

SERVICE BULLETIN



Service Bulletin No.: DAC1-76-03 Rev 2

Date Issued: 6 March 2006

Title: Installation of Mixture Control Cable for
Altitude Compensating Fuel Pump

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- 1. ATA Code:** 7600
- 2. Effectivity:** Required for optional retrofit of altitude compensating fuel pump on IO-240B engine on Diamond Aircraft Industries Model DA20-C1 Aircraft.
- 3. General:** This service bulletin addresses modification of the forward apron baffle, and installation of a revised mixture control cable, bracket, firewall shields, and fuel drain line as part of the optional installation of the altitude compensating fuel pump. This work is to be accomplished concurrently with TCM Service Bulletin SIL 04-1.
- 4. Compliance:** At time of installation of optional altitude compensating fuel pump.
- 5. Approval:** Engineering data referenced or contained in this service bulletin is approved as part of the type design.
- 6. Labor:** Approximately 10 - 12 hours will be required to accomplish this service bulletin.
This estimate is for direct labor performed by a technician and it does not include setup, planning, familiarization, cure time, part fabrication or tool acquisition.

7. Material:	Part	Description	Qty
	22-7610-63-00	Mixture control cable bracket	1
	22-7610-00-04	Mixture control cable keeper	1
	A-950-0670-DA	Mixture control cable	1
	22-7610-03-00	Angled Split Bushing	2
	22-7173-61-00	Fwd drain ass'y, alt comp fuel pump	1
	22-7173-62-00	Vent tube ass'y, alt comp fuel pump	1
	22-7173-63-00	Aft drain ass'y, alt comp fuel pump	1
	22-1130-00-33	Placard, alt comp fuel pump	1
	AN824-4D	"T" fitting, aluminum	1
	HF3M	Rod end bearing	1
	RB227	Grommet, rubber	1
	2N	Spiral wrap, 1/4"	4"
	AN3-7A	Bolt, hex	1
	AN960-10	Washer, plain	2
	AN960-10L	Washer, plain	1
	MS21042-3	Nut, reduced hexagon, self locking	1
	AN526C632R8	Screw, pan head	4
	AN960C6	Washer, plain	4
	656-057	Washer, plain	1
	MS21042-06	Nut, reduced hexagon, self locking	4

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BSPQ-04-02	Rivet, blind	6
BSPQ-04-03	Rivet, blind	5
BSPQ-04-04	Rivet, blind	5
AN960-4	Washer, plain	4
MS3367-5-0	Small cable tie, black	1
MS3367-7-0	Large cable tie, black	1
CSCS-M	Spacer, 90	1
The above material may be ordered as kit DAC1-76-03-AMK2.		
Materials required but not supplied: procure locally.		
PRC 812 or equivalent	Firewall sealant	A/R

8. Special Tools: No special tools are required.

9. References: DA20-C1 Maintenance Manual (AMM), Document number DA201-C1.
TCM Service Bulletin SID 97-3, Revision C or higher
TCM Service Bulletin SIL 04-1

10. Accomplishment Instructions:

- Note:** The altitude compensating fuel pump must be installed in accordance with TCM Service Bulletin SIL 04-1 before commencing these instructions.
- 10.1** Remove the fuel pump drain line from the engine (refer to Chapter 71-70-00, Section 4A, of the AMM). Assemble the forward section of the replacement tube, P/N 22-7173-61-00, and the aft section, P/N 22-7173-63-00, to the straight run ends of the AN824-4D "T"-fitting. Refer to Figure 1.
- 10.2** Install the assembly from the previous step in place of the existing drain line (refer to Chapter 71-70-00, Section 4B, Steps 1-4, of the DA20-C1 AMM). Orient the "T"-fitting so that the "T" points outboard. Refer to Figure 1
- 10.3** Install the altitude compensating fuel pump vent line (P/N 22-7173-62-00) to the 90° MS20822-4D fitting in the fuel pump static pressure reference port. Connect the other end of 22-7173-62-00 to the "T"-fitting in the new fuel pump drain line. Refer to Figure 1.
- 10.4** Remove the mixture control cable (refer to Chapter 76-00-00, Section 3A, of the AMM).
- 10.5** Remove the mixture cable support bracket from apron baffle. Retain the hardware for installation of the new mixture cable bracket.
- 10.6** Drill out the three rivets that connect the left-hand cylinder baffle to

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- the apron, in addition to the baffle rivets indicated in Figure 2.
- 10.7** Remove the left-hand cylinder baffle from apron baffle.
 - 10.8** Using the template (Figure 7), mark the location of the new slot on the left baffle and apron. Use the two holes indicated in Figure 1 to locate the template. Drill pilot hole(s) if required and open up the slot to the final dimensions on both the baffle and the apron.
 - 10.9** Rework the left-hand cylinder baffle to match Figure 3 by removing the corner of the mounting flange. Protect the bare aluminum edges from corrosion with chromate conversion coating (e.g. brush Alodine).
 - 10.10** Fasten the reworked cylinder baffle to the apron assembly using two BSPQ rivets of the appropriate length and two AN960-4 washers. Install the rivets from the top side of the baffle and the washers on the underside of the apron.
 - 10.11** Fasten the new mixture cable bracket to the apron baffle assembly using three BSPQ rivets of the appropriate length. Orient the bracket as shown by the dashed line in Figure 2. Align the slot and the large hole in the bracket with the two holes used to fasten the original mixture cable bracket. Install the two inboard rivets from the top side of the bracket, with AN960-4 washers on the underside of the apron. Install the outboard rivet from the underside of the apron (See Figure 2). The inverted rivet does not require a washer.
 - 10.12** Drill through the cylinder baffle with a 1/8" (3.2mm) drill bit using the hole in the mixture cable bracket as a guide. Note: Apron baffle must be removed from the aircraft for this step and the next.
 - 10.13** Install a BSPQ-04-02 rivet into this hole from the aft side of the baffle.
 - 10.14** Install the apron (refer to Chapter 75-00-00, Section 2B of the AMM).
 - 10.15** Install the hardware from the original mixture cable bracket into the respective locations from which it was removed.
 - 10.16** Strap the 90° spacer to the middle of the hose on the induction tube of cylinder #2 using an MS3367-7-0 cable tie. Ensure that the spacer is sitting on the top of the hose.
 - 10.17** Mark the location of the new hole in the aft baffle, 33 mm (1.3") from the top edge of the composite baffle and equidistant from the oil cooler duct and engine mount boss, as shown in Figure 4. Drill a pilot hole from the aft side of the baffle. Open the hole to 5/8" (16mm). Use care not to damage the surrounding baffle or equipment.
 - 10.18** Insert the rubber grommet RB227 into the new hole in the aft baffle.

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- 10.19** Open the existing mixture cable hole at a 45 degree angle (aft and down) using a round file, so that the angled split bushing fits in the hole with the flange sitting flat on the firewall (see Figure 5).
- Note: On aircraft with a reversed instrument panel (MOD 0085) it is recommended to use the hole location established by Service Bulletin DAC1-76-02.
- 10.20** Locate the new holes in the firewall using the bushing and drill two holes, diameter 0.15" (3.8mm), as shown in Figure 5.
- 10.21** Install the Mixture Control Bowden Cable (steps 1-4 of Chapter 76-00-00, Section 3B of the AMM).
- 10.22** Insert the end of the Bowden cable into the new slot in the apron. Slide the notch in the Bowden cable into the new mixture cable support bracket, as shown in Figure 6.
- 10.23** Place the mixture cable keeper 22-7610-00-04 around the mixture cable. Slide it down into place on the mixture cable bracket. It may be necessary to slide the cable forward to give the keeper enough clearance to slide past the top of the cylinder baffle. Ensure that the orientation of the keeper is correct, so that the two small holes line up with those in the bracket. Secure the keeper to the bracket using two AN526C632R8 screws, AN960C6 washers and MS21042-06 nuts.
- 10.24** Install the rod end bearing onto the forward end of the mixture control Bowden cable.
- 10.25** Install the new mixture arm onto the altitude compensating fuel pump and orient the arm so that it is pointing forward and parallel to the ground when in the middle of its range of motion. See Figure 6. Tighten the nut on the mixture lever.
- 10.26** Install the rod end bearing to the mixture lever on the new fuel pump using an AN3-7A hex bolt:
- Put the AN960-10L washer under the head of the bolt.
 - Insert the bolt into the mixture lever from the inboard side.
 - Put one AN960-10 washer onto the bolt on the other side of the mixture lever.
 - Put the rod end onto the bolt.
 - Put one AN960-10 washer on the other side of the rod end.
 - Put the 656-057 washer on the bolt.
 - Attach an MS21042-3 nut to the bolt.
- Tighten the assembly.
- 10.27** Fasten the mixture cable to the 90° spacer on the #2 induction tube

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- using an MS3367-5-0 cable tie.
- 10.28** Make sure that the radius of the bend in the mixture cable is greater than 76 mm (3"). Adjust the cable as necessary.
 - 10.29** Install the engine cowlings (refer to Chapter 71-10 of the AMM).
 - 10.30** Look through the left-hand air intake to check for clearance between the mixture cable and the upper cowling. Make sure that there is at least 15 mm (5/8") of clearance between the cable and the cowling. Adjust the cable as necessary.
 - 10.31** Remove the engine cowlings (refer to Chapter 71-10 of the AMM).
 - 10.32** Install the spiral wrap onto the mixture cable so that the span of cable directly over cylinder #4 induction tube is protected.
 - 10.33** Install the Mixture Firewall shield lower and upper halves using two AN526C632R8 screws with AN960C6 washers and MS21042-06 nuts. Make sure that the flange of the upper shield is on top of the flange of the lower shield, as shown in Figure 5.
 - 10.34** Seal the firewall shield using PRC 812 or equivalent firewall sealant. Be sure to fully seal both sides of the firewall.
 - 10.35** Test for correct range of motion of the mixture controls (step 9 of Chapter 76-00-00, Section 3B in the AMM)
 - 10.36** Use a piece of lock wire to check for proper thread engagement of the rod end connector at the end of the mixture cable.
 - 10.37** Complete installation of the mixture control cable (steps 10 – 17 of Chapter 76-00-00, Section 3B in the AMM.)
 - 10.38** Install the placard P/N 22-1130-00-33 on the instrument panel, in the empty space below the radio stack.

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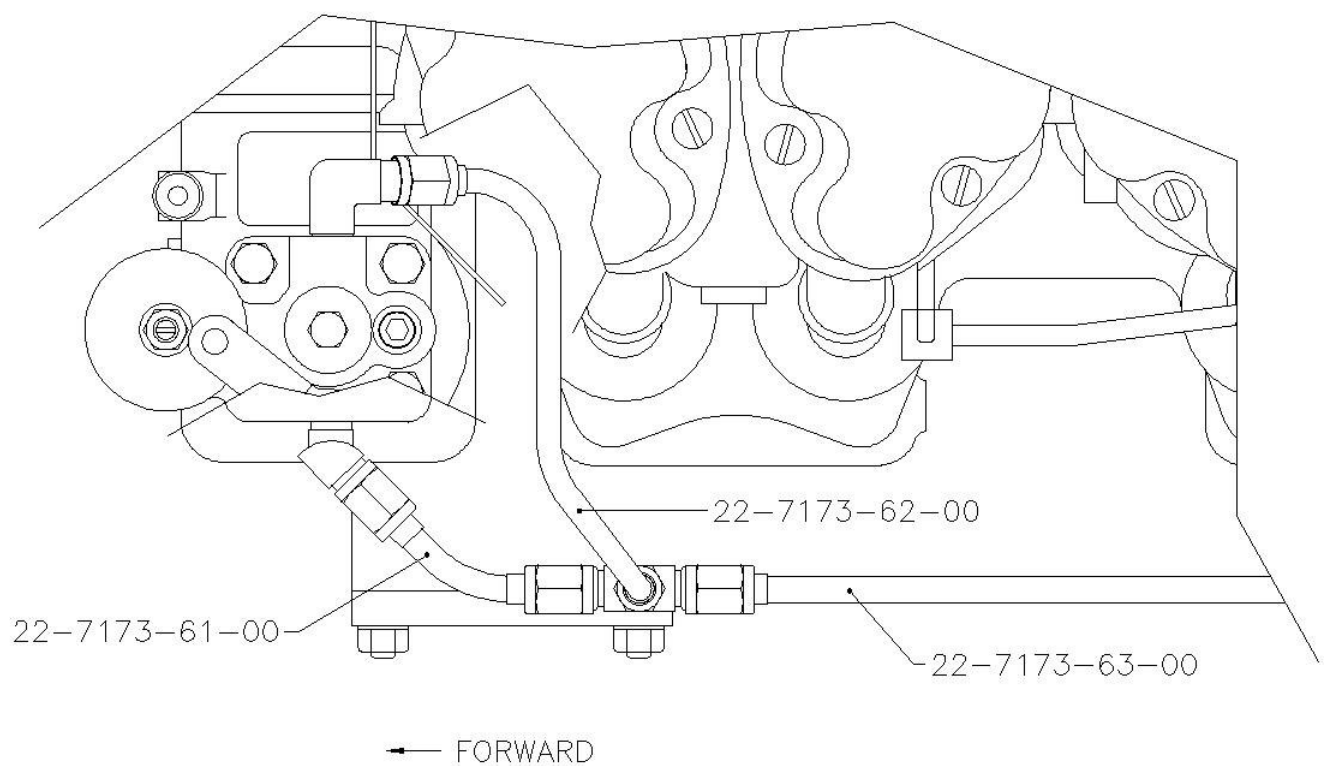


Figure 1: Drain / Vent Assembly
Looking inboard on LH side of engine

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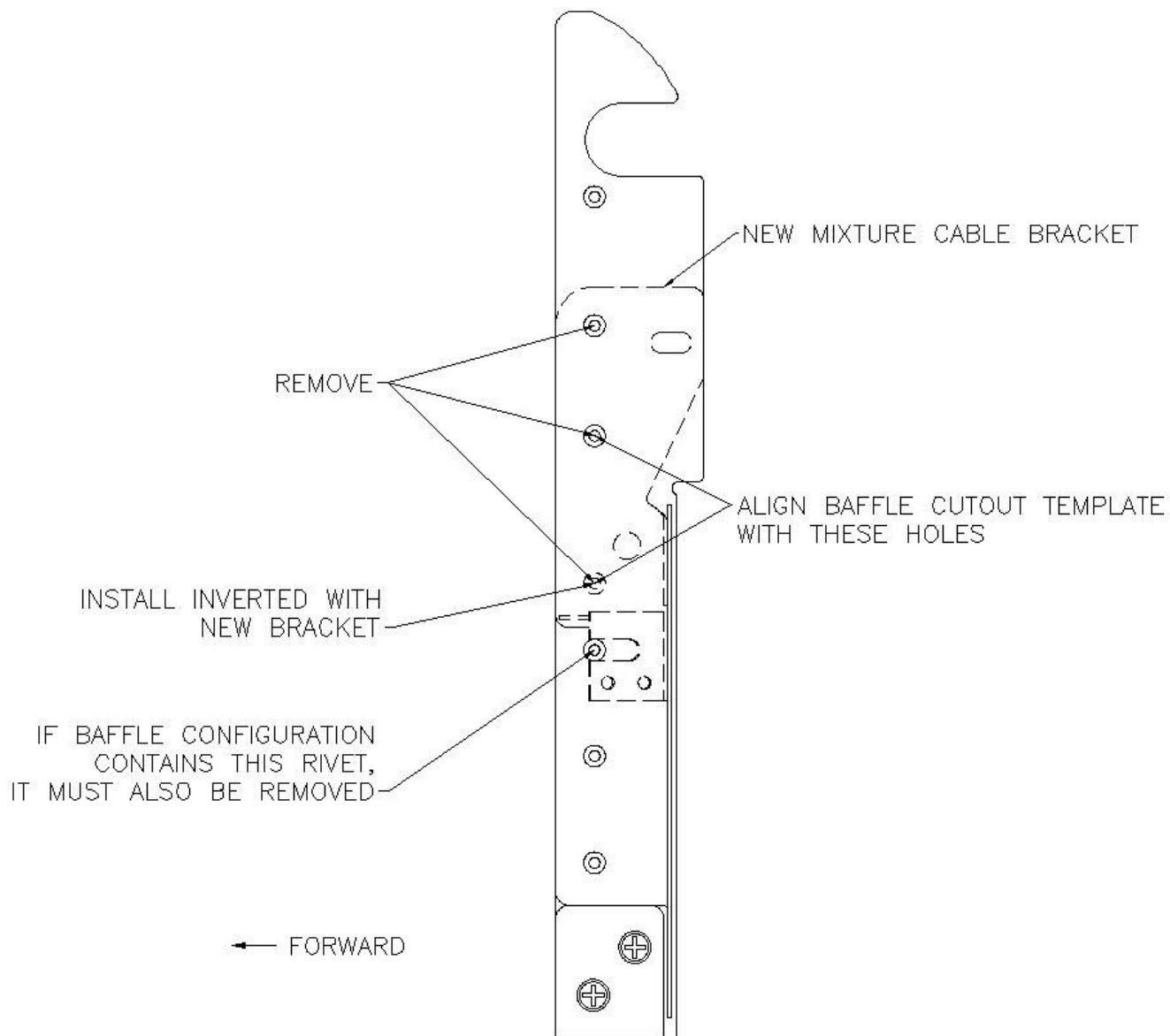


Figure 2: Left-Hand Baffles

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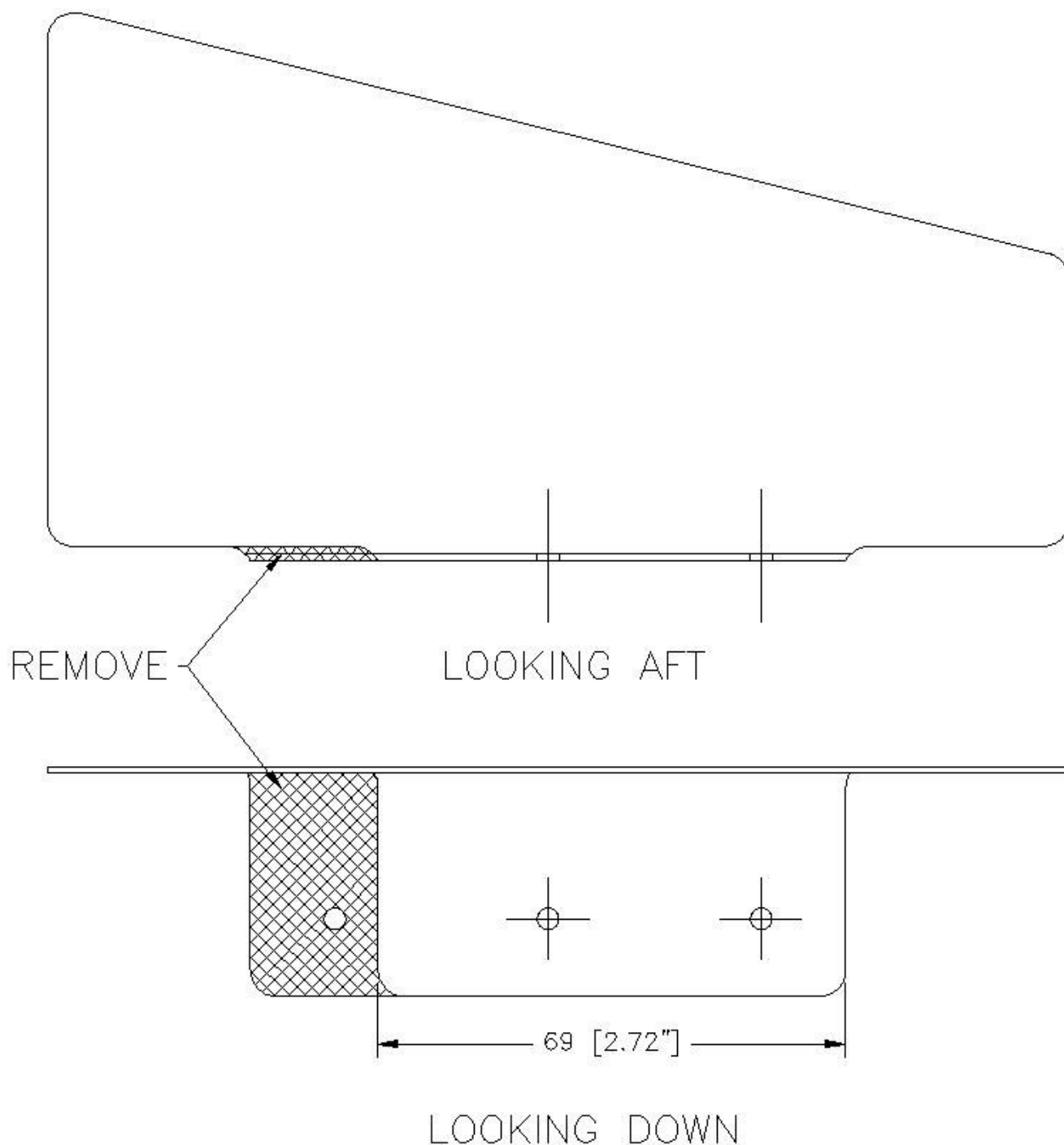


Figure 3: Left-Hand Cylinder Baffle Modifications

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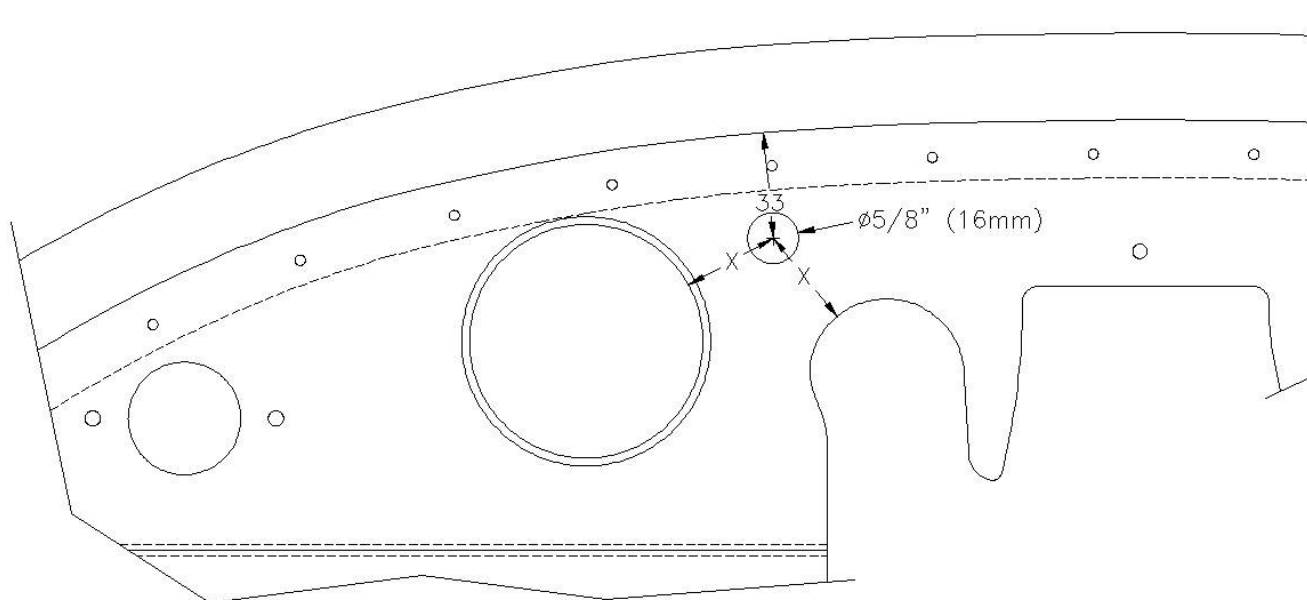


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**Figure 4: Aft Baffle Hole Location
Looking Forward**

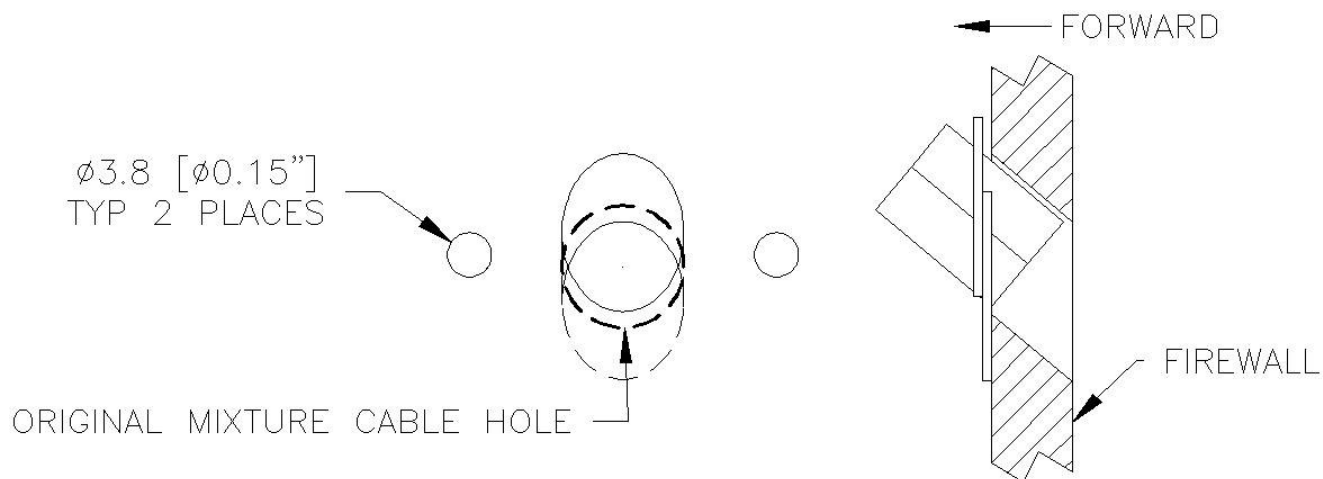


Figure 5: Firewall Holes

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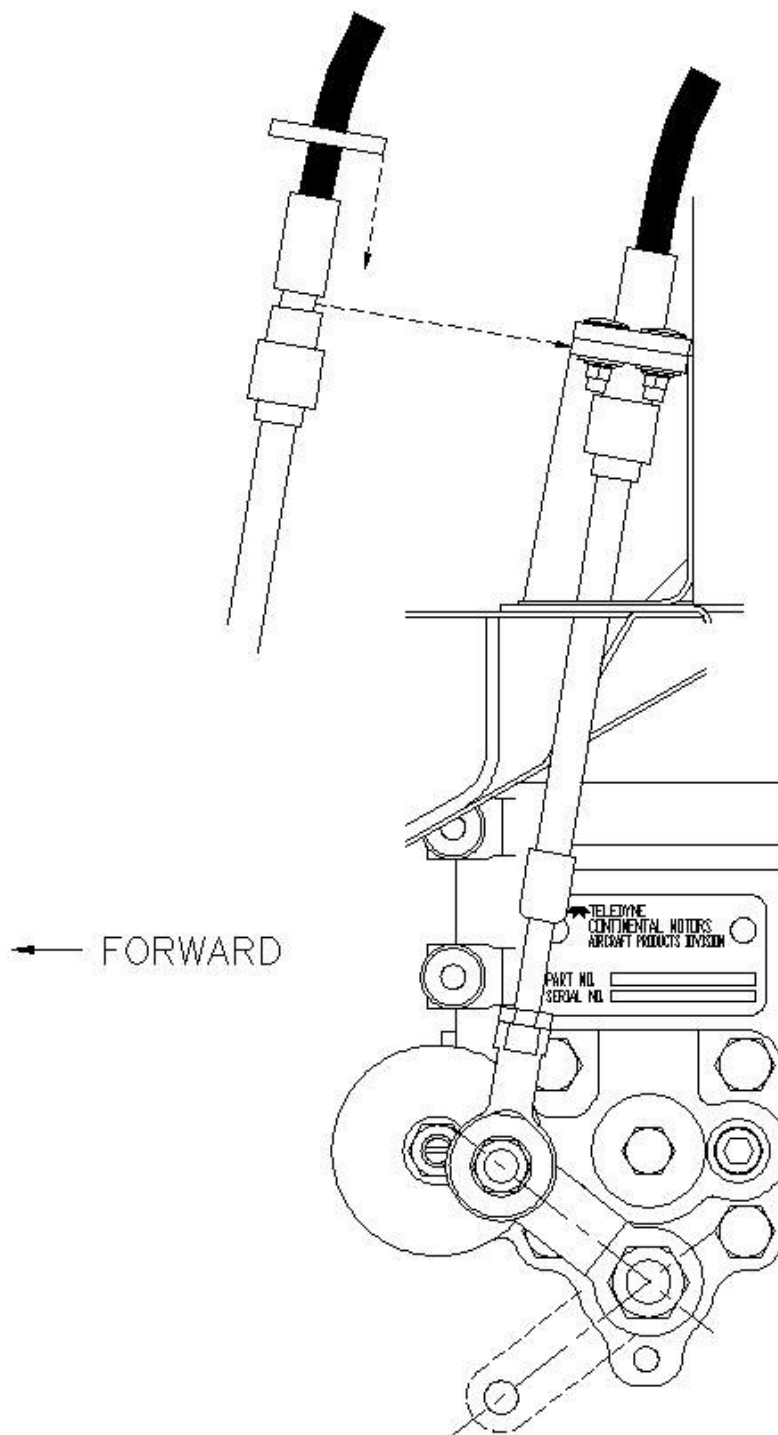


Figure 6: Mixture Cable Installation
Looking inboard on LH side of engine

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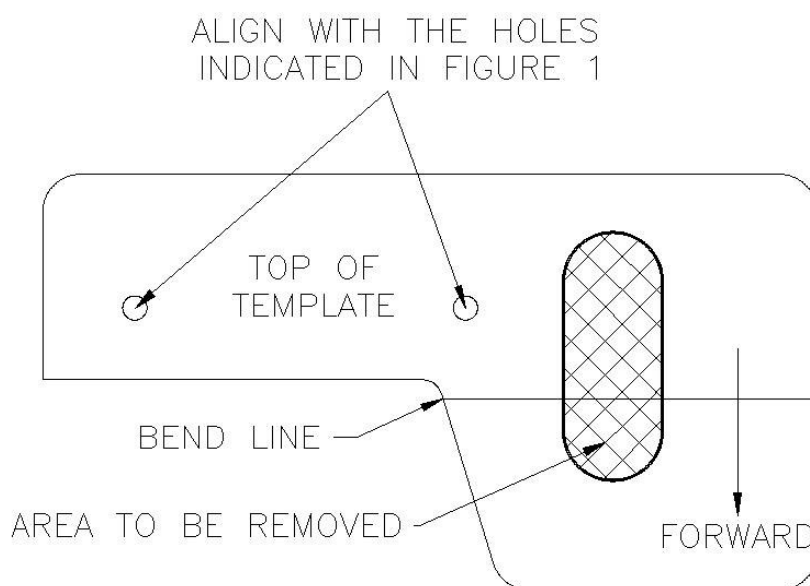


Figure 7: Baffle Cutout Template

To obtain satisfactory results, procedures specified in this Service Bulletin must be accomplished in accordance with accepted methods and current government regulations. Diamond Aircraft Industries Inc. cannot be responsible for the quality of work performed in accomplishing the requirements of this Service Bulletin. Diamond Aircraft reserves the right to void continued warranty coverage in the area affected by this Service Bulletin if it is not incorporated.

If you no longer own the aircraft to which this Service Bulletin applies, please forward it to the current owner and send the name of the current owner to Diamond Aircraft Industries Inc., at the address below.

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