

CHAPTER 17

PITCH TRIM AND ROLL TRIM

STEP ONE - MOUNTING BLOCKS

Fabricate the PT1 {(Figure 17-6)} and RT3 {(Figure 17-5)} blocks from 1/4" 5-ply birch plywood (full size patterns pg. 17-3).

Pitch - Locate PT1, Dremmel-away the skin to clear the AN3-bolts (Figure 17-4 section A-A). Install the bolts then bond PT1 to the fuselage side with flox. Cover with 1 ply BID that laps 1/2" onto fuselage side. Cure.

Roll - Notch the right console 1/4" x 1" to accept RT3 (see view X-X {Figure 17-5} pg. 17-3 and pg. A-8). Bond RT3 to console and fuselage side with flox. Cover with 1 ply BID, lapping 1/2" onto fuselage side and console. Cure.

STEP TWO - PARTS

Fabricate PTH, RT1, two RT2 and four PW, or purchase them prefab from a distributor.

Where to find parts designs:

Part name	Figure	Quantity
PTH	17-7	1
PT1	17-6	1
RT1	17-5	1
RT2	17-5	2
RT3	17-5	1
PW	17-6	4

Refer to the spring specification {table below}. Cut the steel 0.35 x .05 spring stock to the **unstretched** lengths shown.

Springs Pitch & Trim

Part No.	Outside Dia.	Wire Dia.	Unstretched Length	Installed Length	No. Reqd.
PTS	0.350	0.05	6.0	9.0	2
RTS	0.350	0.05	2.0	3.0	2
CS	0.350	0.06	0.5	0.25	2

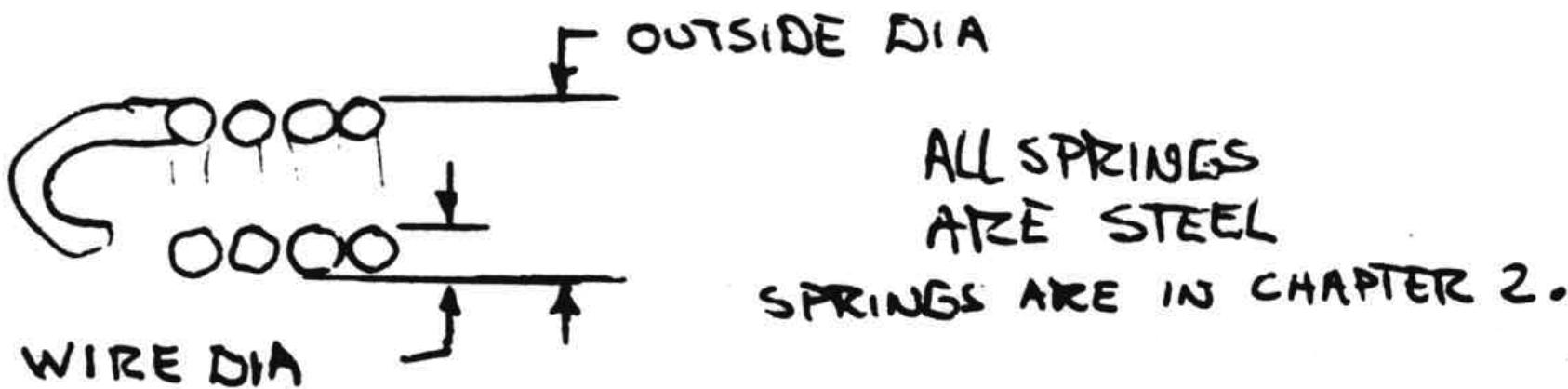


Figure 17-3: Spring dimensions

STEP THREE - PITCH TRIM INSTALLATION

NOTE: Pitch trim is **not** shown on A7 or A8 drawings.

Cut two 20" length of 7x7 1/16" dia. aircraft cable. Using two AN100-3 {Thimbles} and two 18-1-C {sleves}, swage one end of each cable to PTH. Install PTH as shown using **all** the hardware shown in {Figure 17-4 }section A-A. Cut two 2" lengths of polyflow nylon conduit and flox to instrument panel holes. Thread the cable thru and swage the ends at the 5.6 and 6.2 dimensions with the PTH handle at the **neutral trim position**.

Install AN100-3 thimbles in the elevator bracket (PTB chap. 11 {Figure 11-33}). Sew the PTS springs on as shown with two loops of .041 stainless safety wire. Now, install the canard and hook up the springs. The elevator should sit at zero degrees with the handle at neutral trim. After left console installation, cut the required slot to allow full travel and mark the "takeoff" position. Leave a 1" hole in the console to allow adjustment of the lower bolt to change the friction. Adjust friction to **just** hold PTH at full aft trim with full forward stick. Springs should never be slack.

This rigging should give you a trim authority sufficient to fly hands-off at 60 knots at aft trim or hands-off at 170 knots at forward trim. If your trim is insufficient on either end of the range you can make a minor adjustment by shortening one of the PTS springs-up to 1 1/2 inches shorter. If this is

insufficient, your elevator contour is incorrect. Further trim authority adjustment must be done either by correcting elevator contour or by adding a fixed trim tab to the elevator.

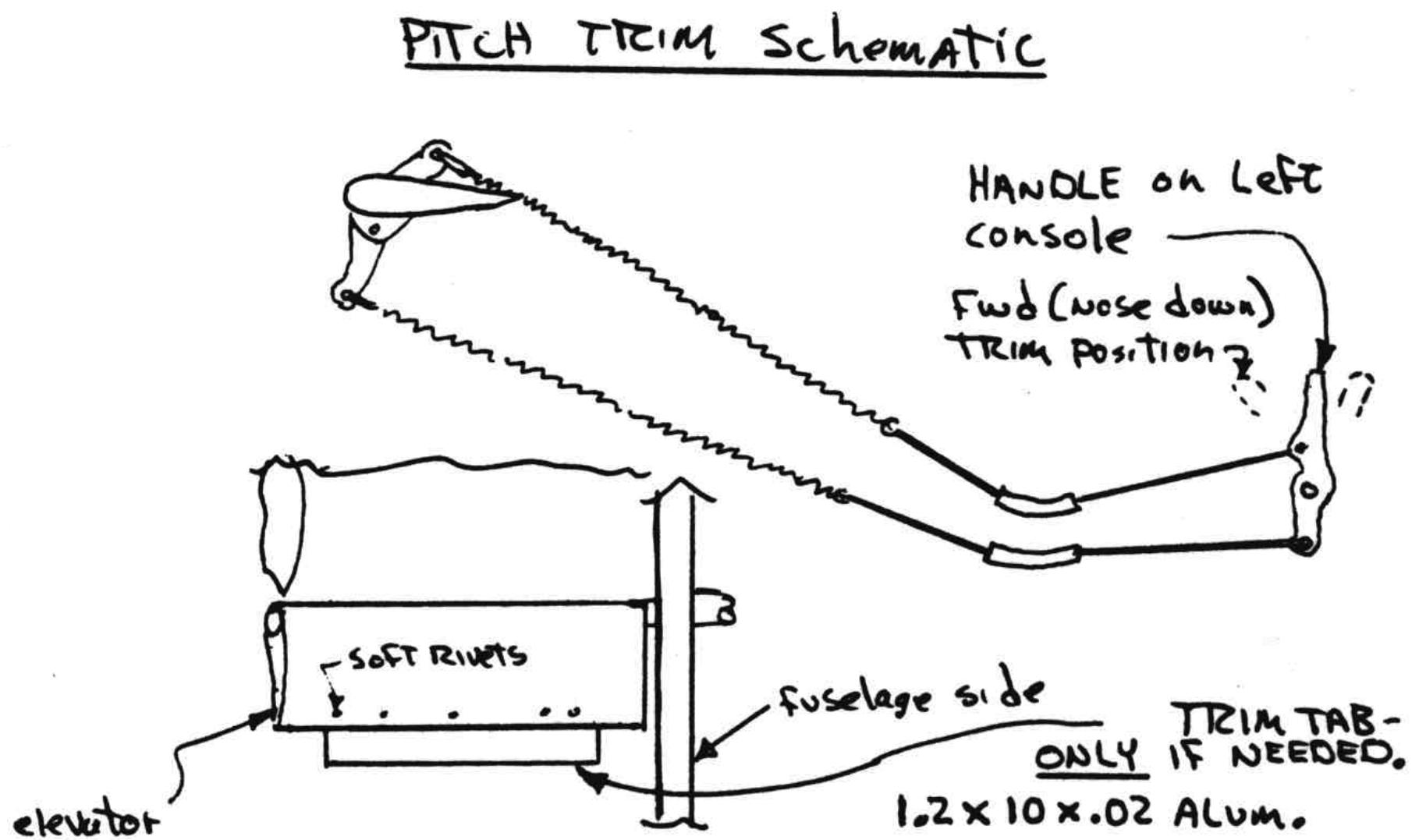


Figure 17-1: Pitch trim overview

Note: the pitch trim system provides redundancy for the pitch control system. The airplane can be easily flown and safely landed using only the trim.

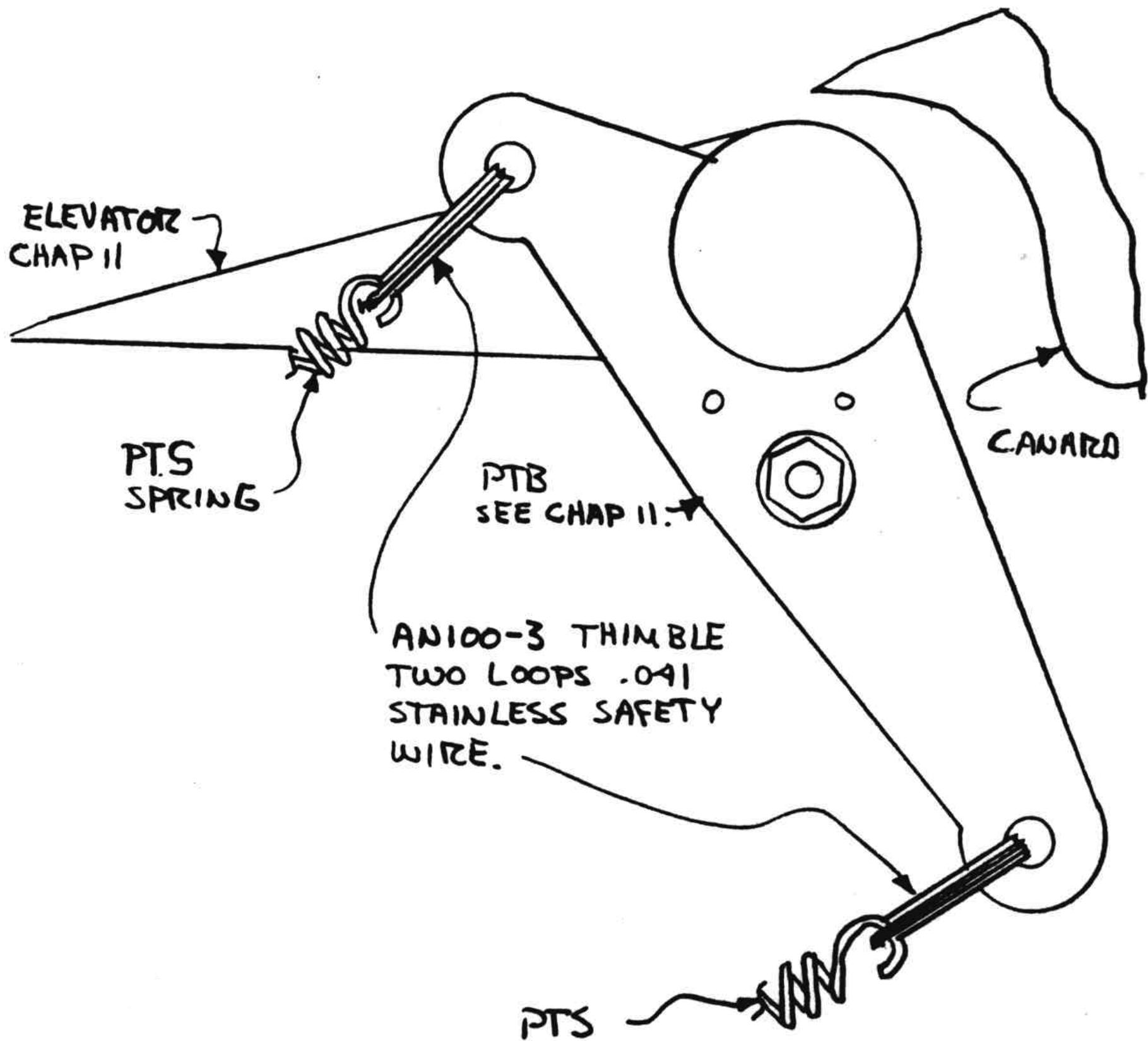


Figure 17-2: Pitch trim springs mounting

Springs Pitch & Trim

Part No.	Outside Dia.	Wire Dia.	Unstretched Length	Installed Length	No. Reqd.
PTS	0.350	0.05	6.0	9.0	2
RTS	0.350	0.05	2.0	3.0	2
CS	0.350	0.06	0.5	0.25	2

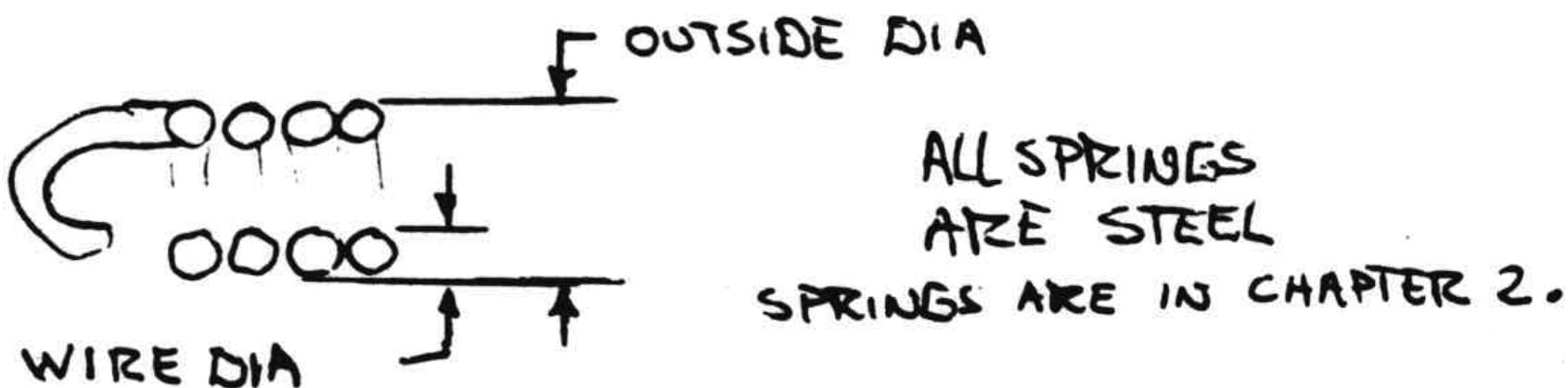


Figure 17-3: Spring dimensions

STEP FOUR - ROLL TRIM INSTALLATION

Using two loops of 0.041 safety wire and an AN100-3 thimble, sew the two RTS springs to the two RT2 brackets and the RT1 trim handle. Bolt the two RT2 brackets to the CS105 torque tube with two AN3-11A bolts (see view X-X and pg. A-8). Clear the console if required to allow full stick travel.

Pull RT1 down and bolt to RT3 using **all** the hardware shown ({Figure 17-5} section B-B). Tighten the lower friction adjustment enough to **just** hold RT1 at full right trim with full left roll stick control. At this condition the inboard spring is just slightly slack.

Roll trim authority is sufficient to handle normal asymmetries (fuel/baggage, etc.) at all speeds, to allow "hands-off" cruising. If more trim is needed it is because of a crooked aileron or wing and must be adjusted with a shim washer to change wing incidence. The cosmetic cover for the stick area must be slotted to allow full travel of the roll trim tab. Mark the slot "Lt--Roll Trim--Rt".

Prefab Parts Available

Quantity	Name	Figure
1	PTH	17-7
1	RT1	17-5
2	RT2	17-5

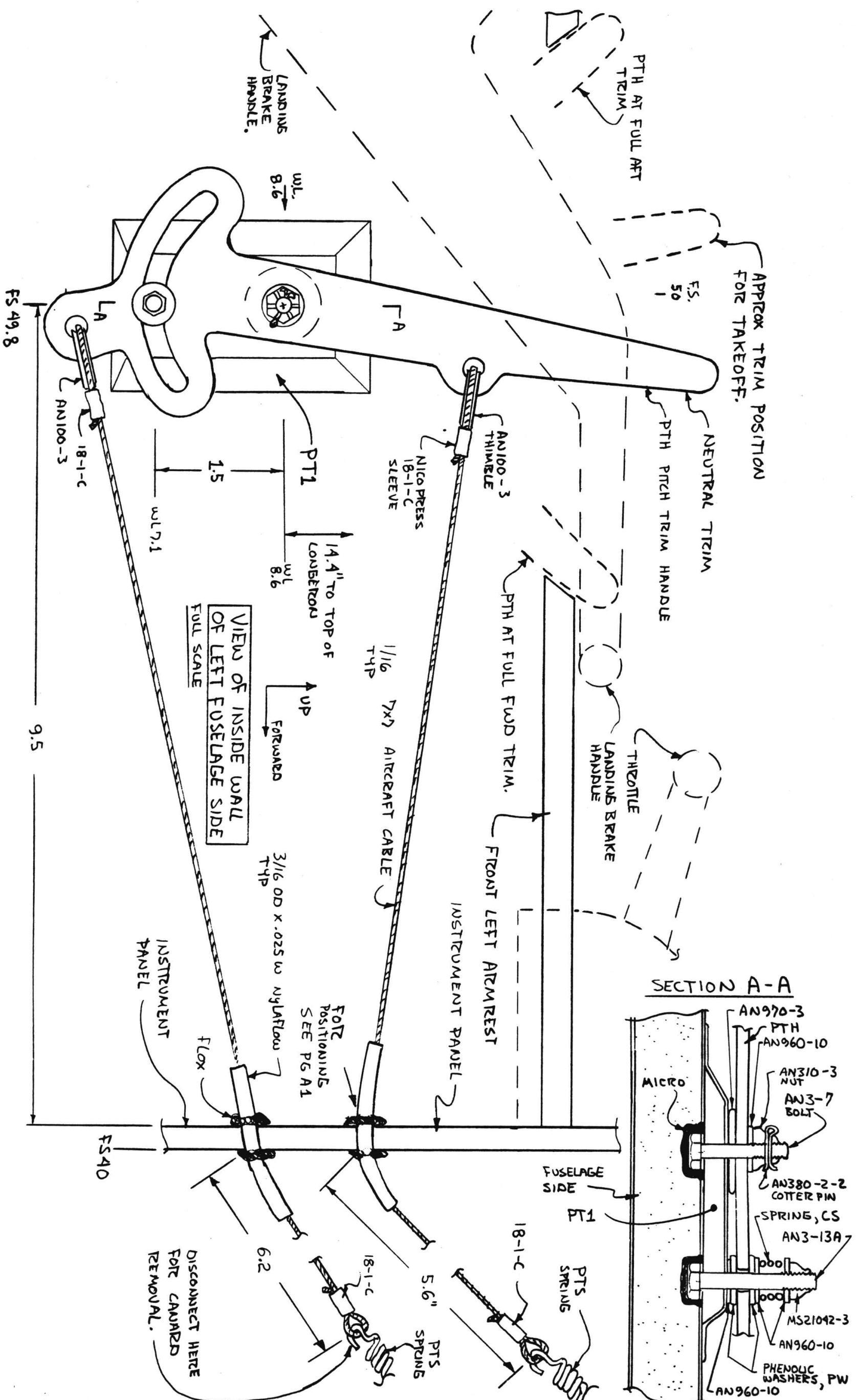


Figure 17-4: Pitch trim system

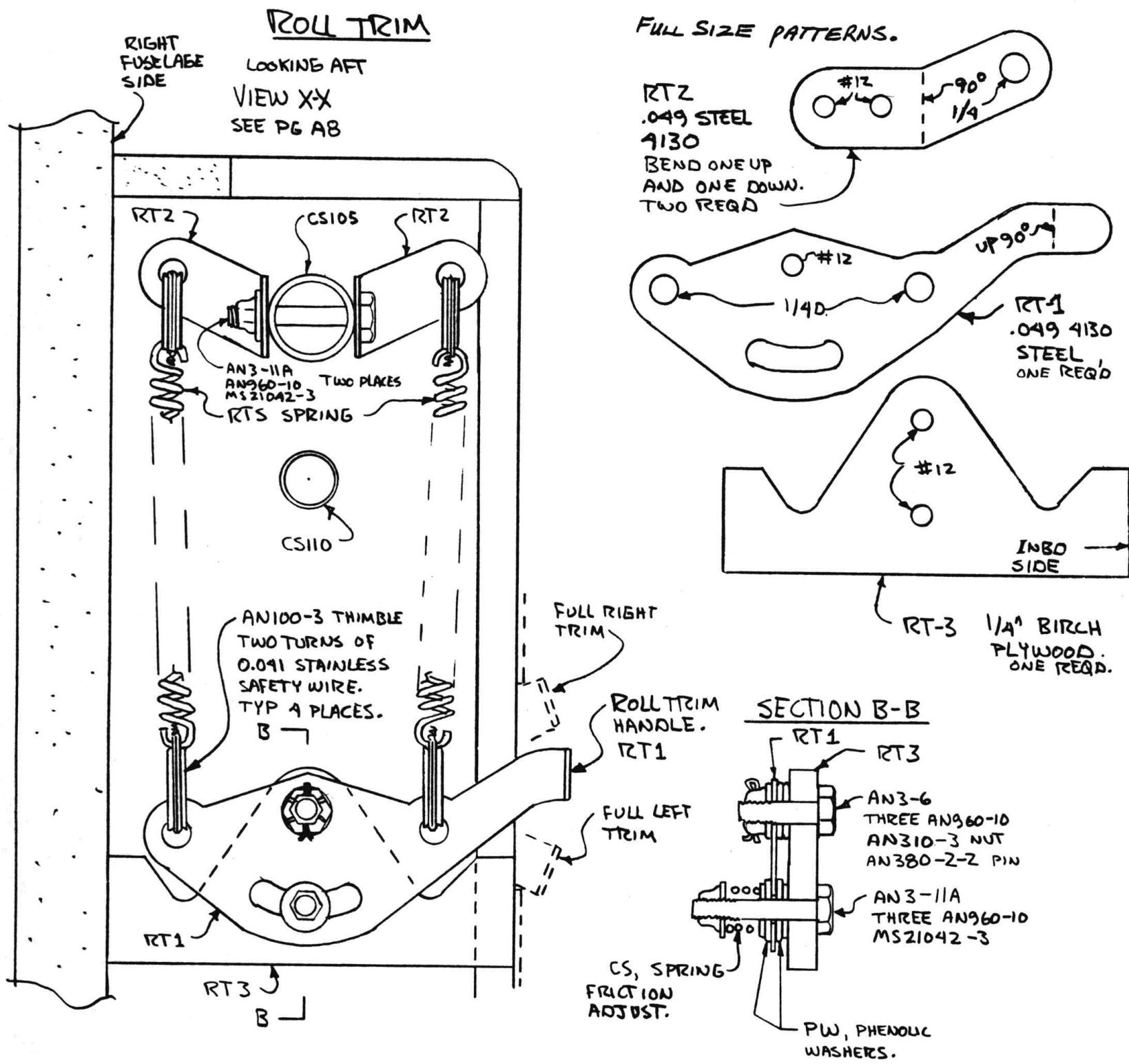


Figure 17-5: Roll trim system

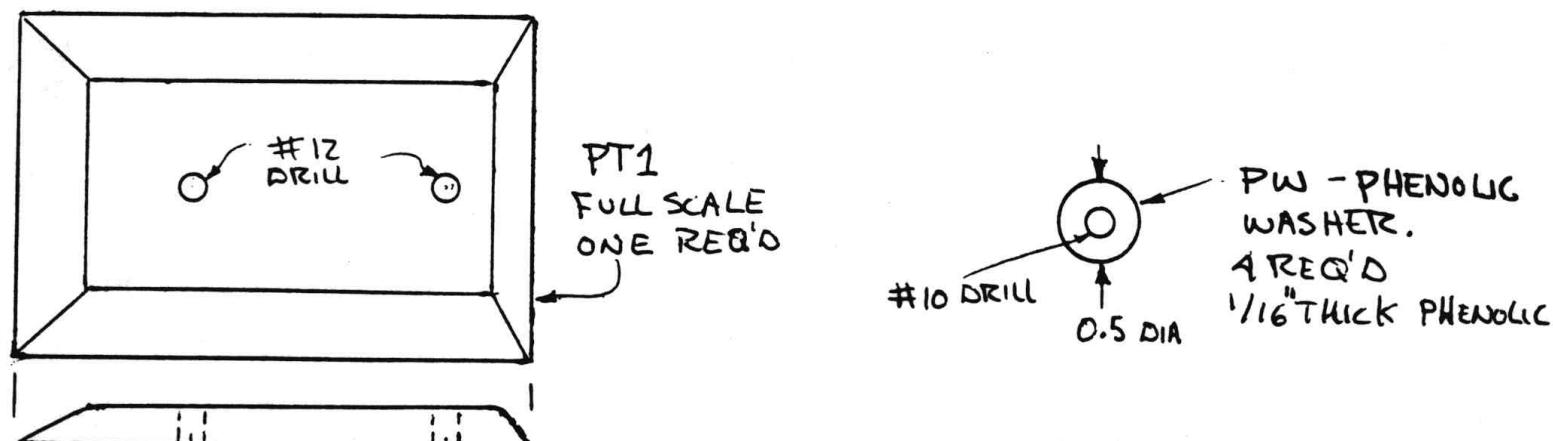


Figure 17-6: Pitch trim mounting block

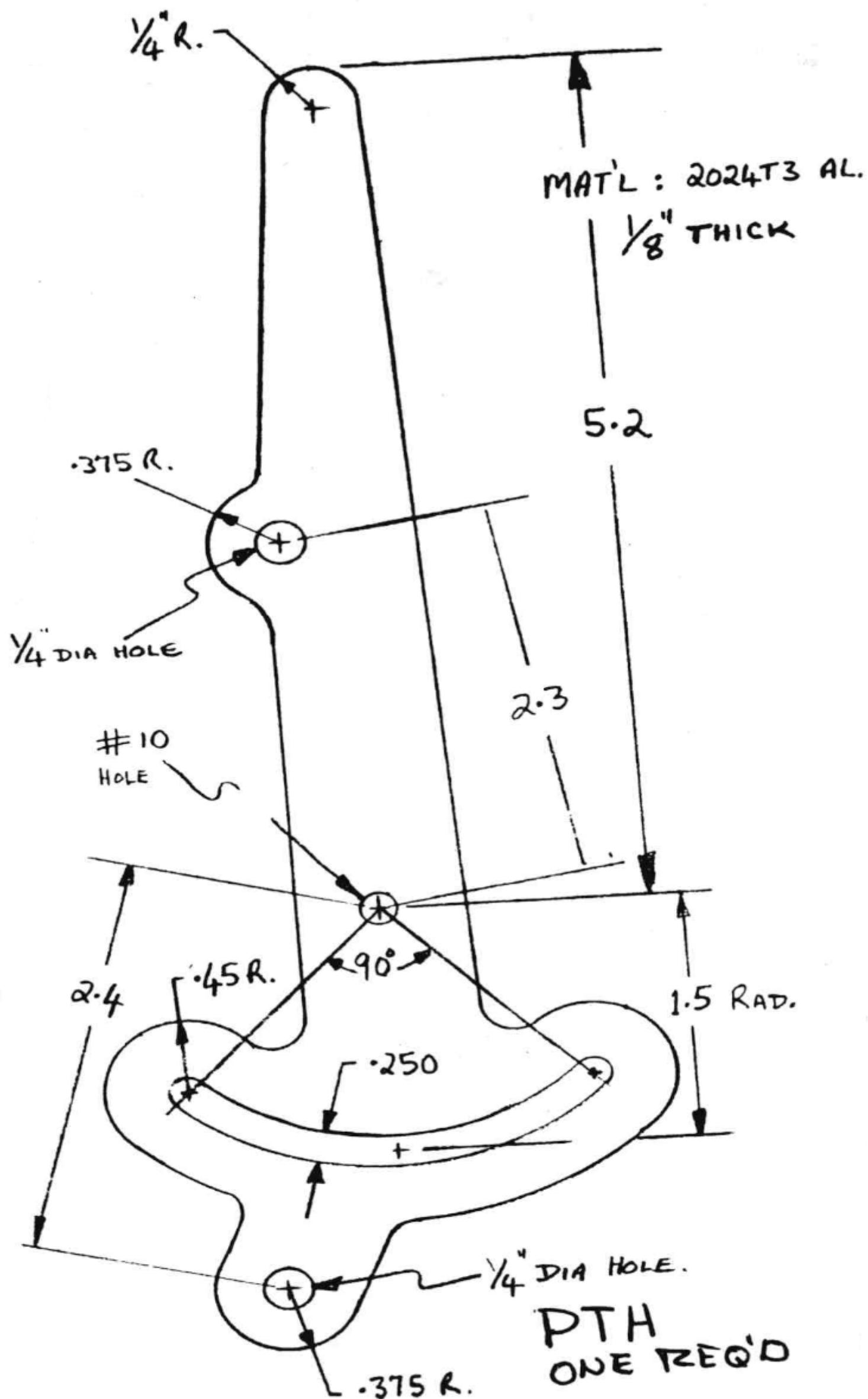


Figure 17-7: Pitch trim handle