

Photo #79

Vertical fin parts as received.

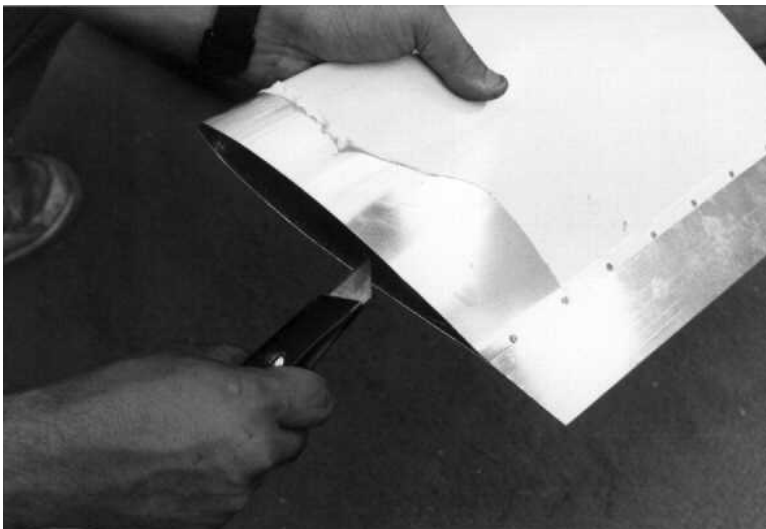


Photo # 80

Deburr airfoil edges.

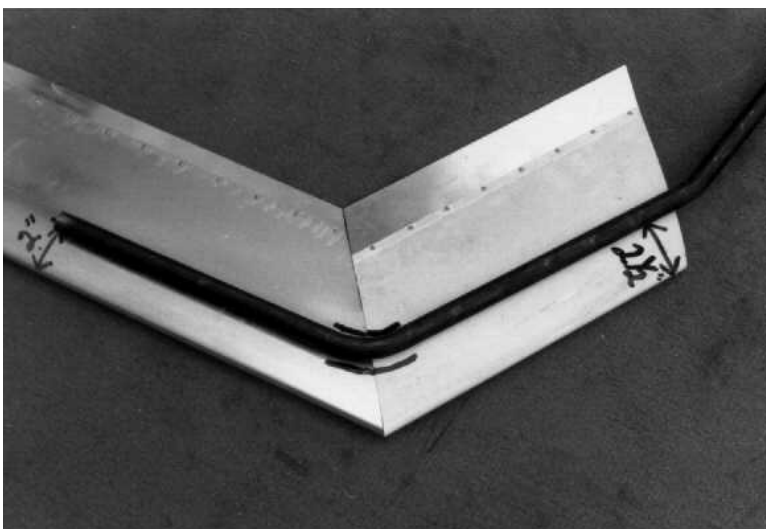


Photo #81

Locate and mark the airfoil where the spar will go.

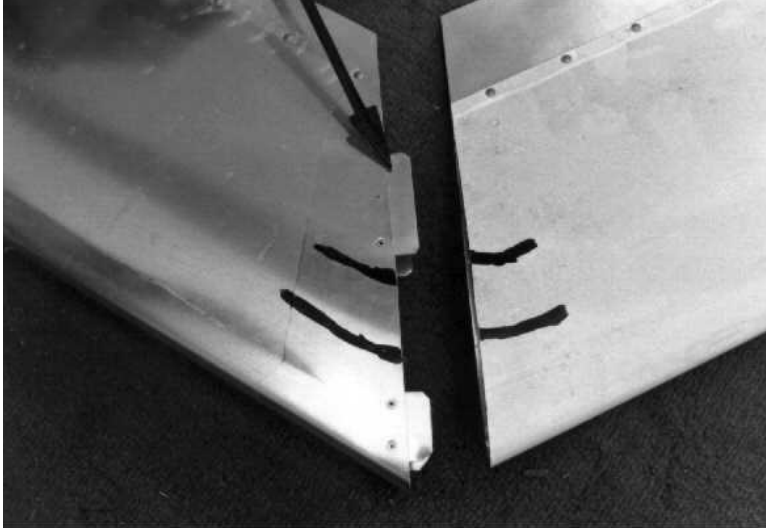


Photo #82

Cut and install the doubler to join airfoils as shown on print E09-2001.

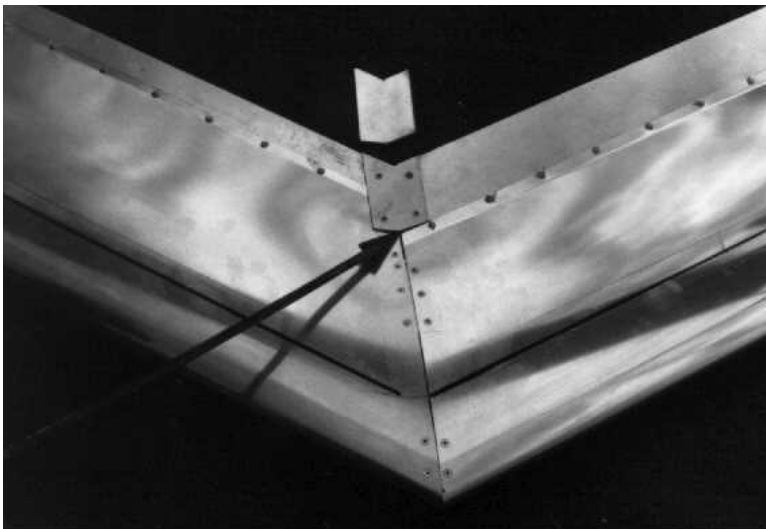


Photo #83

Cut and fit the doubler on the trailing edge of the airfoil.

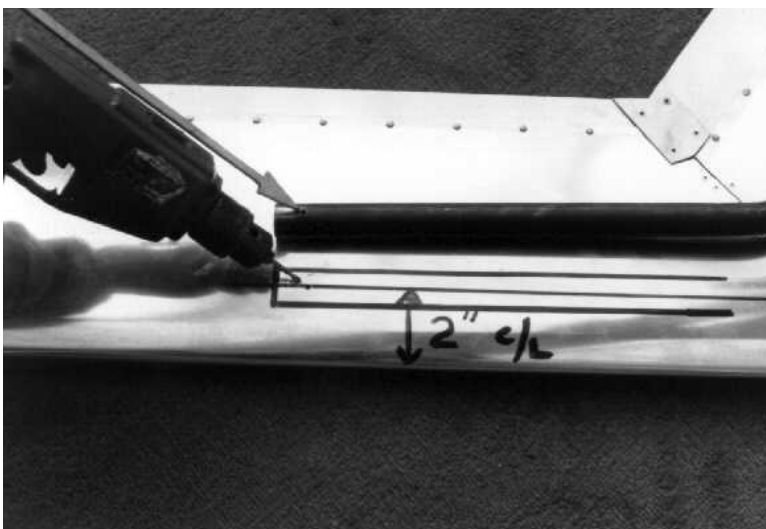


Photo #84

Locate on the airfoil where the center of the spar will be and drill the spar to match it.

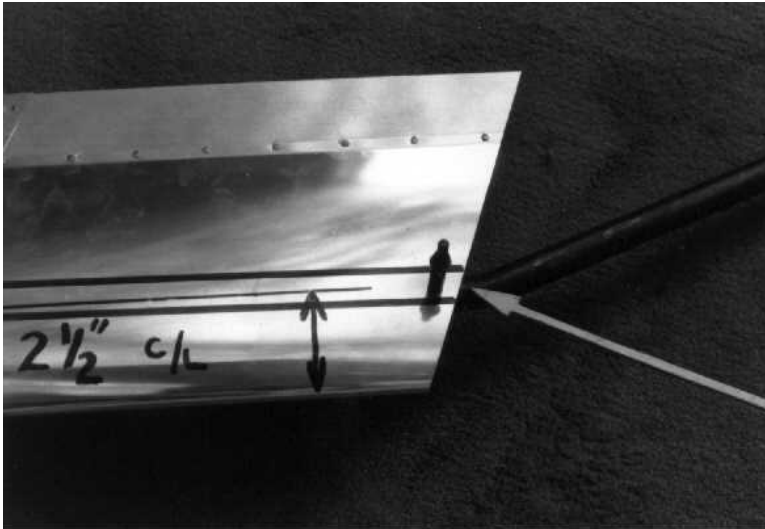


Photo #85

Install the spar in the airfoil. Cleco the top and align the bottom. Drill and install remaining cleco, then drill and install rivets.



Photo #86

Cut out and fit the end plugs on the bottom of the fin. Install wood screws to hold.

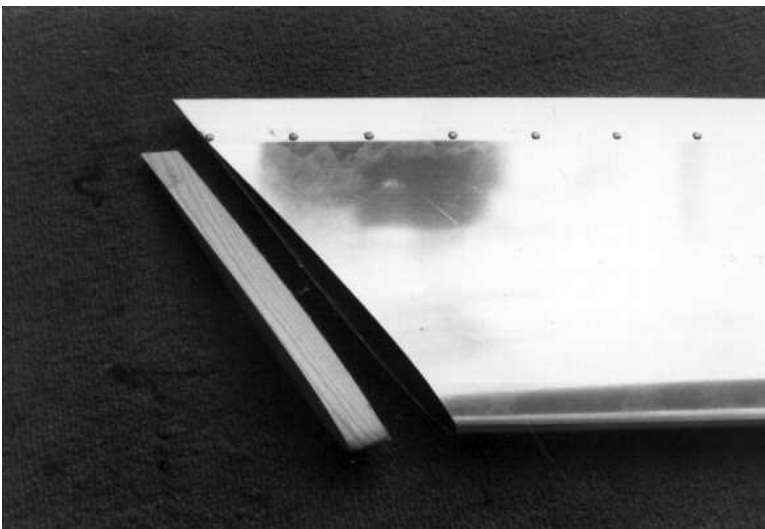


Photo #87

Cut out and fit the end plugs on top. Install wood screws to hold.



Photo #88

Use sandpaper around a wood block to contour the end plugs.

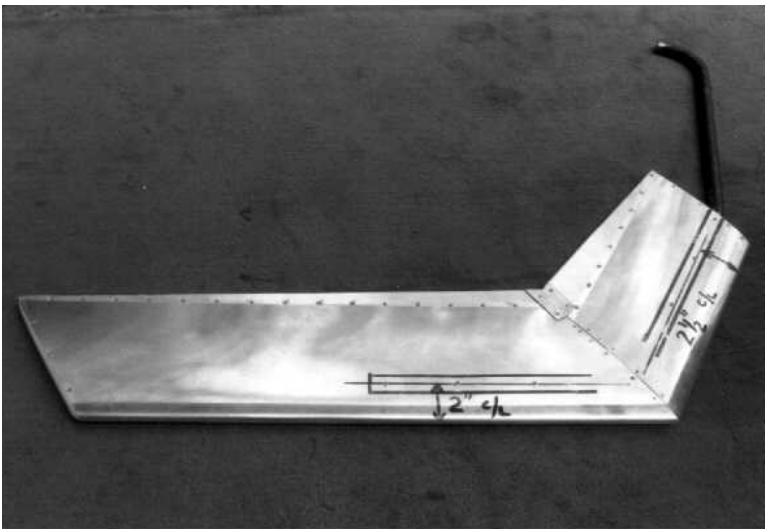


Photo #89

Finished vertical fin ready to detail for paint.

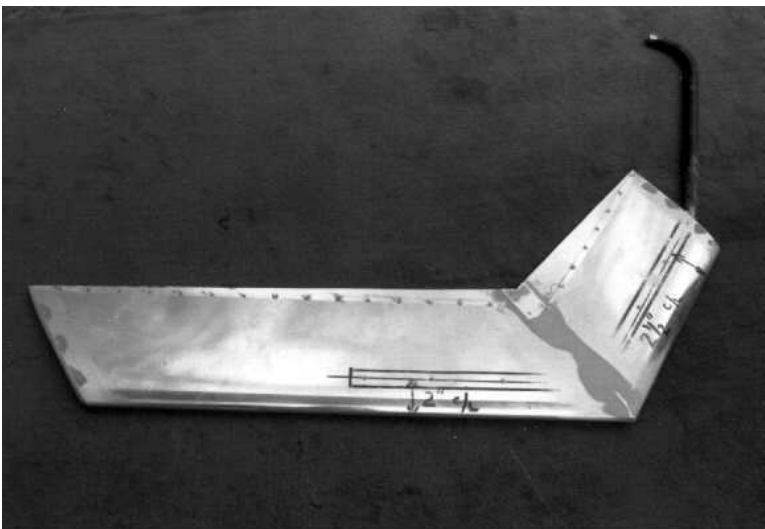


Photo #90

Fill in the low areas on the airfoil with Bondo.

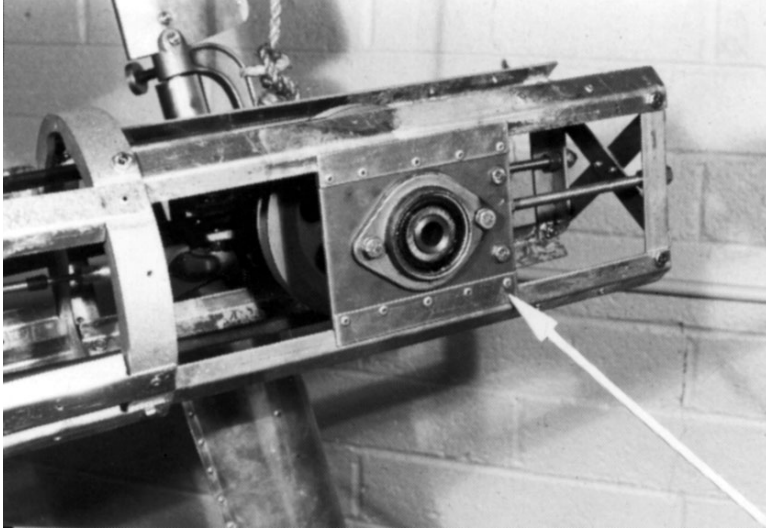


Photo #91

The completed tail rotor unit.

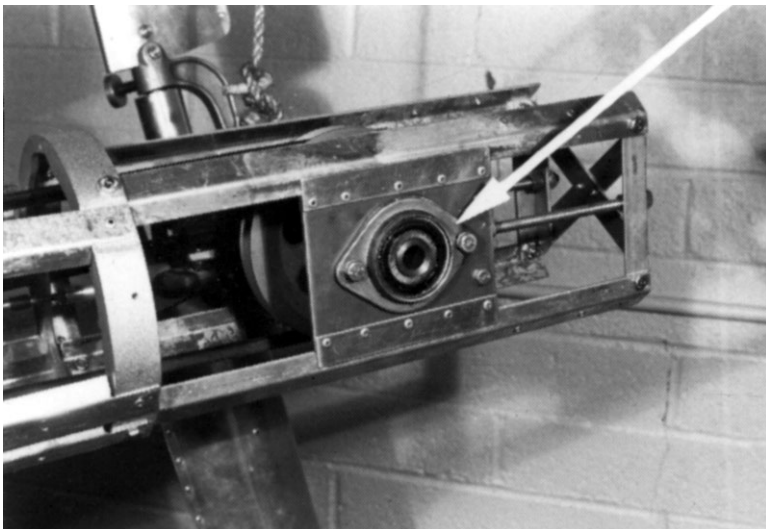


Photo #92

The bearing flanges bolt to the outside of the bearing mounting plate.

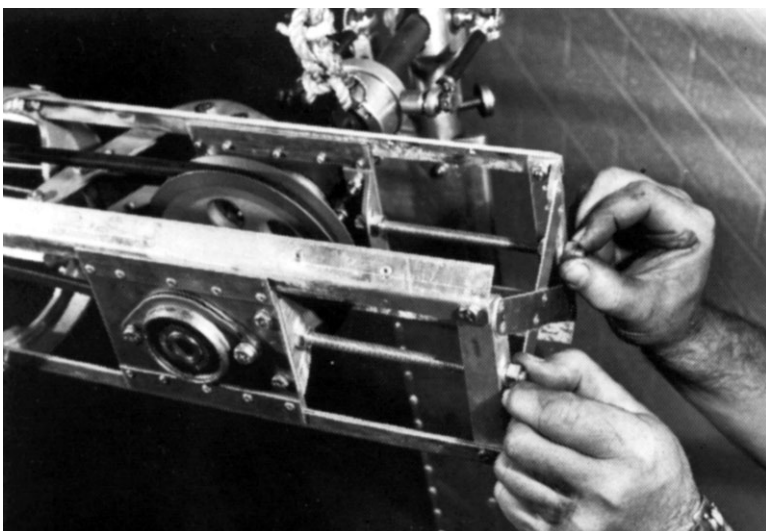


Photo #93

The threaded rods provide a means of tail rotor belt adjustment. The rods are double nutted as shown and must be adjusted properly. Tail rotor belt tensioning adjustment is described in the rigging procedures. After the initial tensioning, the tail rotor belts must be re-adjusted after the first hour of operation and again after the fifth hour of operation or as necessary. After that, adjustment is normally only necessary at 50 hour intervals.



Photo #94

Use prints E17-2000 and E17-2001 and templates E17-1, E17-2, E17-3, and E17-4 when constructing the tail rotor drive assembly. Parts as received from RotorWay International for the tail rotor drive.

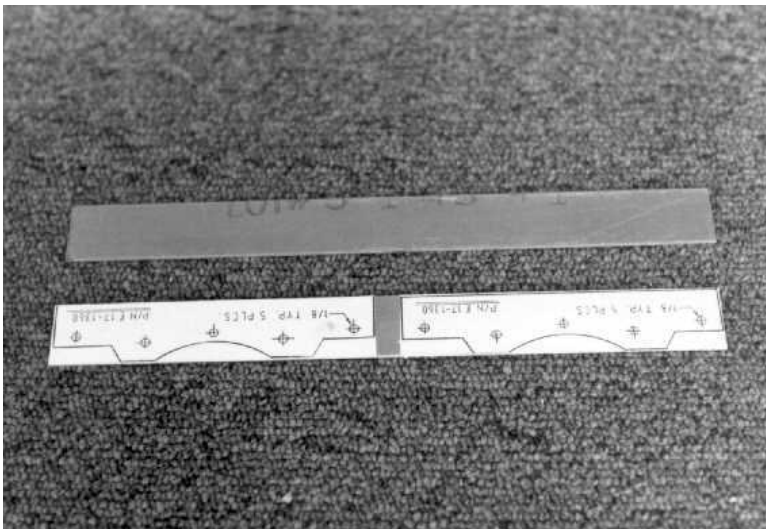


Photo #95

Using template E17-1, cut out and drill holes in the bearing mounting plate slider straps.

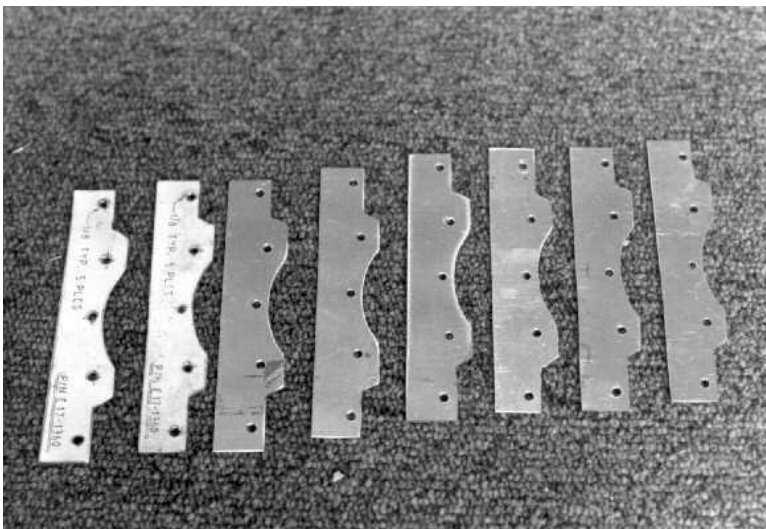


Photo #96

When drilling the 1/8" holes, it is recommended to stack and drill two parts at a time. Install a cleco, then as each hole is drilled, install another cleco. Keep each pair as a set.

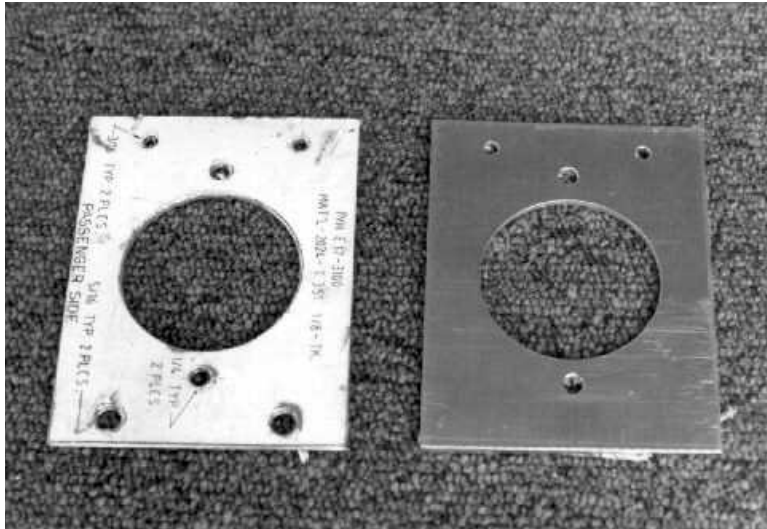


Photo #97

Use template E17-2 to make the tail rotor bearing mounting plates.

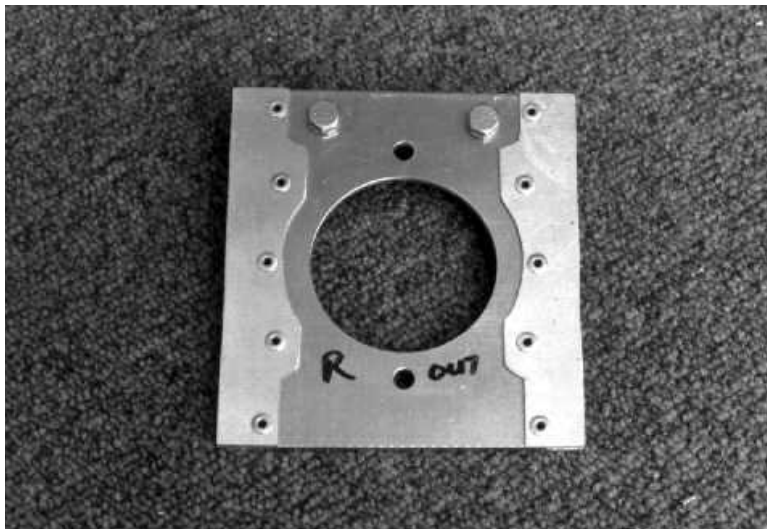


Photo #98

Using each set of slider straps as a template, drill and rivet the straps to the bearing mounting plate per print E17-2001.



Photo #99

Assemble the bearing mounting plates and slider straps. Make the bearing plate adjustment angles and mount one on each of the bearing mounting plates.



Photo #100

Use templates E17-3 and E17-4 to make the tail rotor pitch actuator arms and the cable mount bracket.

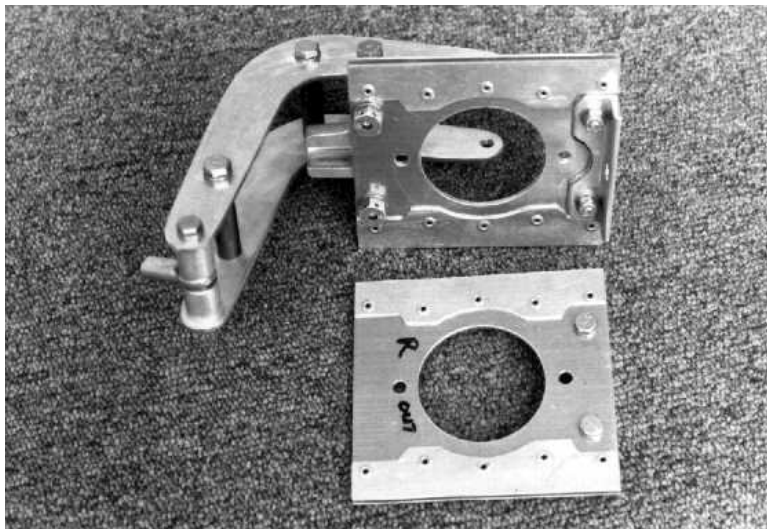


Photo #101

Mount the pitch actuator arm pivot casting to the bearing mounting plate assembly and safety wire the two bolts to each other. Install the spacers and the rod end between the pitch actuator arms. Mount the arm assembly to the pivot casting. Note: Apply grease to the bolt that goes through the pivot casting before assembly.



Photo #102

Other side of the assembly constructed in previous photo.



Photo #103

To construct the slider to actuator arm clevis, use the same method to bend the strap as shown in the E15-2000 assembly (see section 10 page 12). This will ensure equal bends without score marks.

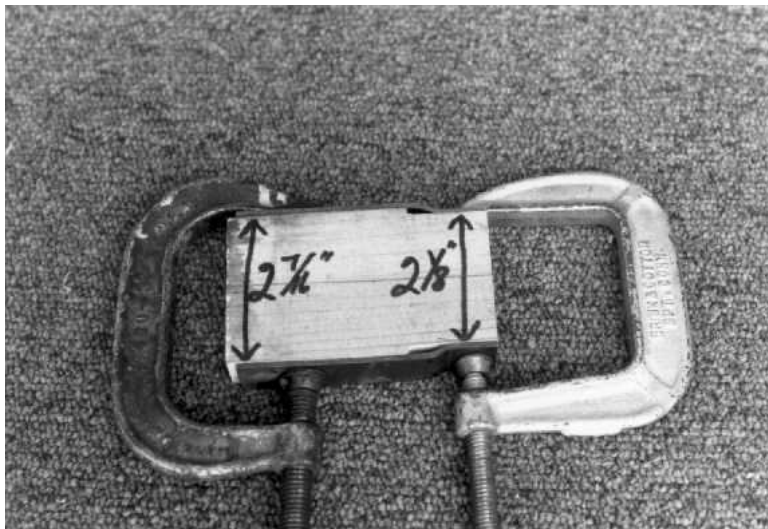


Photo #104

Use a piece of wood to hold the two straps in alignment when welding the connecting strap to them. The ends of the straps should be equal distance from the centerline at both ends of the clevis.

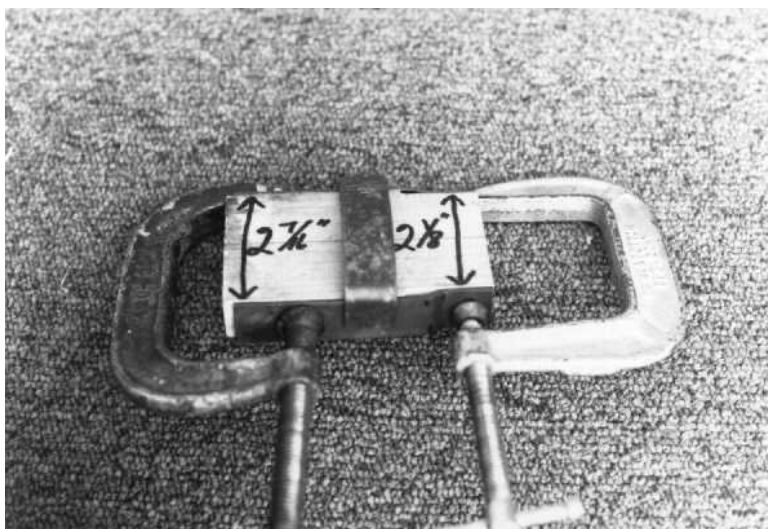


Photo #105

Place the connecting strap in the correct position and weld the pieces together. Use the wood block as a reference to drill the bolt holes.

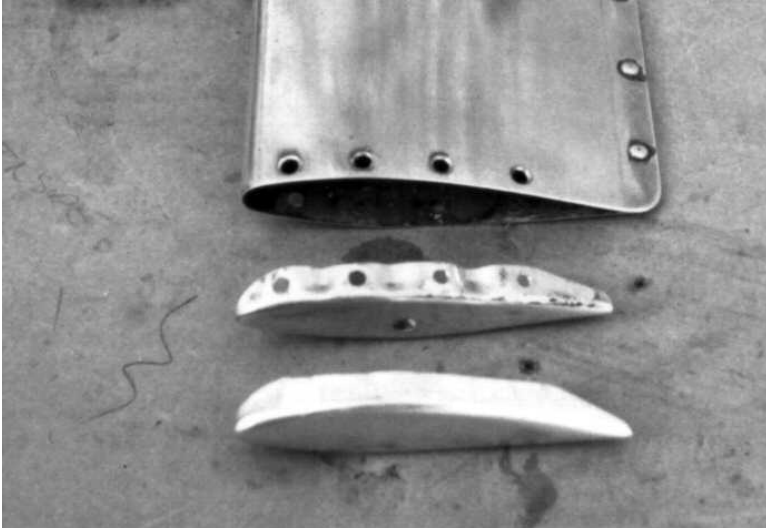


Photo #106

Remove the plastic from the blades and fit the end caps. It may be necessary to bend the cap to achieve a good fit. Note: Do not install the pop rivets until after balancing the blades.

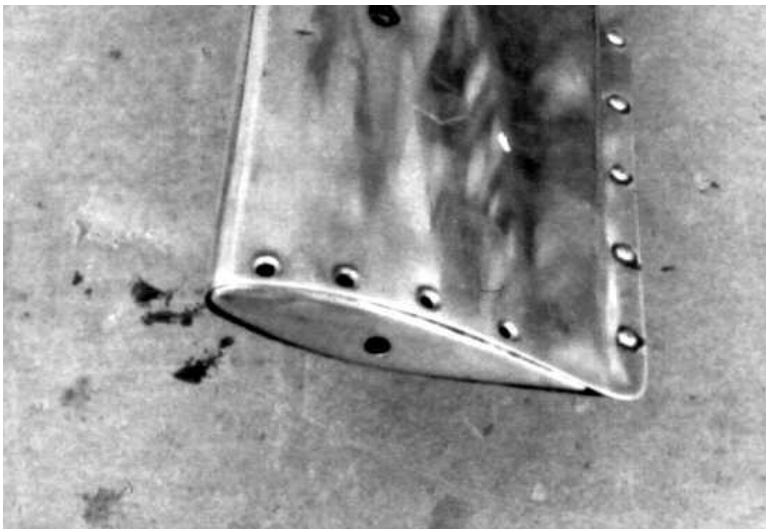


Photo #107

The cap does not need to fit perfectly to the airfoil of the blades. Countersink just enough to make the head of the pop rivet flush with the airfoil. Do not countersink too far or the pop rivet will not hold the end caps.

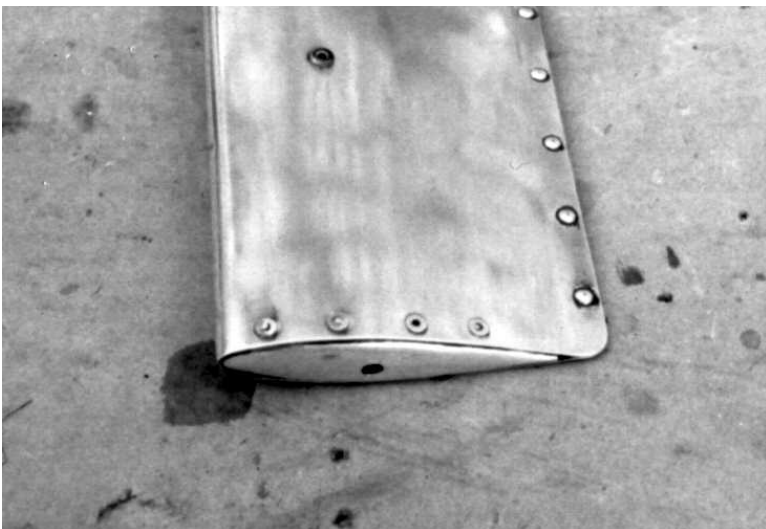


Photo #108

This shows how the end cap will look when final installed. Do not install pop rivets until blades have been balanced.

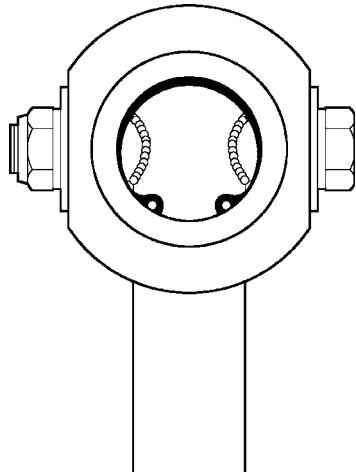


Photo #109

Install the tail rotor barrel on the shaft. Then install the inner snap rings with the numbers (flat side) facing the shaft. The opening in the snap rings should be in line with the shaft.

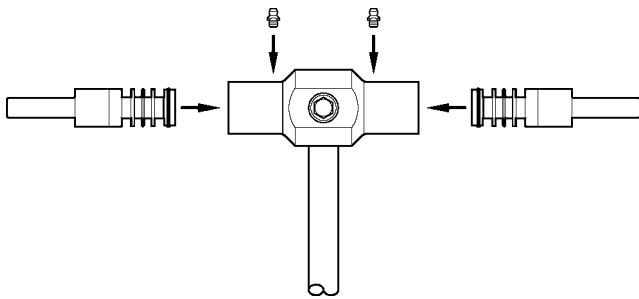


Photo #110

Mount the o-rings on the pitch pins. Grease the pitch pins, thrust bearings and alignment bearings, and assemble as shown on print E17-2000. Install the pitch pin assembly in the tail rotor barrel. Then install the outer snap rings with the flat side out, and with the openings parallel to the tail rotor shaft. Also, install the grease fittings in the tail rotor barrel.

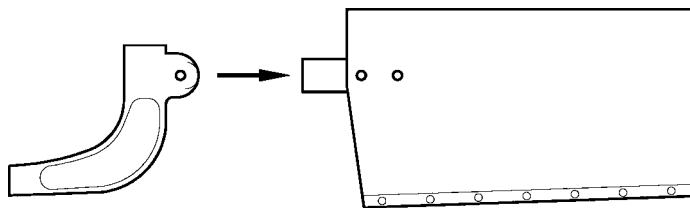


Photo #111

Position the pitch horns on the blade spars.

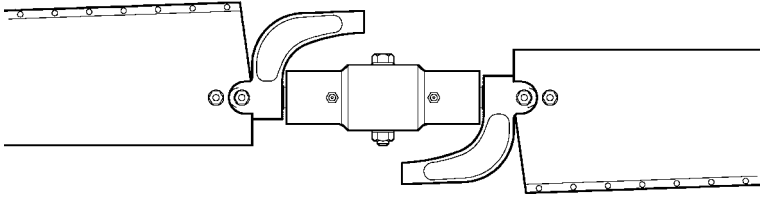


Photo #112

Install the blades and pitch horns on the pitch pins.



Photo #113

Build a balancing fixture like the one shown using a vise, a 2 x 4 board, and two pieces of .050" aluminum. The top edges must be level in all directions.

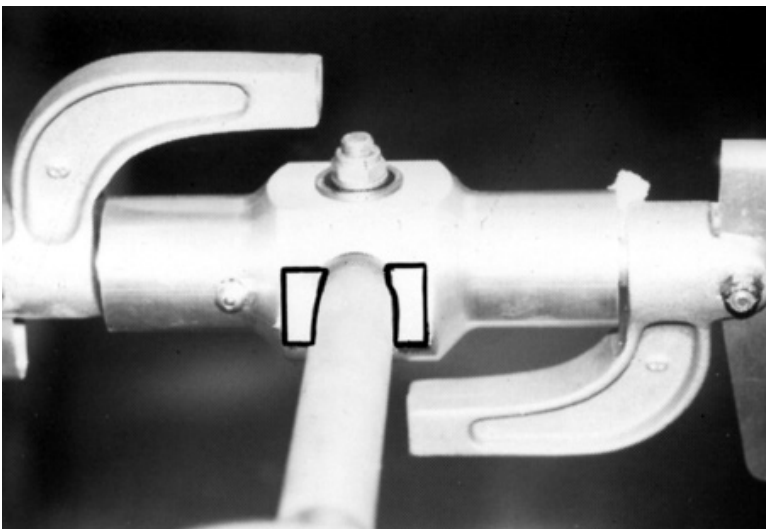


Photo #114

Use the tail rotor pulley and the carriage slider assembly as a counter balance. Use small pieces of foam to wedge the tail rotor blades as shown and to keep the tail rotor barrel 90 degrees to the shaft while balancing.

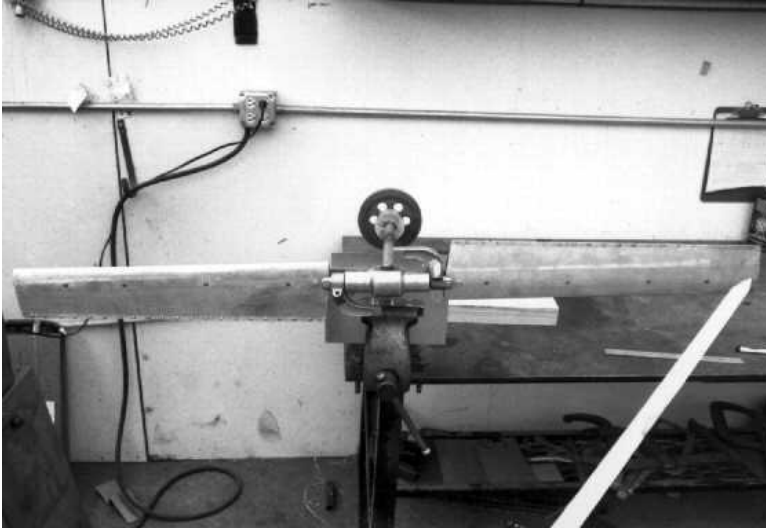


Photo #115

If weight is needed for horizontal balance, add it to the inside of the airfoil at the tip.

Note: Blades must be forced out against the thrust bearings so that they will be in the same position as if forced out by centrifugal force when in flight.

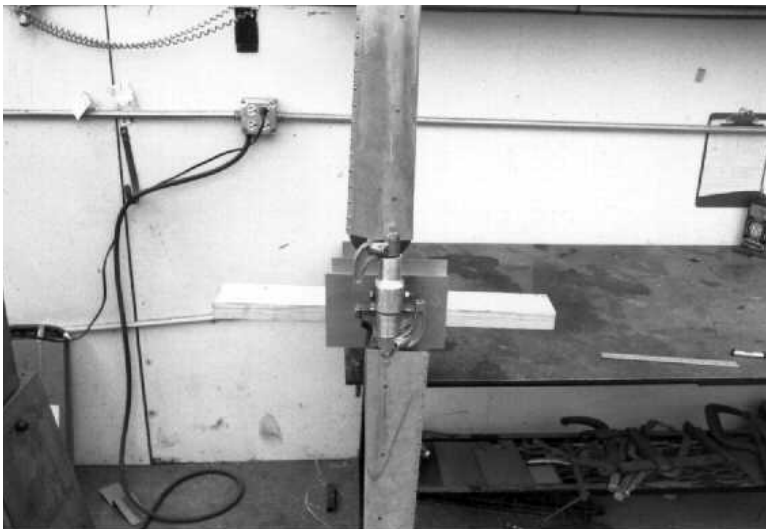


Photo #116

Balance the tail rotor vertically. The blades must be held outward the same as when in flight.

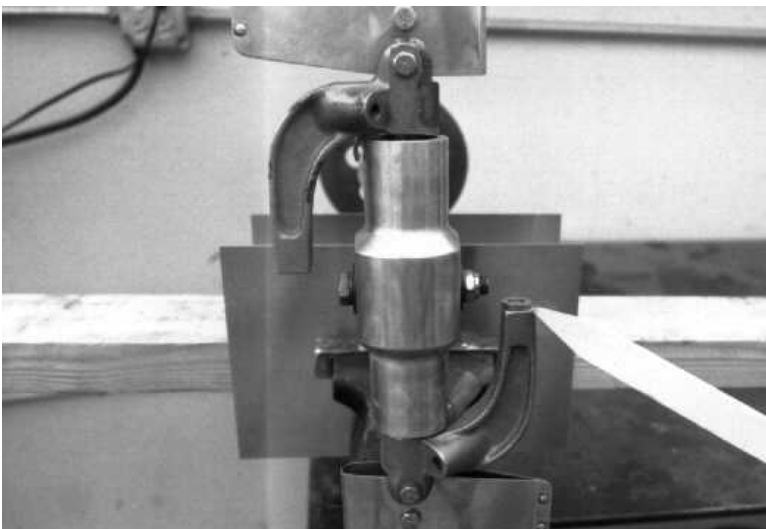


Photo #117

If weight is needed to achieve balance, add washers to the pitch horn bolt. If more than 4 regular 5/16" washers are required, contact RotorWay Customer Service.

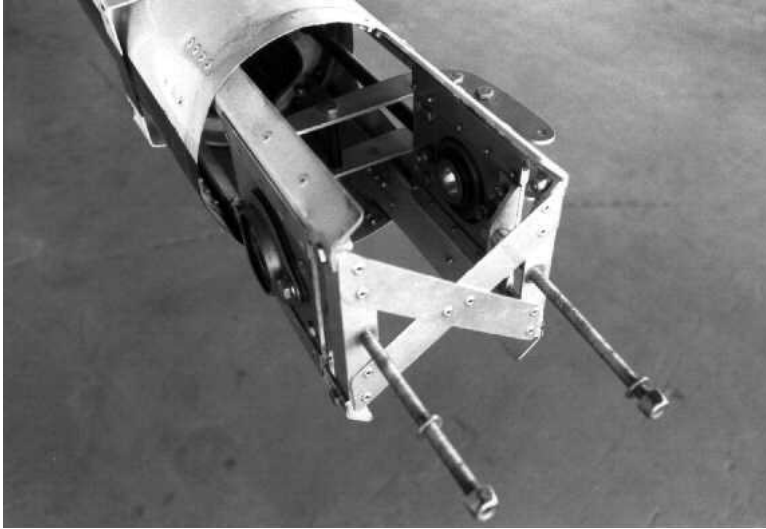


Photo #118

Install the bearing mounting plates in the slider rails.
NOTE: Part of the tail boom must be cut out for clearance of the actuator arms. However, this should not be done at this point, because clearance will be determined by the location of the tail rotor cable. The tail rotor drive assembly can sit back for the time being while the remaining components are fitted.

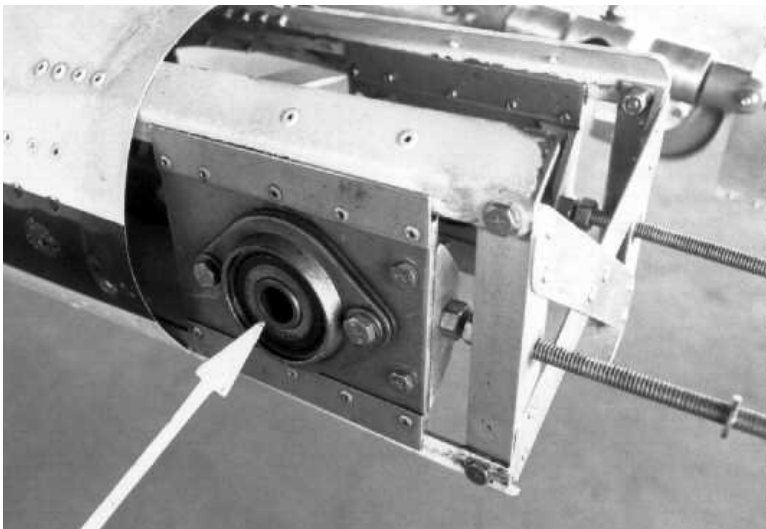


Photo #119

Install the tail rotor shaft along with the pulley in the bearings, so the end of the shaft is even with the bearing on the pilot's side.

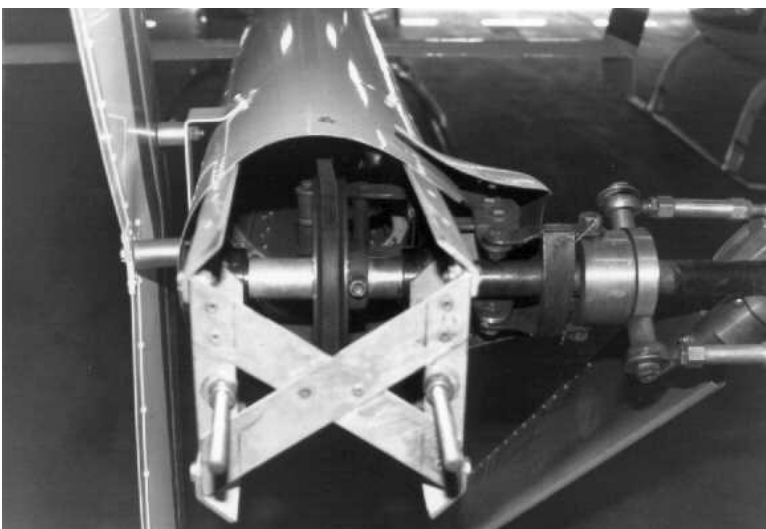


Photo #120

The sliders should be 5" apart. The pulley should be located off center 1/2" to the tail rotor side for proper clearance and belt alignment. Cut the spacers to the proper length to position the pulley in the correct location. Drill the hole for the 1/4" bolt that pins the tail rotor drive pulley to the shaft on assembly. This hole must be a precision fit. Use a 3/16" drill first, then drill to size with a "D" drill.



Photo #121

After final installation in the ship, set the lock rings against the direction of rotation. Loctite the bearings to the shaft for maximum longevity. The extended inner races of the bearings must be facing towards one another so that the lock rings will be on the inside of the mounting plates.

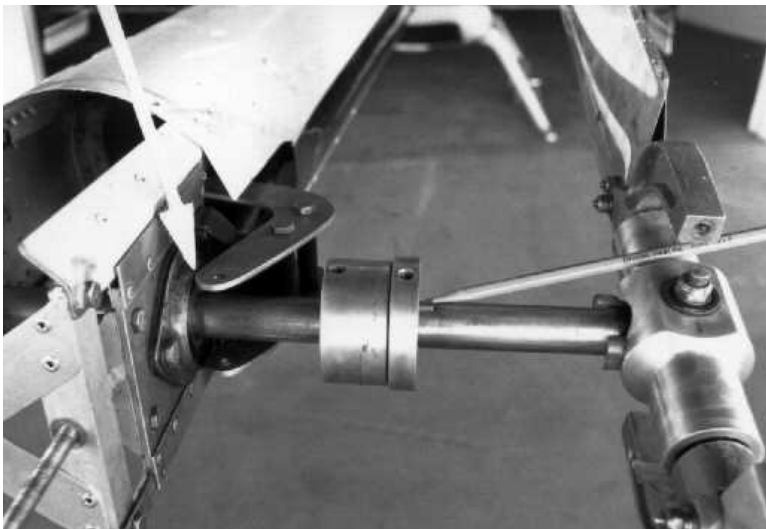


Photo #122

Position the carriage slider assembly so that the key in the shaft shows 1/4". Position the actuator arm so that it just misses the bearing flange on the passenger side.

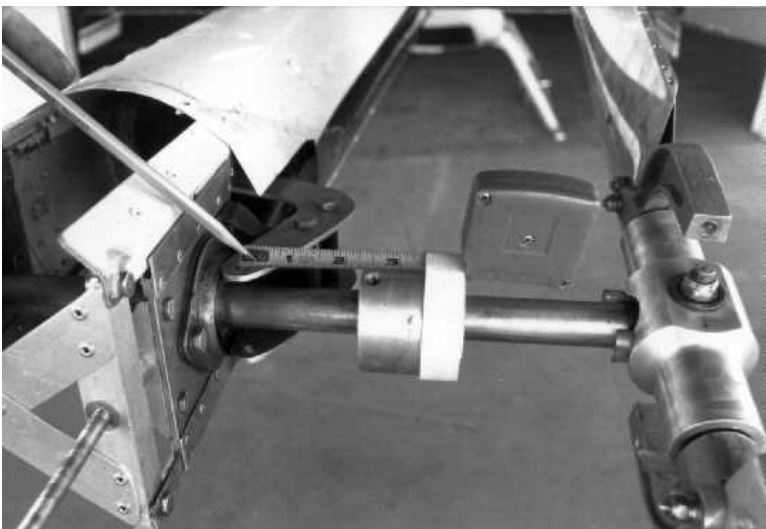


Photo #123

Measure the distance between the holes in the carriage slider assembly and the actuator arms. Using this measurement, locate and drill the holes in the slider to actuator arm clevis.

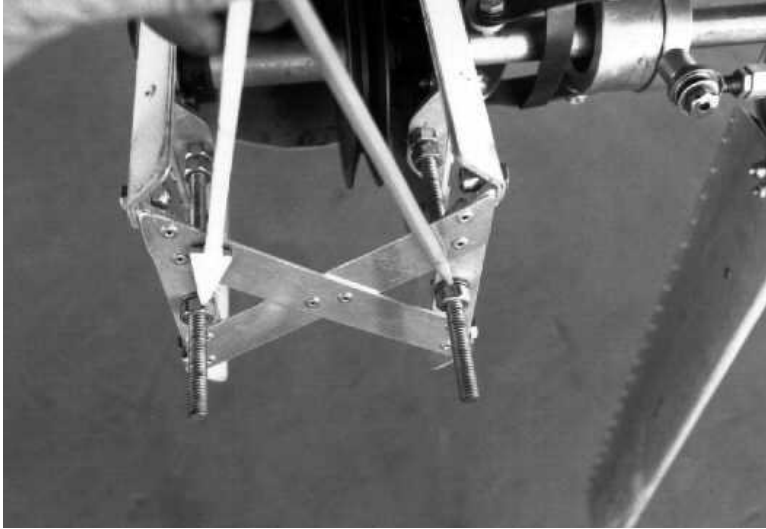


Photo #124

To tighten the tail rotor drive belts, tighten the 5/16" nuts shown by the arrows. To check alignment, place a straight edge on the pilot's side of the pulley. Sight down the straight edge; it should align with the center of the main shaft.

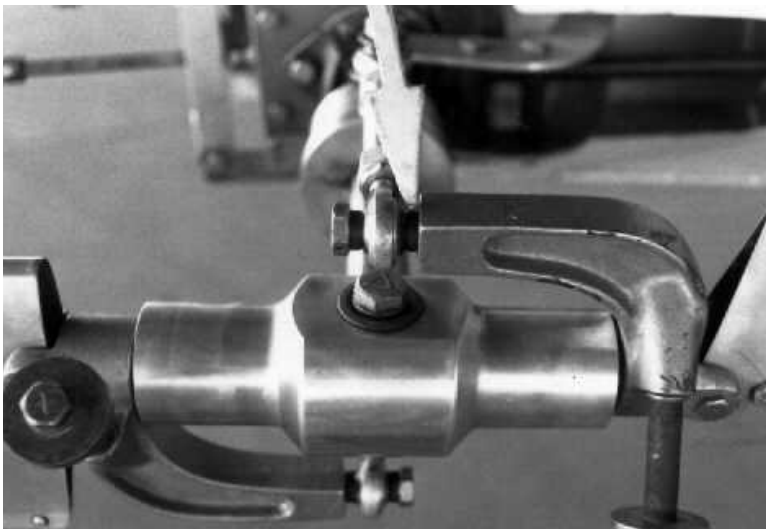


Photo #125

If necessary, use a washer as a spacer between the rod end and the pitch horn to get the rod end centered on the pivot bolt. Whatever weight is added to one pitch horn must be added to the other. If a washer is added to get vertical balance, it must be installed between the rod end and the head of the bolt.



Photo #126

Close up of the tail rotor hub area. Fit the fiberglass parts so they do not interfere with the tail rotor operations. NOTE: The directional control cable has not been fitted yet.

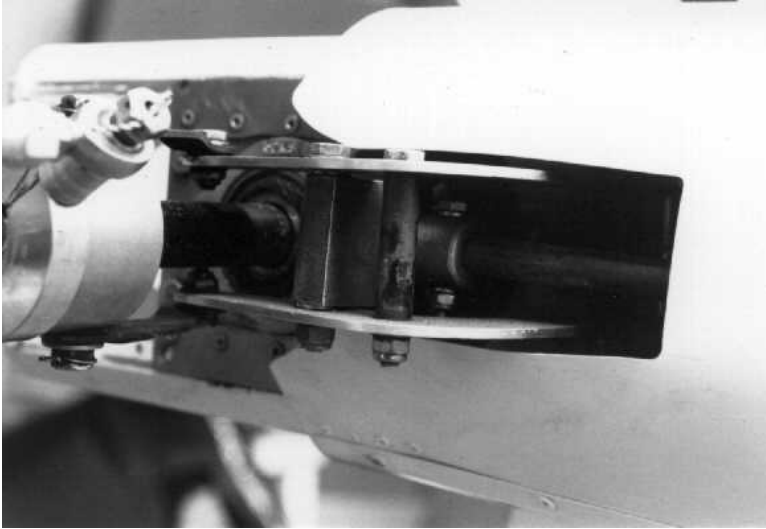


Photo #127

Cut the tail boom skin to clear the actuator arms. Only remove what is necessary to clear the arms. (The tail boom skin and fiberglass can be final trimmed as necessary when the tail rotor cable is fitted and adjusted.)

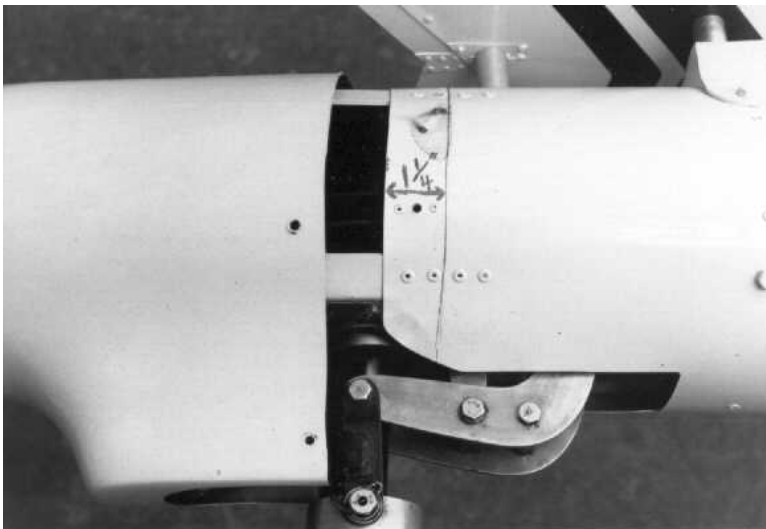


Photo #128

Slide the fiberglass tail cone cover over the end of the tail boom. Overlap 1-1/4". Hold the cover tight on the fin side and drill a 1/8" hole on top and bottom. Hold together with cleco.

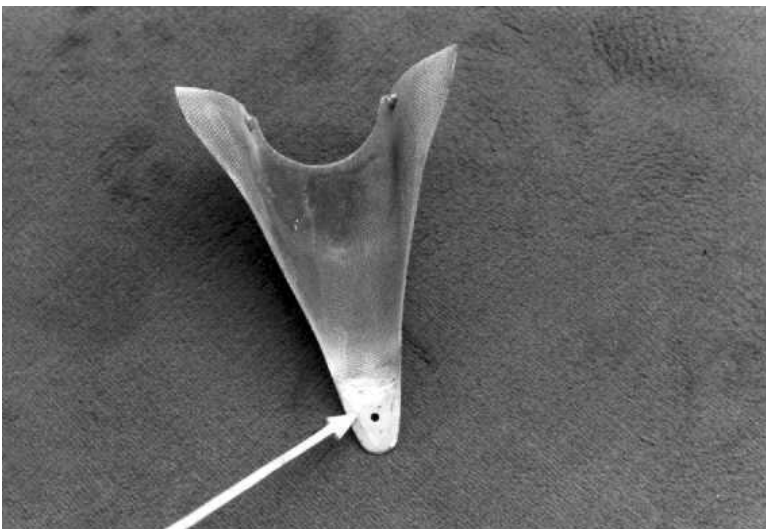


Photo #129

Fill the small end of the slider cover with fiberglass mat and fit to the tail boom and tail cone cover.



Photo #130

After the tail cone cover and slider cover fits, install the nut plates, then install the covers.



Photo #131

Remove material on the covers to allow freedom of travel of the tail rotor assembly.

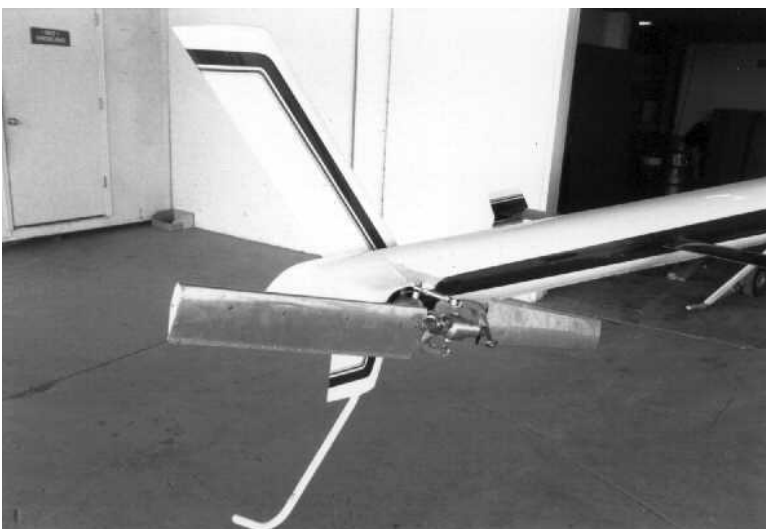


Photo #132

This view shows the tail of the aircraft with the tail rotor and trim fins installed.



Photo #133

Another view of the tail rotor and vertical trim fin after installation.