

PH Aviation Services, Inc.
PHA-01 FLAP ACTUATOR
(Suitable for the RV-6, -7, -8, and -9)
Installation & Operating Instructions

SPECIFICATIONS:

Input Voltage: 12 VDC
Current: 4A at full load, 1.5A at no load
Load Capacity: 112 pounds
Stroke length: 5 inches
Speed: Approximately 1.1 inches per second (same as OEM motor)
Internal Limit Switches: Full stop at ends
Potentiometer: No internal position sensing
Hole to Hole Length: Retracted = 10 1/4" (Same as OEM motor)
Weight: 2 lbs. (9 oz. more than OEM motor)

Overview – The PHA-01 Flap Actuator was developed as a direct replacement for the OEM flap motor found in most RVs. It has the same stroke and speed as the stock OEM flap motors; however, it has built-in stops at the ends of the stroke that automatically shut off the motor. The design incorporates many improvements over the OEM motor: no more migrating grease problems, no more motors left running, no safety wire service bulletin. Because it comes to a complete stop at both extremes, you can use a flap switch that latches in the UP position, thus avoiding the use of the spring-loaded position to raise the flaps. You can just flip your flap switch to the UP position and forget about it on a go-around or touch and go.

We have tested these units extensively and found them to be extremely robust and reliable. These actuators are made for us by a reputable manufacturer to our spec and we believe them to be top quality. We would expect them to last the life of your airplane.

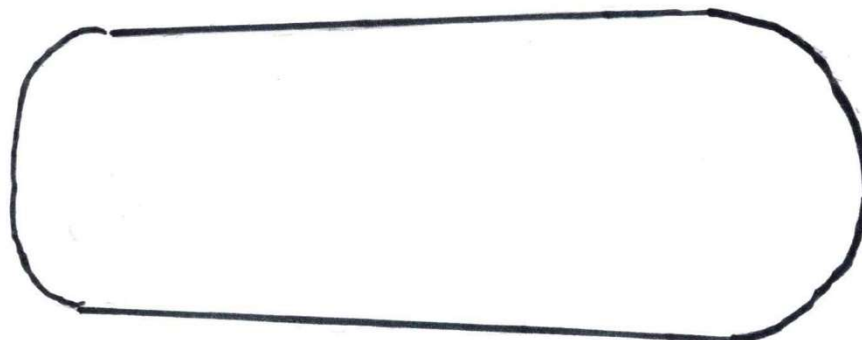
Installation in an RV-8 – the PHA-01 is a drop-in replacement for the flap motor in an RV-8. It uses the same brackets and hardware that are currently found in an -8. The hole in the armrest must be enlarged as shown on the attached photos and included hole template. In most cases, you will not have to re-rig or adjust your flaps. Electrical connection is the same as existing, simply match the existing 2-wire connector that is in the airplane. Here are some photos of an RV-8 installation.



We are attaching a template for the left armrest cutout for the RV-8. Simply position the template over the existing hole and draw the outline for the new hole. It helps to start with

the hole slightly undersized and then adjust as necessary with the actuator operating to obtain the correct clearance for the hole.

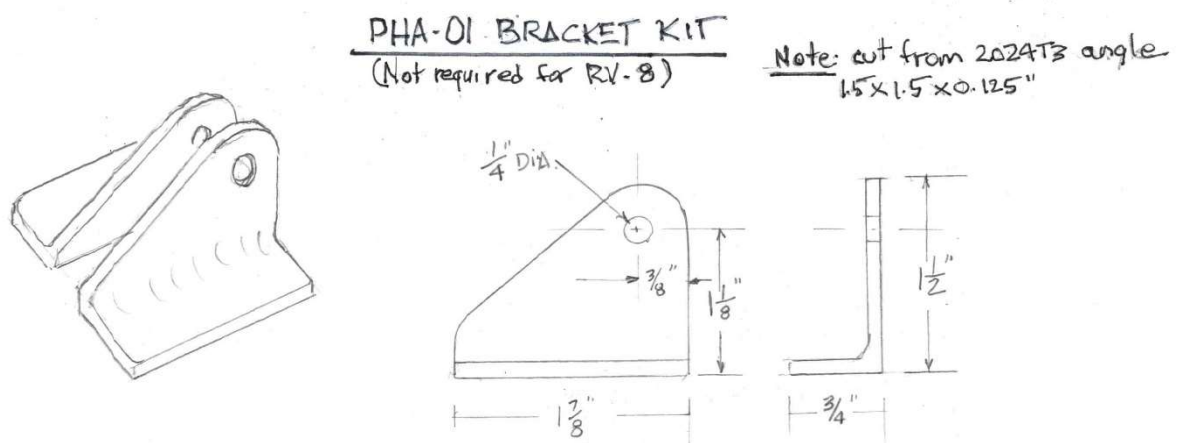
RV-8 ARMREST TEMPLATE CUTOUT



Installation in an RV-6, -7, and -9 – The PHA-01 is a direct replacement for the OEM flap motor found in most of these aircraft; however, because the OEM motor uses an offset bracket arrangement, it is required that you modify the existing bracket arrangement to center the new actuator in the flap channel. We have made available a bracket kit for the PHA-01 installation in these aircraft for your convenience. However, you can make your own very easily. In either case, you can follow our bracket installation instructions found on our website. Again, in most cases, you will not have to re-rig or adjust your flaps, and the electrical connection can remain the same. You'll just have to match the 2-wire connector found in your current airplane. Here are some photos of the PHA-01 mounted in the flap channel of an RV-6, but the other aircraft are very similar.



In the case of the RV-6, -7, and -9, if you want to make your own brackets, we are including a plan drawing for the brackets which you can make from aluminum angle 2024T3, 1.5 x 1.5 x 0.125" as shown on the following page:



Here are some additional photos of the PHA-01 installation:



CAUTION – CAUTION – CAUTION

To protect your actuator from damage please observe the following precautions: do not allow your motor to stall for any reason—internal damage may result! Make sure your flap assembly moves smoothly throughout its range without binding. Make sure that there is no interference between the actuator and its bracket or any part of the airplane structure. And, finally, make sure that the flaps don't reach the end of their travel before the motor stops—to do so will cause the motor to stall and possibly strip internal gears. Adjust the flaps so that the actuator reaches its stops just prior to, or simultaneously with, the flaps' physical stops; for example, the actuator should stop just prior to (or simultaneously with) the flaps touching the bottom of the fuselage while retracting.

Electrical Hookup – The preferred wiring method for the PHA-01 Flap Actuator is through a relay deck. However, the existing wiring in your airplane will work just fine. The advantage of using relays is that only a few milliamps go through your flap switch, which will allow you're switch to last a very long time. Otherwise, if the full load of the flap motor goes through your switch (up to 4 amps), it will result in a diminished switch life. You will probably want a switch that latches UP and spring loads DN. When the flap actuator gets to the end of its stroke, the flaps stop. You will probably want to remove the connector that comes with

the motor to shorten the wire and add a connector to match whatever is in your airplane now. We recommend a 10 amp breaker.

Flap position indicators – if you desire a flap position indicator on your EFIS, you can install a Ray Allen POS-12 potentiometer as many have done. For those wanting a flap positioner, the POS-12 will also be necessary. If you already have a POS-12 installed, your new actuator will work just fine with it.

If you have any questions, please email us at pat@phaviation.com.

Thanks for purchasing our product!

Disclaimer & Warranty:

This part was manufactured by PH Aviation Services, Inc. and should NOT be installed in Certified Aircraft. It is intended for use only in Experimental Aircraft and to be installed by the builder. There are no warranties expressed or implied and purchaser assumes all risk for the operation of this part. However, the purchaser may return this part for repair, replacement, or a full refund if it fails to operate as intended at any time during the first 12 months after the date of purchase.

Return Policy

Normally we accept returns only if the part fails to perform as advertised. We will consider a request for a return on an individual case basis, and, if we agree to accept a return, we will charge for shipping costs and a 10% restocking fee.