



## FRANKLIN SERVICE BULLETIN

NO. 27

DATE: 2/8/46

**SUBJECT:** ADVANCE INFORMATION COVERING ENGINES 6A4-150-B31 AND 6A4-150-B3  
USED IN STINSON 150 VOYAGER

Following are specifications and data for your service guidance covering the 335 cubic inch engines which are used in the above subject aircraft.

ENGINE NAME PLATE The engine name plate is located on top of the engine breather housing casting, which is attached to the top front face of the timing gear case.

RATED HORSE POWER 150

RATED SPEED 2600 rpm

FUEL Minimum 80 octane, aviation gasoline

COMPRESSION RATIO 7.0:1

DISPLACEMENT 335 cubic inches

BORE AND STROKE  $4\frac{1}{2}$  x  $3\frac{1}{2}$

CARBURETOR Single carburetor, model MA3-SPA. The float setting should be  $\frac{7}{32}$ " from the face of the gasket in position on the cover, to the closest point on the float body, with the cover held with the mounting face pointing toward the ground. The idle adjustment should be set for best mixture at approximately 600 rpm.

IGNITION The ignition is dual magneto type, Eisemann LA-6. Point gap is .019" to .021" on high point of cam. Setting of magnetos is  $28^{\circ}$  before top dead center on #1 cylinder. Markings for advance and top dead center are on the outer face of the crankshaft flange. The marks should align with the crankcase center line when adjustments are made.

FUEL PUMP Model AC on Bellanca Crusair.

ENGINE FIRING ORDER 1 - 4 - 5 - 2 - 3 - 6

ENGINE OIL Heavy Duty lubricating oil should be used in the following grades:  
SAE 40 — Above 40°F free air temperature  
SAE 20 — Below 40°F free air temperature

Capacity of oil pan is eight quarts. Additional oil needed as initial refill if cooler is drained.

Oil level stick is located at the right rear side of the crankcase, looking at the engine from the accessory end, and is threaded into the crankcase at the top end.

Maximum oil temperature is 230°F.

Oil pressure should be 35 psi minimum at 230°F temperature, at 2600 rpm.

CYLINDERS Cylinder head temperature maximum is 500°F and cylinder barrel temperature maximum is 300°F.

Intake seats are at a 30° angle and exhaust seats are at a 45° angle.

VALVE ROCKER ADJUSTMENT Valve rocker adjustment is .040" clearance between the top of the valve stem and the face of the rocker on both intake and exhaust with the oil bled out of the lifters and the engine cold. Note: If there is ever occasion to change a valve lifter unit, great care must be used to be sure that you obtain the lifter unit specified for these engines, since both the lifter unit piston and barrel are drilled for internal oiling of the rocker shafts on this engine. Lifter units used on earlier type engines would fit in the lifter unit body, however, with the earlier type, no oil would be fed up to the lifter rods. Service men should be cautioned regarding this.

SPARK PLUGS Spark plugs are Champion J-10. Gaps should be set at .014" - .018". Plugs should be torqued to 180 in. to 240 in. lbs. when installed in the cylinders with the engine cold.

STARTER Delco-Remy with solenoid.

GENERATOR Delco-Remy with voltage regulator. 24 ampere maximum output.

PISTONS Pistons are aluminum alloy and piston pin fit is a palm push fit at room temperature, 70°F. Note: In the event a cylinder and piston are removed for any reason, a piston with rings should never be placed in the cylinder and pushed to the top of the cylinder on the bench, since in doing so the piston will travel far enough for the upper ring to catch back of the cylinder liner and it will be impossible to remove the piston again.

Piston ring gap is .013" to .023".

Clearance between piston and cylinder is .002" to .0035".

VALVE SPRINGS With valves and springs assembled, spring pressure should be 50 lbs. to 60 lbs. with the valve just releasing from the seat. Minimum travel from the valve in the open position should be .390". Adjustment of spring tension is made through the use of shims under the spring and great care must be used to have the minimum travel as well as the specified tension if at any time these assemblies are dismantled.

The above information is given to you as a guide until such time as we have available repair manuals for the field. In the event there is additional information you desire, do not hesitate to write us.

AIRCOOLED MOTORS, INC.  
*F. J. Schaefer*

F. J. Schaefer  
Service Engineering Manager