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CHAMPION AIRCRAFT CORPORATION

REPORT S.L. #60

APPROVED BY _____

SECTION .0, .1.0 FORWARD

This Service Letter outlines the necessary changes required to convert a Model 7EC to a Model 7GC using a carburetor type engine.

.1 GENERAL

The Model 7GC aircraft differs from the Model 7EC by an increased gross weight and speed, higher horsepower engine, strengthened landing gear axle, revised fuel system, revised electrical system (optional), strengthened rear wing lift struts, certain structural changes in the fuselage, revised elevator control system, change in aileron control surfaces movements, revised wing tip. Note: Certain Model 7EC aircraft may have some of the required changes accomplished such as strengthened landing gear axles, strengthened rear wing lift struts, required structural fuselage member changes and revised wing tips. See applicable sections for details.

1. The basic wing structure of the Model 7EC is identical to the 7GC except for the fiberglass wing tip and fuel tank area. See Section, Wing Changes.
2. Control surfaces are identical, however the elevator control system is revised. See Section .260, Elevator Control System Changes.
3. Fuselage on the Model 7EC differs from the 7GC in the sizes of various members in the fuselage, and miscellaneous fitting or lug changes. See Section .26, Fuselage Changes.

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4. The landing gear axles on the Model 7GC are strengthened over the Model 7EC by the welding of reinforcement plates to the oleo mounting lugs. The oleo itself is identical.
5. The Continental C90-12F 90 h.p. engine is replaced with a Lycoming O-290-D2B 135 h.p. engine. See Section, Engine Changes.
6. The change in the aileron control surface movements is shown in Section .29, Aileron Travel Changes.
7. The present instrument panel and instruments in the Model 7EC are also satisfactory for use in the Model 7GC. There is a change, however, in the instrument markings and placards. See Section, Instrument Markings and Placard Changes.
8. See Section "Weight and Balance Changes" for changes in C.G. limits, gross weight, etc.
9. The required fuel system changes are covered in the Section "Fuel System Changes".

It is suggested that the owner making this 7EC to 7GC conversion have on hand the latest copy of Aircraft Specification A-759. Copies of this Specification can be obtained from the Superintendent of Documents, Washington, D.C.

2 DESCRIPTION OF CHANGES

The following sections list the required changes, parts and/or Kits required to convert the aircraft.

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.20 ENGINE CHANGES.200 ENGINE

The Continental C90-12F 90 h.p. engine is replaced with a Lycoming O-290-D2B 135 h.p. engine. Champion Aircraft Kit No. 212 provides the necessary parts and instructions to install the 135 h.p. engine.

.201 BAFFLES

Champion Aircraft Kit No. 213 provides the necessary parts and instructions to install baffles on the 135 h.p. engine.

.202 MUFFLERS

Champion Aircraft Kit No. 214 provides the necessary parts and instructions to install mufflers on the 135 h.p. engine.

.203 COWLING

The engine cowling is replaced with the following items:

<u>Part No.</u>	<u>Item</u>	<u>No. Required</u>
4-1102	Cone	1
7-1091	Upper Cowl	1
7-1092-4	Lower Cowl	1
7-1129	Nose Bowl	1
AN350-1032	Wing Nut	1
AN526-1032-8	Screw	23
AN936-A10	Washer	1
AN960-10L	Washer	24
CA161PL	Filter	1
7-1134	Installation Dwg.	1

Installation of above items shall conform to drawing 7-1134.

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.204 MISCELLANEOUS

.2040 WRAPAROUND

The original wraparound may be retained, or modified (depending on original Part No.) or replaced with a new wraparound.

1. If the Model 7EC was equipped with the 13 gallon fuel tank in the nose, the existing wraparound must be modified to a 7-509-4 or -5 part. The 7-509-4 wraparound is to be used with the 5-260 standard low instrument panel. Sketch No. 1, Wraparound Modification, provides the necessary information to modify the existing 7-509-1 wraparound for use with 5-260 instrument panel.
2. If the Model 7EC was equipped with two 13 gallon fuel tanks in the wings the 7-509-4 wraparound does not require modification (if the standard 5-260 low instrument panel is used). Modification is required if the 7-1103 or 7-1120, 7-1079 Radio Instrument Panel is desired. Sketch No. 2 Wraparound Modification, provides the necessary information to modify the existing 7-509-4 wraparound.
3. If the Model 7EC was equipped with two 13 gallon fuel tanks in the wings and either the 7-1079, 7-1103 or 7-1120 Radio Instrument Panels, no modification of the wraparound is required.

Only Model 7EC aircraft manufactured after approximate dates shown could be factory equipped with the indicated panels.

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<u>Part No.</u>	<u>Date</u>
7-1079	August, 1957
7-1103	October, 1958
7-1120	March, 1962

Model 7EC aircraft manufactured prior to August, 1957 in all probability would be factory equipped with the standard 5-260 panel unless aircraft has been altered in the field.

4. New Wraparound, Part No. 7-509-5, may be purchased if desired. Any of the noted instrument panels may be used with this wraparound.

.2041 FIREWALL

The existing 7EC firewall must be modified by the addition of new holes, covering of unused holes, installation of fireproof grommets for engine controls, temperature lines, etc. emerging through firewall, oil cooler stiffener, new gascolator. Champion Kit No. 215 provides the necessary parts and instructions to modify the existing Model 7EC firewall.

.2042 SPINNER

A propeller spinner is available as an optional item. The following parts and instructions are included.

<u>Part No.</u>	<u>Item</u>	<u>No. Required</u>
1-8801	Washer	8
AN526-1032-10	Screw	8
3-1082	Bulkhead	1
3-1081	Backplate	1
4-1053	Spinner	1
4-1028	Installation Drawing	1

Installation of these items shall conform to Drawing 4-1028.

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.21 FUEL SYSTEM CHANGES

.210 CHANGES IN WING

The fuel tank (5.5 gallon) or tanks (5.5 gallon or 13 gallon) are removed from the wings. Champion Aircraft Kit No. 216 provides the necessary parts and instructions to remove the old system from and install the new 19.7 gallon tanks in the wings.

.211 CHANGES IN FUSELAGE

There are any one of three different fuel systems (fuselage) on Model 7EC aircraft.

1. Aircraft with 13 gallon nose tank. The nose tank and other related items are removed. Aircraft manufactured prior to approximately February, 1956 used this type system.
2. Aircraft with 13 gallon wing tanks using 7-10002 type fuel system. All lines etc. are removed from the fuselage. Model 7EC aircraft manufactured from approximately February, 1956 to July, 1958 used this type system.
3. Aircraft with 13 gallon wing tanks using 7-1102 type fuel system. This fuel system was installed on 7EC aircraft Serial Number 740 and up. The only changes required with this system are: different fuel shutoff valve, valve bracket and fuel line from shutoff valve to gascolator bowl elbow. The 7-1102 fuel system may be identified in the following manner. Remove the top screws in left hand side panel. The main fuel line will be found passing through a grommet in the L.H. upright steel channel.

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Champion Aircraft Kit No. 217 contains the necessary parts and instructions to install or modify the fuel system located in the fuselage. Please specify the type fuel system installed when ordering this kit.

.22 ELECTRICAL SYSTEM

The Model 7EC electrical system must be modified. (Note: An electrical system is not required, however.) Basically, the required changes to the Model 7EC are as follows: The battery is moved approximately 25 inches aft (7EC Models with battery in rear) (Note: some 7EC Models have battery on the firewall. These aircraft were manufactured after approximately April, 1960.) Other required changes are the addition of a voltage regulator and starter solenoid on the firewall, push button starter switch on instrument panel. Wing navigation lights, wires, switch, tail navigation light wires, switch are satisfactory for use in the Model 7GC. The landing lights switch, wiring etc. is also satisfactory for use in the Model 7GC. For Model 7EC aircraft with the battery on the firewall, the battery is removed from the firewall and installed in the rear, the battery solenoid is removed from the firewall and installed the rear. A new battery lead must be installed under the floorboards and run to the firewall. Some Model 7EC aircraft were manufactured without an electrical system, however, in most cases the wing navigation and tail navigation wires are installed. Check for this if the Model 7EC was not equipped with an electrical system.

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Champion Aircraft Kit. No. 218 provides the necessary parts and instructions to modify the existing electrical system in the Model 7EC to that required for the Model 7GC. Please specify the battery location in the Model 7EC so that the kit may be modified as needed for your particular application. For Model 7EC aircraft without an electrical system, please indicate same, so that the complete Kit may be sent.

23 INSTRUMENT MARKING AND PLACARD CHANGES

The instruments must be marked in the following manner.

1. Airspeed: Red line at 162 mph, yellow arc from 120 mph to 162 mph, green arc from 54 mph to 120 mph.
2. Oil Pressure: Red lines at 25 psi and 85 psi with green arc between limits (25 and 85).
3. Oil Temperature: Red lines at 100° and 245° with green arc between limits (100 and 245).
4. Tachometer: Red line at 2800 RPM, yellow arc from 2600 RPM to 2800 RPM, green arc from 1800 RPM to 2600 RPM.

The following placards must be installed on the instrument panel:

1. Placard Part No. 1-1786 reading: "Occupy Front Seat When Flying Solo".
2. Placard Part No. 1-9177 reading: "Intentional Spinning Prohibited".

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3. Alternate Placard Part No. for 1-1786 and 1-9177;
Placard Part No. 1-8912 reading: "Occupy Front Seat Only
When Flying Solo Intentional Spinning Prohibited".

All other placards must be removed from the instrument panel.

The following parts are required for the placard changes:

<u>Part No.</u>	<u>Item</u>	<u>No Req'd</u>
1-1786	Placard	1
1-9177	Placard	1
1-8912 (Alt. for 1-1786 & 1-9177)	Placard	1
AS6-4-4SS	Screw	4

.24 LANDING GEAR CHANGES

No change is required to the oleo unit and case frame now installed on the aircraft. The Model 7EC landing gear axle must be changed. New axles must be purchased as Part No. 7-1080-1 (Note: 7EC Serial No. 705 and up require no change to the landing gear axle.) You must, however, check your axle in the following manner: The measurement across each ear, the lower fittings that the oleo attaches to, should measure .47 for the 7-1080-1 axle. A measurement of .345 across the ears indicates that a new axle is required.

Champion Kit No. 219 provides the necessary parts and instructions to install the new axles.

The original tires and wheels on the Model 7EC may be used. Hydraulic brakes must be installed. If the Model 7EC was equipped with hydraulic brakes, no changes are required as far as wheels, tires, brakes, etc. is concerned.

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Champion Kit No. 189A provides the necessary parts and instructions to install hydraulic brakes in the aircraft, if required.

.25 WING CHANGES

.250 WING FRAME

The basic wing frame assembly requires no changes other than:

1. New holes drilled for fuel tank supports and the installation of the fuel tanks in the wings. (Old fuel system must be removed, however.) (See Section .210)
2. The installation of fiberglass wing tips - the fiberglass wing tip may be identified by the "squared" off effect and also that the tip is thicker than the elliptical tip. Model 7EC aircraft manufactured after approximately April, 1958 were factory equipped with fiberglass wing tips. Champion Kit No. 196 contains the necessary parts and instructions to install the fiberglass wing tip on aircraft not already equipped with this type tip.

.251 WING LIFT STRUT - REAR

The Model 7GC requires the use of Part No. 5-268 Rear Wing Lift Struts. Model 7EC aircraft manufactured after approximately August, 1958 used the required 5-268 struts. The struts now installed in the Model 7EC must be checked, however, in the following manner: Remove the rear wing lift struts from the aircraft. The wall thickness of the upper end fitting must be of .120 material. A wall thickness of .095 indicates an incorrect strut for use in 7GC.

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.26 FUSELAGE CHANGES.260 ELEVATOR CONTROL SYSTEM CHANGES.2600 FITTINGS

Additional fittings must be added to the fuselage structure for the revised elevator control system. Champion Kit No. 220 provides the necessary parts and instructions to add the required fittings to the fuselage.

.2601 CABLES AND PULLEYS

Champion Kit No. 221 provides the necessary up and down elevator cables, pulleys, hardware and instructions to install the revised elevator control system in the aircraft. Note: On converting Model 7EC aircraft manufactured prior to approximately May, 1958 there may be up elevator cable interference with the lower web of the aileron sector casting mounted on the torque tube. If this interference exists after the complete system is installed, contact the factory and a revised casting with installation instructions will be sent.

.261 STRUCTURE CHANGES

All Model 7EC aircraft prior to Serial No. 674 must have the following tube structure changes: (No tube changes required on 7EC Serial No. 674 and up.)

1. Remove tube No. 7-1050-13 (2 Required). Install new tube No. 7-1050-13 (2 Required) (3/4 x .049 4130).

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2. Remove tube No. 7-1050-33 (2 Required). Install new tube No. 7-1050-33 (2 Required) (5/8 x .049 1025).
3. Remove tube No. 7-1050-56 (1 Required). Install new tube No. 7-1050-56 (1 Required) (5/8 x .049 1025).

Before removing above noted tubes, the fuselage structure must be rigidly secured to a suitable type jig to prevent any misalignment or distortion. Installation of tubes must conform to Drawing 7-1050.

The following parts are required for the required fuselage structure changes:

<u>Part No.</u>	<u>Item</u>	<u>No. Required</u>
7-1050-13	Tube	2
7-1050-33	Tube	2
7-1050-56	Tube	1

.27 INTERIOR PANEL CHANGES

The rear panel is moved aft one bay because of the battery location change. The left and right side panels must in turn, also be lengthened. Additional new rear floorboards are also required. The canvas baggage compartment sack is removed from the Model 7EC. Champion Kit No. 222 provides the necessary parts and instructions to modify the Model 7EC interior.

.28 WEIGHT AND BALANCE CHANGES

1. After completion, aircraft must be reweighed and a new empty weight, C.G. and useful load determined.

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2. A new equipment list, weight statement and operations card must be installed in the aircraft.

3. The maximum weight for the converted aircraft is 1650 lbs. and the allowable C.G. range is:

(+10.2) to (+17.7) at 1230 lbs. or less

(+14.2) to (+17.7) at 1650 lbs.

Straight line variation between points given.

New weight and balance sheets and operations limitations cards are provided.

.29 AILERON TRAVELS CHANGE

The angular aileron movement is revised slightly. The up travel is changed from 28 1/2° to 27 1/2° and the down travel is changed from 18° to 19°. Aileron cable tension to be set at 15-22 lbs.

.30 MISCELLANEOUS OTHER CHANGES

1. The name plate in the airplane must be restamped with proper Model designation and the letters "CONV" indicating it has been converted. Do Not change airplane Serial No. or alter it in any way.

GC
Example: Model 7EC CONV

2. A 1-8827 Retainer must be installed against the bottom edge of windshield inside the aircraft. Installation shall conform to Drawing 7-465.

CHAMPION AIRCRAFT CORPORATION
Osceloa, Wisconsin

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SERVICE LETTER #60 MASTER PARTS LIST

<u>Part No.</u>	<u>Item</u>	<u>No. Required</u>
#60	Service Letter	1
#212	Kit	1
#213	Kit	1
#214	Kit	1
1-1102	Cone	1
7-1091	Upper Cowl	1
7-1092-4	Lower Cowl	1
7-1129	Nose Bowl	1
AN350-1032	Wing Nut	1
AN526-1032-8	Screw	23
AN936-A10	Washer	1
AN960-10L	Washer	24
CA161PL	Filter	1
7-1134	Installation Drawing	1
Sketch No. 1		1
Sketch No. 2		1
7-509-5 (Optional)	Wraparound	1
#215	Kit	1
7-9901	Washer	8
AN526-1032-10	Screw	8
7-1082 (Optional)	Bulkhead	1
7-1081 (Optional)	Backplate	1
4-1053	Spinner	1
7-1028	Installation Drawing	1
#196 (Req'd but must be specified on order)	Kit	1
#189A	Kit	1
#216	Kit	1
#217 (For customer's requirements)	Kit	1
#218 (Optional) (For customer's requirements)	Kit	1
#219	Kit	1
5-268	Rear Wing Lift Strut (This strut is req'd, but must be specified on order)	2
#220	Kit	1
#221	Kit	1
7-1050-13	Tube	2
7-1050-33	Tube	2
7-1050-56	Tube	1
#222	Kit	1
Weight & Balance Sheets Operations Limitations Card	7GC	1 ea
7-8827	7GC Retainer	1
7-465	Installation Drawing	1
AS6-4-6SS	Screw	2
7-1786	Placard	1

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Osceola, Wisconsin

SERVICE LETTER #60 MASTER PARTS LIST - Continued

<u>Part No.</u>	<u>Item</u>	<u>No. Required</u>
1-9177	Placard	1
1-8912 (Alt. for 1-1786 & 1-9177)	Placard	1
AS6-4-4SS	Screw	4

New aileron sector casting (mounted on torque tube) in some cases may be required (Ref. Section .2601, Service Letter #60). See Engineering Department if customer requests this item.