STANDARD TORQUE DATA FOR NUTS AND BOLTS

NOTE: *A "click type" torque wrench is recommended for the bolt torques listed below.*

Chart 1 (Plain Nuts/Bolts)

BOLT SIZE (mm)	TYPE 8.8				TYPE 10.9			
	MIN		MAX		MIN		MAX	
	lb ft	Nm	lb ft	Nm	lb ft	Nm	lb ft	Nm
M4	3.0	4.0	3.4	4.5	4.3	5.8	4.8	6.5
M5	4.8	6.5	5.5	7.5	7.0	9.5	7.8	10.5
M6	8.2	11.0	9.2	12.5	11.8	16.0	13.3	18.0
M8	20.0	27.0	22.5	31.0	28.7	39.0	32.3	44.0
M10	40.0	54.0	45.0	61.0	56.0	77.0	64.0	87.0
M12	69.0	94.0	78.0	106.0	100.0	134.0	110.0	151.0
M14	110.0	150.0	125.0	170.0	160.0	215.0	180.0	240.0
M16	175.0	235.0	190.0	260.0	245.0	335.0	275.0	375.0
M20	345.0	470.0	390.0	530.0	480.0	650.0	540.0	730.0
M22	475.0	640.0	530.0	720.0	655.0	890.0	735.0	1000.0
M24	600.0	810.0	675.0	915.0	830.0	1125.0	930.0	1265.0
M30	1190.0	1615.0	1340.0	1815.0	1645.0	2235.0	1855.0	2515.0
M36	2080.0	2825.0	2340.0	3175.0	2875.0	3900.0	3235.0	4390.0

Chart 2 (Phosphate Coated Nuts/Bolts)

BOLT SIZE (mm)	TYPE 8.8				TYPE 10.9			
	MIN		MAX		MIN		MAX	
	lb ft	Nm	lb ft	Nm	lb ft	Nm	lb ft	Nm
M4	2.3	3.0	2.6	3.4	3.2	4.4	3.6	4.9
M5	3.6	4.9	4.1	5.6	5.2	7.1	5.9	8.0
M6	6.2	8.3	6.9	9.4	8.9	12.0	10.0	13.5
M8	15.0	20.3	16.9	23.3	21.5	29.2	24.2	32.8
M10	30.0	41.0	34.0	46.0	42.0	58.0	48.0	65.0
M12	52.0	71.0	59.0	80.0	75.0	101.0	83.0	113.0
M14	83.0	113.0	94.0	126.0	120.0	161.0	135.0	180.0
M16	131.0	176.0	143.0	195.0	185.0	251.0	205.0	280.0
M20	259.0	353.0	293.0	400.0	360.0	490.0	405.0	550.0
M22	355.0	480.0	400.0	540.0	490.0	665.0	550.0	750.0
M24	450.0	608.0	506.0	686.0	625.0	845.0	700.0	950.0
M30	893.0	1211.0	1005.0	1361.0	1235.0	1675.0	1390.0	1885.0
M36	1560.0	2119.0	1755.0	2381.0	2156.0	2925.0	2425.0	3295.0

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GENERAL SPECIFICATIONS

Capacities

TRANSMISSION/HYDRAULIC (HY-TRAN PLUS ®) OIL CAPACITY		
2WD Tractors	34 Litres	9.0 US gal
MFD Tractors	36.5 Litres	9.6 US gal

Steering Specifications

TRACK ADJUSTMENT		
Toe-in	0 to 5 mm	0 to 0.20 inch

Transmission Specifications

CLUTCH		
C50/60/70 Tractors		
Maximum Clutch Plate Thickness	10.4 mm	0.41 inch
Clutch Plate Diameter	305 mm	12 inch
Number of Friction Plate Pads	5 each side	
C80/90/100 Tractors		
Maximum Clutch Plate Thickness	10.4 mm	0.41 inch
Clutch Plate Diameter	310 mm	12.20 inch
Number of Friction Plate Pads	7 each side	
Pressure Plate and Friction Plate Spline Lubricant	MOLYKOTE D321R or equivalent	
SPEED TRANSMISSION		
Speed Transmission Rear Synchronizer End Play	0.05 to 0.30 mm	0.002 to 0.012 inch
Speed Transmission Front Synchronizer End Play	0.05 to 0.30 mm	0.002 to 0.012 inch
RANGE TRANSMISSION		
Pinion Bearing End Play (Maximum)	0.076 mm	0.003 inch
Synchronizer Running Clearance	0.4 to 0.6 mm	0.016 to 0.024 inch
Selector Fork Running Clearance		
Standard Transmission	0.45 mm	0.018 inch
Forward/Reverse Transmission	0.05 mm	0.002 inch
REAR AXLE		
Planetary Gear/Planetary Gear Carrier Shimming	refer to Section 6012	
DIFFERENTIAL		
Differential Lock Selector Ring Clearance (Engaged Position)	0.025 to 0.90 mm	0.001 to 0.035 inch
Ring Gear to Pinion Backlash	0.152 to 0.304 mm	0.006 to 0.012 inch
Ring Gear to Differential Housing Run-out	0 to 0.102 mm	0 to 0.004 inch
Differential Bearing Rolling Pull	2.0 to 6.5 kg	4.5 to 14.5 lb
PTO CLUTCH		
Standard Clutch		
Number of Friction Plates	5	
Number of Steel Separator Plates (2 between each Friction Plate)	8	
Heavy Duty Clutch		
Number of Friction Plates	6	
Number of Steel Separator Plates	5	

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SPECIAL TOOLS

CAS30009 SPLITTING STAND

SPECIAL TORQUES

Engine to Speed Transmission Mounting Bolts	101 to 114 Nm	75 to 84 lb ft

ENGINE

NOTE: *For Engine Service and Overhaul procedures, refer to your Engine Service Manual.*

Removal and Installation

NOTE: *For Installation follow the Removal procedure in reverse order.*

Before removing the engine it will be necessary to carry out the following:

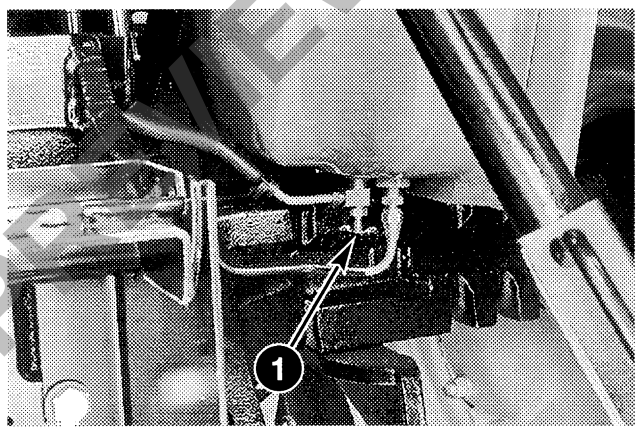
- Park the tractor on hard level ground and apply the parking brake.
- Lower the rear three point hitch.
- Stop the engine and remove the key.
- Put blocks in front of and behind the rear wheels.
- Put wooden blocks between the front axle bolster and front axle.
- Remove the front tractor weights (if equipped).
- Remove the Hood and Side Panels.
- Remove the Exhaust.
- For MFD Tractors, remove the MFD Drive Shaft and Cover.

STEP 1

Disconnect the battery, negative (-) terminal first.

NOTE: *For Installation, connect and tighten the positive (+) terminal first.*

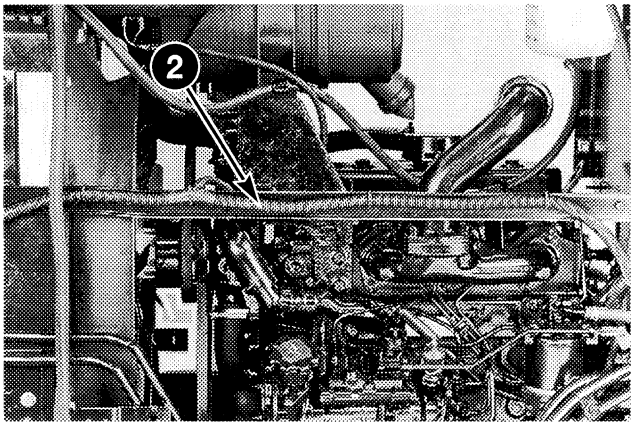
STEP 2



DP97E358

Close fuel supply tap (1) on the fuel tank.

STEP 3



DP97G112

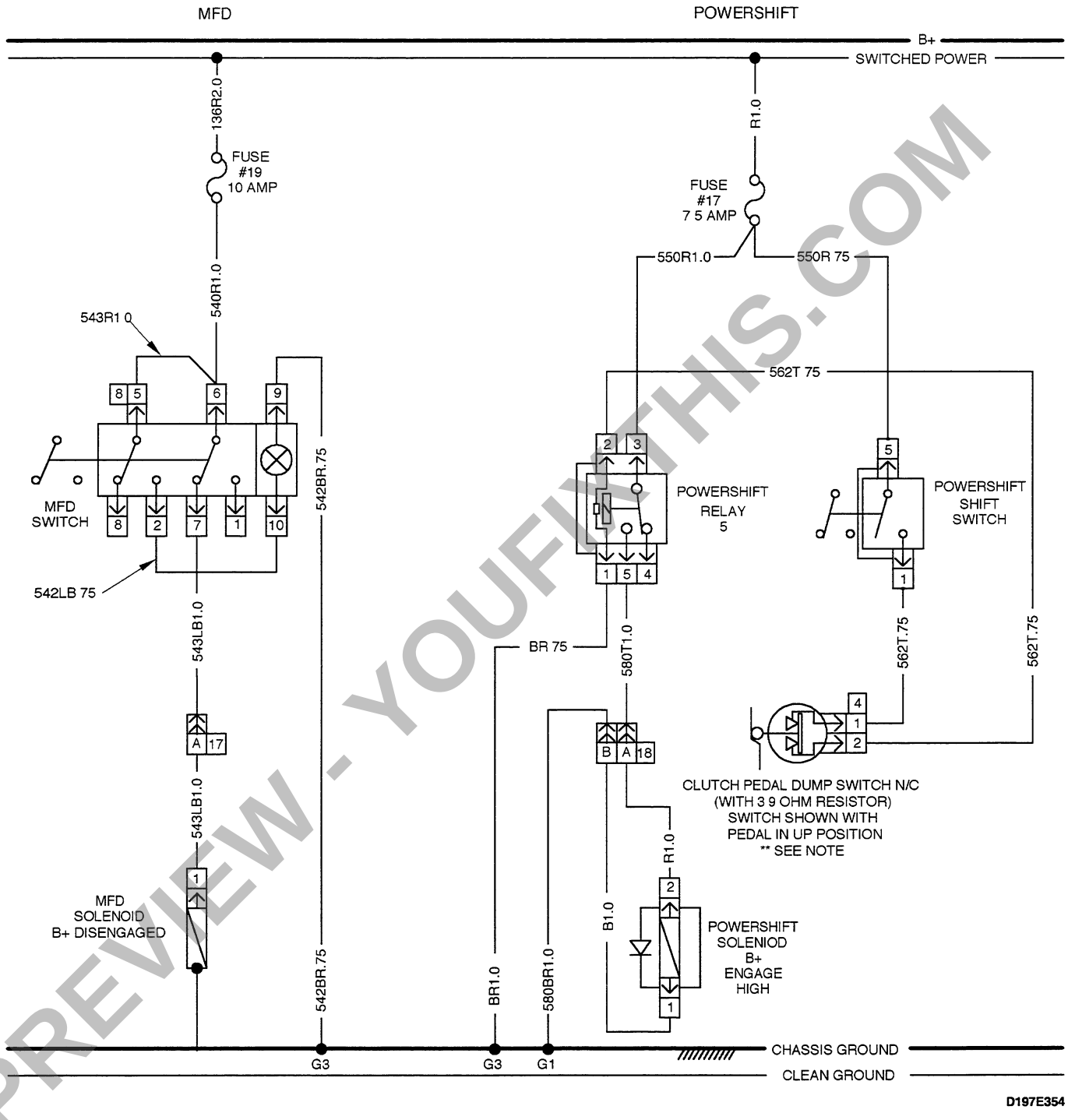
Disconnect the horn and headlamps. Release harness (2) from the rail. Remove the rail between the radiator and battery tray.

NOTE: *Follow STEP 4 to STEP 10 and STEP 17 to STEP 24 for removing the engine from C50/60 Tractors.*

NOTE: *Follow STEP 11 to STEP 16 and STEP 17 to STEP 24 for removing the engine from C70/80/90/100 Tractors.*

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Schematic Circuit



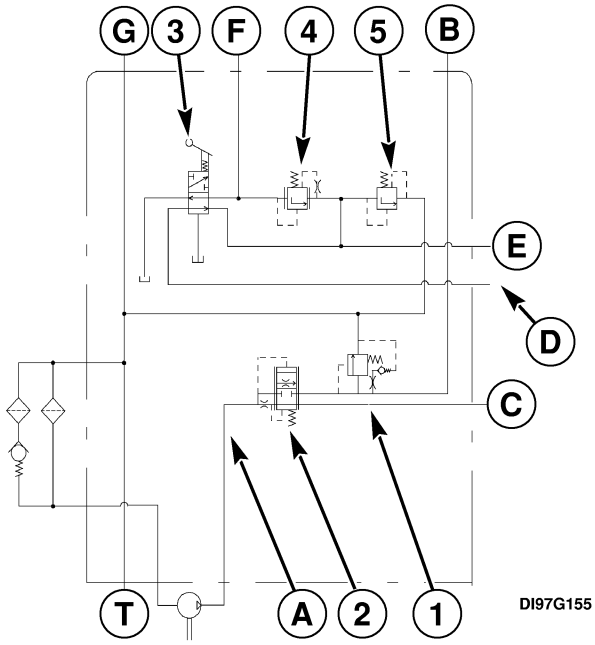
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NOTE: *Only use a HIGH IMPEDENCE multimeter to test the Neutral start and Park brake switches. Do not use a test lamp or damage to the switches may occur.*

NOTE: *G3 chassis ground connections are connected directly to the battery negative terminal.*

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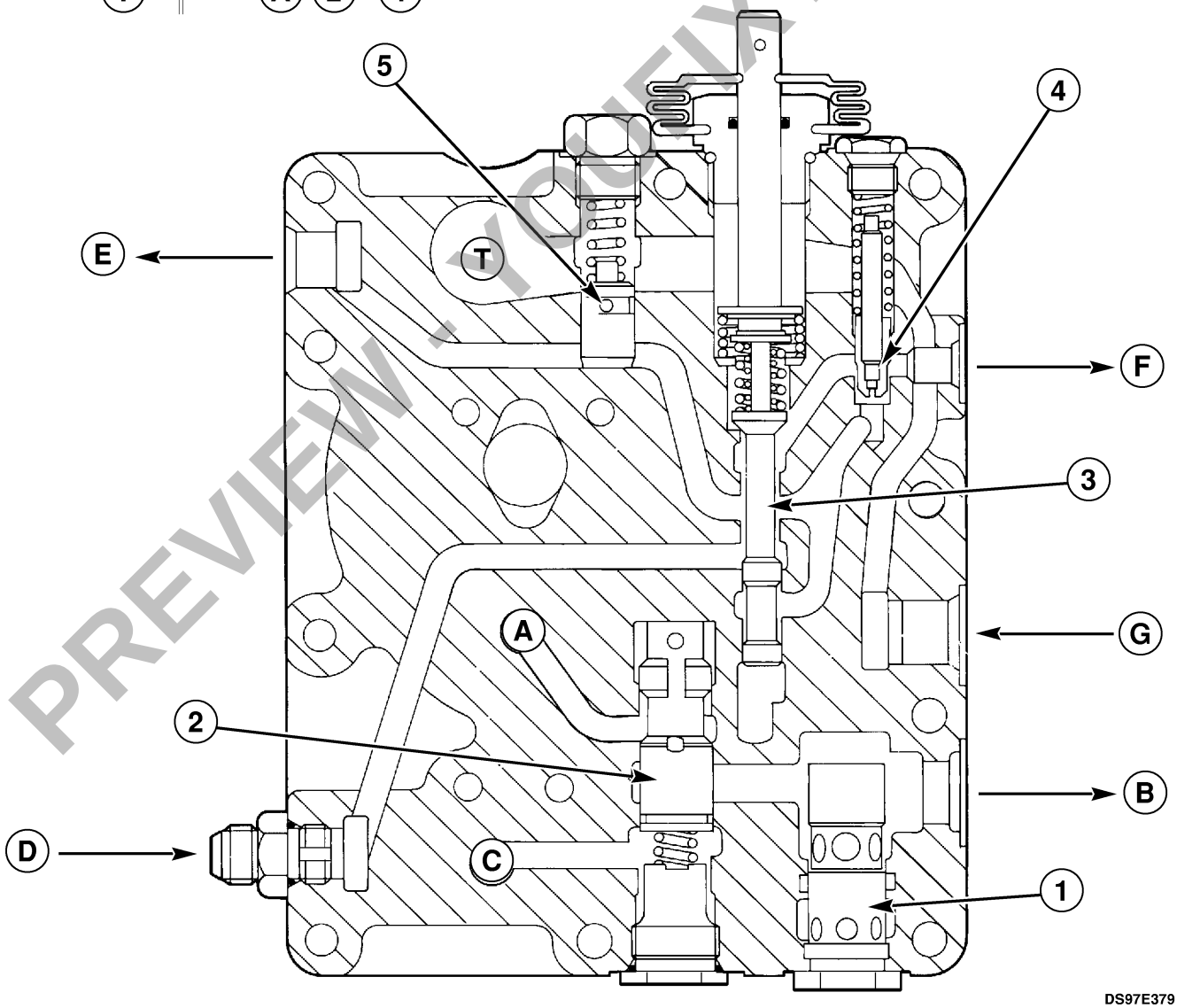
Multi Control Valve (MCV)



DI97G155

1. PILOT RELIEF VALVE
2. PRIORITY FLOW DIVIDER
3. PTO VALVE SPOOL
4. PTO PRESSURE REGULATOR VALVE
5. OIL COOLER BY-PASS VALVE

PORTS
A. SUPPLY FROM HYDRAULIC PUMP
B. SUPPLY TO HITCH
C. SUPPLY TO STEERING
D. RETURN FROM STEERING
E. SUPPLY TO OIL COOLER AND BRAKING SYSTEM
F. SUPPLY TO PTO CLUTCH
G. RETURN FROM REMOTE VALVES
T. RETURN TO TANK

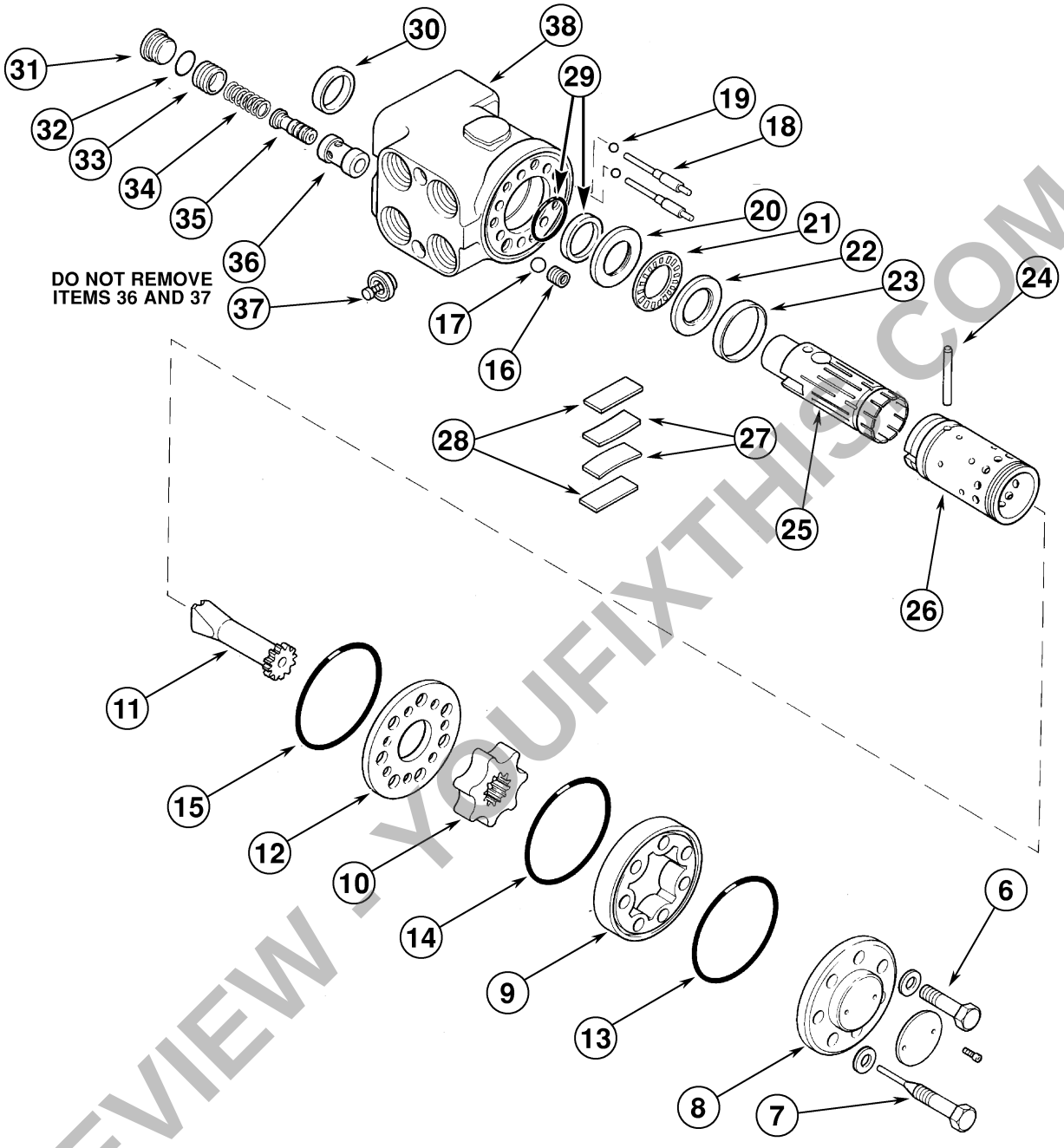


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NOTE: *Items are numbered in order of Disassembly.*



1. RETAINING BOLTS
2. STEERING TUBE
3. O-RING
4. FITTING
5. O-RING
6. RETAINING BOLTS
7. RETAINING BOLT
8. END COVER
9. STATOR
10. ROTOR
11. DRIVE SHAFT
12. VALVE PLATE
13. O-RING
14. O-RING
15. O-RING
16. THREADED BUSHING
17. BALL
18. VALVE PINS
19. BALLS
20. THRUST WASHER
21. THRUST BEARING
22. CHAMFERED THRUST WASHER
23. RETAINING RING
24. PIN
25. SPOOL
26. SLEEVE
27. CENTERING SPRINGS
28. CENTERING SPRINGS
29. SEAL
30. DUST SEAL
31. PLUG
32. WASHER
33. ADJUSTER SCREW
34. SPRING
35. POPPET
36. RELIEF VALVE BODY
37. CHECK VALVE
38. PUMP BODY

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C50, C60, C70, C80, C90 and C100 Tractors

Service Manual Don 7-70900

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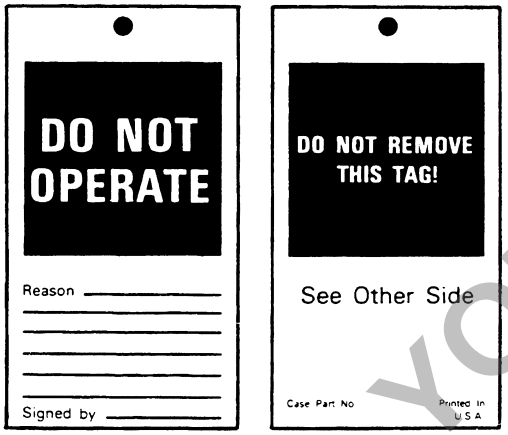
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SAFETY

This symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED. The message that follows the symbol contains important information about safety. Carefully read the message. Make sure you fully understand the causes of possible injury or death.

To prevent injury always follow the Warning, Caution and Danger notes in this section and throughout the manual.

Put the warning tag shown below on the key for the key switch when servicing or repairing the machine. One warning tag is supplied with each machine. Additional tags Part Number 331-4614 are available from your service parts supplier.



WARNING: Read the operators manual to familiarize yourself with the correct control functions.

WARNING: Operate the machine and equipment controls from the seat position only. Any other method could result in serious injury.

WARNING: This is one a man machine, no riders allowed.

WARNING: Before starting engine, study Operator's Manual safety messages. Read all safety signs on machine. Clear the area of other persons. Learn and practice safe use of controls before operating.
It is your responsibility to understand and follow manufacturers instructions on machine operation, service, and to observe pertinent laws and regulations. Operator's and Service Manuals may be obtained from you J.I.Case dealer.

WARNING: If you wear clothing that is too loose or do not use the correct safety equipment for your job, you can be injured. Always wear clothing that will not catch on objects. Extra safety equipment that can be required includes hard hat, safety shoes, ear protection, eye or face protection, heavy gloves and reflector clothing.

WARNING: When working in the area of the fan belt with the engine running, avoid loose clothing if possible, and use extreme caution.

WARNING: When doing checks and tests on the equipment hydraulics, follow the procedures as they are written. DO NOT change the procedure.

WARNING: When putting the hydraulic cylinders on this machine through the necessary cycles to check operation or to remove air from a circuit, make sure all people are out of the way.

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Section

1001

SAFETY, GENERAL INFORMATION AND TORQUE SPECIFICATIONS

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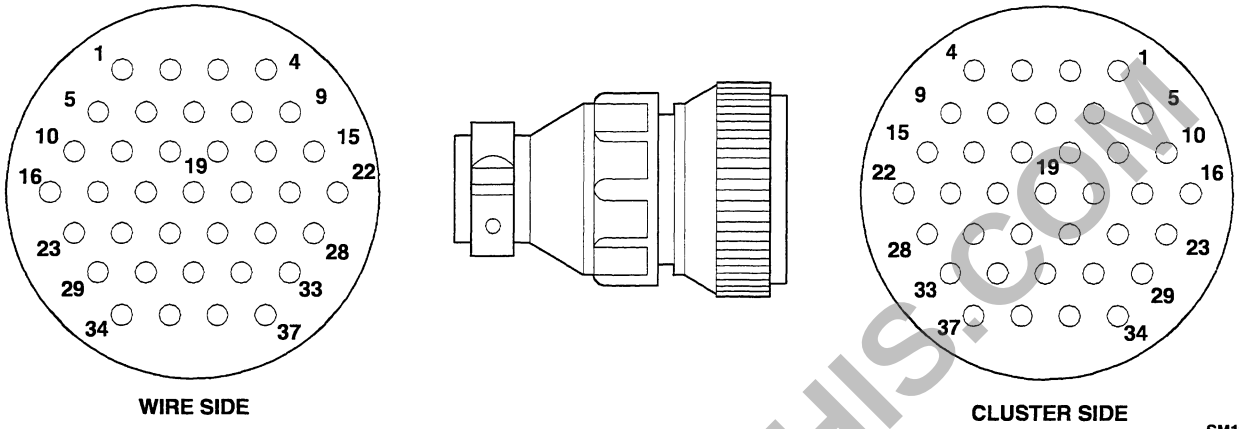
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Instrument Cluster Connector



INSTRUMENT CLUSTER CONNECTOR

PIN	CIRCUIT
1	2ND TRAILER TURN SIGNAL (EUROPE ONLY)
2	KEYED POWER B+
3	NOT USED
4	NOT USED
5	1ST TRAILER TURN SIGNAL (EUROPE ONLY)
6	NOT USED
7	TURN SIGNAL COMMON (EUROPE) TURN SIGNAL GROUND (NORTH AMERICA)
8	NOT USED
9	NOT USED
10	RIGHT HAND TURN SIGNAL
11	NOT USED
12	NOT USED
13	NOT USED
14	NOT USED
15	KEYED POWER (ACCESSORY)
16	ENGINE COOLANT TEMPERATURE
17	PARK BRAKE
18	NOT USED

PIN	CIRCUIT
19	NOT USED
20	NOT USED
21	NOT USED
23	FUEL LEVEL SENDER
24	LEFT HAND TURN SIGNAL
25	NOT USED
26	NOT USED
27	ALTERNATOR ENGINE RPM SIGNAL
28	NOT USED
29	AIR FILTER RESTRICTION
30	ALTERNATOR WARNING D+
31	CLEAN GROUND (BATTERY NEGATIVE)
32	HEADLAMP HIGH BEAM
33	NOT USED
34	ENGINE OIL PRESSURE
35	NOT USED
36	BACK LIGHTING
37	NOT USED

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CIRCUIT TESTING

NOTE: *The battery must be at full charge and all connections must be clean and tight before testing. Only use a HIGH IMPEDENCE multimeter for the tests. Do not use a test lamp or damage to the switches may occur.*

Headlamp Circuit General Information

Battery power flows through fuse 14 to terminals B1 and B2 of the lamp switch. When the lamp switch is in positions 2 and 3 (Headlamps) power flows from terminal HL of the lamp switch to terminal 56 of the dipping relay. Power also flows to pin 36 of the cluster, through the cluster backlight, out of pin 31 of the cluster to chassis ground, illuminating the cluster backlight.

Depending on the position of the dipping relay power flows from terminal 56 to either terminal 56A (High Beam) or 56B (Low Beam).

In low beam power flows from terminal 56B of the dipping relay, through fuses 8 and 9 to the right hand and left hand headlamps. Power then flows through the headlamps to chassis ground, illuminating the headlamp low beam.

In high beam power flows from terminal 56A of the dipping relay, through fuses 10 and 11 to the right hand and left hand headlamps. Power then flows through the headlamps to chassis ground, illuminating the headlamp high beam. Power also flows from fuse 10 to pin 32 of the cluster, through the high beam warning lamp, out of pin 31 of the cluster to chassis ground, illuminating the warning lamp.

Switched power is connected to the dipping relay terminal 30. The dipping relay is energized when the dipping relay is connected to chassis ground. Power flows from terminal S of the dipping relay to terminal 2 of the stalk switch connector. With the stalk switch in the ON position (spring returned off), power flows through the stalk switch to terminal 6 of the stalk switch connector. Power flows from the stalk switch connector terminal 6 to chassis ground activating the dipping relay. The dipping relay will alternate from low beam to high beam every time the stalk switch is moved to the on position.

Right Hand Headlamp Circuit Test

NOTE: *Check fuses 9, 11 and 14 and the right hand headlamp bulb.*

NOTE: *Disconnect the right hand headlamp from the harness.*

Check Point	Reading	Possible Cause of Bad Reading
Test 1: Terminal for wire 738 Brown at the right hand headlamp connector to ground	Continuity	Check wire 738 and the chassis ground connection.

NOTE: *Turn the lamp switch to position 2 (Headlamps). Operate the stalk switch to the LOW BEAM position.*

Test 2: Terminal for wire 738 Pink at the right hand headlamp connector to ground	12 Volts	Bad circuit between the dipping relay terminal 56B and the right hand headlamp. Also check the dipping relay.

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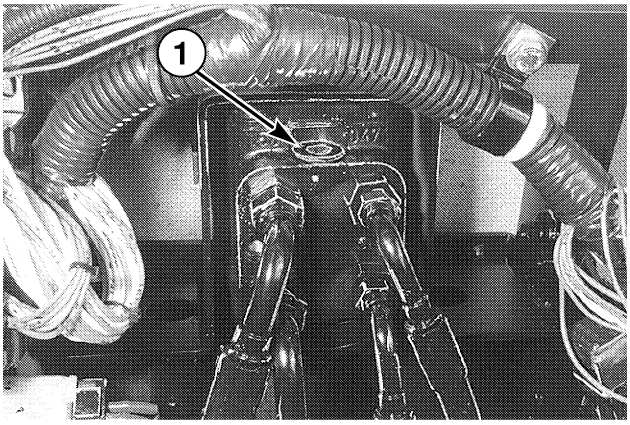
STEERING RELIEF VALVE ADJUSTMENT

NOTE: *To check the Steering Relief Valve pressure, refer to Section 8001.*

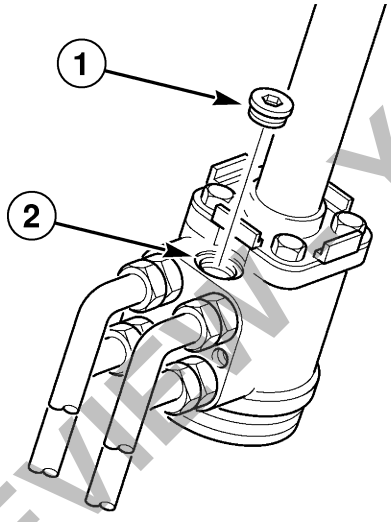
Before adjusting the steering relief valve it will be necessary to carry out the following:

- Park the tractor on hard level ground and apply the parking brake.
- Stop the engine and remove the key.

STEP 1



DD97G063



SM1327

Remove the plug (1), turn the adjuster screw (2) clockwise to increase or counterclockwise to decrease the steering relief valve pressure. Install and tighten the plug (1).

STEP 2

Check the Steering Relief Valve pressure, refer to Section 8001. When the pressure is correct, tighten the plug (1) to a torque of 40 to 60 Nm (30 to 44 lb ft).

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Section

6004

SPEED TRANSMISSION REMOVAL

C50, C60, C70, C80, C90 and C100 Tractors

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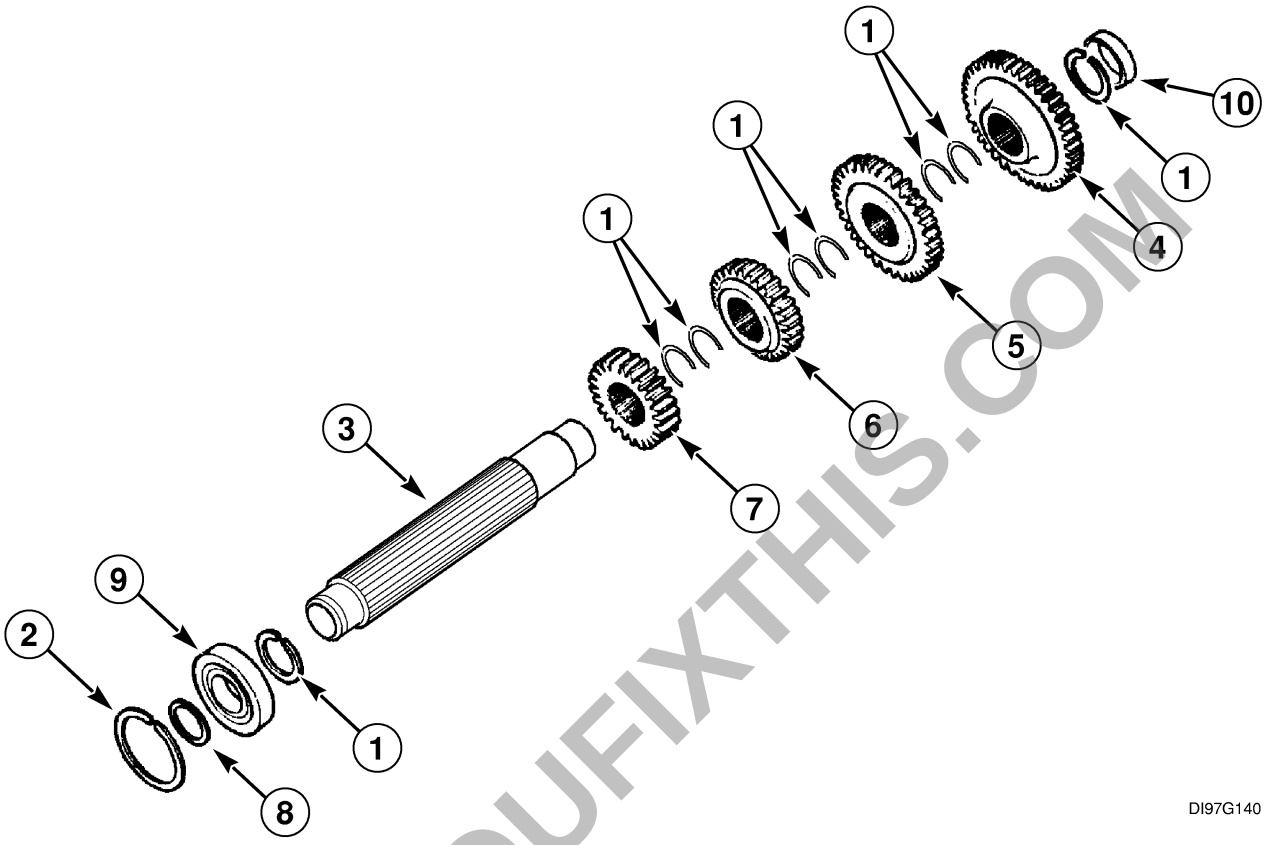
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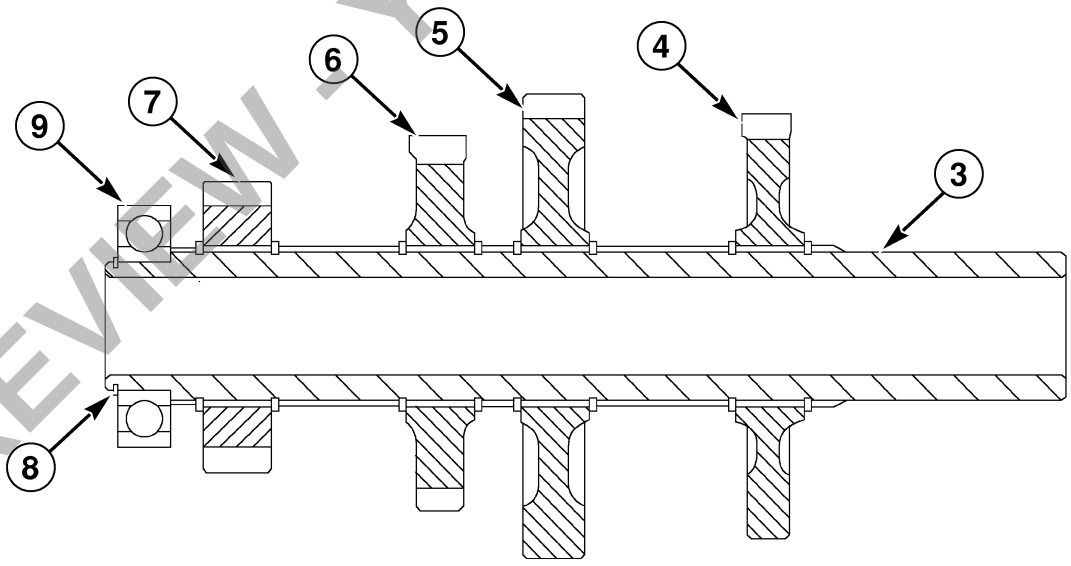
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DI97G140

Cross Sectional Drawing of the Countershaft



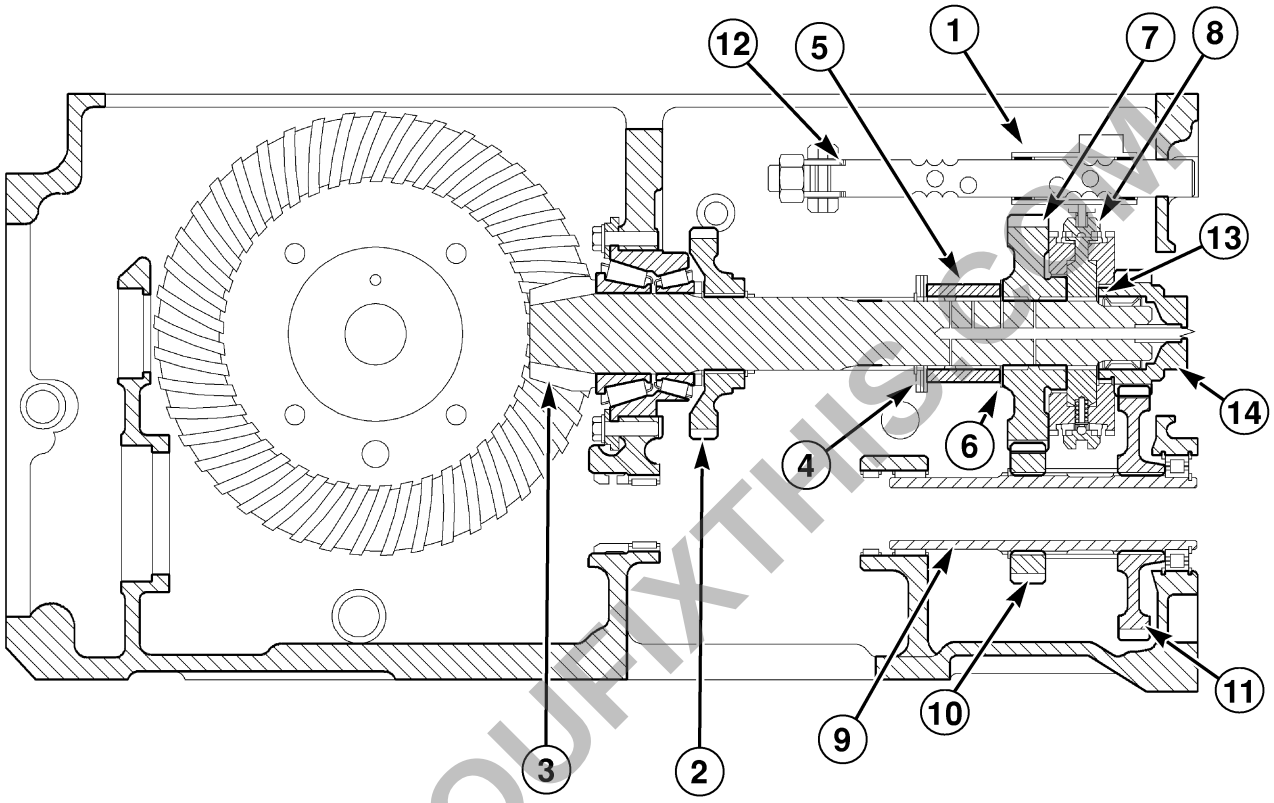
DI97G136

1. RETAINING RING
2. RETAINING RING
3. COUNTERSHAFT
4. CONSTANT DRIVE GEAR
5. 4TH DRIVEN GEAR
6. 2ND DRIVEN GEAR
7. 1ST DRIVEN GEAR
8. SNAP RING
9. BEARING
10. NEEDLE ROLLER BEARING

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Cross Sectional Drawing of the MFD Range Transmission (Tractors With Forward/Reverse Speed Transmissions)



DI97F249

1. SELECTOR FORK ASSEMBLY
2. MFD DRIVE GEAR
3. PINION SHAFT
4. SHIM PACK
5. SPACER
6. THRUST WASHER
7. LOW DRIVEN GEAR
8. HIGH/LOW SYCHRONIZER
9. COUNTERSHAFT
10. LOW RANGE DRIVE GEAR
11. CONSTANT MESH DRIVEN GEAR
12. SHIM
13. NEEDLE ROLLER BEARING
14. SPEED TRANSMISSION MAIN SHAFT

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Section

6017

SHIFTABLE PTO

C50, C60, C70, C80, C90 and C100 Tractors

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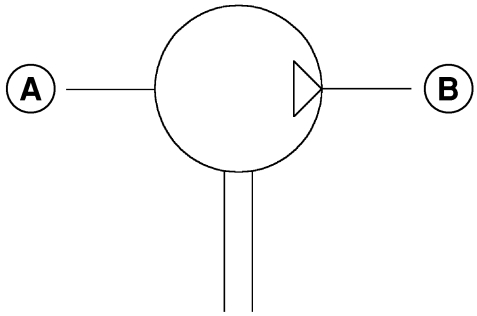
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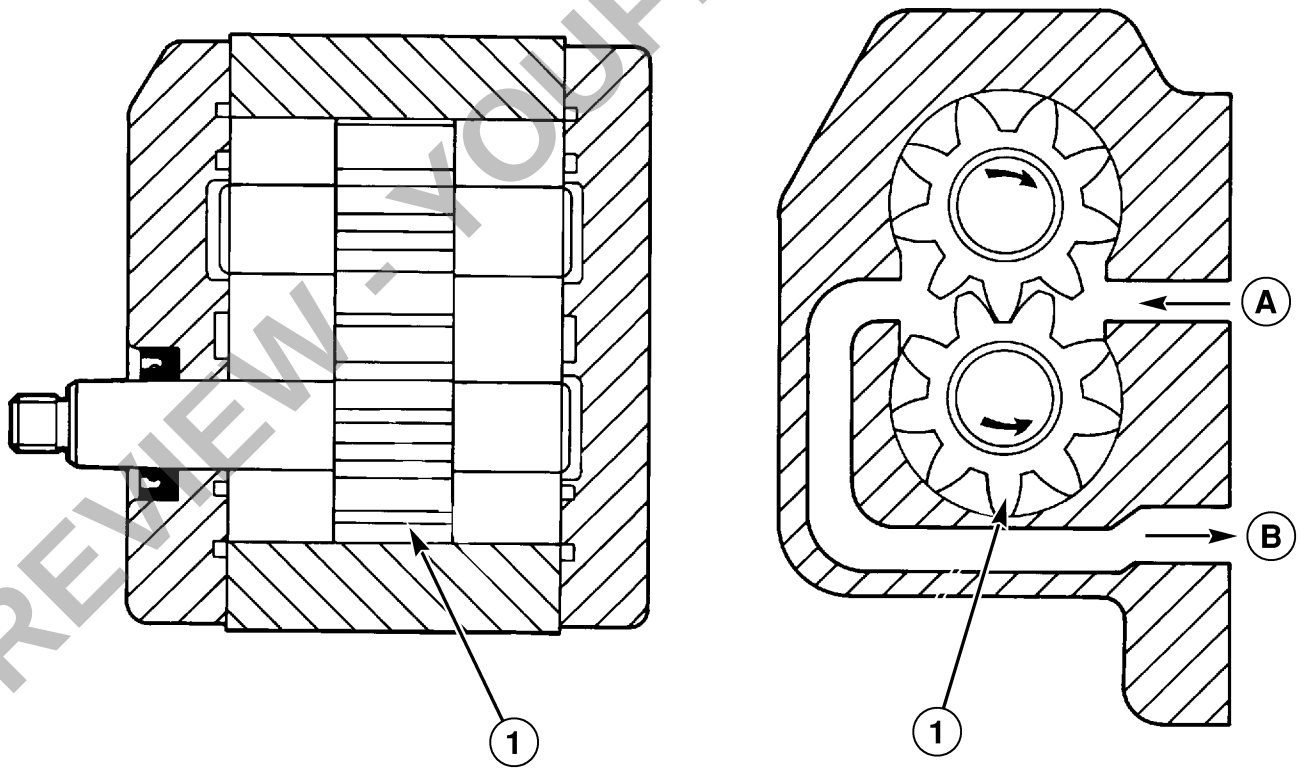
Hydraulic Pump



1. GEAR

PORTS
A. INLET
B. OUTLET

DI97G144



DS97E373

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Section

8035

HYDRAULIC HOUSING SERVICING

C50, C60, C70, C80, C90 and C100 Tractors

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