

SIX-CYLINDER
**WAUKESHA
ENGINES**

for
MOTOR COACHES, TRACTORS
PUMPS, ELECTRICAL AND
INDUSTRIAL MACHINERY

The
**DISPATCH
SIX**

MODELS «6TS» »6TL«



L-HEAD ENGINES
THEY TAKE BETTER
CARE OF THEMSELVES

ENGINE BULLETIN NO. 795-A

WAUKESHA MOTOR COMPANY
WAUKESHA, WISCONSIN

EASTERN SALES OFFICE: EIGHT W. 40TH STREET, NEW YORK CITY



DESCRIPTIVE LITERATURE

ANY OF THIS LITERATURE MAY BE HAD ON REQUEST

SIX-CYLINDER ENGINES

Nine Sizes for Speedy Transportation and Special Industrial Applications.

Bulletin 795—The Dispatch Six. Two high-duty sixes for 25 hp. to 60 hp. requirements.

Bulletin 798—Describes the Express Six, three moderate speed engines, from 40 hp. to 70 hp.

Bulletin 718—Describes the Transport Six, two moderate speed engines in the 60 hp. to 75 hp. range.

Bulletin 592—The 20th Century Six—six-cylinder engines, sizes 75 hp. to 100 hp.

Gas Electric Vehicles, and Special Industrial Applications.

Bulletin 691—The Big Six, a moderate speed, high-duty, long-life, six-cylinder engine, delivering 120 hp. at 1600 r.p.m.

Super-Duty Industrial Engines.

Bulletin 775—Describes the Great Six, two sizes, 200 hp. up to 275 hp., moderate speed, high power engine for full load continuous stationary service for electrical, oil field and industrial applications.

FOUR-CYLINDER ENGINES

Agricultural, Truck and Industrial Engines.

Bulletins 536, 729 and 790—Describe high-duty, four-cylinder engines, in sizes 15 hp. to 50 hp.

Heavy-Duty Truck, Tractor and Industrial Types.

Bulletin 605—Describes in detail four-cylinder heavy-duty, low speed engines—sizes 35 hp. to 50 hp.

Six-cylinder Power Units—Bulletins and complete information on request.

WAUKESHA MOTOR COMPANY

NEW YORK WAUKESHA, WISCONSIN SAN FRANCISCO

IN THE OIL FIELDS:

C. F. Camp Co., Tulsa; Portable Rig Co., Houston; Bradford Supply Co., Bradford, Pa.
The Waukesha Industrial Engine Sales and Service Co., San Francisco and Los Angeles

Hp. CURVES and INSTALLATION DRAWINGS of any engine gladly furnished to engineers and manufacturers.

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The WAUKESHA DISPATCH SIX

MODELS «6TS» and «6TL»

THE introduction in 1924 of the Waukesha six-cylinder motor coach and truck engines definitely established a pace that has required the addition of a dozen other six-cylinder engines, so that now the automotive and industrial user may have Waukesha six-cylinder power in a complete line of engines from 25 hp. at 1000 r.p.m. to over 300 hp.

The two small sizes described in this bulletin are designed to power the popular ton to ton and one-half speed trucks so that every truck builder can have a complete line of six-cylinder trucks from the smallest to the largest, each one with a Waukesha engine especially built and suited to the particular size and service contemplated. For industrial power in hoists, pumps, electric generators and general utility power they are ideal.

A Fully Proved Product

Utilizing the skill and experience of more than twenty years of specializing in heavy-duty engines augmented by a large staff of research engineers, these two engines are a fully proved product. Waukesha laboratories and dynamometer tests carefully analyze every special feature and check every standard practice before any engines are offered the trade. A life test gives them hours of heavy pulling and then special road tests in actual heavy hauling duty prove their ability to carry on.

New Blue Flame Manifolds

A Waukesha development that makes the 1930 Waukesha models stand out among all other engines is the new Blue Flame Manifold. By this special design, a nicely balanced distribution is coupled with a perfectly proportioned application of heat, so that at all loads and under all conditions of acceleration, idling and deceleration, the engine works with a degree of smoothness and freedom from bucking hitherto unknown. With this manifold, these engines have been idled for as long as seventy minutes at low speed without load and then the throttle suddenly opened wide. Even under this severe test, no faltering, missing or harshness developed, the engine picked up with perfect smoothness and exceedingly rapid acceleration.

These 1930 Waukesha engines thus accentuate characteristics long known as Waukesha features. But these are not the only advantages. Those characteristics which make for smooth and instantaneous pick-up also make for long engine life. This practical evidence of the elimination of liquid fuel from the manifold is sure proof of protection against the destruction of cylinder and piston lubrication and excessive wear and tear.

Ricardo Head

The best known feature of every Waukesha engine is the Ricardo Head—the combustion chamber widely imitated in so many modern “L” head engines. Modern fuels require increased turbulence to secure the full and economical use of the power they contain. With most engines, the turbulence created by the rush of gas past the intake valve nearly dies out by the time ignition takes place. With the Ricardo Head the degree of turbulence is under the designer’s control and results in a complete, rapid and simultaneous combustion of every part of the fuel so that after-burning is eliminated and thus a much greater part of the fuel converted into useful power. With no after-burning, exhaust valves stand up much longer. Accelerating combustion increases the useful power. At full load, the economy results from the high output developed by the Ricardo combustion chamber, but these engines show their greatest fuel saving over other types at those half and quarter loads most commonly met in service.

Rigid Crankshaft

All Waukesha engines have always used heavy crankshafts of liberal dimensions. Light flimsy shafts may transmit the power but their flexibility creates early bearing wear, misalignment and roughness of operation. It has been demonstrated that the critical speed of any crankshaft must be above the operating speed range of the engine and this together with rigidity of all stressed parts insures quiet operation and low upkeep. The large 2 3/8" main bearings with unusually heavy cheeks and crank pins make this crankshaft one of the outstanding features of the engine.

WAUKESHA FEATURES

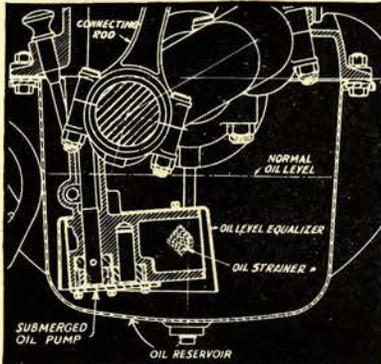
1. Genuine Ricardo Head.
2. Waukesha Blue-Flame Manifold.
3. Minimum Crankcase Dilution.
4. High Economy.
5. Over-Size Bearings.
6. Full-Pressure Oiling.
7. Integral Oil Filter.
8. Accessibility—Low Upkeep.
9. Weight Enough for Rugged Rigidity.
10. Not a “Light Six.”



The WAUKESHA DISPATCH SIX

HIGH DUTY » » » » LONG LIFE

Full Pressure Oiling



Oil Level Equalizer

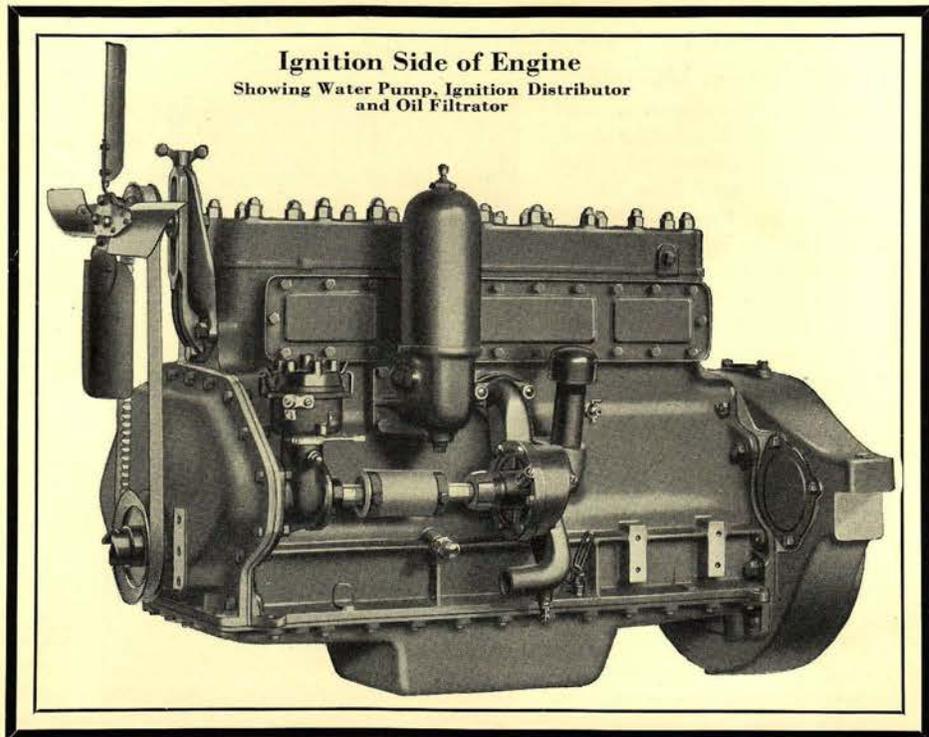
through drilled leads to each crankshaft, camshaft and idler gear bearing and thence through drilled ducts in the crankshaft and connecting rods to each connecting rod and piston pin bearing. A special lead fills the valve tappet chambers with oil so that the tappets and valve stems are submerged at all times. With this definite distribution of the oil to the moving parts, a heavy mist is positively formed to lubricate the pistons and cylinders. The absence of loose joints and tubes in the oil system insures freedom from trouble and positive lubrication as long as the oil supply is maintained. A series type oil filter bolted directly to the side of the engine without any loose piping or joints to interfere with

Full pressure lubrication, a long standing practice with Waukesha, is provided by a positively driven submerged pump of large capacity. This oil pump delivers oil directly to a rifle drilled header and

reliable operation, is a standard feature which adds greatly to engine life.

Oil Level Equalizer

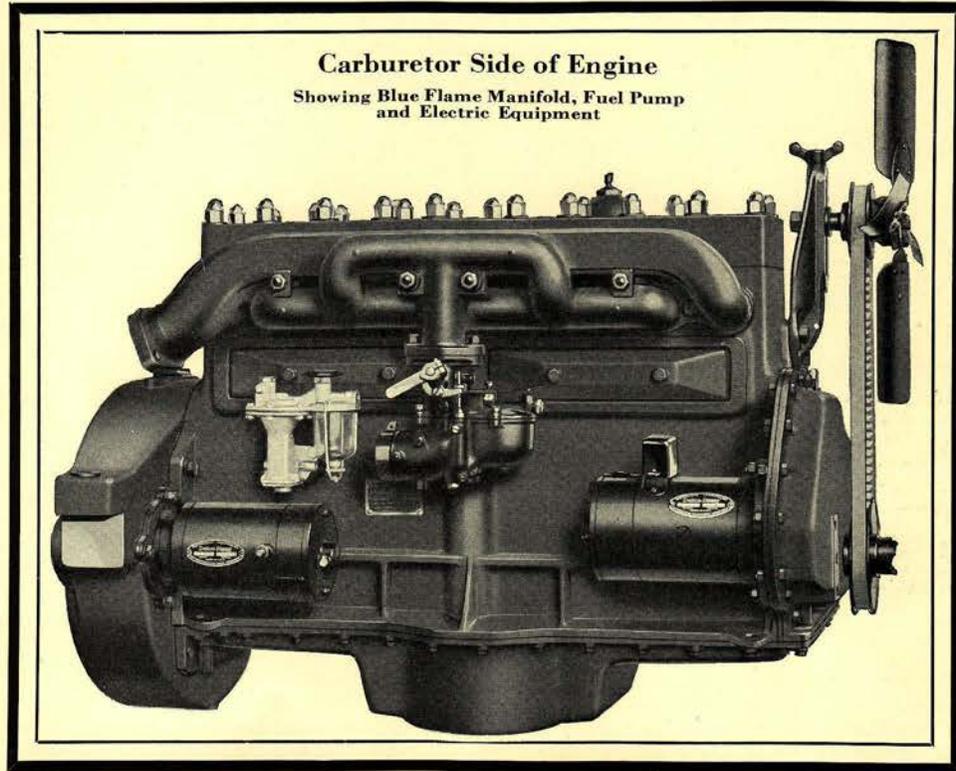
The Waukesha patented oil level equalizer maintains a positive supply of oil under all operating conditions whether the oil is hot or cold, thick or thin, or whether there is much or little. The oil level equalizer insures an adequate supply to each engine part and prevents the possibility of air bound oil lines. As shown in the diagram, it consists of an inverted steel cup placed over the outside of the oil pump screen which fills with oil as soon as the engine is started and by vacuum brings the level up to the top of the screen. This arrangement permits the use of a vertical self-cleaning screen of much larger area than otherwise and avoids placing the screen and the pump in the muck and sludge at the bottom of the oil reservoir. The vertical sides of the screen are kept clean by gravity.



Cooling System

Of equal importance in prolonging the life of any engine is a carefully planned cooling system. An over-cooled engine is in the same danger zone as one that is overheated. A proper disposition and proportion between water passages, water pumps, inlet and outlet piping is more vital than the size of the radiator or the fan. Using a small radiator requires more frequent additions of water but if the water is improperly distributed or sluggishly circulated, hot spots develop and trouble follows. An over-cooled engine is always extravagant in its use of fuel and oil, requiring over-rich mixtures which break down the oil film that protects the cylinders and pistons. These engines have a large water pump which positively directs an ample volume of water around every valve seat and insures *efficient* as well as *adequate* cooling under all conditions.

Responsibility . . . Production Capacity
Waukesha Motor Company has been conducted



Carburetor Side of Engine
Showing Blue Flame Manifold, Fuel Pump and Electric Equipment

by the same management for over two decades, has large reserves and cash resources, a long period of friendly relationship with its customers and with its enlarged modern daylight factory, doubled engineering and research facilities, it is in a better position than ever to maintain its policies of service, the integrity of its product and protect its customers by ample production capacity.

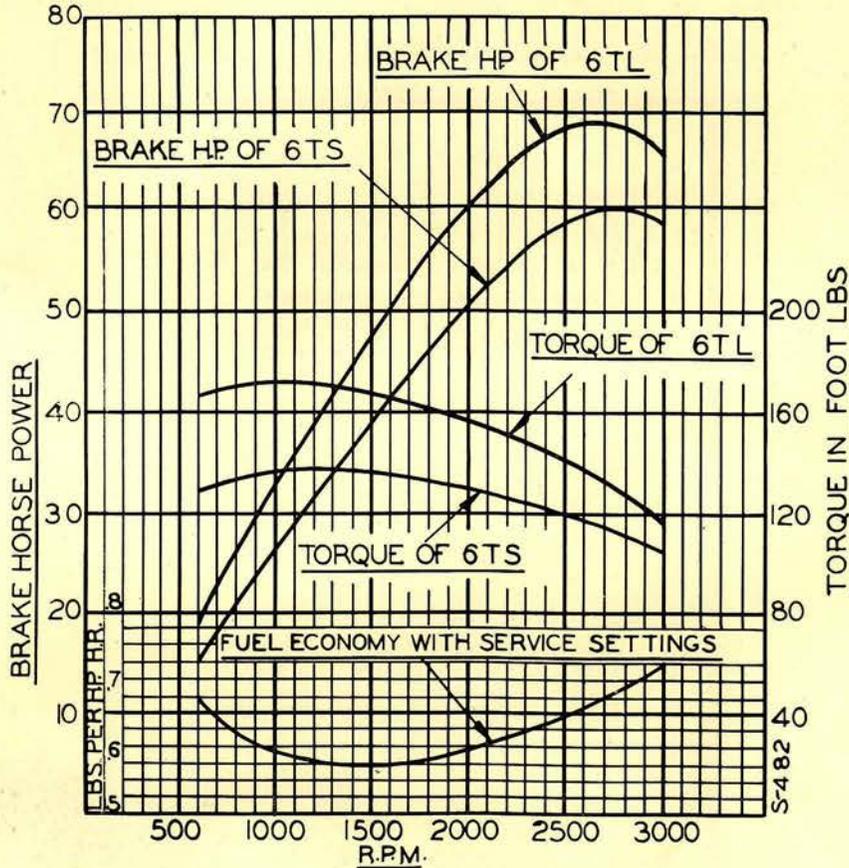
DIMENSIONS

	6TS	6TL
Bore and Stroke	3 7/8 x 4 3/4	3 3/8 x 4 3/4
Displacement, cubic inches	219	255
Intake valve diameter, clear	1 3/8	1 3/8
Exhaust valve diameter, clear	1 1/16	1 1/16
Connecting rod bearing, dia. x lgth.	2 x 1 1/2	2 x 1 1/2
Front main bearing, dia. x lgth.	2 3/8 x 1 3/4	2 3/8 x 1 3/4
Intermediate main bearings (2), dia. x lgth.	2 3/8 x 1 3/4	2 3/8 x 1 3/4
Rear main bearing, dia. x lgth.	2 3/8 x 2 3/8	2 3/8 x 2 3/8
Piston pin bearing, dia. x lgth.	1 x 2 5/8	1 x 2 7/8
Connecting rod length	8 3/4	8 3/4
Number piston rings	4	4
Camshaft diameter	1 1/16	1 1/16
Timing gears, face	1 1/4	1 1/4
Carburetor flange, S.A.E., size	1 1/4	1 1/4
Exhaust manifold—bore	2 1/4	2 1/4
Fan diameter (extra equipment)	17	17
Spark plugs, Metric standard	18 mm.	18 mm.
Flywheel housing, S.A.E., No.	4	4
Approximate weight, pounds	625	640

NOTE — Dimensions except as indicated are given in inches.



PERFORMANCE
Models «6TS» and «6TL»



CONTINUOUS SERVICE—For continuous full load, use a load factor of not more than 85 per cent of the power shown on this curve.

Horsepower shown was obtained with following equipment: Carburetor—Zenith 115½E. Ignition—Delco Remy 640-Z. Fan—None. Electric Generator—None. Air Cleaner—None. Muffler—None.

RECOMMENDED SPEEDS are:—For Continuous Operation, 1800 R.P.M. Maximum. For Intermittent Service during Acceleration and Similar Duty, 2500 R.P.M. Maximum.

Consult the Waukesha Motor Company regarding maximum speed for your service.

Equipment and Material Specifications

- Crankshaft**—S.A.E. 1045 steel, heat treated.
- Crankcase**—Cast Iron—Exceptionally deep ribbed.
- Connecting Rods**—S.A.E. 1045 steel, heat treated. Bearing metal special Waukesha alloy No. 402. Bearings cast directly into big ends.
- Main Bearings**—Special Waukesha alloy No. 402.
- Valves**—Intake, chrome nickel steel. Exhaust, "Silerome."
- Push Rods**—Large diameter, hollow, case-hardened and ground; mushroom type, lock nut adjustment.
- Pistons**—Aluminum alloy with full floating piston pins.
- Cylinders**—Waukesha "en bloc" "truncated" design. Material, Waukesha alloy No. 202. Bore is held to close limits.
- Cylinder Heads**—Singly-cast Waukesha "Ricardo" patent design.

- Timing Gears**—Semi-steel and steel
- Cooling System**—Special Waukesha pump.
- Lubrication**—Full-pressure feed to main, connecting rod, piston pin and camshaft bearings, and to idler gear stud and gears.
- Ignition**—Provision for mounting standard magneto or distributor. These are not furnished, but customers' ignition will be installed and timed if desired.
- Flywheel Housing**—Fully detachable. Standard shown in installation drawing.
- Oil Filter**—Filtrator receives delivery from pump, filters and then passes oil under full pressure to engine parts.
- Electrical Equipment**—(Extra)—Provision for starting motor and electric generator drives when specified. See installation drawing for mounting details.



WAUKESHA ENGINES

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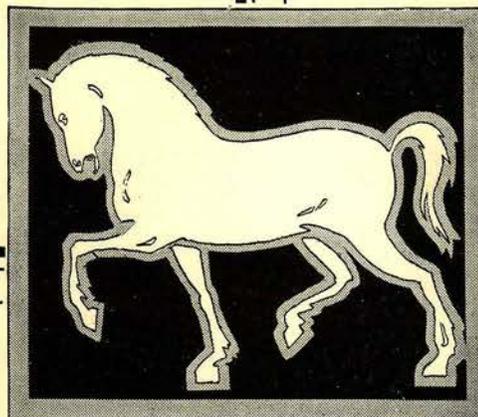
for
MOTOR COACHES, TRUCKS
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THE DISPATCH SIXES

MODEL "6TS"

MODEL "6TL"

Engine
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