



AIRCRAFT  
MAINTENANCE MANUAL

**FLAP - MECHANICAL LINE - SERVICING**

EFFECTIVITY: ALL

1. General

- A. This section gives the procedures to lubricate these components:
- Flap Actuator Ball Nut.
  - Flap Flexible Shaft (FFS).
  - Flap Screwjack Actuator 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
27-51-00-600-801-A ♦	FLAP SCREWJACK ACTUATOR (FSAS) - LUBRICATION	ALL
27-51-00-600-802-A	FLAP FLEXIBLE SHAFT (FFSS) - LUBRICATION	ALL
27-51-00-600-803-A ♦	FLAP SCREWJACK ACTUATOR GEAR - LUBRICATION	ALL



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TASK 27-51-00-600-801-A

EFFECTIVITY: ALL

2. FLAP SCREWJACK ACTUATOR (FSAS) - LUBRICATION

A. General

- (1) This task gives the procedures to lubricate the flap-actuator ball nut that is installed in the wing trailing edge.

B. References

REFERENCE	DESIGNATION
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
AMM TASK 27-51-09-000-802-A/400	INBOARD FLAP TIP ACTUATOR (FSA 2) - REMOVAL
AMM TASK 27-51-09-400-802-A/400	INBOARD FLAP TIP ACTUATOR (FSA 2) - INSTALLATION

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Manually Operated Low-Pressure Grease Gun (Bulk Load Capacity between 150 and 200 ml)	To apply the grease	
GSE 394	Flush Style Type Nozzle	To apply the grease with the Grease Gun	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

SPECIFICATION (BRAND)	DESCRIPTION	QTY
MIL-PRF-81322	Aeroshell Grease 22CF - Commercially available	AR
MIL-PRF-81322	Aeroshell Grease 22 - Commercially available	AR
MIL-PRF-81322	Mobilgrease No 28 - Commercially available	AR
MIL-PRF-81322	Nyco GN 22 - Commercially available	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Wing trailing edge

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) Do not do other tasks on the flap system.
- (3) Energize the aircraft with the External DC Power Supply ( [AMM TASK 20-40-01-860-801-A/200](#)).
- (4) Set the flaps to the 45-degree position.
- (5) On the Circuit Breaker Panel, open the FLAP 1 and FLAP 2 circuit breakers and attach a DO-NOT-CLOSE tag to them.

J. Lubricate Flap Screwjack Actuator (FSAs) ([Figure 301](#))

SUBTASK 640-002-A

**CAUTION: HANDLE THE GREASE GUN CAREFULLY TO PREVENT DAMAGE TO THE GREASE FITTING.**

- (1) Get access to the right wing and left wing flap actuators.

**NOTE:** For outboard root actuators and inboard tip actuators, remove the protection cover ( [AMM TASK 27-51-09-000-802-A/400](#)).

- (2) It is permissible to lubricate the screwjack actuator gimbal with any of the greases identified herein from specification MIL-PRF-81322. Do the following steps:
  - (a) Clean the ballscrew assy nut fitting with a clean cloth.
  - (b) Position the grease gun nozzle in the gimbal nipple in a vertical direction (Refer to sheet 3, [Figure 301](#)).
  - (c) Push the grease gun full travel, again and again, with both hands, against the nipple (Refer to sheet 3, [Figure 301](#)), until all the old grease leaks through the nut/screw interface and you can see the new grease.

**NOTE:** After you lubricate the flap actuator, grease leakage can occur during the first cycles of operation of the flap.

- (d) After you apply the grease, remove the excess from the nipple and from the ballscrew.

K. Follow-on

SUBTASK 842-002-A

- (1) Close the access of the right wing and left wing flap actuators.

**NOTE:** For outboard root actuators and inboard tip actuators, install the protection cover ( [AMM TASK 27-51-09-400-802-A/400](#)).



EMB145 - EMB135

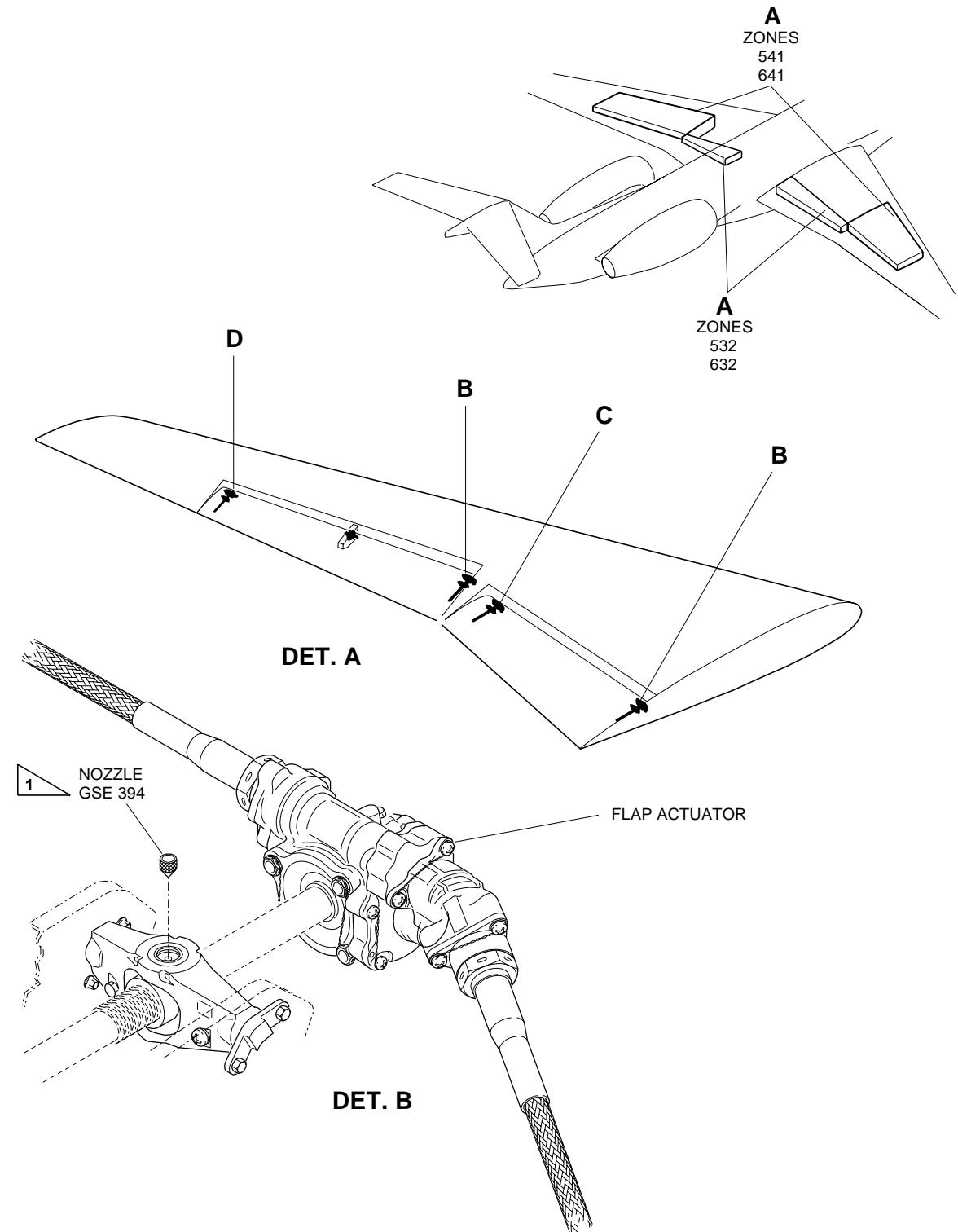
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- (2) On the Circuit Breaker Panel, close the FLAP 1 and FLAP 2 circuit breakers and remove the DO-NOT-CLOSE tag from them.
- (3) Set the flaps to the 0-degree position.
- (4) Deenergize the aircraft ([AMM TASK 20-40-01-860-801-A/200](#)).

**EFFECTIVITY: ALL**

Flap Actuator Ball Nut - Lubrication

Figure 301 - Sheet 1



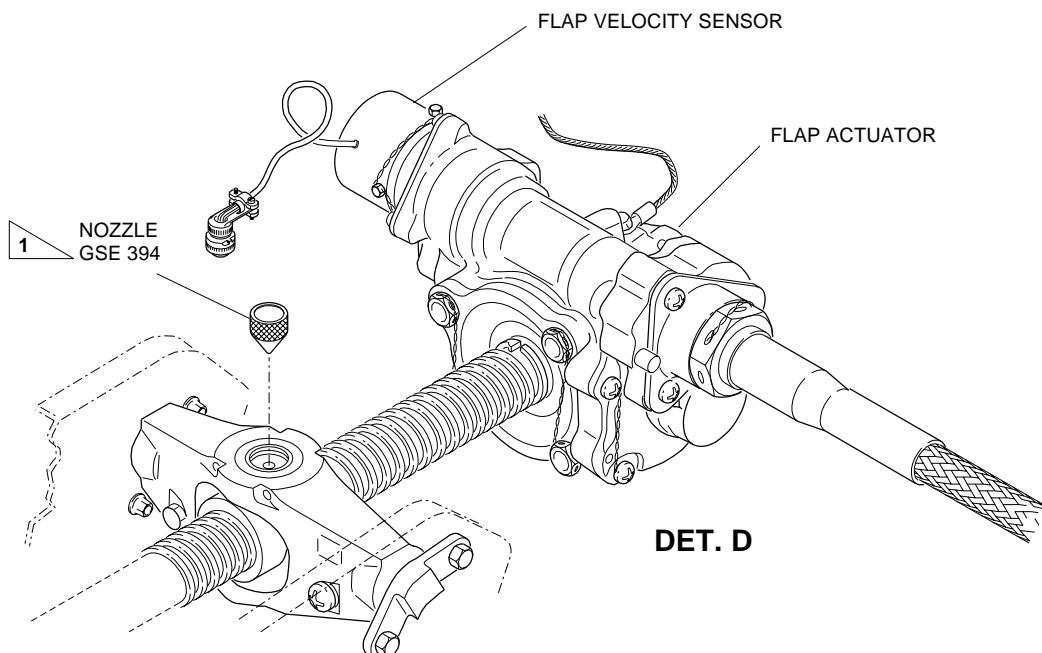
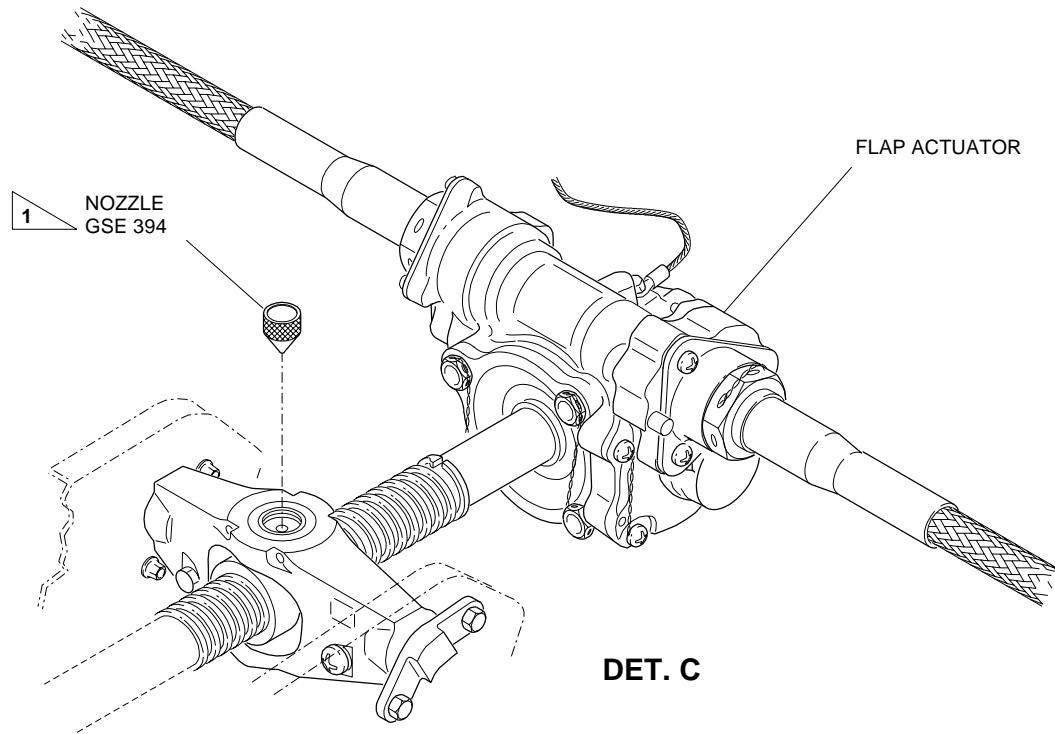
APPLY MIL-PRF-81322

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**EFFECTIVITY: ALL**

Flap Actuator Ball Nut - Lubrication

Figure 301 - Sheet 2

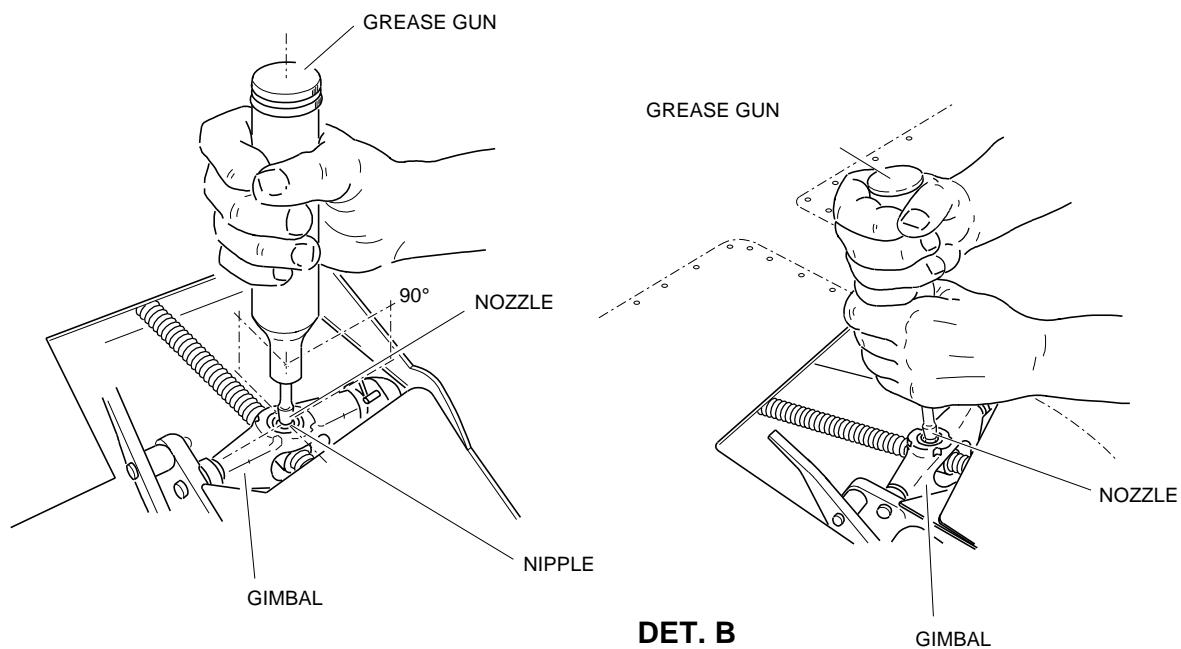
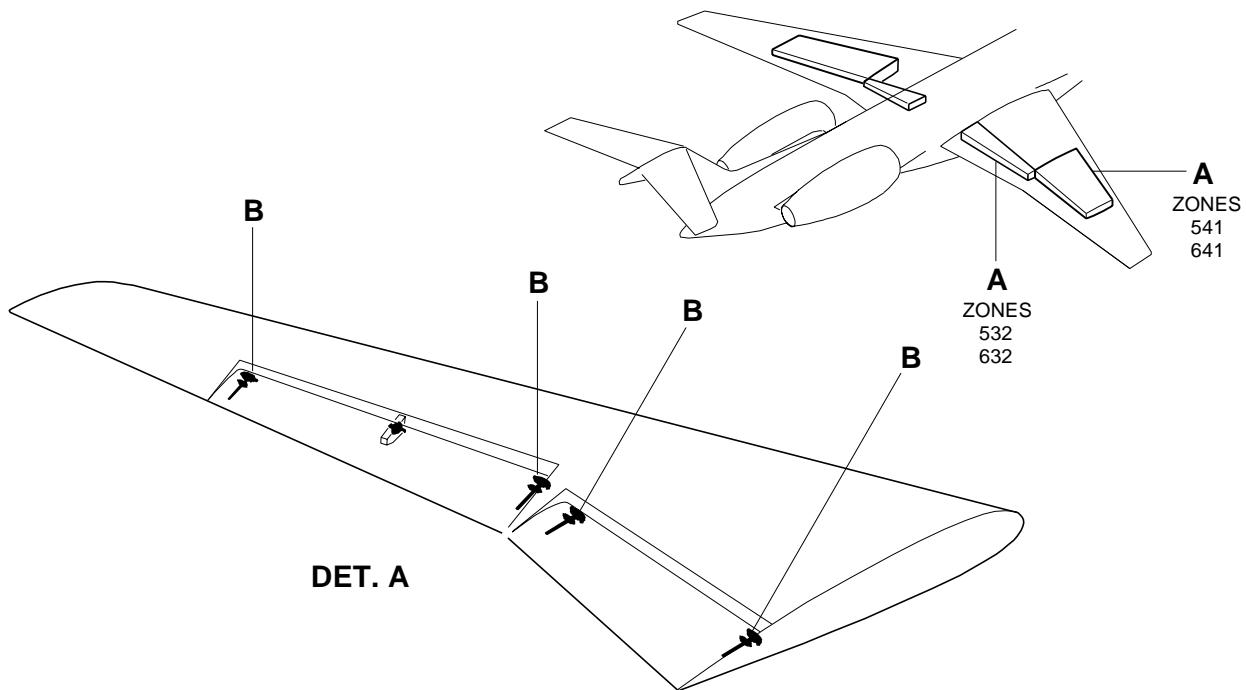

**1 APPLY MIL-PRF-81322**

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**EFFECTIVITY: ALL**

Flap Actuator Ball Nut - Lubrication

Figure 301 - Sheet 3



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# AIRCRAFT MAINTENANCE MANUAL

TASK 27-51-00-600-802-A

EFFECTIVITY: ALL

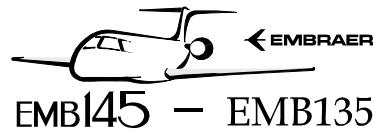
## 3. FLAP FLEXIBLE SHAFT (FFSS) - LUBRICATION

### A. General

- (1) This task gives the procedures to do the lubrication of the Flap Flexible Shafts (FFSs) installed at the wing trailing edge.
  - (a) FFS section 1 connects the FPDU (Flap Power Drive Unit) to the actuator installed at the root of the inboard flap panel.
  - (b) FFS section 2 connects the root actuator to the tip actuator of the inboard flap panel.
  - (c) FFS section 3 connects the tip actuator of the inboard flap panel to the root actuator of the outboard flap panel.
  - (d) FFS section 4 connects the root actuator of the outboard flap panel to the FTB (Flap Transmission Brake).
  - (e) FFS section 5 connects the FTB to the tip actuator of the outboard flap panel.
- (2) The approved consumable materials to do the lubrication of the Flap Flexible Shafts (FFSs) are:
  - (a) Aeroshell Grease 33;
  - (b) Cor-Ban 22

### B. References

REFERENCE	DESIGNATION
AMM TASK 27-51-00-200-802-A/600	FLAP FLEXIBLE SHAFT - INSPECTION
AMM TASK 27-51-00-700-801-A/500	FLAP CONTROL SYSTEM - OPERATIONAL CHECK
AMM TASK 27-51-04-000-801-A/400	FLAP FLEXIBLE SHAFT SECTION 1 - REMOVAL
AMM TASK 27-51-04-400-801-A/400	FLAP FLEXIBLE SHAFT SECTION 1 - INSTALLATION
AMM TASK 27-51-05-000-801-A/400	FLAP FLEXIBLE SHAFT SECTION 2 - REMOVAL
AMM TASK 27-51-05-400-801-A/400	FLAP FLEXIBLE SHAFT SECTION 2 - INSTALLATION
AMM TASK 27-51-06-000-801-A/400	FLAP FLEXIBLE SHAFT SECTION 3 - REMOVAL
AMM TASK 27-51-06-400-801-A/400	FLAP FLEXIBLE SHAFT SECTION 3 - INSTALLATION
AMM TASK 27-51-07-000-801-A/400	FLAP FLEXIBLE SHAFT SECTION 4 - REMOVAL
AMM TASK 27-51-07-400-801-A/400	FLAP FLEXIBLE SHAFT SECTION 4 - INSTALLATION
AMM TASK 27-51-08-000-801-A/400	FLAP FLEXIBLE SHAFT SECTION 5 - REMOVAL
AMM TASK 27-51-08-400-801-A/400	FLAP FLEXIBLE SHAFT SECTION 5 - INSTALLATION
AMM TASK 57-56-01-000-801-A/400	INBOARD AND OUTBOARD FLAP LOWER SHROUDS - REMOVAL
AMM TASK 57-56-01-400-801-A/400	INBOARD AND OUTBOARD FLAP LOWER SHROUDS - INSTALLATION



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## C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
5711/6711	-	Wing trailing edge
5721/6721	-	Wing trailing edge
5722/6722	-	Wing trailing edge

## D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Dry Compressed Air	To dry the component	

## E. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Lint-Free Wiper Cloth	For the component cleaning	AR
Commercially available	Paper Towel	For the component cleaning	AR
Commercially available	Nylon-Bristle Brush	For the component cleaning	AR
Commercially available	Cotton Swab	For the component cleaning	AR

## F. Consumable Materials

SPECIFICATION (BRAND)	DESCRIPTION	QTY
Commercially available	Aeroshell Grease 33	AR
Commercially available	Cor-Ban 22	AR
Commercially available	N-Heptane	AR

## G. Expandable Parts

Not Applicable

## H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Wing trailing edge

## I. Preparation

SUBTASK 841-003-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) Do not do other tasks on the flap system.
- (3) Set the flaps to the 45-degree position.
- (4) On the Circuit Breaker Panel, open the FLAP 1 and FLAP 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](#)).

- (5) Open the lower shroud of the inboard and outboard flaps ([AMM TASK 57-56-01-000-801-A/400](#)).

J. Lubricate the Flap Flexible Shaft (FFSs) ([Figure 302](#))

**SUBTASK 640-003-A**

- (1) Get access to the left and right wing trailing edge.

- (2) FFS section 1 lubrication procedures:

- (a) Disconnect the type-A side of FFS section 1. Refer to [AMM TASK 27-51-04-000-801-A/400](#).

**NOTE:** A red label identifies the type-A end of the FFSs.

- (b) Remove the end-fitting retaining ring of the FFS (type-A side). Use a long nose pliers to remove the retaining ring.
- (c) Pull out the core end-fitting to remove the core assembly from the FFS casing.
- (d) Remove the washer from the core assembly.
- (e) Clean the FFS as follows:

**NOTE:**

- The core is soaked with lubricant; do not use solvent to remove the lubricant.
- The casing can be soaked in solvent; it will not be damaged.

**1 Casing:**

- a Wipe off the exterior of the FFS casing with a lint-free cloth or paper towel soaked in solvent.

**CAUTION:** BE CAREFUL NOT TO SCRAPE OR SCORE THE TEFLON LINER INSIDE THE CASING WITH THE METAL PARTS OF THE NYLON BRUSH.

- b If it is necessary to remove the excess grease buildup, squirt solvent into the end fittings of the core and use a nylon-bristle brush to loosen built-up grease and debris.

**WARNING: WEAR EYE PROTECTION WHEN USING COMPRESSED AIR TO BLOW OUT THE EXCESS GREASE.**

- c Rinse the FFS casing with clean solvent and dry with compressed air.

**NOTE:** The solvent will not dissolve the grease, but will loosen its hold so that the brush and air will remove most of it. Remaining residue is acceptable.

2 Core:

- a Wipe off the exterior surface with a dry paper towel or lint-free cloth until the core leaves no visible residue deposits on the paper towel or cloth.

**NOTE:**

- Do not immerse the core in solvent.
- The core consists of many strands of metal wire with spaces between them that hold the grease. Do not try to remove all of the grease between the strands of wire.
- Do not use compressed air to remove old lubrication.

(f) Do [AMM TASK 27-51-00-200-802-A/600](#) for the external/internal inspection of the FFS.

(g) You can lubricate the FFS with:

- 1 Grease Aeroshell 33. For this, go to step (h); or
- 2 Corrosion inhibiting compound Cor-Ban 22. For this, go to step (i).

(h) Apply grease to the core as follows:

**CAUTION:** LEAVE ONLY A THIN RESIDUE OF GREASE ON THE INNER CORE FOR CORROSION PROTECTION. EXCESS GREASE CAN INCREASE DRAG AND CAUSE DAMAGE TO THE FLAP CONTROL SYSTEM.

- 1 Apply a thin film of grease to the inner core.
- 2 Wrap a lint-free cloth or paper towel around the core and slide it down the length of the core to strip off excess grease so that no visible build-up exists beyond the crevices between the strands of wire and only a shiny residue remains.

**NOTE:** Leave only a shining residue of grease on the inner core with no visible build-up beyond the crevices between the strands of wire.

- 3 Apply a very thin film of grease to the washer. Wipe off the excess, leaving only the grease residue.

- 4 Install the washer to the core assembly.
  - 5 Push the core end-fitting into the FFS casing to install the core assembly.
  - 6 Install the end-fitting retaining ring of the FFS (type-A side).
  - 7 Using a cotton swab ("Q-tip"), wipe any excess grease that may have accumulated in the Type-A and Type-B end fittings during installation of the core so that no visible build-up and only a shiny residue remains. Wipe away any grease built up in the receptacle of the mating component (FSA, FPDU, FTB, etc) so that no visible build-up and only a shiny residue remains.
- (i) Apply corrosion inhibiting compound to the core as follows:
- 1 Install the washer to the core assembly.
  - 2 Put the core assembly on a bed of paper towels or lint-free cloths.
  - 3 Spray a coat of corrosion inhibiting compound along the length of the core, including the coupling washer, and wait for it to distribute and penetrate for at least 30 seconds.
  - 4 Rotate the core 180 degrees and spray the opposite side.
  - 5 Allow 30 minutes minimum for the dispersion solvents to evaporate.
- NOTE: When dry, corrosion inhibiting compound has a grease-like consistency.
- 6 Wipe the corrosion inhibiting compound off of the outboard diameter of the end coupling (the side opposite the washer).
  - 7 Push the core end-fitting into the FFS casing to install the core assembly.
  - 8 Install the end-fitting retaining ring of the FFS (type-A side).
  - 9 Using a cotton swab ("Q-tip"), wipe any excess corrosion inhibiting compound that can be accumulated in the Type-A and Type-B end fittings, during the installation of the core, so that no visible build-up and only a shiny residue remains. Wipe away any grease built up in the receptacle of the mating component (FSA, FPDU, FTB, etc) so that no visible build-up and only a shiny residue remains.
- (j) Connect the FFS to the FPDU and safety it. Refer to [AMM TASK 27-51-04-400-801-A/400](#).
- (3) FFS section 2 lubrication procedures:
- (a) Disconnect the type-A side of FFS section 2. Refer to [AMM TASK 27-51-05-000-801-A/400](#).
- NOTE: A red label identifies the type-A end of the FFSs.
- (b) Remove the end-fitting retaining ring of the FFS (type-A side). Use a long nose pliers to remove the retaining ring.

- (c) Pull out the core end-fitting to remove the core assembly from the FFS casing.
- (d) Remove the washer from the core assembly.
- (e) Clean the FFS as follows:

**NOTE:**

- The core is soaked with lubricant; do not use solvent to remove the lubricant.
- The casing can be soaked in solvent; it will not be damaged.

1 Casing:

- a Wipe off the exterior of the FFS casing with a lint-free cloth or paper towel soaked in solvent.

**CAUTION:** BE CAREFUL NOT TO SCRAPE OR SCORE THE TEFLON LINER INSIDE THE CASING WITH THE METAL PARTS OF THE NYLON BRUSH.

- b If it is necessary to remove the excess grease buildup, squirt solvent into the end fittings of the core and use a nylon-bristle brush to loosen built-up grease and debris.

**WARNING: WEAR EYE PROTECTION WHEN USING COMPRESSED AIR TO BLOW OUT THE EXCESS GREASE.**

- c Rinse the FFS casing with clean solvent and dry with compressed air.

**NOTE:** The solvent will not dissolve the grease, but will loosen its hold so that the brush and air will remove most of it. Remaining residue is acceptable.

2 Core:

- a Wipe off the exterior surface with a dry paper towel or lint-free cloth until the core leaves no visible residue deposits on the paper towel or cloth.

**NOTE:**

- Do not immerse the core in solvent.

- The core consists of many strands of metal wire with spaces between them that hold the grease. Do not try to remove all of the grease between the strands of wire.
- Do not use compressed air to remove old lubrication.

- (f) Do [AMM TASK 27-51-00-200-802-A/600](#) for the external/internal inspection of the FFS.
- (g) You can lubricate the FFS with:
  - 1 Grease Aeroshell 33. For this, go to step (h); or
  - 2 Corrosion inhibiting compound Cor-Ban 22. For this, go to step (i).

- (h) Apply grease to the core as follows:

**CAUTION:** LEAVE ONLY A THIN RESIDUE OF GREASE ON THE INNER CORE FOR CORROSION PROTECTION. EXCESS GREASE CAN INCREASE DRAG AND CAUSE DAMAGE TO THE FLAP CONTROL SYSTEM.

- 1 Apply a thin film of grease to the inner core.
- 2 Wrap a lint-free cloth or paper towel around the core and slide it down the length of the core to strip off excess grease so that no visible build-up exists beyond the crevices between the strands of wire and only a shiny residue remains.
- 3 Apply a very thin film of grease to the washer. Wipe off the excess, leaving only the grease residue.
- 4 Install the washer to the core assembly.
- 5 Push the core end-fitting into the FFS casing to install the core assembly.
- 6 Install the end-fitting retaining ring of the FFS (type-A side).
- 7 Using a cotton swab ("Q-tip"), wipe any excess grease that may have accumulated in the Type-A and Type-B end fittings during installation of the core so that no visible build-up and only a shiny residue remains. Wipe away any grease built up in the receptacle of the mating component (FSA, FPDU, FTB, etc) so that no visible build-up and only a shiny residue remains.

- (i) Apply corrosion inhibiting compound to the core as follows:

- 1 Install the washer to the core assembly.
- 2 Put the core assembly on a bed of paper towels or lint-free cloths.
- 3 Spray a coat of corrosion inhibiting compound along the length of the core, including the coupling washer, and wait for it to distribute and penetrate for at least 30 seconds.
- 4 Rotate the core 180 degrees and spray the opposite side.
- 5 Allow 30 minutes minimum for the dispersion solvents to evaporate.  
**NOTE:** When dry, corrosion inhibiting compound has a grease-like consistency.
- 6 Wipe the corrosion inhibiting compound off of the outboard diameter of the end coupling (the side opposite the washer).
- 7 Push the core end-fitting into the FFS casing to install the core assembly.
- 8 Install the end-fitting retaining ring of the FFS (type-A side).

9 Using a cotton swab ("Q-tip"), wipe any excess corrosion inhibiting compound that can be accumulated in the Type-A and Type-B end fittings during installation of the core, so that no visible build-up and only a shiny residue remains. Wipe away any grease built up in the receptacle of the mating component (FSA, FPDU, FTB, etc) so that no visible build-up and only a shiny residue remains.

- (j) Connect the FFS to the inboard flap tip actuator and safety it. Refer to [AMM TASK 27-51-05-400-801-A/400](#).

**(4) FFS section 3 lubrication procedures:**

- (a) Disconnect the type-A side of FFS section 3. Refer to [AMM TASK 27-51-06-000-801-A/400](#).

**NOTE:** A red label identifies the type-A end of the FFSs.

- (b) Remove the end-fitting retaining ring of the FFS (type-A side). Use a long nose pliers to remove the retaining ring.

- (c) Pull out the core end-fitting to remove the core assembly from the FFS casing.

- (d) Remove the washer from the core assembly.

- (e) Clean the FFS as follows:

**NOTE:** • The core is soaked with lubricant; do not use solvent to remove the lubricant.  
• The casing can be soaked in solvent; it will not be damaged.

**1 Casing:**

- a Wipe off the exterior of the FFS casing with a lint-free cloth or paper towel soaked in solvent.

**CAUTION: BE CAREFUL NOT TO SCRAPE OR SCORE THE TEFLON LINER INSIDE THE CASING WITH THE METAL PARTS OF THE NYLON BRUSH.**

- b If it is necessary to remove the excess grease buildup, squirt solvent into the end fittings of the core and use a nylon-bristle brush to loosen built-up grease and debris.

**WARNING: WEAR EYE PROTECTION WHEN USING COMPRESSED AIR TO BLOW OUT THE EXCESS GREASE.**

- c Rinse the FFS casing with clean solvent and dry with compressed air.

**NOTE:** The solvent will not dissolve the grease, but will loosen its hold so that the brush and air will remove most of it. Remaining residue is acceptable.

**2 Core:**

- a Wipe off the exterior surface with a dry paper towel or lint-free cloth until the core leaves no visible residue deposits on the paper towel or cloth.

**NOTE:**

- Do not immerse the core in solvent.
- The core consists of many strands of metal wire with spaces between them that hold the grease. Do not try to remove all of the grease between the strands of wire.
- Do not use compressed air to remove old lubrication.

(f) Do [AMM TASK 27-51-00-200-802-A/600](#) for the external/internal inspection of the FFS.

(g) You can lubricate the FFS with:

- 1 Grease Aeroshell 33. For this, go to step (h); or
- 2 Corrosion inhibiting compound Cor-Ban 22. For this, go to step (i).

(h) Apply grease to the core as follows:

**CAUTION:** LEAVE ONLY A THIN RESIDUE OF GREASE ON THE INNER CORE FOR CORROSION PROTECTION. EXCESS GREASE CAN INCREASE DRAG AND CAUSE DAMAGE TO THE FLAP CONTROL SYSTEM.

- 1 Apply a thin film of grease to the inner core.
  - 2 Wrap a lint-free cloth or paper towel around the core and slide it down the length of the core to strip off excess grease so that no visible build-up exists beyond the crevices between the strands of wire and only a shiny residue remains.
- NOTE:** Leave only a shining residue of grease on the inner core with no visible build-up beyond the crevices between the strands of wire.
- 3 Apply a very thin film of grease to the washer. Wipe off the excess, leaving only the grease residue.
  - 4 Install the washer to the core assembly.
  - 5 Push the core end-fitting into the FFS casing to install the core assembly.
  - 6 Install the end-fitting retaining ring of the FFS (type-A side).
  - 7 Using a cotton swab ("Q-tip"), wipe any excess grease that may have accumulated in the Type-A and Type-B end fittings during installation of the core so that no visible build-up and only a shiny residue remains. Wipe away any grease built up in the receptacle of the mating component (FSA, FPDU, FTB, etc) so that no visible build-up and only a shiny residue remains.

(i) Apply corrosion inhibiting compound to the core as follows:

- 1 Install the washer to the core assembly.
  - 2 Put the core assembly on a bed of paper towels or lint-free cloths.
  - 3 Spray a coat of corrosion inhibiting compound along the length of the core, including the coupling washer, and wait for it to distribute and penetrate for at least 30 seconds.
  - 4 Rotate the core 180 degrees and spray the opposite side.
  - 5 Allow 30 minutes minimum for the dispersion solvents to evaporate.  
**NOTE:** When dry, corrosion inhibiting compound has a grease-like consistency.
  - 6 Wipe the corrosion inhibiting compound off of the outboard diameter of the end coupling (the side opposite the washer).
  - 7 Push the core end-fitting into the FFS casing to install the core assembly.
  - 8 Install the end-fitting retaining ring of the FFS (type-A side).
  - 9 Using a cotton swab ("Q-tip"), wipe any excess corrosion inhibiting compound that can be accumulated in the Type-A and Type-B end fittings during installation of the core, so that no visible build-up and only a shiny residue remains. Wipe away any grease built up in the receptacle of the mating component (FSA, FPDU, FTB, etc) so that no visible build-up and only a shiny residue remains.
- (j) Connect the FFS to the inboard flap tip actuator and safety it. Refer to [AMM TASK 27-51-06-400-801-A/400](#).
- (5) FFS section 4 lubrication procedures:
- (a) Disconnect the type-A side of FFS section 4. Refer to [AMM TASK 27-51-07-000-801-A/400](#).  
**NOTE:** A red label identifies the type-A end of the FFSs.
  - (b) Remove the end-fitting retaining ring of the FFS (type-A side). Use a long nose pliers to remove the retaining ring.
  - (c) Pull out the core end-fitting to remove the core assembly from the FFS casing.
  - (d) Remove the washer from the core assembly.
  - (e) Clean the FFS as follows:  
**NOTE:** • The core is soaked with lubricant; do not use solvent to remove the lubricant.  
• The casing can be soaked in solvent; it will not be damaged.
- 1 Casing:

- a Wipe off the exterior of the FFS casing with a lint-free cloth or paper towel soaked in solvent.

**CAUTION:** BE CAREFUL NOT TO SCRAPE OR SCORE THE TEFLON LINER INSIDE THE CASING WITH THE METAL PARTS OF THE NYLON BRUSH.

- b If it is necessary to remove the excess grease buildup, squirt solvent into the end fittings of the core and use a nylon-bristle brush to loosen built-up grease and debris.

**WARNING: WEAR EYE PROTECTION WHEN USING COMPRESSED AIR TO BLOW OUT THE EXCESS GREASE.**

- c Rinse the FFS casing with clean solvent and dry with compressed air.

**NOTE:** The solvent will not dissolve the grease, but will loosen its hold so that the brush and air will remove most of it. Remaining residue is acceptable.

2 Core:

- a Wipe off the exterior surface with a dry paper towel or lint-free cloth until the core leaves no visible residue deposits on the paper towel or cloth.

**NOTE:**

- Do not immerse the core in solvent.
- The core consists of many strands of metal wire with spaces between them that hold the grease. Do not try to remove all of the grease between the strands of wire.
- Do not use compressed air to remove old lubrication.

- (f) Do [AMM TASK 27-51-00-200-802-A/600](#) for the external/internal inspection of the FFS.

- (g) You can lubricate the FFS with:

- 1 Grease Aeroshell 33. For this, go to step (h); or
- 2 Corrosion inhibiting compound Cor-Ban 22. For this, go to step (i).

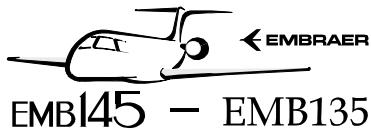
- (h) Apply grease to the core as follows:

**CAUTION:** LEAVE ONLY A THIN RESIDUE OF GREASE ON THE INNER CORE FOR CORROSION PROTECTION. EXCESS GREASE CAN INCREASE DRAG AND CAUSE DAMAGE TO THE FLAP CONTROL SYSTEM OR MIGRATE INTO THE BRAKE ASSEMBLY.

- 1 Apply a thin film of grease to the inner core.
- 2 Wrap a lint-free cloth or paper towel around the core and slide it down the length of the core to strip off excess grease so that no visible build-up exists beyond the crevices between the strands of wire and only a shiny residue remains.

**NOTE:** Leave only a shining residue of grease on the inner core with no visible build-up beyond the crevices between the strands of wire.

- 3 Apply a very thin film of grease to the washer. Wipe off the excess, leaving only the grease residue.
  - 4 Install the washer to the core assembly.
  - 5 Push the core end-fitting into the FFS casing to install the core assembly.
  - 6 Install the end-fitting retaining ring of the FFS (type-A side).
  - 7 Using a cotton swab ("Q-tip"), wipe any excess grease that may have accumulated in the Type-A and Type-B end fittings during installation of the core so that no visible build-up and only a shiny residue remains. Wipe away any grease built up in the receptacle of the mating component (FSA, FPDU, FTB, etc) so that no visible build-up and only a shiny residue remains.
- (i) Apply corrosion inhibiting compound to the core as follows:
- 1 Install the washer to the core assembly.
  - 2 Put the core assembly on a bed of paper towels or lint-free cloths.
  - 3 Spray a coat of corrosion inhibiting compound along the length of the core, including the coupling washer, and wait for it to distribute and penetrate for at least 30 seconds.
  - 4 Rotate the core 180 degrees and spray the opposite side.
  - 5 Allow 30 minutes minimum for the dispersion solvents to evaporate.
- NOTE:** When dry, corrosion inhibiting compound has a grease-like consistency.
- 6 Wipe the corrosion inhibiting compound off of the outboard diameter of the end coupling (the side opposite the washer).
  - 7 Push the core end-fitting into the FFS casing to install the core assembly.
  - 8 Install the end-fitting retaining ring of the FFS (type-A side).
  - 9 Using a cotton swab ("Q-tip"), wipe any excess corrosion inhibiting compound that can be accumulated in the Type-A and Type-B end fittings during installation of the core, so that no visible build-up and only a shiny residue remains. Wipe away any grease built up in the receptacle of the mating component (FSA, FPDU, FTB, etc) so that no visible build-up and only a shiny residue remains.
- (j) Connect the FFS to the outboard flap root actuator and safety it. Refer to [AMM TASK 27-51-07-400-801-A/400](#).
- (6) FFS section 5 lubrication procedures:



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- (a) Disconnect the type-A side of FFS section 5. Refer to [AMM TASK 27-51-08-000-801-A/400](#).

NOTE: A red label identifies the type-A end of the FFSs.

- (b) Remove the end-fitting retaining ring of the FFS (type-A side). Use a long nose pliers to remove the retaining ring.
- (c) Pull out the core end-fitting to remove the core assembly from the FFS casing.
- (d) Remove the washer from the core assembly.
- (e) Clean the FFS as follows:

NOTE: • The core is soaked with lubricant; do not use solvent to remove the lubricant.  
• The casing can be soaked in solvent; it will not be damaged.

1 Casing:

- a Wipe off the exterior of the FFS casing with a lint-free cloth or paper towel soaked in solvent.

CAUTION: BE CAREFUL NOT TO SCRAPE OR SCORE THE TEFLON LINER INSIDE THE CASING WITH THE METAL PARTS OF THE NYLON BRUSH.

- b If it is necessary to remove the excess grease buildup, squirt solvent into the end fittings of the core and use a nylon-bristle brush to loosen built-up grease and debris.

**WARNING: WEAR EYE PROTECTION WHEN USING COMPRESSED AIR TO BLOW OUT THE EXCESS GREASE.**

- c Rinse the FFS casing with clean solvent and dry with compressed air.

NOTE: The solvent will not dissolve the grease, but will loosen its hold so that the brush and air will remove most of it. Remaining residue is acceptable.

2 Core:

- a Wipe off the exterior surface with a dry paper towel or lint-free cloth until the core leaves no visible residue deposits on the paper towel or cloth.

NOTE: • Do not immerse the core in solvent.  
• The core consists of many strands of metal wire with spaces between them that hold the grease. Do not try to remove all of the grease between the strands of wire.  
• Do not use compressed air to remove old lubrication.

(f) Do [AMM TASK 27-51-00-200-802-A/600](#) for the external/internal inspection of the FFS.

(g) You can lubricate the FFS with:

1 Grease Aeroshell 33. For this, go to step (h); or

2 Corrosion inhibiting compound Cor-Ban 22. For this, go to step (i).

(h) Apply grease to the core as follows:

**CAUTION:** LEAVE ONLY A THIN RESIDUE OF GREASE ON THE INNER CORE FOR CORROSION PROTECTION. EXCESS GREASE CAN INCREASE DRAG AND CAUSE DAMAGE TO THE FLAP CONTROL SYSTEM OR MIGRATE INTO THE BRAKE ASSEMBLY.

1 Apply a thin film of grease to the inner core.

2 Wrap a lint-free cloth or paper towel around the core and slide it down the length of the core to strip off excess grease so that no visible build-up exists beyond the crevices between the strands of wire and only a shiny residue remains.

**NOTE:** Leave only a shining residue of grease on the inner core with no visible build-up beyond the crevices between the strands of wire.

3 Apply a very thin film of grease to the washer. Wipe off the excess, leaving only the grease residue.

4 Install the washer to the core assembly.

5 Push the core end-fitting into the FFS casing to install the core assembly.

6 Install the end-fitting retaining ring of the FFS (type-A side).

7 Using a cotton swab ("Q-tip"), wipe any excess grease that may have accumulated in the Type-A and Type-B end fittings during installation of the core so that no visible build-up and only a shiny residue remains. Wipe away any grease built up in the receptacle of the mating component (FSA, FPDU, FTB, etc) so that no visible build-up and only a shiny residue remains.

(i) Apply corrosion inhibiting compound to the core as follows:

1 Install the washer to the core assembly.

2 Put the core assembly on a bed of paper towels or lint-free cloths.

3 Spray a coat of corrosion inhibiting compound along the length of the core, including the coupling washer, and wait for it to distribute and penetrate for at least 30 seconds.

4 Rotate the core 180 degrees and spray the opposite side.

5 Allow 30 minutes minimum for the dispersion solvents to evaporate.

**NOTE:** When dry, corrosion inhibiting compound has a grease-like consistency.

- 6 Wipe the corrosion inhibiting compound off of the outboard diameter of the end coupling (the side opposite the washer).
- 7 Push the core end-fitting into the FFS casing to install the core assembly.
- 8 Install the end-fitting retaining ring of the FFS (type-A side).
- 9 Using a cotton swab ("Q-tip"), wipe any excess corrosion inhibiting compound that can be accumulated in the Type-A and Type-B end fittings during installation of the core, so that no visible build-up and only a shiny residue remains. Wipe away any grease built up in the receptacle of the mating component (FSA, FPDU, FTB, etc) so that no visible build-up and only a shiny residue remains.

**CAUTION:** MAKE SURE THAT THERE IS NO GREASE IN THE CAVITIES OF THE FFS AND FTB. GREASE CAN CAUSE DAMAGE TO THE FTB.

- (j) Clean the cavities of FTB and FFS to remove all possible signs of grease.
- (k) Connect the FFS to the flap tip actuator and safety it. Refer to [AMM TASK 27-51-08-400-801-A/400](#).

**K. Follow-on**

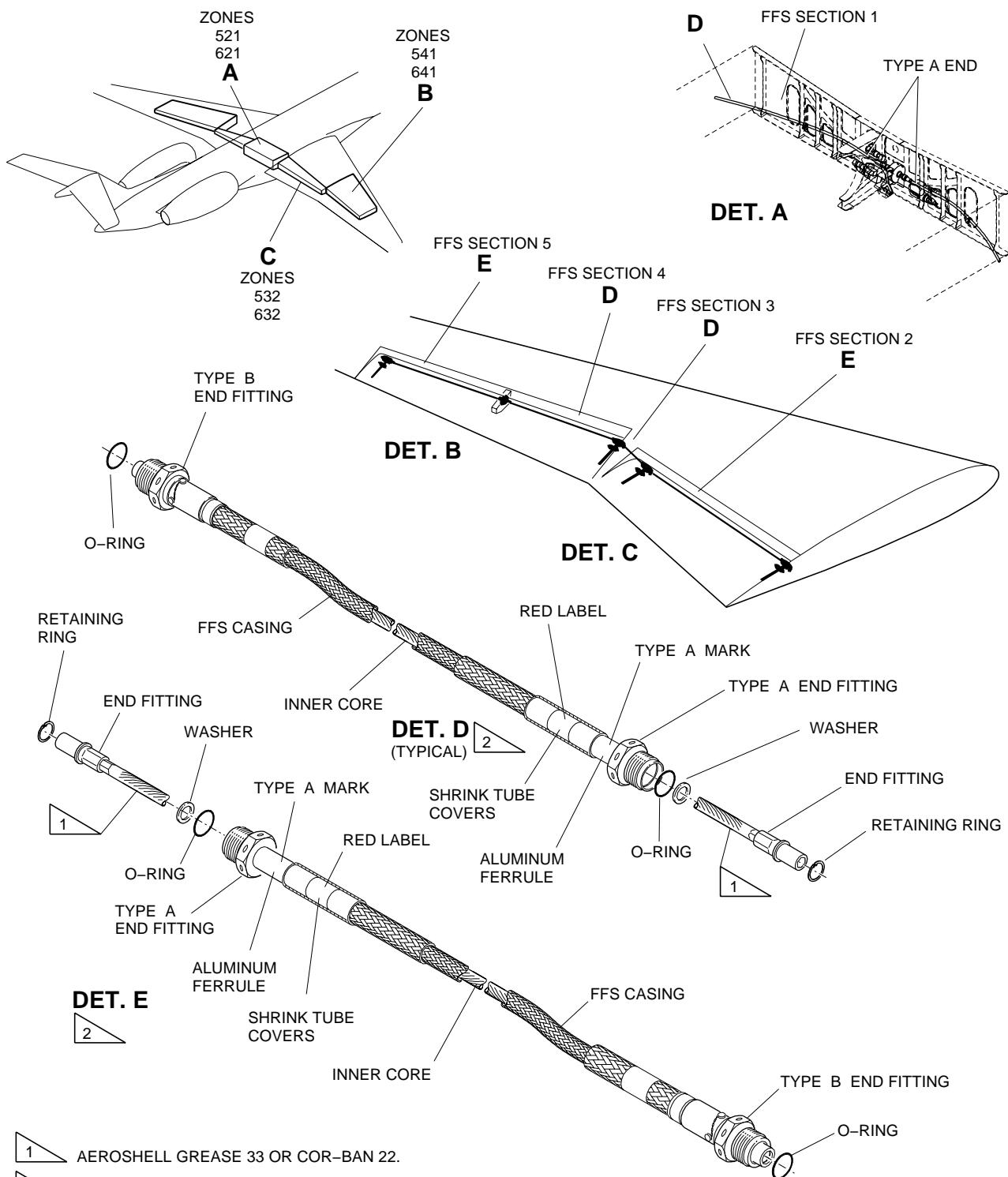
**SUBTASK 842-003-A**

- (1) Close the lower shroud of the inboard and outboard flaps ([AMM TASK 57-56-01-400-801-A/400](#)).

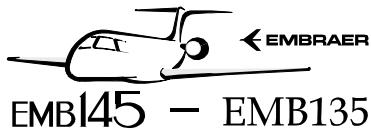
**NOTE:** If you removed the tip and root supports from the inboard-flap lower shroud, install them now ([AMM TASK 57-56-01-400-801-A/400](#)).

- (2) On the Circuit Breaker Panel, close the FLAP 1 and FLAP 2 circuit breakers and remove the DO-NOT-CLOSE tag from them.
- (3) Do the operational check of the Flap Control System ([AMM TASK 27-51-00-700-801-A/500](#)).

**EFFECTIVITY: ALL**  
**Flap Flexible Shaft - Lubrication**  
**Figure 302**



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TASK 27-51-00-600-803-A

EFFECTIVITY: ALL

4. FLAP SCREWJACK ACTUATOR GEAR - LUBRICATION

A. General

- (1) This task gives the procedures to lubricate the flap actuator gear.
- (2) The task procedures are applicable to all flap actuators (right and left wing).
- (3) The points of oil application are on the left side of the actuators (LH/RH wings), as shown in [Figure 303](#).

B. References

REFERENCE	DESIGNATION
AMM MPP 06-44-00/100	- COMPONENT LOCATION
AMM MPP 27-51-09/400	- REMOVAL/INSTALLATION
AMM MPP 27-51-10/400	- REMOVAL/INSTALLATION
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
AMM TASK 27-51-00-700-801-A/500	FLAP CONTROL SYSTEM - OPERATIONAL CHECK
AMM TASK 57-56-01-000-802-A/400	INBOARD AND OUTBOARD FLAP LOWER SHROUDS - OPEN
AMM TASK 57-56-01-400-802-A/400	INBOARD AND OUTBOARD FLAP LOWER SHROUDS - CLOSE

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
541	541GB	Flap screwjack actuator
641	641GB	Flap screwjack actuator

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Funnel	To put the oil into the reservoir	1

F. Consumable Materials

SPECIFICATION (BRAND)	DESCRIPTION	QTY
AMS-M-7866	Molybdenum Disulphide	AR
MIL-PRF-5606	Oil	AR
MS20995C32	Lockwire	AR



## AIRCRAFT MAINTENANCE MANUAL

(Continued)

SPECIFICATION (BRAND)	DESCRIPTION	QTY
MIL-PRF-16173 (Ardrox 3302)	Corrosion Protection	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Wing trailing edge

I. Preparation

**SUBTASK 841-004-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) Do not do other tasks on the flap system.
- (3) Energize the aircraft with the External DC Power Supply ([AMM TASK 20-40-01-860-801-A/200](#)).
- (4) Set the flaps to the 45-degree position.
- (5) On the Circuit Breaker Panel, open the FLAP 1 and FLAP 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 SPRING 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 57-56-01-000-802-A/400](#)).

- (6) Open the inboard flap lower shroud and outboard flap lower shroud to get access to the FSA ([AMM TASK 57-56-01-000-802-A/400](#)).
- (7) Remove access panels 541GB and 641GB ([AMM MPP 06-44-00/100](#)).

J. Lubricate Flap-Screwjack Actuator Gear ([Figure 303](#))

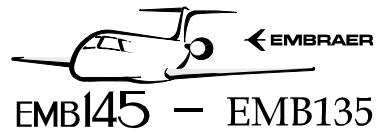
**SUBTASK 640-004-A**

- (1) Get access to the right-wing flap actuators.
- (2) Cut and remove the lockwire (1) from the fill plug (2) and drain plug (3). Refer to [Figure 303](#) - Sheet 1.

**NOTE:** Before remove the drain plug put a suitable container under the drain port to collect the oil.

- (3) Clean the area around the fill plug (2).
- (4) Remove the fill plug (2), drain plug (3), and discard related preformed packing (4) from the FSA. Refer to [Figure 303 - Sheet 1](#).
- (5) Check for metallic particles at both plugs (fill and drain). Refer to [Figure 303 - Sheet 3](#).  
If particles are detected, replace the actuator as required. Refer to [AMM MPP 27-51-09/400](#) or [AMM MPP 27-51-10/400](#).
- NOTE:** The metallic paste that you can find on the plugs is not a failure. It is a result of the mixture of hydraulic fluid 5606 with molybdenum disulphide. Do not think of this as metallic particles.
- (6) Drain all oil from the FSA.  
**NOTE:** An amount of oil remains under the drain port level.
- (7) Clean the FSA reservoir as follows:
  - Using hydraulic fluid MIL-PRF-5606, flush it through the fill port until clean fluid comes out from drain port. Wait until the drop rate is about 1 drop/10 sec to ensure the unit is completely empty.
- (8) Clean the drain plug (3). Refer to [Figure 303 - Sheet 1](#).
- (9) Wet the new preformed packing (4) with oil MIL-PRF-5606 and install it on the drain plug (3). Refer to [Figure 303 - Sheet 1](#).
- (10) Install the drain plug (3) to the FSA. Torque tighten the drain plug (3) to  $3 \pm 0.3$  N.m ( $26.5 \pm 3$  lbf.in). Refer to [Figure 303 - Sheet 1](#).
- (11) Insert a mixture of lubricant  $25 \text{ cm}^3$ , using 10% by weight of Molybdenum Disulphide added to the hydraulic fluid MIL-PRF-5606 into the FSA. Refer to [Figure 303 - Sheet 2](#).
- (12) Wet the new preformed packing (4) with oil MIL-PRF-5606 and install it on the fill plug (2). Refer to [Figure 303 - Sheet 1](#).
- (13) Install the fill plug (2) to the FSA. Torque tighten the fill plug (3) to  $3 \pm 0.3$  N.m ( $26.5 \pm 3$  lbf.in). Refer to [Figure 303](#).
- (14) Clean the area around the FSA face (where screwjack goes into the gearbox) to make sure that no oil remains.
- (15) On the Circuit Breaker Panel, close the FLAP 1 and FLAP 2 circuit breakers and remove a DO-NOT-CLOSE tag from them.
- (16) Cycle flaps full down and then full up (5 cycles).
- (17) Inspect the FSA face for signs of leakage and make sure that the sign of leakage is not sufficient to form a drop of fluid.

**NOTE:** If there is leakage on the FSA face, replace the actuator. Refer to [AMM MPP 27-51-09/400](#) or [AMM MPP 27-51-10/400](#)



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- (18) Lockwire the fill plug (2) and drain plug (3). Refer to [Figure 303](#) - Sheet 1.
- (19) Apply corrosion protection Ardrox 3302 (MIL-PRF-16173) to the fill/drain plugs and lockwire.
- (20) Do steps (1) thru (19) again for the left-wing flap actuators.

K. Follow-on

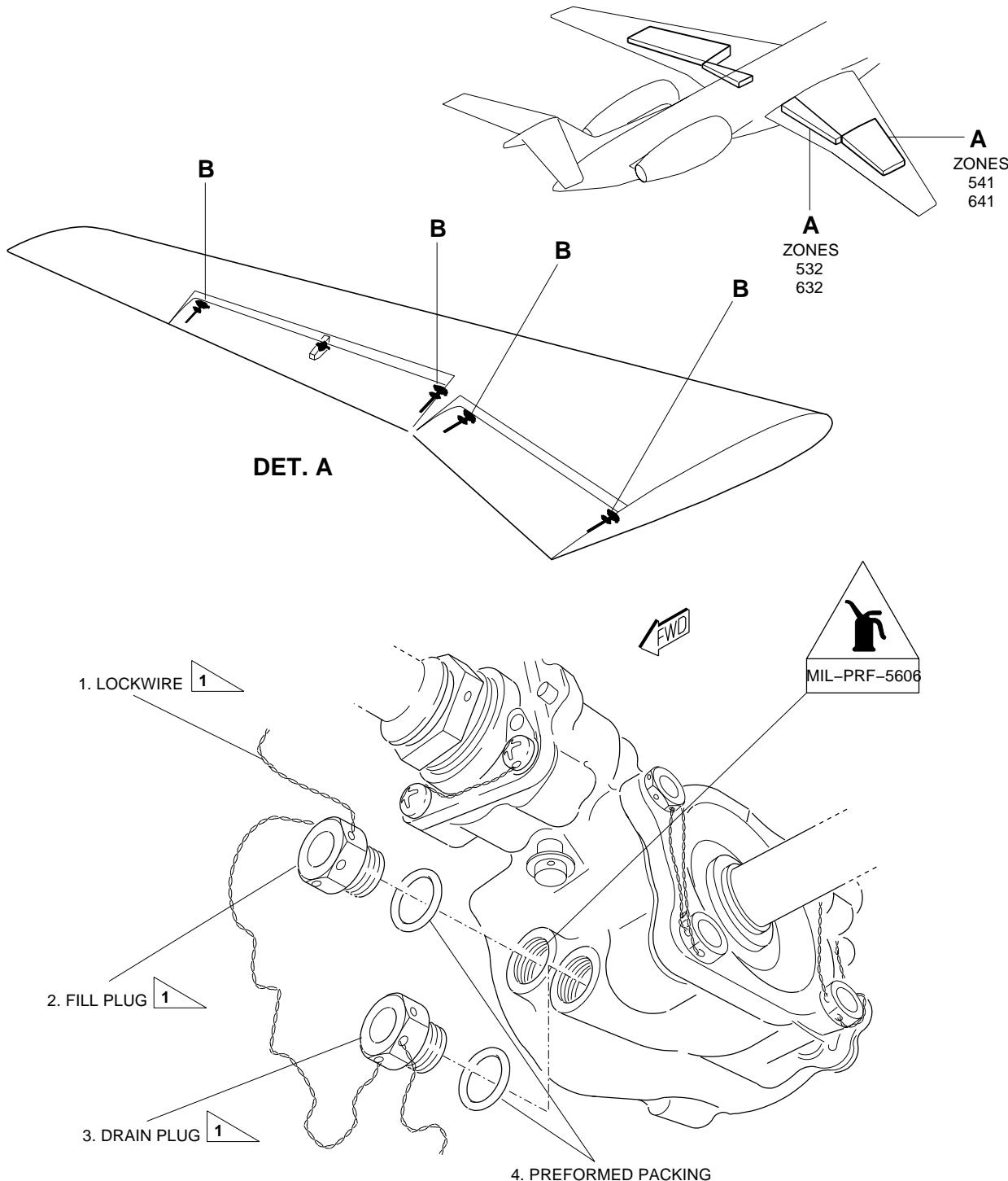
SUBTASK 842-004-A

- (1) Install access panels 541GB and 641GB ([AMM MPP 06-44-00/100](#)).
- (2) Close the inboard-flap lower shroud and outboard-flap lower shroud to get access to the FSA ([AMM TASK 57-56-01-400-802-A/400](#)).
- (3) Do a flap control system operational check ([AMM TASK 27-51-00-700-801-A/500](#)).
- (4) Set the flaps to the 0-degree position.
- (5) Deenergize the aircraft ([AMM TASK 20-40-01-860-801-A/200](#)).

**EFFECTIVITY: ALL**

Flap-Screwjack Actuator Gear - Lubrication

Figure 303 - Sheet 1



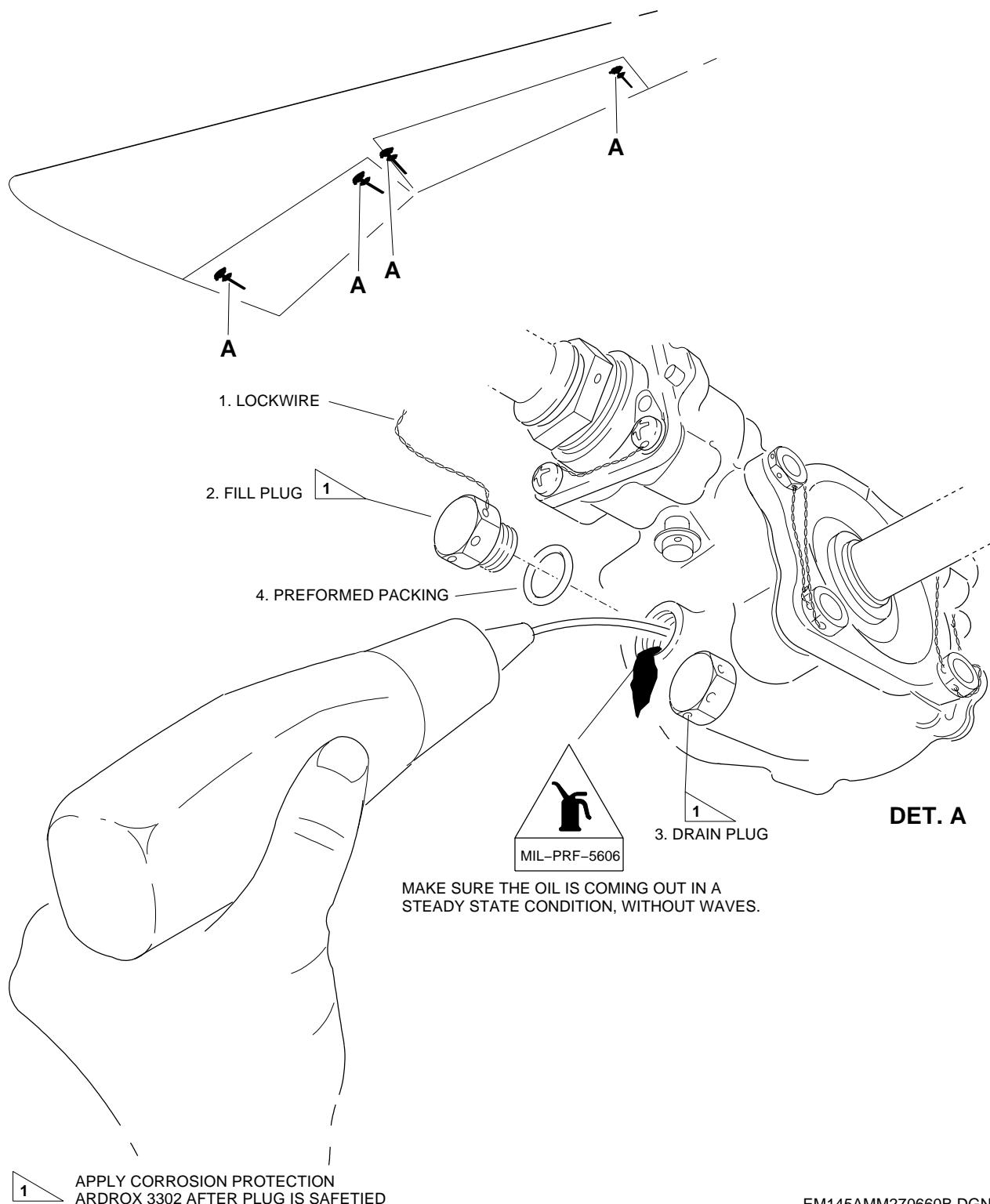
**1** APPLY CORROSION PROTECTION  
ARDROX 3302 AFTER PLUG IS SAFETIED

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**EFFECTIVITY: ALL**

Flap-Screwjack Actuator Gear - Lubrication

Figure 303 - Sheet 2

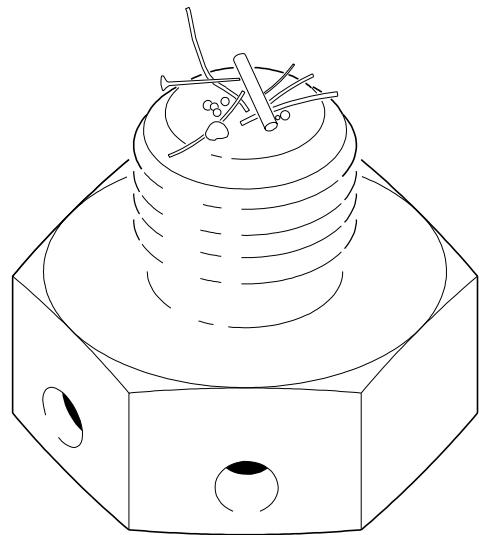


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*EFFECTIVITY: ALL*

Flap-Screwjack Actuator Gear - Lubrication

Figure 303 - Sheet 3



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