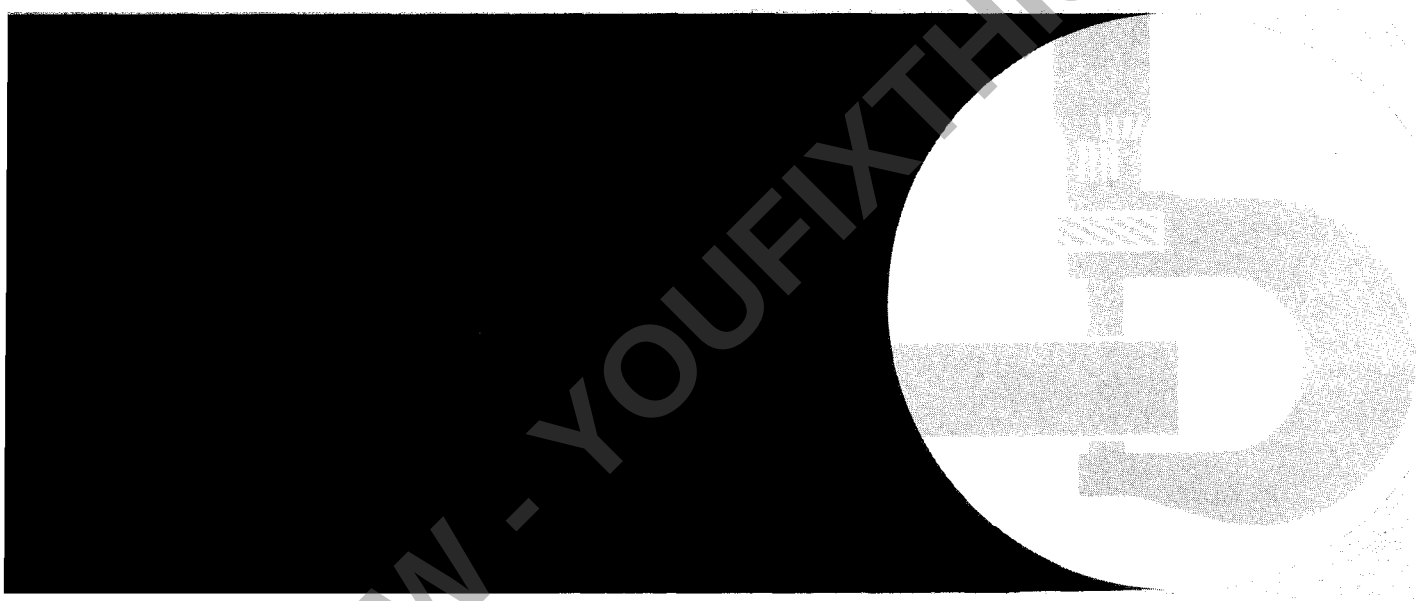
John Deere 670A and 672A Motor Grader Repair



TECHNICAL MANUAL

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JD670-A AND JD672-A MOTOR GRADERS

Technical Manual
TM-1188 (Dec-87)

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MAINTENANCE WITHOUT ACCIDENT
WORK SAFELY



T27999N

This safety symbol is used for important safety messages. When you see this symbol, follow the safety message to avoid personal injury.

EVERY EMPLOYER HAS A SAFETY PROGRAM. KNOW WHAT IT IS!



T27501N

See your shop supervisor for specific instructions on a job, and the safety equipment required.

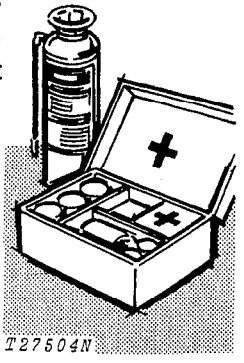
For instance, you may need: Hard hat, safety shoes, safety goggles, heavy gloves, reflector vest, ear protectors, respirator.



T27502N

BE ALERT!

Plan ahead—work safely—know how to use a first-aid kit and a fire extinguisher—and where to get assistance.



T27504N

Maintenance Area

Make sure the maintenance area has enough ventilation.

Keep the maintenance area CLEAN AND DRY. Oily and wet floors are slippery. Greasy rags are a fire hazard. Wet spots are dangerous when working with electrical equipment.

Keep starting aids in a cool, well-ventilated place, out of reach of unauthorized personnel.

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Group III
GENERAL SPECIFICATIONS

(Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with ICED and SAE Standards. Except where otherwise noted, these specifications are based on a unit equipped with 13.00-24, 12 ply rating, tubeless tires, 12 ft. (3.66 m) moldboard, and standard equipment. Weights include lubricants, coolants, full fuel tank and 175 lb. (79 kg) operator.)

Power

(at 2300 engine rpm):	SAE	DIN
Gross	135 hp (100.7 kW)	
Net	125 hp (93.2 kW)	126.7 PS

Net engine flywheel power is for an engine equipped with fan, air cleaner, water pump, lubricating oil pump, fuel pump, alternator, and muffler. The gross engine power is without fan. Flywheel power ratings are under SAE standard conditions of 500 ft. altitude and 85°F temperature, and DIN 70 020 conditions (non-corrected). No derating is required up to 10,000 ft. (3000 m) altitude.

Engine: John Deere turbocharged diesel, vertical 6-cylinder, valve-in-head, 4-stroke cycle.

Bore and stroke	4.19x5 in. (106.5x127 mm)
Piston displacement	414 cu. in. (6784 cm³)
Compression ratio	16.2 to 1
Maximum torque @ 1300 rpm	372 lb.-ft. (504 Nm) (51.4 kg/m)
NACC or AMA (U.S. Tax) horsepower	42.1
Main bearings	7
Lubrication	Pressure system w/full-flow filter
Cooling	Pressurized, w/thermostat and fixed bypass
Fan	Suction
Air cleaner w/restriction indicator	Dry
Electrical system	24 volt w/alternator
Batteries (2) 12 volt	Reserve capacity: 180 minutes

Transmission . . . . Direct drive full Power Shift with planetary gear reductions. Foot inching pedal.

Travel Speeds (2300 engine rpm, no tire slip):

Shift Lever Position	Forward mph	Forward km/h	Reverse mph	Reverse km/h
1	2.3	3.6	2.8	4.5
2	3.2	5.1	3.9	6.3
3	4.8	7.8	5.9	9.5
4	6.3	10.1	7.6	12.3
5	8.2	13.2		
6	10.5	17.0		
7	14.1	22.8		
8	23.9	38.4		

Differential Lock . . . . . Foot-operated, hydraulically actuated

Front Drive: (JD672-A only)
Hydrostatic motor in each wheel controlled through a flow divider to provide optimum traction. Free-wheeling in gears 5 through 8. Switch controlled for two modes of operation.

Pump . . . . . 5.43 cu. in. (89 cm³) variable displacement pump driving a 2.03 cu. in. (33 cm³) reversible motor in each wheel.

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Group IV
PREDELIVERY, DELIVERY, AND AFTER-SALE SERVICES

TEMPORARY GRADER STORAGE

After receiving your grader from the factory and before putting the machine into temporary storage, perform the following checks.

1. Check the battery electrolyte level. Charge the battery, if necessary.

2. Check the level of the coolant in the radiator. The coolant must be 4 in. (102 mm) below the top of the filler neck.

3. Fill the fuel tank.

4. Check the crankcase oil level. Oil must be between marks on the dipstick after the engine has been stopped for 10 minutes.

5. Relieve hydraulic pressure by lowering the blade, stopping the engine and operating the hydraulic control levers until no equipment moves.

PREDELIVERY SERVICE

The service technician must carefully check and service the machine before the dealer delivers it to the customer. When the customer receives a machine that is correctly prepared, the customer is well-satisfied. For these reasons, correct predelivery service is very important to the dealer and the customer.

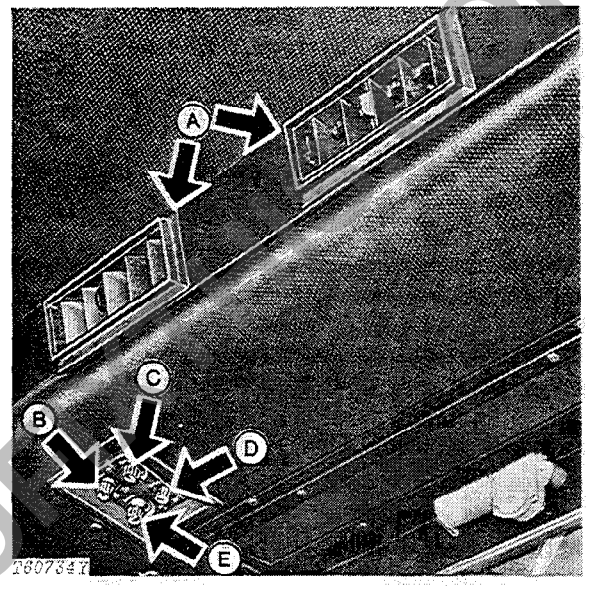
Use the following check list when getting a unit ready for delivery to the customer.

1. Cab Equipment

Check the operation of doors, windows, seat belts, horn, defroster fan, dome light, wipers, heater, etc.

Check air conditioner controls.

NOTE: Air temperature must be 60°F (16°C) or higher.



A—Louvers
B—Recirculating Air Control
C—Heat Control Knob
D—Cooling Control Knob
E—Blower Control Knob

Fig. 1-Air Conditioner Controls

1 - Turn key switch ON. Operate the blower control knob (E) in all positions. Check the fan speeds and air volume from the louvers (A).

2 - Turn the key and blower switches ON. Turn the cooling control knob (D) clockwise toward maximum cooling. Listen for the click from the compressor clutch.

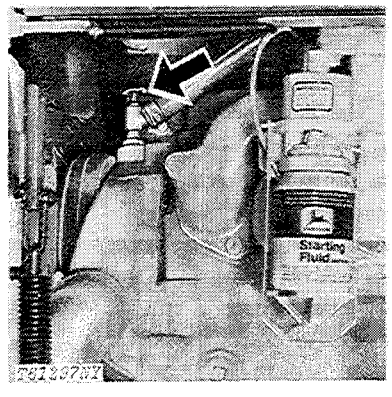
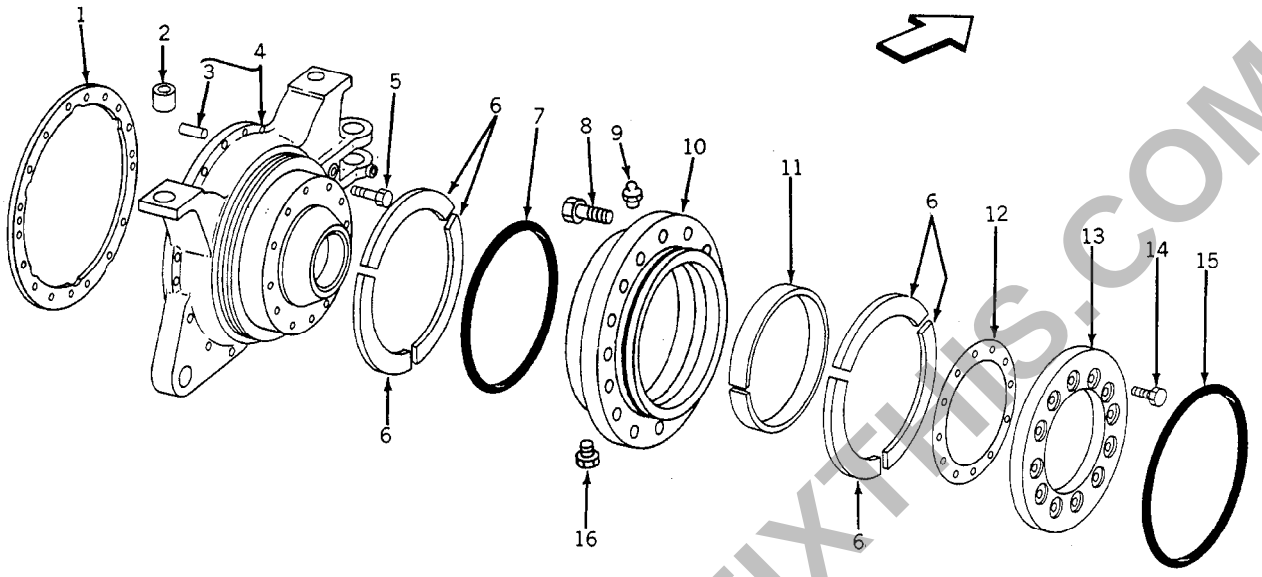


Fig. 2-Heater Valve

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REPAIR

Pivot Housing



T60438N

1—Gasket
2—Hollow Dowel (2 used)
3—Dowel Pin (3 used)
4—Final Drive Housing
5—Cap Screw (16 used)
6—Thrust Washer (6 used)
7—O-Ring
8—Special Cap Screw (2 used)
9—Grease Fitting
10—Tandem Pivot Housing
11—Tandem Pivot Bushing
12—Shim (use as required)
13—Pivot Retainer
14—Special Cap Screw (12 used)
15—O-Ring
16—Pipe Plug

Fig. 6-Pivot Housing Assembly

All parts must be cleaned to permit effective inspection. Steam cleaned parts should be oiled immediately after drying.

Inspect all parts for excessive wear, cracks or other damage. Replace as needed.

Apply multi-purpose grease to O-rings (7 and 15, Fig. 6) before installing.

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33. Accessible Hardware Torque Values

Check all accessible bolts and nuts for correct tightness. If hardware is loose, tighten it to the correct torque.

The table below gives correct torque values for various bolts and cap screws. Tighten all hardware to standard torque unless a different torque is specified.

Most hardware used is high-strength (note dashes on hex. heads). The types of bolts and cap screws are identified by head markings as follows:

Plain Head: regular machine bolts and cap screws.

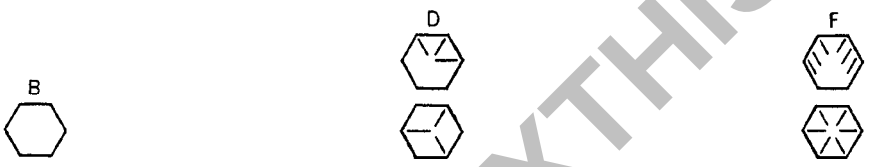
3-Dash Head: tempered steel high-strength bolts and cap screws.

6-Dash Head: tempered steel extra high-strength bolts and cap screws.

Machine bolts and cap screws 7/8-inch (22 mm) and larger are sometimes formed hot rather than cold, which accounts for lower torque.

All accessible hardware torqued *Yes* *No*

RECOMMENDED TORQUE - COARSE AND FINE THREADS



BOLT DIAMETER	PLAIN HEAD			THREE DASHES			SIX DASHES		
	LB-FT	Nm	Kg-m	LB-FT	Nm	Kg-m	LB-FT	Nm	Kg-m
1/4	NOT USED	NOT USED	NOT USED	10	14	1	14	19	2
5/16	NOT USED	NOT USED	NOT USED	20	27	3	30	41	4
3/8	NOT USED	NOT USED	NOT USED	35	47	5	50	68	7
7/16	35	47	5	55	75	8	80	108	11
1/2	55	75	8	85	115	12	120	163	17
9/16	75	102	10	130	176	18	175	237	24
5/8	105	142	15	170	230	24	240	325	33
3/4	185	251	26	300	407	42	425	576	59
7/8	160	217	22	445	603	62	685	929	95
1	250	339	35	670	908	93	1030	1396	142
1-1/8	330	447	46	910	1234	126	1460	1979	202
1-1/4	480	651	66	1250	1695	173	2060	2793	285

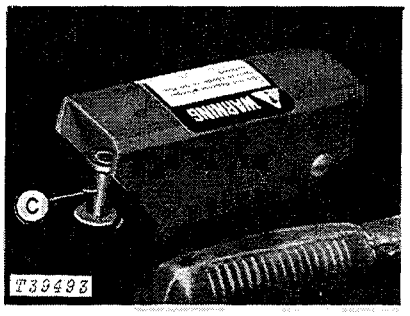
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Fig. 174-Torque Chart

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C—Lift Arm Locking Pin Valve Plunger

Fig. 38-Lift Arm Locking Pin Valve Plunger

When the locking pin valve plunger (C, Fig. 38) is pushed down, the locking pin (B, Fig. 37) retracts from the hole in the crossbar connected to the lift arm (A, Fig. 36). "Rock" the lift arms slightly (using the lift cylinders) to take the load off the locking pin. The indicator light on the instrument panel must be on.

When the locking pin valve plunger is released, the locking pin must go back into the hole in the crossbar connected to the lift arm. The indicator light must go off when the pin is in the hole.

Visually check the pin in the hole when the light is out. Also check if the locking pin valve plunger travels freely.

When the blade lift arm is in the horizontal position (locking pin in the center hole), the pointer on the lift arm must be in line with the center positioning hole in the indicator plate.

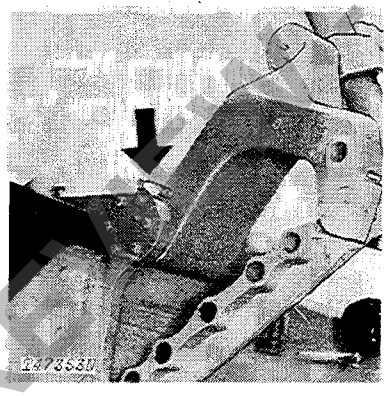


Fig. 39-Lift Arm Pointer

If adjustment is needed, loosen the fasteners holding the pointer. Move the pointer to the desired position. Tighten the fasteners.

Indicator plate adjustment required	*Yes*	*No*
Locking pin working	*Yes*	*No*
Light functioning	*Yes*	*No*

Describe any malfunctions:

_____

_____

_____

_____

_____

_____

12. Accumulator Action

Check the accumulator reserve capacity as follows:

Start the engine. Run it approximately one minute. Stop the engine. Push down the brake pedals five times at five second intervals. If the brakes do not work after this, the accumulator needs repair.

Accumulator checked	*Yes*	*No*

13. Batteries

Check the electrolyte level of the batteries. If distilled water is not available, use clean soft water. Do not use hard water. Remove dirt from the top of the batteries with a damp cloth. Put petroleum jelly on terminals.

IMPORTANT: Never add water to the batteries in freezing weather unless the engine will be run 2 or 3 hours.

Check battery connections.

Punch date code on batteries.

Batteries checked	*Yes*	*No*

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Group V
LUBRICATION

GENERAL INFORMATION

Below are copies of the periodic service charts which are on the motor grader right (R.H.) engine side shield. Read the current JD670-A and JD672-A Motor Grader Operator's Manual for more information on service.

Use the operator's manual and periodic service charts when working on the motor grader. Tell your customer to thoroughly read the operator's manual before attempting to service or operate the motor grader.

PERIODIC SERVICE CHART

REFER TO OPERATOR'S MANUAL FOR MORE DETAILED INFORMATION

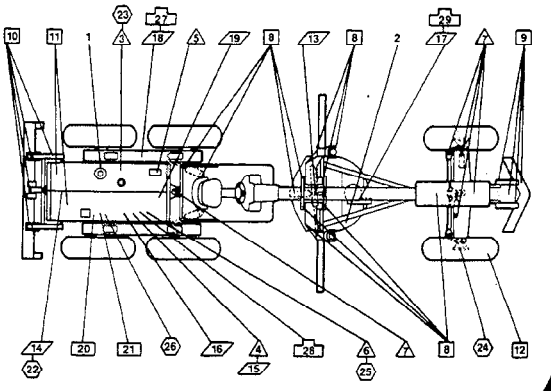
INTERVAL HOURS	ITEM NO.	COMPONENTS	SERVICE POINTS	DESCRIPTION OF SERVICE	CAPACITY OR MEASUREMENT	APPROVED SERVICE MATERIAL
AS REQUIRED	1	PRE-CLEANER	1	CHECK LEVEL OF ACCUMULATED MATERIAL	AS INDICATED ON BOWL	
	2	CIRCLE GEAR	1	BRUSH APPLICATION ON TOP AND BOTTOM SURFACE	AS REQUIRED	SAE MPG
10 OR DAILY	3	AIR CLEANER	1	SEE LABEL ON AIR CLEANER		
	4	ENGINE CRANKCASE	1	CHECK OIL LEVEL PER OPERATOR'S MANUAL	BETWEEN MARKS ON DIPSTICK	OPERATOR'S MANUAL
	5	RADIATOR	1	CHECK COOLANT LEVEL	COLD 4" (102 mm) BELOW CAP	OPERATOR'S MANUAL
	6	TRANSMISSION AND HYDRAULIC SYSTEM	1	CHECK OIL LEVEL ON TRANSMISSION DIPSTICK	BETWEEN MARKS ON DIPSTICK	JD HY-GARD OR EQUIVALENT
	7	FRAME PIVOT, FRONT AXLE PIVOT PINS AND CYLINDERS	26	GREASE FITTINGS	AS REQUIRED	SAE MPG
50	8	CYLINDER, TRUNNIONS, DRAFT FRAME AND CIRCLE SUPPORTS	29	GREASE FITTINGS	AS REQUIRED	SAE MPG
	9	SCARIFIER	1	GREASE FITTING	AS REQUIRED	SAE MPG
		SCARIFIER (HEAVY DUTY)	9	GREASE FITTINGS	AS REQUIRED	SAE MPG
	10	RIPPER	10	GREASE FITTINGS	AS REQUIRED	SAE MPG
	11	BATTERIES	2	CHECK ELECTROLYTE LEVEL CHECK TERMINALS FOR CORROSION	BOTTOM OF FILLER NECK REMOVE ANY CORROSION	DISTILLED WATER
	12	TIRES	6	CHECK AIR PRESSURE	SEE OPERATOR'S MANUAL	
200	13	LIFT ARM LOCKING PIN	1	GREASE FITTING	AS REQUIRED	SAE MPG
	14	FUEL TANK SEDIMENT BOWL	1	CHECK SEDIMENT BOWL	DRAIN ANY DEPOSITS	
	15	ENGINE CRANKCASE	1	DRAIN & REFILL	SEE CHART	SEE CHART
	16	CRANKCASE OIL FILTER	1	REPLACE		JD FILTER
	17	CIRCLE DRIVE GEAR BOX	1	LEVEL WITH HOLE	SEE CHART	NO. 90 EP OIL
	18	TANDEMS	2	LEVEL WITH HOLE	SEE CHART	JD HY-GARD OR EQUIVALENT
	19	ALTERNATOR AND FAN BELT	2	CHECK TENSION	1/2" (13 mm) FLEX WITH 24 LB (111 N) FORCE	
500	20	TRANSMISSION OIL FILTERS	1	REPLACE EVERY 500 HRS. OR AS INDICATED BY FILTER RESTRICTION LIGHT WITH WARM OIL		JD FILTER
	21	HYDRAULIC OIL FILTER	1	REPLACE		JD FILTER
1000	22	FUEL TANK OUTLET SCREEN	1	REMOVE, CLEAN AND REINSTALL		
	23	AIR CLEANER	1	REPLACE SAFETY ELEMENT		OPERATOR'S MANUAL
	24	FRONT AXLE BEARINGS	2	CLEAN, REPACK AND ADJUST		OPERATOR'S MANUAL
	25	TRANSMISSION	1	DRAIN AND REFILL	SEE CHART	JD HY-GARD OR EQUIVALENT
	26	FUEL FILTERS	2	CHANGE FILTERS		JD FILTERS
2000	27	TANDEMS	2	DRAIN AND REFILL	SEE CHART	JD HY-GARD OR EQUIVALENT
	28	TANDEM PIVOT	2	GREASE FITTINGS	10 TO 20 INJECTIONS OF GREASE	SAE MPG
	29	CIRCLE DRIVE GEAR BOX	1	DRAIN AND REFILL	SEE CHART	NO. 90 EP OIL

ENGINE OIL

AIR TEMP.	JOHN DEERE TORO GARD OIL	SINGLE VISCOSITY OIL API SERVICE CD/SD	MULTI VISCOSITY OIL API SERVICE CC/SD
ABOVE 32° F. (0° C.)	SAE 30	SAE 30	NOT RECOMMENDED
32° F. to −10° F. (0° C. to −23,3° C.)	SAE 10W 20	SAE 10W	SAE 10W 20 SAE 10W 30
BELOW −10° F. (−23,3° C.)	SAE 5W 20	SAE 5W	SAE 5W 20

CAPACITIES

ITEM	U.S. MEASURE	METRIC
FUEL TANK	60 GAL	227 l
COOLING SYSTEM	28 QT	26.5 l
ENGINE CRANKCASE	18 QT	17.0 l
CIRCLE DRIVE	3 QT	2.85 l
TANDEMS	4 GAL. EA	15.1 l
TRANSMISSION	14 GAL	53.0 l

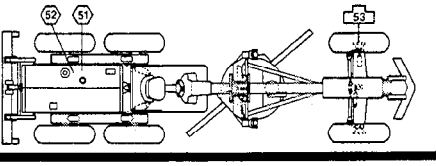


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Fig. 1-Periodic Service Chart

H.F.W.D. PERIODIC SERVICE CHART

1000	51	HYDRAULIC FRONT AXLE RETURN FILTER	1	REPLACE EVERY 1000 HRS. OR AS INDICATED BY LEAKAGE FROM WHEEL MOTOR RELIEF VALVES		JD FILTER
	52	H.F.W.D. PUMP RETURN FILTER	1	REPLACE EVERY 1000 HRS. OR AS INDICATED BY FILTER RESTRICTION INDICATOR		JD FILTER
2000	53	WHEEL MOTORS	1	DRAIN & REFILL		JD HY-GARD OR EQUIVALENT



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Fig. 2-Hydraulic Front Wheel Drive Periodic Service Chart

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Check the crankcase oil level when the machine is on level ground and the engine off. If oil level is at or below the bottom mark on the dipstick, add oil specified on page I-V-2 to bring oil level to between marks on dipstick. Do not operate engine when the oil level is below the bottom mark.

NOTE: There is 2 quarts (1.9 L) difference between the bottom mark and the top mark on the dipstick.

Filter changed	*Yes*	*No*
Crankcase oil level checked	*Yes*	*No*
Oil added	_____ *qts. (L)*	

19. Belt Tension

Check and adjust belt tension.

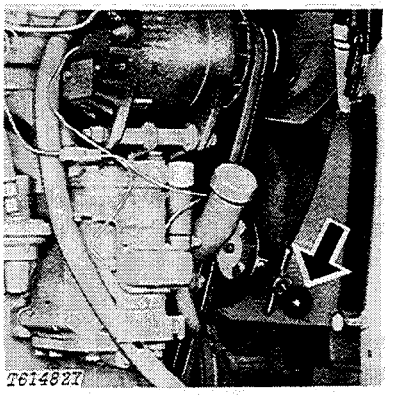


Fig. 130-Tension Gauge

Immediately after stopping the engine (run the engine 5 minutes or more), check the belt tension. If tension is less than 50 lb. (223 N) (23 kg), wait ten minutes. Then change tension to 90 lb. (400 N) (41 kg).

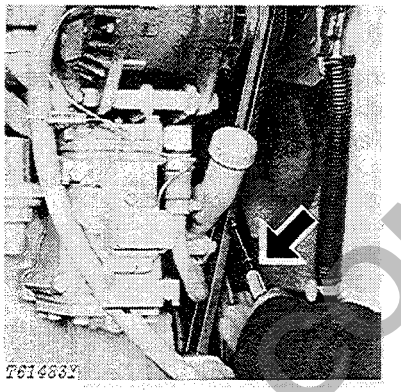


Fig. 131-Tension Tester

Tension tester: A 24 lb. (107 N) (11 kg) force halfway between the pulleys must move the belt 1/2 in. (13 mm).

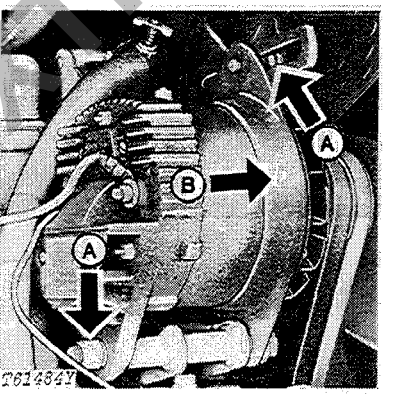
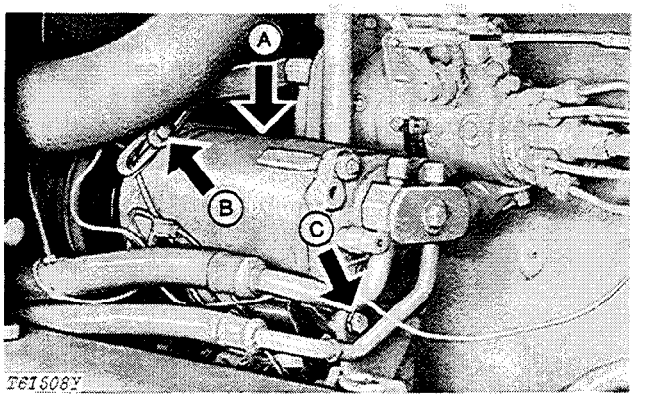


Fig. 132-Adjusting Belt Tension

Tension Adjustment: Loosen the cap screws (A).

IMPORTANT: Apply pressure ONLY to the front alternator housing (B).

Tighten the cap screws.



A—Compressor Belt
B—Adjusting Strap Cap Screw
C—Rear Mounting Cap Screw

Fig. 133-Compressor Belt

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Disassembly

Pull bearing cones (5 and 30, Fig. 2) from each side of differential.

Remove sealing rings (28) from diffferential housing. Inspect sealing rings for wear or damage. Replace as necessary.

Remove cap screws (6) securing differential housing cover (9) to differential housing with spiral bevel gear and remove housing cover.

Be careful not to lose the three small springs (10) mounted on spring pins (8) located in the cover.

Remove the separator plates (14), drive disks (13) and backing plate (15).

Remove piston (16) from differential housing (19).

If necessary, apply compressed air at the oil pressure inlet holes in the housing to lift piston.

CAUTION: Piston can be forced out of bore suddenly and cause bodily injury. Apply compressed air slowly until piston can be removed from bore.

Remove outer and inner O-ring (17 and 18) and inspect for damage. Replace as necessary.

Remove cap screws (29) securing the left-hand differential housing to right-hand differential housing with spiral bevel gear and separate the housings.

Remove bushing (11) from ring gear side of differential housing. Inspect O-rings (12) and replace if necessary.

Remove the bevel lock gear (21, Fig. 2) with thrust washer (22).

Remove bevel pinion (24) and bevel pinion shafts (23).

If equipped, remove roller bearings (34) and snap ring (32).

Inspect roller bearings in each pinion for wear.

NOTE: If any roller bearing is found defective, replace bearings as an entire set.

Remove bevel gear (25) with thrust washer.

Remove bearing cups (4 and 31) from the differential bearing quills (2 and 26).

Refer to page 0210-4 for cleaning, handling and inspecting the differential parts.

Installing New Ring Gear

IMPORTANT: If the spiral bevel gear is no longer serviceable and must be replaced, it will be necessary to replace the spiral bevel pinion shaft also as these parts are furnished only as matched sets.

If any of the cap screws (19, Fig. 3) are to be replaced, it is necessary to heat cap screws to 350°F (177°C) to loosen the epoxy.

Clean and degrease cap screw threads and threads in gear with lacquer thinner, chloroethane or an equivalent.

NOTE: Do not use petroleum base solvents such as gasoline or diesel fuel as they will leave a residue that adversely affects epoxy.

Apply epoxy adhesive 3M2158 or an equivalent to lower 3/4-inch of threads. Cross tighten cap screws to 85 lb-ft (115 N·m) (12 kg-m).

Refer to page 0210-10 to replace spiral bevel pinion shaft.

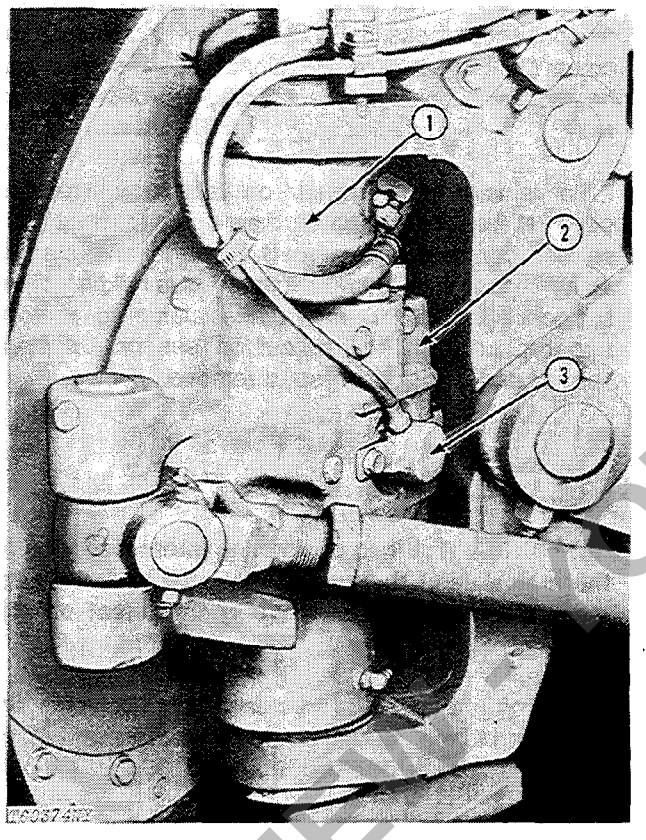
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Group 0260
HYDRAULIC SYSTEM
WHEEL MOTOR AND OIL MANIFOLD

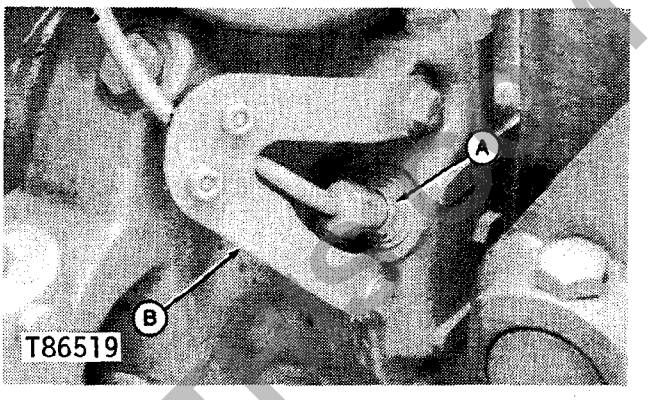
REMOVAL

To remove left wheel motor and oil manifold, steer front wheels to the full right. To remove right wheel motor and oil manifold, steer front wheels to the full left.



1—Motor Housing
2—Oil Manifold
3—Front Sensor

Fig. 1-L. H. Wheel (Early Units)



A—Sensor
B—Cable Support Bracket

Fig. 1A-L. H. Wheel (Later Units)

Drain oil from planetary housing by removing plug (Fig. 2).

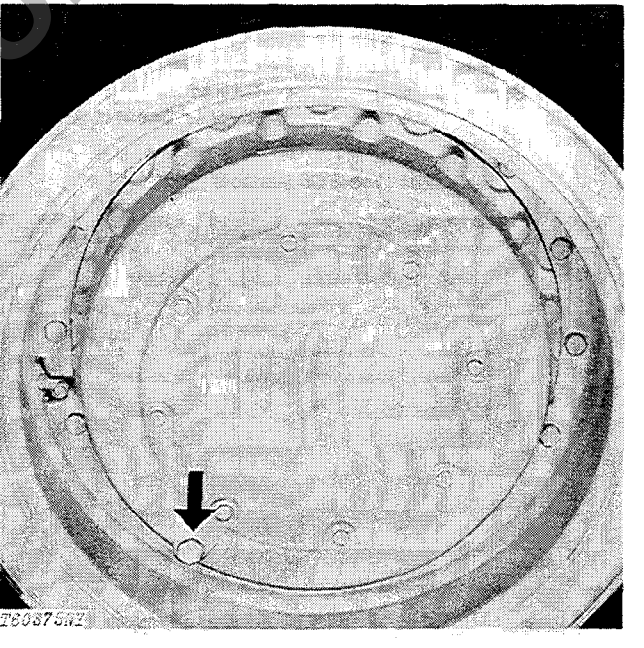


Fig. 2-Planetary Housing Plug

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Group 0341
HOUSINGS AND COVERS

TRANSMISSION CLUTCH HOUSING

GENERAL INFORMATION

The transmission clutch housing, located at the rear of the power unit, contains the transmission oil pump and clutch pack assembly.

The transmission clutch housing bolts directly to the rear of the transmission case.

REMOVAL

Refer to Section 42 and remove rear mounted ripper and rear valve (if so equipped).

Drain lubricant from transmission.

Refer to Group 0400 and remove engine.

Refer to Group 0841 and remove transfer drive housing.

NOTE: When disconnecting hydraulic front wheel drive oil lines, take care so that contamination does not enter system. Plug or cap all fittings.

NOTE: The engine and transfer drive housing can be removed as a unit.

Remove cap screws securing transmission oil pump and clutch pack assembly to clutch housing. Remove oil pump and clutch pack assembly.

Remove transfer drive housing lube line from clutch housing.

Remove lube pressure gauge tube from connector at clutch housing.

Disconnect pump charge line from clutch oil pressure regulating valve and remove from unit.

Attach a sling around clutch housing and attach to an overhead hoist.

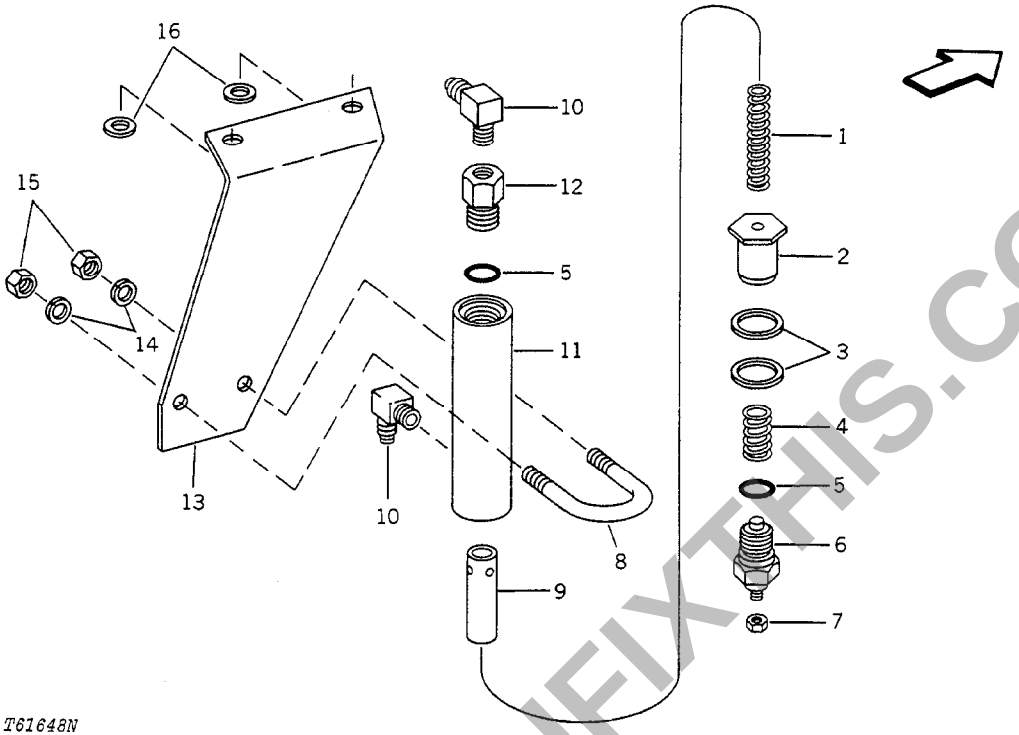
Make sure all lines and hoses to clutch housing are disconnected.

Remove cap screws securing clutch housing to transmission case and remove clutch housing from transmission case.

NOTE: There are two internal cap screws securing the transmission clutch housing to the transmission case. The clutch pack must be removed before these two cap screws can be removed.

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1—Spring
2—Spring Guide
3—Shim (4 used)
4—Spring
5—O-Ring (2 used)
6—Special Plug
7—Nut
8—U-Bolt
9—Valve
10—90° Elbow (2 used)
11—Body
12—Plug
13—Bracket
14—Lock Washer (2 used)
15—Nut (2 used)
16—Washer (2 used)

Fig. 23-Transmission Filter Restriction Switch

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Group 0499
SPECIFICATIONS AND SPECIAL TOOLS
ENGINE BREAK-IN
SPECIFICATIONS AND TORQUE VALUES

NOTE: Whenever possible, use a dynamometer to provide a more accurate break-in, assuring proper initial seating of new piston rings.

Time	Load*	Engine Speed	Remarks
5 MINUTES	NO LOAD	800 RPM (SLOW IDLE)	CHECK OIL
5 MINUTES	NO LOAD	1500 TO 2000 RPM (1/2 THROTTLE)	PRESSURE,
5 MINUTES	1/4 LOAD	1900 TO 2200 RPM	COOLANT
10 MINUTES	1/2 LOAD	(3/4 THROTTLE)	TEMPERATURE,
10 MINUTES	1/2 TO 3/4 LOAD		AND LEAKAGE
10 MINUTES**	3/4 TO FULL LOAD		
100 HOURS+	ALL LOADS		FIELD ONLY

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Loads can be simulated in the field by controlled operation.

***After this run, loosen cylinder head bolts 45 degrees; then retighten bolts one at a time, in sequence (Group 0409), to 95 lb-ft (129 N·m) (13 kg-m). Loosen rocker arm support cap screws; then retighten to 35 lb-ft (47 N·m) (5 kg-m). Check and reset valve clearance (Group 0402). Loosen exhaust manifold cap screws and nuts; then retighten to 35 lb-ft (47 N·m) (5 kg-m).*

+After break-in, drain crankcase oil, and remove oil filter. Install new filter and fill crankcase to proper level with proper oil. Remove turbocharger oil inlet screen.

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Group 0899
SPECIFICATIONS AND SPECIAL TOOLS

HOUSINGS AND COVERS

SPECIFICATIONS AND TORQUE VALUES

1. Drive dowel pins to bottom of bore in upper half of transfer drive housing.

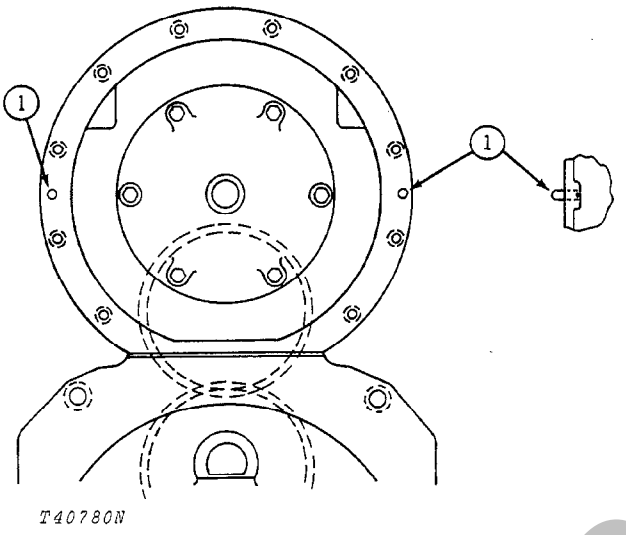
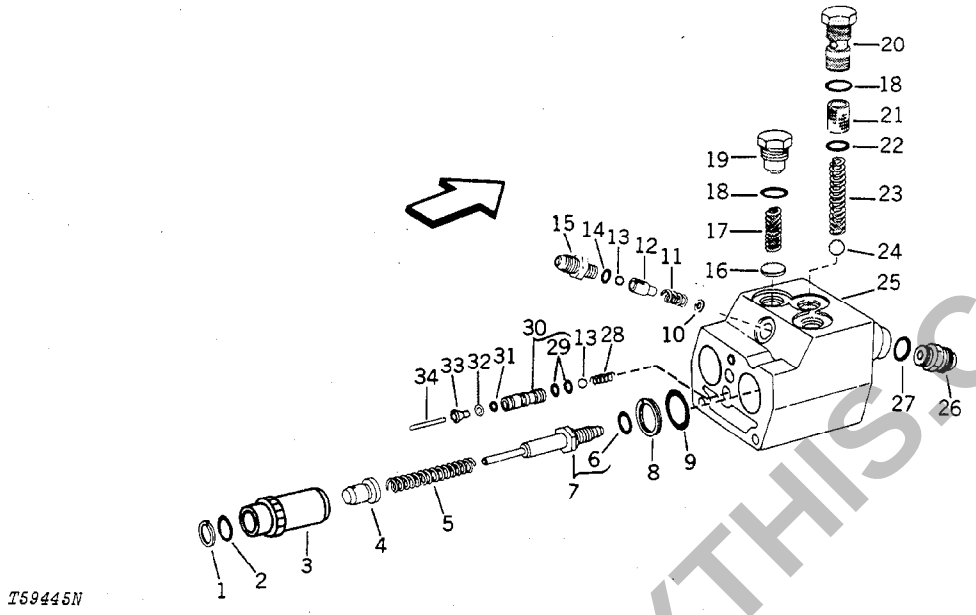


Fig. 1-Transfer Drive Housing

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1—Treated Paper Washer (2 used)
2—O-Ring (2 used)
3—Manual Brake Piston (2 used)
4—Plunger (2 used)
5—Plunger Return Spring (2 used)
6—O-Ring (2 used)
7—Inlet Valve Nipple (2 used)
8—Backup Ring (2 used)
9—O-Ring (2 used)
10—Washer
11—Inlet Guide Spring
12—Inlet Guide
13—Steel Ball (3 used)
14—O-Ring
15—Connector
16—Check Valve Disk (2 used)
17—Check Valve Disk Spring (2 used)
18—O-Ring (3 used)
19—Plug (2 used)
20—Plug
21—Filter Screen
22—O-Ring
23—Reservoir Check Valve Spring
24—Steel Ball
25—Brake Valve Housing
26—Connector (2 used)
27—O-Ring (2 used)
28—Equalizing Valve Spring (2 used)
29—O-Ring (4 used)
30—Equalizing Valve Shaft Guide
31—O-Ring (2 used)
32—Backup Washer (2 used)
33—Sleeve (2 used)
34—Equalizing Valve Shaft (2 used)

Fig. 3-Brake Valve

Remove manual brake piston (3, Fig. 3), plungers (4) and springs (5) from brake valve housing (25). Valve plungers can be pressed from pistons by hand pressure. Check orifices in plunger to make sure they are open and clean.

Use a deep-well socket to remove inlet valve nipple (7) from valve housing.

Remove equalizing valve shaft (34), sleeve (33), guide (30), steel ball (13) and spring (28).

Remove plugs (19), springs (17) and check valve disk (16).

Remove plug (20), spring (23) and steel ball (24). Clean or replace filter screen (21) as necessary.

Inspect all parts for wear, scoring or breakage and replace parts as necessary.

Check springs for fatigue. Replace as necessary.

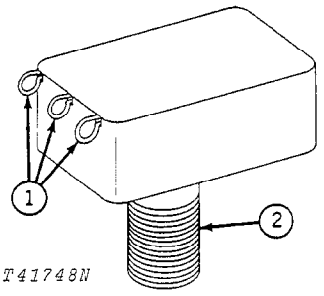
Operating rod spring (10, Fig. 2)
Free length . 1.062 ± 0.005 in. (27 ± 0.13 mm)
Test length . . . . . .0.885 in. (22.5 mm)
compressed with 210 ± 21 lbs.
(935 ± 93 N)
(95 ± 10 kg)

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3. Connect ohmmeter to bracket (B) and grounded brush (D). Resistance reading should be zero or test lamp should light. Move brush and lead wire to make certain that the brush lead wire connections are secure. Resistance reading should not vary when brush and lead wire are moved.

Diode Trio



1—Diode Terminals **2—Mounting Stud**

Fig. 18-Diode Trio Test Points

If a diode tester is used, follow tester manufacturer's testing instructions. If a commercial tester is not available, use a DC test lamp.

IMPORTANT: DO NOT USE A 110-VOLT TEST LAMP. USE A 12-VOLT DC TEST LAMP ONLY, OTHERWISE DIODES WILL BE DAMAGED.

If using a 12-volt DC test lamp, lamp should light only when the diode is connected in a forward bias as given below.

Connect one lead of the test lamp to one of the diode terminals (1, Fig. 18) and the other lead to the mounting stud (2). Reverse the test lamp probes. The test lamp should light in one direction but not in the other.

If the test lamp lights in both directions, the diode is shorted. If the test lamp does not light in either direction, the diode is open.

Test the remaining diodes of the assembly in the same manner. Replace the assembly if one or more of the diodes is found to be faulty.

Use the following procedure when using a 1.5 Volt ohmmeter test:

1. Connect one ohmmeter lead to the diode terminal (1, Fig. 18) and the other lead to the mounting stud (2).

2. Note the ohmmeter reading.

3. Now reverse the ohmmeter leads and note the reading.

4. A good diode will give a high reading in one direction and a lower reading in the other direction.

If the high and low readings between the three diodes are reasonably close, the diodes are good. A defective diode will have a reading obviously different from the good diodes.

When soldering to a diode terminal, use solder with a melting point of 360°F (182°C) or somewhat higher, and take care that a good connection is achieved without overheating the diode.

If the above tests indicate one or more faulty diodes, the assembly should be replaced.

Always re-test diode assembly after diode replacement or soldering.

Stator

Examine stator for insulaton failure or defects. Shorted stator windings are usually discolored and smell of burned insulation.

If a sensitive ohmmeter is available, use the following procedure:

1. Disconnect the stator leads from the diode assemblies.

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ALTERNATOR, REGULATOR AND CHARGING SYSTEM WIRING

SPECIFICATIONS AND TORQUE VALUES—Continued

50 Amp Alternator

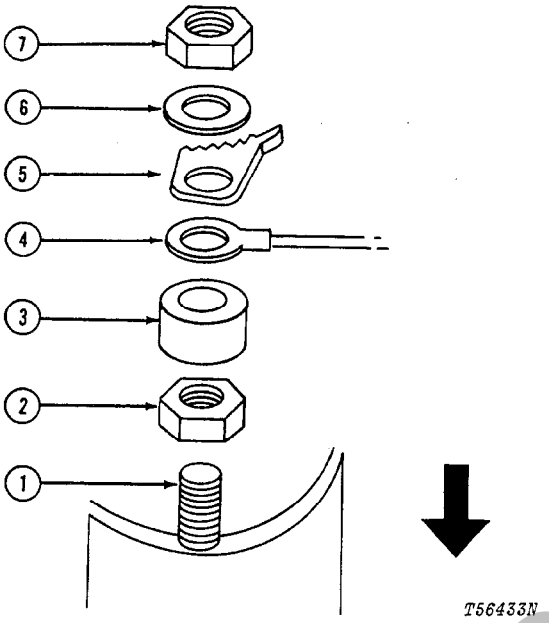


Fig. 4-Stator and Regulator Hold Down Nut Specifications

Rating

50 Amp ..... 24 volt
Ground ..... Negative
Stator Winding ..... Wye

1 - Stud
2 - Flanged Hex Nut ..... 65 lb-in (7.3 Nm) (0.75 kg-m)

Prior to tightening flanged hex nut, obtain minimum rotor/stator clearance of 0.005 in. (0.13 mm).

3 - Spacer
4 - Ground Lead
5 - Regulator
6 - Spring Washer
7 - Double Chamfered Nut..... 25 to 30 lb-in (2.8 to 3.4 Nm) (0.29 to 0.35 kg-m)

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Group 1830
HEATING AND AIR CONDITIONING

HEATING SYSTEM

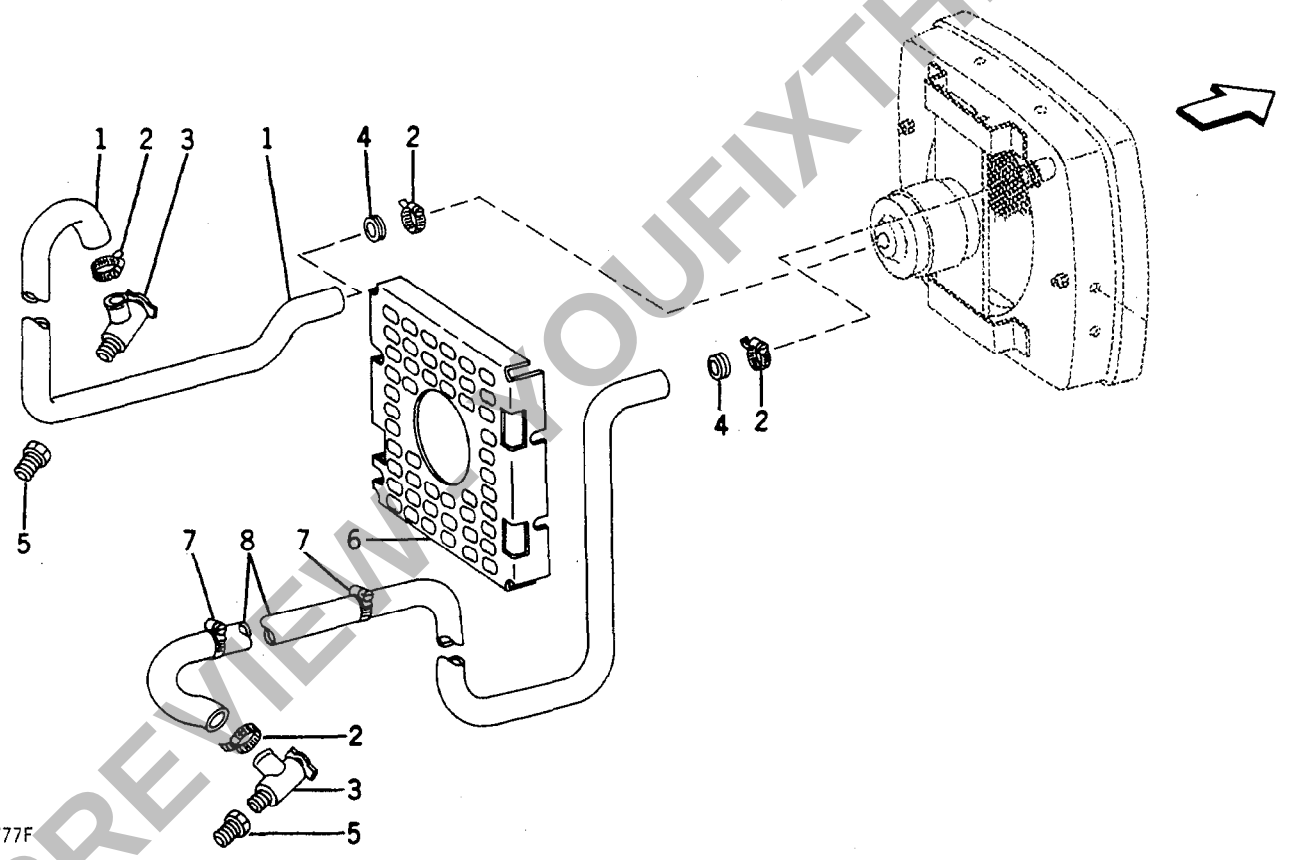
GENERAL INFORMATION

Two floor mounted cab heaters are available to increase operator comfort. The smaller floor mounted heater may be used when the unit is equipped with either the bench style or Personal Posture™ suspension seat. The large floor mounted heater may only be installed when unit is equipped with the Personal Posture™ suspension seat.

REMOVAL

Disconnect heater lead.

Close heater shut-off cocks on engine. Disconnect hoses (1 and 8, Fig. 1) from heater. Remove heater mounting hardware.



1—Inlet Hose
2—Clamps (4 used)
3—Heater Shut-off Cocks (2 used)
4—Grommet (2 used)
5—Pipe Bushing (2 used)
6—Fan Guard
7—Plastic Band (6 used)
8—Outlet Hose

Fig. 1-Small Heater Assembly

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Group 1921
GRILLE AND GRILLE HOUSING

REMOVAL

To remove grille housing:

Remove hood as directed in Section 19, Group 1910.

Remove cap screws (4, Fig. 1) and washers (3) and lower grille from the unit.

Remove grille.

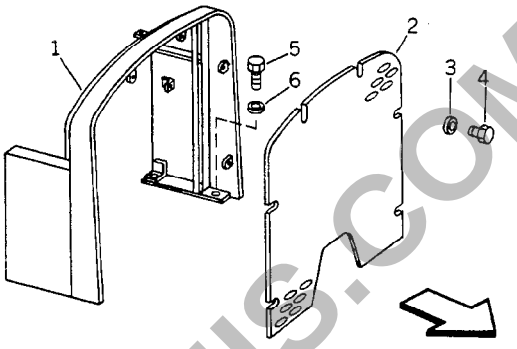
Attach chain hoist to grille housing. Tapped holes are provided on top surface for eye bolts.

Remove cap screws (5) and washers (6) attaching grille housing to engine frame.

Lift grille housing from the unit, moving housing forward to clear radiator and baffles.

REPAIR

Refer to Fig. 1 during disassembly and assembly. Replace parts as necessary.



T59184N

1—Grille Housing
2—Grille
3—Washer (6 used)
4—Cap Screw (6 used)
5—Cap Screw (4 used)
6—Washer (4 used)

Fig. 1-Grille and Grille Housing

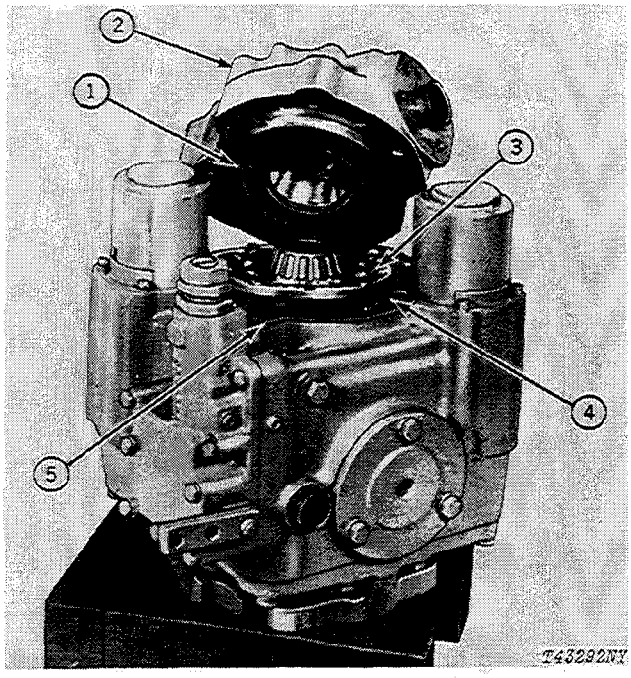
INSTALLATION

Use reverse of removal procedure to install grille and grille housing.

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1—Valve Plate
2—End Cap
3—Bearing Plate
4—Gasket
5—O-Ring

Fig. 65-Installing End Cap, Valve Plate, Bearing Plate, Gasket, and O-Ring

Install bearing plate (brass) (3, Fig. 65) and pilot on cylinder block. Dowel pin in block locates bearing plate. Coat all surfaces liberally with oil.

NOTE: Install pilot with bearing plate.

Coat valve plate (1) with a light coat of petroleum jelly between valve plate and end cap and install on end cap (2). Plate is located by dowel pin and outer race of rear bearing. Coat gasket (4) and O-ring (5) with petroleum jelly and install on pump housing.

IMPORTANT: Use extreme care when assembling plates to avoid dropping, marking or scratching plates, end of cylinder block, or face of end cap. If any of the above-mentioned parts are damaged, they will have to be replaced with new parts.

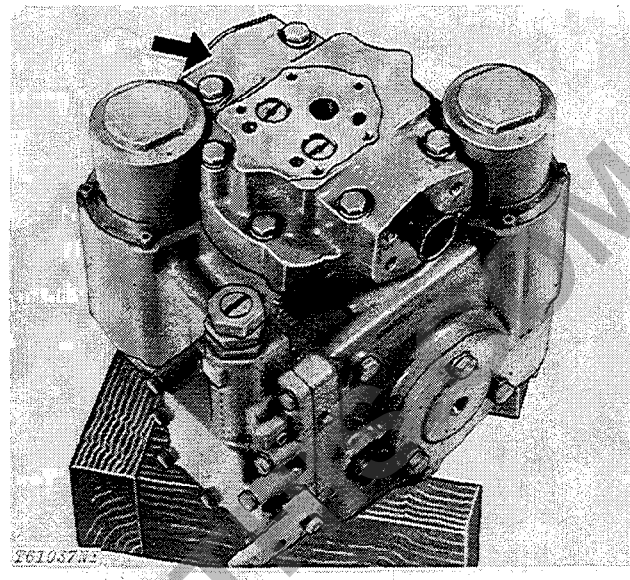


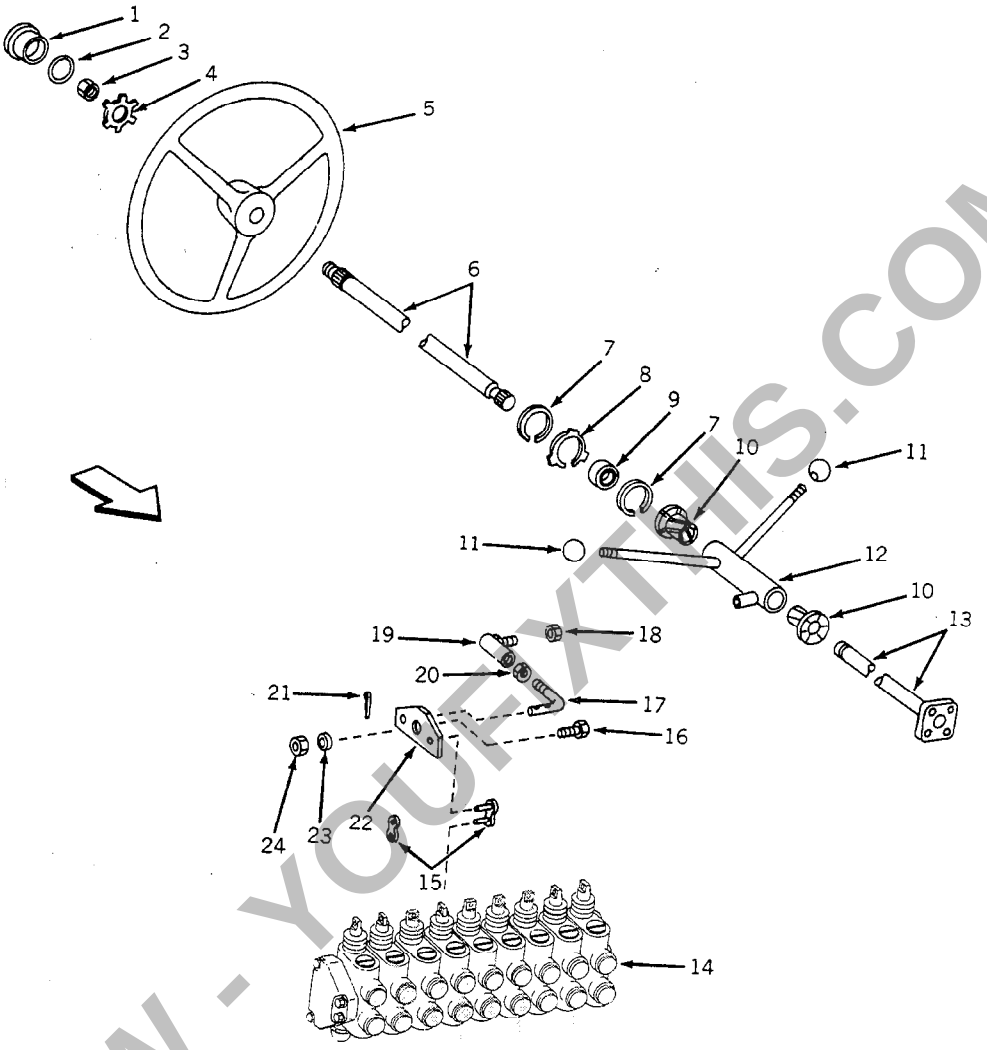
Fig. 66-End Cap Installed

Turn end cap over carefully and set on pump body (Fig. 66).

IMPORTANT: Do not let valve plate fall away from end cap. Tighten opposite bolts to be certain end cap sets properly. Tighten bolts to 36 to 38 lb-ft (49 to 52 N·m) (5.0 to 5.3 kg-m) torque.

Install both check valves and tighten to 35 to 40 lb-ft (47 to 54 N·m) (5 to 6 kg-m) torque.

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1—Steering Wheel Emblem
2—O-Ring
3—Special Nut
4—Lock Washer
5—Steering Wheel
6—Steering Shaft
7—Snap Ring
8—Retaining Ring
9—Bearing
10—Bushing (2 used)
11—Control Knob (2 used)
12—Rear Steering Control
13—Flange Assembly Tube
14—Main Control Valve
15—Coupler Link
16—Cap Screw
17—Rear Steer Rod
18—Special Washer
19—Ball Joint
20—Nut
21—Cotter Pin
22—Pivot Plate
23—Bushing
24—Nut

Fig. 4-Rear Steering Linkage

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Install new inner seal (10, Fig. 32) on piston (12). Install outer seal (16) over inner seal.

Install new wear rings (9) on piston.

Coat threads of piston rods with John Deere Medium Strength Loctite or its equivalent.

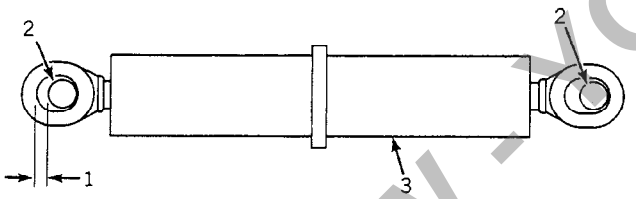
Screw piston rod (1) into piston (12). Align holes in piston rod and piston and install roll pin (11).

Slide piston rod with rod guide and piston assembly into barrel. Tighten rod guide with 250 to 300 lb-ft. (339 to 407 N·m) (35 to 42 kg-m). Tighten set screw with 40 lb-in. (4.5 N·m) (0.46 kg-m).

Slide piston rod (15, Fig. 32) with rod guide into barrel. Hold piston rod (1) and screw piston rod (15) into piston (12). Turn piston rod seventeen 360° turns into the piston. Tighten rod guide with 250 to 300 lb-ft (339 to 407 N·m) (35 to 42 kg-m). Tighten set screw with 40 lb-in (4.5 N·m) (0.46 kg-m).

NOTE: Allow two hours for Loctite to cure after assembling cylinder before using.

Installation



T37991N

1—Clearance between retaining pin and outside edge of piston rod pin hole (0.25 in. [6.9 mm])
2—Retaining Pins
3—Blade Side-Shift Cylinder

Fig. 34-Retaining Pins Installed in Cylinder

Install cylinder on blade and install retaining pins. One of the retaining pins should be tight against the outside edge of one of the piston rod pin holes and the other retaining pin should have a clearance of 0.25 in. (6.9 mm) between the hole and the outside edge of the piston rod pin hole. See Figure 34.

To obtain the proper clearance, remove cylinder and turn piston rod (15, Fig. 32) in or out as required.

NOTE: The clearance between the retaining pin and the outside edge of the piston rod pin hole is required to prevent piston rods from bending.

Drive unit ahead and raise circle to position lower blade shift retainers (5, Fig. 24) in place on lower side-shift rail on blade.

Install upper blade shift retainers (5) and shims. Remove blocking from blade.

Relieve pressure in hydraulic system by operating steering valve and brake valve with engine shut off.

Carefully remove caps from hoses to relieve any pressure.

Connect hoses to cylinder.

Operate the cylinders several times to remove air from the system. Add oil to bring it up to the proper level.

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