Continental

Service Manual

L-Head

Engines

CON-S-LHEAD

QUICK REFERENCE SECTION INDEX

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DO NOT FLUSH CRANKCASE WITH KEROSENE

Some operators unwisely put kerosene in the crankcase after draining the engine oil, then turn the engine over with the starter — in the belief they are doing a better job of crankcase cleaning.

In doing this, kerosene is circulated through the oil pump, the main oil header and the branches leading into the engine bearings — thereby washing away the protective oil film. In addition, some of the kerosene will be trapped and remain to thin out the new oil, reducing its lubricating qualities.

Do not put kerosene into the crankcase. The best method is to drain the oil when the engine is thoroughly heated — which will carry off most of the sediment.

AIR CLEANER

All engines, when operating, consume several thousand cubic feet of air per hour. Since dusty air is full of abrasive matter, the engine will soon wear excessively if the air cleaner does not remove the dust before entering the cylinders.

Two basic types of air cleaners are normally used — the oil bath type and the dry replaceable element type.

Figure 20 — Sectional View of Oil Bath Air Cleaner

Operating conditions determine the air cleaner service periods. In extremely dusty operations, this may be once or twice daily. In dust protected areas, the air cleaner should be serviced when changing oil.

As the dirt is strained from the air flowing through the cleaner, it thickens the oil in the cup and raises the level. If the level is too high, agitation of the oil on the screen is affected and gritty oil is carried over into the air stream, through the carburetor and into the engine cylinders. This would actually introduce a grinding compound with resulting very rapid wear.

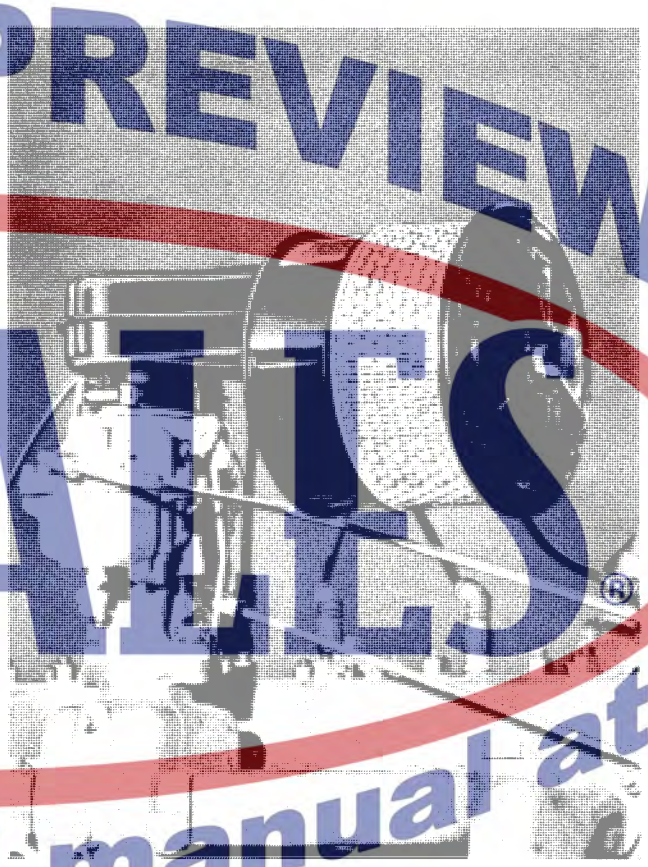

Figure 21 — Dry Replaceable Element Type Air Cleaner

By actual measurement, the amount of dust shown below, when admitted in the volume shown every hour, will completely ruin an engine in an eight hour day.

Figure 22

Proper servicing means **Cleaning Thoroughly** and **Refilling with New Engine Oil,** and **Maintaining Air-Tight Connections** between the air cleaner and intake manifold so that **All Air Entering The Engine Is Filtered.**

the weights (6) causes them to swing outward on their pivots — this energy is opposed by the governor spring (7). The tension of this spring is the means of setting the governor to act at a predetermined speed.

When the engine is not running, the governor spring holds the throttle valve wide open.

When the engine is started, the weights swing out, moving the thrust sleeve (14) along the driveshaft. This movement is transmitted through the thrust bearing (8) to the rocker yoke (9) on the throttle lever shaft. This movement, in turn, moves the governor control lever (13) toward the closed throttle position. The weights continue to move out until the weight force and spring force are in balance — when the throttle will be in position to maintain the governed R.P.M.

Adjustment

1 — The speed of the Governor is regulated by adjusting screw (15).

2 — **Sensitivity** of the governor can be regulated, by auxiliary adjusting screw (12). Surging or hunting under load conditions can usually be eliminated by broadening the regulation with this adjusting screw.

3 — **No Load Surge** — is eliminated by means of the bumper screw (11) at no load-open throttle position.

CAM GEAR GOVERNOR

Some L-head engines use the Continental designed "built-in" cam gear driven governor. Sealed, dust proof and engine lubricated, it is compact and easily adjusted. The control shaft floats on two needle bearings to remove friction for closer, more accurate control through the whole power range.

Figure 91 — Cam Gear Governor

This governor is a variable speed type and has no speed adjustment other than amount of travel the control rod is moved. Control rod movement is determined by accelerator pedal or hand control linkages. Idle surge adjusting screw should be adjusted in just enough to eliminate any tendency of engine to surge.

TAILSHAFT GOVERNORS

Many industrial applications with torque converter drives want to maintain a constant output shaft speed under varying load conditions. This requires the governor to be driven by the output shaft where it can sense output shaft speed variations rather than engine speed.

Tailshaft governors are of the long range type which provide regulation over a wide range of speeds and can be set up to maintain any desired speed in that range.

The tailshaft governor is mounted on the torque converter and is gear-driven. This type governor has two operating levers — one of which is the throttle lever to set the desired output shaft speed and the other lever is connected directly to and operates the carburetor throttle control lever by a mechanical linkage. This linkage, preferably should be a short, straight rod with ball joints at each end or if the linkage is long — walled tubing should be used — so that weight and friction of the linkage is reduced to an absolute minimum.

The torque converter governor, being driven by the output shaft, senses only output shaft speed and controls the engine throttle accordingly. It is therefore very important that the engine be protected, with an overspeed device which will sense engine speed and limit that speed to a safe maximum. This protection may be obtained with a mechanical, electrical or velocity type governor whichever may be the most simple arrangement.

Figure 92 — Tailshaft Governor

Adjustments — include the following:

(A) **High Idle Speed** — Limits maximum engine speed, follow manufacturers recommendations.

(B) **Low Idle Speed** — Limits engine idling speed — 400-600 R.P.M.

(C) **Sensitivity Adjustment** — will eliminate surging or hunting by broadening regulation.

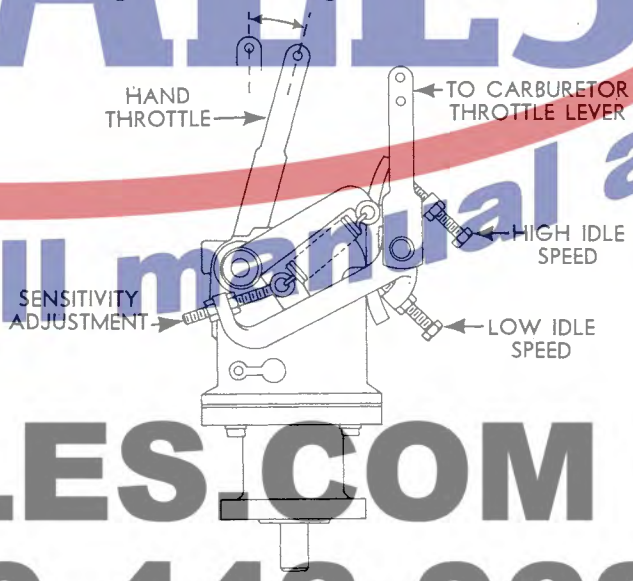

Figure 92A — Tailshaft Governor Adjustments

The hook-up of governor lever to carburetor lever should be done in the following manner:

1. Make sure carburetor shaft does not stick nor bind.
2. With governor lever in its normal position under spring tension, with engine shut off, with carburetor lever in **wide open** throttle position, a rod of exact length to connect the two levers is inserted.
3. Make sure that there is no bind or sticking in the assembly of rods and levers. THIS IS IMPORTANT.

IMPORTANT:

Pressure lubricated line must be connected to the torque converter or supply with an orifice.

Governor control linkage must be absolutely free to obtain correct governor operation.

OIL PUMPS

The oil pump is assembled to the center main bearing, held in position vertically against a machined pad by studs, (except the "N" series engines, which have the oil pump on the rear end plate, and driven off end of camshaft.)

Figure 167 — Oil Pump Removal

The extended portion of the body acts as a pilot, fitting closely in a reamed hole in the main bearing web, maintaining definite relationship between the camshaft and the oil pump drive shaft.

A gear assembled to the upper end of this shaft is driven by a mating gear cut on the camshaft and drives the oil pump gear which is assembled to the lower end of the pump shaft.

The pump shaft is carried in two bronze bushings assembled in the cast iron housing, which is also a part of the oil distributing system, transmitting oil to the drilled passages.

The gear type pump has a capacity well in excess of that required by the engine.

When the pump is removed, examine the drive gear carefully for wear, inspecting the gear on the camshaft at the same time. If scored or worn badly, both the camshaft and the gear on the pump must be replaced.

Examine the pick-up screen (which may be either the Floato type or the stationary screen type) for clogging or damage.

Remove the cover, being careful not to damage the lead gasket which acts as a spacer as well as a gasket to seal the joint.

Examine the gears and pump body for any sign of wear indicating lack of clearance. The gears should have from .001 to .003 clearance in the chamber and should make no contact with the walls.

Inspect the cover and face of the gears for excessive wear or scoring. With the gasket assembled to the body there should be .0015 - .006 clearance between the gears and the cover.

Worn or scored gears can be replaced, as can a worn cover. If the body shows wear in the chamber, it can be replaced, but in a case like this a new pump would be the most economical.

Figure 168 — Checking Oil Pump Gear Clearance in Body

Engine oil pressure must be maintained to specification for satisfactory engine life.

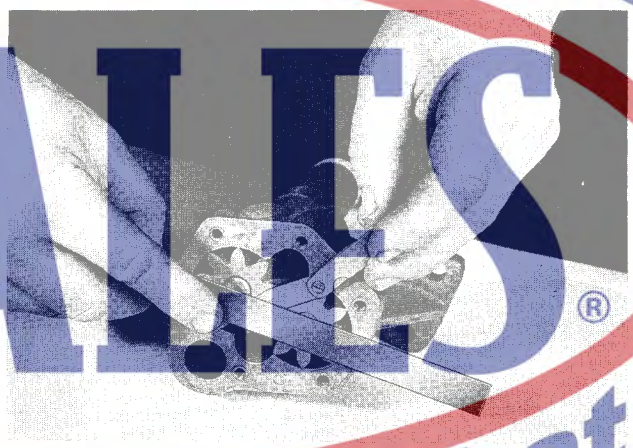

Figure 169 — Checking Oil Pump End Clearance

Pressure relief is located externally on the right-hand side, near the oil pan flange at the center. (on the N series, it is located in the rear end plate). Pressure is controlled by a plunger and spring, the latter specifically for a certain range. The only adjustment variation is either to change springs or assemble or remove washers from behind the present spring. Up to four washers are permissible.

Figure 170 — Oil Pressure Relief Valve