

Custom Kit



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INSTALLATION INSTRUCTIONS ALL METAL EMPENNAGE SINGLE COCKPIT ONLY

KIT 407

REVISED 3/12/90
REVISED 3/30/90

MANUFACTURE AND INSTALLATION OF AYRES CORPORATION CUSTOM KIT CK-407 IS FAA APPROVED FOR MODELS AND SERIAL NUMBER EFFECTIVITIES UNDER AYRES CORPORATION PRODUCTION CERTIFICATE NO. 5SO.

EFFECTIVITY:	MODEL	SERIAL NUMBERS
	S2R-T34	600 - 6049, T34-001 & Up
	S2R-T15	T15-001 & Up
	S2R-T11	T11-001 & Up
	S2R	1416R & Up

LIMITATIONS AND CONDITIONS: The approval of this change in type design applies to the basic aircraft of the specified models that are otherwise unmodified. This approval should not be extended to other aircraft of these models on which other previously approved modifications are incorporated unless it is determined by the installer that the interrelationship between this change and any of those other previously approved modifications will introduce no adverse effect upon the airworthiness of that aircraft.

(1) FABRIC TAIL REMOVAL

- A. Remove fuselage side panels left and right from cockpit aft.
- B. Disconnect tail nav light wire at junction.
- C. Remove the rudder cable/horn link bolts at cable end. New and different links are supplied.
- D. Remove the bolts that attach the two horizontal stabilizer L/E braces to the lower fuselage, top and bottom. The stabilizer braces will not be used.
- E. Remove the rudder, flying wires, vertical stabilizer, elevators and horizontal stabilizer. New hardware is supplied. The trim tab linkage should be disconnected at the forward end of the second rod forward from the tab. New tabs, rods, and bellcranks are supplied.

(2) FUSELAGE REWORK

- A. Remove the 10227-3 Plate shown on ESK 401 (Upper Aft Fuselage Repair). Grind tubes smooth.
- B. Locate and weld on the -3 split fish-mouth tube, both sides per ESK 401.

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- C. Locate and weld on the -2 plate per ESK 401.
- D. Wirebrush, sand, prime and paint.
- E. Drill out rivets, grind off channel P/N 10952-3, discard it, prime and paint ground-off areas on fuselage
- F. Using the dimensions shown on DWG ESK 407, locate and clamp in place the 21130-1 bulkhead provided. Backdrill through pilot holes in bulkhead, through skin, four places.
- G. Attach per ESK 407
- H. Trim out turtleneck skin to clear horizontal stabilizer.
- I. For S2R S/N 1416R and Up, relocate battery forward to engine mount per DWG 90067. Rewire battery and relay with new wires per ECN 90326 AJ-8 and ECN 90326 AJ-16
- J. For S2R S/N 2580 and Up, add lead shot to engine mount ring and tubes -14 and -15 per DWG 60501 ECN C-2, Sheets 1, 2, and 3.

(3) INSTALLATION PROCEDURE

- A. Horizontal Stabilizer - Install per DWG 40220. Some minor finish trimming of the turtleneck may be required.
- B. Horizontal Stabilizer Struts - Install per DWG 40220 and these instructions:
 - 1. Begin by installing one each P/N 40024-10 Plate tightly on top of the existing flying wire attach points on L & R lower fuselage, long end aft.
 - 2. With struts laying V-end to V-end and streamline section forward, the aft tube will have a small rectangular section of weld line at the V-end on one side only. This is the top side, the bottom side has a symmetrical weld on the aft tube.
 - 3. With rod ends and spacer P/N 40024-3 screwed all the way in finger tight, pin struts to the stab with bolts only (no nuts).
 - 4. Swing V-end up to the plate installed at the flying wire attach point, observe the relationship of the strut/plate faces.
 - 5. Bend the flying wire attach on the fuselage up as required to match the face planes of the strut and plate. A slight twist in pitch may be required on the flying wire/strut attach.
 - 6. Adjust rod ends as required to bring the strut as close as possible to attach without touching. The strut should be centered fore and aft with rod ends torqued to not less than 100 in-lbs, nor more than 190 in-lbs. Use shim washers P/N 21194 as req'd to achieve proper strut end/flying wire relationship, rod end/stab attach alignment and proper torque simultaneously.
 - 7. Clamp the strut to the plate on assy and match drill two holes .318 .312 (5/16) in the plate. Remove plate and match drill with another. Install and tighten all bolts and nuts, left and right.

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- C. Elevators - Install per DWG 40220
- D. Elevator Trim Tabs - Install tab bellcranks and rods per DWG 70273 Sheet 2.
- E. Vertical Stabilizer - Install per DWG 40220 except: The -30 shim (tapered) as required (to adjust hinge bearing alignment. See Step 4). The -33 shim as required.
 - 1. Attach stab loosely at fwd point.
 - 2. With the -33 shim in place at the lower fuselage clamp and drill through pilot hole in stab spar, thru shim into existing hole. Bolt tight. Drill and bolt the remaining three holes.
 - 3. Glue squarely a stack of 5 -33 shims. Place between stab spar and and upper fuselage attach. Drill and bolt as described previously (E-2).
 - 4. Check stab/rudder bearing alignment. Stretch a tight string from top bearing through center to bottom bearing hole. Measure fwd, aft, left and right. Observe relationship of string average to center hole. Add or subtract -33 shims as required to align center bearing fore and aft. A lateral correction can be made with a tapered -30 shim top or bottom as required.
 - 5. Trim turtledeck skin to clear vertical stabilizer closeout fairing.
- F. Rudder - Install per DWG 40220. Connect Tail Nav Light. Install rudder ground wire P/N 90176T-70.
- G. Rig all control surface travels to original specifications. Record.
- H. Inspect Complete. Close up aircraft.
- I. Flight Test, Log Entries, FAA Form 337 -

"Ayres Custom Kit 407 "Metal Empennage" installed
on _____ (date) _____ by _____ (Signature) _____."

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J. Weight and Balance

TURBINE POWERED AIRPLANES

	WEIGHT (lb)	ARM*(in)	MOMENT (in-lb)
ADD:			
Tail Weight	47	218.1	10251
Additional Ballast Wt	**	-68	**

NOTE:

- * Datum is the Wing Leading Edge.
- ** Add the Tail Weight and Moment to the current airplane empty weight and moment. Using the airplane empty weight and a moment corrected for addition of the tail, recompute the "Aft C.G. Check" using the form provided in the "Aircraft Weight and Balance Report". By trial, calculate the shot ballast (for the ballast tank at -68) that is required to keep the loaded airplane within its certificated aft CG limits. Add this amount of shot to the ballast tank and record it.

PISTON POWERED AIRPLANES

	WEIGHT (lb)	ARM*(in)	MOMENT (in-lb)
Model S2R:			
ADD: Tail Weight	127	30.0	4410

- * Datum is the Wing Leading Edge