Operator's Instruction Manual

W10 SERIES B Industrial Diesel Unit Loader

4 wheel drive

J. I. CASE® CO. RACINE, WISCONSIN U.S.A.

NOTICE!

At the time your Case Dealer delivers your new Loader, he will acquaint you with its operation and maintenance as outlined in the "Delivery Procedure and Warranty Registration". When your Dealer has completed these instructions, he will ask you to sign the report and will then hand you a copy for your records.

NOTE: The "Delivery Procedure and Warranty Registration" also contains a record of the Pre-Delivery Check-up which your Dealer made on your Loader.

AFTER DELIVERY CHECKUP

The Authorized Case Dealer from whom you purchased your new Loader will perform the "After Delivery Checkup" outlined on the following page, if you will arrange to bring your Loader to his Service Shop within - - -

60 days after date of delivery or 200 hours of operation (whichever occurs first).

NOTE: The only charge your dealer will make for this inspection will be for oil, filters, or other accessories.

AFTER DELIVERY CHECKUP

(Owner's Name) ..... (Date Checkup Performed) .....

(Owner's Address) .....

(Dealership) ..... (Town) .....

Loader has been operated ..... hours ..... (Loader Model and Serial Number)

LOADER

- ☐ Crankcase Oil (Change oil and filter).
- ☐ Cooling System.
- ☐ Tighten Cylinder head bolts and adjust tappets.
- ☐ Fuel Injection pump timing (Diesel).
- ☐ Fuel Filtering System.
- ☐ Distributor point gap and timing (Gasoline).
- ☐ Spark Plugs (Gasoline).
- ☐ Electrical System.
- ☐ Air Cleaner and Breathers.
- ☐ Lubricate all Pressure Fittings.
- ☐ Tire Pressure.
- ☐ Tighten all Bolts.
- ☐ Steering Axle Toe In.
- ☐ Full Governed No Load Engine Speed and Low Idle Speed.
- ☐ Brakes.
- ☐ Operate all Controls.
- ☐ Operation of Instruments.
- ☐ Oil Level in Differential and Planetaries.
- ☐ Oil Level in Transmission, Hydraulic and Steering Systems.
- ☐ Hydraulic System Pressure.
- ☐ Belt Adjustments.

DEALER: Question purchaser carefully concerning his experience with Loader and answer any questions concerning maintenance or operation that are not clear to him.

Checkup ..... Performed by

Signed ..... Dealer

Signed ..... Customer

Original—Dealer
Duplicate—Leave in Operators Manual for Purchaser

Dealer's Copy—Tear Here

AFTER DELIVERY CHECKUP

(Owner's Name) ..... (Date Checkup Performed) .....

(Owner's Address) .....

(Dealership) ..... (Town) .....

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Signed ..... Dealer

Signed ..... Customer

Original—Dealer
Duplicate—Leave in Operators Manual for Purchaser

TO THE PURCHASER OF A CASE LOADER

The care you give your new Case Loader will greatly determine the satisfaction and service life you will obtain from it. Use this manual as your guide. By observing the instructions and suggestions in this manual, your Case Loader will serve you well for many years.

As an Authorized Case Industrial Dealer, we stock Genuine Case Parts, which are manufactured with the same precision and skill as the original equipment. Our factory trained staff is kept well informed on the best methods of servicing Case Equipment and is ready and able to help you.

Should you require additional aid or information, contact us.

YOUR AUTHORIZED CASE INDUSTRIAL DEALER

To insure efficient and prompt service, please furnish us with the Model, Serial, Transmission and Engine Numbers of your Loader in all correspondence or contacts.

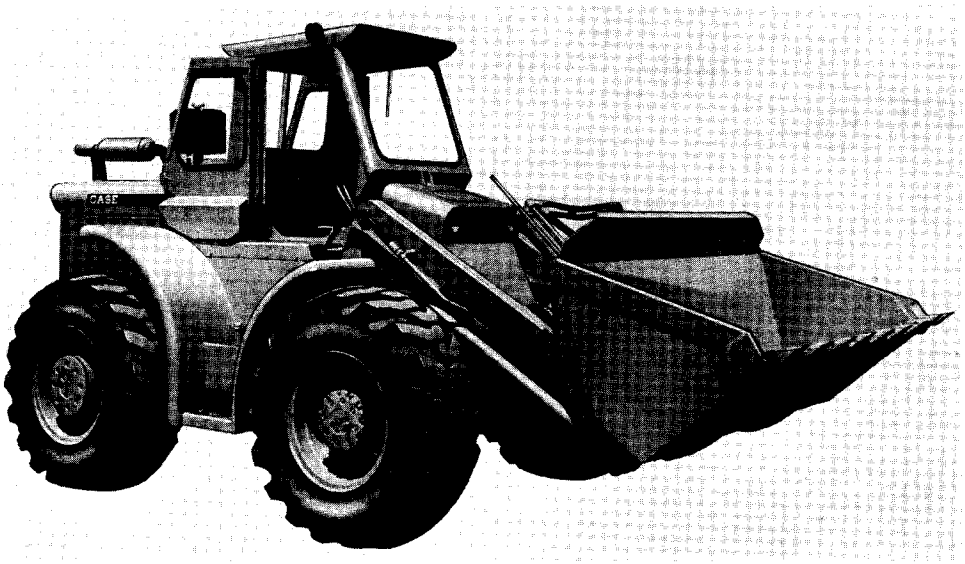


Figure 1. Right Side View of Loader

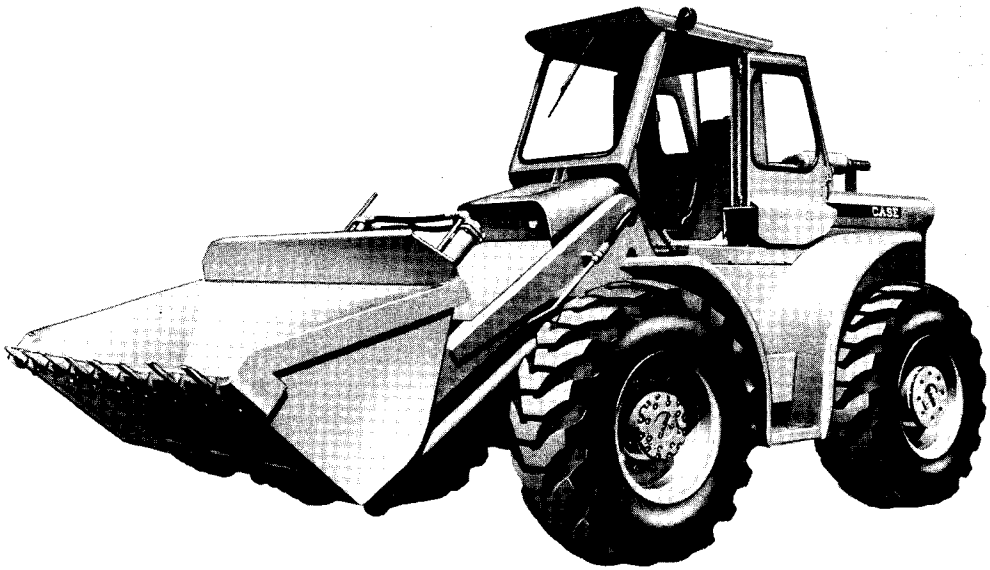


Figure 2. Left Side View of Loader

SERIAL NUMBER

When ordering parts from your Authorized Case Industrial Dealer and in all contacts or correspondence relative to your Case Loader, always specify the Serial Number, Engine Number, Model of the Loader, Converter Number and Transmission Number.

The Model and Serial Numbers are stamped on the plate located on the instrument panel, Figure 3. The engine Number is stamped on a plate located on the left side of the engine block, Figure 4. The converter Number is located on top of the converter housing. The Transmission Number is located on the rear transmission cover.

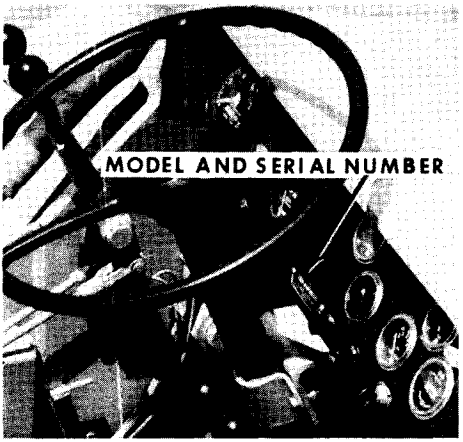


Figure 3

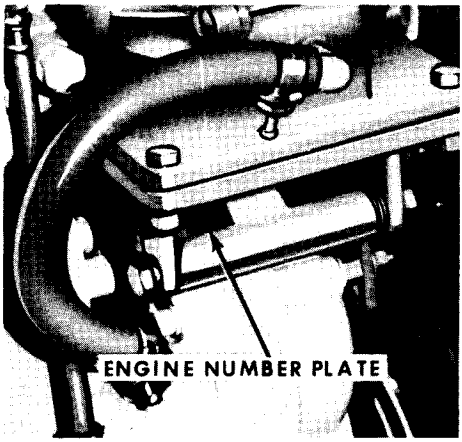


Figure 4

NOTE The terms "Right Hand" and "Left Hand" whenever used in this manual, refers to the machine as viewed when seated in the operator's seat.

For Convenient reference fill in the following Model and Serial Numbers:

Model Number _____

Engine Number _____

Loader Serial Number _____

Converter Number _____

Transmission Number _____

Front Rigid Axle Number _____

Rear Steering Axle Number _____

SPECIFICATIONS

General

Type ---------- 6 Cylinder, 4 Stroke Cycle. Valve-In- Head Diesel Engine.
Firing Order ---------- 1-5-3-6-2-4
Bore ---------- 4-1/8 Inches
Stroke ---------- 5 Inches
Piston Displacement ---------- 401 Cubic Inches
Compression Ratio ---------- 15 to 1
Cylinder Sleeves ---------- Removable ,Wet Type
No Load Governed Engine Speed ---------- 2180 RPM
Full Load Governed Engine Speed ---------- 2000 RPM
Engine Idling Speed ---------- 750 RPM
*Valve Clearance (Intake and Exhaust) --------- .020 Inch (Hot)
Cold Weather Starting Aid ------- Electric Manifold Heater.
Diesel Fuel Recommendation ------- Number 2 Diesel Fuel
*Hot Settings Are Made At Low Idle After the Engine has operated at Thermostat Control Temperature For at Least Fifteen Minutes.

Piston Rings

Rings Per Piston ---------- 4
Number of Compression Rings ---------- 3
Number of Oil Rings ---------- 1

Piston Pins

Type Pins ---------- Full Floating Type

Connection Rods

Type Bearings ---------- Replaceable Precision Steel Back, Copper - Lead Alloy Liners.

Main Bearings

Number of Bearings ---------- 7
Type of Bearings ---------- Replaceable Precision, Steel Back, Copper - Lead Alloy Liners.

Engine Lubricating System

Oil Pressure ---------- 40 to 45 pounds with Engine Warm and operating at Full Governed RPM.

Type System ---------- Forced Circulation

Oil Pump ---------- Gear Type, Floating Oil Screen Inlet

Oil Filter ---------- Full Flow With Replaceable Element

FUEL SYSTEM

Fuel Injection System

Fuel Injection Pump ---------- Robert Bosch, Type PES (Multiple Plunger).

Pump Timing ---------- 33 Degrees Before Top Dead Center (Port Closing).

Fuel Injectors ---------- Robert Bosch, Throttling Pintle Type (Opening Pressure 1950 to 2050 PSI.

Fuel Transfer Pump ------ Plunger Type, Integral Part of Injection Pump.

Governor ---------- Variable Speed, Fly Weight Centrifugal Type; Integral Part of Injection Pump.

Fuel Filters

1st Stage Fuel Filter ---------- Replaceable Element Type

2nd Stage Fuel Filter ---------- Replaceable Element Type

Final (3rd Stage) Fuel Filter ---Replaceable "Sealed Type" Filter

Fuel Tank Water Trap and Drain ---Located in Base of Fuel Tank.

Fuel Gauges

Fuel Tank Level Gauge ---------- Located on Instrument Panel

Fuel Pressure Gauge -------- Located on Injection Side of Engine and Indicates Condition of Fuel Filters.

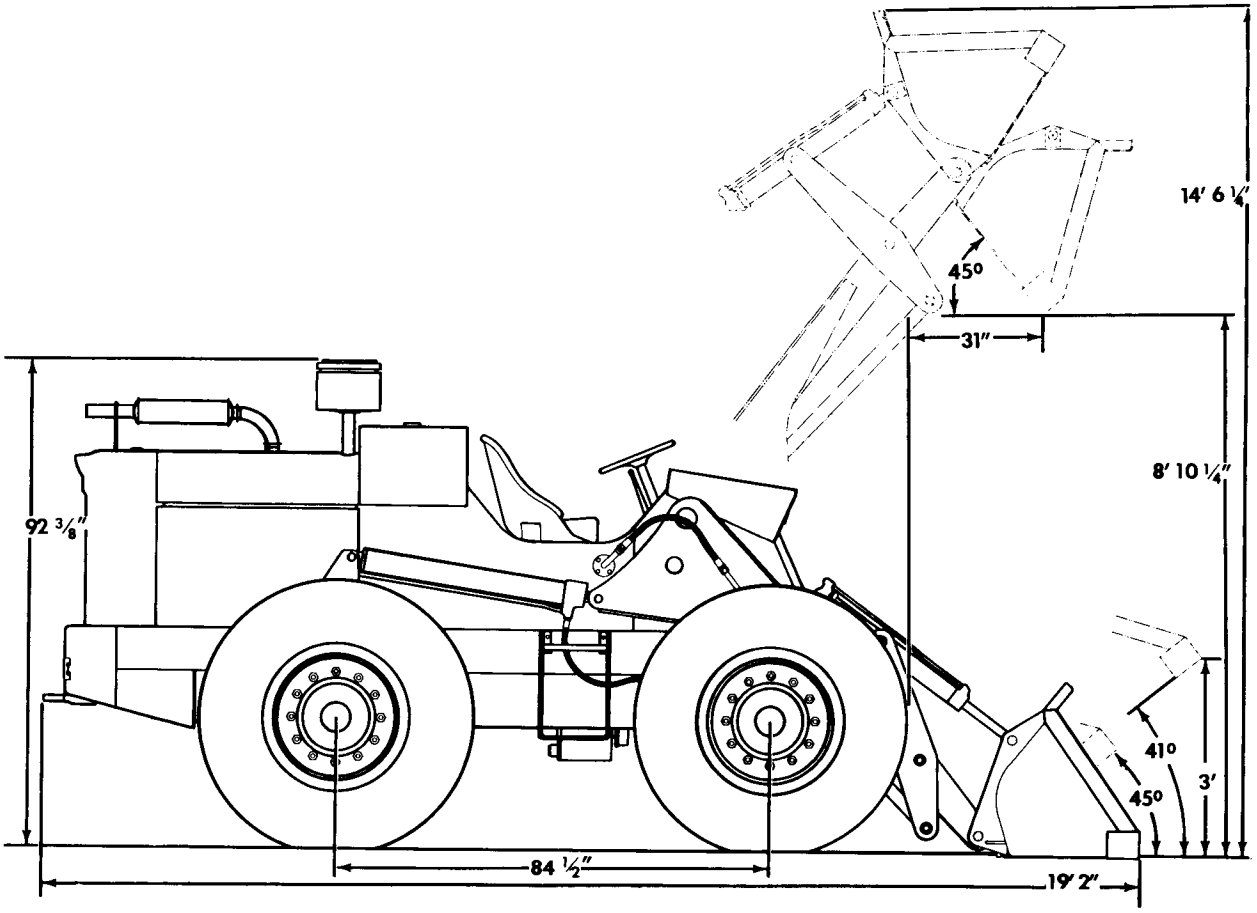


Figure 5

COOLING SYSTEM

Type of System -------- Pressurized Thermostat Controlled By-Pass Type; Forced Circulation (Impeller Type Pump).
Radiator ---------- Heavy Duty Fin and Tube Type
Thermostat ---------- Starts to Open at Approximately 180° F.; Fully Open at 200°
Radiator Shutters ---------- Available as Extra Equipment
Pressure Cap Required ---------- 7 PSI

HYDRAULIC SYSTEM

Pressurized System ---------- 10 PSI
Lift Cylinders - Double Acting -------- 5" Diameter x 36" Stroke
Tilt Cylinders - Double Acting -- 3-1/2" Diameter x 26-3/4" Stroke
Pump ---------- Gear Type Driven from Converter
Pump Capacity at 2000 RPM ---------- 46 Gallons Per Minute
Reservoir ---------- Electric Welded Steel Tank; Oil Level Dip Stick & Dual Full Flow Filters.
Standard Control Valve---------- Two Spool, Four Position (Raise - Neutral - Lower-Float).

ELECTRICAL SYSTEM

Type of System ---------- 24 Volt, Negative Ground
Batteries ---------- 2-12 Volt Batteries Auto-Lite Type 14H-9, 90 Ampere Hours at 20 Hour Rate.
Generator ---------- 24 Volt, 10 AMP Shunt Type
Voltage Regulator ---------- Automatic Type
Starting Motor ---------- 24 Volt Heavy Duty Drive
Circuit Breaker ---------- Protects the Electrical System from overloads.

STANDARD BUCKET

Heaped Capacity ---------- 2.000 cu. yd.
Struck Capacity ----------1.650 cu. yd.
Width Outside ---------- 96"
Height to Center of Hinge Pin ---------- 11' 3-1/2"
Tip Back - Ground Level ---------- 45°
Tip Back at 3'0" Carry Position ----------41°
Raising Time ---------- 8 Sec.
Lowering Time ---------- 5 Sec.
Maximum Dumping Clearance at 45° Dump ----------8' 11-1/2"
Reach to Tire at Max. Height and 45° Dump ---------- 31"
Reach to Tire at Max. Height and Max. Dump ---------- 28"
Angle of Dump at Max. Height ---------- 51°
Digging Depth ----------8-1/2" at 15°
Operating Capacity ---------- 5000 Pounds

OVERALL MEASUREMENTS

Height over Air Cleaner	93-5/8"
Width over Tires	89"
Width over Hubs	94-1/2"
Length - Bucket on Ground	19' 2"
Length - Bucket at Carry Position	19' 3"
Wheel Base	84-1/2"
Ground Clearance	15"
Approximate Weight	19200 Pounds
Thread - Front & Rear	74-3/4"

TURNING RADIUS

Outside Corner of Bucket At Carry Position	20'6"
Outside Rear Hub	21"

POWER TRAIN

Torque Converter	Ratio 3 to 1
Transmission	Full Power Shift In Forward and Reverse 4 Speed Ranges in Forward 4 Speed Ranges in Reverse
Axles and Planetary	Spiral Bevel with Planetary Reduction in Hub.
First	0 - 3.2 MPH
Second	0 - 6.18 MPH
Third	0 - 11.15 MPH
Fourth	0 - 20.25 MPH

WHEELS AND TIRES

Standard (Both front and rear)	8 Ply	14.00 - 24
Tire Pressure (Cold)		40 Pounds
Optional (Both front and rear)	8 Ply	17.50 - 25
Tire Pressure (Cold)		35 Pounds

APPROXIMATE CAPACITIES

Fuel Tank	50 Gallons
Cooling System	45 Quarts
Hydraulic System	16 Gallons
Hydraulic Reservoir (only)	7 Gallons
Transmission and Torque Converter	25 Quarts
Hydraulic Power Steering System	3 Quarts
Hydraulic Power Steering Reservoir	1-1/2 Pints
Engine Crankcase	12 Quarts
Engine Crankcase with Filter	14 Quarts

fuel specifications

DIESEL

CASE DIESEL ENGINES ARE DESIGNED TO OPERATE MOST EFFICIENTLY WHEN USING A NUMBER 2 DIESEL FUEL. MOST WELL KNOWN REFINERS AND DISTRIBUTORS MARKET A GOOD GRADE OF DIESEL FUEL AND THERE SHOULD BE NO DIFFICULTY IN OBTAINING IT.

DO NOT CONFUSE NUMBER 2 DIESEL FUEL WITH NUMBER 2 FURNACE OIL,AS THIS DOES NOT ALWAYS MEET THE FUEL SPECIFICATIONS FOR DIESEL ENGINES.

SPECIFICATIONS FOR SUITABLE NUMBER 2 DIESEL FUEL.

A.P.I.GRAVITY ---------- 32-39
POUR POINT ---------- A RATING 10 DEGREES LOWER THAN THE LOWEST EXPECTED TEMPERATURE.

VOLATILITY
- INITIAL BOILING POINT(MINIMUM ------ 320° FAHRENHEIT
- 50% CONDENSED ---------- 475° - 550° FAHRENHEIT
- FINAL BOILING POINT(MAXIMUM)----- 675° FAHRENHEIT
- DISTILLATION RECOVERY(MINIMUM)---------- 97%.

FLASH POINT ---------LEGAL MINIMUM LIMIT OR HIGHER.
S.U. VISCOSITY AT 100° FAHRENHEIT-------- 34-39 SECONDS
CETANE (MINIMUM)---------- 45(45 - 55 FOR WINTER USE)
DIESEL INDEX ---------- 43
WATER AND SEDIMENT (MAXIMUM)---------- .05%
ASH(MAXIMUM)---------- .02%
TOTAL SULPHUR(MAXIMUM)---------- .5%
CONRADSON CARBON ---------- .2%
COPPER STRIP CORROSION---------- PASS
ALKALI AND MINERAL ACID ---------- NEUTRAL

THE USE OF NUMBER 1 DIESEL FUEL, WHICH IS A LIGHTER FUEL, MAY RESULT IN A LOSS OF ENGINE POWER AND ALSO INCREASED FUEL CONSUMPTION BECAUSE IT HAS LESS HEAT CONTENT AND A LOWER VISCOSITY THAN NUMBER 2 DIESEL FUEL.

THE LIFE OF THE INJECTION PUMP MAY ALSO BE AFFECTED BECAUSE OF THE LACK OF LUBRICANT IN THE LIGHTER NUMBER 1 DIESEL FUEL.

FUEL CONDITIONER

The following "Fuel Conditioner" recommendations are made for areas troubled with gum and varnish in the fuel:

1. Obtain a "Case Fuel Conditioner" and use it as follows:

   A. Add it to the fuel in the main storage tank.

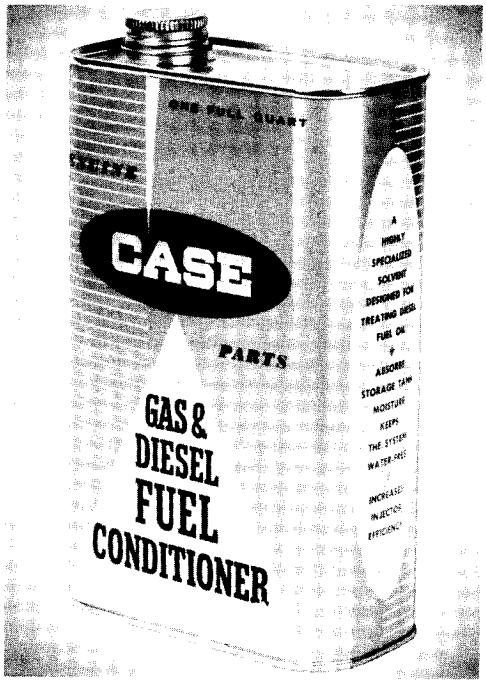
   OR

   B. Add a small quantity to the Loader fuel tank daily.

   OR

   C. Use the "Conditioner" periodically, or when any symptoms develop in the engine that indicate gum and varnish deposits in the Fuel System.

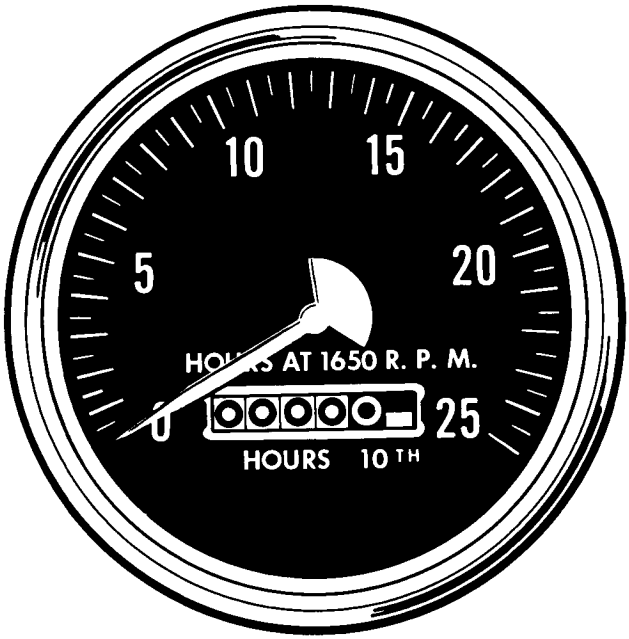
NOTE Refer to the instructions furnished with the "Conditioner" as to the amount that should be used.



IMPORTANT

1. Buy Fuel in quantities that will be used up in 90 days or less.
2. Protect main storage tank with a shelter so the fuel can be kept as cool as possible.

Lubricating your Case Diesel Loader will require only a few minutes of regular daily attention. Wherever possible, automatic lubrication or prepacked bearings, have been provided to reduce the demand made on the operator's time.

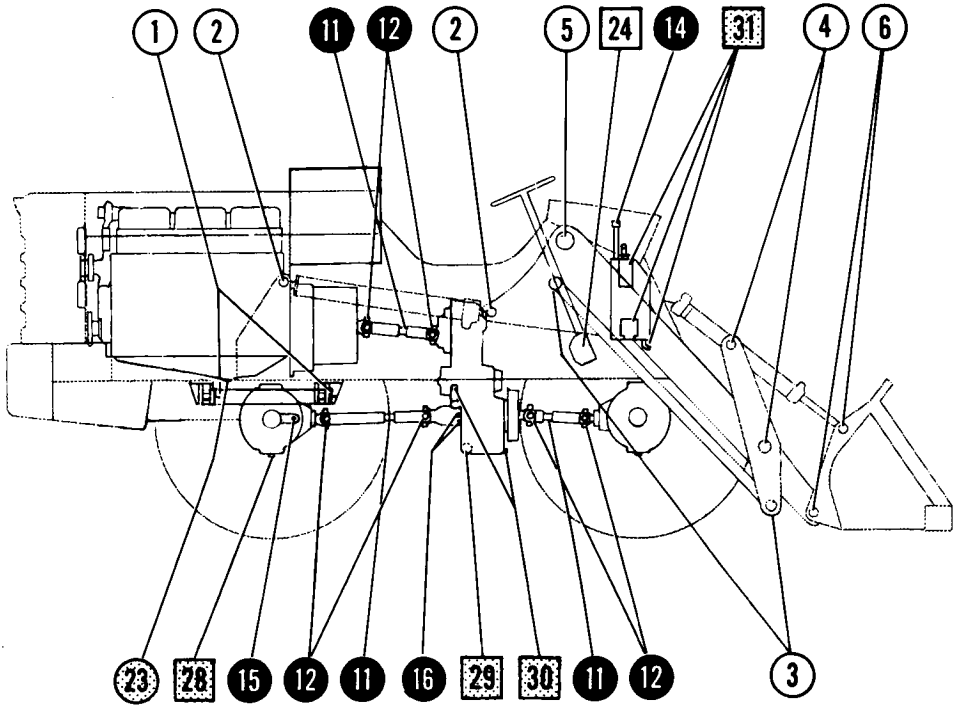


Engine Hour Meter

To assure maximum engine service and complete satisfaction, two factors must be observed.

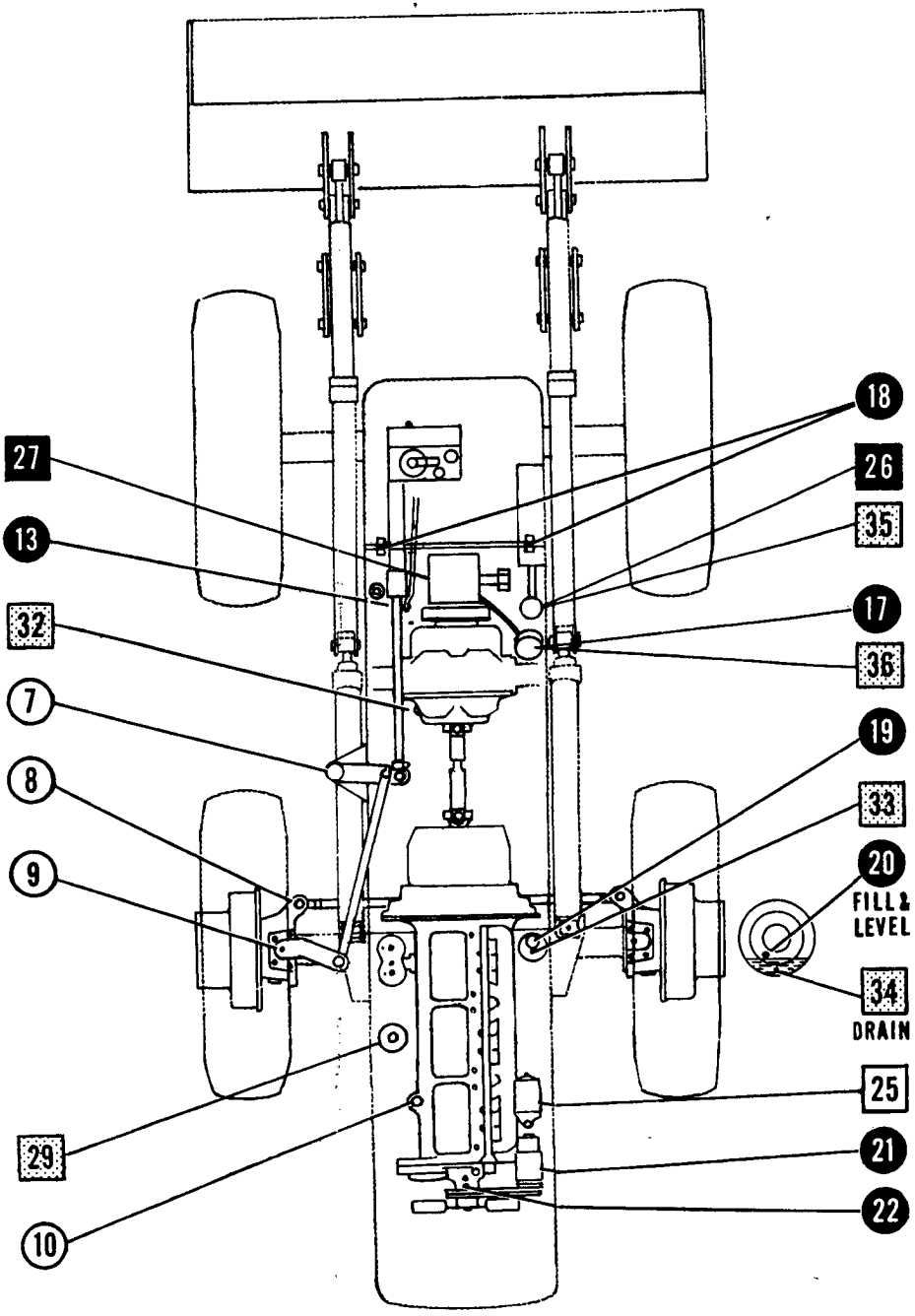
1. Have a regular schedule of inspection and lubrication. All time intervals in the Lubrication Section and the Preventive Maintenance Section of this manual are based on Hour Meter readings. Reading the Hour Meter provided on your Loader will tell you when to service it.

2. Use only high quality oils and greases of unvarying specifications. Always buy from a reliable dealer who handles reputable, well-known brand lubricants. Use only oil and grease of the specifications recommended in this manual.



LUBRICATION RECOMMENDATIONS AND APPROXIMATE CAPACITIES

LUBRICATION POINTS	APPROXIMATE CAPACITIES	AIR TEMPERATURE RANGES			
		Above 80° F.	80° F. to 32° F.	32° F. to -20° F.	-20° F. or Below
Engine Crankcase Refer also to Page 14	12 Quarts	SAE 30*	SAE 20W*	SAE 10W	SAE 5W
Engine Crankcase Including Oil Filter	14 Quarts				
Differential Housing	11 Quarts	Use SAE 90EP		Use SAE 80EP	
Planetary Housing Front	4-1/2 Pints				
Planetary Housing Rear	3 Quarts				
Transmission and Converter	25 Quarts	Use CASE Hi Lo TCH or Automatic Transmission Fluid Type "A"			
Hydraulic System	16 Gallons				
Hydrovac Cylinder	1 Oz.				
Power Steering System	3 Quarts				
Steering Gear Housing	1 Pint	Use SAE 90 General Purpose Gear Lubricant			
Generator	2 or 3 Drops	Use Light Engine Oil			
All Pressure Fittings	As Many Strokes as Required	Use A Good Grade No. 1 Gun Grease			


18
27
26
13
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32
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7
19
8
33
20
9
FILL &
LEVEL
34
DRAIN
25
29
21
22
10

REF. NO.	LUBRICATION POINTS	NO. OF POI	GREASE #1	DRAIN	CHECK	CLEAN	CHANGE	LUBRICATE	FREQUENCY
1	Rear Axle Mounting Bracket Pivot Pins	2	■						
2	Lift Cylinder Front & Rear Pivot Pins	4	■						
3	Level Link Pivot Pins	4	■						
4	Bell Crank Pivot Pins	4	■						
5	Lift Arm Pivot Shaft	2	■						
6	Bucket Pivot Pins	4	■						10 HOURS OR DAILY
7	Intermediate Steering Lever Pivot	1	■						
8	Tie Rod Ends	2	■						
9	Rear Wheel Trunnion Socket	4	■						
10	Engine oil, Dipstick & Filler	1			■				
11	Drive Shaft Slip Joints	3	■						
12	Universal Joints	6	■						
13	Steering Cylinder Actuator Ball Stud	1	■						
14	Hydraulic System Dipstick & Filler	1			■				
15	Differential Filler & Level	2			■				
16	Transmission Oil Level**	2			■				
17	Hydrovac Breather•	1				■			60 HOURS OR WEEKLY
18	Foot Throttle Cross Shaft	2	■						
19	Power Steering Reservoir Dipstick	1			■				
20	Planetary Oil Filler & Level	4			■				
21	Generator (Oil Few Drops)	2						■	
22	Fan Shaft Bearing	1	■						
23	Engine Oil Drain *	1		■					120 HOURS
24	Steering Gear Box	1			■				
25	Engine Oil Filter•	1					■		240 HOURS
26	Hydrovac Filter•	1				■			
27	Hydrovac Cylinder (1 oz)•	1						■	500 HOURS
28	Differential Oil Drain	2		■			■		
29	Transmission Filter & Screen•	2				■	■		
30	Transmission & Converter Oil Drain	2		■			■		
31	Hydraulic System Drain & Filters•	3		■		■	■		
32	Transmission Breather•	1				■			1000 HOURS OR YEARLY
33	Power Steering Reservoir Filter	1					■		
34	Planetary Oil Drain••	4		■			■		
35	Hydrovac Filter •	1					■		
36	Hydrovac Breather•	1					■		

* Refer to Page 15

** Refer to Page 21

• Refer to Pages 16 thru 24 for complete filter & breather service instructions

•• Small drain plug must be in lowest position

ENGINE LUBRICATION

Selection of Lubricating Oil

It is extremely important that you select and use in your Case Loader a stable, high quality, Heavy Duty Type Engine Lubricating oil that has the proper body (SAE Viscosity Rating) for the prevailing air temperatures.

Engine Oil SAE Viscosity Rating

SAE 30---------- Air Temperatures above 80° F.

SAE 20-W ---------- Air Temperatures from 80° F. to 32° F.

SAE 10-W ---------- Air Temperatures from 32°F. to -20°F.

SAE 5-W ---------- Air Temperatures below -20° F.

NOTE If the Loader is to operate under a heavy constant load during extremely cold weather, it is advisable to use SAE 10-W. It may be necessary to drain the oil while it is still hot and pre-heat it to approximately 100 Fahrenheit before pouring it back into the crankcase just prior to starting.

Engine Oil Service Designations

DM Service Classification oil must pass the required engine performance test for Supplement I or Mil-L-2104B rating.

DM Service Classification - moderate to severe Diesel engine operation.

DS Service Classification oil must pass the required engine performance test for Series 3 or Mil-L-45199 rating.

DS Service Classification - severe Diesel engine operation.

Regardless of the type of service, if the fuel contains more than 1.0% sulphur content - use DS Service Classification oil as described above.

ENGINE OIL CHANGE

Run-In-Oil

Drain the special"run-in" oil after the first 20 hours of operation and replace with fresh oil. Drain and refill the crankcase at least every 120 hours of operation thereafter.

Regular Oil Change

Drain and refill the crankcase at least every 120 hours of operation.

If the engine service is severe -(frequent stopping and starting, high or low operating temperature) - the crankcase should be drained more often to prevent the formation of sludge or harmful deposits in the engine.

NOTE You cannot determine the condition of a detergent (heavy duty) oil by its color. Detergent type oil will become much darker in color within a short period of operation. This is caused by the oil's ability to hold carbon in suspension.

Crankcase Oil Refill

IMPORTANT

1. When just the crankcase is drained, always refill with 12 measured quarts of oil. Do not refill using the dipstick as a guide.

2. If you have drained the crankcase and replaced the oil filter element, pour in 14 measured quarts, operate the engine for a few minutes to fill the filter body; then check the oil level with the dipstick.

   Be sure to allow sufficient time for the oil to run down off the engine parts.

3. By following the above procedure, you will prevent overfilling or underfilling the crankcase, either of which can be detrimental to the engine service life and will give you false oil consumption records.

ENGINE OIL FILTER

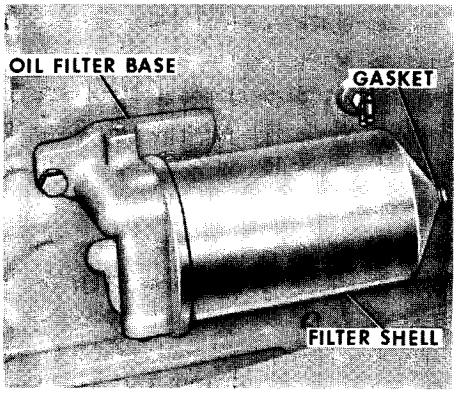


Figure 6

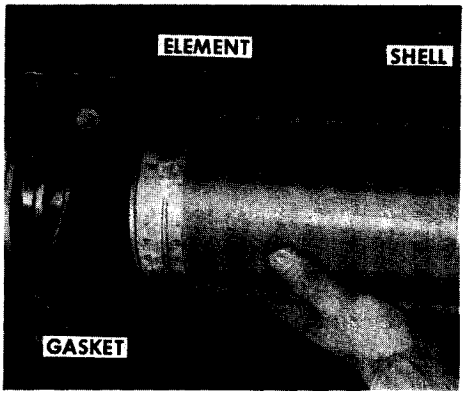


Figure 7

After the first 20 hours of operation and each 240 hours of operation thereafter, install a new Genuine Case Filter Element as follows:

1. Loosen the hex head bolt on the filter shell until the shell and element can be lifted off the base together, Figure 6.
2. Pull the contaminated element out of the shell, Figure 7, and flush the shell and filter base with clean fuel.
3. Install a new Case Filter Element on the bolt. Be sure the element is installed as shown in Figure 7, and BE CAREFUL not to push the rubber grommet seal out of the element, Figure 7.
4. Install the new gasket provided with the element, Figure 7.
5. Position the shell and element on the base and tighten the bolt just enough to form a seal.
6. Operate the engine and check for leakage.

NOTE If leakage is observed between the shell and bolt head, a new gasket must be installed, Figure 6.

Genuine Case Filter Element are obtainable from your Authorized Case Industrial Dealer. This element has been designed to protect your Case Engine from harmful dust and abrasives. Do not use substitutes.

IMPORTANT You cannot determine the condition of an oil filter element by its appearance. While an element may not apper to be excessively dirty, it may be completely contaminated with extremely fine particles of abrasive material. CHANGE THE OIL FILTER AT THE RECOMMENDED TIME INTERVALS.

ENGINE AIR CLEANER

The dual filter dry type air cleaner on the Loader will provide hundreds of hours of satisfactory service if it is serviced properly. The air cleaner filter elements must be serviced immediately if the red appears in the plastic tube on the indicator. Refer to Figure 23.

Servicing the Filter Elements

Remove the outer wing nut, outer cover, inner wing nut and inner cover. Remove the inner and outer filter elements, Figure 8.

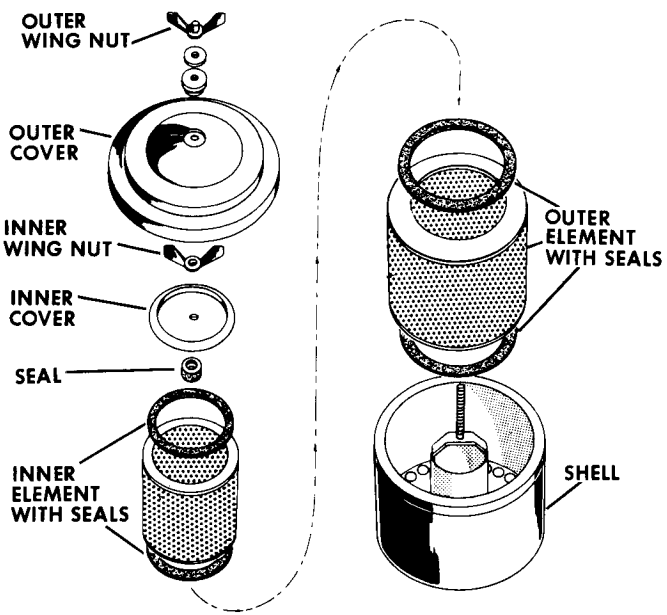


Figure 8

Tap the filter elements against a firm surface to remove loose dirt. Place the elements on a flat clean surface, then place a board or plate with a small opening over the top of the filter elements.

Insert an air hose through the opening in board. Blow the filter elements clean, starting with the low air pressure and gradually increasing it. Be careful not to rupture the filter element with extreme air pressures. Install a new element if the one being serviced is damaged in any way.

In this manner clean the filter elements as thoroughly as possible. The elements cannot be cleaned completely.

Do not clean and use the same filter elements more than three times. Replace the elements when fourth cleaning would be necessary.

POWER STEERING FILTER

Capacity of Power Steering System ---------- 3 Quarts
Type Fluid ----------Case Hi Lo Tch oil or Automatic Transmission Fluid - Type A.

Filter Element

Change Interval -- 1000 hours (more often in severe dust conditions)

A replaceable filter element is provided in the reservoir body, Figure 9. Replace the element every 1000 hours of operation (more often in severe dust conditions).

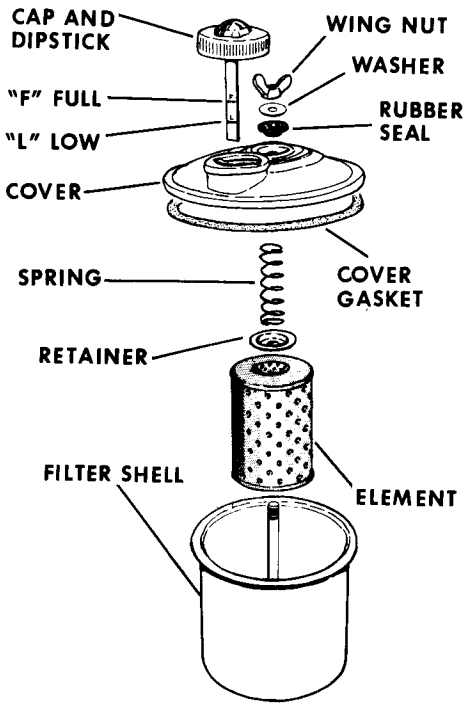


Figure 9

To replace the filter element, remove the reservoir cover, spring and retainer. Lift the contaminated element out of the reservoir. Install a new element in the same location as the one removed (either end up).

Use care not to damage the reservoir cover gasket when reinstalling the cover.

NOTE If proper care is taken to prevent the entry of dirt into the reservoir, and if the filter element is changed periodically, it should not be necessary to ever drain and replace the hydraulic steering fluid.

Power Steering Fluid Temperature

After the engine has been operating for a few minutes, the steering fluid will reach its normal operating temperature and the pump will feel hot to the hand. This is a normal condition found in any hydraulic system and is caused by the fluid from the reservoir being circulated through the pump and control valve at a very accelerated rate whenever the engine operates.

This condition will cause no difficulty as long as the reservoir is kept full.

Filling Reservoir-Bleeding Air from Power Steering System

Remove the reservoir cap and dipstick. Carefully fill reservoir with clean Automatic Transmission Fluid Type - A. until the oil level reaches the"F"mark on the dipstick, Figure 10. Replace the reservoir cap and dipstick and start the engine. Turn the steering wheel through several turns; then stop the engine and refill the reservoir to the"F" mark on the dipstick.

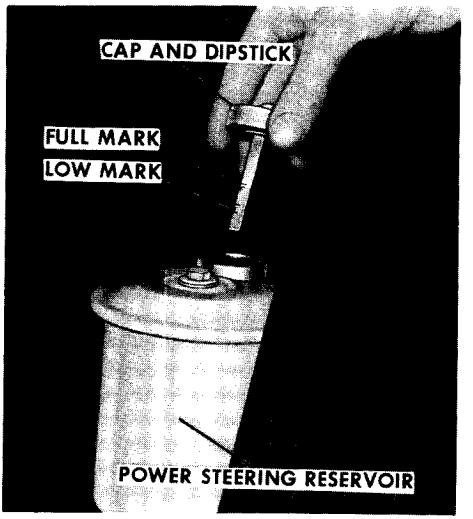


Figure 10

Repeat until the fluid level ceases to drop after turning the steering wheel. The system is then completely filled.

NOTE

The first few times you turn the steering wheel, do not make full turns. Make full turns only after a sufficient amount of fluid is added to the system. IMPORTANT : While bleeding air from system operate engine at low idle speed (approximately 750 RPM).

Checking the Fluid Level

Check the reservoir fluid level every 60 hours of operation. Wipe the reservoir cover and cap clean before removing the cap. Keep the reservoir filled to the "F" mark on the dipstick, Figure 9. Overfilling the reservoir will cause the oil to surge out of the breather hole in the cap.

TRANSMISSION AND CONVERTER OIL AND FILTER CHANGE

OIL AND FILTER CHANGE INTERVAL ---------- 1000 Hours

1. Remove the drain plug from the transmission, Figure 11.

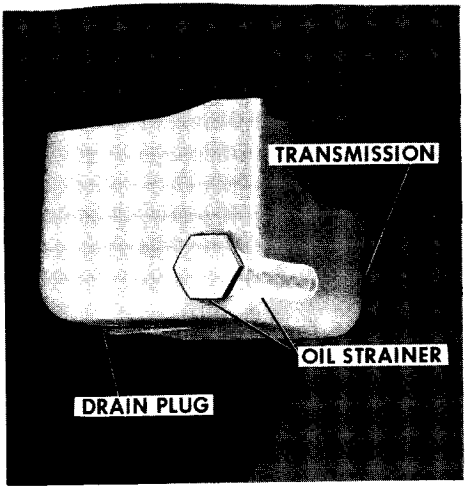


Figure 11

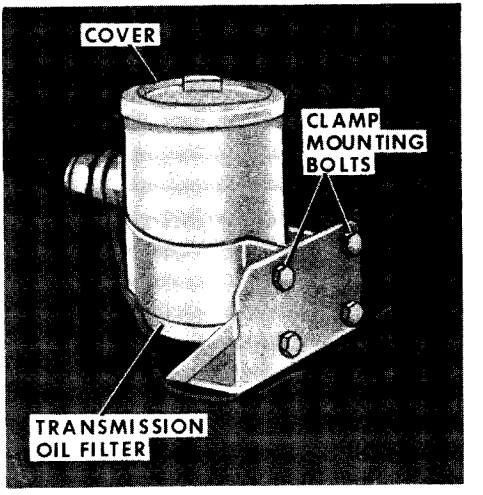


Figure 12

2. Remove the transmission oil strainer, Figure 11 and clean with mineral spirits using a soft bristle brush. Reinstall clean strainer in transmission.

3. Unscrew the cover and remove "O" ring, split backup ring, spring, relief valve and element.

4. Remove the four clamp bolts and nuts, Figure 12. Filter body can be positioned for easy draining and cleaning.

5. Install new split backup ring with the top of ring overlapping the bottom of the ring in the direction cap is installed. Install new "O" ring.

6. Flush out the filter body with clean fuel before installing the new filter element.

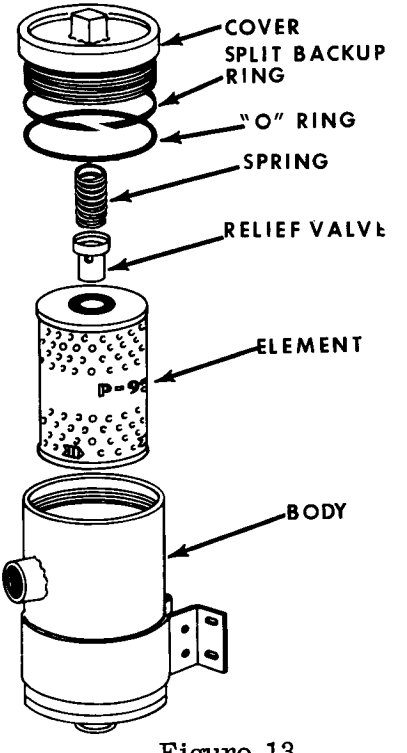


Figure 13

7. Install new element, relief valve, spring and cover. Tighten cover and position the body on the mounting bolts. Check for oil leaks.

8. To refill transmission and converter, pour 4 to 5 gallons of Type A Transmission Fluid through the Transmission filler opening.

NOTE: Always replace the filler opening plug before you start the engine.

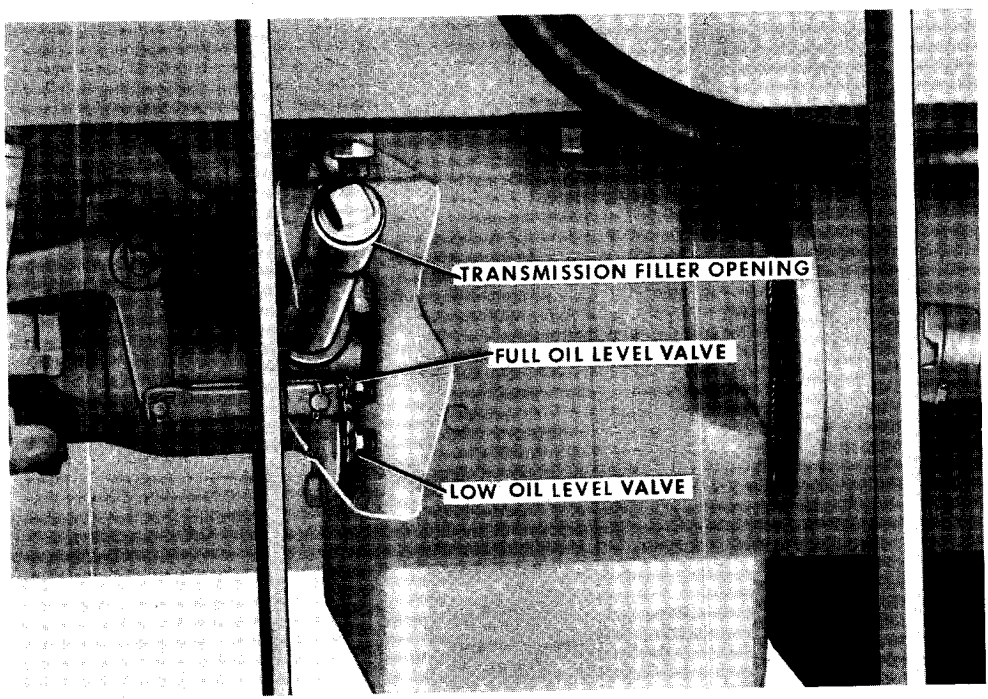


Figure 14

9. Start the engine and let it run at idling speed with the transmission in neutral to charge the transmission and converter hydraulic system with oil.

10. After the engine has been running at idling speed for a few minutes, add enough Type A Transmission Fluid to bring the oil up to the full level valve, Figure 14.

11. When the transmission has been filled to the correct level operate the engine until the transmission fluid is warm - then check the filter for leaks.

HYDRAULIC RESERVOIR

Change the hydraulic reservoir inlet filter element and clean the outlet filter after the first 20 hours of operation (Run In) and each time the reservoir oil is changed thereafter

Cleaning Interval (Reservoir Breather) ---------- 240 Hours
Clean and Change Interval (Filters) ---------- 1000 Hours

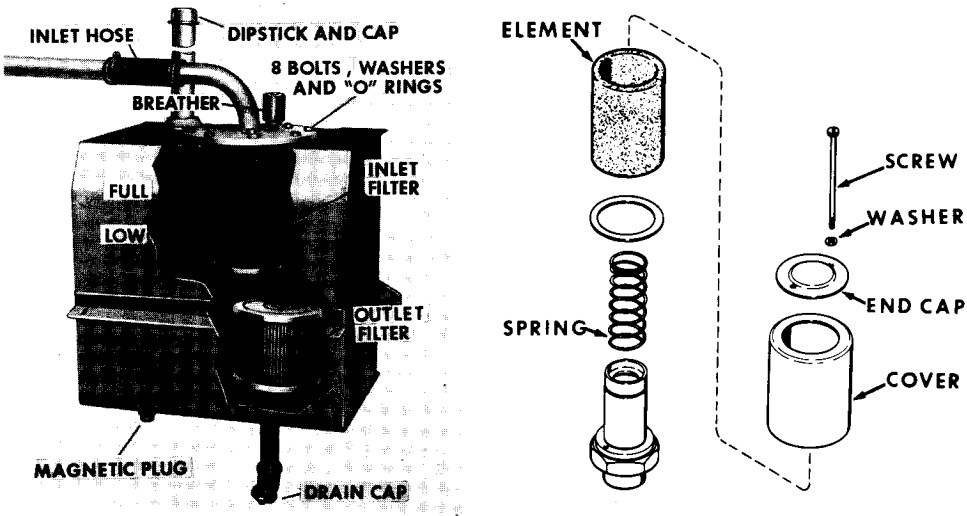


Figure 15

Breather

Remove the two screws, end cap, cover, element and spring. Clean the element in mineral spirits.

Install the element (be sure spring is installed properly) cover, end cap and screws.

Filters

To remove the inlet and outlet filters proceed as follows:

1. Remove the hydraulic reservoir cap and drain plug to drain the hydraulic reservoir.

2. Disconnect the hose on the filter inlet elbow at the top of the tank, Figure 15.

3. Remove the 8 bolts, plain washer and "O" rings from the filter flange.

4. Remove the inlet filter assembly from the reservoir.

5. The outlet filter can be removed by reaching into the hydraulic reservoir and turning it counter clockwise.

6. Outlet filter should be cleaned in mineral spirits.

7. Reinstall the outlet filter by screwing it clockwise into the reservoir.

To install a new filter element on the inlet filter flange:

1. Remove the two Flexloc nuts, the filter retainer and relief valve assembly.

2. Wash the parts of the filter assembly before installing new filter element.

3. Install new filter, two gaskets, retainer and new Flexloc nuts. Tighten the Flexloc nuts evenly until end play is out of the filter element. Then torque the Flexloc nuts to 30 to 35 in. lbs.

4. Reinstall filter flange assembly to the reservoir using a new flange gasket. Make sure the eight "O" rings and plain washers are installed when the bolts are installed.

5. Reconnect the upper inlet hose. Remove and clean the magnetic drain plug before installing it.

6. Fill the reservoir with Case TCH oil. Run the Loader through three complete cycles (raise, dump, retract and lower) and stop the engine. Check the fluid level in the reservoir (use dipstick) add fluid if necessary.

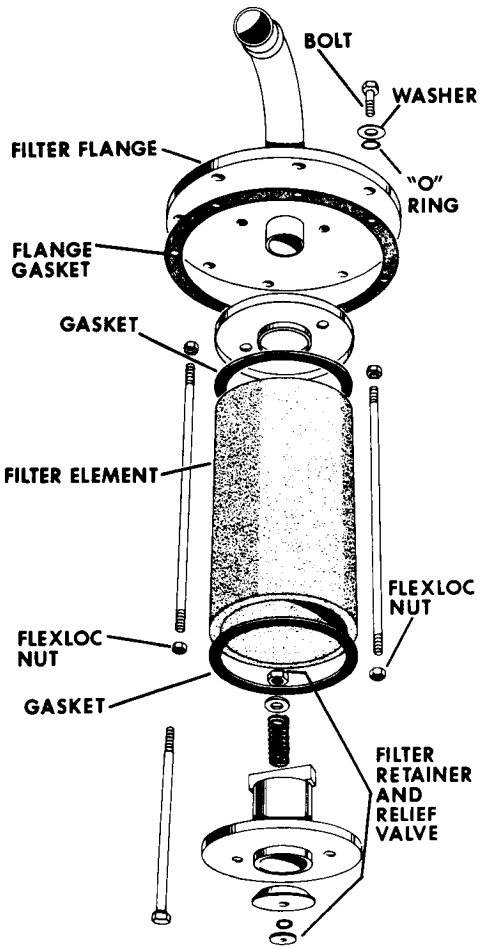


Figure 16

BRAKE SYSTEM BREATHER

Cleaning Interval --- 60 Hours
Change Interval --- 1000 Hours

Remove the breather from the loader and disassemble, refer to Figure 17,by removing the screen retainer, screen and hair, Clean parts in diesel fuel and let dry. Lubricate hair by dipping in clean engine oil and let excess oil drain off. Reassemble and install in loader.

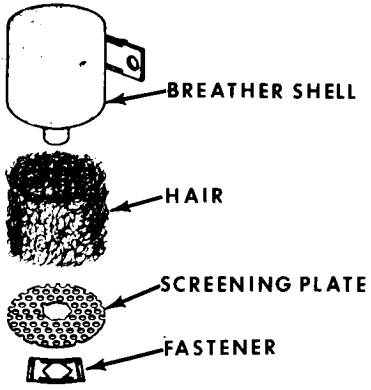


Figure 17

BRAKE SYSTEM FILTER

Cleaning Interval --- 500 Hours
Change Interval --- 1000 Hours

Remove filter assembly from loader and disassemble,refer to Figure 18,by removing the six nuts lockwashers and screws.Separate the two filter halves and remove the hair,gasket and screens. Clean all parts in diesel fuel and let dry.Lubricate by dipping in clean engine oil and let excessive oil drain off. Reassemble and install in loader.

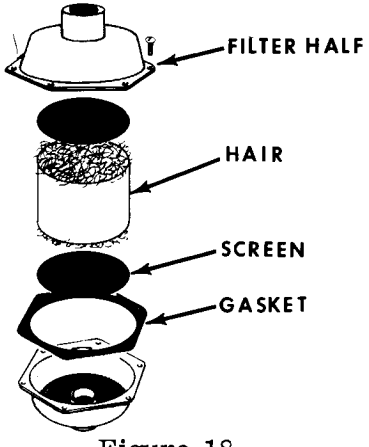


Figure 18

HYDROVAC CYLINDER LUBRICATION

Lubrication Interval -- 500 Hours

CAUTION Engine must not be running and brakes must not be applied.
Remove the 1/8" pipe plug located in the lower left hand end of the Hydrovac cylinder Figure 19. Install one ounce of Case Hi-Lo Tch oil or Automatic Transmission fluid type A, into the hole where the pipe plug has been removed. Reinstall pipe plug.

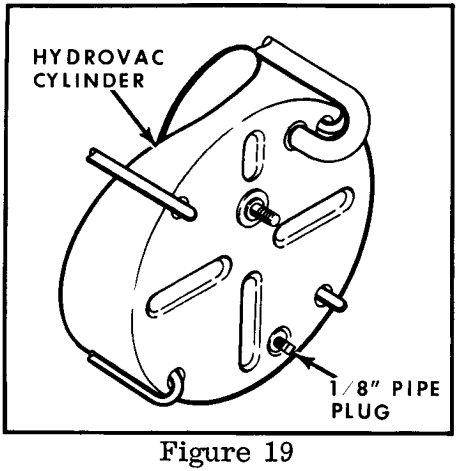


Figure 19

RUN -IN -PROCEDURE

AT ALL TIMES,KEEP THE ENGINE
UP TO THE RECOMMENDED MINIMUM
OPERATING TEMPERATURE
(WORK ZONE ON THE TEMPERATURE GAUGE)
DO NOT IDLE THE ENGINE

Careful attention must be given to proper"Run-In"procedure. Piston rings and cylinder sleeves can be seriously damaged in a new engine if"Run-In" instructions are not followed. The following procedure is recommended:

1. Operating Temperature

Maintain the coolant temperature in the Work Zone in the temperature gauge.

Low operating temperatures contribute to the formation of destructive acids and harmful deposits in the engine.

Adding or removing one or both hood sides will aid in regulating coolant temperature.

Radiator Shutters are available as extra equipment.

2. Crankcase Oil

Case Loaders are shipped from the factory with a special "Run-In" oil in the crankcase. After the first 20 hours of operation drain this oil while the engine is hot and replace it with fresh oil.

NOTE

Do not drain special "Run-In" oil until engine has been operated 20 hours. Replace engine filter element after first 20 hours of operation and every 240 hours thereafter. Change hydraulic reservoir inlet filter element and clean the outlet filter after first 20 hours of operation (Run-In) and each time the reservoir oil is changed thereafter.

PRE-STARTING CHECK LIST

Before starting your Case Loader for the first time and before each operating period thereafter, check the following:

1. Check that all lubrication fittings are serviced as directed on Pages 12 and 13.

2. Check that crankcase and transmission are filled to levels indicated on Pages 12 and 13.

3. Be sure air cleaner is clean. Refer to Page 17.

4. Check that radiator is filled. Use only soft water that is as free as possible of scale forming minerals - or a reputable nationally recognized brand of ethylene glycol base anit-freeze.

5. Check that the fuel tank is filled with clean, water free fuel that meets requirements listed on Page 9. Always wipe fuel tank cap clean before removing it.

6. Drain any accumulated water or sediment from the fuel tank water trap before starting each shift.

7. Visually check fuel system for leakage. Check the engine for coolant or crankcase oil leakage.

8. Check that the fan belts are just tight enough to eliminate slippage.

9. Check the hydraulic power steering and make sure the fluid reservoir is filled. Refer to Page 19.

10. Check the air pressure in the tires.

11. Check the oil level in the Hydraulic Reservoir.

12. Start the engine and let it warm up to the recommended operating temperature.

13. Check that the Clutch Pressure Gauge is registering in the operating zone.

14. Operate the Bucket Control Levers and observe the action of the bucket. Inspect the hoses and connections for evidence of oil leaks.

SAFETY PRECAUTIONS

1. Before starting the engine, be sure all operating controls are in NEUTRAL.
2. Keep bucket as close to ground level as possible when transporting loads on grades or slopes.
3. Keep brakes in proper adjustment.
4. Never operate any of the controls from any position, but seated in the operator's seat.
5. Be extra careful when going down steep grades.
6. Keep Loader in gear when going down steep grades.
7. Drive at speeds slow enough to insure safety and complete control, especially over rough terrain.
8. Reduce speed when making a turn or applying brakes.
9. Never shift to a low range when operating at a high speed. Slow down at least as much as the lower range top speed before shifting down.
10. Never leave the engine running while it is unattended.
11. Always lower the Loader lift arms to the ground or block them securely before performing any service operation or when leaving the machine unattended.
12. Never dismount from a Loader when it is in motion.
13. Never permit persons other than the operator to ride on the Loader.
14. Never stand between a Loader and machine when hitching unless all the controls are in neutral and the parking brake locked.
15. Be careful removing radiator pressure cap when the radiator is hot. Refill only when the engine is stopped.
16. Be careful removing the hydraulic reservoir cap when the Loader has been in operation. Make sure engine is stopped.
17. Do not oil, grease or adjust a Loader when the engine is running.
18. Never refuel a Loader when the engine is hot or running.
19. Do not smoke when refueling or using Starting Fluid.
20. Be extra careful when using cold weather starting fluid. Read the instructions on the can and those listed on Page 46.
21. Never operate a Loader in a closed shed or garage.
22. Do not wear loose fitting clothing which may catch in the moving parts.
23. To prevent highway accidents, use red warning flags in the daytime and red warning lamps at night.
24. Keep a first aid kit and fire extinguisher on the Loader.
25. REMEMBER, A CAREFUL OPERATOR IS ALWAYS THE BEST INSURANCE AGAINST AN ACCIDENT.

IMPORTANT

It is recommended the Loader can be towed at slow speed for a distance not greater and one half mile without disconnecting the drive shafts. If the Loader is to be towed for a greater distance, the drive shafts must be disconnected. USE A RIGID TYPE COUPLER.

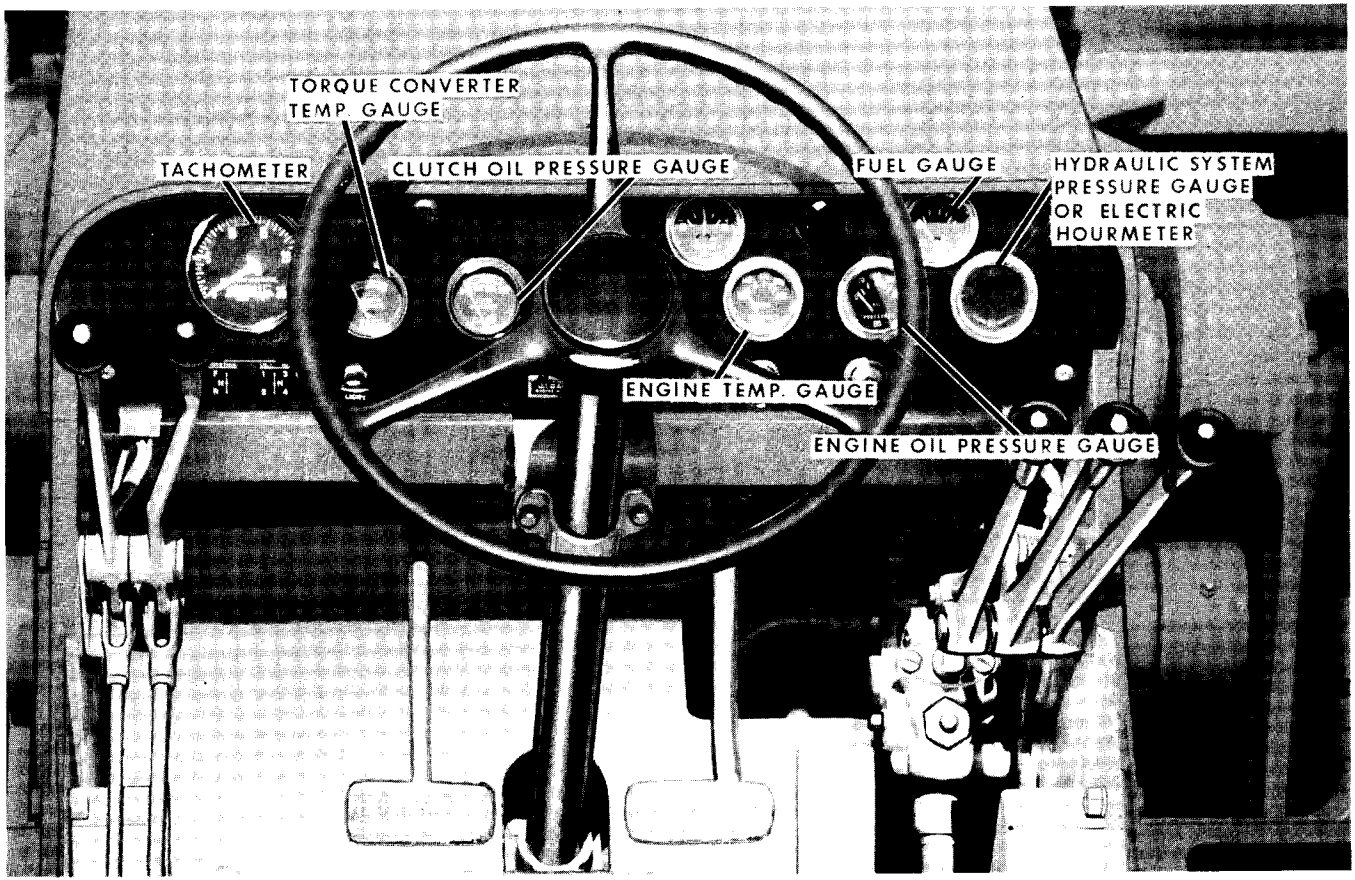

TORQUE CONVERTER
TEMP. GAUGE
TACHOMETER
CLUTCH OIL PRESSURE GAUGE
FUEL GAUGE
HYDRAULIC SYSTEM
PRESSURE GAUGE
OR ELECTRIC
HOURMETER
ENGINE TEMP. GAUGE
ENGINE OIL PRESSURE GAUGE

Figure 20

OPERATING CONTROLS AND INSTRUMENT GUIDE

TACHOMETER - Figure 20. Indicates engine speed in revolutions per minute. Revolutions per minute is indicated in 50 RPM steps.

HOURMETER - Figure 20. The hourmeter is located within the tachometer dial. The direct reading hourmeter indicates hours and tenths of hours that the engine has run. The hourmeter does not record clock hours, but rather the average engine hours, at a mean speed of 1650 RPM. The hourmeter provides a convenient means of knowing when to service the Loader.

CLUTCH PRESSURE GAUGE - Figure 20. Indicates hydraulic clutch operating oil pressure. The gauge needle should register between 150 and 200 PSI before transmission serial #6744C and between 200 and 250 PSI transmission serial #6744C and after, which is the operating zone. If the gauge needle drops out of the operating zone, will not reach the correct operating zone, or goes over the correct operating zone - DO NOT OPERATE THE LOADER UNDER LOAD UNTIL THE CAUSE HAS BEEN DETERMINED AND CORRECTED.

TORQUE CONVERTER TEMPERATURE GAUGE - Figure 20. Indicates operating temperature of the oil in the torque converter. The gauge needle should register in the Green Zone on the gauge. If the gauge needle rises into the red zone. - PLACE THE TRANSMISSION IN NEUTRAL , IDLE THE ENGINE UNTIL THE GAUGE NEEDLE RETURNS TO THE GREEN ZONE. On of the causes of the converter oil overheating is operating too long at stall speed.

FUEL GAUGE - Figure 20. Indicates amount of fuel in the fuel tank.

ENGINE TEMPERATURE GAUGE - Figure 20. The gauge needle will register in the Work Zone when the engine is at correct operating temperature.

ENGINE OIL PRESSURE GAUGE - Figure 20. The engine oil pressure gauge should register between 40 to 45 PSI when the engine is warm and running at full governed speed. When low or no oil pressure is indicated on the gauge, stop the engine and check for the cause of low oil pressure.

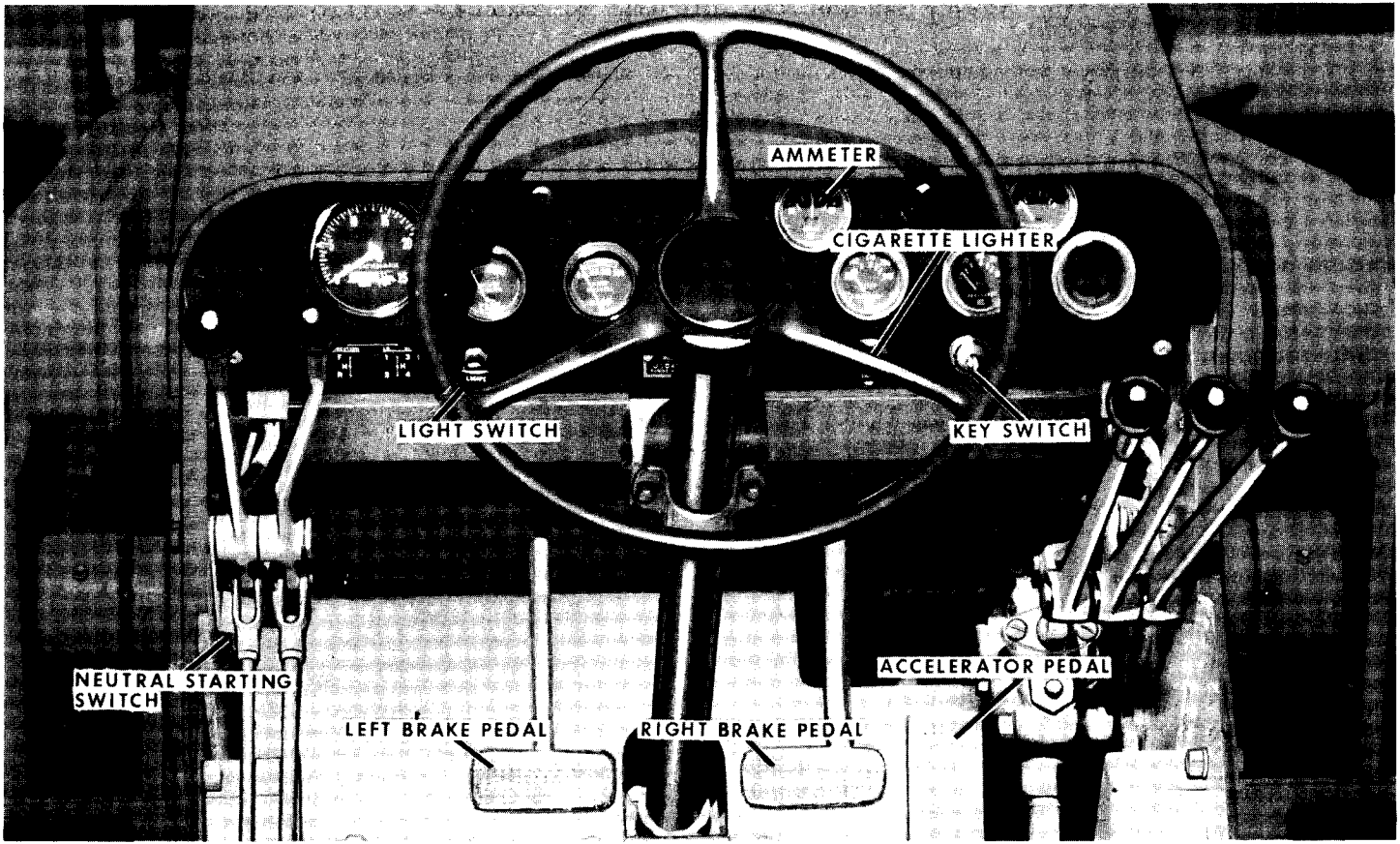

AMMETER
CIGARETTE LIGHTER
LIGHT SWITCH
KEY SWITCH
NEUTRAL STARTING SWITCH
ACCELERATOR PEDAL
LEFT BRAKE PEDAL
RIGHT BRAKE PEDAL

Figure 21

OPERATING CONTROLS AND INSTRUMENT GUIDE (Continued)

AMMETER - Figure 21. When the engine is first started, the ammeter should show a maximum charging rate and gradually fall back as the battery becomes charged. If the lights are turned on, the charging rate should increase automatically to take care of the additional load and show an increase in the ammeter. When the action of the ammeter is different as described above it is an indication that the generator, regulator or batteries should be inspected, tested or adjusted.

CIGARETTE LIGHTER - Figure 21. Push lighter element fully in to light. Lighter element will remain in socket until lit, then pops out to normal position. Pull lighter element out of socket to use.

KEY SWITCH - Figure 21. Combination four position switch. The four positions are ACCESSORY, OFF RUN AND START. The Loader will not start without the key.

LIGHT SWITCH - Figure 21. Pull the light switch out to the first position to turn on headlights, instrument panel lights and red tail lights. When brake pedal is depressed, red tail lights should brighten. Pull the light switch out to second position to turn on headlights, instrument panel lights and rear lights.

LEFT BRAKE PEDAL - Figure 21. Depress left brake pedal for braking action, operation of the clutch cut-off valve and lighting the red stop lights.

RIGHT BRAKE PEDAL - Figure 21. Depress right brake pedal for braking action and lighting the red stop lights.

ACCELERATOR PEDAL - Figure 21. Depress accelerator pedal to increase engine RPM.

NEUTRAL STARTING SWITCH - Figure 21. Direction selector and Power range selector levers must be in Neutral position for starting the engine.

OPERATING CONTROLS AND INSTRUMENT GUIDE (Continued)

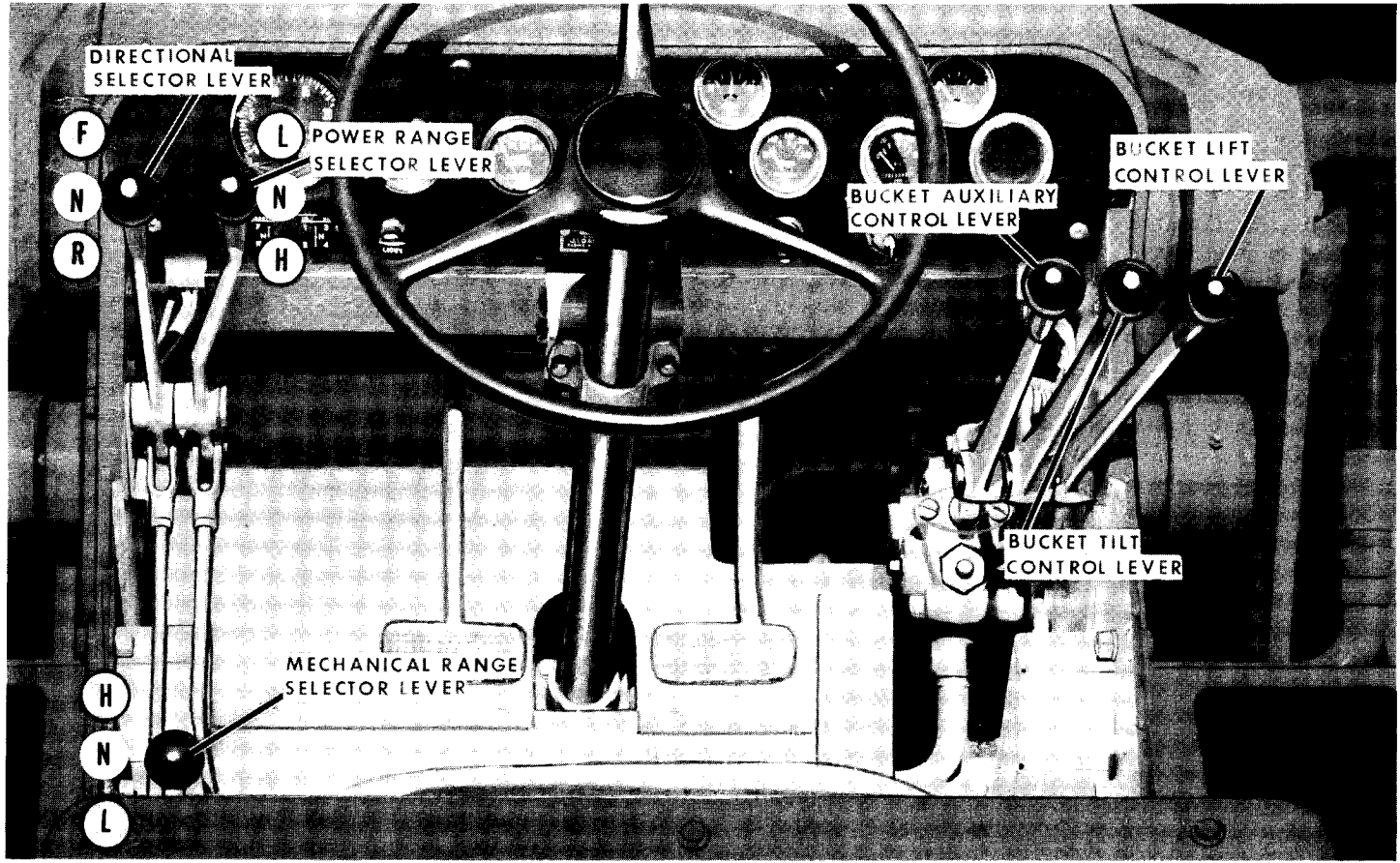


Figure 22

BUCKET LIFT CONTROL LEVER - Figure 22. Push the control lever forward to lower the bucket. Pull the control lever rearward to raise the bucket. The raise and float positions are retained. The control lever must be manually moved from the raise and float positions. The control lever automatically returns to neutral from the lower position when released. Refer to Pages 36 and 37.

BUCKET TILT CONTROL LEVER - Figure 22. Push the tilt control lever forward to tilt the bucket down. Pull the tilt control lever rearward to tilt the bucket up. The tilt control lever automatically returns to neutral when released, stopping and holding the bucket in any position. Refer to Page 38.

BUCKET AUXILIARY CONTROL LEVER - Figure 22. Push lever forward opens segmented type bucket. Pulling lever rearward closes segmented type bucket. Refer to Page 38.

POWER RANGE SELECTOR LEVER - Figure 22. Push selector lever forward for low range and pull selector lever rearward for high range.

MECHANICAL RANGE SELECTOR LEVER - Figure 22. Move lever up for low range and down for high range.

NOTE Loader must be stopped and direction selector in neutral when this is done.

DIRECTION SELECTOR LEVER - Figure 22. Push direction selector forward to move the Loader in a forward direction. Pull the direction selector rearward to move the Loader in a rearward direction.

OPERATING CONTROLS (Continued)

AIR CLEANER CONDITION INDICATOR - Figure 23. When red appears inside of plastic tube, air cleaner must be serviced. To reset indicator press rubber base.

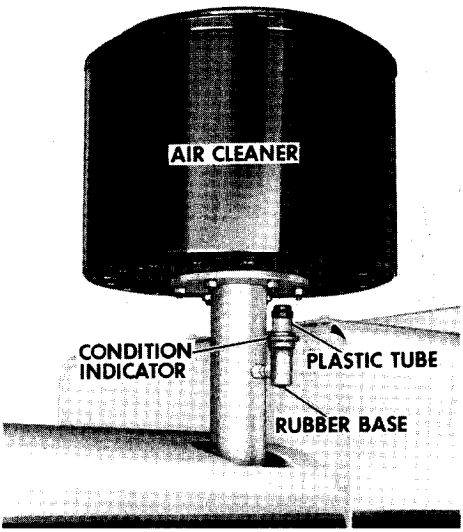


Figure 23

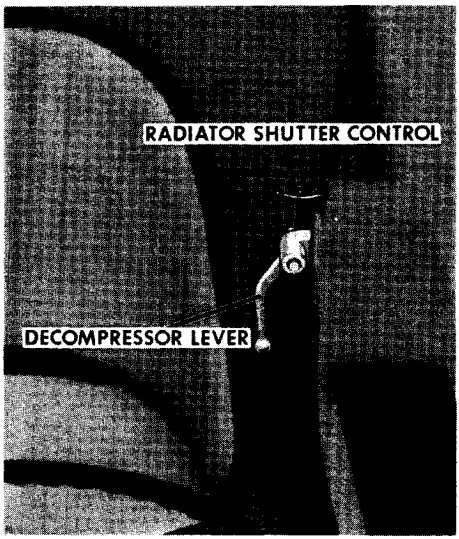


Figure 24

RADIATOR SHUTTER CONTROL (Extra Equipment) -Figure 24. To close the shutters partically or fully, pull the control out to the required position, and turn the handle clockwise.

DECOMPRESSOR LEVER - (If so equipped) Refer to Page 41.

FUEL STOP LEVER - Figure 24A. Pull lever up and release accelerator pedal to stop engine.

REAR AXLE SHIFT-OUT - Figure 24A. Push handle down to disengage rear axle for road travel. Pull handle up to engage rear axle for four wheel drive.

PARKING BRAKE - Figure 24A. Pull handle up to engage the parking brake when stopped on an incline or when the operator leaves the Loader. The parking brake tension can be adjusted by turning the knurled portion of the brake handle when the brake is in the released position. Turn the knurled portion of the handle toward the front of the Loader to increase the tension. Turn rearward to decrease tension.

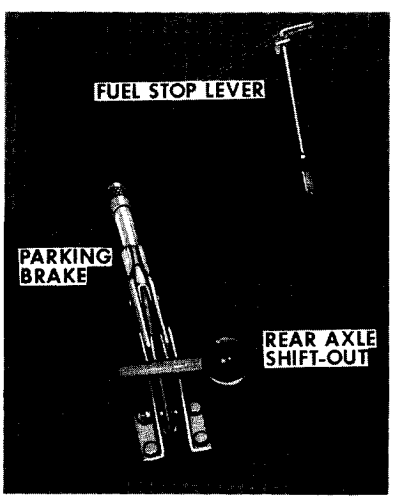


Figure 24A

FUEL PRESSURE GAUGE - Figure 25. The gauge indicates the condition of the Fuel Filters. When the needle is in the Green Zone the filters are in good condition.

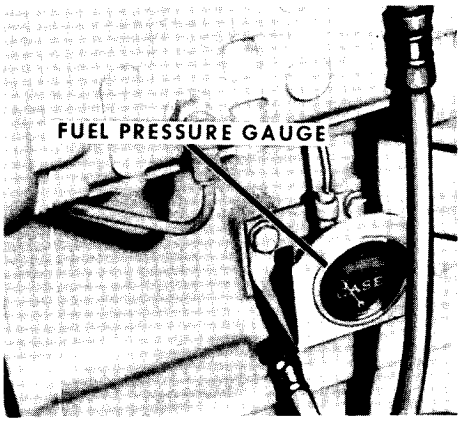


Figure 25

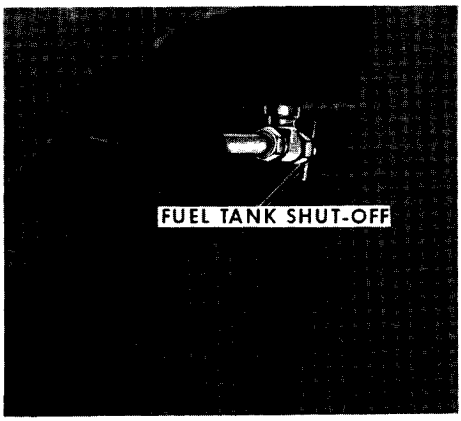


Figure 26

FUEL TANK SHUT-OFF - Figure 26. Turn valve fully in to shut off fuel from the tank.

OPERATOR'S SEAT ADJUSTMENT

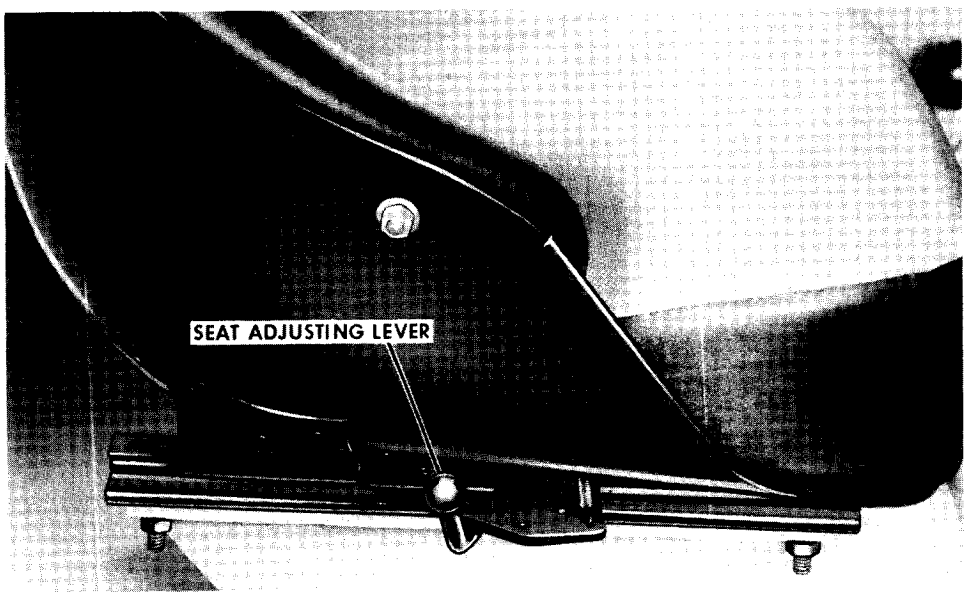


Figure 27

The seat, Figure 27, is adjustable forward or back by moving the lever rearward and sliding the seat forward or back.

BUCKET LIFT CONTROL

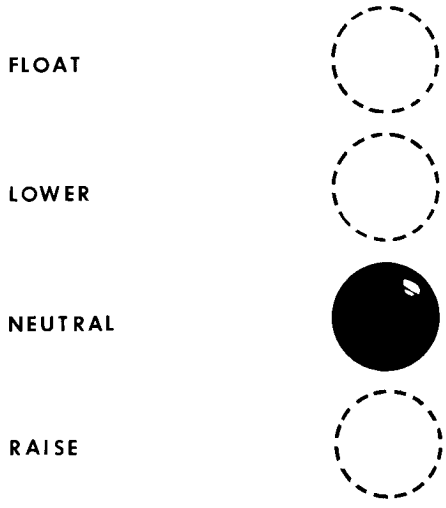


Figure 28

TO RAISE THE BUCKET - pull the control lever rearward, Figure 28. Raise is a retained position and the control lever must be manually moved from the raise position to any other required position. By placing the lever in the retained raise position, the operator's hand is free to work the tilt lever for fast, efficient crowding action.

TO STOP THE BUCKET - the control lever must be manually moved from the raise, or float positions to neutral. The control lever returns to neutral from the lower position, when released, stopping the bucket and holding it in position.

TO LOWER THE BUCKET - push the control lever forward, Figure 28. It is necessary to hold the lever in this position to continue lowering the bucket. Releasing the lever will stop the bucket and hold it in position.

FLOAT - is a retained position ahead of the lowering position, Figure 28, and provides the bucket with float action. By pushing the control lever all the way forward until the valve spool locks in float detent, leaving operator free to operate the bucket tilt lever. The retained float position also allows the bucket to skim over graded or smooth surfaces without constant lever manipulation. This float action prevents gouging or skipping.

IMPORTANT

The bucket lift control must be manually moved from the retained float and retained raise positions to stop the bucket and hold it in position.

BUCKET LIFT CONTROL (Continued)

Adjustable Detent for Float and Raise

The bucket lift control spool of your Case Unit Loader is equipped with an adjustable end cap. This lift spool end cap allows the operator to adjust the "Detent Feel" in Float and Raise to his "touch".

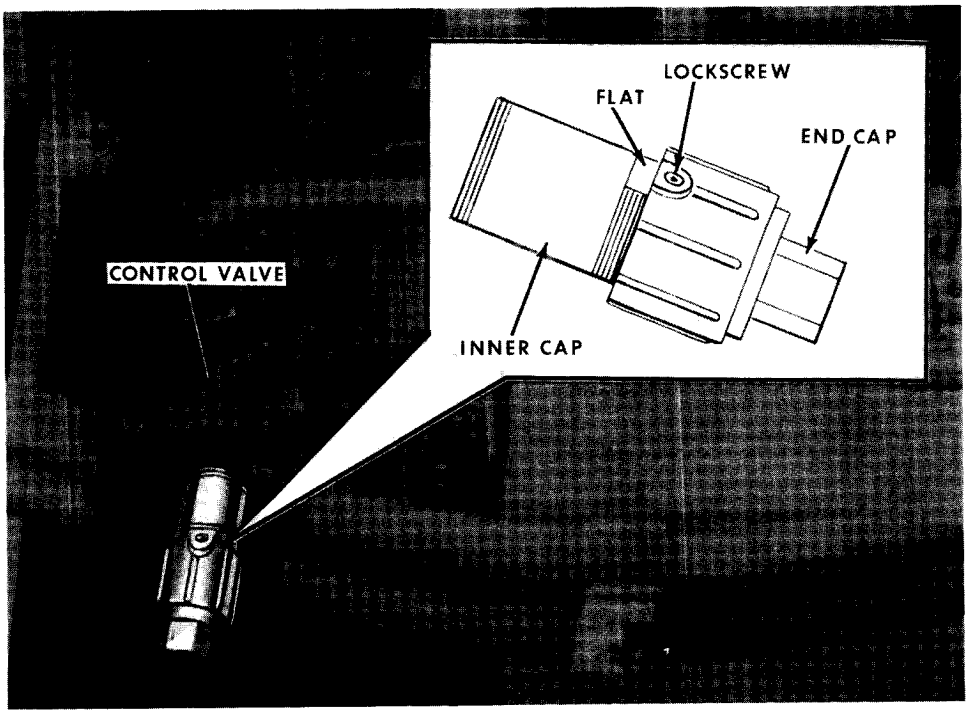
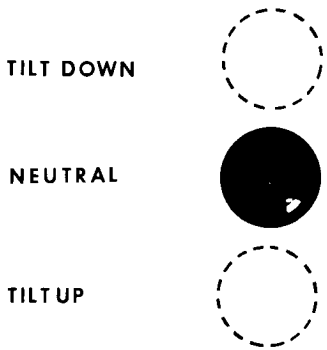


Figure 29

To adjust the "Detent Feel"

1. Loosen lock screw on end cap, Figure 29.
2. Turning end cap farther on inner cap will give a "more positive Detent Feel".
3. Turning end cap farther off inner cap will give a "softer Detent Feel".
4. Tighten lock screw after adjusting so it seats on a flat spot of the inner cap.

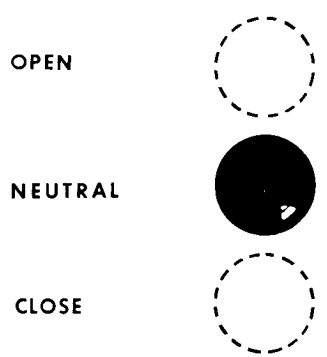
BUCKET TILT CONTROL



Push the lever forward to tilt the bucket down. Pull the lever back to tilt the bucket up. Releasing the lever will allow it to automatically return to neutral, stop the bucket and hold it in position.

Figure 30

BUCKET AUXILIARY CONTROL LEVER



Pushing the lever forward opens the segmented type bucket. Pulling the lever rearward closes the segmented type bucket. Releasing the lever will allow the lever to automatically return to neutral while stopping and holding the clam in the position at which the lever is released.

Figure 31

STANDARD BUCKET SIGHT LEVEL GAUGE

A bucket sight level gauge, Figure 32, is located directly ahead of the operator and is in his normal line of vision when operating the Loader.

The position of the gauge rod in its sheath indicates the angle of which the bucket is tilted.

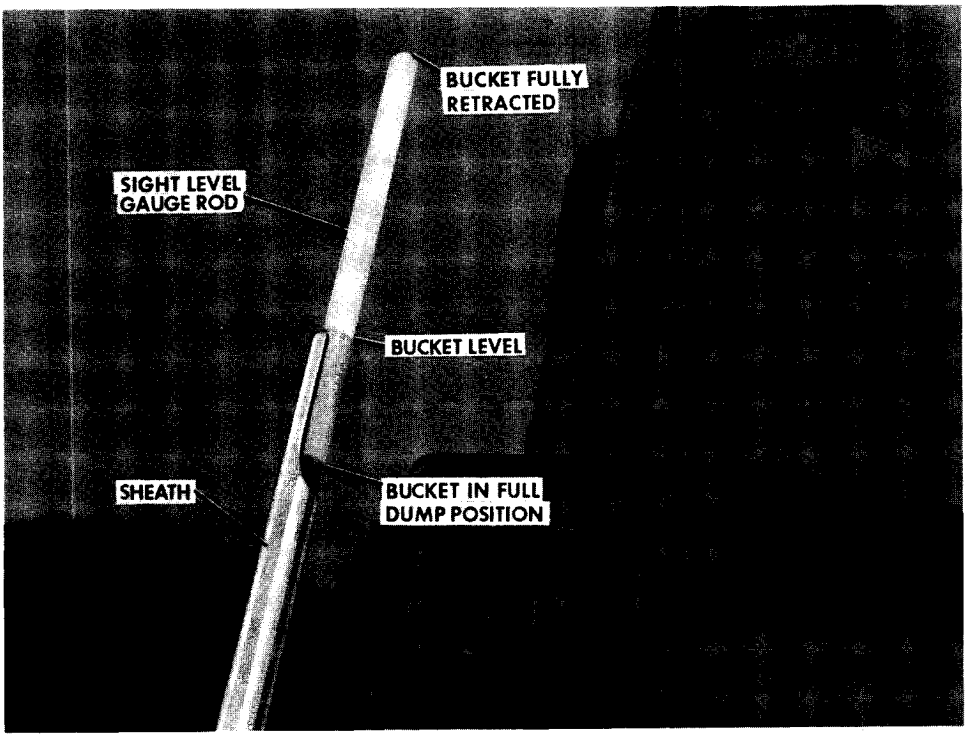


Figure 32

BUCKET RETRACTED (TILTED UPWARD) - The rod will protude above the end of its sheath.

BUCKET IN LEVEL POSITION - The rod will be approximately even with the end of its sheath.

BUCKET IN DUMPING POSITION - The rod wil be at the lower end of the cutaway portion of its sheath.

SEGMENTED BUCKET INDICATORS

There are two bucket indicators on the segmented bucket. The Clam Indicator and the Bucket Level Indicator.

Clam Indicator

The Clam Indicator located on the top of the moldboard indicates position of the clam. Use the clam indicator for doing scraper work to control the depth of cut. When the clam is closed the boss will line up with the "O" mark on the indicator gauge, Figure 33.

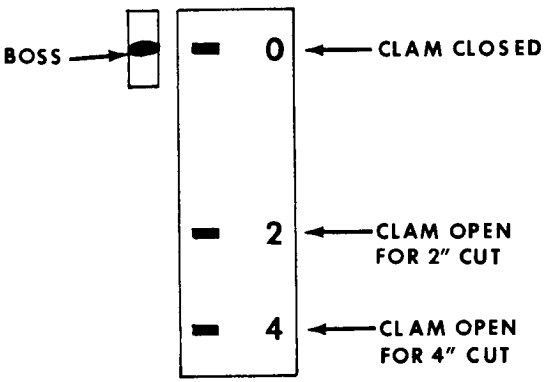


Figure 33

Bucket Level Indicator

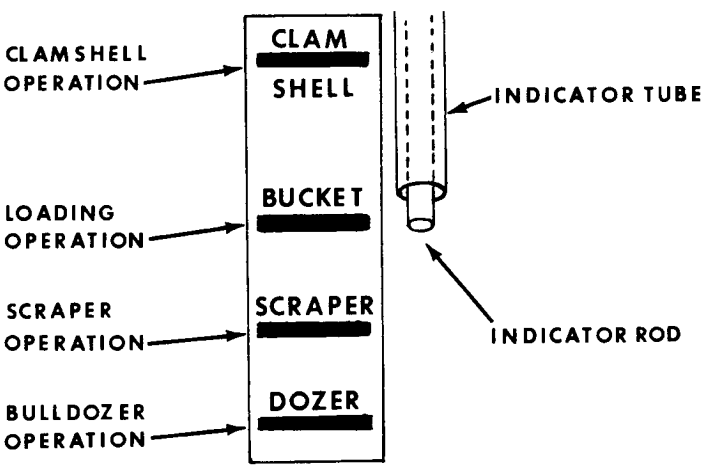


Figure 34

The bucket level indicator, Figure 34, is located on the right hand tilt cylinder, and indicates the approximate angle of the bucket for various operations.

DECOMPRESSOR
(If so equipped)

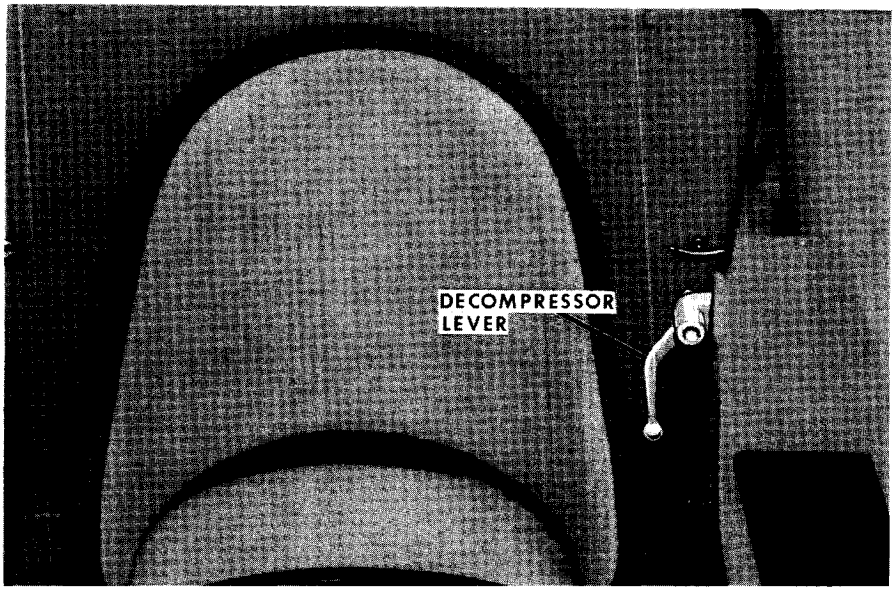


Figure 35

The decompressor, Figure 35, makes it possible to manually relieve engine compression when it is necessary to hand crank the engine for operations such as checking valve tappet clearances, etc. Pulling the lever up holds the exhaust valves open and thereby relieves compression. Lowering the hand lever releases the valves and restores compression.

NOTE

The decompressor may be used to stop the diesel engine in an emergency. Should the fuel stop control be damaged so the engine cannot be shut-off, pulling the decompressor lever up will stop the engine.

The decompressor may also be used as an extra precautionary measure to prevent children or unauthorized persons from accidently starting the diesel engine.

IMPORTANT

DO NOT USE THE DECOMPRESSOR LEVER AS A REGULAR MEANS BY WHICH TO STOP THE ENGINE. SERIOUS DAMAGE TO THE ENGINE MAY RESULT.

STARTING PROCEDURE

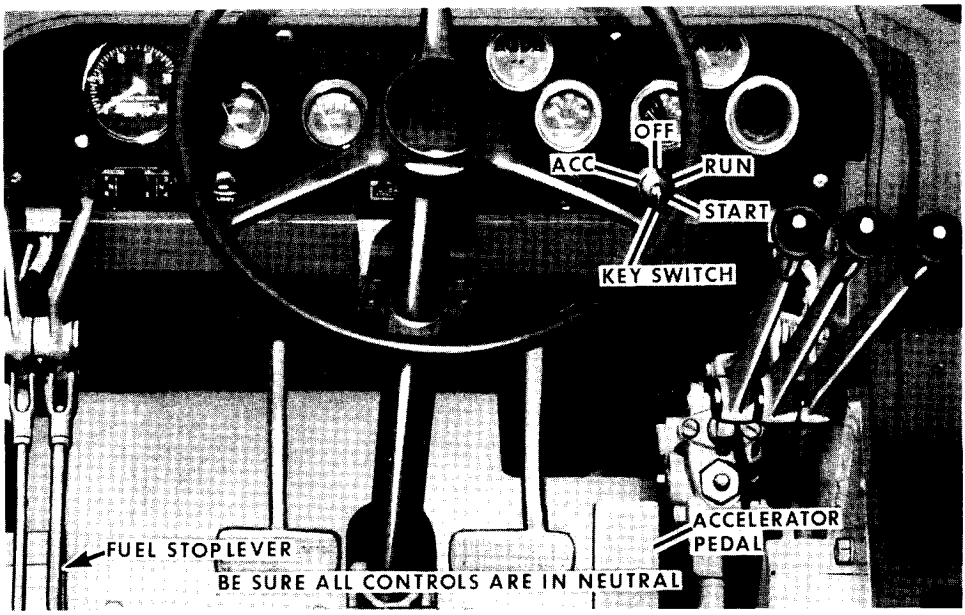


Figure 36

To start the engine of the Loader, place all the controls in neutral. Depress the accelerator pedal half way and push the fuel stop lever all the way down. Turn the key switch fully clockwise until the engine starts. Release the key.

1. Immediately check that the oil pressure for low or no oil pressure and the ammeter for no charging rate if either of these conditions are present stop the engine and investigate.

2. If the engine fires and stops, wait for the starting motor to stop spinning before again turning the key switch to start.

3. Do not use the starting motor longer than 30 seconds without interruption. Wait at least 3 minutes so batteries can recuperate and the starting motor can cool.

NOTE While the engine is being turned over with the key switch, white or black exhaust smoke should be observed. If none is observed and the engine will not start, it is an indication that no fuel is being delivered to the cylinders.

Stopping the Engine

Idle the engine for a few minutes, before shutting it off, so the engine parts can cool evenly. Place all controls in neutral. Pull the fuel stop lever up. Turn the key switch counter-clockwise to OFF.

COLD WEATHER OPERATION

To start and operate your Case Loader during cold weather, the following precautions must be observed:

1. BATTERIES - Both storage batteries must be fully charged.

2. FUEL RECOMMENDATIONS - The diesel fuel must have a Pour Point 10 degrees Fahrenheit lower than the prevailing air temperature and a Cetane rating from 45 to 55. The fuel must be clean and free of water.

3. CRANKCASE OIL - The oil in the crankcase must be of the recommended viscosity.

4. TRANSMISSION AND CONVERTER OIL - Always use Automatic Transmission Fluid - Type A.

5. HYDRAULIC RESERVOIR OIL - Always use Automatic Transmission Fluid Type A.Both winter and summer.

6. COOLING SYSTEM - Must be protected by a reputable brand of "High Boiling Point" type Ethylene Glycol anti-freeze.

7. STOPPING THE ENGINE - Always allow the engine to reach operating temperature before stopping it. If the engine has been working under load, always idle the engine for a few minutes before stopping it so the engine parts can cool evenly.

8. CONDENSATION IN FUEL TANK - Always fill the fuel tank at the end of the day's operation to prevent the tank from "sweating" and water entering the fuel.

9. FUEL TANK WATER TRAP - Drain the fuel tank water trap daily to prevent any accumulation of water from freezing and causing possible damage to the water trap or the fuel tank due to expansion.

10. DURING EXTREMELY COLD WEATHER, the following extra precautions may be required:

A. Remove and store the batteries in a moderately warm place (preferably room temperature). Reinstall the batteries just prior to starting.
B. Drain the crankcase oil while it is still warm from operation. Store it in a warm place. If possible, pre-heat the oil to approximately 100 degrees Fahrenheit before replacing it just prior to starting.
C. Drain and store the anti-freeze in a warm place. If possible, the anti-freeze should be warmed before replacing it in the cooling system just prior to starting.

CAUTION

NEVER IDLE THE ENGINE FOR PROLONGED PERIODS OF TIME!

DURING EXTREMELY COLD WEATHER, WATCH THE COOLANT TEMPERATURE CAREFULLY AND NEVER OPERATE THE ENGINE FOR PROLONGED PERIODS BELOW THE RECOMMENDED COOLANT TEMPERATURE, (WORK ZONE ON THE TEMPERATURE GAUGE).

During extremely cold temperatures, the engine will not warm up to, or maintain the operating temperature at low engine speeds. Low idling speeds during extremely cold temperatures will result in incomplete combustion, heavy deposit formations on the valve system and possible serious damage to the engine.

1. ENGINE WARM UP PROCEDURE

A. Close the radiator shutters (if so equipped) or cover the radiator.
B. Start the engine as described on the previous pages and allow it to run at a reduced speed just long enough for the oil to circulate through the engine. (Not over one or two minutes).

2. MAINTAIN ENGINE OPERATING TEMPERATURE

When the engine is not operating under load, but the operator wishes to keep the engine running due to the extremely cold temperatures:

A. Keep the hood sides in place on the Loader.
B. Keep the radiator shutters closed sufficiently to maintain temperature in the Work Zone on the temperature gauge.
C. DO NOT IDLE THE ENGINE.

COLD WEATHER STARTING PROCEDURE

IMPORTANT

IF YOU DECOMPRESS THE ENGINE AND TURN IT OVER WITH THE STARTING MOTOR TO FREE THE PISTONS AND RINGS,DO NOT DEPRESS THE ACCELERATOR PEDALS WHILE THE ENGINE IS TURNING OVER. THIS WILL PREVENT FLOODING THE COMBUSTION CHAMBERS AND WASHING LUBRICATING OIL OFF THE CYLINDER WALLS.

Intake Manifold Heater

To start the Diesel Loader at temperatures near freezing or below it may be necessary to use the manifold heater. Under normal conditions the manifold heater will aid cold weather starting down to 10° F. For cold weather below 10°F, refer to Page 46.

1. Turn the key switch counter-clockwise(fully to the left) to the accessory position. Hold the key in this position for about 30 seconds, Figure 37.

2. Release starter key and turn clockwise until engine starts, then release key.

3. If engine does not start after starting motor has cranked for 15 seconds repeat above procedure.

WARNING

CRANK ENGINE 5 SECONDS BEFORE ATTEMPTING TO USE MANIFOLD HEATER IF YOU HAVE USED STARTING FLUID.

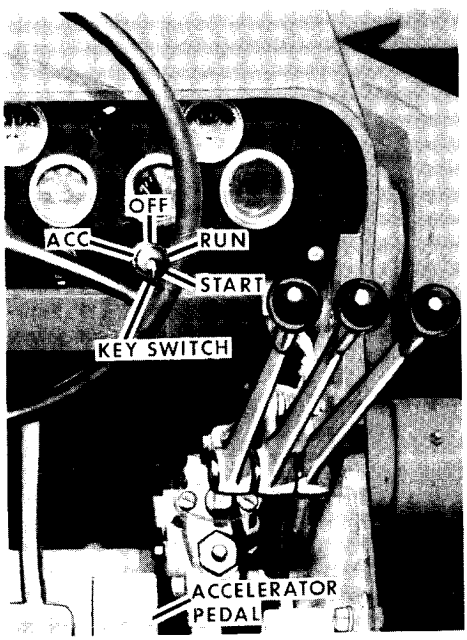


Figure 37

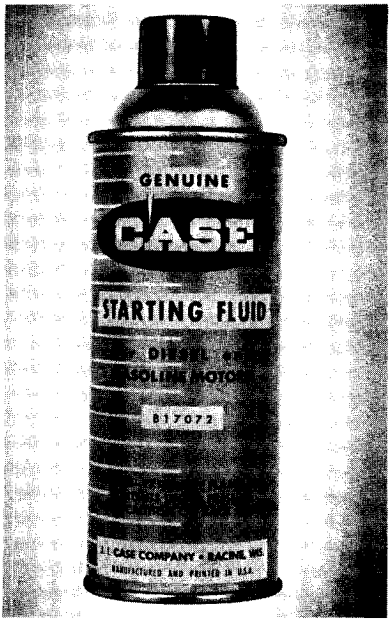
Starting Fluid

To start the Loader diesel engine at freezing temperatures or below it may be necessary to use starting Fluid. Genuine Case Starting Fluid is available through your Authorized Case Industrial Dealer.

To start the diesel engine using starting fluid, proceed as follows:

1. Spray starting fluid into the air cleaner.
2. At the same time turn the starter key clockwise to start engine.
3. Then release key when engine starts.

NOTE Complete instructions are given on the container.



WARNING

WAIT 10 MINUTES BEFORE USING STARTING FLUID IF YOU HAVE ATTEMPTED TO USE THE MANIFOLD HEATER.

Coolant Heater

The engine cylinder block on the Case Loader is provided with a passage located on the manifold side of the engine near the engine oil filter, Figure 38. The MAXIMUM depth the coolant heater can be submerged in the cylinder block is 5-1/2 inches, Figure 39.

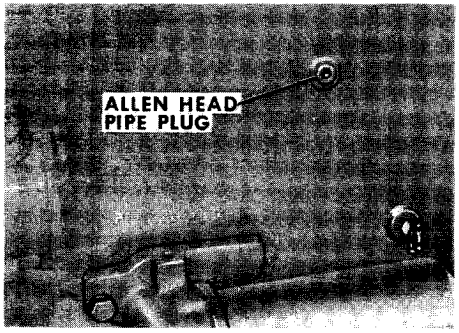


Figure 38

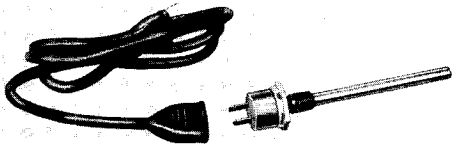


Figure 39

To install the coolant heater, remove the Allen Head pipe plug from the cylinder block, Figure 38, and follow the heating element manufacturer's instructions for installation.

This section of the Operator's Manual will provide helpful suggestions to enable you to operate the Loader most effectively. The amount of work accomplished per hour will depend primarily on the job layout and the development of a work cycle. From there on, operator skill and capability are the determining factors.

FILLING THE BUCKET

1. To fill the bucket, select a forward speed range to fit the terrain and material conditions. During the approach to the cut or stockpile, use the bucket sight level gauge as a guide and locate the bucket parallel to the ground with the Bucket Tilt Control, then push the Bucket Lift Control forward to lower the bucket to ground level, Figure 40.

Figure 40

2. As the bucket penetrates the stockpile or cut to a point where enough resistance is encountered to stop forward motion of the Loader, place the Lift Control in the retained raise position and work the Tilt Control while continuing to move forward. This working of the Tilt Control while the lift arms raise will bring the bucket up in a continual arc, filling it completely.

Figure 41

3. When the bucket is filled, the Direction Selector and Range Selector can be pulled back simultaneously, allowing the operator to back away from the cut or stockpile in a higher speed range and cut time in the work cycle.

Figure 42

This method of filling the bucket is sometimes called"crowding" and is the most efficient and speedy method to get a large pay load Practice and continual operation in different types of material will enable the operator to gauge his initial penetration and length of arc to obtain a heaping bucket every cut.

Transporting the Load

The terrain and material conditions will be determining factors in this phase of the work cycle. The Direction Selector allows the operator to use Forward and Reverse to best advantage when transporting. The Range Selector (Low and High) can be used to shorten the work cycle. Filling the Bucket is usually accomplished in a lower speed range, while transporting is usually in a higher speed range. Therefore, depending on type of material, terrain and transport distance, a skillful operator can select suitable speed ranges rapidly to save valuable time and adapt the Loader to any condition that may be encountered.

Figure 43

The bucket should be carried as close to the ground as conditions permit, to give the operator a clear view and to provide greater stability in transporting the load.

EMPTYING THE BUCKET

The operator can shorten the work cycle considerably by having the bucket in position to dump at the end of the transport run. By moving the Bucket Lift Control Back as the dump area is near, the bucket will be at the proper height to load trucks, dump onto a stockpile or into a fill, Figure 44.

Figure 44

Move the Bucket Tilt Control fully forward to empty the bucket, Figure 45.

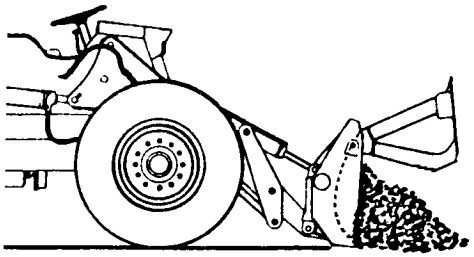
Figure 45

The use of both forward and reverse and the four speed ranges will enable the operator to save time in this phase of the work cycle. As the Loader approaches to refill, the operator can use the sight level gauge as a guide to locate the bucket parallel to the ground while lowering the bucket to ground level and be ready for another bucket full when the stockpile or cut is reached.

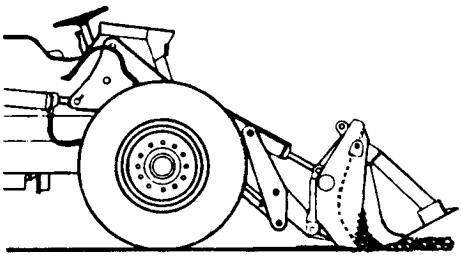
4 IN 1 SEGMENTED TYPE BUCKET

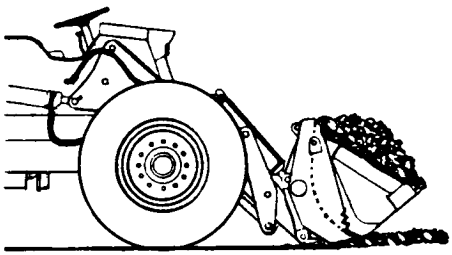
Bulldozer

Set indicator on bulldozer position. Lower lift arms to ground level. Depth of cut is regulated by tilting blade backward and forward. More cut is taken when blade is tilted forward, less when tilted backward.



Scraper





Set indicator on scraper position.

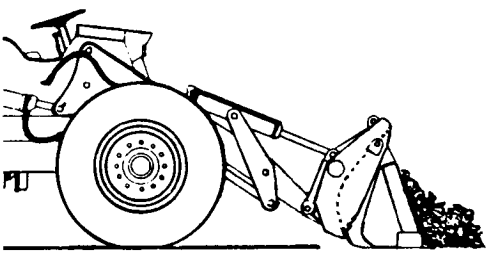
Starting Load - Clam is used as a depth gauge. Set clam indicator on rear mold board for desired depth.

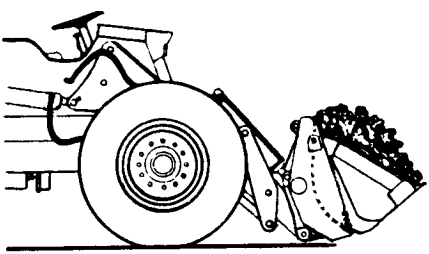
While Loading - Desired cut leaves smooth surface for Loader to travel on.

When Loaded - Tilt back before closing. Note compaction plate and design of clam for ironing, crushing and compaction action.

Bucket

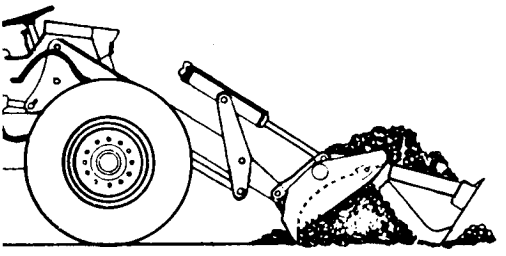
Set indicator on bucket position. Close clam. For greater cut, tilt bucket slightly forward. For lesser cut tilt bucket all the way back while moving forward to retain maximum payload to level off pile of dirt ahead of bucket. Carry bucket close to ground to maintain stability.



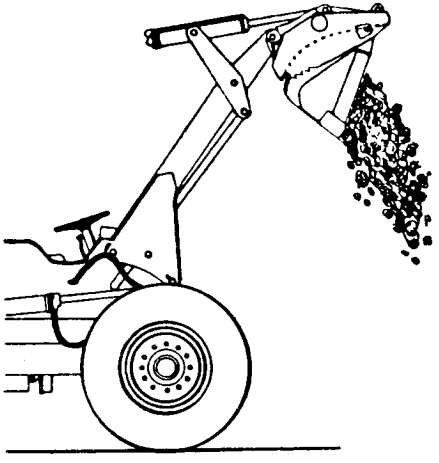


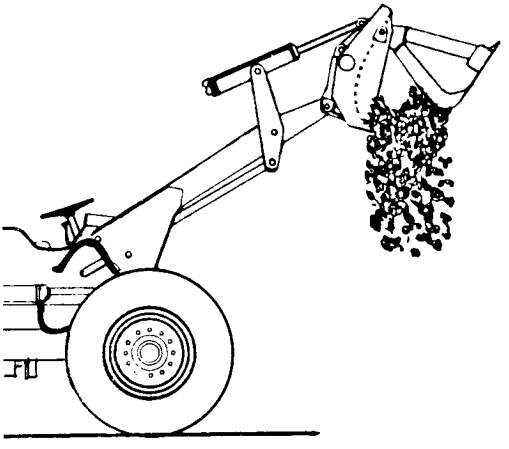
Clamshell

Set indicator on clamshell position. Open clam. Lower clam over pile of dirt and place lift lever in float position. Work clam and tilt levers to close clam and tilt back at the same time.



Dumping



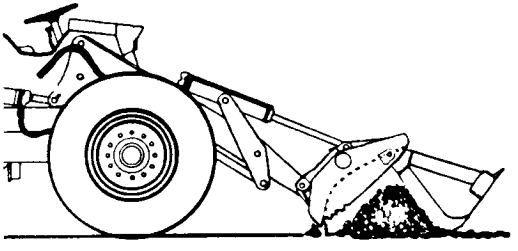


Start raise while approaching truck. For greater reach, tilt bucket over forward to dump.

For maximum dumping height or when operating in sticky conditions, use bottom dump.

Other Operations

Clam can be used as shown for back dragging or pushing loose material.



CAUTION

DO NOT USE CLAM IN THIS POSITION AGAINST BURIED OR ANCHORED OBJECTS AS ROCKS, STUMPS ETC.

OPERATING TIPS

Review the following tips on operating techniques. They'll help you move more yardage with less wear on the machine and less effort for you.

1. Job Layout

A. Set up the work cycle as short as possible. Proper spotting of the truck is very important for efficient operation.

B. Spend a few minutes leveling off the work area, if necessary. Smooth runways for the Loader and a level parking area for trucks will speed up the job.

C. Keep transport distances as short as possible; less transport makes a shorter work cycle.

2. Filling the Bucket

A. Set the bottom of the bucket level or parallel to ground for loose materials. Use the sight level gauge as a guide. Enter material with the bucket just skimming top of the ground.
B. Don't have the bucket tilted back from level position. This causes a lifting force as the bucket enters material and reduces crowding traction.
C. Don't "cowboy" the machine by hitting the back or pile too hard or fast. This is hard on man and machine.
D. Coordinate tilt and lift of bucket so bucket fills gradually as it "walks" its way up the pile in loose material.
E. In packed or hard material, coordinate the bucket controls to fill the bucket in a continual arc.
F. Don't try to fill the bucket completely at the bottom of the bank or pile. This overloads or stalls the hydraulic system and wastes time.
G. Don't set and spin the wheels when crowding the bank. You'll just dig holes with the tires. Make loading or backing out easy by varying the foot accelerator to obtain best crowding or reversing traction.

3. Transporting

A. Keep bucket low when backing out and carrying. This provides best stability, particularly when backing up a ramp or incline.
B. Don't back out with the bucket fully raised. Stability is reduced and steering traction is lowered. If bucket load is exceptionally heavy, steering can be improved by backing out with the bucket actually skidding on the ground.

4. Emptying the Bucket

A. It is not necessary to use the brakes when emptying the bucket. Use the direction selector and accelerator pedal to control the Loader. Approach the dump area with the bucket at proper dumping height, decelerate, push the tilt control forward and pull both the range and direction levers rearward, accelerate. This will "throw" the load out of the bucket. Use extreme care and plenty of practice to perfect this method of emptying the bucket.

B. If sticky material packs in bucket corners, raise bucket to full height and rapidly move the tilt lever back and forth to rap the bucket against the lift arm stops and jar the packed material out.

5. Truck Loading

A. Keep the wind to your back for dumping into a truck. This eliminates chance of dust and loose material blowing into your face and impairing visibility. This also reduces engine air cleaner maintenance.

B. Start raising the bucket so it will just reach dumping height at the time you arrive at the dump area.

C. If one side of the truck is lower than the other, try to spot the truck so you dump over the low side. This improves reach and distribution of the load in the truck.

D. Reach over and dump into the far side of the truck first. Fill the truck gradually from the far side to the near side in order to distribute the load in the truck properly.

6. General

A. Keep the Loader serviced and in top running condition at all times. A few minutes of preventive maintenace will save hours of down time.

B. Use the proper attachments and extra equipment available for specialized applications.

C. Know your Loader thoroughly.

IMPORTANT

TOWING THE LOADER IS NOT RECOMMENDED. TOWING THE LOADER MAY RESULT IN DAMAGE TO THE STEERING AXLE, TORQUE CONVERTER AND TRANSMISSION.

PERCENTAGE OF SWELL OF EARTH

Payments for earth work are generally made on the basis of measurements of solid or compacted material. The terms"Pay Load" "Bank Measure", "Compact Measure", generally refer to quantity of earth as measured in the cut before it is loosened. Since loaders, scrapers and other pieces of equipment handle earth after it has been loosened, it is necessary to know the pay load hauled per trip.

The difference between the volume occupied by the material after it is loosened and that occupied in its original compact form is called the "swell" and is expressed in terms of percentage of the original volume occupied. Thus if a cubic yard of solid rock occupies 1-1/2 cubic yards of space after it has been blasted, we would say that the swell is .5 or 50 percent. The following table gives the generally accepted percentages of swell for different classes of material.

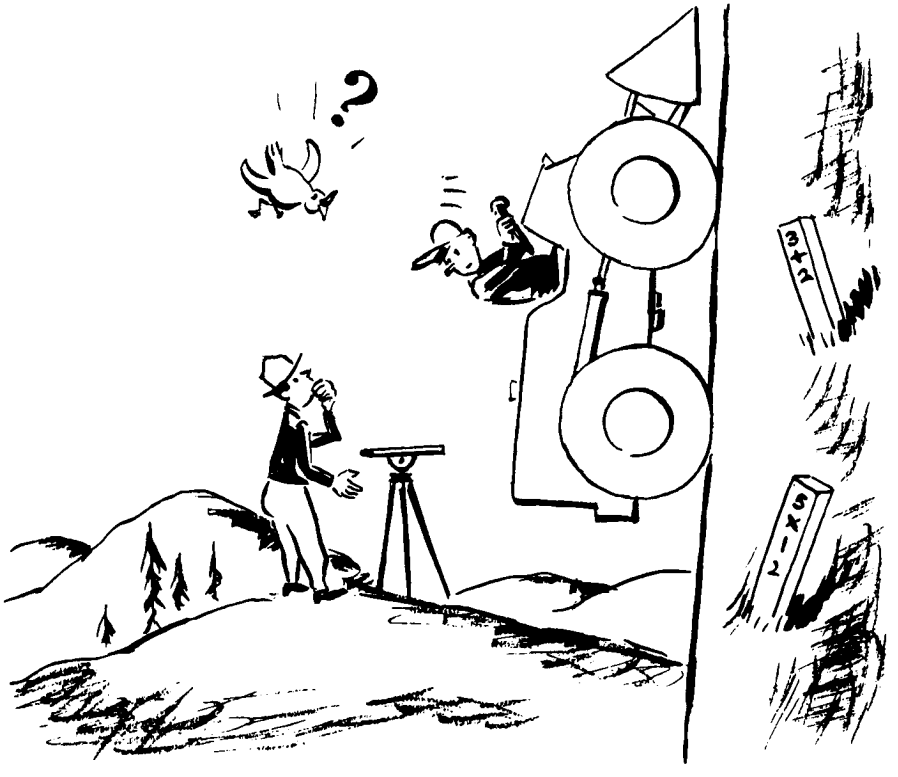
Percentage Swell of Different Classes

MATERIAL	PERCENT SWELL
Clean Sand or Gravel	5 to 15
Top Soil	11 to 20
Loam	17-1/2
Good Common Earth	24 to 35
Clay with Sand or Gravel	30 to 45
Clay - Light and Friable	35 to 55
Clay - Hard and Tough	42 Hard Lump to 62 with rocks or roots.
Shale and Soft Rock	50 to 73
Hard Rock	56 well blasted to 98 poorly blasted.

GRADES AND GRADE LINES

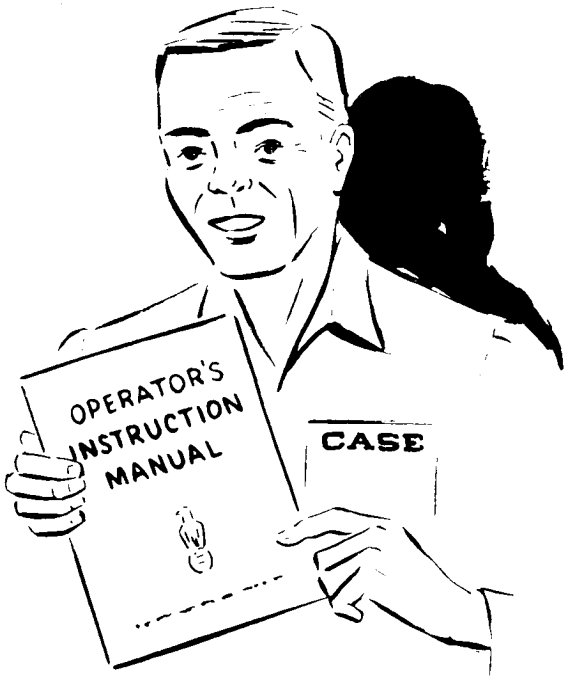
Grades are referred to in percent. The grade line is referred to as a plus or minus grade, PLUS when going UP,MINUS when going DOWN. For example: plus 1% grade is uphill at the rate of 1 foot per 100 feet of horizontal distance while a minus 1.5% grade is downhill at the rate of 1.5 feet per 100 feet of horizontal distance.

PERCENT GRADE		ANGLE OF GRADE
1%	0°	34.4'
5%	2°	51.7'
10%	5°	42.6'
20%	11°	18.6'
25%	14°	2.2'
45%	24°	13.7'
75%	36°	52.2'
100%	45°	



APPROXIMATE WEIGHTS OF COMMON MATERIALS IN POUNDS PER CUBIC YARD

Ashes and Cinders	1000 - 1100
Average Crushed Stone	2700 - 3000
Clay	
Dry	2300 - 2400
Wet	2900 - 3000
Clay and Gravel (Dry)	2700
Coal (Broken)	
Anthracite	1500 - 1600
Bituminus	1350 - 1400
Coke	800
Common Earth	
Loose	2100
Packed	2500 - 2700
Wet Packed	3000 - 3100
Gravel	
Dry	3000 - 3100
Wet	3300 - 3400
Iron Ore (Broken)	3600 - 5500
Limestone (Broken)	2500 - 2700
Sandstone (Broken)	2300 - 2500
Shale (Broken)	2500 - 2700
Slag (Broken)	2400
Sand	
Dry	2200 - 2500
Wet	3000 - 3300
Sand and Gravel	2700 - 3000



PREVENTIVE MAINTENANCE IS IMPORTANT TO YOU!

AS THE OWNER OF A CASE LOADER YOU POSSES A MACHINE THAT IS MADE TO THE HIGHEST STANDARDS POSSIBLE.

PREVENTIVE MAINTENANCE BY YOU OR YOUR OPERATOR IS THE EASIEST AND MOST ECONOMICAL MEANS OF ASSURING MANY SATISFACTORY HOURS OF OPERATION.

The preceding sections of this Operator's Manual have dealt with instructions necessary for daily operation of your Loader. The following subjects present detailed instructions concerning the care and adjustment of the various parts.

COOLING SYSTEM

Capacity of System ---------- 45 Quarts

Temperature Control ----------(Radiator Shutters Available as Extra Equipment).

(Thermostat) ---------- 180° to 195° Fahrenheit

General Description

The Case Loader has a large capacity cooling system to provide efficient cooling under heavy loads. The coolant is circulated through the system by means of an impeller type pump that is driven from the crankshaft by Vee belts. Coolant is circulated through the radiator, down into a distributor gallery in the engine block; then up past the entire length of the cylinder sleeves into the cylinder heads where it passes into a water manifold and travels to the top of the radiator.

A thermostat and by-pass hose are located in the water manifold as shown in Figure 46. The thermostat blocks the coolant flow to the radiator when the coolant temperature is below its 180° Fahrenheit opening temperature. The coolant must then pass down through the by-pass hose and be recirculated through the engine until the heat of combustion warms it sufficiently to open the thermostat.

When the thermostat is fully open, the coolant must pass through the radiator. The radiator dissipates heat in excess of the engine's operating temperature.

In this manner, the engine temperature is automatically maintained within its operating range.

CAUTION DO NOT OPERATE THE ENGINE WITHOUT THE THERMOSTAT. If the thermostat is not in place, it will be difficult to bring the engine up to operating temperature.

Condensation

Water is one of the products of combustion. Slightly over one gallon of water is formed for every gallon of fuel burned. With an engine operating at recommended temperature, this water vapor is passed out of the engine in the exhaust gas.

Continued operations of the Loader at too low an operating temperature will cause rapid engine wear, allow moisture to emulsify with the crankcase oil, which in cold weather can restrict or plug the flow of oil through the oil pump.

Maintaining Operating Temperature

1. Always operate the engine between 2/3 and wide open when the engine is not under load. DO NOT slow idle engine.

2. In areas where cool or cold climatic temperatures are common radiator shutters (available as extra equipment) should be installed.

3. Keep radiator filled with a clean or soft water that is as free as possible of scale forming minerals. Always use a reputable brand "Rust Inhibitor"

4. Keep radiator and engine clean.

5. Check fan and water pump drive belt for slippage. Make sure fan blades and shrouding are not bent.

6. Check that the hoses are not collapsed or leaking.

7. Do not over load the engine.

Checking the Thermostat

During operation, check the temperature gauge frequently. Should the engine warm up very slowly under load, or if the temperature gauge needle does not reach the recommended operating range, remove and check the thermostat. Suspend the thermostat in a pan of water that is being heated and check the opening temperature with a thermometer. If the thermostat is inoperative, discard it and install a new genuine Case Thermostat having the same heat range as the original.

NOTE

An engine that is not working under load will be slow to warm up to operating temperature. This is due to the large capacity cooling system and is normal. When the engine is under load, however, it should warm up reasonably soon.

During extremely cold weather, and if the thermostat is found to be operative, failure to maintain the proper operating temperature is an indication that radiator shutters are required.

Anti Freeze Solutions

Your Case Loader is shipped from the factory with high boiling type anti-freeze in the cooling system. This anti-freeze should never be used more than one winter due to the natural break-down of the rust inhibitor.

Use only a nationally recognized brand of High Boiling Point Ethylene Glycol anti-freeze in the CASE Loader.

Low Boiling Point Type alcohol base anti-freeze solutions are not recommended for use. Loss from evaporation could be excessive since the boiling point of alcohol is frequently below the Loader engine's minimum operating temperature.

DO NOT mix different types of anti-freeze solutions in the cooling system. The exact amount of protection afforded is almost impossible to determine by use of a tester when different types solutions are mixed.

CAUTION

Never use any of the following as anti-freeze.

1. Solutions of unknown composition such as honey, sugar, glucose or sodium silicate.

2. Inorganic salt solutions such as: sodium chloride (commom salt) calcium chloride, magnesium chloride.

3. Mineral oil or petroleum base solutions such as: kerosene, fuel oil or lubricating oil.

Thermostat Removal

1. Drain the cooling system. See Page 64.

2. Remove the hood.

3. Remove the upper radiator hose and the by-pass hose; then remove the thermostat housing. The thermostat is located bwetween the water manifold and the thermostat housing, Figure 46.

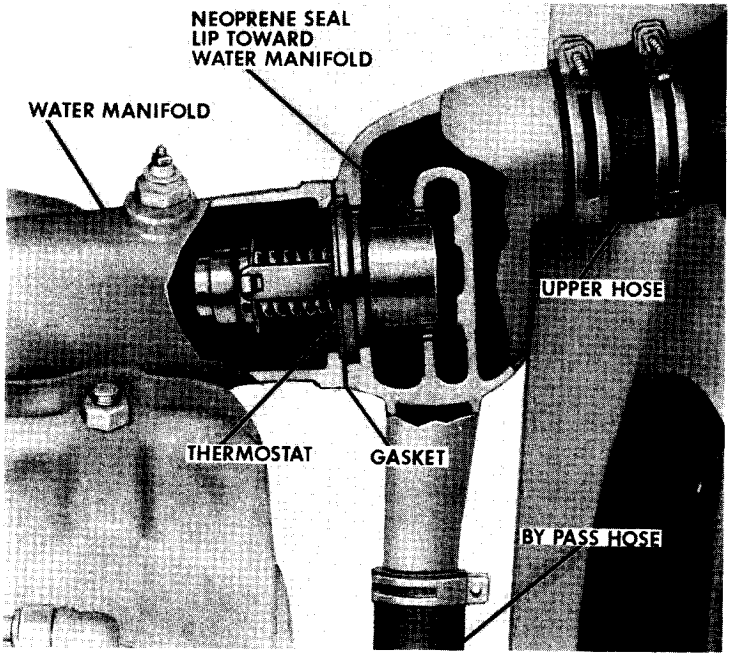


Figure 46

Thermostat Installation

1. Install a new Genuine Case thermostat with rubber seal as indicated in Figure 46.

2. Install the thermostat housing with a new gasket on the water manifold. Place a thin film of sealing compound on the gasket. Be sure to remove all old gasket material before installing a new gasket.

3. Refill cooling system and check operating temperature.

Genuine Case Thermostats are obtainable from your Authorized Case Industrial Dealer. This thermostat has been designed to provide efficient heat control for your Case Loader. Do not use substitutes.

FACTS ABOUT PRESSURIZED COOLING SYSTEMS

1. ***CAUTION*** ALWAYS REMOVE THE PRESSURE CAP SLOWLY. Quick removal of the pressure cap could reduce the pressure enough to cause the coolant to boil out of the radiator filler opening and result in painful burns to the operator.

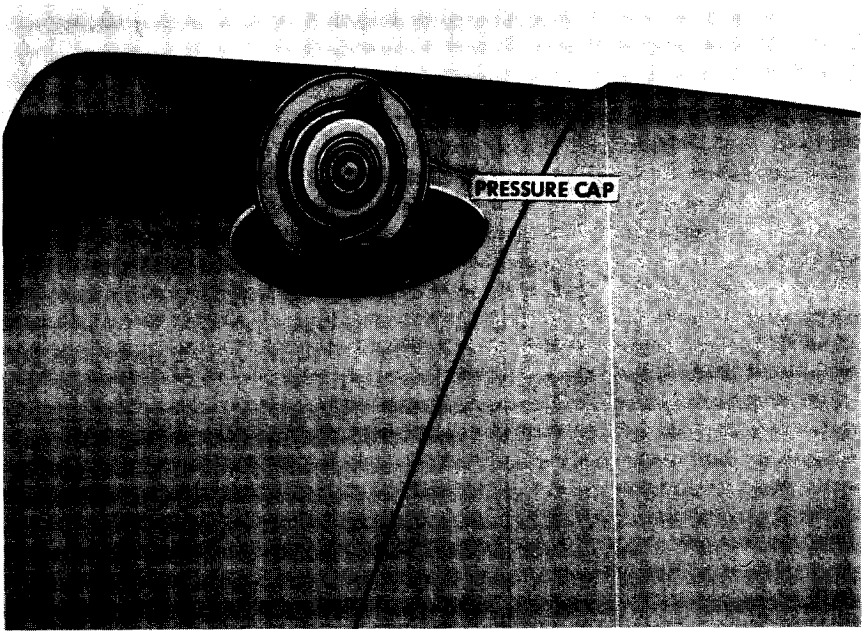


Figure 47

2. The pressure cap on a pressurized cooling system is equipped with a control valve which functions as a SAFETY RELIEF VALVE to keep the pressure within the system at 7 PSI. Operating the engine without a pressure cap or a pressure cap that has a control valve that is not set to function at the designed 7 PSI can cause SERIOUS DAMAGE.

3. Pressurizing the cooling system reduces the loss of coolant by evaporation, surging or boiling, thus making the efficiency of the cooling system dependent upon good seals at the radiator cap, hoses and hose connections. It is especially important ALL LEAKS REGARDLESS OF SIZE be repaired quickly. A small drip can become a heavy stream, when 7 PSI of pressure is built up in the cooling system. A weak hose could burst while the Loader is in operation and cause serious injury or damage. Check all hoses and connections frequently. KEEP HOSES, HOSE CONNECTIONS AND PRESSURE CAP IN GOOD CONDITION.

Cleaning the Cooling System

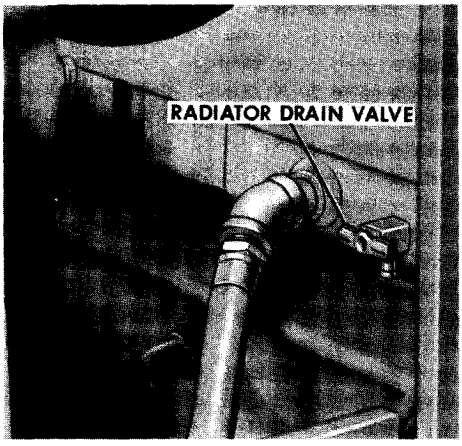


Figure 48

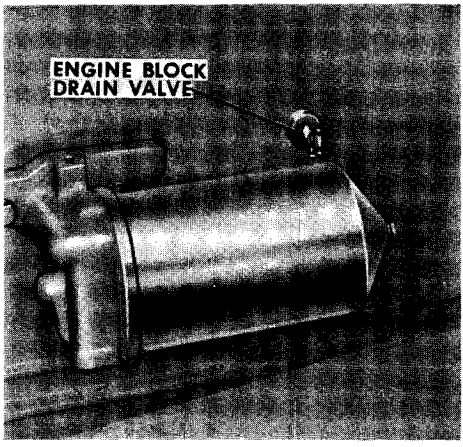


Figure 49

CAUTION NEVER POUR COOLANT INTO A HOT ENGINE. THE ENGINE BLOCK OR CYLINDER HEADS MIGHT CRACK BY THE SUDDEN CONTRACTION CAUSED BY THE DIFFERENCE IN TEMPERATURE BETWEEN THE METAL AND THE COOLANT.

Clean the cooling system a least once a year. In areas where water containing scale forming mineral is all that is available, clean the system more often.

1. While the coolant is still hot, open the radiator drain valve and the engine block drain valve, Figure 48 and 49.
2. Add a radiator cleaner to the system and refill with clean water. Any nationally known commercial brand cleaner marketed by a reputable manufacturer may be used. Follow the directions provided with the cleaner.
3. After draining the cleaning solutions, flush the system with clean water before refilling for operation and check the hoses, radiator, pump and water manifold for leakage.
4. Make sure the outside of the engine and the radiator is cleaned of dirt accumulation.

NOTE AFTER THE COOLING SYSTEM HAS BEEN COMPLETELY DRAINED AND REFILLED OPERATE THE ENGINE FOR APPROXIMATELY FIVE MINUTES TO BLEED ALL AIR OUT OF THE SYSTEM. RECHECK COOLANT LEVEL AND ADD COOLANT IF NECESSARY.

If water is used in the cooling system during the warm summer months, always add a reputable brand rust (or corrosion) inhibitor.

Fan Belt Adjustment

A properly adjusted Vee belt can be depressed 1/2 inch midway between the generator pulley and the fan pulley, Figure 50.

To tighten the belts loosen the generator mounting bolts and swing the generator farther away from the engine.

IMPORTANT The belts must ride on the side of the Vee pulley never on the bottom.

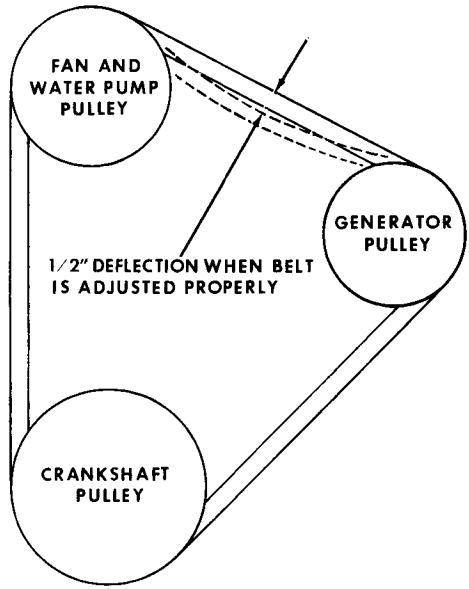


Figure 50

Replacing the Fan Belt

To install new Vee belts proceed as follows:

1. Loosen the generator mounting bolts and swing generator toward the engine.

2. Slip the new Vee belts over the fan and onto the fan pulley, then onto the lower drive pulley and the generator pulley.

IMPORTANT The fan belts are matched to operate as a set - Do Not Replace one belt without replacing entire set.

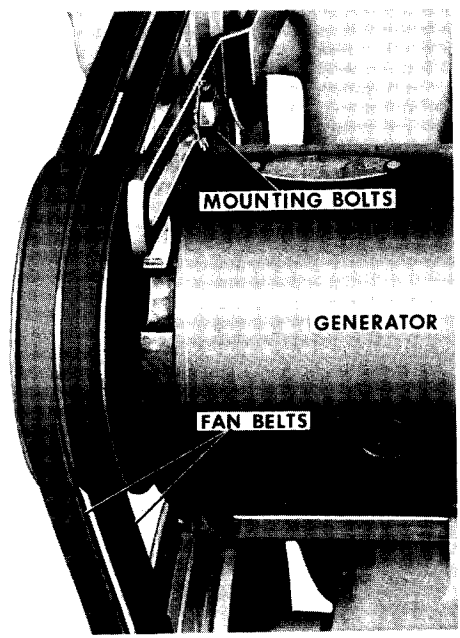


Figure 51

STORAGE BATTERIES

When working around a storage battery, remember all its exposed metal parts are "live". Never lay a metal object across the terminals as a spark or short circuit may result. Sparks, lighted matches and exposed flames must be kept away from the batteries due to the presence of explosive gas in the batteries.

The liquid in the battery is acid. Use care not to spill it on your hands or clothing.

Rules for Battery Care

1. Add pure water, as needed, to keep the separators covered. Check every 60 hours or weekly.

2. Keep the batteries in a healthy state of charge as shown by hydrometer readings.

3. Make sure the batteries are securely fastened in position. Wires leading from the batteries should not touch cell connectors or lay on the battery holddown.

4. Keep the batteries clean and dry.

On a diesel engine it is very important to keep both batteries fully charged. Since starting is largely dependent upon the cranking speed developed by the batteries and starting motor.

If both batteries are weak, recharging or replacing just one battery will not help. Both must be brought up to full charge.

Each week, and before adding water, take a hydrometer reading from every cell. The gravity reading from each cell should be between 1.250 and full charge. If it varies more than this, the batteries should be replaced.

NOTE: The full charge gravity reading will usually be indicated on the battery. A battery having a reading of 1.075 will freeze at approximately zero degrees Fahrenheit.

If one battery is weak and the other near full charge, there is a possibility of overcharging and damaging the fully charged battery. If it is necessary to add water to a battery frequently, it is probably being overcharged. CHECK BOTH BATTERIES and bring them up to full charge. Check for loose ground connections.

If a battery will not hold a charge, replace it with a new one meeting the specifications listed in this manual.

Cold Weather Precautions

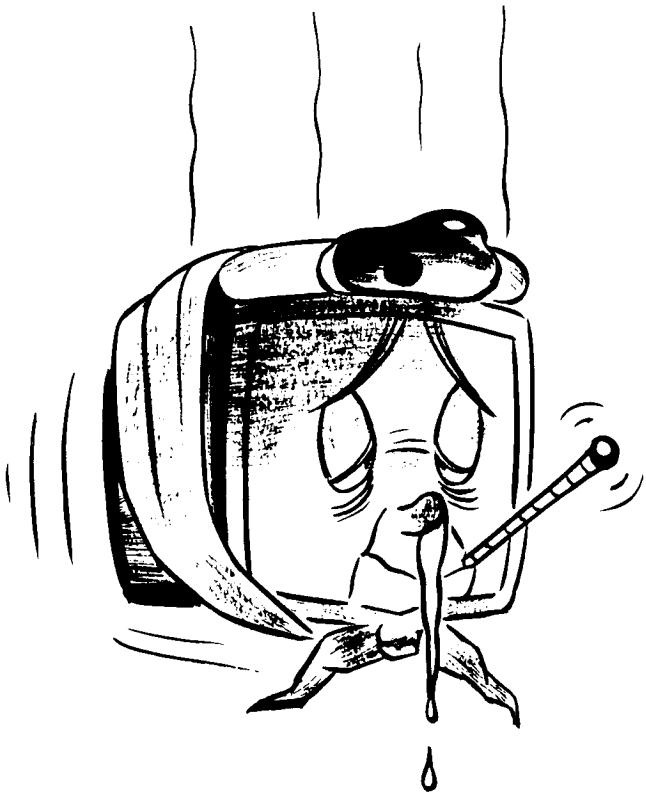


Figure 52.

As air temperatures drop, storage battery's output capacity lowers. A battery actually becomes "numb" from the cold and will not turn an engine over as fast or for as long a period as it will during warm temperatures.

Since starting a diesel engine is very dependent upon turning the engine over fast enough to cause self-ignition of the diesel fuel, the importance of having fully charged batteries for cold weather starting cannot be over-emphasized.

During extremely cold weather, the batteries should be removed and stored in a moderately warm place (preferably room temperature) in order to keep the output capacity up for starting.

Adding Water

Unless the tap water in your area is "approved water" (water free of scale-forming minerals), always add distilled water to the battery.

When the water is added during freezing weather, the battery must receive a charge immediately to mix the water and electrolyte. If it is not mixed, the water will remain at the top and freeze.

Check the liquid level in each cell weekly by removing the vent plugs. Water must be added before the tops of the separators are exposed. Do Not Overfill.

Vent Plugs

Always keep the vent plugs in place and tight. Be sure the vent holes are free of dirt to prevent gas pressure in cells from breaking the sealing or the container.

Cable Terminals and Battery Posts

The battery terminals must be kept clean and tight. A good method of cleaning terminals is to remove all excess corrosion with a wire brush, then wash with a weak baking soda solution or ammonia. After cleaning, a thin coating of vaseline or light cup grease will retard further corrosion. Be sure ground connection of the Loader is kept clean.

Idle Battery

When the Loader is not in active use, the batteries will require a charge at sufficient intervals to keep the hydrometer reading at or above 1.250. An idle storage battery will slowly discharge.

LIGHTING EQUIPMENT

Instrument panel lights ---------- 12 Volt Single Contact #67

Headlights and Rear Lights -------- 12 Volt Sealed Unit #4411

Combination Stop and Tail Lights --- 12 Volt Double Contact #1034

Instrument Panel Lights

The instrument panel light bulbs are controlled by the headlight switch. To replace the instrument panel bulb, pull the light hood off and replace the bulb, Figure 53.

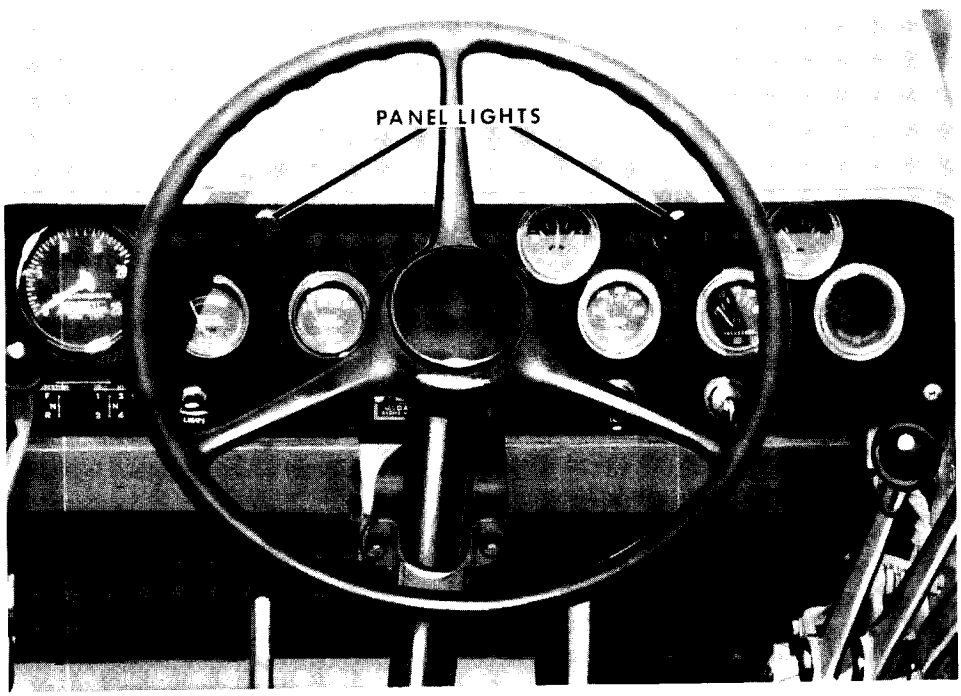


Figure 53

Combination Stop and Tail Lights

To replace the combination stop and tail light bulbs, remove the screws that retain the lens and replace the bulbs.

Instrument Panel Wiring Diagram
Without Alternator

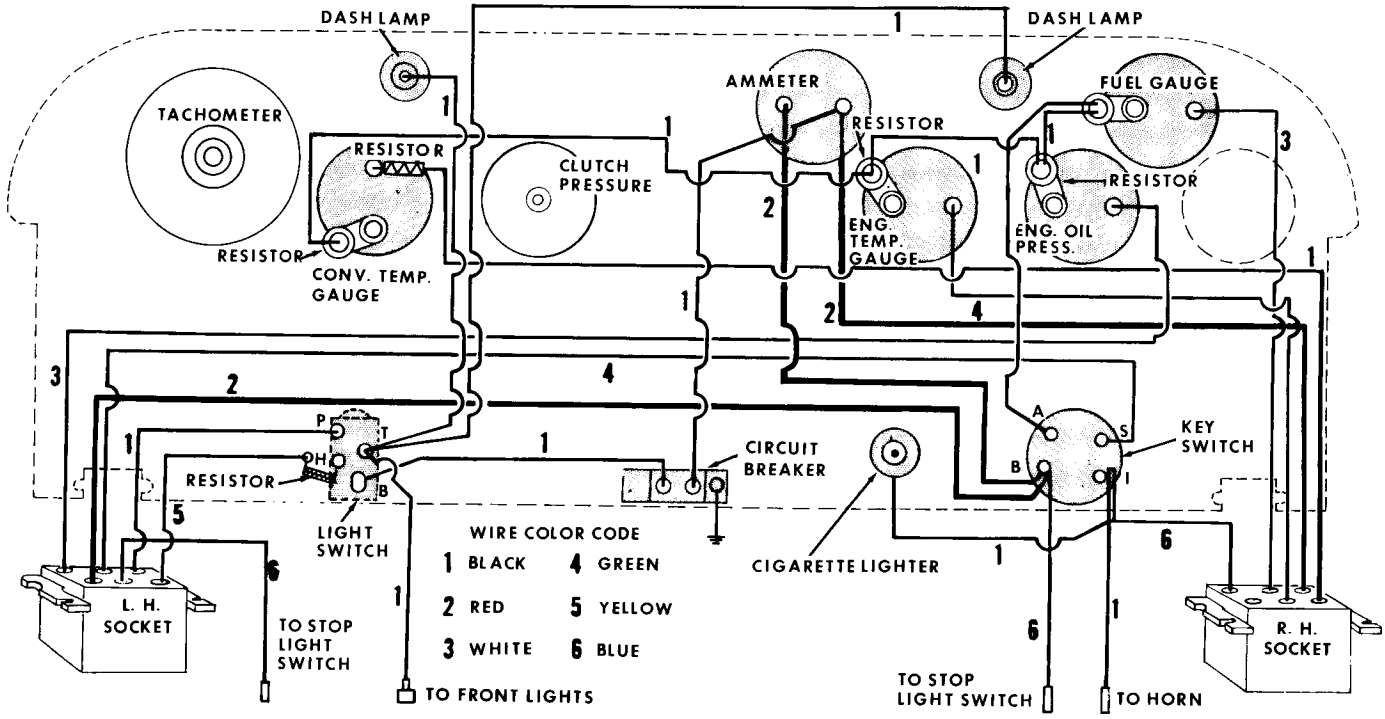


Figure 54

Loader Wiring Diagram
Without Alternator

WIRE COLOR CODE

1 BLACK
2 RED
3 WHITE
4 GREEN
5 YELLOW
6 BLUE

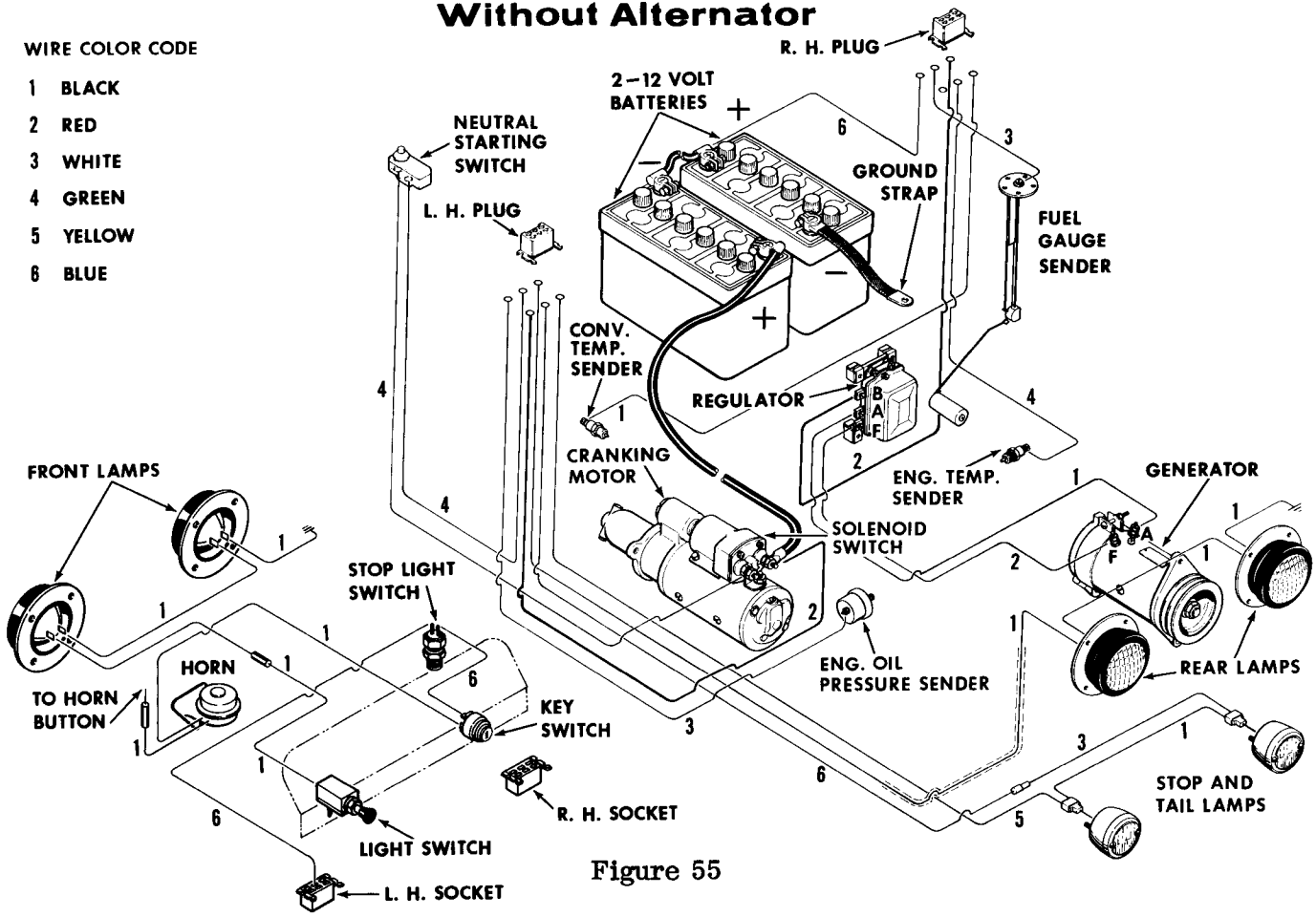


Figure 55

Headlights and Rear Lights

All genuine Case 12 volt Replacement Sealed Units have a label marked "12-V" or are stamped "12-V" on the back of the unit. This marking is placed on the unit to make sure you do not install a 6 volt sealed unit which would burn out immediately.

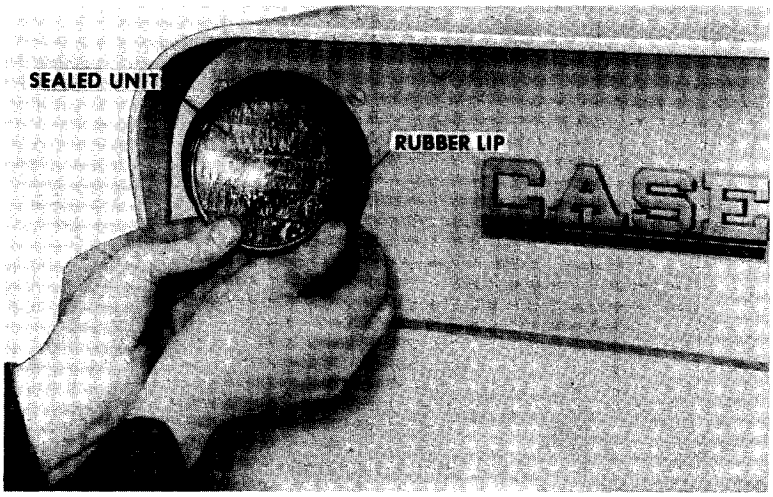


Figure 56

To install a new headlight or rear light, roll the rubber lip off the edge of the sealed unit, Figure 56. Pull out the old unit and disconnect the two wires as shown in Figure 57.

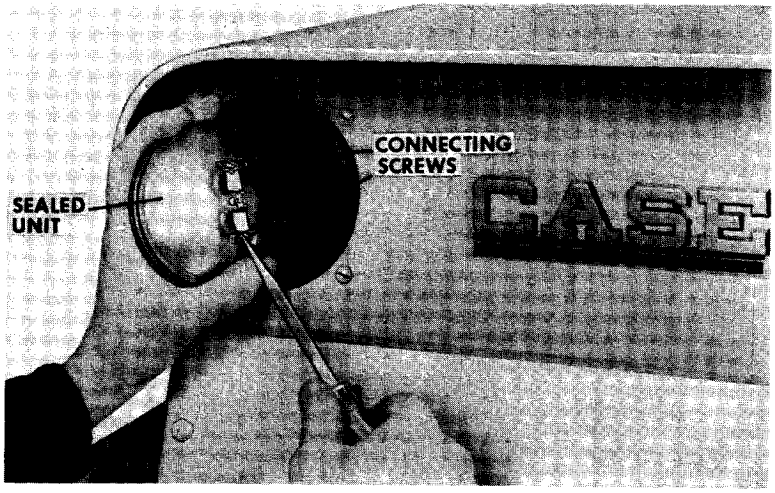


Figure 57

When installing the new sealed unit make sure the connections are tight; then roll the rubber lip over the edge of the new unit.

FUEL SYSTEM

Fuel Tank Water Trap

Before starting the Loader engine for each day's operation, open the drain valve on the fuel tank water trap, Figure 58. Drain until clear fuel appears. This will remove any water or sediment that may have settled out of the fuel while the engine was stopped.

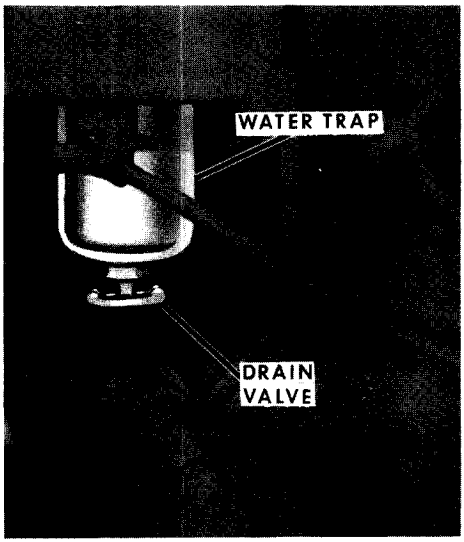


Figure 58

IMPORTANT Always be sure to drain water trap daily in cold weather. If a large amount of water is allowed to accumulate and freeze in the trap - serious damage to the fuel may result.

IMPORTANT Always fill the fuel tank at the end of each day's operation to prevent moisture condensation from forming in the tank and entering the fuel.

Fuel Tank Cap

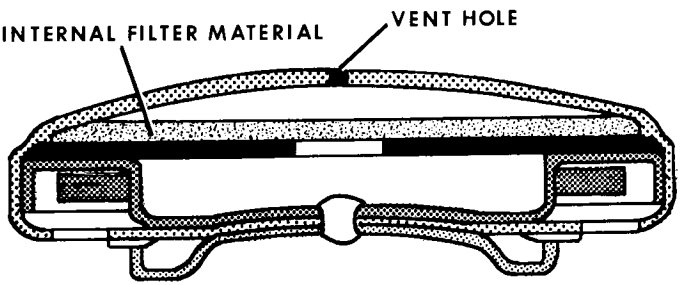


Figure 59. Fuel Tank Breather Assembly

The fuel tank cap is equipped with a vent hole in the center. This vent hole must be kept open and free from dirt. If the hole becomes plugged it will stop the flow of fuel to the transfer pump due to a vacuum forming in the tank.

CAUTION When cleaning the vent hole, be careful not to damage the internal filter material.

FUEL SYSTEM
General Description

Figure 60, illustrates the fuel flow from the engine fuel supply tank to the combustion chambers. The fuel system is composed of the following units.

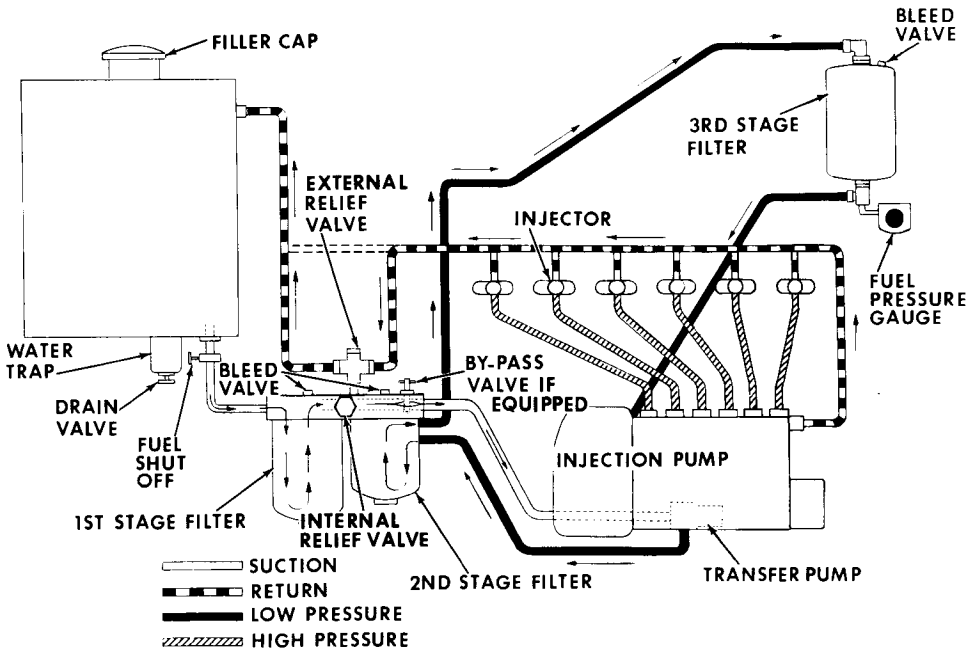


Figure 60. Diesel Fuel System Flow Diagram

FUEL SUPPLY TANK ---- An Air Vent in the fuel tank filler cap, vents air into the tank as fuel is removed. A water trap with a drain valve is located on the bottom of the fuel tank.

FIRST STAGE FUEL FILTER ------ The first stage filter is of the replaceable type. It removes abrasive particles from the fuel. A bleed valve is located in the top of the filter to vent air out of the filter.

BLEEDER BY-PASS VALVE (If so equipped) ------ The bleeder by-pass valve is used only when bleeding air from the fuel system. When the by-pass valve is open, the fuel flows directly from the first stage filter through the cored passage in the filter head to the second stage filter, by-passing the fuel transfer pump.

FUEL TRANSFER PUMP - The fuel transfer pump which supplies fuel from the tank to the injection pump is an integral part of the injection pump.

EXTERNAL OR INTERNAL RELIEF VALVE - The relief valve is provided on the inlet side of the second stage filter to maintain a pre-set pressure on the fuel entering the second and final filters. Fuel in excess of the pre-set pressure is returned directly to the fuel tank or first stage filter. This materially increases the service life of both the second and final filters.

SECOND STAGE FUEL FILTER ---- The second stage filter uses replaceable element which removed very fine abrasive particles from the fuel. A bleed valve is provided in the top of the filter to vent air out of the filter.

FINAL (THIRD) STAGE FUEL FILTER ----- The final (third stage) filter is of the "sealed unit" type. It provides the final filtering action before the fuel reaches the precision injection equipment. A bleed valve is located in the top of the filter to vent air out of the filter.

FUEL PRESSURE GAUGE - The fuel pressure gauge is to be used as a guide for determining when to service the fuel filters.

FUEL INJECTION PUMP - The fuel injection pump receives fuel from the final filter and then meters and distributes the fuel under very high pressure to each of the injectors. Fuel in excess of the engine demand is returned to the fuel tank through the return line.

FUEL INJECTORS ------- The injectors deliver the fuel to the combustion chambers in a predetermined spray pattern. The fuel used to lubricate each injector is returned to the fuel tank through return lines.

BLEEDING THE FUEL SYSTEM

THE FUEL SYSTEM MUST BE BLED IF AIR ENTERS THE FUEL SYSTEM AS A RESULT OF:

1. Engine running out of fuel.
2. Parts removed for service or repairs.
3. Engine stored for a considerable period of time.

NOTE AFTER RUNNING OUT OF FUEL, IT MAY BE POSSIBLE TO REFUEL AND START THE ENGINE WITHOUT BLEEDING. HOWEVER, A SMALL AMOUNT OF AIR MAY REMAIN IN THE FILTERS RESULTING IN LACK OF POWER AND STALLING WHEN A LOAD IS APPLIED.

Sequence for Bleeding the Fuel System

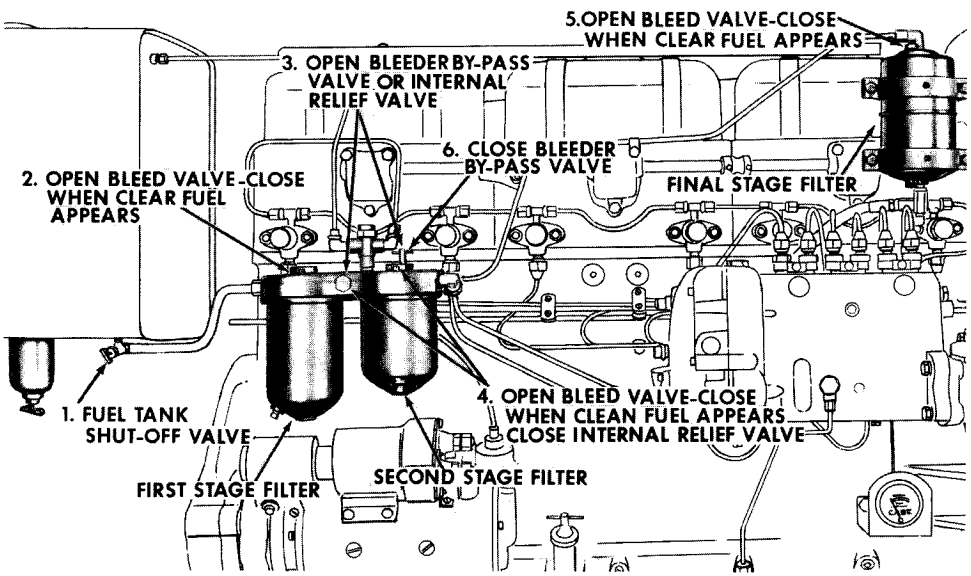


Figure 61

Wipe the filter tops clean before opening bleed valves.

1. Fill Fuel Tank and Open Fuel Tank Shut-Off Valve.
2. Open Bleed Valve on First Stage Filter - Close Bleed Valve When Clear Fuel Appears.
3. Open Bleeder By-Pass Valve or Internal Pressure Relief Valve.
4. Open Bleed Valve on Second Stage Filter - Close Bleed Valve When Clear Fuel Appears. Close Internal Pressure Relief Valve.
5. Open Bleed Valve on Final Stage Filter-Close Bleed Valve When Clear Fuel Appears.
6. Close Bleeder By-Pass Valve. The engine may start and operate with the by-pass valve open, but will lack power and stall when load is applied.

CHECKING CONDITION OF FUEL FILTERS

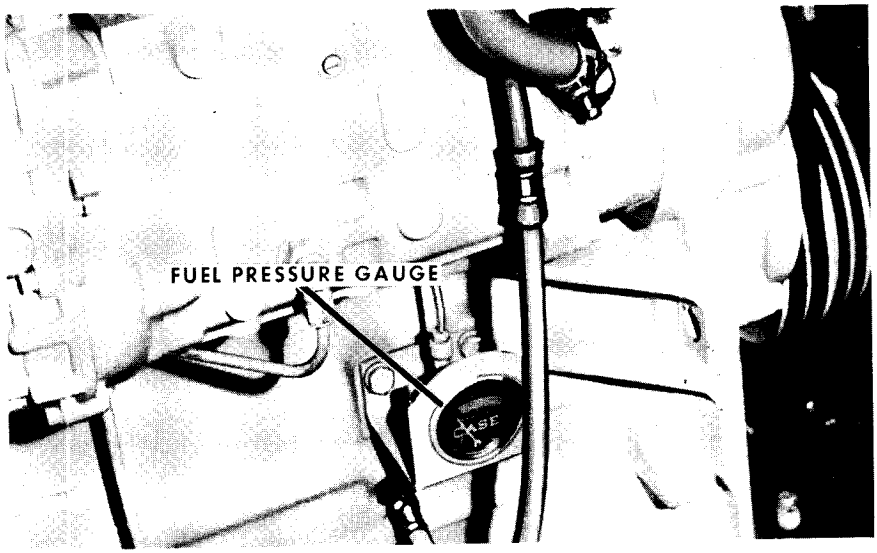


Figure 62

It is important that the fuel pressure gauge be checked daily. In normal operation, the needle will appear in the Green Zone, Figure 63. This indicates a satisfactory condition of all fuel filters.

As sediment gradually plugs a filter element, a drop in pressure will result. This will be indicated by the needle moving downward toward the Red Zone at the left side of the gauge, as shown in Figure 64.

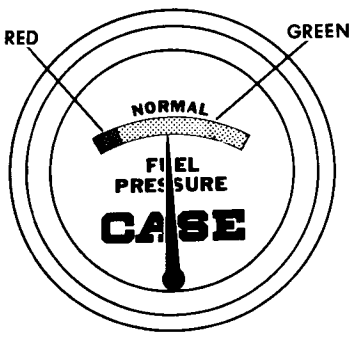


Figure 63. Element Is Clean

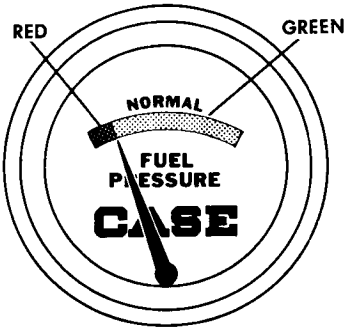


Figure 64. Replace Element

CAUTION When the needle enters the Red Zone, one or more of the filter elements has become plugged to the point where it must be serviced immediately.

SERVICING FUEL FILTERS

When servicing fuel filters, always begin with the first stage filter and by the process of elimination, follow on through the second and final stage filters, if necessary until the needle in the fuel pressure gauge registers in the Green Zone. Proceed in the following manner.

First Stage Filter

Service the first stage filter as desribed on Page 81 Bleed the system.

After bleeding the system start the engine and check the fuel pressure gauge immediately. If the needle registers in the Green Zone. all fuel filters are now in satisfactory condition.

If the needle registers in the Red Zone, or if the engine fails to start, proceed to service the second stage filter.

Second Stage Filter

Service the second stage filter as described on Page 82. Bleed the system.

After bleeding the system, start the engine and observe pressure gauge reading. If the needle registers in the Green Zone, all fuel filters are now in a satisfactory condition. If the needle registers in the Red Zone,or the engine fails to start,proceed to check the final filters.

Final Fuel Filter

If you have been servicing the 1st and 2nd Stage Fuel Filters regularly and are using clean Diesel Fuel that meets Case specifications you can expect many thousands of hours of operation from the final filter.

A badly restricted final filter will result in a low pressure gauge reading or in a loss of power under load until finally the engine will stall.

Checking Final Filter

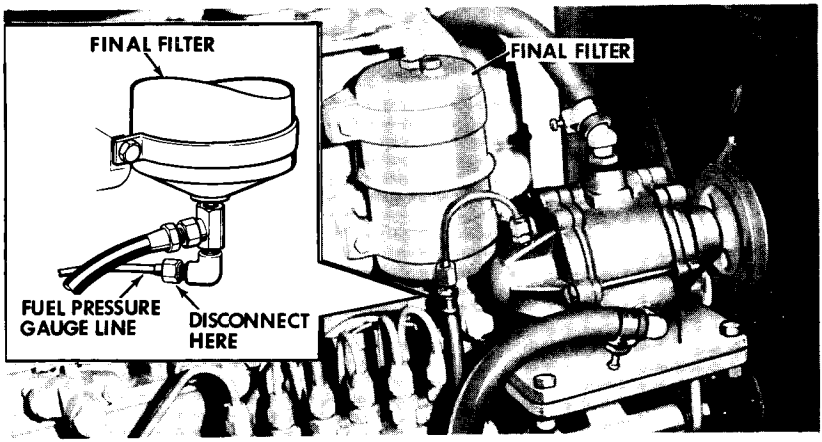


Figure 65

1. The fuel tank must be full.

2. Clean the outside of the fuel injection pump, the fuel lines and the area around the final filter. This cannot be overemphasized.

3. Carefully disconnect the fuel pressure gauge line at the point indicated in Figure 65. Make sure no dirt enters the line.

4. Open the bleeder by-pass valve (if so equipped), on top of the second stage filter. If a continuous flow of fuel does not appear at the opening, the final filter is plugged and must be replaced. Refer to Page 83.

CAUTION

Use extra care to prevent dirt entering the fuel system when reconnecting the pressure gauge line. Tighten the tubing nut carefully so the threads are not damaged. Do not over-tighten.

THE BLEEDER BY-PASS VALVE (IF SO EQUIPPED) MUST BE CLOSED BEFORE STARTING THE ENGINE.

Checking 1st and 2nd Stage Filter if Engine Will Not Start

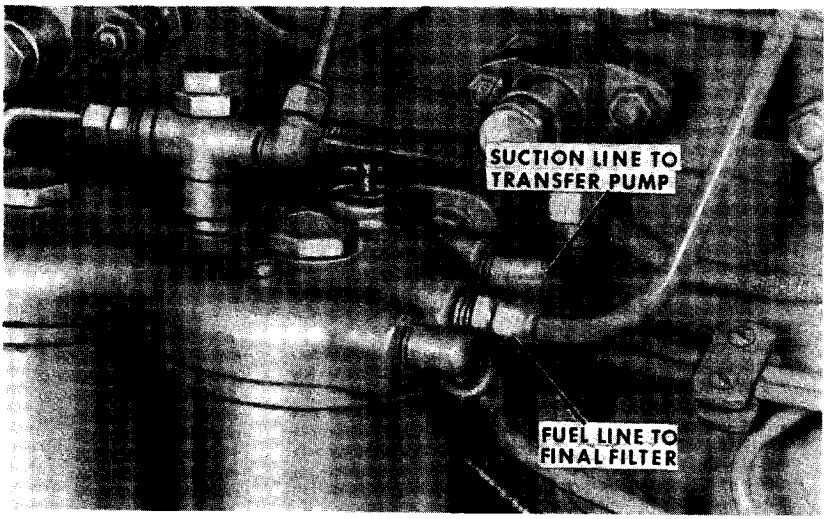


Figure 66

An engine that cannot be started due to a plugged fuel filter is easily recognized by a lack of exhaust smoke while the engine is being turned over by the starting motor. No exhaust smoke can only mean that no fuel is reaching the combustion chambers.

To determine which filter is plugged, proceed as follows:

1. Make sure the fuel tank is full.

2. Disconnect the suction line to the transfer pump, Figure 66. Check the fuel flow. If fuel does not flow freely, the first stage filter is plugged. Reconnect fuel line.

3. Open by-pass valve or internal pressure relief valve and disconnect fuel line to final filter, Figure 66. If fuel does not flow freely, the second stage filter is plugged. Reconnect fuel line.

4. Check the final filter as described on Page 79.

REPLACING FIRST STAGE FILTER

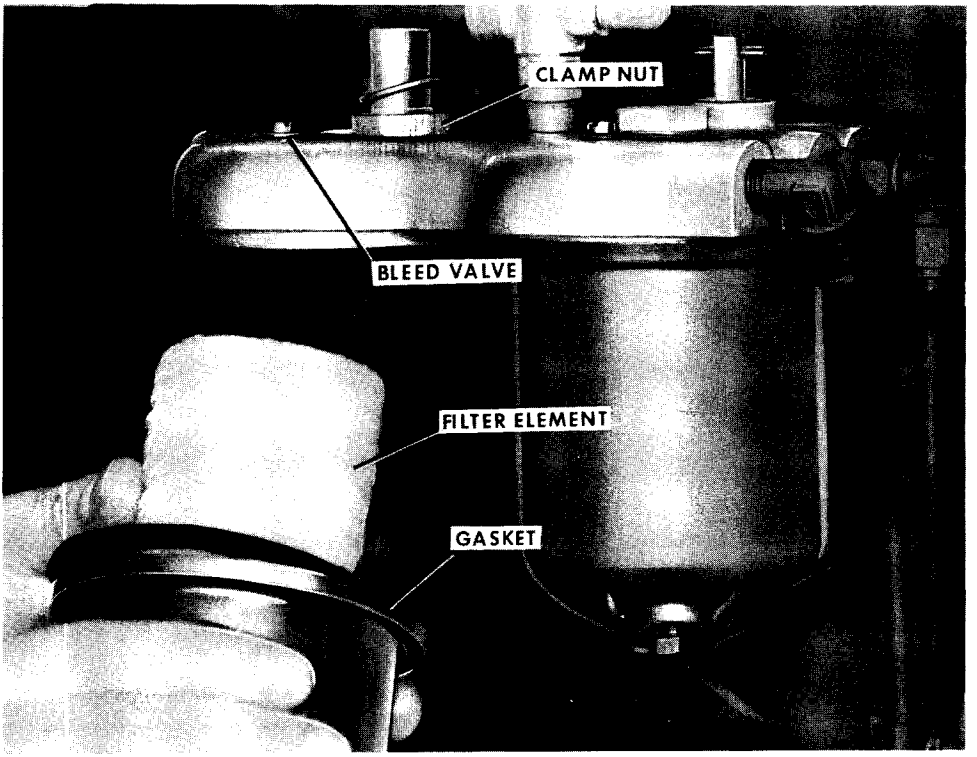


Figure 67

To remove the Filter Element:

1. CLEAN THE FILTER SIDE OF THE ENGINE THOROUGHLY. BE SURE NO DIRT IS LEFT ON THE FILTER BODY.
2. Close the fuel shut-off valve on the fuel tank, remove the drain plug from the bottom of the filter and allow it to drain.
3. Loosen the filter clamp nut on the filter cover until the body can be lowered away from the cover, Figure 67.
4. Lift the contaminated element out of the body and discard it.
5. Wash the filter body assembly thoroughly in clean diesel fuel.
6. Install a new Genuine Case Filter Element in the filter body. Be sure to install the new filter body gasket provided with the new element.
   Check that the clamp nut gasket is in good condition. Replace it if necessary.
7. Install the filter drain plug and bleed the system as directed on Page 76.

REPLACING SECOND STAGE FILTER

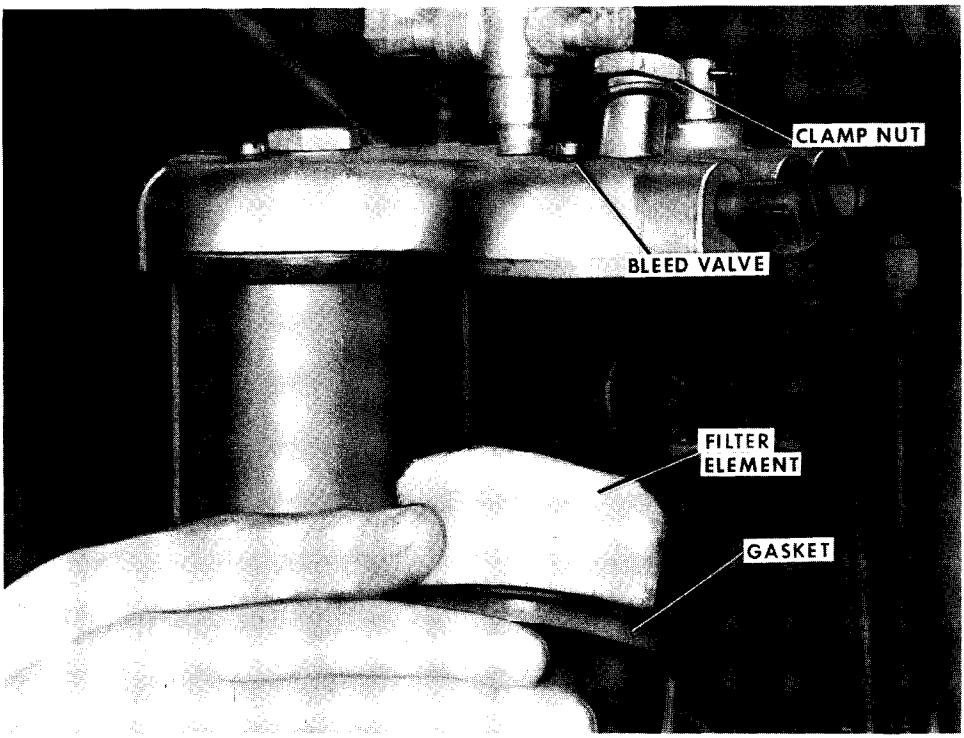


Figure 68

To Remove the Filter Element:

1. CLEAN THE FILTER SIDE OF THE ENGINE THOROUGHLY.BE SURE NO DIRT IS LEFT ON THE FILTER BODY.
2. Close the fuel shut-off valve on the fuel tank, remove the drain plug from the bottom of the filter and allow it to drain.
3. Loosen the filter clamp nut, Figure 68, until the entire filter body assembly can be lowered away from the top cover.
4. Lift the contaminated element out of the body and discard it.
5. Wash the filter body assembly thoroughly in clean diesel fuel.
6. Install a new Genuine Case Filter Element in the filter body. Be sure to install the new filter body gasket provided with the new element. Check that the clamp nut gasket is in good condition.
7. Install the filter drain plug and bleed the system as directed on Page 76.

REPLACING FINAL FILTER

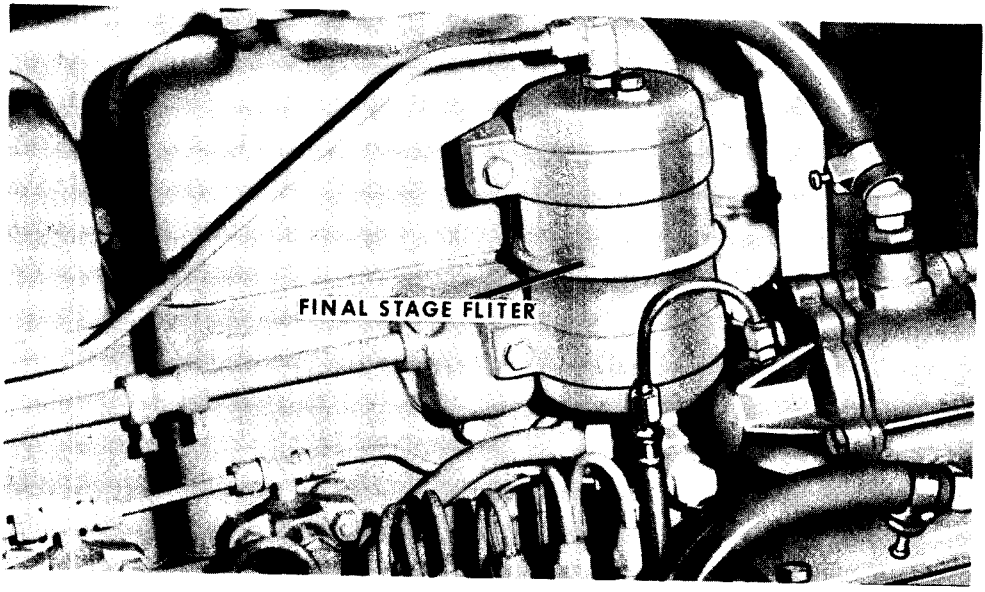


Figure 69

NOTE The final filter can be expected to last thousands of hours only if the first and second stage filters have been serviced regularly as directed in this manual and if the fuel is being used is clean when it enters the tank and meets the specifications listed on Page 9.

While replacing the final filter is a simple matter mechanically, there are certain precautions that can only be safely performed in the Case Dealer's Service Shop where experienced personnel are available.

Removal of the final filter by inexperienced personnel will expose the high precisioned and most costly units of the fuel system to the entry of dirt.

IMPORTANT

A PARTICLE OF DIRT THAT IS INVISIBLE TO THE NAKED EYE CAN SERIOUSLY DAMAGE THE HIGH PRECISION INJECTION EQUIPMENT.

VALVE TAPPET ADJUSTMENT

Check the valve (tappet) clearance after every 240 hours of engine operation.

CLEARANCE WITH ENGINE COLD

Intake valves ---------- .025 inch
Exhaust valves ---------- .025 inch

SEQUENCE FOR CHECKING VALVE CLEARANCE

The two valves for each cylinder are to be checked and adjusted when the piston for that particular cylinder is at top dead center on the compression stroke. Start with Number 1 cylinder and follow the sequence of the firing order (1-5-3-6-2-4).

DECOMPRESSOR LEVER

Use the decompressor lever to release the compression when cranking the engine, but realease the lever and restore compression when checking or adjusting the valve clearances.

SETTING THE NUMBER 1 PISTON AT TOP DEAD CENTER ON THE COMPRESSION STROKE.

A. Crank the engine slowly, until the crankshaft pulley is in the position shown in Figure 70. (Mark for checking No. 1 cylinder must be aligned with pointer).

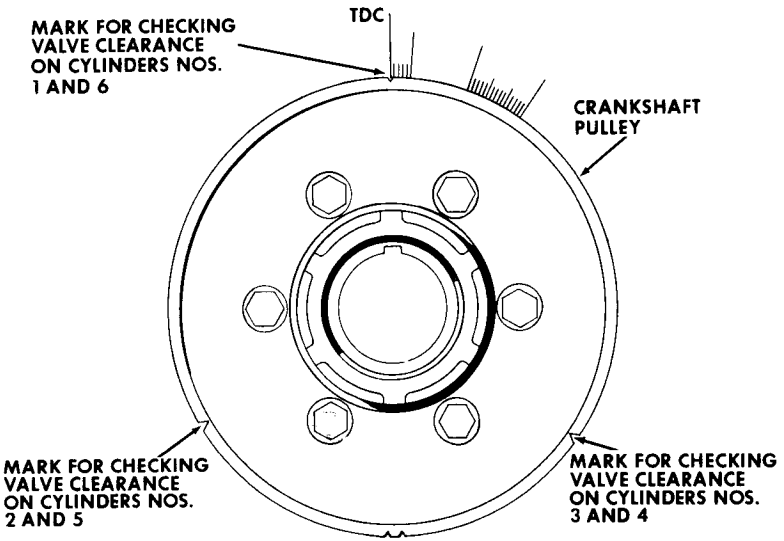


Figure 70

B. When Number 1 piston is at top dead center on the compression stroke, the push rods will be loose on Number 1 cylinder and tight on Number 6 cylinder. The push rod for the exhaust valve on Number 2 cylinder will be tight. Refer to Figure 71. If the reverse is true, crank the engine one complete revolution.

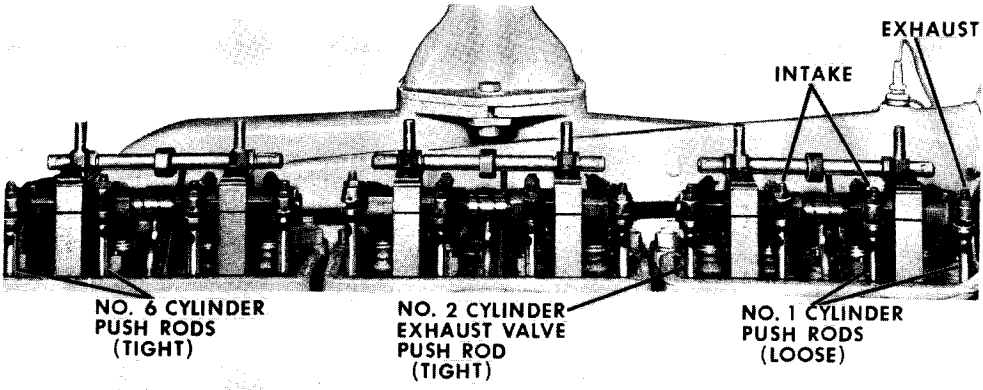


Figure 71

After checking and adjusting the valve clearance on Number 1 cylinder rotate the flywheel one third revolution until the next single mark on the crankshaft pulley is aligned with the pointer. The piston in Number 5 cylinder will then be at top dead center on the compression stroke, and the valves on the cylinder can then be checked and adjusted.

After checking and adjusting the valve clearance on Number 5 cylinder rotate the crankshaft pulley to the next single mark, skipping over the double mark half way between. This double mark must not be used for setting the valve clearance. Then proceed to check the valve clearance on Number 3 cylinder.

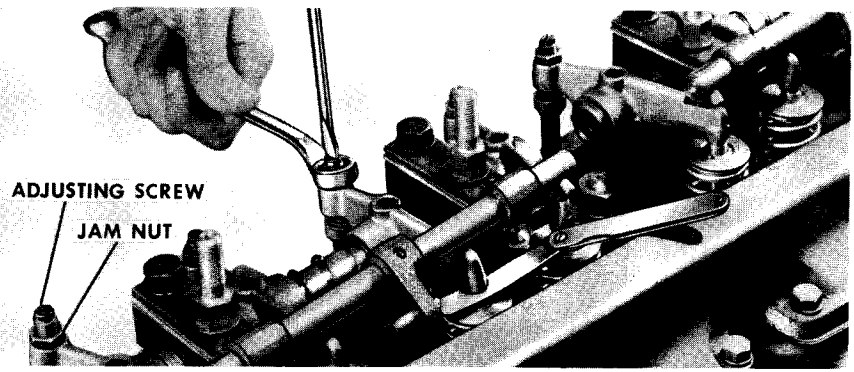


Figure 72

Continue on in this manner until the valve clearance on all cylinders have been checked and adjusted. It will require 1-2/3 revolutions of the crankshaft pulley to check all six cylinders.

After the valve tappet clearances are checked and while the valve covers are removed, start the engine and check that the rocker arm assembly is receiving lubrication.

HYDRAULIC SYSTEM PRESSURE CHECK

The pressure relief valve in the control valve body on the Loader should be set to open at 1600 PSI of hydraulic pressure. The pressure relief valves are factory set to open at 1600 PSI.

It is not practical to operate at a pressure relief valve setting under 1600 PSI. Under no circumstances may the pressure relief valve setting be above 1600 PSI. A damaged relief valve spring will allow hydraulic oil to flow through the control valve directly back to the reservoir without ever building up sufficient working pressure in the hydraulic system.

To check the Loader hydraulic system pressure, proceed as follows:

1. Rest the Loader bucket flat on the ground or floor.

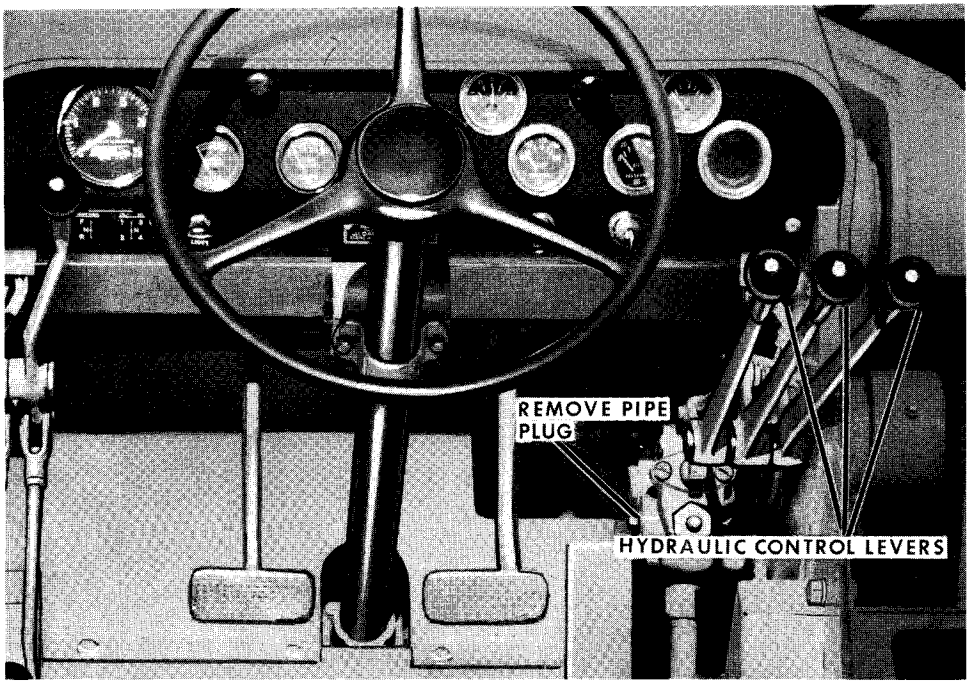


Figure 73

2. Turn off the engine and relieve hydraulic pressure in the lines by working the control levers back and forth several times, Figure 73.

3. Place a receptical under the hydraulic control valve body and remove the small pipe plug shown in Figure 73.

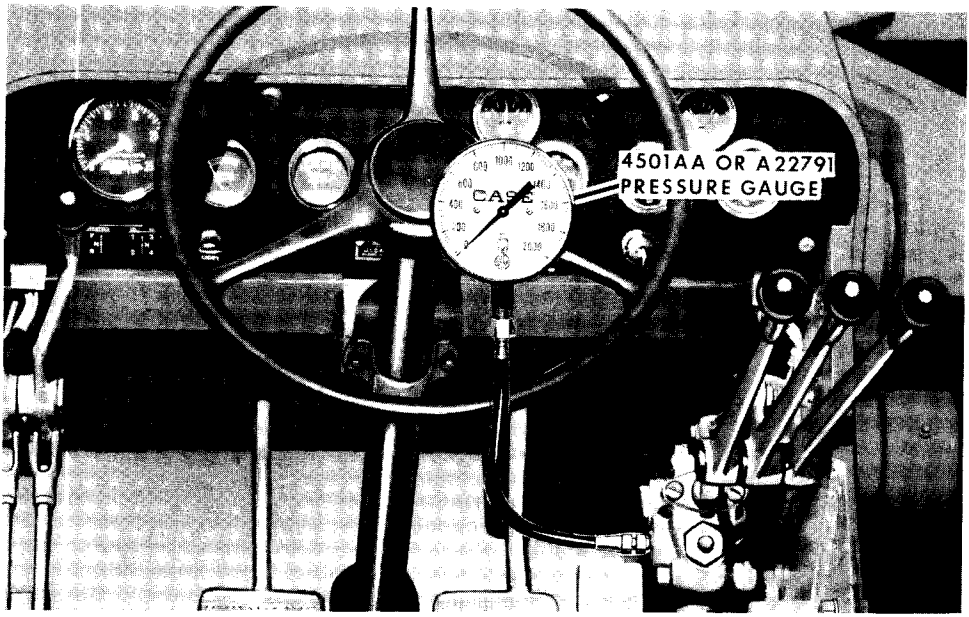


Figure 74

4. Install a 4501AA or A22791 Pressure Gauge in the threaded opening shown in Figure 74.

NOTE The 4501AA or A22791 Pressure Gauge can be purchased from your Case Dealer.

5. Start the Loader engine and run it at approximately 1000 RPM.

6. Slowly move the tilt control lever rearward to the tilt up position. Continue holding the control lever rearward until the bucket is against the stops and the pressure relief valve is forced open.

7. Gradually increase engine speed to 1500 RPM.

8. Observe the pressure gauge reading. The pressure gauge should register 1600 PSI. If the pressure gauge registers above or below 1600 PSI, the pressure relief valve must be adjusted.

To adjust the pressure relief valve, proceed as follows:

A. Remove the acorn nut from the relief valve and loosen the jam nut, Figure 75.

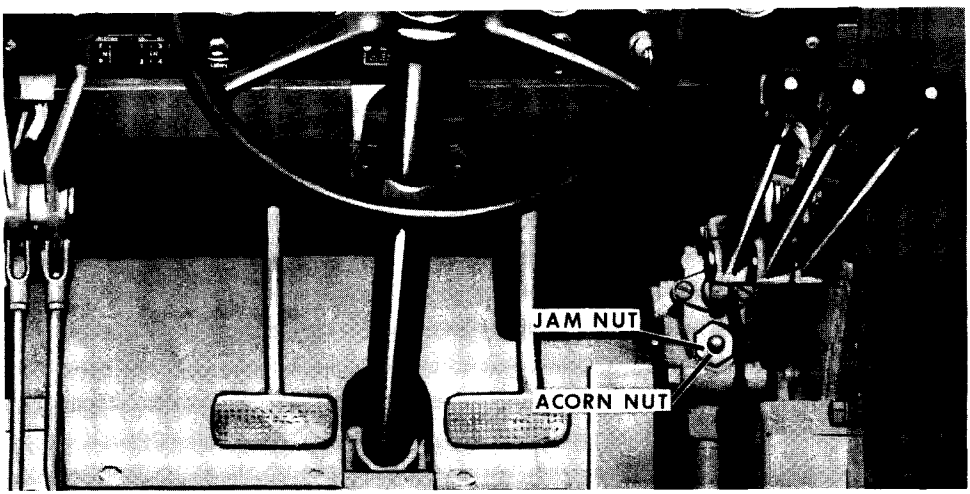


Figure 75

B. With engine running at 1500 RPM place either bucket control lever in a powering position. Turn the relief valve adjusting screw in or out until the 1600 PSI gauge reading is obtained.

C. Hold the adjusting screw in position while tightening the jam nut. Install the acorn nut.

9. After the correct pressure relief valve setting is obtained, rest the Loader bucket flat on the ground or floor and turn off the engine.

10. Relieve hydraulic pressure in the lines by working both control levers back and forth several times.

11. Remove the Pressure Gauge and reinstall the small pipe plug.

12. Start the engine. Bleed the hydraulic system by working both bucket control levers through several full cycles. Check the oil level in the hydraulic reservoir, add oil if necessary.

PARKING BRAKE ADJUSTMENT

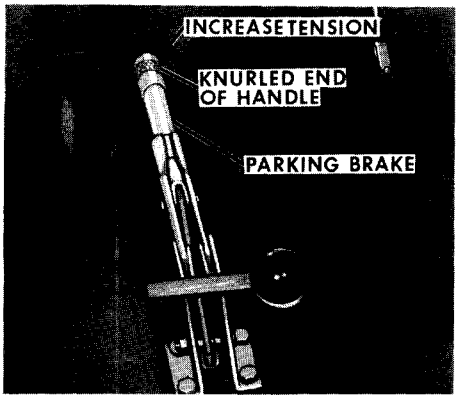


Figure 76

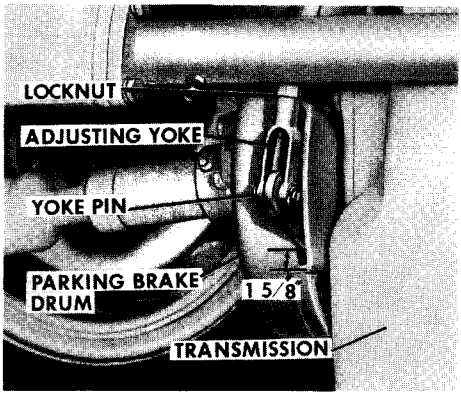


Figure 77

Occasionally it may be necessary to adjust the parking brake on the transmission.

The parking brake can be adjusted as follows:

Minor

The parking brake handle is located in the operator's compartment at the rear center, Figure 76. To adjust the parking brake turn the knurled portion of the handle toward the front of the Loader to increase the tension -- Turn rearward to decrease tension. After several minor adjustments have been made it will be necessary to make a major adjustment. A major adjustment is made as follows:

Major

The rod and yoke adjustment is made by removing the yoke pin from the brake lever and loosen the lock nut, Figure 77. The yoke can then be turned on or off for the required adjustment. Tighten the lock nut after adjustment has been made.

CAUTION After the parking brake has been adjusted several times the brake lining wear should be checked as follows:

1. Disconnect the adjusting yoke from the brake lever, Figure 77.

2. Check the travel of the brake lever - if the travel exceeds 1-5/8 inches - when disconnected from the yoke - the brake linings must be replaced.

SEE YOUR AUTHORIZED CASE INDUSTRIAL DEALER

BRAKE SHOE ADJUSTMENT

Occasionally it may be necessary to adjust the brake shoes to compensate for loss of pedal due to lining wear.

To adjust the brake shoes proceed as follows:

Rear Steering Axle

1. Jack both rear wheels clear of the ground or floor. Be sure parking brake is released.

2. Expand brake shoes on each rear wheel, as shown in Figure 78, until a heavy drag is felt when rotating the wheels.

3. Loosen the brake adjusting nuts on both rear wheels evenly, just enough so the wheels turn freely. Lower the Loader wheels to the ground or floor.

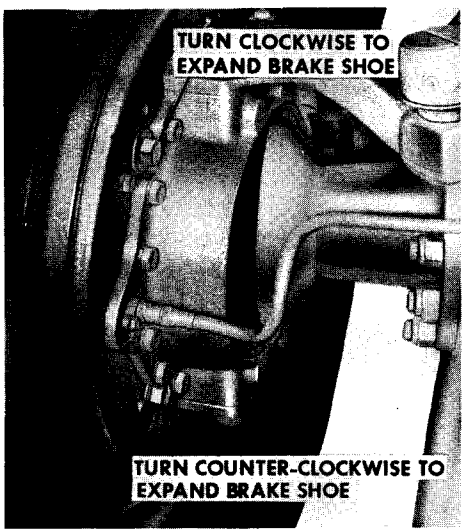


Figure 78

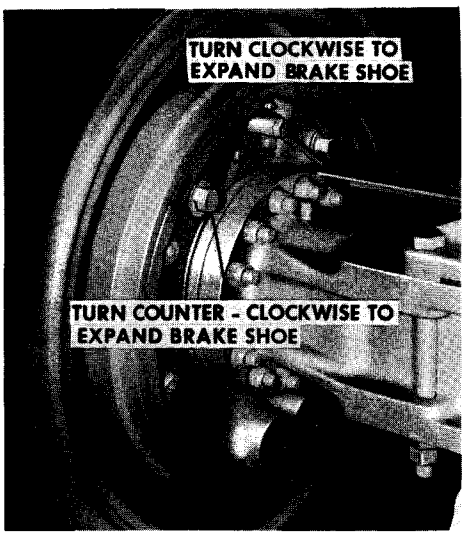


Figure 79

Front Rigid Axle

1. Jack both front wheels clear of the ground or floor. Be sure parking brake is released.

2. Expand brake shoes on each front wheel, as shown in Figure 79, until a heavy drag is felt when rotating the wheels.

3. Loosen the brake adjusting nuts on each front wheel evenly, just enough so the wheels turn freely. Lower the Loader wheels to the ground or floor.

FILLING AND BLEEDING THE HYDRAULIC BRAKE SYSTEM

After adjusting the brake shoes always check to make sure the master cylinder is filled to the bottom of filler opening with SAE 70R1 Heavy duty Brake Fluid.

Be sure engine is stopped, apply brakes several times to relieve the vacuum in the Hydrovac system.

Whenever the brake system has been disconnected the system must be bled at all four wheel cylinders Figures 81 and 82 and the two bleed screws at the Hydrovac cylinder, Figure 80.

It is recommended that a pressure type bleed tank be used for bleeding the hydraulic brake system.

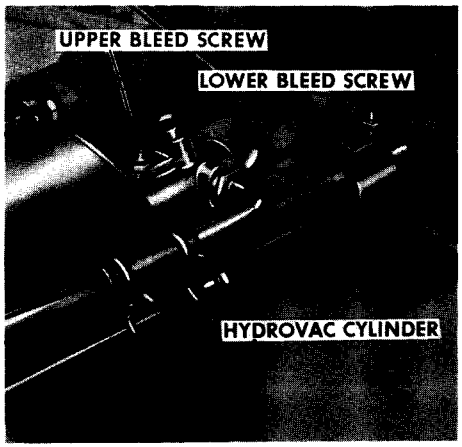


Figure 80

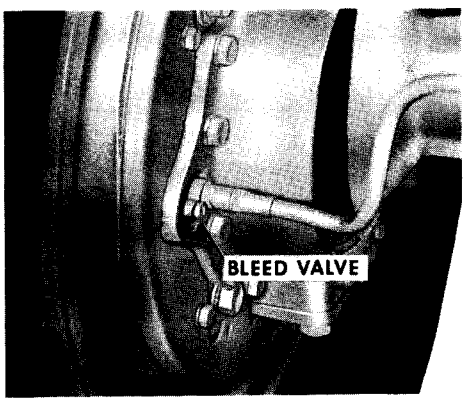


Figure 81

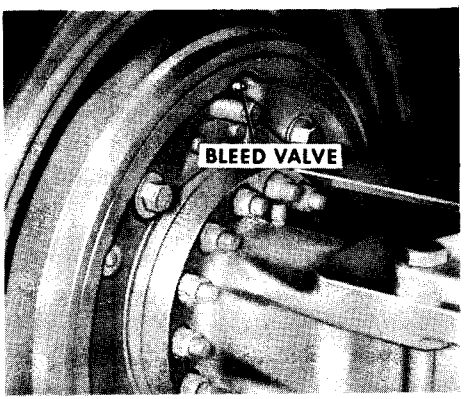


Figure 82

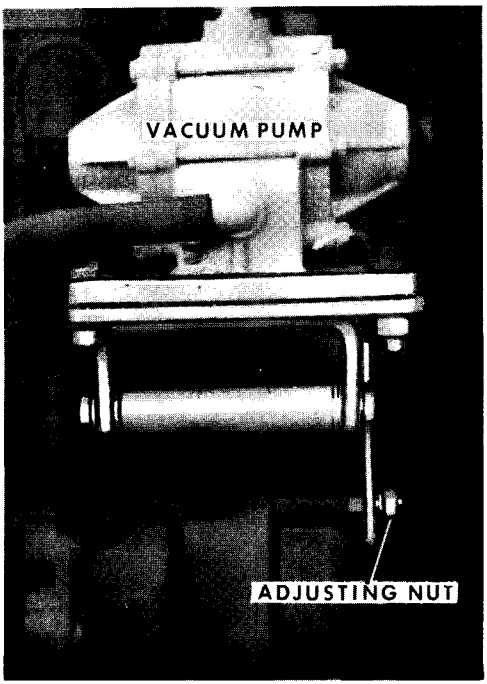
To bleed the brake system proceed as follows:

1. Fill and bleed the pressure tank according to the tank manufacturer's instructions.
2. Connect the pressure tank to the master cylinder filler opening.
3. Loosen the upper bleed screw on the Hydrovac cylinder. Close when air bubbles cease to appear close bleed screw. Repeat the operation on the Hydrovac lower bleed screw.
4. Loosen the bleeder valve on the furthest wheel cylinder from the Hydrovac cylinder. Observe flow of brake fluid from the bleed screw. When air bubbles cease to appear close bleed screw.
5. Repeat this bleeding operation on the balance of the wheel cylinders.

VACUUM PUMP BELT ADJUSTMENT

The effectiveness of which the Hydrovac brake system operates depends upon the condition and tautness of the belt that drives the vacuum pump.

Loosen the adjusting nut and move the vacuum pump up or down until the belt can be depressed 1/4 inch at a point midway between the pump pulley and fan pulley and tighten nut, refer to Figure 83.



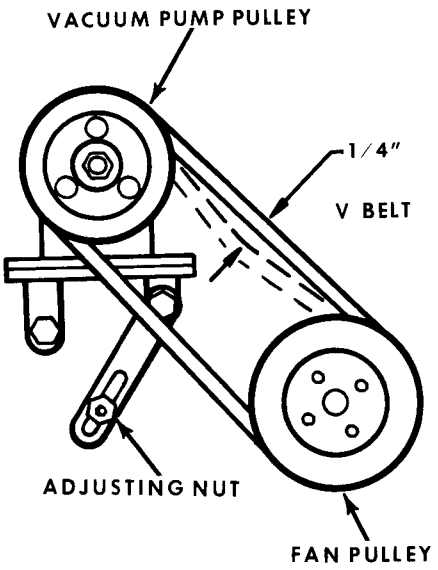


Figure 83

Belt Adjustment

The fan and generator drive belts will have to be loosened or removed refer to page 65 before the vacuum pump drive belt can be replaced.

Loosen the adjusting nut and move the pump downward until the belt can be taken off the pump pulley, fan pulley and over the fan blades one at a time. Install the new belt and readjust the belt tension to 1/4".

Reinstall and adjust the fan and generator drive belts refer to Page 65.

NEUTRAL START SWITCH ADJUSTMENT

If the neutral starting switch is not properly adjusted it may result in either the engine not starting or being able to start the engine with the directional lever in forward or reverse.

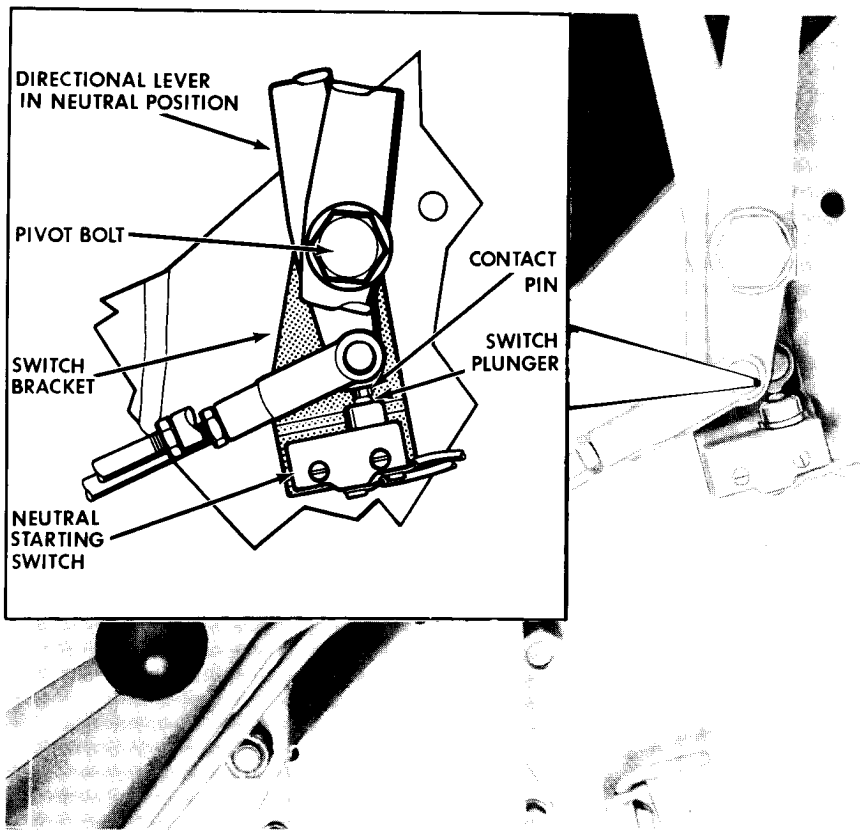


Figure 84

To adjust the neutral starting switch move the directional lever to the neutral position. Loosen the directional lever pivot bolt and nut. Figure 84. Then move the switch bracket forward or rearward until the switch plunger makes contact with the pin located in the bottom of the directional lever (See inset). Retighten the pivot bolt and nut while holding the switch in this position. Check the switch adjustment by turning the key switch to the start position, the engine should turn over.

INSTRUCTIONS FOR INSTALLING AND REMOVING BUCKET OR ATTACHMENT

Interchanging buckets or attachments on the Loader is a speedy operation that requires a minimum of tools and effort.

To remove the bucket or attachment from the Loader, remove the retaining capscrews from the pivot pin locks.

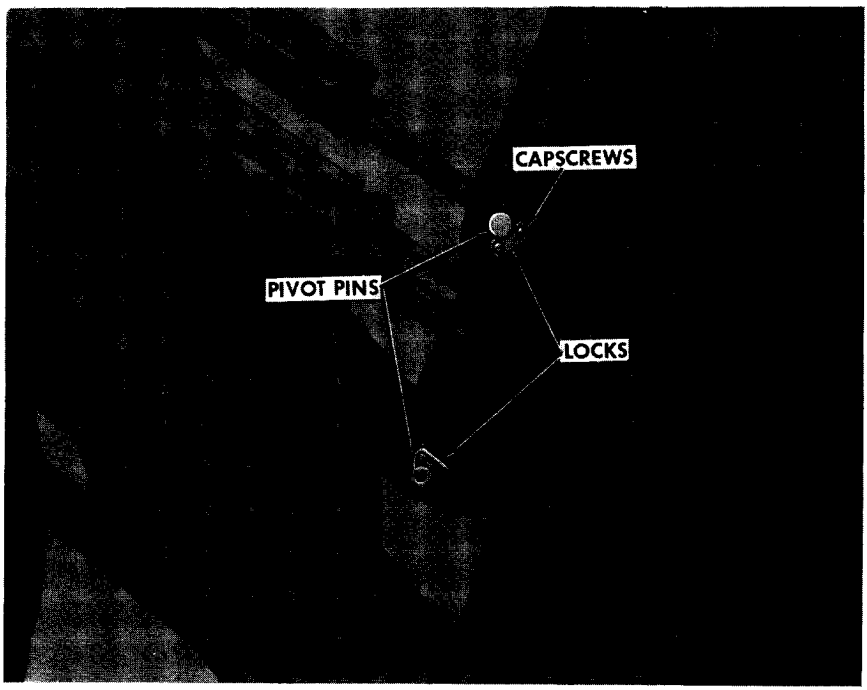


Figure 85

Remove the eight capscrews and the four bucket pivot pins.

Remove the bucket or attachment

To install the bucket or attachment, align the pivot pin holes on the bucket or attachment with the pivot pin holes on the lift arms and the tilt cylinder rods, Figure 85.

Install the four pivot pins and the eight capscrews.

Operator's Cab

The operator's cab completely covers the operator's compartment and is equipped with a windshield wiper. The glass panels give the operator complete view on all sides.

Heater and Defroster

The defroster will help to keep the glass panels clean and the heater will give the operator a comfortable temperature inside of the cab in cold weather.

Pusher Type Fan

The pusher type fan is recommended for use in warm temperatures to expel the heat out and away from the operator and engine.

Alternator

The alternator can be installed in place of the generator where special electrical equipment is installed and high amperage load is required from the alternator at low or high engine RPM.

Three Spool Valve

The three spool valve can be installed in place of the two spool valve and used for special equipment which requires an extra hydraulic controlled circuit.

Fork Lift

The fork lift can be installed in place of the bucket whenever special loads are to be handled by the loader.

Bucket Teeth

Bucket teeth can be installed on the bucket for special digging and breakout operations. Two types are available either the bolt on or the welded type.

Dozer Blade

The dozer blade can be installed and used for finish grading, backfilling or dozing in place of a bucket.

Snow Removal Equipment

Special snow removal equipment can be installed for any type of plowing, snow blowing or snow removal operation.

Buckets

The following buckets are available for the loader for handling different types and weight materials.

1-1/2 Cubic yard bucket. Heavy duty bucket for digging and heavy duty pry out action.

1-1/2 Cubic yard standard bucket.

1-3/4 Cubic yard standard bucket w/spill guard.

2 Cubic yard light material bucket.

3 Cubic yard light material bucket.

1-1/2 Cubic yard Drott 4 in 1 segmented type bucket.

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

WARNING

LOWER THE LOADER LIFT ARMS TO THE GROUND OR BLOCK THEM SECURELY BEFORE PERFORMING ANY SERVICE OPERATIONS OR WHEN LEAVING THE LOADER UNATTENDED.

As a member of the National Safety Council, we are privileged to use the Green Cross for Safety to designate not only our interest in Safety, but to point out more clearly the safety precautions in this manual.

INSIST ON GENUINE CASE PARTS

Case parts insure satisfactory service because they are made from the same patterns and materials as original equipment - they are tested, proved and guaranteed by Case.

Here are just a few of the accessory items your Case Dealer stocks to help keep your equipment looking and performing like new.

FILTERS

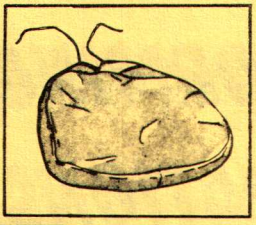
Case engine crankcase, hydraulic system, diesel fuel and transmission filters - insure same micronic filtering as original equipment.

Hi-Lo TCH OIL

One oil for transmissions, converters, hydraulics and power steering systems.

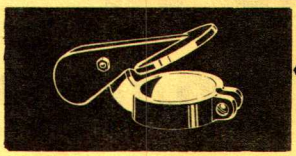
SEAT COVERS

For all style seats.



COOLING SYSTEM PELLETS

Helps resist rust in cooling system - stops leaks.

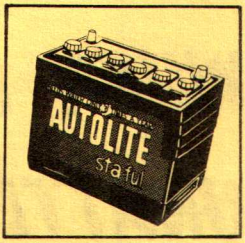


WEATHER CAPS

Helps protect exhaust systems.

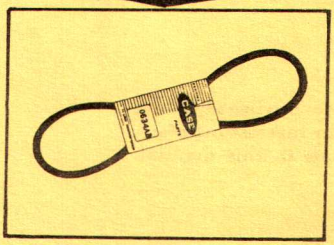
BATTERIES

Same dependability as original equipment - for sure starts.



BELTS

Case belts fit properly and are designed for long life.



FORMULA 77

Brings back original color to oxidized enamels, decals, vinyl - stops rust - waterproofs.

NOTICE

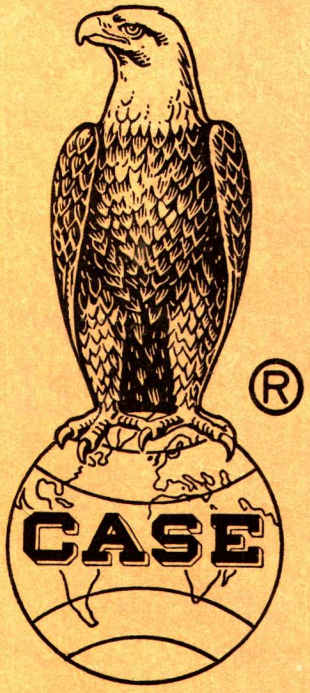
Insist on
GENUINE CASE® PARTS

CASE® made parts fit and insure satisfactory service because they are made from the original patterns and of the same materials as used in new machines. - - -

FOR SERVICE AND PARTS
See Your Case Dealer

Always Give Model and Description, or Serial Number of Machine

NOTE: The J. I. Case Company reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.



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