



EMB145 - EMB135

AIRCRAFT
MAINTENANCE MANUAL

GROUND SPOILER ACTUATOR - REMOVAL/INSTALLATION

EFFECTIVITY: ALL

1. General

- A. This section gives the procedures to remove and install the Ground Spoiler Actuator.
- 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
27-62-01-000-801-A	GROUND SPOILER ACTUATOR - RE- MOVAL	ALL
27-62-01-400-801-A	GROUND SPOILER ACTUATOR - INSTAL- LATION	ALL



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TASK 27-62-01-000-801-A

EFFECTIVITY: ALL

2. GROUND SPOILER ACTUATOR - REMOVAL

A. General

(1) This task gives the procedures to remove the Ground Spoiler Actuator.

B. References

REFERENCE	DESIGNATION
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
AMM TASK 29-10-00-860-801-A/200	HYDRAULIC SYSTEM - PRESSURIZATION WITH HTS
AMM TASK 57-56-01-000-801-A/400	INBOARD AND OUTBOARD FLAP LOWER SHROUDS - REMOVAL

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
5712		Ground Spoiler
6712		Ground Spoiler

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 pair
Commercially available	Rubber Goggles, Phosphate Ester-Base, Fluid-Resistant	Protection for the eyes	1 pair

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Ground Spoiler



I. Preparation

SUBTASK 841-002-A

WARNING: MAKE SURE THAT THERE ARE NO PERSONS OR EQUIPMENT IN THE FLAP TRAVEL AREA.

- (1) Make sure that the aircraft is safe for maintenance.
- (2) Release the pressure of the hydraulic system ([AMM TASK 29-10-00-860-801-A/200](#)).
- (3) Do not do other tasks on the Spoiler and Flap System.
- (4) Energize the aircraft with the External DC Power Supply ([AMM TASK 20-40-01-860-801-A/200](#)).
- (5) Set the flaps to the 45-degree position.
- (6) On the Circuit Breaker Panel, open the FLAP 1, FLAP 2, SPEED BRAKE, GND SPLR INBD/OUTBD, ELEC PUMP 1, and ELEC PUMP 2 circuit breakers and attach a DO-NOT-CLOSE tag to them.

CAUTION: WHEN YOU OPEN THE INBOARD-FLAP LOWER SHROUD, IF IT IS NECESSARY TO MOVE THE FLAPS, DO AS FOLLOWS (IT WILL PREVENT DAMAGE TO THE INBOARD-FLAP LOWER SHROUD AND INBOARD-FLAP LEADING EDGE):

- RELEASE THE SPRINGS FROM THE ROOT AND TIP SUPPORTS OF THE INBOARD-FLAP LOWER SHROUD.
- REMOVE THE TIP AND ROOT SUPPORTS ONLY FROM THE INBOARD-FLAP LOWER SHROUD ([AMM TASK 57-56-01-000-801-A/400](#)).

- (7) Open the lower shroud of the inboard flap ([AMM TASK 57-56-01-000-801-A/400](#)).

J. Removal (Figure 401)

SUBTASK 020-002-A

WARNING: • **MAKE SURE THAT THE HYDRAULIC SYSTEM IS NOT PRESSURIZED** ([AMM TASK 29-10-00-860-801-A/200](#)).

- **THE HYDRAULIC SYSTEM CONTAINS PHOSPHATE-ESTER HYDRAULIC FLUID. THE FLUID CAN CAUSE IRRITATION IN YOUR SKIN OR INJURY TO YOUR EYES. USE THE APPLICABLE RUBBER GOGGLES AND GLOVES. IF THE FLUID TOUCHES YOU, FLUSH YOUR SKIN WITH WATER. IF IT GETS IN YOUR EYES, FLUSH THEM WITH WATER AND GET MEDICAL HELP.**

CAUTION: WHEN YOU REMOVE THE SPOILER ACTUATOR, LIFT THE SPOILER PANEL BEFORE YOU MOVE THE FLAP TO PREVENT DAMAGE TO THE SPOILER PANEL AND INBOARD FLAP LEADING EDGE.

- (1) Remove the bolt (3), washer (2), bushing (14), nut (15), and cotterpin (12) to remove the actuator from the Ground Spoiler panel (1). Discard the cotterpin (12).



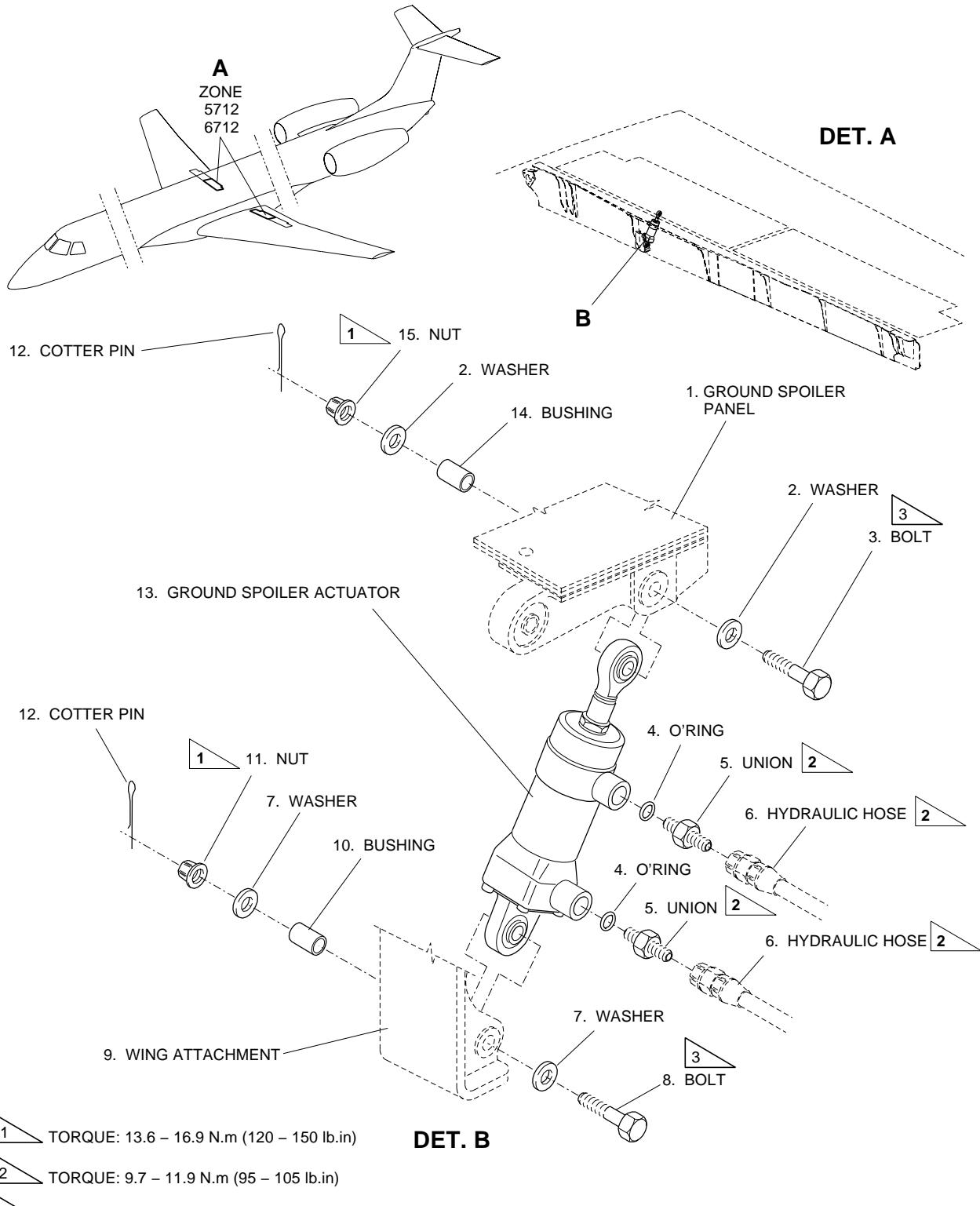
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- (2) Remove the bolt (8), washer (7), bushing (10), nut (11), and cotterpin (12) to remove the actuator from the wing attachment (9). Discard the cotterpin (12).
- (3) Remove the hydraulic hoses (6) from the union (5) installed at the actuator (13). Put the plugs at the end of the hoses (6) and at the union (5).
- (4) Remove the union (5) from the actuator (13). Put the plugs at the actuator.
- (5) Remove and discard the o'ring (4) from the union (5).
- (6) Remove the Ground Spoiler actuator (13).

EFFECTIVITY: ALL

Ground Spoiler Actuator - Removal/Installation
Figure 401



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TASK 27-62-01-400-801-A

EFFECTIVITY: ALL

3. GROUND SPOILER ACTUATOR - INSTALLATION

A. General

- (1) This task gives the procedures to install the Ground Spoiler Actuator.
- (2) The approved Corrosion-Inhibiting Compound for the ground spoiler actuator is:
 - Compound COR-BAN 27L

B. References

REFERENCE	DESIGNATION
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
AMM TASK 27-63-01-700-801-A/500	SPOILER SYSTEM - OPERATIONAL CHECK
AMM TASK 27-63-01-700-802-A/500	SPOILER SURFACE - ADJUSTMENT
AMM TASK 29-10-00-860-801-A/200	HYDRAULIC SYSTEM - PRESSURIZATION WITH HTS
AMM TASK 29-10-00-860-803-A/200	HYDRAULIC SYSTEM - BLEED OF AIR
AMM TASK 57-56-01-400-801-A/400	INBOARD AND OUTBOARD FLAP LOWER SHROUDS - INSTALLATION
IPC 27-62-03	SPEED BRAKE ACTUATOR

C. Zones and Accesses

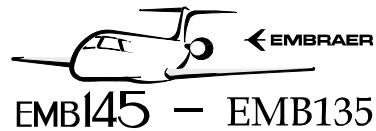
ZONE	PANEL/DOOR	LOCATION
5712		Ground Spoiler
6712		Ground Spoiler

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Torque wrench (see Figure 401)	To apply the torques	

E. Auxiliary Items

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



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F. Consumable Materials

SPECIFICATION (BRAND)	DESCRIPTION	QTY
MEP 09-075	Corrosion-Inhibiting Compound (COR-BAN 27L)	AR

G. Expendable Parts

ITEM	IPC REFERENCE (VENDOR REFERENCE)	QTY
O'ring	IPC 27-62-03	2
Cotterpin	IPC 27-62-03	2

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Ground Spoiler

I. Preparation

SUBTASK 841-003-A

- (1) Drain the storage fluid from the Ground Spoiler actuator. Keep the caps installed.

J. Installation (Figure 401)

SUBTASK 420-002-A

WARNING: • **MAKE SURE THAT THE HYDRAULIC SYSTEM IS NOT PRESSURIZED (AMM TASK 29-10-00-860-801-A/200).**

• **THE HYDRAULIC SYSTEM CONTAINS PHOSPHATE-ESTER HYDRAULIC FLUID. THE FLUID CAN CAUSE IRRITATION IN YOUR SKIN OR INJURY TO YOUR EYES. USE THE APPLICABLE RUBBER GOGGLES AND GLOVES. IF THE FLUID TOUCHES YOU, FLUSH YOUR SKIN WITH WATER. IF IT GETS IN YOUR EYES, FLUSH THEM WITH WATER AND GET MEDICAL HELP.**

NOTE: The installation area must be clean to avoid system contamination.

WARNING: BE CAREFUL WHEN YOU USE THE COR-BAN 27L CORROSION-INHIBITING COMPOUND. PUT ON SAFETY GOGGLES AND PROTECTIVE CLOTHING. DO NOT BREATHE THE GAS OR DUST. DO THE WORK IN AN AREA WHICH HAS A GOOD FLOW OF AIR. COR-BAN 27L IS POISONOUS AND HIGHLY FLAMMABLE.

- (1) Apply corrosion-inhibiting compound COR-BAN 27L to the bolt (3), washer (2), bushing (14), nut (15), and cotterpin (12) to install the actuator on the Ground Spoiler panel (1). Apply the torques as given in (Figure 401).

NOTE: • The Ground Spoiler actuator must be installed retracted and locked.



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- The inboard flap surface and the spoiler panel can touch each other, but not be under tension.

WARNING: BE CAREFUL WHEN YOU USE THE COR-BAN 27L CORROSION-INHIBITING COMPOUND. PUT ON SAFETY GOGGLES AND PROTECTIVE CLOTHING. DO NOT BREATHE THE GAS OR DUST. DO THE WORK IN AN AREA WHICH HAS A GOOD FLOW OF AIR. COR-BAN 27L IS POISONOUS AND HIGHLY FLAMMABLE.

- (2) Apply corrosion-inhibiting compound COR-BAN 27L to the bolt (8), washer (7), bushing (10), nut (11), and cotterpin (12) to install the actuator on the wing attachment (9). Apply the torques as given in (Figure 401).
- (3) Install the o'ring (4) on the union (5).
- (4) **NOTE:** Use the hydraulic fluid of the spoiler system to lubricate fittings and retaining rings to make the installation of the hose easier.
Install the union (5) in the actuator (13). Apply the torques as given in (Figure 401).
- (5) **NOTE:** Hoses and fittings components must show no imperfections or defects.
Before the installation of the hose do a visual inspection on fitting ends, threads, retaining surfaces and protection braids for failures, scratches, broken strings or cuts.

CAUTION: If the hose is twisted when you install it or when you apply torque to it, leakages may occur. To prevent twisting of the hose, make sure that the swivel nut is manually aligned and tightened until you get a metal-to-metal contact.

- (6) **NOTE:** If the hose is new, make sure that the hose ends protection is removed only right before the start of the installation procedures.
Install the hydraulic hoses (6) in the actuator (13). Apply the torques as given in (Figure 401).
- (7) Do the adjustment/test of the spoiler surface ([AMM TASK 27-63-01-700-802-A/500](#)).

K. Follow-on

SUBTASK 842-002-A

- (1) Close the lower shroud of the inboard flap ([AMM TASK 57-56-01-400-801-A/400](#)).
NOTE: If you removed the tip and root supports from the inboard-flap lower shroud, install them now ([AMM TASK 57-56-01-400-801-A/400](#)).
- (2) On the Circuit Breaker Panel, close the FLAP 1, FLAP 2, SPEED BRAKE, GND SPLR INBD/OUTBD, ELEC PUMP 1, and ELEC PUMP 2 circuit breakers and remove the DO-NOT-CLOSE tag from them.
- (3) Set the flaps to the 0-degree position.
- (4) Bleed the air from the hydraulic system lines ([AMM TASK 29-10-00-860-803-A/200](#)).
- (5) Make sure that there are no leaks in the ground spoiler actuator.
- (6) Do the operational check of the spoiler system ([AMM TASK 27-63-01-700-801-A/500](#)).



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- (7) Deenergize the aircraft ([AMM TASK 20-40-01-860-801-A/200](#)).

