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Valve springs

To change the valve springs (with cylinder head installed) — Operation 3-8

Special requirements

Special tools			
Description	**Part number**	**Description**	**Part number**
Valve spring compressor	PD.6118B	Setscrew adaptor used with PD.6118B	PD.6118-8
Stud adaptor used with PD.6118B	PD.6118-7		

Note: Steps 1 to 12 refer to a change of valve springs for a single cylinder.

Warning! *Wear eye protection during this operation.*

1 Remove the rocker cover, see Operation 3-1.

2 Rotate the crankshaft in the normal direction of rotation until the inlet valve of the relevant cylinder has just opened and the exhaust valve has not fully closed. In this position the piston will be at approximately top dead centre (TDC).

3 Remove the rocker assembly, see Operation 3-3.

4 Install the valve spring compressor (A1) and the relevant adaptor (A2 or A3).

5 Compress the valve spring and remove the collets. Ensure that the valve spring is compressed squarely or damage to the valve stem can occur.

Caution: *Do not rotate the crankshaft while the valve springs are removed.*

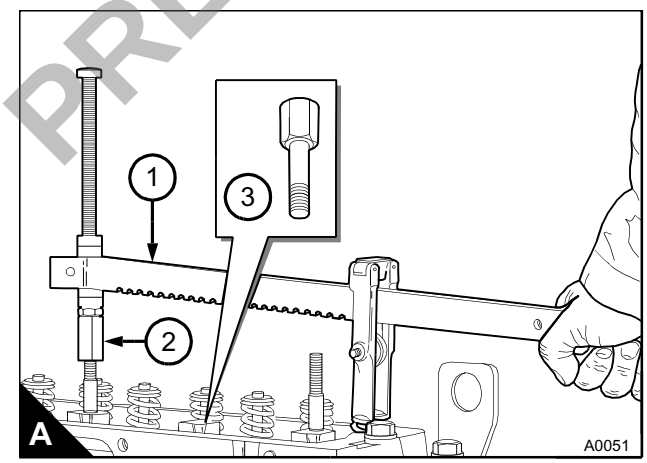
6 Release the valve spring compressor and remove the valve spring caps and valve spring.

Caution: *The outer diameter of the exhaust valve guide is 1 mm larger than the inlet valve guide. To prevent leakage past the inlet valve stem it is important that the larger exhaust valve seal is not installed onto the inlet guide. The seals have a colour code for identification.*

7 Install new valve stem seals on the valve guides. Ensure that the brown seal is installed to the exhaust valve and the green seal is installed to the inlet valves.

8 Put the new valve springs in position.

Continued



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Timing case

To remove — Operation 6-12

1 Remove the fan, see Operation 12-12.

2 Remove the drive belts, see Operation 14-4.

3 Remove the crankshaft pulley, see Operation 5-1 or Operation 5-2.

4 If necessary, remove the fan drive assembly, see Operation 12-13.

5 Drain the coolant and remove the coolant pump. Gear driven pumps only, see Operation 12-4.

6 Remove the alternator together with its mounting bracket and front support plate.

7 Remove the timing case cover, see Operation 6-1.

8 Rotate the crankshaft until the marked teeth of the crankshaft gear and the camshaft gear are in mesh with the idler gear. The marked teeth of the idler gear will not necessarily be in mesh with the marked teeth of the other gears because of the different speed of rotation of the idler gear.

9 Remove the fuel injection pump, see Operation 11-10

10 Remove the idler gear, see Operation 6-6 and the camshaft gear, see Operation 6-10.

11 Remove the setscrews which hold the timing case to the cylinder block and the setscrews which hold the sump to the bottom of the timing case.

12 Remove the timing case and the joint, do not allow the idler gear hub to fall. Ensure that the camshaft thrust washer is not lost.

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Note: If the drive cam of the fuel lift pump is at the point of maximum lift, it will not be possible to operate the priming lever. In this situation, the crankshaft must be rotated one revolution.

Caution: *Use a spanner to prevent movement of the fuelled starting aid (E1) when the union nut (E2) is loosened or tightened.*

3 Loosen the union nut (E2) at the fuelled starting aid and operate the priming lever of the fuel lift pump until fuel, free of air, comes from the connection. Tighten the union nut at the starting aid.

4 Loosen the fuel pipe union at the fuel injection pump return outlet connection to the fuel filter. Operate the priming lever of the fuel lift pump (F) until fuel, free from air, comes from the fuel injection pump union. Tighten the union.

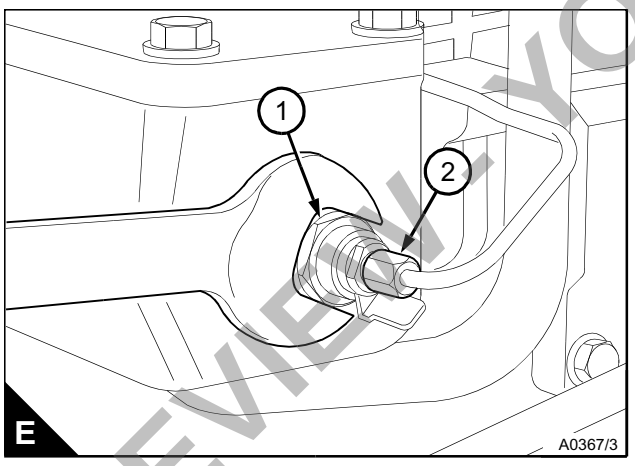
5 Loosen the high-pressure connections at two of the atomisers (G1).

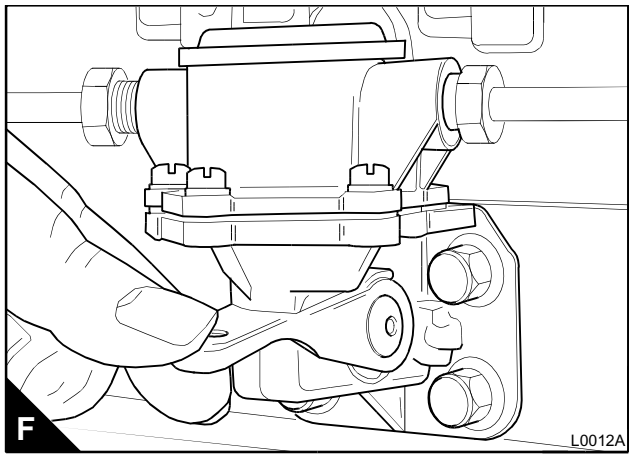
Warning! *When the starter motor is operated to eliminate air from the high pressure pipes, the engine may run.*

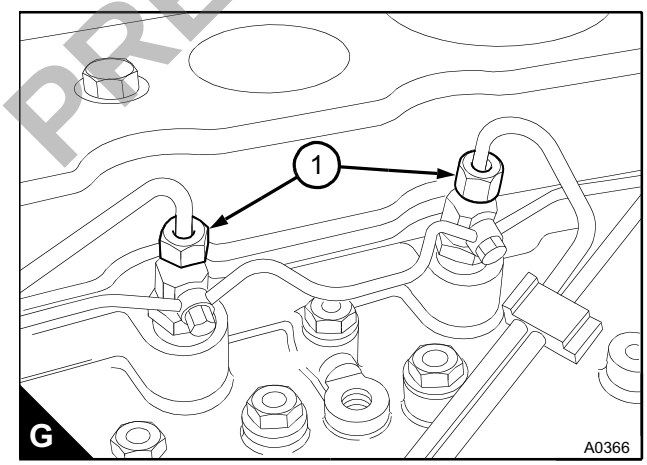
***Cautions*:**

* *Do not tighten the union nuts of the high-pressure pipes more than the recommended torque tension. If there is a leakage from the union nut, ensure that the pipe is correctly aligned with the atomiser inlet. Do not tighten the atomiser union nut more, as this can cause a restriction at the end of the pipe. This can affect the fuel delivery.*
* *Damage to the fuel injection pump, battery and starter motor can occur if the starter motor is used excessively to eliminate air from the fuel system.*

Continued







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Standard torque values

Most of the torque values on the engine are standard. Special torque values are listed in the separate special torque tables. The standard torque values listed in the tables below can be used when a special torque is not necessary.

The torque values below apply to components lubricated with a little clean engine oil before they are fitted.

Standard torques for setscrews and nuts

Thread size	Torque		
	Nm	lbf ft	kgf m
M6 x 1,00	9	7	0,9
M8 x 1,25	22	16	2,2
M10 x 1,50	44	32	4,5
M12 x 1,25	78	58	8,0
M14 x 2,00	124	92	13,0
M16 x 2,00	190	140	19,3

Standard torques for studs (metal end)

Thread size	Torque		
	Nm	lbf ft	kgf m
M6 x 1,00	5	4	4
M8 x 1,25	11	8	1,1
M10 x 1,50	18	13	1,8
M12 x 1,75	25	18	2,5

Standard torques for pipe unions, plugs, and adaptors

Thread size inches	Torque		
	Nm	lbf ft	kgf m
1/8 PTF	9,5	7	0,9
1/4 PTF	17	12	1,7
3/8 & 1/2 PTF	30	22	3,0
3/4 PTF	45	33	4,6

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Timing case

To remove — Operation 6-16

Special requirements

Special tools			
Description	**Part number**	**Description**	**Part number**
Crankshaft timing pin	27610211	Fuel pump timing pin	27610032
Camshaft timing pin	27610212		

Note: It is not necessary to remove the alternator, if the belts and the link setscrew are removed. The alternator can be rotated away from the timing case.

1 Drain the lubricating oil and coolant.

2 Remove the fan drive, see Operation 12-9.

3 If not previously removed, remove the crankshaft pulley, see Operation 5-1.

4 If required remove the alternator, see Operation 14-4.

5 Remove the lubricating oil sump, see Operation 10-4.

6 Remove the fuel injection pump:

- For Bosch fuel injection pumps, see Operation 11-9 or Operation 11-11.
- For the Delphi DP210 fuel injection pump, see Operation 11-13.

7 Remove the coolant by-pass, see Operation 12-13.

8 Remove the PTO, if fitted see Operation 15-2.

9 Remove the crankshaft timing pin and the camshaft timing pin.

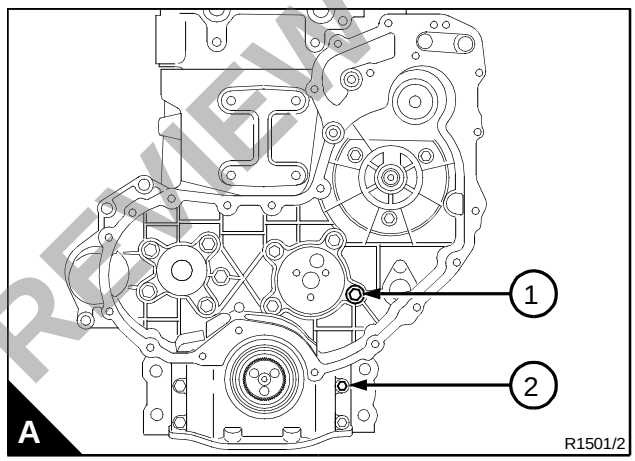
10 Remove the camshaft gear, see Operation 6-12.

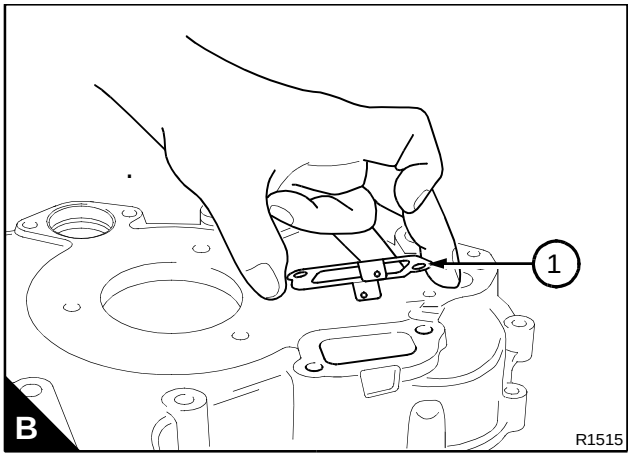
11 Remove the timing case oil seal if a new oil seal is to be fitted, see Operation 6-13.

12 Remove the internal setscrews (A1) and the outer setscrews (A2) of the timing case.

13 Remove the timing case from the cylinder block. Remove the upper joint (B1) from the timing case, and the lower joint from the cylinder block.

14 Discard all old joints.





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To dismantle and to assemble **Operation 12-12**

To dismantle

1 Remove the oil cooler from the cylinder block, see Operation 12-10.

2 Remove the four setscrews (A1) from the oil cooler and remove the cooler element.

Warning! *Do not allow compressed air to contact your skin. If compressed air enters your skin, obtain medical help immediately.*

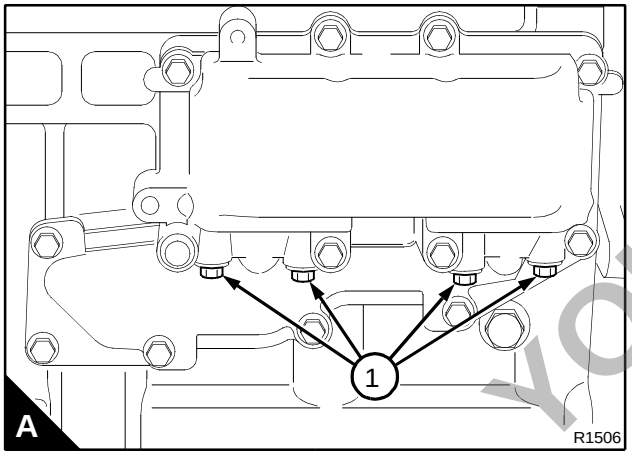
3 Clean the element and check for cracks. If a solution is used to clean the outside of the element, ensure that this does not enter the element. Check that there are no restrictions to the flow of lubricating oil through the element of the oil cooler. If the inside of the element needs to be cleaned, use a solvent which is suitable for copper. Dry the element with low pressure air and then flush it with clean engine lubricating oil.

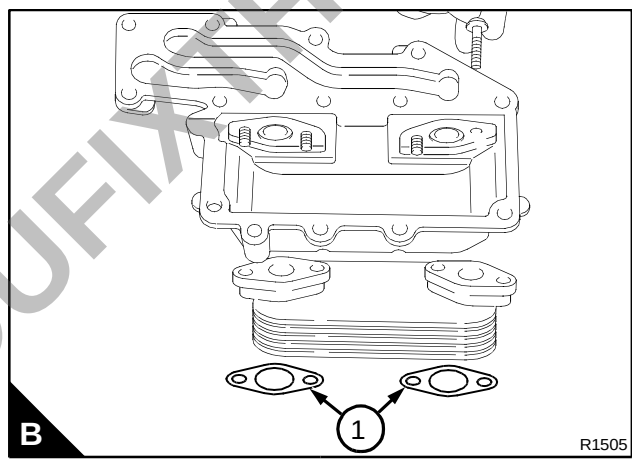
To assemble

1 Renew the joints (B1) on the flanges of the element.

2 Fit the element to the cover and tighten the setscrews (A1) to the correct torque.

3 Fit the oil cooler, see Operation 12-11.





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Cylinder head assembly

General description

The cast iron cylinder head is fastened to the cylinder block by flanged head setscrews. The cylinder head gasket has a soft outer surface with an inner steel core. The individual inlet and exhaust ports are designed to assist air swirl and improve air flow. The ports for the inlet and exhaust are on the right side of the cylinder head.

The cylinder head assembly has two overhead valves fitted for each cylinder. Each overhead valve is held in place by a single coil spring, cap, and two collets. The face angle of the intake valve is 45°and the face angle of the exhaust valve is 30°. The cylinder head has steel valve seat inserts fitted for both the intake and the exhaust valves, and these can be renewed. The angles of the valve seats in the cylinder head are 46°f or the intake valves, and 31°for the exhaust valves. The valves move in sintered steel valve guides which can also be renewed. The exhaust valve guides have a counterbore to prevent seizure of the valve stem caused by a build up of carbon under the head of the valve. Each valve stem is fitted with a synthetic rubber oil seal.

The overhead valves are operated by a rocker shaft assembly fitted to the top of the cylinder head. The forged steel rocker levers are operated by cold drawn push rods with hardened heads. The rocker shaft is supported by sintered steel brackets between each pair of valves. The rockers and valve gear are lubricated by oil from the hollow rocker shaft that receives a reduced oil flow from the camshaft oil feed. Tappet adjustment is achieved by adjustment screws and locknuts at the push rod end of each rocker lever.

In a diesel engine there is little carbon deposit and for this reason the number of hours run is no indication of when to overhaul a cylinder head assembly. The factors which indicate when an overhaul is necessary are how easily the engine starts and its general performance.

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To assemble Operation 7-2

Special requirements

Consumable products
Description
Loctite 242/243 Threadlock and nutlock

1 Clean thoroughly the new cylinder block. Ensure that all the oil passages are clean and free from debris.

2 Clean the threads of the old cylinder block plugs. Seal the threads with Loctite 242/243 Threadlock and nutlock, and fit the threaded plugs into the new cylinder block.

3 Fit the piston cooling jets, see Operation 4-15.

4 Fit the crankshaft, see Operation 5-13 but do not fit the lubrication oil sump at this time.

5 Fit the piston and connecting rod assemblies, see Operation 4-5.

6 Fit the camshaft, see Operation 6-17.

7 Fit the lubricating oil filter housing, see Operation 10-2 or Operation 10-4.

8 Fit the lubricating oil cooler, see Operation 12-12.

9 Fit the CCB drain valve, see Operation 9-7.

10 Fit the ECM, see Operation 14-12, the wiring harness, and the speed and timing sensor, see Operation 14-15.

11 Fit the VLPM, see Operation 14-3.

12 Install the engine into the vehicle or machine.

13 Fill the cooling system.

14 Fill the lubricating oil sump to the correct level with the recommended grade of lubricating oil.

15 Eliminate air from the fuel system, see Operation 11-10.

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Caution: *Do not damage the sealing face of the oil seal housing during removal of the seal.*

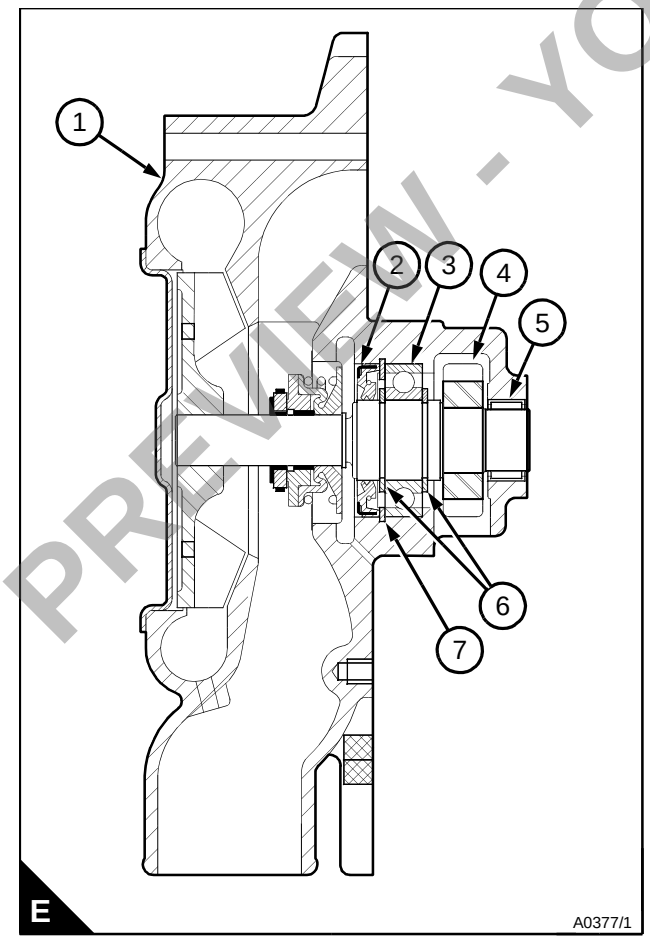
4 Drill a 3.175 mm (0.125 in) hole through the top of the oil seal and fit a 25.4 mm (1.00 in) self-tapping screw. Insert a suitable lever through the coolant inlet of the pump body and apply the lever under the head of the self-tapping screw to remove the oil seal (E2). Discard the oil seal.

5 Remove and discard the circlip (E7).

6 Put the impeller end of the pump body (E1) face down on a suitable press. Press the drive gear end of the shaft through the gear (E4) and the pump body until the shaft and ball bearing assembly (E3) are released from the pump. Discard the bearing, the shaft and the two circlips (E6). The gear will also be released.

7 Inspect the gear for wear or other damage and renew it, if necessary.

8 Put the impeller end of the pump body face down onto a press. Use a suitable mandrel to engage the outer race of the needle roller bearing (E5). Press out the bearing and discard it.



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CIRCUIT GENERAL INFORMATION

The starter solenoid will only operate when the Forward/Neutral/Reverse lever is in the neutral position.

With the key switch in the START position, battery power at terminal 1 flows to terminal 2 then to the Forward/Neutral/Reverse switch at terminal 4. With the Forward/Neutral/Reverse switch in the neutral position, power flows through the switch from terminal 4 and out of terminal 5 to the starter relay at terminal 86. Power flows through the relay winding to terminal 85 and to chassis ground at G6 energizing the relay.

With the starter relay energised, battery power at terminal 30 is connected to terminal 87 and flows to the starter solenoid at terminal S to ground internally through the starter motor, energising the solenoid.

With the starter solenoid energized, battery power flows from the battery to the starter motor (through an optional jumper stud or battery master disconnect switch) and to ground internally through the motor, operating the motor.

NOTE: *For tractors equipped with master disconnect switches, when the switch is in the OFF position all battery power is disconnected to the tractor except for power for the instrument cluster clock, interior light, radio and independent front suspension axle controller (if equipped).*

Fuel Shut Off and Auto Advance Circuit General Information - Tractors With 1000 Series Engines

Battery power is available at the key switch terminal 1. When the key switch is in the ON position power flows from the key switch at terminal 5 through fuse 38 to the fuel shut off solenoid terminal A. Power then flows through the solenoid to terminal B and to ground at G6 energizing the solenoid.

Power also flows from terminal 5 of the key switch through fuse 38 to the auto fuel advance temperature switch.

When the engine coolant temperature is approximately 50°C (122°F) power will flow through the switch to the auto fuel advance solenoid which will melt the wax inside the coil gradually reducing excess fuel delivery to normal operation after approximately 3 minutes.

If the engine coolant temperature is below 40°C power will not flow through the switch to the auto fuel advance unit, this will allow excess fuel delivery.

Cold Start Circuits

American specification tractors with 1000 series engines are equipped with either Thermostart or Ether Start, European specification tractors and American specification tractors with 1100 series engines are equipped with Thermostart only.

With the key switch in the ON or START position battery power at terminal 1 is connected to terminal 5 and flows through fuse 37 to the cold start switch terminal 1. When the switch held ON power flows through the switch to terminal 5 and to the ether start solenoid or the thermostart unit.

Ether Start (if Equipped)

When the switch is held ON power flows from terminal 1 of the switch to the ether start solenoid terminal A. Power then flows through the solenoid to terminal B then to ground at G6 energising the solenoid. This allows a small amount of ether fluid to enter the engine air intake.

Thermostart

When the switch is held ON power flows from terminal 1 of the switch through the Thermostart Unit to ground operating the thermostart heater element. The element will increase the temperature of the air flowing into the engine.

continued....

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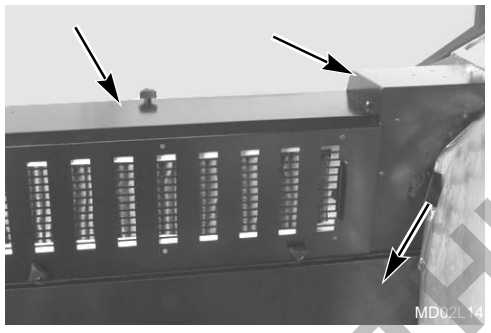
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Blower Motor Circuit Test
- Low Profile Cab Tractors Equipped With Air Conditioning

IMPORTANT: *Before carrying out the following tests, refer to "CIRCUIT TESTING General Information" on page 5.*

NOTE: *To gain access to the blower motor remove heater box top cover, air conditioning controller cover and heater box front panel.*

NOTE: *Turn the key to the OFF position and disconnect the blower motor from the harness.*



HEATER BOX AND CONTROLLER COVERS

Check Point	Reading	Possible Cause of Bad Reading
Check 1: Terminal B of the blower motor connector (cab harness side) for the Black wire to ground.	Continuity	Bad chassis ground circuit. Also check the chassis ground connection.

NOTE: *Turn the key to the ON position and turn the blower switch to the HIGH (III) speed position.*

Check 2: Terminal A of the blower motor connector (cab harness side) for wire 116 Orange to ground.	12 Volts approximately	Bad circuit between the blower switch and the blower motor. Go to check 3.

NOTE: *Turn the key to the ON position and turn the blower switch to the MEDIUM (II) speed position.*

Check 3: Terminal A of the blower motor connector (cab harness side) for wire 116 Orange to ground.	12 Volts approximately	Bad circuit between the blower switch and the blower motor, through the resistors. Go to check 4.

NOTE: *Turn the blower switch to the LOW (I) speed position.*

Check 4: Terminal A of the blower motor connector (cab harness side) for wire 116 Orange to ground.	12 Volts approximately	Bad circuit between the blower switch and the blower motor, through the resistors.

NOTE: *If the readings at checks 2,3 and 4 are all incorrect check wire 116 Orange between the splice and the blower motor. Also check the blower switch, refer to "Blower Switch Circuit Test - Low Profile Cab Tractors Equipped With Air Conditioning" on page 115.*

NOTE: *If the reading at check 2 is correct but the readings at both or one of checks 3 and 4 are incorrect check the resistor, refer to "Blower Motor Resistor Circuit Test - Low Profile Cab Tractors Equipped With Air Conditioning" on page 116. Also check the blower switch, refer to "Blower Switch Circuit Test - Low Profile Cab Tractors Equipped With Air Conditioning" on page 115.*

NOTE: *If the readings are correct check the blower motor.*

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AMERICAN SPECIFICATION HEADLIGHTS, POSITION LIGHTS AND RIGHT HAND CONSOLE LIGHT

CIRCUIT GENERAL INFORMATION
Headlight and Rear Position Light Circuits 209
Rear Position Light Circuits 209
Headlight Circuits 209
Dipper Relay Operation 209

CIRCUIT TESTING
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Instrument Cluster Backlighting Circuit Test 214
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Left Hand Rear Position Light Circuit Test 215
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Optional Left Hand Upper Fender Position Light Circuit Test
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(MC Series, MTX110, 125 and 140 European 2WD Tractors,
MTX110, 125 and 140 North American Tractors and
MTX155 and 175 North American 2WD Tractors)
Disassembly....4
Inspection....6
Assembly....6

STEERING HAND PUMP
(MTX110, 125 and 140 European MFD Tractors)
Disassembly....10
Inspection....12
Assembly....12

STEERING HAND PUMP
(MTX155 and 175 European Tractors and
MTX155 and 175 North America MFD Tractors)
Disassembly....16
Inspection....18
Assembly....18

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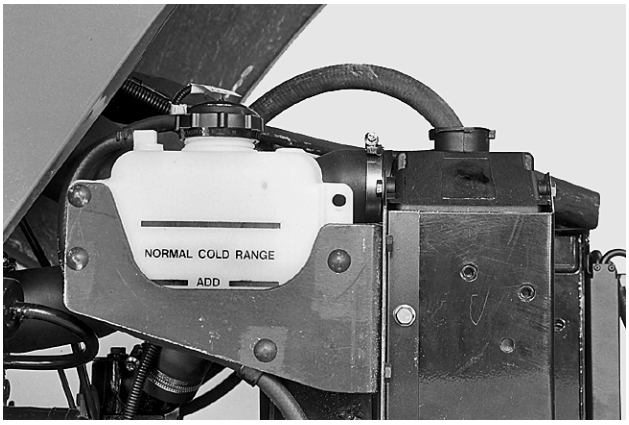
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STEP 5

Fill the radiator with correct coolant solution. Install the bleed hose into the radiator filler neck and remove the clamp from rear hose (3).

IMPORTANT: *Never put coolant into a hot engine. The engine block or cylinder head can crack due to the temperature difference between the coolant and the engine.*

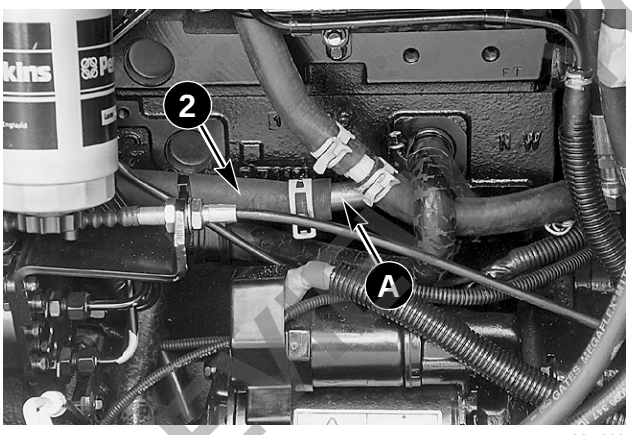
STEP 6



DP98A362

Fill the coolant recovery reservoir to the ‘normal’ mark with correct coolant solution. Install the cap.

STEP 7



DP98A360

To purge any air in the front hose (2), loosen the clamp on front hose (2) until coolant flows from the hose. Install a 5/8 inch diameter plug (A) into the open end of the hose and secure with a hose clip. Remove the clamp.

STEP 8

Start and run the engine at low idle for 1 minute to purge any air from the heater into the radiator. Stop the engine.

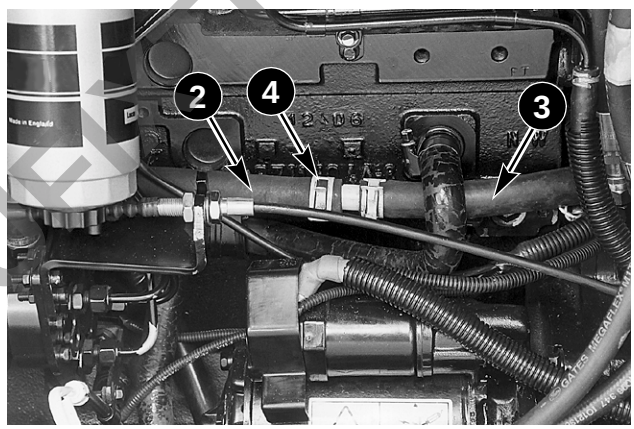
WARNING: *Never operate the engine in a closed building. Proper ventilation is required under all circumstances.* SM100A

STEP 9

Check the radiator coolant level.

NOTE: *If the radiator tubes are not covered with coolant fill the radiator with coolant solution and repeat STEP 8.*

STEP 10



DP98A361

Using suitable clamps, clamp the heater return front hose (2) and rear hose (3). Remove the bleed hose from the radiator filler neck. Release the hose clip and remove the bleed hose and plug. Connect the front and rear hoses and install the hose clips. Remove the hose clamps.

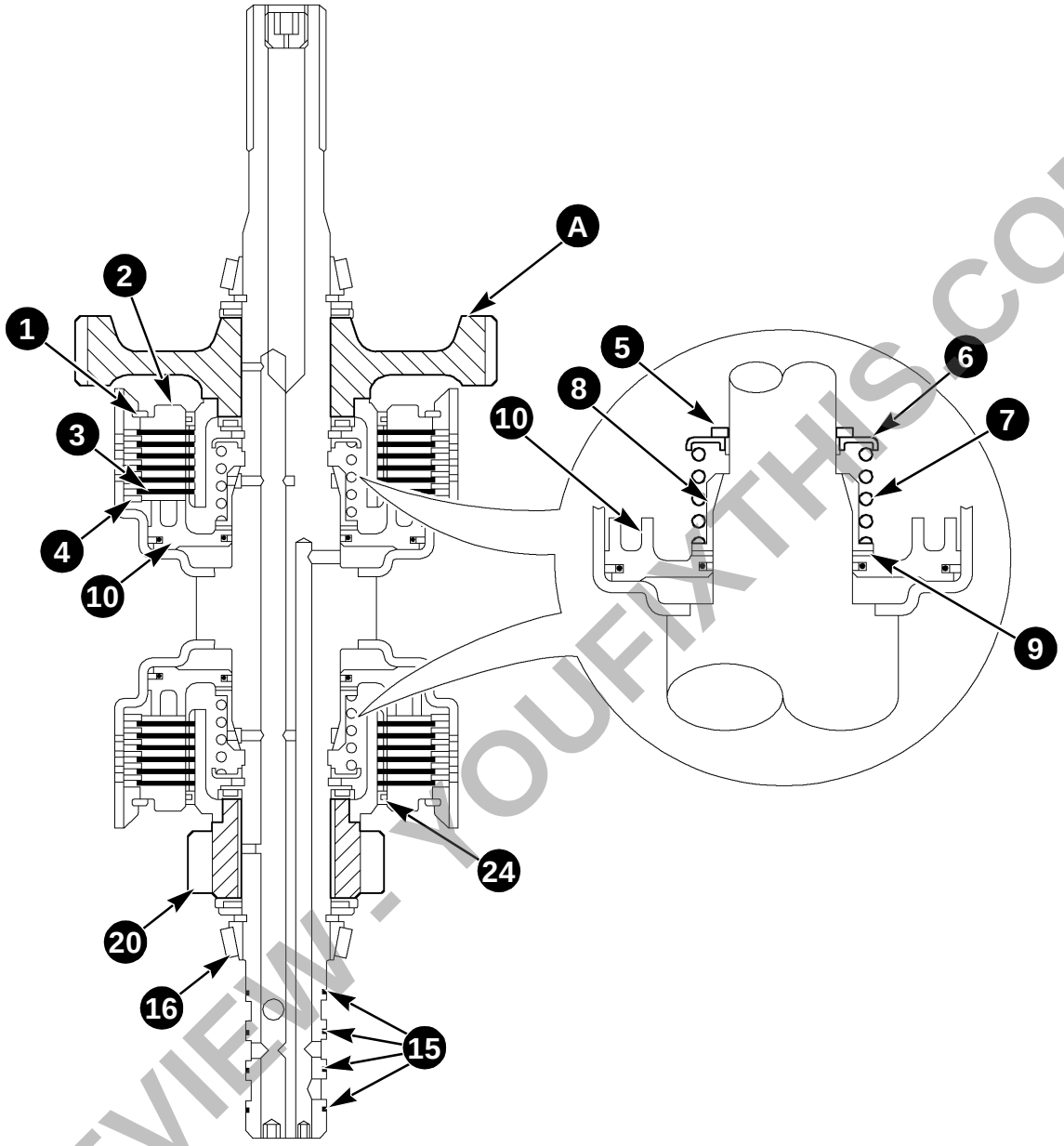
STEP 11

Fill the radiator with coolant and install the filler cap. Fill the recovery reservoir to the ‘normal, mark and install the cap.

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Cross Sectional Drawing of the Shuttle Shaft



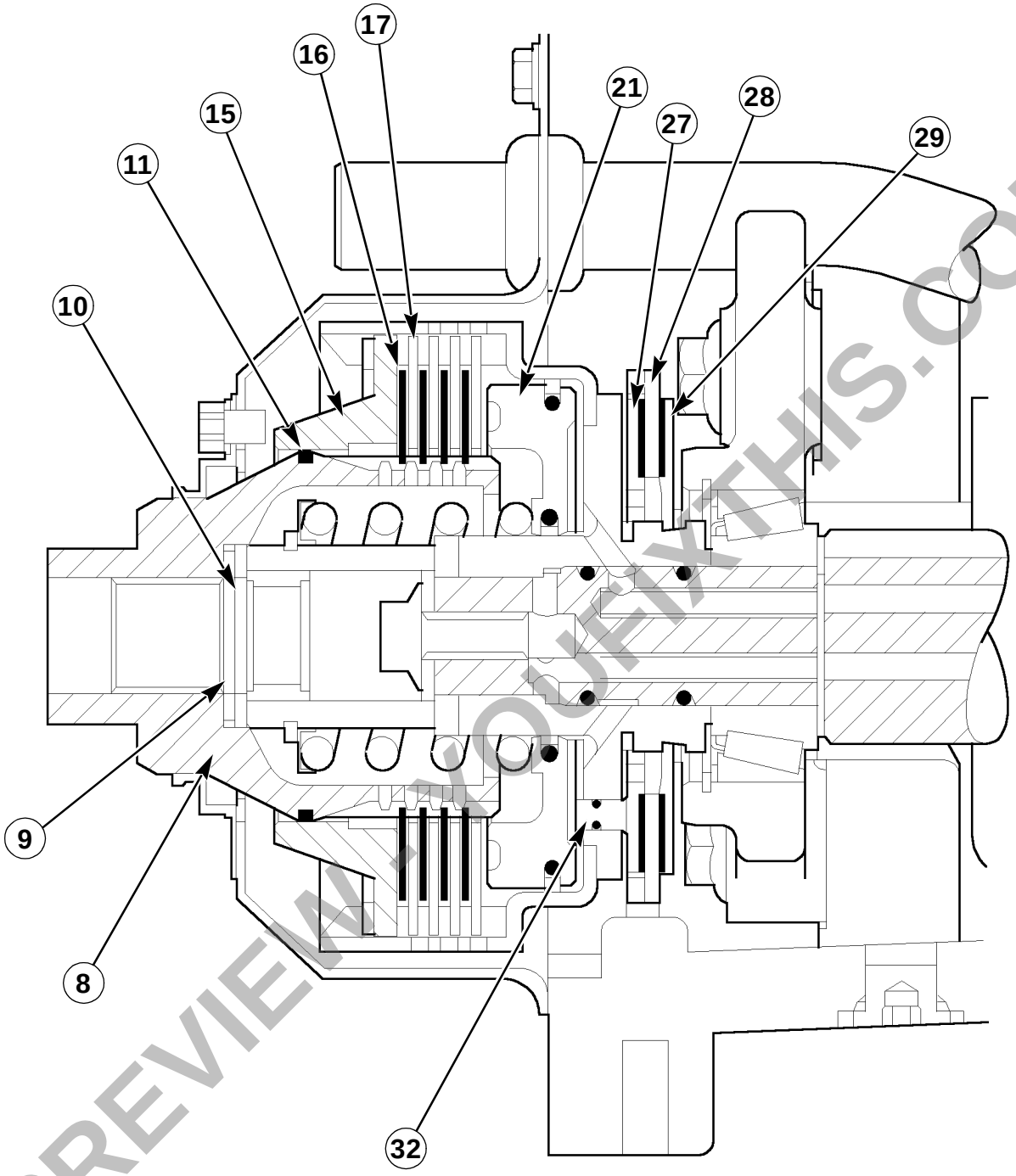
DI96A001

A. FORWARD GEAR HUB
1. SNAP RING
2. BACKING PLATE
3. FRICTION PLATES
4. METAL SEPARATOR PLATES
5. SNAP RING
6. SPRING RETAINER
7. SPRING
8. LUBRICATION SLEEVE
9. SHIMS
10. PISTON
15. SEALING RINGS
16. BEAERING CONE
20. REVERSE GEAR HUB
24. SEALING RING

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Cross Sectional Drawing of the PTO Clutch

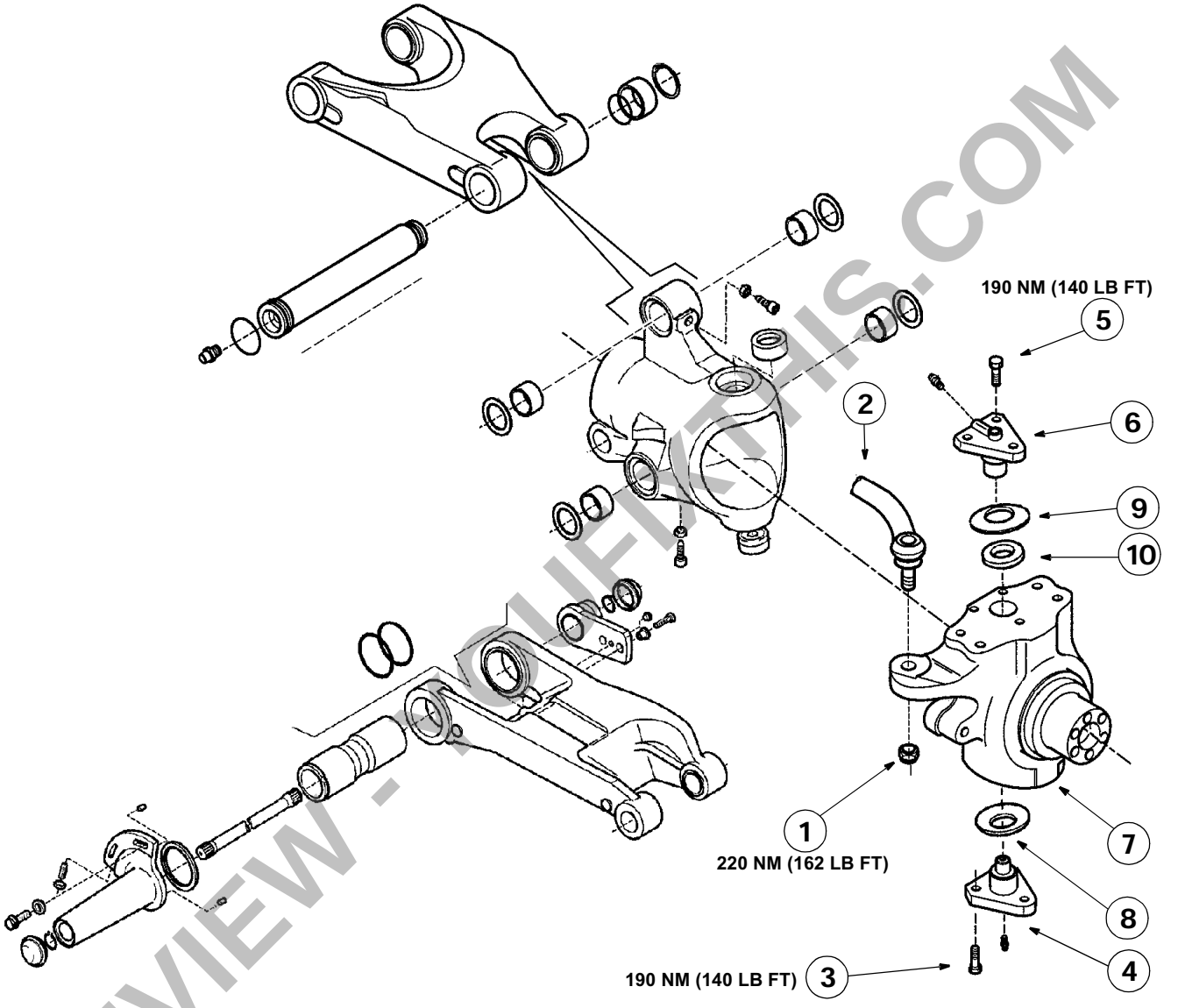


DI97B139

8. HUB
9. BEARING
10. WASHER
11. SEAL
15. BACKING PLATE
16. FRICTION PLATE (4)
17. SEPARATOR PLATE (4)
21. PISTON
27. FRICTION PLATE
28. BRAKE PLATE
29. FRICTION PLATE
32. PISTON PIN

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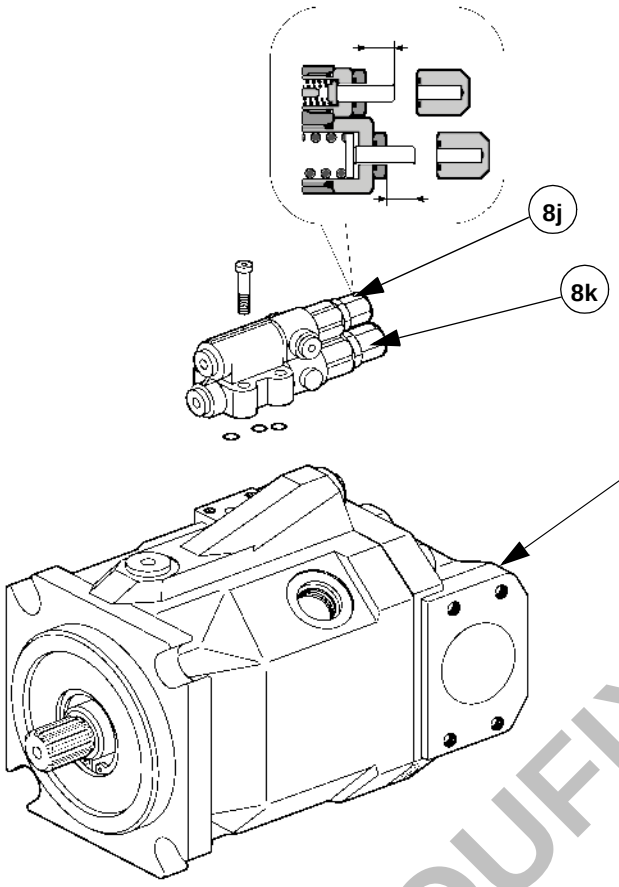
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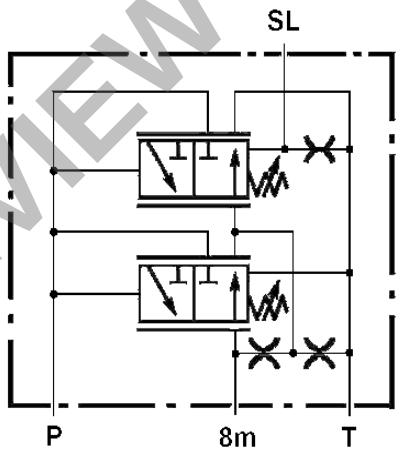


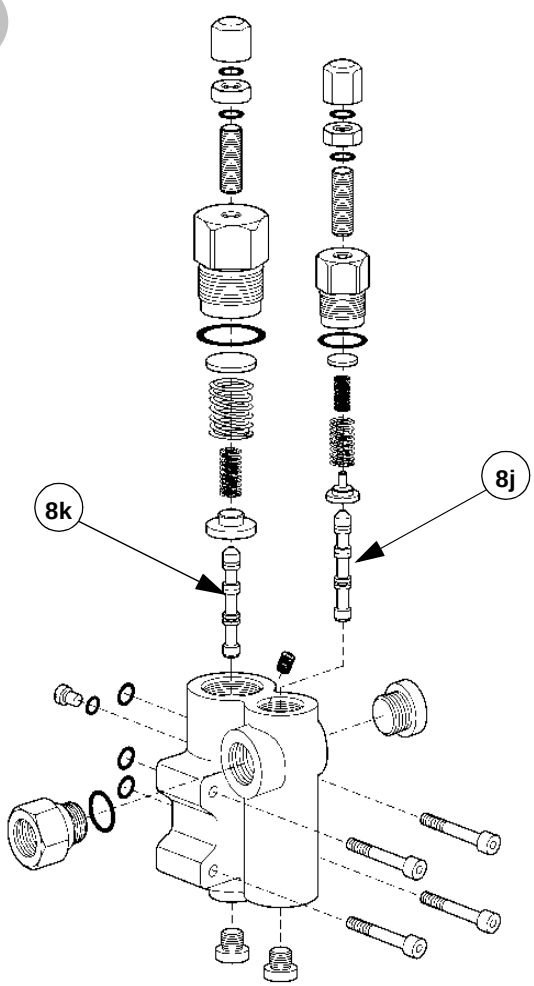
1. NUT
2. BALL JOINT
3. RETAINING BOLTS
4. KING PIN
5. RETAINING BOLTS
6. KING PIN
7. SWIVEL HOUSING
8. BELLEVILLE WASHER
9. BELLEVILLE WASHER
10. THRUST WASHER

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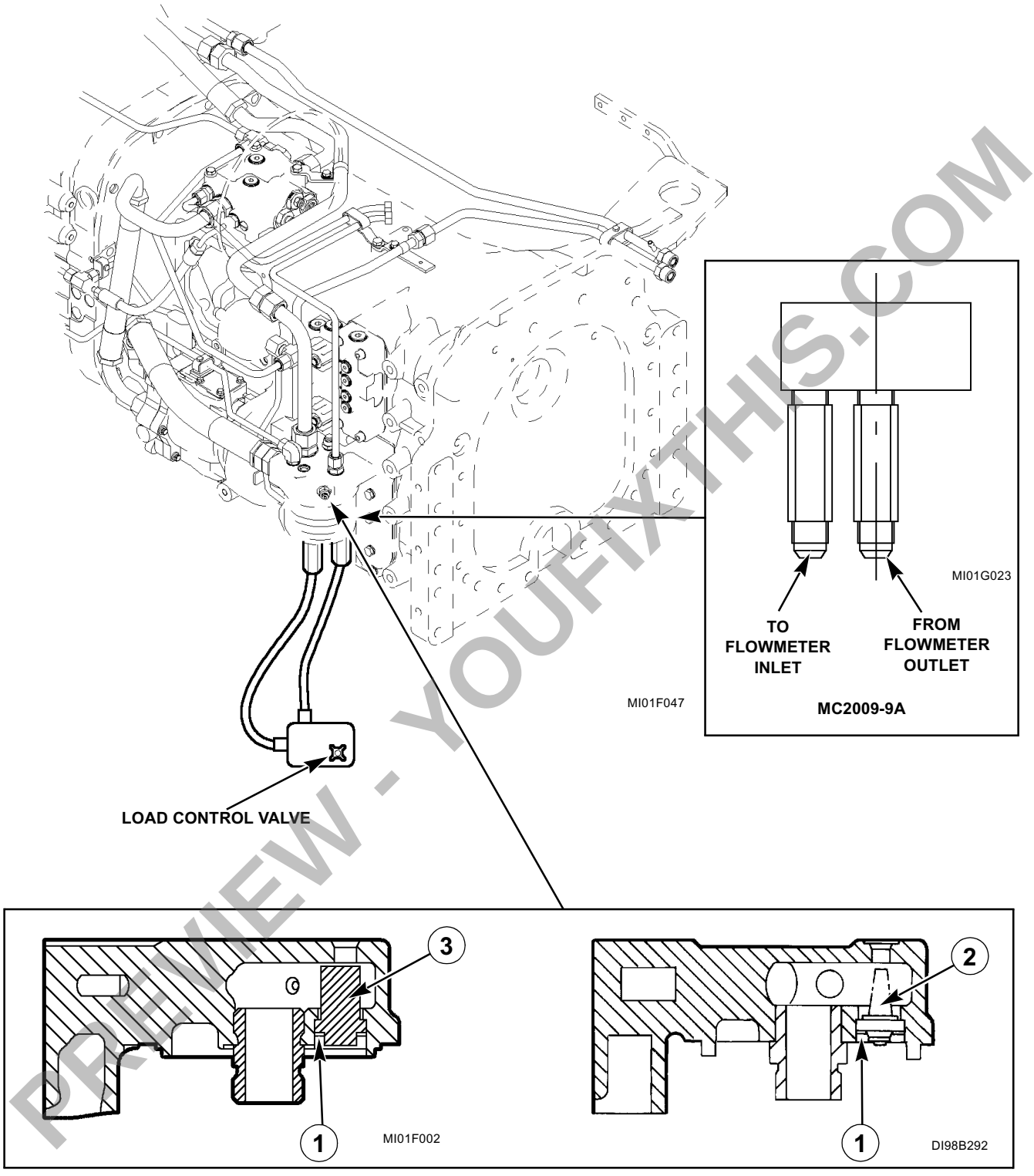




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Test 3 - Charge Pump Flow Test



IMPORTANT: *The flowmeter load control valve must fully open before starting test. Connect the flowmeter to the flow adaptor using hydraulic hose and adaptors with a minimum internal diameter of 16 mm (5/8 inch) for the charge pump flow test.*

IMPORTANT: *Remove retaining ring (1) and bypass valve (2). Install MC2009-10 flowmeter test adapter pin 3 and retaining ring (1). Care must be taken not to damage the retaining ring 1.*

IMPORTANT: *Make sure the flowmeter hoses are connected to the test adaptor MC2009-9A as shown. Failure to do so will cause damage to the charge lubrication pump.*

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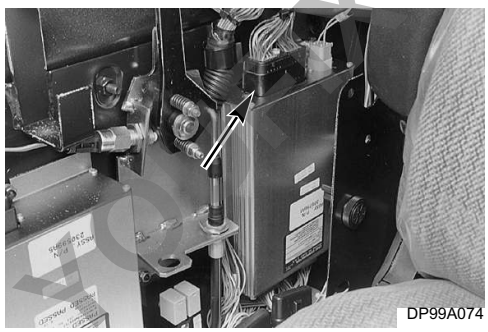
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NOTE: *Connect connector 40. Remove the right hand console side cover and disconnect connector J1 (Black) from the hitch controller.*

Check Point	Reading	Possible Cause of Bad Reading
Check 13: Between connector 40 pin 14 and connector 49A or 49B pin A for wires 514 Brown.	Continuity	Check wire 514 Brown between connector 40 and connector 49A or 49B.
Check 14: Between connector 40 pin 12 and connector 49A or 49B pin C for wires 514 Red.	Continuity	Check wire 514 Red between connector 40 and connector 49 A or 49B.
Check 15: Between connector 40 pin 13 and L/H load pin connector 49A pin B for wire 515 Light Blue.	Continuity	Check wire 515 between connector 40 and L/H load pin connector 49A.
Check 16: Between connector 40 pin 15 and R/H load pin connector 49B pin B for wire 514 Light Blue.	Continuity	Check wire 514 between connector 40 and R/H load pin connector 49B.

NOTE: *Connect connector 40. Remove the right hand console side cover and disconnect connector J1 (Black) from the hitch controller.*



CONNECTOR J1 (BLACK)

Check 17: Between connector J1 (Black) pin 33 for wire 514 Brown and pin A of R/H or L/H load pins for wires 514 Brown or 514 Black.	Continuity	Check wire 514 Black between connector 40 and connector J1 (Black).
Check 18: Between connector J1 (Black) pin 32 and pin C of R/H or L/H load pins for wire 514 Red.	Continuity	Check wire 514 Red between connector 40 and connector J1 (Black).
Check 19: Between connector J1 (Black) pin 34 and L/H load pin connector 49A pin B for wire 515 Light Blue.	Continuity	Check wire 515 between L/H load pin connector 49A and connector J1 (Black).
Check 20: Between connector J1 (Black) pin 35 and R/H load pin connector 49B pin B for wire 514 Light Blue.	Continuity	Check wire 514 between R/H load pin connector 49B and connector J1 (Black).

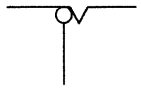
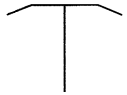
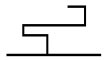
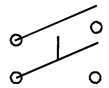
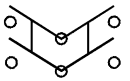
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Schematic Symbols

ACTUATORS			
 LEVER	 HAND	 FOOT	 TEMPERATURE
 LIQUID LEVEL FLOAT	 PRESSURE	 COIL	 DIODE
 VARIABLE RESISTOR	 RESISTOR	 MAGNETIC	CONTACTS  MOMENTARY  MAINTAINED
HOUSINGS			
 VACUUM SWITCH	 PRESSURE SWITCH	 TEMPERATURE SWITCH	 MOTOR  LIGHT
SWITCH CONTACT CONFIGURATION			
 S.P.S.T. (SINGLE POLE SINGLE THROW)	 S.P.D.T. (SINGLE POLE DOUBLE THROW)	 D.P.S.T. (DOUBLE POLE SINGLE THROW)	 D.P.D.T. (DOUBLE POLE DOUBLE THROW)
MISCELLANEOUS SYMBOLS			
 FUSE	 CIRCUIT BREAKER		

NOTE: *Schematic symbols shown with tractor parked and power OFF.*

Error Code 22

IMPORTANT: *Before carrying out the following troubleshooting, refer to "General Information" on page 9.*

PTO controller is receiving an ON and OFF signal from the PTO control switch at the same time.

Check PTO control switch circuit.
Go to "Test 5 - PTO Control Switch" on page 45.

Error Code 23

IMPORTANT: *Before carrying out the following troubleshooting, refer to "General Information" on page 9.*

PTO controller is receiving two input signals from forward and reverse switch circuit.

Check F/N/R switch circuit. Go to "Test 24 - Forward/Neutral/Reverse Switch" on page 72

Error Codes 24, 25 and 26

IMPORTANT: *Before carrying out the following troubleshooting, refer to "General Information" on page 9.*

NOTE: *These Error Codes were stored when the PTO indicator lamp failed. "No Error Code - PTO Operates But PTO Indicator Lamp Does Not Illuminate" on page 16.*

Error Code 27

IMPORTANT: *Before carrying out the following troubleshooting, refer to "General Information" on page 9.*

F/N/R neutral lamp not operating.

Check F/N/R neutral lamp circuit. Go to "Test 25 - F/N/R Neutral Lamp" on page 74.

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