

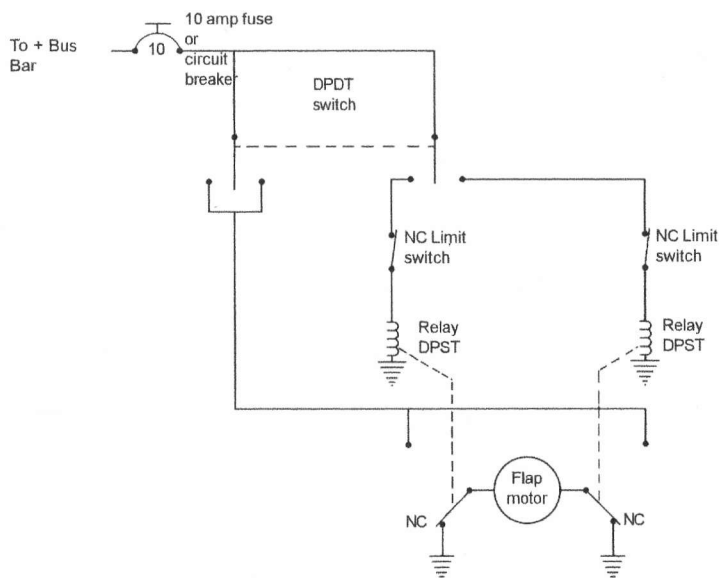
H. Flap Wiring

The Lancair Legacy flaps are driven by the 12V electric linear actuator. Also the limit stops are set by the custom limit stop (micro switch) assembly that mounts directly over the actuator shaft. It is operated by magnetic reed switches.

There are two DPST (double pole, single throw) relays required to connect them. The part number for the 12V system is LY1 and for 24V it is LY1-24V. Also a DPDT Momentary On switch is needed to operate the flaps (Part # MS24658-23D).

See Figure 27:H:1 for the flap wiring. If you have trouble interpreting the schematic, don't worry, the additional drawings will take you through this installation in a simple pictorial manner.

Flap Motor Wiring Schematic
Fig 27:H:1



The relays can be secured to the motor or elsewhere.

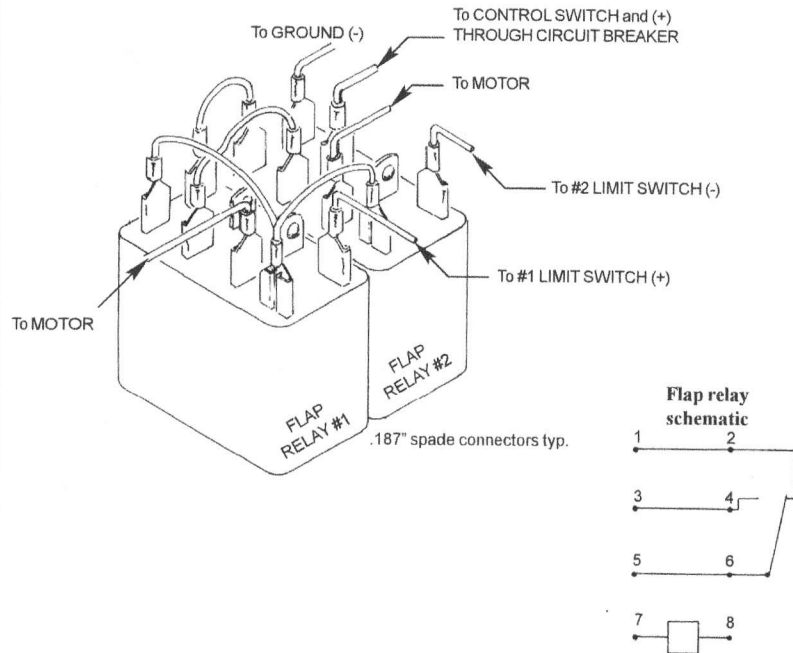
- H 1.** Per figure 27:H:2, connect the wiring to these relays and attach the wires to their respective locations. The “spade” connectors on the relays are .187” in width. Use #18 wire.

NOTE: There are 4 wires that will travel forward to the instrument panel:

1. Ground
2. Up limit switch
3. Down limit switch
4. Positive (+) to the relays.

- H 2.** Secure the wires so that they can not possibly get tangled up with any of the flap actuator movements.
- H 3.** Before wiring the relay / flap motor assembly it is important to first establish the proper polarity of the motor. Or put another way, you must determine which wire on the motor is (+) when the actuator is **extending**. By placing one of the motor leads on (+) and one on (-) on any handy 12V battery, locate the correct combination that **extends** the actuator shaft. Mark that appropriate wire (+) for future reference. This extension movement will act to bring the flaps **UP**.
- H 4.** Attach the limit switch assembly to the actuator shaft. (The final position will be determined later, but for now, just put the magnetic reed switches on opposite ends of the base bracket - not all the way to the ends though.) The limit switch that is at the far end of the shaft (away from the motor) is the one that will limit the flaps **UP** position.
- H 5.** For the sake of discussion, let's pick relay #2 as the one to be used for flaps **UP**. The other relay will be used for flaps **DOWN**. With this established, the wire marked “Limit Switch #2 is connected to that limit switch. See figure 27:H:2. Also, the wire on relay #2 marked “to motor” must be connected to the flap motor wire which was earlier labeled (+). Now we have the motor turning in the correct direction for flaps UP and the motor will be stopped by the correct magnetic reed switch (or limit switch).
- H 6.** The flap control switch has two possible wires that could connect to the above limit switch #2. See drawing of a typical control switch in figure 27:H:4. Either wire can be used on limit switch #2, this will however determine which way the flap control switch moves to extend the flaps. Naturally, you want the movement on the control switch to be either “downward” or “aft” when dropping flaps. If the direction ends up being opposite, just turn the switch around in its instrument panel mounting hole.

Flap Relays
Fig 27:H:2



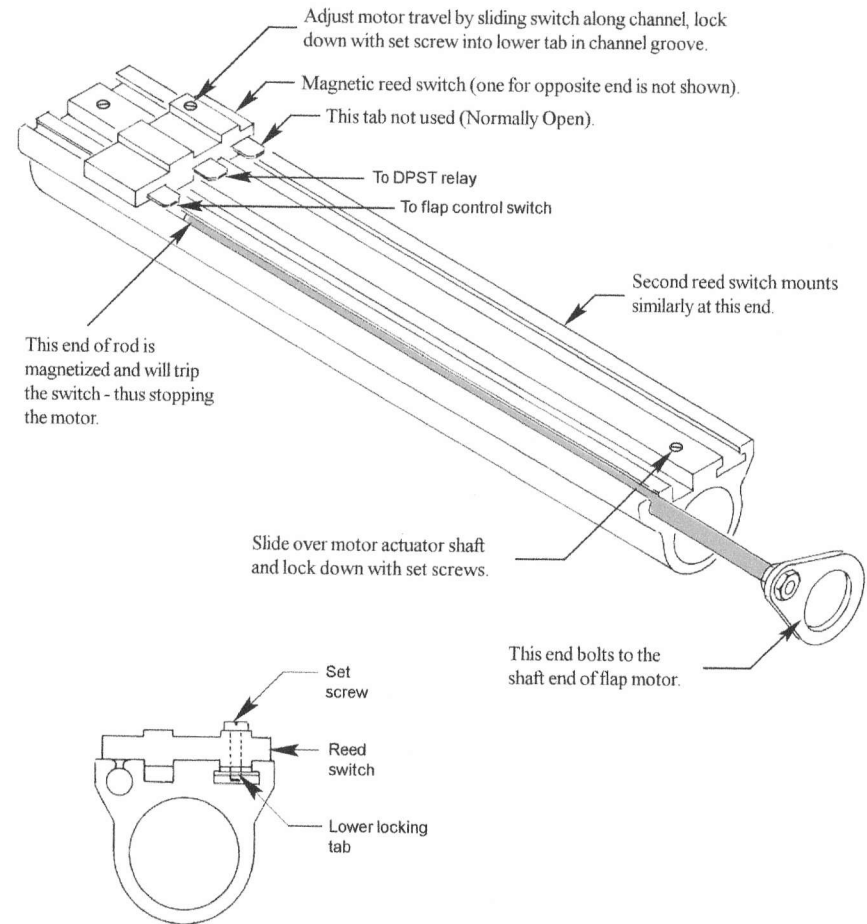
H 7. The magnetic reed switch will have three possible contact points. Use the center contact and ONLY the contact labelled "W".

NOTE: When setting the wiring for the limit stops, calculate extra wire so that you will be able to fit the custom dust cover over this limit switch installation and be able to route all the wires through its exit hole which is on the END.

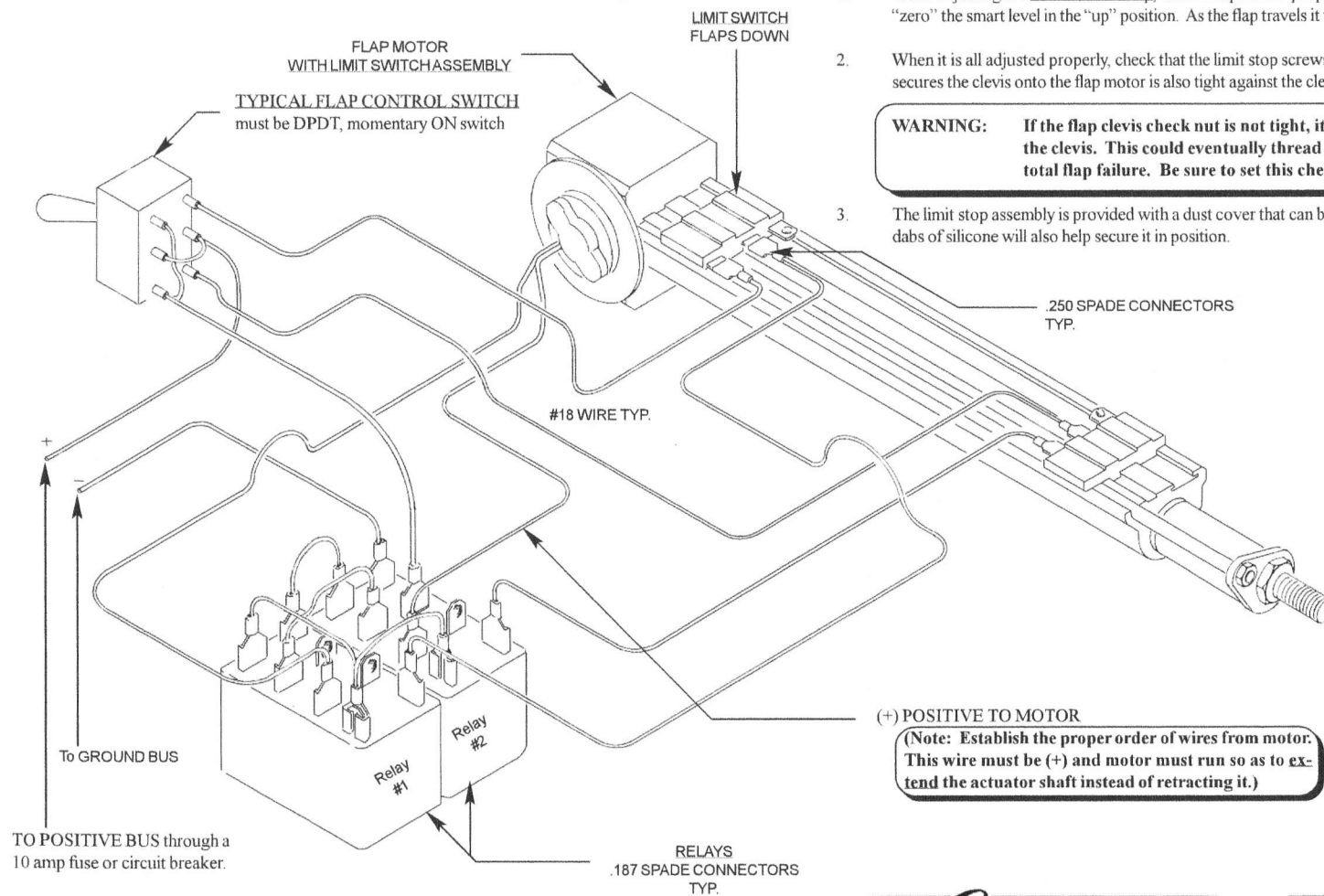
H 8. After completing all the wiring, test run the system and check for two things:

- The limit switches must stop the travel in their respective directions;
- The motor must be self braking. That is, when you release the control switch, the motor should stop quickly instead of gliding or coasting for two or three seconds. Such coasting is not acceptable and will not occur if everything is wired correctly.

Flap Reed Switch
Fig 27:H:3



Flap Wiring Diagram
Fig 27:H:4



Setting the Flap Limit Stops

1. When adjusting the **DOWN** limit stop, run the flaps to the proper down limit position (40 degrees). Simply "zero" the smart level in the "up" position. As the flap travels it will read the actual flap setting.
2. When it is all adjusted properly, check that the limit stop screws are snug and check that the hex nut that secures the clevis onto the flap motor is also tight against the clevis.

WARNING: If the flap clevis check nut is not tight, it could allow the actuator shaft to turn in the clevis. This could eventually thread the actuator out of the clevis and cause a total flap failure. Be sure to set this check nut.

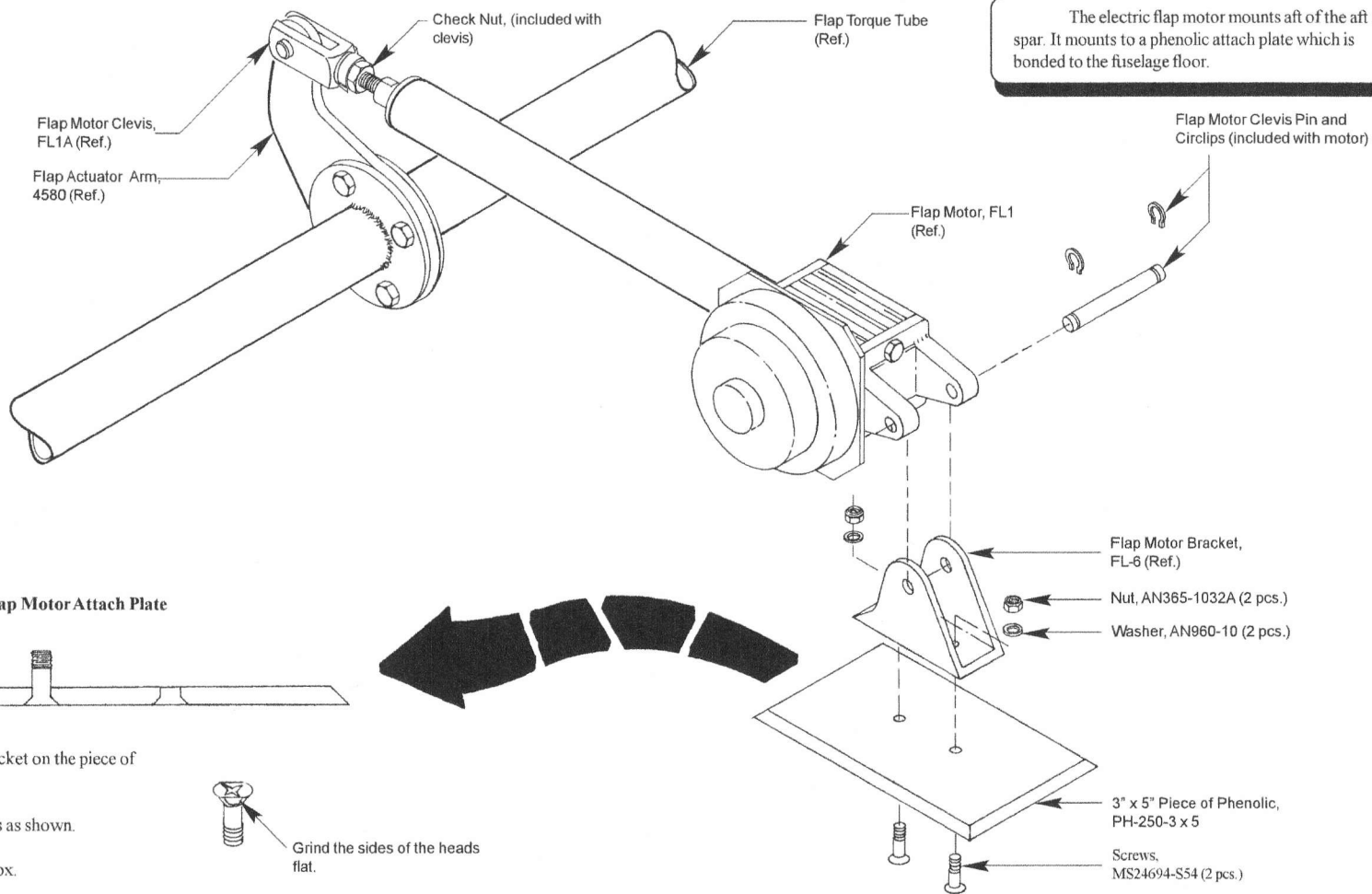
3. The limit stop assembly is provided with a dust cover that can be wire tied over this installation. A couple of dabs of silicone will also help secure it in position.

(+) POSITIVE TO MOTOR

(Note: Establish the proper order of wires from motor. This wire must be (+) and motor must run so as to extend the actuator shaft instead of retracting it.)

C. Flap Motor Installation

Flaps Actuator Mechanism Exploded View
Fig. 21:C:1



1. Center the flap motor bracket on the piece of phenolic.
2. Countersink the holes.
3. Grind the heads of screws as shown.
4. Sand bottom.
5. Pot in place with epoxy/flox.



Grind the sides of the heads flat.