A Textron Company

TECHNICAL BULLETIN 407-19-130

28 July 2022

MODEL AFFECTED: 407

SUBJECT: IMPROVED AFT ENGINE FIREWALL INSTALLATION KIT 407-704-037-101 and -103, INTRODUCTION OF.

HELICOPTERS AFFECTED: Serial numbers 53000 through 53900, 53911 through 54166, 54300 through 54752, 54806 through 54815, 54817 through 54823, 54825 through 54831.

[Serial number 54805, 54816, 54824, 54832 and subsequent will have the intent of this bulletin accomplished prior to delivery.]

COMPLIANCE: At customer's option or when replacement parts for the aft firewall assembly are required.

DESCRIPTION:

Bell has recently introduced an improved aft firewall assembly in the engine bay of the 407 model. This new firewall has an improved profile and includes left and right frame assemblies made from carbon fiber material. This new firewall assembly can be retrofitted to the 407 serial numbers listed in the helicopters affected block above while using the procedure described in this bulletin.

APPROVAL:

The engineering design aspects of this bulletin are Transport Canada Civil Aviation (TCCA) approved.

CONTACT INFO:

For any questions regarding this bulletin, please contact:

Bell Product Support Engineering
LIGHT Tel: 450-437-2862 / 1-800-363-8023 / productsupport@bellflight.com

MANPOWER:

Approximately 32 man-hours are required to complete this bulletin. This estimate is based on hands-on time and may vary with personnel and facilities available.

WARRANTY:

There is no warranty credit applicable for parts or labor associated with this bulletin.

MATERIAL:

Required Material:

-NOTE-

These kits are only compatible with 407EC-203-3 Air Conditioning Dual Evaporator STC and subsequent versions. If installed, STC versions prior to 407EC-203-3 must be upgraded with (AirComm) Service Bulletin SB 407-060120 and Compressor Installation Drawing 407EC-300-4 or subsequent version to ensure compatibility with kit 407-704-037-101 or -103.

-NOTE-

For ships S/N 53001 through 53579 not modified per TB 407-03-53, additional part will be required to modify side engine doors in accordance with applicable instructions shown within TB 407-03-53.

The following material is required for the accomplishment of this bulletin and may be obtained through your Bell Supply Center.

<u>For helicopters S/N 53001 through 53579, kit 407-704-037-103 must be ordered (See Note 1)</u>

<u>For Helicopter S/N 53580 and subsequent, kit 407-704-037-101 must be ordered</u>

Part Number	Nomenclature	Qty (Note)
407-064-014-103	Firewall assy.	1
206-032-305-171	Support	1
407-704-037-117	Doubler	1 (1)
407-704-037-118	Doubler	1 (1)
407-064-014-163	Filler	2
407-064-014-185	Strip, lateral (Gasket)	2
407-064-014-187	Strip, top (Gasket)	1
407-064-015-115	Clip	1
407-064-015-116	Clip	1
407-064-806-147	Washer	2
407-064-806-157	Pad	1
110-223-04-04	Fastener	2
110-229-04-03	Fastener	4
23052363	Decal	1
31-097-1	Decal	1
50-007A21C	Fastener	2 (2)
50-007A24C	Fastener	2 (2)
50-007A27C	Fastener	2 (2)
50-007A30C	Fastener	10 (2)
50-007A33C	Fastener	12 (2)
50-007A36C	Fastener	12 (2)
50-007A39C	Fastener	12 (2)
50-007A42C	Fastener	12 (2)
50-007A45C	Fastener	4 (2)
50-007A48C	Fastener	2 (2)
50-007W24C	Fastener	2 (2)
50-007W27C	Fastener	2 (2)
50-007W30C	Fastener	2 (2)
50-007W33C	Fastener	2 (2)
50-007W36C	Fastener	4 (2)
50-007W39C	Fastener	2 (2)
50-007W42C	Fastener	2 (2)
50-007W45C	Fastener	2 (2)
50-007W48C	Fastener	2 (2)
50-008-RF2C	Receptacle	18
50-009C2	Grommet	24
50-136J12-30	Union	1
70-061L000T224A	Hose Assy.	1
AS5178J12	Nut	1
MS20426T3-3	Rivet	16 (1, 2)
MS20426T3-3-5	Rivet	4 (1, 2)
MS20613-3C3	Rivet	7 (2)
MS20613-3C3-5	Rivet	6 (2)
MS20613-3C4	Rivet	2 (2)
MS20613-3C5	Rivet	2 (2)

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MS20613-4C4-5	Rivet	6 (1, 2)
MS20613-4C5	Rivet	2 (1, 2)
MS20613-4C6	Rivet	2 (2)
MS20615-3M3	Rivet	23
MS20615-3M4	Rivet	17
MS20615-4M5	Rivet	2
NAS1149C0516R	Washer	2
NAS1149C0532R	Washer	2
NAS1149C0563R	Washer	4
NAS1149C1790R	Washer	2
NAS1149CN532R	Washer	3
NAS1399CFA3A2	Rivet	4
NAS1399CFA3A3	Rivet	4
NAS1399CFA3A4	Rivet	24
NAS1399CFA3A5	Rivet	4
NAS9307M-4-03	Rivet	10 (2)

NOTES:

1. Those parts are applicable to S/N 53001 through 53129 only if equipped with aft fairing assy 407-064-312-101 (fiber glass).
2. Length of fasteners may vary from one helicopter to another. The correct length of fasteners must be determined at installation.

Consumable Material:
The following material is required to accomplish this bulletin, but may not require ordering, depending on the operator's consumable material stock levels. This material may be obtained through your Bell Supply Center.

Part Number	Nomenclature	Qty (Note)	Reference *
2000-06010-00	Adhesive	1Qt (1)	C-310
2010-10345-01	Sealant	1Pt (1)	C-308
2000-01022-00	Adhesive	1Pt (1)	C-317
2100-00044-00	CPC	1Pt (1)	C-101
2100-09016-02	CPC	1Pt (1)	C-104
2010-12481-01	Sealant	1Pt (1)	C-251
2010-05970-00	Sealant, firewall	1Pt (1)	C-559

DAPCO 2100	Sealing compound	6Oz (1)	C-353
2000-00015-00	Anti-chaffing tape	1 Roll (1)	C-454

* C-XXX numbers refer to the consumables list in the BHT-ALL-SPM, Standard Practices Manual

NOTE 1: All consumables listed above can be ordered under a single kit part number 407-704-037-115.

SPECIAL TOOLS:

None required.

WEIGHT AND BALANCE:

Not affected.

ELECTRICAL LOAD DATA:

Not affected.

REFERENCES:

407-IPB, Illustrated Parts Breakdown, Chapter 53
407-MM, Maintenance Manual, Chapter 53 and 65
BHT-ALL-SRM, Structural Repair Manual, Chapter 3
BHT-ALL-SPM, Standard Practices Manual
Technical Bulletin 407-97-4
Technical Bulletin 407-03-53
Installation Instructions 407-II-33
Service Bulletin (AirComm) 407-060120

PUBLICATIONS AFFECTED:

BHT-407-IPB, Illustrated Parts Breakdown, Chapter 53

ACCOMPLISHMENT INSTRUCTIONS:

PART I: Preparation

1. Prepare the helicopter for maintenance.

2. Remove oil cooler blower fairing assembly.

3. Remove upper engine cowl assembly with side doors.

4. Remove engine from the airframe, oil cooler (with applicable support legs, ref 407-II-33), oil cooler blower assembly with mating bearing supports, tail rotor driveshaft and all connecting lines and tubes. Cap and protect all opened lines. Protect affected area as required.

5. Remove the two firewall cover halves P/N 206-064-902-137 or 206-064-902-145 (TB 407-97-4) from the firewall. Retain with existing attachment hardware for re-installation.

6. As required, AirComm compressor and attaching bracket might need to be removed to gain access to the firewall lower support (angle) 206-032-305-171.

PART II: Removal of existing firewall assembly (Ref. Figure 2)

-NOTE-

If AirComm STC is installed, forward oil cooler blower hanger bearing support can be used as a workaid to locate the height of the firewall in conjunction with height measured from the top of the firewall to the oil cooler panel. The aft collar S-3010EC-7 could be used to back drill the holes through the stiffener and firewall accordingly.

1. Choose two reference points on the oil cooler deck and measure heigh each side (laterally) of the firewall using an appropriate device (measuring tape or else) for future reference. Record height observed.

2. Drill and remove all rivets securing the base of existing firewall assembly to the airframe at Sta 192.00. Lift the firewall seal from the side flange, this will provide access to drill and remove the side vertical rivets (2 each) securing vertical leg of engine pan corner clips 407-064-015-115 and 407-064-015-116. Break sealant, lift firewall up and discard.

3. Drill all rivets securing the bottom support (angle) and side clips. Break sealant, remove angle and side clips from engine bay area and discard. Clean all sealant residues from mating surfaces.

-NOTE-

For aircraft modified by 407-II-33, Retain fillers 206-032-305-165 and 206-032-305-166 between lower support (angle) 206-032-305-171 and oil cooler support fittings 407-030-017-117 and 407-030-117-118 as indicated on Figure 2, sheet 3.

4. As required, remove a few more rivets at AirComm compressor bracket stiffener and doubler to release the firewall lower support (angle) 206-032-305-171.

PART III: Installation of new firewall assembly (Ref. Figure 3)

1. Position new engine pan aft support 206-032-305-171 (angle) in place in engine bay. Mark and transfer existing hole from vertical face of bulkhead at Sta 192.00 to vertical flange of new angle. Mark and transfer existing rivet holes from engine pan lower web to lower flange of angle. Remove angle and deburr holes. Coat faying surface of back side (aft face) of support with sealant (C-251). Coat faying surface of lower flange with sealant (C-353). Install support (angle) using rivets shown but omit at this time the two outboard corner rivets on lower flange that will be common to the two side clips 407-064-015-115 and 407-064-015-116.

-NOTE-

Engine upper cowling and side doors along with aft oil cooler fairing may be required in next step to control proper height and position of new firewall during installation. If those are required to align the firewall assembly, remove all fasteners interfering with the new firewall assembly before proceeding below.

-NOTE-

If engine door aft latch striker is present, trim striker flush to existing side skin panel, as indicated on Figure 3, sheet 5.

2. Slide down the new firewall assembly in place and position to proper height as recorded earlier in Part II, step 1, before marking and drilling rivets holes common to new angle. Make sure that a minimum of 0.040 inch (1.01 mm) minimum gap exists between lower edge of both side firewall supports and the top of engine bay as shown in Figure 3, sheet 4. With firewall in proper place, position side clips and back drill holes (2 each) in their lower flange. Drill all holes common to the angle 206-032-305-171 and new firewall assembly. Drill three new rivets holes in their vertical flange and in the corner support of the firewall assembly at the location shown. Remove side clips and firewall and deburr all new holes drilled. Coat faying surfaces of the new firewall assembly and the side clips and install in right position using rivets shown wet with sealant C-353. Apply firewall sealant C-559 on lower section of firewall vertical web, on lower flange of the firewall assembly, across full width of engine pan and allow to cure per product specifications.

-NOTE-

For ships S/N 53001 through 53579 not modified per TB 407-03-53, modify side engine doors as per applicable instructions shown in that TB before proceeding to the following Step 3.

-NOTE-

Before to mark all fastener holes on new firewall assy, remove old top strip(seal) 206-064-902-039 from original firewall and install it temporarily on top of new firewall. It will provide the appropriate height for the engine cowling to locate the fastener holes in new firewall.

3. Once the firewall is riveted in place, remove all applicable dzus fasteners and grommets from the engine upper cowl and side doors interfering with the firewall. Install engine cowl in place over firewall side frames forward flanges and top support and temporarily secure in place using remaining fasteners. Temporarily secure the two pre-drilled fillers 407-064-014-163 in place against the corner supports and align with fastener holes from each engine side door. Mark the location of the rivet holes and the fastener hole in each corner support of the firewall. Mark all locations of mating fastener holes onto the new firewall flanges and remove 407-064-014-163 fillers. Remove engine upper cowl and side doors.

CAUTION

Radius blocks behind frames are made from Titanium and are hot-bonded. It is recommended to use a C-Clamp to secure radius block during the drilling operation. Do not generate heat as it may debond the radius block from the frame. Increase hole diameter in steps. Should the radius blocks debond, please contact Product Support Engineering.

a. Drill eight 0.328 (+.006/-.001 inch) (8.33 (+0.15/-0.05mm)) diameter holes in new firewall top support and forward side flanges using locations marked.

b. Transfer the two 0.098 to 0.102 inch (2.49 to 2.59 mm) diameter rivet holes and one 0.328 (+.006/-.001 inch) (8.33 (+0.15/-0.05mm)) diameter fastener hole from each of the lower corner supports using locations defined at step 3.

c. Deburr all the new holes drilled in step 3a and 3b.

d. Install new dzus receptacles on top support and side flanges of the firewall assembly using the proper rivet length. Rivets to be installed wet with sealant (C-353).

4. Install the dzus receptacles and the fillers 407-064-014-163 in place against the forward lower corner supports of the firewall using 3/32 flush head rivets, sealant (C-353) and let cure. Install anti-friction tape C-454 on external surface of filler as seen in Figure 3, sheet 4 as follows:

   a. Slightly sand with an abrasive pad or paper the gloss finish on the filler.

   b. Clean with alcohol and let dry.

   c. Install tape C-454.

   d. Cut hole in tape to clear the wing dzus fastener.

5. If not already done, remove all applicable dzus fasteners and grommet from the oil cooler aft fairing common to the firewall. Install fairing in place over firewall side frames aft flanges and temporarily secure in place using remaining fasteners on the fairing. Mark locations of fasteners mating holes on the firewall aft flanges.

CAUTION

Radius blocks behind frames are made from Titanium and hot-bonded. It is recommended to use a C-Clamp to secure radius block during the drilling operation. Do not generate heat as it may debonds the radius block from the frame. Increase hole diameter in steps. Should any radius blocks debond, please contact Product Support Engineering for repair.

   a. Remove the fairing and drill eight 0.328 (+0.006/-0.001 inch) (8.33 (+0.15/-0.05mm)) diameter holes within side flanges of frames using marked locations.

   b. Deburr the new holes drilled.

   c. Coat faying surfaces and install new dzus receptacles on side flanges using proper rivet length. Rivets to be installed wet with sealant (C-353).

PART IV: Modification of engine cowl assy. and aft fairing (Ref. Figure 4)

1. Modify the left and right engine doors as follows:

   a. <u>Applicable to ships S/N 53001 through 53518:</u> Modify left and right engine doors per Part IV of TB 407-03-53. Drill the 0.218 to 0.226-inch (5.53 to 5.74 mm) dia. additional fastener holes into the left and right engine doors to be in line with new

firewall side supports as indicated by the procedure of that TB and reference to Figure 4, sheet 2. Wing dzus fastener hole will be approximately 1.1 inch (27.94 mm) below existing nutplate hole.

b. Applicable to ships S/N 53519 through 53579: Modify left and right engine doors per Part V of TB 407-03-53. Drill the 0.218 to 0.226-inch (5.53 to 5.74 mm) dia. additional fastener holes into the left and right engine doors to be in line with new firewall side supports as indicated by the procedure of that TB and reference to Figure 4, sheet 2. Wing dzus fastener hole will be approximately 1.1 inch (27.94 mm) below existing nutplate hole.

2. Install on upper engine cowl, and engine side engine doors the new dzus fasteners, grommets and washers as shown.

-NOTE-

It is permissible to bend each extremity of folding rod bracket attached to door to minimize a maximum gap of 0.090 inch (2.28 mm) at each extremity.

3. On the right engine door only, drill the three rivets and remove the folding rod bracket. Plug existing holes with rivets shown and cover with sealant (C-559). Verify fit of bracket with door contour and adjust before drilling three new rivet holes forward of existing position. Coat faying surfaces and install bracket with rivets shown wet with structural adhesive (C-317). Cover each rivets and edge of bracket with sealant (C-559).

4. On the right engine door only, remove the existing folding brace pad. Clean residues from the surface and bond the new pad 407-064-806-157 using sealant (C-308).

5. Modify folding braces retaining hardware on the left and right brackets riveted to the forward face of the firewall assembly by installing additional washers as shown.

6. Applicable to S/N 53001 through 53129 only: Remove and retain ejector blades shown in Figure 4 sheet 7. Discard existing studs and grommets. Coat with sealant (C-559) faying surfaces of the two corner doublers 407-704-037-117 and 407-704-037-118 and install in upper section of fairing using rivets wet with sealant (C-559). Transfer dzus fastener holes 0.327 to 0.334 inch (8.31 to 8.48 mm) dia. (4 places) into both doublers. Locate ejector blades from existing holes in fairing and install using rivets wet with sealant (C-559). Coat the rivets holding the retainer to the fairing with sealant (C-559).

7. Install the missing dzus fasteners, grommets and washers on the aft fairing as shown.

PART V: Installation of hoses on right side of firewall (Ref. Figure 5)

1. Open a 0.889 to 0.900 inch (22.58 to 22.86 mm) diameter hole for the hose on right side of firewall using one of the following positions:

    a. Use top position for helicopters S/N 53001 through 53559 not modified with oil cooler support kit (Ref. 407-II-33).

    b. Use lower position for helicopters S/N 53560 delivered from factory with oil cooler support braces and subsequent or helicopters prior to S/N 53560 and modified in accordance with Service Instruction 407-II-33.

2. Discard the previous oil reservoir flex hose union that was used through the previous firewall assembly. Using the pre-drilled location on the right side of the firewall, temporarily install the new union 50-136J12-30 with 2 washers NAS1149C1790R and two nuts AS5178J12. Install the new flex hose 70-061L000T224A between oil reservoir and new union while using existing clamping arrangement. Connect flex hose in front of new firewall assembly and adjust nuts as required before applying torque, to relief the firewall assembly from any forward-aft tension.

PART VI: Installation of decals (Ref. Figure 6)

1. Install decals on forward and aft face of firewall assembly at the locations shown in Figure 6.

PART VII: Re-installation of parts removed (Ref. Figure 7)

1. Apply sealant C-353 on faying surfaces and install the two driveshaft cover halves P/N 206-064-902-137 or 206-064-902-145 (refer to TB 407-97-4) using retained hardware. Gap between shaft and edge of each cover halves to be between 0.050 to 0.100 inch (1.27 to 2.54 mm). Trim covers as required before final installation.

2. Re-install engine, oil cooler (with applicable support legs, (refer to 407-II-33), oil cooler blower assembly with mating bearing supports, oil cooler, tail rotor driveshaft and all connecting lines and tube.

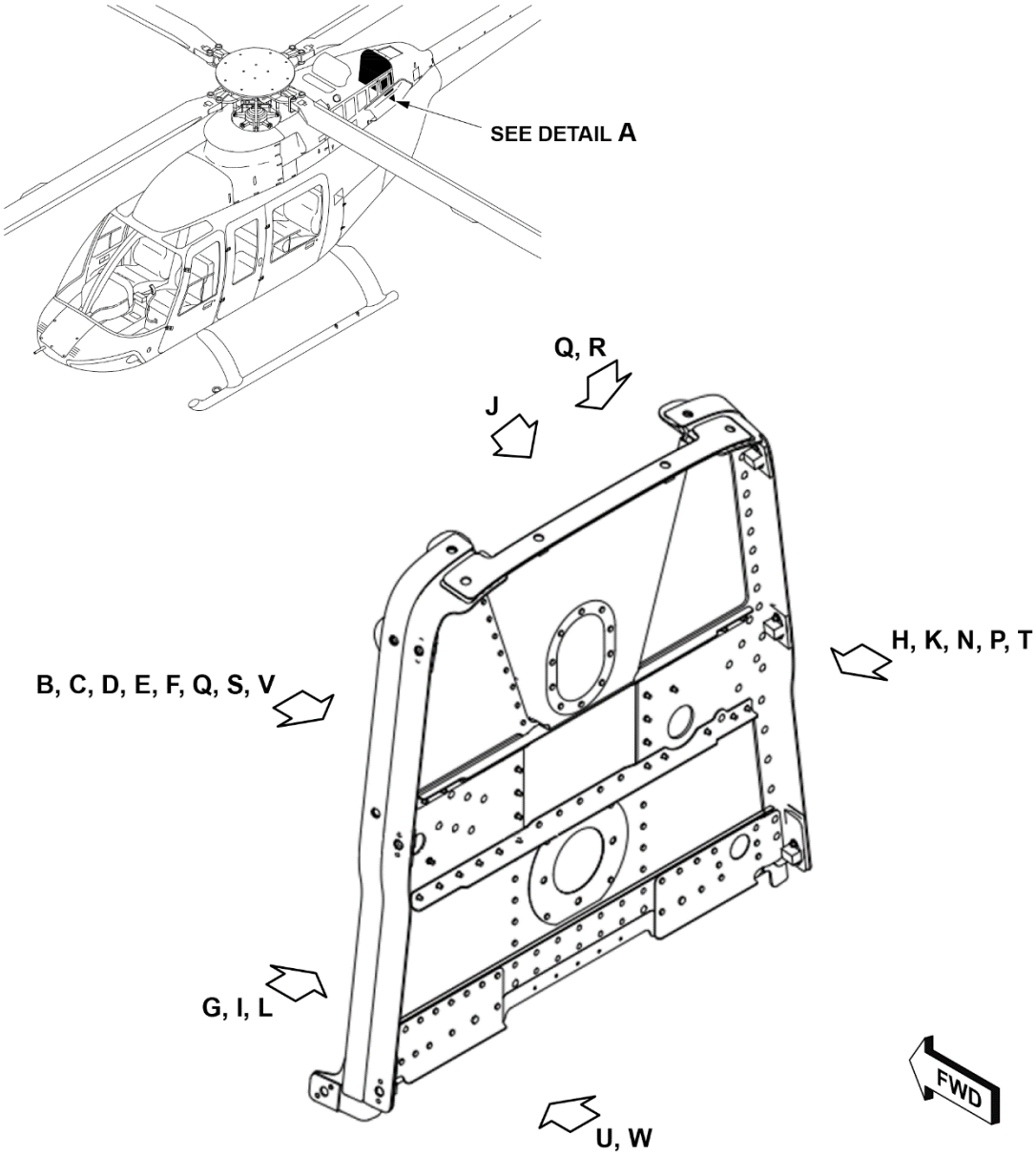
    a. If applicable, attach lower end of applicable oil cooler support legs, (refer to 407-II-33) in accordance with Figure 7.

3. Replenish oil reservoir and prime engine oil system as required.

4. Re-install the oil cooler blower fairing assembly.

5. Re-install upper engine cowl assembly with side doors.

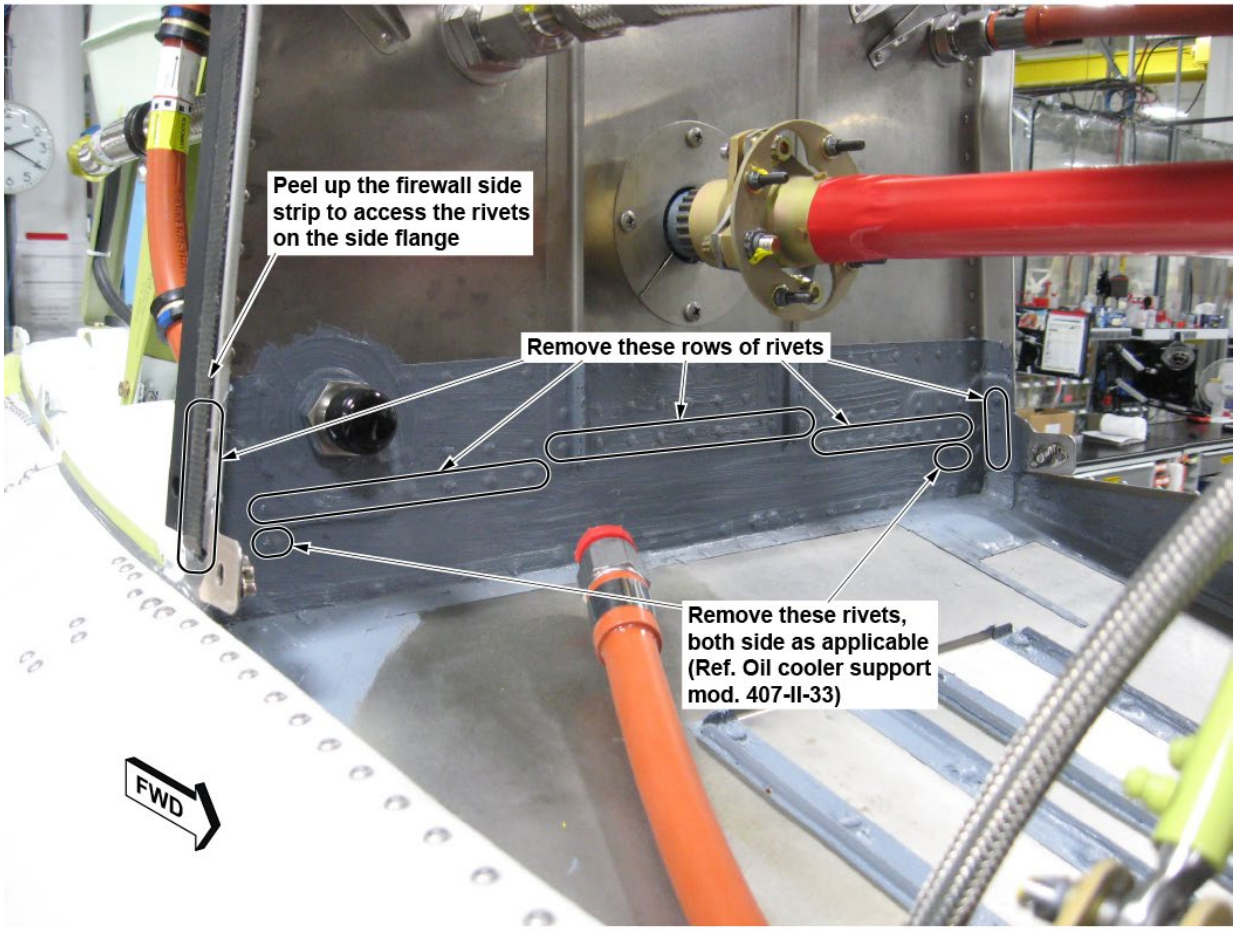
6. Make an entry in the helicopter logbook and historical service records indicating compliance with this Technical Bulletin.



DETAIL A
AFT FIREWALL ASSEMBLY
(STA. 192.00)

19833_001

FIGURE 1: IMPROVED ENGINE BAY AFT FIREWALL ASSEMBLY (STA. 192.00).



VIEW B

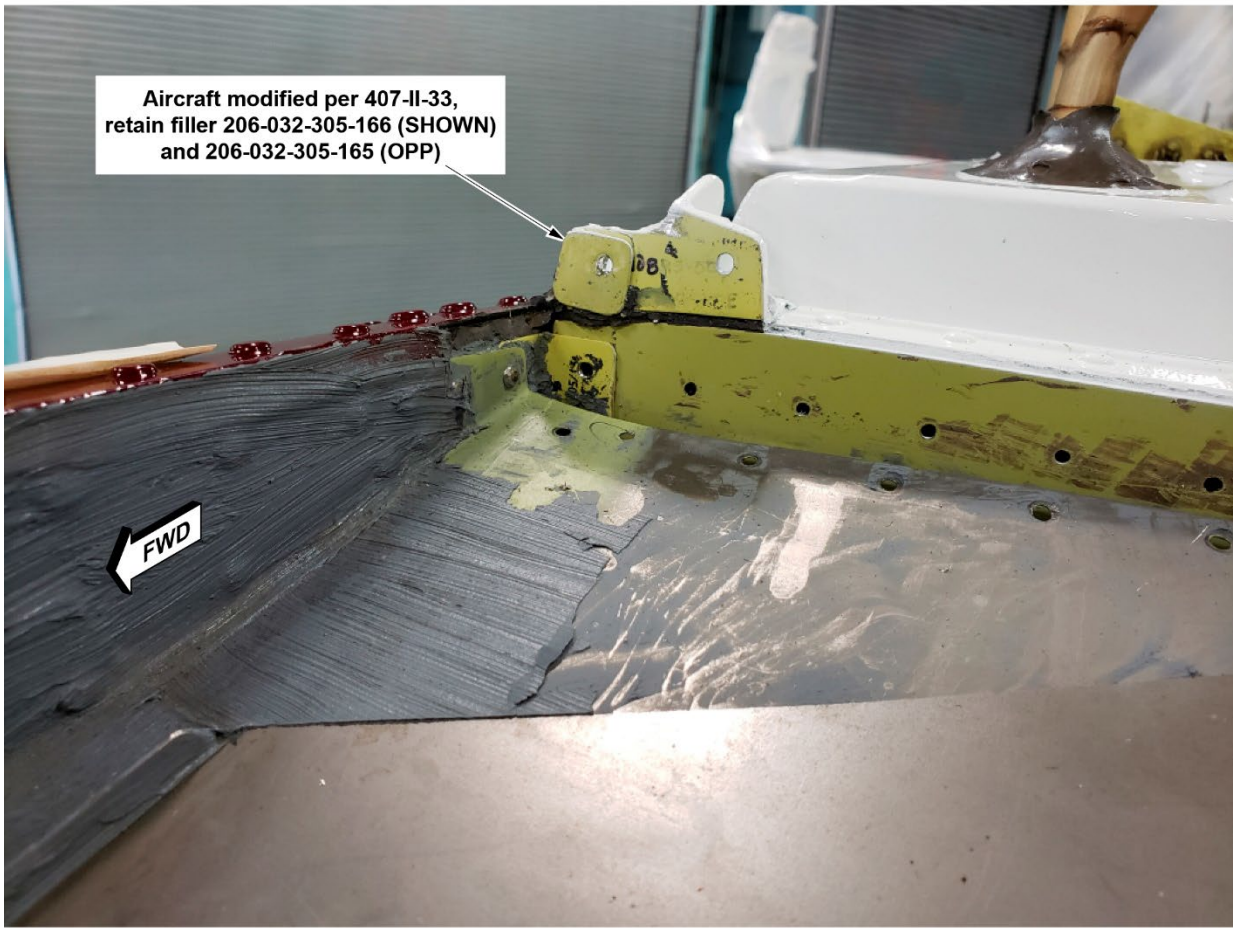
19833_002a

FIGURE 2: REMOVAL OF EXISTING FIREWALL ASSEMBLY (Sheet 1 of 3)

VIEW C
LOOKING AFT

19833_002b

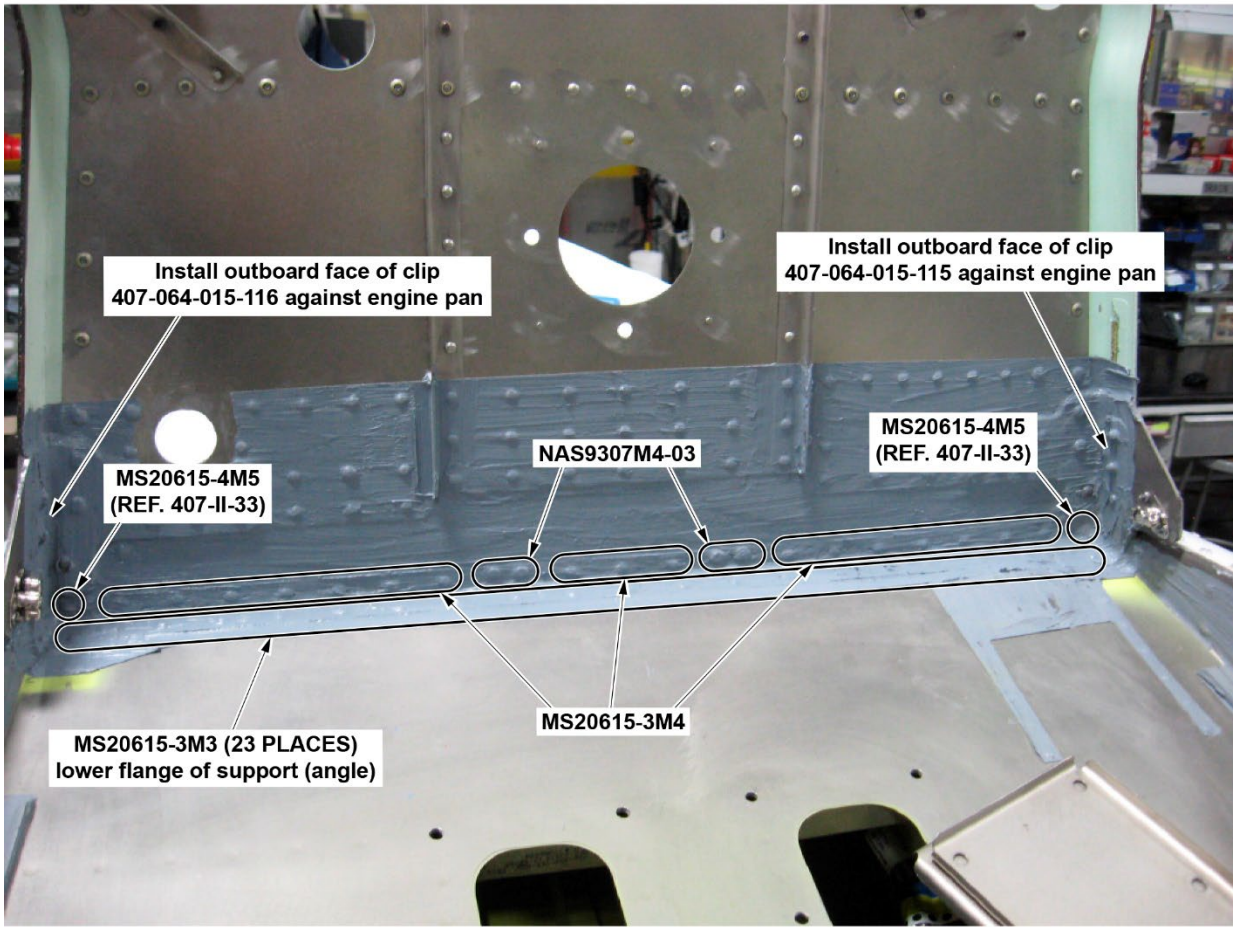
FIGURE 2: REMOVAL OF EXISTING FIREWALL ASSEMBLY (Sheet 2 of 3)



VIEW D

19833_002c

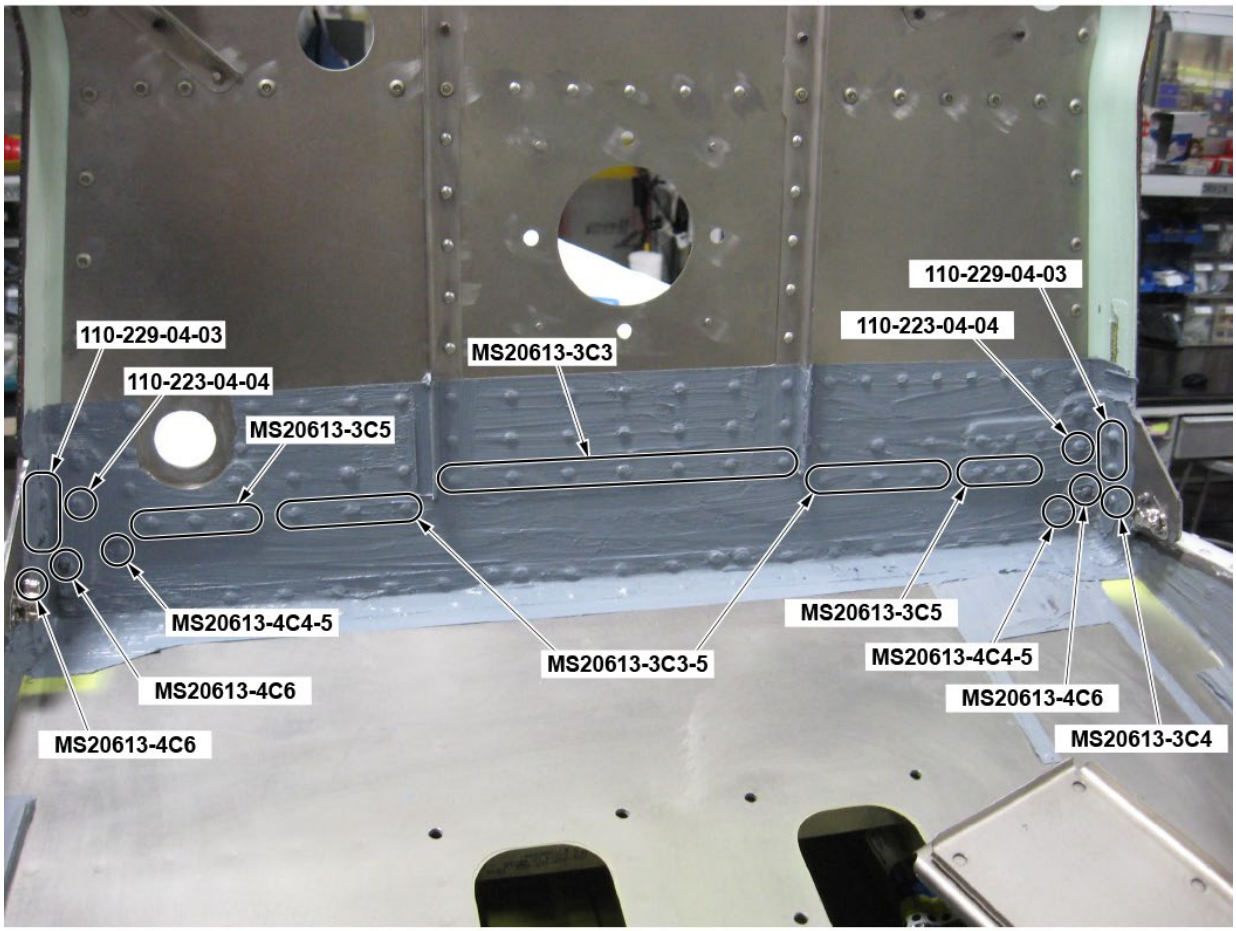
FIGURE 2: REMOVAL OF EXISTING FIREWALL ASSEMBLY (Sheet 3 of 3)



VIEW E
LOOKING AFT

19833_003a

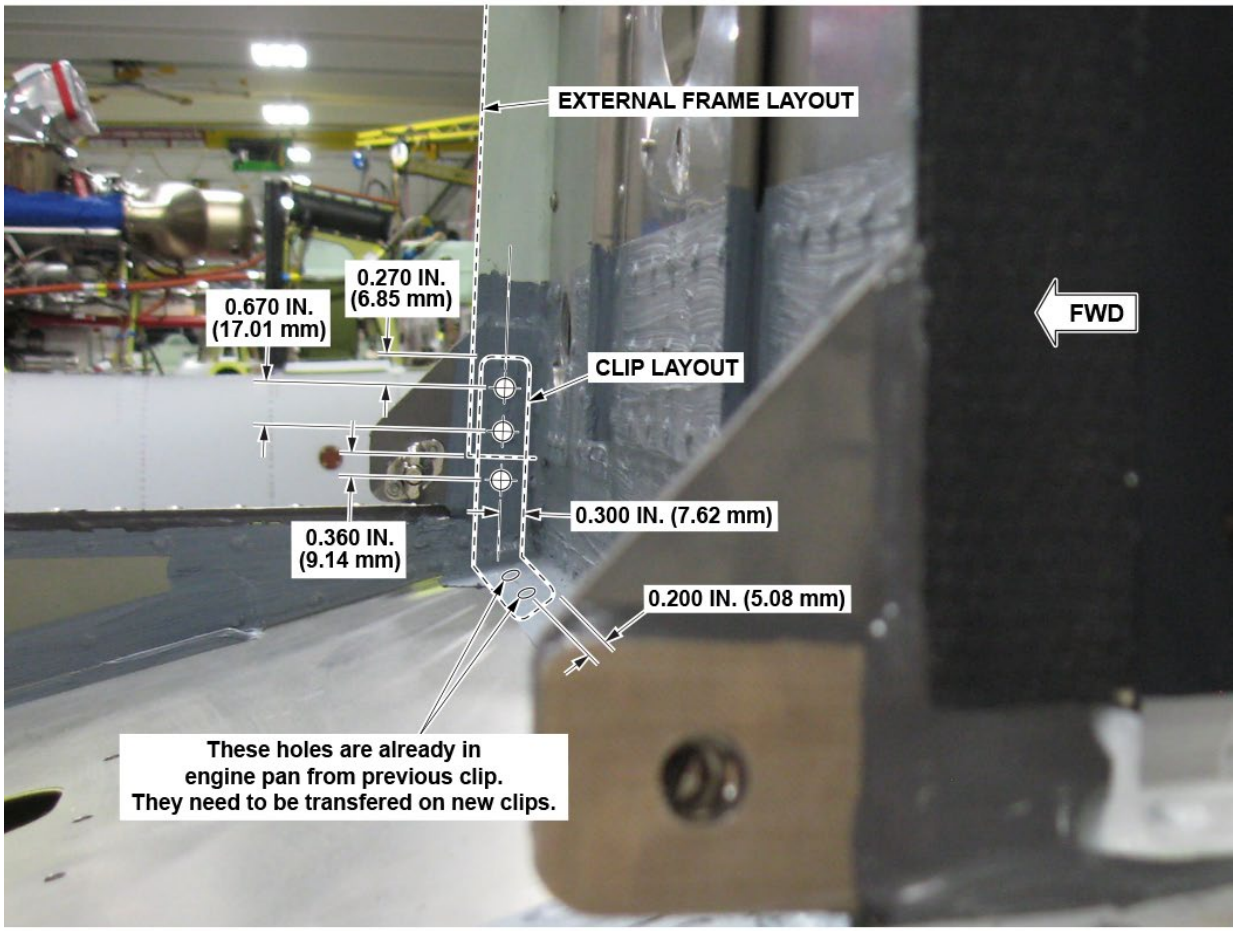
FIGURE 3: INSTALLATION OF NEW FIREWALL ASSEMBLY (Sheet 1 of 7)



VIEW F
LOOKING AFT

19833_003b

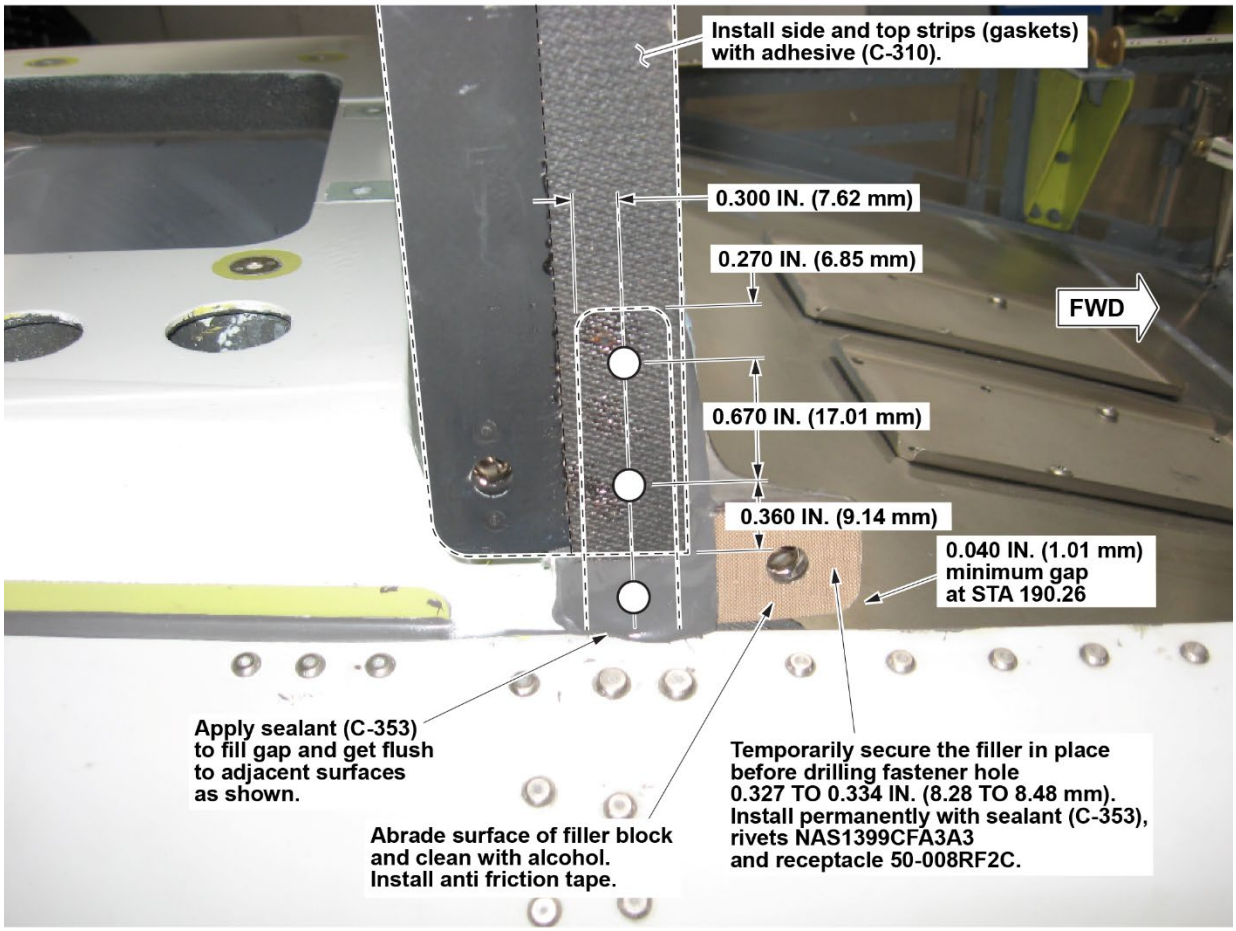
FIGURE 3: INSTALLATION OF NEW FIREWALL ASSEMBLY (Sheet 2 of 7)



VIEW G

19833_003c

FIGURE 3: INSTALLATION OF NEW FIREWALL ASSEMBLY (Sheet 3 of 7)



VIEW H

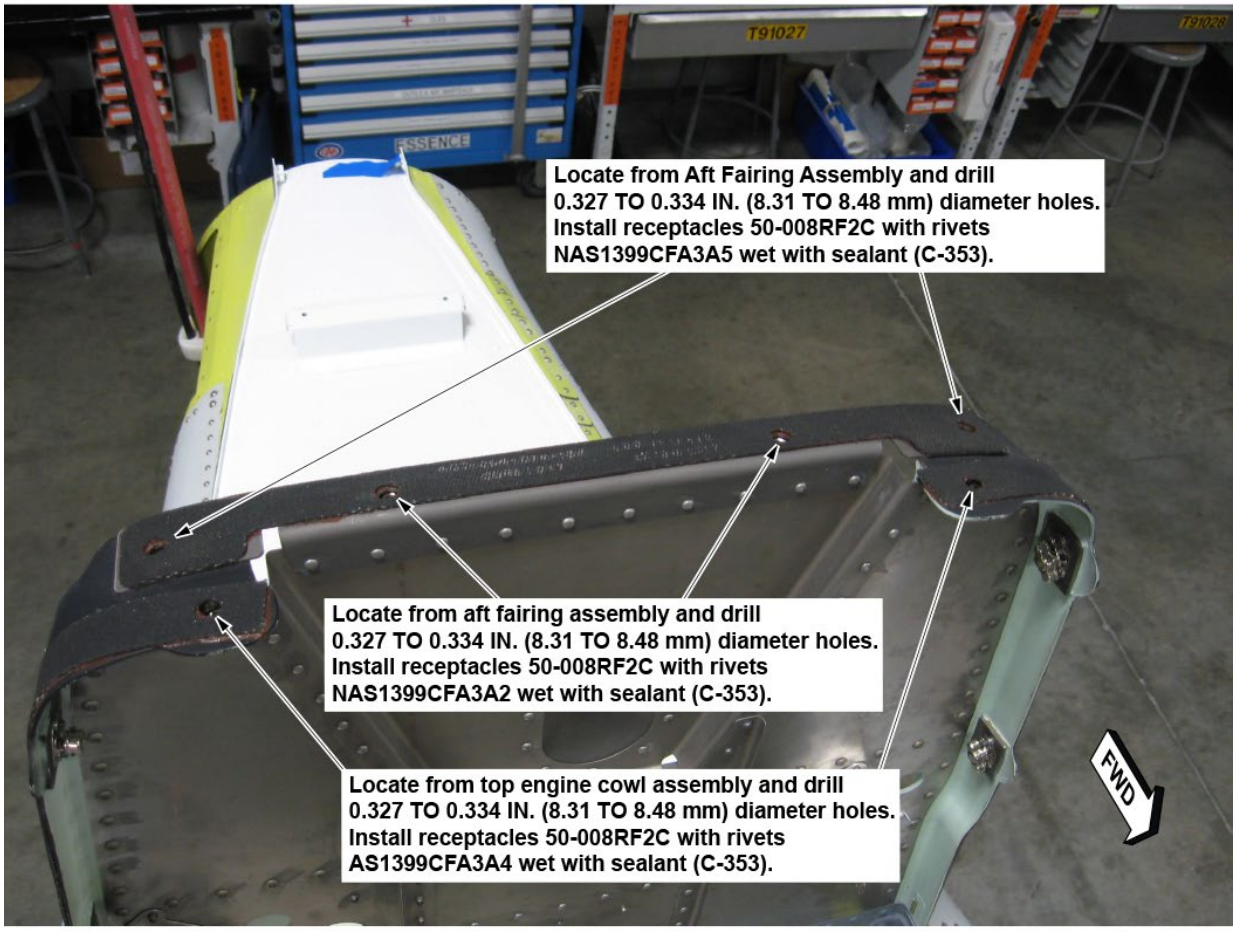
19833_003d

FIGURE 3: INSTALLATION OF NEW FIREWALL ASSEMBLY (Sheet 4 of 7)

VIEW I

19833_003e

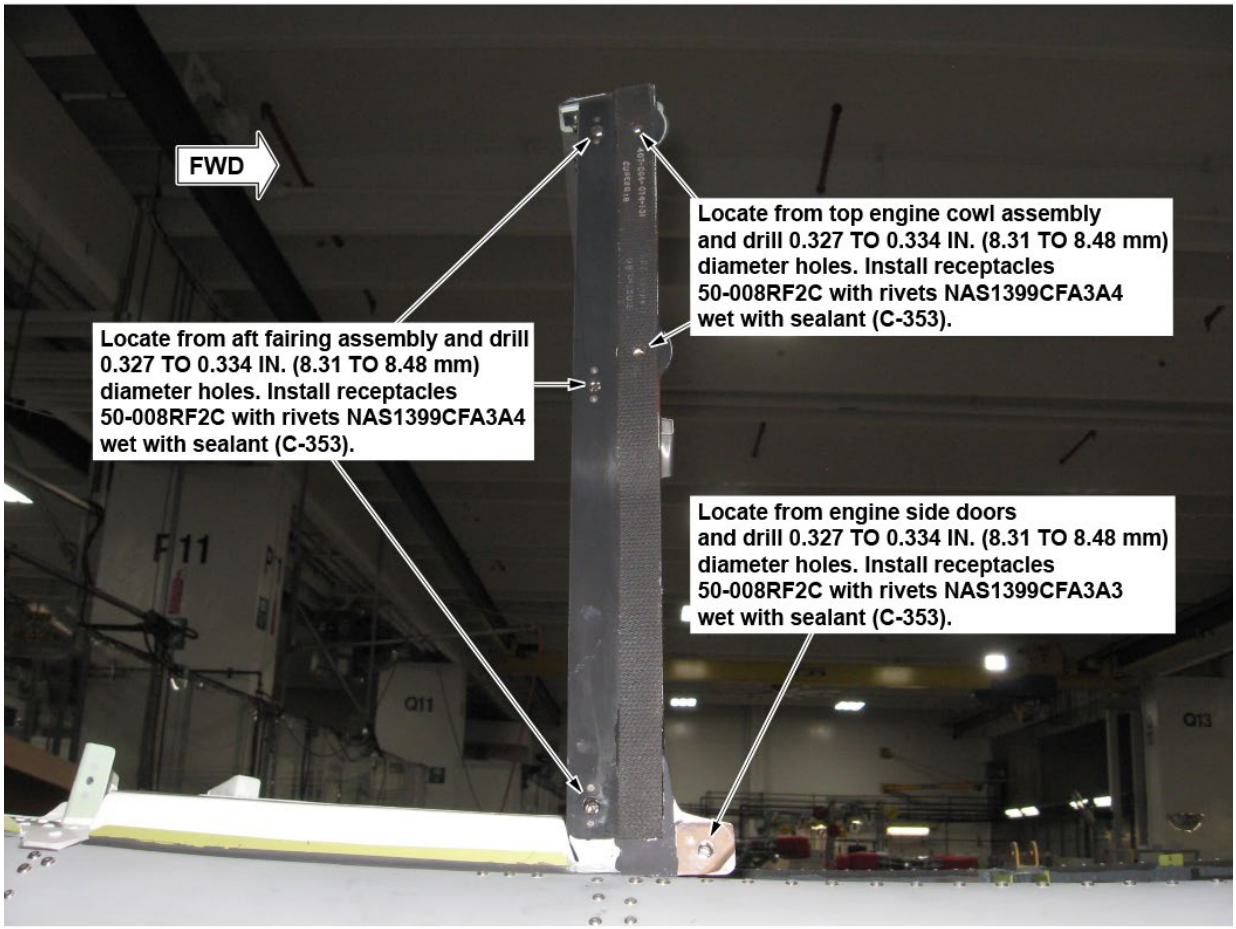
FIGURE 3: INSTALLATION OF NEW FIREWALL ASSEMBLY (Sheet 5 of 7)



VIEW J

19833_003f

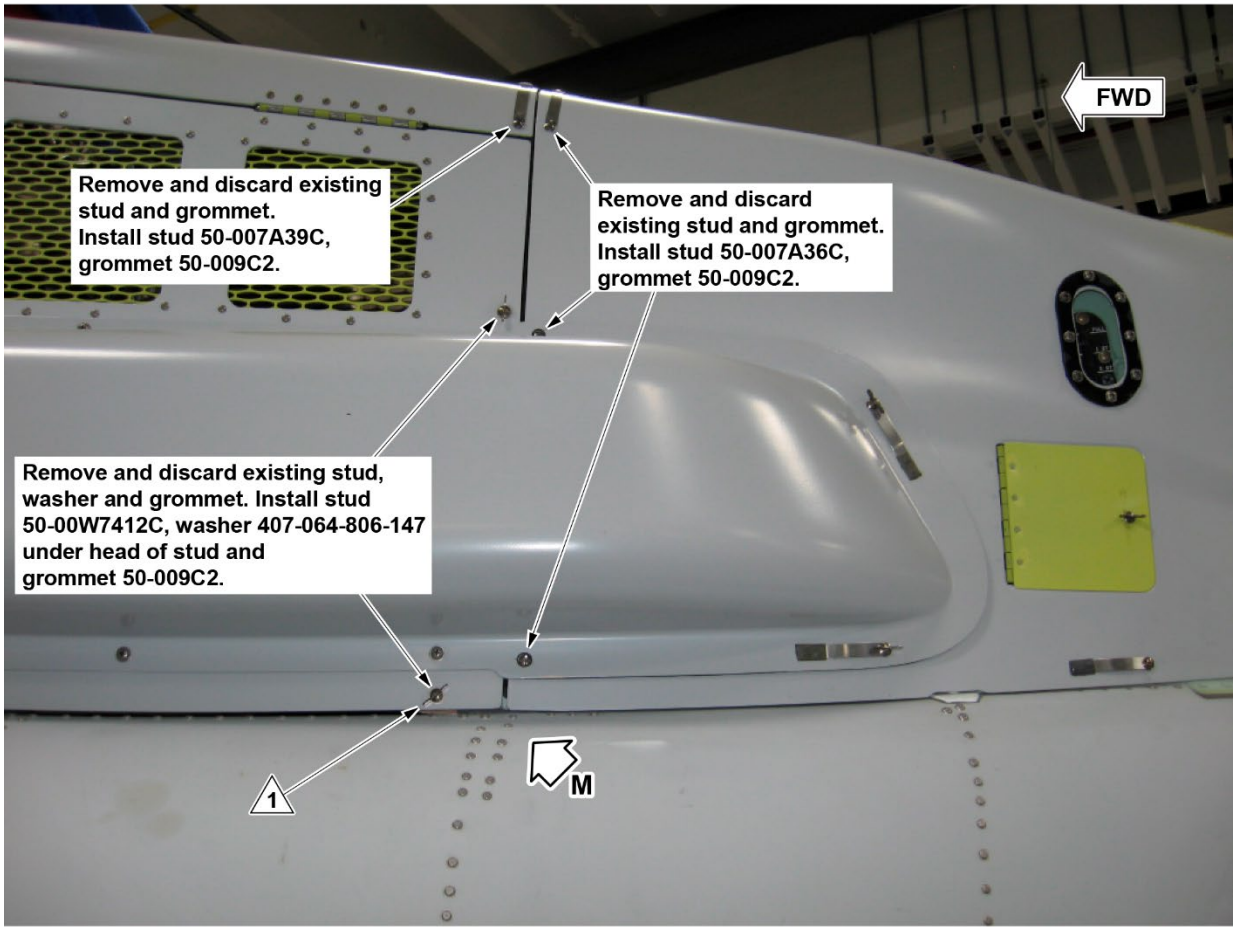
FIGURE 3: INSTALLATION OF NEW FIREWALL ASSEMBLY (Sheet 6 of 7)



VIEW K

19833_003g

FIGURE 3: INSTALLATION OF NEW FIREWALL ASSEMBLY (Sheet 7 of 7)



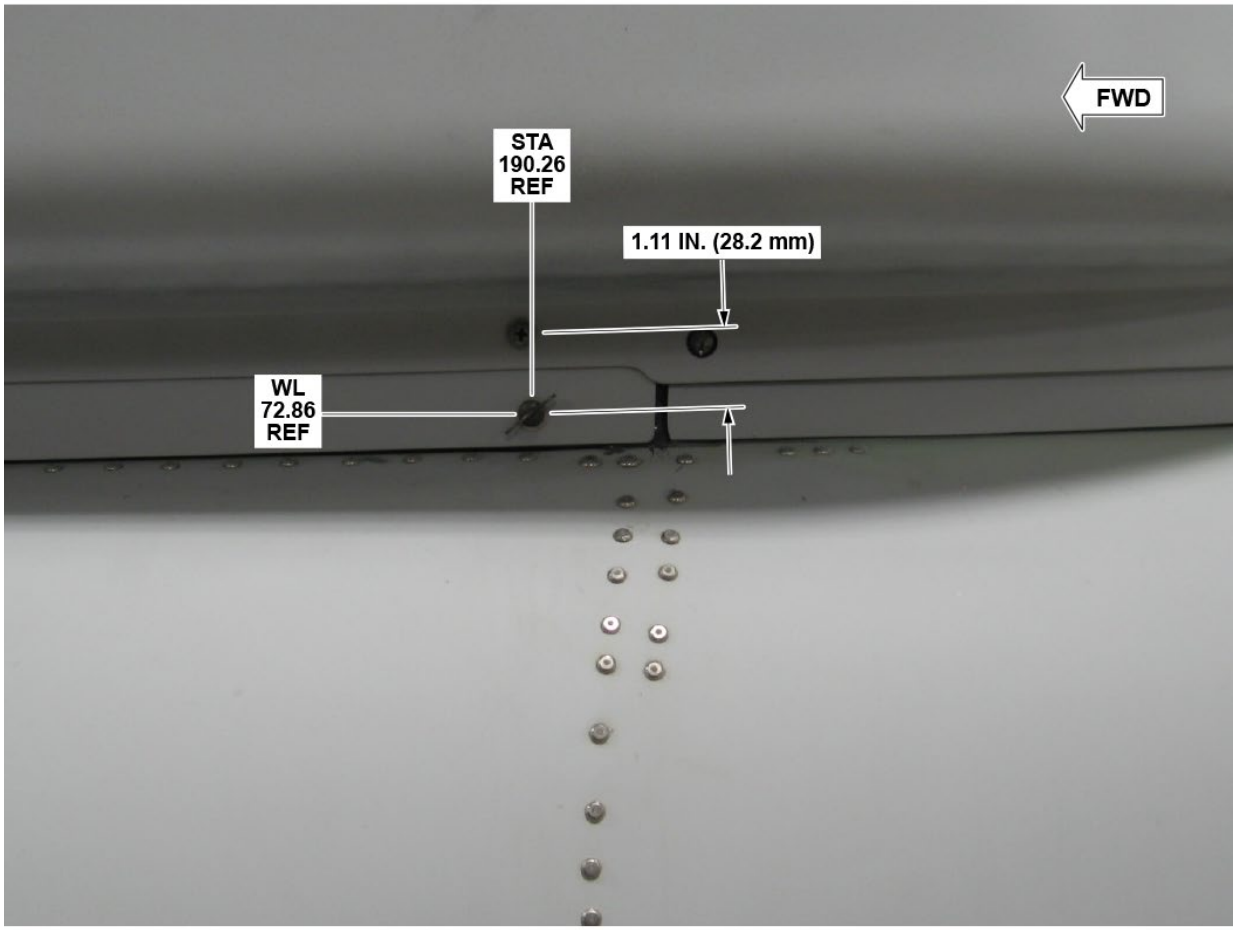
VIEW L

NOTE

1 **If hole is not present in engine door, drill hole using reference shown. Make certain the hole is in center of the filler block attached to the firewall forward support.**

19833_004a

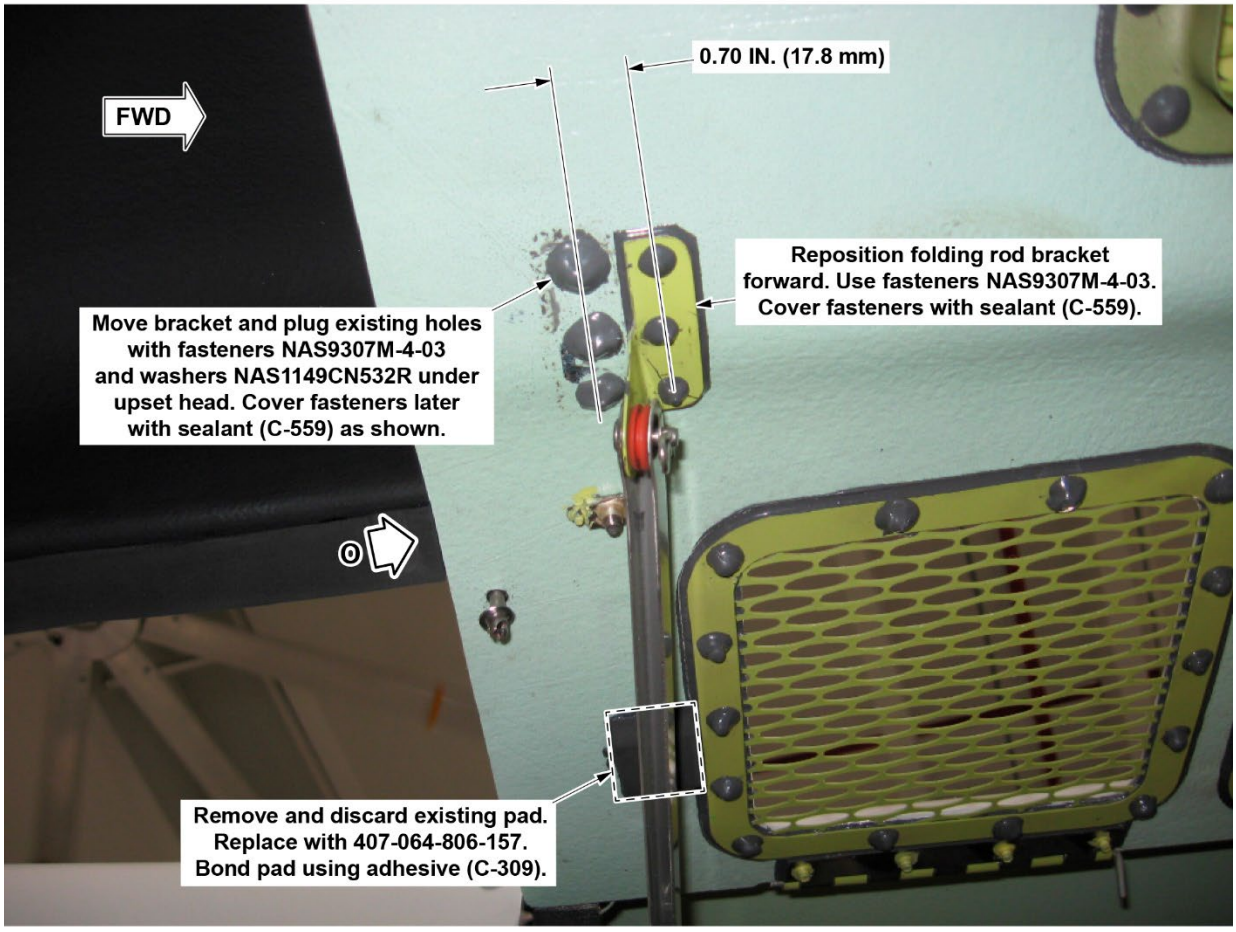
FIGURE 4: MODIFICATION OF ENGINE COWL AND AFT FAIRING (Sheet 1 of 7)



VIEW M
LEFT SIDE SHOWN
RIGHT SIDE OPPOSITE

19833_004b

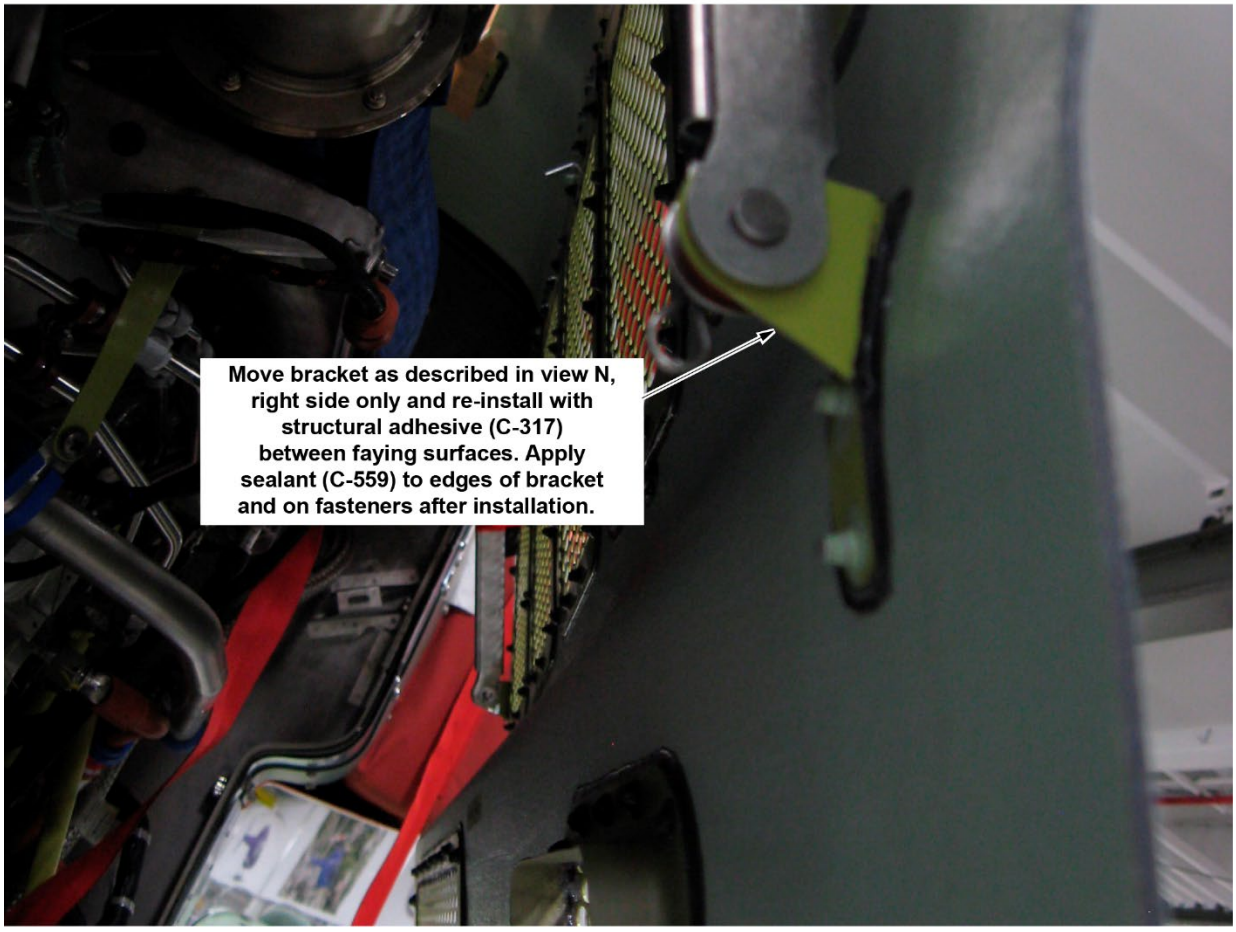
FIGURE 4: MODIFICATION OF ENGINE COWL AND AFT FAIRING (Sheet 2 of 7)



VIEW N

19833_004c

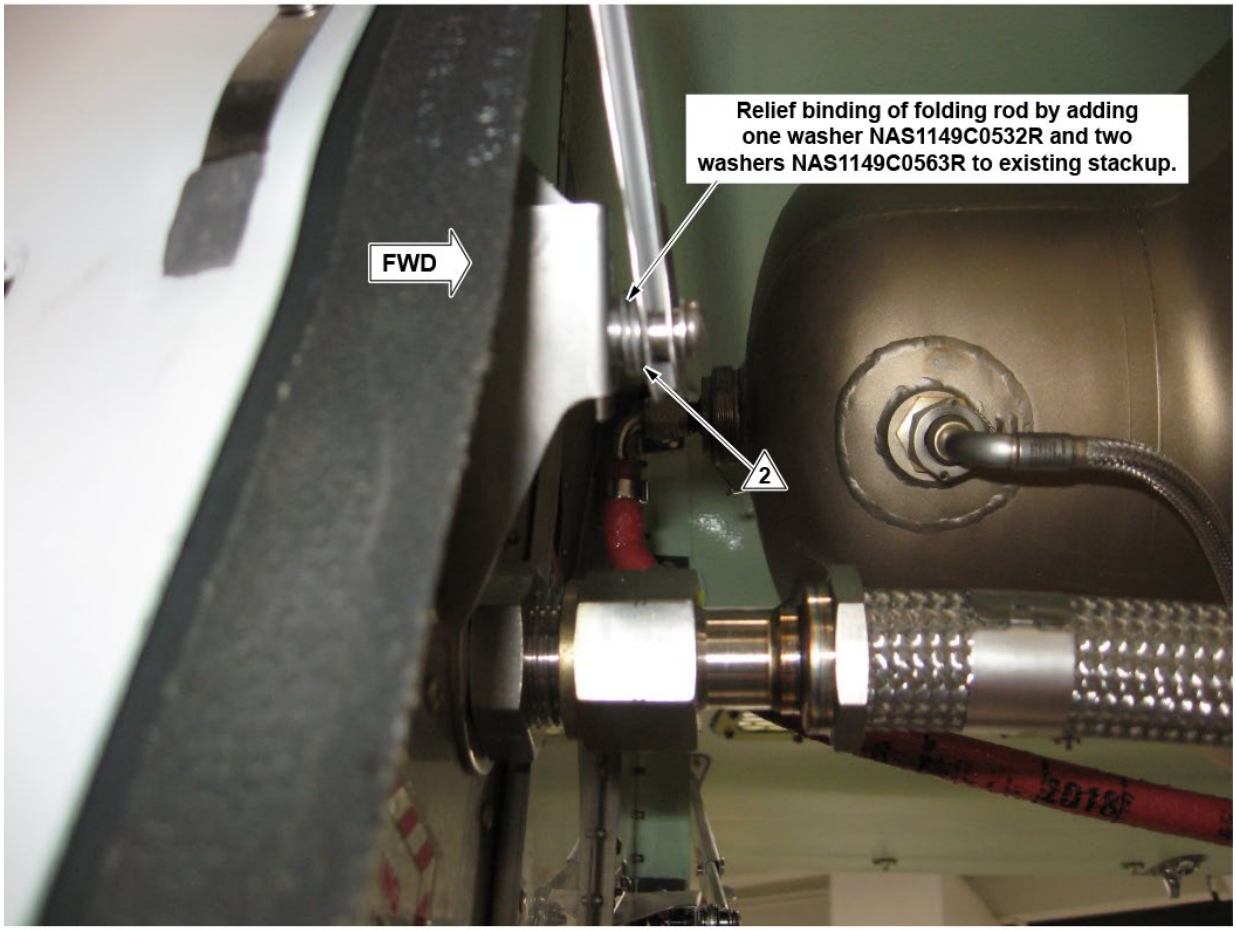
FIGURE 4: MODIFICATION OF ENGINE COWL AND AFT FAIRING (Sheet 3 of 7)



VIEW O
LOOKING FORWARD

19833_004d

FIGURE 4: MODIFICATION OF ENGINE COWL AND AFT FAIRING (Sheet 4 of 7)



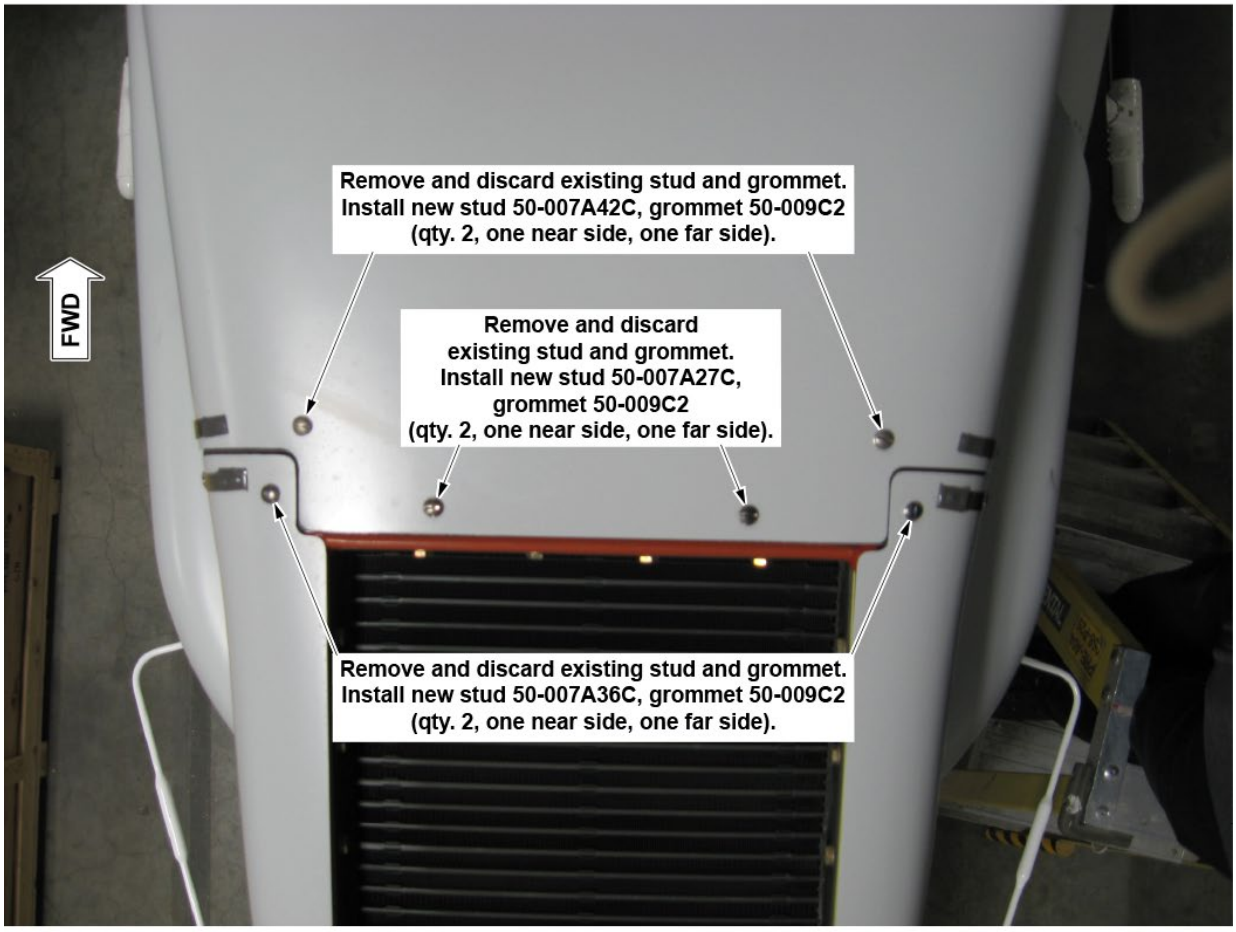
VIEW P

NOTE

2 **It is permissible to add two additional washers NAS1149C0516R beyond the three indicated above to close gap without applying pre-load on the support.**

19833_004e

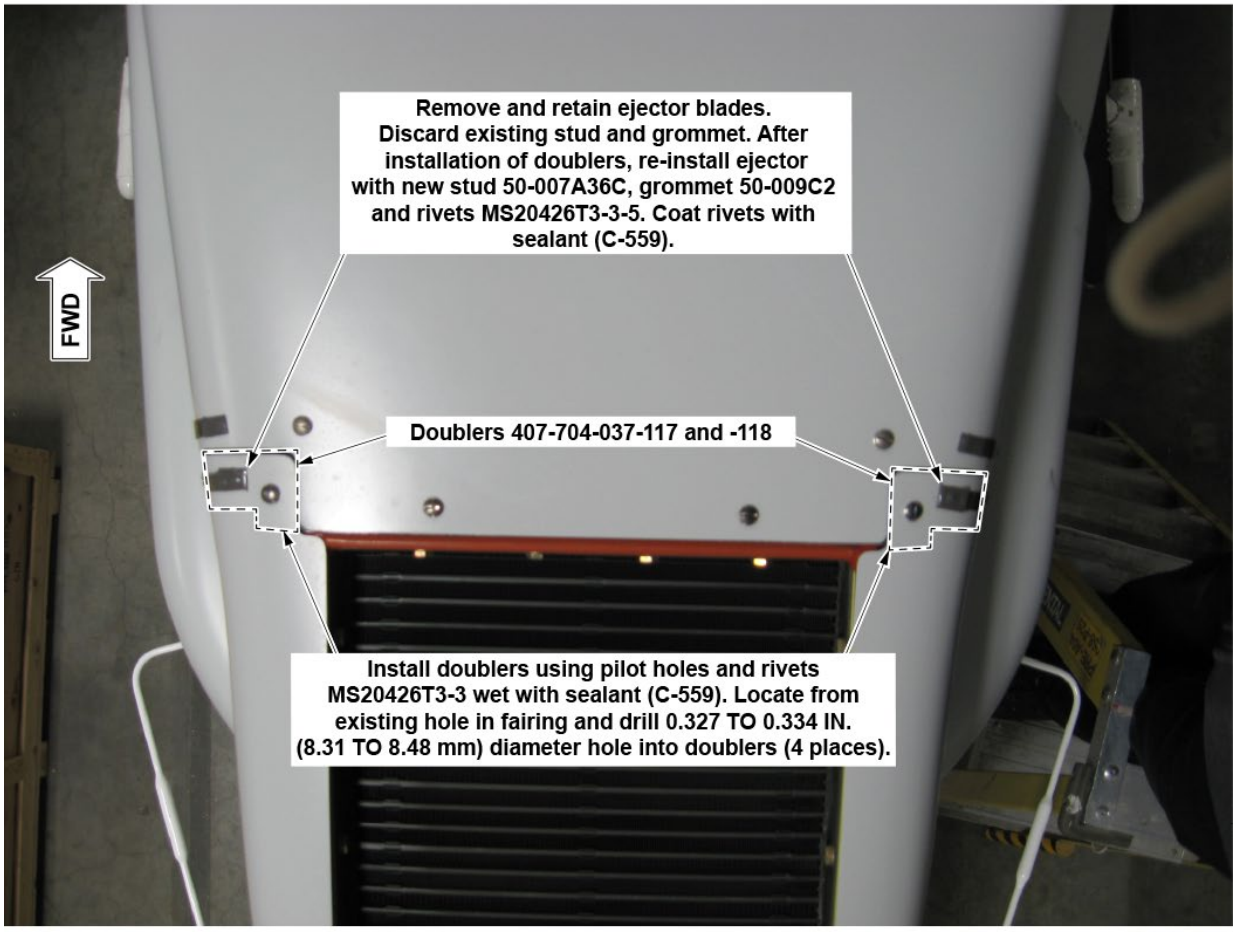
FIGURE 4: MODIFICATION OF ENGINE COWL ASSY. AFT FAIRING (Sheet 5 of 7)



VIEW Q

19833_004f

FIGURE 4: MODIFICATION OF ENGINE COWL AND AFT FAIRING (Sheet 6 of 7)

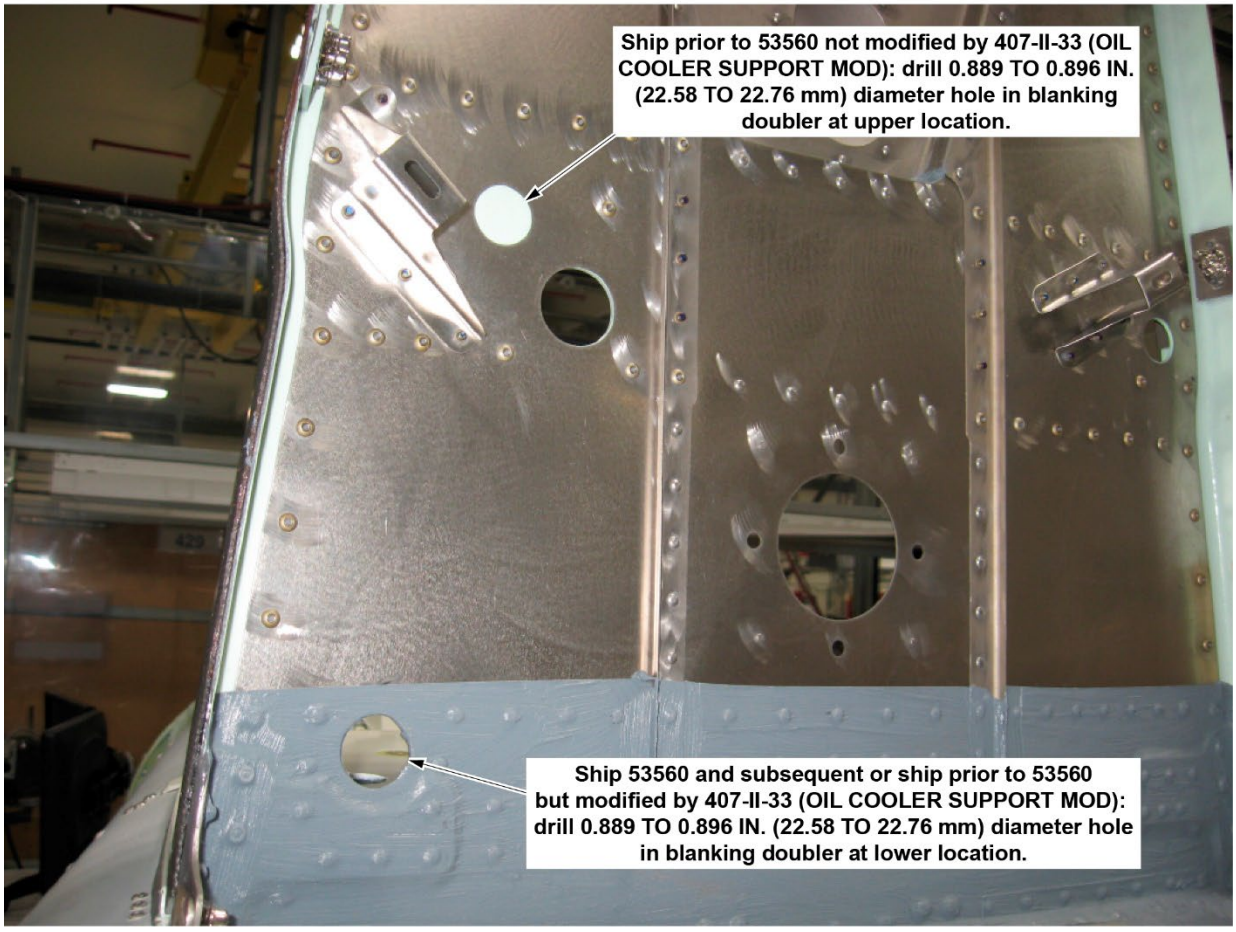


VIEW R

19833_004g

NOTE: DOUBLERS APPLICABLE TO SHIP 53001 THROUGH 53129 ONLY

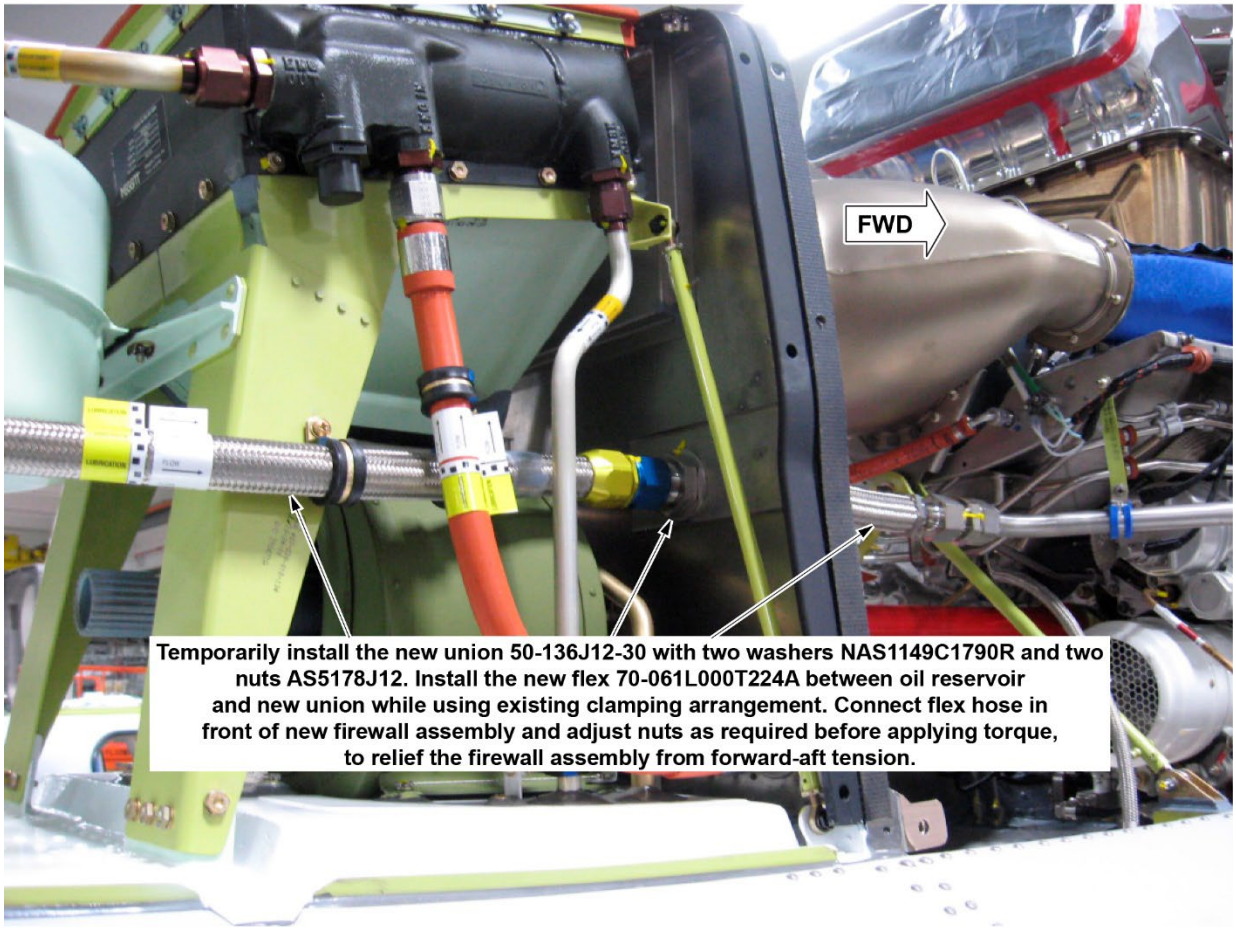
FIGURE 4: MODIFICATION OF ENGINE COWL AND AFT FAIRING (Sheet 7 of 7)



VIEW S
LOOKING AFT

19833_005a

FIGURE 5: INSTALLATION OF HOSES (R/H SIDE) (Sheet 1 of 2)

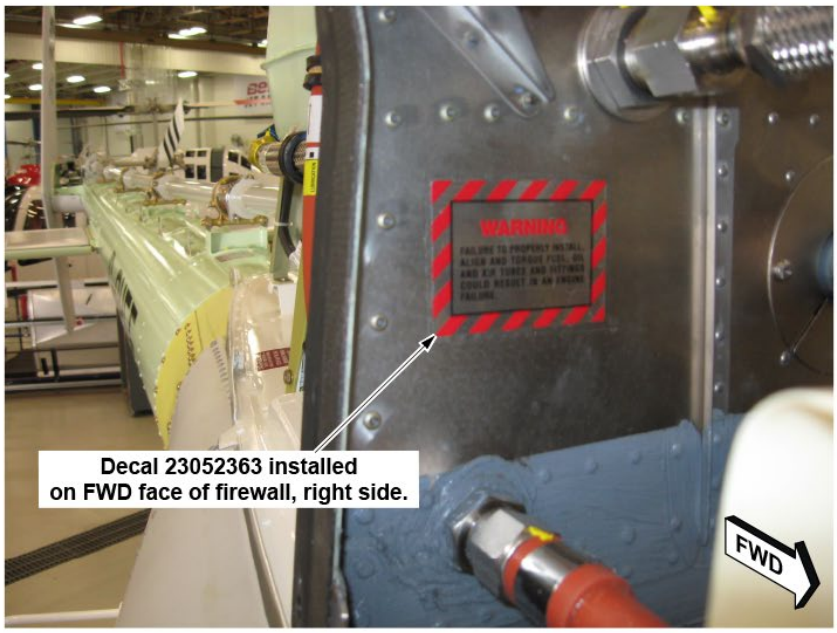


VIEW T

19833_005b

FIGURE 5: INSTALLATION OF HOSES (R/H SIDE) (Sheet 2 of 2)

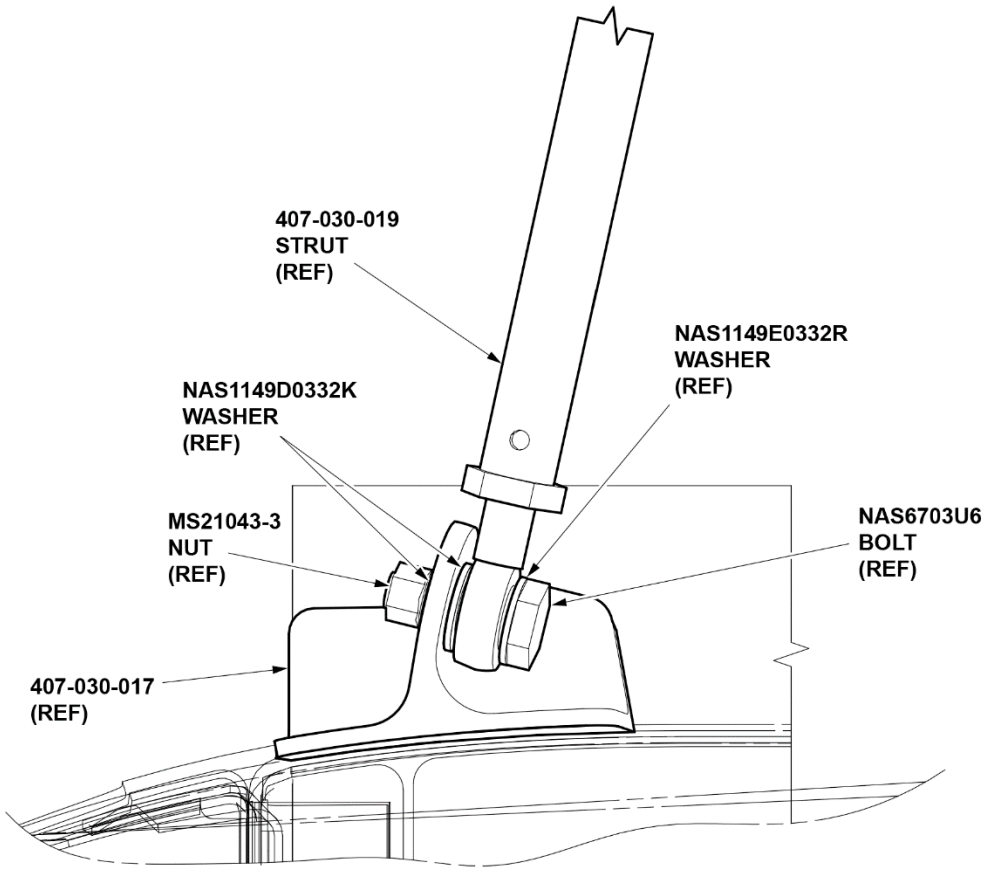
VIEW U



VIEW V

19833_006

FIGURE 6: INSTALLATION OF DECALS



VIEW W
LOOKING FORWARD
LEFT SIDE SHOWN, RIGHT SIDE OPPOSITE

19833_007

FIGURE 7: MODIFICATION OF OIL COOLER STRUT HARDWARE