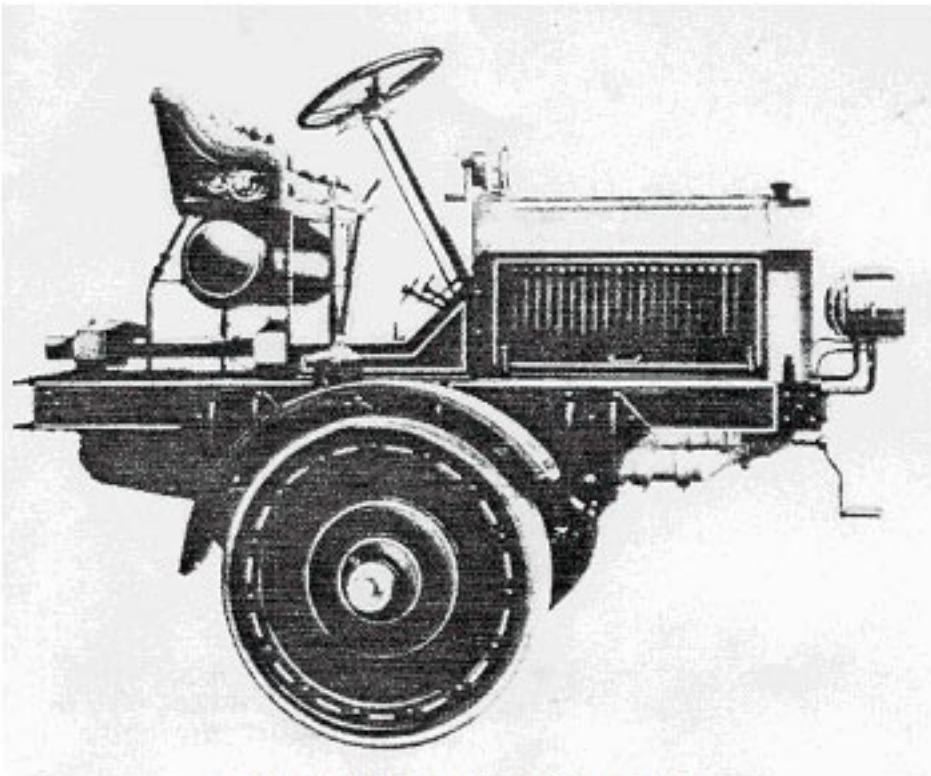
AMERICAN-LAFRANCE



STANDARD TYPE 31

Front -Drive Tractor for Steamer

SPECIFICATIONS

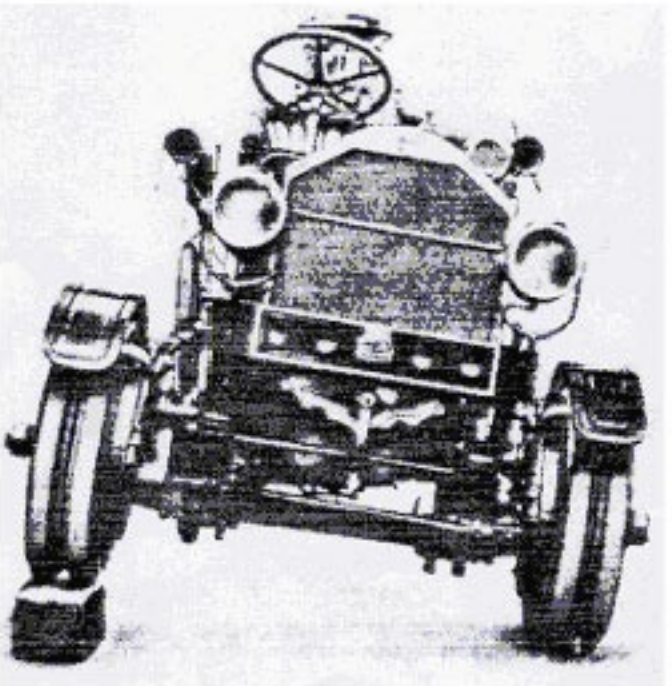
Motor-- Four cylinders, 5 1/2-inch bore by 6-inch stroke, 75 Horse Power.
Wheels-- Cast steel disc type.
Tires -- Single Giant. Special types of tires furnished at additional cost.
Lighting System-- (2) 12-inch electric headlights.
Siren Horn -- One, hand-operated.
Tool Box -- One.
Gasoline Capacity-- 20 gallons, gravity feed.
Bumper -- One.

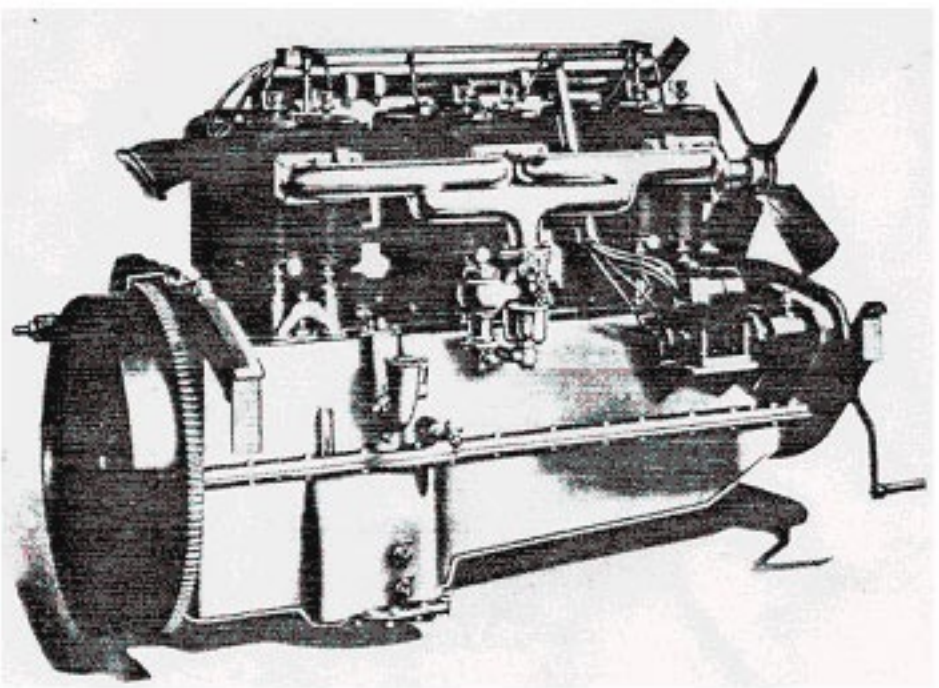
ALL NECESSARY OPERATING TOOLS

This tractor can be furnished with six-cylinder motor if desired

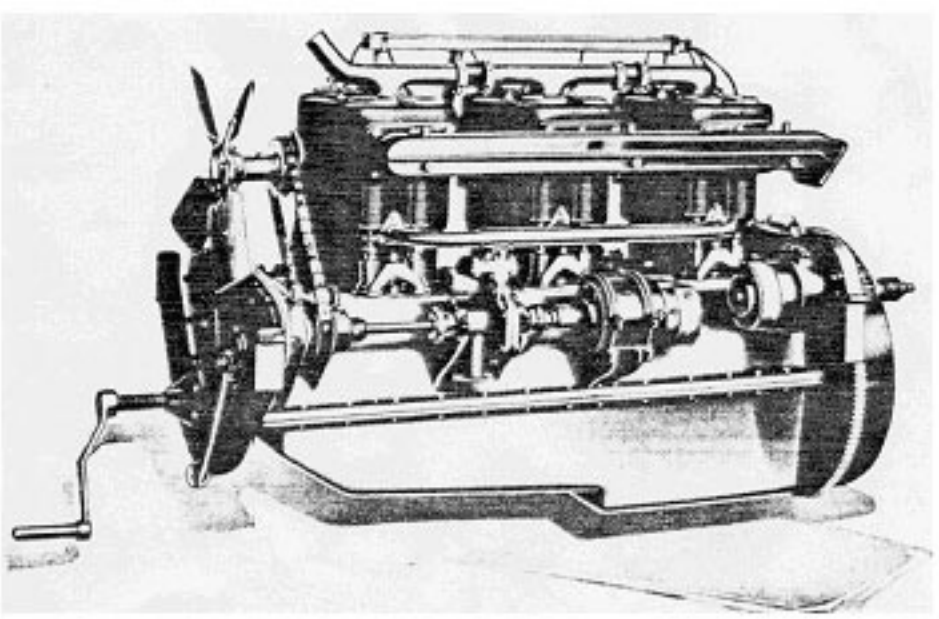
Detailed specifications on request

Our steamer tractors are provided with oscillating trunnion to provide for sway and strain.





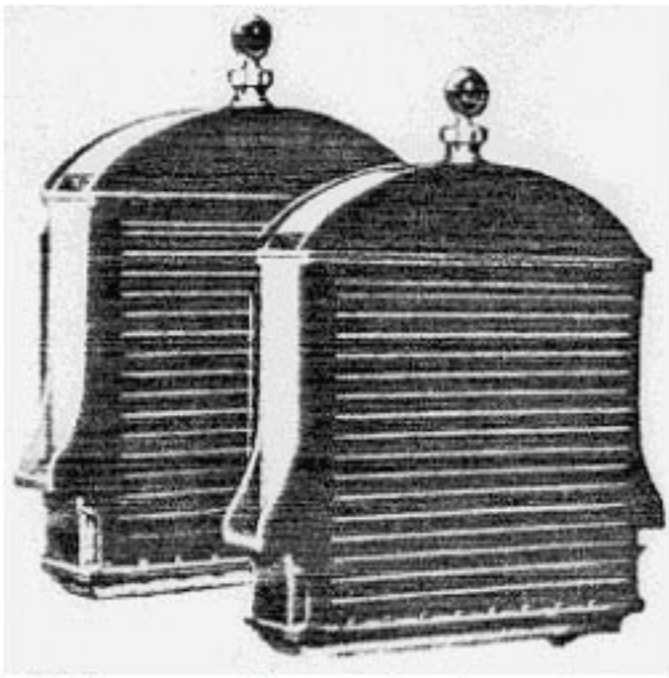
Type 38 Motor--Inlet Side



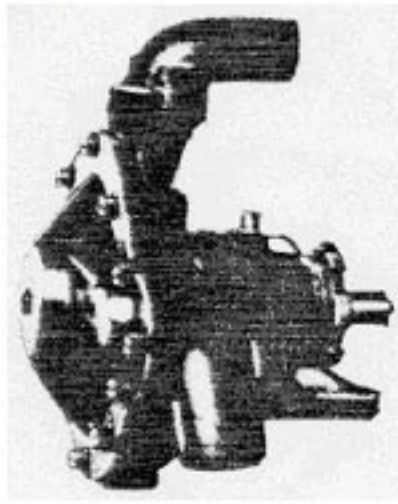
Type 38 Motor--Exhaust Side

VALVES TIMING DRIVING COOLING

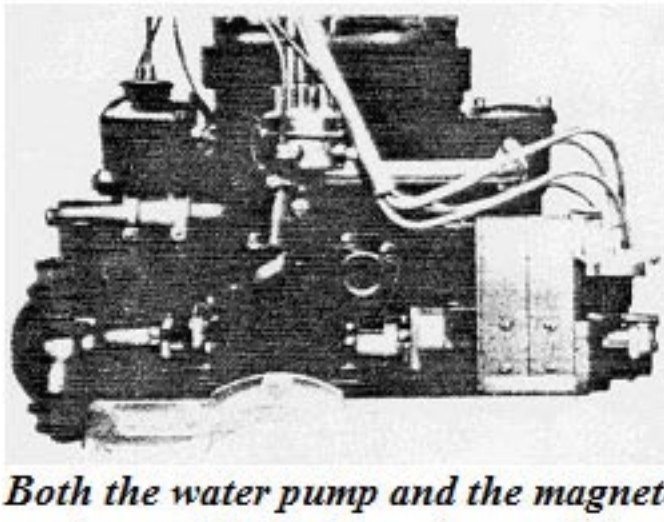
Valves are located side-by-side on the right of the engine, actuated by roller-type lifters and tubular push rods. Tappets, springs and valve stems are housed in two chambers and are accessible by the removal of cover plates that seal the chambers, each held in place by two large wheel nuts. Exhaust valves are of chrome-silicone steel and intake of chrome-nickel steel. Fuel is fed by gravity from a 25-gallon tank on hose wagons and ladder trucks, and from a 40-gallon tank on apparatus equipped with fire pumps.



Efficient cooling results from the use of a continuous-finned radiator core and hand-adjustable steel radiator shutters. The staunch brass upper tank and the aluminum lower tank and side-plates combined with a shock-insulating rubber block support assure freedom from derangements.



A single stuffing box, packed with greaseless, ready-cut packing; a balanced bronze rotor; a stainless steel shaft and a thrustless splined drive are a few of the unusual features of the water pump



Both the water pump and the magneto are located high, dry and accessible at the front of the engine, each driven independently by the cross-shaft and with short and direct connections.

Three-Gear Timing Drive

Timing drive is accomplished with but three gears, namely, the crankshaft, camshaft and auxiliary cross-shaft gears. The first two are of case-hardened steel, while the third is of bronze, set perpendicular to the other two and driven from the camshaft gear. All three have helical teeth, and to secure silent operation and long life, the steel gears are ground to perfect form and surface.

The cross-shaft gear, with its two Timken bearings, is carried in a separate housing bolted to the timing gear extension of the crankcase. The shaft to which the gear is secured extends across the front of the engine, driving the water pump at the right, magneto at the left and distributor at the center. Thus located, the accessibility of these units is greatly increased. Water connections are uncommonly direct. The water pump, located at the front of the engine draw its supply by a short, straight hose connection from the lower radiator tank and discharges it by a similarly short elbow into the front of the cylinder block. Here, instead of flowing into the jackets directly, it is conducted through a brass header, cast in the cylinder block, from where it issues through four holes directly under the exhaust valve seats. The introduction of the coolest water into the hottest part of the cylinder means cooler valves, with less warpage and pitting and more uniform distribution of heat through-out the cylinders. Water jackets are of unusual size, particularly about the valve seats, and of more than usual depth.

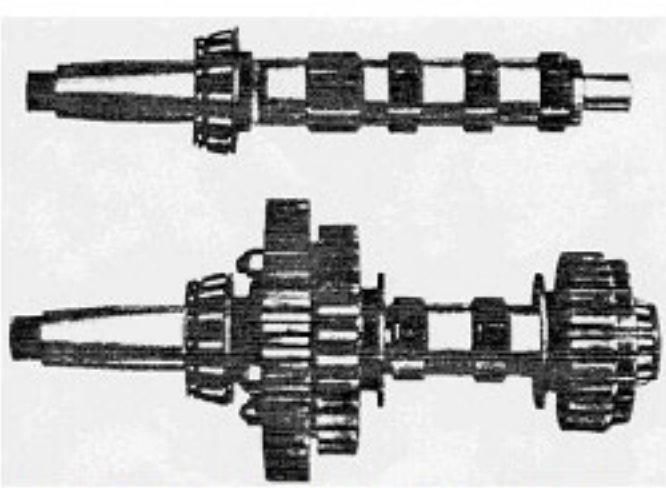
The radiator is of the continuous-fin tubular type, comprising a separate upper tank of heavy nickel-plated brass, a lower tank and side plates of cast aluminum, all bolted together and supporting the core. It is mounted on large rubber blocks so that it cannot be strained by frame weaving. Water temperature is controlled by shutters across the front of the radiator operated manually by a knob placed on the dash convenient to the driver. Their intelligent manipulation is assisted by a Motometer surmounting the radiator cap. A 22-inch, pressed steel fan of four blades is driven by a wide, flat belt from a pulley attached to the camshaft gear.

Effective Lubrication

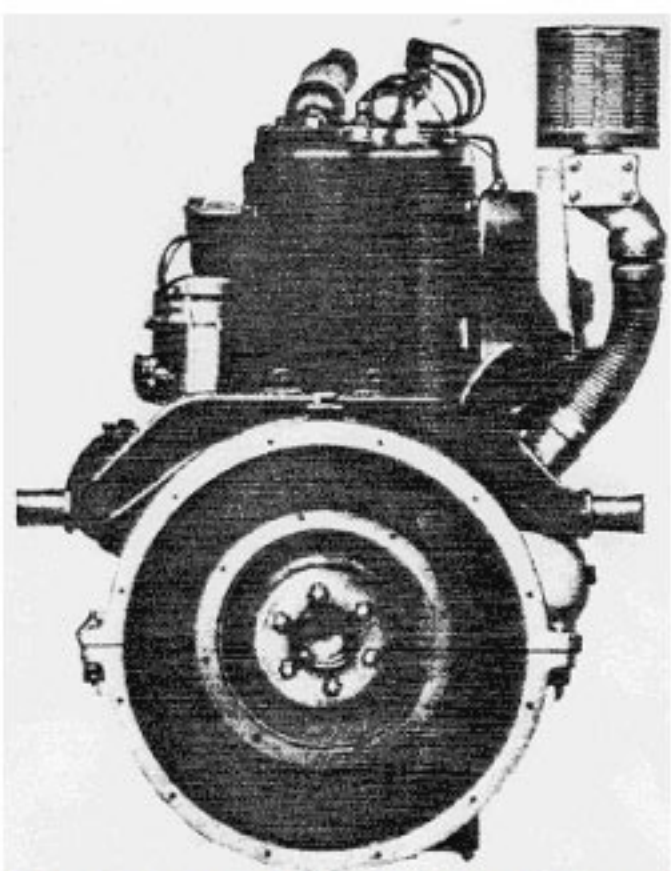
Force feed and splash lubrication are combined in a unique manner. Circulation of the oil is produced by a gear pump located at the bottom of the crankcase oil sump, and driven, as already mentioned, from the camshaft. This pump raises the oil in abundant quantity and under moderate pressure from the crankcase sump to an auxiliary reservoir at the upper left front of the cylinder block and cast integrally with it. With only a thin wall separating the reservoir from the water jackets, the oil is quickly warmed on starting the engine, and is maintained under all operating conditions at a practically constant temperature by the cooling water in the cylinder jackets. This eliminates the dangers of sluggish circulation of chilled oil as well as the disastrous effects arising from overheated oil that has lost its lubricating value.

From the auxiliary reservoir oil is fed to all three main bearings and to the four splash troughs beneath the connecting rods. Scoops on the ends of the rods, dipping into the oil at each revolution, convey an ample amount to the crankpins and throw the balance in the form of a spray over the valve lifters, wristpins and cylinder walls. Oil in the splash troughs is kept at at constant level by continuous overflow, the amount of oil fed being always in excess of actual requirements. Surplus oil in the reservoir is conducted through a large tube to the timing gears, bathing them in a constant cataract of oil.

The oil is twice screened each time it circulates; first, as it is sucked into the pump, and then again as it enters the upper reservoir. Both screens are readily removable for cleaning, the pump screen through a trap at the bottom of the crankcase, while the other is lifted out by unbolting the reservoir cover-plate. With the exception of the short oil pipe leading from the reservoir to the timing gears and the oil gage lead, all oil piping is cast in the crankcase and cylinder block which insures rigidity and freedom from breakage.



The Mack interrupted spline shaft provides a snug and positive drive for the gears while retaining a firm seating on ground surfaces to keep them in line.



Here is shown the rear support beam; in place, the flywheel and its bell-housing.