



## AIRCRAFT MAINTENANCE MANUAL

### NOSE-LANDING-GEAR MAIN BRACE STRUT - REMOVAL/INSTALLATION

EFFECTIVITY: ALL

#### 1. General

- A. This section gives the procedures to remove and install the main brace strut of the nose landing gear.
- B. The procedures in this section are given in the sequence below. The tasks identified with (♦) are part of the Scheduled Maintenance Requirements Document (SMRD).

TASK NUMBER	DESCRIPTION	EFFECTIVITY
32-20-02-000-801-A	MAIN BRACE STRUT OF THE NOSE LANDING GEAR - REMOVAL	ALL
32-20-02-400-801-A	MAIN BRACE STRUT OF THE NOSE LANDING GEAR - INSTALLATION	ALL



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TASK 32-20-02-000-801-A

EFFECTIVITY: ALL

2. MAIN BRACE STRUT OF THE NOSE LANDING GEAR - REMOVAL

A. General

- (1) This procedure gives the instructions to remove the main brace strut of the nose landing gear.

B. References

REFERENCE	DESIGNATION
AMM TASK 07-10-00-500-801-A/200	-
AMM TASK 29-10-00-860-802-A/200	HYDRAULIC SYSTEM - PRESSURIZATION WITH EMDP
AMM TASK 32-00-01-910-801-A/200	LG SAFETY PIN - INSTALLATION AND REMOVAL
AMM TASK 32-00-02-910-801-A/200	SAFETY PIN OF THE NLG DOORS SOLENOID VALVE - INSTALLATION AND REMOVAL
AMM TASK 32-20-03-000-801-A/400	AUXILIARY BRACE STRUT OF THE NOSE LANDING GEAR - REMOVAL
AMM TASK 32-33-05-000-801-A/400	NOSE LANDING GEAR ACTUATOR - REMOVAL
AMM TASK 32-33-06-000-801-A/400	UNLOCKING ACTUATOR OF THE NOSE LANDING GEAR - REMOVAL
SB145-32-0036	-

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Nose landing gear
1	Helps the other technician	Nose landing gear



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I. Preparation

SUBTASK 841-002-A

- (1) On the circuit breaker panel, open the ELEC PUMP 1, CMD, IND 1, and IND 2 circuit breakers and attach DO-NOT-CLOSE tags to them.
- (2) For aircraft PRE-MOD [SB145-32-0036](#), make sure that the pressure in hydraulic system No. 1 is fully released ([AMM TASK 29-10-00-860-802-A/200](#)).
- (3) For aircraft POST-MOD [SB145-32-0036](#), install safety pin of the NLG doors solenoid valve ([AMM TASK 32-00-02-910-801-A/200](#)).
- (4) Make sure that the safety pins of the landing gears are installed ([AMM TASK 32-00-01-910-801-A/200](#)).
- (5) Lift the aircraft on jacks. Refer to AMM TASK 07-10-00-500-801-A/200.
- (6) Remove the unlocking actuator ([AMM TASK 32-33-06-000-801-A/400](#)).
- (7) Remove the nose landing gear actuator ([AMM TASK 32-33-05-000-801-A/400](#)).
- (8) Disconnect the lower end of the auxiliary brace strut ([AMM TASK 32-20-03-000-801-A/400](#)).

J. Removal ([Figure 401](#)) ([Figure 403](#))

SUBTASK 020-002-A

- (1) Disconnect the end of the bonding strap (3) from the main brace strut (4). For this, remove the nut, washers, and bolt.
- (2) Remove the cotter pin (6), nut (7), washer (5), special bolt (8), and sleeve (13), to disconnect the lower end of the main brace strut (4). Refer to [Figure 401](#).
- (3) Remove the nuts (1), washers (2) and (12), and bolts (11) (8 positions).
- (4) Remove the bearings (9) and (10).

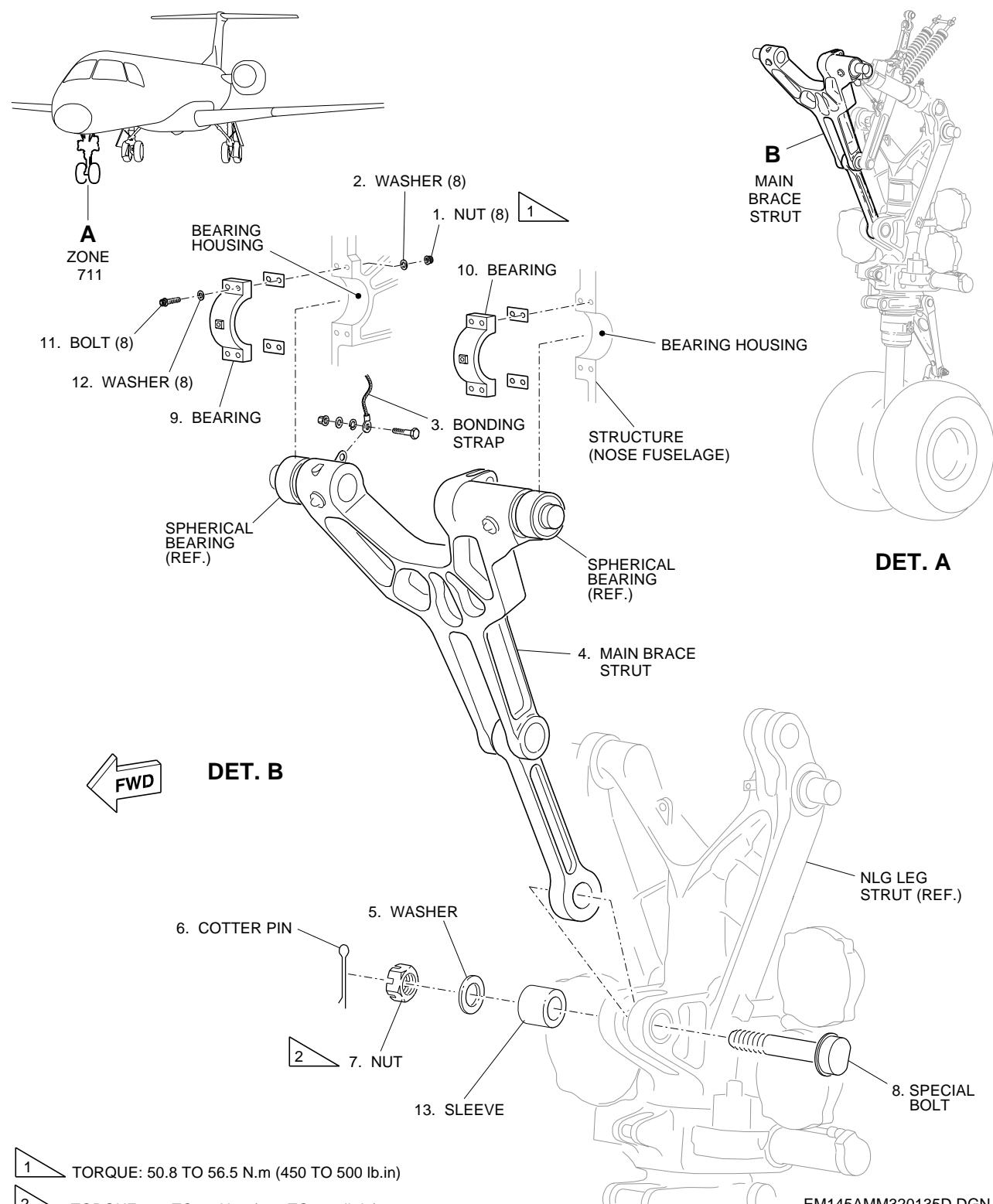
NOTE: During the removal of the main brace strut, identify the half-bearings, laminated washer, and solid washers for position (left or right side) to prevent their inverted installation.

- (5) Remove the main brace strut (4).
- (6) For aircraft equipped with shim, remove the shim (13). Refer to [Figure 403](#).

**EFFECTIVITY: ALL**

Main Brace Strut of the Nose Landing Gear - Removal/Installation

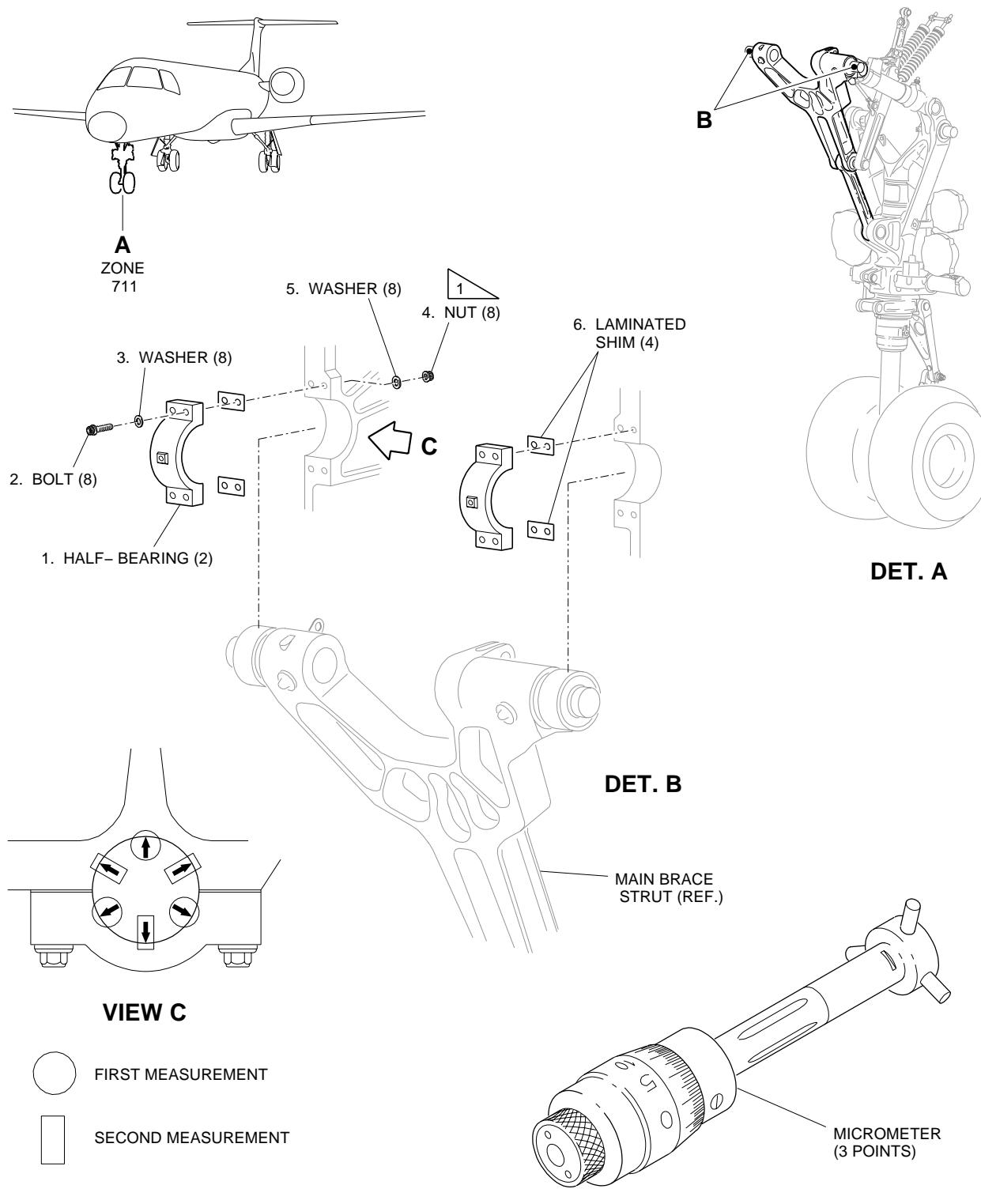
Figure 401



**EFFECTIVITY: ALL**

Main Brace Strut of the Nose Landing Gear - Installation

Figure 402

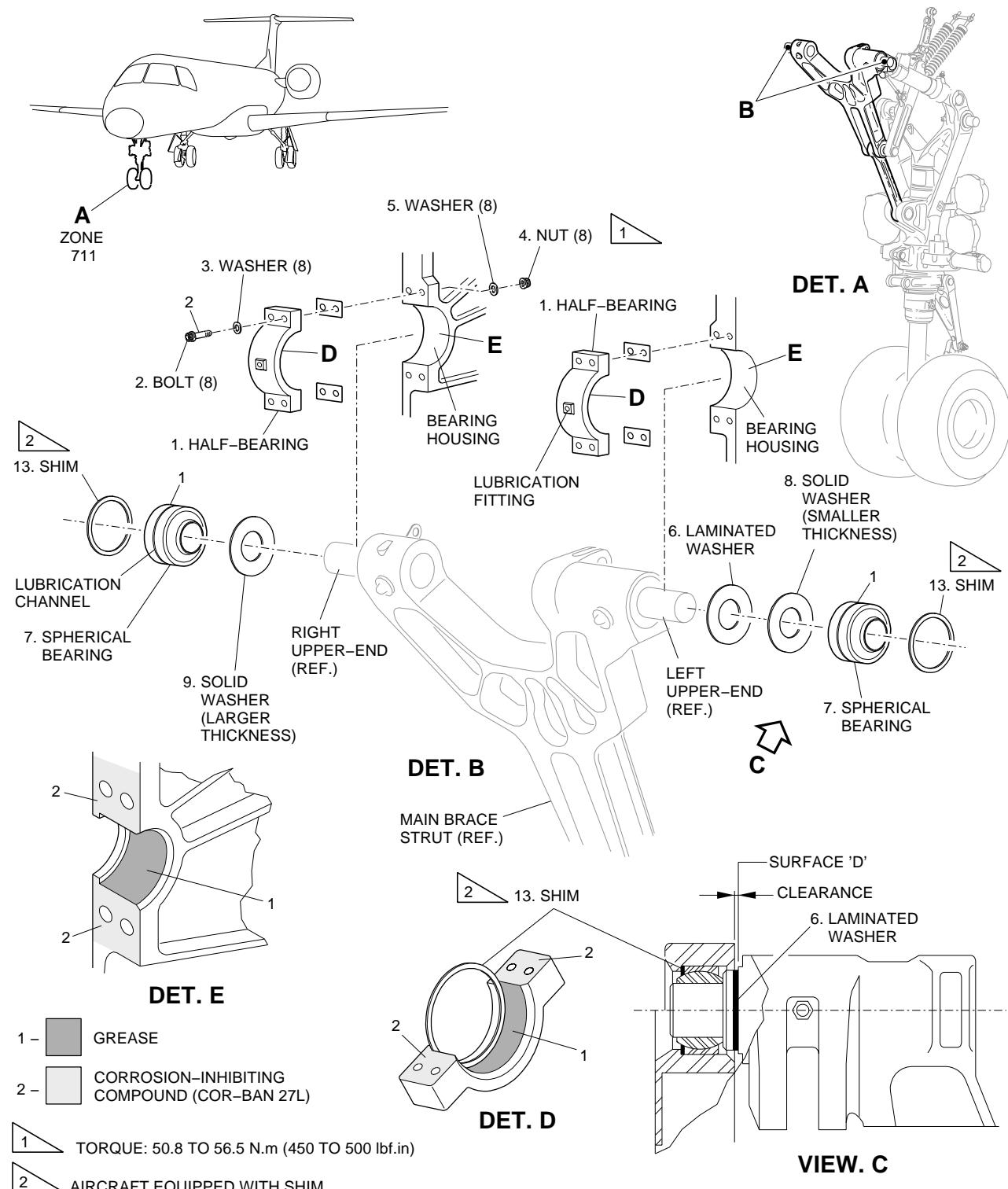


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**EFFECTIVITY: ALL**

Main Brace Strut of the Nose Landing Gear - Laminated Washer

Figure 403





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## TASK 32-20-02-400-801-A

EFFECTIVITY: ALL

3. MAIN BRACE STRUT OF THE NOSE LANDING GEAR - INSTALLATION

## A. General

(1) This procedure gives the instructions to install the main brace strut of the nose landing gear.

## B. References

REFERENCE	DESIGNATION
AMM TASK 07-10-00-500-804-A/200	-
AMM TASK 20-13-21-910-801-A/200	TYPES OF ELECTRICAL BONDING AND SURFACE PREPARATION - STANDARD PROCEDURES
AMM TASK 32-00-02-910-801-A/200	SAFETY PIN OF THE NLG DOORS SOLENOID VALVE - INSTALLATION AND REMOVAL
AMM TASK 32-20-03-400-801-A/400	AUXILIARY BRACE STRUT OF THE NOSE LANDING GEAR - INSTALLATION
AMM TASK 32-30-00-700-801-A/500	EXTENSION AND RETRACTION SYSTEM - OPERATIONAL CHECK
AMM TASK 32-33-05-000-801-A/400	NOSE LANDING GEAR ACTUATOR - REMOVAL
AMM TASK 32-33-06-000-801-A/400	UNLOCKING ACTUATOR OF THE NOSE LANDING GEAR - REMOVAL
AMM TASK 32-34-00-600-801-A/300	MLG AND NLG - LUBRICATION
AMM TASK 32-34-00-700-801-A/500	LG EMERGENCY EXTENSION - OPERATIONAL AND FUNCTIONAL CHECKS
IPC 32-20-00	NOSE LANDING GEAR
SB145-32-0036	-

## C. Zones and Accesses

Not Applicable

## D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Torque wrench (0-1000 lb.in range)	To tighten the nuts that attach the bearings at the nose fuselage structure	
Commercially available	Feeler gage	To measure the clearance between the top half-bearing and the solid washer	
Commercially available	3-point micrometer (internal measurement)	To measure the inner diameter of the bearing housing	

## E. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Rubber Gloves, Phosphate Ester-Base Fluid-Resistant	For protection of the hands	2
Commercially available	Rubber Goggles, Phosphate Ester-Base Fluid-Resistant	For protection of the eyes	2



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ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Soft Lint-Free Cloth	To clean the components	AR

## F. Consumable Materials

SPECIFICATION (BRAND)	DESCRIPTION	QTY
MEP 09-075	Corrosion-Inhibiting Compound (COR-BAN 27L)	AR
MIL-PRF-81322	Aeroshell Grease 22	AR
MIL-PRF-23827	Aeroshell Grease 33 (alternative to Aeroshell 22)	AR
MEP 13-073	Rhodiasolve E-23	AR

## G. Expendable Parts

ITEM	IPC REFERENCE (VENDOR REFERENCE)	QTY
Nut	IPC 32-20-00	16

## H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Nose landing gear
1	Helps the other technician	Nose landing gear

## I. Preparation (Figure 402)

## SUBTASK 841-003-A

- (1) Procedure to find the thickness of the laminated shims (6) of the half-bearing (1).

NOTE: This procedure is applicable when the shims of the half-bearings are lost or damaged.

- (a) Install the lower half-bearing (1), bolt (2), and washers (3) and (5) to the structure, without the laminated shims.
- (b) Install nut (4). Apply a torque of 50.8 to 56.5 N.m (450 to 500 lb.in).
- (c) Measure the diameter in two different positions, as shown in the figure. Write the values.
- (d) Calculate the average between the two values found in step (c), with this formula:  
$$M = (M_1 + M_2)/2$$
, where:  
M<sub>1</sub> = the first measurement  
M<sub>2</sub> = the second measurement  
M = the average between the two measurements
- (e) Calculate the thickness of the laminated shims as follows:

X = 61.922 - M

- (f) Adjust the thickness of the laminated shims of the value found in step (e).
- (g) Install the lower half-bearing (1) again to the structure, but, at this time, together with the laminated shims.
- (h) Torque the nuts to 50.8 to 56.5 N.m (450 to 500 lb.in).
- (i) Do step (c) and make sure that the values found are between 61.907 and 61.937 mm.
- (j) Do steps (a) thru (i) for the other lower half-bearing.

**(2) Procedure to find the thickness of the laminated washer (6): (Figure 403)**

NOTE: • This procedure is applicable when the laminated washer of the spherical-bearing is lost or damaged.

• The main-brace-strut has two solid washers. One solid washer is installed on the right upper-end of the main-brace-strut. The other solid washer is installed on the left upper-end of the main brace strut together with the laminated washer.

- (a) Install the solid washer (9) (larger thickness) and spherical-bearing (7) on right top end of the main brace strut.

NOTE: The spherical-bearing (7) has a blue rubber seal on one side.

1 The spherical-bearing (7) must be installed with its blue rubber seal facing the inboard nose landing gear. It means facing the solid washers (9). Refer to (Figure 403).

- (b) Install the solid washer (8) (smaller thickness) and spherical-bearing (7) on the left top end of the main brace strut, without the laminated washer (6).

NOTE: The spherical-bearing (7) has a blue rubber seal on one side.

1 The spherical-bearing (7) must be installed with its blue rubber seal facing the inboard nose landing gear. It means facing the solid washers (8). Refer to (Figure 403).

- (c) If applicable, install the shim (13). Refer to (Figure 403).

- (d) Temporarily install the main-brace-strut in the bearing-housing.

- (e) Put the half-bearings in their installation position.

- (f) Install the bolts (2), washers (3) and (5), and nuts (4).

- (g) Apply a torque of 50.80 to 56.45 N.m (450 to 500 lb.in) to the nuts (4) of the half-bearings (1).

- (h) Manually move the main-brace-strut to the right.



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- (i) Measure the clearance between the solid washer (8) and the surface D of the main-brace-strut with a feeler gage to the left side. Refer to Figure 403, DET. C.
- (j) Remove the main-brace-strut.
- (k) Prepare the laminated washer (6) with the thickness found in step (i).

NOTE: The maximum clearance is 0.05 mm (0.002 in).

J. Installation (Figure 401) (Figure 403)

SUBTASK 420-002-A

- (1) Use a dry lint-free cloth to remove unwanted remaining grease from the components as necessary.

**WARNING: BE CAREFUL WHEN YOU USE SOLVENTS BECAUSE THEY ARE A HEALTH AND FIRE HAZARD. USE SAFETY GOGGLES AND PROTECTIVE CLOTHING. DO NOT BREATHE THE SOLVENT GASES AND WORK IN A WELL VENTILATED AREA.**

- (2) With a cloth soaked in Rhodiasolve E-23, clean the remaining grease from the components as necessary.
- (3) Install a solid washer (9) (larger thickness) and a spherical-bearing (7) on the right top end of the main brace strut. Refer to (Figure 403).

NOTE: The spherical-bearing (7) has a blue rubber seal on one side.

- (a) The spherical-bearing (7) must be installed with its blue rubber seal facing the inboard nose landing gear. It means facing the solid washers (9). Refer to (Figure 403).
- (4) Install laminated washer (6) prepared as given in paragraph I.(2), solid washer (8) (smaller thickness), and spherical bearing (7), at the left top end of the main brace strut. Refer to (Figure 403).

NOTE: The spherical-bearing (7) has a blue rubber seal on one side.

- (a) The spherical-bearing (7) must be installed with its blue rubber seal facing the inboard nose landing gear. It means facing the solid washers (8). Refer to (Figure 403).

- (5) If applicable, install the shim (13). Refer to (Figure 403).

**CAUTION: AEROSHELL GREASE 22 MUST NOT BE MIXED WITH AEROSHELL GREASE 33. IF YOU DO NOT OBEY THIS PRECAUTION, DAMAGE TO THE COMPONENTS CAN OCCUR.**

- (6) Fill the lubrication channel of the main-brace-strut bearing with Aeroshell Grease 22. Refer to (Figure 403)

NOTE: You can use alternative Aeroshell 33 grease.

- (7) Apply the same grease used in step (6) to the inner surface of bearing housing (contact surface with the spherical bearing). Refer to Figure 403.

- (8) Record in the applicable document the grease that you used.
- (9) Apply corrosion-inhibiting compound (COR-BAN 27L) to the bearing housing (contact surface between the half-bearing and the bearing housing). Refer to (Figure 403).
- (10) Install the main brace strut to the bearing housing.
- (11) Apply the same grease to the inner surface of half-bearing (contact surface with the spherical bearing). Refer to Figure 403.
- (12) Apply corrosion-inhibiting compound (COR-BAN 27L) to the half-bearing (contact surface between the half-bearing and the bearing housing), and to the bolts. Refer to (Figure 403).
- (13) Install the half-bearings (9) and (10) on the bearing housing at the nose fuselage structure. Refer to (Figure 401).
- (14) Install the bolts (11), washers (12) and (2), and nuts (1) (8 positions). Refer to (Figure 401).
- (15) Apply a torque of 50.8 - 56.5 N.m (450 - 500 lb.in) to the nuts (1).
- (16) Put the lower-end of the main-brace-strut (4) in its installation position on the nose landing gear leg and install the special bolt (8), sleeve (13), washer (5), nut (7), and cotter pin (6). Refer to (Figure 401).
- (17) Manually lift the main brace-strut and make sure that it moves freely.  
NOTE: If the main brace strut does not have a free movement, remove and adjust the thickness of the laminated washer (6) (obey the instructions in paragraph I.(2)) and do steps (4) thru (18) again. You must use the same grease.
- (18) Fill the bearing with the same grease through the lubrication fitting at the bottom of the half-bearing until grease spreads out from the bearing.

#### K. Follow-on

##### SUBTASK 842-002-A

- (1) Install the nose landing gear actuator ([AMM TASK 32-33-05-000-801-A/400](#)).
- (2) Connect the lower end of the auxiliary brace strut ([AMM TASK 32-20-03-400-801-A/400](#)).
- (3) Install the unlocking actuator ([AMM TASK 32-33-06-000-801-A/400](#)).
- (4) Connect the bonding strap end to the main brace strut ([AMM TASK 20-13-21-910-801-A/200](#)).
- (5) Lubricate the main brace strut ([AMM TASK 32-34-00-600-801-A/300](#)) with the same grease as in the installation.
- (6) On the circuit breakers panel, close the ELEC PUMP, CMD, IND 1, and IND 2 circuit breakers and remove the DO-NOT-CLOSE tags from them.
- (7) Energize the aircraft.



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- (8) Remove the safety pins from the landing gears.
- (9) For aircraft POST-MOD [SB145-32-0036](#), remove safety pin of the NLG doors solenoid valve ([AMM TASK 32-00-02-910-801-A/200](#)).
- (10) Do the retraction and extension of the landing gear ([AMM TASK 32-30-00-700-801-A/500](#)).
- (11) Do the functional check of the landing gear free-fall system ([AMM TASK 32-34-00-700-801-A/500](#)).
- (12) Lower the aircraft and remove the jacks ([AMM TASK 07-10-00-500-804-A/200](#)).