AIRCRAFT SPECIALTY

FLIGHTLINES

Aircraft Specialty Flightlines is excited to announce our FT-60 fuel flow transducer bracket mounting kit. This kit can be utilized with either an AFP or a Lycoming fuel injection setup, but the install instructions vary for each.

These kits will be complete and the website will include an ordering section which allows you to specify the correct length and configuration hose to go from the fuel servo to the transducer. **PLEASE READ ENTIRE MANUAL PRIOR TO INSTALLATION.**

First, let's look at two optional choices you will have to make when ordering this kit.

1. You have the option to select Steel Fittings, or Stainless Fittings. Performance on both setups will be the same, but for those that want to show off their engines with a really high end look, the stainless fittings will match the stainless hose ends utilized with our transducer hose.

2. Standard versus Integral Firesleeve- Both are excellent quality hoses, that are not time limited. Both come with a 10 year warranty. The integral hoses feature our premium silicone firesleeve and silicone cuffs.

Items included with the AFP Kit

1. 1/8NPT to -4 straight fitting
2. ¼ Npt to -4 straight fitting
3. 90 degree NPT to -4 swivel fitting
4. AN4-21A Bolts Qty 2
5. AN363-428 Qty 2
6. AN960-416 and AN960-416L Washers as well as a star lock washer.
7. Aft Bolt – MS20074-04-06
8. AFP Anodized and laser etched bracket

Items included with Lycoming Kit

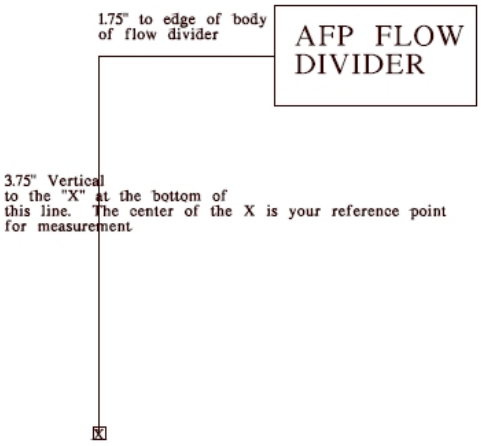
1. 1/8NPT to -4 straight fitting
2. ¼ Npt to -4 45 degree fitting (Straight fitting MAY also included for kit standardization. You will not need it)
3. 90 degree NPT to -4 swivel fitting
4. AN4-25A Bolts Qty 2

5. AN363-428 Qty 2
6. AN960-416 and AN960-416L Washers as well as a star lock washer.
7. Aft Bolt – MS20074-04-07
8. Lycoming Anodized and laser etched bracket
9. Two shims for adjustment of bracket if required
10. Larger washer for slotted hole in back of bracket where it attaches to engine case

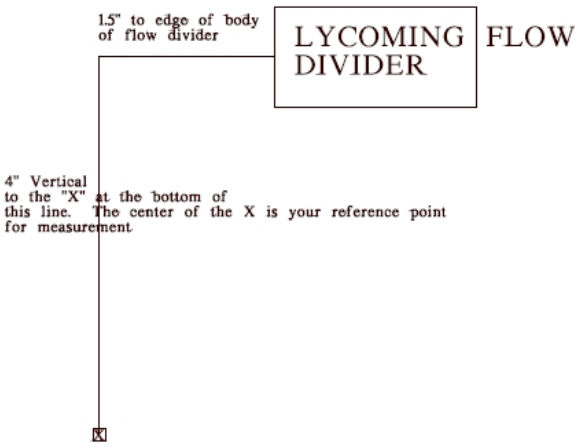
Required items: If you don't have a crows foot for installation that will work, you may need to buy a very cheap 7/16" wrench and grind it down/cut it off for tightening bracket to engine case. Shown in pictures at end of document.

Before purchasing this kit, you will need to take a measurement to ensure that we include the correct length hose to fit your application. We make this measurement easy through the following measurement template. The template below is NOT TO SCALE. Utilize the dimensions shown to make a measurement template.

SIDE VIEW OF FLOW DIVIDER



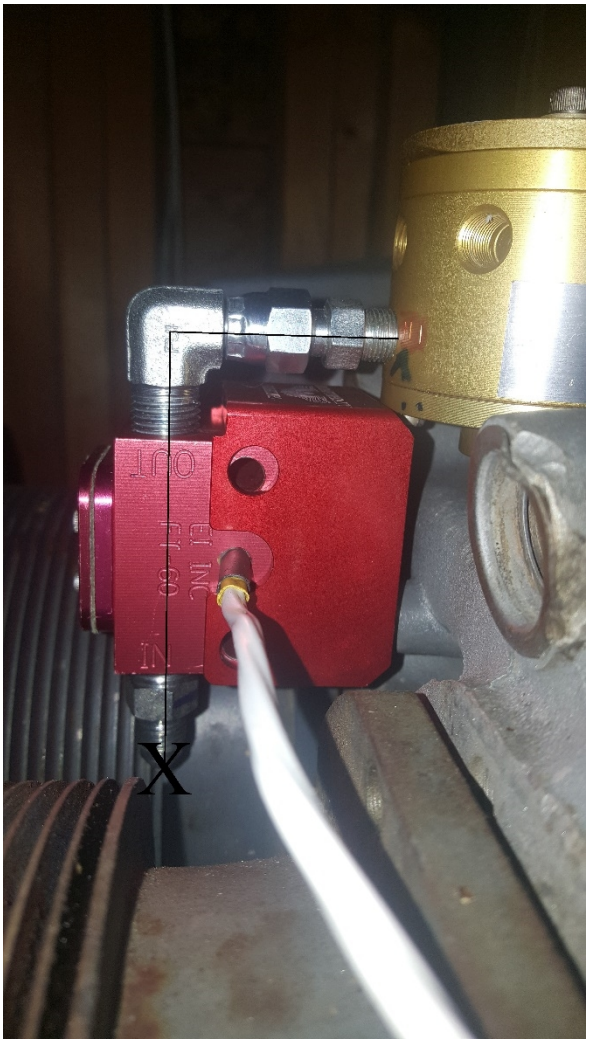
SIDE VIEW OF FLOW DIVIDER

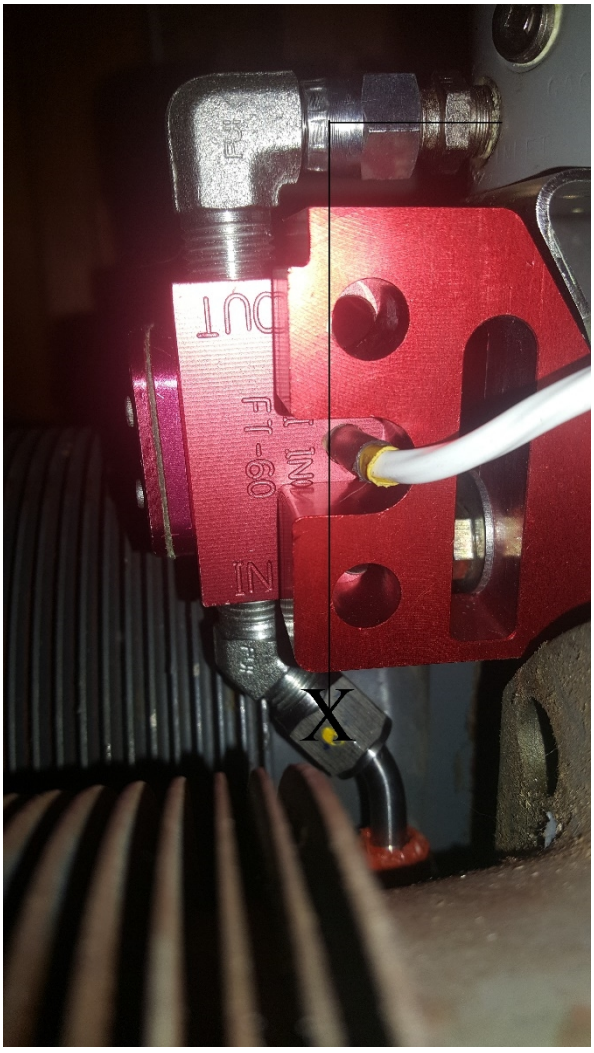


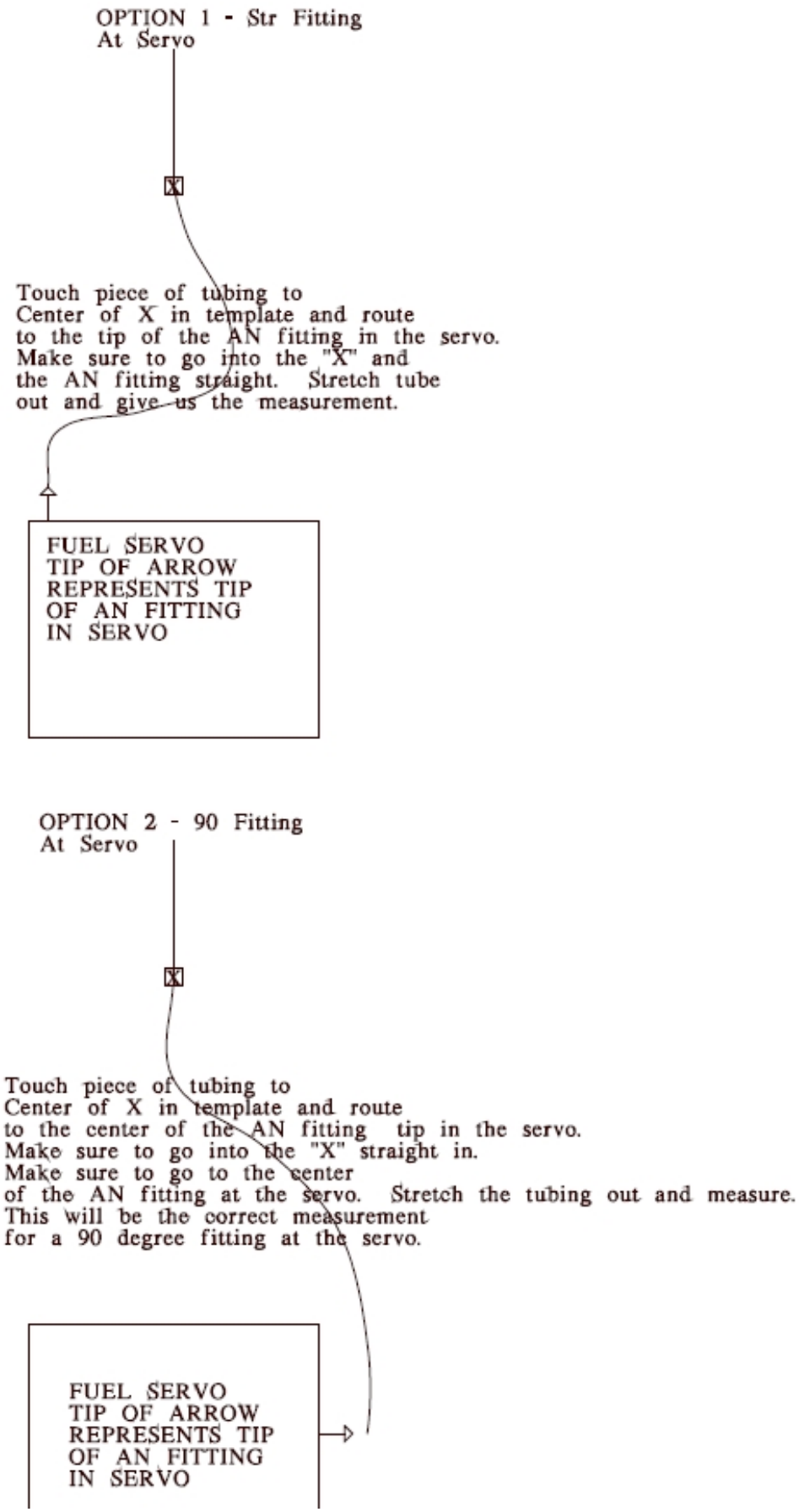
After building the correct template for either the AFP or Lycoming install, here is what you do with it. The measurement is taken off of the front of the Fuel Spider. The horizontal distances given are from the BODY of the spider. The vertical distance is from the center of the NPT port on the front of the fuel spider.

On the AFP installations, you will either utilize a hose with a straight fitting on the Servo, or a 90 degree fitting on the servo. Directions on how to measure both configurations are shown on the image on the next page.

On the Lycoming installations, you will most likely have a straight fitting at your servo. It will be configuration #1. If for some reason a 90 degree fitting is needed, please contact us as it will create the need to discuss a clocking issue. The images shown below show you what the X in the images above represent. They show a side view of the brackets with the horizontal and vertical distances represented by a line.






OPTION 1 - Str Fitting
At Servo
X
Touch piece of tubing to
Center of X in template and route
to the tip of the AN fitting in the servo.
Make sure to go into the "X" and
the AN fitting straight. Stretch tube
out and give us the measurement.
FUEL SERVO
TIP OF ARROW
REPRESENTS TIP
OF AN FITTING
IN SERVO
OPTION 2 - 90 Fitting
At Servo
X
Touch piece of tubing to
Center of X in template and route
to the center of the AN fitting tip in the servo.
Make sure to go into the "X" straight in.
Make sure to go to the center
of the AN fitting at the servo. Stretch the tubing out and measure.
This will be the correct measurement
for a 90 degree fitting at the servo.
FUEL SERVO
TIP OF ARROW
REPRESENTS TIP
OF AN FITTING
IN SERVO

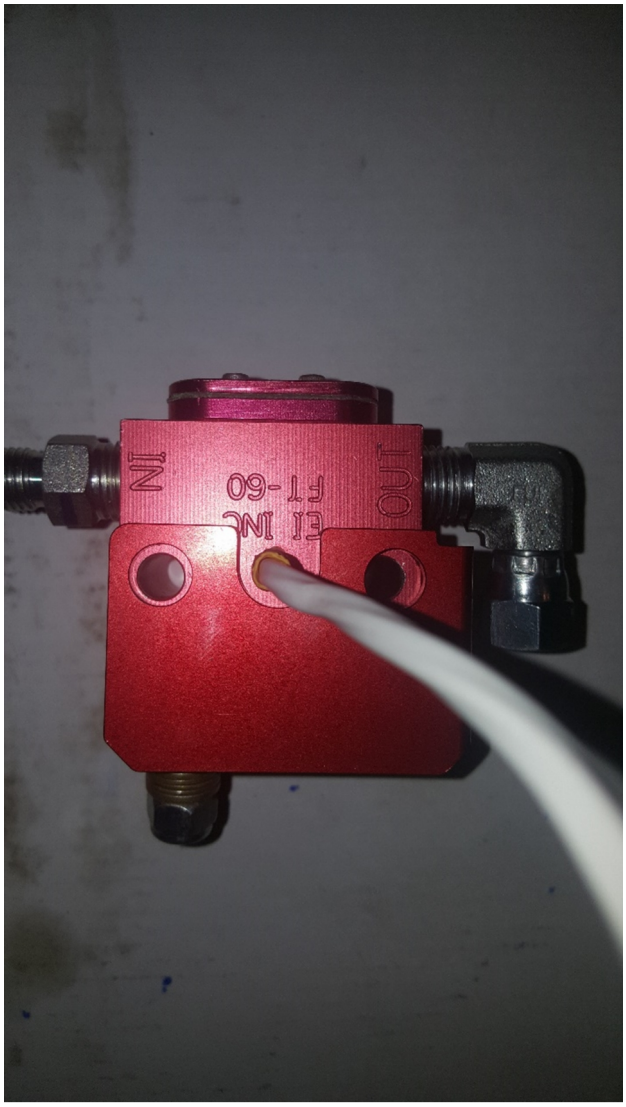
Once you have completed your hose measurement, you will be ready to order your kit. The installation instructions that follow show how to assemble the AFP and the Lycoming Brackets for installation.

AIRFLOW PERFORMANCE TRANSDUCER

BRACKET INSTALLATION

This guide is for the installation of the Electronics International FT60 fuel flow transducer mounted at the injection flow divider that originally utilized the Air Flow Performance divider bracket. The installation incorporates the Aircraft Specialty Flightlines transducer bracket, along with the AFP bracket to stabilize the transducer mounting.

THIS IS NOT A QUICK INSTALLATION!! Take your time. We are dealing with low pressure fuel, but fuel none the less. All connections must be sealed where required, oriented where required, and tight. Tight is the operative word. Here goes!



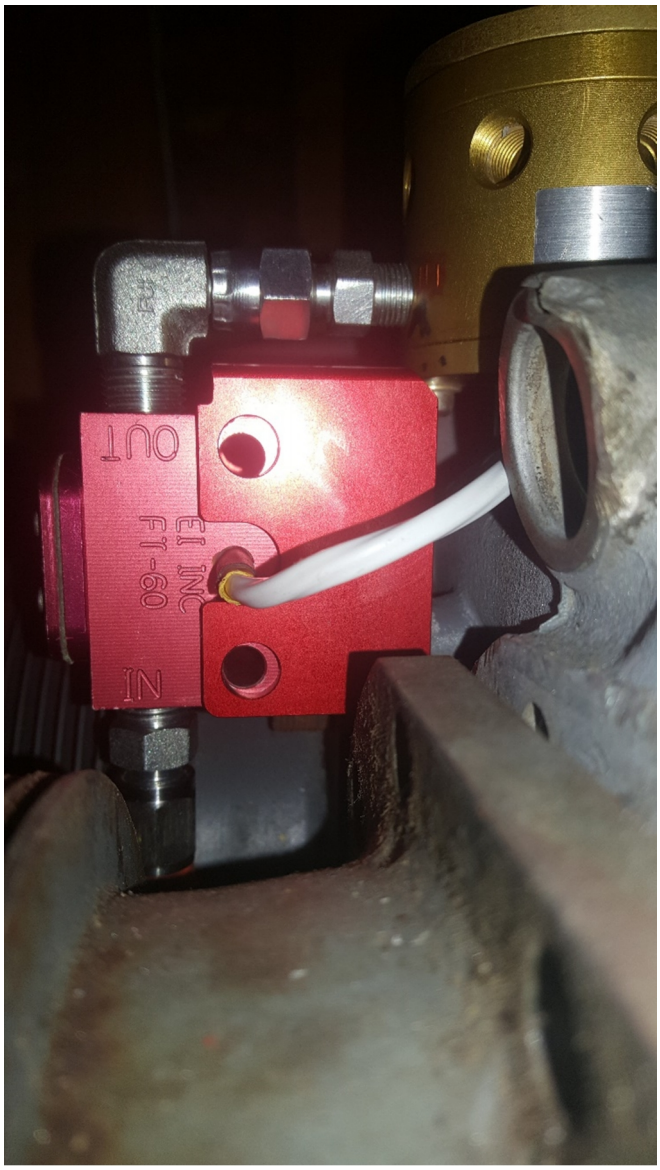
The AFP version bracket is an open clamshell design that surrounds the transducer as it is mounted to the flow divider. There are 2 adapter fittings that connect the transducer to the flow divider that provide fuel flow and mechanical connection. The transducer nests in a cavity in the bracket, secured by 2 cross bolts, washers and lock nuts. There is a single aft case bolt that secures the bracket to the engine case, by a threaded boss between cylinders 1 & 3.

We start by installing the fittings in the transducer. On the inlet side there is a straight ¼ male NPT to -4 AN adapter that needs to be sealed on the NPT threads, tightened as shown. The straight hose end connects here. The outlet fitting is a 90* ¼ Male NPT to female -4 AN swivel fitting that connects the transducer to the

flow divider. Its orientation is aft, or perpendicular to the cross bolt holes in the body. This aligns with the flow divider fitting. Use a sharpie and place an index mark on the inboard edge of the transducer, Seal the NPT threads, tighten and orient the fitting to your index mark.

Remove the original 90* adapter fitting from the flow divider, and replace it with the straight 1/8 NPT to -4 AN fitting supplied with the package. Seal the NPT threads, and tighten.

To begin the actual installation, place the 1/4-20 x .75 bolt and washer in the aft body slot in the bracket. The washer will bridge the slot gap and you will also need to put a star lock washer over the other washer to secure the install when it is tightened.



Hold the bracket and press the bolt to the hole in the engine case. Access the bolt by using a 7/16 socket and extension to thread the bolt into the case, but leave it loose so you can move the bracket.

Connect the straight hose end to the inlet adapter fitting, snug, but allow yourself some movement.

Place the transducer at the bracket, wires pointing forward so they will nest in the slot machined in the bracket. Route the hose down, through the grommet in the inner baffle and allow to rest.

Align the transducer outlet fitting with the straight nipple in the flow divider, and snug. Check the alignment of the fittings, install the 2 cross bolts, washers and lock nuts. Tighten the transducer to flow divider fitting.

Tighten the bracket to case bolt. Route the hose to the servo outlet and connect. Electrically connect the transducer to the appropriate wiring. Leak test and enjoy.

LYCOMING TRANSDUCER BRACKET INSTALL

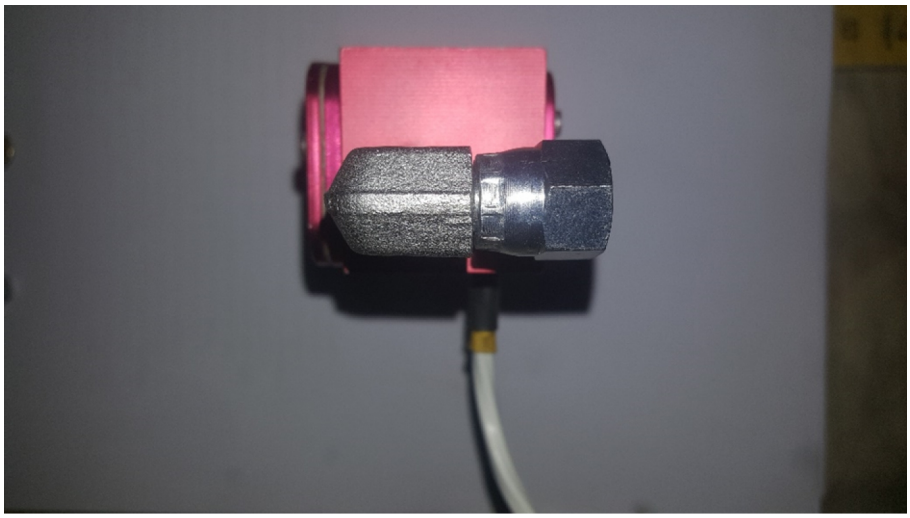
This guide is for the installation of the Electronics International FT60 fuel flow transducer mounted at the injection flow divider that originally utilized the Lycoming 75009 divider bracket. The installation incorporates the Aircraft Specialty Flightlines transducer bracket, along with the Lycoming bracket to stabilize the transducer mounting.

THIS IS NOT A QUICK INSTALLATION!! Take your time. We are dealing with low pressure fuel, but fuel none the less. All connections must be sealed where required, oriented where required, and tight. Tight is the operative word. Here goes!

The Lycoming version bracket is an open clamshell design that surrounds the transducer as it is mounted to the flow divider. There are 2 adapter fittings that connect the transducer to the flow divider that provide fuel flow and mechanical connection. The transducer nests in a cavity in the bracket, secured by 2 cross bolts, washers and lock nuts. There is a single aft case bolt that secures the bracket to the 75009 Lycoming bracket, and the engine case, by a threaded boss between cylinders 1 & 3.

We start by installing the fittings in the transducer. On the inlet side there is a 45* ¼ male NPT to -4 AN adapter that needs to be sealed on the NPT threads, tightened and oriented as shown. Use a sharpie and place an index mark on the lower inboard leading edge corner. Seal the NPT threads and tighten this fitting, at the same time orient the flared side to your index mark. If it appears loose, make another turn. This orientation will allow the connection hose, with its 45* hose end, to be centered in the existing inner baffle grommet.

The outlet fitting is a 90* ¼ Male NPT to female -4 AN swivel fitting that connects the transducer to the flow divider. Its orientation is aft, or perpendicular to the cross bolt holes in the body. This aligns with the flow divider fitting. Use a sharpie and place an index mark on the inboard edge of the transducer, Seal the NPT threads, tighten and orient the fitting to your index mark.



Remove the original 90* adapter fitting from the flow divider, and replace it with the straight 1/8 NPT to -4 AN fitting supplied with the package. Seal the NPT threads, and tighten.

To begin the actual installation, remove the original case bolt from the Lycoming bracket. Place the 1/4-20 x1.00 bolt and washer in the aft body slot in the bracket. THIS IS THE TRICKY PART! Using you left hand and thumb, hold the bracket and press the bolt to the hole in the engine case. Access the bolt by using a 7/16 wrench (shorter the better) passing through the forward slot to thread the bolt into the case, but leave it loose so you can move the bracket. **Remember, that you will want to utilize a lock washer on here too so that when final tightening it will remain secure.**

The bracket will nest against the curved section of the Lycoming bracket when secured.

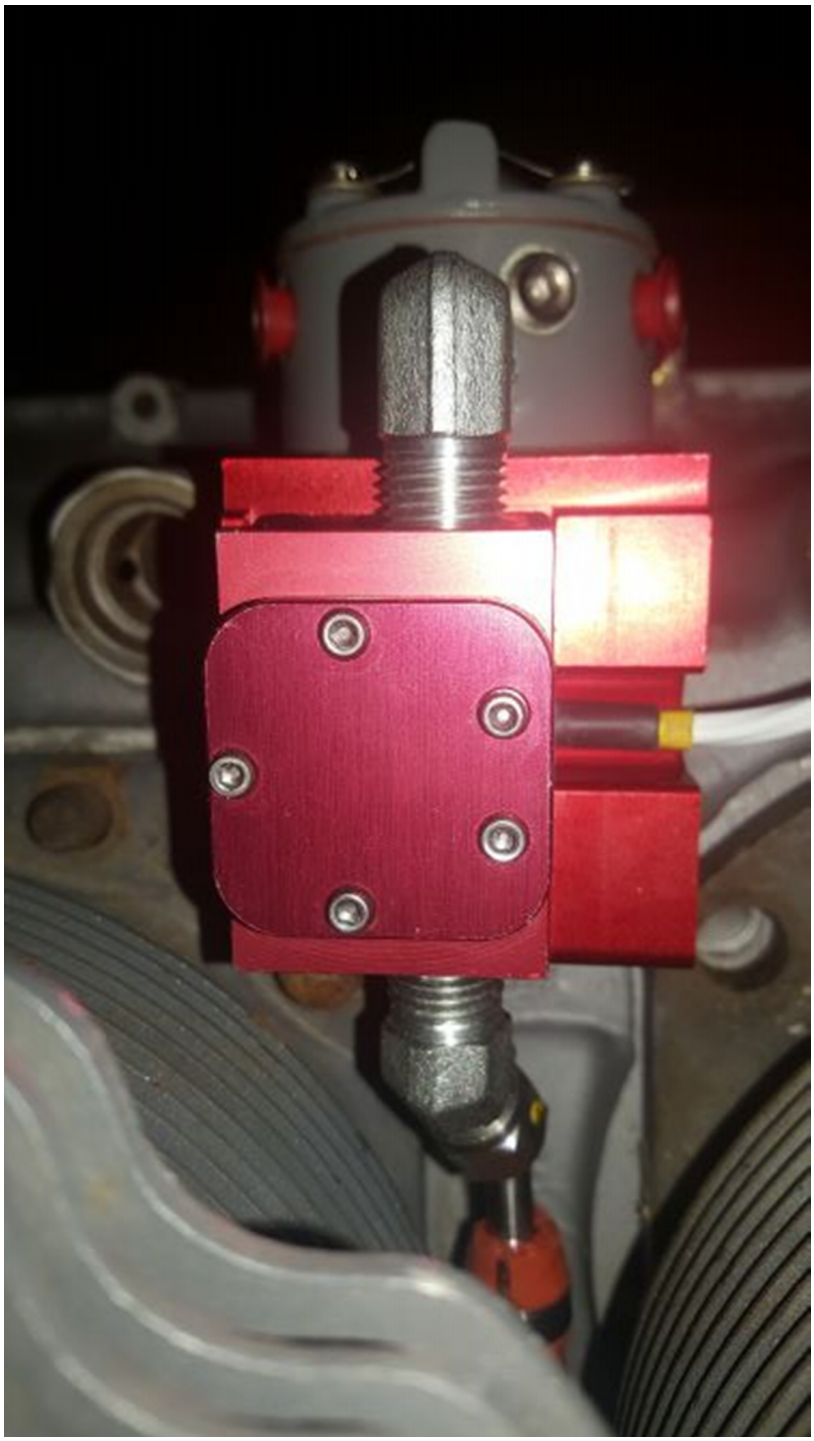
Connect the 45* hose end to the inlet adapter fitting, snug, but allow yourself some movement.

Place the transducer at the bracket, wires pointing forward so they will nest in the slot machined in the bracket. Route the hose down, through the grommet in the inner baffle and allow to rest.

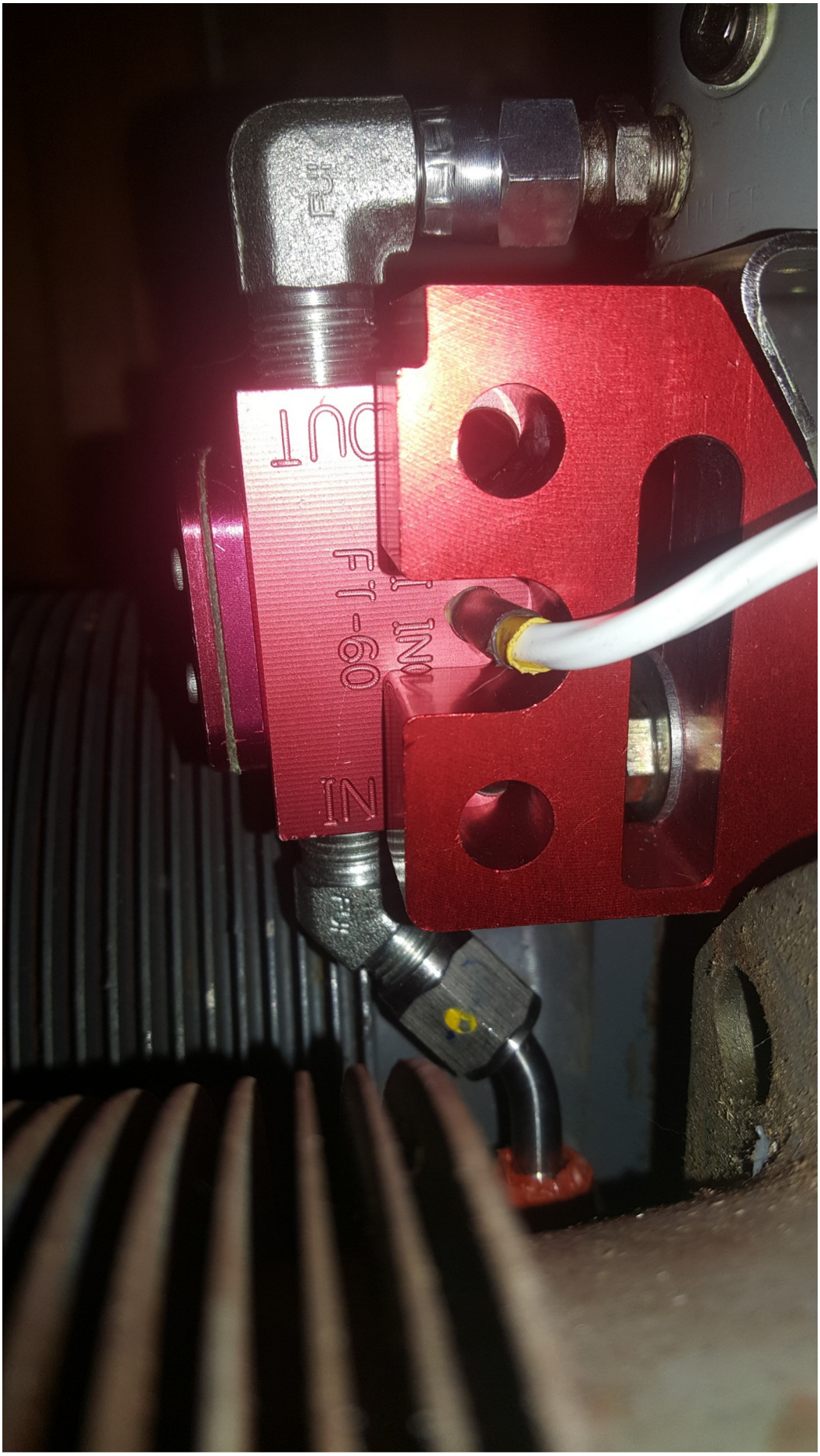
Align the transducer outlet fitting with the straight nipple in the flow divider, and snug. Check the alignment of the fittings, make sure the transducer bracket nests with

the Lycoming bracket, install the 2 cross bolts, washers and lock nuts. Tighten the transducer to flow divider fitting.

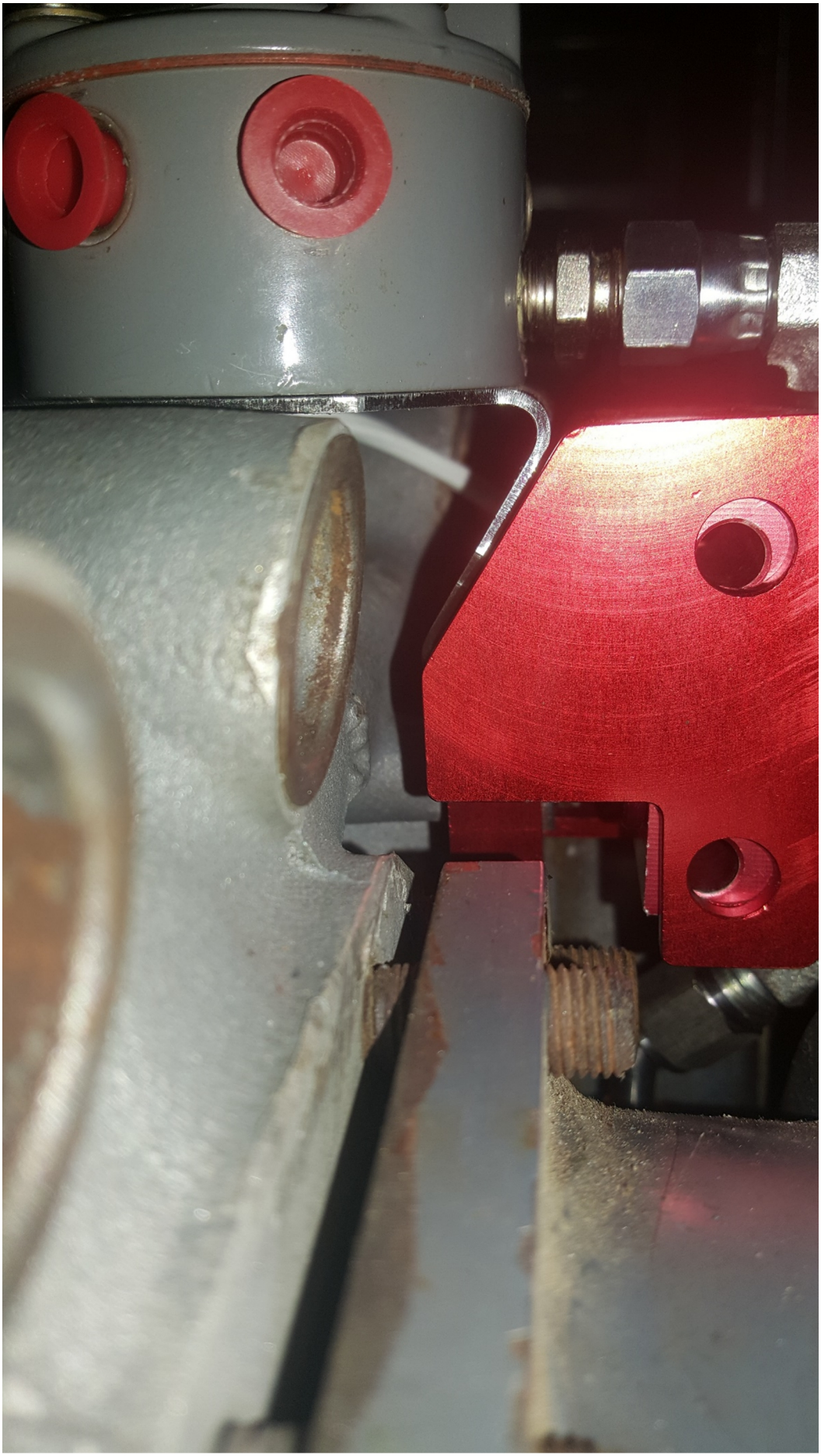
Using the forward slot in the bracket, tighten the bracket to case bolt. Route the hose to the servo outlet and connect. Electrically connect the transducer to the appropriate wiring. Leak test and enjoy.



FT-60 Transducer Mount Bracket Install Guide Rev 2 9-17-20



FT-60 Transducer Mount Bracket Install Guide Rev 2 9-17-20

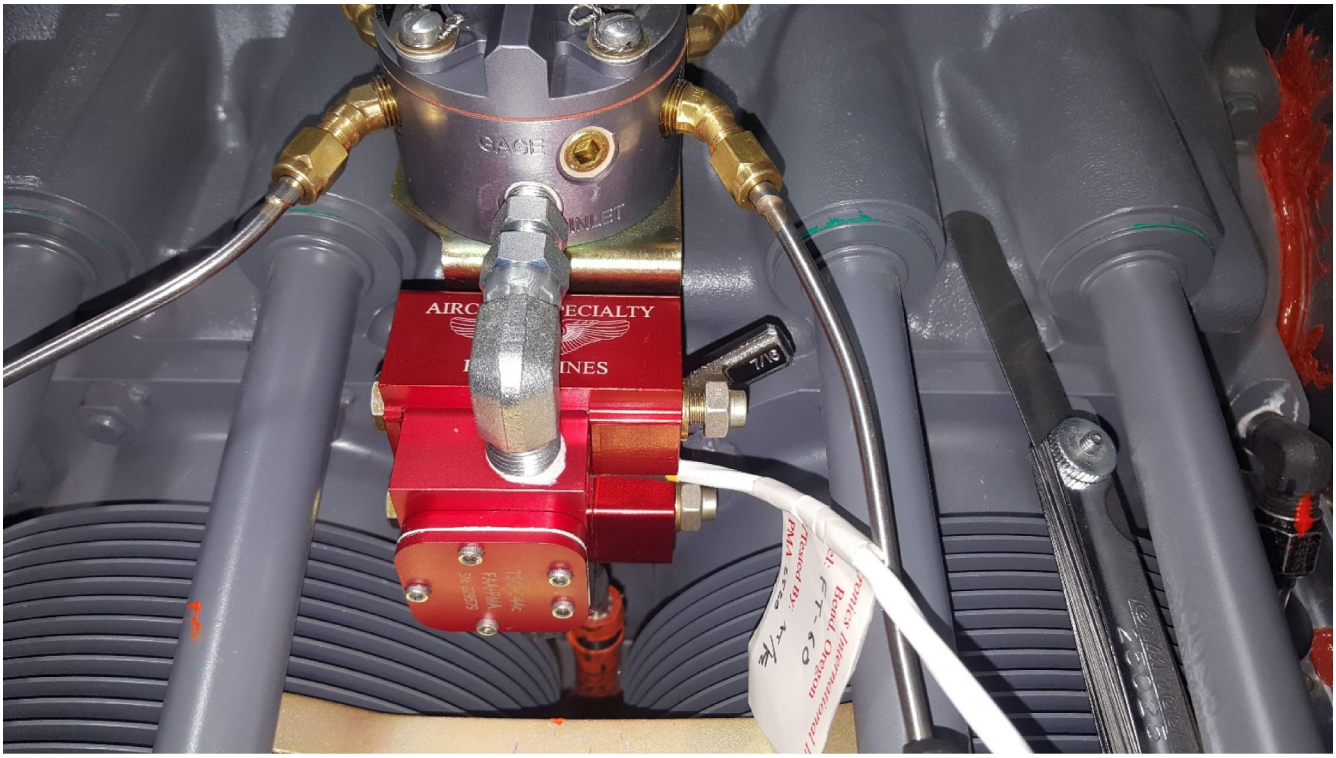


BASED ON CUSTOMER FEEDBACK, WE ARE PROVIDING ADDITIONAL GUIDANCE ON THE LYCOMING INSTALLATION.

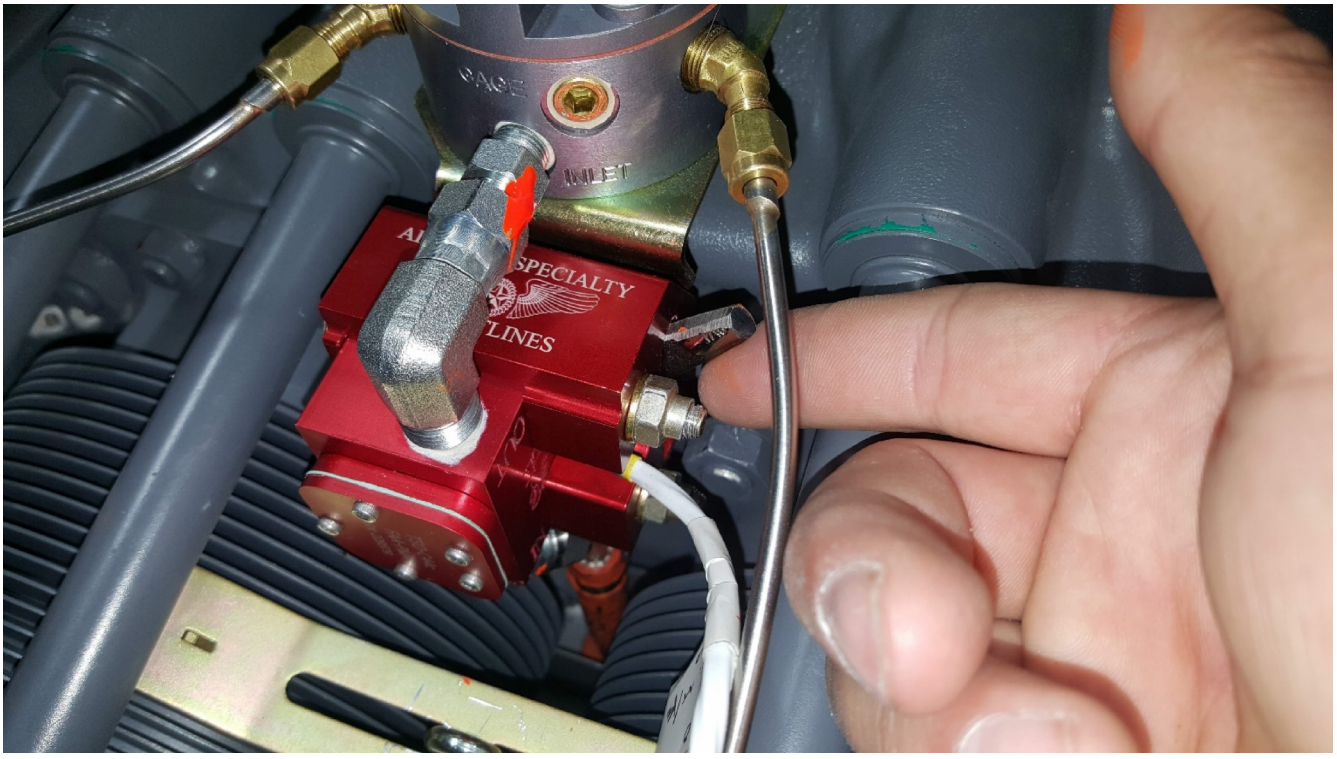
Installation feedback from an early beta tester:

Hello again gents. I had a chance last night to install the new bracket. Below are some pics and the process. It's not mega difficult but it certainly isn't easy.

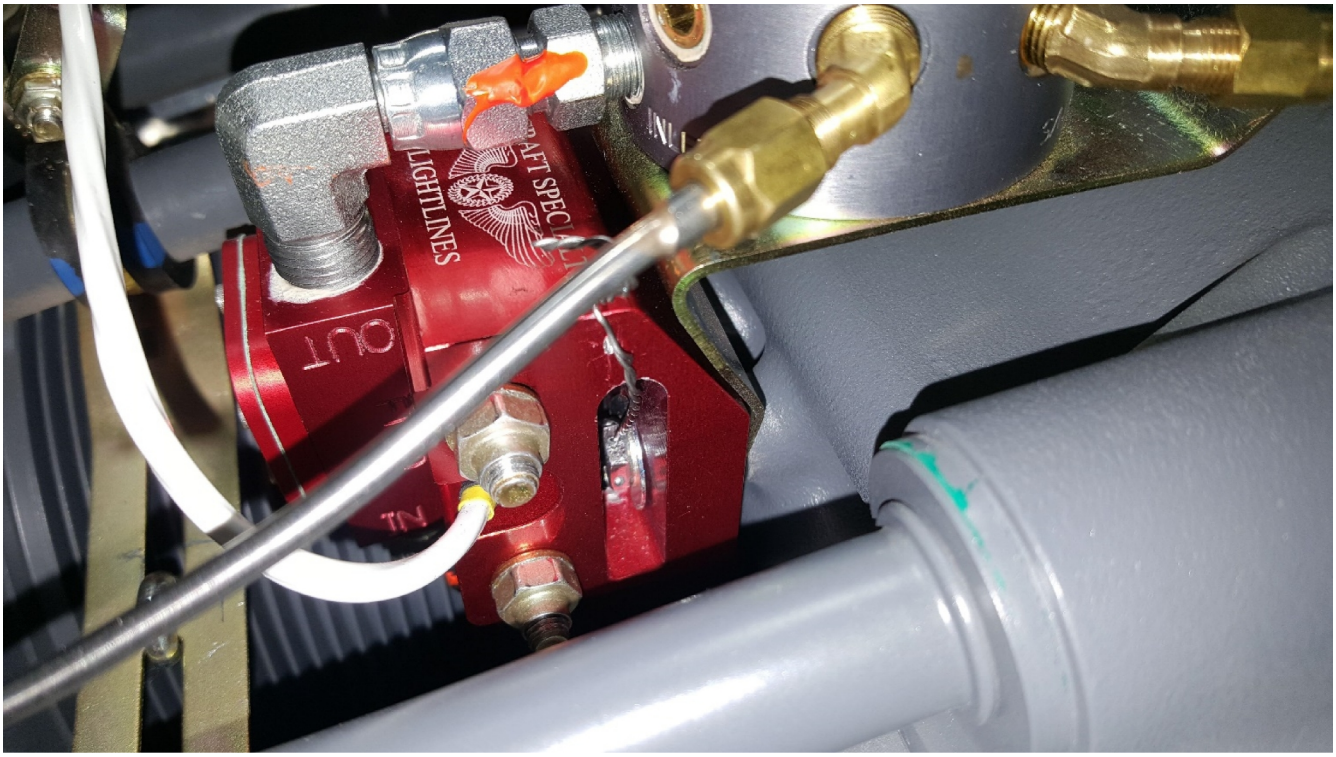
1st I went to the store and bought the cheapest 7/16" wrench I could find and cut it down to the right size to fit on the bolt and still clear the pushrod tube. I had to loosely place the through bolts in the assembly before getting it bolted to the case. Starting the bolt into the case was a bit of a challenge because you can no longer put your thumb on it. I used an awl/pick and rotated the bolt using the holes I drilled in the head until it started. Then I could get the wrench on the bolt to continue turning. In the pic below you see my first attempt at using the wrench. It wouldn't get enough rotation to get on the next flat.



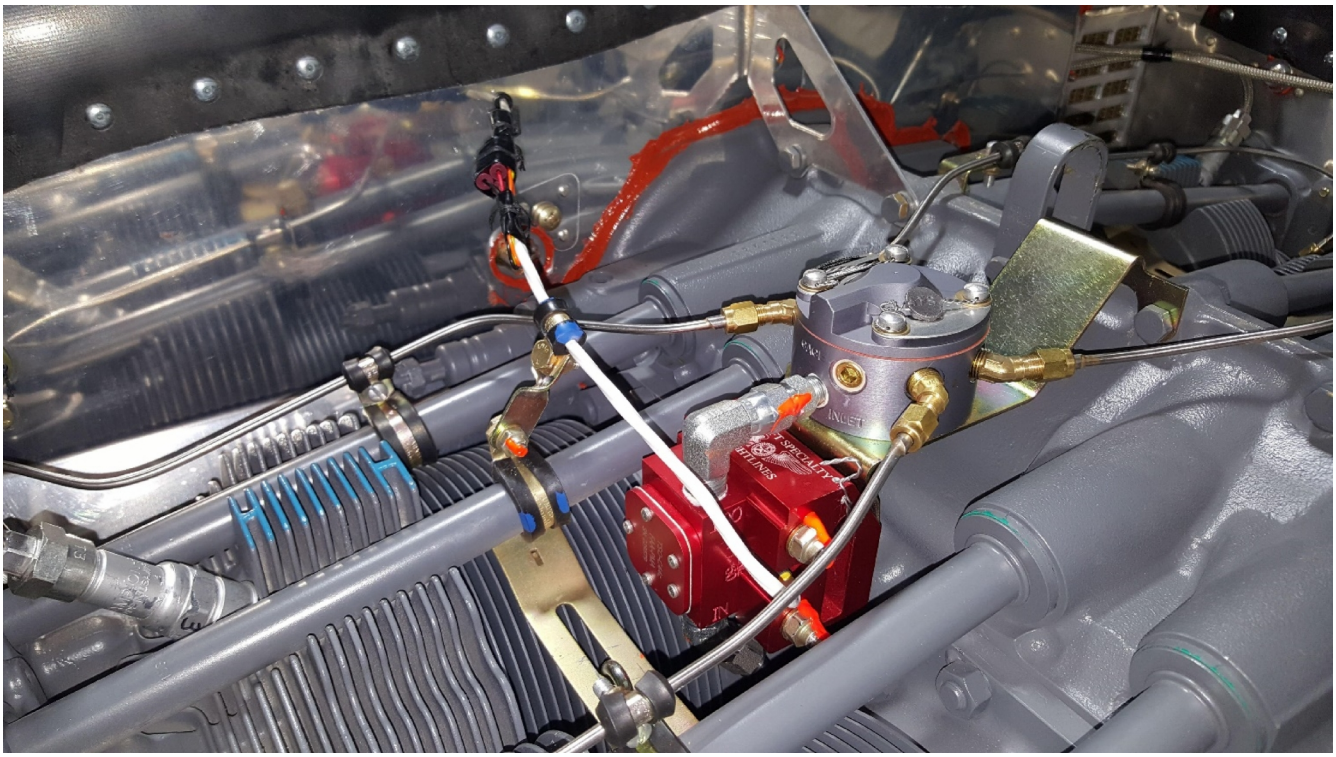
So I took the wrench to the grinder and this was able to make it onto the next flat.



Then after torqueing the fuel line connection I could tighten the through bolts and proceed with safety wire. I drilled a small hole in the bracket at the top for the safety wire.



Here is the final assembly.



A few very important items of note: .090 and .125” shims are provided for between the transducer and the bracket. Depending on the individual install and how tight all the npt threads are, it is possible that the bracket will need a shim behind it which will move it upward slightly. Also, the Lycoming bracket itself may vary slightly from installation to installation. That is why the shims are provided. If you utilize the shims, this might necessitate the grinding down of the larger stainless washer on the inside of the bracket that screws into the engine case to prevent interference with the bottom of the bracket.

The bolt going into the engine is a ¼-20 bolt. If the transducer is moved up by placing shims behind it, you will have to evaluate if you would like to utilize a longer bolt in the installation. The one provided is sized for no shim usage.

Please feel free to reach out to us with any questions.