International Harvester

Operator's Manual

U-1 Power Unit

Operator's Manual

IH-O-U-1 PU

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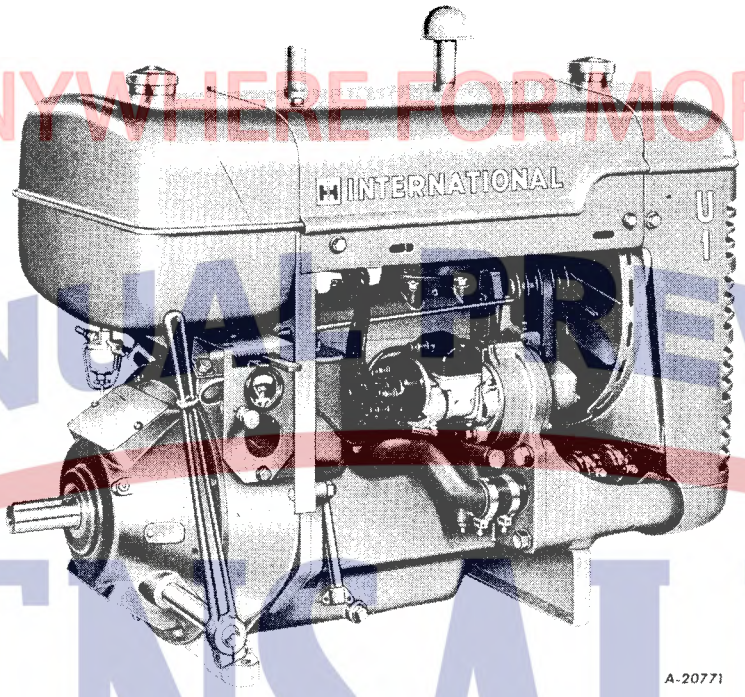
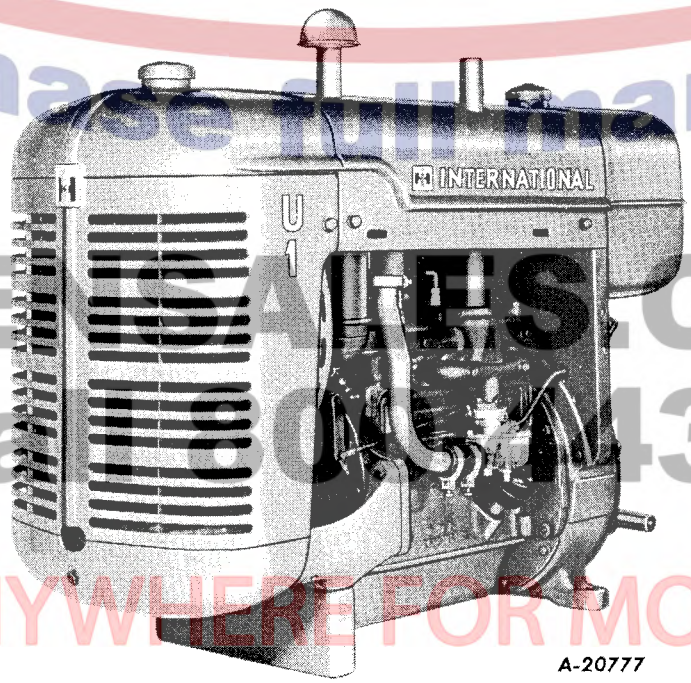


A-20771

Right side - closed type.



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Left side - closed type.

DESCRIPTION

Power is supplied by the economical, four cylinder, "L" head, carbureted engine which features precision type bearings, Tocco hardened crankshaft, pressure type lubrication, oil bath type air cleaner, and dependable magneto ignition.

SPECIFICATIONS

Engine

Cylinders	4
Bore	2-5/8 inches
Stroke	2-3/4 inches
Magneto	IH, type J-4
Carburetor	IH, 3/4 inch, updraft
Clutch, over-center type	6-1/2 inches
Spark plug gap	.023 inch
Valve clearance (engine cold)	.015 inch
Valve clearance (engine hot)	.013 inch

Engine Speed

Maximum full load governed	2500±10 r.p.m.
High idle	2750±25 r.p.m.
Low idle	475±25 r.p.m.
Power take-off shaft	2500 r.p.m.

Capacities (U. S. measure) (Approximate)

Fuel tank	7 gallons
Cooling system	10 quarts
Crankcase pan	3 quarts
Air cleaner oil cup	
Donaldson type	1/2 pint
United type	3/8 pint

General

Length (over-all) (less starting crank)	43-5/16 inches
Width (over-all)	22-7/8 inches
Height (over-all) (over air cleaner cap)	33-1/16 inches
Weight (approximate)	450 pounds

Specifications subject to change without notice.

OPERATION

BEFORE STARTING YOUR NEW POWER UNIT

Make a complete inspection of the power unit for any shortage or damage which may have occurred while being shipped. Check to see that all component parts are securely mounted to the engine.

Lubrication

Lubricate the entire power unit. Refer to "LUBRICATION GUIDE" on pages 18 and 19.

1. Check the oil levels of the engine crankcase and air cleaner oil cup to see that they are filled to the correct levels with the proper grades of oil for the prevailing temperature. Refer to "LUBRICATION GUIDE."

2. Remove the spark plugs and put about one teaspoonful of crankcase oil into each cylinder. Replace the spark plugs and crank the engine to distribute the oil over the cylinder walls. This assures positive lubrication of the cylinders and pistons immediately after starting, and eliminates the possibility of scoring.

3. The lubrication procedure above is necessary only in starting a new power unit or one that has been idle for a long time. For procedure in starting a power unit that has been removed from storage, *refer to page 34.*

4. Engines shipped from the factory to destinations in the United States of America, Canada, and Mexico have the crankcase and air cleaner filled with oil. However, this is for preservative purposes only, and is not suitable for use in regular service. The original oil should be drained from the crankcase and air cleaner and be replaced with the required amount of fresh oil. The fresh oil should have the physical properties and proper viscosity grade for the prevailing temperature and type of service as specified in the "LUBRICATION GUIDE."

5. For further information, refer to "LUBRICATION GUIDE."

Power Units Packed for Export

All oil is drained from the engine crankcase, air cleaner, and all gear cases on power units packed for export.

Cooling System

Be sure radiator is filled with clean water. Use soft or rain water, and rust preventive if possible. (Capacity 10 U. S. quarts.)

If the power unit is to be operated in freezing temperatures, refer to "OPERATING IN COLD WEATHER."

Fuel System

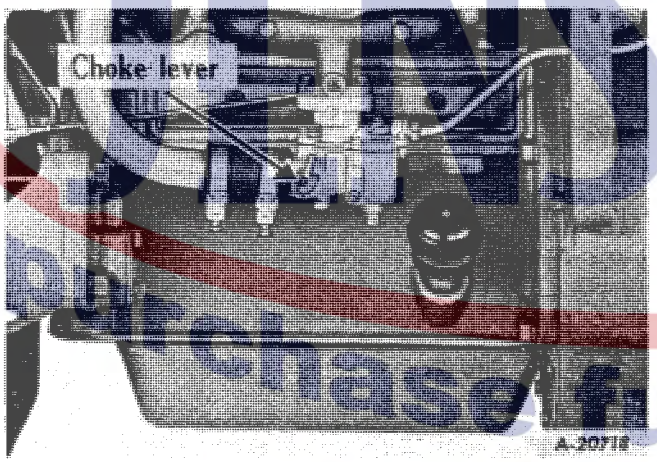
For best results use the fuel for which the engine is designed.

motor causes cranking motor pinion to engage the flywheel ring gear, thereby cranking the engine. Release the rod the moment the engine starts. Do not operate the cranking motor more than 30 seconds at a time. Allow the cranking motor to cool 2 or 3 minutes and repeat the starting operation.

Ammeter (If Used)

This instrument indicates the charging rate of the generator, or the rate at which the battery is being discharged. The ammeter should show "charge" whenever the engine is operating at a speed faster than low idle speed. If it shows "discharge" continuously while the engine is operating at this speed, the cause should be investigated in order to avoid completely discharging the battery and, possibly, damaging the generator.

Choke Lever (On Carburetor)



Illust. 4
Choke lever.

The choke aids in starting the engine when it is cold. Moving the lever to the choked position shuts off air to the carburetor and enriches the fuel mixture. After the first few revolutions of the engine, move the lever to a point where the engine operates steadily. Move the lever to the open position as the engine warms up.

Choke Rod (If Used)

It helps start the engine when the engine is cold. Pulling out the choke rod shuts off air to the carburetor, giving a rich mixture. After the first few revolutions of the engine, push the choke rod in half way, or to a point where the engine operates without missing. Push the choke all the way in after the engine has started. Do not operate the engine with the choke rod out.

Clutch Lever

This lever is used to engage or disengage the engine from the load. If using the over-center type of clutch, push the lever forward until a definite over-center action is felt, in order to engage the clutch. (Pushing the lever forward will disengage the spring-loaded type clutch.) *See Illust. 3.*

Radiator Shutter Control Crank (If Used)

This control crank is used to open and close the radiator shutter in order to control the engine temperature. Turn the crank counterclockwise to close the shutter.

Heat Indicator (If Used)

This instrument registers the temperature of the liquid in the cooling system. The indicator should be in the low side of the "RUN" range for engines using gas or gasoline for fuel.

Oil Pressure Indicator

This instrument registers the pressure of the lubricating oil circulating through the engine. The indicator of the gauge should be in the white area when the engine is operating. If the indicator is not in the white area, stop the engine immediately and investigate the cause of the oil pressure failure. *See Illust. 3.*

PREPARING THE POWER UNIT FOR DAILY OPERATION

Fuel System

Check to see that you have an adequate supply of fuel in the fuel tank. Strain all fuel carefully to be sure that it is clean.

Cooling System

Remove the radiator cap and check to see that the water comes up to a level slightly below the filler opening.

Lubrication

Change the oil in the air cleaner oil cup.

Be sure that the oil in the crankcase is up to the "FULL" level mark on the bayonet gauge.

For complete lubrication requirements, refer to the "LUBRICATION GUIDE."

OPERATING IN HOT WEATHER

Fuel System

Keep the gasoline tank well filled to avoid condensation of moisture within the tank; this may occur if much air is allowed to enter the tank. Be sure that the vents in the gasoline tank filler cap are open and the cap is on tight.

Lubrication

Be sure to use the correct grade of lubricant in the engine crankcase and air cleaner. Refer to "Specifications of Lubricants" on page 18.

Batteries (If Equipped with Electric Starting)

Inspect the batteries frequently to see that the electrolyte is at the correct level and of the correct specific gravity.

Cooling System

Check the tension of the fan belt frequently. Check the coolant level frequently and be sure that the radiator filler cap is on tight. Clean and flush the internal parts of the cooling system frequently. Keep the external parts of the radiator free from bugs and dirt.

PREVENTIVE MAINTENANCE

PERIODIC INSPECTIONS

Every power unit operator should practice preventive maintenance for continued good operation of his unit. Periodical preventive inspection and maintenance are the only sure means of keeping the unit in proper working order. Prompt detection and correction of irregularities will prevent engine failure and repairs. Be systematic; inspect at intervals outlined below.

After Every 10 Hours of Operation

Point of Inspection	Remarks
* Air intake cap	Remove dirt or chaff. *Refer to page 22.*
Lubrication points	Refer to "LUBRICATION GUIDE" on pages 18 and 19.

After Every 60 Hours of Operation

Flexible rubber connections between air cleaner and carburetor	Inspect for loose fit or damage. *Refer to page 22.*
Fan belt	Check tension; replace when necessary. *Refer to page 21.*
Radiator core	Clean spaces. *Refer to page 21.*
Lubrication points	Refer to "LUBRICATION GUIDE" on pages 18 and 19.

After Every 120 Hours of Operation

Lubricating oil filter	Replace filter element. *Refer to pages 23 and 24.*
Engine crankcase	Drain and change oil. Refer to "LUBRICATION GUIDE" on pages 18 and 19.
Crankcase breather cap	Remove and clean. *Refer to page 20.*
Retaining bar metering hole	Clean. *Refer to page 24.*
Lubrication points	Refer to "LUBRICATION GUIDE" on pages 18 and 19.

After Every 240 Hours of Operation

Fuel strainer and sediment bowl	Take apart and clean. *Refer to pages 29 and 30.*
Spark plugs	Remove and clean; check gap. *Refer to pages 24 and 25.*
Magneto breaker points and chamber	Clean chamber and check gap. *Refer to pages 25 and 26.*
Magneto drive chamber and impulse coupling	Check and clean if necessary. Refer to "OPERATING IN COLD WEATHER" on page 10.

After Every 480 Hours of Operation

Cooling system	Clean. *Refer to page 20.*
Engine valves	Check for clearance. *Refer to page 30.*
Clutch	Check for correct engagement. *Refer to page 31.*
Lubrication points	Refer to "LUBRICATION GUIDE" on pages 18 and 19.

After Every 960 Hours of Operation

* Air cleaner, complete	Remove and clean. *Refer to page 22.*

* When unusual dust or dirt conditions exist, it may be necessary to service these points more frequently.

PROBLEM	PROBABLE CAUSE	PROBABLE REMEDY
ENGINE TURNS BUT WILL NOT START	C. Carburetor choked too much.	C. Open the choke.
	D. Air intake restricted.	D. Service air cleaner. *See page 22.*
MISSING AND BACKFIRING	A. Water in the gasoline.	A. Drain gasoline tank, strainer and carburetor. Refill with clean gasoline.
	B. Air leaks around intake manifold.	B. Tighten manifold stud nuts.
	C. Improper firing order.	C. Check spark plugs for correct installation at spark plugs and magneto distributor cap.
	D. Magneto not correctly timed to engine.	D. Check and adjust timing. *See pages 27 and 28.*
	E. Valves not properly seated.	E. *
LOSS OF OIL PRESSURE	A. Low oil level.	A. Add sufficient oil to bring up to specified mark on level gauge.
	B. Oil pressure indicator or line defective.	B. Replace. *
	C. Main or connecting rod bearings worn.	C. Replace. *
	D. Dirt in regulating valve or regulating valve spring broken.	D. Clean, or replace spring. *
	E. Oil pump worn.	E. Remove, and repair or replace. *
	F. Camshaft bearings worn excessively.	F. Install new bearings. *
	G. Incorrect lubricant.	G. Use correct lubricant. *See page 18.*
LACK OF COMPRESSION	A. Improper valve clearance.	A. Adjust valve clearance. *See page 30.*
	B. Valves sticking.	B. Clean valve guides and stems. Grind valves if necessary. *
	C. Worn pistons, sleeves, piston rings; and sticking piston rings.	C. Replace. *
	D. Valves warped.	D. Replace. *
ENGINE DOES NOT DEVELOP FULL POWER, AND UNEVEN OPERATION	A. Exhaust restricted.	A. Remove restriction.
	B. Insufficient air to engine.	B. Service the air cleaner. *See page 22.*
	C. Governor out of adjustmen or worn.	C. Adjust or replace. *

Continued on next page

* Consult your International Industrial Power distributor or dealer.