January 1940

Advertising Brochure: International Harvester TD-6 Crawler

Nebraska Tractor Test Lab
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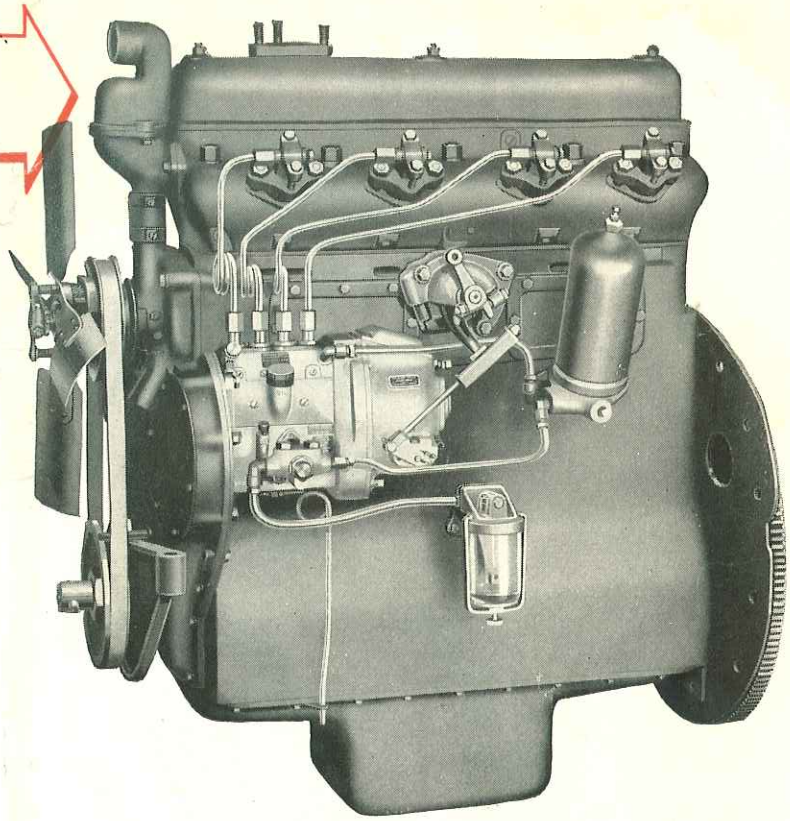
INTERNATIONAL

TD-6

DIESEL

TRACTRACTORS

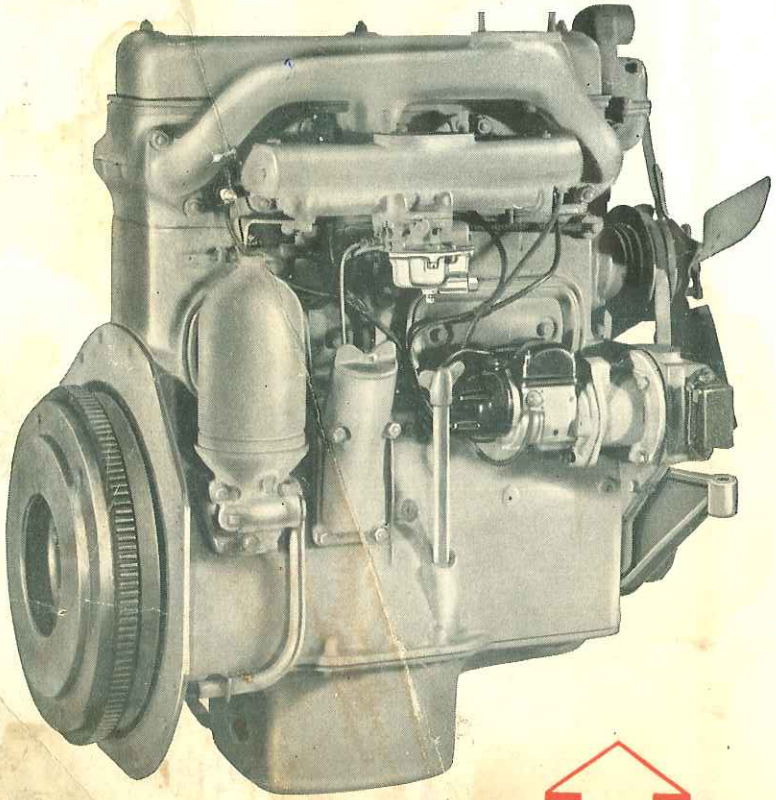
MONEY SAVING DIESEL



International TD-6 power plant delivers low - cost Diesel power. Note the accessible location of the fuel filter, injection pump, injection nozzles, and the sediment trap.

THE International Diesel TD-6, small member of the Diesel TracTracTor family with new standards of economy and power, meets the requirements of a large number of crawler tractor users. It is powered by a compression-ignition 4-cylinder, 4-cycle Diesel engine with a bore and stroke of 3⅞ by 5¼ inches.

TD-6 TracTracTors, like all other International Diesels, are easy to start and quickly on the job. They have hand clutches, five advantageous traveling speeds, and are available in two treads, 40 and 50 inches, with various shoe equipment. They are comfortable for the operator and have clear view, both ahead and to the rear. In addition to the many outstanding features of construction and performance, the TD-6 is backed by International Harvester's nation-wide service organization which assures economical, long-life performance.



The manifold and starting side of the TD-6 engine, showing location of magneto, spark plugs and carburetor, used for starting.

THE 4-cylinder Diesel engine of the TD-6 TracTracTor is designed and built for heavy-duty tractor service. It operates on small quantities of low-cost fuel, idles smoothly, responds quickly to the sensitive governor to meet load changes, and delivers economical power on all loads within its capacity.

The cylinder blocks are ribbed to maintain accurate bearing alignment. Hardened, replaceable cylinder sleeves permit quick and easy replacement should one become scored through neglect or worn after long service.

A double oil pump and full-pressure system assure positive lubrication of all working parts whether operating on level terrain or steep hillsides. Oil under pressure is conveyed through rifle-drilled passages in the crankshaft, connecting rods, and engine block to all engine bearing surfaces.

Other features contributing to the high efficiency of the Diesel TD-6 engine are the precombustion chamber design; five-bearing, Tocco-hardened crankshaft; efficient cleaners for air, fuel, and lubricating oil; replaceable, precision-type bearings; centrifugal water pump; by-pass type, thermostatically controlled cooling water circulation; and direct cooling of the valve seats.

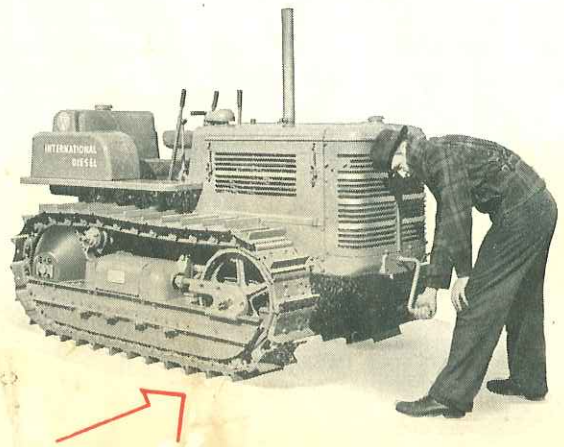
ENGINES

THE Diesel TD-6, like all other International Harvester Diesels, can be cranked by hand as easily as a gasoline engine of corresponding size. One operation, raising a lever on the dash, temporarily converts the TD-6 Diesel into a gasoline engine for starting. An auxiliary chamber containing a spark plug is connected to each cylinder. A gasoline carburetor prepares the fuel mixture and a high-tension magneto supplies the spark. While the engine is operating on gasoline, the combustion areas are heated by direct flame, greatly shortening the warm-up period required for successful compression-ignition. From a cold start, the engine can be shifted to full Diesel operation after about one minute's operation as a gasoline engine. This eliminates the use of a separate starting engine, numerous gadgets, or high-voltage batteries.

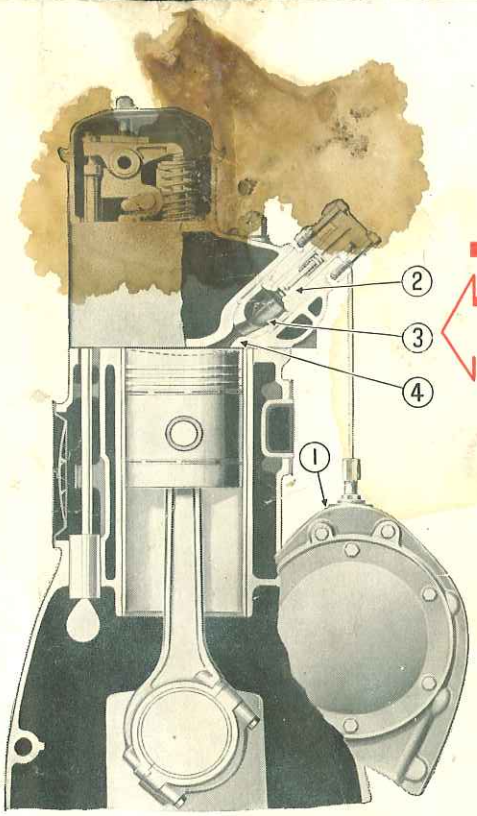
The International precombustion chamber and injection nozzle design enable the engine to perform economically and smoothly under the various load and operating conditions demanded of tractors in heavy-duty service. The injection nozzles are compact, single-hole type, set at a 45-degree angle in the cylinder head. Water jacketing around the precombustion chambers maintains the desired uniform temperature necessary for maximum power and smooth idling.

The pistons are aluminum alloy, with five rings—three compression, and one oil ring above the piston pin and one oil ring below. Large overhead valves provide free passage for intake air and exhaust gases.

The TD-6 engine, with its many outstanding features of design, is carefully manufactured by skilled craftsmen and is economical in operation, dependable in performance, yet simple to operate and maintain.



(Above) The Diesel TD-6 can be started any time, and anywhere, easily, by hand cranking. This distinctive International Harvester feature is appreciated any time of the year and especially in cold weather.



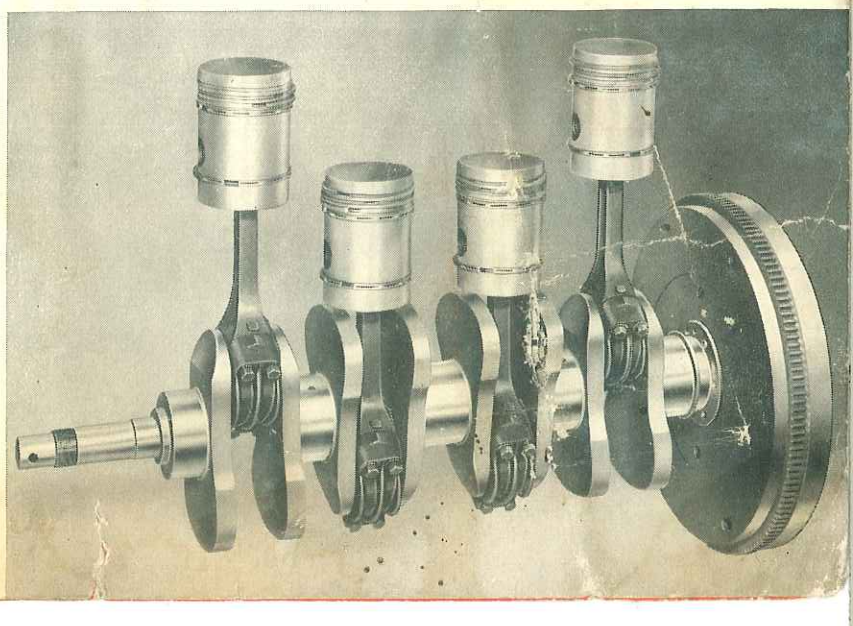
(Left) The fuel injection pump, nozzle, precombustion chamber, and their relationship to the cylinder are well shown. The fuel passes from the injection pump (1) through the injection nozzle, and injection valve (2) into the precombustion chamber (3). Combustion starts in the precombustion chamber, forcing the fuel charge through opening (4) into the combustion chamber above the piston.

INTERNATIONAL HARVESTER crankshafts are accurately machined and balanced dynamically (in motion) and statically (at rest) with precision machines. In addition to all regular heat treatments, the bearing surfaces are Tocco-hardened. The Tocco process provides the toughest and longest-wearing crankshaft bearings ever developed.

The crankshafts are rifle-drilled for pressure lubrication to the connecting-rod bearings and also to convey lubricant through the connecting rods to the full-floating, bronze-bushed piston pins.

The main and connecting-rod bearings are the replaceable, precision, steel-backed type. They can be replaced in the field if necessary, as they require no fitting operations.

(Below) The TD-6 crankshafts are heavy drop forgings of alloy steel.



Lo

Moving big loads with a 6-foot bullgrader is everyday work for the International TD-6 TracTracTor.

The International Diesel TD-6 TracTracTor meets the growing demand for a small Diesel with International's positive, easy starting combined with proved construction, dependable performance, and long-life operation.

Snaking logs out of the trackless forests supplies work for many TD-6 TracTracTors in logging sections, and with a five-speed transmission, moves more board feet per day.

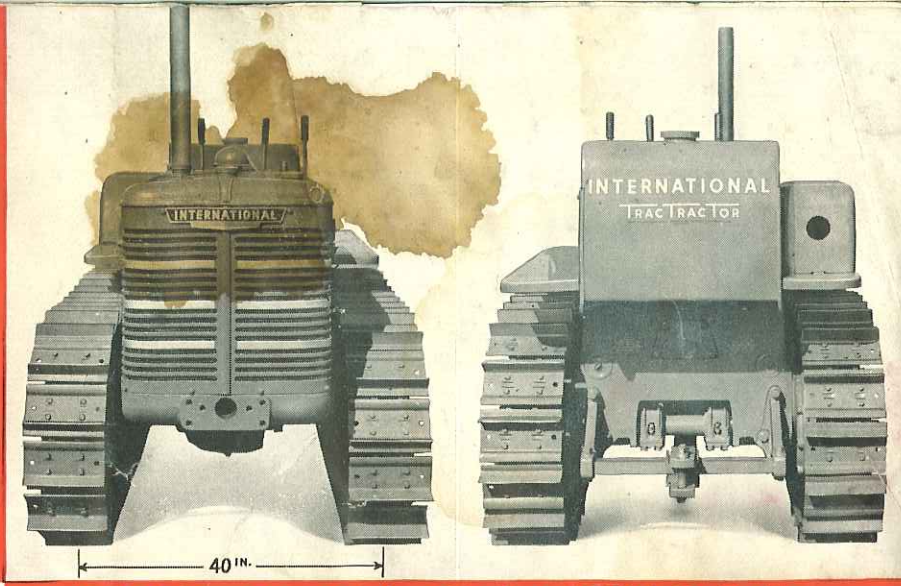
TD-6

This TD-6 digs and side casts dirt with an 8-foot bullgrader blade.

Ample power for pulling three 14-inch plows eight inches deep in northwestern soils.

Harrowing a wide strip wit
International TD-6 TracTrac

w-Cost Power for Many Jobs



Front and rear views of the 40-inch tread TD-6 TracTracTor. Mounting pads on front and rear of main frame and also track frames adapt the tractor readily to various types of operating equipment. Power take-off and belt pulley operate at the rear center of the tractor.

TYPICAL WORK OF THE TD-6 IN FARMING OPERATIONS:

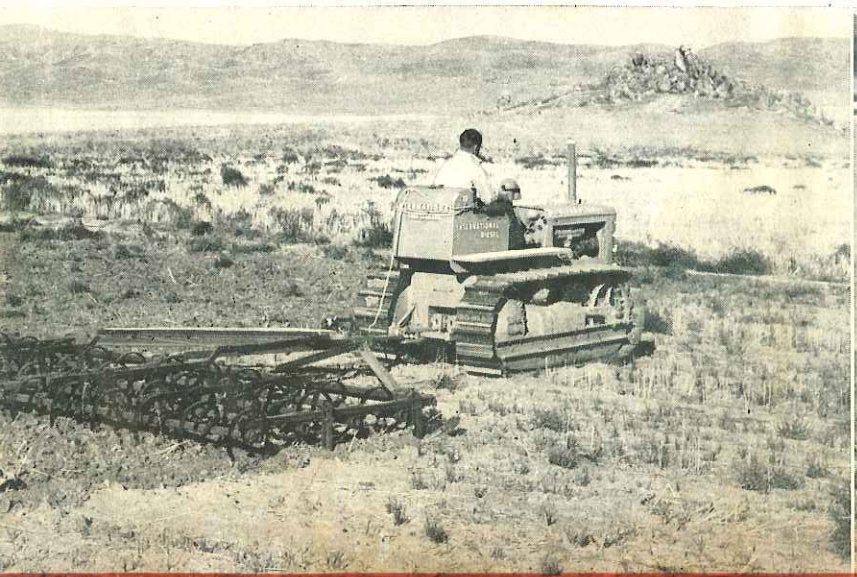
Pulling—
- Three and four 14-inch plows
- Ten-foot double-disk
- Lister cultivators
- Subsoilers
- Power take-off combines

Operating—
- 24-in. and 26-in. threshers
- Sprayers, silo fillers, and other belt machines

HIGHWAY AND INDUSTRIAL MACHINES OPERATED BY THE DIESEL TD-6:

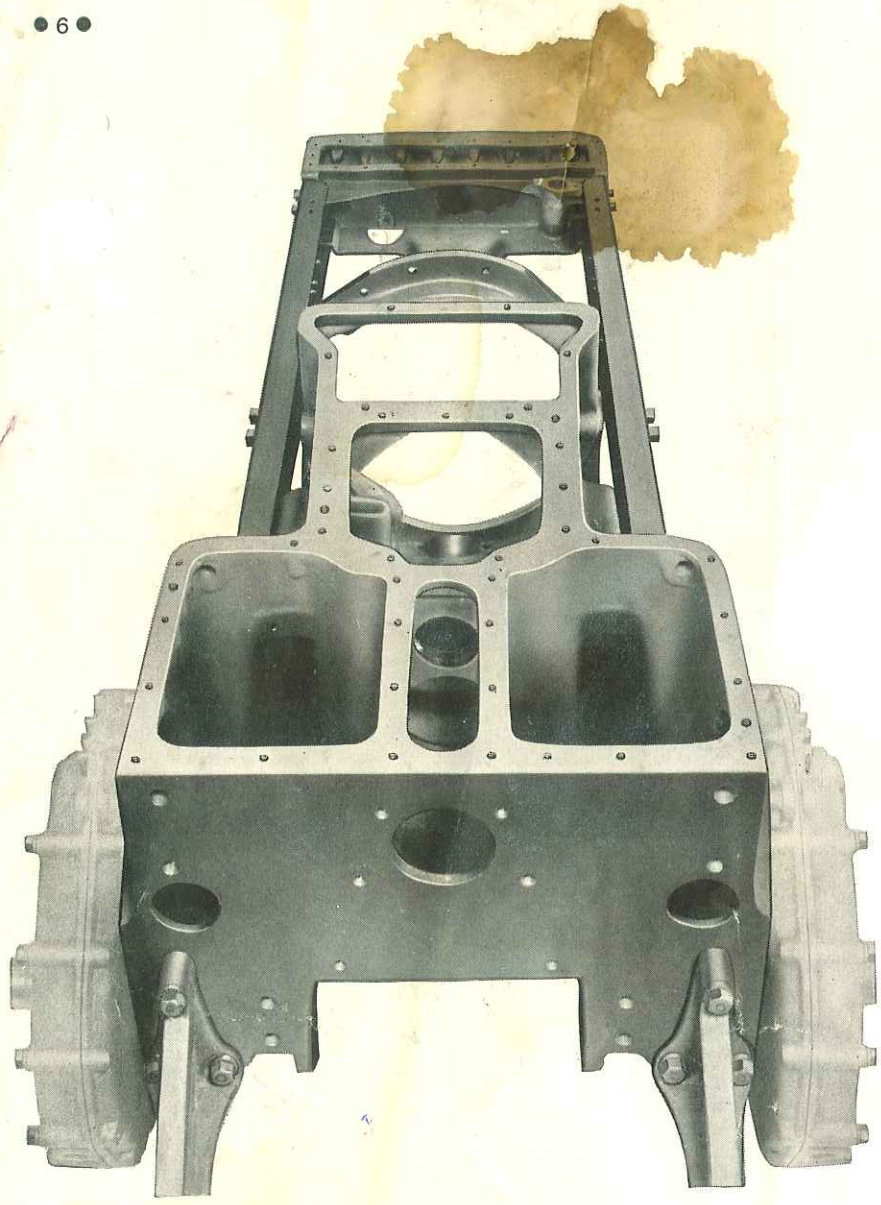
Pulling—
- Eight-foot blade maintainers
- 2-3 yard loading scrapers
- 6 and 7-foot bulldozers
- 7 and 8-foot bullgraders
- ¾-yard roll-over scrapers

Operating—
- Oil field winches
- Logging equipment and similar units



a heavy spring-tooth harrow is but one of the many applications of the ors.

The TD-6 double-disks 10 feet in heavy soil, and does other field and belt work in proportion.



International TracTracTors, with their rugged frames, are built to "stand the gaff" in the toughest going.

BUILT FOR

A HEAVY, reinforced casting houses the transmission, bevel pinion and gear, steering clutches, and steering brakes. Channels of steel are securely bolted to the main casting and tied in front by the heavy radiator base. This rugged foundation absorbs stresses, strains, and twists, relieving the operating units of this punishment.

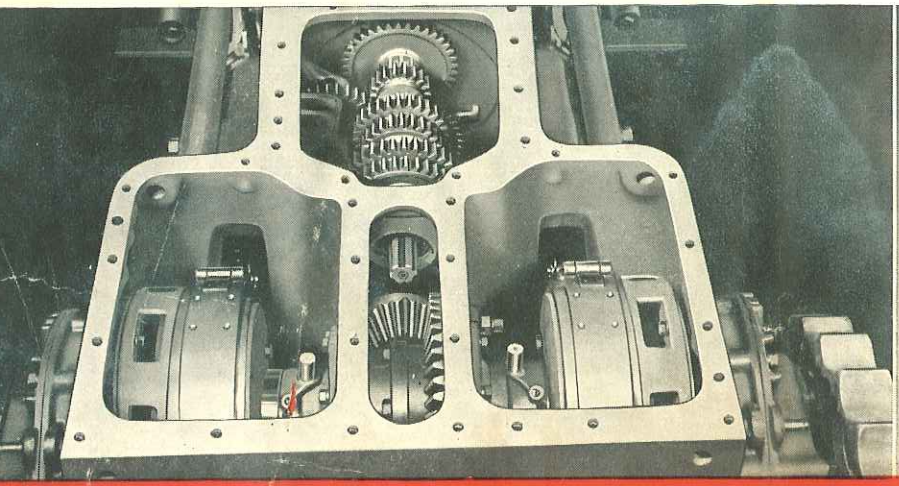
TracTracTors are built on International Harvester's proved unit construction design. Each unit, engine, steering clutches, track frames, driver's compartment and other units are constructed as independent assemblies and then placed in the rugged main frame. In addition to providing a rugged backbone to absorb shocks and stresses, unit construction simplifies inspection and service, for when occasion arises units can be removed without disturbing adjacent members.

5-Speed Transmission

Five forward speeds increase work capacity and lower costs by making possible full use of maximum engine horsepower on all types of loads from slow, heavy pulls to fast speeds with light loads. An engine clutch brake, which slows the transmission gears, assists in quick shifting from one speed to another.

Steering Clutches and Brakes

The main frame casting provides dry compartments for the steering clutches and steering brakes. The multiple-disk steering clutches are operated through light pressure on the hand levers. The clutches are accessible for adjustment through top or rear cover plates, while the contracting wide-band steering brakes have an accessible external adjustment and an inside adjustment reached through the lower cover plates.



The steering clutches and steering brakes are located in separate dry compartments in the main frame. Either steering clutch or brake assembly can be inspected, adjusted, or replaced independent of the other units. The clutches are removed through the top cover plates, while the brakes can be removed through lower cover plates.

Drivers appreciate the upholstered comfortable seat, adjustable steering levers and brake pedals, convenient controls, unobstructed view ahead and of pulled machines, and the easy, positive-starting engine, which results in increased daily output.

LONG-LIFE

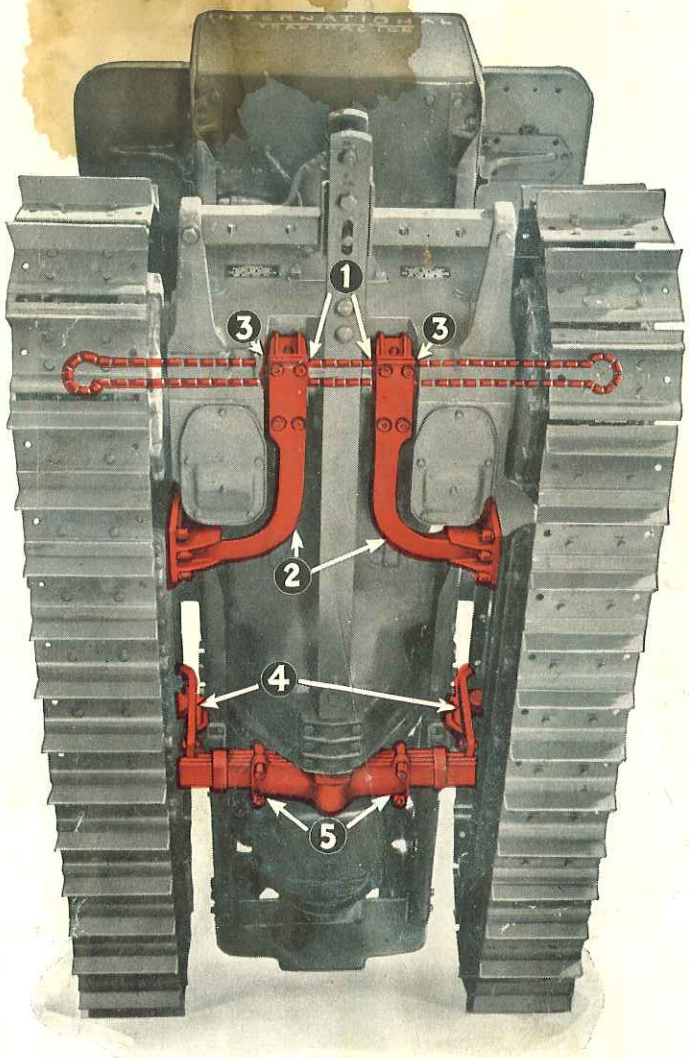
THE exclusive International track frame and stabilizer construction is another outstanding development in track-type tractor engineering. This feature assures free oscillation and positive alignment of the tracks under all conditions, maximum track-to-ground contact permitting higher traveling speeds, and easier handling of the tractor.

A heavy pivot shaft (1) extends through the tractor, from track to track. The driving sprockets revolve about this stationary axle. The track frames are mounted on this same axle through a ball-and-socket joint, thus eliminating any twisting, or leverage loads at this point. Sturdy steel arms (2) securely attached at the midpoint of the track roller frames are mounted on wide bearings (3) on the axle shaft (1). These arms have only one function—to prevent the tracks from tilting. Stabilizer rollers (4) bolted to the tractor frame hold the tracks in horizontal alignment. These rollers permit track guides and tracks to oscillate up and down freely, yet always in alignment. A heavy equalizer spring (5) cushions the front of the tractor.

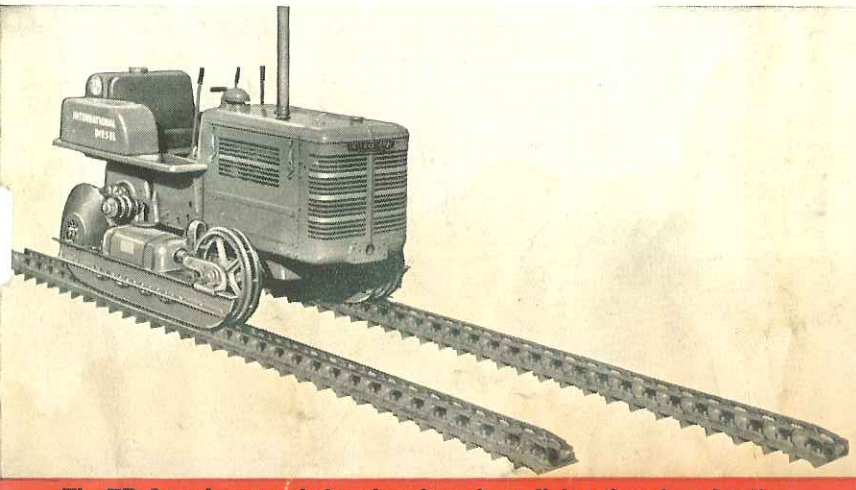
Track Frames

The track frames are built up of two channels securely fastened together. Four lower track rollers, one upper track roller, and a double compression spring comprise the track frame assembly.

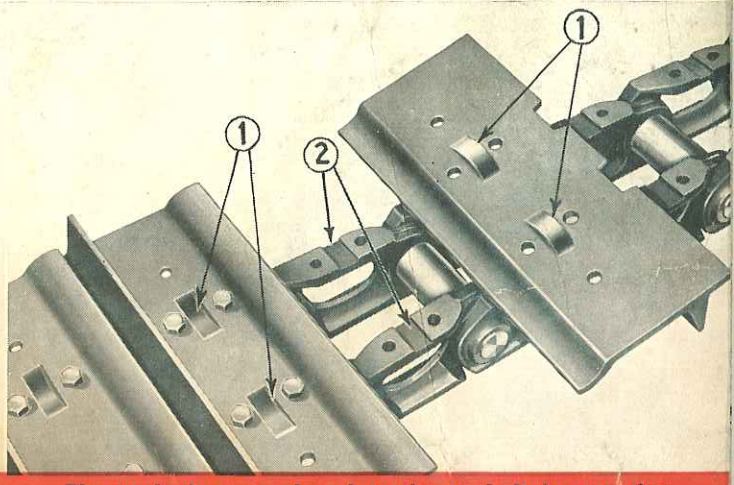
All track rotating parts, including sprockets, idler, and track rollers have multiple sealing protection which keeps dust, sand, snow, and water out and the oil in. The sprockets have the International Harvester diaphragm seal on each side, while the others have multiple spring-loaded rawhide seals, dual felt washers, and labyrinth seals.



Underview of the International TD-6 TracTracTor, showing the new-type track stabilizer construction. Note the forward mounting of the drawbar.



The TD-6 tracks extended to show how the well distributed track rollers roll on the track and track chains. The chains form a regular rail, and with both the track roller and chain surfaces hardened, wear is reduced to a minimum. Multiple dust seals keep the dust, water, and dirt out and oil in.



The track shoes are keyed to the track links—another exclusive feature. Two integral keys (1) in each shoe fit into slots (2) in the track links. The bolts hold the track shoes firmly against the links; twisting and shearing action is transmitted direct to the keys, relieving stress on the bolts.

TD Specifications

Capacity—maximum values from observed performance corrected to 60° F. at sea level (barometric pressure, 29.9 inches mercury) according to A.S.A.E. and S.A.E. test code.	
Belt horsepower	36
Drawbar horsepower	30
Maximum drawbar pull in pounds at rated governed engine r.p.m.:	
First	6,500
Second	5,000
Third	3,500
Fourth	2,700
Fifth	1,750
Speeds in m.p.h. computed at rated governed engine r.p.m.:	
First	1.5
Second	2.2
Third	3.1
Fourth	3.8
Fifth	5.4
Reverse	1.7
Engine—four-cycle Diesel:	
Number of cylinders	4
Bore in inches	3.875
Stroke in inches	5.25
Rated governed speed, r.p.m.	1,450
Piston speed in feet per min.	1,269
Piston displacement, cu. in.	247.7
Displacement, cu. in. per min.	359,165
S.A.E., N.A.C.C., or A.M.A. horsepower rating	24.0
Engine lubrication—crankshaft, connecting rods, camshaft, and valve rocker levers	Full Pressure
Crankshaft:	
Number of main bearings	5
Diameter, main bearings, inches	3.75
Total area, main bearings, surface, sq. in.	91
Engine clutch (single-plate, over-center) with automatic clutch brake, diameter, inches	12
Fuel	Diesel

Track dimensions, inches:	
Tread—center to center of tracks	40 or 50
Length of tracks on ground	58.75
Regular track shoes (keyed and bolted to track links), width	10
Height of regular grousers	1.94
Track-driving sprocket pitch diameter	24.19
Diameter, track shoe bolts	.4375
Diameter, track link pins	1.25
Diameter, track link bushings	1.813
Area of ground contact (with regular track shoes), sq. in.	1,175
Pull-bracing grouser area (with regular track shoes), sq. in.	388
Number of track rollers, bottom	8
Number of track rollers, upper	2
Tractor dimensions, inches:	
Length, overall	104
Width, overall, 40-inch tread	53
50-inch tread	63
Height, base of shoe to top of exhaust pipe	72.25
Height, tip of grouser to highest point exclusive of air cleaner and exhaust pipe	59.25
Minimum ground clearance, from base of shoe (at equalizer spring)	8.75
Drawbar, inches:	
Height, above ground	12.25
Lateral movement (at pin)	19.375
Steering clutches:	
Diameter, inches	10.875
Steering clutch friction area, sq. in. (each)	1,022
Steering brakes:	
Diameter, inches	12.125
Friction area, sq. in. (each brake)	71
Capacities:	
Cooling system—Imperial gal.	8.7
Fuel tank—Imperial gal.	16.66
Starting tank—Imperial gal.	.55
Engine lubrication—Imperial qt.	6.66
Transmission case—Imperial qt.	11.66
Final drive case (each)—Imperial qt.	.83
Shipping weights (approximate):	
40-inch tread, lb.	6,800
50-inch tread (with 10-in. shoes), lb.	7,100

Available Attachments

Belt pulley—12.25-inch diameter by 8-inch face, speed—811 r.p.m., either rear right or left-hand application; electric starting and lighting equipment; various track and shoe equipment; heavy-duty track roller shield; front pull hook; muffler; crankcase guard; hood side doors; front power take-off coupling; exhaust pipe extension; front idler shield; sprocket drive housing rock shields; front bumper; radiator guard; radiator shutter; power take-off—1.38-inch S.A.E.; 6-spline shaft at rear of tractor center; speed 862 r.p.m.

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