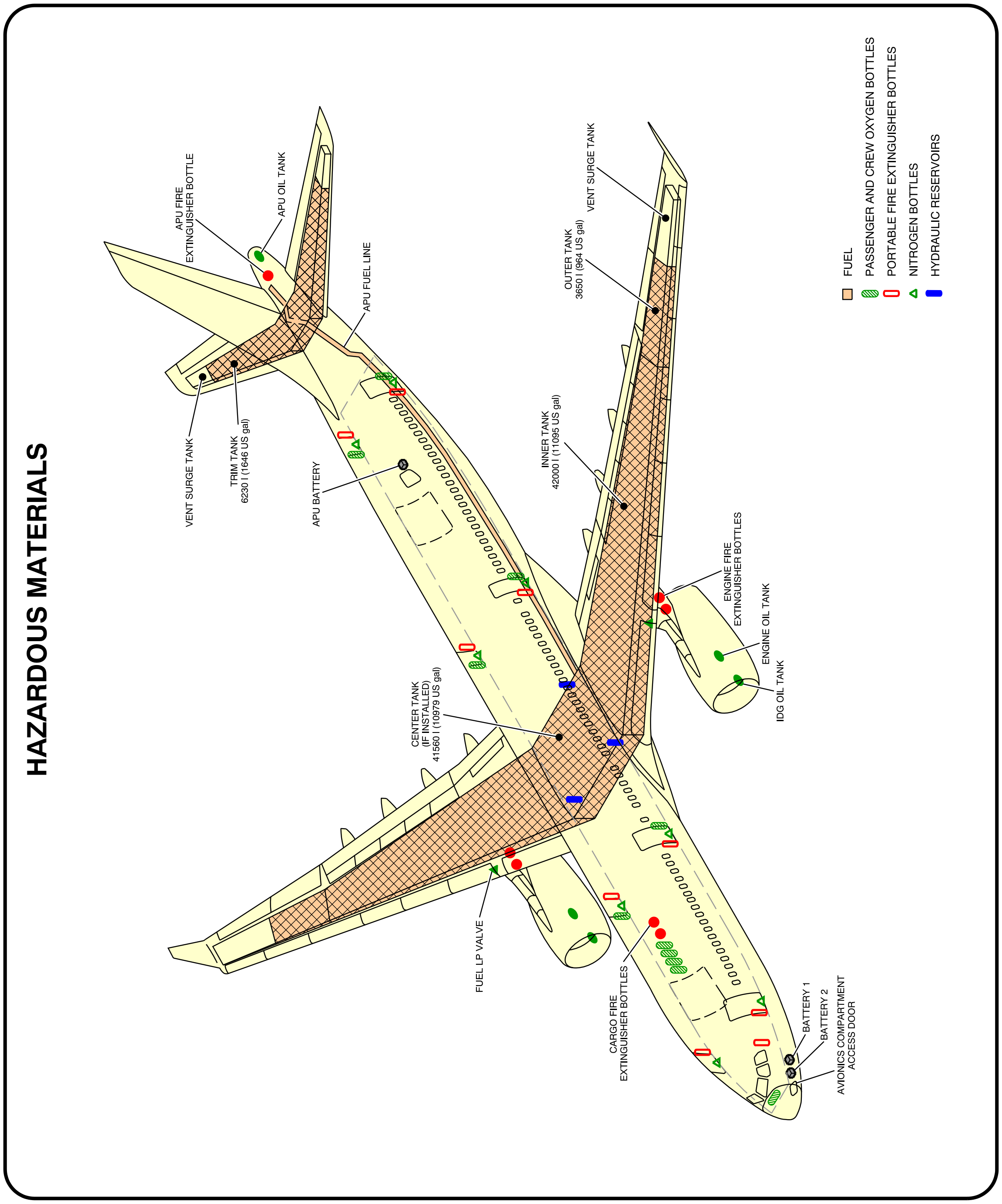
ISSUED BY:
AIRBUS S.A.S
CUSTOMER SERVICES
TECHNICAL DATA SUPPORT AND SERVICES
31707 BLAGNAC CEDEX
FRANCE

REVISION DATE: APRIL 2013
REFERENCE : F_RF_000000_1_A330000
SHEET 1/2

F_AC_100000_1_0010101_01_00

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

**ON A/C A330-200 A330-300



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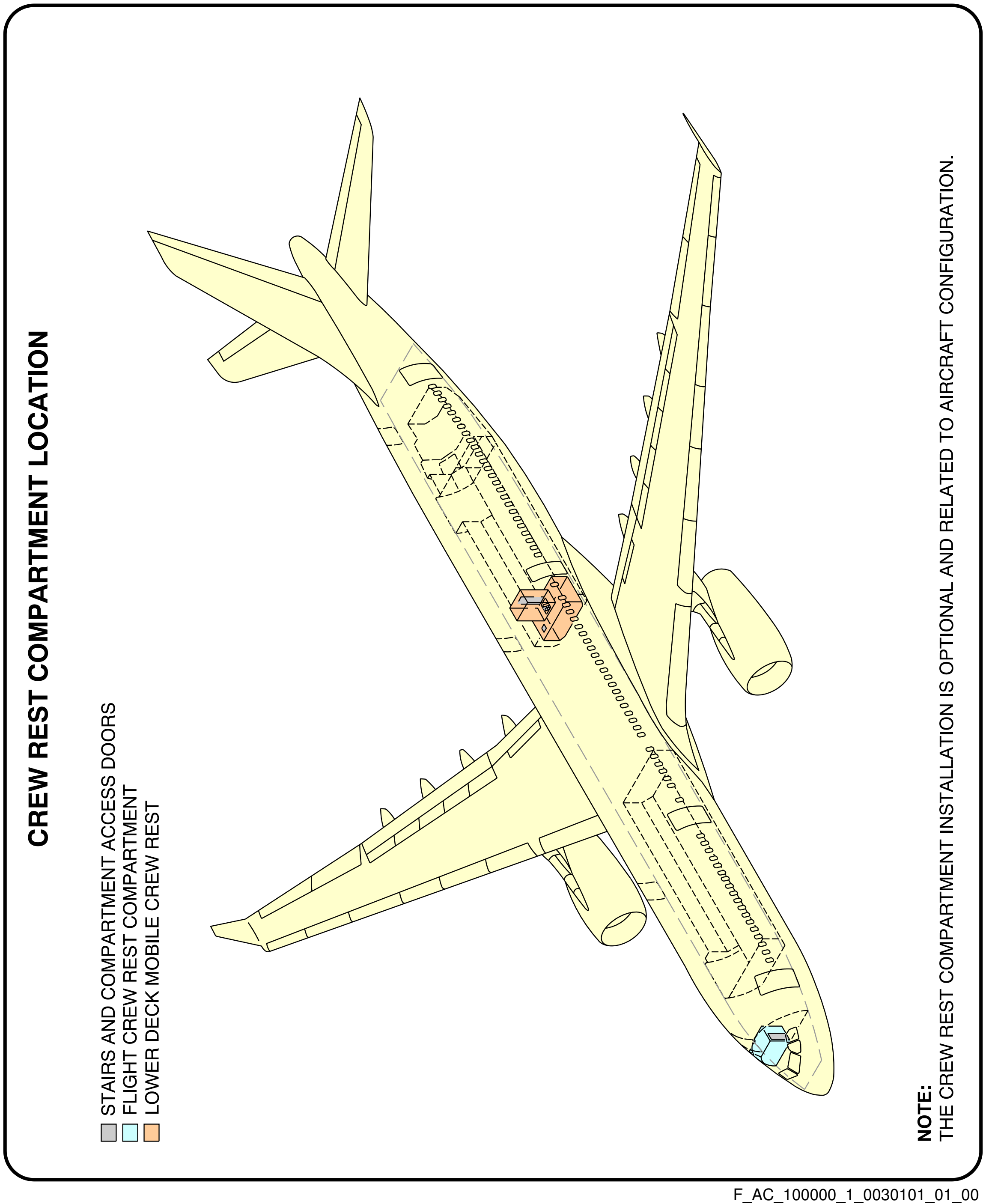
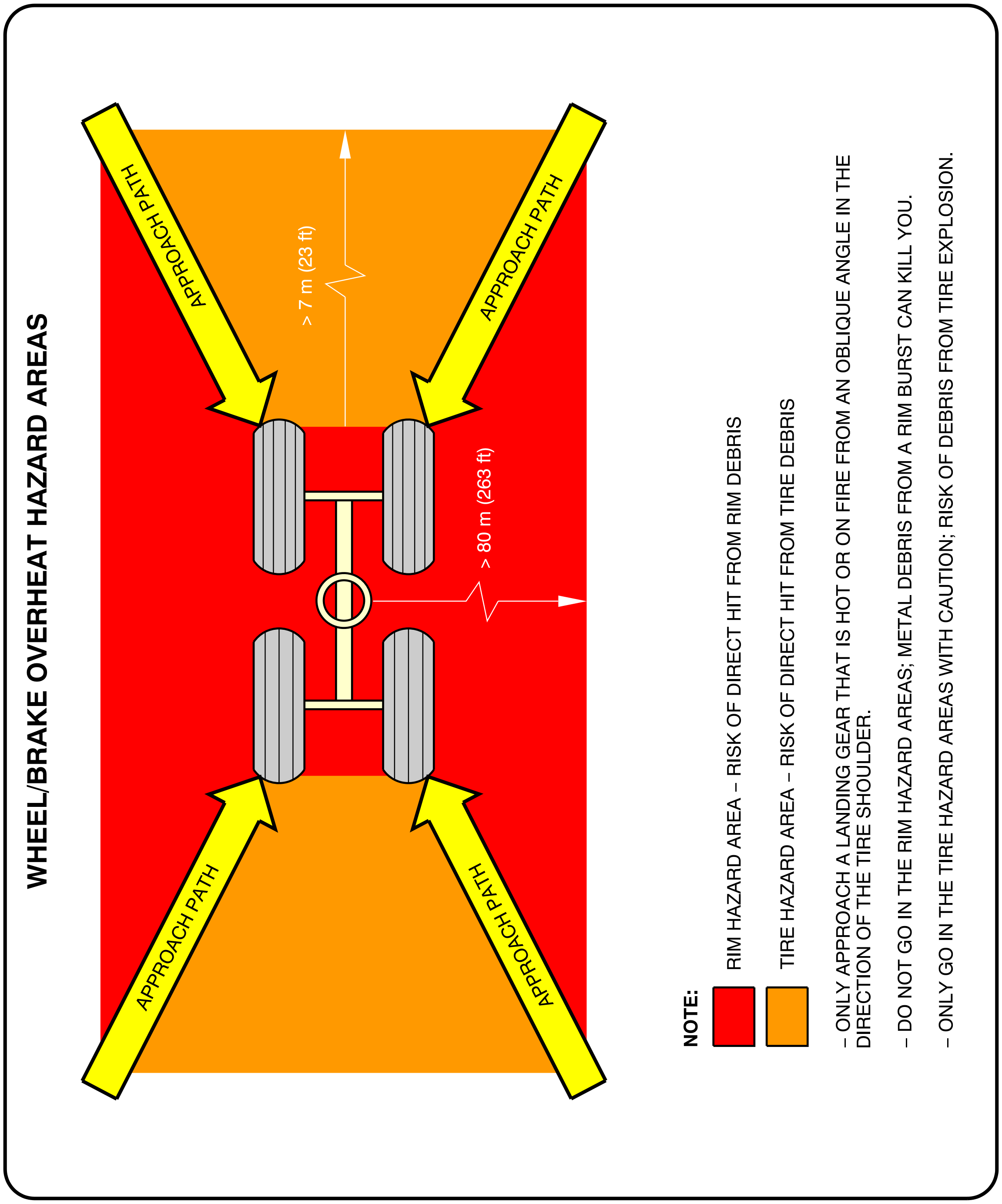
Highly Flammable and Hazardous Materials and Components
FIGURE-10-0-0-991-002-A01

**ON A/C A330-200 A330-300



Crew Rest Compartments Location
FIGURE-10-0-0-991-003-A01

**ON A/C A330-200 A330-300



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Wheel/Brake Overheat
Wheel Safety Area (Sheet 1 of 2)
FIGURE-10-0-0-991-004-A01

**ON A/C A330-200 A330-300

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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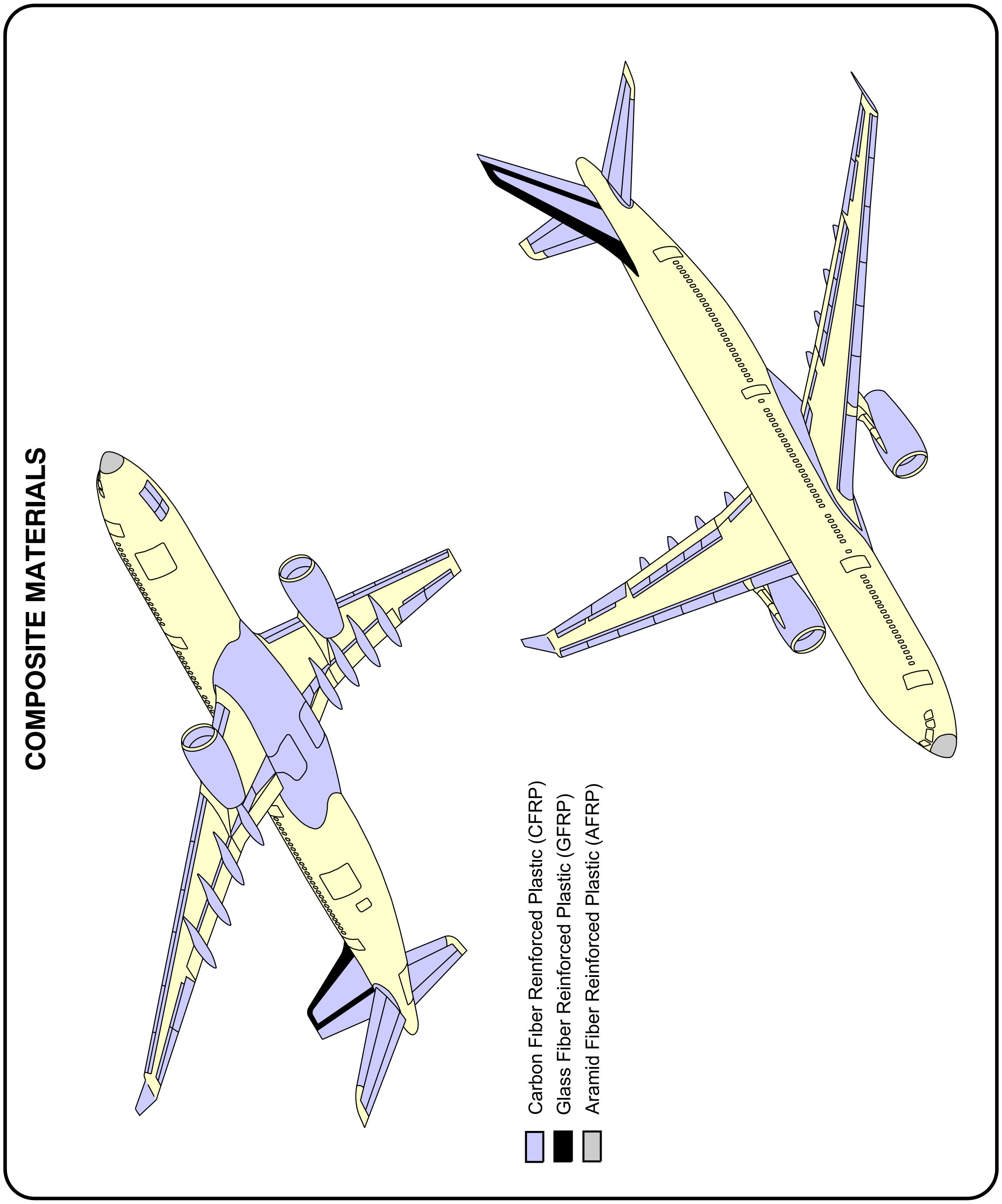
Wheel/Brake Overheat
Recommendations (Sheet 2 of 2)
FIGURE-10-0-0-991-004-A01

**ON A/C A330-200 A330-300



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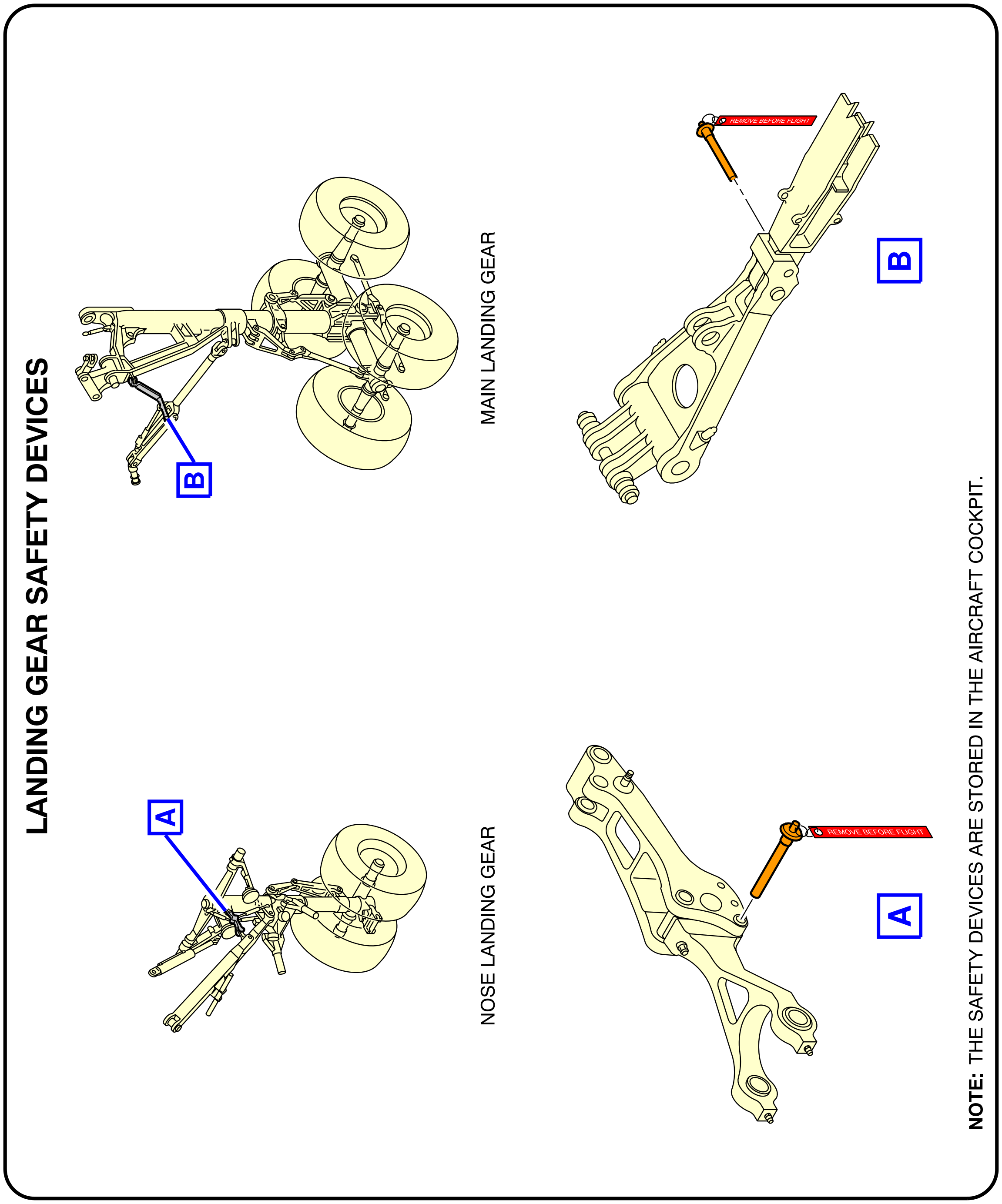
Composite Materials Location
FIGURE-10-0-0-991-005-A01

**ON A/C A330-200 A330-300



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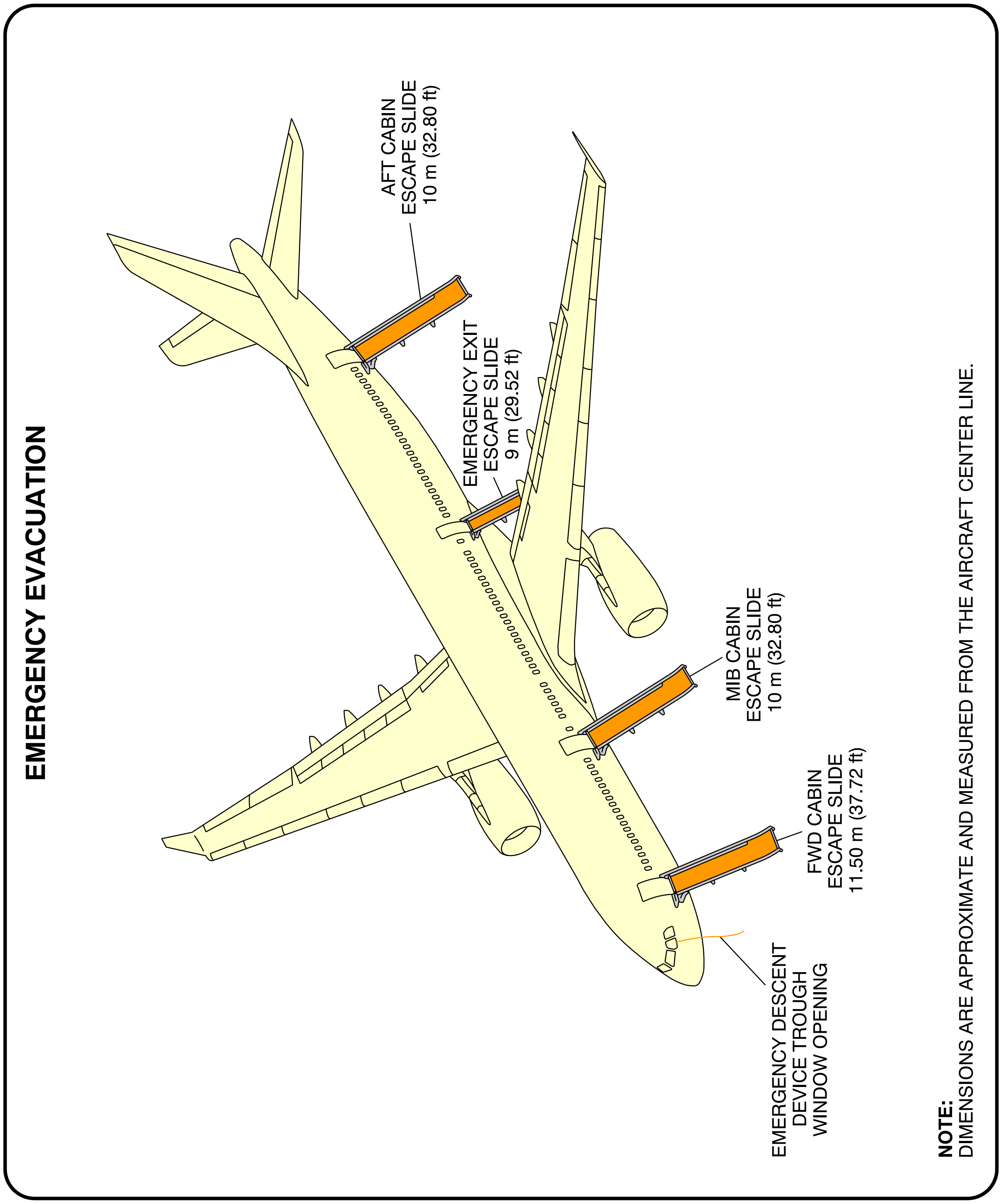
Ground Lock Safety Devices
FIGURE-10-0-0-991-006-A01

**ON A/C A330-200 A330-300



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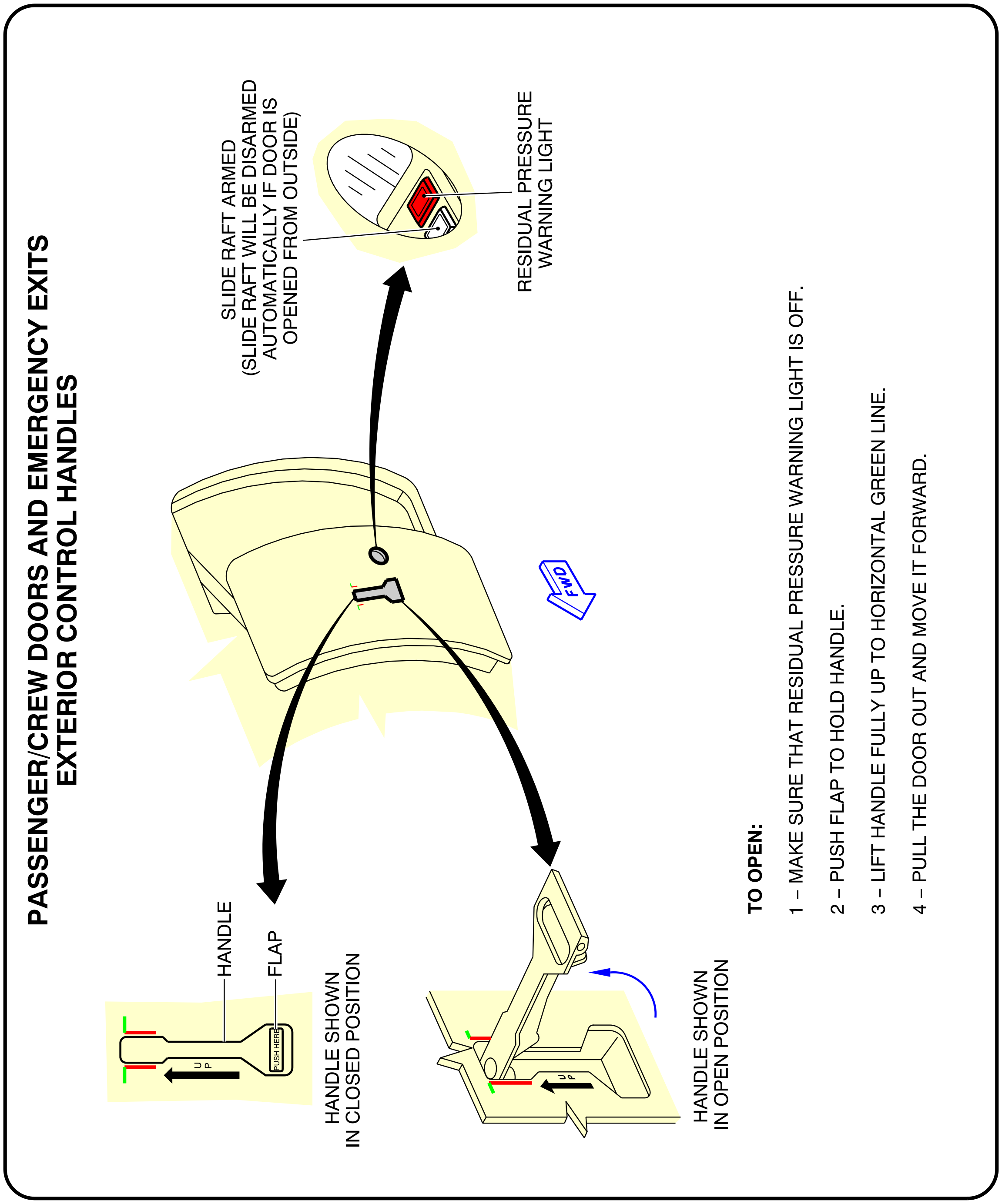
Emergency Evacuation Devices
FIGURE-10-0-0-991-007-A01

**ON A/C A330-200 A330-300



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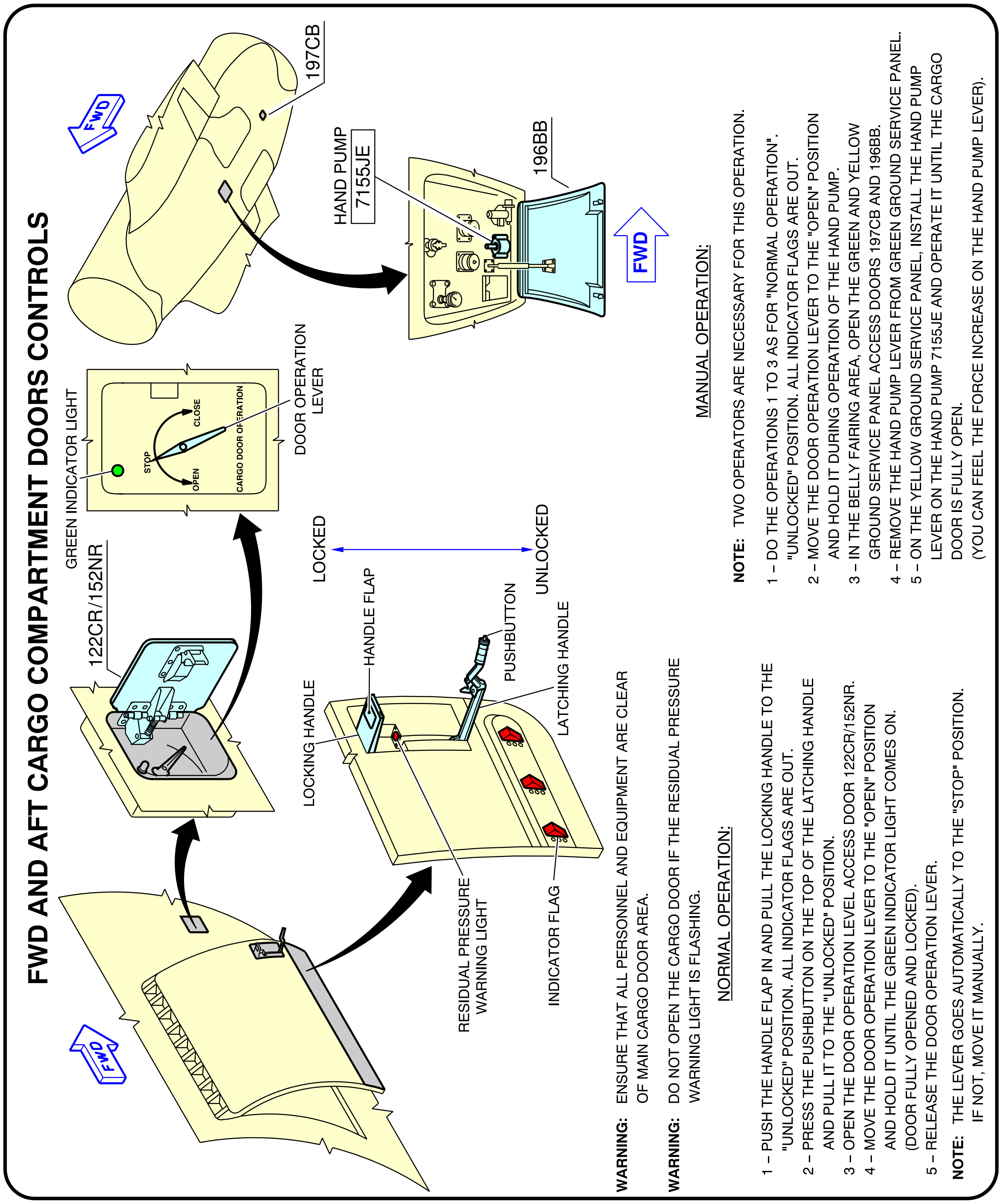
Pax/Crew Doors and Emergency Exits
FIGURE-10-0-0-991-008-A01

****ON A/C A330-200 A330-300**



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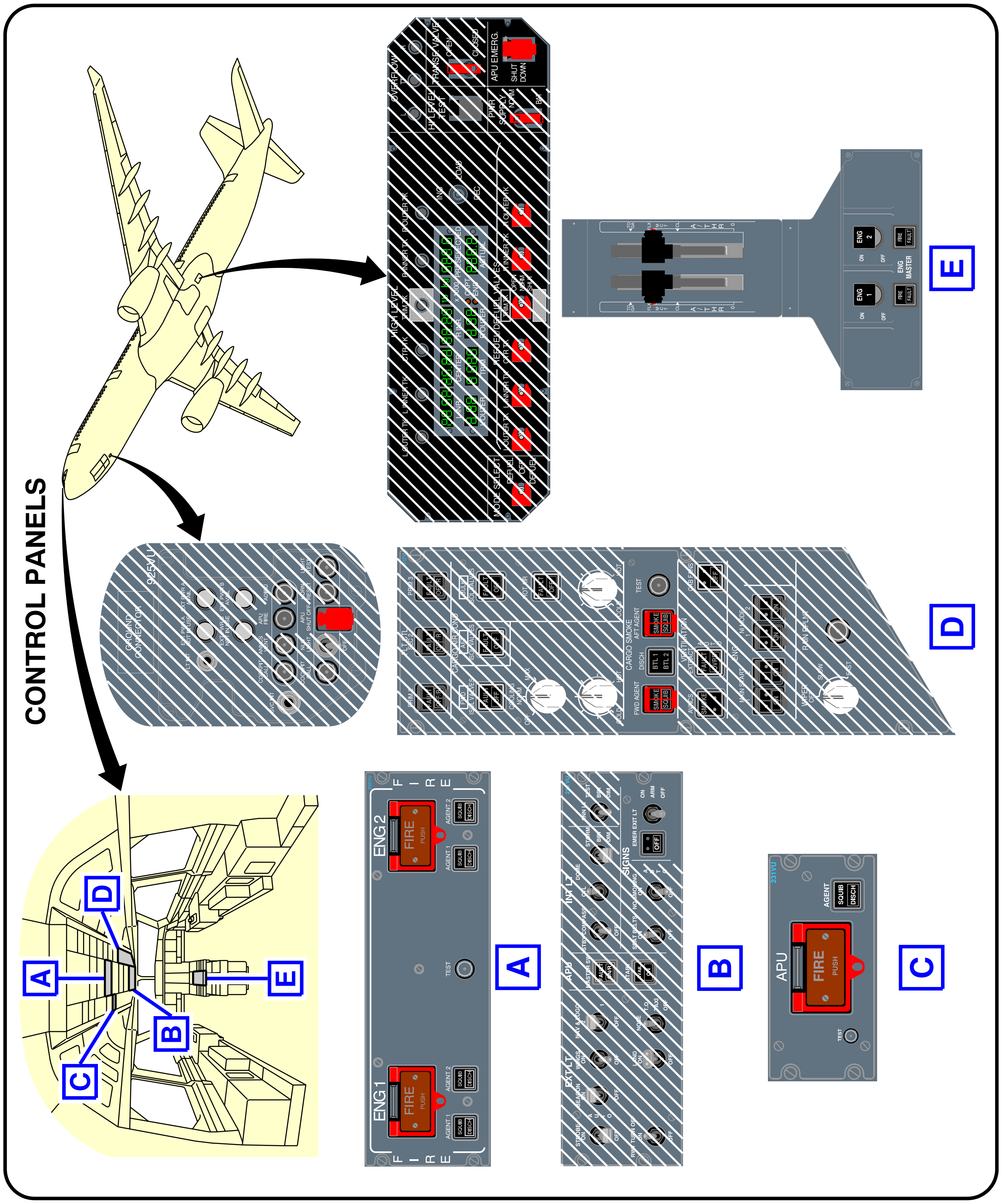
FWD and AFT Lower Deck Cargo Doors
FIGURE-10-0-0-991-009-A01

**ON A/C A330-200 A330-300



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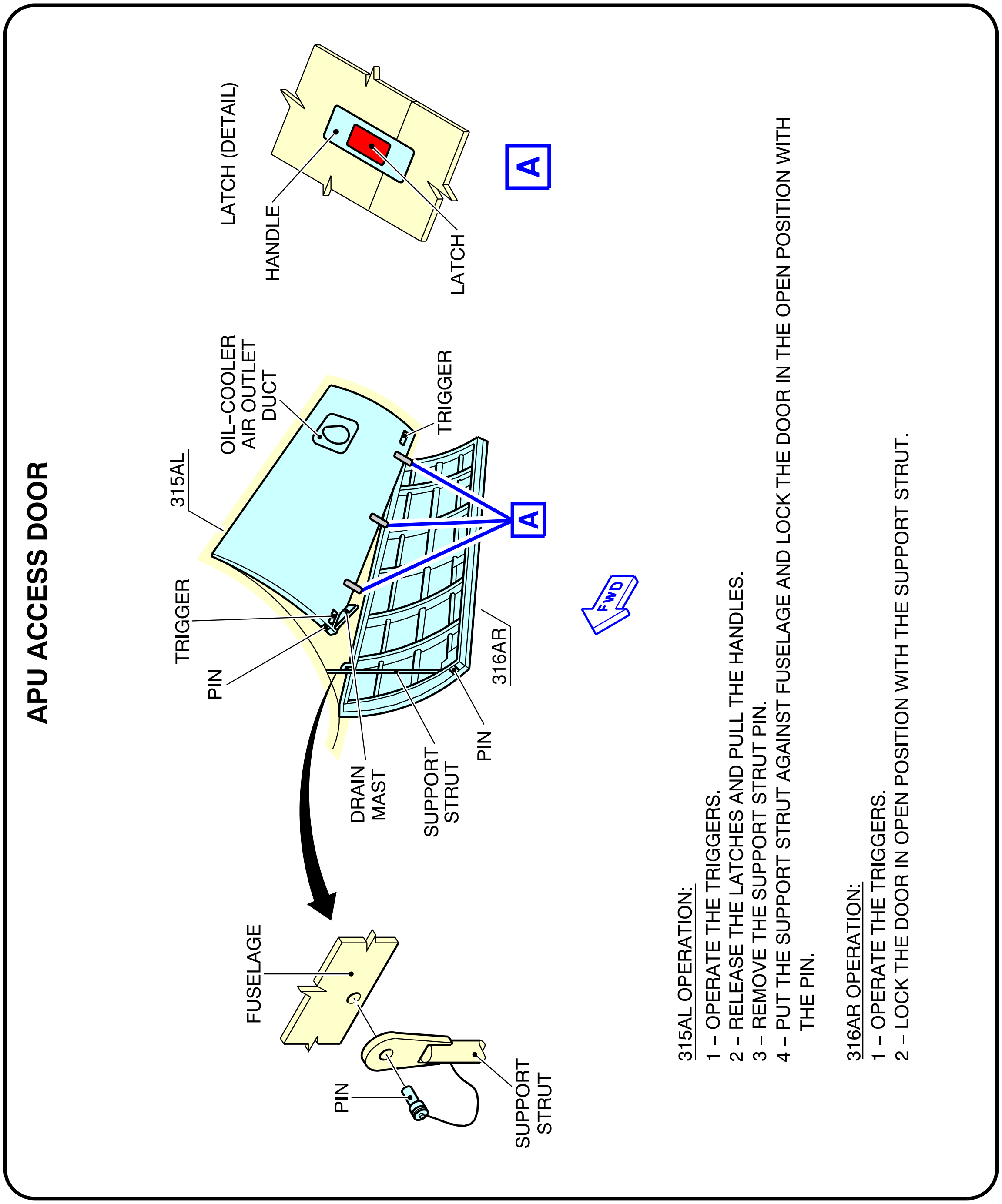
Control Panels
FIGURE-10-0-0-991-010-A01

**ON A/C A330-200 A330-300



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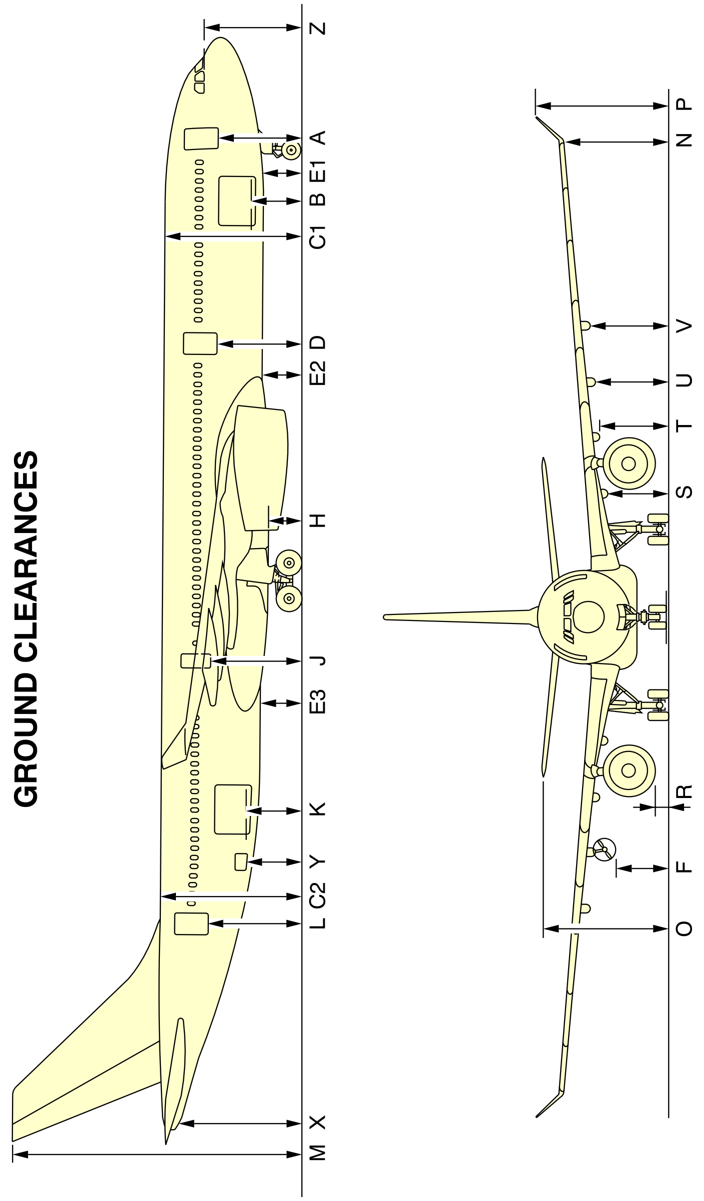
APU Compartment Access
FIGURE-10-0-0-991-011-A01

**ON A/C A330-200 A330-300

GROUND CLEARANCES



DIMENSIONS ARE RELATED TO AIRCRAFT WEIGHT AND CG CONFIGURATION

A/C CONFIGURATION	120 t AFT CG (26.8%) m	120 t AFT CG (26.8%) ft
A	3.45	14.9
B	2.70	8.9
C1	7.74	25.4
C2	8.53	28.0
D	4.83	15.8
E1	2.10	6.9
E2	2.28	7.5
E3	2.74	9
F	3.45	11.3
H	2.04	6.7

A/C CONFIGURATION	120 t AFT CG (26.8%) m	120 t AFT CG (26.8%) ft
J	5.34	17.5
K	3.43	11.3
L	5.77	18.9
M	17.2	56.4
N	6.46	21.2
O	8.33	27.3
P	8.05	26.4
GE = R	0.94	3.1
PW = R	0.90	3
RR = R	0.87	2.9

A/C CONFIGURATION	120 t AFT CG (26.8%) m	120 t AFT CG (26.8%) ft
S	3.87	12.7
T	4.33	14.2
U	4.64	15.2
V	4.97	16.3
X	7.48	24.5
Y	3.68	12.1
Z	5.62	18.4

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

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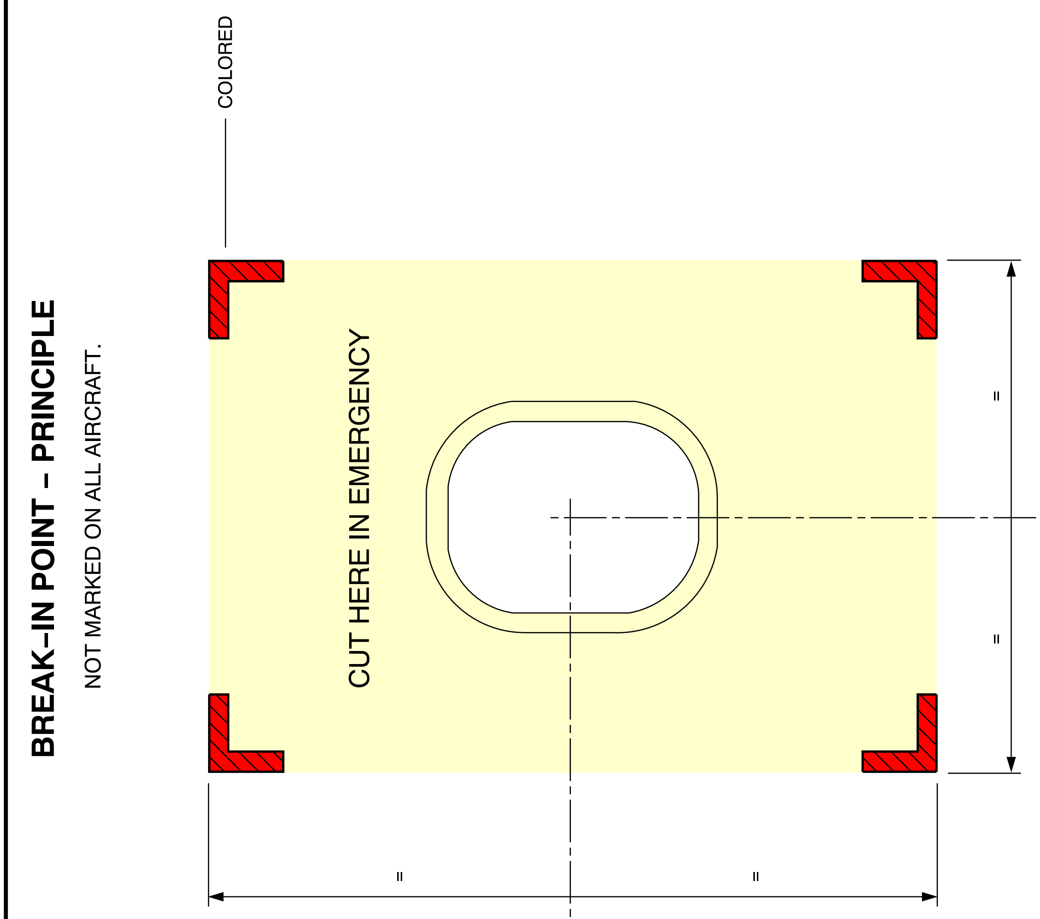
Ground Clearances
FIGURE-10-0-0-991-012-A01

**ON A/C A330-200 A330-300



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Structural Break-in Points
FIGURE-10-0-0-991-013-A01

****ON A/C A330-200F**

<u>Aircraft Rescue and Fire Fighting</u>

1. Aircraft Rescue and Fire Fighting Charts
   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 (ARFC) poster available on AIRBUSWorld and the Airbus website.

**ON A/C A330-200F

AIRBUS

A330-200F

Aircraft Rescue and Fire Fighting Chart
ARFC

NOTE:
THIS CHART GIVES THE GENERAL LAYOUT OF THE A330−200F STANDARD VERSION.
THE NUMBER AND ARRANGEMENT OF THE INDIVIDUAL ITEMS VARY WITH THE CUSTOMERS.
FIGURES CONTAINED IN THIS POSTER ARE AVAILABLE SEPARATLY IN THE CHAPTER 10 OF THE "AIRCRAFT CHARACTERISTICS – AIRPORT AND MAINTENANCE PLANNING" DOCUMENT.

ISSUED BY:
AIRBUS S.A.S
CUSTOMER SERVICES
TECHNICAL DATA SUPPORT AND SERVICES
31707 BLAGNAC CEDEX
FRANCE

REVISION DATE: APRIL 2013
REFERENCE : F_RF_000000_1_A33020F
SHEET 1/2

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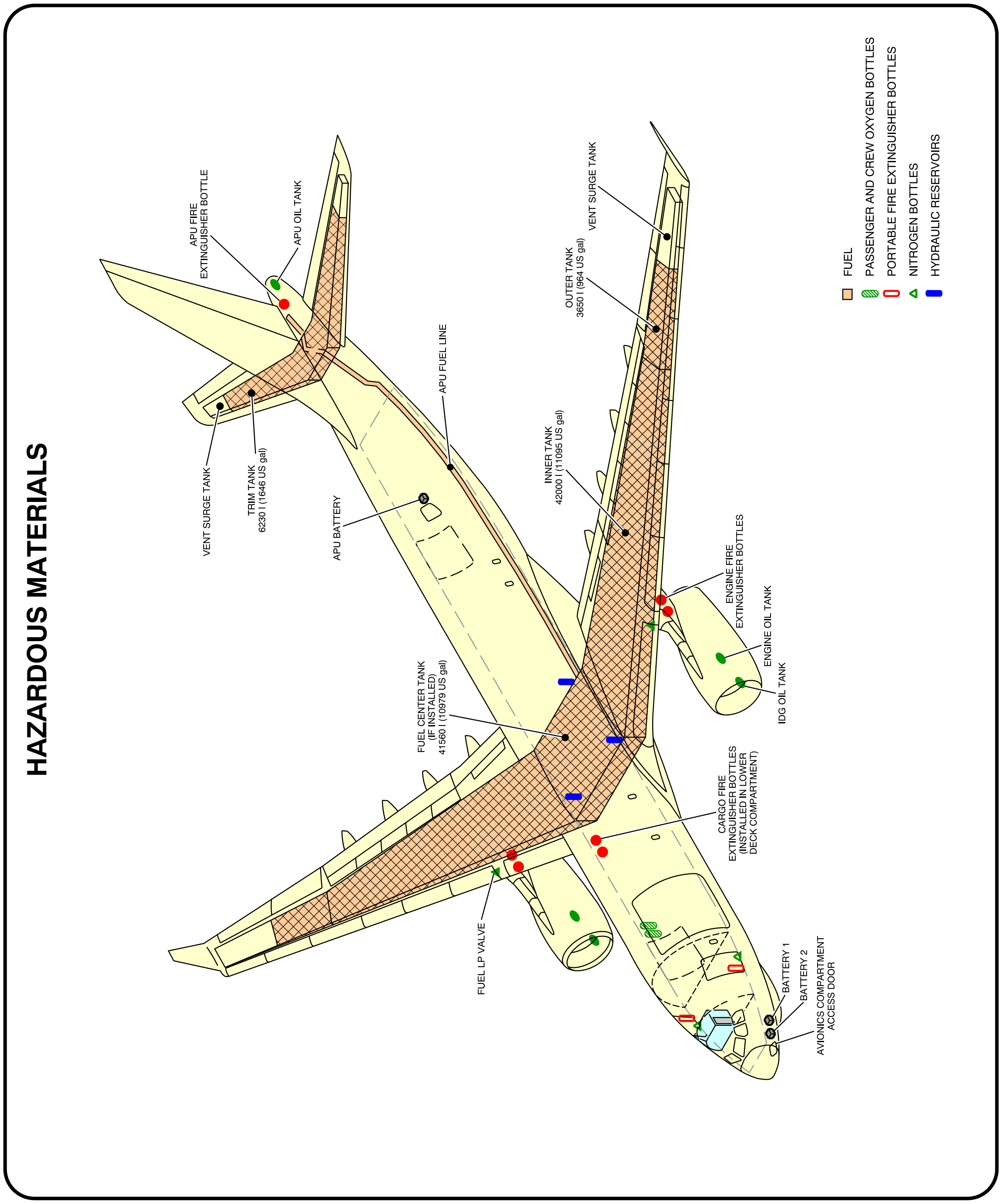
Front Page
FIGURE-10-0-0-991-014-A01

**ON A/C A330-200F



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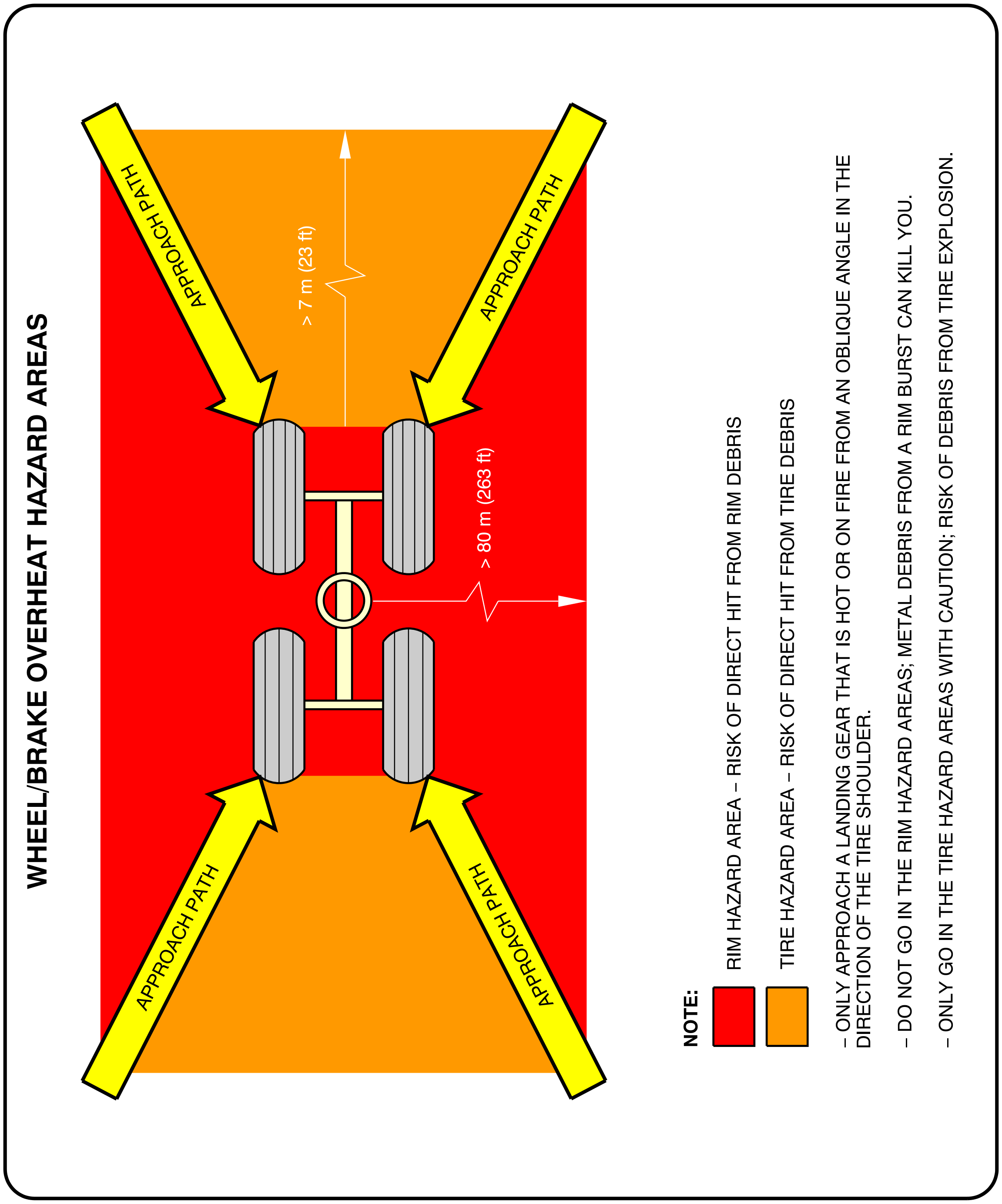
Highly Flammable and Hazardous Materials and Components
FIGURE-10-0-0-991-015-A01

**ON A/C A330-200F



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Wheel/Brake Overheat
Wheel Safety Area (Sheet 1 of 2)
FIGURE-10-0-0-991-016-A01

**ON A/C A330-200F

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.
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4 – USE WATER MIST TO DECREASE THE TEMPERATURE OF THE COMPLETE WHEEL AND BRAKE ASSEMBLY.
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THEY CAN DECREASE THE SPEED OF HEAT DISSIPATION WITH A POSSIBLE RISK OF PERMANENT STRUCTURAL DAMAGE TO THE BRAKES, WHEELS OR WHEEL AXLES.

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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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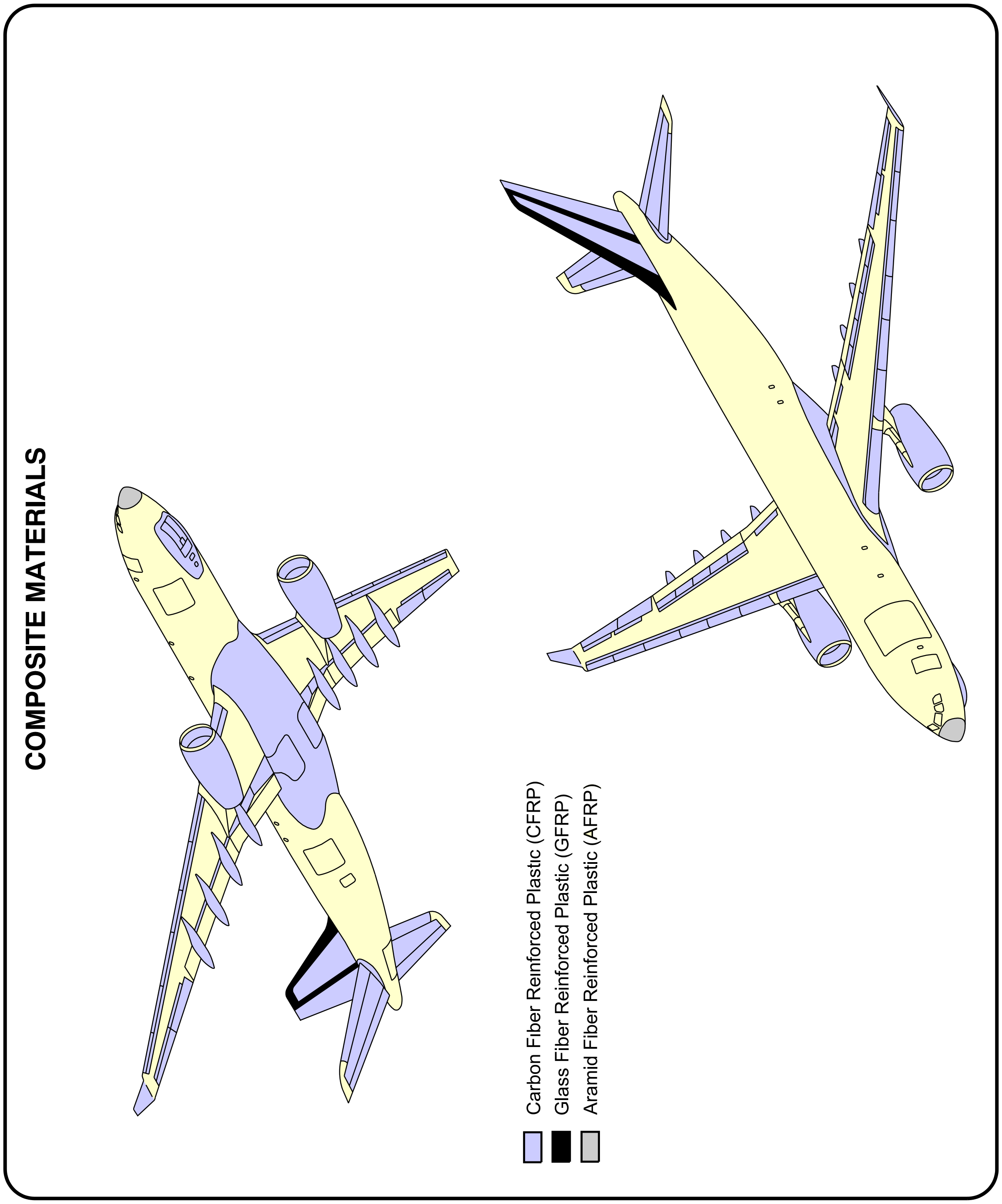
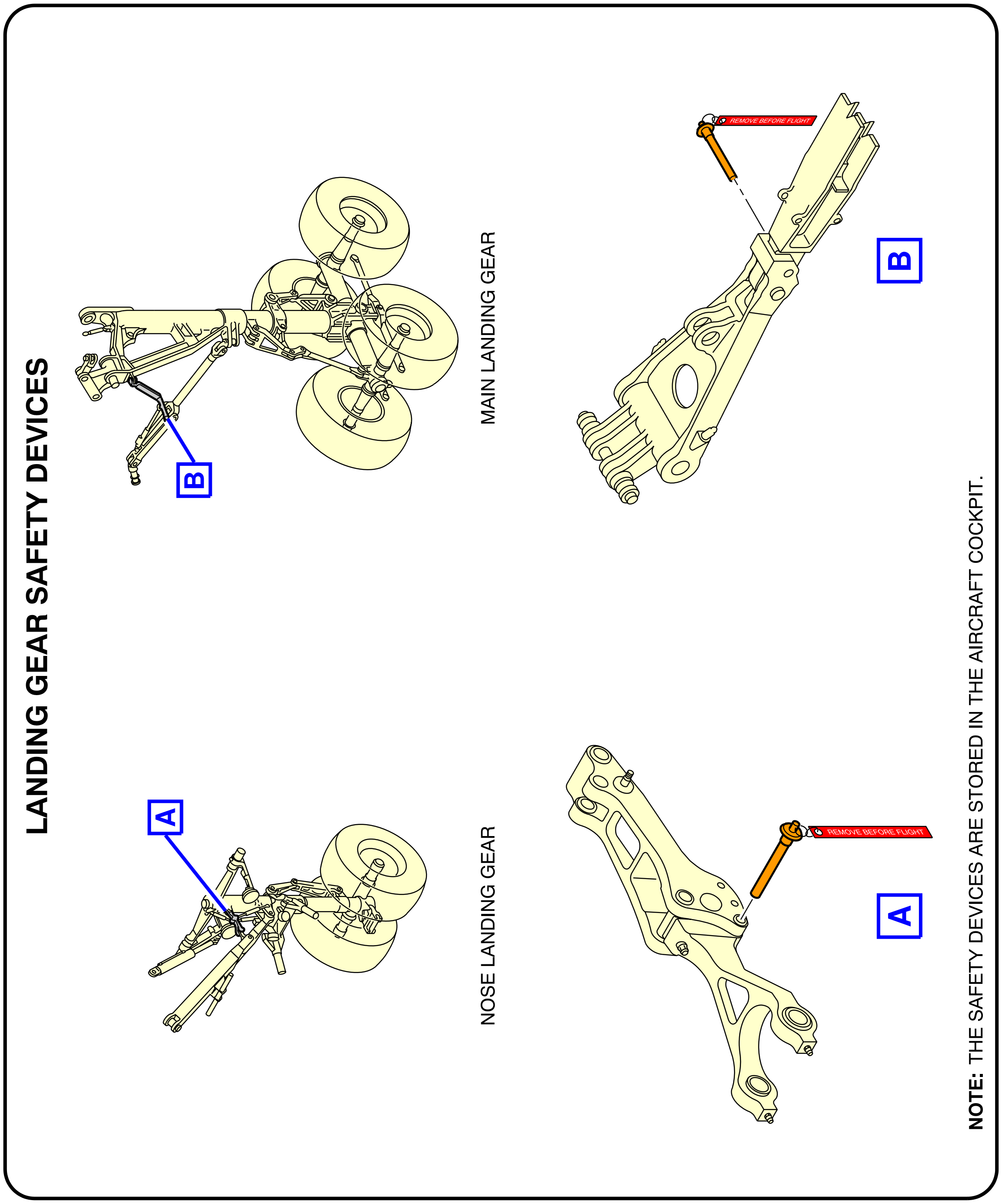
Wheel/Brake Overheat
Recommendations (Sheet 2 of 2)
FIGURE-10-0-0-991-016-A01

**ON A/C A330-200F



Composite Materials Location
FIGURE-10-0-0-991-018-A01

****ON A/C A330-200F



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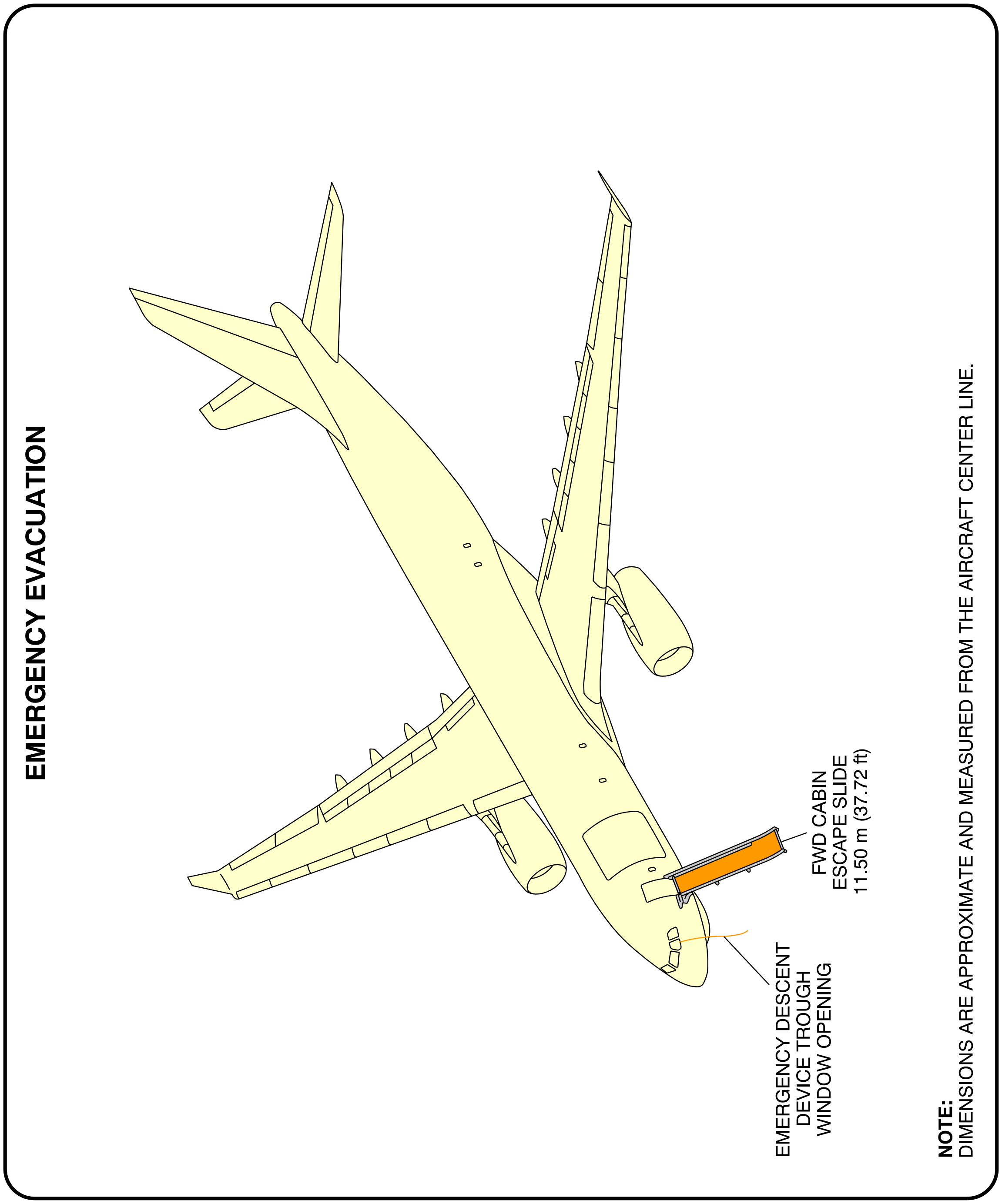
Ground Lock Safety Devices
FIGURE-10-0-0-991-019-A01

**ON A/C A330-200F



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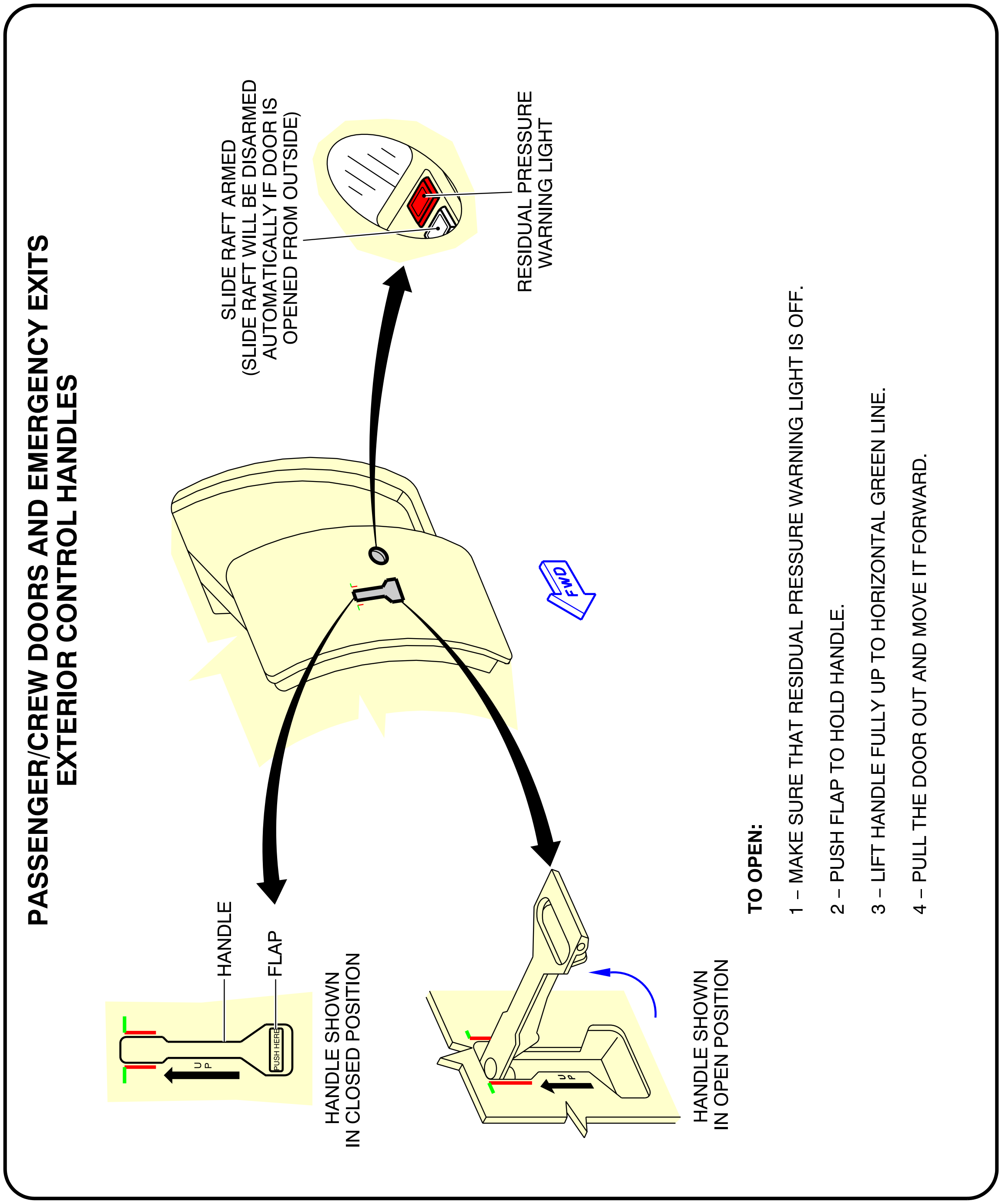
Emergency Evacuation Devices
FIGURE-10-0-0-991-020-A01

**ON A/C A330-200F



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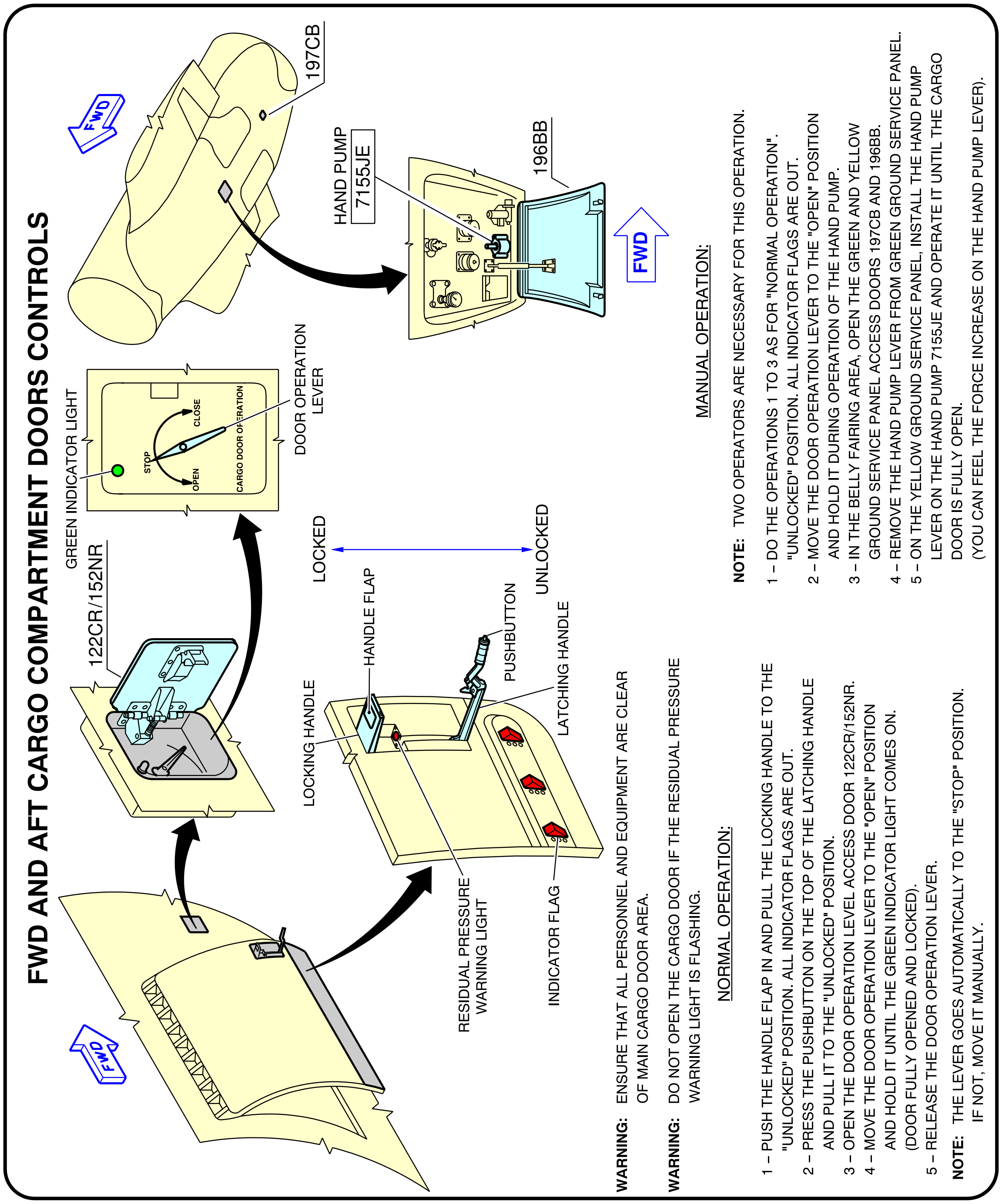
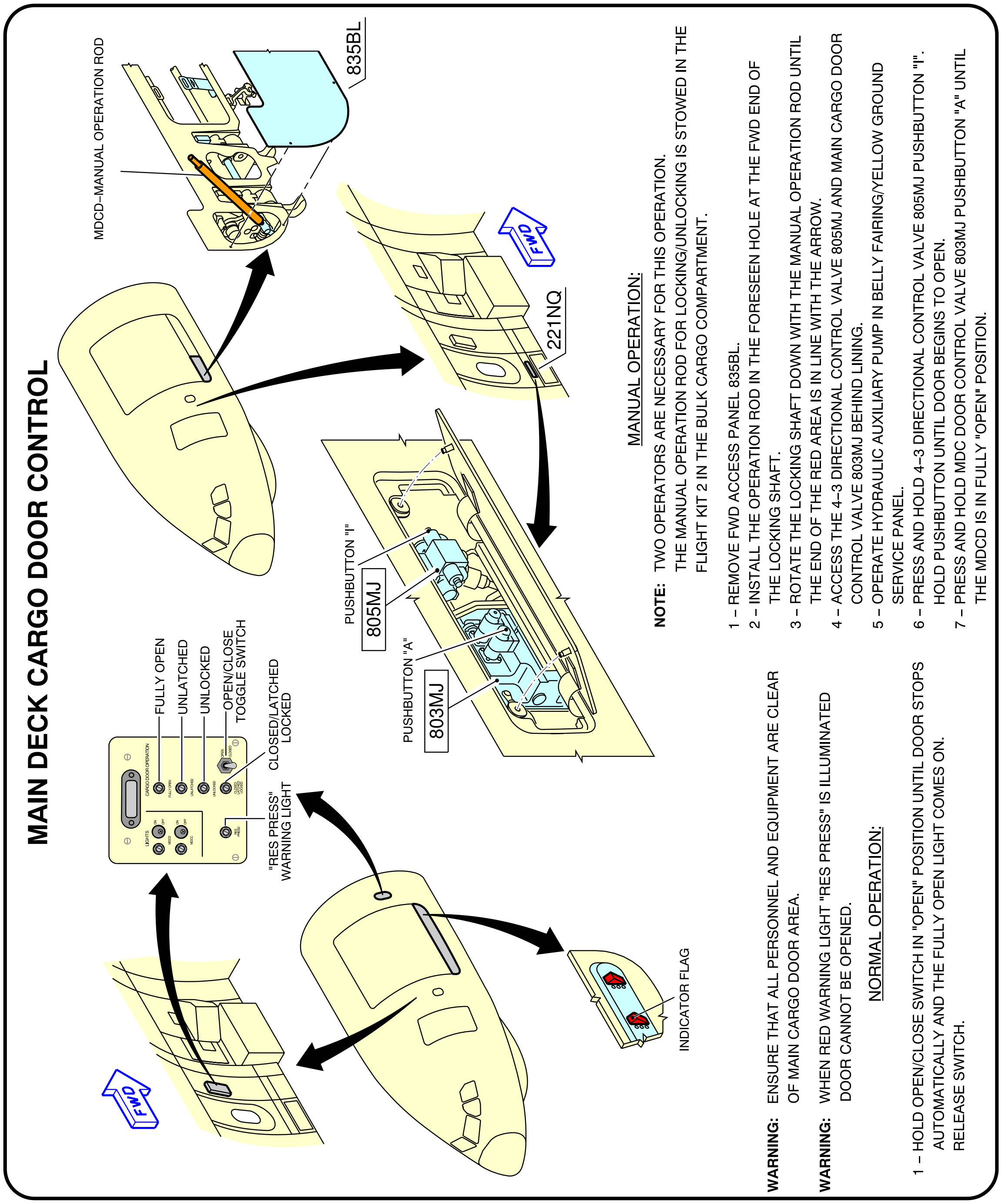
Crew Doors and Emergency Exits
FIGURE-10-0-0-991-021-A01

**ON A/C A330-200F



Cargo Doors
FWD and AFT Lower Deck Compartments (Sheet 1 of 2)
FIGURE-10-0-0-991-022-A01

**ON A/C A330-200F



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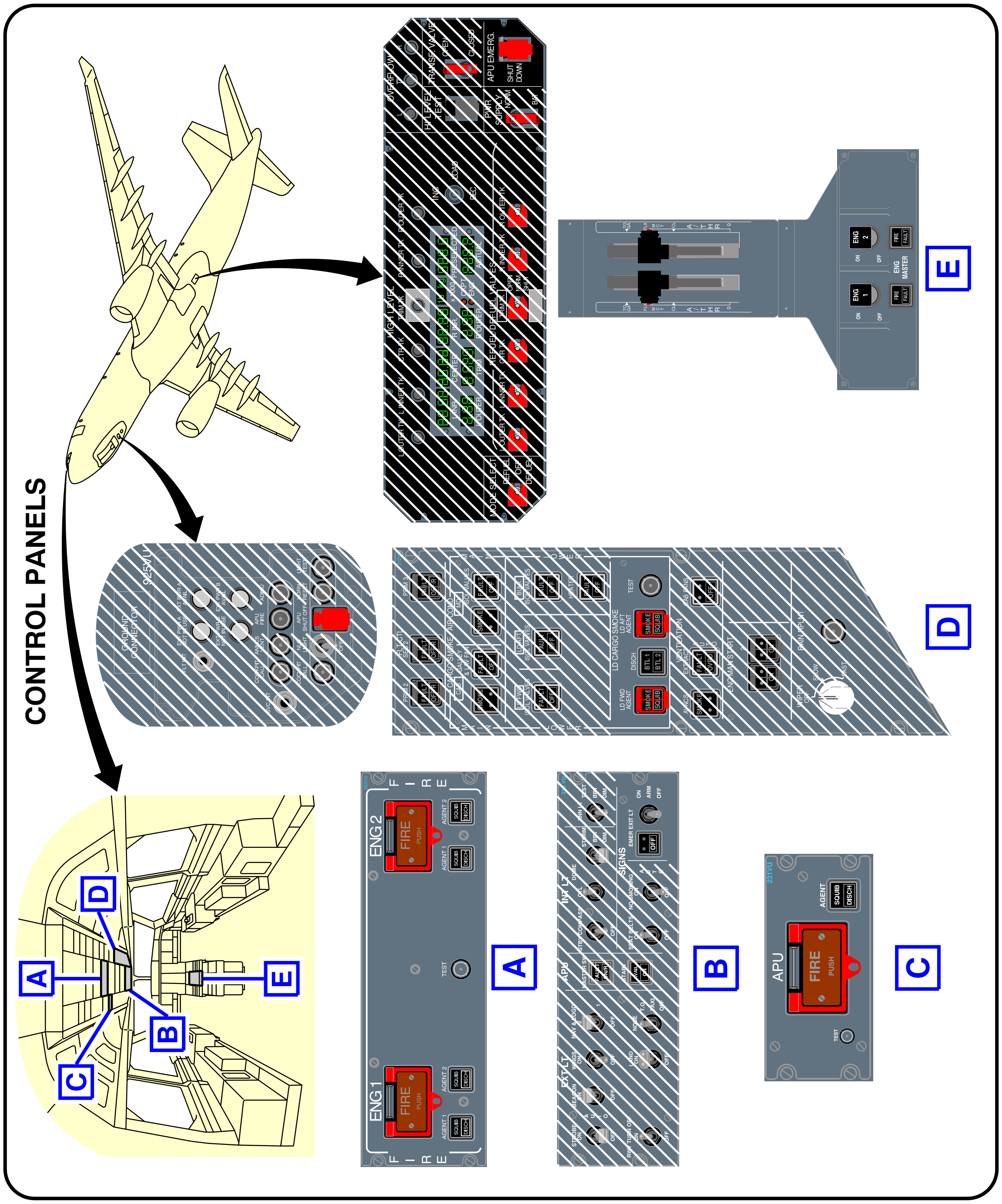
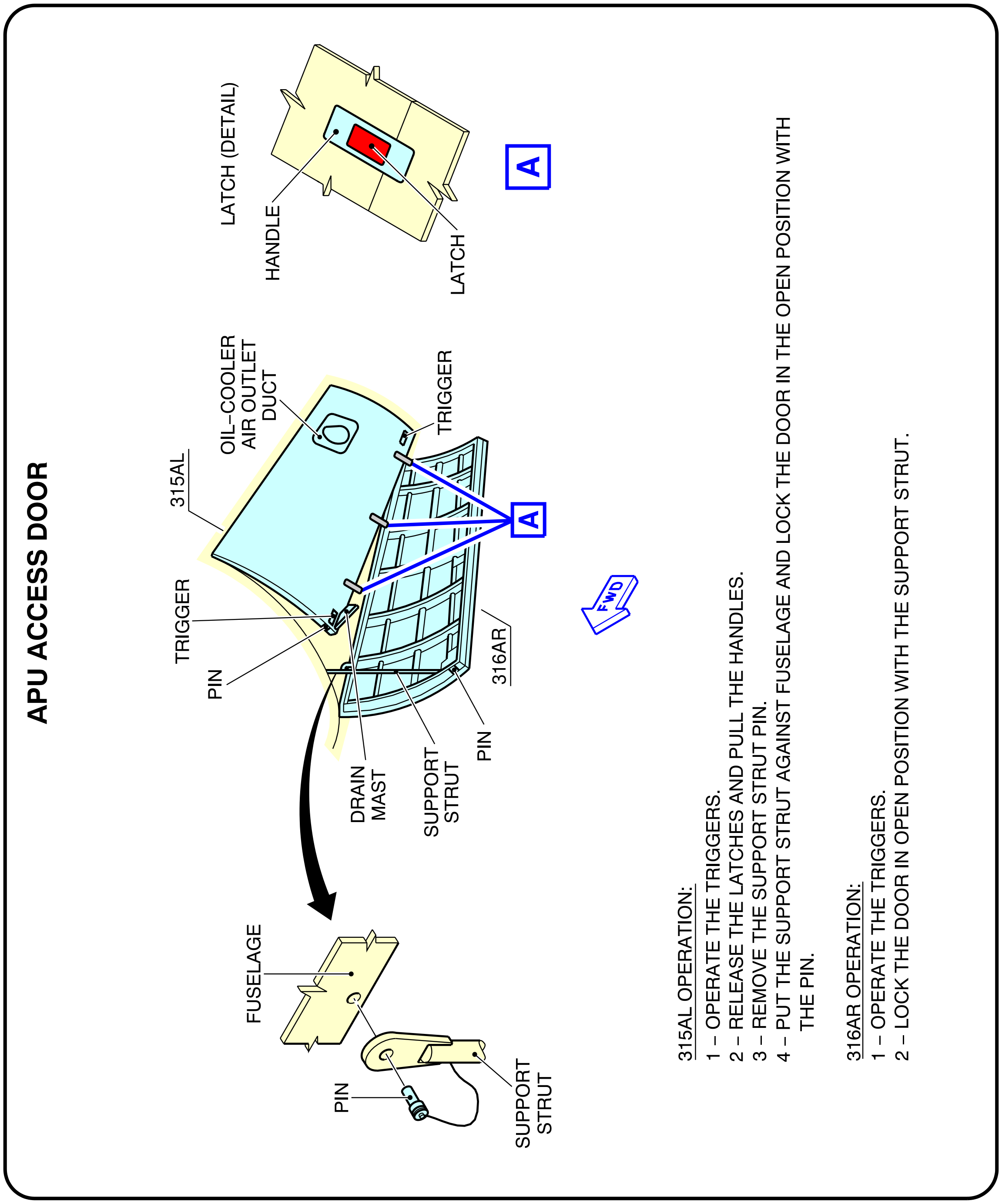
Cargo Doors
Upper Deck Compartment (Sheet 2 of 2)
FIGURE-10-0-0-991-022-A01

**ON A/C A330-200F



Control Panels
FIGURE-10-0-0-991-023-A01

**ON A/C A330-200F



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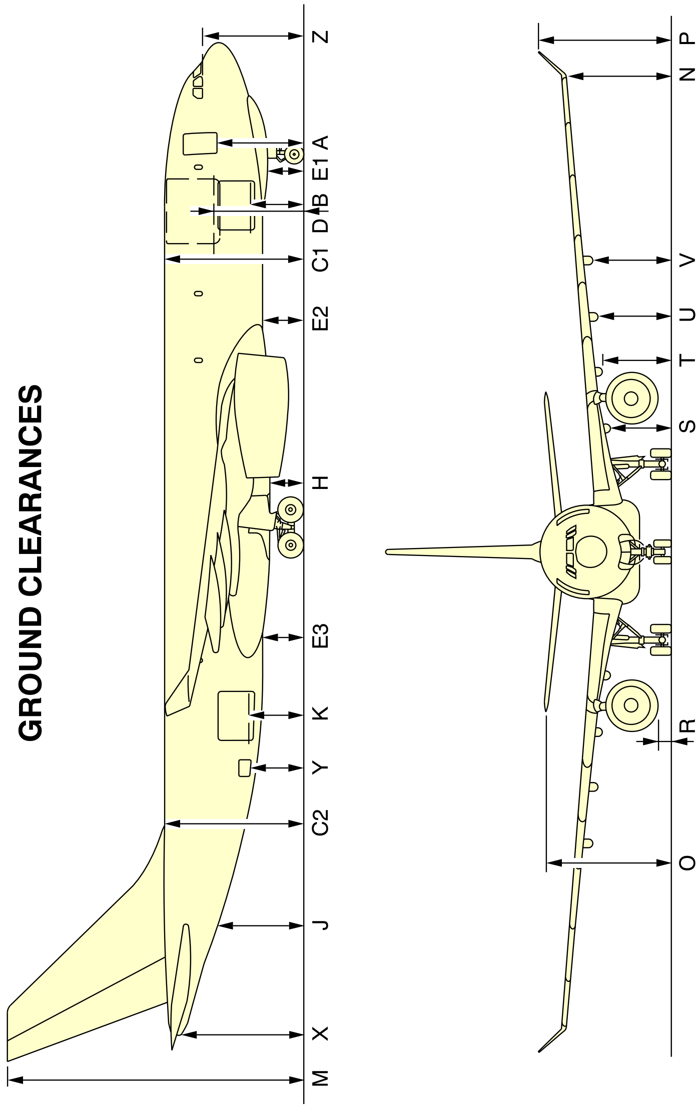
APU Compartment Access
FIGURE-10-0-0-991-024-A01

**ON A/C A330-200F

GROUND CLEARANCES



DIMENSIONS ARE RELATED TO AIRCRAFT WEIGHT AND CG CONFIGURATION

A/C CONFIGURATION	110 t AFT CG (20.6%) m	110 t AFT CG (20.6%) ft
A	4.82	15.8
B	2.93	9.6
C1	7.87	25.8
C2	8.06	26.4
D	4.88	16
E1	2.06	6.8
E2	2.26	7.4
E3	2.37	7.8
H	1.89	6.2
J	5.13	16.8

A/C CONFIGURATION	110 t AFT CG (20.6%) m	110 t AFT CG (20.6%) ft
K	3.15	10.3
M	17	55.6
N	7.46	24.5
O	7.85	25.8
P	8.88	29.1
RR = R	0.82	2.7
PW = R	0.89	2.9
S	2.44	8
T	2.69	8.8
U	2.63	8.6

A/C CONFIGURATION	110 t AFT CG (20.6%) m	110 t AFT CG (20.6%) ft
V	2.70	8.9
X	7.46	24.5
Y	3.25	10.7
Z	6.08	20

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

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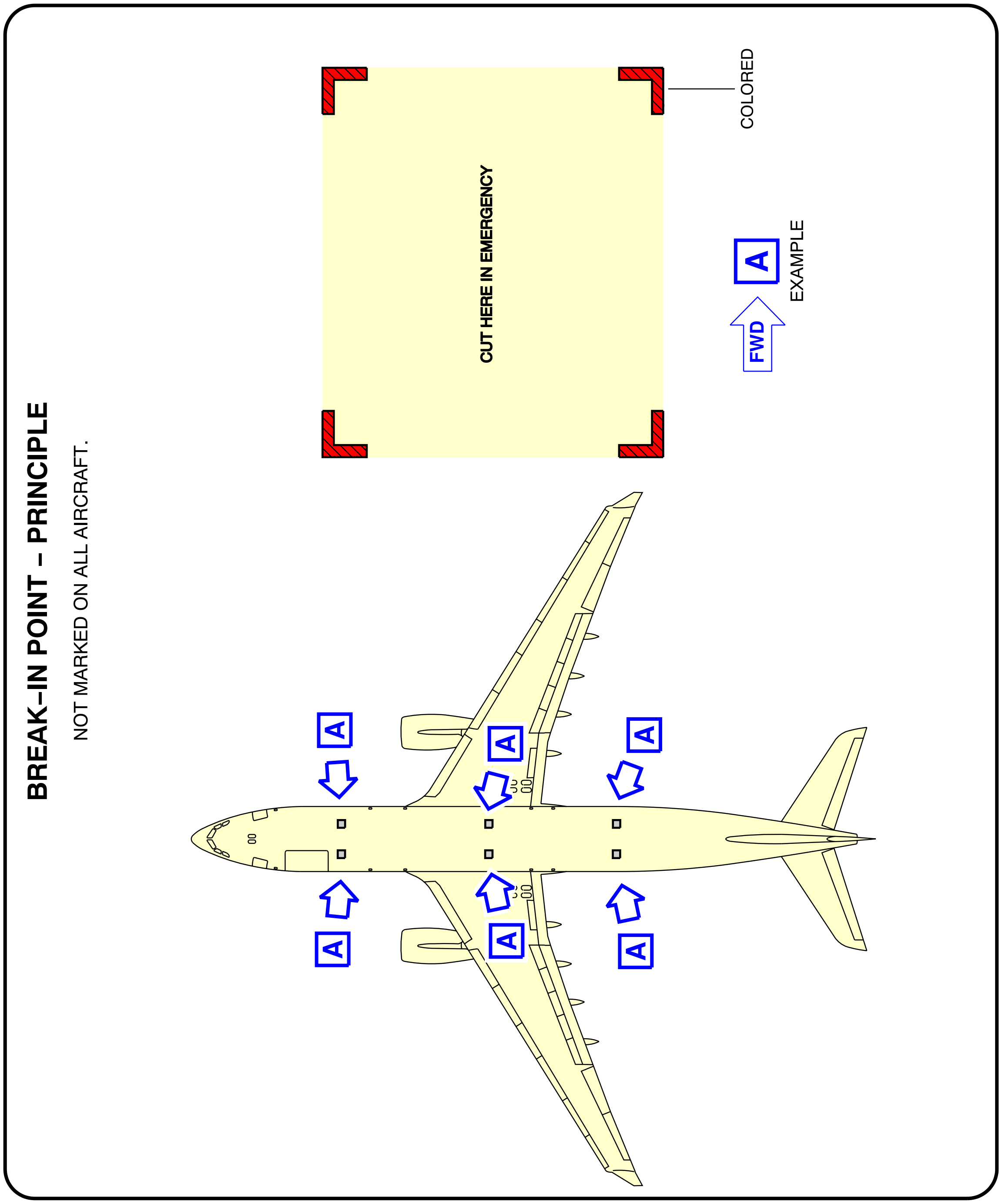
Ground Clearances
FIGURE-10-0-0-991-025-A01

**ON A/C A330-200F



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Structural Break-in Points
FIGURE-10-0-0-991-026-A01