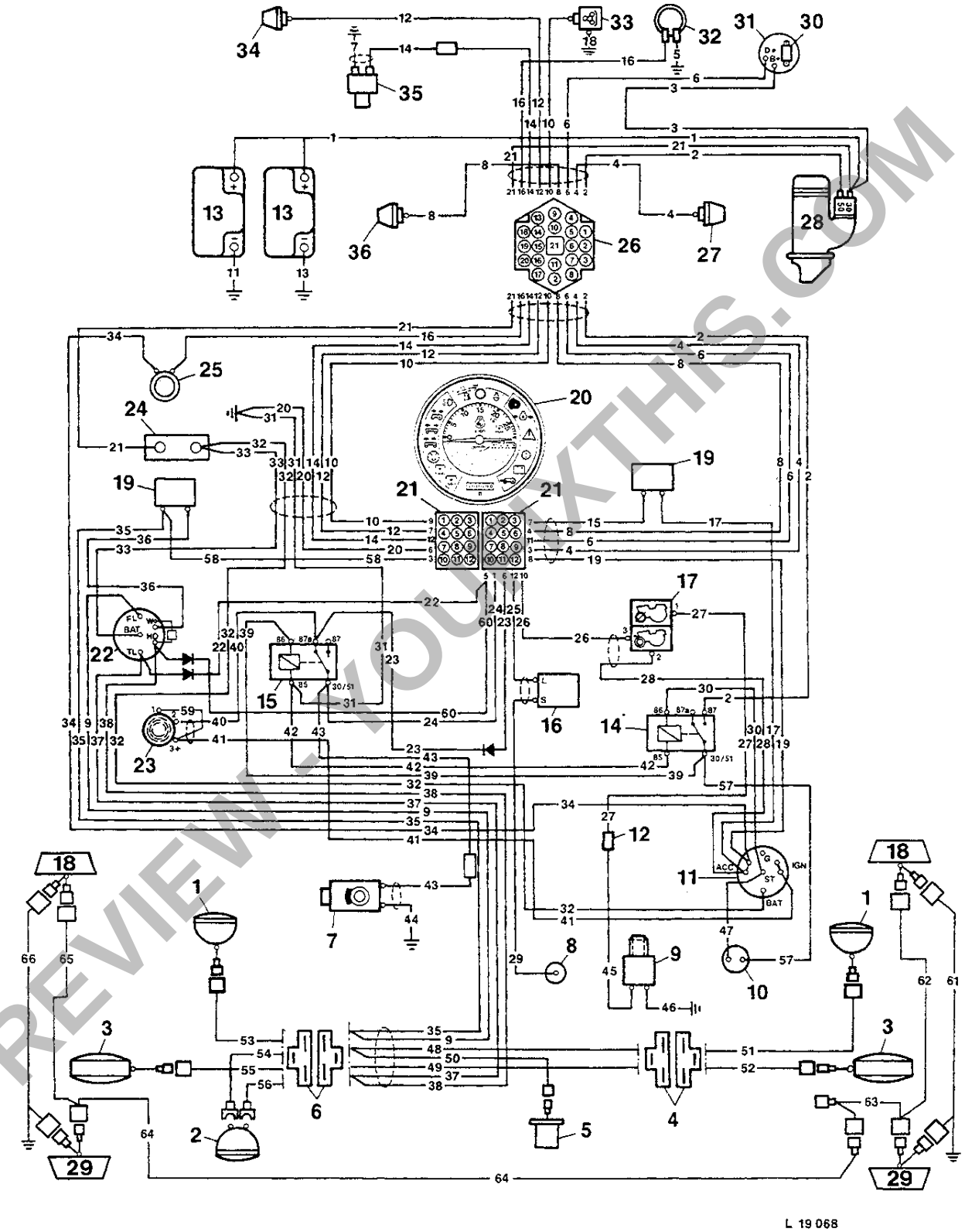


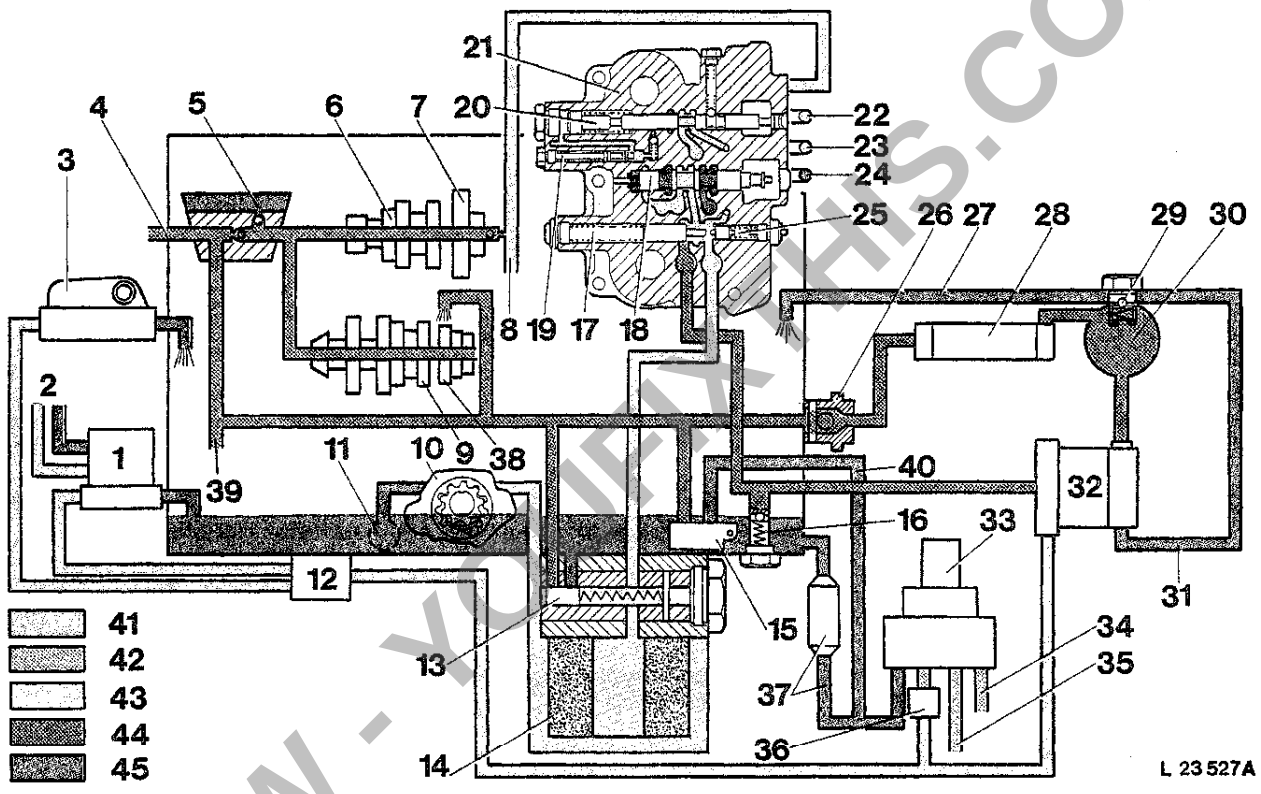
Fig. 1 - Wiring Diagram without Sound-Gard Body

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Group 05

Description, Diagnosing Malfunctions and Tests



1—Selective Control Valves
2—To Quick Couplers
3—Rockshaft
4—Lube Oil for Final Drives
5—Oil Manifold with Transmission Oil Cup
6—Countershaft
7—Hi-Lo Shift Unit
8—To Solenoid Spool of Mechanical Front Wheel Drive
9—Differtial Drive Shaft
10—Transmission Oil Pump
11—Intake Screen
12—Pressure Control Valve of Hydrostatic Steering
13—By-Pass Valve of Transmission Oil Filter
14—Transmission Oil Filter
15—Brake Valve
16—Surge Relief Valve
17—Pressure Regulating Valve
18—PTO Control Valve
19—Automatic Shift Valve
20—Hi-Lo Control Valve
21—Transmission Shift Cover
22—To Hi-Lo Disk Clutch
23—To PTO Clutch
24—To PTO Brake
25—Transmission Oil Pressure Warning Switch
26—Priority Lube Check Valve
27—Bleed and Leak-Off Line
28—Oil Cooler
29—Check Valve
30—Hydraulic Oil Auxiliary Reservoir
31—Leak-Off Line
32—Hydraulic Pump
33—Hydrostatic Steering
34—To Steering Cylinder (Left-Turn)
35—To Steering Cylinder (Right-Turn)
36—Pressure Reduction Valve
37—Oil Filter with Suction Line (Without Sound-Gard Body Only)
38—Range Shaft
39—To PTO Lubrication
40—Suction Line (With Sound Gard Body Only)
41—High Pressure
42—Medium Pressure Oil
43—Low Pressure Oil
44—Oil to Hydraulic Pump or Lubricating Oil
45—Pressure-Free Oil

Fig. 1 - Complete Hydraulic System (Tractor with Hi-Lo Shift Unit, Mechanical Front Wheel Drive, Independent PTO and Hydrostatic Steering)

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STANDARD TORQUES

RECOMMENDED TORQUES IN N·m, AND FT-LBS FOR UNC AND UNF CAP SCREWS				
Head marking (identifying strength)	 or 10.9*		 or 12.9**	
Thread-O.D. (in.)	**N·m**	**ft-lbs**	**N·m**	**ft-lbs**
1/4	15	10	20	15
5/16	30	20	40	30
3/8	50	35	70	50
7/16	80	55	110	80
1/2	120	85	170	120
9/16	180	130	240	175
5/8	230	170	320	240
3/4	400	300	580	425
7/8	600	445	930	685
1	910	670	1400	1030
1-1/8	1240	910	1980	1460
1-1/4	1700	1250	2800	2060

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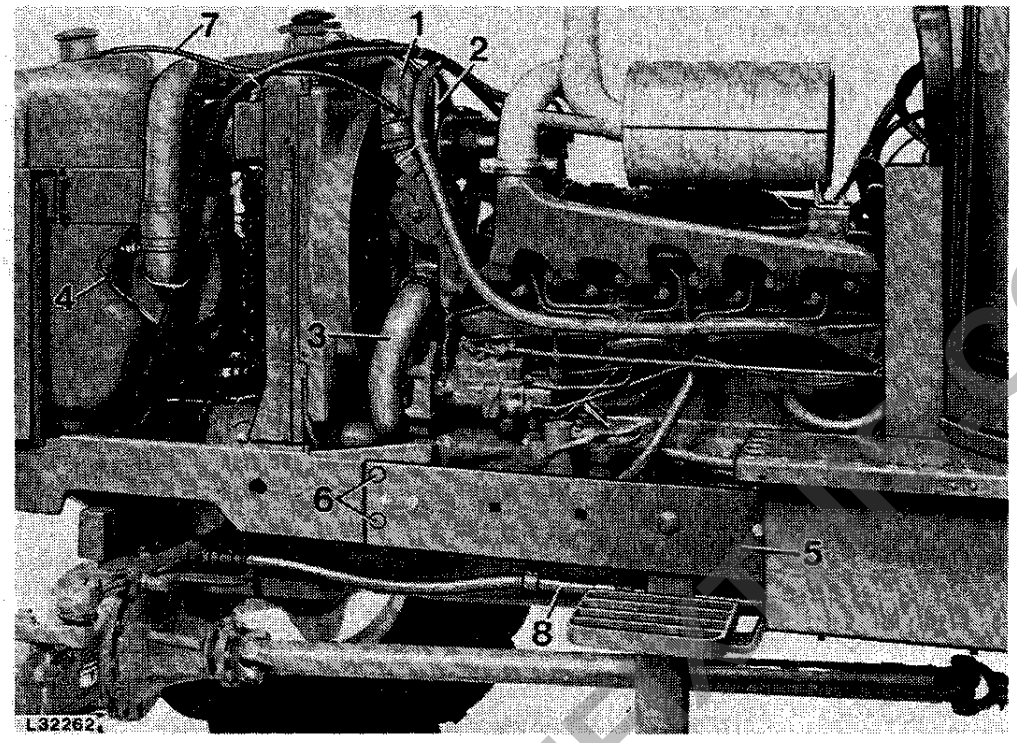
NOTE: A variation of ± 10% is permissible for all torques indicated in this chart.

Torque figures indicated above and in the Specification sections of this manual are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or cap screws unless otherwise specified in this manual.

* *Tempered steel high-strength bolts and cap screws*
** *Tempered steel extra high-strength bolts and cap screws*

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1—Upper Water Hose
2—Radiator Brace Rod
3—Lower Water Hose
4—Cable of Air Cleaner Restriction Warning Switch
5—Side Frame
6—Attaching Screws
7—Fuel Return Line
8—Hydrostatic Steering Pressure Line

Fig. 2 - Separating Between Tractor Front End and Engine - Left-Hand Side.

Removal

1. Disconnect ground straps from batteries. Remove front end weights (if equipped). Remove radiator cap, fuel tank cap, exhaust pipe and air precleaner (if equipped).

2. Remove radiator side grilles and hood. Reinstall radiator and fuel tank caps.

3. Remove front attaching screws (6, Fig. 2) of both side frames (5, Figs. 1 and 2).

4. Disconnect fuel return line (7, Fig. 2) at tank.

5. Disconnect cable (4, Fig. 1) of fuel gauge sending unit at tank.

6. Disconnect cable (4, Fig. 2) at air cleaner restriction warning switch.

7. Remove clamps attaching wiring harnesses and leak-off line to air intake line (2, Fig. 1) and disconnect air intake line (2) at intake manifold.

8. Disconnect leak-off and vent line (3) leading to transmission shift cover at hydraulic oil reservoir.

9. Remove radiator brace rod (2, Fig. 2).

10. Drain coolant and disconnect upper and lower water hoses (1 and 3, Fig. 2) at radiator.

11. Disconnect fuel inlet line (6, Fig. 1) at fuel transfer pump.

12. Disconnect hydraulic pump pressure line (7, Fig. 1) at connection (11). Disconnect inlet line (8) at connection (9) and return line (10) at connection (14). Remove two spacer clamps (13).

13. Disconnect pressure line (12, Fig. 1) and pressure line (8, Fig. 2) of hydrostatic steering at pressure hose connection.

IMPORTANT: Use plastic plugs to plug all hydraulic lines in order to prevent entry of dirt.

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DIAGNOSING MALFUNCTIONS

Engine Will Not Crank

Empty batteries

Bad battery connections

Defective main switch or start safety switch

Starter solenoid defective

Starter defective

Engine Hard to Start or Will Not Start

Loose or corroded battery connections

Low battery output

Excessive resistance in starter circuit

Too high viscosity crankcase oil

Water, dirt or air in fuel system

Fuel filter restricted

Stuck shut-off knob

Dirty or faulty fuel injection nozzles

Defective fuel injection pump

Defective fuel transfer pump

Fuel injection pump incorrectly timed

Engine Runs Irregularly or Stalls Frequently

Coolant temperature too low

Insufficient fuel supply

Fuel injection nozzles defective or leaking

Fuel filter or fuel lines restricted

Defective fuel transfer pump

Fuel injection pump incorrectly timed

Improper valve clearance

Cylinder head gasket leaking

Worn or broken compression rings

Valves stuck or burnt

Exhaust system restricted

Engine compression too low

Engine overheated

Defective fuel injection pump

Engine Misses

Water in fuel

Mixture of petrol and diesel fuel

Air in fuel system

Defective fuel injection nozzles

Defective fuel injection pump

Fuel injection nozzles improperly installed

Leaking fuel injection nozzle seals

Engine overheated

Lobes of camshaft worn

Weak valve springs

Worn or defective fuel transfer pump

Preignition

Fuel injection pump incorrectly timed

Engine compression too low

Improper valve clearance

Burnt, damaged or stuck valves

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Group 00
SPECIFICATIONS AND SPECIAL TOOLS

SPECIFICATIONS

Serial Numbers

The engine serial number is stamped into the plate located on the lower front right-hand side of the cylinder block.

NOTE: When ordering engine parts, quote all digits of serial number stamped on the plate

The plate showing the tractor serial number is located on the right-hand side of the front axle carrier.

NOTE: When ordering tractor service parts (excluding engine parts), quote all digits of serial number stamped on the plate.

A plate showing the tractor type, transmission serial number, cone point measurement etched into pinion face of differential drive shaft (as well as reduction of differential) is located on the right-hand side of the transmission case.

Model Numbers

The fuel injection pump, fuel injection nozzles, alternator, starting motor, hydrostatic steering valve and hydraulic pump have model numbers to facilitate identification of different makes of a given unit.

Engine

Number of cylinders		6
Cylinder liner bore		106.5 mm (4.19 in.)
Stroke		110 mm (4.33 in.)
Displacement		5883 cm³ (359 cu. in.)
Compression ratio		16.8:1
Maximum torque at 1400 rpm		320 N·m (236 ft-lb)
Firing order		1-5-3-6-2-4
Valve clearance (engine hot or cold)		
Intake valve	0.35 mm	(0.014 in.)
Exhaust Valve	0.45 mm	(0.018 in.)
Fast idle speed		2660 rpm
Slow idle speed		750 rpm
Rated engine speed		2500 rpm
Working speed range		1400 to 2500 rpm

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LUBRICATION AND SERVICE

Capacities

Engine crankcase		
Without filter change	11 L	(2.9 U.S. gal.)
With filter change	11.5 L	(3.0 U.S. gal.)
Transmission - Hydraulic system		
Initial filling	68 L	(18.0 U.S. gal.)
Oil change	60 L	(15.9 U.S. gal.)
Mechanical front wheel drive		
Front axle housing	6.5 L	(1.7 U.S. gal.)
Final drive housing, each	1.0 L	(0.3 U.S. gal.)

Service Intervals

Checking crankcase oil level	every 10 hours
Changing engine oil	every 100 hours
Changing engine oil filter	every 200 hours
Checking transmission/hydraulic system oil level	every 50 hours
Changing transmission/hydraulic system oil filter	every 500 hours
Changing transmission/hydraulic oil	every 1000 hours
Changing hydrostatic steering filter	every 1000 hours
Cleaning hydraulic pump strainer	every 1000 hours
Checking MFWD oil level	every 100 hours
MFWD oil change	every 1000 hours
Cleaning and packing front wheel bearings	every 1000 hours
Lubricating grease fittings	
Front axle and front axle bearings	every 50 hours
Rear axle bearings	every 500 hours
in wet and muddy conditions	every 10 hours
Three-point hitch	every 200 hours

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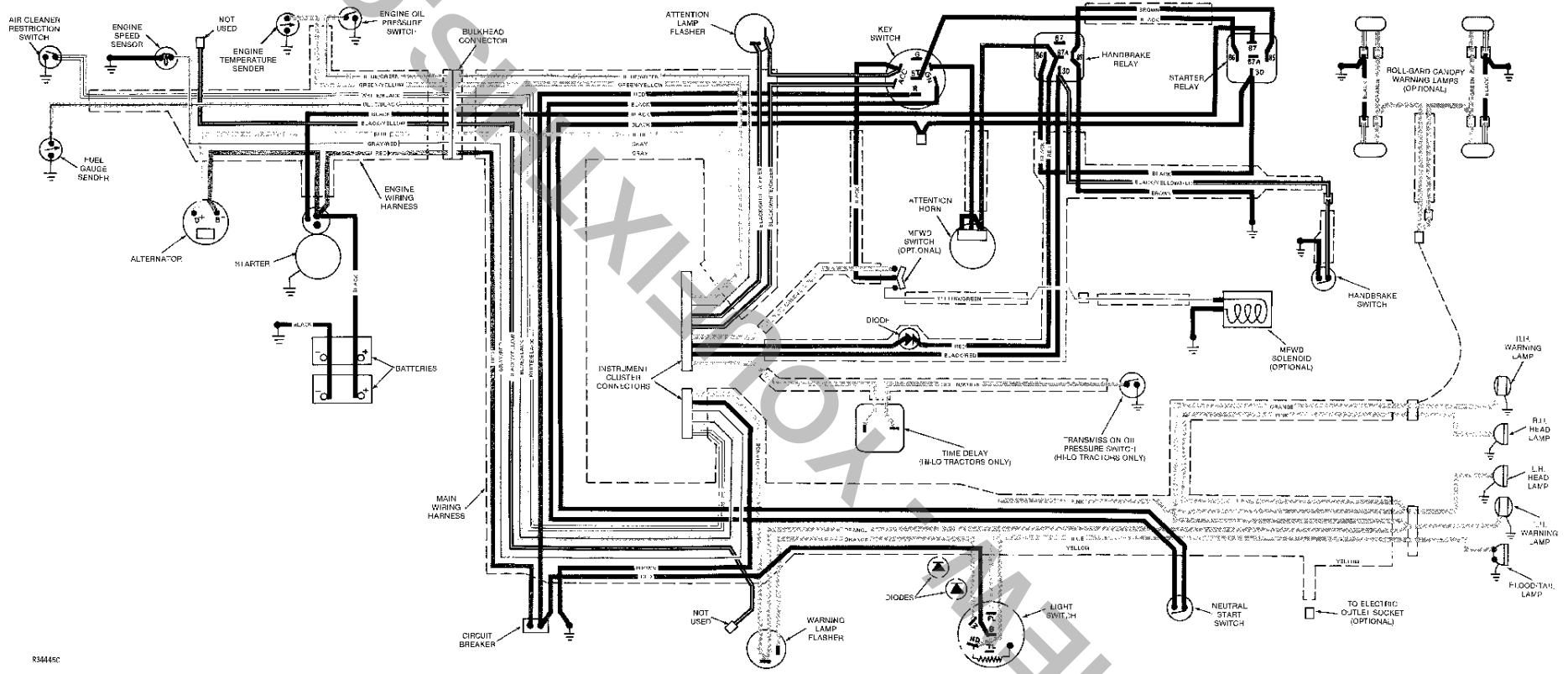


Fig. 2 Wiring Diagram

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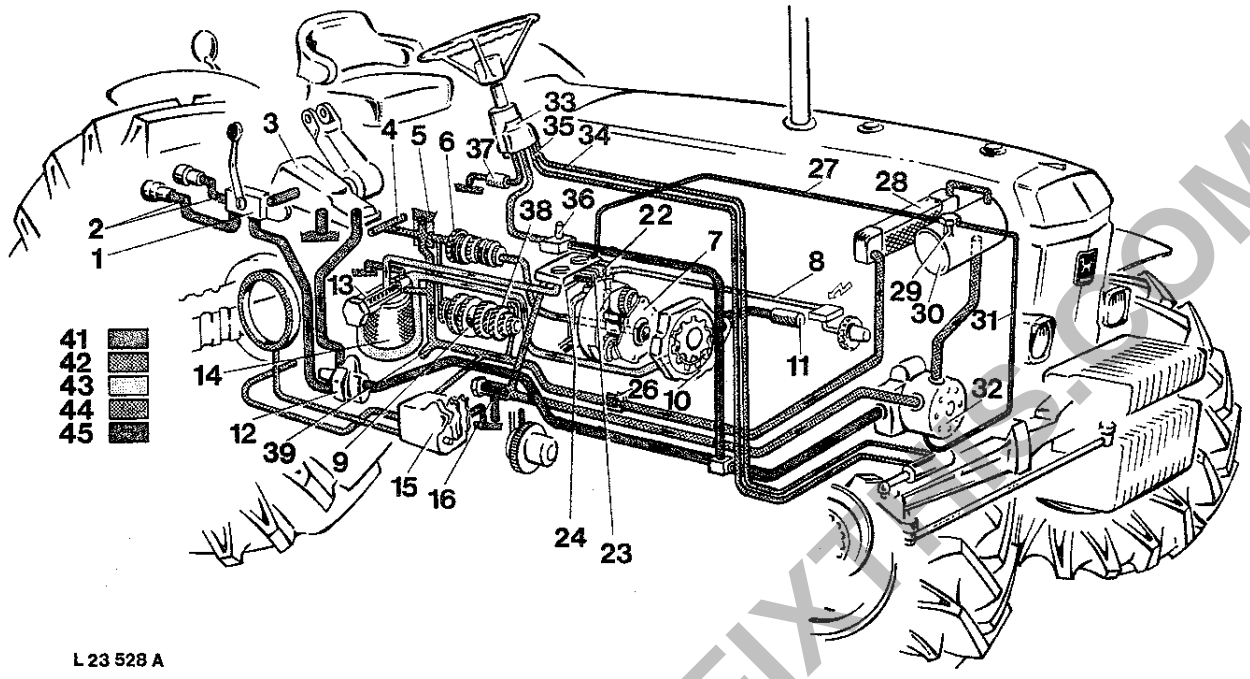


Fig. 2 - Complete Hydraulic System (Tractor with Hi-Lo Shift Unit, Mechanical Front Wheel Drive, Independent PTO and Hydrostatic Steering)

See Fig. 1 for Legend

DESCRIPTION

The hydraulic system of the tractor includes main oil reservoir (transmission case), hydraulic pump, transmission oil pump, various valves, oil lines, filter, hydrostatic steering with pressure control valve, hydraulic oil auxiliary reservoir, oil cooler, Hi-Lo shift unit*, independent PTO, rockshaft and one or more selective control valves*.

The hydraulic system (see Figs. 1 and 2) is a closed-center, constant pressure type system.

"Closed-center system" means that no oil flows through hydraulic unit control valves when the latter are in neutral position.

"Constant pressure" means that high pressure is constantly maintained in the hydraulic system while engine and hydraulic pump are operating, as long as none of the hydraulic units requires oil.

For a detailed explanation of operation and repair of hydrostatic steering and hydraulic brakes, see section 60.

*If equipped

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RECOMMENDED TORQUES IN N·m, AND FT-LBS FOR METRIC CAP SCREWS						
Head marking (identifying strength)	8.8*		10.9**		12.9***	
Thread-O.D. (mm)	N·m	ft-lbs	N·m	ft-lbs	N·m	ft-lbs
M5	7	5	9	6.5	10	8.5
M6	10	8.5	15	10	20	15
M8	30	20	40	30	40	30
M10	50	35	80	60	90	70
M12	100	75	140	100	160	120
M14	160	120	210	155	260	190
M16	240	175	350	260	400	300
M20	480	355	650	480	780	575
M24	820	605	1150	850	1350	995
M30	1640	1210	2250	1660	2700	1990
M36	2850	2110	4000	2950	4700	3465

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NOTE: A variation of ± 10% is permissible for all torques indicated in this chart.

Torque figures indicated above and in the Specification sections of this manual are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or cap screws unless otherwise specified in this manual.

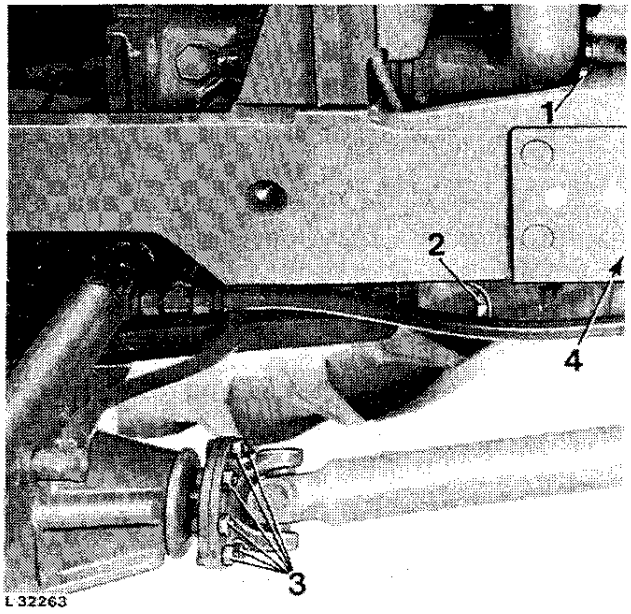
* *Regular bolts and cap screws*
** *Tempered steel high-strength bolts and cap screws*
*** *Tempered steel extra high-strength bolts and cap screws*

RECOMMENDED TORQUES IN N·m, AND FT-LBS FOR PIPE AND HOSE CONNECTIONS				
	with O-rings		with cone	
Thread size	N·m	ft-lbs	N·m	ft-lbs
3/8-24 UNF	7.5	5.5	8	6
7/16-20 UNF	10	7	12	9
1/2-20 UNF	12	9	15	11
9/16-18 UNF	15	11	25	18
3/4-16 UNF	25	20	45	35
7/8-14 UNF	40	30	60	45
1-1/16-12 UNC	60	45	100	75
1-3/16-12 UNC	70	50	120	90
1-5/16-12 UNC	80	60	140	105
1-5/8-12 UNC	110	80	190	140
1-7/8-12 UNC	150	110	220	160

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1—Cap Screw (4 used)
2—Cap Screw (2 used)
3—Cap Screws (8 used)
4—Cap Screws (2 used)

Fig. 3 - Attaching Points of Tractor Front End

14. *On tractors with MFWD,* remove cap screws (3, Fig. 3) and disconnect flange of jointed shaft at front axle drive hub.

15. *On tractors with air conditioning,* loosen lateral condenser attaching screws and pull out condenser from one side.

16. Securely support rear of tractor under clutch housing.

17. Insert wooden blocks between front axle and front support to prevent the latter from tipping sideways. Attach front of tractor to a suitable hoist.

18. Remove cap screws (1, 2 and 4, Fig. 3) of front support and separate front end from engine.

CAUTION: Take measures to prevent front of tractor from tipping to the front. If tank contains too much fuel, drain it or safely support front of tractor.

Installation

1. Make sure that pump drive carrier is installed correctly in rear coupler.

2. Move front of tractor toward engine.

3. Engage pump shaft in hydraulic pump drive shaft.

Connect pressure line (7, Fig. 1) and inlet line (8) of hydraulic pump and attach return line (10) to connection (14).

4. Attach front of tractor to engine by means of four cap screws (1, Fig. 3) and torque to 230 N·m (170 ft-lbs).

NOTE: Make sure engine crankcase is flush against clutch housing. Attach crankcase to clutch housing, tightening cap screws to 230 N·m (170 ft-lbs) torque.

5. Eliminate gap between front support and crankcase by means of shims and attach front support to crankcase, tightening both cap screws (2, Fig. 3) to 400 N·m (300 ft-lbs) torque.

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Lack of Engine Power

Air cleaner restricted or dirty

Excessive resistance in air intake system

Fuel filter restricted

Defective fuel transfer pump

Defective fuel injection pump

Defective fuel injection nozzles

Improper crankcase oil

Engine overheated

Engine clutch slipping

Defective cylinder head gasket

Lobes of camshaft worn

Improper valve clearance

Improper valve timing*

Burnt, damaged or stuck valves*

Weak valve springs*

Fuel injection pump incorrectly timed

Piston rings and cylinder liners excessively worn*

Engine compression too low*

Improper coolant temperature

Engine Overheats

Lack of coolant in cooling system

Radiator core and/or side screens dirty

Loose or defective fan belt

Defective thermostat(s)

Cooling system limed up

Engine overloaded

Fuel injection pump delivers too much fuel

Damaged cylinder head gasket

Fuel injection pump incorrectly timed

Defective water pump

Too low crankcase oil level

Defective radiator cap

High Oil Consumption

Oil control rings worn or broken

Scored cylinder liners or pistons

Excessive resistance in air intake system

Oil flow through oil passages restricted

Worn valve guides or stems

Too low viscosity crankcase oil

Excessive oil pressure

Piston ring grooves excessively worn

Piston rings sticking in ring grooves

Insufficient piston ring tension

Piston ring gaps not staggered

Excessive main or connecting rod bearing clearance

Crankcase oil level too high

External oil leaks

Front and/or rear crankshaft oil seal faulty

Glazed cylinder liners (insufficient load during engine break-in)

* *Measure blow-by at crankcase vent tube or carry out cylinder compression test. See Section 10, Group 15.*

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PTO* Horsepower at engine rated speed—2500 rpm ..... 60 kW (80 HP)

Lubrication system ..... Full internal force feed system with full flow filter

Engine Clutch ..... Single dry disk clutch with torsion damper, foot-operated

Cooling System

Type ..... Pressurized system with centrifugal pump

Temperature regulation ..... Two thermostats

Fuel System

Type ..... Direct injection

Fuel injection pump timing to engine ..... TDC

Fuel injection pump type ..... Distributor type

Air cleaner ..... Dry-type air cleaner with secondary (safety) element

Electrical System

Batteries ..... 2 x 12 volts, 88 Ah

Alternator with internal regulator ..... 14 volts, 33 or 55 amps.

Starting motor ..... 12 volts (3 kW) (4 HP)

Battery terminal grounded ..... Negative

Synchronized Transmission

Type ..... Synchronized transmission

Gear selections ..... 8 forward and 4 reverse

Gear shifting ..... Two forward groups and one reverse group Synchronized forward and reverse shifting within groups

Hi-Lo Shift Unit

Type ..... Hydraulic gear reduction unit which can be shifted under load with "wet" multiple disk clutch and brake packs

Travel speed decreases in each gear by ..... Approx. 20 percent

Shifting to reduced (Low) speed ..... Preloaded cup springs

Shifting to normal (High) speed ..... Hydraulic

** With the engine run in (above 100 hours of operation) and having reached operating temperature (engine and transmission); measured by means of a dynamometer. Permissible variation ± 5 percent.*

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John Deere High Temperature EP multipurpose Grease is recommended for all grease fittings. If other greases are used, use:

—SAE EP Multipurpose Grease

At temperatures below -30°C (-22°F) use Arctic Grease (MIL-G-10924 C).

Grease must be free of dust and other contamination.

Grease the tractor only when the engine is not running!

Clean grease fittings prior to greasing!

STORING LUBRICANTS

The tractor can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture, and other contamination.

GENERAL INFORMATION

Carefully written and illustrated instructions are included in the tractor operator's manual. Remind your customer to follow the recommendations in these instructions.

For your convenience when servicing the tractor, the following chart shows capacities for the various components.

Component	Capacity	Service Interval
Engine crankcase	Without filter change: 11 liters (2.9 U.S. gal.) With filter change: 11.5 liters (3.0 U.S. gal.)	Every 10 operating hours: check oil level Every 100 operating hours: oil change Every 200 operating hours: filter change*
Transmission/hydraulic system (including oil reservoir and oil cooler)	Dry system: 68.0 liters (18.00 U.S. gal.) Oil change: 60.0 liters (15.9 U.S. gal.)	Every 50 operating hours: check oil level Every 500 operating hours: filter change** Every 1000 operating hours: oil change Every 1000 operating hours: Change hydrostatic steering filter Every 1000 operating hours: Clean hydraulic pump stroke control valve filter
Mechanical front wheel drive	Axle housing: 6.5 liters (1.7 U.S. gal.) Final drives: 1.0 liters (0.3 U.S. gal.) each	Every 100 operating hours: check oil level Every 1000 operating hours: oil change***
Hydraulic operated clutch (tractors with Sound Gard Body)	500 cm^3 (17.5 fl.oz.)	Change brake fluid every year

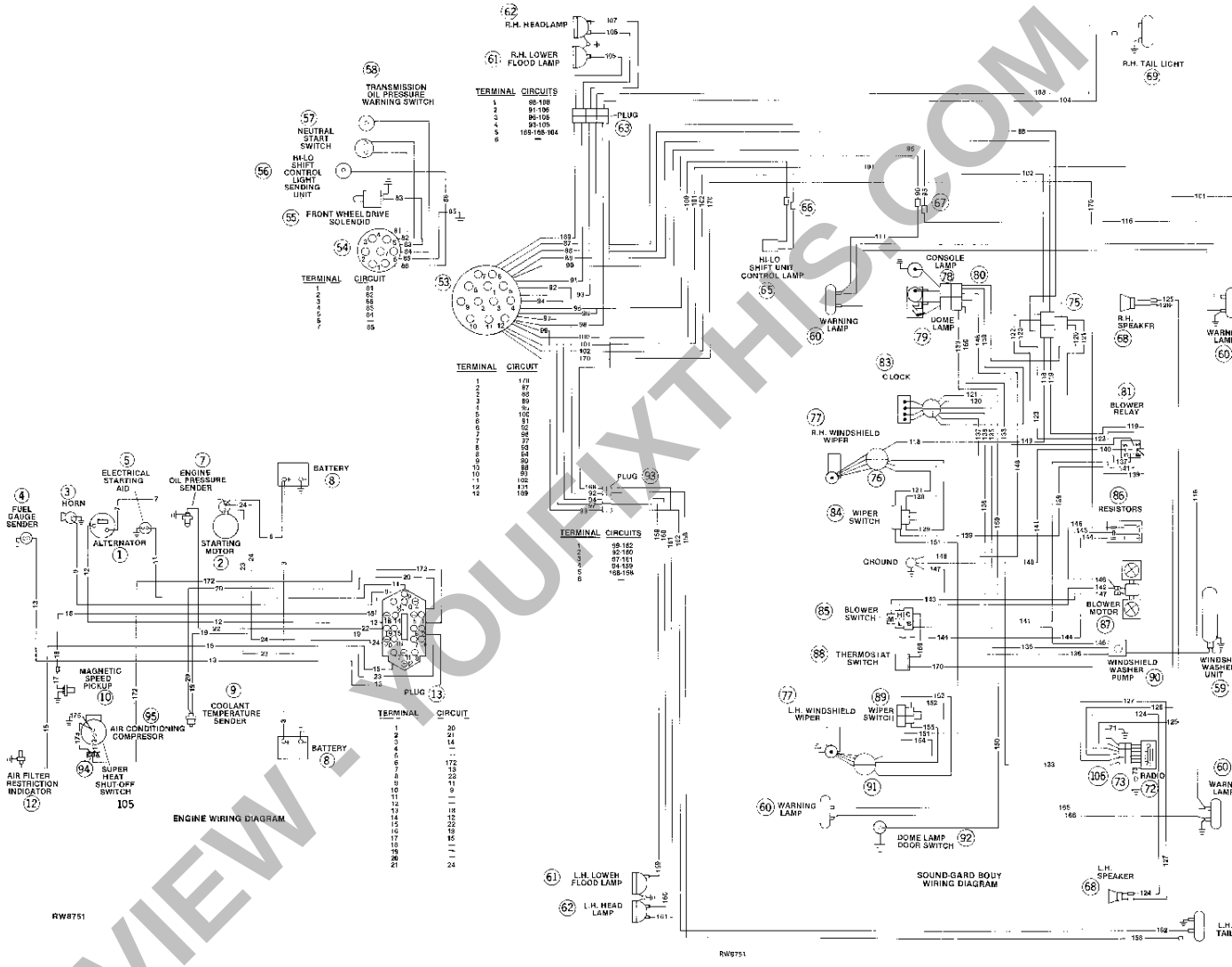
** Replace crankcase filter element after the first 100 and 200 hours of operation. Thereafter replace filter element after every 200 hours of operation.*

*** Replace transmission/hydraulic filter element after the first 50 hours of operation, after the first 500 and thereafter every 500 hours of operation.*

**** On tractors with MFWD, first oil change after 100 hours of operation. Thereafter every 1000 hours of operation.*

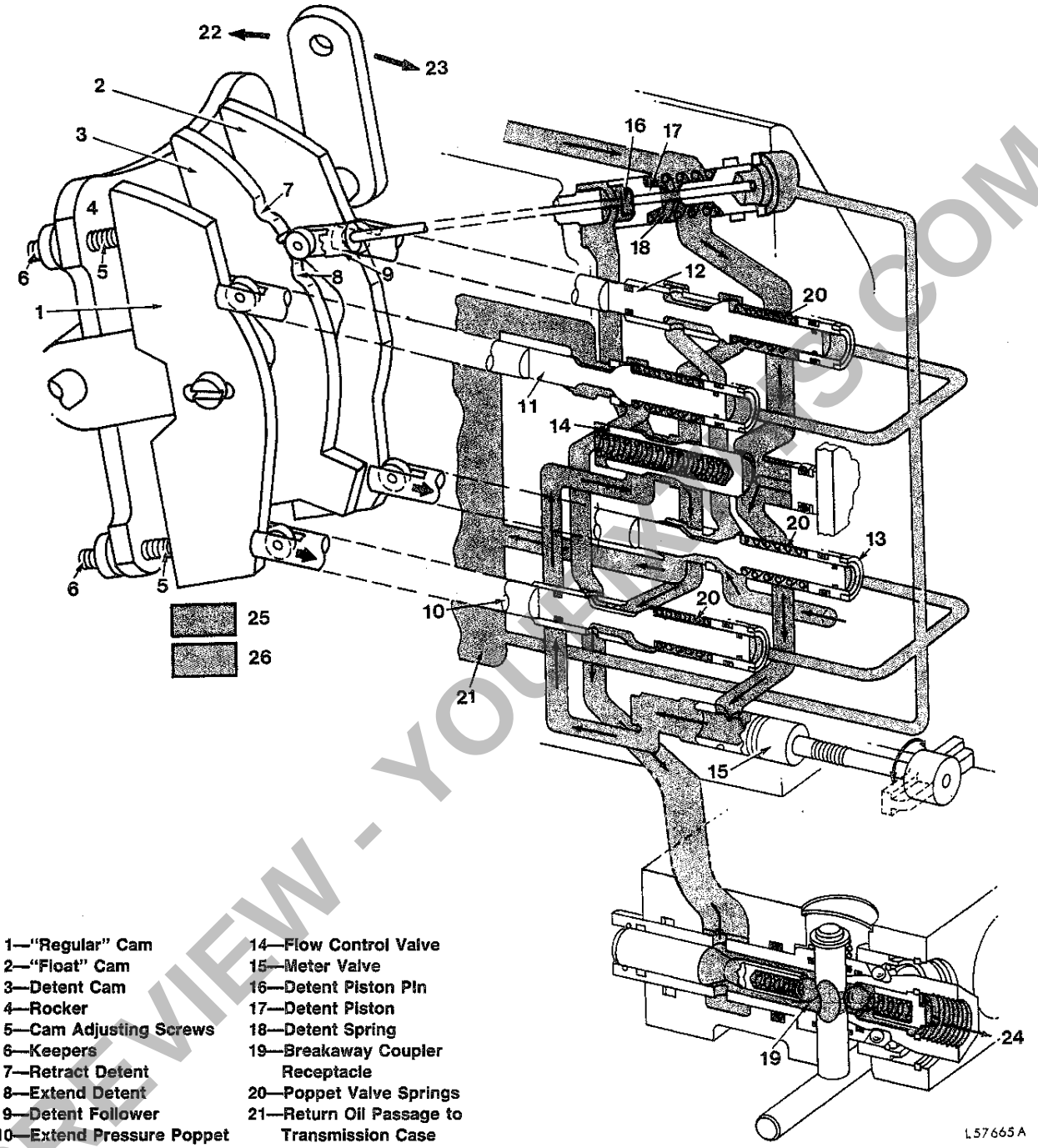
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1—"Regular" Cam
2—"Float" Cam
3—Detent Cam
4—Rocker
5—Cam Adjusting Screws
6—Keepers
7—Retract Detent
8—Extend Detent
9—Detent Follower
10—Extend Pressure Poppet Valve
11—Retract Return Poppet Valve
12—Retract Pressure Poppet Valve
13—Extend Return Poppet Valve
14—Flow Control Valve
15—Meter Valve
16—Detent Piston Pin
17—Detent Piston
18—Detent Spring
19—Breakaway Coupler Receptacle
20—Poppet Valve Springs
21—Return Oil Passage to Transmission Case
22—Extend
23—Retract
24—To Piston Side of Remote Cylinder
25—Pressure Oil
26—Return Oil

Fig. 1 - Selective Control Valve Oil Flow - Slow Extend Position

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6. Tighten both engine to front axle carrier cap screws (4, Fig. 3) to 230 N·m (170 ft-lb) torque.

7. *On tractors with MFWD,* torque cap screws attaching jointed shaft flange to front axle drive hub to 70 N·m (50 ft-lbs).

8. Connect hydrostatic steering pressure hoses to corresponding pressure lines (12, Fig. 1) and (8, Fig. 2).

9. Connect fuel return line to tank.

10. Connect fuel inlet line to fuel transfer pump.

11. Connect cables (4, Figs. 1 and 2) to fuel gauge sending unit and air cleaner restriction warning switch.

12. Attach radiator brace rod (2, Fig. 2) to engine.

13. *On tractors with air conditioning,* place condenser into mounting bracket in front of radiator and attach.

14. Attach water hoses (1 and 3, Fig. 2) to radiator.

15. Connect leak-off and vent line (3, Fig. 1) to hydraulic oil reservoir. Install spacers and clamps of hydraulic lines.

16. Attach air intake line (2) to air intake manifold.

17. Install hood and radiator side grilles.

18. Fill radiator with clear soft water, adding an antifreeze-rust inhibitor mixture (see Operator's Manual) and top up transmission oil.

19. Connect ground straps to batteries.

IMPORTANT: Always connect ground straps to negative (—) pole of batteries.

20. Start engine and check fuel lines, hydraulic lines and water hoses for leaks.

CAUTION: Escaping hydraulic oil under pressure can have sufficient force to penetrate the skin, causing serious injury. Before disconnecting lines, be sure to relieve pressure. Before applying pressure, be sure connections are tight and lines, pipes and hoses are not damaged. Use a piece of cardboard or wood, rather than your hands, to search for leaks. If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.

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2940 TRACTOR TECHNICAL MANUAL TM-1220 (MAY-82)

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CAUTION: For safety reasons, do not subject refrigerant containers to temperatures above 52°C (125°F).

3. DO NOT WELD OR SOLDER NEAR OR ON AIR CONDITIONING SYSTEM. Refrigerant coming into contact with an open flame or very hot metal will produce phosgene gas which is poisonous and can make a person very sick when inhaled.

Heat produced during the welding process may cause system components to explode.

CAUTION: Refrigerant subjected to an open flame will result in phosgene gas which may be deadly. Inhaling the gas a little at a time can be cumulative, resulting in a toxic condition.

A well-venttilated area with good circulation is the only safe working area.

4. NEVER CLEAN AIR CONDITIONING COMPONENTS WITH STEAM OR COMPRESSED AIR. Liquid condensing inside system components may cause serious damage.

5. DO NOT DISCHARGE REFRIGERANT INTO AN ENCLOSED AREA. Refrigerant gas is heavier than air; danger of asphyxiation, especially in work shop pits. When repairing air conditioning system, pay particular attention to leaks which will allow the refrigerant gas to enter the cab. Make sure cab and working area are well ventilated.

6. DO NOT HANDLE REFRIGERANT WITHOUT SUITABLE SAFETY EQUIPMENT.

CAUTION: When handling refrigerant, always wear safety glasses and leather gloves, otherwise serious personal injury may result since refrigerant has a low boiling point (-30°C; -22°F). If refrigerant strikes the eye, the eyeball may be frozen. Freezing the eye can cause blindness.

If refrigerant should strike the eye, follow these instructions:

6.1 Do not rub the eye.

6.2 Rise eye with cold water; preferably use a 1% boric acid solution. This will raise the temperature.

6.3 Protect affected eye against entry of dirt.

6.4 Wash affected parts of the body with water, or preferably with a solution consisting of one part essence of vinegar and five parts water.

6.5 See a doctor immediately.

7. Always wear safety gloves when charging system.

Do not add anyting but pure refrigerant and refrigerant oil into the system.

CAUTION: Frost will form on the outside of refrigerant containers when they are wet, causing the hand to be frozen to the container. This can occur when using warm water to heat the container. If this happens, wet the container and your hand will thaw and be released.

WHEN EVACUATING OR DISCHARGING SYSTEM, DISCHARE REFRIGERANT SLOWLY. Refrigerant has a great affinity for oil and carries approximately 8% of the oil in the system with it. Rapid discharging or evacuating will carry an excess amount of the oil out with the refrigerant.

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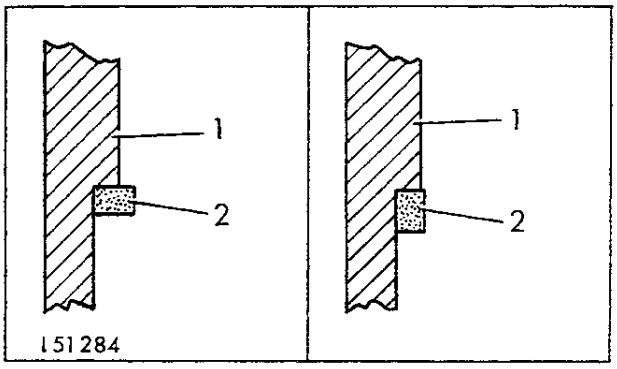
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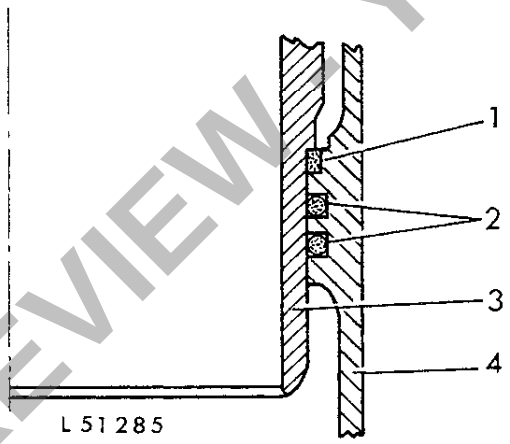
Improper Installation *Proper Installation*

1—Cylinder Liner
2—Packing

Fig. 20 - Installing Rectangular-Section Packing

9. Apply lubricating soap to two new O-rings (2, Fig. 21) and install in grooves of cylinder block.

NOTE: See enclosed installation instructions for sequence of installing new O-rings. Do not twist O-rings.



1—Rectangular Section Packing
2—O-Rings
3—Cylinder Liner
4—Cylinder Block

Fig. 21 - Lower Liner Sealing

NOTE: Before installing liner, make sure O-rings are properly seated in cylinder block grooves. If part of an O-ring projects into bore for liner, the O-ring could be pressed onto groove edge, thus getting damaged without the serviceman noticing it.

10. Slide liner together with shim into its bore in cylinder block. Observe the mark applied during disassembly to identify the liner and its corresponding bore cylinder block. Install liner using wood block (see Fig. 18).

IMPORTANT: Do not compress packing at this stage.

11. Measure protrusion and record. Subtract dimension (with shim, without packing) measured before from amount of protrusion. The difference indicates how much the liner packing will be compressed. The minimum is 0.13 mm (0.005 in.).

12. If this dimension is not attained, the check must be repeated with another cylinder liner.

13. If the minimum dimension can still not be attained, replace the cylinder block. Never use more than one shim between liner and cylinder block.

14. Install all cylinder liners in cylinder block and secure by means of large washers and cap screws.

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On Tractors with Sound-Gard Body

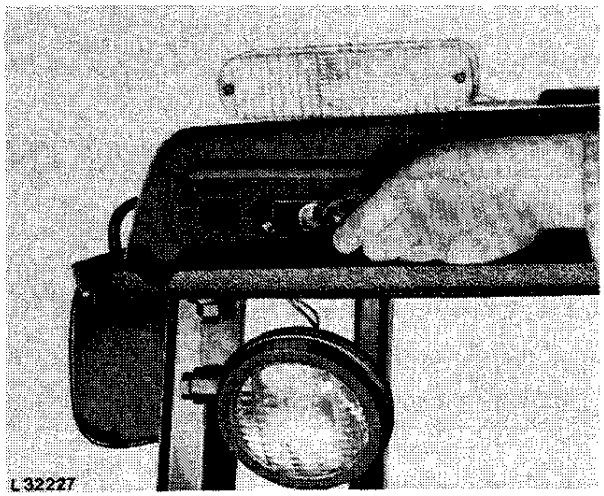


Fig. 11 - Replacing Hazard Warning Light Bulb

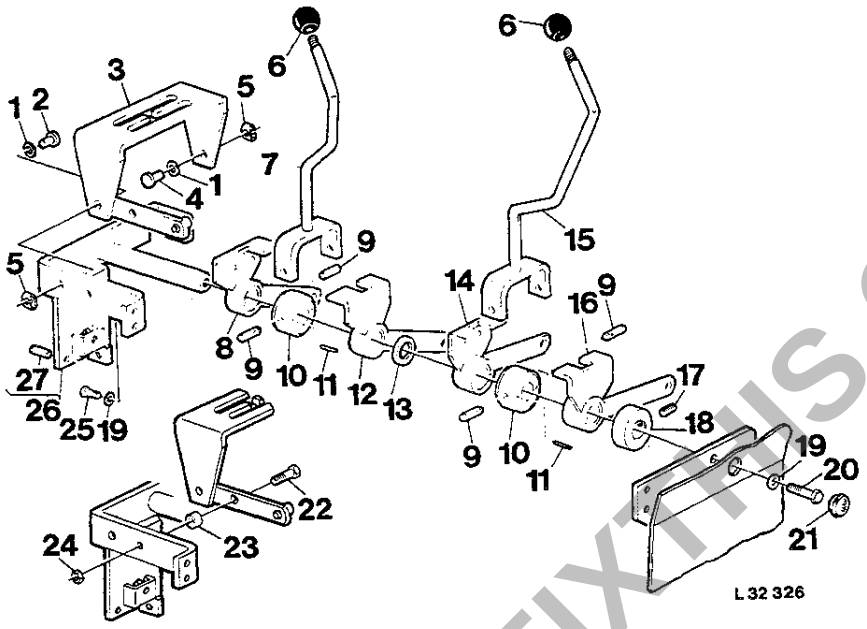
1. Unscrew both Phillips screws and remove hazard warning light glass.

2. Slightly push in bulb and turn to the left. Remove bulb.

3. Push in new bulb while turning to the right.

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1—Washer
2—Flanged Pin
3—Shift Console
4—Flanged Pin
5—Clip
6—Gear Lever Knob
7—Gear Shift Lever
8—Shift Lever
9—Pin
10—Bushing
11—Spring Pin (4 used)
12—Shift Lever
13—Washer
14—Shift Lever
15—Range Shift Lever
16—Shift Lever
17—Grub Screw
18—Locating Ring
19—Washer
20—Cap Screw
21—Cap
22—Cap Screw*
23—Bushing*
24—Hex. Nut*
25—Cap Screw
26—Bracket
27—Pin

* On tractors not equipped with Hi-Lo shift unit

Fig. 2 - Transmission Shift Lever Assembly, Exploded View (Console Shift)

5. Remove cap (21, Fig. 2) and remove cap screw (20).

6. Lift shift console (3) upward and remove.

7. Disconnect throttle connecting rod at hand throttle lever.

8. Disconnect connecting rods (4, 5, 6 and 7, Fig. 3) at shift levers.

9. Unhook Hi-Lo connecting rod at lever of shift console (3, Fig. 2).

10. Remove both cap screws (25, Fig. 2) and lift out complete shift lever assembly.

11. Slacken grub screw (17) and remove locating ring (18).

12. *On tractors not equipped with Hi-Lo shift unit:* Remove cap screw (22), hex. nut (24) and bushing (23).

13. Remove all parts from shaft of bracket (26).

14. Disconnect connecting rods (4, 5, 6 and 7, Fig. 3) at shifter shafts and remove.

15. Disconnect throttle connecting rod and Hi-Lo connecting rod at hand throttle lever and Hi-Lo shift lever.

16. Separate tractor between clutch housing and transmission case, see Section 10, Group 20.

17. Remove rockshaft, see Section 10, Group 20.

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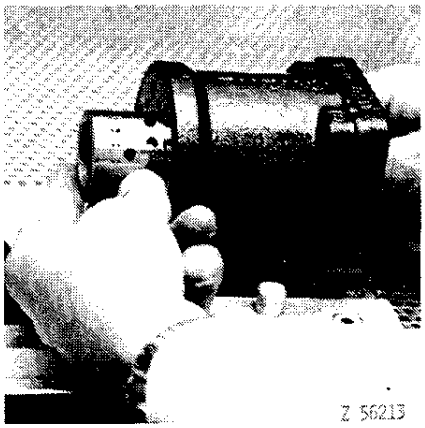


Fig. 21 - Removing Valve Spool and Sleeve

10. Remove retaining ring (18) with bearing race (19), needle bearing (20) and bearing race (21) from rotary valve assembly.

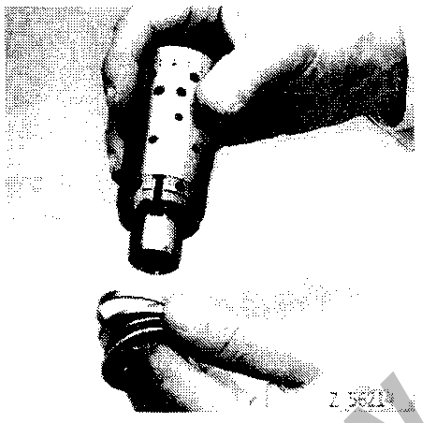


Fig. 22 - Removing Needle Bearing with Bearing Races and Retaining Ring

11. By means of special cap screw with roll pin (4) press cross pin (17) out of rotary valve assembly.

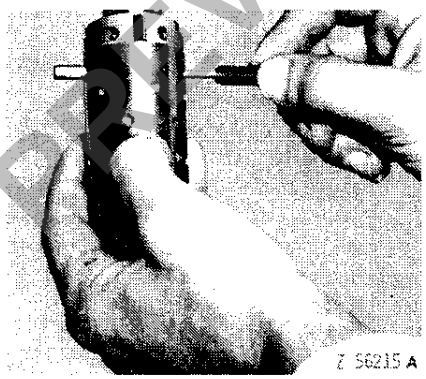


Fig. 23 - Removing Cross Pin

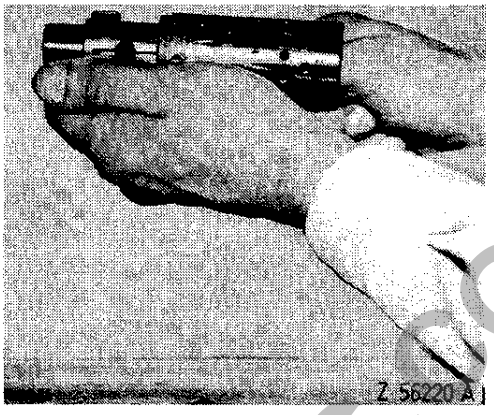


Fig. 24 - Pressing Out Valve Spool

12. Carefully press valve spool out of sleeve.

IMPORTANT: This will release pressure on leaf springs.



Fig. 25 - Valve Spool and Sleeve Separated

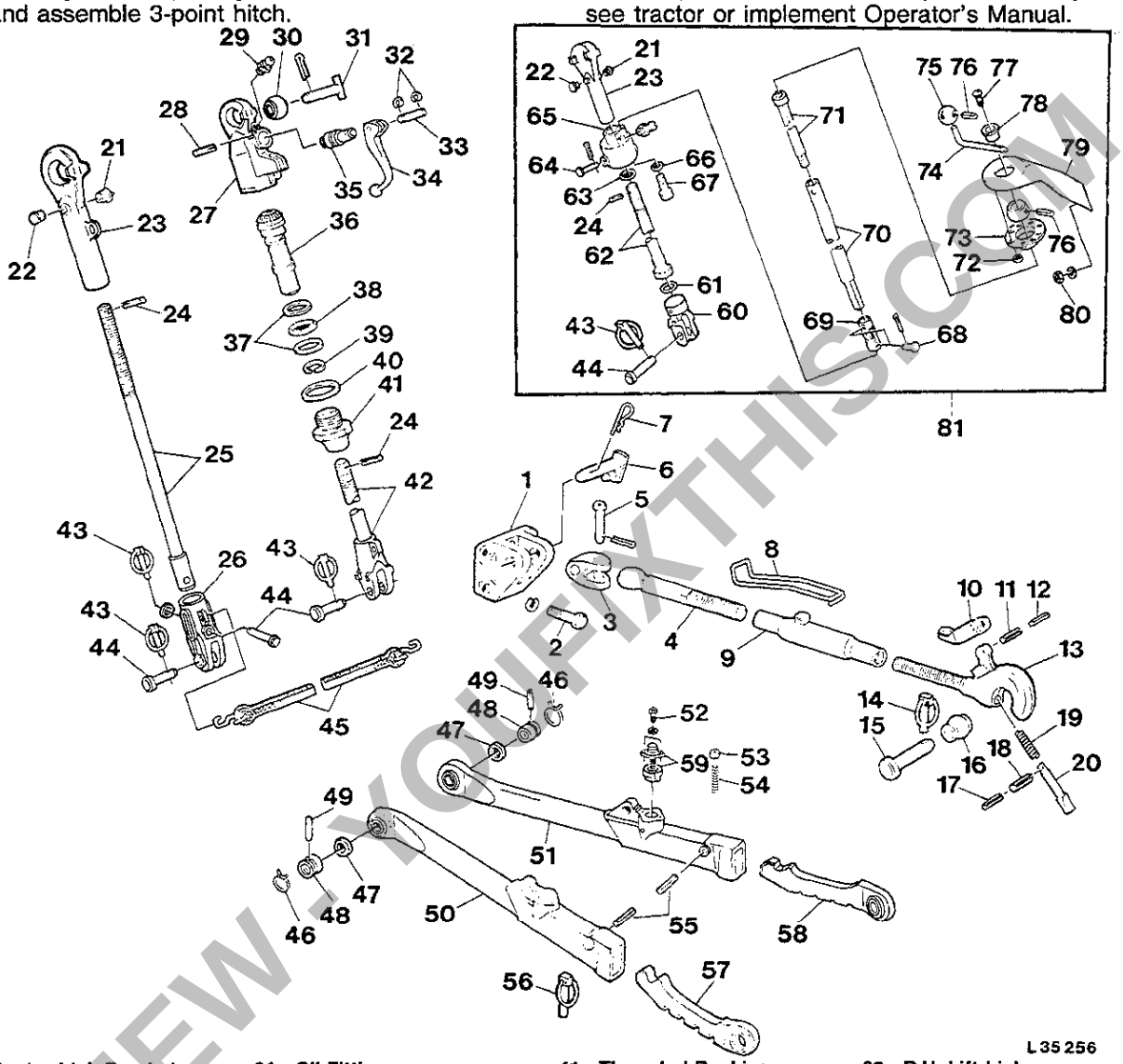
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THREE-POINT HITCH

Refer to Fig. 19 as a parts guide to remove, disassemble and assemble 3-point hitch.

For complete information of 3-point hitch adjustment see tractor or implement Operator's Manual.



1—Center Link Bracket
2—Cap Screw (5 used)
3—Pivot Bracket
4—Link End
5—Pin
6—Pin with Handle
7—Spring Locking Pin
8—Adjusting Handle
9—Center Link Body
10—Lever
11—Spring Pin
12—Spring Pin
13—Center Link Hook
14—Quik-Lock Pin
15—Pin
16—Implement Hitch Ball
17—Spring Pin
18—Spring Pin
19—Spring
20—Lock Pin
21—Oil Fitting
22—Plug
23—Link End
24—Spring Pins
25—L.H. Lift Link
26—Yoke
27—Gear Housing
28—Spring Pin
29—Grease Fitting
30—Ball
31—Pin with Handle
32—Snap Rings
33—Bearing Pin
34—Crank
35—Pinion Shaft
36—Pinion Shaft
37—Thrust Races
38—Thrust Bearing
39—Snap Rings
40—Washer
41—Threaded Bushing
42—R.H. Lift Link
43—Quik-Lock Pin
44—Pin
45—Strap with Hooks
46—Locating Springs
47—Shim (use as required)
48—Bushings
49—Pins
50—Draft Link
51—Draft Link
52—Cap Screw (4 used)
53—Rubber Ring (2 used)
54—Spring (2 used)
55—Spring Pins
56—Quik-Lock Pin (2 used)
57—Draft Link Bar
58—Draft Link Bar
59—Locking Assembly
60—Forked End
61—Washer
62—R.H. Lift Link
63—O-Ring
64—Pin
65—Housing
66—O-Ring
67—Pinion Shaft
68—Pin
69—Ball Joint
70—Tube
71—Square Shaft
72—Hex. Nut (4 used)
73—Flange
74—Lever
75—Ball
76—Spring Pin
77—Countersunk Screw
78—Cover
79—Bracket
80—Hex. Nut (2 used)
81—On Tractors with Sound-Gard Body

Fig. 19 - Exploded View of 3-Point Hitch

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