

SERVICE

MEMO

Service Memo No. 21

MODEL PA-22 RIGGING PROCEDURE (Supplement to PA-20 Rigging Procedure)

The rigging procedure for the PA-22 is the same as the PA-20 with the exception of the interconnection of the rudder and aileron control system, which is as follows:

In the control system of the Piper Tri-Pacer to provide automatically coordinated aileron and rudder controls for simplified air control, and to increase stability in flight, the aileron control cables are connected to the rudder cables by means of an interconnecting cable. The interconnection incorporates a spring and is arranged so that although in level flight a movement of the ailerons results in the proper rudder action to give coordinated turns, still the controls can be crossed if desired to obtain slips or skids.

In rigging the control system of the PA-22, this procedure should be followed

1. Center the nose wheel, rudder pedals, rudder and ailerons with the interconnecting cables slack at turnbuckles, located behind the baggage compartment.
2. Check the airplane in flight for proper trim with the interconnecting cables slack
3. During the flight check, if ailerons do not line up with the flap trailing edges equally adjust the aileron tab to obtain proper aileron position.
4. If airplane is wing heavy with ailerons in proper position, adjust the rear strut fork on the wing heavy side inward to obtain correct trim. Each ten degrees of wing heaviness in flight requires approximately one turn of the strut fitting.

If the airplane skids in flight when the wings are level, it is out of rig directionally. To correct this condition, bend the leading edge of the fin in the direction towards which the airplane skids. Be careful not to depress the fin far enough to cause fabric wrinkles.

6. After the plane is trimmed properly directionally and laterally, tighten the interconnecting cables with the coil springs just beginning to become extended.

Check the trim of the plane in flight again to see that trim has not been affected by step 6, and to see that interconnecting cables are at correct tension to give properly coordinated controls. If the interconnecting cable tension is excessive, too much rudder movement will result from aileron movement, causing a skid. If the cables are not tight enough, the rudder will not move far enough when the control wheel is rotated to give coordinated turns. Proper tension will give coordinated turns at cruising speeds when either the wheel or the rudder controls are moved.

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PA-20 LEVELING AND RIGGING PROCEDURE

(1). Leveling: Place adjustable jacks or blocks under the axle extension so that the jacks or blocks do not touch the brake lines or connections. Raise each wheel by pushing up on the lift struts on one side and pulling down on the opposite side. All lifting or pulling pressure must be applied as near to the wing attachment points as possible so as to be sure that the lift struts will not be bowed. Raise the tail to approximate level flight position and support it on an adjustable jack or block.

To level the airplane laterally and longitudinally, drop a plumb bob on a string from the hole located on the side of the upper door frame member approximately 5-3/4 inches aft of the front door frame member, to the center punch mark located on the seat front cross tube just inside the door. Adjust the jacks or blocks until the plumb bob centers over the mark.

(2). Dihedral Angle: Stretch a length of string from wing tip to wing tip along the top of the wing at the front spar location. Measure down from the string to the top of the fuselage front wing hinge fittings a distance of 4-7/8 inches. Adjust the front lift strut fork fittings in or out to produce this dimension.

To check for equal dihedral in each wing, use a 30 inch level held spanwise against the underside of the wing at the front spar location. Note the amount of off level on one wing and see if the other wing has the same amount of off level. Adjust the front lift strut forks in on one side and out on the other to get the same amount of off level in both wings. Check the 4-7/8 inch dimension after this adjustment to see that it has not been affected by the equalizing adjustments.

(3). Wash Out: Place a 1-3/8 inch block under the wing at the rear spar location at the outboard aileron rib. Place a 30 inch level chordwise across this block with the front end of the level at the front spar location. The bubble will center if the wing has the proper 2-1/2 degree washout. Adjust the rear lift strut forks in or out to bring the bubble to center.

(4). Tail Assembly: Level the stabilizers at the rear spar with the airplane in level position. Adjustment is accomplished by the tightening and loosening of the tail brace wires. Take up as many turns as the opposite wires are let out, to keep the same tension on the wires. Do not scratch or mar the wires with pliers or wrenches, as this may cause the wires to fracture.

Over -

Plumb the rudder hinge line. Slight adjustments can be accomplished by firmly pushing against the fin rear spar in that direction required to bring the hinges in line.

(5) Control Surface Travels:

Aileron	15° up	15° down
Elevator	24° up	12° down
Rudder	16° R	16° L
Stabilizer	1° up	6-1/2° down
Flaps	40° down	
