

S/N 22-7282

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INSTRUCTIONS FOR INSTALLING STODDARD WING TANKS
IN PIPER PA-20 and PA-22 AIRPLANES PER STC SA12AL

Read the complete instructions and make sure you understand them before starting the job.

1. Remove fairing strips from around root of wing. Remove lid from Piper tank and remove tank.
2. Locate position where auxiliary tank is to be installed. Secure four aluminum channel braces (Piper P/N 12252-03) for each tank to be installed. These are longer than necessary and should be cut down to an appropriate length as shown in Drawing number 431. Cut holes in the top fabric of the wing as shown in Drawing 431. Attach the channel braces across from the flange of the spars to the web of the top capstrip of the rib using number 4x½ P-K screws. The bottom of the ribs need no support as the bottom fabric will not be removed. (When lowering the tank into place, the two P-K screws fastening the braces to the INBOARD rib will have to be temporarily removed to permit the fuel gauge unit to enter past the top of the rib. Replace the P-K screws immediately when this has been accomplished.)
3. After these channel braces have been installed, cut the top wing fabric from between the ribs and from a couple of inches ahead of the front spar to a couple of inches aft of the rear spar, being very careful NOT to cut any of the rib stitches. Determine location on spars where brackets will rest and cut holes in the BOTTOM wing fabric for the brackets to protrude through. Allow enough room to bend the brackets up under the spars. Cut away sufficient of the leading edge material (both top and bottom) to permit the tank attachment bracket to drop into place and the lower ends of the bracket to be bent up under and against the front spar. Wrap the places on the spars where the brackets will be with two or three layers of masking tape to prevent the possibility of chafing the spars. Remove drag and anti-drag wires to permit tank to be lowered into place. Also clip the protruding ends from the nose-rib that extends into the tank area and cut the herringbone tape cross-bracing from the area and tie to the respective ribs.
- 4A. PA-20 and PA-22 AIRPLANES TO AND INCLUDING SERIAL NUMBER 22-2424 (125 and 135 hp). Auxiliary tank area will be TWO bays out from the main tank or there will be about 22 inches between the two tanks. Drag and anti-drag wires cross in the tank area and will have to be discarded and replaced with a drag tube as in the first bay and passing through the tank in the same manner as the one through the main tank. Brace tube for this purpose will be Piper

part number 10641-00 and should fit exactly as it comes from the factory. If it should not, then reform a new end on one end that will make the tube fit properly. Try the tube for length by installing it temporarily in place before the tank is installed. After the tube is determined to be the correct length, solder a 10-32 elastic stop-nut to each end, over the hole so that the nut is on one side at one end and on the other side at the other end. When the tube is installed, the side with the nuts on should be turned toward their respective spars to facilitate installing the 10-32 bolts. Be sure to put the tube through the tank before it is completely lowered into place. A hole will have to be cut through the top wing fabric to permit this. The location of the hole will be obvious and the tube will be inserted from the rear of the wing, inboard of the tank toward the front and through both ribs. The whole unit should then lower into place. This tank has a capacity of 12 U. S. gallons.

- 4B. PA-22 AIRPLANES. SERIAL NUMBER 22-2425 and UP (150 and 160 hp and PIPER COLT). Auxiliary tank area will be ONE bay out from the main tank. There will be approximately 12 inches between the main and auxiliary tanks. Drag and anti-drag wires will be reinstalled and adjusted after the tank has been lowered into place. The airspeed tube bracket will have to be removed from the front of the rear spar in the LEFT wing and mounted on the rear of the spar, using the same mounting holes through the spar. This tank has a capacity of 11 U. S. gallons.
5. After the tank has been lowered into place, check where the drain fitting presses against the bottom wing fabric. With the point of a sharp knife, cut the fabric around the outline of the fitting so the fitting can protrude through and let the tank go all the way down to its final place. Have someone hold down firmly on the top of the two rear corners of the tank while the rear tank bracket is bent up firmly under the spar. Now do likewise at the front of the tank. Drill 3/16" holes through the brackets just ahead of the front spar and just to the rear of the rear spar and install the special bolts furnished. Drill the holes as close to the spars as possible without letting the bit touch the spars. Tighten the bolts firmly, but not excessively. Excessive tightening will distort the spar. Should slack show up in the masking tape, the bolts are too tight and must be loosened.
6. Install fuel lines (aluminum or aluminum alloy) from the auxiliary tank outlets parallel to the spars, just aft of the front spar and just ahead of the rear spar. The rear line will curve under the rear inboard corner of the main tank and proceed forward and "T" into the front line near the front door-post. Where the lines cross ribs

or other structure, they should be protected with short pieces of automotive loom or other suitable substance and properly attached to the structure for support.

7. At this point, the wiring for the fuel gauges should be attached to the terminals of the tank units. Wire should be 18 gauge and long enough to reach the indicator units located on the instrument panel or somewhere within the vision of the pilot. If the airplane already has dual indicators, this will be all you will need as a throw-over switch will enable you to use these indicators for all of the tanks. One position will give an indication for the main tanks and the other position for the auxiliary tanks. If the airplane has only one indicator with a throw-over switch for the right and left tanks, leave this assembly as it is and install another indicator and switch in some suitable location to handle right and left auxiliary tanks. Fuel gauge installation should be in accordance with manufacturer's instructions.

NOTE! See that the auxiliary tanks are grounded to the aircraft structure or the gauges will not function!

8. Patch all of the small holes you have cut in the top or bottom of the wing with individual patches BEFORE putting the fabric over the tank. THIS IS IMPORTANT. Cut a piece of fabric at least four inches longer and wider than the tank. Cut a hole to accommodate the filler neck and dope over the entire tank. Use fabric cement on the top of the tank for a good bond and dope down smoothly over the area. Cut a neat round grommet from fabric and dope around filler neck.
9. Finish the doped area to match wing, reinstall factory tank, tank cover, and fairings. Use standard Piper filler caps. (When the installation is in a plane having 150 or 160 hp engine, it may be desirable to provide a 3/8" copper tube gooseneck vent in the caps and install a placard "Face Vent Forward" on the wing. This will give a slight pressure to the fuel in the tanks and expedite the flow. PLACARD ALL TANKS FOR APPROPRIATE CAPACITY AND OCTANE RATING.
10. PLUMBING WITHIN THE CABIN OF ALL MODELS. Remove the fairings from the sides of the windshield, both those around the leading edge of the wing and on the inside of the cabin, going from the top of the door-post down to the instrument panel. The lines and the wiring to the fuel gauges will go inside these fairings. They also cover the aileron control cables and care must be observed to ascertain that the cables do not touch any of the lines or wiring. Leave the LEFT MAIN tank plumbing exactly as it is but cut the line coming across just back of the instrument panel (the fuel line from the RIGHT MAIN

tank to the selector valve). Cut it as close to the selector valve as practical and connect the line from the LEFT AUXILIARY TANK by using 3/8" I.D. fuel hose and clamps per Drawing 429. Change the placard on the selector valve from "RIGHT TANK" to "LEFT AUXILIARY TANK". This completes the plumbing for BOTH left tanks. The other end of the right main tank line should be cut 6" to 8" from the tee joining the forward and rear lines from the right main tank.

11. Obtain a standard Piper selector valve P/N 11383-03 and mount it on a suitable bracket attached to the bottom of the instrument panel under the RIGHT control wheel. (Some latitude is allowable as to whether it is directly under the wheel or just to the right or left.) Mount the valve so the outlet is directly DOWN so NO water trap will be formed. Now connect the line from the tee joint from the RIGHT MAIN TANK and the line from the RIGHT AUXILIARY TANK to the INLET SIDES OF THIS VALVE. One line will connect with a straight line to the valve and the other will require two 90° elbows. The right main tank line may be connected using 3/8" I.D. hose per Drawing 429 as an alternate method. SEE THAT NO LOW SPOT IS CREATED IN THE LINES TO FORM A WATER TRAP. Install a 90° elbow in the OUTLET of the valve and run a 3/8" fuel line down toward the firewall and across to the brass elbow at the fuel strainer. Fasten the line to the firewall with an Adel clamp somewhere near the bend in the line so it will be properly supported and determine that the line DOES NOT INTERFERE WITH THE OPERATION OF THE CONTROL COLUMN in any position. Remove line from brass elbow at the fuel strainer and remove elbow. Modify elbow as per Drawing 428 and check for fuel flow restriction. Reinstall the elbow and connect the lines, using fuel hose to connect the line from the RIGHT tanks. Placard RIGHT selector valve appropriately and replace all fairings. Tanks are installed in accordance with STC SA12AL. Use actual weight of parts installed. C.G. is 23" aft of the wing leading edge. USE AUXILIARY TANKS (ONE AT A TIME) IN LEVEL FLIGHT ONLY. USE FULLEST MAIN TANK FOR TAKE-OFF AND LANDINGS.
12. If only one auxiliary tank is installed, the original fuel system is not altered. The auxiliary line routing is the same as described for the right auxiliary tank in instruction 11 except that a single shut-off valve, Imperial P/N 58 is installed. The connection between the valve and the #428 fitting is identical. If the installation is in the left wing, the valve will be located under the left control wheel. Placard the valve for the appropriate off-on positions. Check opening through valve to make sure its I.D. is at least 5/16".