

SERVICE REPAIR

H80FT H90FT H100FT H110FT H120FT [S005]

HYSTER

Lift Truck Lifting Capacity

Model	Weight
H4.0FT5, H4.0FT6 (H80FT) (S005)	3629 kg (8000 lb)
H4.5FTS5 (H90FT) (S005)	4082 kg (9000 lb)
H4.5FT6 (H100FT) (S005)	4536 kg (10000 lb)
H5.0FT (H110FT) (S005)	4989 kg (11000 lb)
H5.5FT (H120FT) (S005)	5443 kg (12000 lb)
NOTE: Load center at 500 mm (24 in.).	

Counterweight Weights

Model	Weight
H4.0FT5 (H80FT) (S005)	2108 kg (4647 lb)
H4.0FT6 (S005)	2314 kg (5102 lb)
H4.5FTS5 (H90FT) (S005)	2455 kg (5412 lb)
H4.5FT6 (H100FT) (S005)	2642 kg (5825 lb)
H5.0FT (H110FT) (S005)	2936 kg (6473 lb)
H5.5FT (H120FT) (S005)	3226 kg (7112 lb)

Tire Sizes

Truck	Drive Tires	Steer Tires
H4.0FT5, H4.5FTS5 (H80FT, H90FT) (S005)	250 x 15	7.00 x 12
	250 x 70 x R15	28 x 9 to 15
	28 x 12.5 to 15	
	29 x 8 Dual	
	7.00 x 15 Dual	
	7.00 x R15 Dual	
H4.5FT6, H5.0FT, H5.5FT (H100FT, H110FT, H120FT) (S005)	300 x 15	7.00 x 12
	315 x 70 x R15	28 x 9 to 15
	32 x 12.1 to 15	
	355 x 65 x 15	
	355 x 50 x 20	
	8.25 x 15 Dual	
	8.25 x R15 Dual	

Capacities

Item	Quantity	Specifications
Fuel Capacity		
Gas (Short Wheel Base)	79 liter (20.8 gal)	86 Octane
Gas (Long Wheel Base)	100.3 liter (26.5 gal)	86 Octane
LPG	15.1 - 20.4 kg (33.5 - 45.0 lb) Full	LPG-HD 5, HD 10
Kubota 3.6L Diesel (Short Wheel Base)	79 liter (20.8 gal)	Diesel No. 2
Kubota 3.6L Diesel (Long Wheel Base)	100.3 liter (26.5 gal)	Diesel No. 2
Kubota 3.8L Diesel (Short Wheel Base)	79 liter (20.8 gal)	Ultra Low Sulfur ≤15 ppm Diesel No.2
Kubota 3.8L Diesel (Long Wheel Base)	100.3 liter (26.5 gal)	Ultra Low Sulfur ≤15 ppm Diesel No.2
Engine Oil		
PSI (GM) 4.3L	4.7 liter (5 qt)	-7°C (-20°F) and below SAE 5W-20 16°C (60 °F) and below SAE 5W-30 -18°C (0°F) and above SAE 10W-30 API SL IL- SAC GF4
Kubota Diesel	13.2 liter (13.9 qt)	-15°C (5°F) and above SAE 15W-40 -25°C (-13°F) SAE 10W-30 Below -25°C (-13°F) SAE 5W-30 API CJ-4

Item	Quantity	Specifications
Cooling System		
PSI (GM) 4.3L	15.1 liter (15.9 qt)	 CAUTION Additives may damage the cooling system. Before using additives, contact your local Hyster dealer. Use Ethylene Glycol Boron-free Antifreeze. Purchase a pre-diluted 50/50 solution; or mix 50% concentrate with 50% distilled or deionized water.
Kubota Diesel	11 liter (11.6 qt)	 CAUTION Additives may damage the cooling system. Before using additives, contact your local Hyster dealer. Use Ethylene Glycol Boron-free Antifreeze. Purchase a pre-diluted 50/50 solution; or mix 50% concentrate with 50% distilled or deionized water.
Hydraulic Tank Oil Capacity		
PSI (GM) 4.3L (Short Wheel Base)	62.0 liter (65.5 qt) Drain and Fill	 CAUTION Additives may damage the hydraulic system. Before using additives, contact your local Hyster dealer. ISO VG-46 Hydraulic Oil –15°C (5°F) and above
PSI (GM) 4.3L (Long Wheel Base)	78 liter (82.4 qt) Drain and Fill	 CAUTION Additives may damage the hydraulic system. Before using additives, contact your local Hyster dealer. ISO VG-46 Hydraulic Oil –15°C (5°F) and above

Item	Quantity	Specifications
Kubota Diesel (Short Wheel Base)	62.0 liter (65.5 qt) Drain and Fill	 CAUTION Additives may damage the hydraulic system. Before using additives, contact your local Hyster dealer. ISO VG-46 Hydraulic Oil –15°C (5°F) and above
Kubota Diesel (Long Wheel Base)	78.0 liter (82.4 qt) Drain and Fill	 CAUTION Additives may damage the hydraulic system. Before using additives, contact your local Hyster dealer. ISO VG-46 Hydraulic Oil –15°C (5°F) and above
Transmission		
Basic Powershift Transmission	20 liter (21.0 qt)	John Deere JDM J20C
DuraMatch Transmission	20 liter (21.0 qt)	John Deere JDM J20C
Brake Oil (Master Cylinder)	0.35 liter (0.74 pt)	Dexron III
Transmission and Wet Brake Drive Axle - Dana Axle Only		
Transmission and Planetary Carrier Housing	31.3 liter (33.0 qt)	John Deere JDM J20C
Center Body (Dana Axle Only)	2.0 liter (2.1 qt)	SAE 80W-90
Wet Brake Drive Axle - NMHG Axle Only		
New or Rebuilt Axle	10.3 liter (10.9 qt)	John Deere JDM J20C
Service Fill	9.3 liter (9.9 qt)	John Deere JDM J20C

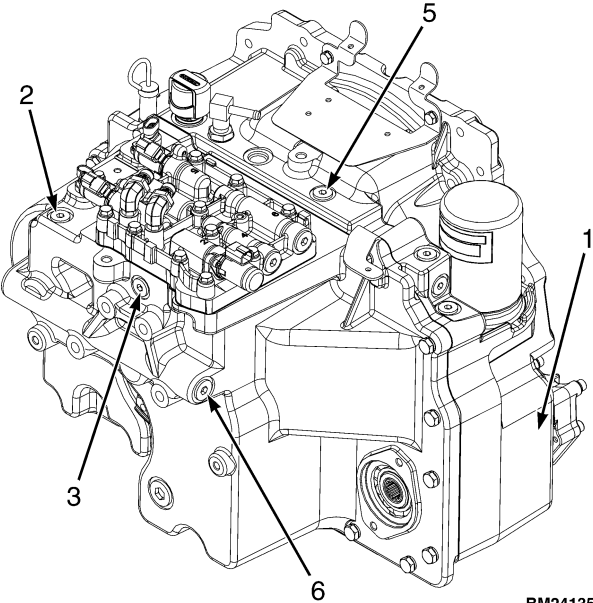
Electrical System

Item	PSI (GM) 4.3L	Kubota Diesel
Battery	12-volt, negative ground	12-volt, negative ground
Spark Plugs	AC-R44-LTS	N/A
Spark Plug Gap	0.889 mm (0.035 in.)	N/A
Ignition Timing:		
Gas	Not Adjustable	N/A
LPG	Not Adjustable	N/A
Diesel	N/A	Not Adjustable

PSI (GM) 4.3L		
Alternator Output (14 Volts)	G and LPG	GS and LPS
Idle	50 amps @ 750rpm	38 amps @ 750rpm
Governed Speed	65 amps @ 2400 rpm	45 amps @ 2400 rpm
Kubota 3.6L Diesel		
Alternator Output (13.5 Volts)	D	
Low Idle	30 amps @ 850 rpm	
Governed Speed	80 amps @ 2470 rpm	
Kubota 3.8L Diesel		
Alternator Output (13.5 Volts)	D	DS
Low Idle	30 amps @ 800 rpm	25 amps @ 800 rpm
Governed Speed	80 amps @ 2200 rpm	45 amps @ 2200 rpm

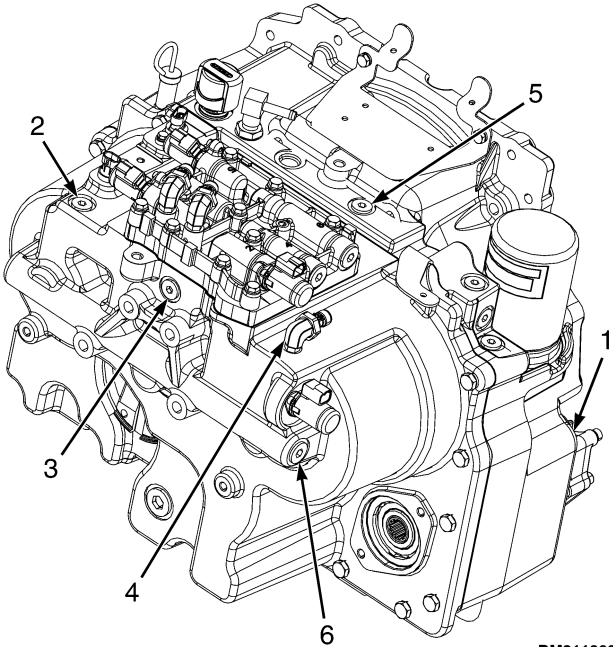
Transmission Oil Pressures

1-Speed Transmission All Pressures at 2500 rpm and Oil at 50 to 65°C (120 to 150°F)					
Port 1 Transmission Pump		Port 2	Port 3	Port 5	Port 6
***Low Pressure	***High Pressure	Reverse Clutch	Forward Clutch	Torque Converter	Lubrication
1138 ±96* kPa (165 ±14 psi)	1482 ±96* kPa (215 ±15 psi)	983 ±58** kPa (142.5 ±8.5 psi)	983 ±58** kPa (142.5 ±8.5 psi)	738 ±52 kPa (107 ±7.5 psi)	55 ±28 kPa (8 ±4 psi)



*Relief Pressure **Clutch pack pressure difference between the forward and reverse packs cannot exceed manufacturing limit of 48 kPa (7 psi) or service limit of 70 kPa (10 psi). ***High pressure port is used when the lift truck is equipped with a dry brake system. The low pressure port is used when the lift truck is equipped with a wet brake system.

2-Speed Transmission All Pressures at 2500 rpm and Oil at 50 to 65°C (120 to 150°F)						
Port 1 Transmission Pump		Port 2	Port 3	Port 4	Port 5	Port 6
***Low Pressure	***High Pressure	Reverse Clutch	Forward Low Clutch	Forward High Clutch	Torque Converter	Lubrication
1138 ±96* kPa (165 ±14 psi)	1482 ±96* kPa (215 ±15 psi)	983 ±58** kPa (142.5 ±8.5 psi)	983 ±58** kPa (142.5 ±8.5 psi)	983 ±58** kPa (142.5 ±8.5 psi)	738 ±52 kPa (107 ±7.5 psi)	55 ±28 kPa (8 ±4 psi)



BM211060

*Relief Pressure **Clutch pack pressure difference between the forward and reverse packs cannot exceed manufacturing limit of 48 kPa (7 psi) or service limit of 70 kPa (10 psi). ***High pressure port is used when the lift truck is equipped with a dry brake system. The low pressure port is used when the lift truck is equipped with a wet brake system.

Hydraulic System Relief Pressures

Table 1. Hydraulic Systems With Hydraulic Gear Pump

Item	Specification
Oil Temperature for Setting Relief Pressure	50 to 65°C (122 to 149°F)
Primary Relief Valve Pressure (High Idle)	22.1 ±0.48 MPa (3205 ± 70 psi)
Secondary Relief Valve Pressure (High Idle)	15.51 ±0.48 MPa (2250 ±70 psi)

Table 2. Hydraulic Systems With Variable Displacement Pump

Item	Specification
Oil Temperature for Setting Relief Pressure	50 to 65°C (122 to 149°F)
Primary Relief Valve Pressure (High Idle)	23.7 ±0.50 MPa (3437 ± 72.5 psi)
Secondary Relief Valve Pressure (High Idle)	15.50 ±0.50 MPa (2248 ±72.5 psi)
Maximum Allowable Leakage at 1A Port to Tank	22.7 cc @ 19.3 MPa (2799 psi)

Steering System

Item	Quantity	
Oil Temperature	50 to 65°C (122 to 149°F)	
Steering Relief Pressure at 800 rpms (PSI (GM) 4.3L and Kubota 3.8L Diesel Engine)	12.4 ±0.3 MPa (1798 ±43.5 psi)	
Steering Relief Pressure at 850 rpms (Kubota 3.6L Diesel Engine)	12.4 ±0.3 MPa (1798 ±43.5 psi)	
Steering Cylinder Stroke (Each Side)	200.85 mm (7.9 in.)	
Inside Steering Tire Angle	80°	
Number of Turns to Lock	3.984	
Turning Radius (±50 mm NO LOAD)	Outside	Inside
H4.0FT5 (H80FT)	2570	49
H4.0FT6	2599	49
H4.5FTS5 (H90FT)	2619	49
H4.5FT6 (H100FT)	2837	131
H5.0FT (H110FT)	2877	131
H5.5FT (H120FT)	2915	131

Stall Speeds (in RPM ± 100 rpm)

PSI (GM) 4.3L

Transmission	New Engine	Broken-In Engine
Basic	2000	2100
DuraMatch	2000	2100
DuraMatch2	2000	2100
DuraMatch Plus2	Stall Speed Not Valid	Stall Speed Not Valid

KUBOTA 3.6L DIESEL

Transmission	New Engine	Broken-In Engine
Basic	1950	2000
DuraMatch	1950	2000
DuraMatch2	1950	2000
DuraMatch Plus2	Stall Speed Not Valid	Stall Speed Not Valid

KUBOTA 3.8L DIESEL

Transmission	New Engine	Broken-In Engine
Basic	1900	1970
DuraMatch	1900	1970
DuraMatch2	1900	1970
DuraMatch Plus2	Stall Speed Not Valid	Stall Speed Not Valid

Mast Speeds

NOTE: Lift speed is measured in meters/sec at governed engine RPM with full open valve and 65°C (149°F) oil temperature. Plus or minus 10% acceptable lifting or lowering.

Lowering speed is measured in meters/sec with full open valve and 65°C (149°F) oil temperature.

Table 3. Lift Truck Models H4.0FT5, H4.0FT6 (H80FT, H90FT) (S005)

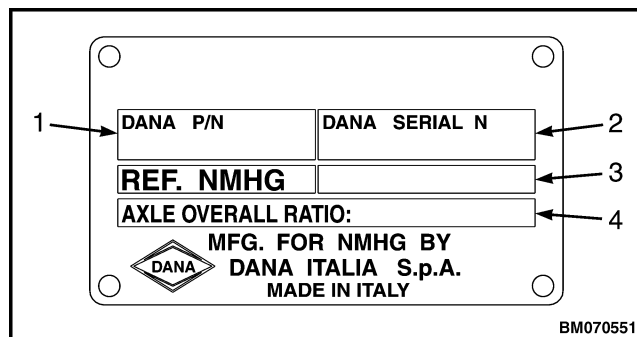
Model/ Engine	Mast	Lowering M/Sec		Lifting M/Sec	
		No Load	Rated Load	No Load	Rated Load
PSI (GM) 4.3L (Standard Displacement Pump)	2-Stage LFL	0.47	0.55	0.62	0.61
	2-Stage FFL	0.36	0.50	0.55	0.54
	3-Stage FFL	0.44	0.53	0.58	0.57

General

This manual covers the repair of the drive axle, differential, and the wet disc brakes.

IDENTIFICATION PLATE

See Figure 1.



1. DANA PART NUMBER
2. DANA SERIAL NUMBER
3. HYSTER PART NUMBER
4. AXLE OVERALL RATIO

Figure 1. Identification Plate

Drive Axle Removal



WARNING

When putting the lift truck on blocks, make sure the surface is solid, even, and level. Any blocks used to support the lift truck must be solid, one-piece units.

1. Put blocks on each side (front and back) of the steering tires to prevent movement of the lift truck.
2. Raise the lift truck and put blocks under the frame so that the drive wheels do not touch the floor. Put blocks under the counterweight for stability.
3. Remove the mast assembly as described in the section **Mast Repairs** (S/N A513, A514, A613, A614, A702, A703, A704, A705, A706, A707, A751, A752, B513, B514, B586, B587, B588, B589, B590, B591, B749, B750, B751, B752, B753, B754) 4000SRM1250.



WARNING

On lift trucks with pneumatic tires, completely remove air from tires before removing them from lift truck. Air pressure in tires can cause tire and rim parts to explode, which can cause serious injury

or death. Never loosen nuts that hold together inner and outer wheel halves when there is air pressure in tire.

4. Remove the wheels.
5. Remove the planetary carrier housing fill/level plugs on both sides of the drive axle.

See Figure 2 for lift truck models

- S4.0, 4.5, 5.5FT, S5.5FTS (S80, 100, 120FT; S80, 100FTBCS; S120FTS; S120FTPRS) (G004, H004, J004)

See Figure 3 for lift truck models

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80, 90, 100, 110, 120FT) (N005, P005, R005, S005, U005)

6. Remove the center section fill/level plug.

See Figure 2 for lift truck models

- S4.0, 4.5, 5.5FT, S5.5FTS (S80, 100, 120FT; S80, 100FTBCS; S120FTS; S120FTPRS) (G004, H004, J004)

See Figure 3 for lift truck models

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80, 90, 100, 110, 120FT) (N005, P005, R005, S005, U005)

7. Remove the planetary carrier housing drain plugs on both sides of the drive axle to drain the oil from the planetary carrier housings into a suitable container.

See Figure 2 for lift truck models

- S4.0, 4.5, 5.5FT, S5.5FTS (S80, 100, 120FT; S80, 100FTBCS; S120FTS; S120FTPRS) (G004, H004, J004)

See Figure 3 for lift truck models

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80, 90, 100, 110, 120FT) (N005, P005, R005, S005, U005)

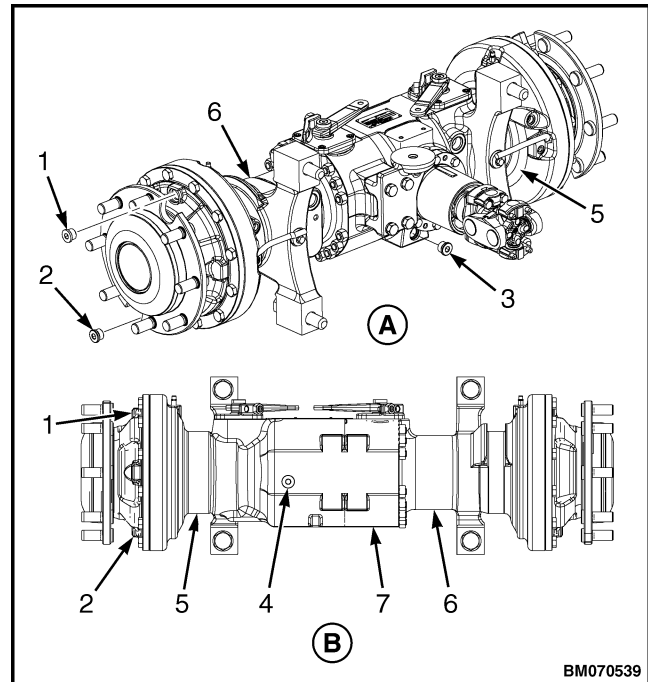
8. Remove the center section drain plug to drain the oil from the center section into a suitable container.

See Figure 2 for lift truck models

- S4.0, 4.5, 5.5FT, S5.5FTS (S80, 100, 120FT; S80, 100FTBCS; S120FTS; S120FTPRS) (G004, H004, J004)

See Figure 3 for lift truck models

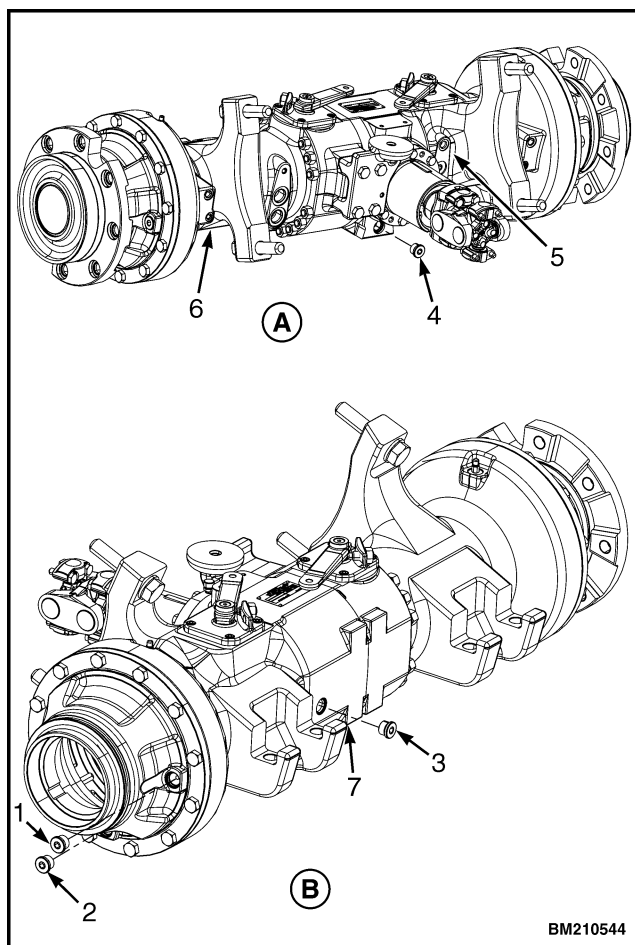
- H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80, 90, 100, 110, 120FT) (N005, P005, R005, S005, U005)



- A. REAR VIEW SHOWN
- B. FRONT VIEW SHOWN

1. PLANETARY CARRIER HOUSING FILL/LEVEL PLUGS
2. PLANETARY CARRIER HOUSING DRAIN PLUGS
3. CENTER SECTION DRAIN PLUG
4. CENTER SECTION FILL/LEVEL PLUG
5. PLANETARY CARRIER HOUSING (RH)
6. PLANETARY CARRIER HOUSING (LH)
7. CENTER SECTION

Figure 2. Drive Axle Drain and Fill/Level Plugs for Lift Truck Models S4.0, 4.5, 5.5FT, S5.5FTS, (S80, 100, 120FT; S80, 100FTBCS; S120FTS; S120FTPRS) (G004, H004, J004)



A. REAR VIEW SHOWN
B. FRONT VIEW SHOWN

1. PLANETARY CARRIER HOUSING FILL/LEVEL PLUGS
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4. CENTER SECTION DRAIN PLUG
5. PLANETARY CARRIER HOUSING (RH)
6. PLANETARY CARRIER HOUSING (LH)
7. CENTER SECTION

Figure 3. Drive Axle Drain and Fill/Level Plugs for Lift Truck Models H4.0FT5/FT6; H4.5FTS5, H4.5FT6; H5.0-5.5FT (H80, 90, 100, 110, 120FT) (N005, P005, R005, S005, U005)

9. Remove the parking brake cables. Refer to the following section for removal procedures:

See **Brake System** 1800SRM1247 for lift truck models

- S4.0, 4.5, 5.5FT, S5.5FTS, (S80, 100, 120FT; S80, 100FTBCS; S120FTS; S120FTPRS) (G004, H004)

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6; H5.0-5.5FT (H80, 90, 100, 110, 120FT) (N005, P005, R005, S005)

See **Wet Brakes - NMHG** 1800SRM1597 for lift truck models

- S4.0, 4.5, 5.5FT, S5.5FTS, (S80, 100, 120FT; S80, 100FTBCS; S120FTS; S120FTPRS) (J004)
- H4.0FT5/FT6; H4.5FTS5, H4.5FT6; H5.0-5.5FT (H80, 90, 100, 110, 120FT) (U005)

10. Remove the capscrews retaining the line guards and remove the line guards on both sides of the drive axle.

See Figure 4 for lift truck models

- S4.0, 4.5, 5.5FT, S5.5FTS (S80, 100, 120FT; S80, 100FTBCS; S120FTS; S120FTPRS) (G004, H004, J004)

See Figure 5 for lift truck models

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80, 90, 100, 110, 120FT) (N005, P005, R005, S005, U005)

11. Disconnect the brake cooling lines from both sides of the drive axle.

See Figure 4 for lift truck models

- S4.0, 4.5, 5.5FT, S5.5FTS (S80, 100, 120FT; S80, 100FTBCS; S120FTS; S120FTPRS) (G004, H004, J004)

See Figure 5 for lift truck models

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80, 90, 100, 110, 120FT) (N005, P005, R005, S005, U005)

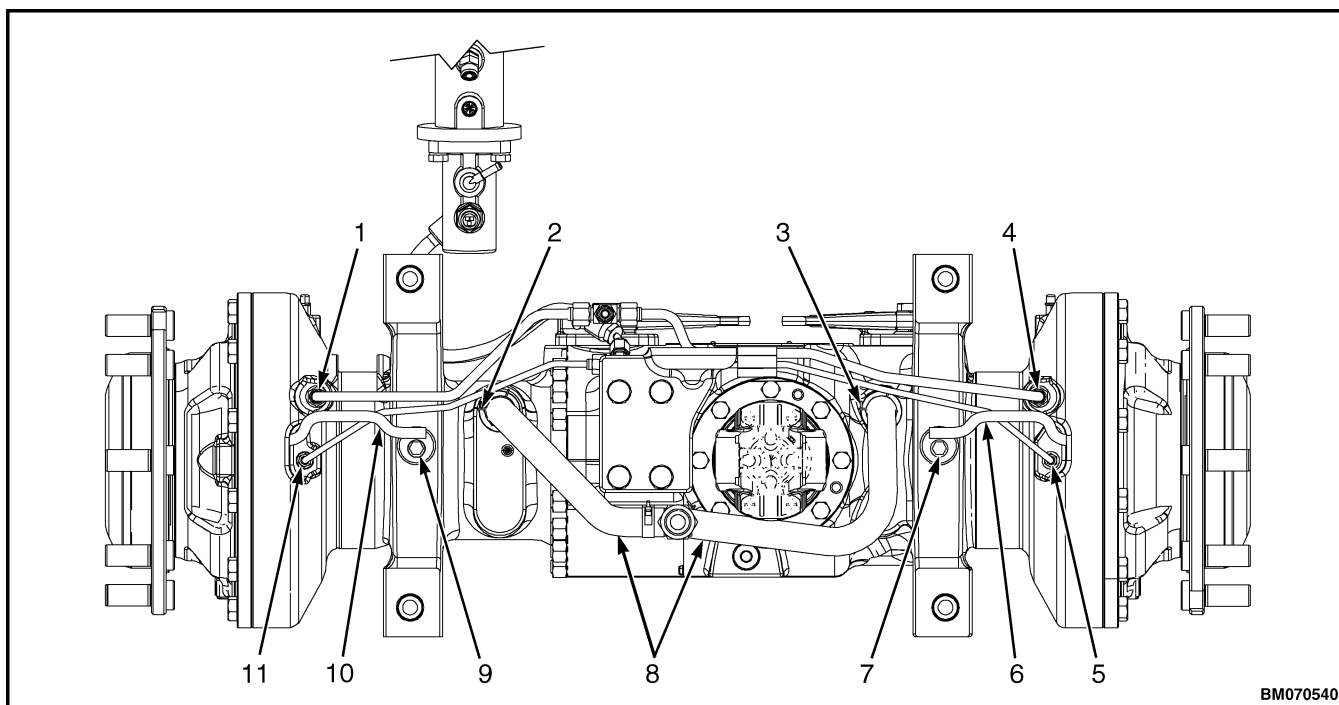
12. Disconnect the brake lines from both sides of the drive axle.

See Figure 4 for lift truck models

- S4.0, 4.5, 5.5FT, S5.5FTS (S80, 100, 120FT; S80, 100FTBCS; S120FTS; S120FTPRS) (G004, H004, J004)

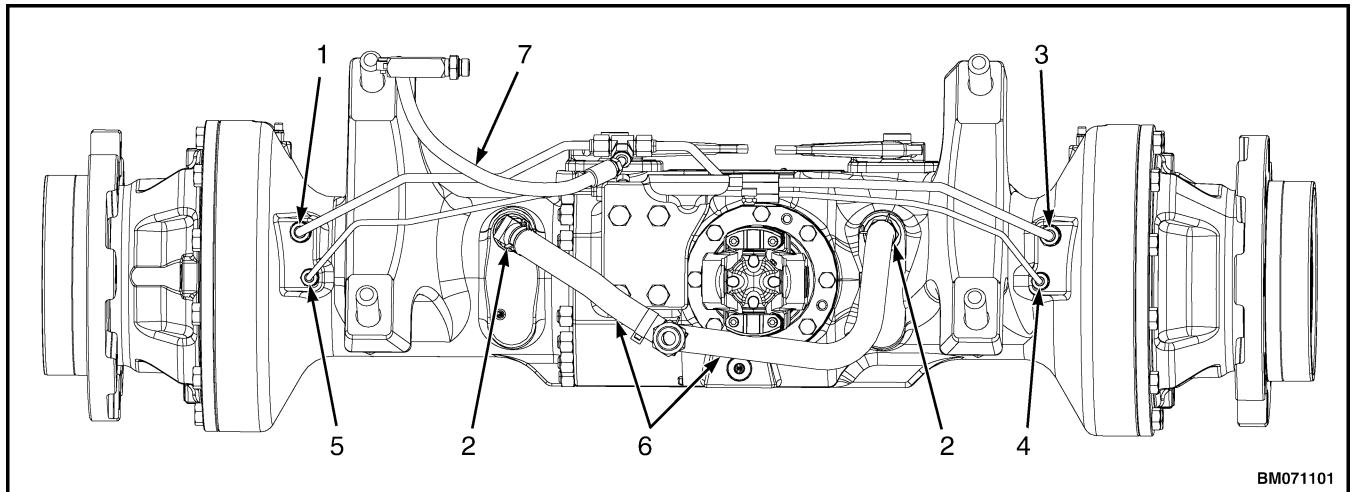
See Figure 5 for lift truck models

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80, 90, 100, 110, 120FT) (N005, P005, R005, S005, U005)



- | | |
|------------------------------------|----------------------------|
| 1. BRAKE COOLING LINE (LEFT SIDE) | 7. CAPSCREW |
| 2. HOSE CLAMP | 8. COOLING RETURN HOSES |
| 3. HOSE CLAMP | 9. CAPSCREW |
| 4. BRAKE COOLING LINE (RIGHT SIDE) | 10. LINE GUARD (LEFT SIDE) |
| 5. BRAKE LINE (RIGHT SIDE) | 11. BRAKE LINE (LEFT SIDE) |
| 6. LINE GUARD (RIGHT SIDE) | |

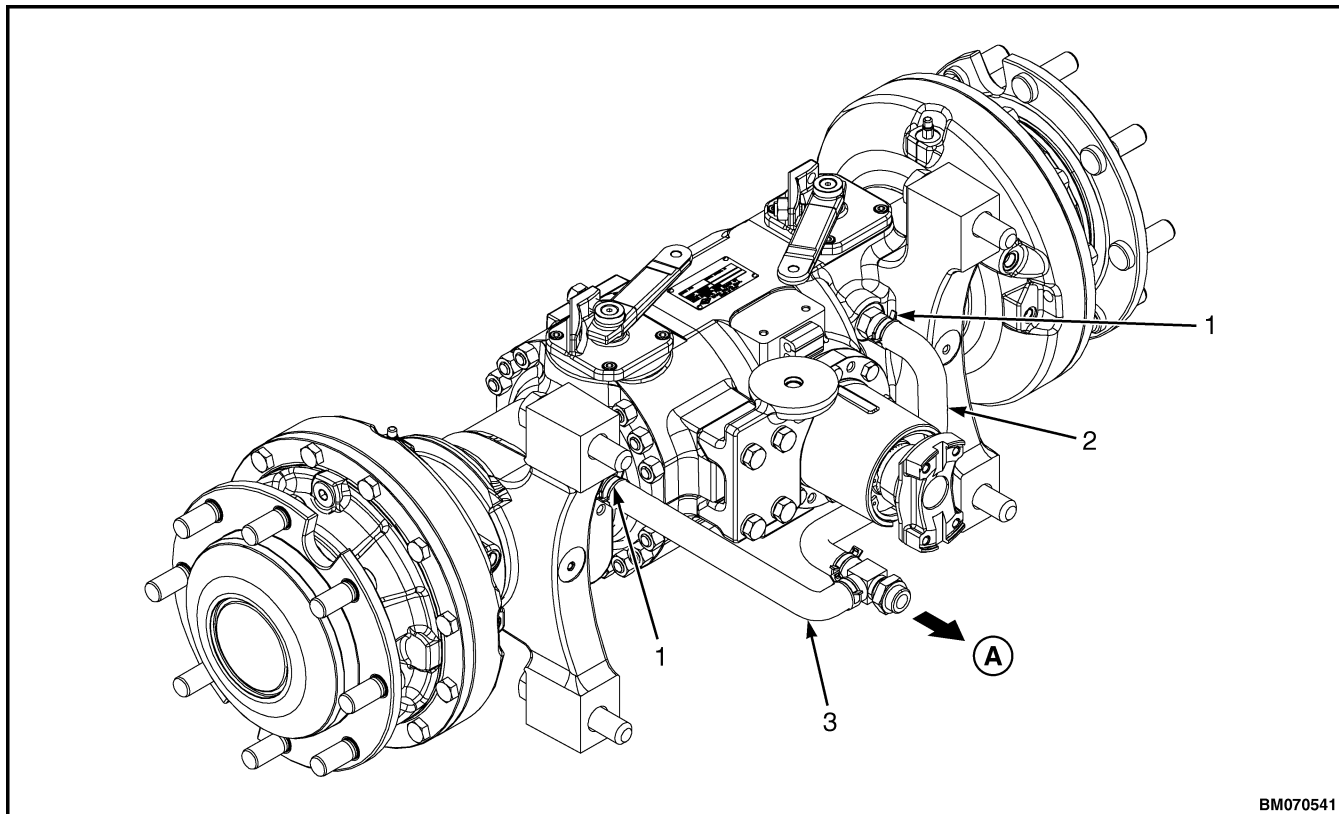
Figure 4. Brake Cooling Lines and Brake Lines, Lift Truck Model S4.0, 4.5, 5.5FT, S5.5FTS (S80, 100, 120FT; S80, 100FTBCS; S120FTS; S120FTPRS) (G004, H004, J004)



- | | |
|------------------------------------|---------------------------|
| 1. BRAKE COOLING LINE (LEFT SIDE) | 5. BRAKE LINE (LEFT SIDE) |
| 2. HOSE CLAMP | 6. COOLING RETURN HOSES |
| 3. BRAKE COOLING LINE (RIGHT SIDE) | 7. BRAKE LINE SUPPLY LINE |
| 4. BRAKE LINE (RIGHT SIDE) | |

Figure 5. Brake Cooling Lines and Brake Lines, Lift Truck Model H4.0FT5/FT6; H4.5FTS5, H4.5FT6; H5.0-5.5FT (H80, 90, 100, 110, 120FT) (N005, P005, R005, S005, U005)

13. Disconnect the cooling return hoses from the drive axle. See Figure 6.
14. Place blocks under the axle assembly and connect slings and lifting device.
15. Place blocks under the transmission to support the transmission while removing the drive axle.
16. Remove the capscrews holding the drive shaft and remove the drive shaft.



A. DRIVE AXLE COOLING HOSE RETURN TO TRANSMISSION SUMP

- | | |
|------------------------------------|-----------------------------------|
| 1. HOSE CLAMP | 3. COOLING RETURN HOSE, LEFT SIDE |
| 2. COOLING RETURN HOSE, RIGHT SIDE | |

Figure 6. Drive Axle Cooling Return Hoses

17. Remove the transmission isolator mounting bolt located on top of the assembly. See Figure 7.

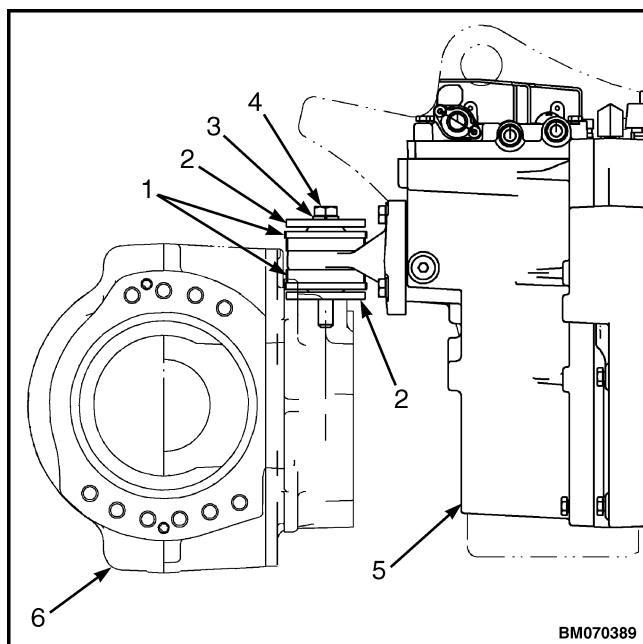


Figure 7. Transmission to Differential Mounting Bolt

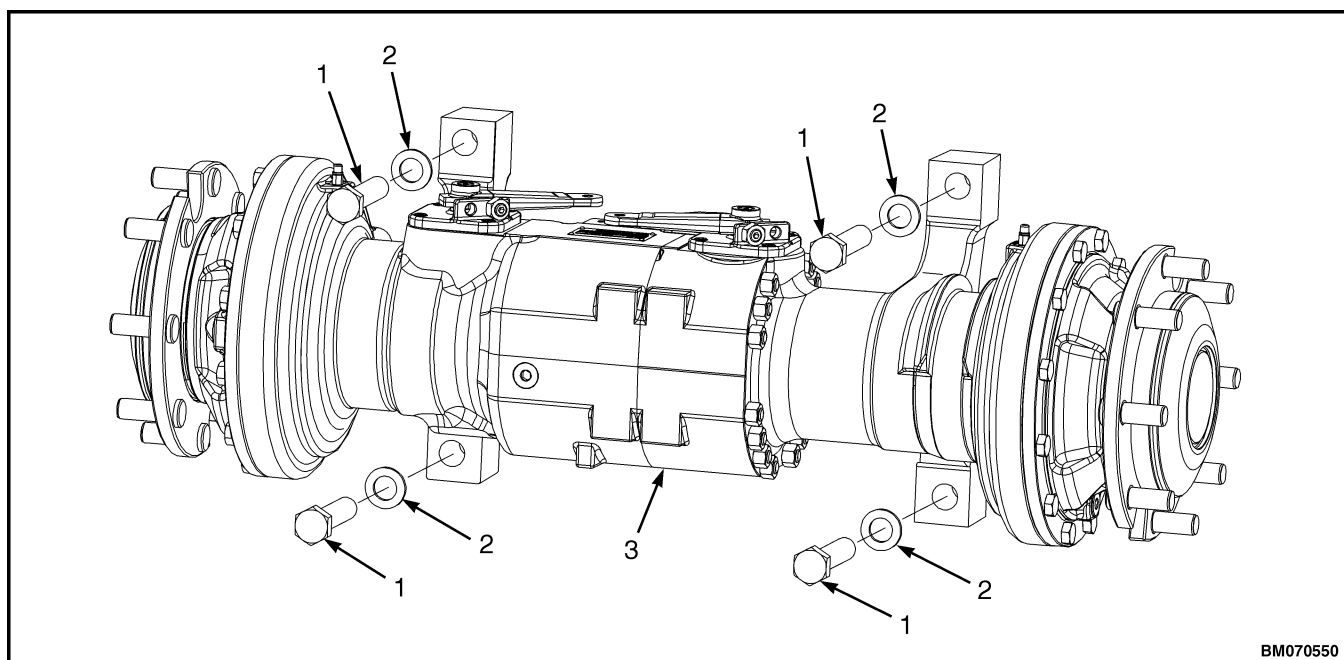
Legend for Figure 7

- | | |
|--------------|-----------------|
| 1. ISOLATORS | 4. CAPSCREW |
| 2. WASHER | 5. TRANSMISSION |
| 3. WASHER | 6. DRIVE AXLE |

18. Remove the four mounting capscrews and washers from the drive axle. See Figure 8.

19. Remove blocks and lower the drive axle assembly. Pull axle forward and away from frame.

20. Place blocks under the differential assembly.

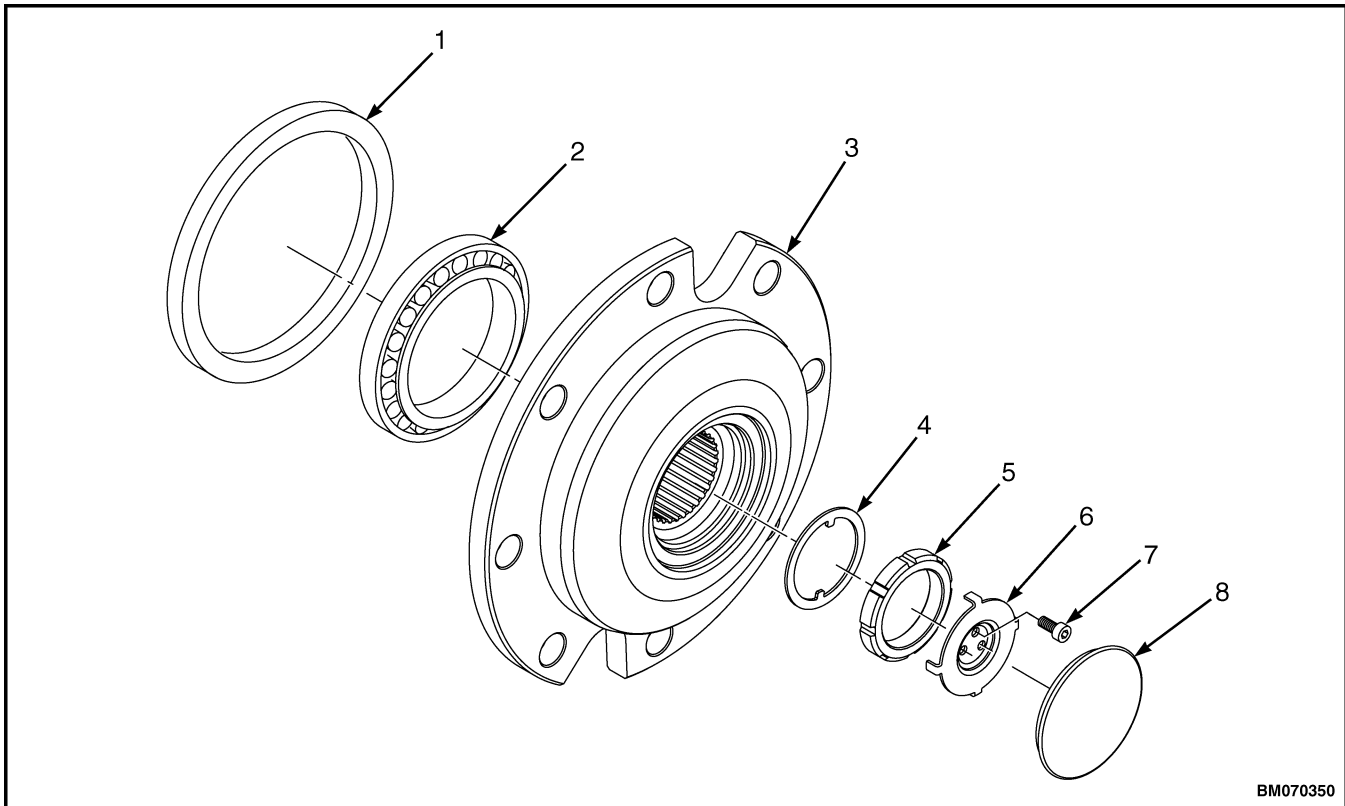


1. CAPSCREW
2. WASHER

3. DRIVE AXLE

Figure 8. Drive Axle Mounting Capscrews

Hub Seal Replacement



1. SEAL
2. EXTERNAL BEARING
3. HUB
4. WASHER

5. RING NUT
6. SAFETY FLANGE
7. SOCKET HEAD SCREW
8. COVER

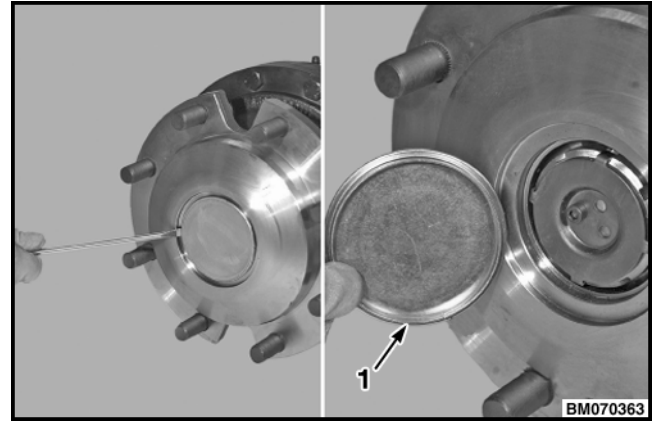
Figure 9. Hub Seal Replacement

REMOVE

Refer to Figure 9.

STEP 1.

Remove the cover from the hub.

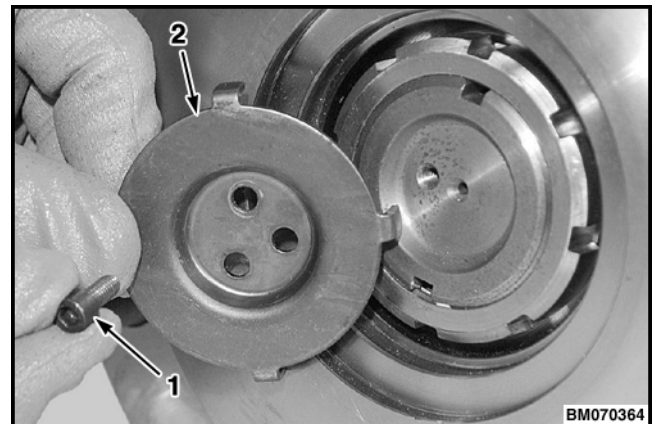


1. COVER

STEP 2.

Mark the position of the ring nut.

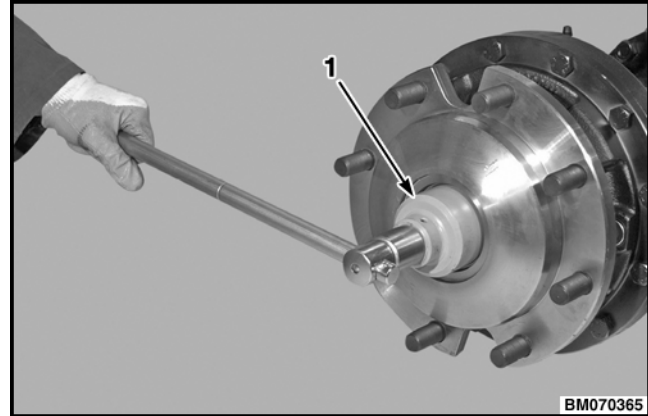
Remove the socket head screw and the safety flange from the ring nut.



1. SOCKET HEAD SCREW
2. SAFETY FLANGE

STEP 3.

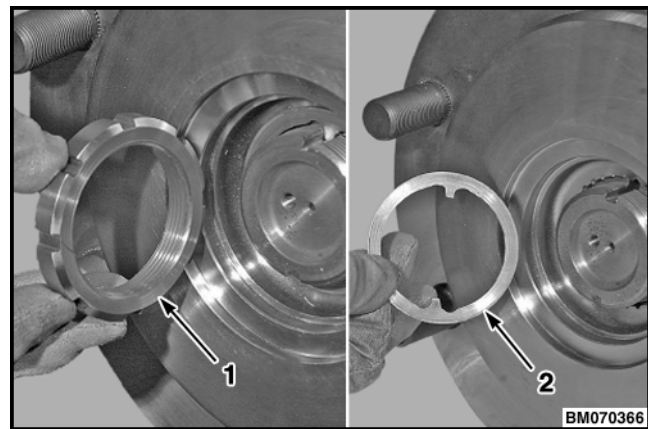
Using special tool T1, loosen the ring nut.



1. SPECIAL TOOL T1

STEP 4.

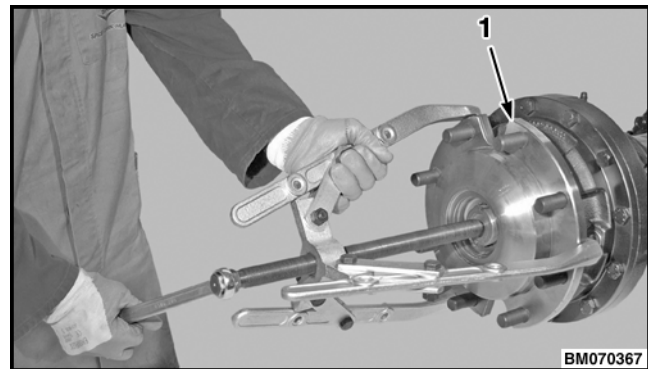
Remove the ring nut and washer.



1. RING NUT
2. WASHER

STEP 5.

Using a puller, loosen the hub assembly.



1. HUB ASSEMBLY

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