

FEDERAL AVIATION AGENCY  
WASHINGTON 25, D. C.

June 27, 1961

BUREAU OF FLIGHT STANDARDS RELEASE NO. 446

SUBJECT: Eligibility of Surplus Continental Tank Engine Parts For Use in  
Certificated R670 and W670 Series Aircraft Engines

SUPERSEDES: Bureau of Flight Standards Release No. 444

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It has been determined from an engine parts interchangeability study conducted in conjunction with the engine manufacturer that many W670-9A tank engine parts are common to the certificated R670 and W670 aircraft engines. Since the -9A tank engine parts which are common to the type certificated aircraft engines were produced to a Federal Aviation Agency approved design under an aircraft engine quality control system, such tank engine parts are eligible for use in R670 and W670 certificated aircraft engines installed in either standard or restricted (Part 8) aircraft. All -9A tank engine parts, including -9A tank engine cylinders, not listed in the tabulation which follows, are common to R670 and W670 aircraft engines. The -9A tank engine cylinders, although slightly different from aircraft engine cylinders due to heavier walls, were separately approved for use in certificated aircraft engines.

There are W670-9A tank engine parts which are not common to R670 and W670 aircraft engines. These parts are listed in the following tabulation and are acceptable for incorporation, where applicable, in tank engines or certificated R670 and W670 engines only when installed in Part 8 aircraft engaged in agricultural or similar special purpose operations over noncongested areas.

Any tank engine part listed in the following tabulation when used in a type certificated aircraft engine installed in a Part 8 agricultural or similar special purpose aircraft introduces the possibility that this engine may be later inadvertently installed in an aircraft certificated in the standard classification of airworthiness. In order to exercise control of the tank engine parts listed in the tabulation, installation of such parts in a certificated R670 or W670 aircraft engine is therefore considered a major change (Ref: CAM 18.1-1(b)(7) to the engine and must be recorded on Form ACA-337, together with a statement that the modified engine is approved for use only in Part 8 aircraft (Ref: CAM 8.20-3(b)2(ii) engaged in agricultural or similar special purpose operations over non-congested areas. This Form ACA-337 record is not required for the installation of -9A tank engine parts which are common to the certificated R670 and W670 aircraft engines.

## TABULATION

Continental Part No.	Nomenclature	Identifying Features
3427	Thrust Bearing Cage	Inside diameter 4.9216 + .0000 - .0005 inches. Width, front to back, 1-1/8 inches, flange diameter, 6-7/16 inches.
3492	Generator Gear Drive	Shaft and gear forged in one piece. Gear diameter greater than shaft diameter. External teeth on gear.
3978	Oil Pump Drive Gear	Has two lightening holes in gear web spaced 180° apart. Aircraft engine gear has eight equally spaced lightening holes.
3979	Intermediate Cam Drive	Has two lightening holes in gear web spaced 180° apart. Aircraft engine gear has eight equally spaced lightening holes.
4378	Rear Crankshaft Starter Gear	Has two or four lightening holes in gear web spaced 90° or 180° apart. Aircraft engine gear has eight equally spaced lightening holes.
4925	Piston, 6.1:1 Compression Ratio	Cast piston. Dimension from piston pin center line to top is 2.203 inches. Aircraft 6.1:1 C.R. piston is forged and has a waffle pattern under the head with lightening holes drilled in the dome above the piston pin bosses. Cast piston does not have waffle pattern and holes.

## TABULATION

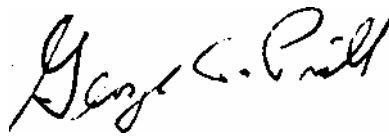
Continental Part No.	Nomenclature	Identifying Features
A6517	Ignition Harness Assembly (Shielded)	P/N A6517 harnesses are mounted aft of the cylinders. The conduit is formed in a large horseshoe open at the bottom with leads from the magnetos entering at approximately 1 and 11 o'clock. Aircraft shielded harnesses are mounted forward of the cylinders. The conduit is formed in a small horseshoe open at the bottom with leads from the magnetos entering at approximately 2 and 10 o'clock.
20600	Rear Main Ball Bearing	Bearing is S.R.B.#309M. Dimensions 100 mm X 45 mm X 25 mm (3.9366" X 1.7714" X .9793"); 12 balls 5/8 in diameter.
20601	Front and Intermediate	Bearing is S.R.B.#214V. Dimensions 125mm X 70mm X 20mm (4.9208" X 2.7556" X .7849"); 16 balls 5/8 in diameter.
A35099	Ignition Drive Gear Assembly	Assembly uses P/N 4379 gear which has two lightening holes 1-1/8 inches in diameter. Aircraft gear has six lightening holes.
35105	Primer Distributor	Has eight ports. One port is plugged. Lines go from other ports to all seven cylinders. Aircraft engine primer distributor has four ports and lines to cylinders #1, #2, #6, and #7.
A50023	Master Rod Assembly	Uses P/N 50023 rod. Rod has No. 20 (.161 in.) hole in the piston pin end perpendicular to the piston pin bore. A locking pin is inserted through this hole into the piston pin bushing. Aircraft engine master rods do not have such a hole.

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Continental Part No.	Nomenclature	Identifying Features
A5145	Crankshaft Assembly	Tank crankshaft is shorter than aircraft engine shaft and has a short SAE Standard No. 30 spline (sixteen splines, O.D. 2.625"). Both halves of shaft have the same serial number. This number is on the end of the crankpin on the front half and above the bolt on the rear half.
5245	Carburetor	Stromberg NA-R6B. This carburetor has no mixture control.
A6117	Crankcase Assembly	Thrust bearing cage bore is 5.1969 inches. No propeller governor pad. Both halves of crankcase have the same serial number on top surface, usually between No. 2 and 7 cylinders.
6158	Accessory Case	The P/N 6158 case has one oil hole at approximately 6 o'clock. The hole diameter is 9/16 inch and it is counterbored to 21/32 inch. Aircraft cases have this hole and an additional hole beside it. The second hole is 3/8 inch diameter and counterbored to 15/32 inch. All aircraft accessory cases except R-670-3 also have a hole inside at approximately 7 o'clock and 2-11/16 inches from the centerline of the case. A flush 1/8 inch pipe thread plug is installed in this hole. All cases have two breather holes at approximately 1 and 11 o'clock. On the P/N 6158 case these holes are tapped with 3/8 inch pipe thread. Aircraft cases have one hole tapped with 3/8 inch pipe thread and one tapped with 3/4 inch pipe thread. When viewed from the outside the 3/8 inch pipe thread will be on the left.

NOTE:

1. The 6.1:1 compression ratio pistons are not compatible with a crankshaft designed for use with 5.4:1 compression ratio pistons.
2. The W670-9A lubrication system is not the same as most of the W670 and R670 series aircraft engines. The oil pump used on the W670-9A is P/N A4174. This pump, which has no check valve, was also used on the R670-3 aircraft engine. The oil pump used on the other W670 and R670 series aircraft engines has a check valve and a pressure relief valve.



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