



# AIRCRAFT MAINTENANCE MANUAL

## BRAKE ASSEMBLY - REMOVAL/INSTALLATION

EFFECTIVITY: ALL

### 1. General

- A. This section gives the procedures to remove and install the brake assembly of the main landing gear and of the brake assembly shuttle valve.
- 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
32-49-03-000-801-A	BRAKE ASSEMBLY OF THE MAIN LAND- ING GEAR - REMOVAL	ALL
32-49-03-400-801-A	BRAKE ASSEMBLY OF THE MAIN LAND- ING GEAR - INSTALLATION	ALL
32-49-03-000-802-A	BRAKE ASSEMBLY SHUTTLE VALVE - REMOVAL	ALL
32-49-03-400-802-A	BRAKE ASSEMBLY SHUTTLE VALVE - IN- STALLATION	ALL



# AIRCRAFT MAINTENANCE MANUAL

TASK 32-49-03-000-801-A

EFFECTIVITY: ALL

## 2. BRAKE ASSEMBLY OF THE MAIN LANDING GEAR - REMOVAL

### A. General

- (1) This procedure gives the instructions to remove the brake assembly of the main landing gear.

### B. References

REFERENCE	DESIGNATION
AMM TASK 07-10-00-500-803-A/200	-
AMM TASK 29-10-00-860-802-A/200	HYDRAULIC SYSTEM - PRESSURIZATION WITH EMDP
AMM TASK 32-10-08-200-801-A/600	MLG WHEEL AXLE - INSPECTION
AMM TASK 32-47-01-000-801-A/400	TEMPERATURE SENSORS - REMOVAL
AMM TASK 32-49-02-000-801-A/400	WHEEL ASSEMBLY OF THE MAIN LANDING GEAR - REMOVAL

### C. Zones and Accesses

Not Applicable

### D. Tools and Equipment

Not Applicable

### E. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Rubber Gloves, Phosphate Ester-Base, Fluid-Resistant	Protection for the hands	1
Commercially available	Rubber Goggles, Phosphate Ester-Base, Fluid-Resistant	Protection for the eyes	1

### F. Consumable Materials

Not Applicable

### G. Expandable Parts

Not Applicable

### H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	RH and LH Main Landing Gears
1	Helps the other technician	RH and LH Main Landing Gears

I. Preparation

**SUBTASK 841-002-A**

- (1) On the circuit breaker panel, open the ELEC PUMP 1 and ELEC PUMP 2 circuit breakers and attach a DO-NOT-CLOSE tag to them.
  - (2) Make sure that the pressure in hydraulic systems No. 1 and No. 2, in the Landing Gear/Main Door hydraulic accumulator, and in the Emergency/Parking Brake hydraulic accumulator is fully released ([AMM TASK 29-10-00-860-802-A/200](#)).
  - (3) Control the ailerons up and down, or the rudder left and right, until the EICAS shows zero-PSI pressure in the hydraulic system.
  - (4) Lift the related wheel of the aircraft with a jack ([AMM TASK 07-10-00-500-803-A/200](#)).
  - (5) Remove the wheel assembly ([AMM TASK 32-49-02-000-801-A/400](#)).
    - (a) If necessary, do a general vision inspection on the MLG wheel axle. Refer to ([AMM TASK 32-10-08-200-801-A/600](#))
- NOTE: This is an Embraer Optional Task. Refer to SMRD.
- (6) Make sure that the handle of the emergency/parking brake is not operated.
  - (7) Remove the temperature sensor ([AMM TASK 32-47-01-000-801-A/400](#)) and keep it to be installed back in the Follow-on procedures.

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

**SUBTASK 020-002-A**

**CAUTION:** • DO NOT TWIST THE HYDRAULIC HOSE WHEN YOU TORQUE THE CONNECTORS. THIS CAN CAUSE DAMAGE TO THE HOSE AND MAKE IT UNSERVICEABLE.

• USE TWO WRENCHES WHEN YOU REMOVE OR INSTALL THE HYDRAULIC HOSE. USE ONE WRENCH TO HOLD THE CONNECTOR AND OTHER WRENCH TO LOOSEN OR TIGHTEN THE HYDRAULIC-HOSE COUPLING NUT. IF YOU DO NOT OBEY THIS PRECAUTION, DAMAGE TO THE HYDRAULIC HOSE CAN OCCUR.

• DO NOT LET HYDRAULIC OIL SPILL ON THE BRAKE ASSEMBLY.

- (1) Disconnect the hydraulic hoses (3) and (4) or (6) and (7), as applicable to the aircraft configuration. For this, loosen the quick-disconnect couplings or the normal (threaded) couplings, as applicable. Tag the hydraulic hoses to prevent inversion during their installation.

NOTE: On aircraft with quick-disconnect coupling hoses installed, keep the adapter of the shuttle valve installed to the valve.

- (2) Remove the locking pin (1).



## AIRCRAFT MAINTENANCE MANUAL

**CAUTION:** BE CAREFUL WHILE YOU REMOVE THE BRAKE ASSEMBLY. IF THE BRAKE ASSEMBLY DROPS OR RUBS ON THE LANDING-GEAR WHEEL AXLE, DAMAGE TO THE AXLE CHROME-PLATING AND THE BRAKE AXLE BORE CAN OCCUR.

(3) Remove the brake assembly (5).

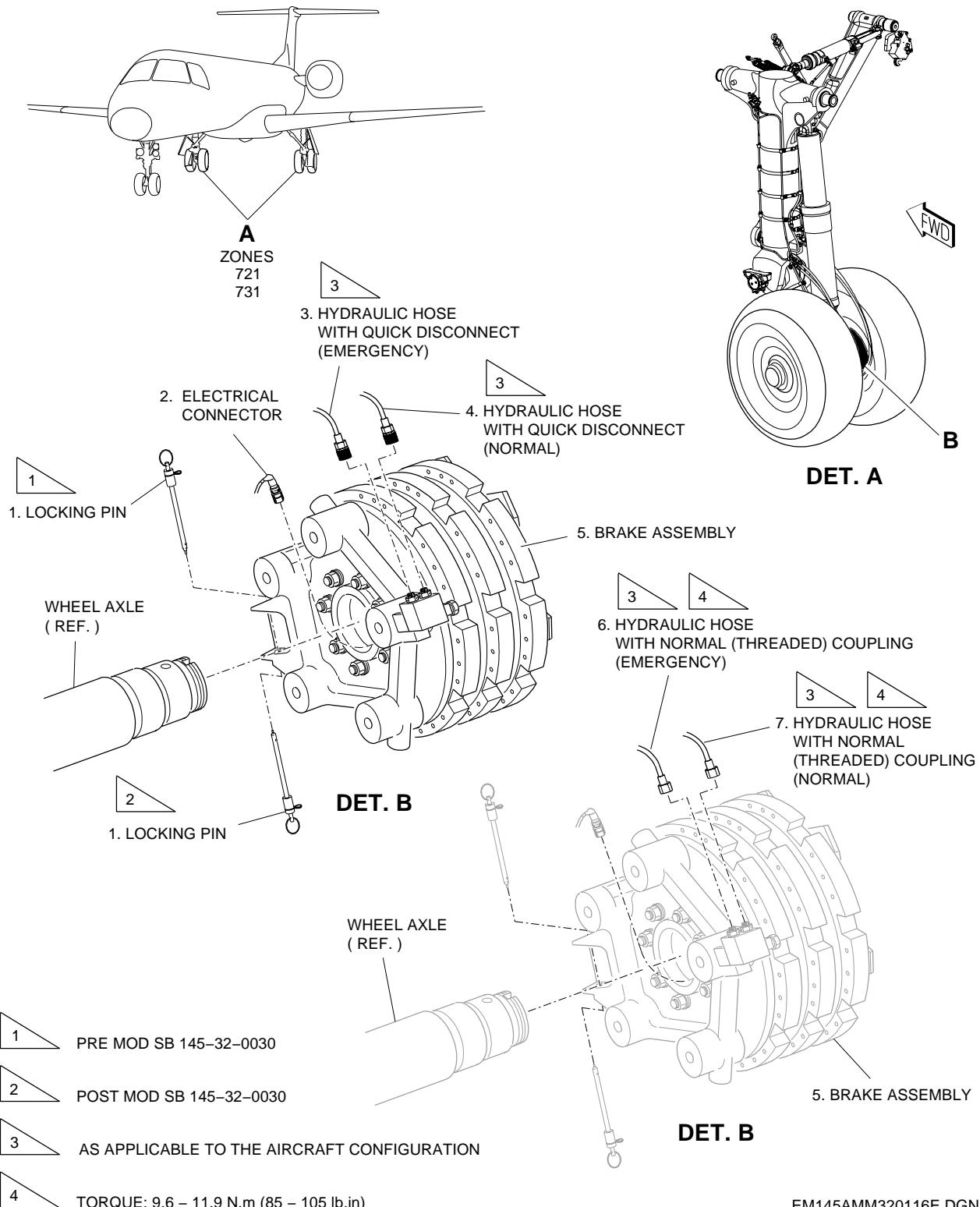
(a) If necessary, do a general vision inspection on the MLG wheel axle. Refer to [AMM TASK 32-10-08-200-801-A/600](#).

**NOTE:** This is an Embraer Optional Task. Refer to SMRD.

**EFFECTIVITY: ALL**

Brake Assembly of the Main Landing Gear - Removal/Installation

Figure 401

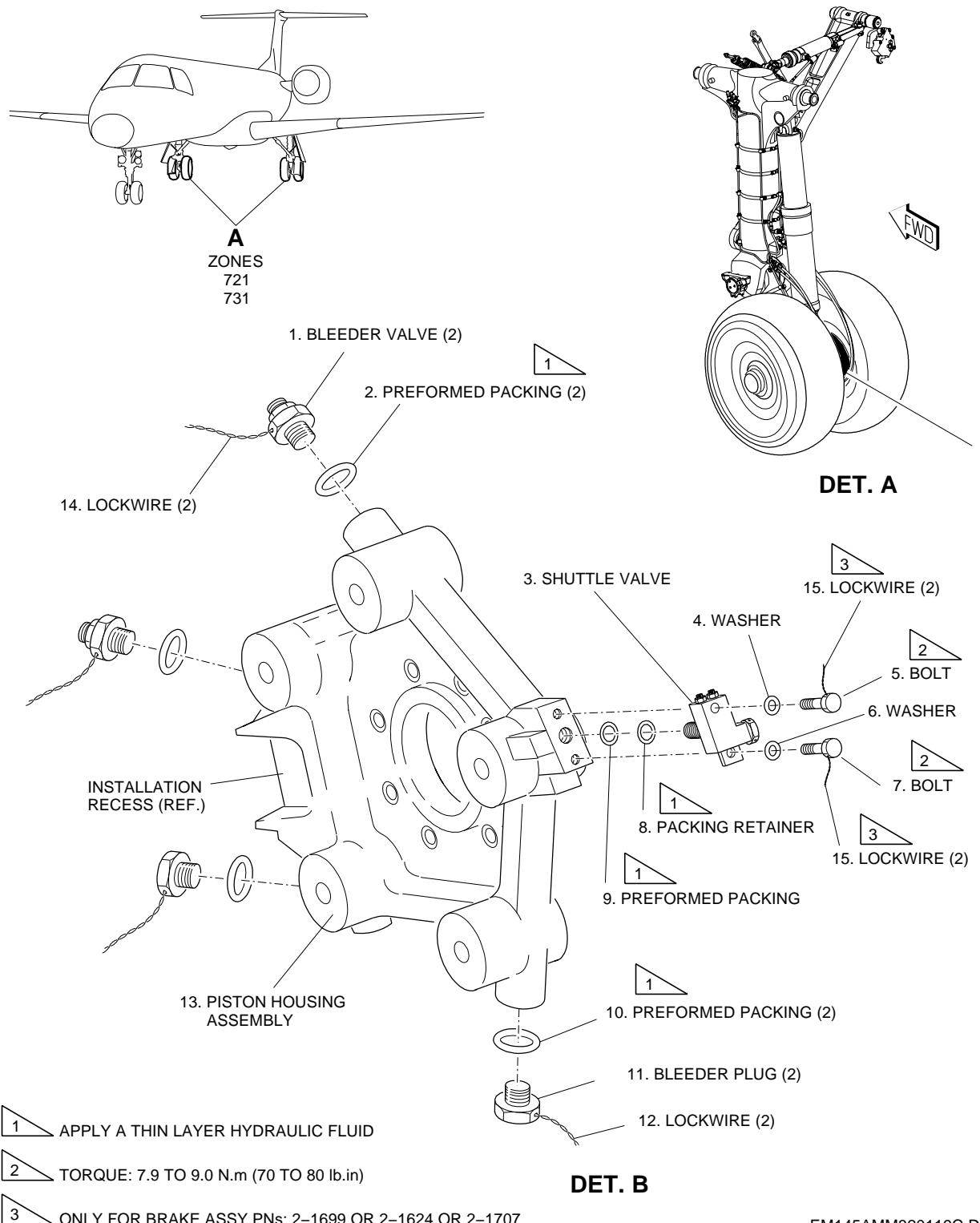


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**EFFECTIVITY: FOR AIRCRAFT WITH BRAKE ASSEMBLY THAT HAVE TWO BLEEDER VALVES**

Brake Assembly of the Main Landing Gear - Removal/Installation

Figure 402

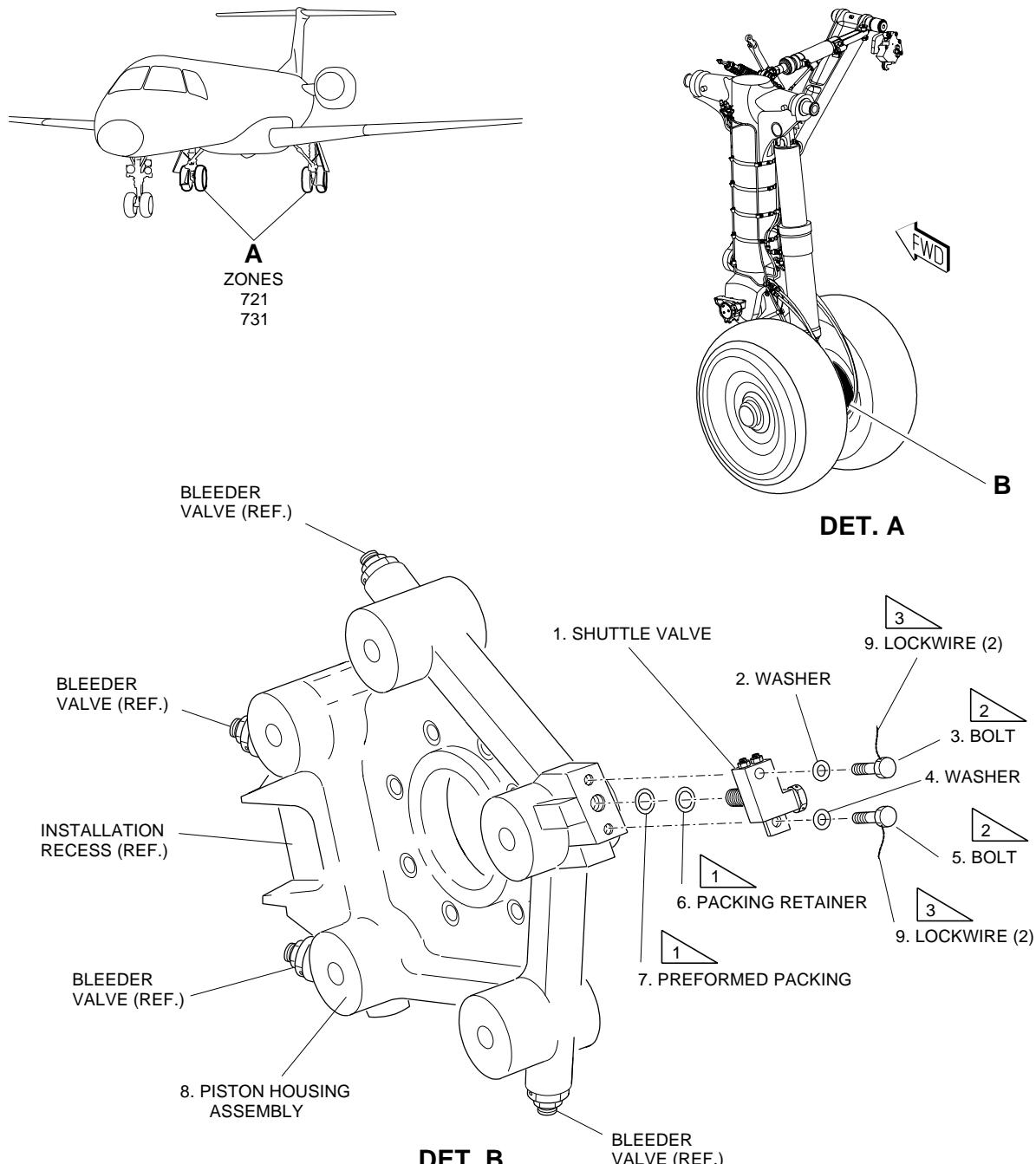


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**EFFECTIVITY: FOR AIRCRAFT WITH BRAKE ASSEMBLY THAT HAVE FOUR BLEEDER VALVES**

Brake Assembly of the Main Landing Gear - Removal/Installation

Figure 403



1. APPLY A THIN LAYER HYDRAULIC FLUID

2. TORQUE: 7.9 TO 9.0 N.m (70 TO 80 lb.in)

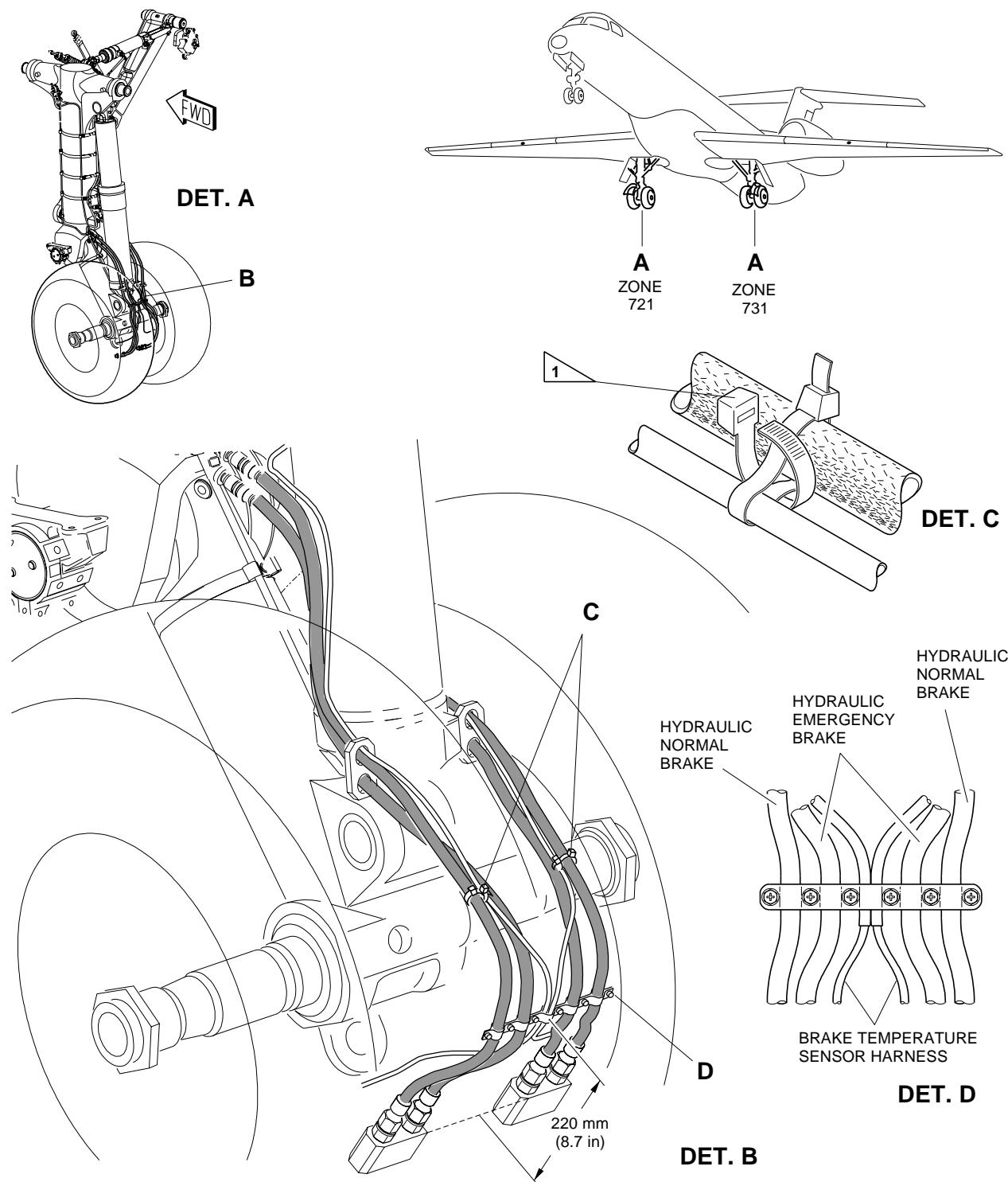
3. ONLY FOR BRAKE ASSY PN: 2-1699 OR 2-1624 OR 2-1707

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**EFFECTIVITY: ALL**

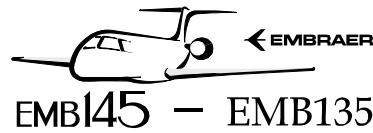
Brake Assembly of the Main Landing Gear - Removal/Installation

Figure 404



**1** EMBRAER SUGGESTS THE USE OF A SECOND TIE-DOWN STRAP AS A SPACER BETWEEN THE HYDRAULIC HOSE AND THE TEMPERATURE SENSOR HARNESS.

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MAINTENANCE MANUAL

TASK 32-49-03-400-801-A

EFFECTIVITY: ALL

3. BRAKE ASSEMBLY OF THE MAIN LANDING GEAR - INSTALLATION

A. General

(1) This procedure gives the instructions to install the brake assembly of the main landing gear.

B. References

REFERENCE	DESIGNATION
AMM TASK 07-10-00-500-804-A/200	-
AMM TASK 32-10-08-200-801-A/600	MLG WHEEL AXLE - INSPECTION
AMM TASK 32-40-00-800-801-A/200	NORMAL BRAKE AND EMERGENCY PARKING BRAKE SYSTEMS - BLEEDING
AMM TASK 32-47-01-400-801-A/400	TEMPERATURE SENSORS - INSTALLATION
AMM TASK 32-49-02-400-801-A/400	WHEEL ASSEMBLY OF THE MAIN LANDING GEAR - INSTALLATION
AMM TASK 32-49-07-700-801-A/500	BRAKE SHUTTLE VALVE - OPERATIONAL CHECK
BF Goodrich CMM 32-49-03	-
ELEB CMM 32-10-01	-

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Rubber Gloves, Phosphate Ester-Base, Fluid-Resistant	Protection for the hands	1
Commercially available	Rubber Goggles, Phosphate Ester-Base, Fluid-Resistant	Protection for the eyes	1

F. Consumable Materials

SPECIFICATION (BRAND)	DESCRIPTION	QTY
68-269	Preformed packing	2 (If necessary)
68-1330	Preformed packing	1 (If necessary)
56-627	Packing retainer	1 (If necessary)



EMB145 - EMB135

AIRCRAFT  
MAINTENANCE MANUAL

(Continued)

SPECIFICATION (BRAND)	DESCRIPTION	QTY
MS20995C32	Lockwire	AR (if neces- sary)
MIL-L-87177	Lektro-Tech Super Corr-B-12350	As nec- essary

## G. Expandable Parts

Not Applicable

## H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	RH and LH Main Landing Gear
1	Helps the other technician	RH and LH Main Landing Gear

## I. Preparation

## SUBTASK 841-003-A

- (1) For aircraft with brake assembly that have two bleeder valves, do as follows (Refer to Figure 402):

- (a) For installation of the brake assembly to the inner or the outer wheel, make sure that:

- 1 The bleeder valves (1) are in the top of the piston housing assembly (13).
- 2 The inlet ports of the shuttle valve (3) point up, to receive the hydraulic hoses.

- (b) If necessary, change the assemblage of the bleeder valves and the shuttle valve, as follows:

- 1 Remove the lockwires (12), (14) and (15) if applicable.
- 2 Remove the bleeder valves (1) and preformed packings (2). Discard the preformed packings (2).
- 3 Remove the bleeder plugs (11) and preformed packings (10). Discard the preformed packings (10).
- 4 Install new preformed packings (2) and bleeder valves (1) in the upper port of the piston housing assembly (13).

NOTE: Before the installation of the preformed packings (2), apply a thin layer of hydraulic fluid to them.

- 5 Install new preformed packings (10) and bleeder plugs (11) in the lower port of the piston housing assembly (13).

NOTE: Before the installation of the preformed packings (10), apply a thin layer of hydraulic fluid to them.

- 6 Safety the bleeder valves (1) and bleeder plugs (11) with lockwire.
- 7 Remove the bolts (5) and (7), and the washers (4) and (6).
- 8 Remove the shuttle valve (3), packing retainer (8), and preformed packing (9). Discard the packing retainer (8) and preformed packing (9).
- 9 Install a new packing retainer (8) and a new preformed packing (9) in the shuttle valve (3).

**NOTE:** Before the installation of the packing retainer (8) and the preformed packing (9), apply a thin layer of hydraulic fluid to them.

- 10 Put the shuttle valve (3) in the piston housing assembly (13), with the inlet ports pointed up.

**NOTE:** Make sure that the quick-disconnect couplings are installed and safetied on the shuttle valve as written in BF Goodrich CMM 32-49-03.

- 11 Install the bolts (5) and (7), and the washers (4) and (6).

- 12 Apply a torque of 7.9 to 9.0 N.m (70 to 80 lb.in) to the bolts (5) and (7).

- 13 Safety the bolts (5) and (7) together with lockwire, if applicable.

- (2) For aircraft with brake assembly that have four bleeder valves, do as follows (Refer to Figure 403):

- (a) For installation of the brake assembly to the inner or the outer wheel, make sure that:

- 1 The inlet ports of the shuttle valve (1) point up, to receive the hydraulic hoses.

- (b) If necessary, change the assemblage of the shuttle valve, as follows:

- 1 Remove the lockwires (9) if applicable.

- 2 Remove the bolts (3) and (5), and the washers (2) and (4).

- 3 Remove the shuttle valve (1), packing retainer (6), and preformed packing (7). Discard the packing retainer (6) and preformed packing (7).

- 4 Install a new packing retainer (6) and a new preformed packing (7) in the shuttle valve (1).

**NOTE:** Before the installation of the packing retainer (6) and the preformed packing (7), apply a thin layer of hydraulic fluid to them.

- 5 Put the shuttle valve (1) in the piston housing assembly (8), with the inlet ports pointed up.

**NOTE:** Make sure that the quick-disconnect couplings are installed and safetied on the shuttle valve as written in BF Goodrich CMM 32-49-03.

- 6 Install the bolts (3) and (5), and the washers (2) and (4).
  - 7 Apply a torque of 7.9 to 9.0 N.m (70 to 80 lb.in) to the bolts (3) and (4).
  - 8 Safety the bolts (3) and (5) together with lockwire, if applicable.
- (3) Make sure that the handle of the emergency/parking brake is not operated.
  - (4) Make sure that the two brake plates of the brake stop trailing arm are installed correctly.
    - (a) If one brake plate is missing, measure the thickness of the other one and refer to repair section of the ELEB CMM 32-10-01 (repair for corrosion removal from brake stop of the trailing arm) to identify the correct brake plate part number.
    - (b) If two brake plates are missing, refer to repair section of the ELEB CMM 32-10-01 (repair for corrosion removal from brake stop of the trailing arm) to identify the correct brake plate part number.

J. Installation (Figure 401) (Figure 404)

**SUBTASK 420-002-A**

**CAUTION: BE CAREFUL WHILE YOU INSTALL THE BRAKE ASSEMBLY. IF THE BRAKE ASSEMBLY DROPS OR RUBS ON THE LANDING GEAR WHEEL AXLE, DAMAGE TO THE AXLE CHROME-PLATING AND THE BRAKE AXLE BORE CAN OCCUR.**

- (1) Put the brake assembly (5) on the wheel axle. Refer to (Figure 401).
  - (a) If necessary, do a general vision inspection on the MLG wheel axle. Refer to ([AMM TASK 32-10-08-200-801-A/600](#))

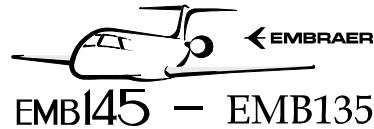
**NOTE:** This is an Embraer Optional Task. Refer to SMRD.
- (2) Install the locking pin (1). Refer to (Figure 401) for the installation position (lower or upper).
- (3) For the lower position, safety the locking pin with lockwire.

**CAUTION:** • DO NOT TWIST THE HYDRAULIC HOSE WHEN YOU TORQUE THE CONNECTORS. THIS CAN CAUSE DAMAGE TO THE HOSE AND MAKE IT UNSERVICEABLE.

- USE TWO WRENCHES WHEN YOU REMOVE OR INSTALL THE HYDRAULIC HOSE. USE ONE WRENCH TO HOLD THE CONNECTOR AND OTHER WRENCH TO LOOSEN OR TIGHTEN THE HYDRAULIC-HOSE COUPLING NUT. IF YOU DO NOT OBEY THIS PRECAUTION, DAMAGE TO THE HYDRAULIC HOSE CAN OCCUR.
- DO NOT LET HYDRAULIC OIL SPILL ON THE BRAKE ASSEMBLY.

- (4) Connect the hydraulic hoses (3) and (4) or (6) and (7), as applicable to the aircraft configuration, as follows (Figure 401):

**NOTE:** • Obey the correct positions of the hydraulic hoses and remove the tags.



- For hydraulic hoses attachment details, refer to (Figure 404).
- (a) For aircraft with MLG that have hydraulic hoses with quick-disconnect couplings, do as follows:
- 1 Put the hydraulic hoses (3) and (4) to the shuttle valve. Refer to (Figure 401), DET B, as applicable to the aircraft configuration.
  - 2 Hold on the quick disconnect and manually apply torque.
- (b) For aircraft with MLG that have hydraulic hoses with normal (threaded) couplings, do as follows:
- 1 Connect the hydraulic hoses (6) and (7) to the shuttle valve.
  - 2 Use a torque wrench to torque the hydraulic hoses (3) and (4) to 9.6 - 11.9 N.m (85 - 105 lb.in). Refer to (Figure 401), DET B, as applicable to the aircraft configuration.

K. Follow-on

SUBTASK 842-002-A

- (1) Install the temperature sensor back ([AMM TASK 32-47-01-400-801-A/400](#)).
- (2) Install the wheel assembly back ([AMM TASK 32-49-02-400-801-A/400](#)).
- (3) On the circuit breaker panel, close the ELEC PUMP 1 and ELEC PUMP 2 circuit breakers and remove the DO-NOT-CLOSE tag from it.
- (4) Bleed the air from the brake hydraulic line ([AMM TASK 32-40-00-800-801-A/200](#)).  
NOTE: Only bleed the hydraulic line of the brake assembly that was installed.
- (5) Examine the hydraulic fittings of the brake assembly for leaks.
- (6) Do the operational check of the brake shuttle valve ([AMM TASK 32-49-07-700-801-A/500](#)).
- (7) Lower the aircraft and remove the jack ([AMM TASK 07-10-00-500-804-A/200](#)).



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MAINTENANCE MANUAL

TASK 32-49-03-000-802-A

EFFECTIVITY: ALL

4. BRAKE ASSEMBLY SHUTTLE VALVE - REMOVAL

A. General

- (1) This procedure gives the instructions to remove the brake assembly shuttle valve from the brake assembly.

B. References

REFERENCE	DESIGNATION
AMM TASK 29-10-00-860-802-A/200	HYDRAULIC SYSTEM - PRESSURIZATION WITH EMDP

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Rubber Gloves, Phosphate Ester-Base, Fluid-Resistant	Protection for the hands	1
Commercially available	Rubber Goggles, Phosphate Ester-Base, Fluid-Resistant	Protection for the eyes	1

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

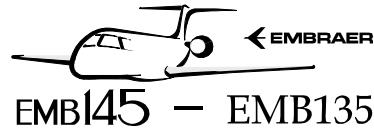
H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	RH and LH Main Landing Gears

I. Preparation

**SUBTASK 841-004-A**

- (1) On the circuit breaker panel, open the ELEC PUMP 1 and ELEC PUMP 2 circuit breakers and attach a DO-NOT-CLOSE tag to them.
- (2) Make sure that the pressure in hydraulic systems No. 1 and No. 2, in the Landing Gear/Main Door hydraulic accumulator, and in the Emergency/Parking Brake hydraulic accumulator, is fully released ([AMM TASK 29-10-00-860-802-A/200](#)).
- (3) Control the ailerons up and down, or the rudder left and right, until the EICAS shows zero-PSI pressure in the hydraulic system.



- (4) Make sure that the handle of the emergency/parking brake is not operated.

J. Removal ([Figure 405](#))

SUBTASK 020-003-A

**CAUTION:** • USE TWO WRENCHES WHEN YOU REMOVE OR INSTALL THE HYDRAULIC HOSE. USE ONE WRENCH TO HOLD THE CONNECTOR AND OTHER WRENCH TO LOOSEN OR TIGHTEN THE HYDRAULIC-HOSE COUPLING NUT. IF YOU DO NOT OBEY THIS PRECAUTION, DAMAGE TO THE HYDRAULIC HOSE CAN OCCUR.  
• DO NOT LET HYDRAULIC OIL SPILL ON THE BRAKE ASSEMBLY.

- (1) Disconnect the hydraulic hoses (1) and (2) or (4) and (5), as applicable to the aircraft configuration. For this, loosen the quick-disconnect couplings or the normal (threaded) couplings, as applicable. Tag the hydraulic hoses to prevent inversion during their installation.

K. Removal

SUBTASK 020-004-A

- (1) Remove the brake assembly shuttle valve (1), as follows (Refer to [Figure 406](#)):

**WARNING: USE EYE PROTECTION WHEN YOU CUT THE LOCKWIRE. WHEN YOU DO IT, BREAK OFF PIECES CAN HIT YOUR EYES AND CAUSE INJURY.**

- (a) Cut the lockwire (12) that lock the quick-disconnect couplings (2) to the shuttle valve (1).
- (b) Remove the quick-disconnect couplings (2) from the shuttle valve (1).
- (c) Remove the O-rings (3) from the quick-disconnect couplings (2) and discard them.

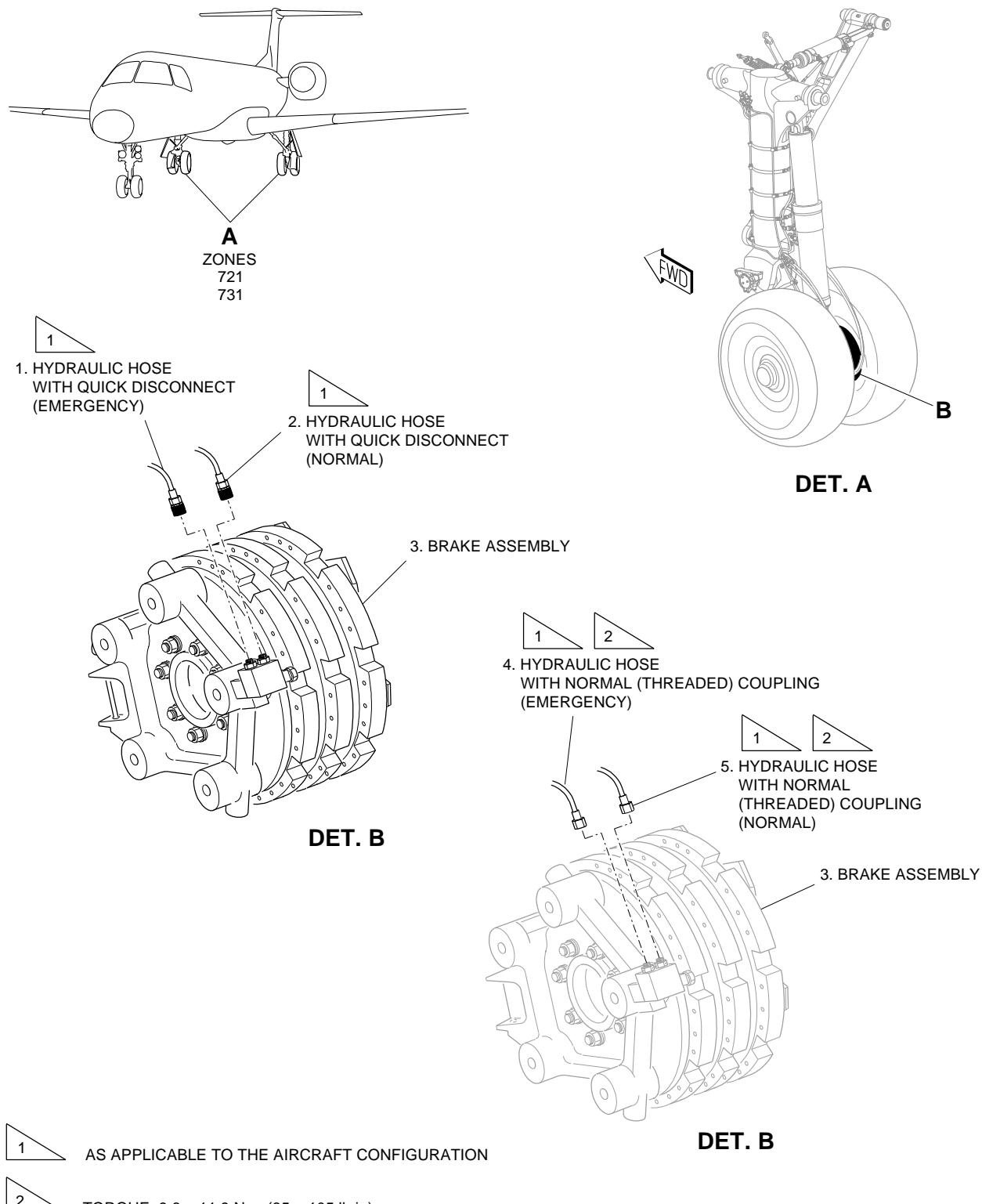
**WARNING: USE EYE PROTECTION WHEN YOU CUT THE LOCKWIRE. WHEN YOU DO IT, BREAK OFF PIECES THAT CAN HIT YOUR EYES AND CAUSE INJURY.**

- (d) Cut the lockwires (5) of the bolts (6) and (8). If applicable to the aircraft configuration.
- (e) Remove the bolts (6) and (8), and the washers (4) and (7) from the shuttle valve (1).
- (f) Remove the shuttle valve (1), from the piston housing assembly (11).
- (g) Remove the preformed packing (10) from the shuttle valve (1) and discard it.
- (h) Remove the packing retainer (9) and discard it, only if it is damaged.

**EFFECTIVITY: ALL**

Brake Assembly Shuttle Valve - Removal/Installation

Figure 405

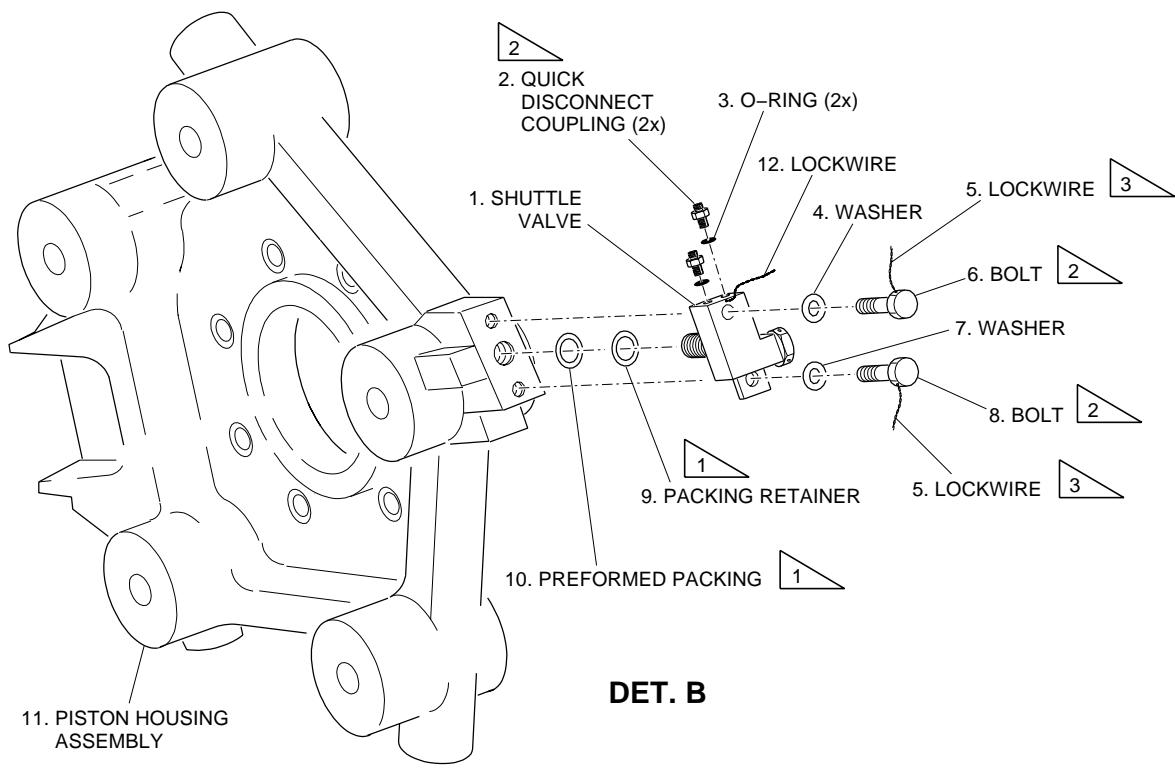
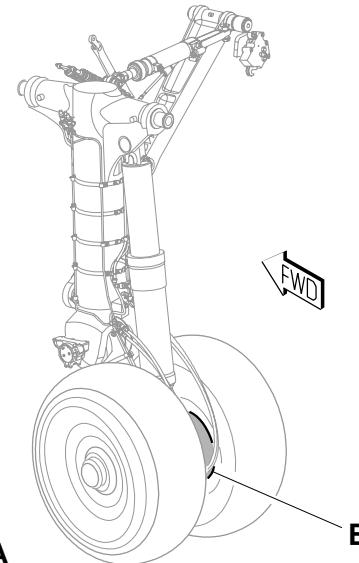
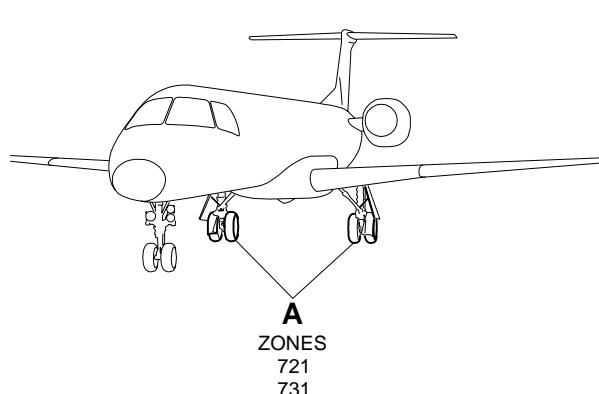


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**EFFECTIVITY: ALL**

Brake Assembly Shuttle Valve - Removal/Installation

Figure 406



**1** APPLY A THIN LAYER OF HYDRAULIC FLUID.

**2** TORQUE: 7.9 TO 9.0 N.m (70 TO 80 lb.in)

**3** ONLY FOR BRAKE ASSY PN: 2-1699 OR 2-1624 OR 2-1707.

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EMB145 - EMB135

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MAINTENANCE MANUAL

TASK 32-49-03-400-802-A

EFFECTIVITY: ALL

5. BRAKE ASSEMBLY SHUTTLE VALVE - INSTALLATION

## A. General

- (1) This procedure gives the instructions to install the brake assembly shuttle valve in the brake assembly.

## B. References

REFERENCE	DESIGNATION
AMM TASK 32-40-00-800-801-A/200	NORMAL BRAKE AND EMERGENCY PARKING BRAKE SYSTEMS - BLEEDING
AMM TASK 32-49-07-700-801-A/500	BRAKE SHUTTLE VALVE - OPERATIONAL CHECK
Lockwire	-
Packing retainer	-
Preformed packing	-

## C. Zones and Accesses

Not Applicable

## D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Torque Wrench (Range: 30 to 150 lb.in)	To torque the bolts/couplings of the shuttle valve	

## E. Auxiliary Items

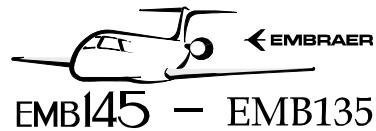
ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Rubber Gloves, Phosphate Ester-Base, Fluid-Resistant	Protection for the hands	1
Commercially available	Rubber Goggles, Phosphate Ester-Base, Fluid-Resistant	Protection for the eyes	1

## F. Consumable Materials

SPECIFICATION (BRAND)	DESCRIPTION	QTY
TT-I-735	Isopropyl alcohol	AR

## G. Expendable Parts

ITEM	IPC REFERENCE (VENDOR REFERENCE)	QTY
68-404	Preformed packing	2
68-1330	Preformed packing	1



# AIRCRAFT MAINTENANCE MANUAL

(Continued)

ITEM	IPC REFERENCE (VENDOR REFERENCE)	QTY
56-627	Packing retainer	1 (If necessary)
MS20995C32	Lockwire	AR

## H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	RH and LH Main Landing Gears

## I. Preparation (Figure 402)

### SUBTASK 841-005-A

- (1) Make sure that the aircraft is in the same configuration as it was at the end of the removal task.

## J. Installation (Figure 405) (Figure 406)

### SUBTASK 420-003-A

- (1) Install the brake assembly shuttle valve (1), as follows (Refer to (Figure 406):
  - (a) Apply a thin layer of hydraulic fluid to the new preformed packing (10) and the packing retainer (9).
  - (b) Install a packing retainer (9) and a new preformed packing (10) in the shuttle valve (1).
  - (c) Install the washers (4) and (7) on the bolts (6) and (8).
  - (d) Clean the shuttle valve (1) and its installation position at the piston housing with isopropyl alcohol.
  - (e) Attach the shuttle valve (1) on the piston housing assembly (11).

NOTE: Make sure that the shuttle valve inlet ports is in a up position toward the hydraulic bleeder valve (ref).

- (f) Install the bolts (6) and (8) with washers (4) and (7) through the shuttle valve (1) in the piston housing assembly (11).
- (g) Apply a torque of 7.9 to 9.0 N.m (70 to 80 lb.in) to the bolts (6) and (8).
- (h) Safety the bolts (6) and (8) with lockwire (5), if applicable to the aircraft configuration.
- (i) Apply a thin layer of hydraulic fluid to the new O-rings (3).
- (j) Install the new O-rings (3) on the quick-disconnect couplings (2).
- (k) Install the quick-disconnect couplings (2) in the shuttle valve (1) inlet port.

- (l) Apply a torque of 7.9 to 9.0 N.m (70 to 80 lb.in) to the quick-disconnect couplings (2).
- (m) Safety the quick-disconnect couplings (2) in the shuttle valve (1) with lockwire (12).

**K. Installation**

**SUBTASK 420-004-A**

**CAUTION:** • USE TWO WRENCHES WHEN YOU REMOVE OR INSTALL THE HYDRAULIC HOSE. USE ONE WRENCH TO HOLD THE CONNECTOR AND OTHER WRENCH TO LOOSEN OR TIGHTEN THE HYDRAULIC-HOSE COUPLING NUT. IF YOU DO NOT OBEY THIS PRECAUTION, DAMAGE TO THE HYDRAULIC HOSE CAN OCCUR.

- DO NOT LET HYDRAULIC OIL SPILL ON THE BRAKE ASSEMBLY.

- (1) Connect the hydraulic hoses (1) and (2) or (4) and (5), as applicable to the aircraft configuration. Obey the correct positions of the hydraulic hoses and remove the tags. Refer to (Figure 405).

**CAUTION:** • DO NOT TWIST THE HYDRAULIC HOSE WHEN YOU TORQUE THE CONNECTORS. THIS CAN CAUSE DAMAGE TO THE HOSE AND MAKE IT UNSERVICEABLE.

- USE TWO WRENCHES WHEN YOU REMOVE OR INSTALL THE HYDRAULIC HOSE. USE ONE WRENCH TO HOLD THE CONNECTOR AND OTHER WRENCH TO LOOSEN OR TIGHTEN THE HYDRAULIC-HOSE COUPLING NUT. IF YOU DO NOT OBEY THIS PRECAUTION, DAMAGE TO THE HYDRAULIC HOSE CAN OCCUR.
- DO NOT LET HYDRAULIC OIL SPILL ON THE BRAKE ASSEMBLY.

- (2) Connect the hydraulic hoses (1) and (2) or (4) and (5), as applicable to the aircraft configuration, as follows (Figure 406):

**NOTE:** Obey the correct positions of the hydraulic hoses and remove the tags.

- (a) For aircraft with MLG that have hydraulic hoses with quick-disconnect couplings, do as follows:
  - 1 Put the hydraulic hoses (1) and (2) to the shuttle valve. Refer to (Figure 406), DET B, as applicable to the aircraft configuration.
  - 2 Hold on the quick disconnect and manually apply torque.
- (b) For aircraft with MLG that have hydraulic hoses with normal (threaded) couplings, do as follows:
  - 1 Connect the hydraulic hoses (4) and (5) to the shuttle valve.
  - 2 Use a torque wrench to torque the hydraulic hoses (4) and (5) to 9.6 - 11.9 N.m (85 - 105 lb.in). Refer to (Figure 405), DET B, as applicable to the aircraft configuration.

L. Follow-on

**SUBTASK 842-003-A**

- (1) On the circuit breakers panel, close the ELEC PUMP 1 and ELEC PUMP 2 circuit breakers and remove the DO-NOT-CLOSE tag from it.

- (2) Bleed the air from the brake hydraulic line ([AMM TASK 32-40-00-800-801-A/200](#)).

**NOTE:** It is only to bleed the hydraulic lines (emergency and normal) of the brake assembly that had the shuttle valve replaced.

- (3) On the hydraulic panel, on the overhead panel, set the ELEC PUMP switch of system 2 to ON and apply parking brake. Keep the ELEC PUMP 'ON' for at least 30 seconds.

- (4) Set the ELEC PUMP switch of system 2 to OFF.

- (5) After five minutes (minimum), release the parking brake.

- (6) Do an inspection for hydraulic fluid leakage. No leakage that can be measured is permitted (less than one drop). If any leakage is detected, disassembly the shuttle valve (1), inspect the o'rings (9) and (10) and replace them, if they are damaged. Refer to (Figure 406).

**NOTE:** To prevent hydraulic fluid transference from system 1 to system 2 or vice versa, first apply brakes with the pedals and then pull or release the emergency/parking brake handle.

- (7) Do the operational check of the brake shuttle valve ([AMM TASK 32-49-07-700-801-A/500](#)).

