TC18, TC21D, TC24D REPAIR MANUAL COMPLETE CONTENTS

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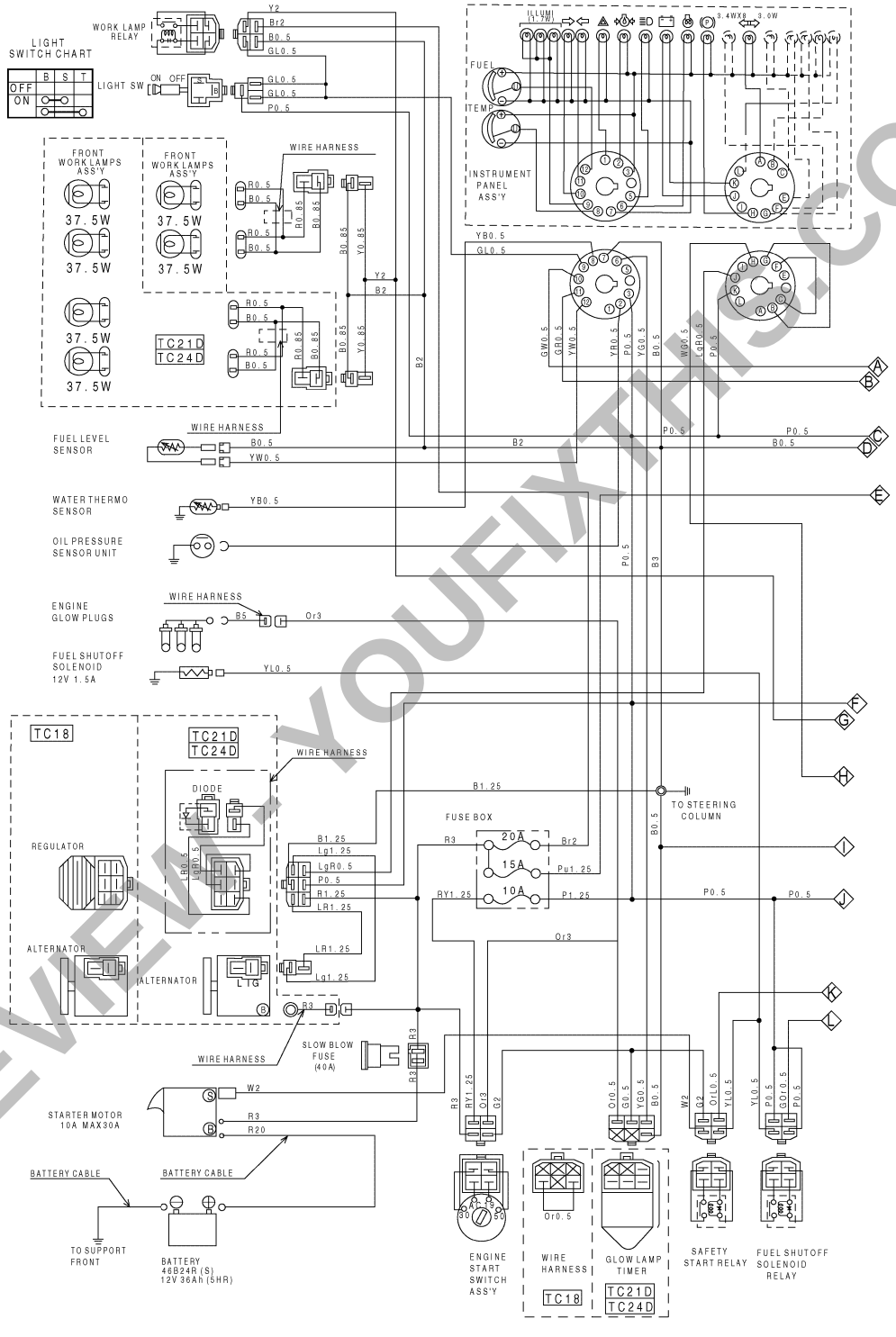
The following pages are the collation of the contents pages from each section and chapter of the TC18, TC21D and TC24D Tractor Repair manual. Complete Repair part # 87012847.

The sections used through out all New Holland product Repair manuals may not be used for each product. Each Repair manual will be made up of one or several books. Each book will be labeled as to which sections are in the overall Repair manual and which sections are in each book.

The sections listed above are the sections utilized for the TC18, TC21D and TC24D Tractors.

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ELECTRICAL WIRING DIAGRAM

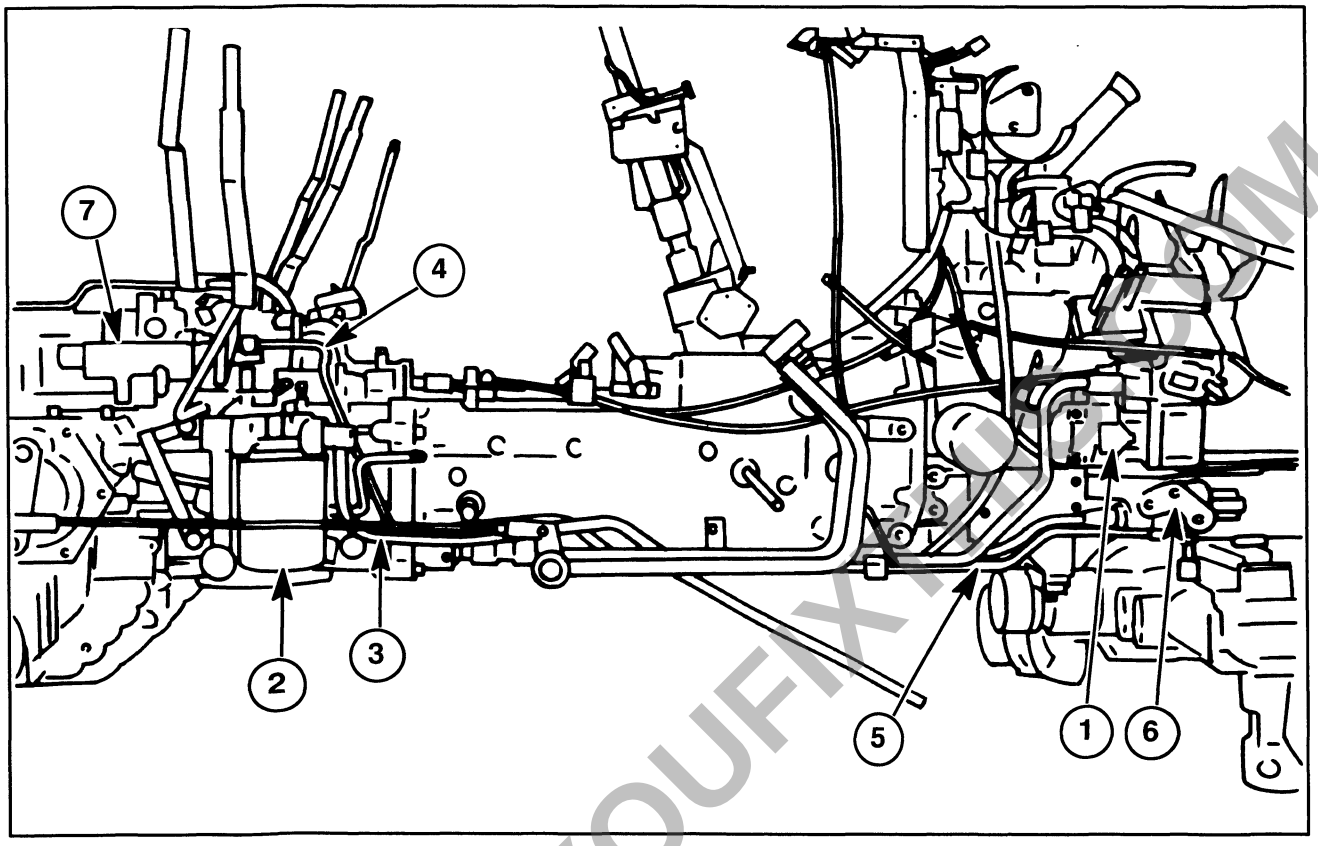


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HYDRAULIC SYSTEM CIRCUITS



1

1. Hydraulic Pump
2. Inlet Filter
3. Suction Tube
4. High Pressure Return Tube
5. Return to Sump Tube
6. Diverter/Relief Valve Manifold
7. Hydraulic System Control Valve

Op. 35 000

DESCRIPTION AND OPERATION

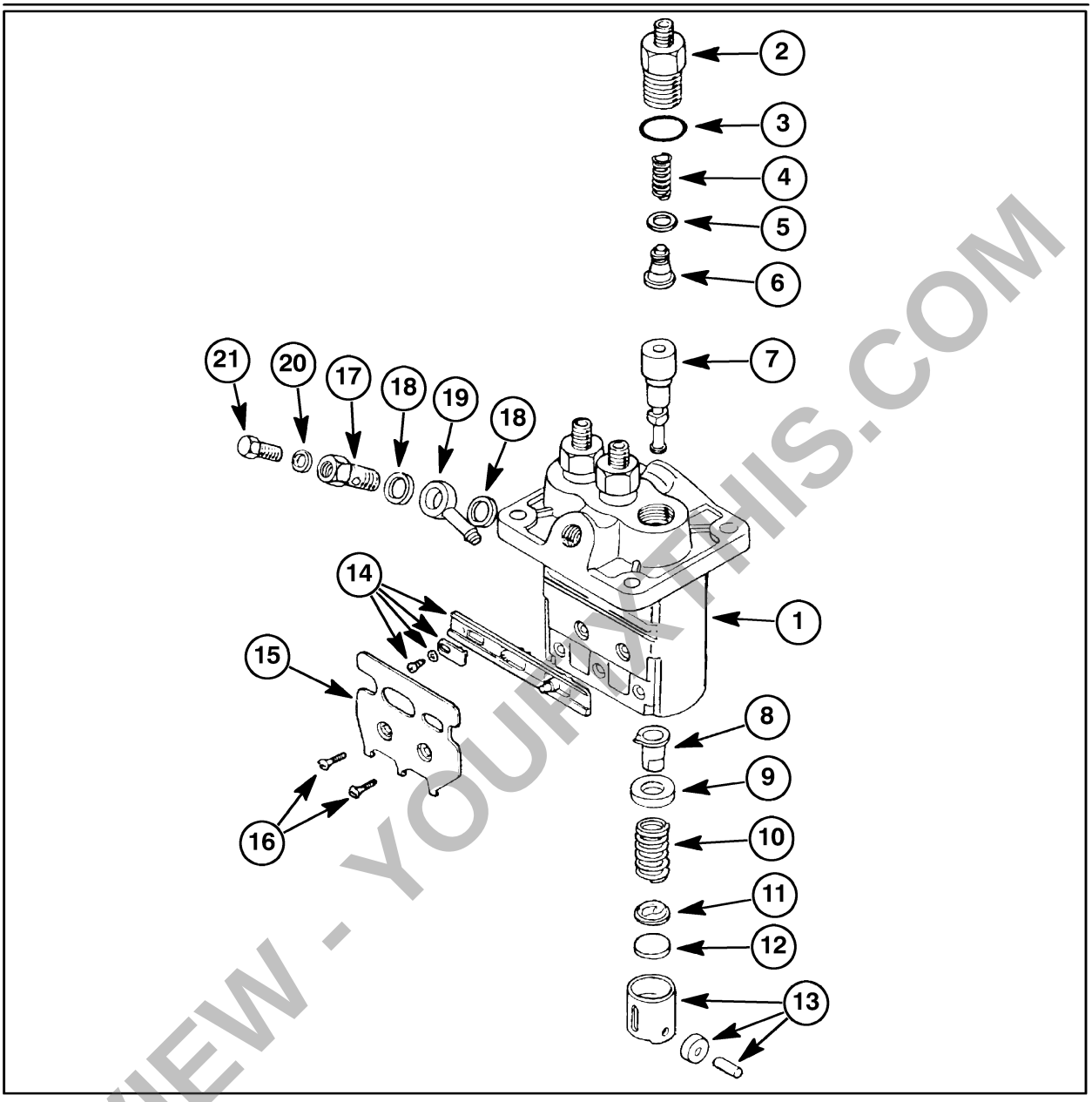
The basic components of the tractor hydraulic system are an oil reservoir, hydraulic pump, control valve, lift cylinder, piston and lift arms.

The rear axle center housing and transmission serve as a common reservoir that supplies oil to the hydraulic pump.

A gear type pump, 1, supplies oil to a control valve, 7, which directs oil to effect a raise, neutral, or lowering action of the lift arms. The pump is mounted on the right side of the engine and is driven by the idler timing gear.

The oil is drawn from the rear axle center housing through an external tube to the hydraulic pump inlet filter, 2. The oil is pressurized by the hydraulic pump, 1, and flows through the combination system relief/diverter valve manifold, 6, mounted on the right-hand side of the tractor, and to the control valve, 7, which is located outside the hydraulic lift cover assembly.

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2

FUEL INJECTION PUMP

1. Housing Assembly
2. Delivery Valve Holder
3. O Ring
4. Delivery Valve Spring
5. Gasket
6. Valve and Seat Assembly
7. Element Assembly
8. Sleeve Assembly
9. Upper Spring Seat
10. Plunger Spring
11. Lower Spring Seat
12. Plate
13. Tappet Assembly
14. Rack Assembly
15. Bracket
16. Screw
17. Hollow Bolt
18. Washer
19. Nipple
20. Washer
21. Screw

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MINIMUM HARDWARE TIGHTENING TORQUES

IN FOOT POUNDS (NEWTON-METERS) FOR NORMAL ASSEMBLY APPLICATIONS

INCH HARDWARE AND LOCKNUTS

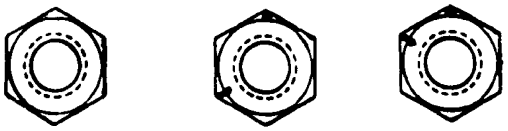
NOMINAL SIZE	SAE GRADE 2		SAE GRADE 5		SAE GRADE 8		LOCKNUTS		NOMINAL SIZE
	UNPLATED or PLATED SILVER	PLATED W/ZnCr GOLD	UNPLATED or PLATED SILVER	PLATED W/ZnCr GOLD	UNPLATED or PLATED SILVER	PLATED W/ZnCr GOLD	GR.B w/GR5 BOLT	GR.C w/GR8 BOLT	
1/4	55* (6.2)	72* (8.1)	86* (9.7)	112* (13)	121* (14)	157* (18)	61* (6.9)	86* (9.8)	1/4
5/16	115* (13)	149* (17)	178* (20)	229* (26)	250* (28)	324* (37)	125* (14)	176* (20)	5/16
3/8	17 (23)	22 (30)	26 (35)	34 (46)	37 (50)	48 (65)	19 (26)	26 (35)	3/8
7/16	27 (37)	35 (47)	42 (57)	54 (73)	59 (80)	77 (104)	30 (41)	42 (57)	7/16
1/2	42 (57)	54 (73)	64 (87)	83 (113)	91 (123)	117 (159)	45 (61)	64 (88)	1/2
9/16	60 (81)	77 (104)	92 (125)	120 (163)	130 (176)	169 (229)	65 (88)	92 (125)	9/16
5/8	83 (112)	107 (145)	128 (174)	165 (224)	180 (244)	233 (316)	90 (122)	127 (172)	5/8
3/4	146 (198)	189 (256)	226 (306)	293 (397)	319 (432)	413 (560)	160 (217)	226 (306)	3/4
7/8	142 (193)	183 (248)	365 (495)	473 (641)	515 (698)	667 (904)	258 (350)	364 (494)	7/8
1	213 (289)	275 (373)	547 (742)	708 (960)	773 (1048)	1000 (1356)	386 (523)	545 (739)	1

NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION
CAP SCREWS AND CARRIAGE BOLTS



SAE GRADE 2 SAE GRADE 5 SAE GRADE 8



REGULAR NUTS SAE GRADE 5 HEX NUTS SAE GRADE 8 HEX NUTS

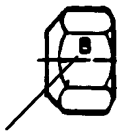
LOCKNUTS



GRADE IDENTIFICATION
GRADE A NO NOTCHES
GRADE B ONE CIRCUMFERENTIAL NOTCH
GRADE C TWO CIRCUMFERENTIAL NOTCHES



GRADE IDENTIFICATION
GRADE A NO MARKS
GRADE B THREE MARKS
GRADE C SIX MARKS
MARKS NEED NOT BE LOCATED AT CORNERS



GRADE A NO MARK
GRADE B LETTER B
GRADE C LETTER C
GRADE IDENTIFICATION

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TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	CORRECTION
Engine does not develop full power	Clogged air cleaner	Inspect an replace air cleaner if necessary
	Fuel line obstructed	Check for crimping fuel line. Inspect fuel filter for cleanliness. Repair/ replace components as required
	Improper injection Timing	Correct injection timing
	Improper nozzle injection pressure and angle	Inspect for proper injection pressure and angle
	Low cylinder compression	Check engine compression
	Insufficient fuel injection	Repair at authorized shop
	Improper valve lash adjustment	Adjust valves to correct tolerances
	Burned, worn, or sticking valves	Inspect and replace as necessary
	Blown head gasket	Replace head gasket
	Worn or sticking piston rings	Overhaul as necessary
	Faulty engine stop solenoid	Replace stop solenoid
Low oil pressure	Engine oil level low	Fill to proper level
	Wrong grade oil	Replace with correct grade oil
	Clogged oil filter	Change oil filter
	Faulty oil pressure relief valve	Replace relief valve
	Worn oil pump gears, or broken pipe	Inspect oil system and components. Replace defective components
	Excessive main or connecting rod bearing clearance	Replace bearings or crankshaft if necessary
Engine will not stop	Faulty engine stop solenoid	Replace stop solenoid
	Faulty starter switch	Replace starter switch

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SPECIFICATIONS

	Model TC18— Hydrostatic/Gear
ENGINE	
Type	Diesel
Engine Gross Horsepower	18.5
Cylinders	3
Bore	75 mm (2.95″)
Stroke	72 mm (2.83″)
Displacement	0.954 L (58.2 cu. in.)
Compression Ratio	23:1
Firing Order	1-2-3
Low Idle Speed	1100-1200 RPM
Maximum Speed:	
High Idle	2800-2850 RPM
Rated	2600 RPM
Valve Clearance (Cold):	
Intake	0.20 mm (0.008″)
Exhaust	0.20 mm (0.008″)
CAPACITIES	
Fuel Tank	20 liters/ 5.3 U.S. gals.
Cooling System	3.5 liters/ 3.7 U.S. qts.
Engine Crankcase:	
Less Filter	2.6 liters/ 2.7 U.S. qts.
With Filter Change	2.8 liters/ 2.9 U.S. qts.
Rear Axle & Transmission (Includes Hydraulics)	16 liters/ 4.23 U.S. gals.
Front Axle Final Reduction	0.8 liter/ 0.85 U.S. qt. per side
Differential Gear Case	1 liter/ 1.06 U.S. qts.

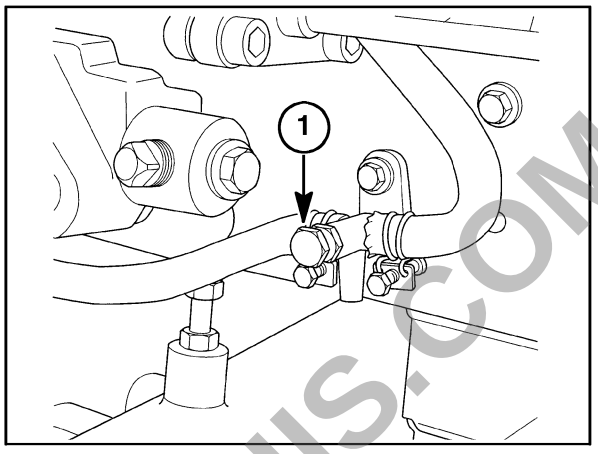
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ENGINE OVERHAUL

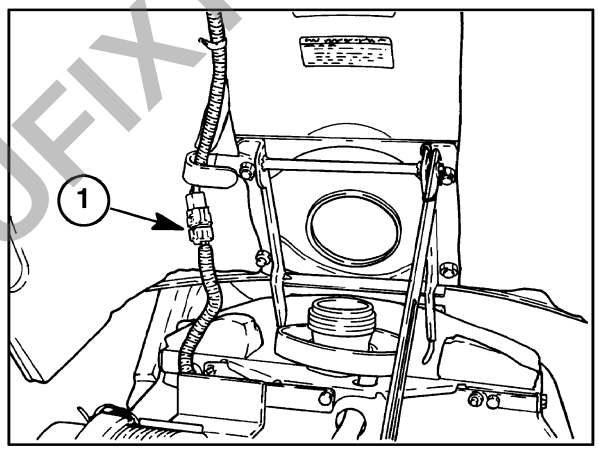
ENGINE DISASSEMBLY

1. Open the radiator drain, 1, and drain and remove the radiator assembly. See “Radiator Removal” discussed later in this section.



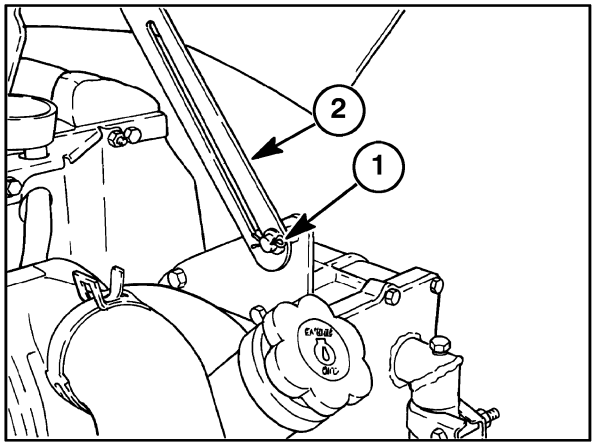
3

2. Disconnect the electrical connector, 1, for the head lamps.



4

3. Remove the clip pin, 1, from the hood support, 2, and gradually lower the hood.



5

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SAFETY

PRECAUTIONARY STATEMENTS

A careful operator is the best operator. Most accidents can be avoided by observing certain precautions. To help prevent accidents, read and take the following precautions before operating this equipment. Equipment should be operated only by those who are responsible and instructed to do so.

Carefully review the procedures given in this manual with all operators. It is important that all operators be familiar with and Follow safety precautions.

THE TRACTOR

1. Read the Operator's Manual carefully before using the tractor. Lack of operating knowledge can lead to accidents.
2. Use an approved roll bar and seat belt for safe operation. Overturning a tractor without a roll bar can result in death or injury. If your tractor is not equipped with a roll bar and seat belt, see your New Holland Dealer.
3. Always use the seat belt. The only instance when the seat belt should not be used is if the roll bar has been removed from the tractor.
4. If a front end loader is to be installed, always use a FOPS (Falling Object Protective Structure) canopy to avoid injury from falling objects.
5. Use the handholds and step plates when getting on and off the tractor to prevent falls. Keep steps and platform cleared of mud and debris.
6. Do not permit anyone but the operator to ride on the tractor. There is no safe place for extra riders.
7. Keep all safety decals clean of dirt and grime, and replace all missing, illegible, or damaged safety decals. See the list of decals in the Decal section of this manual.

SERVICING THE TRACTOR

1. The cooling system operates under pressure which is controlled by the radiator cap. It is dangerous to remove the cap while the system is hot. Always turn the cap slowly to the first stop and allow pressure to escape before removing the cap entirely.
2. Keep any type of open flame away from the tractor and do not smoke while refueling. Wait for the engine to cool before refueling.
3. Keep the tractor and equipment, particularly brakes and steering, maintained in a reliable and satisfactory condition to ensure your safety and comply with legal requirements.
4. Keep open flame or cold weather starting aids away from the battery to prevent fires or explosions. Use jumper cables according to instructions to prevent sparks which could cause explosion.
5. Stop the engine before performing any service on the tractor.
6. Escaping hydraulic/diesel fluid under pressure can penetrate the skin causing serious injury. If fluid is injected into the skin, obtain medical attention immediately or gangrene may result.
   - DO NOT use your hand to check for leaks. Use a piece of cardboard or paper to search for leaks.
   - Stop the engine and relieve pressure before connecting or disconnecting lines.
   - Tighten all connections before starting the engine or pressurizing lines.
7. Do not modify or permit anyone else to modify or alter this tractor or any of its components or functions without first consulting a New Holland Dealer.
8. The fuel oil in the injection system is under high pressure and can penetrate the skin. Unqualified persons should not remove or attempt to adjust a pump, injector, nozzle, or any other part of the fuel injection system. Failure to follow these instructions can result in serious injury.
9. Continuous long-term contact with used engine oil may cause skin cancer. Avoid prolonged contact with used engine oil. Wash skin promptly with soap and water.

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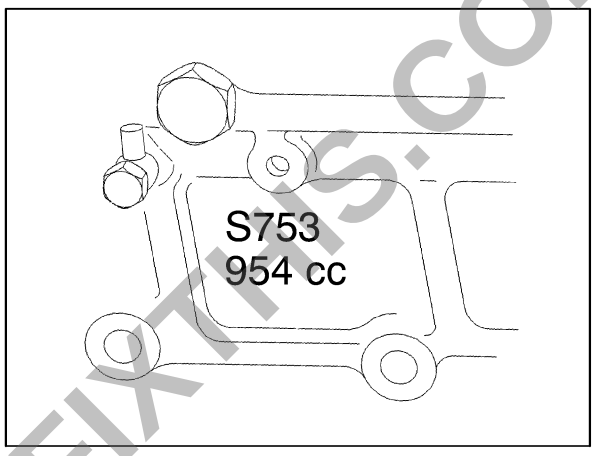
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GENERAL INFORMATION

DESCRIPTION AND OPERATION

This section describes the engine overhaul and repair procedures of the Models TC18, TC21D and TC24D tractors. Repair procedures are essentially the same for all models except as noted in the repair procedures.

The tractors are equipped with three-cylinder in-line engines. They are all four cycle, overhead valve, liquid cooled engines. The engines are identified by a code cast into the lower right side of the cylinder block, just behind the hydraulic pump. The identification numbers of the engines used is shown in the following chart.



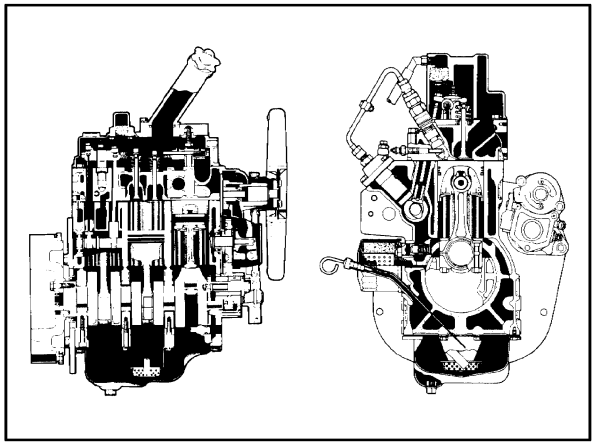
1

IDENTIFICATION CHART

ENGINE IDENTIFICATION	TRACTOR MODEL	HORSE-POWER
S753	TC18	18.5
S773	TC21D	21.0
S773L	TC24D	24.0

CYLINDER HEAD AND VALVE TRAIN COMPONENTS

The cylinder head incorporates the valve assemblies, rocker arms, rocker shaft, push rods, lifters, and pre-combustion chambers. The air intake manifold is incorporated into the left hand side of the valve cover assembly. The exhaust manifold is bolted on the left-hand side of the cylinder head. The cylinder heads have integral valve guides. Standard size valves only are used. Figure 2 provides a cut-away front and side view of an engine.



2

A pre-combustion chamber is located between the injector assembly and the combustion chamber of the cylinder and provides an area for initial ignition of the fuel for improved starting. A glow plug located in the head extends into the pre-combustion chamber and, when energized, pre-heats the fuel-air mixture for improved fuel ignition under cold weather conditions.

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SECTION 18 - SINGLE CLUTCH

BOOK 1 - 87032525

Chapter 1 - Single Clutch

CONTENTS

Section	Description	Page
	General Information	2
	Single Clutch Overhaul	4
	Separating the Tractor – Between the Engine and Clutch Housing – 6 x 2 and 9 x 3 Transmissions	4
	Servicing Clutch-Related Components	25
	Troubleshooting	32
	Specifications	33
	Special Tools	34

SECTION 21 - TRANSMISSION SYSTEMS

BOOK 1 - 87032525

Chapter 1 - Transmission Systems

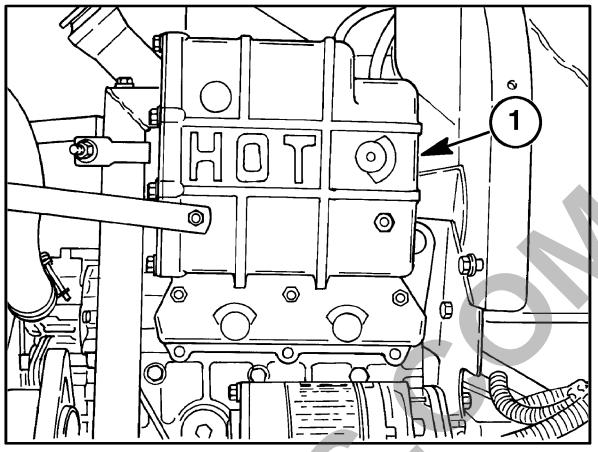
CONTENTS

Section	Description	Page
	Introduction	2
	6 x 2 Gear Transmission Description and Operation	3
	6 x 2 Gear Transmission Overhaul	9
	Separating the Tractor – Between the Clutch Housing and the Rear Transmission – 6 x 2 Transmission	10
	Reconnecting the Tractor – When Separated Between the Clutch Housing and the Rear Transmission – 6 x 2 Transmission	42
	9 x 3 Gear Transmission Description and Operation	45
	9 x 3 Gear Transmission Overhaul	48
	Separating the Tractor – Between the Clutch Housing and the Rear Transmission – 9 x 3 Transmission	49
	Reconnecting the Tractor - When Separated Between the Engine and Clutch Housing - 6 x 2 and 9 x 3 Transmissions	83

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8. Remove the exhaust muffler and manifold assembly, 1.

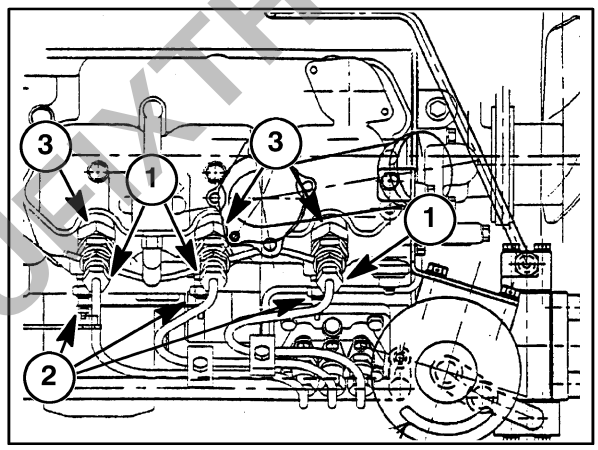


9

FUEL INJECTOR AND GLOW PLUG REMOVAL

1. Clean all dirt and oil from the injectors and surrounding areas.
2. Disconnect the fuel lines, 1, from the injectors and cap all openings.
3. Remove the three glow plugs, 2.
4. Disconnect the return line to the fuel tank from the number three injector.
5. Remove the injector assemblies, 3.

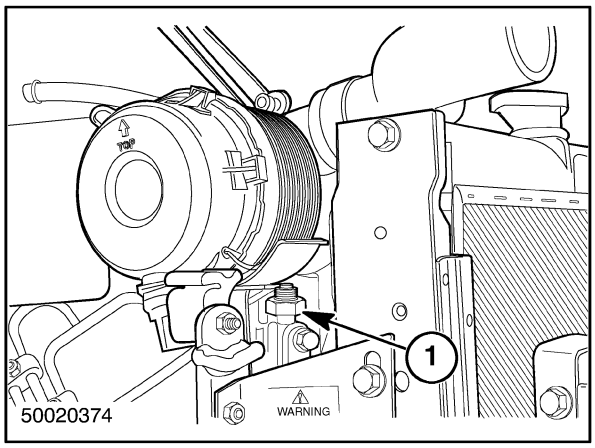
NOTE: *Be sure to remove the injector sealing washer from the injector bore, if not removed with the injector.*



10

OIL PRESSURE SWITCH REMOVAL

1. Disconnect and remove the oil pressure switch, 1.



11

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MAINTENANCE

⚠ WARNING ⚠

The cooling system operates under pressure which is controlled by the radiator cap. It is dangerous to remove the cap from a hot engine or while the engine is running. Always shut the engine off and allow it to cool before removing the radiator cap. When removing the cap, use a thick cloth to cover the cap and slowly turn the cap to the first stop to allow pressure to escape before removing the cap completely.

Clean the cooling system to remove rust, sludge, and other foreign material by using a coolant system cleaning solvent. In severe cases, pressure flushing may be required. A pulsating or reverse flow flushing will more effectively loosen and remove foreign material than a steady flushing in normal direction of coolant flow. If pressure flushing is to be used, always remove the thermostat and make sure the head bolts are tightened properly.

COOLANT

The coolant is a permanent type ethylene-glycol base antifreeze and should be used all year. Recommended use of 50/50 mixture of ethylene-glycol antifreeze and pure water provides maximum cooling efficiency for summer use and has a winter time freeze protection to -36° C (-33° F).

NOTE: *Alcohol base coolants are not recommended for use in the tractor engine.*

Drain and flush the cooling system every twelve months and replace the coolant with fresh antifreeze and pure water.

After the coolant has been drained from the radiator and block, flush the system by placing a water hose in the radiator filler neck. With the drain open and the system full of water, start the engine and run it until the water flowing from the drain is clear. Stop the engine and allow the system to drain, then replace the coolant with new 50/50 mixture of antifreeze and pure water.

THERMOSTAT

The thermostat is located between the coolant outlet on the engine water pump and the radiator. In this position the thermostat is able to sense the coolant temperature in the engine and regulate the flow of coolant to the radiator. When the engine is cold, only a small amount of coolant flows to the radiator through the thermostat by-pass. As engine warm-up occurs, the thermostat opens to allow sufficient coolant flow to the radiator to maintain a constant engine temperature.

WATER PUMP

The water pump is an impeller attached to a shaft which is belt driven by the engine crankshaft. The impeller circulates water by centrifugal force. Coolant entering the pump housing from the radiator through the lower hose is thrown outward against the housing with sufficient force to cause a circulating action.

COOLING FAN

A six blade fan is belt driven by the engine crankshaft and is mounted on the water pump shaft. The fan is positioned behind the radiator to draw air through the radiator cooling fins. To increase and concentrate the volume of air flowing through the radiator, a shroud is positioned around the fan.

RADIATOR

The heat of combustion, absorbed by the coolant as it flows through the engine, is transferred to the atmosphere by the radiator. Heat is removed from the coolant as it flows down through the radiator cores to the bottom of the radiator before it is recirculate into the engine.

RADIATOR CAP

The radiator cap acts to pressurize the cooling system. The cap contains a pressure valve and a vacuum vent valve. The pressure valve permits a limited pressure build-up in the cooling system as the coolant heats up. This increased pressure increases the boiling point of the coolant. If excess pressure builds up in the system, the pressure valve will open until the pressure returns to the proper level. Radiator cap pressure rating is 0.9 bar (13 psi).

When the engine is shut off and the coolant cools, a vacuum condition is created in the system. A vent valve in the radiator cap opens to permit outside air pressure into the system when this condition exists.

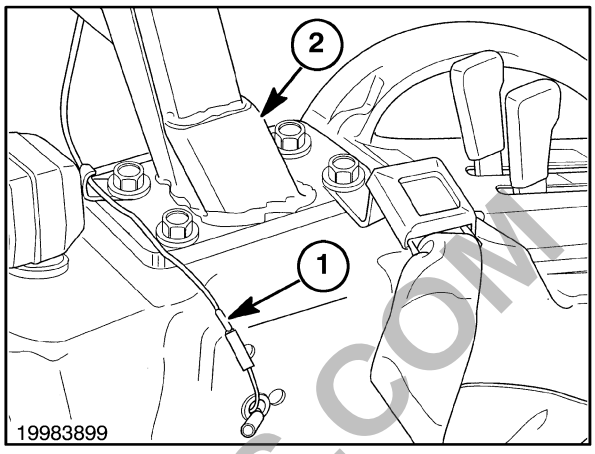
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CONDITION	CAUSE	REMEDY
Pump fails to deliver fuel to all injectors	Blocked fuel lines to pump	Remove fuel lines and flush or replace
	Air in system	Check for air leaks on the suction side of system. Bleed the fuel system
	Control rod seized in “OFF” position	Repair or replace control rod
Pump fails to deliver fuel to one injector	Air in fuel line to injector	Bleed fuel line
	Plunger spring broken	Replace spring
	Plunger seized	Repair or replace barrel and plunger assembly
	Delivery valve seized	Repair or replace delivery valve
	Badly scored plunger and barrel	Replace plunger and barrel assembly
Governor fails to maintain maximum or minimum no-load fuel delivery	Control spring broken	Replace control spring
	Governor weights seized	Repair or replace weight assembly and/or camshaft
	Governor weight carrier broken	Replace weight assembly
	Slider seized	Replace slider and/or camshaft
	Pump link spring broken	Replace spring

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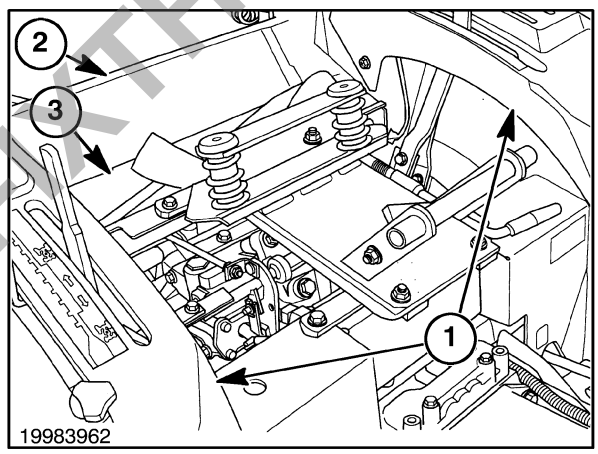
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8. Disconnect the rear light wire connectors, 1.
9. Remove the ROPS bar, 2.
10. Using a moveable hoist and sling, support the rear transmission and center housing.
11. Remove the tractor rear wheels.



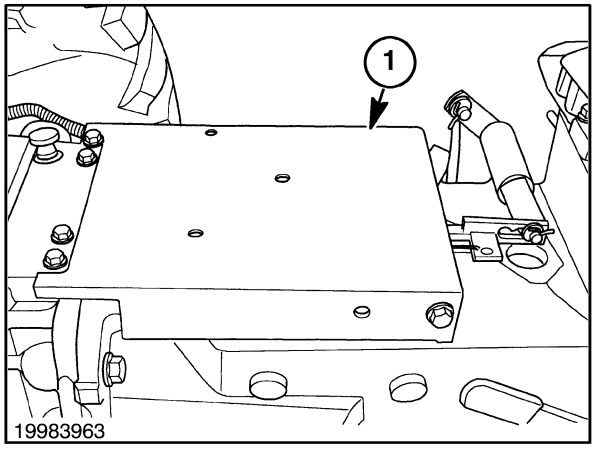
15

12. Remove the fenders, 1, toolbox, 2, and center frame, 3.



16

13. Remove the transmission cover plate, 1.

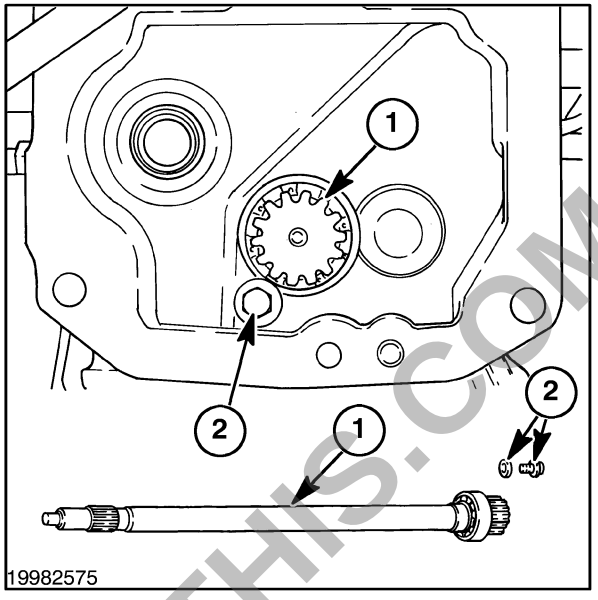


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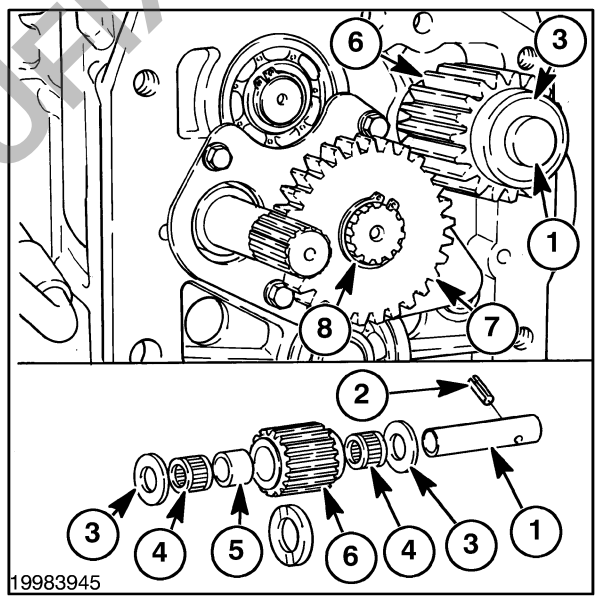
Input Shaft, Idler Gear, and Countershaft Gear Removal

1. Remove the hex head cap screw and washer, 2, and withdraw the input shaft, 1, from the rear of the clutch case.



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2. Remove the idler shaft, 1, with roll pin, 2, thrust washers, 3, needle bearing, 4, spacer collar, 5, and idler gear (19T), 6, from the front of the transmission case.
3. Remove the snap ring, 8, and remove the countershaft gear (29T), 7.



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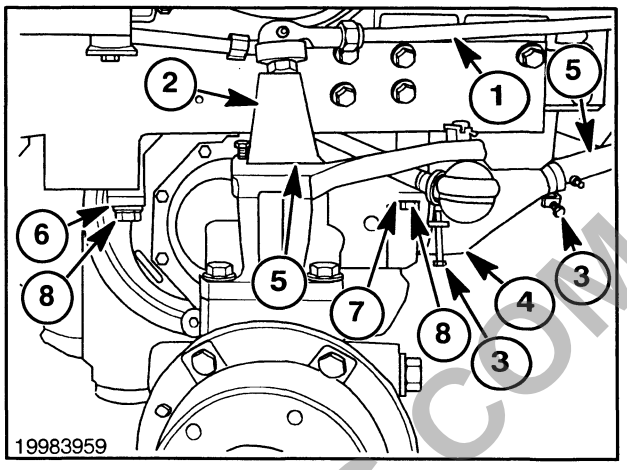
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FRONT-WHEEL DRIVE FRONT AXLE INSTALLATION

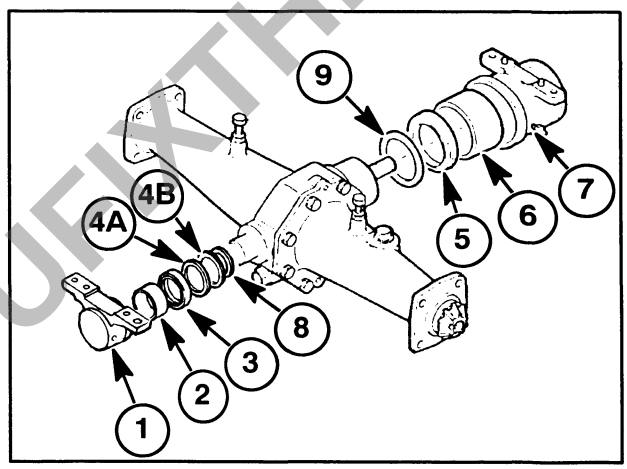
1. Roll the front axle in position under the tractor and install the bolts to secure the front and rear bearing holders, 6 and 7.
2. Connect the FWD drive shaft universal joint and secure with the retaining bolt.
3. Slide the boot, 4, forward over the case and secure with the clamps, 3.
4. (With power steering) connect the power steering hoses to the steering cylinder.
5. (With manual steering) Connect the drag link, 1, to the spindle arm, 2.
6. Remove the floor jack and safety stands.

During the assembly and installation, observe the following requirements:

1. With the assembled axle installed to the support frame, check the fore and aft end play. Add or subtract shims, 4A or 4B, to obtain the correct end play clearance of 0 - 0.3 mm (0 - 0.012 in.).
2. Use loctite or thread sealant on all mounting bolts and tighten to 95 N·m (70 ft-lbs).



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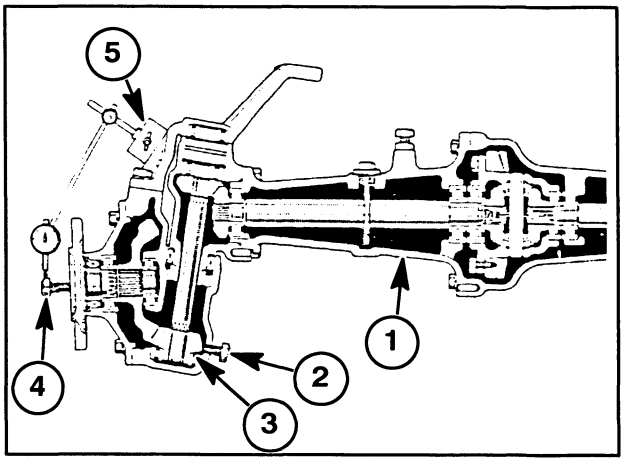
Front Axle Pivot - FWD

1.	Front Bearing Holder	5.	Oil Seal
2.	Bushing	6.	Bushing
3.	Oil Seal	7.	Rear Bearing Holder
4A.	Shim - 0.2 mm (0.008 in.)	8.	Thrust Washer
4B.	Shim - 0.5 mm (0.020 in.)	9.	Thrust Washer

BACKLASH ADJUSTMENT

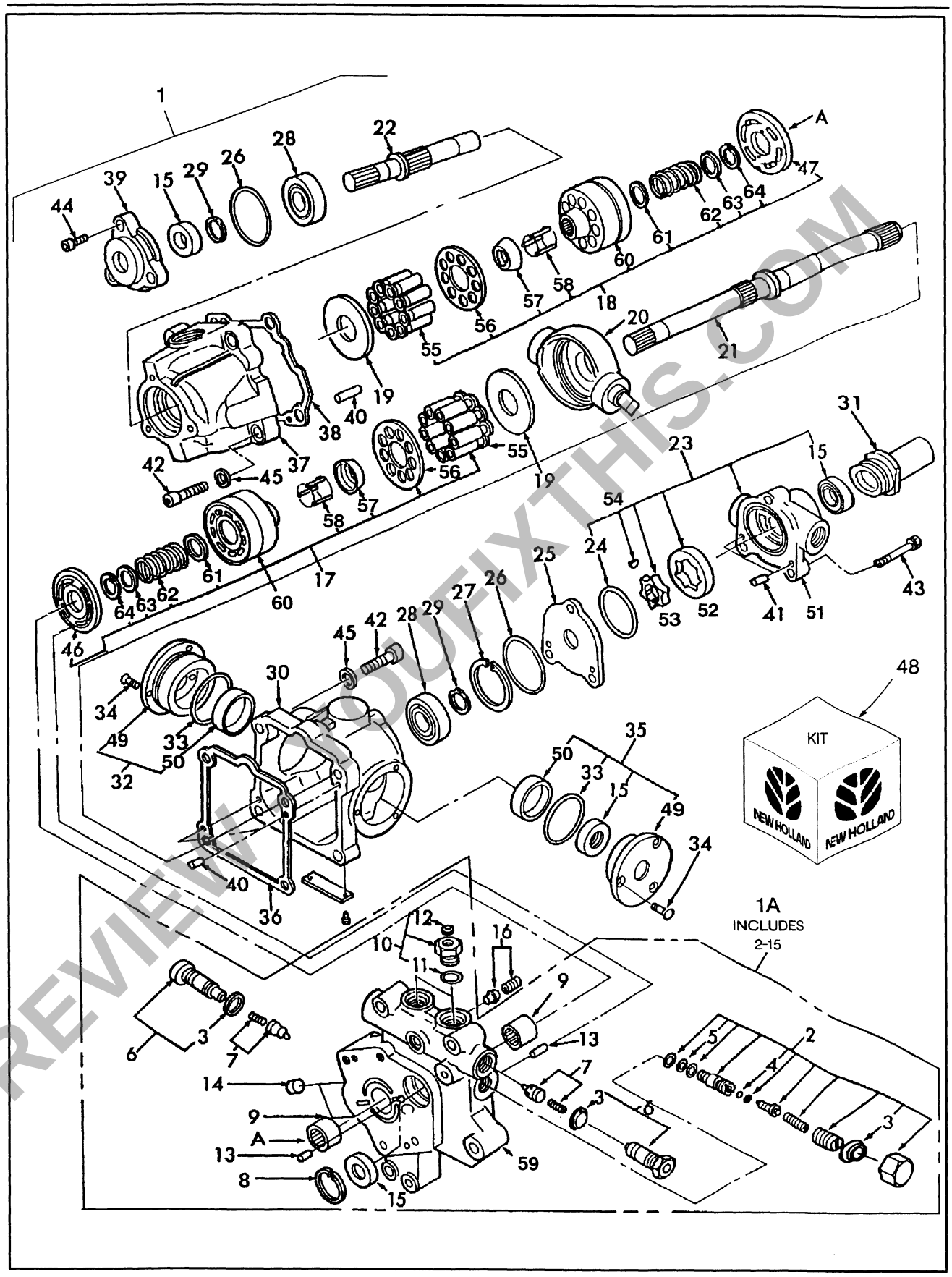
Final Pinion and Wheel Shaft

1. Support the tractor and remove the front wheels.
2. Remove the drain plug from the final drive housing and drain the oil.
3. Install a long bolt, 2, into the drain plug hole so that it contacts the final pinion, 3, and keeps it from rotating.
4. Install a wheel bolt, 4, into the wheel shaft and attach a dial indicator, 5.
5. Check the backlash by rocking the wheel hub back and forth while observing the dial indicator, 5, reading.
6. Replace the bearing and/or gears if the clearance exceeds 0.5 mm (0.020 in.).



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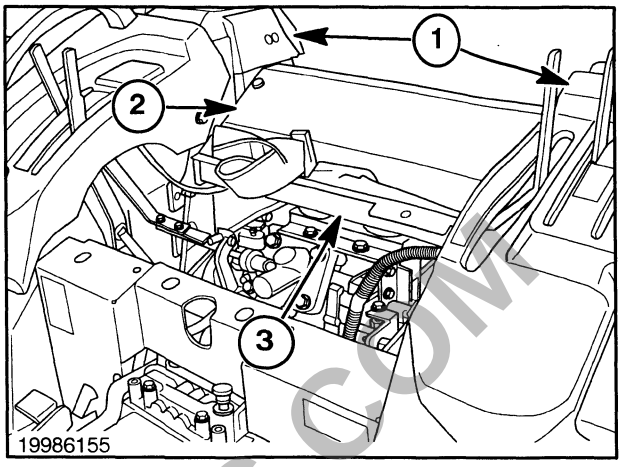


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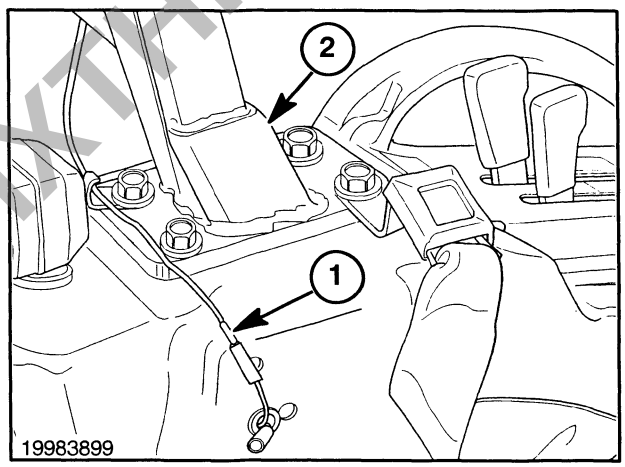
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14. Install the center frame, 3, tool box, 2, and fenders, 1.



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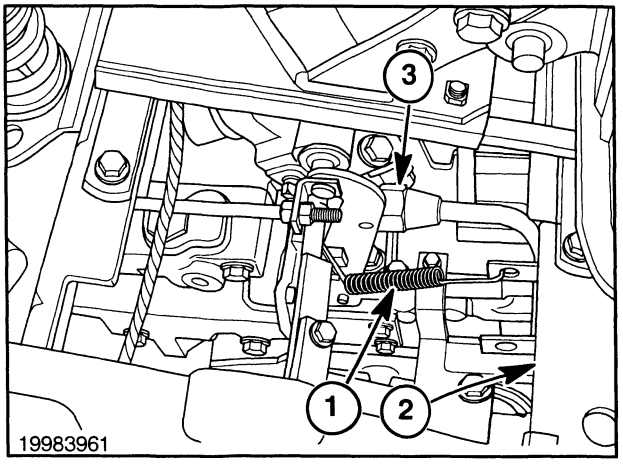
15. Install the ROPS bar, 2, and connect the rear light wire connectors.



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16. Connect the high-pressure inlet tube, 3, to the top cover. Tighten the tube nut to 5 - 6 N·m (5 - 6 ft lbs).

17. Install the front side cover, 2, and connect the control valve return spring, 1.



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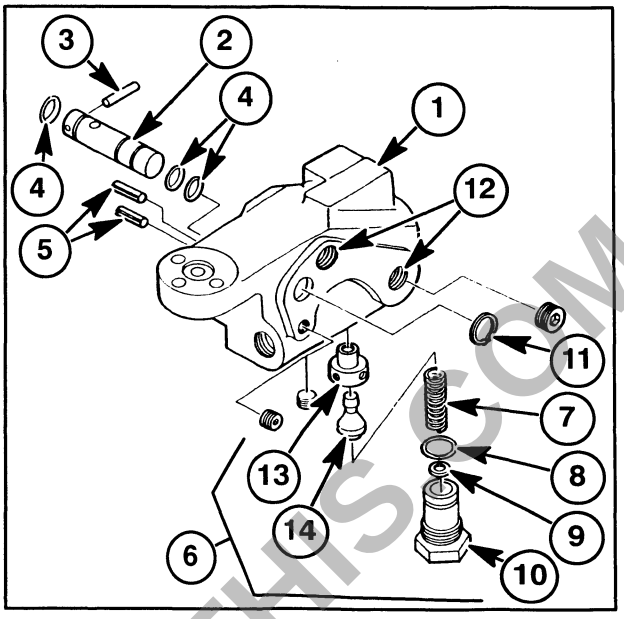
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Op. 35 080

COMBINATION SYSTEM RELIEF - DIVERTER VALVE MANIFOLD

The combination system relief-diverter valve manifold, 1, is located in the high pressure line just below the hydraulic pump.

The valve assembly contains the system relief valve, 6, which protects the hydraulic pump from overload conditions. The valve body, 1, also serves as a manifold, containing hose connection ports, 12, for use of auxiliary hydraulic equipment, such as loaders. The diverter valve spool, 2, permits the operator to select operation of either the auxiliary hydraulic circuits or the hydraulic lift system by rotating the spool to the desired position.

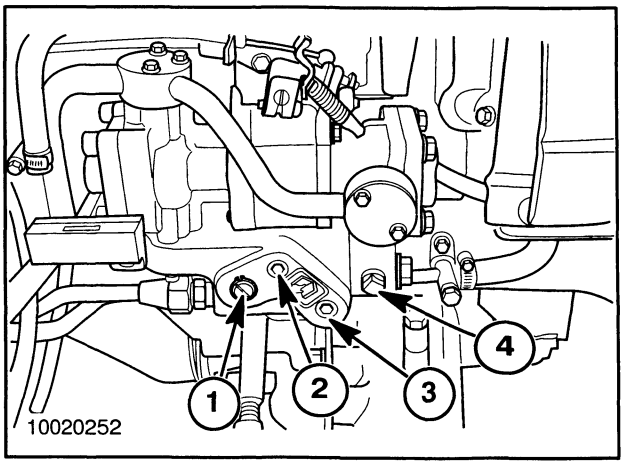


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1. Valve Body
2. Diverter Valve Spool
3. Roll Pin
4. O Ring
5. Roll Pins
6. System Relief Valve (includes items 7 - 10, 13 and 14)
7. Spring
8. O Ring
9. Shim
10. Plug Cap
11. Snap Ring
12. Hose Ports
13. Poppet Guide
14. Poppet Valve

The hydraulic manifold block/diverter valve is located on the right-hand side of the tractor below the engine oil dipstick. The manifold block supplies hydraulic oil to optional remote valves to allow for operation of implements such as front end loaders, blades, backhoes, etc.

The diverter valve, 1, can be turned with a blade screwdriver. In this position, 10 o'clock, hydraulic fluid is directed to the HPL valve and rear remotes (optional). When a remote valve is plumbed to the three ports pressure out, 2, pressure return, 3, and sump or tank, 4, the diverter valve must be turned clockwise to 1 o'clock position for hydraulic fluid to flow to the remote valve and then to the HPL valve and rear remote valve (optional).



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1. Diverter Valve Spool
2. Pressure Out (P) Port
3. Pressure Return (PB) Port
4. Sump (T) Port

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Assembly

1. Install the O ring, 3, washer, 4, spacer, 1, and plate, 5, and capscrews, 6, into the valve assembly, 2.
2. Install the plungers, 7, springs, 8, O rings, 9, and plugs, 10.
3. Install the plug, 11, with and O ring into the valve assembly, 2.
4. Install O ring, 12, into the grooves of the spool bore.
5. Install the spacer cap, 13, O ring, 14, washer, 15, spacers, 1, plate, 16, and capscrews, 17, into the valve body, 2.

IMPORTANT: *The lift spool and bucket REGEN spool are NOT interchangeable. Insert the spools into the proper bores during assembly.*

6. Carefully slide the REGEN spool, 18, into the correct valve body bore.
7. Install the spacer, 19, wiper, 20, over the spool.
8. Slide the plate, 21, guide, 22, washer, 23, spring, 24, and guide, 25 onto the spool.
9. Insert the spring, 26, into the detent retainer, 27, and compress the spring into the detent retainer.
10. Install the detent balls, 28, and slide the detent sleeve, 29, with the end cap, 30, onto the retainer.

NOTE: *Use petroleum jelly to help retain detent balls.*

11. Secure the end cap, 30, to the valve assembly, 2, by using the capscrews, 31.
12. Install the spacer, 32, and retaining ring, 33, and cover, 34, onto the valve assembly, 2.
13. Install the float spool, 35, into the valve assembly, 2, in the same manner.

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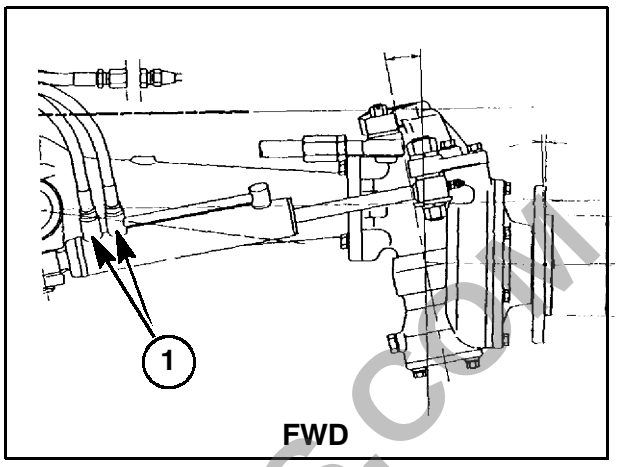
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Op. 41 216

STEERING CYLINDER

Removal

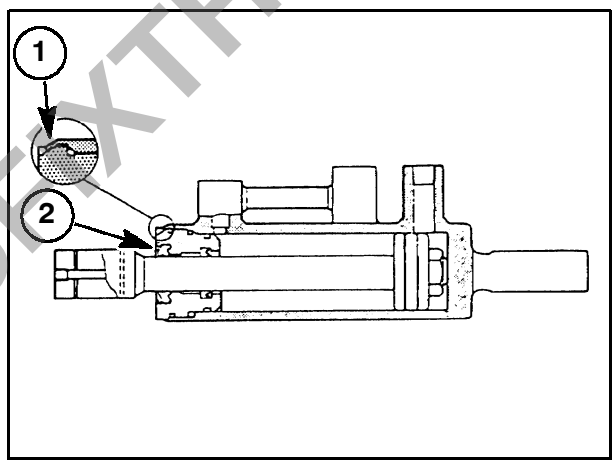
1. Disconnect the steering hoses, 1, to the power steering cylinder and cap all openings.
2. Remove the cylinder from the tractor.



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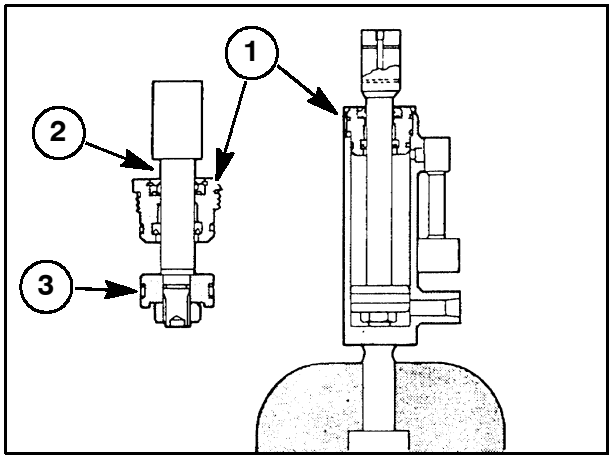
Disassembly

1. Using a suitable chisel, straighten the cylinder tube crimping, 1, from the gland head, 2.



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2. Using an adjustable wrench, unscrew the gland head, 1, out of the cylinder tube.
3. Pull the cylinder rod, 2, gland head, 1, and piston assembly, 3, out of the tube.



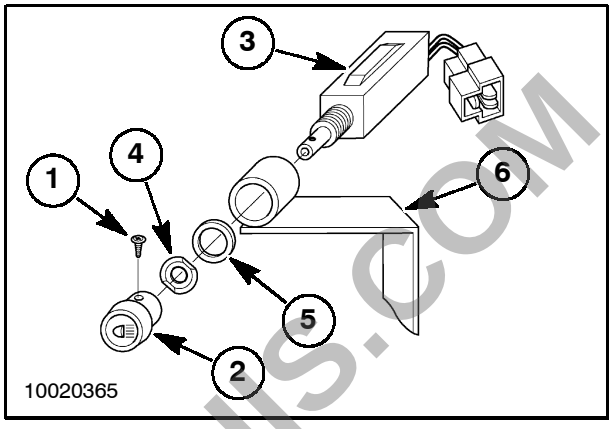
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Removal

1. Disconnect the negative (-) battery cable from the negative (-) battery terminal.
2. Raise the instrument panel from the operator console.
3. Remove the rubber boot from the operator console.
4. Unthread the screw, 1, to remove the knob, 2 from the light switch, 3.
5. Remove the retaining nut, 4, and washer, 5, from the light switch, 3, to remove the light switch from the mounting bracket, 6.

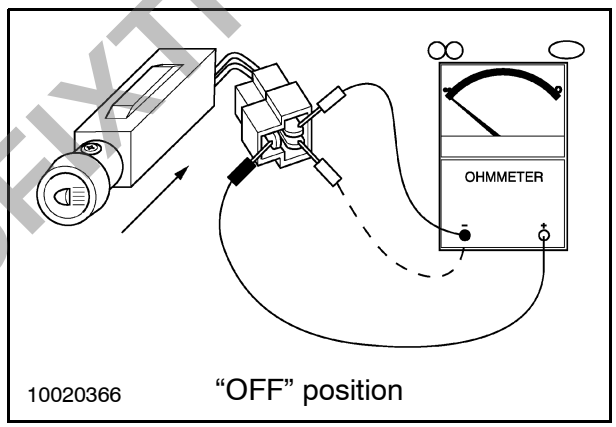


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Testing

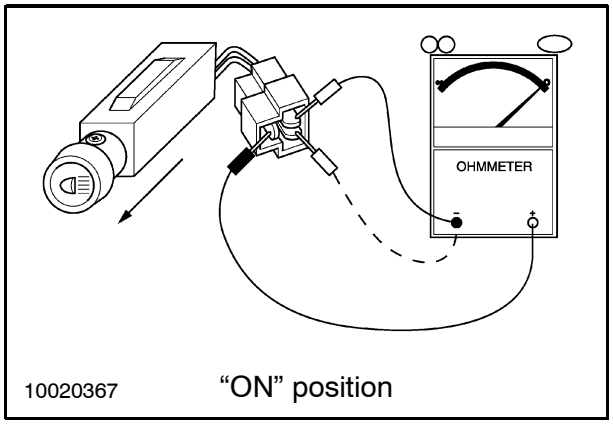
Use an ohmmeter to test the light switch for electrical continuity.

1. Push the knob of the light switch inward to the “OFF” position.
2. Use an ohmmeter to test the three terminals of the light switch.
3. There should be no continuity between any of the three light switch terminals.
4. If continuity exists between any of the switch terminals in the “OFF” position, the switch is defective and requires replacement.



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1. Pull the knob of the light switch outward to the “ON” position.
2. Use an ohmmeter to test the three terminals of the light switch.
3. Continuity should exist between the three light switch terminals.
4. If continuity does not exist between any of the three light switch terminals in the “ON” position, the switch is defective and requires replacement.



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TROUBLESHOOTING GLOW PLUG CIRCUIT		
CONDITION	**POSSIBLE CAUSE**	**REMEDY**
Inoperative Glow Plugs	Blown Main Fuse	Check fuse and replace as necessary
	Malfunctioning Key Switch	Check Switch and Replace as Necessary
	Poor Circuit Connections	Check Switch connections and circuit and repair as necessary
	Malfunctioning Glow Plugs	Test Glow Plugs and replace as necessary
Inoperative Glow Plug Indicator Light	Blown Indicator Bulb	Replace Bulb
	Blown 10-amp fuse	Replace 10-amp fuse
	Defective Glow Lamp Timer	Test Timer and replace if necessary

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TC18 – CHARGING SYSTEM

1. Current flow starts at the battery positive (+) terminal and is transferred to the starter battery terminal by the positive (+) battery cable.
2. From the starter, current flows to the 40 amp main fuse. The main fuse supplies current through a wire splice to terminal 30 on the engine start switch and to the out put on the voltage regulator.
3. When the engine start switch is the “ON” position, current is transferred from terminal 30 to “ACC” terminal of the engine start switch.
   - From the “ACC” terminal of the engine start switch, current passes through the 10 amp fuse.
   - The 10 amp fuse supplies current to terminal “K” of the instrument panel Connector. Terminal “K” provides current to the battery charge indicator light. When the current from indicator light returns to ground, through terminal “J” of the instrument panel connector, the indicator light will illuminate. The charge light will remain lit until the engine is started and the regulator opens the ground path to the indicator light and supplies current through terminal 17 of regulator to the indicator light. When current is supplied to both terminals of indicator light the light will turn off.
   - The 10 amp fuse supplies current to the voltage regulator (detection) terminal 18.
4. When the engine is running the AC permanent magnet generator puts out 28 volts AC voltage through alternator terminals 46 and 47 the AC voltage is transferred to regulator terminals 21 and 23 respectively. The 28 volts AC voltage is converted to 12 volts DC current by the voltage rectifier located in the regulator assembly. DC output charging voltage is provided by terminal 20 of regulator. Voltage output is controlled by the voltage input detected at terminal 18 to maintain the system output at 14 to 15 volts. Voltage regulator coil ground path is provide by terminal 22 through a wire splice to a ground connection located at the steering column.

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