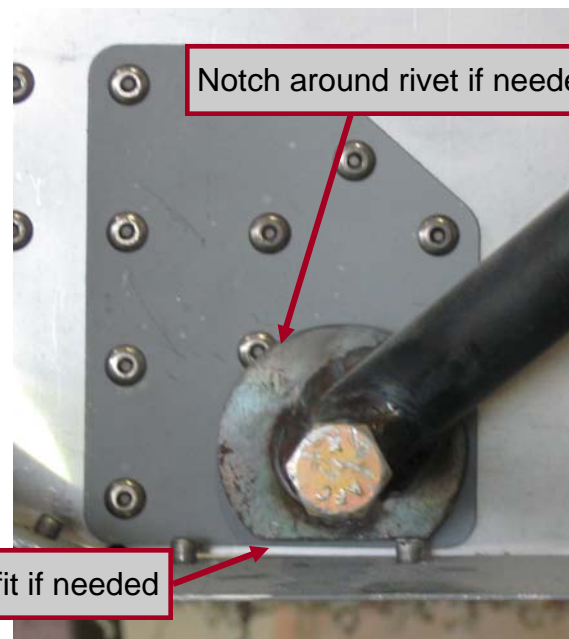


The engine mount will have to be trimmed so that the mount pads that contact the firewall will fit correctly on the firewall. These pads may have to be trimmed to match their firewall, avoid rivets and to allow room to make a good fit with the nose wheel support

1. Place the nose leg support weldment in place on the firewall and insert firewall side bolts through firewall. Bolt heads on the cockpit side of firewall.
2. Position the engine mount over the nose wheel support and on to the firewall. Hold the mount in place by installing common jam nuts over the mount bolts. Since the mount will come off again (maybe more than once) do not use the AN363 metal locking nuts at this time..



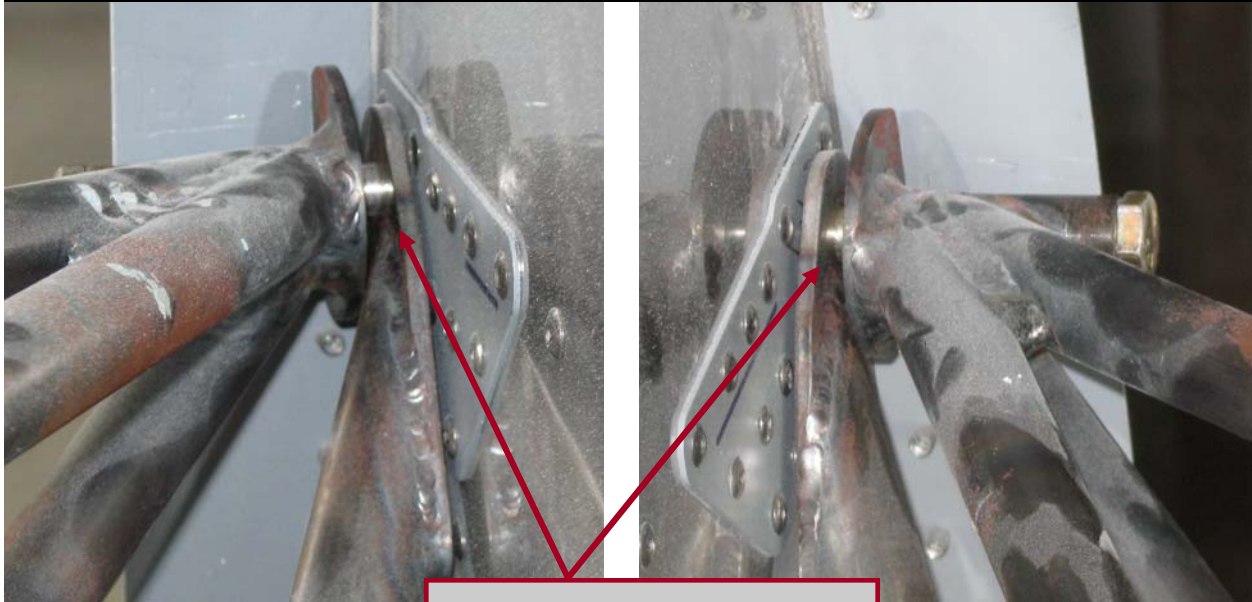
3. Position the lower two mount pads in the correct position and mark for trimming so that the pads fit above the fuselage bottom skin. You may have to notch out the mount pad to avoid a rivet in the firewall reinforcement pad. Most mounts will fit with no trim but make sure the mount pad does not lie over a rivet head.



5. Check the fit of the top engine mount pads against the nose wheel support. Trim to fit if needed. Newer mounts are fabricated with smaller mounting pads than these that are pictured and should require little or no trimming. Just make sure the mount pad sits flat against the nose wheel support.

Take care not to stretch the mount itself as it is possible to distort the mount so that the mount will not fit the engine.





Make sure mount sits flat against the nose wheel support in these areas

#### 8. Prep & Paint Mount

Clean all manufacturing oils or oxidation from the steel tubes of the mount. Use steel wool and a solvent to loosen deposits. Wipe clean and dry with a soft cloth.

Prime the mount with a good self etching primer (available at most auto stores).

Top coat with a good spray enamel like Rustoleum Hi Performance. We suggest a light color like white or light gray as it makes it easier to spot any cracks that might occur during the life of the mount.

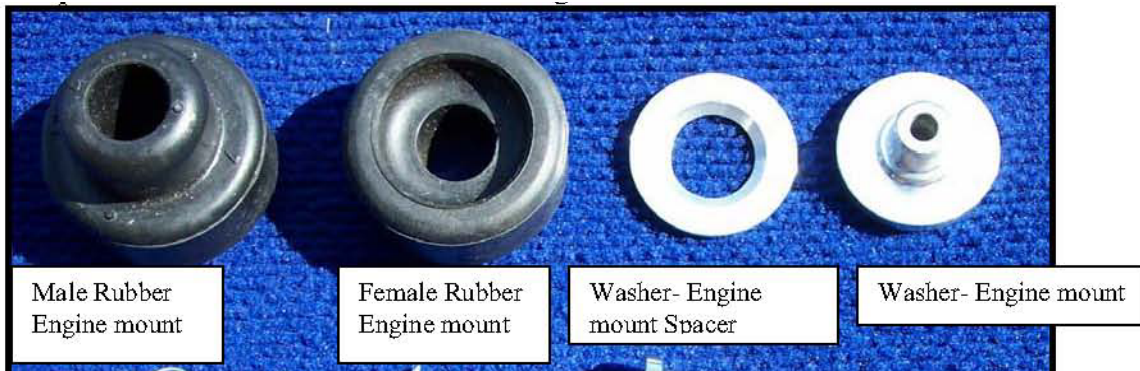
9. When satisfied with the mount fit remove mount and go on to step two: Fit Mount to Engine.

10. If building with the single throttle system be sure to install the throttle arm extension onto the carb. Much easier to install before engine is on mount or on the airplane.

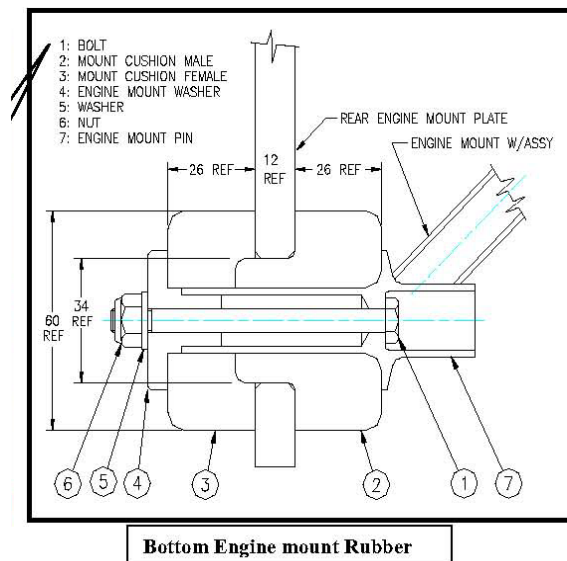
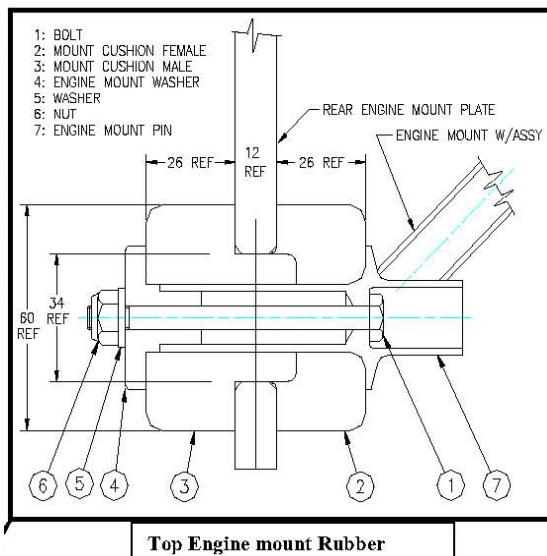
Builders may find it easier to mount the engine to the engine mount and then mount the assembly to the firewall. However, it is not necessary to attach mount to engine first and the mount can be attached to the firewall if the builder prefers.

There are a few procedures that are easier to do before the engine is mounted to the firewall, though. Attaching the throttle arm extension and drilling a new hole for the cable end adjuster installing and attaching the throttle cable is easier to do with the carb off the engine and on the bench. See the instructions for those procedures.

1. Locate the engine mount cushions and hardware in photo 1 that came with the Jabiru engine in the accessory bag. Also find the engine mount bolts, washers, and nuts from the FWF kit.



2. Refer to the mount cushion assembly drawings below.
3. Install the female half of the mount cushion on the top mount pins.
4. Install the male half of the mount cushion on the bottom mount pins.
5. Stand the engine up on its prop flange.

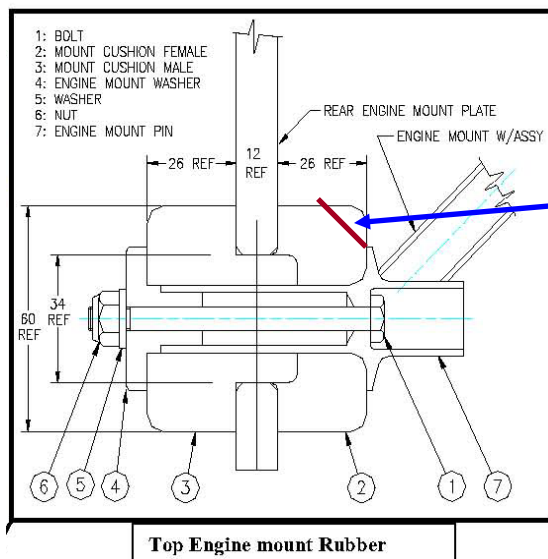
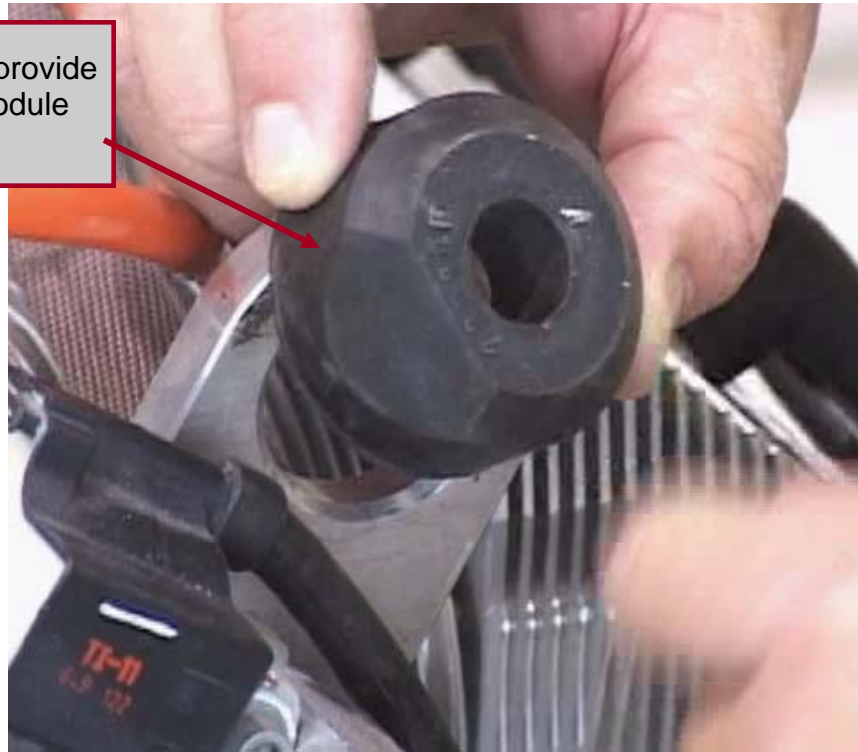


## Trim Female Cushion

The female mount cushion that will go on the upper right side of the engine must be trimmed a bit to provide clearance for the ignition module. This is most easily accomplished on a band saw but a hack saw or similar tool will do the job as well.

Complete this job as you trial fit engine to engine mount

Trim female cushion to provide clearance for ignition module and lead wire.



Remove rubber shoulder with a bevel cut. Rotate cushion so that the beveled area is over the ignition module lead. Remove enough so that the cushion does not interfere with or contact the module or lead. Remove only in an area just large enough to provide clearance for the module and lead. Do not bevel the entire radius of the cushion!

6. Lower the mount down onto the engine, inserting the male cushions into the engine back plate.
7. Insert the AN4-31A mount bolt in the top mount pins
8. Install the male half of the cushion onto the engine mount pin and into the engine back plate.
9. Install the mount washer into the end of the mount cushion and engine mount pin.
10. Using an extended length socket to hold the bolt in place, compress the mount cushion and mount washer until the mount bolt extends far enough through the mount washer to get the washer and AN363-428 nut started. See photo below.

11. Tighten the nut until the mount washer bottoms on the engine mount pin. There should be about two threads showing on the mount bolt.
12. Repeat for other mount bolts.



Builders may find it easier to mount the engine to the engine mount and then mount the assembly to the firewall. There are a few procedures that may be easier if done before final engine installation:

Single throttle carb throttle lever extension is easier to install before engine is on the plane (not needed for dual throttle option)  
Female mount cushion for the upper right mount should be beveled for ignition module clearance

Once those tasks are complete and the engine is on the mount use an engine hoist (or a few strong helpers) to lift the engine and mount into position for a temporary fit up. Install the bolts and jam nuts in all firewall mounting holes and lightly snug up the bolts.

Typically a builder would temporarily hang the engine and then locate the positions of other accessories on the firewall. Using the photos and instructions in other sections of this manual locate the accessories by holding in place and marking their perimeter



or mounting hole locations with a Sharpie marker.

See page four for list of items to locate on the firewall



Guide engine onto mount to install top mount locations first.



After top mount bolts are secure and the engine back plate is centered on the male mount cushions, lower the engine hoist and let the weight of the engine help compress the bottom mount cushions



Once the engine has been temporarily mounted the firewall mounted accessories must be located. Each of these items has its own section. Please refer to those sections for instructions.

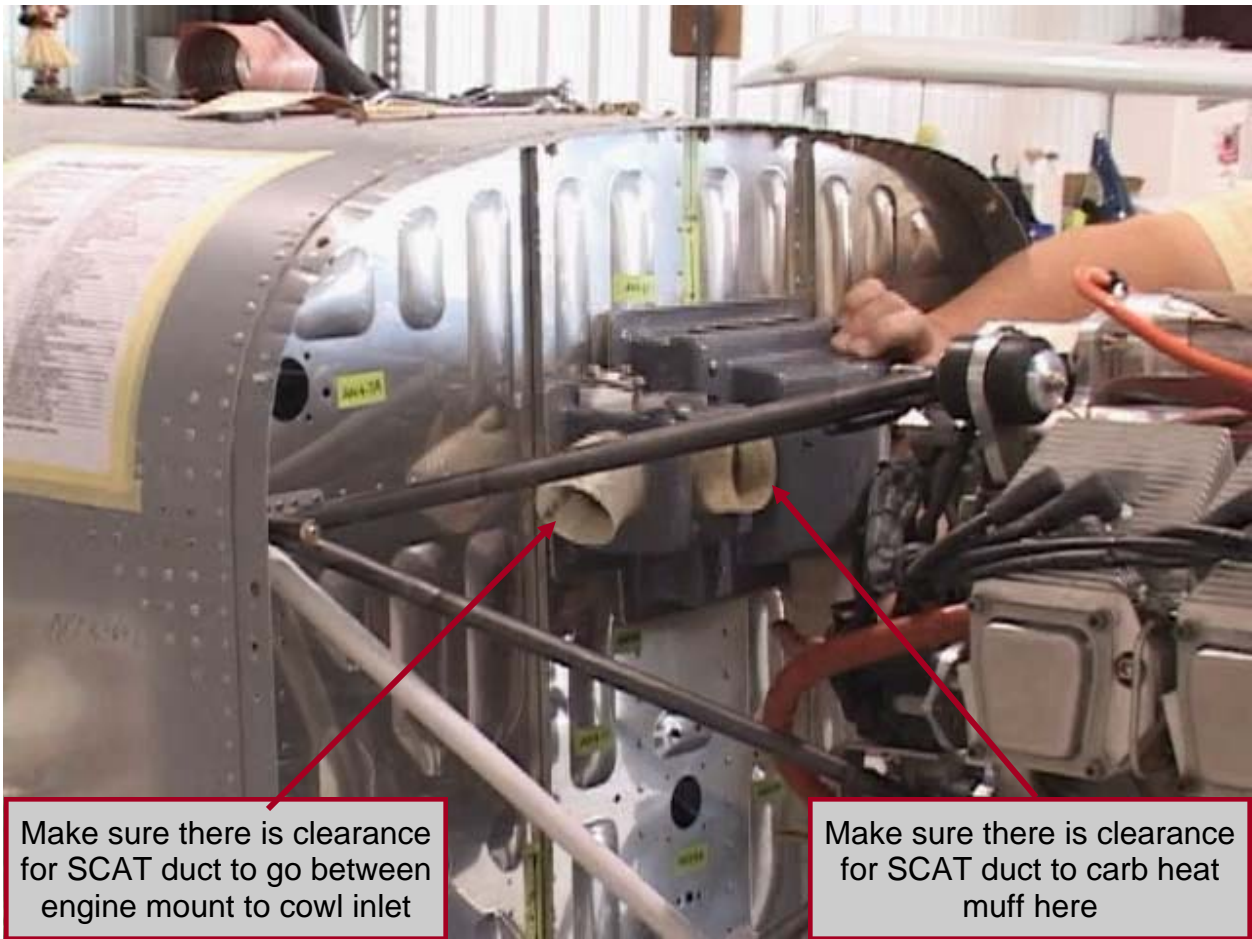
**Airbox**  
**Cabin Heat Mixer Box (optional)**  
**Battery Support & Clamp**  
**Oil Recovery Bottle**  
**Fuel fitting**  
**Starter Solenoid**  
**Regulator**

After firewall items are located it may be easier to remove engine to permanently install those items that are on the firewall.

Final engine installation then is accomplished by installing all bolts and tightening to the appropriate torque for aircraft AN bolts.

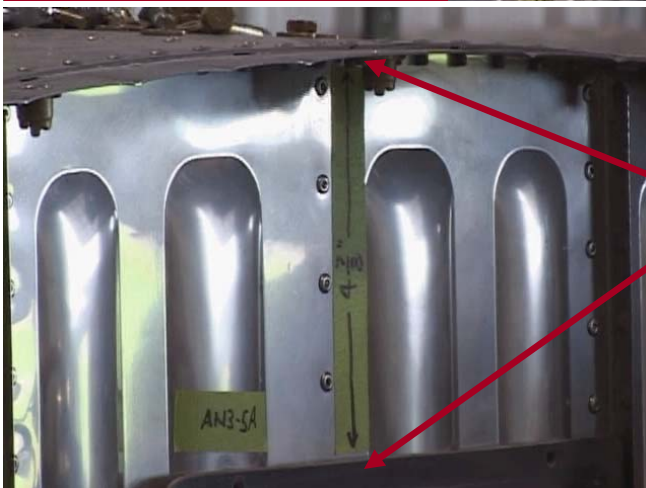
1. Remove the airbox top from the airbox base
2. Position the base per your previous markings on the firewall
3. Drill one hole in each corner of the base and one additional hole in the center of the long side of the base through the airbox flange and through the firewall with a 1/8 inch drill.
4. Temporarily secure the airbox in place with Cleco's.
5. Finalize the drilling by drilling one hole in each corner of the base and one additional hole in the center of the long side of the base.
6. Remove base, scuff the flange and coat edge with silicone sealant
7. Reinstall base with 6 x 1/8 dome head rivets.
8. Insert K&N air filter
9. Replace airbox top and screw to base with the #8 screws provided.



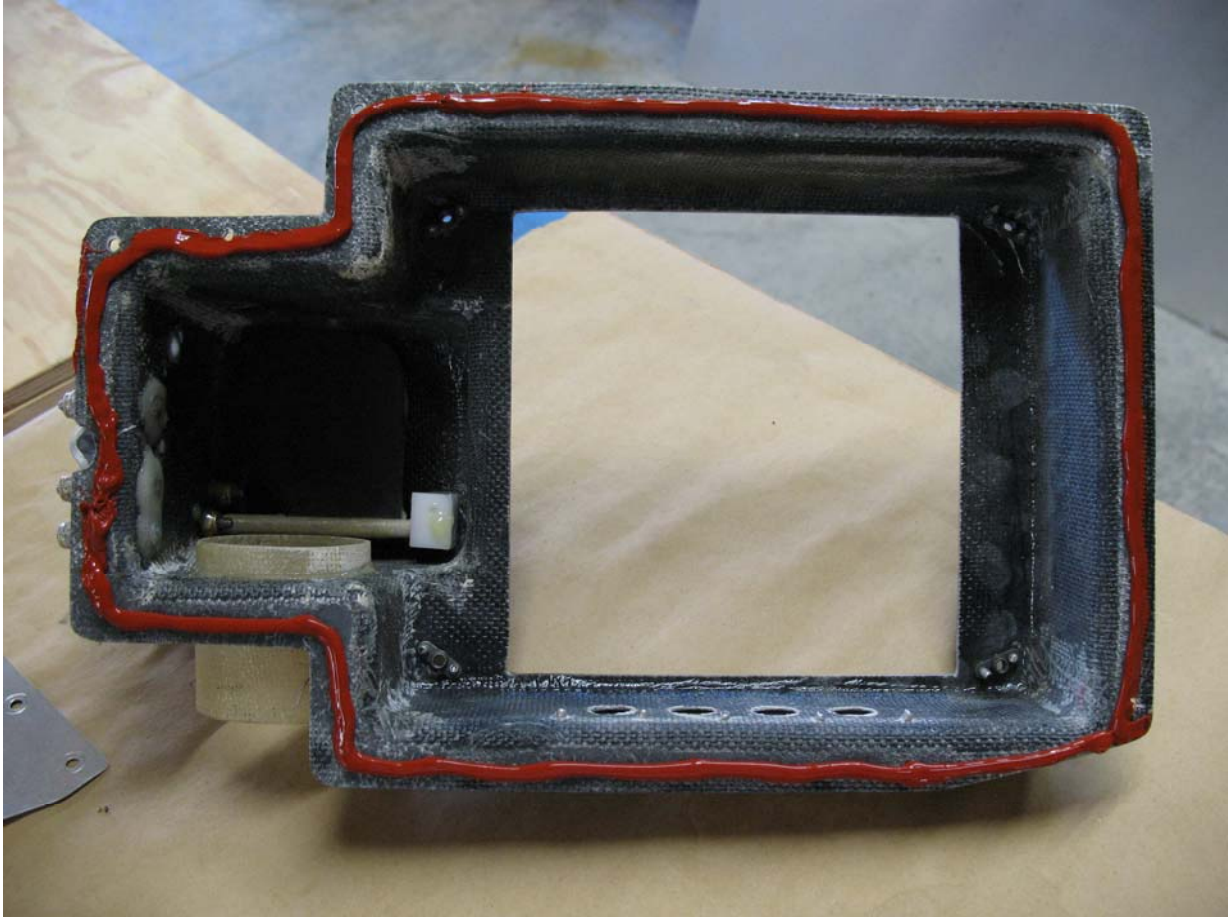


Make sure there is clearance for SCAT duct to go between engine mount to cowl inlet

Make sure there is clearance for SCAT duct to carb heat muff here



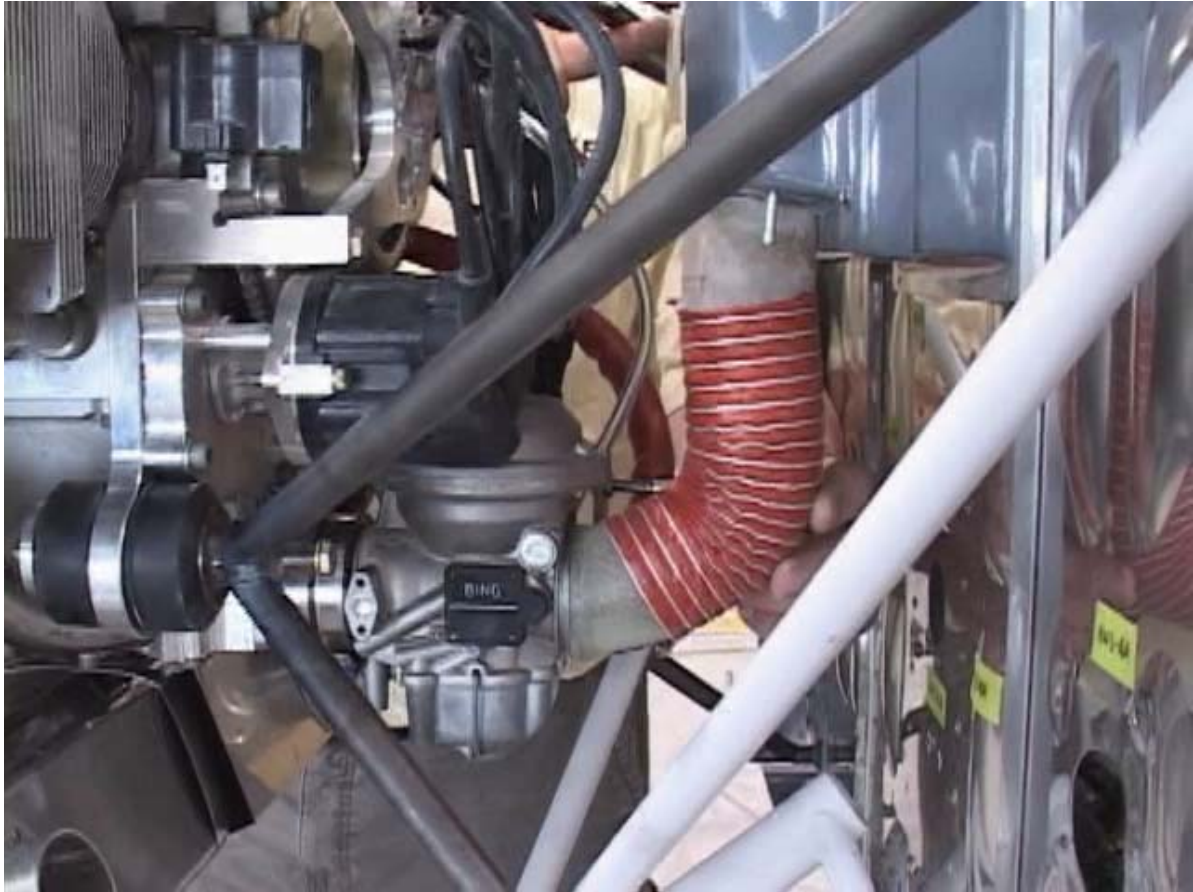
The dimension that worked for us on the S-19 we built is 4.875 inches from top of the airbox to the fuselage skin is



Run a small bead of hi temp rtv around the edge of the airbox bottom. Then close the bottom of the airbox with the aluminum sheet provided.

Once the bottom has been closed the airbox bottom can be riveted to the fire-wall with the 3/16 rivets in the airbox component sub kit. Make sure you rivet into the bumps in the fire-wall.





Once airbox is installed put filter in to airbox and connect SCAT duct to the carb as pictured above.

**Cabin Heat Mixer Box**

With a 2" hole saw cut a hole in the firewall on the lower pilots side for the cabin heat mixer box

The mixer box will sit on three of the bumps in the firewall and those bumps will have to be flattened out (see photo)

Deburr hole

Install box with 4 x 1/8 inch rivets

The location is flexible but this position worked for us on our S-19. The stiffener bumps on the firewall stainless do add to the challenge of locating the mixer box.



Many builders choose to fabricate a bell crank to reverse the direction of the cabin heat box flapper door. This may be easier than running the actuator cable up from the bottom. See photos below for details. Scrap aluminum from the airframe kit can be used.



Rivet the mixer box in place making sure the rubber gasket seals completely around the mixer box base.

Attach a length of 2" SCAT to the mixer box.



Attach forward end of SCAT to the muffler heat muff using the clamps provided



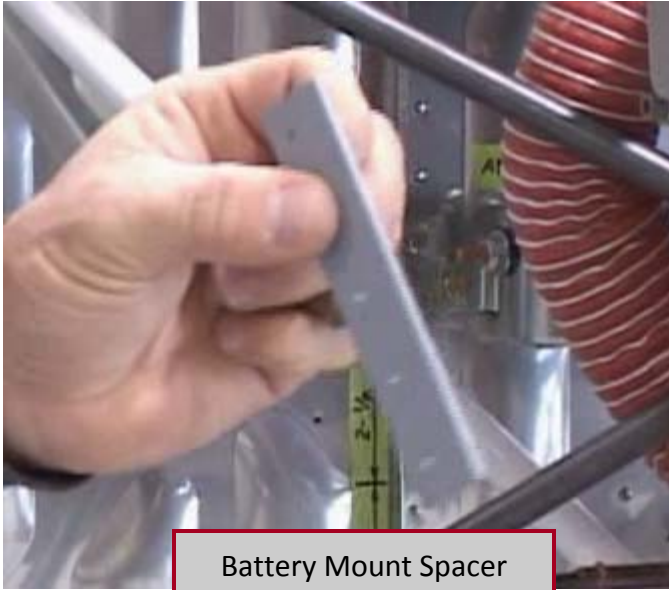


### Battery Support & Clamp

The battery installation on the S-19 is a bit more involved than some of our other FWF installations because of the stiffener bumps on the Rans firewall. However, the battery support and clamp is very straight forward in all other ways. The builder simply rivets an aluminum angle support to the firewall and then fabricates and installs an aluminum clamp that hinges to the firewall.

First locate the battery support (angle aluminum) on the firewall so that the bottom of the support is just above the row of rivets already installed in the firewall. Lay out and drill for four 1/8 blind rivets. Then fabricate a spacer from the 1/8 inch thick flat aluminum stock and match drill to the aluminum angle battery support.

A battery is not supplied with the firewall forward kit. We recommend an Odyssey PC680 battery. It is available on line at the lowest price. Try Googling for Odyssey PC680 or try [www.batteries4everything.com](http://www.batteries4everything.com) as one source.



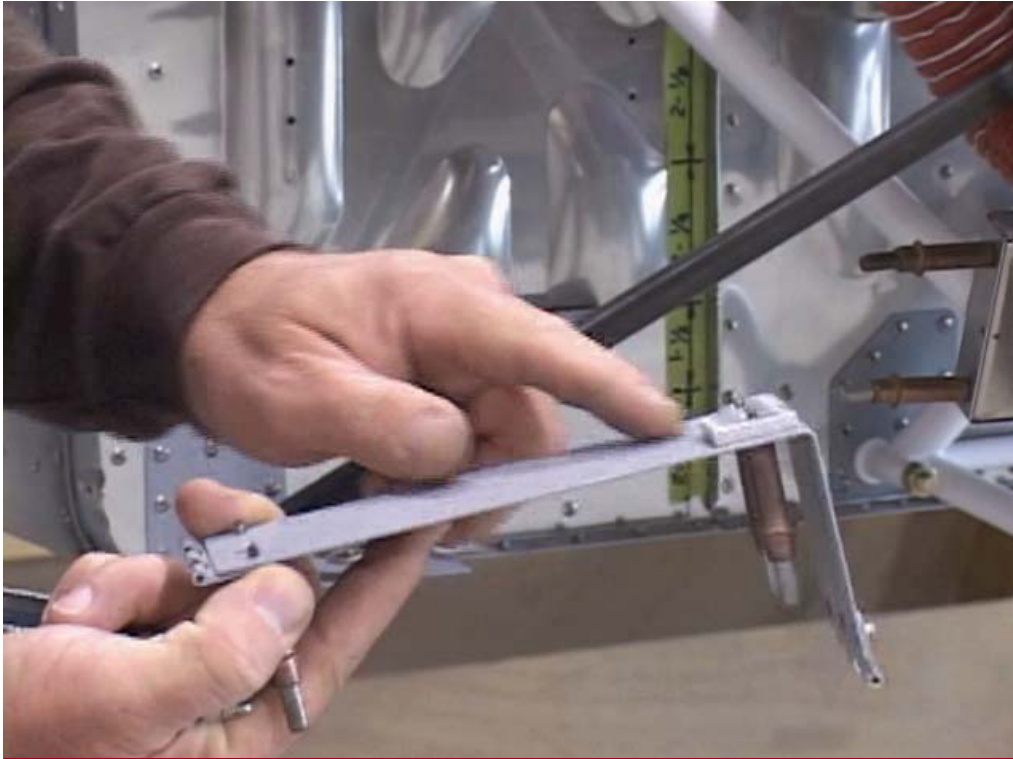
Battery Mount Spacer



Cleco support & Spacer to firewall



Fabricate battery clamp as shown from aluminum flat stock and piano hinge stock.



The starboard side of battery clamp will be riveted directly to the firewall on top of one of the stiffener bumps. The inboard side requires a spacer as shown as the inboard side rivets to a flat spot in the firewall.



Rivet the support and clamp assembly to the firewall. Put a slight bend in the hinge pins so that the pin will not work itself out.

