

**B757 MANUAL SUPPLEMENT - ATP 3510  
SECTION 1 CHAPTER 9  
CONTROL PAGE - INITIAL ISSUE**

- A. File the attached Temporary Revision/Alerts in the Manual Supplement in ATA Chapter/Section/Subject/Page sequence
- B. File this Control Page in front of the Chapter TRs/Alerts.
- C. The following list shows active TRs/Alerts together with TRs/Alerts added by this control page.

Chapter Section Subject	Page	TR/Alert No.
09-11-00	201	* BA.9-506

- D. Remove and Destroy the following TRs/Alerts:

\* Indicates TRs/Alerts issued with this control page

**ATP  
TEMPORARY  
REVISION**

**AIRPLANE**

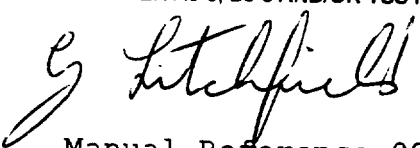
**NB322**

TR Page 1 of 1  
15 September, 1998

757 MAINTENANCE MANUAL

TEMPORARY REVISION No. 9-506

THIS TEMPORARY REVISION IS ISSUED BY BRITISH AIRWAYS ENGINEERING (TECHNICAL INFORMATION SERVICES, G2, TBA, S401, P. O. BOX 10, HEATHROW AIRPORT, HOUNSLOW, MIDDLESEX TW6 2JA) AND COMPLIES WITH BCAR'S CHAPTER A5-3, B5-3 AND/OR TSS No. 0-2 AS REQUIRED. CAA DESIGN APPROVAL No. DA1/8566/78.

 For CHIEF ENGINEER QUALITY AND TRAINING

Manual Reference 09-11-00 Page 201

REASON FOR REVISION

To add details of steering lockout pin.

ACTION

TASK 09-11-00-582-001

2.Tow the Airplane

A.Equipment

Item (1) is revised as follows

(1) BAB> Nose Gear Steering Valve Lockpin - 1-59132/A <BAB

NOTE: BAB> The lockpin is in the stowage box 1-59132 located on the lamp assembly on the front of the nose landing gear. Make sure you return the lockpin to the stowage after use. <BAB

Originator: S.PREECE  
Reference: 32C084  
Workbook: GL

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GPA Group plc

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R = REVISED, A = ADDED OR D = DELETED  
F = FOLDOUT PAGE  
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**D633N132**

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CHAPTER 09 - TOWING & TAXIING

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TOWING AND TAXIING - GENERAL

TASK 09-00-00-602-001

1. Towing and Taxiing

A. General

- (1) Refer to AMM 09-11-00 for normal towing of the airplane.
- (2) When you taxi the airplane on the ground, the movement is equivalent to other conventional tricycle geared airplanes. The nose wheel steering and engine thrust are used as required to turn the airplane. Refer to AMM 09-21-00 for the taxi procedures.

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TOWING - MAINTENANCE PRACTICES

1. General

- A. The design of the airplane will permit you to tow or push the airplane from the nose or main landing gear. The forward tow fitting on the nose gear is usually used to tow the airplane. The antennas and beacons that are under the body have been positioned to permit the airplane to be towed from behind with the low profile tow tractors. Because of this, an optional aft tow fitting (on the nose gear), that is the same as the forward fitting, is available.
- B. Each main landing gear has an eye for towing at each end. They are used for unusual operations such as airplane recovery.
- C. You must be careful when you tow the airplane in a turn. Do not do more than the Maximum Towing Loads as shown in Figure 203.
- D. Make sure you have the necessary clearance when you go near a parked airplane or other structures.
  - (1) When the APU in the towed airplane or a parked airplane is on, you must have a minimum clearance of 32.8 feet (10 meters).
    - (a) The clearance must be between the APU exhaust port and the adjacent airplane's wingtip (fuel vent).
- E. Be careful when you pull the airplane rearward. This is when you use the low profile tractor attached by a towbar to the nose gear aft tow lug. Make sure you do not touch the engine nacelles or the fuselage with the tow tractor.
- F. Towing stability of a Towbarless Tow Vehicle (TLTV)/Airplane combination is dependent on many variables, two of these key variables being the characteristics of the tow vehicle tractive forces and the runway conditions. Maximum towing speeds shall be the responsibility of the airplane operator in conjunction with the airport authority with consideration of recommendations from the TLTV manufacturer.
- G. You can use towbarless equipment to push or pull the airplane. Make sure the maximum permitted loads on the landing gear are not more than the Maximum Towing Loads as shown in Figure 203.

NOTE: This procedure is for towing or pushing the airplane with a tow bar. However, most of the steps in this procedure will apply if you use towbarless equipment. Refer to the equipment manufacturers data for procedures that are specific to their equipment.

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H. To tow the airplane with the entry or lower cargo doors open is optional.

TASK 09-11-00-582-001

2. Tow the Airplane

A. Equipment

- (1) Towing Lever Lockpin - A09003-2 preferred
- (2) Towing Lever Lockpin - A09003-1
- (3) Tow Bar - Fabricate per B09001, Data Sheet -  
757 Tow bar (if it is necessary)
- (4) Tow Vehicle
- (5) Door Lock, Landing Gear - (Ref 32-00-15)

B. References

- (1) AMM 05-51-01/201, Hard Landing or High Drag/Side Load Landing  
Condition
- (2) AMM 24-22-00/201, Electrical Power - Control
- (3) AMM 29-11-00/201, Pressurize/Depressurize Main Hydraulic System
- (4) AMM 32-00-20/201, Landing Gear Downlocks
- (5) AMM 32-21-09/401, Nose Gear Torsion Links
- (6) AMM 71-11-04/201, Fan Cowl Panels
- (7) AMM 78-31-00/201, Thrust Reverser System

C. Prepare to Tow the Airplane

S 862-024

**WARNING:** DO NOT CONNECT A HEADSET AND DO NOT TOUCH CONNECTIONS TO THE AIRPLANE DURING ATMOSPHERIC ELECTRICAL ACTIVITY OR IN STRONG ELECTROMAGNETIC FIELDS. LIGHTNING STRIKE AND HIGH DISCHARGE CURRENTS CAN CAUSE SEVERE INJURY.

**WARNING:** MOST TOWBARLESS TOW VEHICLES DO NOT HAVE A SHEAR PIN TO LIMIT LOADS IF THE AIRPLANE BRAKES ARE USED DURING TOWING. DO NOT APPLY THE AIRPLANE BRAKES WHEN YOU TOW THE AIRPLANE WITH TOWBARLESS TOW VEHICLES. IF YOU APPLY THE BRAKES, YOU CAN APPLY LOADS TO THE NOSE LANDING GEAR THAT ARE MORE THAN THE DESIGN LOAD LIMITS. IF YOU DO NOT OBEY THIS CAUTION, DAMAGE WILL OCCUR TO THE NOSE LANDING GEAR, THE TOW VEHICLE, AND MAINTENANCE PERSONS CAN BE INJURED.

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 **BOEING**  
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**WARNING:** ALL WORK AROUND THE AIRPLANE MUST STOP WHEN LIGHTNING OCCURS AT A DISTANCE OF 6 MILES OR LESS. ALL PERSONNEL MUST GO IN A BUILDING OR THE AIRPLANE. LIGHTNING CAN CAUSE INJURY TO PERSONNEL.

**CAUTION:** MAKE SURE ALL ENGINE COWLS ARE CLOSED AND LATCHED BEFORE THE AIRPLANE IS TOWED. DAMAGE TO THE AIRPLANE AND EQUIPMENT CAN OCCUR.

- (1) To prepare to tow the airplane, do the steps that follow:
- (a) Make sure you have an approved brake operator in the flight compartment.
  - (b) Close the fan cowl panels (AMM 71-11-04)
  - (c) Close the thrust reverser (AMM 78-31-00)

**CAUTION:** THE TOWING LEVER LOCK PIN MUST BE IN THE TOWING POSITION BEFORE YOU TOW THE AIRPLANE. FAILURE TO PUT THE TOWING LEVER IN THE TOWING POSITION CAN CAUSE DAMAGE TO THE TOW FITTING, TOW BAR (IF USED), OR THE STEERING COMPONENTS.

- (d) Move the towing lever (shown on Figure 201) on the metering valve module to the TOWING position.

**NOTE:** When you hold the tow lever in the TOWING position with the lockpin, the nose gear steering will not operate. This is when the hydraulic system is pressurized.

**NOTE:** You can make the airplane turn 65 degrees and not disconnect the torsion links (the steering actuator bottoms at 65 degrees). To turn more than 65 degrees, the torsion links must be disconnected.

- (e) Install the towing lever lock pin.
- (f) Make sure the downlocks are installed on the nose and main landing gear (AMM 32-00-20).

**NOTE:** It is optional to install the landing gear downlocks when you tow or push the airplane for flight. This is when the airplane is in position for the flight crew to taxi the airplane prior to or after a flight.

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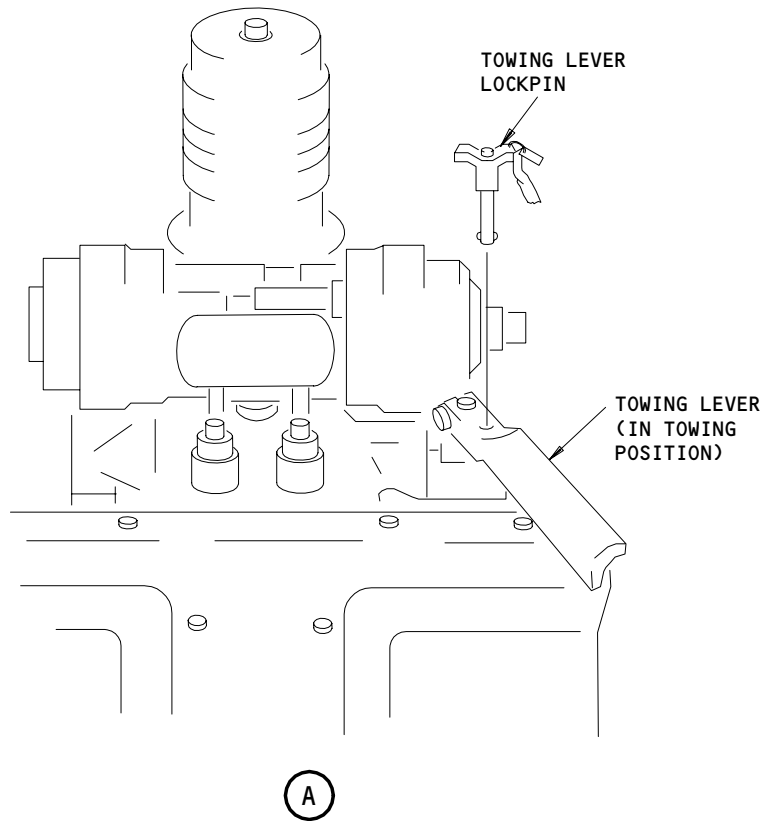
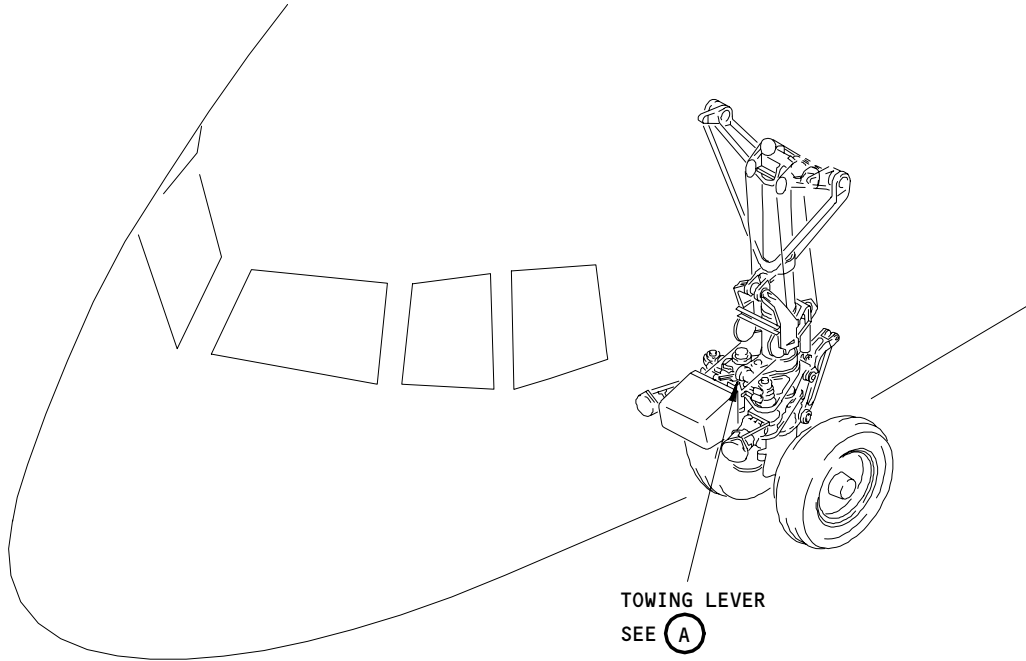
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Nose Gear Steering Valve Lockpin Installation  
Figure 201

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**CAUTION:** DO NOT TOW THE AIRPLANE WHEN A SHOCK STRUT, OF THE LANDING GEAR, IS COMPRESSED FULLY. IF YOU MUST TOW THE AIRPLANE IN AN EMERGENCY, FOLLOW THE INSTRUCTIONS BELOW. IF YOU DO NOT FOLLOW THESE INSTRUCTIONS, DAMAGE TO THE SHOCK STRUT CAN OCCUR.

IT IS PERMITTED TO TOW THE AIRPLANE WITH ONE OR MORE DEFLATED SHOCK STRUTS. THIS IS IF YOU LIMIT THE TOW SPEEDS TO 5 MPH ON ROUGH GROUND. WHEN THE AIRPLANE HAS A DEFLATED NOSE STRUT, IT IS RECOMMENDED TO TOW THE AIRPLANE STRAIGHT FORWARD ONLY. THE TOWING ANGLE MUST ALSO BE KEPT TO A MINIMUM.

- (g) Make sure that the shock struts have a minimum extension of two inches on all of the landing gear (See Figure 201A for the procedure to the measure shock strut extension).

**NOTE:** You can tow the airplane with deflated shock struts (zero shock strut extension) in an emergency if you obey the limits in the caution note.

**CAUTION:** THE MAXIMUM PERMITTED SHOCK STRUT EXTENSION FOR THE NOSE LANDING GEAR IS 10 INCHES. THIS IS TO MAKE SURE THE CENTERING CAM DOES NOT ENGAGE. THIS IS ALSO TO KEEP A FORWARD CENTER OF GRAVITY SO THE AIRPLANE WILL NOT ROTATE ON ITS TAIL. IF YOU DO NOT FOLLOW THESE INSTRUCTIONS, DAMAGE TO THE AIRPLANE CAN OCCUR.

- (h) Make sure the open surface of inner cylinder chrome of the nose landing gear is not more than 10 inches.
- (i) 757-200 AIRPLANES;  
Make sure the airplane center of gravity is below the GROUND STABILITY LIMIT line in Figure 202.

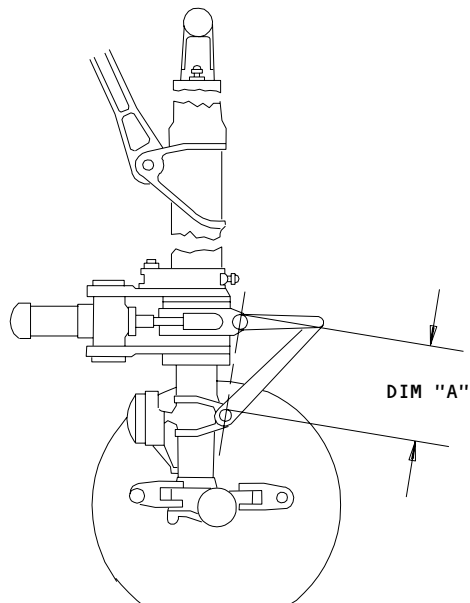
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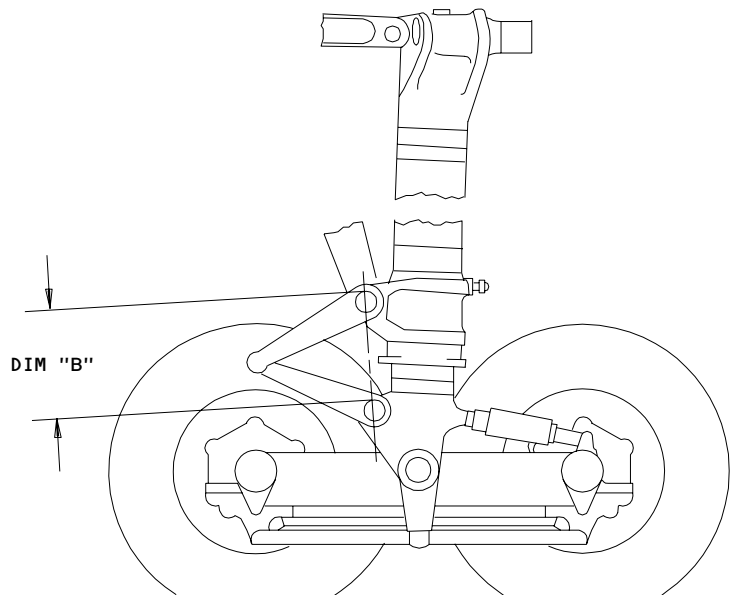
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NOSE GEAR



MAIN GEAR

MINIMUM SHOCK STRUT EXTENSION

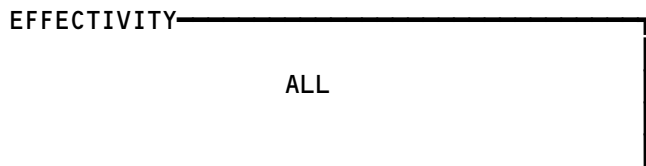
DIM "A" = 11.46 INCHES

NOTE: FULLY COMPRESSED STRUT: DIM "A" = 9.46 INCHES

DIM "B" = 14.46 INCHES

NOTE: FULLY COMPRESSED STRUT: DIM "B" = 12.46 INCHES

Landing Gear Shock Strut Extension Requirements  
Figure 201A



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**WARNING:** DO THESE STEPS BEFORE YOU APPLY EXTERNAL POWER. THE PITOT PROBE CAN BECOME VERY HOT. THIS CAN CAUSE INJURIES TO PERSONNEL.

- (j) Push the BAT switch on the P5 panel to the ON position.
- (k) Turn the STBY power switch on the P5 panel to the AUTO position.

S 862-003

- (2) Supply electrical power to the airplane (AMM 24-22-00).

S 862-004

- (3) Supply right system hydraulic power (or left system hydraulic power if the right system does not operate) (AMM 29-11-00).

S 212-006

- (4) Do a check of the brake system.
  - (a) Make sure the hydraulic brake pressure is 3000 ±100 psi.

**NOTE:** The BRAKE PRESSURE indicator gage is found on the pilots center instrument panel, P3.

**CAUTION:** TO TOW THE AIRPLANE WITH BRAKES THAT WILL OPERATE, YOU MUST HAVE 2800 TO 3000 PSI IN THE ACCUMULATOR. THERE IS A LIMIT TO THE NUMBER OF BRAKE APPLICATIONS AVAILABLE FROM ACCUMULATOR PRESSURE. WHEN HYDRAULIC PRESSURE IN THE ACCUMULATOR IS ZERO THE AIRCRAFT WILL NOT STOP WHEN THE BRAKES ARE APPLIED. DAMAGE TO THE AIRPLANE OR GROUND EQUIPMENT CAN OCCUR.

- (b) If electrical power is not available, you must have a minimum of 2800 psi in the accumulator. You can apply the brakes approximately 2 to 3 times when the accumulator pressure is 2800 psi.

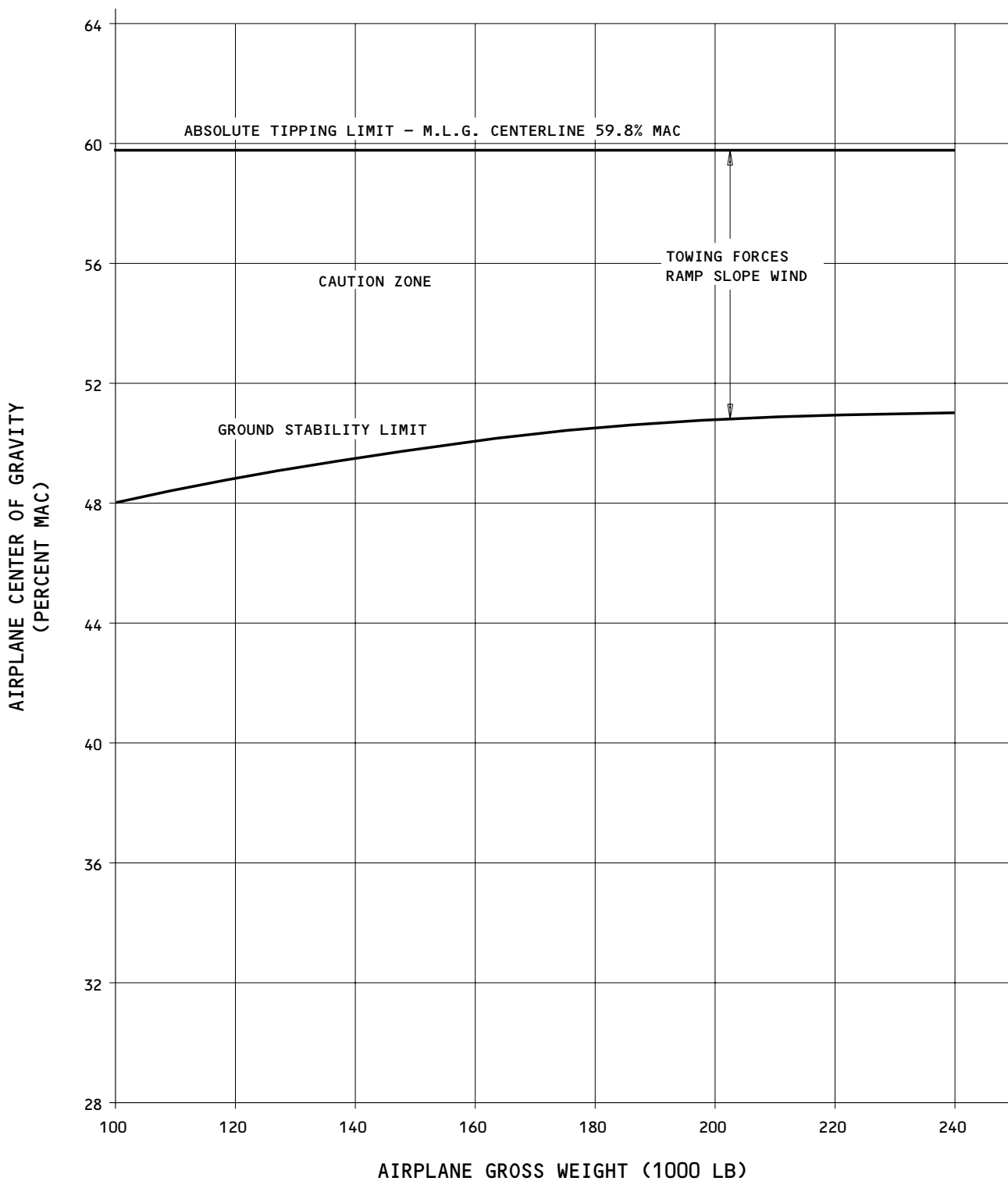
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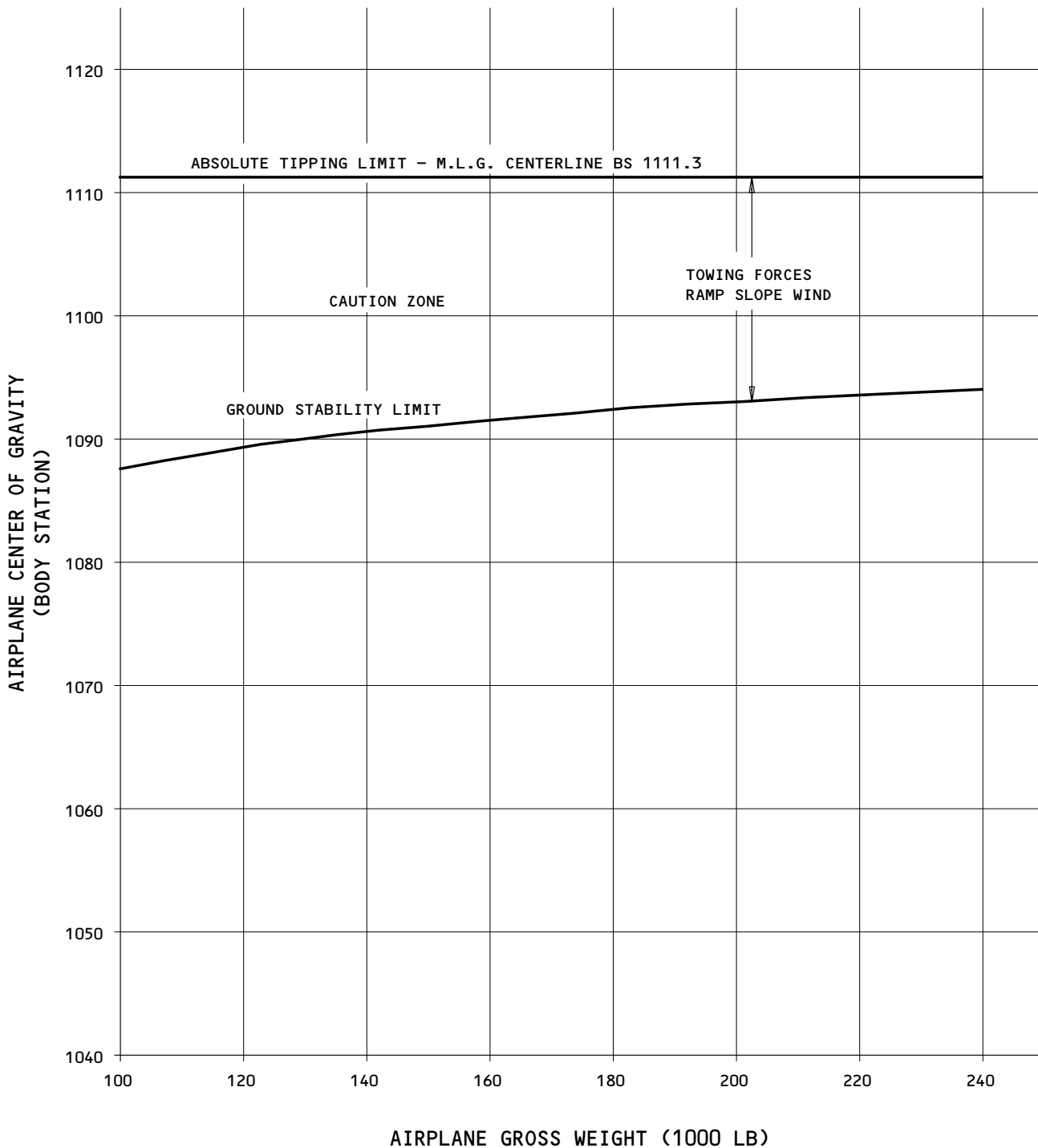
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757-200  
Towing Center of Gravity Limitation  
Figure 202 (Sheet 1)

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757-200  
Towing Center of Gravity Limitation  
Figure 202 (Sheet 2)

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S 582-007

**CAUTION:** DO NOT PERMIT THE LOADS ON THE NOSE LANDING GEAR (WHILE THE AIRPLANE IS IN A TURN) TO BE MORE THAN THE SPECIFIED LOADS. IF YOU APPLY MORE LOADS THAN ARE SPECIFIED, STRUCTURAL DAMAGE TO THE LANDING GEAR CAN OCCUR.

(5) 757-200 Airplanes

Make sure the maximum permitted tow loads, for the nose landing gear, are not more than those specified in Figure 203.

**CAUTION:** DO NOT TOW THE 757-200 AIRPLANE AT ANGLES THAT ARE MORE THAN 65 DEGREES. THIS IS WHEN THE TORSION LINKS FOR THE NOSE GEAR ARE NOT DISCONNECTED. IF YOU TOW DURING THESE CONDITIONS, DAMAGE TO THE AIRPLANE HYDRAULIC SYSTEM CAN OCCUR.

DO NOT DISCONNECT THE 757-200 NOSE WHEEL STEERING SPRING CARTRIDGE FROM THE UPPER TORSION LINK WHEN YOU DISCONNECT THE TORSION LINKS (AMM 32-21-09). ATTACH THE UPPER TORSION LINK SO THE SENSOR TARGETS (THAT ARE INSTALLED ON THE UPPER TORSION LINK) DO NOT HIT THE SENSORS DURING THE TOW. ATTACH THE LOWER TORSION LINK AS NECESSARY TO PREVENT DAMAGE DURING THE TOW.

(a) 757-200 AIRPLANES;

When the nose gear angle will be more than 65 degrees, disconnect the torsion links (Figure 207) before you tow the airplane (AMM 32-21-09).

**NOTE:** A red indicator stripe is painted on the nose gear doors. This stripe will tell you when you are near a 65 degree nose gear turn.

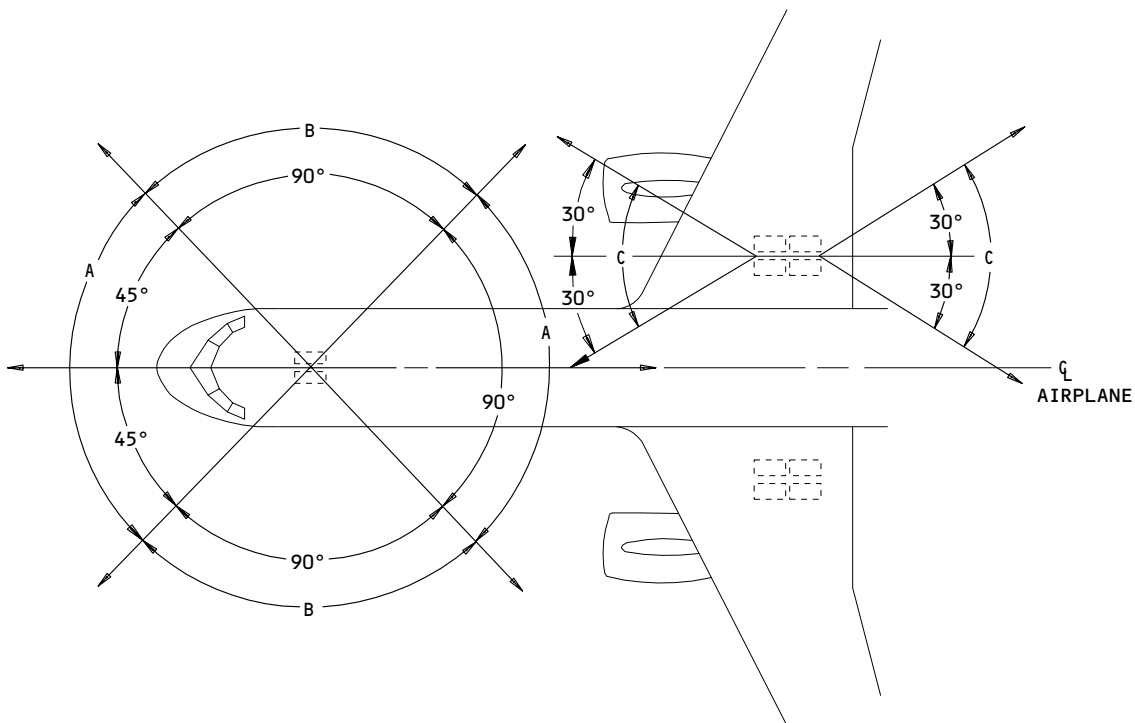
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757-200	
A	36,200 LBS (16,420 KGS)
B	33,000 LBS (14,970 KGS)
C	24,560 LBS (11,140 KGS)

**NOTE:** DISCONNECT NOSE GEAR TORSION LINK WHEN TOWING AT ANGLES GREATER THAN 65° TO PREVENT DAMAGE TO THE HYDRAULIC STEERING SYSTEM

Nose and Main Gear Maximum Towing Loads  
Figure 203

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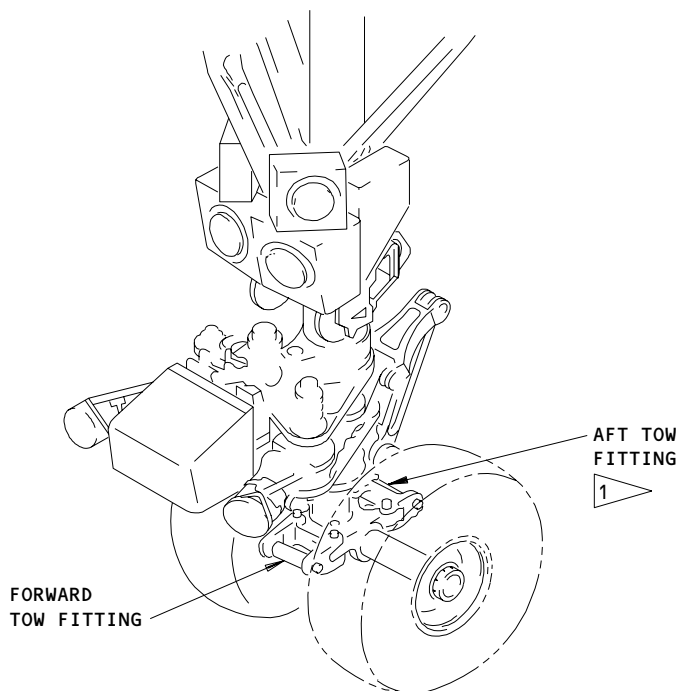
- 1) To prevent damage to the area after the upper torsion link is disconnected, do the step that follows:
  - a) Lift the upper torsion link and attach it to a safe point.
- 2) Put the lower torsion link on the towbar, against the trunnion cylinder or attach it to a safe point to prevent damage.

S 492-008

- (6) Put the tow vehicle in to position and, if it is necessary, attach the towbar to the tow fitting on the nose landing gear. Tow within the breakaway tow bar load requirements, see Figure 206.

S 492-020

- (7) Make sure that the control cabin crew, towing ground crew and tow tractor operator have intercom communication.



1 IF INSTALLED

Nose Gear Tow Fittings  
Figure 204

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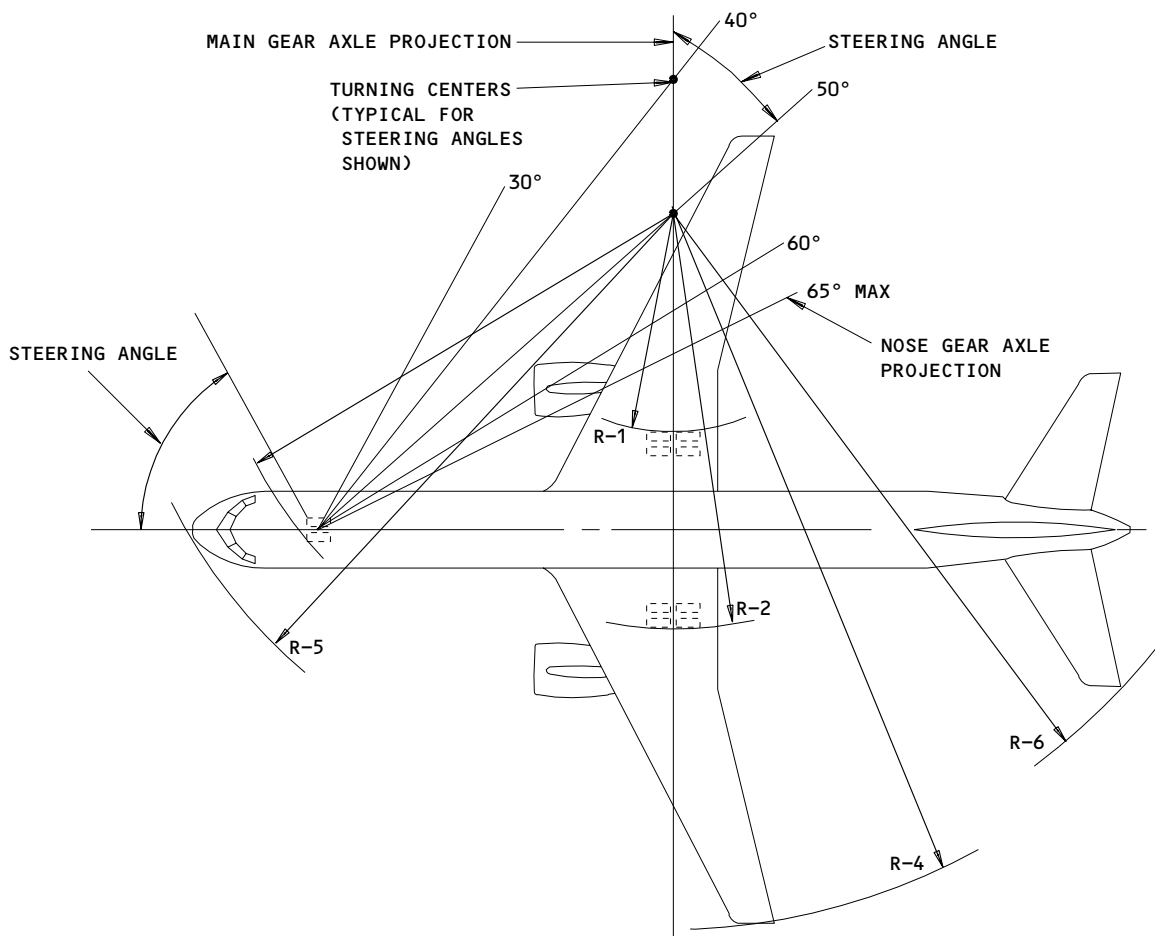
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# BOEING

## 757 MAINTENANCE MANUAL



**NOTES:**

- ACTUAL OPERATING TURNING RADII MAY BE GREATER
- CONSULT USING AIRLINE FOR SPECIFIC OPERATING PROCEDURE DATA

DIMENSIONS ROUNDED TO NEAREST FOOT AND 0.1 METER

STEERING ANGLE (DEGREES)	R-1		R-2		R-3		R-4		R-5		R-6	
	INNER GEAR		OUTER GEAR		NOSE GEAR		WINGTIP		NOSE		TAIL	
	FT	M	FT	M	FT	M	FT	M	FT	M	FT	M
30	90	28.0	118	35.3	120	36.6	167	50.9	131	39.8	149	45.3
35	72	22.5	100	29.8	105	31.9	149	45.4	117	35.6	133	40.6
40	58	18.1	86	25.5	93	28.4	135	41.1	107	32.6	122	37.1
45	46	14.6	74	21.9	85	25.9	123	37.6	99	30.3	113	34.4
50	36	11.7	64	19.0	78	23.9	114	34.7	94	28.6	106	32.2
55	28	9.1	56	16.5	73	22.3	106	32.2	90	27.3	100	30.4
60	21	6.9	49	14.2	69	21.1	98	30.0	87	26.4	95	29.0
65 MAX	14	4.9	42	12.2	60	20.2	92	28.0	84	25.6	91	27.7

757-200  
Turning Radii - No Slip Angle  
Figure 205

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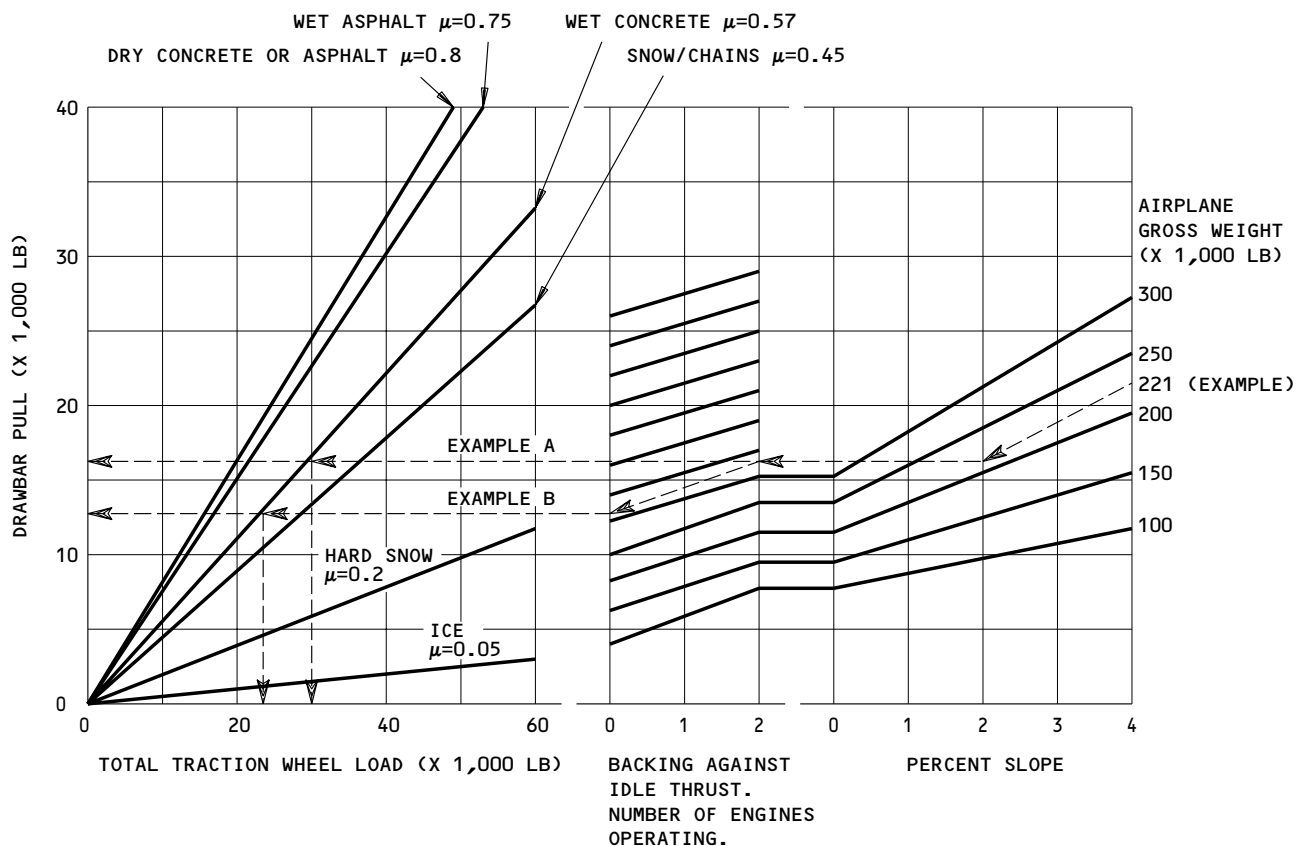
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(EXAMPLE)

MODEL 757 WITH A MAXIMUM TAXI WEIGHT OF 221,000 POUNDS (100,244 KILOGRAMS) AND TWO ENGINES IDLING. WHEN THE PAVEMENT IS ASSUMED TO BE WET CONCRETE WITH A 2 PERCENT SLOPE, THE REQUIRED TOTAL TRACTION WHEEL LOAD WOULD BE 30,000 POUNDS (13,600 kg) AND THE DRAWBAR PULL WOULD BE 17,000 POUNDS (7,711kg) (EXAMPLE A). WHEN THE AIRPLANE IS BACKED WITHOUT IDLE THRUST, THESE NUMBERS WOULD CHANGE TO 23,300 POUNDS (10,600kg) AND 13,300 POUNDS (6,032kg), RESPECTIVELY (EXAMPLE B)

NOTES:

- STRAIGHT LINE TOW
- UNUSUAL BREAKAWAY CONDITIONS NOT SHOWN
- COEFFICIENTS OF FRICTION ( $\mu$ ) ARE ESTIMATED FOR RUBBER TIRED TOW VEHICLES

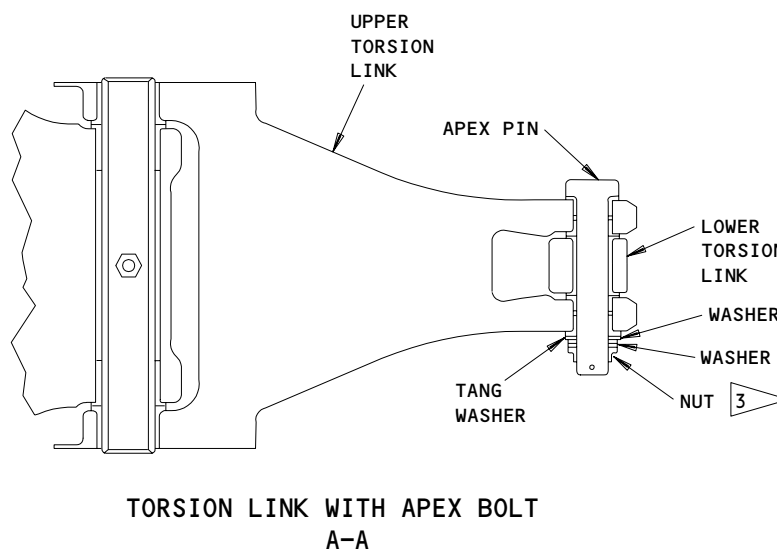
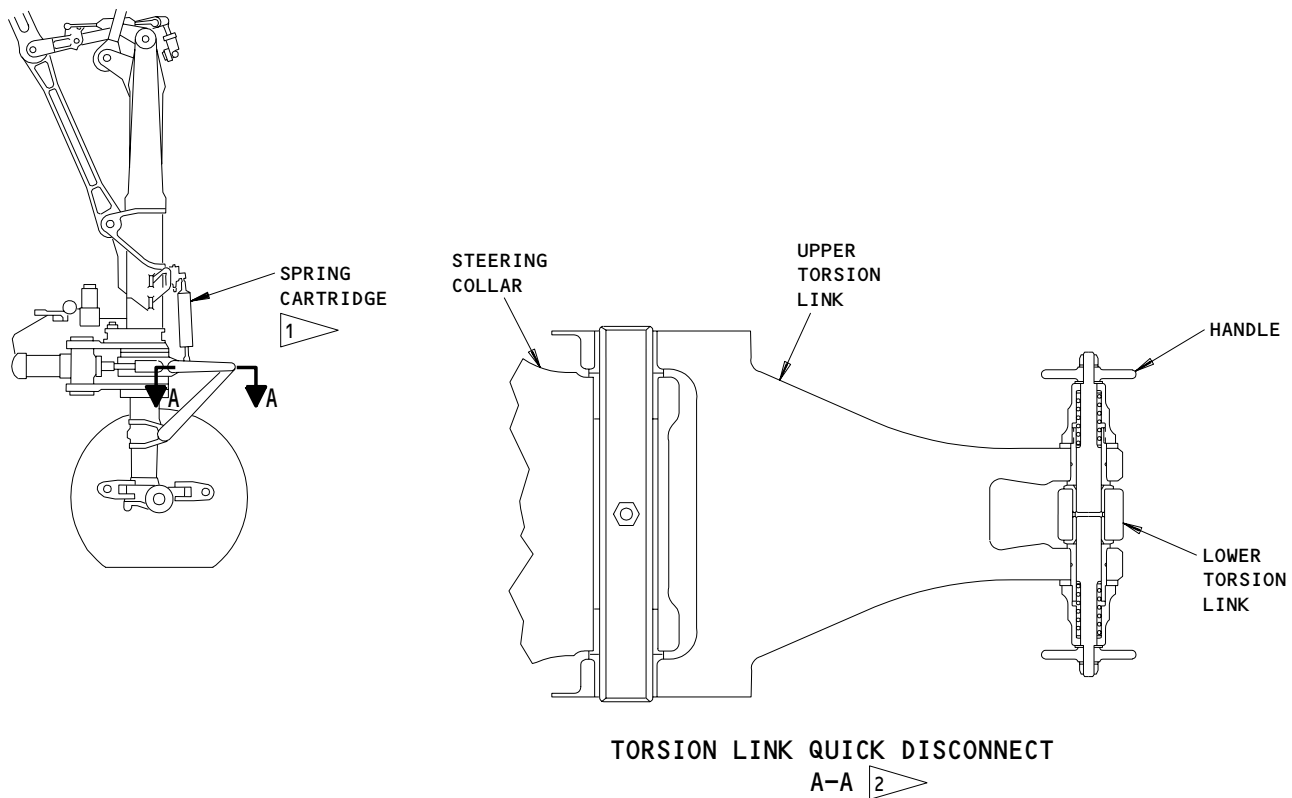
Breakaway Tow Bar Load Requirements  
Figure 206

EFFECTIVITY ————  
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- 1 IF INSTALLED
- 2 NOT ON ALL AIRPLANES
- 3 TIGHTEN NUT 200-250 POUND-INCHES.  
BACK OFF TO INSTALL COTTER PIN

Nose Gear Torsion Links Disconnect  
Figure 207

EFFECTIVITY

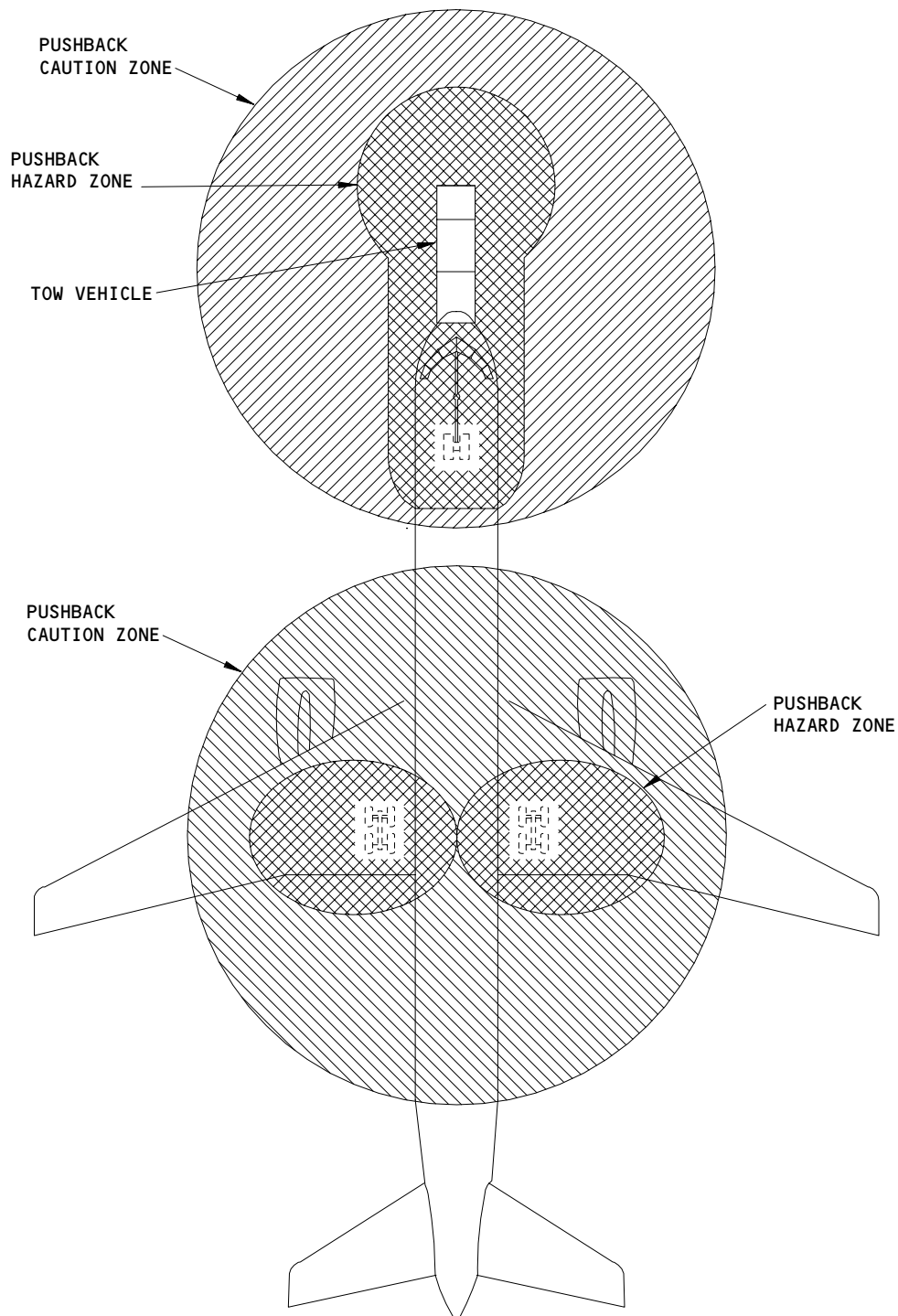
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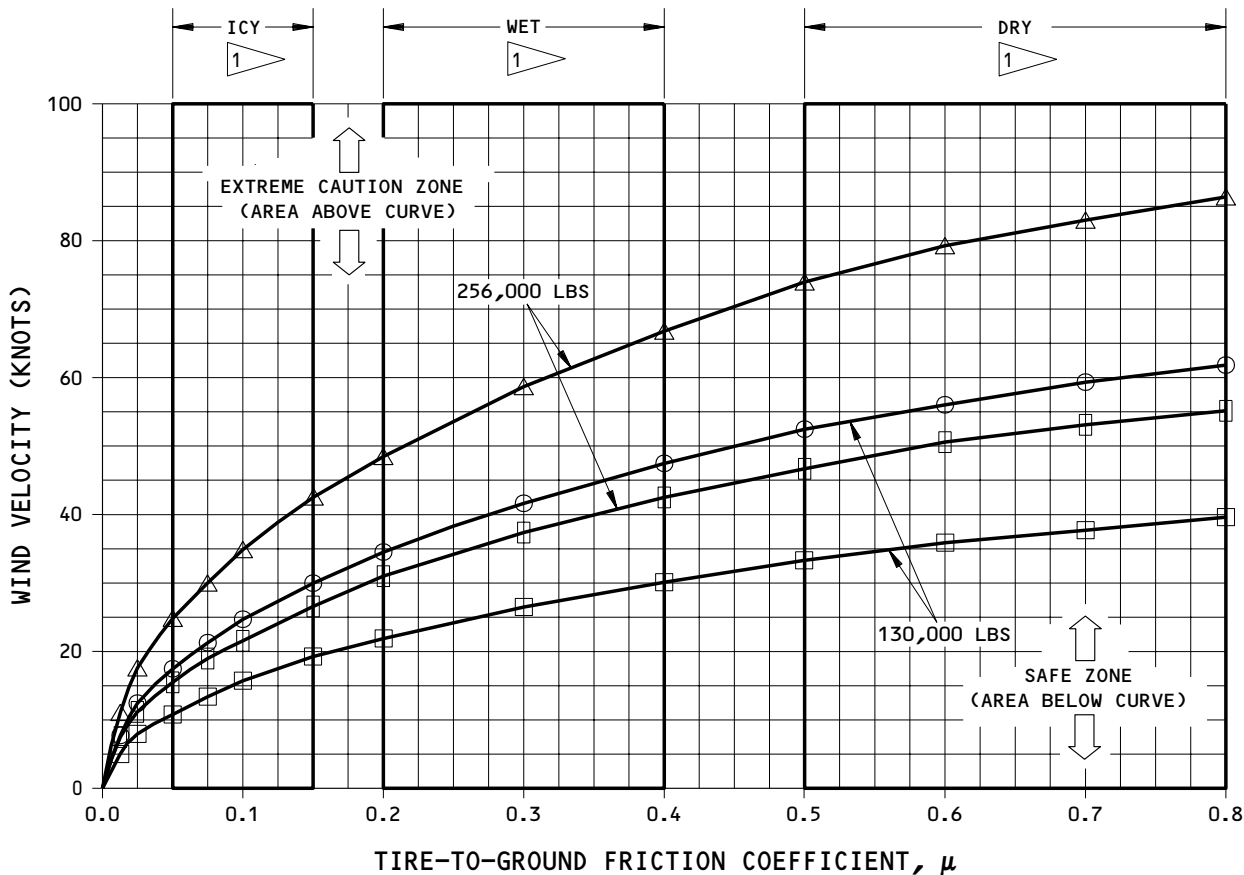


**WARNING:** MAINTAIN A MINIMUM OF TEN FEET (3 METERS) SEPARATION BETWEEN PERSONS ON THE GROUND AND THE NOSE WHEELS, TOW BAR AND TOW VEHICLE, AND THE MAIN WHEELS WHILE THE AIRPLANE IS MOVING.

Towing Hazard Zones  
Figure 208

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WEIGHT (LBS)	CG %MAC
○ 130,000	0.09
□ 130,000	0.39
△ 256,000	0.09
□ 256,000	0.39

- NOTE:**
- A. FLAPS UP, STAB = 4 PILOT UNITS
  - B. WIND FROM ANY DIRECTION
  - C. WIND GUST SHALL BE ADDED TO STEADY WIND VELOCITY FOR MAXIMUM WIND SPEED.
  - D. USE ACTUAL AIRPLANE WEIGHT, CG POSITION, AND TIRE-TO-GROUD FRICTION COEFFICIENT FOR INTERPOLATION.
  - E. IF NO MEASURED VALUE FOR TIRE-TO-GROUND FRICTION COEFFICIENT IS AVAILABLE, USE THE LOWER LIMIT OF THE APPROPRIATE BOUNDED FRICTION BAND.
  - F. FOR TOWING AND MANEUVERING IN CLOSE PROXIMITY TO BUILDINGS OR OTHER AIRPLANES, THE ALLOWABLE WIND VELOCITY SHOULD BE REDUCED BY ONE-THIRD.
  - G. REDUCE THE WIND LIMITS TO ACCOUNT FOR OPERATIONAL CONSIDERATIONS SUCH AS HIGH-SPEED TOWING OR CONTAMINATED RUNWAYS.
  - H. BASED ON ZERO PERCENT GROUND SLOPE

1 APPROXIMATE NORMAL RANGES SHOWN

757-200  
Airplane Stability - Maximum Winds for Towing and Taxiing  
Figure 209

EFFECTIVITY

ALL

09-11-00

S 862-027

- (8) Make sure the airplane brakes are released.

S 772-028

- (9) Check for a fuel imbalance.

(a) Adjust the current fuel loading as appropriate.

D. Tow the Airplane

S 582-009

**CAUTION:** DO NOT HOLD OR TURN THE TILLER FOR THE NOSE WHEEL STEERING WHILE THE AIRPLANE IS TOWED. IF YOU HOLD OR TURN THE TILLER, DAMAGE TO THE NOSE WHEEL STEERING SYSTEM CAN OCCUR.

- (1) To tow the airplane, do the steps that follow:

**WARNING:** WHEN YOU TOW THE AIRPLANE, ALL PERSONS MUST STAY OUT OF THE DANGEROUS AREAS AROUND THE TOW VEHICLE, TOW BAR, NOSE WHEELS, AND MAIN WHEELS. PERSONS ON THE GROUND MUST KNOW IT IS POSSIBLE TO BE RUN OVER BY THE NOSE WHEELS, MAIN WHEELS, AND THE TOW VEHICLE. THIS IS BECAUSE THE AIRPLANE WILL CHANGE POSITION DURING PUSHBACK AND TOWING. MAKE SURE YOU KEEP A MINIMUM OF 10 FEET SEPARATION BETWEEN PERSONS ON THE GROUND AND THE EQUIPMENT THAT MOVES. IF YOU DO NOT KEEP THE MINIMUM DISTANCE, A FATAL INJURY COULD OCCUR.

- (a) Make sure the persons that work near the areas that follow, know the pushback hazard zones as shown in Figure 208:

- tow vehicle
- towbar
- nose wheels
- main wheels.

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**CAUTION:** IF YOU USE A TOW BAR, YOU CAN CAUSE THE SHEAR PINS TO SHEAR IF YOU USE THE AIRPLANE BRAKES WHILE YOU TOW THE AIRPLANE.

MOST TOWBARLESS TOW VEHICLES DO NOT HAVE A SHEAR PIN TO LIMIT THE LOADS IF AIRPLANE BRAKES ARE USED DURING TOWING. IF AIRPLANE BRAKES ARE USED WHILE TOWING WITH A TOWBARLESS TOW VEHICLE ATTACHED TO THE NOSE LANDING GEAR, PERFORM THE "HARD LANDING OR HIGH DRAG/SIDE LOAD LANDING CONDITION" INSPECTION FOR THE NOSE LANDING GEAR AREAS (AMM 05-51-01).

- (b) While the airplane is towed, do not use the airplane brakes to stop the airplane, unless it is an emergency.

**NOTE:** You can cause the tow bar shear pins to shear if you use the brakes while you tow the airplane.

- (c) Refer to Figure 204 to find the nose gear tow fitting.
- (d) 757-200 AIRPLANES;  
Refer to Figure 205 to find the specified airplane clearance during the tow.
- (e) Before the airplane is parked, make sure you move the airplane not less than 12 feet in a straight line.

**NOTE:** This procedure will make sure that the torsional loads (side load pressures) are released before it is parked.

**CAUTION:** MAKE SURE THE TORSION LINK DOES NOT FALL BEFORE IT IS CONNECTED. IF THE TORSION LINK FALLS, IT CAN CAUSE DAMAGE TO ADJACENT EQUIPMENT.

- 1) If the torsion links were disconnected, align the links during the last 12 feet of the tow.

**NOTE:** This will permit the torsion links bolt to be attached smoothly (see Figure 207).

- (f) Connect the torsion links (AMM 32-21-09).

**CAUTION:** DO NOT APPLY THE PARKING BRAKES WHEN THEY ARE HOT. IT IS POSSIBLE THAT THE BRAKES WILL NOT BE RELEASED WHEN THEY ARE APPLIED WHILE THEY ARE HOT.

- (g) Set the parking brake.

**NOTE:** Make sure the parking brake pressure gage shows approximately 3000 psi.

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E. Put the Airplane Back to Its Initial Condition

S 582-025

- (1) At the end of towing, put the wheel chocks fore and aft of a main gear wheel on each of the main gear. The chocks should be approximately 2-4 inches away from the wheels.

S 862-026

- (2) Release the parking brake.

S 862-010

- (3) Remove the electrical power if it is not necessary (AMM 24-22-00).

S 092-011

- (4) If it is necessary, disconnect the towbar from the tow fitting and remove the towbar.

S 862-012

**WARNING:** MOVE AWAY FROM THE NOSE WHEELS. THE NOSE WHEELS CAN TURN QUICKLY TO THEIR CENTERED POSITION WHEN THE LOCKPIN IS REMOVED. INJURY TO PERSONS CAN OCCUR.

- (5) Make sure the wheels of the nose landing gear are in the centered position, and remove the towing lever lockpin.

F. Tow the airplane in High Winds.

S 582-014

- (1) 757-200 AIRPLANES;  
The airplane can be towed in high winds, but you must obey the previous subject paragraph titled, "Tow the Airplane", and remain below the appropriate airplane stability limit line in Figure 209.

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TOW AIRPLANE WITH ENGINES REMOVED – MAINTENANCE PRACTICES

TASK 09-11-01-602-001

1. Tow Airplane with Engines Removed

A. General

- (1) Obey this caution during all of this task.
- (2) Do not tow the airplane with one or two engines removed and the center of gravity is not in the SAFE ZONE (see Figure 201). Use accepted weight and balance procedures and keep the airplane center of gravity below the GROUND STABILITY MARGIN line.
- (3) Usually ballast is not necessary when the airplane has all equipment installed and is towed with engines removed. This applies when the crew, the payload, and the fuel are not in the airplane.

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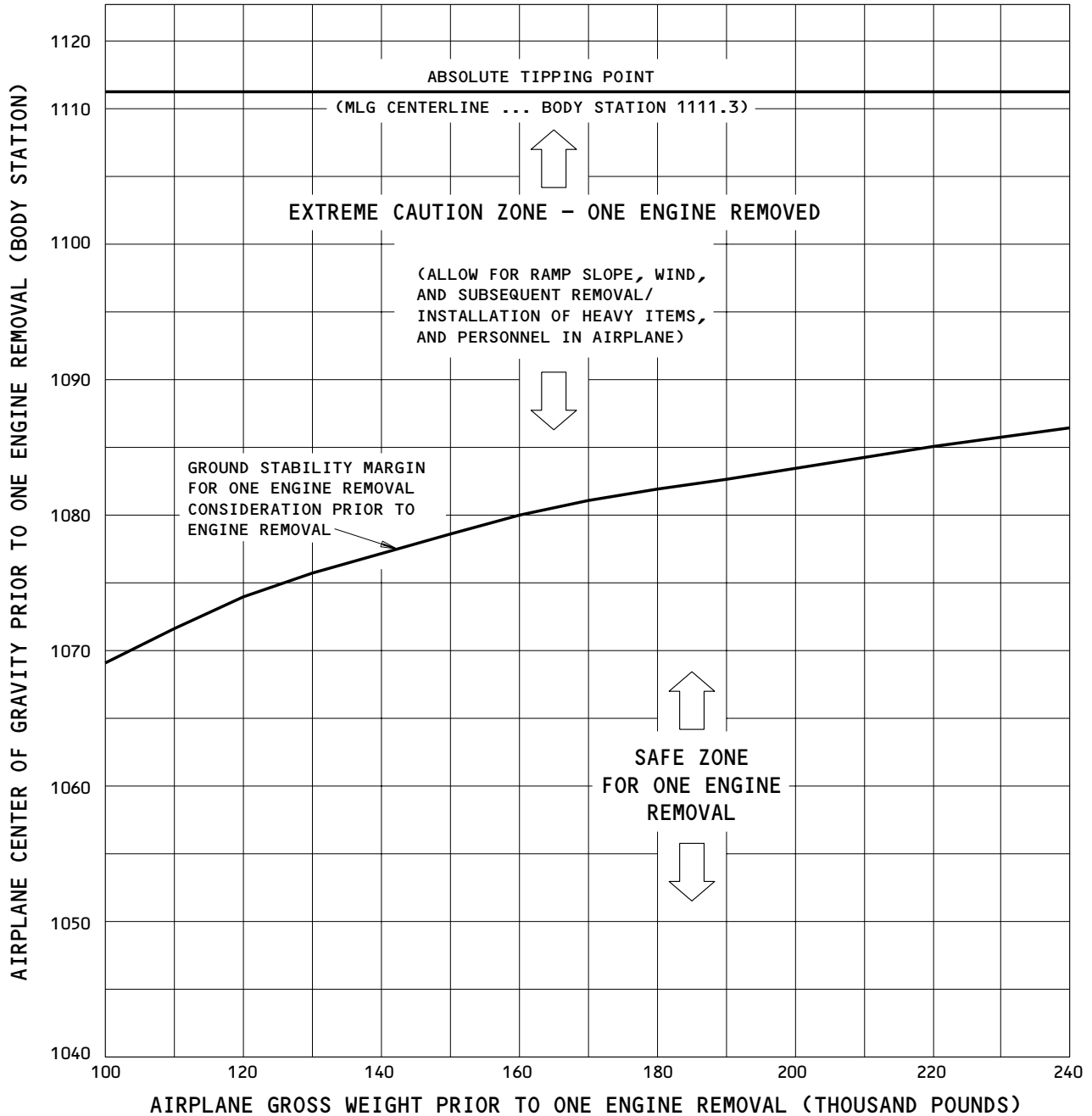


757  
MAINTENANCE MANUAL

TIPPING OF 757-200 AIRPLANE

THE CHART BELOW SHOWS THE 757 TIPPING LIMITS. THE ABSOLUTE TIPPING LIMIT IS THE MLG CENTERLINE AT B.S. 1111.3. THE GROUND STABILITY MARGIN LINE REPRESENTS THE ABSOLUTE TIPPING LIMIT TO ACCOUNT FOR FACTORS SUCH AS TOWING FORCES, RAMP SLOPE AND WIND. BY ENSURING THAT THE AIRPLANE WEIGHT AND C.G. DURING MAINTENANCE OPERATIONS IS BELOW THIS LINE, A TIPPING SITUATION WILL BE AVOIDED.

757-200  
GROUND STABILITY MARGIN  
TOWING/SHORT TERM MAINTENANCE AND ENGINE REMOVAL CONDITIONS



Towing Center of Gravity Limitations with Engine(s) Removed  
Figure 201 (Sheet 1)

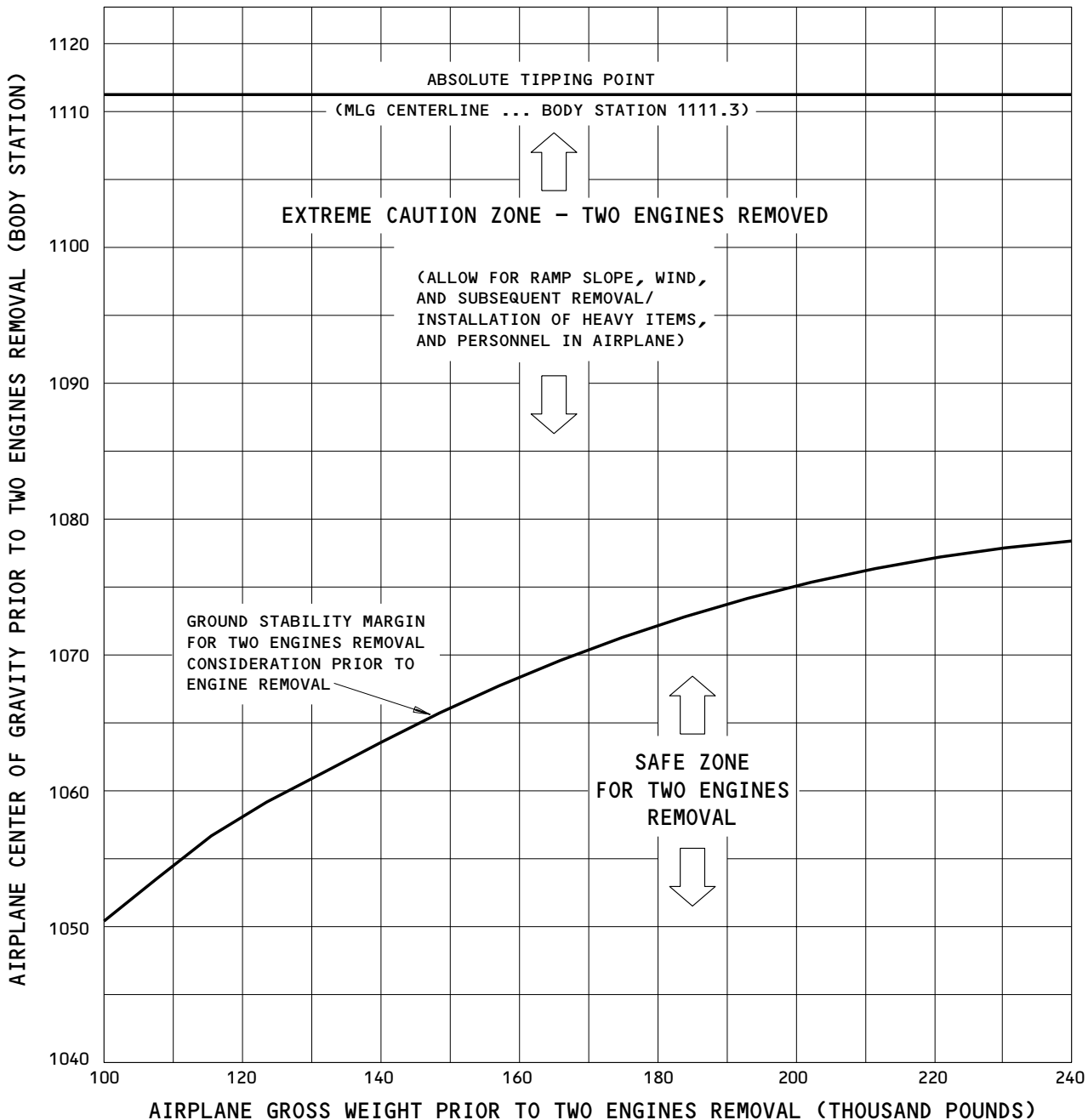
EFFECTIVITY  
757-200

09-11-01

### TIPPING OF 757-200 AIRPLANE

THE CHART BELOW SHOWS THE 757 TIPPING LIMITS. THE ABSOLUTE TIPPING LIMIT IS THE MLG CENTERLINE AT B.S. 1111.3. THE GROUND STABILITY MARGIN LINE REPRESENTS THE ABSOLUTE TIPPING LIMIT TO ACCOUNT FOR FACTORS SUCH AS TOWING FORCES, RAMP SLOPE AND WIND. BY ENSURING THAT THE AIRPLANE WEIGHT AND C.G. DURING MAINTENANCE OPERATIONS IS BELOW THIS LINE, A TIPPING SITUATION WILL BE AVOIDED.

757-200  
GROUND STABILITY MARGIN  
TOWING/SHORT TERM MAINTENANCE AND ENGINE REMOVAL CONDITIONS



Towing Center of Gravity Limitations with Engine(s) Removed  
Figure 201 (Sheet 2)

EFFECTIVITY  
757-200

09-11-01

TOW AIRPLANE WITH LIMITED HYDRAULIC BRAKE PRESSURE – MAINTENANCE PRACTICES

1. General

- A. When electrical power from the APU or the tow vehicle is not available to power the airplane electric pumps, the procedure that follows is recommended.

**NOTE:** Brakes are usually supplied with power by the right hydraulic system of the airplane. The left hydraulic system is used when the right system has a failure, and it operates automatically. If the left and right hydraulic systems have a failure, a precharged accumulator will let you apply the brakes. But, there is a limit to the times you can apply the brakes.

The reserve brake source system supplies a third source of hydraulic power. This source of hydraulic brake power is available when you push the RESERVE BK AND STRG switch in the flight compartment.

- B. When you tow the airplane, do not touch the rudder pedals with your feet. Do not apply the brakes unless there is an emergency, or until the airplane comes to a stop. A light pressure on the top of the rudder pedals will cause a decrease of hydraulic pressure through the bleed hole in each antiskid valve.

**NOTE:** Full pressure (3000 psig) will only let you apply the brakes approximately 2 to 3 times.

TASK 09-11-03-582-001

2. Tow the Airplane

A. References

- (1) 09-11-00/201, Towing
- (2) 32-00-15/201, Landing Gear Door Locks

B. Procedure

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S 582-006

**WARNING:** WHEN ELECTRICAL POWER IS NOT AVAILABLE TO OPERATE THE BRAKE HYDRAULIC SYSTEM, TELL THE TOW VEHICLE PERSON. WITHOUT ELECTRICAL POWER, THERE IS ONLY ACCUMULATOR PRESSURE AVAILABLE TO OPERATE THE BRAKES. YOU MUST DECREASE THE TOW SPEEDS OR NOT TOW THE AIRPLANE.

- (1) Tow the Airplane (Ref 09-11-00).

S 582-003

**CAUTION:** ELECTRICAL POWER FROM THE 28V DC HOT BATTERY BUS IS NECESSARY TO SET THE PARKING BRAKES ELECTRICALLY (NORMAL). WHEN ELECTRICAL POWER IS NOT AVAILABLE, THE MANUAL OVERRIDE LEVER ON THE PARKING BRAKE VALVE MUST BE MOVED MANUALLY TO POSITION 2 (YOU CAN FIND THE VALVE IN THE RIGHT MAIN GEAR WHEEL WELL). FAILURE TO CLOSE THE PARKING BRAKE VALVE BEFORE YOU APPLY THE BRAKES WILL CAUSE THE HYDRAULIC PRESSURE TO DECREASE.

- (2) When the airplane tow is completed, set the parking brake.

S 492-004

**WARNING:** USE THE PROCEDURE IN AMM 32-00-15 TO INSTALL THE DOOR LOCKS. THE DOORS OPEN AND CLOSE QUICKLY AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- (3) Open the doors for the landing gear and install the door locks (Ref 32-00-15).

S 982-005

- (4) Do the steps that follow to apply the parking brake:
  - (a) Put the manual override lever of the parking brake valve, (found in the right main gear wheel well), to POS 2 (closed).
  - (b) Push the top of the rudder pedals to apply the brakes.
  - (c) Pull the parking brake lever to keep pressure on the brake linkage.
  - (d) Release the brake pedal pressure.
  - (e) Release the parking brake handle.

**NOTE:** Release the foot pressure on the brake pedal before the parking brake handle is released. When you do not release the foot pressure, the parking brakes will not be applied.

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TOW AIRPLANE WITH FLAT TIRE(S) – MAINTENANCE PRACTICES

1. General

- A. The airplane can be towed when it has flat tires (see Figure 201). Such operations must be kept to a minimum because overloads occur frequently, during these conditions, on the inflated tires. These overloads cause the good tires to be damaged and replacement will be necessary. Also during some conditions, damage can occur to the wheels, landing gear, and/or the airplane structure.

TASK 09-11-04-582-001

2. Tow Airplane With Flat Tire(s)

A. References

- (1) 09-11-00/201, Towing
- (2) 32-45-03/601, Wheels

B. Prepare to Tow the Airplane with Flat Tires

S 582-002

- (1) To tow the airplane with flat tires, do the steps that follow (Ref 09-11-00):
  - (a) The airplane can be towed by the nose gear with one flat nose tire and five flat main tires. This is permitted only to remove the airplane from the runway. If there is a total of more than six flat tires, tow the airplane at both main gear.
  - (b) Keep the tow speeds to a minimum.
  - (c) Avoid sharp turns when the airplane is towed.

S 212-003

- (2) After the airplane is towed with two flat tires on one axle (as in conditions (2), (6), (7), (8), of Figure 201), do a wheel inspection. The inspection must include an NDT inspection for cracks and concentricity (Ref 32-45-03).

NOTE: It is not recommended to tow the airplane if the wheel rims are ground flat. Wheel rims with flat spots could cause high drag loads and landing gear damage.

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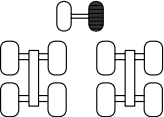
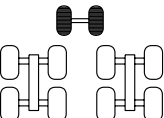
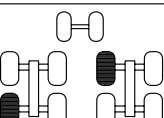
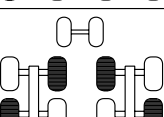
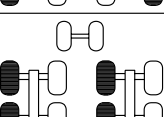
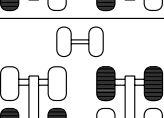
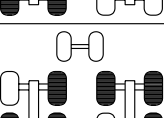
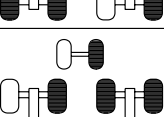
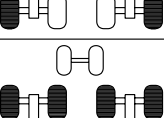
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# BOEING

## 757 MAINTENANCE MANUAL

○ GIVES LOCATION OF INFLATED TIRE

● GIVES LOCATION OF FLAT TIRE

CONDITIONS	POSITION OF FLAT TIRE(S)	LIMITS
(1) ONE FLAT TIRE ON NOSE GEAR		NONE
(2) TWO FLAT TIRES ON NOSE GEAR		TOW TO CLEAR RUNWAY, THEN INSTALL AT LEAST ONE SERVICEABLE TIRE.
(3) ONE FLAT TIRE POSITIONED ON ONE OR BOTH MAIN GEAR		NONE
(4) TWO FLAT TIRES ON DIAGONAL WHEELS, POSITIONED ON ONE OR BOTH MAIN GEAR		NONE
(5) TWO FLAT TIRES IN TANDEM, POSITIONED ON ONE OR BOTH MAIN GEAR		NONE
(6) TWO FLAT TIRES ON FRONT OR REAR WHEELS, POSITIONED ON ONE OR BOTH MAIN GEAR		TOW ONLY TO GET OFF RUNWAY IF RUNWAY MUST BE CLEARED, THEN REPLACE TIRES OR MOVE TIRES AROUND TO MEET CONDITION (4).
(7) THREE FLAT TIRES POSITIONED ON ONE OR BOTH MAIN GEAR		TOW ONLY TO GET OFF RUNWAY IF RUNWAY MUST BE CLEARED, THEN INSTALL SERVICEABLE TIRES TO MEET CONDITION (4).
(8) ONE FLAT NOSE TIRE WITH 5 FLAT MAIN GEAR TIRES POSITIONED IN ANY ORDER.		TOW ONLY TO GET OFF RUNWAY IF RUNWAY MUST BE CLEARED, THEN INSTALL SERVICEABLE TIRES TO MEET CONDITION (4).
(9) FOUR FLAT TIRES ON ONE OR BOTH MAIN GEAR		TOW AT BOTH MAIN GEARS IF RUNWAY MUST BE CLEARED, THEN INSTALL SERVICEABLE TIRES TO MEET CONDITION (4).

Tow Airplane with Flat Tire(s)  
Figure 201

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TAXIING - MAINTENANCE PRACTICES

TASK 09-21-00-582-006

1. Taxiing Precautions

A. Taxi Safety

§ 582-007

- (1) When you taxi an airplane, caution and precision are necessary. The taxi procedure must be done only by persons that are approved.

§ 582-008

- (2) The taxi path must be clear of all persons and vehicles.

§ 582-009

- (3) You must get approval from the airport ground control to taxi the airplane. This will prevent interference with other airport operations.

§ 582-010

- (4) You must keep clearance from the buildings and the other airplanes, at all times.

§ 582-011

- (5) You must have electrical power to operate the taxi lights, the navigation lights, the radio and intercom equipment, and other systems. This is necessary to taxi the airplane safely.

§ 582-012

- (6) The applicable airplane hydraulic systems must be pressurized to supply hydraulic pressure. This is for the airplane brakes and the nose wheel steering systems.

§ 582-013

- (7) When the taxi operations are done at night or in bad weather conditions, the crew must know the area around the airplane. They must know the location of parked vehicles, maintenance stands, and the condition of the pavement surface.

§ 582-014

- (8) A taxi checklist for the airline maintenance persons is necessary to help the crew have a safe taxi operation.

B. Maintenance Persons Necessary to Taxi the Airplane

§ 582-015

- (1) The persons necessary for a safe taxi operations must include a flight compartment crew and a ground crew.

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§ 582-016

- (2) There must be a minimum of two flight compartment persons.
  - (a) The flight compartment persons must be approved on all of the procedures that follow, for the taxi operations:
    - 1) To prepare the flight compartment
    - 2) The engine start, operation, and shutdown procedures
    - 3) The engine fire and emergency procedures
    - 4) The radio and intercom operation and procedures
    - 5) The taxi procedures (turning, wing tip clearances, taxi speeds, etc.)

§ 582-017

- (3) One or two ground crew persons are necessary to do the tasks that follow:

NOTE: In areas of congestion or a limit of space (hangers, ramp areas next to the terminal, airplane parking areas, etc.) more ground persons are necessary. This is to help monitor the wing clearances and to be general observers.

- (a) To remove and replace the wheel chocks
- (b) To help during the engine start
- (c) To help the flight compartment crew during the airplane movement
- (d) To make sure the airplane taxi path is clear.

C. Communications

§ 192-018

- (1) Most of the area around the airplane is out of the field of view permitted by the flight compartment windows. Also, much of the ground operations work near the airplane is out of the field of view of the flight compartment crew.

§ 582-019

- (2) There must be communication between airplane and ground crews. This is necessary during the engine start, removal and replacement of wheel chocks, and during the engine shutdown.

§ 582-020

- (3) You must use hand signals, lights, intercom and/or radio communications. These are important to have a safe taxi operation.

§ 582-021

- (4) The communications with the ground control authority is also necessary for taxi operations. This will make sure that the persons in the tower know of the taxi operation, and the path that the airplane will follow.

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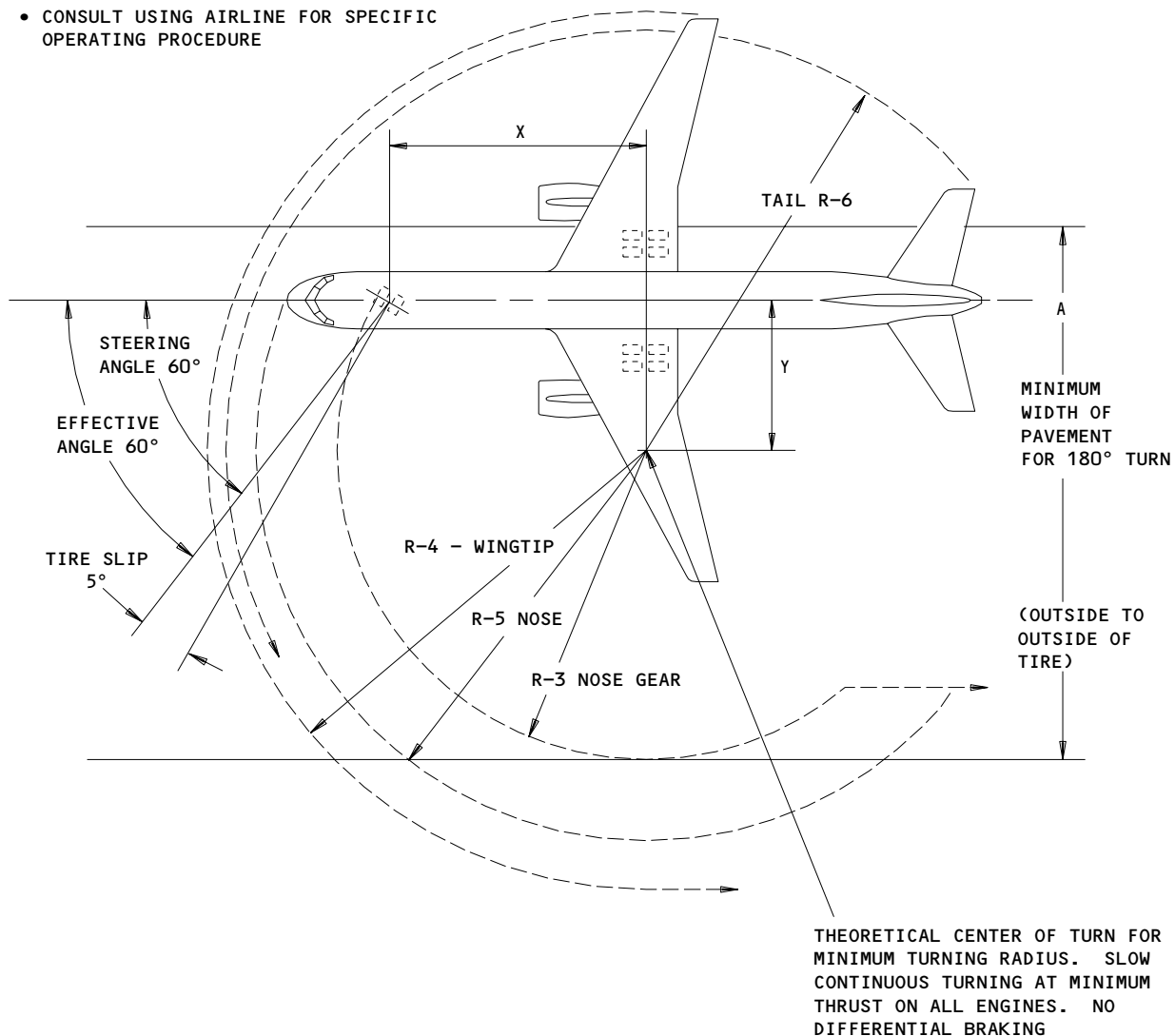
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# BOEING

## 757 MAINTENANCE MANUAL

**NOTES:**

- 5° TIRE SLIP ANGLE APPROXIMATE FOR 65° TURN ANGLE
- CONSULT USING AIRLINE FOR SPECIFIC OPERATING PROCEDURE



FOR AN EFFECTIVE TURN ANGLE OF 60°								
MODEL		X	Y	A	R-3	R-4	R-5	R-6
757-200	FT	60	35	120	71	98	87	95
	M	18.3	10.7	36.6	21.6	29.9	26.5	29.0

**Taxi Turning Radius  
Figure 201**

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757-200

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D. Procedure to Taxi the Airplane

S 582-022

- (1) When you taxi the airplane on the ground, the movement is equivalent to other conventional tricycle geared airplanes.
  - (a) The nose wheel steering, and the engine thrust are used as necessary, to taxi the airplane.

S 582-023

- (2) Airplane ground stability.
  - (a) 757-200 AIRPLANES;  
During the airplane taxi, the center of gravity (CG) must always be below the Ground Stability Limits line (AMM 09-11-00/201).
  - (b) Find the airplane center of gravity (CG) for the applicable airplane configuration. Use component weight and CG data, and the procedures to calculate them, in the approved weight and balance manuals.

S 582-024

- (3) Airplane clearance during the taxi.
  - (a) Make sure you have the necessary clearance when you go near a parked airplane or other structures.
    - 1) When the APU in the taxi airplane or the parked airplane is on, you must have a minimum clearance of 32.8 feet (10 meters).
      - a) The clearance must be between the APU exhaust port and the adjacent airplane's wingtip (fuel vent).

S 582-025

- (4) Airplane taxi speed.
  - (a) The taxi speed must not be more than approximately 20 knots. Speeds more than this, added to long taxi distances will cause heat to collect in the tires.
  - (b) Before you make a turn, decrease the speed of the airplane to a speed which is applicable to the local conditions. On a dry surface, use a speed of approximately 8 to 12 knots.

S 582-026

- (5) Airplane turns during taxi.
  - (a) Always use the largest turn radius possible.
  - (b) Do not try to turn the airplane until it has moved.
  - (c) Make all turns at a slow taxi speed to prevent tire skids.
  - (d) When an outboard engine is used to help make a turn, use only the minimum power possible.
  - (e) Do not let the airplane stop during a turn.

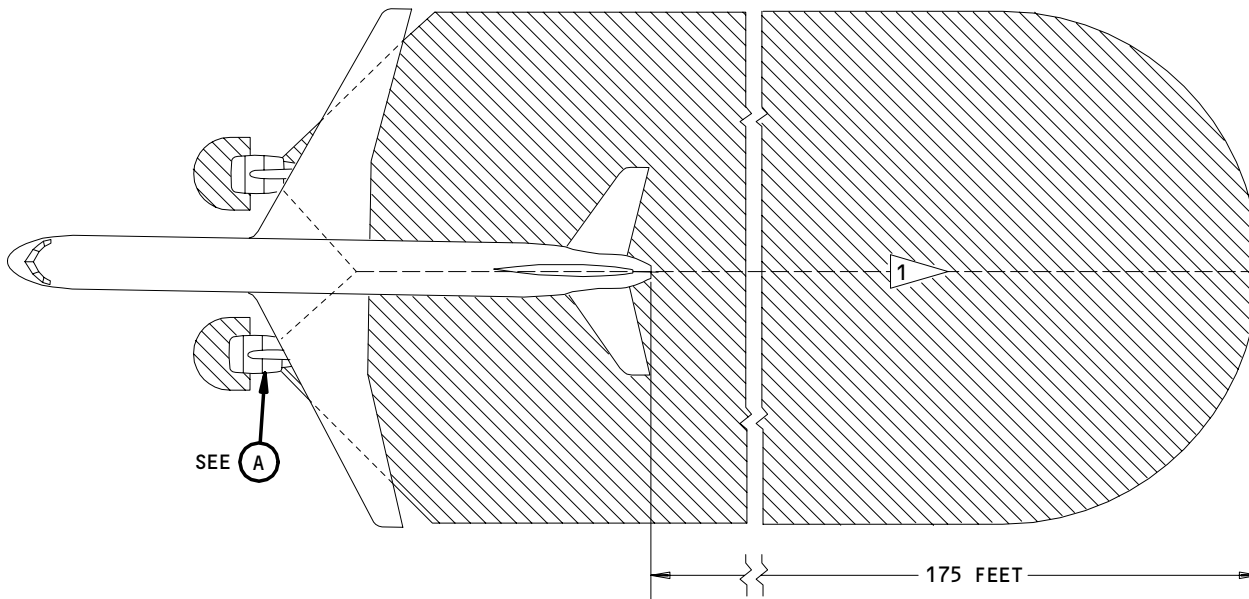
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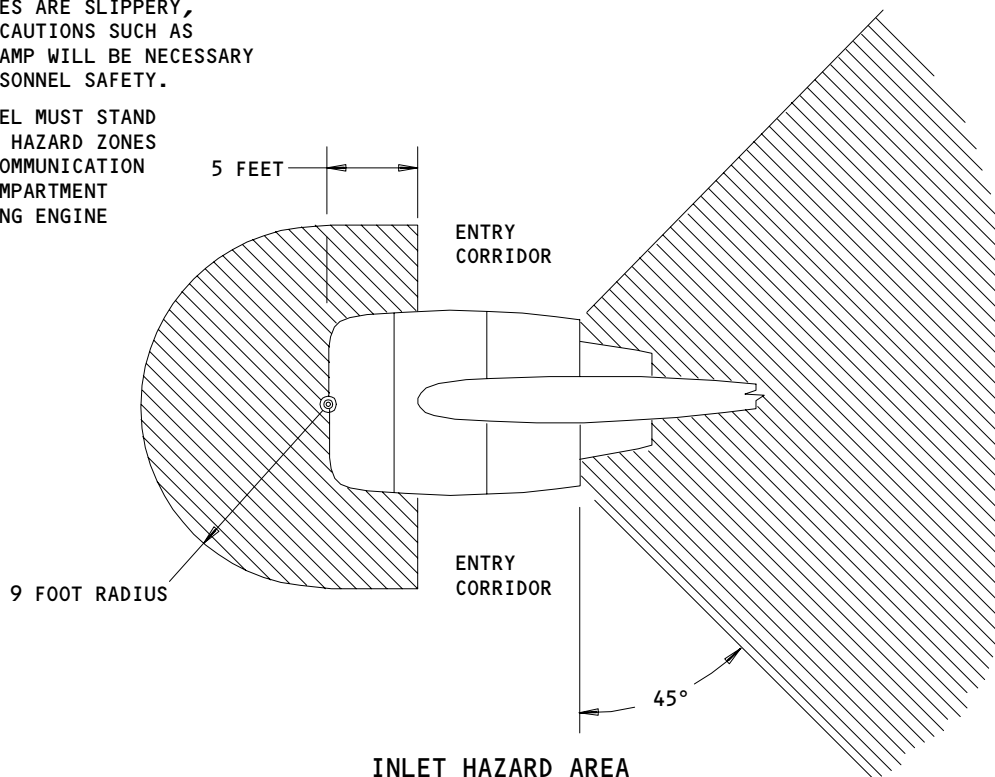
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**EXHAUST HAZARD AREA**

**WARNING:** IF SURFACE WIND IS REPORTED GREATER THAN 25 KNOTS, INCREASE DISTANCE OF INLET BOUNDARY BY 20%. IF RAMP SURFACES ARE SLIPPERY, ADDITIONAL PRECAUTIONS SUCH AS CLEANING THE RAMP WILL BE NECESSARY TO PROVIDE PERSONNEL SAFETY.

GROUND PERSONNEL MUST STAND CLEAR OF THESE HAZARD ZONES AND MAINTAIN COMMUNICATION WITH FLIGHT COMPARTMENT PERSONNEL DURING ENGINE RUNNING.



**INLET HAZARD AREA**

1 DOTTED LINE INDICATES HAZARD AREA BOUNDARY FOR SINGLE ENGINE OPERATION

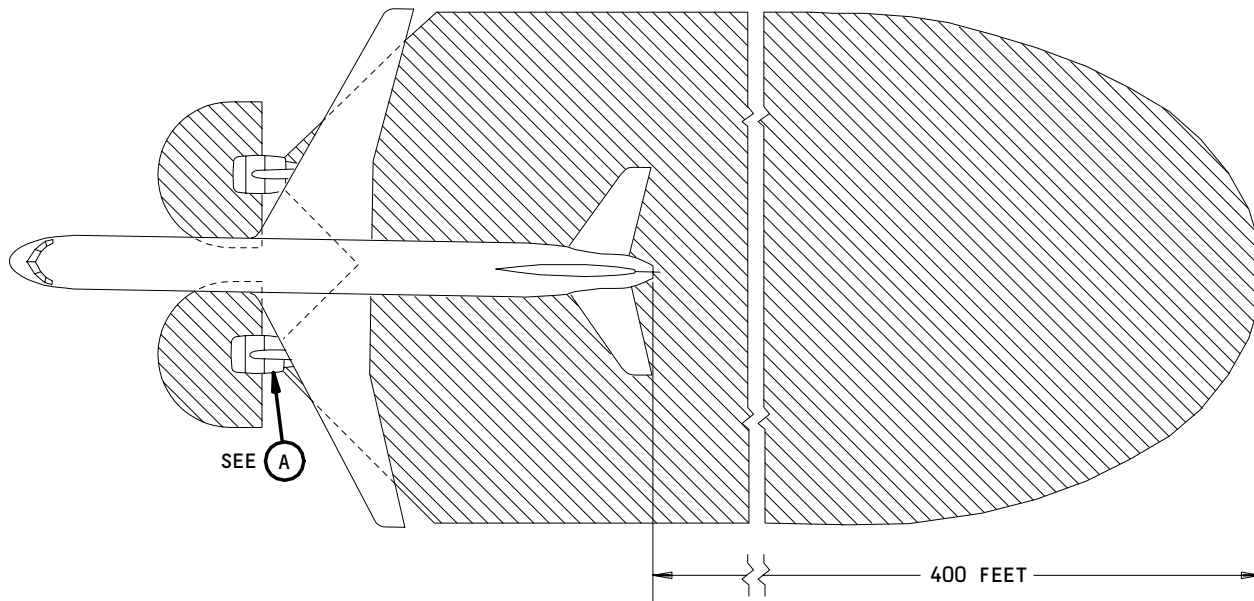
Minimum Idle/High Idle - Power Hazard Area  
Figure 202

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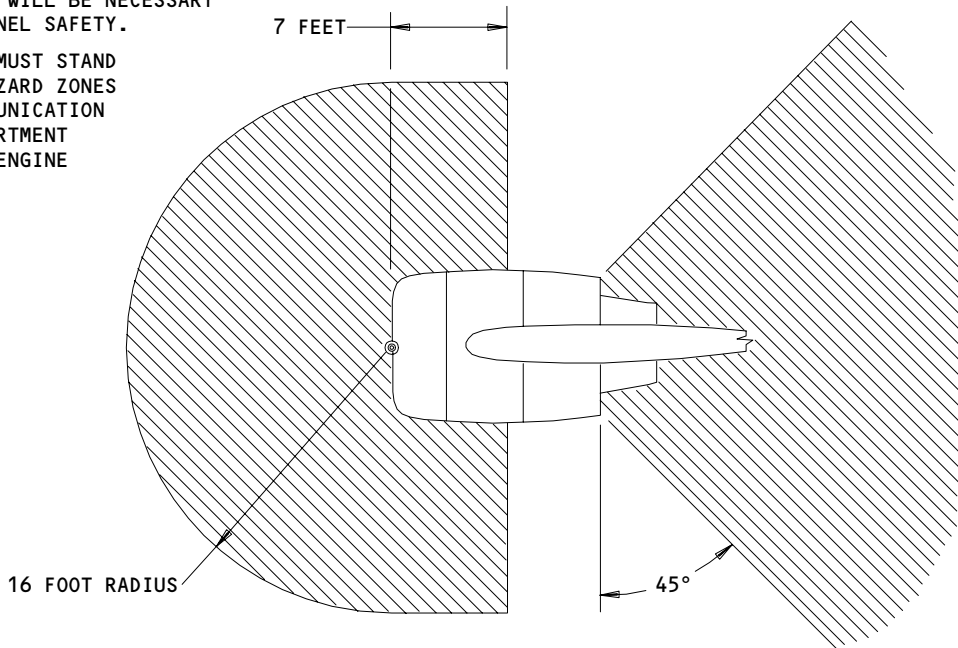
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**EXHAUST HAZARD AREA**

**WARNING:** IF SURFACE WIND IS REPORTED GREATER THAN 25 KNOTS, INCREASE DISTANCE OF INLET BOUNDARY BY 20%. IF RAMP SURFACES ARE SLIPPERY, ADDITIONAL PRECAUTIONS SUCH AS CLEANING THE RAMP WILL BE NECESSARY TO PROVIDE PERSONNEL SAFETY.

GROUND PERSONNEL MUST STAND CLEAR OF THESE HAZARD ZONES AND MAINTAIN COMMUNICATION WITH FLIGHT COMPARTMENT PERSONNEL DURING ENGINE RUNNING.



**INLET HAZARD AREA**

(A)

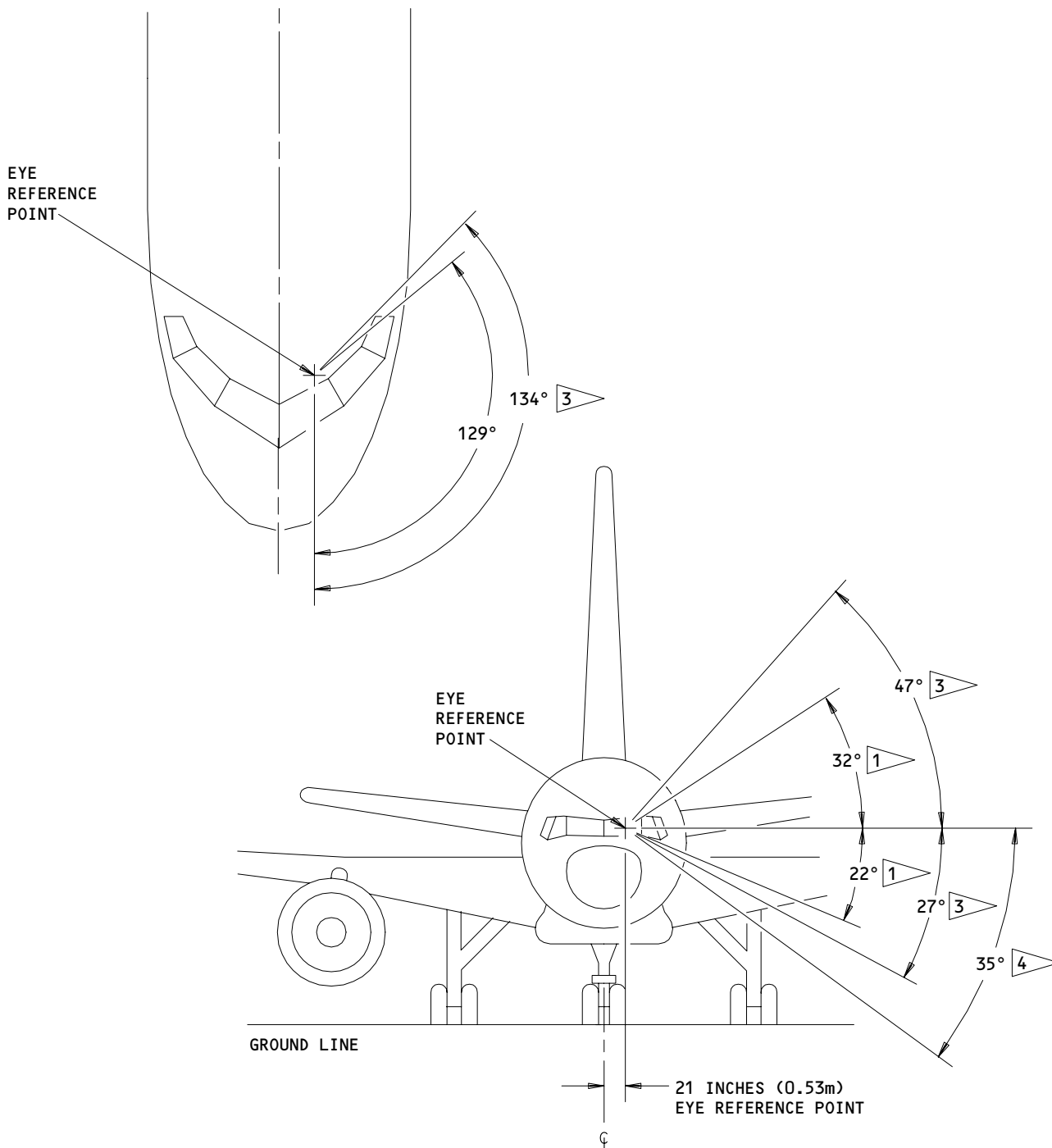
**Breakaway Thrust - Power Hazard Area  
Figure 203**

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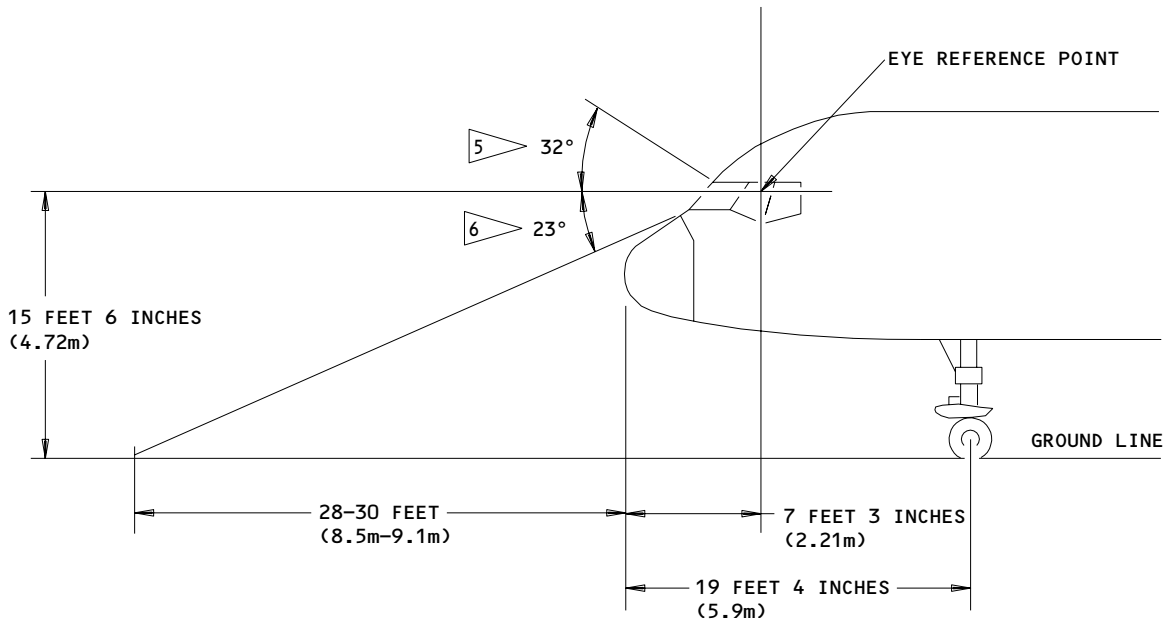


- 1 UPWARD VISION THROUGH MAIN WINDOW
- 2 DOWNWARD VISION THROUGH MAIN WINDOW
- 3 WITH HEAD MOVED 5 INCHES (0.13m) OUTBOARD
- 4 WITH HEAD MOVED 2 INCHES (0.05m) FORWARD AND 5 INCHES (0.13m) OUTBOARD

Flight Deck Sight Lines (For On-Ground Use)  
Figure 204 (Sheet 1)

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- 5 UPWARD VISION THROUGH MAIN WINDOW
- 6 DOWNWARD VISION THROUGH MAIN WINDOW

Flight Deck Sight Lines (For On-Ground Use)  
Figure 204 (Sheet 2)

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(f) Do not use the brakes to help during a turn.

NOTE: See the paragraph on Airplane taxi in bad weather conditions about differential braking.

- 1) Decrease the speed of the airplane with the brakes when it is necessary, before the turn is started.
- 2) Make a minimum radius turn with maximum nose wheel steering, and the engine thrust only.
- 3) When you use the brakes during a turn, the main and nose landing gear tires will be scrubbed.

(g) When it is possible, complete the taxi in a straight line roll for a minimum of 12 feet. This will remove the torsional stresses in the landing gear components, and in the tires.

S 582-027

(6) Airplane taxi in bad weather conditions.

- (a) You must know the conditions of the taxi surface, and the taxi speeds when you taxi in bad weather conditions.
- (b) If the taxi surface has snow, slush, or ice on it, the anti-ice system can be used.
- (c) Taxi the airplane with the flaps up.
- (d) Use the differential engine thrust when you taxi the airplane on a slick surface at decreased speeds. This will help to keep airplane movement through a turn.
- (e) A light differential braking can have more of an effect than nose wheel steering, on very slick surfaces.

#### E. Airplane Characteristics

S 582-028

(1) 757-200 AIRPLANES;

The minimum turn radius that the airplane can make is shown in Figure 201. The wingtips and the horizontal stabilizer move in larger arcs during a turn than the nose of the airplane. Thus, monitor these areas of the airplane carefully for clearance with buildings, equipment, and other airplanes.

S 582-030

(2) The basic factors that can change the geometry of a turn are as follows:

- (a) The nose wheel steering angle
- (b) The engine power position
- (c) The center of gravity location on the airplane
- (d) The airplane gross weight
- (e) The taxi surface conditions
- (f) The airplane ground speed
- (g) The differential braking that you use.

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S 582-031

- (3) When you operate jet engine airplanes, you must follow all precautions. This is necessary to prevent injury to persons, or damage to buildings, equipment, or other airplanes.
- (a) Refer to Figure 202 and Figure 203 to find the dangerous areas at engine idle, and at the engine breakaway thrust.
  - (b) All persons must keep away from the two engine inlet and exhaust areas. Hot, high velocity gases come out of the exhaust nozzles of the engine. The velocity of the engine fan air, specially at high thrust positions, is sufficient to cause injury or death to persons.
  - (c) When the thrust reverser is in the reverse position, the high velocity fan air will come out and move forward. When this occurs, the hot, high velocity engine exhaust gases will continue to come out rearwards.

S 582-032

- (4) 757-200 AIRPLANES;  
To find the angles of view from the flight compartment, for a person in the left seat, refer to Figure 201. This is when the left seat is correctly adjusted.

TASK 09-21-00-582-001

## 2. Taxi the Airplane

### A. References

- (1) 09-11-00/201, Towing
- (2) 24-22-00/201, Electrical Power - Control
- (3) 29-11-00/201, Main Hydraulic Systems
- (4) 71-00-00/201, Power Plant

### B. Prepare to Taxi the Airplane

S 582-005

**WARNING:** DO NOT CONNECT A HEADSET AND DO NOT TOUCH CONNECTIONS TO THE AIRPLANE DURING ATMOSPHERIC ELECTRICAL ACTIVITY OR IN STRONG ELECTROMAGNETIC FIELDS. LIGHTNING STRIKE AND HIGH DISCHARGE CURRENTS CAN CAUSE INJURIES TO PERSONNEL.

**WARNING:** ALL WORK AROUND THE AIRPLANE MUST STOP WHEN LIGHTNING OCCURS A DISTANCE OF 6 MILES OR LESS. ALL PERSONNEL MUST GO IN A BUILDING OR THE AIRPLANE. LIGHTNING CAN CAUSE INJURY TO PERSONNEL.

- (1) To prepare to taxi the airplane, you must do the steps that follow:

**NOTE:** These steps are only minimum procedures.

- (a) Use the airline taxi checklist.
- (b) Examine the external areas of the airplane.

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- (c) Make sure that the wheel chocks are in the correct position. The wheel chocks should be placed about 3 inches away from the tires.
- (d) Make sure that all engine cowls, doors, and hatches are closed.
- (e) Make sure that the engine inlets and exhausts are clear.
- (f) Make sure that the flight control surfaces are clear and will not touch the ground equipment.
- (g) Make sure that the tires are in a satisfactory condition.

**CAUTION:** DO NOT TAXI THE AIRPLANE WITH THE SHOCK STRUTS OF THE MAIN LANDING GEAR FULLY COMPRESSED. DAMAGE TO THE SHOCK STRUTS CAN OCCUR.

- (h) Make sure that the shock struts of the main landing gear are filled correctly (Ref 12-15-01).

**CAUTION:** DO NOT TAXI THE AIRPLANE WITH THE SHOCK STRUT OF THE NOSE LANDING GEAR FULLY COMPRESSED. DAMAGE TO THE SHOCK STRUT CAN OCCUR.

- (i) Make sure that the shock strut of the nose landing gear is filled correctly (Ref 12-15-01).

**CAUTION:** DO NOT LET THE SHOCK STRUT OF THE NOSE LANDING GEAR EXTEND MORE THAN THE MAXIMUM PERMITTED EXTENSION OF 10 INCHES. AN EXTENSION MORE THAN 10 INCHES CAN CAUSE THE CENTERING CAM TO ENGAGE AND CAUSE DAMAGE TO THE SHOCK STRUT DURING A TURN.

IT CAN ALSO MAKE THE AFT CENTER OF GRAVITY LIMITS CHANGE AND CAUSE THE AIRPLANE TO ROTATE ON TO ITS TAIL.

- (j) Make sure that not more than 10 inches of chrome surface, of the inner cylinder on the shock strut, shows.
- (k) Make sure that the towing lever on the nose landing gear is in the NORMAL position (Ref 09-11-00).
- (l) Make sure the flight compartment seats are adjusted as follows:
  - 1) To give the correct view from the flight compartment windows.
  - 2) To give the correct position to operate the rudder and brake pedals.
- (m) Make sure that all airplane systems are prepared to have electrical power safely put on the airplane.
- (n) Supply electrical power (Ref 24-22-00).

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 **BOEING**  
757  
MAINTENANCE MANUAL

**CAUTION:** A MINIMUM OF 600 GALLONS (4020 POUNDS/1827 KILOGRAMS) OF FUEL IS NECESSARY IN EACH WING FUEL TANK TO GIVE COOLING TO THE HYDRAULIC FLUID. WHEN SUFFICIENT FUEL IS NOT IN THE WING FUEL TANKS, THE HYDRAULIC FLUID WILL BECOME TOO HOT.

- (o) Make sure that the fuel quantity indicator on the captain's overhead panel, P-5, shows a minimum of 4020 pounds (1827 kilograms) of fuel.

**NOTE:** Add the quantity of fuel that will be necessary for the engine start, taxi, and maintenance operations after the taxi.

- (p) Make sure that the hydraulic systems are pressurized for the brake and nose wheel steering operations (Ref 29-11-00).

**NOTE:** Hydraulic power for the brakes comes from the right hydraulic system. The left hydraulic system gives automatic backup when the right system does not operate. If the right and left systems do not operate, a reserve brake system can be started through the BRAKE SOURCE switch on the captain's instrument panel, P-1. If all hydraulic systems do not operate, the airplane must not be taxied. But, if all hydraulic systems stop during the taxi, the brakes will be operated through the brake hydraulic accumulator. The brake hydraulic accumulator is in the right hydraulic system.

When it is fully serviceable, the brake hydraulic accumulator will permit the brakes to be applied approximately 2 to 3 times.

The nose wheel steering gets power from the left hydraulic system. The landing-gear-control lever must be in the DN position to use the nose wheel steering system.

- (q) Make sure that the landing-gear-control lever is in the DN position.
- (r) Make sure that the VHF radio is on and set to the correct frequency. This is for radio communications with the authority for the airport ground control.
- (s) Make sure that the service interphone and the hand radios operate, and the ground crew can hear you.
- (t) Check for a fuel imbalance.
  - 1) Adjust the current fuel loading as appropriate.

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C. Taxi the Airplane

S 582-003

- (1) To taxi the airplane, do the steps that follow:
- (a) Get the necessary approval from the airport ground control to start the engine.
  - (b) Tell the ground crew to remove the wheel chocks, and the static electrical ground wire (as necessary).
  - (c) Make sure that the beacon light that rotates, is on. The beacon light must be on while the engines are on.
  - (d) Make sure that the navigation lights are on. The lights must be on during movement of the airplane.

**CAUTION:** CERTAIN ENGINE HARDWARE OR SYSTEM FAILURES CAN CAUSE THE ENGINE TO RUNDOWN WHEN OPERATING AT LOW IDLE OR DURING ACCELERATION FROM LOW IDLE. IF AN ENGINE RUNDOWN OCCURS AND THE FUEL CONTROL SWITCH IS NOT QUICKLY PUT IN THE CUTOFF POSITION, AN ENGINE OVERTEMPERATURE (EGT EXCEEDENCE) MAY OCCUR THAT CAN CAUSE DAMAGE TO THE ENGINE.

- (e) Start the engines (Ref 71-00-00).
  - 1) To prevent an EGT exceedence when operating at low idle or during initial acceleration from low idle, periodically monitor engine N3 speed and EGT.
    - a) If N3 is below low idle (below 48.5% N3) and the EGT is above the subidle limit (above 570 degrees Celsius), place the fuel control switch in the CUTOFF position.
- (f) When the airplane is prepared to taxi, get approval to taxi from the airport ground control.
- (g) When the ground crew gives the signal, release the brakes and start to taxi the airplane.
  - 1) Supply engine power smoothly to start the airplane forward movement.
  - 2) Put the engines back to idle power when the airplane starts to move.
- (h) Make sure the airplane moves, forward in a straight line before a turn is started.
- (i) Turn the airplane with the tiller for the nose wheel steering, or the rudder pedals.

**NOTE:** You will get approximately 65 degrees of nose wheel steering when the tiller for the nose wheel steering is turned to its maximum. You will get approximately 7 degrees of nose wheel steering through maximum movement of the rudder pedals.

- (j) Speak to the ground crew during a turn to make sure that the airplane stays clear of all equipment, buildings, and airplanes. Use the service interphone or the hand radios.
- (k) When the taxi surface has taxi lines available, taxi the airplane with the nose wheel on the line.

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**CAUTION:** DO NOT USE THE BRAKES CONTINUOUSLY TO KEEP THE NECESSARY TAXI SPEED. IF YOU USE THE BRAKES WITHOUT SUFFICIENT TIME FOR THEM TO COOL, YOU CAN CAUSE THE BRAKES TO BECOME TOO HOT. THIS CAN CAUSE BRAKE DAMAGE OR A DECREASE OF TIRE INFLATION PRESSURE BECAUSE A WHEEL-THERMAL-FUSE PLUG MELTED.

- (l) Taxi the airplane slowly with the engines at idle.
  - 1) Use the Inertial Reference System (IRS) in the ground speed (GS) mode to monitor the taxi speed.
  - 2) If the airplane taxi speed is too fast (with the engines at idle), operate the brakes slowly and smoothly for a short time. This will decrease the taxi speed.
    - a) If the taxi speed increases again, operate the brakes as you did in the step before.
- (m) Always use the largest radius possible when you turn the airplane. This will decrease landing gear side loads, and the tire scrub will be decreased.
  - 1) Make sure that the airplane continues to move while a turn is made. Do not stop during a turn.
- (n) When it is possible, complete the taxi in a straight line roll for a minimum of 12 feet. This will remove the torsional stresses in the landing gear components, and in the tires.
- (o) Operate the brakes to stop the airplane.
- (p) Set the parking brake after the airplane has stopped.
- (q) Use the airline checklist to deactivate, and to shutdown the applicable airplane systems.
- (r) Tell the ground crew to install the wheel chocks about 3 inches away from the tires, and to install the static electrical ground wire.
- (s) Release the parking brake after the wheel chocks are positioned (optional).

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