



International Harvester

Operator's Manual

UD-1091

Power Unit

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or Call 800-443-0625

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MANUAL PREVIEW

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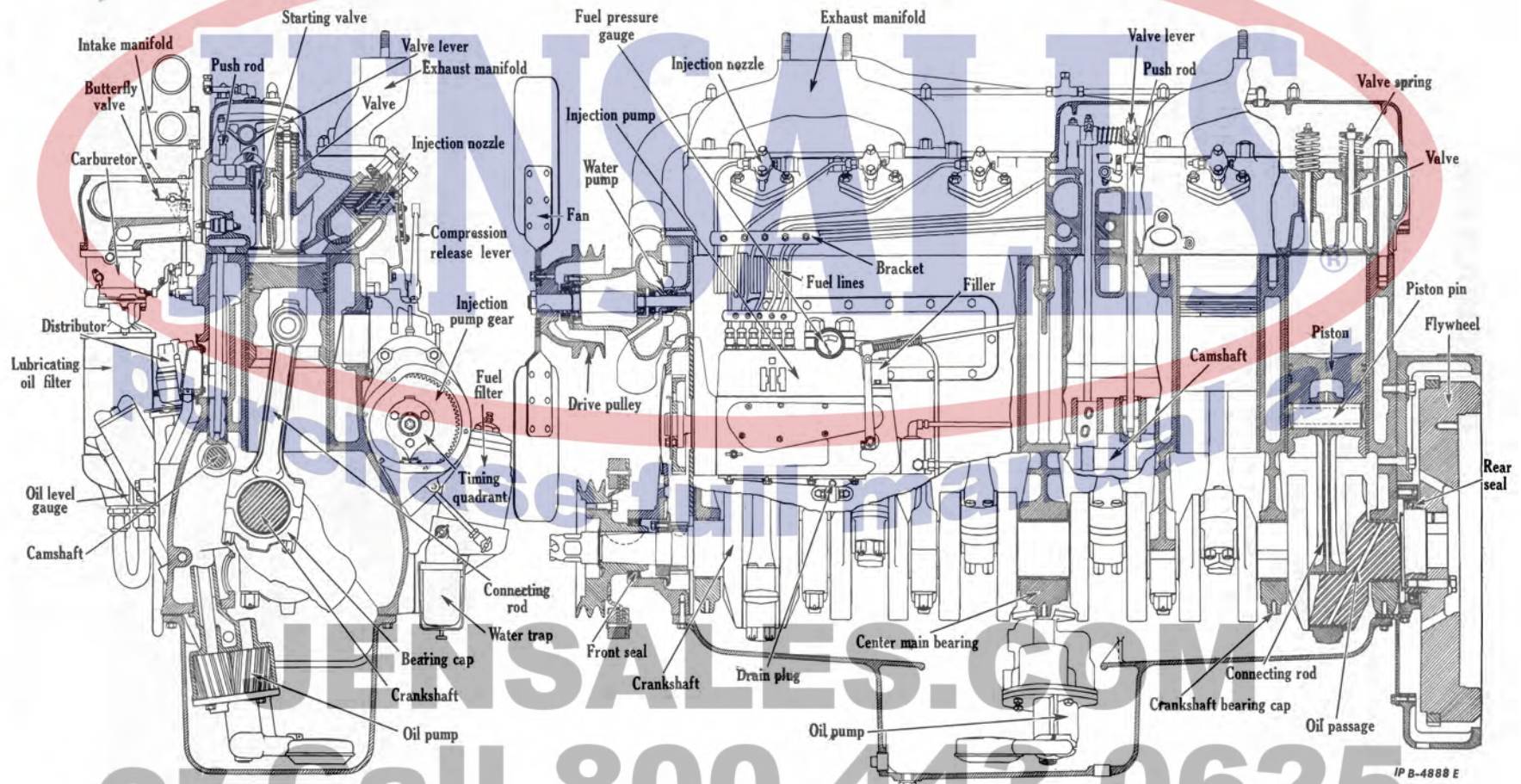
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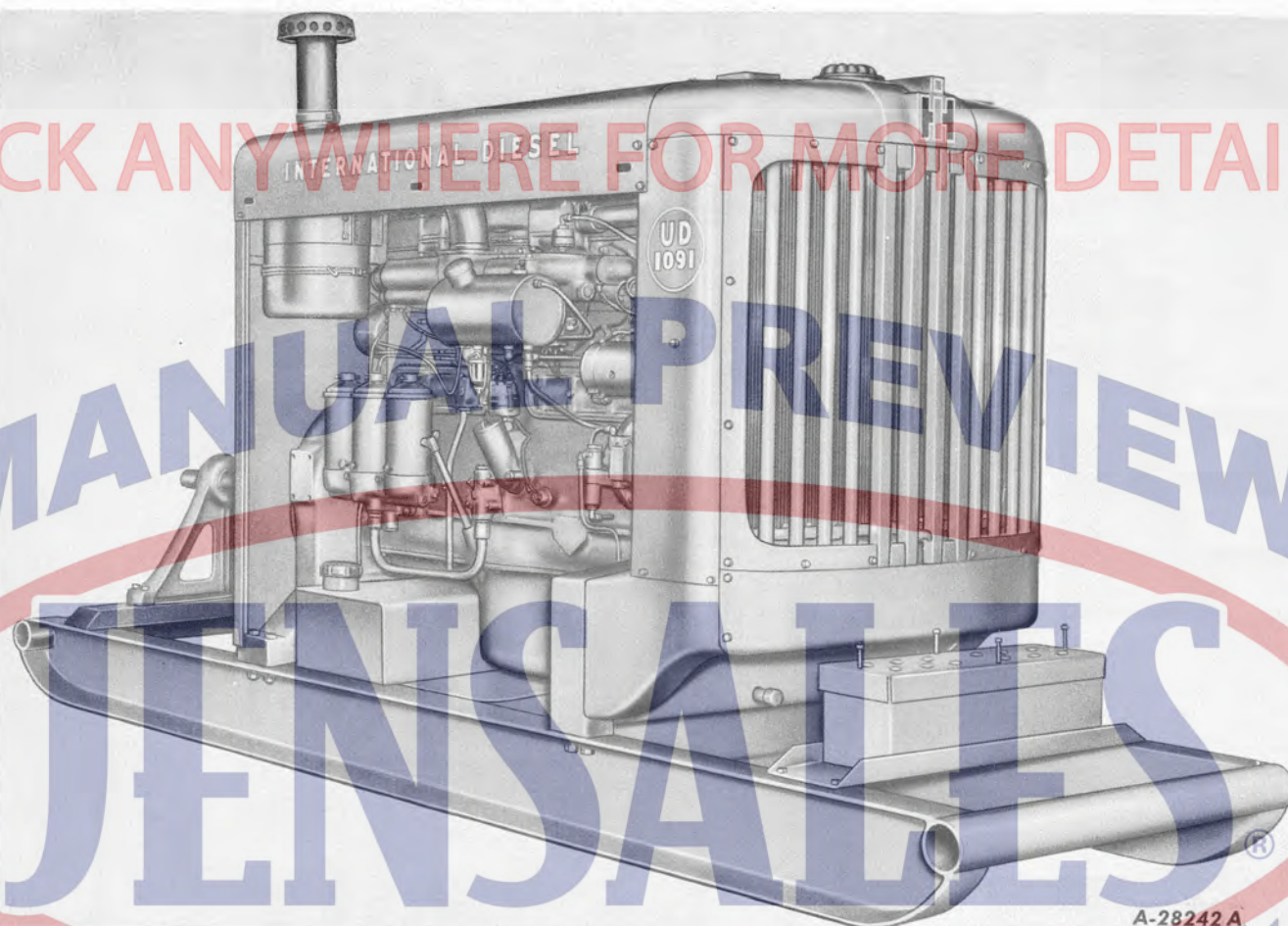
MANUAL PREVIEW



Illustr. 3
Cross-section of UD-1091 engine.

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INTRODUCTION



Illust. 5

Closed-type power unit with extended shaft, outboard bearing, and long skid base.

INSTALLATION

VENTILATION FOR UNITS INSTALLED INSIDE OF BUILDINGS

Power units installed inside buildings, sheds, or cabs should be the open type; that is, with the engine hood and dash removed to permit free circulation of fresh air around the engine, radiator, etc.

The exhaust pipes should be arranged to provide the shortest possible length within the engine room. The parts of these exhaust pipes inside the building should be surrounded with a light steel tube sufficiently large to permit a two to four inch air space all around. This space should be ventilated to the outside. Another method of installation is to cover the exhaust pipe completely with at least two inches of air cell asbestos.

Ventilate the engine room thoroughly and install the power unit so that air can flow freely through the radiator. An opening to the outside in front of the radiator is extremely desirable. Openings to the north or to a shaded side of the building are preferred. A blower fan attachment is available and also desirable to force the air out of the building on some installations.

Where the door or window area is restricted, galvanized ducts extending from ceiling above the engine to the top of the building are recommended to carry off the hot air. Not less than two ducts, 24 x 24 inches if cross sectioned, should be installed. At the same

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INSTALLATION

time, as many openings as possible in the sides of the engine room should be provided to let in cool outside air.

The exhaust manifold is provided with one or more drain holes. Plugs are furnished for closing the holes to prevent the escape of the exhaust gas. Be sure to use these plugs when the power unit is to be operated inside a building.

SUGGESTED POWER UNIT AND FUEL TANK ARRANGEMENT

1. Anchor the power unit securely to a solid foundation, preferably concrete, especially where an extended shaft and outboard bearing is used.

2. Mount the power unit or driven machine so that the belts may be removed or tightened. The slide rail and belt tightening attachments are ideal for this.

3. Install the diesel fuel main supply tank so that the highest level of the fuel is less than six feet above the fuel transfer pump or the lowest level is no greater than eight feet below the fuel transfer pump.

4. Do not support a long exhaust pipe on the exhaust manifold; use a flexible pipe at the engine and support a rigid pipe from the ceiling or floor.

5. Use long-sweep elbows in the exhaust pipes.

6. For every 12 feet of exhaust pipe, enlarge the diameter of the pipe one standard pipe size.

7. The diesel fuel return line should always be larger than the fuel supply line.

8. Install flexible fuel lines between the pipes to the fuel tank and engine. Also install flexible exhaust piping so that belting may be adjusted without disconnecting the exhaust pipes or fuel lines.

DESCRIPTION

The principal components of the UD-1091 power unit are the engine, radiator, and electric starting system.

Engine power is supplied by a full diesel, six-cylinder engine. Features of this engine are a seven-bearing, Tocco-hardened, counter-balanced crankshaft; hardened, replaceable cylinder sleeves; precision-type replaceable bearings; full pressure lubrication system; a by-pass type, thermostat-controlled, centrifugal water pump cooling system, and an IH twin-plunger fuel injection pump.

SPECIFICATIONS

Capacities (U.S. Measure)

Air trap	7/8 gallon
Gasoline tank	1 gallon
Crankcase oil pan	30 quarts
Injection pump housing	7/8 pint
Cooling system	37 gallons
Air cleaner oil cup	4 quarts

Engine

Type	Diesel
Cylinders (dry line)	6
Bore	5-3/4 inches
Stroke	7 inches
Distributor	IH
Carburetor (IH)	1-1/4 inch

Air cleaner (Donaldson)	12 inches
Fuel injection pump (IH)	Twin plunger
Distributor point clearance	.020 inch
Valve clearance (engine hot)	.023 inch
Valve clearance (engine cold)	.025 inch
Spark plug gap	.023 inch

Engine Speed

Maximum full load governed	1400 ± 10 rpm
High idle	1555 ± 30 rpm
Low idle	500 ± 50 rpm

Engine Clutch (Special)

Type	Over-center, double-plate
Diameter	14 inches

Dimensions of Power Unit

Length (overall)	107-9/16 inches
Width (overall)	44 inches
Height (overall) (including air cleaner)	72 inches

DIESEL FUEL SPECIFICATIONS

The best guide to follow when selecting fuel for use in the International diesel engine, is the set of fuel specifications prepared and recommended by the builder.

Continued on next page

OPERATION

cranking motor to turn the engine over to distribute the oil over the cylinder walls. This assures positive lubrication of the cylinders and pistons immediately after starting, and reduces the possibility of scoring.

LUBRICATION WHEN SHIPPED

Power units shipped to destinations in the United States of America, Canada, and Mexico have all the lubricant compartments filled with oil at the factory. The lubricant in the crankcase, air cleaner, and injection pump can be used up to the first 25 hours of operation. Drain this oil after 25 hours or less of operation, depending on severity of load conditions, and replace it with the required amount of fresh oil having the physical properties and viscosity grade for the prevailing air temperature and type of service. Refer to "LUBRICATION GUIDE."

When a power unit is packed for export, all the oil is drained from the lubricant compartments. Before starting the engine, give complete lubrication service.

Cooling System

1. Check that the drain valve on the bottom of the radiator is closed and that the drain valve on the side of the crankcase is also closed.

2. Remove the vent plug in the thermostat housing.

3. Pour or run clean water (soft or rain water is best) into the radiator slowly until the water has reached a point approximately one inch above the baffle.

4. Let it stand for a few minutes to allow air to escape.

5. The water level should be rechecked after the engine has been started and brought up to operating temperature.

6. Check the tension of the fan belts. See *Illust. 29*. The tension is correct when the belts can be depressed by your thumb three-quarters to one inch midway between the pulleys. If the belt tension is not correct, adjust as outlined on *page 29*.

7. For further information, refer to "COOLING SYSTEM" on *page 28*.

Fuel System

When the power unit is new or in case the fuel lines have been disturbed, disconnect the upper pipe from the fuel transfer pump and fill

the transfer pump with fuel; then reconnect this pipe.

More fuel will be supplied to the engine by the fuel transfer pump than will be required at any time. The excess fuel must be returned to the main fuel supply tank to prevent a build-up of pressure in the system. To permit this, a line, preferably of one-half inch pipe, should be connected from the tap in the right end of the air trap (near the top) to the main fuel supply tank. **CAUTION:** Do not plug this opening as serious damage to the engine may result.

1. Fill the main fuel tank with clean diesel fuel (refer to the diesel fuel specifications on *pages 7 and 8*), and be sure that all pipes are properly connected.

2. Be sure that the air trap, and the water trap and auxiliary fuel filter, mounted on the injection pump side of the engine, are filled with clean diesel fuel before starting the engine. To do this, remove the square-head pipe plug on the top of the air trap. See *Illust. 49B*. Open the vent valve on top of the auxiliary fuel filter. Pour diesel fuel into the air trap. Close the vent valve when the fuel appears and continue filling the air trap until it is full. Install the square-head pipe plug.

Electrical System

After all cables have been connected, do not start the engine until the generator has been polarized. To polarize the generator correctly to the batteries, place a jumper lead momentarily across the "BAT" and "GEN" terminals of the regulator. See *page 38*. This allows a momentary surge of current to flow through the generator and to polarize it correctly. Failure to do this may result in severe damage to equipment since reversed generator polarity can cause the relay contact points to vibrate, arc and burn, can run the battery down, and possibly seriously damage the generator.

1. Check to be sure that the distributor is securely mounted in place and that it was not damaged in shipment. Check the spark plug cables to be sure that they are securely connected in the distributor cap and at each spark plug.

2. The power unit is equipped with a generator and batteries. Connect the ground strap to the battery terminal. Connect the generator wire at the "F" terminal on the generator. Service the batteries as instructed on the tag attached thereto.