AIRBUS

A320

AIRCRAFT CHARACTERISTICS
AIRPORT AND MAINTENANCE PLANNING

AC

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

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HIGHLIGHTS

Revision No. 27 - Jun 01/12

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
CHAPTER 1	R	
Section 1-1		
Subject 1-1-0		
Purpose	R	PURPOSE CHANGED DUE TO MERGE OF THE MFP AND AC MANUALS. PART EFFECTIVITY ADDED/REVISED/DELETED
Section 01-02	D	
CHAPTER 2	R	
Section 2-1	R	
Subject 2-1-0	R	
General Airplane Characteristics	R	WEIGHT DEFINITIONS UPDATED. PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 2-1-1	R	
General Airplane Characteristics Data	R	ADDED WV 0017 AND 0018. OEW AND PAYLOAD DELETED. PART EFFECTIVITY ADDED/REVISED/DELETED
Section 2-2	R	
Subject 2-2-0	R	
General Aircraft Dimensions	R	REPLACED "AIRPLANE" BY "AIRCRAFT" AND COMPLETED TITLE OF ILLUSTRATIONS. DESCRIPTION TITLE UPDATED
FIGURE General Aircraft Dimensions - Wing Tip Fence	R	ILLUSTRATION REVISED
Section 2-3		
Subject 2-3-0		

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
Ground Clearances	R	REVISED GROUND CLEARANCES TO SHOW THE DIMENSIONS FOR A LIGHT AND HEAVY WEIGHT VARIANT. DELETED THE TERM "OWE". PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Clearances	R	
FIGURE Ground Clearances - Ground Clearances with Sharklets	N	ILLUSTRATION ADDED
FIGURE Ground Clearances - Flaps and Flap Track Fairings When Flaps Fully Extended	N	ILLUSTRATION ADDED
FIGURE Ground Clearances - Flaps and Flap Track Fairings When Flaps Fully Extended	N	ILLUSTRATION ADDED
FIGURE Ground Clearances - Flap Track Fairings Up	N	ILLUSTRATION ADDED
FIGURE Ground Clearances - Aileron Down	N	ILLUSTRATION ADDED
FIGURE Ground Clearances - Aileron Up and Spoilers 1 to 5 Extended	N	ILLUSTRATION ADDED
FIGURE Ground Clearances - Slats Extended	N	ILLUSTRATION ADDED
Section 2-4		
Subject 2-4-0		
Interior Arrangements	R	PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 2-4-1		
Typical Configuration	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Typical Configuration - Typical Configuration Single-Class, High Density	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Typical Configuration - Typical Configuration Two-Class	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
Section 2-5		
Subject 2-5-0		
Passenger Compartment Cross-section	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Passenger Compartment Cross-section	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Passenger Compartment Cross-section - Economy Class, 6 Abreast - Wider Aisle	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Passenger Compartment Cross-section - Passenger Compartment Cross-section, First-class	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Section 2-6	R	
Subject 2-6-0		
Cargo Compartments	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Cargo Compartments - Locations, Dimensions and Loading Combinations	N	ILLUSTRATION ADDED
Subject 02-06-01	D	
Section 2-7		
Subject 2-7-0		
Doors Clearances	R	PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 2-7-1		
Forward Passenger / Crew Doors	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Doors Clearances - Forward Passenger / Crew Doors	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 2-7-2		
Emergency Exits	R	PART EFFECTIVITY ADDED/REVISED/DELETED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Doors Clearances - Emergency Exits	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 2-7-3		
Aft Passenger / Crew Doors	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Doors Clearances - Aft Passenger / Crew Doors	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 2-7-4		
Forward Cargo Compartment Door	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Doors Clearances - Forward Cargo Compartment Door	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 2-7-5		
Aft Cargo Compartment Door	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Doors Clearances - Aft Cargo Compartment Door	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 2-7-6		
Bulk Cargo Compartment Door	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Doors Clearances - Bulk Cargo Compartment Door	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 2-7-7		
Main Landing Gear Doors	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Doors Clearances - Main Landing Gear Doors	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Doors Clearances - Main Landing Gear Doors (Bogie)	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 2-7-8		
Radome	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Doors Clearances - Radome	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 2-7-9		
APU and Nose Landing Gear Doors	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Doors Clearances - APU and Nose Landing Gear Doors	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Section 2-8	N	
Subject 2-8-0	N	
Escape Slides	N	
FIGURE Escape Slides - Location	N	ILLUSTRATION ADDED
FIGURE Escape Slides - Dimensions	N	ILLUSTRATION ADDED
Section 2-9	N	
Subject 2-9-0	N	
Landing Gear	N	
FIGURE Landing Gear - Main Landing Gear - Twin Wheel	N	ILLUSTRATION ADDED
FIGURE Landing Gear - Main Landing Gear Dimensions - Twin Wheel	N	ILLUSTRATION ADDED
FIGURE Landing Gear - Main Landing Gear - Four Wheels - Bogie	N	ILLUSTRATION ADDED
FIGURE Landing Gear - Main Landing Gear Dimensions - Four Wheels - Bogie	N	ILLUSTRATION ADDED
FIGURE Landing Gear - Nose Landing Gear	N	ILLUSTRATION ADDED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Landing Gear - Nose Landing Gear Dimensions	N	ILLUSTRATION ADDED
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
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
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
Section 2-12	N	
Subject 2-12-0	N	
Auxiliary Power Unit	N	
FIGURE Auxiliary Power Unit - Access Doors	N	ILLUSTRATION ADDED
FIGURE Auxiliary Power Unit - General Layout	N	ILLUSTRATION ADDED
Engine and Nacelle	N	
FIGURE Power Plant Handling - Major Dimensions - CFM56 Series Engine	N	ILLUSTRATION ADDED
FIGURE Power Plant Handling - Major Dimensions - CFM56 Series Engine	N	ILLUSTRATION ADDED
FIGURE Power Plant Handling - Fan Cowls - CFM56 Series Engine	N	ILLUSTRATION ADDED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Power Plant Handling - Thrust Reverser Cowls - CFM56 Series Engine	N	ILLUSTRATION ADDED
FIGURE Power Plant Handling - Major Dimensions - IAE V2500 Series Engine	N	ILLUSTRATION ADDED
FIGURE Power Plant Handling - Major Dimensions - IAE V2500 Series Engine	N	ILLUSTRATION ADDED
FIGURE Power Plant Handling - Fan Cowls - IAE V2500 Series Engine	N	ILLUSTRATION ADDED
FIGURE Power Plant Handling - Thrust Reverser Halves - IAE V2500 Series Engine	N	ILLUSTRATION ADDED
Section 2-13	N	
Subject 2-13-0	N	
Leveling, Symmetry and Alignment	N	
FIGURE Location of the Leveling Points	N	ILLUSTRATION ADDED
Section 2-14	N	
Subject 2-14-0	N	
Jacking for Maintenance	N	
FIGURE Jacking for Maintenance - Jacking Point Location	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 - Safety Stay	N	ILLUSTRATION ADDED
FIGURE Jacking for Maintenance - Jacking Design	N	ILLUSTRATION ADDED
FIGURE Loads at the Aircraft Jacking Points - Forward Fuselage Jacking Point - Twin Wheel/Bogie	N	ILLUSTRATION ADDED
FIGURE Loads at the Aircraft Jacking Points - Wing Jacking Point Rib 8 - Twin Wheel/Bogie	N	ILLUSTRATION ADDED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Jacking for Maintenance - Location of Shoring Cradles	N	ILLUSTRATION ADDED
Jacking for Wheel Change	N	
FIGURE Landing Gear Jacking for Wheel Change - MLG Jacking Point Location - Twin Wheels	N	ILLUSTRATION ADDED
FIGURE Landing Gear Jacking for Wheel Change - MLG Jacking with Cantilever Jack - Twin Wheels	N	ILLUSTRATION ADDED
FIGURE Landing Gear Jacking for Wheel Change - Loads at MLG Jacking Points - Twin Wheels	N	ILLUSTRATION ADDED
FIGURE Landing Gear Jacking for Wheel Change - MLG Jacking Point Location Bogie	N	ILLUSTRATION ADDED
FIGURE Landing Gear Jacking for Wheel Change - MLG Jacking Point Location Bogie	N	ILLUSTRATION ADDED
FIGURE Landing Gear Jacking for Wheel Change - MLG Jacking Point Location Bogie	N	ILLUSTRATION ADDED
FIGURE Landing Gear Jacking for Wheel Change - Loads at MLG Jacking Points - Bogie Version	N	ILLUSTRATION ADDED
FIGURE Landing Gear Jacking for Wheel Change - Loads at MLG Jacking Points - 77 000 kg	N	ILLUSTRATION ADDED
FIGURE Landing Gear Jacking for Wheel Change - NLG Jacking - Point Location	N	ILLUSTRATION ADDED
FIGURE Landing Gear Jacking for Wheel Change - Loads at NLG Jacking Points	N	ILLUSTRATION ADDED
FIGURE Landing Gear Jacking for Wheel Change - Loads at NLG Jacking Points - 77 000 kg	N	ILLUSTRATION ADDED
CHAPTER 3	R	

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
Section 3-1		
Subject 3-1-0		
General Information	R	PART EFFECTIVITY ADDED/REVISED/DELETED
Section 3-2		
Subject 3-2-0		
Payload / Range	R	PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 3-2-1		
ISA Conditions	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Payload / Range - CFM56-5A series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Payload / Range - CFM56-5B series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Payload / Range - IAE V2500-A1 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Payload / Range - IAE V2500-A5 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Section 3-3		
Subject 3-3-0		
FAR / JAR Take-off Weight Limitation	R	PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 3-3-1		
ISA Conditions	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE FAR / JAR Take-off Weight Limitation - ISA Conditions – CFM56 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE FAR / JAR Take-off Weight Limitation - ISA Conditions – IAE V2500 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 3-3-2		
ISA +15°C (+59°F) Conditions	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE FAR / JAR Take-off Weight Limitation - ISA +15°C (+59°F) Conditions – CFM56 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE FAR / JAR Take-off Weight Limitation - ISA +15°C (+59°F) Conditions – IAE V2500 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Section 3-4		
Subject 3-4-0		
FAR / JAR Landing Field Length	R	PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 3-4-1		
ISA Conditions	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE FAR / JAR Landing Field Length - CFM56 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE FAR / JAR Landing Field Length - IAE V2500 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Section 3-5		
Subject 3-5-0		
Final Approach Speed	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Final Approach Speed - CFM56 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Final Approach Speed - IAE V2500 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
CHAPTER 4		
Section 4-1		
Subject 4-1-0		
General Information	R	PART EFFECTIVITY ADDED/REVISED/DELETED
Section 4-2		
Subject 4-2-0		
Turning Radii	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Turning Radii, No Slip Angle - Turning Radii – Dual Landing Gear	R	ILLUSTRATION REVISED
FIGURE Turning Radii, No Slip Angle - Turning Radii – Dual Landing Gear	N	ILLUSTRATION ADDED
FIGURE Turning Radii, No Slip Angle - Turning Radii – Bogie Landing Gear	R	ILLUSTRATION REVISED
FIGURE Turning Radii, No Slip Angle - Turning Radii – Bogie Landing Gear	N	ILLUSTRATION ADDED
Section 4-3		
Subject 4-3-0		
Minimum Turning Radii	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Minimum Turning Radii	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Section 4-4		
Subject 4-4-0		
Visibility from Cockpit in Static Position	N	
FIGURE Visibility from Cockpit in Static Position	N	ILLUSTRATION ADDED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Binocular Visibility Through Windows from Captain Eye Position	N	ILLUSTRATION ADDED
Section 4-5	R	
Subject 4-5-0		
Runway and Taxiway Turn Paths	R	PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 4-5-1		
135° Turn - Runway to Taxiway	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE 135° Turn - Runway to Taxiway - Cockpit Over Centerline Method	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE 135° Turn - Runway to Taxiway - Judgemental Oversteering Method	N	ILLUSTRATION ADDED
Subject 4-5-2		
90° Turn - Runway to Taxiway	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE 90° Turn - Runway to Taxiway - Cockpit Over Centerline Method	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE 90° Turn - Runway to Taxiway - Judgemental Oversteering Method	N	ILLUSTRATION ADDED
Subject 4-5-3	N	
180° Turn on a Runway	N	
FIGURE 180° Turn on a Runway - Edge of Runway Method	N	ILLUSTRATION ADDED
Subject 4-5-4	N	
135° Turn - Taxiway to Taxiway	N	
FIGURE 135° Turn - Taxiway to Taxiway - Cockpit Over Centerline Method	N	ILLUSTRATION ADDED
Subject 4-5-5		
90° Turn - Taxiway to Taxiway	R	PART EFFECTIVITY ADDED/REVISED/DELETED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE 90° Turn - Taxiway to Taxiway - Cockpit Over Centerline Method	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Section 4-6		
Subject 4-6-0		
Runway Holding Bay (Apron)	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Runway Holding Bay (Apron)	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
CHAPTER 5	R	
Section 5-0		
Subject 5-0-0		
Terminal Servicing	R	PART EFFECTIVITY ADDED/REVISED/DELETED
Section 5-1	R	
Subject 5-1-0	R	
Airplane Servicing Arrangements	R	PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 5-1-1		
Symbols Used on Servicing Diagrams	R	PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 5-1-2	R	
Typical Ramp Layout - Open Apron	R	TITLE CHANGED FROM "AIRCRAFT AT THE GATE" TO "TYPICAL RAMP LAYOUT - OPEN APRON". ADDED "STAND SAFETY LINE" DEFINITION. DESCRIPTION TITLE UPDATED
FIGURE Typical Ramp Layout - Open Apron - Bulk Loading	R	ILLUSTRATION REVISED
FIGURE Typical Ramp Layout - Open Apron - ULD Loading	N	ILLUSTRATION ADDED
Subject 5-1-3	R	

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
Typical Ramp Layout - Gate	R	TITLE CHANGED FROM "AIRCRAFT AT AN OPEN APRON" TO "TYPICAL RAMP LAYOUT - GATE". ADDED "STAND SAFETY LINE" DEFINITION. DESCRIPTION TITLE UPDATED
FIGURE Typical Ramp Layout - Gate	R	ILLUSTRATION REVISED
Section 5-2	R	
Subject 5-2-0	R	
Terminal Operations - Full Servicing Turn Round Time	N	
FIGURE Turn Round Stations - Full Servicing (43 Min.)	N	ILLUSTRATION ADDED
Subject 05-02-01	D	
Section 5-3	R	
Subject 5-3-0	R	
Terminal Operation - Minimum Servicing Turn Round Time	N	
FIGURE Turn Round Stations - Minimum Servicing (23 Min.)	N	ILLUSTRATION ADDED
Subject 05-03-01	D	
Section 5-4		
Subject 5-4-0		
Ground Service Connections	R	PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 5-4-1		
Ground Service Connections Layout	R	DELETED GROUND SERVICE CONNECTIONS LAYOUT TABLE. PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Service Connections - Ground Service Connections Layout	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 5-4-2		

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
Grounding Points	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Service Connections - Grounding Points	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Service Connections - Grounding Points	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 5-4-3		
Hydraulic System	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Hydraulic System - Green System Ground Service Panel	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Hydraulic System - Blue System Ground Service Panel	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Hydraulic System - Yellow System Ground Service Panel	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 5-4-4		
Electrical System	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Service Connections - External Power Receptacles	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 5-4-5		
Oxygen System	R	PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 5-4-6		
Fuel System	R	PART EFFECTIVITY ADDED/REVISED/DELETED NOTE AMENDED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Ground Service Connections - Refuel/Defuel Panel	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Service Connections - Refuel/Defuel Couplings	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Service Connections - Gravity Refuel Couplings	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Service Connections - Overpressure Protector and NACA Flame Arrestor	N	ADDED OVERPRESSURE PROTECTOR AND NACA FLAME ARRESTOR ILLUSTRATION. ILLUSTRATION ADDED
Subject 5-4-7		
Pneumatic System	R	PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 5-4-8		
Potable Water System	R	UPDATED ACCESS PANEL 133AL AS OPTIONAL FOR A320. UPDATED ACCESS PANEL 133AL AS OPTIONAL FOR A320. PART EFFECTIVITY ADDED/REVISED/DELETED NOTE AMENDED
FIGURE Ground Service Connections - Potable Water Ground Drain Panel	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 5-4-9		
Oil System	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Service Connections - Engine Oil Tank – CFM56 Series Engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Service Connections - IDG Oil Tank – CFM56 Series Engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Ground Service Connections - Starter Oil Tank – CFM56 Series Engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Service Connections - Engine Oil Tank – IAE V2500 Series Engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Service Connections - IDG Oil Tank – IAE V2500 Series Engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Service Connections - Starter Oil Tank – IAE V2500 Series Engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Service Connections - APU Oil Tank	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 5-4-10		
Vacuum Toilet System	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Service Connections - Waste Water Ground Service Panel	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Section 5-5		
Subject 5-5-0		
Engine Starting Pneumatic Requirements	R	PART EFFECTIVITY ADDED/REVISED/DELETED CROSS REFERENCED DOCUMENTARY UNIT ADDED/REVISED/DELETED
FIGURE Engine Starting Pneumatic Requirements	N	ILLUSTRATION ADDED
Subject 5-5-1	R	
Low Ambient Temperatures	R	DESCRIPTION TITLE UPDATED PART EFFECTIVITY ADDED/REVISED/DELETED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Engine Starting Pneumatic Requirements - Low Ambient Temperature -40˚C (-40˚F) – CFM56 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Engine Starting Pneumatic Requirements - Low Ambient Temperature -40˚C (-40˚F) – IAE V2500 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 5-5-2	R	
Medium Ambient Temperatures	R	DESCRIPTION TITLE UPDATED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Engine Starting Pneumatic Requirements - Medium Ambient Temperature +15˚C (+59˚F) – CFM56 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Engine Starting Pneumatic Requirements - Medium Ambient Temperature +15˚C (+59˚F) – IAE V2500 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 5-5-3	R	
High Ambient Temperatures	R	DESCRIPTION TITLE UPDATED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Engine Starting Pneumatic Requirements - High Ambient Temperature +55˚C (+131˚F) – CFM56 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Engine Starting Pneumatic Requirements - High Ambient Temperature +50˚C (+122˚F) – IAE V2500 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Section 5-6		
Subject 5-6-0		

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
Ground Pneumatic Power Requirements	R	DELETED THE AIRFLOW DATA TABLE. ADDED A NOTE FOR GROUND PNEUMATIC POWER REQUIREMENTS. PART EFFECTIVITY ADDED/REVISED/DELETED NOTE AMENDED
Subject 5-6-1		
Heating	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Pneumatic Power Requirements - Heating	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 5-6-2		
Cooling	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Ground Pneumatic Power Requirements - Cooling	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Section 5-7		
Subject 5-7-0		
Preconditioned Airflow Requirements	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Preconditioned Airflow Requirements	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Section 5-8		
Subject 5-8-0		
Ground Towing Requirements	R	SAE REFERENCES UPDATED AND FIGURES CORRESPONDING TO TYPICAL TOW BAR CONFIGURATION DELETED PART EFFECTIVITY ADDED/REVISED/DELETED NOTE AMENDED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Ground Towing Requirements	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
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Engine Exhaust Velocities and Temperatures	R	PART EFFECTIVITY ADDED/REVISED/DELETED
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Engine Exhaust Velocities Contours - Ground Idle Power	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Engine Exhaust Velocities - Ground Idle Power – CFM56 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Engine Exhaust Velocities - Ground Idle Power – IAE V2500 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 6-1-2		
Engine Exhaust Temperatures Contours - Ground Idle Power	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Engine Exhaust Temperatures - Ground Idle Power – CFM56 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Engine Exhaust Temperatures - Ground Idle Power – IAE V2500 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 6-1-3		
Engine Exhaust Velocities Contours - Breakaway Power	R	PART EFFECTIVITY ADDED/REVISED/DELETED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Engine Exhaust Velocities - Breakaway Power – CFM56 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Engine Exhaust Velocities - Breakaway Power – IAE V2500 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 6-1-4		
Engine Exhaust Temperatures Contours - Breakaway Power	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Engine Exhaust Temperatures - Breakaway Power – CFM56 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Engine Exhaust Temperatures - Breakaway Power – IAE V2500 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
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Engine Exhaust Velocities Contours - Takeoff Power	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Engine Exhaust Velocities - Takeoff Power – CFM56 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Engine Exhaust Velocities - Takeoff Power – IAE V2500 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 6-1-6		
Engine Exhaust Temperatures Contours - Takeoff Power	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Engine Exhaust Temperatures - Takeoff Power – CFM56 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Engine Exhaust Temperatures - Takeoff Power – IAE V2500 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
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Subject 6-2-0		

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Airport and Community Noise	R	PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 6-2-1		
Noise Data	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Airport and Community Noise - CFM56-5A series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Airport and Community Noise - CFM56-5B series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Airport and Community Noise - IAE V2500 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
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Subject 6-3-0		
Danger Areas of Engines	R	PART EFFECTIVITY ADDED/REVISED/DELETED
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Ground Idle Power	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Danger Areas of Engines - CFM56 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Danger Areas of Engines - IAE V2500 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 6-3-2		
Takeoff Power	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Danger Areas of Engines - CFM56 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Danger Areas of Engines - IAE V2500 series engine	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
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APU Exhaust Velocities and Temperatures	R	PART EFFECTIVITY ADDED/REVISED/DELETED
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APU - APIC & GARRETT	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Exhaust Velocities and Temperatures - APU – APIC & GARRETT	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
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General Information	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Aircraft Codes	R	ILLUSTRATION REVISED
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Subject 7-2-0		
Landing Gear Footprint	R	PART EFFECTIVITY ADDED/REVISED/DELETED CROSS REFERENCED DOCUMENTARY UNIT ADDED/REVISED/DELETED NOTE AMENDED
FIGURE Landing Gear Footprint	R	ILLUSTRATION REVISED
FIGURE Landing Gear Footprint	R	
FIGURE Landing Gear Footprint	R	
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Maximum Pavement Loads	R	PART EFFECTIVITY ADDED/REVISED/DELETED

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Maximum Pavement Loads	R	
FIGURE Maximum Pavement Loads	R	ILLUSTRATION REVISED
FIGURE Maximum Pavement Loads	R	
FIGURE Maximum Pavement Loads	R	
FIGURE Maximum Pavement Loads	R	
FIGURE Maximum Pavement Loads	R	
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Landing Gear Loading on Pavement	R	UPDATED TITLE FOR REFERENCE SECTION 7-4-1 LANDING GEAR LOADING ON PAVEMENT. PART EFFECTIVITY ADDED/REVISED/DELETED
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Landing Gear Loading on Pavement	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Landing Gear Loading on Pavement	R	
FIGURE Landing Gear Loading on Pavement	R	
FIGURE Landing Gear Loading on Pavement	R	
FIGURE Landing Gear Loading on Pavement	R	
FIGURE Landing Gear Loading on Pavement	R	
FIGURE Landing Gear Loading on Pavement	R	
FIGURE Landing Gear Loading on Pavement	R	
FIGURE Landing Gear Loading on Pavement	R	
FIGURE Landing Gear Loading on Pavement	R	
FIGURE Landing Gear Loading on Pavement	R	

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Landing Gear Loading on Pavement	N	ILLUSTRATION ADDED
FIGURE Landing Gear Loading on Pavement	N	ILLUSTRATION ADDED
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Subject 7-5-0		
Flexible Pavement Requirements - U.S. Army Corps of Engineers Design Method	R	UPDATED TITLE FOR REFERENCE SECTION 7-5-1 FLEXIBLE PAVEMENT REQUIREMENTS. PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 7-5-1		
Flexible Pavement Requirements - U.S. Army Corps of Engineers Design Method	R	DELETED TWO FIGURES FOR THE A/C CODE "P". PART EFFECTIVITY ADDED/REVISED/DELETED CROSS REFERENCED DOCUMENTARY UNIT ADDED/REVISED/DELETED NOTE AMENDED
FIGURE Flexible Pavement Requirements	R	ILLUSTRATION REVISED
FIGURE Flexible Pavement Requirements	R	ILLUSTRATION REVISED
FIGURE Flexible Pavement Requirements	R	ILLUSTRATION REVISED
FIGURE Flexible Pavement Requirements	R	ILLUSTRATION REVISED
FIGURE Flexible Pavement Requirements	R	ILLUSTRATION REVISED
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FIGURE Flexible Pavement Requirements - Flexible Pavement Requirements	R	
FIGURE Flexible Pavement Requirements	R	ILLUSTRATION REVISED
FIGURE Flexible Pavement Requirements	R	ILLUSTRATION REVISED
FIGURE Flexible Pavement Requirements	R	
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Flexible Pavement Requirements - LCN Conversion	R	UPDATED TITLE FOR REFERENCE SECTION 7-6-1 FLEXIBLE PAVEMENT REQUIREMENTS. PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 7-6-1		
Flexible Pavement Requirements - LCN Conversion	R	DELETED TWO FIGURES FOR THE A/C CODE "P". PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Flexible Pavement Requirements - LCN Conversion	R	
FIGURE Flexible Pavement Requirements - LCN Conversion	R	
FIGURE Flexible Pavement Requirements - LCN Conversion	R	ILLUSTRATION REVISED
FIGURE Flexible Pavement Requirements - LCN Conversion	R	
FIGURE Flexible Pavement Requirements - LCN Conversion	R	
FIGURE Flexible Pavement Requirements - LCN Conversion	R	
Section 7-7		
Subject 7-7-0		
Rigid Pavement Requirements - Portland Cement Association Design Method	R	UPDATED TITLE FOR REFERENCE SECTION 07-07-01 RIGID PAVEMENT REQUIREMENTS (PCA). PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 7-7-1		

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Rigid Pavement Requirements - Portland Cement Association Design Method	R	DELETED TWO FIGURES FOR THE A/C CODE "P". PART EFFECTIVITY ADDED/REVISED/DELETED CROSS REFERENCED DOCUMENTARY UNIT ADDED/REVISED/DELETED NOTE AMENDED
FIGURE Rigid Pavement Requirements (PCA)	R	
FIGURE Rigid Pavement Requirements (PCA)	R	
FIGURE Rigid Pavement Requirements (PCA)	R	
FIGURE Rigid Pavement Requirements (PCA)	R	
FIGURE Rigid Pavement Requirements (PCA)	R	
FIGURE Rigid Pavement Requirements (PCA)	R	
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Subject 07-08-00	D	
Subject 7-8-1		
Radius of Relative Stiffness	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Radius of Relative Stiffness - (Reference: Portland Cement Association)	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
Subject 7-8-2		
Rigid Pavement Requirements - LCN Conversion	R	MOVED THE TEXT FROM 7-8-0 TO 7-8-2. PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Rigid Pavement Requirements - LCN Conversion	R	
FIGURE Rigid Pavement Requirements - LCN Conversion	R	

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Rigid Pavement Requirements - LCN Conversion	R	
FIGURE Rigid Pavement Requirements - LCN Conversion	R	
FIGURE Rigid Pavement Requirements - LCN Conversion	R	
FIGURE Rigid Pavement Requirements - LCN Conversion	R	ILLUSTRATION REVISED
FIGURE Rigid Pavement Requirements - LCN Conversion	R	
FIGURE Rigid Pavement Requirements - LCN Conversion	R	ILLUSTRATION REVISED
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Radius of Relative Stiffness (Other values of "E" and "L")	R	PART EFFECTIVITY ADDED/REVISED/DELETED
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Radius of Relative Stiffness	R	PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Radius of Relative Stiffness - (Effect E and μ on "L" values)	R	ILLUSTRATION REVISED PART EFFECTIVITY ADDED/REVISED/DELETED
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Subject 7-9-1		
Aircraft Classification Number - Flexible Pavement	R	DELETED TWO FIGURES FOR THE A/C CODE "P". PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Aircraft Classification Number – Flexible Pavement	R	

LOCATIONS	CHG CODE	DESCRIPTIONS OF CHANGE
FIGURE Aircraft Classification Number – Flexible Pavement	R	
FIGURE Aircraft Classification Number – Flexible Pavement	R	
FIGURE Aircraft Classification Number – Flexible Pavement	R	
FIGURE Aircraft Classification Number – Flexible Pavement	R	
FIGURE Aircraft Classification Number – Flexible Pavement	R	
FIGURE Aircraft Classification Number – Flexible Pavement	R	
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Aircraft Classification Number - Rigid Pavement	R	DELETED TWO FIGURES FOR THE A/C CODE "P". PART EFFECTIVITY ADDED/REVISED/DELETED
FIGURE Aircraft Classification Number – Rigid Pavement	R	
FIGURE Aircraft Classification Number – Rigid Pavement	R	
FIGURE Aircraft Classification Number – Rigid Pavement	R	
FIGURE Aircraft Classification Number – Rigid Pavement	R	
FIGURE Aircraft Classification Number – Rigid Pavement	R	
FIGURE Aircraft Classification Number – Rigid Pavement	R	
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FIGURE Scaled Drawing	N	ILLUSTRATION ADDED

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FIGURE Highly Flammable and Hazardous Materials and Components	N	ILLUSTRATION ADDED
FIGURE Wheel Safety Area	N	ILLUSTRATION ADDED
FIGURE Composite Materials	N	ILLUSTRATION ADDED
FIGURE LG Ground Lock Safety Devices	N	ILLUSTRATION ADDED
FIGURE Evacuation/Escape Slide/Raft	N	ILLUSTRATION ADDED
FIGURE Pax/Crew Doors	N	ILLUSTRATION ADDED
FIGURE Emergency Exit Hatch	N	ILLUSTRATION ADDED
FIGURE FWD and AFT Lower Deck Cargo Doors	N	ILLUSTRATION ADDED
FIGURE Control Panels	N	ILLUSTRATION ADDED
FIGURE APU Access Door	N	ILLUSTRATION ADDED
FIGURE Aircraft Ground Clearances	N	ILLUSTRATION ADDED
FIGURE Structural Break-in Points	N	ILLUSTRATION ADDED

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FIGURE Passenger Compartment Cross-section	R	Jun 01/12
FIGURE Passenger Compartment Cross-section - Economy Class, 6 Abreast - Wider Aisle	R	Jun 01/12
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FIGURE Cargo Compartments - Locations, Dimensions and Loading Combinations	N	Jun 01/12
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FIGURE Doors Clearances - Forward Passenger / Crew Doors	R	Jun 01/12
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FIGURE Landing Gear Jacking for Wheel Change - Loads at MLG Jacking Points - Twin Wheels	N	Jun 01/12
FIGURE Landing Gear Jacking for Wheel Change - MLG Jacking Point Location Bogie	N	Jun 01/12
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FIGURE Landing Gear Jacking for Wheel Change - MLG Jacking Point Location Bogie	N	Jun 01/12
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FIGURE Landing Gear Loading on Pavement	R	Jun 01/12
FIGURE Landing Gear Loading on Pavement	R	Jun 01/12
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FIGURE Flexible Pavement Requirements - LCN Conversion		May 01/11
FIGURE Flexible Pavement Requirements - LCN Conversion		May 01/11
FIGURE Flexible Pavement Requirements - LCN Conversion		May 01/11
FIGURE Flexible Pavement Requirements - LCN Conversion		May 01/11
FIGURE Flexible Pavement Requirements - LCN Conversion	R	Jun 01/12

CONTENT	CHG CODE	LAST REVISION DATE
FIGURE Rigid Pavement Requirements (PCA)		May 01/11
FIGURE Rigid Pavement Requirements (PCA)		May 01/11
FIGURE Rigid Pavement Requirements (PCA)		May 01/11
FIGURE Rigid Pavement Requirements (PCA)		May 01/11
FIGURE Rigid Pavement Requirements (PCA)		May 01/11
FIGURE Rigid Pavement Requirements (PCA)		May 01/11
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FIGURE Rigid Pavement Requirements (PCA)		May 01/11
FIGURE Rigid Pavement Requirements (PCA)		May 01/11
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FIGURE Rigid Pavement Requirements (PCA)	R	Jun 01/12
FIGURE Rigid Pavement Requirements (PCA)	R	Jun 01/12
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FIGURE Rigid Pavement Requirements (PCA)		May 01/11
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FIGURE Rigid Pavement Requirements (PCA)		May 01/11
FIGURE Rigid Pavement Requirements (PCA)		May 01/11
FIGURE Rigid Pavement Requirements (PCA)	R	Jun 01/12
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CONTENT	CHG CODE	LAST REVISION DATE
FIGURE Aircraft Classification Number – Rigid Pavement		May 01/11
FIGURE Aircraft Classification Number – Rigid Pavement		May 01/11
FIGURE Aircraft Classification Number – Rigid Pavement		May 01/11
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FIGURE Aircraft Classification Number – Rigid Pavement		May 01/11
FIGURE Aircraft Classification Number – Rigid Pavement	R	Jun 01/12
FIGURE Aircraft Classification Number – Rigid Pavement	R	Jun 01/12
FIGURE Aircraft Classification Number – Rigid Pavement	R	Jun 01/12
FIGURE Aircraft Classification Number – Rigid Pavement	R	Jun 01/12
FIGURE Aircraft Classification Number – Rigid Pavement		May 01/11
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FIGURE Aircraft Classification Number – Rigid Pavement		May 01/11
FIGURE Aircraft Classification Number – Rigid Pavement	R	Jun 01/12

CONTENT	CHG CODE	LAST REVISION DATE
FIGURE Aircraft Classification Number – Rigid Pavement	R	Jun 01/12
FIGURE Aircraft Classification Number – Rigid Pavement		May 01/11
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FIGURE Highly Flammable and Hazardous Materials and Components	N	Jun 01/12
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FIGURE Evacuation/Escape Slide/Raft	N	Jun 01/12
FIGURE Pax/Crew Doors	N	Jun 01/12
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SCOPE

1-1-0 Purpose

****ON A/C A320-200**

Purpose

1. General

The A320 AIRCRAFT CHARACTERISTICS – AIRPORT AND MAINTENANCE PLANNING (AC) manual is issued for the A320-200 series aircraft, equipped with wing-tip fences or Sharklets to provide necessary data to airport operators, airlines and Maintenance/Repair Organizations (MRO) for airport and maintenance facilities planning.

This revision is now a merge 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.

The data given in this issue of the A320-200 AC equipped with Sharklets can be subject to change pending completion of the flight test phase. It is given for guidance only and does not constitute a contractual commitment.

This non-customized document conforms to NAS 3601 specification.
This document must not be used for training purposes.

The single aisle A320 Family is a short to medium range aircraft delivering superior fuel efficiency, passenger comfort, environmental characteristics and economics, with a global market coverage.
With record number of operators and wide market approval, the A320 Family benefits from continuous improvements such as:

- Sharklets
- New Engine Option (neo)

The A320 Family wider fuselage, advanced troubleshooting and Cargo Loading System enable easy and cost effective ground handling, whilst minimizing aircraft turn round time.

This document does not include the A320neo which is under development.

Correspondence concerning this publication should be directed to:

AIRBUS S.A.S.
Customer Services
Technical Data Support and Services

1, Rond Point Maurice BELLONTE
31707 BLAGNAC CEDEX
FRANCE

AIRCRAFT DESCRIPTION

2-1-0 General Aircraft Characteristics

****ON A/C A320-200**

General Airplane Characteristics

1. General Airplane Characteristics
   The weight terms used throughout this manual are given below together with their respective definitions.

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

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

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

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

   Standard Seating Capacity:
   Number of passengers specifically certified or anticipated for certification.

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

   Usable Fuel Capacity:
   Fuel available for aircraft propulsion.

   Water Volume:
   Volume of cargo compartment.

2-1-1 General Aircraft Characteristics Data

**ON A/C A320-200

General Airplane Characteristics Data

1. The following table provides characteristics of A320-200 Models, these data are specific to each Weight Variant:

Aircraft Characteristics						
		WV000	WV001	WV002	WV003	WV004
Maximum Ramp Weight (MRW) Maximum Taxi Weight (MTW)	Kilograms	73 900	68 400	70 400	75 900	71 900
	Pounds	162 922	150 796	155 205	167 331	158 512
Maximum Takeoff Weight (MTOW)	Kilograms	73 500	68 000	70 000	75 500	71 500
	Pounds	162 040	149 914	154 324	166 449	157 630
Maximum Landing Weight (MLW)	Kilograms	64 500	64 500	64 500	64 500	64 500
	Pounds	142 198	142 198	142 198	142 198	142 198
Maximum Zero Fuel Weight (MZFW)	Kilograms	60 500	60 500	60 500	60 500	60 500
	Pounds	133 380	133 380	133 380	133 380	133 380

Aircraft Characteristics						
		WV005	WV006	WV007	WV008	WV009
Maximum Ramp Weight (MRW) Maximum Taxi Weight (MTW)	Kilograms	67 400	66 400	77 400	73 900	75 900
	Pounds	148 592	146 387	170 638	162 922	167 331
Maximum Takeoff Weight (MTOW)	Kilograms	67 000	66 000	77 000	73 500	75 500
	Pounds	147 710	145 505	169 756	162 040	166 449
Maximum Landing Weight (MLW)	Kilograms	64 500	64 500	64 500	64 500	64 500
	Pounds	142 198	142 198	142 198	142 198	142 198
Maximum Zero Fuel Weight (MZFW)	Kilograms	60 500	60 500	60 500	61 000	61 000
	Pounds	133 380	133 380	133 380	134 482	134 482

Aircraft Characteristics						
		WV010	WV011	WV012	WV013	WV014
Maximum Ramp Weight (MRW) Maximum Taxi Weight (MTW)	Kilograms	77 400	75 900	77 400	71 900	73 900
	Pounds	170 638	167 331	170 638	158 512	162 922

Aircraft Characteristics						
		WV010	WV011	WV012	WV013	WV014
Maximum Takeoff Weight (MTOW)	Kilograms	77 000	75 500	77 000	71 500	73 500
	Pounds	169 756	166 449	169 756	157 630	162 040
Maximum Landing Weight (MLW)	Kilograms	64 500	66 000	66 000	64 500	64 500
	Pounds	142 198	145 505	145 505	142 198	142 198
Maximum Zero Fuel Weight (MZFW)	Kilograms	61 000	62 500	62 500	61 000	61 500
	Pounds	134 482	137 789	137 789	134 482	135 584

Aircraft Characteristics					
		WV015	WV016	WV017	WV018
Maximum Ramp Weight (MRW) Maximum Taxi Weight (MTW)	Kilograms	78 400	73 900	78 400	71 900
	Pounds	172 842	162 922	172 482	158 512
Maximum Takeoff Weight (MTOW)	Kilograms	78 000	73 500	78 000	71 500
	Pounds	171 961	162 040	171 961	157 630
Maximum Landing Weight (MLW)	Kilograms	64 500	66 000	66 000	66 000
	Pounds	142 198	145 505	145 505	145 505
Maximum Zero Fuel Weight (MZFW)	Kilograms	61 000	62 500	62 500	62 500
	Pounds	134 482	137 789	137 789	137 789

2. The following table provides characteristics of A320-200 Models, these data are common to each Weight Variant:

Aircraft Characteristics		
Standard Seating Capacity	Single-class	180
Usable Fuel Capacity	Liters	23 859 - 26 759* - 29 659**
	US gallons	6 303 - 7 069* - 7 835**
	Kilograms (density = 0.785 kg/l)	18 729 - 21 005* - 23 282**
	Pounds	41 290 - 46 308* - 51 328**
Pressurized Fuselage Volume (A/C non equipped)	Cubic meters	330
	Cubic feet	11 654
Passenger Compartment Volume	Cubic meters	139
	Cubic feet	4 909
Cockpit Volume	Cubic meters	9
	Cubic feet	318
Usable Volume, FWD CC	Cubic meters	13.28
	Cubic feet	469

Aircraft Characteristics		
Usable Volume, AFT CC	Cubic meters	18.26
	Cubic feet	645
Usable Volume, Bulk CC	Cubic meters	5.88
	Cubic meters	208
Water Volume, FWD CC	Cubic meters	15.56
	Cubic feet	549.5
Water Volume, AFT CC	Cubic meters	20.77
	Cubic feet	733.5
Water Volume, Bulk CC	Cubic meters	7.76
	Cubic feet	274

* OPTION: 1 ACT
** OPTION: 2 ACT

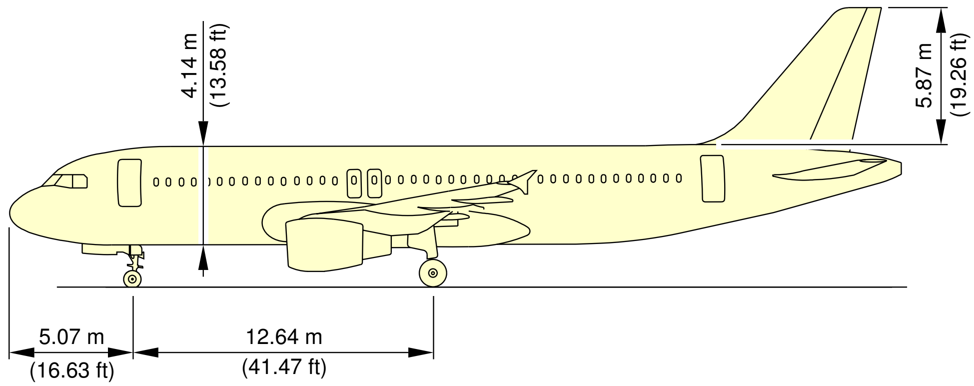
2-2-0 General Aircraft Dimensions

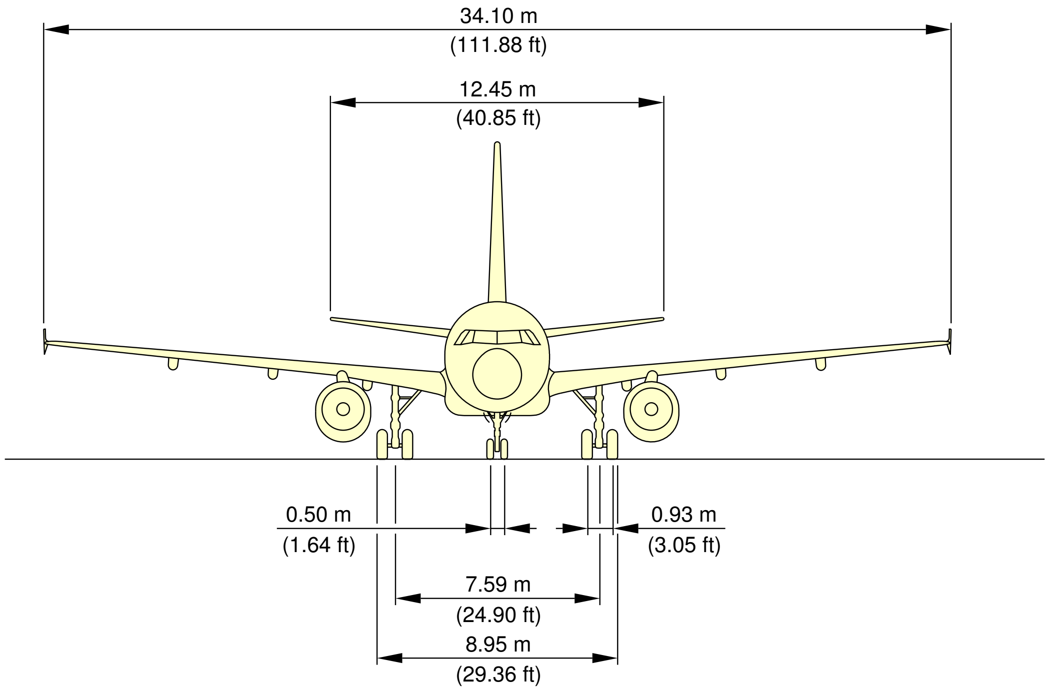
****ON A/C A320-200**

General Aircraft Dimensions

1. This section provides General Aircraft Dimensions.

****ON A/C A320-200**





RELATED TO AIRCRAFT ATTITUDE AND WEIGHT

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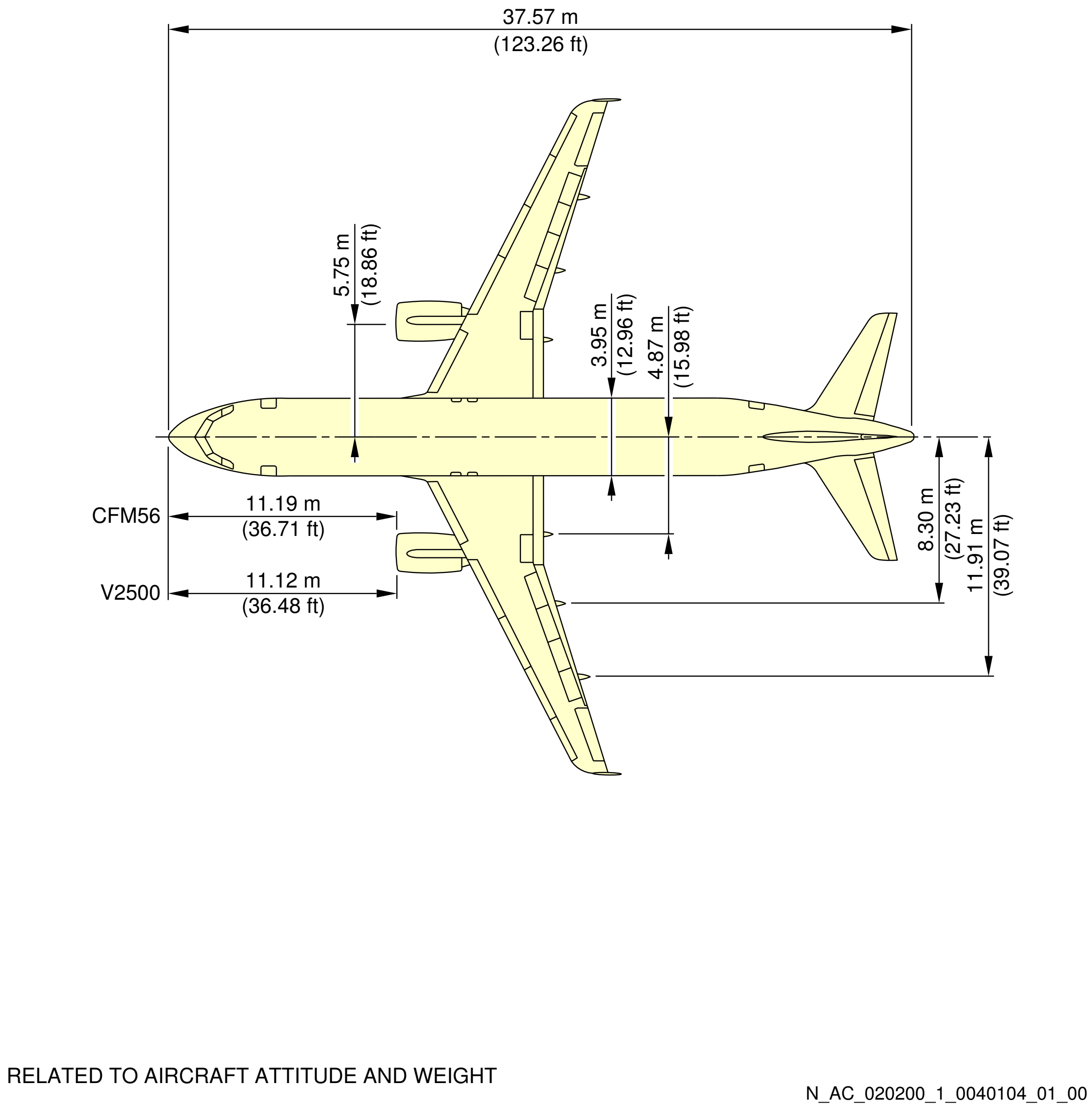
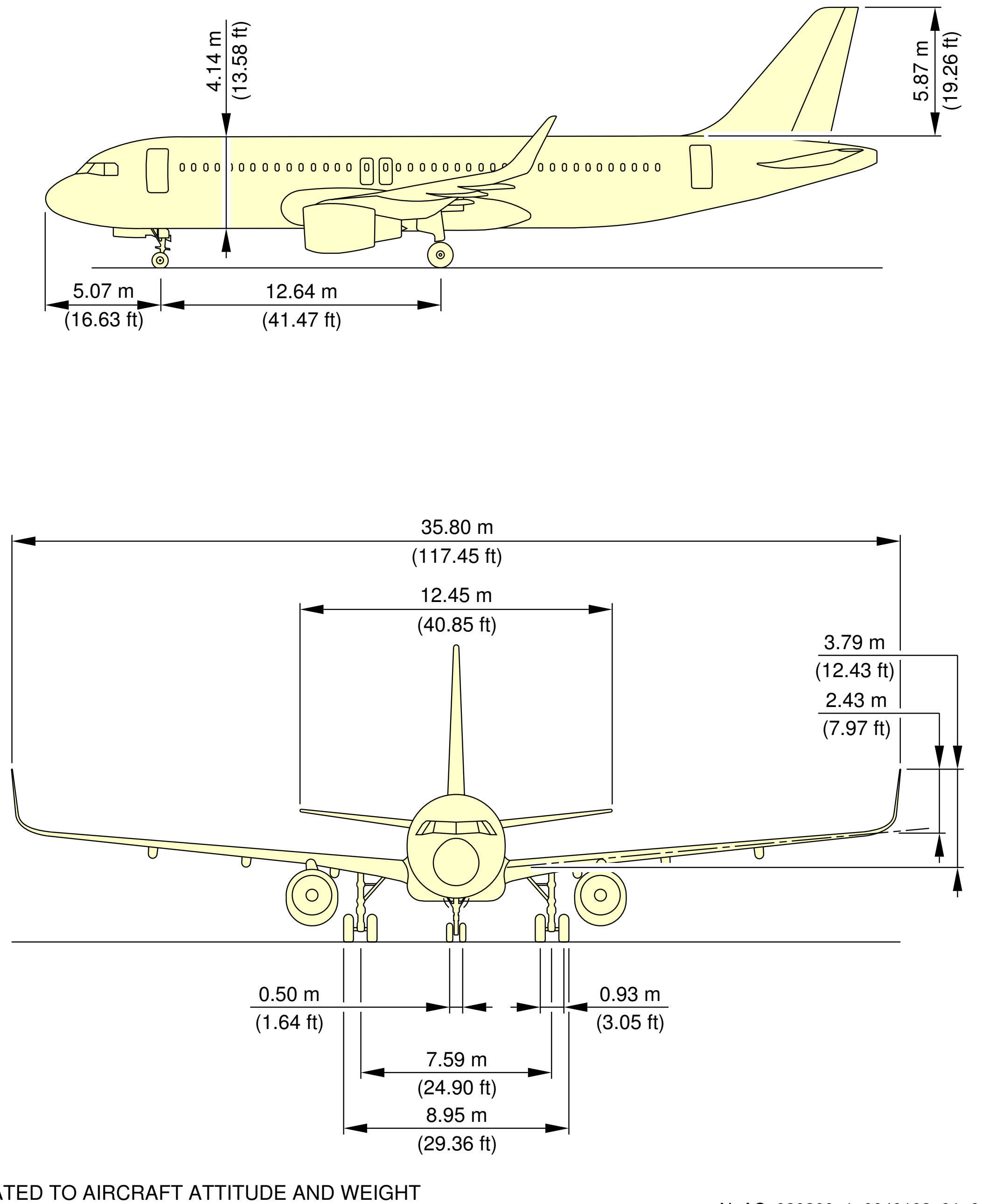
General Aircraft Dimensions
Wing Tip Fence (Sheet 1 of 4)
FIGURE-2-2-0-991-004-A01

**ON A/C A320-200



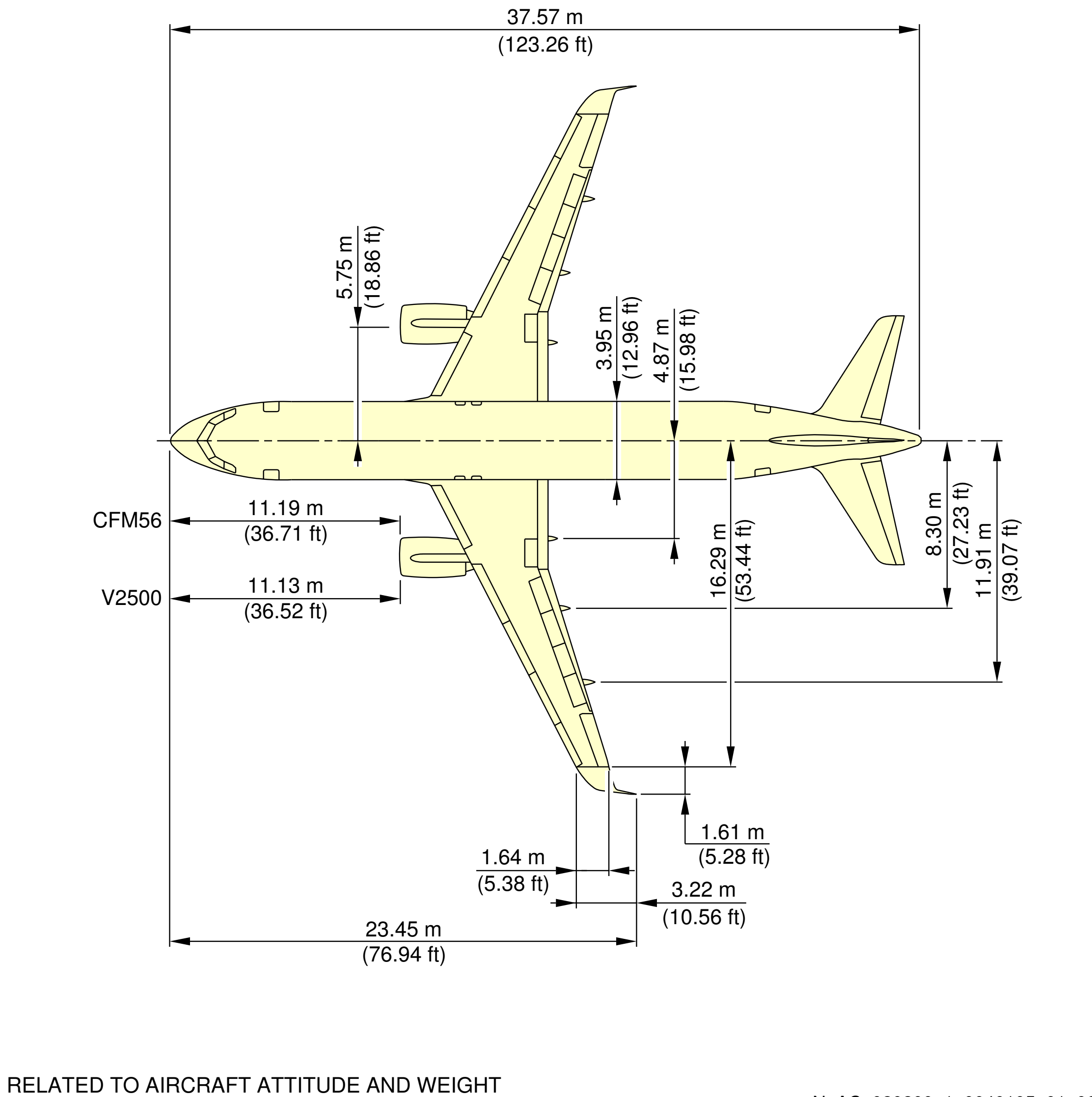
General Aircraft Dimensions
Wing Tip Fence (Sheet 2 of 4)
FIGURE-2-2-0-991-004-A01

**ON A/C A320-200



General Aircraft Dimensions
Sharklet (Sheet 3 of 4)
FIGURE-2-2-0-991-004-A01

**ON A/C A320-200



General Aircraft Dimensions
Sharklet (Sheet 4 of 4)
FIGURE-2-2-0-991-004-A01

2-3-0 Ground Clearances

**ON A/C A320-200

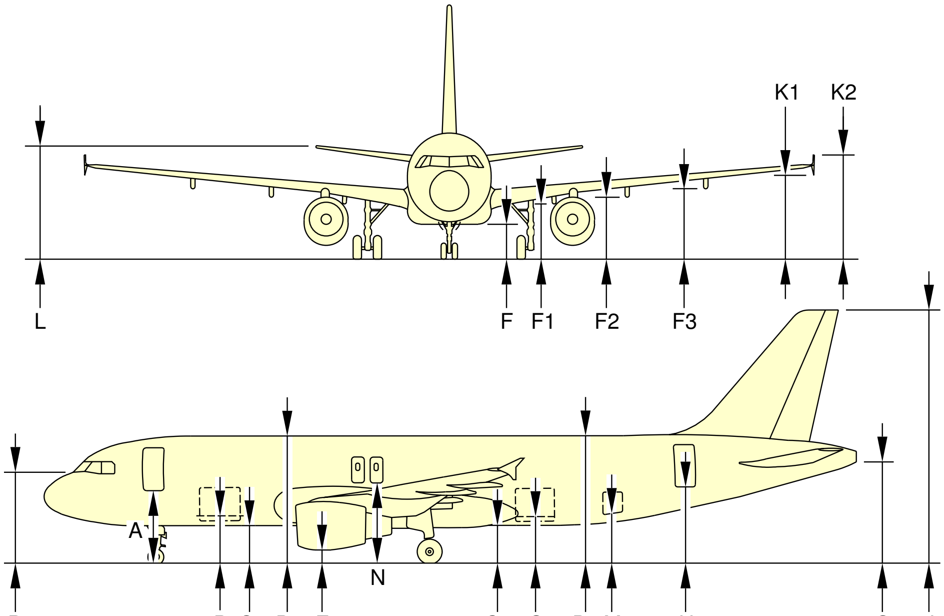
Ground Clearances

1. This section gives the height of various points of the aircraft, above the ground, for different aircraft configurations.
   Dimensions in the tables are approximate and will vary with tire type, weight and balance and other special conditions.

   The dimensions are given for:
   - a light weight, for an A/C in maintenance configuration with a mid CG,
   - the MRW for a light weight variant with a FWD CG and a AFT CG,
   - the MRW for a heavy weight variant with a FWD CG and a AFT CG,
   - aircraft on jacks, FDL at 4.6 m (15.09 ft).

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

**ON A/C A320-200



A/C CONFIG-URATION	41 t		MRW 74 t				MRW 78 t				A/C JACKED FDL = 4.60 m (15.09 ft)	
	CG 26.5%		FWD CG 17%		AFT CG 40%		FWD CG 17%		AFT CG 36.8%			
	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft
A	3.48	11.42	3.38	11.09	3.48	11.42	3.38	11.09	3.45	11.32	4.13	13.55
B	2.09	6.86	1.99	6.53	2.06	6.76	1.98	6.50	2.04	6.69	2.71	8.89
C1	1.82	5.97	1.73	5.68	1.79	5.87	1.72	5.64	1.76	5.77	2.43	7.97
C2	1.95	6.40	1.86	6.10	1.79	5.87	1.84	6.04	1.79	5.87	2.43	7.97
D1	5.97	19.59	5.87	19.26	5.93	19.46	5.86	19.23	5.90	19.36	6.58	21.59
D2	6.09	19.98	6.00	19.68	5.93	19.46	5.99	19.65	5.93	19.46	6.58	21.59
E (CFM)	0.67	2.20	0.58	1.90	0.59	1.94	0.57	1.87	0.58	1.90	1.24	4.07
E (IAE)	0.85	2.79	0.76	2.49	0.77	2.53	0.75	2.46	0.76	2.49	1.42	4.66
F	1.72	5.64	1.63	5.35	1.61	5.28	1.62	5.31	1.60	5.25	2.26	7.41
F1	2.72	8.92	2.63	8.63	2.60	8.53	2.61	8.56	2.60	8.53	3.25	10.66
F2	3.15	10.33	3.06	10.04	3.03	9.95	3.05	10.01	3.03	9.94	3.68	12.07
F3	3.49	11.45	3.40	11.15	3.36	11.02	3.39	11.12	3.36	11.02	4.01	13.16
G	2.22	7.28	2.13	6.99	2.07	6.79	2.12	6.96	2.07	6.79	2.71	8.89
H	3.70	12.14	3.61	11.84	3.49	11.45	3.60	11.81	3.50	11.48	4.13	13.55
J	12.08	39.63	12.00	39.37	11.81	38.75	11.98	39.30	11.83	38.81	12.45	40.85
K1	3.89	12.76	3.80	12.47	3.74	12.27	3.78	12.40	3.74	12.27	4.38	14.37
K2	4.86	15.94	4.77	15.65	4.71	15.45	4.76	15.62	4.71	15.45	5.35	17.55
L	5.56	18.24	5.47	17.95	5.29	17.36	5.46	17.91	5.32	17.45	5.93	19.46
M	2.29	7.51	2.20	7.22	2.11	6.92	2.19	7.19	2.11	6.92	2.75	9.02
N	3.98	13.06	3.88	12.73	3.89	12.76	3.87	12.70	3.88	12.73	4.54	14.89
P	4.28	14.04	4.17	13.68	4.31	14.14	4.17	13.68	4.27	14.01	4.96	16.27
Q	4.84	15.88	4.76	15.62	4.56	14.96	4.74	15.55	4.59	15.06	5.20	17.06

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

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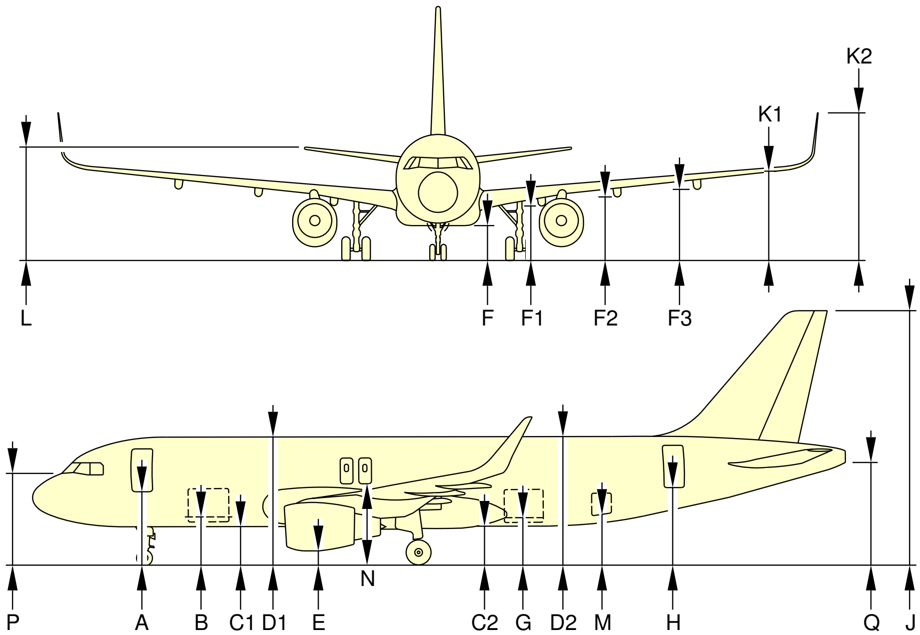
Ground Clearances
FIGURE-2-3-0-991-004-A01

****ON A/C A320-200**



A/C CONFIG–URATION	42 t		MRW 74 t				MRW 78 t				A/C JACKED FDL = 4.60 m (15.09 ft)	
	CG 26.5%		FWD CG 17%		AFT CG 40%		FWD CG 17%		AFT CG 36.8%			
	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft
A	3.48	11.42	3.38	11.09	3.48	11.42	3.38	11.09	3.45	11.32	4.13	13.55
B	2.09	6.86	1.99	6.53	2.06	6.76	1.98	6.50	2.04	6.69	2.71	8.89
C1	1.82	5.97	1.73	5.68	1.79	5.87	1.72	5.64	1.76	5.77	2.43	7.97
C2	1.95	6.40	1.86	6.10	1.79	5.87	1.84	6.04	1.79	5.87	2.43	7.97
D1	5.97	19.59	5.87	19.26	5.93	19.46	5.86	19.23	5.90	19.36	6.58	21.59
D2	6.09	19.98	6.00	19.68	5.93	19.46	5.99	19.65	5.93	19.46	6.58	21.59
E (CFM)	0.67	2.20	0.58	1.90	0.59	1.94	0.57	1.87	0.58	1.90	1.24	4.07
E (IAE)	0.85	2.79	0.76	2.49	0.77	2.53	0.75	2.46	0.76	2.49	1.42	4.66
F	1.72	5.64	1.63	5.35	1.61	5.28	1.62	5.31	1.60	5.25	2.26	7.41
F1	2.72	8.92	2.63	8.63	2.60	8.53	2.61	8.56	2.60	8.53	3.25	10.66
F2	3.15	10.33	3.06	10.04	3.03	9.95	3.05	10.01	3.03	9.94	3.68	12.07
F3	3.49	11.45	3.40	11.15	3.36	11.02	3.39	11.12	3.36	11.02	4.01	13.16
G	2.22	7.28	2.13	6.99	2.07	6.79	2.12	6.96	2.07	6.79	2.71	8.89
H	3.70	12.14	3.61	11.84	3.49	11.45	3.60	11.81	3.50	11.48	4.13	13.55
J	12.08	39.63	12.00	39.37	11.81	38.75	11.98	39.30	11.83	38.81	12.45	40.85
K1	4.16	13.65	4.07	13.35	4.01	13.16	4.05	13.29	4.01	13.16	4.65	15.26
K2	6.80	22.31	6.71	22.01	6.65	21.82	6.70	21.98	6.65	21.82	7.25	23.79
L	5.56	18.24	5.47	17.95	5.29	17.36	5.46	17.91	5.32	17.45	5.93	19.46
M	2.29	7.51	2.20	7.22	2.11	6.92	2.19	7.19	2.11	6.92	2.75	9.02
N	3.98	13.06	3.88	12.73	3.89	12.76	3.87	12.70	3.88	12.73	4.54	14.89
P	4.28	14.04	4.17	13.68	4.31	14.14	4.17	13.68	4.27	14.01	4.96	16.27
Q	4.84	15.88	4.76	15.62	4.56	14.96	4.74	15.55	4.59	15.06	5.20	17.06

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

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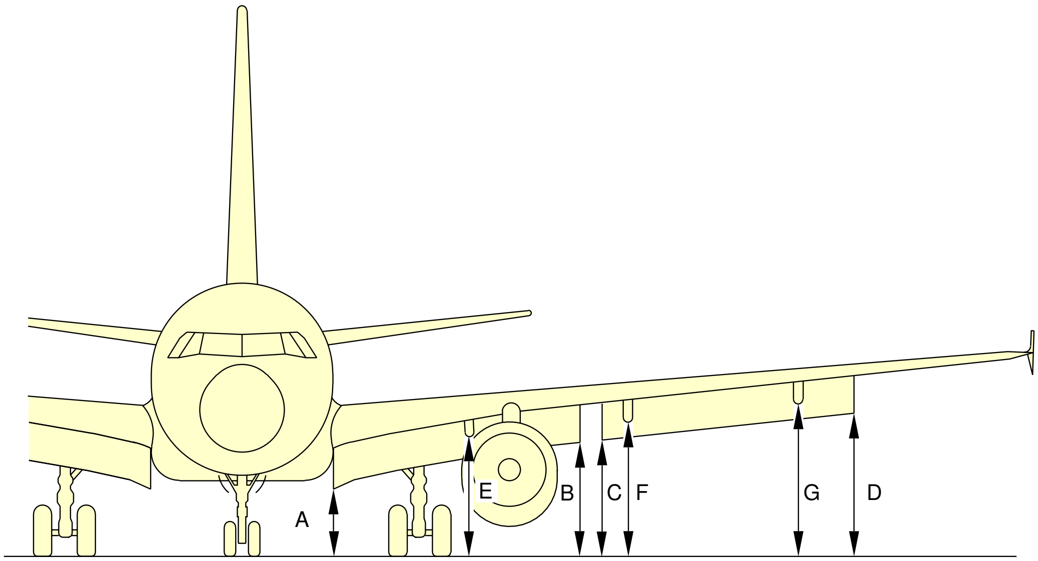
Ground Clearances
Ground Clearances with Sharklets
FIGURE-2-3-0-991-029-A01

**ON A/C A320-200



HEIGHT FROM GROUND CFM 56 ENGINE						
	A/C IN MAINTENANCE CONFIGURATION MID CG		MAXIMUM RAMP WEIGHT FWD CG		MAXIMUM RAMP WEIGHT AFT CG	
	m	ft	m	ft	m	ft
A	2.09	6.86	1.99	6.53	1.96	6.43
B	2.82	9.25	2.71	8.89	2.69	8.83
C	2.86	9.38	2.75	9.02	2.72	8.92
D	3.68	12.07	3.56	11.68	3.52	11.55
E	2.18	7.15	2.08	6.82	2.05	6.73
F	2.66	8.73	2.55	8.37	2.52	8.27
G	3.10	10.17	2.99	9.81	2.95	9.68

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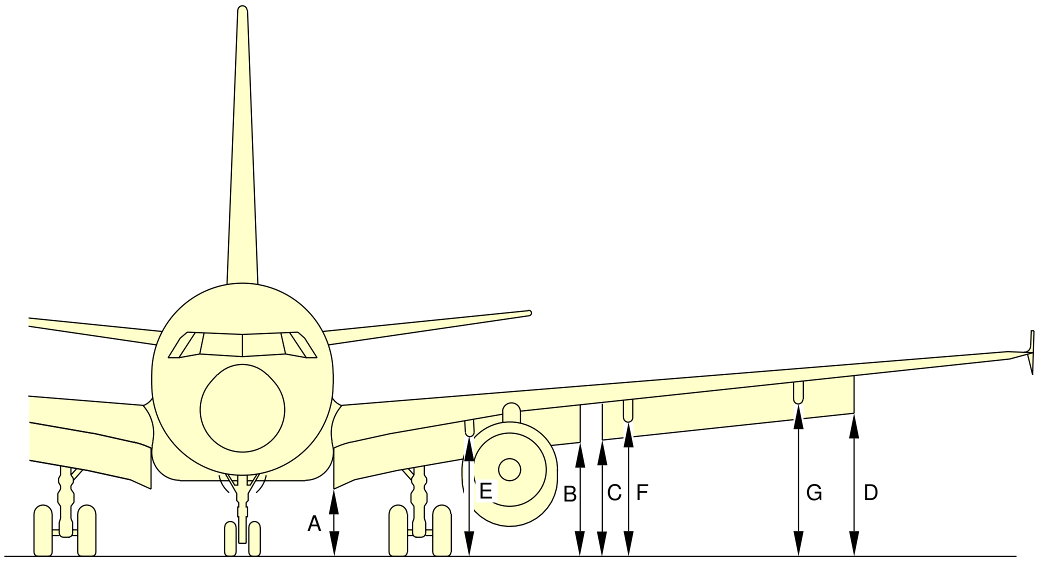
Ground Clearances
Flaps and Flap Track Fairings When Flaps Fully Extended
FIGURE-2-3-0-991-016-A01

****ON A/C A320-200**

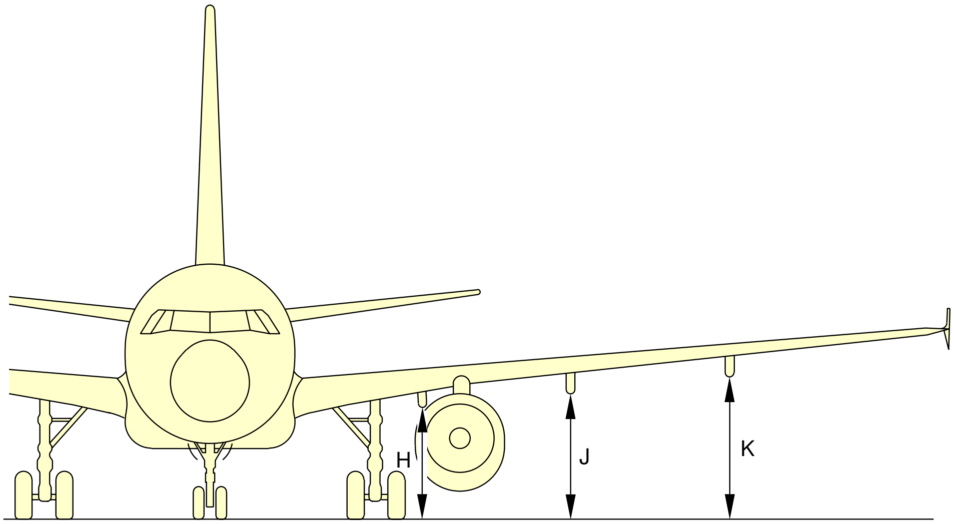


HEIGHT FROM GROUND IAE V2500 ENGINE						
	A/C IN MAINTENANCE CONFIGURATION MID CG		MAXIMUM RAMP WEIGHT FWD CG		MAXIMUM RAMP WEIGHT AFT CG	
	m	ft	m	ft	m	ft
A	2.05	6.73	1.94	6.37	1.92	6.30
B	2.77	9.09	2.66	8.73	2.64	8.66
C	2.81	9.22	2.70	8.86	2.68	8.78
D	3.64	11.94	3.53	11.58	3.49	11.45
E	2.09	6.86	1.98	6.49	1.95	6.40
F	2.59	8.50	2.48	8.14	2.44	8.01
G	3.03	9.94	2.92	9.58	2.88	9.45

N_AC_020300_1_0170101_01_00

Ground Clearances
Flaps and Flap Track Fairings When Flaps Fully Extended
FIGURE-2-3-0-991-017-A01

**ON A/C A320-200

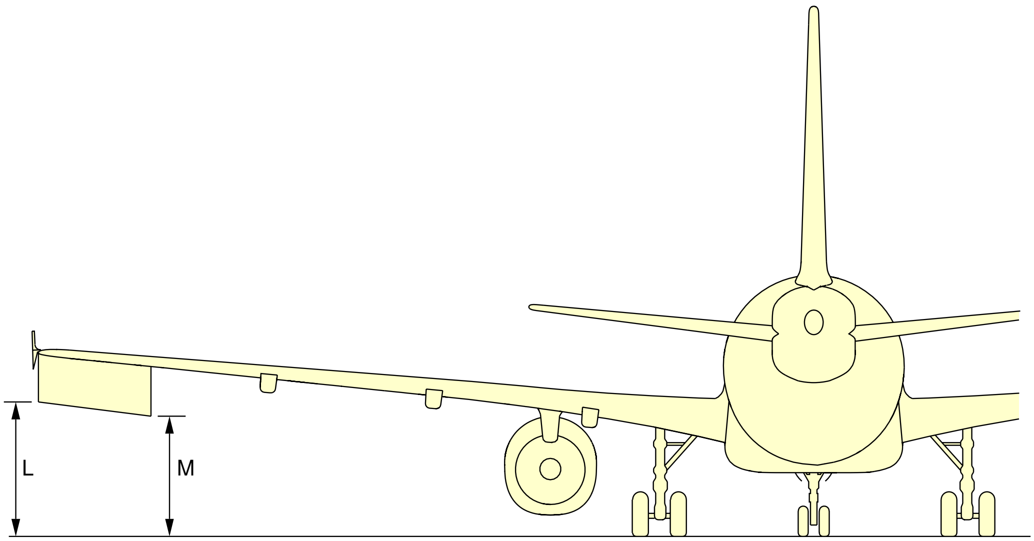


HEIGHT FROM GROUND						
	A/C IN MAINTENANCE CONFIGURATION MID CG		MAXIMUM RAMP WEIGHT FWD CG		MAXIMUM RAMP WEIGHT AFT CG	
	m	ft	m	ft	m	ft
H	2.68	8.79	2.58	8.46	2.56	8.40
J	3.08	10.11	2.98	9.78	2.95	9.68
K	3.48	11.42	3.37	11.06	3.34	10.96

N_AC_020300_1_0180101_01_00

Ground Clearances
Flap Track Fairings Up
FIGURE-2-3-0-991-018-A01

**ON A/C A320-200

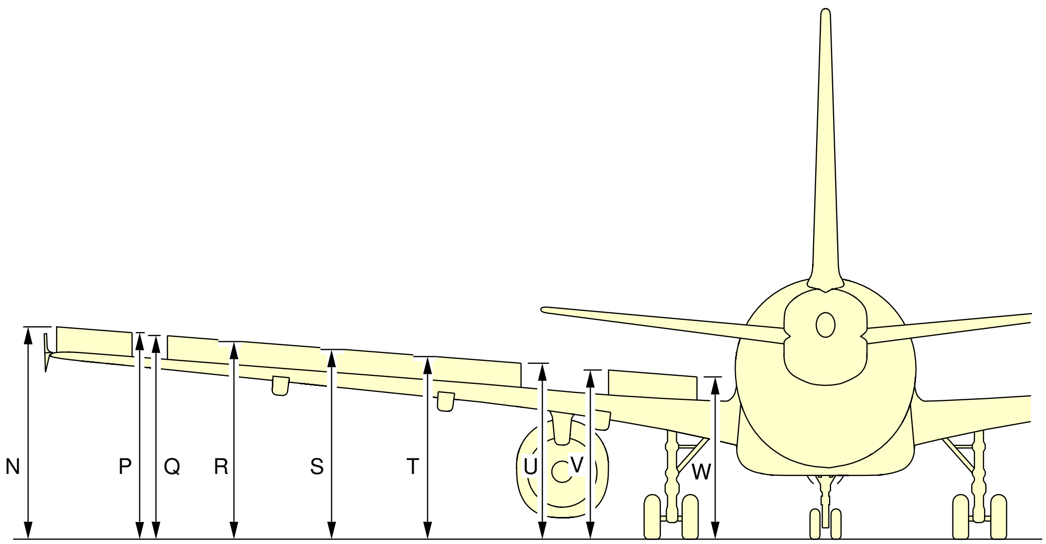


HEIGHT FROM GROUND						
	A/C IN MAINTENANCE CONFIGURATION MID CG		MAXIMUM RAMP WEIGHT FWD CG		MAXIMUM RAMP WEIGHT AFT CG	
	m	ft	m	ft	m	ft
L	4.17	13.68	4.06	13.32	4.01	13.16
M	3.83	12.57	3.72	12.21	3.68	12.07

N_AC_020300_1_0190101_01_00

Ground Clearances
Aileron Down
FIGURE-2-3-0-991-019-A01

****ON A/C A320-200**

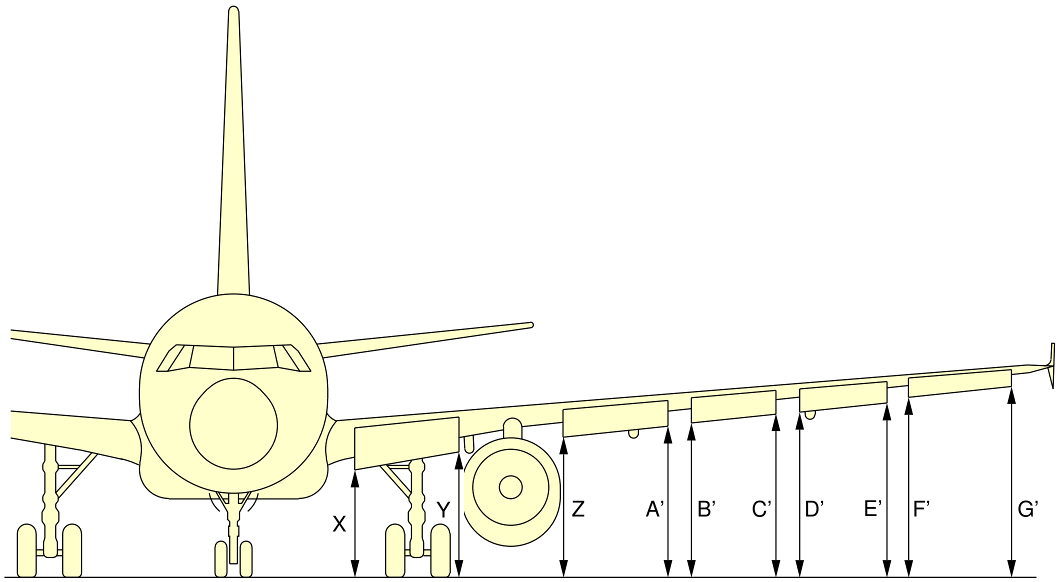


HEIGHT FROM GROUND						
	A/C IN MAINTENANCE CONFIGURATION MID CG		MAXIMUM RAMP WEIGHT FWD CG		MAXIMUM RAMP WEIGHT AFT CG	
	m	ft	m	ft	m	ft
N	4.55	14.93	4.44	14.57	4.39	14.40
P	4.35	14.27	4.24	13.91	4.20	13.78
Q	4.59	15.06	4.48	14.70	4.45	14.60
R	4.47	14.67	4.36	14.31	4.33	14.21
S	4.35	14.27	4.24	13.91	4.21	13.81
T	4.21	13.81	4.11	13.48	4.08	13.39
U	4.07	13.35	3.96	12.99	3.94	12.93
V	4.01	13.16	3.90	12.80	3.88	12.73
W	3.75	12.30	3.64	11.94	3.63	11.91

N_AC_020300_1_0200101_01_00

Ground Clearances
Aileron Up and Spoilers 1 to 5 Extended
FIGURE-2-3-0-991-020-A01

**ON A/C A320-200



HEIGHT FROM GROUND						
	A/C IN MAINTENANCE CONFIGURATION MID CG		MAXIMUM RAMP WEIGHT FWD CG		MAXIMUM RAMP WEIGHT AFT CG	
	m	ft	m	ft	m	ft
X	2.57	8.43	2.48	8.14	2.50	8.20
Y	2.98	9.78	2.88	9.45	2.90	9.51
Z	3.07	10.07	2.97	9.74	2.98	9.78
A' / B'	3.36	11.02	3.26	10.70	3.26	10.70
C' / D'	3.61	11.84	3.51	11.52	3.50	11.48
E' / F'	3.86	12.66	3.76	12.34	3.73	12.24
G'	4.09	13.42	3.98	13.06	3.95	12.96

N_AC_020300_1_0210101_01_00

Ground Clearances
Slats Extended
FIGURE-2-3-0-991-021-A01

2-4-0 Interior Arrangements

****ON A/C A320-200**

Interior Arrangements

1. This section gives the standard interior arrangements configuration.

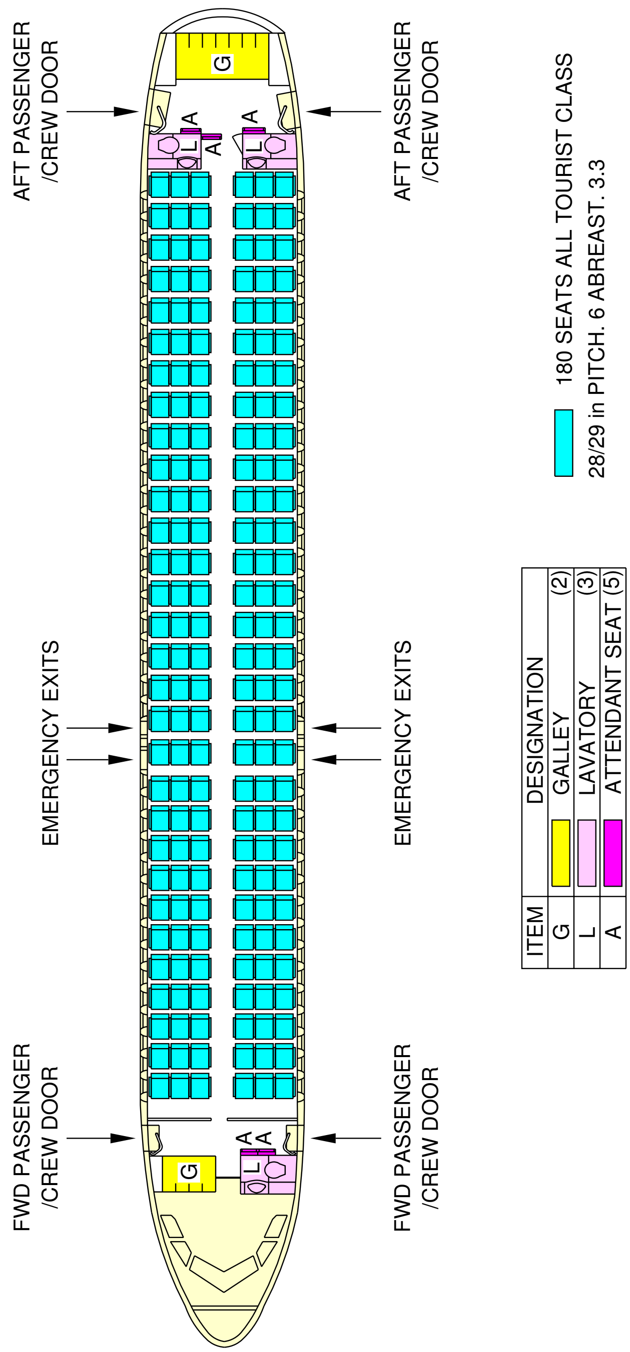
2-4-1 Passenger Compartment Layout

****ON A/C A320-200**

Typical Configuration

1. This section gives the typical interior configuration.

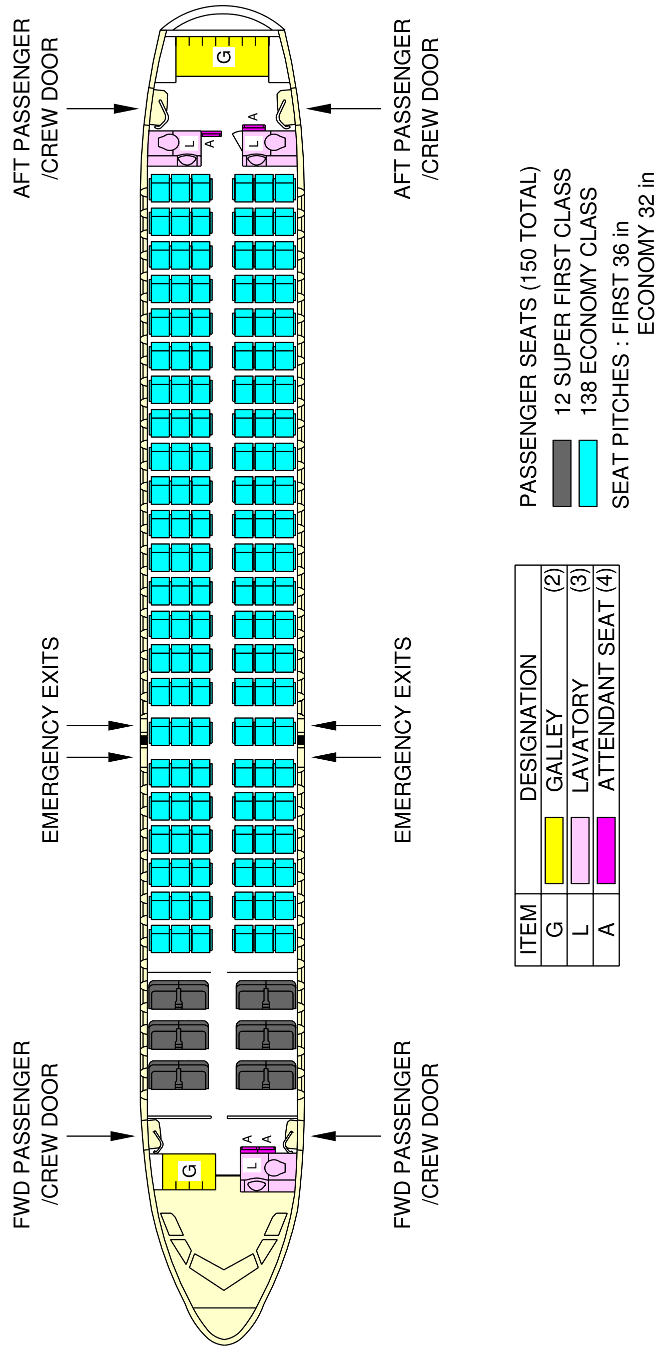
**ON A/C A320-200



N_AC_020401_1_0030101_01_02

Typical Configuration
Typical Configuration Single-Class, High Density
FIGURE-2-4-1-991-003-A01

**ON A/C A320-200



N_AC_020401_1_0090101_01_00

Typical Configuration
Typical Configuration Two-Class
FIGURE-2-4-1-991-009-A01

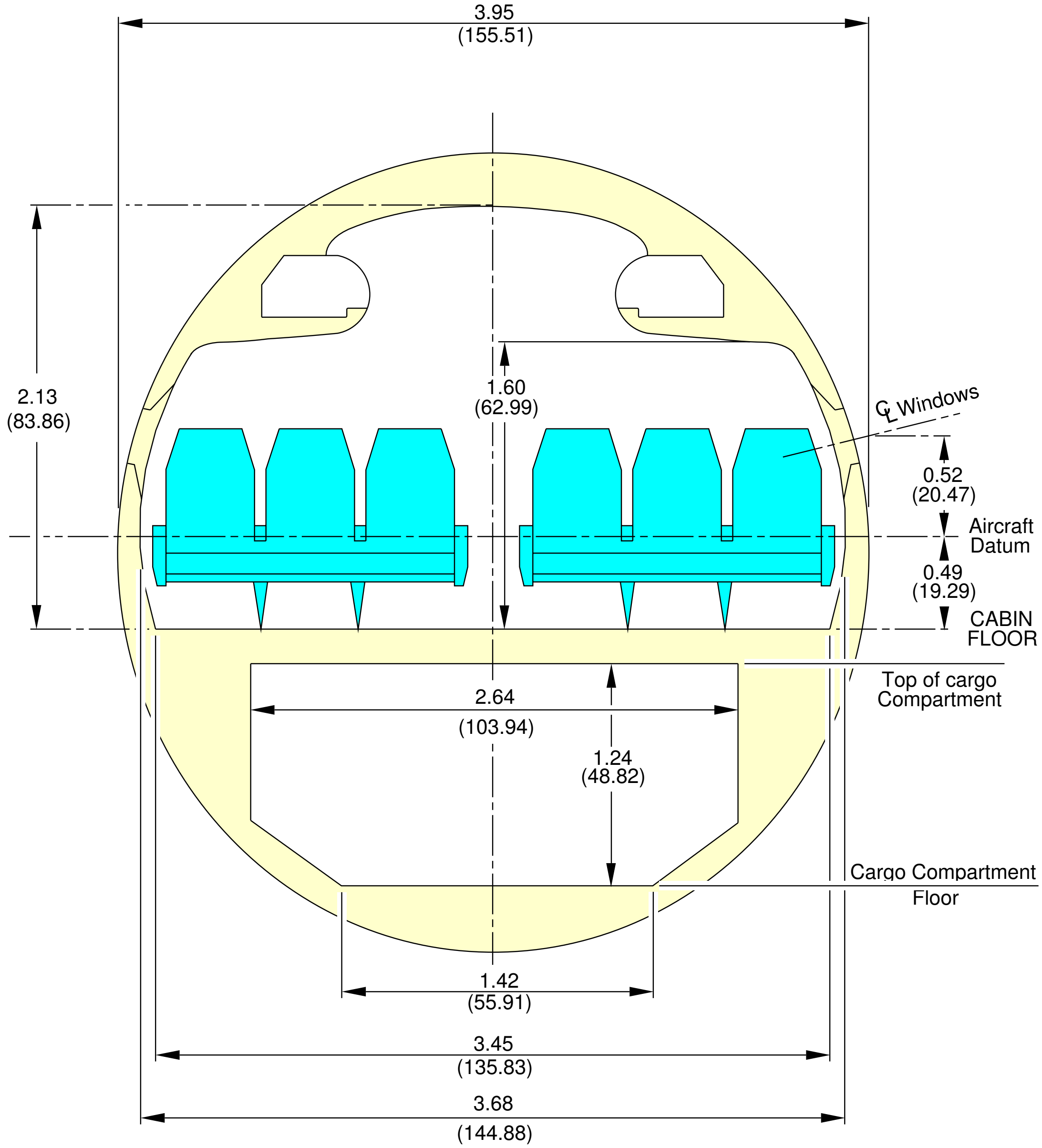
2-5-0 Passenger Compartment Cross Section

****ON A/C A320-200**

Passenger Compartment Cross-section

1. This section gives the typical passenger compartment cross-section configuration.

**ON A/C A320-200

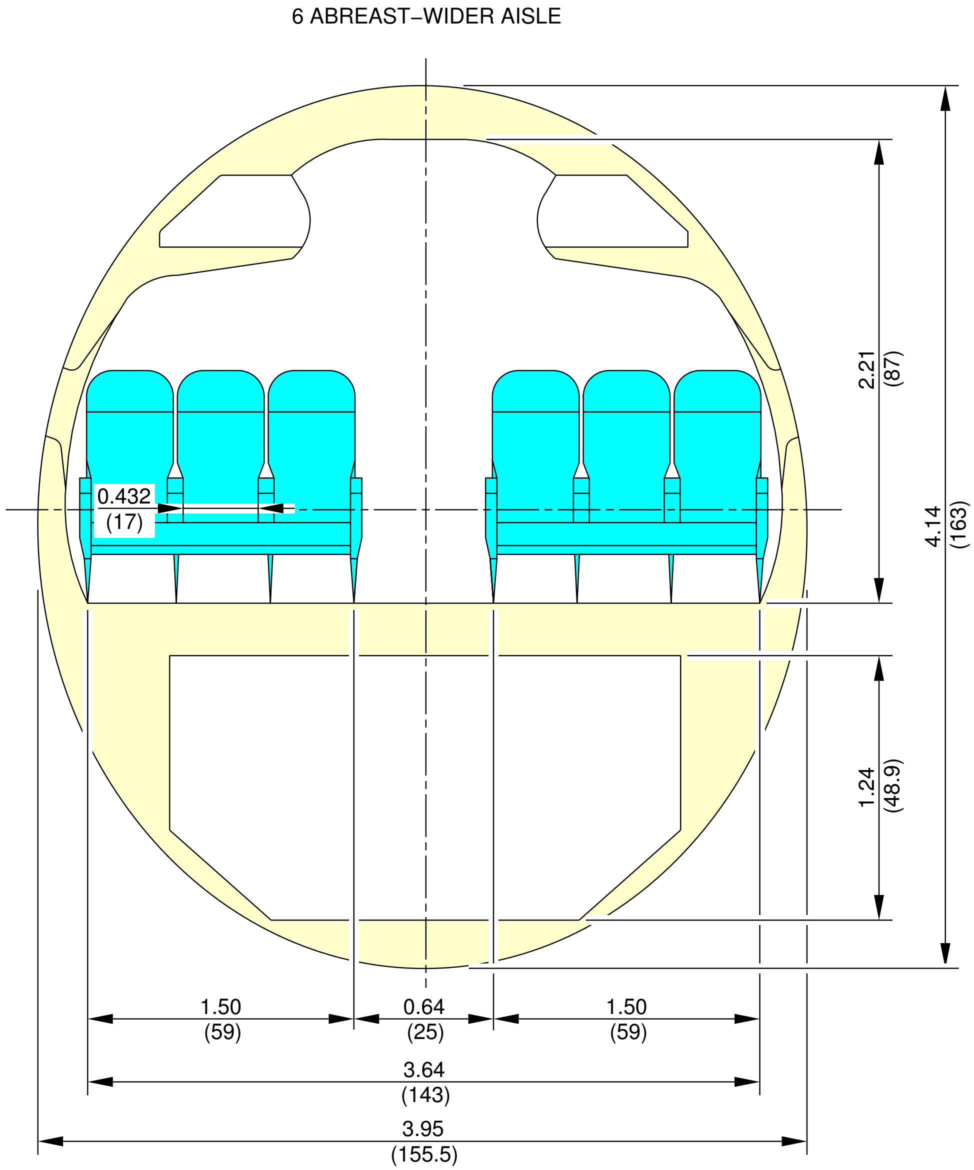


NOTE: DIMENSIONS m (in)

N_AC_020500_1_0010101_01_01

Passenger Compartment Cross-section
FIGURE-2-5-0-991-001-A01

**ON A/C A320-200

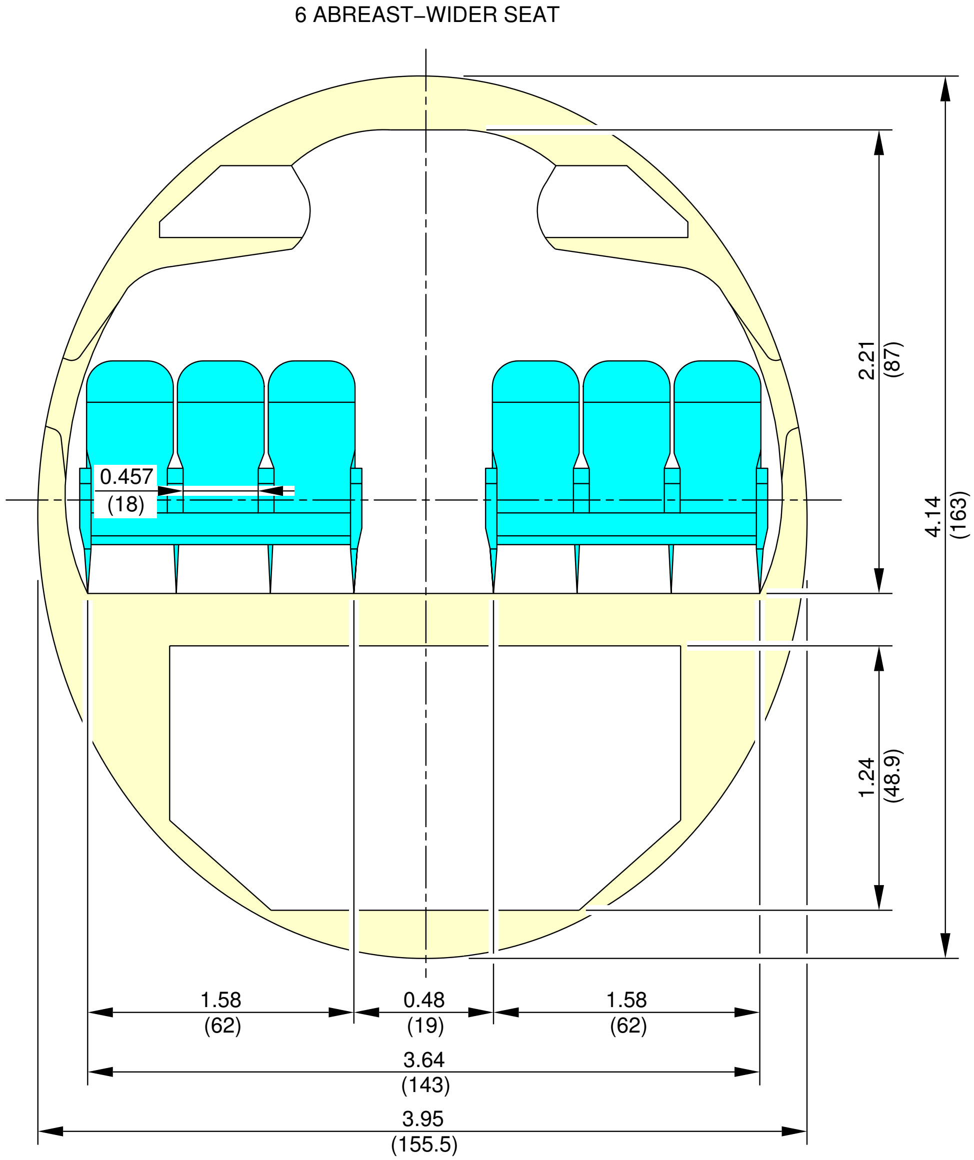


NOTE: DIMENSIONS m (in)

N_AC_020500_1_0050101_01_00

Passenger Compartment Cross-section
Economy Class, 6 Abreast - Wider Aisle (Sheet 1 of 2)
FIGURE-2-5-0-991-005-A01

**ON A/C A320-200

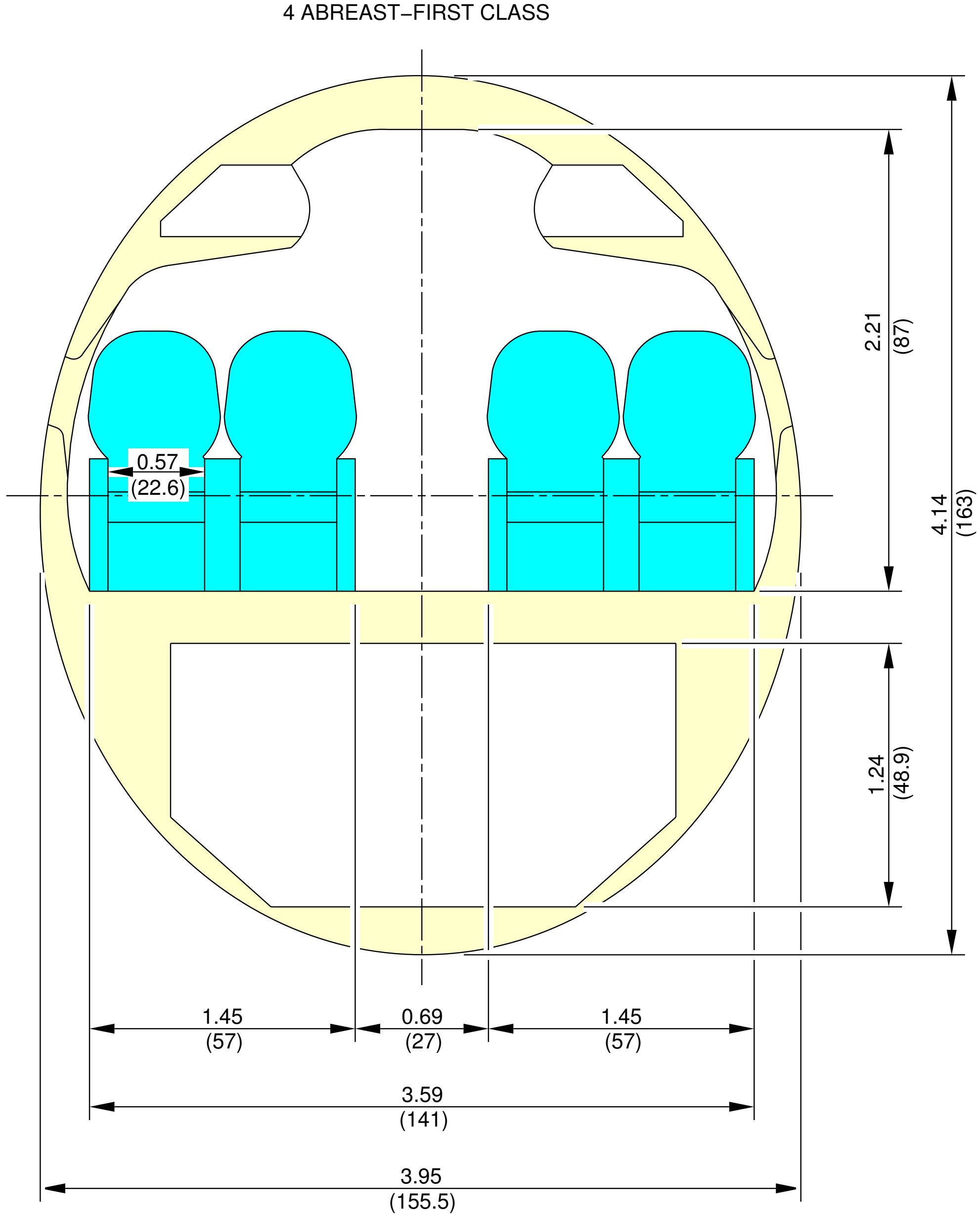


NOTE: DIMENSIONS m (in)

N_AC_020500_1_0050102_01_02

Passenger Compartment Cross-section
Economy Class, 6 Abreast - Wider Seat (Sheet 2 of 2)
FIGURE-2-5-0-991-005-A01

**ON A/C A320-200



NOTE: DIMENSIONS m (in)

N_AC_020500_1_0060101_01_00

Passenger Compartment Cross-section
Passenger Compartment Cross-section, First-class
FIGURE-2-5-0-991-006-A01

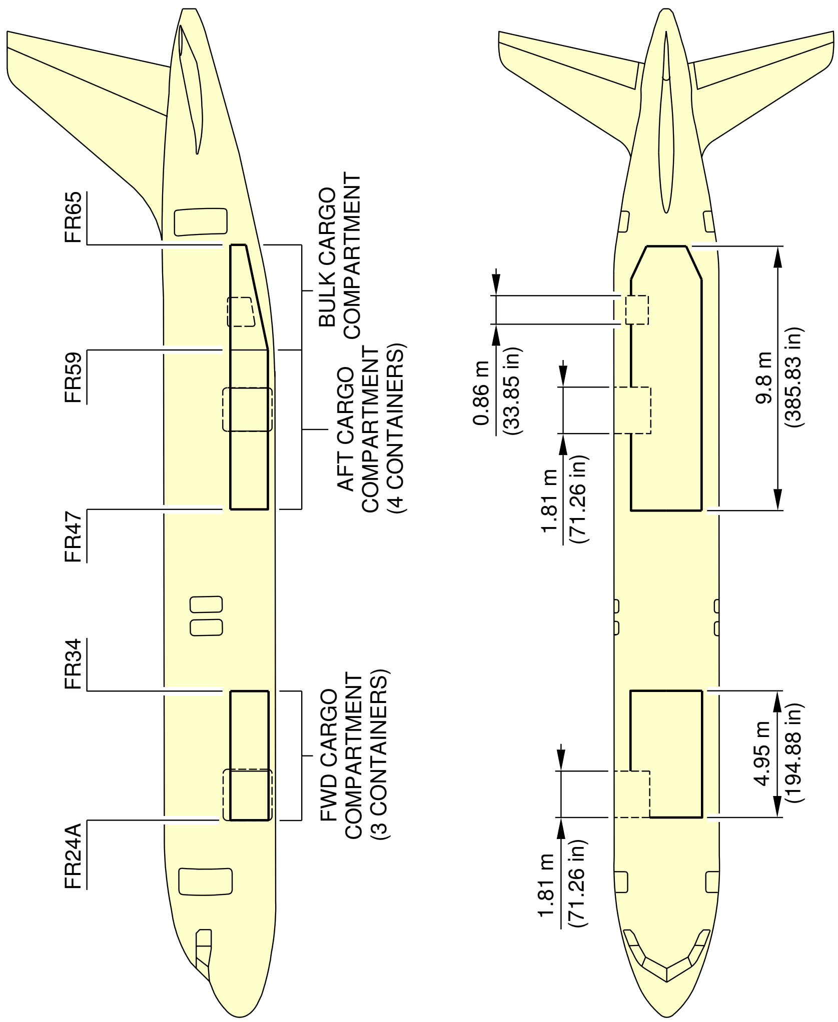
2-6-0 Cargo Compartments

****ON A/C A320-200**

Cargo Compartments

1. This section gives the cargo compartments locations, dimensions and loading combinations.

**ON A/C A320-200



Cargo Compartments
Locations, Dimensions and Loading Combinations
FIGURE-2-6-0-991-003-A01

2-7-0 Door Clearances

****ON A/C A320-200**

Doors Clearances

1. This section gives doors clearances.

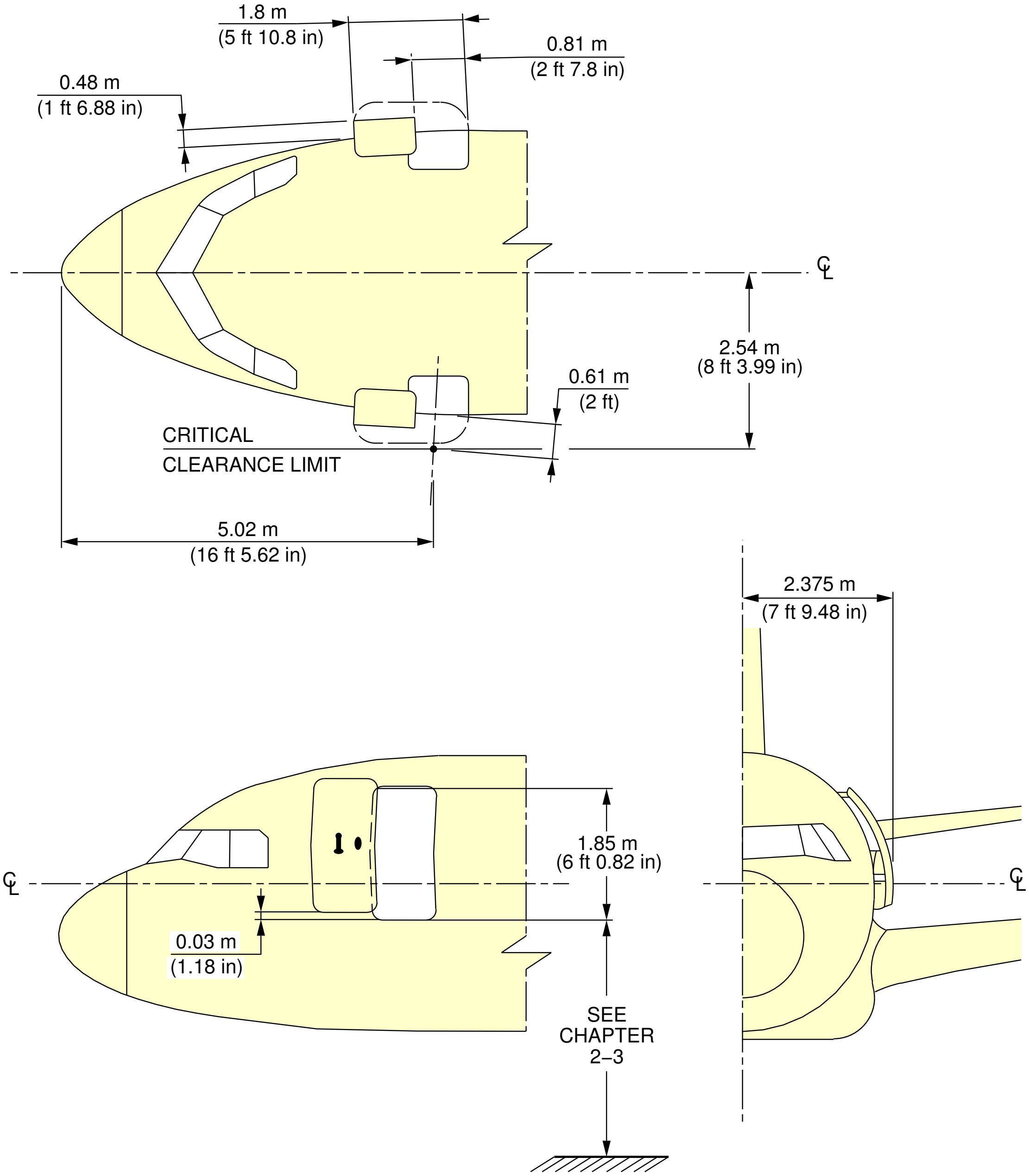
2-7-1 Forward Passenger / Crew Doors

****ON A/C A320-200**

Forward Passenger / Crew Doors

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

**ON A/C A320-200



Doors Clearances
Forward Passenger / Crew Doors
FIGURE-2-7-1-991-003-A01

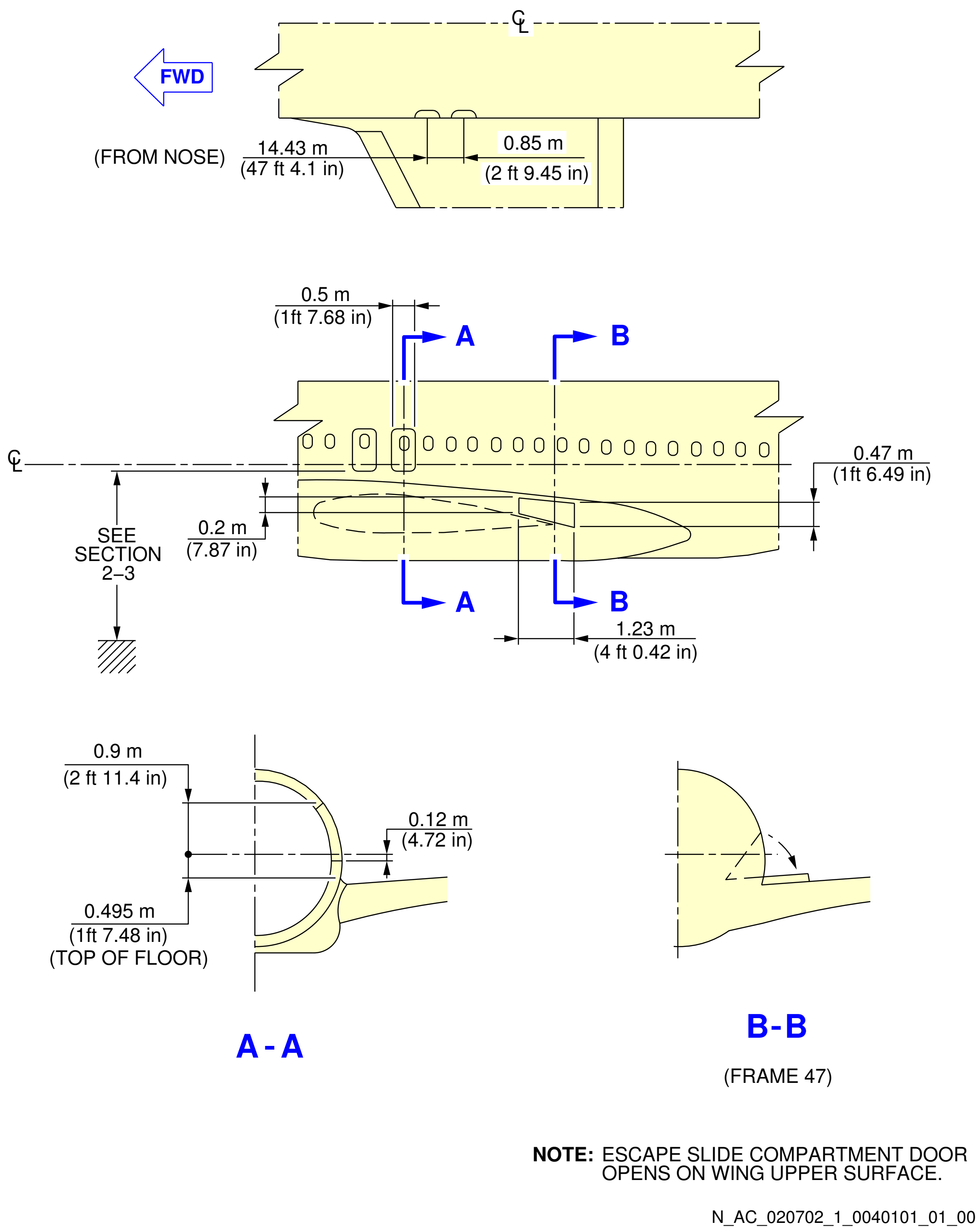
2-7-2 Emergency Exits

****ON A/C A320-200**

Emergency Exits

1. This section gives emergency exits doors clearances.

**ON A/C A320-200



Doors Clearances
Emergency Exits
FIGURE-2-7-2-991-004-A01

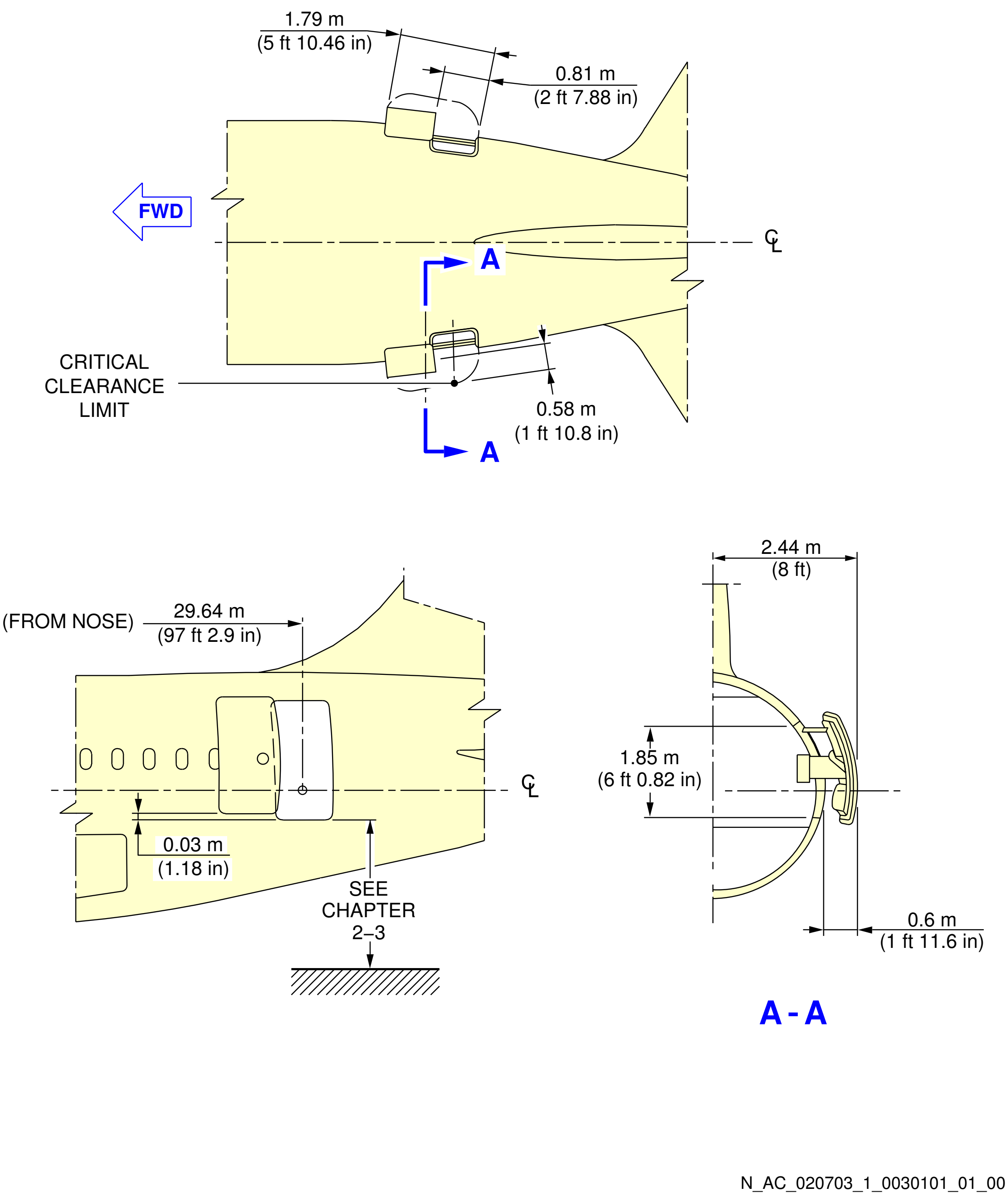
2-7-3 Aft Passenger / Crew Doors

**ON A/C A320-200

Aft Passenger / Crew Doors

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

**ON A/C A320-200



Doors Clearances
Aft Passenger / Crew Doors
FIGURE-2-7-3-991-003-A01

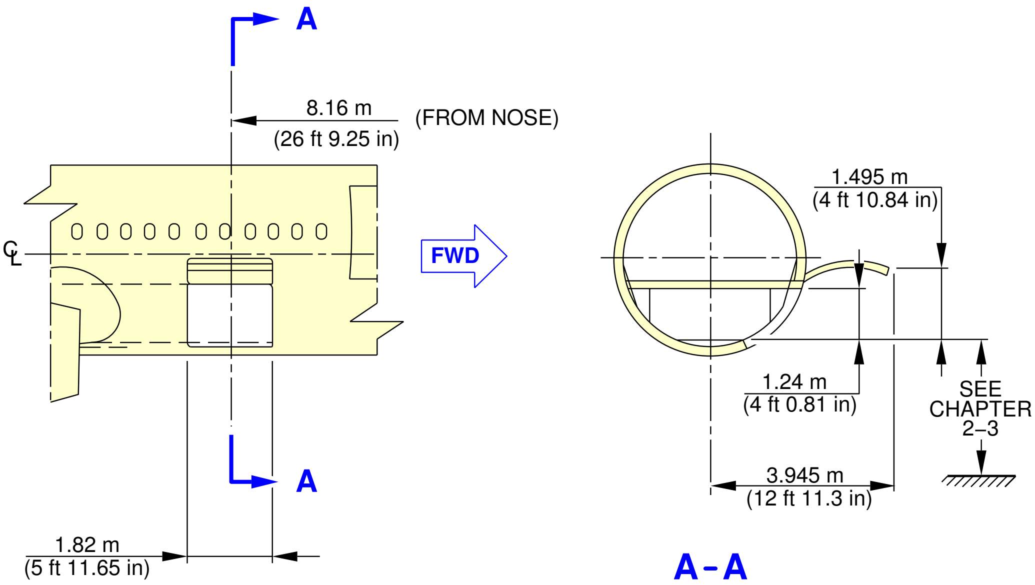
2-7-4 Forward Cargo Compartment Doors

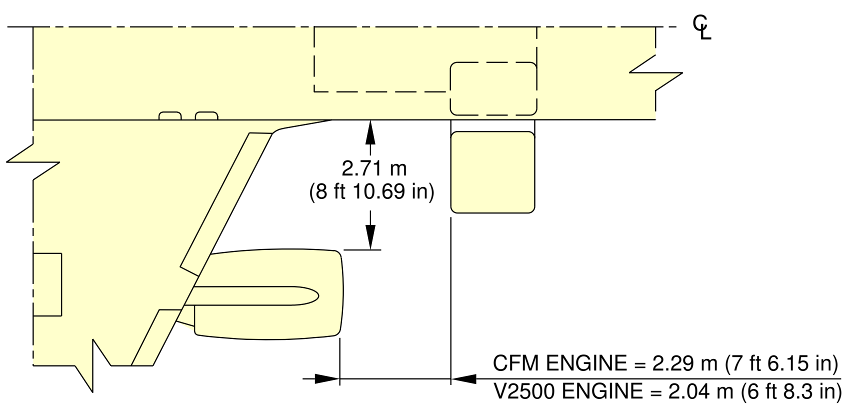
****ON A/C A320-200**

Forward Cargo Compartment Door

1. This section gives forward cargo compartment door clearances.

**ON A/C A320-200





N_AC_020704_1_0030101_01_00

Doors Clearances
Forward Cargo Compartment Door
FIGURE-2-7-4-991-003-A01

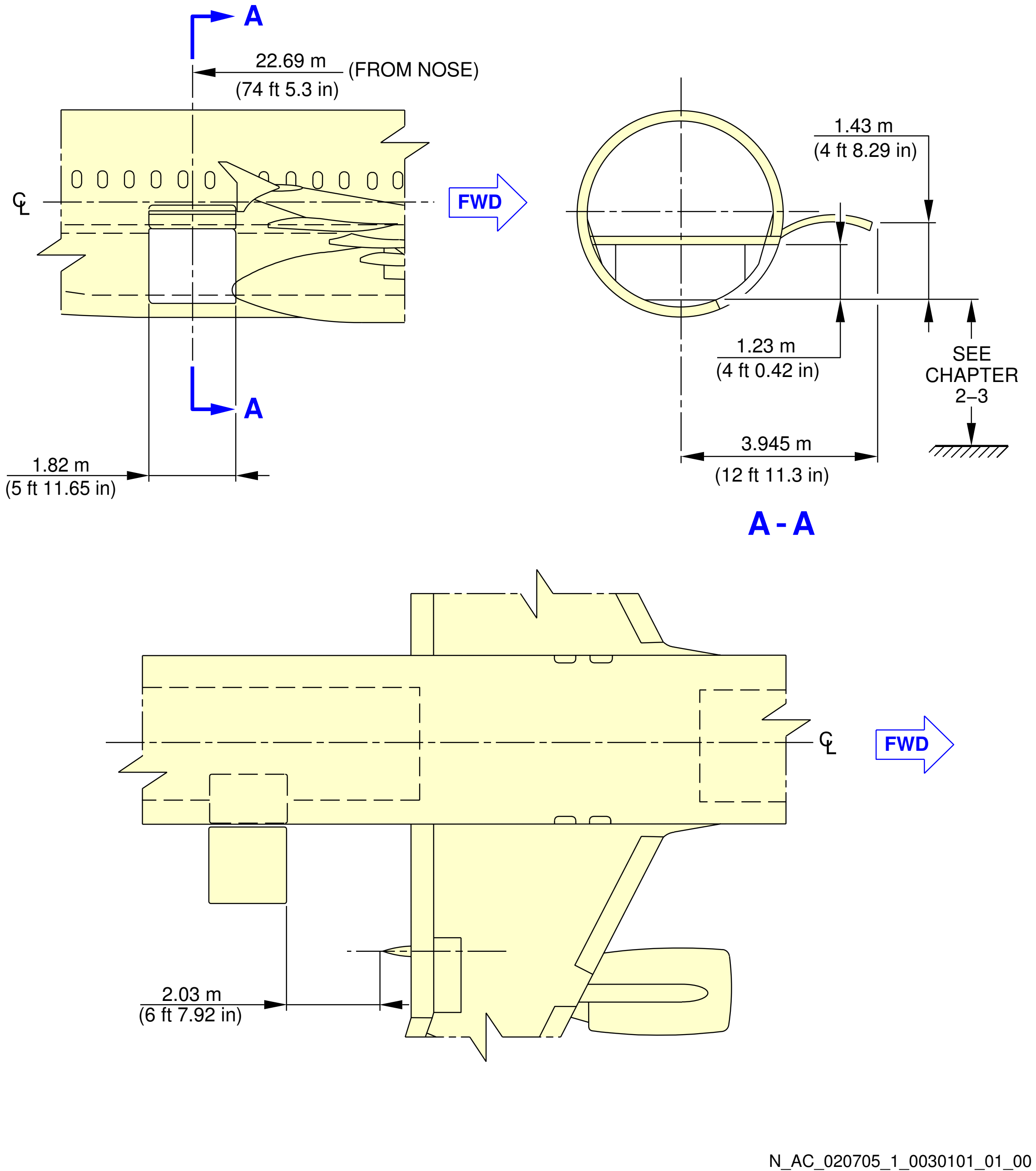
2-7-5 Aft Cargo Compartment Doors

****ON A/C A320-200**

Aft Cargo Compartment Door

1. This section gives Aft cargo compartment door clearances.

**ON A/C A320-200



Doors Clearances
Aft Cargo Compartment Door
FIGURE-2-7-5-991-003-A01

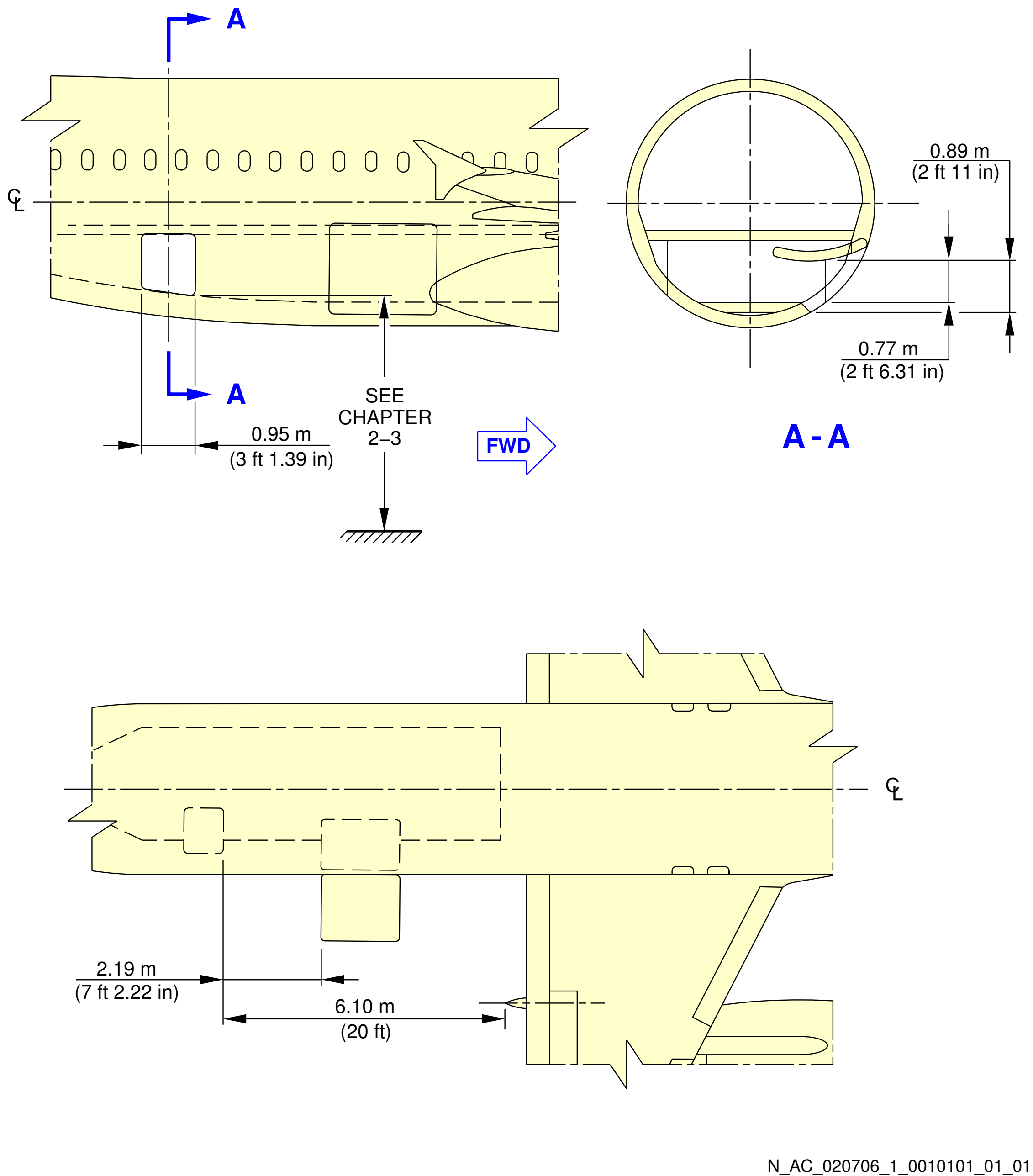
2-7-6 Bulk Cargo Compartment Doors

****ON A/C A320-200**

Bulk Cargo Compartment Door

1. This section gives the bulk cargo compartment door clearances.

**ON A/C A320-200



Doors Clearances
Bulk Cargo Compartment Door
FIGURE-2-7-6-991-001-A01

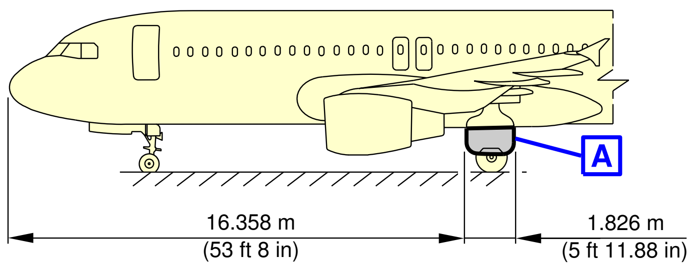
2-7-7 Main Landing Gear Doors

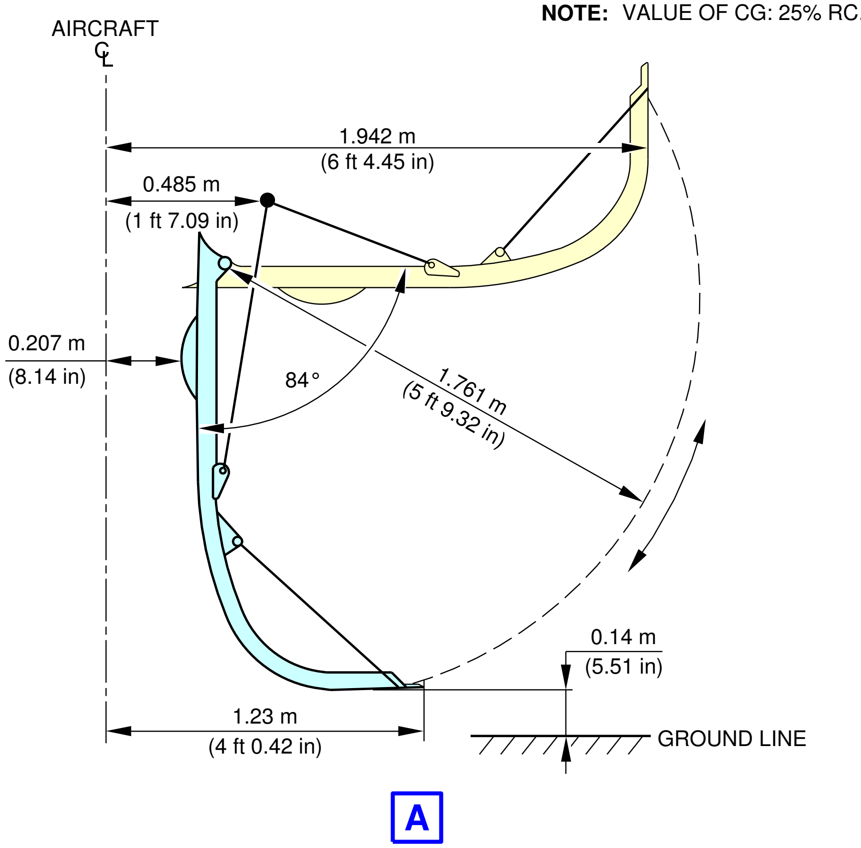
****ON A/C A320-200**

Main Landing Gear Doors

1. This section gives the main landing gear doors clearances.

**ON A/C A320-200

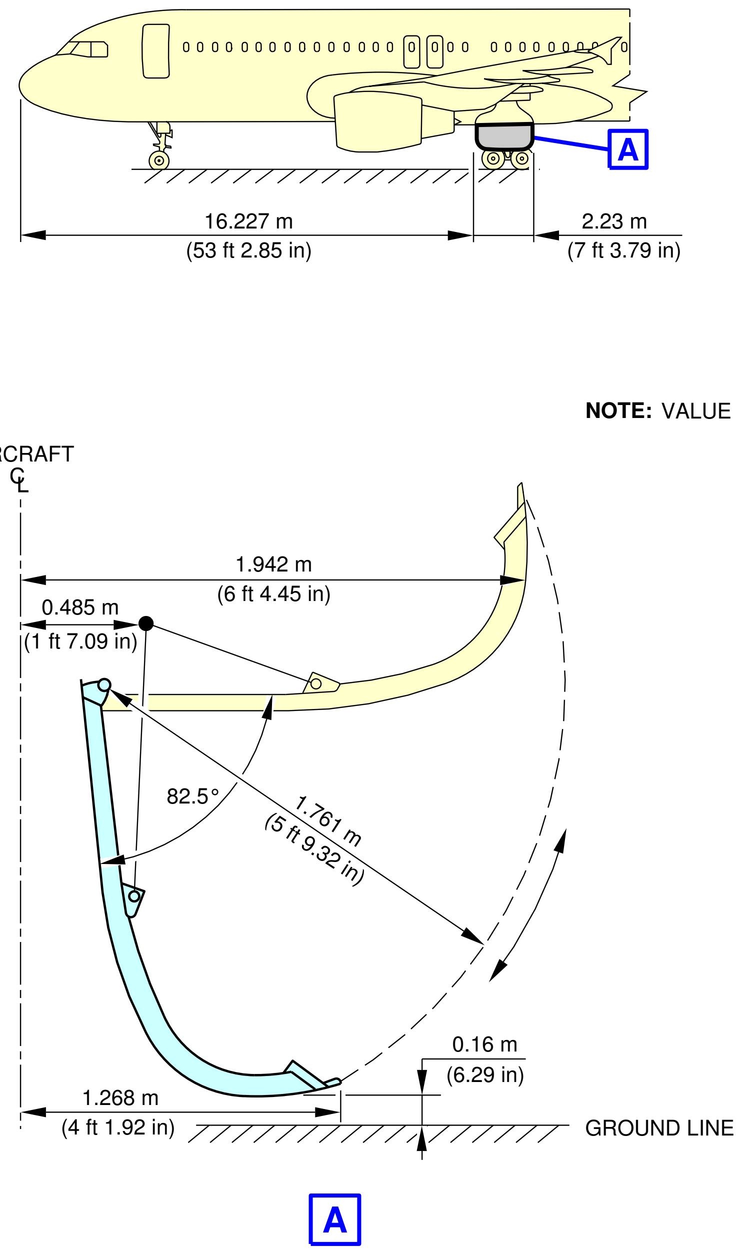




N_AC_020707_1_0030101_01_02

Doors Clearances
Main Landing Gear Doors
FIGURE-2-7-7-991-003-A01

**ON A/C A320-200



N_AC_020707_1_0040101_01_02

Doors Clearances
Main Landing Gear Doors (Bogie)
FIGURE-2-7-7-991-004-A01

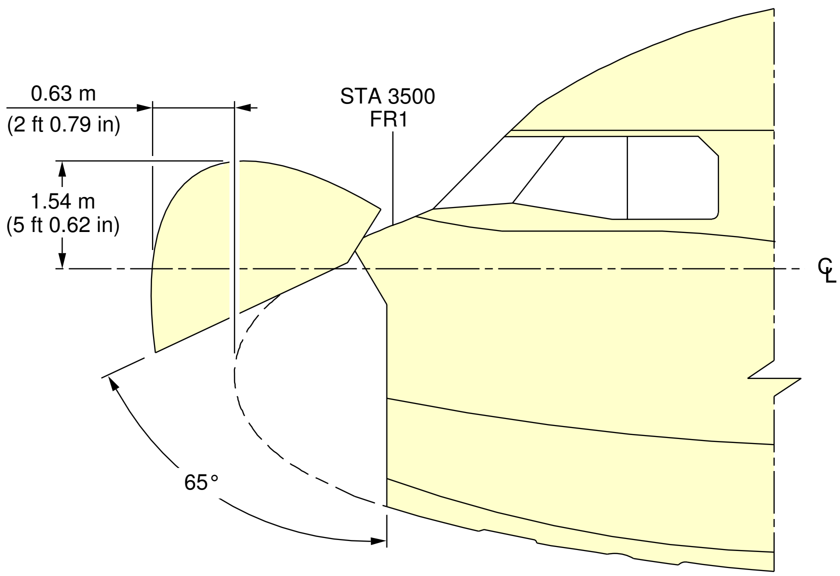
2-7-8 Radome

****ON A/C A320-200**

Radome

1. This section gives the radome clearances.

**ON A/C A320-200



N_AC_020708_1_0030101_01_00

Doors Clearances
Radome
FIGURE-2-7-8-991-003-A01

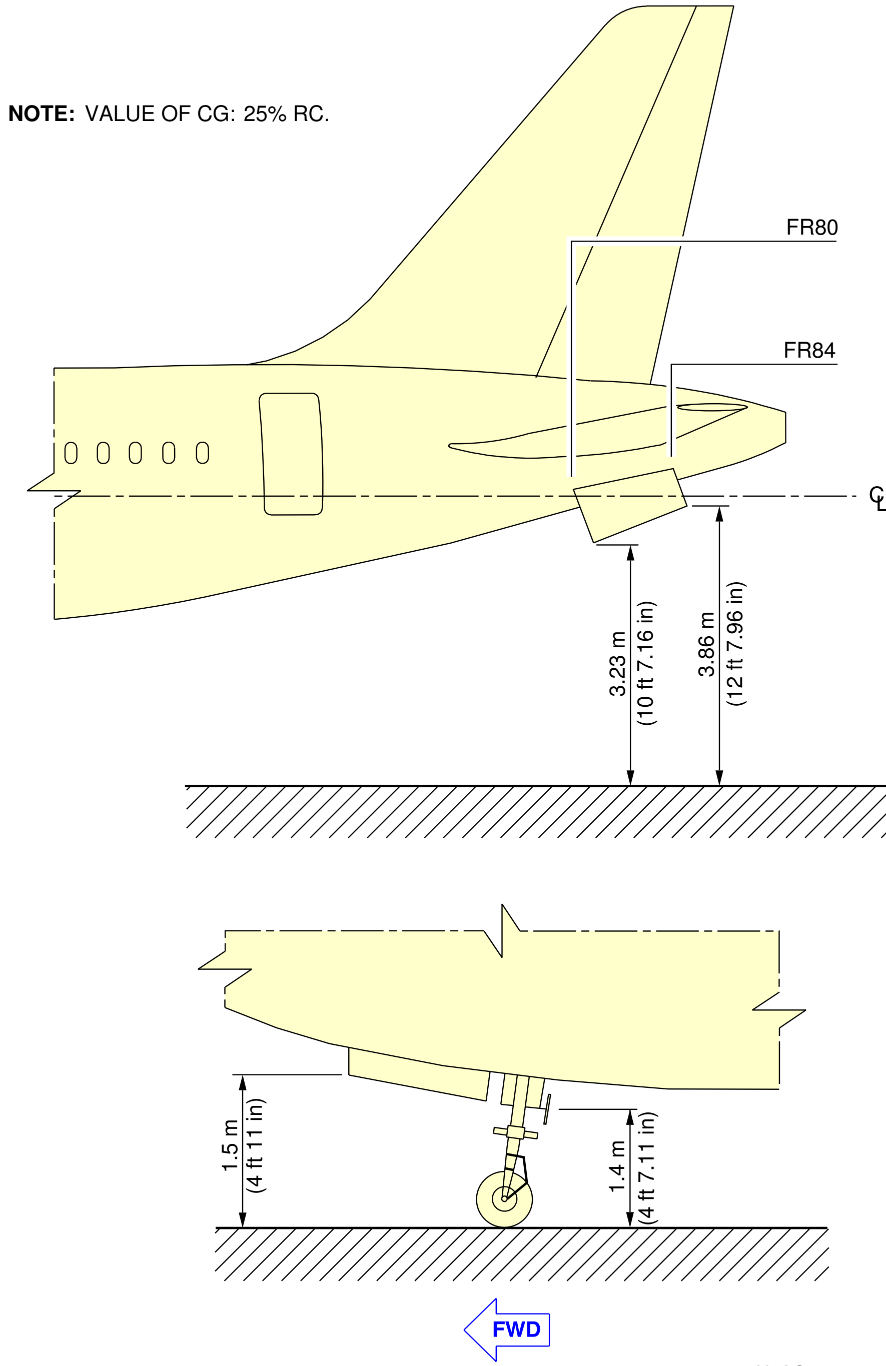
2-7-9 APU and Nose Landing Gear Doors

****ON A/C A320-200**

APU and Nose Landing Gear Doors

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

**ON A/C A320-200



Doors Clearances
APU and Nose Landing Gear Doors
FIGURE-2-7-9-991-003-A01

2-8-0 Escape Slides

**ON A/C A320-200

Escape Slides

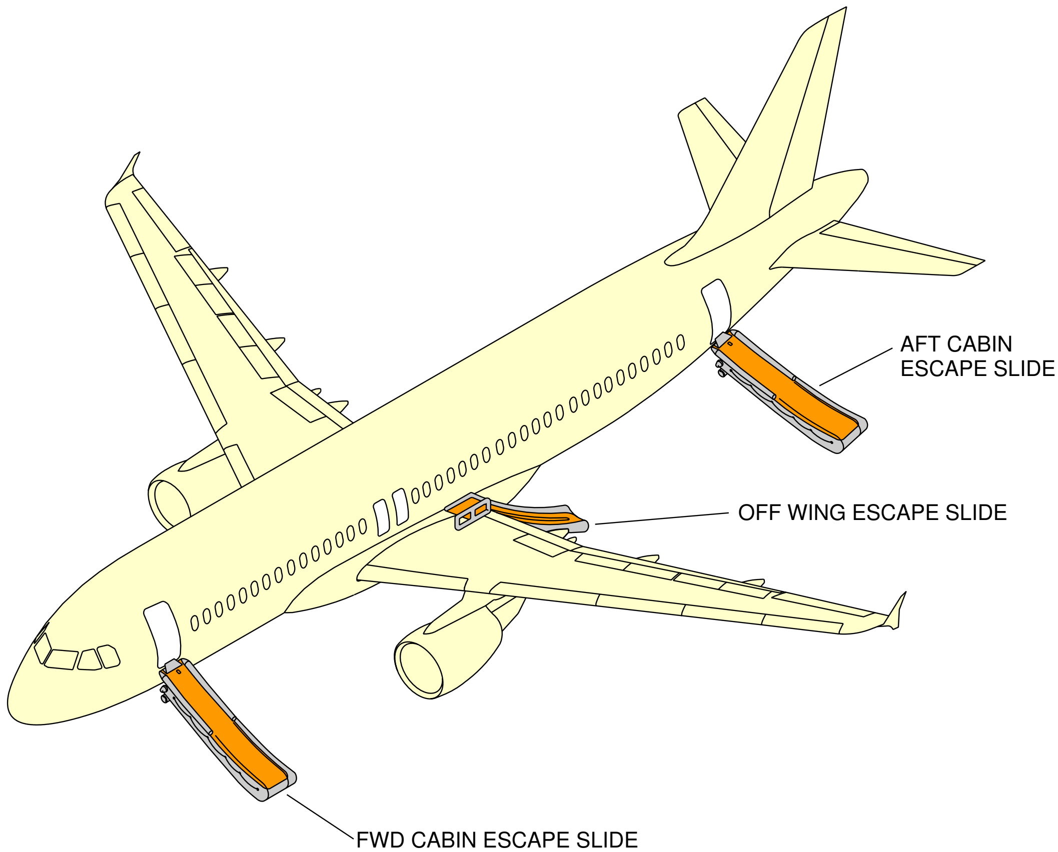
1. General

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

2. Location

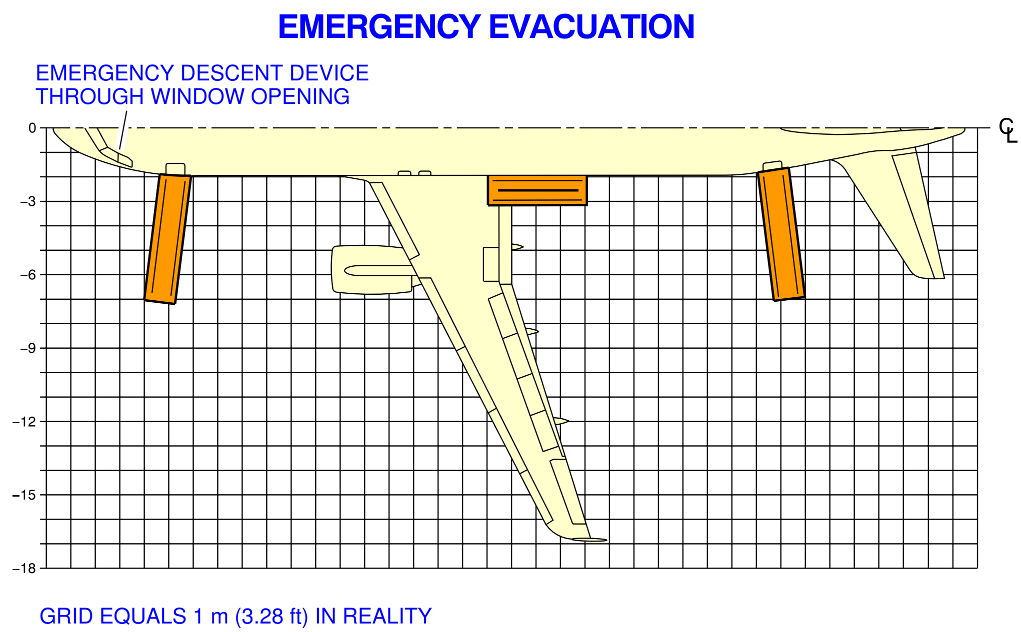
   Escape facilities are provided at the following locations:
   - one slide-raft at each passenger/crew door (total four)
   - one slide for emergency exit doors (total two). Dual lane offwing escape slides are installed above the wings in the left and right wing-to-fuselage fairings for off-the-wing evacuation.

****ON A/C A320-200**



Escape Slides
Location
FIGURE-2-8-0-991-005-A01

**ON A/C A320-200



Escape Slides
Dimensions
FIGURE-2-8-0-991-006-A01

2-9-0 Landing Gear

****ON A/C A320-200**

Landing Gear

1. General

The landing gear is of the conventional retractable tricycle type comprising:
- Two main gears with twin wheel or four wheels bogie assembly,
- A twin wheel nose gear.

The main landing gear twin wheel landing gears are located under the wing and retract sideways towards the fuselage centerline.
The nose landing gear retracts forward into a fuselage compartment located between STA 5394/FR 9 and STA 8077/FR 20.

The landing gear and landing gear doors operation is controlled electrically and hydraulically operated.
In abnormal operation, the landing gear can be extended by gravity.

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

2. Main Landing Gear

A. Twin wheel

Each of the two main landing gear assemblies consists of a conventional two wheel direct type with an integral shock absorber supported in the fore and aft direction by a fixed drag strut and laterally by a folding strut mechanically locked when in the DOWN position.

B. Four wheels - Bogie

Each of the two main landing gear assemblies consists of a direct action shock absorber on which is installed a bogie beam and four wheels.
The shock absorber is supported in the fore and aft direction by a fixed drag strut and laterally by a folding strut mechanically locked when in the DOWN position.

3. Nose Landing Gear

The nose landing gear comprises a leg with a built-in shock absorber strut, carrying twin wheel with adequate shimmy damping and a folding strut mechanically locked when in the DOWN position.

4. Nose Wheel Steering

Steering is controlled by two hand wheels in the cockpit. For steering angle controlled by the hand wheels, refer to AMM 32-51-00.
For steering angle limitation, refer to AMM 09-10-00.

A steering disconnection box installed on the nose landing gear to allow steering deactivation for towing purpose.

5. Landing Gear Servicing Points

A. General

Filling of the landing gear shock absorbers is through MS28889 standard valves.

Charging of the landing gear shock absorbers is accomplished with nitrogen through MS28889 standard valves.

B. Charging Pressure

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

6. Braking

A. General

The four main wheels are equipped with carbon multidisc brakes.

The braking system is electrically controlled and hydraulically operated.

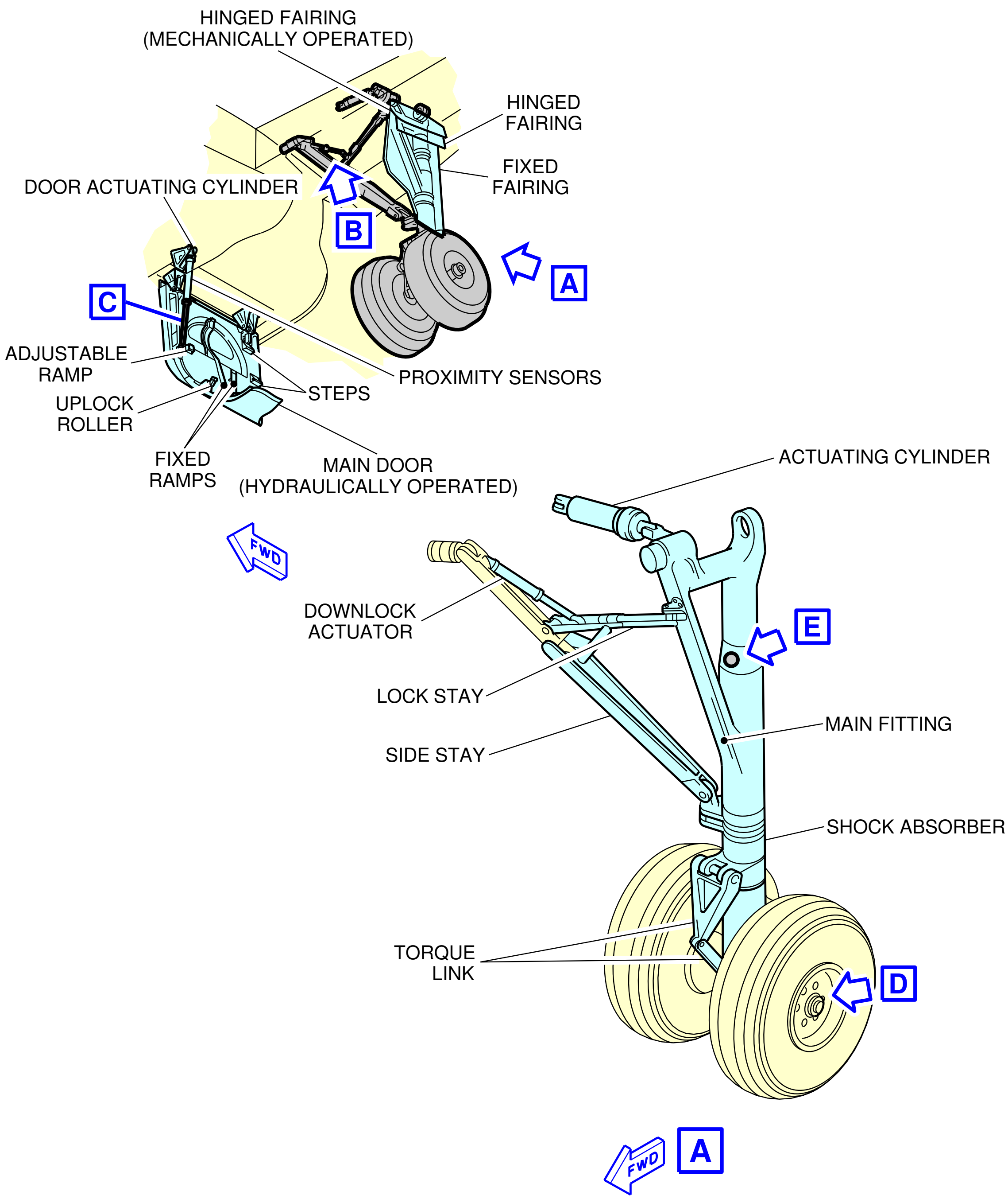
The braking system has four braking modes plus autobrake and anti-skid systems:
- Normal braking with anti-skid capability
- Alternative braking with anti-skid capability
- Alternative braking without anti-skid capability
- Parking brake with full pressure application capability only.

B. In-Flight Wheel Braking

The main gear wheels are braked automatically before the wheels enter the wheel bay.

The nose gear wheels are stopped by the wheels contacting a rubbing strip (the brake band) when the gear is in the retracted position.

**ON A/C A320-200

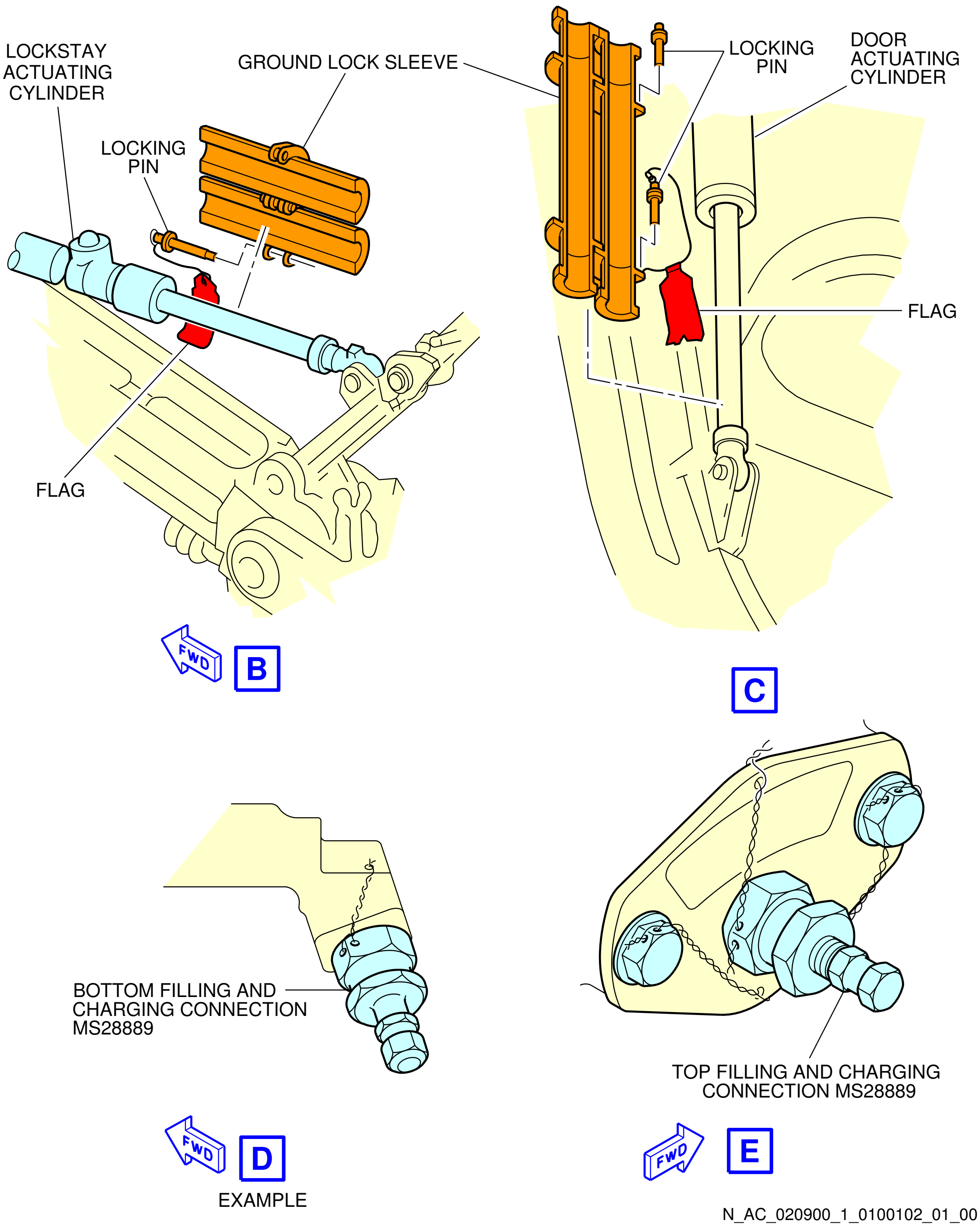


NOTE: MAIN DOOR SHOWN OPEN IN GROUND MAINTENANCE POSITION.

N_AC_020900_1_0100101_01_00

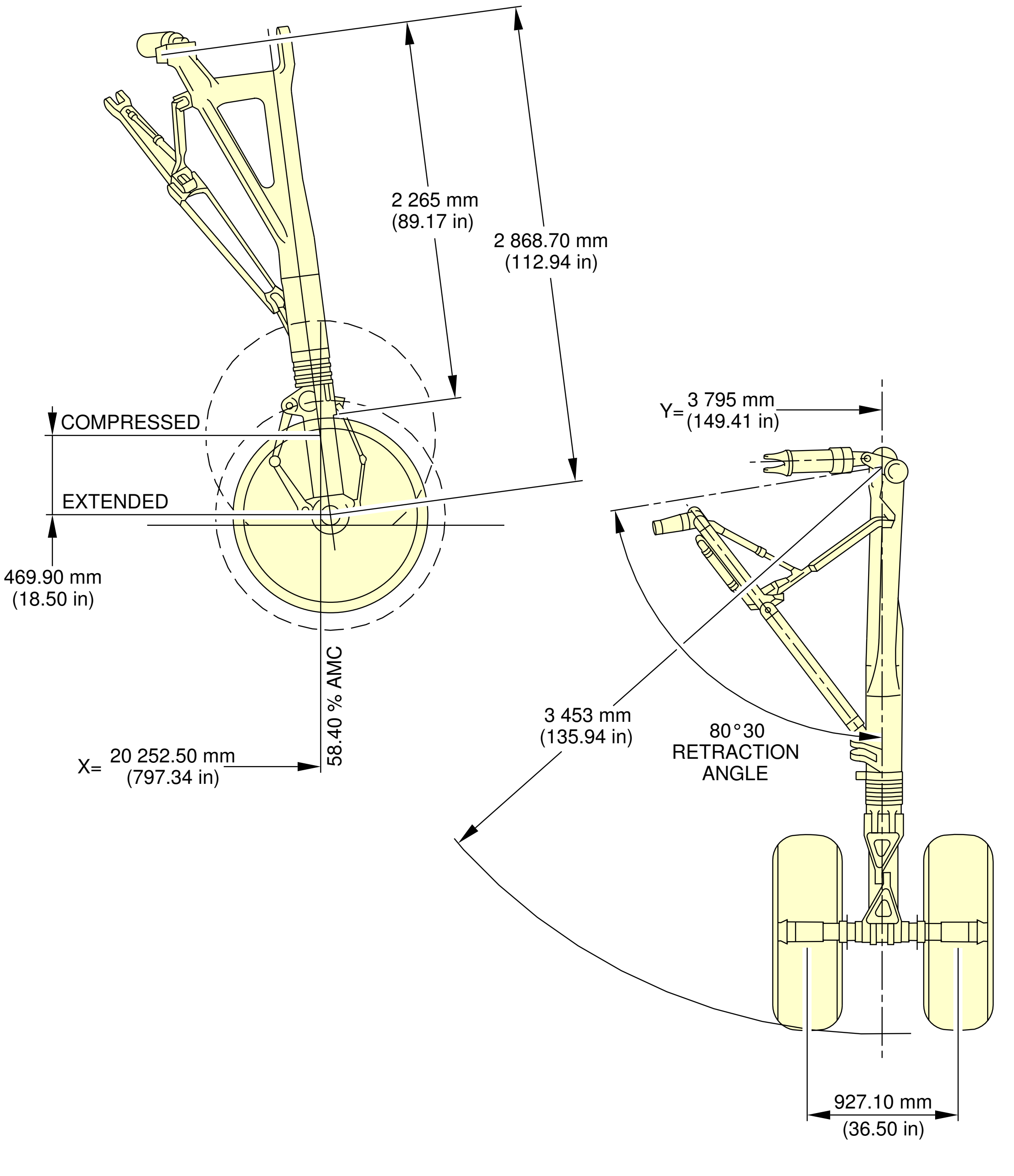
Landing Gear
Main Landing Gear - Twin Wheel (Sheet 1 of 2)
FIGURE-2-9-0-991-010-A01

**ON A/C A320-200



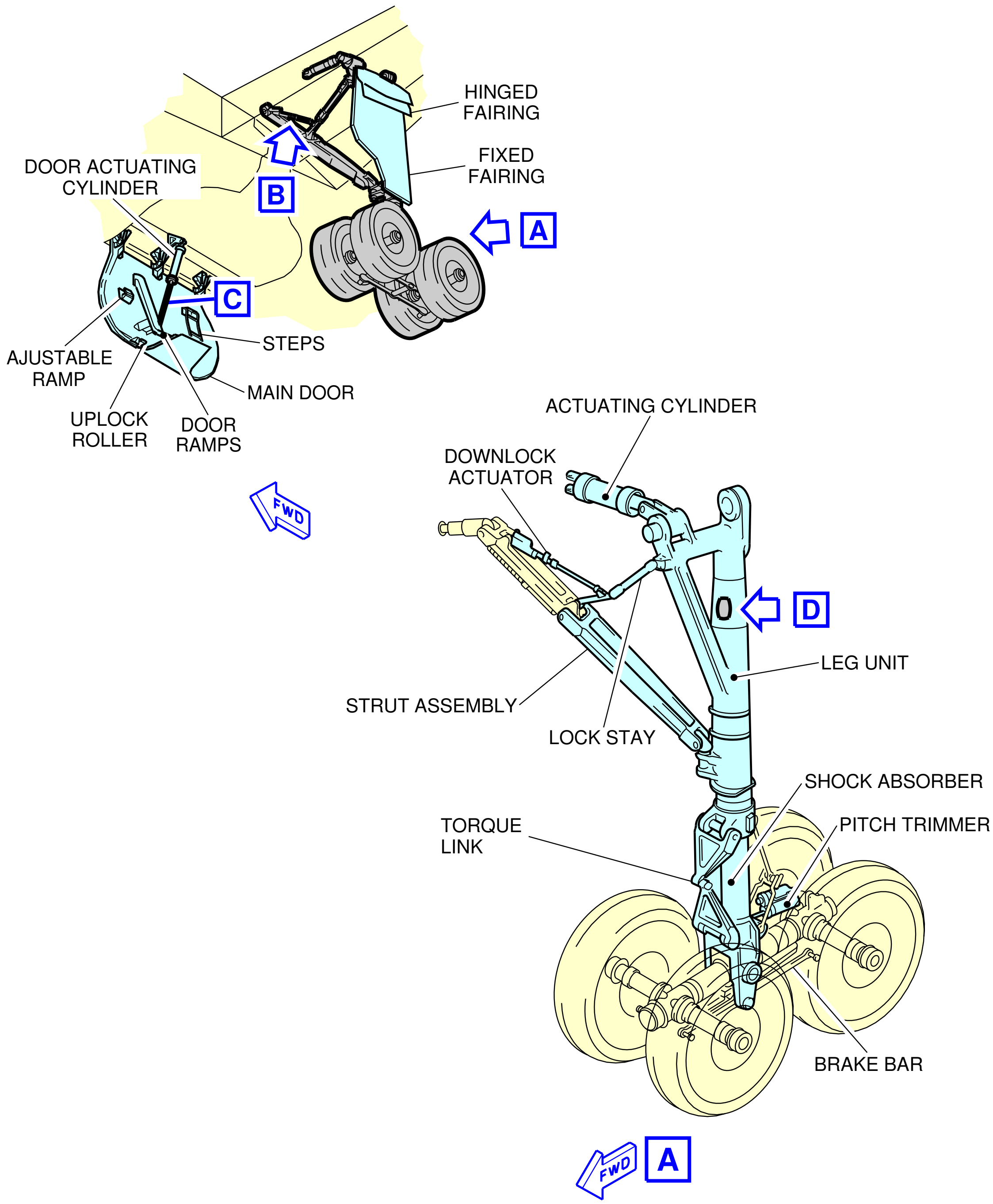
Landing Gear
Main Landing Gear - Twin Wheel (Sheet 2 of 2)
FIGURE-2-9-0-991-010-A01

**ON A/C A320-200



Landing Gear
Main Landing Gear Dimensions - Twin Wheel
FIGURE-2-9-0-991-011-A01

**ON A/C A320-200

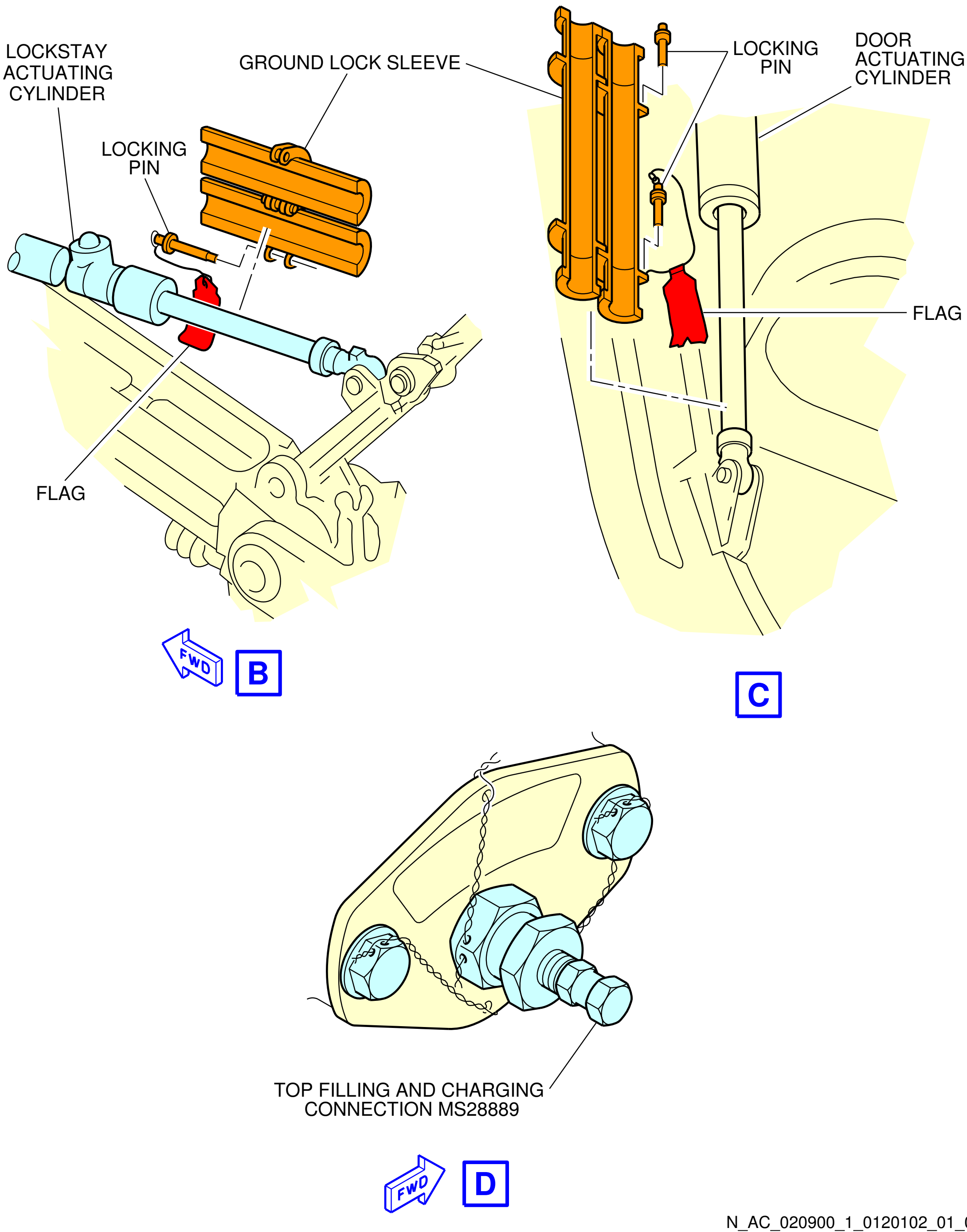


NOTE: MAIN DOOR SHOWN OPEN IN GROUND MAINTENANCE POSITION.

N_AC_020900_1_0120101_01_00

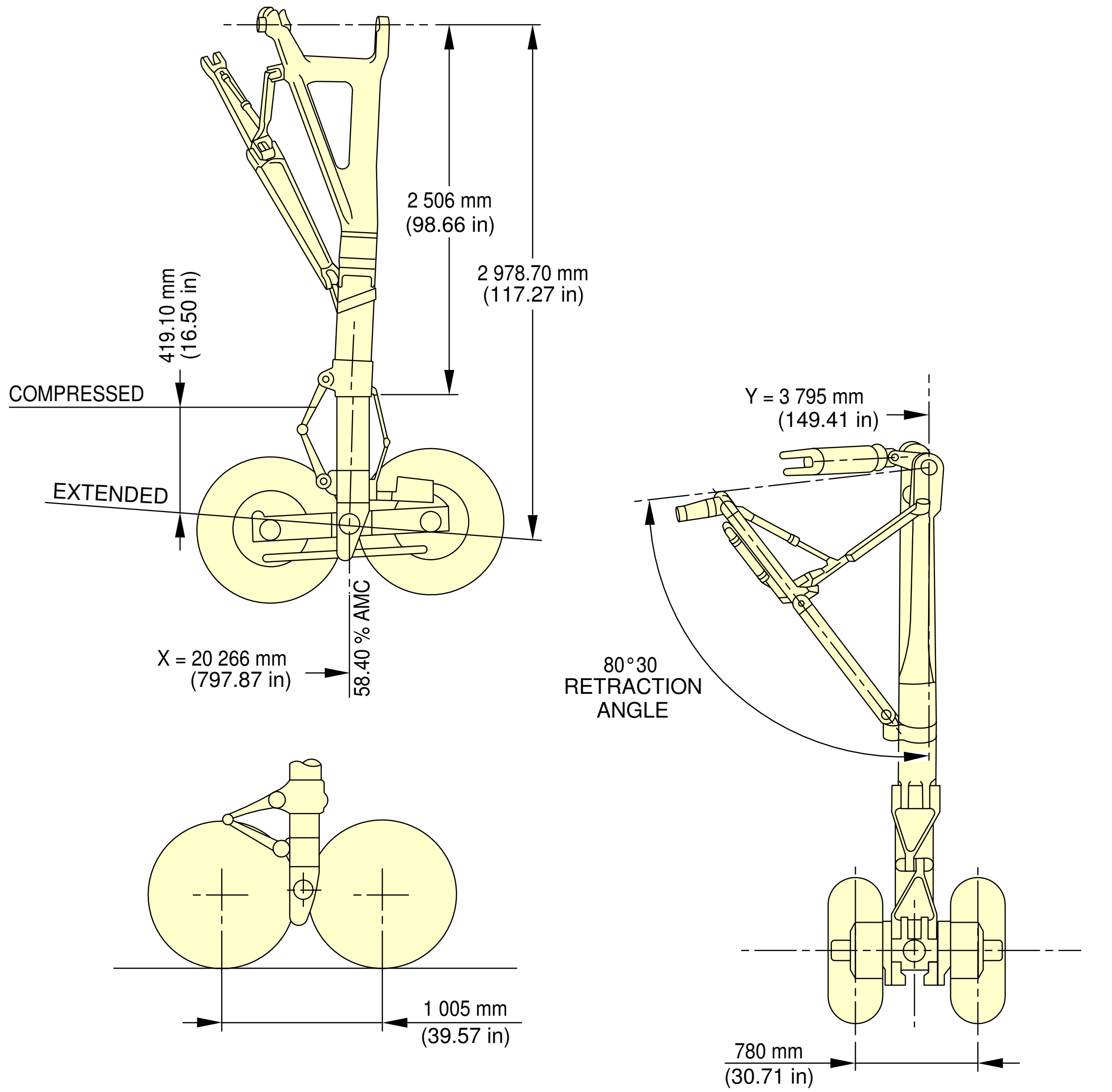
Landing Gear
Main Landing Gear - Four Wheels - Bogie (Sheet 1 of 2)
FIGURE-2-9-0-991-012-A01

**ON A/C A320-200



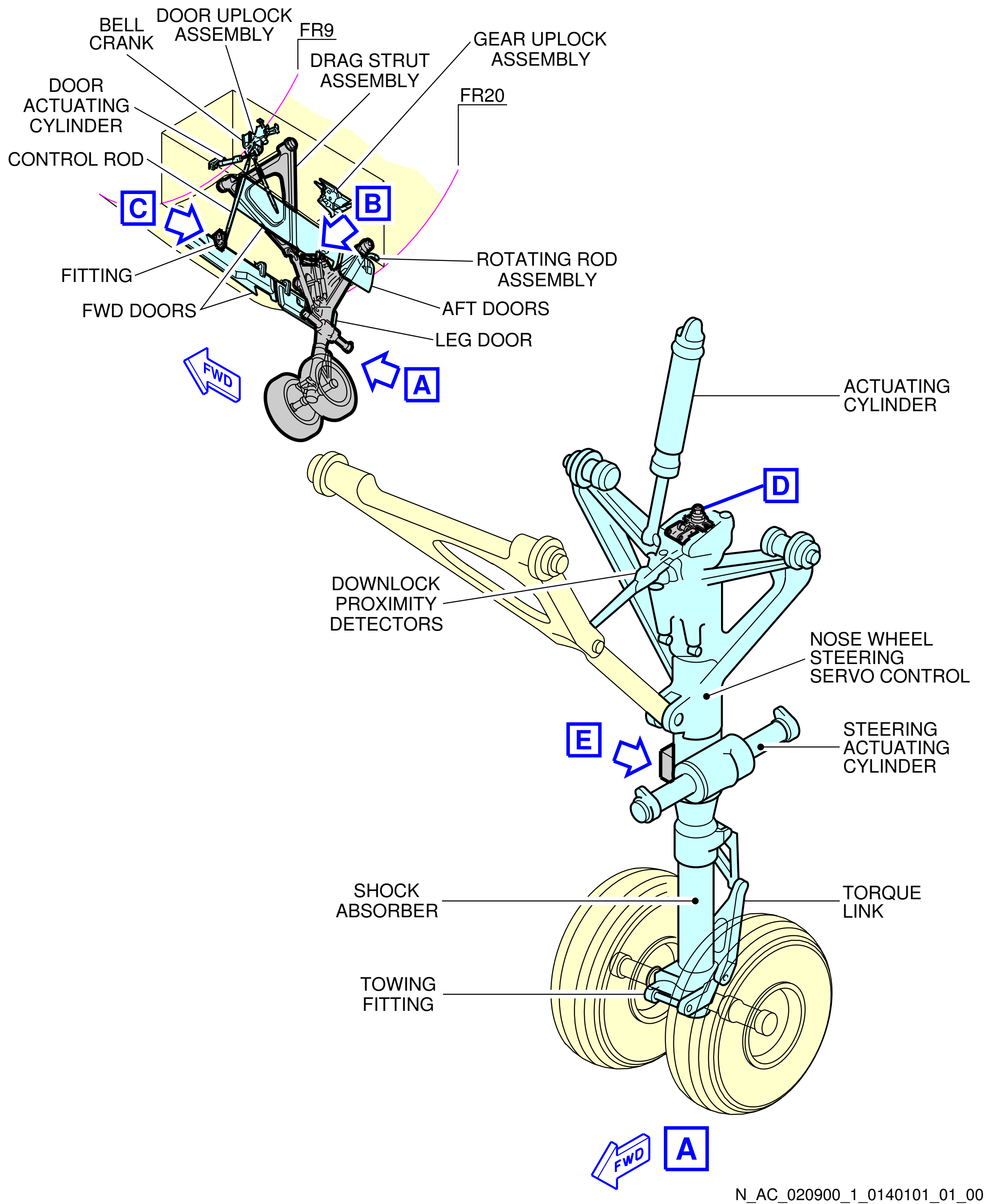
Landing Gear
Main Landing Gear - Four Wheels - Bogie (Sheet 2 of 2)
FIGURE-2-9-0-991-012-A01

****ON A/C A320-200**



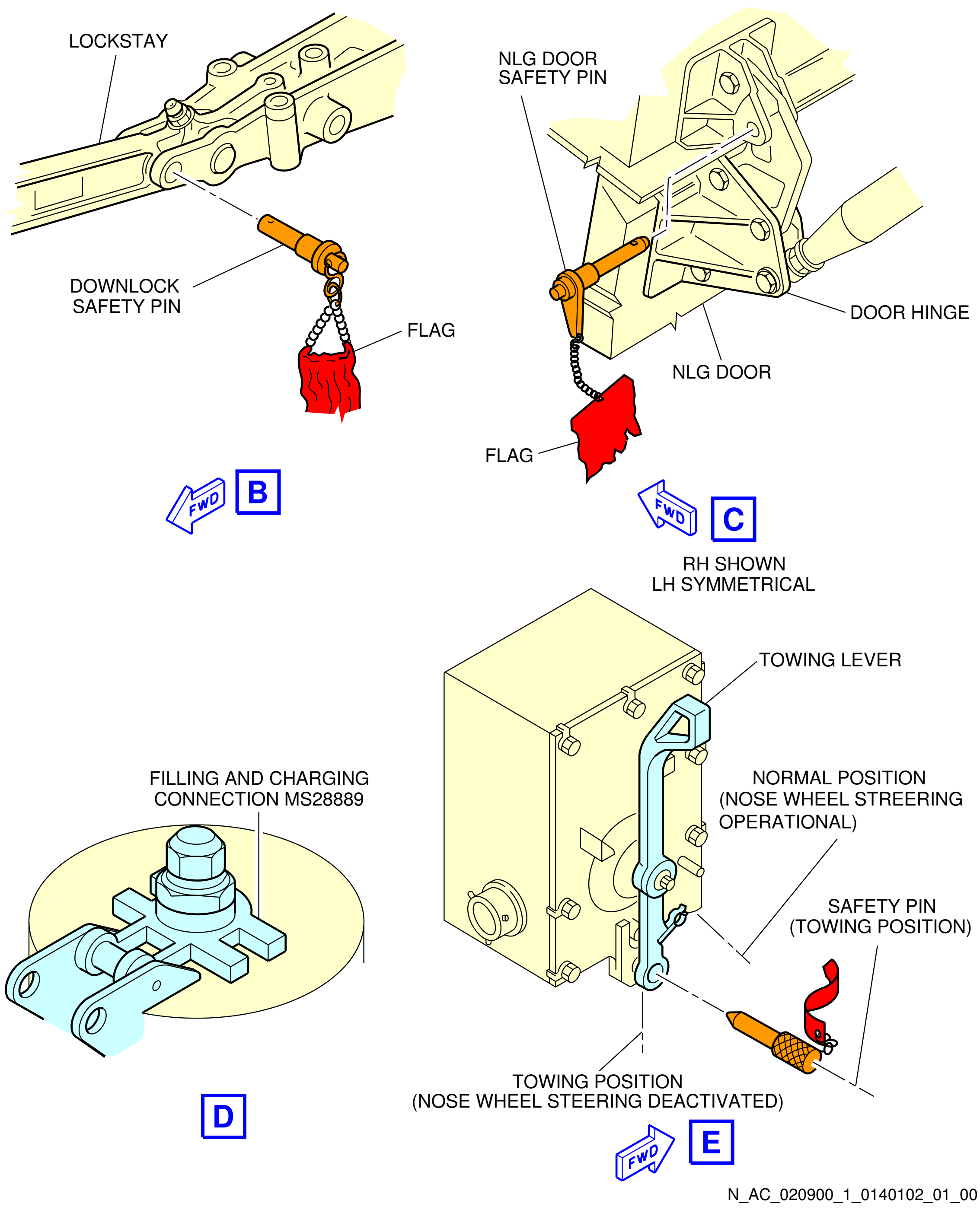
Landing Gear
Main Landing Gear Dimensions - Four Wheels - Bogie
FIGURE-2-9-0-991-013-A01

**ON A/C A320-200



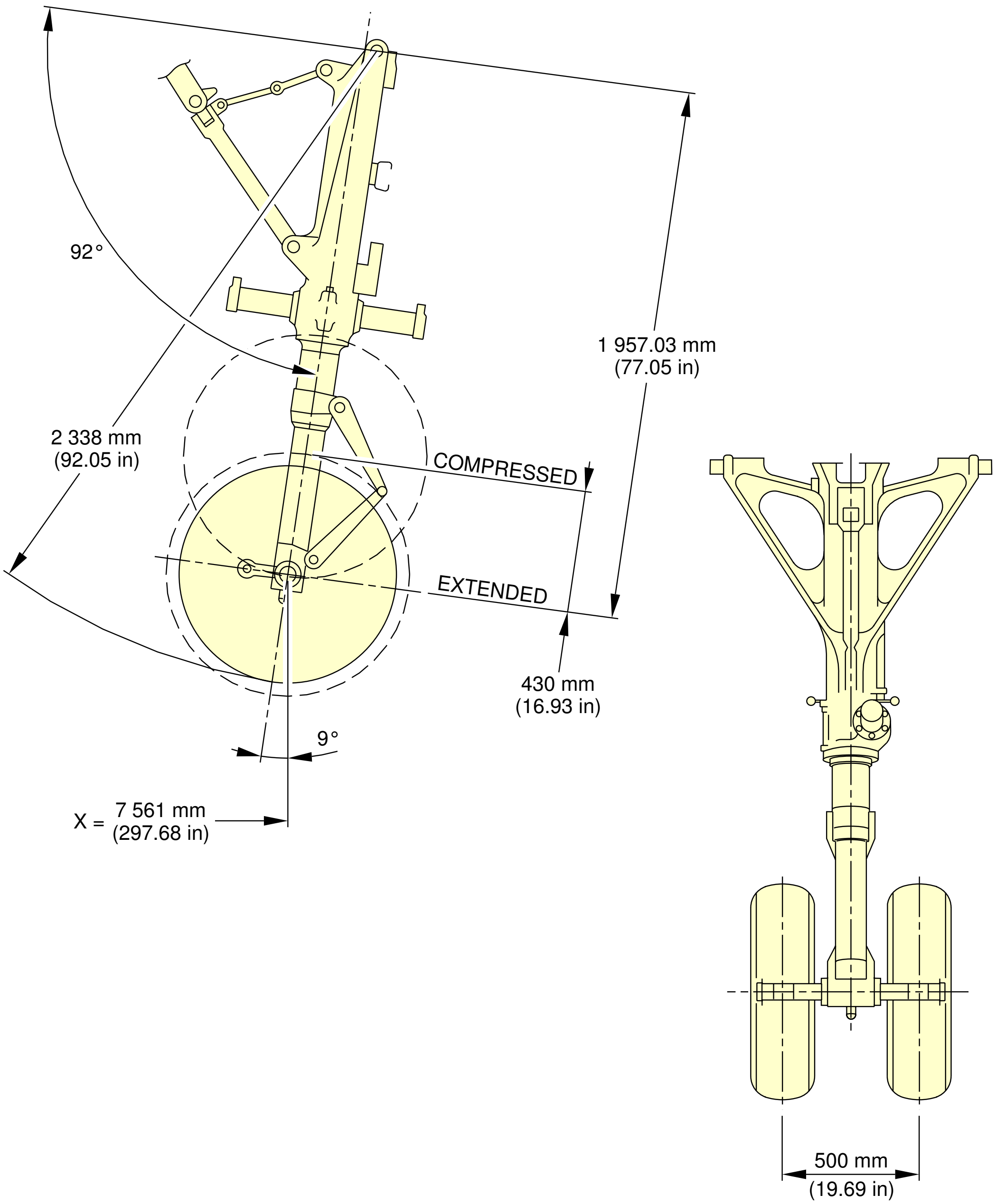
Landing Gear
Nose Landing Gear (Sheet 1 of 2)
FIGURE-2-9-0-991-014-A01

**ON A/C A320-200



Landing Gear
Nose Landing Gear (Sheet 2 of 2)
FIGURE-2-9-0-991-014-A01

**ON A/C A320-200



Landing Gear
Nose Landing Gear Dimensions
FIGURE-2-9-0-991-015-A01

**ON A/C A320-200

Landing Gear Maintenance Pits

1. Description

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

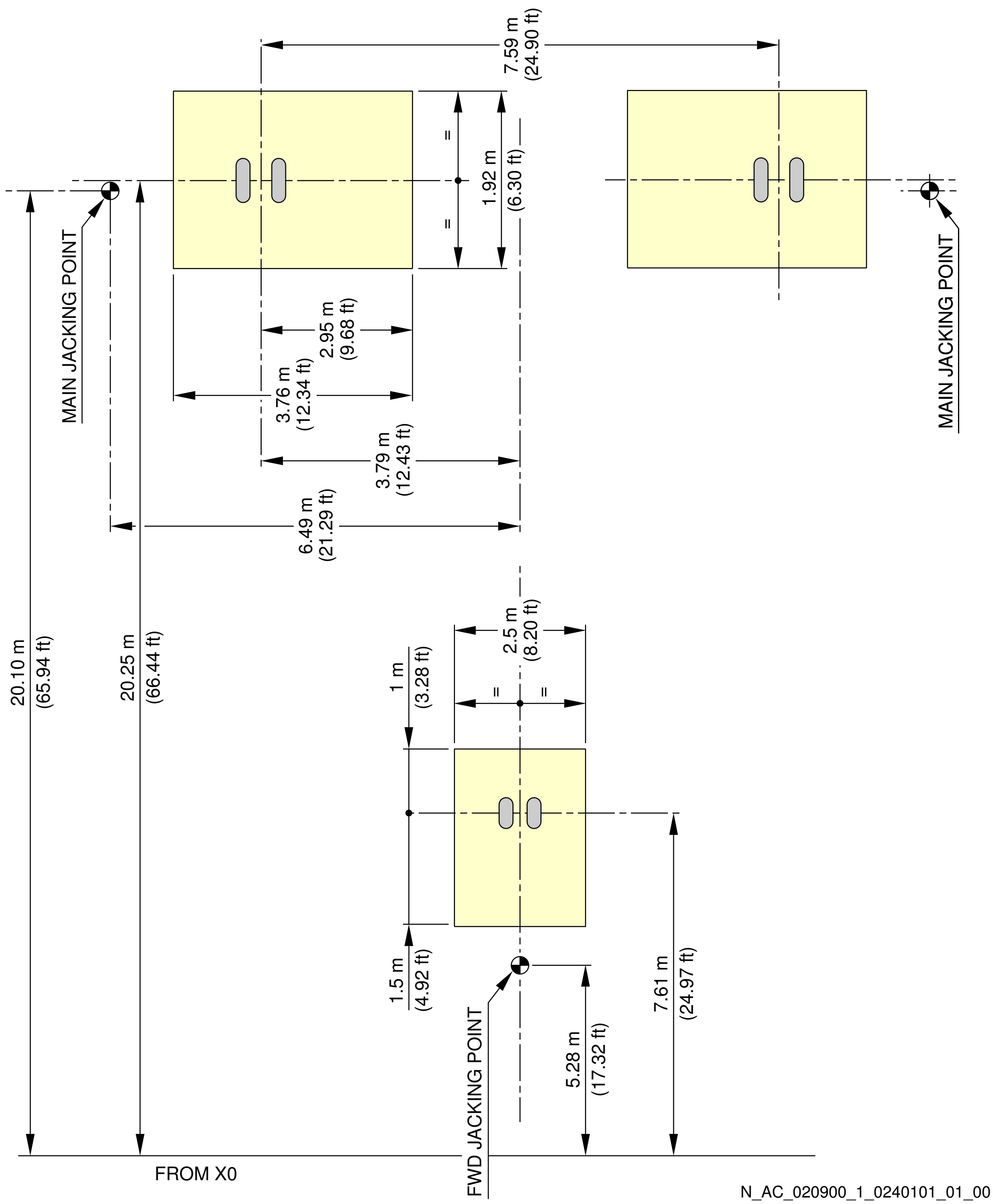
All dimensions shown are minimum dimensions with zero clearances.

The dimensions for the pits have been determined as follows:

- 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 allows 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.

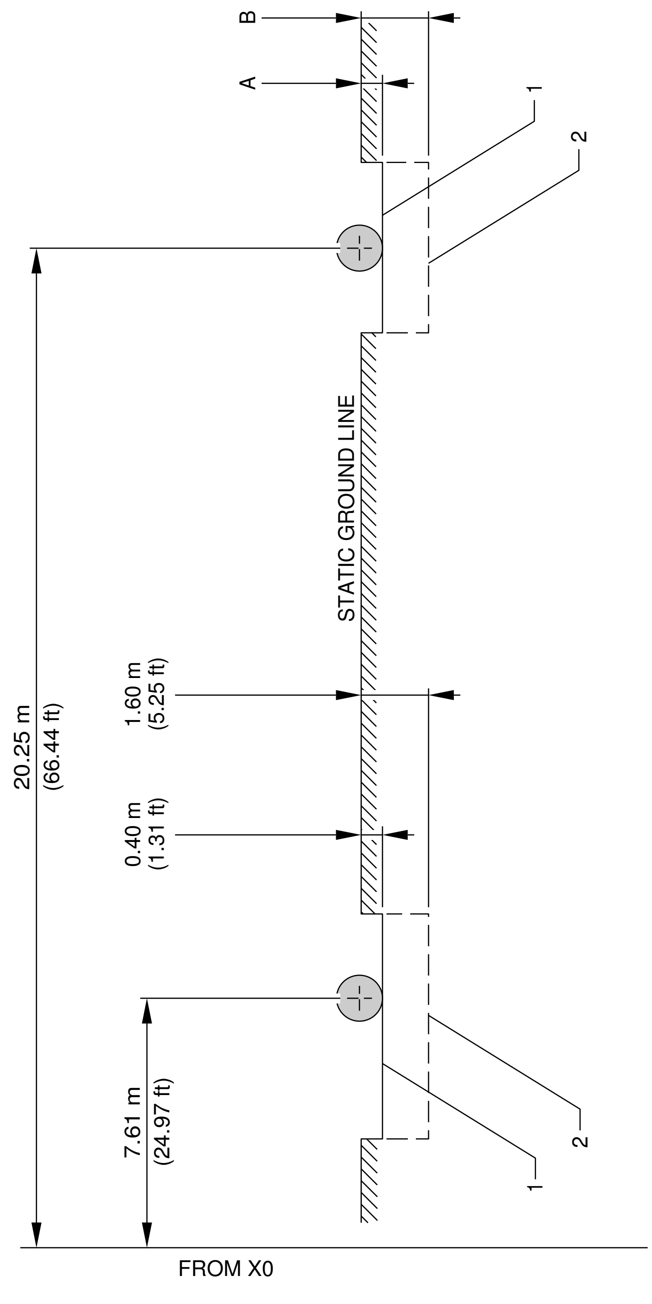
**ON A/C A320-200



Landing Gear Maintenance Pits
Maintenance Pit Envelopes
FIGURE-2-9-0-991-024-A01

**ON A/C A320-200

	A		B	
	m	ft	m	ft
DIM QUOTED IS WITH WHEELS REMOVED AND 153 mm (6.02 in) CLEARANCE AT JACKING DOME	0.52	1.71	1.17	3.84



NOTE: 1 REPRESENTS TOP OF MECHANICAL OR HYDRAULIC ELEVATOR, WITH AIRCRAFT WEIGHT SUPPORTED AND LANDING GEAR SHOCK ABSORBERS EXTENDED.
2 REPRESENTS TOP OF MECHANICAL OR HYDRAULIC ELEVATOR, SHOWN WITH ZERO CLEARANCE LOWERED FOR SHOCK ABSORBER REMOVAL.

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Landing Gear Maintenance Pits
Maintenance Pit Envelopes
FIGURE-2-9-0-991-025-A01

2-10-0 Exterior Lighting

****ON A/C A320-200**

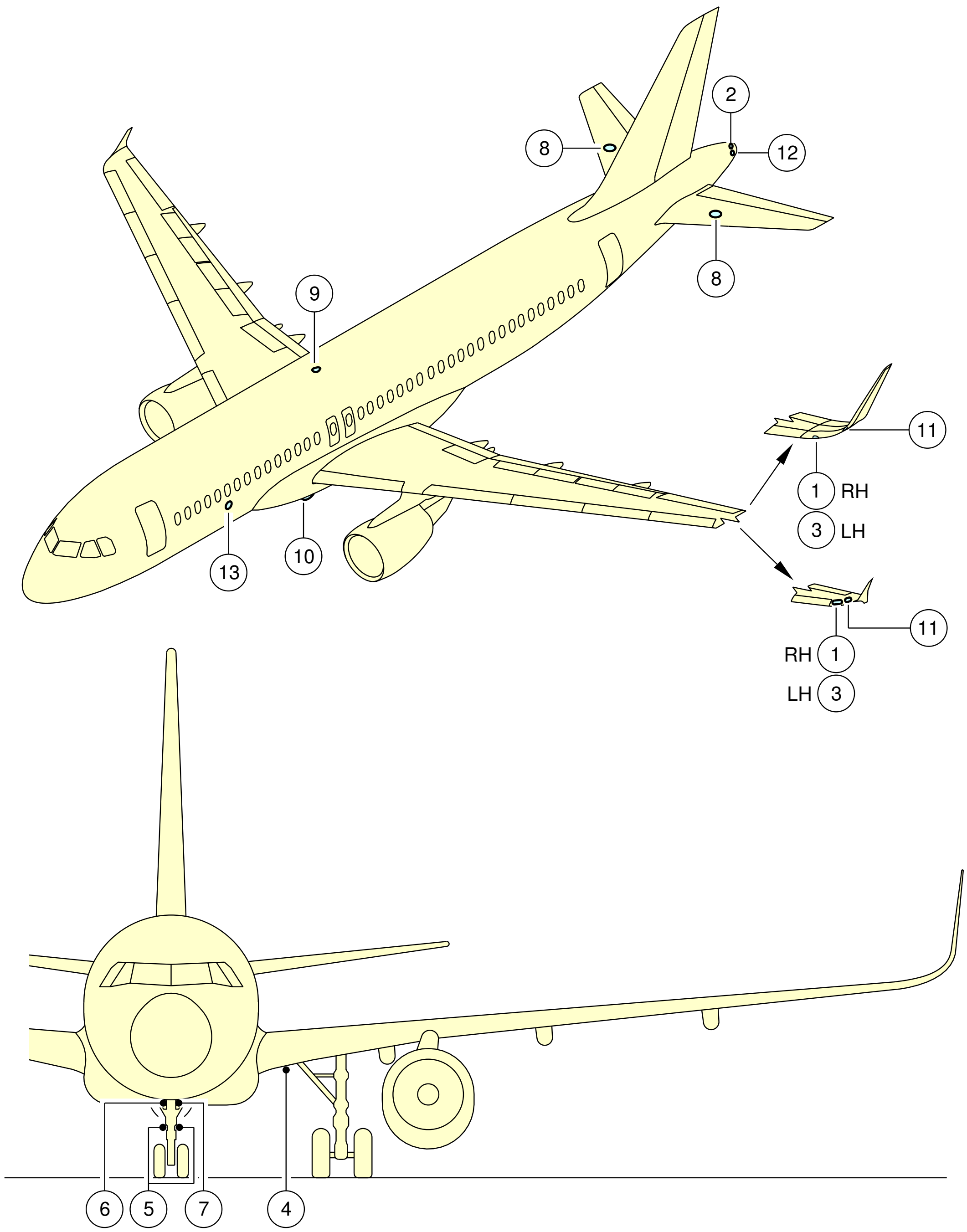
Exterior Lighting

1. General

This section gives the location of the aircraft exterior lighting.

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

**ON A/C A320-200



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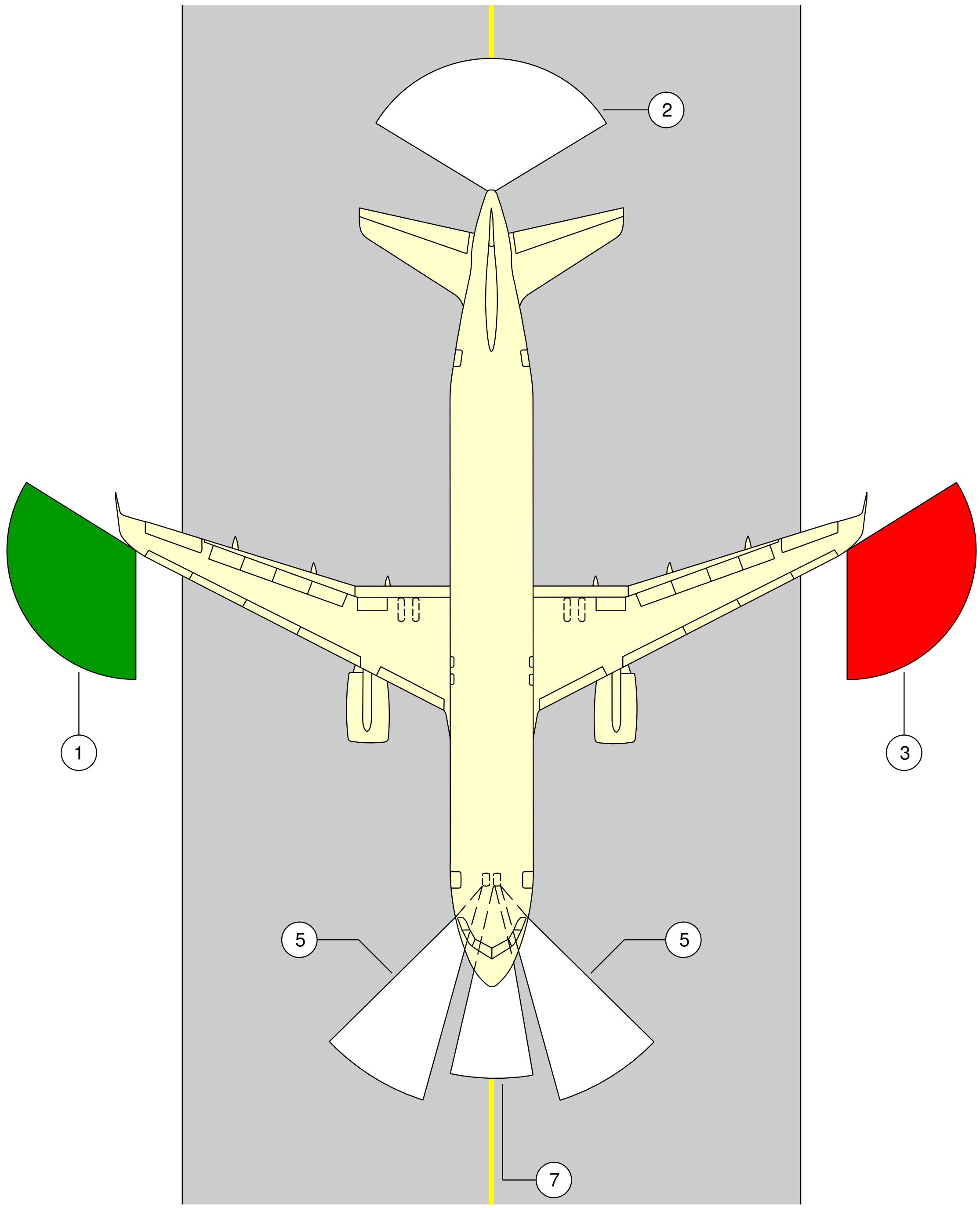
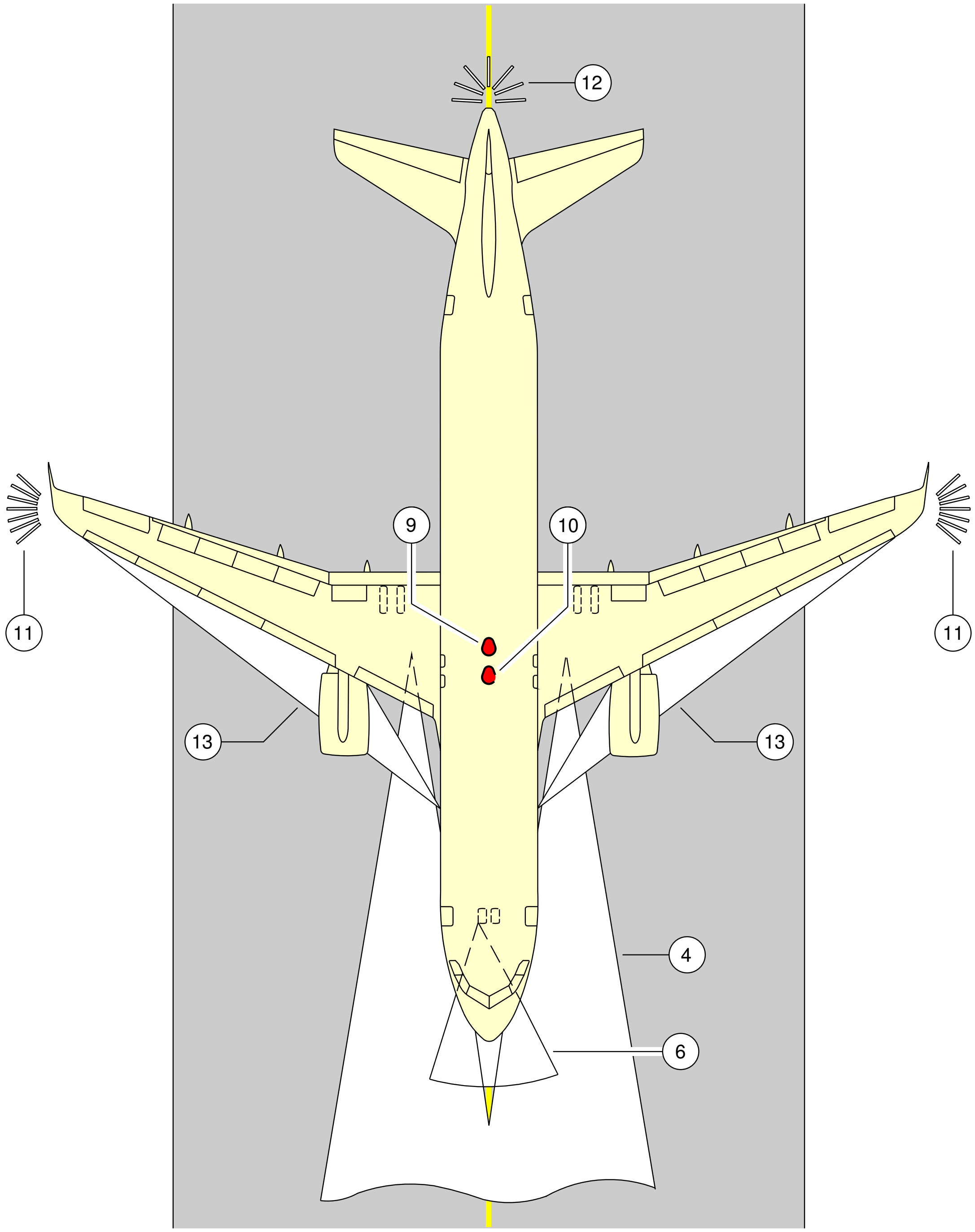
Exterior Lighting
FIGURE-2-10-0-991-009-A01

**ON A/C A320-200



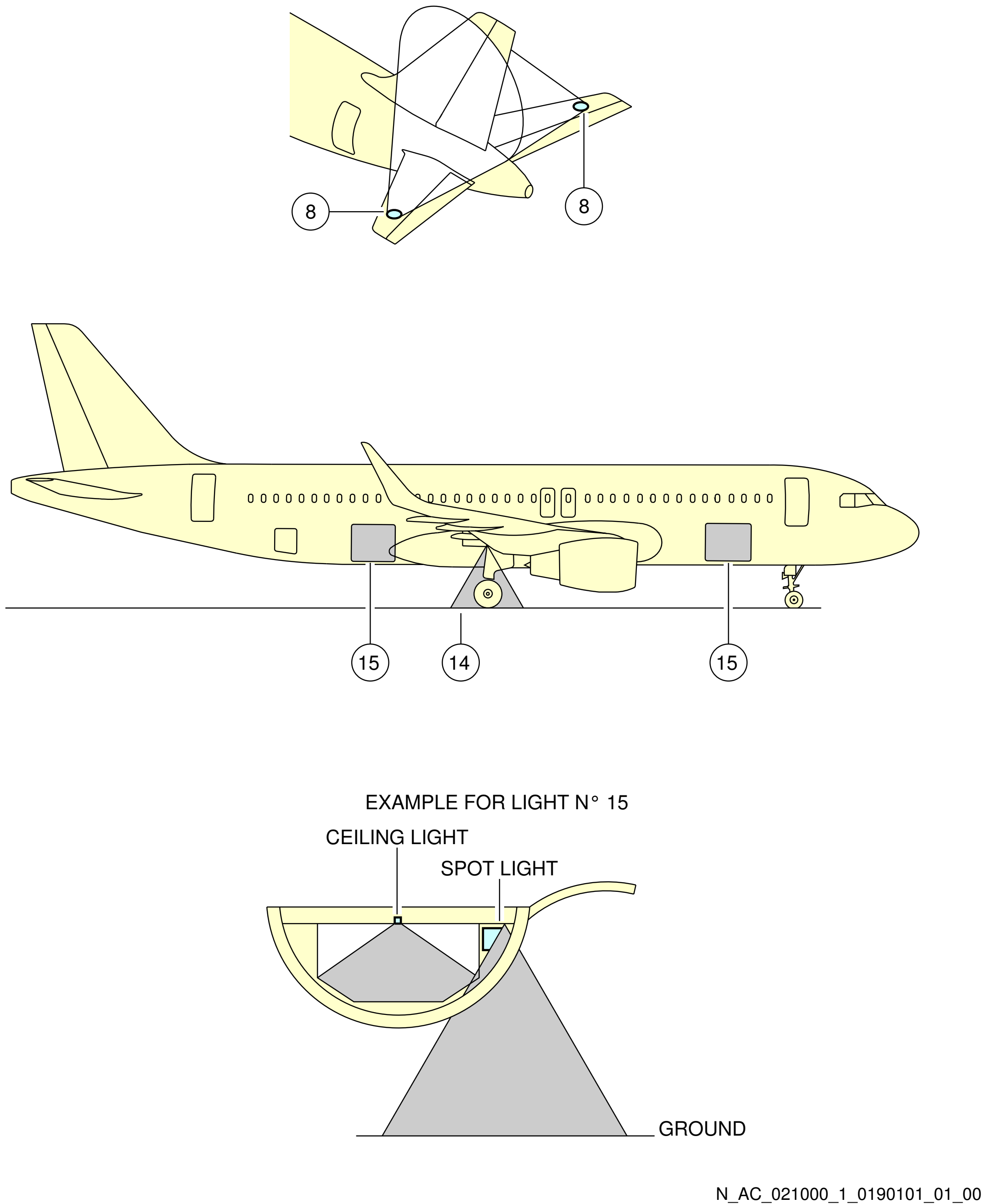
Exterior Lighting
FIGURE-2-10-0-991-010-A01

**ON A/C A320-200



Exterior Lighting
FIGURE-2-10-0-991-011-A01

**ON A/C A320-200



Exterior Lighting
FIGURE-2-10-0-991-019-A01

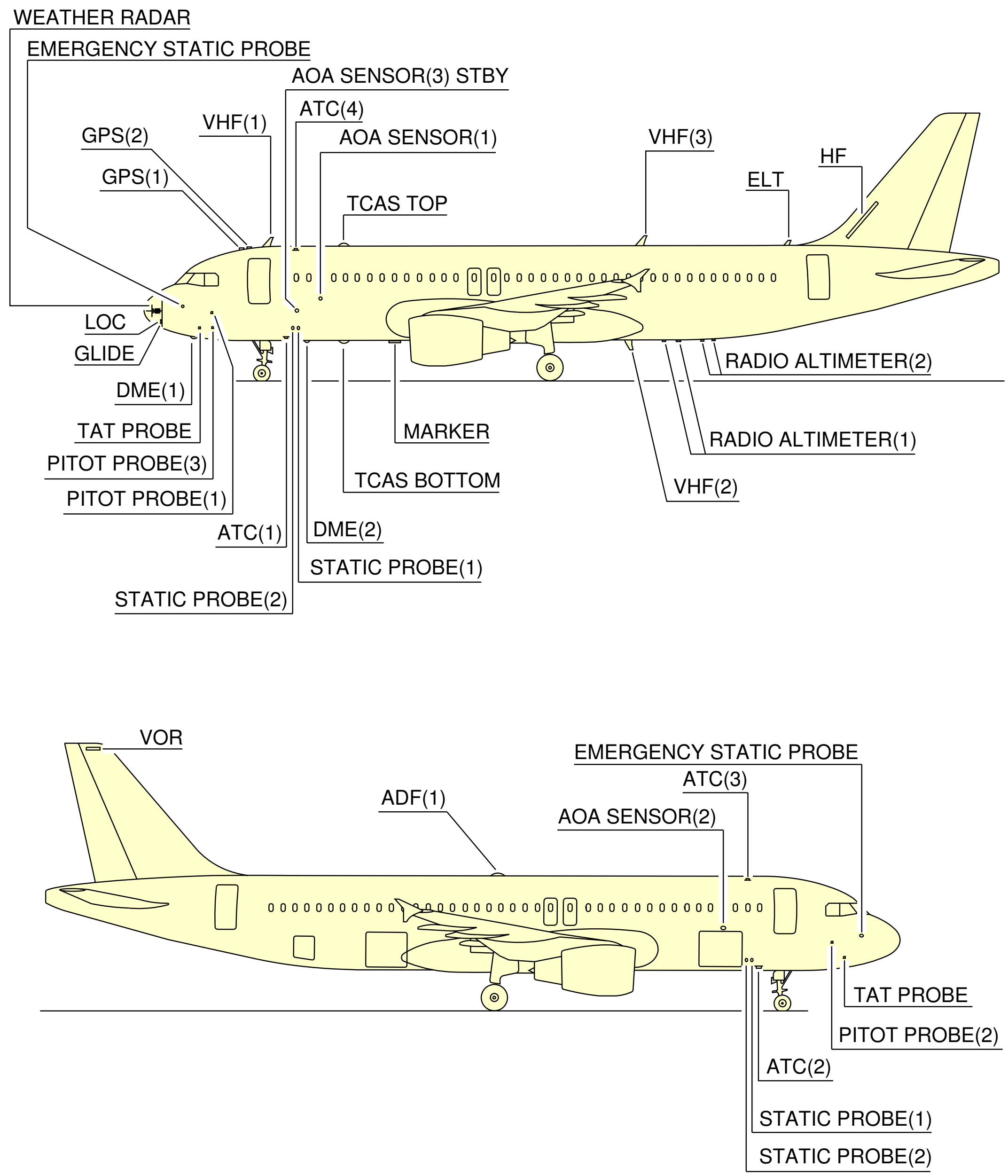
2-11-0 Antennas and Probes Location

**ON A/C A320-200

Antennas and Probes Location

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

**ON A/C A320-200



NOTE: DEPENDING ON AIRCRAFT CONFIGURATION

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Antennas and Probes
Location
FIGURE-2-11-0-991-003-A01

2-12-0 Power Plant

**ON A/C A320-200

Auxiliary Power Unit

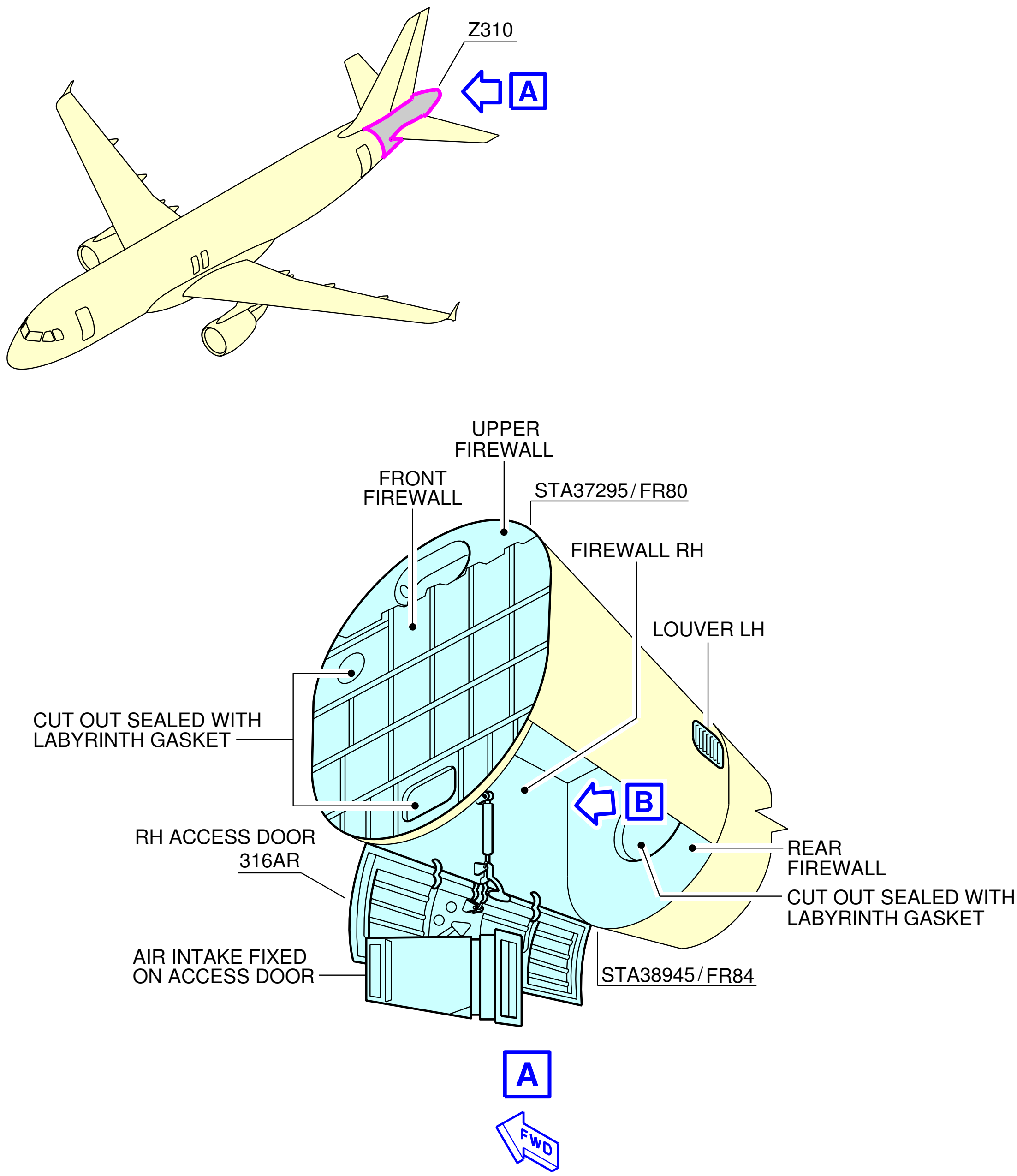
1. General

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

2. Controls and Indication

   The primary APU controls and indications are installed on the overhead panel, on the center pedestal and on the center instrument panel. Additionally, an external APU panel is installed on the nose landing gear to initiate an APU emergency shutdown.

**ON A/C A320-200



NOTE: LH ACCESS DOOR 315AL NOT SHOWN FOR CLARITY

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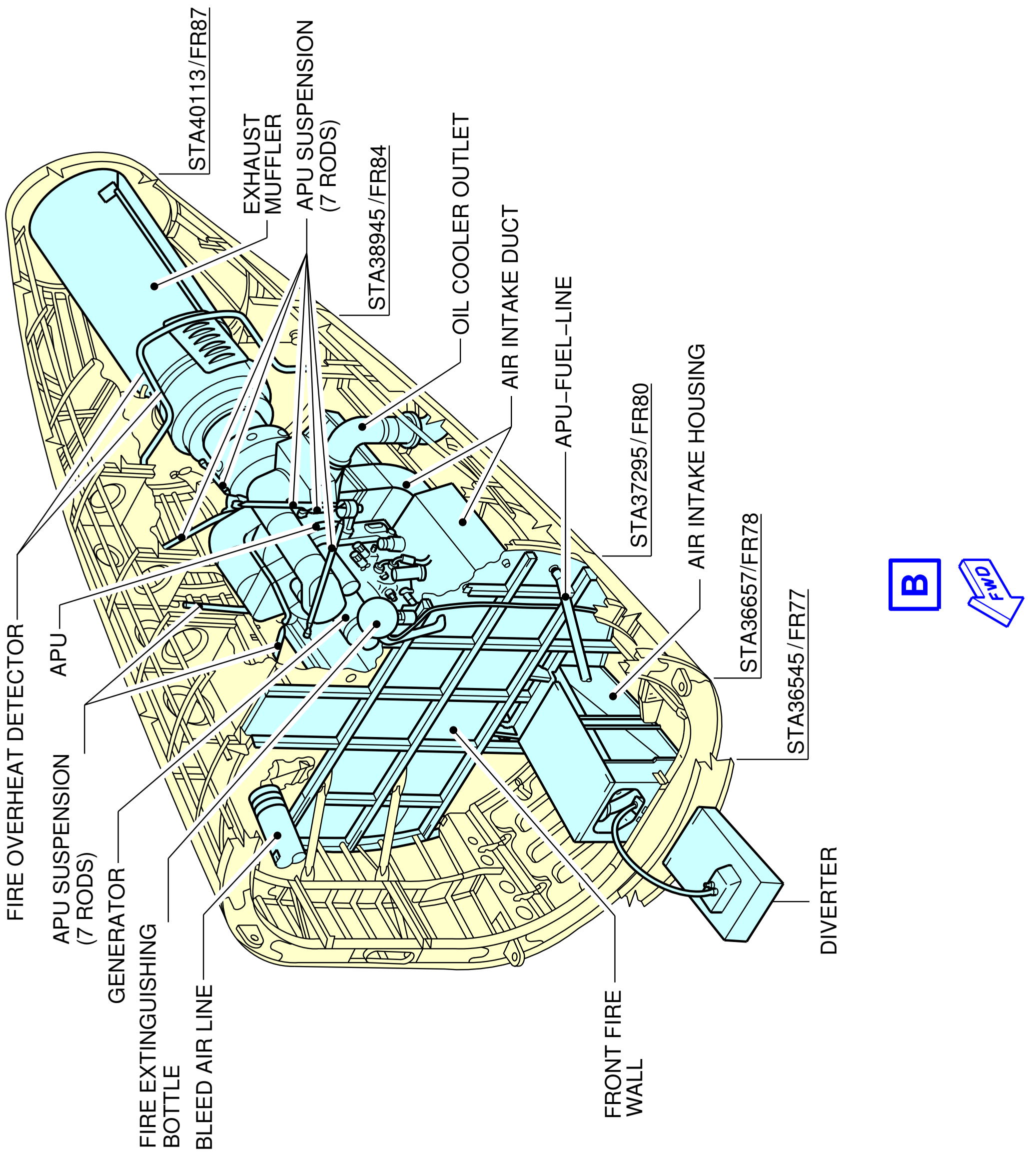
Auxiliary Power Unit
Access Doors
FIGURE-2-12-0-991-005-A01

**ON A/C A320-200



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Auxiliary Power Unit
General Layout
FIGURE-2-12-0-991-006-A01

**ON A/C A320-200

Engine and Nacelle

1. Engine and Nacelle - CFM Engine

A. Engine

The engine is a dual-rotor, variable stator, high bypass ratio turbo fan power plant for subsonic services. The principal modules of the engine are:

- low pressure compressor (fan stator and fan rotor)
- high pressure compressor
- turbine frame
- combustion chamber
- high pressure turbine
- low pressure turbine
- accessory drives (gear box).

The 9 stage high pressure compressor is driven by 1 stage high pressure turbine, and the integrated front fan and booster is driven by 4 stage low pressure turbine. An annular combustor converts fuel and compressor discharge air into energy to provide engine thrust part through primary exhaust and to drive the turbines. The accessory drive system extracts energy from the high pressure rotor to drive the engine accessories and the engine mounted aircraft accessories. Reverse thrust for braking the aircraft after landing is supplied by an integrated system which acts on the fan discharge airflow.

B. Nacelle

The cowls enclose the periphery of the engine so as to form the engine nacelle. Each engine is housed in a nacelle suspended from a pylon attached to the wing lower surface. The nacelle consists of the demountable powerplant, the fan cowls and the thrust reverser cowls.
The nacelle installation is designed to provide cooling and ventilation air for engine accessories mounted along the fan and core casing. The nacelle provides:

- protection for the engine and the accessories
- airflow around the engine during its operation
- lighting protection
- HIRF and EMI attenuation.

2. Engine and Nacelle - IAE Engine

A. Engine

The engine is a two spool, axial flow, high bypass ratio turbofan powerplant for subsonic sevice. The main modules of the engine are:

- low pressure compressor (fan and booster) assembly
- LP compressor/intermediate case
- No. 4 bearing and combustion section
- high pressure compressor
- HP turbine section
- LP turbine section
- accessory drives (gear box).

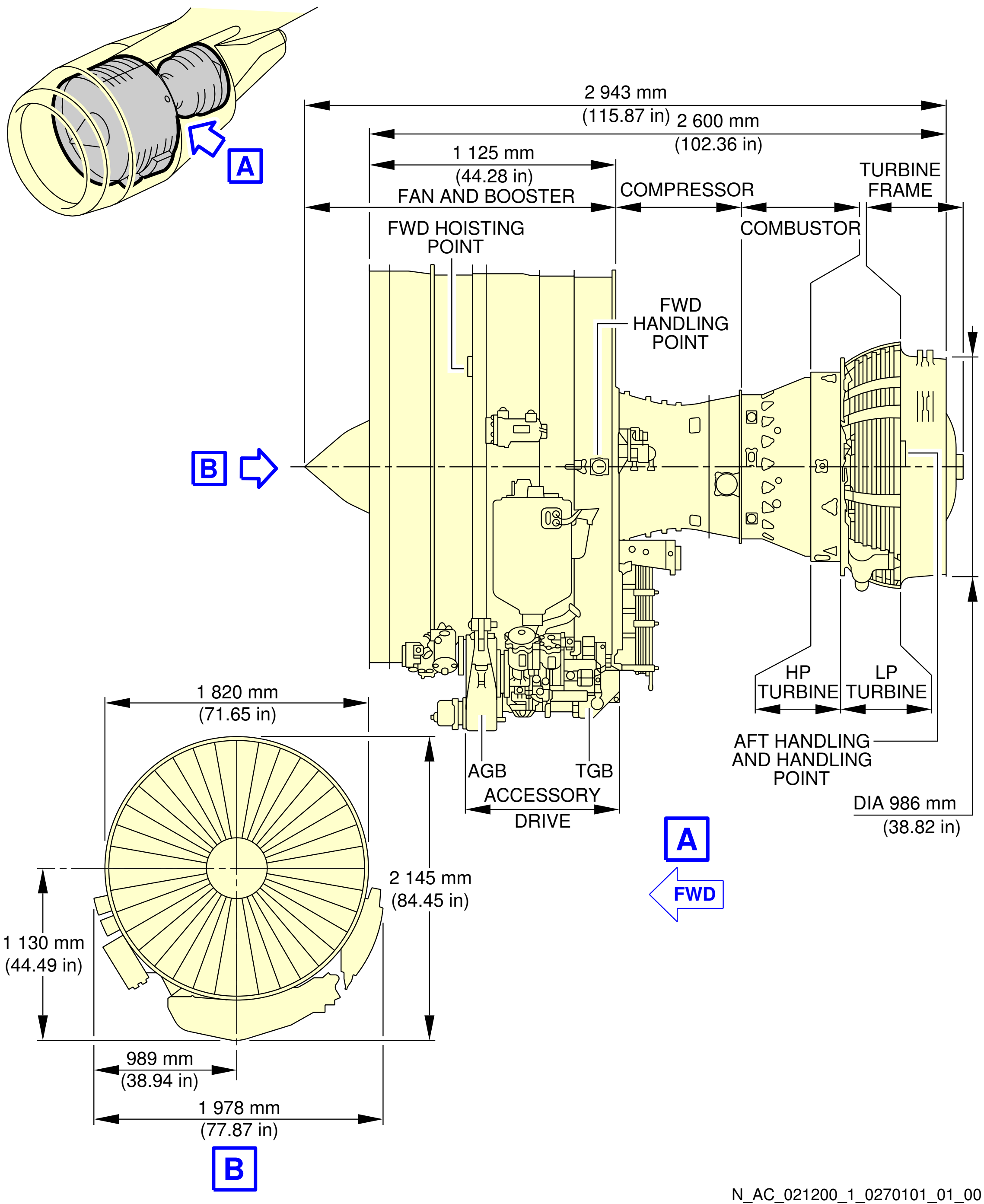
The four stage Low Pressure Compressor (LPC) is driven by a five stage Low Pressure Turbine (LPT) and the ten stage High Pressure Compressor (HPC) by a two stage High Pressure Turbine (HPT). The HPT also drives a gearbox which, in turn drives the engines and aircraft mounted accessories. The two shafts are supported by five main bearings.
The V2500 incorporates a Full Authority Digital Engine Control (FADEC) which governs all engine functions, including power management. Reverse thrust for braking the aircraft after landing is supplied by an integrated system which acts on the fan discharge airflow.

B. Nacelle

The cowls enclose the periphery of the engine so as to form the engine nacelle. Each engine is housed in a nacelle suspended from a pylon attached below the wing.
The nacelle installation is designed to provide cooling and ventilation air for engine accessories mounted along the fan and core casing. The nacelle provides:

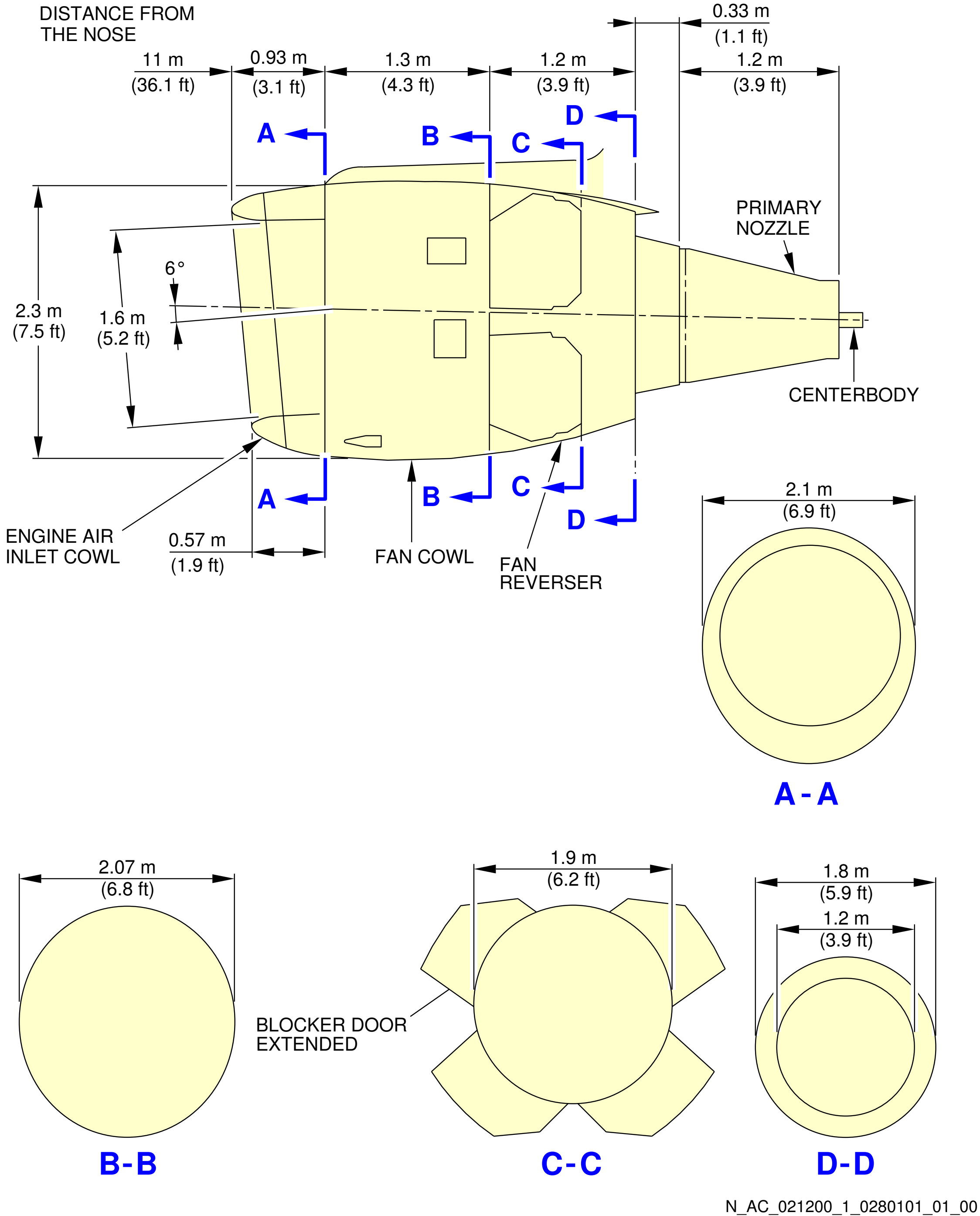
- protection for the engine and the accessories
- airflow around the engine during its operation
- lighting protection
- HIRF and EMI attenuation.

**ON A/C A320-200



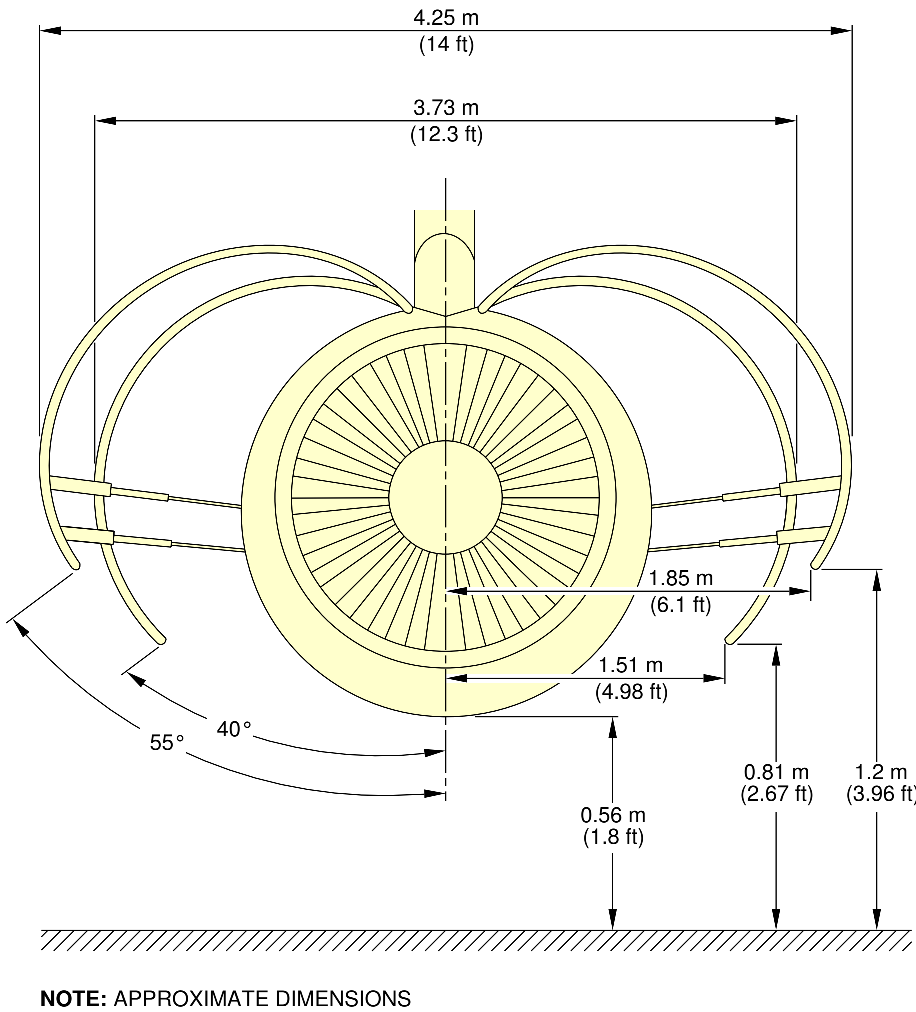
Power Plant Handling
Major Dimensions - CFM56 Series Engine
FIGURE-2-12-0-991-027-A01

**ON A/C A320-200



Power Plant Handling
Major Dimensions - CFM56 Series Engine
FIGURE-2-12-0-991-028-A01

**ON A/C A320-200



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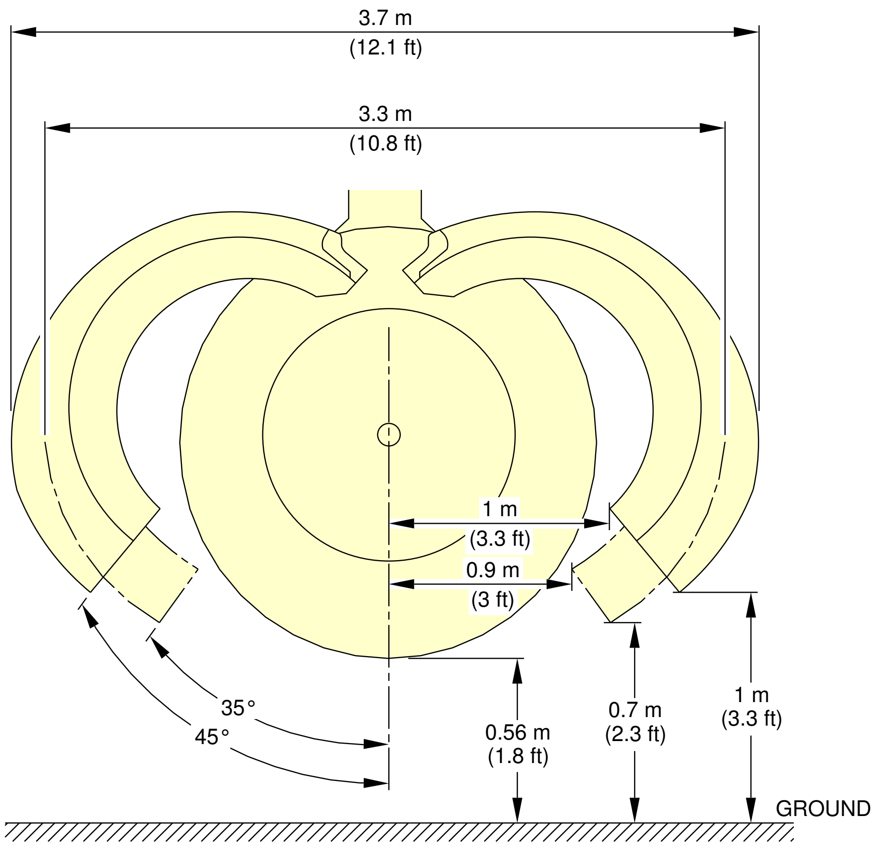
Power Plant Handling
Fan Cowls - CFM56 Series Engine
FIGURE-2-12-0-991-029-A01

**ON A/C A320-200



CAUTION
DO NOT ACTUATE SLATS:
- WITH THRUST REVERSER COWLS 45° OPEN POSITION
- WITH BLOCKER DOORS OPEN AND THRUST REVERSER COWLS AT 35° AND 45° OPEN POSITION

NOTE: APPROXIMATE DIMENSIONS

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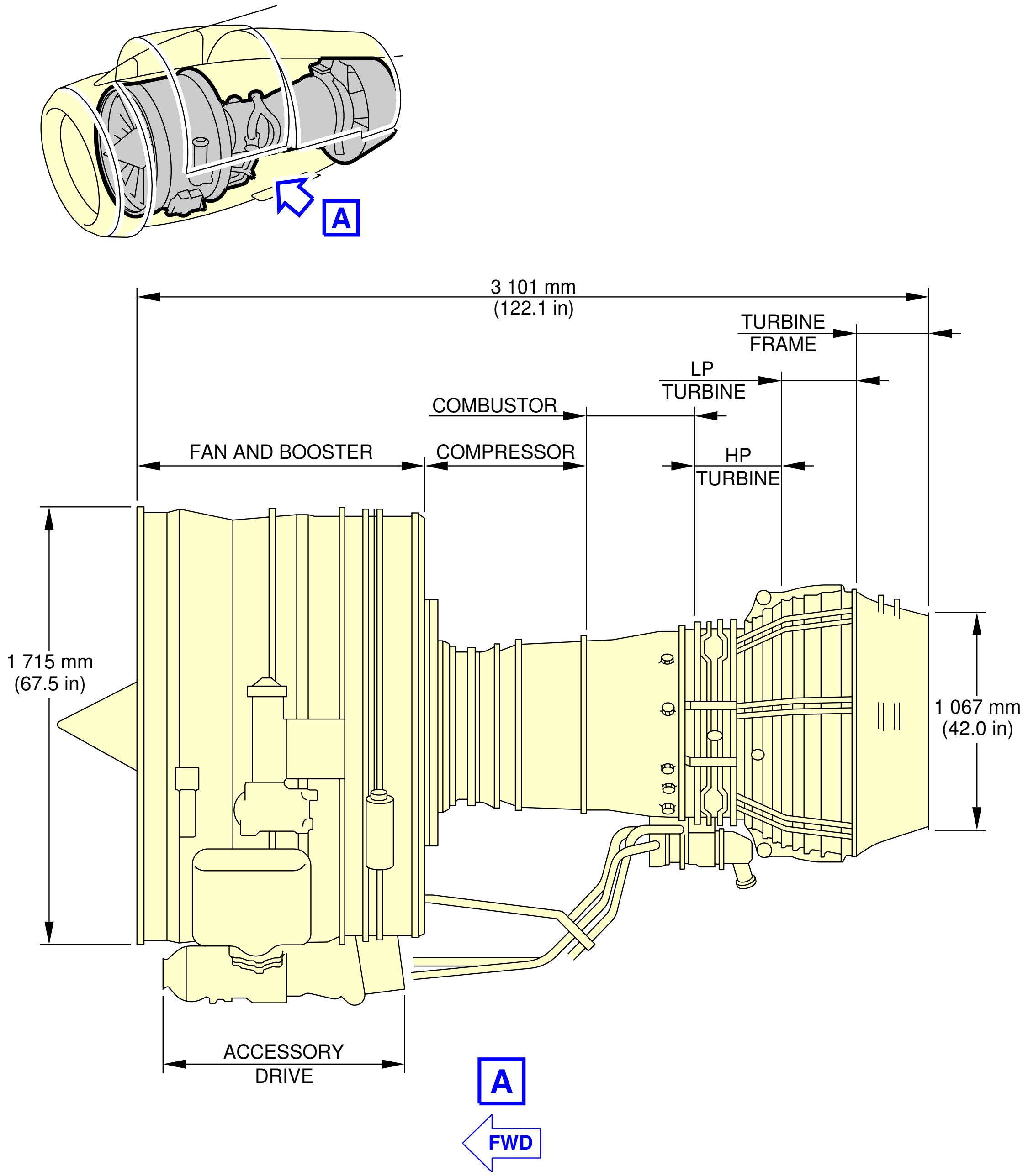
Power Plant Handling
Thrust Reverser Cowls - CFM56 Series Engine
FIGURE-2-12-0-991-030-A01

**ON A/C A320-200



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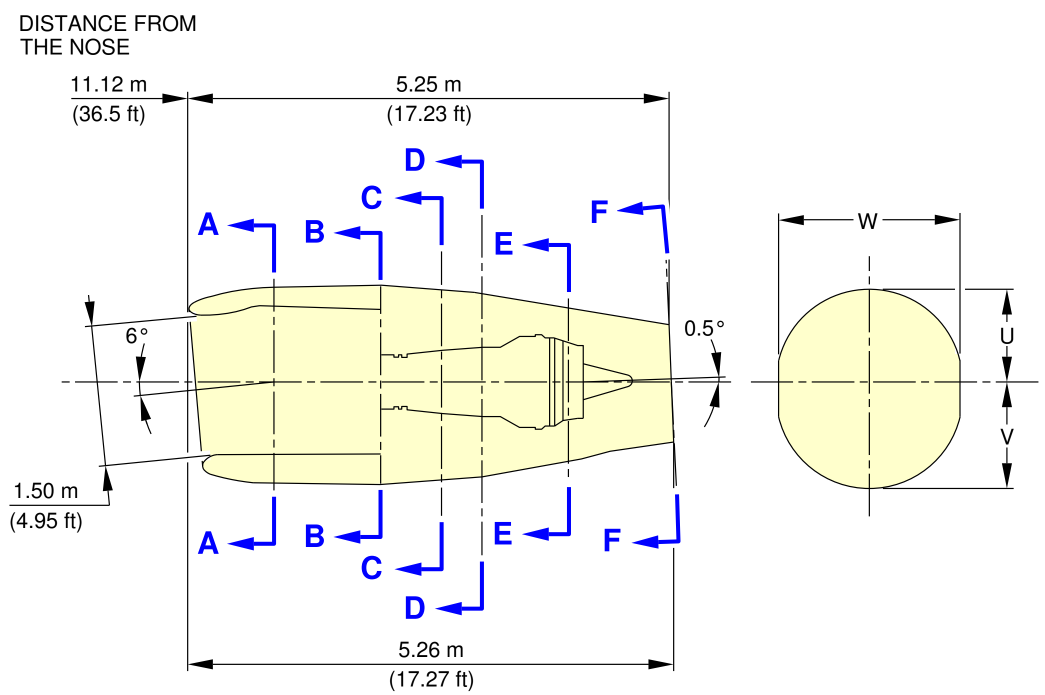
Power Plant Handling
Major Dimensions - IAE V2500 Series Engine
FIGURE-2-12-0-991-031-A01

**ON A/C A320-200



	W		U		V		PPS		AT COMPONENT
	m	ft	m	ft	m	ft	m	ft	
A–A	2.01	6.58	0.99	3.25	1.10	3.63	1.41	4.62	INLET ATTACH FLG
B–B	2.01	6.58	1.00	3.29	1.11	3.64	2.59	8.50	TORQUE BOX "V" BLADE
C–C	1.98	6.50	0.97	3.19	1.07	3.52	3.26	10.70	COMB. CHAMBER ENTRY FLG
D–D	1.93	6.32	0.93	3.06	1.03	3.39	3.63	11.90	COMB. CHAMBER EXIT FLG
E–E	1.64	5.38	0.78	2.57	0.86	2.83	4.60	15.10	TECH FLG TURB. EXIT CASE
F–F	1.24	4.07	0.60	1.96	0.64	2.11	----	----	AFT END CNA

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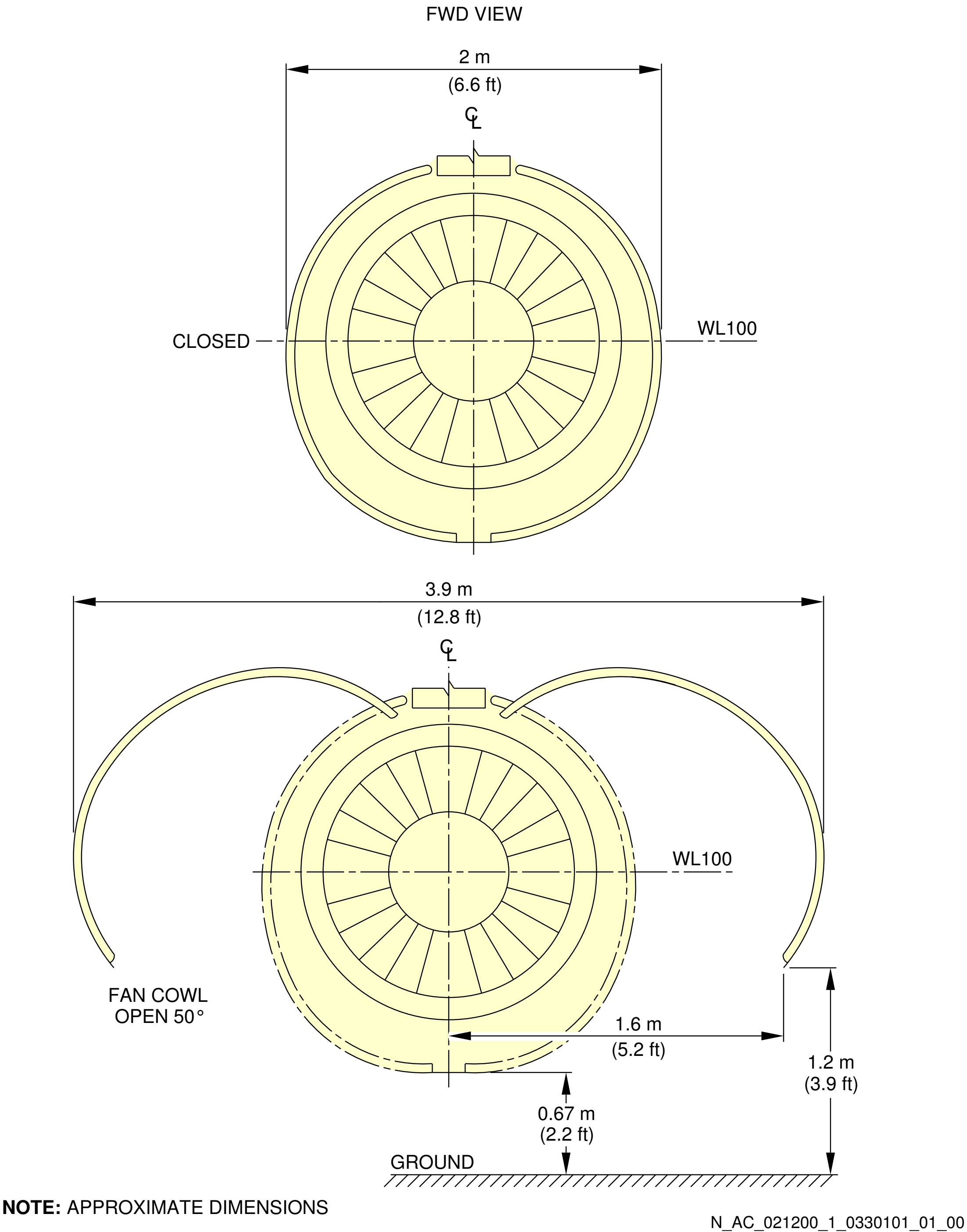
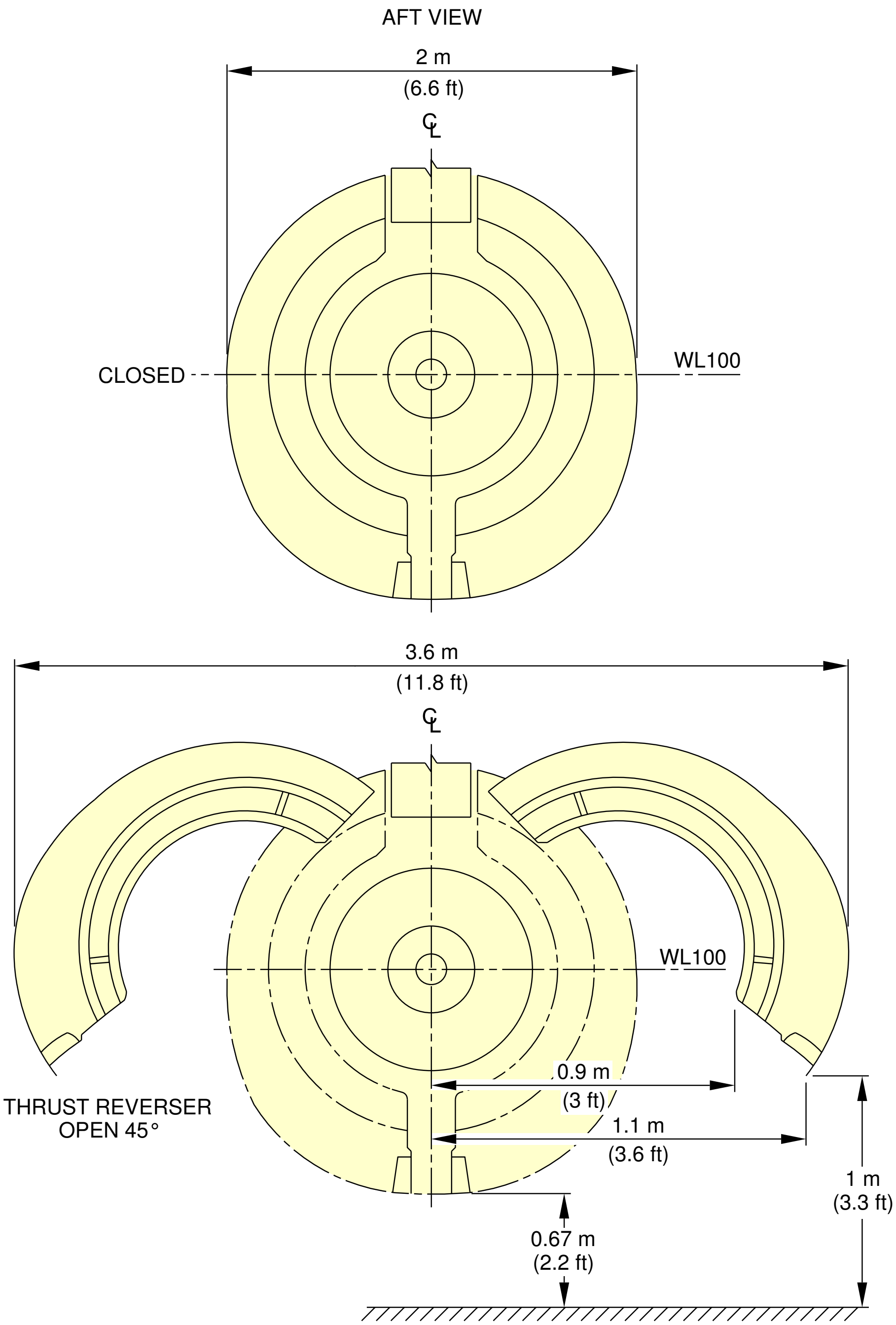
Power Plant Handling
Major Dimensions - IAE V2500 Series Engine
FIGURE-2-12-0-991-032-A01

**ON A/C A320-200



Power Plant Handling
Fan Cowls - IAE V2500 Series Engine
FIGURE-2-12-0-991-033-A01

**ON A/C A320-200



NOTE: APPROXIMATE DIMENSIONS

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Power Plant Handling
Thrust Reverser Halves - IAE V2500 Series Engine
FIGURE-2-12-0-991-034-A01

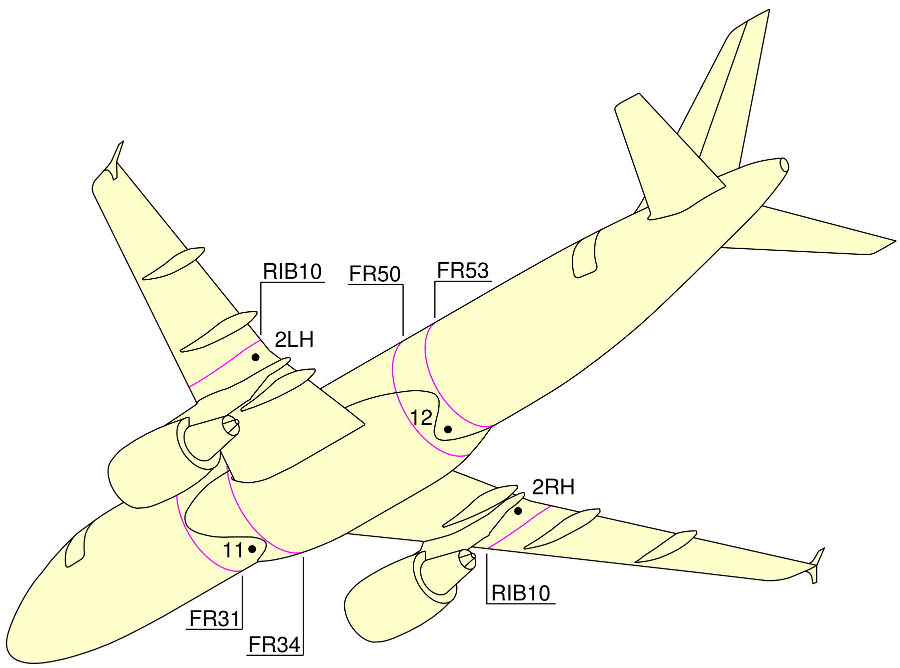
2-13-0 Leveling, Symmetry and Alignment

****ON A/C A320-200**

Leveling, Symmetry and Alignment

1. Quick Leveling
   There are three alternative procedures to level the aircraft:
   - Quick leveling procedure with Air Data/Inertial Reference Unit (ADIRU).
   - Quick leveling procedure with a spirit level in the passenger compartment.
   - Quick leveling procedure with a spirit level in the FWD cargo compartment.
2. Precise Leveling
   For precise leveling, it is necessary to install sighting rods in the receptacles located under the fuselage (points 11 and 12 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).
3. Symmetry and Alignment Check
   Possible deformation of the aircraft is measured by photogrammetry.

**ON A/C A320-200



Location of the Leveling Points
FIGURE-2-13-0-991-004-A01

2-14-0 Jacking

****ON A/C A320-200**

Jacking for Maintenance

1. Jacking for Maintenance

   A. General

   The A320 aircraft can be jacked:
   - at no more than the maximum permitted aircraft weight for jacking (59 000 kg (130 072 lb)) and,
   - within the limits of the permissible wind speed when the aircraft is jacked outside a closed environment.

   B. Primary Jacking Points

   The aircraft is provided with three jacking points:
   - one located under the forward fuselage (STA5194/FR8),
   - two located under the wings: one under each wing, located at the intersection of STA4862/RIB9 and the rear of spar-datum.

   Three jacking adapters are used as intermediary parts between the airplane and jacks:
   - one male spherical jacking adapter of 19 mm (0.75 in) radius, forming part of the airplane structure, FR8,
   - a wing jack pad, attached to each wing at RIB 9 by 2 bolts, provides the location for jacking adaptor.
     Wing jack pads are ground equipment.

   C. Auxiliary Jacking Points - Safety Stay

   When the aircraft is on jacks, it is recommended that a safety stay be placed under the fuselage, between FR73 and FR74 to prevent tail tipping caused by accidental displacement of the center of gravity.

   The safety stay is not used to lift the aircraft.

   A male spherical ball pad with a 19 mm (0.75 in) radius forming part of the airplane structure is provided for using the safety stay.

2. Jack design

   In fully retracted position (jack stroke at minimum) the height is such that the jack may be placed beneath the airplane under the most adverse conditions, namely, tires deflated and shock absorbers depressurized.

In addition, a clearance of 50 mm (1.97 in) approximately must be provided between the airplane jacking point and the jack upper end. The lifting jack stroke enables the aircraft to be jacked up so that the fuselage longitudinal datum line (aircraft center line) parallel to the ground, with a 100 mm (3.94 in) clearance between the main landing gear wheels and the ground.
In particular, this enables the landing gear extension/retraction tests to be performed.

Jacking Point Location	Z	Maximum Permitted Load
Forward Fuselage Jacking Point	-1.987 m (-6.52 ft)	6 800 daN (15 287 lbf)
Wing Jacking Point	-0.828 m (-2.72 ft)	28 500 daN (64 071 lbf)
Safety Stay	-0.748 m (-2.45 ft)	2 000 daN (4 496 lbf)

The maximum permitted aircraft weight for the jacking procedure is 59 000 kg (130 073 lb).
Centerline at 4.6 mm (0.18 in) parallel to the ground.

3. Shoring Cradles

When it is necessary to support the aircraft in order to relieve the loads on the structure accomplishment of modifications or major work, shoring cradles shall be placed under each wing and fuselage as necessary.

NOTE : Aircraft must not be lifted or supported by the wings or fuselage alone without adequate support of the other.

A. Under the Fuselage

Frames which are capable of supporting loads are noted below as well as the maximum permissible loads for each frame.

Under the Fuselage	
FR 15	6 700 daN (15 062 lbf)
FR 33	3 400 daN (7 644 lbf)
FR 42	1 000 daN (2 248 lbf)
FR 62/FR 63	3 000 daN (6 744 lbf)
FR 73/FR 74 Safety Stay Pad	2 000 daN (4 496 lbf)

B. Under the Wings

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 (6.00 in) square, are positioned at three locations under each wing. These locations are detailed in Table 3.

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

Table 3 shows the maximum load limit allowed at each jack pad when the wings are supported by the cradles. These load limits apply to all A320 aircraft and variants.

The maximum permitted load, as specified in Table 3, is for a wing with its engines removed. When the wing(s) are held with the shoring cradles, and with the engines installed, the level of shear stress caused (at the front spar) is not permitted. The weight of the engine can also cause a torsion load that will lift the rear spar from its cradle.

Thus it is recommended that you remove the applicable engine(s) before you use the shoring cradles. However, for minor repairs the engines may be installed if their full weight is held.

It is important that the loads at each rib position are not exceeded because damage to the aircraft may occur.

Maximum Allowable Load at each Jack Pad						
Maximum Stress Relief Jacking Forces (LIMIT)						
Configuration	Rib 4		Rib 13		Rib 22	
	F/Spar	R/Spar	F/Spar	R/Spar	F/Spar	R/Spar
Engine & MLG Removed	790 daN (1 776 lbf)	1 330 daN (2 990 lbf)	670 daN (1 506 lbf)	550 daN (1 236 lbf)	320 daN (719 lbf)	380 daN (854 lbf)
Engine Removed	530 daN (1 191 lbf)	2 510 daN (5 643 lbf)	610 daN (1 371 lbf)	610 daN (1 371 lbf)	310 daN (697 lbf)	380 daN (854 lbf)

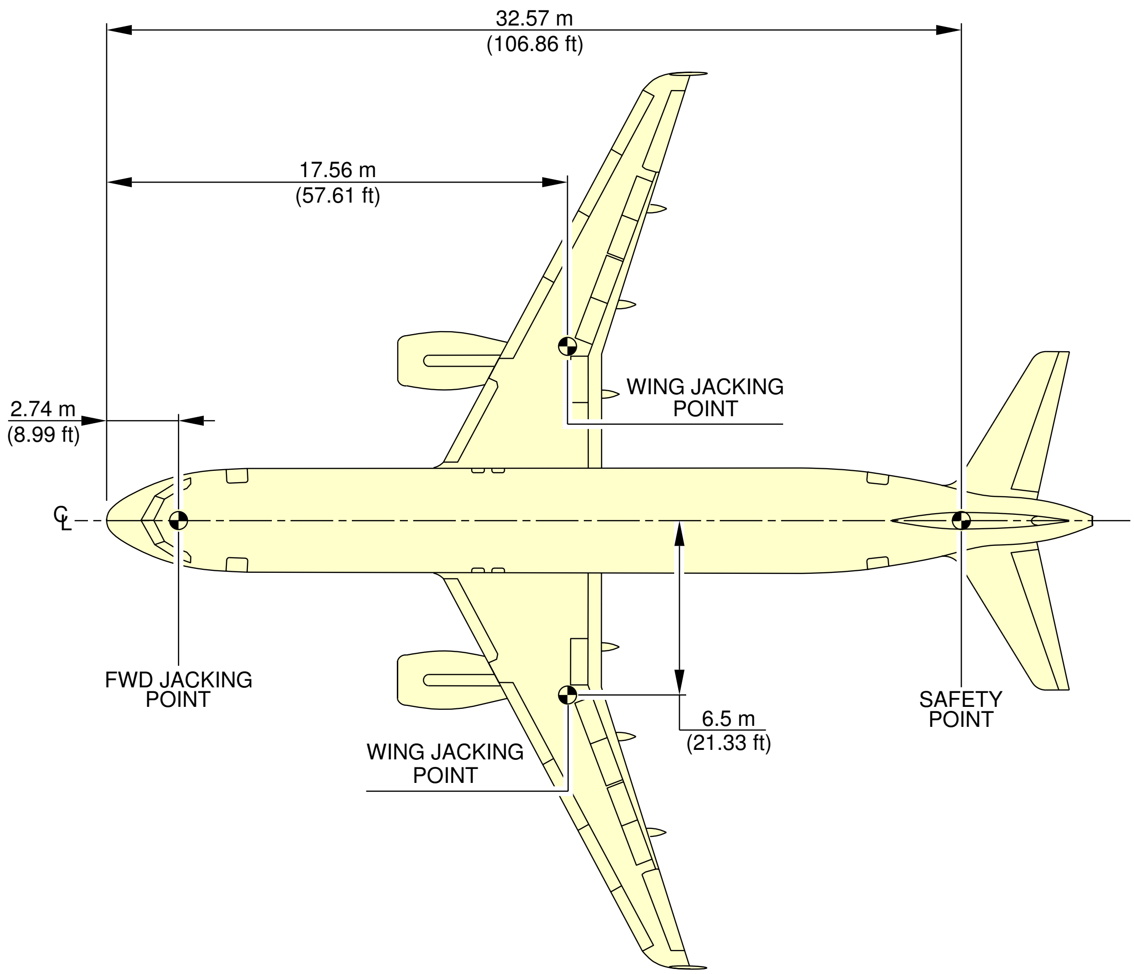
4. Airplane Jacking for Removal/Installation of Landing Gear Shock Absorbers

For removal/installation of the nose gear shock absorber with the gear fully extended and the wheels removed, the fuselage longitudinal datum line must be not less than 5 300 mm (208.66 in) above the ground.

For removal/installation of the main landing gear shock absorber, after removing the bogie beam, the fuselage longitudinal datum line must be not less than 5 210 mm (205.12 in) above the ground.

For reference, for landing gear swinging tests, the fuselage longitudinal datum line must be not less than 4 600 mm (181.10 in) above the ground.

**ON A/C A320-200



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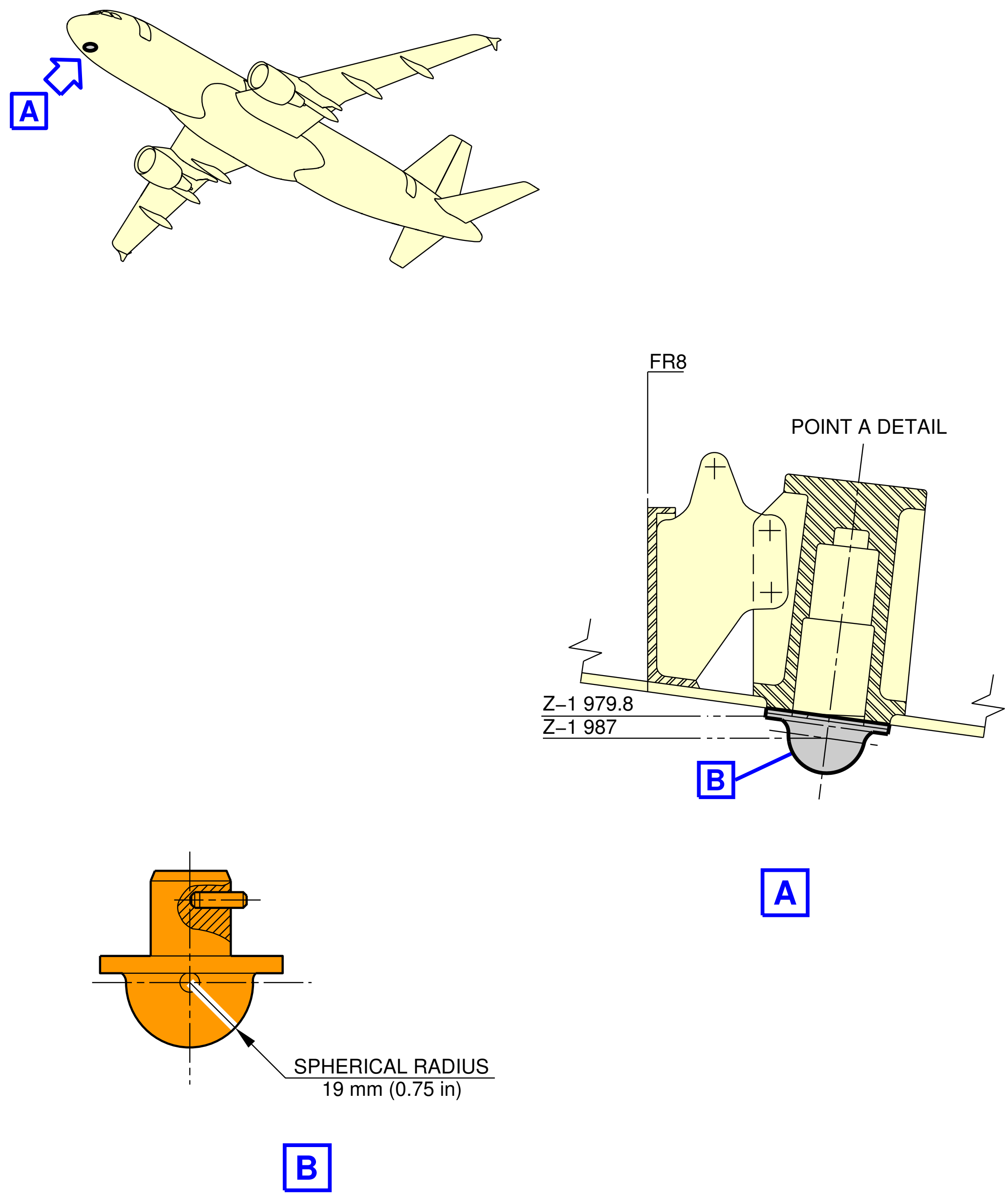
Jacking for Maintenance
Jacking Point Location
FIGURE-2-14-0-991-030-A01

**ON A/C A320-200



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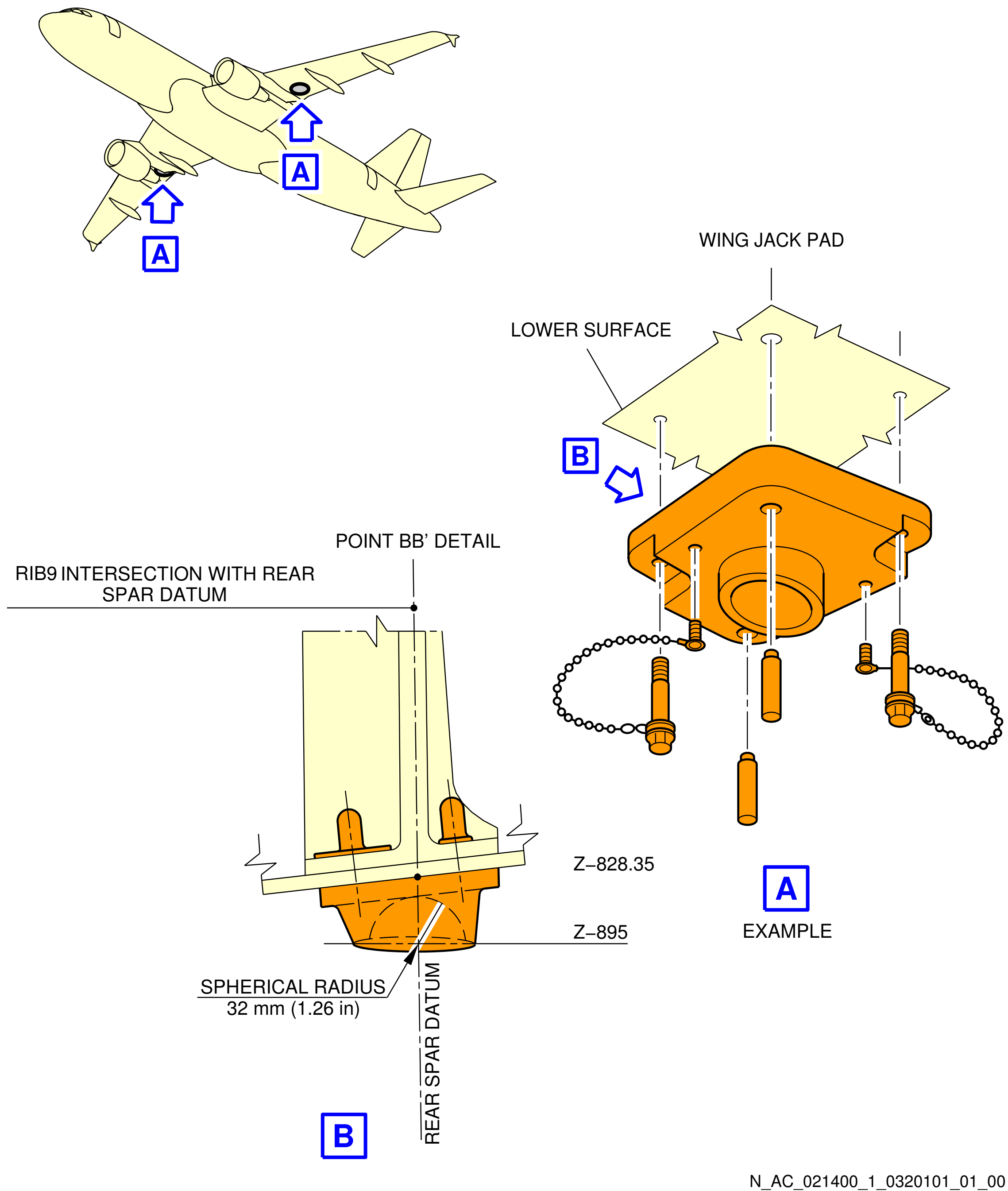
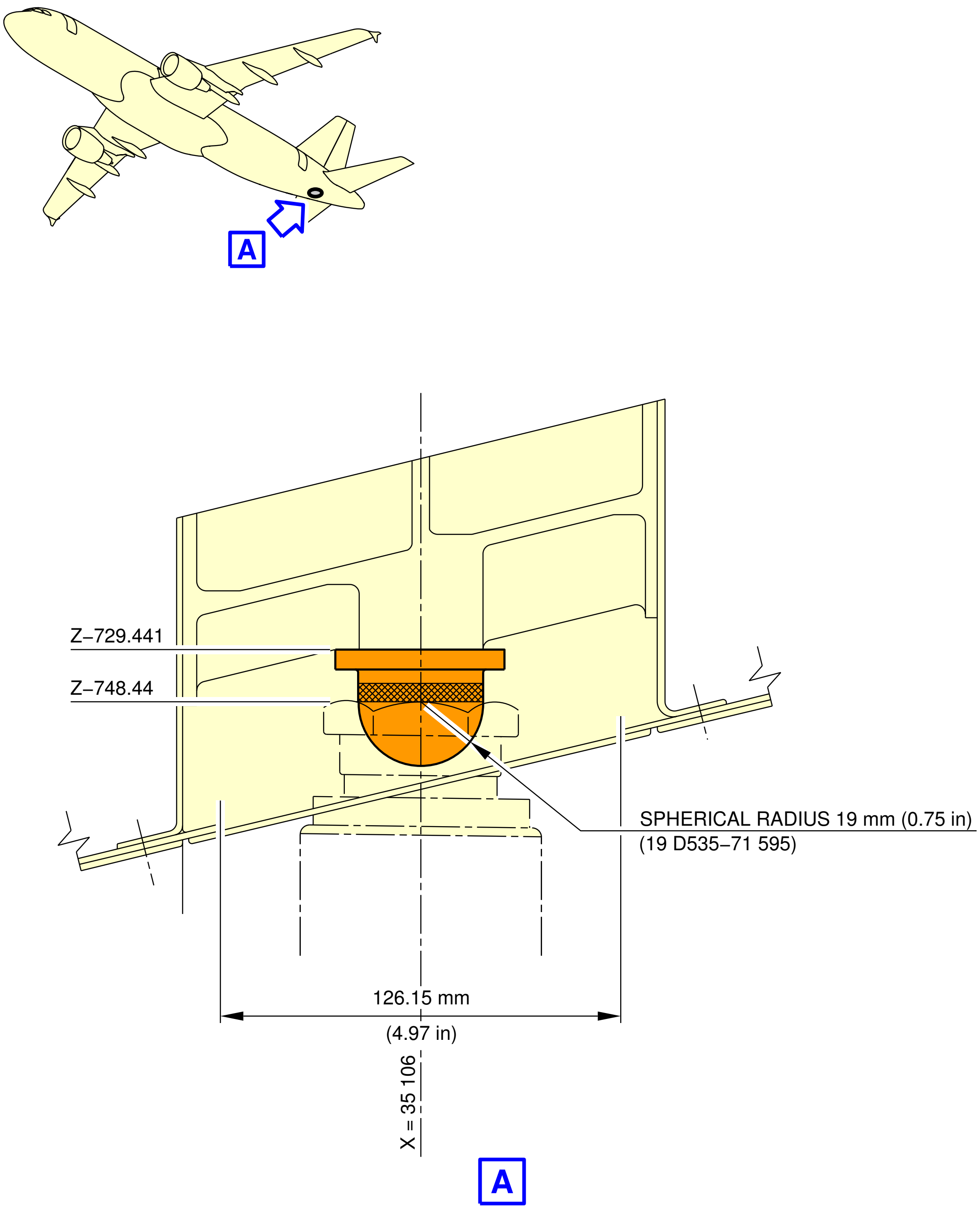
Jacking for Maintenance
Forward Jacking Point
FIGURE-2-14-0-991-031-A01

**ON A/C A320-200



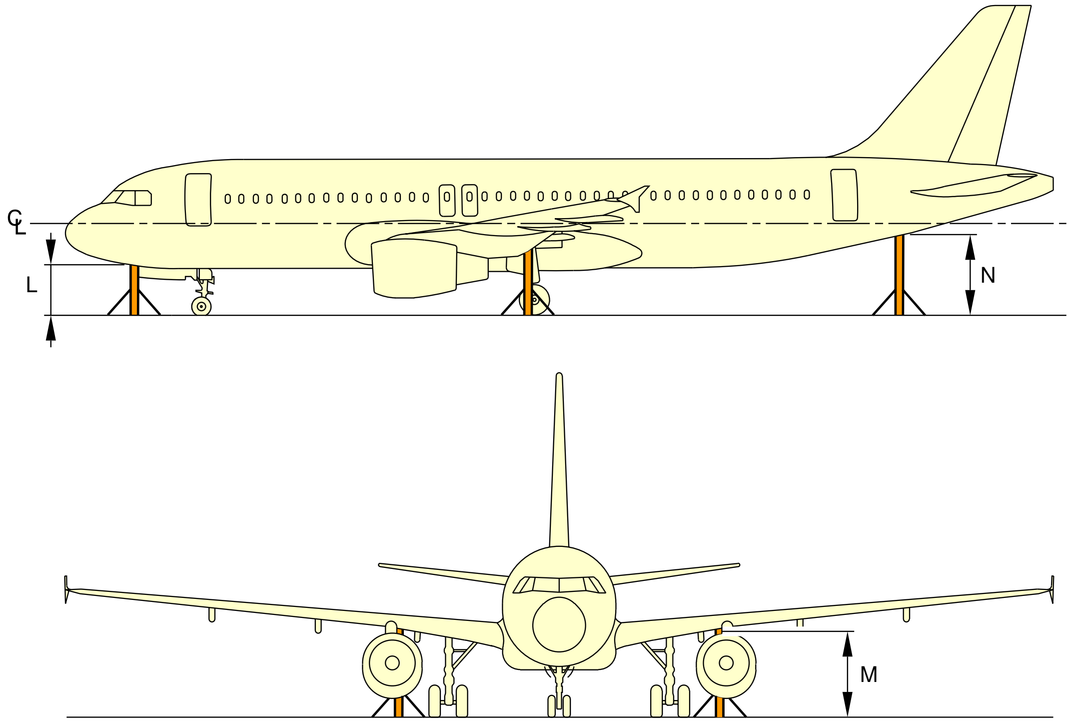
Jacking for Maintenance
Wing Jacking Points
FIGURE-2-14-0-991-032-A01

**ON A/C A320-200



Jacking for Maintenance
Safety Stay
FIGURE-2-14-0-991-033-A01

**ON A/C A320-200



	L	M	N
AIRCRAFT ON WHEELS, SHOCK ABSORBERS DEFLATED AND FLAT TIRES	1 675 mm (65.94 in)	2 801 mm (110.28 in)	2 858 mm (112.52 in)
AIRCRAFT ON JACKS, CENTER LINE (CL) PARALLEL TO GROUND SHOCK ABSORBERS EXTENDED MAIN WHEEL CLEARANCE (STANDARD TIRES) (49 x 17) 120 mm (4.72 in) FOR EXTENDED AND RETRACTED LANDING GEARS	2 599 mm (102.32 in)	3 751 mm (147.68 in)	3 834 mm (150.94 in)
AIRCRAFT ON WHEELS, (STANDARD TIRES) AT MAX. PERMITTED WEIGHT FOR JACKING	1 897 mm (74.69 in)	3 178 mm (125.12 in)	3 391 mm (133.50 in)
AIRCRAFT ON WHEELS, NLG SHOCK ABSORBER DEFLATED AND FLAT TIRES	1 545 mm (60.83 in)	2 761 mm (108.70 in)	2 940 mm (115.75 in)

NOTE: THE CENTER LINE (CL) IS A FICTITIOUS LINE AROUND WHICH THE AIRCRAFT IS BUILT.
SAFETY STAY IS NOT USED FOR JACKING.
SEE SECTION 1–10, FOR GROUND CLEARANCES A/C ON JACKS.

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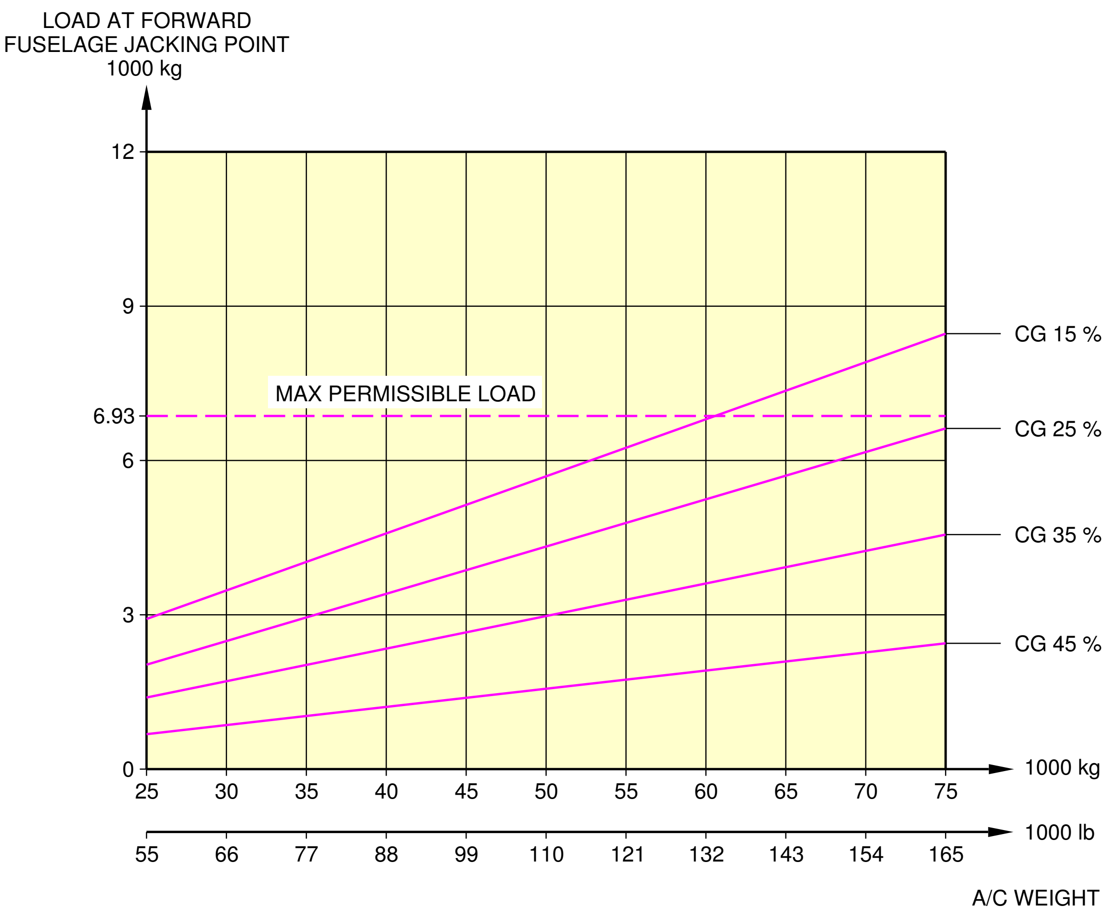
Jacking for Maintenance
Jacking Design
FIGURE-2-14-0-991-034-A01

**ON A/C A320-200



NOTE: AS AN EXAMPLE ASSUME THAT THE AIRCRAFT HAS A GROSS WEIGHT OF 66 000 kg AND THE CENTER OF GRAVITY (CG) IS AT 25 %. THUS THE FORCE AT THE FORWARD FUSELAGE JACKING POINT IS 5 300 kg.

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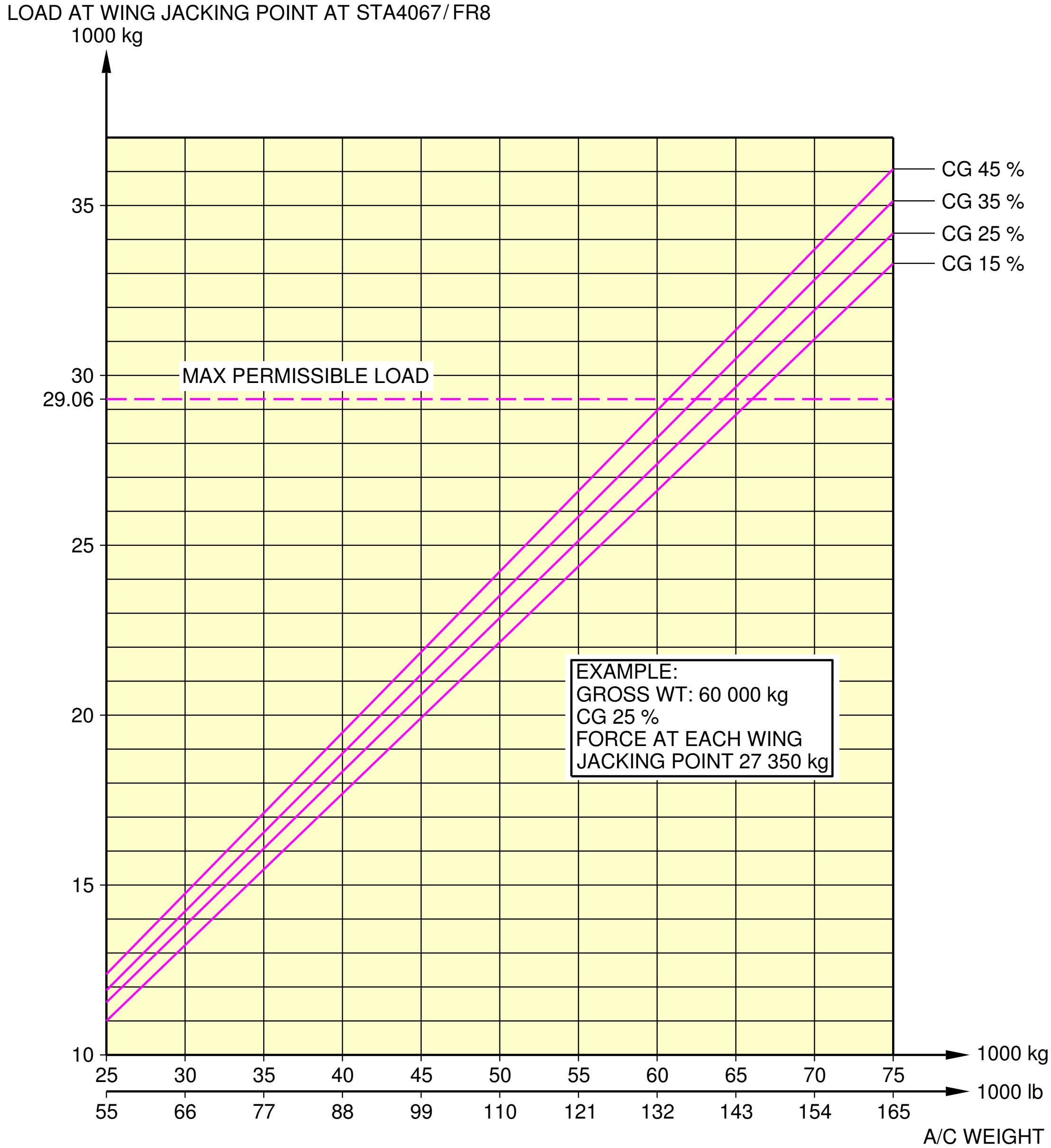
Loads at the Aircraft Jacking Points
Forward Fuselage Jacking Point - Twin Wheel/Bogie
FIGURE-2-14-0-991-035-A01

**ON A/C A320-200



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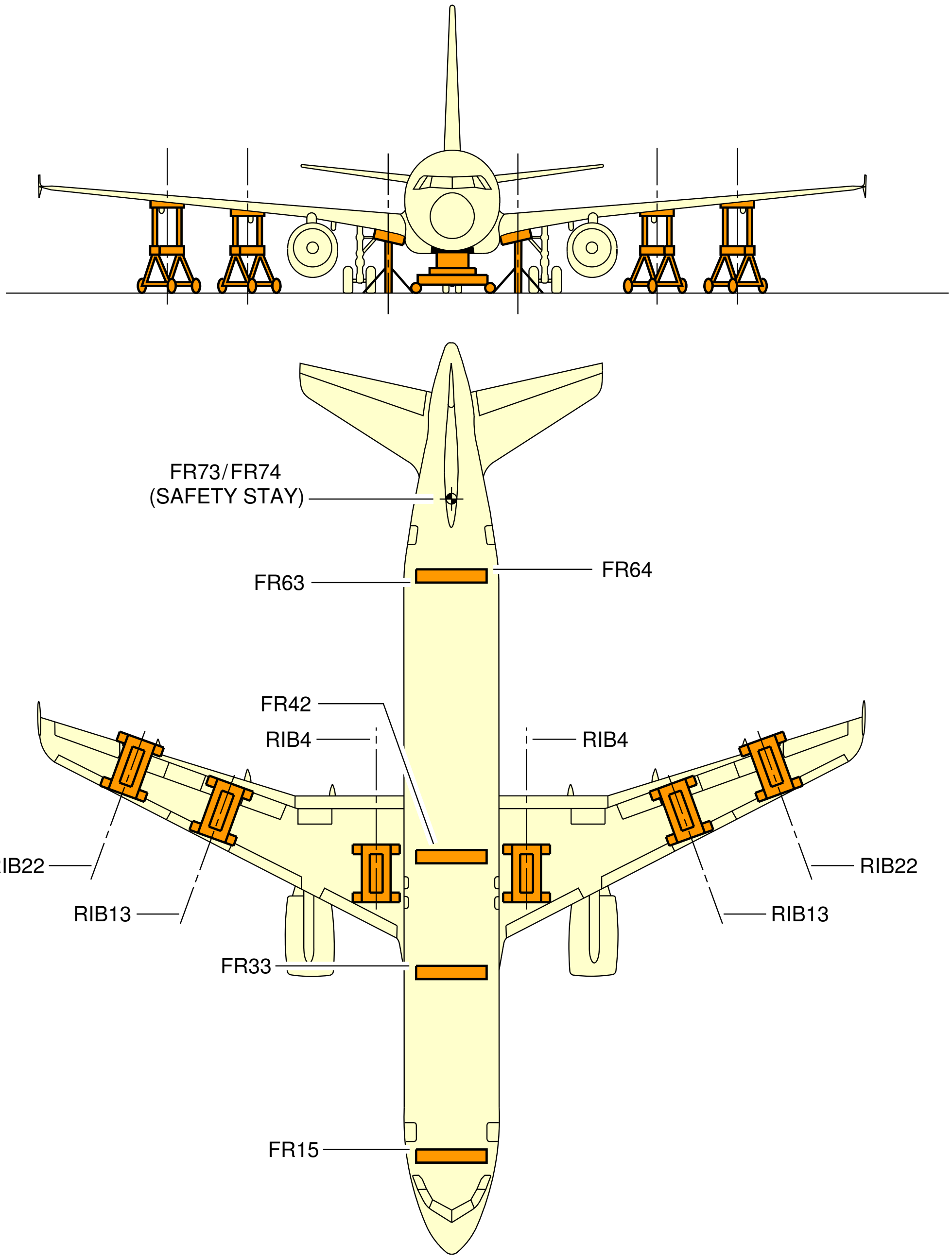
Loads at the Aircraft Jacking Points
Wing Jacking Point Rib 8 - Twin Wheel/Bogie
FIGURE-2-14-0-991-036-A01

**ON A/C A320-200



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

N_AC_021400_1_0370101_01_00

Jacking for Maintenance
Location of Shoring Cradles
FIGURE-2-14-0-991-037-A01

****ON A/C A320-200**

Jacking for Wheel Change

1. General

Landing gear jacking will be required especially for replacing wheels and brake unit components.

The maximum permitted aircraft weight for jacking is 59 000 kg (130 073 lb).

2. Main Gear Jacking (Twin Wheel)

The main gears are normally jacked up by placing a jack directly under the ball pad.

The ball spherical radius is 19 mm (0.75 in).

It is also possible to jack the main gear using a cantilever jack.

3. Main Gear Jacking (4 Wheels Bogie)

The fore and aft pair of MLG wheels can be jacked by placing a jack directly under the ball pads located at each end of the bogie beam.

The ball spherical radius is 19 mm (0.75 in).

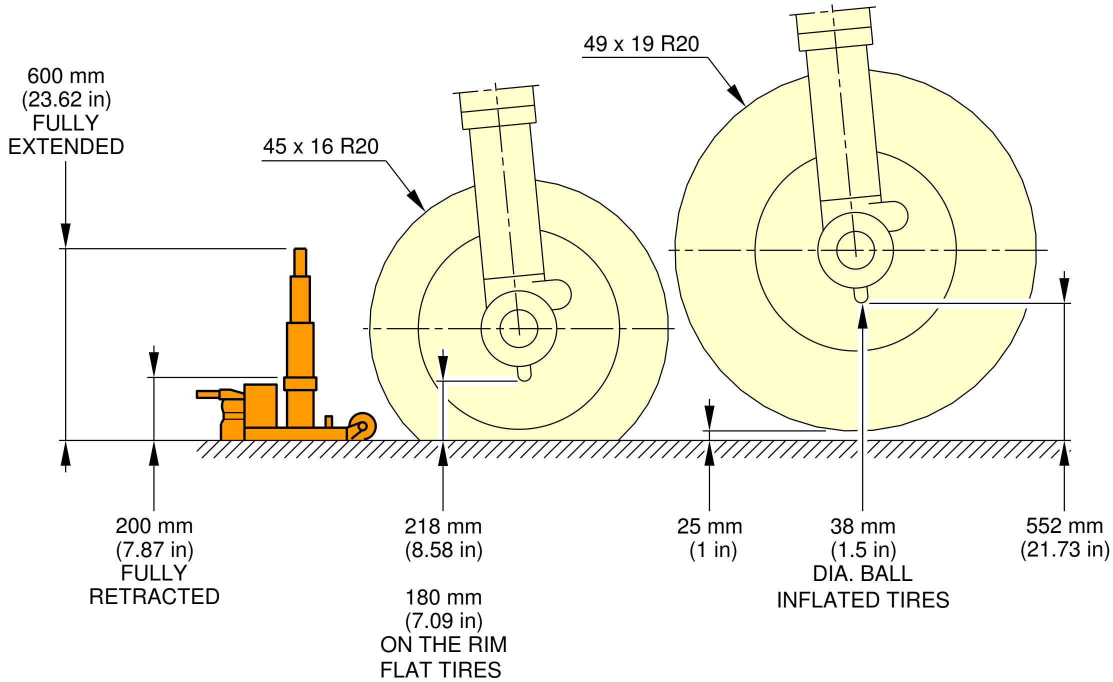
The leading dimensions and environmental distances of these jacking points are shown on Figures 4, 5 and 6.

The reactions at each of the jacking points are shown on the graph (Ref. Figure 7).

4. Nose Gear Jacking

For nose gear jacking a 19 mm (0.75 in) radius ball pad is fitted under the lower end of the shock absorber sliding tube. Jacking can be accomplished either by placing a jack directly under the ball pad, or using an adapter fitting provided with an identical ball pad.

**ON A/C A320-200

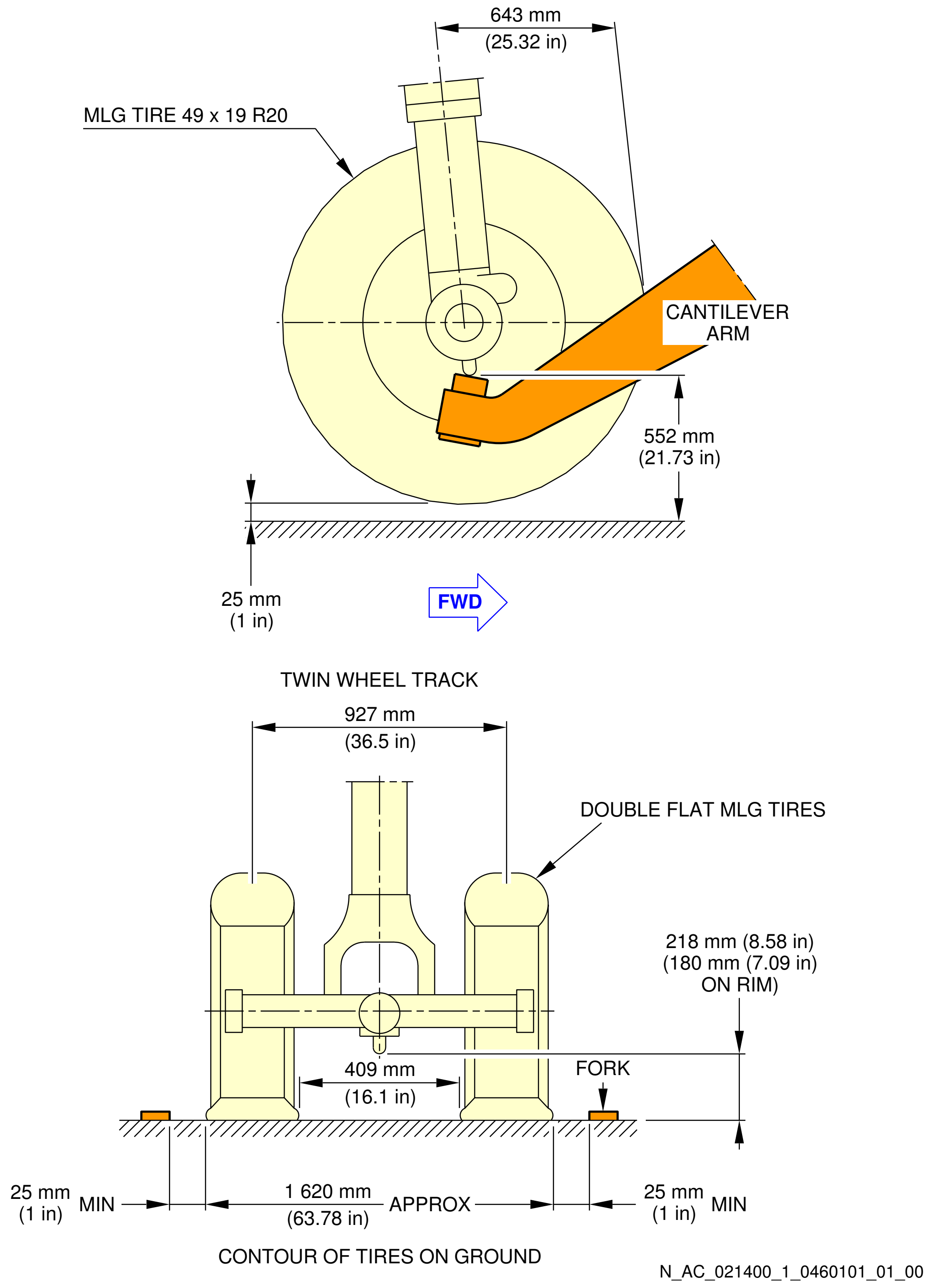


NOTE: TWIN WHEEL TRACK IS 927 mm (36.5 in).
THE FLAT TIRES VIEW SHOWS THE MINIMUM HEIGHT TO ENGAGE JACK WITH 2 FLAT TIRES.
THE INFLATED TIRES VIEW SHOWS THE JACKING HEIGHT TO GIVE 25 mm (1 in) CLEARANCE BETWEEN THE TIRE AND GROUND.

N_AC_021400_1_0450101_01_00

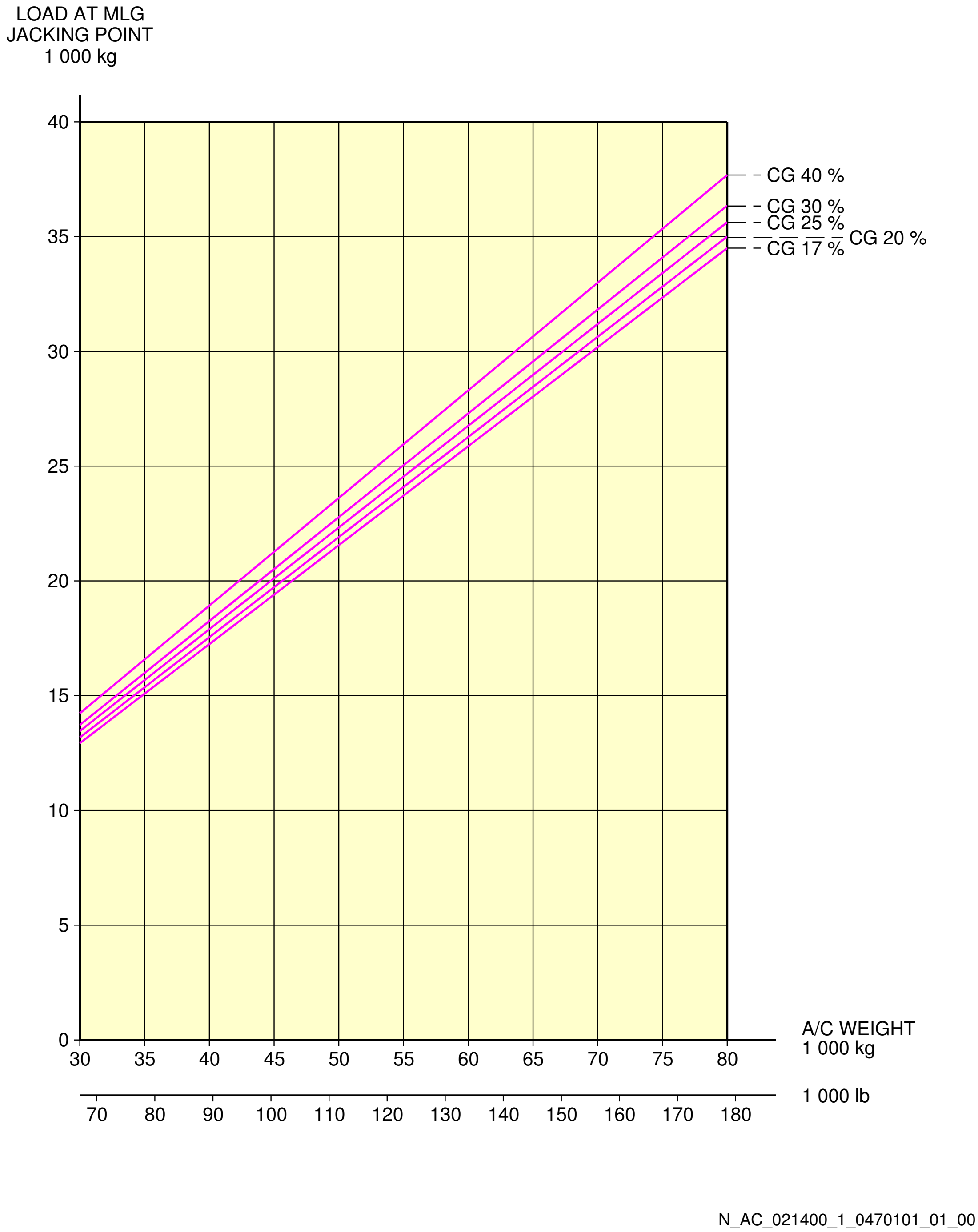
Landing Gear Jacking for Wheel Change
MLG Jacking Point Location - Twin Wheels
FIGURE-2-14-0-991-045-A01

**ON A/C A320-200



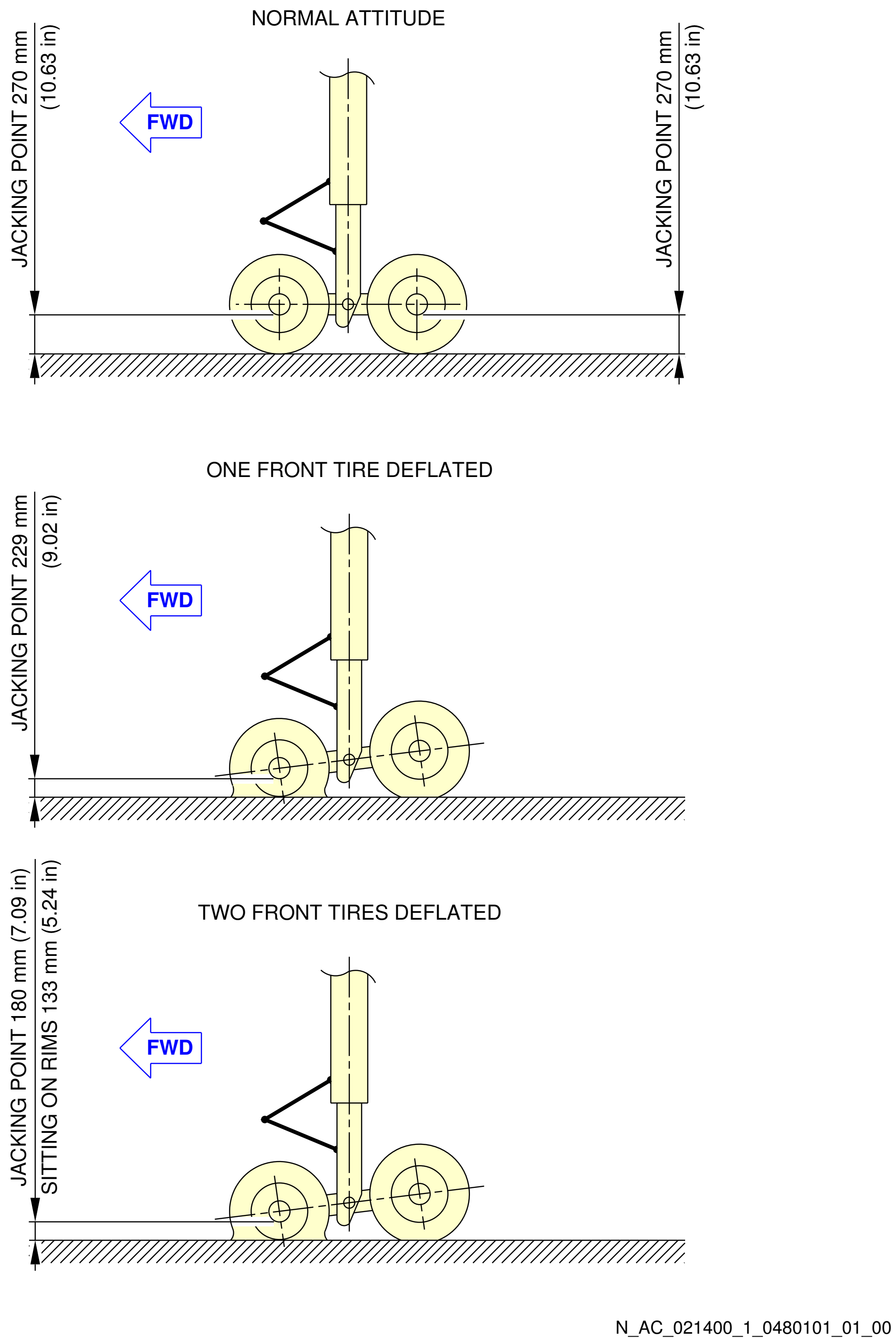
Landing Gear Jacking for Wheel Change
MLG Jacking with Cantilever Jack - Twin Wheels
FIGURE-2-14-0-991-046-A01

**ON A/C A320-200



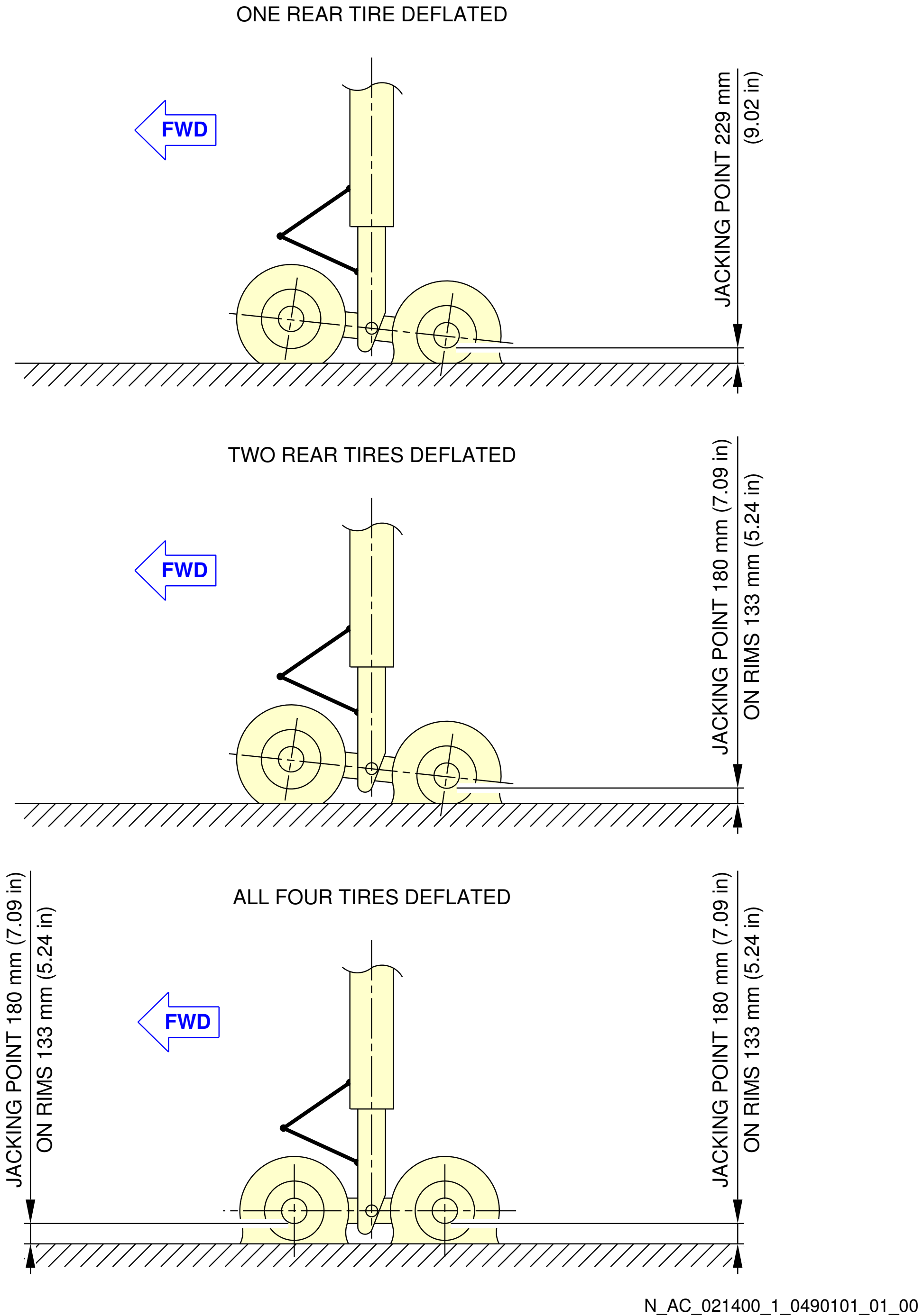
Landing Gear Jacking for Wheel Change
Loads at MLG Jacking Points - Twin Wheels
FIGURE-2-14-0-991-047-A01

**ON A/C A320-200



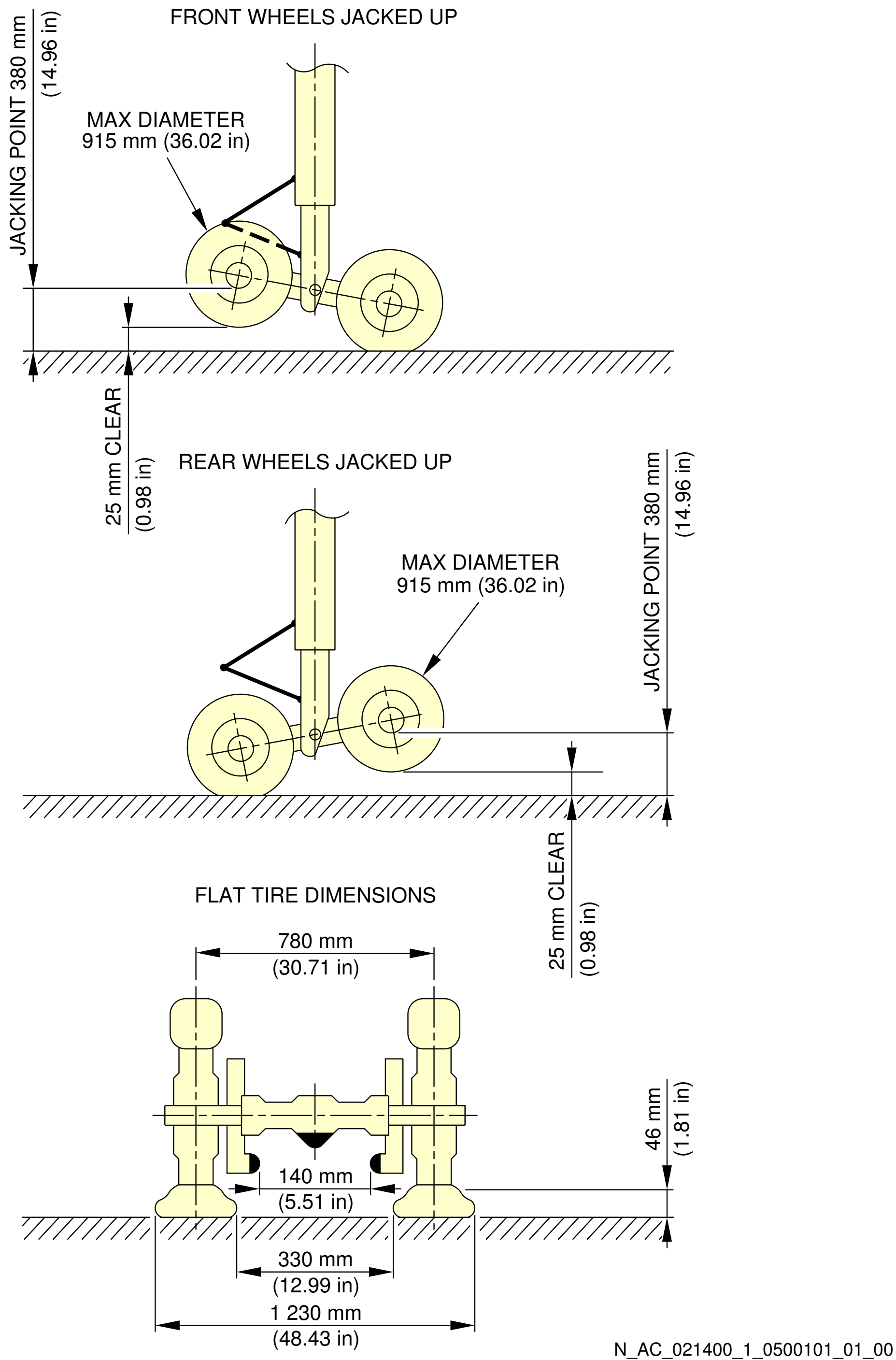
Landing Gear Jacking for Wheel Change
MLG Jacking Point Location Bogie
FIGURE-2-14-0-991-048-A01

**ON A/C A320-200



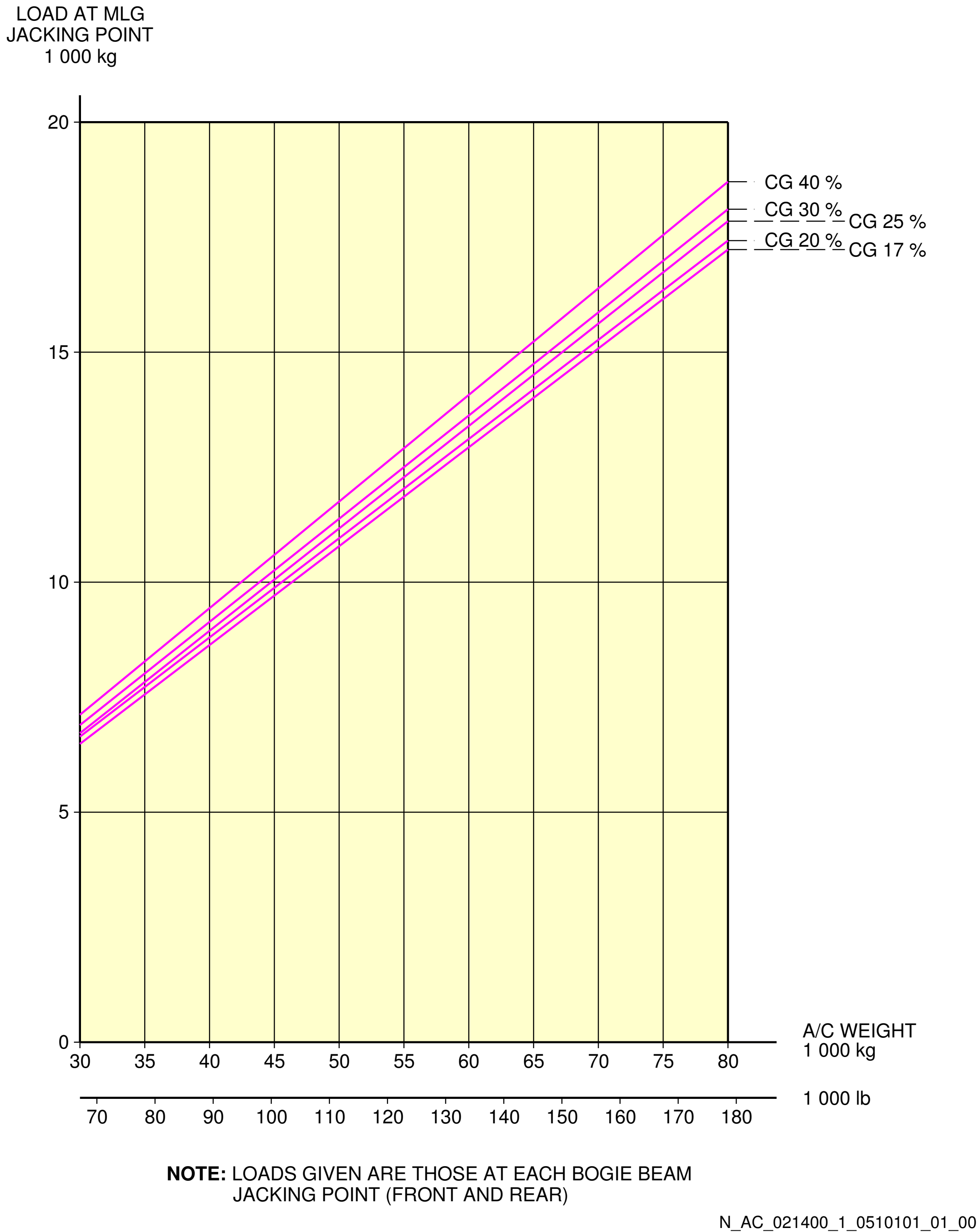
Landing Gear Jacking for Wheel Change
MLG Jacking Point Location Bogie
FIGURE-2-14-0-991-049-A01

**ON A/C A320-200



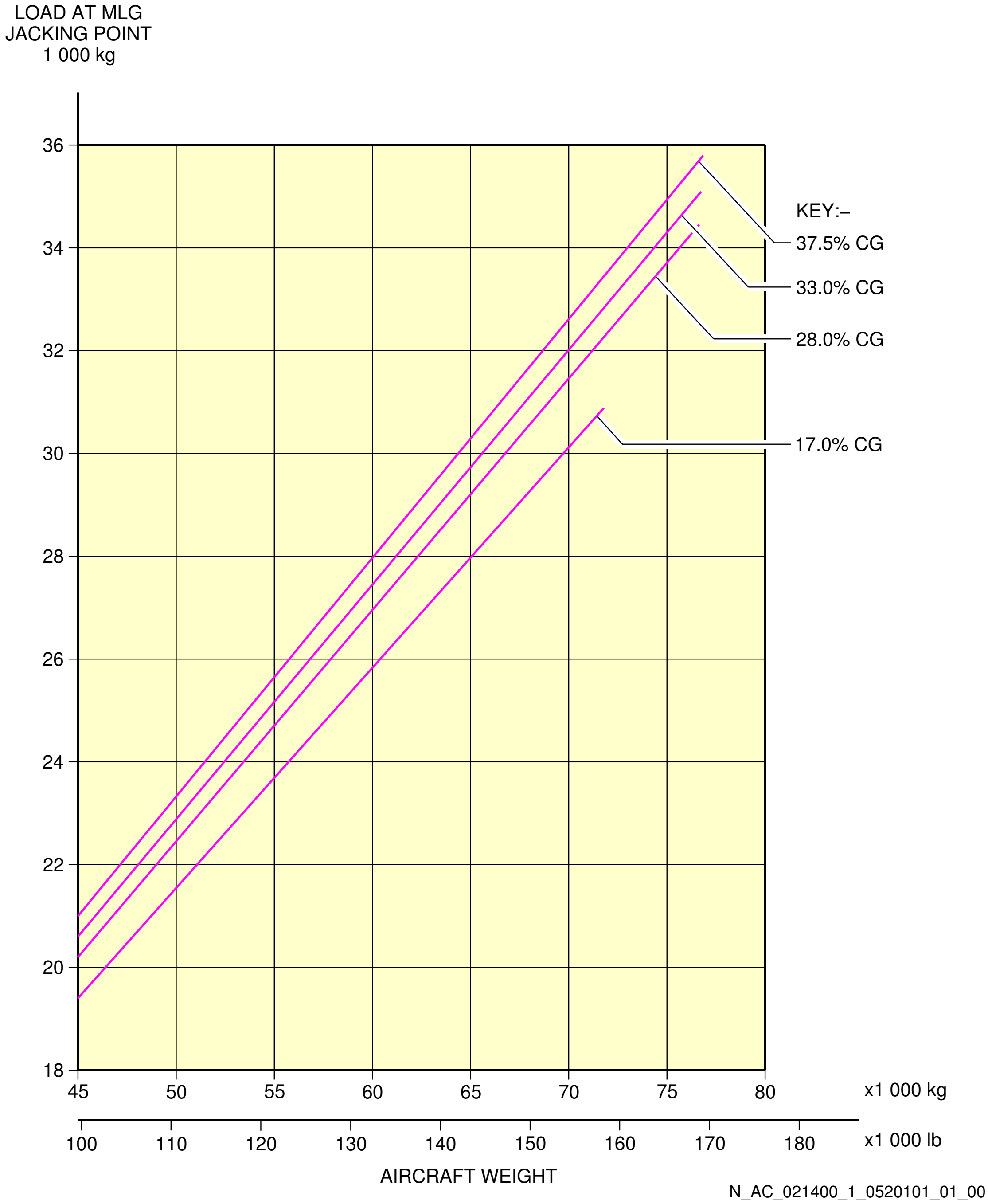
Landing Gear Jacking for Wheel Change
MLG Jacking Point Location Bogie
FIGURE-2-14-0-991-050-A01

**ON A/C A320-200



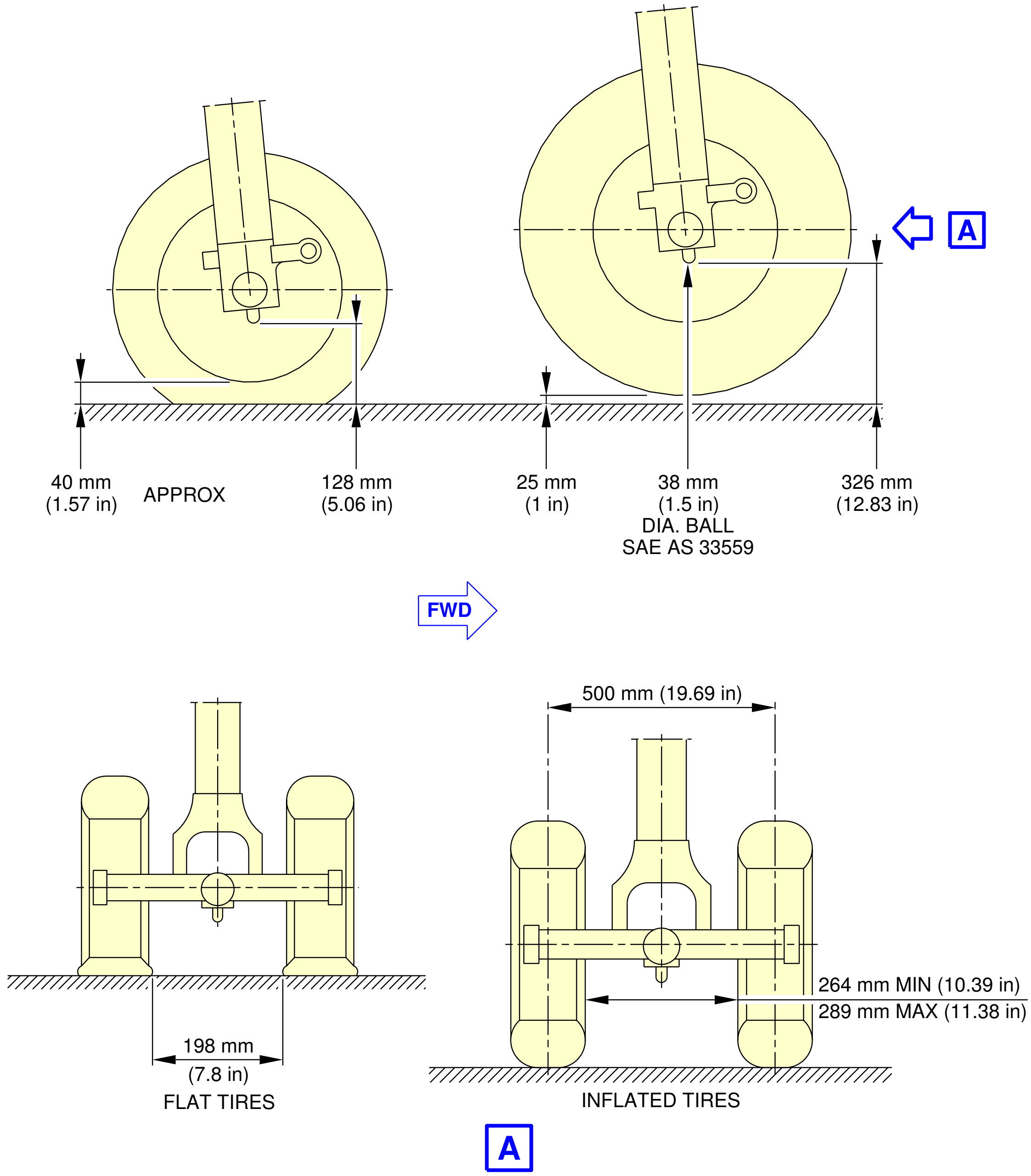
Landing Gear Jacking for Wheel Change
Loads at MLG Jacking Points - Bogie Version
FIGURE-2-14-0-991-051-A01

**ON A/C A320-200



Landing Gear Jacking for Wheel Change
Loads at MLG Jacking Points - 77 000 kg
FIGURE-2-14-0-991-052-A01

**ON A/C A320-200

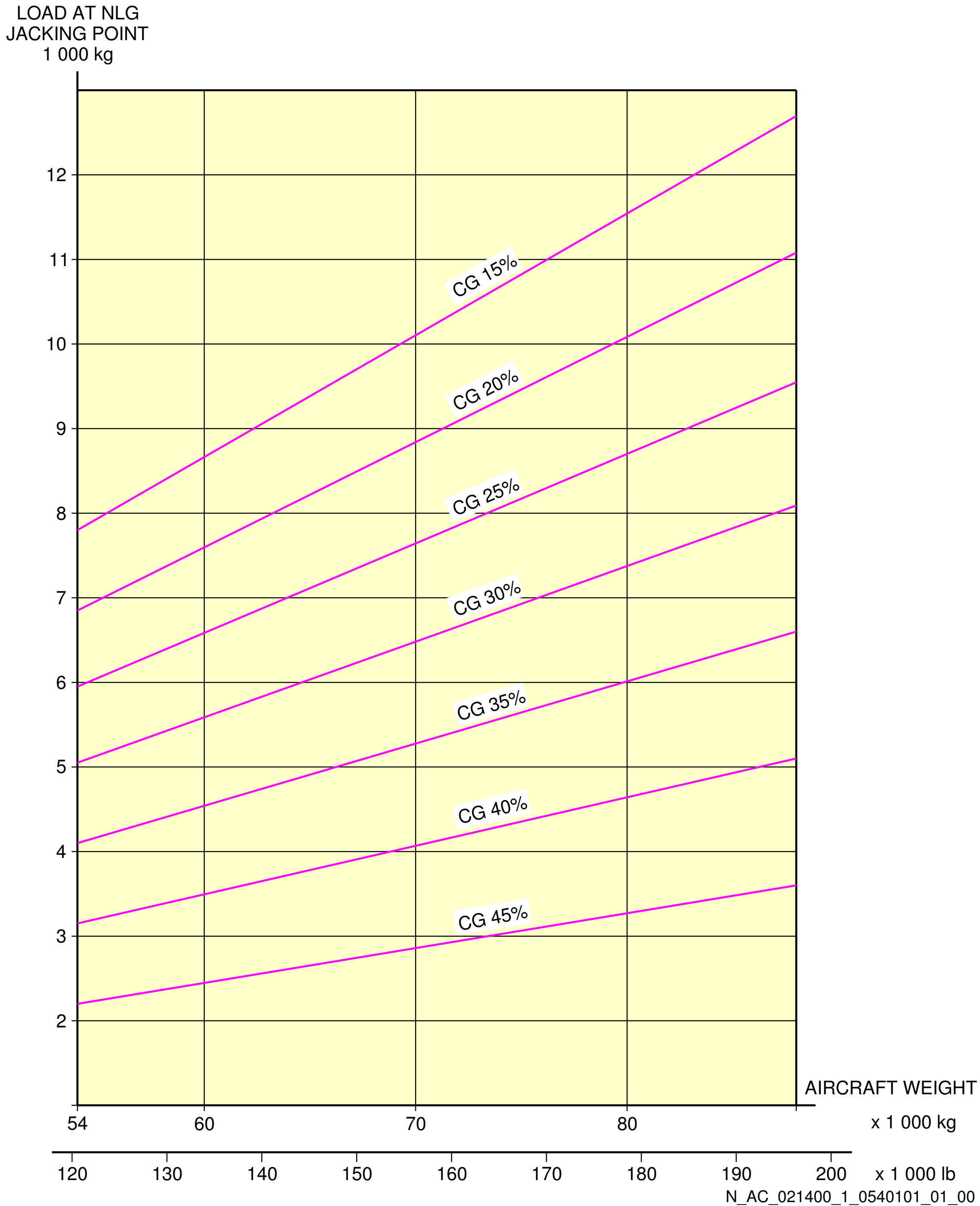


NOTE: THE FLAT TIRES VIEW SHOWS THE MINIMUM HEIGHT TO ENGAGE JACK WITH 2 FLAT TIRES. THE INFLATED TIRES VIEW SHOWS THE JACKING HEIGHT TO GIVE 25 mm (1 in) CLEARANCE BETWEEN THE TIRE AND GROUND.

N_AC_021400_1_0530101_01_00

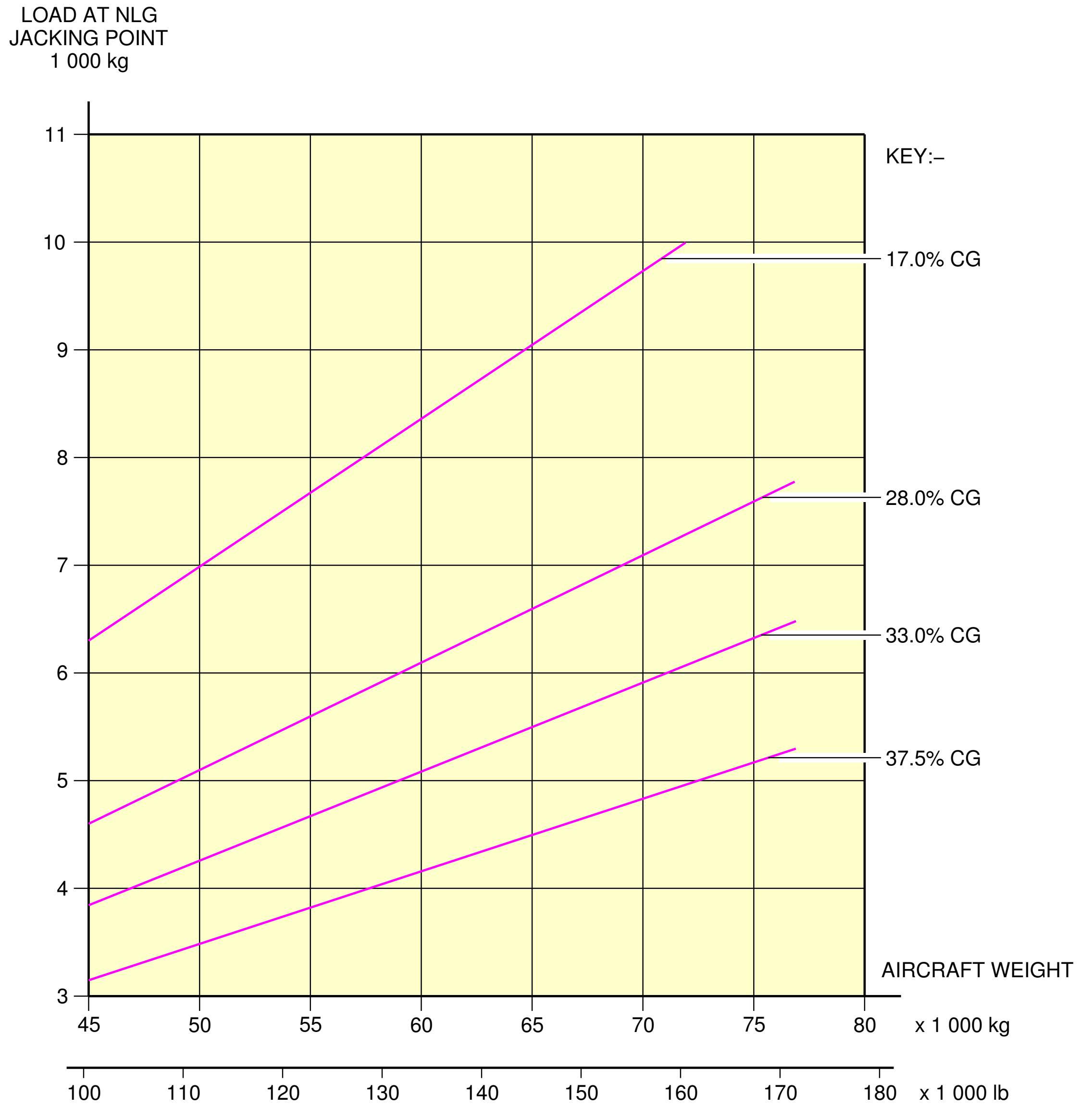
Landing Gear Jacking for Wheel Change
NLG Jacking - Point Location
FIGURE-2-14-0-991-053-A01

**ON A/C A320-200



Landing Gear Jacking for Wheel Change
Loads at NLG Jacking Points
FIGURE-2-14-0-991-054-A01

**ON A/C A320-200



Landing Gear Jacking for Wheel Change
Loads at NLG Jacking Points - 77 000 kg
FIGURE-2-14-0-991-055-A01

AIRCRAFT PERFORMANCE

3-1-0 General Information

**ON A/C A320-200

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 take-off runway length requirements at ISA and ISA +15°C (+59°F) for CFM56-5A, CFM56-5B and IAE V2500 series engine conditions for FAA certification.

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

   Section 3-5 indicates final approach speeds.

   Standard day temperatures for the altitudes 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 A320-200**

Payload / Range

1. Payload / Range

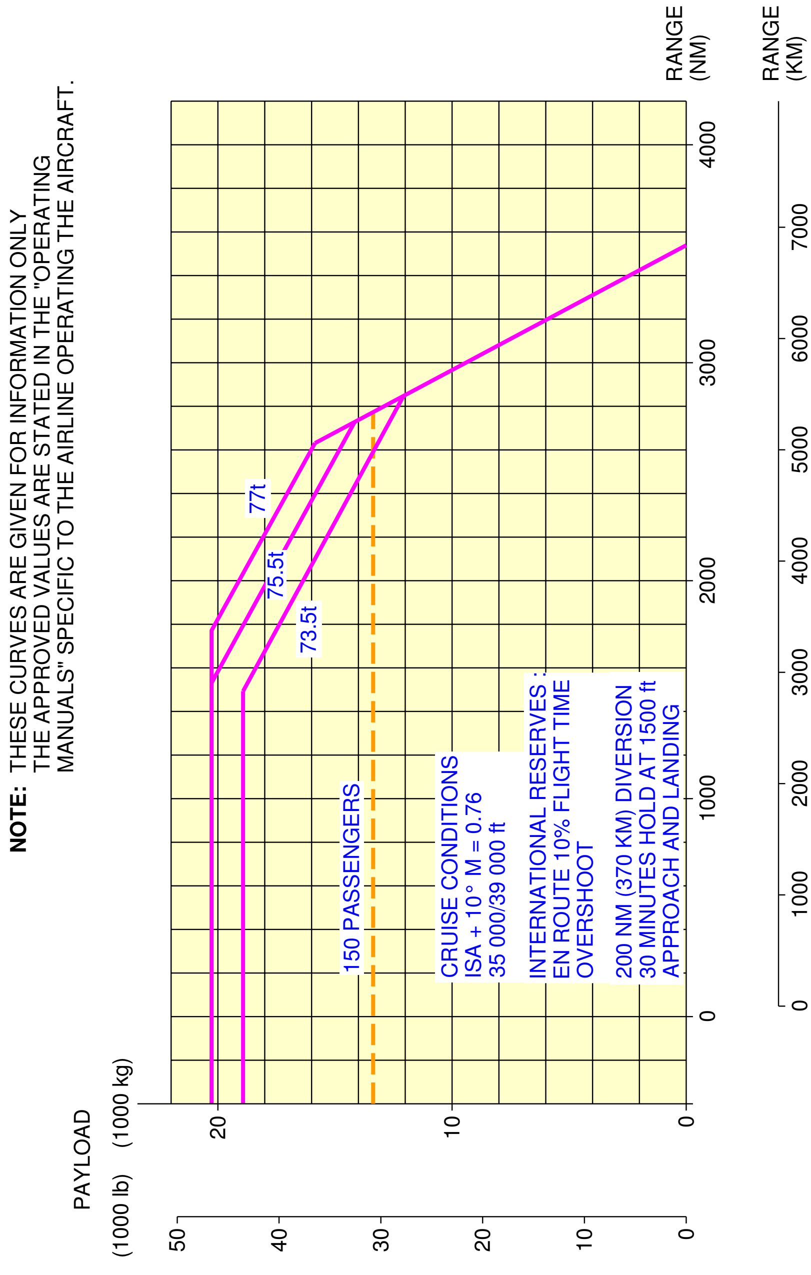
3-2-1 ISA Conditions

****ON A/C A320-200**

ISA Conditions

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

**ON A/C A320-200



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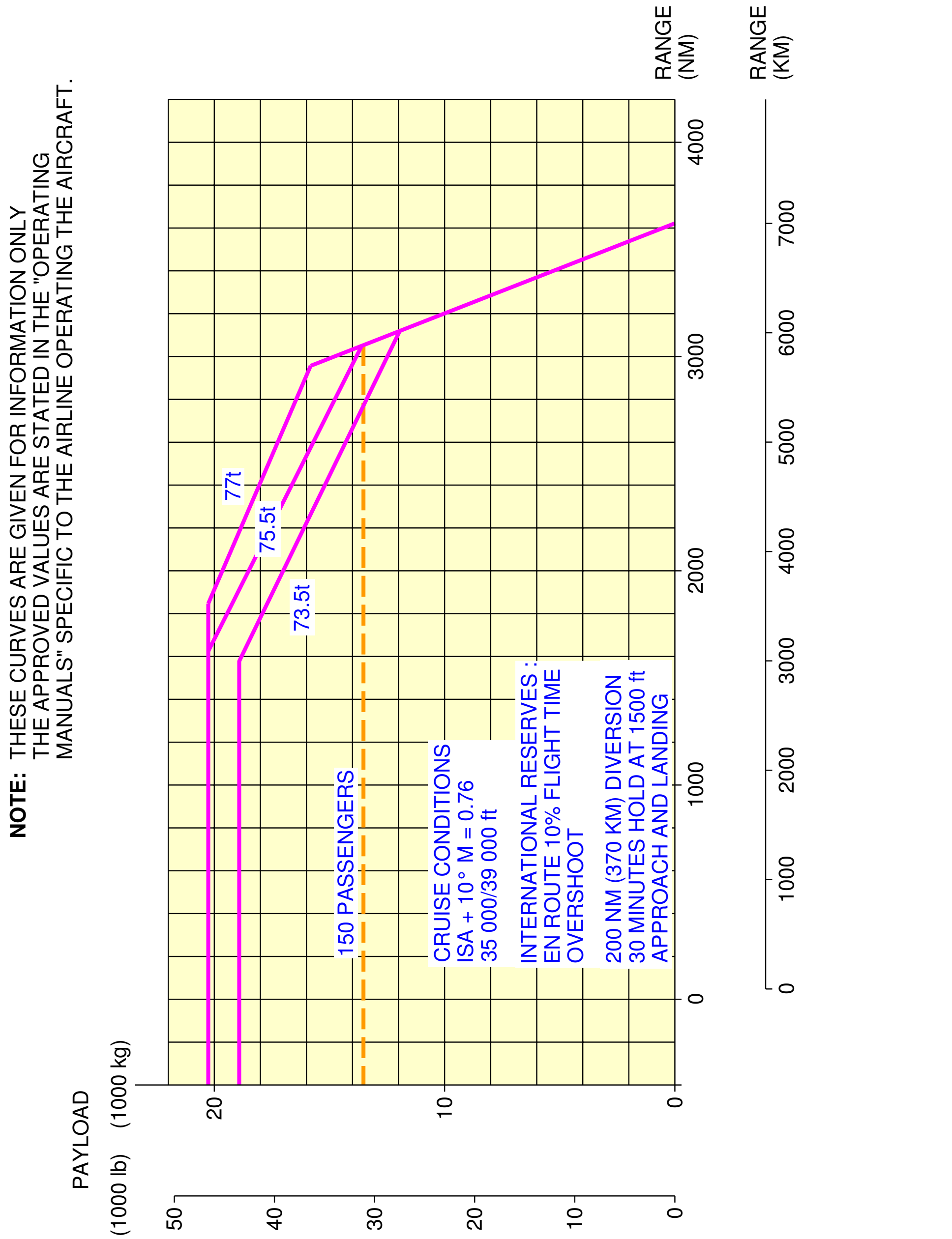
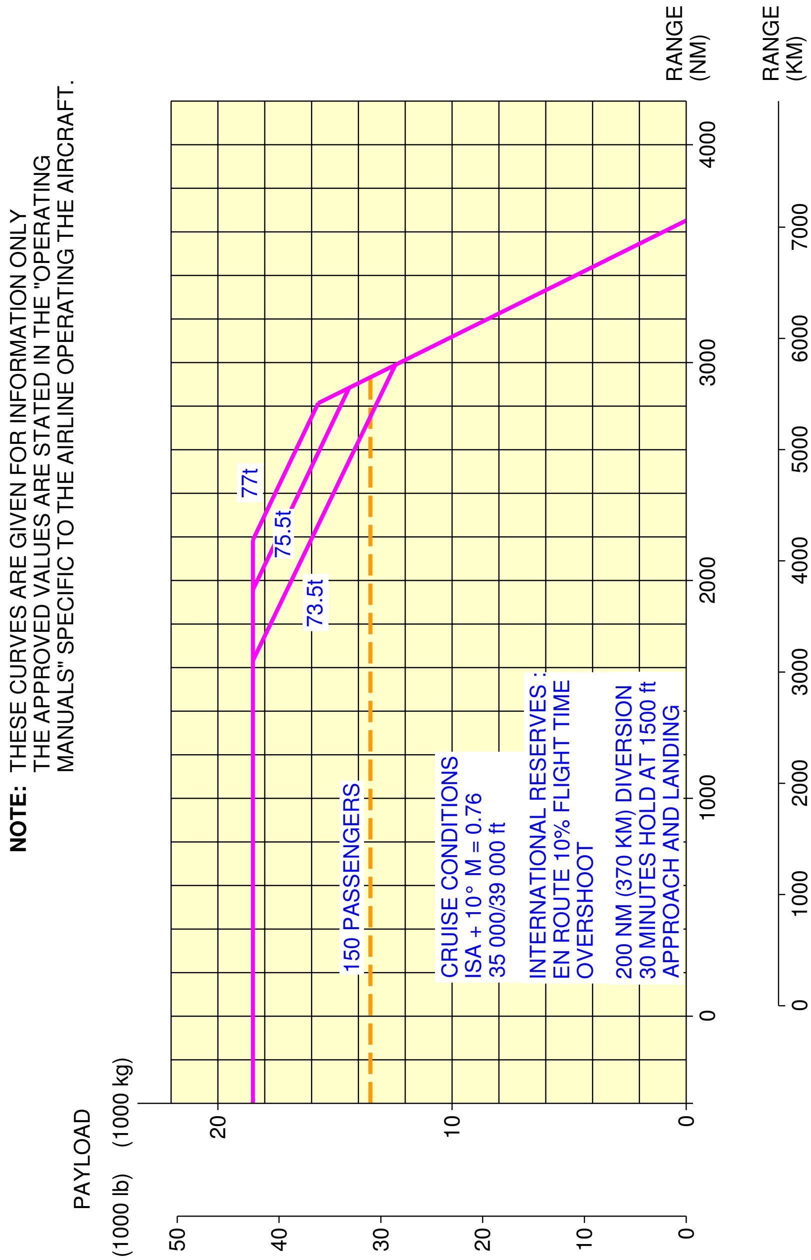
Payload / Range
CFM56-5A series engine
FIGURE-3-2-1-991-006-A01

**ON A/C A320-200



Payload / Range
CFM56-5B series engine
FIGURE-3-2-1-991-007-A01

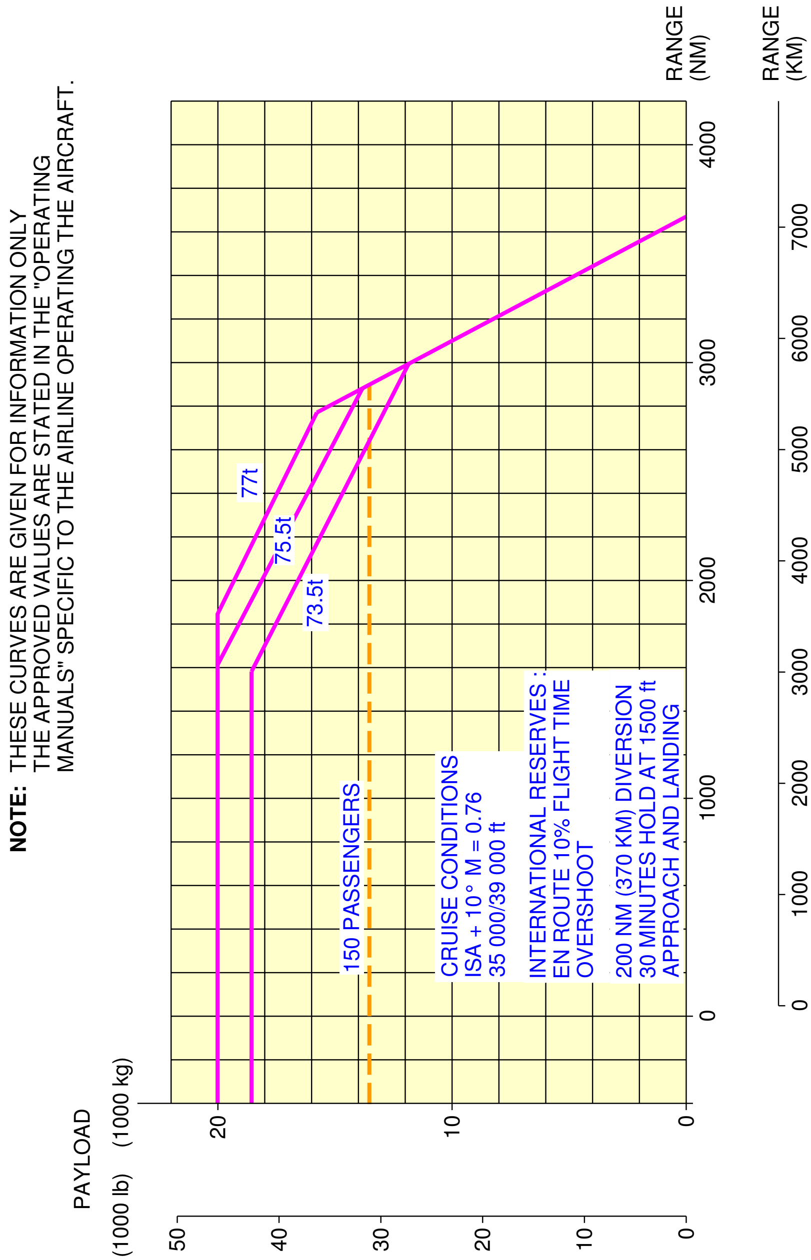
**ON A/C A320-200



N_AC_030201_1_0080101_01_00

Payload / Range
IAE V2500-A1 series engine
FIGURE-3-2-1-991-008-A01

**ON A/C A320-200



N_AC_030201_1_0090101_01_00

Payload / Range
IAE V2500-A5 series engine
FIGURE-3-2-1-991-009-A01

3-3-0 FAR / JAR Takeoff Weight Limitation

****ON A/C A320-200**

FAR / JAR Take-off Weight Limitation

1. FAR / JAR Take-off Weight Limitation

3-3-1 ISA Conditions

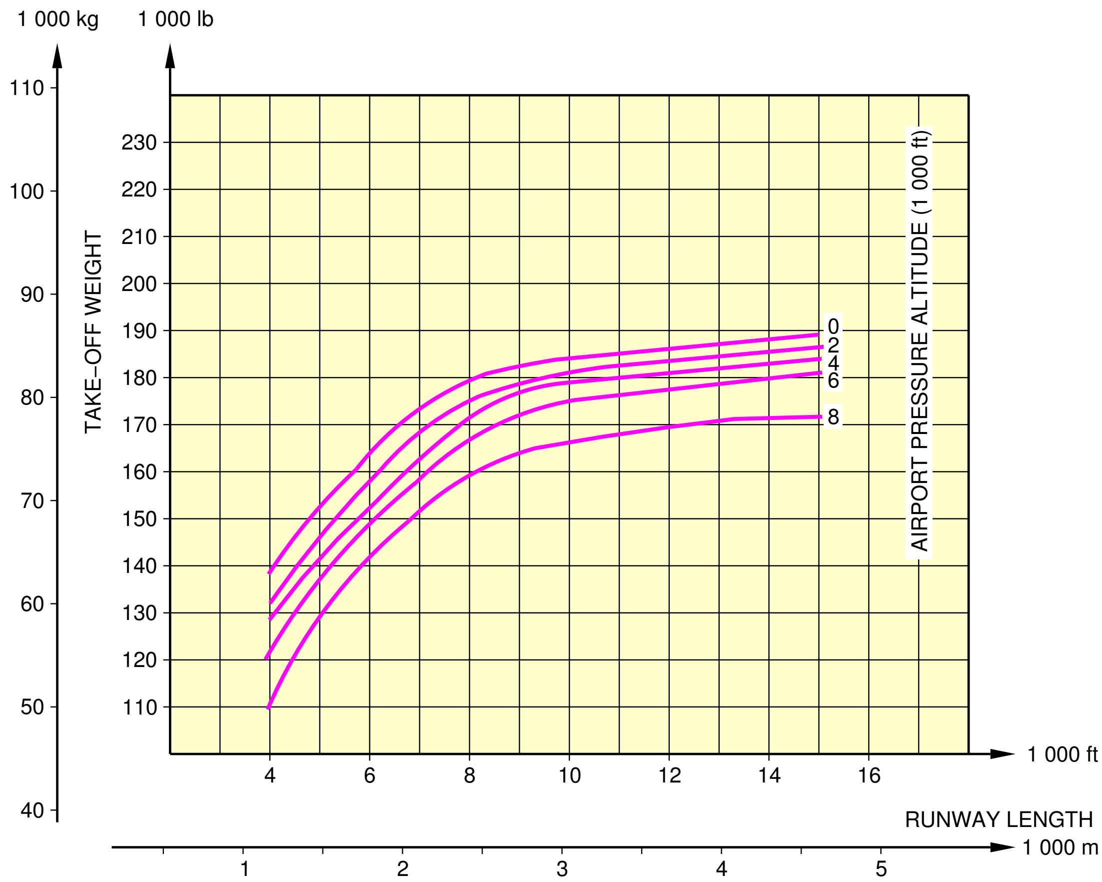
****ON A/C A320-200**

ISA Conditions

1. This section gives the take-off weight limitation at ISA conditions.

**ON A/C A320-200

NOTE: THESE CURVES ARE GIVEN FOR INFORMATION ONLY
THE APPROVED VALUES ARE STATED IN THE "OPERATING MANUALS" SPECIFIC TO THE AIRLINE OPERATING THE AIRCRAFT.

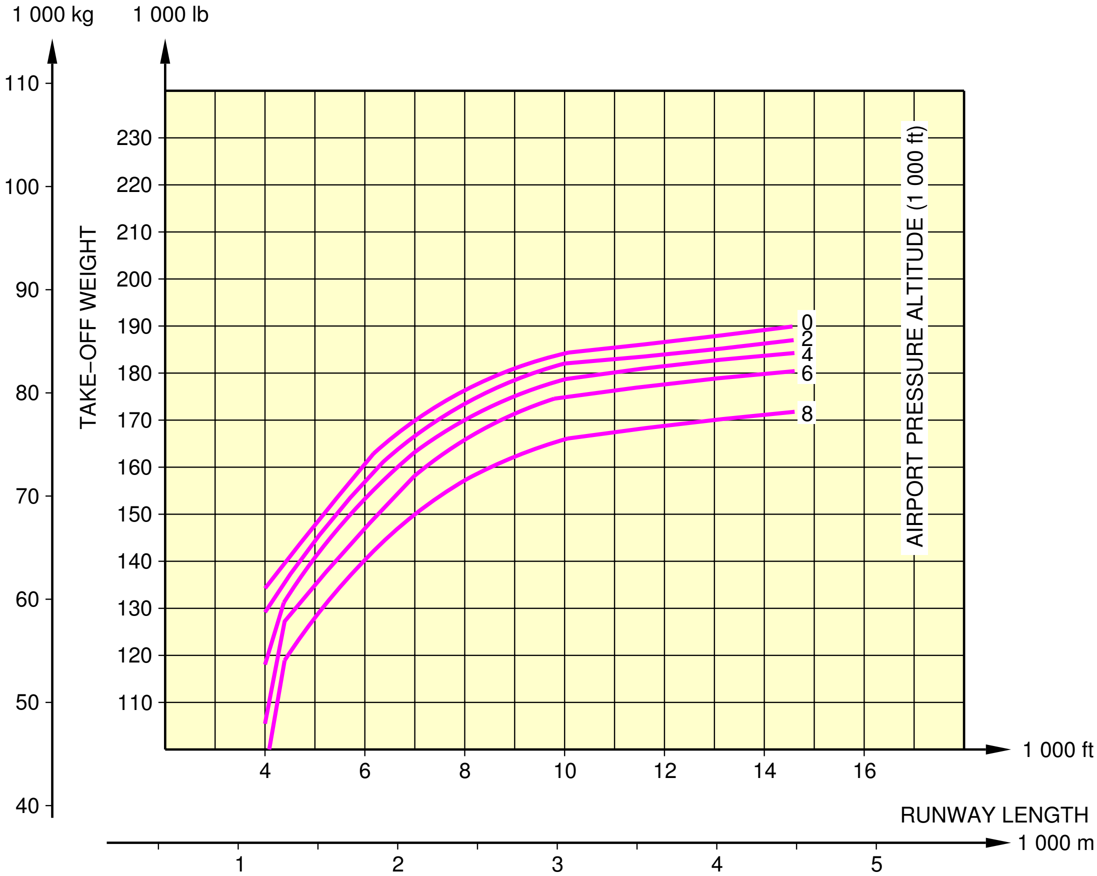


N_AC_030301_1_0050101_01_01

FAR / JAR Take-off Weight Limitation
ISA Conditions – CFM56 series engine
FIGURE-3-3-1-991-005-A01

**ON A/C A320-200

NOTE: THESE CURVES ARE GIVEN FOR INFORMATION ONLY
THE APPROVED VALUES ARE STATED IN THE "OPERATING MANUALS" SPECIFIC TO THE AIRLINE OPERATING THE AIRCRAFT.



N_AC_030301_1_0060101_01_01

FAR / JAR Take-off Weight Limitation
ISA Conditions – IAE V2500 series engine
FIGURE-3-3-1-991-006-A01

3-3-2 ISA +15°C (+59°F) Conditions

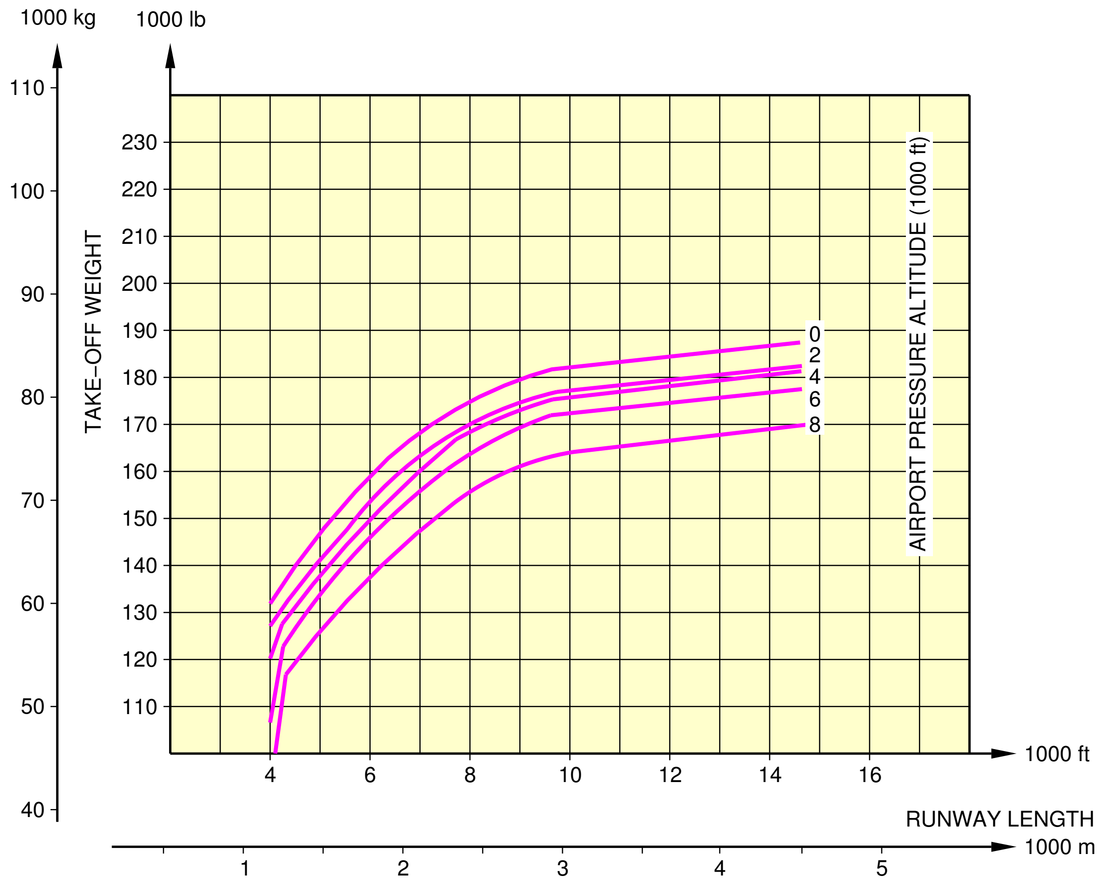
**ON A/C A320-200

ISA +15°C (+59°F) Conditions

1. This section gives the take-off weight limitation at ISA +15°C (+59°F) conditions.

**ON A/C A320-200

NOTE: THESE CURVES ARE GIVEN FOR INFORMATION ONLY
THE APPROVED VALUES ARE STATED IN THE "OPERATING MANUALS" SPECIFIC TO THE AIRLINE OPERATING THE AIRCRAFT.

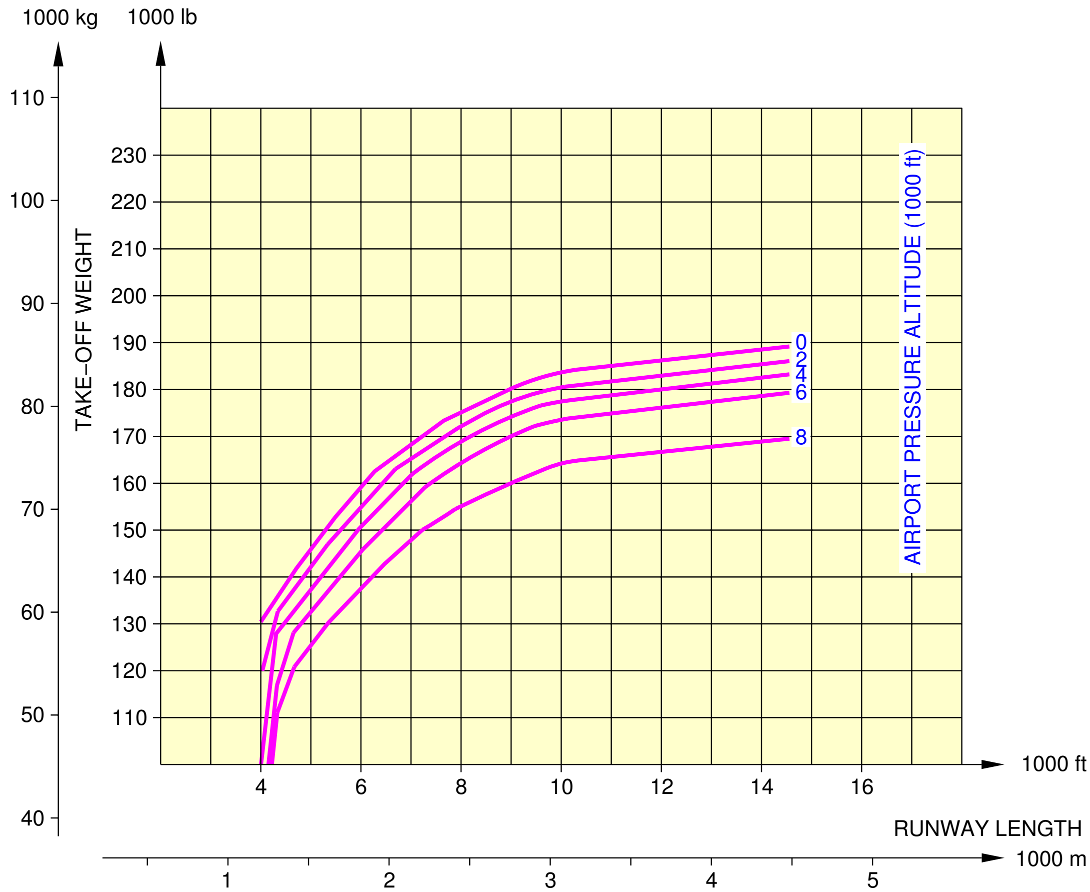


N_AC_030302_1_0050101_01_01

FAR / JAR Take-off Weight Limitation
ISA +15°C (+59°F) Conditions – CFM56 series engine
FIGURE-3-3-2-991-005-A01

**ON A/C A320-200

NOTE: THESE CURVES ARE GIVEN FOR INFORMATION ONLY
THE APPROVED VALUES ARE STATED IN THE "OPERATING MANUALS" SPECIFIC TO THE AIRLINE OPERATING THE AIRCRAFT.



N_AC_030302_1_0060101_01_00

FAR / JAR Take-off Weight Limitation
ISA +15°C (+59°F) Conditions – IAE V2500 series engine
FIGURE-3-3-2-991-006-A01

3-4-0 FAR / JAR Landing Field Length

****ON A/C A320-200**

FAR / JAR Landing Field Length

1. FAR / JAR Landing Field Length

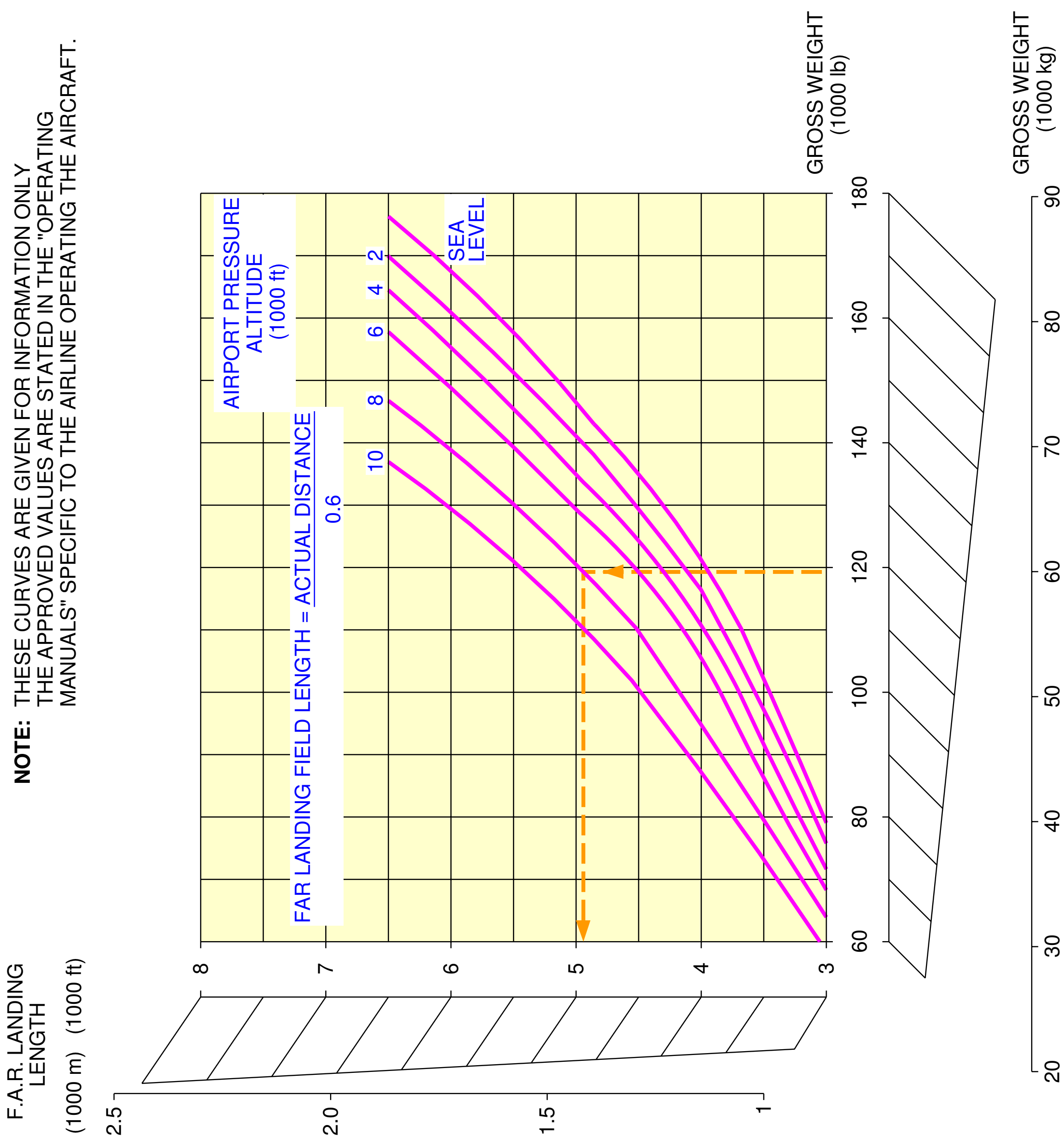
3-4-1 ISA Conditions

****ON A/C A320-200**

ISA Conditions

1. This section gives the landing field length.

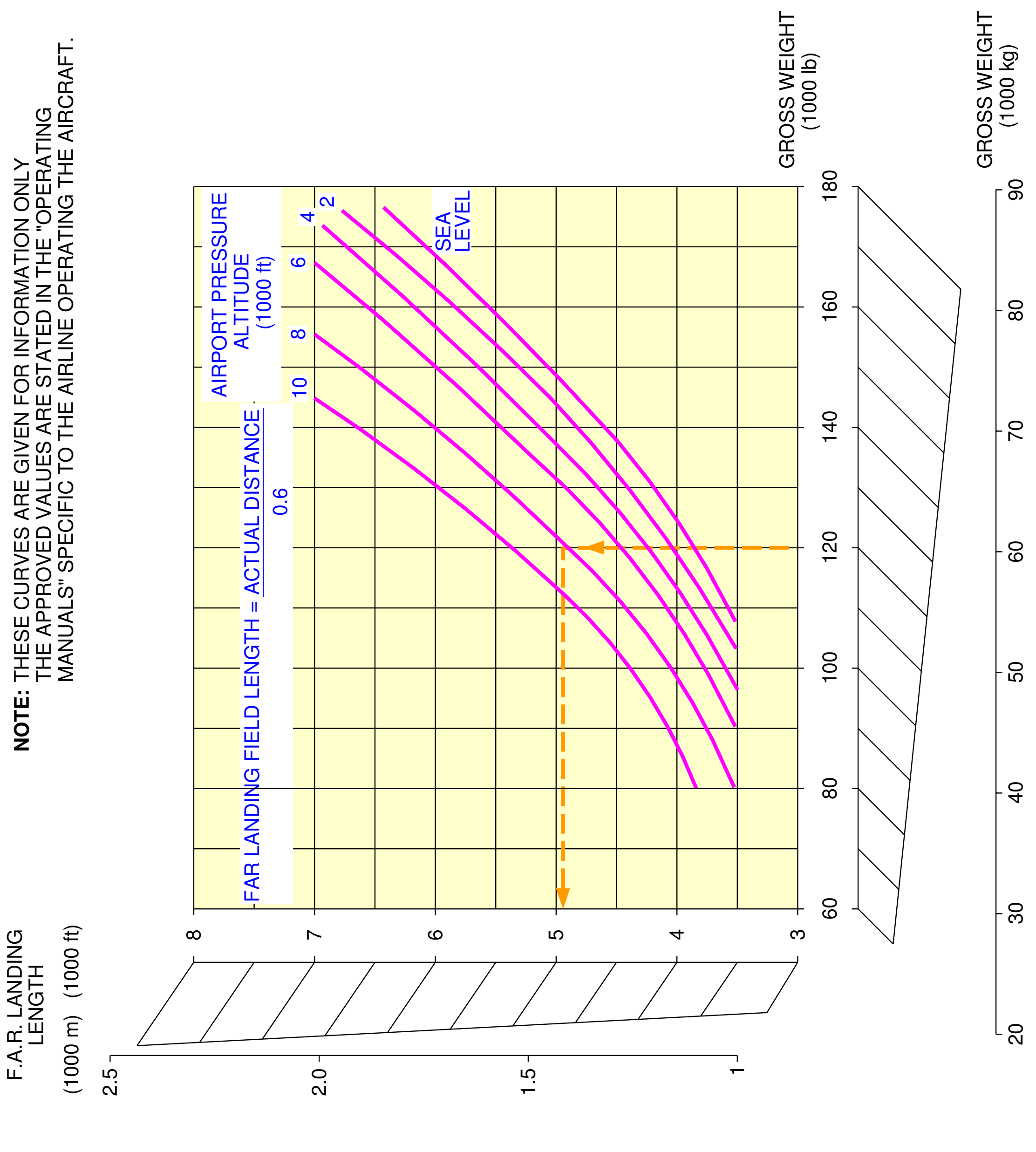
**ON A/C A320-200



N_AC_030401_1_0050101_01_00

FAR / JAR Landing Field Length
CFM56 series engine
FIGURE-3-4-1-991-005-A01

**ON A/C A320-200



N_AC_030401_1_0060101_01_00

FAR / JAR Landing Field Length
IAE V2500 series engine
FIGURE-3-4-1-991-006-A01

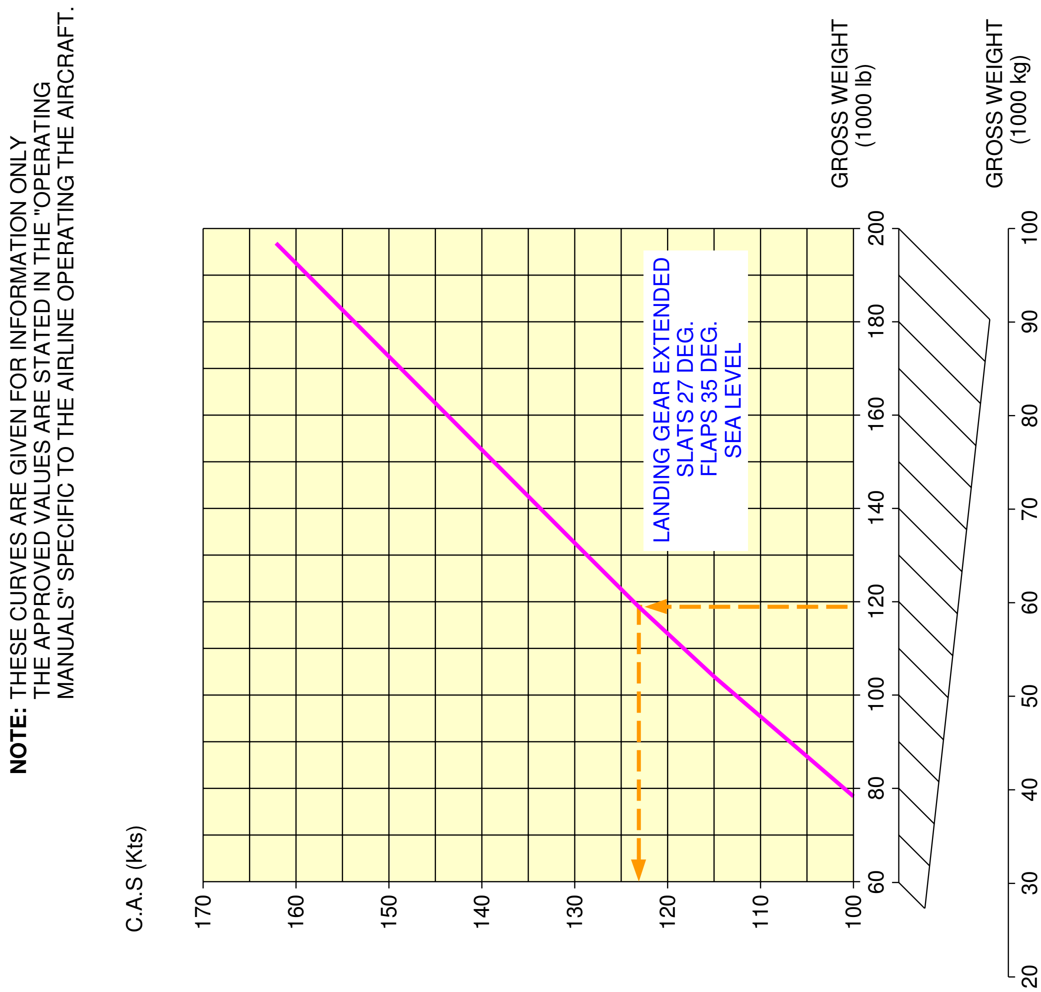
3-5-0 Final Approach Speed

****ON A/C A320-200**

Final Approach Speed

1. This section gives the final approach speed.

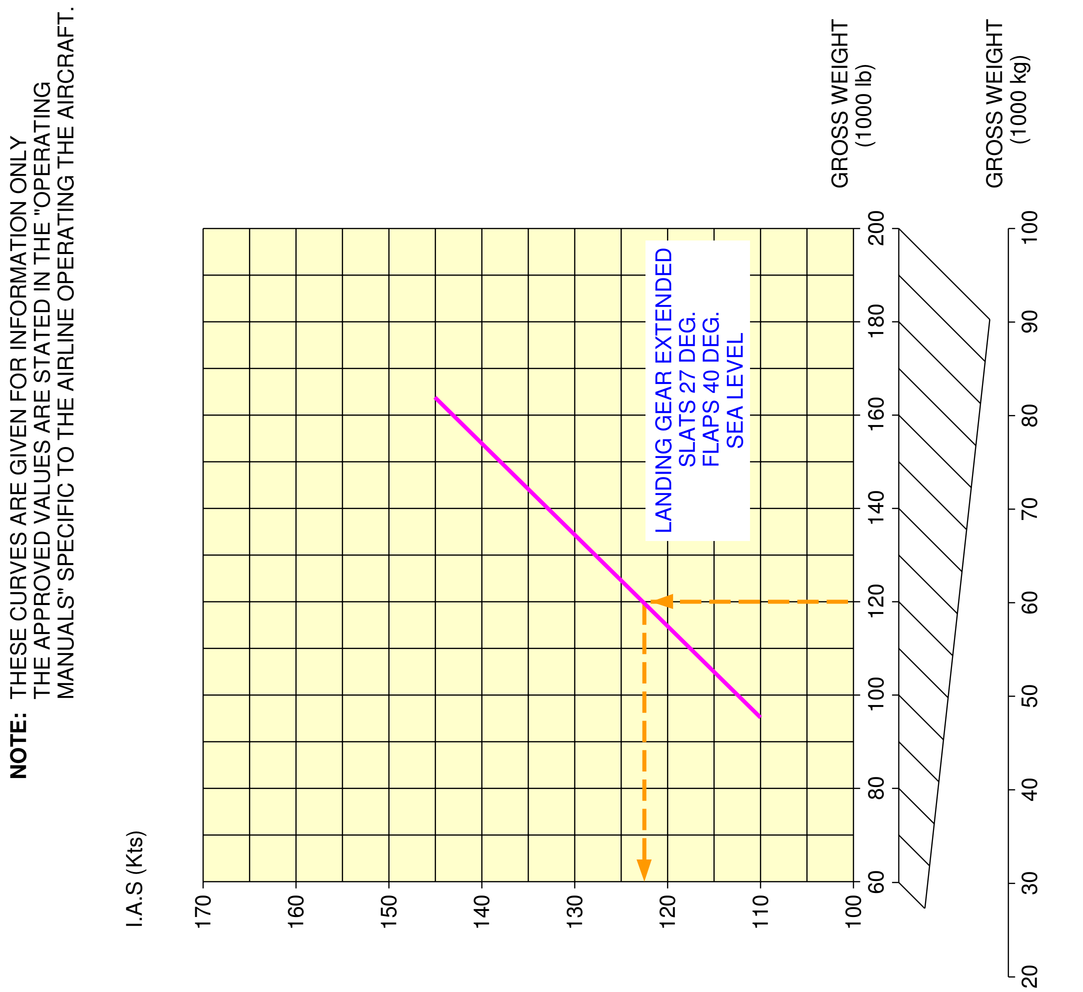
**ON A/C A320-200



N_AC_030500_1_0050101_01_00

Final Approach Speed
CFM56 series engine
FIGURE-3-5-0-991-005-A01

****ON A/C A320-200**



N_AC_030500_1_0060101_01_00

Final Approach Speed
IAE V2500 series engine
FIGURE-3-5-0-991-006-A01

GROUND MANEUVERING

4-1-0 General Information

****ON A/C A320-200**

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.

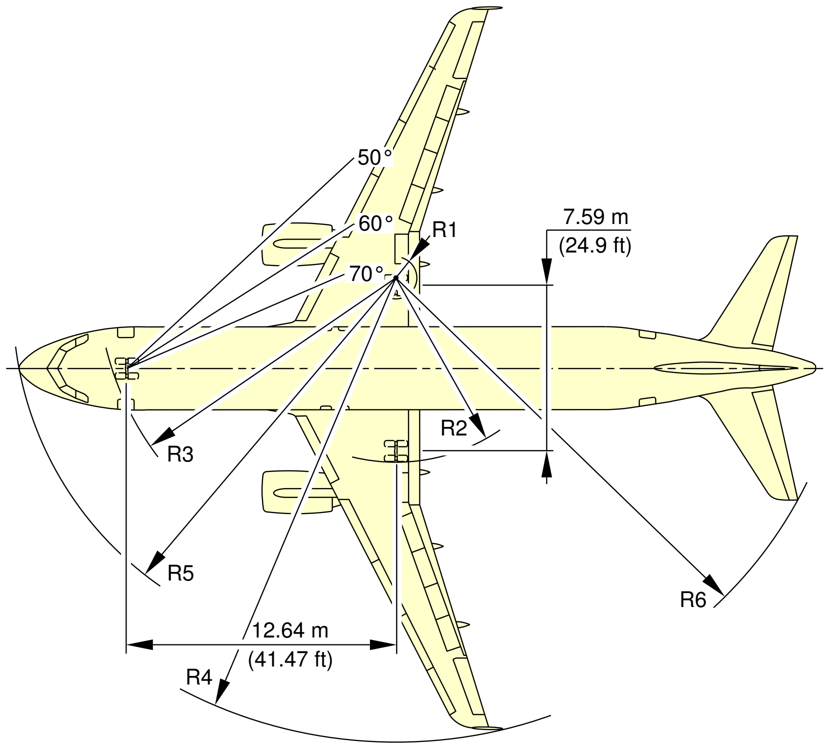
4-2-0 Turning Radii

****ON A/C A320-200**

Turning Radii

1. This section gives the turning radii.

**ON A/C A320-200



NOTE: FOR STEERING DIMENSION TABLE SEE SHEET 2.

TURN TYPE:

1. ASYMMETRIC THRUST DIFFERENTIAL BRAKING (PIVOTTING ON ONE MAIN GEAR).
2. SYMMETRIC THRUST NO BRAKING.

N_AC_040200_1_0050101_01_01

Turning Radii, No Slip Angle
Turning Radii – Dual Landing Gear
FIGURE-4-2-0-991-005-A01

**ON A/C A320-200

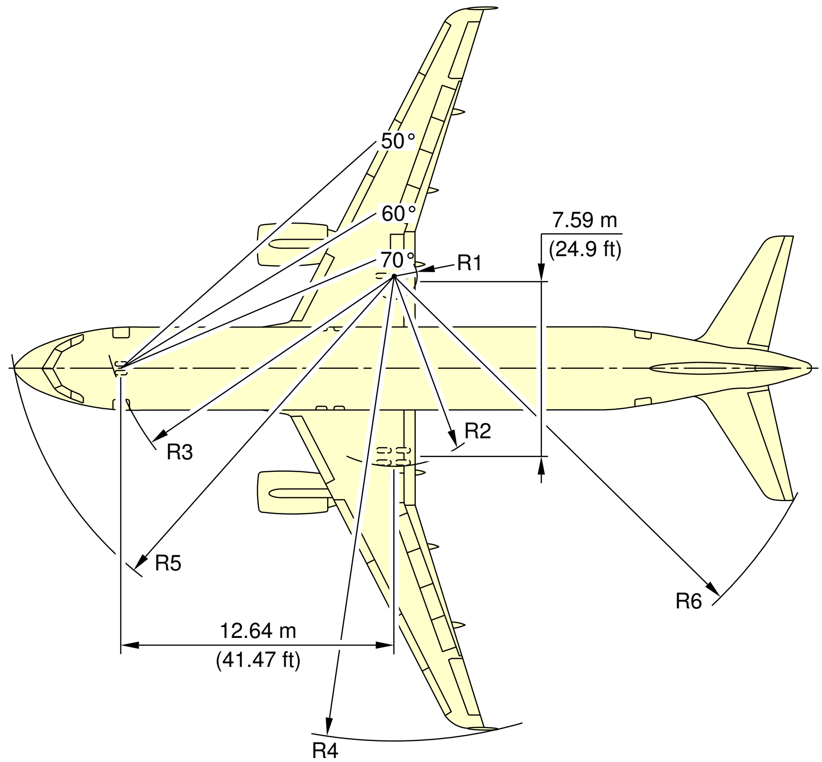
TYPE OF TURN	MAXIMUM RAMP WEIGHT		R1 RMLG		R2 LMLG		R3 NLG		R4 – WING				R5 NOSE		R6 THS	
	STEERING ANGLE (deg)	EFFECTIVE STEERING ANGLE (deg)	m	ft	m	ft	m	ft	WINGTIP FENCE m	WINGTIP FENCE ft	SHARKLET m	SHARKLET ft	m	ft	m	ft
2	20	19.5	32.6	107	40.2	132	38.2	125	52.9	174	53.8	176	39.8	131	46.0	151
2	25	24.4	24.8	81	32.3	106	30.9	101	45.1	148	46.0	151	33.0	108	39.0	128
2	30	29.3	19.4	64	27.0	89	26.2	86	39.8	131	40.7	133	28.7	94	34.4	113
2	35	34.2	15.5	51	23.1	76	22.8	75	35.9	118	36.8	121	25.7	84	31.3	103
2	40	39.0	12.5	41	20.1	66	20.4	67	32.9	108	33.8	111	23.6	77	28.9	95
2	45	43.8	10.1	33	17.6	58	18.5	61	30.5	100	31.4	103	22.1	72	27.1	89
2	50	48.6	8.0	26	15.6	51	17.1	56	28.5	94	29.4	96	20.9	69	25.7	84
2	55	53.3	6.3	21	13.9	46	16.0	52	26.8	88	27.7	91	20.1	66	24.6	81
2	60	57.9	4.8	16	12.4	41	15.1	50	25.4	83	26.2	86	19.4	64	23.7	78
2	65	62.4	3.5	12	11.1	36	14.4	47	24.1	79	24.9	82	18.9	62	22.9	75
2	70	66.8	2.4	8	9.9	33	13.9	46	22.9	75	23.7	78	18.5	61	22.3	73
2	75 (MAX)	70.2	1.5	5	9.0	30	13.6	44	22.0	72	22.9	75	18.3	60	21.8	72
1	50	48.8	8.0	26	15.5	51	17.0	56	28.4	93	29.3	96	20.9	68	25.6	84
1	55	53.6	6.2	20	13.8	45	15.9	52	26.7	88	27.6	90	20.0	66	24.5	80
1	60	58.4	4.7	15	12.3	40	15.0	49	25.2	83	26.0	85	19.3	63	23.6	77
1	65	63.1	3.3	11	10.9	36	14.3	47	23.9	78	24.7	81	18.8	62	22.8	75
1	70	67.8	2.1	7	9.6	32	13.8	45	22.6	74	23.5	77	18.4	61	22.1	73
1	75 (MAX)	71.9	1.1	4	8.6	28	13.4	44	21.6	71	22.5	74	18.2	60	21.6	71

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.

N_AC_040200_1_0100101_01_00

Turning Radii, No Slip Angle
Turning Radii – Dual Landing Gear
FIGURE-4-2-0-991-010-A01

**ON A/C A320-200



NOTE: FOR STEERING DIMENSION TABLE SEE SHEET 2.

N_AC_040200_1_0060101_01_02

Turning Radii, No Slip Angle
Turning Radii – Bogie Landing Gear
FIGURE-4-2-0-991-006-A01

****ON A/C A320-200**

STEERING ANGLE (deg)	R1		R2		R3		R4		R5		R6	
	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft
30	17.55	58	26.23	86	25.64	84	39.1	128	28.16	92	33.96	111
35	13.71	45	22.39	73	22.40	73	35.28	116	25.29	83	30.86	101
40	10.72	35	19.40	64	20.02	66	32.32	106	23.25	76	28.56	94
45	8.3	27	16.98	56	18.24	60	29.92	98	21.76	71	26.81	88
50	6.27	21	14.95	49	16.86	55	27.90	92	20.65	68	25.42	83
55	4.51	15	13.19	43	15.79	52	26.17	86	19.80	65	24.29	80
60	2.96	10	11.64	38	14.95	49	24.64	81	19.16	63	23.36	77
65	1.55	5	10.23	34	14.31	47	23.26	78	18.67	61	22.58	74
70	0.26	1	8.94	29	13.81	45	21.99	72	18.3	60	21.91	72

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Turning Radii, No Slip Angle
Turning Radii – Bogie Landing Gear
FIGURE-4-2-0-991-011-A01

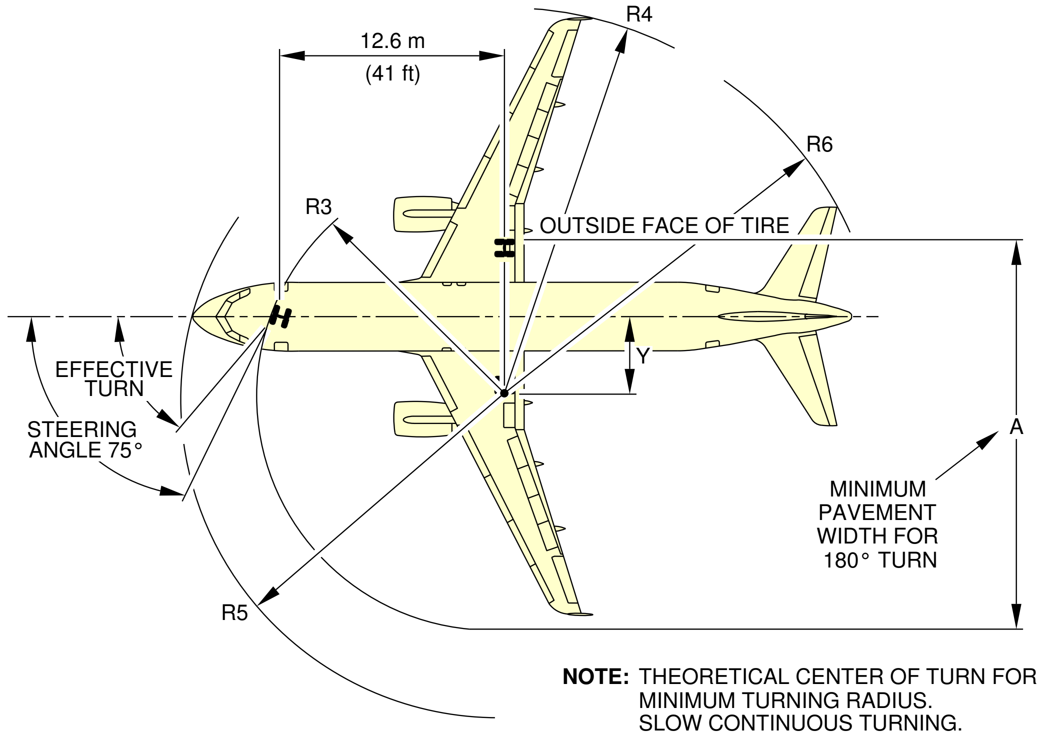
4-3-0 Minimum Turning Radii

****ON A/C A320-200**

Minimum Turning Radii

1. This section gives the minimum turning radii.

**ON A/C A320-200



NOTE: THEORETICAL CENTER OF TURN FOR MINIMUM TURNING RADIUS.
SLOW CONTINUOUS TURNING.
APPROXIMATELY IDLE THRUST ON ALL ENGINES.
NO DIFFERENTIAL BRAKING.
NOSE GEAR RADII TRACK MEASURED FROM OUTSIDE FACE OF TIRE.

DUAL LANDING GEAR

TYPE OF TURN	STEERING ANGLE (DEG)	EFFECTIVE STEERING ANGLE		Y	A	R3 NLG	R4 WING		R5 NOSE	R6 THS
							WING TIP FENCE	SHARKLET		
1	75 (MAX)	71.9°	m	4.1	22.3	13.4	21.6	22.5	18.2	21.6
			ft	14	73	44	71	74	60	71
2	75 (MAX)	70.2°	m	4.5	22.8	13.6	22.0	22.9	18.3	21.8
			ft	15	75	44	72	75	60	72

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

BOGIE LANDING GEAR

STEERING ANGLE (DEG)	EFFECTIVE STEERING ANGLE		Y	A	R3 NLG	R4 WING	R5 NOSE	R6 THS
						WING TIP FENCE		
75 (MAX)	70.0°	m	4.6	22.8	13.8	22.0	18.3	21.9
		ft	15	75	45	72	60	72

N_AC_040300_1_0030101_01_01

Minimum Turning Radii
FIGURE-4-3-0-991-003-A01

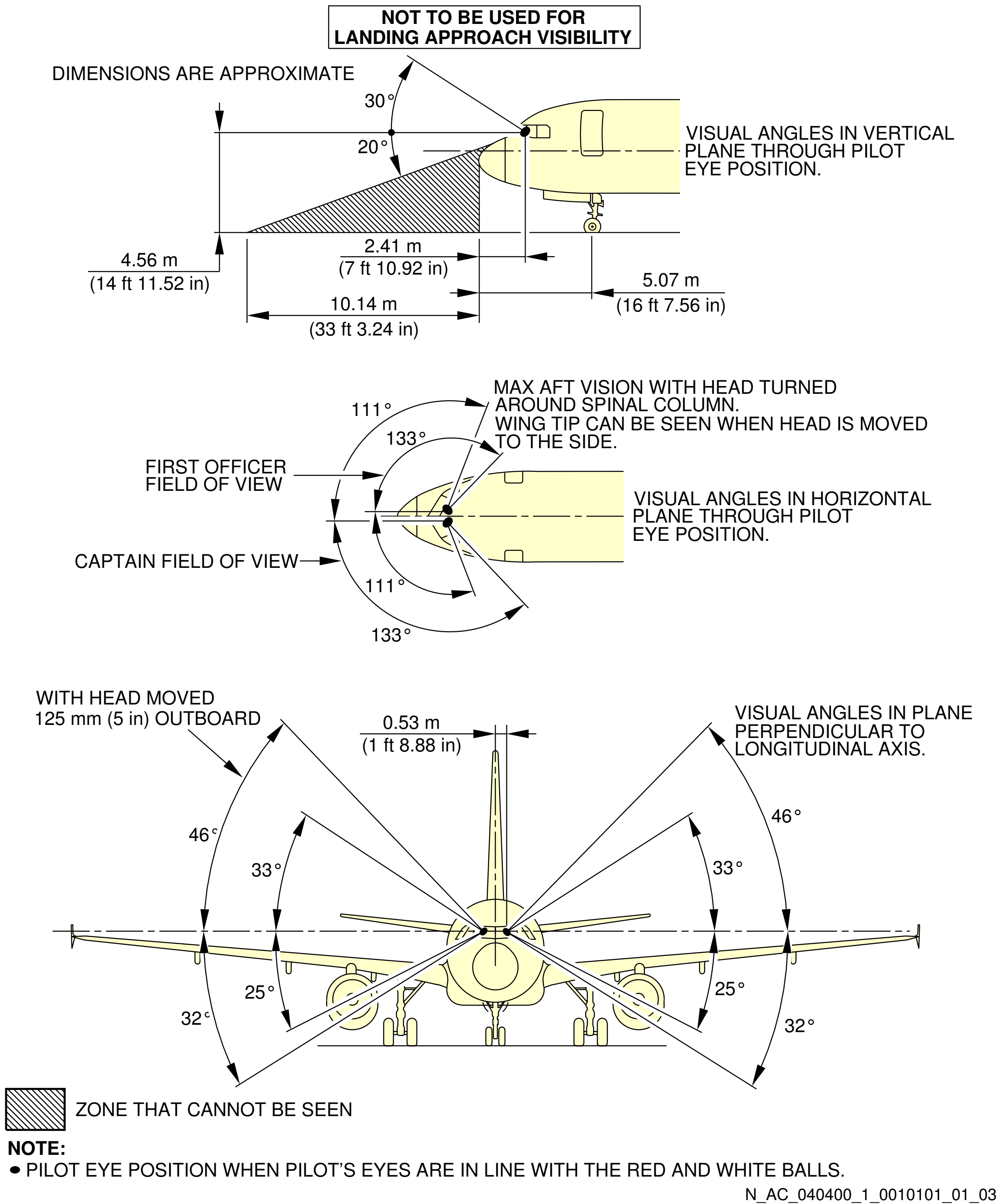
4-4-0 Visibility from Cockpit in Static Position

****ON A/C A320-200**

Visibility from Cockpit in Static Position

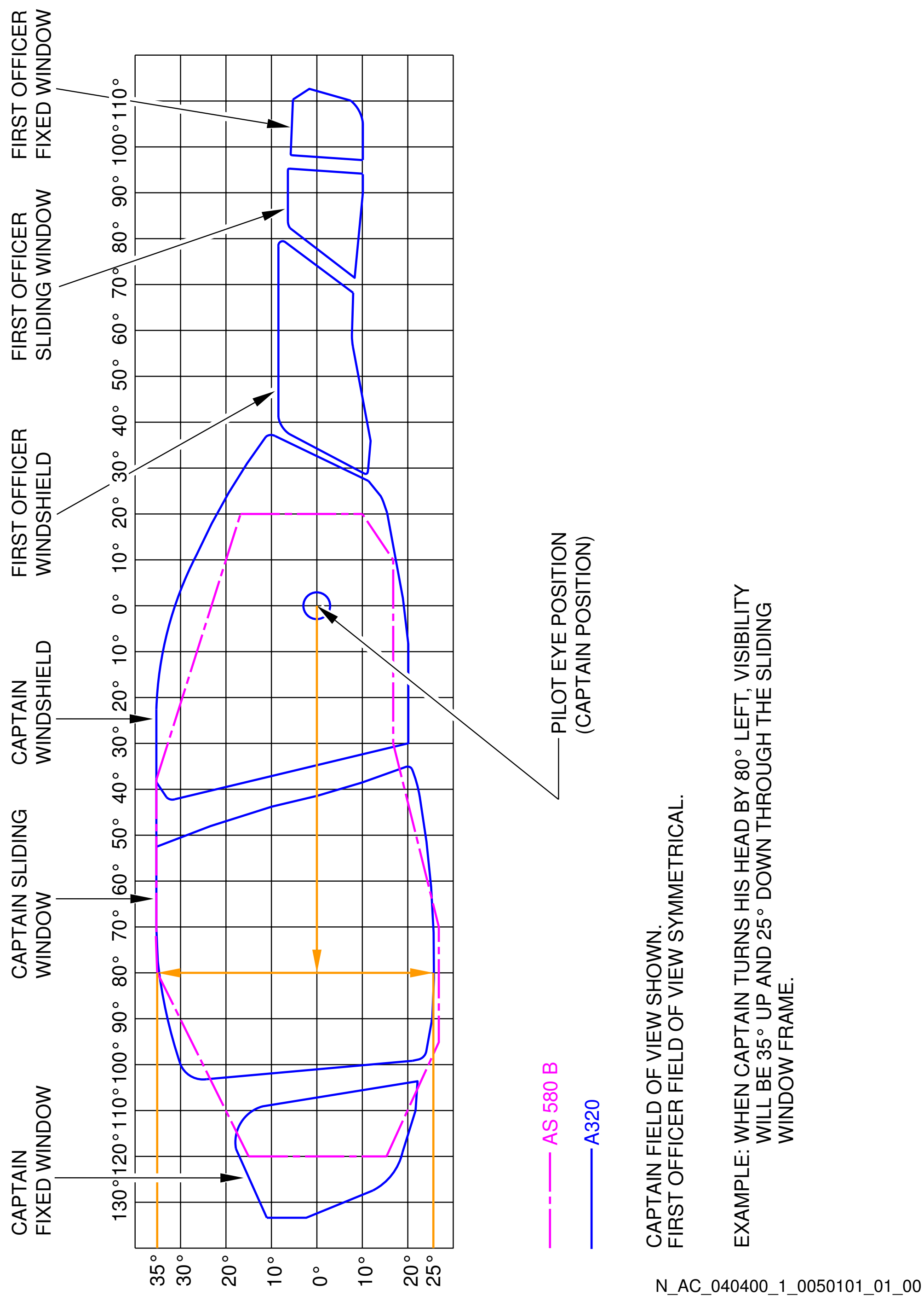
1. This section gives the visibility from cockpit in static position.

**ON A/C A320-200



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

****ON A/C A320-200**



Binocular Visibility Through Windows from Captain Eye Position
FIGURE-4-4-0-991-005-A01

4-5-0 Runway and Taxiway Turn Paths

****ON A/C A320-200**

Runway and Taxiway Turn Paths

1. Runway and Taxiway Turn Paths.

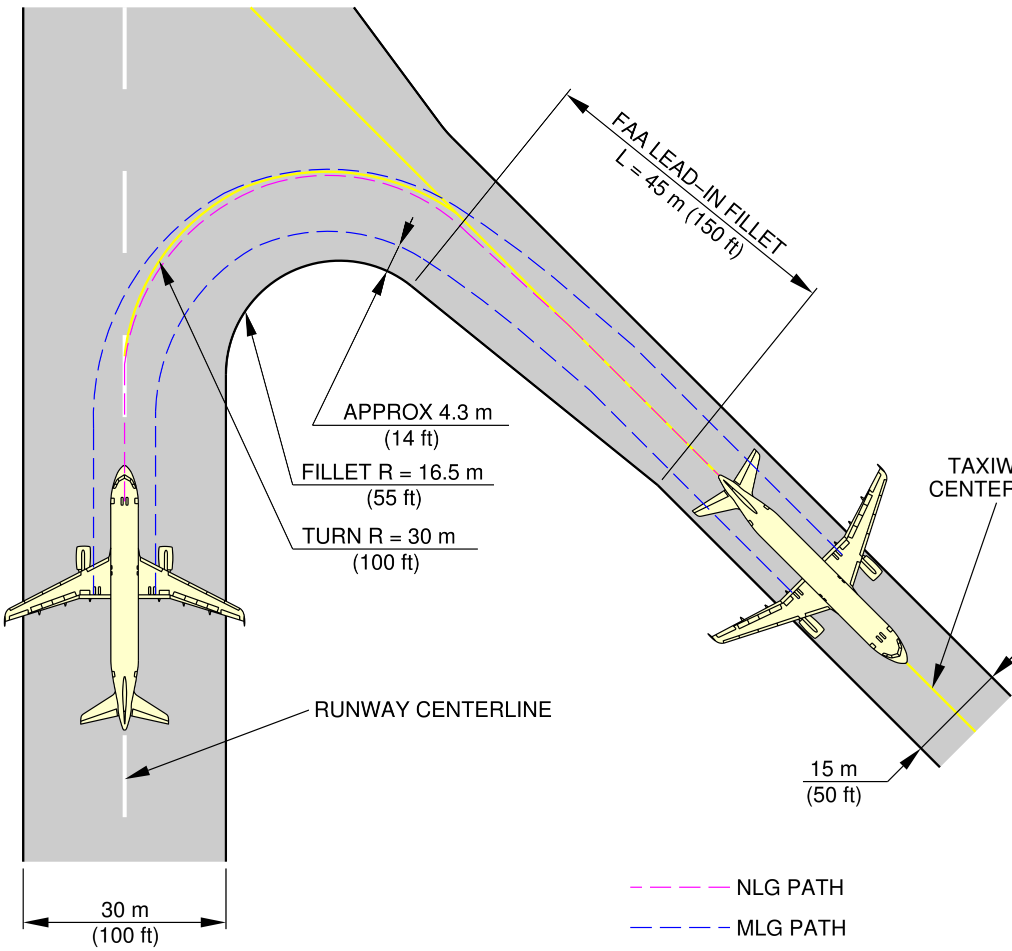
4-5-1 135° Turn - Runway to Taxiway

****ON A/C A320-200**

<u>135° Turn - Runway to Taxiway</u>

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

**ON A/C A320-200

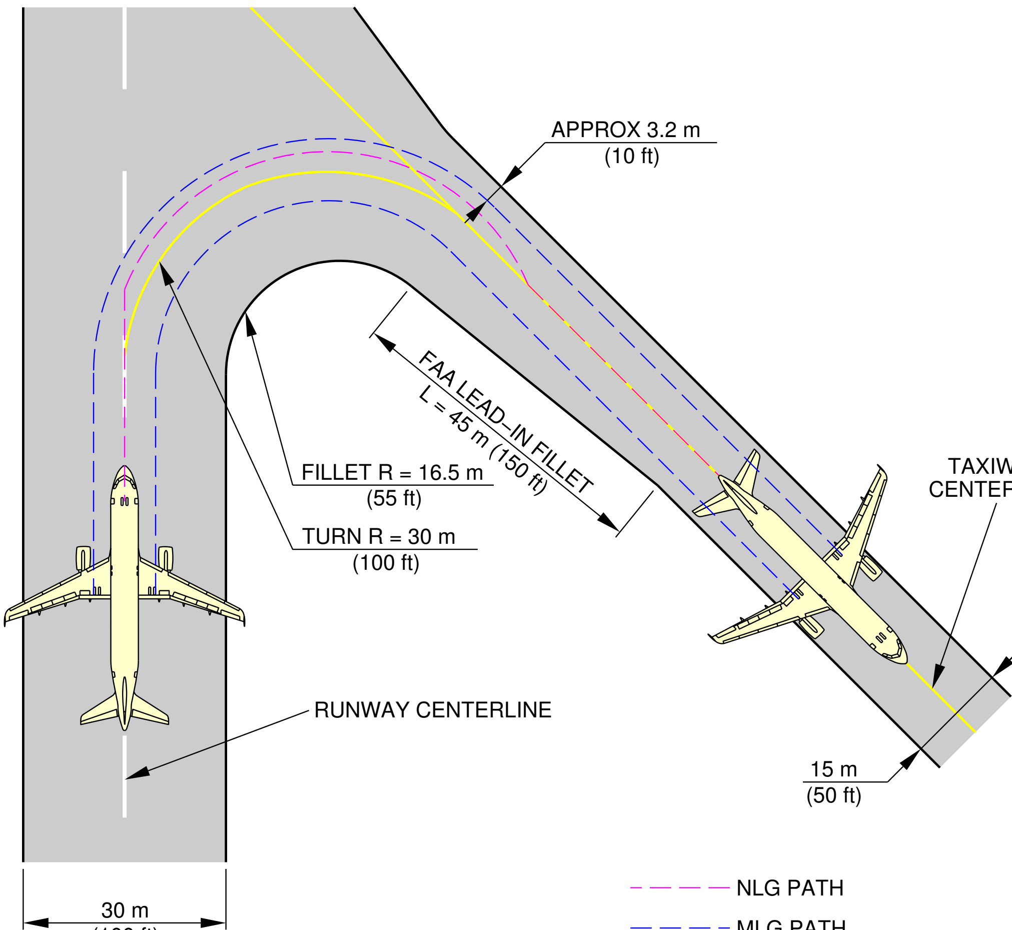


NOTE: FAA GROUP III FACILITIES.

N_AC_040501_1_0040101_01_01

135° Turn - Runway to Taxiway
Cockpit Over Centerline Method
FIGURE-4-5-1-991-004-A01

**ON A/C A320-200



NOTE: FAA GROUP III FACILITIES.

N_AC_040501_1_0120101_01_00

135° Turn - Runway to Taxiway
Judgemental Oversteering Method
FIGURE-4-5-1-991-012-A01

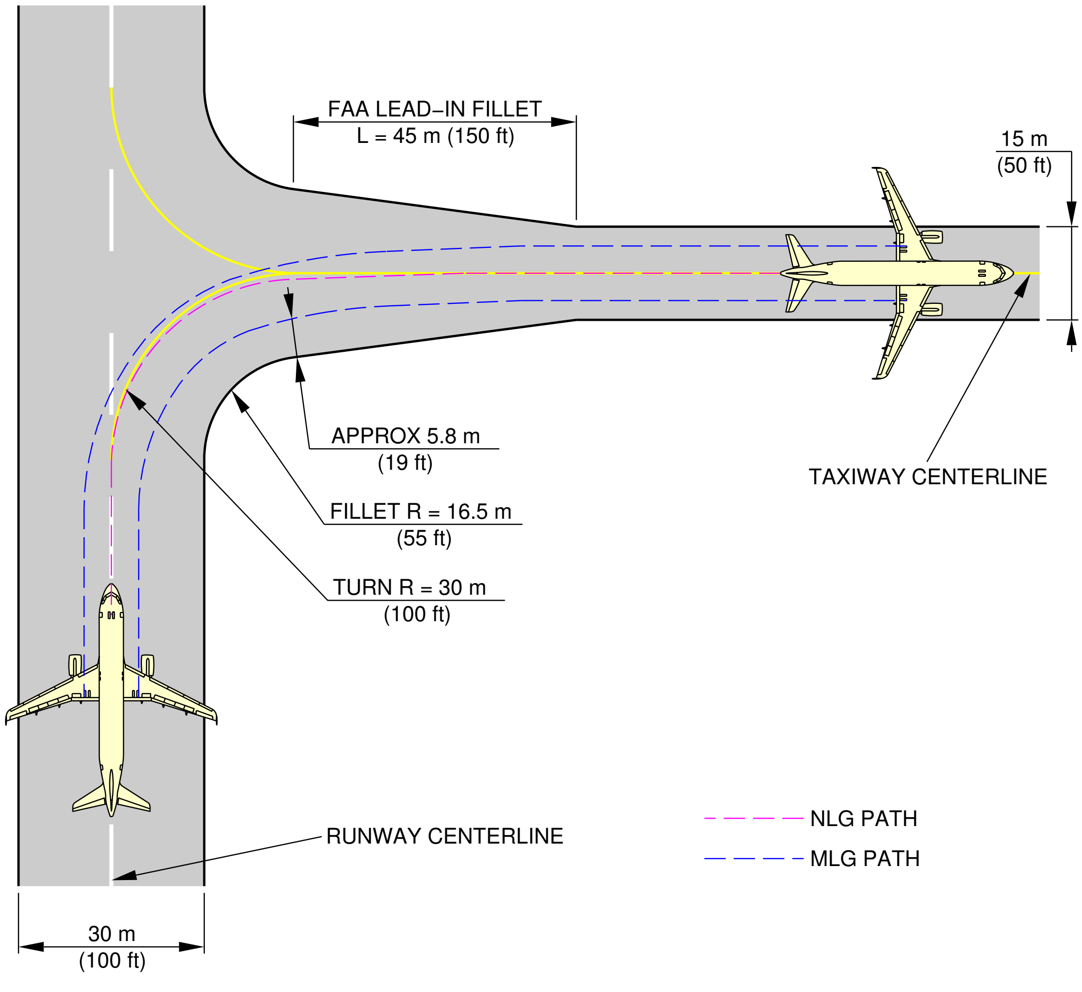
4-5-2 90° Turn - Runway to Taxiway

****ON A/C A320-200**

90° Turn - Runway to Taxiway

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

**ON A/C A320-200

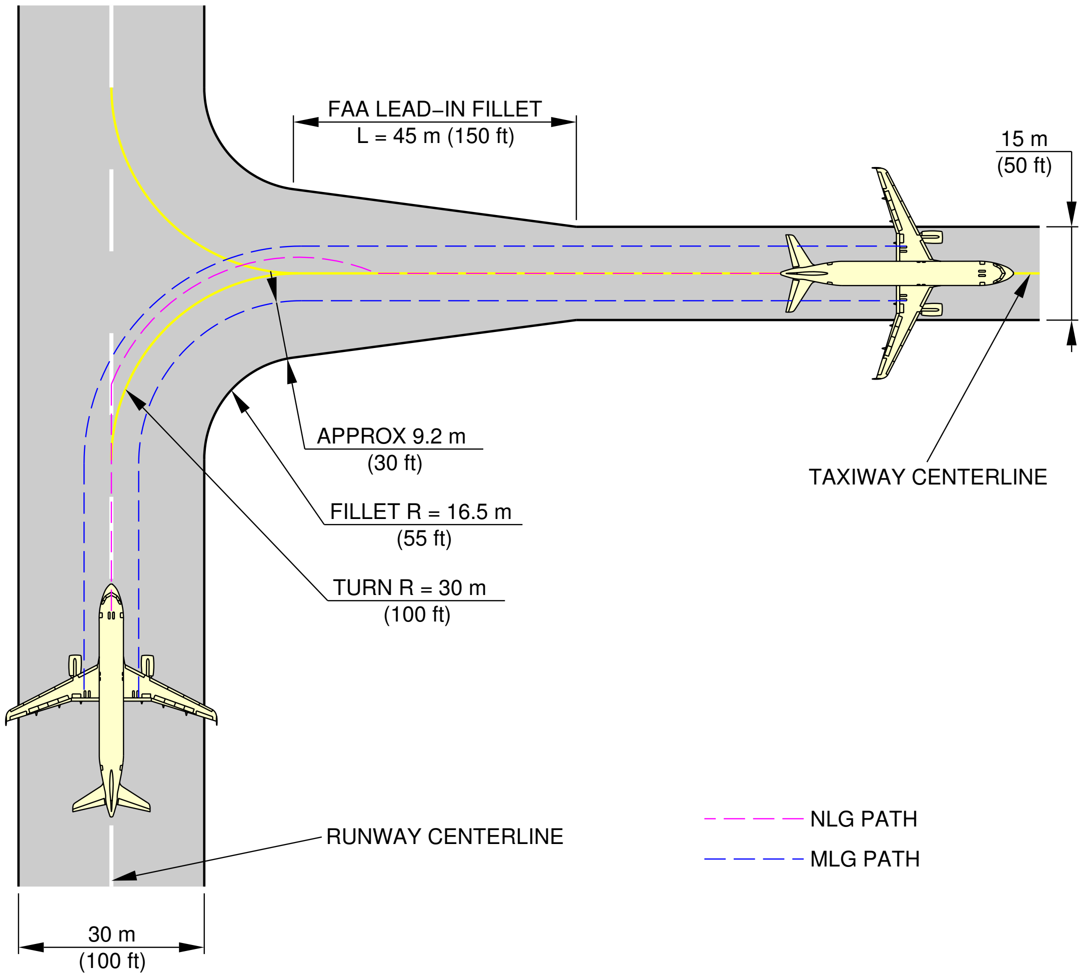


NOTE: FAA GROUP III FACILITIES.

N_AC_040502_1_0040101_01_01

90° Turn - Runway to Taxiway
Cockpit Over Centerline Method
FIGURE-4-5-2-991-004-A01

**ON A/C A320-200



NOTE: FAA GROUP III FACILITIES.

N_AC_040502_1_0090101_01_00

90° Turn - Runway to Taxiway
Judgemental Oversteering Method
FIGURE-4-5-2-991-009-A01

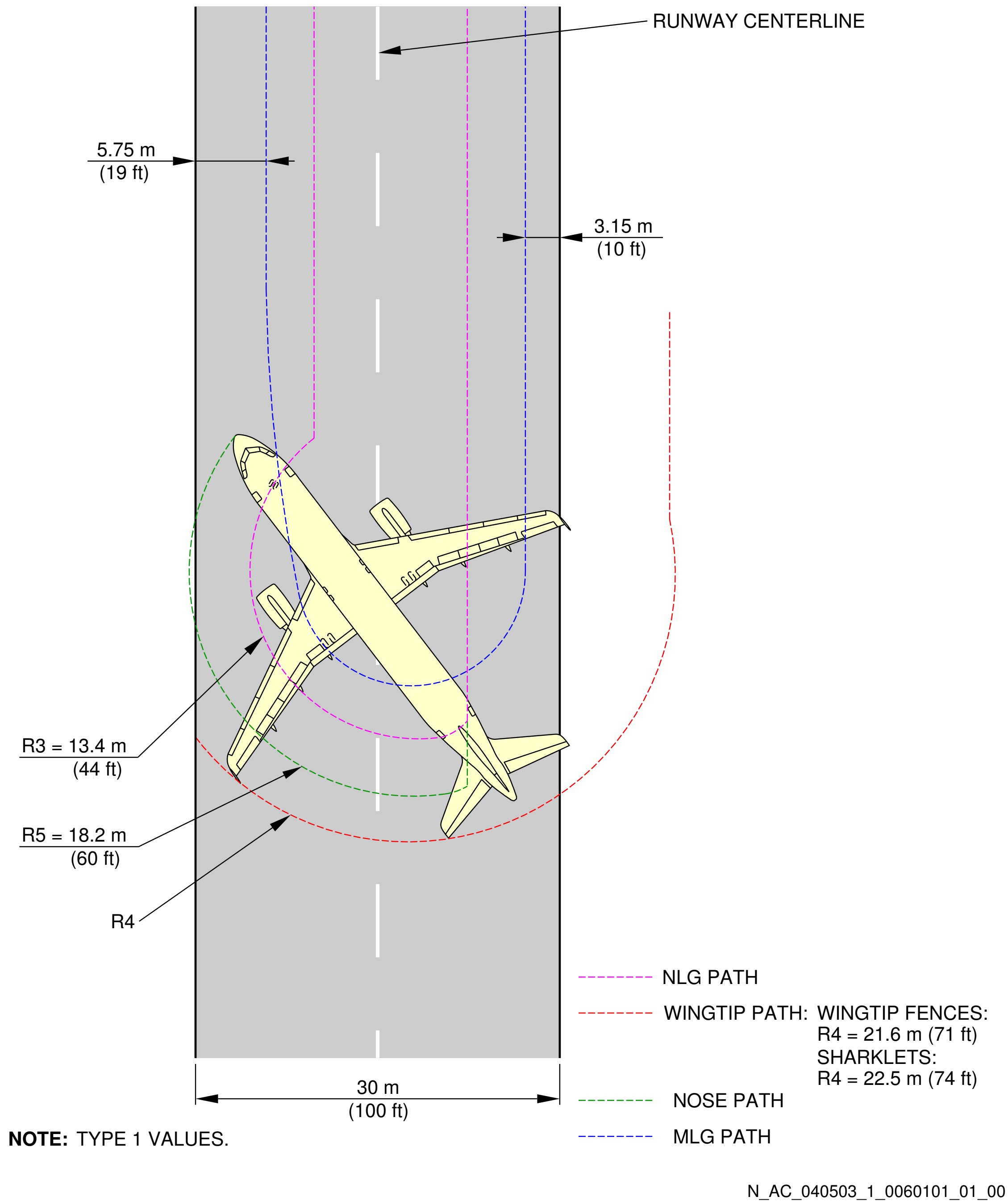
4-5-3 180° Turn on a Runway

****ON A/C A320-200**

180° Turn on a Runway

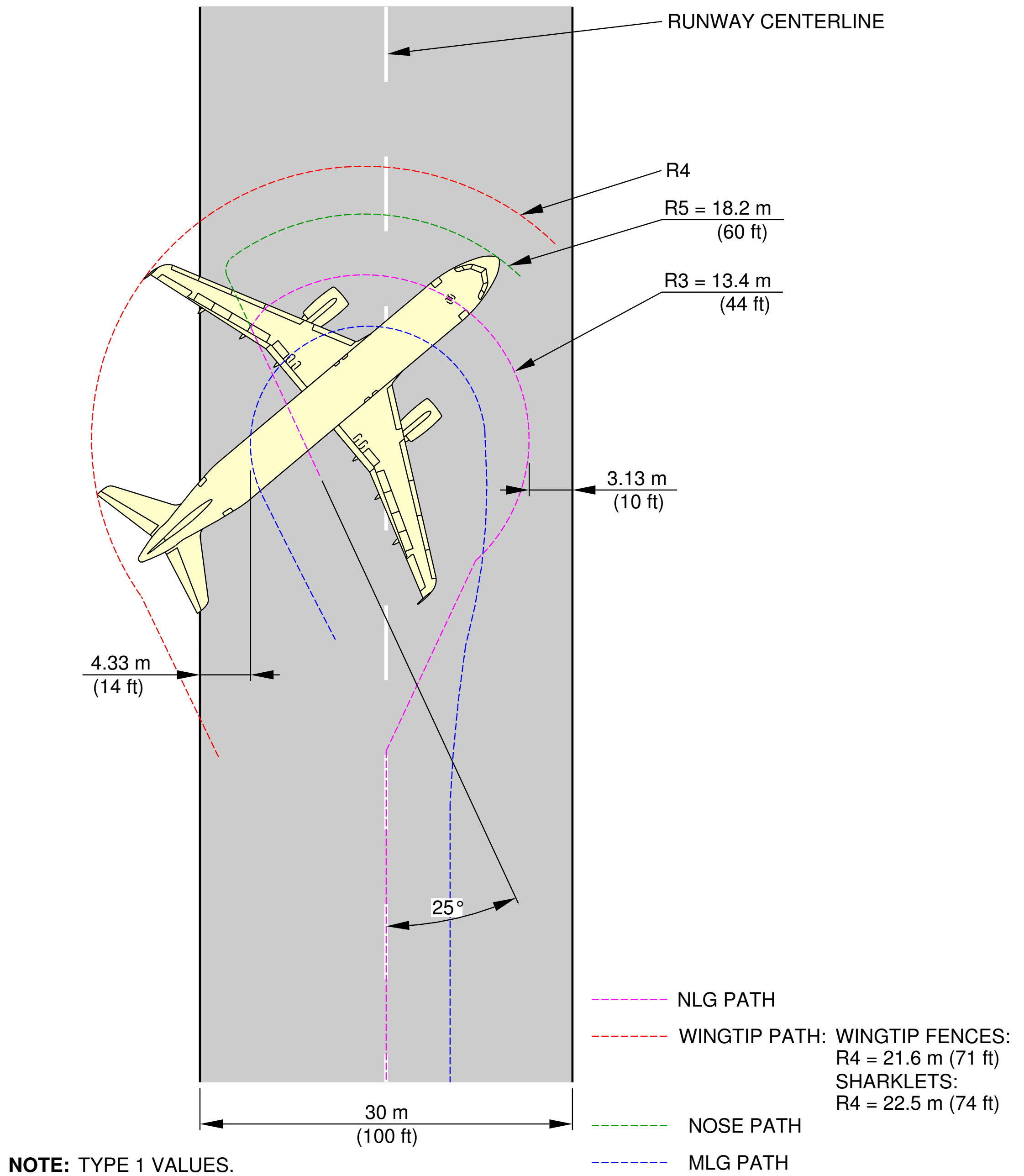
1. This section gives the 180° turn on a runway.

**ON A/C A320-200



180° Turn on a Runway
Edge of Runway Method (Sheet 1 of 2)
FIGURE-4-5-3-991-006-A01

**ON A/C A320-200



180° Turn on a Runway
Center of Runway Method (Sheet 2 of 2)
FIGURE-4-5-3-991-006-A01

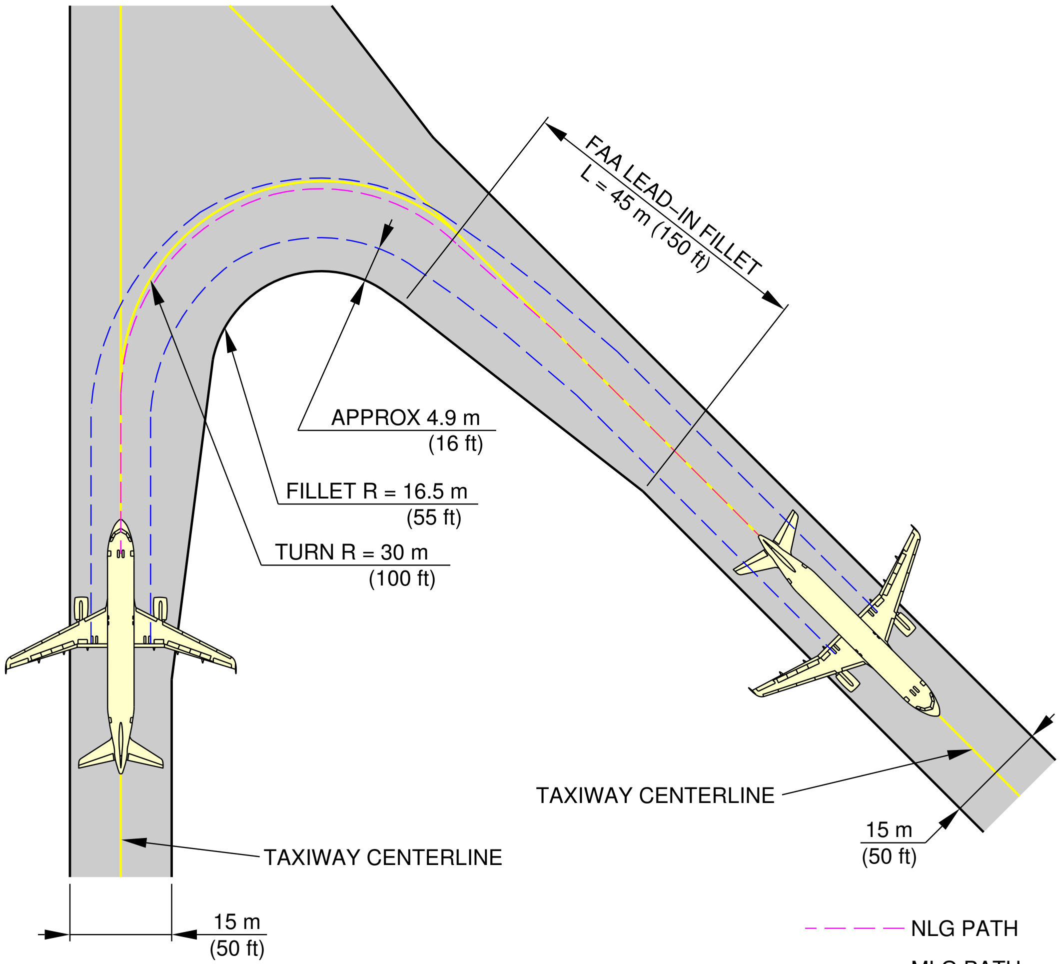
4-5-4 135° Turn - Taxiway to Taxiway

**ON A/C A320-200

135° Turn - Taxiway to Taxiway

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

**ON A/C A320-200

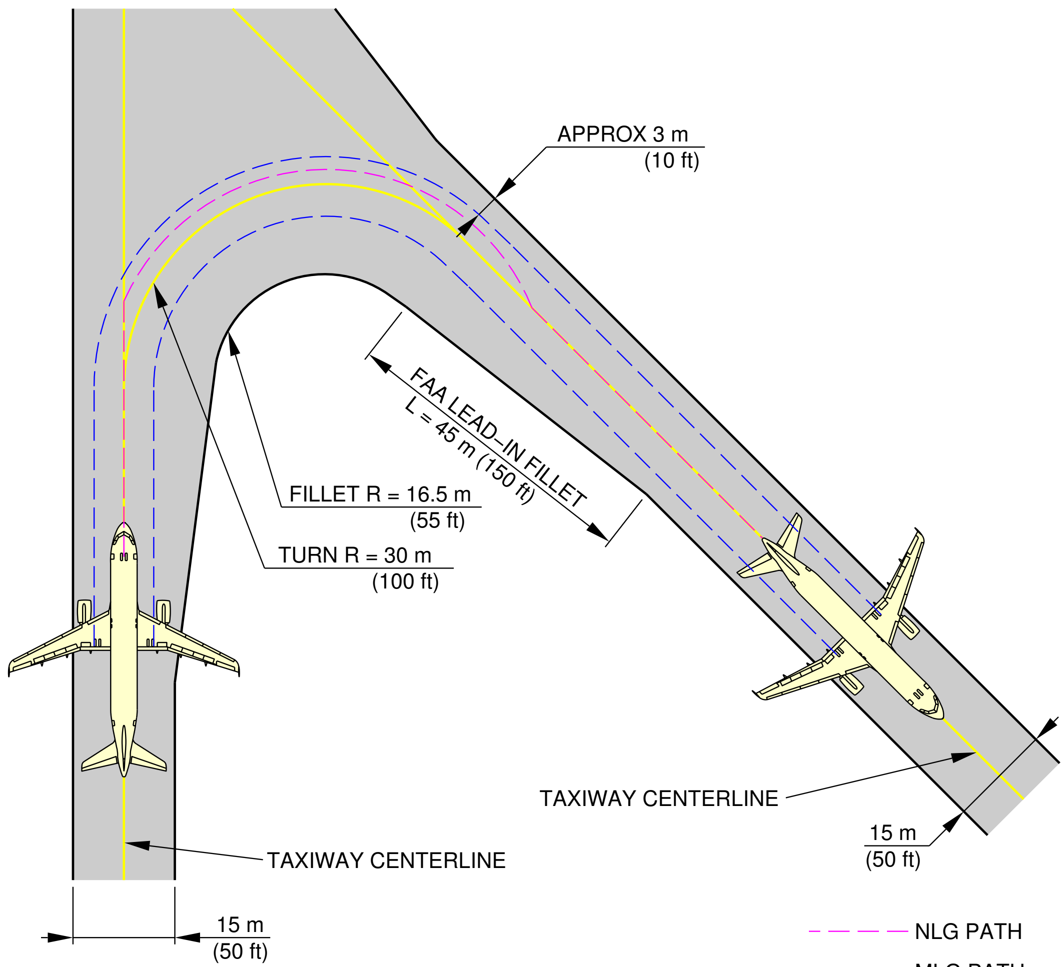


NOTE: FAA GROUP III FACILITIES

N_AC_040504_1_0060101_01_00

135° Turn - Taxiway to Taxiway
Cockpit Over Centerline Method (Sheet 1 of 2)
FIGURE-4-5-4-991-006-A01

**ON A/C A320-200



NOTE: FAA GROUP III FACILITIES

N_AC_040504_1_0060102_01_00

135° Turn - Taxiway to Taxiway
Judgemental Oversteering Method (Sheet 2 of 2)
FIGURE-4-5-4-991-006-A01

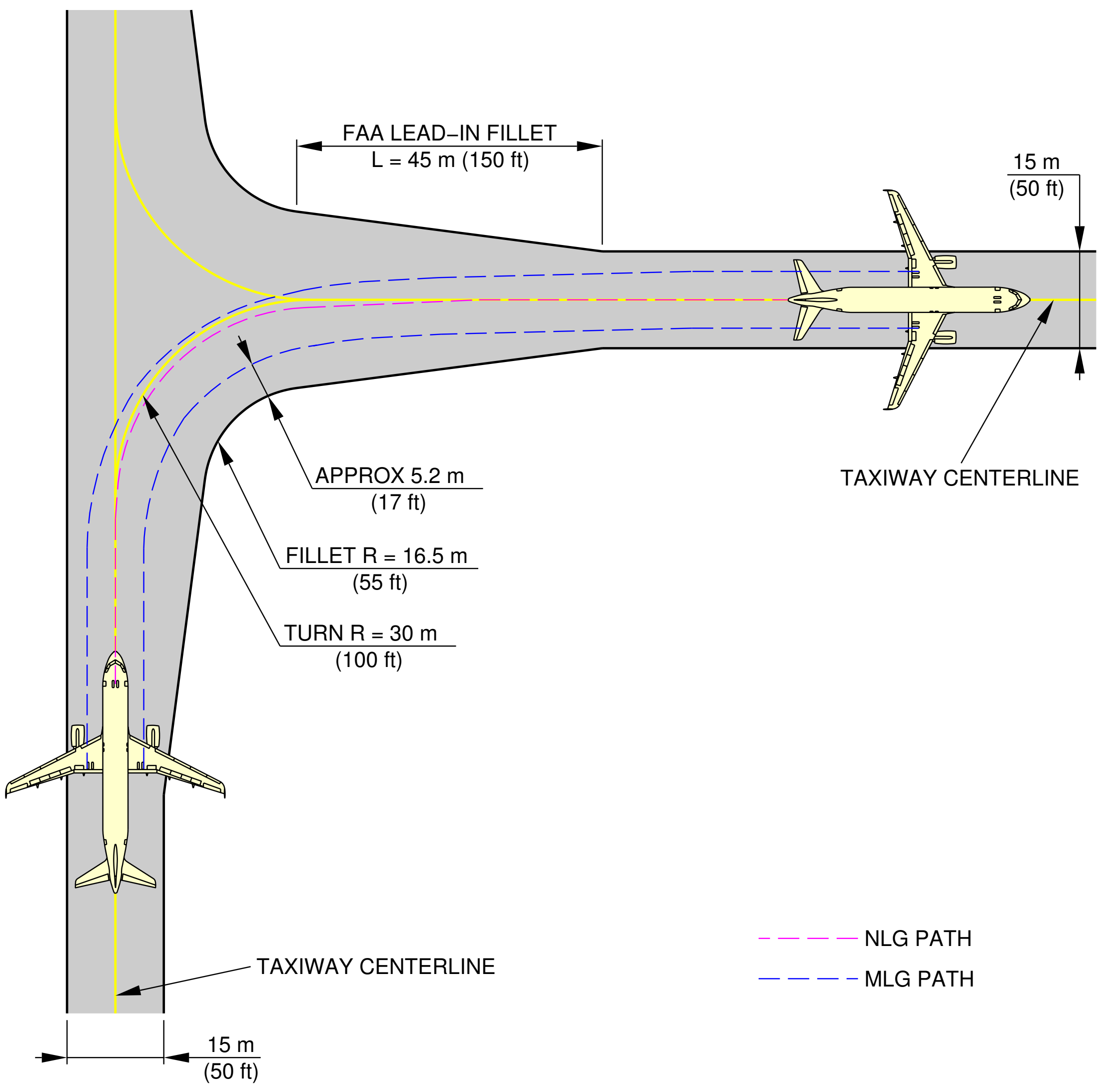
4-5-5 90° Turn - Taxiway to Taxiway

****ON A/C A320-200**

90° Turn - Taxiway to Taxiway

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

**ON A/C A320-200

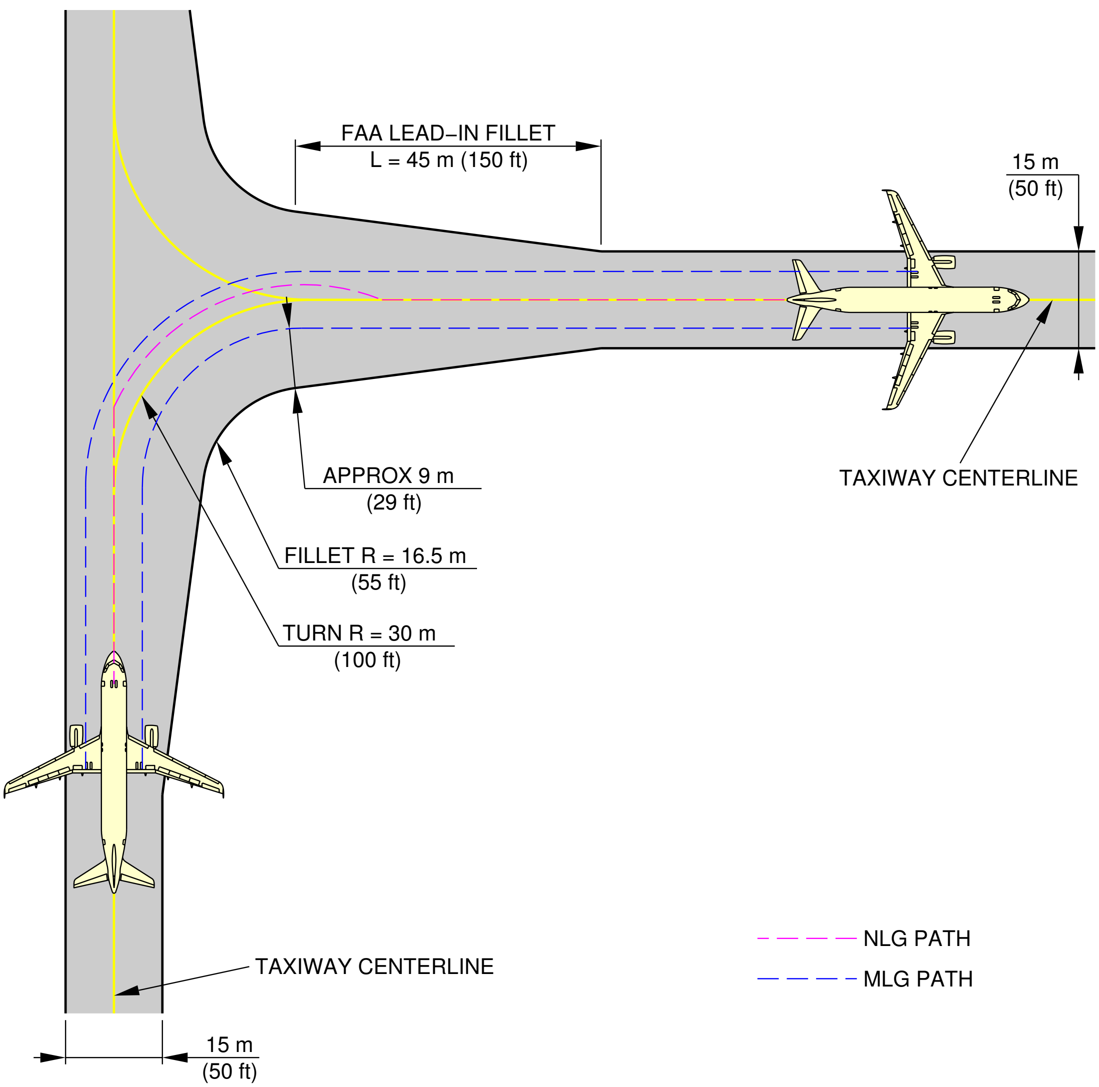


NOTE: FAA GROUP III FACILITIES.

N_AC_040505_1_0020101_01_01

90˚ Turn - Taxiway to Taxiway
Cockpit Over Centerline Method (Sheet 1 of 2)
FIGURE-4-5-5-991-002-A01

**ON A/C A320-200



NOTE: FAA GROUP III FACILITIES.

N_AC_040505_1_0020102_01_00

90° Turn - Taxiway to Taxiway
Judgemental Oversteering Method (Sheet 2 of 2)
FIGURE-4-5-5-991-002-A01

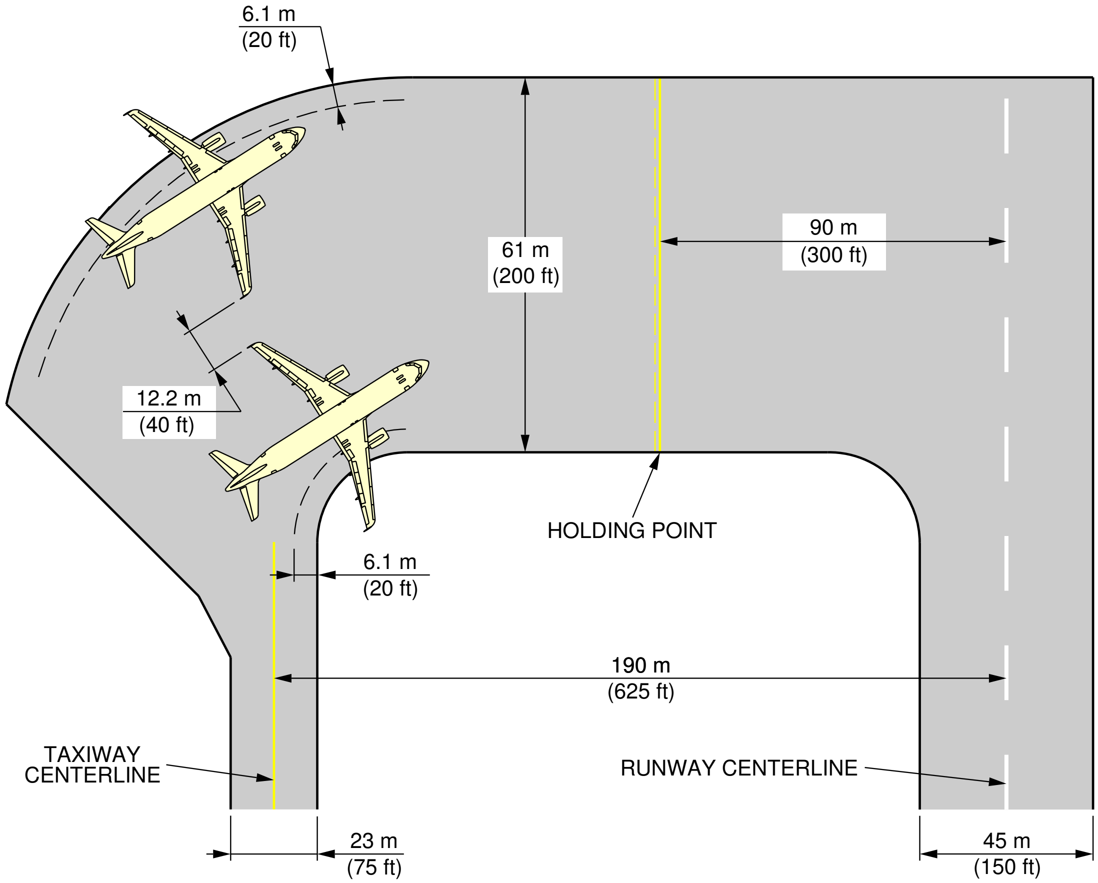
4-6-0 Runway Holding Bay (Apron)

****ON A/C A320-200**

Runway Holding Bay (Apron)

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

**ON A/C A320-200



NOTE: COORDINATE WITH USING AIRLINE FOR SPECIFIC PLANNED OPERATING PROCEDURES.

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Runway Holding Bay (Apron)
FIGURE-4-6-0-991-003-A01

TERMINAL SERVICING

5-0-0 TERMINAL SERVICING

****ON A/C A320-200**

Terminal Servicing

1. General

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.
- Section 5.2 shows the minimum turnaround schedules for full servicing arrangements.
- Section 5.3 shows the minimum turnaround schedule for reduced servicing arrangements.
- 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 Servicing Arrangements

****ON A/C A320-200**

Airplane Servicing Arrangements

1. General

   This chapter 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 chart for full servicing is given in section 5.2.
   The associated turnaround chart for minimum servicing arrangement is given in section 5.3.

5-1-1 Symbols Used on Servicing Diagrams

****ON A/C A320-200**

Symbols Used on Servicing Diagrams

1. This table gives the symbols used on servicing diagrams.

Ground Support Equipment	
AC	AIR CONDITIONING UNIT
AS	AIR STARTING 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
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

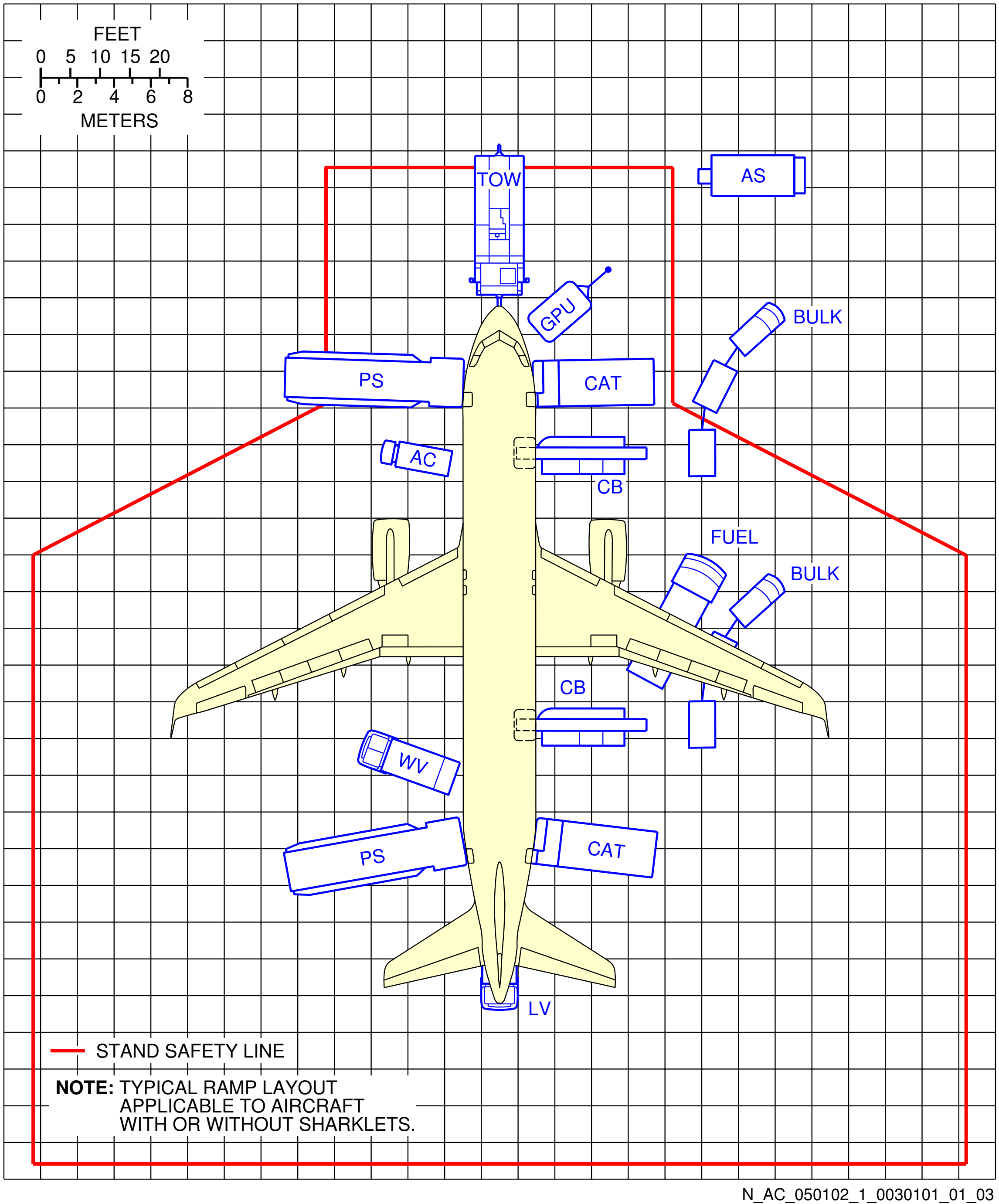
****ON A/C A320-200**

Typical Ramp Layout - Open Apron

1. This section gives the typical servicing arrangement for pax version (Open Apron).

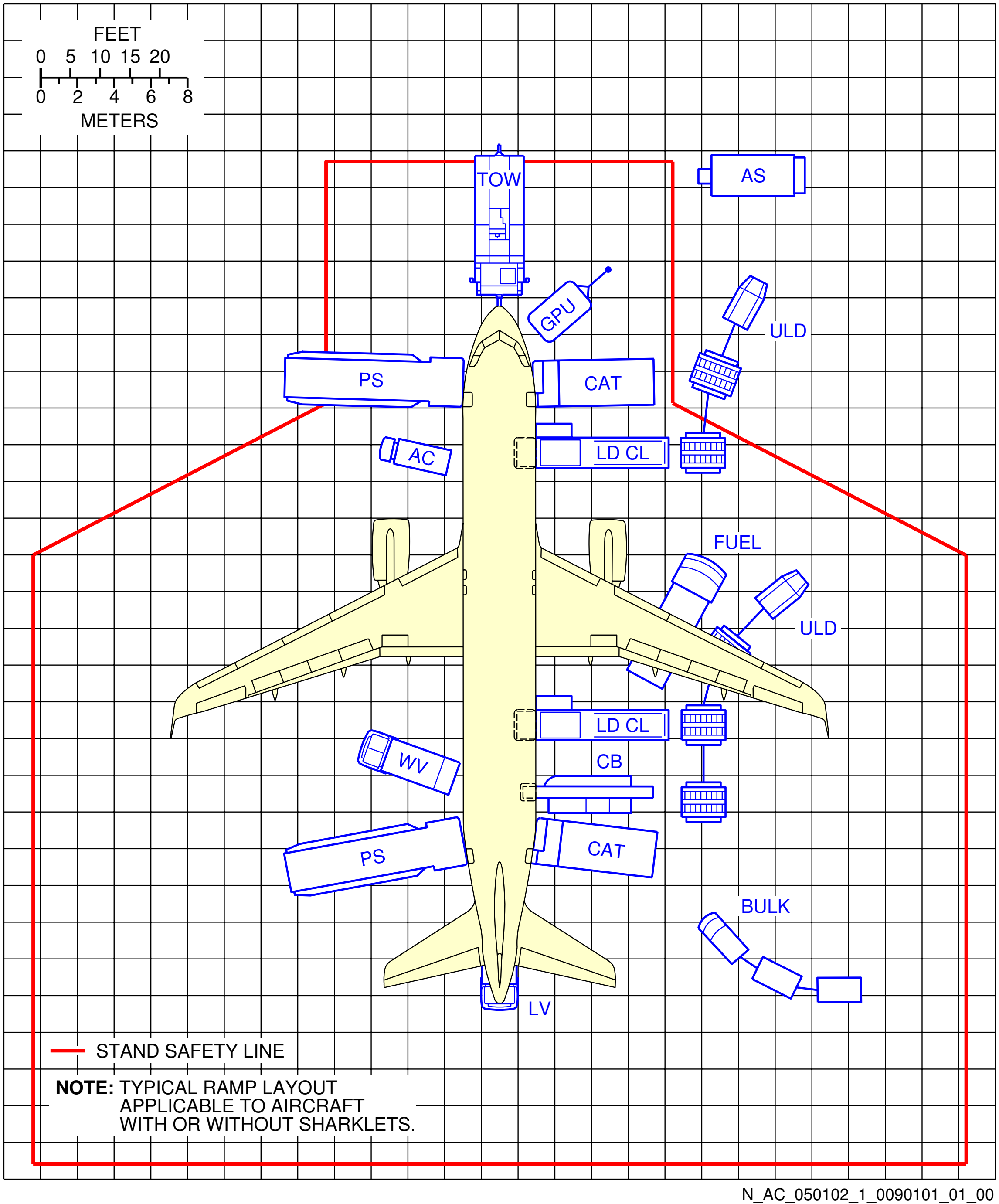
   The Stand Safety Line delimits the Aircraft Safety Area (minimum distance of 7.5 m from the aircraft). No vehicle must be parked in this area before complete stop of the aircraft (wheel chocks in position on landing gears).

**ON A/C A320-200



Typical Ramp Layout
Open Apron - Bulk Loading
FIGURE-5-1-2-991-003-A01

**ON A/C A320-200



Typical Ramp Layout
Open Apron - ULD Loading
FIGURE-5-1-2-991-009-A01

5-1-3 Typical Ramp Layout - Gate

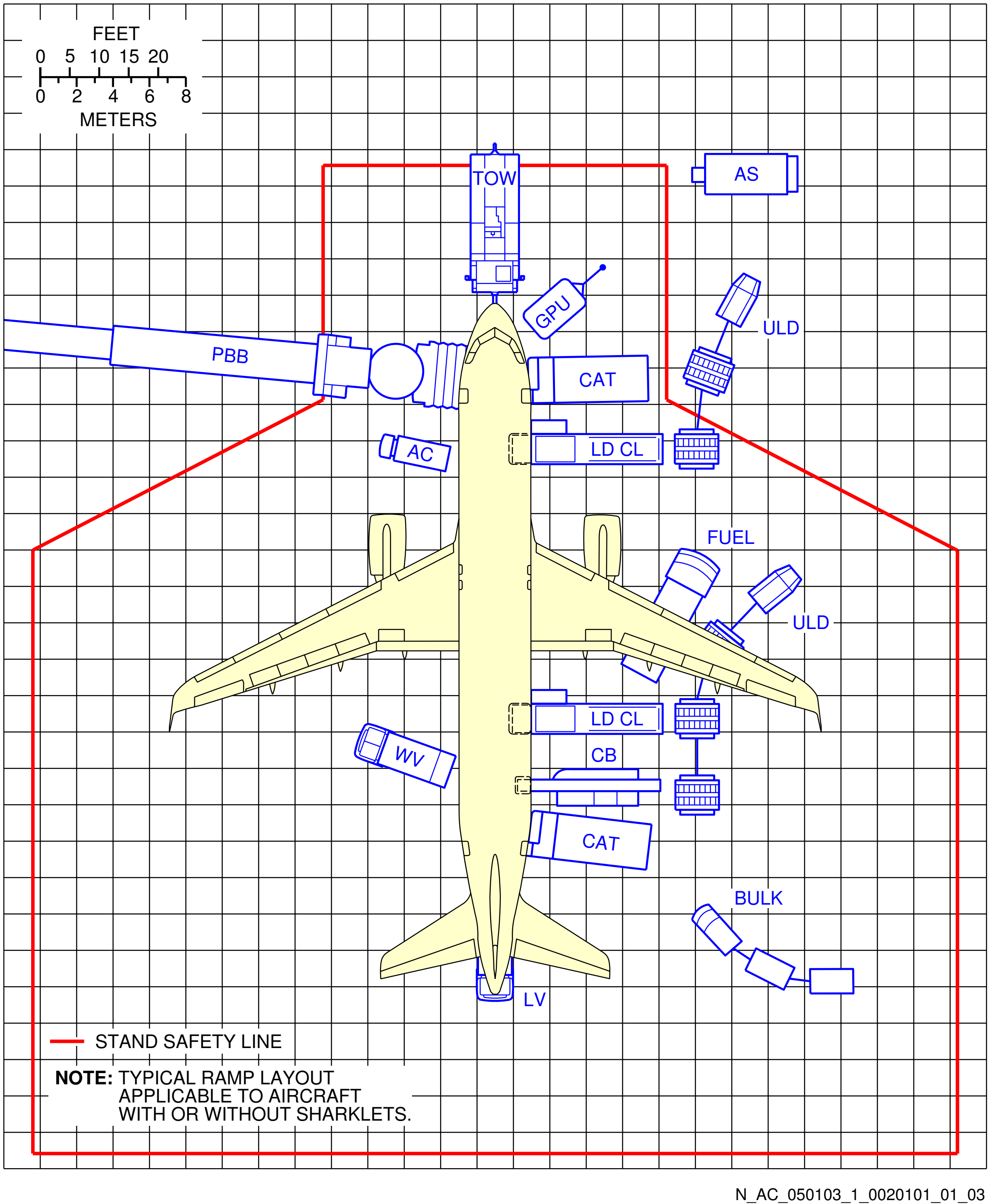
****ON A/C A320-200**

Typical Ramp Layout - Gate

1. This section gives the typical servicing arrangement for pax version (Passenger Bridge).

   The Stand Safety Line delimits the Aircraft Safety Area (minimum distance of 7.5 m 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 A320-200



Typical Ramp Layout
Gate
FIGURE-5-1-3-991-002-A01

5-2-0 Terminal Operations - Full Servicing

****ON A/C A320-200**

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.

   For each turn round time chart, the associated typical ramp layout is given in Section 5-1.

2. Assumptions for full turn round chart

   A. PASSENGER HANDLING
   150 pax, all Y/C
   All passengers deboard and board the aircraft
   1 Passenger Boarding Bridge (PBB) used at door L1
   Equipment positioning/removal + opening/closing door = 2 min

   Deboarding:
   - 150 pax at door L1
   - Deboarding rate = 22 pax/min per door
   - No Passenger with Reduced Mobility (PRM)

   Boarding:
   - 150 pax at door L1
   - Boarding rate = 18 pax/min per door
   - Last Pax Seating allowance (LPS) + headcounting = +2 min
   - No Passenger with Reduced Mobility

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

   Cargo exchange:
   - FWD cargo compartment: 3 LD3
   - AFT cargo compartment: 4 LD3
   - Bulk compartment: 500 kg (1102 lb)

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

Bulk off-loading/loading times:
- Bulk off-loading rate = 120 kg/min (265 lb/min)
- Bulk loading rate = 100 kg/min (220 lb/min)

C. REFUELLING
2 hoses, one side
7134 l (1885 US gal) at 50 psi (3 bar)
Dispenser positioning/removal = 4 min

D. CLEANING
Performed in available time

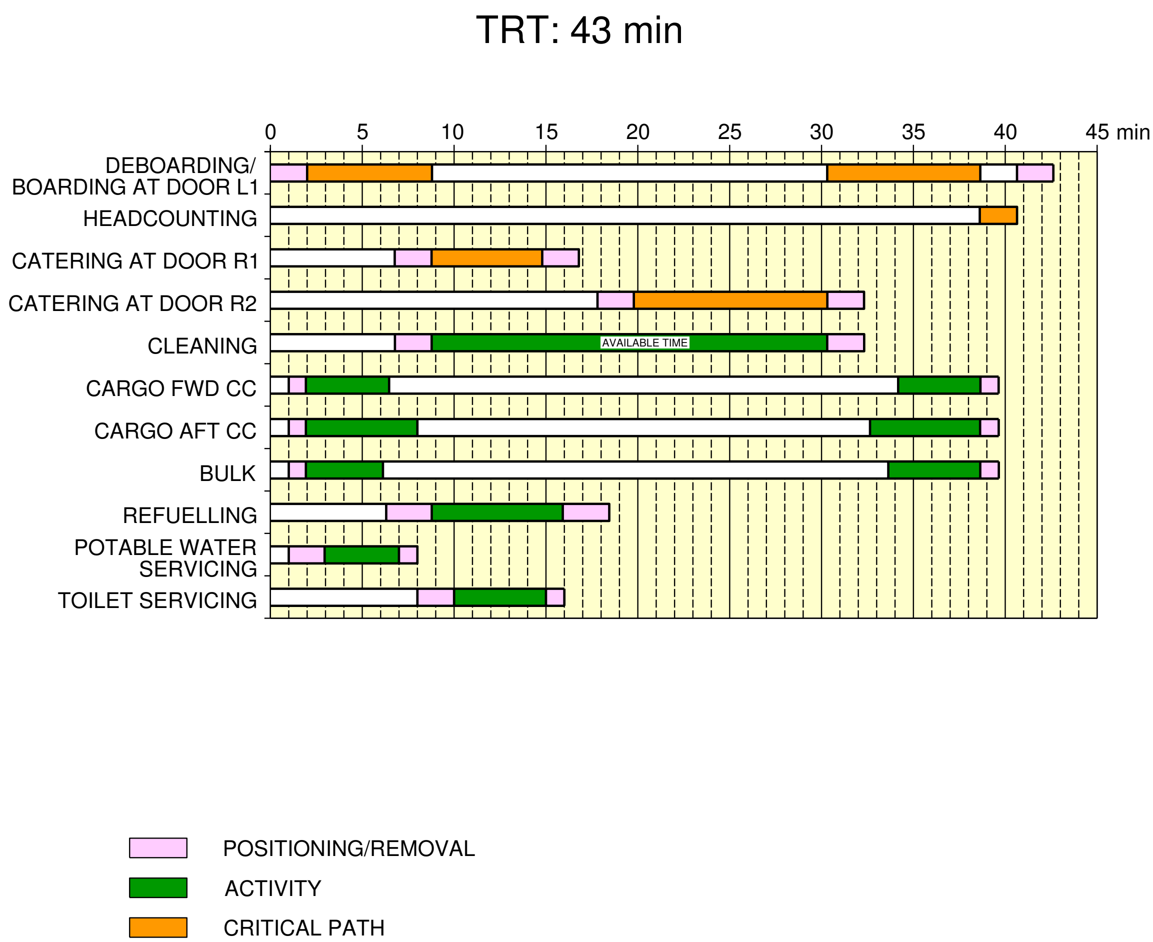
E. CATERING
1 catering truck for servicing galleys sequentially at doors R1 & R2
Equipment positioning/removal + door opening/closing = 2 min
Time to drive from one door to the other = 1 min
Full Size Trolley Equivalent (FSTE) to unload and load:
- 4 FSTE at door R1
- 7 FSTE at door R2

Time for trolley exchange = 1.5 min per FSTE

F. GROUND HANDLING SERVICING
Start of operations:
- Bridges: t0 = 0
- Other equipment: t = t0 + 1 min

Potable water servicing: 100% uplift, 200 l (53 US gal), max filling pressure = 3.45 bar (50 psi)
Toilet servicing: draining + rinsing = 5 min, max rinse & precharge pressure = 3.45 bar (50 psi)

**ON A/C A320-200



Turn Round Stations
Full Servicing (43 Min.)
FIGURE-5-2-0-991-006-A01

5-3-0 Terminal Operation - Transit

**ON A/C A320-200

Terminal Operation - 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.

   For each turn round time chart, the associated typical ramp layout is given in Section 5-1.

2. Assumptions for minimum turn round chart

   A. PASSENGER HANDLING
   180 pax, all Y/C
   2 Stairways used at doors L1 & L2
   Equipment positioning/removal + opening/closing door = 2 min

   Deboarding:
   - 90 pax at door L1
   - 90 pax at door L2
   - Deboarding rate = 20 pax/min per door
   - No Passenger with Reduced Mobility (PRM)

   Boarding:
   - 90 pax at door L1
   - 90 pax at door L2
   - Boarding rate = 15 pax/min per door
   - Last Pax Seating allowance (LPS) + headcounting = +2 min
   - No Passenger with Reduced Mobility

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

   Cargo exchange:
   - FWD cargo compartment: 3 LD3
   - AFT cargo compartment: 4 LD3
   - Bulk cargo compartment: 500 kg (1102 lb)

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

Bulk off-loading/loading times:

- Off-loading rate = 120 kg/min (265 lb/min)
- Loading rate = 100 kg/min (220 lb/min)

C. REFUELLING

2 hoses, one side
7134 l (1885 US gal) at 50 psi (3 bar)
Dispenser positioning/removal = 4 min

D. CLEANING

Performed in available time

E. CATERING

No catering

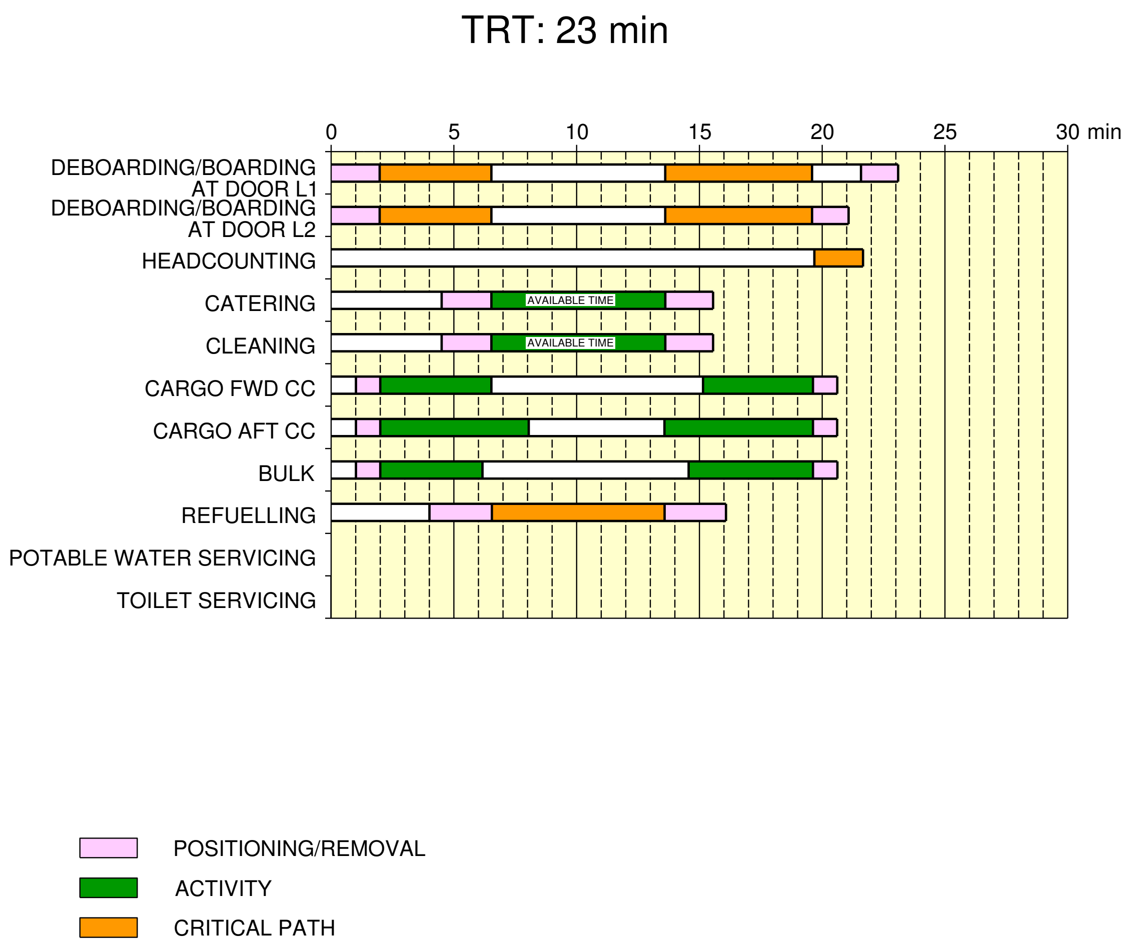
F. GROUND HANDLING SERVICING

Start of operations:

- Bridges: t0 = 0
- Other equipment: t = t0 + 1 min

No potable water servicing
No toilet servicing

**ON A/C A320-200



Turn Round Stations
Minimum Servicing (23 Min.)
FIGURE-5-3-0-991-003-A01

5-4-0 Ground Service Connections

**ON A/C A320-200

Ground Service Connections

1. Ground Service Connections.

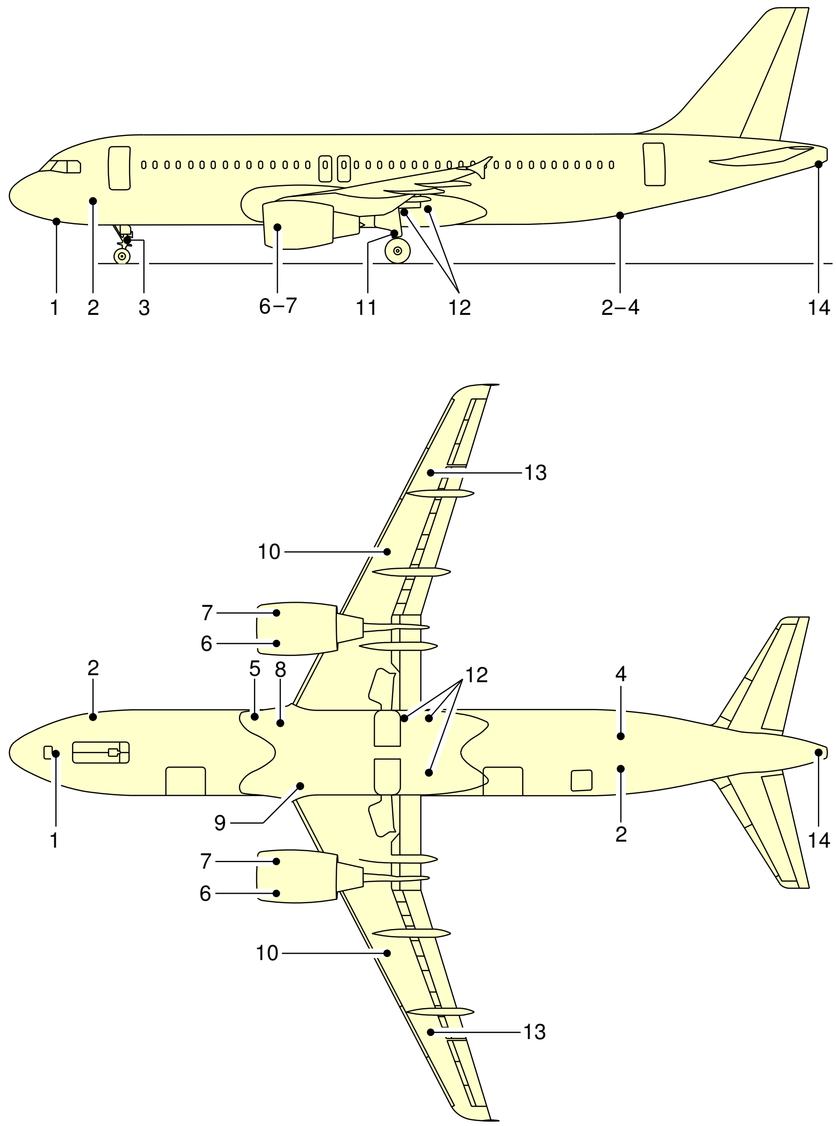
5-4-1 Ground Service Connections Layout

****ON A/C A320-200**

Ground Service Connections Layout

1. This section gives the ground service connections layout.

**ON A/C A320-200



1 – EXTERNAL POWER RECEPTACLE
2 – TOILET SERVICE DOOR
3 – GROUNDING POINT NLG
4 – POTABLE WATER SERVICE DOOR
5 – GROUND SERVICE CONDITIONED AIR CONNECTOR (LP)
6 – IDG OIL FILLING
7 – ENGINE OIL FILLING CONNECTOR
8 – GROUND AIR START CONNECTOR (HP)
9 – REFUEL/DEFUEL PANEL
10 – REFUEL/DEFUEL CONNECTORS
11 – GROUNDING POINT MLG
12 – HYDRAULIC SYSTEM GROUND SERVICES PANELS
13 – GRAVITY REFUEL
14 – APU OIL FILLING

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Ground Service Connections
Ground Service Connections Layout
FIGURE-5-4-1-991-005-A01

5-4-2 Grounding Points

**ON A/C A320-200

Grounding Points

1. Grounding Points.

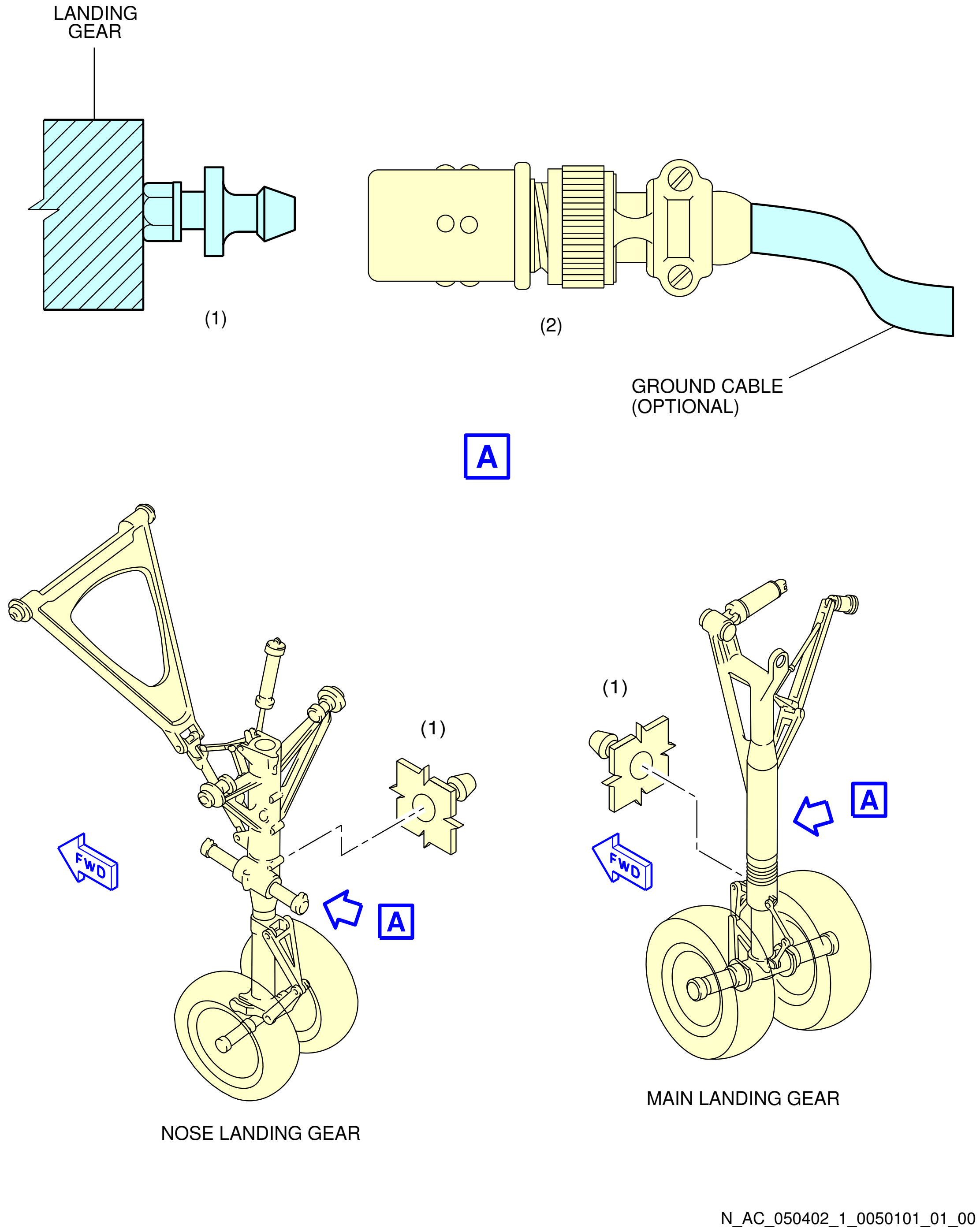
	DISTANCE: Meters (ft)			
	AFT OF NOSE	FROM AIRPLANE CENTERLINE		MEAN HEIGHT FROM GROUND
		R SIDE	L SIDE	
On Nose Landing Gear leg:	5.07 m (16.63 ft)	on centerline		0.94 m (3.08 ft)
On left Main Landing Gear leg:	20.25 m (66.44 ft)		3.79 m (12.43 ft)	1.07 m (3.51 ft)
On right Main Landing Gear leg:	20.25 m (66.44 ft)	3.79 m (12.43 ft)		1.07 m (3.51 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.

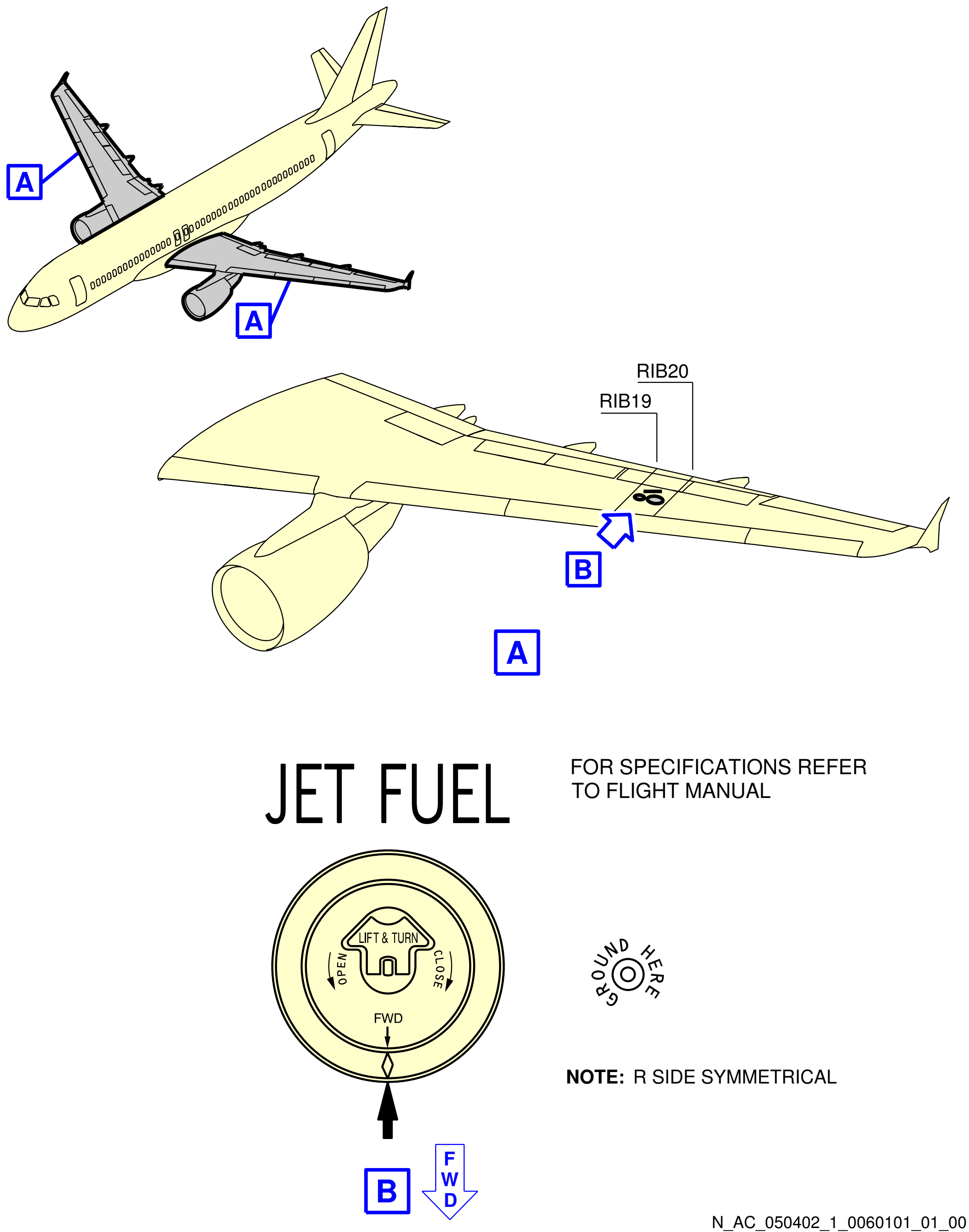
NOTE : In all other conditions, the electrostatic discharge through the tyre is sufficient.

**ON A/C A320-200



Ground Service Connections
Grounding Points
FIGURE-5-4-2-991-005-A01

**ON A/C A320-200



Ground Service Connections
Grounding Points
FIGURE-5-4-2-991-006-A01

5-4-3 Hydraulic System

****ON A/C A320-200**

Hydraulic System

1. Access.

ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		RH SIDE m (ft)	LH SIDE m (ft)	
Green System: Access door 197CB	19.17 (62.89)		1.27 (4.17)	1.76 (5.77)
Yellow System: Access door 198CB	19.17 (62.89)	1.27 (4.17)		1.76 (5.77)
Blue System: Access door 197EB	20.22 (66.34)		1.27 (4.17)	1.76 (5.77)

NOTE : Distances are approximate.

2. Reservoir Pressurization.
On the air pressurization manifold:

ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		RH SIDE m (ft)	LH SIDE m (ft)	
Access door 195BB	15.65 (51.35)		0.25 (0.82)	1.74 (5.71)

NOTE : Distances are approximate.

- One 1/4 in. AEROQUIP AE 96994E self-sealing connection common to the 3 reservoirs.

3. Accumulator Charging.
Four (MS28889-1) connections (one for each accumulator) for:

ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		RH SIDE m (ft)	LH SIDE m (ft)	
Yellow System accumulator: Access door 196BB	16.1 (52.82)	0.25 (0.82)		1.99 (6.53)

ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		RH SIDE m (ft)	LH SIDE m (ft)	
Green System accumulator: Left MLG door	16.77 (55.02)		0.25 (0.82)	3.2 (10.5)
Blue System accumulator: Access door 195BB	18.2 (59.71)		0.25 (0.82)	1.99 (6.53)
Yellow System braking accumulator: Access door 196BB	16.1 (52.82)	0.76 (2.49)		1.74 (5.71)

NOTE : Distances are approximate.

4. Reservoir Filling.
On the Green system ground service panel:

ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		RH SIDE m (ft)	LH SIDE m (ft)	
Access door 197CB	19.17 (62.89)		1.27 (4.17)	1.76 (5.77)

NOTE : Distances are approximate
One 1/4 in. AEROQUIP AE96993E self-sealing connection for pressurized supply.
One handpump filling connection for unpressurized (suction) supply.

5. Reservoir Drain.
On 3/8 in. self-sealing connection on reservoir for:

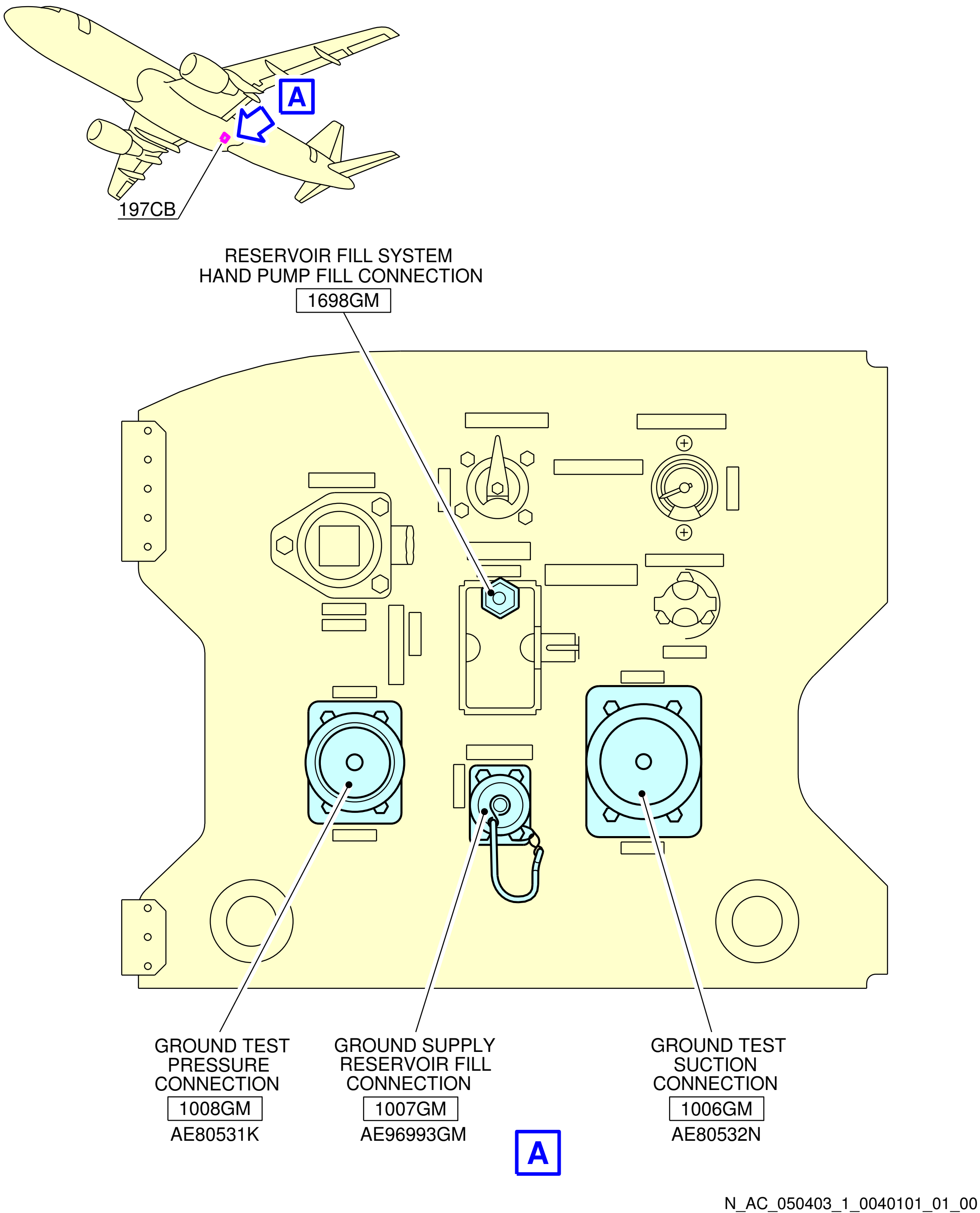
ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		RH SIDE m (ft)	LH SIDE m (ft)	
Yellow System: Access door 196BB - 198CB	16.1 (52.82)	1.43 (4.69)		1.90 (6.23)
Green System: Left MLG door	16.77 (55.02)		1.27 (4.17)	2.61 (8.56)

ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		RH SIDE m (ft)	LH SIDE m (ft)	
Blue System Access door 197EB	20.22 (66.34)		1.27 (4.17)	1.76 (5.77)

NOTE : Distances are approximate.
On 3/8 in. self-sealing connection for the Blue system on:
- Blue system ground service panel.

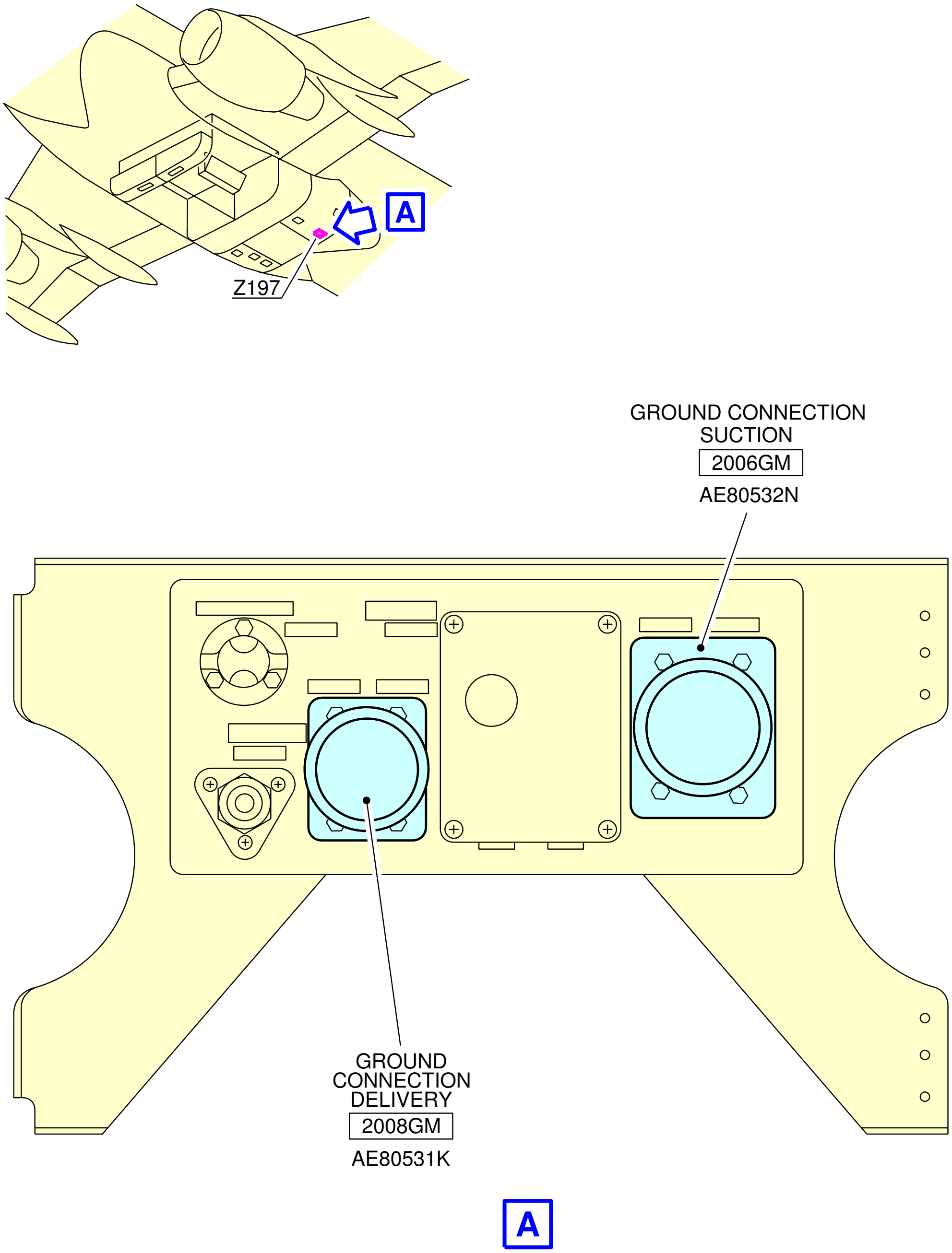
6. Ground Test.
On each ground service panel:
- One self-sealing connector AE80532N (suction).
- One self-sealing connector AE80531K (delivery).

**ON A/C A320-200



Hydraulic System
Green System Ground Service Panel
FIGURE-5-4-3-991-004-A01

**ON A/C A320-200



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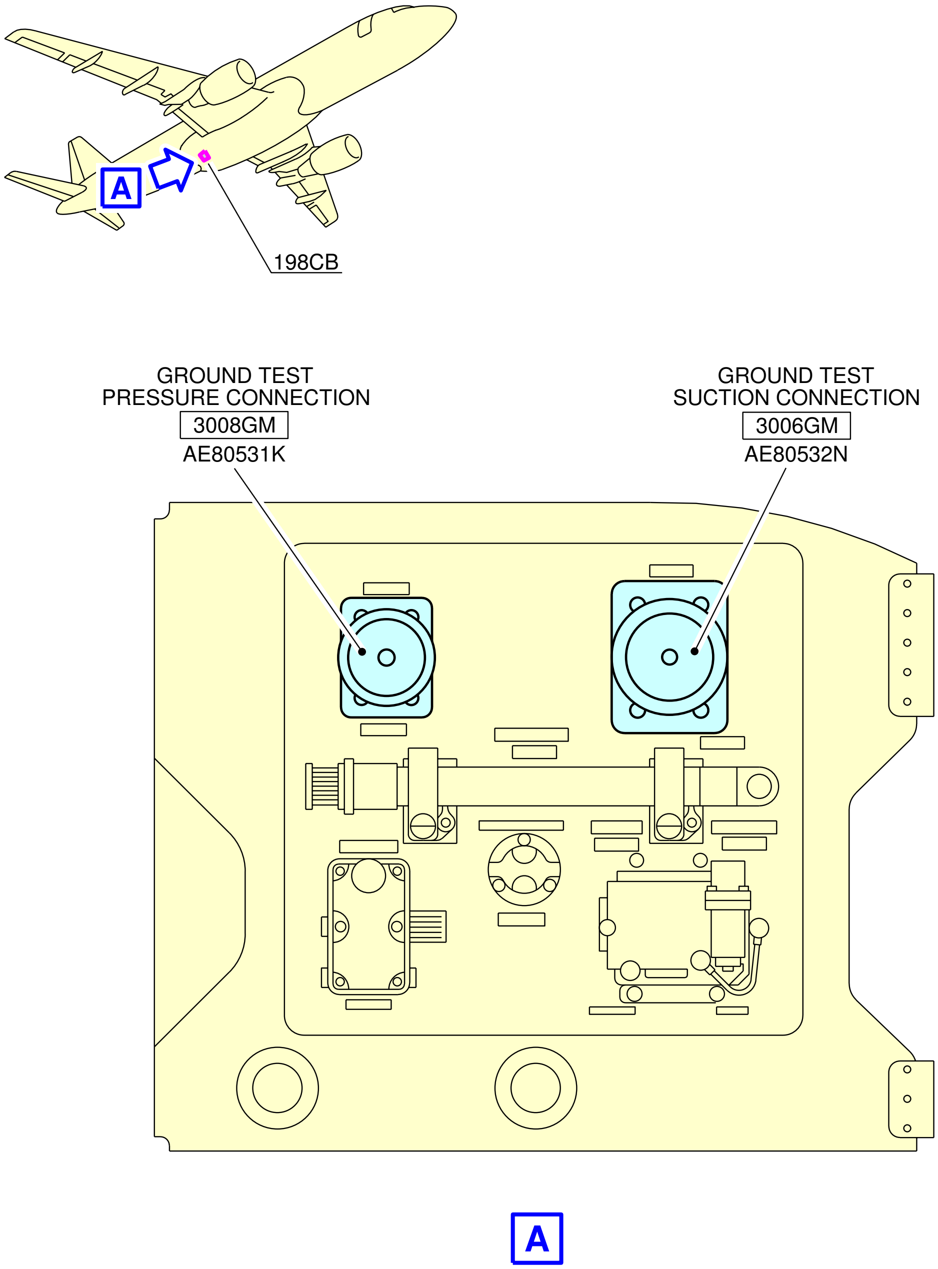
Hydraulic System
Blue System Ground Service Panel
FIGURE-5-4-3-991-005-A01

**ON A/C A320-200



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Hydraulic System
Yellow System Ground Service Panel
FIGURE-5-4-3-991-006-A01

5-4-4 Electrical System

****ON A/C A320-200**

Electrical System

1. Electrical System.
   This chapter gives data related to the location of the ground service connections.

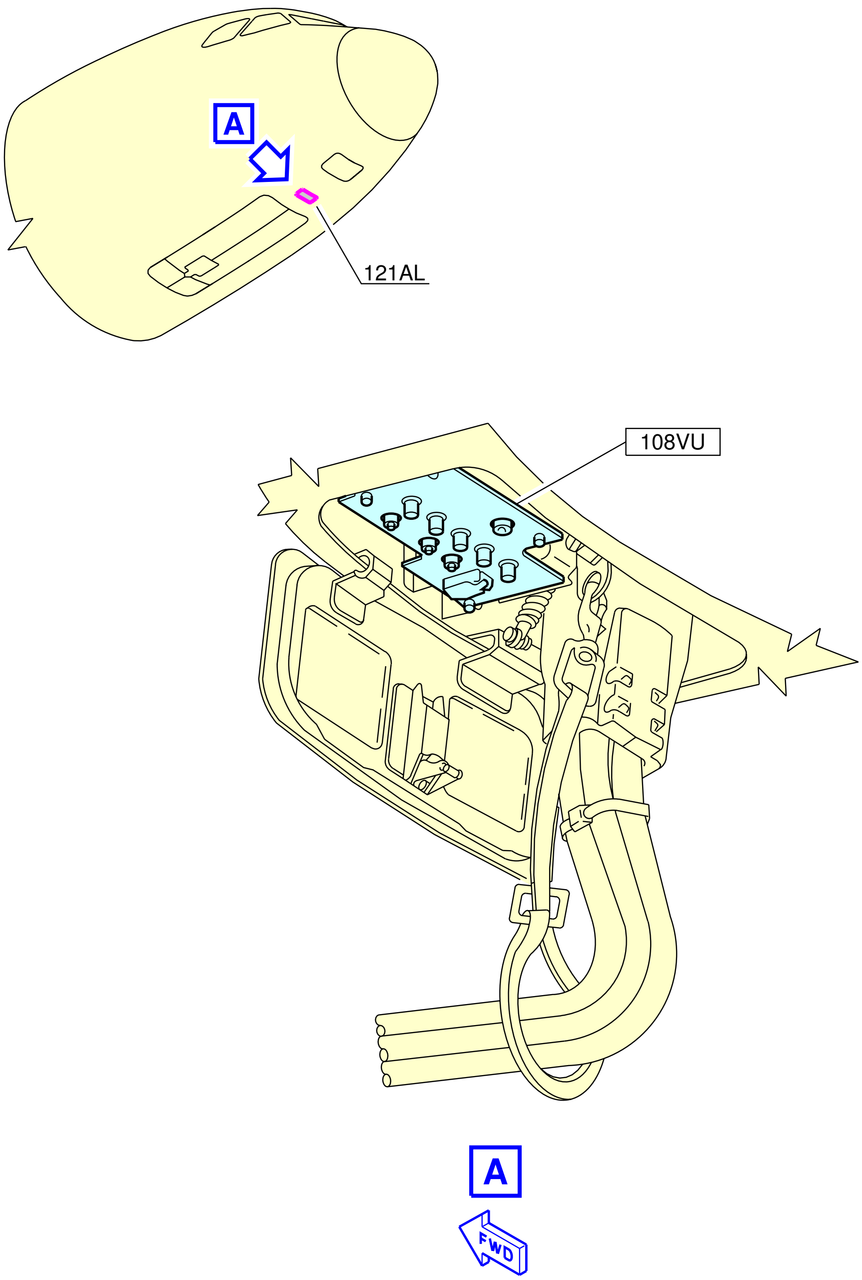
<table>
<tr><th rowspan="2">ACCESS</th><th rowspan="2">AFT OF NOSE
m (ft)</th><th colspan="2">POSITION FROM AIRCRAFT CENTERLINE</th><th rowspan="2">MEAN HEIGHT FROM GROUND
m (ft)</th></tr>
<tr><th>RH SIDE
m (ft)</th><th>LH SIDE
m (ft)</th></tr>
<tr><td>A/C External Power:
Access door 121AL</td><td>2.55
(8.37)</td><td colspan="2">on centerline</td><td>2.00
(6.56)</td></tr>
</table>

NOTE : Distances are approximate.

2. Technical Specifications
   This chapter gives data related to the location of the ground service connections.
   A. External Power Receptacle:
      - One Style3 ISO 461 receptacle - 90 KVA.
   B. Power Supply:
      - Three-phase, 400 Hz, 115/200V
   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 connected to the engines, are supplied as in flight.
      In these conditions, the maximum power on ground is approximately 75 KVA; this value does not take into account the supply of the galleys, which according to the aircraft interior layout, may reach 30 KVA.
   E. Electrical Power necessary for Maintenance at Line Stop and Workshops
      - Hydraulic electric-pumps: 34 KVA
      - Air Conditioning/Ventilation: 20.8 KVA
      - Fuel pumps: 12 KVA
      - Lighting commercial: 6.7 KVA
      - Lighting technical: 3 KVA
      - Ice and rain protection: 3 KVA
      - Cargo loading: 3 KVA
      - AFS, Flight controls, ADS, Recorders: 3.3 KVA
      - Communications: 1.3 KVA

- Radio navigation: 1.2 KVA.

**ON A/C A320-200



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Ground Service Connections
External Power Receptacles
FIGURE-5-4-4-991-001-A01

5-4-5 Oxygen System

****ON A/C A320-200**

Oxygen System

1. Oxygen System.

	DISTANCE: Meters (ft)			
	AFT OF NOSE	FROM AIRPLANE CENTERLINE		MEAN HEIGHT FROM GROUND
		R SIDE	L SIDE	
One service connection (external charging in the avionics compartment) MS22066 Std.	3.45 m (11.32 ft)		1.15 m (3.77 ft)	2.60 m (8.53 ft)

3/8" UNF × 24 TPI

Nominal pressure: 1850 psi (127.55 bar)

Max fill pressure: 2035 psi (140.31 bar)

NOTE : Internal charging connection provided.

5-4-6 Fuel System

****ON A/C A320-200**

Fuel System

1. Refuel/Defuel Control Panel.

ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		RH SIDE m (ft)	LH SIDE m (ft)	
Refuel/Defuel Integrated Panel: Access door 192MB	16.4 (53.81)	1.8 (5.91)		1.8 (5.91)

2. Refuel/Defuel Connectors.

ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		RH SIDE m (ft)	LH SIDE m (ft)	
Refuel/Defuel coupling, Left Access Door 522HB (Optional)	17.59 (57.71)		9.83 (32.25)	3.65 (11.98)
Refuel/Defuel coupling, Right Access Door 622HB	17.59 (57.71)	9.83 (32.25)		3.65 (11.98)
Gravity Refuel Coupling	19.1 (62.66)	12.4 (40.68)	12.4 (40.68)	3.7 (12.14)

A. Refuel/Defuel couplings:
- Right wing: one standard ISO 45, 2.5 in.
- Left wing: one optional standard ISO 45, 2.5 in.

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

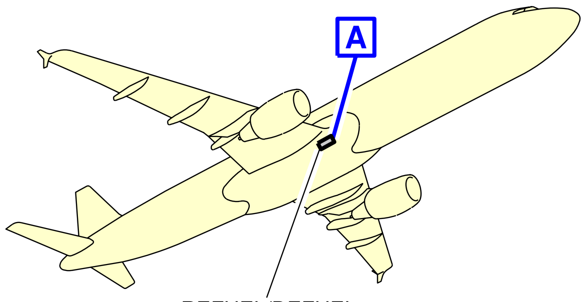
C. Refuel Flow:
- 1400 l/minute (369.84 US gal/minute).

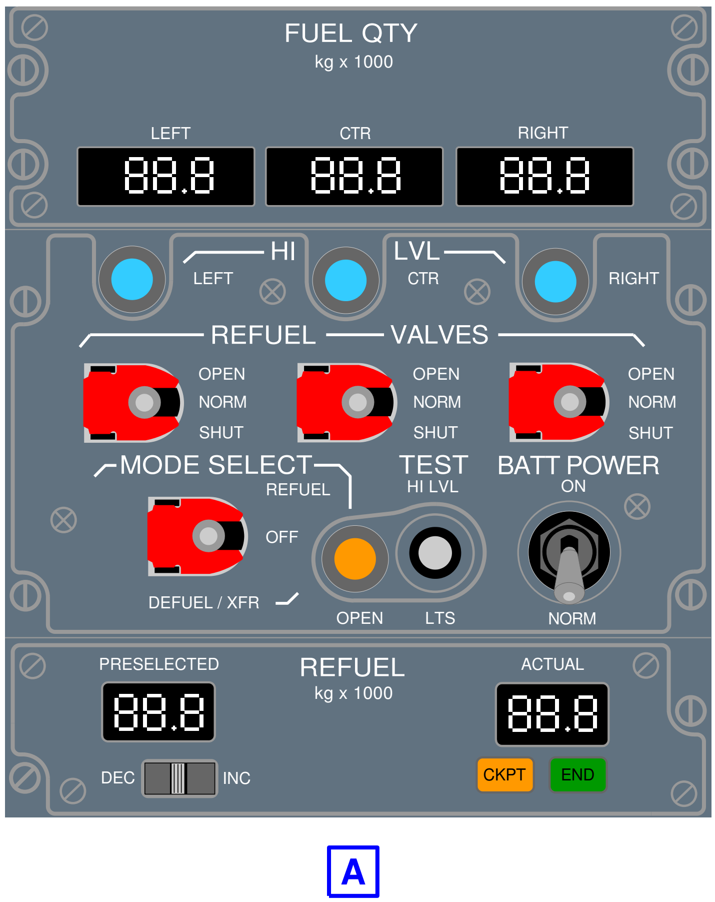
3. Overpressure Protector and NACA Flame Arrestor.

ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		RH SIDE m (ft)	LH SIDE m (ft)	
Overpressure Protector	20.36 (66.80)	14.9 (48.88)	14.9 (48.88)	4.32 (14.17)
NACA Flame Arrestor	19.8 (64.96)	13.7 (44.95)	13.7 (44.95)	4.02 (13.19)

NOTE : Distances are approximate.

**ON A/C A320-200





NOTE: STANDARD CONFIGURATION OF REFUEL/DEFUEL PANEL.

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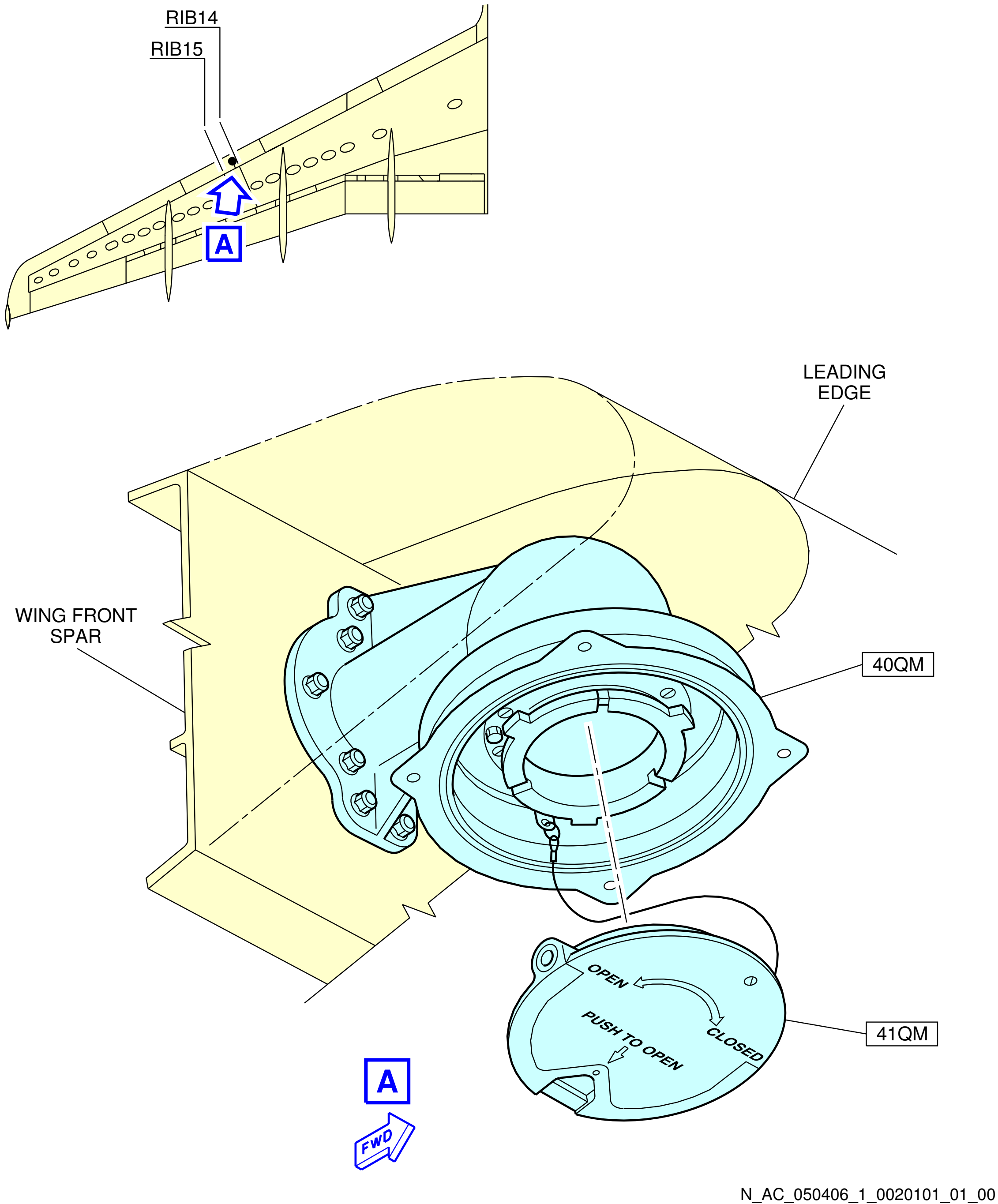
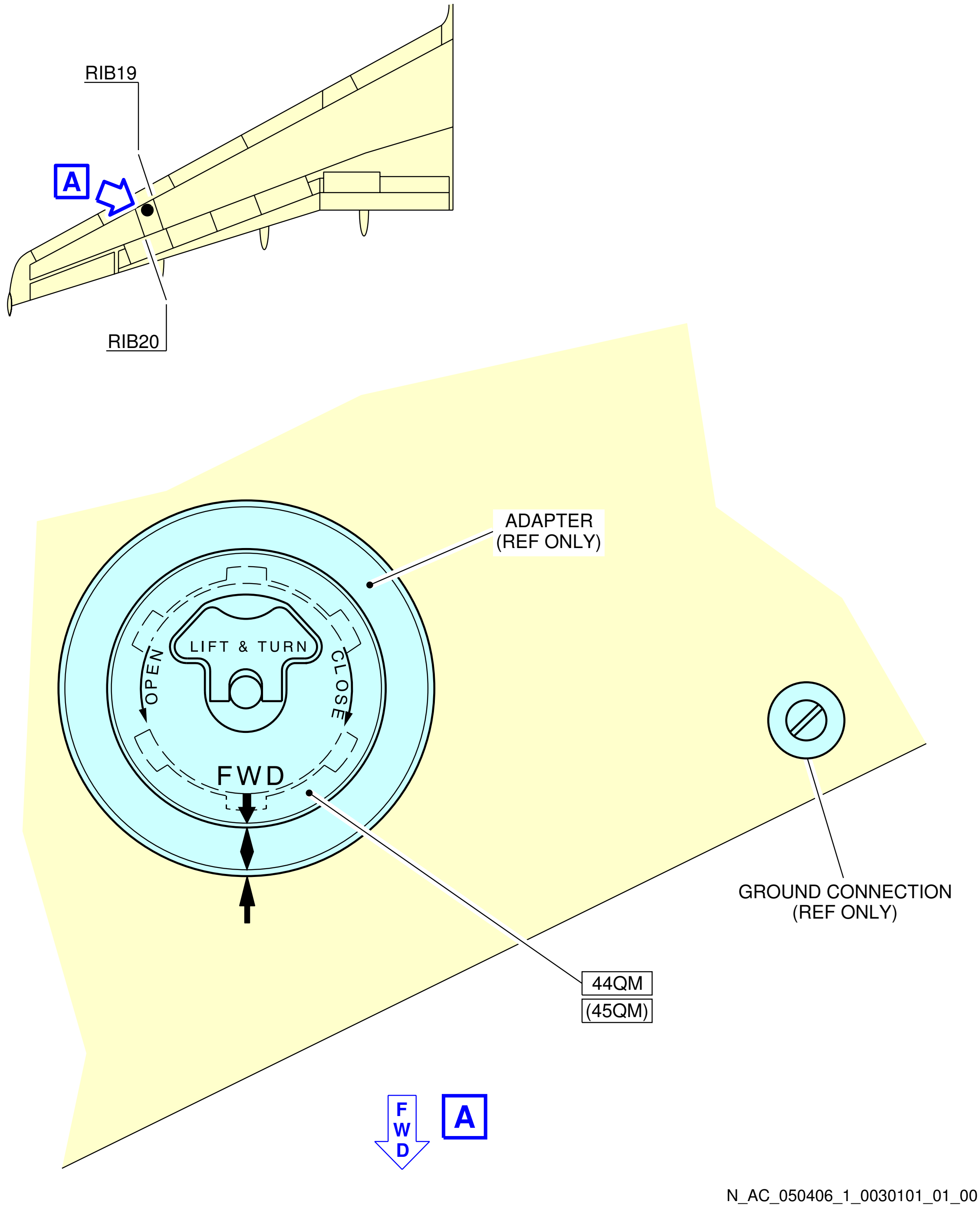
Ground Service Connections
Refuel/Defuel Panel
FIGURE-5-4-6-991-001-A01

**ON A/C A320-200



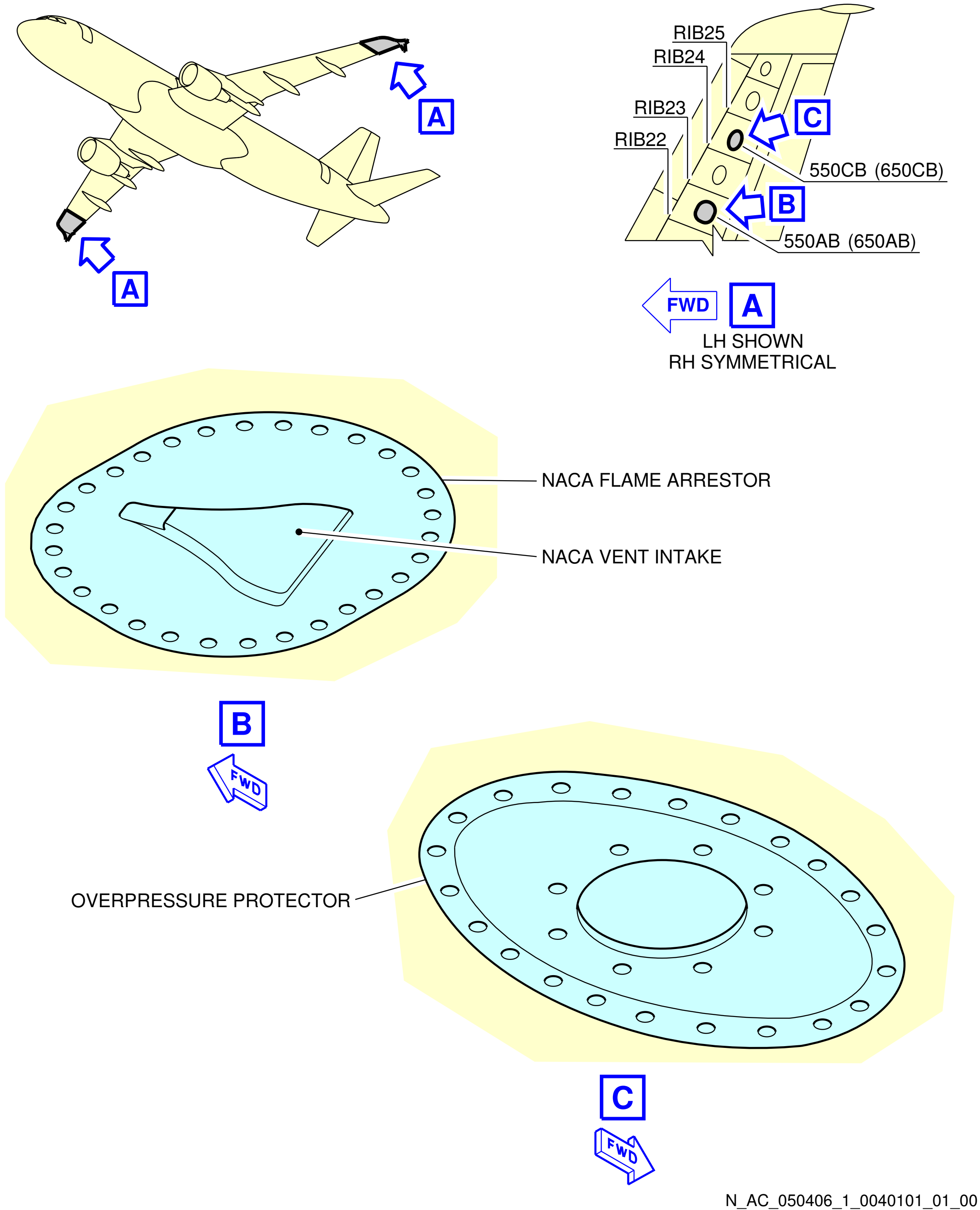
Ground Service Connections
Refuel/Defuel Couplings
FIGURE-5-4-6-991-002-A01

**ON A/C A320-200



Ground Service Connections
Gravity Refuel Couplings
FIGURE-5-4-6-991-003-A01

**ON A/C A320-200



Ground Service Connections
Overpressure Protector and NACA Flame Arrestor
FIGURE-5-4-6-991-004-A01

5-4-7 Pneumatic System

****ON A/C A320-200**

Pneumatic System

1. High Pressure Air Connectors.
This chapter gives data related to the location of the ground service connections.

	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		RH SIDE m (ft)	LH SIDE m (ft)	
HP Connector Access door 191DB	12.98 (42.59)		0.84 (2.76)	1.76 (5.77)

NOTE : Distances are approximate.

A. Connector:
- One standard 3 in. ISO TC20 connection (MS33740) for engine starting and cabin air preconditioning (HP) installed on the left side of the belly fairing

2. Low Pressure Air Connectors.
This chapter gives data related to the location of the ground service connections.

	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		RH SIDE m (ft)	LH SIDE m (ft)	
LP Connector Access door 191CB	12.45 (40.85)		1.11 (3.64)	1.73 (5.68)

NOTE : Distances are approximate.

A. Connector:
- One standard 8 in. connection (SAE AS4262 type B) for cabin air preconditioning (LP) installed on the left side of the belly fairing

5-4-8 Potable Water System

**ON A/C A320-200

Potable Water System

1. Potable Water Ground Service Panel.

ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		RH SIDE m (ft)	LH SIDE m (ft)	
Potable Water Ground Service Panel: Access door 171AL:	31.3 (102.69)		0.3 (0.98)	2.6 (8.53)

NOTE : Distances are approximate

2. Potable Water Ground Drain Panel.

ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		RH SIDE m (ft)	LH SIDE m (ft)	
Potable Water Ground Service Panel: Access door 133AL (Optional)	11.8 (38.71)		0.15 (0.49)	1.75 (5.74)
Potable Water Ground Service Panel: Access door 192NB	12.5 (41.01)	0.51 (1.67)		1.75 (5.74)

NOTE : Distances are approximate

3. Technical Specifications

A. Connectors:

(1) On the potable ground service panel (Access Door 171AL)
- Fill/Drain Nipple 3/4 in (ISO 17775).
- One ground pressurization connector.

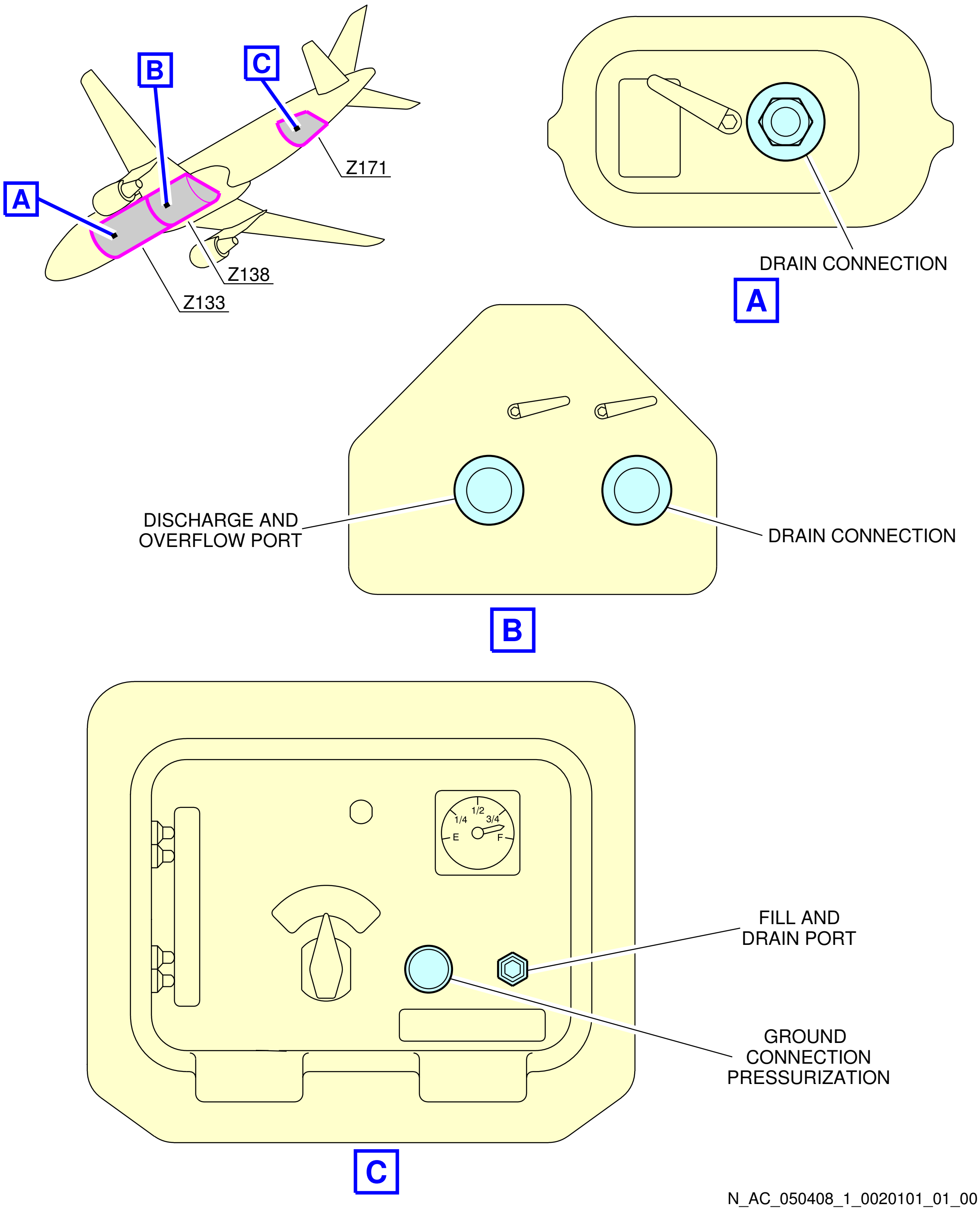
(2) On drain panel (Access Door 133AL and/or 192NB)
- Drain Nipple 3/4 in (ISO 17775)

B. Usable capacity:
- Standard configuration - one tank:200 l (52.83 US gal)

C. Filling pressure:
- 3.45 bar (50 psi).

D. Typical flow rate:
- 50 l/min (13.21 US gal/min).

**ON A/C A320-200



Ground Service Connections
Potable Water Ground Drain Panel
FIGURE-5-4-8-991-002-A01

5-4-9 Oil System

**ON A/C A320-200

Oil System

1. Engine Oil Replenishment for CFM56 Series Engine (See FIGURE 5---9-99--001-A):
   One gravity filling cap and one pressure filling connection per engine.

ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		ENGINE 1 (LH) m (ft)	ENGINE 2 (RH) m (ft)	
Engine Oil Gravity Filling Cap: Access door: 437BL (LH), 447BL (RH)	13.12 (43.04)	6.63 (21.75)	4.82 (15.81)	1.46 (4.79)
Engine Oil Pressure Filling Port:	13 (42.65)	6.49 (21.29)	4.74 (15.55)	1.42 (4.66)

NOTE : Distances are approximate

A. Tank capacity:
   - Full level: 19.6 l (5.18 US gal)
   - Usable: 9.46 l (2.50 US gal)

B. Maximum delivery pressure required: 25 psi (1.72 bar)
   Maximum delivery flow required: 180 l/h (47.55 US gal/h)

2. IDG Oil Replenishment for CFM56 Series Engine (See FIGURE 5---9-99--002-A):
   One pressure filling connection per engine: OMP 2506-18 plus one connection overflow: OMP 2505-18.

ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		ENGINE 1 (LH) m (ft)	ENGINE 2 (RH) m (ft)	
IDG Oil Pressure Filling Connection: Access door 438DR (LH), 448DR (RH)	12.2 (40.03)	6.9 (22.64)	5.52 (18.11)	0.68 (2.23)

NOTE : Distances are approximate

A. Tank capacity: 5 l (1.32 US gal)

B. Delivery pressure required: 5 to 40 psi (0.34 to 2.76 bar) at the IDG inlet.

3. Starter Oil Replenishment for CFM56 Series Engine (See FIGURE 5---9-99--003-A:
One gravity filling cap per engine.

ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		ENGINE 1 (LH) m (ft)	ENGINE 2 (RH) m (ft)	
Starter Oil Filling Connection:	12.7 (41.67)	5.3 (17.39)	6.2 (20.34)	0.76 (2.49)

NOTE : Distances are approximate

A. Tank capacity: 0.8 l (0.21 US gal)

4. Engine Oil Replenishment for IAE V2500 Series Engine (See FIGURE 5---9-99--004-B):
One gravity filling cap per engine.

ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		ENGINE 1 (LH) m (ft)	ENGINE 2 (RH) m (ft)	
Engine Oil Gravity Filling Cap: Access door 437BL (LH), 447BL (RH)	12.24 (40.16)	6.56 (21.52)	4.92 (16.14)	1.22 (4)

NOTE : Distances are approximate

A. Tank capacity:
- Full level: 28 l (7.4 US gal)
- Usable: 23.50 l (6.21 US gal)

1. IDG Oil Replenishment for IAE V2500 Series Engine:
One pressure filling connection per engine: OMP 2506-2 plus one overflow connection: OMP 2505-2.

ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		ENGINE 1 (LH) m (ft)	ENGINE 2 (RH) m (ft)	
IDG Oil Pressure Filling Connection:	12.8 (41.99)	5.42 (17.78)	6.04 (19.82)	0.8 (2.62)

NOTE : Distances are approximate

A. Tank capacity: 4.1 l (1.08 US gal)

5. Starter Oil Replenishment for IAE V2500 Series Engine (See FIGURE 5---9-99--006-B):
One gravity filling cap per engine.

ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		ENGINE 1 (LH) m (ft)	ENGINE 2 (RH) m (ft)	
Starter Oil Filling Connection:	15.4 (50.52)	5.3 (17.39)	6.14 (20.14)	0.75 (2.46)

NOTE : Distances are approximate

A. Tank capacity: 0.35 l (0.09 US gal)

6. APU Oil System (See FIGURE 5---9-99--007-A):
APU oil gravity filling cap.

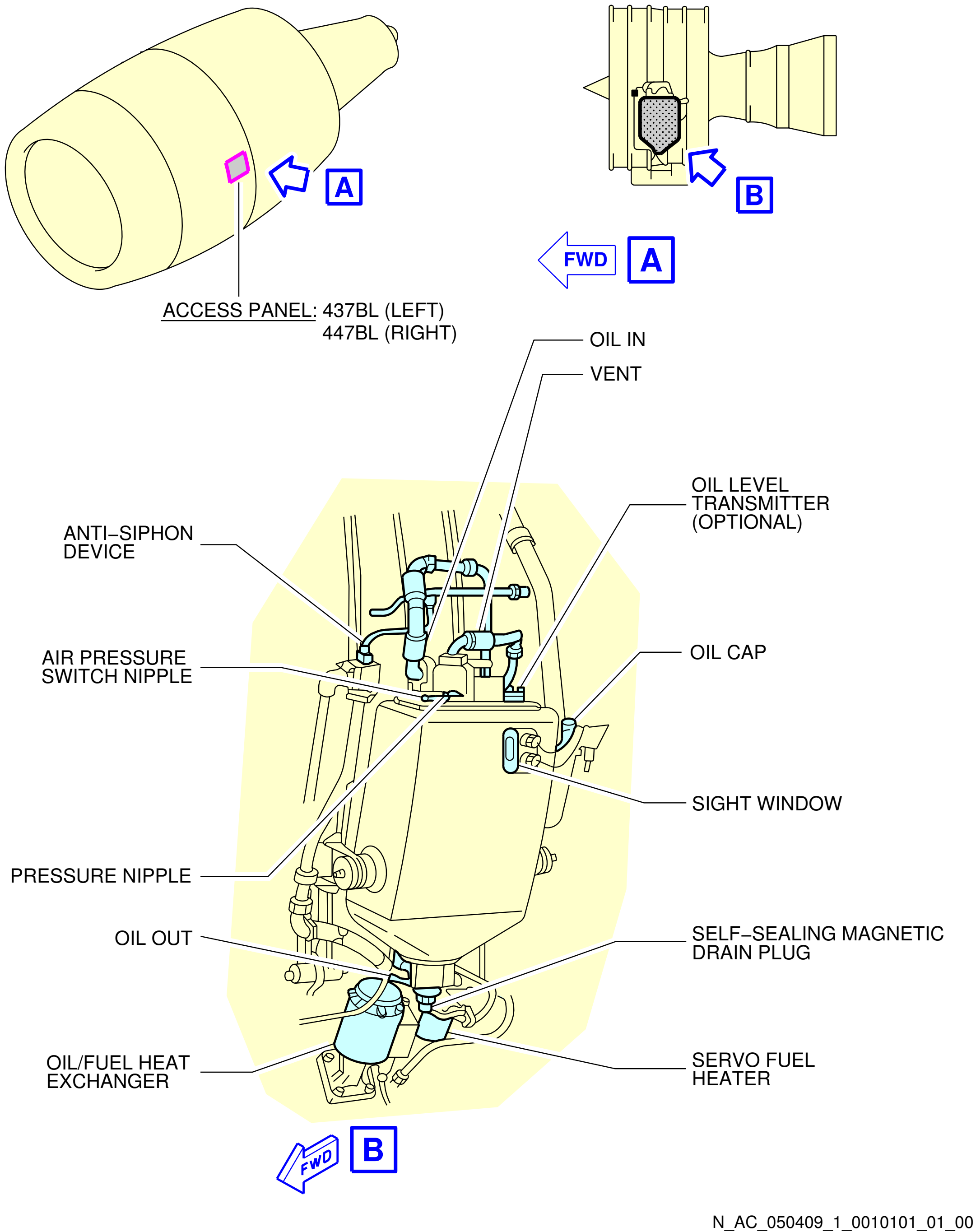
	AFT OF NOSE m (ft)	FROM AIRPLANE CENTERLINE (LEFT HAND) m (ft)	MEAN HEIGHT FROM GROUND m (ft)
GTCP 36-300	35.49 (116.44)	0.3 (0.98)	4.83 (15.85)
APS 3200	35.49 (116.44)	0.3 (0.98)	4.78 (15.68)
131-9	35.39 (116.11)	0.35 (1.15)	4.32 (14.17)

NOTE : Distances are approximate

A. Tank capacity (usable):
- APU type GTCP 36-300: 6.20 l (1.64 US gal)
- APU type APS 3200: 5.40 l (1.43 US gal)

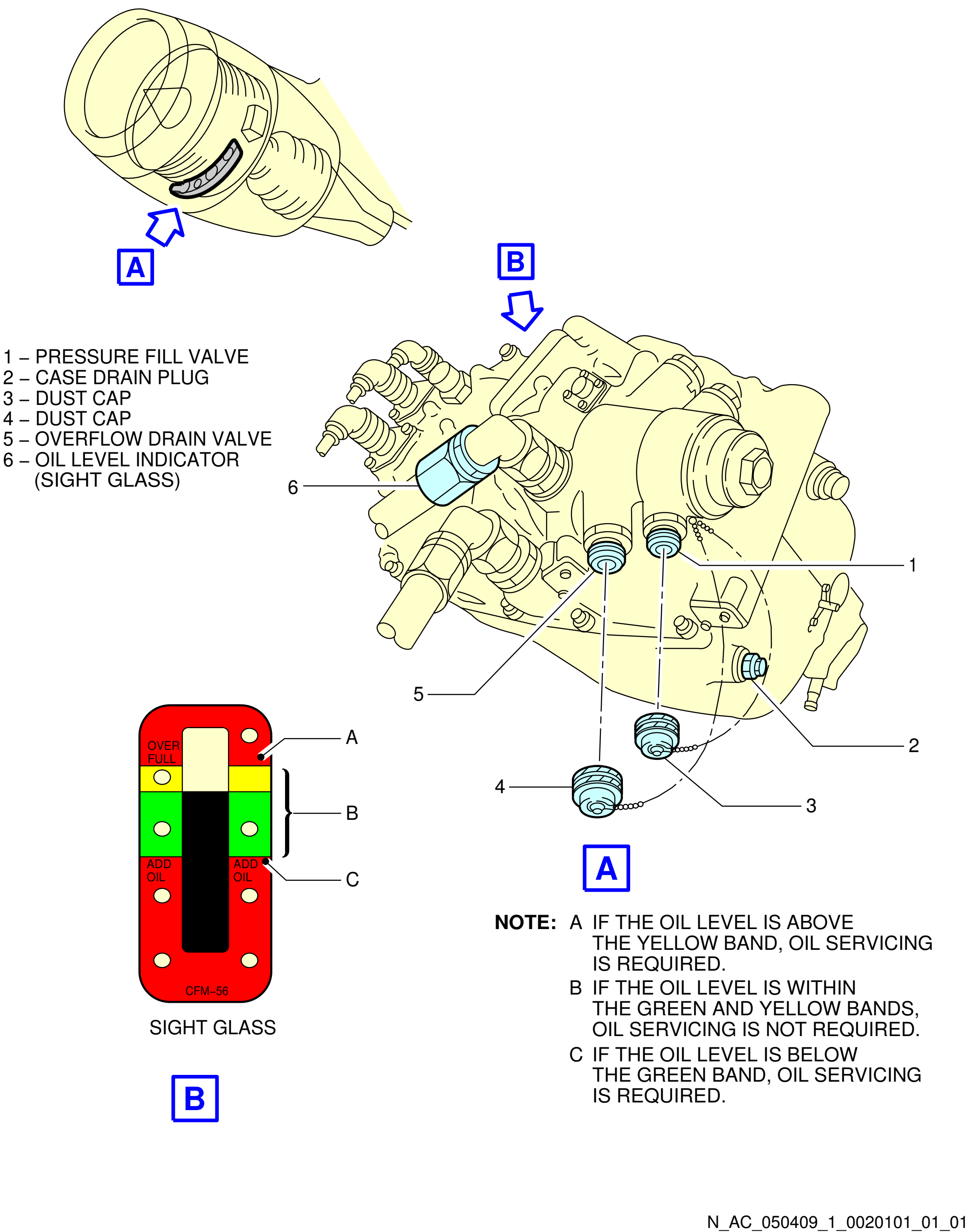
- APU type 131-9: 6.25 l (1.65 US gal)

**ON A/C A320-200



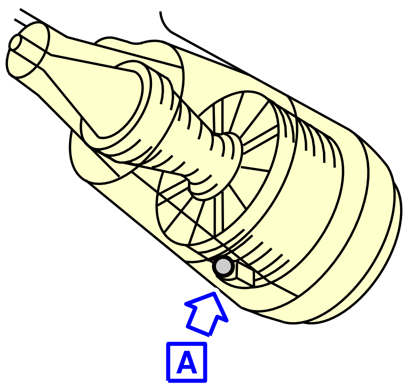
Ground Service Connections
Engine Oil Tank – CFM56 Series Engine
FIGURE-5-4-9-991-001-A01

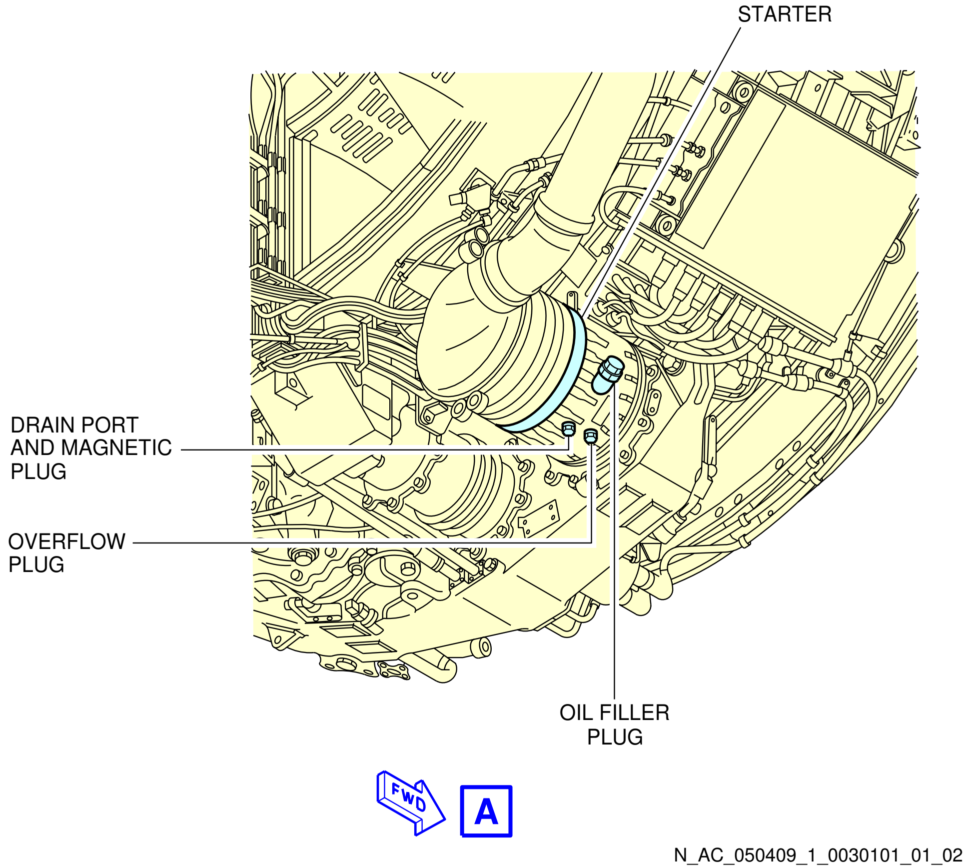
**ON A/C A320-200



Ground Service Connections
IDG Oil Tank – CFM56 Series Engine
FIGURE-5-4-9-991-002-A01

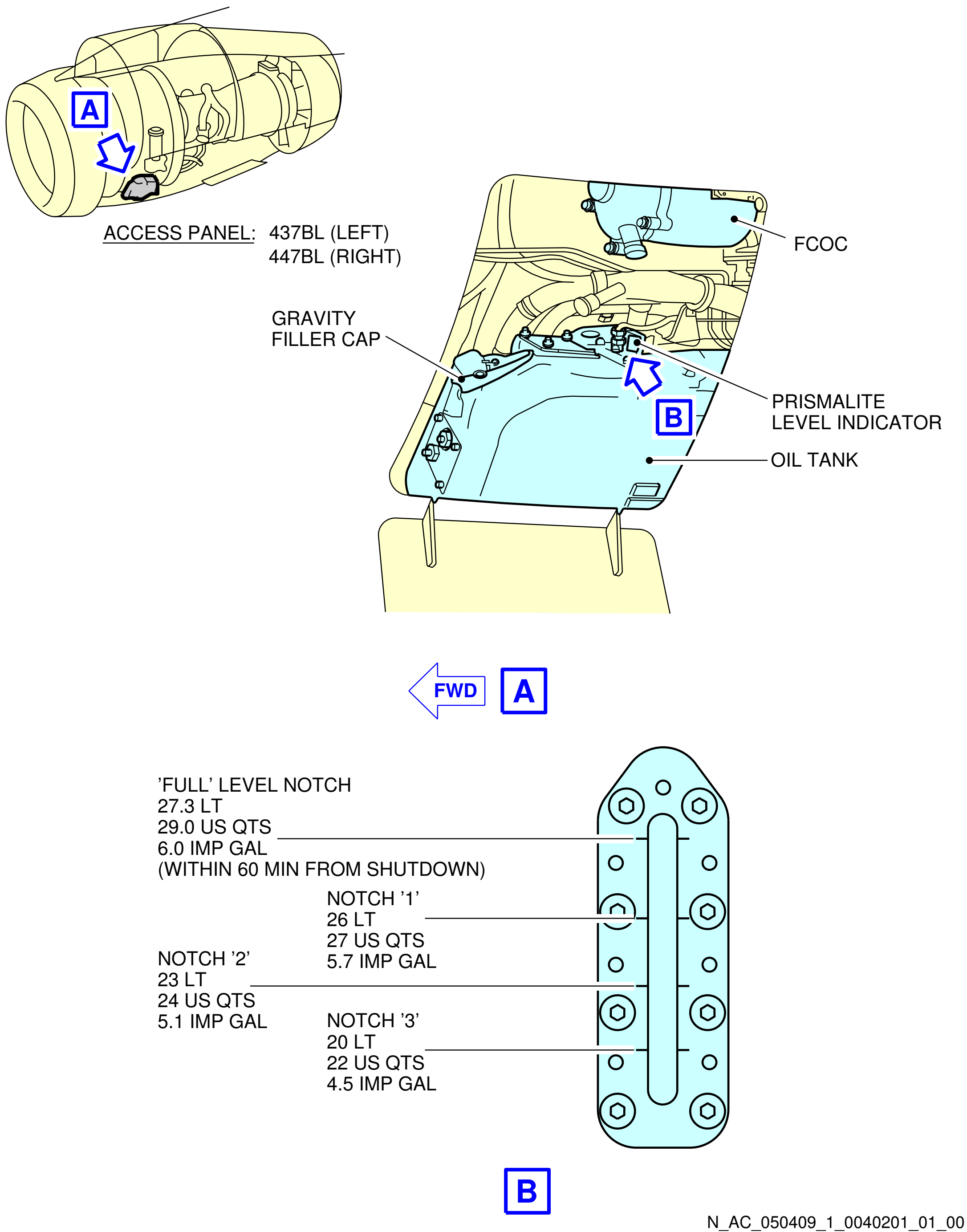
**ON A/C A320-200





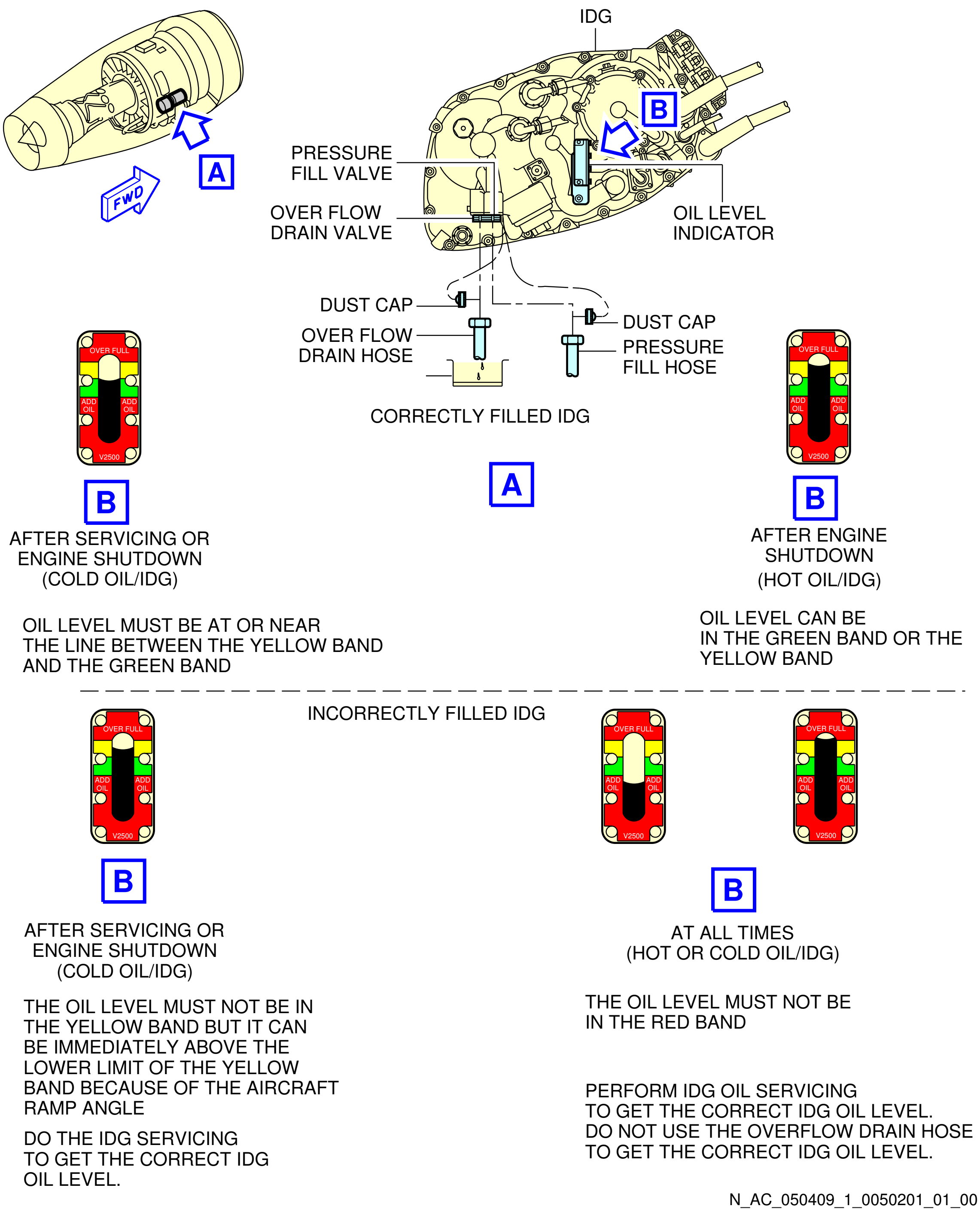
Ground Service Connections
Starter Oil Tank – CFM56 Series Engine
FIGURE-5-4-9-991-003-A01

**ON A/C A320-200



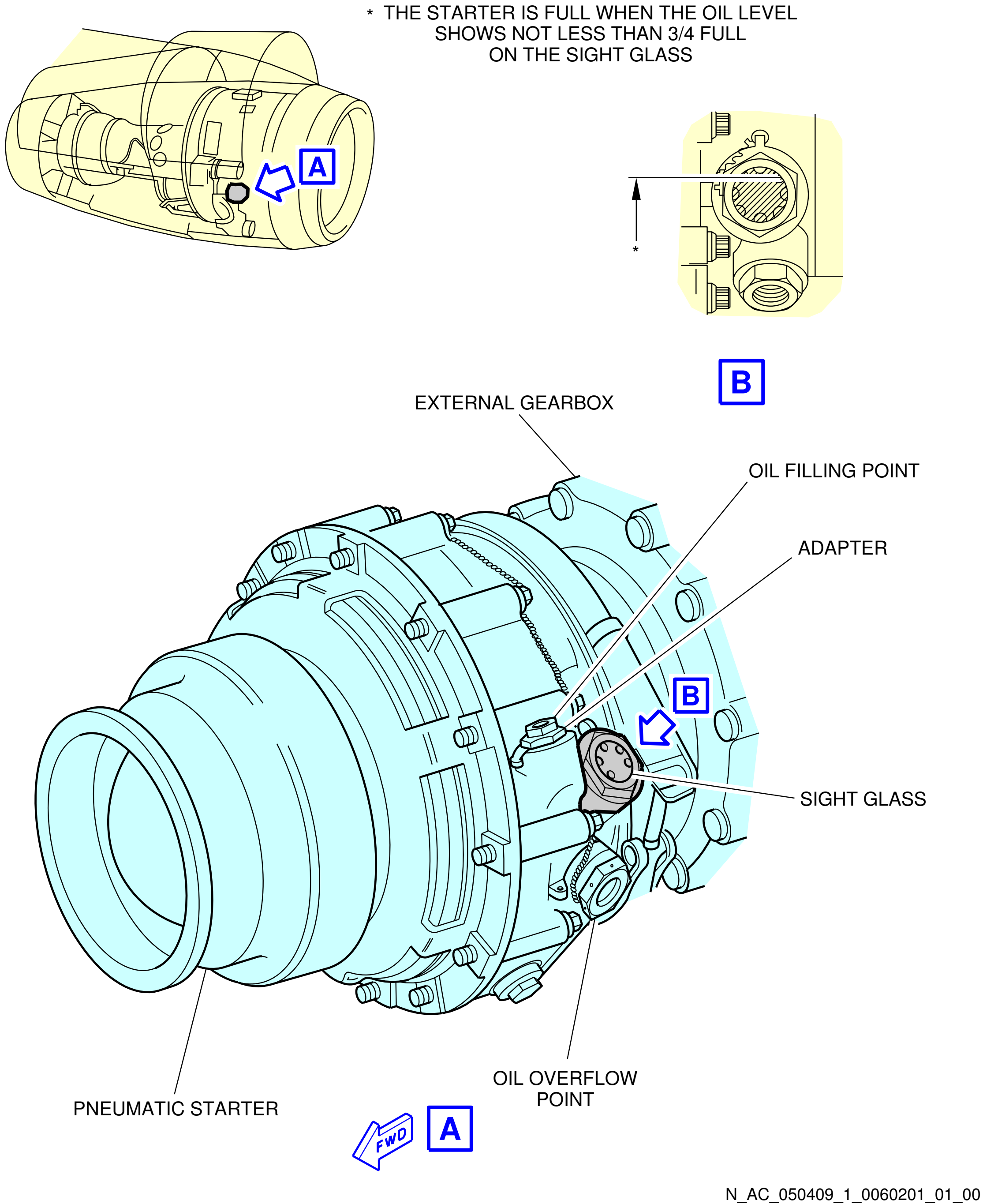
Ground Service Connections
Engine Oil Tank – IAE V2500 Series Engine
FIGURE-5-4-9-991-004-B01

**ON A/C A320-200



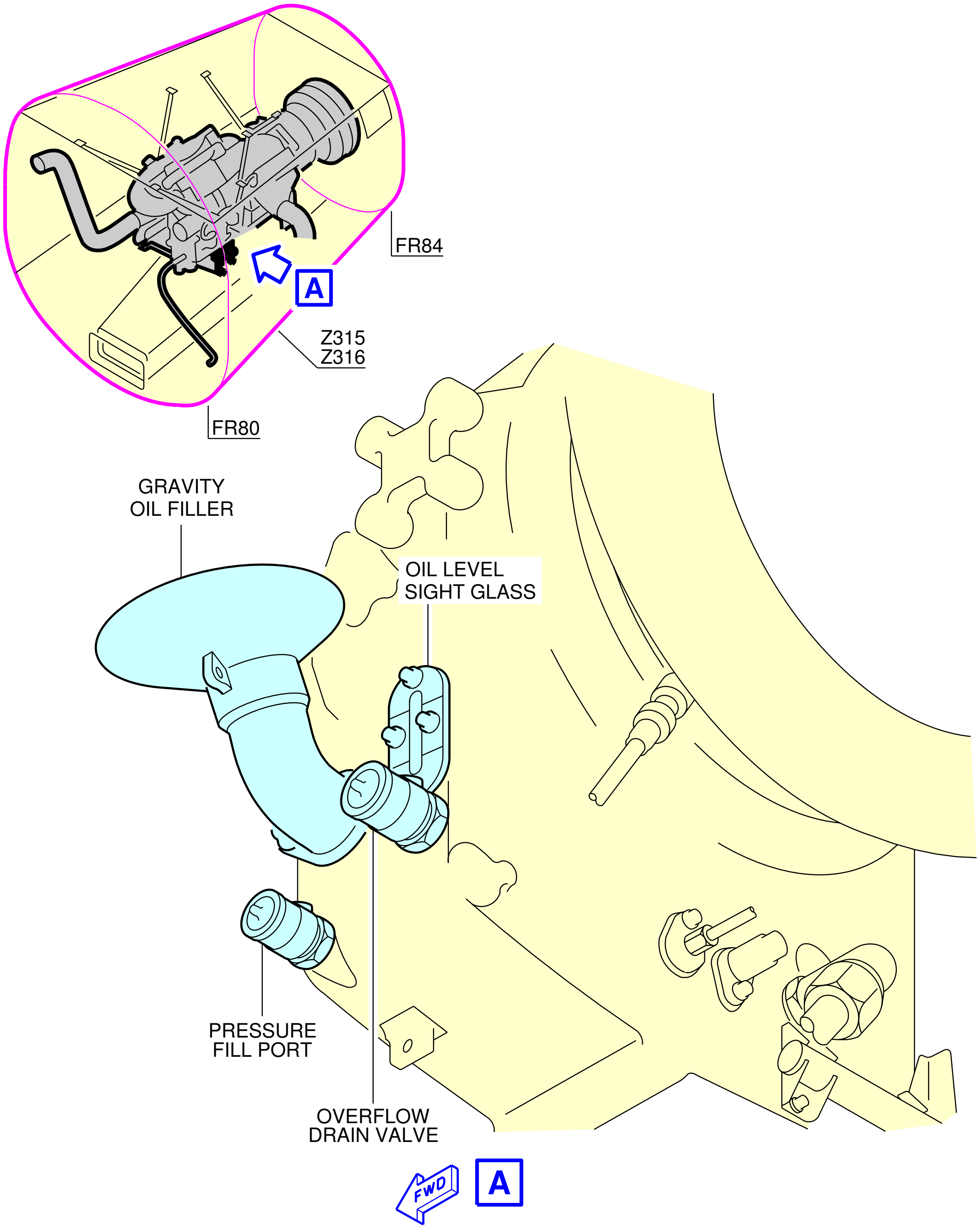
Ground Service Connections
IDG Oil Tank – IAE V2500 Series Engine
FIGURE-5-4-9-991-005-B01

**ON A/C A320-200



Ground Service Connections
Starter Oil Tank – IAE V2500 Series Engine
FIGURE-5-4-9-991-006-B01

**ON A/C A320-200



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Ground Service Connections
APU Oil Tank
FIGURE-5-4-9-991-007-A01

5-4-10 Vacuum Toilet System

****ON A/C A320-200**

Vacuum Toilet System

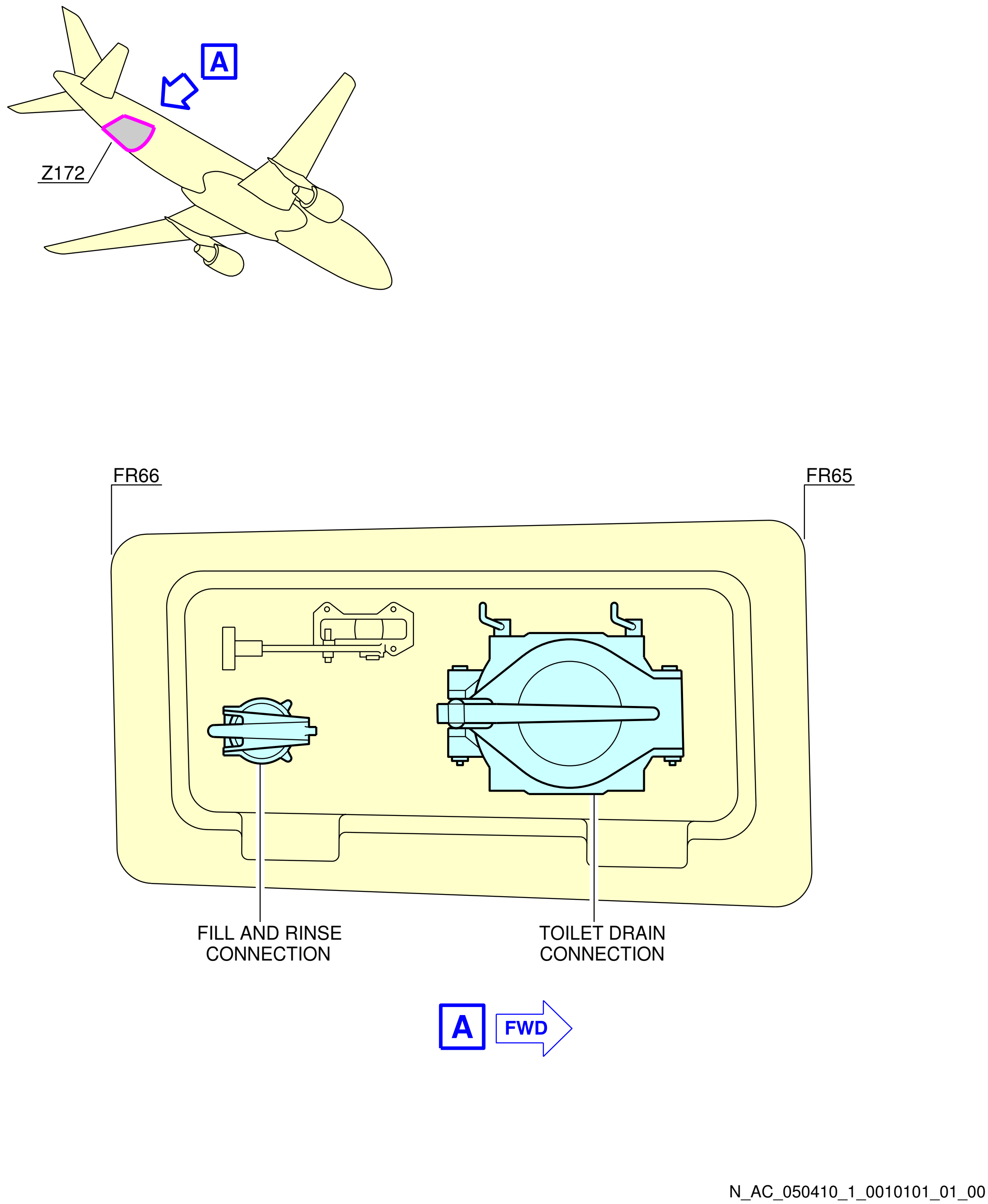
1. Vacuum Toilet System.

ACCESS	AFT OF NOSE m (ft)	POSITION FROM AIRCRAFT CENTERLINE		MEAN HEIGHT FROM GROUND m (ft)
		R SIDE m (ft)	L SIDE m (ft)	
Waste Water Ground Service Panel: Access door 172AR	31.3 (102.69)	0.8 (2.62)		2.8 (9.18)

NOTE : Distances are approximate

2. Technical Specifications
   A. Connectors:
      - Draining: 4 in (ISO 17775).
      - Flushing and filling: 1 in (ISO 17775).
   B. Usable waste tank capacity:
      - Standard configuration - on tank: 177 l (30.91 US gal).
   C. Waste tank - Rinsing:
      - Operating pressure: 3.45 bar (50 psi).
   D. Waste tank - Precharge:
      - 10 l (2.64 US gal).

**ON A/C A320-200



Ground Service Connections
Waste Water Ground Service Panel
FIGURE-5-4-10-991-001-A01

5-5-0 Engine Starting Pneumatic Requirements

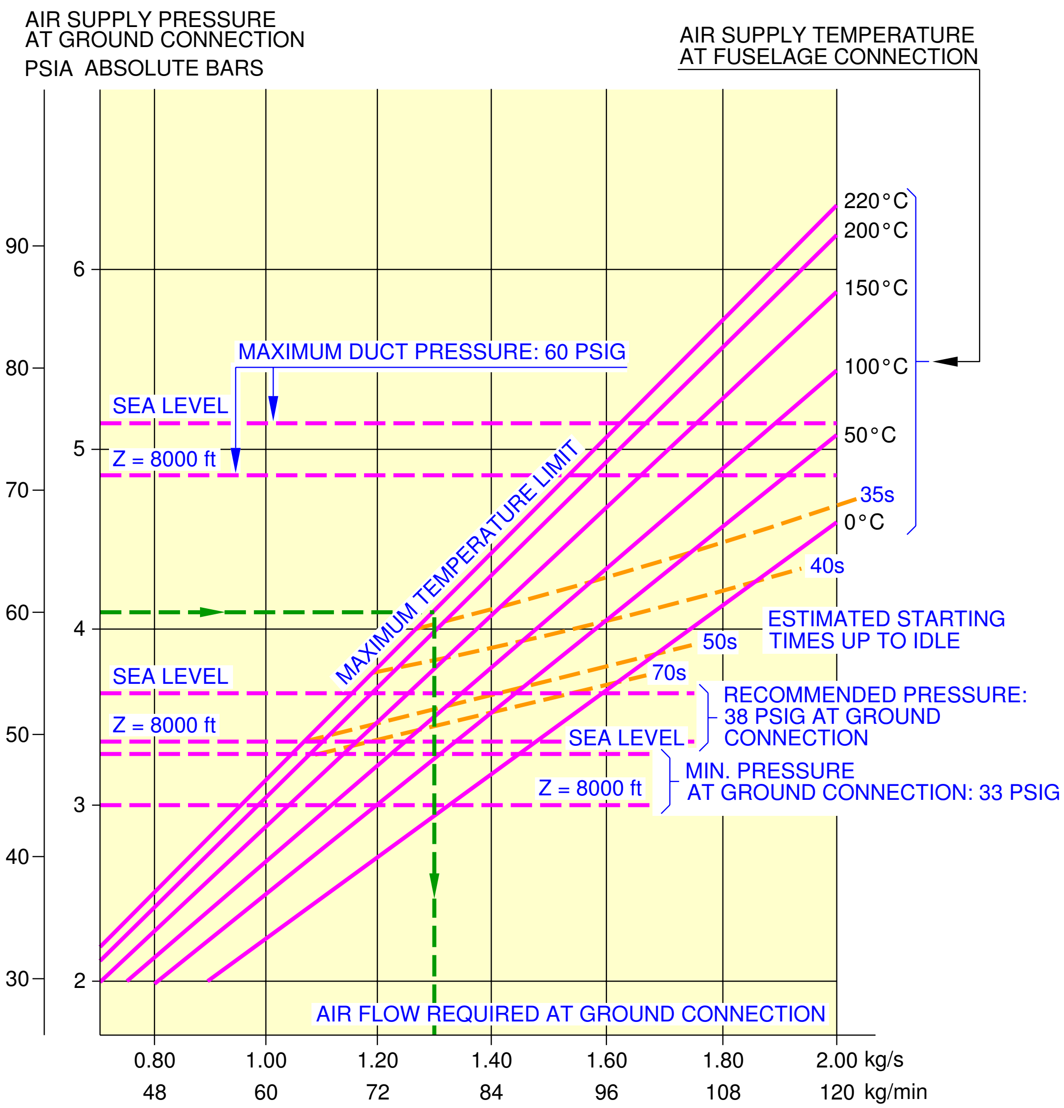
****ON A/C A320-200**

Engine Starting Pneumatic Requirements

1. Engine Starting Pneumatic Requirements.
   To determine the airflow required at ground connection, refer to the example given in FIGURE 5--0-99--003-A.

   For engine starting pneumatic requirements for:
   - Low ambient temperatures, refer to 5-5-1,
   - Medium ambient temperatures, refer to 5-5-2,
   - High ambient temperatures, refer to 5-5-3.

**ON A/C A320-200



EXAMPLE TO DETERMINATE THE AIRFLOW REQUIRED AT THE FUSELAGE CONNECTION:
–FOR AN AIR START UNIT DELIVERING 60 PSIA (4.14 BARS) AIR PRESSURE AT THE FUSELAGE CONNECTOR
–AT A SUPPLIED AIR TEMPERATURE OF 220°C (428°F) AT THE FUSELAGE CONNECTOR

1. DRAW AN HORIZONTAL LINE FROM THE SUPPLIED AIR PRESSURE (60 PSIA (4.14 BARS)).
2. FROM THE INTERSECTION WITH THE AIR SUPPLY TEMPERATURE AT FUSELAGE CONNECTION (220°C (428°F)), DRAW A VERTICAL LINE.
3. THE INTERSECTION WITH THE HORIZONTAL AXIS GIVES THE REQUIRED AIRFLOW AT GROUND CONNECTION (78 kg/min (1.3 kg/s)).

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Engine Starting Pneumatic Requirements
FIGURE-5-5-0-991-003-A01

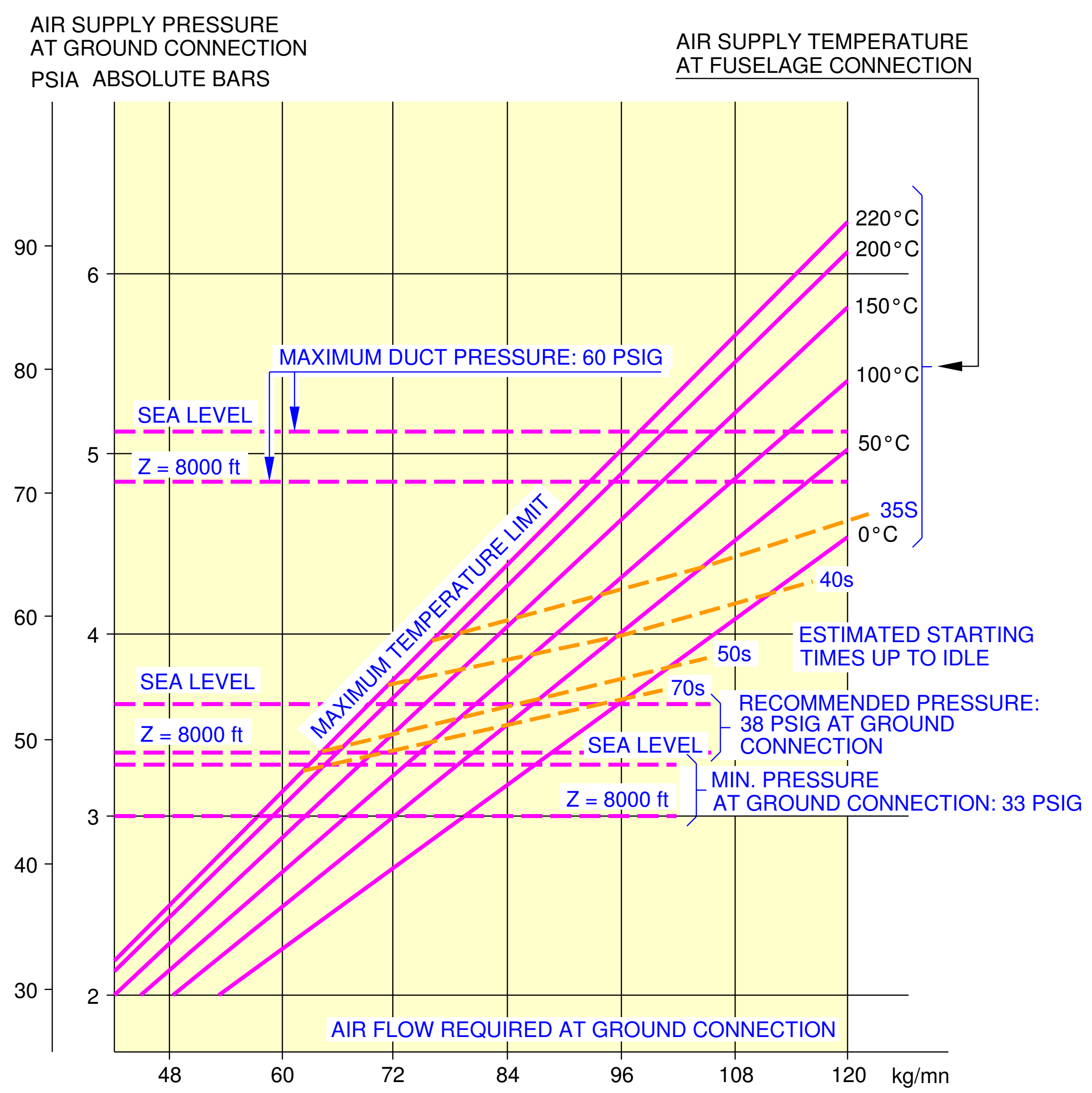
5-5-1 Low Ambient Temperatures

****ON A/C A320-200**

Low Ambient Temperatures

1. This section provides the engine starting pneumatic requirements for a temperature of -40°C (-40°F).

**ON A/C A320-200



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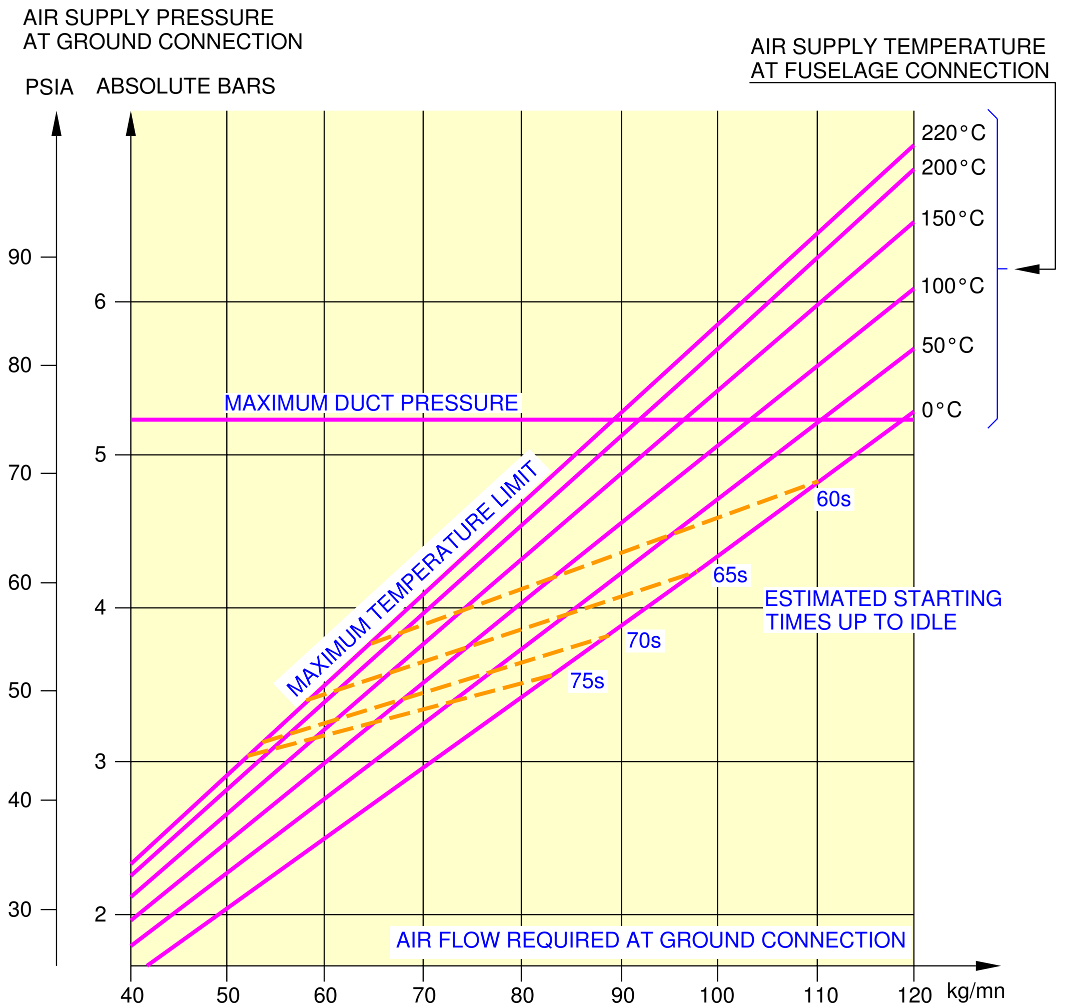
Engine Starting Pneumatic Requirements
Low Ambient Temperature -40˚C (-40˚F) – CFM56 series engine
FIGURE-5-5-1-991-005-A01

**ON A/C A320-200



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Engine Starting Pneumatic Requirements
Low Ambient Temperature -40°C (-40°F) – IAE V2500 series engine
FIGURE-5-5-1-991-006-A01

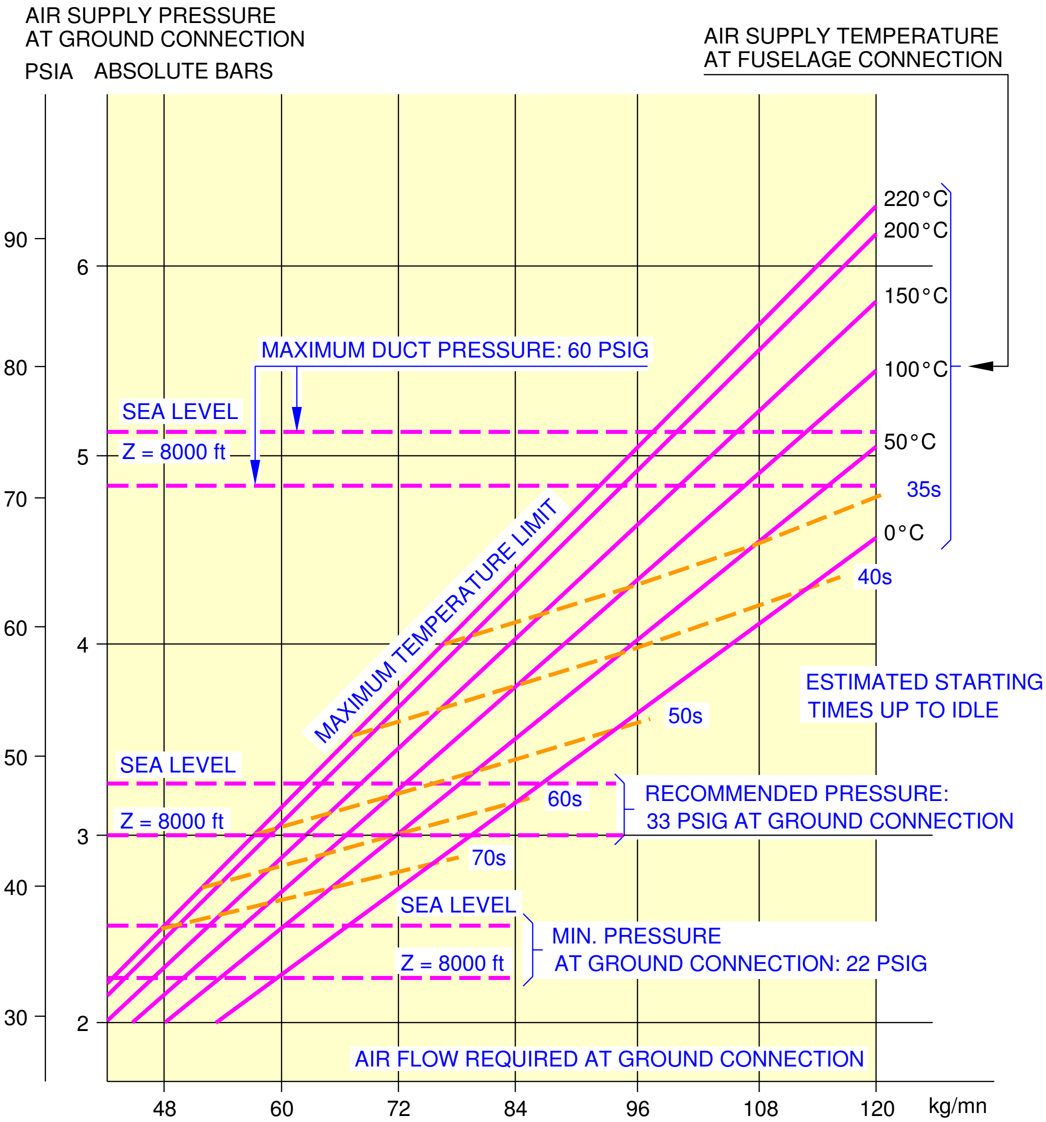
5-5-2 Medium Ambient Temperatures

****ON A/C A320-200**

Medium Ambient Temperatures

1. This section provides the engine starting pneumatic requirements for a temperature of +15°C (+59°F).

**ON A/C A320-200



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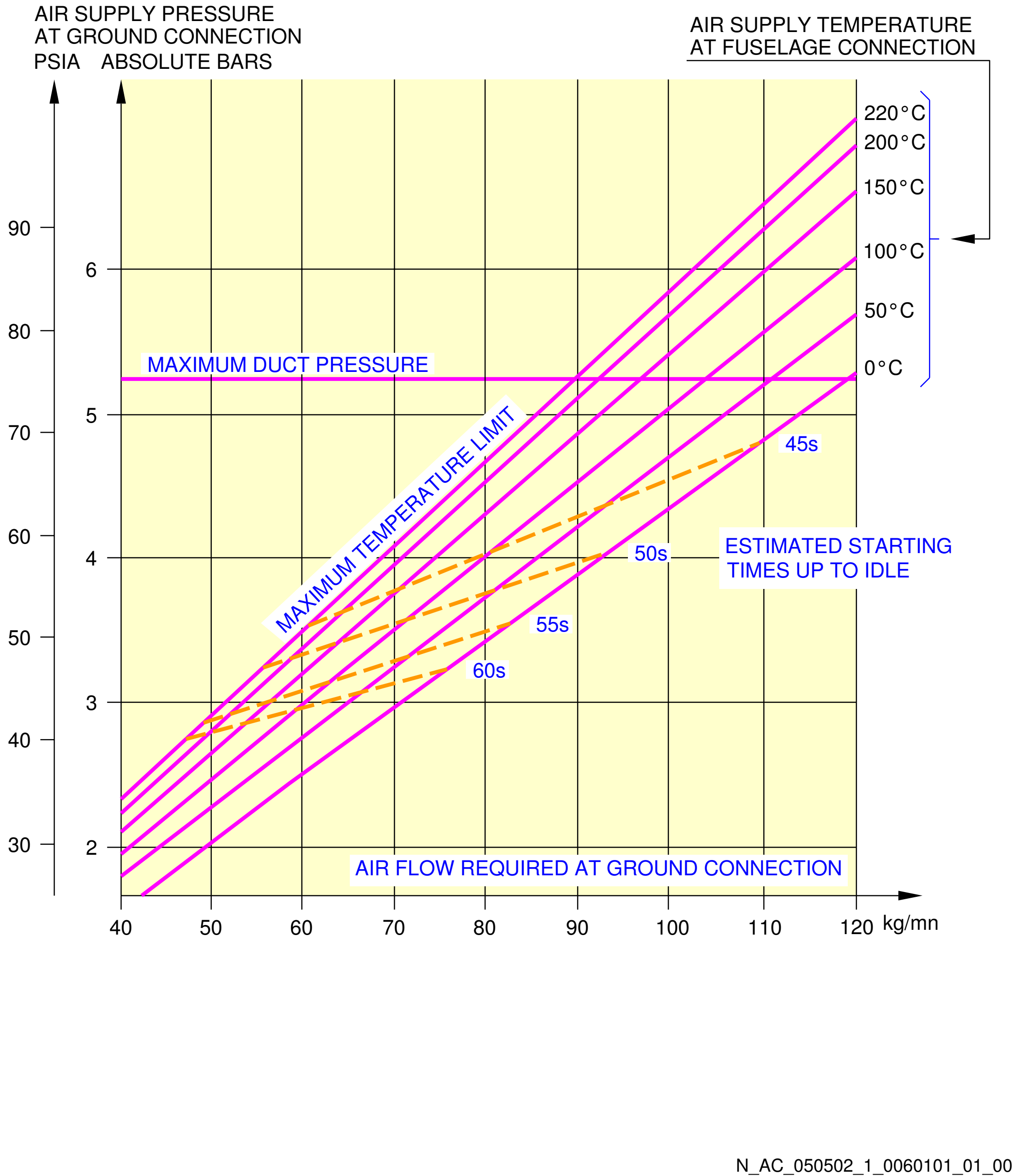
Engine Starting Pneumatic Requirements
Medium Ambient Temperature +15 ° C (+59 ° F) – CFM56 series engine
FIGURE-5-5-2-991-005-A01

**ON A/C A320-200



Engine Starting Pneumatic Requirements
Medium Ambient Temperature +15˚C (+59˚F) – IAE V2500 series engine
FIGURE-5-5-2-991-006-A01

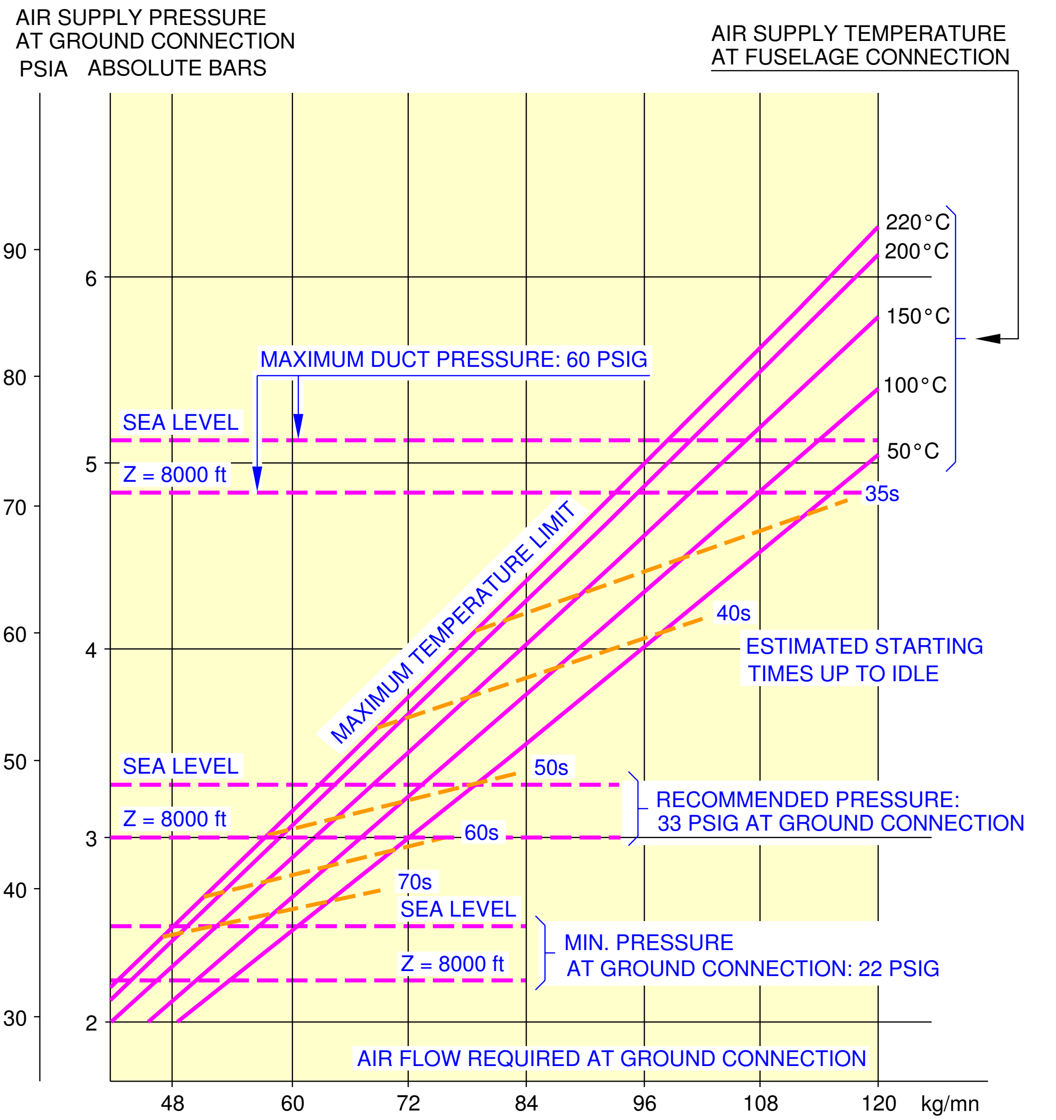
5-5-3 High Ambient Temperatures

****ON A/C A320-200**

High Ambient Temperatures

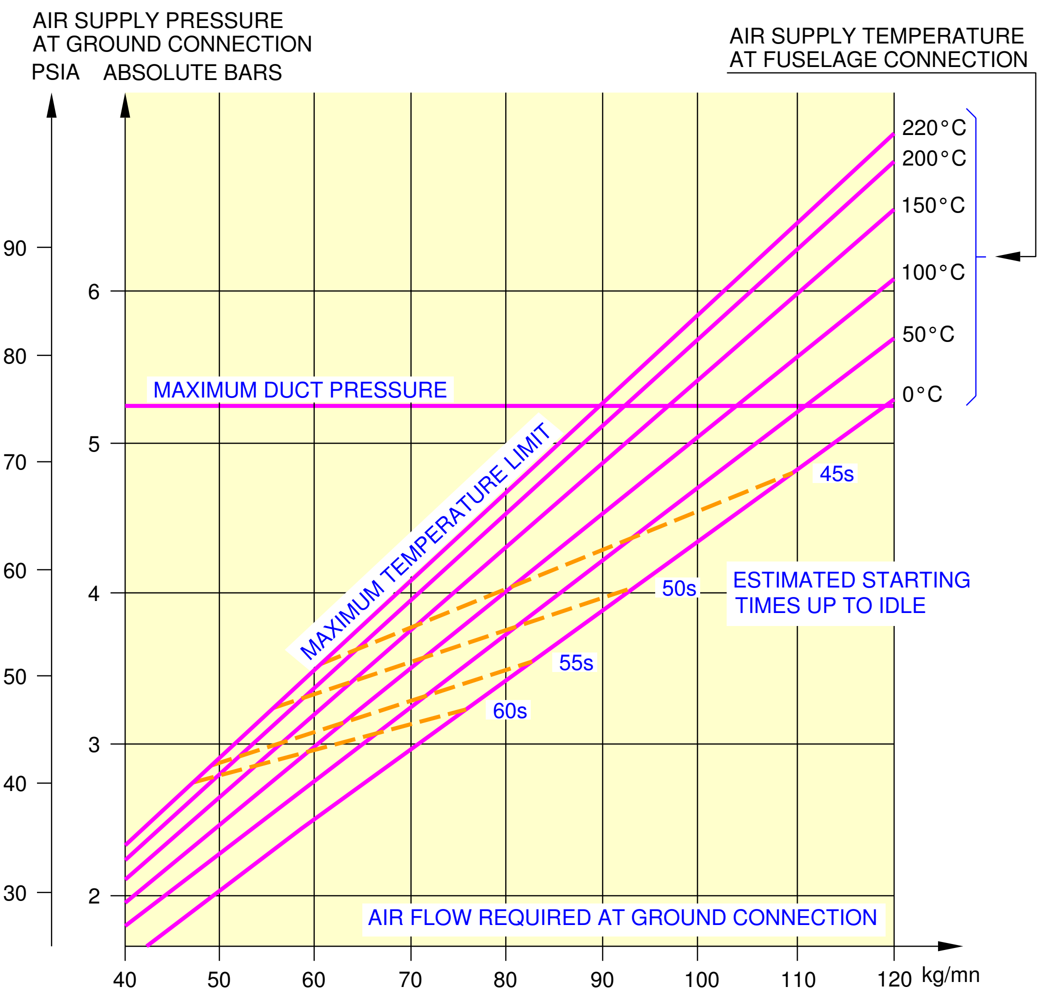
1. This section provides the engine starting pneumatic requirements for a temperature upper:
   - +50°C (+122°F) – IAE V2500
   - +55°C (+131°F) – CFM56

**ON A/C A320-200



Engine Starting Pneumatic Requirements
High Ambient Temperature +55 °C (+131 °F) – CFM56 series engine
FIGURE-5-5-3-991-005-A01

**ON A/C A320-200



Engine Starting Pneumatic Requirements
High Ambient Temperature +50°C (+122°F) – IAE V2500 series engine
FIGURE-5-5-3-991-006-A01

5-6-0 Ground Pneumatic Power Requirements

****ON A/C A320-200**

Ground Pneumatic Power Requirements

1. Ground Pneumatic Power Requirements

NOTE : The air flow rates and temperature requirements given in sections 5.6 and 5.7 are given at aircraft connection.

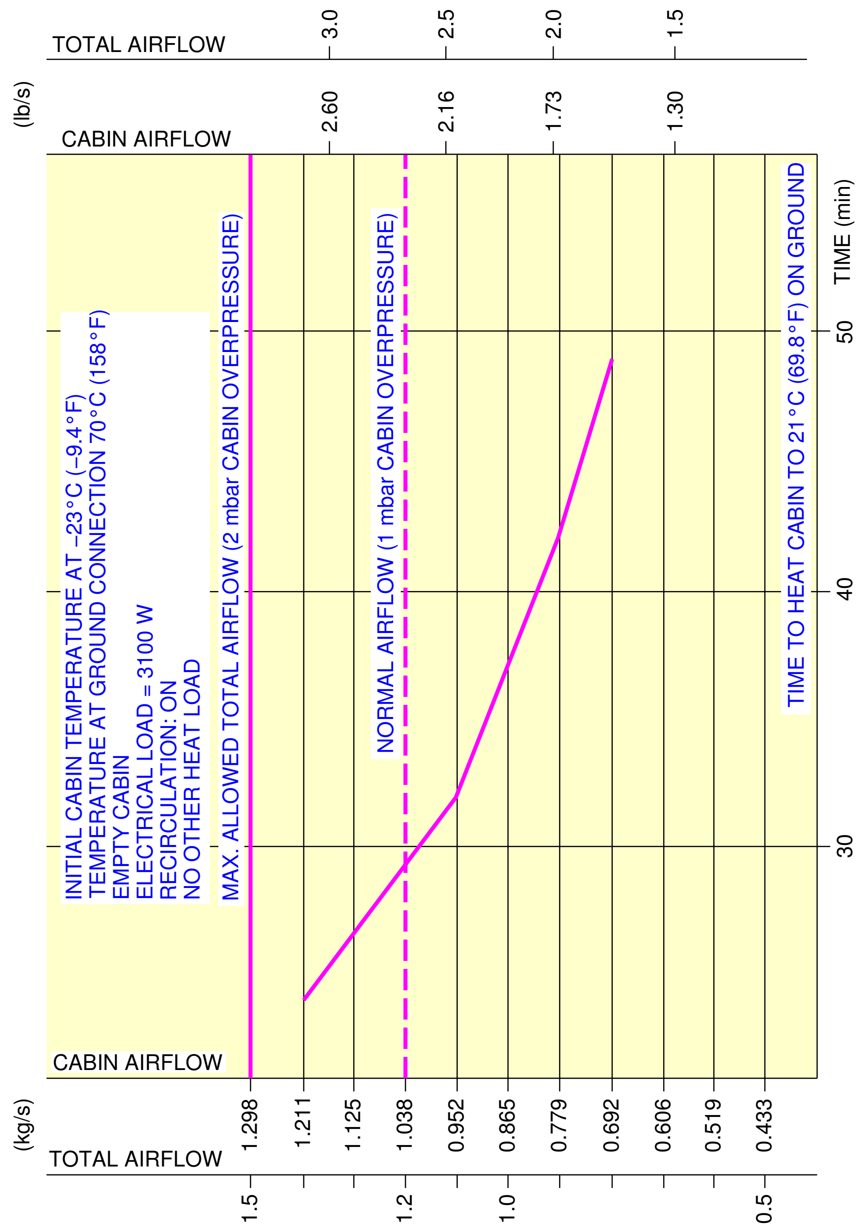
5-6-1 Heating

****ON A/C A320-200**

Heating

1. This section provides the ground pneumatic power requirements heating.

**ON A/C A320-200



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Ground Pneumatic Power Requirements
Heating
FIGURE-5-6-1-991-003-A01

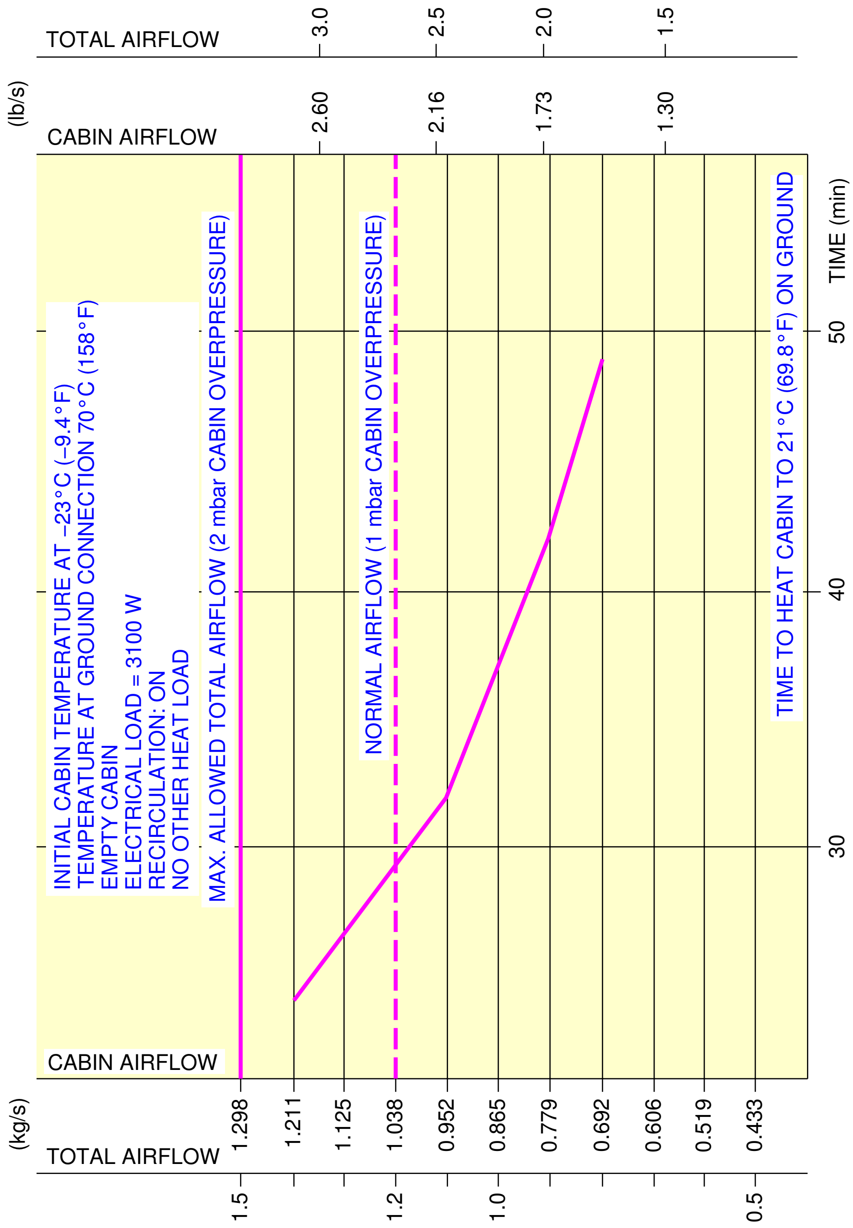
5-6-2 Cooling

****ON A/C A320-200**

Cooling

1. This section provides the ground pneumatic power requirements cooling.

**ON A/C A320-200



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Ground Pneumatic Power Requirements
Cooling
FIGURE-5-6-2-991-003-A01

5-7-0 Preconditioned Airflow Requirements

**ON A/C A320-200

Preconditioned Airflow Requirements

1. This section gives the preconditioned airflow requirements for cabin air conditioning.

A. Preconditioned Airflow Requirements.

FRESH AIRFLOW				CURVE 1	
TOTAL		CABIN		T FL	
(kg/s)	(lb/s)	(kg/s)	(lb/s)	(˚C)	(˚F)
0.5	1.10	0.433	0.955	-42.7	-44.9
0.6	1.32	0.519	1.144	-31.1	-24.0
0.7	1.54	0.606	1.336	-22.7	-8.9
0.8	1.76	0.692	1.526	-16.5	2.3
0.9	1.98	0.779	1.717	-11.6	11.1
1.0	2.20	0.865	1.907	-7.7	18.1
1.1	2.43	0.952	2.099	-4.5	23.9
1.2	2.65	1.038	2.288	-1.9	28.6
1.3	2.87	1.125	2.480	0.4	32.7
1.4	3.09	1.211	2.670	2.3	36.1
1.5	3.31	1.298	2.862	4.0	39.2

NOTE : Data for stabilized conditions see 5-7-0.

B. Preconditioned Airflow Requirements.

FRESH AIRFLOW				CURVE 2	
TOTAL		CABIN		T FL	
(kg/s)	(lb/s)	(kg/s)	(lb/s)	(˚C)	(˚F)
0.5	1.10	0.433	0.955	27.8	82.0
0.6	1.32	0.519	1.144	26.6	79.9
0.7	1.54	0.606	1.336	25.7	78.3
0.8	1.76	0.692	1.526	25.1	77.2
0.9	1.98	0.779	1.717	24.6	76.3
1.0	2.20	0.865	1.907	24.2	75.6
1.1	2.43	0.952	2.099	23.8	74.8
1.2	2.65	1.038	2.288	23.5	74.3
1.3	2.87	1.125	2.480	23.3	73.9
1.4	3.09	1.211	2.670	23.1	73.6

FRESH AIRFLOW				CURVE 2	
TOTAL		CABIN		T FL	
(kg/s)	(lb/s)	(kg/s)	(lb/s)	(˚C)	(˚F)
1.5	3.31	1.298	2.862	22.9	73.2

NOTE : Data for stabilized conditions see 5-7-0.

C. Preconditioned Airflow Requirements.

FRESH AIRFLOW				CURVE 3	
TOTAL		CABIN		T FL	
(kg/s)	(lb/s)	(kg/s)	(lb/s)	(˚C)	(˚F)
0.5	1.10	0.433	0.955	32.2	90.0
0.6	1.32	0.519	1.144	30.2	86.4
0.7	1.54	0.606	1.336	28.8	83.8
0.8	1.76	0.692	1.526	27.8	82.0
0.9	1.98	0.779	1.717	26.9	80.4
1.0	2.20	0.865	1.907	26.3	79.3
1.1	2.43	0.952	2.099	25.7	78.3
1.2	2.65	1.038	2.288	25.3	77.5
1.3	2.87	1.125	2.480	24.9	76.8
1.4	3.09	1.211	2.670	24.6	76.3
1.5	3.31	1.298	2.862	24.3	75.7

NOTE : Data for stabilized conditions see 5-7-0.

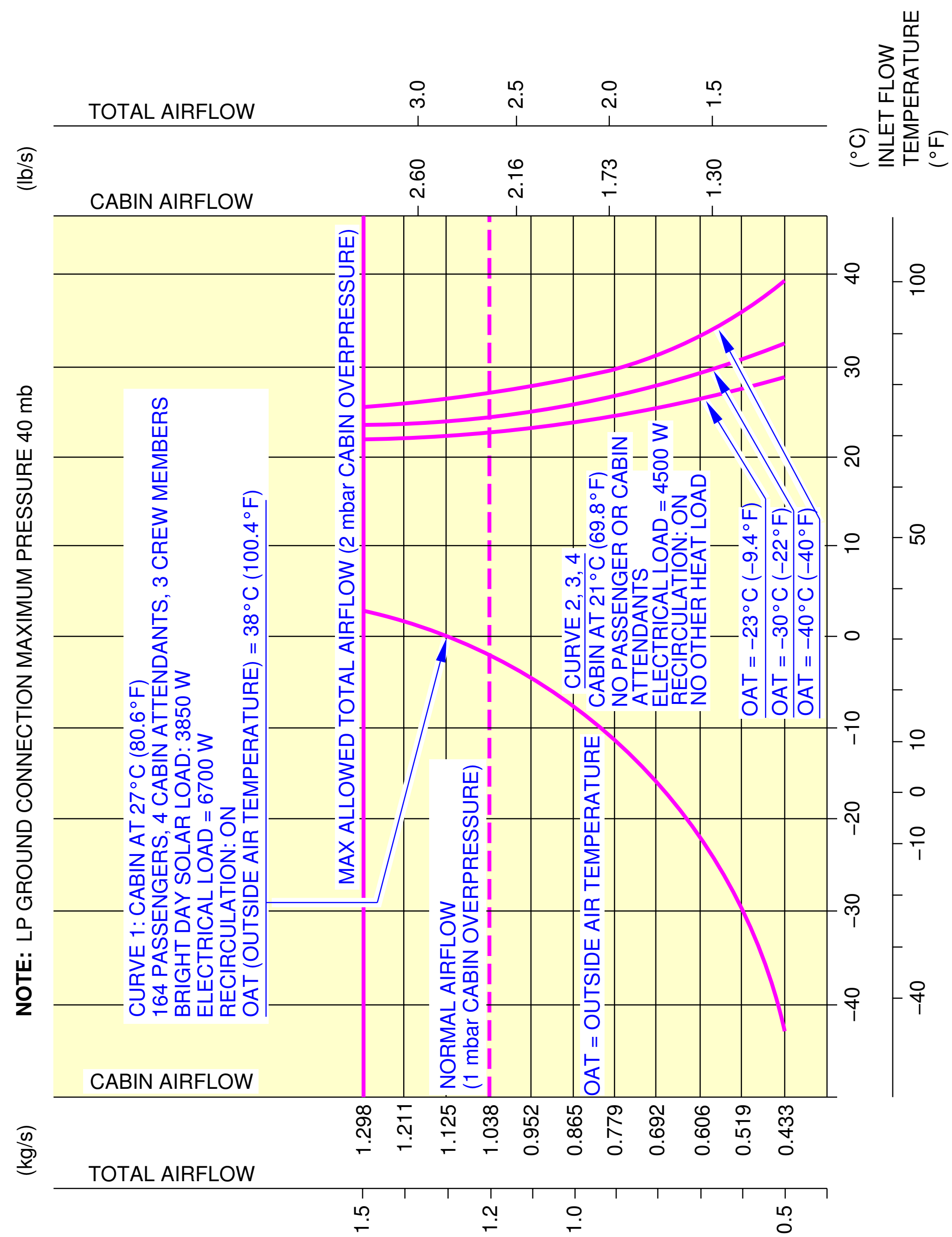
D. Preconditioned Airflow Requirements.

FRESH AIRFLOW				CURVE 4	
TOTAL		CABIN		T FL	
(kg/s)	(lb/s)	(kg/s)	(lb/s)	(˚C)	(˚F)
0.5	1.10	0.433	0.955	38.9	102.0
0.6	1.32	0.519	1.144	35.8	96.4
0.7	1.54	0.606	1.336	33.6	92.5
0.8	1.76	0.692	1.526	31.9	89.4
0.9	1.98	0.779	1.717	30.6	87.1
1.0	2.20	0.865	1.907	29.6	85.3
1.1	2.43	0.952	2.099	28.7	83.7
1.2	2.65	1.038	2.288	28.0	82.4
1.3	2.87	1.125	2.480	27.4	81.3
1.4	3.09	1.211	2.670	26.9	80.4

FRESH AIRFLOW				CURVE 4	
TOTAL		CABIN		T FL	
(kg/s)	(lb/s)	(kg/s)	(lb/s)	(°C)	(°F)
1.5	3.31	1.298	2.862	26.4	79.5

NOTE : Data for stabilized conditions see 5-7-0.

**ON A/C A320-200



Preconditioned Airflow Requirements
FIGURE-5-7-0-991-003-A01

5-8-0 Ground Towing Requirements

**ON A/C A320-200

Ground Towing Requirements

1. General

This section provides information on aircraft towing.
This aircraft 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 tow bar attached to the nose gear leg (refer to AMM chap 9 for conditions and limitations).
One tow bar fitting is installed at the front of the leg.
The main landing gears have attachment points for towing or debogging (for details, refer to chapter 07 of the Aircraft Recovery Manual).

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

   The chart is based on the engine type with the highest idle thrust level.

B. The second part of this section supplies guidelines for the tow bar.

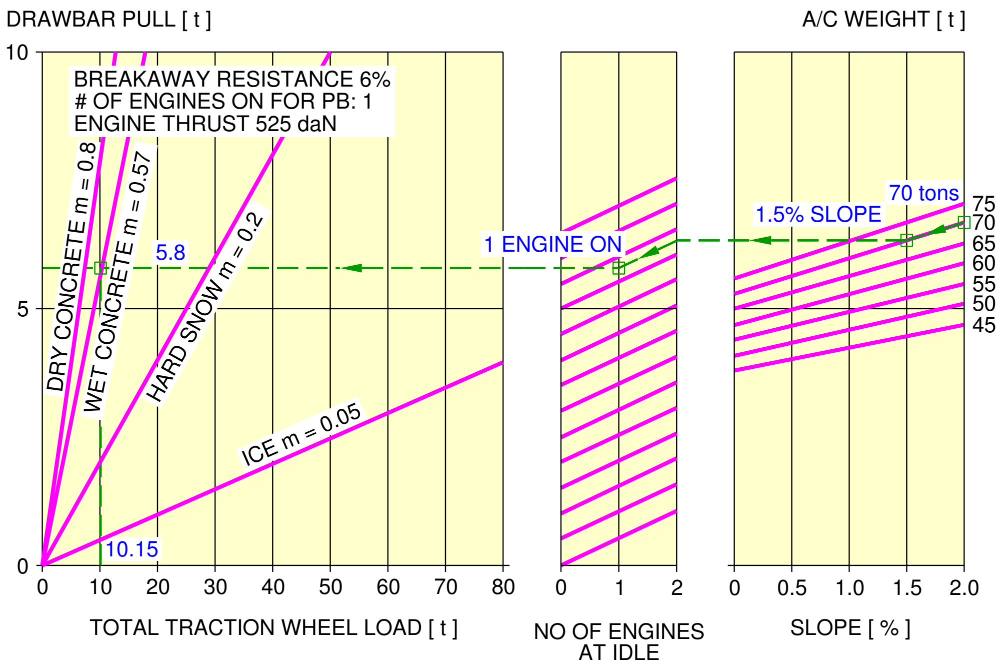
   NOTE : Information on aircraft towing procedures and corresponding aircraft limitations are given in chapter 9 on the Aircraft Maintenance Manual.

   The aircraft tow bar shall respect the following norms:
   - SAE AS1614 C, "Main Line Aircraft Tow Bar Attach Fitting Interface".
   - SAE ARP1915 D, "Aircraft Tow Bar".
   - ISO 8267-1, "Aircraft - Tow bar attachment fitting - Interface requirements - Part 1: Main line aircraft".
   - ISO 9667, "Aircraft ground support equipment - Tow bars".
   - IATA Airport Handling Manual AHM 958, "Functional Specification for an Aircraft Tow bar".

   A conventional type tow bar 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 9425 daN (21188 lbf).
   - A torsion pin calibrated at 826 m.daN (7311 lbf.in).

   The towing head is designed according to SAE AS1614 C (Aircraft Weight Category I).

**ON A/C A320-200



EXAMPLE HOW TO DETERMINE THE MASS REQUIREMENT TO TOW A A320 AT 70 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 (70 t)
- FROM THIS POINT DRAW A PARALLEL LINE TO THE REQUIRED SLOPE PERCENTAGE (1.5%)
- FROM THE 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 (5.8 t)
- SEARCH THE INTERSECTION WITH THE "WET CONCRETE" LINE. THE OBTAINED X–COORDINATE IS THE RECOMMENDED MINIMUM TRACTOR WEIGHT (10.1 t)

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Ground Towing Requirements
FIGURE-5-8-0-991-001-C01

5-9-0 De-Icing and External Cleaning

**ON A/C A320-200

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 13 m (42.65 ft).

2. De-Icing

AIRCRAFT TYPE	Wing Top Surface (Both Sides)		Wingtip Devices (Both Inside and Outside Surfaces) (Both Sides)		HTP Top Surface (Both Sides)		VTP (Both Sides)	
	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2
A320	99.7	1073.16	1.8	19.38	27	290.63	43	462.85
A320 Sharklet	99.7	1073.16	9.6	103.33	27	290.63	43	462.85

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
A320	137.9	1484.34	23.6	254.03	333	3584
A320 Sharklet	137.9	1484.34	23.6	254.03	341	3670

NOTE : Dimensions are approximate

3. External Cleaning

AIRCRAFT TYPE	Wing Top Surface (Both Sides)		Wing Lower Surface (Including Flap Track Fairing) (Both Sides)		Wingtip Devices (Both Inside and Outside Surfaces) (Both Sides)		HTP Top Surface (Both Sides)		HTP Lower Surface (Both Sides)	
	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2
A320	99.7	1073.16	103.4	1112.99	1.8	19.38	27	290.63	27	290.63
A320 Sharklet	99.7	1073.16	103.4	1112.99	9.6	103.33	27	290.63	27	290.63

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
A320	43	462.85	421.2	4533.76	73.2	787.92	796	8568

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
A320 Sharklet	43	462.85	421.2	4533.76	73.2	787.92	804	8654

NOTE : Dimensions are approximate

OPERATING CONDITIONS

6-1-0 Engine Exhaust Velocities and Temperatures

****ON A/C A320-200**

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.

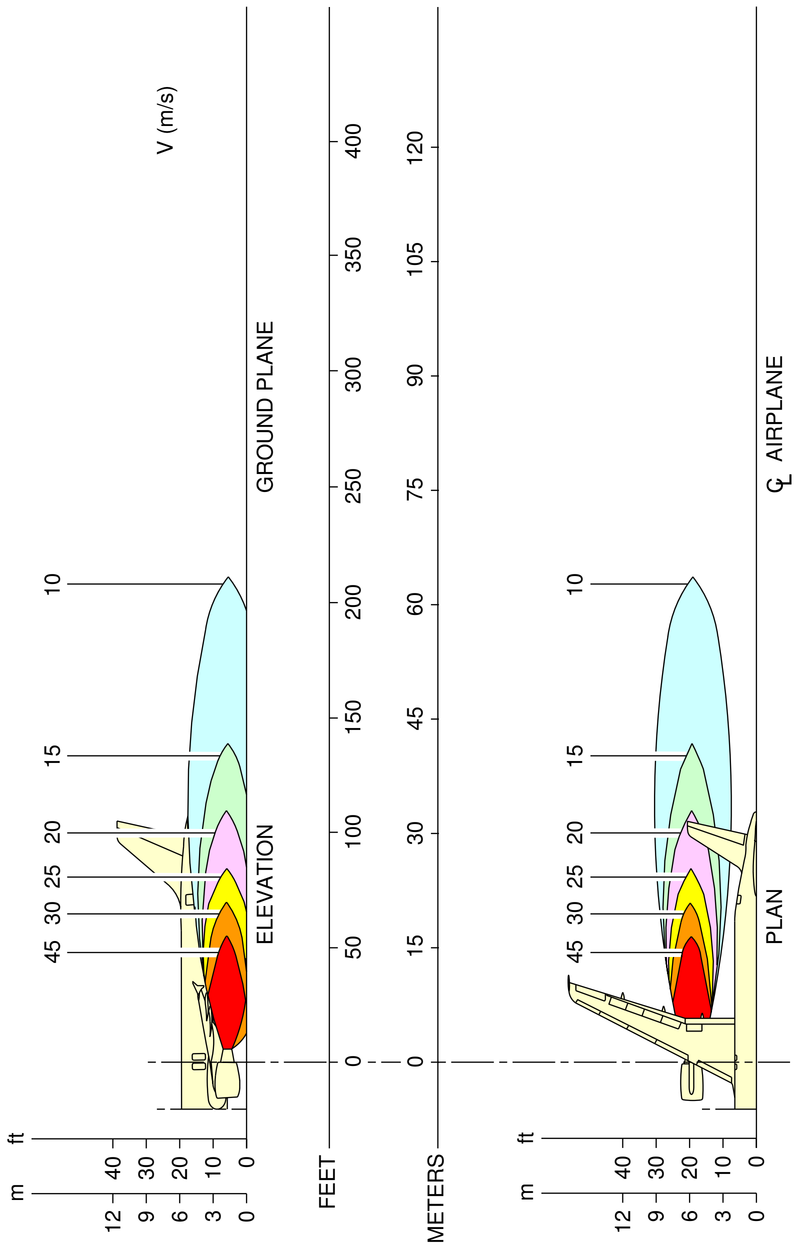
6-1-1 Engine Exhaust Velocities Contours - Ground Idle Power

****ON A/C A320-200**

Engine Exhaust Velocities Contours - Ground Idle Power

1. This section gives engine exhaust velocities contours at ground idle power.

****ON A/C A320-200**



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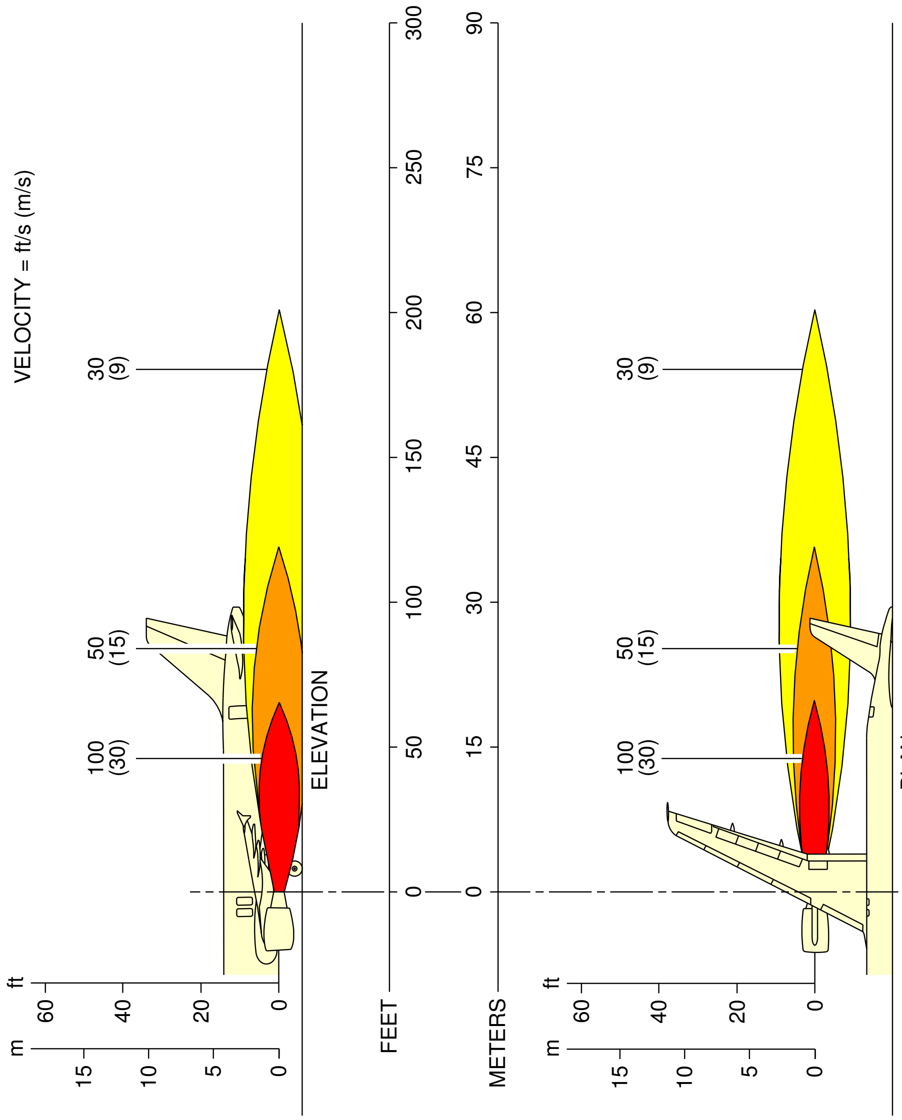
Engine Exhaust Velocities
Ground Idle Power – CFM56 series engine
FIGURE-6-1-1-991-005-A01

**ON A/C A320-200



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Engine Exhaust Velocities
Ground Idle Power – IAE V2500 series engine
FIGURE-6-1-1-991-006-A01

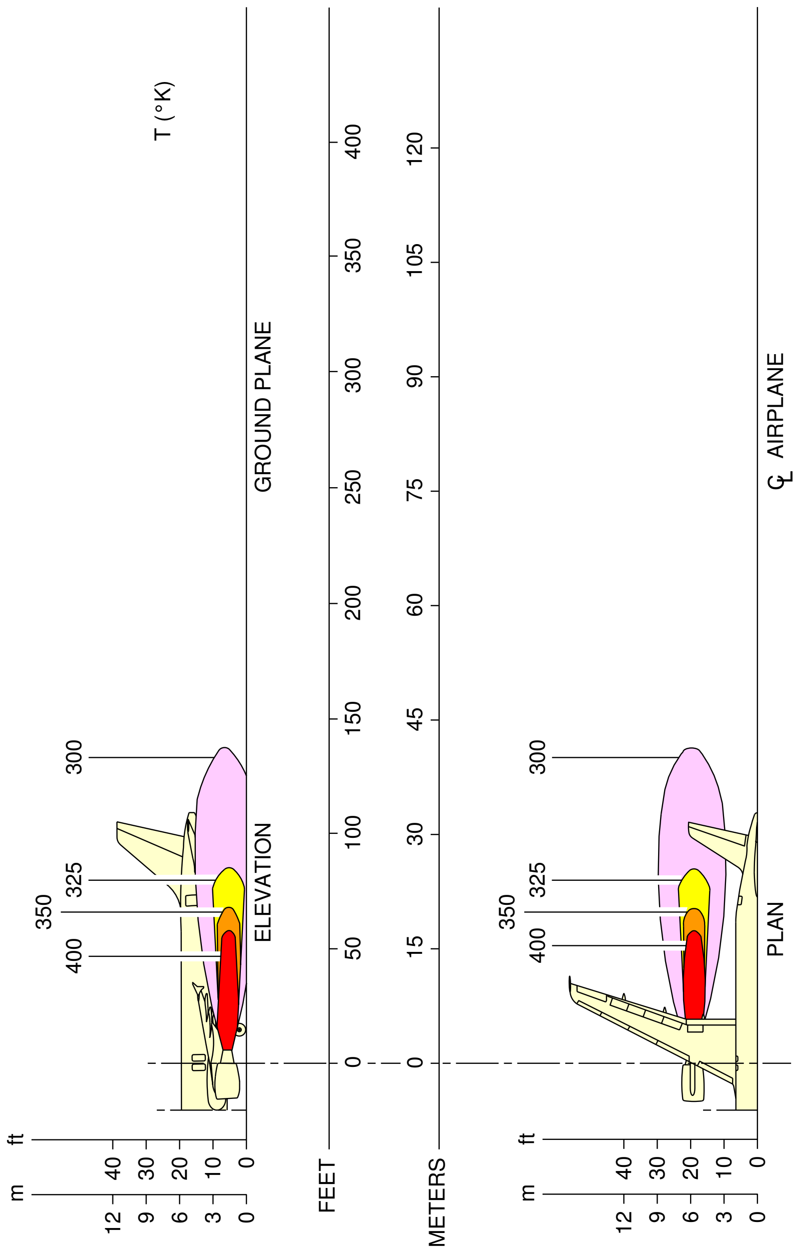
6-1-2 Engine Exhaust Temperatures Contours - Ground Idle Power

****ON A/C A320-200**

Engine Exhaust Temperatures Contours - Ground Idle Power

1. This section gives engine exhaust temperatures contours at ground idle power.

**ON A/C A320-200



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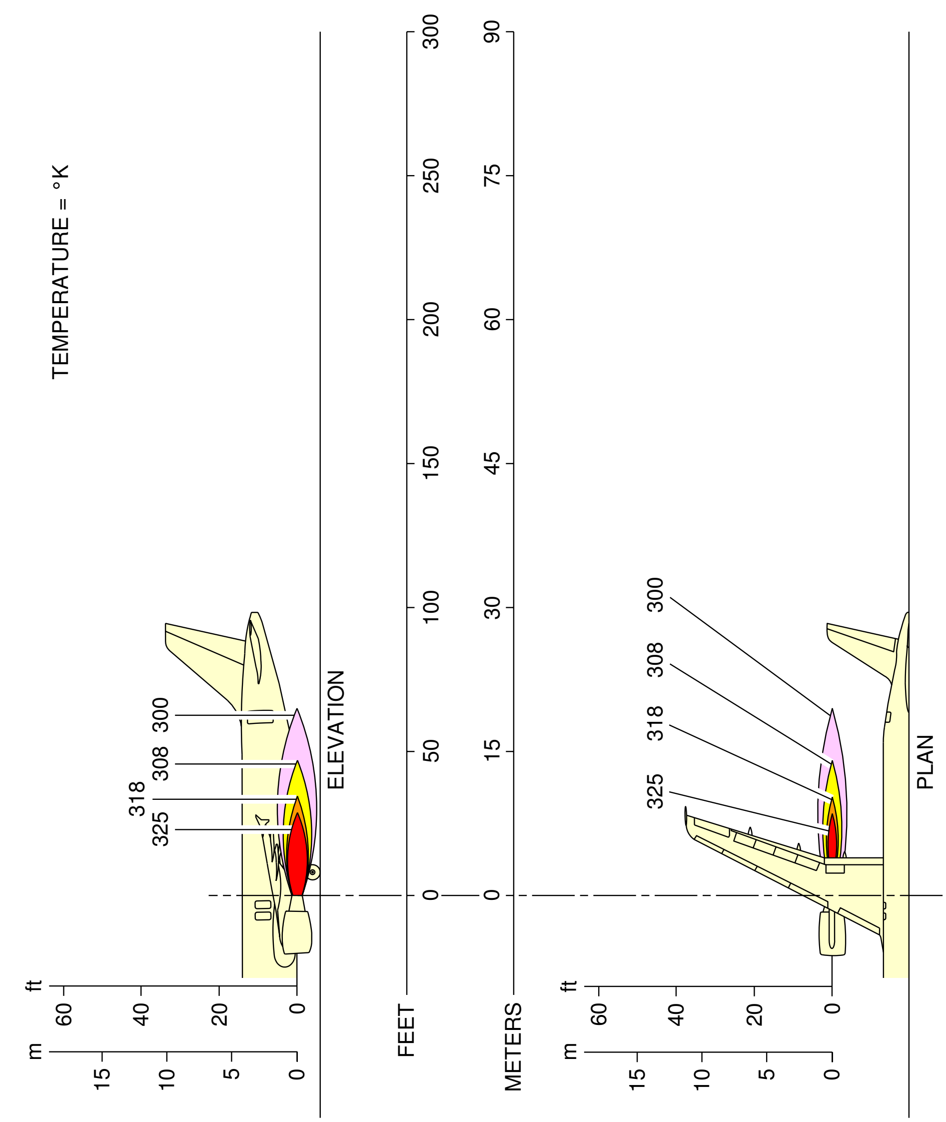
Engine Exhaust Temperatures
Ground Idle Power – CFM56 series engine
FIGURE-6-1-2-991-005-A01

**ON A/C A320-200



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Engine Exhaust Temperatures
Ground Idle Power – IAE V2500 series engine
FIGURE-6-1-2-991-006-A01

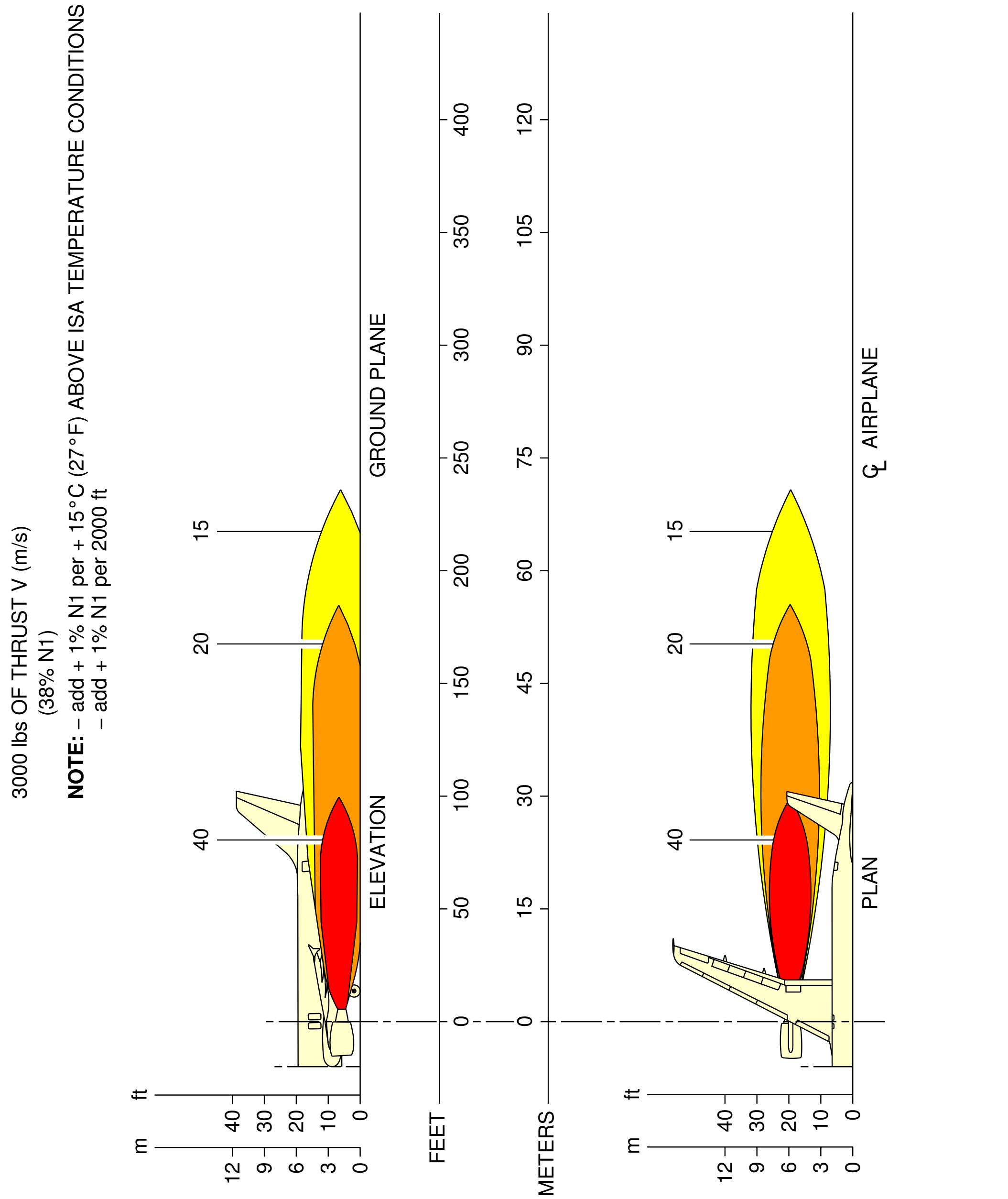
6-1-3 Engine Exhaust Velocities Contours - Breakaway Power

****ON A/C A320-200**

Engine Exhaust Velocities Contours - Breakaway Power

1. This section gives engine exhaust velocities contours at breakaway power.

**ON A/C A320-200



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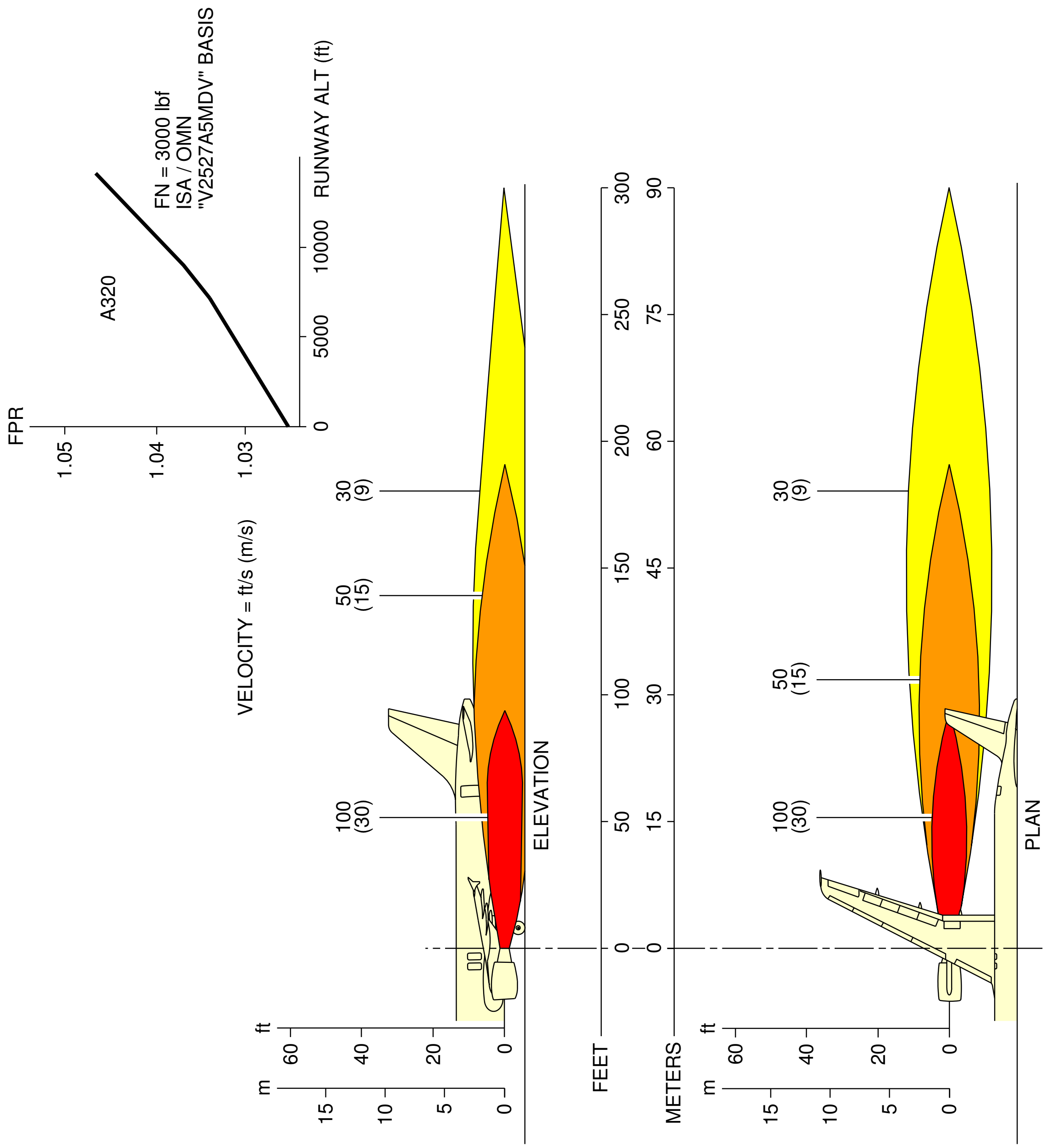
Engine Exhaust Velocities
Breakaway Power – CFM56 series engine
FIGURE-6-1-3-991-003-A01

**ON A/C A320-200



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Engine Exhaust Velocities
Breakaway Power – IAE V2500 series engine
FIGURE-6-1-3-991-004-A01

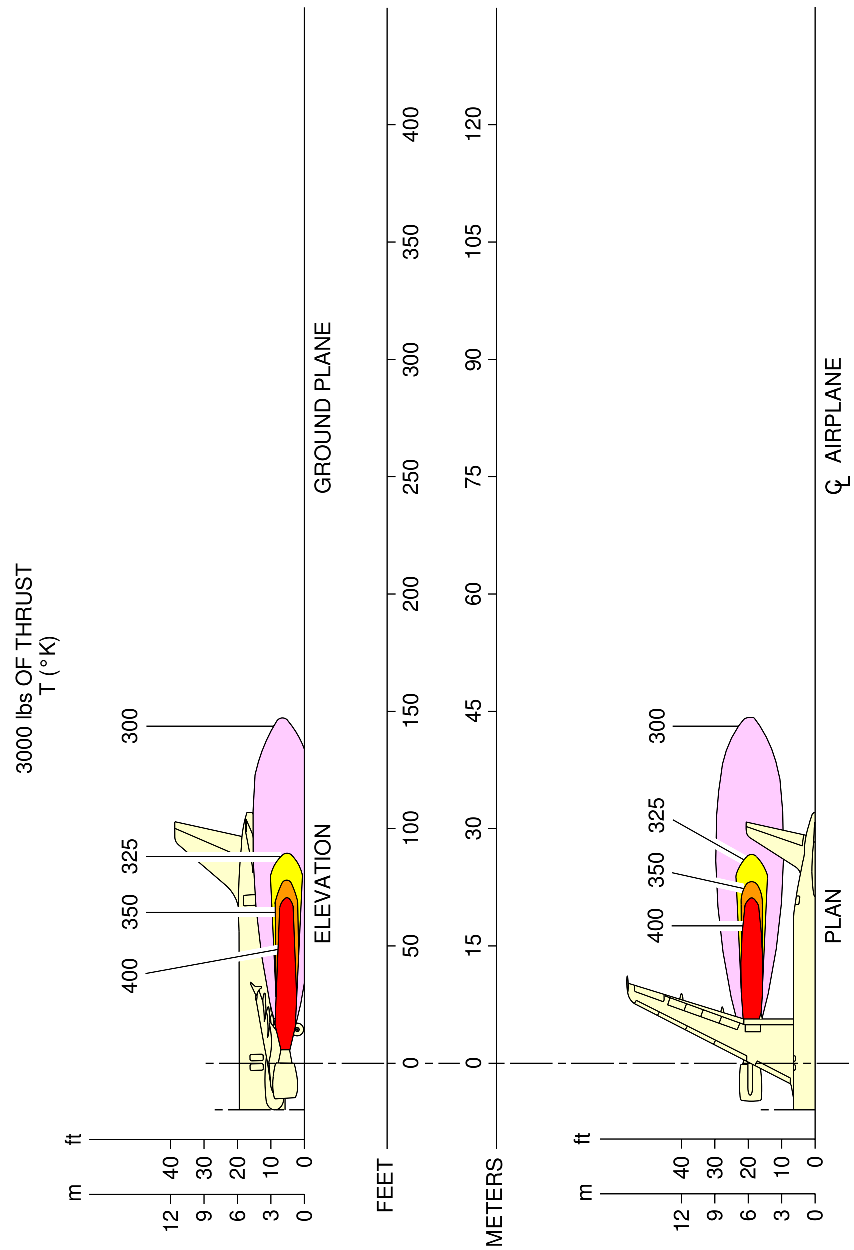
6-1-4 Engine Exhaust Temperatures Contours - Breakaway Power

****ON A/C A320-200**

Engine Exhaust Temperatures Contours - Breakaway Power

1. This section gives engine exhaust temperatures contours at breakaway power.

****ON A/C A320-200**



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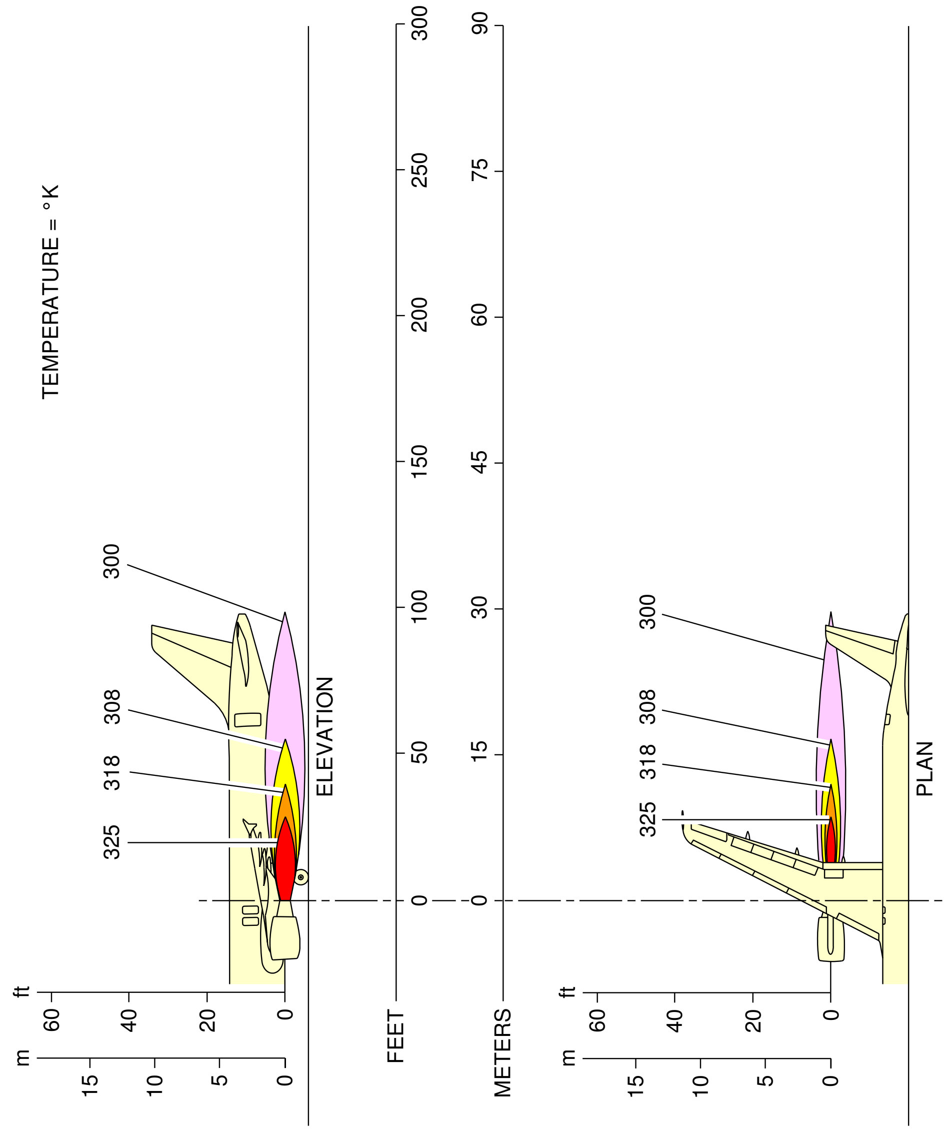
Engine Exhaust Temperatures
Breakaway Power – CFM56 series engine
FIGURE-6-1-4-991-003-A01

**ON A/C A320-200



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Engine Exhaust Temperatures
Breakaway Power – IAE V2500 series engine
FIGURE-6-1-4-991-004-A01

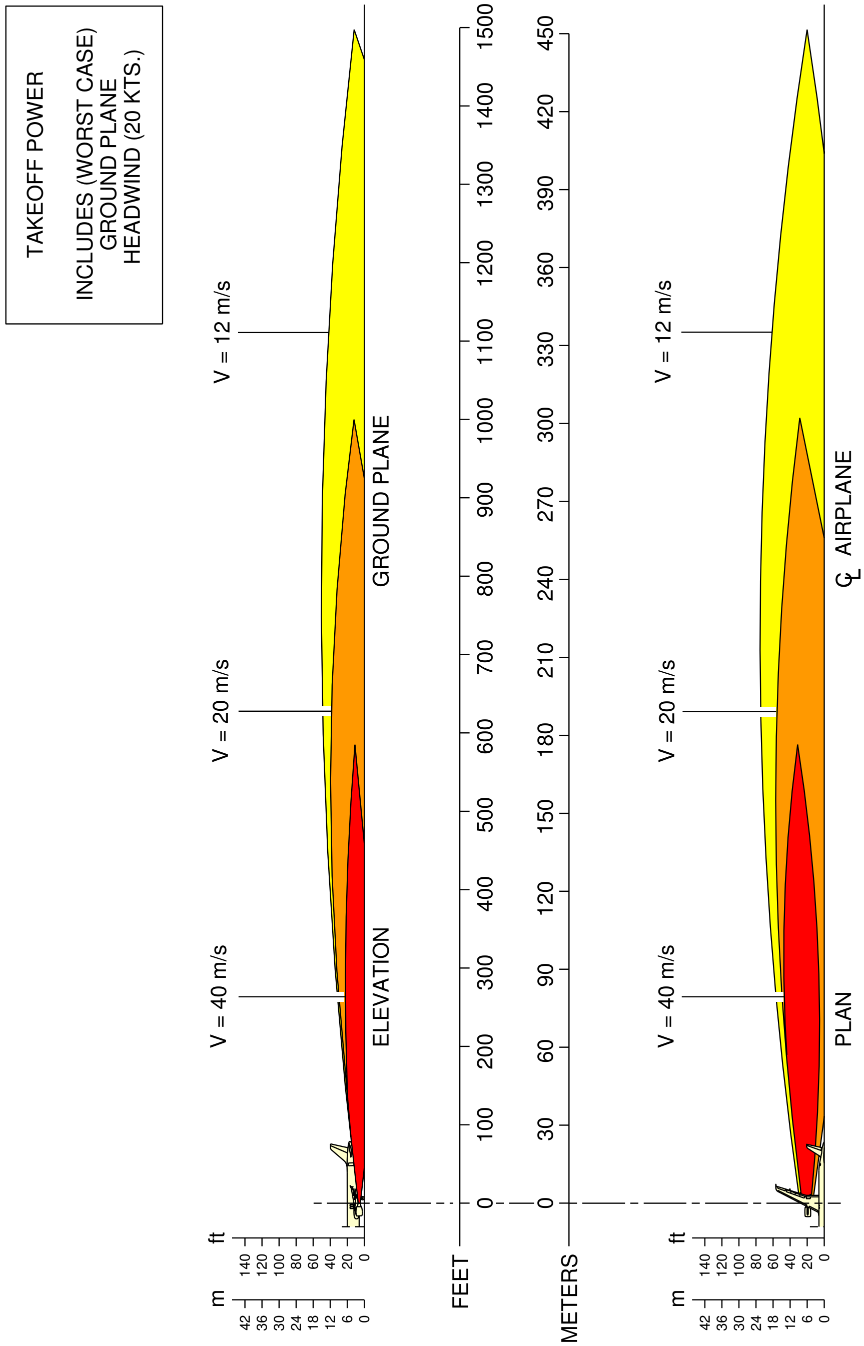
6-1-5 Engine Exhaust Velocities Contours - Takeoff Power

****ON A/C A320-200**

Engine Exhaust Velocities Contours - Takeoff Power

1. This section gives engine exhaust velocities contours at takeoff power.

**ON A/C A320-200



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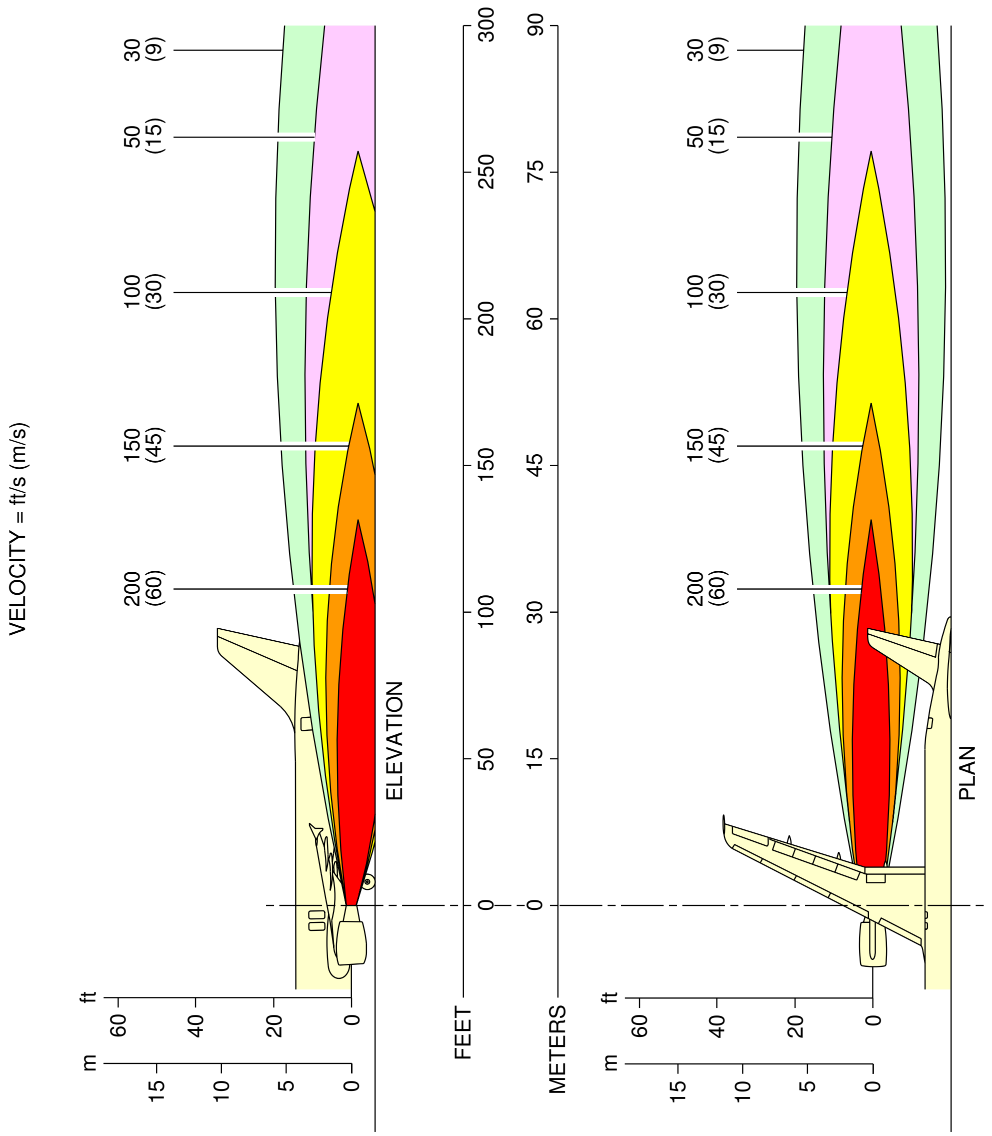
Engine Exhaust Velocities
Takeoff Power – CFM56 series engine
FIGURE-6-1-5-991-005-A01

**ON A/C A320-200



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Engine Exhaust Velocities
Takeoff Power – IAE V2500 series engine
FIGURE-6-1-5-991-006-A01

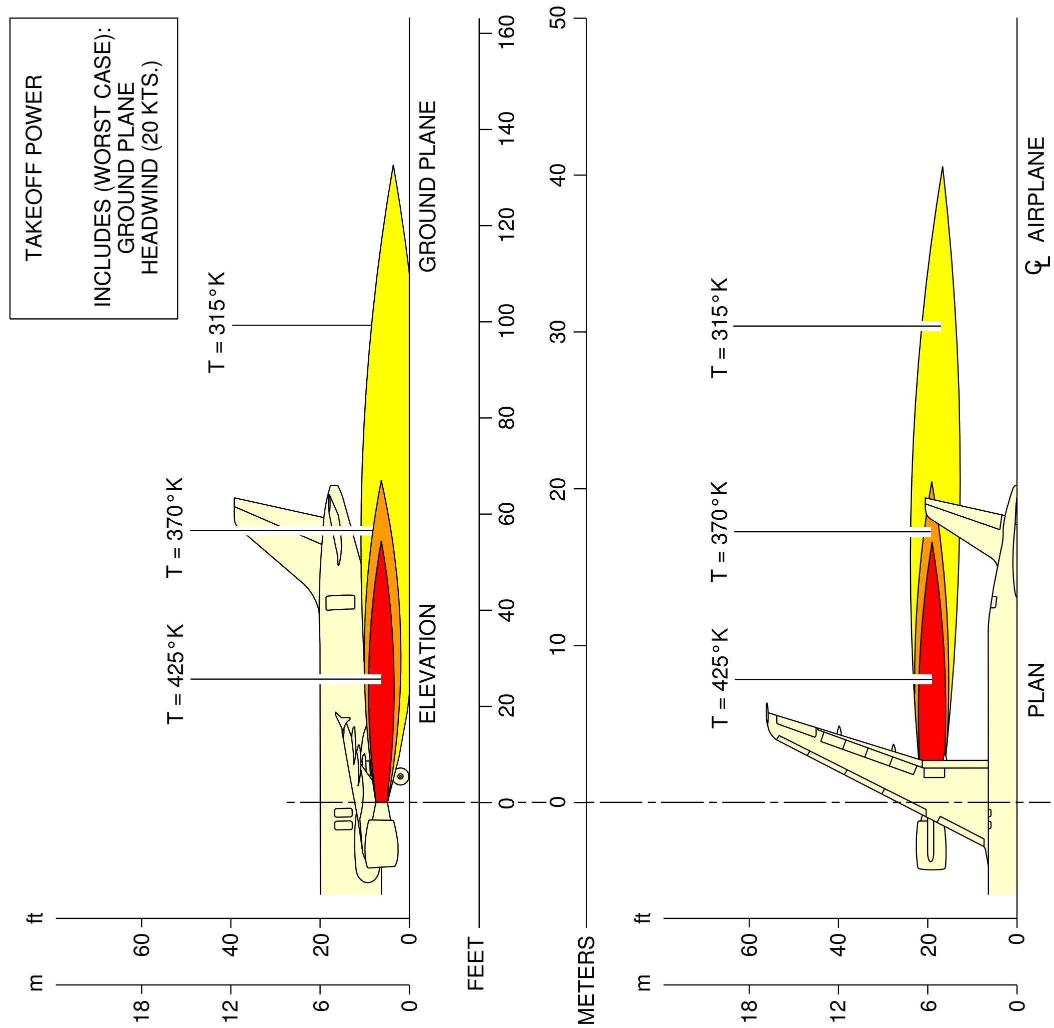
6-1-6 Engine Exhaust Temperatures Contours - Takeoff Power

**ON A/C A320-200

Engine Exhaust Temperatures Contours - Takeoff Power

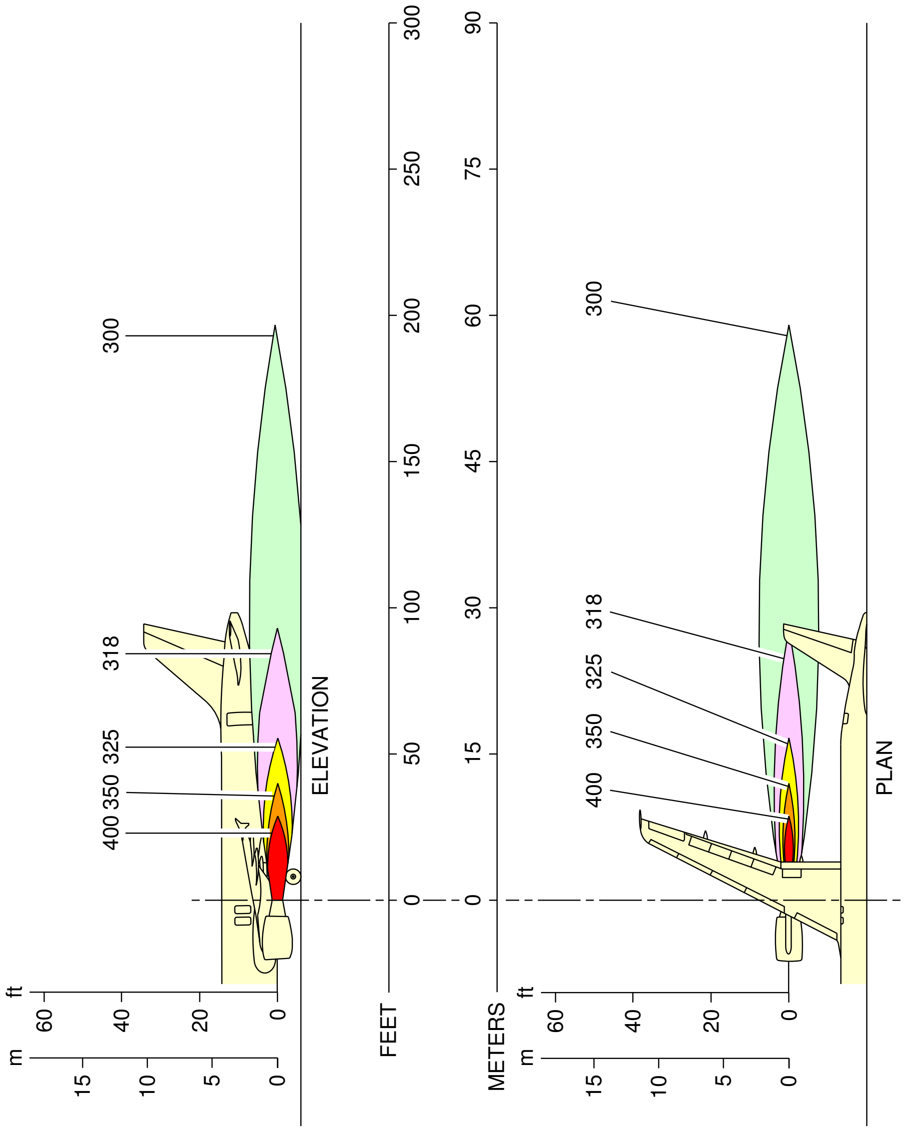
1. This section gives engine exhaust temperatures contours at takeoff power.

**ON A/C A320-200



Engine Exhaust Temperatures
Takeoff Power – CFM56 series engine
FIGURE-6-1-6-991-005-A01

****ON A/C A320-200**



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Engine Exhaust Temperatures
Takeoff Power – IAE V2500 series engine
FIGURE-6-1-6-991-006-A01

6-2-0 Airport and Community Noise

****ON A/C A320-200**

Airport and Community Noise

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 A320-200

Noise Data

1. Noise Data for CFM56-5A 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: 3°C (37°F)
      - Relative humidity: 66%
      - Atmospheric pressure: 1016 hPa
      - Wind speed: Negligible
      - No rain

2. Noise Data for CFM56-5B 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: 22°C (72°F)
      - Relative humidity: 42%
      - Atmospheric pressure: 1003 hPa
      - Wind speed: Negligible
      - No rain

3. Noise Data for IAE V2500 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.

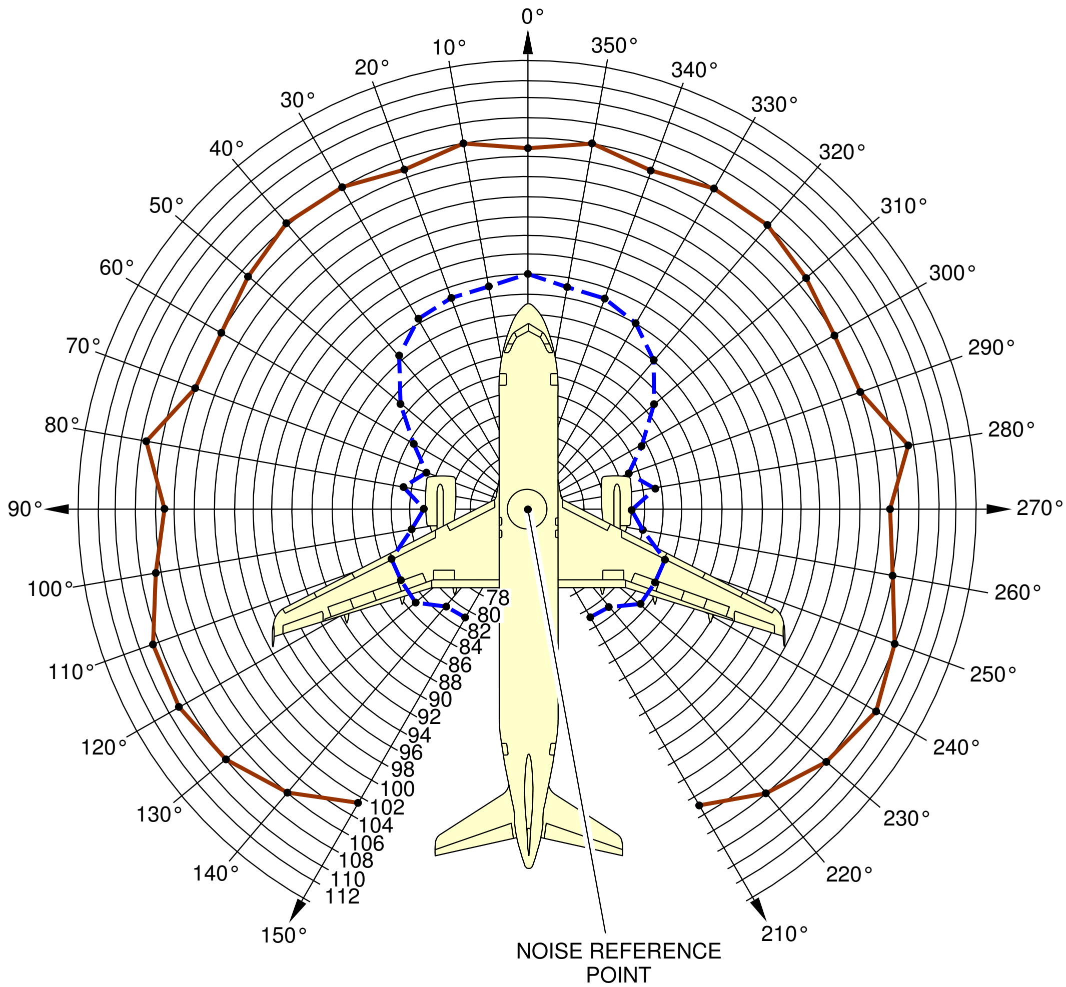
B. Engine parameters: 2 engines running

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: 12°C (54°F)
- Relative humidity: 62.5%
- Atmospheric pressure: 1000 hPa
- Wind speed: Negligible
- No rain

**ON A/C A320-200

	GROUND IDLE	MAX THRUST POSSIBLE ON BRAKES
N1	20.8%	90%
CURVE		



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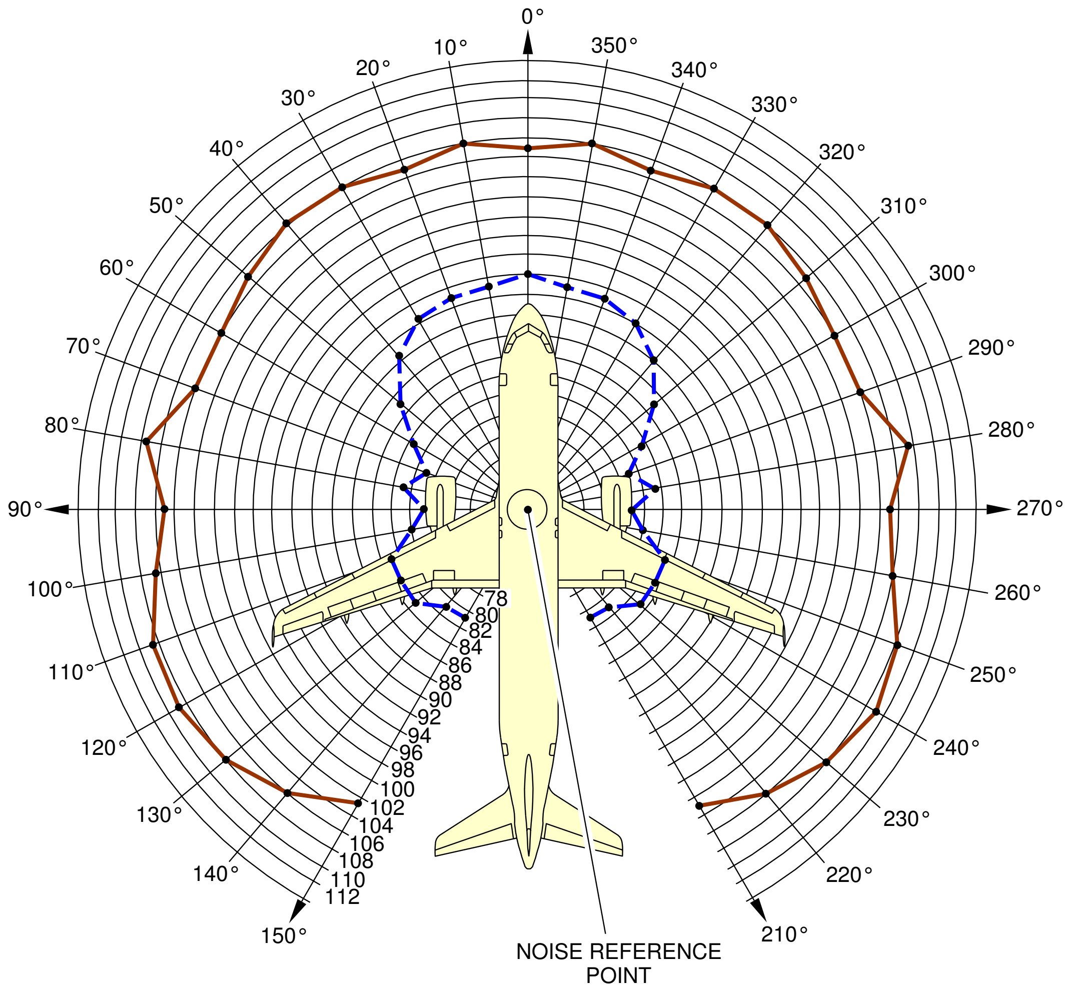
Airport and Community Noise
CFM56-5A series engine
FIGURE-6-2-1-991-007-A01

**ON A/C A320-200

	GROUND IDLE	MAX THRUST POSSIBLE ON BRAKES
N1	18.9%	87%
CURVE		



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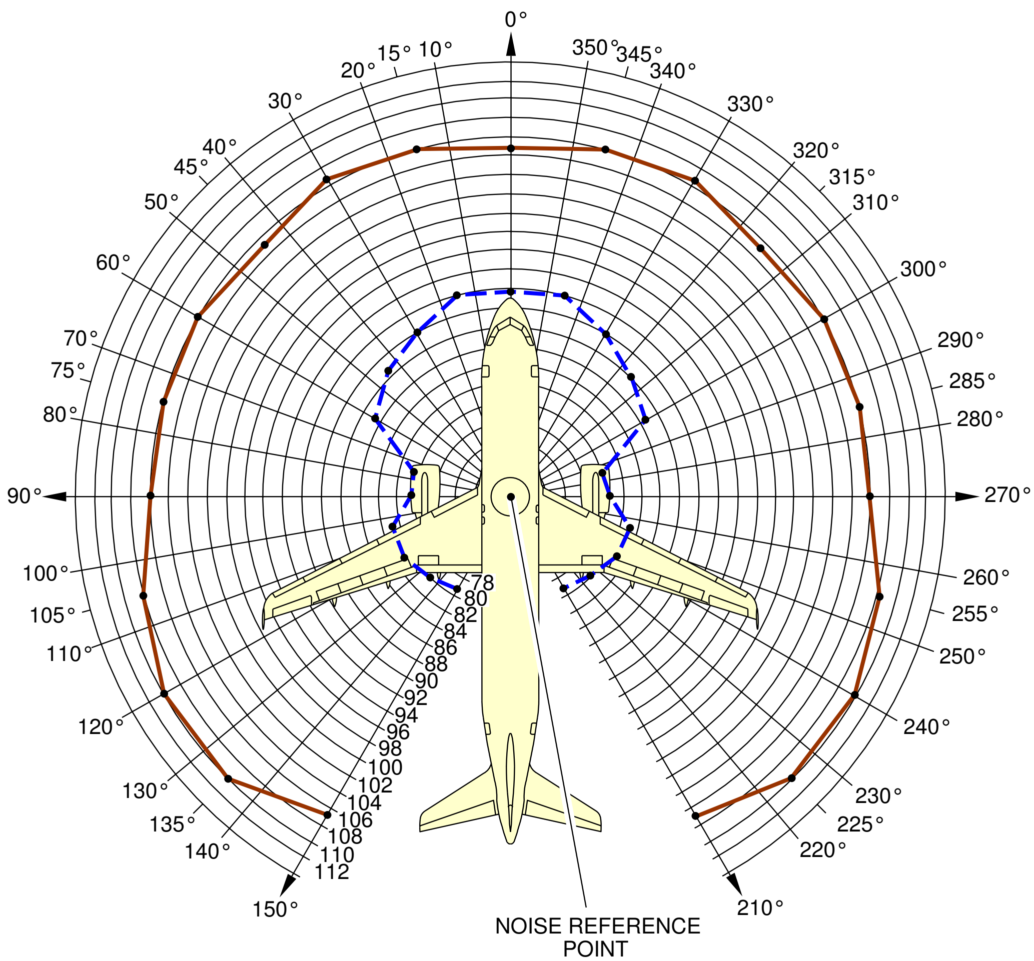
Airport and Community Noise
CFM56-5B series engine
FIGURE-6-2-1-991-008-A01

**ON A/C A320-200

	GROUND IDLE	MAX THRUST POSSIBLE ON BRAKES
E.P.R	1.007	1.397
N2	57.7%	92.5%
CURVE		



N_AC_060201_1_0090101_01_00

Airport and Community Noise
IAE V2500 series engine
FIGURE-6-2-1-991-009-A01

6-3-0 Danger Areas of Engines

****ON A/C A320-200**

Danger Areas of Engines

1. Danger Areas of the Engines.

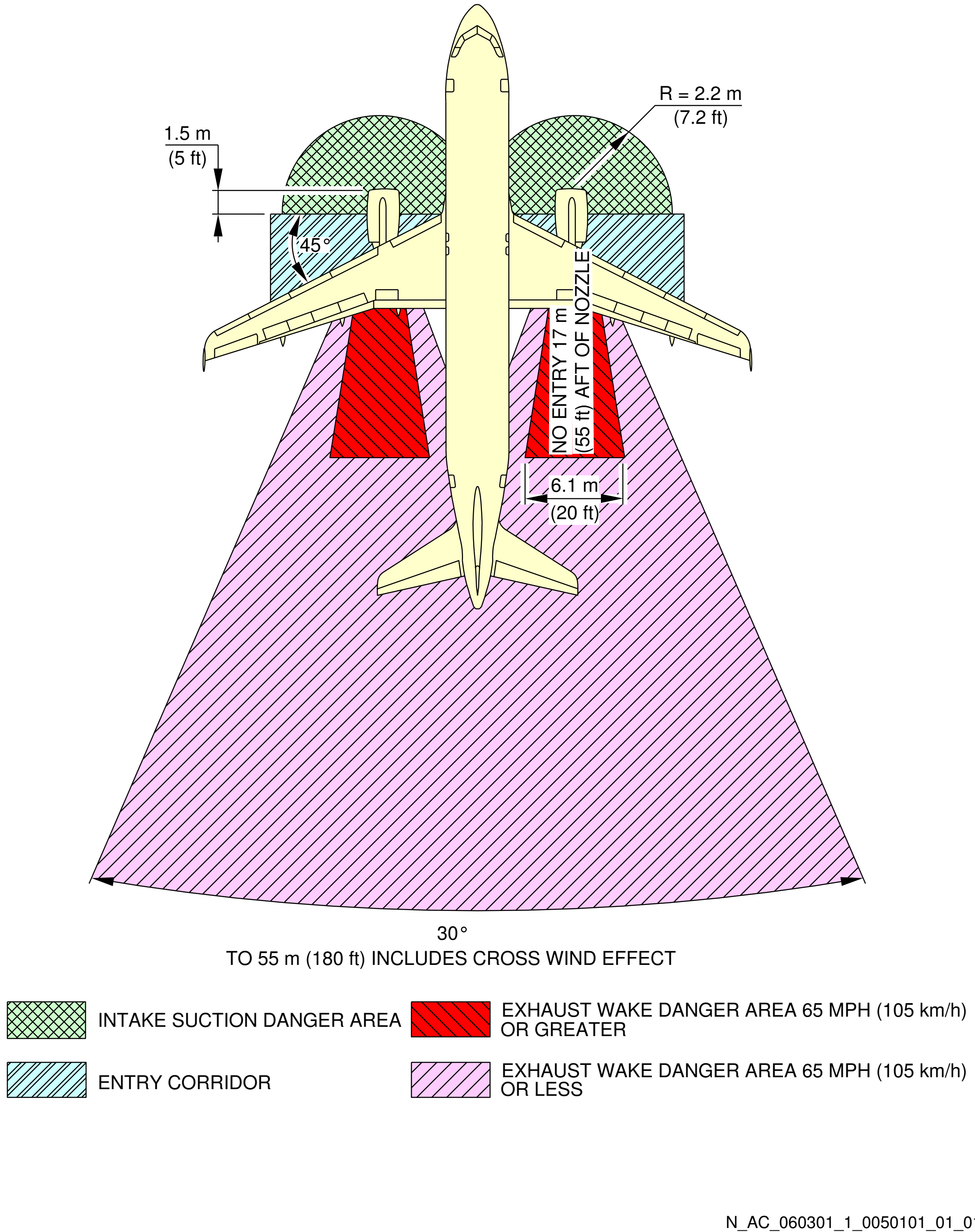
6-3-1 Ground Idle Power

****ON A/C A320-200**

Ground Idle Power

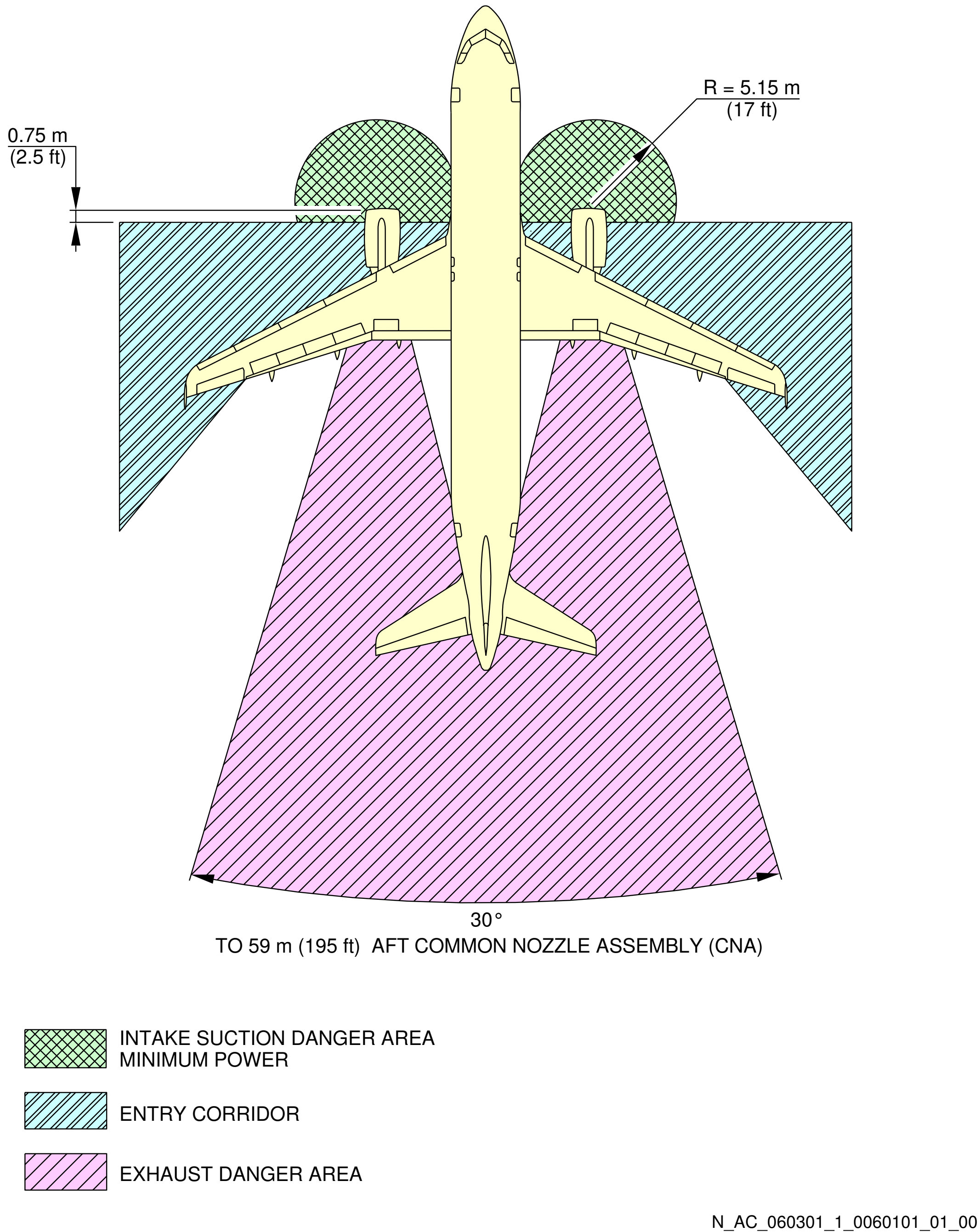
1. This section gives danger areas of the engines at ground idle power conditions.

****ON A/C A320-200**



Danger Areas of Engines
CFM56 series engine
FIGURE-6-3-1-991-005-A01

**ON A/C A320-200



Danger Areas of Engines
IAE V2500 series engine
FIGURE-6-3-1-991-006-A01

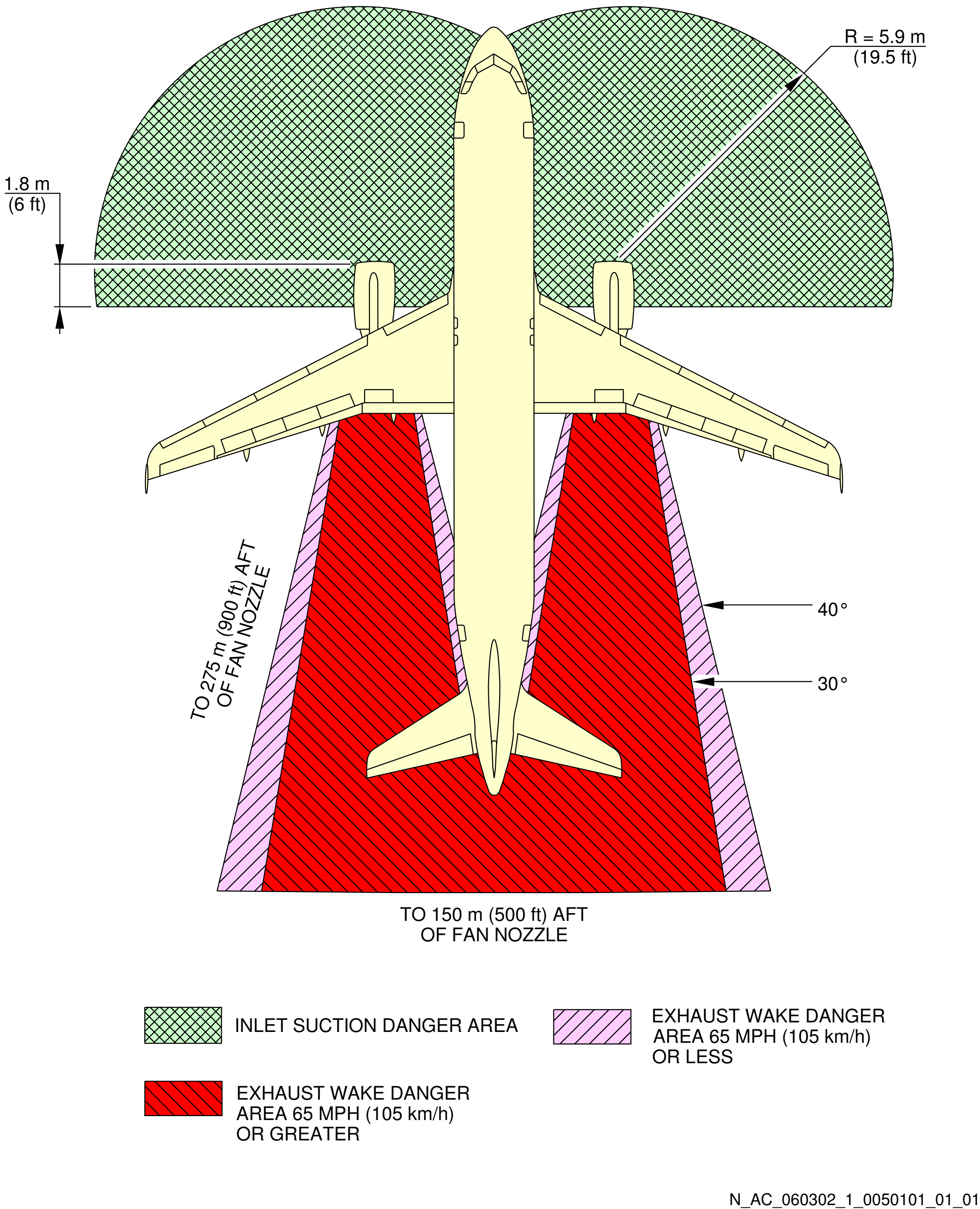
6-3-2 Takeoff Power

****ON A/C A320-200**

Takeoff Power

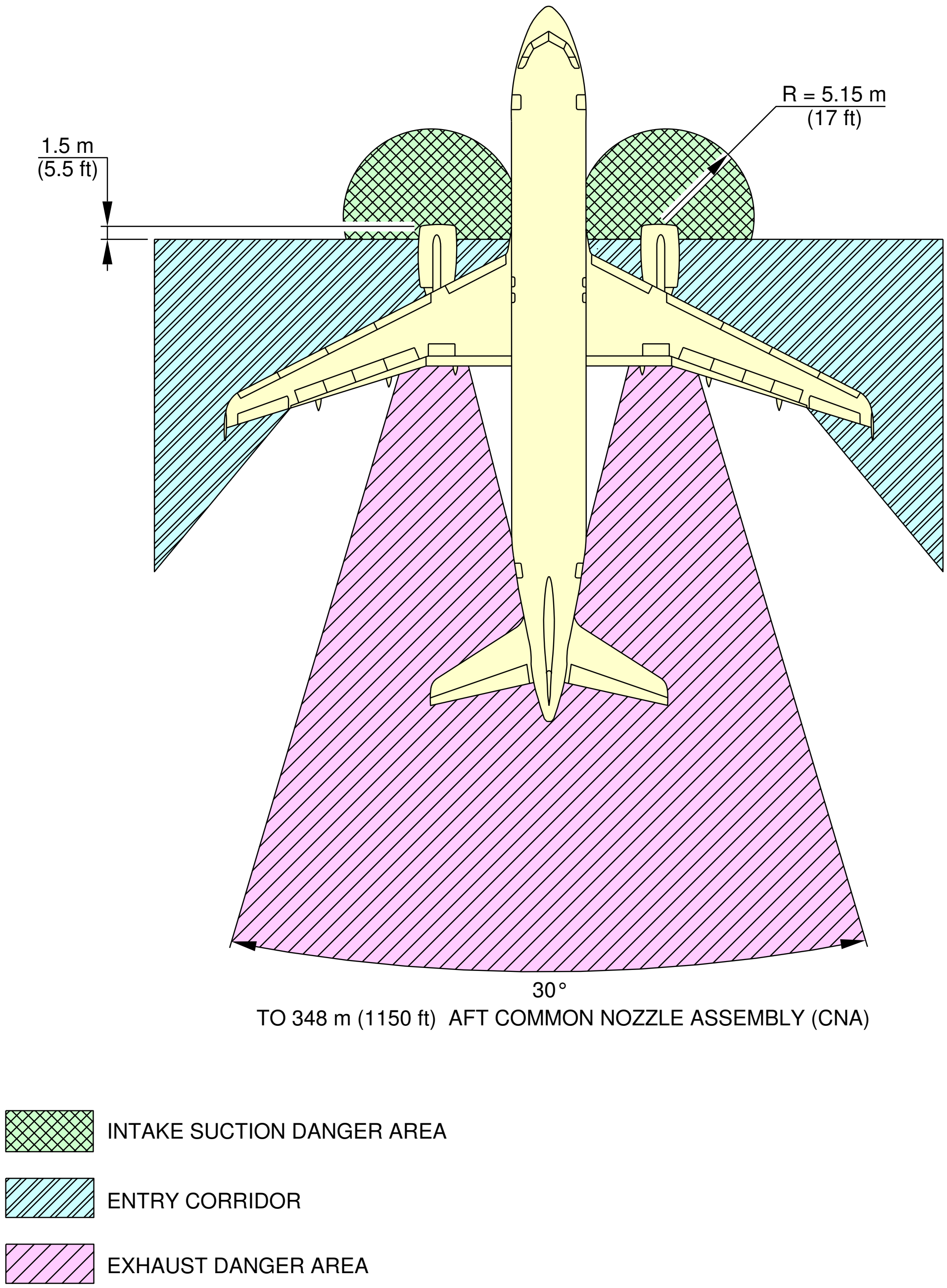
1. This section gives danger areas of the engines at max takeoff conditions.

**ON A/C A320-200



Danger Areas of Engines
CFM56 series engine
FIGURE-6-3-2-991-005-A01

**ON A/C A320-200



Danger Areas of Engines
IAE V2500 series engine
FIGURE-6-3-2-991-006-A01

6-4-0 APU Exhaust Velocities and Temperatures

****ON A/C A320-200**

APU Exhaust Velocities and Temperatures

1. APU Exhaust Velocities and Temperatures.

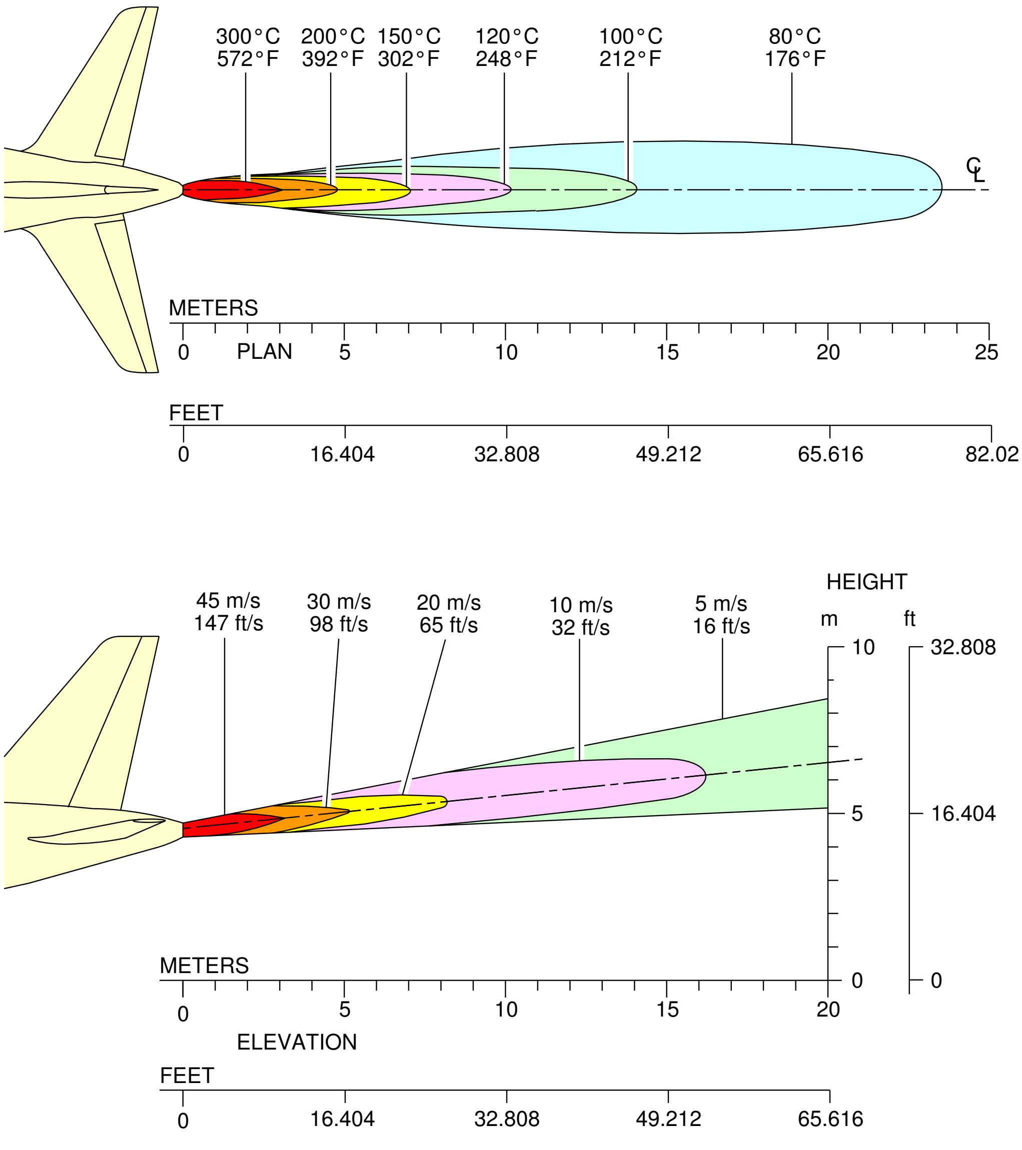
6-4-1 APU

****ON A/C A320-200**

APU - APIC & GARRETT

1. This section gives APU exhaust velocities and temperatures.

**ON A/C A320-200



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Exhaust Velocities and Temperatures
APU – APIC & GARRETT
FIGURE-6-4-1-991-003-A01

PAVEMENT DATA

7-1-0 General Information

****ON A/C A320-200**

General Information

1. General Information

This brief description of the pavement charts that follow will help in their use for airport planning.

To aid in the interpolation between the discrete values shown, each airplane configuration is shown with a minimum range of five loads on the main landing gear.

All curves on the charts represent data at a constant specified tire pressure with:
- The airplane loaded to the maximum ramp weight.
- The Center of Gravity (CG) at its maximum permissible aft position.

Pavement requirements for commercial airplanes are derived from the static analysis of loads imposed on the main landing gear struts.

The A/C codes are used for configuration management of chapter 07 only. There is no relation between these A/C codes and the ICAO A/C codes used for determining the airplane wing span and outer main gear wheel span as described in ICAO-Annex 14 Volume 1, Aerodrome Design and Operation Chapter 1.4, Table 1-1.

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

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

Section 7-4-1 contain charts to find these loads throughout the stability limits of the airplane at rest on the pavement.

These main landing gear loads are used as the point of entry to the pavement design charts which follow, interpolating load values where necessary.

Section 7-5-1 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).

The procedure that follows is used to develop flexible pavement design curves such as shown in Section 7-5-1.

- With the scale for pavement thickness at the bottom and the scale for CBR at the top, an arbitrary line is drawn representing 10 000 coverages.
- Incremental values of the weight on the main landing gear are then plotted.
- Annual departure lines are drawn based on the load lines of the weight on the main landing gear that is shown on the graph.

Section 7-7-1 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.

The procedure that follows is used to develop rigid pavement design curves such as shown in Section 7-7-1.

- With the scale for pavement thickness to the left and the scale for allowable working stress to the right, an arbitrary load line is drawn. This represents the main landing gear maximum weight to be shown.
- All values of the subgrade modulus (k values) are then plotted.
- Additional load lines for the incremental values of weight on the main landing gear are drawn on the basis of the curve for k = 300 already shown on the graph.

All Load Classification Number (LCN) curves shown in Section 7-6-1 and Section 7-8-2 have been developed from a computer program based on data provided in International Civil Aviation Organisation (ICAO) document 7920-AN/865/2, Aerodrome Manual, Part 2, "Aerodrome Physical Characteristics", Second Edition, 1965.

The flexible pavement charts in Section 7-6-1 show LCN against equivalent single wheel load, and equivalent single wheel load against pavement thickness.

The rigid pavement charts in Section 7-8-2 show LCN against equivalent single wheel load and equivalent single wheel load against radius of relative stiffness.

Section 7-9-0 gives ACN data prepared according to the ACN/PCN system as referenced in ICAO Annex 14, "Aerodromes", Volume 1 Fourth Edition July 2004, incorporating Amendments 1 to 6.

The ACN/PCN system gives a standardized international airplane/pavement rating system replacing the various S, T, TT, LCN, AUW, ISWL, etc., rating systems used throughout the world.

The 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 is defined as the load on a single tire inflated to 1.25 Mpa (181 psi) that would have the same pavement requirements as the aircraft.

Computationally the ACN/PCN system uses PCA program PDILB for rigid pavements and S-77-1 for flexible pavements to calculate ACN values.
The Airport Authority must decide on the method of pavement analysis and the results of their evaluation shown as follows:

PCN			
PAVEMENT TYPE	SUBGRADE CATEGORY	TIRE PRESSURE CATEGORY	EVALUATION METHOD
R – Rigid	A – High	W – No Limit	T – Technical
F – Flexible	B – Medium	X – To 1.5 Mpa (217 psi)	U – Using Aircraft
	C – Low	Y – To 1.0 Mpa (145 psi)	
	D – Ultra Low	Z – To 0.5 Mpa (73 psi)	

Section 7-9-1 shows the aircraft ACN values for flexible pavements.

The four subgrade categories are:
- A. High Strength CBR 15
- B. Medium Strength CBR 10
- C. Low Strength CBR 6
- D. Ultra Low Strength CBR 3

Section 7-9-2 shows the aircraft ACN 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)

**ON A/C A320-200

MODEL	WV	AIRCRAFT CODE
A320−2XX	06	E
A320−2XX	05	F
A320−2XX	01	G
A320−2XX	02	H
A320−2XX	13 04	I
A320−2XX	08 00 14	J
A320−2XX	16	K
A320−2XX	03 09	L
A320−2XX	11	M
A320−2XX	10 07	N
A320−2XX	12	O
A320−2XX	15	P
A320−2XX	17	Q
A320−2XX	18	R
A320−2XX Bogie L/G	00	TT

NOTE: FOR WEIGHT VARIANT DEFINITION, REFER TO CHAPTER 02−01−01.

NOTE: THE A/C CODES ARE USED FOR CONFIGURATION MANAGEMENT OF CHAPTER 07 ONLY.THERE IS NO RELATION BETWEEN THESE A/C CODES AND THE ICAO A/C CODES USED FOR DETERMINING THE AIRPLANE WING SPAN AND OUTER MAIN GEAR WHEEL SPAN AS DESCRIBED IN ICAO−ANNEX 14 VOLUME 1, AERODROME DESIGN AND OPERATION CHAPTER 1.4, TABLE 1−1.

N_AC_070100_1_0030101_01_01

Aircraft Codes
FIGURE-7-1-0-991-003-A01

7-2-0 Landing Gear Footprint

****ON A/C A320-200**

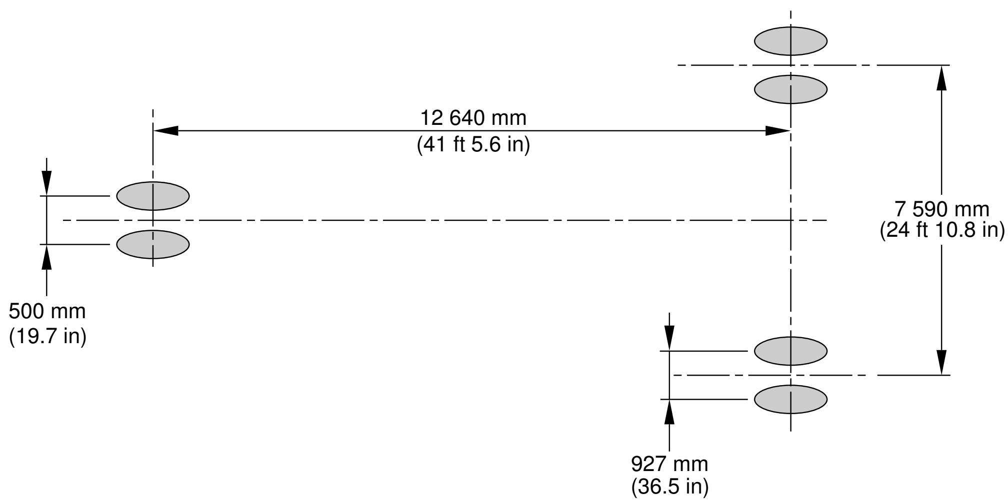
Landing Gear Footprint

1. This section gives Landing Gear Footprint.

   NOTE : For AC Code definition, refer to chapter 07-01-00.

**ON A/C A320-200

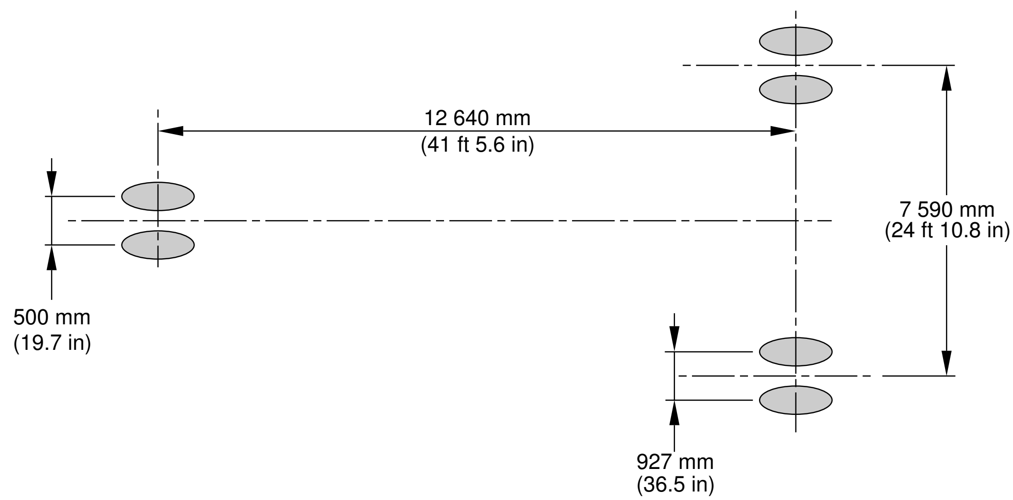
A/C CODE	E		
PERCENTAGE OF WEIGHT ON MAIN GEAR GROUP	SEE SECTION 7–4–1		
NOSE GEAR TIRE SIZE	30 x 8.8 R15 (30 x 8.8 – 15)		
NOSE GEAR TIRE PRESSURE	11 bar (160 psi)		
MAIN GEAR TIRE SIZE	46 x 17 R20 (46 x 16 – 20)	49 x 17 – 20	49 x 19 – 20
MAIN GEAR TIRE PRESSURE	12.3 bar (178 psi)	10.2 bar (148 psi)	9.2 bar (133 psi)



Landing Gear Footprint
FIGURE-7-2-0-991-010-A01

**ON A/C A320-200

A/C CODE	F			
PERCENTAGE OF WEIGHT ON MAIN GEAR GROUP	SEE SECTION 7–4–1			
NOSE GEAR TIRE SIZE	30 x 8.8 R15			
NOSE GEAR TIRE PRESSURE	11.4 bar (165 psi)			
MAIN GEAR TIRE SIZE	46 x 17 R20	49 x 17 – 20	49 x 19 – 20	1 270 x 455 R22 (49 x 18 – 22)
MAIN GEAR TIRE PRESSURE	12.8 bar (186 psi)	10.6 bar (154 psi)	9.6 bar (139 psi)	10.9 bar (158 psi)



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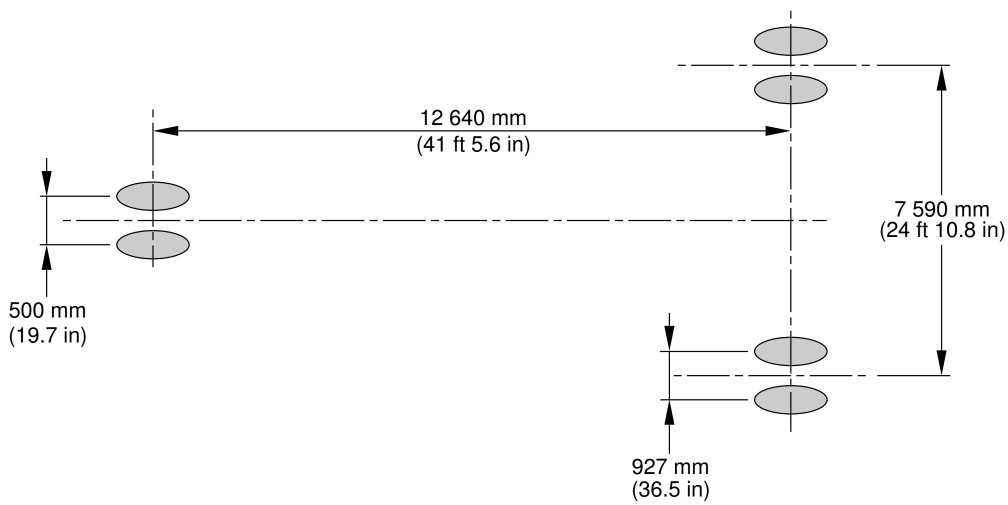
Landing Gear Footprint
FIGURE-7-2-0-991-027-A01

**ON A/C A320-200

A/C CODE	G			
PERCENTAGE OF WEIGHT ON MAIN GEAR GROUP	SEE SECTION 7–4–1			
NOSE GEAR TIRE SIZE	30 x 8.8 R15 (30 x 8.8 – 15)			
NOSE GEAR TIRE PRESSURE	11.4 bar (165 psi)			
MAIN GEAR TIRE SIZE	46 x 17 R20 (46 x 16 – 20)	1 270 x 455 R22 (49 x 18 – 22)	49 x 17 – 20	49 x 19 – 20
MAIN GEAR TIRE PRESSURE	12.8 bar (186 psi)	10.9 bar (158 psi)	10.6 bar (154 psi)	9.6 bar (139 psi)

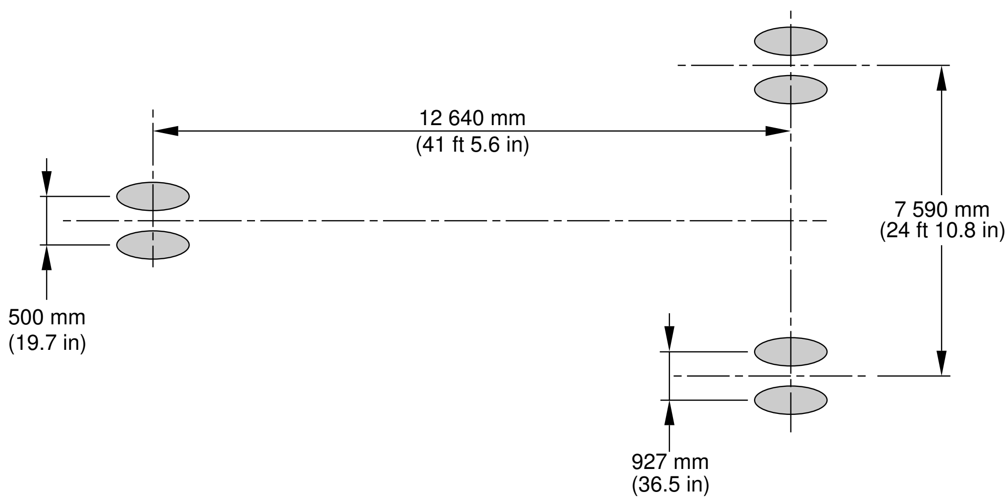


N_AC_070200_1_0110101_01_01

Landing Gear Footprint
FIGURE-7-2-0-991-011-A01

**ON A/C A320-200

A/C CODE	H			
PERCENTAGE OF WEIGHT ON MAIN GEAR GROUP	SEE SECTION 7–4–1			
NOSE GEAR TIRE SIZE	30 x 8.8 R15 (30 x 8.8 – 15)			
NOSE GEAR TIRE PRESSURE	11.4 bar (165 psi)			
MAIN GEAR TIRE SIZE	46 x 17 R20 (46 x 16 – 20)	1 270 x 455 R22 (49 x 18 – 22)	49 x 17 – 20	49 x 19 – 20
MAIN GEAR TIRE PRESSURE	12.8 bar (186 psi)	10.9 bar (158 psi)	10.6 bar (154 psi)	9.6 bar (139 psi)

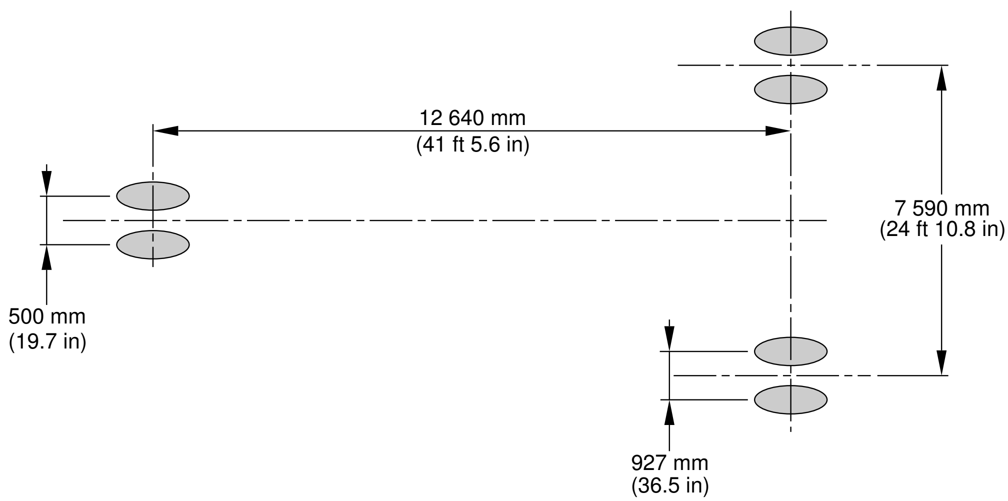


N_AC_070200_1_0120101_01_01

Landing Gear Footprint
FIGURE-7-2-0-991-012-A01

**ON A/C A320-200

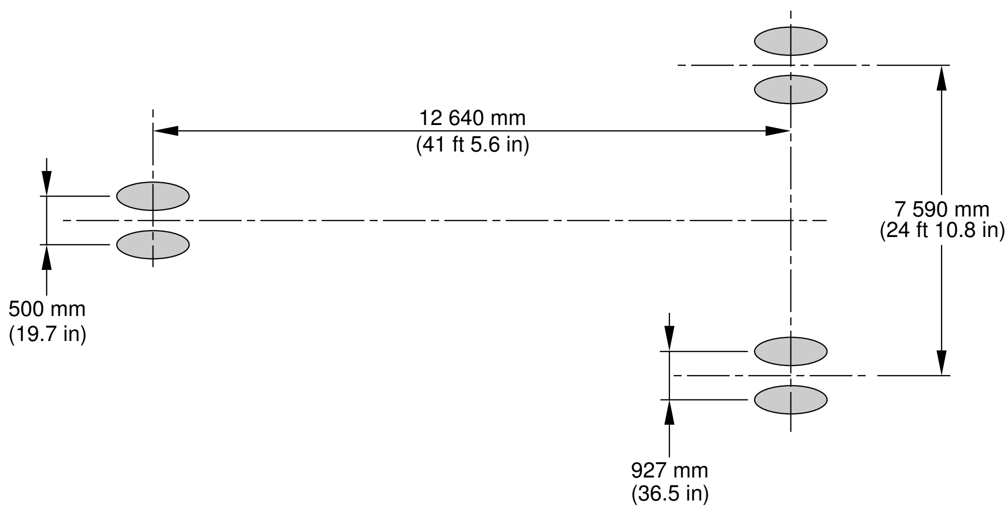
A/C CODE	I – R			
PERCENTAGE OF WEIGHT ON MAIN GEAR GROUP	SEE SECTION 7–4–1			
NOSE GEAR TIRE SIZE	30 x 8.8 R15 (30 x 8.8 – 15)			
NOSE GEAR TIRE PRESSURE	12.3 bar (178 psi)			
MAIN GEAR TIRE SIZE	46 x 17 R20 (46 x 16 – 20)	1 270 x 455 R22 (49 x 18 – 22)	49 x 17 – 20	49 x 19 – 20
MAIN GEAR TIRE PRESSURE	13.8 bar (200 psi)	11.8 bar (171 psi)	11.4 bar (165 psi)	10.3 bar (149 psi)



Landing Gear Footprint
FIGURE-7-2-0-991-013-A01

**ON A/C A320-200

A/C CODE	J – K			
PERCENTAGE OF WEIGHT ON MAIN GEAR GROUP	SEE SECTION 7–4–1			
NOSE GEAR TIRE SIZE	30 x 8.8 R15 (30 x 8.8 – 15)			
NOSE GEAR TIRE PRESSURE	12.3 bar (178 psi)			
MAIN GEAR TIRE SIZE	46 x 17 R20 (46 x 16 – 20)	1 270 x 455 R22 (49 x 18 – 22)	49 x 17 – 20	49 x 19 – 20
MAIN GEAR TIRE PRESSURE	13.8 bar (200 psi)	11.8 bar (171 psi)	11.4 bar (165 psi)	10.3 bar (149 psi)



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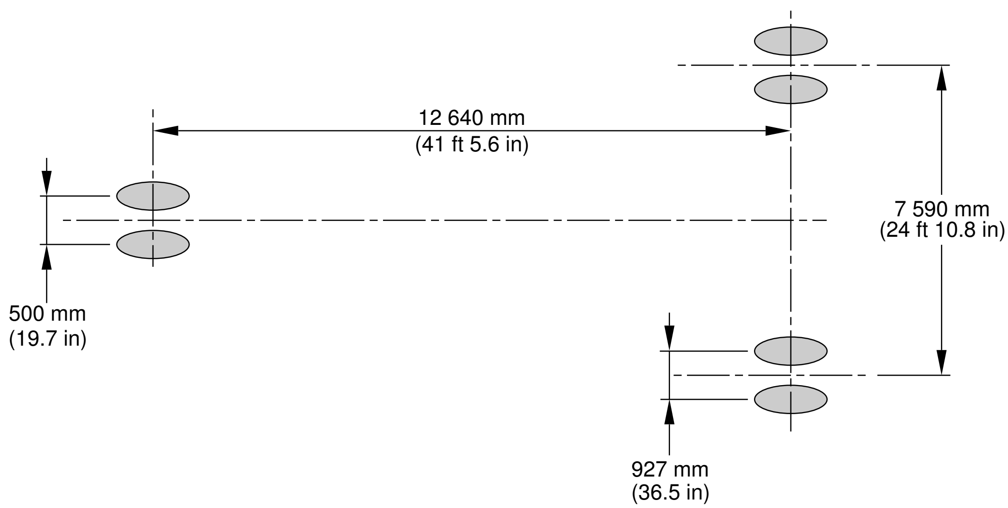
Landing Gear Footprint
FIGURE-7-2-0-991-014-A01

**ON A/C A320-200

A/C CODE	L – M			
PERCENTAGE OF WEIGHT ON MAIN GEAR GROUP	SEE SECTION 7–4–1			
NOSE GEAR TIRE SIZE	30 x 8.8 R15 (30 x 8.8 – 15)			
NOSE GEAR TIRE PRESSURE	12.3 bar (178 psi)			
MAIN GEAR TIRE SIZE	46 x 17 R20 (46 x 16 – 20)	1 270 x 455 R22 (49 x 18 – 22)	49 x 17 – 20	49 x 19 – 20
MAIN GEAR TIRE PRESSURE	13.8 bar (200 psi)	11.8 bar (171 psi)	11.4 bar (165 psi)	10.3 bar (149 psi)

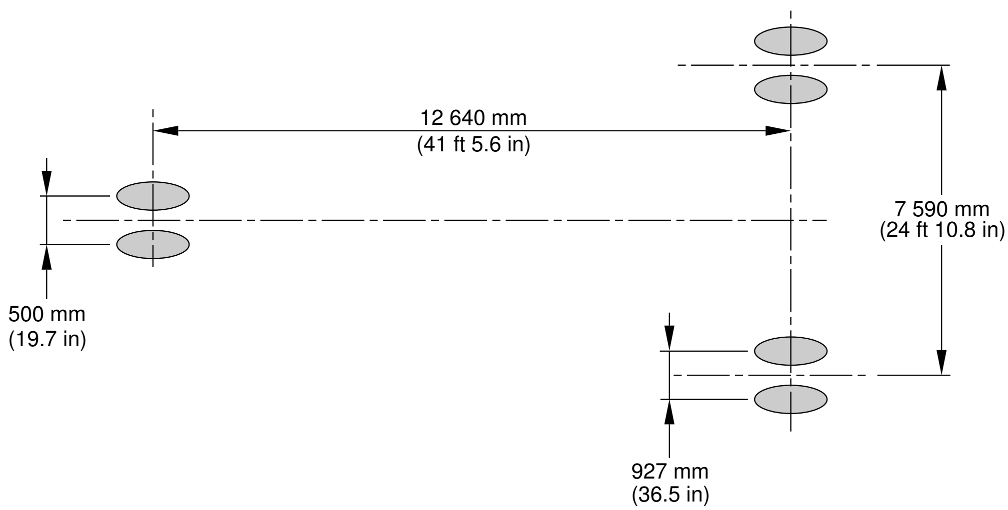


N_AC_070200_1_0150101_01_01

Landing Gear Footprint
FIGURE-7-2-0-991-015-A01

**ON A/C A320-200

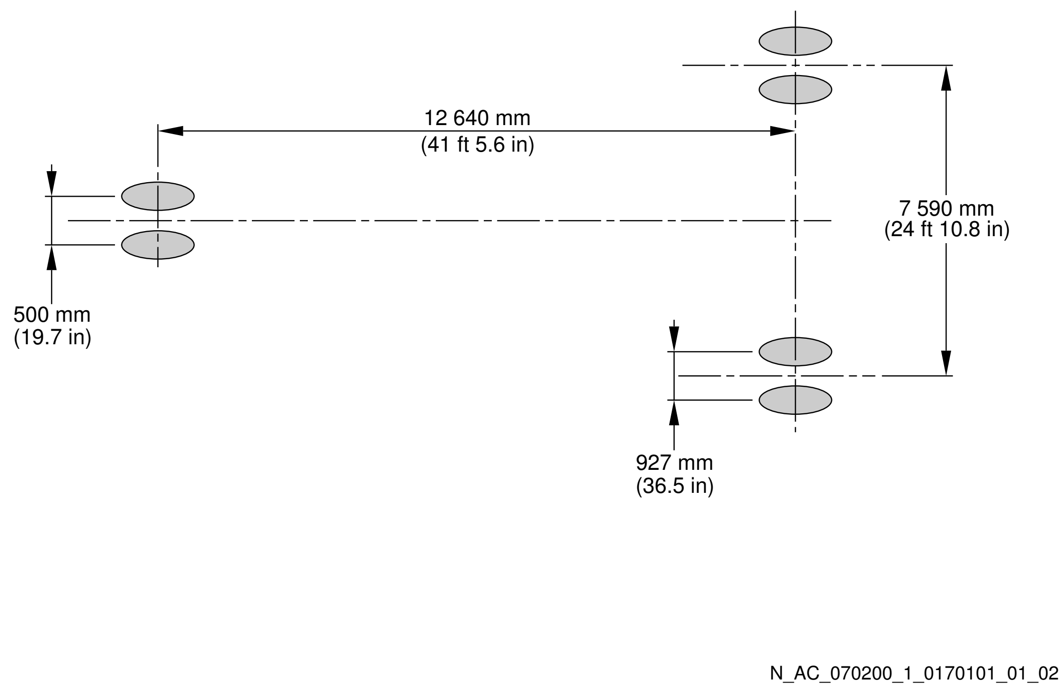
A/C CODE	N – O			
PERCENTAGE OF WEIGHT ON MAIN GEAR GROUP	SEE SECTION 7–4–1			
NOSE GEAR TIRE SIZE	30 x 8.8 R15 (30 x 8.8 – 15)			
NOSE GEAR TIRE PRESSURE	12.3 bar (178 psi)			
MAIN GEAR TIRE SIZE	46 x 17 R20 (46 x 16 – 20)	1 270 x 455 R22 (49 x 18 – 22)	49 x 17 – 20	49 x 19 – 20
MAIN GEAR TIRE PRESSURE	14.4 bar (209 psi)	12.3 bar (178 psi)	12 bar (174 psi)	10.7 bar (155 psi)



Landing Gear Footprint
FIGURE-7-2-0-991-016-A01

**ON A/C A320-200

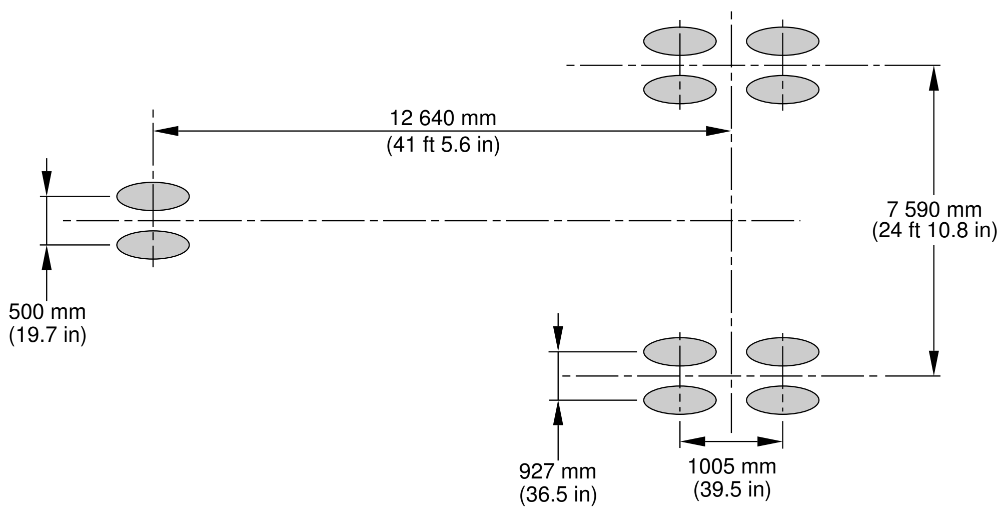
A/C CODE	P – Q	
PERCENTAGE OF WEIGHT ON MAIN GEAR GROUP	SEE SECTION 7–4–1	
NOSE GEAR TIRE SIZE	30 x 8.8 R15 (30 x 8.8 – 15)	
NOSE GEAR TIRE PRESSURE	12.3 bar (178 psi)	
MAIN GEAR TIRE SIZE	46 x 17 R20 (46 x 16 – 20)	1 270 x 455 R22 (49 x 18 – 22)
MAIN GEAR TIRE PRESSURE	14.4 bar (209 psi)	12.3 bar (178 psi)



Landing Gear Footprint
FIGURE-7-2-0-991-017-A01

**ON A/C A320-200

A/C CODE	TT
PERCENTAGE OF WEIGHT ON MAIN GEAR GROUP	SEE SECTION 7–4–1
NOSE GEAR TIRE SIZE	30 x 8.8 R15 (30 x 8.8 – 15)
NOSE GEAR TIRE PRESSURE	12.3 bar (178 psi)
MAIN GEAR TIRE SIZE	915 x 300 R16 (36 x 11 – 16)
MAIN GEAR TIRE PRESSURE	12.2 bar (177 psi)



Landing Gear Footprint
FIGURE-7-2-0-991-018-A01

7-3-0 Maximum Pavement Loads

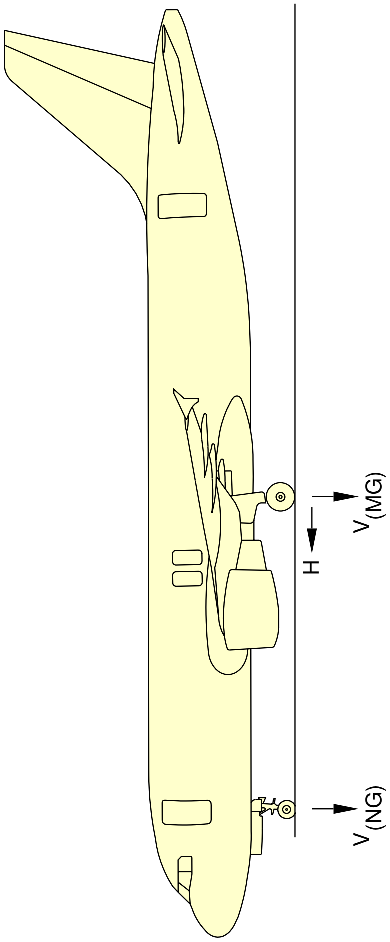
****ON A/C A320-200**

Maximum Pavement Loads

1. This section gives Maximum Pavement Loads.

   NOTE : For A/C code definition, refer to chapter 7-1-0.

**ON A/C A320-200



1	2		3		4		5		6			
			VNG				VMG (PER STRUT)		H (PER STRUT)			
A/C CODE	MAXIMUM RAMP WEIGHT		STATIC LOAD AT MOST FWD CG (1)		STATIC BRAKING @ 10 ft/s² DECELERATION		STATIC LOAD AT MAX AFT CG (2)		STEADY BRAKING @ 10 ft/s² DECELERATION		AT INSTANTANEOUS BRAKING COEFFICIENT = 0.8	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
E	146 375	66 400	20 375	9 240	32 275	14 640	69 550	31 540	22 750	10 320	55 625	25 230
G	150 800	68 400	20 975	9 510	33 225	15 070	71 650	32 500	23 425	10 630	57 300	26 000

$V_{(NG)}$ 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

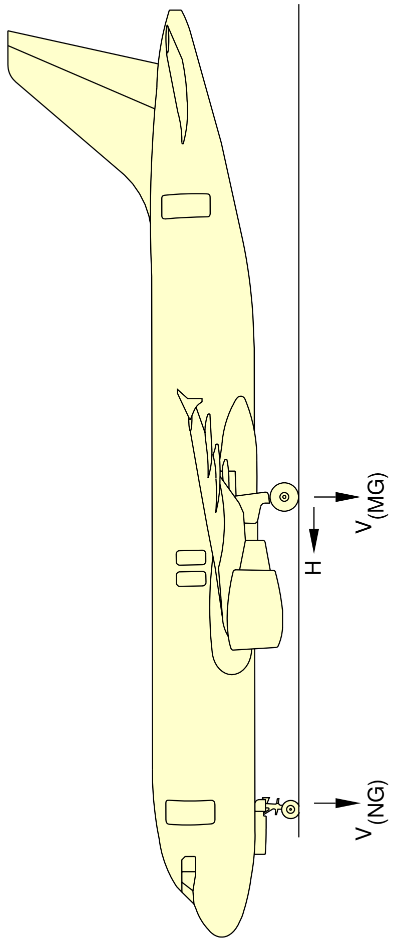
	A/C CODE	
(1)	E – G	FWD CG = 17 % MAC
(2)	E – G	AFT CG = 43 % MAC

NOTE: ALL LOADS CALCULATED USING AIRPLANE MAXIMUM RAMP WEIGHT

N_AC_070300_1_0100101_01_01

Maximum Pavement Loads
FIGURE-7-3-0-991-010-A01

**ON A/C A320-200



1	2		3		4		5		6			
			VNG				VMG (PER STRUT)		H (PER STRUT)			
A/C CODE	MAXIMUM RAMP WEIGHT		STATIC LOAD AT MOST FWD CG (1)		STATIC BRAKING @ 10 ft/s² DECELERATION		STATIC LOAD AT MAX AFT CG (2)		STEADY BRAKING @ 10 ft/s² DECELERATION		AT INSTANTANEOUS BRAKING COEFFICIENT = 0.8	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
F	148 600	67 400	20 675	9 370	32 750	14 850	70 600	32 020	23 100	10 470	56 475	25 620

$V_{(NG)}$ 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

A/C CODE

(1) F MRW = 67 400 kg FWD CG = 17 % MAC AT A/C WEIGHT = 67 400 kg

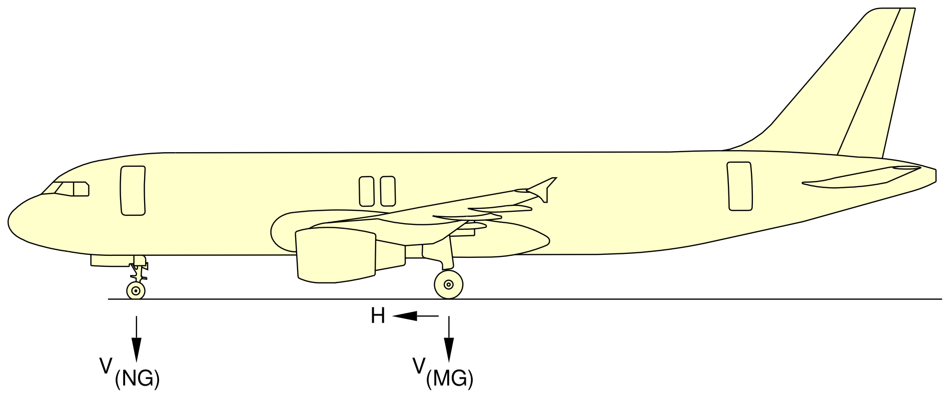
(2) F MRW = 67 400 kg AFT CG = 43 % MAC AT A/C WEIGHT = 67 400 kg

NOTE: ALL LOADS CALCULATED USING AIRPLANE MAXIMUM RAMP WEIGHT

N_AC_070300_1_0320101_01_00

Maximum Pavement Loads
FIGURE-7-3-0-991-032-A01

**ON A/C A320-200



1	2		3		4		5		6			
			VNG				VMG (PER STRUT)		H (PER STRUT)			
A/C CODE	MAXIMUM RAMP WEIGHT		STATIC LOAD AT MOST FWD CG (1)		STATIC BRAKING @ 10 ft/s² DECELERATION		STATIC LOAD AT MAX AFT CG		STEADY BRAKING @ 10 ft/s² DECELERATION		AT INSTANTANEOUS BRAKING COEFFICIENT = 0.8	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
H	155 200	70 400	21 575	9 790	34 150	15 490	73 200 (2)	33 200 (2)	24 125	10 940	58 550	26 560
I – R	158 500	71 900	22 025	9 990	34 850	15 810	74 875 (3)	33 960 (3)	24 625	11 170	59 900	27 170

$V_{(NG)}$ 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

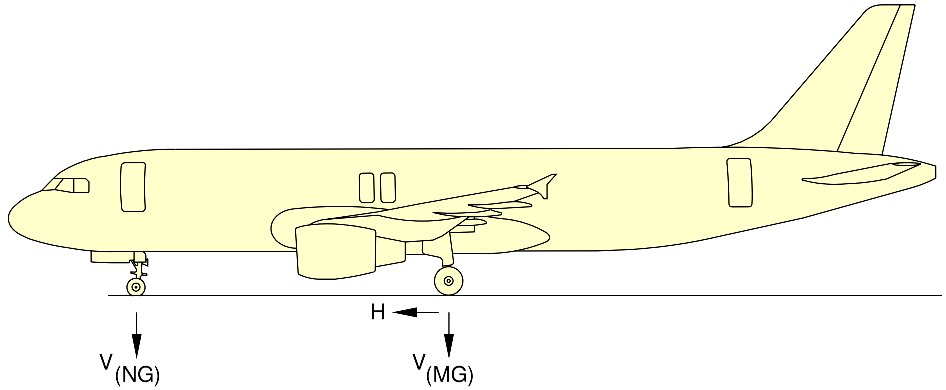
	A/C CODE	
(1)	H – I – R	FWD CG = 17 % MAC
(2)	H	AFT CG = 41 % MAC
(3)	I – R	AFT CG = 41.42 % MAC

NOTE: ALL LOADS CALCULATED USING AIRPLANE MAXIMUM RAMP WEIGHT.

N_AC_070300_1_0110101_01_02

Maximum Pavement Loads
FIGURE-7-3-0-991-011-A01

**ON A/C A320-200



1	2		3		4		5		6			
			VNG				VMG (PER STRUT)		H (PER STRUT)			
A/C CODE	MAXIMUM RAMP WEIGHT		STATIC LOAD AT MOST FWD CG (1)		STATIC BRAKING @ 10 ft/s² DECELERATION		STATIC LOAD AT MAX AFT CG		STEADY BRAKING @ 10 ft/s² DECELERATION		AT INSTANTANEOUS BRAKING COEFFICIENT = 0.8	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
J – K	162 925	73 900	22 050	10 000	34 900	15 830	76 550 (2)	34 720 (2)	25 325	11 480	61 250	27 780
L – M	167 325	75 900	22 050	10 000	34 900	15 830	78 250 (3)	35 490 (3)	26 000	11 800	62 600	28 390

$V_{(NG)}$ 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

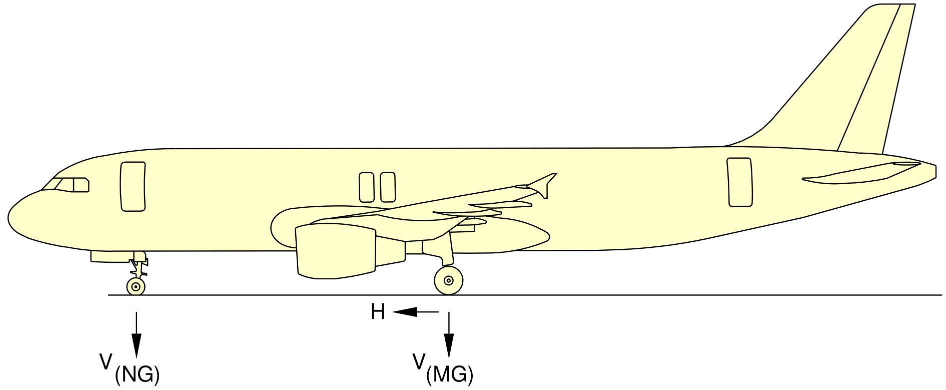
A/C CODE
(1) J – K – L – M FWD CG = 17 % MAC AT A/C WEIGHT = 72 000 kg
(2) J – K AFT CG = 40 % MAC
(3) L – M AFT CG = 38.7 % MAC

NOTE: ALL LOADS CALCULATED USING AIRPLANE MAXIMUM RAMP WEIGHT

N_AC_070300_1_0120101_01_01

Maximum Pavement Loads
FIGURE-7-3-0-991-012-A01

**ON A/C A320-200



1	2		3		4		5		6			
			VNG				VMG (PER STRUT)		H (PER STRUT)			
A/C CODE	MAXIMUM RAMP WEIGHT		STATIC LOAD AT MOST FWD CG (1)		STATIC BRAKING @ 10 ft/s² DECELERATION		STATIC LOAD AT MAX AFT CG		STEADY BRAKING @ 10 ft/s² DECELERATION		AT INSTANTANEOUS BRAKING COEFFICIENT = 0.8	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
N – O	170 650	77 400	22 050	10 000	34 900	15 830	79 450 (2)	36 030 (2)	26 525	12 030	63 550	28 830
P – Q	172 850	78 400	22 050	10 000	34 900	15 830	80 250 (3)	36 400 (3)	26 850	12 180	64 200	29 120

$V_{(NG)}$ 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

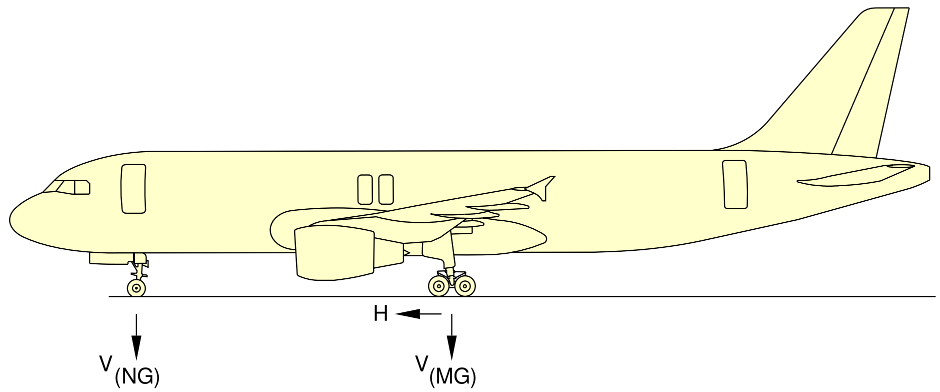
A/C CODE
(1) N – O – P – Q FWD CG = 17 % MAC AT A/C WEIGHT = 72 000 kg
(2) N – O AFT CG = 37.5 % MAC
(3) P – Q AFT CG = 36.8 % MAC

NOTE: ALL LOADS CALCULATED USING AIRPLANE MAXIMUM RAMP WEIGHT.

N_AC_070300_1_0130101_01_02

Maximum Pavement Loads
FIGURE-7-3-0-991-013-A01

**ON A/C A320-200



1	2		3		4		5		6			
			VNG				VMG (PER STRUT)		H (PER STRUT)			
A/C CODE	MAXIMUM RAMP WEIGHT		STATIC LOAD AT MOST FWD CG (1)		STATIC BRAKING @ 10 ft/s² DECELERATION		STATIC LOAD AT MAX AFT CG (2)		STEADY BRAKING @ 10 ft/s² DECELERATION		AT INSTANTANEOUS BRAKING COEFFICIENT = 0.8	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
TT	162 925	73 900	22 150	10 050	35 000	15 870	76 500	34 700	25 325	11 480	61 200	27 760

$V_{(NG)}$ 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

A/C CODE
(1) TT FWD CG = 17 % MAC AT A/C WEIGHT = 72 000 kg
(2) TT AFT CG = 40 % MAC

NOTE: ALL LOADS CALCULATED USING AIRPLANE MAXIMUM RAMP WEIGHT

N_AC_070300_1_0140101_01_01

Maximum Pavement Loads
FIGURE-7-3-0-991-014-A01

7-4-0 Landing Gear Loading on Pavement

****ON A/C A320-200**

Landing Gear Loading on Pavement

1. General

In the example shown in Section 7-4-1 Landing Gear Loading on Pavement, A/C Code E-F-G, the Gross Aircraft Weight is 49 000 kg (108 025 lb) and the percentage of weight on the Main Landing Gear is 94.95 %.

For these conditions the total weight on the MLG Group is 46 520 kg (102 575 lb).

7-4-1 Landing Gear Loading on Pavement

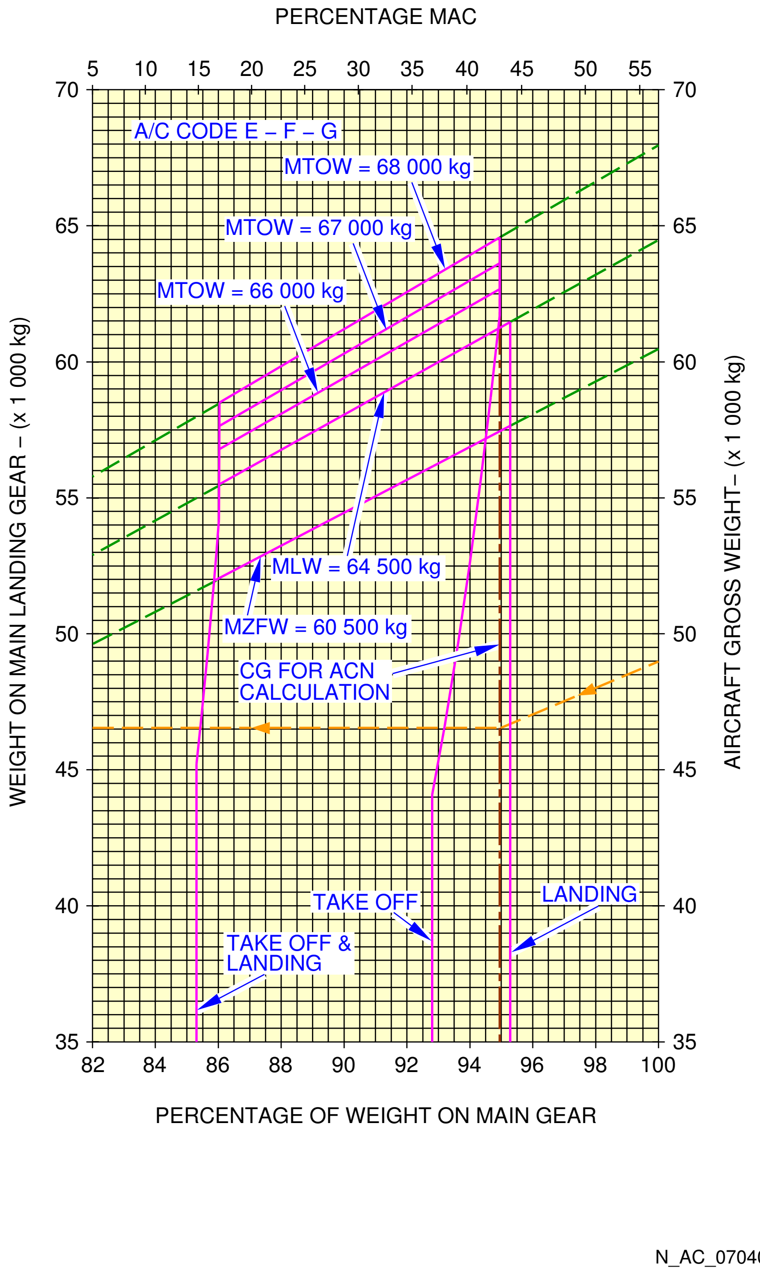
****ON A/C A320-200**

Landing Gear Loading on Pavement

1. This section gives Landing Gear Loading on Pavement.

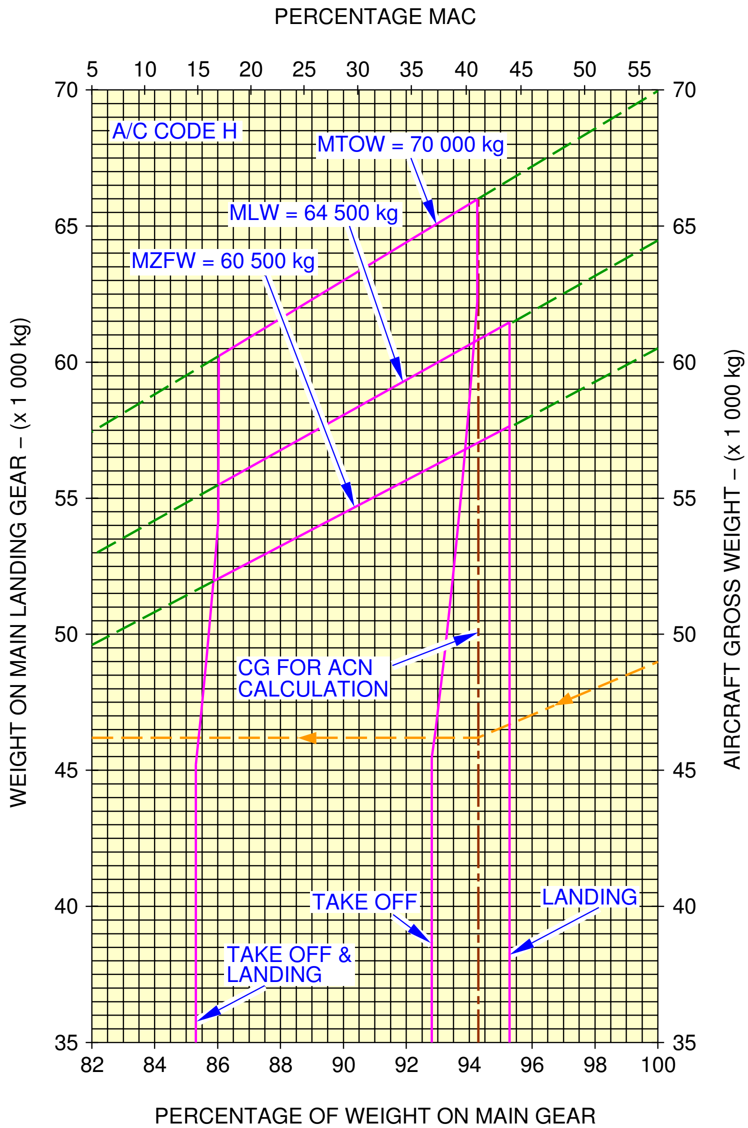
   NOTE : For A/C Code definition, refer to chapter 7-1-0.

**ON A/C A320-200



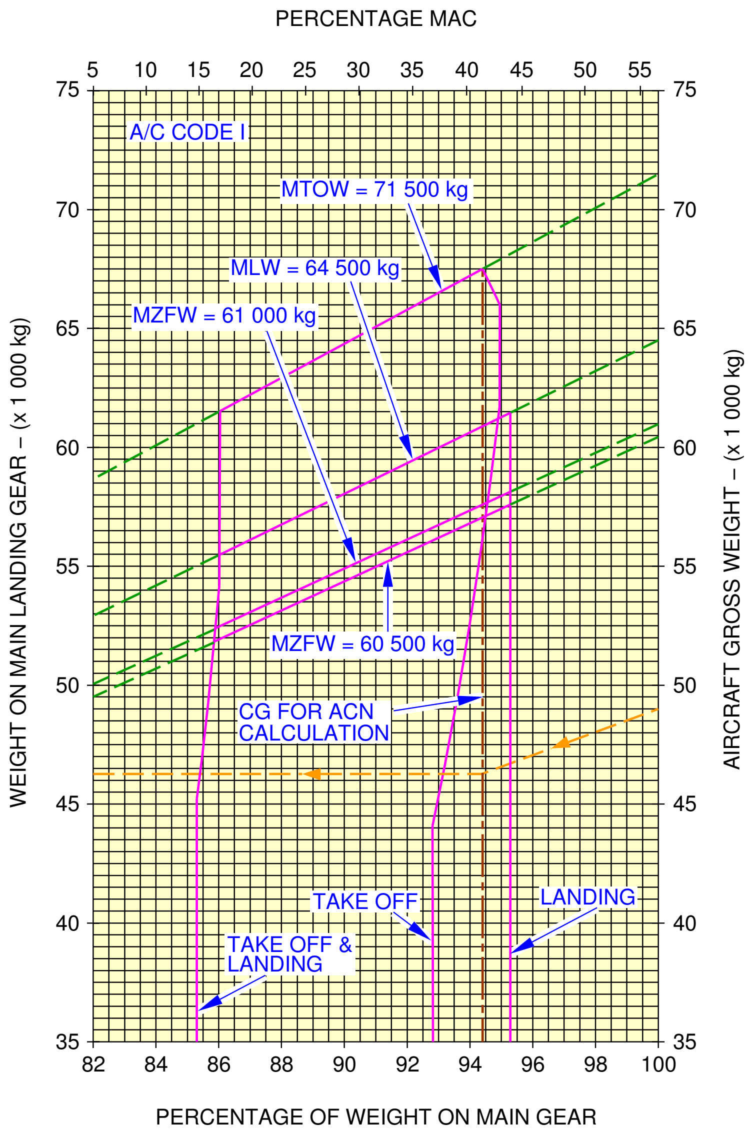
Landing Gear Loading on Pavement
FIGURE-7-4-1-991-011-A01

**ON A/C A320-200



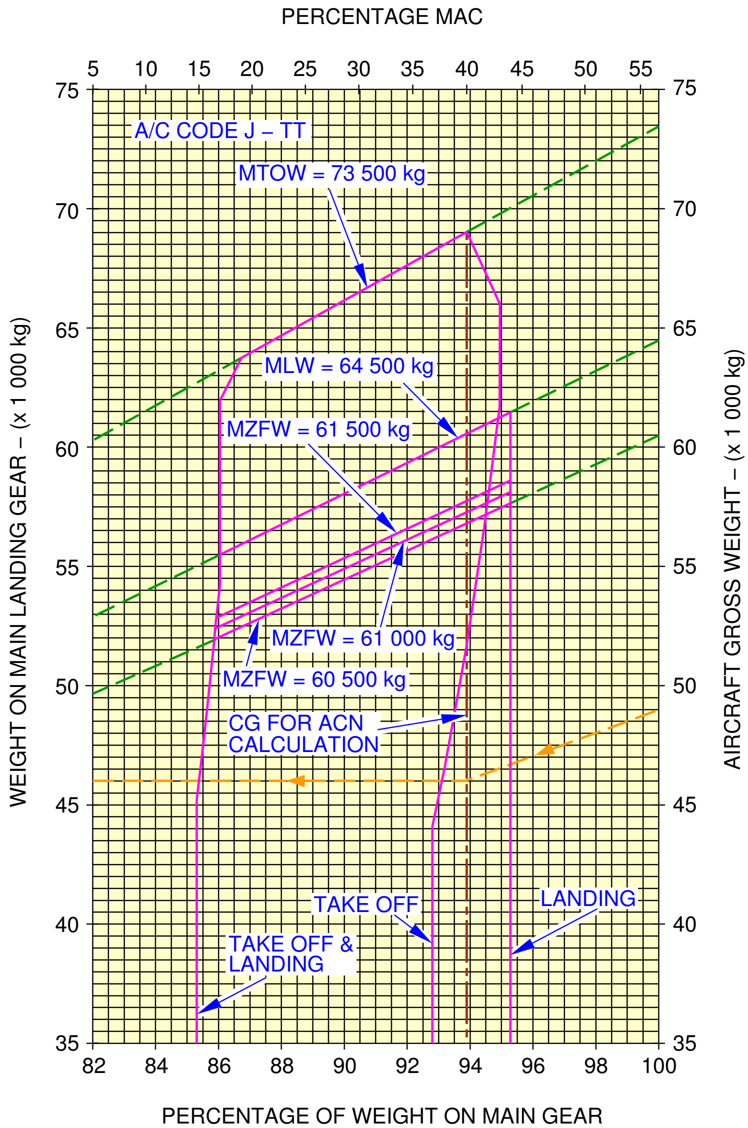
Landing Gear Loading on Pavement
FIGURE-7-4-1-991-012-A01

**ON A/C A320-200



Landing Gear Loading on Pavement
FIGURE-7-4-1-991-013-A01

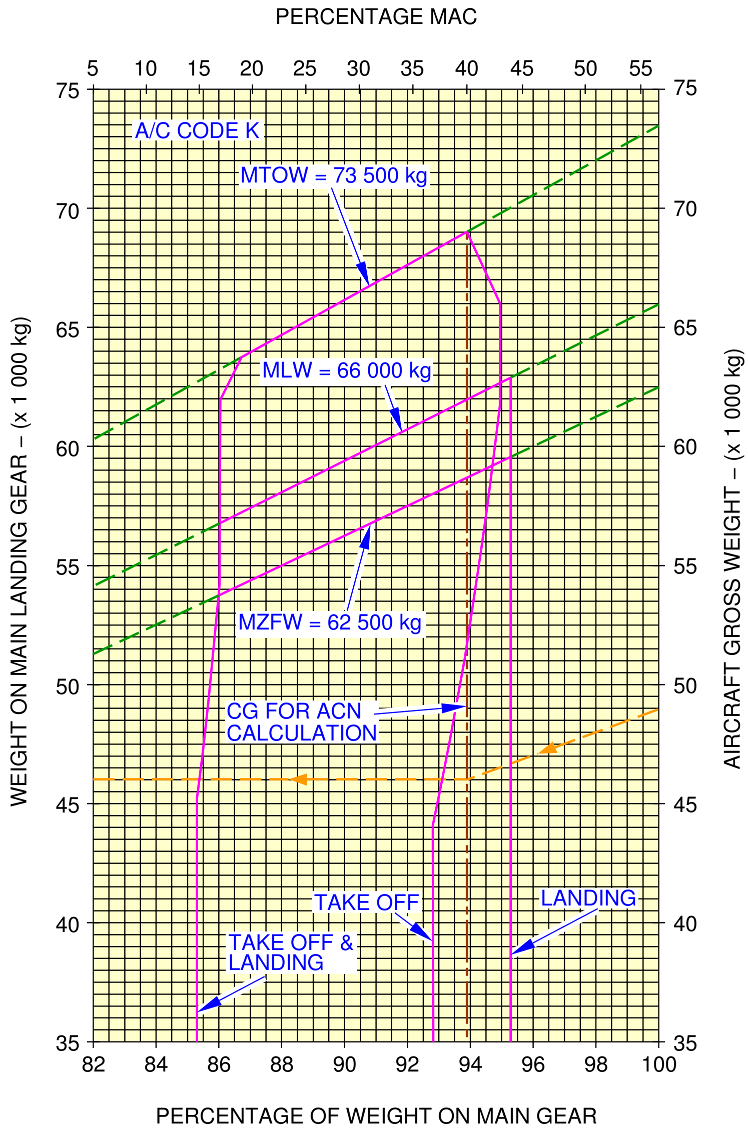
**ON A/C A320-200



N_AC_070401_1_0140101_01_02

Landing Gear Loading on Pavement
FIGURE-7-4-1-991-014-A01

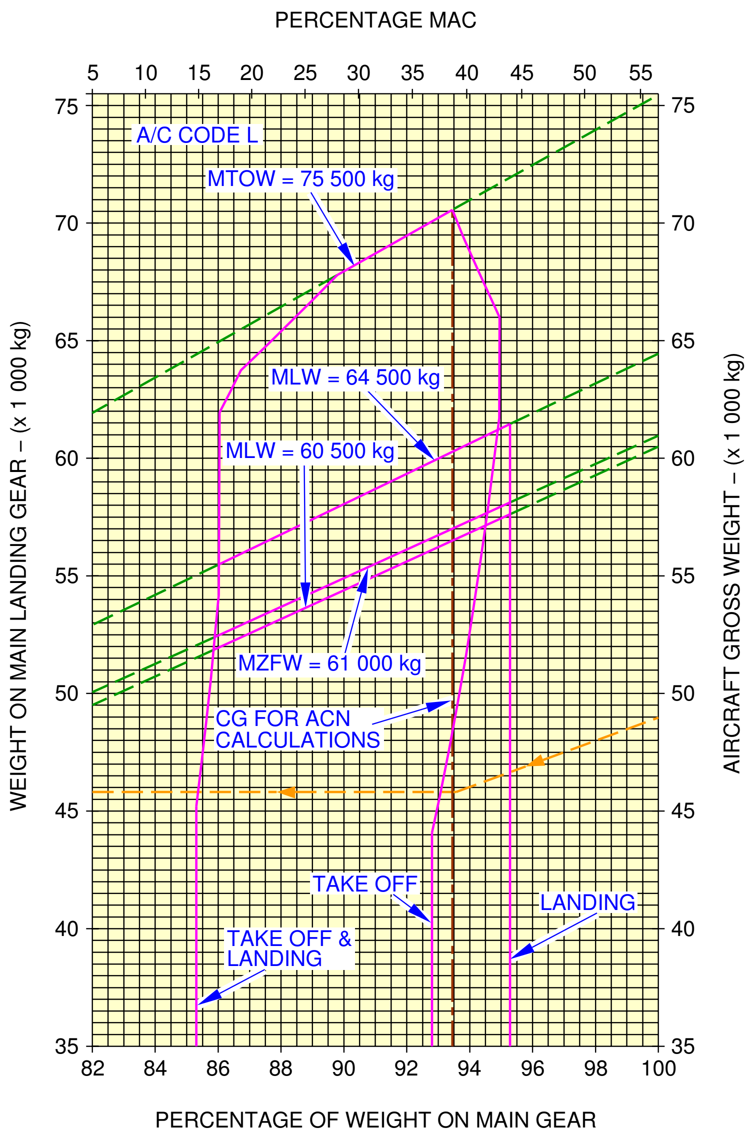
**ON A/C A320-200



N_AC_070401_1_0150101_01_02

Landing Gear Loading on Pavement
FIGURE-7-4-1-991-015-A01

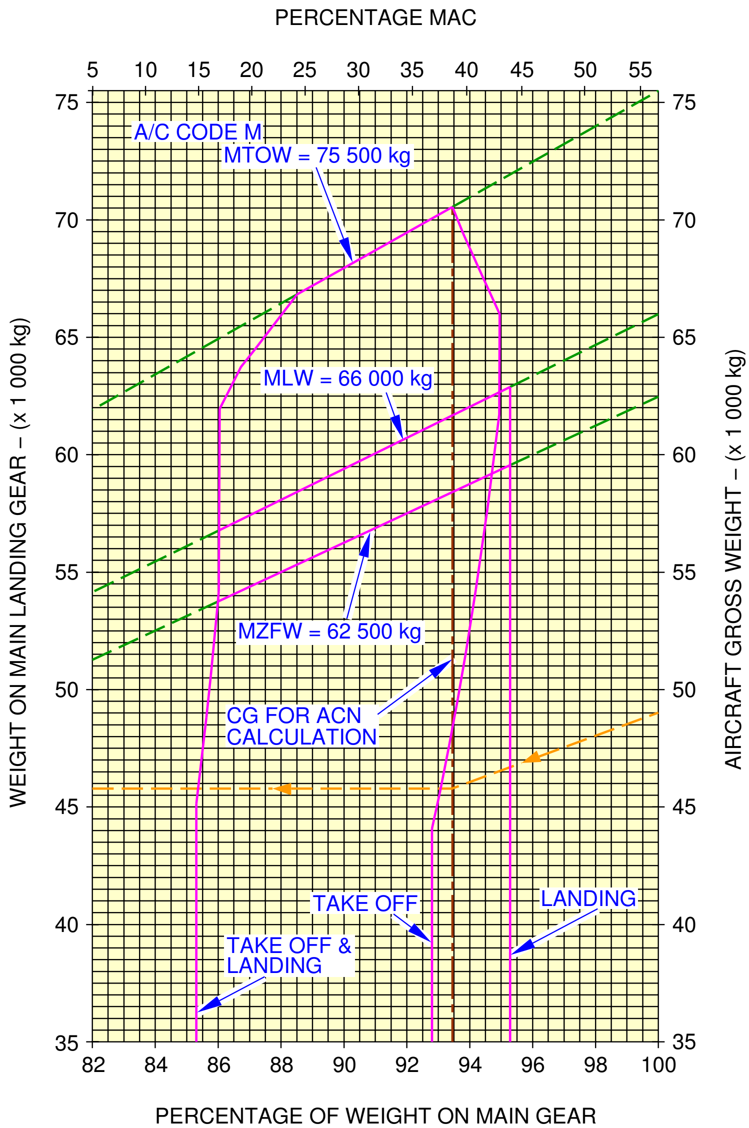
**ON A/C A320-200



N_AC_070401_1_0160101_01_02

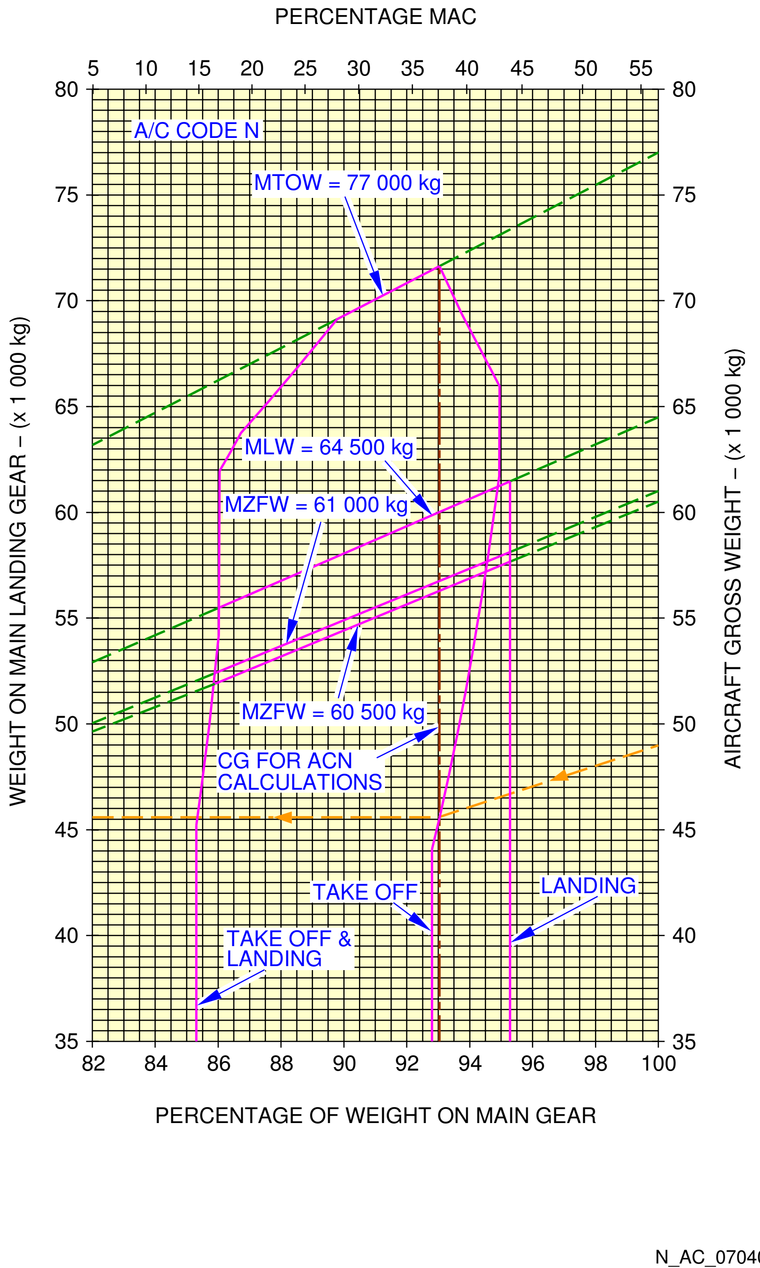
Landing Gear Loading on Pavement
FIGURE-7-4-1-991-016-A01

**ON A/C A320-200



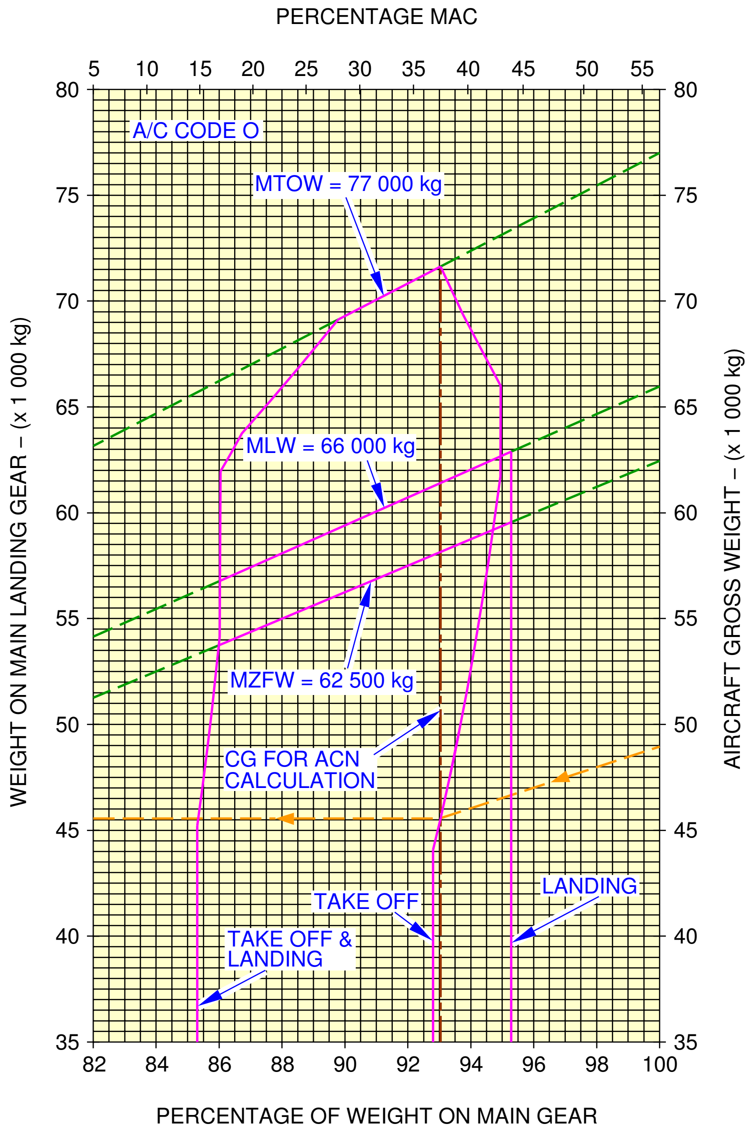
Landing Gear Loading on Pavement
FIGURE-7-4-1-991-017-A01

**ON A/C A320-200



Landing Gear Loading on Pavement
FIGURE-7-4-1-991-018-A01

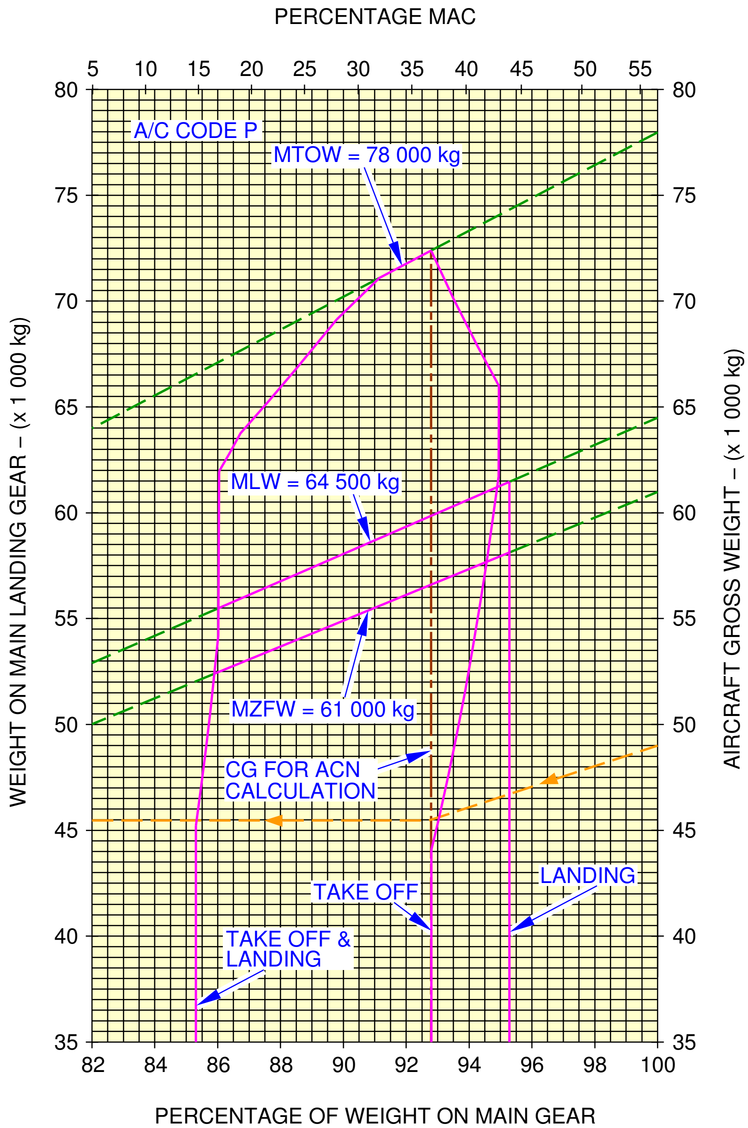
**ON A/C A320-200



N_AC_070401_1_0190101_01_02

Landing Gear Loading on Pavement
FIGURE-7-4-1-991-019-A01

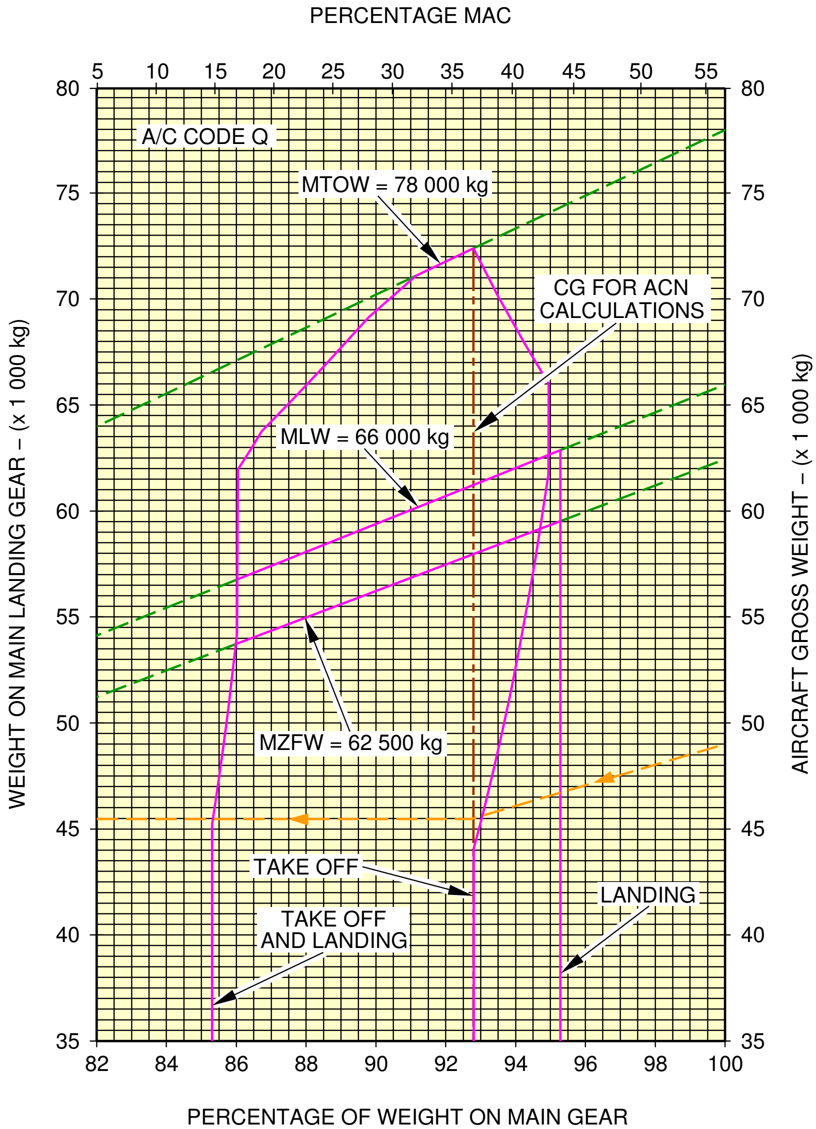
**ON A/C A320-200



N_AC_070401_1_0200101_01_02

Landing Gear Loading on Pavement
FIGURE-7-4-1-991-020-A01

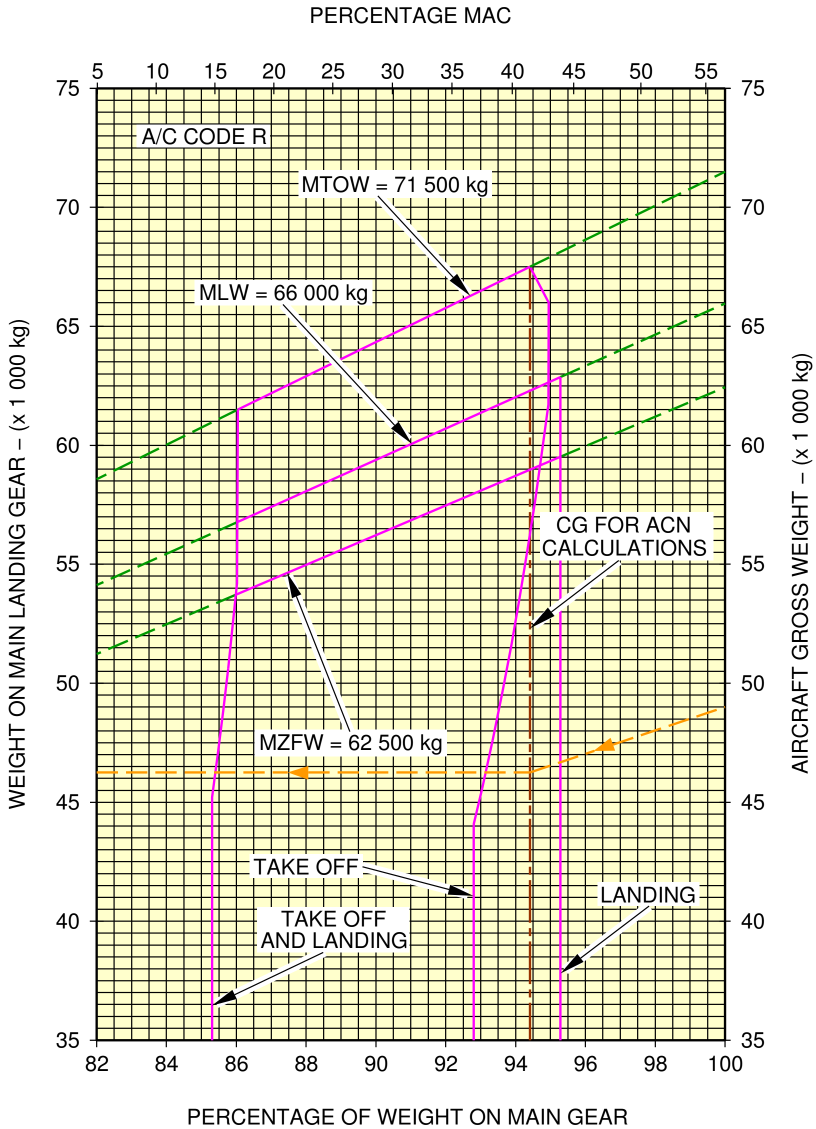
**ON A/C A320-200



N_AC_070401_1_0850101_01_00

Landing Gear Loading on Pavement
FIGURE-7-4-1-991-085-A01

**ON A/C A320-200



N_AC_070401_1_0860101_01_00

Landing Gear Loading on Pavement
FIGURE-7-4-1-991-086-A01

7-5-0 Flexible Pavement Requirements - U.S. Army Corps of Engineers Design Method

****ON A/C A320-200**

Flexible Pavement Requirements - U.S. Army Corps of Engineers Design Method

1. General

In order to determine a particular Flexible Pavement Thickness, the Subgrade Strength (CBR), the Annual Departure Level and the weight on one Main Landing Gear must be known.

In the example shown in Section 7-5-1 Flexible Pavement Requirements, A/C Code E (Main Gear Tire Size 46 x 17 R20 (46 x 16 - 20), inflated at 12.3 bar (178 psi)):
- a CBR value of 10
- an Annual Departure Level of 15 000
- the Load on one MLG of 20 000 kg (44 100 lb).

For these conditions, the Flexible Pavement Thickness is 41.5 cm (16.3 in).

The line showing 10 000 Coverages is used to calculate the Aircraft Classification Number (ACN).

7-5-1 Flexible Pavement Requirements - U.S. Army Corps of Engineers Design Method

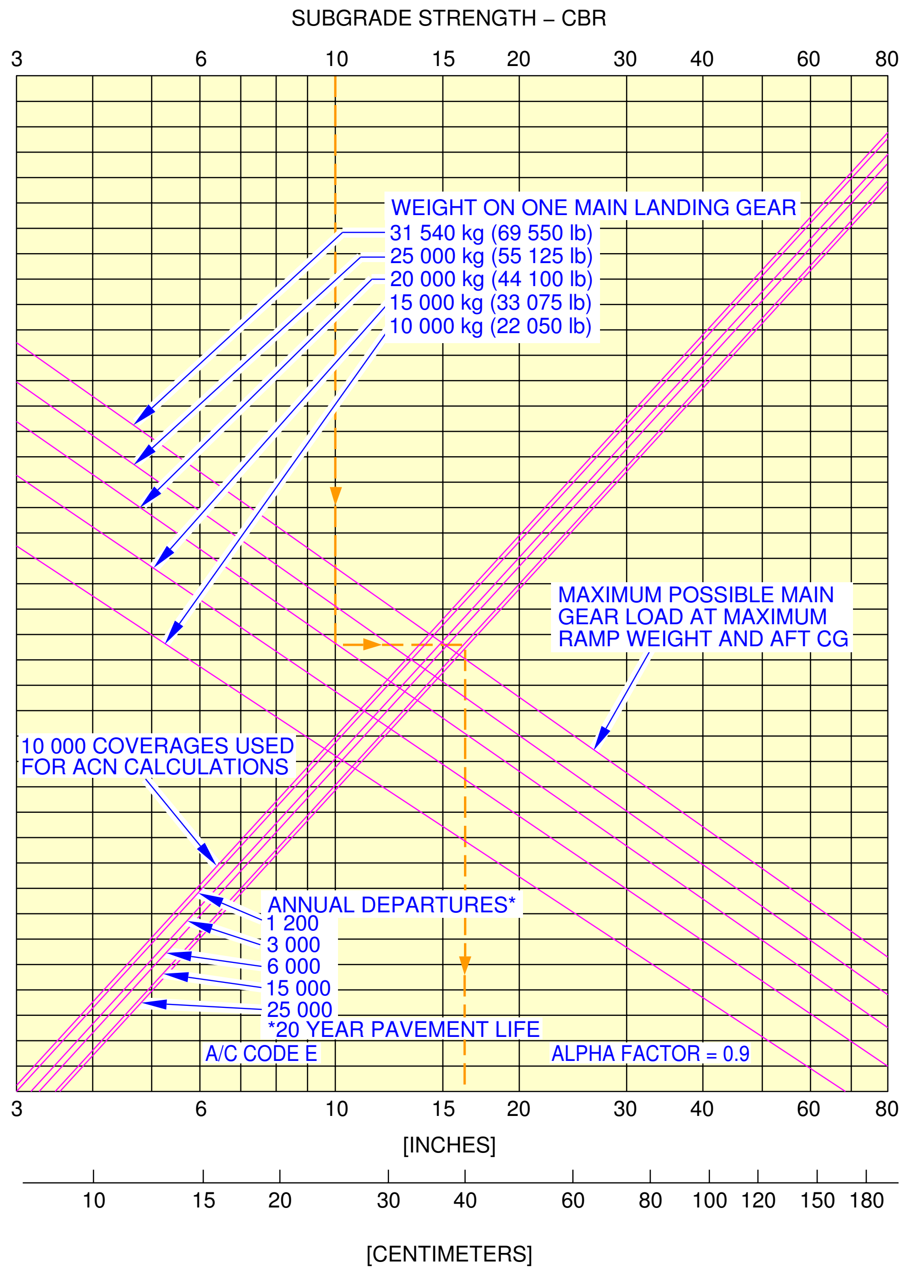
****ON A/C A320-200**

Flexible Pavement Requirements - U.S. Army Corps of Engineers Design Method

1. This section gives Flexible Pavement Requirements.

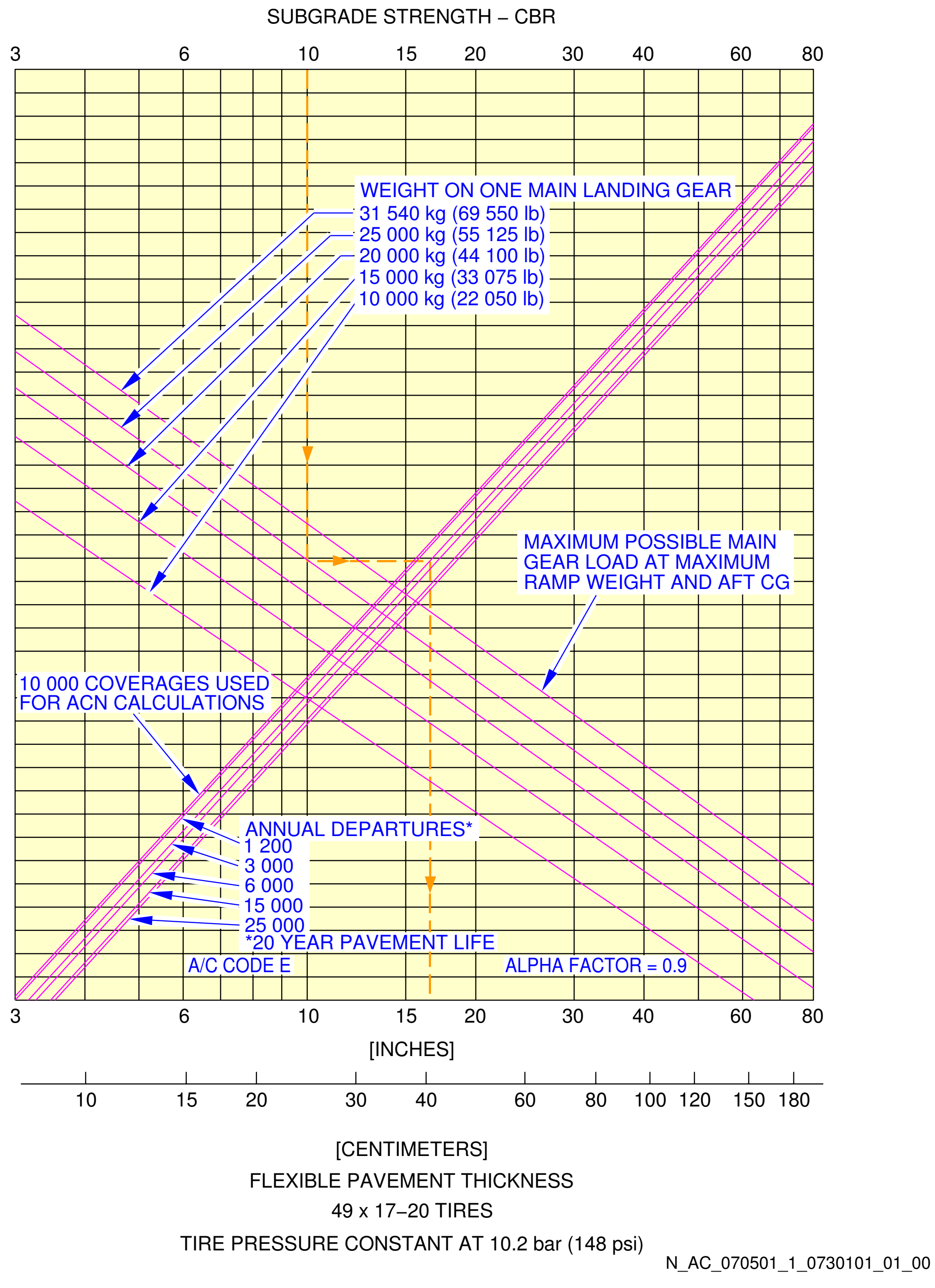
   NOTE : For A/C Code definition, refer to chapter 07-01-00.

**ON A/C A320-200



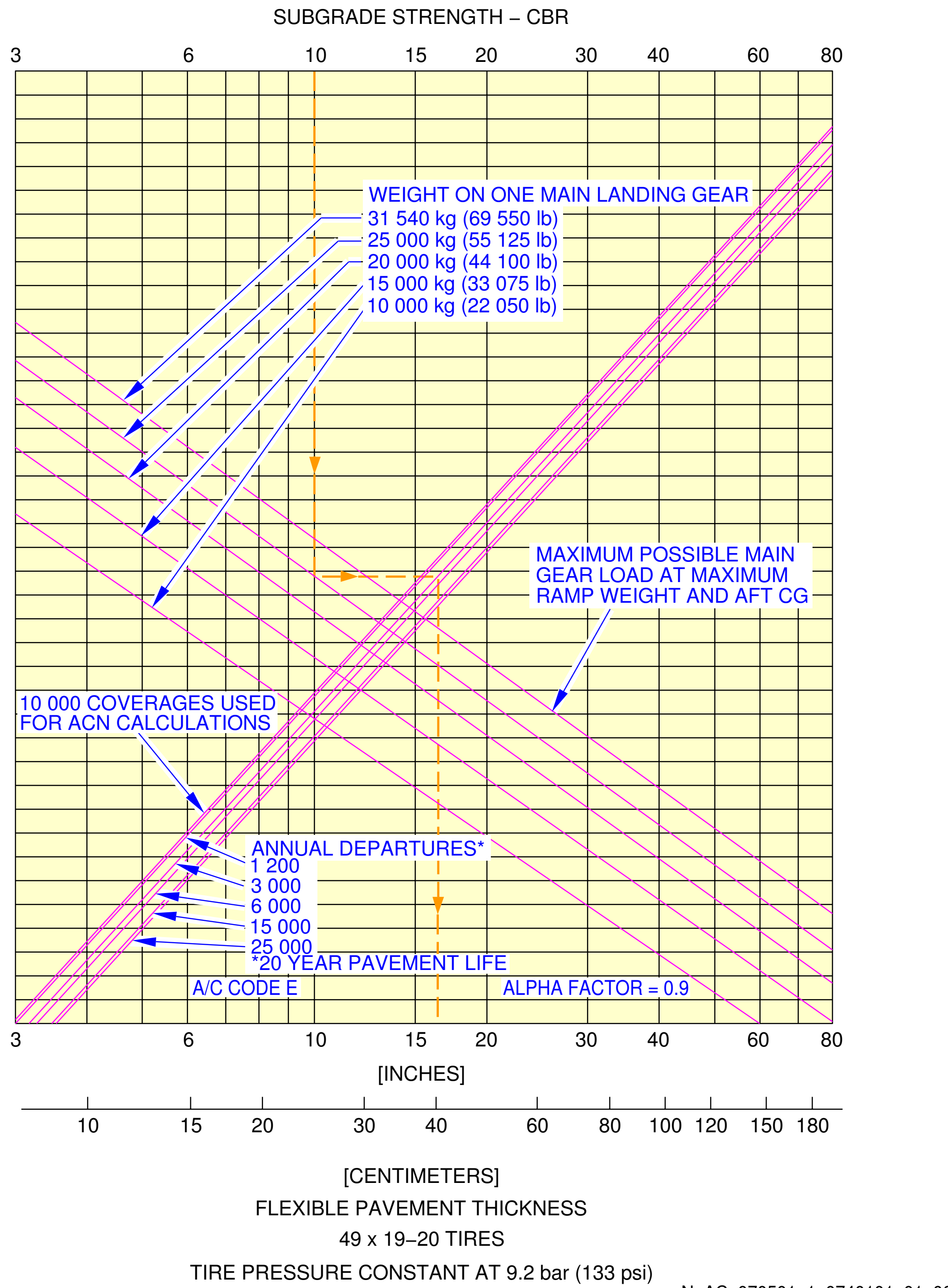
Flexible Pavement Requirements
FIGURE-7-5-1-991-072-A01

**ON A/C A320-200



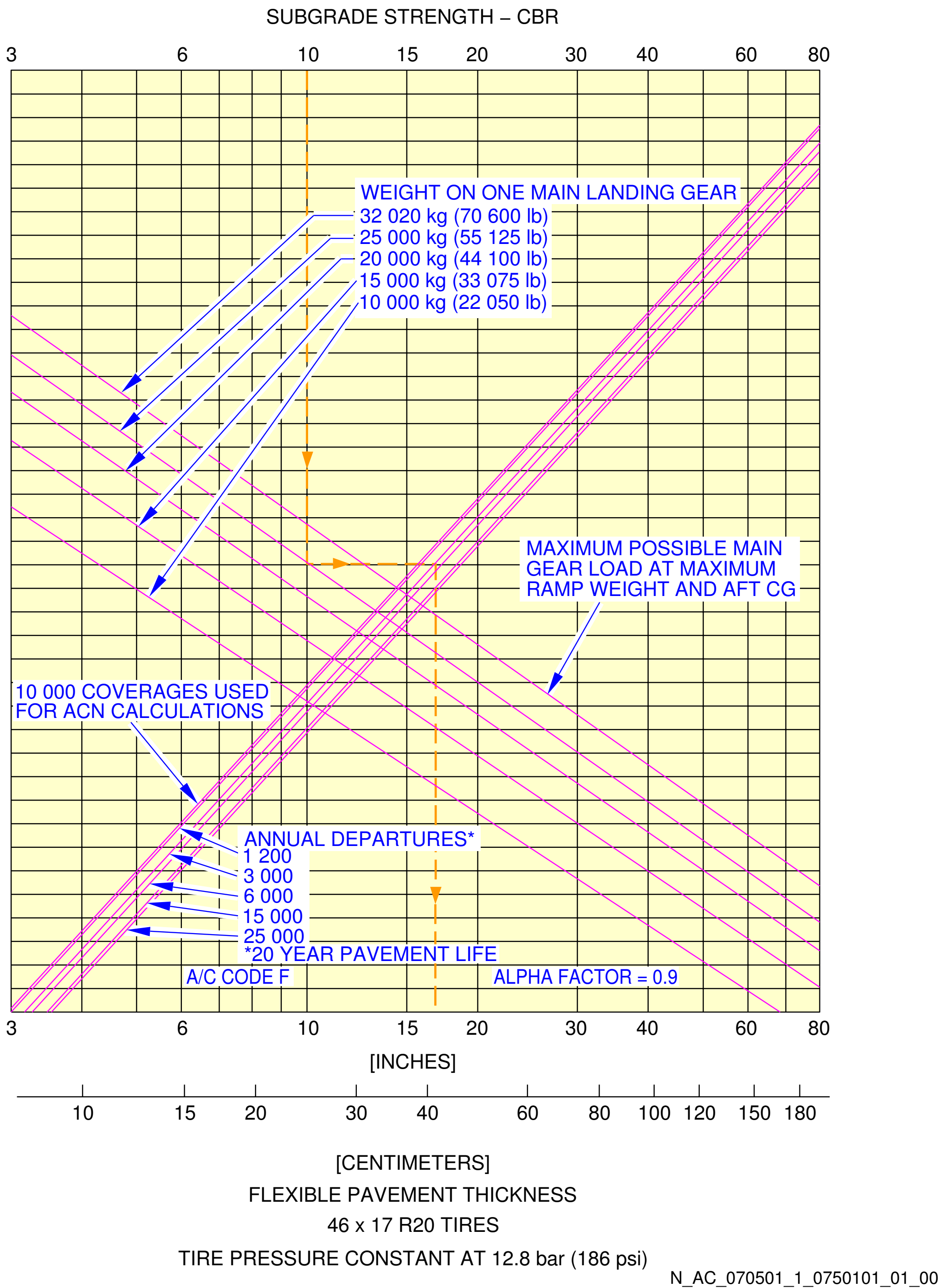
Flexible Pavement Requirements
FIGURE-7-5-1-991-073-A01

**ON A/C A320-200



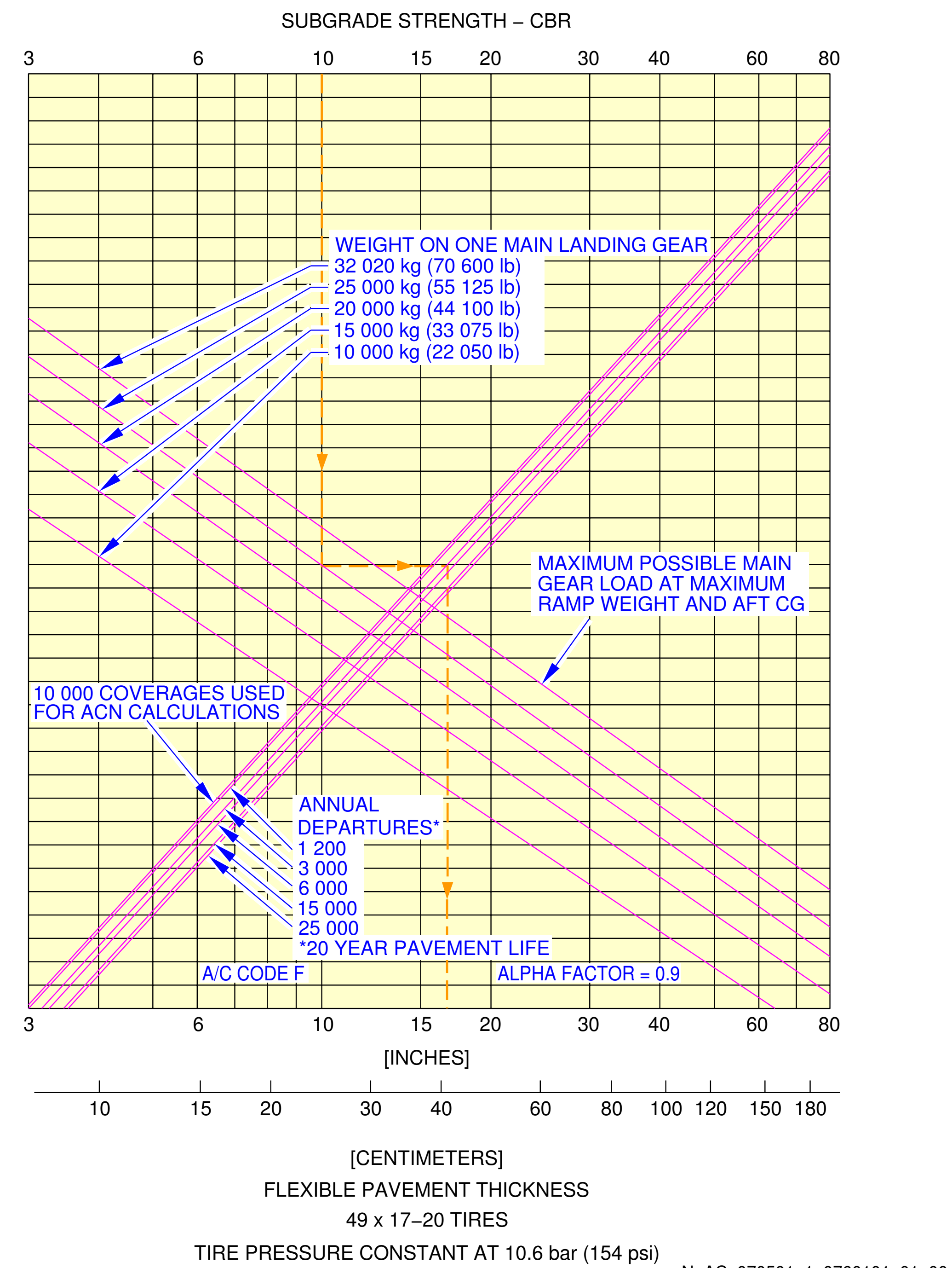
Flexible Pavement Requirements
FIGURE-7-5-1-991-074-A01

**ON A/C A320-200



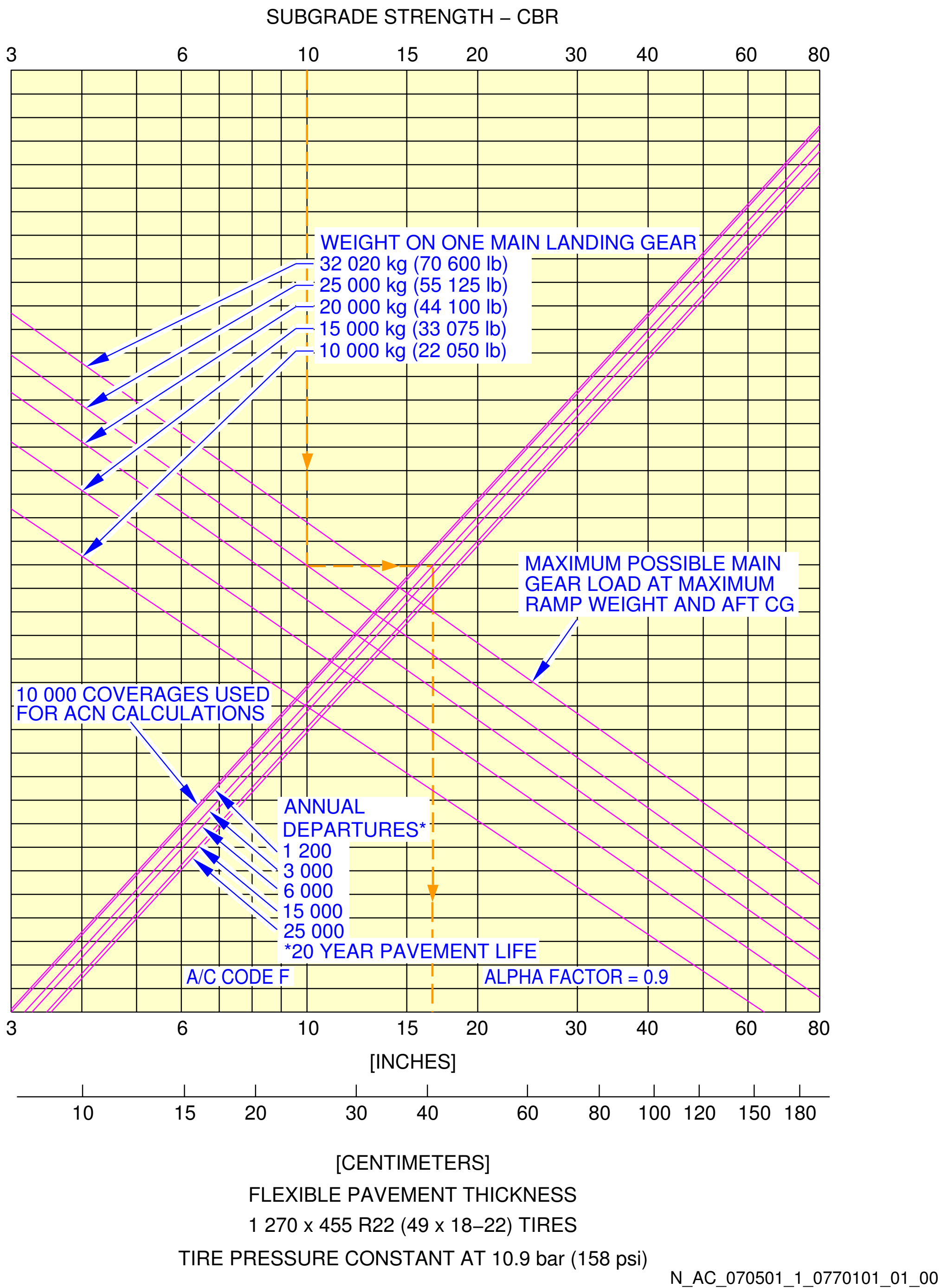
Flexible Pavement Requirements
FIGURE-7-5-1-991-075-A01

**ON A/C A320-200



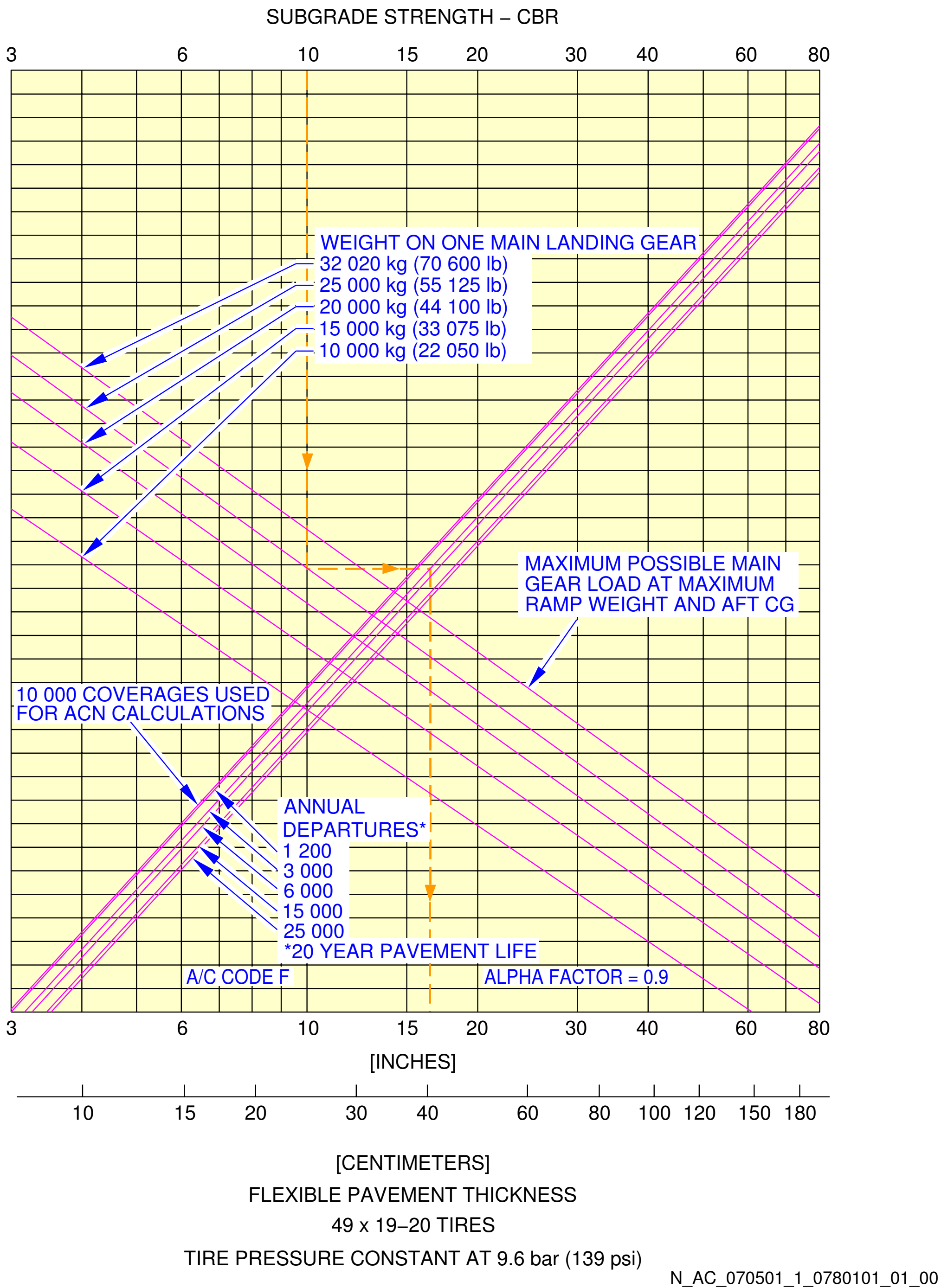
Flexible Pavement Requirements
FIGURE-7-5-1-991-076-A01

**ON A/C A320-200



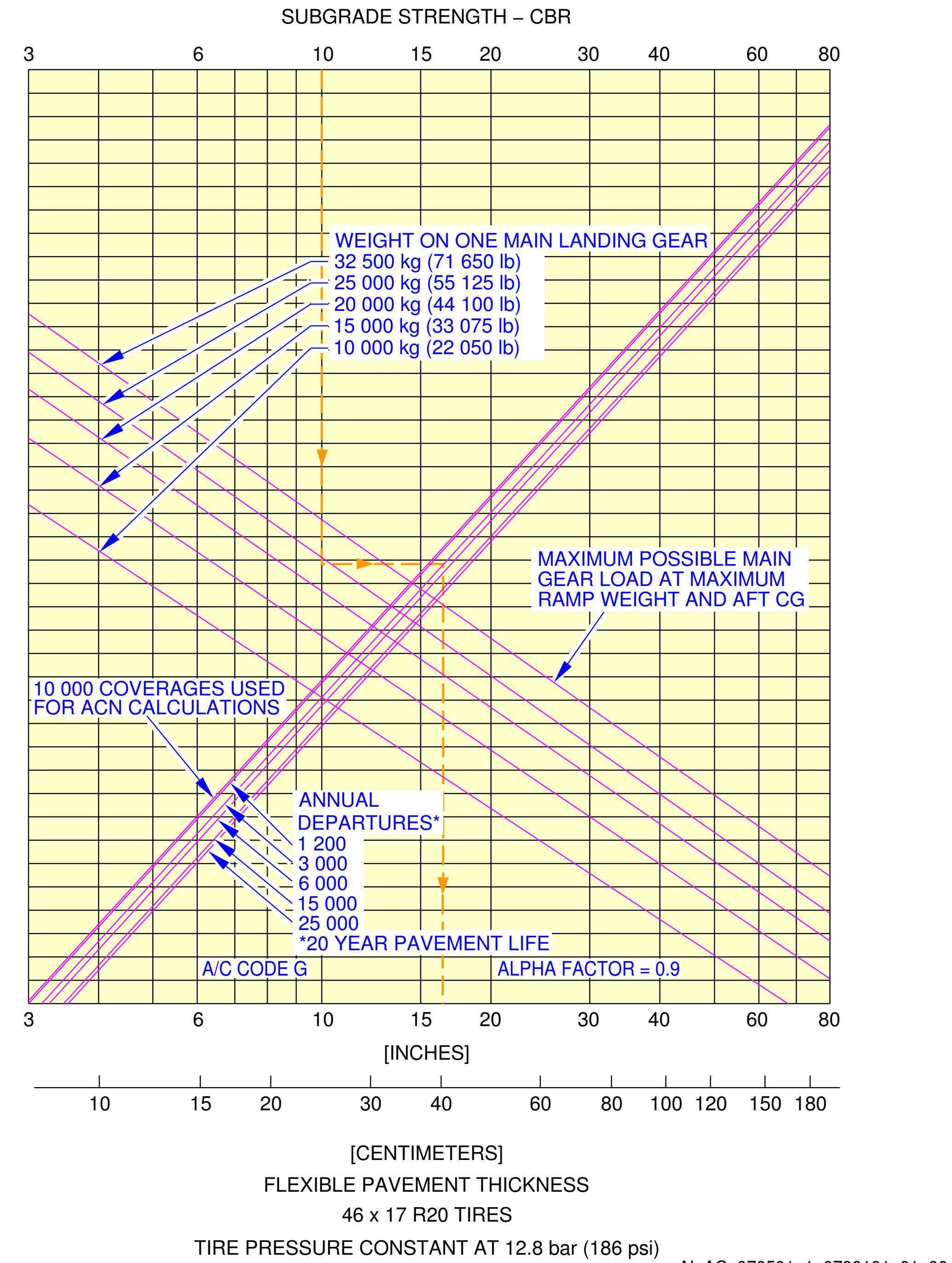
Flexible Pavement Requirements
FIGURE-7-5-1-991-077-A01

**ON A/C A320-200



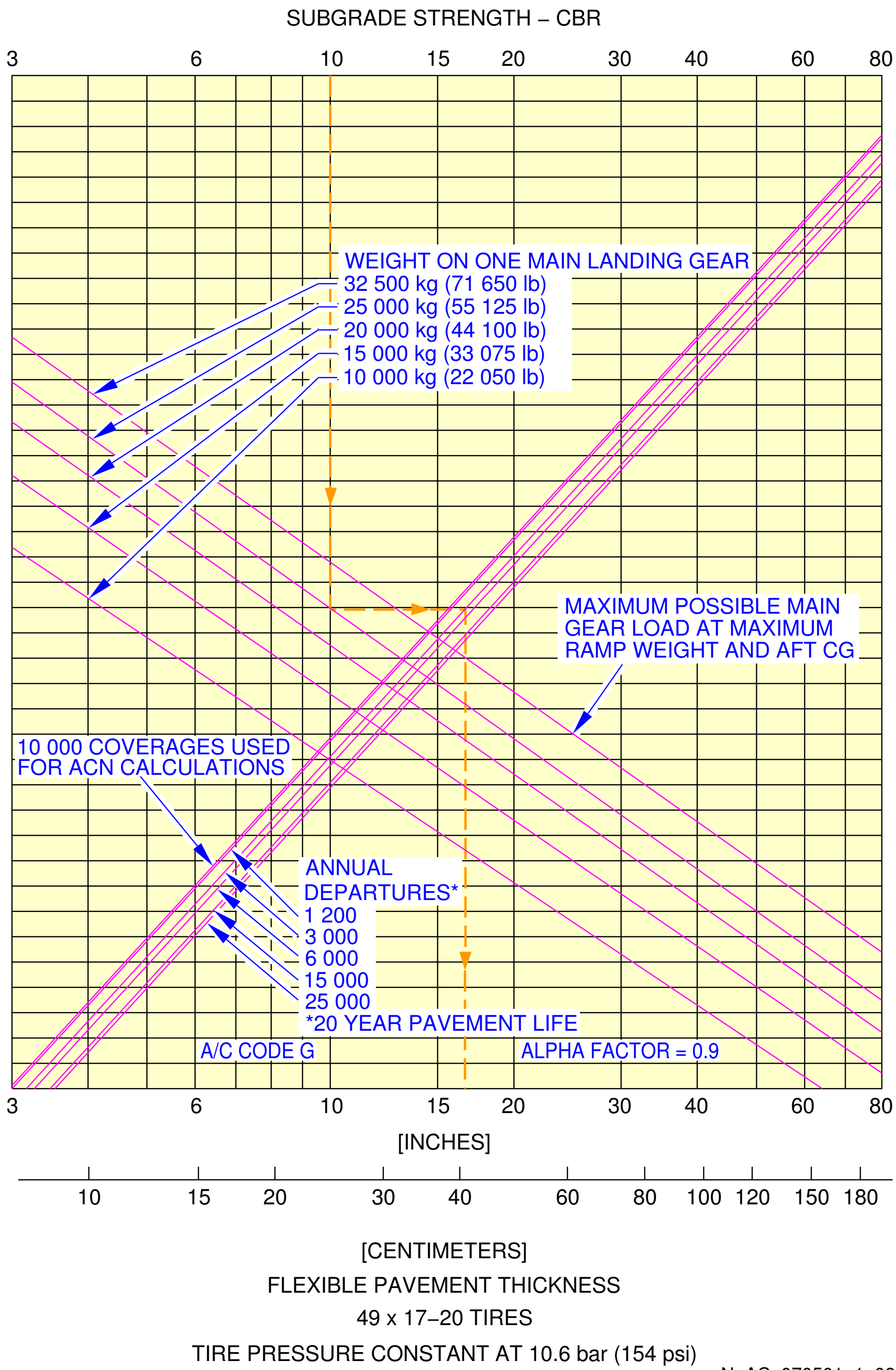
Flexible Pavement Requirements
FIGURE-7-5-1-991-078-A01

**ON A/C A320-200



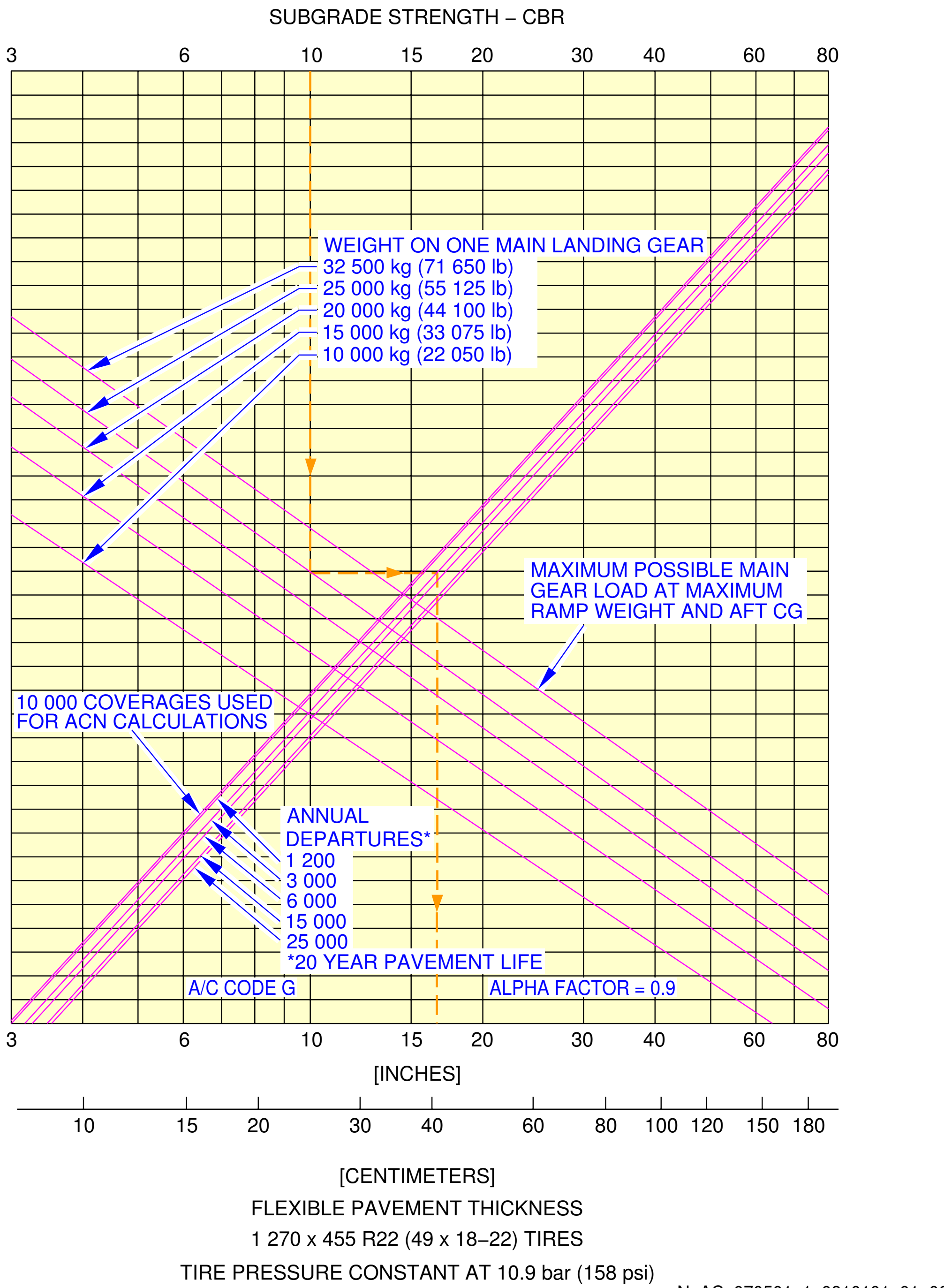
Flexible Pavement Requirements
FIGURE-7-5-1-991-079-A01

**ON A/C A320-200



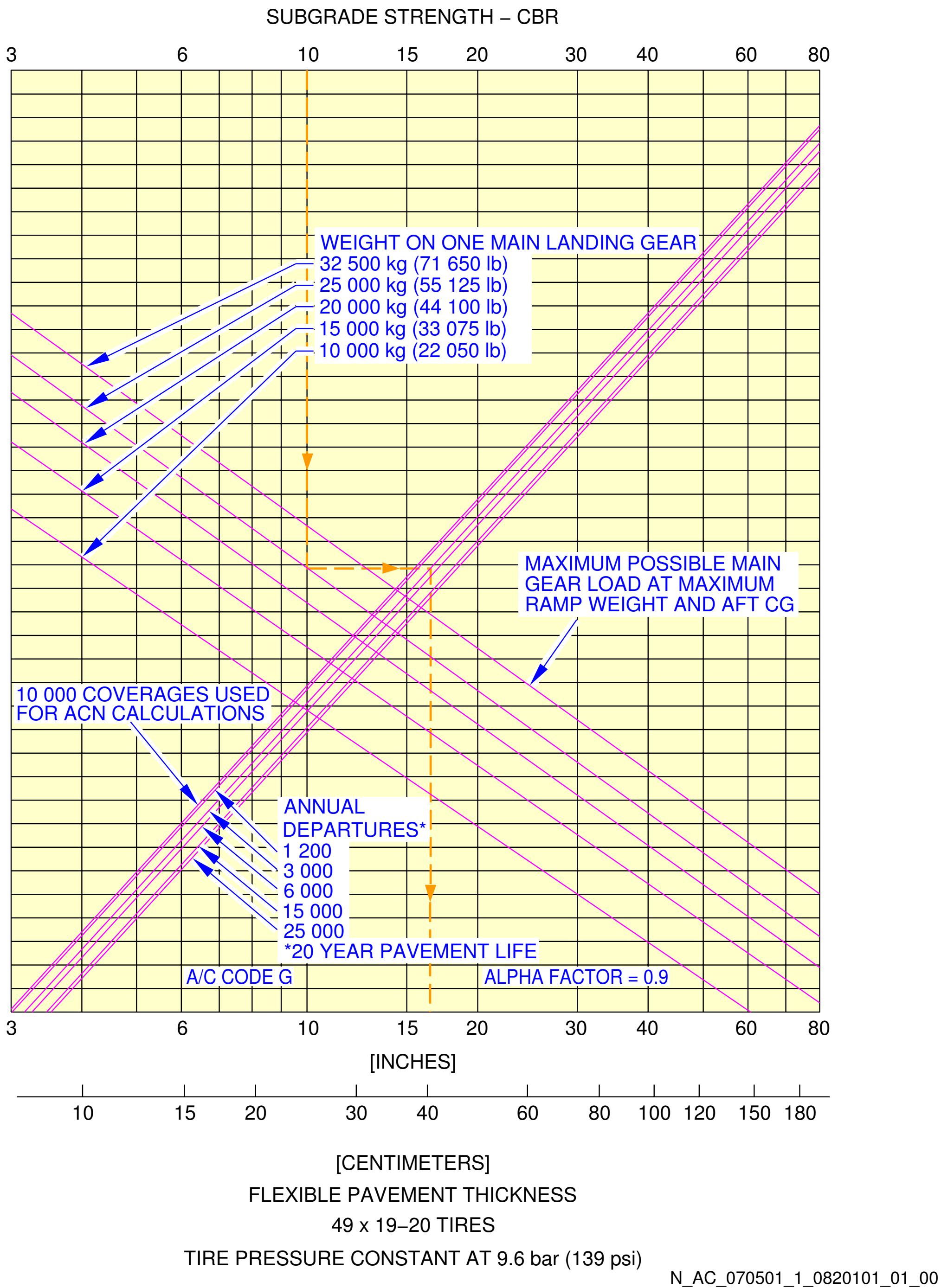
Flexible Pavement Requirements
FIGURE-7-5-1-991-080-A01

**ON A/C A320-200



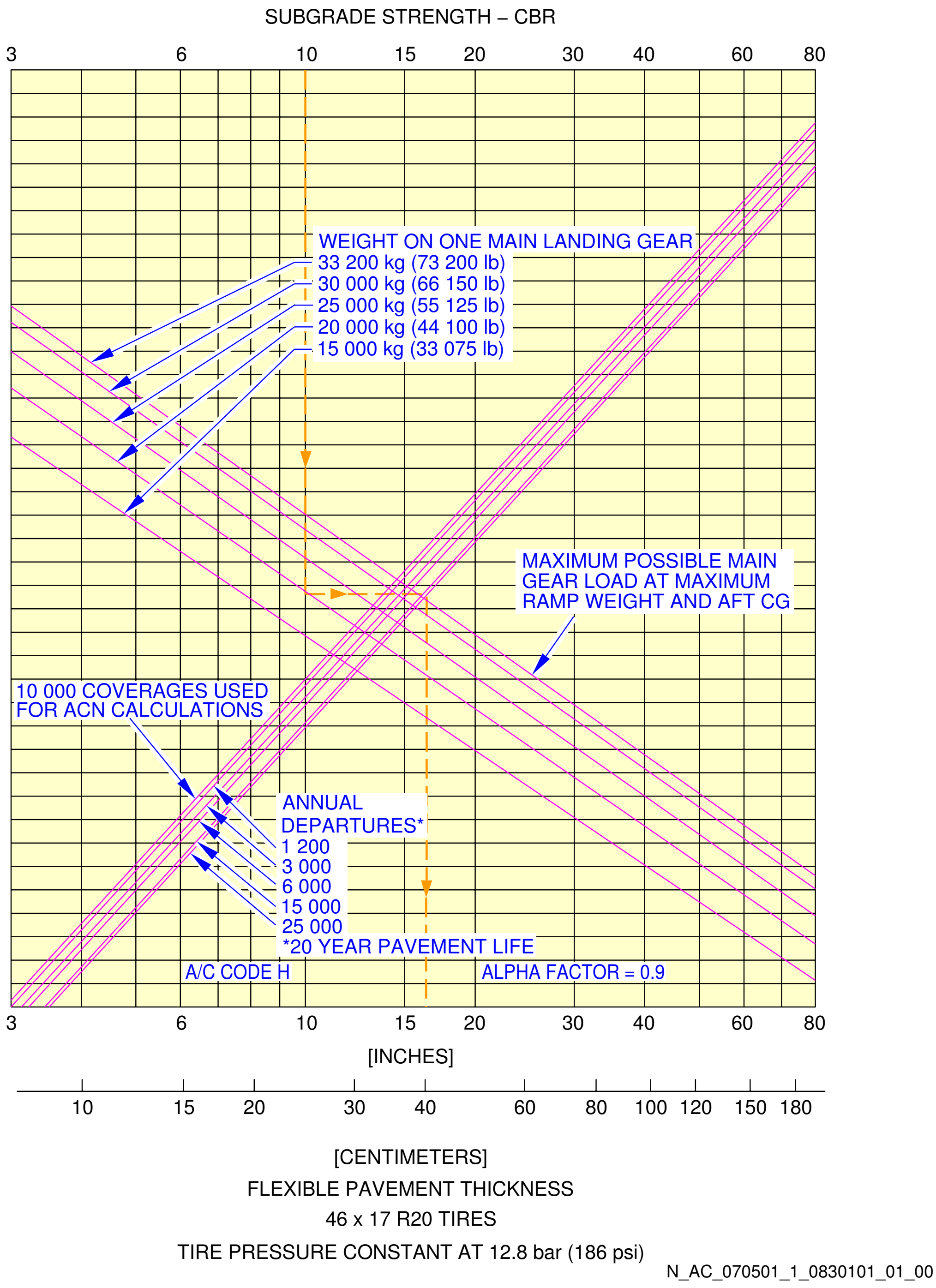
Flexible Pavement Requirements
FIGURE-7-5-1-991-081-A01

**ON A/C A320-200



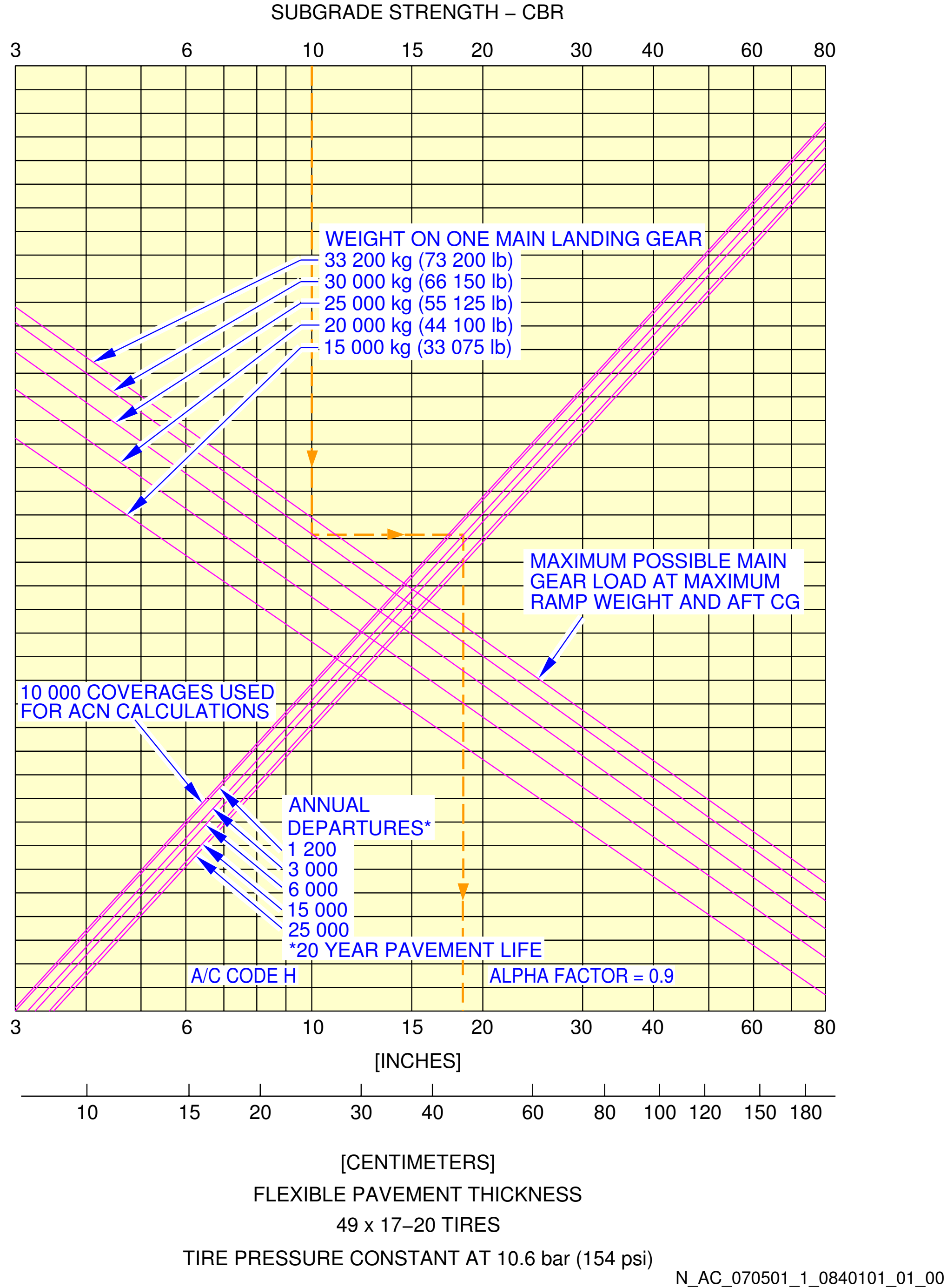
Flexible Pavement Requirements
FIGURE-7-5-1-991-082-A01

**ON A/C A320-200



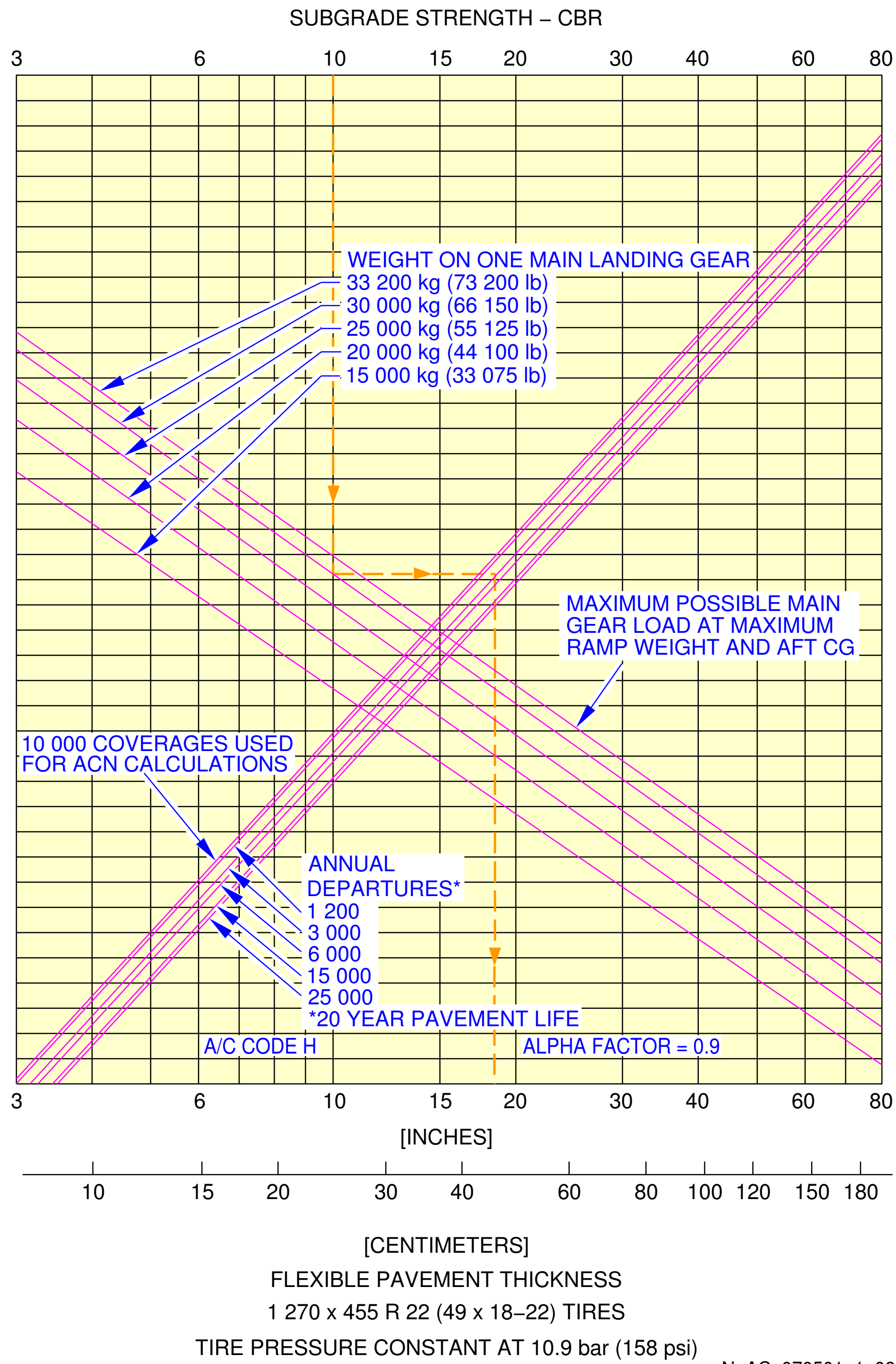
Flexible Pavement Requirements
FIGURE-7-5-1-991-083-A01

**ON A/C A320-200



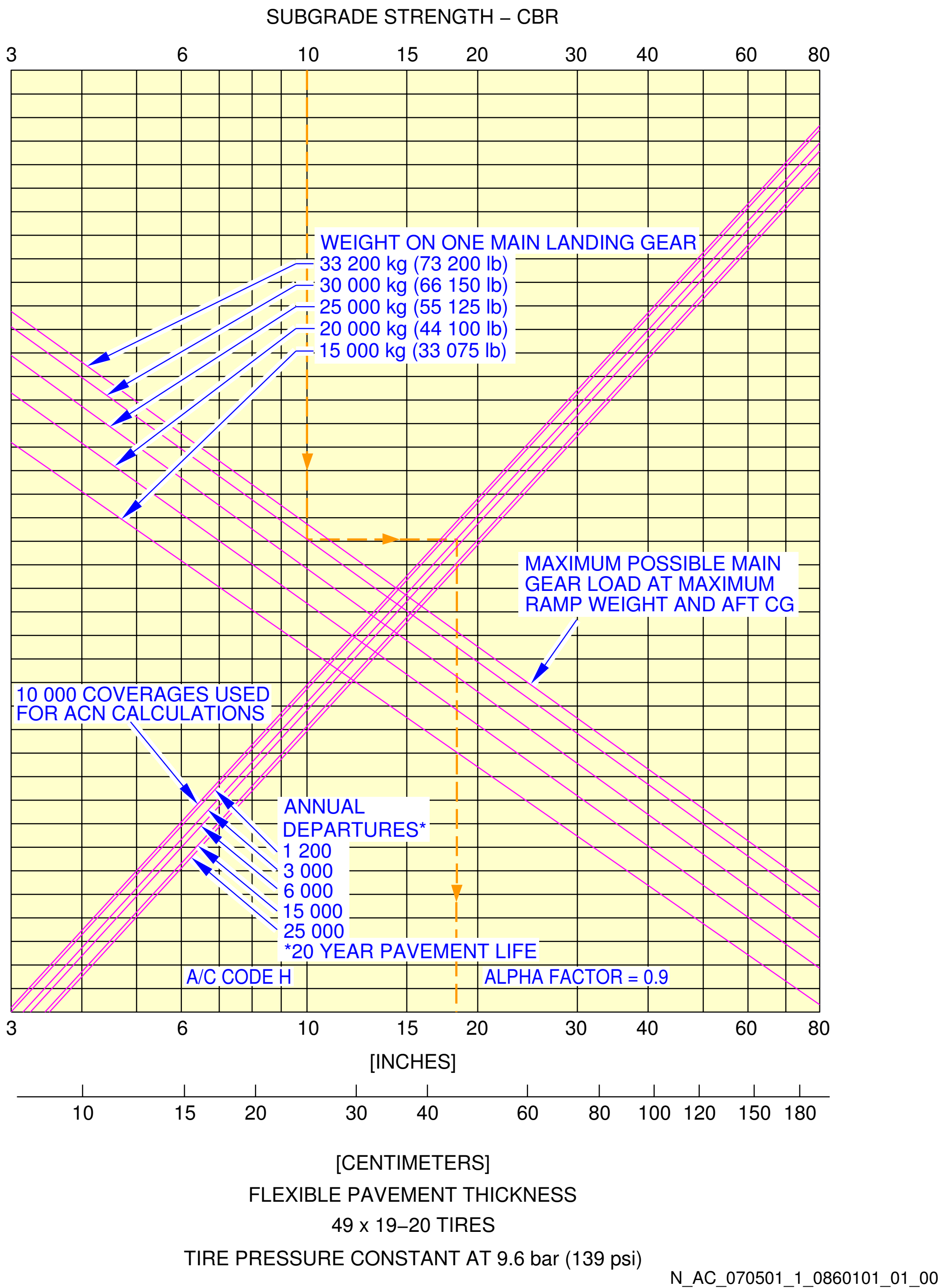
Flexible Pavement Requirements
FIGURE-7-5-1-991-084-A01

**ON A/C A320-200



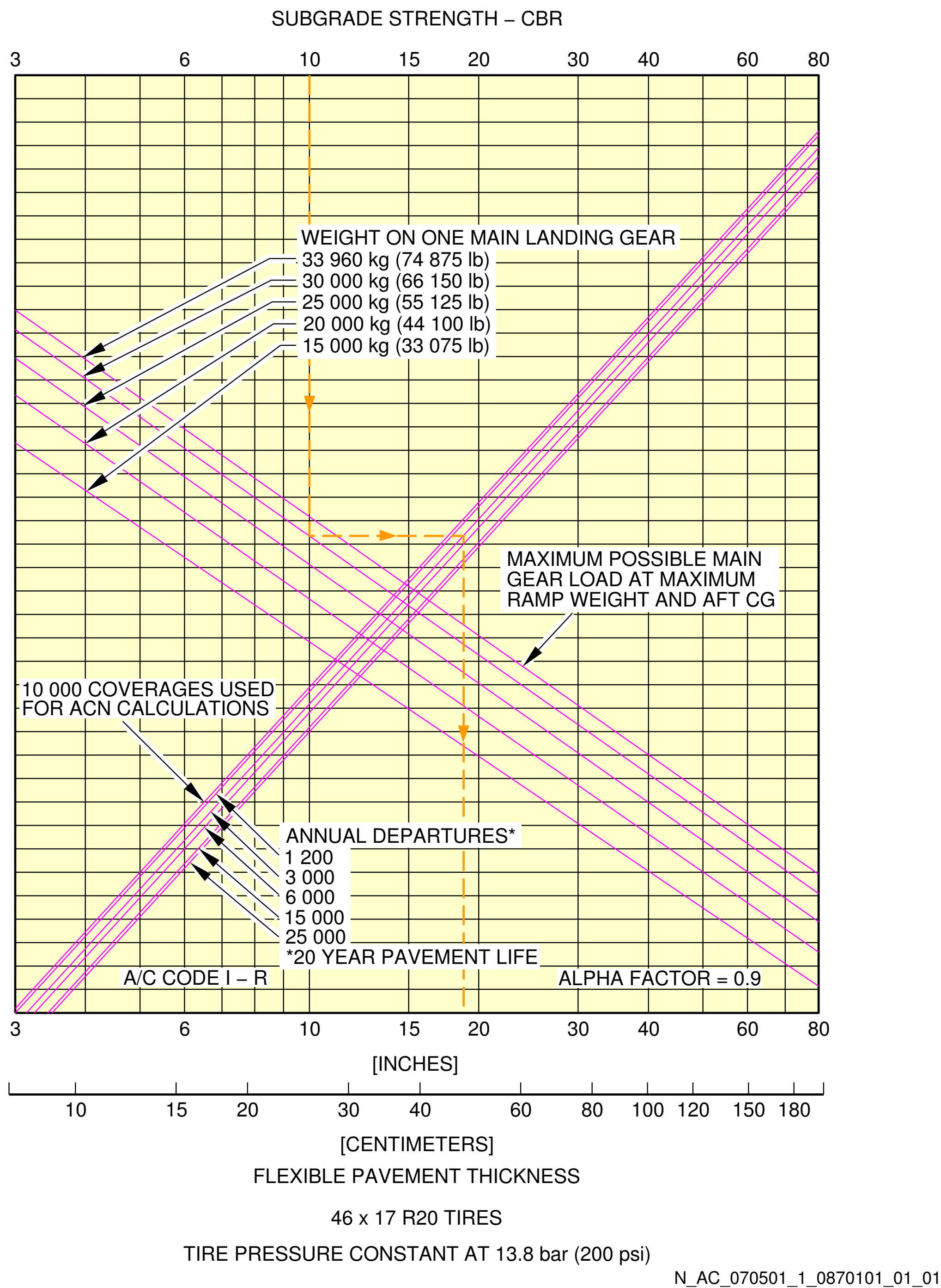
Flexible Pavement Requirements
FIGURE-7-5-1-991-085-A01

**ON A/C A320-200



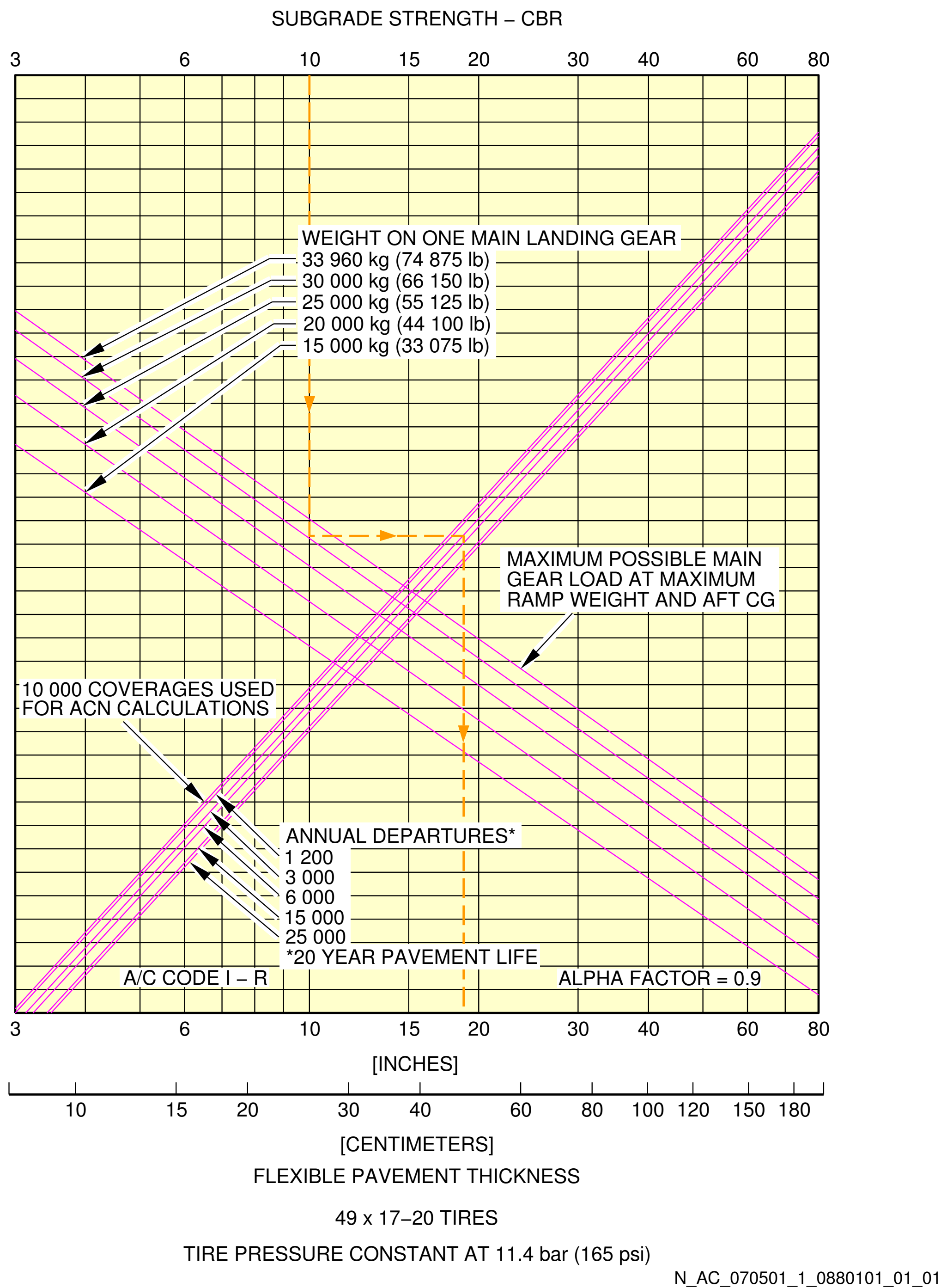
Flexible Pavement Requirements
FIGURE-7-5-1-991-086-A01

**ON A/C A320-200



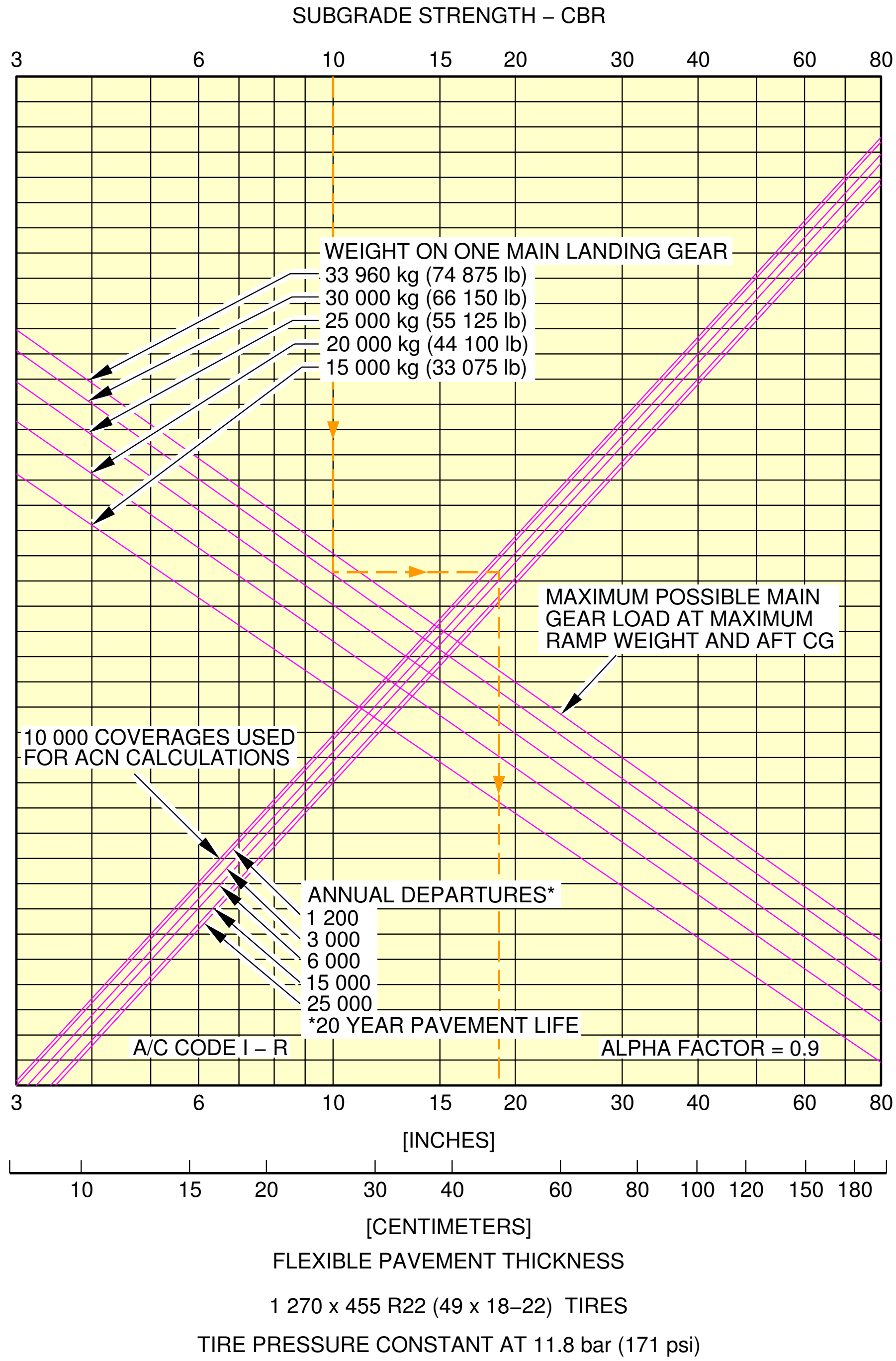
Flexible Pavement Requirements
FIGURE-7-5-1-991-087-A01

**ON A/C A320-200



Flexible Pavement Requirements
FIGURE-7-5-1-991-088-A01

**ON A/C A320-200



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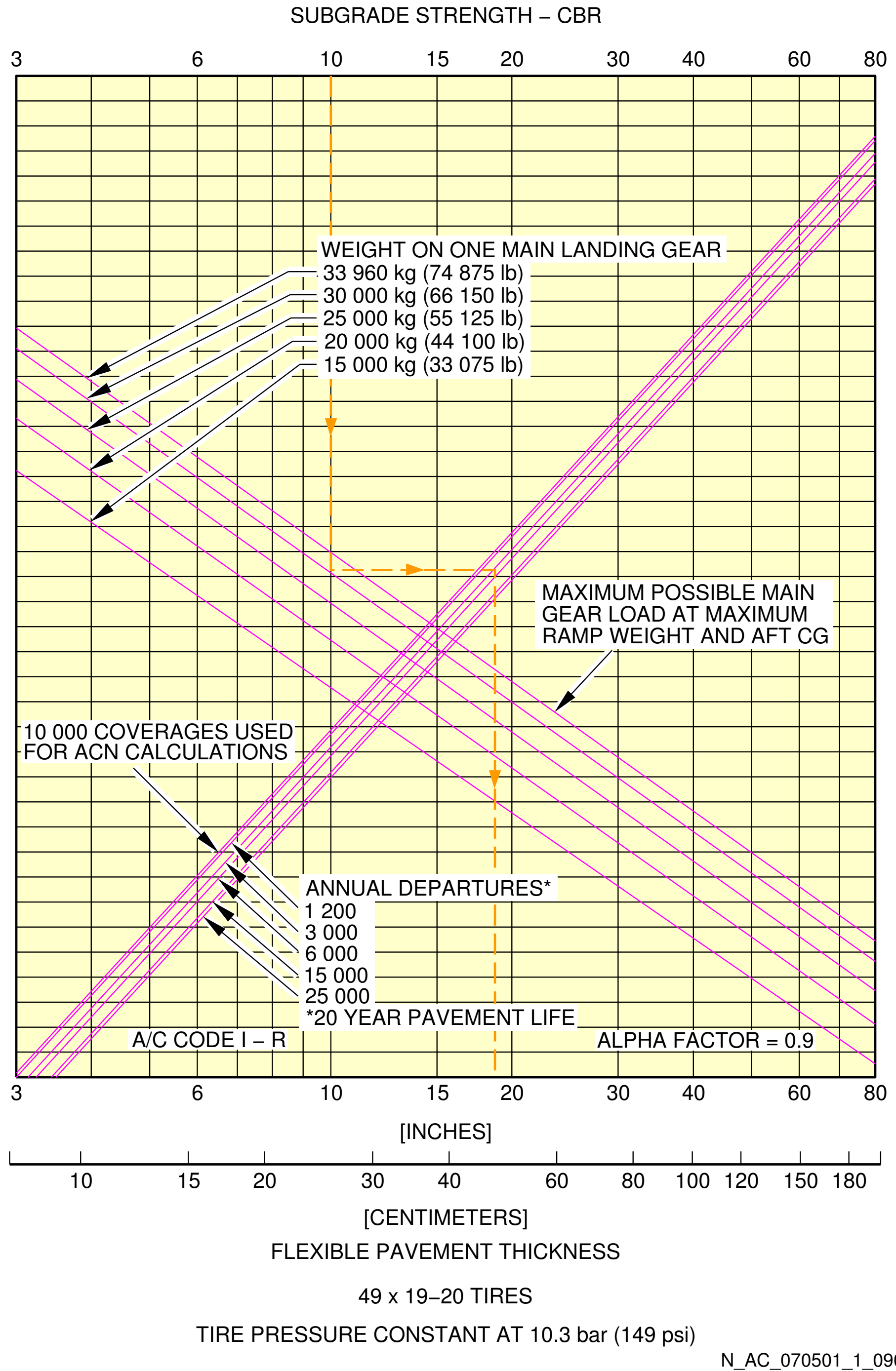
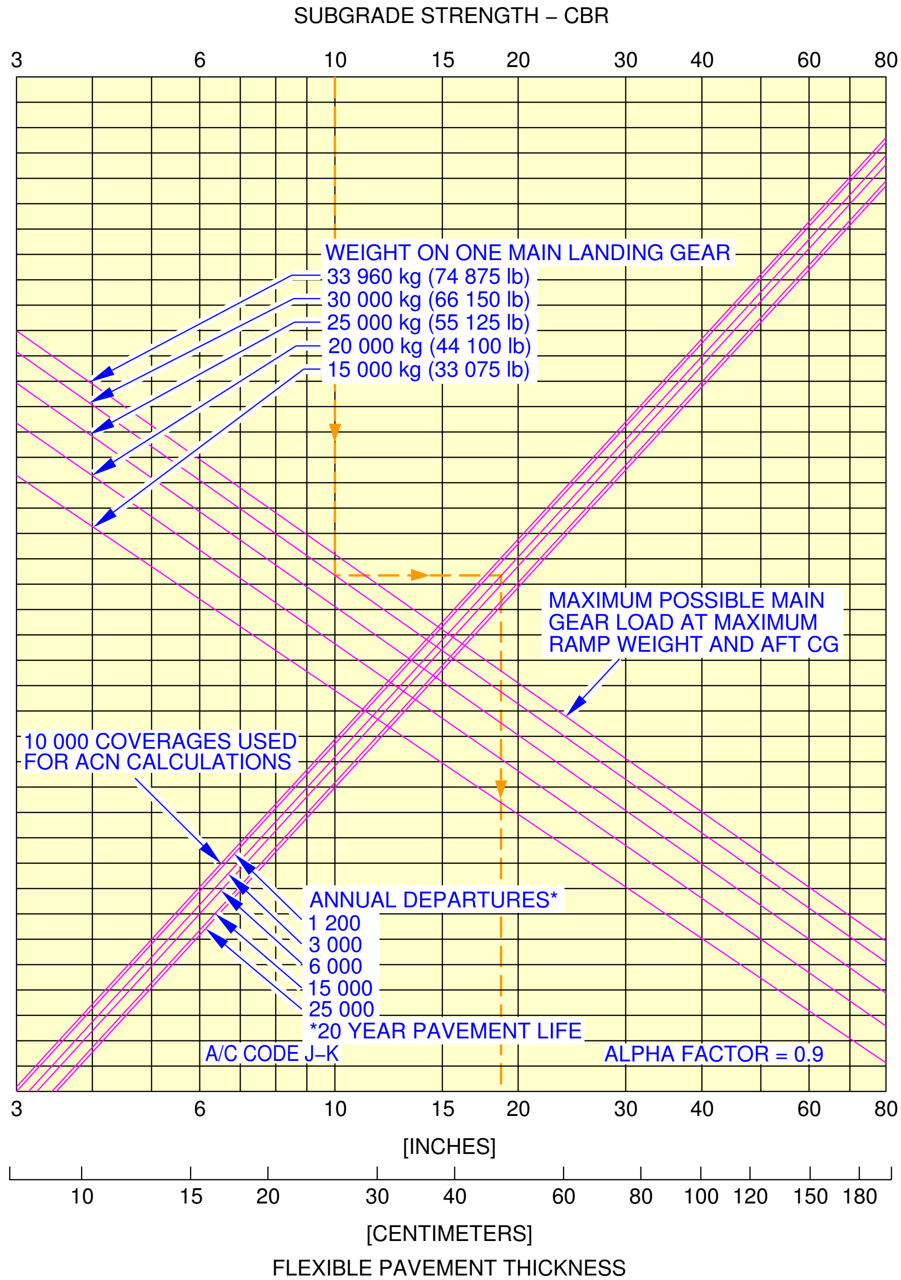
Flexible Pavement Requirements
FIGURE-7-5-1-991-089-A01

**ON A/C A320-200



Flexible Pavement Requirements
FIGURE-7-5-1-991-090-A01

**ON A/C A320-200



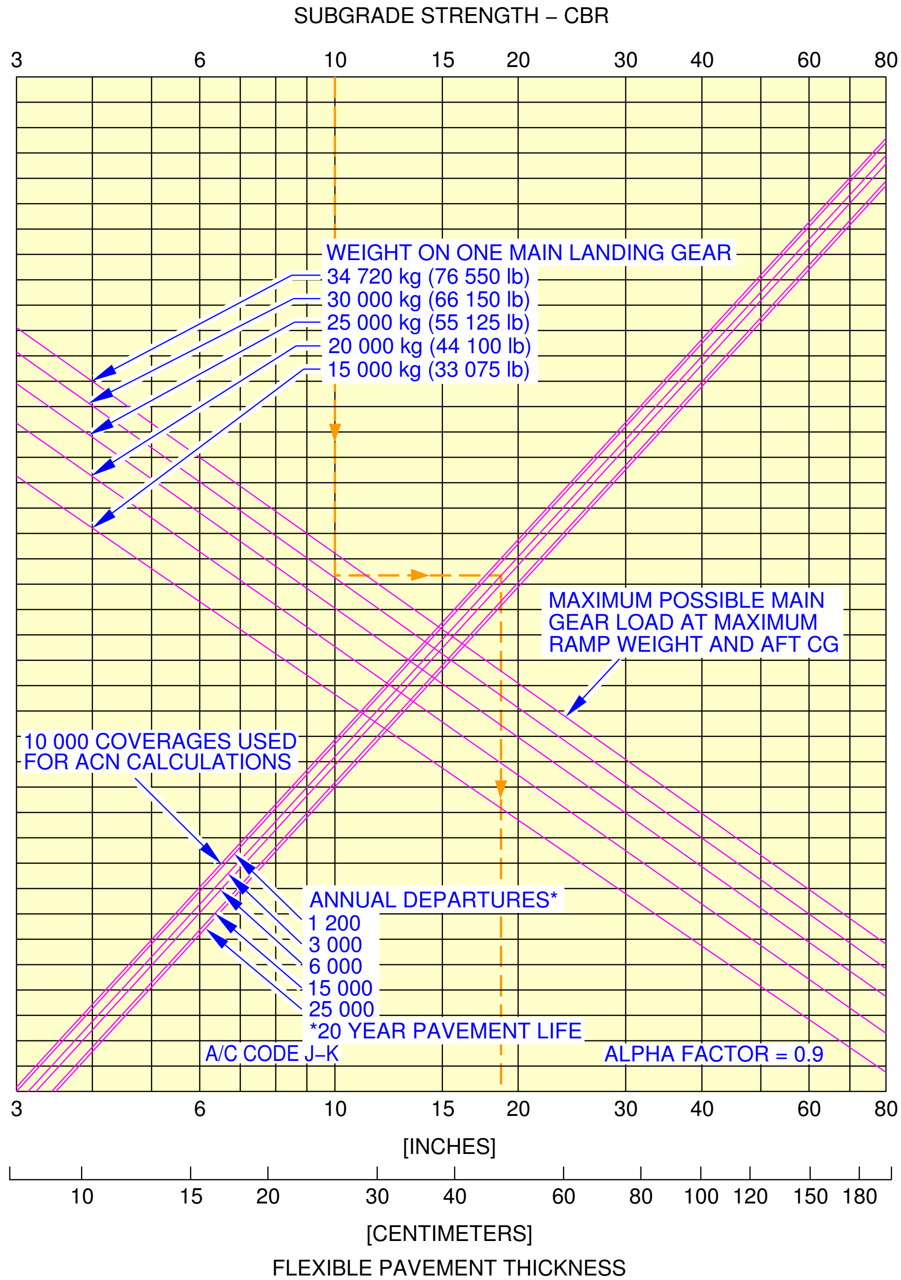
46 x 17 R20 TIRES

TIRE PRESSURE CONSTANT AT 13.8 bar (200 psi)

N_AC_070501_1_0910101_01_00

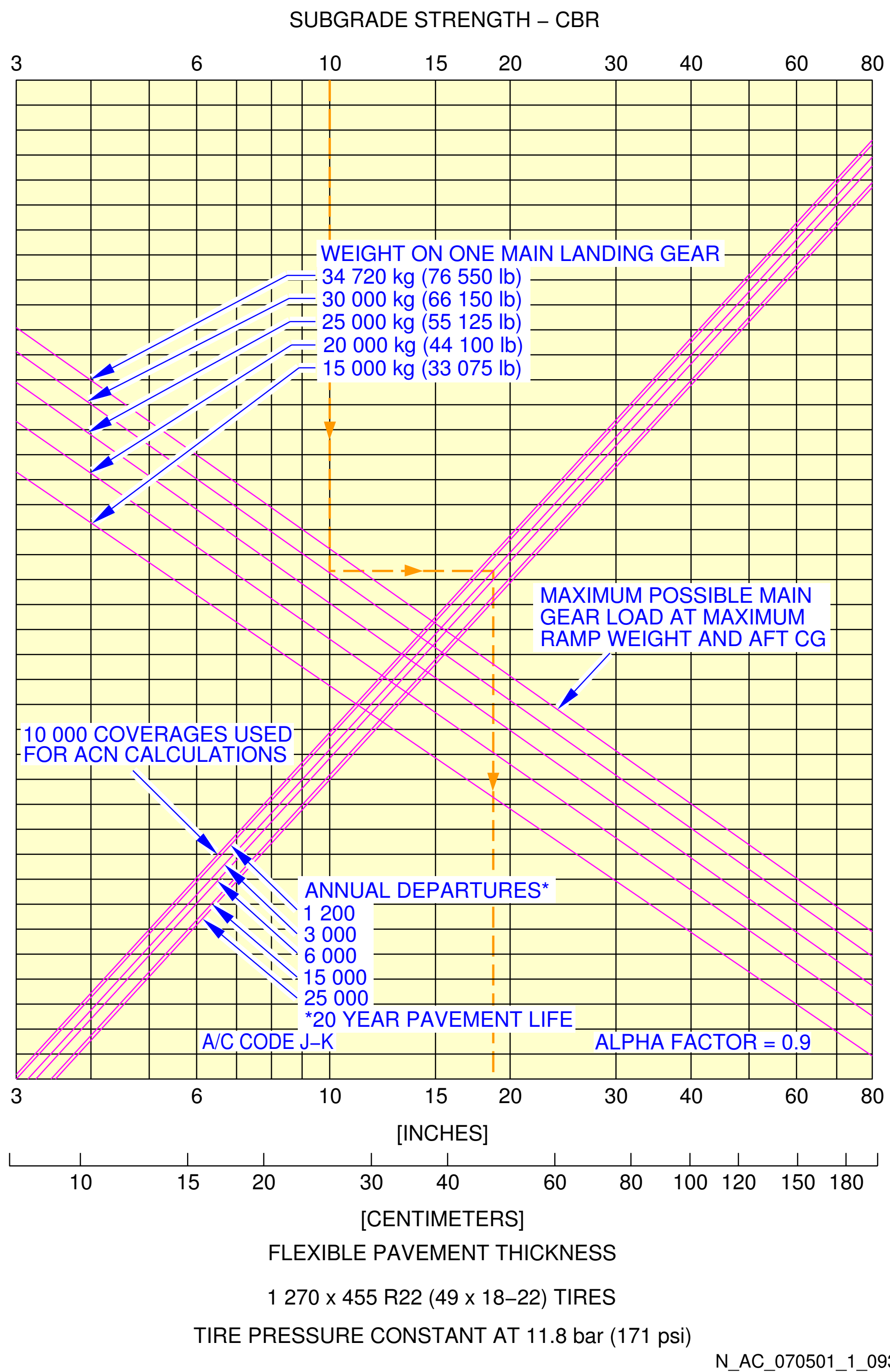
Flexible Pavement Requirements
FIGURE-7-5-1-991-091-A01

**ON A/C A320-200



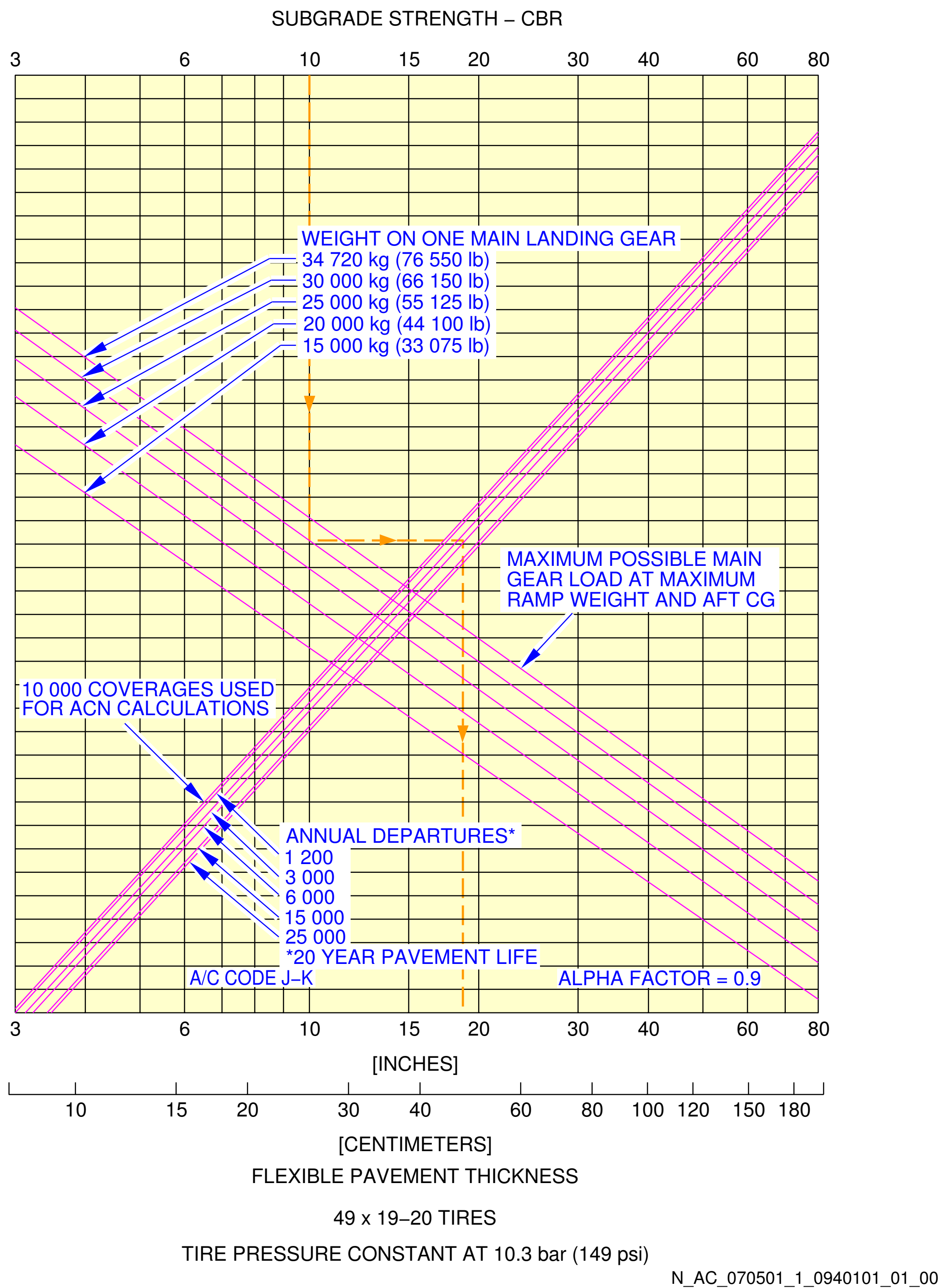
Flexible Pavement Requirements
FIGURE-7-5-1-991-092-A01

**ON A/C A320-200



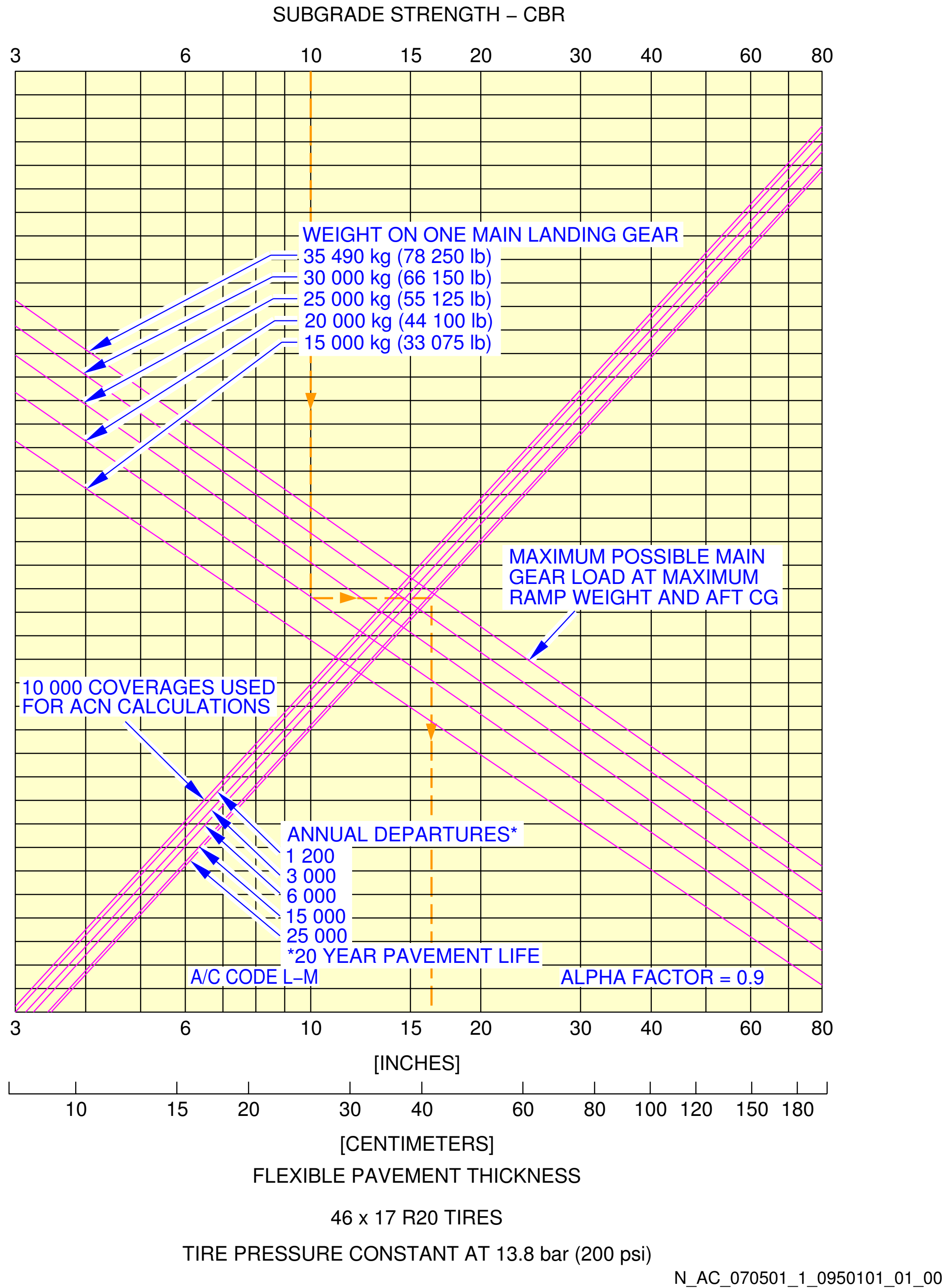
Flexible Pavement Requirements
Flexible Pavement Requirements
FIGURE-7-5-1-991-093-A01

****ON A/C A320-200**



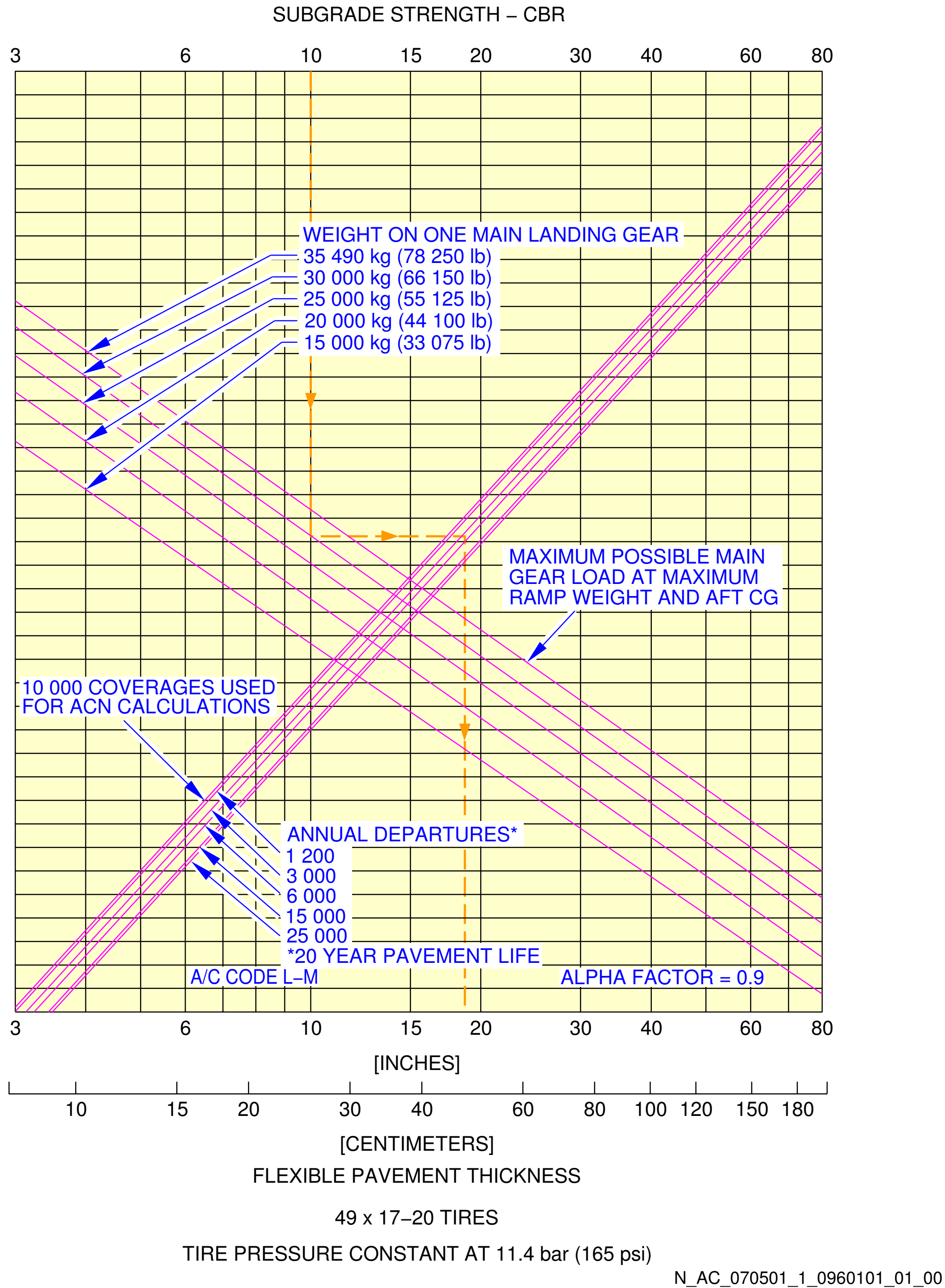
Flexible Pavement Requirements
FIGURE-7-5-1-991-094-A01

**ON A/C A320-200



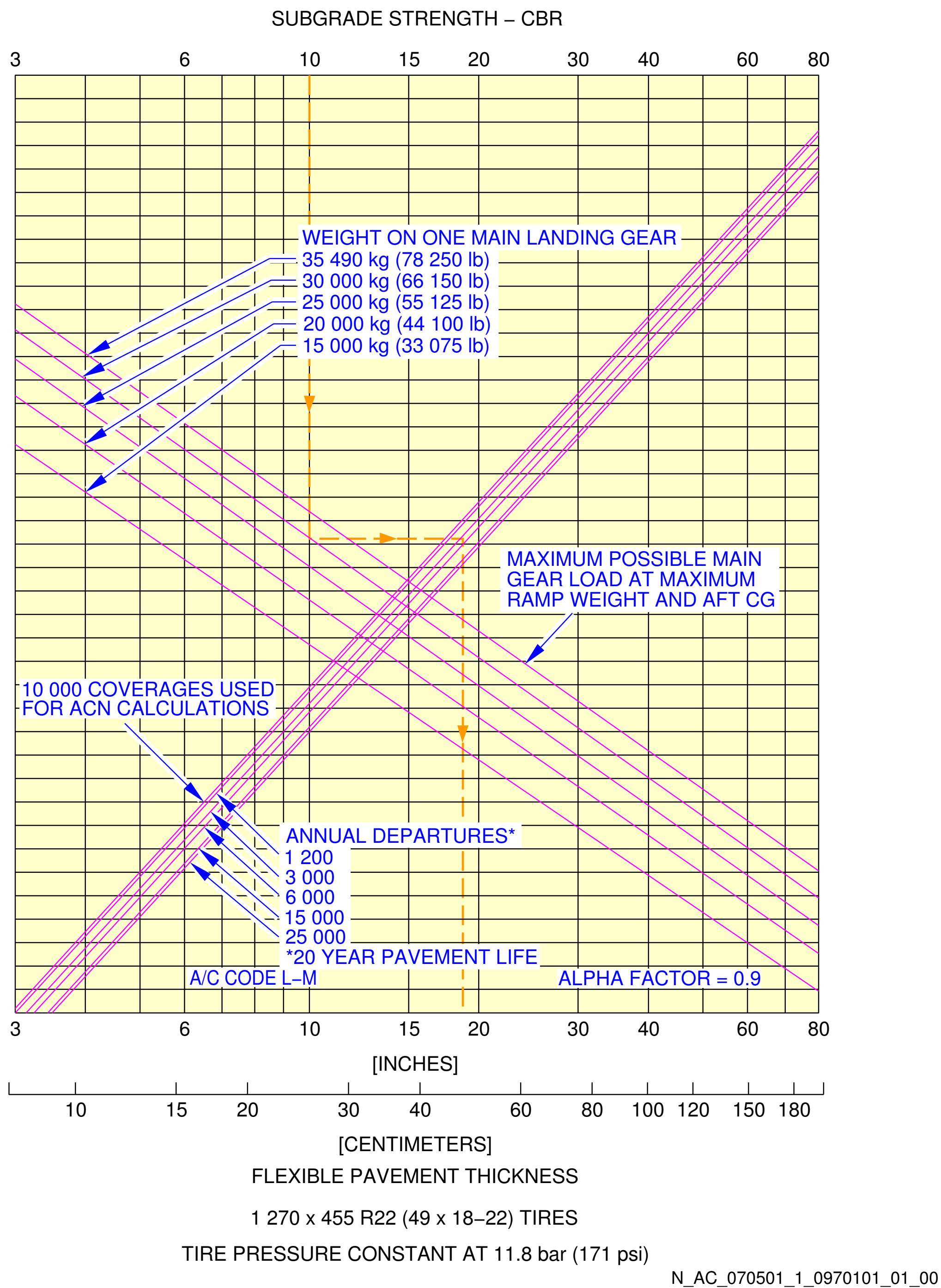
Flexible Pavement Requirements
FIGURE-7-5-1-991-095-A01

**ON A/C A320-200



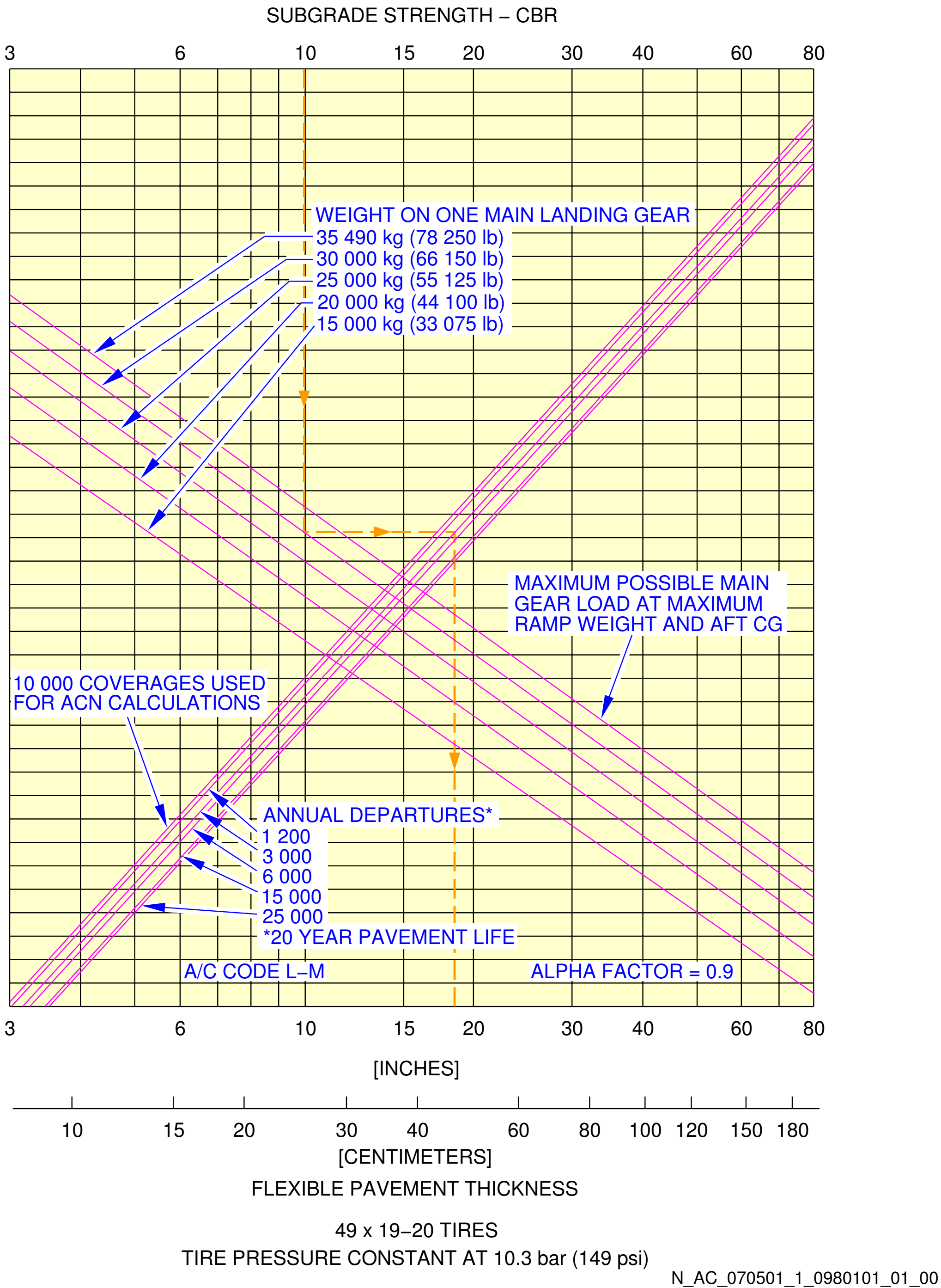
Flexible Pavement Requirements
FIGURE-7-5-1-991-096-A01

**ON A/C A320-200



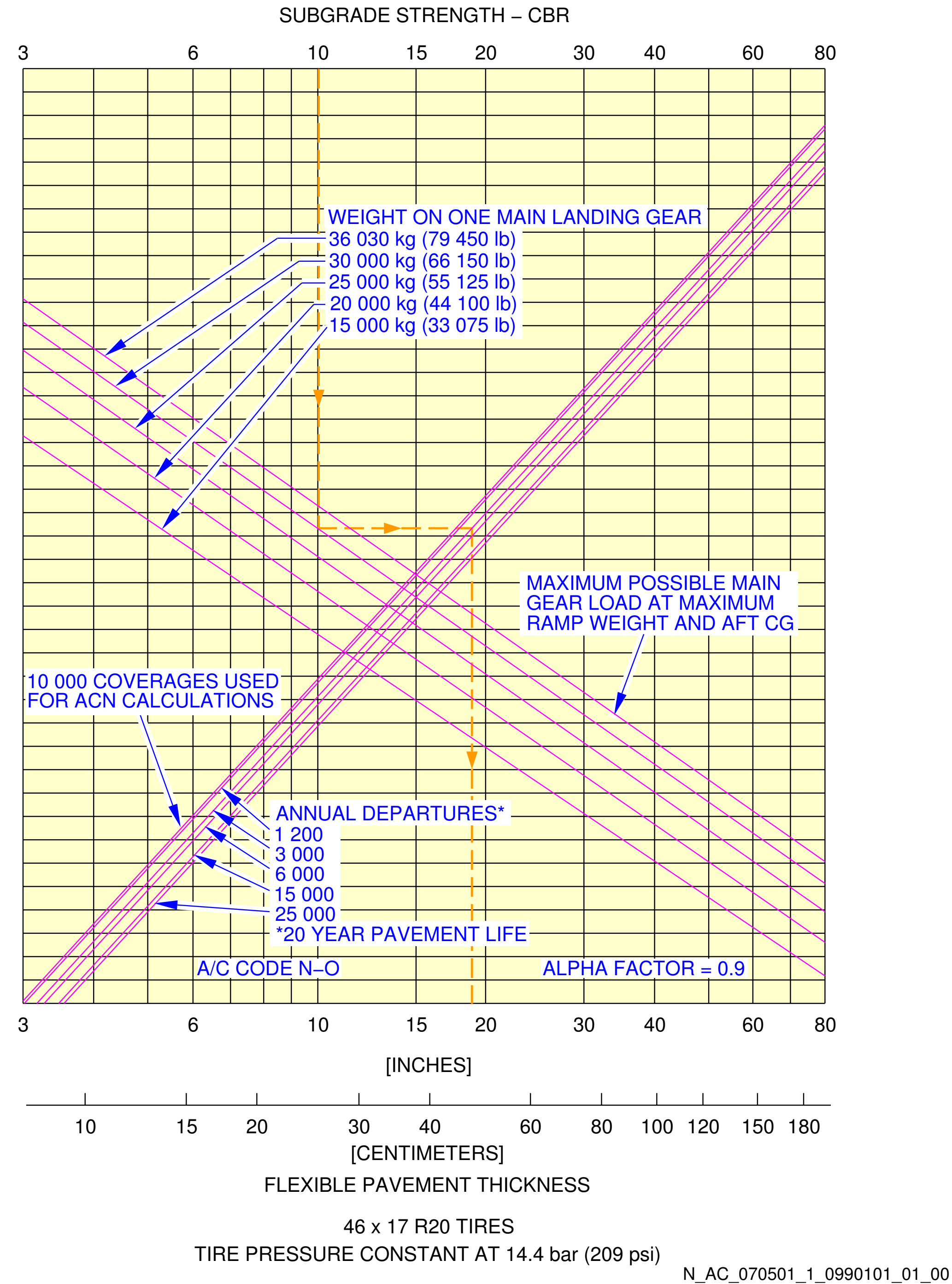
Flexible Pavement Requirements
FIGURE-7-5-1-991-097-A01

**ON A/C A320-200



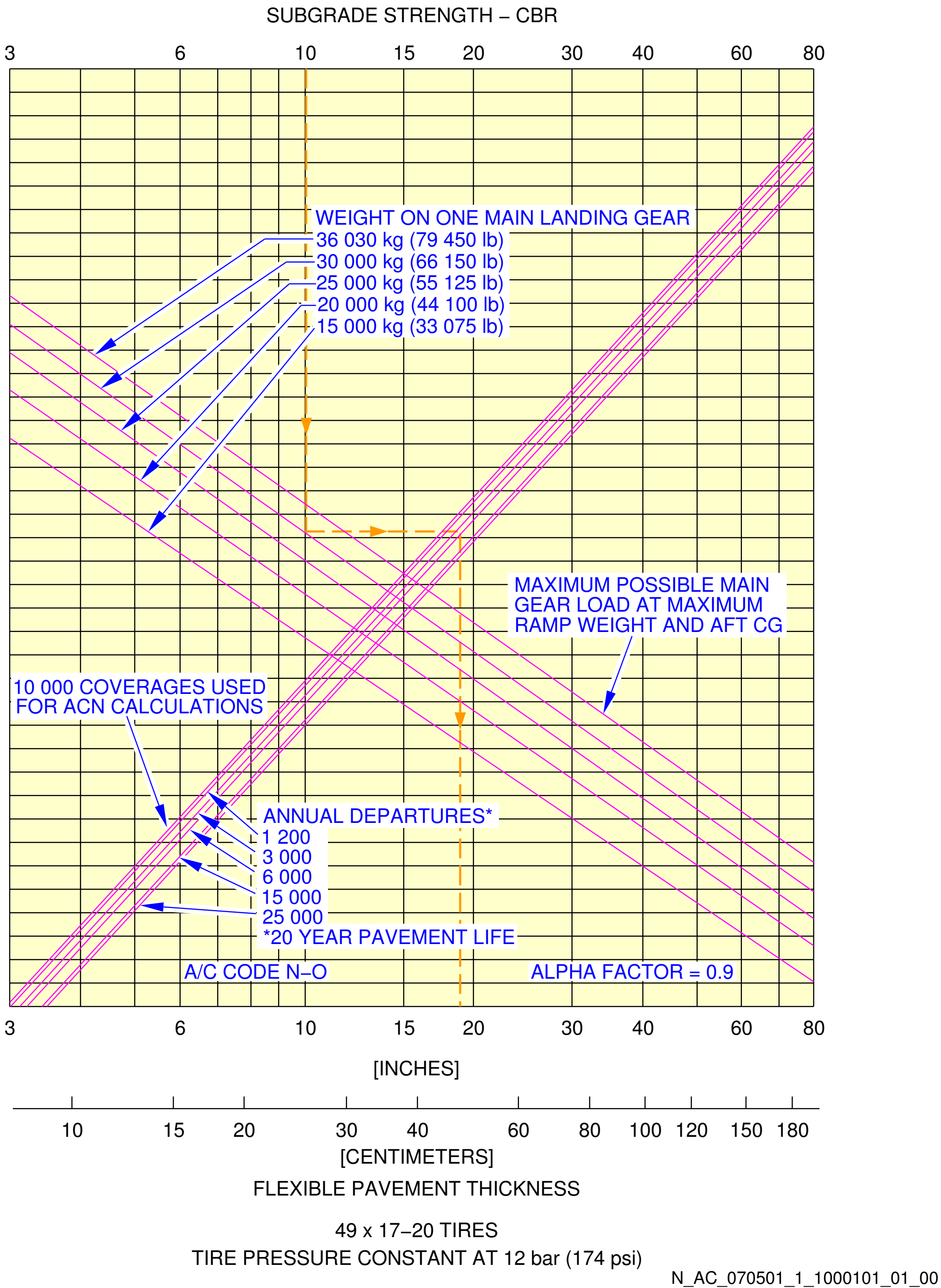
Flexible Pavement Requirements
FIGURE-7-5-1-991-098-A01

**ON A/C A320-200



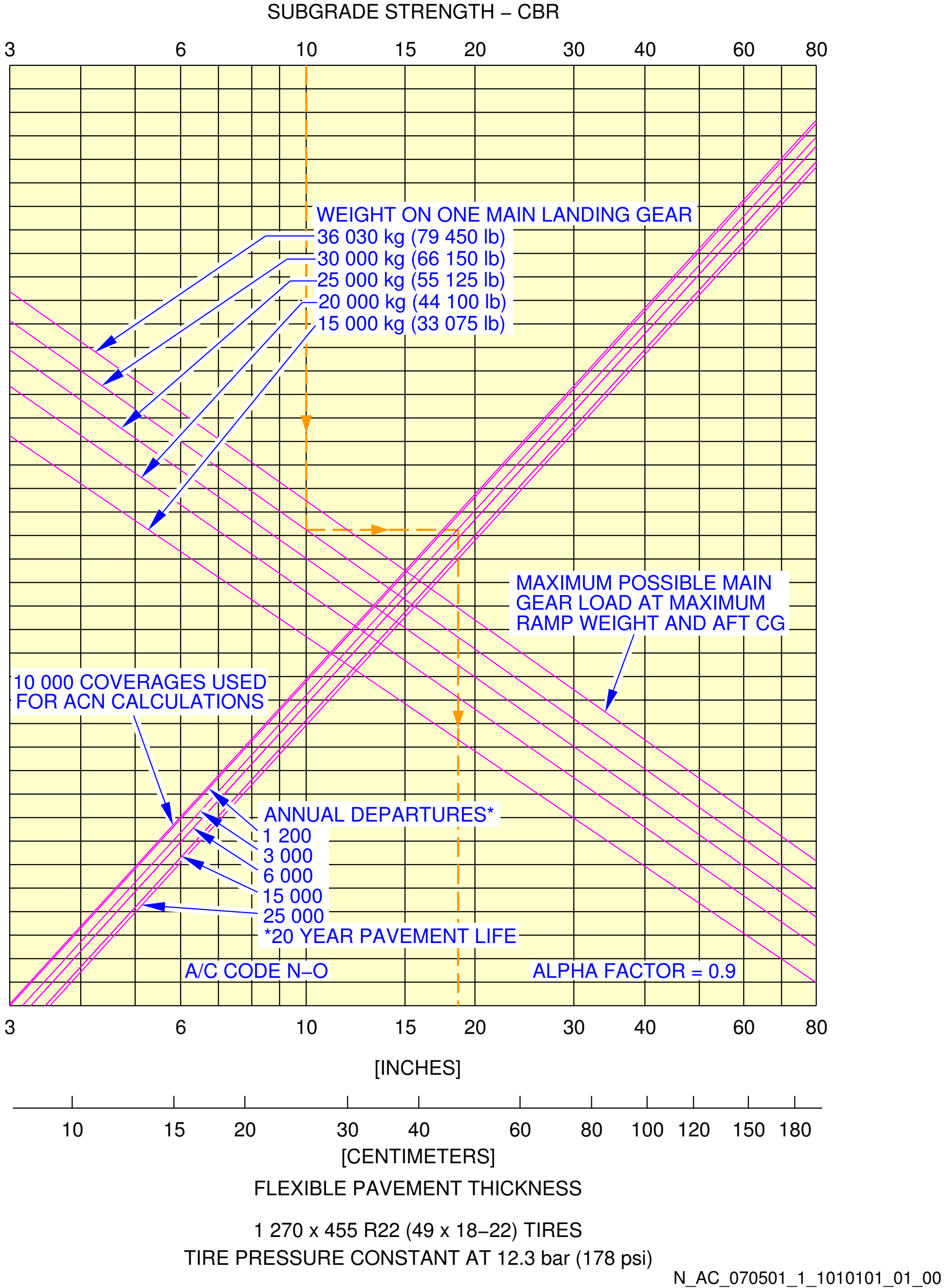
Flexible Pavement Requirements
FIGURE-7-5-1-991-099-A01

**ON A/C A320-200



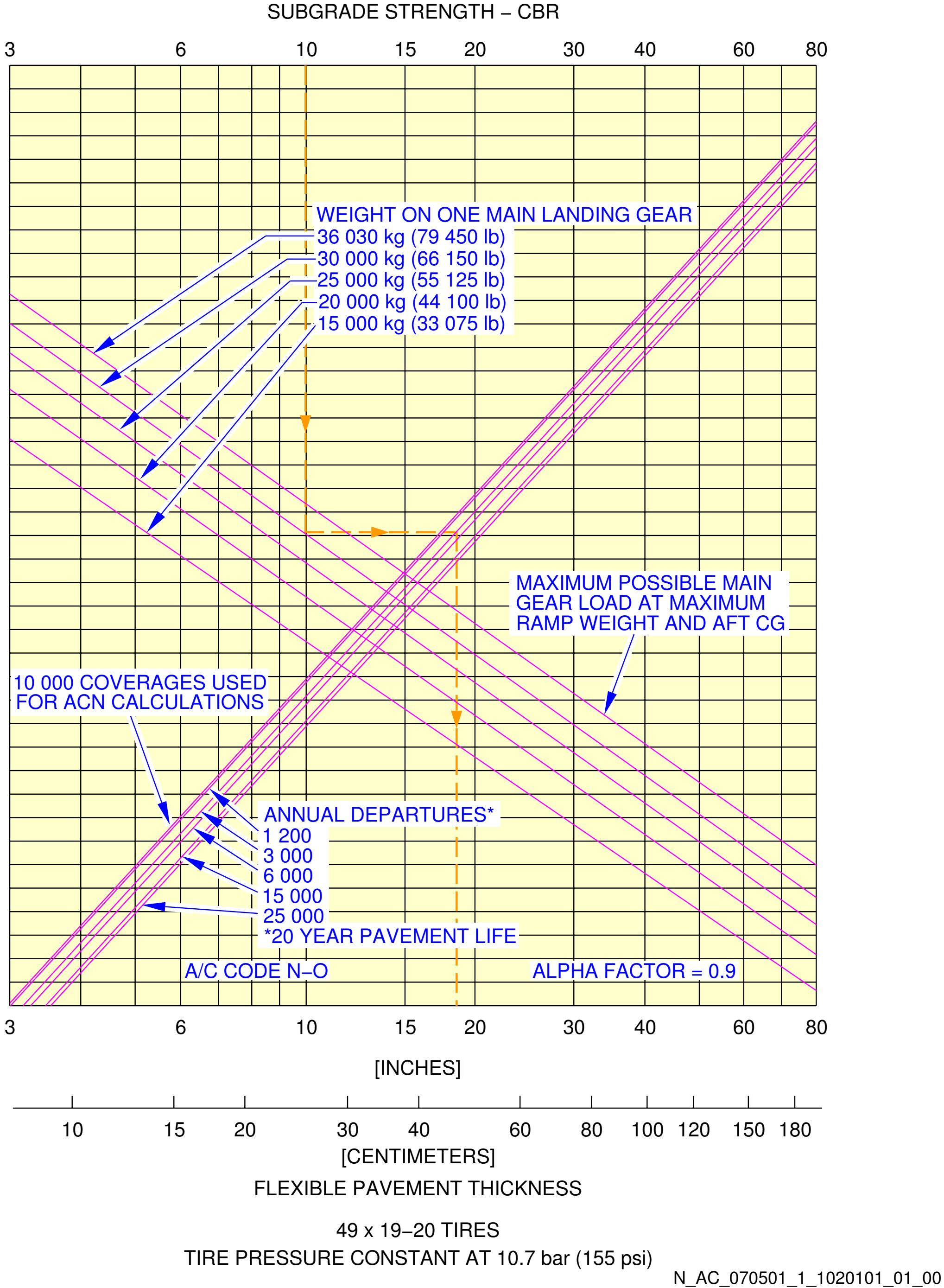
Flexible Pavement Requirements
FIGURE-7-5-1-991-100-A01

**ON A/C A320-200



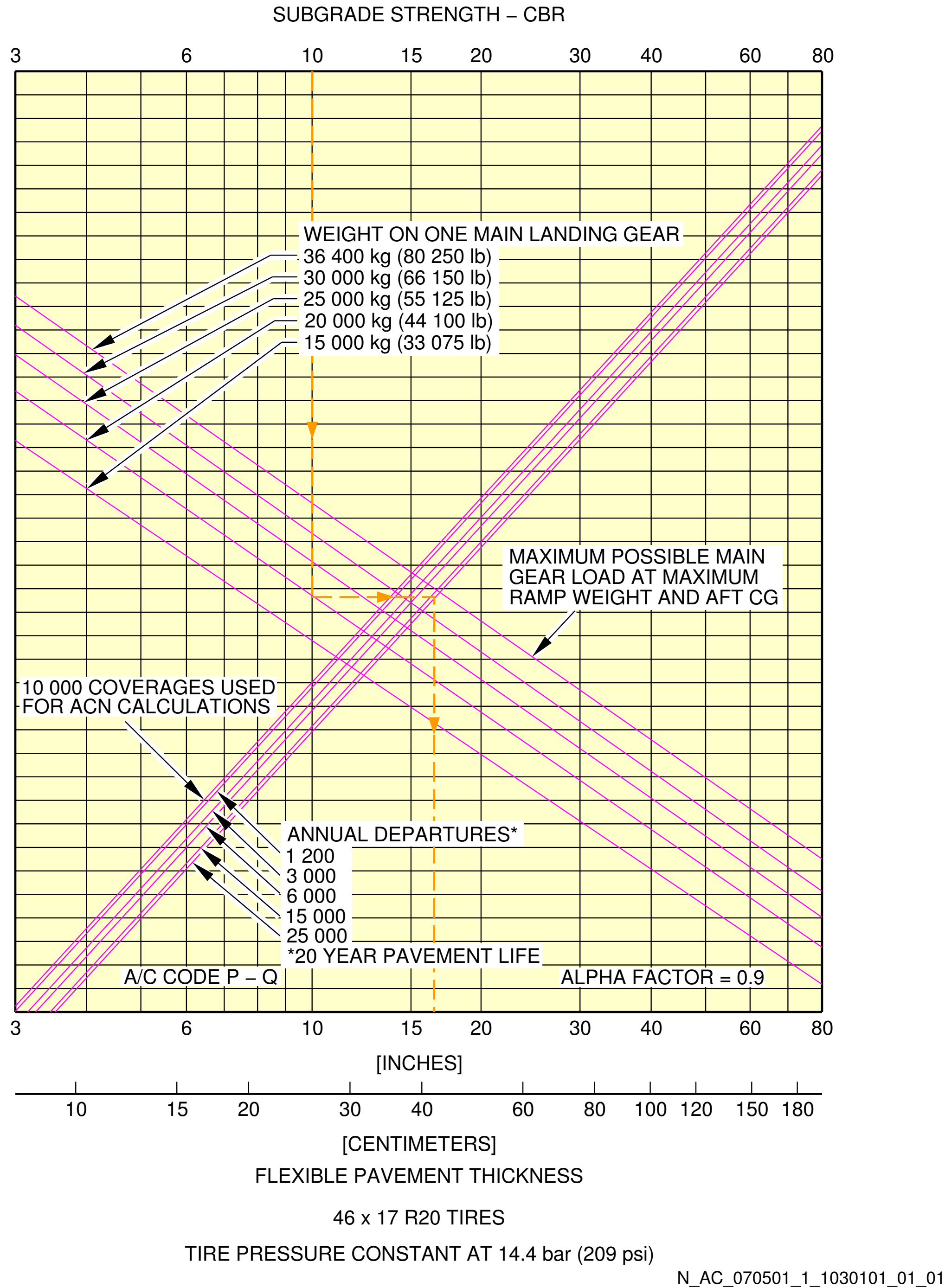
Flexible Pavement Requirements
FIGURE-7-5-1-991-101-A01

**ON A/C A320-200



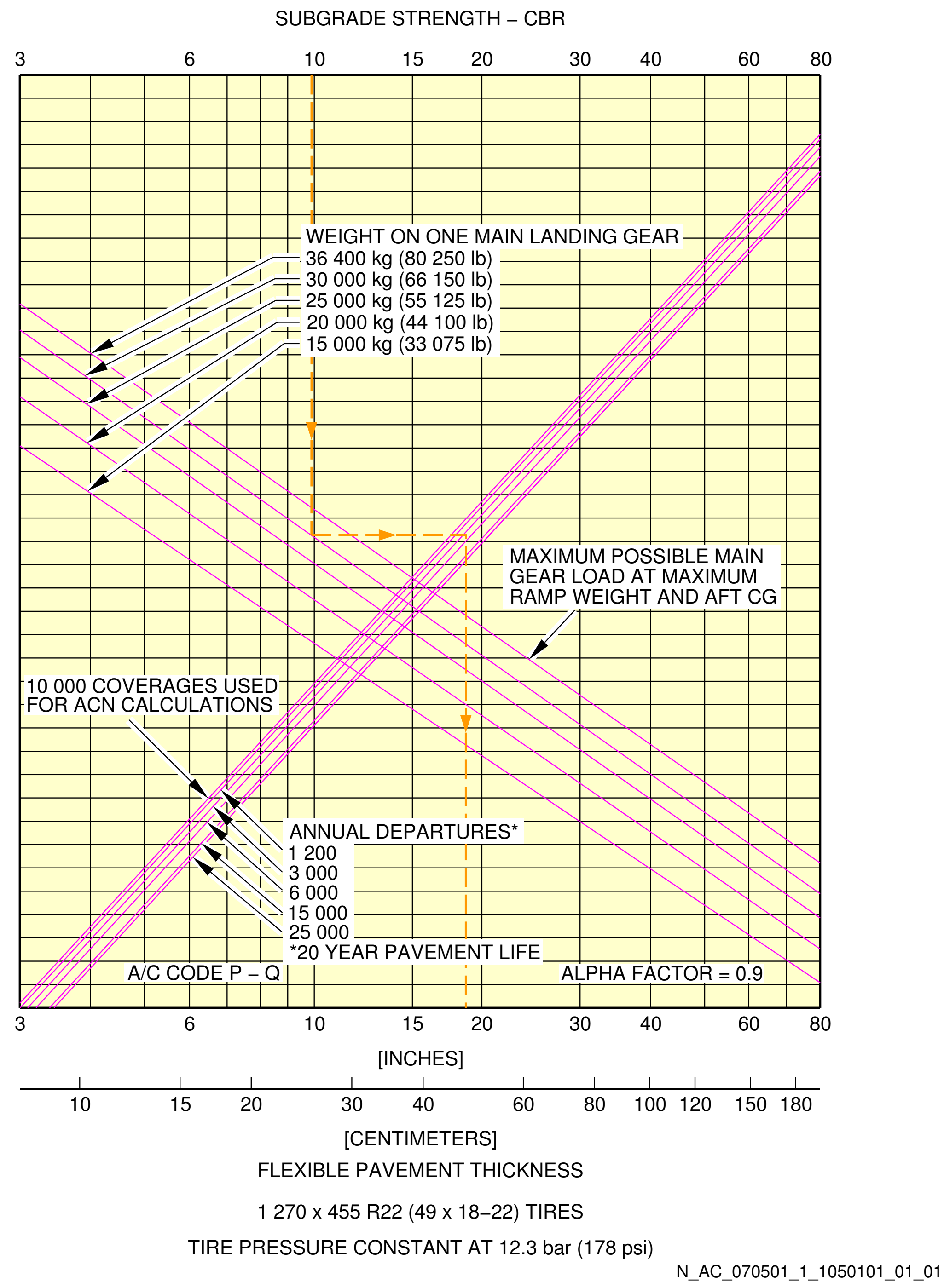
Flexible Pavement Requirements
FIGURE-7-5-1-991-102-A01

**ON A/C A320-200



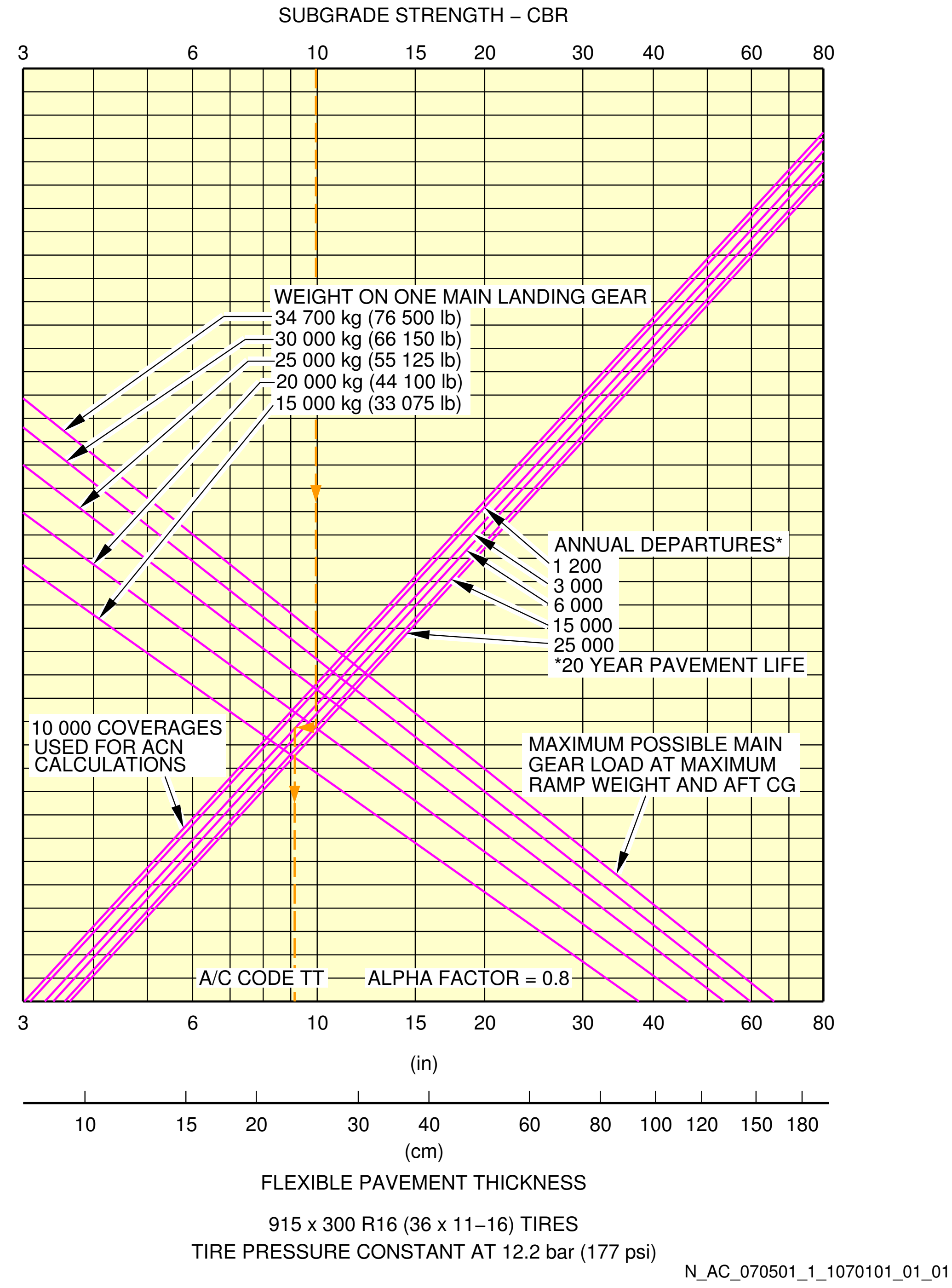
Flexible Pavement Requirements
FIGURE-7-5-1-991-103-A01

**ON A/C A320-200



Flexible Pavement Requirements
FIGURE-7-5-1-991-105-A01

**ON A/C A320-200



Flexible Pavement Requirements
FIGURE-7-5-1-991-107-A01

7-6-0 Flexible Pavement Requirements - LCN Conversion

**ON A/C A320-200

Flexible Pavement Requirements - LCN Conversion

1. General

In order to determine the airplane weight that can be accommodated on a particular Flexible Pavement, both the LCN of the pavement and the thickness (h) must be known.

In the example shown in Section 7-6-1 Flexible Pavement Requirements - LCN Conversion, A/C Code E (Main Gear Tire Size 46 x 17 R20 (46 x 16 - 20), inflated at 12.3 bar (178 psi)) for:
The thickness (h) is shown at 20 inches with an LCN of 53.

For these conditions, the weight on one Main Landing Gear is 25 000 kg (55 125 lb).

7-6-1 Flexible Pavement Requirements - LCN Conversion

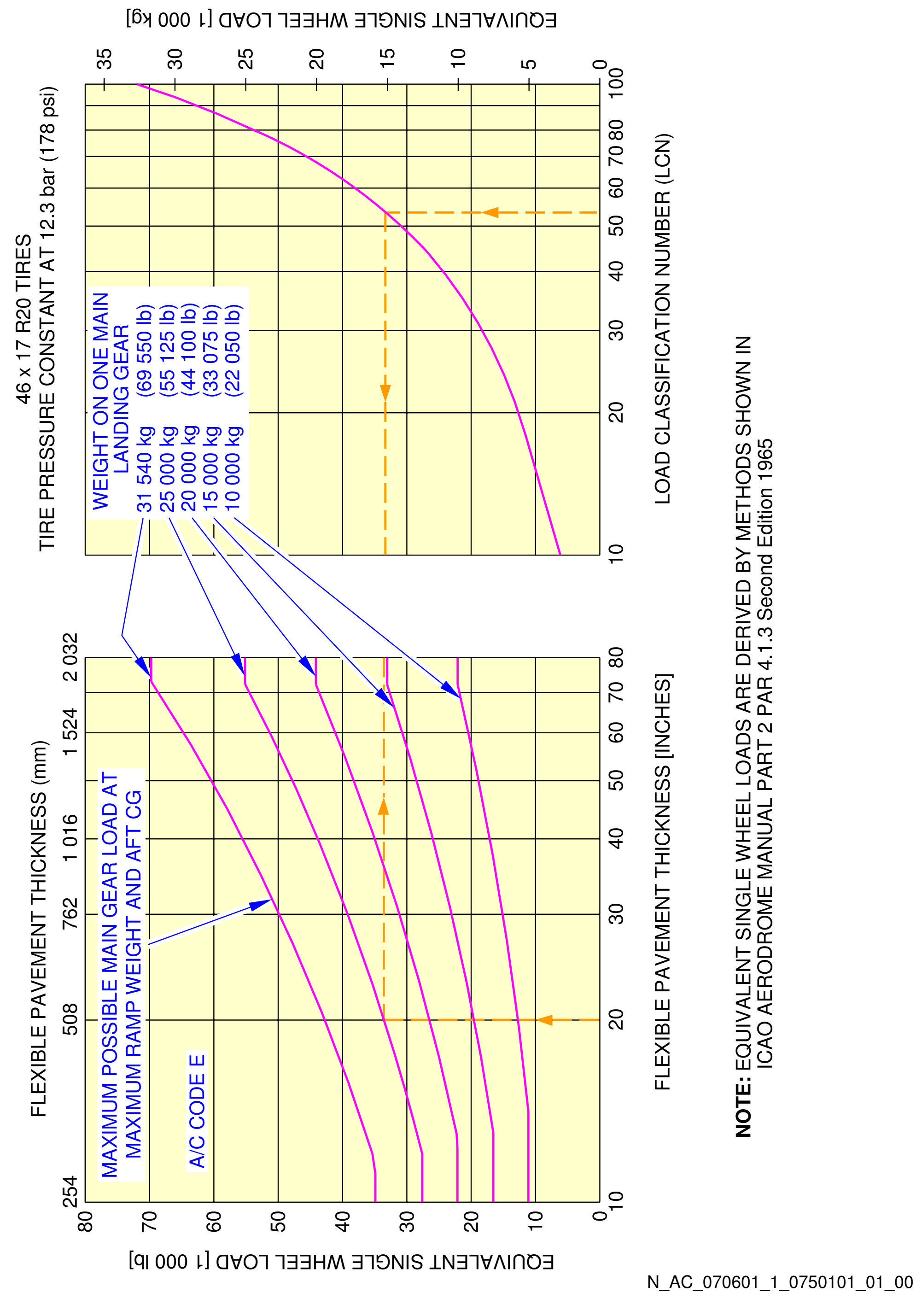
**ON A/C A320-200

Flexible Pavement Requirements - LCN Conversion

1. This section gives Flexible Pavement Requirements - LCN Conversion.

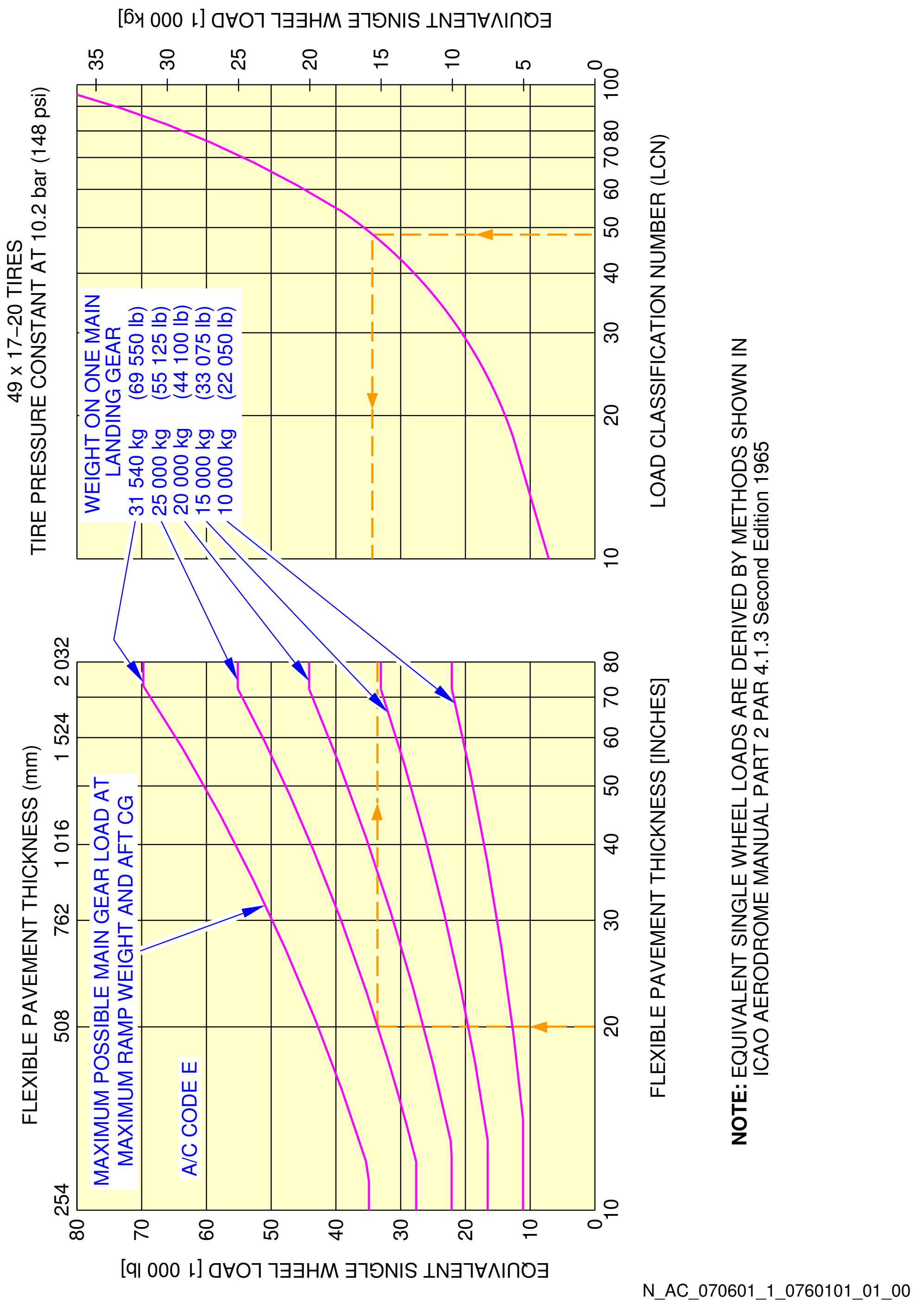
   NOTE : For A/C Code definition, refer to chapter 7-1-0.

**ON A/C A320-200



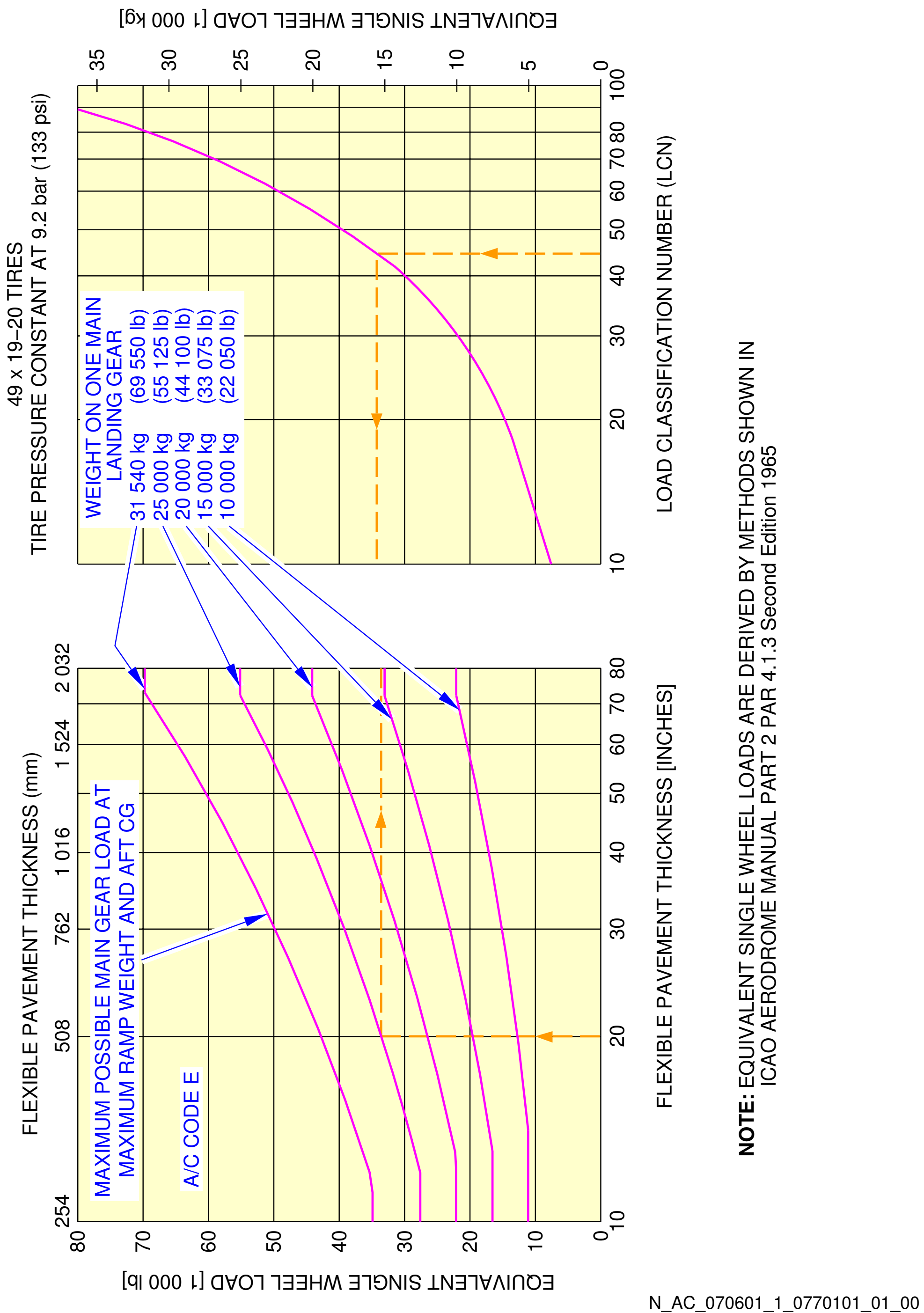
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-075-A01

**ON A/C A320-200



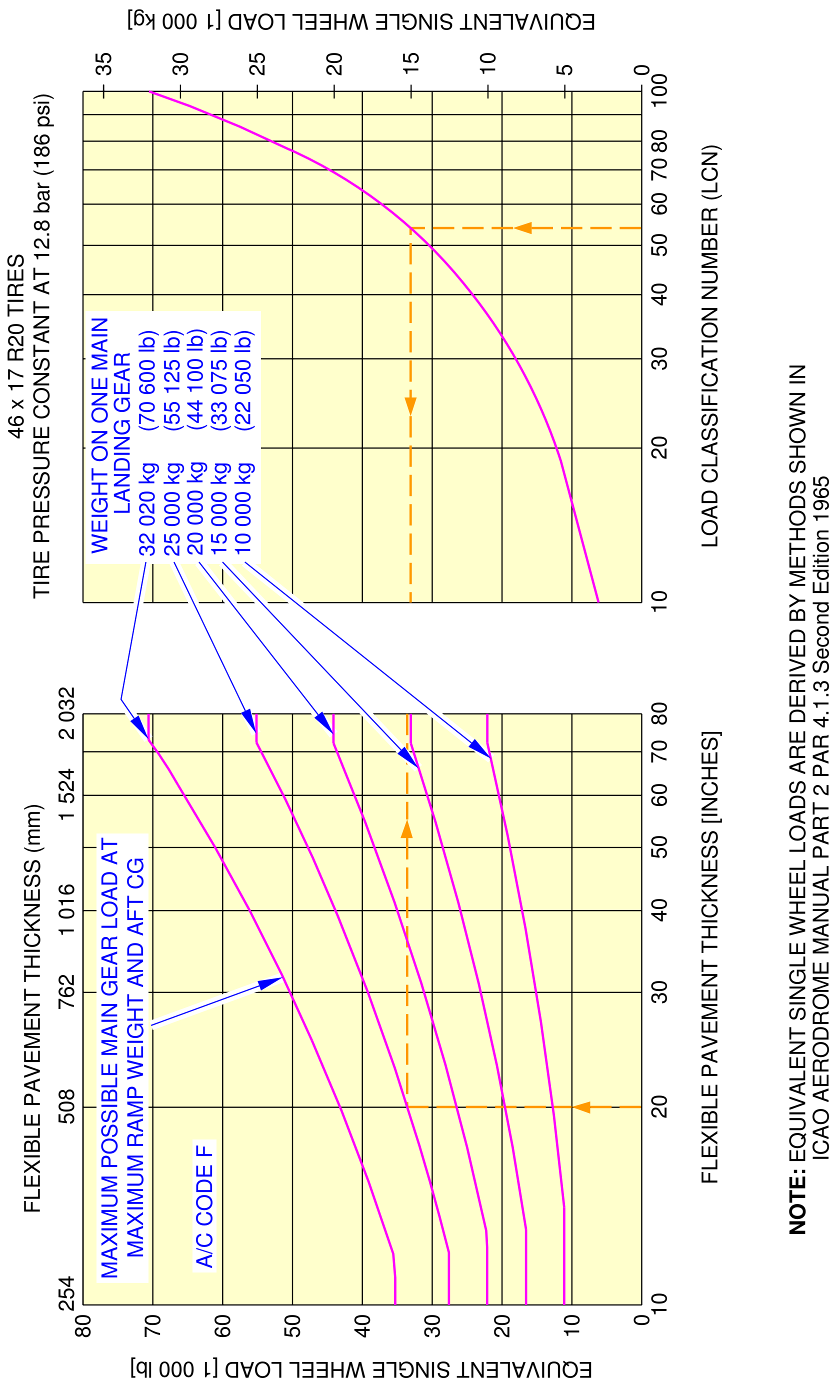
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-076-A01

**ON A/C A320-200



Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-077-A01

**ON A/C A320-200



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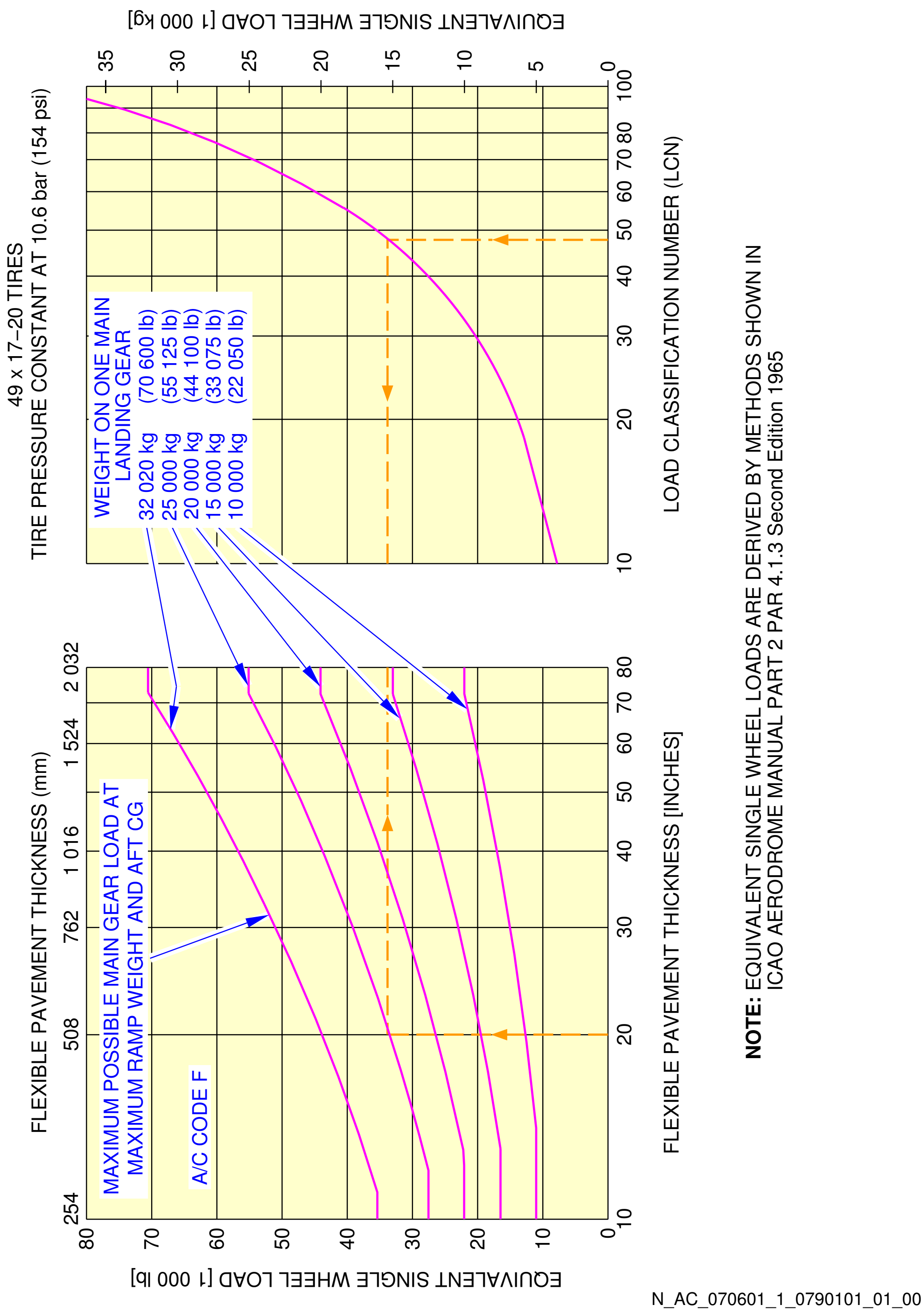
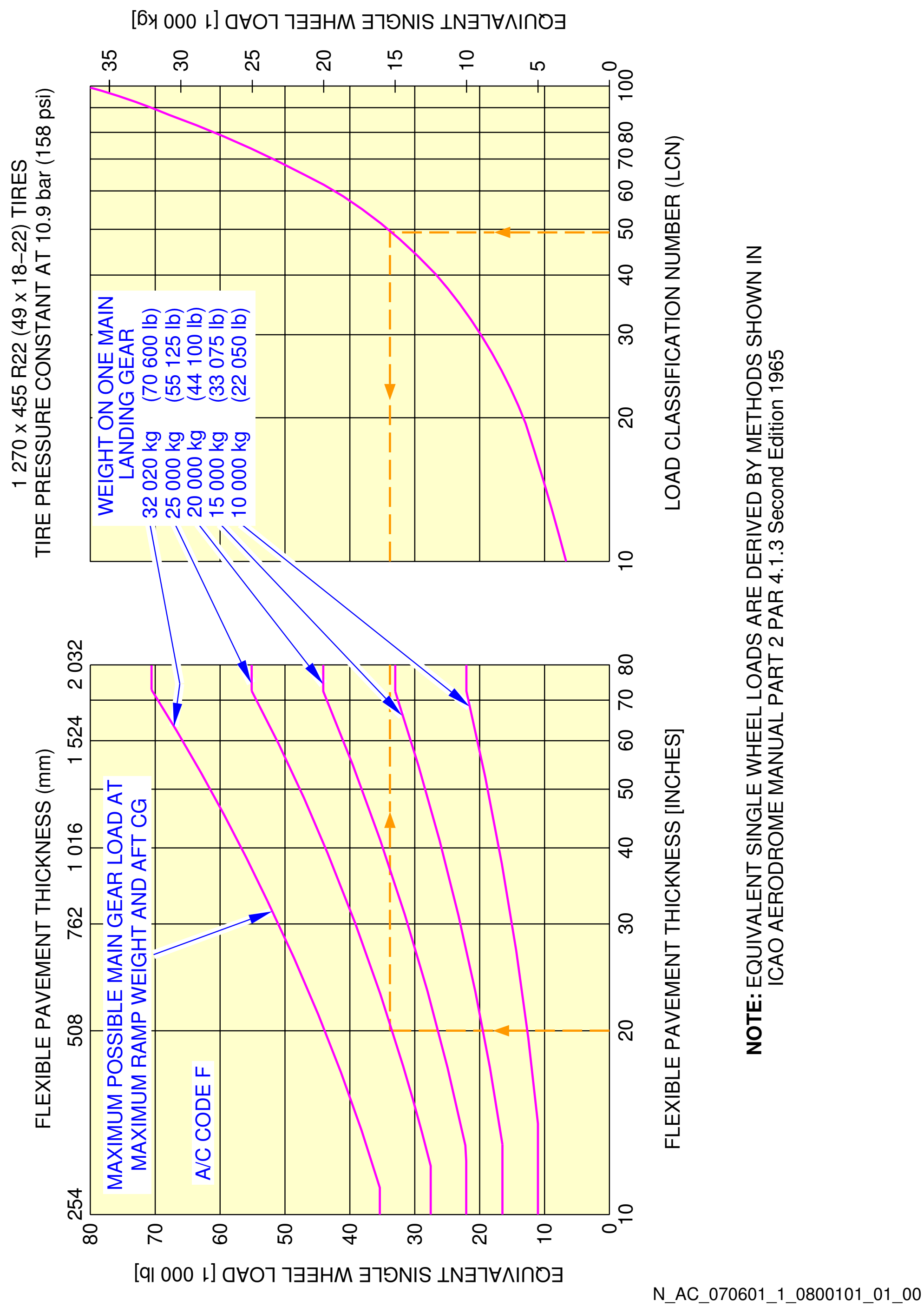
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-078-A01

**ON A/C A320-200



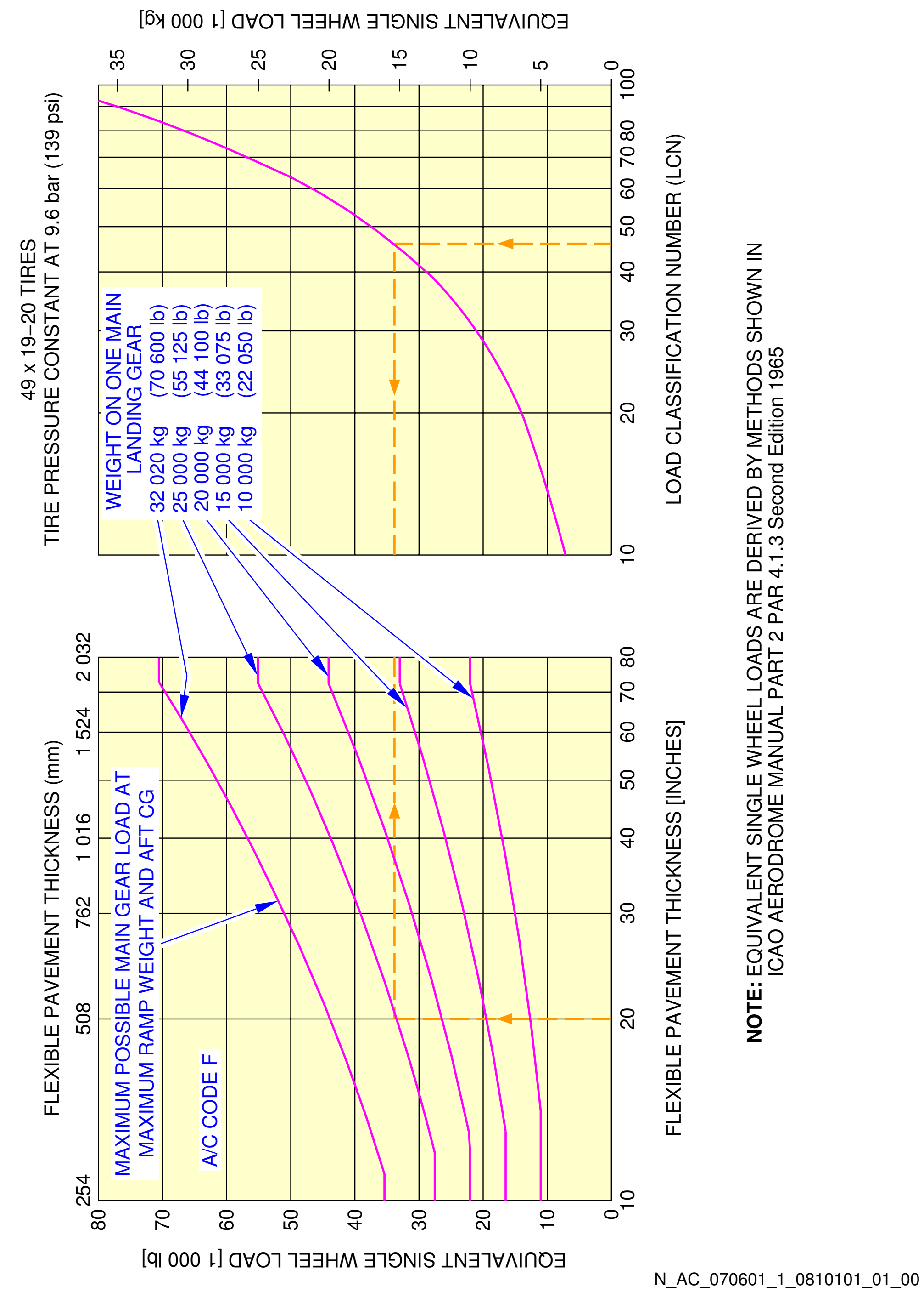
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-079-A01

****ON A/C A320-200**



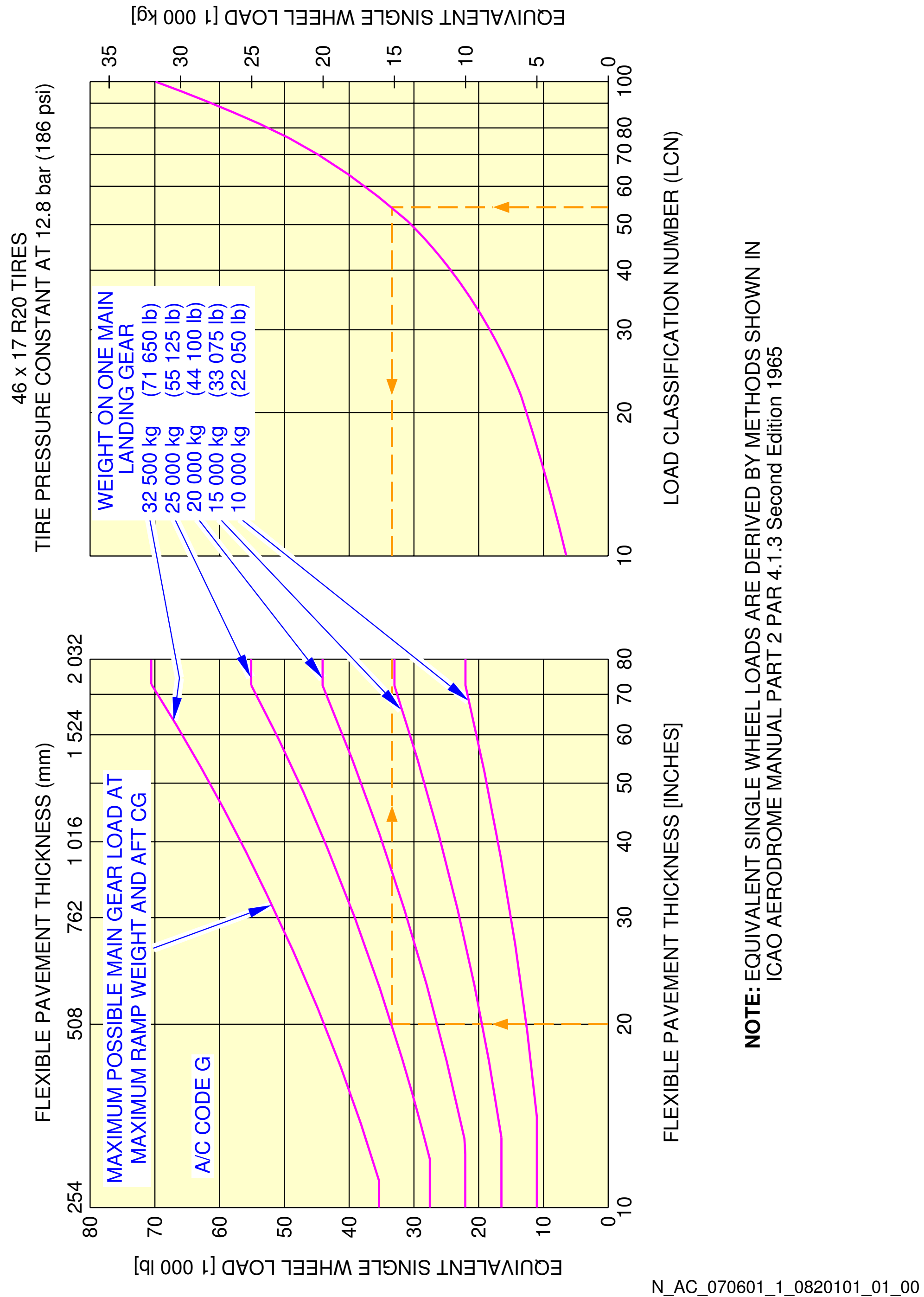
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-080-A01

****ON A/C A320-200**



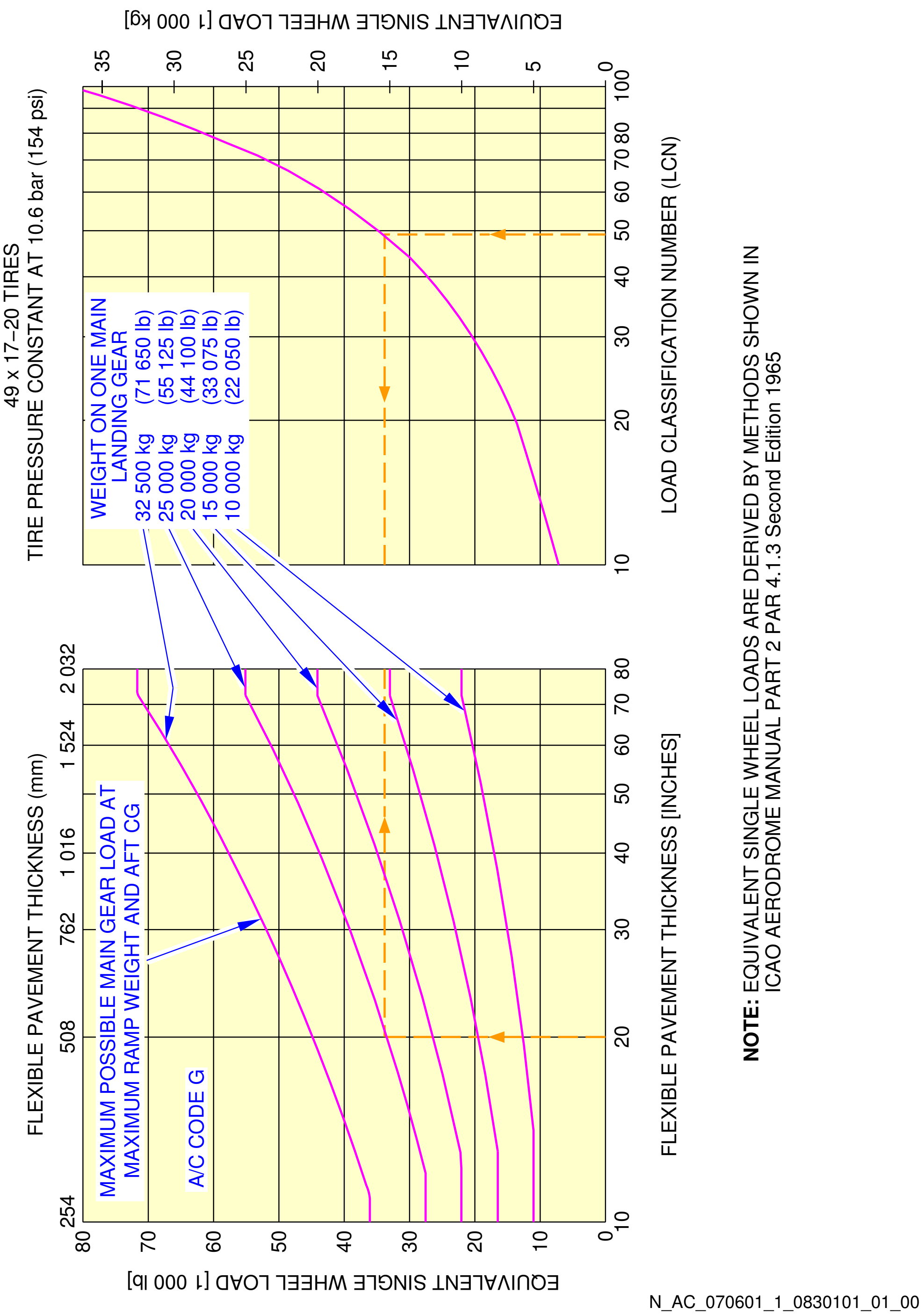
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-081-A01

**ON A/C A320-200



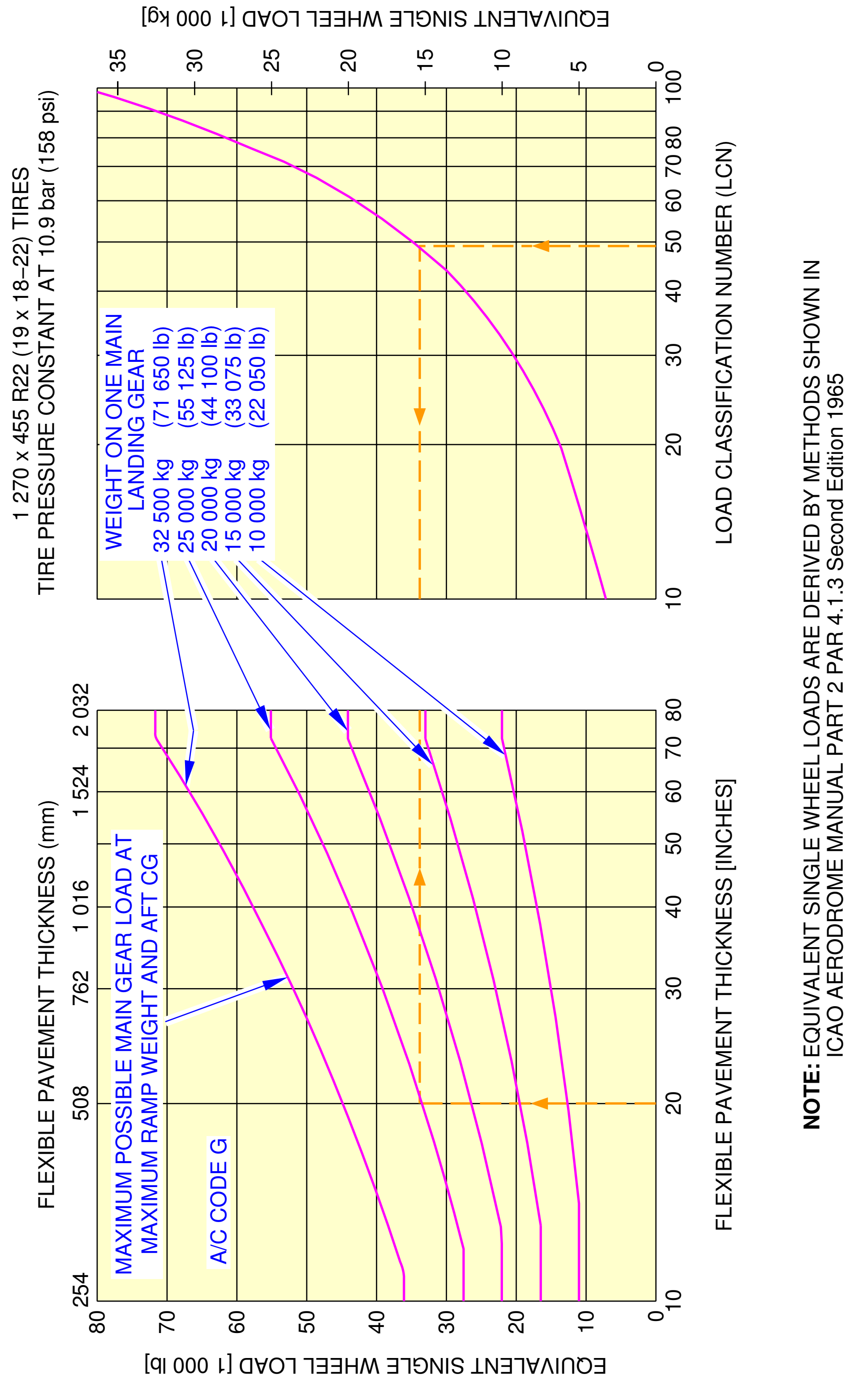
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-082-A01

**ON A/C A320-200



Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-083-A01

**ON A/C A320-200



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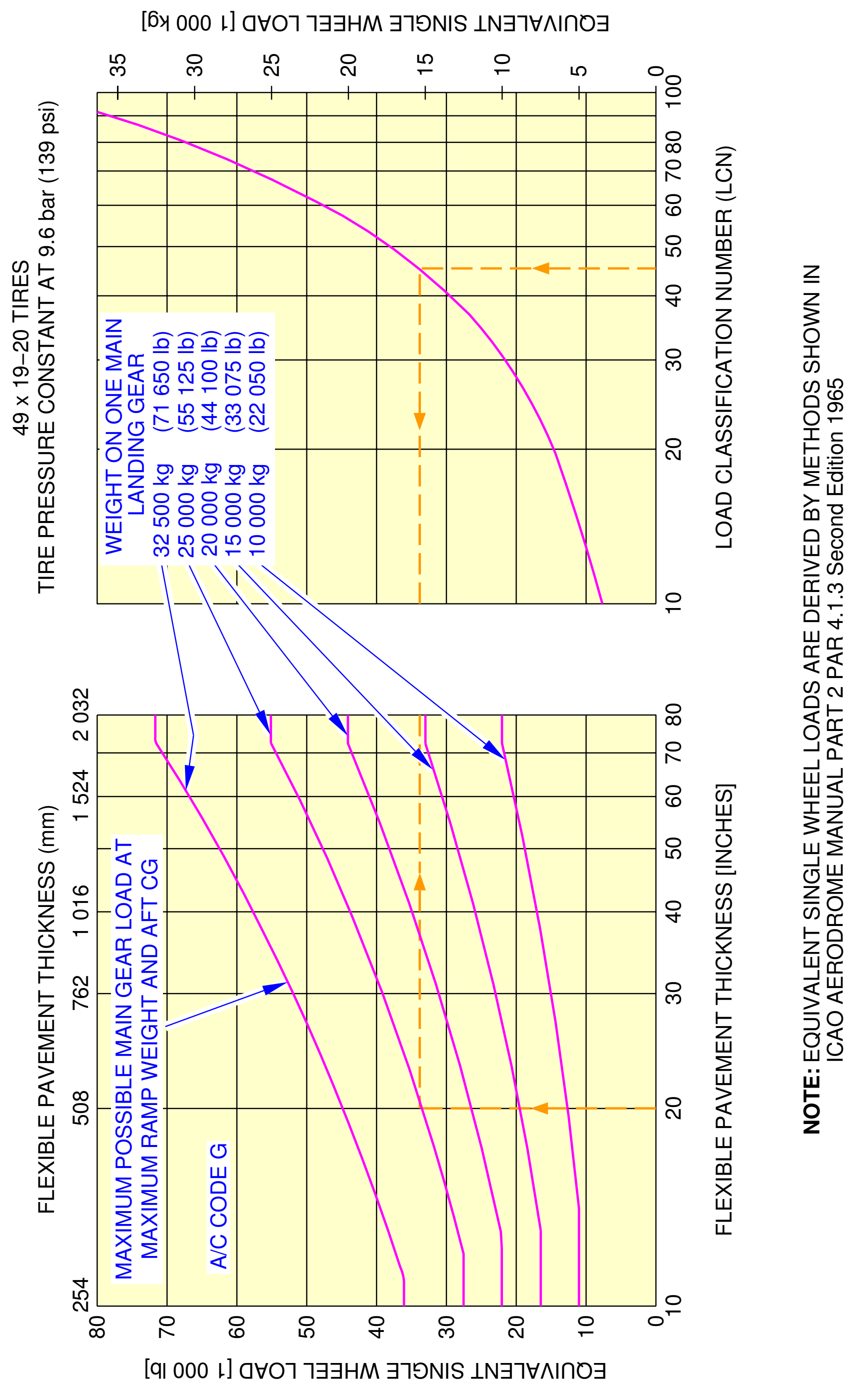
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-084-A01

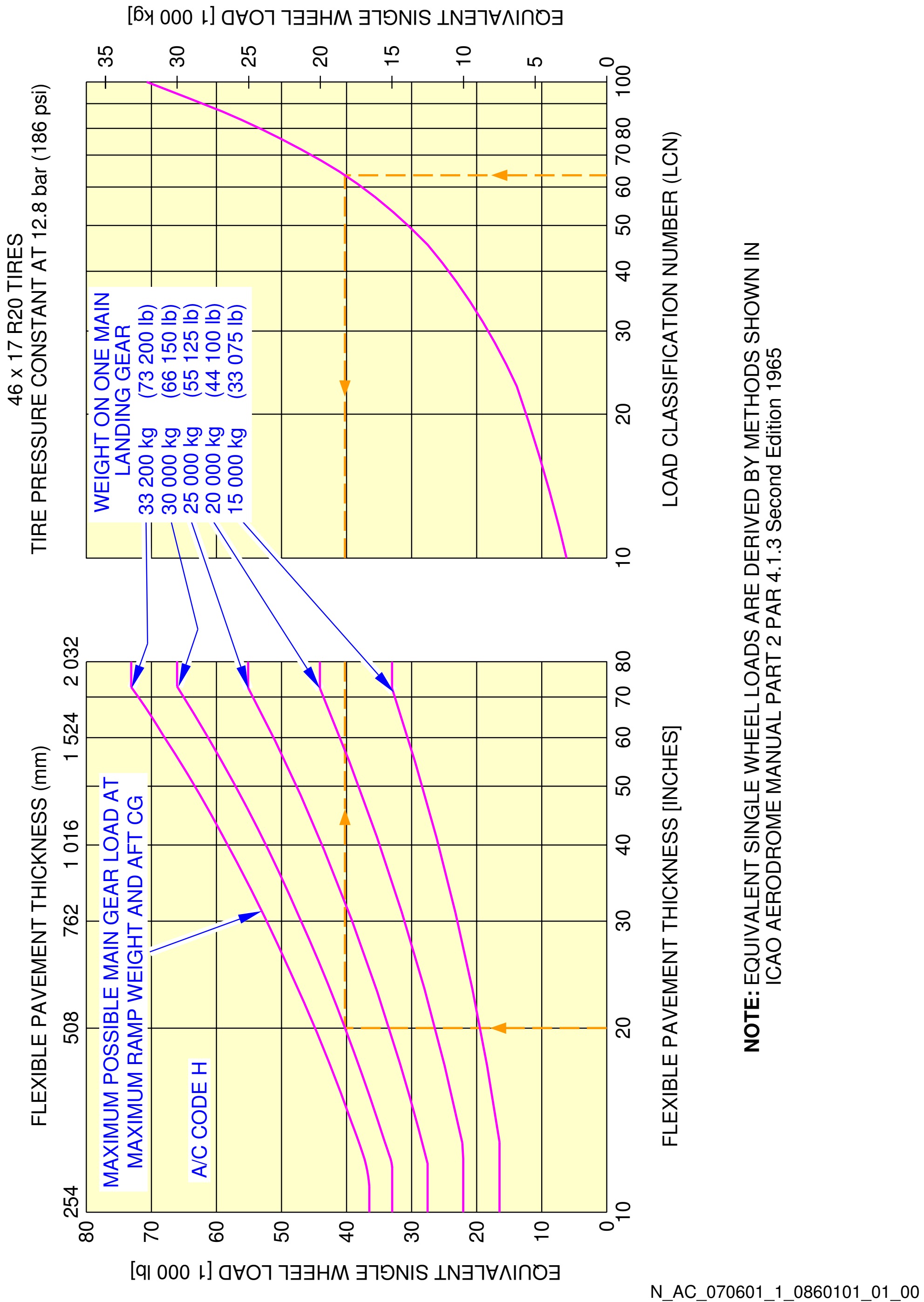
****ON A/C A320-200**



N_AC_070601_1_0850101_01_00

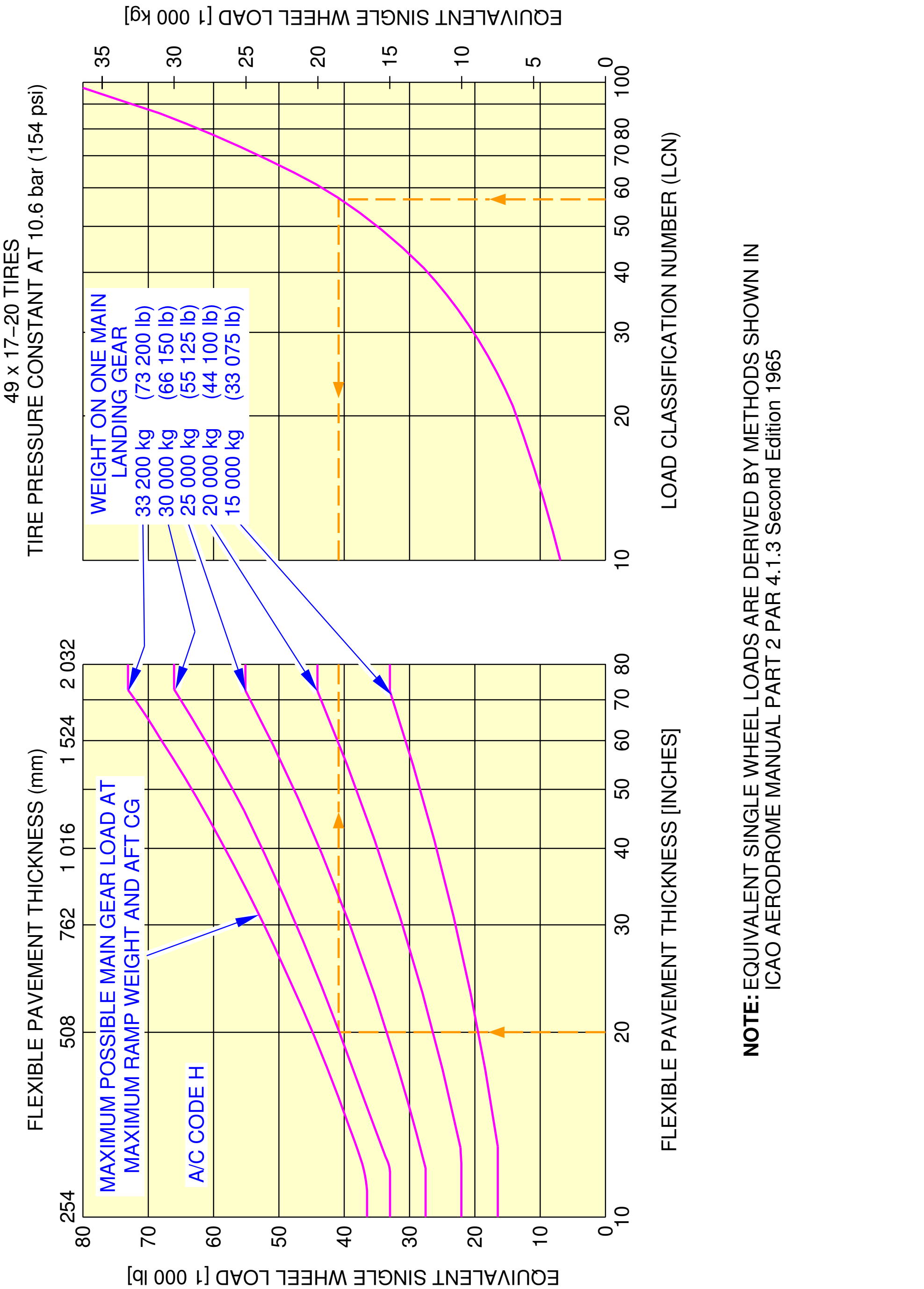
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-085-A01

****ON A/C A320-200**



Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-086-A01

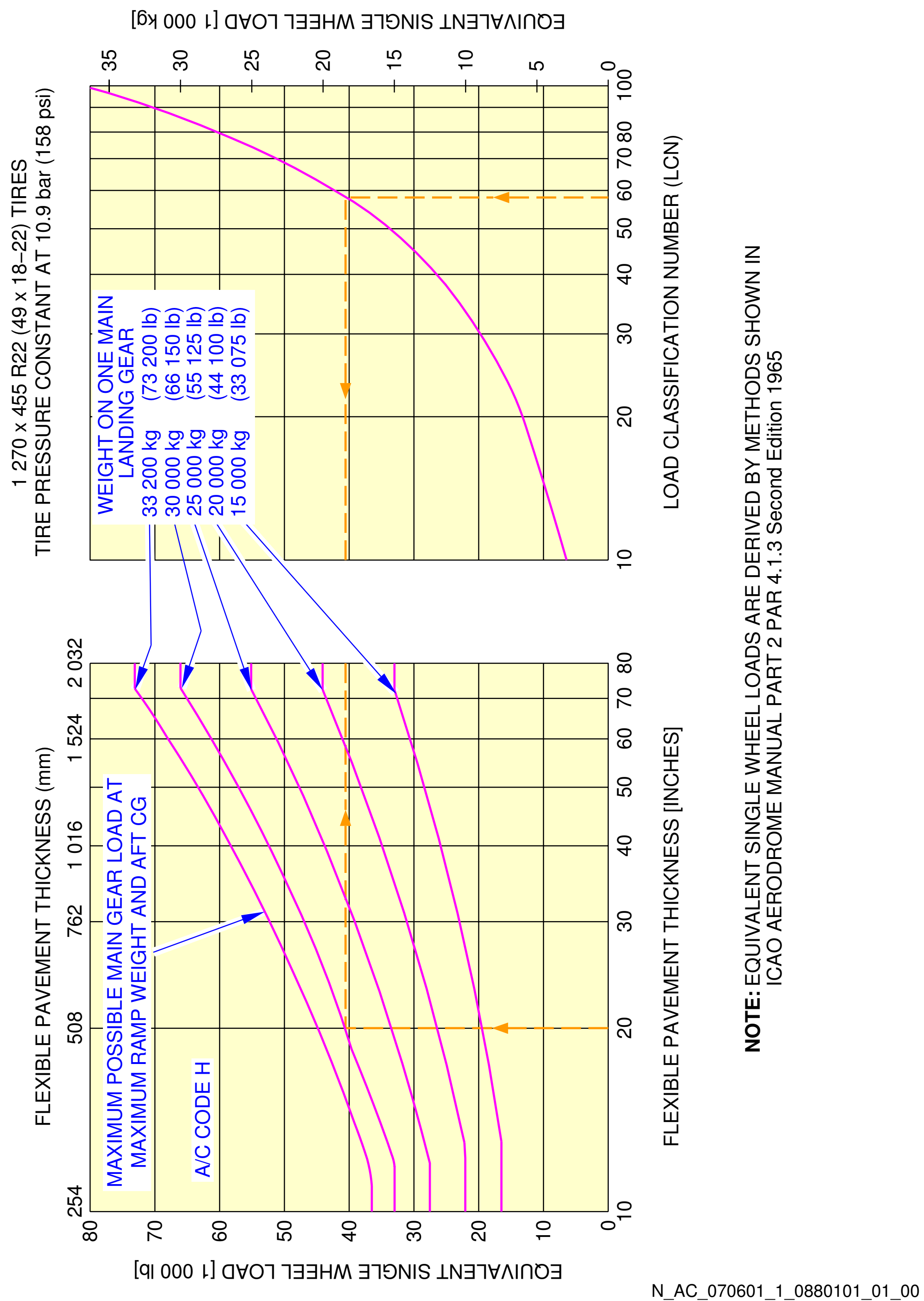
**ON A/C A320-200



N_AC_070601_1_0870101_01_00

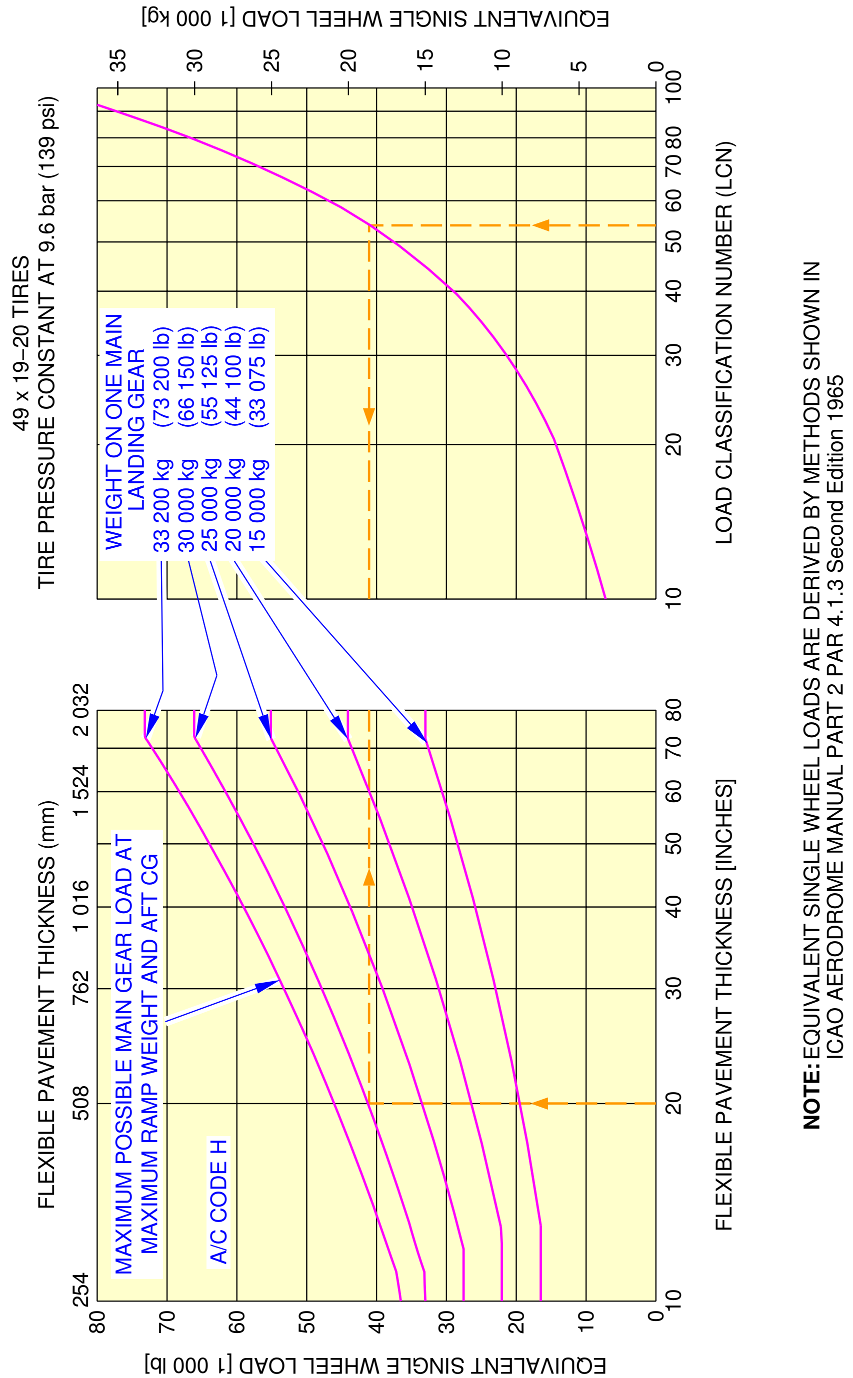
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-087-A01

**ON A/C A320-200



Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-088-A01

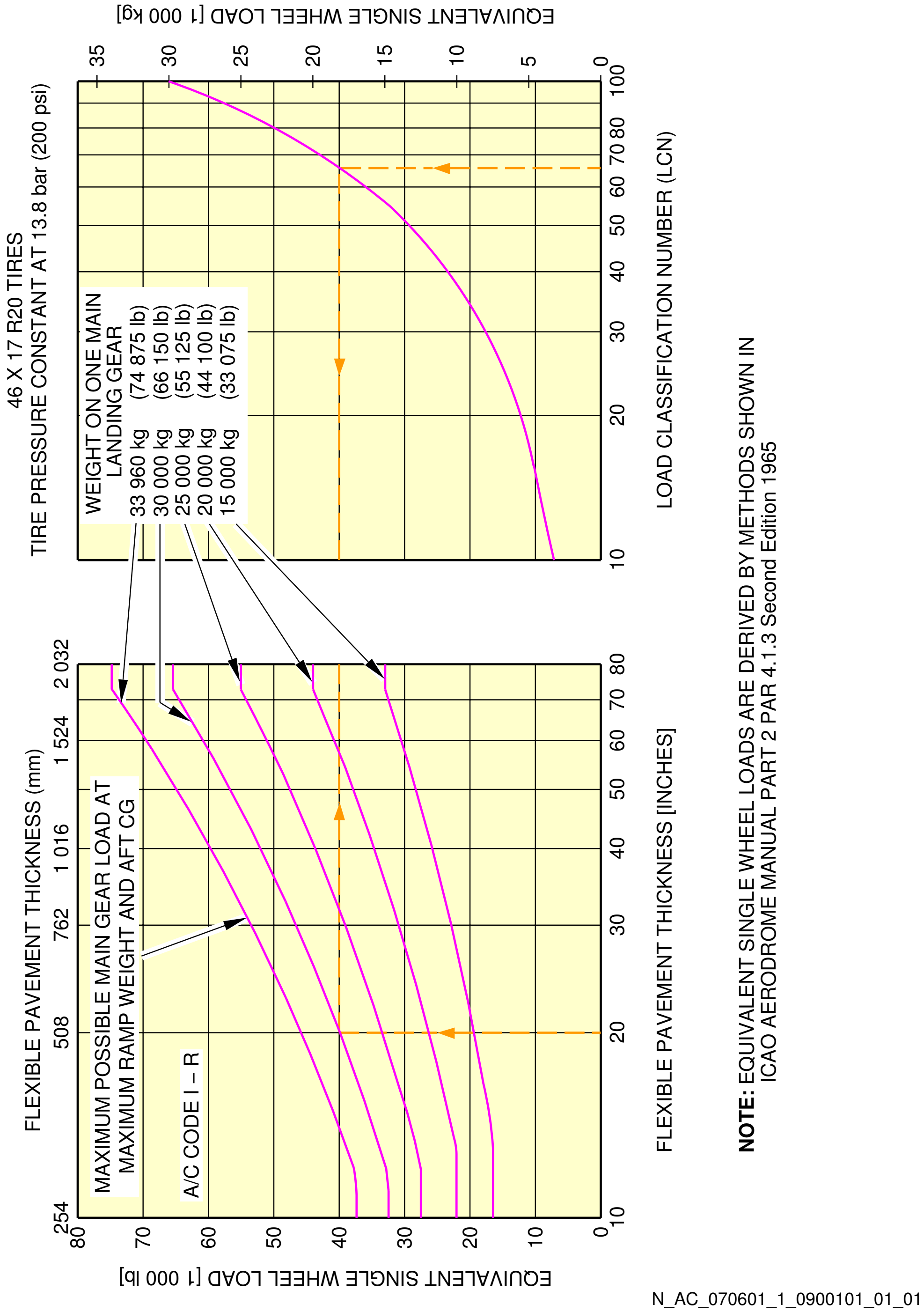
**ON A/C A320-200



N_AC_070601_1_0890101_01_00

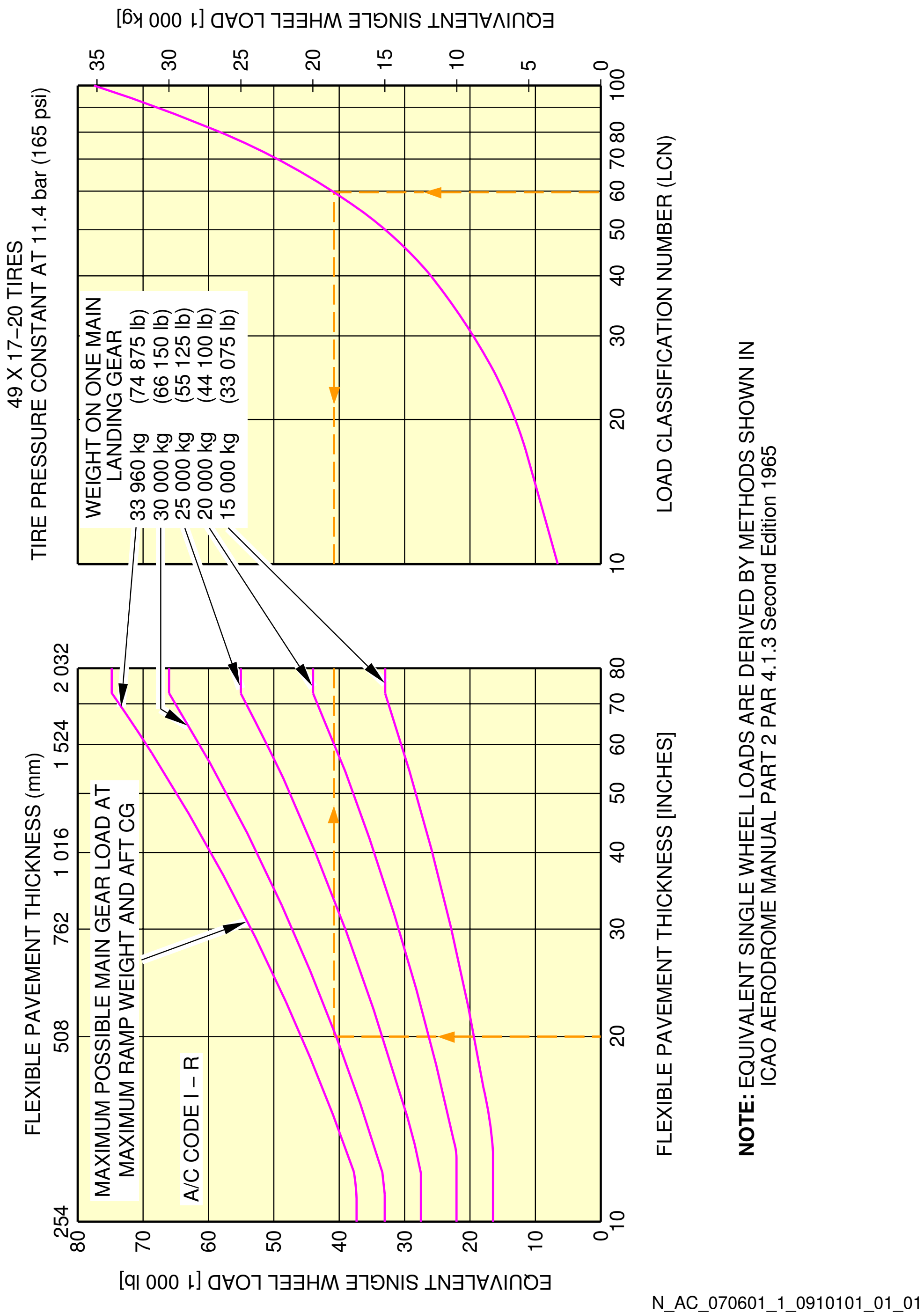
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-089-A01

****ON A/C A320-200**



Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-090-A01

**ON A/C A320-200



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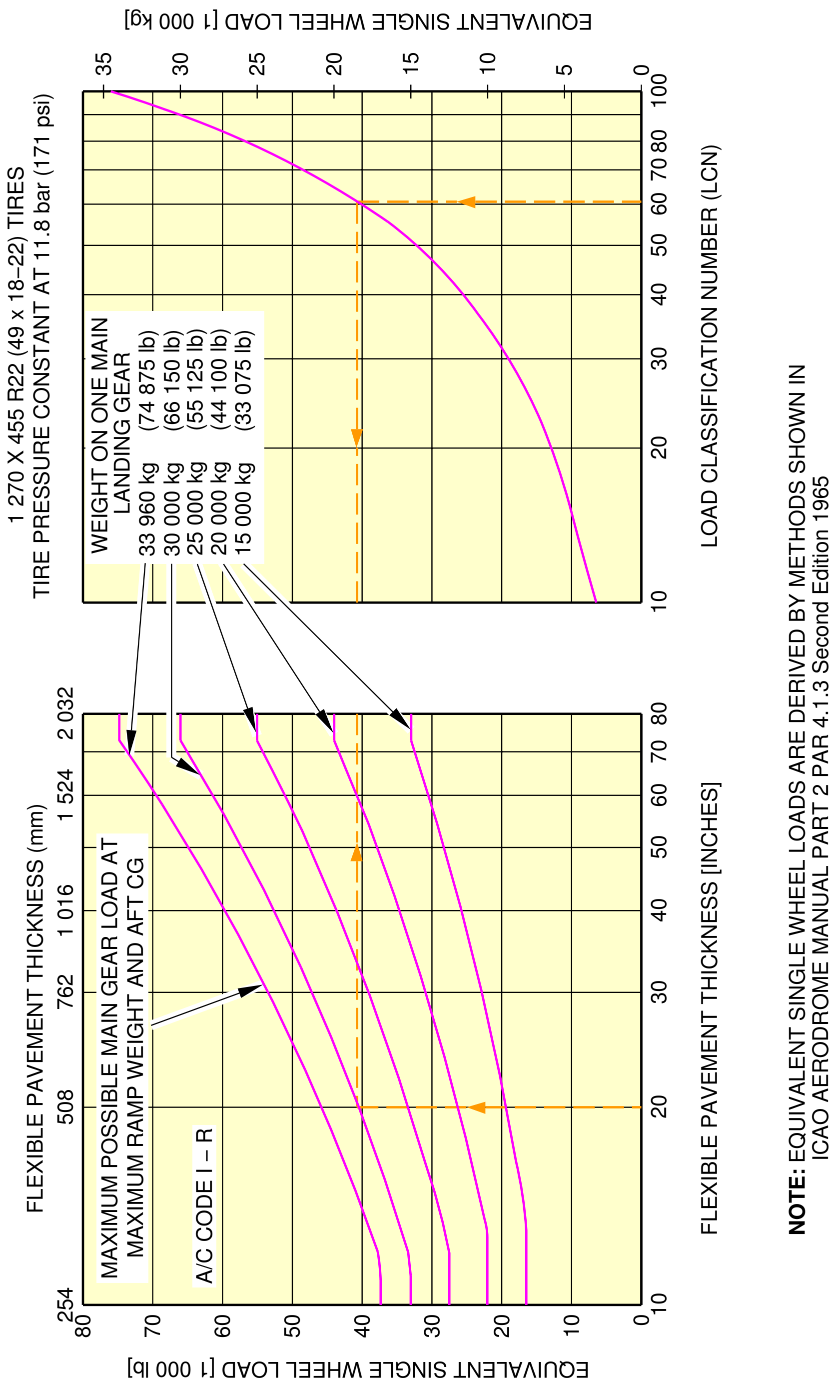
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-091-A01

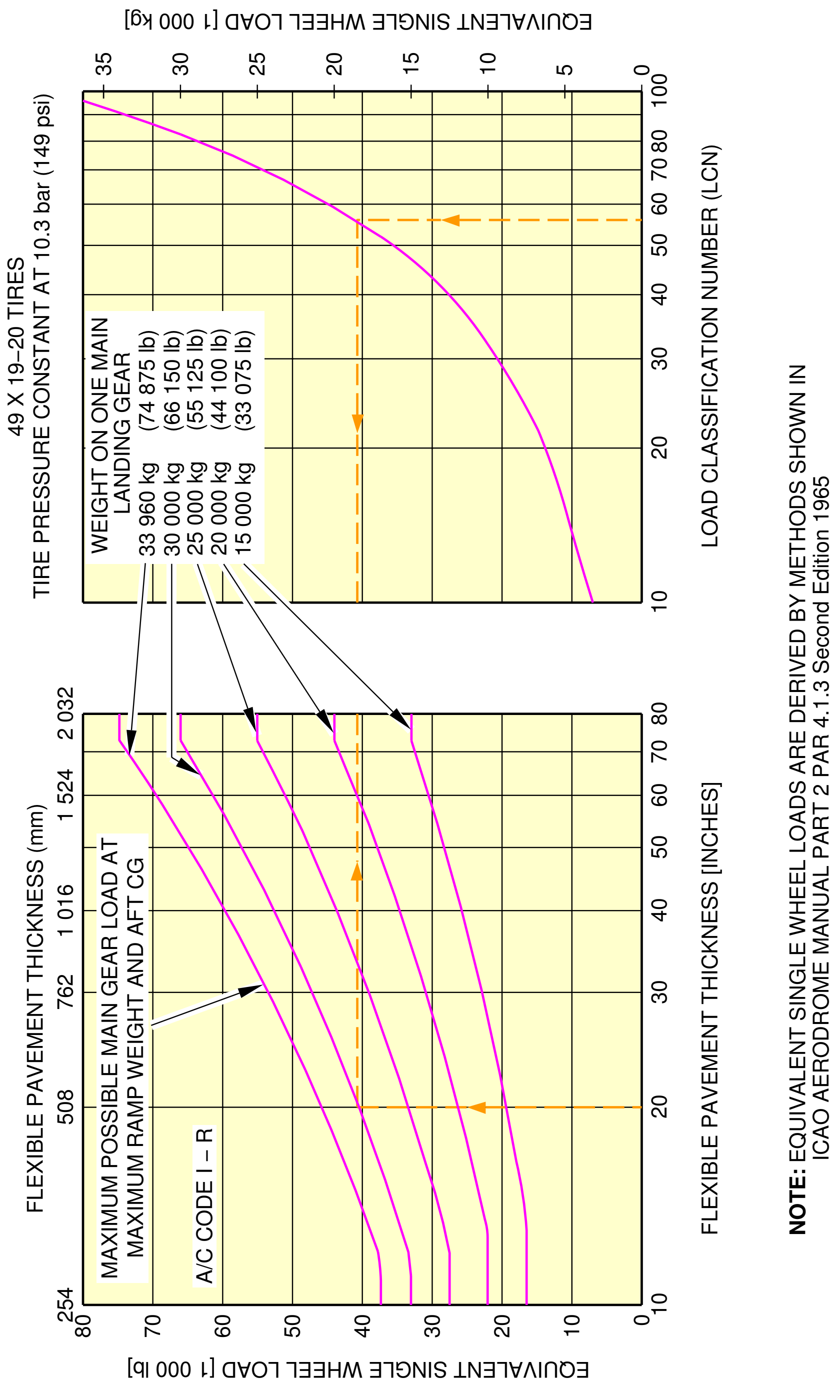
**ON A/C A320-200



N_AC_070601_1_0920101_01_01

Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-092-A01

**ON A/C A320-200



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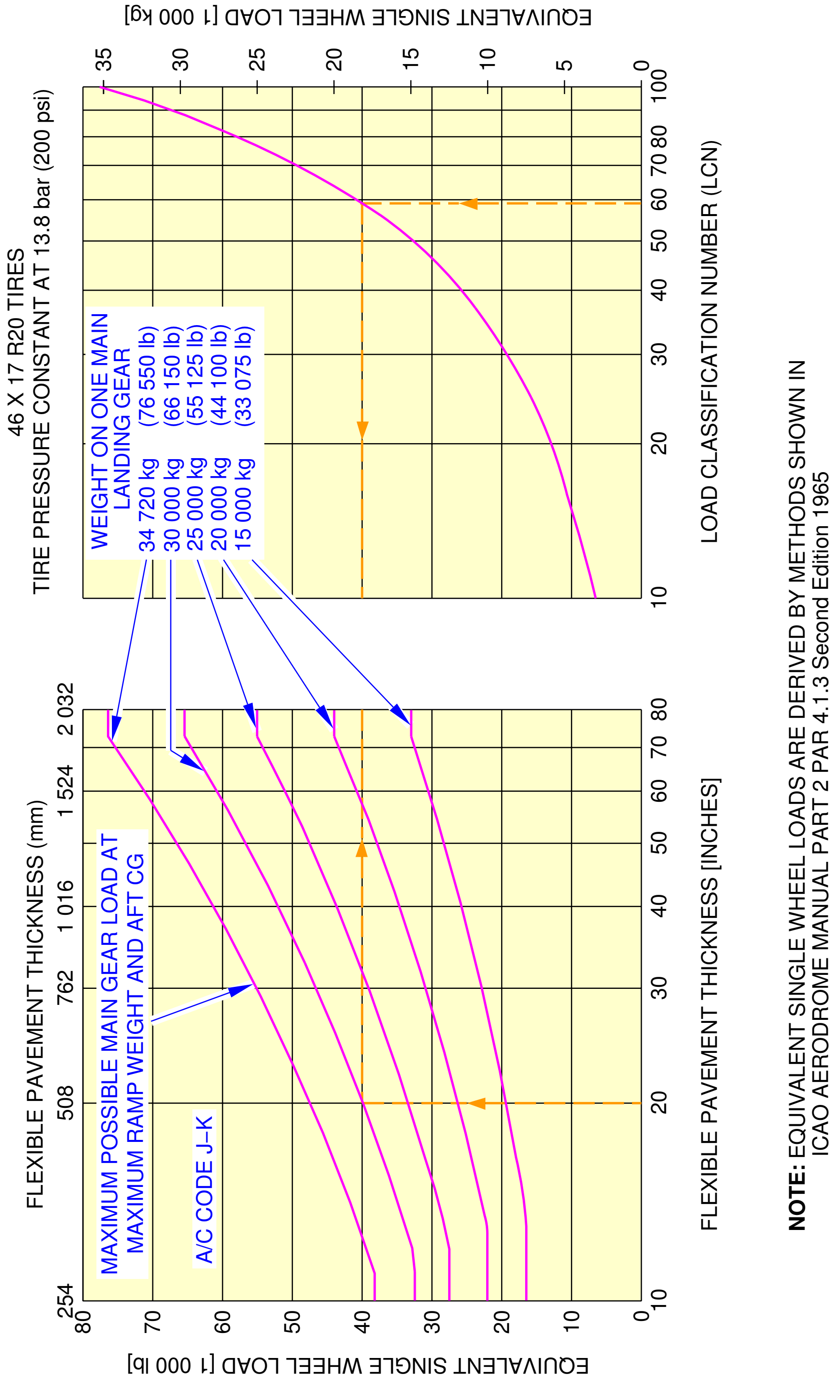
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-093-A01

**ON A/C A320-200



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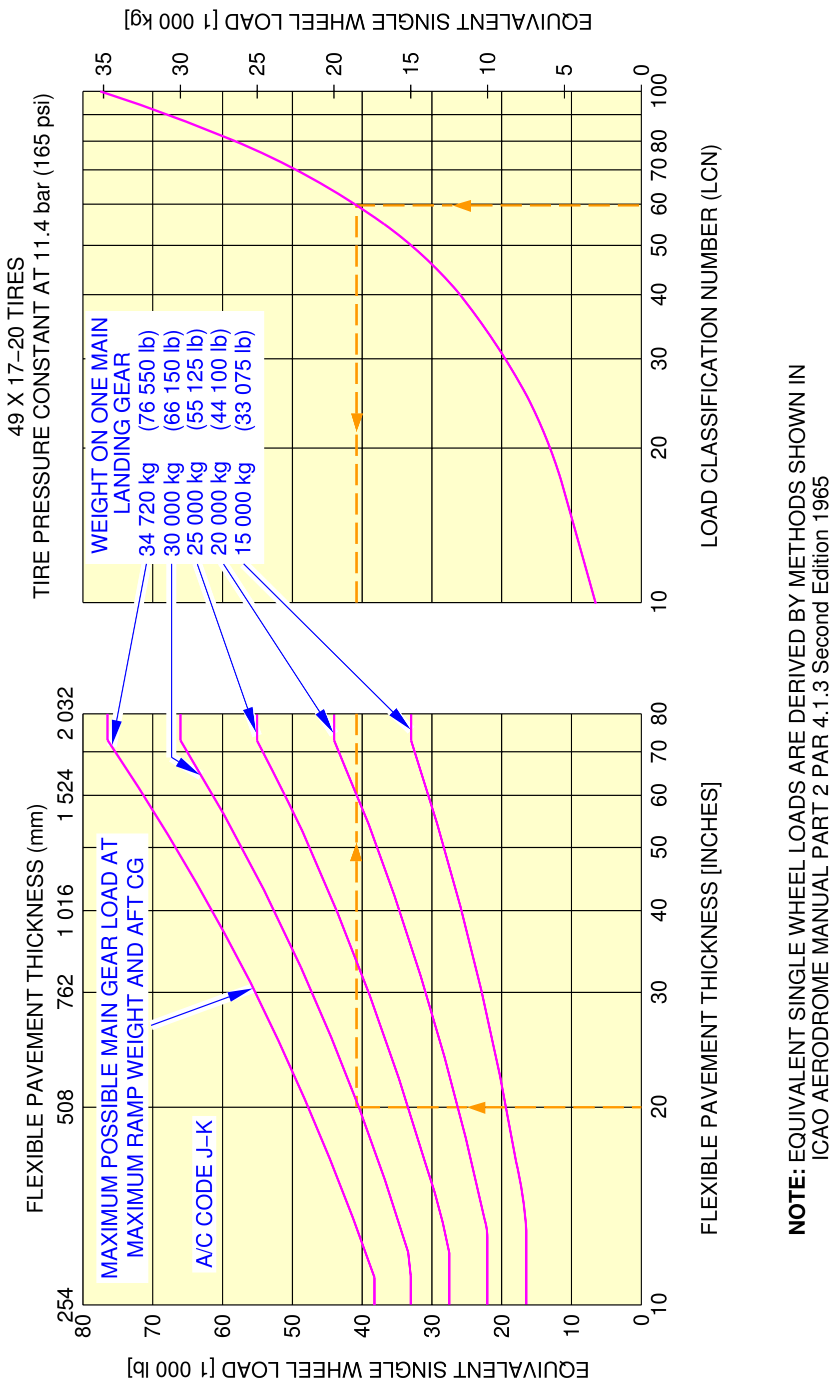
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-094-A01

****ON A/C A320-200**



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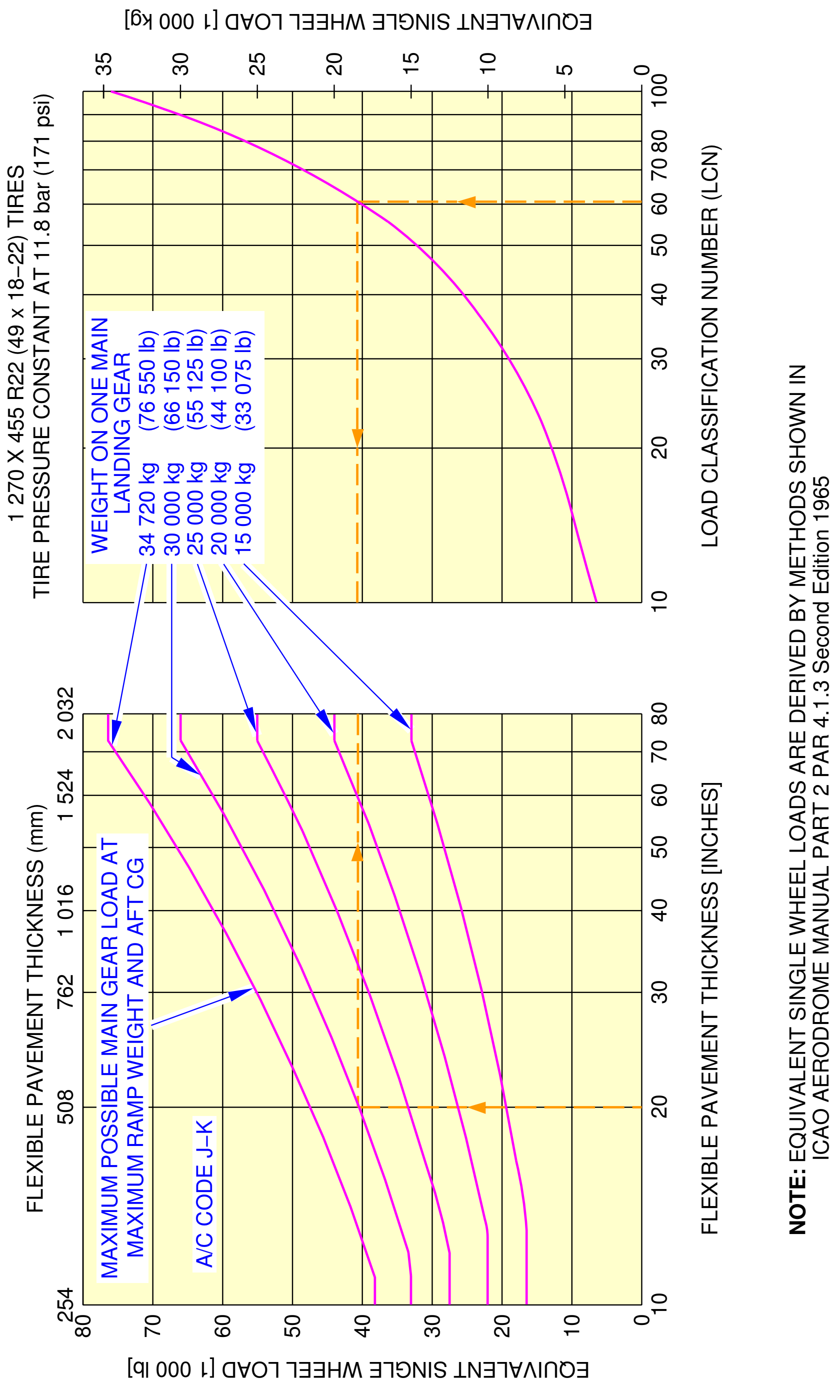
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-095-A01

**ON A/C A320-200



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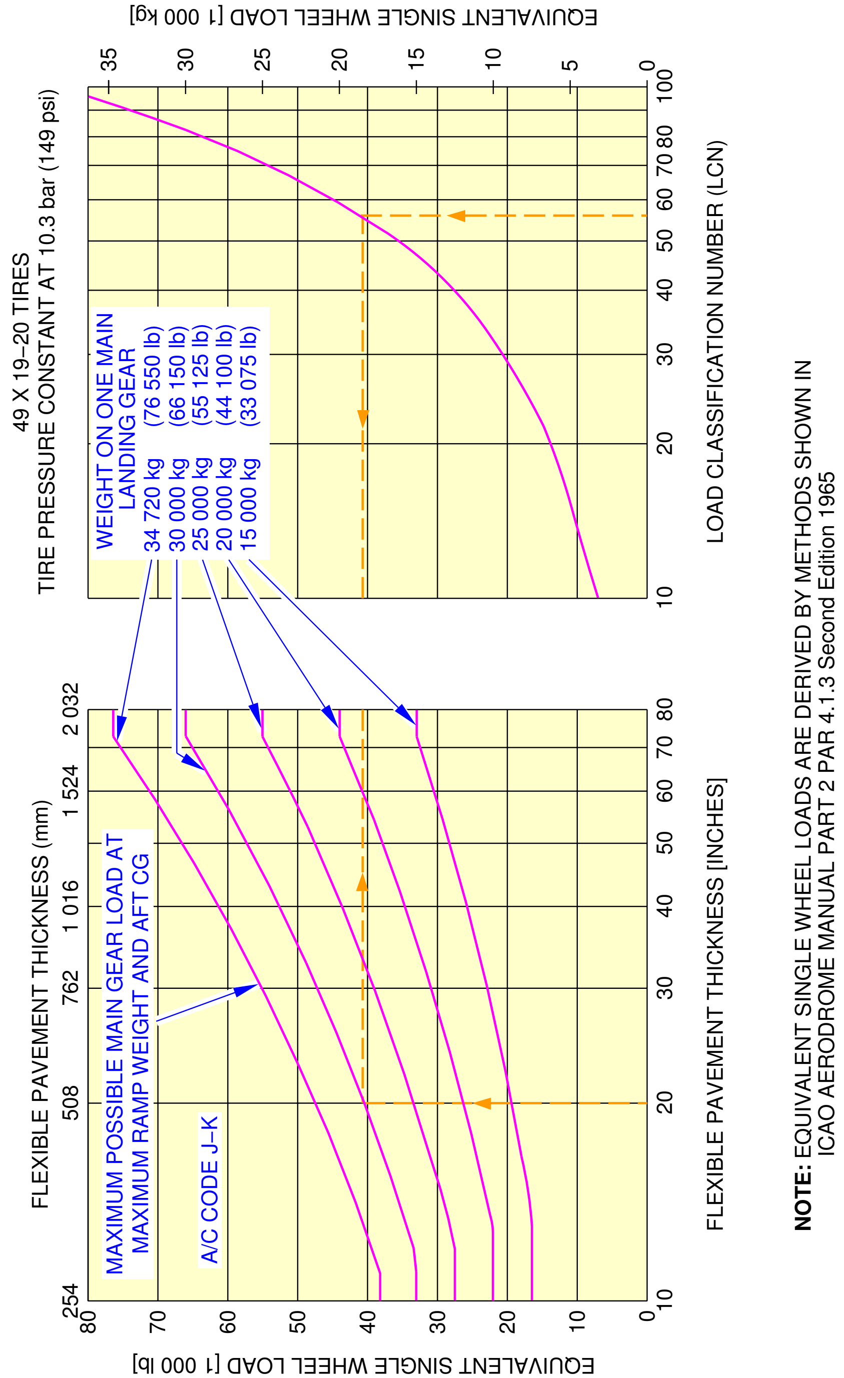
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-096-A01

**ON A/C A320-200



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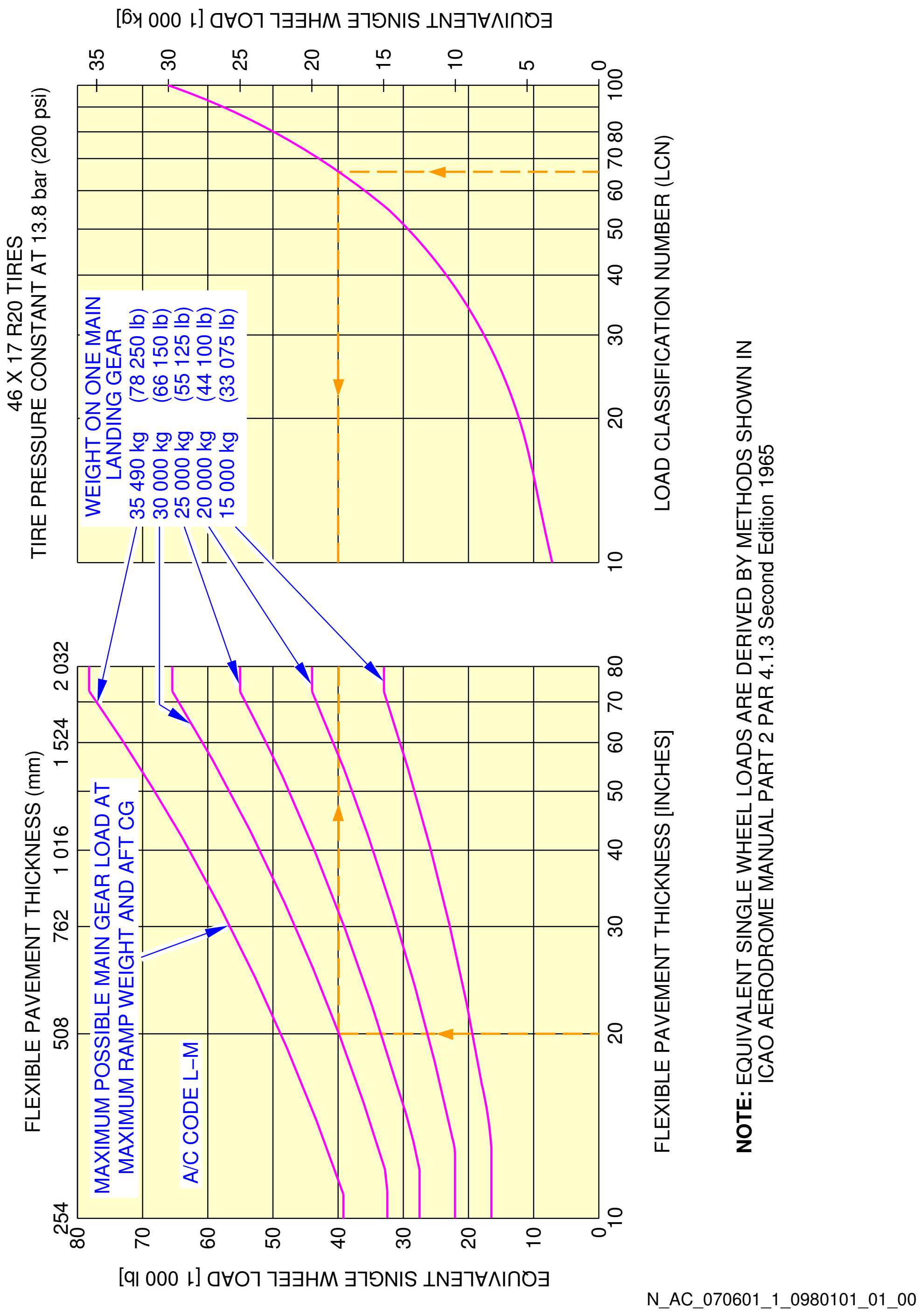
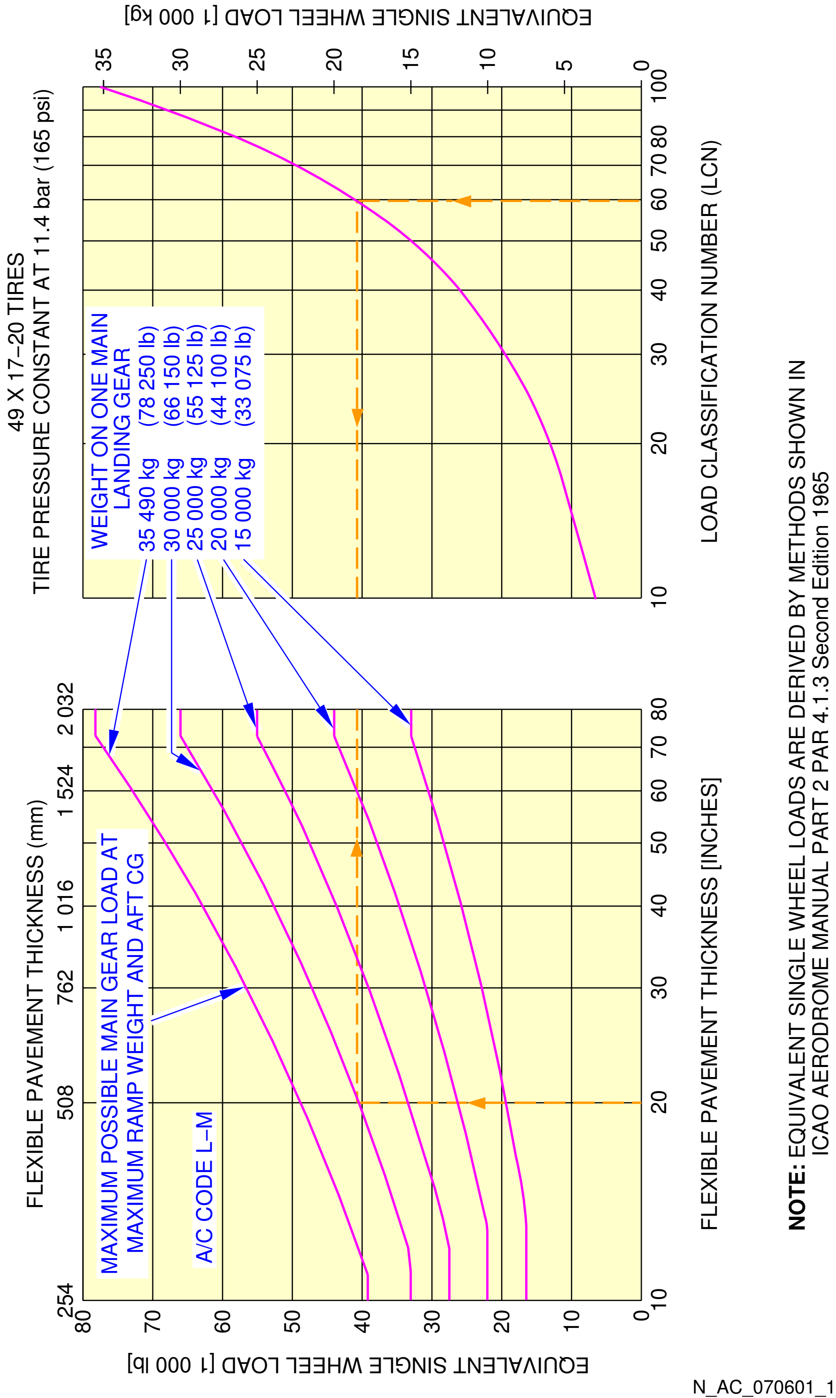
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-097-A01

**ON A/C A320-200



Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-098-A01

**ON A/C A320-200



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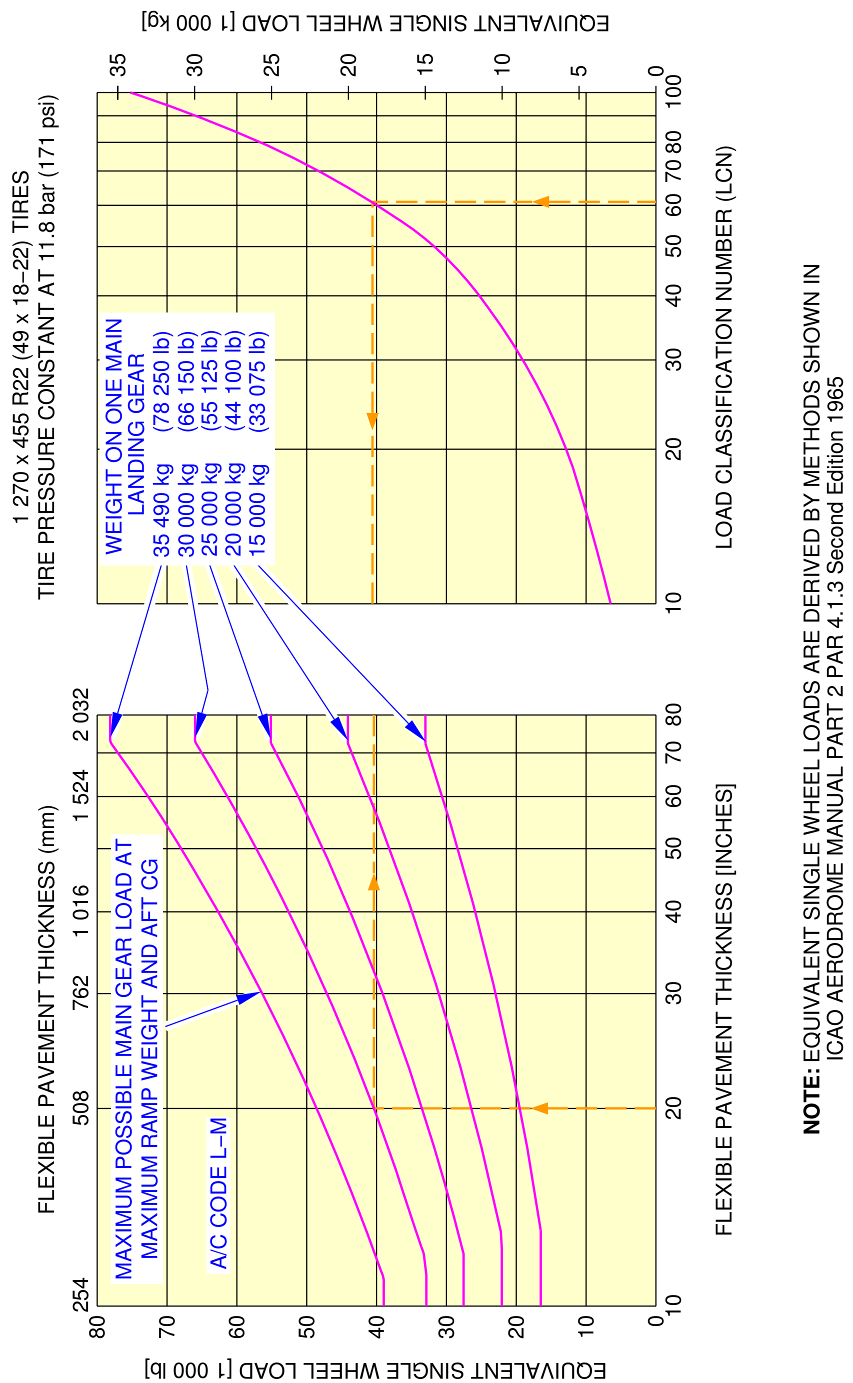
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-099-A01

**ON A/C A320-200



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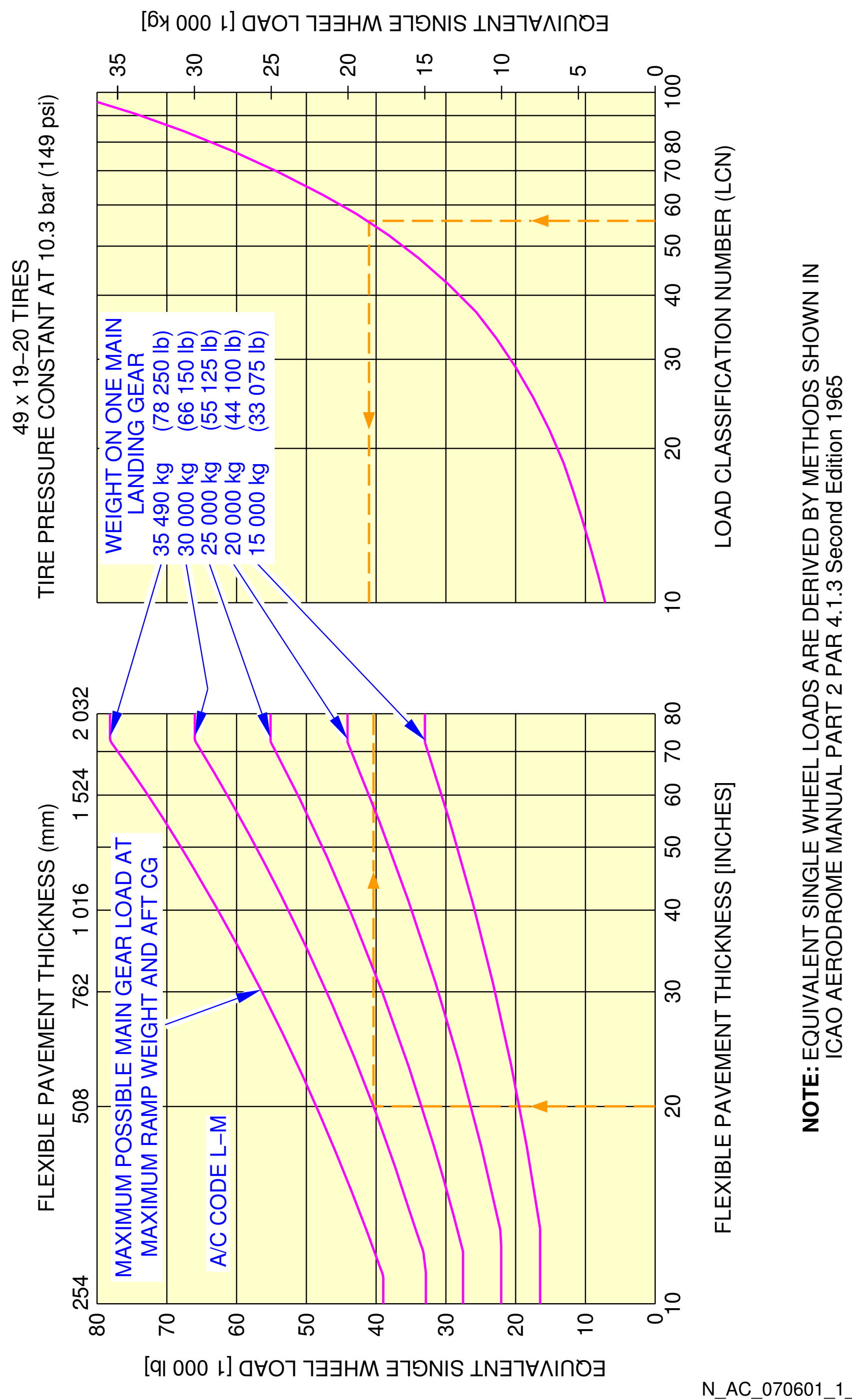
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-100-A01

**ON A/C A320-200



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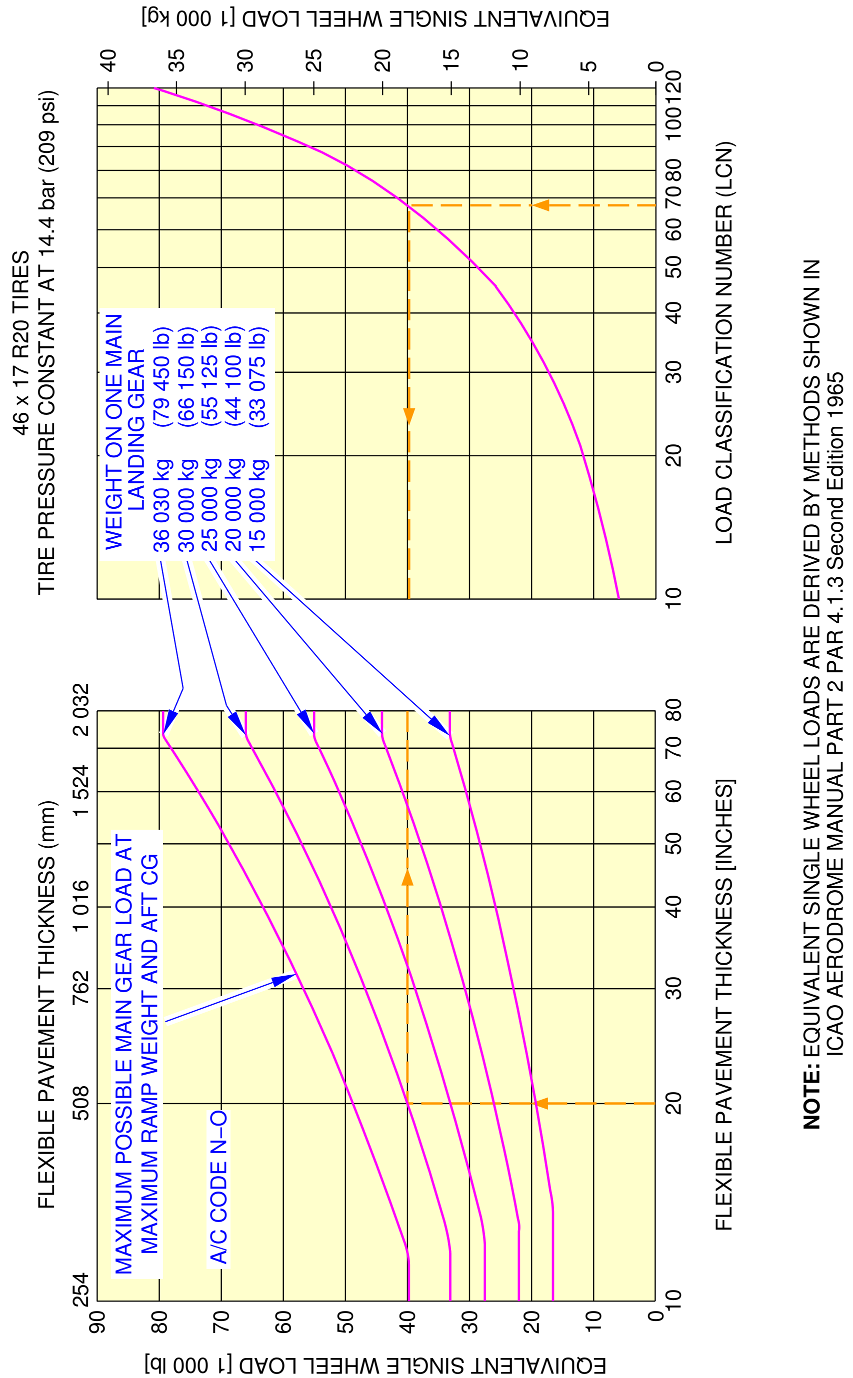
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-101-A01

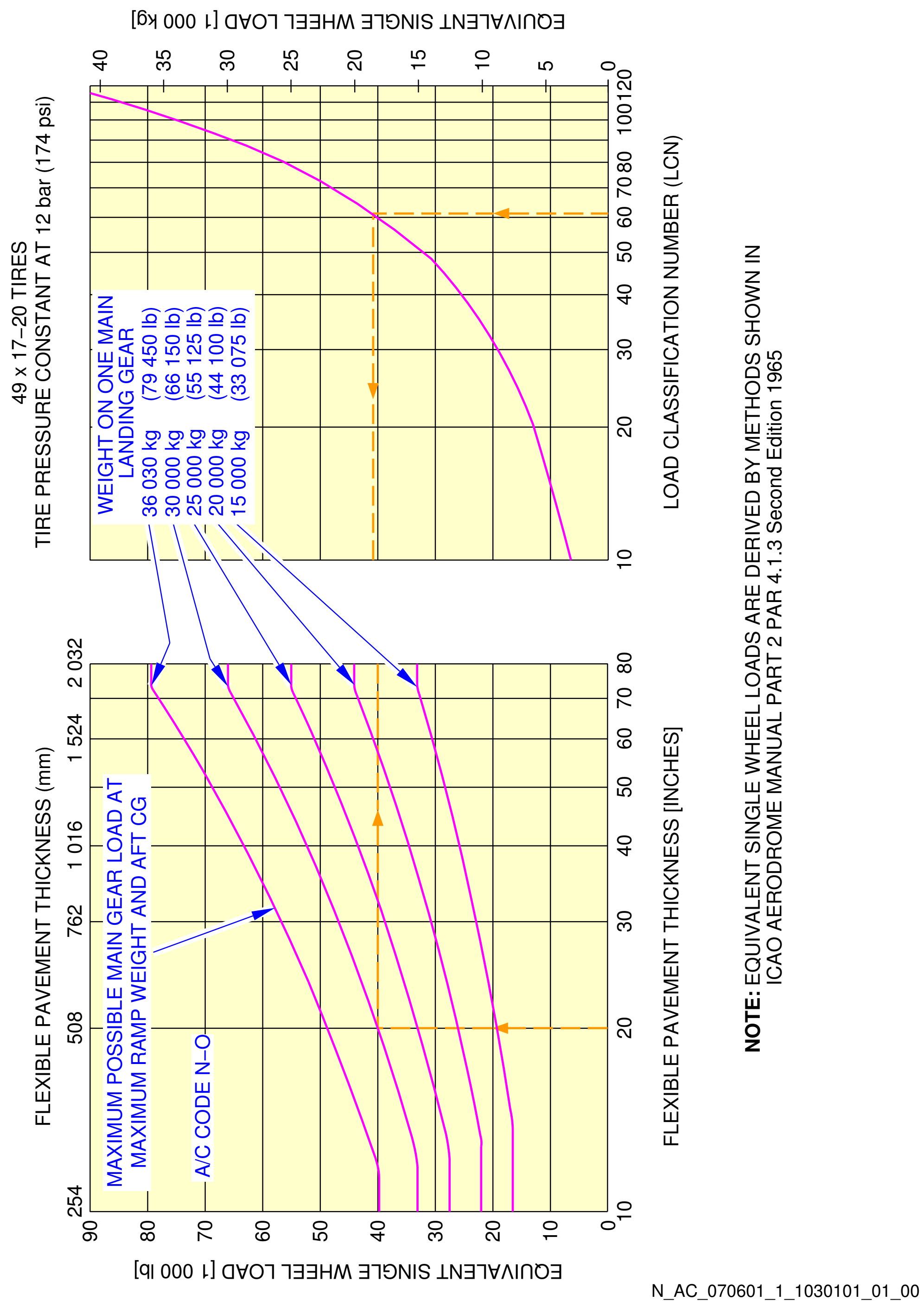
**ON A/C A320-200



N_AC_070601_1_1020101_01_00

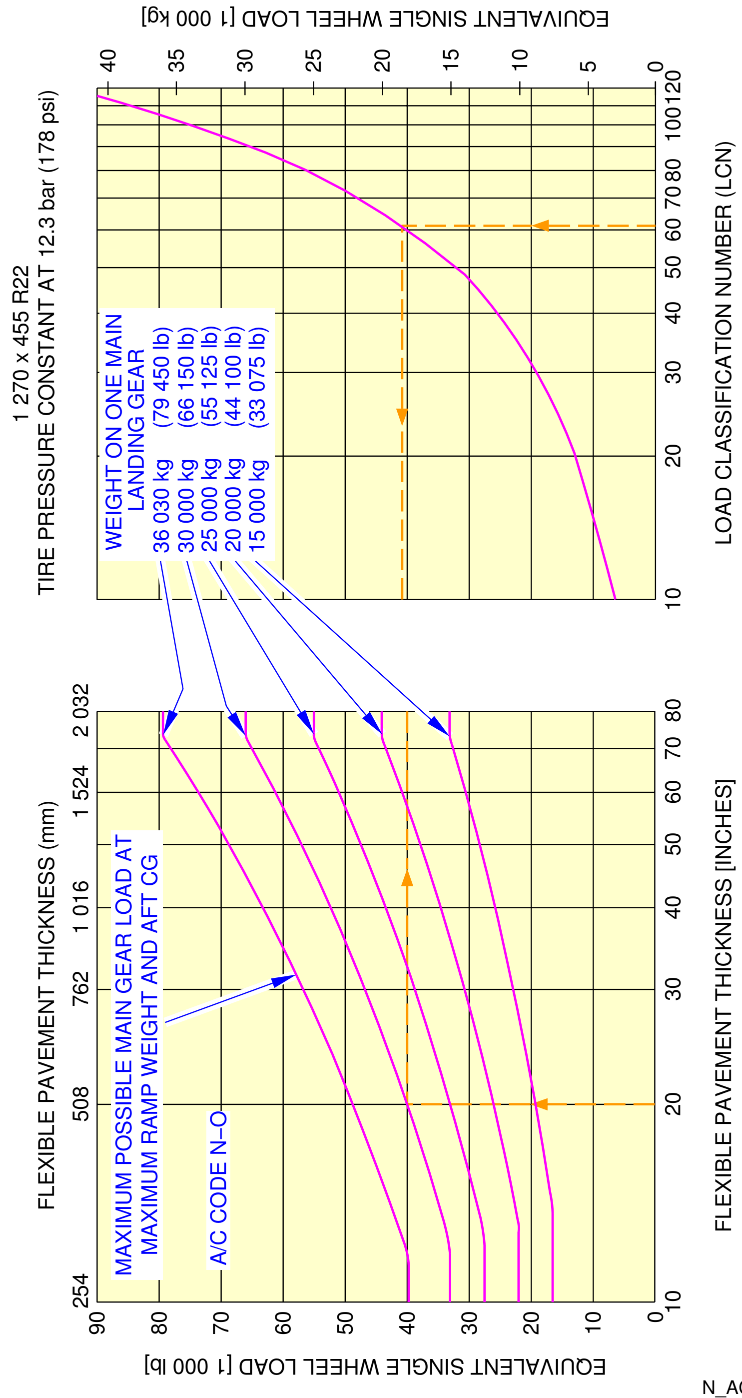
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-102-A01

****ON A/C A320-200**



Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-103-A01

**ON A/C A320-200



NOTE: EQUIVALENT SINGLE WHEEL LOADS ARE DERIVED BY METHODS SHOWN IN ICAO AERODROME MANUAL PART 2 PAR 4.1.3 Second Edition 1965

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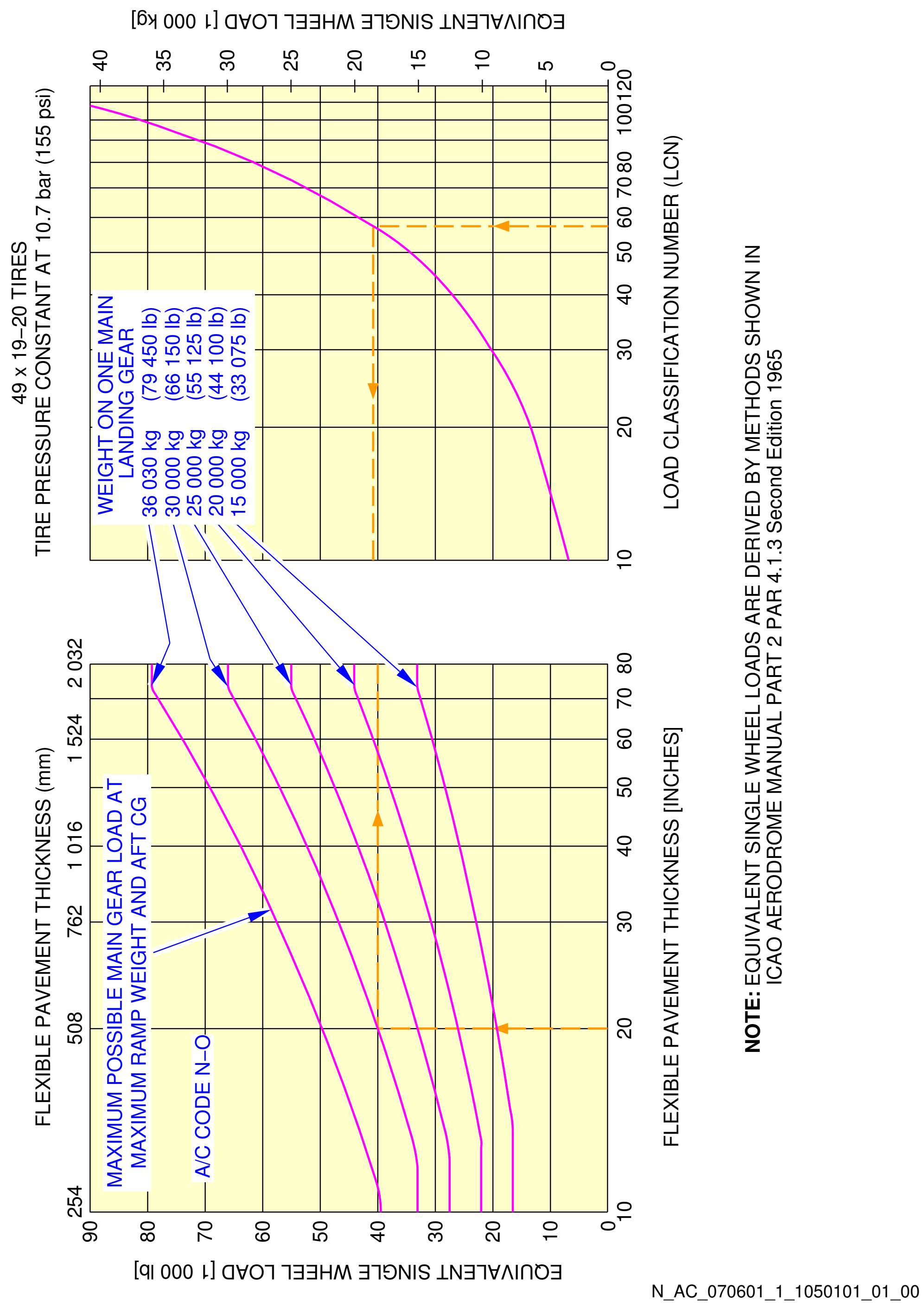
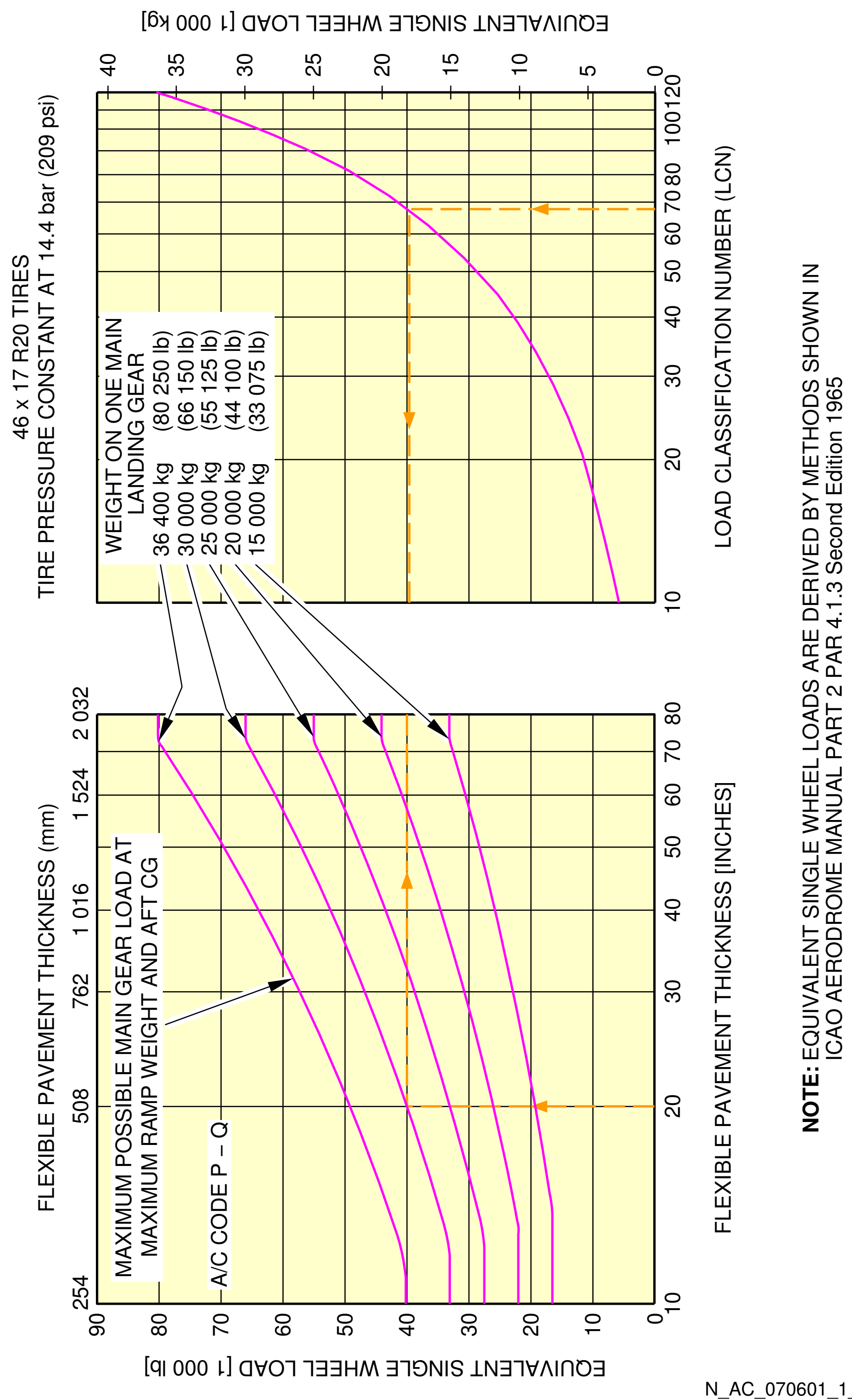
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-104-A01

**ON A/C A320-200



Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-105-A01

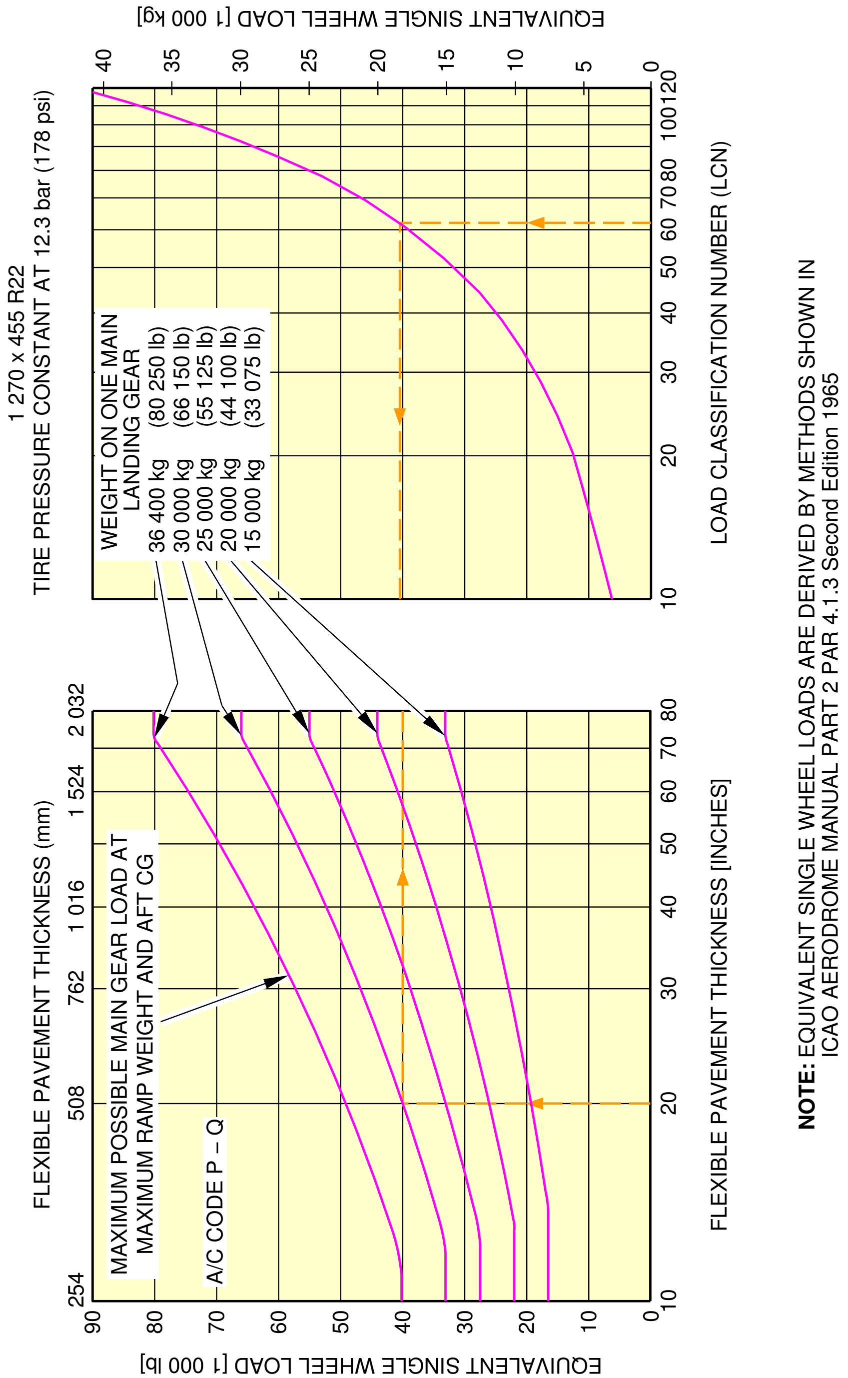
****ON A/C A320-200**



N_AC_070601_1_1060101_01_01

Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-106-A01

**ON A/C A320-200



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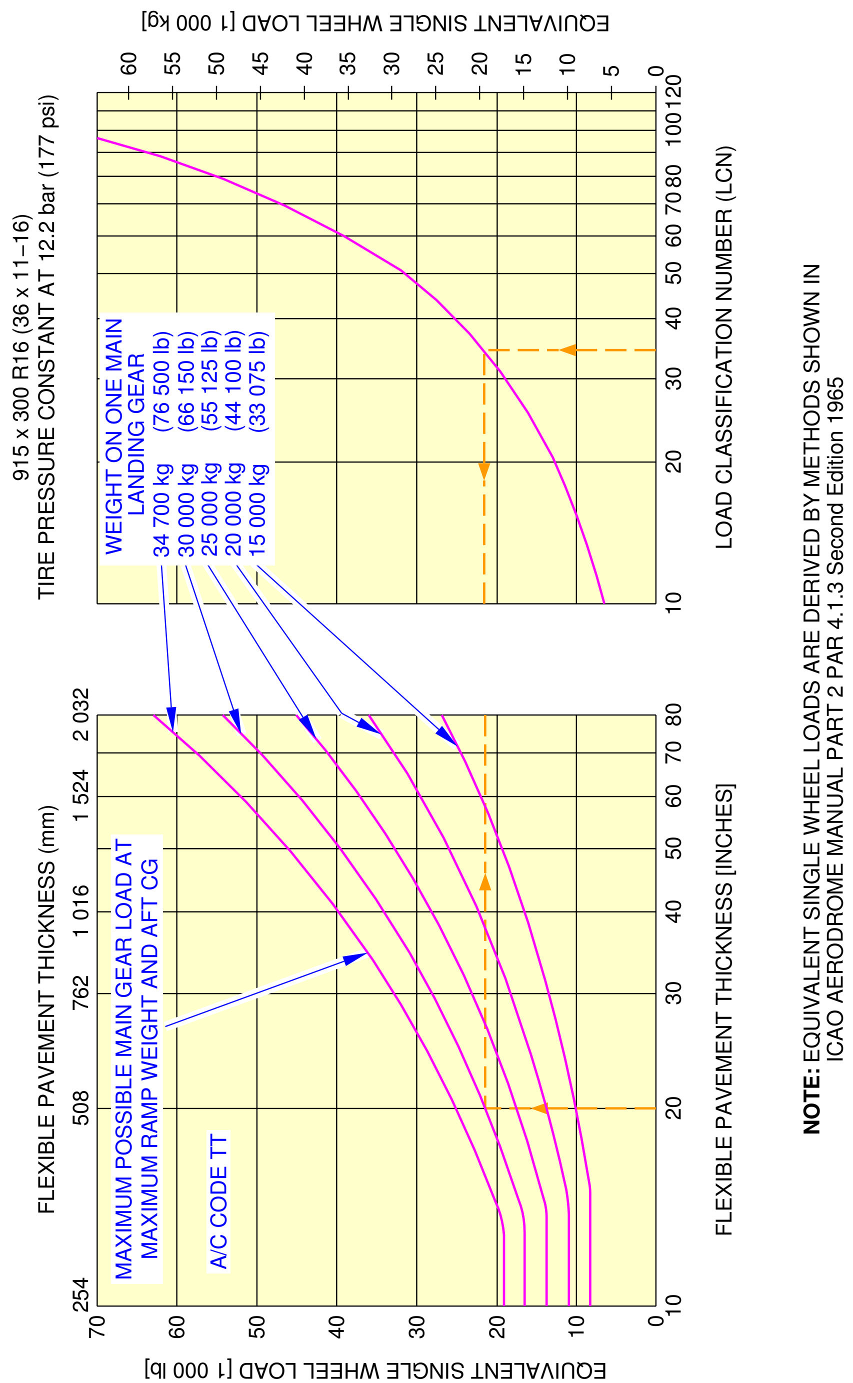
Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-108-A01

**ON A/C A320-200



N_AC_070601_1_1100101_01_00

Flexible Pavement Requirements - LCN Conversion
FIGURE-7-6-1-991-110-A01

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

****ON A/C A320-200**

Rigid Pavement Requirements - Portland Cement Association Design Method

1. General

In order to determine a Rigid Pavement Thickness, the Subgrade Modulus (k), the allowable working stress and the weight on one Main Landing Gear must be known.

In the example shown in Section 7-7-1 Rigid Pavement Requirements (PCA), A/C Code E (Main Gear Tire Size 46 x 17 R20 (46 x 16 - 20), inflated at 12.3 bar (178 psi)) for:

- a "k" value of 80 MN/m^3 (300 lb/in^3)
- an allowable working stress of 32 kg/cm^2 (450 lb/in^2)
- a load on one MLG of 25 000 kg (55 125 lb).

For these conditions, the Rigid Pavement Thickness is 23 cm (9.1 in).

7-7-1 Rigid Pavement Requirements - Portland Cement Association Design Method

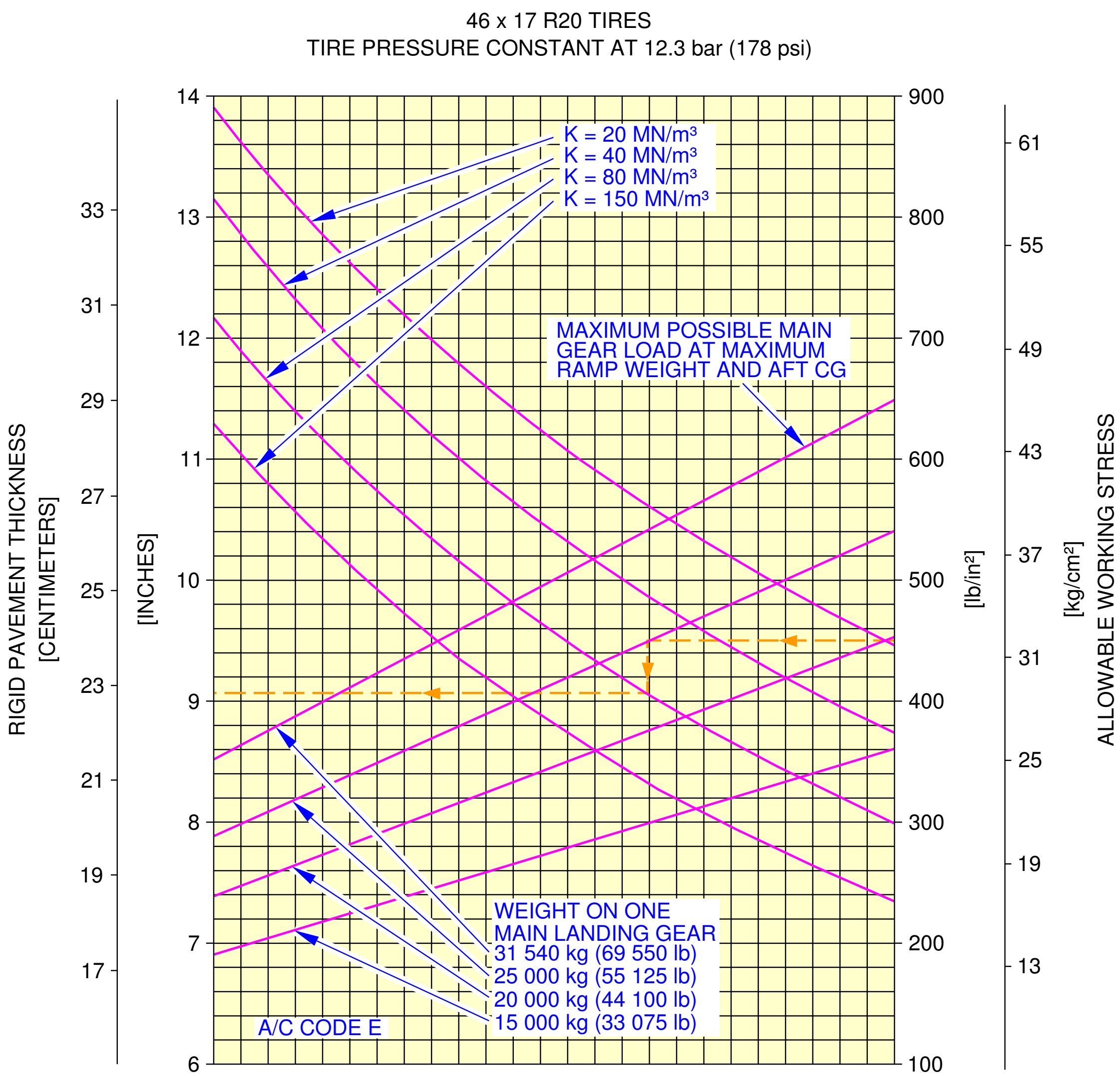
****ON A/C A320-200**

Rigid Pavement Requirements - Portland Cement Association Design Method

1. This section gives Rigid Pavement Requirements.

   NOTE : For A/C Code definition, refer to chapter 07-01-00.

**ON A/C A320-200



NOTE:
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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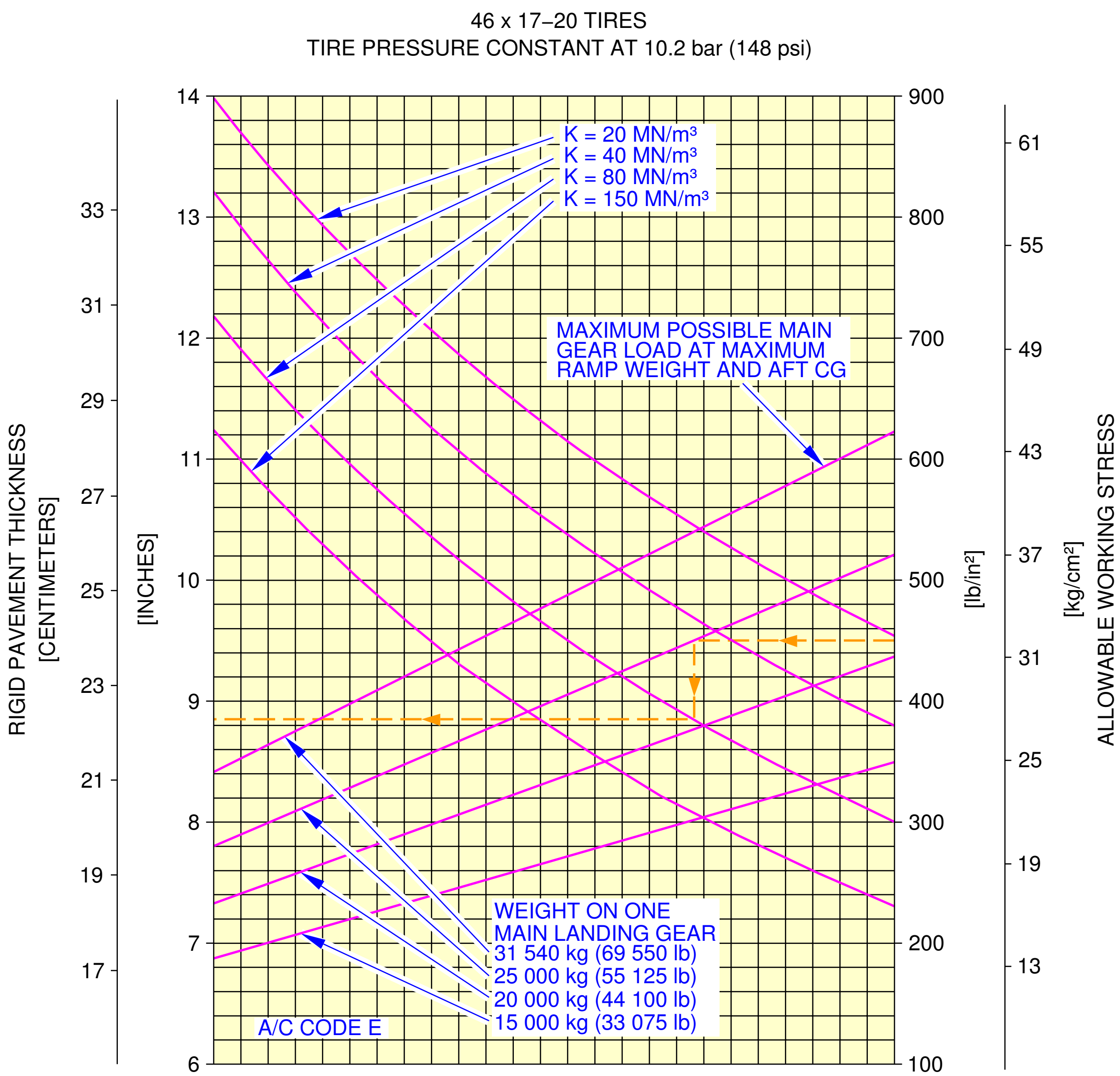
Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-072-A01

**ON A/C A320-200



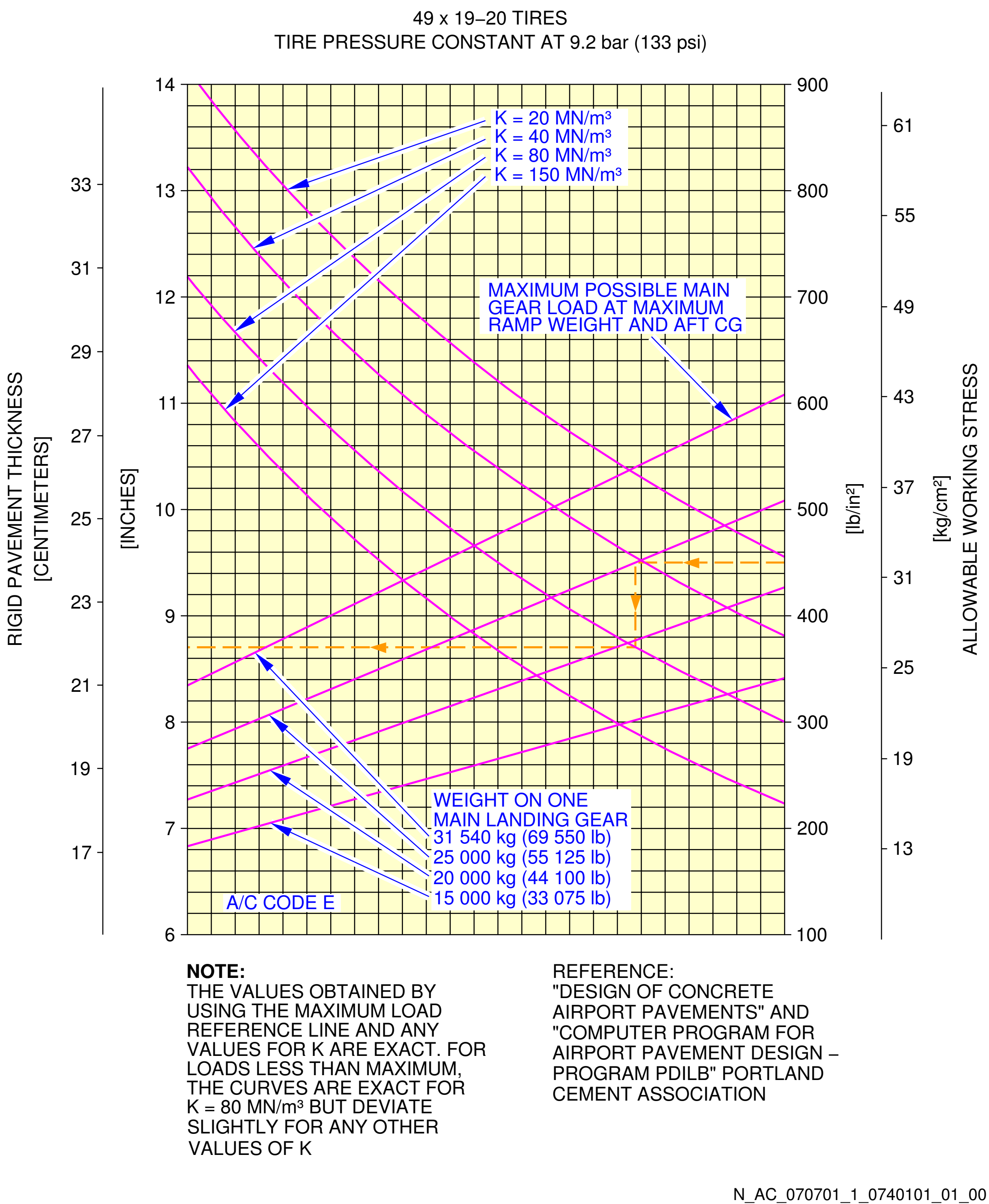
NOTE:
THE VALUES OBTAINED BY USING THE MAXIMUM LOAD REFERENCE LINE AND ANY VALUES FOR K ARE EXACT. FOR LOADS LESS THAN MAXIMUM, THE CURVES ARE EXACT FOR K = 80 MN/m³ BUT DEVIATE SLIGHTLY FOR ANY OTHER VALUES OF K

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

N_AC_070701_1_0730101_01_00

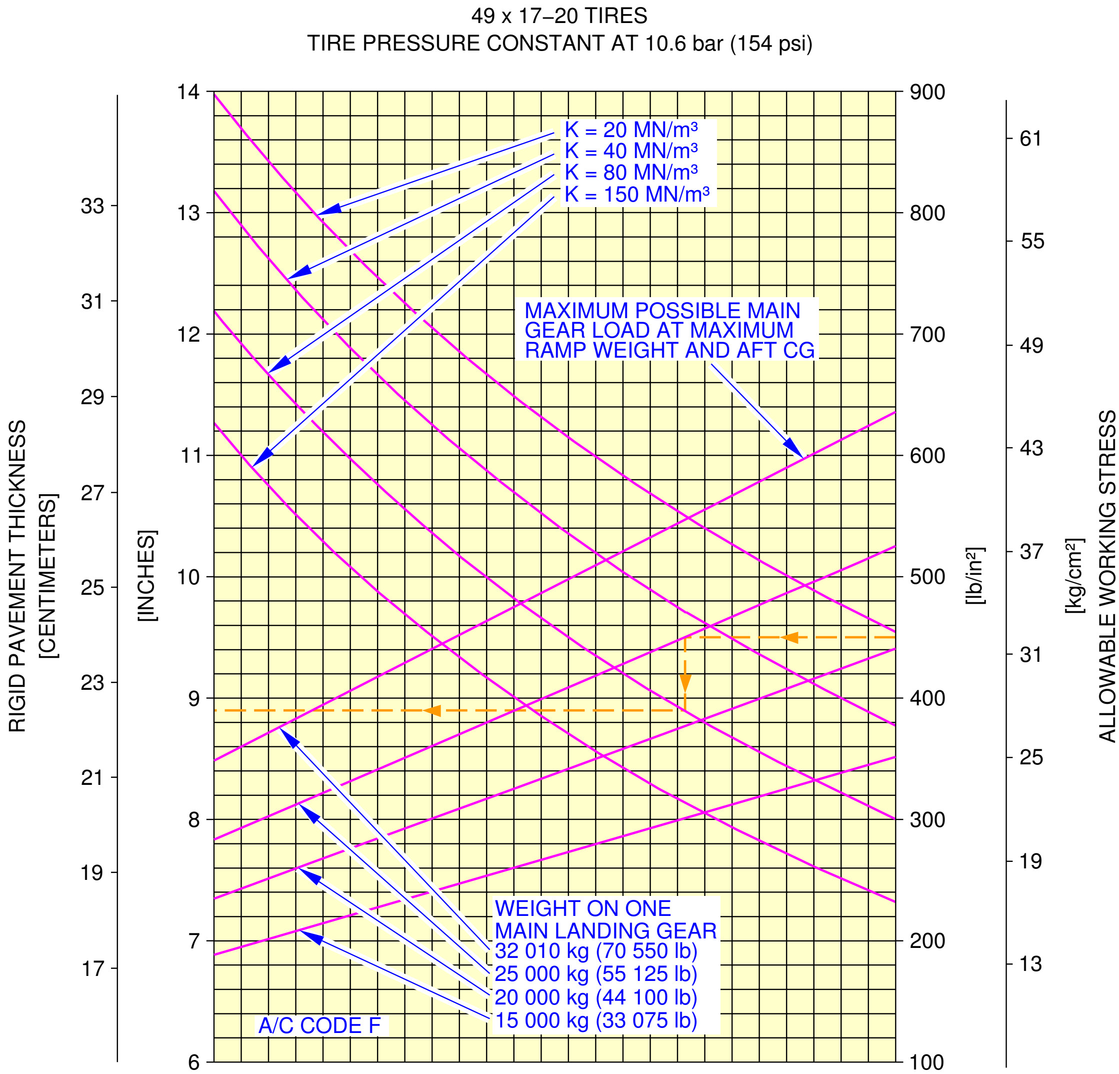
Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-073-A01

**ON A/C A320-200



Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-074-A01

**ON A/C A320-200



NOTE:
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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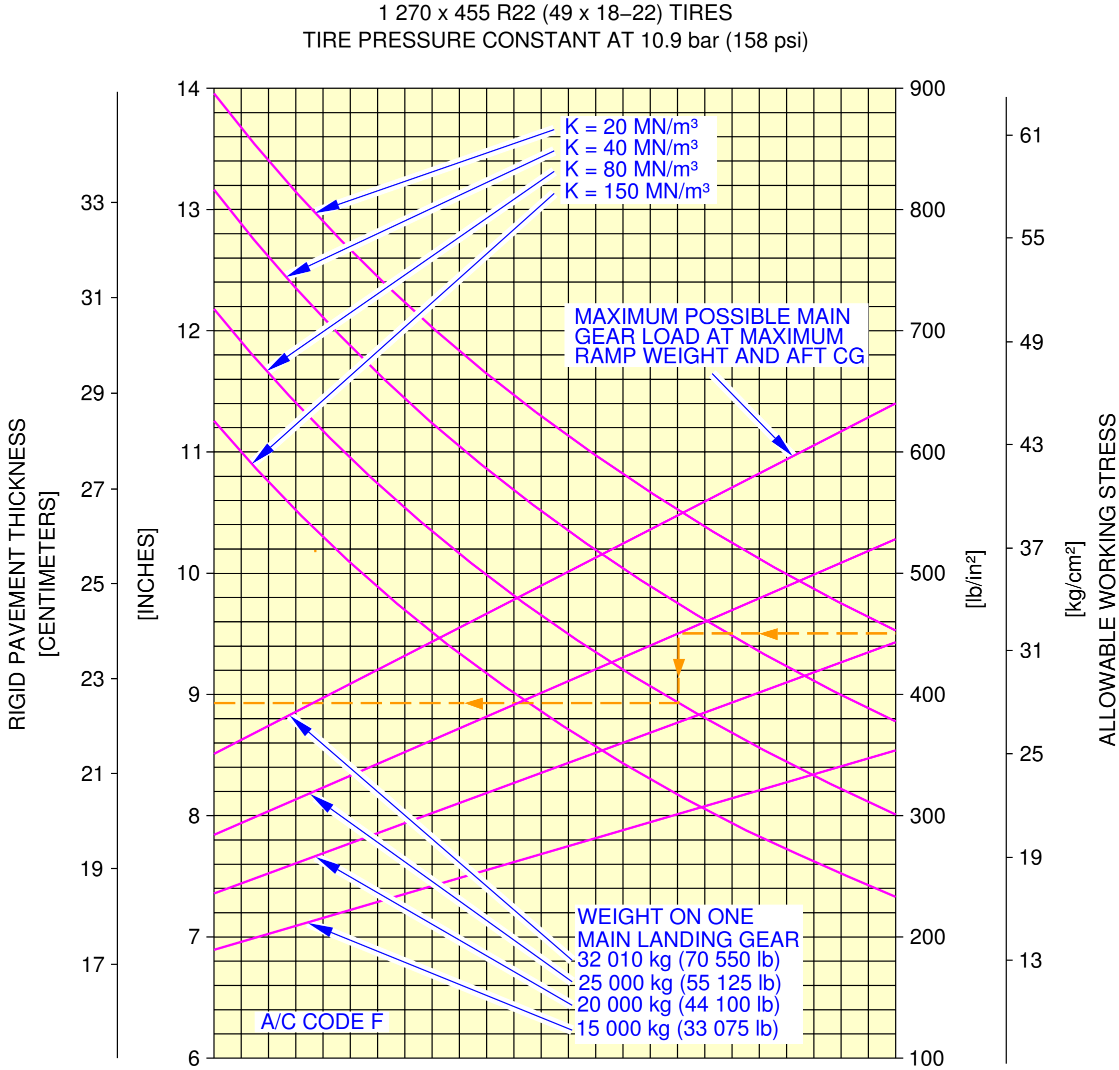
Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-075-A01

**ON A/C A320-200



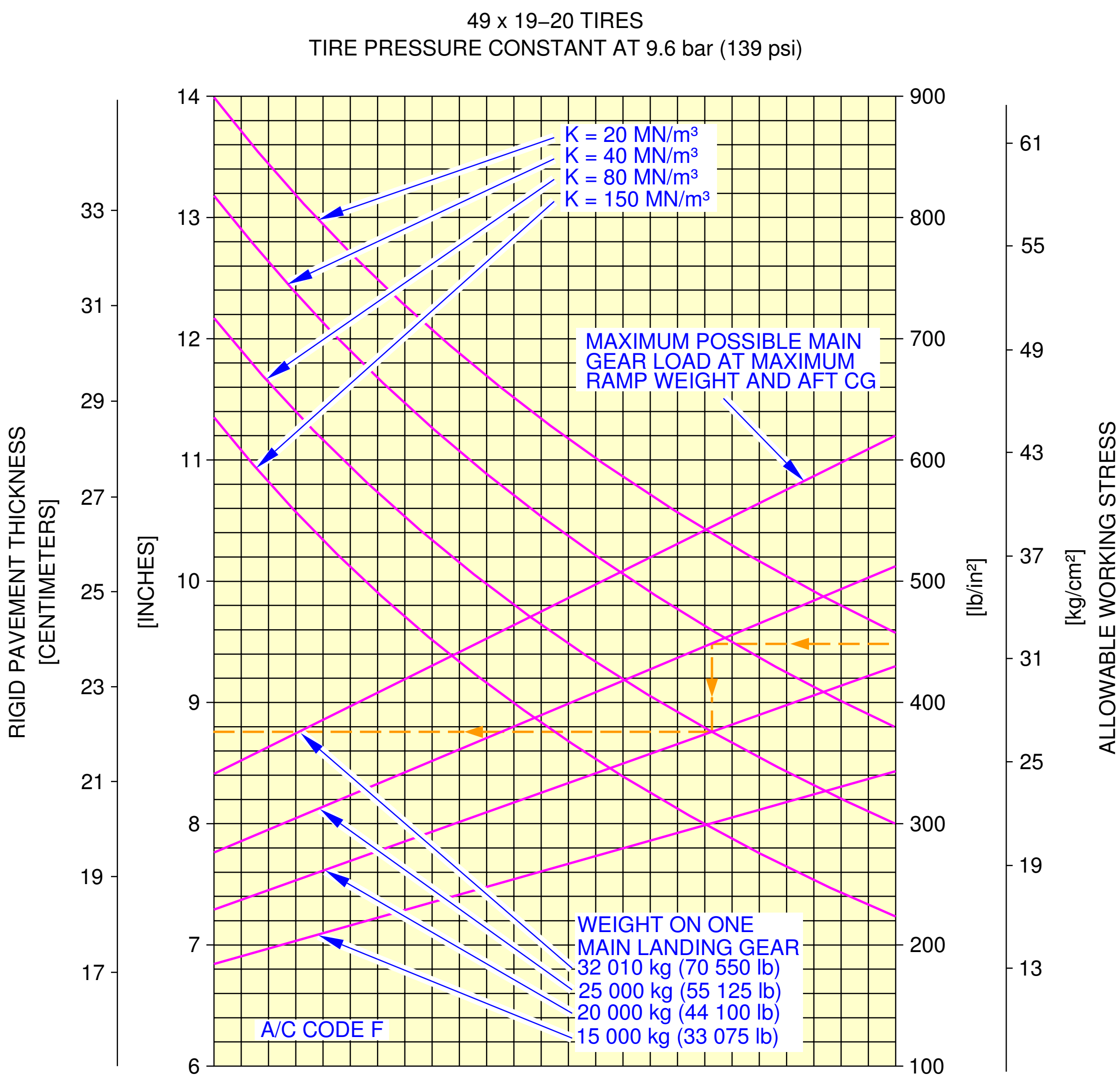
NOTE:
THE VALUES OBTAINED BY USING THE MAXIMUM LOAD REFERENCE LINE AND ANY VALUES FOR K ARE EXACT. FOR LOADS LESS THAN MAXIMUM, THE CURVES ARE EXACT FOR K = 80 MN/m³ BUT DEVIATE SLIGHTLY FOR ANY OTHER VALUES OF K

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

N_AC_070701_1_0760101_01_00

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-076-A01

**ON A/C A320-200



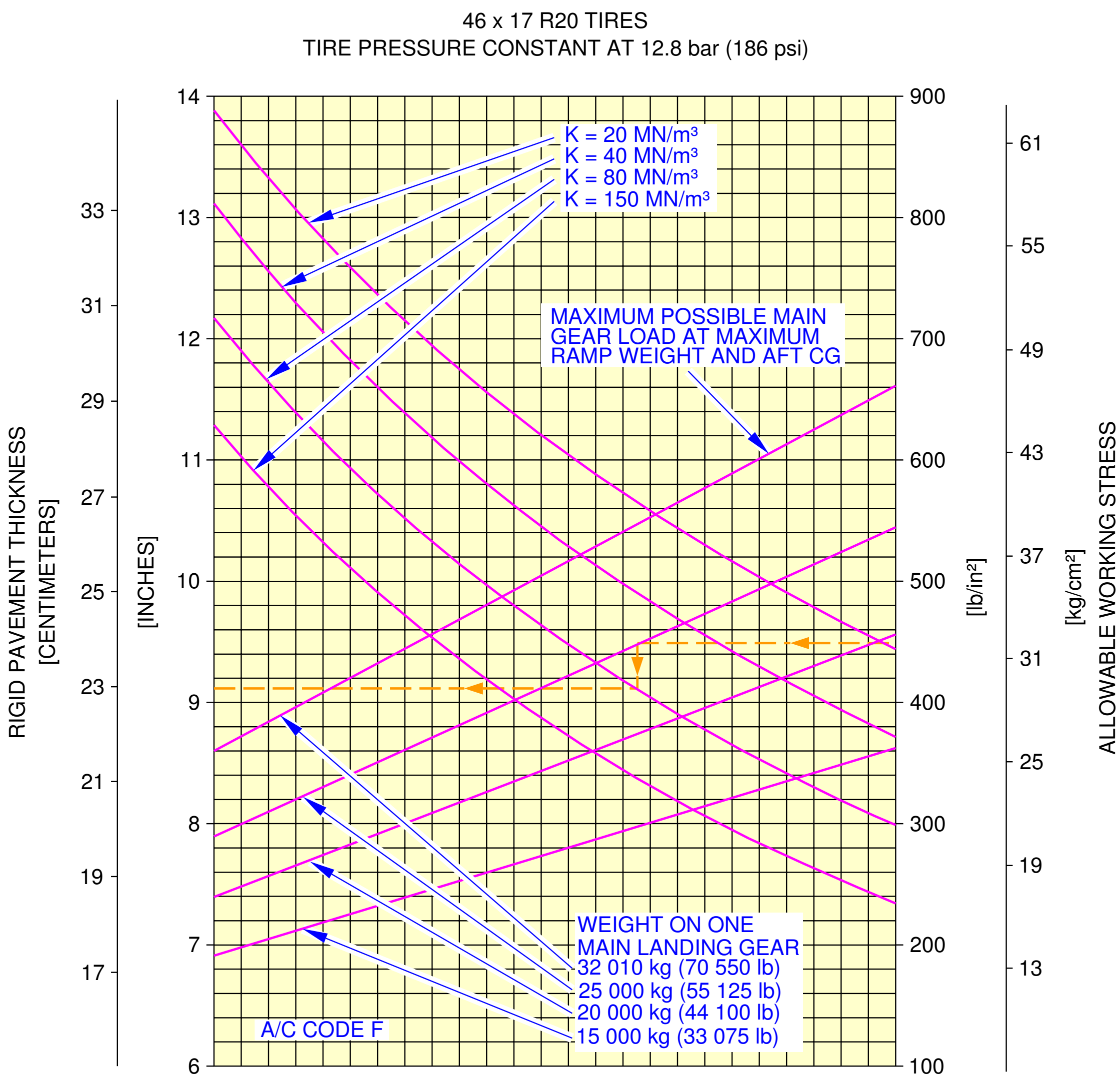
NOTE:
THE VALUES OBTAINED BY USING THE MAXIMUM LOAD REFERENCE LINE AND ANY VALUES FOR K ARE EXACT. FOR LOADS LESS THAN MAXIMUM, THE CURVES ARE EXACT FOR K = 80 MN/m³ BUT DEVIATE SLIGHTLY FOR ANY OTHER VALUES OF K

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

N_AC_070701_1_0770101_01_00

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-077-A01

**ON A/C A320-200



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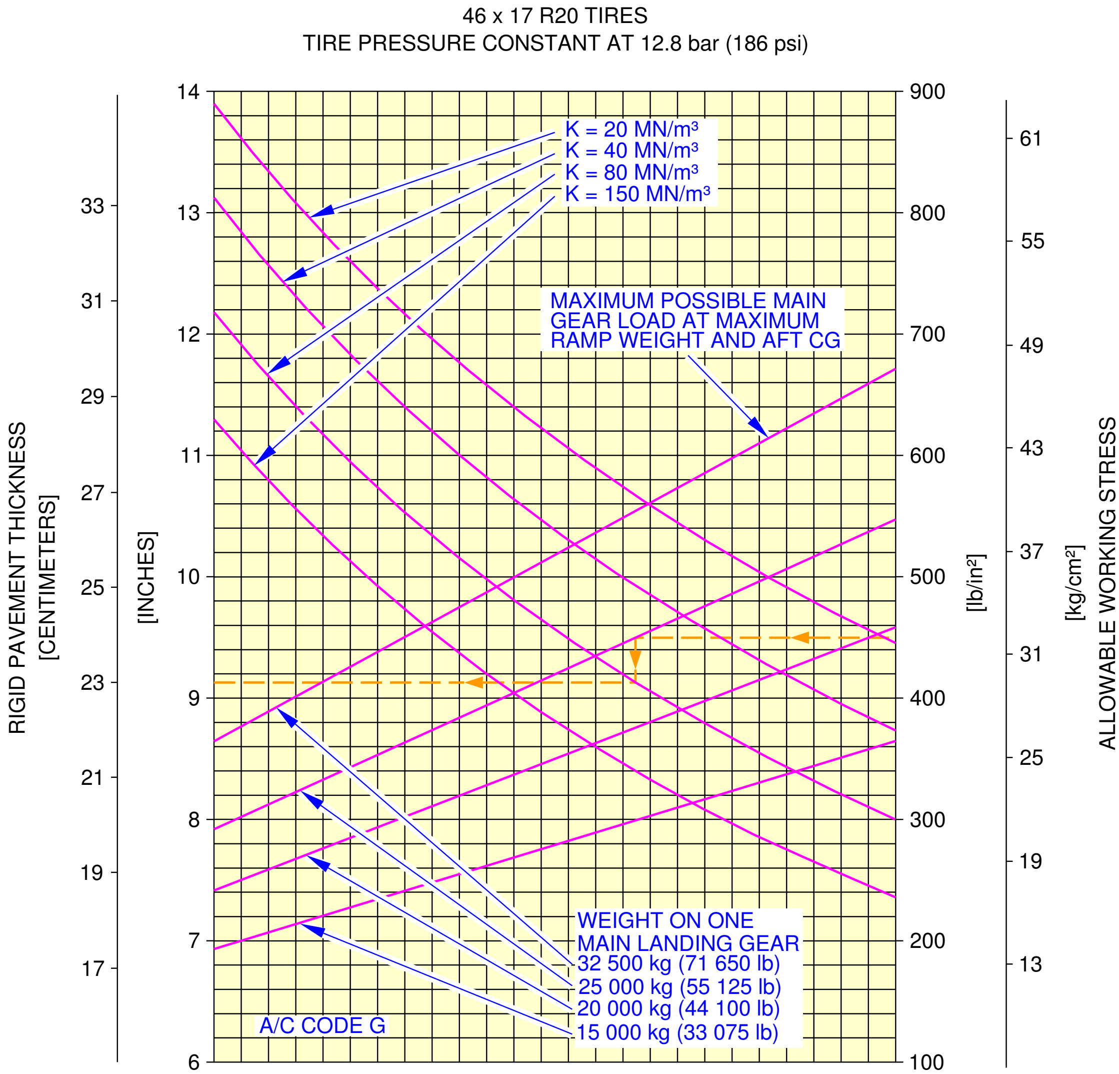
N_AC_070701_1_0780101_01_00

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-078-A01

**ON A/C A320-200



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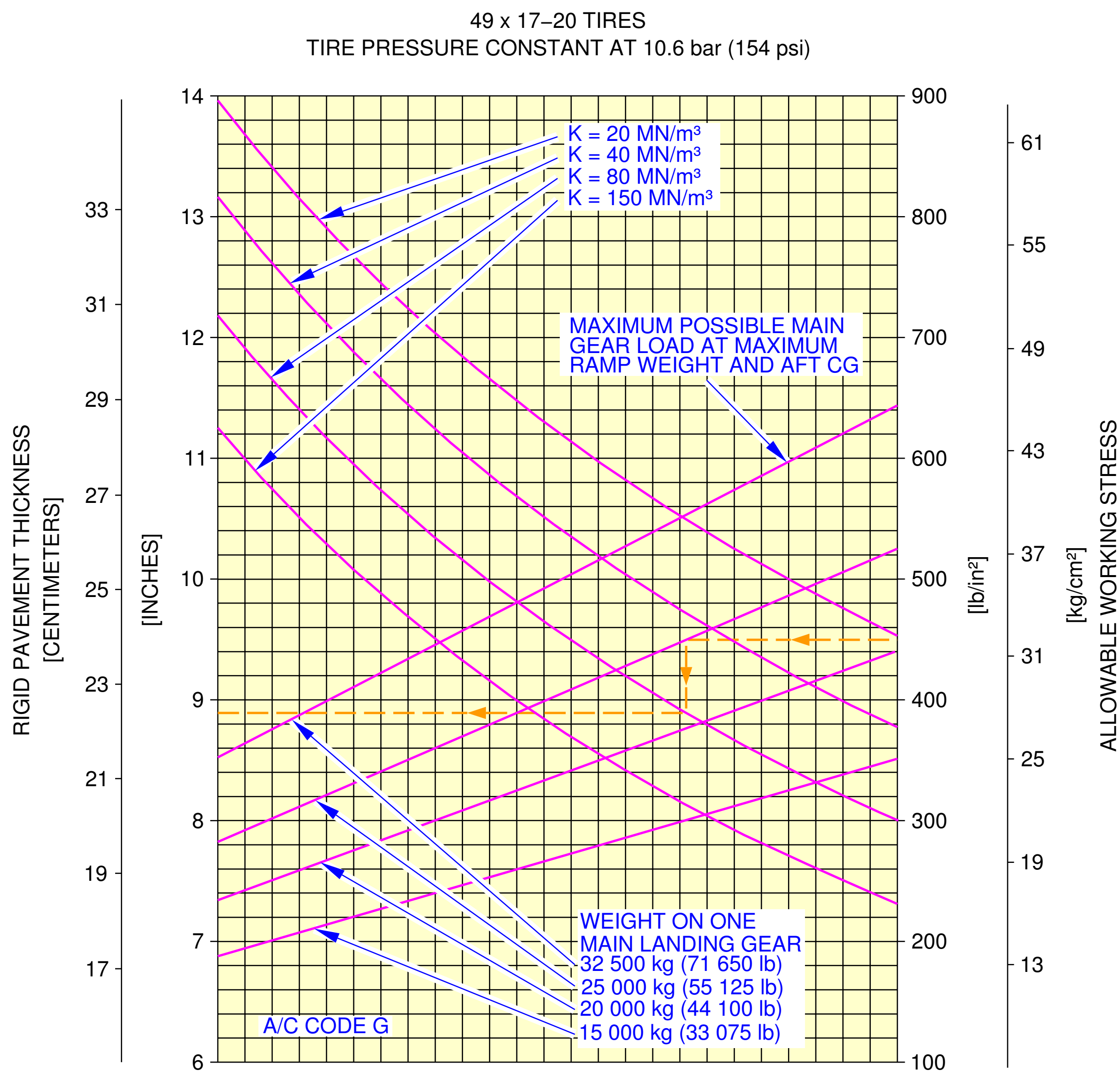
Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-079-A01

**ON A/C A320-200



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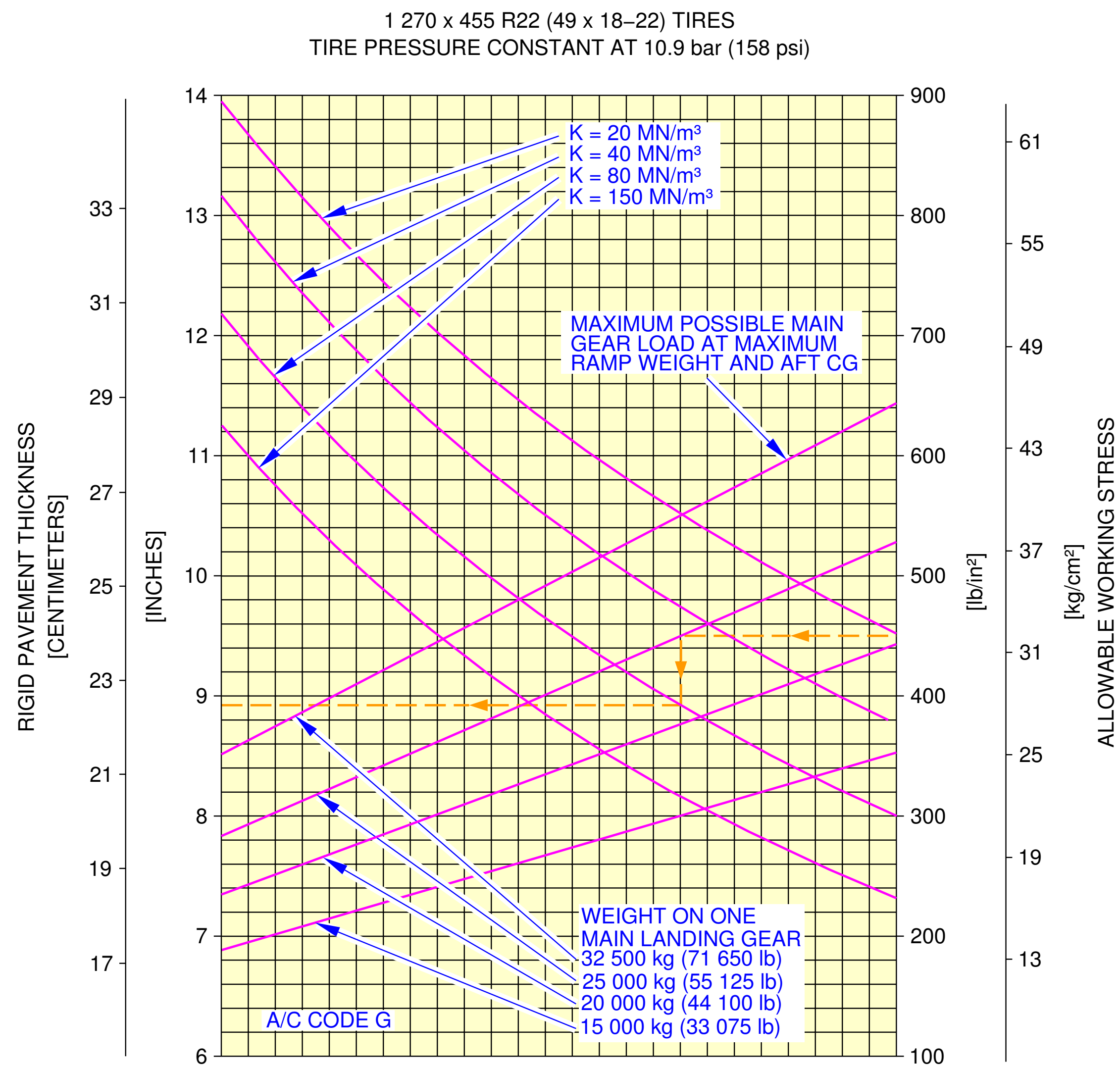
N_AC_070701_1_0800101_01_00

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-080-A01

**ON A/C A320-200



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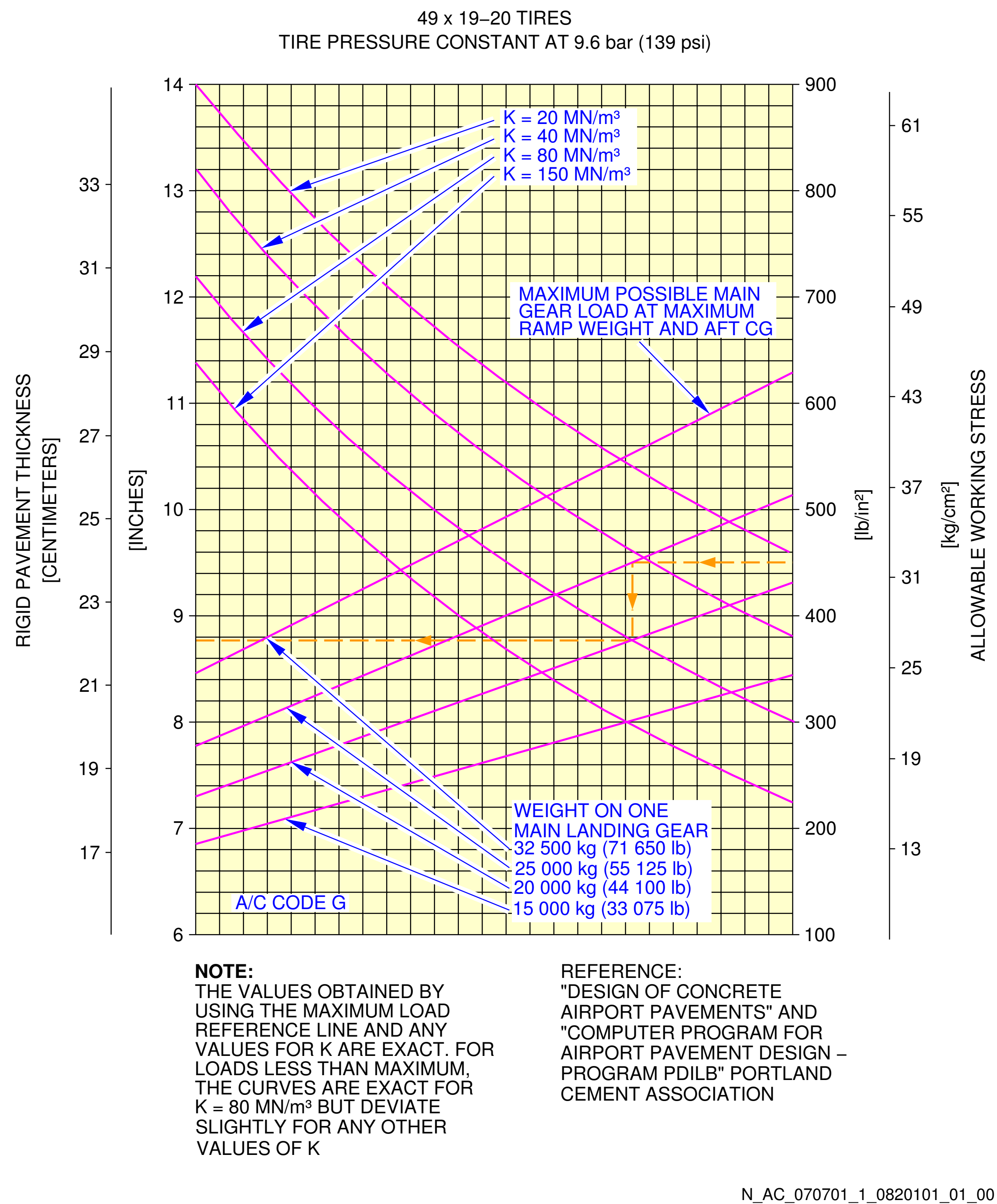
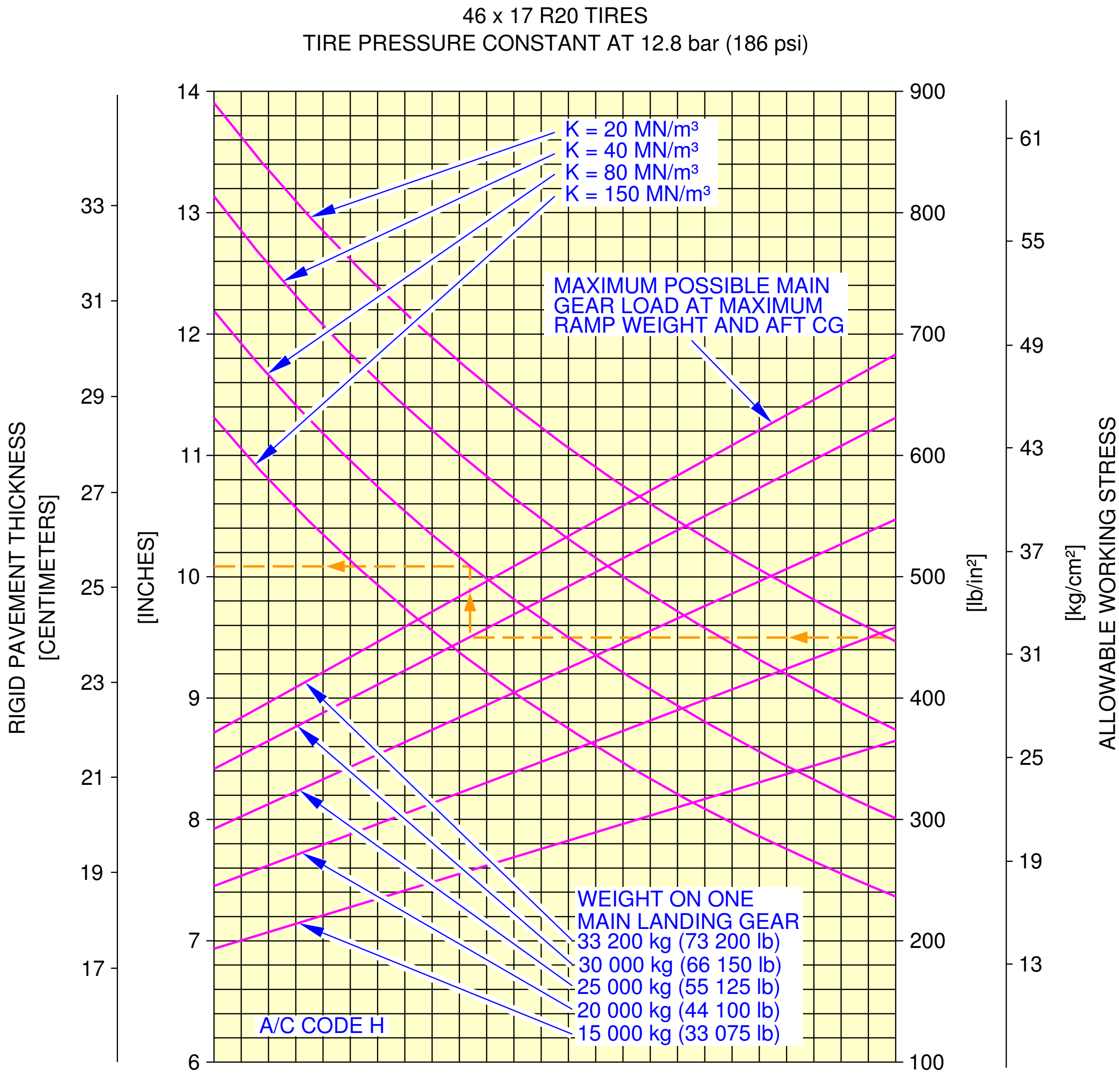
Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-081-A01

**ON A/C A320-200



Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-082-A01

**ON A/C A320-200



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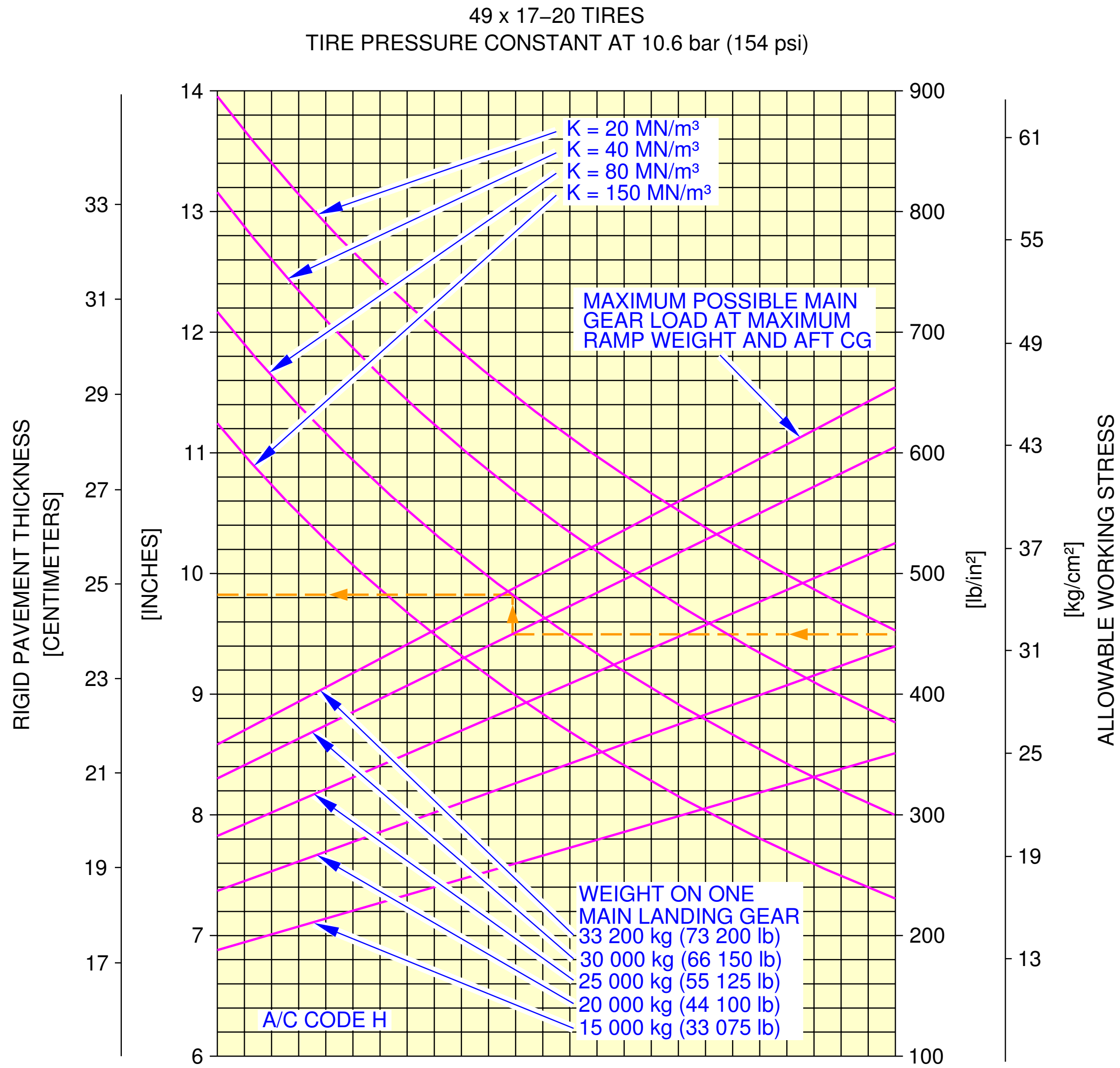
Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-083-A01

**ON A/C A320-200



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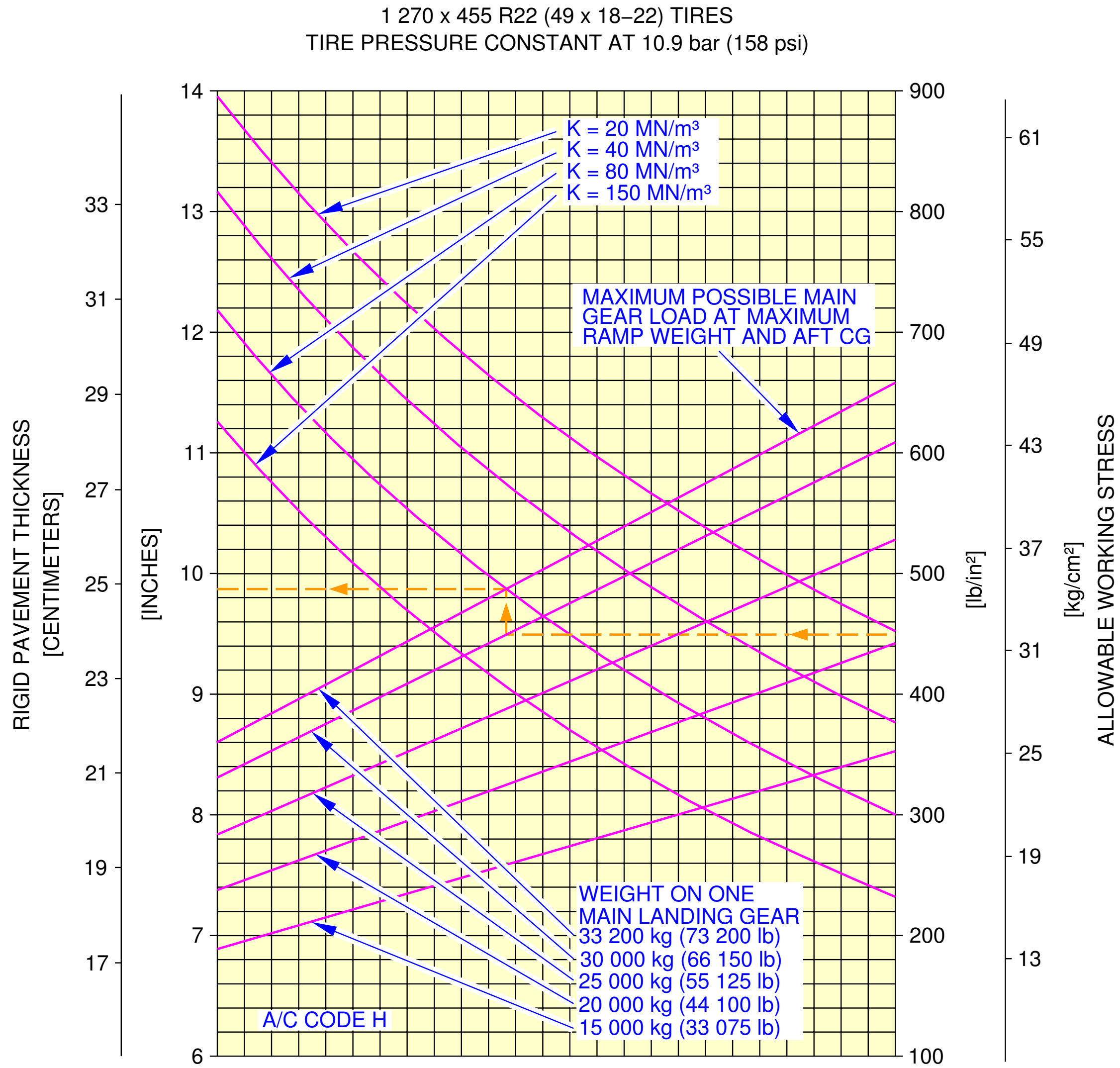
N_AC_070701_1_0840101_01_00

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-084-A01

**ON A/C A320-200



NOTE:
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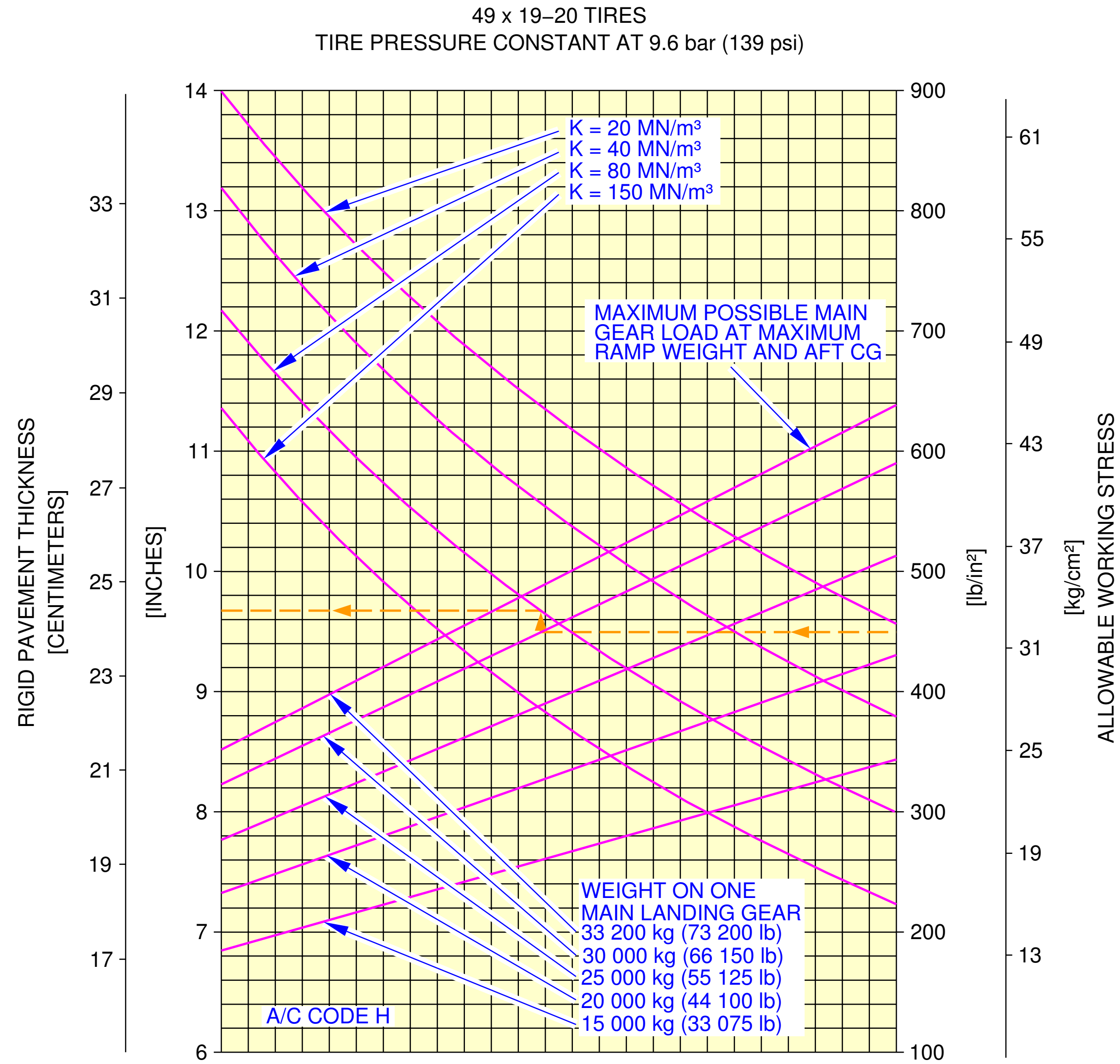
Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-085-A01

**ON A/C A320-200



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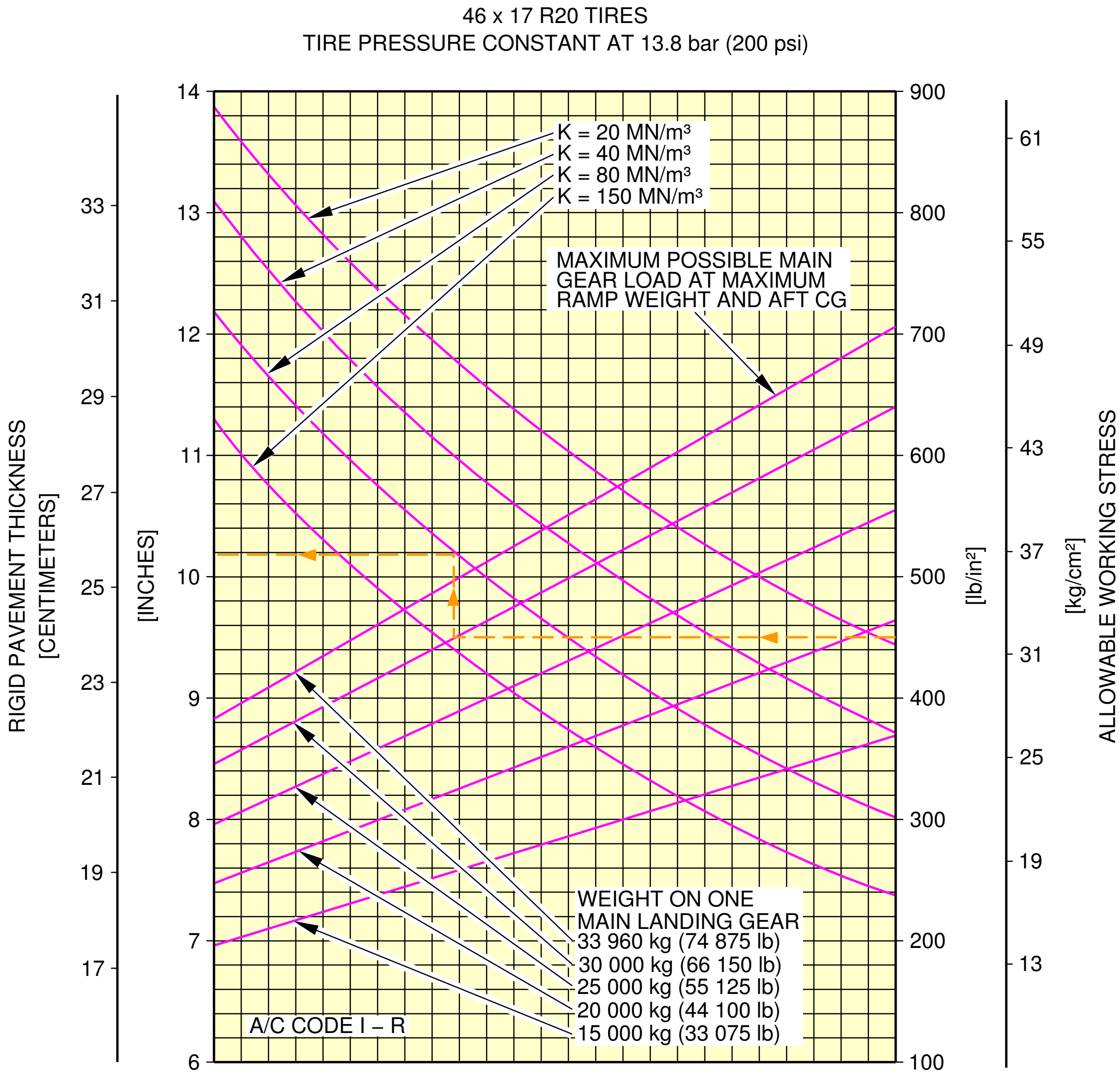
Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-086-A01

**ON A/C A320-200



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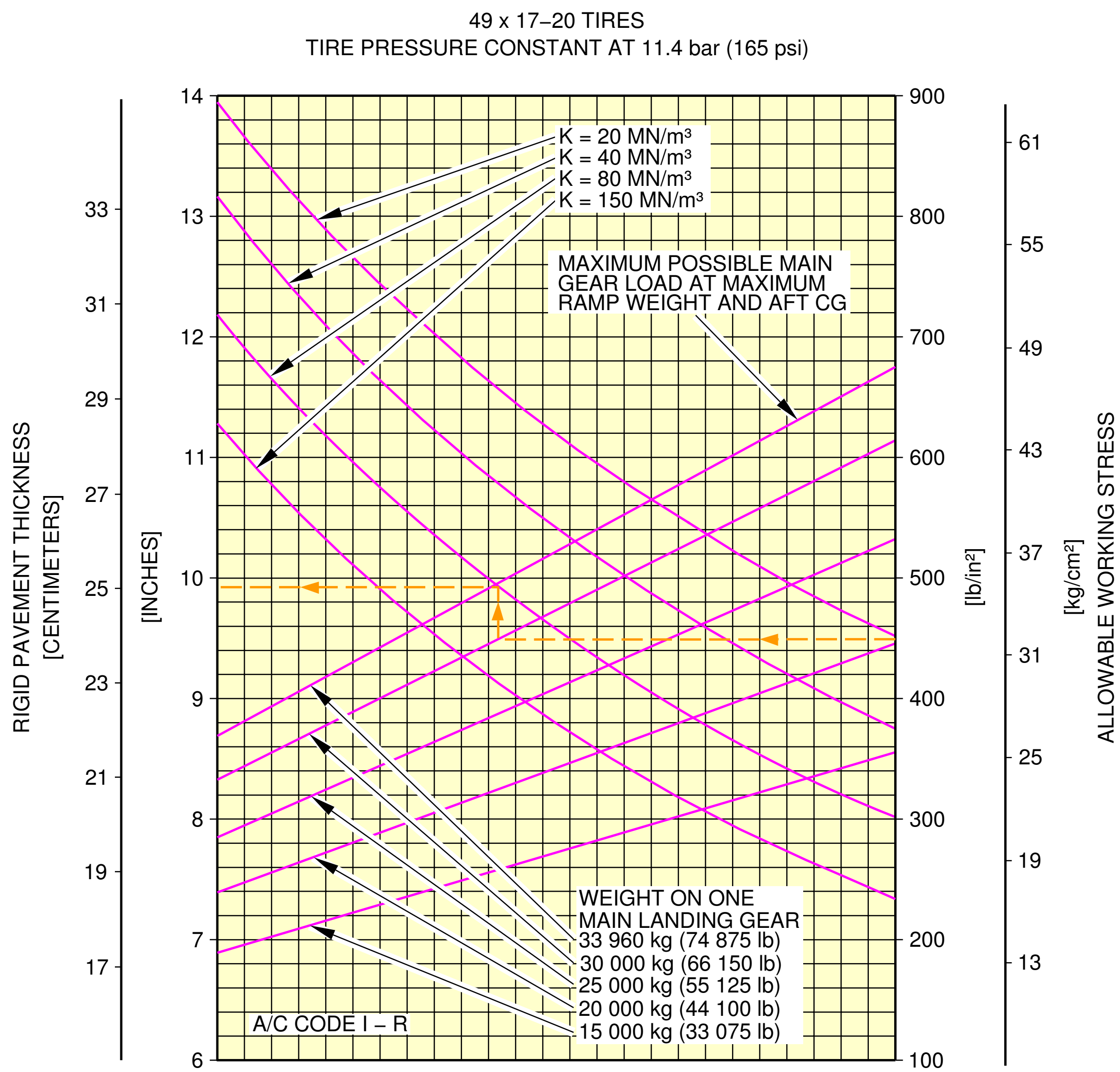
N_AC_070701_1_0870101_01_01

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-087-A01

**ON A/C A320-200



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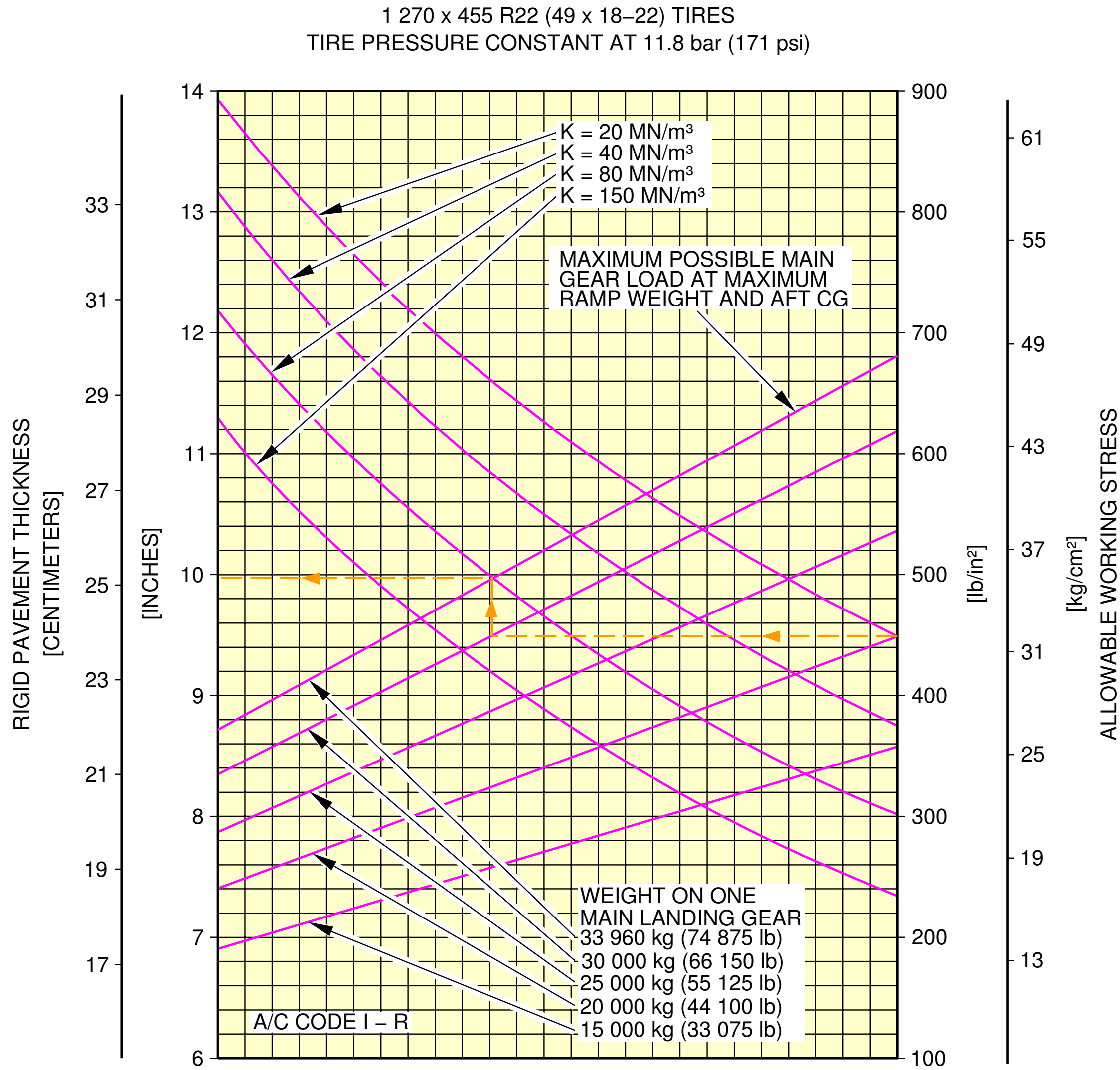
Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-088-A01

**ON A/C A320-200



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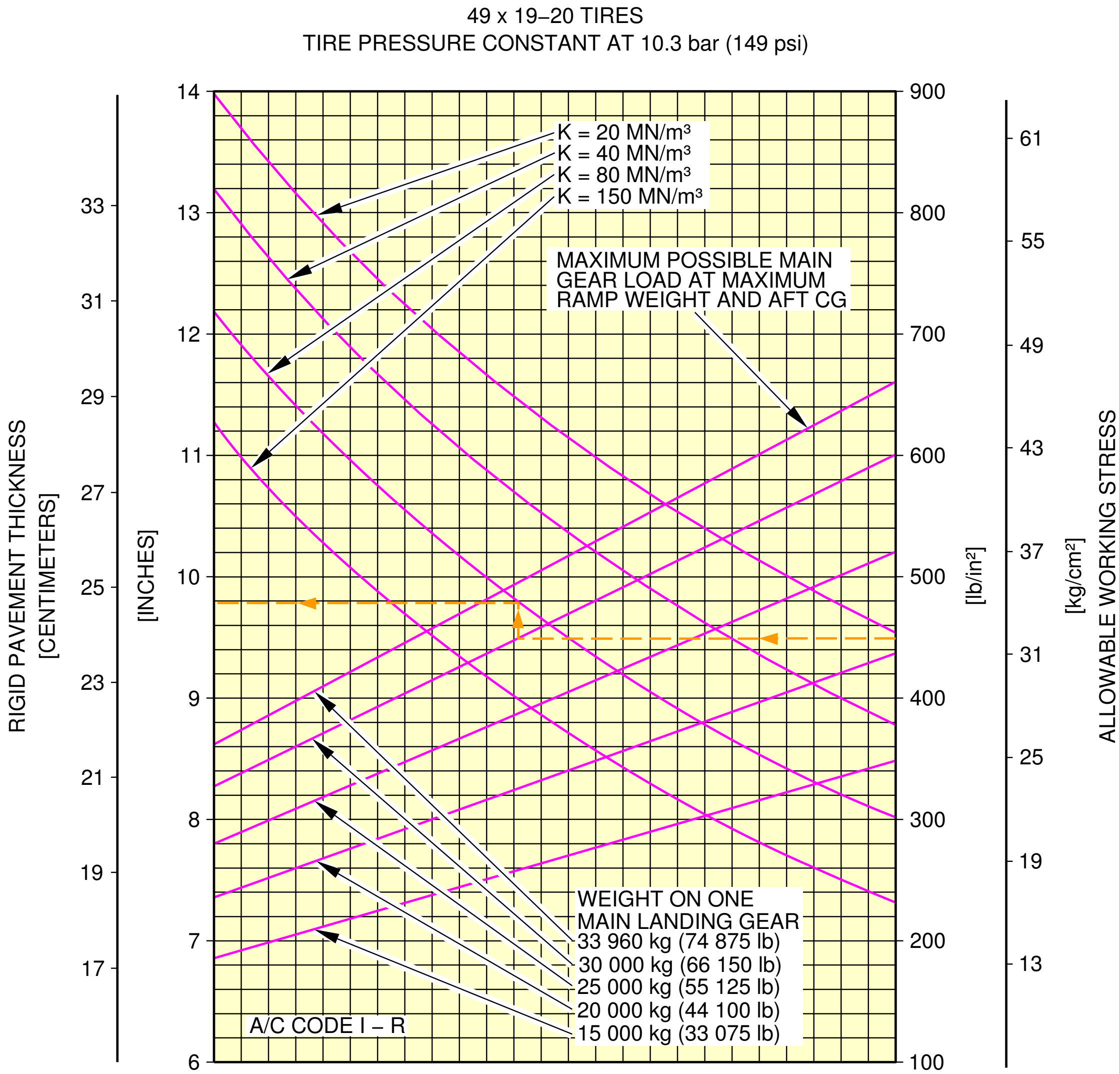
N_AC_070701_1_0890101_01_01

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-089-A01

**ON A/C A320-200



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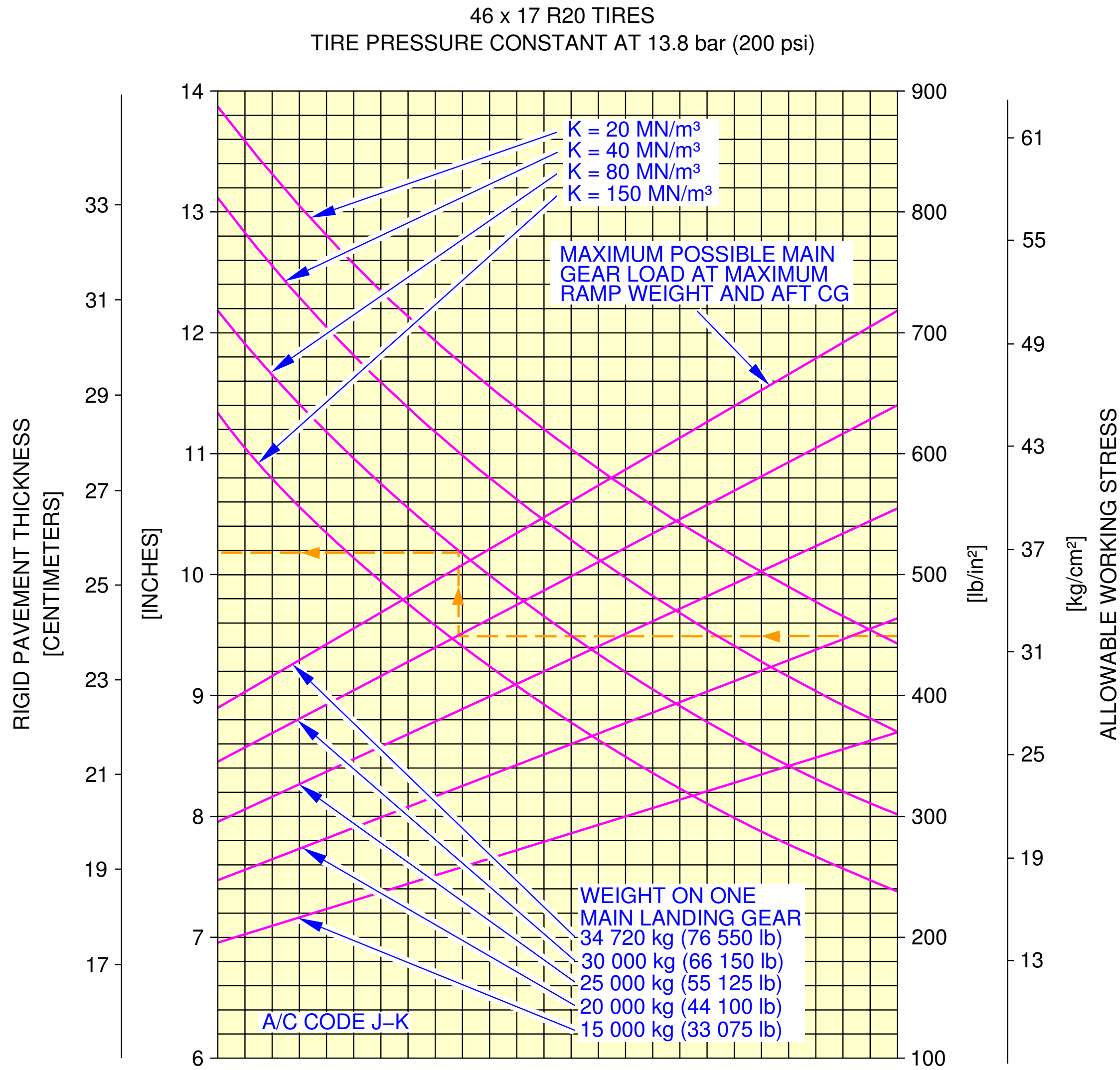
N_AC_070701_1_0900101_01_01

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-090-A01

**ON A/C A320-200



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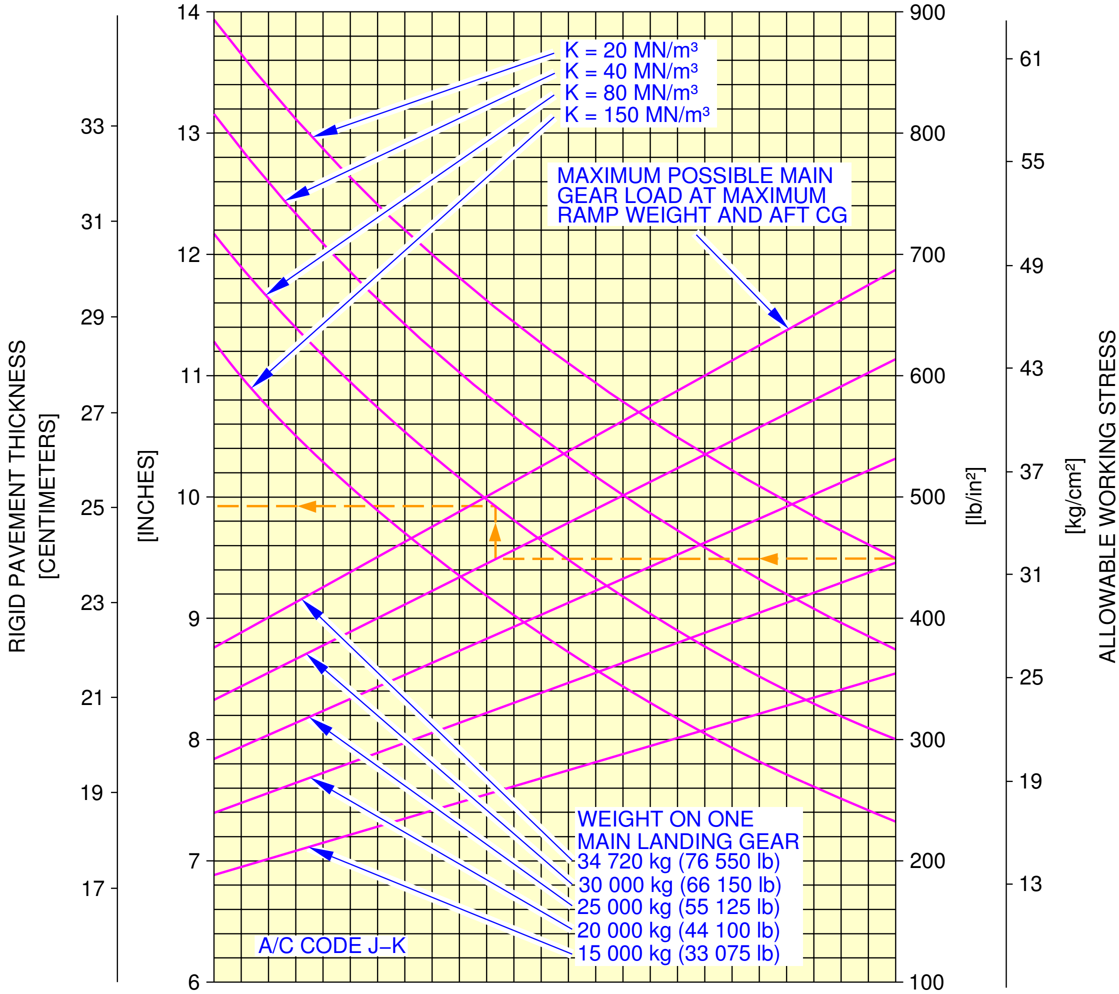
Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-091-A01

**ON A/C A320-200



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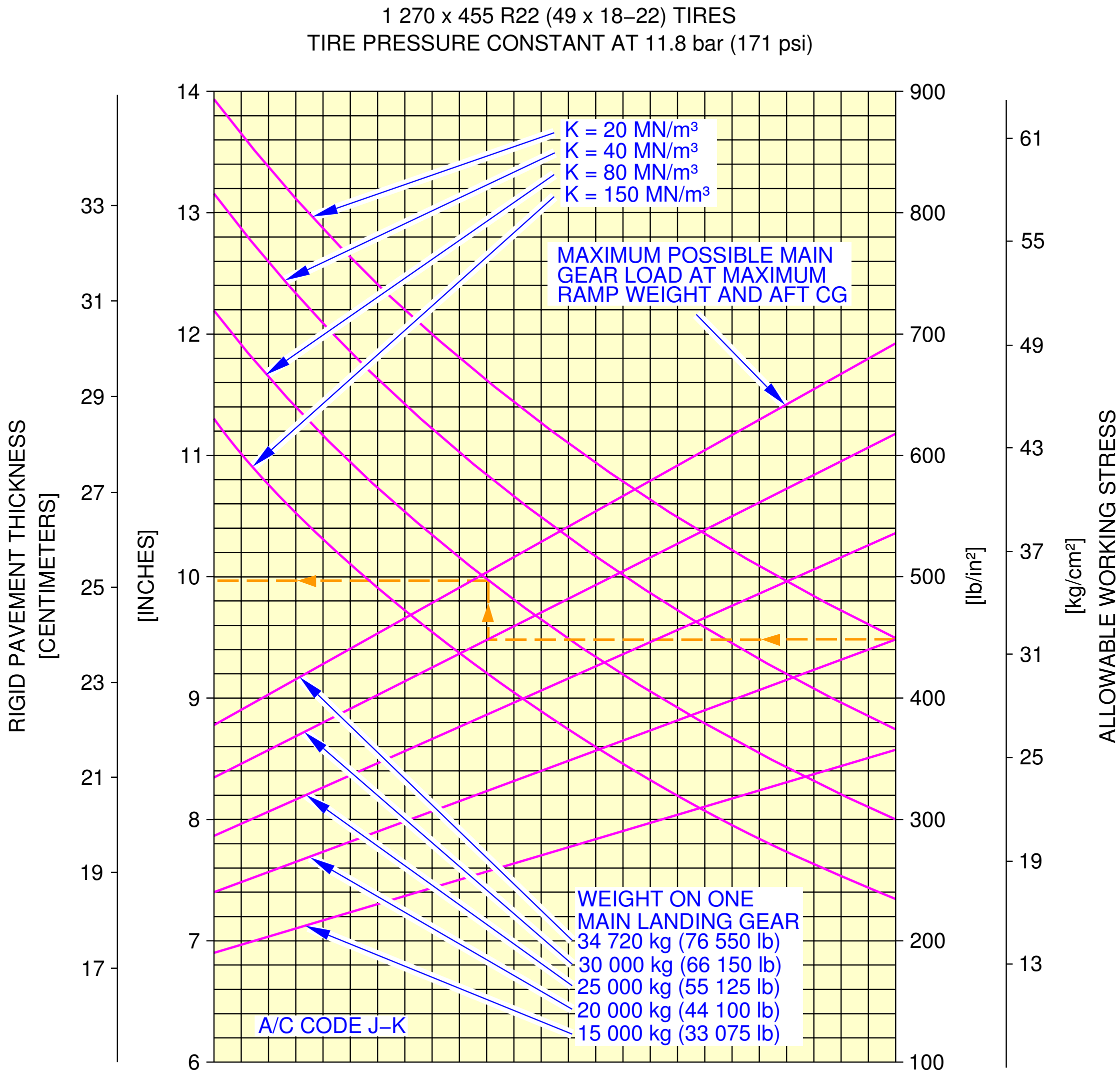
N_AC_070701_1_0920101_01_00

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-092-A01

**ON A/C A320-200



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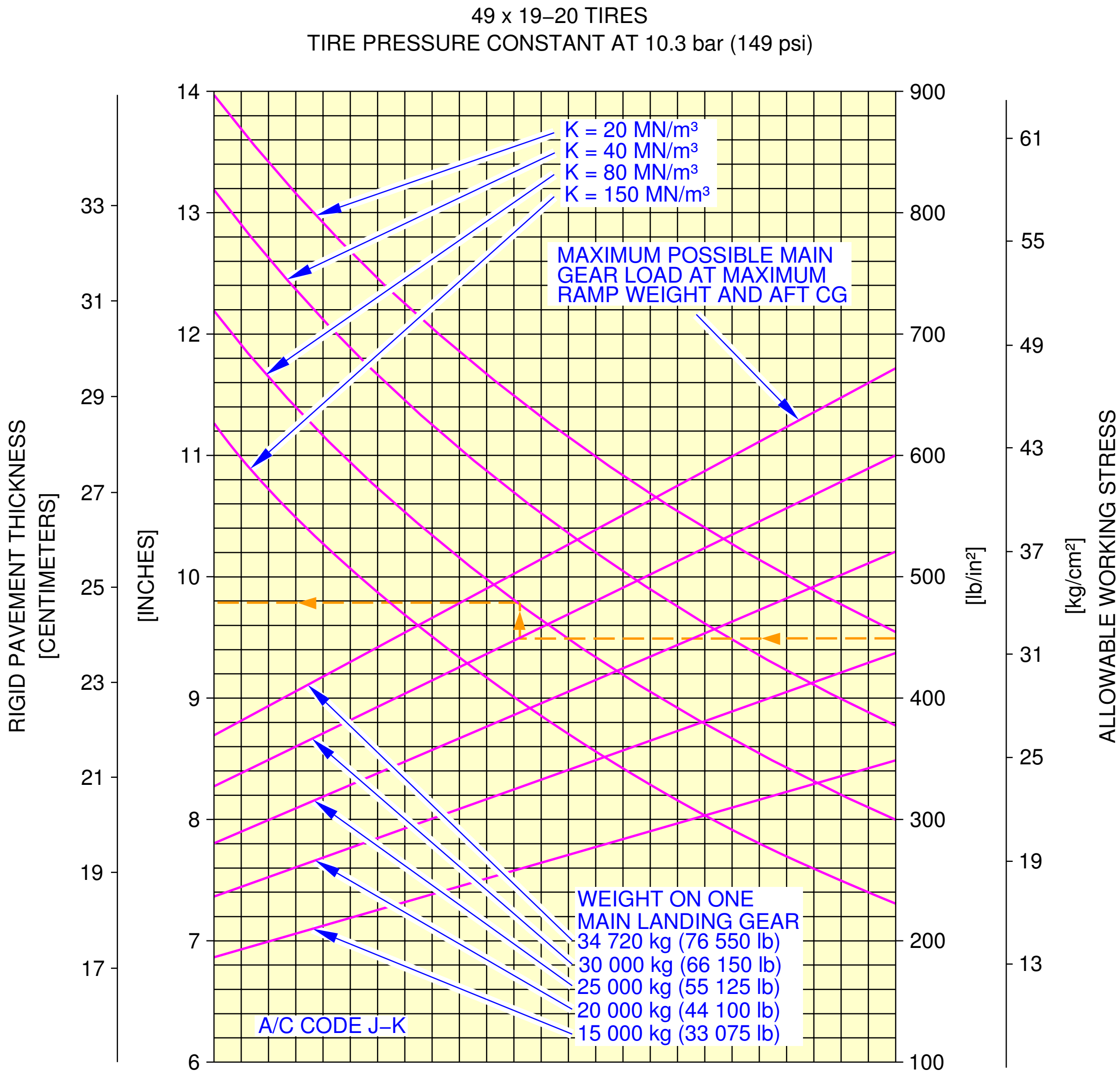
N_AC_070701_1_0930101_01_00

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-093-A01

**ON A/C A320-200



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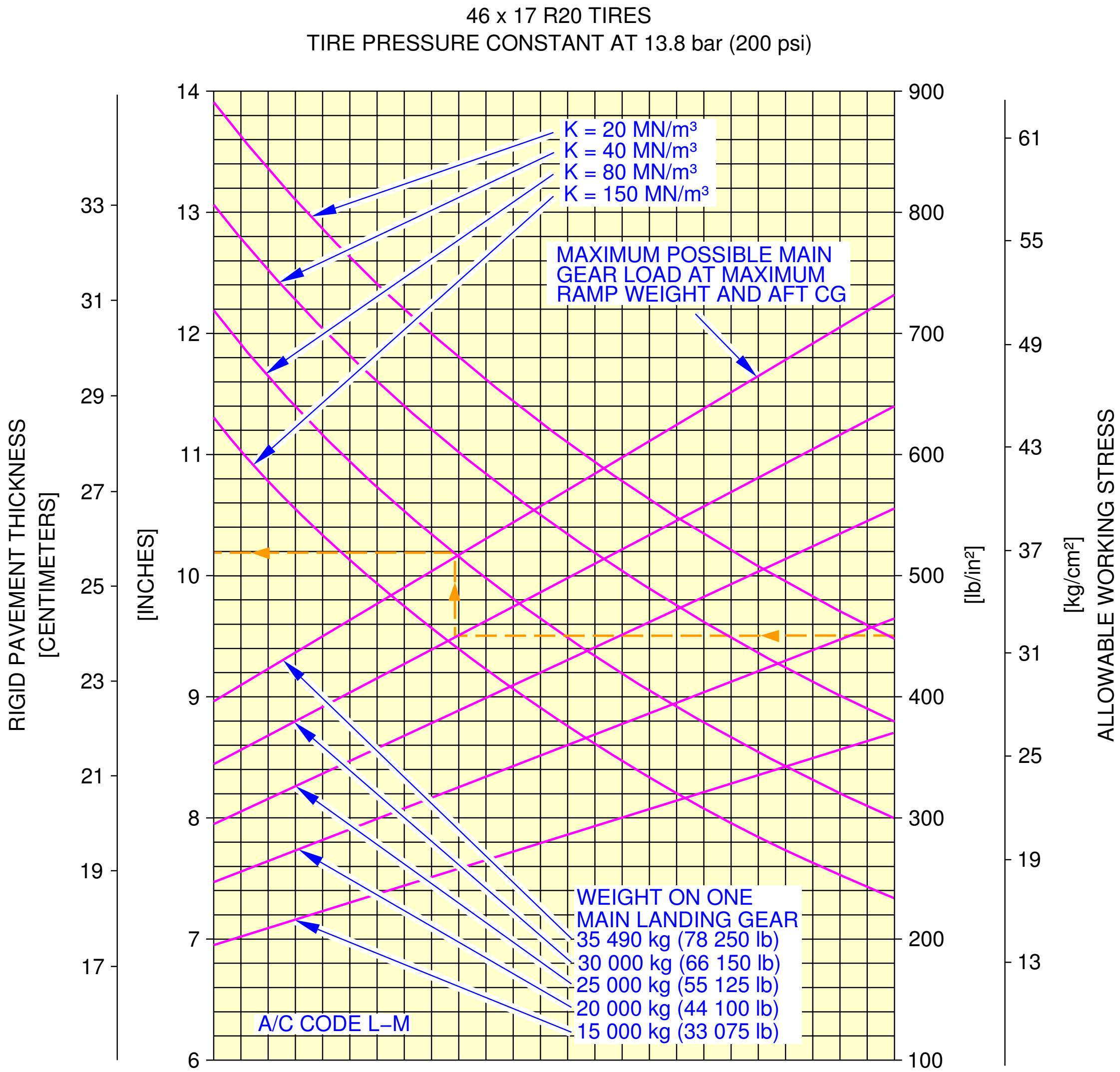
N_AC_070701_1_0940101_01_00

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-094-A01

**ON A/C A320-200



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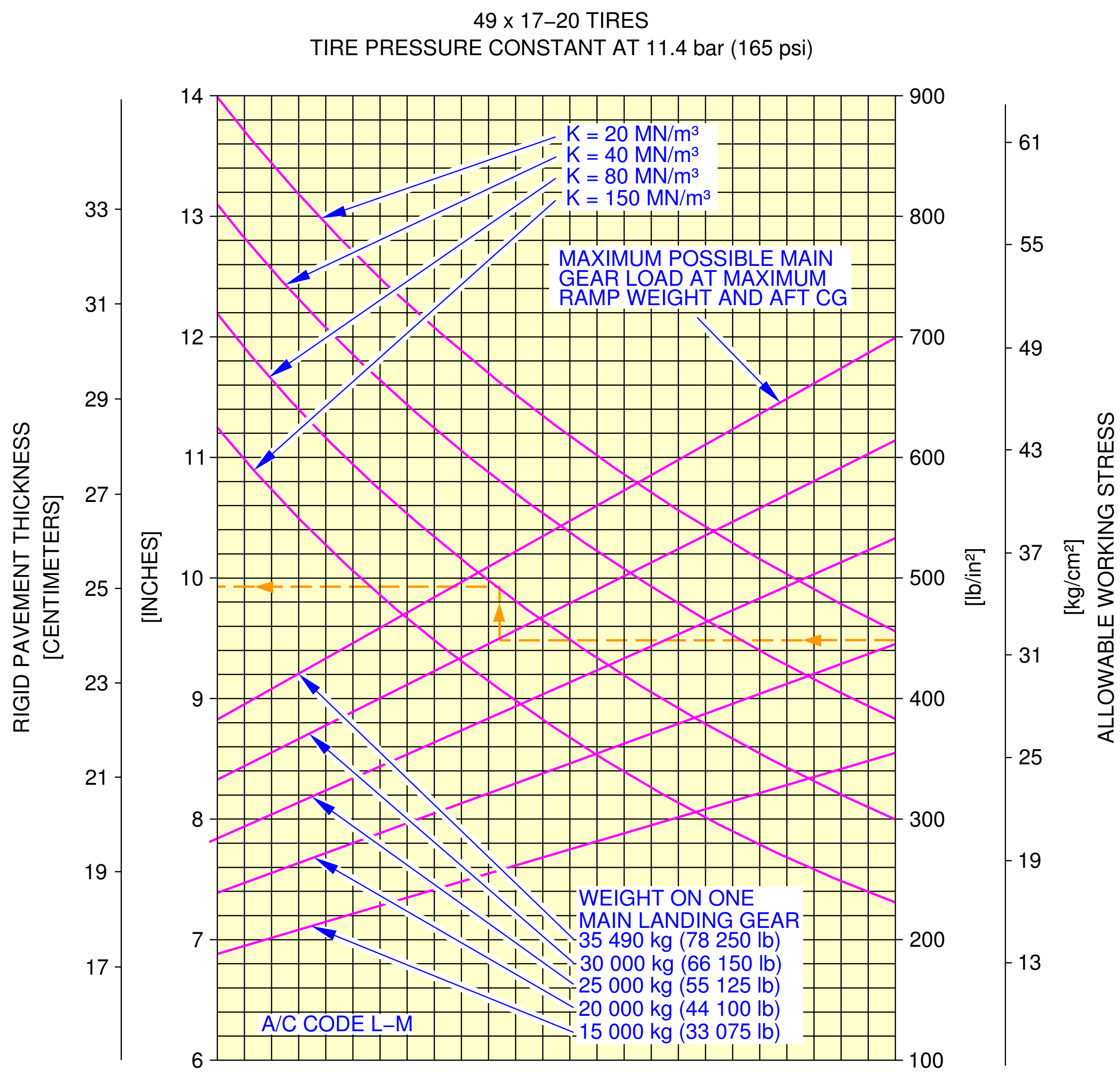
N_AC_070701_1_0950101_01_00

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-095-A01

**ON A/C A320-200



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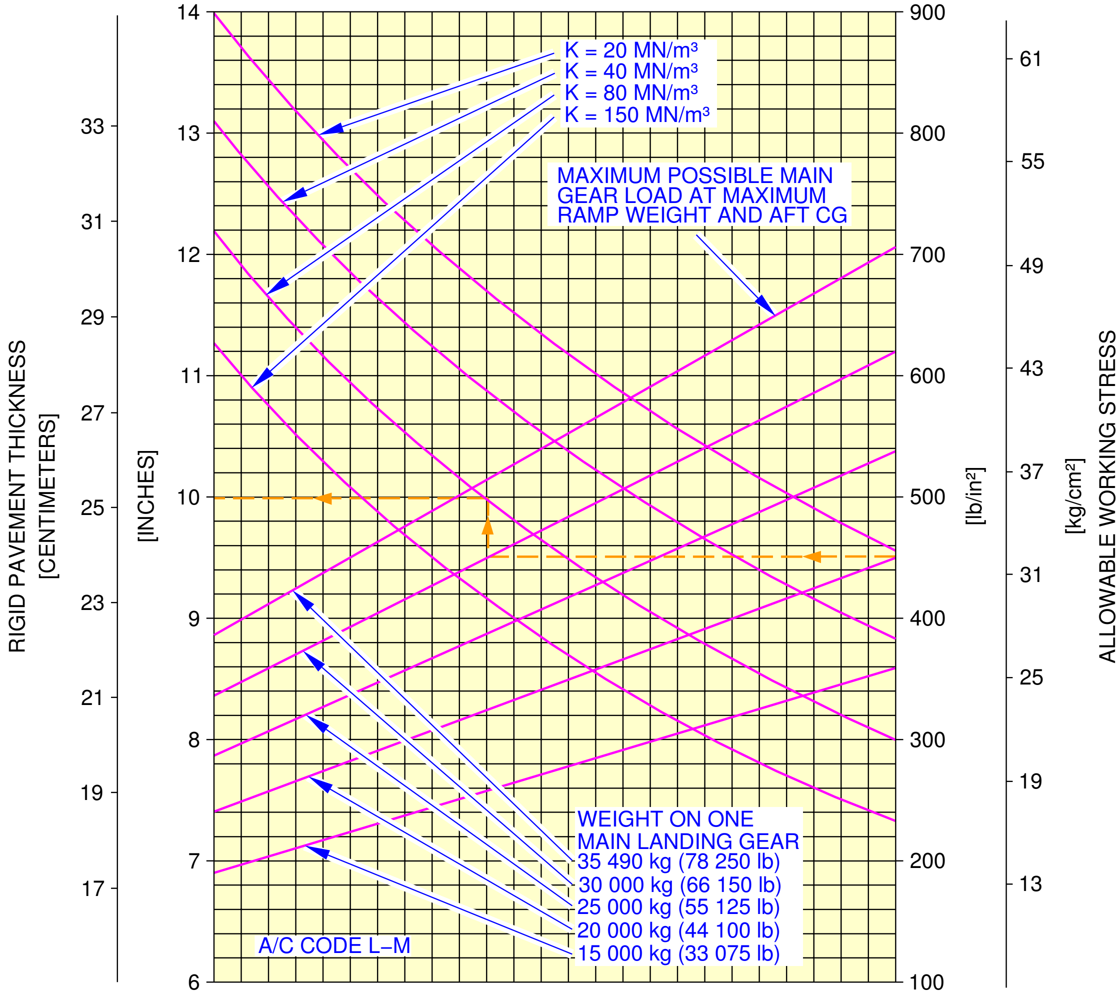
N_AC_070701_1_0960101_01_00

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-096-A01

**ON A/C A320-200



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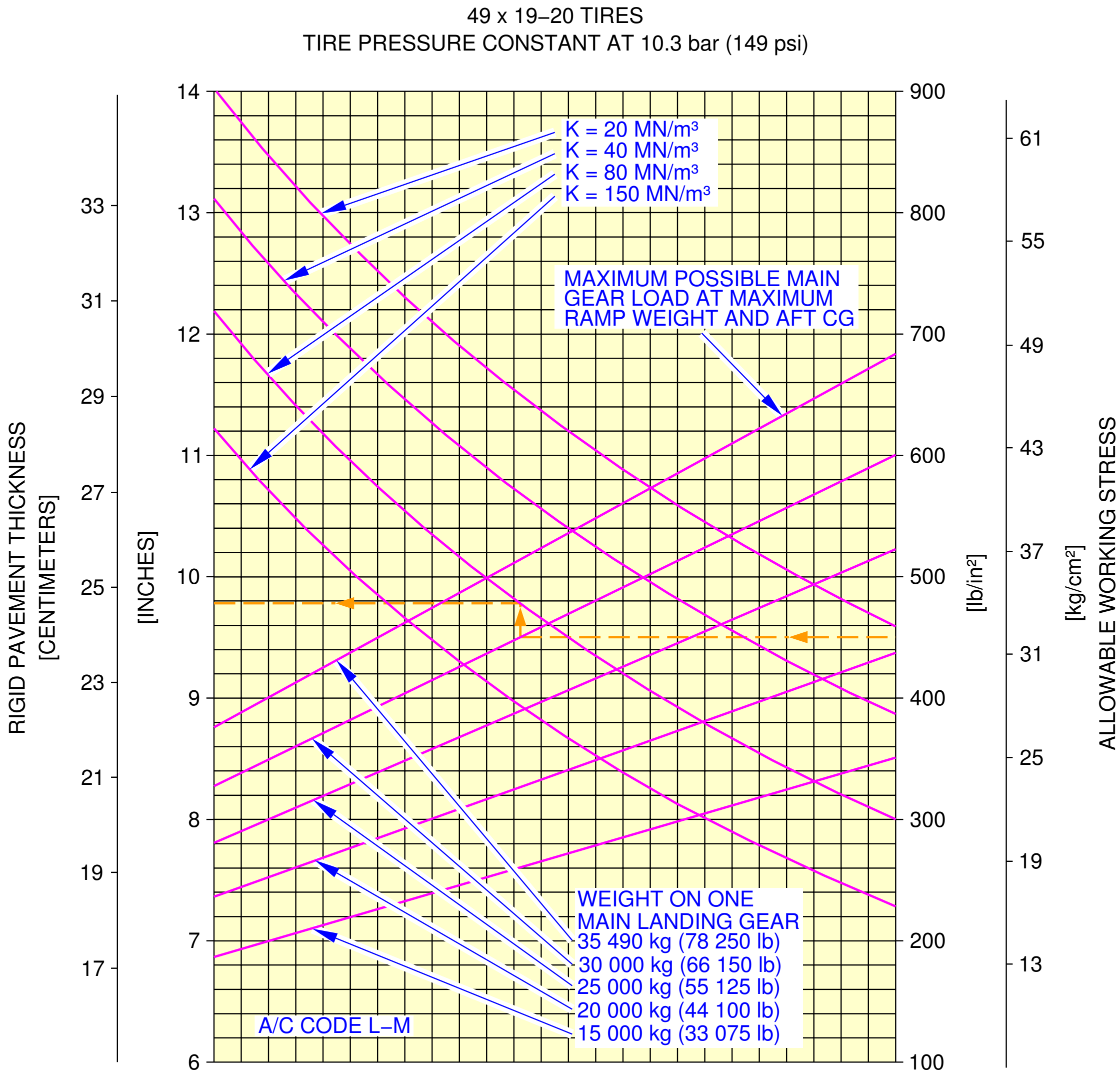
N_AC_070701_1_0980101_01_00

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-098-A01

**ON A/C A320-200



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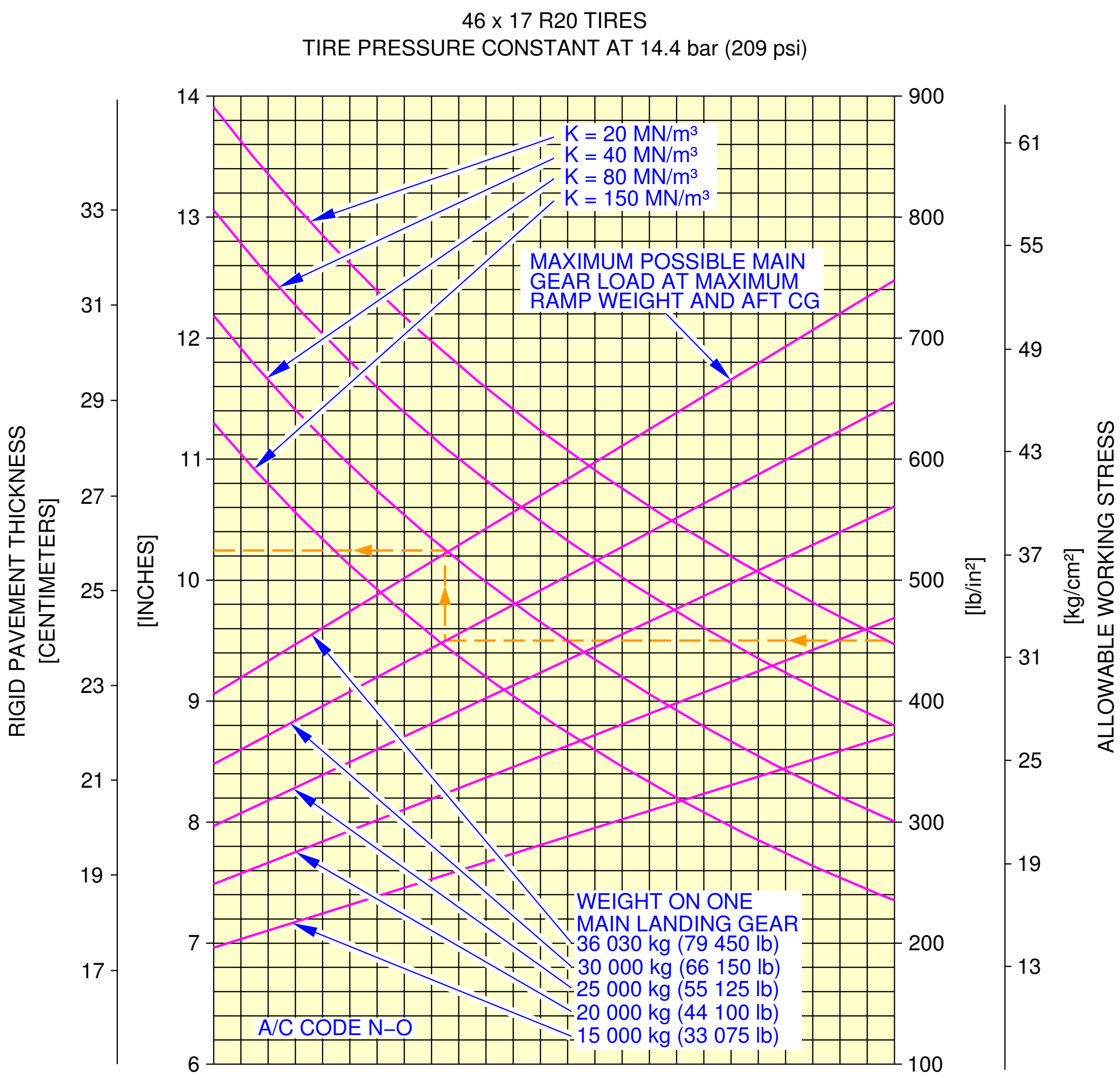
N_AC_070701_1_0990101_01_00

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-099-A01

**ON A/C A320-200



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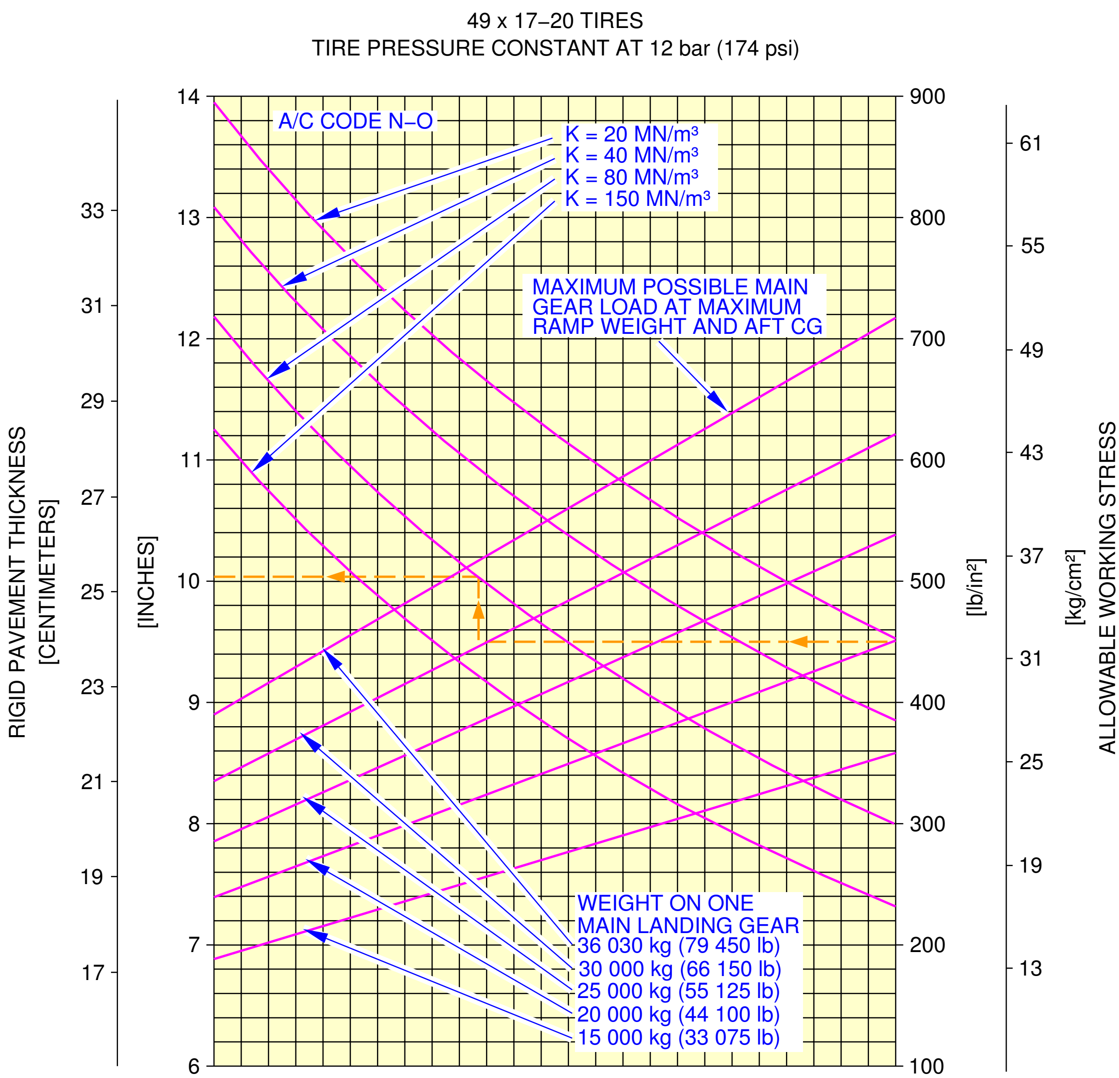
Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-100-A01

**ON A/C A320-200



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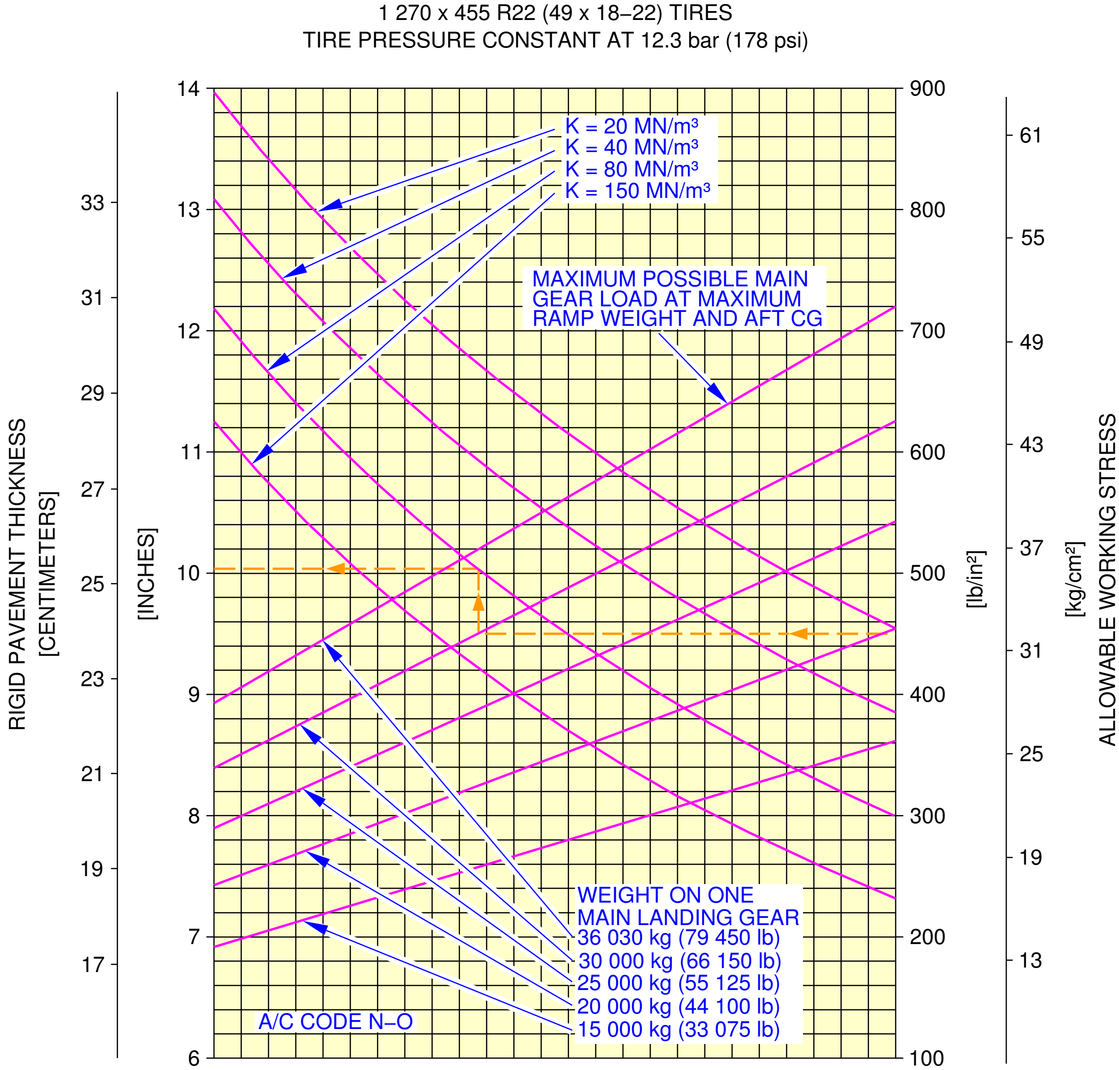
N_AC_070701_1_1010101_01_00

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-101-A01

**ON A/C A320-200



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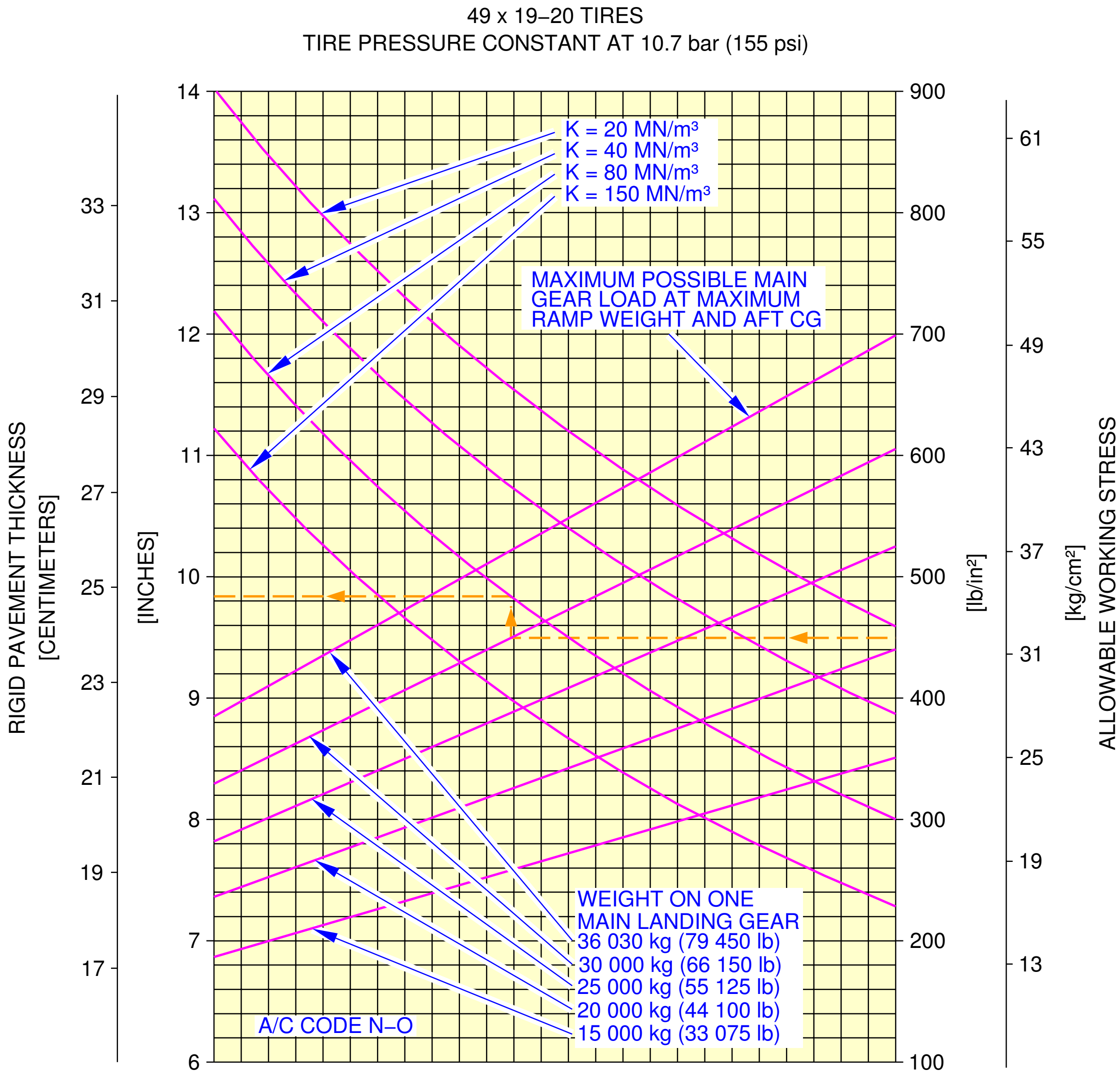
N_AC_070701_1_1020101_01_00

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-102-A01

**ON A/C A320-200



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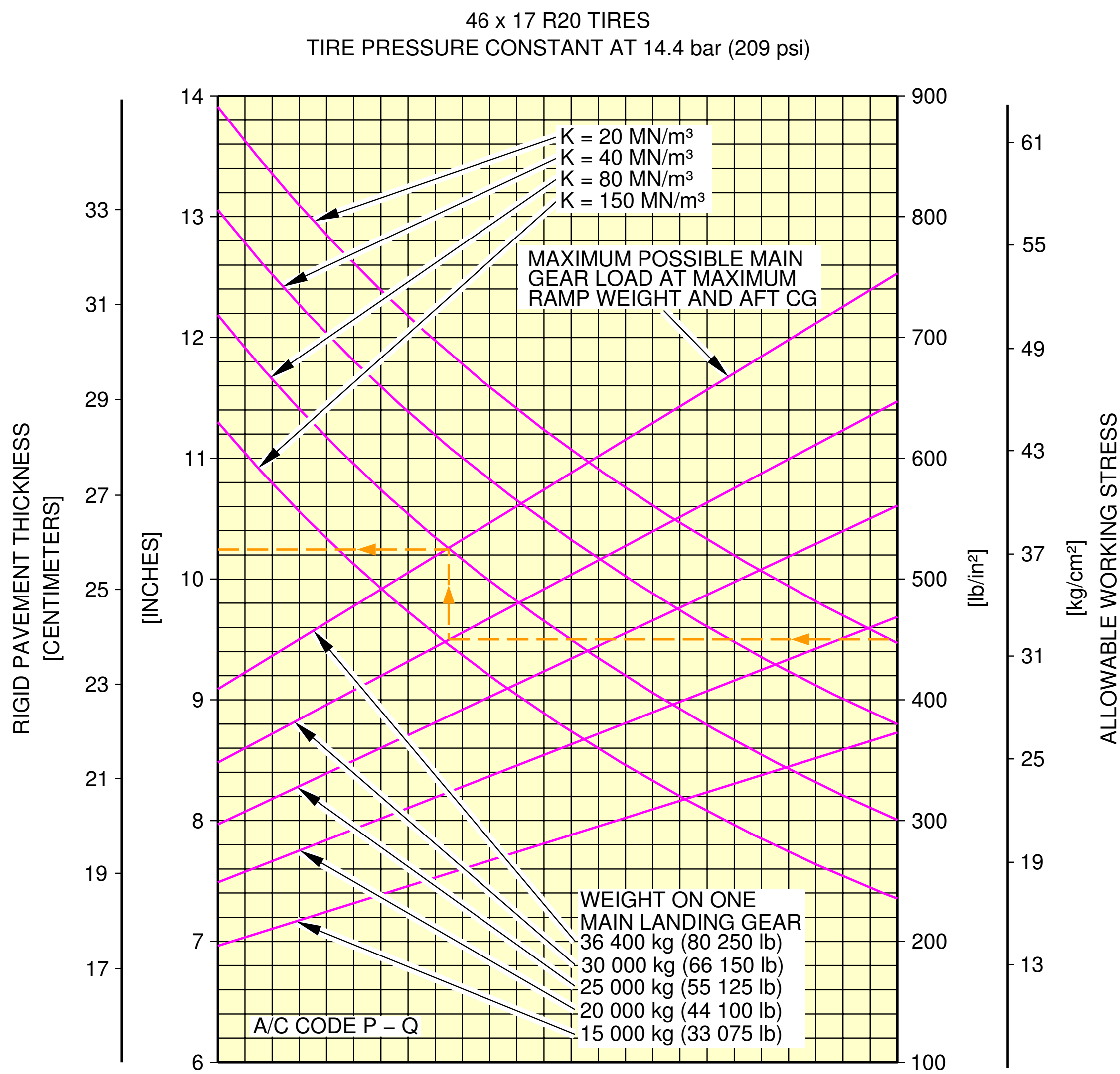
N_AC_070701_1_1030101_01_00

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-103-A01

**ON A/C A320-200



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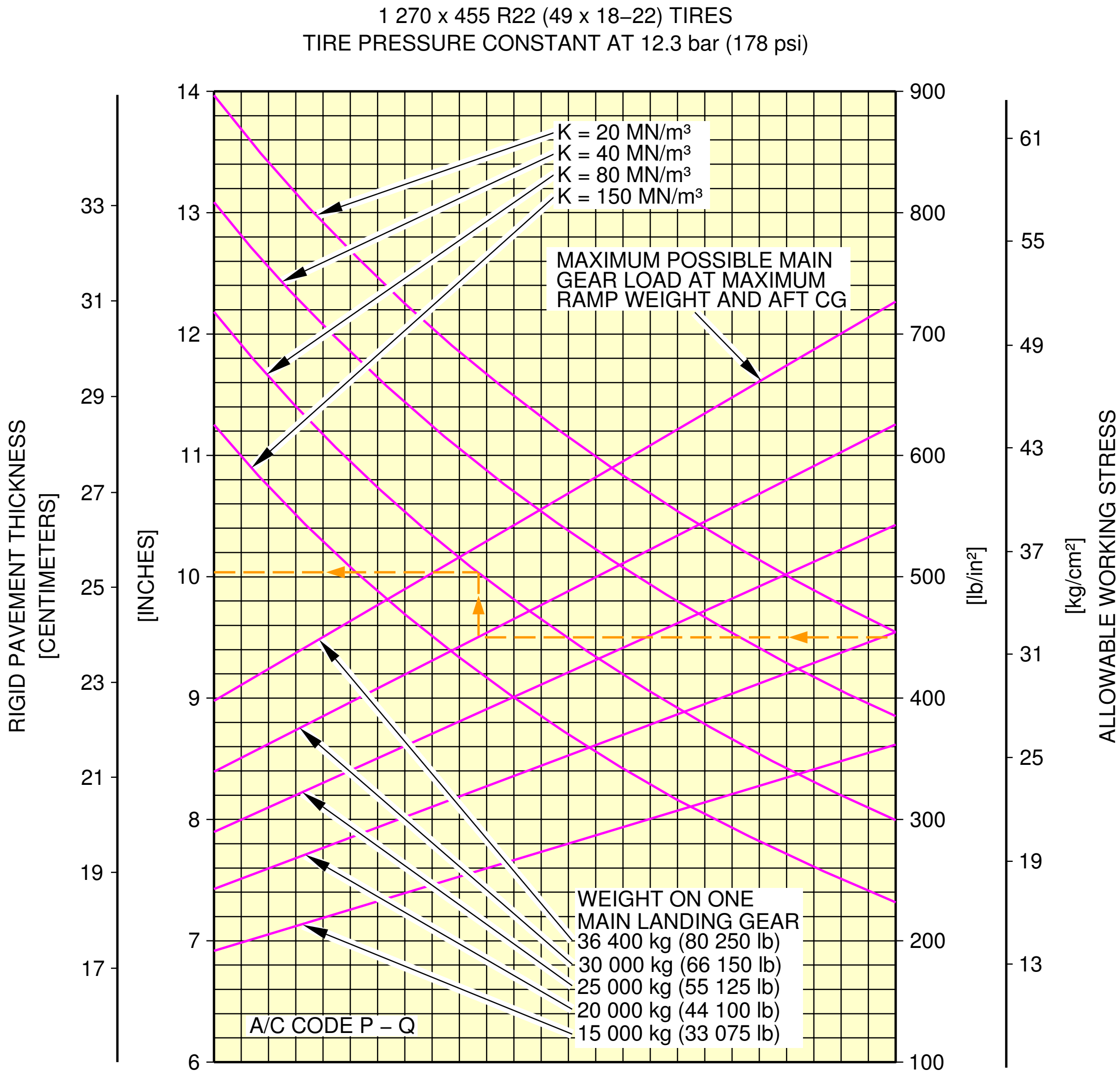
N_AC_070701_1_1040101_01_01

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-104-A01

**ON A/C A320-200



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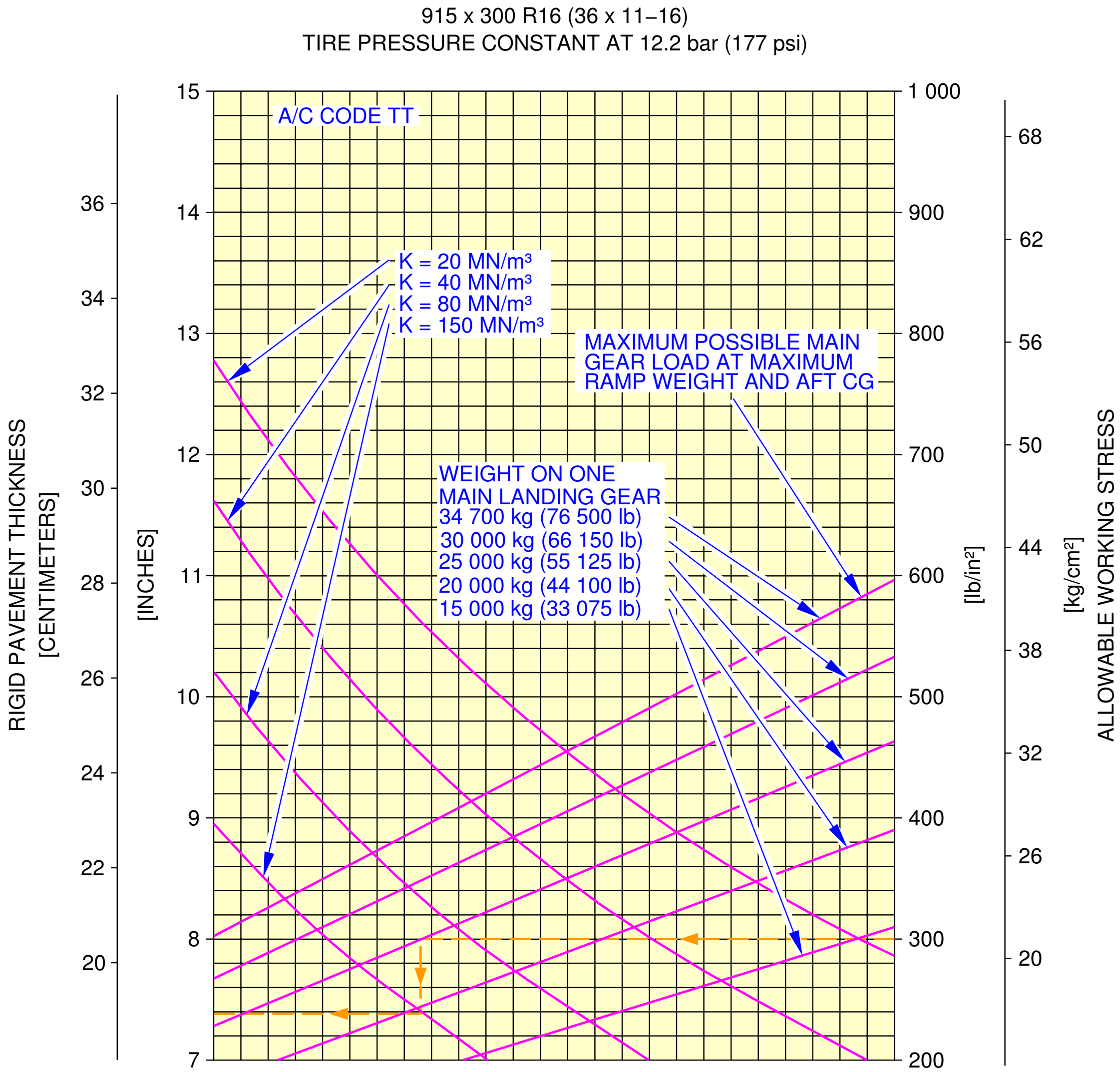
N_AC_070701_1_1060101_01_01

Rigid Pavement Requirements (PCA)
FIGURE-7-7-1-991-106-A01

**ON A/C A320-200



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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 (PCA)
FIGURE-7-7-1-991-108-A01

7-8-1 Radius of Relative Stiffness

****ON A/C A320-200**

Radius of Relative Stiffness

1. This section gives Radius of Relative Stiffness.

**ON A/C A320-200

RADIUS OF RELATIVE STIFFNESS (L)
VALUES IN INCHES

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

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

d	k=75	k=100	k=150	k=200	k=250	k=300	k=350	k=400	k=550
6.0	31.48	29.30	26.47	24.63	23.30	22.26	21.42	20.72	19.13
6.5	33.43	31.11	28.11	26.16	24.74	23.64	22.74	22.00	20.31
7.0	35.34	32.89	29.72	27.65	26.15	24.99	24.04	23.25	21.47
7.5	37.22	34.63	31.29	29.12	27.54	26.32	25.32	24.49	22.61
8.0	39.06	36.35	32.85	30.57	28.91	27.62	26.58	25.70	23.74
8.5	40.88	38.04	34.37	31.99	30.25	28.91	27.81	26.90	24.84
9.0	42.67	39.71	35.88	33.39	31.58	30.17	29.03	28.08	25.93
9.5	44.43	41.35	37.36	34.77	32.89	31.42	30.23	29.24	27.00
10.0	46.18	42.97	38.83	36.14	34.17	32.65	31.42	30.39	28.06
10.5	47.90	44.57	40.28	37.48	35.45	33.87	32.59	31.52	29.11
11.0	49.60	46.16	41.71	38.81	36.71	35.07	33.75	32.64	30.14
11.5	51.28	47.72	43.12	40.13	37.95	36.26	34.89	33.74	32.16
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

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Radius of Relative Stiffness
(Reference: Portland Cement Association)
FIGURE-7-8-1-991-003-A01

7-8-2 Rigid Pavement Requirements - LCN Conversion

****ON A/C A320-200**

Rigid Pavement Requirements - LCN Conversion

1. General

   In order to determine the airplane weight that can be accommodated on a particular Rigid Pavement, both the LCN of the pavement and the Radius of Relative Stiffness (L) must be known.

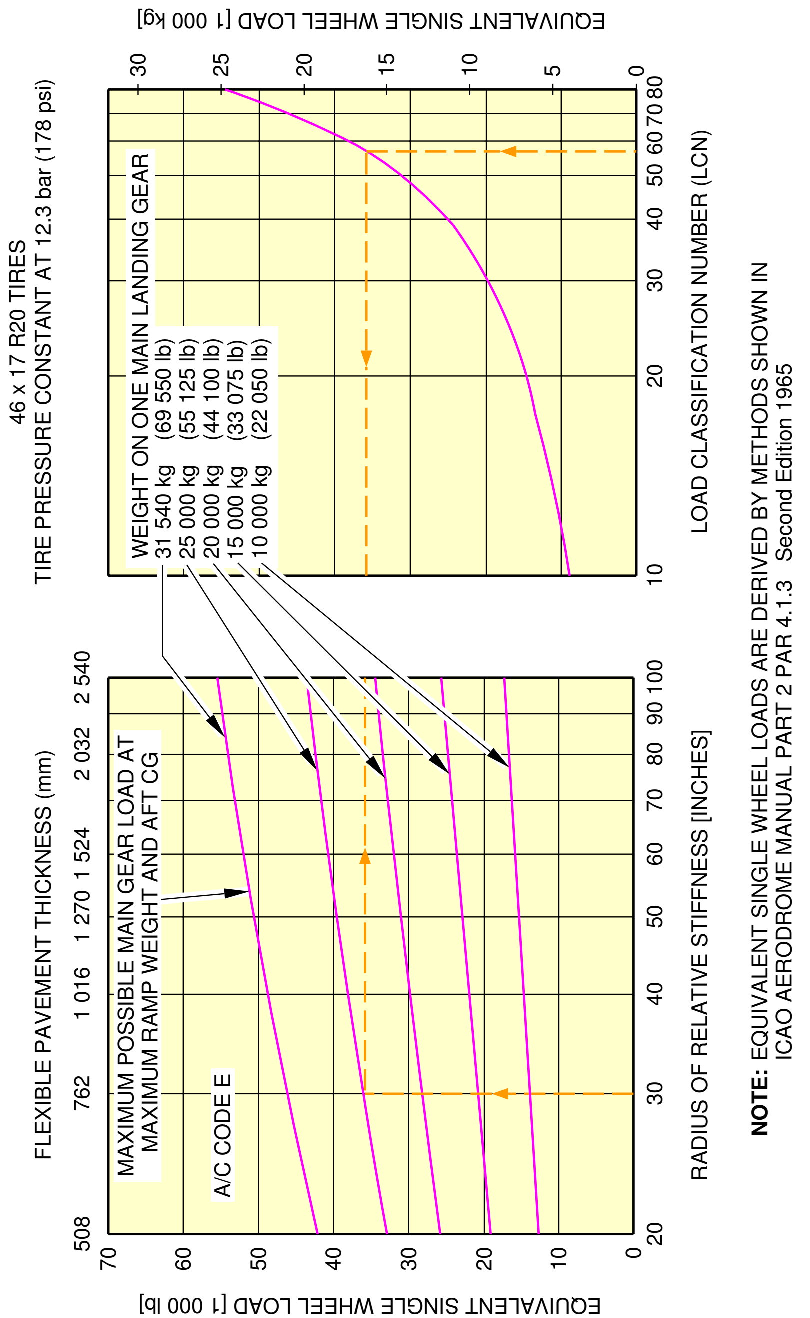
   In the example shown in this section Rigid Pavement Requirements - LCN Conversion, A/C Code E (Main Gear Tire Size 46 x 17 R20 (46 x 16 - 20), inflated at 12.3 bar (178 psi)) for:

   - The Radius of Relative Stiffness is shown at 762 mm (30 in) with an LCN of 57.

   For these conditions, the weight on one Main Landing Gear is 25 000 kg (55 125 lb).

   NOTE : For A/C Code definition, refer to chapter 7-1-0.

**ON A/C A320-200



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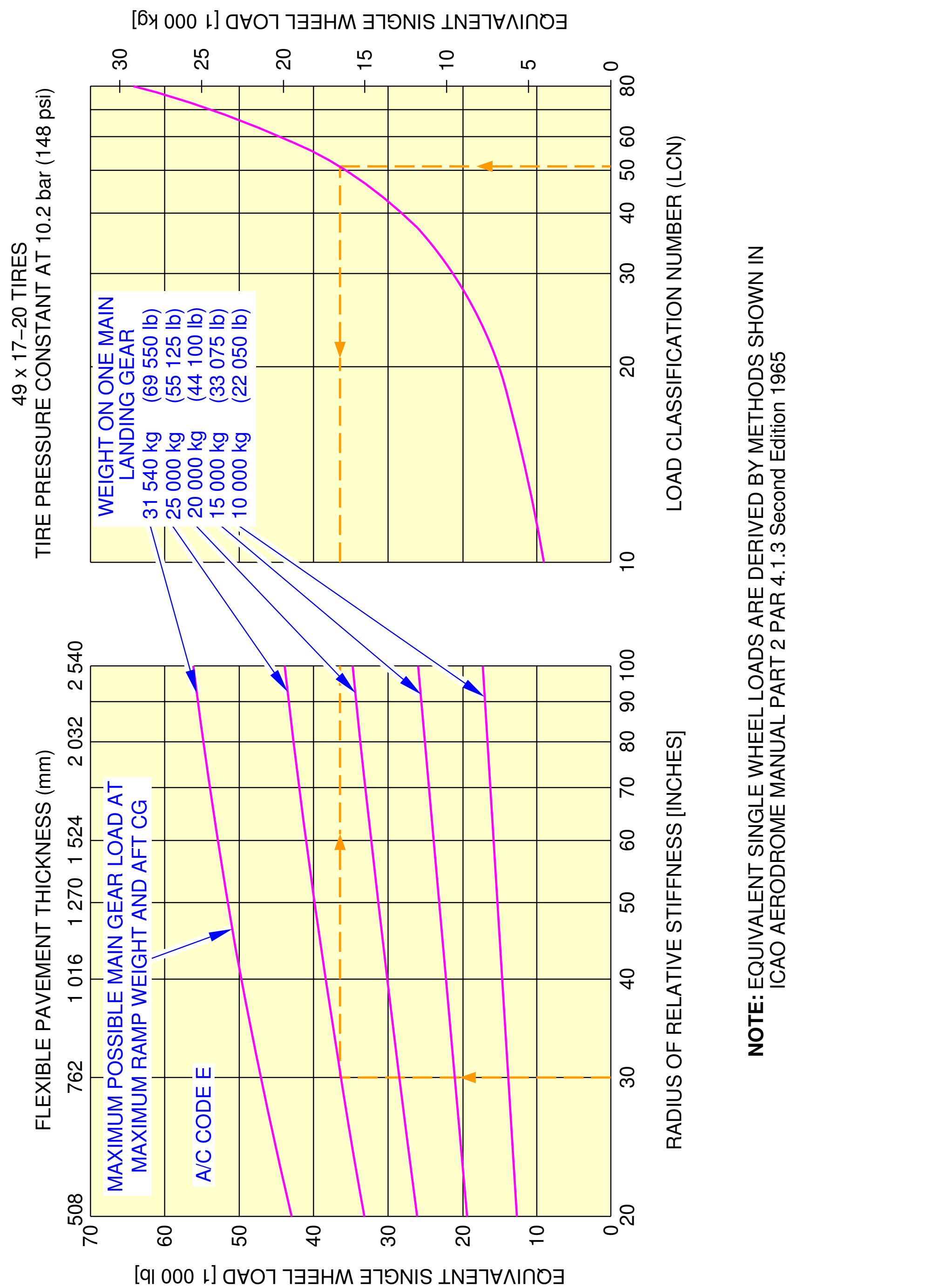
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-075-A01

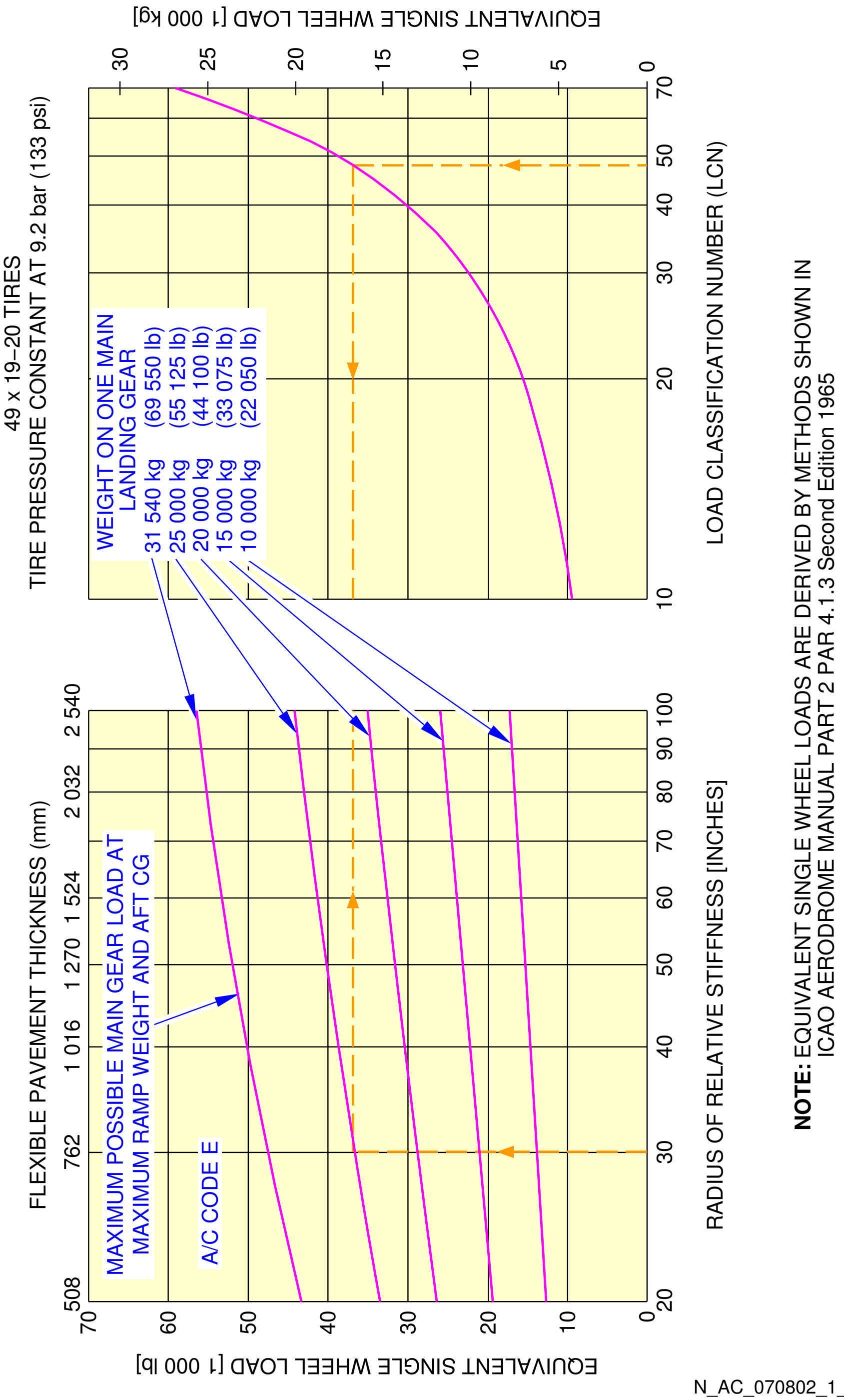
**ON A/C A320-200



N_AC_070802_1_0760101_01_00

Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-076-A01

**ON A/C A320-200



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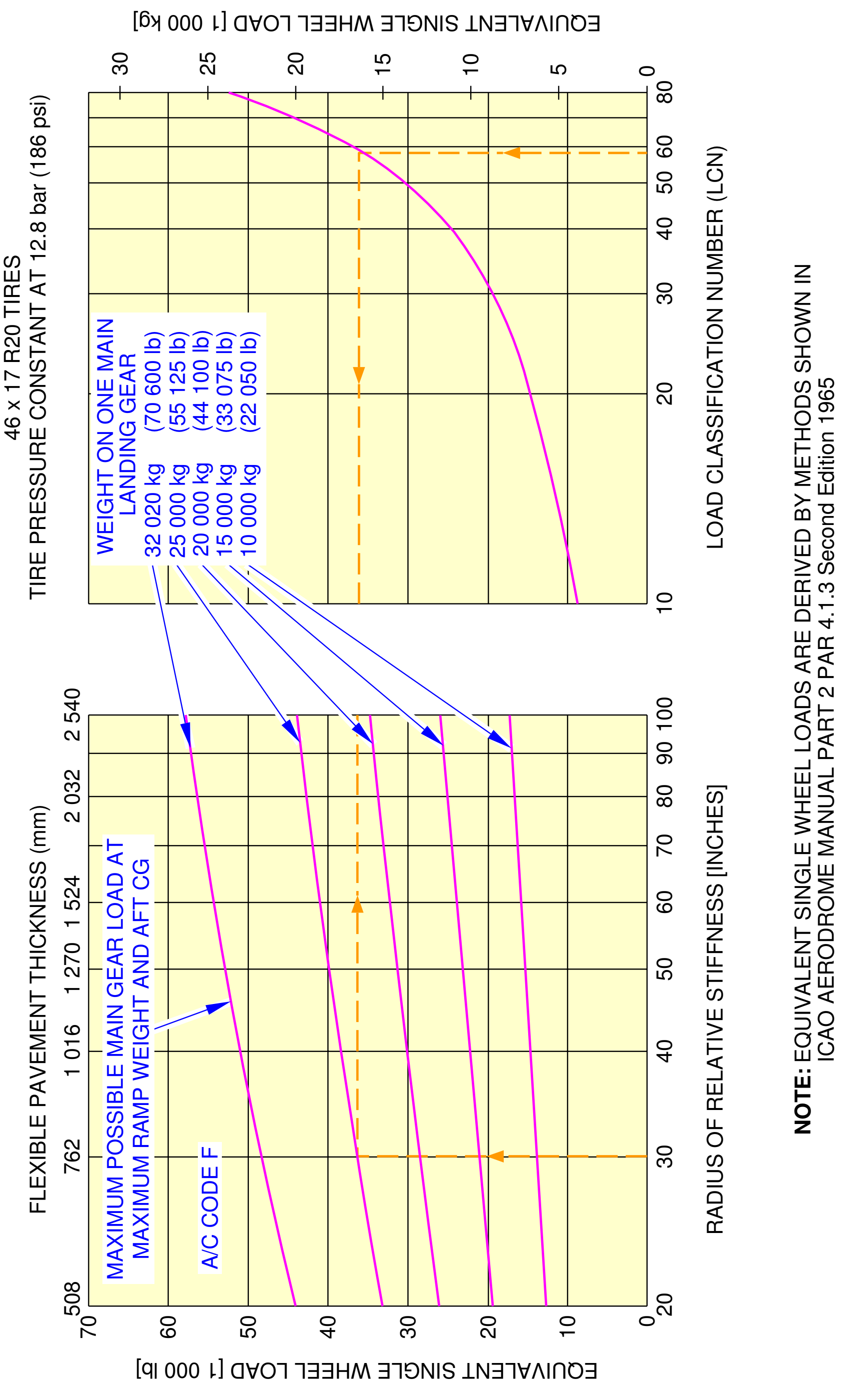
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-077-A01

**ON A/C A320-200



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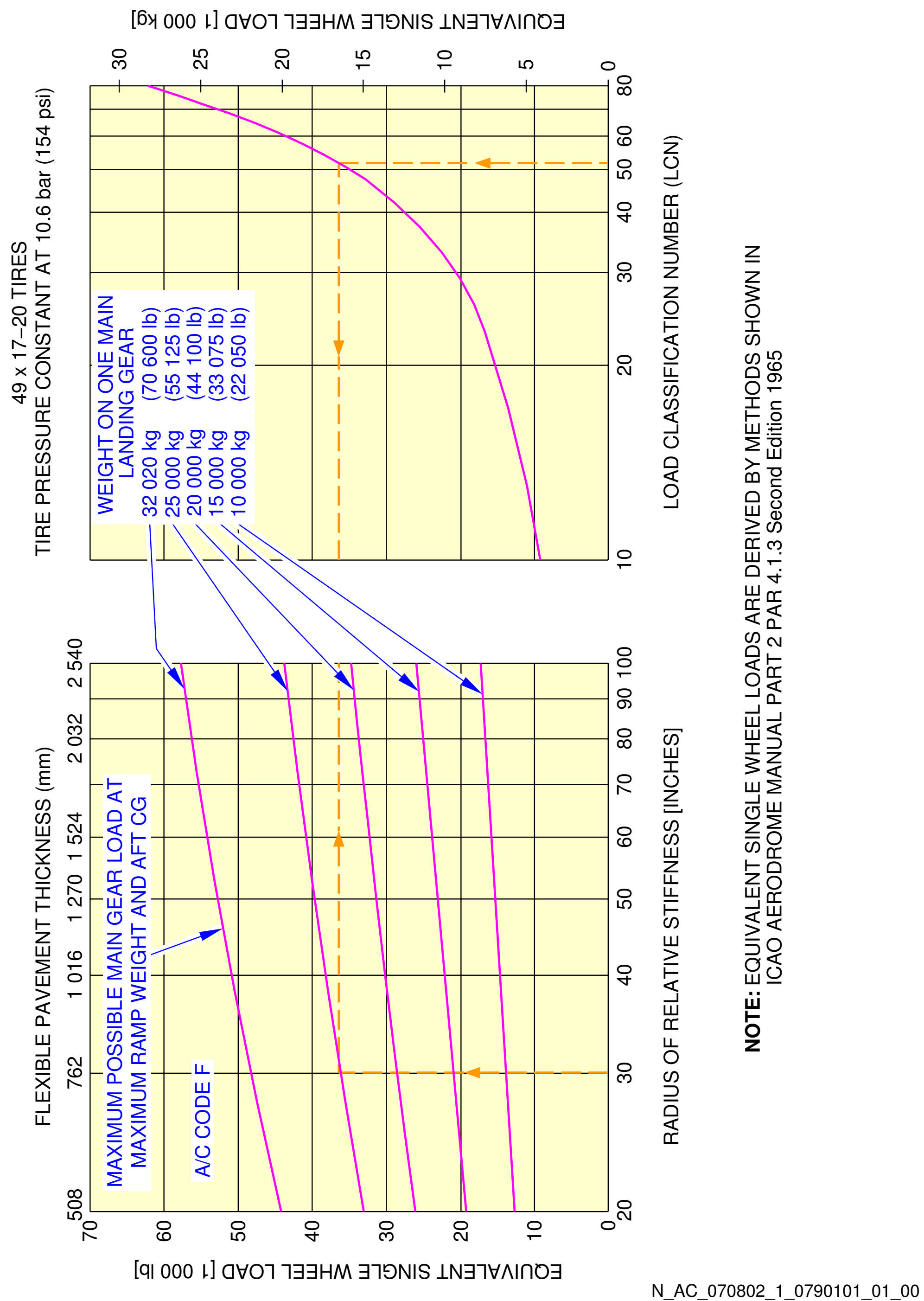
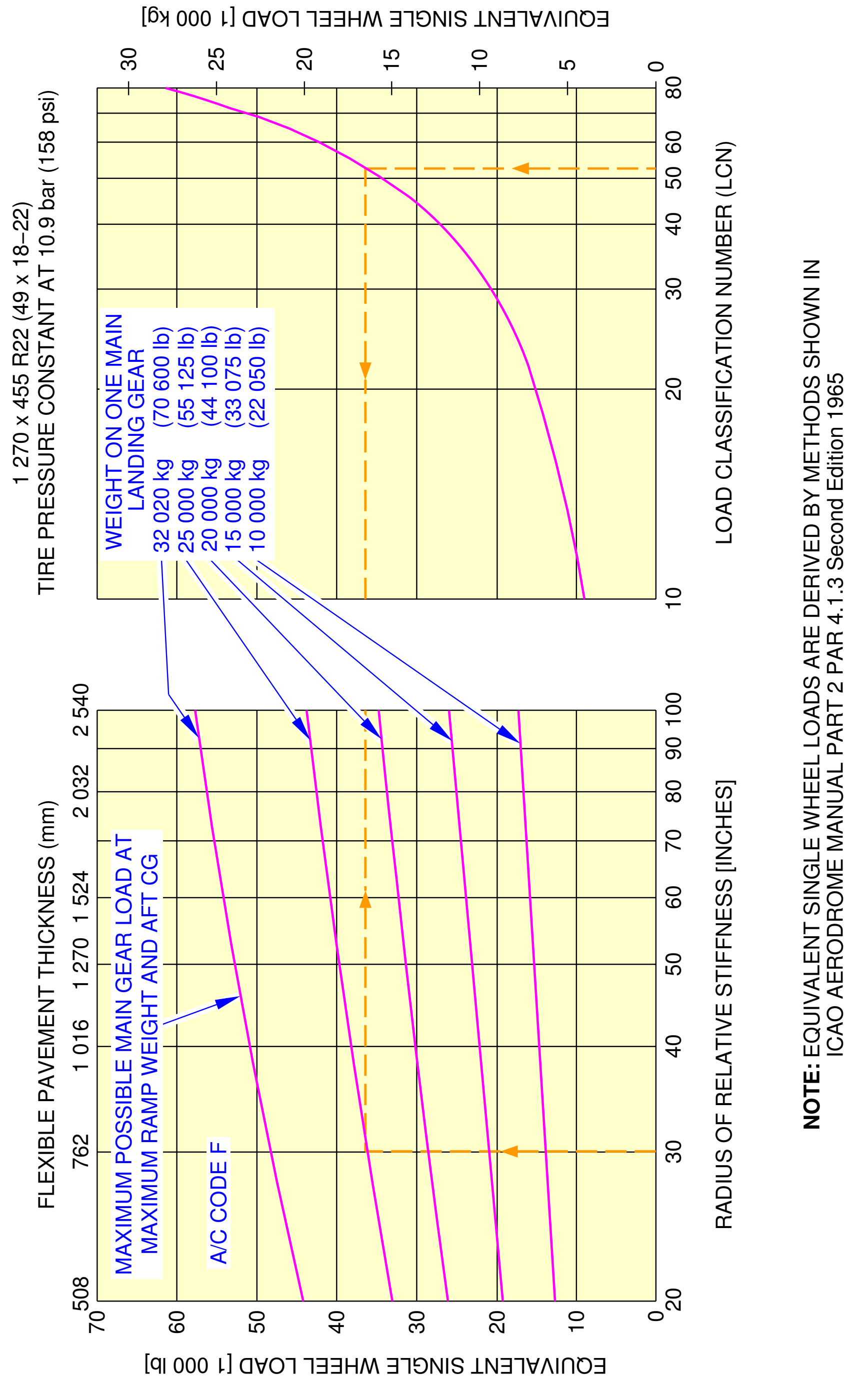
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-078-A01

****ON A/C A320-200**



Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-079-A01

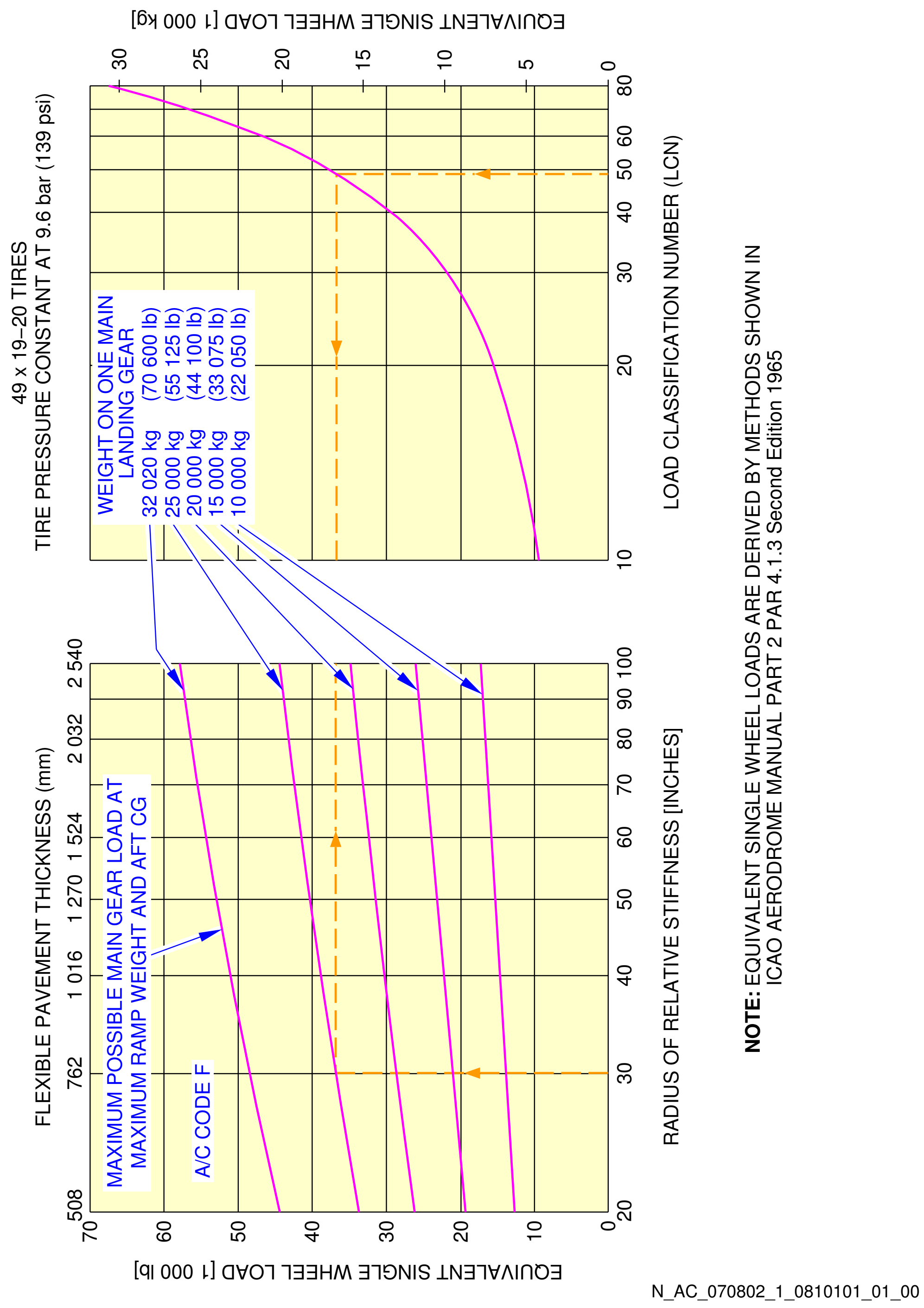
**ON A/C A320-200



N_AC_070802_1_0800101_01_00

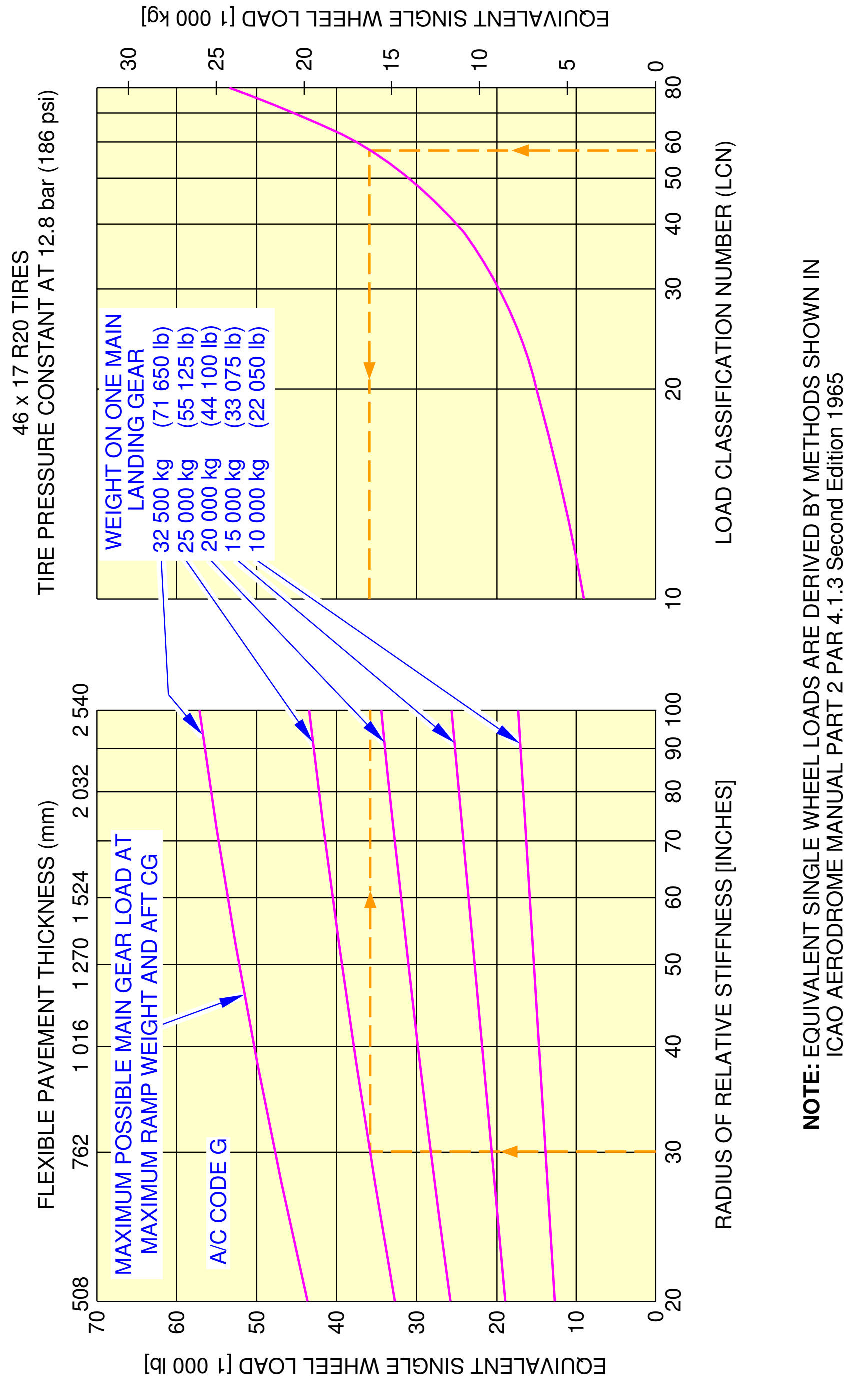
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-080-A01

**ON A/C A320-200



Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-081-A01

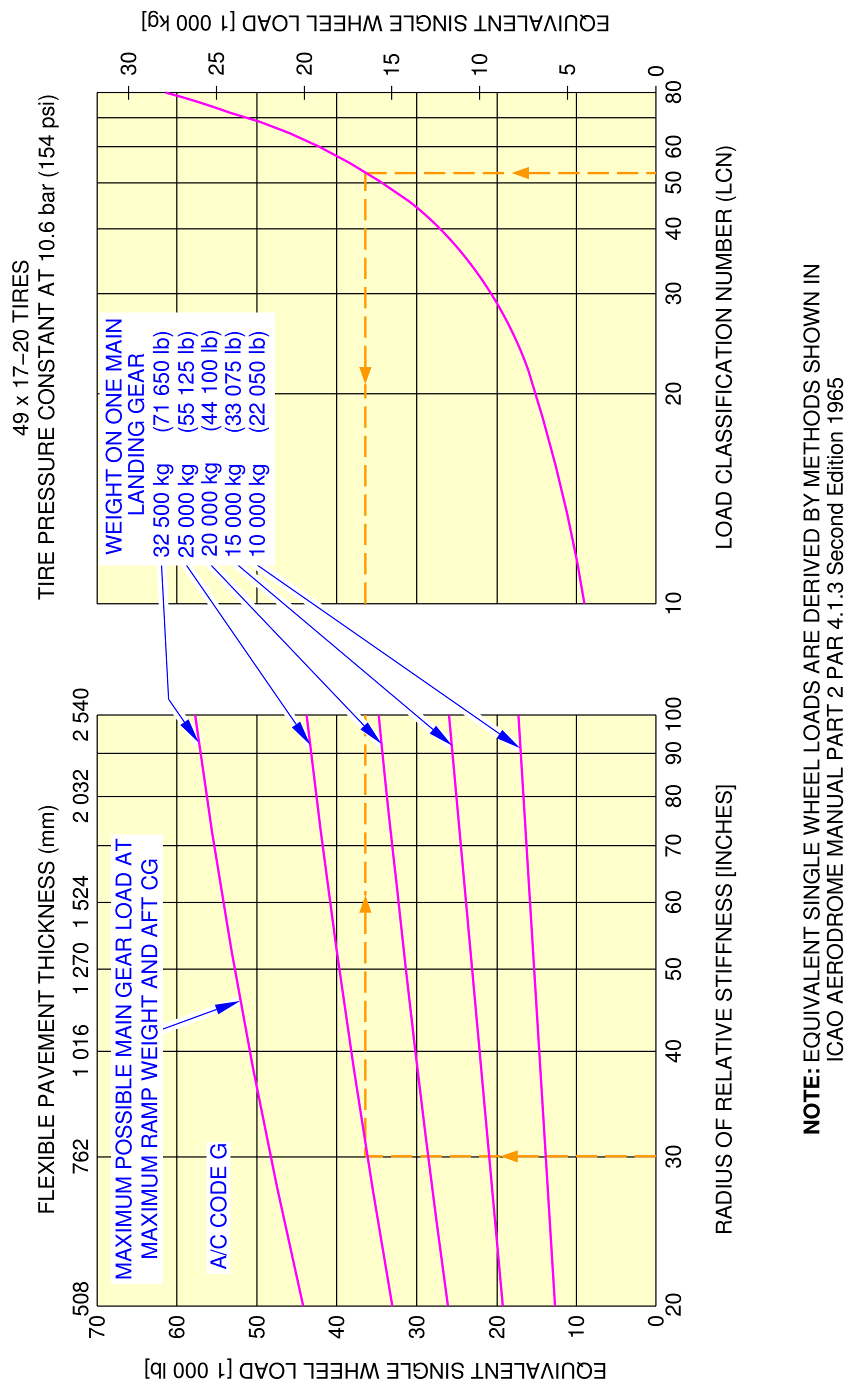
**ON A/C A320-200



N_AC_070802_1_0820101_01_00

Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-082-A01

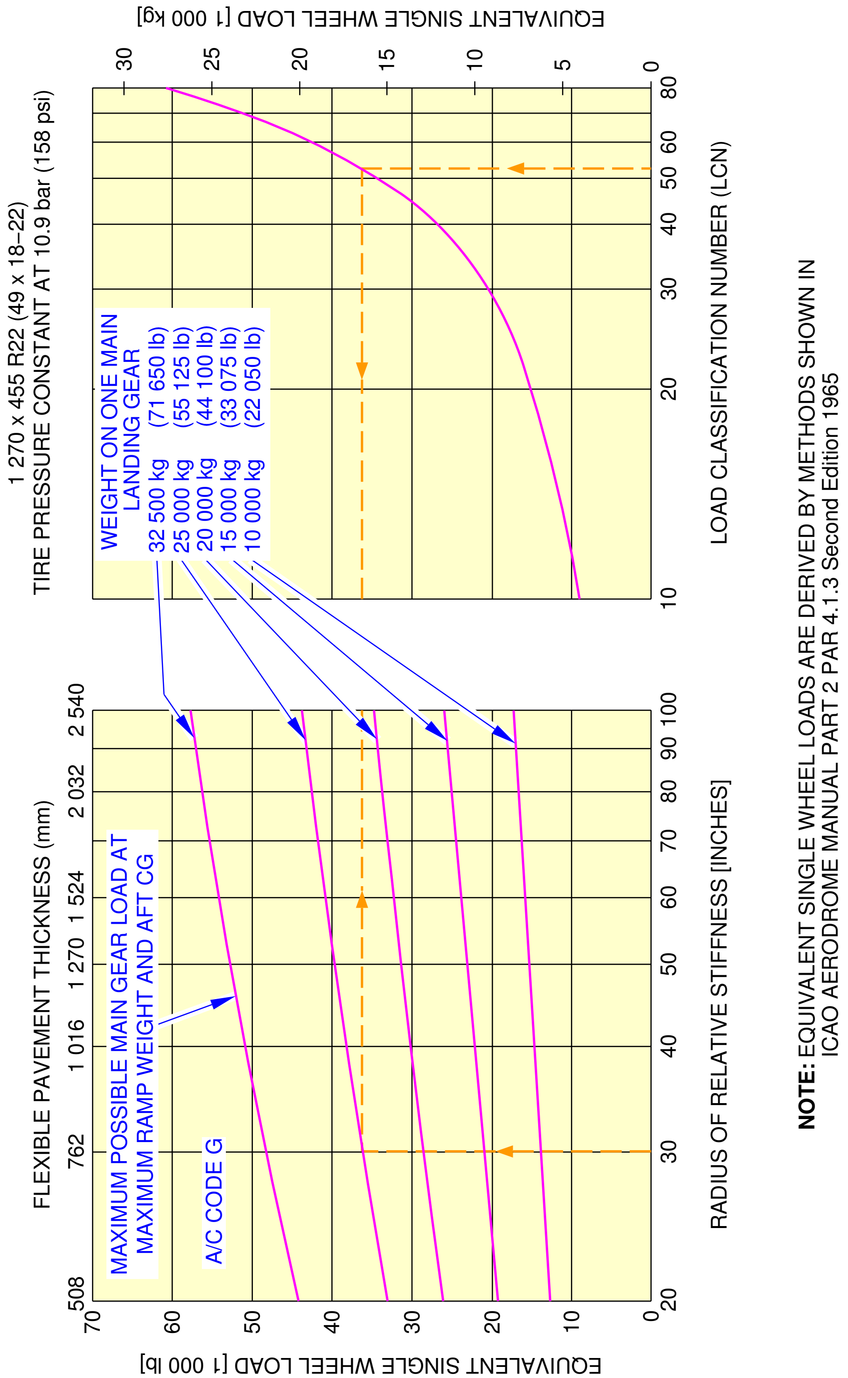
**ON A/C A320-200



N_AC_070802_1_0830101_01_00

Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-083-A01

**ON A/C A320-200



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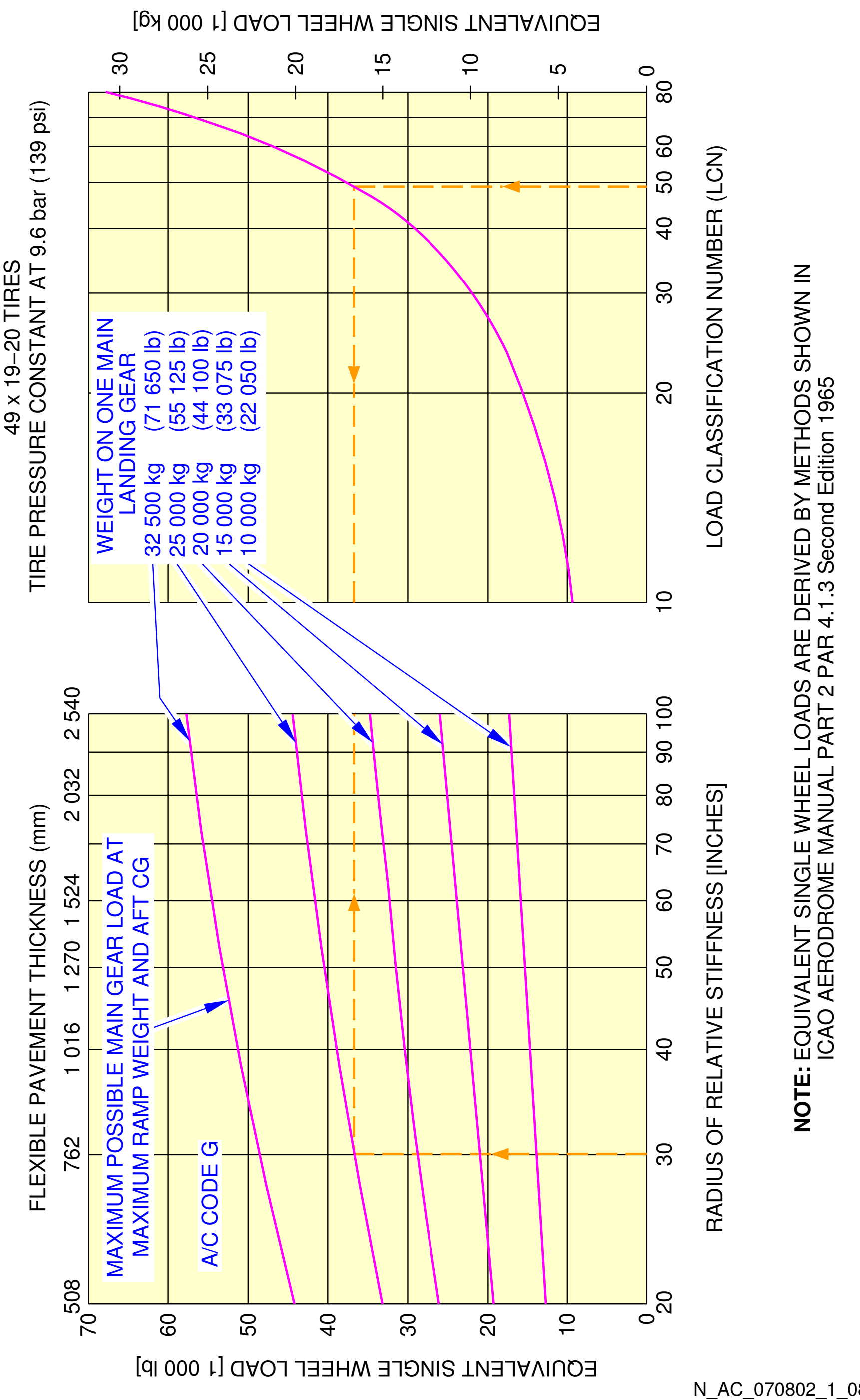
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-084-A01

**ON A/C A320-200



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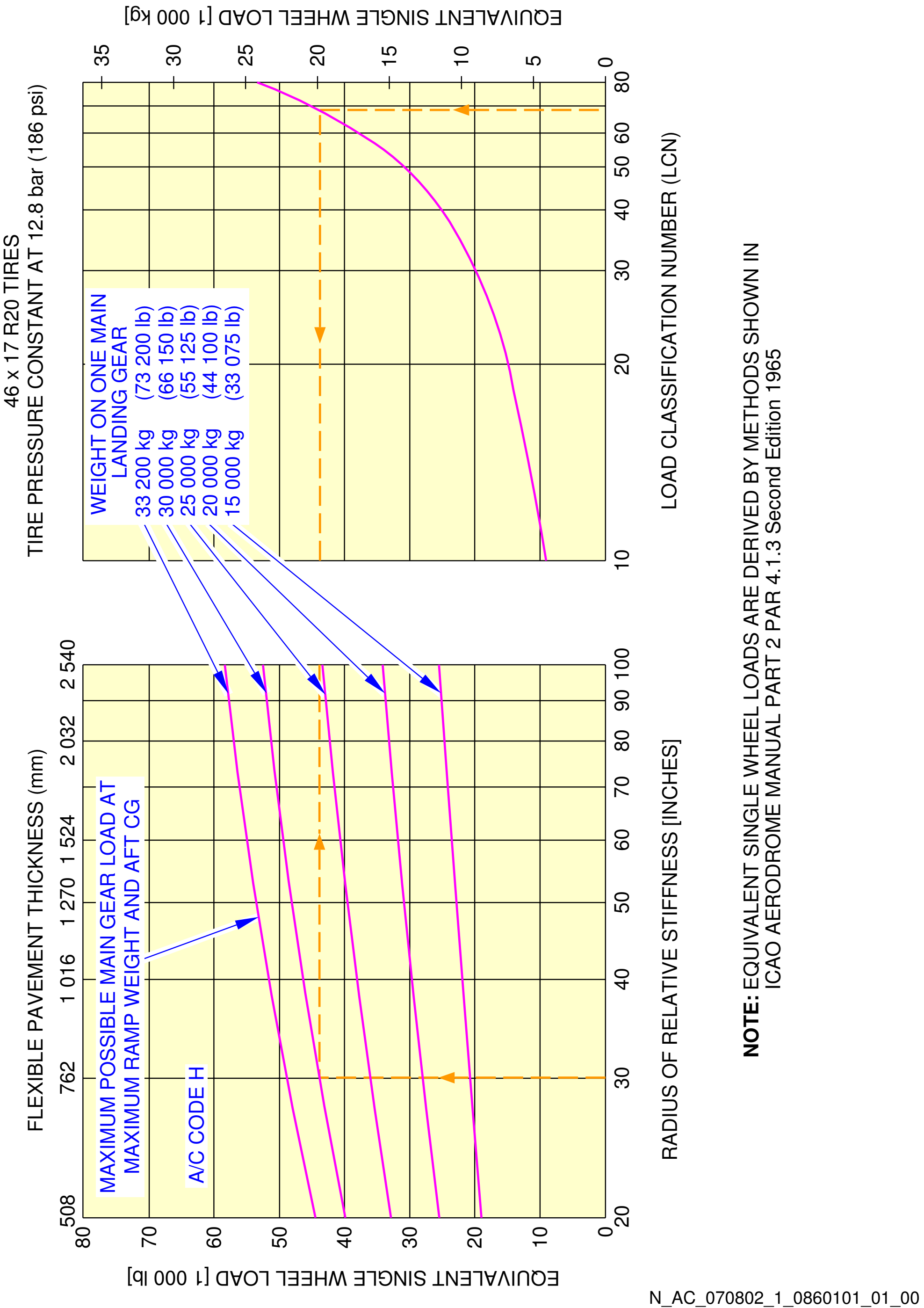
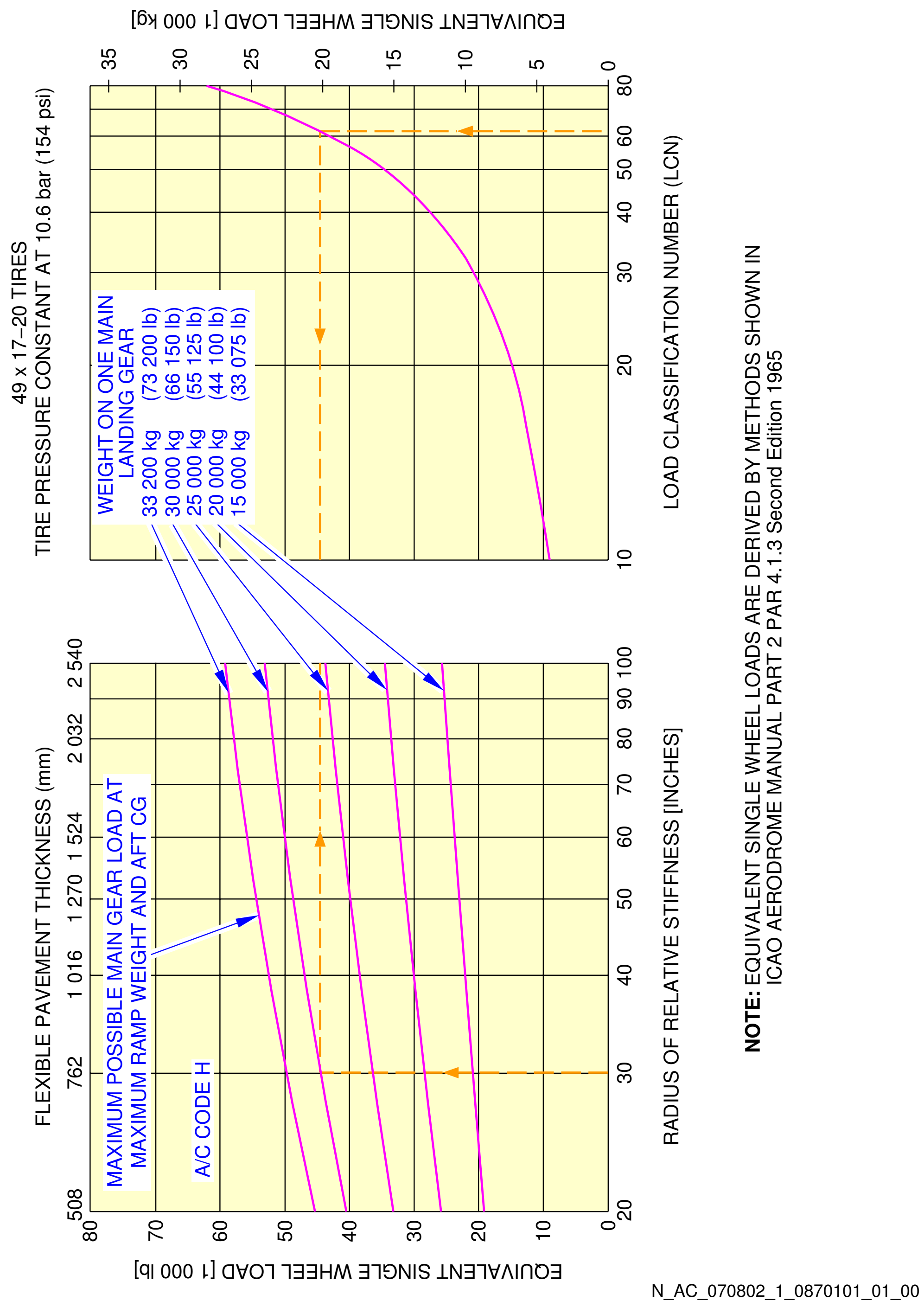
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-085-A01

**ON A/C A320-200



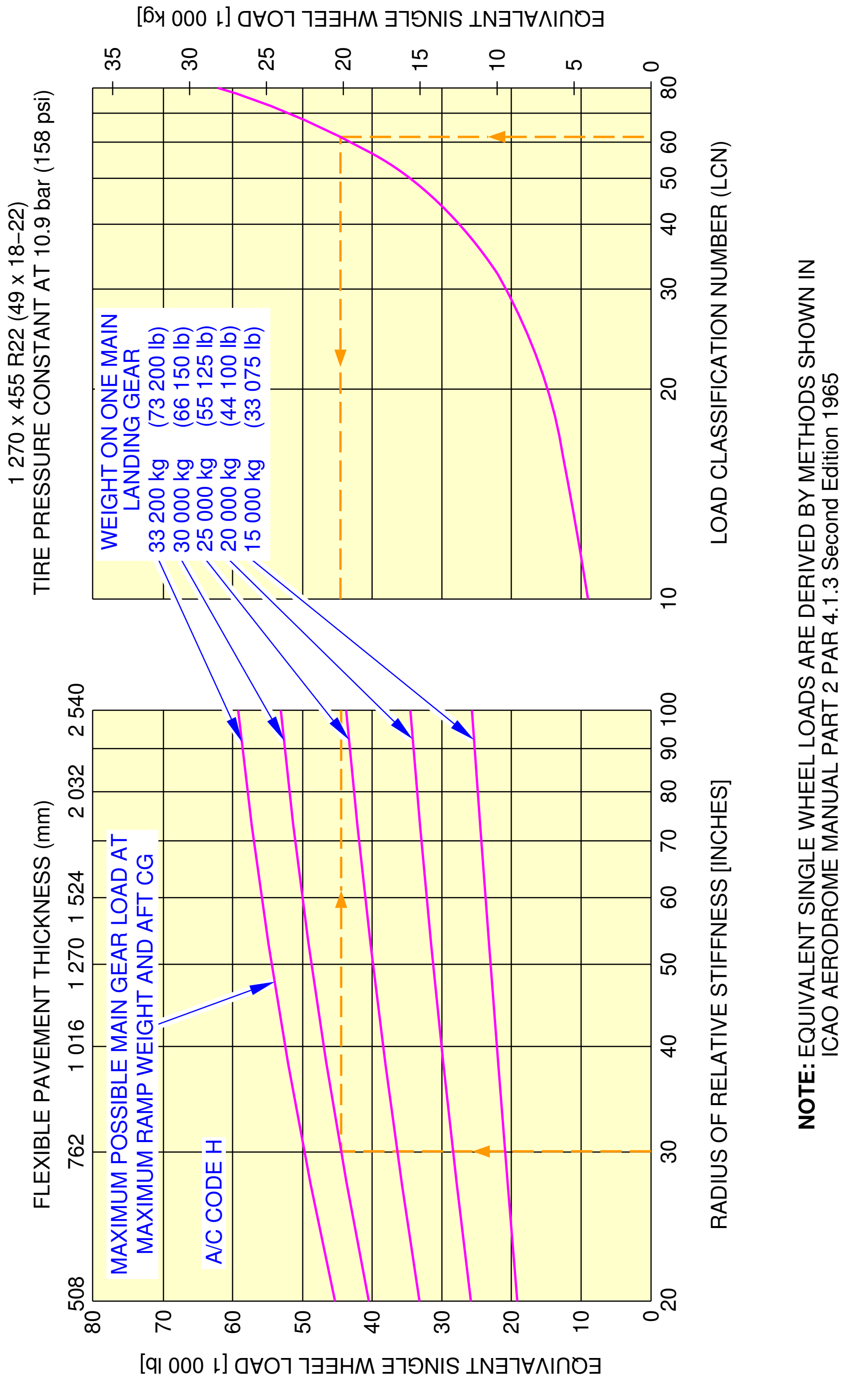
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-086-A01

**ON A/C A320-200



Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-087-A01

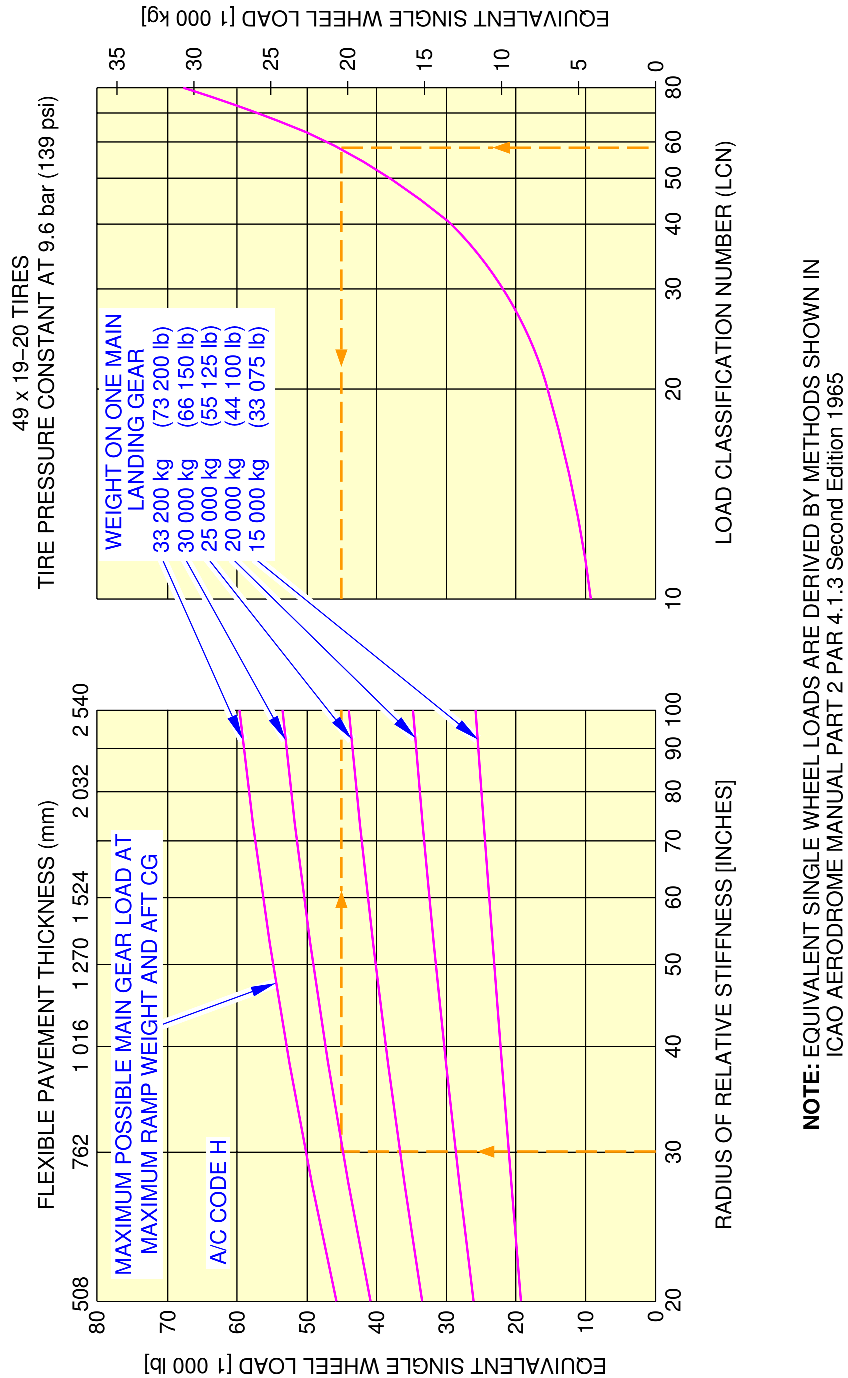
**ON A/C A320-200



N_AC_070802_1_0880101_01_00

Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-088-A01

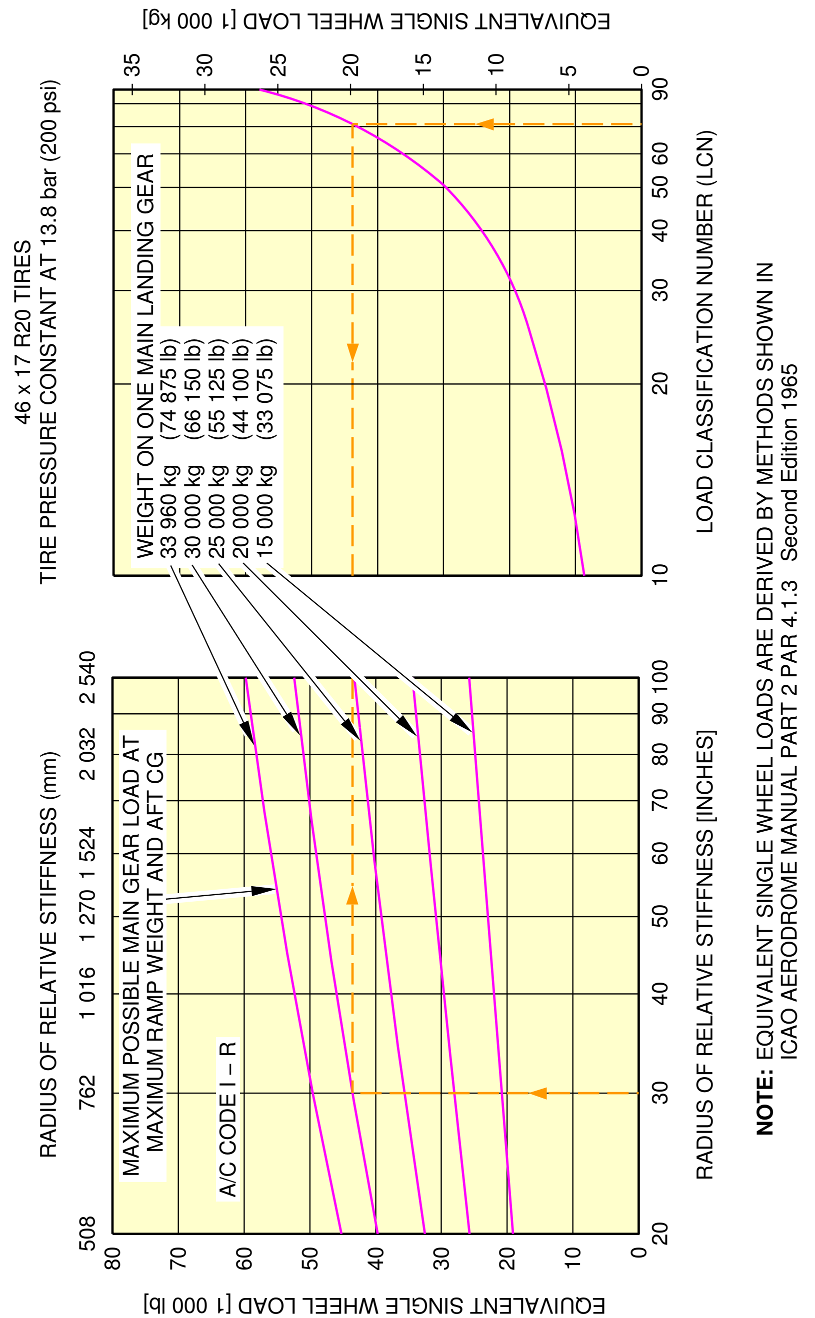
****ON A/C A320-200**



N_AC_070802_1_0890101_01_00

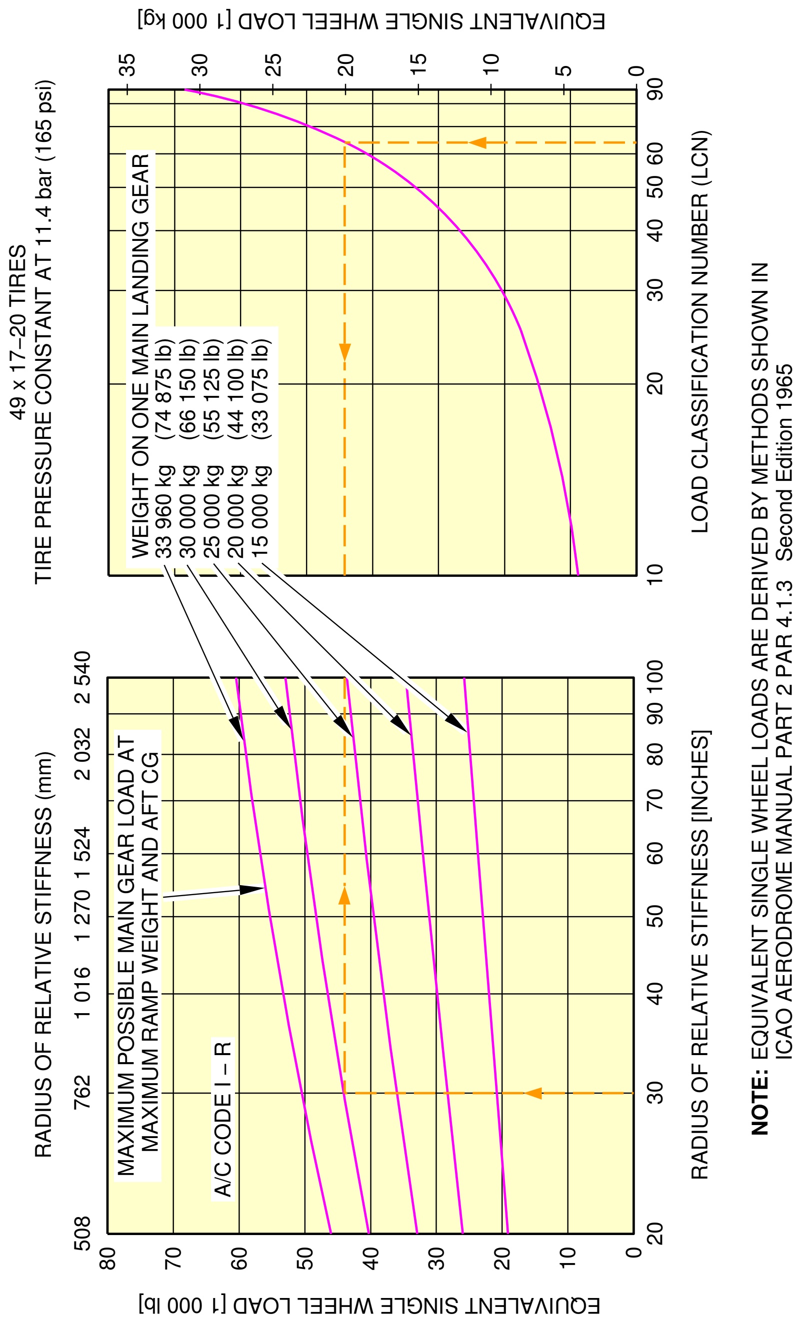
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-089-A01

**ON A/C A320-200



Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-090-A01

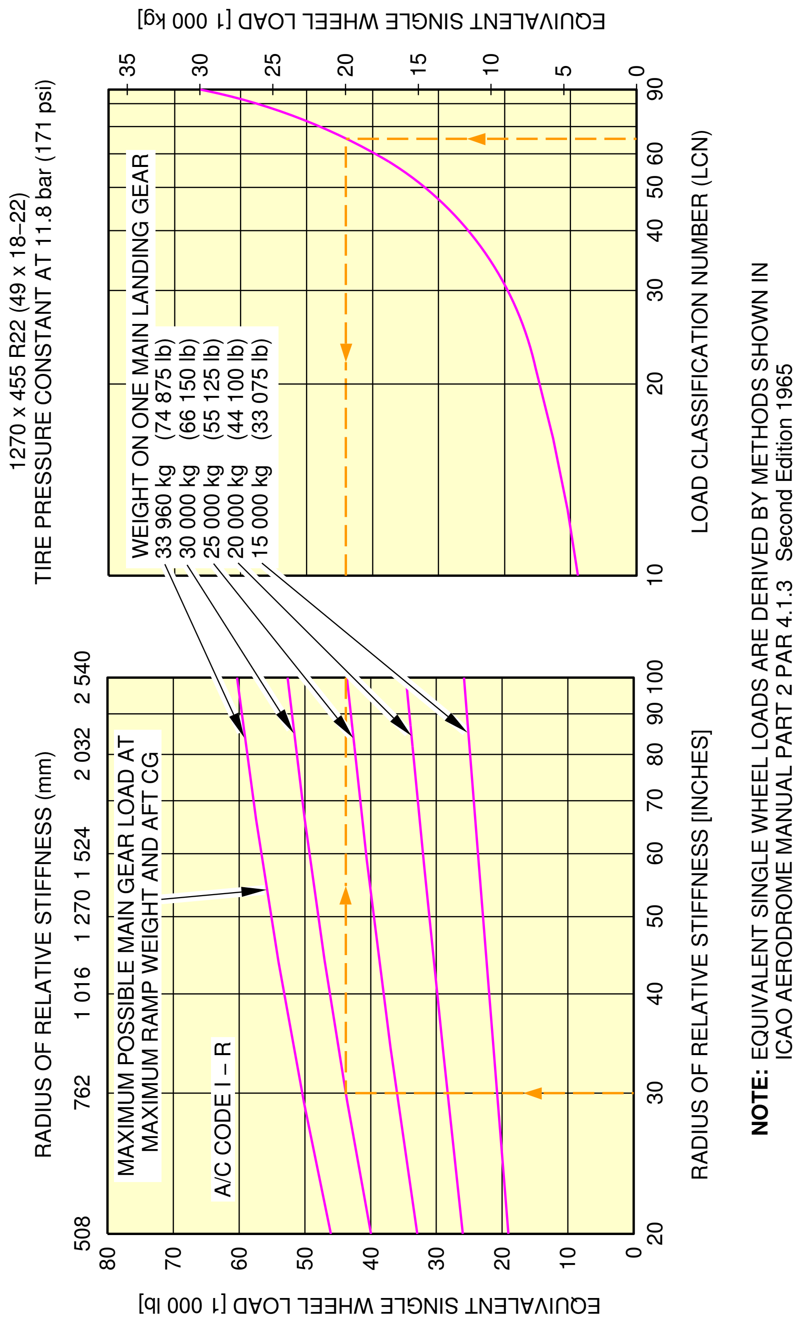
**ON A/C A320-200



N_AC_070802_1_0910101_01_01

Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-091-A01

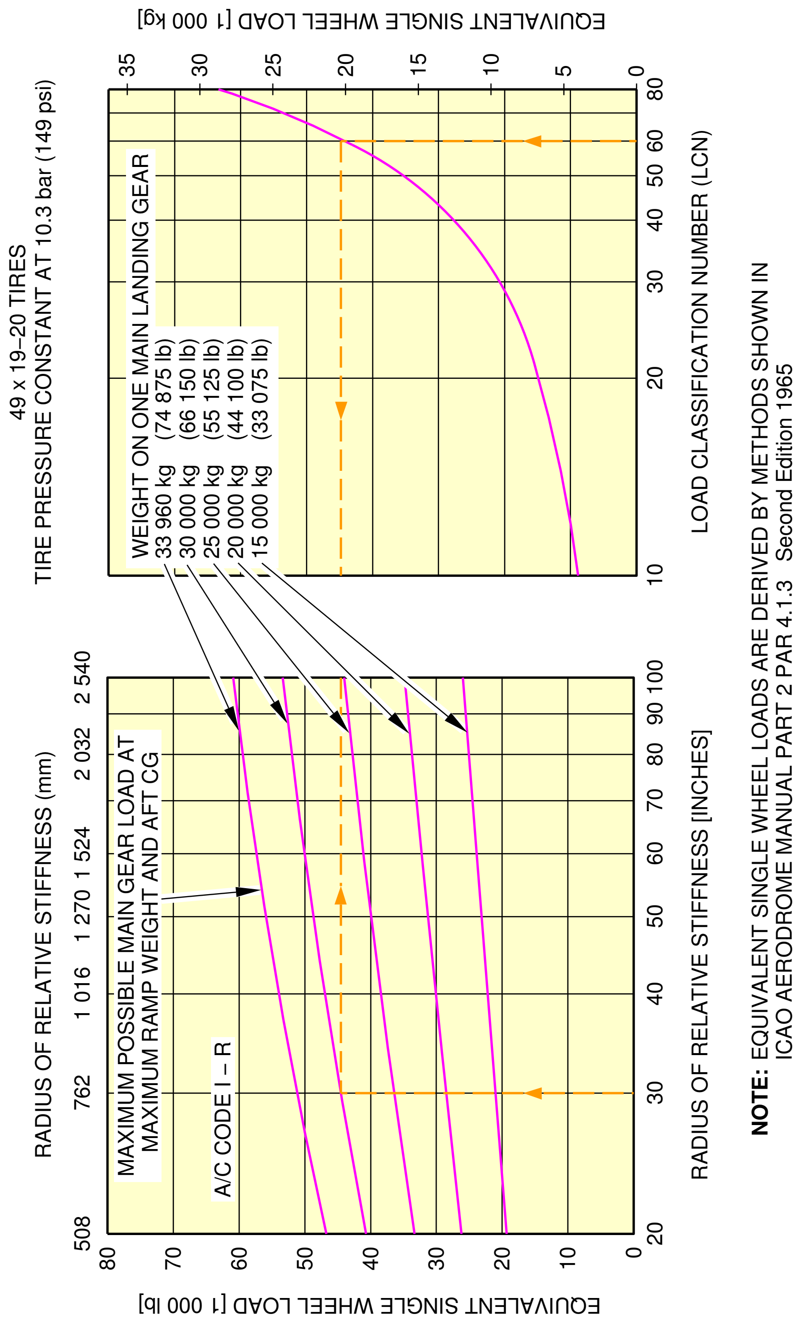
****ON A/C A320-200**



N_AC_070802_1_0920101_01_01

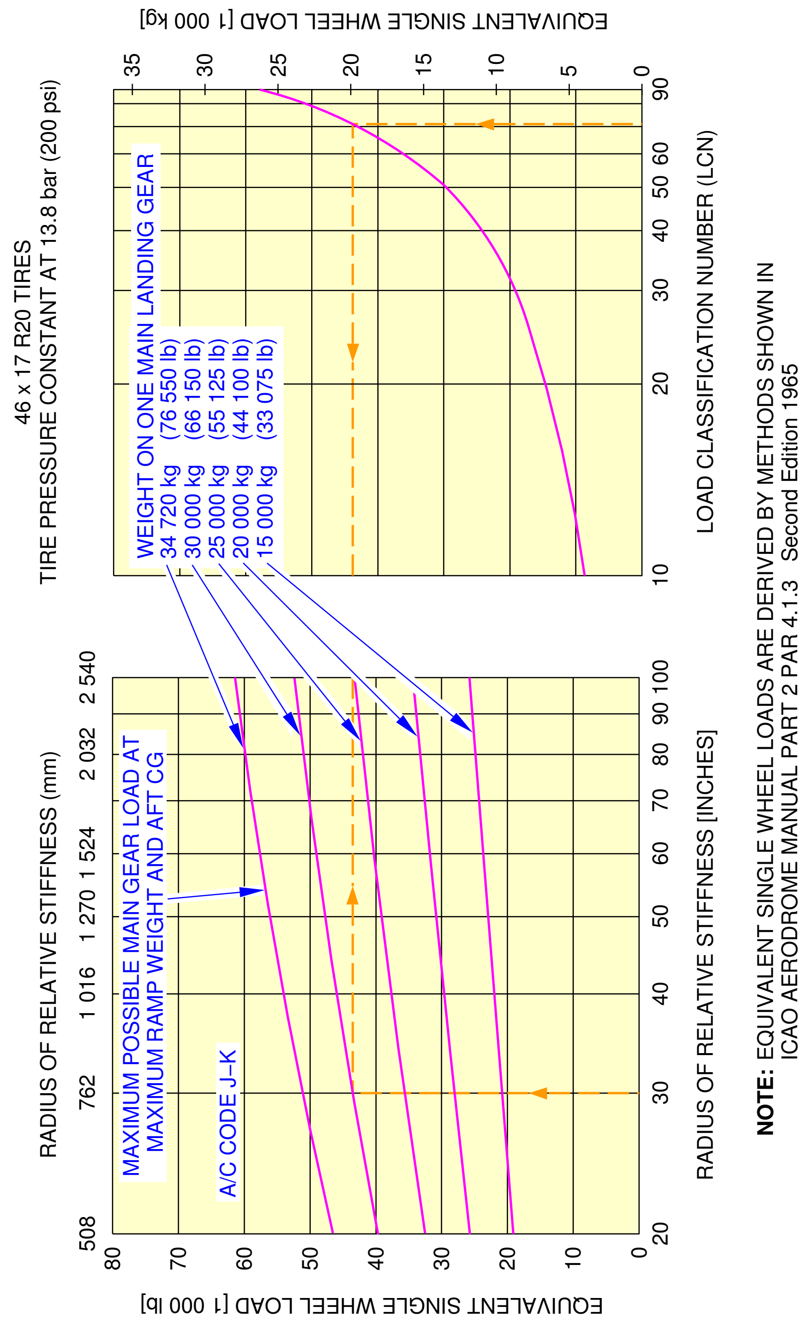
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-092-A01

**ON A/C A320-200



Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-093-A01

****ON A/C A320-200**



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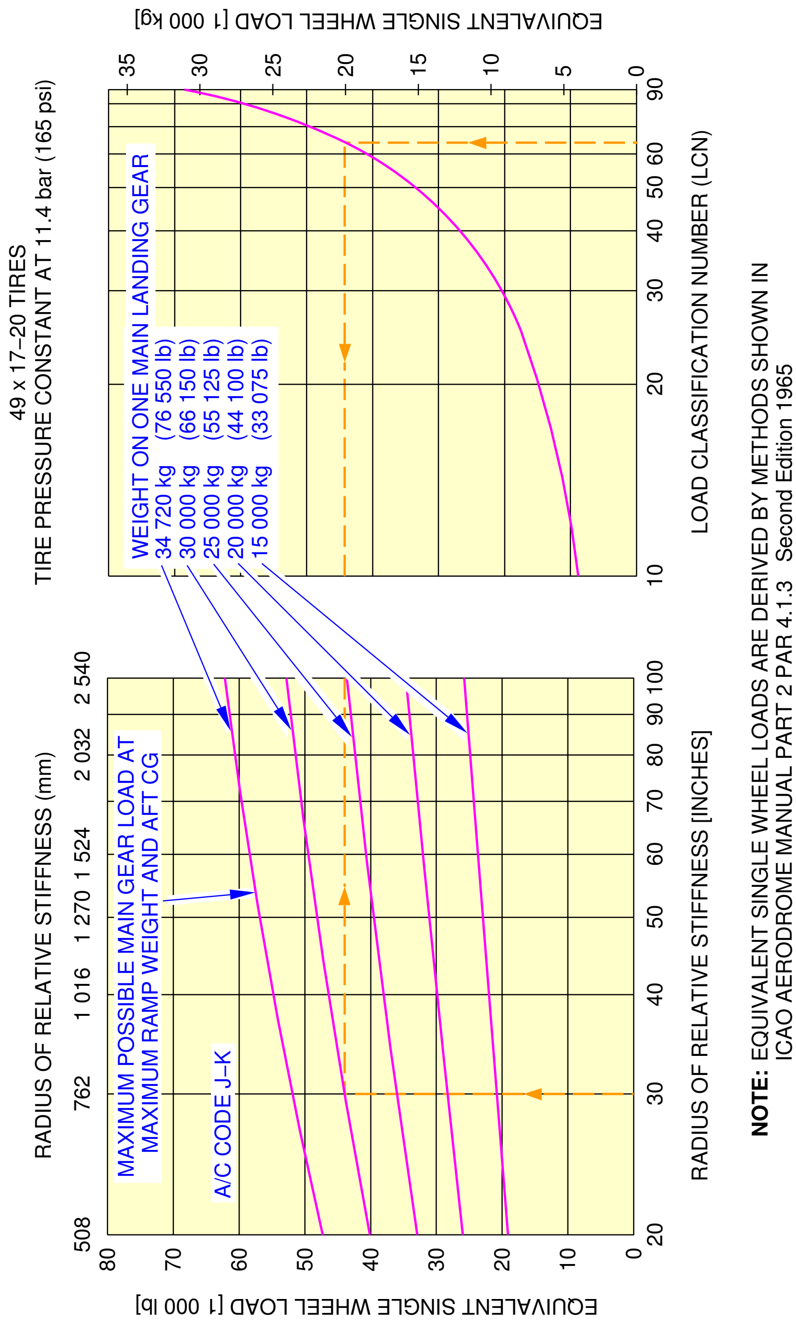
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-094-A01

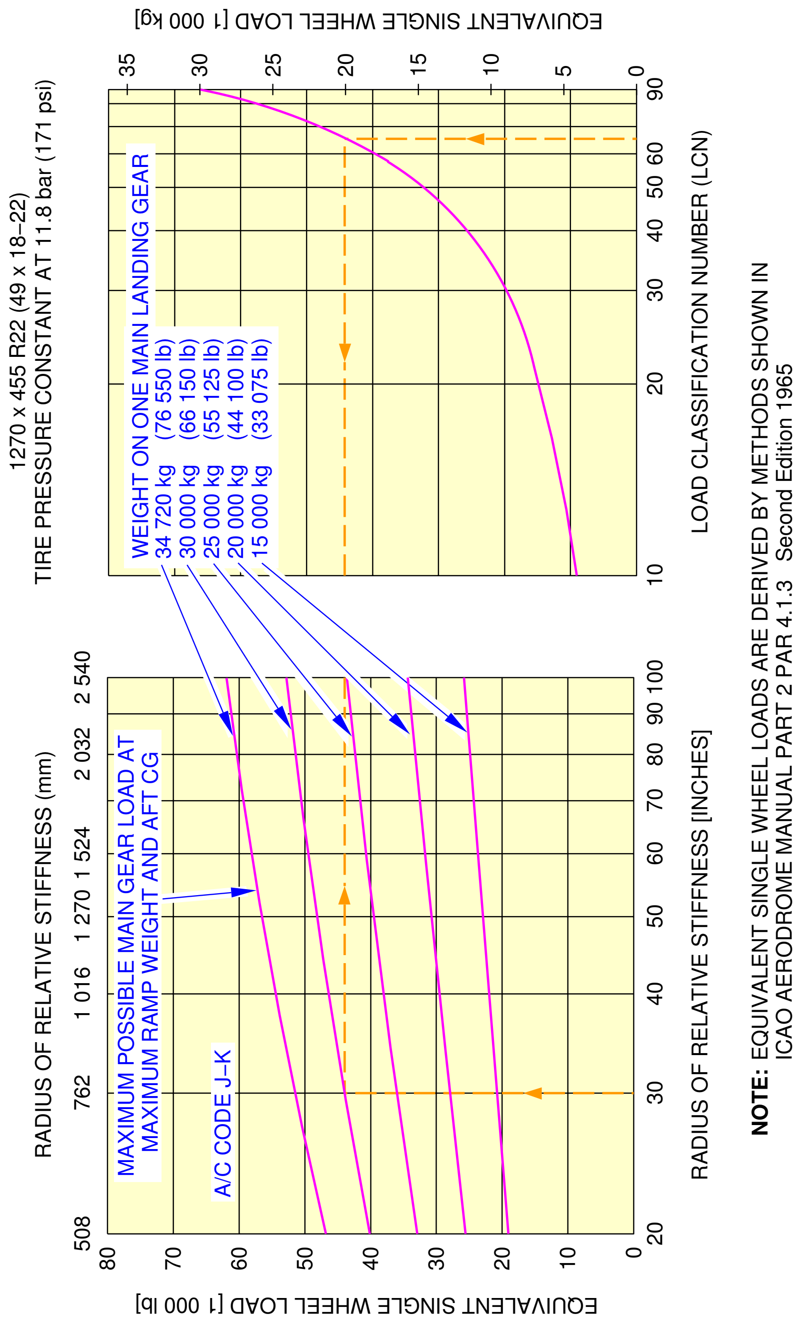
**ON A/C A320-200



N_AC_070802_1_0950101_01_00

Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-095-A01

**ON A/C A320-200



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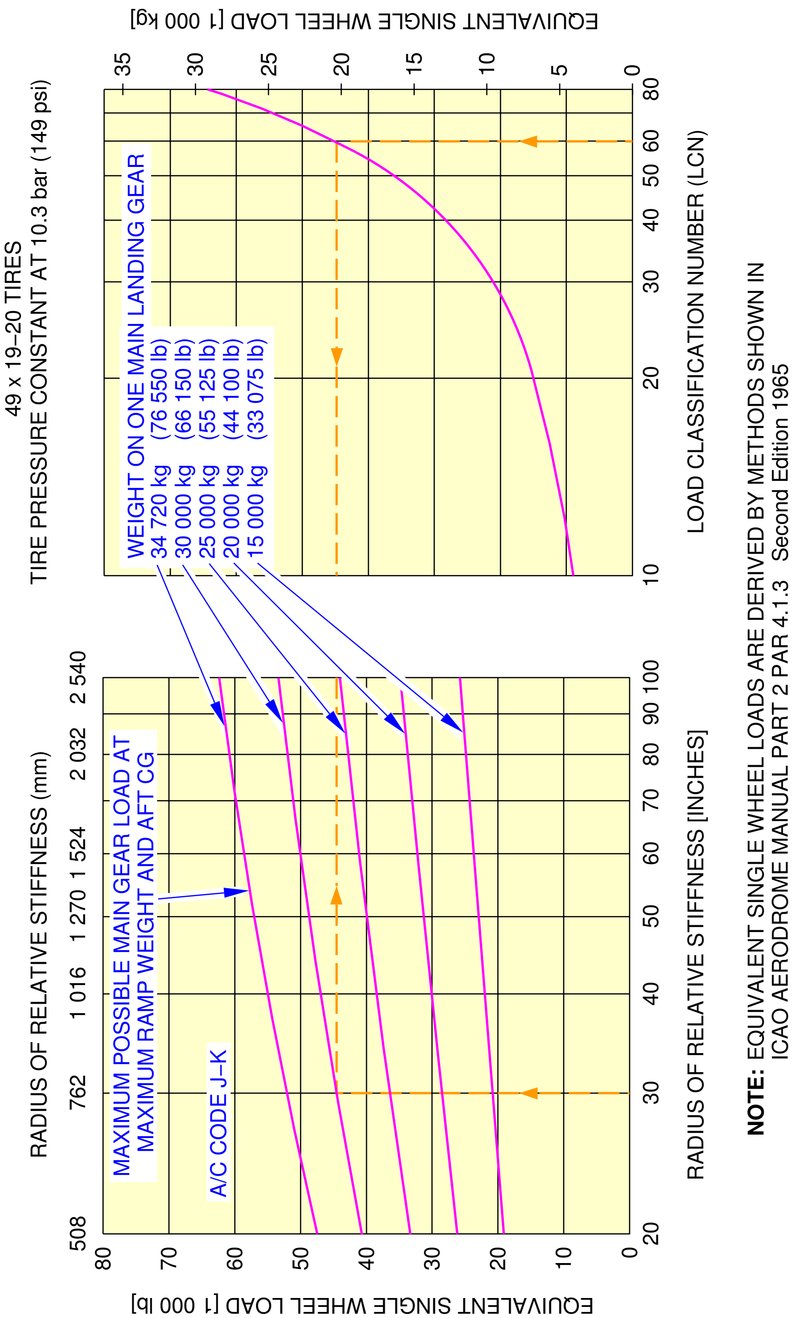
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-096-A01

**ON A/C A320-200



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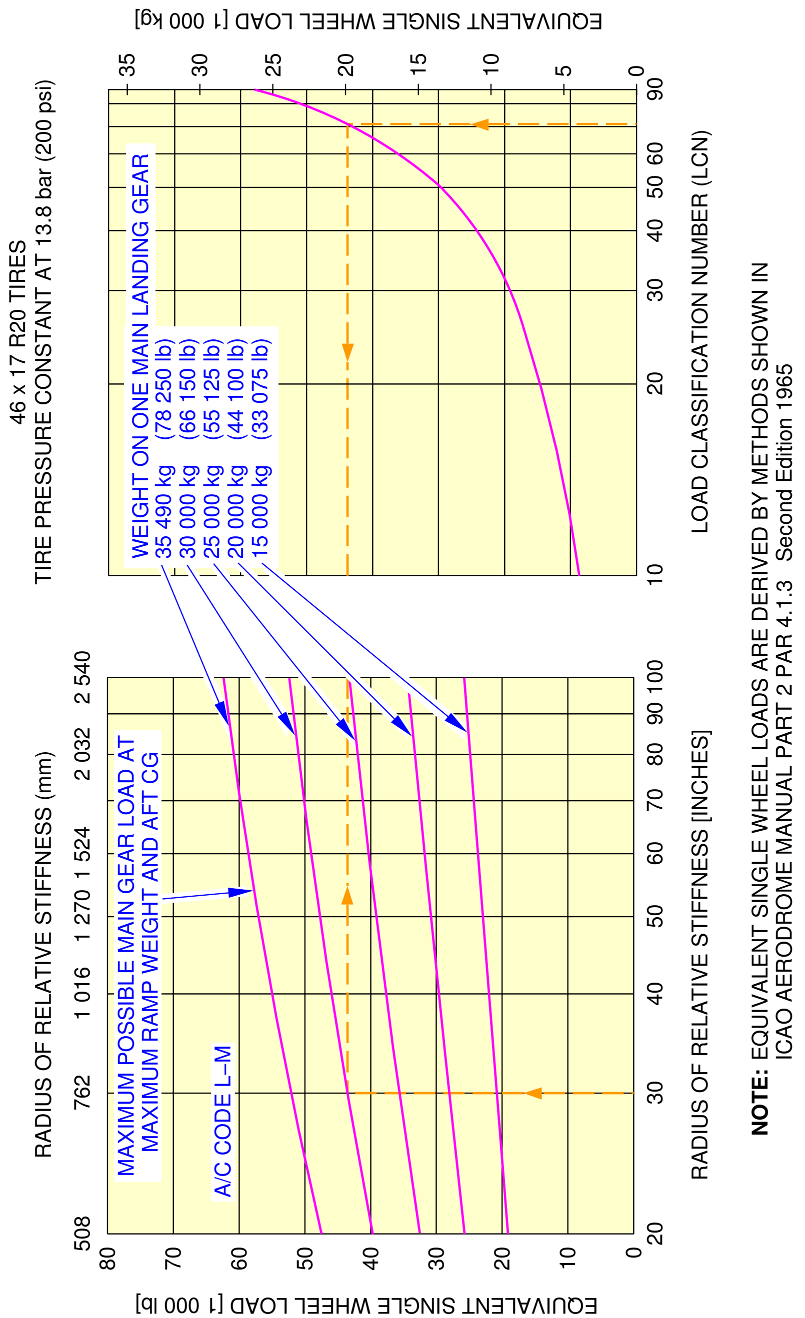
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-097-A01

**ON A/C A320-200



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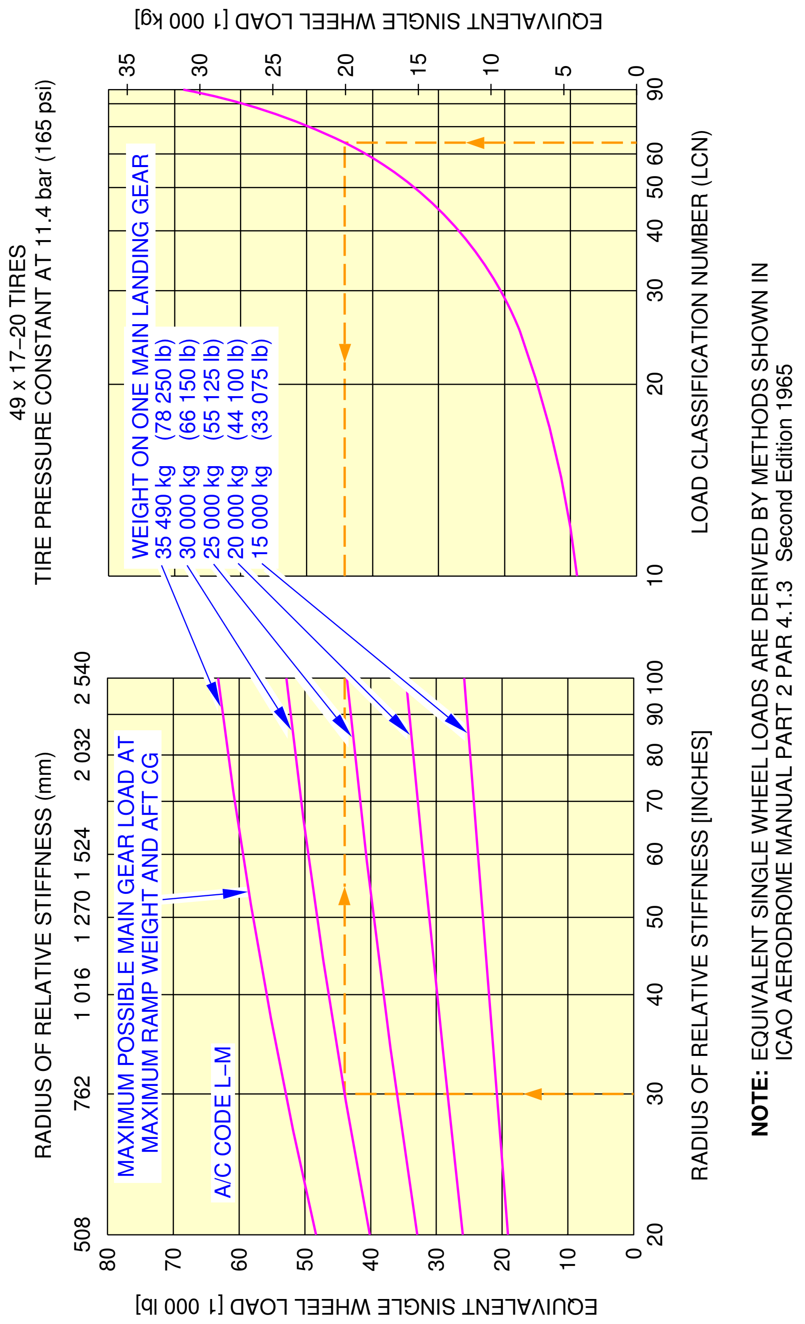
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-098-A01

**ON A/C A320-200



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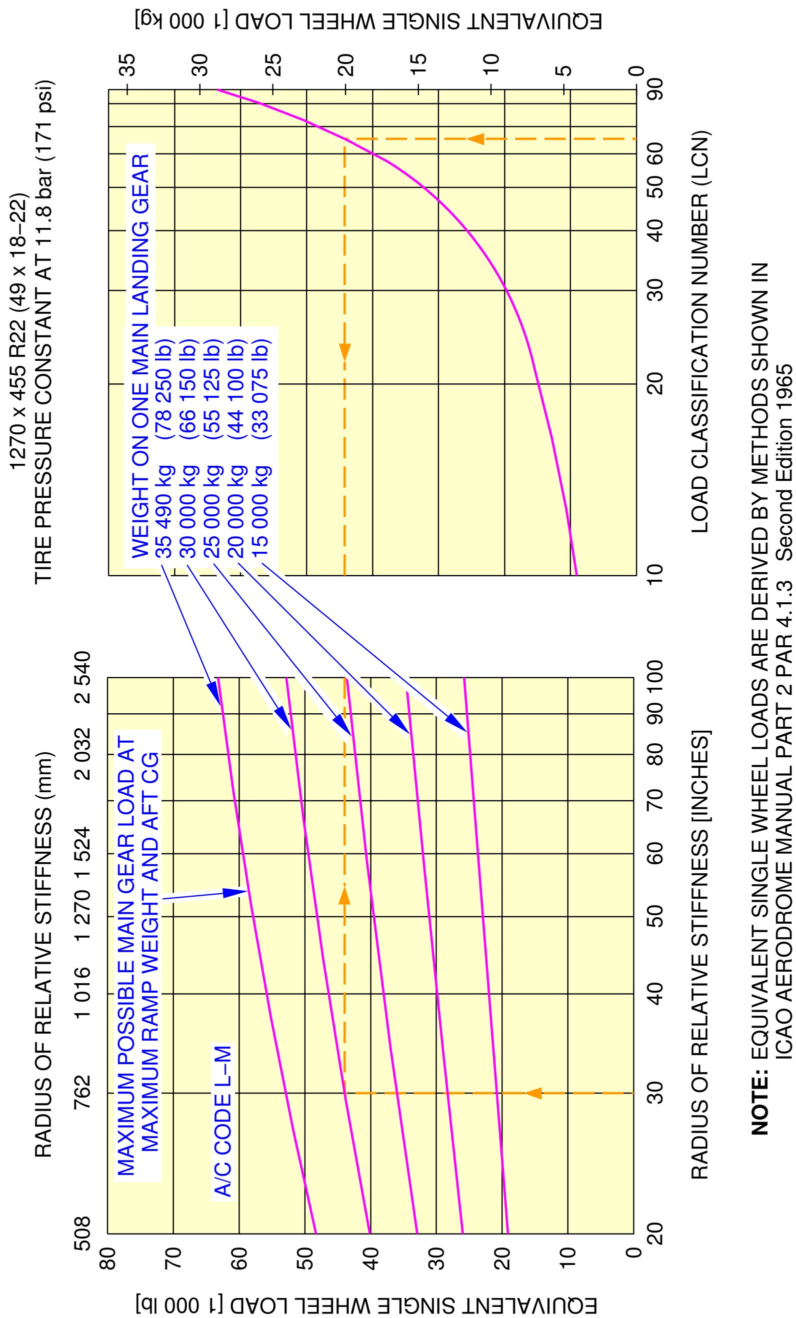
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-099-A01

****ON A/C A320-200**



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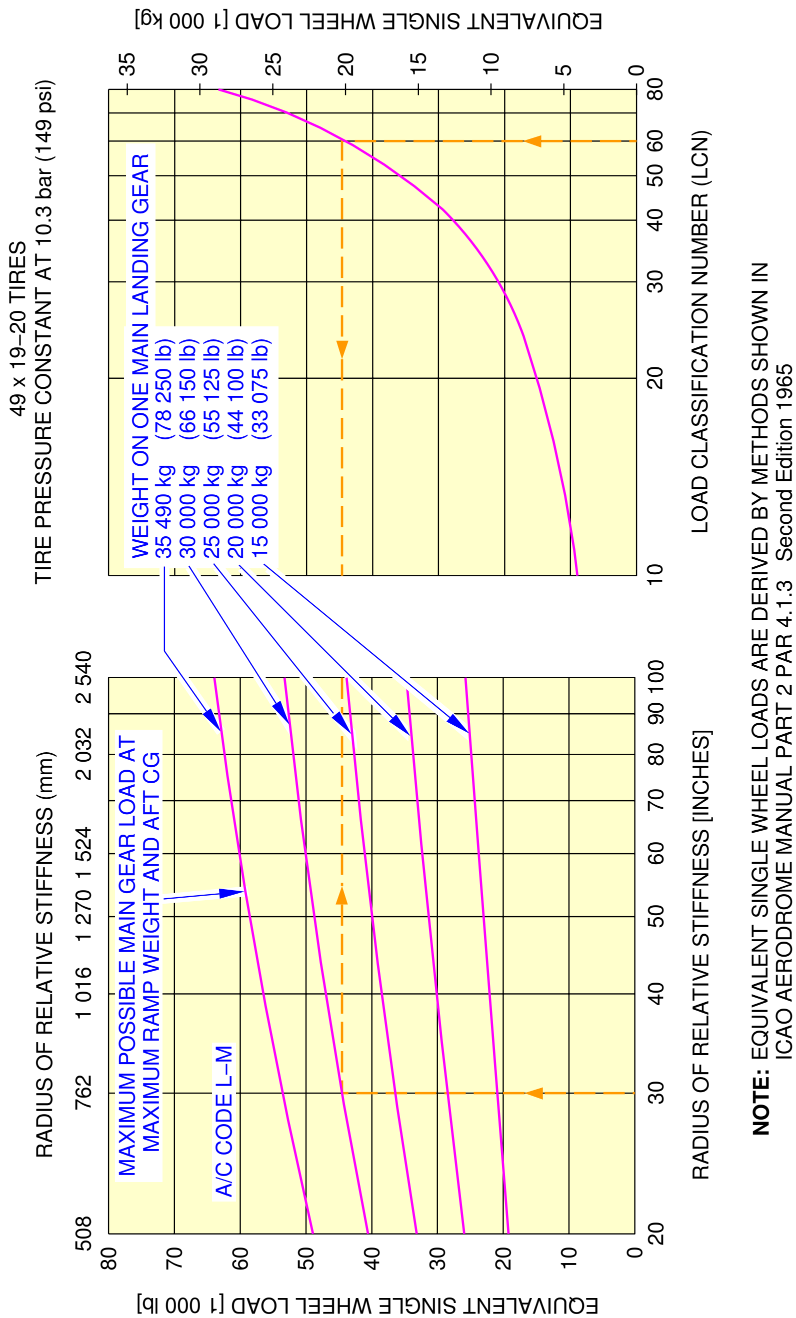
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-100-A01

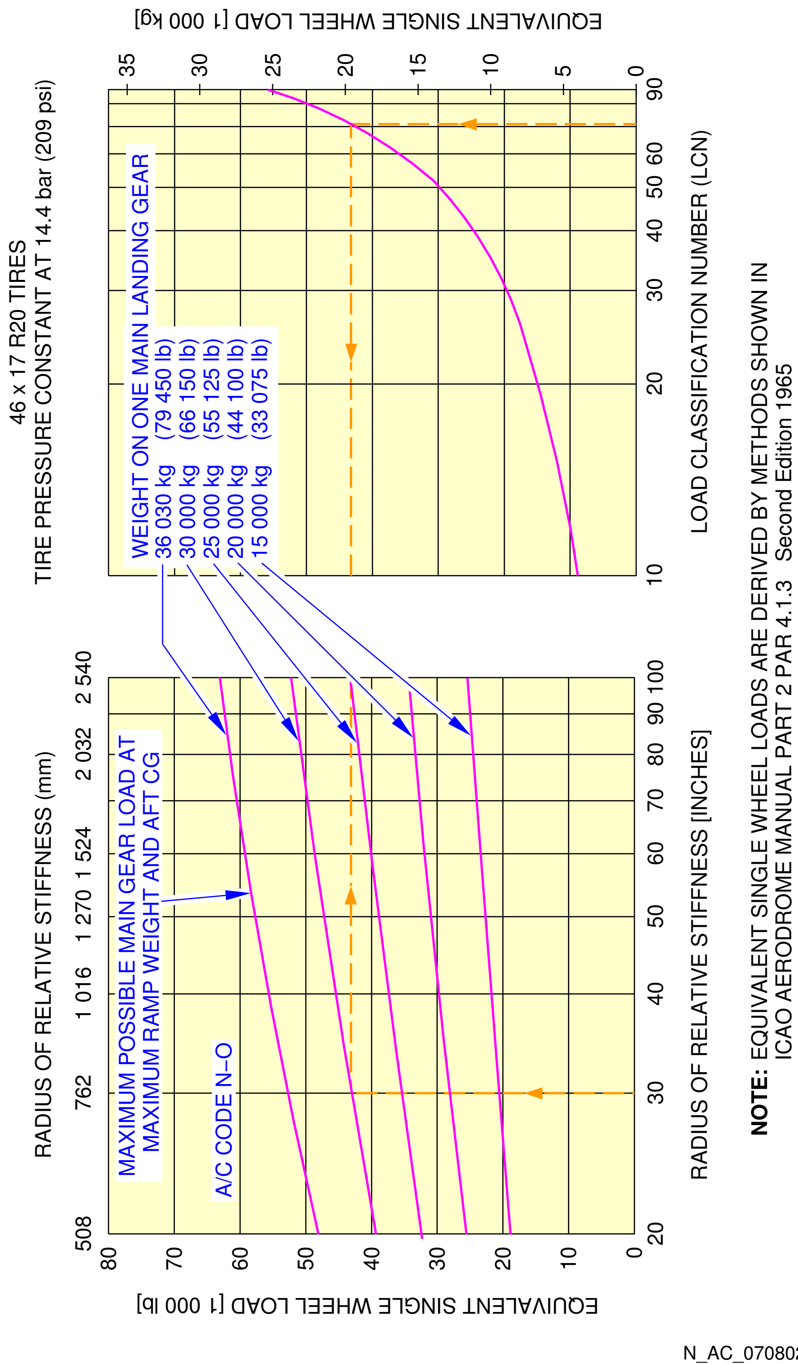
**ON A/C A320-200



N_AC_070802_1_1010101_01_00

Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-101-A01

****ON A/C A320-200**



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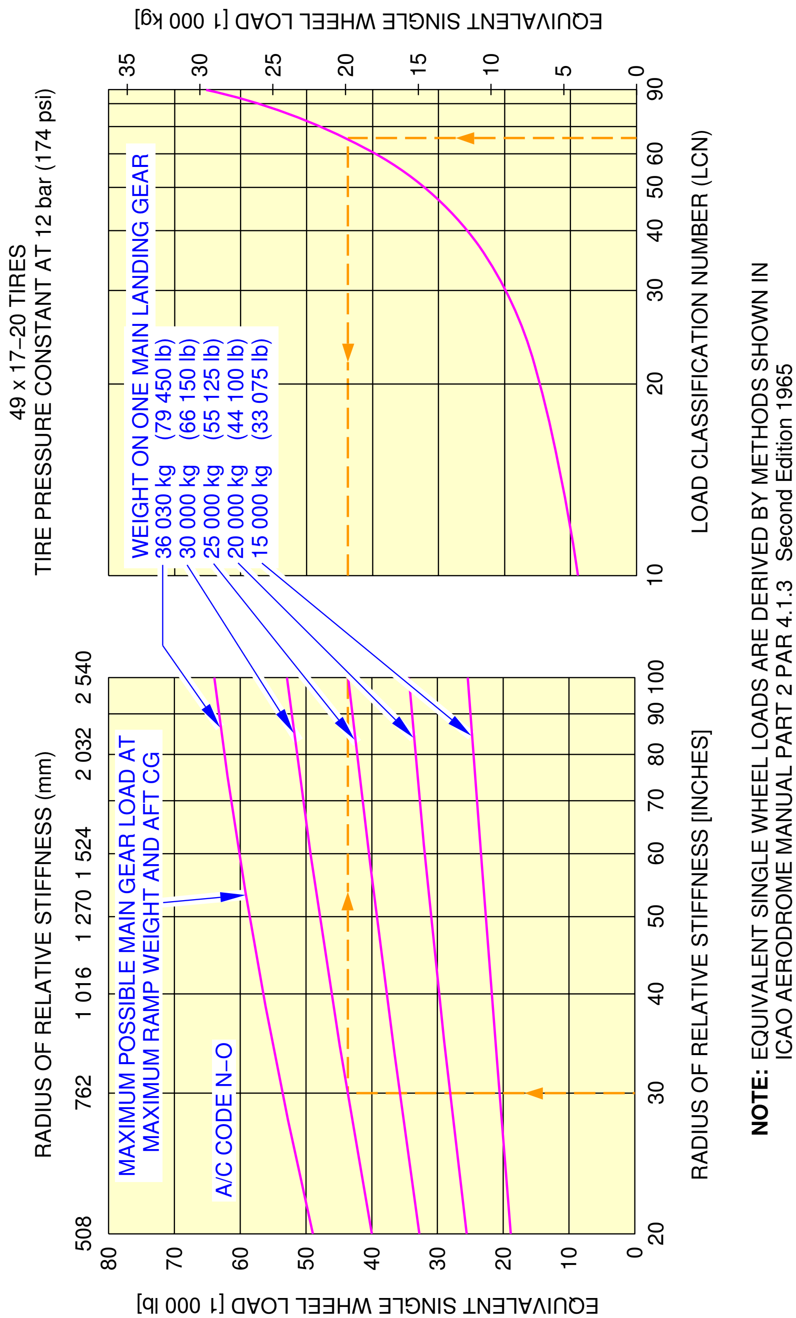
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-102-A01

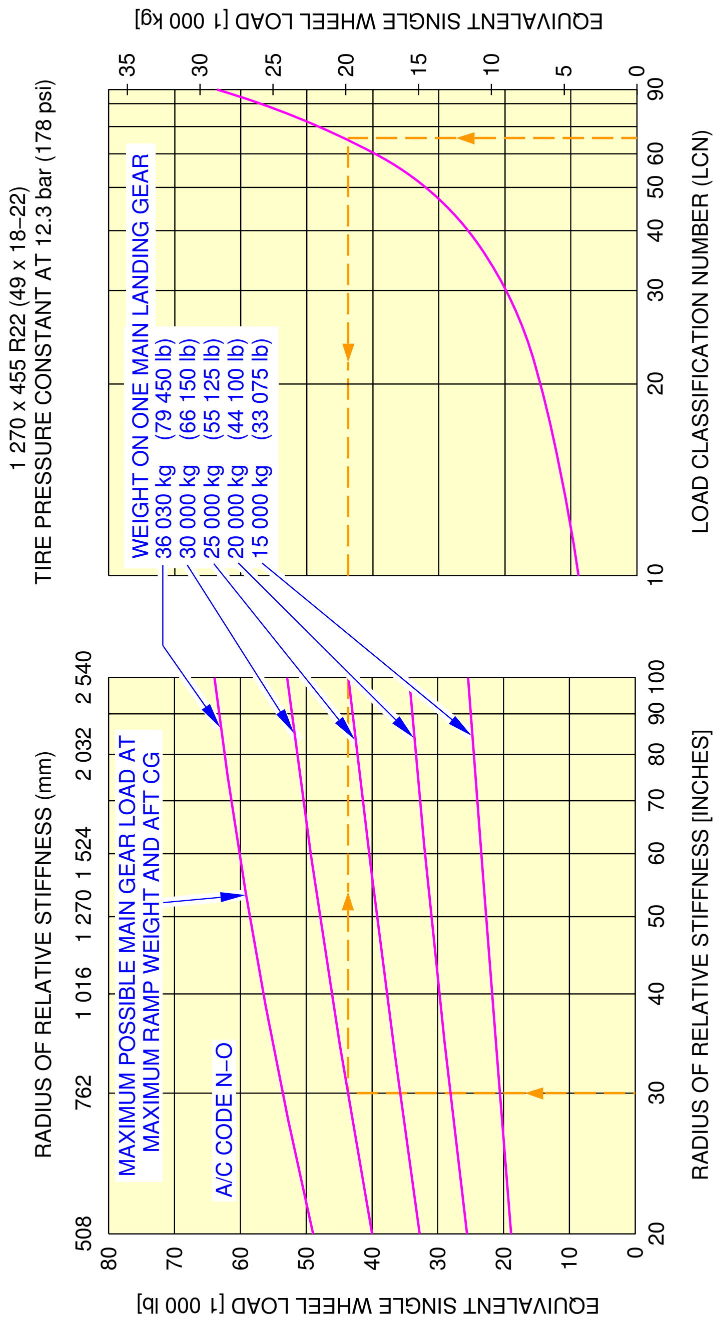
**ON A/C A320-200



N_AC_070802_1_1030101_01_00

Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-103-A01

**ON A/C A320-200



NOTE: EQUIVALENT SINGLE WHEEL LOADS ARE DERIVED BY METHODS SHOWN IN ICAO AERODROME MANUAL PART 2 PAR 4.1.3 Second Edition 1965

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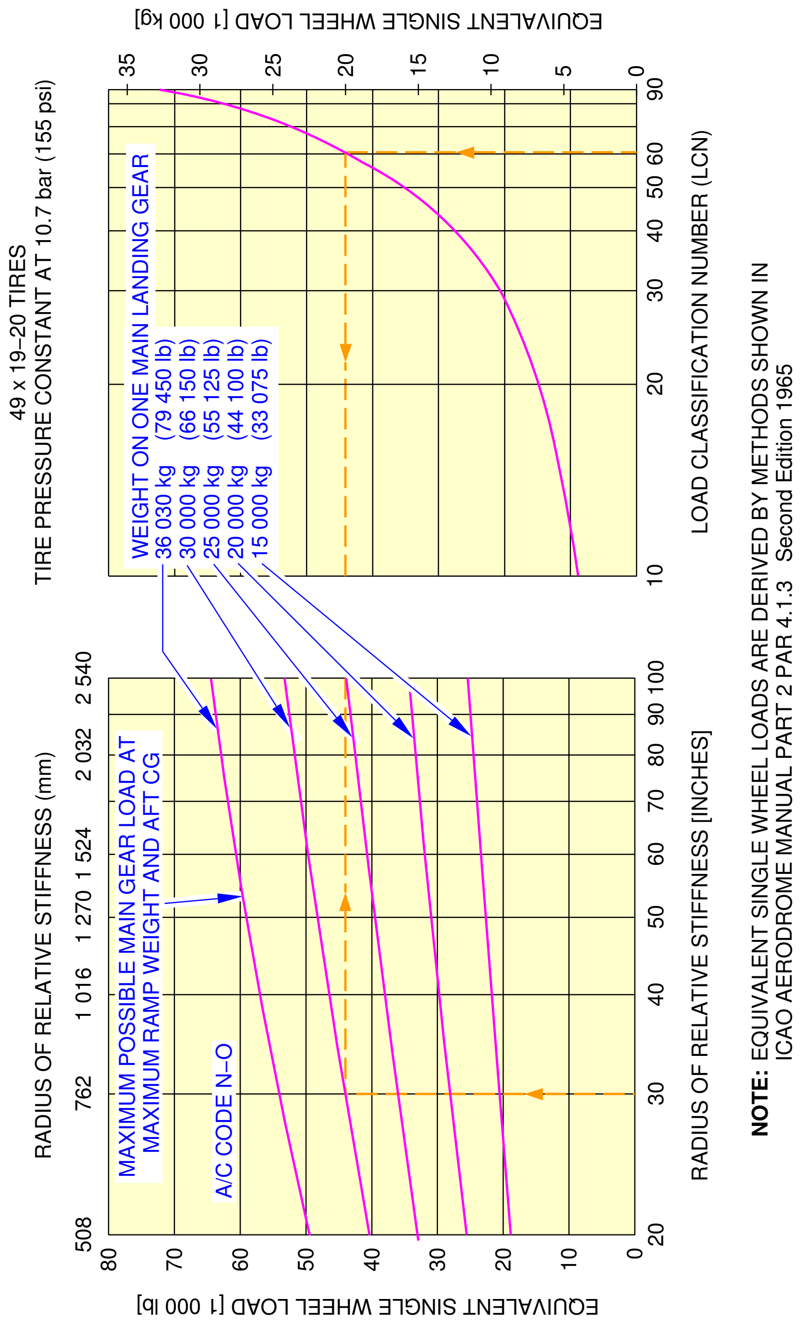
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-104-A01

**ON A/C A320-200



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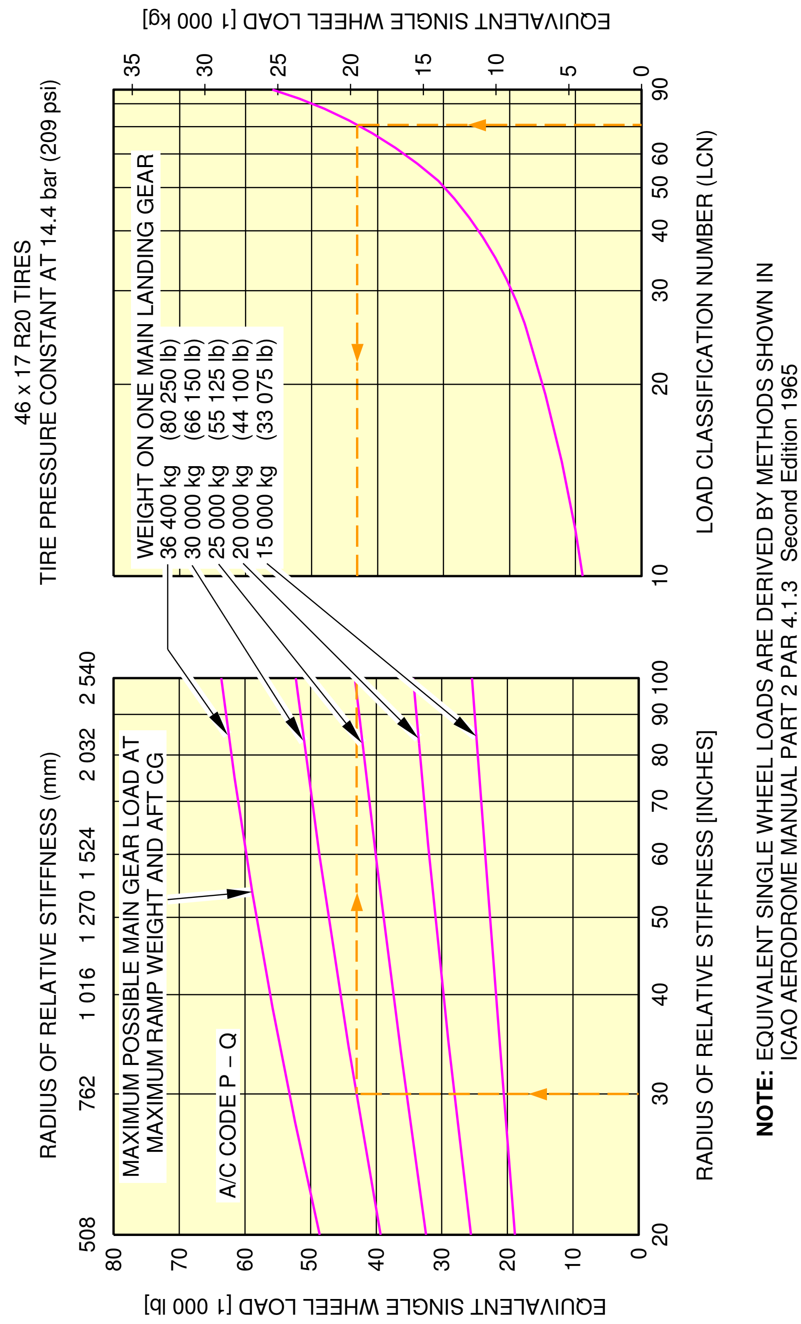
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-105-A01

**ON A/C A320-200



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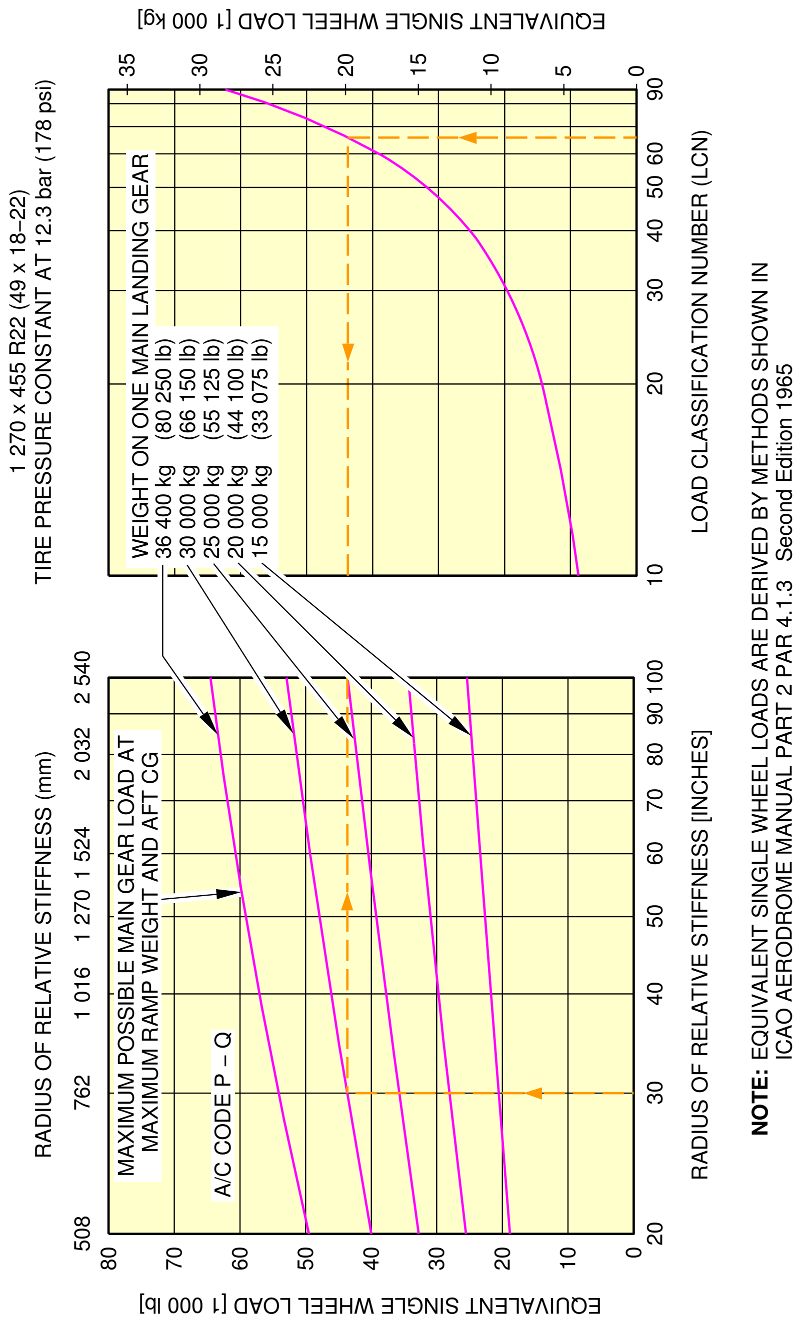
Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-106-A01

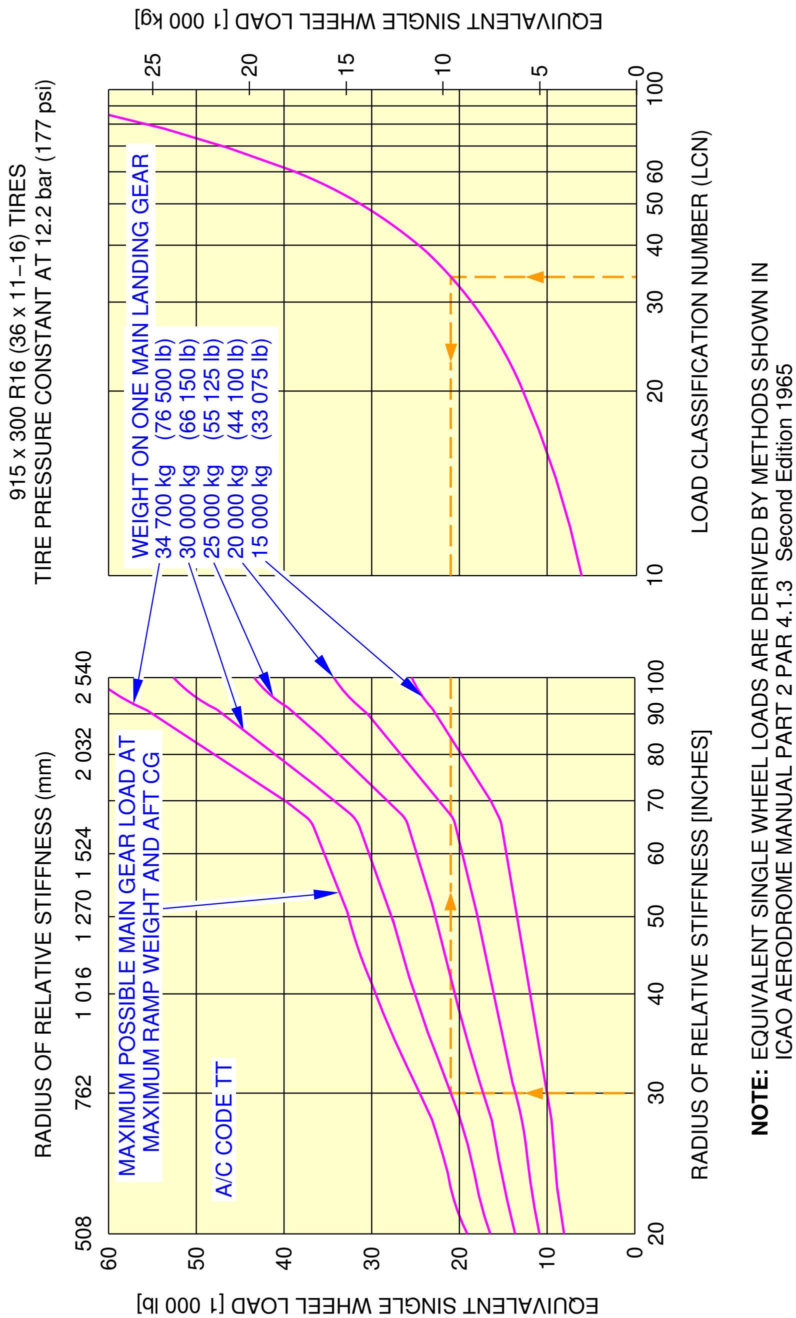
**ON A/C A320-200



N_AC_070802_1_1080101_01_01

Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-108-A01

****ON A/C A320-200**



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Rigid Pavement Requirements - LCN Conversion
FIGURE-7-8-2-991-110-A01

7-8-3 Radius of Relative Stiffness (Other values of E and L)

**ON A/C A320-200

Radius of Relative Stiffness (Other values of "E" and "L")

1. General

The table of Section 7-8-1, Radius of Relative Stiffness, presents "L" values based on Young's Modulus (E) of 4 000 000 psi and Poisson's Ratio (μ) of 0.15.

To find "L" values based on other values of "E" and "μ", see Section 7-8-4.

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

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

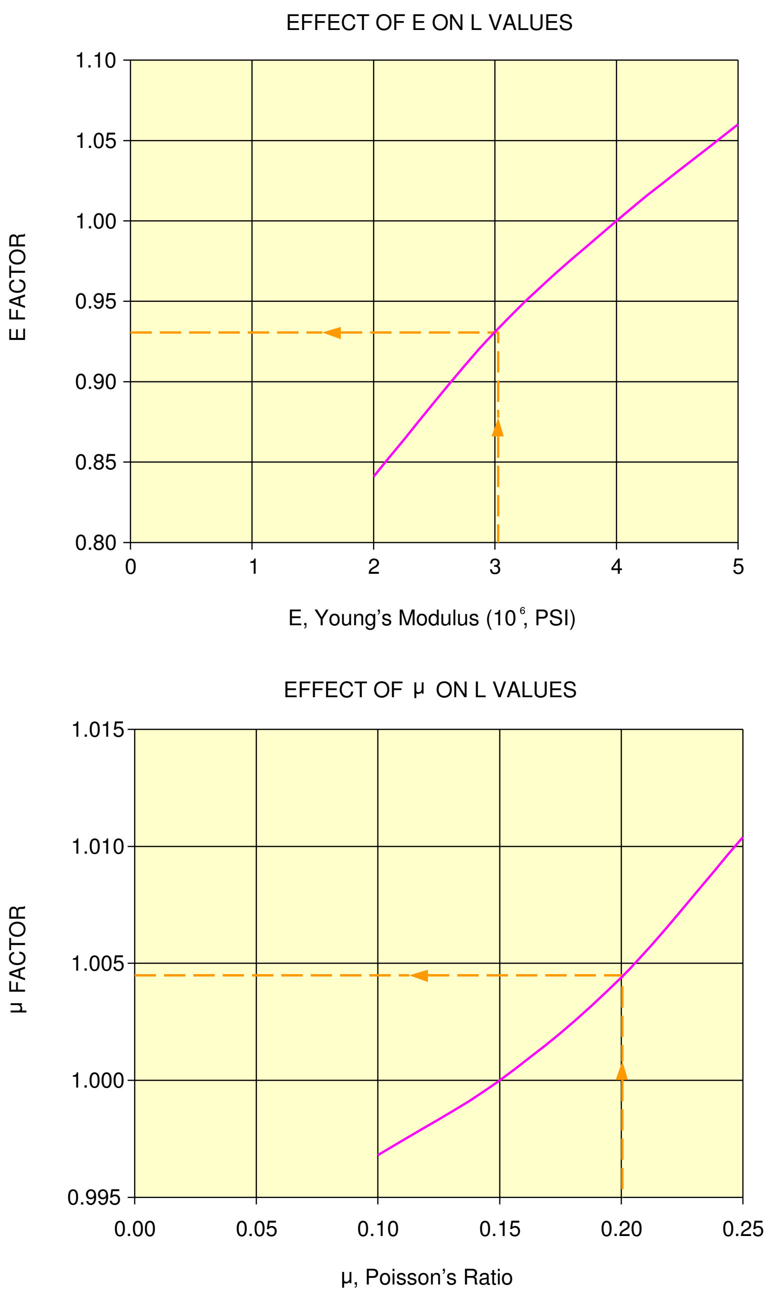
7-8-4 Radius of Relative Stiffness

****ON A/C A320-200**

Radius of Relative Stiffness

1. This section gives Radius of Relative Stiffness.

**ON A/C A320-200



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

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Radius of Relative Stiffness
(Effect E and μ on "L" values)
FIGURE-7-8-4-991-003-A01

7-9-0 ACN/PCN Reporting System

**ON A/C A320-200

ACN/PCN Reporting System

1. General

To determine the ACN of an aircraft on flexible or rigid pavement, both the aircraft gross weight and the subgrade strength must be known.

In the example shown in Section 7-9-1 Aircraft Classification Number – Flexible Pavement, A/C Code E (Main Gear Tire Size 46 x 17 R20 (46 x 16 - 20), inflated at 12.3 bar (178 psi)), for an aircraft gross weight of 55 000 kg (121 250 lb) and medium subgrade strength (code B), the ACN for the flexible pavement is 28.

In the example shown in Section 7-9-2 Aircraft Classification Number – Rigid Pavement, A/C Code E (Main Gear Tire Size 46 x 17 R20 (46 x 16 - 20), inflated at 12.3 bar (178 psi)), for an aircraft gross weight of 55 000 kg (121 250 lb) and medium subgrade strength (code B), the ACN for the rigid pavement is 32.

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).

7-9-1 Aircraft Classification Number - Flexible Pavement

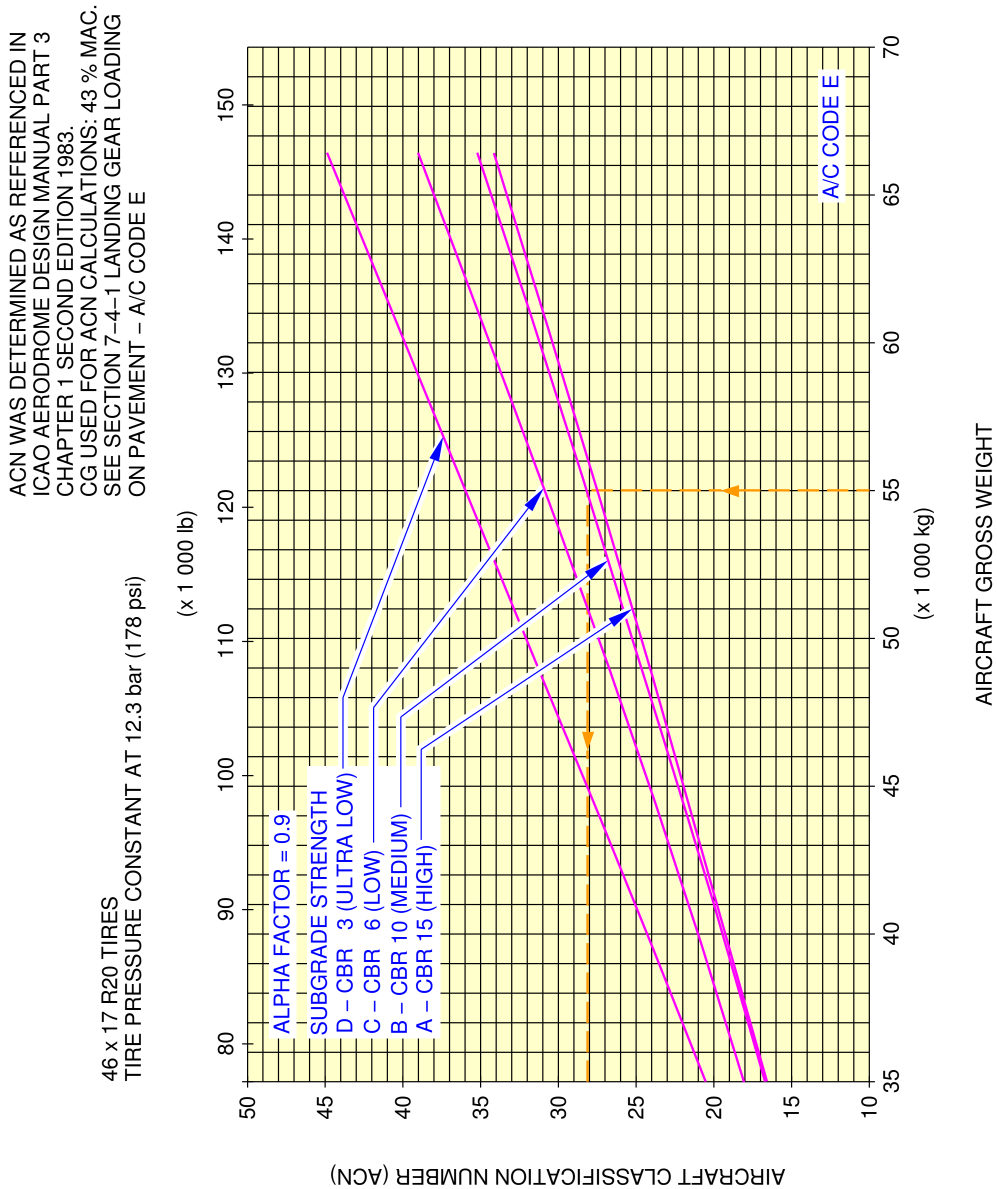
****ON A/C A320-200**

Aircraft Classification Number - Flexible Pavement

1. This section gives the Aircraft Classification Number - Flexible Pavement.

   NOTE : For A/C Code definition, refer to chapter 7-1-0.

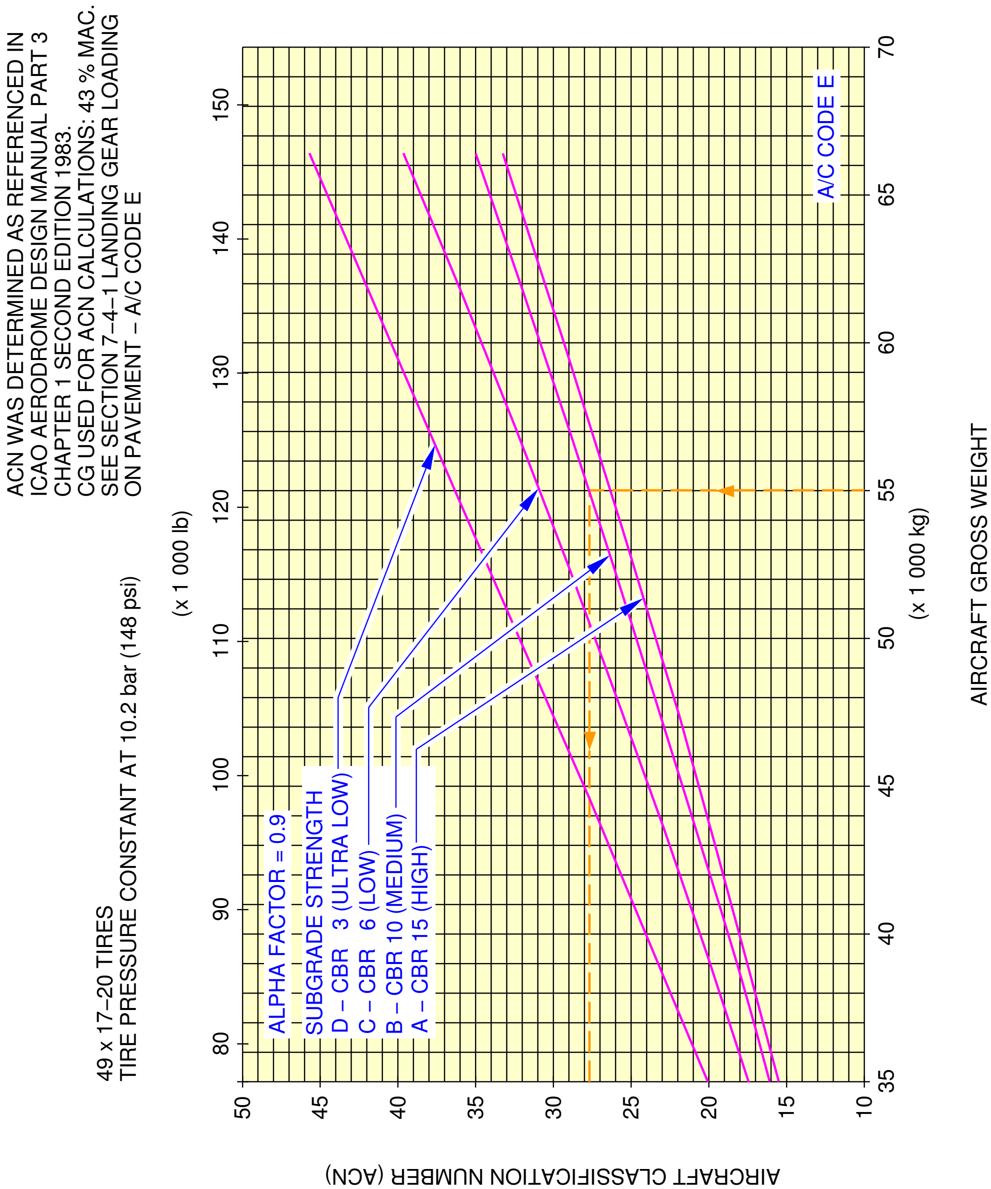
**ON A/C A320-200



N_AC_070901_1_0870101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-087-A01

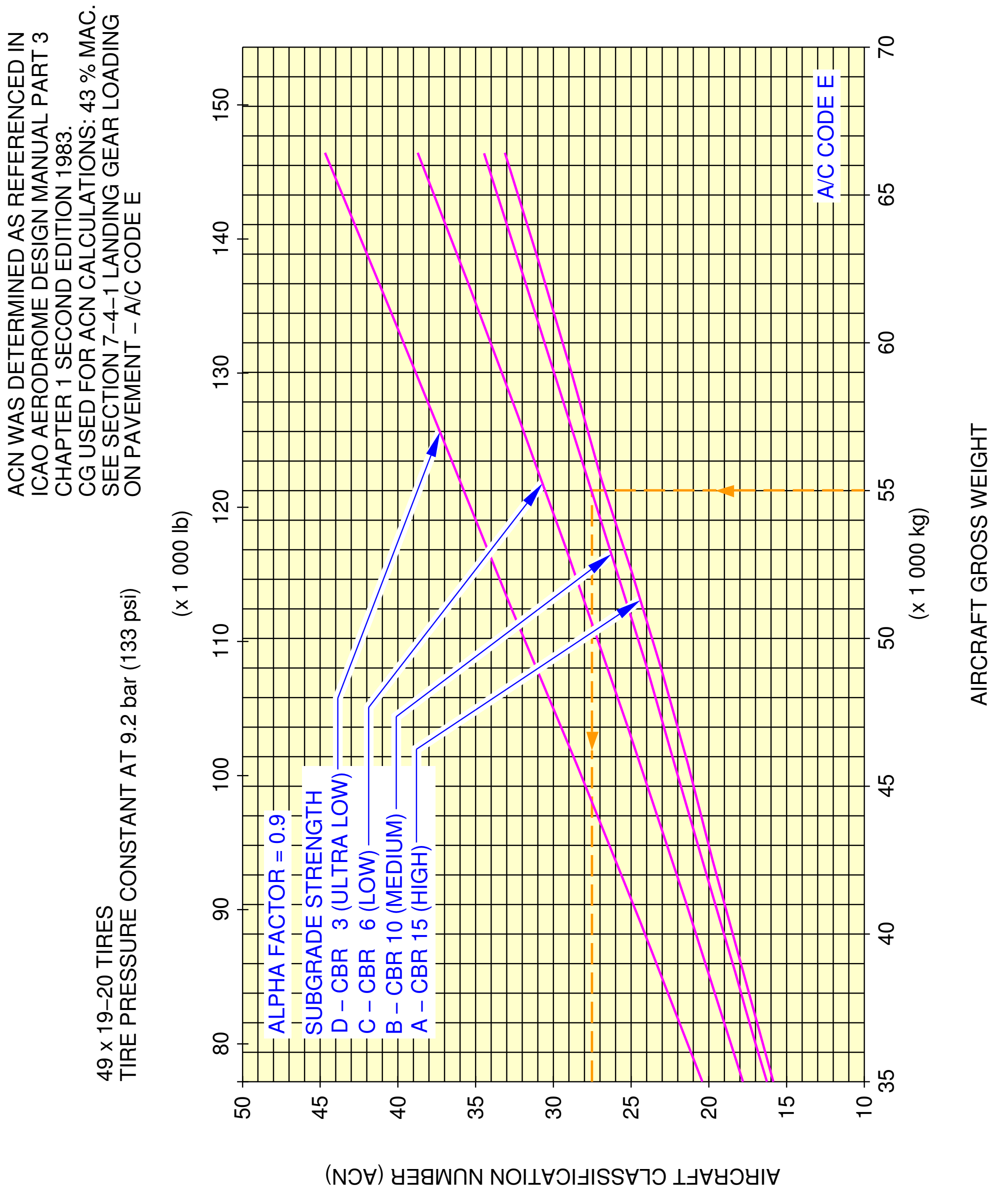
**ON A/C A320-200



N_AC_070901_1_0880101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-088-A01

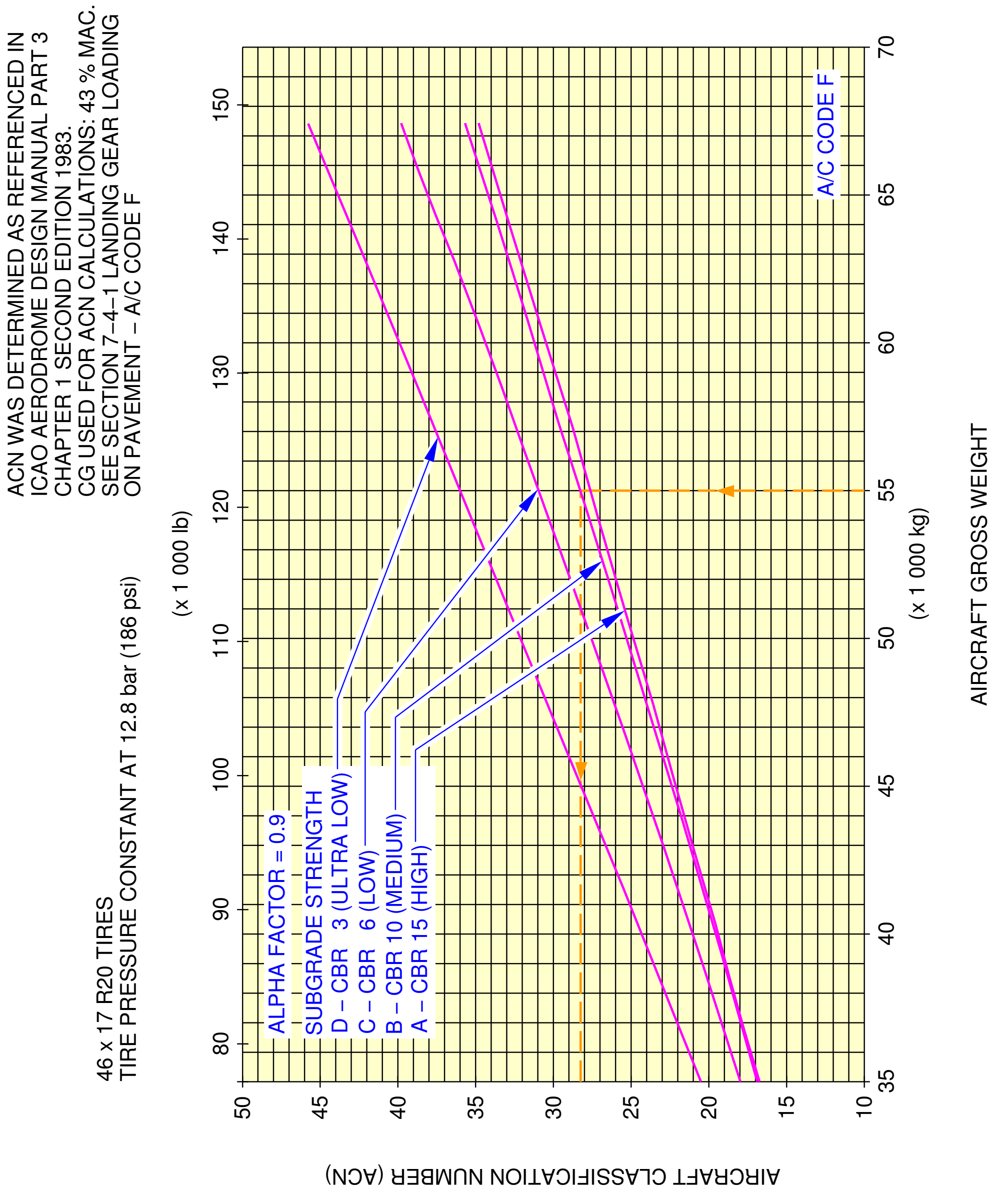
**ON A/C A320-200



N_AC_070901_1_0890101_01_00

Aircraft Classification Number − Flexible Pavement
FIGURE-7-9-1-991-089-A01

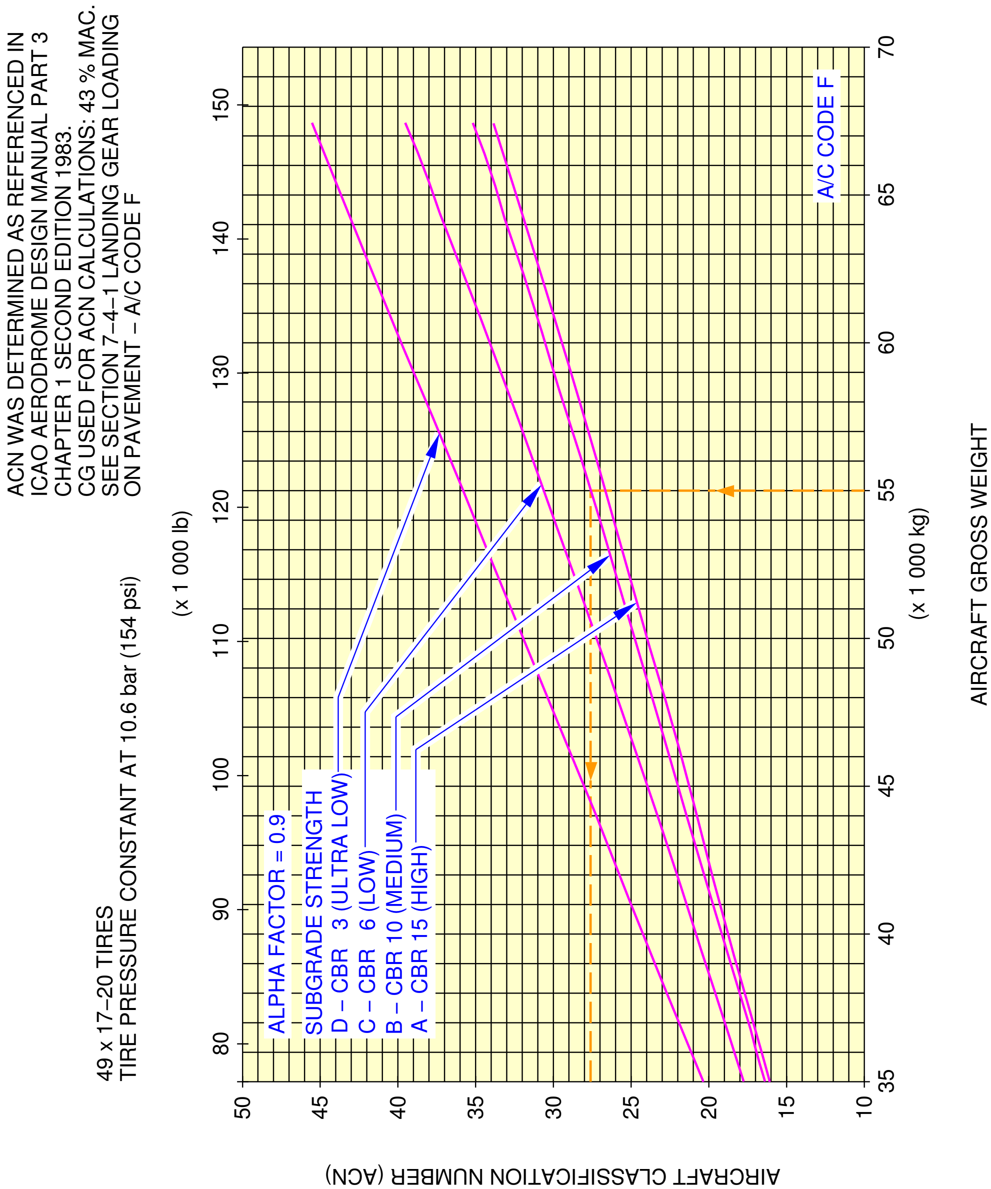
**ON A/C A320-200



N_AC_070901_1_0900101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-090-A01

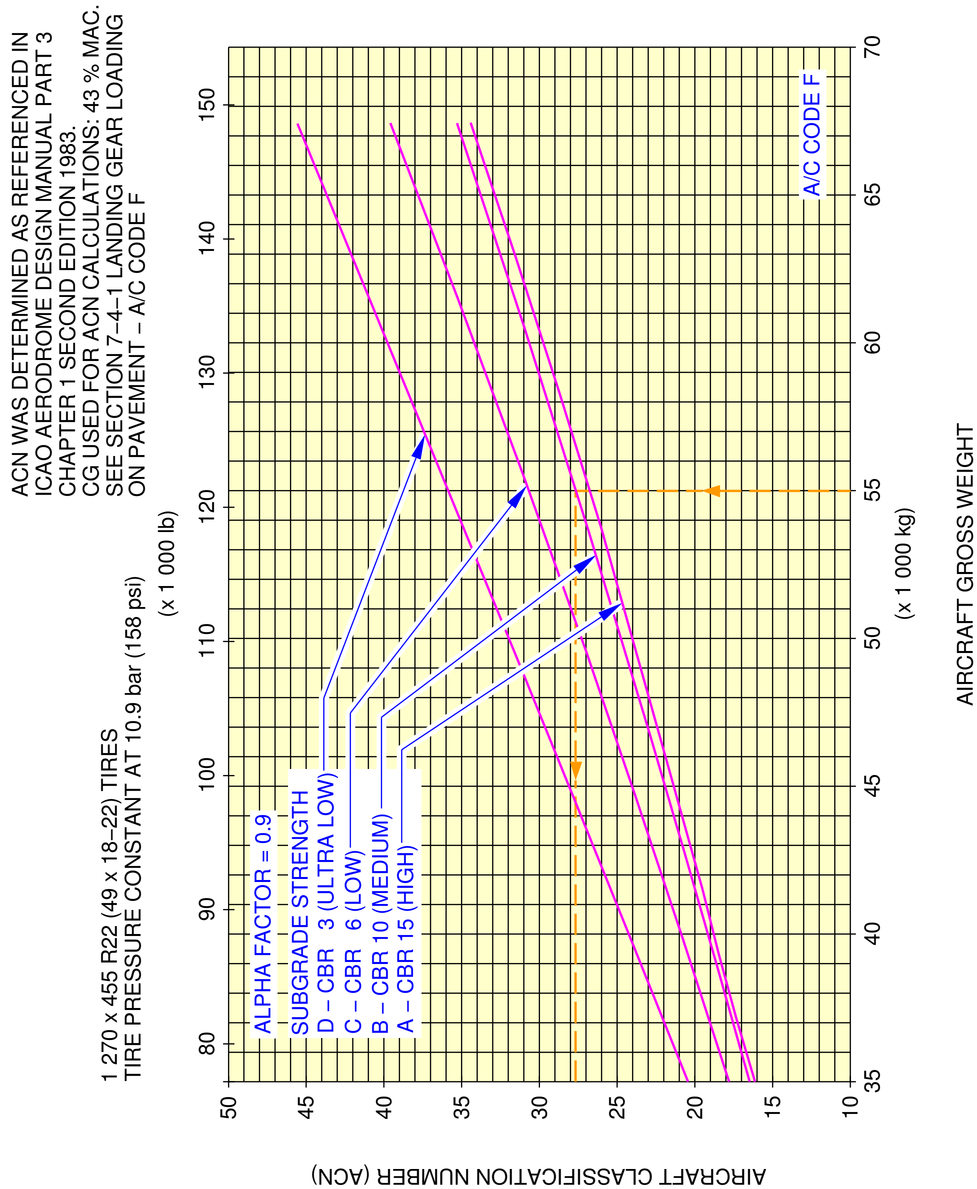
**ON A/C A320-200



N_AC_070901_1_0910101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-091-A01

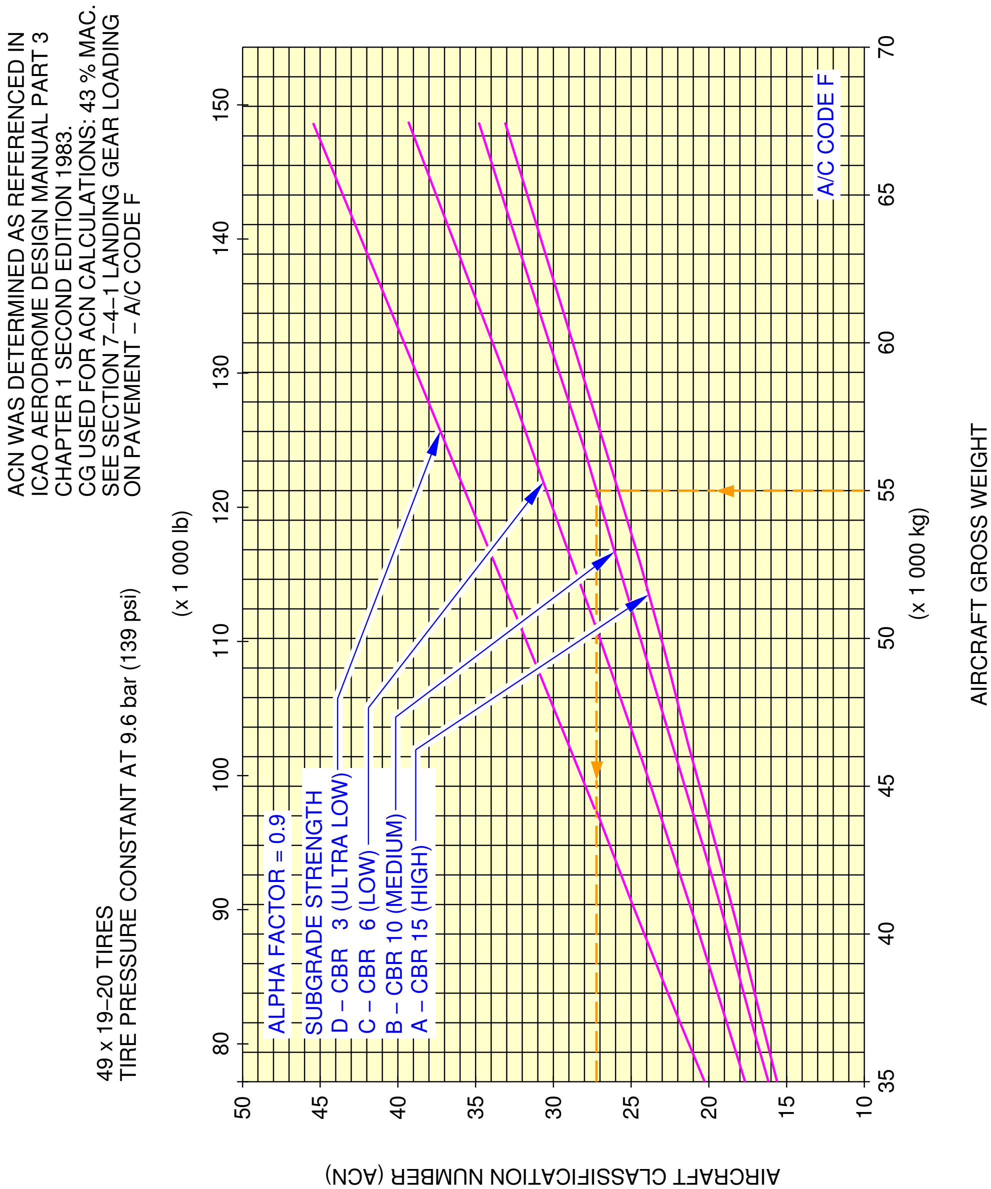
**ON A/C A320-200



N_AC_070901_1_0920101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-092-A01

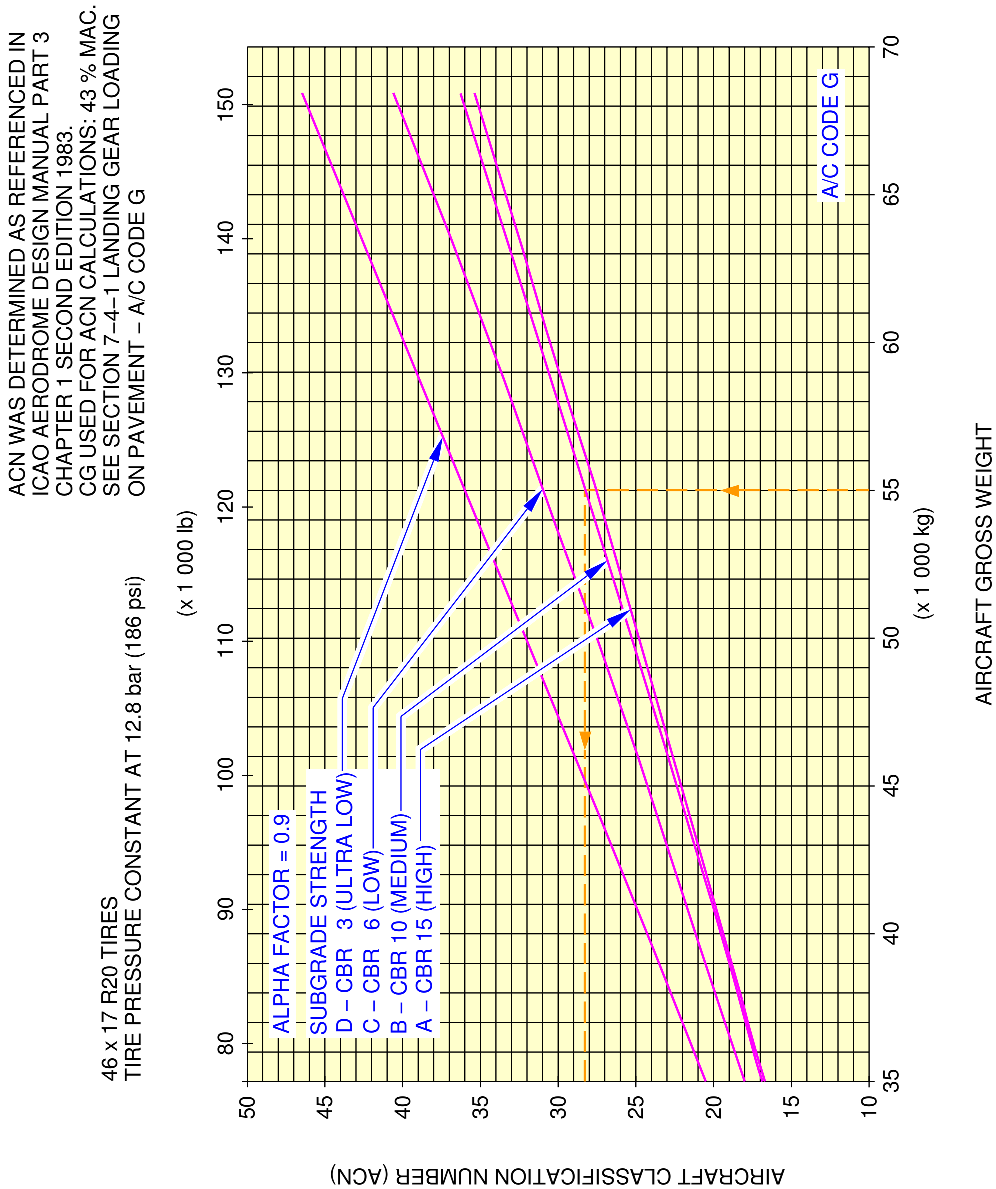
**ON A/C A320-200



N_AC_070901_1_0930101_01_00

Aircraft Classification Number − Flexible Pavement
FIGURE-7-9-1-991-093-A01

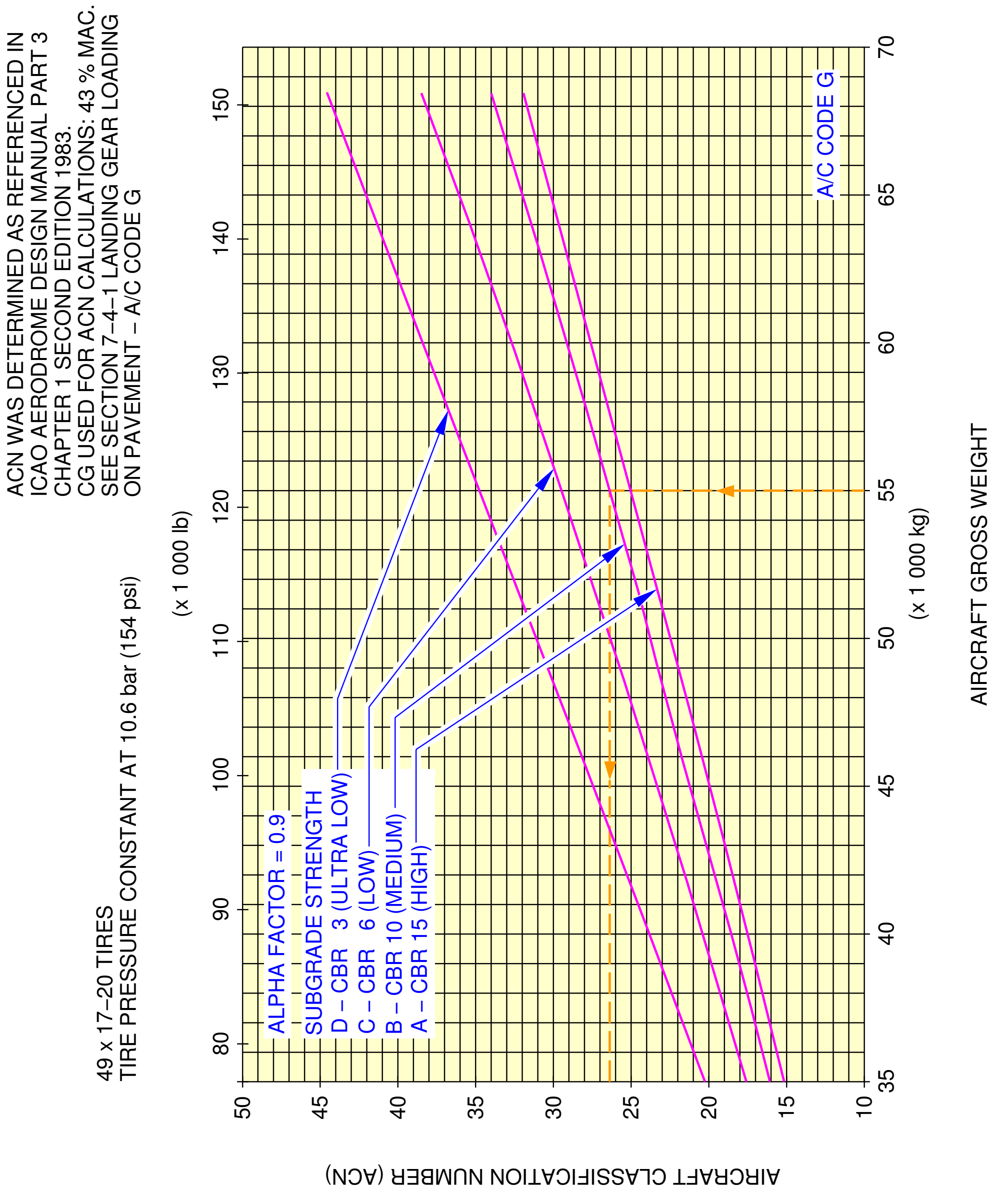
**ON A/C A320-200



N_AC_070901_1_0940101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-094-A01

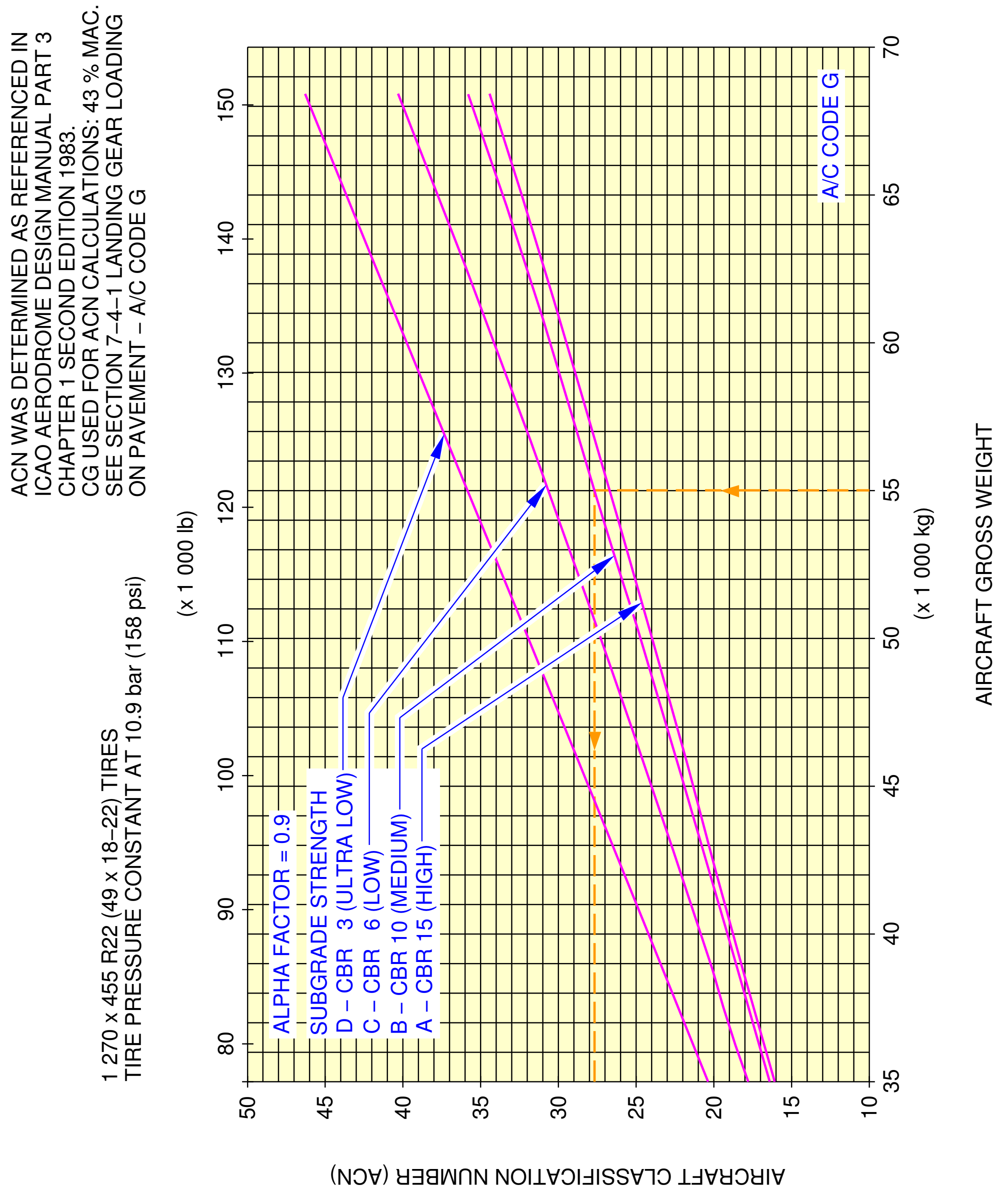
**ON A/C A320-200



N_AC_070901_1_0950101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-095-A01

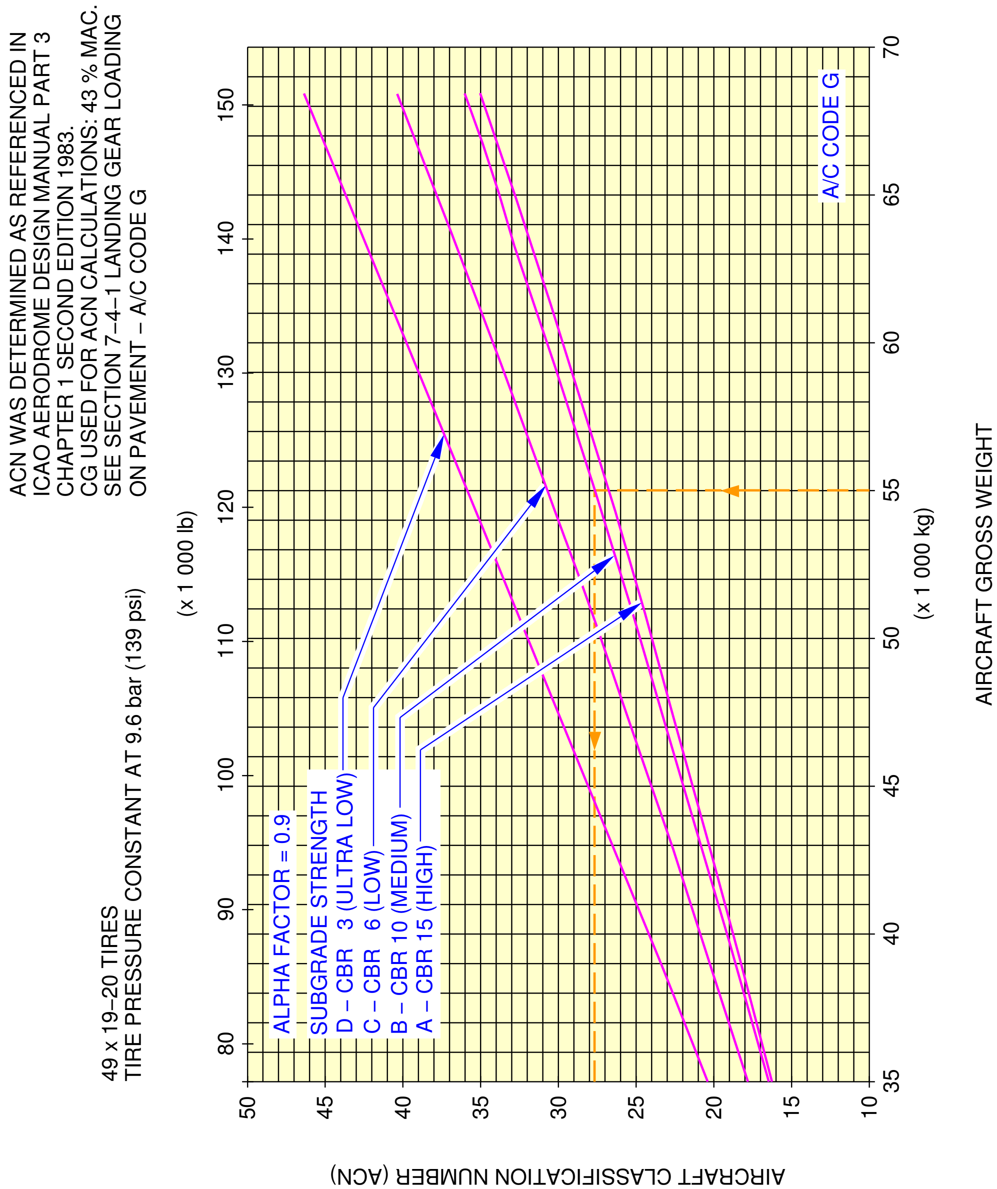
**ON A/C A320-200



N_AC_070901_1_0960101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-096-A01

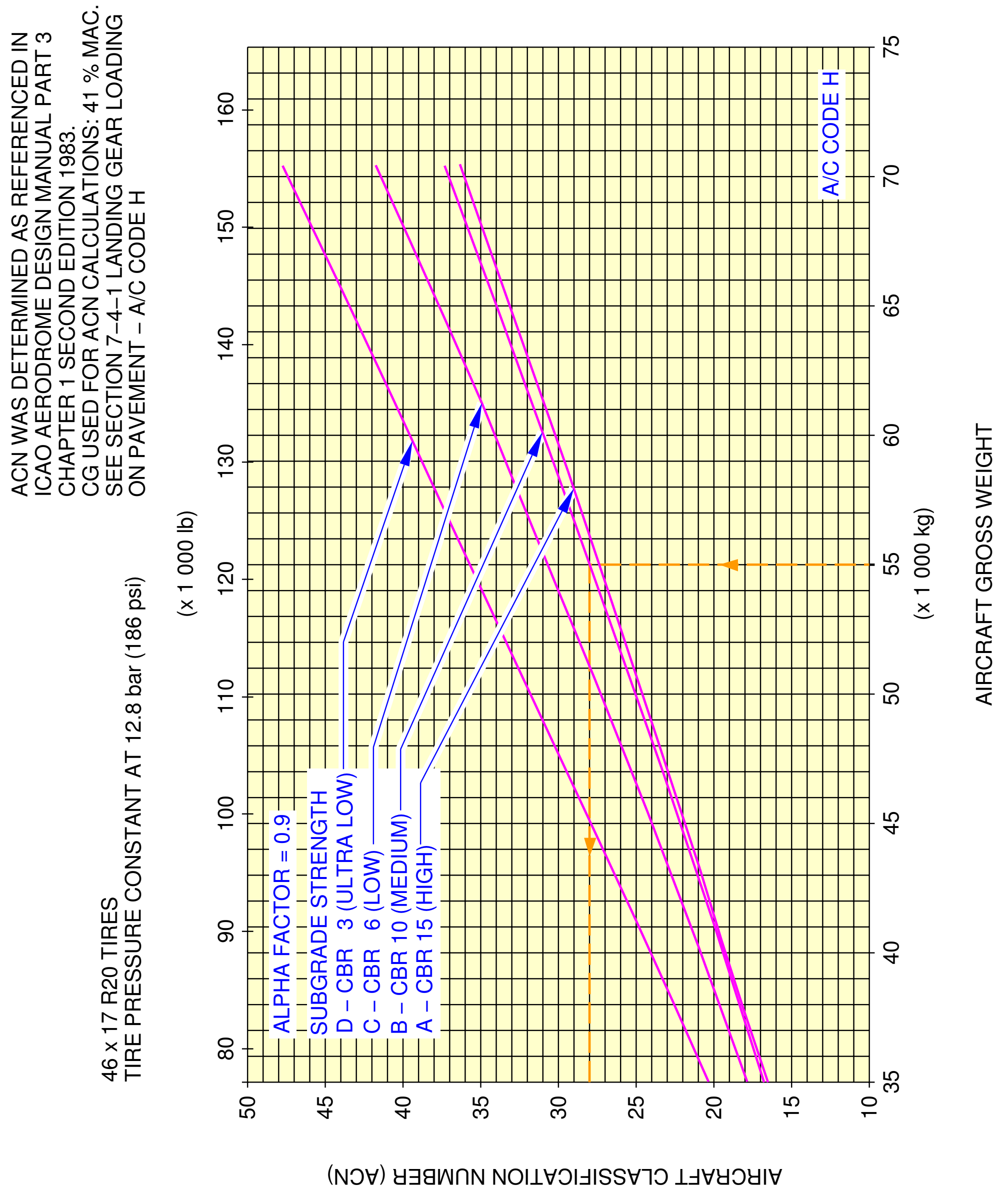
**ON A/C A320-200



N_AC_070901_1_0970101_01_00

Aircraft Classification Number - Flexible Pavement
FIGURE-7-9-1-991-097-A01

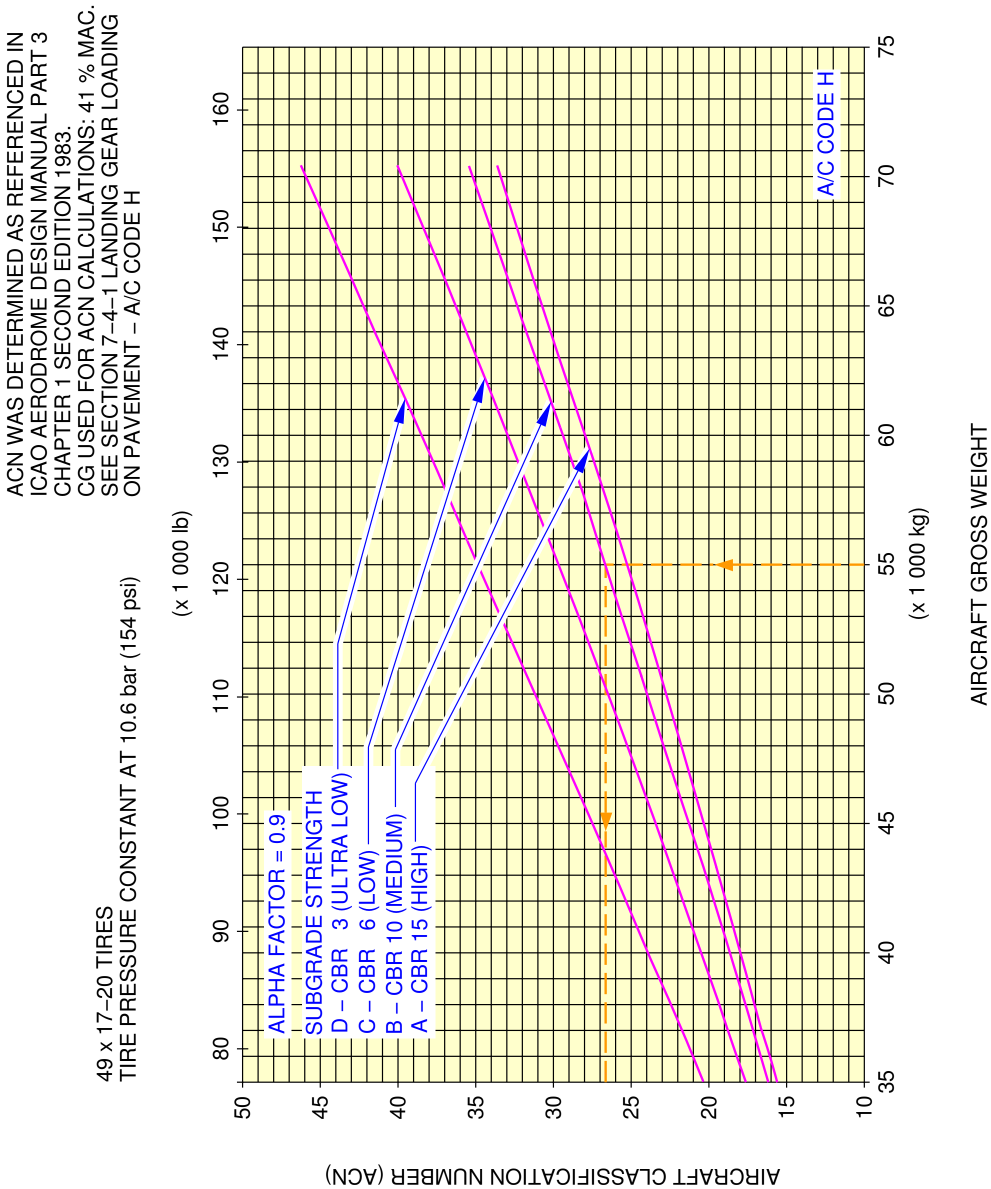
**ON A/C A320-200



N_AC_070901_1_0980101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-098-A01

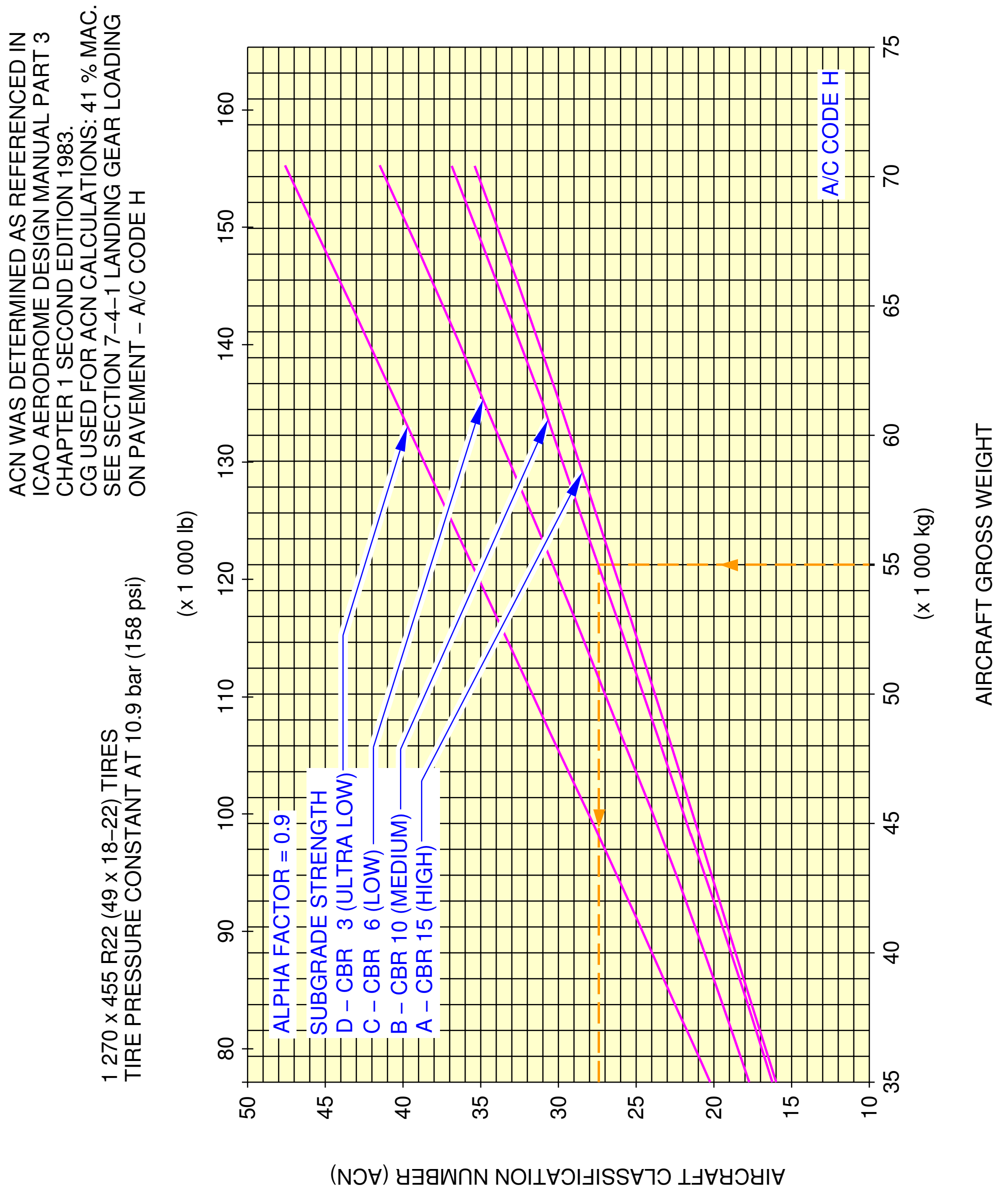
**ON A/C A320-200



N_AC_070901_1_0990101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-099-A01

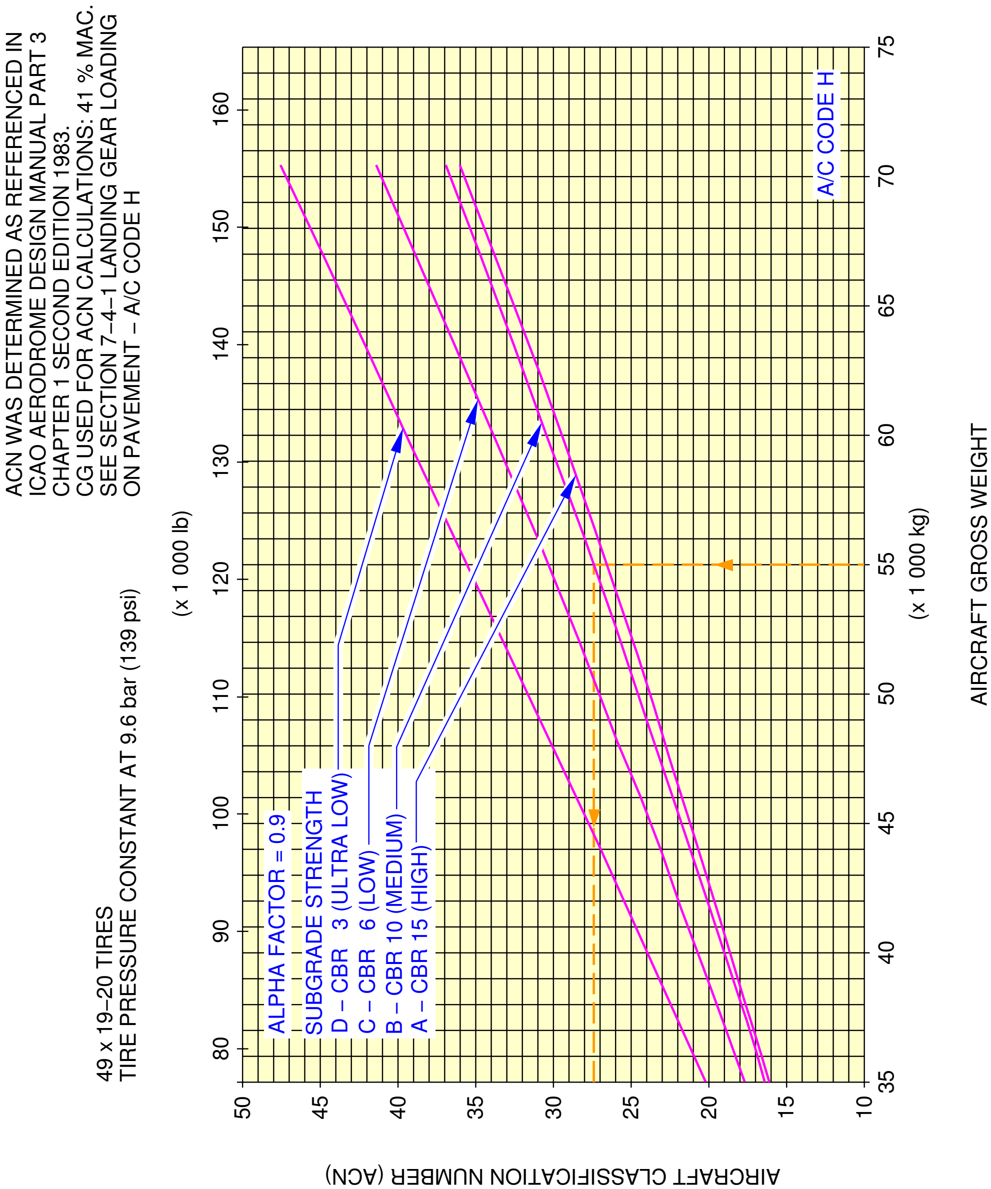
**ON A/C A320-200



N_AC_070901_1_1000101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-100-A01

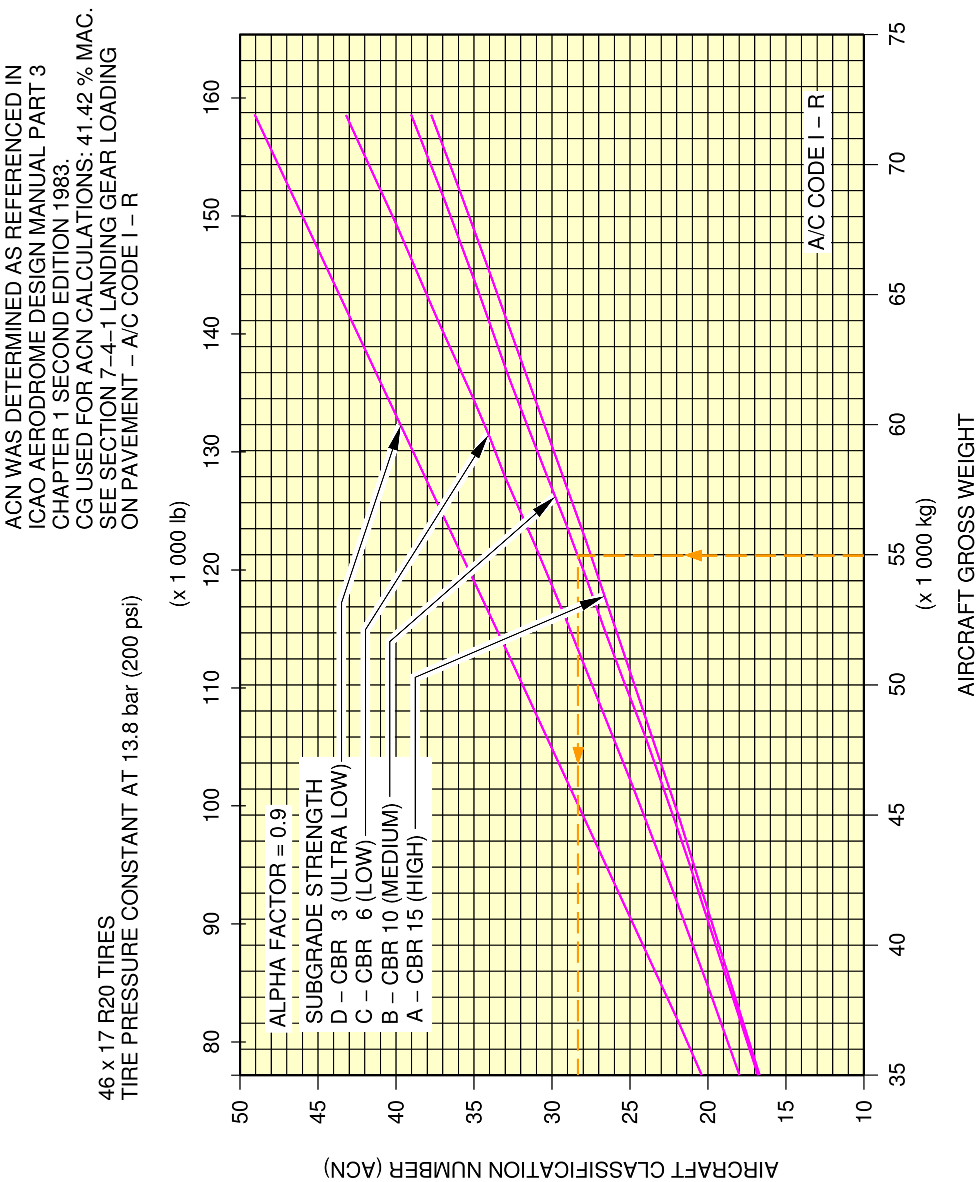
**ON A/C A320-200



N_AC_070901_1_1010101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-101-A01

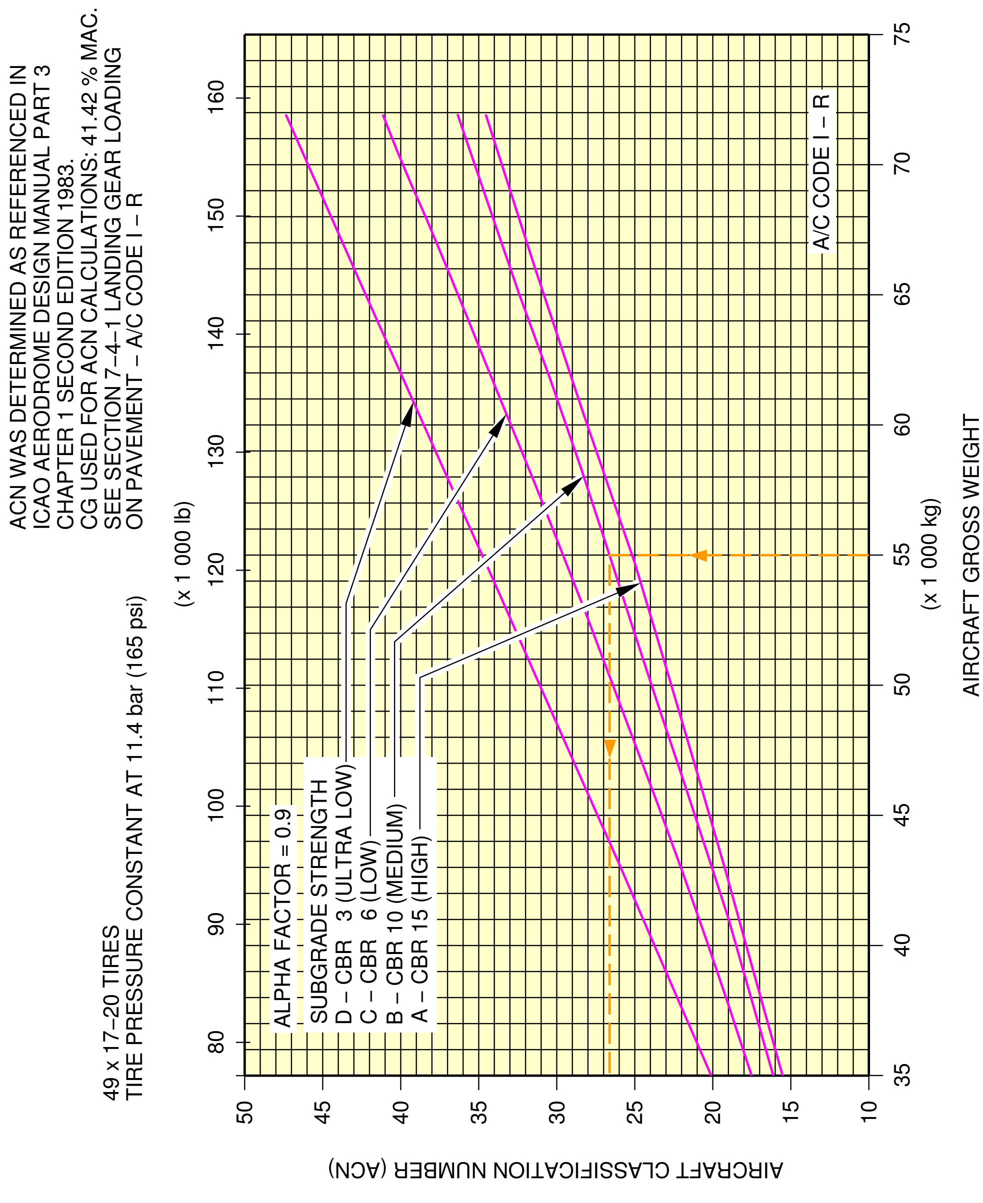
****ON A/C A320-200**



N_AC_070901_1_1020101_01_01

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-102-A01

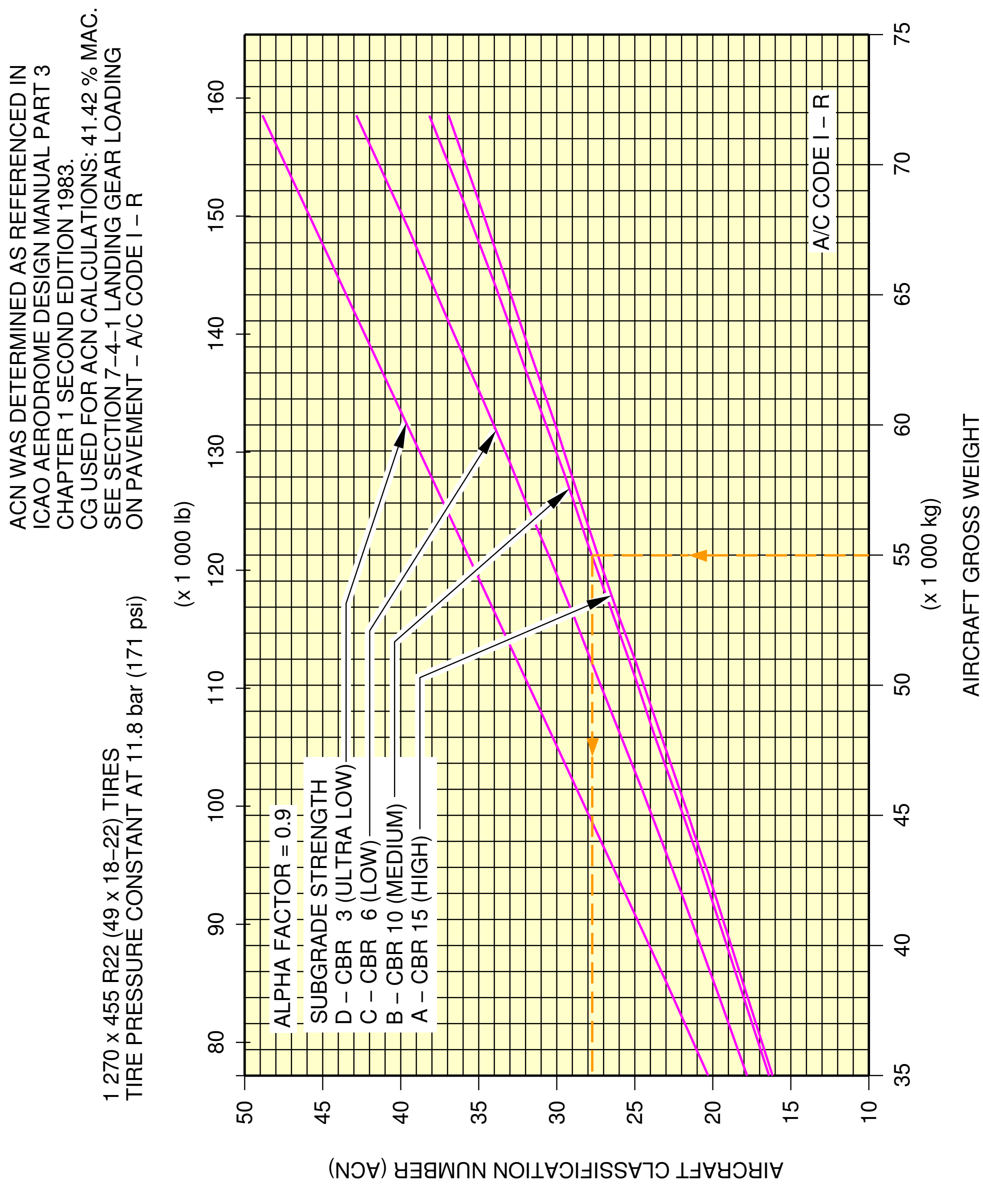
****ON A/C A320-200**



N_AC_070901_1_1030101_01_01

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-103-A01

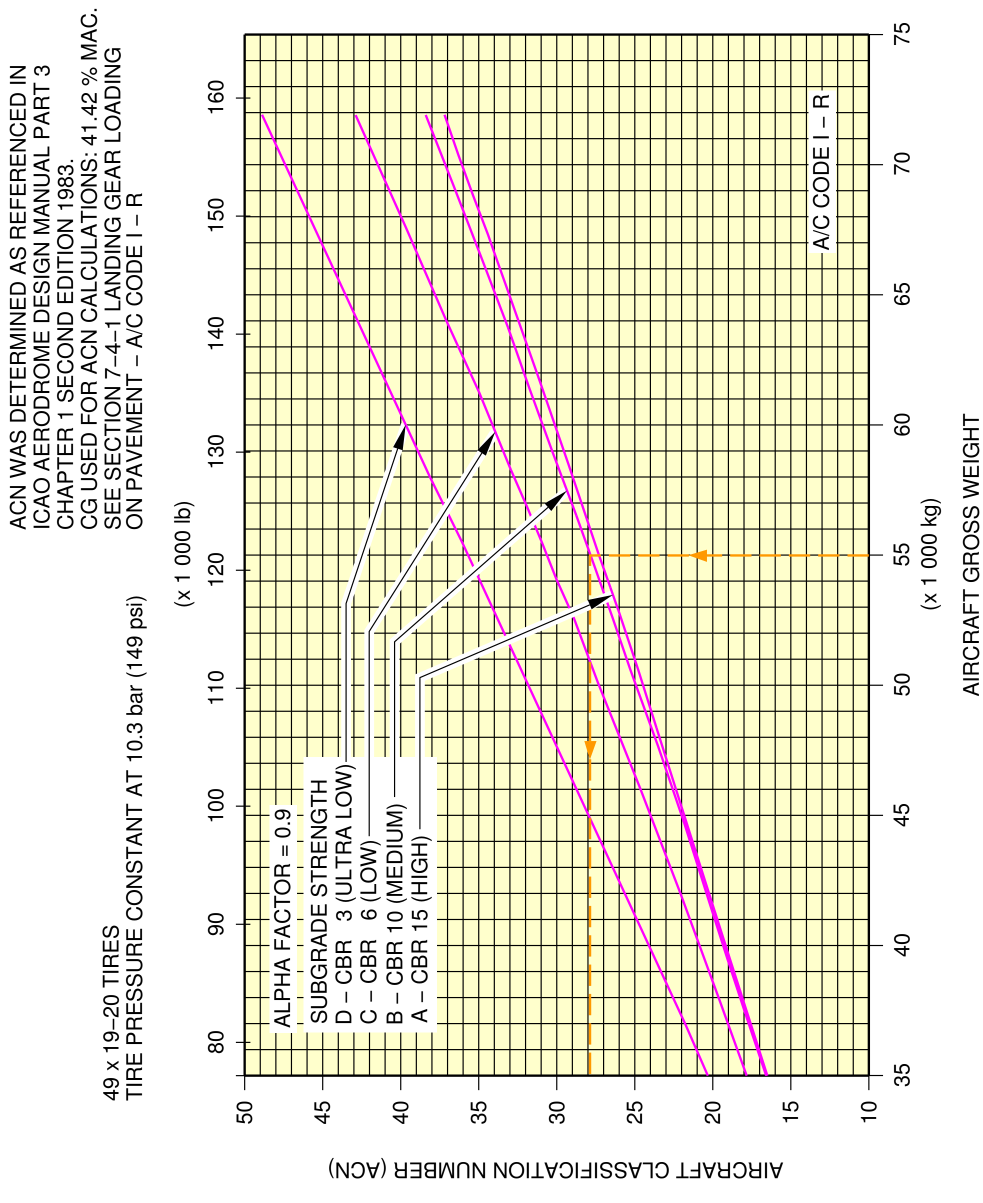
**ON A/C A320-200



N_AC_070901_1_1040101_01_01

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-104-A01

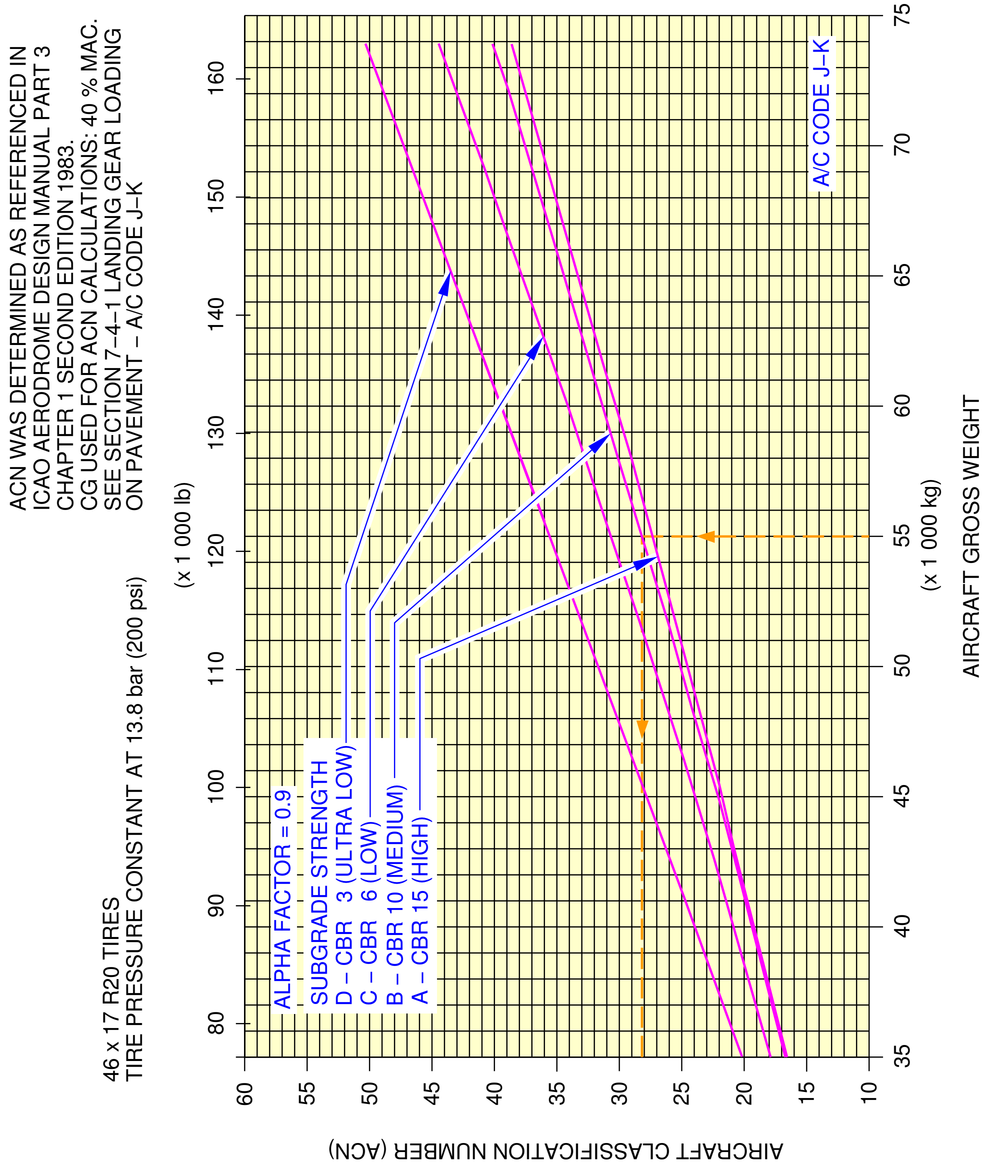
**ON A/C A320-200



N_AC_070901_1_1050101_01_01

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-105-A01

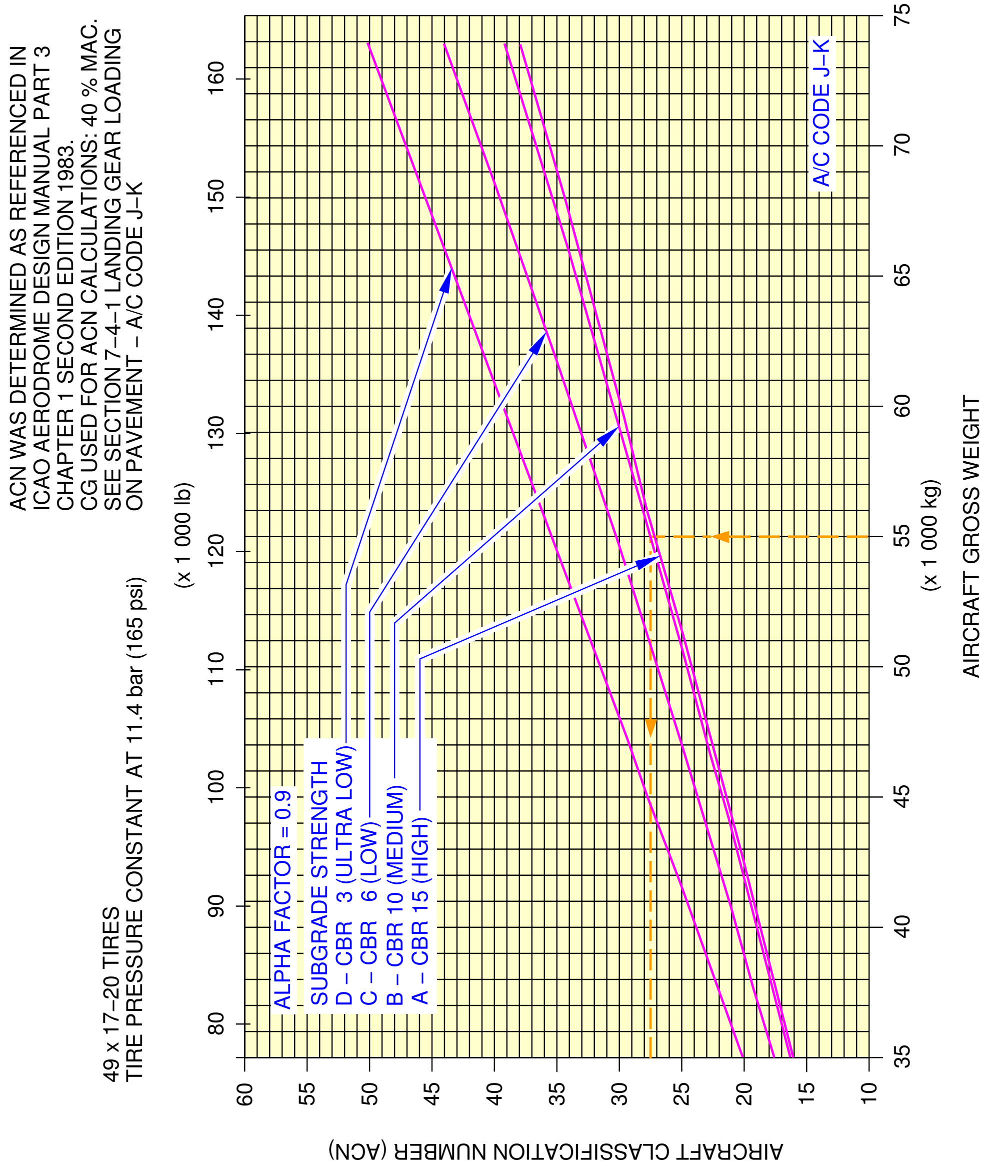
**ON A/C A320-200



N_AC_070901_1_1060101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-106-A01

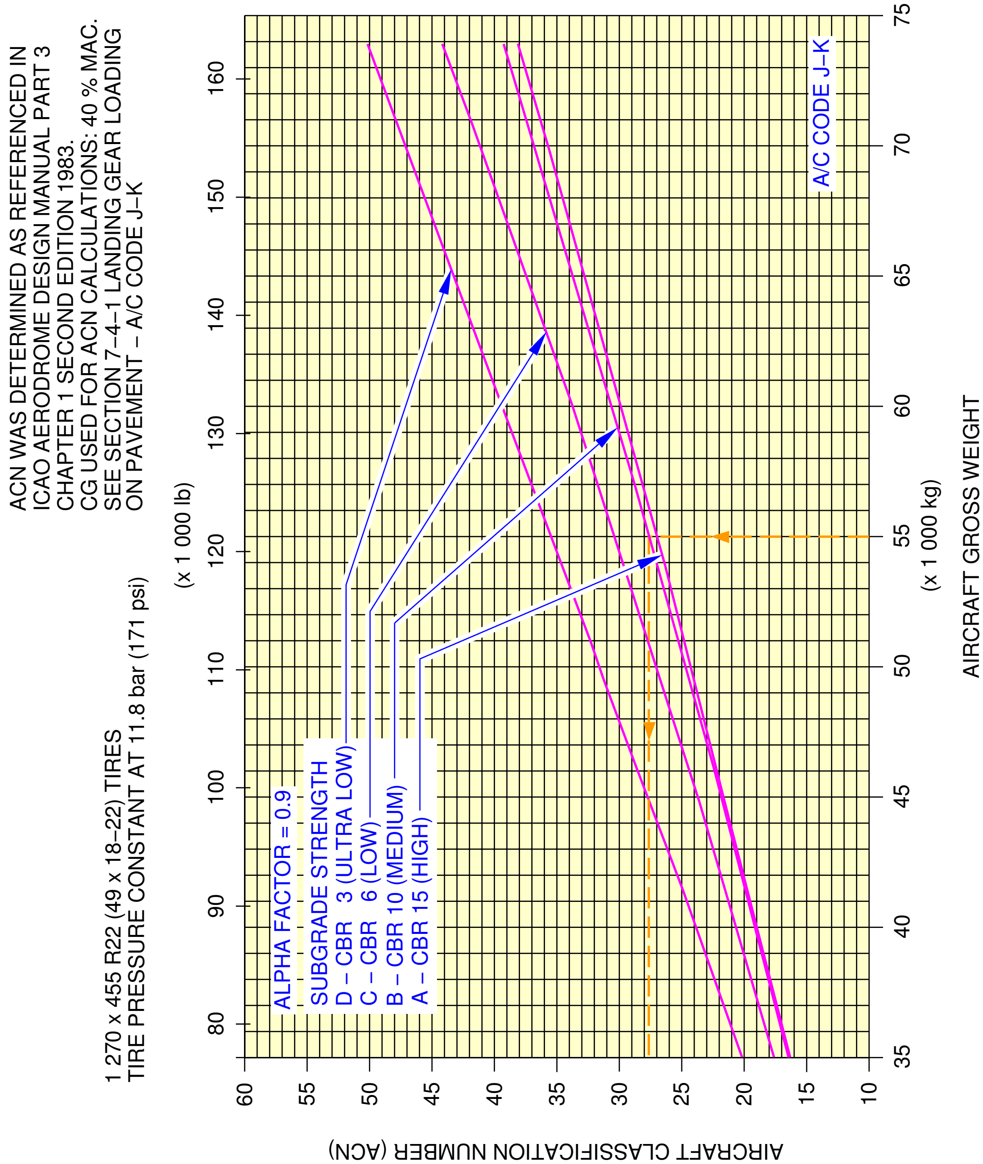
**ON A/C A320-200



N_AC_070901_1_1070101_01_00

Aircraft Classification Number − Flexible Pavement
FIGURE-7-9-1-991-107-A01

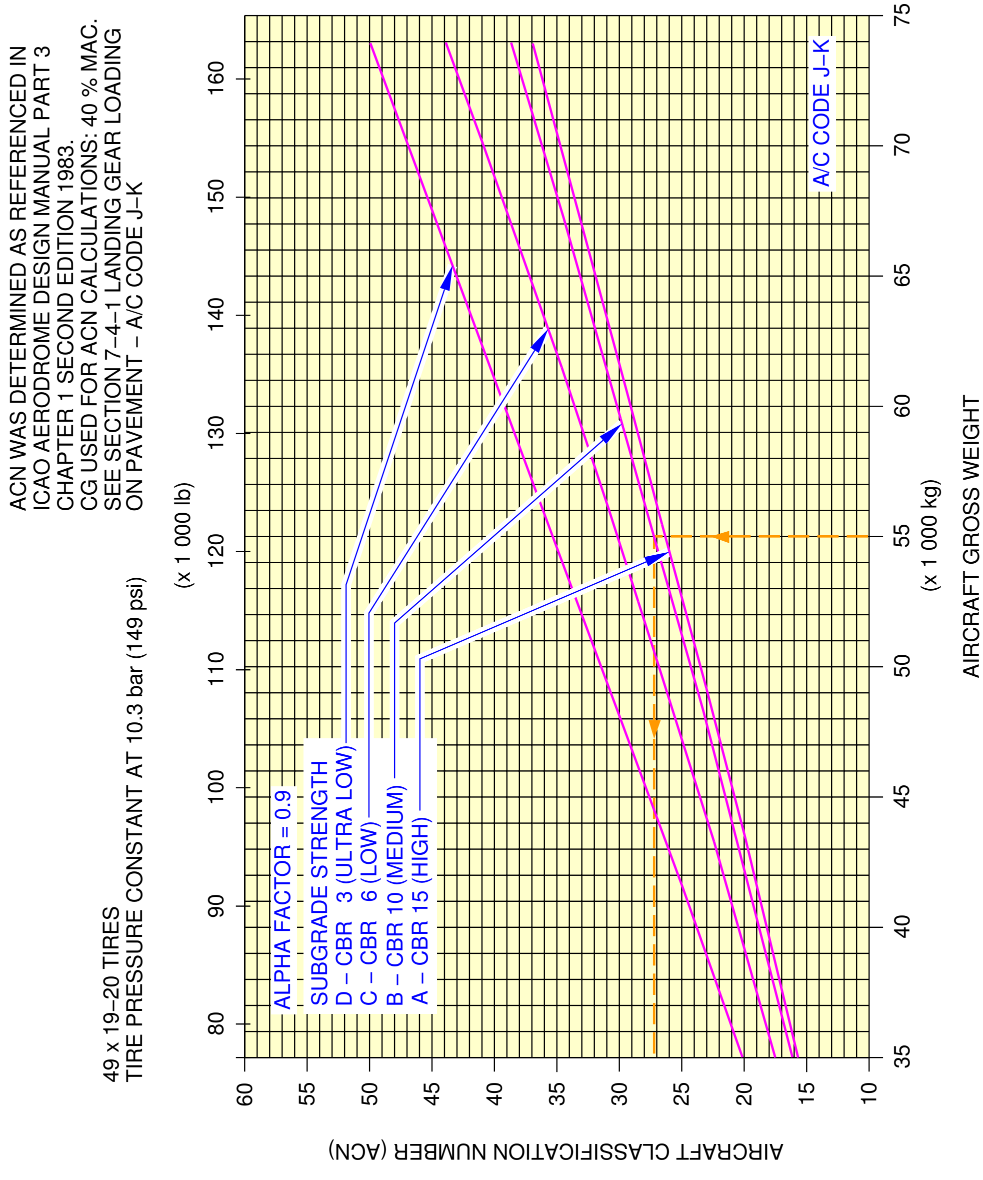
**ON A/C A320-200



N_AC_070901_1_1080101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-108-A01

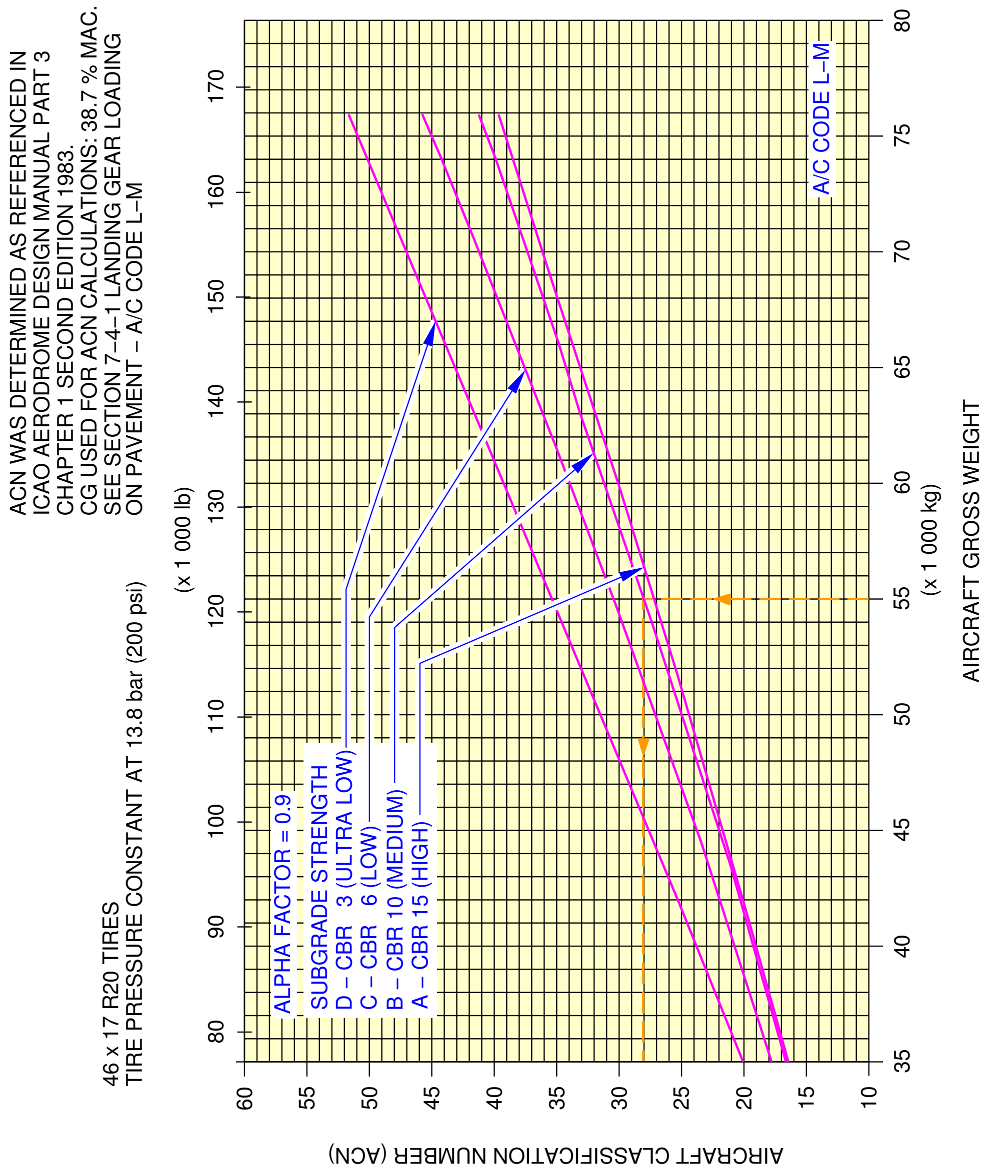
**ON A/C A320-200



N_AC_070901_1_1090101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-109-A01

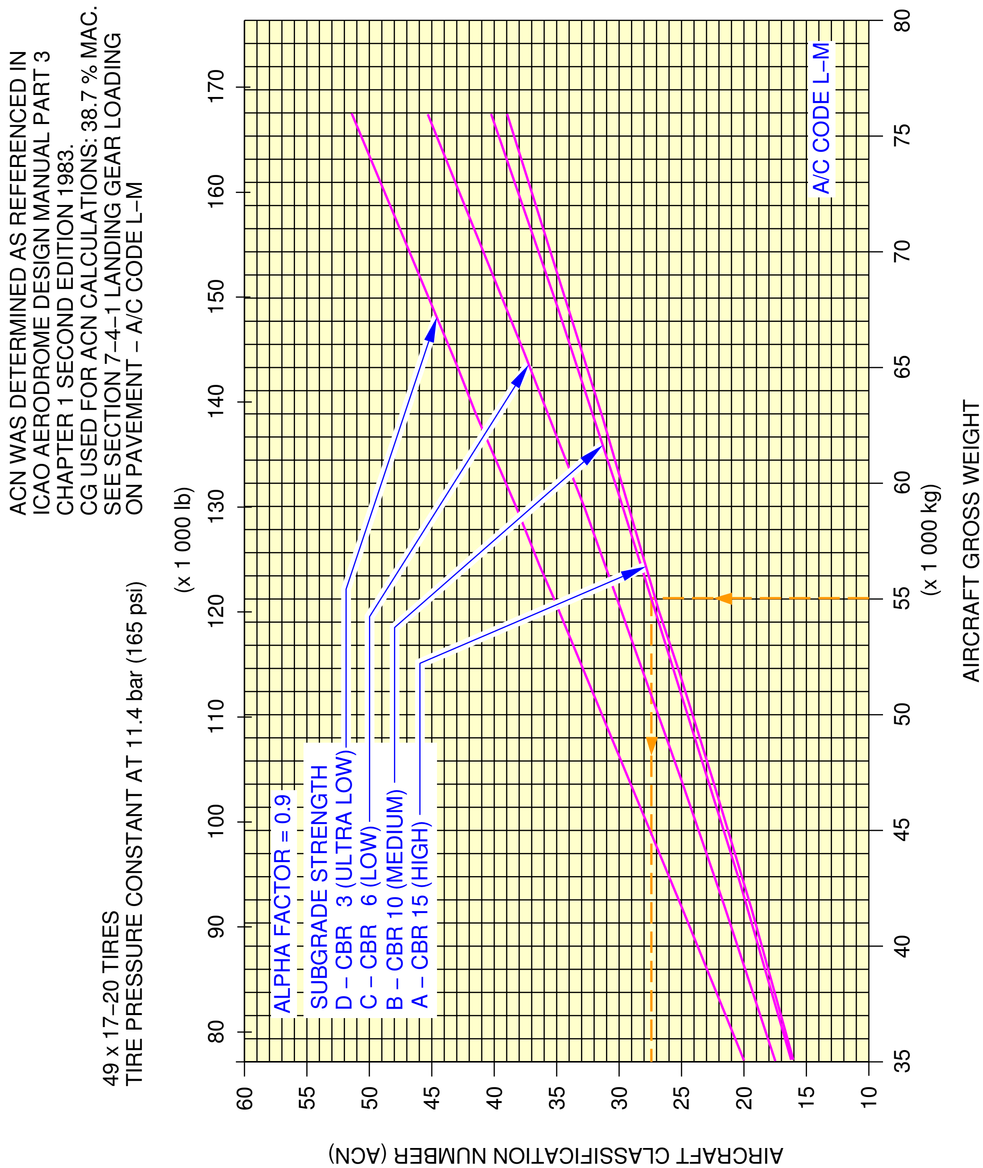
****ON A/C A320-200**



N_AC_070901_1_1100101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-110-A01

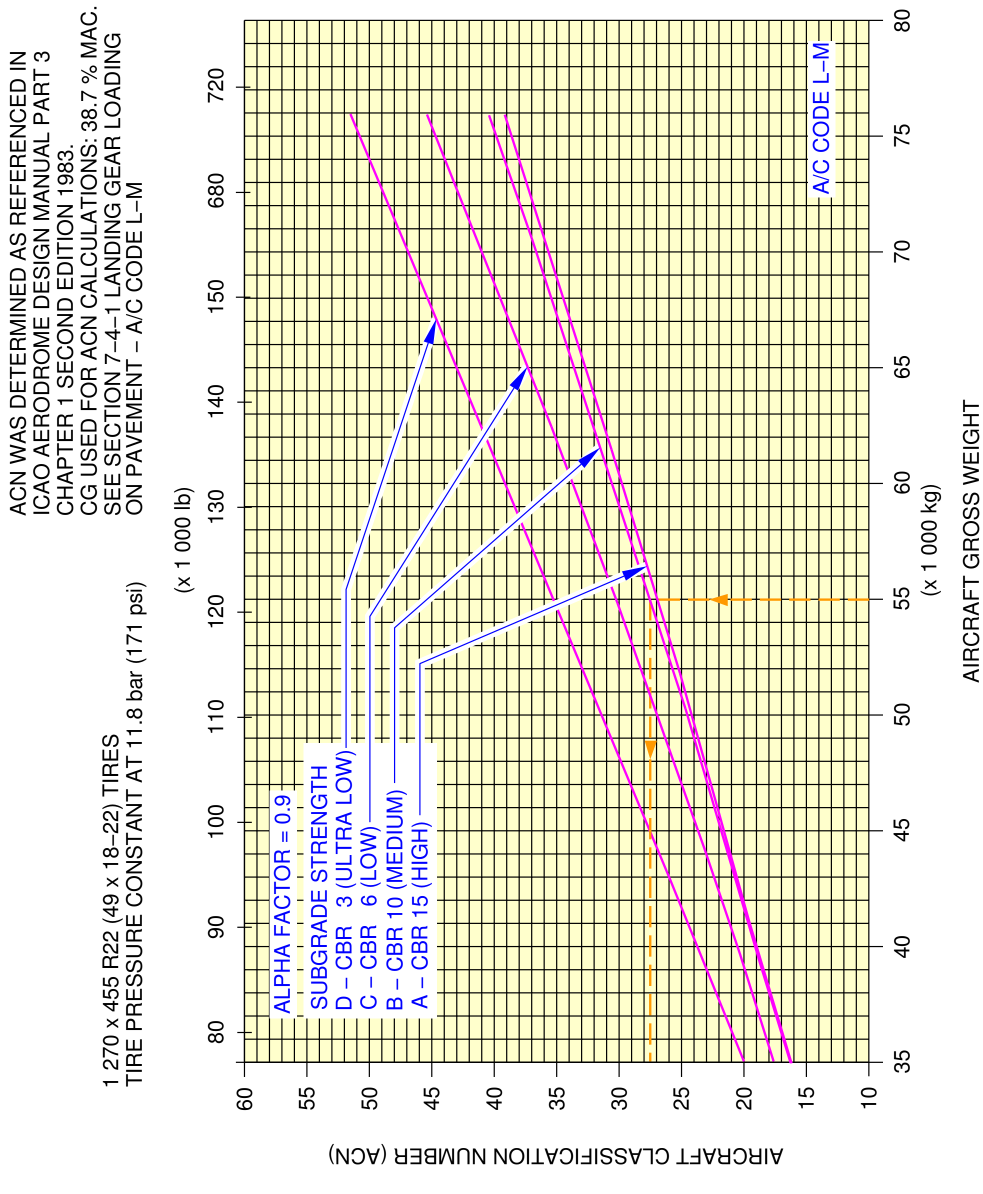
**ON A/C A320-200



N_AC_070901_1_1110101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-111-A01

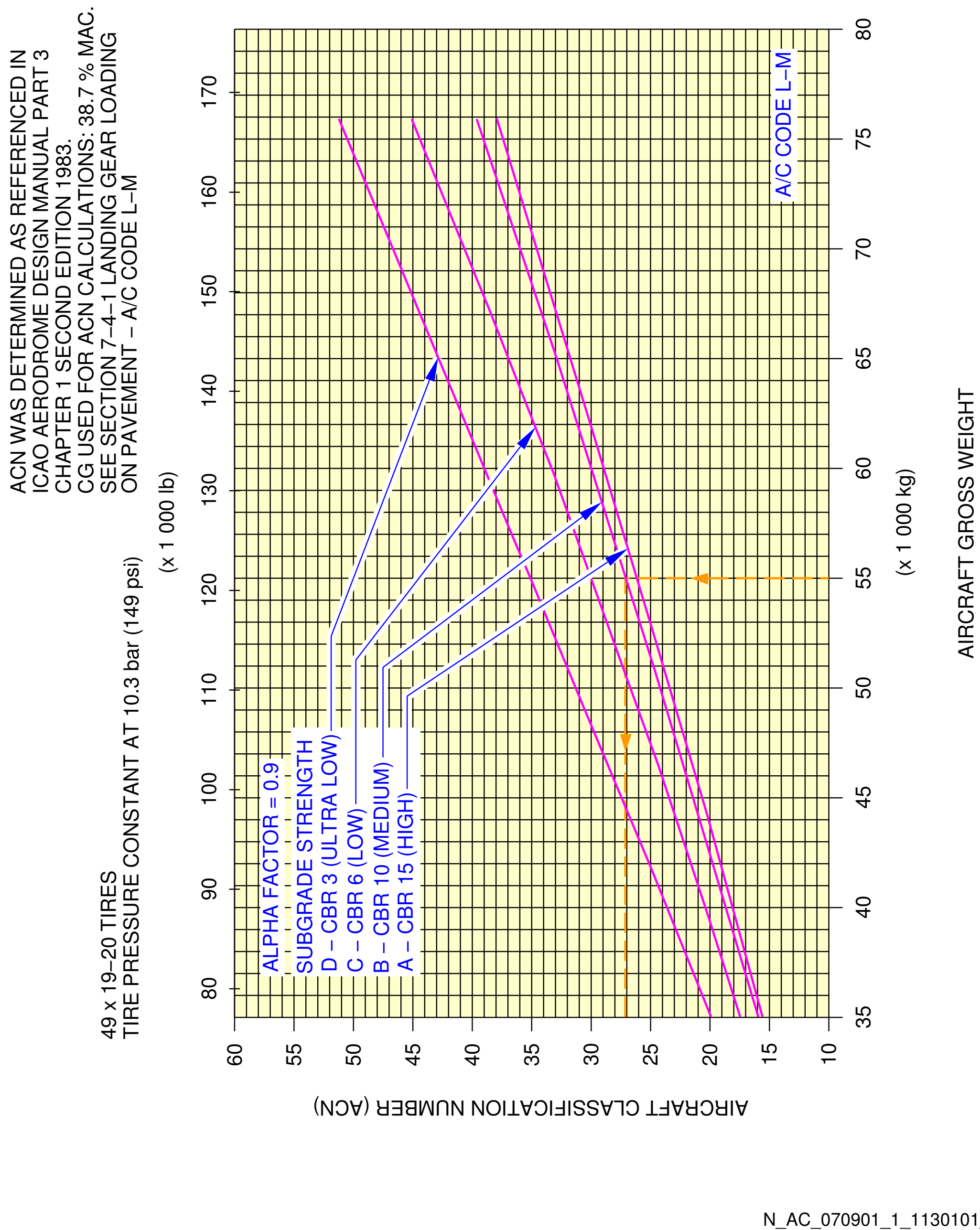
**ON A/C A320-200



N_AC_070901_1_1120101_01_00

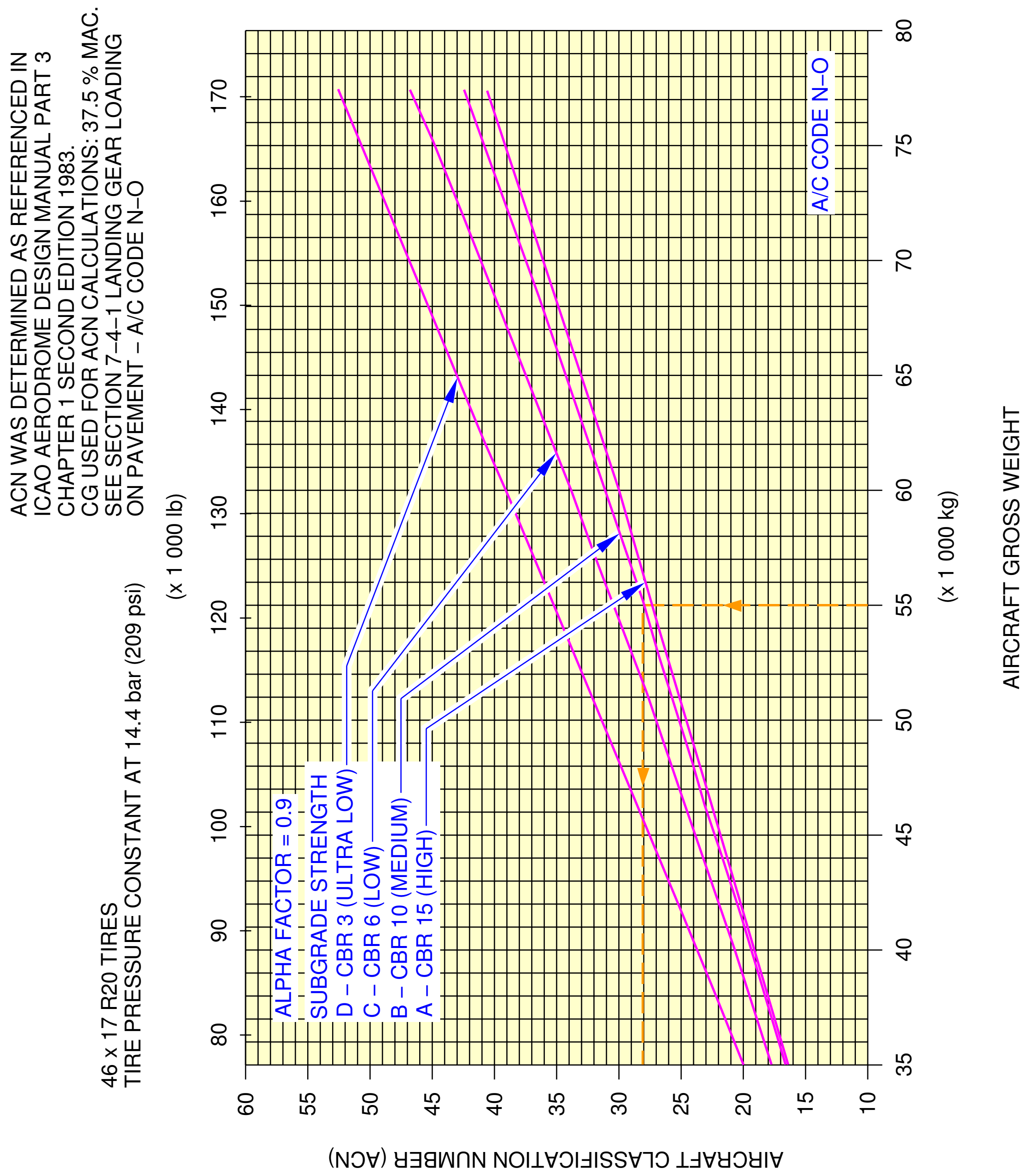
Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-112-A01

**ON A/C A320-200



Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-113-A01

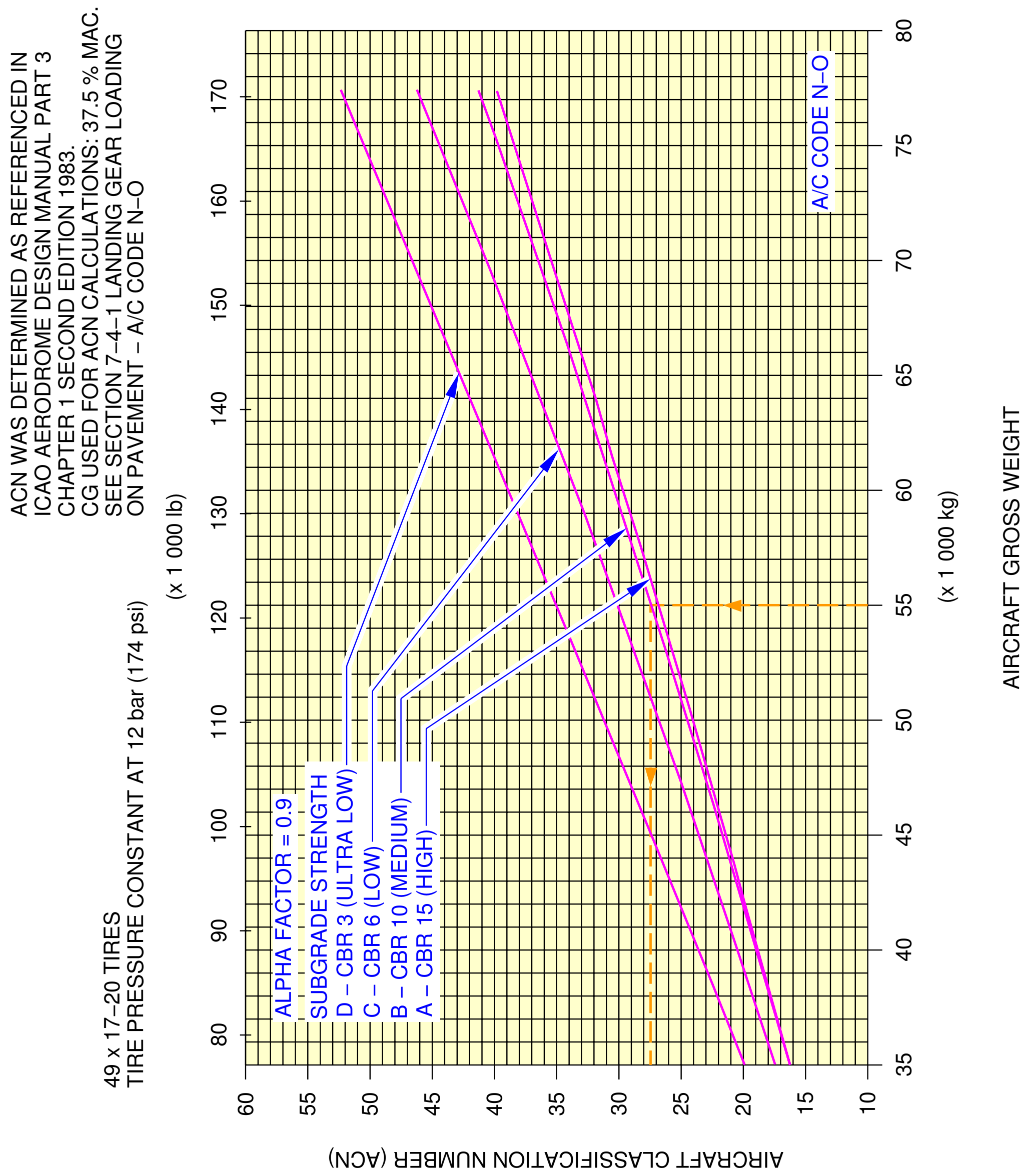
**ON A/C A320-200



N_AC_070901_1_1140101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-114-A01

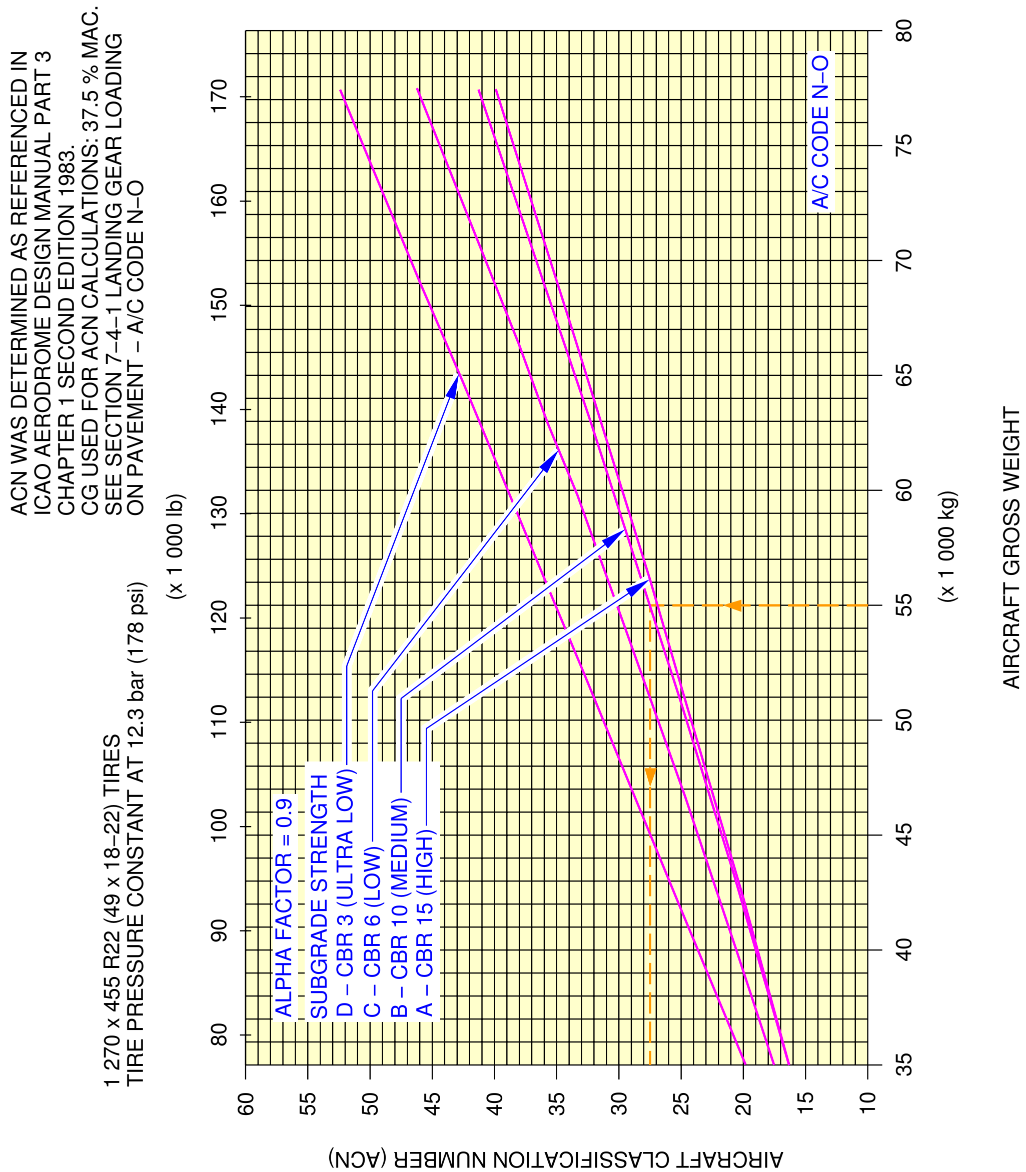
**ON A/C A320-200



N_AC_070901_1_1150101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-115-A01

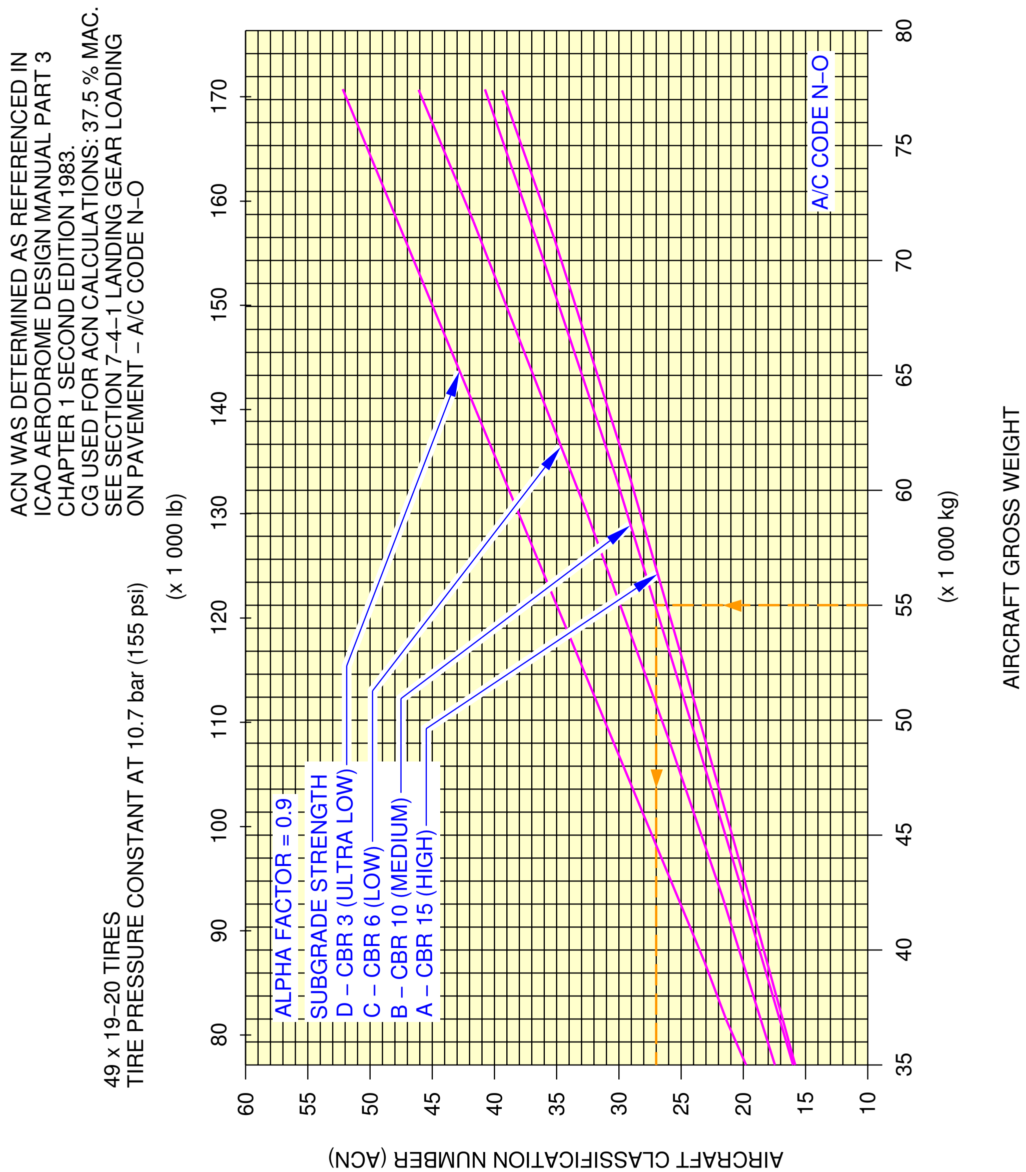
**ON A/C A320-200



N_AC_070901_1_1160101_01_00

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-116-A01

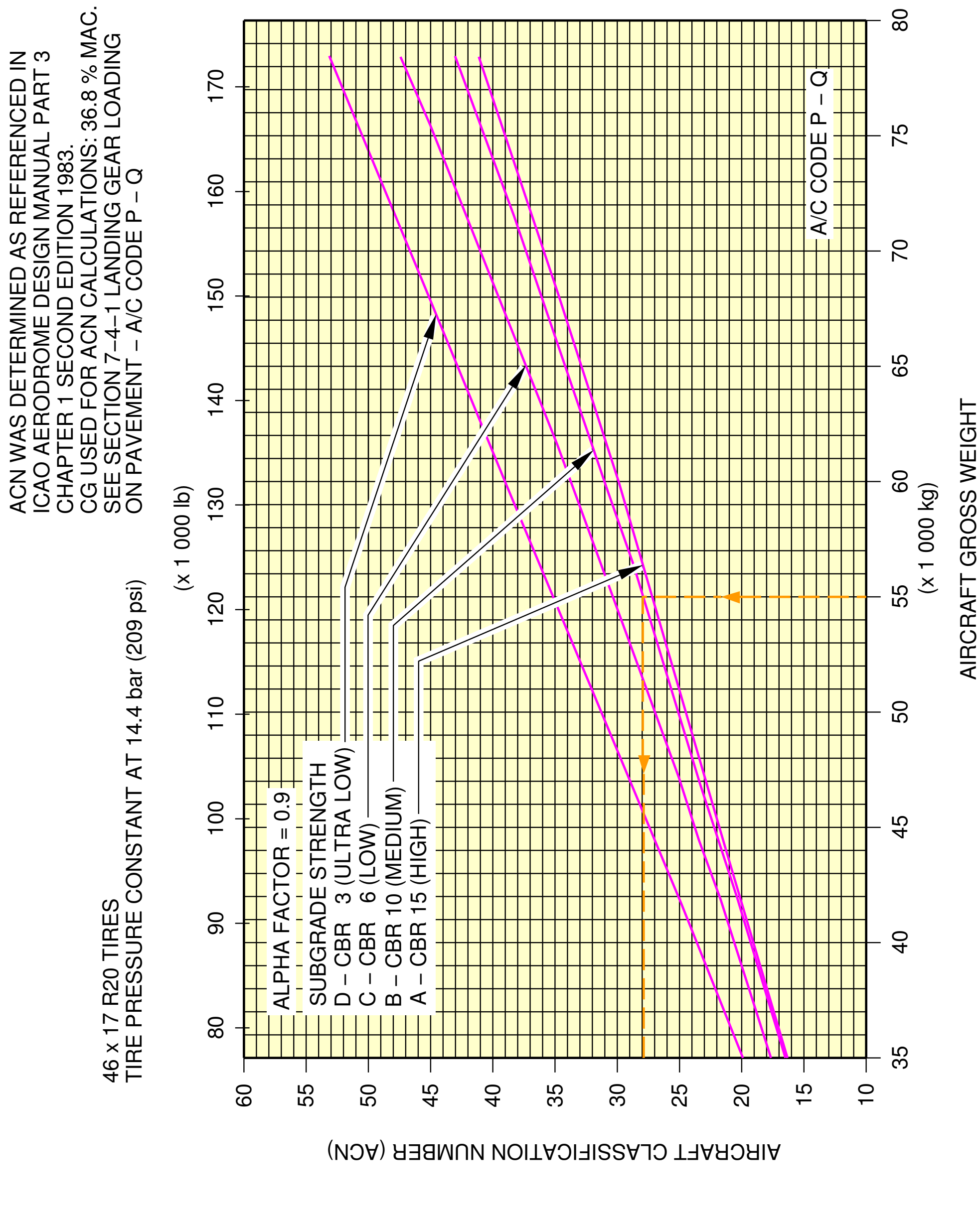
**ON A/C A320-200



N_AC_070901_1_1170101_01_00

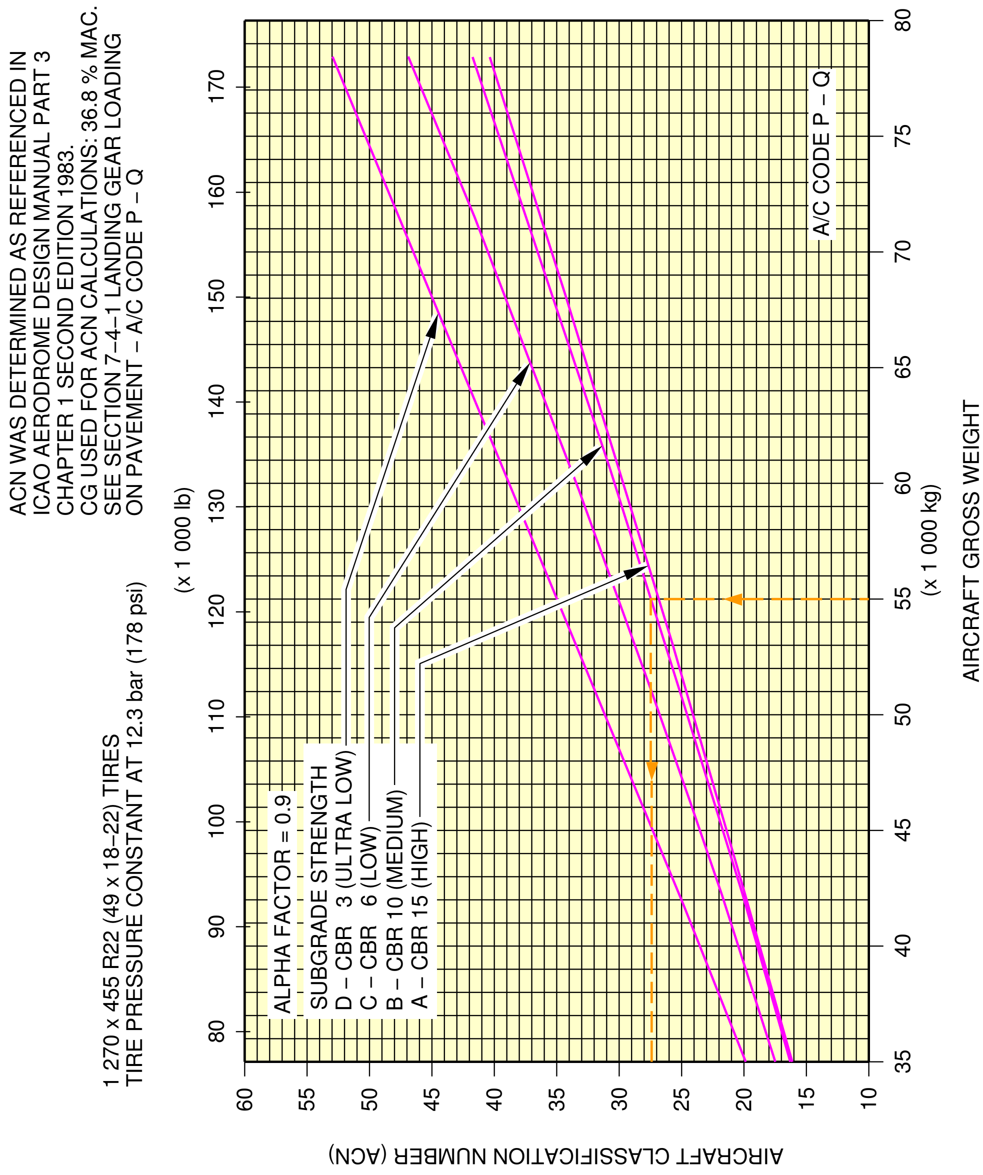
Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-117-A01

****ON A/C A320-200**



Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-118-A01

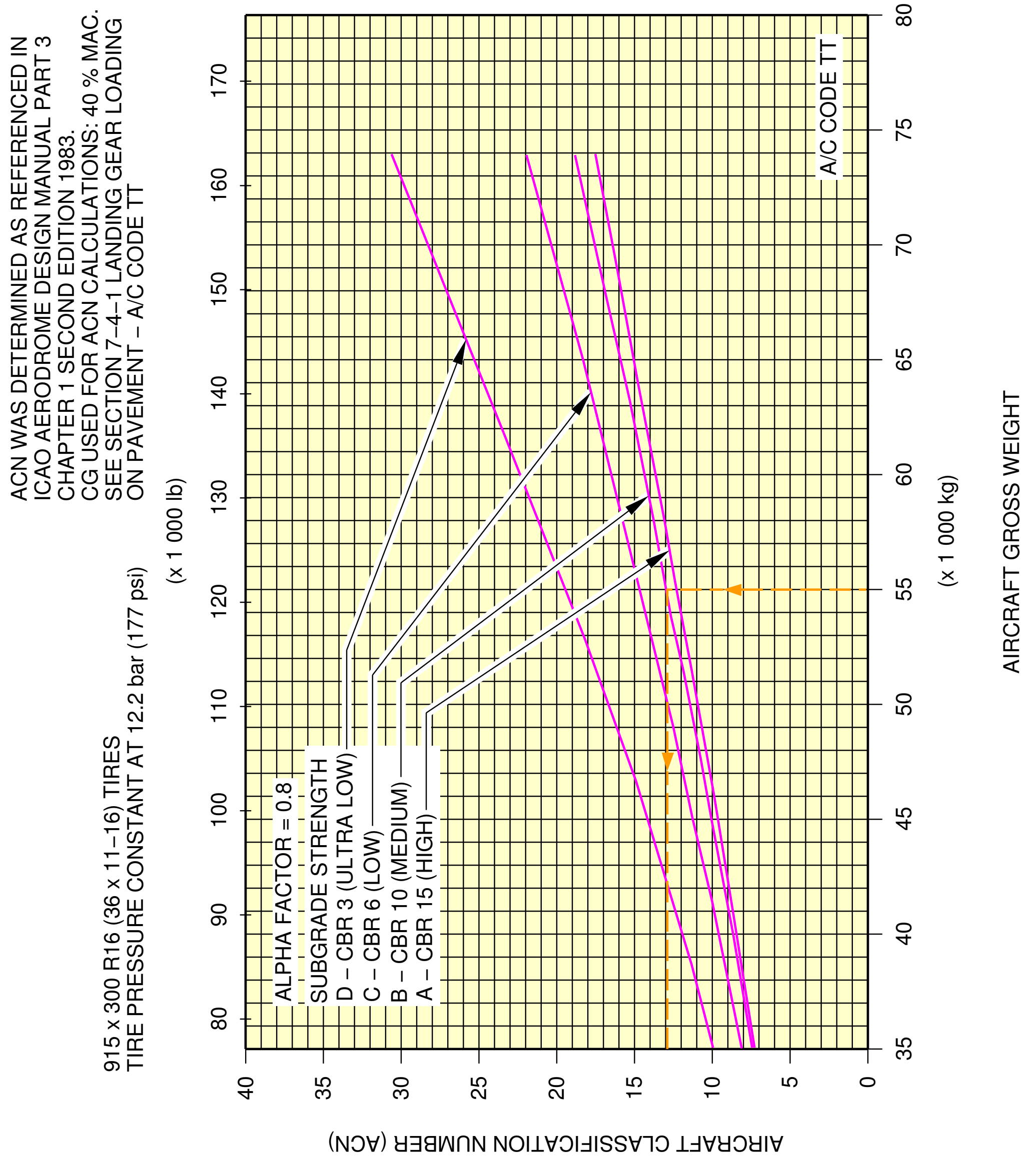
****ON A/C A320-200**



N_AC_070901_1_1200101_01_01

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-120-A01

****ON A/C A320-200**



N_AC_070901_1_1220101_01_01

Aircraft Classification Number – Flexible Pavement
FIGURE-7-9-1-991-122-A01

7-9-2 Aircraft Classification Number - Rigid Pavement

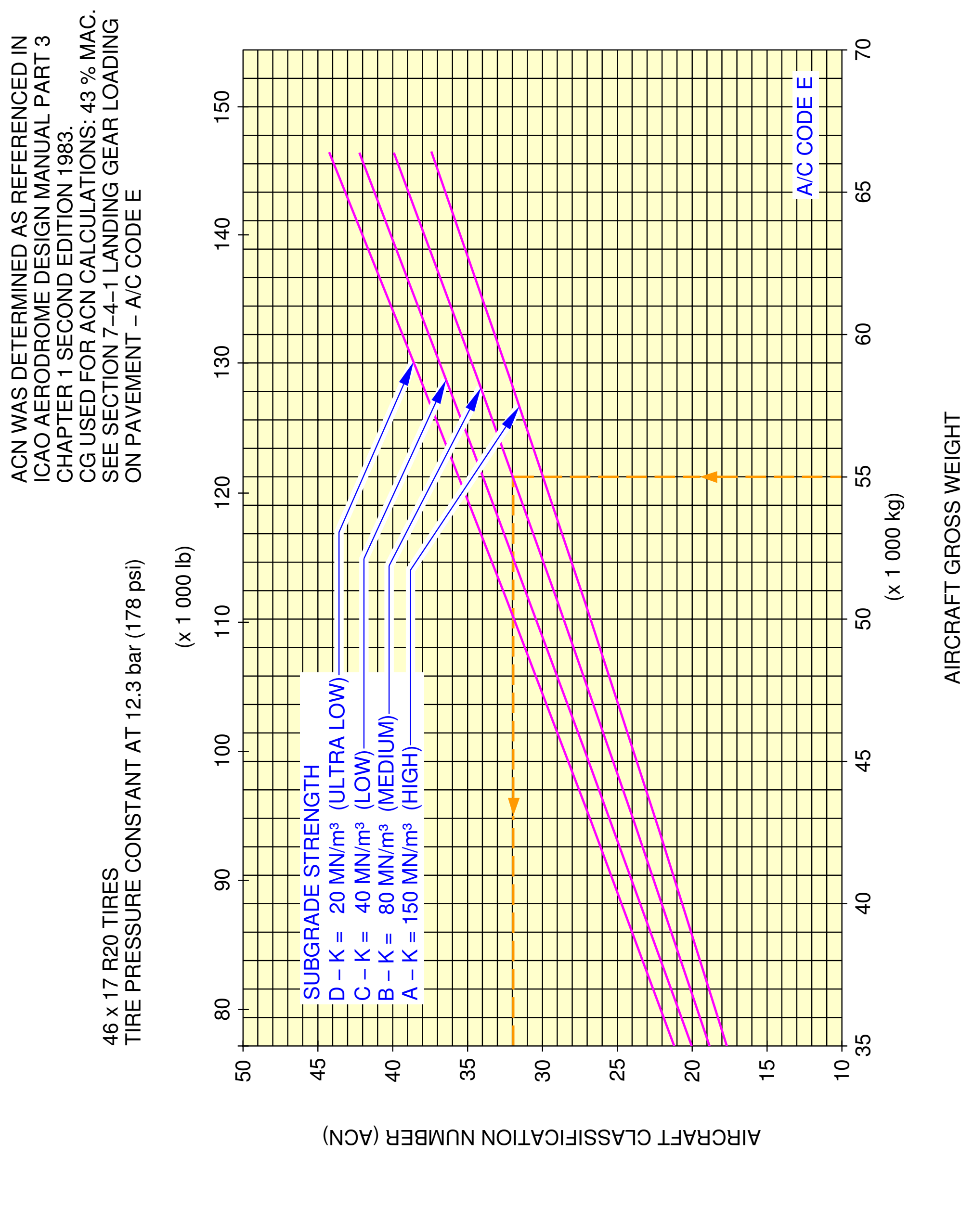
****ON A/C A320-200**

Aircraft Classification Number - Rigid Pavement

1. This section gives the Aircraft Classification Number - Rigid Pavement.

   NOTE : For A/C Code definition, refer to chapter 7-1-0.

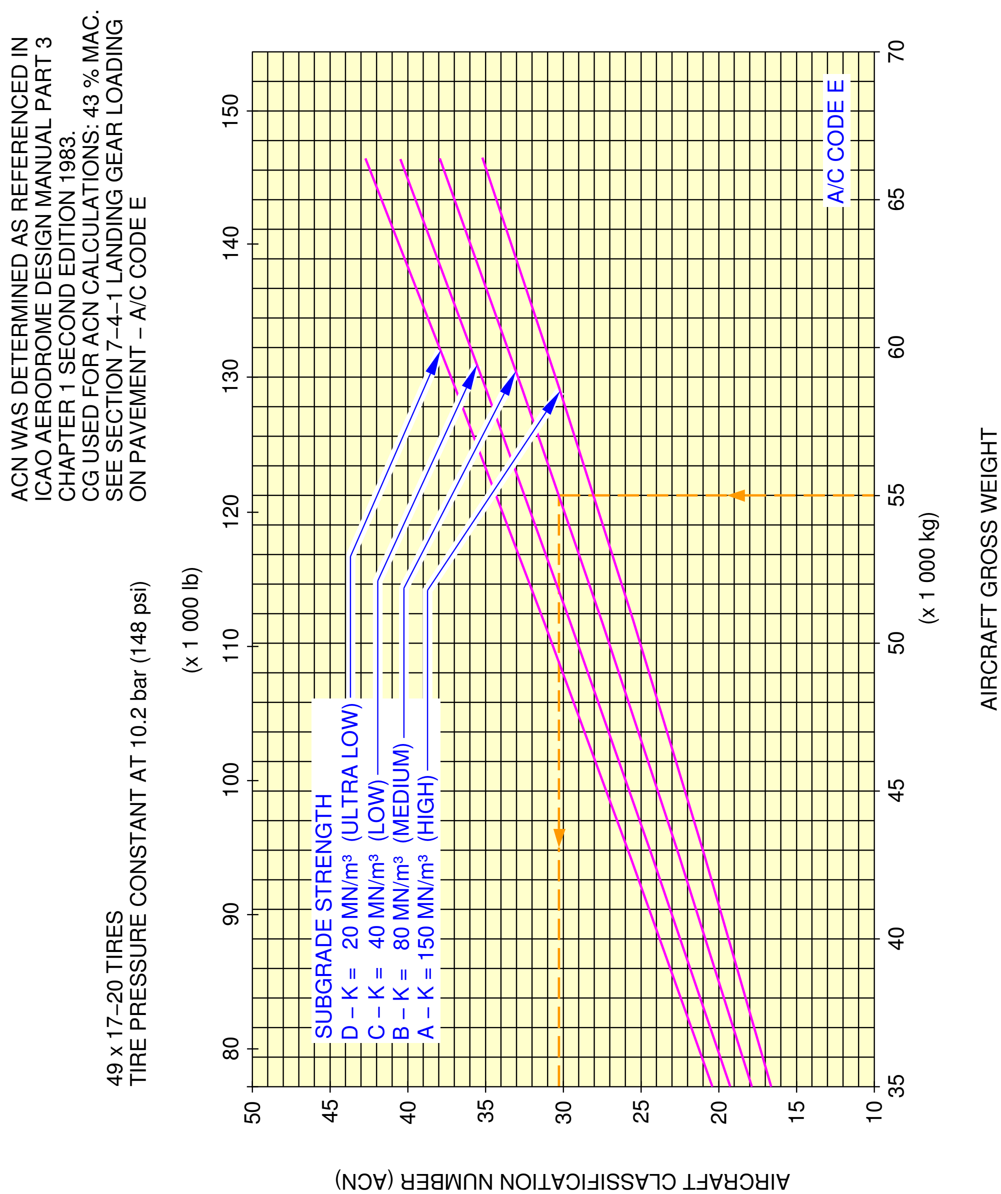
**ON A/C A320-200



N_AC_070902_1_1280101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-128-A01

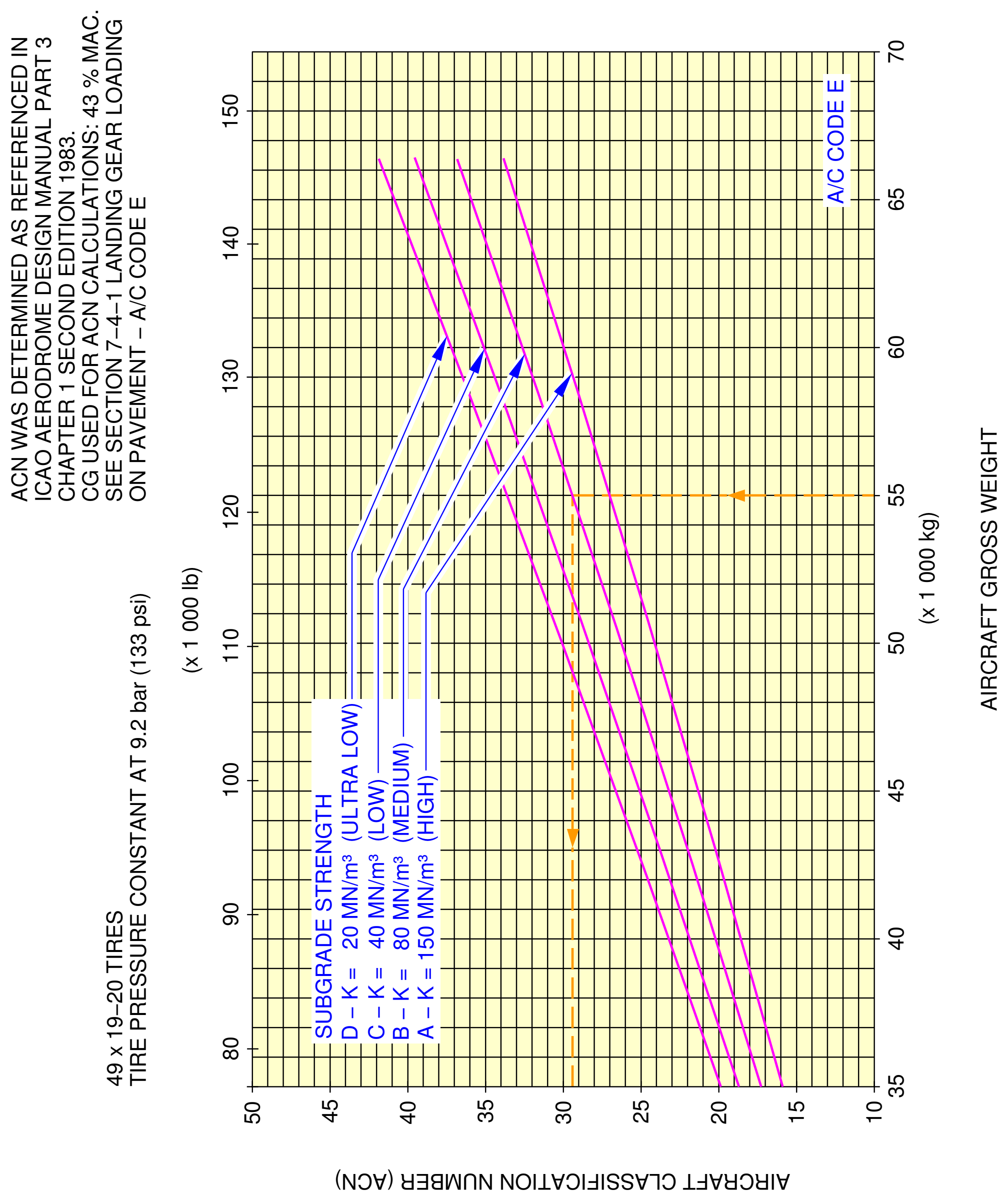
**ON A/C A320-200



N_AC_070902_1_1290101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-129-A01

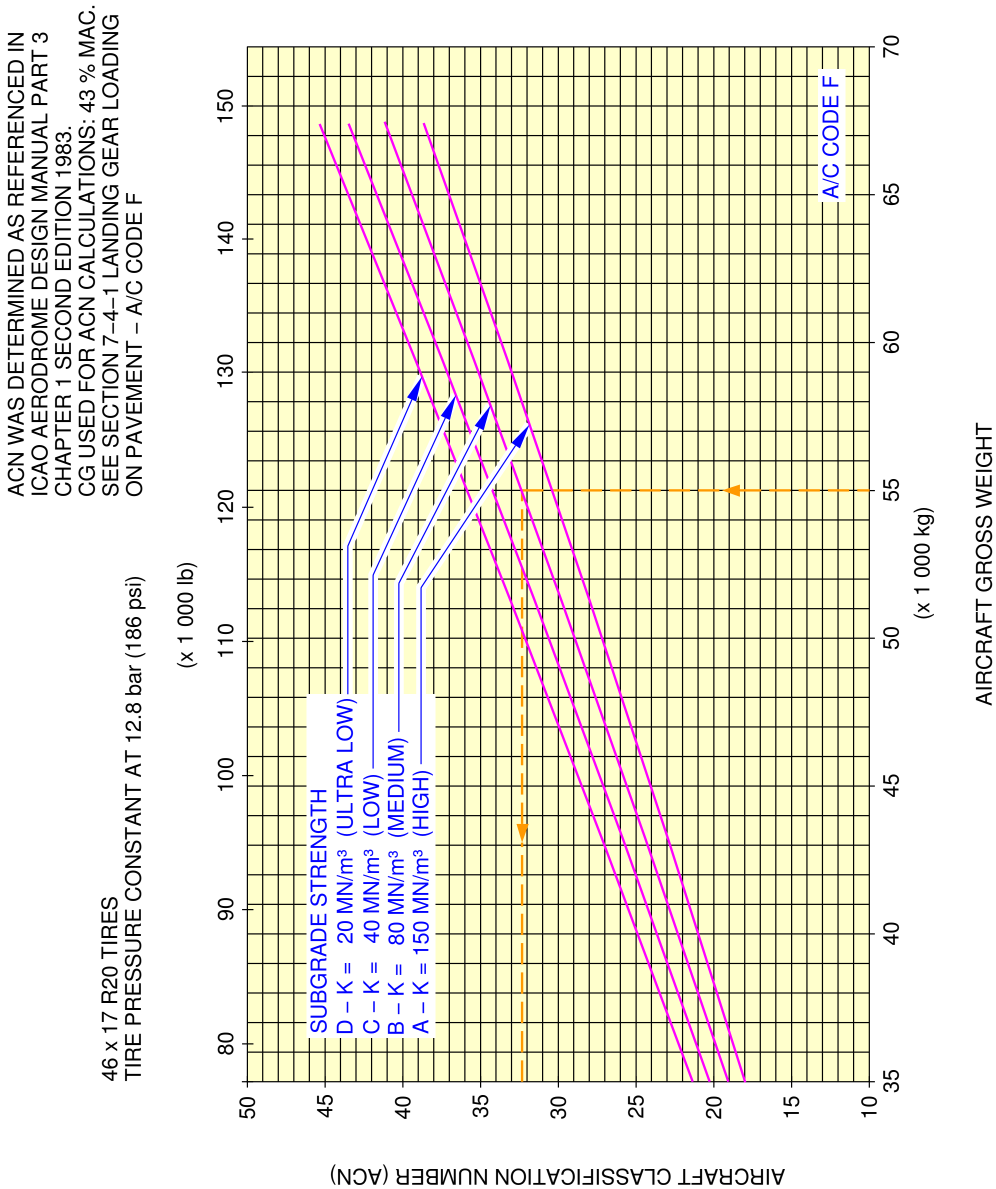
**ON A/C A320-200



N_AC_070902_1_1300101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-130-A01

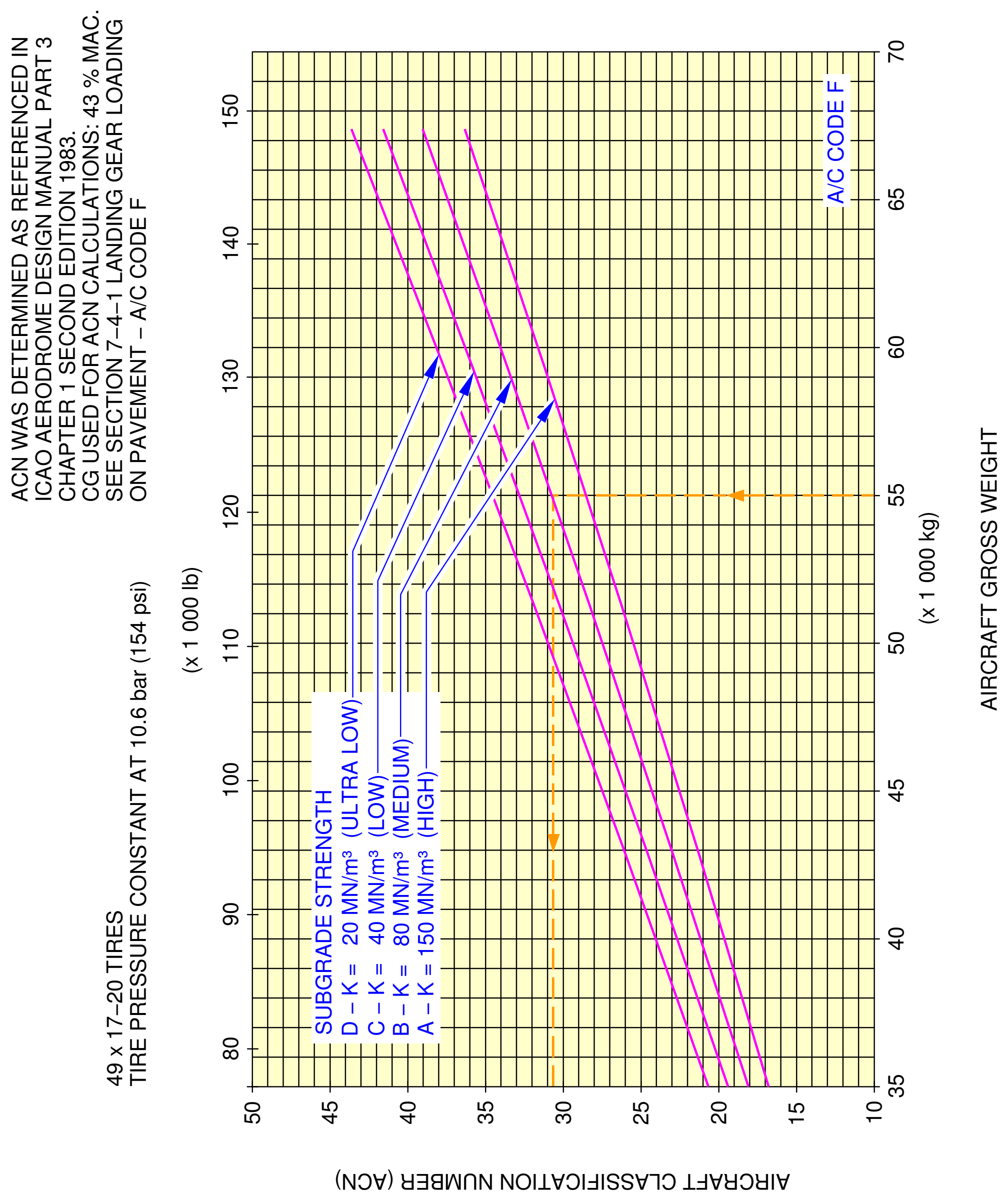
**ON A/C A320-200



N_AC_070902_1_1310101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-131-A01

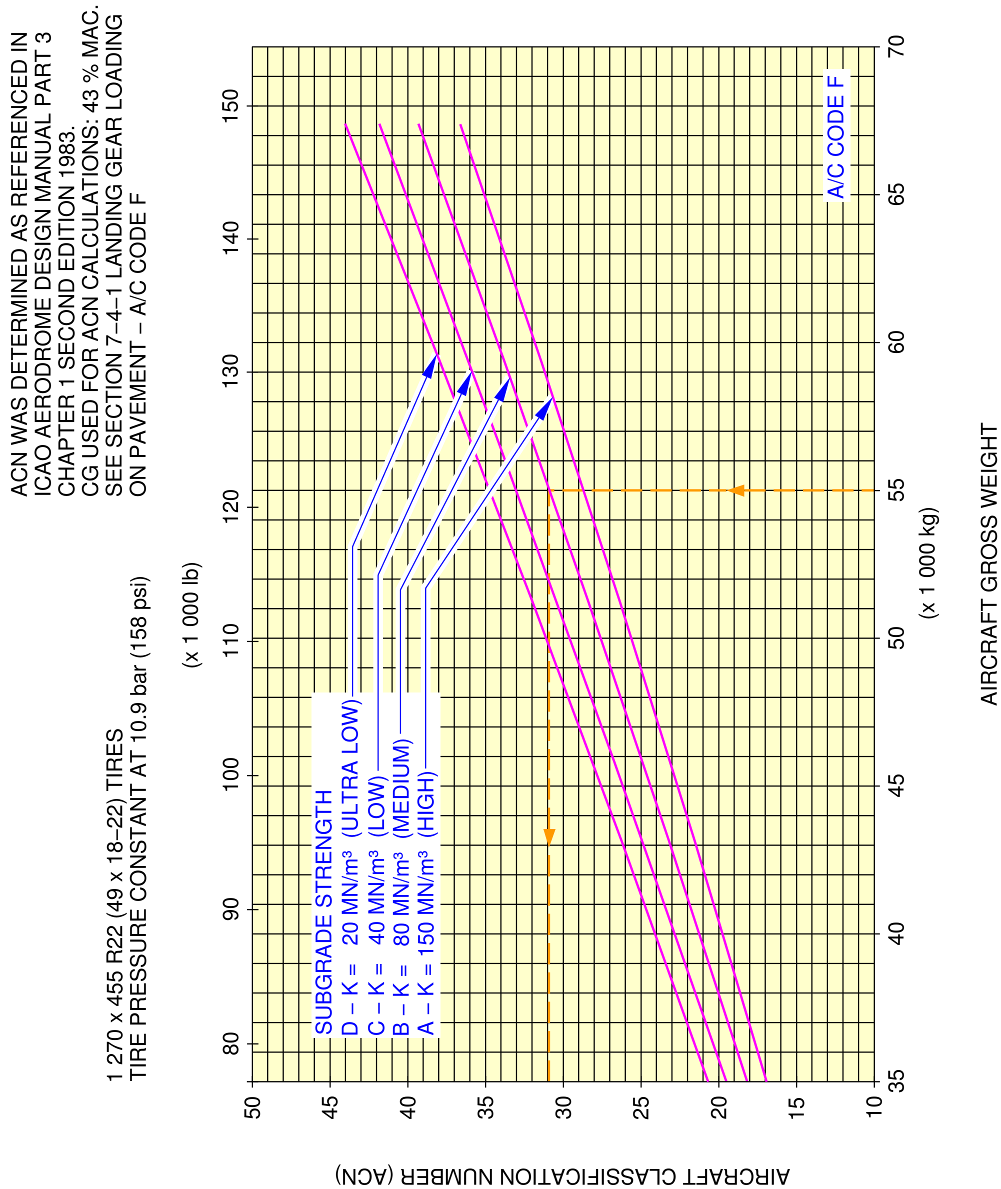
**ON A/C A320-200



N_AC_070902_1_1320101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-132-A01

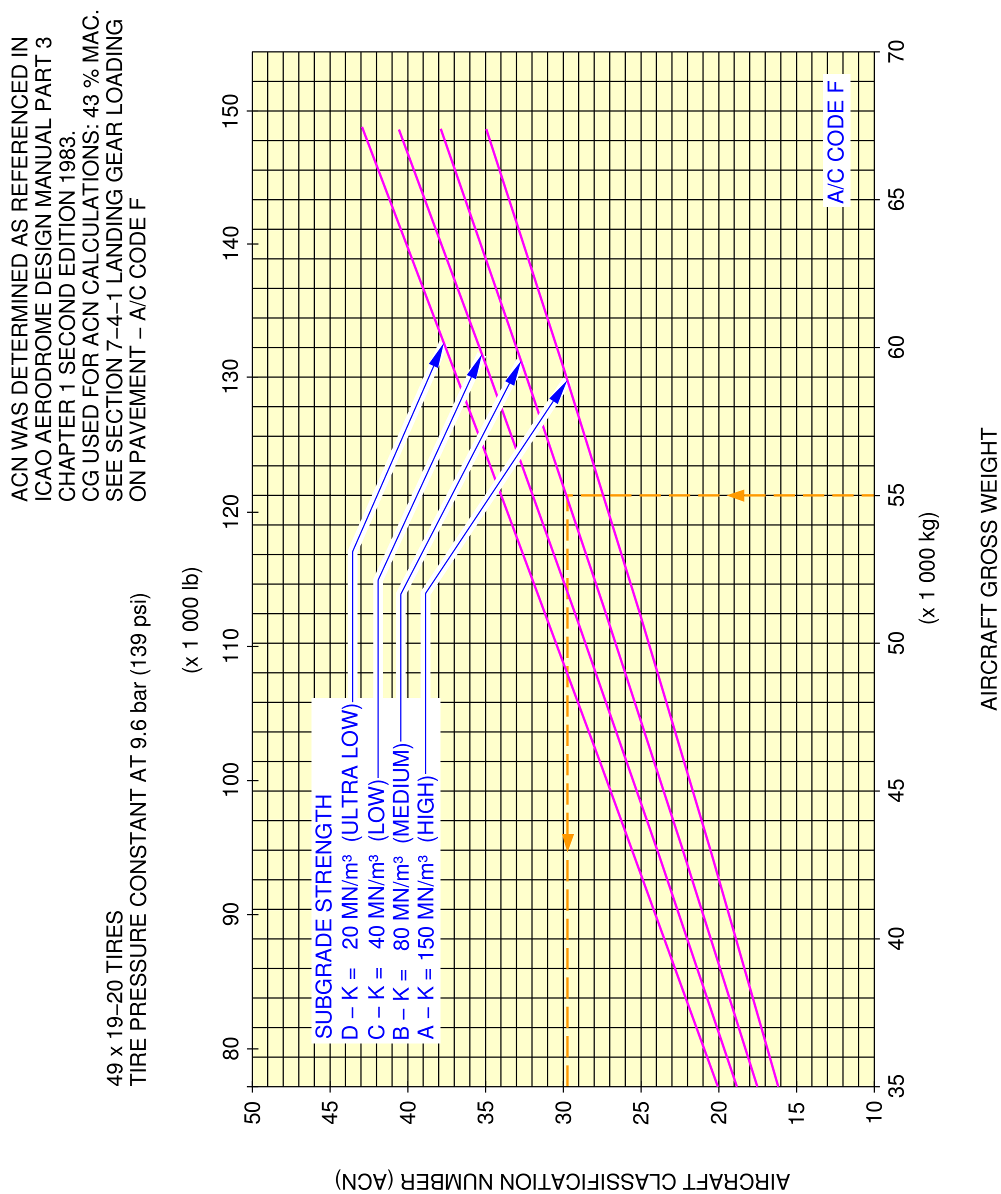
**ON A/C A320-200



N_AC_070902_1_1330101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-133-A01

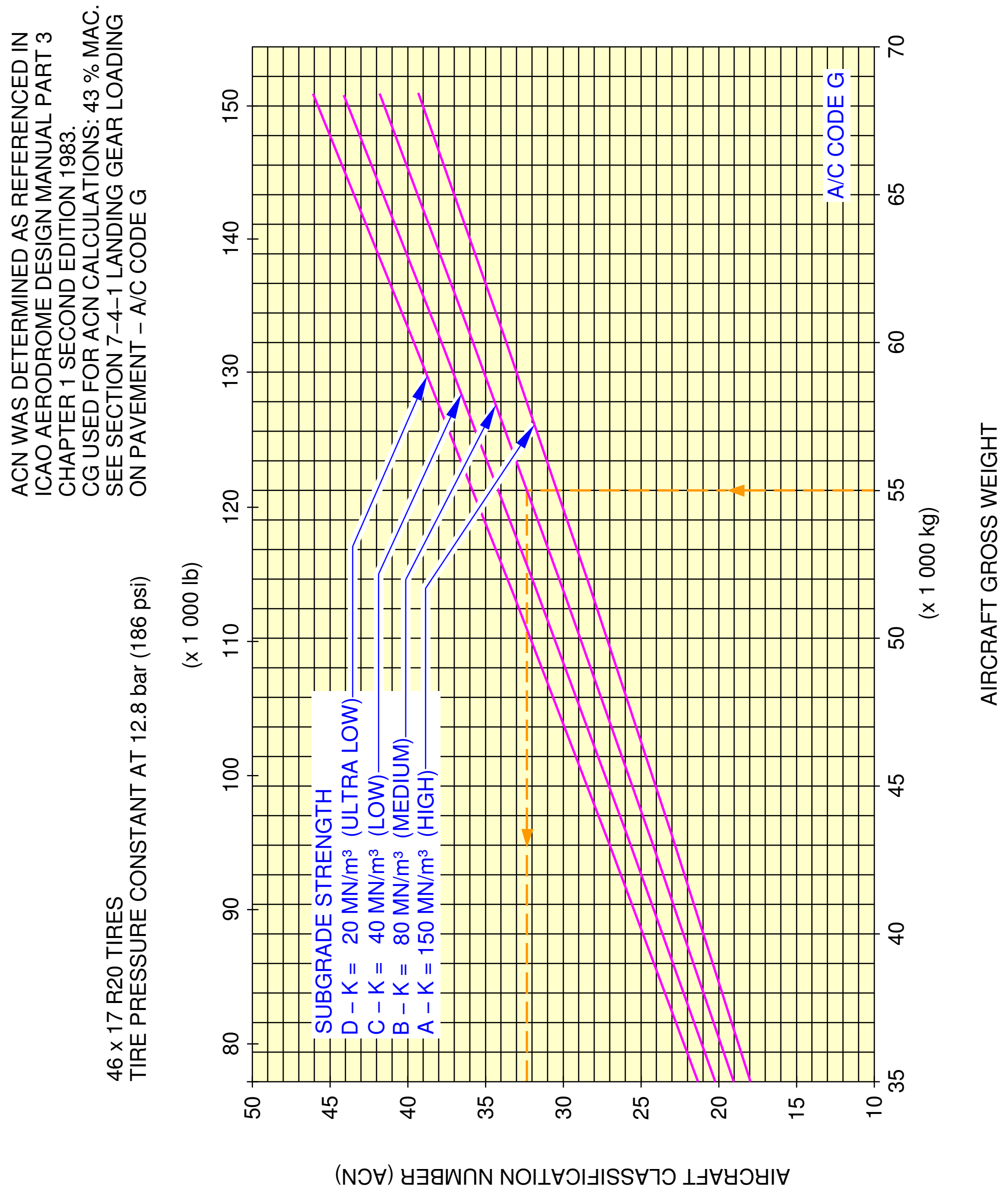
**ON A/C A320-200



N_AC_070902_1_1340101_01_00

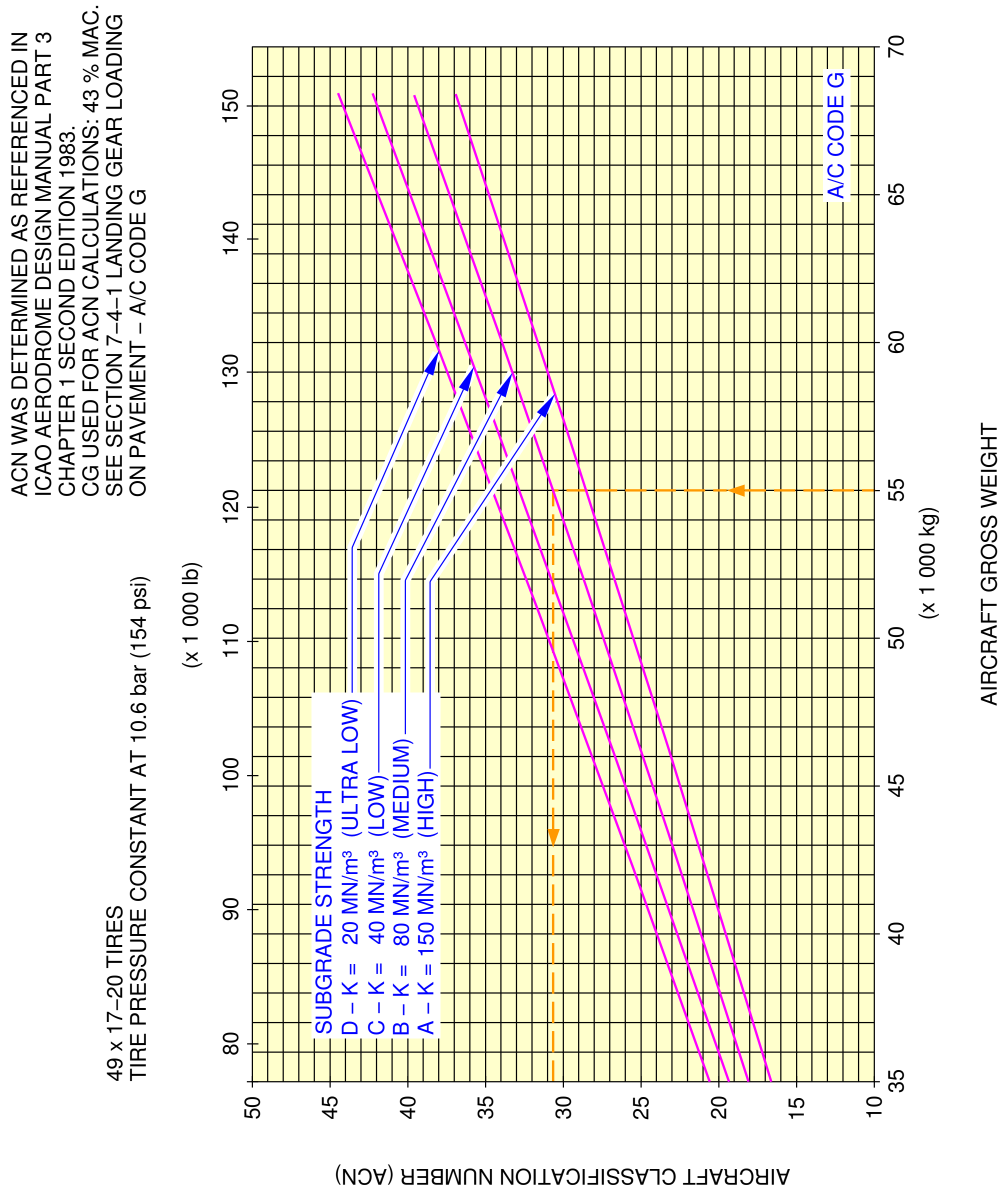
Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-134-A01

**ON A/C A320-200



Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-135-A01

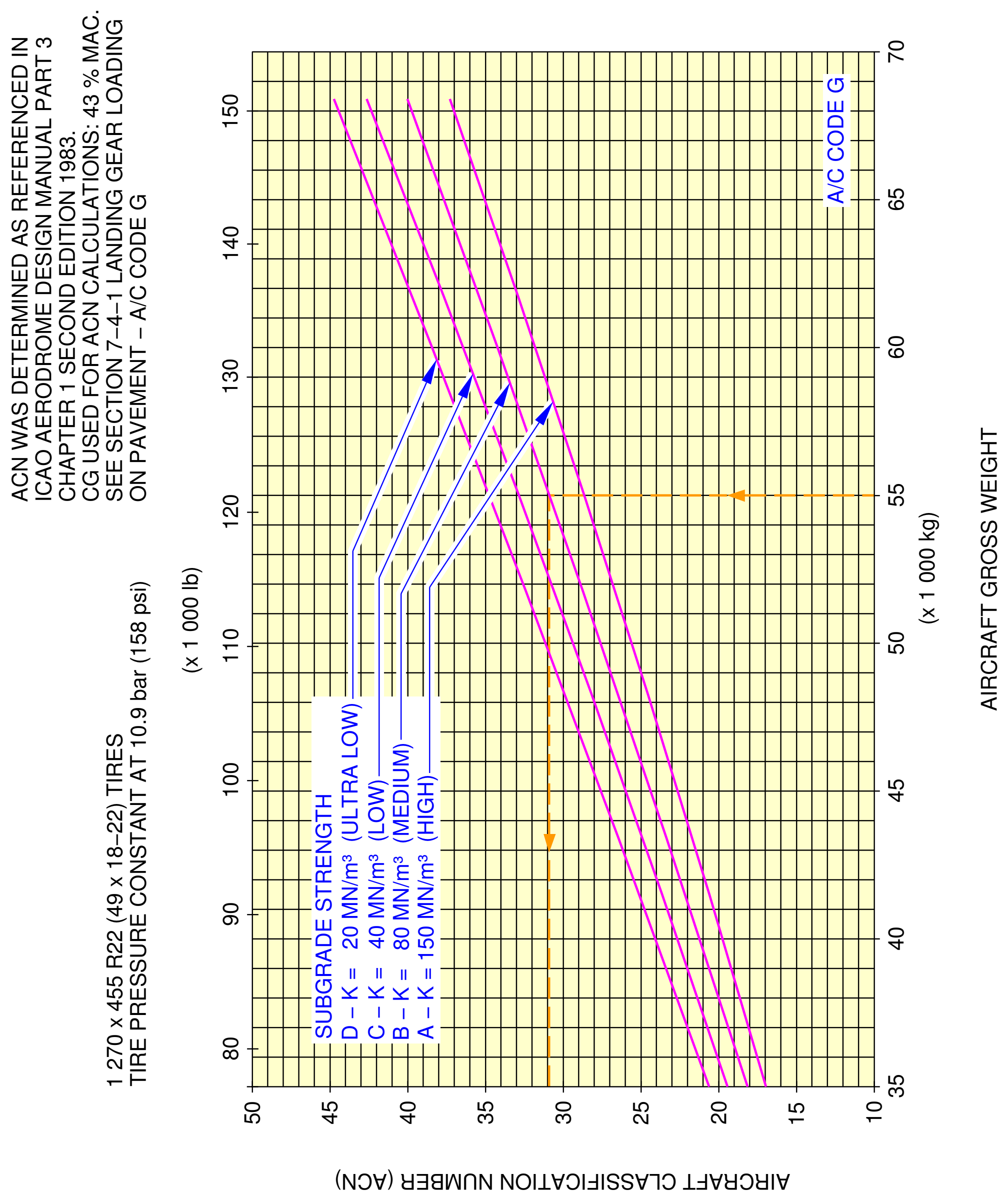
**ON A/C A320-200



N_AC_070902_1_1360101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-136-A01

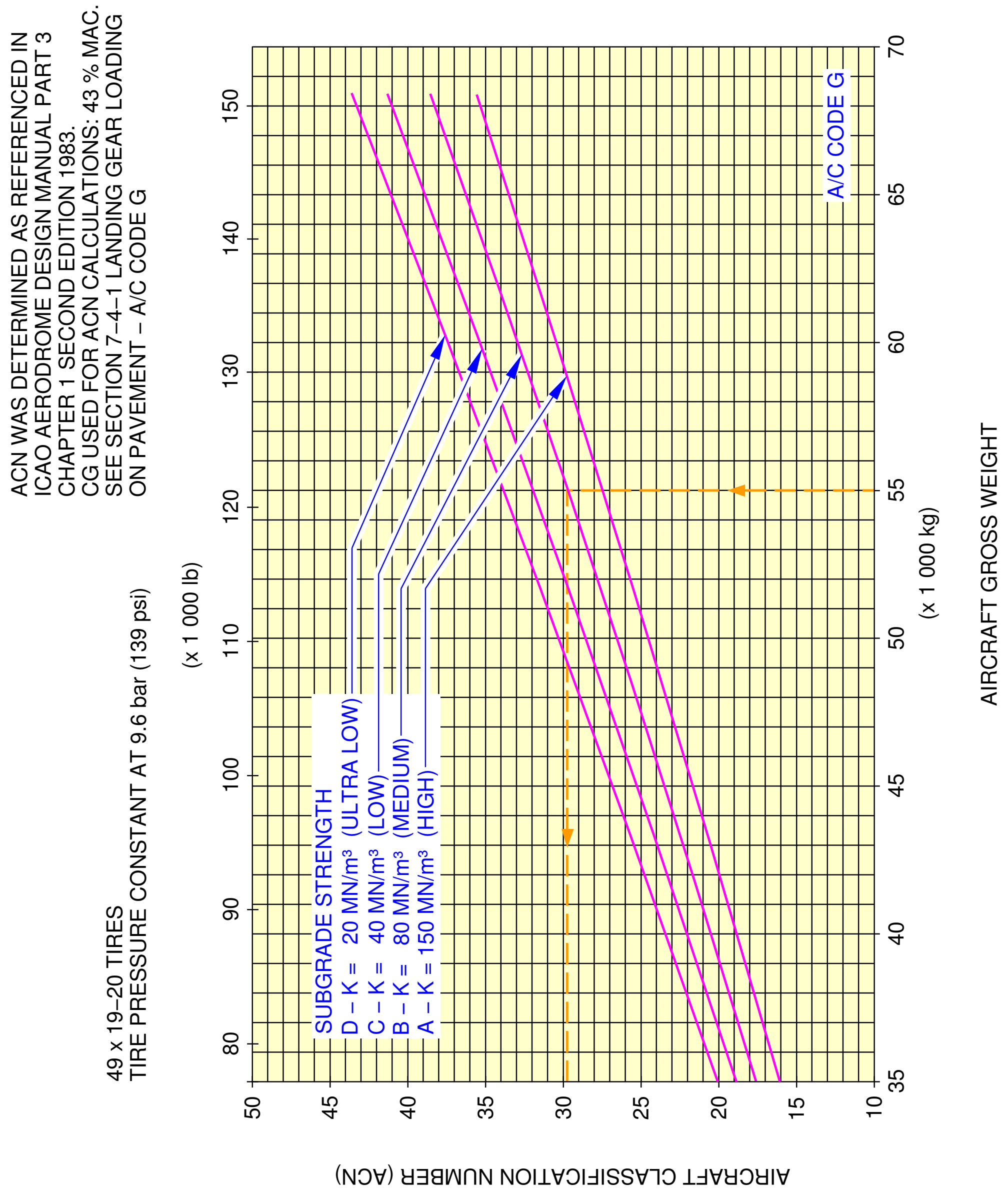
**ON A/C A320-200



N_AC_070902_1_1370101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-137-A01

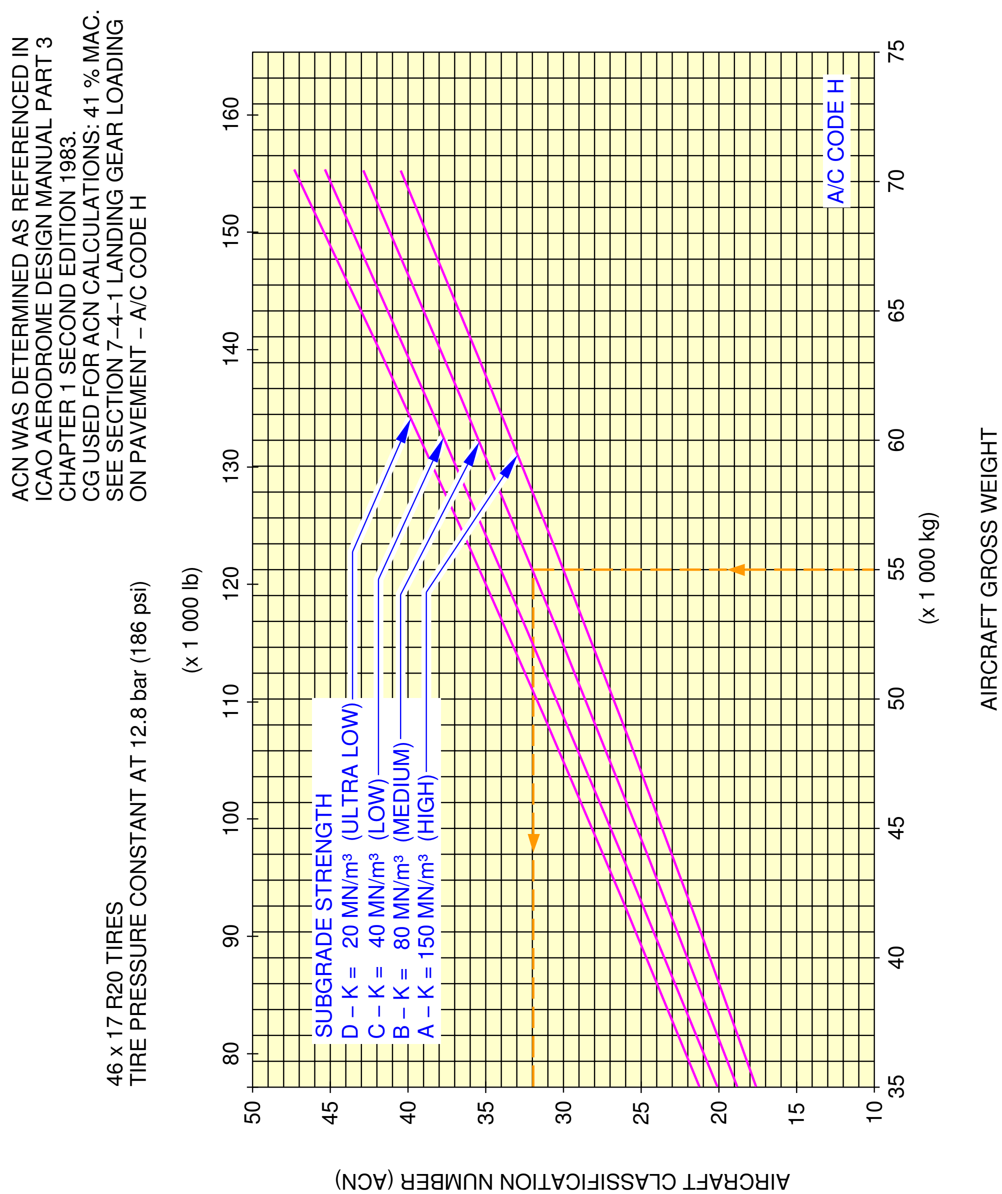
**ON A/C A320-200



N_AC_070902_1_1380101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-138-A01

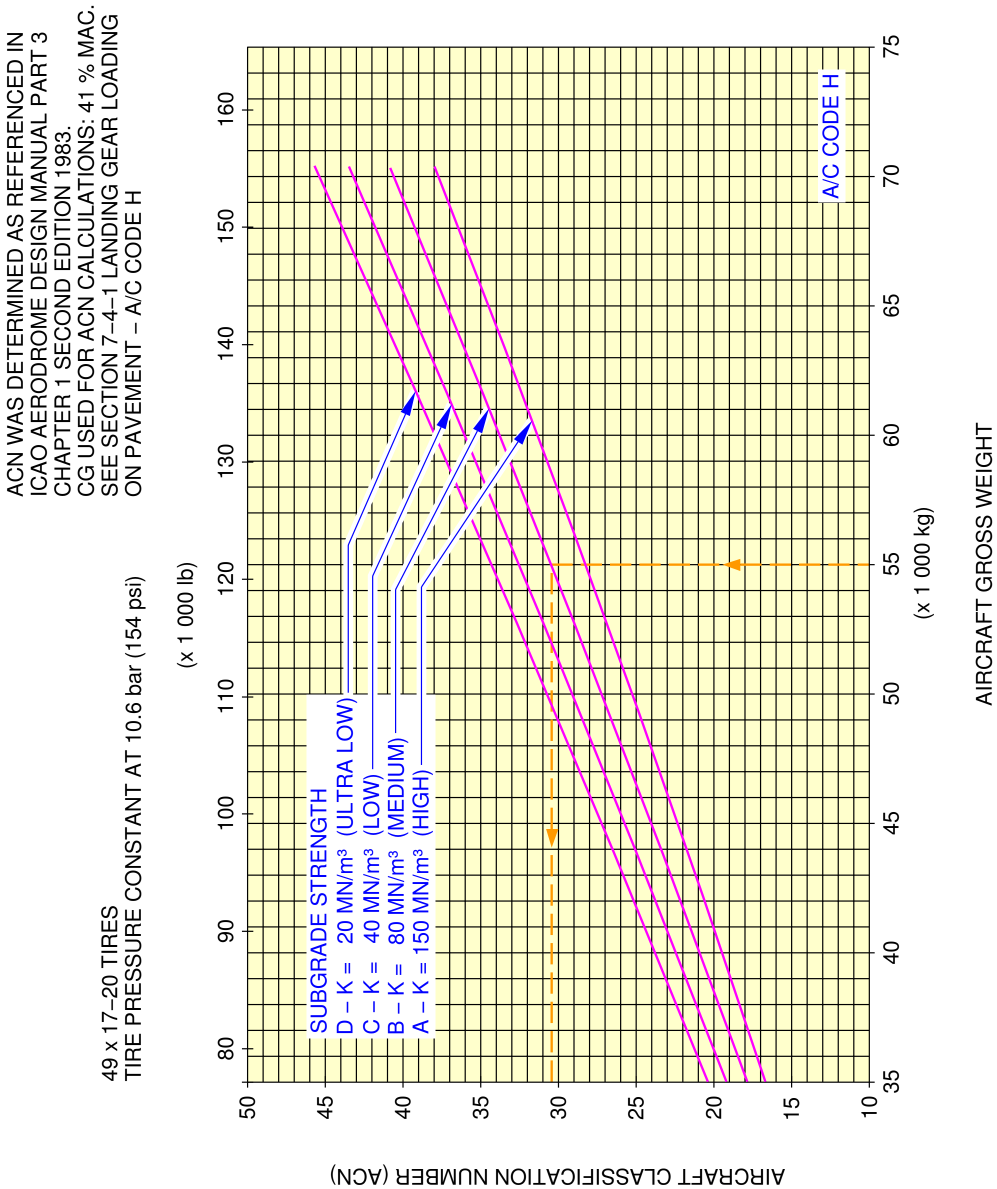
**ON A/C A320-200



N_AC_070902_1_1390101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-139-A01

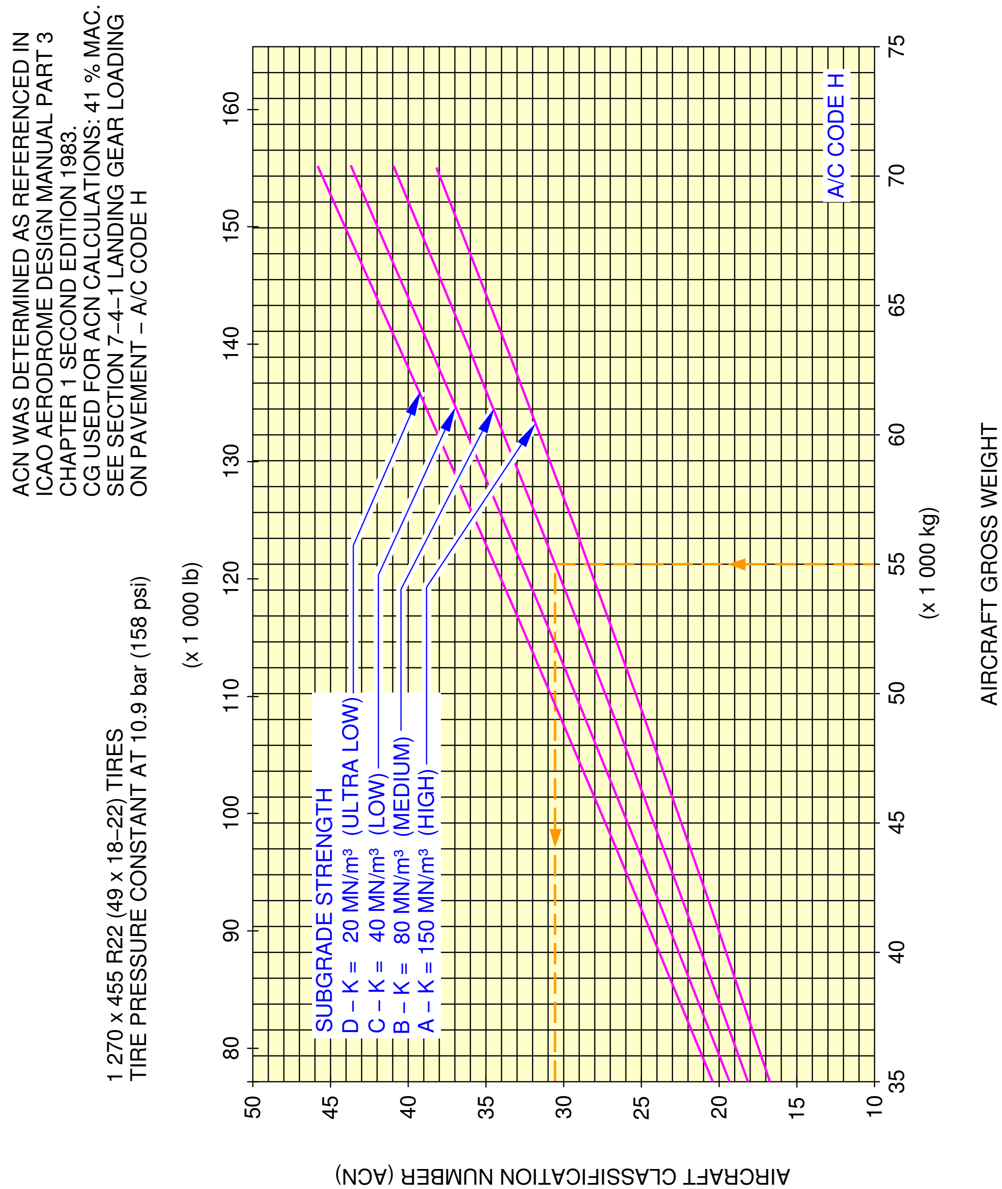
**ON A/C A320-200



N_AC_070902_1_1400101_01_00

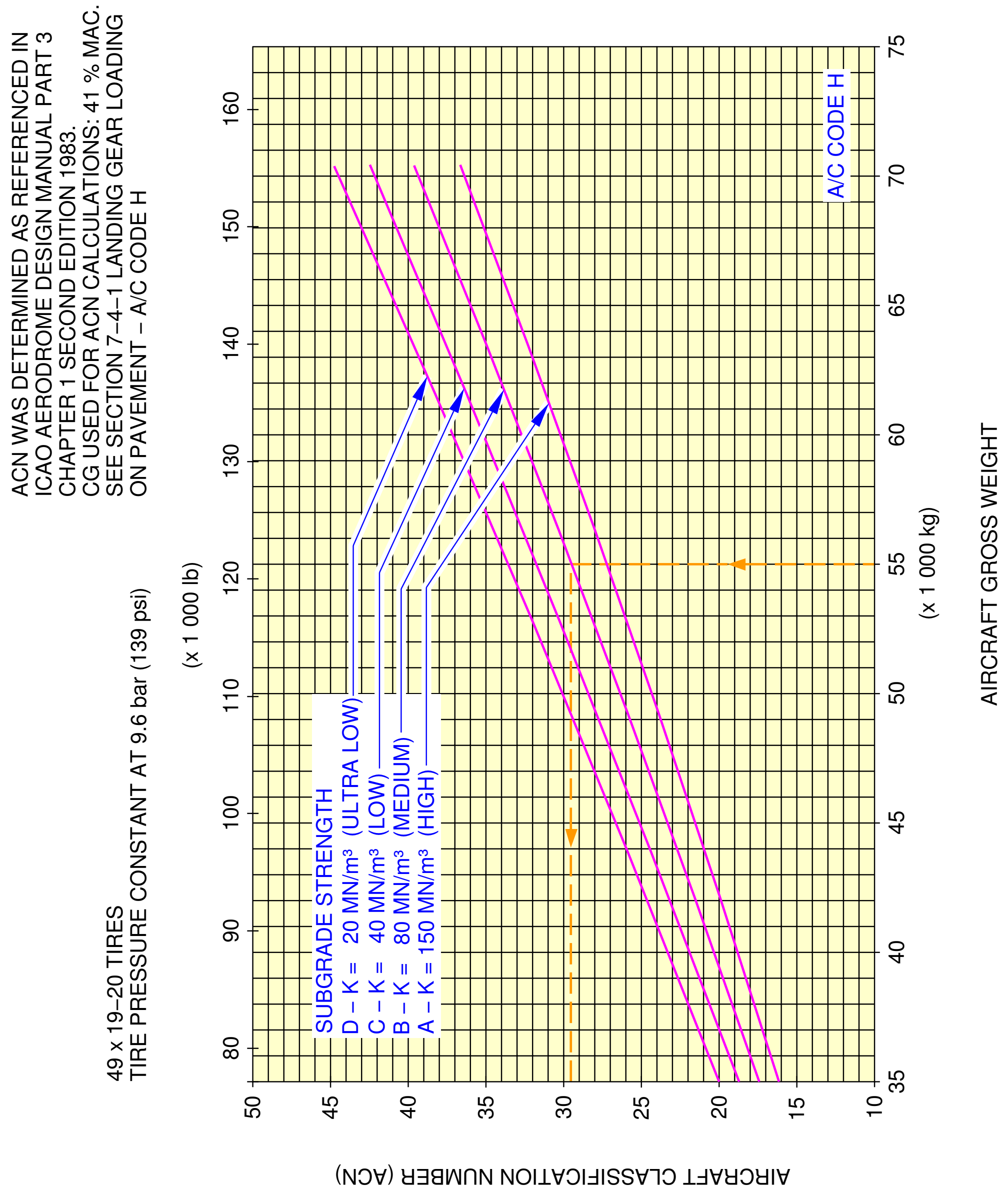
Aircraft Classification Number − Rigid Pavement
FIGURE-7-9-2-991-140-A01

**ON A/C A320-200



Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-141-A01

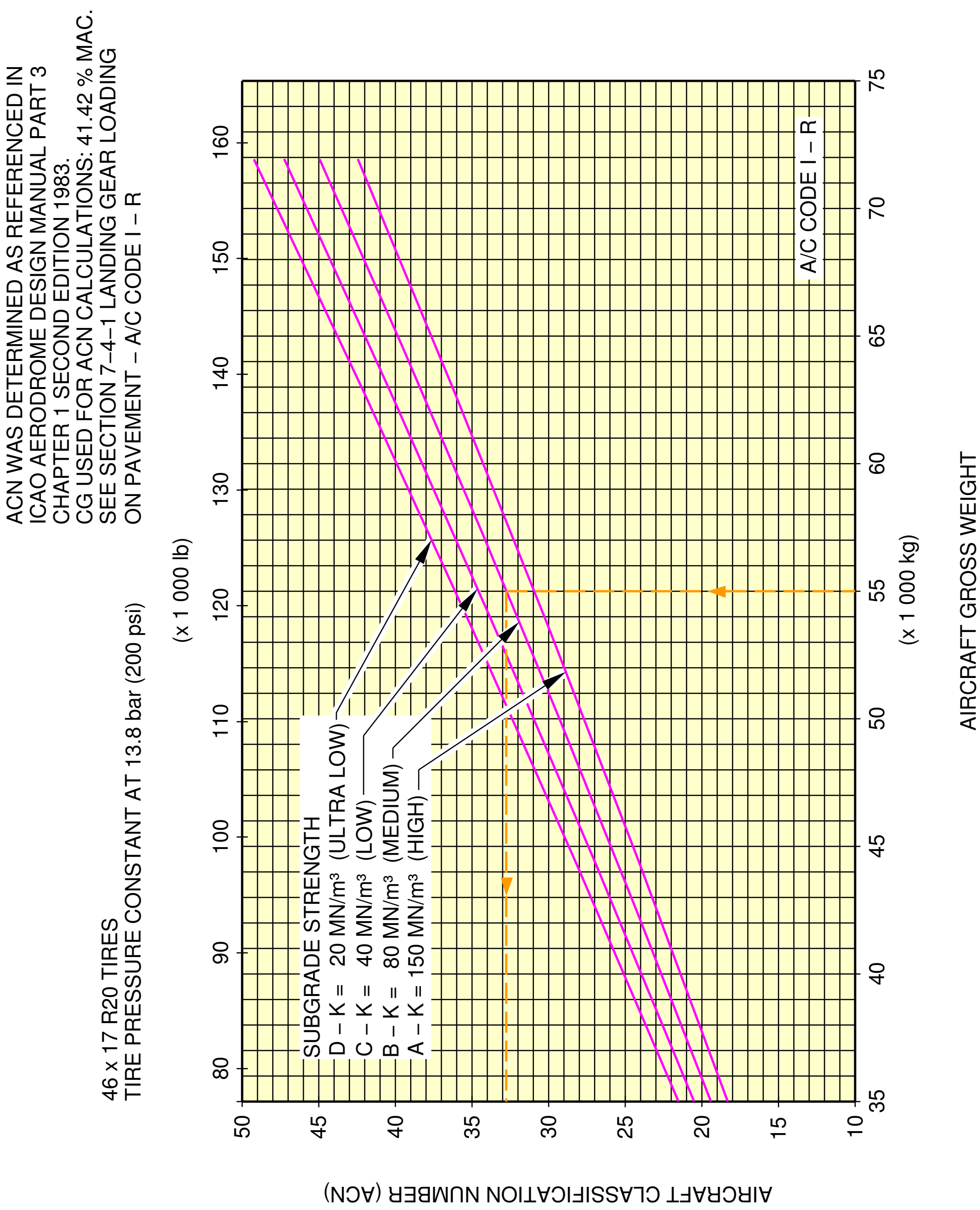
**ON A/C A320-200



N_AC_070902_1_1420101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-142-A01

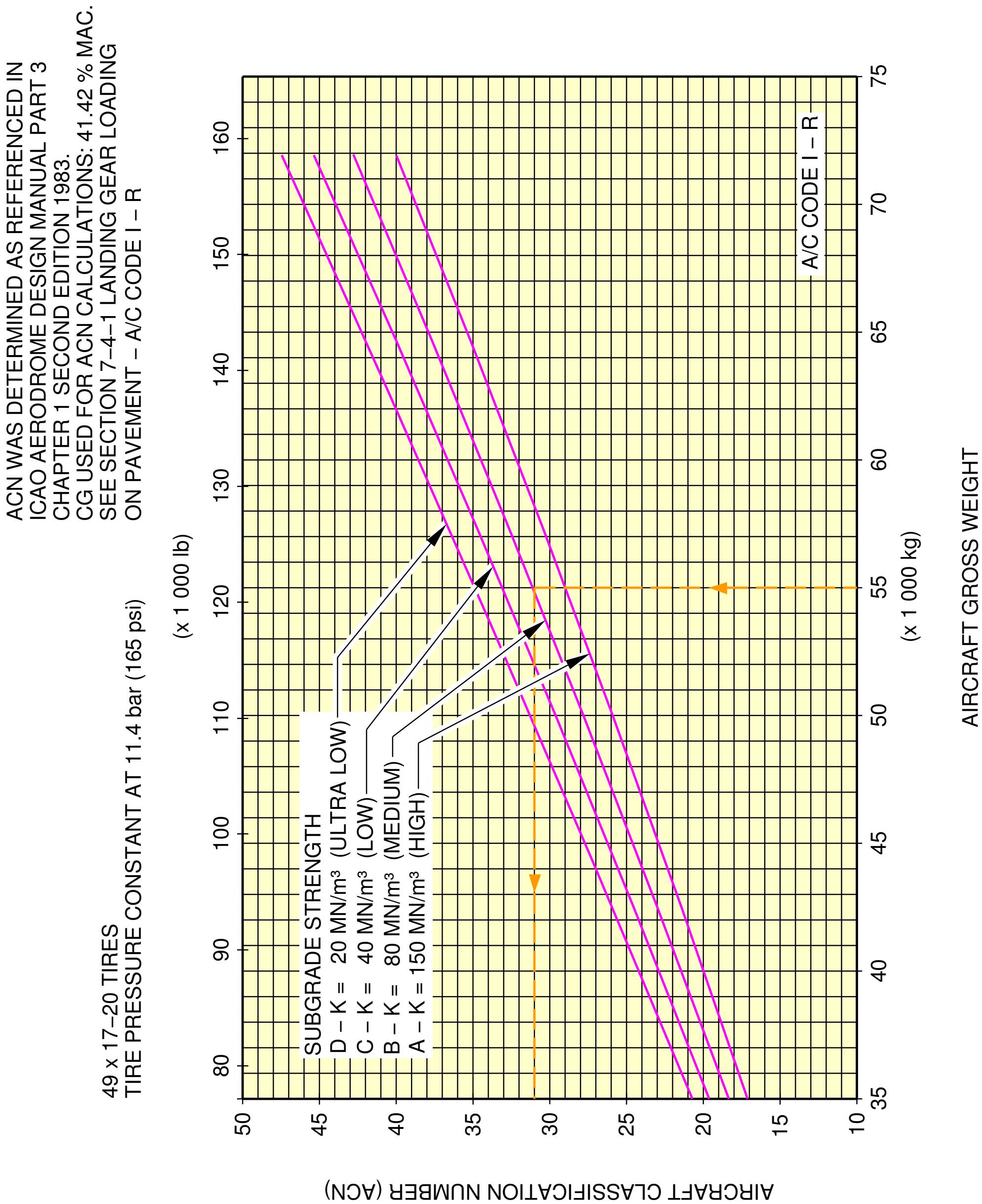
**ON A/C A320-200



N_AC_070902_1_1430101_01_01

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-143-A01

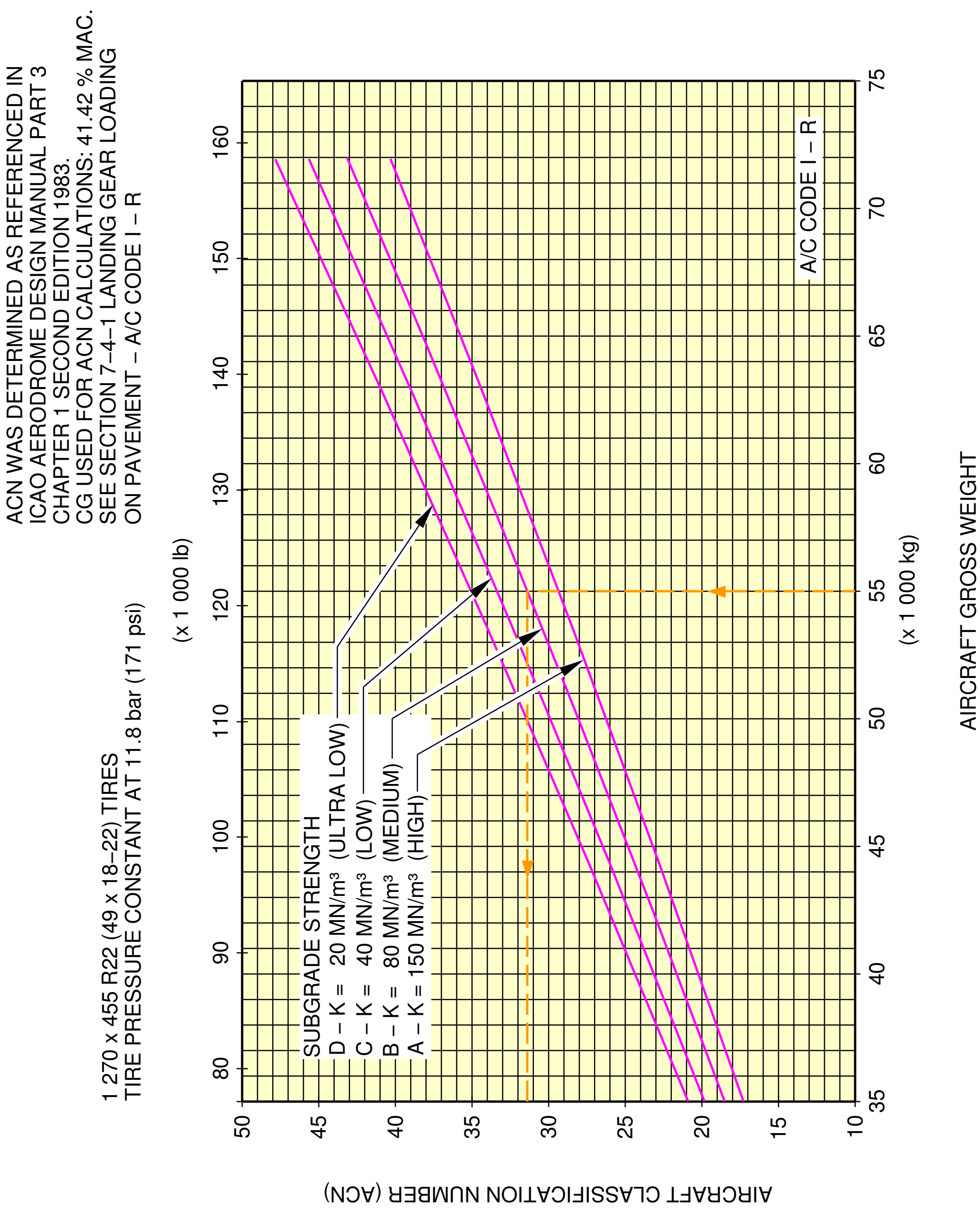
**ON A/C A320-200



N_AC_070902_1_1440101_01_01

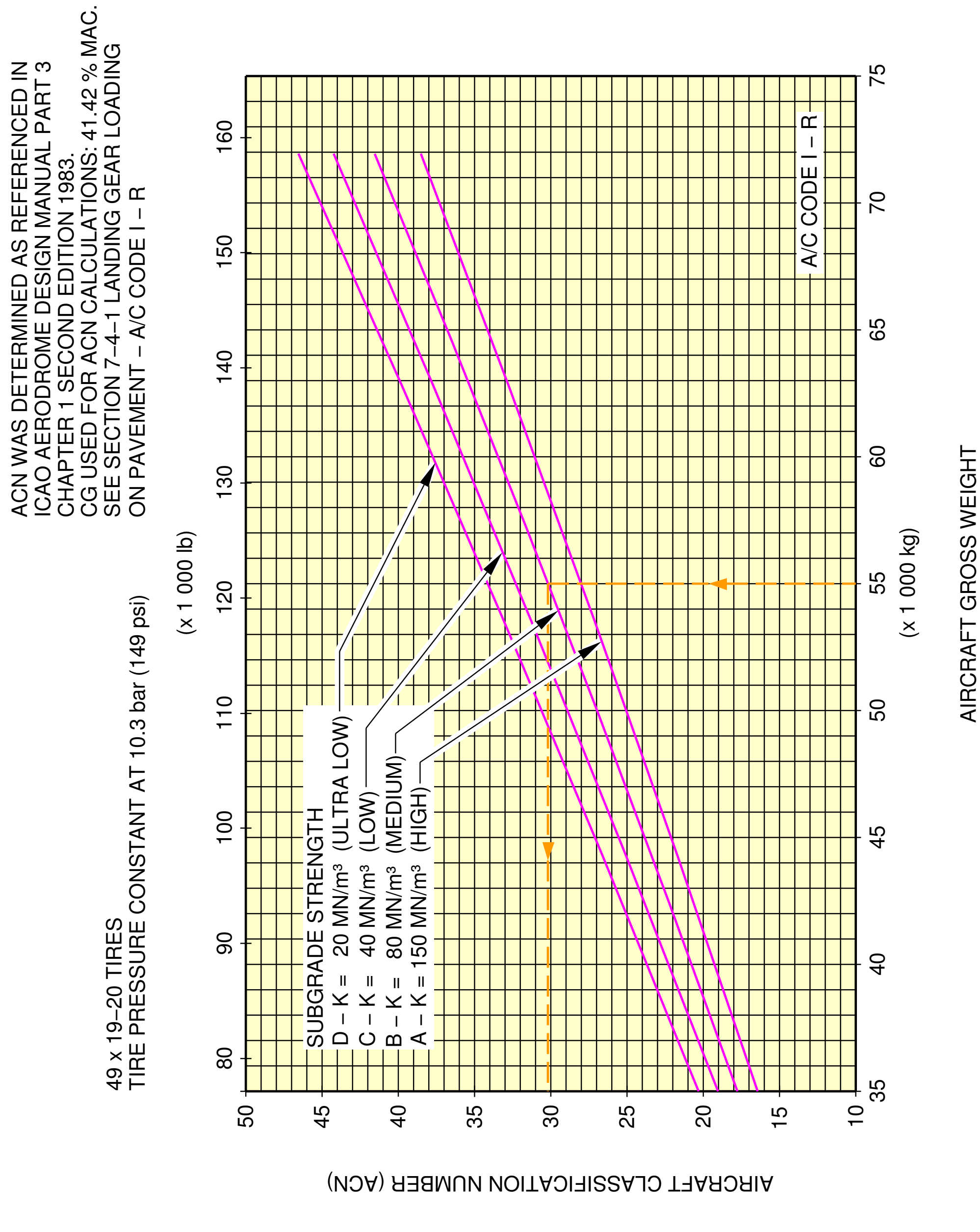
Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-144-A01

**ON A/C A320-200



Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-145-A01

**ON A/C A320-200



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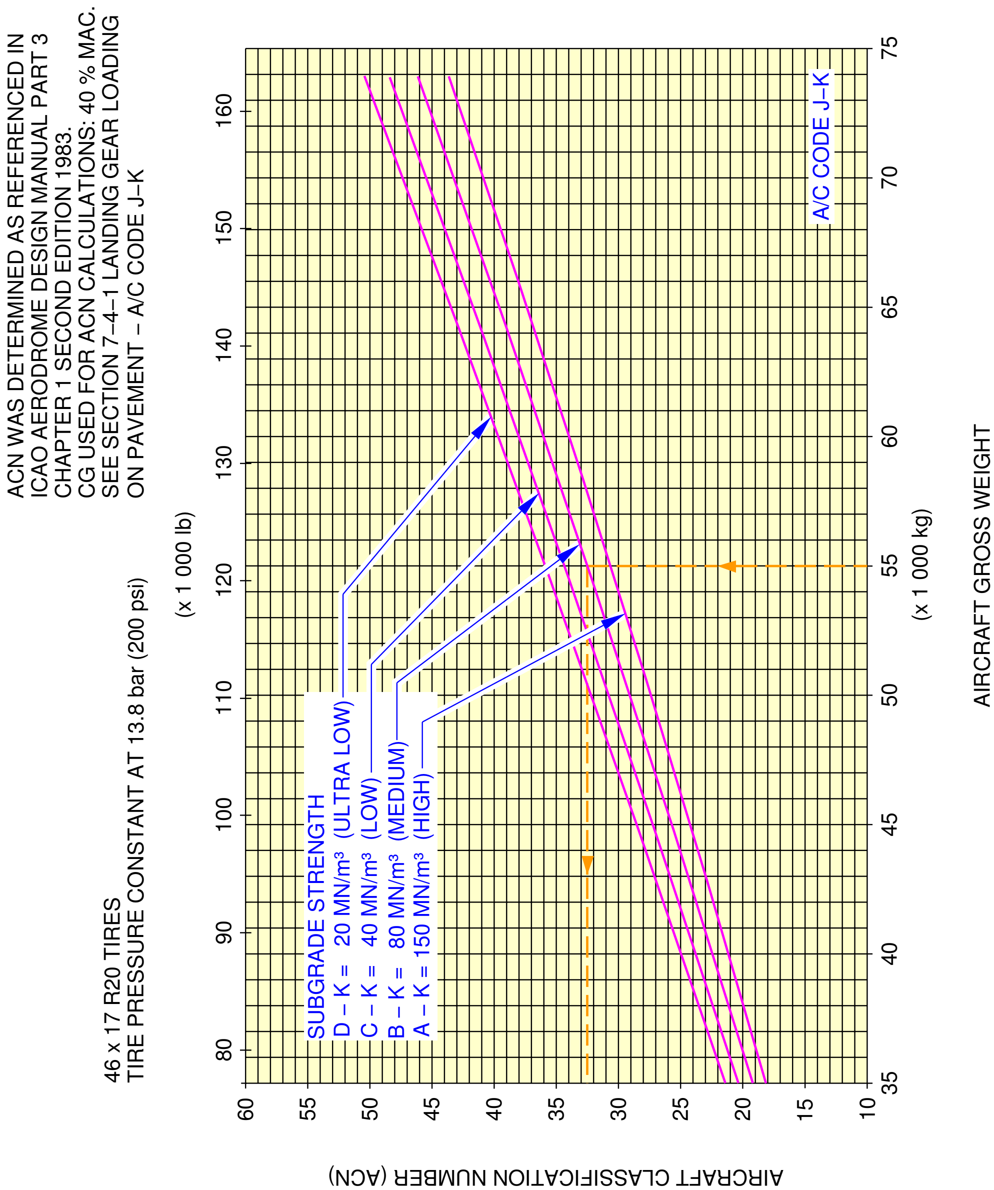
Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-146-A01

**ON A/C A320-200



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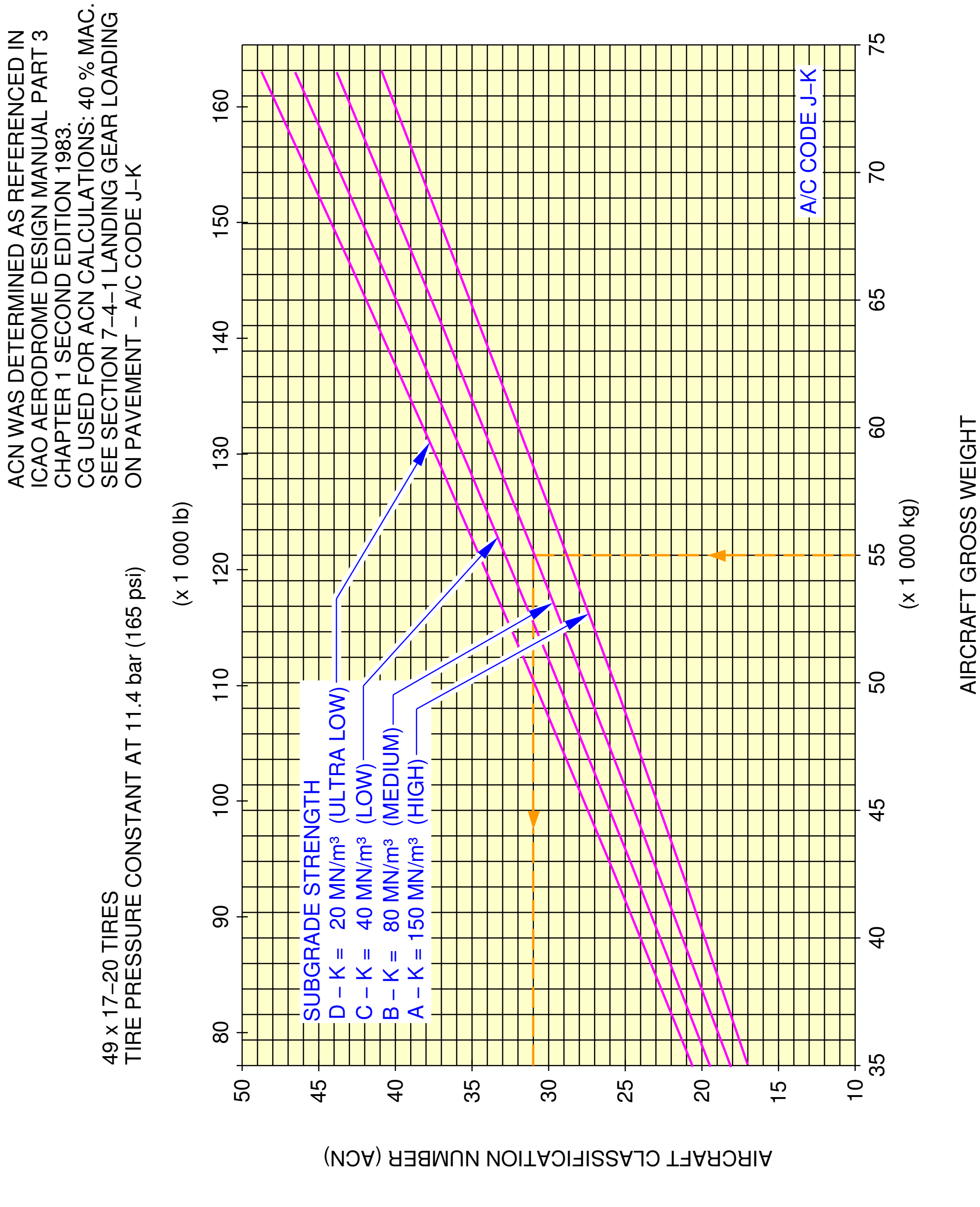
Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-147-A01

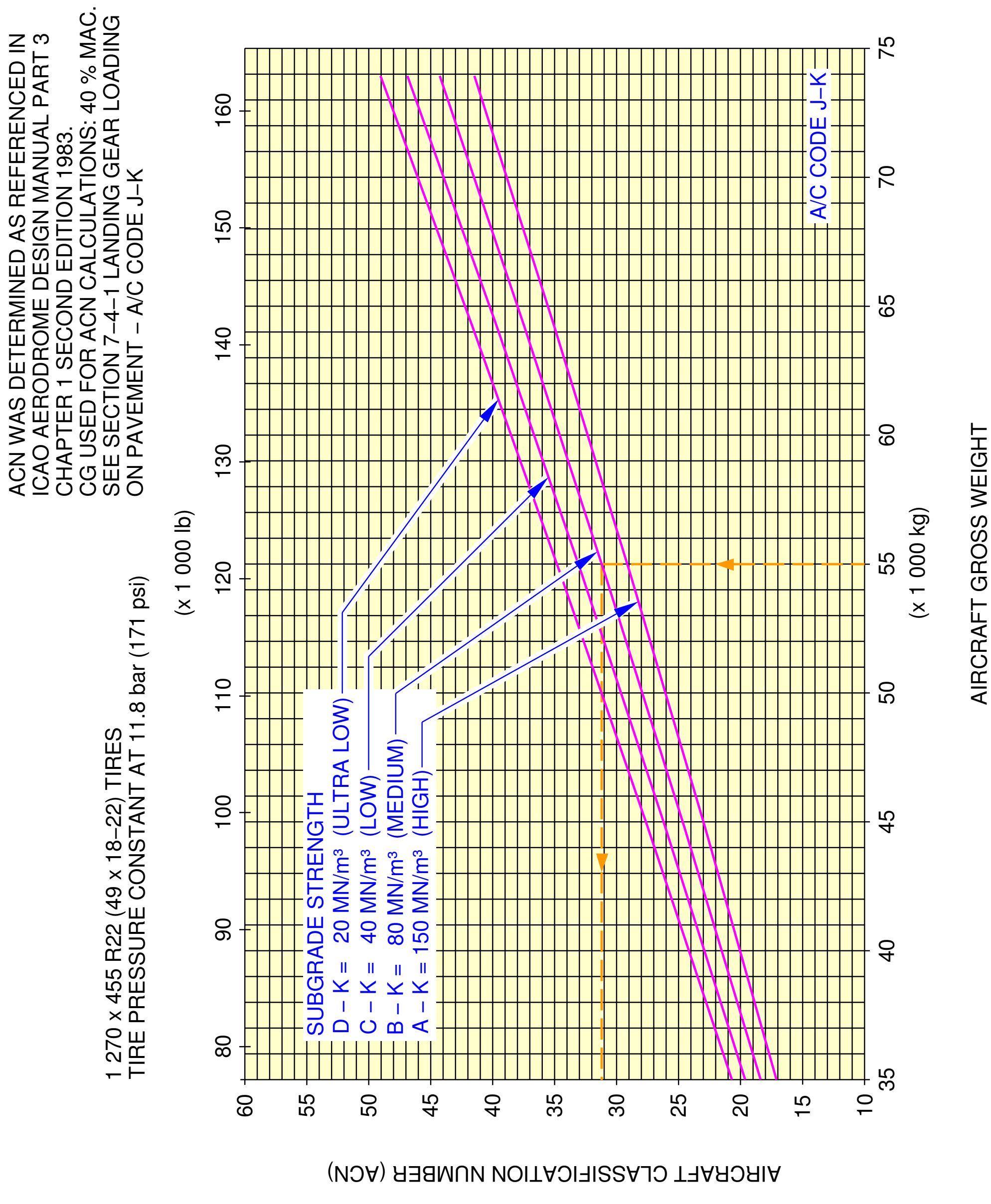
**ON A/C A320-200



N_AC_070902_1_1480101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-148-A01

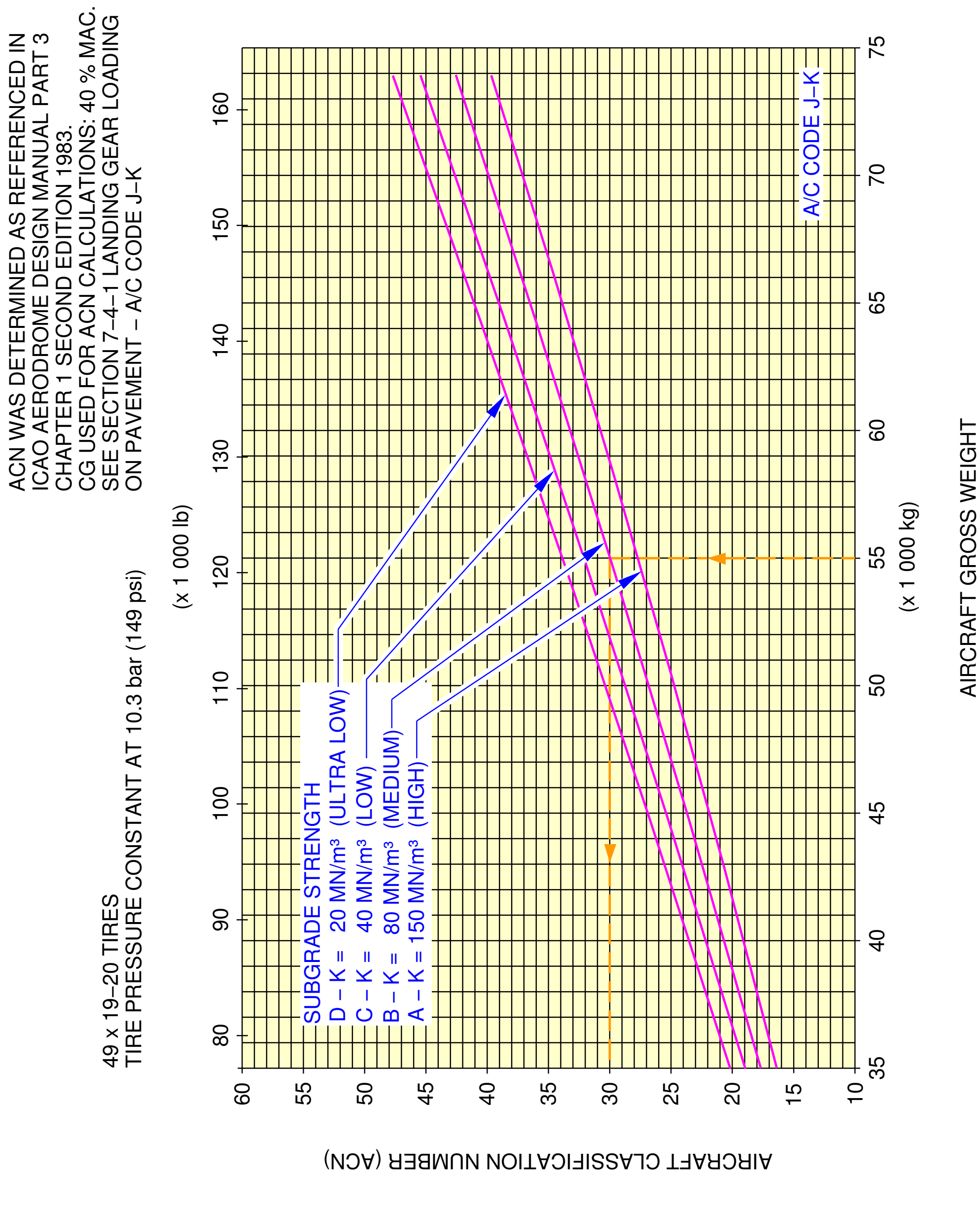
****ON A/C A320-200**



N_AC_070902_1_1490101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-149-A01

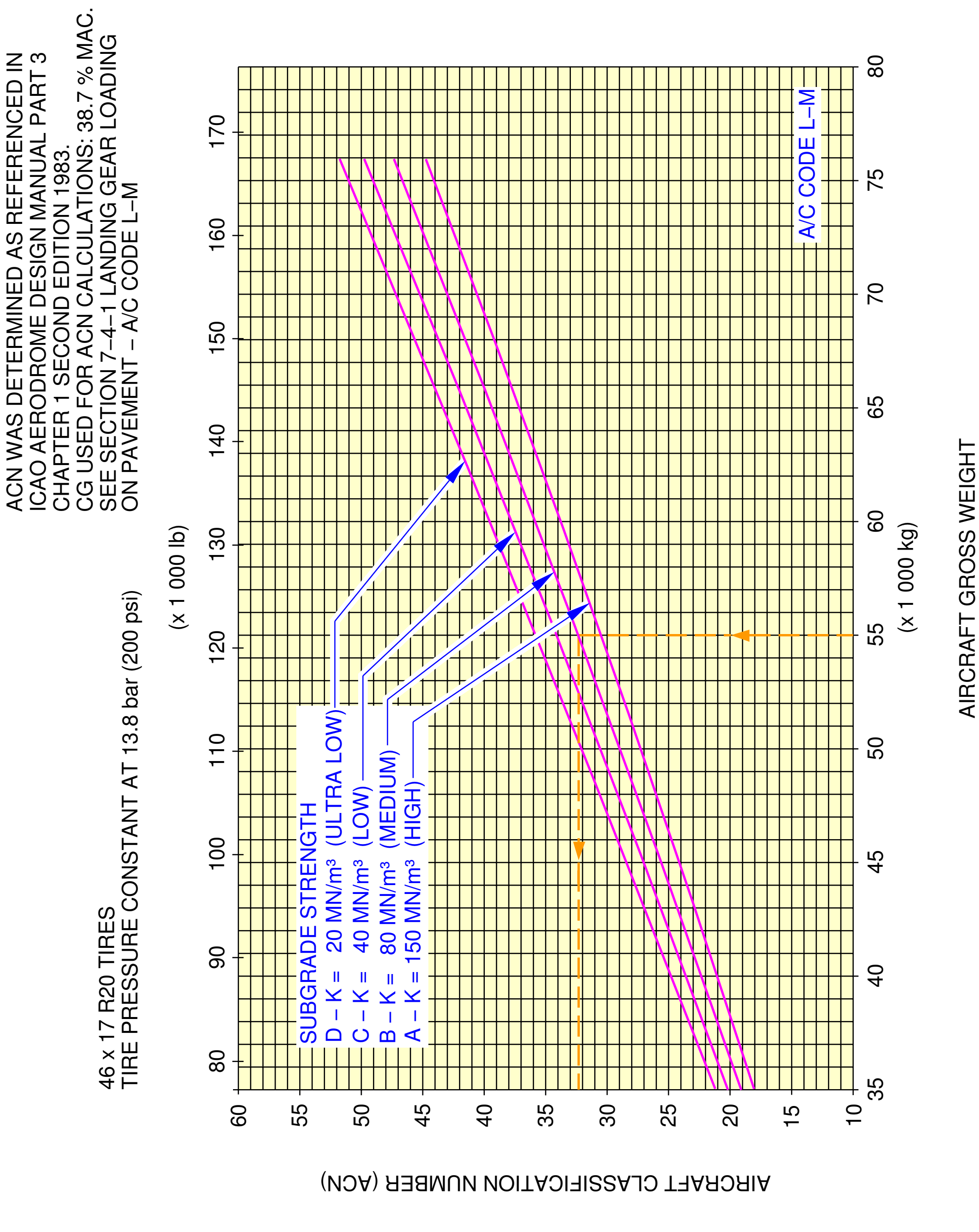
**ON A/C A320-200



N_AC_070902_1_1500101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-150-A01

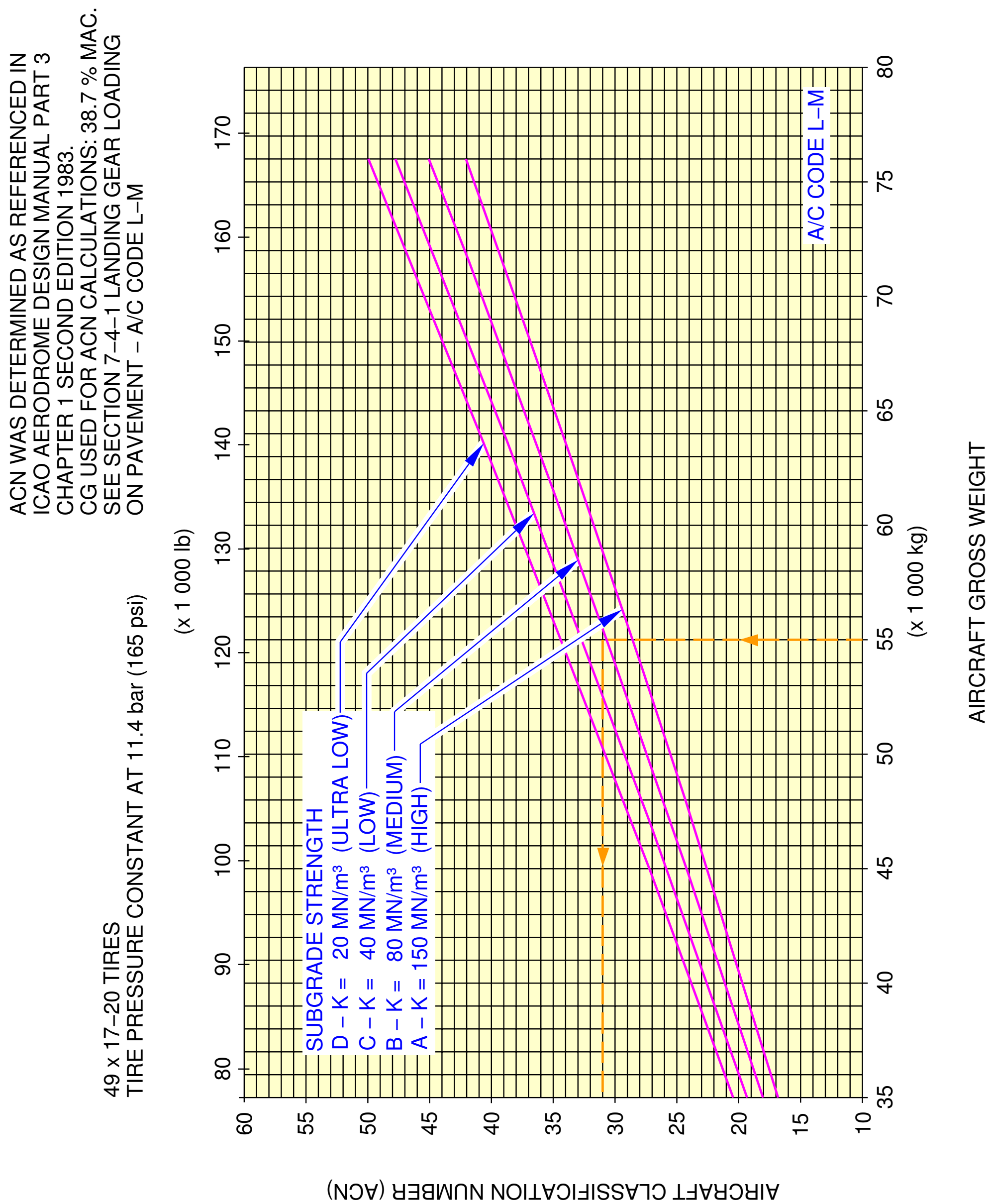
**ON A/C A320-200



N_AC_070902_1_1510101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-151-A01

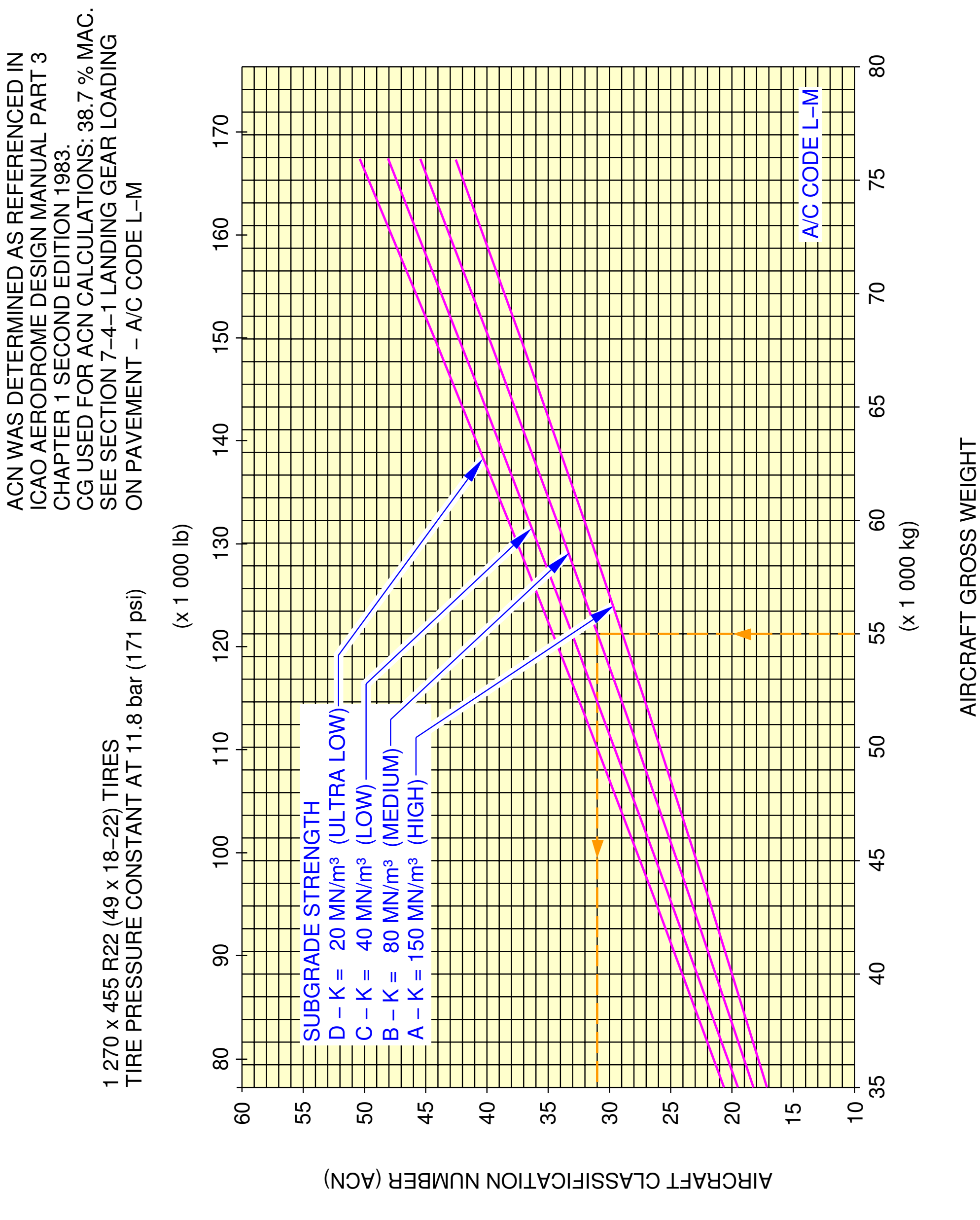
****ON A/C A320-200**



N_AC_070902_1_1520101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-152-A01

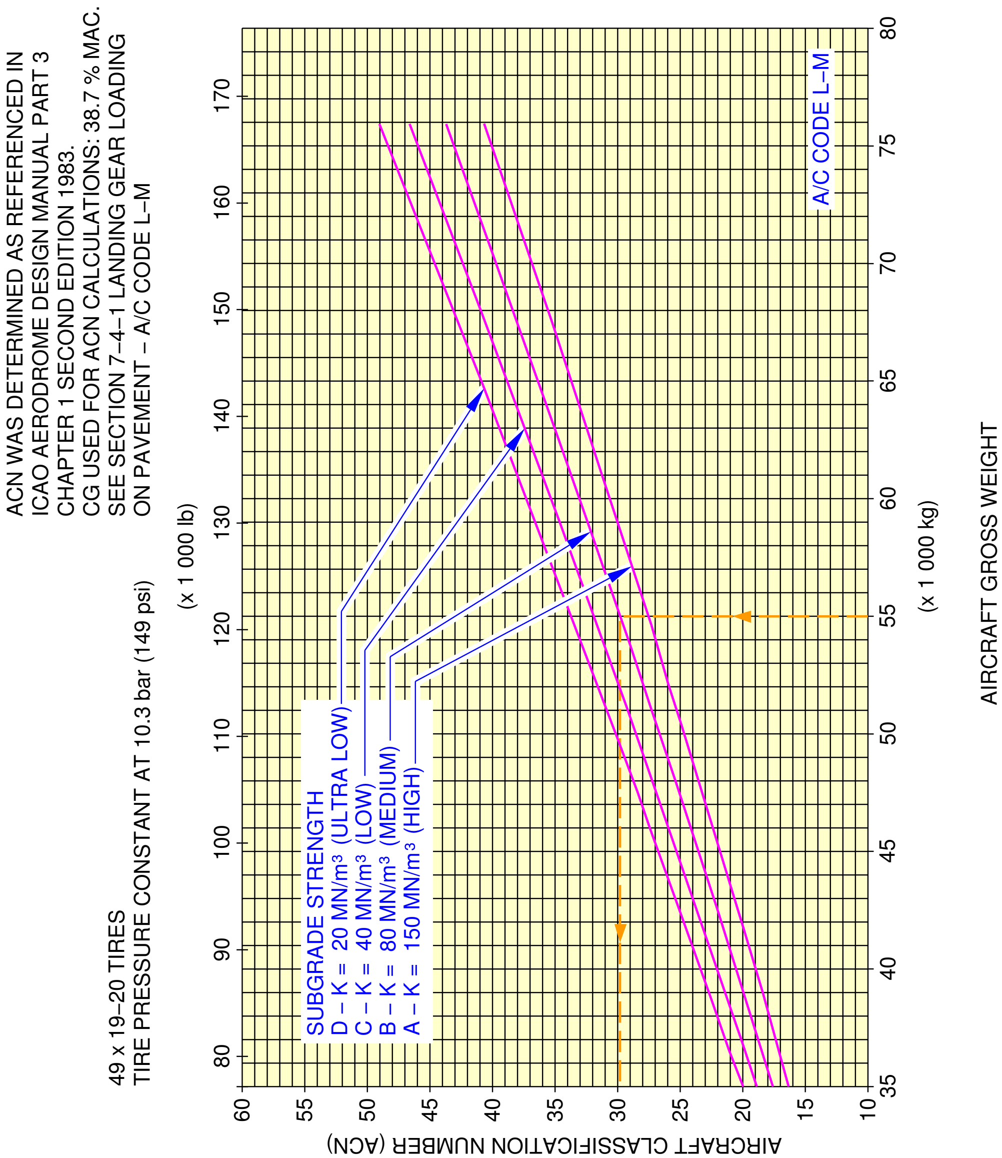
****ON A/C A320-200**



N_AC_070902_1_1530101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-153-A01

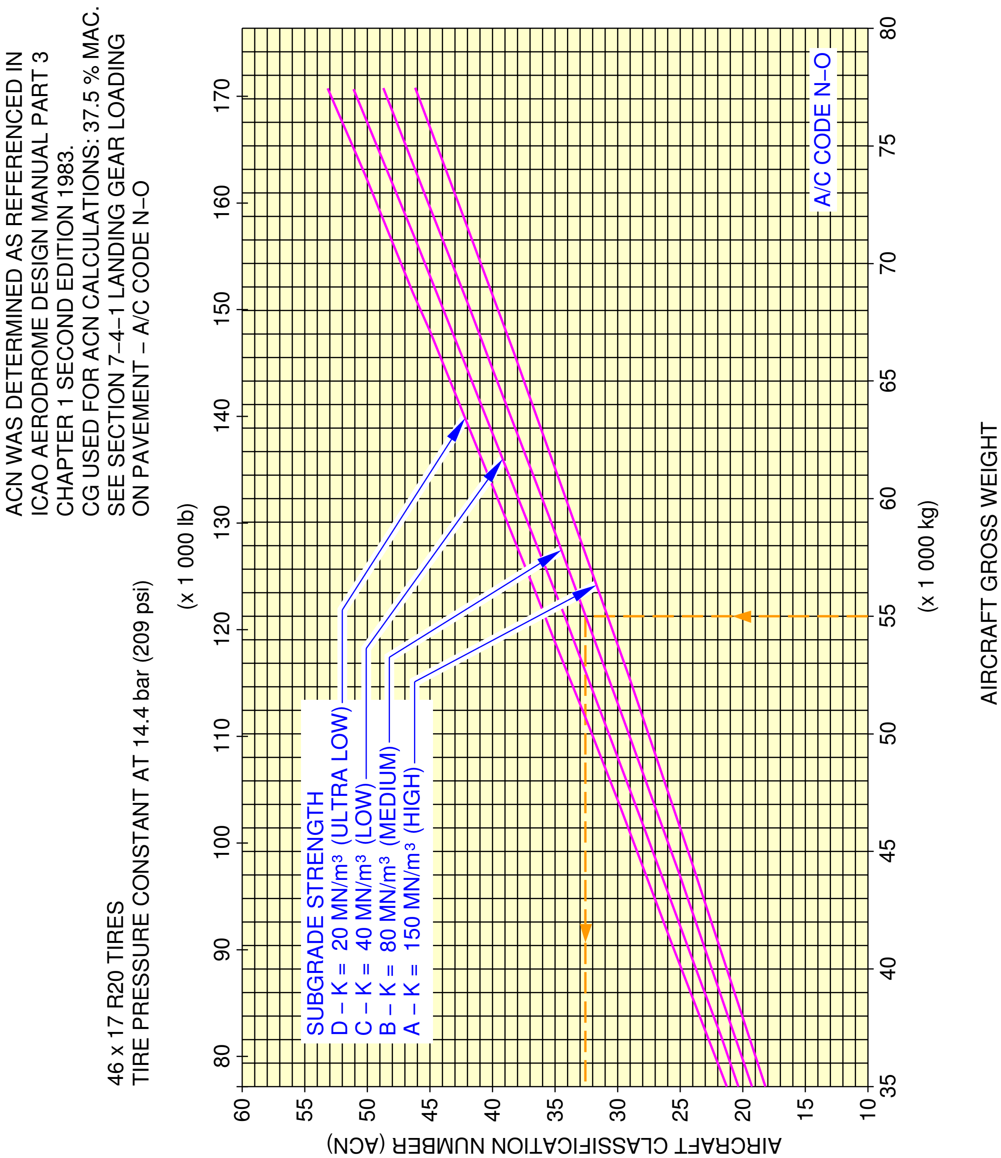
**ON A/C A320-200



N_AC_070902_1_1540101_01_00

Aircraft Classification Number − Rigid Pavement
FIGURE-7-9-2-991-154-A01

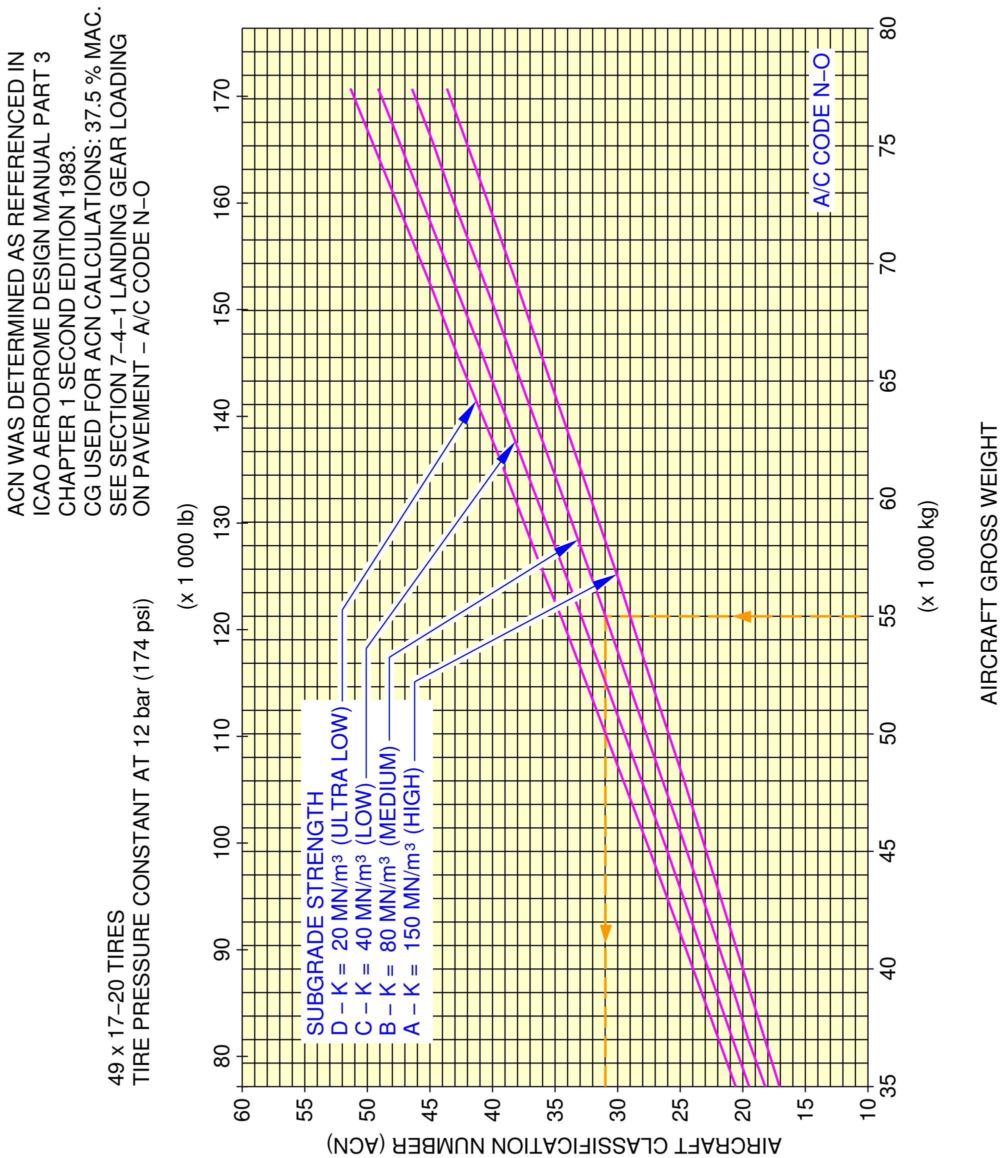
**ON A/C A320-200



N_AC_070902_1_1550101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-155-A01

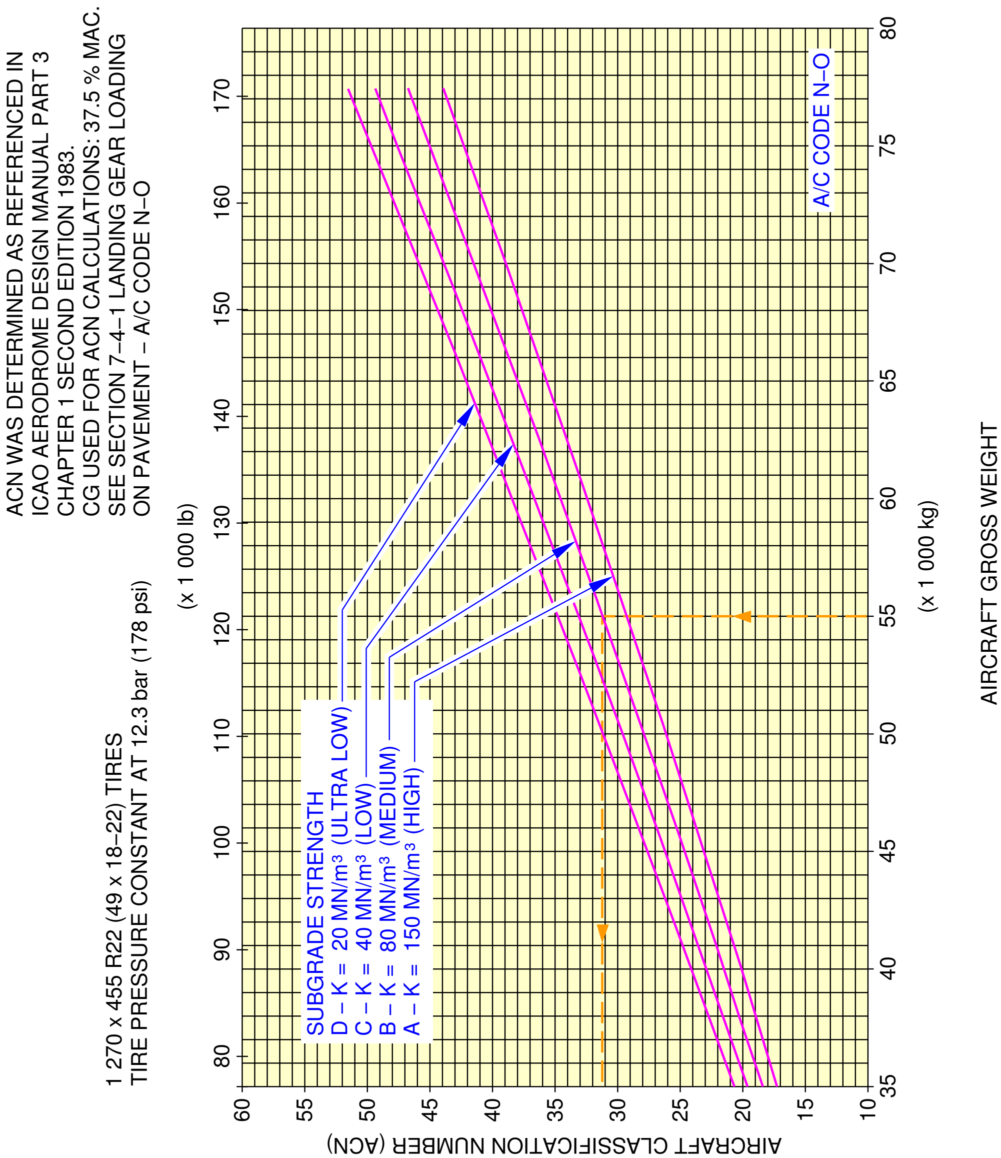
**ON A/C A320-200



N_AC_070902_1_1560101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-156-A01

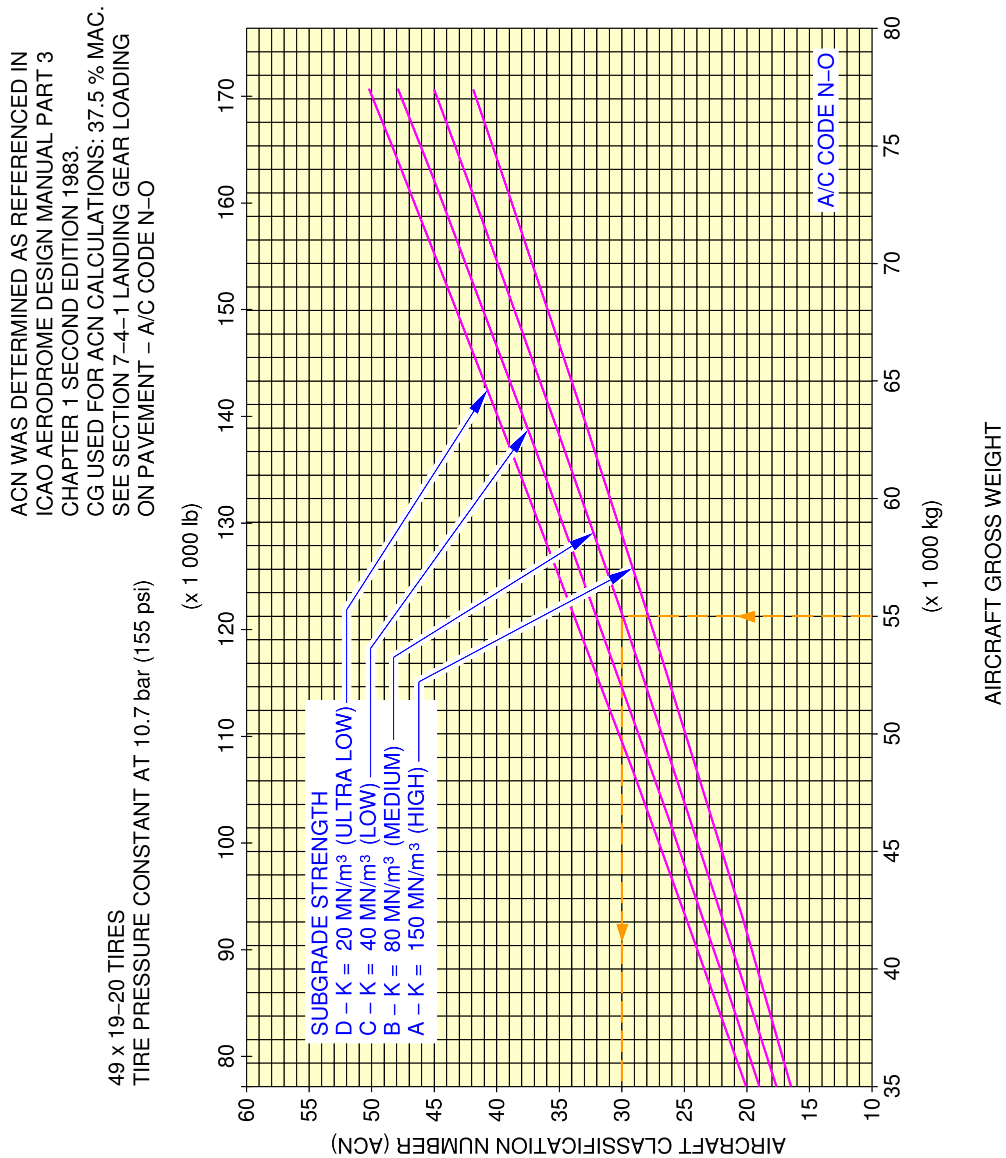
**ON A/C A320-200



N_AC_070902_1_1570101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-157-A01

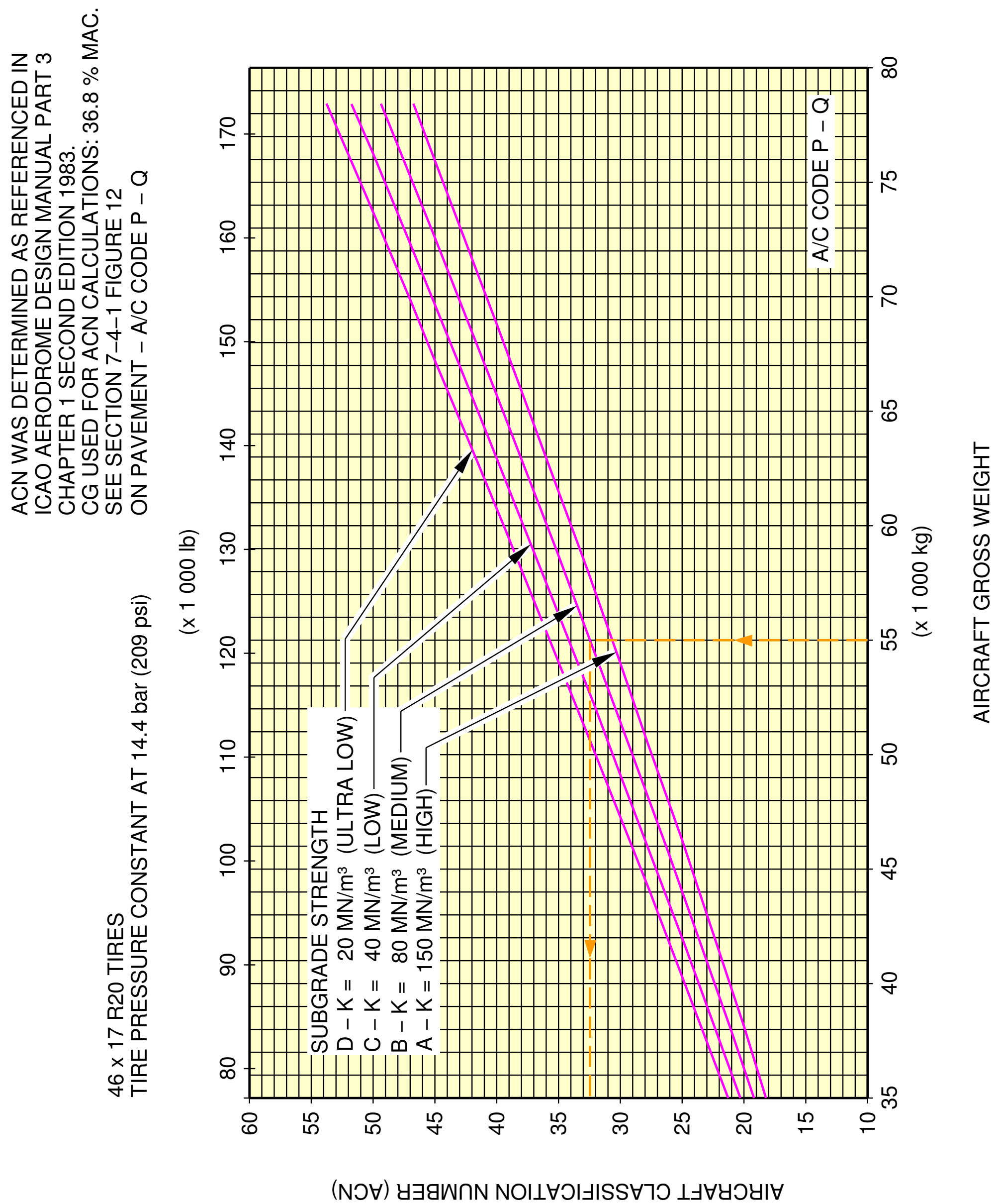
**ON A/C A320-200



N_AC_070902_1_1580101_01_00

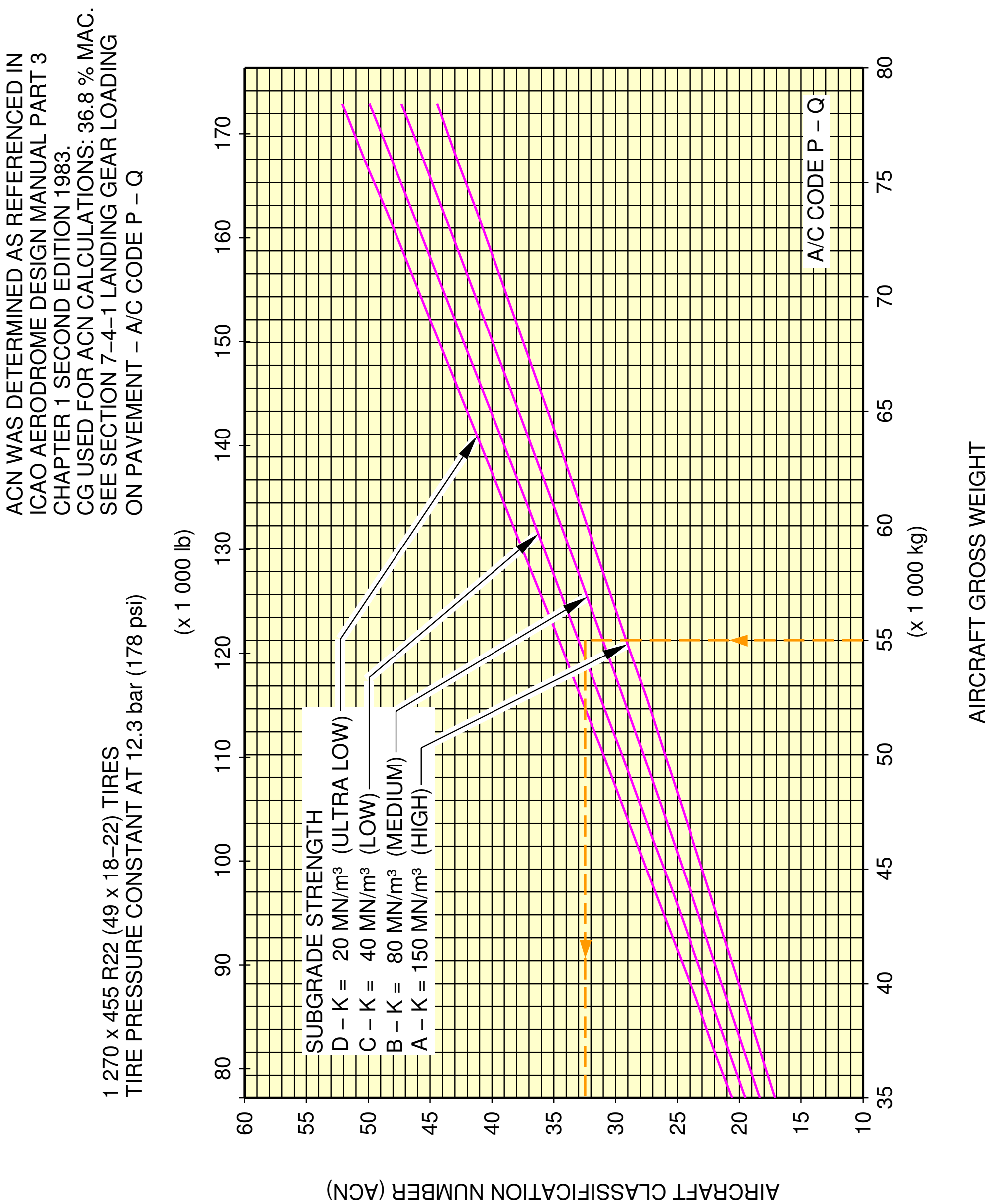
Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-158-A01

**ON A/C A320-200



Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-159-A01

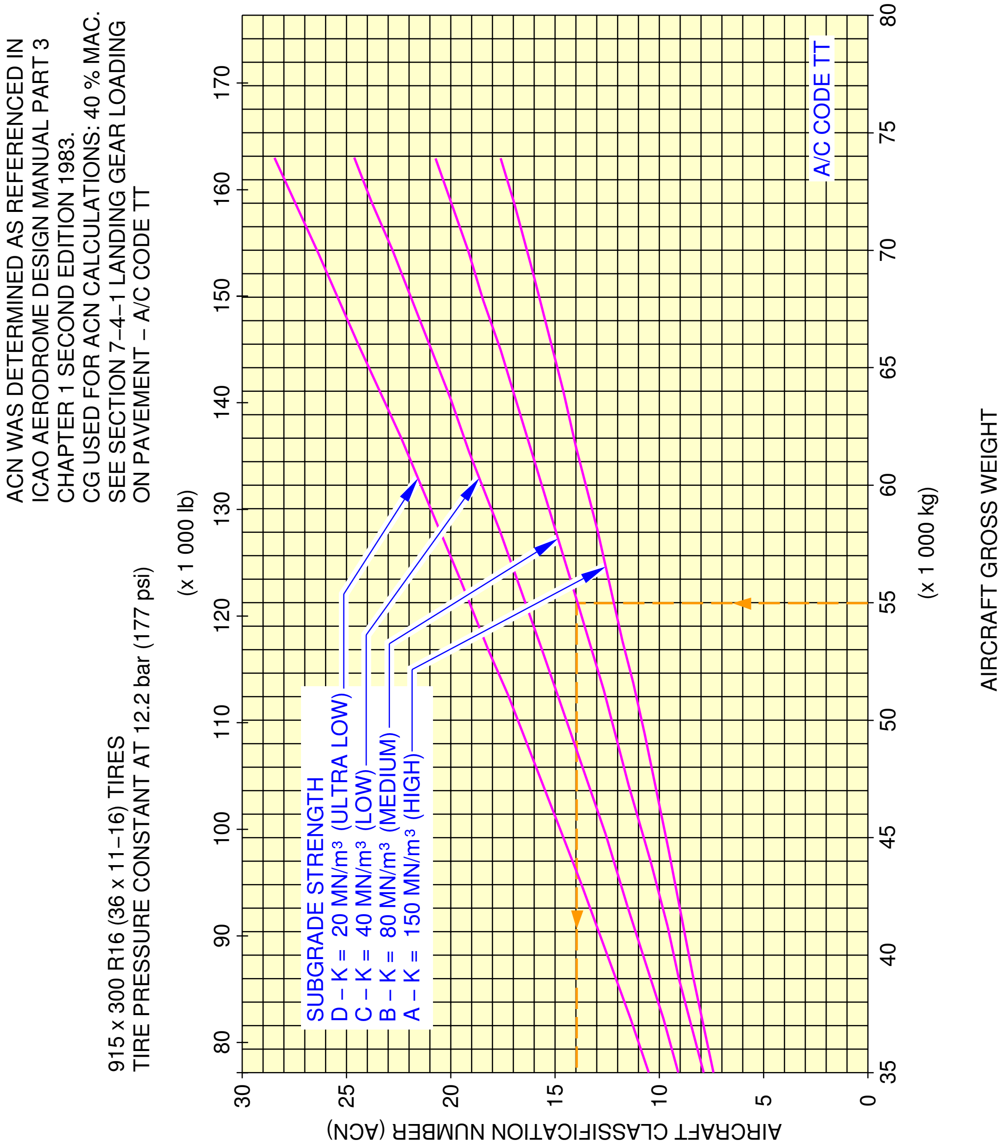
****ON A/C A320-200**



N_AC_070902_1_1610101_01_01

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-161-A01

**ON A/C A320-200



N_AC_070902_1_1630101_01_00

Aircraft Classification Number – Rigid Pavement
FIGURE-7-9-2-991-163-A01

SCALED DRAWINGS

8-0-0 SCALED DRAWINGS

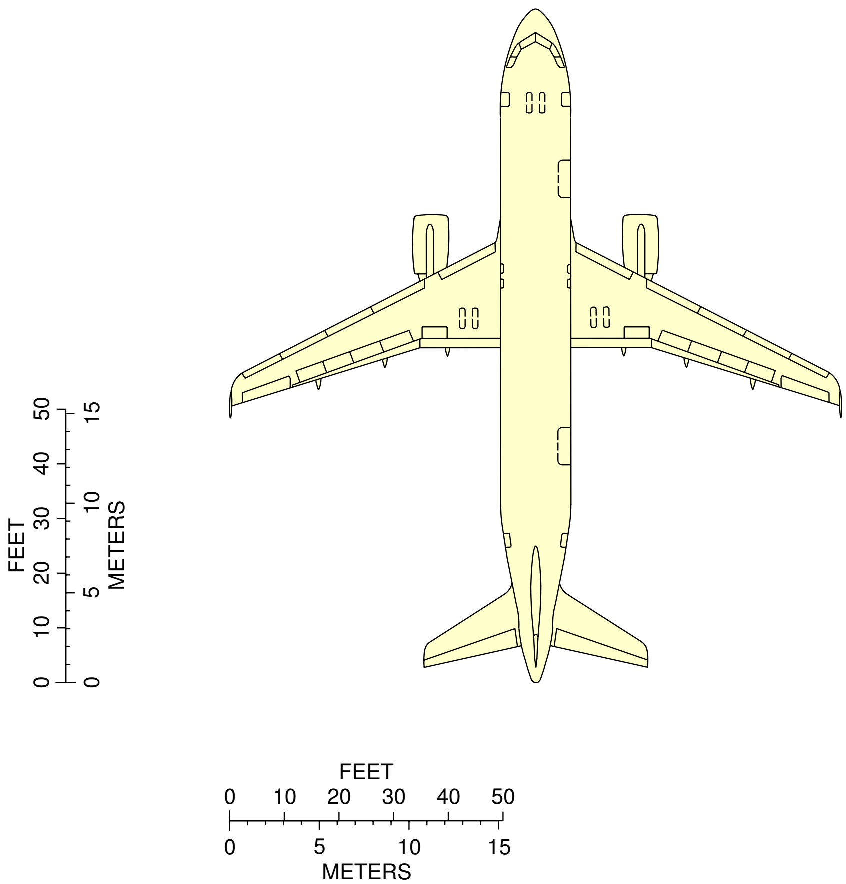
****ON A/C A320-200**

Scaled Drawings

1. This section provides the scaled drawings.

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

**ON A/C A320-200



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

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Scaled Drawing
FIGURE-8-0-0-991-003-A01

AIRCRAFT RESCUE AND FIRE FIGHTING

10-0-0 AIRCRAFT RESCUE AND FIRE FIGHTING

****ON A/C A320-200**

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 poster available for download on AIRBUSWorld and the Airbus website.

**ON A/C A320-200

AIRBUS
A320
Aircraft Rescue and Fire Fighting Chart
ARFC

NOTE:
THIS CHART GIVES THE GENERAL LAYOUT OF THE A320 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.

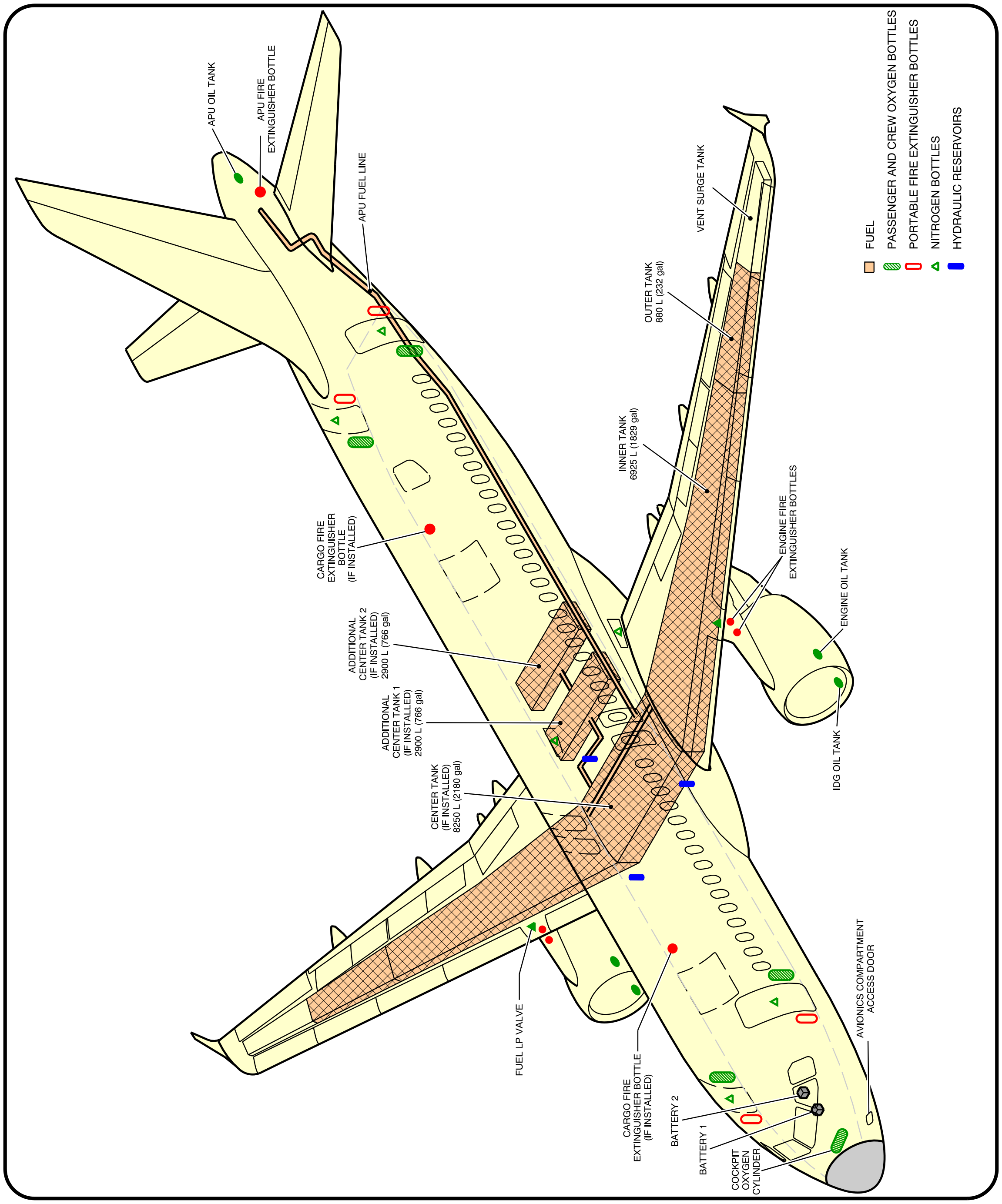
ISSUED BY:
AIRBUS S.A.S
CUSTOMER SERVICES
TECHNICAL DATA SUPPORT AND SERVICES
31707 BLAGNAC CEDEX
FRANCE

REVISION DATE: JUNE 2012
REFERENCE : N_RF_000000_1_A320000
SHEET 1/2

N_AC_100000_1_0010301_01_00

Front Page
FIGURE-10-0-0-991-001-C01

**ON A/C A320-200



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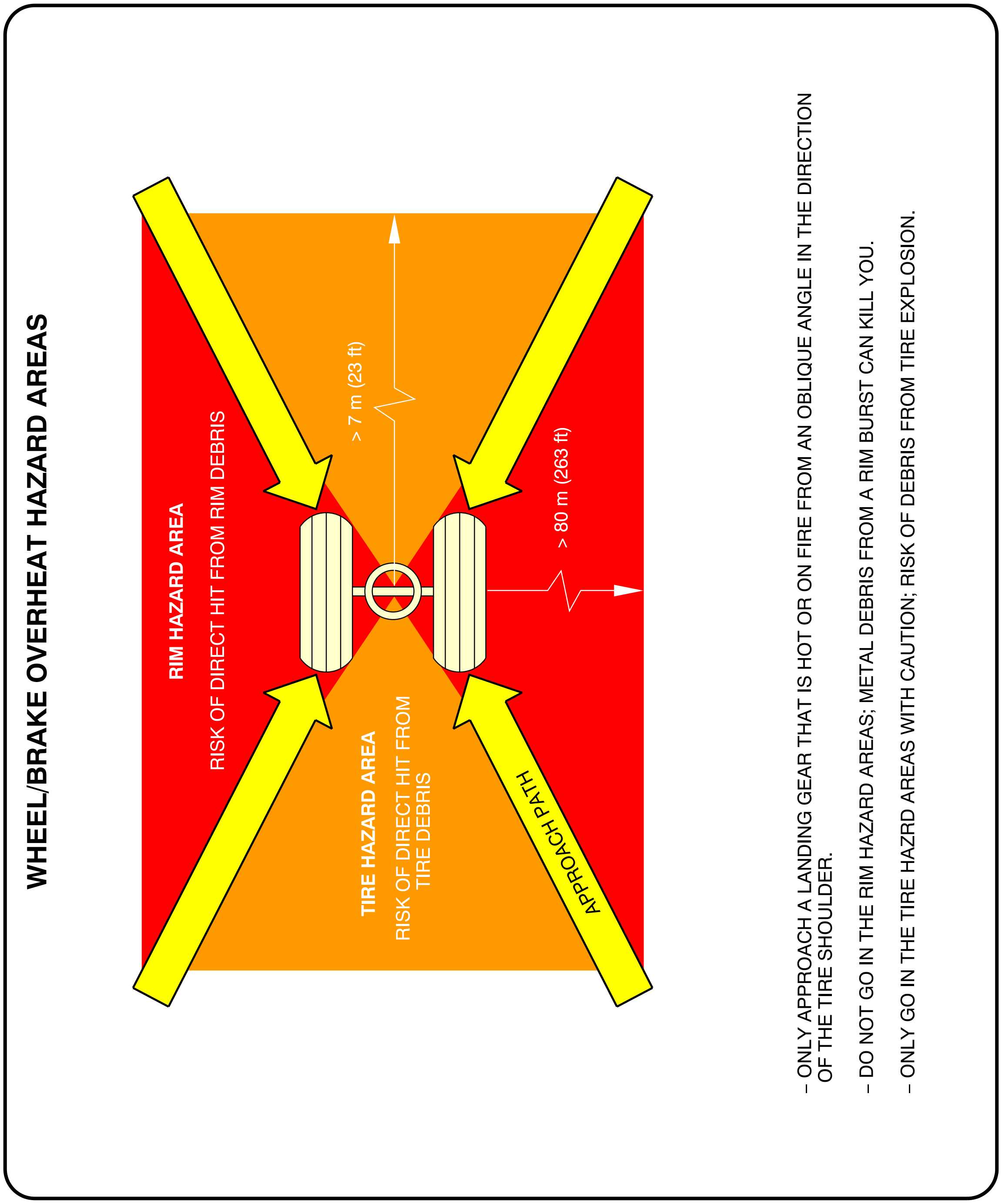
Highly Flammable and Hazardous Materials and Components
FIGURE-10-0-0-991-002-C01

**ON A/C A320-200



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Wheel Safety Area
(Sheet 1 of 2)
FIGURE-10-0-0-991-003-A01

**ON A/C A320-200

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 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 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. 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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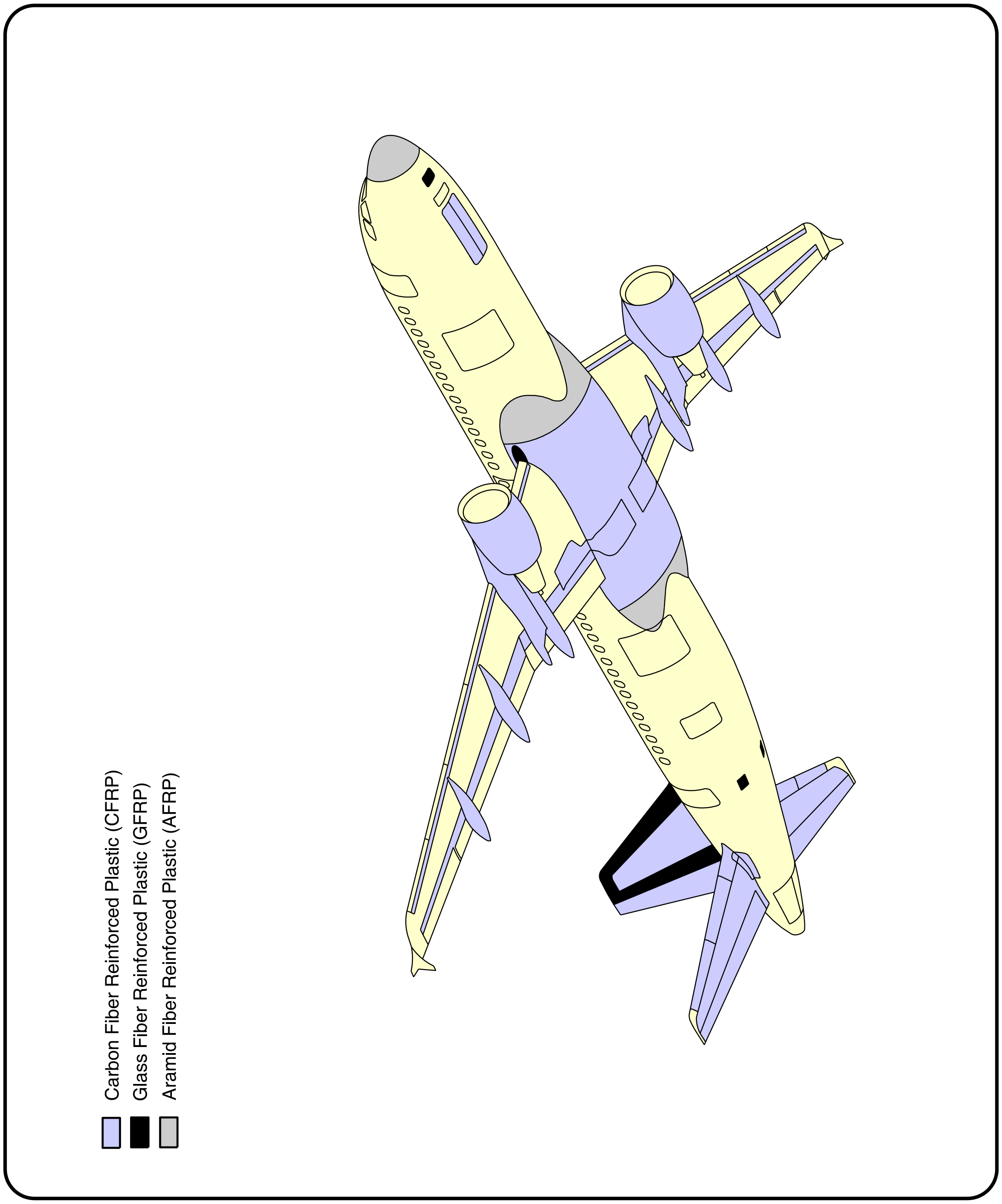
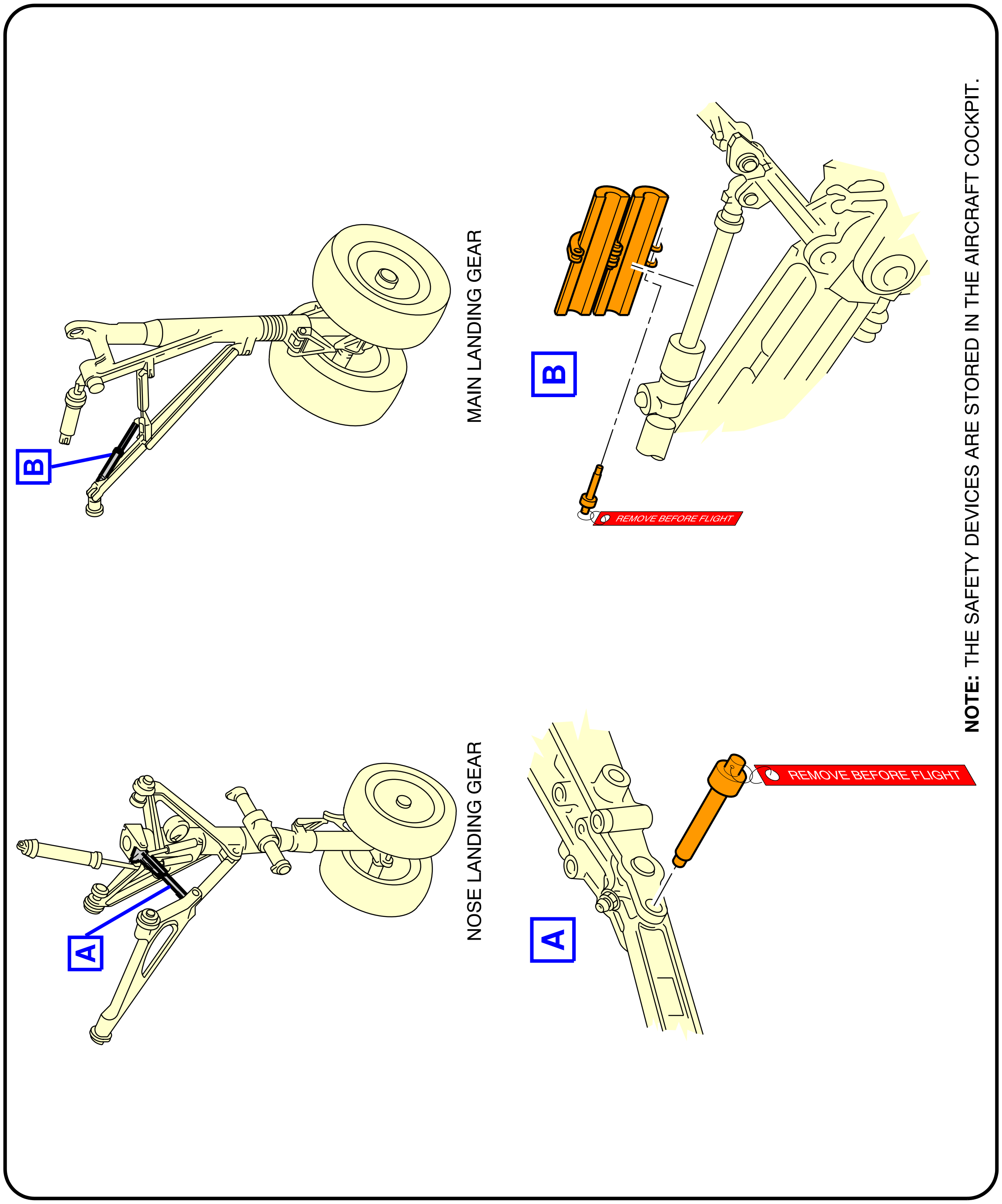
Wheel Safety Area
Recommendations (Sheet 2 of 2)
FIGURE-10-0-0-991-003-A01

**ON A/C A320-200



Composite Materials
FIGURE-10-0-0-991-004-C01

**ON A/C A320-200



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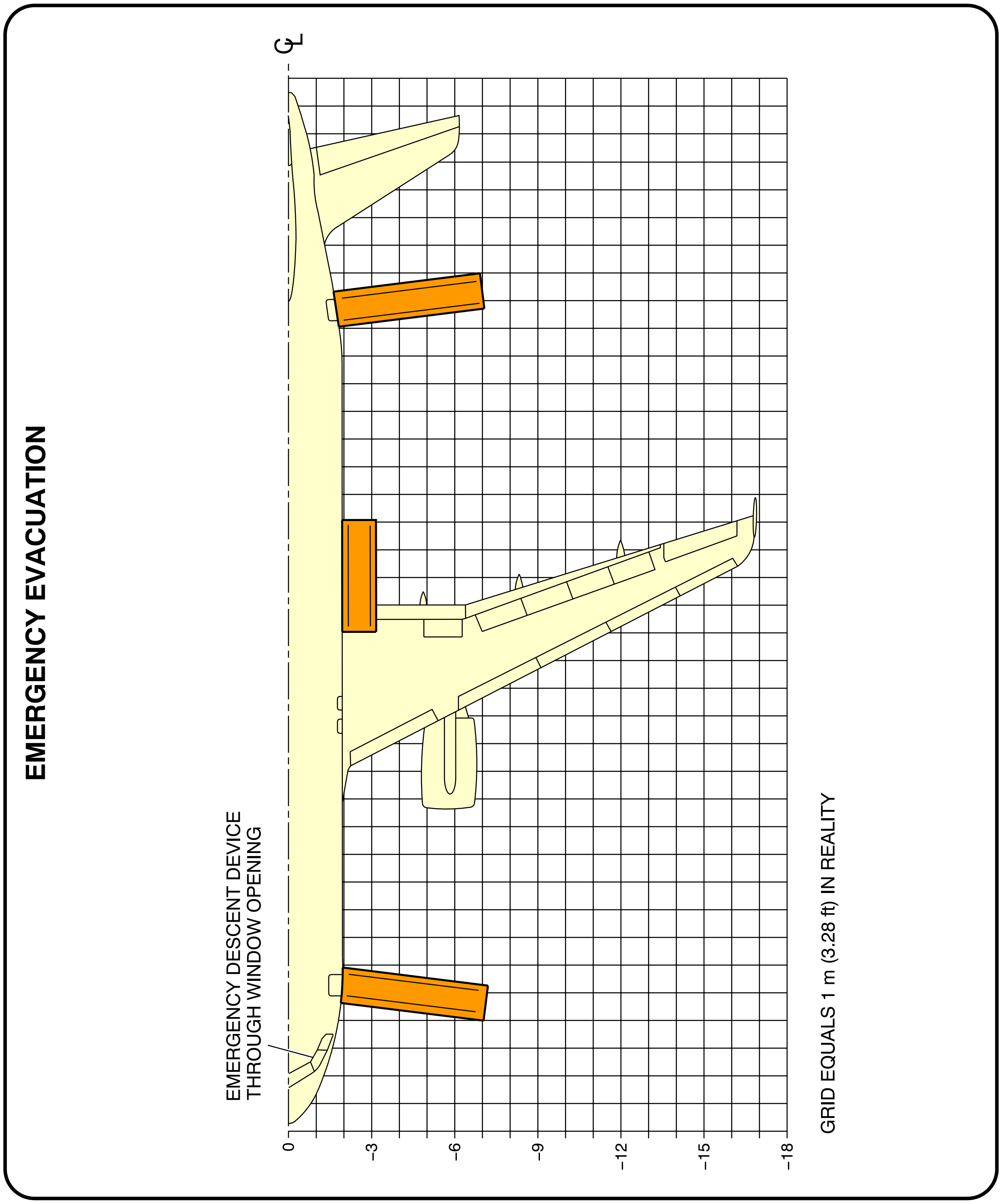
LG Ground Lock Safety Devices
FIGURE-10-0-0-991-005-A01

**ON A/C A320-200



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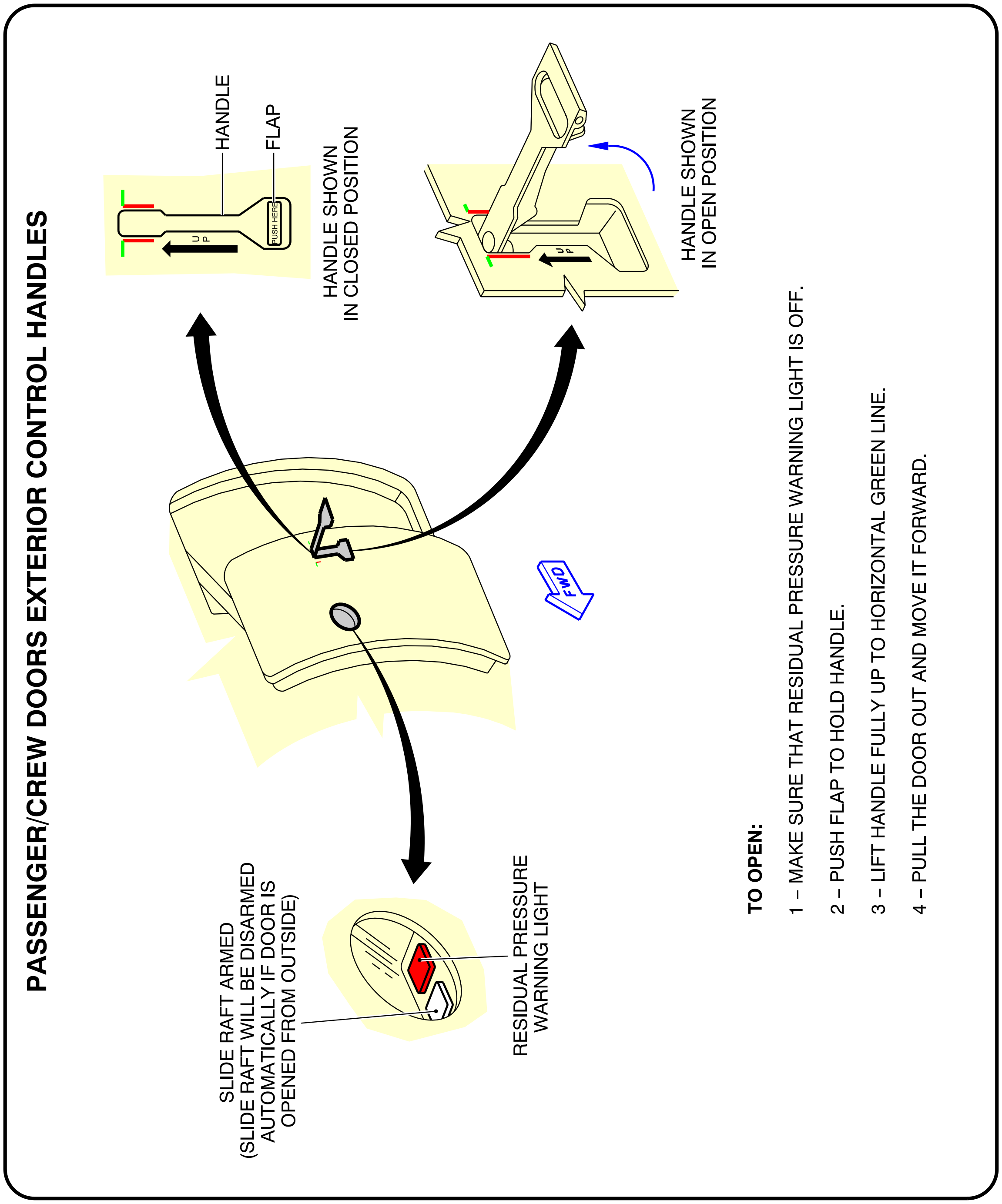
Evacuation/Escape Slide/Raft
FIGURE-10-0-0-991-006-C01

**ON A/C A320-200



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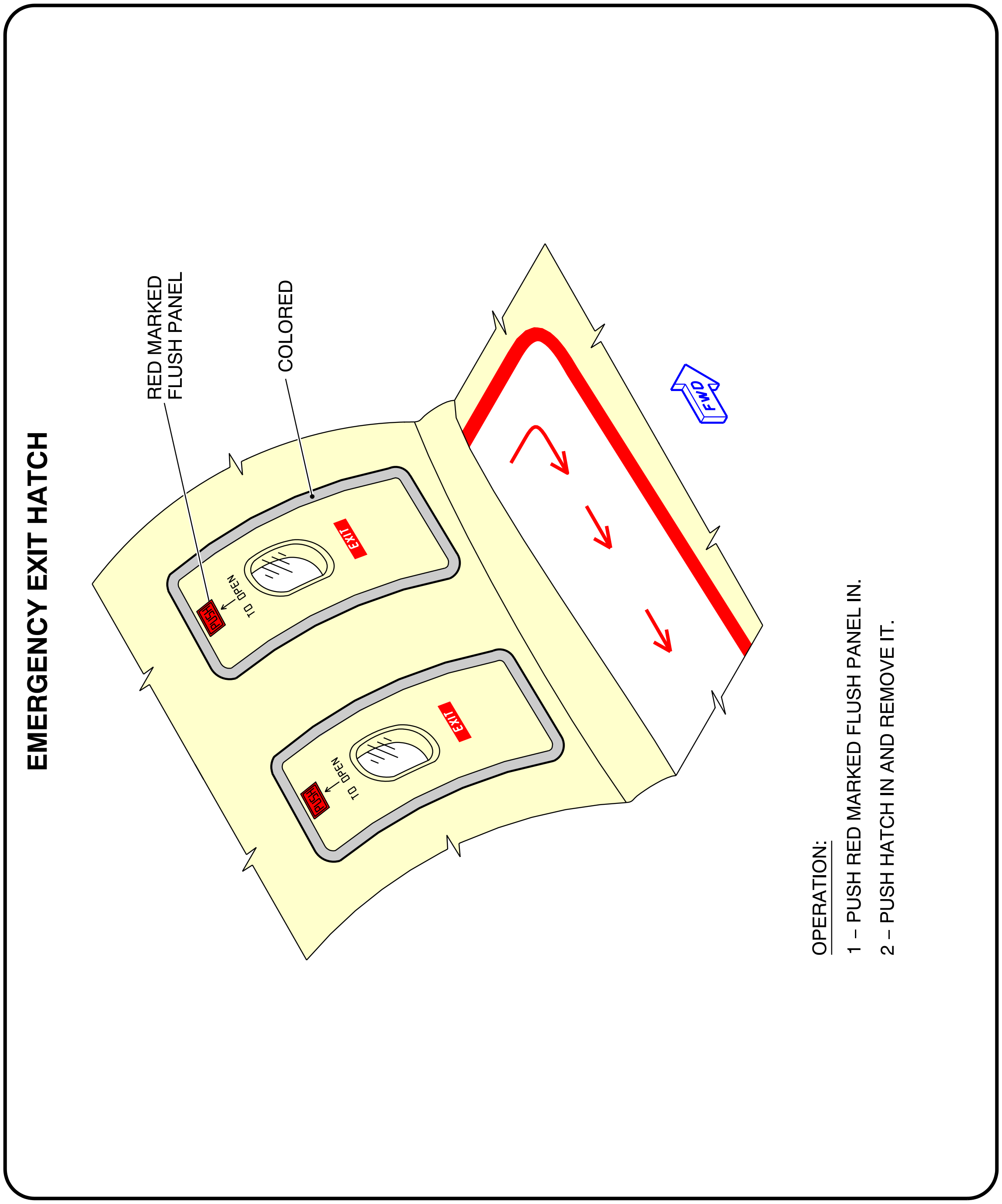
Pax/Crew Doors
FIGURE-10-0-0-991-007-A01

**ON A/C A320-200



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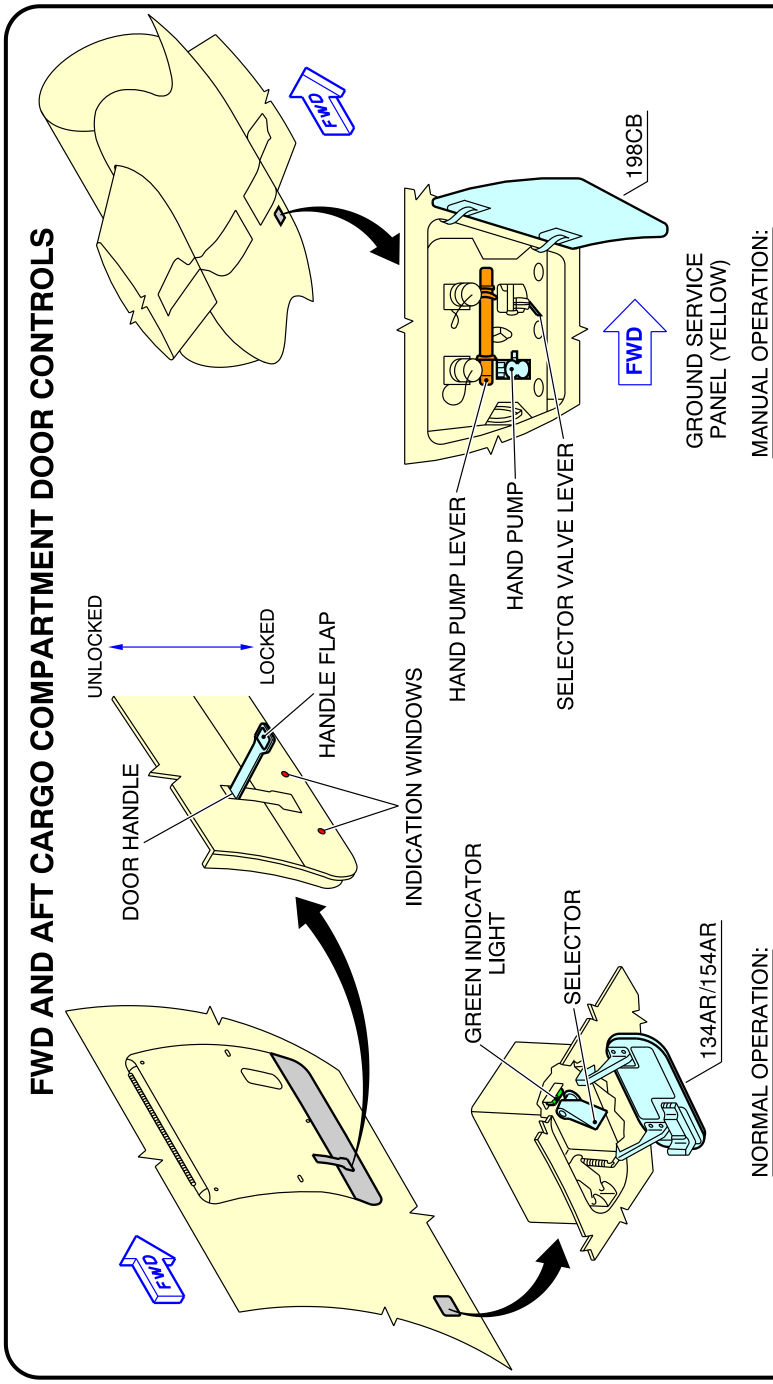
Emergency Exit Hatch
FIGURE-10-0-0-991-008-C01

**ON A/C A320-200

FWD AND AFT CARGO COMPARTMENT DOOR CONTROLS



NORMAL OPERATION:

WARNING: ENSURE THAT ALL PERSONNEL AND EQUIPMENT ARE CLEAR OF CARGO DOOR AREA.

1 – PUSH THE DOOR HANDLE FLAP IN TO RELEASE THE DOOR HANDLE FROM THE CATCH OF THE DOOR STRUCTURE.
2 – PULL THE DOOR HANDLE AWAY AND UP FROM THE DOOR STRUCTURE TO THE FULLY "UNLOCKED" POSITION. YOU CAN SEE A RED MARK THROUGH ALL THE INDICATION WINDOWS.
3 – OPEN THE ACCESS DOOR 134AR/154AR BELOW THE FUSELAGE TO GET ACCESS TO THE SELECTOR.
4 – MOVE THE SELECTOR TO THE "OPEN" POSITION AND HOLD IT UNTIL THE GREEN INDICATOR LIGHT COMES ON. (DOOR FULLY OPEN AND LOCKED)
5 – RELEASE THE SELECTOR.

MANUAL OPERATION:

NOTE: TWO OPERATORS ARE REQUIRED FOR THIS OPERATION MODE.

1 – DO THE OPERATIONS 1 TO 3 AS FOR "NORMAL OPERATION".
2 – MOVE THE SELECTOR OF THE CONTROL PANEL TO THE "OPEN" POSITION AND HOLD IT DURING OPERATION OF THE HAND PUMP.
3 – IN THE BELLY FAIRING AREA, OPEN THE ACCESS PANEL 198CB OF THE YELLOW GROUND SERVICE PANEL.
4 – SET THE LEVER OF THE ELECTRO–MANUAL SELECTOR VALVE TO THE HAND PUMP POSITION.
5 – INSTALL THE HAND PUMP LEVER ON THE HAND PUMP AND OPERATE IT UNTIL THE CARGO DOOR IS FULLY OPENED. (YOU CAN FEEL THE FORCE INCREASE ON THE HAND PUMP LEVER).

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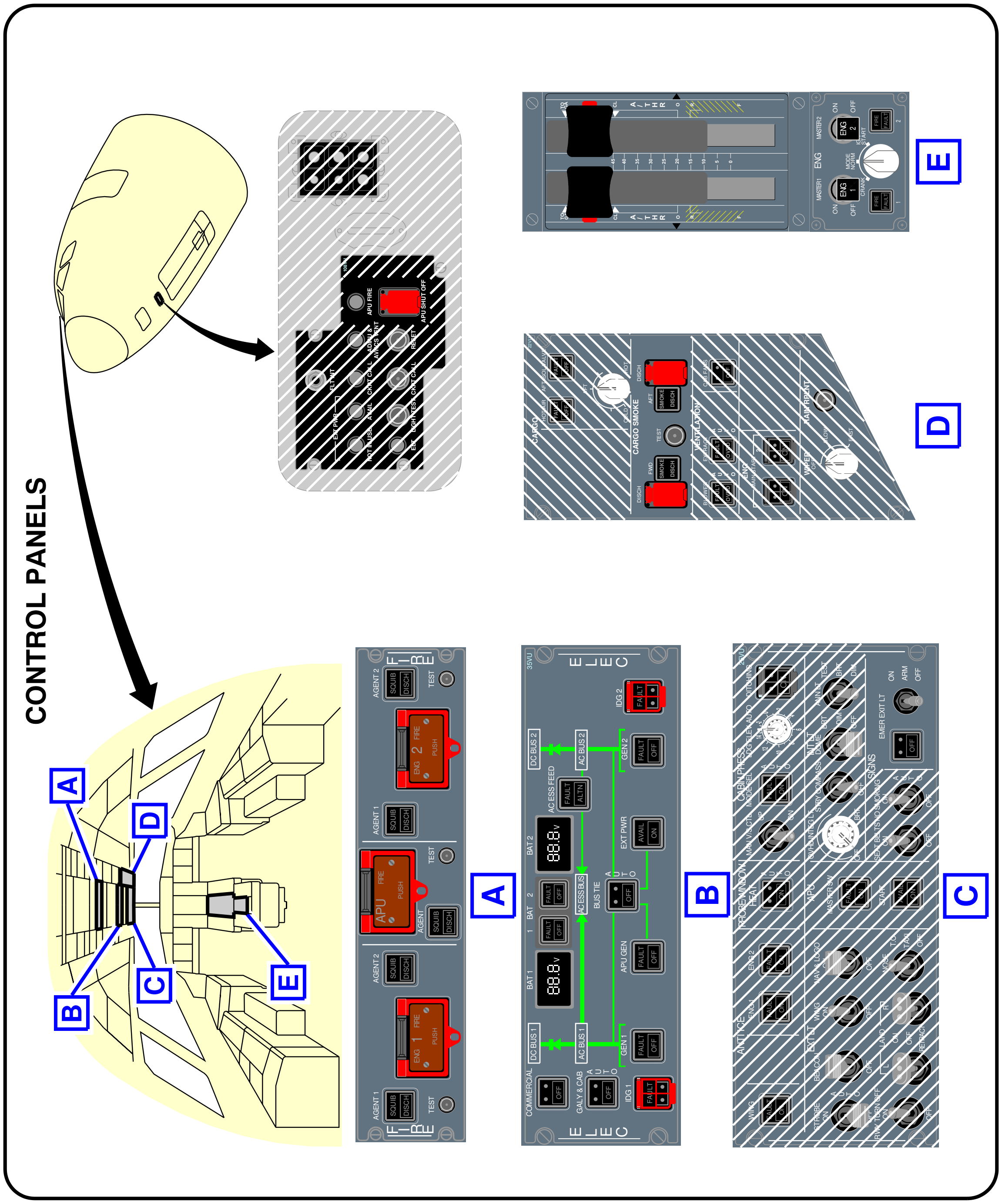
FWD and AFT Lower Deck Cargo Doors
FIGURE-10-0-0-991-009-A01

**ON A/C A320-200



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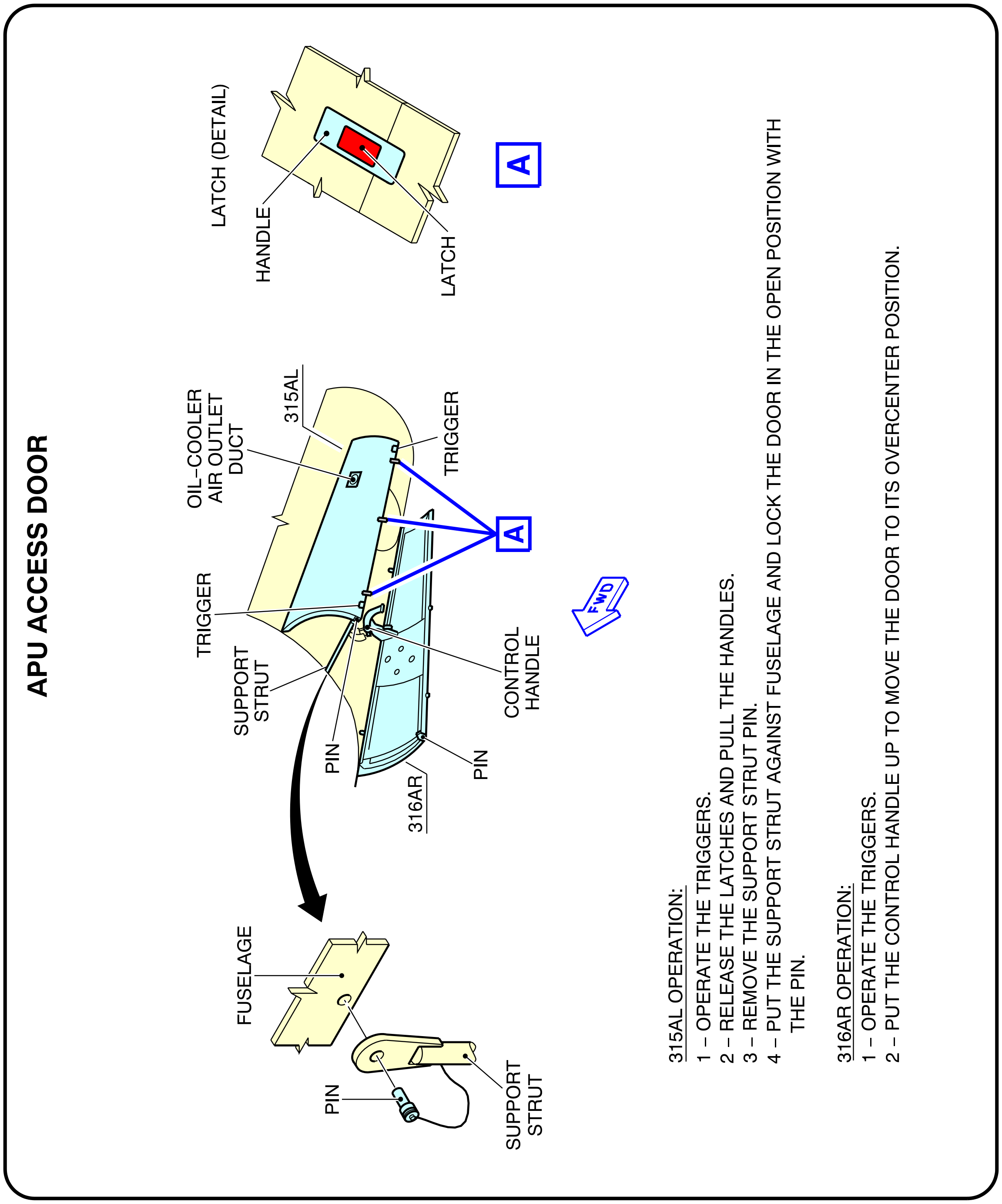
Control Panels
FIGURE-10-0-0-991-012-A01

**ON A/C A320-200



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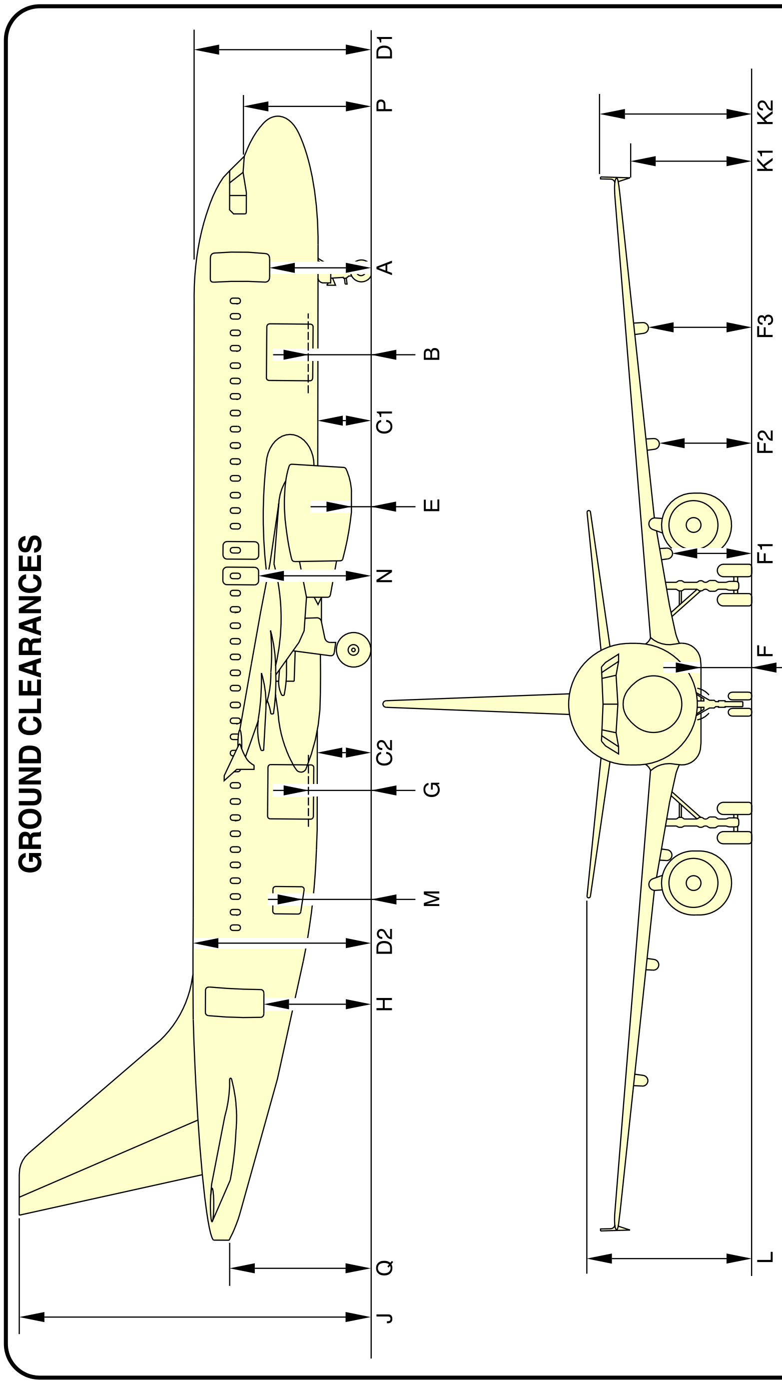
APU Access Door
FIGURE-10-0-0-991-013-A01

**ON A/C A320-200



DIMENSIONS ARE RELATED TO AIRCRAFT WEIGHT AND CG CONFIGURATION

A/C CONFIGURATION	42 000 kg CG 26.5% m	42 000 kg CG 26.5% ft
A	3.48	11.42
B	2.09	6.86
C1	1.82	5.97
C2	1.95	6.40
D1	5.97	19.59
D2	6.09	19.98
E (CFM)	0.67	2.20
E (IAE)	0.85	2.79
F	1.72	5.64
F1	2.72	8.92
F2	3.15	10.33

A/C CONFIGURATION	42 000 kg CG 26.5% m	42 000 kg CG 26.5% ft
F3	3.49	11.45
G	2.22	7.28
H	3.70	12.14
J	12.08	39.63
K1	3.89	12.76
K2	4.86	15.94
L	5.56	18.24
M	2.29	7.51
N	3.98	13.06
P	4.28	14.04
Q	4.84	15.88

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

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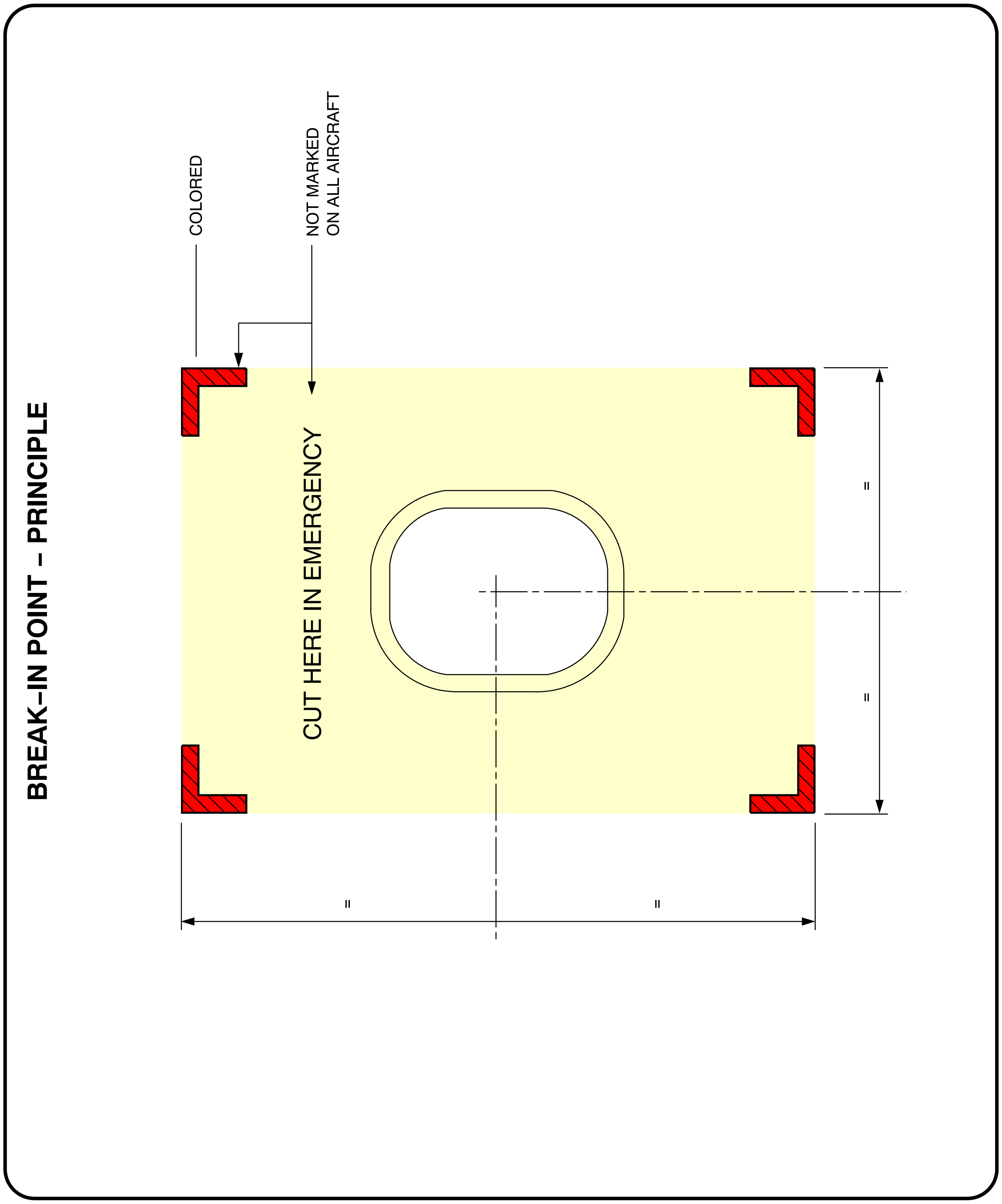
Aircraft Ground Clearances
FIGURE-10-0-0-991-014-C01

**ON A/C A320-200



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Structural Break-in Points
FIGURE-10-0-0-991-015-A01