DX48, DX55
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 DX48, DX55 Repair manual. Complete Repair part # 87367132.

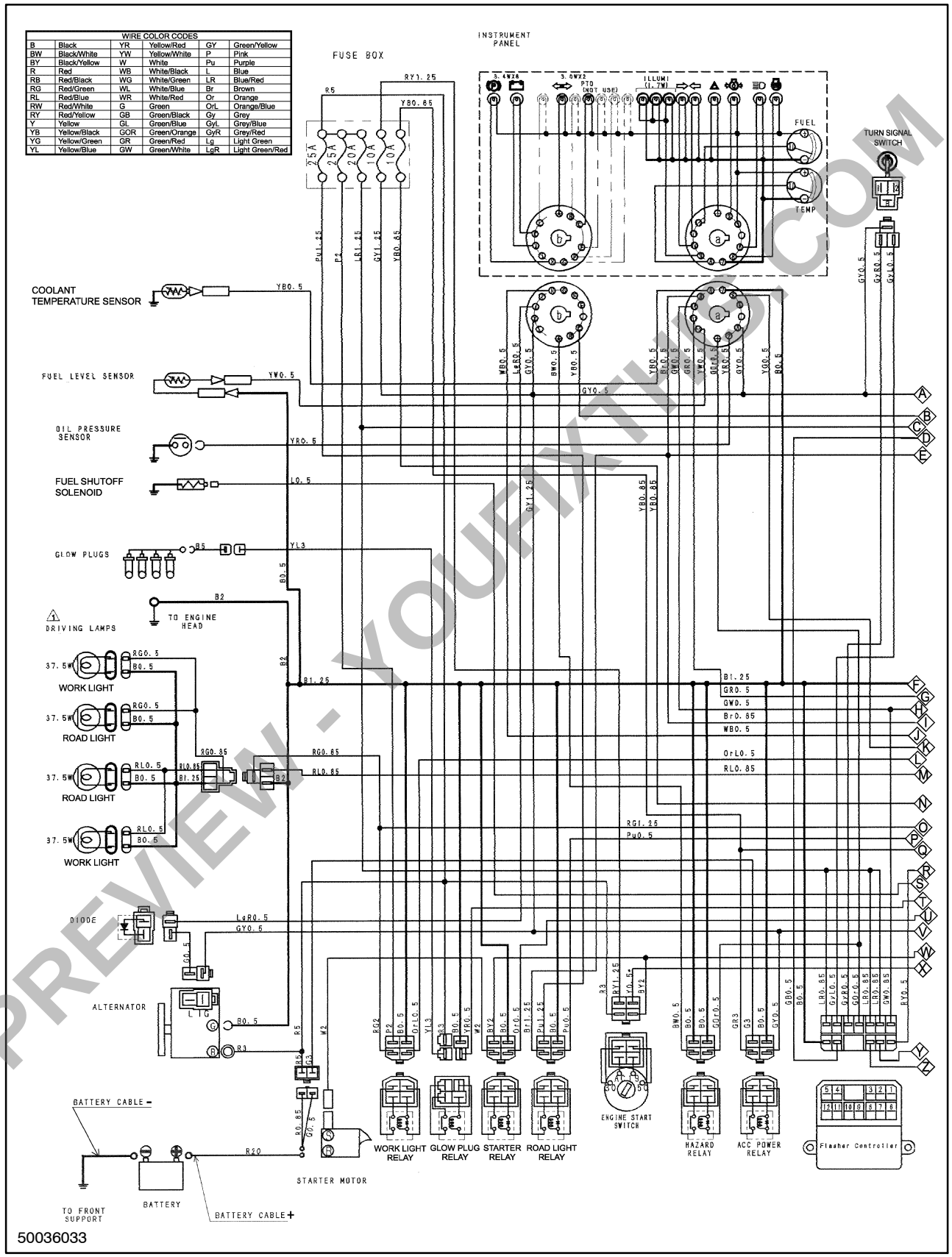
The sections used through out all Case IH product Repair manuals may not be used for each product. Each Repair manual will be made up of one or several books. Each book will be labeled as to which sections are in the overall Repair manual and which sections are in each book.

The sections listed above are the sections utilized for the DX48, DX55 Tractors.

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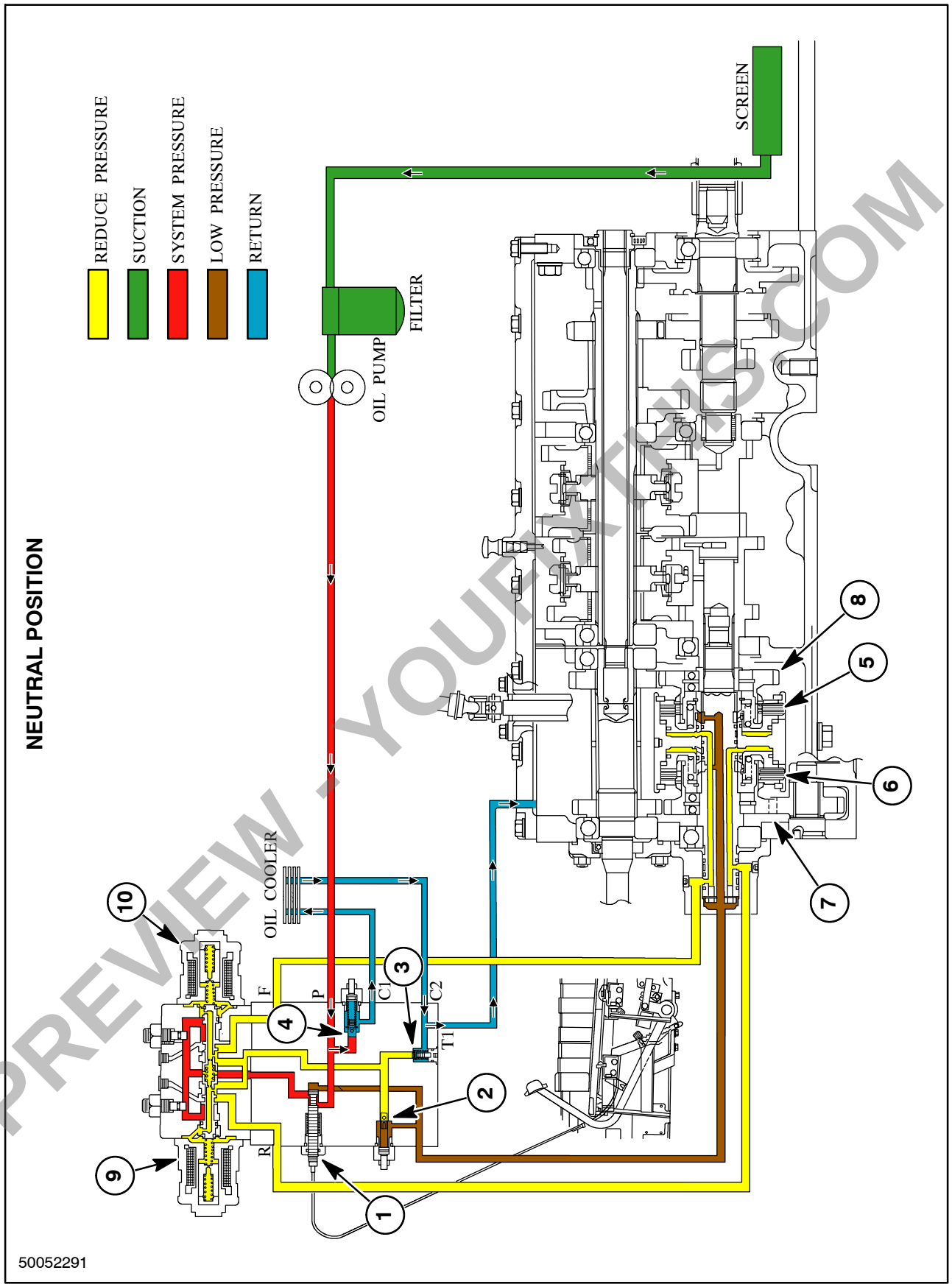
COMPLETE SCHEMATICS
DX48 – Prior to PIN #HDG500142, DX55 – Prior to PIN #HDG600346



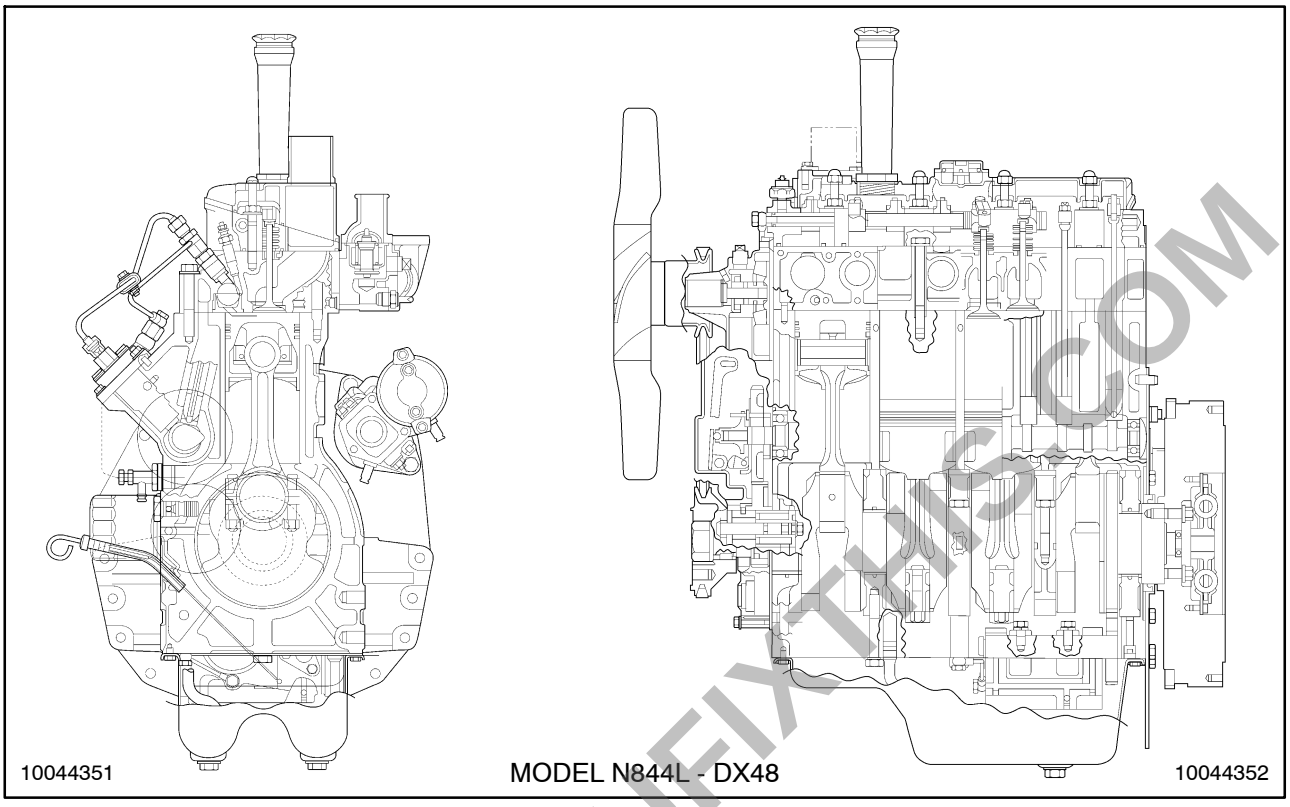
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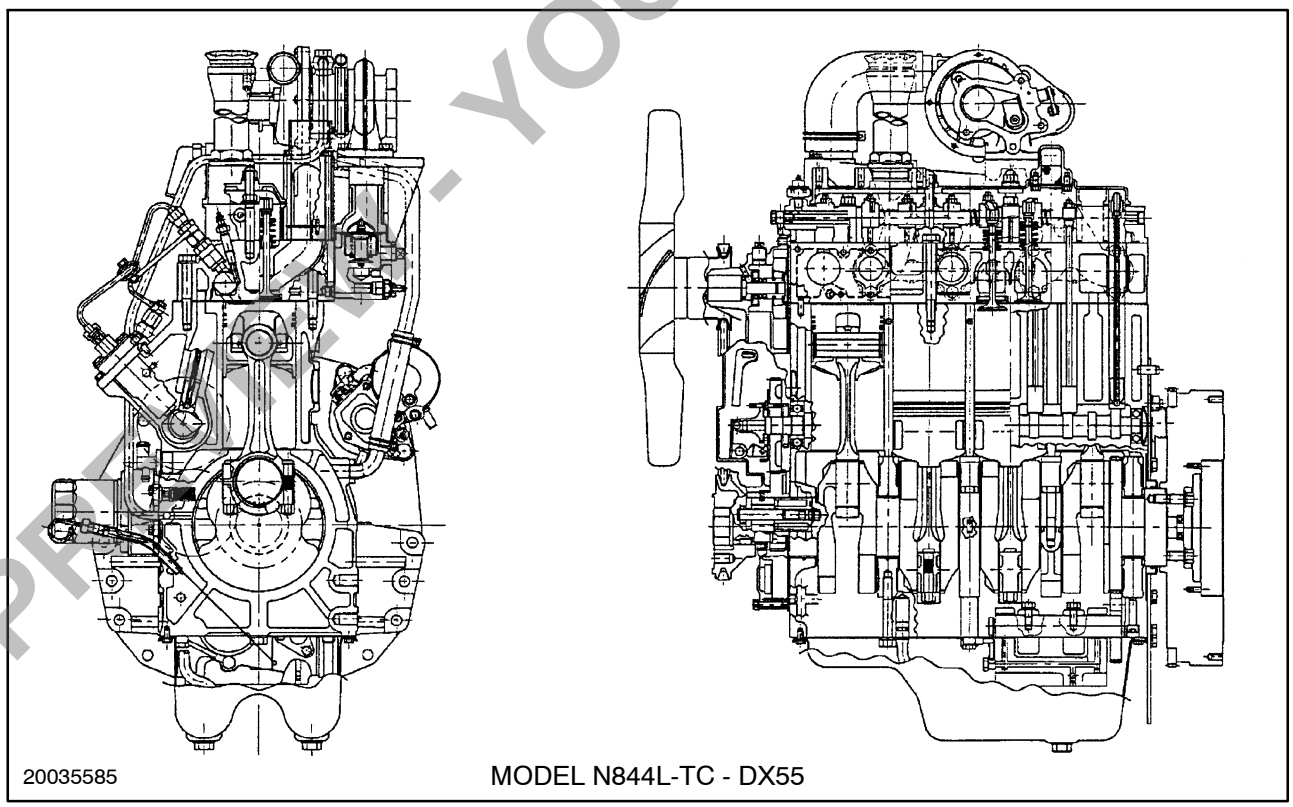
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MINIMUM HARDWARE TIGHTENING TORQUES

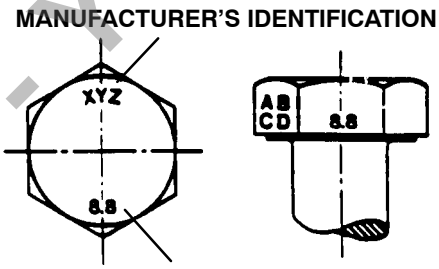
IN NEWTON-METERS (FOOT POUNDS) FOR NORMAL ASSEMBLY APPLICATIONS

METRIC NON-FLANGED HARDWARE AND LOCKNUTS

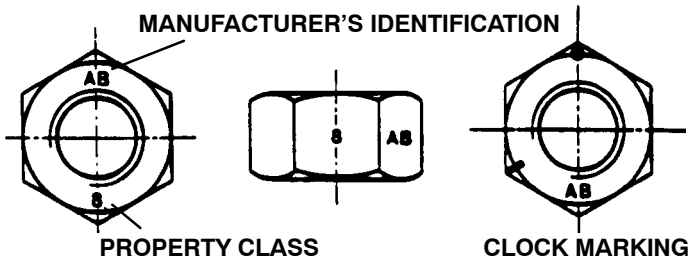
NOMINAL SIZE	CLASS 5.8		CLASS 8.8		CLASS 10.9		LOCKNUT CL.8 W/CL8.8 BOLT
	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	
M4	1.7 (15)*	2.2 (19)*	2.6 (23)*	3.4 (30)*	3.7 (33)*	4.8 (42)*	2.3 (20)*
M6	5.8 (51)*	7.6 (67)*	8.9 (79)*	12 (102)*	13 (115)*	17 (150)*	7.8 (69)*
M8	14 (124)*	18 (159)*	22 (195)*	28 (248)*	31 (274)*	40 (354)*	19 (169)*
M10	28 (21)	36 (27)	43 (32)	56 (41)	61 (45)	79 (58)	38 (28)
M12	49 (36)	63 (46)	75 (55)	97 (72)	107 (79)	138 (102)	66 (49)
M16	121 (89)	158 (117)	186 (137)	240 (177)	266 (196)	344 (254)	164 (121)
M20	237 (175)	307 (226)	375 (277)	485 (358)	519 (383)	671 (495)	330 (243)
M24	411 (303)	531 (392)	648 (478)	839 (619)	897 (662)	1160 (855)	572 (422)

NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION
HEX CAP SCREW AND CARRIAGE BOLTS
CLASSES 5.6 AND UP



HEX NUTS AND LOCKNUTS
CLASSES 05 AND UP



86529681 REV F 5.1

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TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	CORRECTION
Engine does not develop full power	Clogged air cleaner	Inspect and replace air cleaner if necessary
	Fuel line obstructed	Check for crimped fuel line. Inspect fuel filter for cleanliness
	Improper injection timing	Repair/ replace components as required
	Improper nozzle injection pressure and angle	Check injection timing Inspect for proper injection pressure an 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 of oil	Replace with correct grade oil
	Clogged oil pump filter	Change oil and filter
	Faulty oil pressure relief valve	Replace relief valve
	Worn oil pump drive shaft gears, or broken oil pipe	Inspect oil system and components. Replace defective components
	Excessive main or connecting rod bearing clearances	Replace bearings or shaft if necessary
	Oil pump axial clearance not properly set	Check pump clearance and shim as needed to proper tolerance
Engine will not stop	Faulty engine stop solenoid	Replace the stop solenoid
	Faulty starter switch	Replace starter switch
Low cylinder compression	Burned, worn or sticking valves	Replace valves
	Bent valve stem	Replace valves
	Broken or weak valve spring	Replace valve spring
	Blown cylinder head gasket	Replace head gasket
	Worn or sticking piston rings	Replace piston rings
	Scored piston	Replace piston
Poor engine idling	Improper injection timing	Correct the injection timing
	Air in injection pump	Purge air from the system
	Improper governor adjustment	Adjust the governor

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SPECIFICATIONS

	Model DX48	Model DX55
ENGINE		
Type/Model	Diesel/844L	Diesel/N844L-T
Engine Gross Horsepower	35.8 kw (48)	41.0 kw (55)
Cylinders	4	4
Bore	84 mm (3.31″)	84 mm (3.31″)
Stroke	100 mm (3.94″)	100 mm (3.94″)
Displacement	2.2 L (135.2 cu. in.)	2.2 L (135.2 cu. in.)
Compression Ratio	22.4:1	22.4:1
Firing Order	1-3-4-2	1-3-4-2
Low Idle Speed	1000 RPM (± 50)	1000 RPM (± 50)
Maximum Speed:		
High Idle	3000 RPM (± 50)	2900 RPM (± 50)
Rated	2800 RPM (± 50)	2700 RPM (± 50)
CAPACITIES		
Fuel Tank	51.0 liters/ 13.5 U.S. gals.	51.0 liters/ 13.5 U.S. gals.
Cooling System	8.0 liters/ 8.4 U.S. qts.	8.0 liters/ 8.4 U.S. qts.
Engine Crankcase:		
With Filter	7.0 liters/ 7.4 U.S. qts.	7.0 liters/ 7.4 U.S. qts.
Rear Axle & Transmission (EHSS & SSS) (Includes Hydraulics)	42.0 liters/ 11.1 U.S. gals.	42.0 liters/ 11.1 U.S. gals.
Power Steering	1.8 liters/ 1.9 U.S. qts.	1.8 liters/ 1.9 U.S. qts.
Front Axle Final Reduction /Differential Gear Case	5.8 liters/ 6.1 U.S. qts.	5.8 liters/ 6.1 U.S. qts.

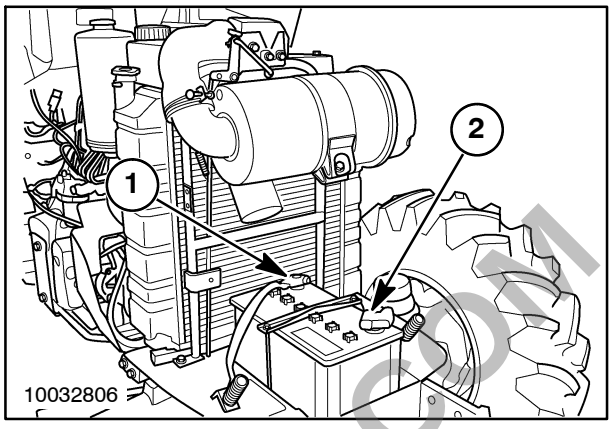
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ENGINE

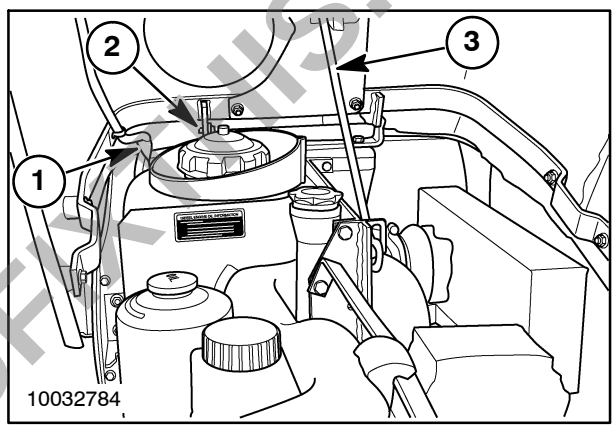
Removal

1. Disconnect the negative (–) battery cable, 1, and positive (+) battery cable, 2, from the battery.



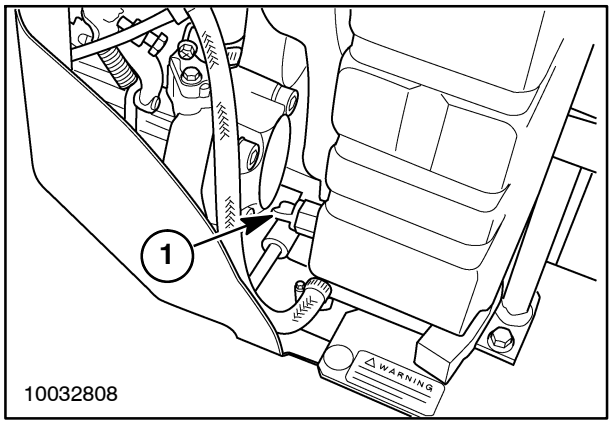
6

2. Disconnect the headlight wire harness plug, 1.
3. Remove the clips and pins, 2, from each side of the hood bracket.
4. Remove the support rod, 3, and remove the hood from the tractor.



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5. Drain the coolant from radiator, and engine using the petcock valve, 1. Remove radiator cap to assist draining.
6. Remove the radiator (see Radiator Removal in Section 10).



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PRECAUTIONARY STATEMENTS

PERSONAL SAFETY

Throughout this manual and on machine decals, you will find precautionary statements ("**DANGER**", "**WARNING**", and "**CAUTION**") followed by specific instructions. These precautions are intended for the personal safety of you and those working with you. Please take the time to read them.

⚠ DANGER ⚠

This word "DANGER" indicates an immediate hazardous situation that, if not avoided, will result in death or serious injury. The color associated with Danger is RED.

⚠ WARNING ⚠

This word "WARNING" indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury. The color associated with Warning is ORANGE.

⚠ CAUTION ⚠

This word "CAUTION" indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. The color associated with Caution is YELLOW.

FAILURE TO FOLLOW THE "DANGER", "WARNING", AND "CAUTION" INSTRUCTIONS MAY RESULT IN SERIOUS BODILY INJURY OR DEATH.

MACHINE SAFETY

The precautionary statement ("**IMPORTANT**") is followed by specific instructions. This statement is intended for machine safety.

IMPORTANT: *The word "IMPORTANT" is used to inform the reader of something he needs to know to prevent minor machine damage if a certain procedure is not followed.*

INFORMATION

NOTE: *Instructions used to identify and present supplementary information.*

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SECTION 10 - ENGINE

BOOK 1 - 87367133

Chapter 1 - Engine Dismantling Sequence (Continued)

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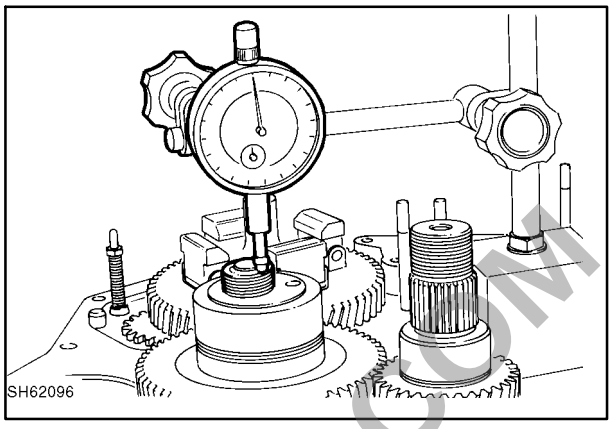
	Model DX48/DX55
TIRES	
FRONT:	
Agricultural:	
FWD	8 x 16, 6PR, R1
	9.5 x 16, 6PR, R1
2WD	9.5 x 15, 6PR, F2
Turf:	
FWD	27 x 10.5 x 15, 4PR, R3
	27 x 12LL x 15, 6PR, R3
2WD	25 x 1050LL x 15, 6PR, R3
Industrial:	
FWD	12 x 16.5, 8PR, R4
2WD	11L x 15SL, 8PR, F3
REAR:	
Agricultural	14.9 x 24, 6PR, R1
	14.9 x 28, 6PR, R1
Turf	44 x 18.00-20, 6PR, R3
	22.5LL x 16.1, 6PR, R3
Industrial	18.4 x 24, 8PR, R4
WHEEL BOLT TORQUES	
Front Wheel—	
Disc-to-Hub:	
FWD	169 N·m (125 ft. lbs.)
Rear Wheel—	
Rear Wheel & Disc-to Axle	169 N·m (125 ft. lbs.)
Disc-to Rim	244 N·m (180 ft. lbs.)
ROPS ATTACHING BOLT TORQUES	
ROPS to Rear Axle	74 N·m (55 ft. lbs.)
Seat Belt	47.4 N·m (35 ft. lbs.)

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6. Adjust with shim 0.1, 0.15, 0.2, 0.5 mm so the axial clearance of the oil pump, rotor, and vane is in the range of 0.1 mm to 0.15 mm (0.004″-0.006″). The allowable limit is 0.2 mm (0.008″) .

NOTE: *Coat both faces of the rotor and vane with petroleum jelly for assembly.*

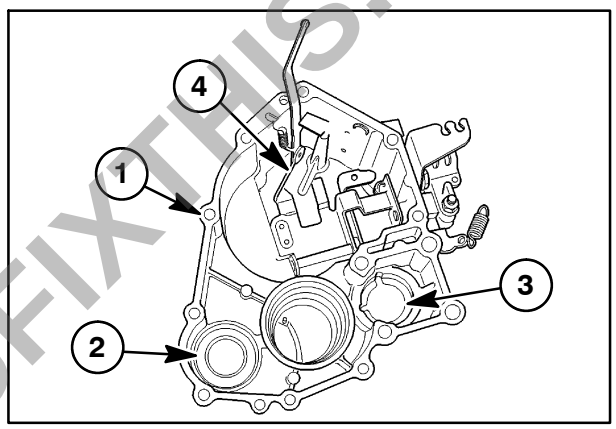


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TIMING GEAR CASE

The timing gear housing, 1, contains the front oil seal, 2, power steering seal, 3, and the governor linkage assembly, 4. See “Governor Assembly”, for governor linkage repair and replacement procedures.

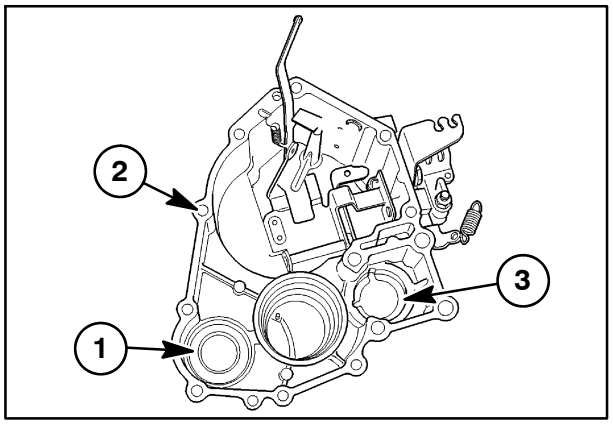


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FRONT OIL SEAL AND STEERING PUMP SEAL

Replacement

1. Remove the front oil seal, 1, from the timing gear cover, 2, and insert a new oil seal in its place.
2. Remove the steering pump O ring, 3, located on the front of the timing gear cover, and replace with a O ring.



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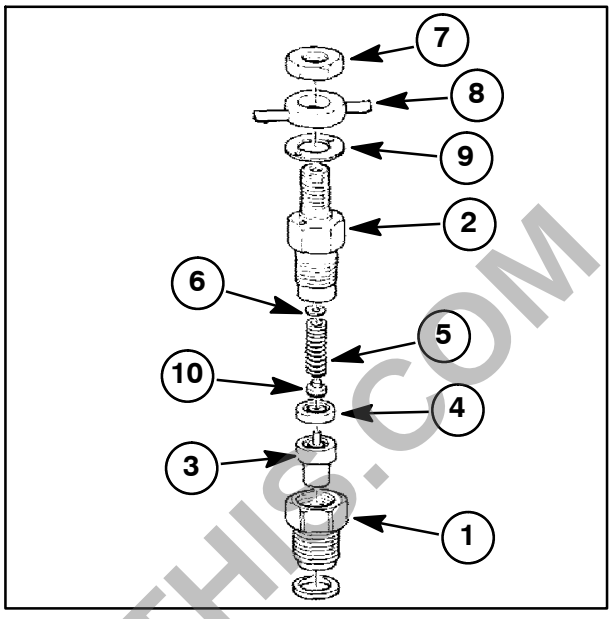
Disassembly

1. Loosen and remove the nozzle nut, 1, from the injector body, 2, being careful not to drop or damage the nozzle.
2. Remove the nozzle assembly, 3, spacer, 4, spring, 5, and shim (s), 6.
3. Clean the nozzle body and the needle valve. Check the nozzle for any burn or score marks. Check the needle seat for evidence of fuel leakage or carbon deposits.
4. Correct fuel leakage at the seat using a polishing stick and polish the seat area.
5. Inspect the upper and lower contact surfaces of the nozzle holder for a clean contact surface area.
6. Check the contact area between the push rod and spring seat.

Assembly/Adjustment

NOTE: *Clean all parts in clean fuel oil and assemble while still wet.*

1. Install the shim(s), 6, spring, 5, spacer, 4, and nozzle assembly, 3, in the injector body, 2.
2. Install the nozzle nut, 1, and tighten to 39 - 44 N·m (29 - 33 ft. lbs.).
3. Check and adjust the injector pressure setting using injector tester No. OEM1064 and adapter fitting No. 23622. Adjust the pressure setting to 146 bar (2117 psi).



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1. Nozzle Nut
2. Injector Body
3. Nozzle Assembly
4. Spacer
5. Spring
6. Shims
7. Nut
8. Leak-Off Line
9. Washer
10. Rod

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F Forward Clutch Passage
R Reverse Clutch Passage
T Lube Passage
T1 To Reservoir
C1 To Oil Cooler
C2 From Oil Cooler
P From Oil Pump

1. Lube Cutoff Valve
2. Low Pressure Relief Valve
3. Check Valve
4. System Relief Valve
5. Forward Clutch Pack
6. Reverse Clutch Pack
7. Reverse Drive Gear
8. Forward Drive Gear
9. Reverse Solenoid
10. Forward Solenoid

Neutral Position

When the shuttle change lever is in the neutral position, the solenoid valve is not energized by the control box, leaving both solenoid valve passages closed. Pump pressure fluid flows into the valve body and is directed to the relief valve and pressure builds to unseat the relief valve poppet and permits fluid flow via the oil cooler, back to the reservoir, through passage T1.

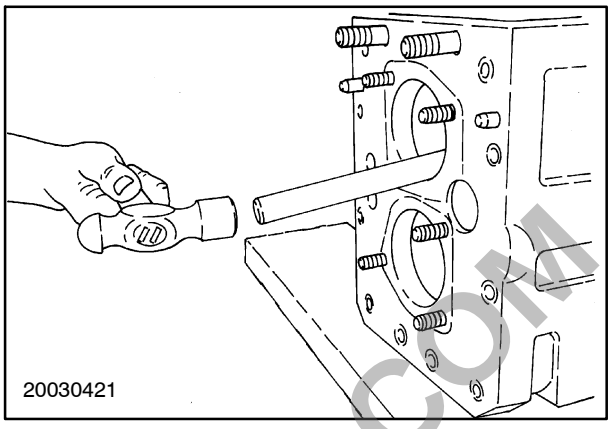
Fluid trapped in the shuttle clutch piston chambers is free to return to the reservoir via passages R, F, solenoid valves 9 and 10 and passage T or T1.

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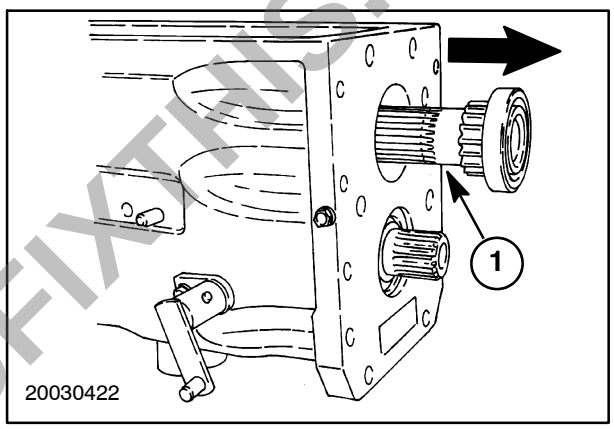
Countershaft

1. Use an aluminum drift and a hammer to lightly tap the countershaft rearward.



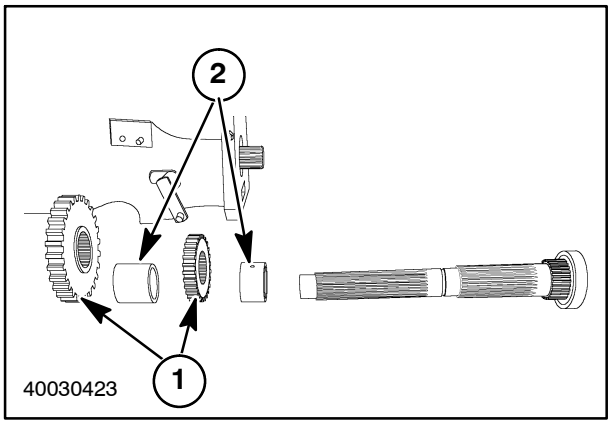
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2. Pull the countershaft, 1, out through the rear of the housing.



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3. Remove the range gears, 1, and spacers, 2, from the rear compartment of the housing.



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3RD OR 4TH GEAR ENGAGED LOW AND FORWARD ENGAGED

(DX55 PIN Number HDG600345 and below)

Current Flow

- Battery
- Fusible link
- #30 terminal of key switch

Key switch placed in "RUN/ACC" position

- ACC terminal of key switch
- #2 (10 amp) fuse
- Main 1-2 switch, Sub L Switch, #1 terminal of controller, "B" terminal of shuttle switch

When transmission is placed either in 3rd or 4th gear, main 1-2 switch opens.

When the transmission is placed in "LOW" range the Sub L switch closes sending current to the #4 terminal of the controller.

When the transmission is placed in the forward position current is transferred from the "B" terminal to the #2 terminal of the shuttle switch. From the #2 terminal of the shuttle switch current is sent to the #15 of the controller.

POTENTIOMETER

With the inching pedal (not depressed)

- Input current travels from #6 terminal of controller to #3 terminal of potentiometer
- Output current travels from #2 terminal of potentiometer to the #11 terminal of the controller
- Ground source for potentiometer is provided by terminal #14 of controller, to terminal #1 of potentiometer

CONTROLLER CURRENT OUTPUT

Current travels out of #2 terminal to the forward solenoid of the control valve assembly and the solenoid is energized.

When the forward solenoid is deenergized current leaves the solenoid windings and travels to the #8 terminal of the controller.

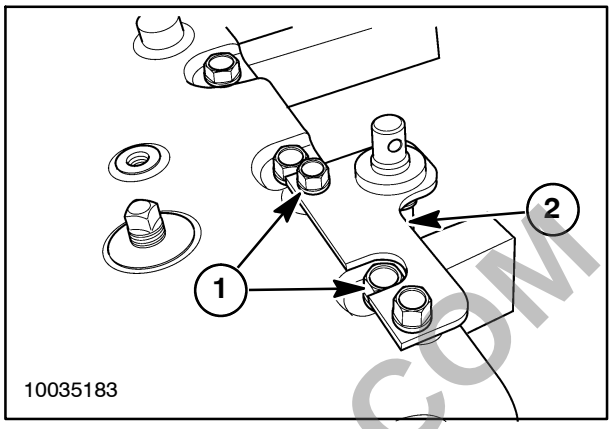
GROUND SOURCES

- HPL Cover
- #16 terminal of controller

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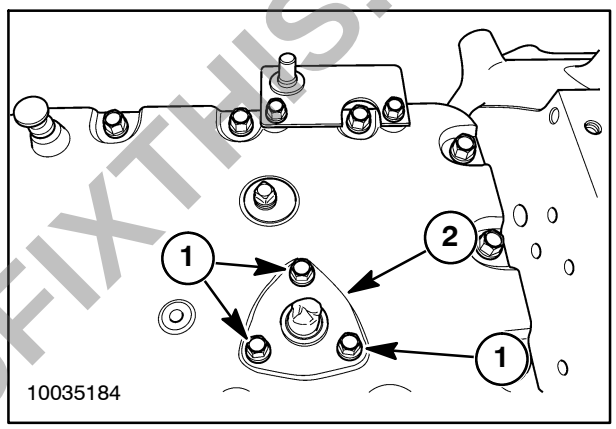
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6. Remove the two bolts, 1, from the shuttle selector shaft retaining plate, 2. Remove the retaining plate.



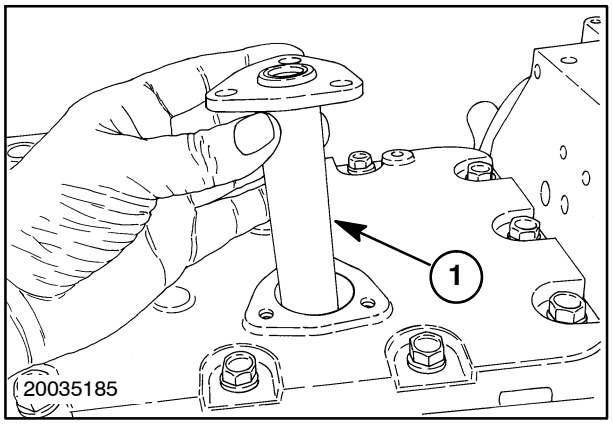
13

7. Remove the three bolts, 1, securing the main gear selector shaft retainer, 2, to the transmission cover.



14

8. Remove the retainer, 1.
9. Remove the transmission dipstick from the cover.



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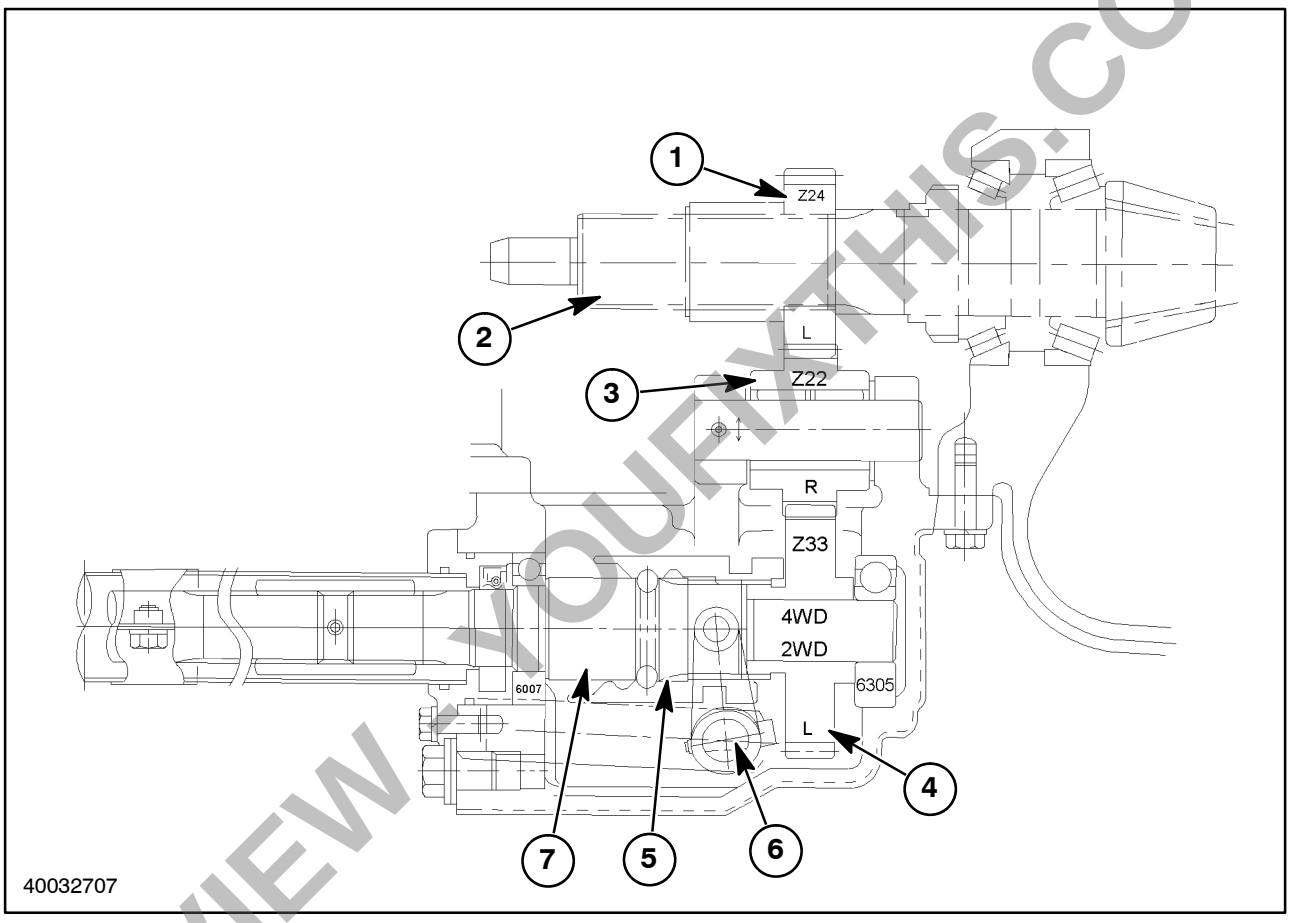
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DESCRIPTION OF OPERATION – FRONT WHEEL DRIVE GEARBOX

The front wheel drive gearbox is mounted under the rear differential housing. The gearbox is driven by a 24 tooth fixed gear, 1, on the final drive pinion shaft, 2, and consists of one 22 tooth counter gear, 3, one 33 tooth drive gear, 4, a slide gear, 5, shift fork, 6, and an output shaft, 7.

When the operator's lever is moved to engage the front wheel drive, the shift fork moves the slide gear, engaging it to the drive gear, which powers the output shaft. The power is then transferred to the front wheel drive shaft, which connects and drives the FWD axle.

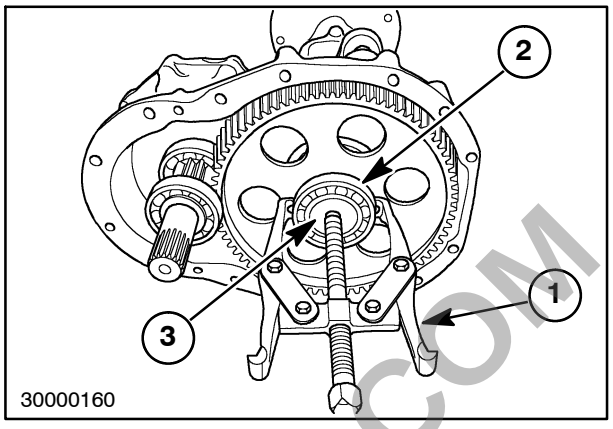


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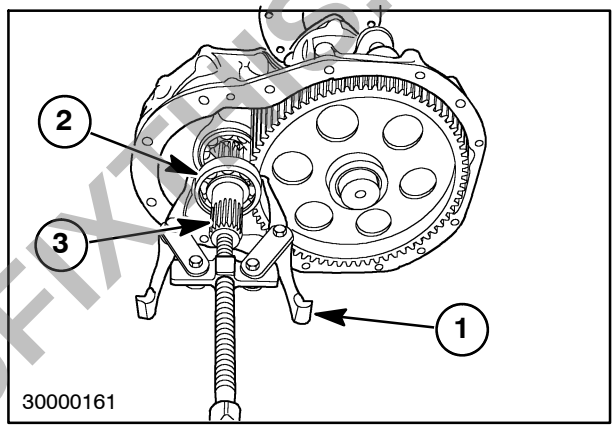
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6. Use a suitable puller, 1, to remove the inner axle bearing, 2, from the axle, 3.



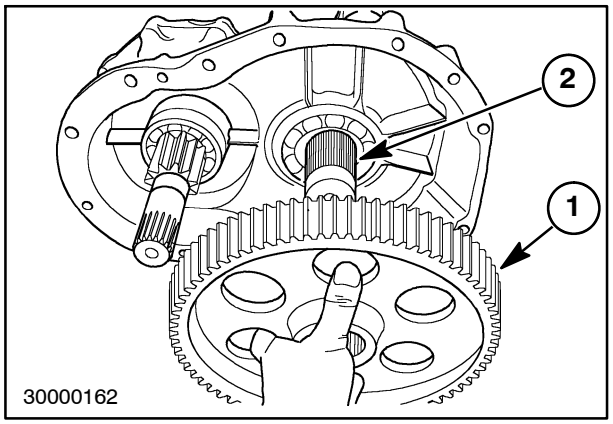
34

7. Use a suitable puller, 1, to remove the inner final pinion bearing, 2, from the pinion shaft, 3.



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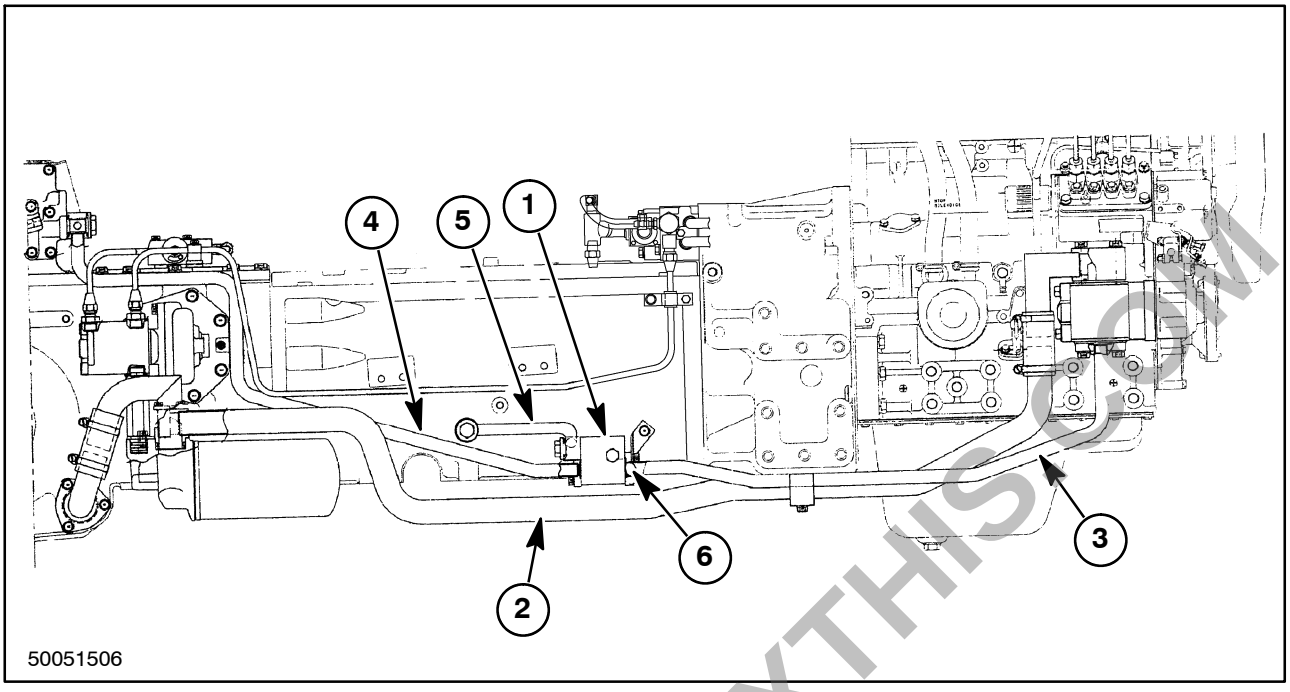
8. Remove the large final gear, 1, from the axle shaft, 2.



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Op. 35 080

COMBINATION SYSTEM RELIEF – DIVERTER VALVE MANIFOLD ASSEMBLY (EHSS MODEL)

The combination system relief-diverter valve manifold, 1, is located in the high-pressure line on the right side of the tractor. A supply line, 2, supplies the pump with hydraulic fluid from the hydraulic fluid reservoir. A high pressure line, 3, supplies fluid from the pump to the manifold. The control valve line, 4, supplies the hydraulic powered lift valve (control valve). The pressure relief line, 5, provides a return path back to the reservoir for hydraulic fluid.

NOTE: *A filtering screen, 6, is located between high pressure line, 3, and diverter valve manifold, 1. The screen filters out any large pieces of contaminates from the hydraulic oil, before they reach the control valves.*

NOTE: *DX55 tractors equipped with a EHSS transmission (Serial #HDG600346 and Above) are now equipped with a oil cooler, located on the EHSS manifold. For more information see Section 21, Chapter 1 (EHSS transmission) pages 21-42 through 21-48.*

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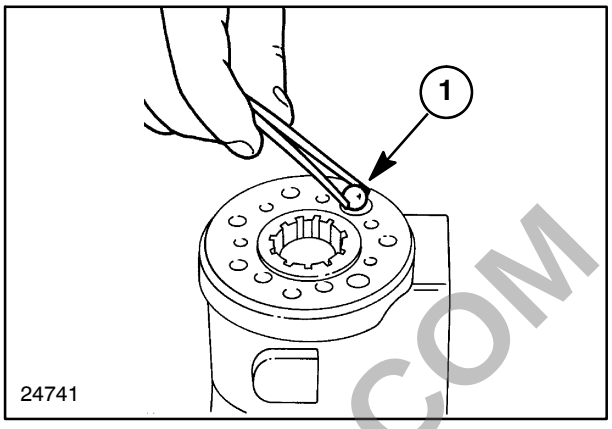
1. Nut 5/16″ – N. F.
2. E-Clip
3. Lockout Handle
4. Clevis Spring
5. Clevis
6. Cap Screw, Socket Head 1/4″ x 3/4″ NC
7. Cap Screw, Socket Head 1/4″ x 1-3/4″ NC
8. Cap Screw, Socket Head 1/4″ x 2″ NC
9. End Cap
10. Detent Balls
11. Float Sleeve
12. Poppet
13. Detent Spring
14. Retainer
15. Spacer
16. Float Spool
17. Stop Cup
18. Spring
19. Washer
20. Detent Retainer
21. O Ring
22. Regen Spool
23. Plug
24. Pipe Plug
25. Check Plug
26. Spring
27. Load Check Poppet
28. Regen Sleeve
29. Rod End Assembly
30. Spool Stud
31. O Ring
32. O Ring
33. Cap Screw, Socket Head 5/16″ x 3/4″ – N. F.
34. Flange
35. Rod End
36. Nuts 5/16″ – N. F.
37. Roll Pin
38. Knob
39. Lock
40. Washer

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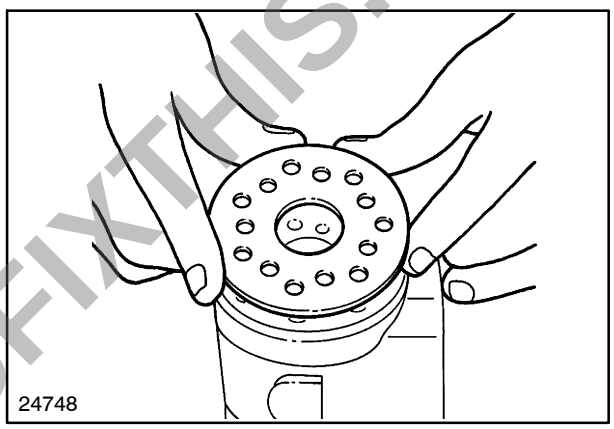
***IMPORTANT**: Do not over tighten the housing in the vise. Housing damage may result.*

14. Clamp the housing in a vise. Use just enough clamping force to hold the housing securely.
15. Install check ball, 1, into the deepest hole of the housing.



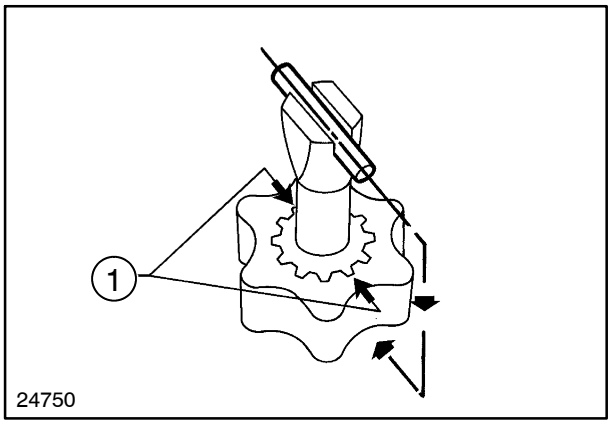
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16. Lubricate a new O ring with petroleum jelly and install in the groove of the housing.
17. Install the wear plate onto the housing. Be sure to align the holes as well as the paint marks made during disassembly.



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18. Install the drive shaft. Be sure to engage the slot in the drive shaft with the pin.
19. Lubricate a new O ring with petroleum jelly and install in the groove of the wear plate.



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Testing

Use an ohmmeter to test the switch for electrical continuity.

All positions are referenced as switch is mounted on tractor.

Terminals viewed from rear of switch.

Terminal wire leads identification:

1. Blue/White
2. Blue
3. Red
4. Black/White

“NEUTRAL” Position

Continuity in terminals: “B” and #3

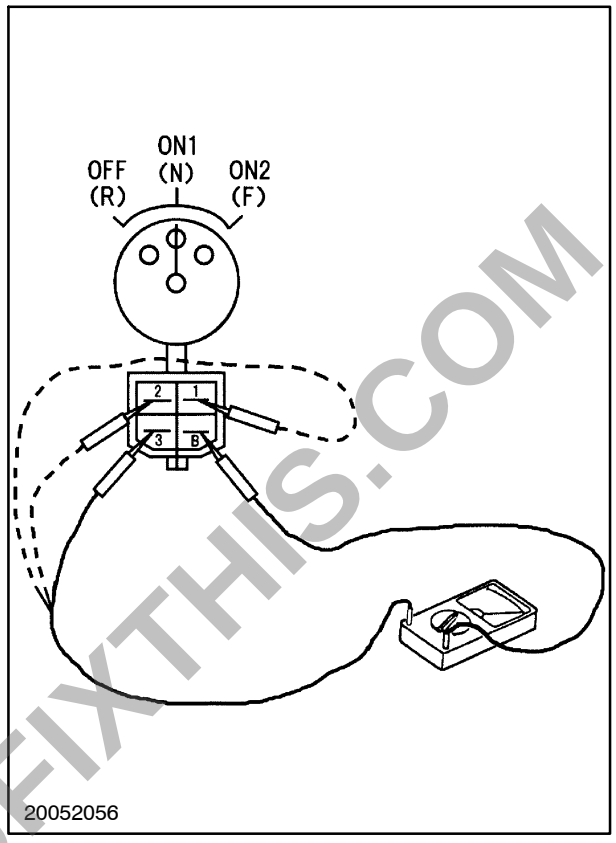
“FORWARD” Position

Continuity in terminals: “B” and #2

“REVERSE” Position

Continuity in terminals: “B” and #1

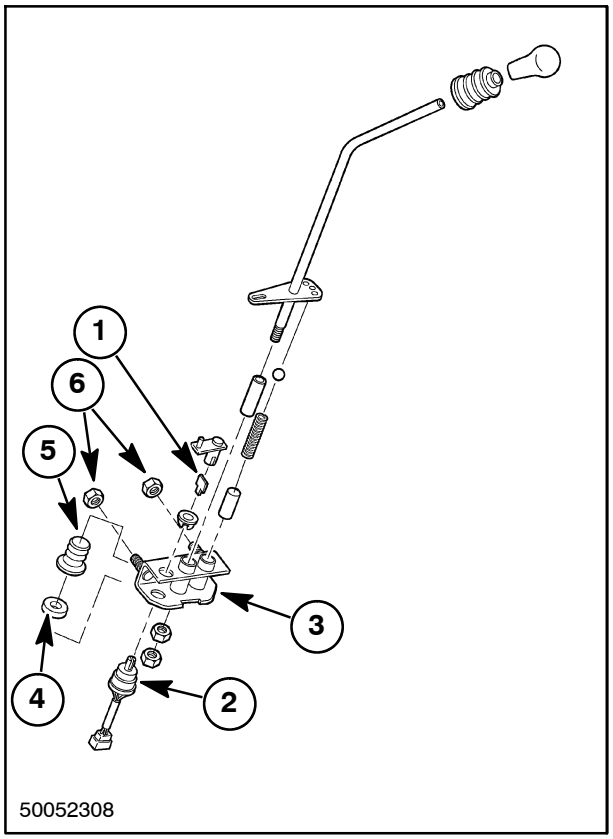
If any other test results are found the switch is defective and should be replaced.



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Installation

1. Install spade, 1, into the slot of the switch post.
2. Install switch, 2, (aligning spade that is in post of switch into slot of shift linkage) into mounting bracket, 3, insert tab of switch into slot in mounting bracket, secure with switch retaining nut, 4, and place rubber boot, 5, on top of switch.
3. Install switch and mounting bracket assembly onto steering column and secure with the two nuts, 6.
4. Connect the switch to the tractor wire harness.

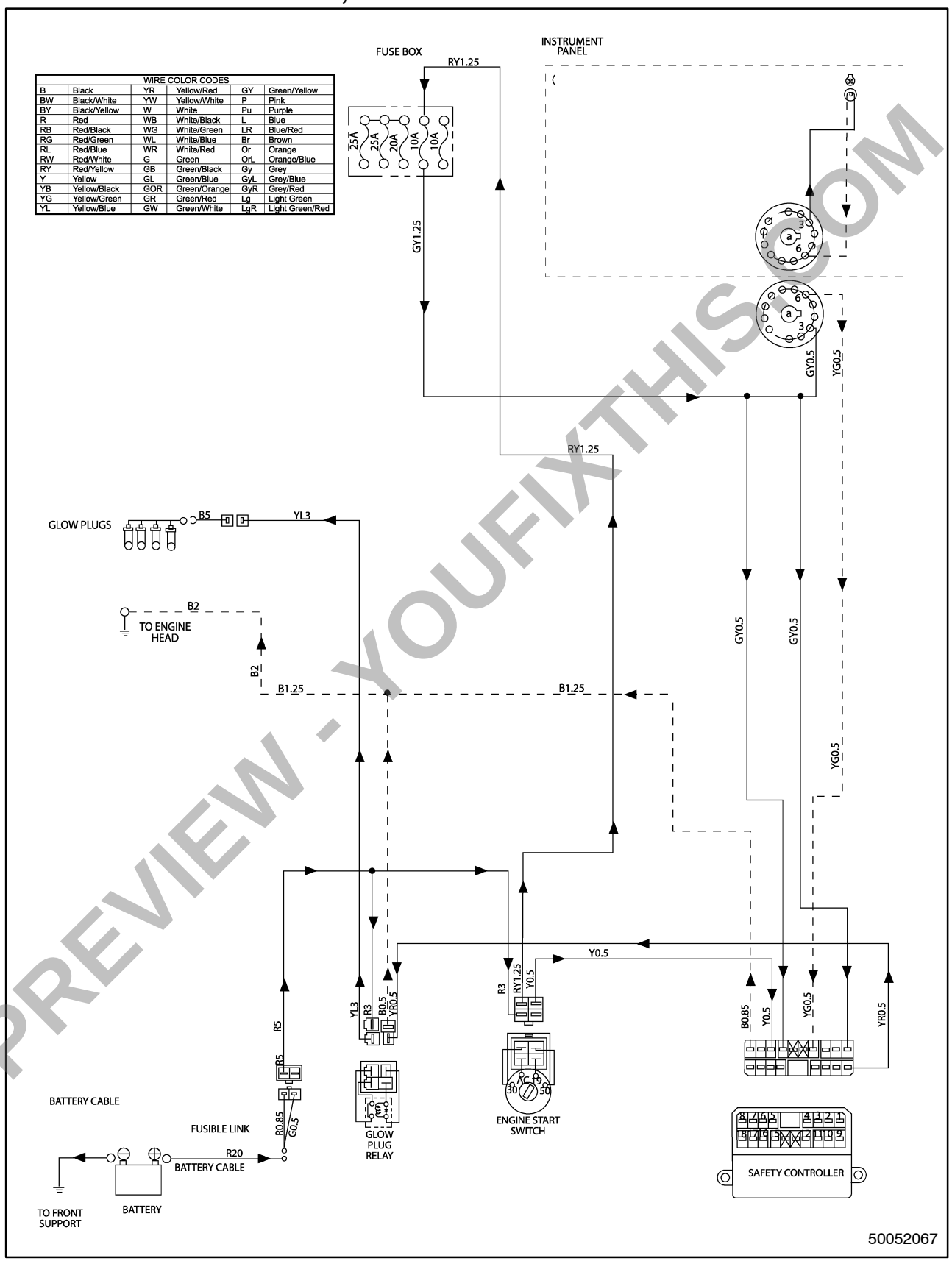


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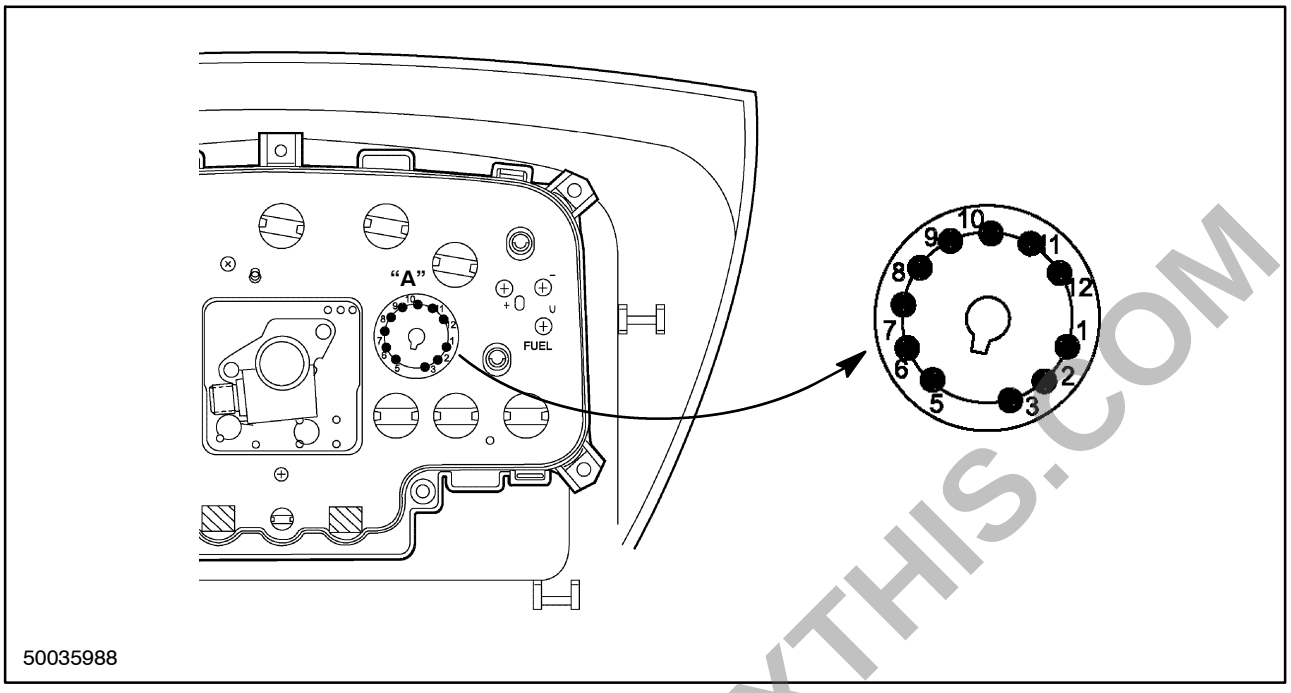
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ENGINE GLOW PLUG CIRCUIT
DX48 – Prior to PIN #HDG500142, DX55 – Prior to PIN #HDG600346



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INSTRUMENT PANEL CONNECTOR IDENTIFICATION

CONNECTOR "A"

Terminal	Function
1	Hazard Indicator Light
2	Engine Oil Pressure Indicator Light
3	(+) current to IP
5	High Beam Indicator Light
6	Glow Plug Indicator Light
7	Ground (-)
8	Temperature Gauge Sender
9	(+) Illumination
10	Right turn Signal
11	Left Turn Signal
12	Fuel Gauge Sender

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