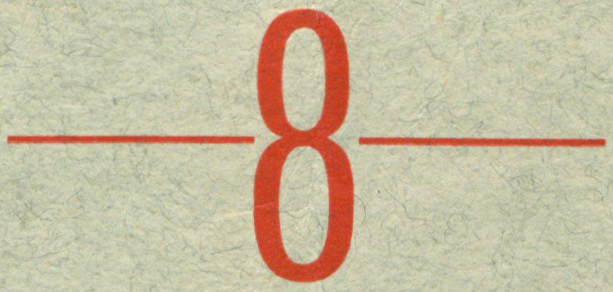
Lubrication Adjustment and Care

of the

LYCOMING ENGINE

—8-IN-LINE—

SERIES H



LYCOMING MANUFACTURING CO.
WILLIAMSPORT, PENNSYLVANIA
U. S. A.

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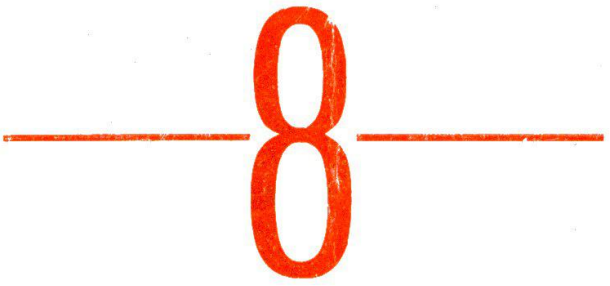

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Importance of Correct Lubrication

IF two moving surfaces are perfectly lubricated they will not come in contact but are completely separated by a film of oil. Where these conditions exist there is practically no wear—if a car or engine could be perfectly lubricated at all times, it would last almost indefinitely.

There are many conditions encountered in automotive lubrication which make this degree of perfection hard to obtain, but it is nevertheless true that the degree of perfection which can be reached governs the life and performance of the unit. If we use the best lubricating materials and the utmost care in their application, we are repaid, many times over by long wear and good service.

Complete failure of lubrication always results in disaster. We can exhaust our fuel supply with no other results than inconvenience; an ignition failure simply stops the engine without any lasting harm and a failure of the cooling system generally gives ample warning before causing trouble.

Interference with correct lubrication, on the other hand, may not keep the unit from performing its regular work—but it will result in increased wear to the moving parts. Complete lubrication failure frequently results in damage without much warning. It must be guarded against by careful attention to the supply of lubricant and to the condition in which it is kept.

Correct lubrication involves the use of the right materials properly applied. The purpose of this booklet is to set forth clearly and simply the means by which it can be attained and the dangers to be avoided. The suggestions which are offered can be carried out with very little trouble or expense and their adoption will pay large dividends in long wear and satisfactory service.

General Description

of the

Lycoming–8–in–Line Engine

The Lycoming 8-in-Line is of the vertical, L head, four stroke cycle type, with eight cylinders in line and a detachable head.

Cooling is by water. The cylinder block is cast with a large opening on the side of the jacket extending nearly the full length of the block. This design insures uniform water passages and even wall thickness of cylinders.

The cylinders are carefully finished by grinding and are accurately fitted with light pistons.

The camshaft, water pump and generator are driven by a silent chain 1½" wide. An automatic adjustment is provided to maintain a constant tension at all times on the chain. This feature positively eliminates chain whip, greatly reduces wear and ensures a quiet drive. This automatic adjusting device is shown in figure 3.

A Swan design intake manifold is used to assist complete vaporization and an equal distribution of the gases to the cylinders.

The keynote throughout the entire production of Lycoming engines is accuracy. All parts are closely inspected to insure strict adherence to rigid specifications. Vibration is reduced to a minimum by accurate static and dynamic balancing of the reciprocating and revolving parts and the care taken in the assembly and running in process contributes to that ultimate in engine value which ensures the utmost satisfaction to the user.

THE COOLING SYSTEM

A centrifugal water pump mounted in an accessible position on the right hand side of the crankcase insures positive circulation of the cooling water at all times. The water is forced between all of the cylinder barrels to the valve side, insuring uniform cooling of all cylinders and valves. A fan is mounted on an adjustable bracket and is driven by a 5/8" V belt.

THE LYCOMING FORCE FEED SYSTEM OF LUBRICATION

The lubrication system employed is of the force feed type, details of which are shown in figures 4 and 5.

The oil is contained in a reservoir formed in the lower half of the crankcase. A gear type pump driven positively from a spiral gear on the camshaft, is located in the oil reservoir and about even with the normal oil level.

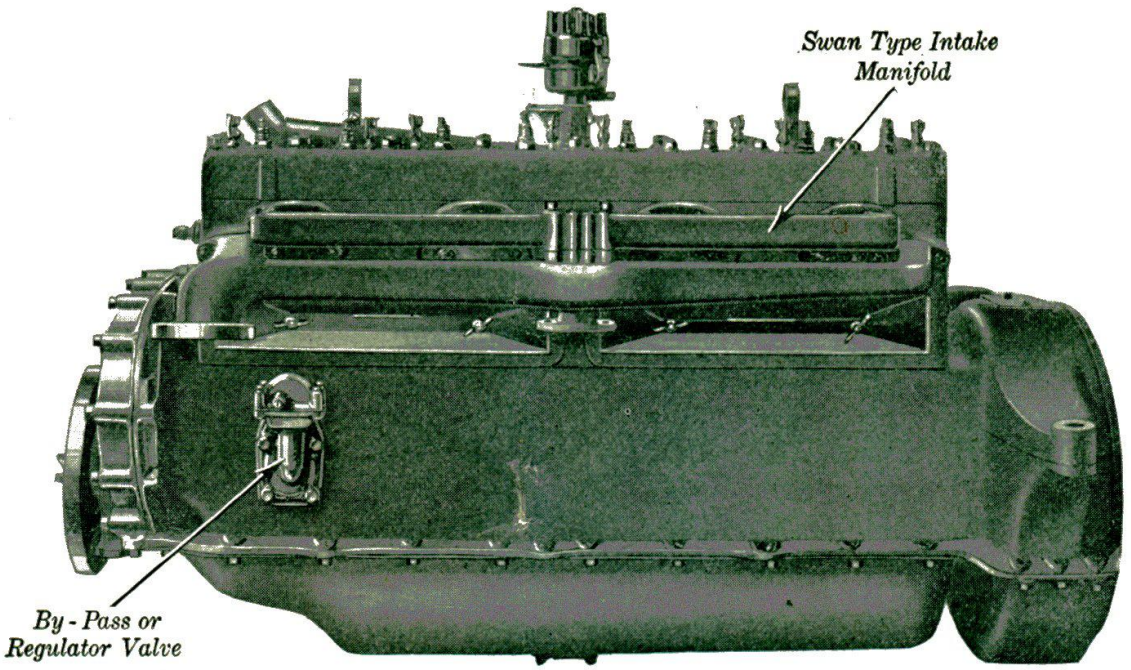

Figure 1—Lycoming Engine Valve Side.

The pump draws oil from the reservoir through a screen or strainer and forces it under pressure, past the throttle-controlled by-pass or pressure regulating valve, through copper tube manifolds to the main crankshaft. (See figure 4.)

Grooves in the lower half of these bearings, registering with the ends of drilled passages through the crankwebs, carry the oil under pressure to the connecting rod lower bearings. The cylinder walls, pistons, piston pin bearings, camshaft bearings and valve operating mechanism are lubricated by spray thrown from the connecting rod bearings.

Oil is supplied to the front end timing chain by a special lubricating device which is built into the automatic chain tightener. Oil is forced to the tightener stud through a drilled passage in the crankcase leading from the front main bearing. Oil holes in the revolving sprocket ring of the automatic tightener register with oil passages in the stud so that at every revolution of the tightener ring several "shots" of oil are supplied to the chain and sprockets.

The surplus oil from the front end drains back into the oil reservoir. The accessory shaft is supplied with oil under pressure by means of a copper tube which connects with an oil passage in the crankcase.

The valve stems are lubricated by oil spray which passes from the crankcase through cored holes in the cylinder base.

DETERMINING THE CORRECT LUBRICANT

The selection of the correct body and character of oil for an automotive engine is a problem requiring careful study by competent engineers, familiar with the design and construction of automotive units, as well as with the per-

formance of lubricants under the various conditions of service encountered.

The determination of the correct grade of oil depends upon the consideration of many different features of design, construction and operation of the engine, all of which may be classified generally under four basic lubrication factors, namely, operating temperatures, oil distribution, piston seal and carbon formation.

Engine operating temperatures are affected principally by the service the engine performs, the type of cooling system, kind of fuel employed, the engine speed and the size of the cylinder bore.

As the proper functioning of the lubricating system depends almost entirely upon the use of the correct oil, this must be of such body and character that it will be reliably circulated and distributed to all the working parts under all temperature conditions encountered in service. Some lubricating systems are adapted for the perfect circulation of all oils, from the heaviest to the lightest bodies. Others require oils of special fluidity. To make sure that

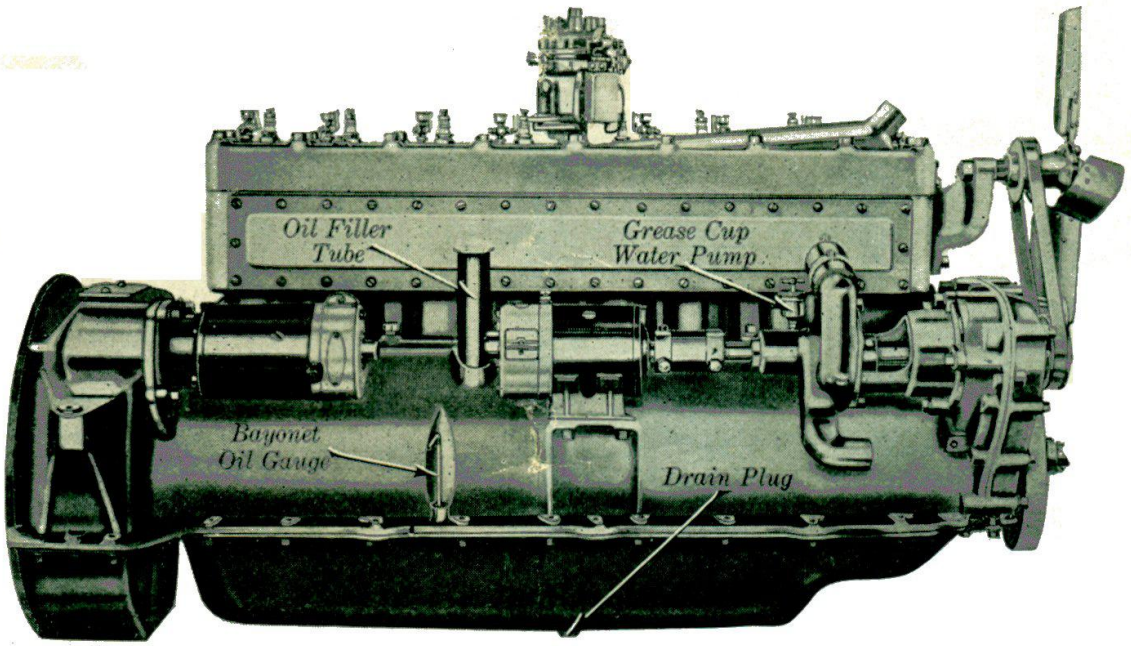

Figure 2—Lycoming Engine Right Side.