

X. ENGINE EXHAUST SYSTEM, CABIN HEAT, AND CARB HEAT MUFFS

✓ Completed 9-17-03 1.0 hour

STEP X-1 FITTING THE EXHAUST SYSTEM

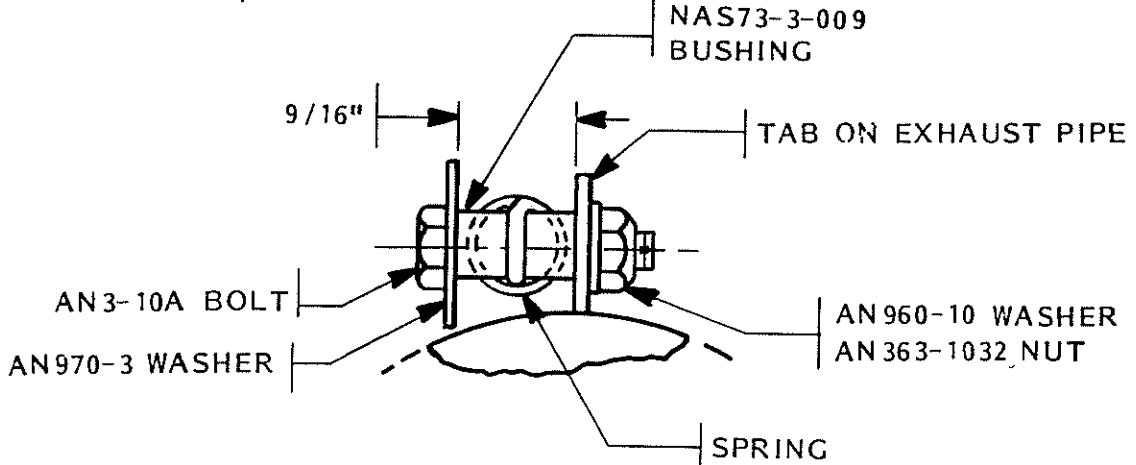
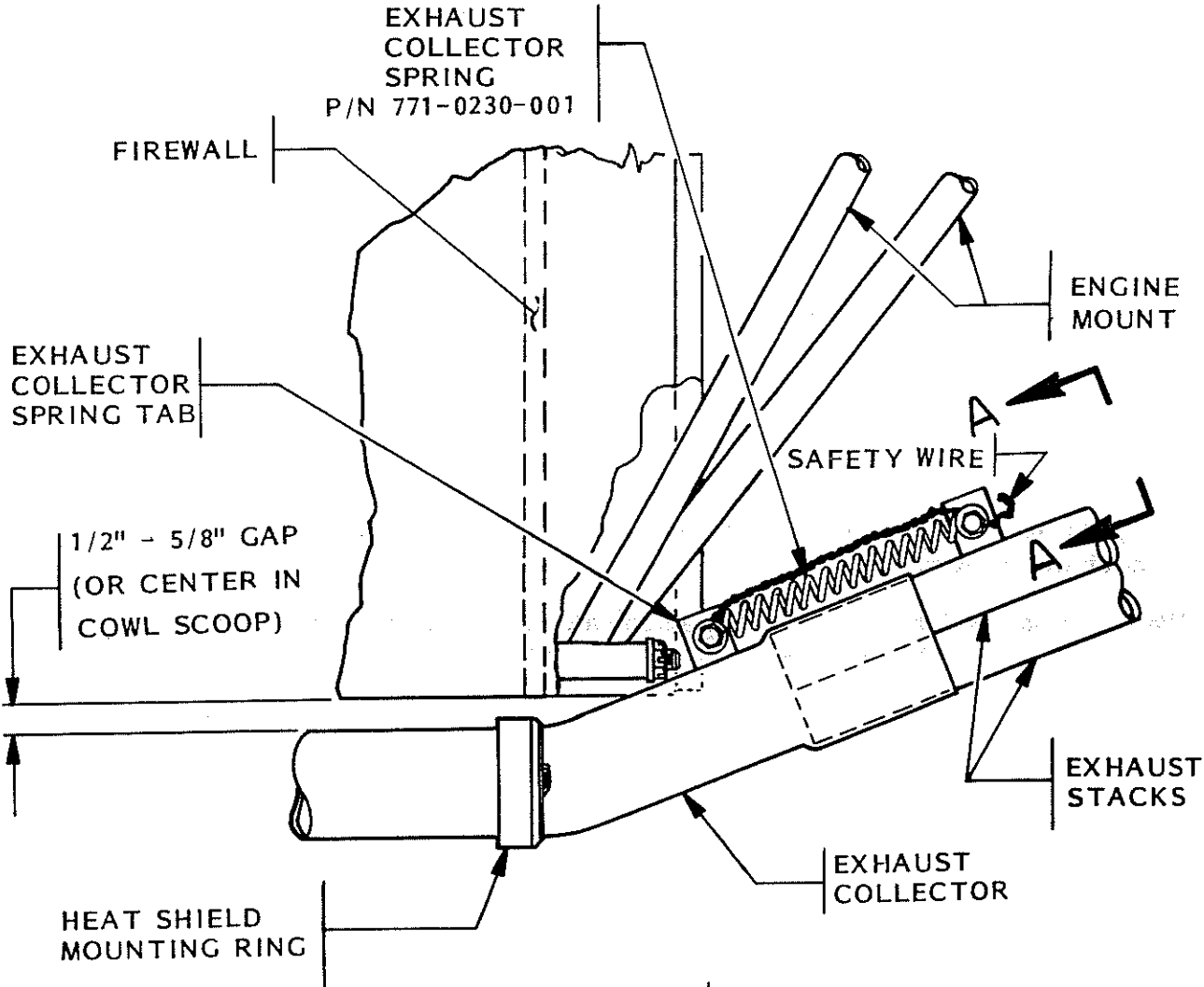
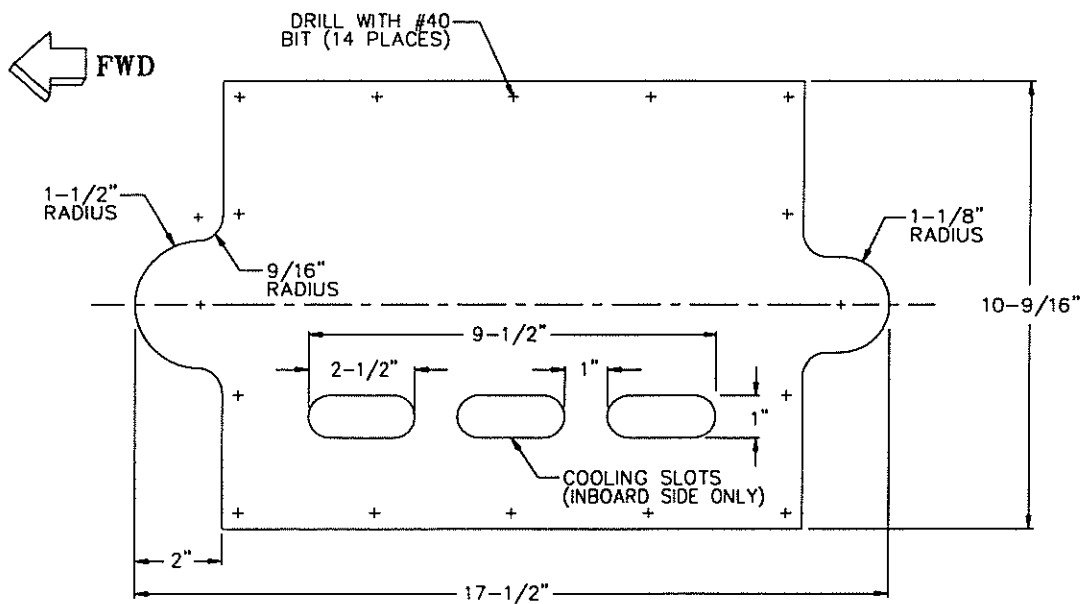
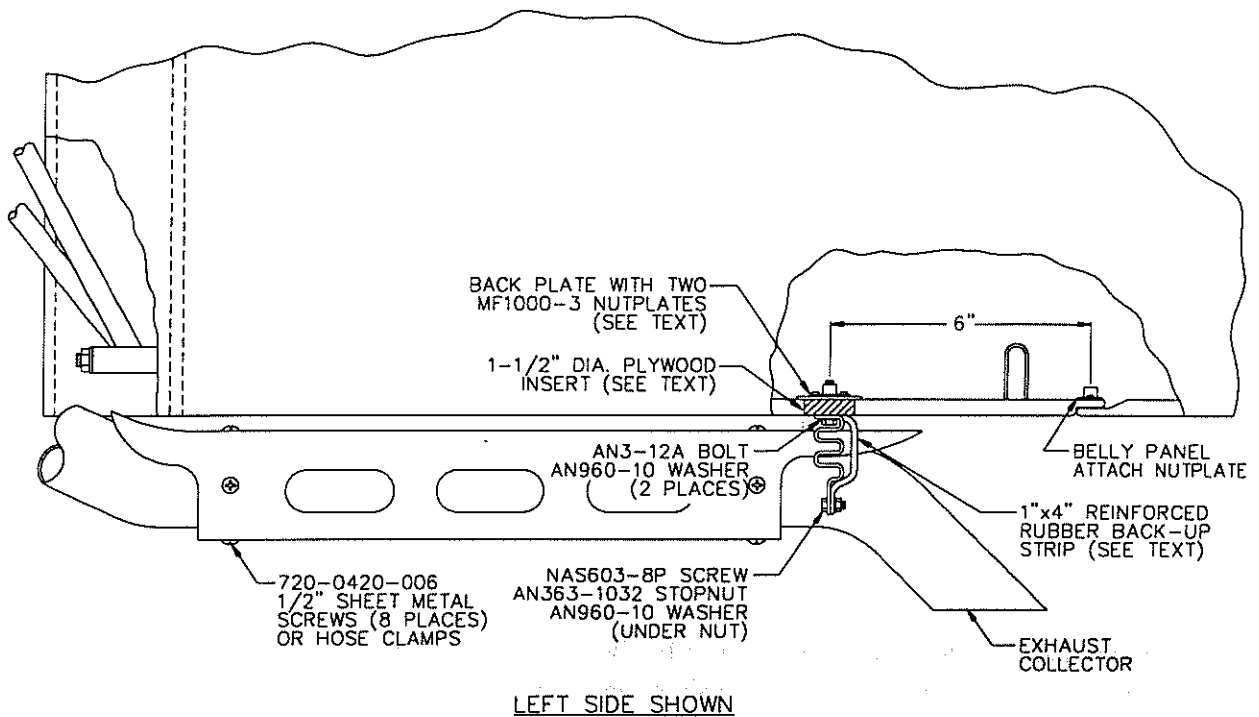


FIGURE (G-162)



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PATTERN FOR HEAT SHIELD

FIGURE (G-163)

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The exhaust system for the Super II RG is available as an engine-related option; it is not supplied with the basic airframe kit. When shipped, the exhaust system is ready to bolt to the engine and requires only some drilling and trimming of the exhaust tubes.

Bolt the exhaust stacks to the engine cylinders, using the proper gaskets and nuts.

NOTE: The exhaust gaskets and nuts are not provided with the kit. They are available from most aircraft supply houses if they did not come with your engine. We recommend the thick, no-blow type exhaust gaskets, and strongly suggest always using new gaskets when installing the exhaust system.

Fit the collector to the exhaust stacks, trimming the exhaust stacks to approximately center the collector between the fuselage belly panel and the exhaust tunnel. There will be about 1/2" to 5/8" clearance between the belly panel and the collector when the collector is positioned properly.

STEP X-2 MOUNT THE EXHAUST COLLECTOR HEAT SHIELD

Done - came with engine

Once the collector has been centered properly in the exhaust tunnel, remove it from the exhaust stacks and mount the heat shield to it, as shown in FIGURE (G-163). Fabricate the exhaust collector heat shield from .032" thick 6061-O aluminum sheet provided with the kit, as shown in FIGURE (G-163). Cut the cooling slots as shown on the inboard side of the shield, wrap the shield around the mounting rings and secure it with (720-0420-006) sheet metal screws, pop rivets, or large hose clamps. The overlap seam that runs the length of the shield must be secured with (720-0420-007) sheet metal screws. Before securing the heat shield, apply a bead of silicone sealant on the mounting rings to prevent vibration from wearing the shield. Drill 3/16" holes in the tabs on the aft end of the collector for the mounting bolts.

STEP X-3 INSTALL THE EXHAUST SYSTEM *✓ Completed 9-17-03 2.5 hours*

Mount the collector to the exhaust stacks and the airframe as shown in FIGURES (G-162) and (G-163). At the forward end, drill 3/16" holes for the mounting bolts through the tabs on the collector and the exhaust stack. Position the holes to minimize the distance the collector spring must be stretched during installation while also providing a minimum 1/4" edge distance to the bolt holes. Assemble the forward exhaust collector spring, as shown in FIGURE (G-162), using the AN3-10A bolt, AN970-3 washer, NAS73-3-009 bushing stock, AN960-10 washer, and AN363-1032 nut at each end of the spring. Several loops of safety wire, installed loosely between the bushings on the two AN3-10A bolts, serve as a back-up connection in case the tension spring breaks.



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At the aft end, the collector is secured with the aft exhaust collector springs and lengths of reinforced rubber sheet installed in parallel with the springs. The rubber strips span the mounting springs to damp vibration that might cause the springs to fail. Cut two 1" x 4" lengths of stiff, 1/8" thick fiber-reinforced rubber (from an old radiator hose, for example). Fasten the aft mounting springs and one end of each rubber strip to the exhaust collector with NAS603-8P screws, AN960-10 washers (under the nuts), and AN363-1032 nuts, as shown in FIGURE (G-163).

NOTE: AN363-1032 all metal stop nuts are used on the collector ends of the mounting springs because the high heat will disintegrate an ordinary elastic stop nut in a short time.

To secure the aft springs to the fuselage, first measure 6" forward from the center belly panel attach screws and draw a line parallel to the forward belly panel seam. Hold the exhaust collector in place and use the aft springs to mark the best locations of the two mounting holes on this line. Drill the holes with a 1/8" bit. Remove enough of the inside skin and foam core at the two hole locations to bond in two 1-1/2"-diameter by 1/2" thick birch plywood inserts. Bond the inserts in with resin/Q-cell mixture and then apply two layers of bi-directional cloth, overlapping the original inside laminates by at least 1" all around. Re-drill the bolt holes with a 3/16" bit.

Fabricate a backing plate from .032" x 3" x 6" aluminum sheet. Use the holes in the belly to locate the bolt holes in the backing plate and mount two MF1000-3 nutplates (secured with AN426AD3-5 rivets) to the backing plate centered on the holes. Secure the backing plate to the inside of the belly panel with 700-0004-004 pull rivets. Secure the aft exhaust collector mounting springs and the other ends of the rubber strips to the forward belly with AN3-12A bolts threaded into the nutplates on the backing plate. Place AN960-10 washers under the heads of the bolts.

STEP X-4 CABIN HEAT ^{ONLY} ~~AND CARBURETED~~ MUFFS

No carb. heat needed

NOTE: The heat exchanger muffs are not supplied with the basic airframe kit. The cabin heat muff is supplied with the exhaust system kit; the carb heat muff is supplied with the optional carbureted induction system kit.

The heat exchanger muffs for the carb heat and cabin heat are shipped pre-welded. The builder must cut out the holes in the sheet metal where the inlet and outlet tubes are welded on, and must fasten the muffs to the heat exchanger rings on the exhaust pipes. The longer muff, with the (2) tubes welded on, is for the cabin heat and is mounted to the crossover tube from cylinder #2. The shorter, single tube muff is for the carb heat and is mounted to the rings on the cylinder #4 exhaust stack.

NOTE: The cabin heat muff rings on crossover tube #2 are welded all the way around to prevent any cowling air from entering the cabin. The cabin heat muff has its own separate air inlet that is taken at the inlet to the cowl where fresh outside air can be obtained. The carb heat muff rings on stack #4 are not welded completely around since it is not necessary.



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NOTE: The carb heat muff supplies heated air to the carb heat manifold, which is part of the carbureted induction system. The carbureted induction system is available as a kit from the Glasair Options Catalog.

Drill evenly spaced 3/8" diameter holes all the way around both of the carb heat rings, as shown in FIGURE (G-165), to serve as air inlet holes for the muff.

NOTE: When drilling stainless steel, it is important to use a sharp drill bit and to keep the bit cutting. If the drill bit is allowed to spin in an unfinished hole, it work hardens the metal, making it extremely difficult to finish the hole.

Mount the muffers to the rings on the stacks, using (720-0420-006) sheet metal screws spaced about every 1-1/2" or so. Also, seam the 1/2" overlap splice together in the middle with (720-0420-007) sheet metal screws.

NOTE: Apply a bead of silicone to the mounting rings before mounting the heat muffers, to prevent vibration from wearing the muffers.



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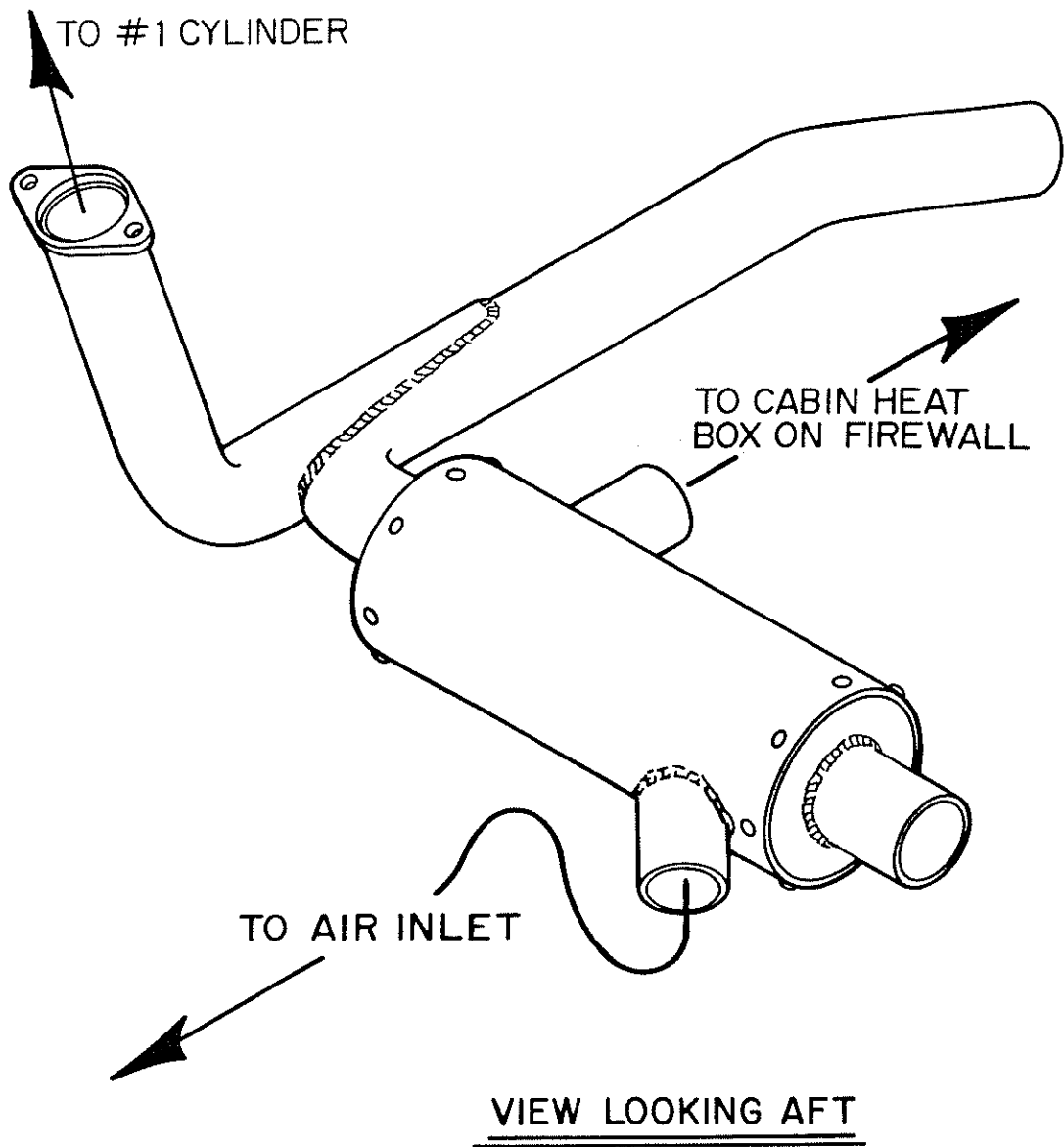


FIGURE (G-164)

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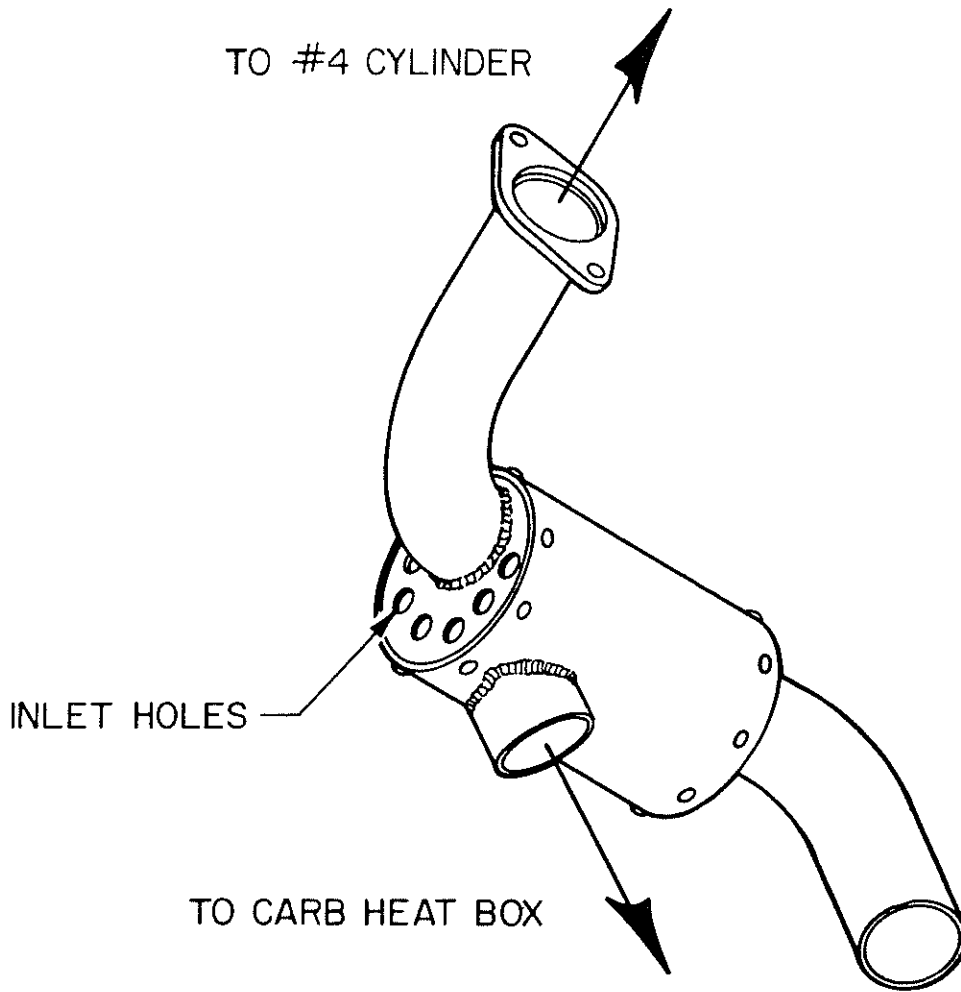


FIGURE (G-165)

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MODEL	ASSEMBLY NAME	REVISION	DATE	VOLUME	PAGE
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A 1-1/2" ID air duct attach flange must be fastened to the lower forward engine baffling piece to provide fresh air for the cabin heat inlet. The air duct attach flange is not supplied in the kit but is available from the Glasair Options Catalog.

A cabin heat box (not supplied) must also be installed to transfer warm air through the firewall to the passenger compartment. A cabin heat box with a stainless steel duct for firewall pass-through and a fire-resistant Sil-Temp door gasket is available from the Glasair Options Catalog. Refer to FIGURE (G-69) on page G-123 for a suggested cabin heat box mounting location. Any alternative location that provides clearance for the rudder pedal hardware, firewall pass-throughs, engine accessories, and airframe structural components is acceptable. Heat box mounting instructions are provided with the heat box.

Use hose clamps to secure 1-1/2" ID SCAT tubing between the carb heat muff and the heated air inlet tube on the carb heat manifold, between the air duct flange on the engine baffle and the inlet to the cabin heat muff, and between the outlet of the cabin heat muff and the cabin heat box. SCAT ducting and hose clamps are available from the Glasair Options Catalog.

WARNING: Seal all seams in the cabin heat muff with silicone sealant to prevent engine exhaust gases and other fumes from entering the cockpit. ✓ done

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