



AIRCRAFT
MAINTENANCE MANUAL

FLAP VELOCITY SENSOR - REMOVAL/INSTALLATION

EFFECTIVITY: ALL

1. General

- A. This section gives the procedures to remove and install the Flap Velocity Sensor.
- 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
27-51-12-000-801-A	FLAP VELOCITY SENSOR - REMOVAL	ALL
27-51-12-400-801-A	FLAP VELOCITY SENSOR - INSTALLATION	ALL



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TASK 27-51-12-000-801-A

EFFECTIVITY: ALL

2. FLAP VELOCITY SENSOR - REMOVAL

A. General

(1) This task gives the procedures to remove the Flap Velocity Sensor.

B. References

REFERENCE	DESIGNATION
AMM MPP 06-44-00/100	- COMPONENT LOCATION
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
AMM TASK 27-51-10-000-802-A/400	OUTBOARD FLAP TIP ACTUATOR (FSA 4) - REMOVAL
AMM TASK 57-56-04-000-801-A/400	AILERON LOWER SHROUD - REMOVAL
ITEM GSE 165	SOFT JAW PLIERS

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
541	541GB	Wing
641	641GB	Wing

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
GSE 165	Soft Jaw Plier	To disconnect and connect the FVS electrical connector	
Commercial available	Wrench, ratchet, 1/4 in drive	To remove the bolts from the FVS (only used for the alternative method when disconnect the FVS without removing the outboard flap tip actuator)	
Commercial available	Extension, Knurled, 14 in	To remove the bolts from the FVS (only used for the alternative method when disconnect the FVS without removing the outboard flap tip actuator)	
Commercial available	Socket, Universal, Shallow, 1/4 in, 6-Point	To remove the bolts from the FVS (only used for the alternative method when disconnect the FVS without removing the outboard flap tip actuator)	
Commercial available	Bit, Power, Hex, 5/32 in, 1/4 in hex, 15/16 in	To remove the bolts from the FVS (only used for the alternative method when disconnect the FVS without removing the outboard flap tip actuator)	

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	Wing trailing edge

I. Preparation

SUBTASK 841-002-A

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

- (1) Make sure that the aircraft is safe for maintenance.
- (2) Energize the aircraft with the External DC Power Supply ([AMM TASK 20-40-01-860-801-A/200](#)).
- (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.
- (5) Remove access door 541GB and 641GB ([AMM MPP 06-44-00/100](#)).

J. Removal ([Figure 401](#)) ([Figure 402](#)) ([Figure 403](#))

SUBTASK 020-002-A

- (1) Procedure for the removal of the FVS on bench (with removing the Outboard Flap Tip Actuator):

CAUTION: THE ELECTRICAL CONNECTOR OF THE FLAP VELOCITY SENSOR AND ITS CABLE CAN BE DAMAGED IF THEY ARE TWISTED OR BENT TOO MUCH, DURING THE DISCONNECTION/REMOVAL PROCEDURE. DO THE SUBSEQUENT PROCEDURE TO DISCONNECT AND REMOVE THE ELECTRICAL CONNECTOR.

- (a)
- (b) Procedure for the Disconnection/Removal of the FVS Electrical Connector (2). Refer to [Figure 401](#)
 - 1 Cut and discard the lockwire from the connector (2). Refer to [Figure 402](#)
 - 2 Back off the nut (1) from the connector (2) to get space to permit the retraction of the connector (2). Refer to [Figure 402](#).

CAUTION: DO NOT UNSCREW THE FVS BACKSHELL (4). REFER TO FIGURE 402.

- 3 Retract the connector (2) to the back part of the bracket (5) to get space to permit an easy disconnection of the FVS electrical connector (3). Refer to [Figure 402](#).
 - 4 Carefully disconnect the FVS electrical connector (3) from the connector (2). Refer to [Figure 402](#).
- NOTE:** If necessary, use soft jaw plier ([ITEM GSE 165](#)) to disconnect the FVS electrical connector.
- 5 Remove the Outboard Flap Tip Actuator (1) ([AMM TASK 27-51-10-000-802-A/400](#)).
 - 6 Cut the lockwires (5) and remove the bolts (4) and washers (3).
 - 7 Remove the Flap Velocity Sensor (6) from the Outboard Flap Tip Actuator (1).

- (2) Procedure for the removal of the Flap Velocity Sensor on wing (without removing the Outboard Flap Tip Actuator)

CAUTION: THE ELECTRICAL CONNECTOR OF THE FLAP VELOCITY SENSOR AND ITS CABLE CAN BE DAMAGED IF THEY ARE TWISTED OR BENT TOO MUCH, DURING THE DISCONNECTION/REMOVAL PROCEDURE. DO THE SUBSEQUENT PROCEDURE TO DISCONNECT AND REMOVE THE ELECTRICAL CONNECTOR.

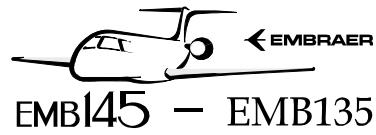
- (a)
- (b) Procedure for the Disconnection/Removal of the Flap Velocity Sensor Electrical Connector (2). Refer to [Figure 401](#)
 - 1 Cut and discard the lockwire from the connector (2). Refer to [Figure 402](#)
 - 2 Back off the nut (1) from the connector (2) to get space to permit the retraction of the connector (2). Refer to [Figure 402](#).

CAUTION: DO NOT UNSCREW THE FVS BACKSHELL (4). REFER TO FIGURE 402.

- 3 Retract the connector (2) to the back part of the bracket (5) to get space to permit an easy disconnection of the Flap Velocity Sensor electrical connector (3). Refer to [Figure 402](#).
- 4 Carefully disconnect the Flap Velocity Sensor electrical connector (3) from the connector (2). Refer to [Figure 402](#).

NOTE: If necessary, use soft jaw plier ([ITEM GSE 165](#)) to disconnect the Flap Velocity Sensor electrical connector.

- 5 Remove the aileron lower shroud ([AMM TASK 57-56-04-000-801-A/400](#)).
- 6 Cut the lockwires (5) of the bolts (4) that attach the Flap Velocity Sensor to the Outboard Flap Tip Actuator, refer to [Figure 401](#).
- 7 Remove the bolts (4), and washers (5).

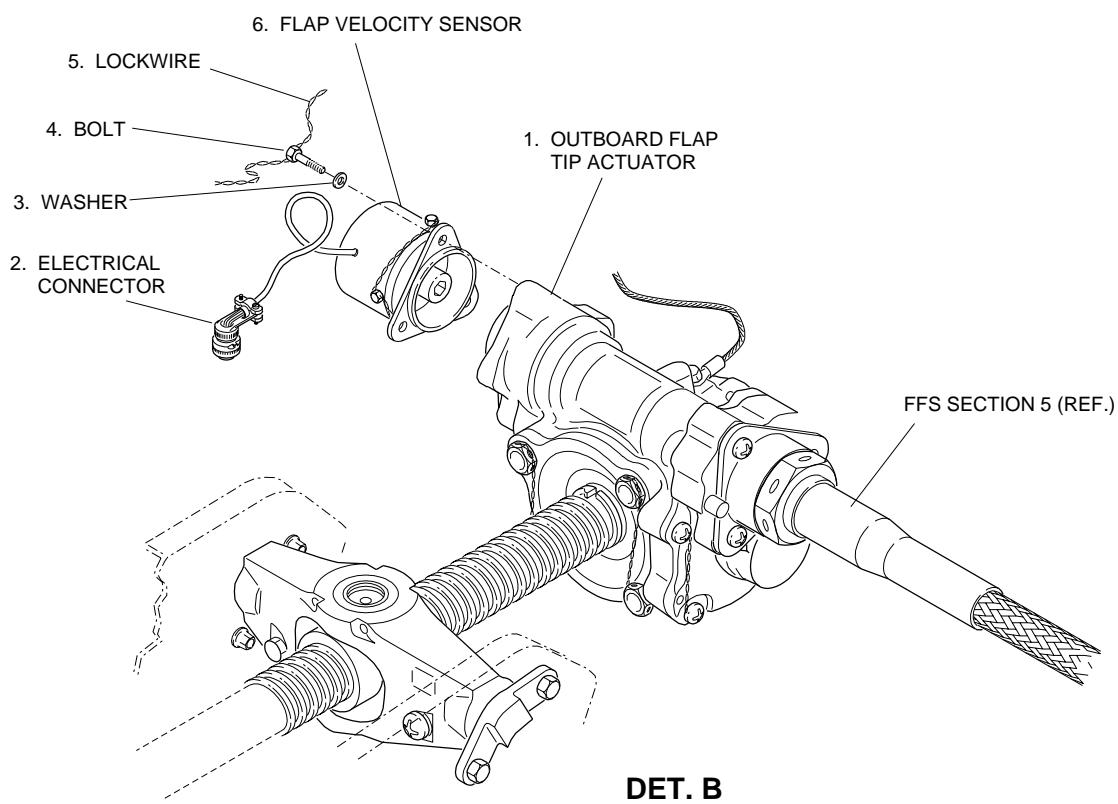
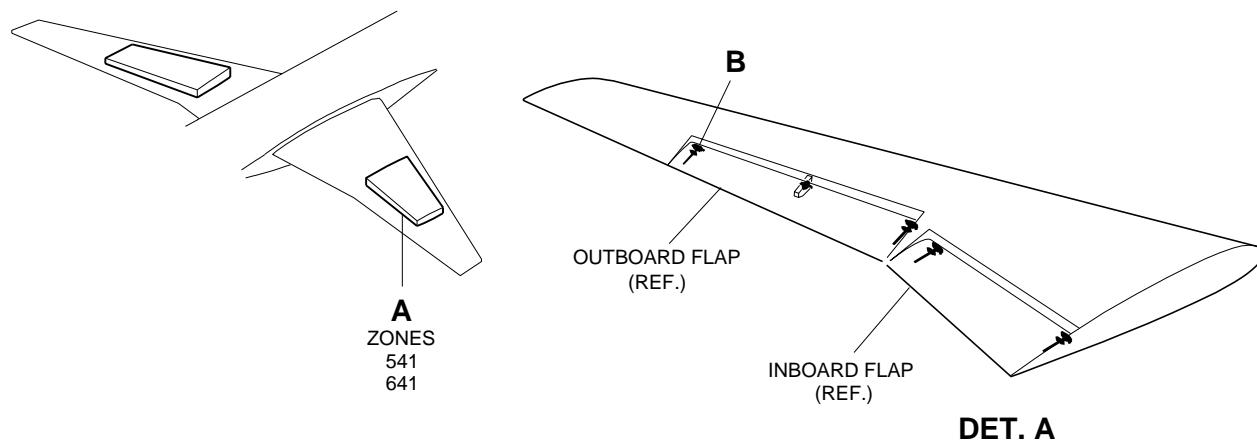


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8 Remove the Flap Velocity Sensor from the Outboard Flap Tip Actuator.

NOTE: 1. Use a Knurled Extension, a Socket, and an Allen Bit assembly to get access to the bolts that attach the Flap Velocity Sensor to the Outboard Flap Tip Actuator. Refer to [Figure 403](#).

2. Use a ratchet wrench to adapt to the knurled extension.

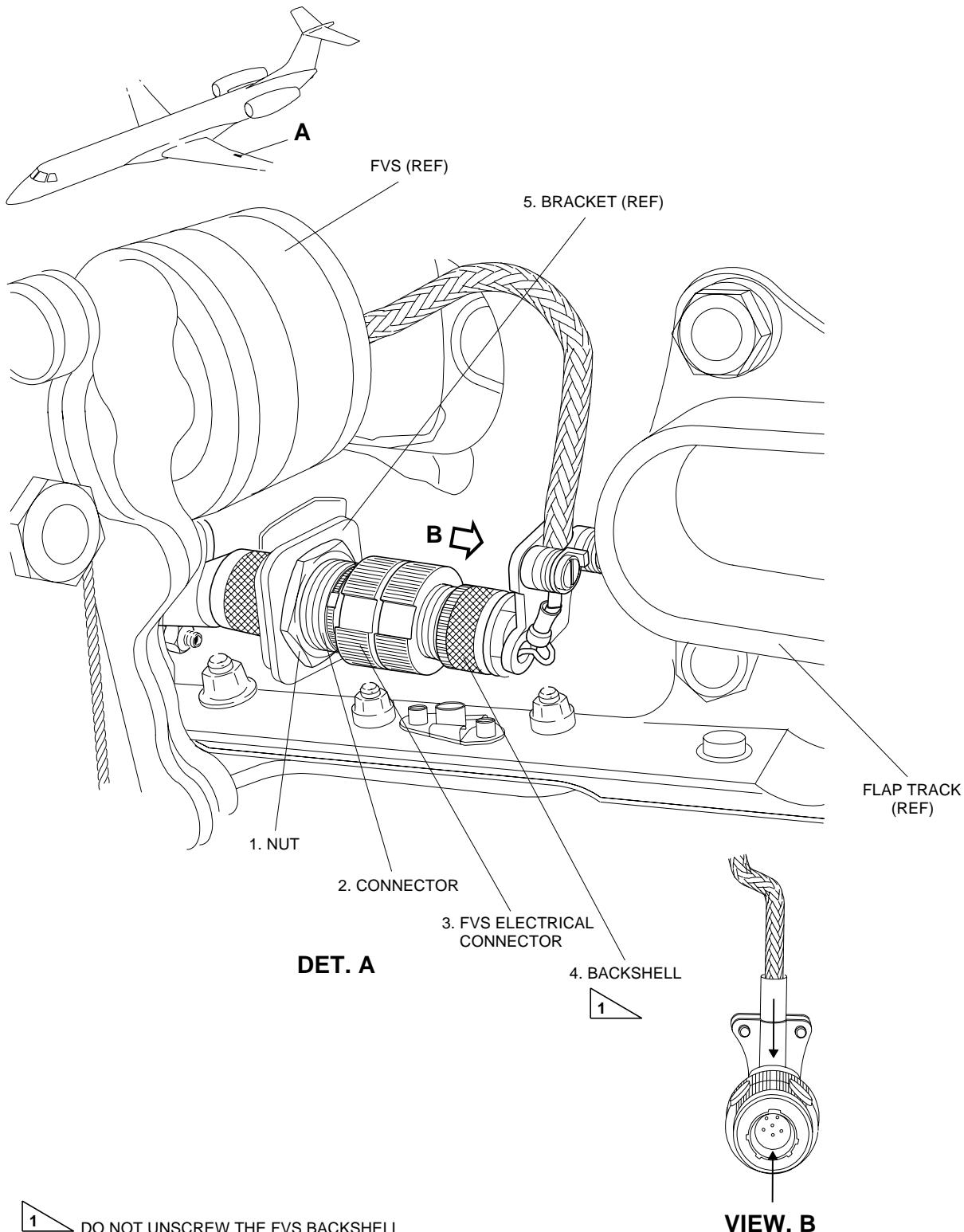
EFFECTIVITY: ALL
Flap Velocity Sensor - Removal/Installation
Figure 401


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EFFECTIVITY: ALL

Flap Velocity Sensor - Electrical Connector

Figure 402

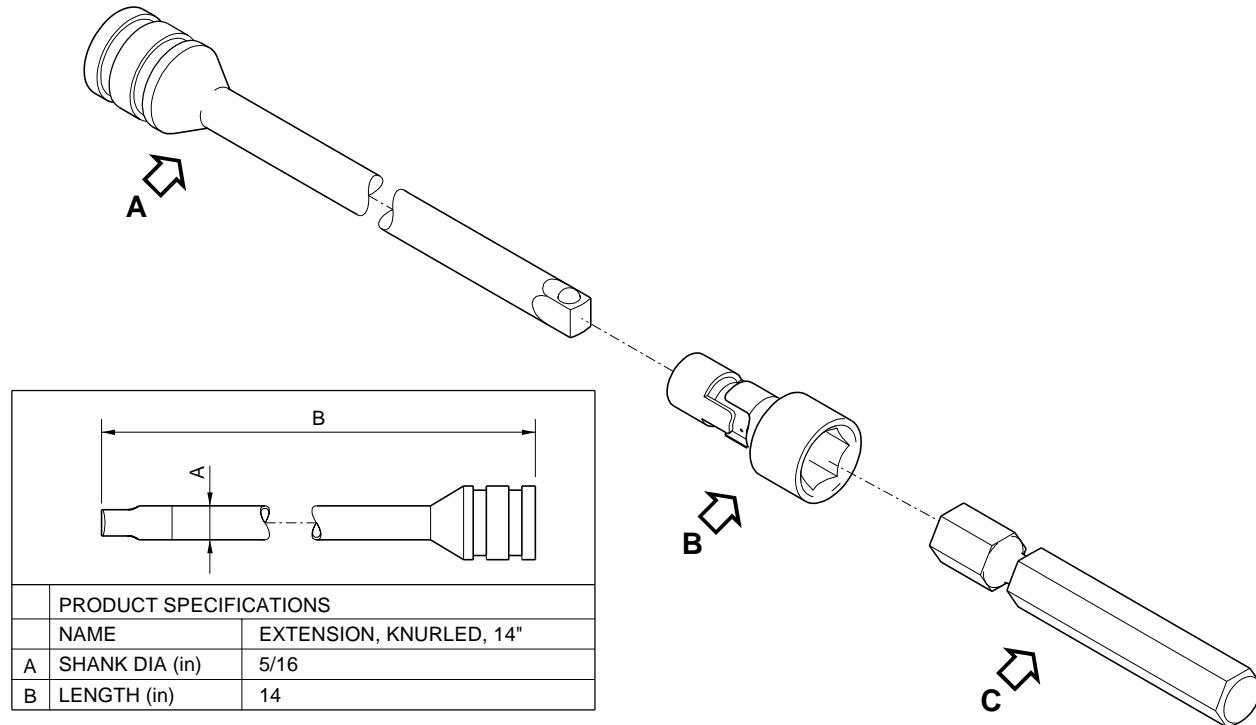
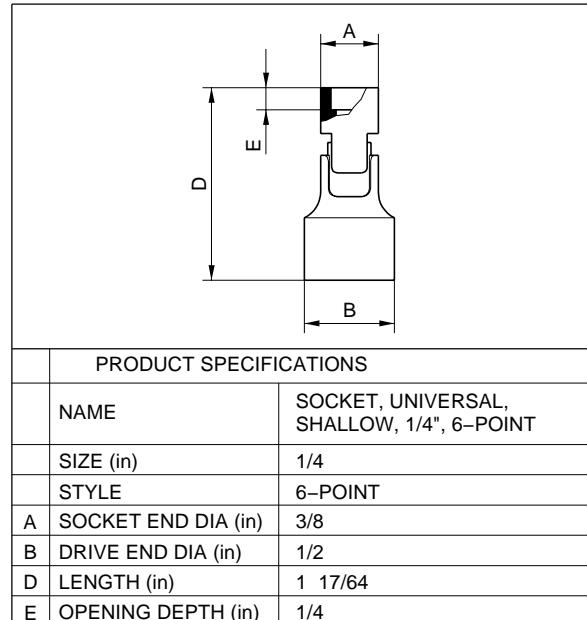
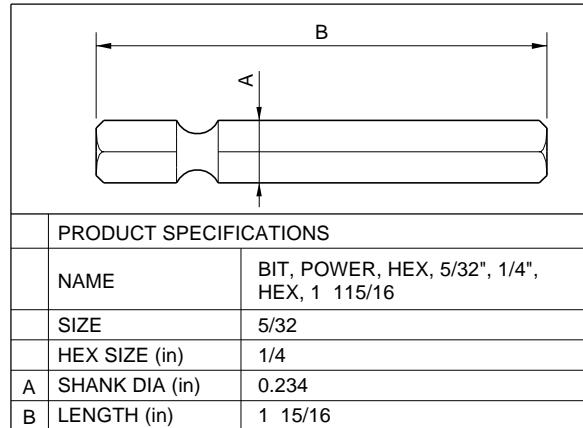


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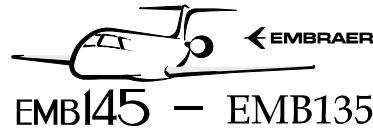
EFFECTIVITY: ALL

Extension, Socket, and Allen Bit Assembly

Figure 403


VIEW A

VIEW B

VIEW C

EM145AMM270804A.DGN



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TASK 27-51-12-400-801-A

EFFECTIVITY: ALL

3. FLAP VELOCITY SENSOR - INSTALLATION

A. General

(1) This task gives the procedures to install the Flap Velocity Sensor.

B. References

REFERENCE	DESIGNATION
AMM MPP 06-44-00/100	- COMPONENT LOCATION
AMM TASK 27-51-00-700-801-A/500	FLAP CONTROL SYSTEM - OPERATIONAL CHECK
AMM TASK 27-51-10-400-802-A/400	OUTBOARD FLAP TIP ACTUATOR (FSA 4) - INSTALLATION
AMM TASK 57-56-04-400-801-A/400	AILERON LOWER SHROUD - INSTALLATION
ITEM GSE 165	SOFT JAW PLIERS

C. Zones and Accesses

ZONE	PANEL/DOOR	LOCATION
541	541GB	Wing
641	641GB	Wing

D. Tools and Equipment

ITEM	DESCRIPTION	PURPOSE	QTY
GSE 165	Soft Jaw Plier	To disconnect and connect the FVS electrical connector	
Commercial available	Extension, Knurled, 14 in	To gain access to the bolts of the FVS (only used for the alternative method when disconnect the FVS without removing the outboard flap tip actuator)	
Commercial available	Socket, Universal, Shallow, 1/4 in, 6-Point	To gain access to the bolts of the FVS (only used for the alternative method when disconnect the FVS without removing the outboard flap tip actuator)	
Commercial available	Bit, Power, Hex, 5/32 in, 1/4 in hex, 1 15/16 in	To gain access to the bolts of the FVS (only used for the alternative method when disconnect the FVS without removing the outboard flap tip actuator)	

E. Auxiliary Items

Not Applicable



EMB145 - EMB135

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F. Consumable Materials

SPECIFICATION (BRAND)	DESCRIPTION	QTY
MS20995C32	Lockwire	As nec- essary
MIL-L-87177	Lubricant and Anticorrosive film Lektro-Tech Super Corr-B-12350	As nec- essary

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	Wing trailing edge

I. Installation (Figure 401) (Figure 402) (Figure 403)

SUBTASK 420-002-A

(1) Procedure for the installation of the Flap Velocity Sensor on bench:

- (a) Install the Flap Velocity Sensor (6) in the Outboard Flap Tip Actuator (1). Use the bolt (4) and washer (3).
- (b) Safety the bolts (4).
- (c) Install the Outboard Flap Tip Actuator (1) ([AMM TASK 27-51-10-400-802-A/400](#)).

CAUTION: • THE ELECTRICAL CONNECTOR OF THE FLAP VELOCITY SENSOR AND ITS CABLE CAN BE DAMAGED IF THEY ARE TWISTED OR BENT TOO MUCH, DURING THE INSTALLATION PROCEDURE. DO THE SUBSEQUENT PROCEDURE TO INSTALL THE ELECTRICAL CONNECTOR.

• WHEN YOU INSTALL THE ELECTRICAL CONNECTOR, MAKE SURE THAT THERE IS NO FRICTION BETWEEN THE ELECTRICAL CONNECTOR AND THE FLAP MOVING PARTS.

- (d)
- (e) Procedure for the Installation of the Flap Velocity Sensor Electrical Connector (2). Refer to (Figure 401).

WARNING: DO NOT GET LUBRICANT AND ANTICORROSIVE FILM LEKTRO-TECH SUPER CORR-B-12350 IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE LUBRICANT AND ANTICORROSIVE FILM LEKTRO-TECH SUPER CORR-B-12350. KEEP AWAY FROM SPARKS, FLAME, AND HEAT. THE LEKTRO-TECH SUPER CORR-B-12350 IS A POISONOUS AND FLAMMABLE SUBSTANCE.

- 1 Apply the Lektro-Tech Super Corr-B-12350 into the plug connector to prevent corrosion and to clean the contacts. Refer to (Figure 402).

NOTE: There is not a definition for the exact amount of spray to be applied, but the product should cover the contacts without excess spray. Excess spray does not cause any damage to the connector contacts and/or rubber, but may contribute to dirt accumulation.

- 2 With the connector (2) retracted up to the back of the bracket (5), connect the Flap Velocity Sensor electrical connector (3) to the connector (2). Refer to (Figure 402).
- 3 Attach the nut (1) to the connector (2). Refer to (Figure 402).

CAUTION:

- MAKE SURE THAT THE PLUG COMPLETELY COVERS THE RED BAND ON THE RECEPTACLE BODY.
- MAKE SURE THAT THE FVS GUIDE PIN IS ALIGNED WITH THE CONNECTOR CLAMP. REFER TO VIEW B IN FIGURE 402.

- 4 With soft jaw plier ([ITEM GSE 165](#)), carefully tighten the Flap Velocity Sensor electrical connector (3) to the connector (2). Refer to (Figure 402).

(f) Tighten the nut (1). Refer to (Figure 402).

(g) Safety the nut (1). Refer to (Figure 402).

WARNING: DO NOT GET LUBRICANT AND ANTICORROSION FILM LEKTRO-TECH SUPER CORR-B-12350 IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE LUBRICANT AND ANTICORROSION FILM LEKTRO-TECH SUPER CORR-B-12350. KEEP AWAY FROM SPARKS, FLAME, AND HEAT. THE LEKTRO-TECH SUPER CORR-B-12350 IS A POISONOUS AND FLAMMABLE SUBSTANCE.

- (h) Apply the Lektro-Tech Super Corr-B-12350 over the electrical connector (2) and (3). Refer to (Figure 402).

NOTE: There is not a definition for the exact amount of spray to be applied, but the excess may contribute to dirt accumulation.

- (2) Procedure for the installation of the Flap Velocity Sensor on wing:

- (a) Attach the Flap Velocity Sensor (6) in the Outboard Flap Tip Actuator (1) with the bolts (4) and washers (3).

NOTE: 1. Use a Knurled Extension, a Socket, and an Allen Bit to get access to the bolts (4), refer to (Figure 403).

2. Use a ratchet wrench to adapt to the knurled extension.

(b)

(c) Safety the bolts (4).

- CAUTION:** • THE ELECTRICAL CONNECTOR OF THE FLAP VELOCITY SENSOR AND ITS CABLE CAN BE DAMAGED IF THEY ARE TWISTED OR BENT TOO MUCH, DURING THE INSTALLATION PROCEDURE. DO THE SUBSEQUENT PROCEDURE TO INSTALL THE ELECTRICAL CONNECTOR.
- WHEN YOU INSTALL THE ELECTRICAL CONNECTOR, MAKE SURE THAT THERE IS NO FRICTION BETWEEN THE ELECTRICAL CONNECTOR AND THE FLAP MOVING PARTS.

(d)

- (e) Procedure for the Installation of the Flap Velocity Sensor Electrical Connector (2). Refer to (Figure 401).

WARNING: DO NOT GET LUBRICANT AND ANTICORROSIVE FILM LEKTRO-TECH SUPER CORR-B-12350 IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE LUBRICANT AND ANTICORROSIVE FILM LEKTRO-TECH SUPER CORR-B-12350. KEEP AWAY FROM SPARKS, FLAME, AND HEAT. THE LEKTRO-TECH SUPER CORR-B-12350 IS A POISONOUS AND FLAMMABLE SUBSTANCE.

- 1 Apply the Lektro-Tech Super Corr-B-12350 into the plug connector to prevent corrosion and to clean the contacts. Refer to (Figure 402).

NOTE: There is not a definition for the exact amount of spray to be applied, but the product should cover the contacts without excess spray. Excess spray does not cause any damage to the connector contacts and/or rubber, but may contribute to dirt accumulation.

- 2 With the connector (2) retracted up to the back of the bracket (5), connect the Flap Velocity Sensor electrical connector (3) to the connector (2). Refer to (Figure 402).

- 3 Attach the nut (1) to the connector (2). Refer to (Figure 402).

- CAUTION:** • MAKE SURE THAT THE PLUG COMPLETELY COVERS THE RED BAND ON THE RECEPTACLE BODY.
- MAKE SURE THAT THE FVS GUIDE PIN IS ALIGNED WITH THE CONNECTOR CLAMP. REFER TO VIEW B IN FIGURE 402.

- 4 With soft jaw plier (**ITEM GSE 165**), carefully tighten the Flap Velocity Sensor electrical connector (3) to the connector (2). Refer to (Figure 402).

- (f) Tighten the nut (1). Refer to (Figure 402).

- (g) Safety the nut (1). Refer to (Figure 402).

WARNING: DO NOT GET LUBRICANT AND ANTICORROSIVE FILM LEKTRO-TECH SUPER CORR-B-12350 IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE LUBRICANT AND ANTICORROSIVE FILM LEKTRO-TECH SUPER CORR-B-12350. KEEP AWAY FROM SPARKS, FLAME, AND HEAT. THE LEKTRO-TECH SUPER CORR-B-12350 IS A POISONOUS AND FLAMMABLE SUBSTANCE.

- (h) Apply the Lektro-Tech Super Corr-B-12350 over the electrical connector (2) and (3). Refer to (Figure 402).

NOTE: There is not a definition for the exact amount of spray to be applied, but the excess may contribute to dirt accumulation.

J. Follow-on

SUBTASK 842-002-A

- (1) On the Circuit Breaker Panel, close the FLAP 1 and FLAP 2 circuit breakers and remove the DO-NOT-CLOSE tag from them.
- (2) Install access door 541GB and 641GB ([AMM MPP 06-44-00/100](#)).
- (3) Install the aileron lower shroud ([AMM TASK 57-56-04-400-801-A/400](#)), if applicable.
- (4) Do the operational check of the Flap Control System ([AMM TASK 27-51-00-700-801-A/500](#)).

