SPRING CARTRIDGES - ADJUSTMENT/TEST

EFFECTIVITY: AIRCRAFT WITH ELECTROMECHANICAL GUST LOCK

1. General

A. This section gives the procedures to test the electromechanical gust lock spring-cartridge movement and the alignment of the flanged support with the use of the spring cartridge as a guide.

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*
27-71-03-700-801-A	SPRING-CARTRIDGE FRICTION FORCE - TEST	AIRCRAFT WITH ELECTROMECHANICAL GUST LOCK
27-71-03-700-802-A	SPRING CARTRIDGE ALIGNMENT	AIRCRAFT WITH ELECTROMECHANICAL GUST LOCK

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TASK 27-71-03-700-801-A
EFFECTIVITY: AIRCRAFT WITH ELECTROMECHANICAL GUST LOCK

2. SPRING-CARTRIDGE FRICTION FORCE - TEST

A. General

(1) This task gives the procedures to test the electromechanical gust lock spring-cartridge movement.

B. References

REFERENCE	*DESIGNATION*
AMM TASK 27-71-03-000-801-A/400	SPRING CARTRIDGES - REMOVAL
AMM TASK 27-71-03-400-801-A/400	SPRING CARTRIDGES - INSTALLATION
AMM TASK 55-36-00-000-801-A/400	TAIL BOOM - REMOVAL
AMM TASK 55-36-00-400-801-A/400	TAIL BOOM - INSTALLATION
IPC 27-71-00	GUST LOCK ELECTROMECHANICAL

C. Zones and Accesses

ZONE	*PANEL/DOOR*	*LOCATION*
321	321	Tail boom

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
GSE 056	Dynamometer	To apply the loads	

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	Horizontal stabilizer

I. Preparation

SUBTASK 841-002-A

(1) Make sure that the aircraft is safe for maintenance.

(2) Do not do other tasks on the elevator and horizontal stabilizer area.

(3) Set the gust lock system to the unlocked position.

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(4) Remove rear fairings 321 of the horizontal stabilizer. Refer to AMM TASK 55-36-00-000-801-A/400

(5) Remove the spring-cartridge. Refer to AMM TASK 27-71-03-000-801-A/400

J. Spring-Cartridge Friction Force - Test (Figure 501)

SUBTASK 720-002-A

WARNING: MAKE SURE THAT THE RUDDER, HORIZONTAL STABILIZER, AND ELEVATOR CANNOT BE OPERATED ACCIDENTALLY. AN ACCIDENTAL OPERATION CAN CAUSE INJURY TO PERSONS.

(1) Put the spring cartridge into its sleeve and, with the aid of GSE-056 (dynamometer), slowly pull the spring cartridge out of the sleeve and measure the force necessary to retract it from the sleeve until the end of the locking pin aligns with the bottom face of the sleeve.

NOTE:
- Do this step five times.
- Pull the spring cartridge from its sleeve in the horizontal direction.
- This step is necessary for both RH and LH spring cartridges.

(a) Write down the load values, measured in each retraction travel of the spring cartridge, in Table 501.

Table 501 - FRICTION FORCE VALUES BETWEEN THE SPRING CARTRIDGE AND ITS SLEEVE

Loads	L1	L2	L3	L4	L5
Values measured with GSE-056					
Average value	Xl =				

(2) Find the average value Xl, between the five friction force values, and write it down in Table 501.

NOTE: This step is necessary for both RH and LH spring cartridges.

(a) Xl = (L1+L2+L3+L4+L5)/5

NOTE: If the average value of the measured force is more than 2.27 kgf (5 lbf), replace the O-ring Spring Cartridge IPC 27-71-00. Repeat the test until you get the correct average value and a serviceable assembly.

K. Follow-on

SUBTASK 842-002-A

(1) Install the spring-cartridge. Refer to AMM TASK 27-71-03-400-801-A/400.

(2) Install rear fairings 321 of the horizontal stabilizer (AMM TASK 55-36-00-400-801-A/400).

(3) Set the gust lock system to the locked position.

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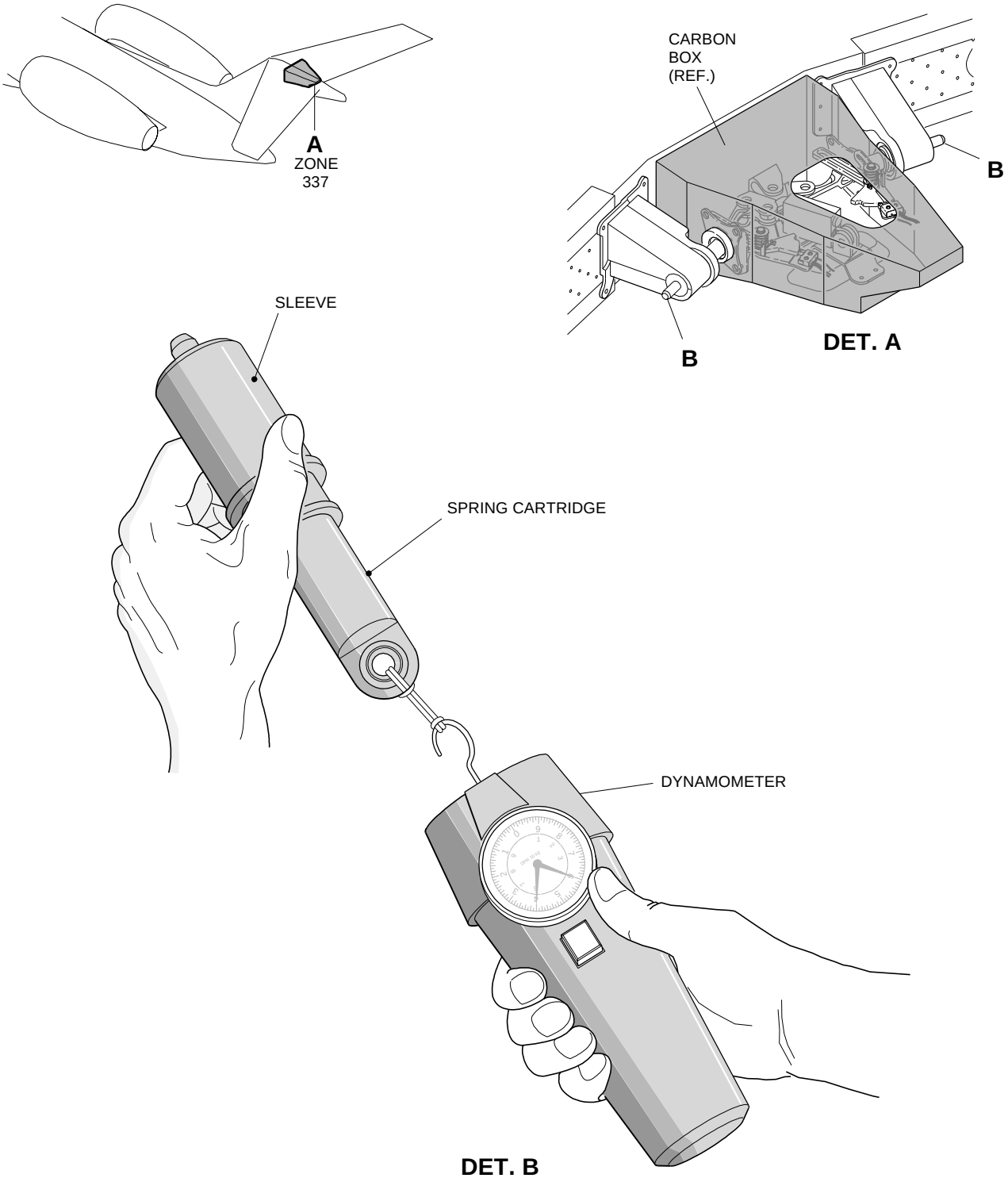
EFFECTIVITY: AIRCRAFT WITH ELECTROMECHANICAL GUST LOCK
Spring Cartridge Friction Force
Figure 501



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TASK 27-71-03-700-802-A
EFFECTIVITY: AIRCRAFT WITH ELECTROMECHANICAL GUST LOCK

3. SPRING CARTRIDGE ALIGNMENT

A. General

(1) This task gives the procedures to align the spring cartridge with the flanged support.

B. References

REFERENCE	*DESIGNATION*
AMM TASK 20-40-01-860-801-A/200	ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE
AMM TASK 27-71-00-700-801-A/500	ELECTROMECHANICAL GUST LOCK - OPERATIONAL CHECK
AMM TASK 27-71-01-700-801-A/500	ELECTROMECHANICAL ACTUATOR - FUNCTIONAL CHECK
AMM TASK 27-71-03-000-801-A/400	SPRING CARTRIDGES - REMOVAL
AMM TASK 27-71-03-400-801-A/400	SPRING CARTRIDGES - INSTALLATION
AMM TASK 27-71-14-400-801-A/400	SPRING-CARTRIDGE POSITION MECHANISM - INSTALLATION
AMM TASK 55-36-00-000-801-A/400	TAIL BOOM - REMOVAL
AMM TASK 55-36-00-400-801-A/400	TAIL BOOM - INSTALLATION
IPC 27-71-00	GUST LOCK ELECTROMECHANICAL

C. Zones and Accesses

ZONE	*PANEL/DOOR*	*LOCATION*
321	321	Tail boom

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
GSE 495	Gauge - Adjustment, Gust Lock	To align the spring cartridge with the flanged support.	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
MIL-PRF-81733	Sealant PS870 C-12	AR

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G. Expendable Parts

ITEM	*IPC REFERENCE (VENDOR REFERENCE)*	*QTY*
Shim	IPC 27-71-00	AR

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	Horizontal stabilizer

I. Preparation

SUBTASK 841-003-A

(1) Make sure that the aircraft is safe for maintenance.

(2) Do not do other tasks on the elevator and horizontal stabilizer area.

(3) Remove rear fairings 321 of the horizontal stabilizer. Refer to AMM TASK 55-36-00-000-801-A/400

(4) Remove the spring-cartridge and the flanged support. Refer to AMM TASK 27-71-03-000-801-A/400

(5) Remove all the sealant from the carbon box and the flanges support.

J. Spring Cartridge Alignment (Figure 502)

SUBTASK 720-003-A

WARNING: MAKE SURE THAT THE RUDDER, HORIZONTAL STABILIZER, AND ELEVATOR CANNOT BE OPERATED ACCIDENTALLY. AN ACCIDENTAL OPERATION CAN CAUSE INJURY TO PERSONS.

(1) Without GSE 495

(a) Put the spring cartridge in position on the support and then put the flanged support in position in the carbon box.

(b) Find the correct position of the flanged support. To do this, use the spring cartridge as a guide.

(c) Finger-tighten the three attaching bolts to the flanged support.

NOTE: Make sure that the spring cartridge is free to move while you put the flanged support in position.

(d) While you move the spring cartridge, tighten the bolts slightly and alternately. Make sure that you keep the correct alignment of the spring cartridge.

NOTE: Make sure that the flanged support is in the center position at the spring cartridge position.

(e) If you cannot keep the the spring cartridge correctly aligned of, cut a laminated shim as necessary and install it between the flanged support and the carbon box.

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NOTE: Delaminate the shim as necessary for the spring cartridge movement to be free.

(f) If you cannot move the spring cartridge easily , release the bolts and do the steps before until the spring cartridge is free.

(g) After you make sure that the Spring cartridge aligns is correctly, remove the flange support and apply a thin layer of sealant to the flanged support as shown in Figure 504.

(h) Install the flanged support back. Use the spring cartridge as a guide.

NOTE: Make sure that the spring cartridge is correct aligned and freely.

(2) With GSE 495

(a) Put the spring cartridge in the position on the support and then put the flanged support in position in the carbon box.

(b) Find the correct position of the flanged support. To do this, use the spring cartridge as a guide.

(c) Tighten the three attaching bolts to the flanged support.

NOTE: Make sure that the flanged support is in the center position at the spring cartridge.

(d) Put the GSE 495 at the smaller diameter of the cartridge to make the GSE 495 surface touch the spring cartridge shoulder surface.

(e) Move the spring cartridge until the opposite surface of the GSE touches the flanged support. Refer to DET B, Figure 503.

(f) Do a check to see if there is a gap between the GSE surface and the flanged support surface.

(g) If there is a gap between the flanged support and the GSE surface, use a filler gage to measure this gap at the attaching bolt line. Refer to points A, B and C on DET C Figure 503.

NOTE: There can be a gap of up to 0.15mm.

(h) Write down the gap values in Table 502 and use the result as a reference for the thickness of the shim.

Table 502 - GAP MEASURED BETWEEN THE GSE AND THE FLANGED SUPPORT

Points	A	B	C
Gap Value [xx]			

1 If the largest gap is at point A:

- Calculate the thickness of the shim to be added at point 2 as follows: SHIM2 = 2,9*(A-B)
- Calculate the thickness of the shim to be added at point 3 as follows:

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SHIM3 = 2,8*(A-C)

2 If the largest gap is at point B:

- Calculate the thickness of the shim to be added at point 1 as follows: SHIM1 = 3,3*(B-A)
- Calculate the thickness of the shim to be added at point 3 as follows: SHIM3 = 2,8*(B-C)

3 If the largest gap is at point C:

- Calculate the thickness of the shim to be added at point 1 as follows: SHIM1 = 3,3*(C-A)
- Calculate the thickness of the shim to be added at point 2 as follows: SHIM2 = 2,9*(C-B)

(i) Use the results found in the steps above and, as necessary, add laminated shims between the flanged support and the carbon box at the points referred to.

(j) Install the flanged support back and tighten the three attaching bolts alternately.

(k) Use a filler gage to make sure that the flanged support surface is parallel with the GSE surface, and make sure that the spring cartridge moves freely.

(l) After you make sure that the flanged support is correctly aligned, remove it and apply a thin layer of sealant to the flanged support as shown in Figure 504.

K. Follow-on

SUBTASK 842-003-A

(1) Install the spring cartridge, according to AMM TASK 27-71-03-400-801-A/400.

(2) Install the spring cartridge position mechanism. Refer to AMM TASK 27-71-14-400-801-A/400

(3) Do the actuator functional check. Refer to AMM TASK 27-71-01-700-801-A/500.

(4) Do the gust lock operational test. Refer to AMM TASK 27-71-00-700-801-A/500.

(5) De-energize the aircraft. Refer to AMM TASK 20-40-01-860-801-A/200.

(6) Install rear fairings 321 of the horizontal stabilizer (AMM TASK 55-36-00-400-801-A/400).

(7) Set the gust lock system to the locked position.

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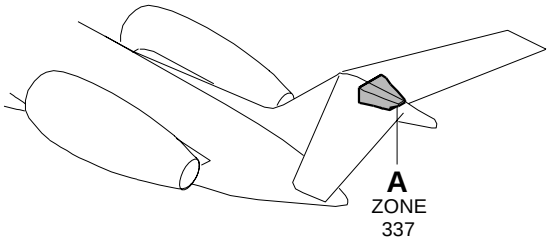
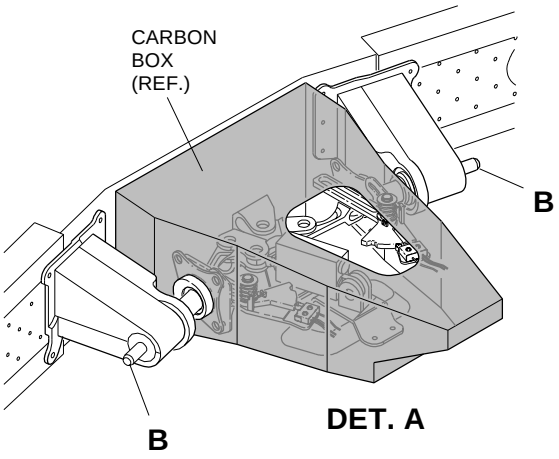
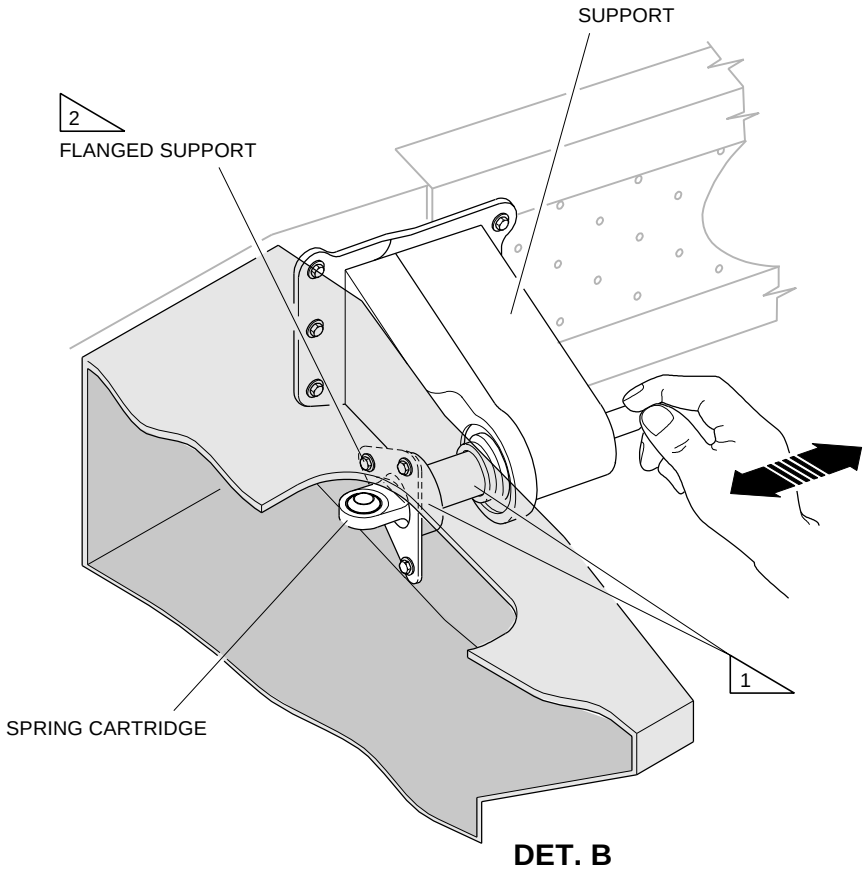
EFFECTIVITY: AIRCRAFT WITH ELECTROMECHANICAL GUST LOCK
Spring Cartridge Alignment
Figure 502







1 POSITION THE FLANGED SUPPORT USING THE SPRING CARTRIDGE AS A GUIDE DURING THE TIGHTENING OF THE BOLTS.

2 APPLY SEALANT PS870C−12 TO THE FLANGED SUPPORT.

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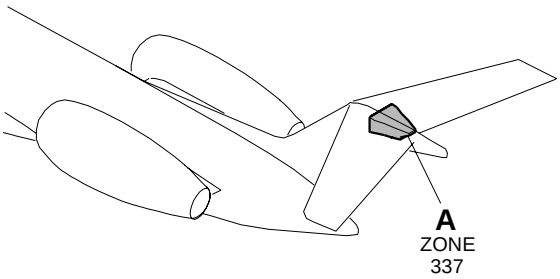
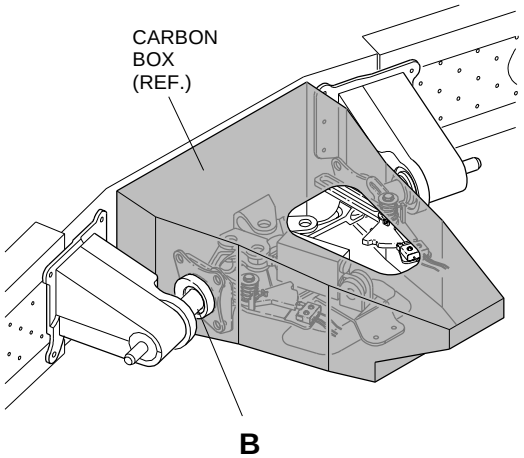
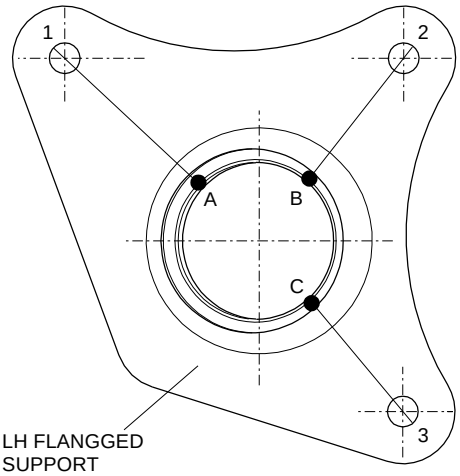
EFFECTIVITY: AIRCRAFT WITH ELECTROMECHANICAL GUST LOCK
Spring Cartridge Alignment with GSE 495
Figure 503

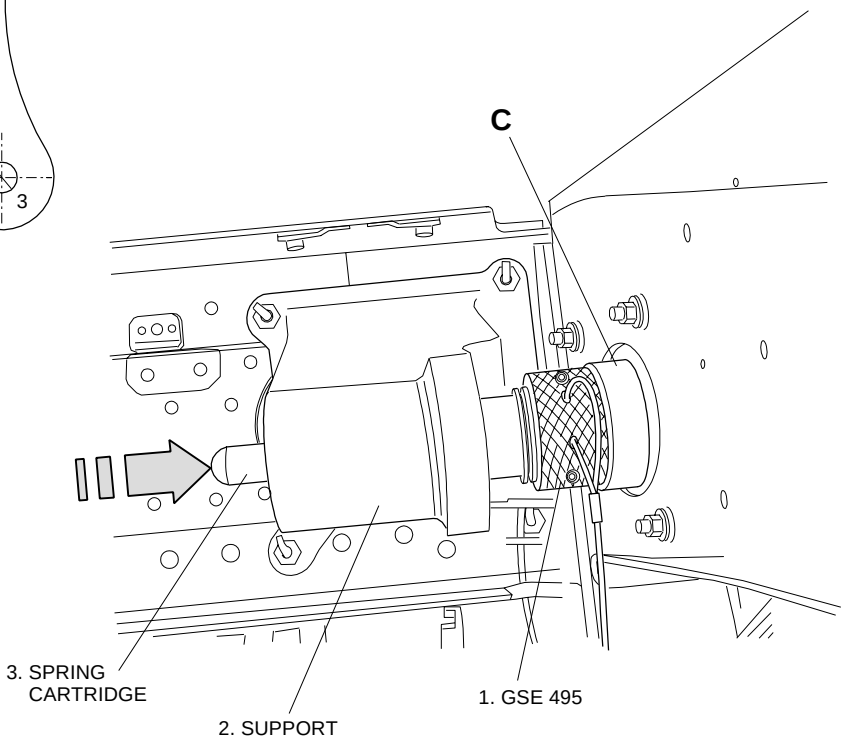




DET. A



DET. C
(TYPICAL)



DET. B
(TYPICAL)

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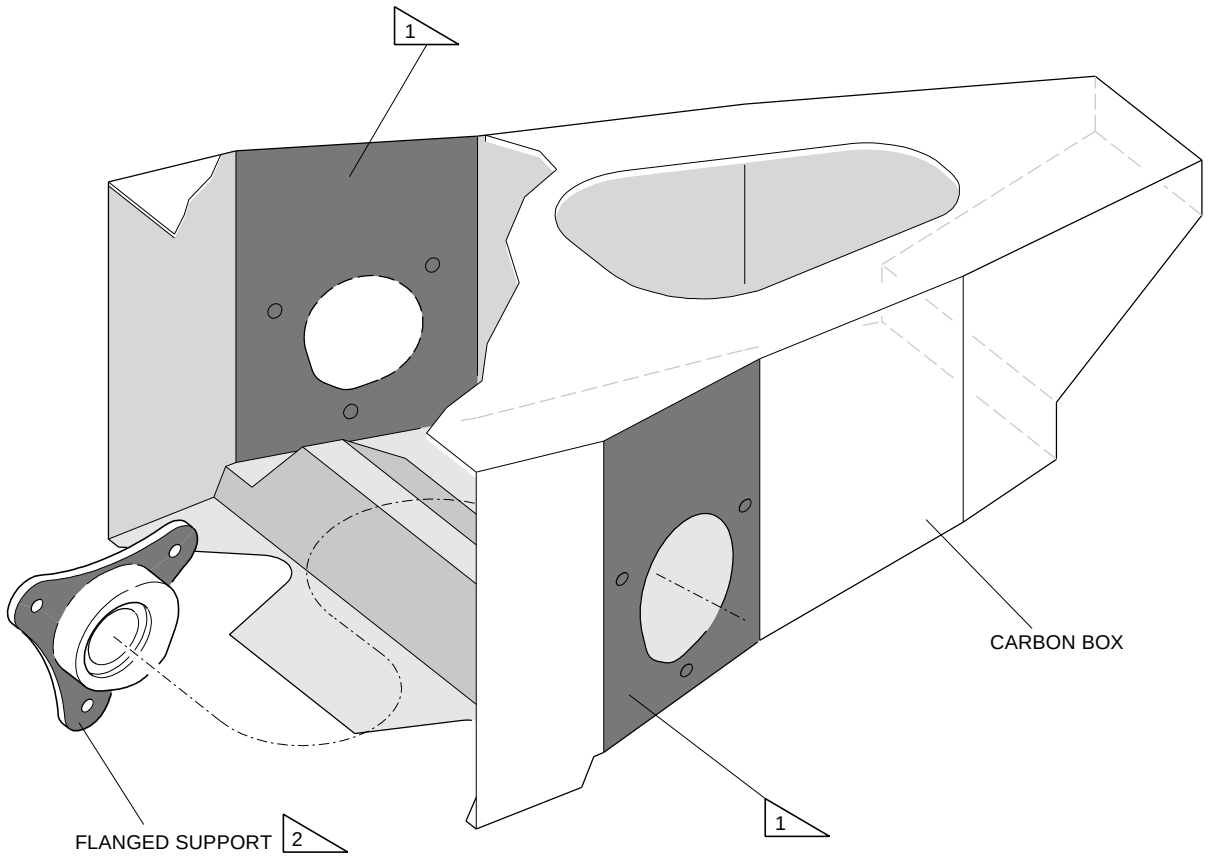
EFFECTIVITY: AIRCRAFT WITH ELECTROMECHANICAL GUST LOCK
Sealant Application
Figure 504



1 WITH THE AID OF A SCRAPER, FULLY REMOVE THE SEALANT RESIDUES INTERNALLY AND EXTERNALLY.

2 APPLY A THIN LAYER OF SEALANT.

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