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MANUAL PREVIEW

Allis Chalmers

Catalog

**L-O Controlled Ignition
Oil Tractors**

Catalog

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MAIN WATER PREVIEW

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MODEL
40

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Controlled Ignition

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GIL TRACTORS

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MANUAL PREVIEW

THE MODEL L-O CONTROLLED IGNITION OIL TRACTOR

The Model "L-O" with its 79 maximum drawbar horsepower and six forward speeds is built to handle your heavy jobs economically. It is a large tractor built powerful and sturdy for tough going in all types of work.

The "L-O" will handle 8 to 10 yard scrapers — 12 to 14 yard crawler wagons — 12 to 14 foot blade graders — all sizes of elevating graders — large size logging arches, snow plows and bulldozers or any of the largest scale miscellaneous jobs you may have.

Burning a wide variety of commercial Diesel fuels, the "L-O" provides numerous advantages found in no other crawler tractor. It is conservatively rated and specifically built to develop its maximum rated horsepower. Completely built by Allis-Chalmers, the "L-O" has definitely established itself as the leader in the field through its design, construction and economy of operation.

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Why ONLY THE "L-O" GIVES YOU

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1 LOWER ORIGINAL INVESTMENT The more you save on your tractor investment, the more working capital you will have available for other needs. That is why the "L-O" is first choice for both large and small jobs. It fits your jobs perfectly — it's not overweight — your investment is based on usable power — you get more power per pound of weight — you get more tractor for your dollar and you profit in every way with an "L-O".

2 LOWER OPERATING COST With the "L-O" you can bid low and still make a profit, because operating costs are lower than on any other track-type tractor. Diesel fuel economy will cut your fuel bill tremendously; and the Controlled Ignition engine, because of its low internal pressures and smooth operation will split your maintenance expense on bearings, pistons, rings, crankshaft, clutches and transmission. Only ordinary good grade lubricants are required — the starting system is simple and trouble-free, the entire tractor is easily serviced right in the field and repair parts are very reasonably priced, providing additional assurance of low cost operation.



3 MORE WORK HOURS PER SHIFT Generally when your tractors are down, so is the rest of your job, but your costs go on whether your men and equipment are at work or not. Built into the "L-O" are the most advanced engineering principles and the highest quality materials, which combined with the Controlled Ignition Oil engine gives you a tractor you can depend upon for 24 hours performance daily, in biting cold or blistering heat.

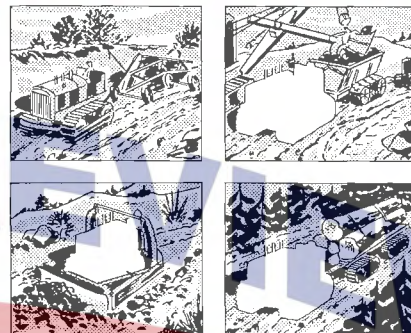
4 HIGHER SPEEDS Because the "L-O" engine employs low compression and Controlled Ignition, it need not be constructed any heavier than a gasoline engine of equal power. Consequently there is no useless dead weight to lug around which absorbs power and fuel, and slows up travel speeds. Stripped for action, the "L-O" can step out at 6½ miles per hour, and set the pace for the entire job. Higher speeds mean more trips per shift and more profit per unit of work. Not only is the "L-O" the most powerful tractor per pound of weight, but it is also the fastest in the field — bar none.



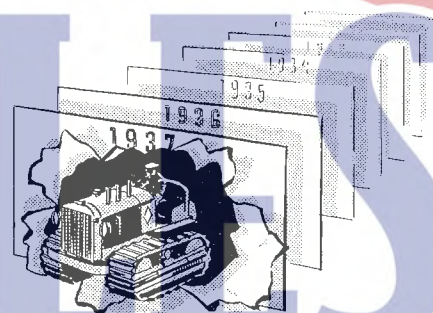
YOU LOWER COST PERFORMANCE

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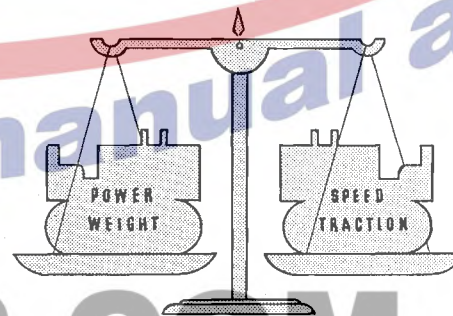
5 GREATER WORK CAPACITY Because the "L-O" is light, powerful and easily maneuvered it can handle all of your jobs profitably. It can be unhitched from your scraper and slipped into a bulldozer — unhooked from a wagon and hooked to a blade grader — attached to a logging arch, and then to a trailbuilder, and handles all jobs on a profitable, economical basis. The "L-O" is just the right size; it fits your jobs, fits your auxiliary equipment and fits your pocketbook.



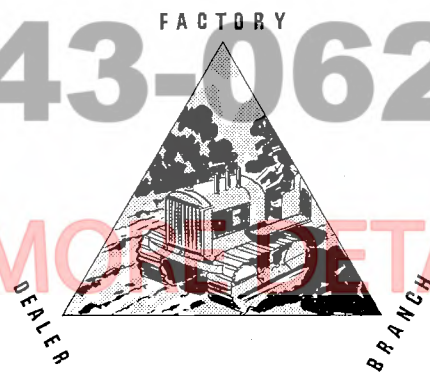
6 LONGER ECONOMICAL LIFE A tractor has two lives, mechanical and economical. Its mechanical life ceases when its parts are worn beyond repair. Its economical life ends long before that — when fuel and maintenance costs rise above that of a new tractor. The "L-O" because of its simple design and quality construction has an unusually long mechanical life. The low compression Controlled Ignition engine, operating without destructive vibration, crankshaft whip, excessively high temperatures and tremendous pressures has an economical life equal to any high grade gasoline engine. The "L-O", and only the "L-O", gives you both long mechanical and long economical life.



7 BETTER BALANCE Pulling power depends upon proper relationship between weight and power. A tractor must have just enough weight to enforce traction, be light enough to provide speed and powerful enough to pull both itself and its load. All of these essentials are found in the "L-O". Its engine develops maximum power per pound of weight, its speed is unmatched in the entire field, and it develops approximately 7 drawbar horsepower per ton of weight. That is why the "L-O" can step into your job and outperform any other tractor.



8 THREE POINT SERVICE Back of every Model "L-O" stand three organizations ready and willing to lend every assistance possible to you in the way of service, repairs and inspections. Large stocks of repairs are maintained at the factory — the factory branches, located in principal cities, carry a reserve supply of parts and in addition, every dealer carries an ample supply. Thus, prompt, courteous service and reasonably priced repair parts are available at a moment's notice. Factory trained service men operating from factory and branches, support the dealer's men, assuring you of efficient service.



INCREASED PRODUCTION THR

In most every industry railroading, contracting, automotive, etc. the trend in machine design is toward lighter weight, higher speed machines capable of increasing pay loads and speeding up schedules. Higher speeds have brought lower operating costs, increased production and greater profits to every industry that has recognized and taken advantage of the possibilities weight reduction affords.

In the tractor industry, only Allis-Chalmers has provided high speed tractors to give you greater power through scientific weight reduction, and strength and ruggedness through the use of new light weight alloy steels, new design technique and new manufacturing methods. Allis-Chalmers engineers were the first to realize that a tractor must be both powerful and fast and first to develop a tractor with excess tonnage eliminated.

Excess tractor weight costs in many ways — you pay for it originally — you pay to transport it — you pay for more fuel to move it — you pay for increased maintenance — you decrease your effective pulling power — you decrease your speeds and you increase the unit cost on your job. Weight in a tractor over and above that required to convert the engine power into drawbar power has absolutely no value.

The real value of a tractor depends upon its pulling power, yet no tractor can pull a pound until it first moves itself. Because the tractor absorbs the engine power first to move itself and applies what is left over to move the load, it is vitally important to reduce the tractor weight so that a greater portion of the engine's power is applied to move the load.

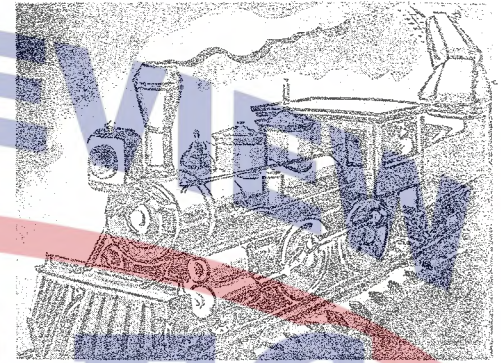
In the "L-O" scientific weight elimination and distribution have resulted in a tractor that is stripped for action — dead weight has been eliminated — strength increased, power more efficiently applied and speeds stepped up to give you a tractor that will out-last and out-perform any other type.

STRENGTH WITHOUT WEIGHT

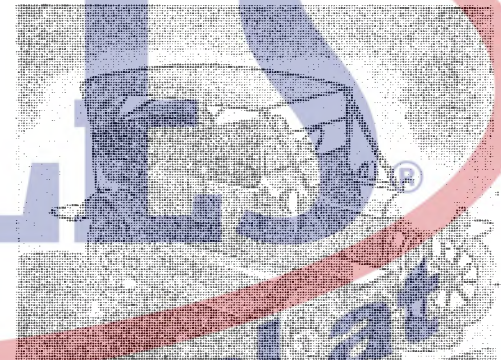
It's strength that is required in a tractor — not weight. Strength to withstand severe service, strength for bulldozers, scrapers, logging or snow bucking, yet the tractor must be fast and flexible. The "L-O" gives you



Fifty years ago excavating equipment was built big and heavy—large in bulk, but small in capacity.



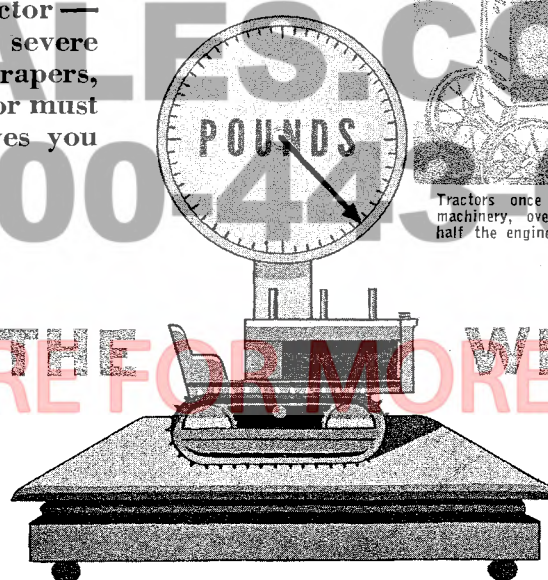
Years ago trains were big, heavy and slow. Average road speeds were approximately 20 to 25 miles per hour.



Twenty-five years ago the automobile's average running speed was 15 miles per hour, because their excessive weight, in order to achieve strength, prevented greater speeds.



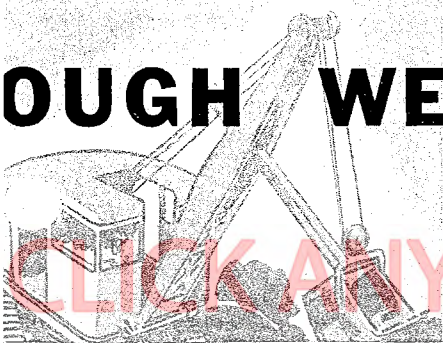
Tractors once were huge, slow, cumbersome masses of machinery, overweight and underpowered with more than half the engine power required to move the tractor itself.



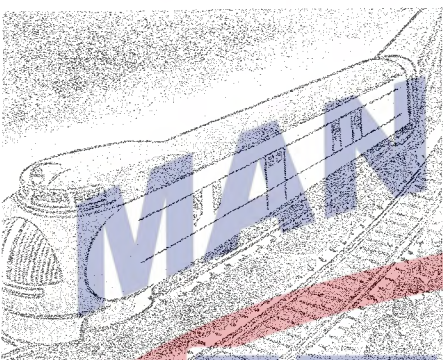
DON'T VALUE THE WEIGHT

- Increased Original Cost
- Increased Fuel Consumption
- Increased Maintenance
- Increased Transportation Expense

OUGH WEIGHT REDUCTION . . .



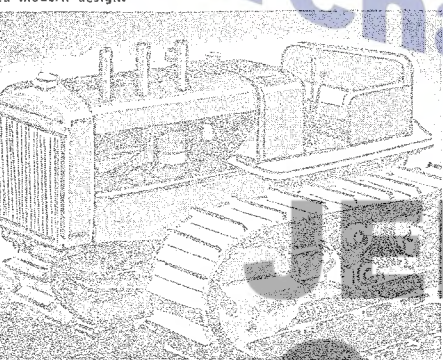
Day's power shovels are light and speedy—weight is reduced, strength increased and capacity stepped up, through use of new steels and dead weight elimination.



Today, light weight streamline trains haul larger pay loads. Weight elimination, anti-friction bearings and scientific design brought higher speeds and greater profits to the railroads.



The average speed of the present automobile is 45 miles per hour—due to its lighter weight, use of anti-friction bearings and modern design.



Today the trend in tractor design is toward the elimination of dead weight so that greater pay loads can be hauled. Illis-Chalmers has pioneered this trend, and the "L-O" now possesses greater strength, speed and power per pound of weight than any other track type tractor.

maximum strength with minimum weight through the use of higher grade alloy steels, unit construction instead of frame supports, scientifically designed transmission case, elimination of complex, differential steering, simple track alignment instead of heavy cast diagonal braces and general all around simplicity of design. Throughout the "L-O" strength is achieved not by adding metal to make a part heavier, but by improving and perfecting the quality of the steels.

POWER WITHOUT WEIGHT

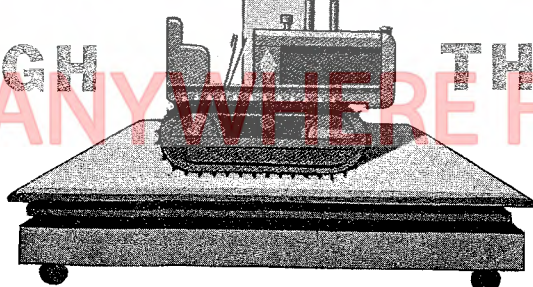
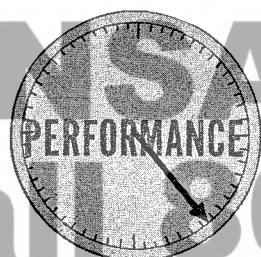
Weight doesn't mean power! If it did your steam roller would be ideal for your scrapers and heavy duty jobs. It's power you need—unhampered by excessive weight. The "L-O" has just the right balance between horsepower and weight — ample power to handle the weight of the tractor — ample weight to balance the engine power. To this perfect power-to-weight ratio — the "L-O" owes its ability to haul big loads in tough going, to pull up steeper grades than any other tractor, to tread lightly on soft fills or embankment edges, and obtain traction in loose footing.

SPEED WITHOUT WEIGHT

Weight reduction throughout the "L-O" has made possible not only a variety of 8 speeds (6 forward and 2 reverse), but a high speed of 6½ miles per hour, to supply a speed for every need. Higher tractor speeds cut travel time, increase the trips per shift and step up the pace of the entire job.

DIESEL FUEL ECONOMY WITHOUT WEIGHT

The elimination of dead weight has been one of the most important problems in applying Diesel fuel burning engines to tractor service. The "L-O" is the first and only tractor built which has successfully overcome the handicap of excess weight and provided Diesel fuel economy. Since the "L-O" does not depend upon high compression to effect ignition, and all operating and internal pressures are low there is no necessity of building a large, heavy engine block, heads, crankshaft, bearings, or fly-wheel to withstand high operating pressures. Low compression means less weight — and less weight means more speed, power and economy.



Value!

- ⊙ Lower Original Investment
- ⊙ More Power per Pound
- ⊙ Higher Speeds
- ⊙ Greater Grade Climbing Ability
- ⊙ More Efficient Use of Engine Power

Controlled Ignition ENGINE

The Controlled Ignition Oil Engine, designed and developed by Allis-Chalmers provides three-way operating economy: (1) it burns a wide variety of low priced Diesel fuels (2) fuel consumption per horse power developed is less than with gasoline engines (3) maintenance expenses are reduced far below any other type of Diesel fuel burning engine.

This triple economy is possible only with the Controlled Ignition engine because it employs a new, improved system of engine operation combining gasoline engine simplicity with the economy of Diesel fuel. The Controlled Ignition engine is a low compression engine differing from a gasoline engine in that it burns Diesel fuel which is injected into the cylinder by a pump, and differing from any other type of Diesel engine in that compression pressures and temperatures are low and ignition is controlled by means of an electrical discharge.

The compression pressures and temperatures in the "L-O" engine are only one fourth of those required in other types of engines depending upon heat of compression for ignition. Consequently, the internal pressures are barely higher than in gasoline engines and the "L-O" runs more smoothly, idles more evenly, and eliminates all crankshaft whip and damaging vibrations which are the result of high internal pressures.

In addition the low compression principle eliminates the excessive wear and maintenance cost due to blow-by, stuck rings, gummed valves and scored cylinder walls resulting from high internal combustion pressures. The "L-O" engine provides a simple, controlled, electrical ignition system which assures instantaneous, positive ignition and a complete orderly burning of each fuel charge.

The triple thrift of the Controlled Ignition Engine — Diesel Fuel economy, fuel consumption economy, and maintenance economy are your assurance of low cost tractor operation — and only the "L-O" provides these three essentials.

RUNNING



INTAKE A measured quantity of cleaned air is drawn into the combustion chamber. The quantity is varied according to engine load by the governor.

COMPRESSION The air is next compressed to approximately 160 pounds pressure. 60° before top dead center Diesel fuel is injected and thoroughly mixed with the air.

POWER The mixture is next ignited by an electrical discharge from the ignition system. Smooth, even power is delivered because of the gradual burning of the fuel charge.

EXHAUST The exhaust valve opens and the burned gas is expelled from the cylinder in exactly the same manner as in a regular gasoline burning engine.

BURNING TRACTOR ENGINE!

The "L-O" engine is built for tractor service — built to operate in dirt and dust — in mud and water — at the Equator or the North Pole. Its foundation is this large one-piece cast block well ribbed and braced which keeps all reciprocating parts in alignment and bolts directly to the transmission case.

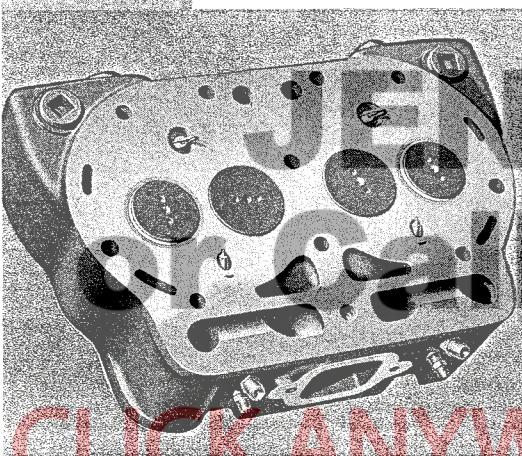
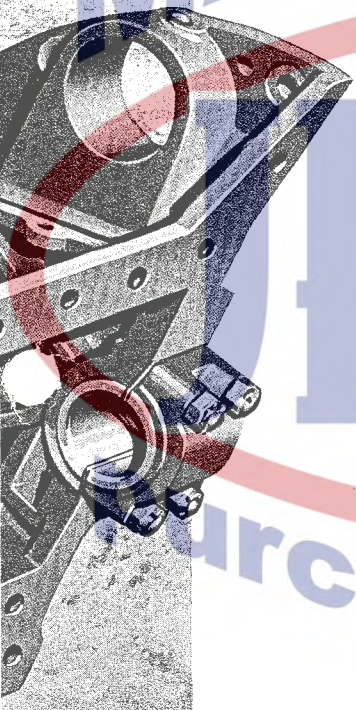
A carefully balanced special carbon steel forged crankshaft of the suspended type is held in alignment by four large main bearings. Both crankshaft and main bearings are sufficiently lubricated at all times by pressure through drilled passages in the crankshaft.

Three cast nickel alloy cylinder heads, each covering two cylinders, with extra large cooling areas around the valve seats are employed on the "L-O" engine. The water jackets completely surround each valve, preventing hot spots and valve warping and assuring efficient operation under all conditions. Controlled Ignition further simplifies the heads as there are no pre-combustion chambers, hot spots or other ignition means to keep hot.

Easily removable, heat resisting, nickel iron cylinder liners assist in more efficient cooling and prevent the cylinders from expanding out of shape when hot. This type of construction also eliminates the necessity of costly, inaccurate block reboring.

Cup-shaped pistons form the combustion chambers and completely cover the cylinder walls at the top of the stroke, preventing the fuel mixture from coming into contact with the cool cylinder walls.

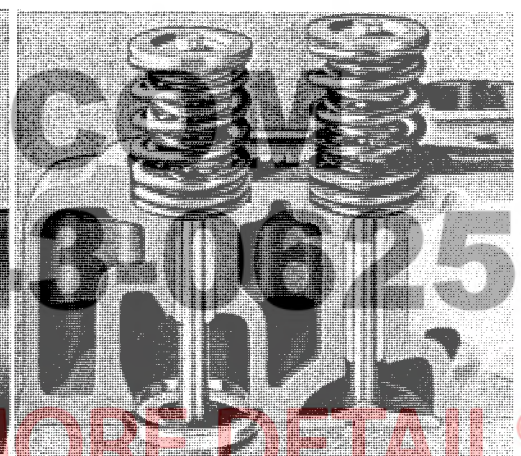
Every modern engineering principle is employed in the design of the "L-O" engine to lengthen its life and improve its service. Inserted valve seats, removable liners, full force lubrication, efficient oil, fuel and air filters and special alloy metals all contribute to the dependable performance you expect and deserve in a tractor engine.



Three cast nickel alloy cylinder heads, each covering two cylinders, are employed. Water jackets completely encircle each valve. Large diameter overhead valves provide generous intake and exhaust passages.



Six removable, heat resisting, nickel alloy cylinder liners are employed which assist in more efficient cooling and eliminate the necessity for costly, inaccurate reboring.



Longer valve life is assured through the use of special tungsten steel exhaust valve inserts. The exhaust valve seats are made hard and durable by stellite facing.



or Call 800-443-0625

① The Model "L-O" will burn a wide variety of Diesel fuel which is stored in the fuel tank and drawn into the transfer pump where it is subjected to approximately 10 pounds of pressure and pumped to the fuel filter.

② The fuel filter positively removes any foreign matter, preventing damage to the pump or injectors. The fuel is cleaned at four points before entering the combustion chamber; first, by a screen at the entrance of the fuel tank; second, by a screen in the transfer pump; third, by the fuel filter, and fourth, by a fine screen in the injectors.