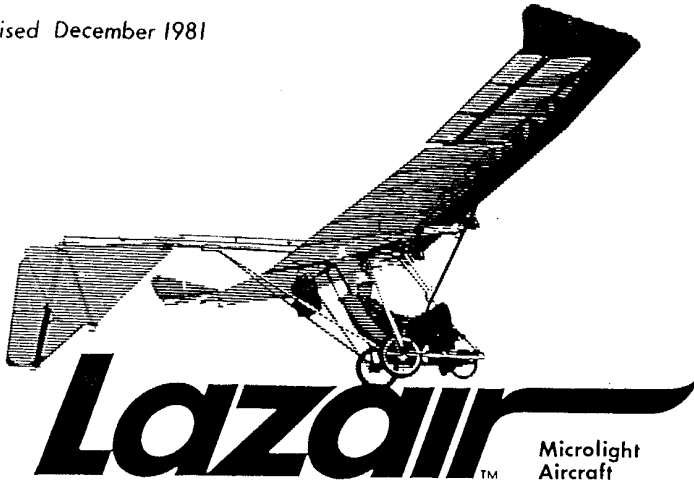


Report No. 81014

Revised December 1981



Rotax Engine Conversion Kit

ASSEMBLY MANUAL

NOTES:

1. These instructions are provided for the installation of Rotax 185 cc engines on a Lazair previously equipped with Pioneer 100 cc engines. The instructions have been written with the assumption that the aircraft has been fitted with the Lazair rigid seat. Because of the difficulty in locating the centre of gravity properly, *the use of Rotax engines with a sling seat is not recommended.*
2. For engine operating instructions, refer to the Lazair Operating Manual, December 1981 Revision.



ULTRAFLIGHT MANUFACTURING LIMITED
P.O. Box 370, Port Colborne, Ontario. L3K 1B7

1.0 NACELLE ASSEMBLY

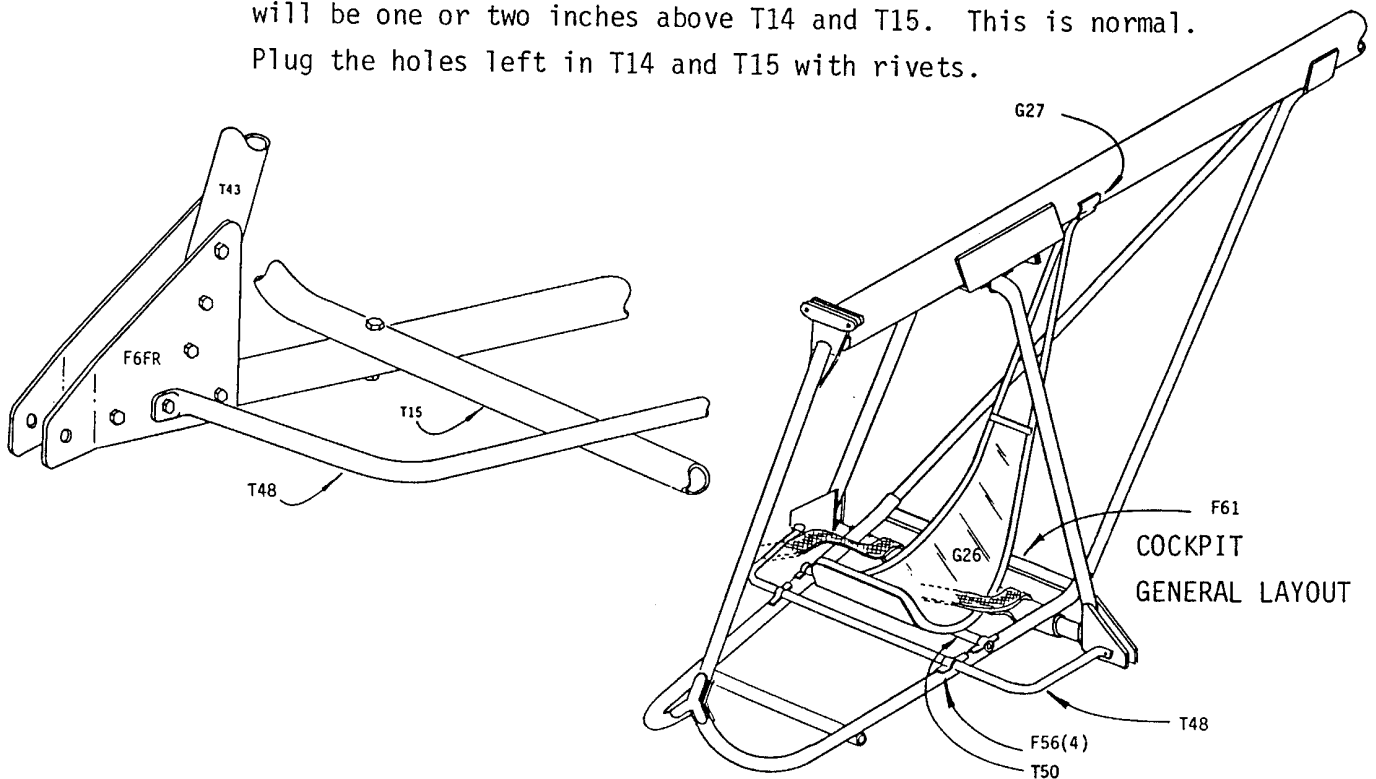
1.0 Assemble two new nacelles following the instructions attached (Section 4 from the new Lazair Assembly Manual), and fit the dual propellers as indicated.

2.0 SEAT MODIFICATIONS

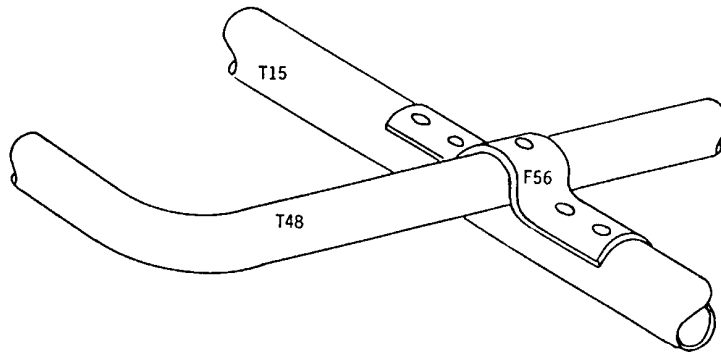
2.1 Remove the seat cover and cushion. Drill out the rivets and remove the seat clamp (G27) and the seat (T44 and G26) from the fuselage. Plug the holes in the boom (T23) with rivets.

NOTE: The relocation of the front crosstube (T48) as described below is not essential. However, it allows the throttle quadrant to be moved nearer the pilot as indicated in step 3.10 of these instructions.

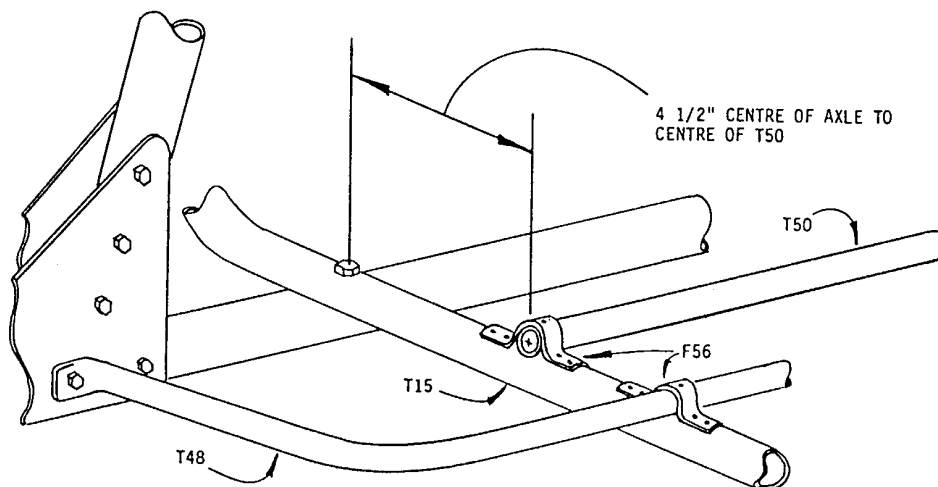
2.2 Drill out the rivets from the F56 crosstube clamps and remove the front crosstube T48. Turn T48 over, and refit it above T14 and T15 as shown. Note that with the bolts tight, T48 will be one or two inches above T14 and T15. This is normal. Plug the holes left in T14 and T15 with rivets.



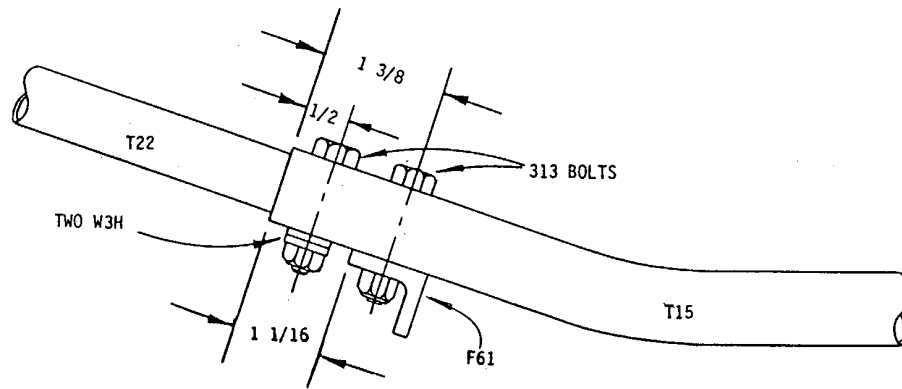
- 2.3 Pull the T48 down tight onto T14 and T15 and rivet in place using the F56 clamps and stainless steel rivets.



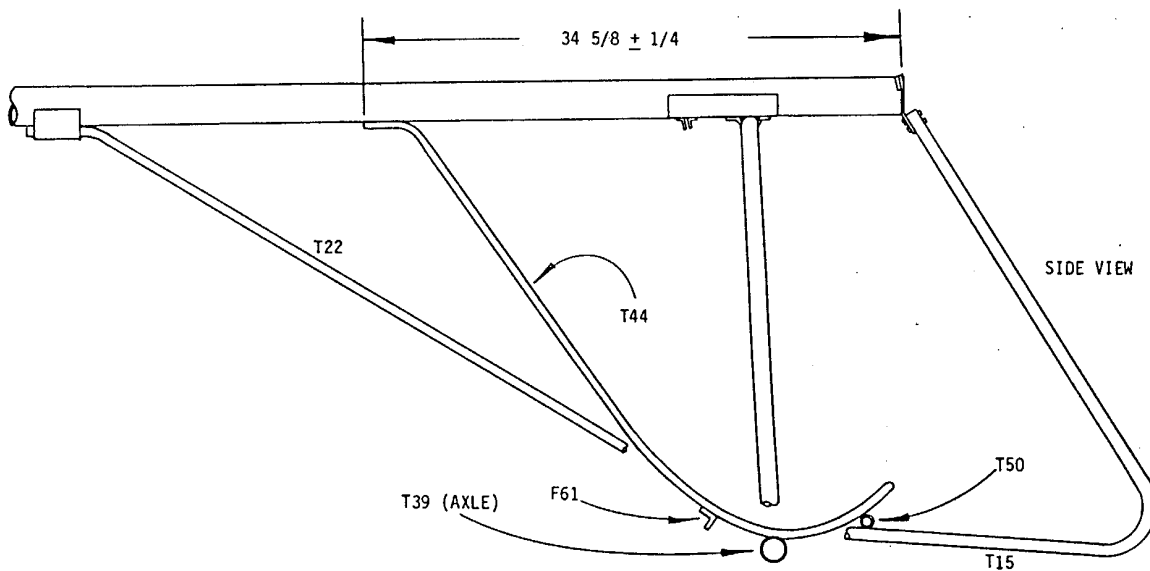
- 2.4 Position seat support tube T50 as shown and rivet in place using two F56 clamps and stainless steel rivets.



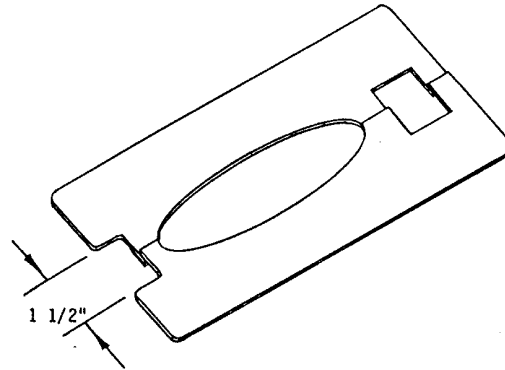
2.5 Drill and bolt seat support angle F61 in place using the existing 313 bolt as shown below.



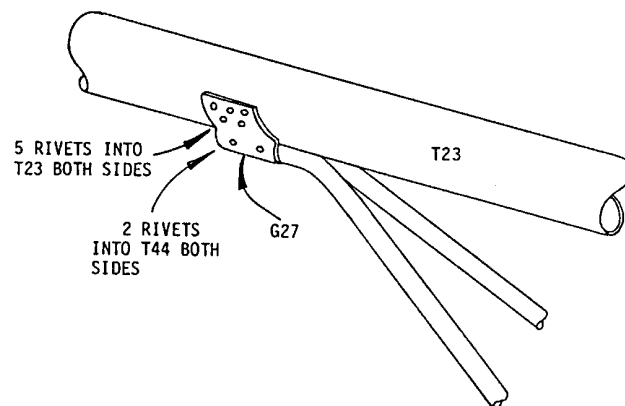
2.6 With the cover and cushion removed, put the seat into position as shown. Bend the seat tube T44 if necessary so that the seat touches F61, T39 and T50. When bending the seat, bend it very gradually and check the fit frequently. Be sure both sides are bent equally.



Notch the trailing edge of the mid gap cover as shown if necessary to provide a space for the seat tube.



- 2.7 Clamp the tails of the seat tube T44 to the boom with seat clamp G27 and rivet in place as shown.



- 2.8 Centre the seat between T14 and T15 and rivet the seat skin G26 to T50 with 5 equally spaced rivets.

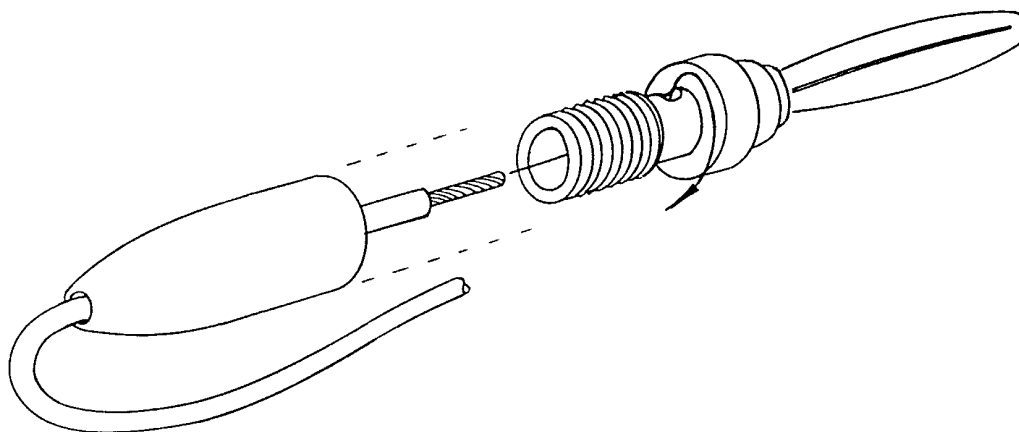
2.9 Rivet G26 to F61 with 5 equally spaced rivets.

NOTE: Do not rivet G26 to the axle.

3.0 CABLE, WIRE, AND FUEL LINE INSTALLATION

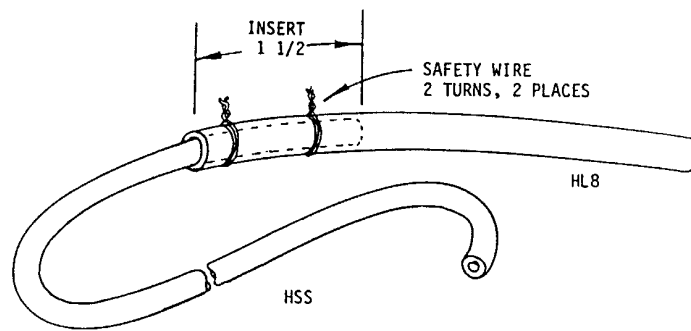
NOTE: Your engine kit includes a length of expandable cable jacket (CJ) as provided in the new Lazair kits. Although not essential, the use of this jacket will enhance the appearance of your cable assemblies. If you wish to use it, cut it into two equal lengths and slide one over each cable bundle (throttle cable, magneto wire and fuel line) from the engine end before proceeding. Taping the ends of the cable bundle to cover up all sharp edges will make it easier to install the cable jacket.

3.1 Make sure the magneto wires are long enough to reach the banana jack on the engine bellhousing (splice on an additional length of wire if necessary). Attach banana plugs to the engine end of the magneto wires as shown.

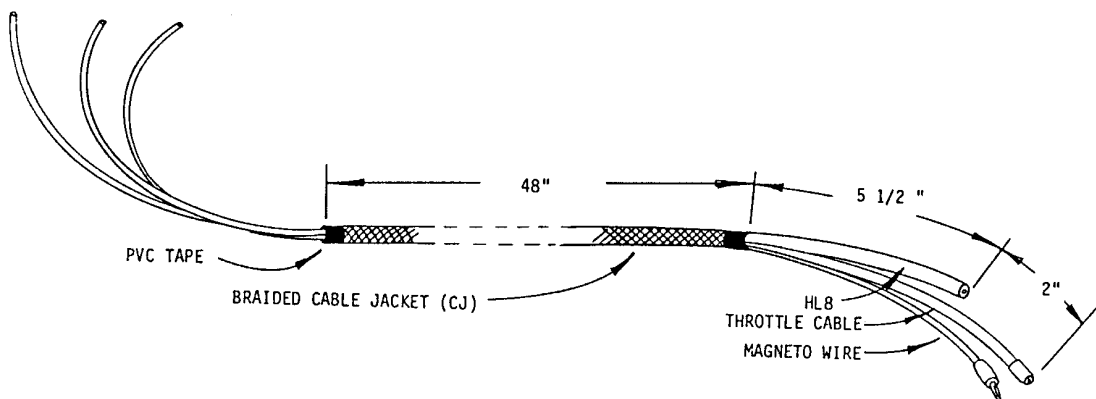


3.2 NOTE: This instruction assumes that the aircraft being modified has been fitted with the small (1/8 inch inside diameter) fuel line HSS.

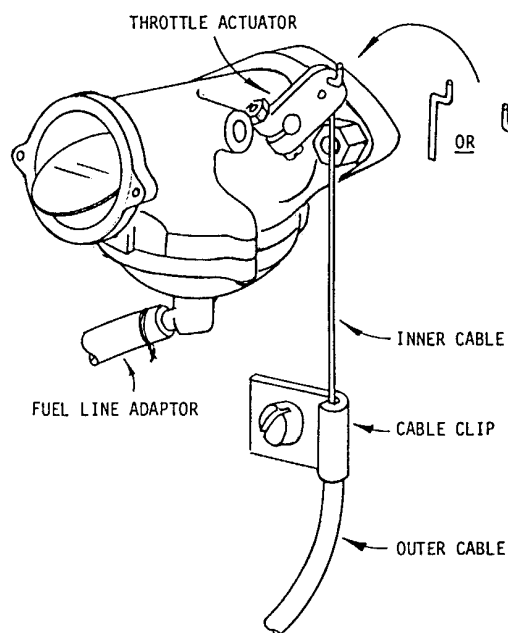
Attach a fuel line adaptor (HL8) to the engine end of both fuel lines as shown. Twist the safety wire tight and bend it flat against HL8.



3.3 Adjust the position of the cable jacket as shown and tape the ends with PVC tape (not supplied).

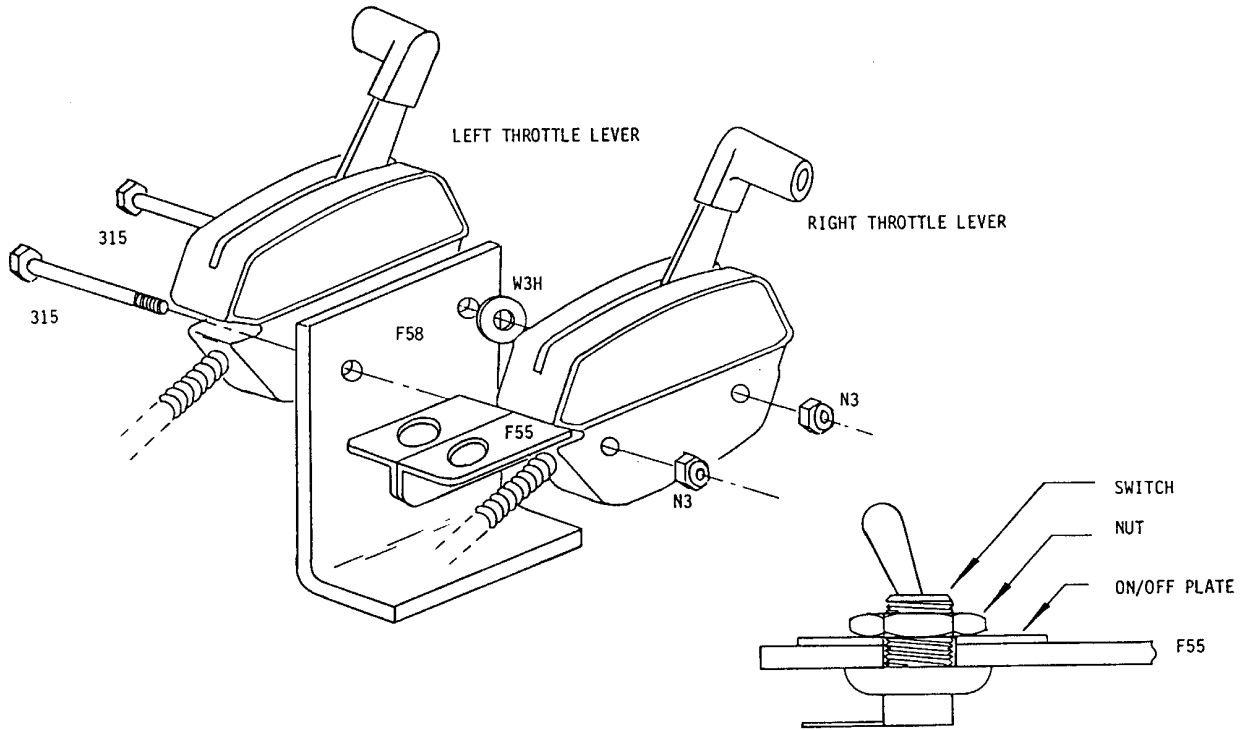


- 3.4 Connect the throttle cables as shown. Note that the inner throttle cable may be inserted into the throttle actuator in either of two ways. Use the orientation which puts the least twist in the cable. Use the outermost hole in the throttle actuator. Squeeze the throttle cable clamp with pliers so that it will hold the outer throttle cable securely, and yet will allow the cable to be removed without tools when required.

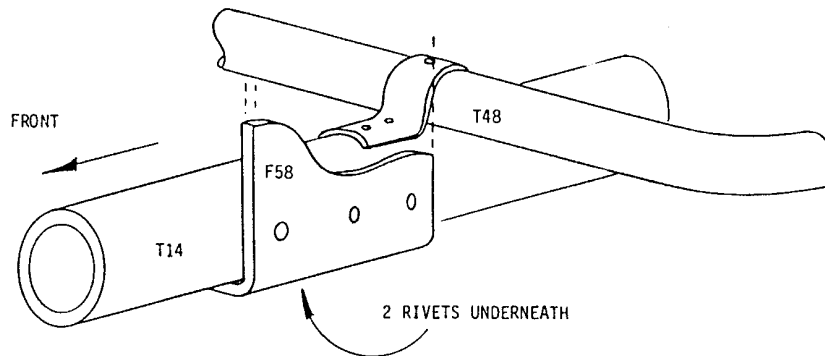


- 3.5 Push the fuel line adaptor HL8 over the fitting on the carburetor and secure with two turns of safety wire. Cut HL8 to length as required.
- 3.6 Insert the magneto wire banana plug into the black banana jack on the engine bellhousing.
- 3.7 Drill out the rivets and remove the throttle quadrant from T14. Remove and discard throttle cable support F57. Plug the holes in T14 with rivets.
- 3.8 If your aircraft is equipped with two independent magneto switches, proceed to step 3.10.

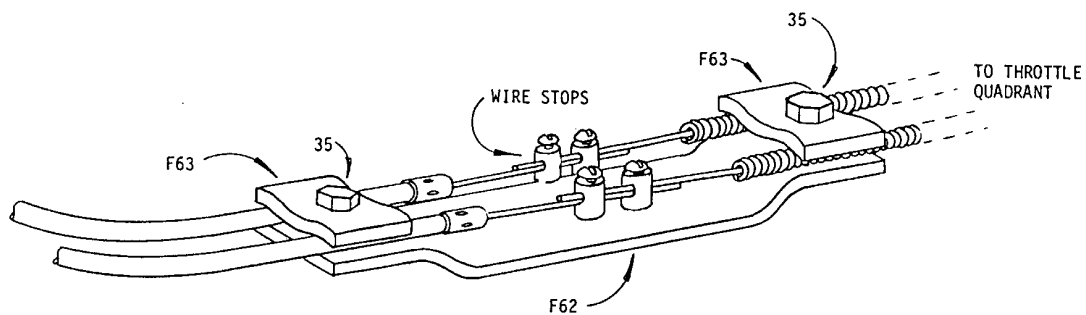
3.9 If your aircraft has only one magneto switch, install a dual switch bracket (F55) and two switches as shown (the second switch and the F55 are included in the Rotax engine conversion kit).



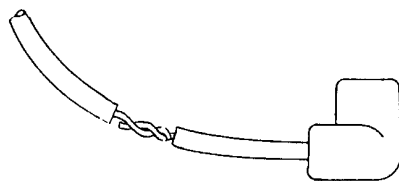
3.10 Reinstall the throttle quadrant just ahead of T48 as shown. Rivet in place using stainless steel rivets.



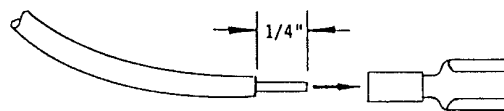
- 3.11 Connect the throttle cables to the throttle quadrant using F62 as shown. Set the throttle levers to the idle position (fully back) and adjust the position of the throttle cables and wire stops so that the throttle butterflies in the carburetors are closed. Tighten the clamps and wire stops and verify that with the levers pushed forward, both throttle butterflies are fully open.



- 3.12 Dress the cables along T43 and fasten in place with tie wraps. Make sure that there are no bends in the cable with a radius less than five inches.
- 3.13 Cut the magneto wire as necessary and attach the terminals to connect to the switches. Your kit may be supplied with either molded or crimp-on terminals as shown below.



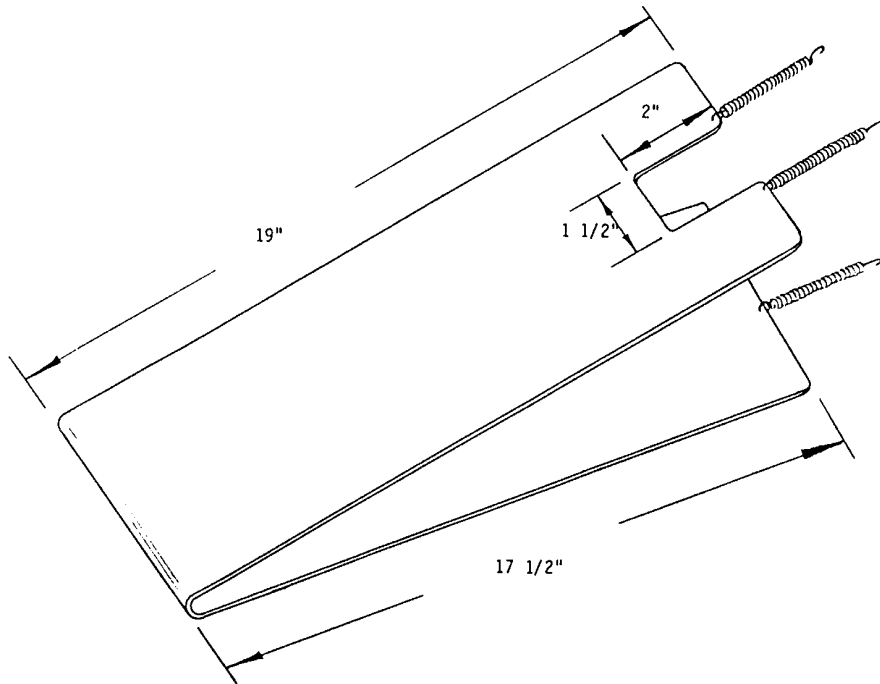
MOLDED TERMINAL
STRIP, SOLDER AND TAPE



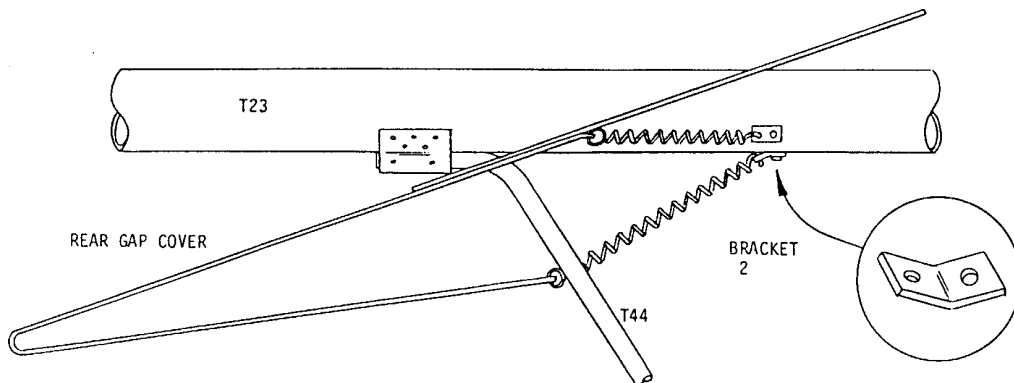
CRIMP-ON TERMINAL
STRIP, INSERT AND CRIMP (USING CRIMPING TOOL OR VICE-GRIP PLIERS)

4.0 REAR GAP COVER MODIFICATION

4.1 Cut the rear gap cover and attach the springs as shown below.

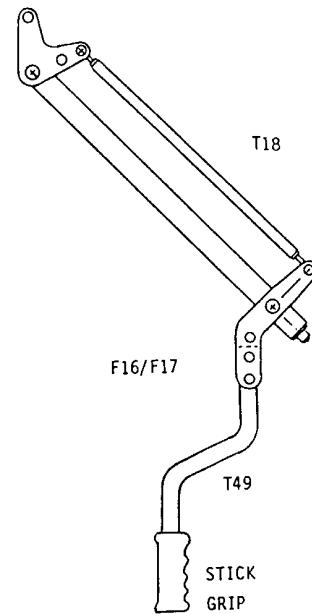


4.2 Reposition the spring brackets (bracket 2) as shown so that with the rear gap cover in place, the springs are stretched to approximately 5 1/2 inches in length.



5.0 CONTROL COLUMN INSTALLATION

- 5.1 Remove the control stick (T17) and replace it with the new bent control stick, T49 as shown.



- 5.2 Put the stick grip on the new stick and check for proper control movement.