TC31DA, TC34DA
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 TC31DA, TC34DA Repair manual. Complete Repair part # 87531021.

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

The sections listed above are the sections utilized for the TC31DA, TC34DA Tractors.

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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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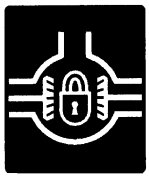
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SPECIFICATIONS

	Model TC31DA—Hydrostatic/Gear	Model TC34DA—Hydrostatic
ENGINE		
Type	Diesel	Diesel
Engine Gross Horsepower	23.1 kw (31)	26.1 kw (35)
Cylinders	3	3
Bore	84 mm (3.31″)	84 mm (3.31″)
Stroke	80 mm (3.15″)	100 mm (3.94″)
Displacement	1.33 L (81.2 cu. in.)	1.65 L (101.1 cu. in.)
Compression Ratio	22.7:1	22.2:1
Firing Order	1-2-3	1-2-3
Low Idle Speed	1000 RPM	1000 RPM
Maximum Speed:		
High Idle	2840 ± 25 RPM	2840 ± 25 RPM
Rated	2600 RPM	2600 RPM
Valve Clearance (Cold):		
Intake	0.20 mm (0.008″)	0.20 mm (0.008″)
Exhaust	0.20 mm (0.008″)	0.20 mm (0.008″)
CAPACITIES		
Fuel Tank	27.6 liters/ 7.3 U.S. gals.	27.6 liters/ 7.3 U.S. gals.
Cooling System	5.2 liters/ 5.5 U.S. qts.	5.2 liters/ 5.5 U.S. qts.
Engine Crankcase:		
With Filter	4.0 liters/ 4.2 U.S. qts.	4.0 liters/ 4.2 U.S. qts.
Rear Axle & Transmission (Includes Hydraulics)		
Gear	32.5 liters/ 8.6 U.S. gals.	
HST	33.3 liters/ 8.8 U.S. gals.	33.3 liters/ 8.8 U.S. gals.
Front Axle Final Reduction	0.8 liters/ 0.85 U.S. qts.	0.8 liters/ 0.85 U.S. qts.
Differential Gear Case	1.4 liters/ 1.5 U.S. qts.	1.4 liters/ 1.5 U.S. qts.

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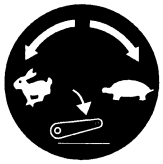
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Differential Lock
PART NO:
86532901
LOCATION:
Left Side Operator's Platform (HST)
Right Side Operator's Platform (Gear)



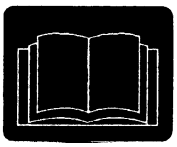
Starter Switch
PART NO:
86400175
LOCATION:
Right Console Panel



Flow Control Valve
PART NO:
86532897
LOCATION:
Top of Flow Control Knob



Engine Oil
PART NO:
86532916
LOCATION:
Engine Oil Filler Cap



Hyd. Manifold Operation
(See Operator's Manual)
PART NO:
86532914
LOCATION:
Top Side of Hyd. Manifold/Air Filter Cap



(Optional)
Coupler-Extending
PART NO:86532920



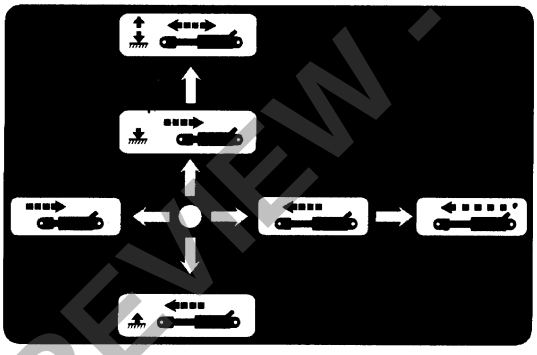
(Optional)
Coupler-Retracting
PART NO:86532919



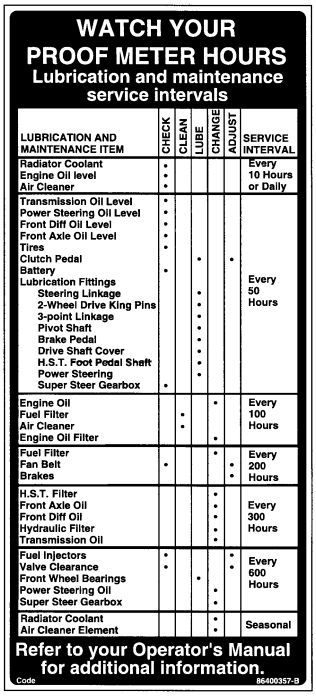
(Optional)
Coupler-Extending
PART NO:86532921



(Optional)
Coupler-Retracting
PART NO:86532922



Optional)
Operating Remote Control Valve-Double Spool
PART NO:
86532911
LOCATION:
Cover of 2-Spool Remote Valve



WATCH YOUR PROOF METER HOURS
Lubrication and maintenance service intervals

LUBRICATION AND MAINTENANCE ITEM	CHECK	CLEAN	LUBE	CHANGE	ADJUST	SERVICE INTERVAL
Radiator Coolant	•					Every 10 Hours or Daily
Engine Oil level	•					
Air Cleaner	•					
Transmission Oil Level	•					Every 50 Hours
Power Steering Oil Level	•					
Front Diff Oil Level	•					
Front Axle Oil Level	•					
Tires	•					
Clutch Pedal			•		•	
Battery	•					
Lubrication Fittings						
Steering Linkage			•			
2-Wheel Drive King Pins			•			
3-point Linkage			•			
Pivot Shaft			•			
Brake Pedal			•			
Drive Shaft Cover			•			
H.S.T. Foot Pedal Shaft			•			
Power Steering			•			
Super Steer Gearbox	•					
Engine Oil				•		Every 100 Hours
Fuel Filter		•				
Air Cleaner		•				
Engine Oil Filter				•		
Fuel Filter				•		Every 200 Hours
Fan Belt	•				•	
Brakes					•	
H.S.T. Filter				•		Every 300 Hours
Front Axle Oil				•		
Front Diff Oil				•		
Hydraulic Filter				•		
Transmission Oil				•		
Fuel Injectors	•				•	Every 600 Hours
Valve Clearance	•				•	
Front Wheel Bearings			•			
Power Steering Oil				•		
Super Steer Gearbox				•		
Radiator Coolant					•	Seasonal
Air Cleaner Element					•	

Refer to your Operator's Manual for additional information.

Code 86400357-B

Lubrication and Maintenance Intervals
PART NO:
86400357
LOCATION:
Inside of Hood

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MINIMUM HARDWARE TIGHTENING TORQUES

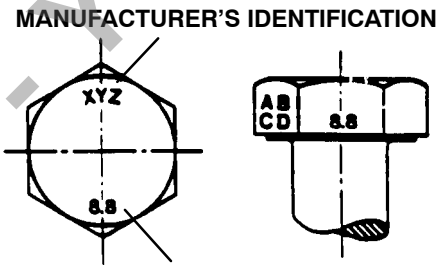
IN NEWTON-METERS (FOOT POUNDS) FOR NORMAL ASSEMBLY APPLICATIONS

METRIC NON-FLANGED HARDWARE AND LOCKNUTS

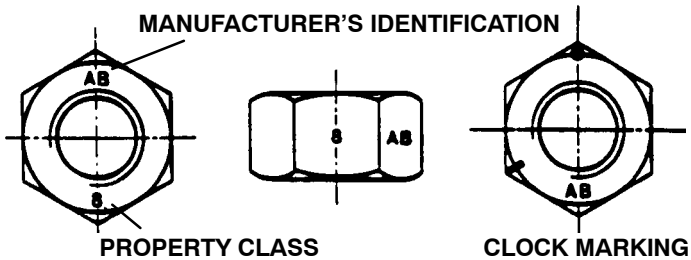
NOMINAL SIZE	CLASS 5.8		CLASS 8.8		CLASS 10.9		LOCKNUT CL.8 W/CL8.8 BOLT
	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	
M4	1.7 (15)*	2.2 (19)*	2.6 (23)*	3.4 (30)*	3.7 (33)*	4.8 (42)*	2.3 (20)*
M6	5.8 (51)*	7.6 (67)*	8.9 (79)*	12 (102)*	13 (115)*	17 (150)*	7.8 (69)*
M8	14 (124)*	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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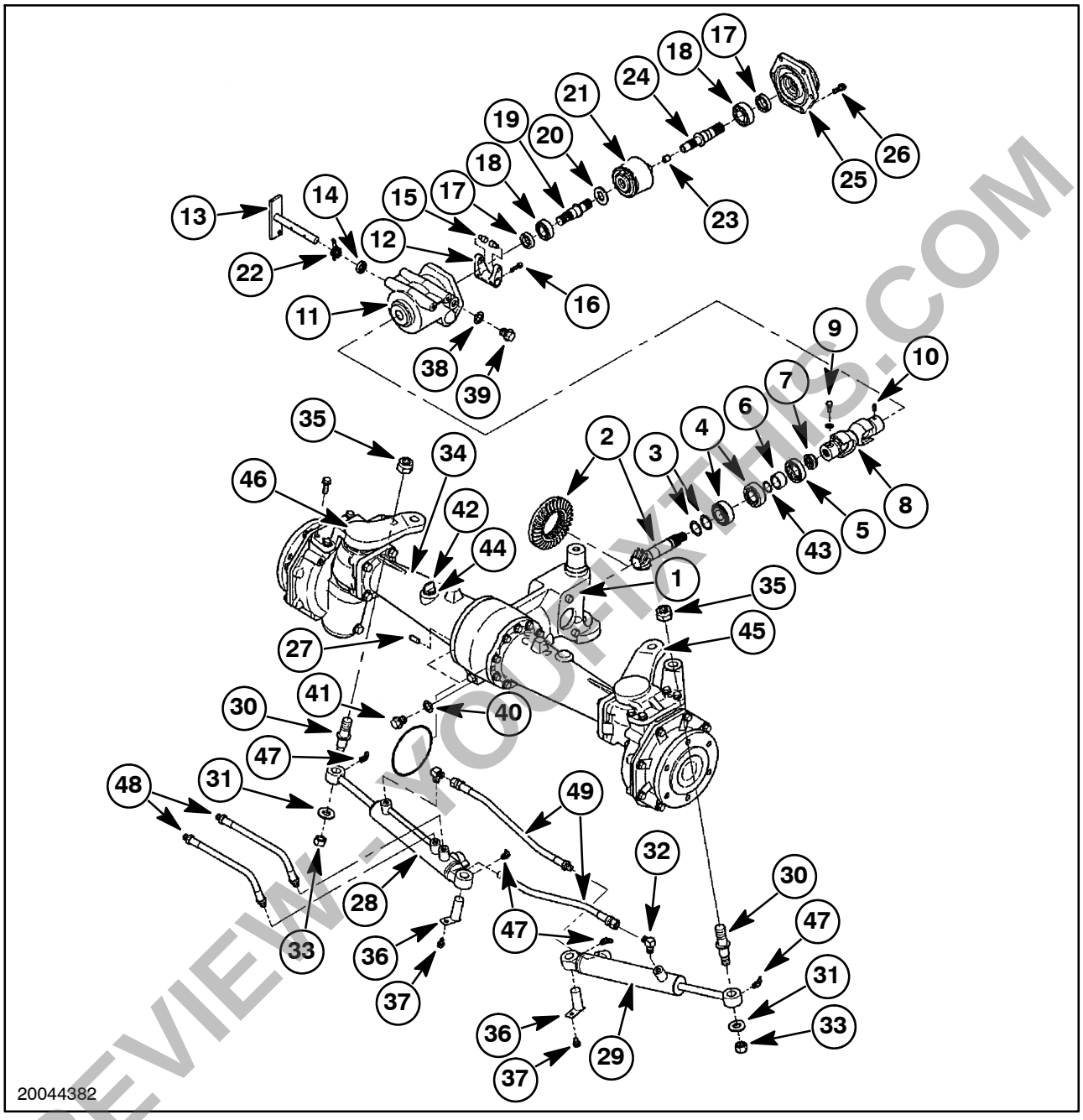
TROUBLESHOOTING

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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SUPERSTEER AXLE COMPONENTS

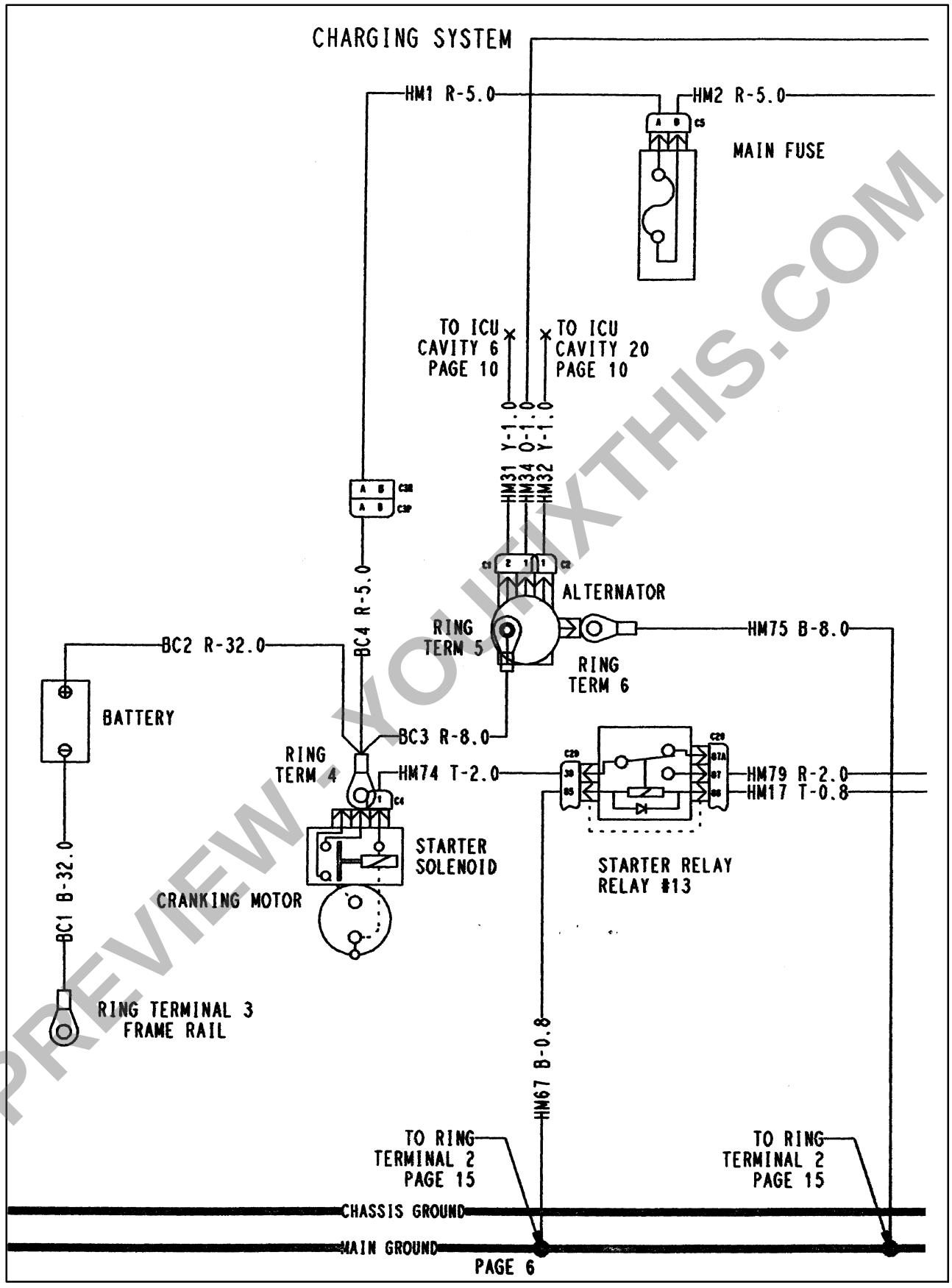


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1. Casing Assembly
2. Drive Pinion Assembly
3. Shim
4. Tapered Roller Bearing
5. Oil Seal
6. Collar
7. Nut
8. Joint
9. Bolt
10. Grease Nipple
11. Casing
12. Shifter Fork
13. Shift Arm
14. Oil Seal
15. Roller (2)
16. Bolt M6 x 25 Socket Head (2)
17. Oil Seal
18. Ball Bearing
19. Drive Shaft
20. Thrust Washer
21. Clutch Assembly
22. Spring
23. Bushing
24. Shaft
25. Seal Cover
26. Bolt M8 x 25 (6)
27. Pin (2)
28. R.H. Cylinder Assembly
29. L.H. Cylinder Assembly
30. Pin (2)
31. Spacer (2)
32. Adapter
33. Nut M16 x 1.5 (2)
34. Axle Housing
35. Nut M20 x 1.5 (2)
36. Pin (2)
37. Bolt M8 x 12 (2)
38. Seal Washer
39. Plug
40. Seal Washer
41. Plug
42. Dipstick
43. O ring
44. Seal Washer
45. L.H. Arm
46. R.H. Arm
47. Grease Nipple (2)
48. Hose, 500 mm
49. Hose, 420 mm

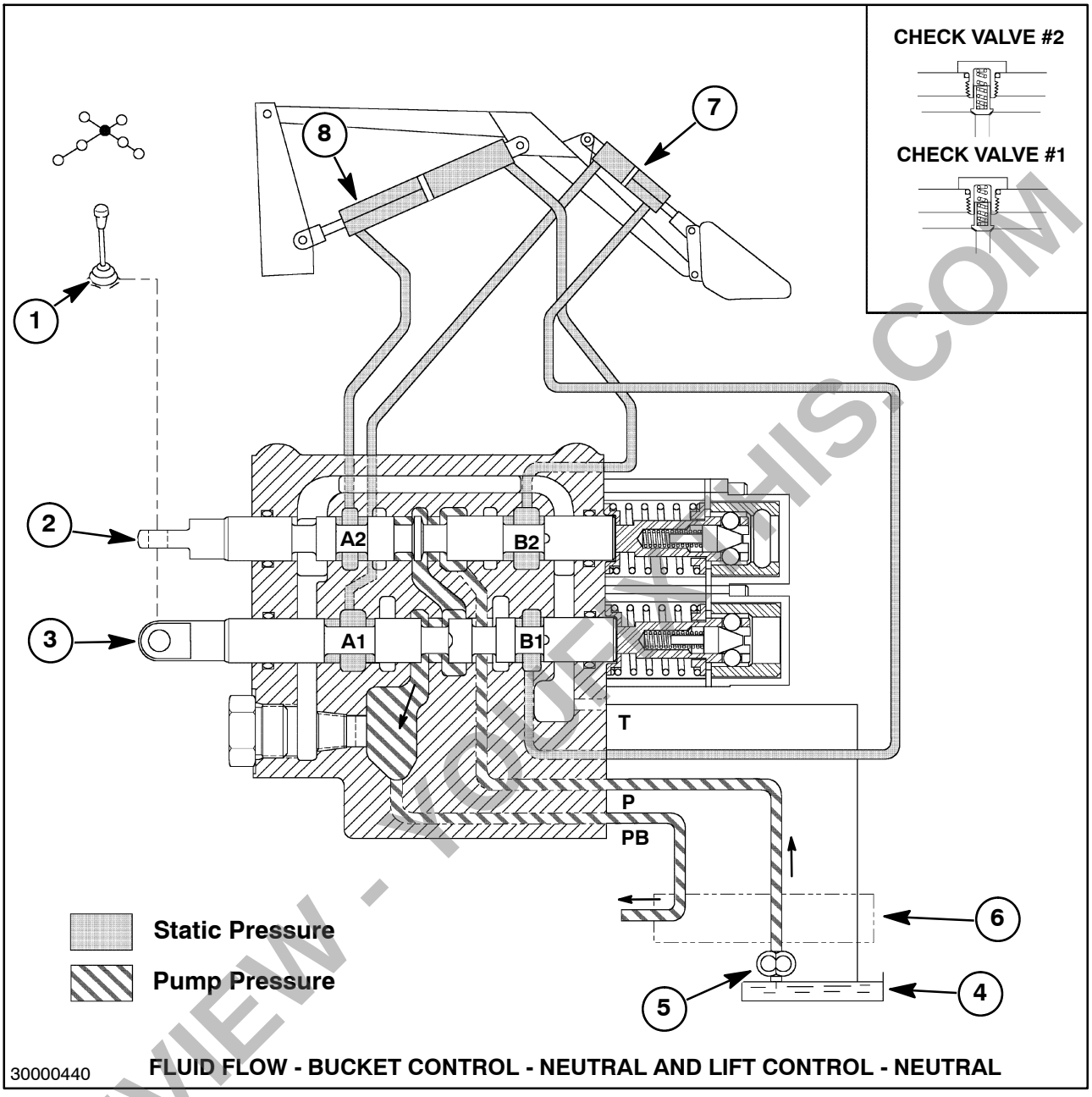
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30000440 **FLUID FLOW - BUCKET CONTROL - NEUTRAL AND LIFT CONTROL - NEUTRAL**

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Front (double spool) Remote Control

System Bucket Control - Neutral and Lift Control - Neutral

When the control lever, 1, is in the neutral position, both control spools, 2 and 3, are centered in the valve body. Fluid is suctioned from the hydraulic reservoir, 4, by the hydraulic pump, 5, and is directed through the diverter valve manifold, 6, through port "P", to the center of the two control spools. In this position, the spool lands block the work passages to the loader cylinders. Since there is no hydraulic fluid flowing through either spool, both check valves in the valve body remain closed. Fluid contained in the bucket control cylinders, 7, and the lift control cylinders, 8, is trapped by the spools, and the cylinders remain in a fixed position.

When both spools are in the neutral position, the passages to the power beyond (PB) port are open and hydraulic fluid flows through the valve body to the diverter valve manifold, 6, and then to the HPL hydraulic control valve. If the hydraulic fluid is not used by the main hydraulic system, it is returned to the hydraulic fluid reservoir, 4.

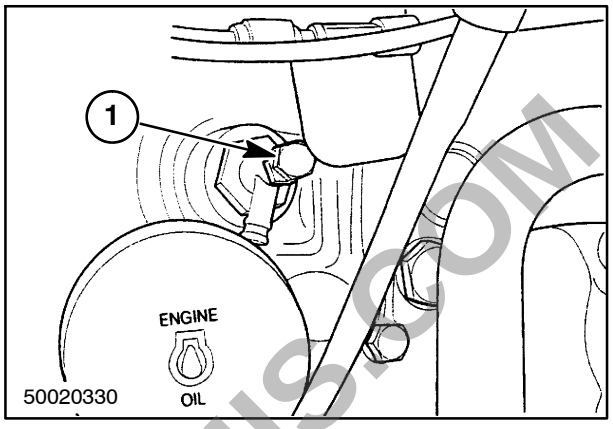
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OVERHAUL

ENGINE

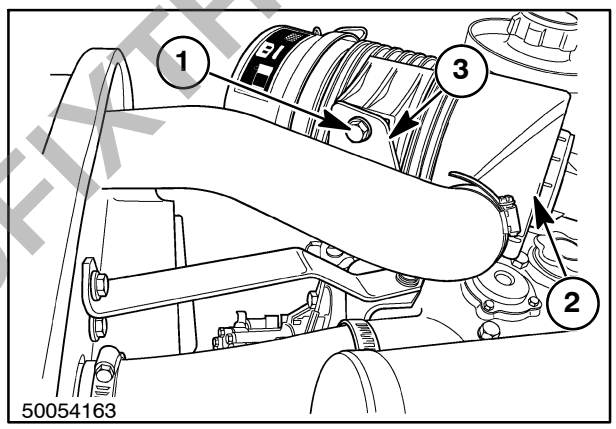
Preparation

1. Turn coolant tap bolt, 1, counterclockwise to drain fluid. Remove the radiator assembly. See “Radiator Removal”, discussed later in this section.



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2. Remove bolts, 1, fastening the air cleaner assembly, 2, to the tractor. Remove the mounting bracket, 3, from engine.



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SECTION 10 - ENGINE

BOOK 1 - 87531022

Chapter 1 - Engine Systems (Continued)

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	Removal	30
	Oil Suction Pipe and Strainer	31
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	Removal	31
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	Removal	32
	Backplate and Oil Seal	32
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	Front Crankshaft Gear	32
	Removal	32
	Crankshaft and Main Bearings	33
	Removal	33
10 101	Cylinder Head	34
	Disassembly	34
	Inspection and Repair	34
	Valve Seats	35
	Inspection and Repair	35
	Valves	36
	Inspection and Replacement	36
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	Inspection	40

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	Model TC31DA—	Model TC34DA—
TRANSMISSION SPEEDS (Hydrostatic)		
	(2,600 RPM Engine Speed with 11.2 x 24 Rear Tires)	(2,600 RPM Engine Speed with 11.2 x 24 Rear Tires)
Gear Position:		
Low	0-6.30 KPH (0-3.91 MPH)	0-6.30 KPH (0-3.91 MPH)
Mid	0-13.09 KPH (0-8.13 MPH)	0-13.09 KPH (0-8.13 MPH)
High	0-26.70 KPH (0-16.59 MPH)	0-26.70 KPH (0-16.59 MPH)
Reverse Low	0-4.7 KPH (0-2.92 MPH)	0-4.7 KPH (0-2.92 MPH)
Reverse Mid	0-9.82 KPH (0-6.10 MPH)	0-9.82 KPH (0-6.10 MPH)
Reverse High	0-20.02 KPH (0-12.44 MPH)	0-20.02 KPH (0-12.44 MPH)

TRANSMISSION SPEEDS (Gear)	
	(2,600 RPM Engine Speed with 11.2 x 24 Rear Tires)
Gear Position:	
1st	1.47 KPH (0.91 MPH)
2nd	2.17 KPH (1.35 MPH)
3rd	3.11 KPH (1.93 MPH)
4th	4.64 KPH (2.88 MPH)
5th	6.85 KPH (4.26 MPH)
6th	9.83 KPH (6.11 MPH)
7th	11.88 KPH (7.38 MPH)
8th	17.54 KPH (10.90 MPH)
9th	25.16 KPH (15.63 MPH)
Reverse 1	2.17 KPH (1.35 MPH)
Reverse 2	6.85 KPH (4.26 MPH)
Reverse 3	17.54 KPH (10.90 MPH)

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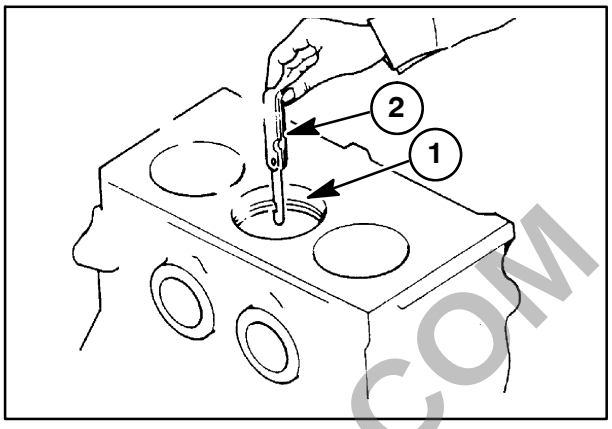
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PISTON RINGS

Disassembly and Inspection

1. Position the piston rings, 1, one at a time, in the cylinder to the lowest point of travel. Use an inverted piston to square the ring in the bore.
2. With a feeler gauge, 2, measure the ring gap.

   The ring is shown at the top of its travel for clarity.
3. Replace worn rings with end gap clearance in excess of 1.0 mm (0.039″).



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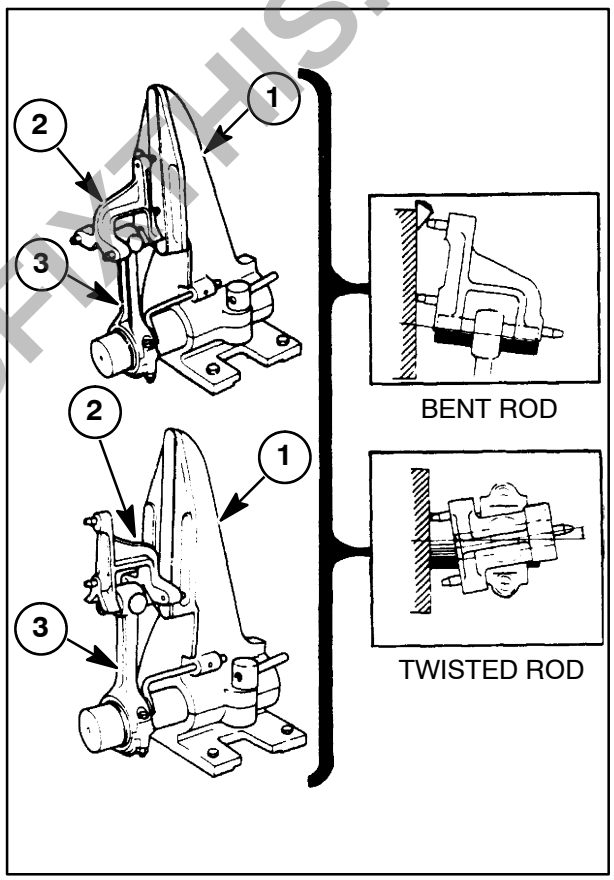
CONNECTING RODS

Disassembly and Inspection

1. Check the connecting rods for damage and alignment. Place each rod in an alignment fixture to check for bent or twisted condition.
2. Straighten or replace rods that are bent or twisted more than the following dimensions:

   Max. Bend: 0.15 mm (0.0059″) per 100 mm (3.94″)

   Twist: 0.2 mm (0.0078″) per 100 mm (3.94″)



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1. Alignment Fixture
2. Gauge
3. Connecting Rod

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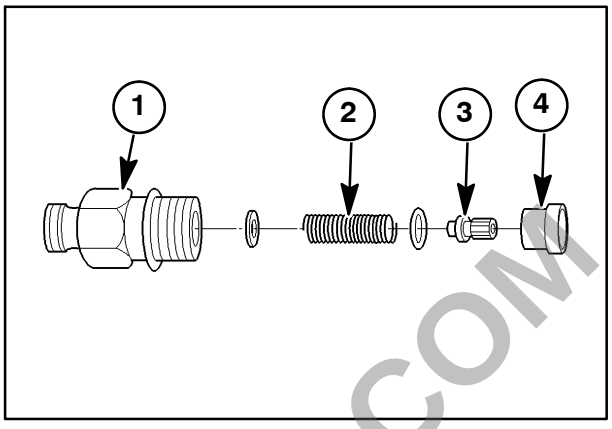
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Op. 10 214

DELIVERY VALVES

Located above each pumping element is a delivery valve assembly. The delivery valve consists of a delivery valve holder, 1, spring, 2, piston and stem assembly, 3, operating within a cylindrical guide, 4, which terminates in a conical seat. The lower part of the stem has four vertical flutes which accurately locate within the guide while permitting fuel to pass. Above the flutes is a piston which is a lapped fit in the bore of the valve guide.

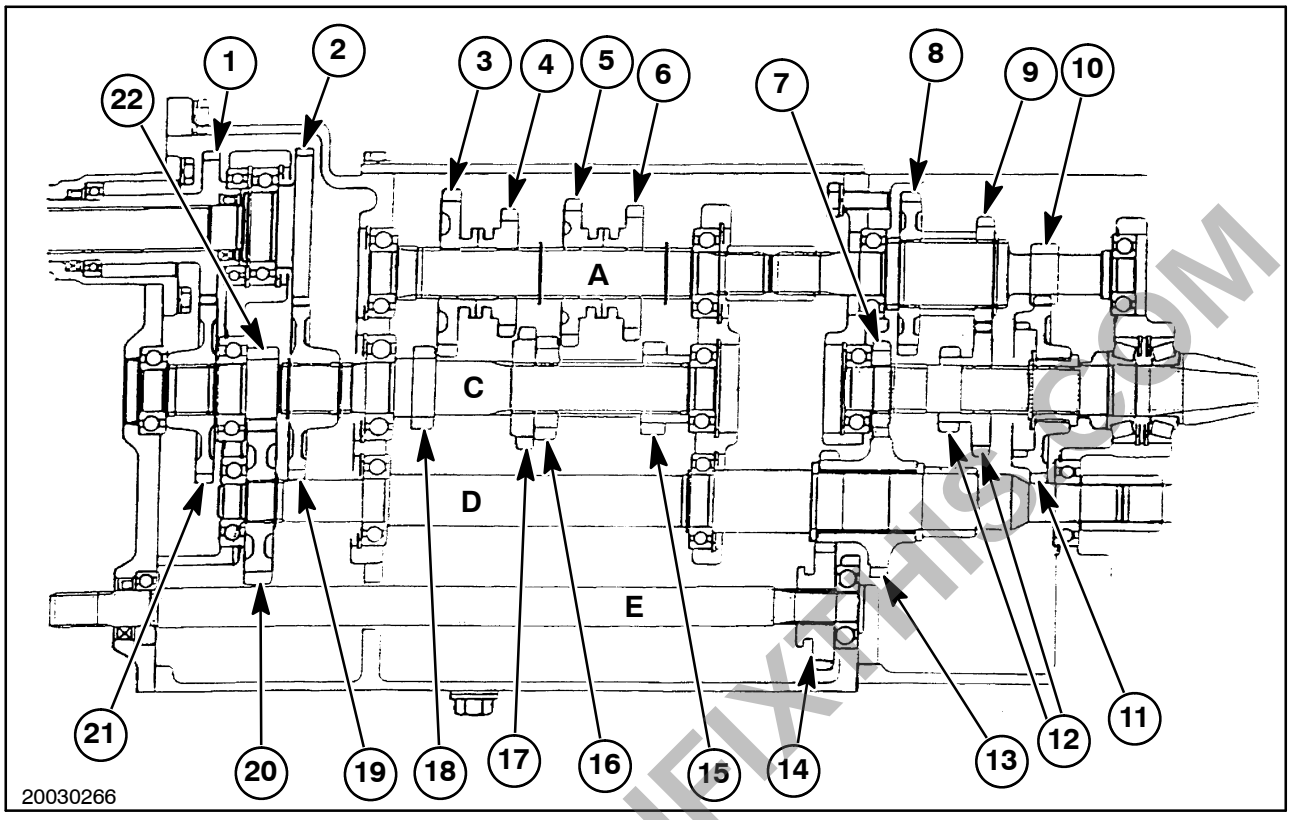
The delivery valve serves as a non-return valve and also as a means of rapidly reducing the fuel pressure in the injector line when injection ceases. Rapid pressure reduction is required to be sure injector needle valve “snaps” shut to prevent fuel “dribble”, a condition which can cause carbon formation on the injector tip.



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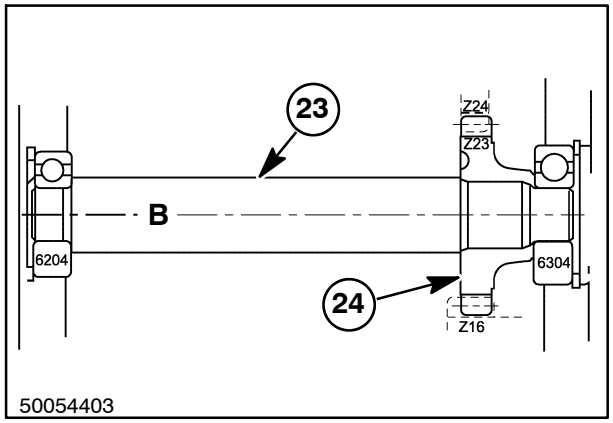


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CROSS SECTION - 9 X 3 GEAR TRANSMISSION

1. PTO Input Shaft Fixed Gear-33T
2. Transmission Input Shaft Fixed Gear-37T
3. Sliding Gear (1st gear)-31T
4. Sliding Gear (3rd gear)-23T
5. Sliding Gear (2nd gear)-27T
6. Sliding Gear (Reverse gear)-24T
7. FWD Fixed Gear (Pinion Shaft)-22T
8. High Range Gear (Fixed)-36T
9. Mid Range Gear (Fixed)-24T
10. Low Range Gear (Fixed, Main Shaft)-11T
11. Low Range Gear (Fixed, Pinion Shaft)-42T
12. Sliding Gear (High, Mid, Low)-17T/29T
13. FWD Counter Gear (Fixed)-18T/30T
14. FWD Sliding Gear (FWD Shaft)-22T
15. Fixed Reverse Gear (Countershaft)-16T
16. Fixed 2nd Gear (Countershaft)-18T
17. Fixed 3rd Gear (Countershaft)-22T
18. Fixed 1st Gear (Countershaft)-14T
19. Transmission Counter Gear (Countershaft)-39T
20. Front PTO Countershaft Gear-30T
21. Upper PTO Countershaft Gear-42T
22. PTO Countershaft Fixed Gear-14T
23. Reverse Idler Gear Shaft
24. Reverse Idler Gear - 23T

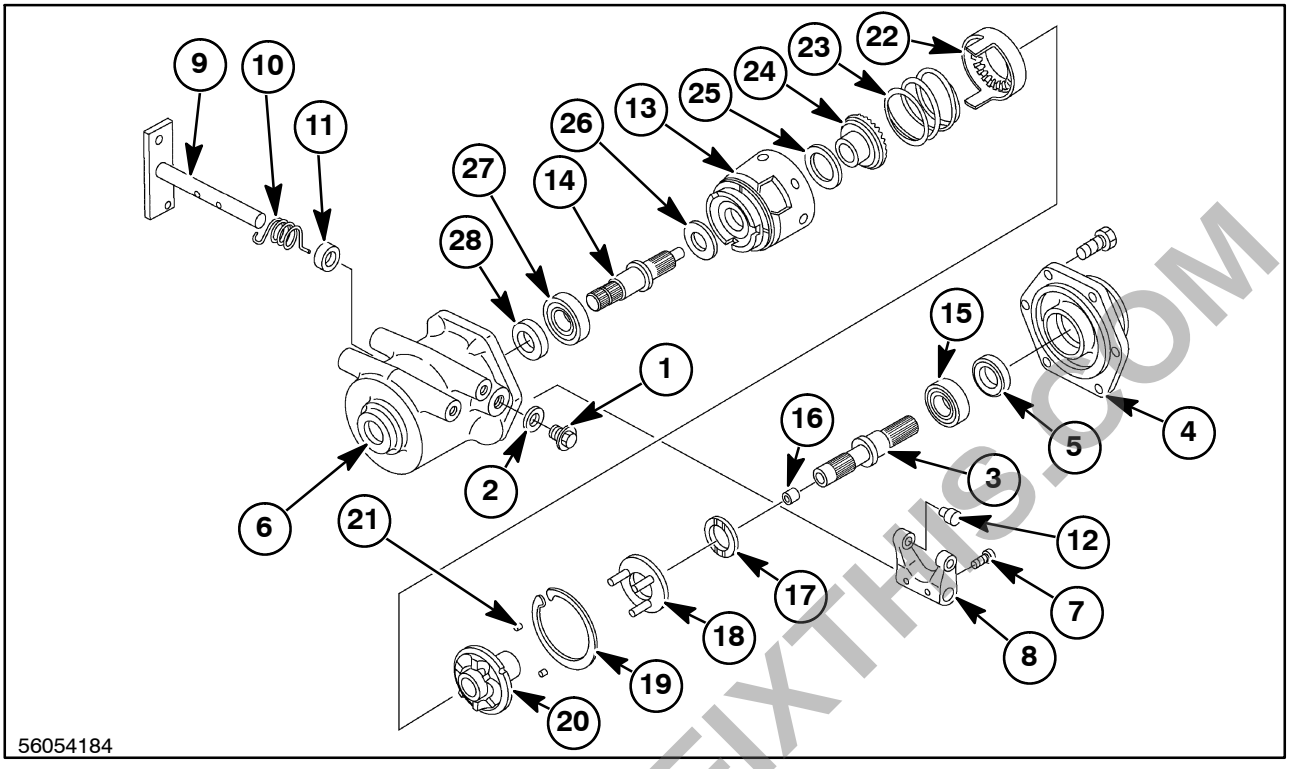
A. Transmission Main Shaft
B. Reverse Idler Shaft
C. Transmission Counter Shaft
D. PTO Countershaft
E. FWD Output Shaft



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Disassembly

1. Remove the oil plug, 1, and seal washer, 2, and drain the oil from the case into a suitable container.
2. Place the assembly in a vise with the input shaft, 3, facing upward. Remove the cover bolts and remove the cover, 4, and oil seal, 5, from the case, 6.
3. Remove the two socket head bolts, 7, from the shifter fork, 8, and shift arm, 9.

IMPORTANT: *Apply heat to remove bolts, 7, from shifter fork.*

4. Slide the shift arm, 9, with spring, 10, and oil seal, 11, out of the shifter fork and case.
5. Remove the shifter fork and rollers, 12, from the case.
6. Remove one-way clutch assembly, 13, out of the case and off the output shaft, 14.
7. Pull the input shaft, 3, with bearing, 15, and bushing, 16, out of the assembly and remove the thrust washer, 17, and sleeve, 18.
8. Remove the snap ring, 19, and remove the drive cam, 20, keeper pins, 21, center cam, 22, compression spring, 23, driven cam, 24, and thrust washer, 25, from the one-way clutch, 13.
9. Remove the thrust washer, 26, from the output shaft.
10. Remove the case from the vise and lightly tap the output shaft, 14, to remove its bearing from the case counter bore, and remove the shaft with bearing, 27. Remove oil seal, 28, from case, 6.

Inspection and Repair

1. Replace all seals during assembly.
2. Inspect the shifter fork blocks. The blocks should be smooth and free of any nicks or scratches. Minor nicks or scratches can be removed using fine emery cloth on a flat surface.
3. Inspect the drive cam, center cam, and driven cam mating areas for excessive wear. Replace if found defective.
4. Inspect all thrust washers for excessive wear and replace if necessary.
5. Inspect the compression spring for distortion. Replace as required.
6. Inspect the bearings for excessive wear or binding when rotated by hand. Replace if necessary.

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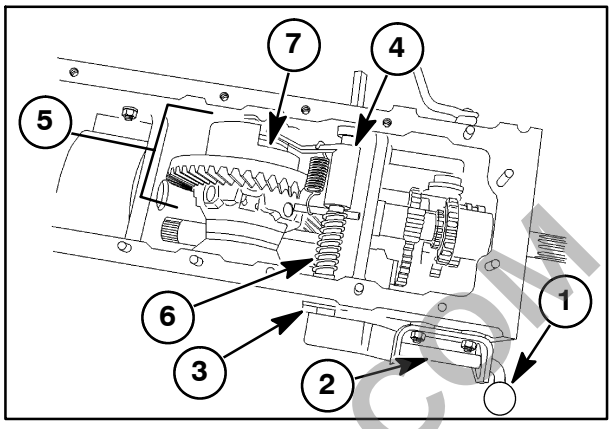
DIFFERENTIAL LOCK

A differential lock is provided to lock the differential system so that both rear wheels rotate when power is provided by the transmission even though one wheel may lose traction.

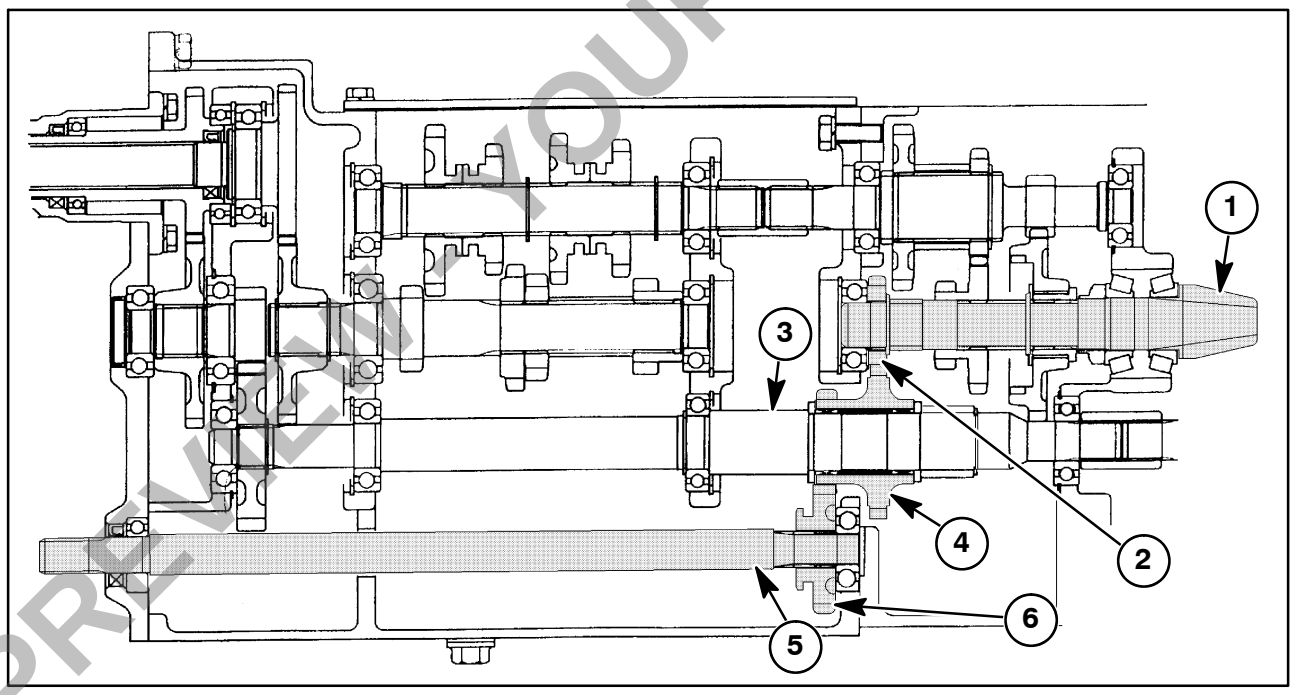
The differential lock control lever, 1, is foot operated. The pedal lever is located on the right side of the differential housing on gear transmission, and on the left side on HST transmission.

Depressing the differential lock pedal, 1, rotates the shaft, 2, moving the differential lock shaft, 3, causing the fork, 4, to move toward the differential assembly, 5, and at the same time compressing the return spring, 6. This action causes the clutch, 7, to move toward the differential, 5.

When the pedal is released, the return spring moves the fork outward to disengage the clutch.



5



6

If equipped with front wheel drive, the drive pinion shaft, 1, contains FWD gear, 2. The front PTO countershaft, 3, contains fixed gear, 4. The front wheel drive shaft, 5, and sliding gear, 6, are also provided.

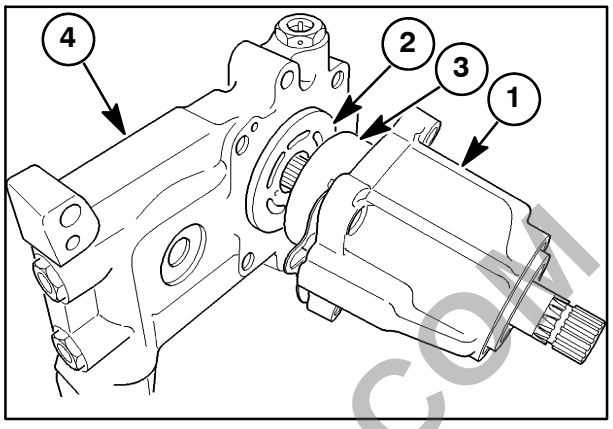
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2. Remove the motor housing, 1, sufficiently enough to confirm the location of the valve port plate, 2.

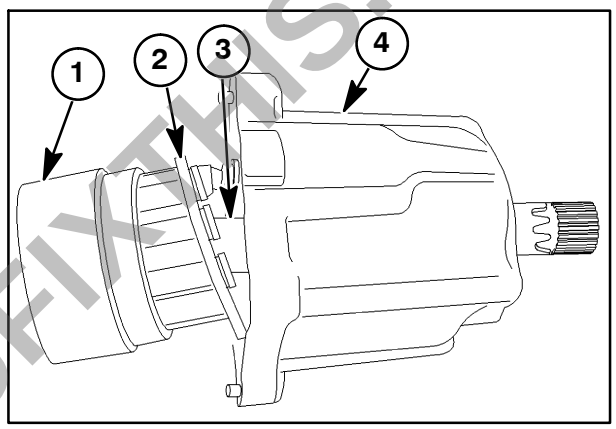
NOTE: *The valve plate, 2, will adhere to either the motor cylinder block, 3, surface or the port block, 4, surface. Exercise care in removing the motor to prevent the valve plate to inadvertently being dropped during disassembly.*

3. Remove the motor assembly and valve plate, 2. The valve plate will have four feathering notches.



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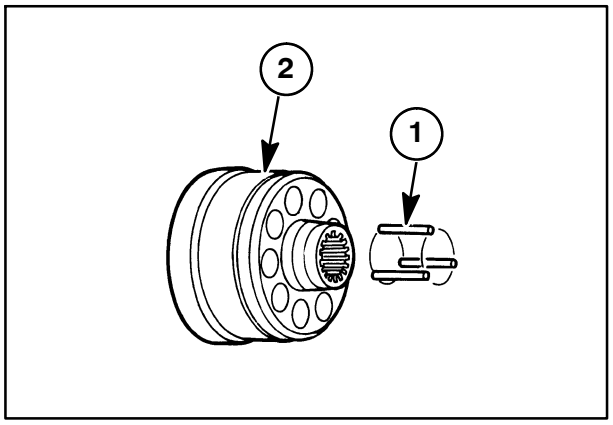
4. Slide the motor cylinder block, 1, and piston assembly, 2, off the motor output shaft, 3, to remove from motor housing, 4.



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5. Remove the thrust plate from the motor housing. If it is hard to remove, use a hook type tool to remove the plate.

NOTE: *Be careful not to lose the three pins, 1, from the pump cylinder block, 2.*



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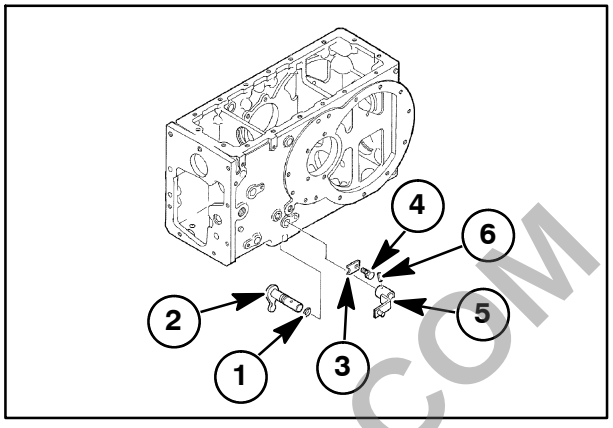
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SHIFTER ARM

Assembly

NOTE: *Install shifter arm assembly before mid-PTO case is attached to rear axle housing.*

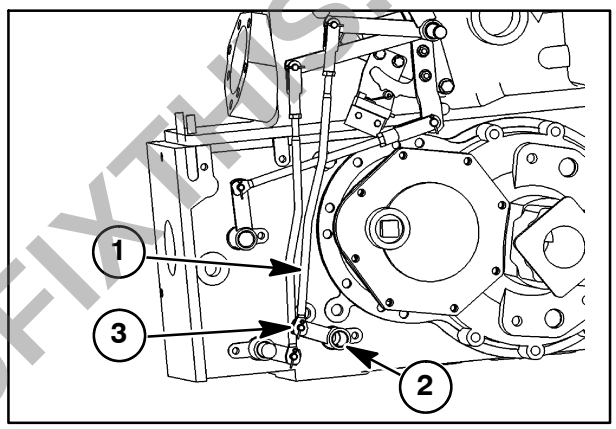
1. Using new O ring, 1, install the shift arm, 2, and secure with plate, 3, and M8 x 16 bolt, 4.
2. Install the change lever, 5, and roll pin, 6.



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3. Connect the link, 1, to the change lever, 2, by installing cotter pin, 3.

NOTE: *Make sure mid-PTO safety switch operates correctly when linkage is installed.*



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1. Mid-PTO Link
2. Mid-PTO Change Lever
3. Cotter Pin

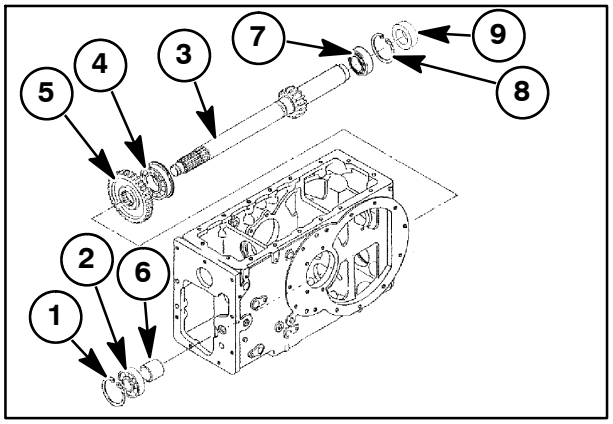
COUNTERSHAFT

Assembly

1. Install snap ring, 1, and bearing, 2, into housing.
2. Install the countershaft, 3, and bearing, 4, in the case.
3. Install fixed gear, 5, and spacer, 6, on the countershaft, as it is placed into the case.
4. Install bearing, 7, snap ring, 8, then sealing cover, 9.

REAR PTO COMPONENTS ASSEMBLY

1. Install the PTO rear countershaft. See “Rear PTO Countershaft Assembly,” discussed earlier in this section.
2. Install the PTO center countershaft. See “PTO Center Countershaft Assembly,” discussed earlier in this section.
3. Install the PTO output shaft. See “PTO Output Shaft Installation,” discussed earlier in this section.



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1. Snap Ring
2. Bearing
3. Countershaft—13T
4. Bearing
5. Fixed Gear—37T (9 x 3), 35T (HST)
6. Spacer
7. Bearing
8. Snap Ring
9. Sealing Cover

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Rear (Single Spool) Remote Valve

The rear remote valves are equipped with self-centering springs so that the spools automatically return to neutral when the control handle is released following a raise or lowering operation.

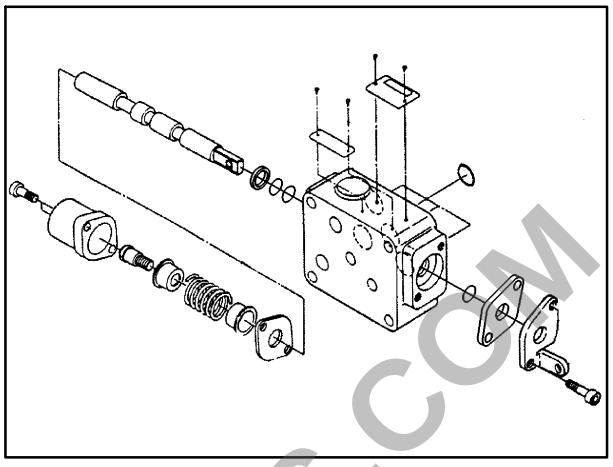
NOTE: *The single spool remote valve does not have a detent mechanism.*

Front (Double Spool) Remote Valve (Figure 69)

The double-spool remote valve also contains a spring-loaded detent mechanism to provide a float position for loader operation. In float position, fluid is free to flow between piston and rod sides of the loader lift cylinder allowing the lift arms to float over uneven terrain.

The double-spool remote control valve contains check valves located in the valve spool passages. The check valves function to hold the loader lift and bucket cylinders in a fixed position while the valve is being initially operated to prevent dropping the load. In operation, the check valve is retained on its seat by spring force plus the back side pressure of fluid contained in the loader cylinder. During initial spool movement, pump-pressurized fluid fills the passage to the check valve, and the remaining pump fluid flows to the sump through the open center passage. With continued spool movement, the open center passage closes. Pump pressure increases on the force of the check valve, overcoming the backside pressure, and causes the check valve to open. Pump fluid flow then flows to the cylinder. This action prevents any backflow out of the cylinder and provides a smooth-lifting action of the loader.

NOTE: *Separate installation instructions are provided for the different remote valve kits.*



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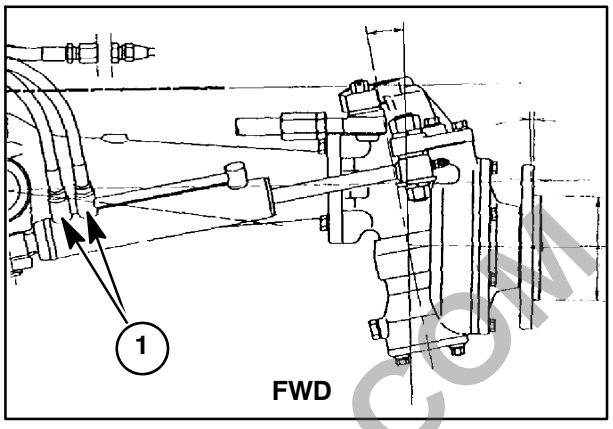
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FWD STEERING CYLINDER

Removal

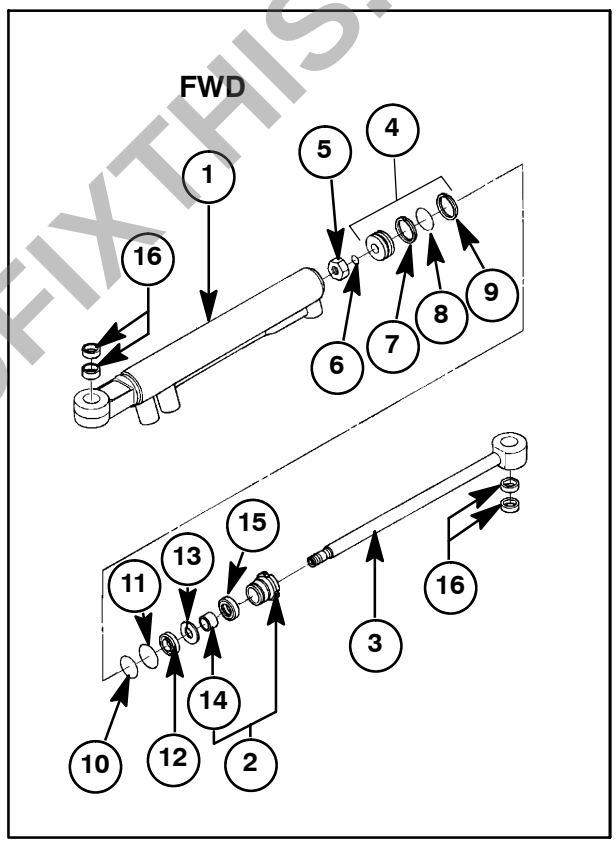
1. Disconnect the steering hoses, 1, to the power steering cylinder and cap all openings.
2. Remove the cylinder from the tractor.



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Disassembly

1. Using a suitable chisel, straighten the cylinder tube crimping, 1, from the gland head, 2.
2. Using a spanner wrench, unscrew the gland head, 2, out of the cylinder tube. Pull the piston rod, 3, gland head, 2, and piston assembly, 4, out of the tube.
3. Remove the piston nut, 5, and O ring, 6, from the rod, 3, and remove the piston assembly, 4.



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1. Cylinder Tube
2. Gland Head
3. Piston Rod
4. Piston Assembly
5. Nut
6. O ring—Rod
7. Back-up ring
8. O ring—Piston
9. Back-up ring
10. O ring—Cylinder Head
11. O ring
12. U-ring Seal
13. Back-up Ring
14. Bushing
15. U-ring Seal
16. Bushing

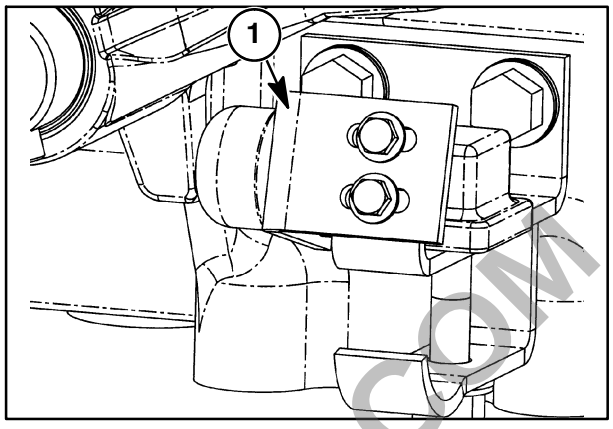
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CRUISE CONTROL BRAKE RELEASE SWITCH

Description

The H.S.T. cruise control brake release switch, 1, is a push-button switch located beneath the right operator's platform. The actuator button and the terminals of this switch are sealed to protect the switch from moisture. The switch is normally open; when the left brake pedal is applied, the actuator button is released and the circuit through the switch is opened.

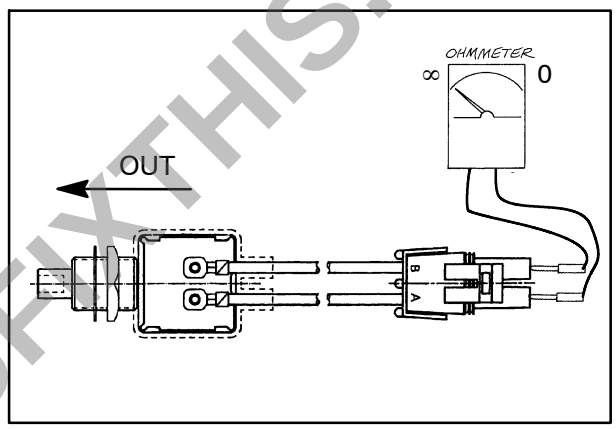


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Testing

Use an ohmmeter to test the cruise control brake release switch.

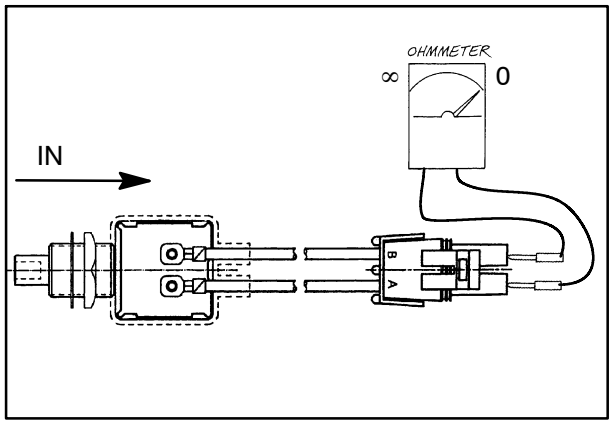
- With the button in the "OUT" position, continuity will not exist across the terminals.



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- With the button in the "IN" position, there will be continuity across the terminals.

If test results are not as outlined above, replace the cruise control brake release switch.



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SAFE OPERATION CIRCUIT (OPERATOR PRESENT)

NOTE: *The operating circuit is shown with:*

- Operator in the seat

1. Current starts at the battery, and flows through the positive (+) battery cable to the engine starter motor.
2. From the starter motor, current flows through the 40-amp fuse to a wire splice. The wire splice sends current into two directions:
   - To the “B” terminal of the ignition switch
3. When the ignition switch is placed in the “ACC/RUN” position current is transferred across the following ignition switch terminals:
   - “B” to “C” terminals

Terminal “C” of ignition switch

1. Current flows from the “C” terminal of the ignition switch to the fuse panel bussbar, from the bussbar current travels through the following fuses.
   - #2, 10-amp fuse
   - #5 15-amp fuse
2. The #2 10-amp fuse supplies current to the fuel shutoff relay.
3. The #5, 15-amp fuse supplies current to the operator safety switch.

Seat switch and operator safety module

1. When the operator is in the seat, the seat switch closes and sends current to terminal #4 of the switch, sending current to terminal “E” of the operator safety module. Also terminals #1 and #3 are connected, sending current to terminal “3” of the park brake alarm.
2. When current is present at terminal “E” of the operator safety module, the ground path is completed by terminals “B” and “C” of module for the fuel shutoff relay.

Fuel shutoff relay

1. When current is provided to the fuel shutoff relay by the 10-amp fuse and ground circuit is completed by the operator safety module, the fuel shutoff relay is energized.
2. When the fuel shutoff relay is energized terminals #5 and #3 are latched providing current to the fuel shutoff solenoid. When the solenoid is energized the solenoid plunger retracts and allows fuel to flow to the fuel injection pump. This allows the engine to remain operating.

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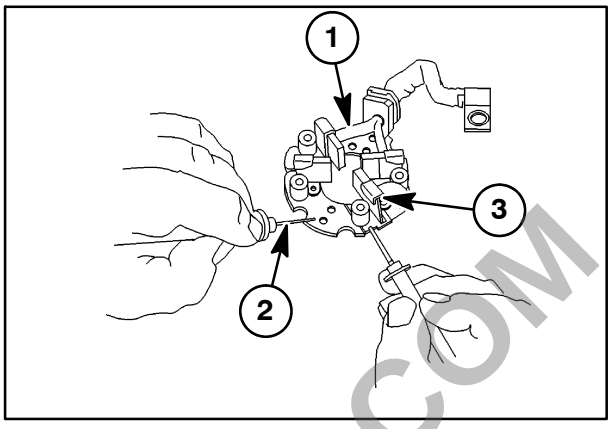
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Brush Holder Inspection

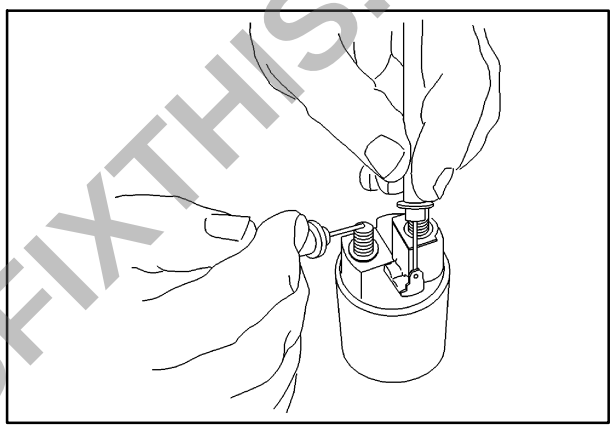
1. Use and ohmmeter to test the brush holder assembly, 1.
2. Touch one test probe to the insulated brush holder, 3, and the other test probe to the brush holder plate, 2.
3. Observe the ohmmeter. Repeat the test for the opposite insulated brush holder.
4. A reading high resistance indicates no continuity and the brush holder is good. Little or no resistance indicates that there is continuity and the brush holder is defective and needs replaced.



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Starter Solenoid Inspection

1. Use an ohmmeter to check the starter solenoid for proper operation and continuity.
2. Touch one ohmmeter test probe to terminal “M” of the starter solenoid.
3. Touch the other ohmmeter test probe to the body (ground) of the solenoid.
4. Observe the ohmmeter. There should be little or no resistance, indicating continuity. If there is no continuity, the starter solenoid is defective and needs replaced.



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