DX55

SSS – PIN Number Z7NFP1001 and Above
EHSS – PIN Number Z7NFS1001 and Above

DX60
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 DX55, DX60 Repair manual. Complete Repair part # 84140461.

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 DX55, DX60 Tractors.

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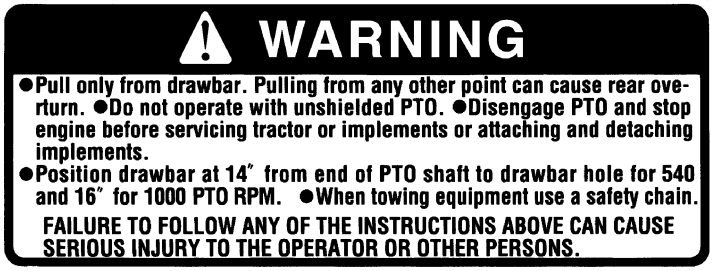
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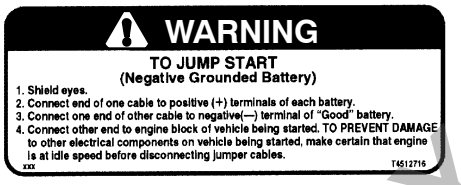
SAFETY DECALS

The following safety decals have been placed on your machine in the areas indicated. They are intended for your personal safety and for those working with you. Please take this manual and walk around your machine to note the content and location of these warning signs. Review these warning signs and the operating instructions detailed in this manual with your machine operators.

Keep the decals legible. If they are not, obtain replacements from your authorized dealer. The decal replacement part numbers are listed with each decal.



WARNING: Pull Only From Drawbar
PART NO: SBA390192293
LOCATION: Top of PTO Shield



WARNING: To Jump Start
PART NO: SBA490990571
LOCATION: Right Side of Battery Box



WARNING: Before Starting and Operating
PART NO: SBA390198380
LOCATION: Inside Left-Hand Fender



WARNING: Rotating Fan and Belts
PART NO: SBA390198470
LOCATION: Both Sides of Radiator Shroud



DANGER: ROPS
PART NO: SBA390197530
LOCATION: Top Under Side of ROPS

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SPECIFICATIONS

GENERAL	DX55	DX60
Engine Model	N844L-T	N844L-T
Number of Cylinders	4	4
Bore x Stroke	84 x 100 mm. (3.31 x 3.94in)	84 x 100 mm. (3.31 x 3.94in)
Displacement	135.2 cu. In.(2216 cc)	135.2 cu. In.(2216 cc)
Compression Ratio	22.5:1	22.5:1
Rated Speed (rpm)	2700	2800
Firing Order	1-3-4-2	1-3-4-2
Low Idle Speed	1000	1000
Maximum No Load Speed	2900	3000
Cylinder Arrangement	In-line vertical	In-line vertical
Valve Arrangement	Overhead	Overhead
Compression Pressure At 200 rpm (cylinder speed)	29.4 ± 3.5 bar (427 ± 50 psi)	29.4 ± 3.5 bar (427 ± 50 psi)
Gross Engine Power	41.0 kw (55 hp)	44.7 kw (60 hp)
PTO Power @ Engine Rated rpm	34.3 kw (46 hp) EHSS @ 589 PTO rpm	37.3 kw (50 hp) EHSS @ 610 PTO rpm
	35.0 kw (47 hp) SSS @ 589 PTO rpm	38.0 kw (51 hp) SSS @ 610 PTO rpm
CYLINDER BLOCK	N844L-T	N844L-T
Bore		
Standard	84.0 mm (3.3071 in)	84.0 mm (3.3071 in)
Maximum	84.2 mm (3.315 in)	84.2 mm (3.315 in)
Head Surface Warp		
Standard	.05 mm (.002 in)	.05 mm (.002 in)
Maximum	.12 mm (.005 in)	.12 mm (.005 in)
CYLINDER HEAD	N844L-T	N844L-T
Head Warp		
Standard	.05 mm (.002 in)	.05 mm (.002 in)
Maximum	.12 mm (.005 in)	.12 mm (.005 in)
Valve seat width		
Standard	1.7-2.1 mm (0.067-0.082 in)	1.7-2.1 mm (0.067-0.082 in)
Maximum	1.8 mm (0.071 in)	1.8 mm (0.071 in)
Valve seat sink	N844L-T	N844L-T
Standard (recess)	0.85-1.15mm (0.0334-0.0453 in)	0.85-1.15mm (0.0334-0.0453 in)
Maximum	1.8 mm (0.071 in)	1.8 mm (0.071 in)
Valve Angle	45 degrees	45 degrees
PISTON	N844L-T	N844L-T
Diameter		
Standard	83.948-83.963 mm (3.30503-3.30562 in)	83.948-83.963 mm (3.30503-3.30562 in)
Minimum	83.7 mm (3.2953 in)	83.7 mm (3.2953 in)
BORE CLEARANCE	N844L-T	N844L-T
Standard	0.038-0.072 mm (0.0015-0.0028 in)	0.038-0.072 mm (0.0015-0.0028 in)
Maximum	0.25mm (0.010 in)	0.25mm (0.010 in)

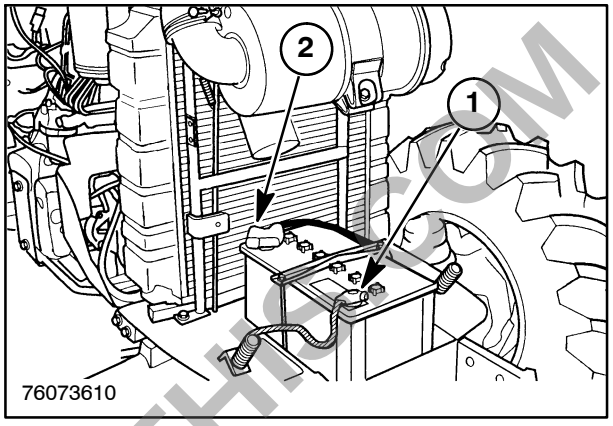
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OVERHAUL

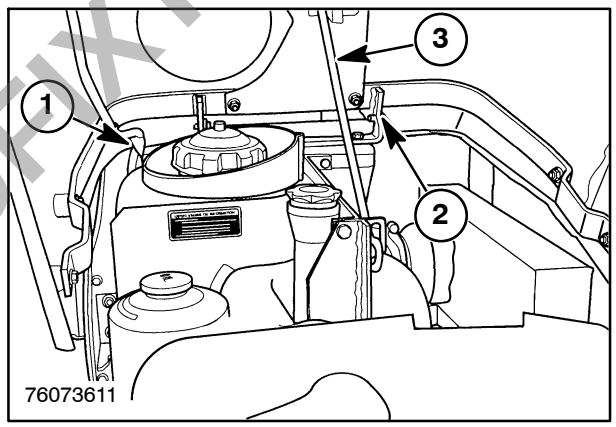
SEPARATING THE TRACTOR AT CLUTCH HOUSING/ENGINE

1. Disconnect the negative (-) battery cable, 1, and positive (+) battery cable, 2, from the battery.
2. Drain all of the hydraulic fluid from the transmission and differential into a suitable container.



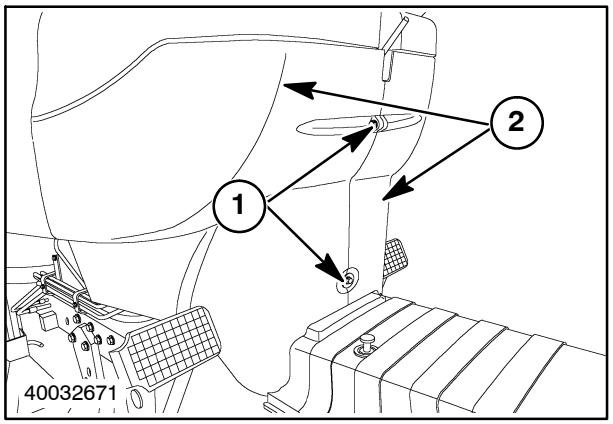
2

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



3

6. Remove the two bolts, 1, from the rear hood panels, 2.



4

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DESCRIPTION OF OPERATION

The EHSS transmission provides 12 forward and 12 reverse speeds which are controlled by three shift levers.

The EHSS transmission is driven by a single flex plate which transmits power from the engine to the input shaft in the transmission.

The forward and reverse functions of the transmission are controlled by two hydraulic clutch packs in the transmission housing. The three control levers, Forward and Reverse, 1, Main Gears, 2, and Range Gears, 3 (figure 6), control the electronic signal to the EHSS controller. The controller then sends the signal to a solenoid operated hydraulic valve which determines hydraulic flow to the clutch packs.

NOTE: *The following procedures have to be performed, after starting the tractor, to allow the EHSS controller to be activated and transmission able to operate.*

- Operator in the seat.
- Inching pedal, 4 (figure 7), cycled

The hydraulic fluid is sent to the clutch packs, pressurized by a separate tandem type oil pump, located on the right side, of the rear transmission housing. The oil is supplied from the common reservoir of the transmission and differential housing.

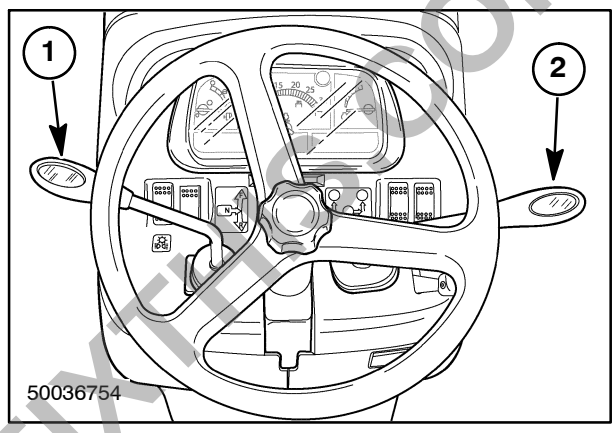
If no forward or reverse direction is signaled, pressurized fluid opens a relief valve and the fluid is returned to the reservoir, through the oil cooler. A portion of the fluid is sent through the clutch pack assembly for lubrication purposes.

The transmission is divided into three compartments. The front compartment contains the shuttle clutch packs and the forward and reverse gears. The center compartment contains the synchronized main gears, 1st through 4th, while the rear compartment contains the range gears, Low, Medium and High.

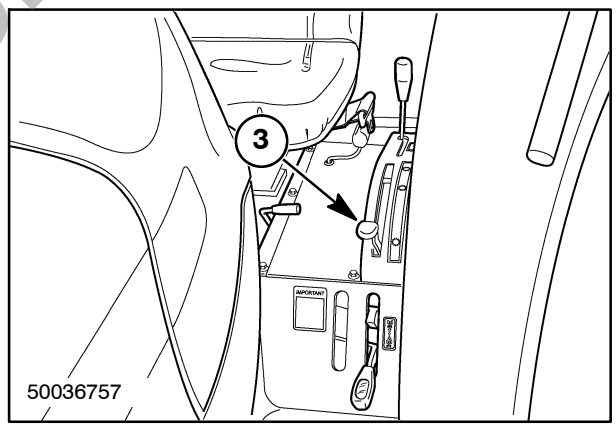
The main transmission gear shift lever is mounted on the dash panel to the right of the steering column. The shuttle shift lever is located on the dash panel to the left of the steering column. The range gear shift lever is located on the left fender, next to the operators seat.

While the main transmission gears are synchronized, the range gears are not. The range gears are changed through sliding gears located in the rear compartment of the transmission.

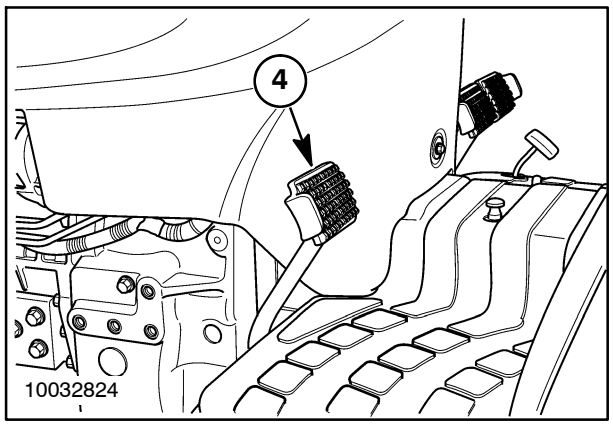
The oil level dipstick is located on the transmission top cover.



5



6



7

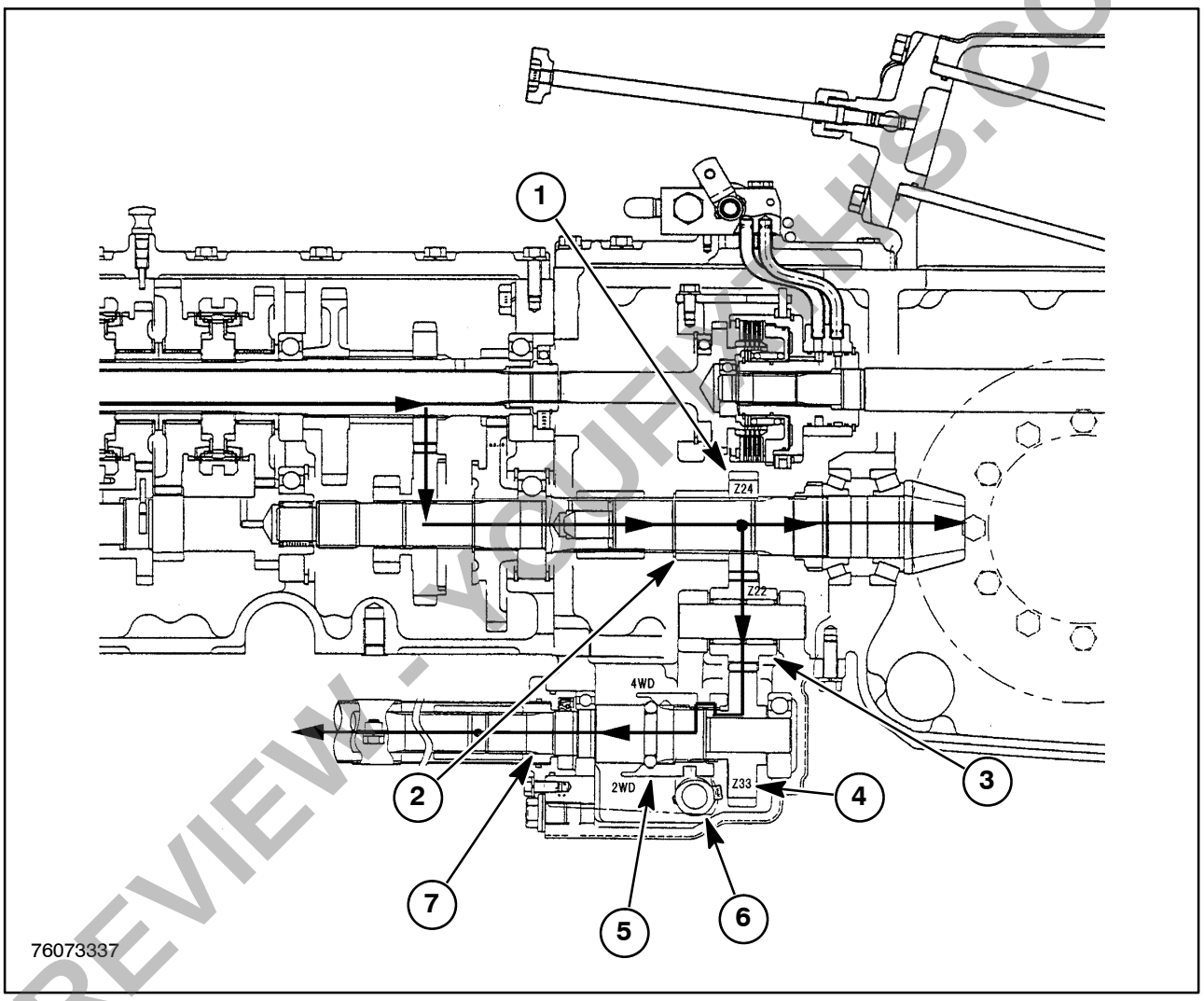
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DESCRIPTION OF OPERATION - FRONT WHEEL DRIVE GEARBOX

The front wheel drive gearbox is mounted under the rear differential housing. The gearbox is driven by a 24T fixed gear, 1, on the final drive pinion shaft, 2, and consists of one 22T counter gear, 3, one 33T 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.



1

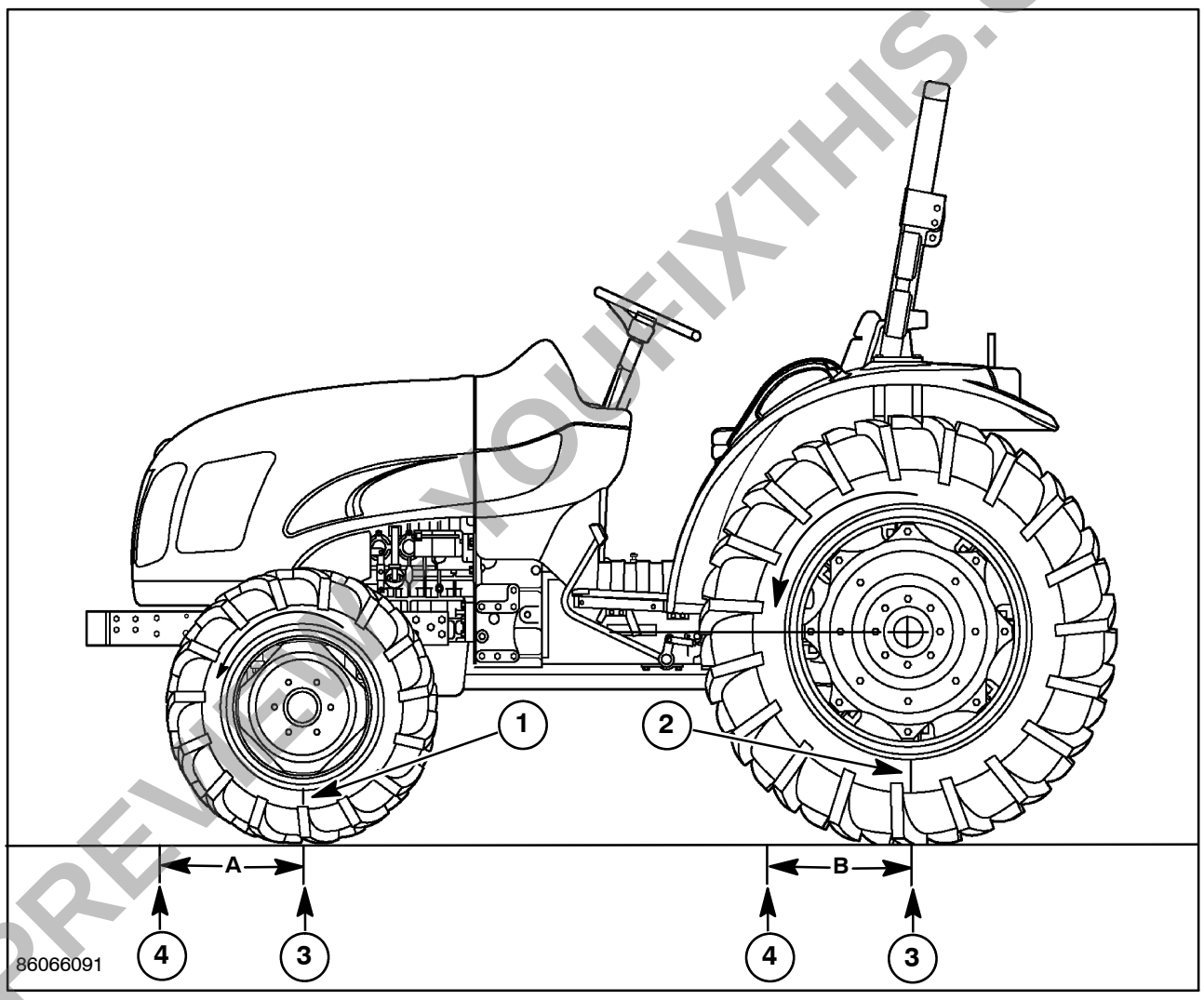
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Method 2: Rolling Test

1. Make a mark on the front tire, 1, and the rear tire, 2.
2. Make a corresponding mark, 3, on the ground at each tire.
3. Slowly roll the tractor forward until the marks on the tires, 1 and 2, make one full revolution.
4. Make a second mark, 4, on the ground as in step 2.
5. Measure the distance between the marks on the ground for each tire.
6. Divide the distance B by the distance A to calculate the front to rear ratio.
7. To change the front to rear ratio, increase or decrease the tire inflation pressure, or check the rear counterbalance weights.

NOTE: *Do not exceed the tire inflation pressures recommended in the Operators Manual. Consult the Operators Manual for the available tire sizes and inflation pressures for a specific tractor.*

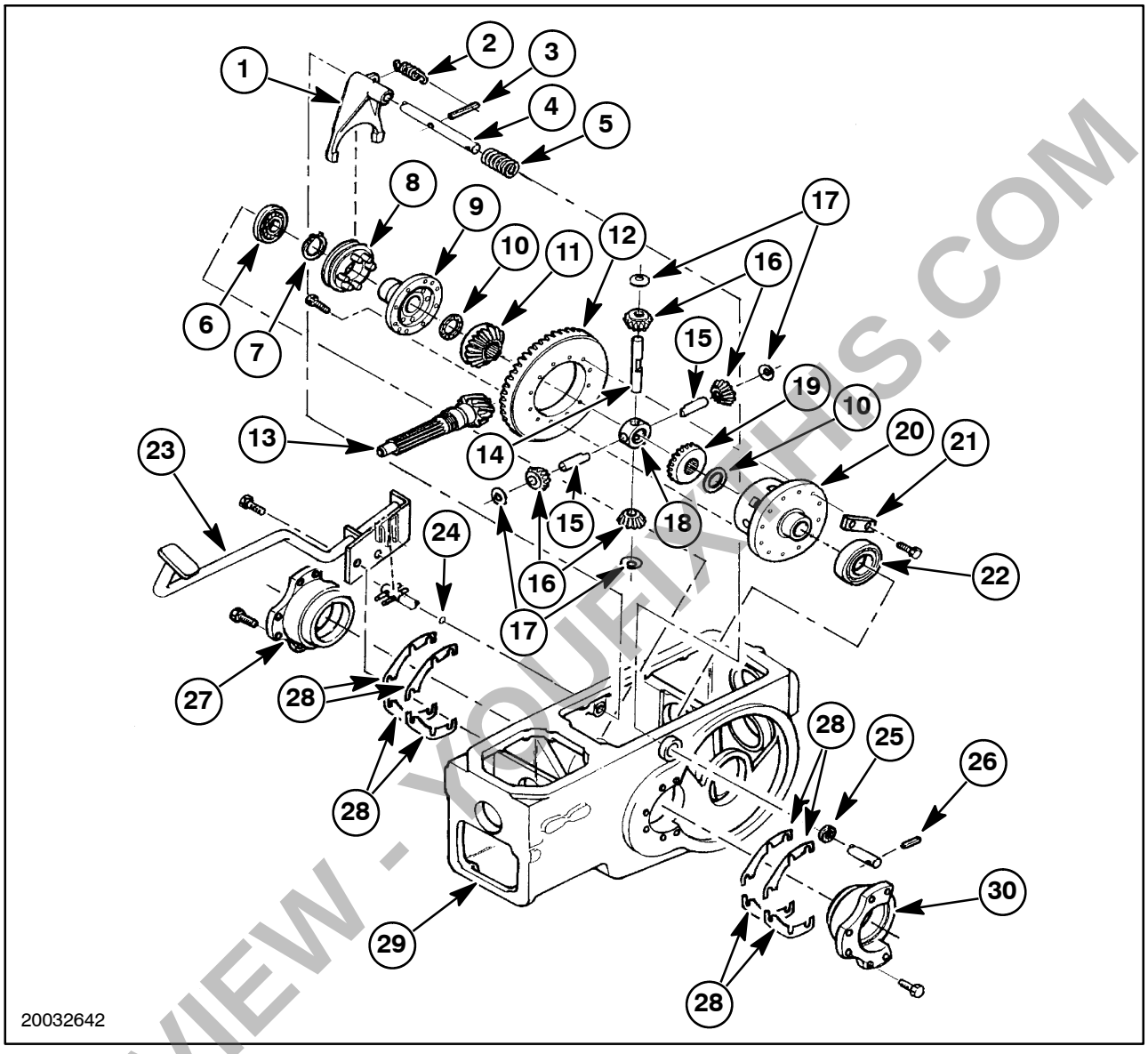


2

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DESCRIPTION OF OPERATION - DIFFERENTIAL AND REAR AXLE



1

1. Differential Lock Fork
2. Tension Spring
3. Inner Roll Pin
4. Differential Lock Shaft
5. Return Spring
6. RH Differential Side Bearing
7. Retaining Ring
8. Differential Lock Clutch
9. Differential Gear Case End Plate
10. Thrust Washer
11. Side Gear, RH
12. Drive Ring Gear
13. Drive Pinion
14. Differential Pinion Shaft, Long
15. Differential Pinion Shaft, Short
16. Pinion Gear
17. Thrust Washer
18. Pinion Shaft Joint
19. Side Gear, LH
20. Differential Gear Case
21. Lock Plate
22. LH Differential Side Bearing
23. Differential Lock Pedal
24. O-ring
25. Differential Lock Shaft Oil Seal
26. Roll Pin
27. RH Bearing Carrier
28. Shims (as required)
29. Differential Housing
30. LH Bearing Carrier

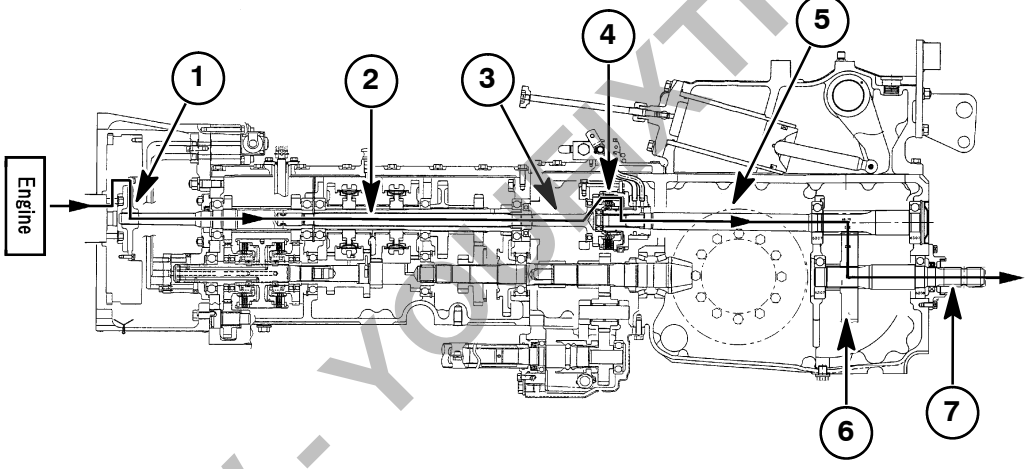
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REAR PTO – POWER FLOW DIAGRAM

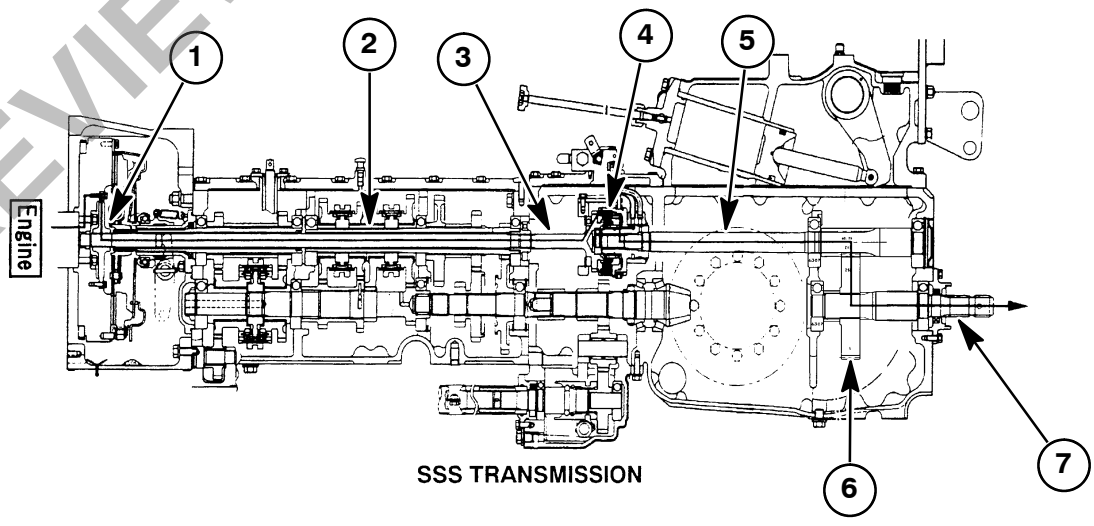
On tractors equipped with the EHSS and SSS transmissions, power flows from the engine through a flex-plate, 1, through the transmission via the PTO drive shaft, 2, to a PTO input shaft, 3. The PTO input shaft, 3, is connected to the PTO clutch, 4. When the operator engages the PTO, power flows through the PTO clutch, 4, to the PTO countershaft, 5. Power is then transferred from the PTO countershaft, 5, to a fixed 55-tooth gear, 6. The gear, 6, turns the rear PTO shaft, 7, when the PTO is engaged.

NOTE: *With the tractor shut off, the rear PTO output shaft, 7, can be rotated slightly, to aid in connection to implement drive shaft, but cannot be rotated in a complete revolution, due to the PTO driven gear, 6, being constantly engaged with the power train.*



76074347 **EHSS TRANSMISSION**

5



SSS TRANSMISSION

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6

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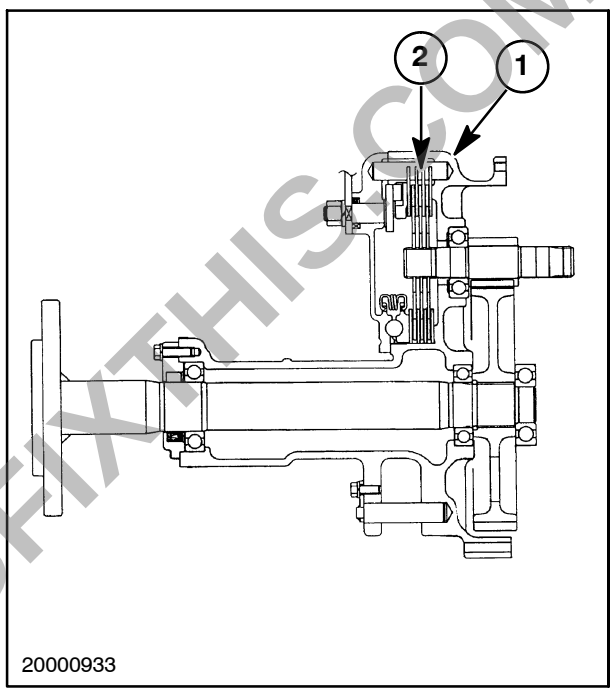
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DESCRIPTION OF OPERATION - BRAKES

The rear axle used on the DX55 and DX60 is a double reduction type, consisting of a conventional ring gear and pinion for primary reduction, and a final drive pinion and gear for secondary reduction.

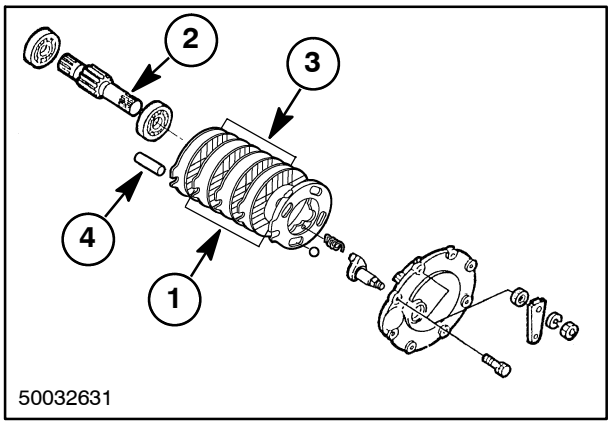
The axle housing, 1, encloses the brake discs and stators, 2. The rear axle and differential components are lubricated by the common hydraulic oil reservoir.

The brakes are a mechanically actuated, wet disc type. The brakes are located outside of the differential housing and are enclosed in the front portion of the axle housing. The brake housing cover seals the brakes from contaminants and moisture.



1

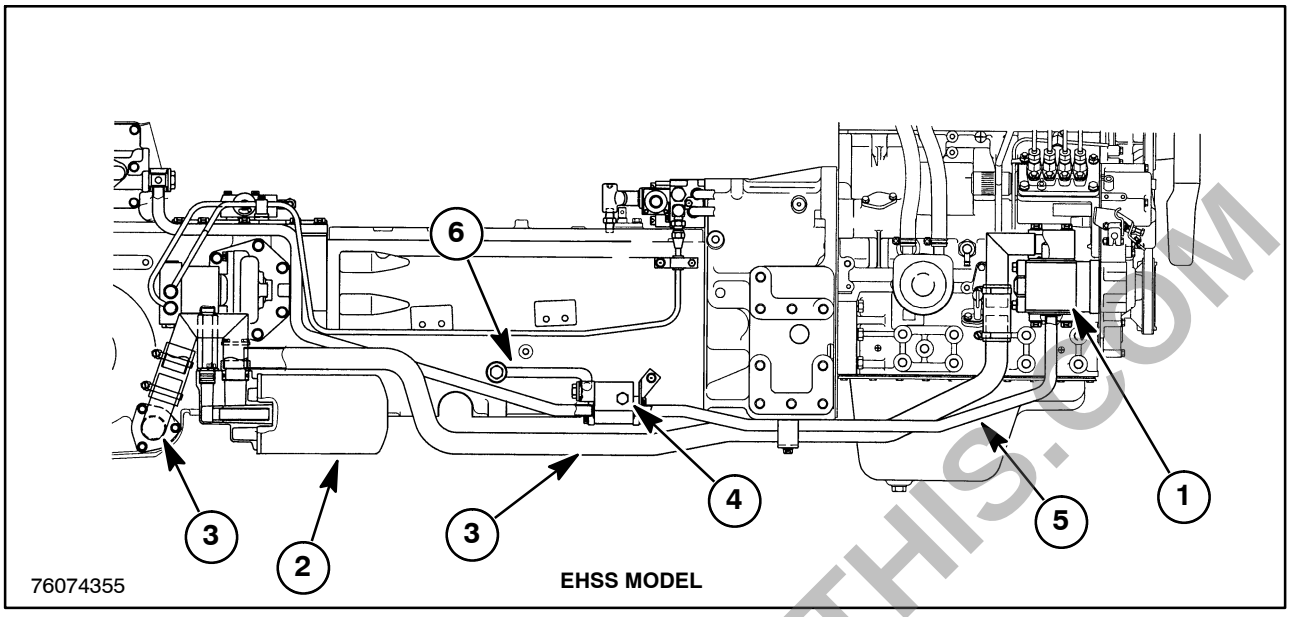
The brake discs, 1, are splined to the final drive pinion shaft, 2, and turn at the same speed as the differential assembly. The stators, 3, are kept in position by a locating pin, 4, in the axle housing.



2

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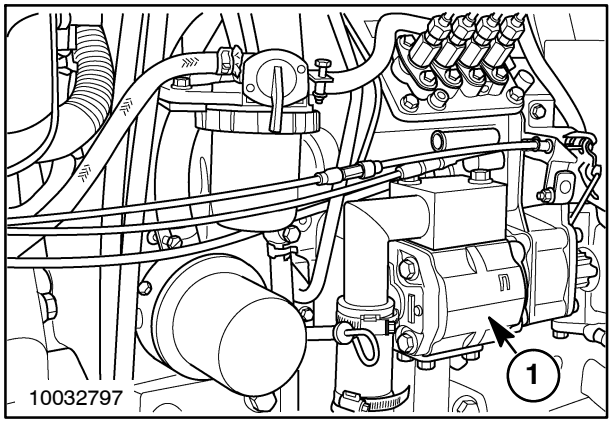
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DESCRIPTION OF OPERATION - HYDRAULIC SYSTEMS

Hydraulic position control is standard equipment on all DX55, DX60 tractors. The open center hydraulic system consists essentially of a fluid reservoir, hydraulic pump, lift cylinder and piston, control valve and lift links.

The rear axle and transmission housing serve as a common hydraulic fluid reservoir and supply fluid to the hydraulic pump, 1, through the filter, 2, and suction tubes, 3. The hydraulic pump supplies hydraulic fluid to the system control valve through the combination relief/diverter valve manifold, 4, and the high pressure line, 5. The control valve, when operated, affects raise, neutral, or lowering action of the lift arms. Hydraulic fluid is returned to the reservoir through line, 6.

The hydraulic pump, 1, is mounted on the right side of the engine and is driven by the engine oil pump gear located on the front of the engine block.

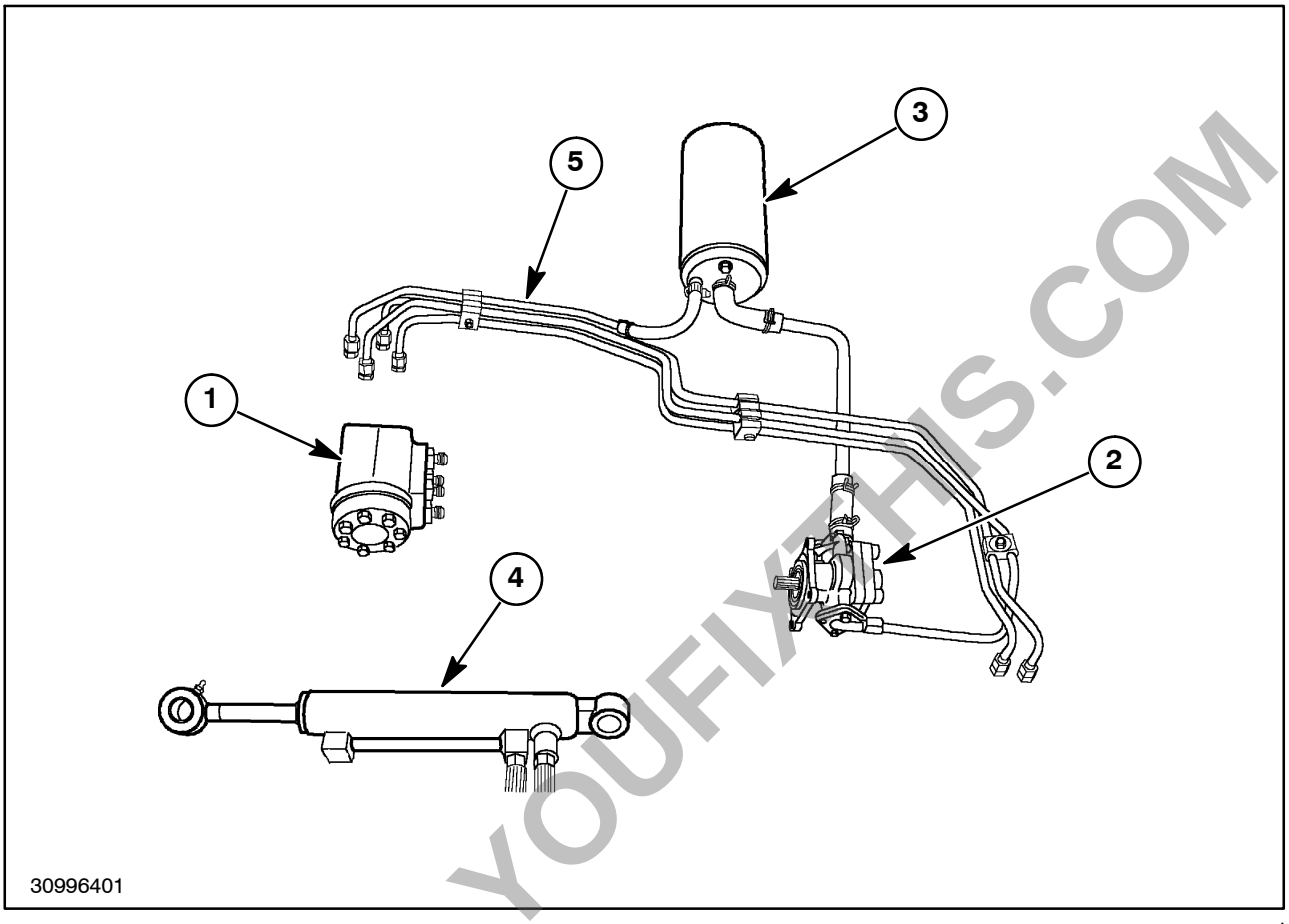


4

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DESCRIPTION OF OPERATION



1

POWER STEERING

The power steering system consists of a power steering control motor, 1, a power steering pump, 2, a fluid reservoir, 3, a steering cylinder assembly, 4, and tubing, 5.

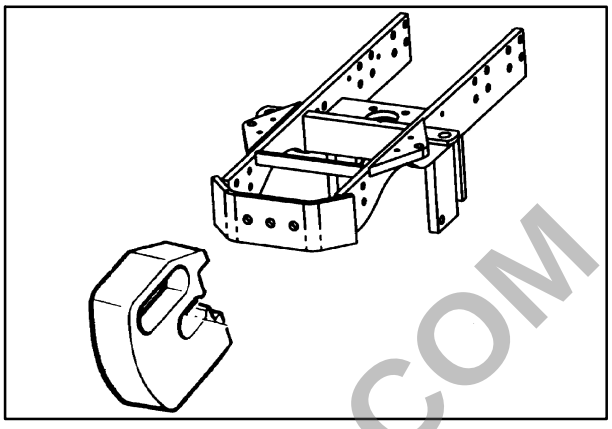
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CAST IRON WEIGHTS (OPTIONAL)

Cast iron weights are available as accessories from your Case IH Dealer. Weights can be mounted on the front end of the tractor and on the rearmost wheels.

27 kg (60 lbs) - #710215016
45 kg (100 lbs) - #718215036



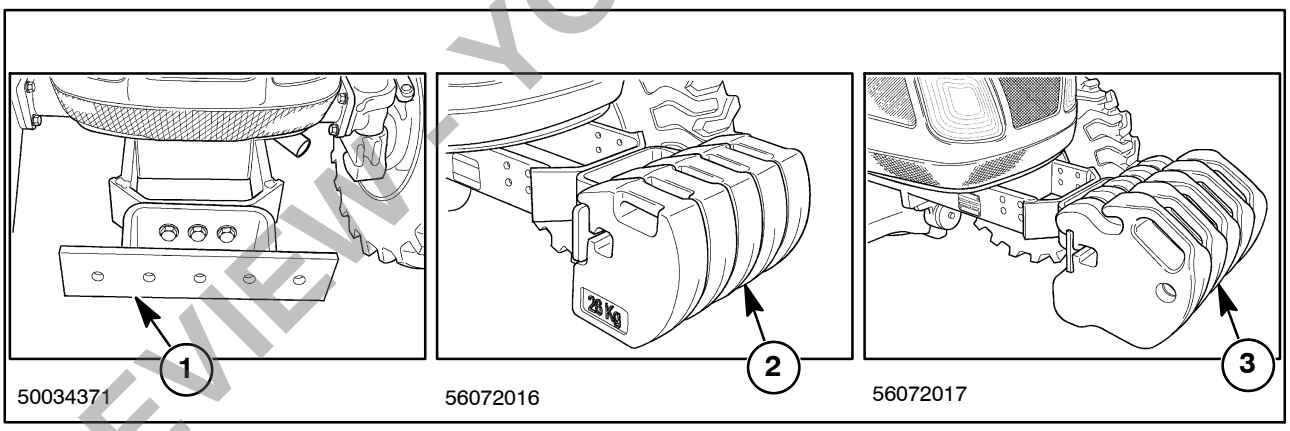
2

Front Frame Mounted Weights

Tire Type	Weight(s)
Agricultural, Turf, & Industrial	Maximum of (2) weights per tractor @ 27.3 kg (60 lbs) each- 54.6 kg (120 lbs) total Optional: (2) weights @ 45 kg (100 lbs) each - 90 kg (200 lbs) total

Optional Front Weight Extension Bracket

If additional front weights are needed for counterbalancing a rear mounted implement, an optional front weight extension bracket, 1, (#718233006) can be installed to the front of the tractor. With the extension bracket installed, a maximum of (5) 27 kg (60 lbs), 2, or (5) 45 kg (100 lbs), 3, weights can be installed.



3

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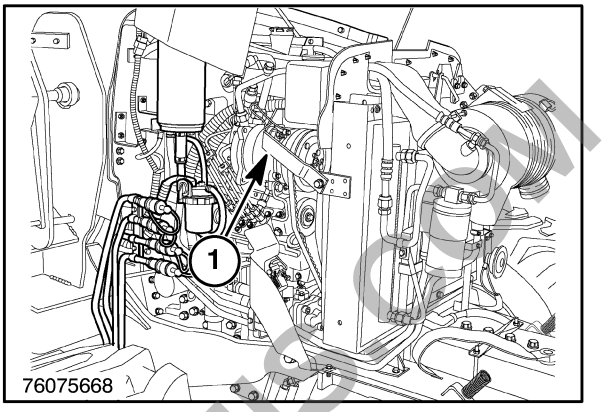
DESCRIPTION AND OPERATION

COMPRESSOR

The compressor, 1, is mounted inside the engine compartment and is driven by the crankshaft pulley. Refrigerant and oil is moved through the air conditioning system by the compressor, which lubricates and cools the unit during operation.

An electromagnetic clutch is used to engage or disengage the compressor as required when operating the air conditioning system. The clutch is of a stationary coil type and forms an integral part of the compressor pulley assembly. When the coil is energized, the clutch plate is pulled against the rotating pulley. De-energizing the coil will allow the plate to return to a standby position.

This system holds 1.1 kg (2.40 lbs) of R-134A refrigerant. When the system is empty it will hold 135 ml (4.56 fl. oz.) of SP-20 PAG Oil.

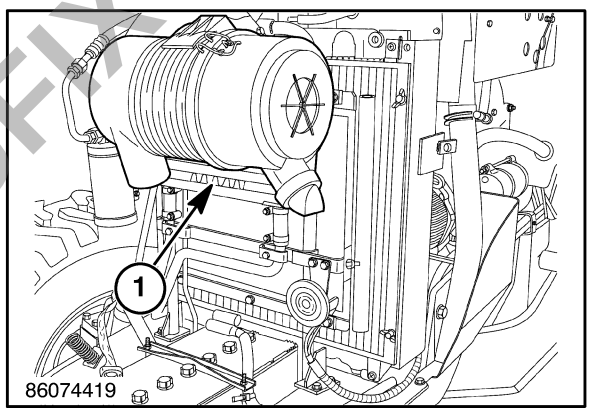


1

CONDENSER

The condenser, 1, is located at the front of the tractor. The condenser consists of a number of turns of continuous coils mounted in a series of thin cooling fins to provide maximum heat transfer in a minimum amount of space.

The condenser receives the hot, high pressure refrigerant vapor from the compressor. As the hot vapor passes through the coil, outside air is drawn around the coils by the engine fan. Heat is transferred from the hot refrigerant vapor into the cooler outside air flowing across the coils and fins. The refrigerant condenses inside the unit and becomes a high pressure liquid.

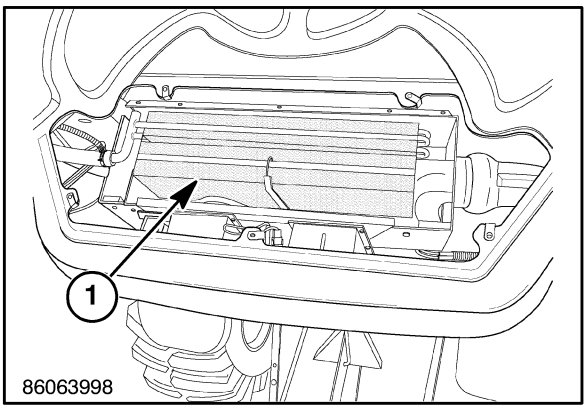


2

EVAPORATOR

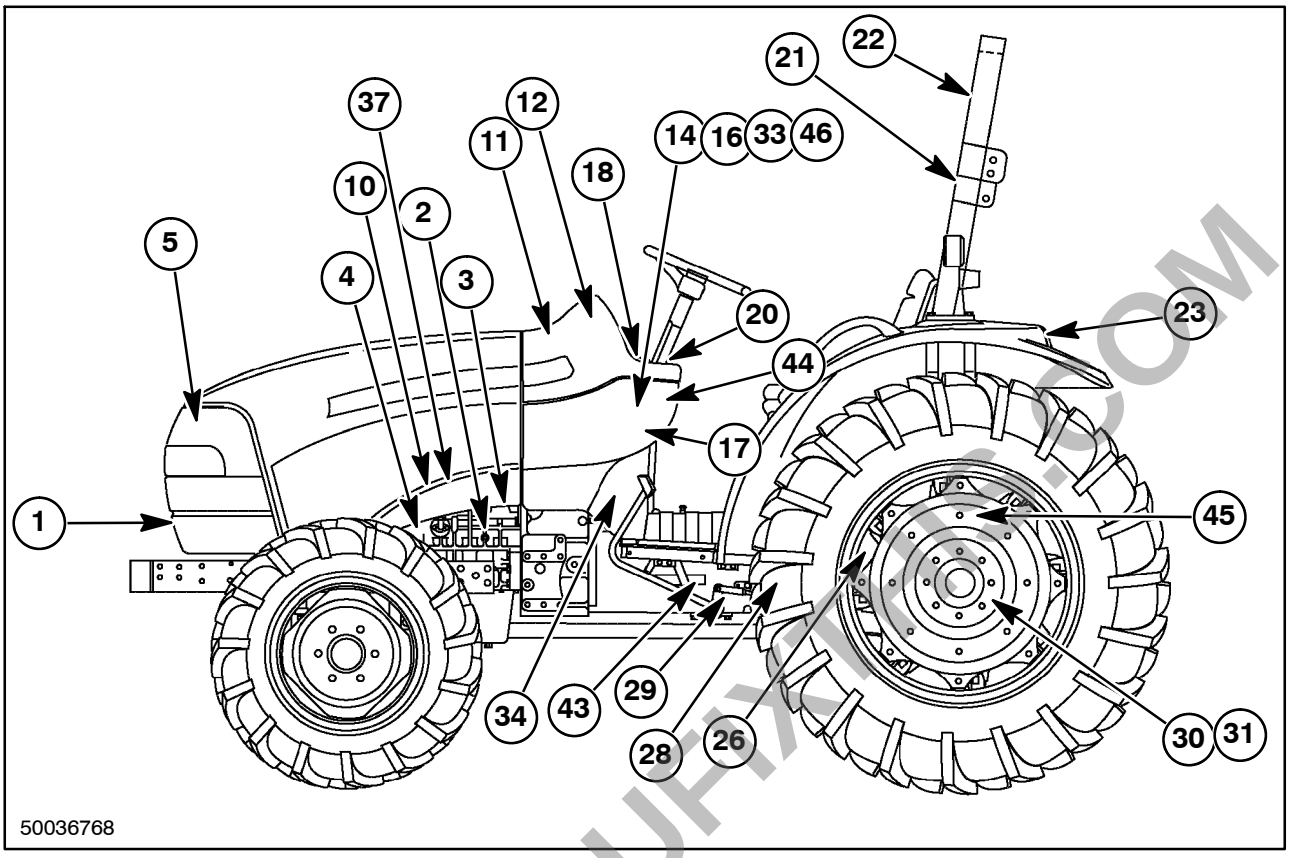
The evaporator core, 1, is located in the ventilation housing located in the cab roof housing. Similar to the condenser, the evaporator core consists of numerous tubes mounted in a series of thin aluminum cooling fins. The fins and tubing are designed to transfer heat from the cab air to the cold refrigerant liquid as it moves through the evaporator tubing.

The low pressure liquid inside the tubes removes heat from air passing around them. As the refrigerant absorbs heat, it boils and flashes to a vapor. The low pressure vapor then flows to the compressor to repeat the refrigerant cycle.

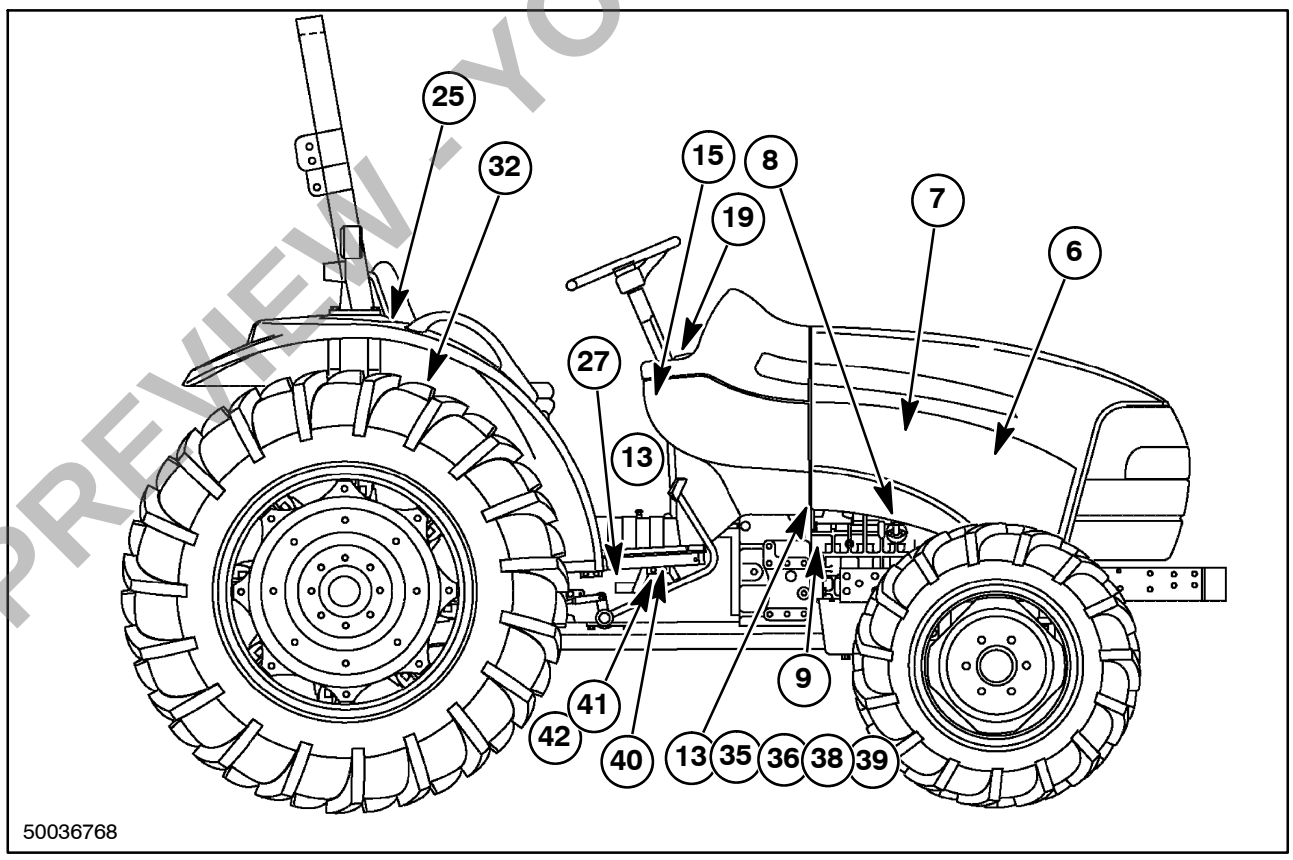


3

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1



2

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DESCRIPTION OF OPERATION AND OVERHAUL

This section describes the removal and installation of components such as, dash panels, fenders, hood, and the side steps.

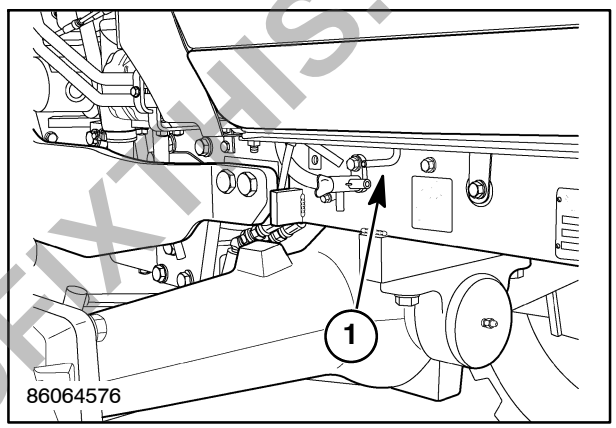
DANGER

Lift and handle all heavy parts using suitable lifting equipment. Support parts or an assembly by means of suitable slings, hooks, or jack stands. Make sure that no person is near a raised load.

HOOD

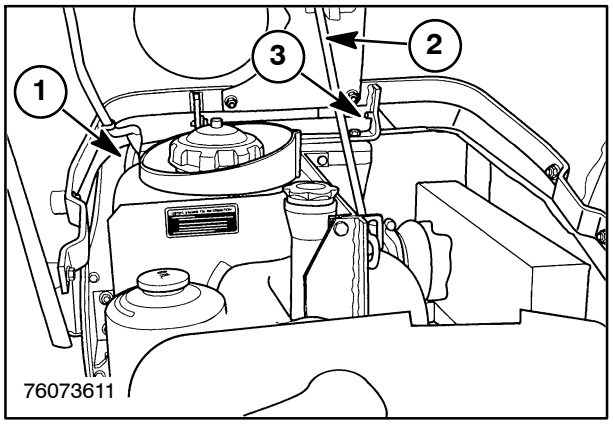
Removal

1. Release the hood latch under the right hand side of the hood, 1, and open the hood.



1

2. Disconnect the headlight wiring, 1, from the main wire harness.
3. Remove the clip, and washer from the hood prop rod, 2.
4. Remove the clip, 3, from the hood mounting bracket.
5. Support the hood and remove the prop rod from the hood. Carefully remove the hood from the tractor.



2

Installation

1. Carefully lift the hood into position over the tractor.
2. Slide the hood onto the hood hinges and secure to the tractor by using the clip, 3.
3. Install the hood prop rod, 2, using the flat washer, and clip.
4. Connect the headlight wiring to the main wire harness.

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SECTION 10 – ENGINE

BOOK 1 - 87711137

Chapter 1 – Engine Components (Continued)

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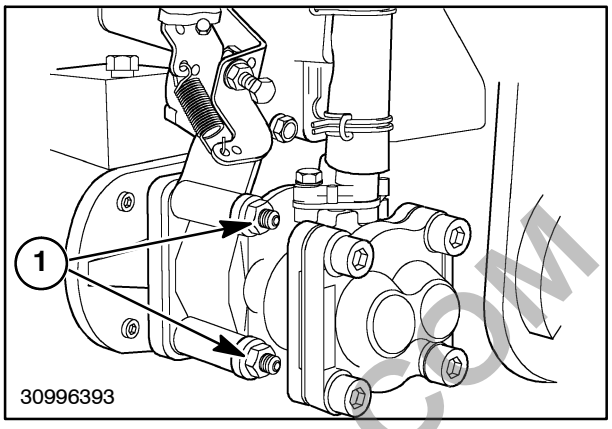
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POWER STEERING PUMP

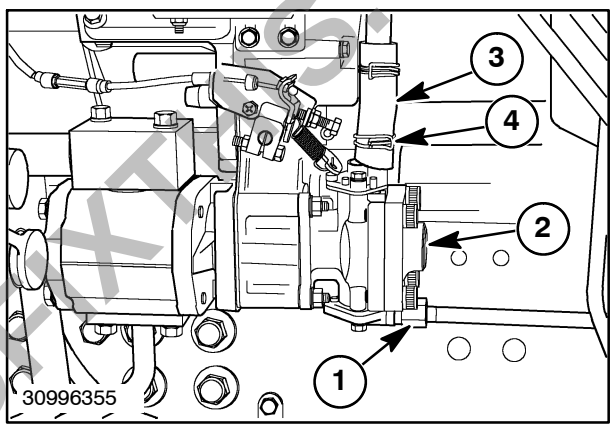
Installation

1. Mount the power steering pump in position on the timing gear cover with two retaining bolts (not shown), and two retaining nuts, 1.



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2. Attach the pressure tube, 1, to the bottom of the steering pump, 2.
3. Install the suction line, 3, on the suction tube and install the hose clamp, 4.



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TURBO CHARGER

All tractor installed turbochargers – removal, inspection, and assembly of turbocharger are referred to in “Chapter 3 – Turbocharger” in this section.

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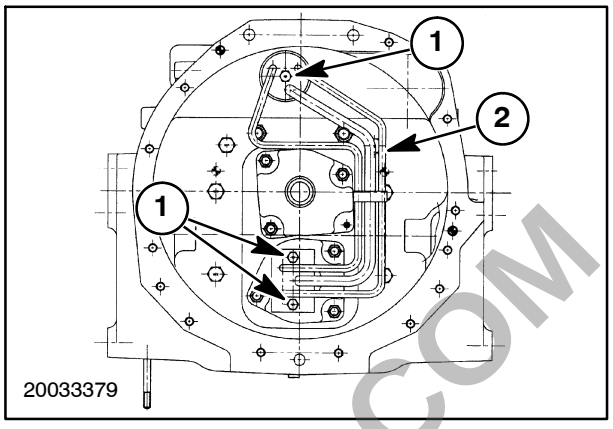
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CLUTCH HOUSING

Disassembly

IMPORTANT: *During pressure tube removal be sure not to lose the six O rings between the tube assembly and the clutch housing.*

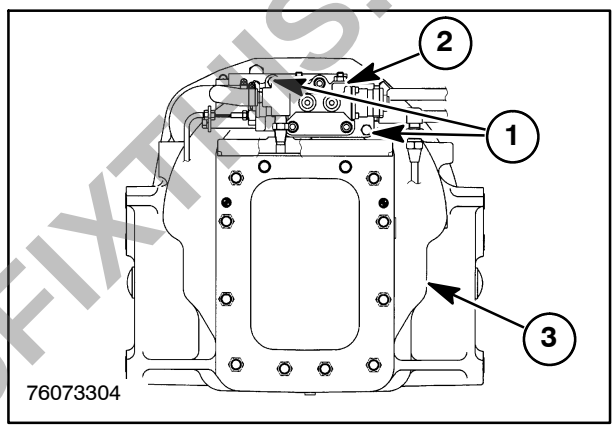
1. Remove the three bolts, 1, securing the pressure tubes, 2, to the transmission. Remove the pressure tubes as an assembly.



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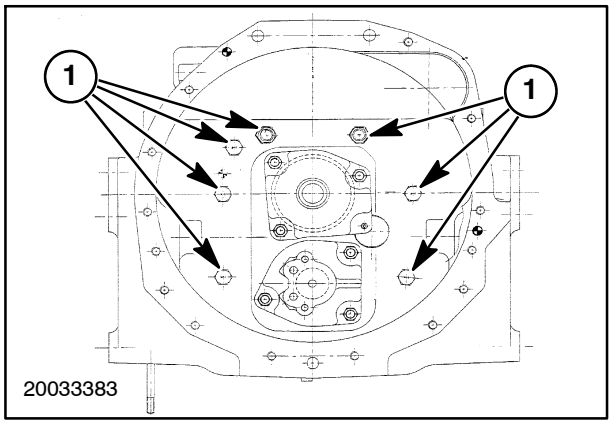
IMPORTANT: *During control valve removal be sure not to lose the three O rings between the valve assembly and the clutch housing.*

2. Remove the two bolts, 1, securing the lube cut-off valve and control valve assembly, 2, to the clutch housing, 3. Remove the valve assembly from the clutch housing.



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3. Remove the clutch housing bolts, 1.



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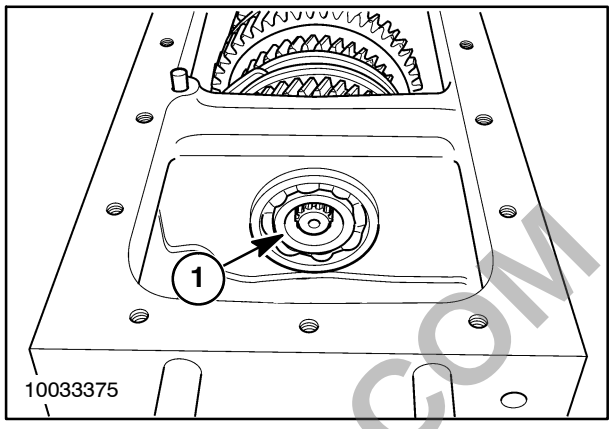
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INPUT SHAFT

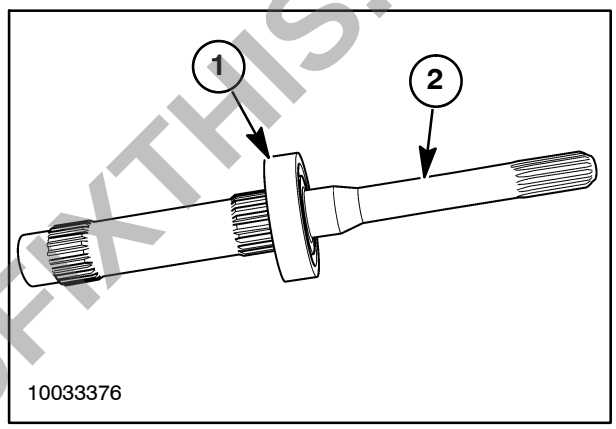
Assembly

1. Install the rear input shaft bearing (6208), 1, in the housing.



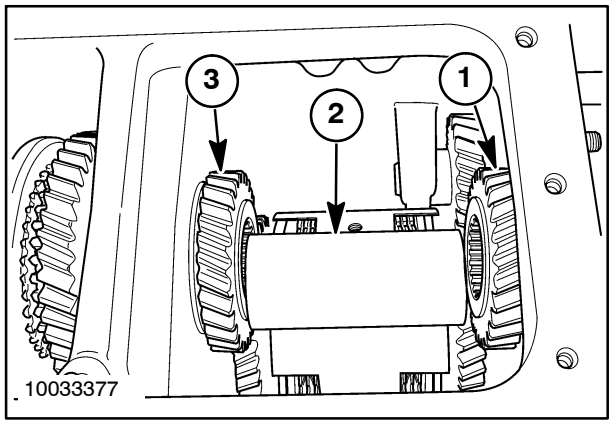
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2. Install the front input shaft bearing, 1, on the input shaft, 2.



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3. Position the 28T gear, 1, (flange facing forward), spacer, 2, and 29T gear, 3, (flange facing rearward) in the housing.



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SECTION 35 – HYDRAULIC SYSTEM

Chapter 1 – Hydraulic System

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SECTION 44 – WHEELS AND TIRES

Chapter 1 – Wheels and Tires

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TROUBLESHOOTING SAFE OPERATION CIRCUIT (Operator Not Present)		
PROBLEM	**POSSIBLE CAUSE**	**CORRECTION**
Engine does not continue to run while operator is not seated with the shuttle switch in neutral.	Defective shuttle switch.	Test shuttle switch and replace as necessary.
	Malfunctioning fuel shutoff solenoid.	Test fuel shutoff solenoid and replace as necessary.
	Defective safety controller.	Test controller replace as necessary.
	Loosen connection in safe operation circuit.	Check for loose connectors, grounds or wire damage.
	Blown 10 or 20 amp fuse.	Check fuse(s) and replace as necessary.

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Testing

Use an ohmmeter to test both of the positions of the seat switch for electrical continuity.

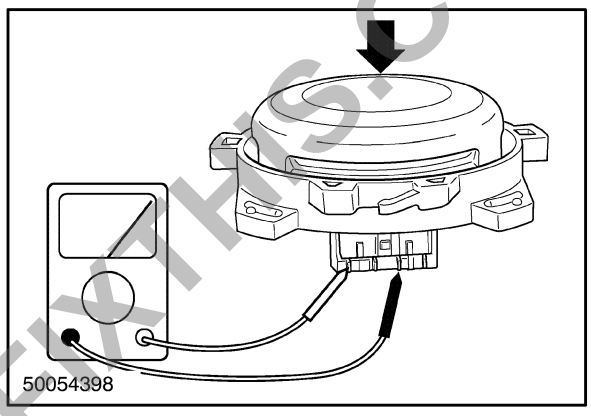
Extended Position

With the switch in the “extended” (OUT) position continuity should not exist between any of the four terminals. If continuity exists between any of the switch terminals while the switch is in the “extended” position, the switch is defective and needs to be replaced.

Retracted Position

With the switch in the “retracted” (IN) position, continuity should exist across the following terminals:

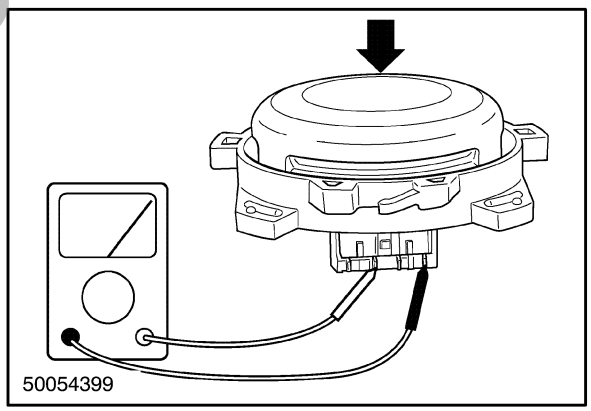
Check continuity between Terminals #1 and #3.



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Check continuity between Terminals #2 and #4.

If continuity does not exist between the two sets of terminals while the switch is in the “retracted” position the switch is defective and needs to be replaced.



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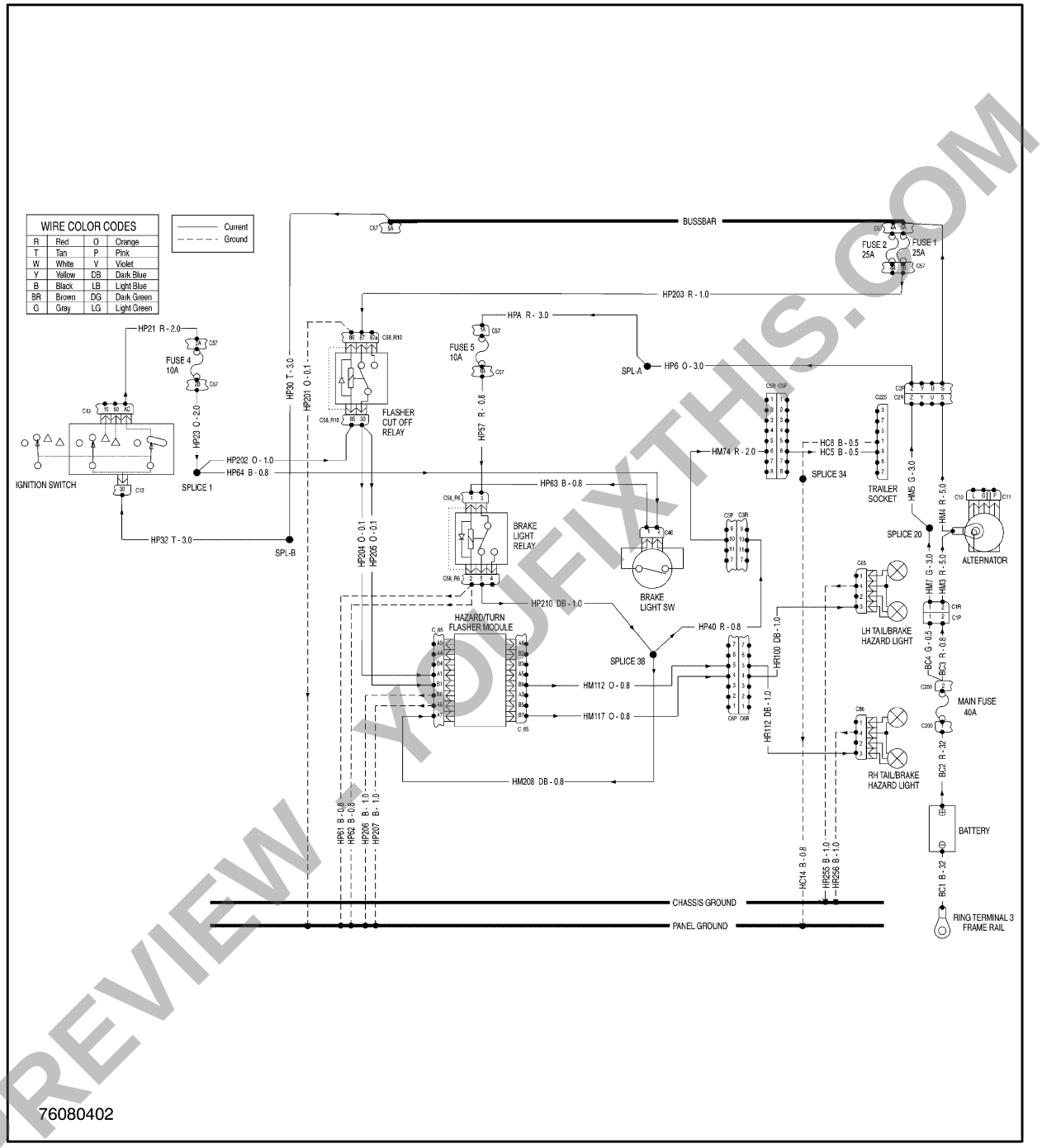
Installation

1. Tilt the seat forward to reveal the bottom of the seat.
2. Rotate the switch clockwise to retain the locking tabs.
3. Connect the seat switch harness to the switch.

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BRAKE LIGHTS



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