966 Tractor

Operators Manual

1082944R1

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CASE IH

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THIS SAFETY ALERT SYMBOL INDICATES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY OR DEATH.

M171B

If Safety Decals on this machine use the words **Danger, Warning or Caution,** which are defined as follows:

- **DANGER:** Indicates an immediate hazardous situation which if not avoided, will result in death or serious injury. The color associated with Danger is RED.
- **WARNING:** Indicates an potentially hazardous situation which if not avoided, will result in serious injury. The color associated with Warning is ORANGE.
- **CAUTION:** Indicates an potentially hazardous situation which if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. The color associated with Caution is YELLOW.

If Safety Decals on this machine are ISO two panel Pictorial, decals are defined as follows:

- The first panel indicates the nature of the hazard.
- The second panel indicates the appropriate avoidance of the hazard.
- Background color is YELLOW.
- Prohibition symbols such as  and  if used, are RED.

WARNING

IMPROPER OPERATION OF THIS MACHINE CAN CAUSE INJURY OR DEATH. BEFORE USING THIS MACHINE, MAKE CERTAIN THAT EVERY OPERATOR:

- Is instructed in safe and proper use of the machine.
- Reads and understands the Manual(s) pertaining to the machine.
- Reads and understands ALL Safety Decals on the machine.
- Clears the area of other persons.
- Learns and practices safe use of machine controls in a safe, clear area before operating this machine on a job site.

It is your responsibility to observe pertinent laws and regulations and follow Case Corporation instructions on machine operation and maintenance.

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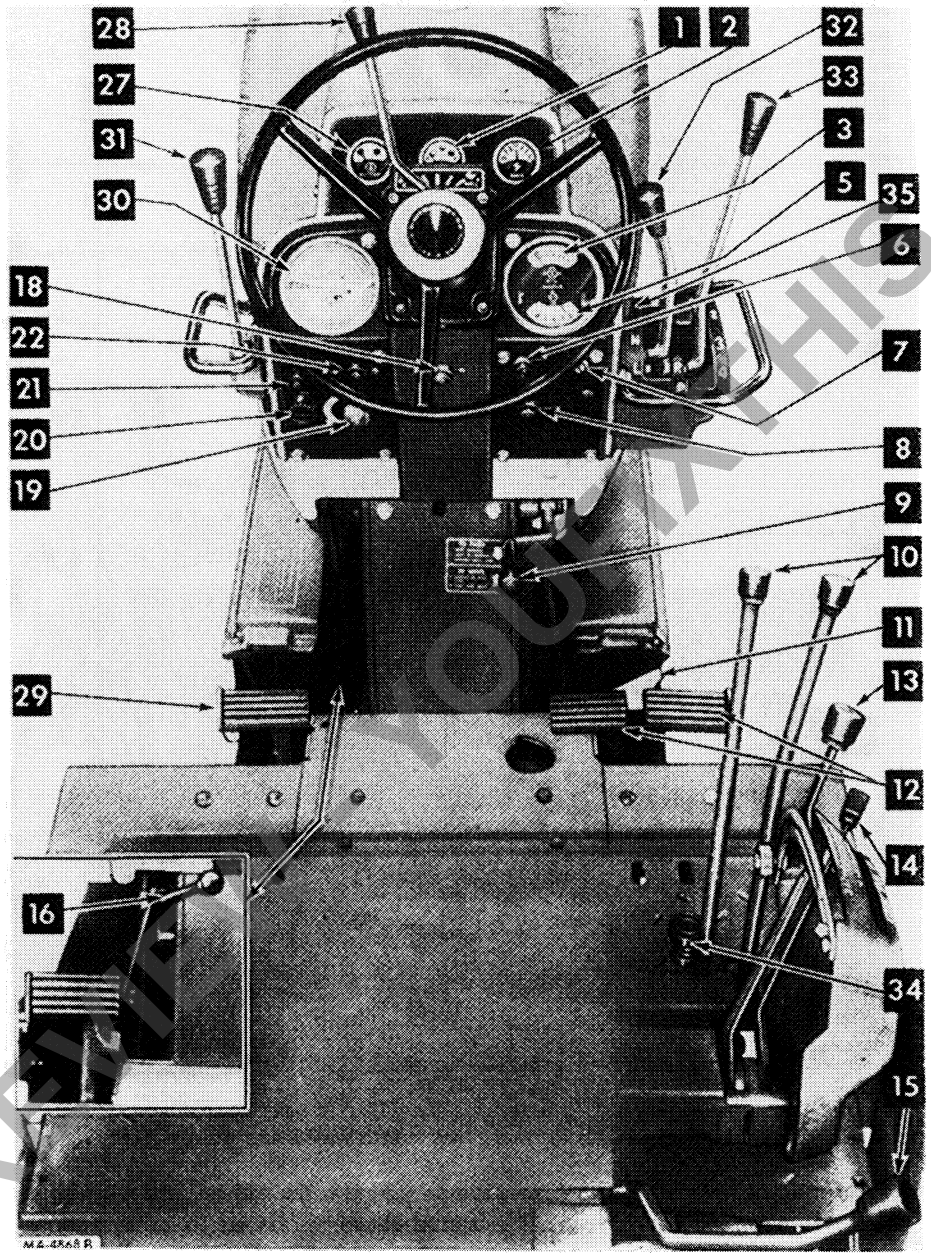
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TRACTOR INSTRUMENTS AND CONTROLS

Before attempting to start or operate the tractor, be sure to review all the instructions for the new tractor and thoroughly familiarize yourself with the tractor instruments and controls.



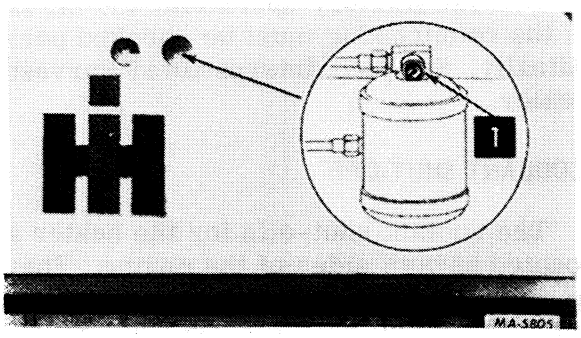
Illust. 5 – Location of tractor instruments and controls.

(Gear drive with torque amplifier lever, clutch pedal, and transmission range lever and speed lever).
Reference numbers for items illustrated above are listed on page 7.

NOTE: For the symbols used to pictorially identify various tractor instruments and controls, refer to "UNIVERSAL SYMBOLS FOR TRACTOR INSTRUMENTS AND CONTROLS".

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REFRIGERANT SIGHT GLASS



1 - Sight glass

Illust. 11

The sight glass is used to determine if sufficient refrigerant charge is in the air conditioning unit.

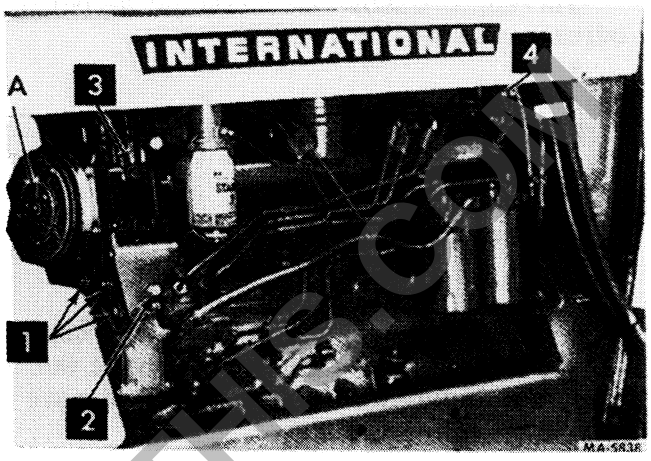
To check the sight glass remove both plugs at the rear of the condenser box.

View sight glass through one hole while illuminating the sight glass through the other hole.

Be sure sight glass is clean.

If the sight glass is cloudy, with many bubbles, in continuous running cycle, the unit is low on refrigerant charge and must be serviced to full charge condition for efficient cooling. See your International Harvester dealer.

ADJUSTING THE COMPRESSOR BELT TENSION



1 - Compressor mounting bracket bolts
2 - Adjusting bolt and lock nut
3 - Compressor oil filler plug
4 - Coolant shutoff (left rear shown – right front located on engine thermostat housing)

Illust. 11A
Left side of engine shown.

The compressor drive belt is adjusted for tension by moving the compressor on its mounting bracket. See Illust. 11A.

Loosen the three mounting bracket bolts and the adjusting bolt lock nut. Tighten the belt by turning the adjusting bolt "in"; loosen the belt by turning the adjusting bolt "out". The tension is correct when the belt can be deflected with a 25 pound load 15/32-inch midway between the fan and compressor pulleys.

When using a belt tension dial gauge, the recommended range is 100 to 120 pounds (direct reading on the dial).

After adjustment is made, tighten the adjustment bolt lock nut and the mounting bracket bolts.

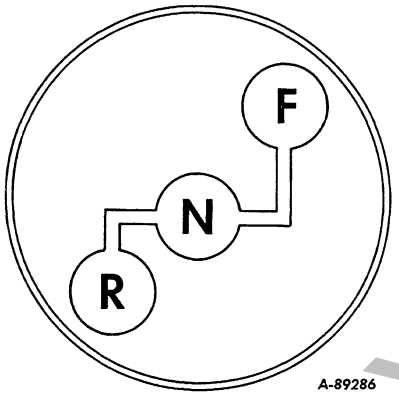
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STARTING SWITCH

The starting switch is located under the platform at the left side of the tractor. It serves to prevent moving the tractor accidentally with the cranking motor or starting the engine when the tractor is not in neutral.

The switch moves to the closed contact position when the Foot-n-Inch pedal is depressed all the way.

SPEED RATIO CONTROL



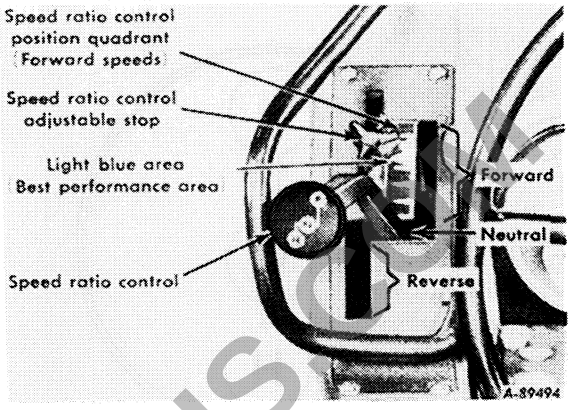
Illust. 21
Speed ratio control positions.

This lever is used to select any speeds from a standstill "N" (neutral) position in the "F" (forward) direction and in the "R" (reverse) direction. Refer to the "Specifications".

For "F" (forward) travel, move control to the right in the "N" (neutral) position cross slot and push forward to increase speed. To decrease forward speed, pull control back.

For "R" (reverse) travel, move control to the left in the "N" (neutral) position cross slot and pull back to increase speed. To decrease speed in reverse, push control forward.

When control is moved to the "N" (neutral) position cross slot and released, it will automatically move to the "N" (neutral) position.



Illust. 21A
Speed ratio control and position quadrant.

An adjustable stop is provided for use whenever it is desirable to return the speed ratio control to the same operating speed. See Illust. 21A. If the operator wishes to go faster temporarily, the control can be moved past the stop.

For best performance in either "H" (high) range or "L" (low) range, the speed ratio control should be located in the blue area of the quadrant.

Note: For maximum vehicle performance, always attempt to keep engine speed up to rated load speed (2400 R. P. M.). This will produce maximum power and productivity. Avoid operating in an overload condition, except momentarily.

HI-LO RANGE SELECTOR CONTROL

This control, located to the right of the instrument panel is used with the speed ratio control when operating equipment. See Illusts. 6 and 22.

The Hi-Lo range selector control must always be in "N" (neutral) position when towing the tractor.

Push the control forward for "L" (low) or work range at 0-8 miles per hour.

Continued on next page.

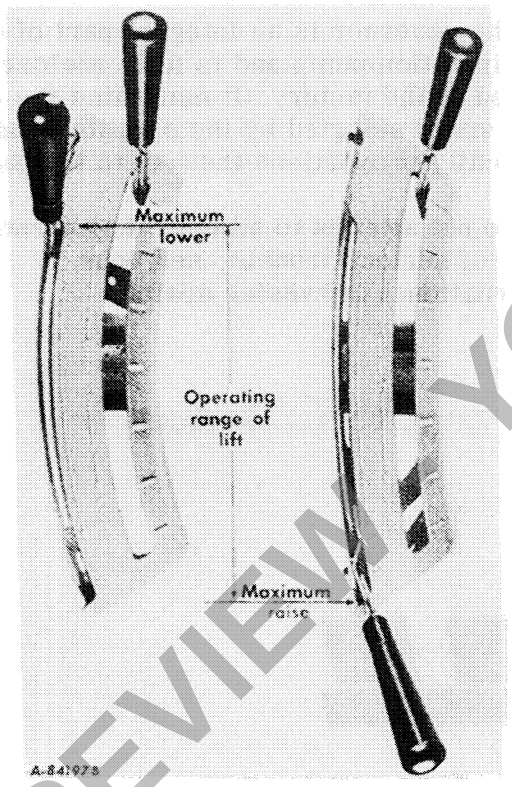
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HYDRAULIC CONTROLS FOR THREE-POINT OR TWO-POINT HITCH

The control levers and a quadrant are mounted to the right side of the seat.

The illustrations accompanying the following explanations are only examples. Working conditions and operator preference in each case must govern the exact positions of the levers.

POSITION CONTROL (Inside Lever)



Illust. 32
Inside control lever showing maximum raise and lower position (draft control in extreme forward position).

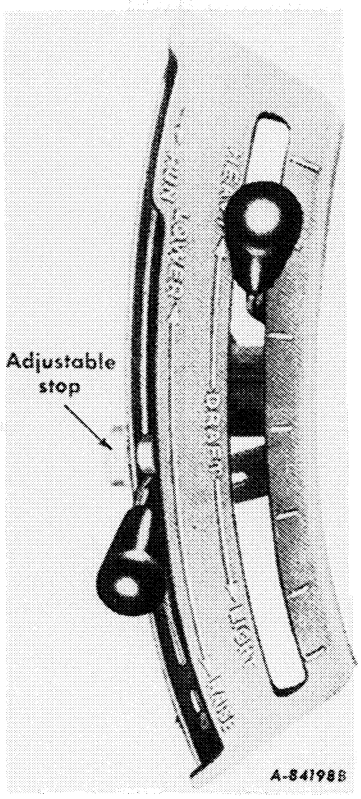
The inside control lever is used to raise, lower, or control all equipment which operates above the ground, or ground-working equipment when draft sensing is not desired. The draft control lever is placed in the extreme forward position when draft sensing is not used.

This lever is also used to raise and lower equipment which operates below the ground, such as plows, subsoilers, and cultivators.

The location of this inside lever in the quadrant indicates the relative position of the equipment. When the lever is placed at the offset near the forward end of the quadrant, the hitch is as low as it will go. When the lever is placed at the rear position, the hitch is as high as it will go. See Illust. 32.

Caution! Never park the equipment in the raised position. Moving the control lever will lower the equipment even though the engine is not running.

Adjustable Stop



Illust. 32A
Adjustable stop being used to return inside control lever to same operating position.

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– Daily or After Every 10 Hours of Operation – Continued

Three-Point and Two-Point Hitch

16. Rockshaft arm (2).
17. Leveling screw collar (2).
18. Leveling screw housing (2).
19. Lower link pin (2).
20. Sensing link pin (2). (Two-Point Hitch)

Swinging Drawbar

21. Roller

Use IH 251H EP grease or equivalent #2 multi-purpose lithium grease and apply two or three strokes of the lubricator, or sufficient grease to flush out the old grease and dirt.

– After Every 100 Hours of Operation

22. Crankcase oil drain plug.

Remove the crankcase drain plug and drain all the oil from the crankcase while the engine is warm; then reinstall the plug and refill with new oil to the "H" (Full) mark on the oil level gauge. Refer to the "Lubrication Table".

23. Drive housing hydraulic fluid filter (Hydrostatic drive).

Note: - After the first 100 hours only: Remove element shell and element. Replace the element with a new one. Reinstall element and element shell. Change the element at 250 hours, and every 250 hours of operation thereafter. Refer to "Hydrostatic Drive Housing Hydraulic Fluid Filter."

24. Hydraulic fluid filter.

Note: - After the first 100 hours only: Remove and clean the by-pass valve screen and replace the filter. Refer to "Hydraulic Fluid Filter." Change the filter at 250 hours and every 250 hours of operation thereafter.

25. Front wheel pivot bearings. (All-Wheel drive tractor)(4)

Use IH 251H EP grease or equivalent #2 multi-purpose lithium grease and apply two or three strokes of lubricator, or sufficient grease to flush out the old grease and dirt.

26. Compensating ring bushings (8). (All-Wheel drive tractors).

Note: The lubrication fittings for the compensating ring bushings can be reached by removing the four dust plugs on each wheel cover. Replace the plugs when lubrication is completed.

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● – Periodic

Hydrostatic Drive Tractors only: Before checking the level of the transmission lubricant, put the range selector and speed ratio controls in "N" neutral position.

Run the engine to operating temperature. With the engine running for three minutes at 1600 r.p.m. check the level on the gauge in the top of the transmission case. Keep the lubricant up to the full mark.

Gear Drive and Hydrostatic Drive

Transmission and Hydraulic System

39. Oil filler and bayonet-type gauge.
40. Drain plug (Rear frame, center plug).
41. Drain plug (Clutch housing) (Gear drive).
42. Drain plug (Drive housing) (Hydrostatic drive).
43. Drain plug I. P. T. O. (rear unit).
44. Drain plug (Rear axle carrier).

Check the level of the lubricant periodically. Use approved lubricant according to the "Lubrication Table."

Keep the lubricant up to the "Full" mark on the transmission oil level gauge at the top left side of the transmission case.

Note: Change the lubricant in the transmission case at least once a year preferably before freezing weather sets in. However, do not drive the tractor more than 1,000 hours without changing the lubricant. Be sure to change the hydraulic fluid filter at this time.

Remove the center drain plug (40) and drain plugs (41 and 44) and allow all the lubricant to drain out. For tractors with Independent Power Take-Off also remove the drain plug (43). Remove the transmission oil level gauge (39). Refill with IH Hy-Tran® fluid up to the "Full" mark on the gauge. Start the tractor engine and operate it at a moderate idle speed. Move the steering wheel first to one extreme, then to the other, and then back to center.

If so equipped, set the "Position Control (inner) Lever" and "Auxiliary Valve Levers" all the way forward.

Note: Disconnect equipment from hydraulic couplers before actuating the auxiliary valve levers.

Stop the engine and refill with IH Hy-Tran fluid up to the "Full" mark on the transmission oil level gauge and reinstall the gauge.

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ENGINE OIL – Continued

We recommend "I. H. No. 1* Engine Oil for this engine". This oil is formulated from from base oils and additives especially selected for maximum stability and minimum oil consumption. It is a Series 3 oil meeting specifications and API Service Classifications CA, CB, CC, CD, SC, SD and SE.

* Trade Mark

"Series 3" engine oil must be used for satisfactory performance.

It is not the policy of the International Harvester Company to publish approved lists of lubricants or to guarantee oil performance in service. The responsibility for the quality of the lubricant, its performance under the conditions of operation, and its compatability with the diesel fuels used must remain with the supplier of the lubricant.

High-speed diesel fuels and lubricants should be procured from a reliable source. When in doubt, consult your International Harvester dealer.

TO AID STARTING

To aid starting, the selection of crankcase lubricating oils should be based on the lowest anticipated temperature for the oil change interval.

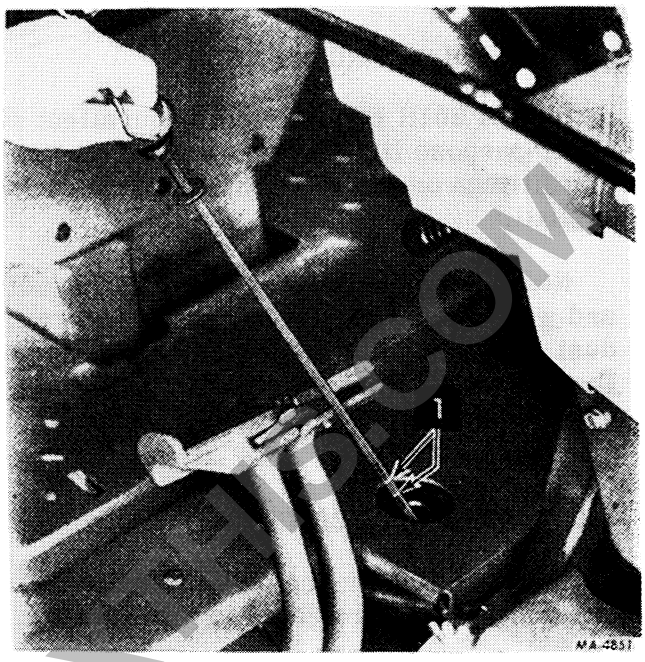
Also see "Cold Weather Precautions" for special instructions.

GEAR LUBRICANT

Tractors shipped from the factory to destinations in the United States of America, Canada, and Mexico are filled with IH Hy-Tran® Fluid in the transmission and differential case, final drives, and hydraulic system.

Use IH Hy-Tran Fluid only. If fluid is used which does not meet requirements of IH B-6 specification, International Harvester Company will not be responsible for substandard performance of the transmission and hydraulic components.

Note: Failures due to use of improper fluid or filters are not covered by the warranty. For maximum protection use IH Hy-Tran Fluid and filters.



1 - "Full" and "Add" marks on gauge

Illust. 89
Transmission oil level gauge.

On gear drive tractors the transmission oil pressure Tellite indicates whether the transmission is functioning properly. The light should go out within a few seconds after the engine starts. If the light remains on, stop the engine and check the fluid level. The level should be at the "Full" mark on the level gauge. See your International Harvester dealer for further instructions if the problem persists.

On hydrostatic drive tractors before checking the level of the transmission lubricant, put the range selector and speed ratio controls in "N" (neutral) position.

Run the engine to operating temperature. With the engine running for three minutes at 1600 r.p.m. check the level on the gauge in the top of the transmission case. Keep the lubricant up to the full mark.

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LUBRICATION FITTING GREASE

Use IH 251H EP grease or equivalent #2 multi-purpose lithium grease, for lubrication fittings on which the hand lubricator is applied.

Note: Keep your supply of lubricating oil and grease absolutely clean and free from dust. Always use clean containers. Keep the lubricant clean and wipe dirt from the fittings before applying the lubricator.

FULL FLOW ENGINE OIL FILTER

The life of your engine depends upon clean oil being circulated to all bearings.

The purpose of the oil filter is to separate and remove the dirt and other foreign substances from the oil to prevent these injurious materials from being circulated to the engine. This filter will keep the circulating oil free of harmful materials.

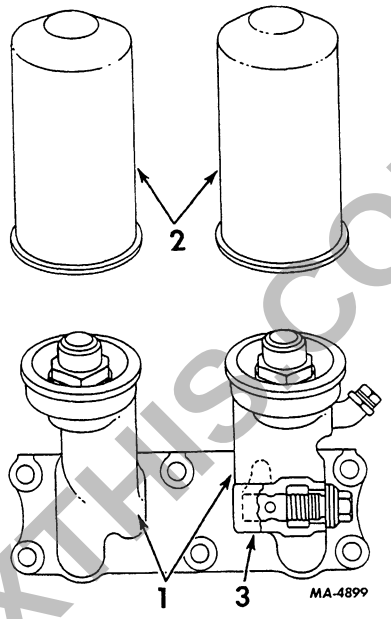
If the filters are not replaced and become clogged the by-pass valve will open and unfiltered oil will be circulated through the engine.

Note: To avoid delays, we recommend that you carry extra filters on hand so replacement can be made at the proper time.

CHANGING THE ENGINE OIL FILTERS

Under normal operating conditions, replace the engine oil filters every second oil change (200 hours of operation).

Remove the filter by turning counterclockwise. Discard the old filter. Apply a thin film of engine oil on the filter gasket. Install the new filter on the threaded center tube by turning it clockwise until the gasket contacts the filter base. Hand tighten an additional 1/4 to 1/2 turn after the gasket contacts the filter base. Do not use tools to tighten the filter.



1 – Filter base
2 – Filter
3 – By-pass valve

Illust. 90
Engine oil filters.

Start the engine, check the engine oil pressure gauge to see whether lubricating oil is circulating through the engine; then inspect the filters for oil leaks.

HYDRAULIC FLUID FILTER

A fluid filter in the right side of the rear frame keeps foreign matter from entering the hydraulic system.

Clean the by-pass valve screen and replace the filter cartridge, retainer seal and cover O-ring after the first 10, 100, and 250 hours of operation and every 250 hours of operation thereafter. Clean the screen and replace the cartridge more frequently when operating under unusual dirt or dust conditions. Also clean the by-pass valve screen and replace the filter cartridge whenever the transmission and hydraulic fluid is changed. To avoid delays, keep extra filter cartridges on hand so replacement can be made at the proper time.

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CAPACITIES (U.S. Measure - Approximate)

Belt pulley housing (Initial fill only)	2 quarts
Cooling System — Gear drive	26 quarts
Cooling System — Hydrostatic drive	26 quarts
Fuel Tank	37 gallons
Crankcase pan (with filter change)	12 quarts
Differential housing (All-Wheel Drive tractor)	10 quarts
Gear-drive transmission differential case and rear axle carrier	22-1/2 gallons
Hydrostatic drive housing and differential case and rear axle carrier	28 gallons
Hi-Clear housing (each)	4-1/2 quarts

ENGINE

Make and Model	D-414
Cylinders	6
Bore	4.30 inches
Stroke	4.750 inches
Displacement	.414
Engine speeds:	
Full load (governed speed)	2400 r.p.m.
High idle (governed speed)	2600 r.p.m.
Low idle speed	700 r.p.m.
Valve clearance (engine warm)	
Intake	.020 inch*
Exhaust	.025 inch*
Injection pump	American Bosch Model 100
Injection nozzles	American Bosch multi-hole
Injection pump timing, engine stopped:	
Start of injection	18^{O} BTC

POWER TAKE-OFF SHAFT SPEEDS

540 r.p.m. PTO:	
At 2,400 r.p.m. engine speed	616 r.p.m.
At high idle speed	667 r.p.m.
At low idle speed	180 r.p.m.
At 2,100 r.p.m. engine speed (standard shaft speed)	539 r.p.m.
1000 r.p.m. PTO:	
At 2,400 r.p.m. engine speed	1159 r.p.m.
At high idle speed	1254 r.p.m.
At low idle speed	338 r.p.m.
At 2,100 r.p.m. engine speed (standard shaft speed)	1014 r.p.m.

BELT PULLEY SPEEDS

At 2,400 r.p.m. engine speed	1158 r.p.m.
At high idle speed	Approx. 1256 r.p.m.
At low idle speed	Approx. 321 r.p.m.
Belt speed at 2,400 r.p.m. engine speed	3170 feet per minute
Pulley diameter	11 inches
Pulley face	7-1/2 inches

* Check valve clearance at 1000 hour intervals.

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