SERVICE MANUAL

Boomer™ 3040 CVT / Boomer™ 3045 CVT / Boomer™ 3050 CVT

Compact Tractor

PIN ZCMB11001 and above; PIN ZDMB11925 and above

Part number 48017760
1st edition English
November 2016
Replaces part number 47463786

AGRICULTURE

General specification Tire Pressures

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

FRONT TIRE INFLATION PRESSURES		
Tire Type	Tire Size	Inflation Pressure
Agricultural:		
2WD	5.50 x 16, 4PR, F2 7.5 x 15, 6 PR	**0.6 - 1.4 bar** (**8 - 20 psi**)
FWD	7 x 16, 6PR, R1 8 x 16, 6PR, R1	**0.6 - 1.4 bar** (**8 - 20 psi**) **1.4 - 1.7 bar** (**20 - 24 psi**)
Turf:		
2WD FWD	25 x 8.50-14, 4PR, R3 27 x 8.50-15, 4PR, R3	**0.6 - 0.8 bar** (**8 - 12 psi**)
Industrial (FWD only)	10 x 16.5, 6PR, R4	**1.1 - 3.1 bar** (**16 - 45 psi**)

REAR TIRE INFLATION PRESSURES		
Agricultural	13.6 x 24, 4PR, R1	**0.8 - 0.97 bar** (**12 - 14 psi**)
Turf	44 x 18-20, 4PR, R3	**0.83 - 1.38 bar** (**12 - 20 psi**)
Industrial (R4)	17.5 x 24, 6PR, R4	**0.83 - 1.79 bar** (**12 - 26 psi**)

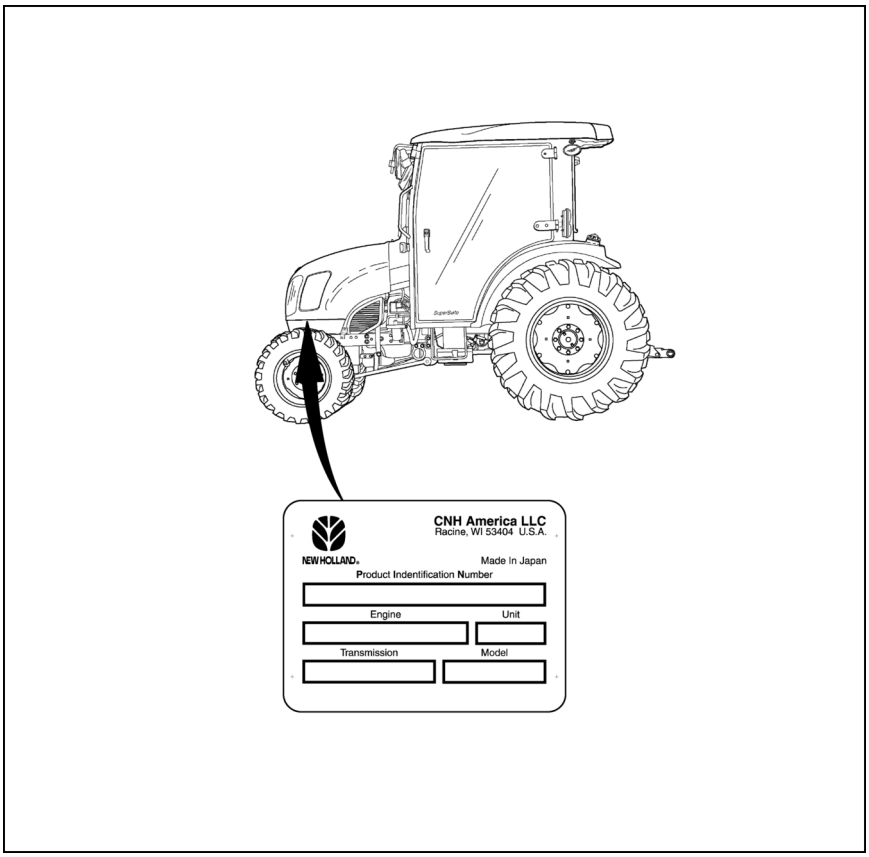
Product identification General information

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

PLEASE READ CAREFULLY:

performed by your dealer, refer to the DELIVERY REPORT checklist found at the back of this manual. Keep one copy as your record of the service performed. The other copy should be removed from the manual and kept by your dealer. MAKE SURE THAT BOTH COPIES ARE COMPLETED AND THAT YOU AND THE DEALER SIGN BOTH COPIES.

A PRODUCT IDENTIFICATION PLATE is located on the left-hand side of the front frame.



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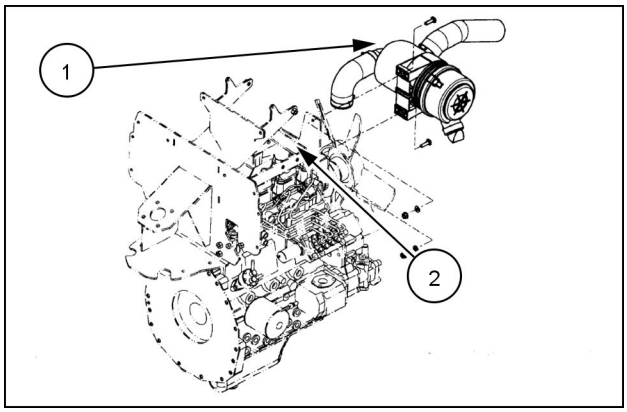
4. Remove the air cleaner assembly, **(1)**, from the firewall, **(2)**.



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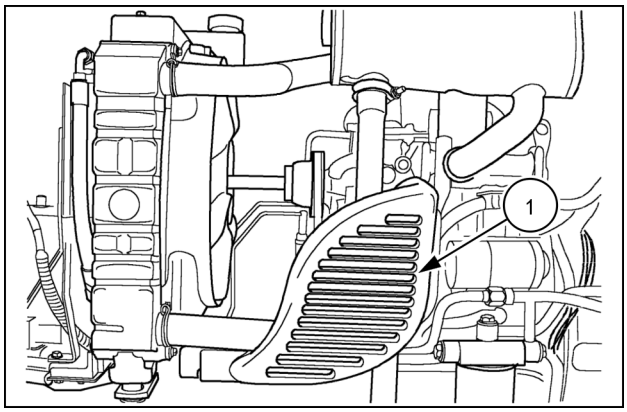
5. Remove the muffler guard, **(1)**, from the tractor.



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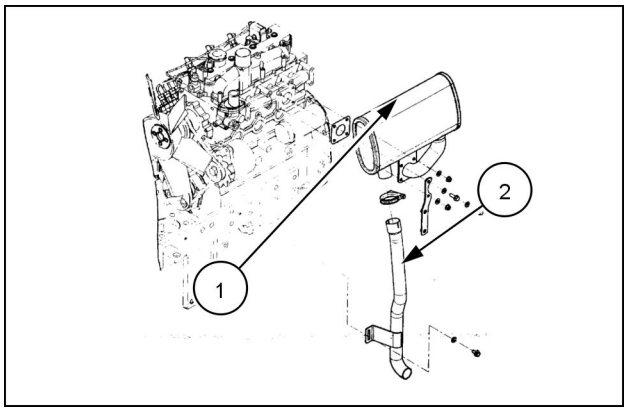
6. Remove the muffler, **(1)**, and the exhaust pipe, **(2)**, from the tractor.
7. Drain the coolant from the radiator into a suitable container.
8. Remove the top, **(3)**, and the bottom, **(4)**, radiator hoses.
9. Remove the radiator, **(5)**, and the oil cooler (if equipped) from the tractor.



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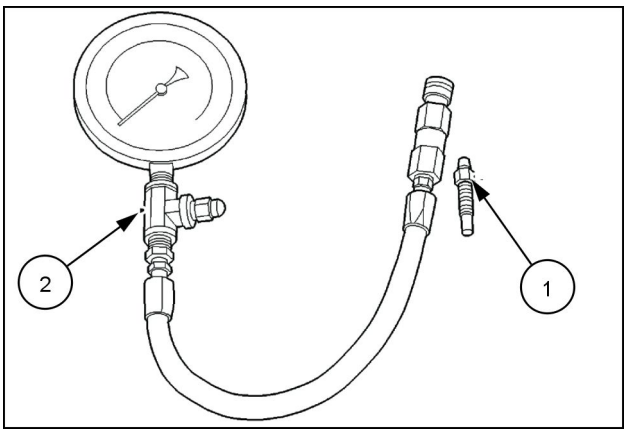
Cylinder head - Compression test

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Compression test is performed through the glow plug ports. The test adapter tool **(1)**, is equipped with quick coupler ends for easy installation of the hose and gauge.

The procedures to perform a compression test are as follows:

1. Remove the wire lead from the fuel injection pump solenoid.
2. Remove the glow plug electrical wire and wire connector from top of the glow plugs.



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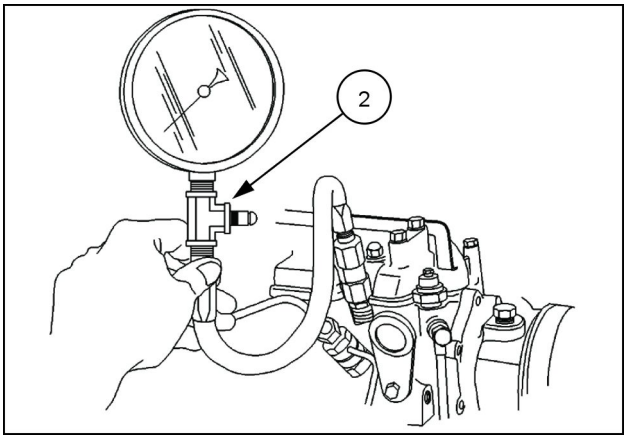
3. Remove all of the glow plugs.

NOTE: *Be sure all the glow plugs are removed before starting the compression tests.*

4. Install the adapter Tool No. **FNH00120** , hose and gauge assembly OEM1074 **(2)**, in each port and crank the engine until pressure stabilizes. The gauge should read **2944 kPa** (**427 psi**)) plus or minus **345 kPa** (**50 psi**) .



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NOTE: *It may be necessary to remove some injector fuel lines to install the adapter tool.*

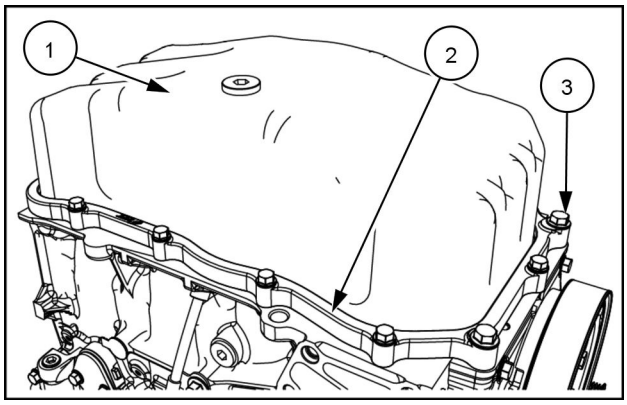
NOTE: *There should not be more than **345 kPa** (**50 psi**) variation between the cylinders.*

5. When all cylinders have been tested, reinstall the glow plugs and electrical connections.

Engine oil pan - Remove

NOTE: *Oil pan images may vary depending on your model.*

1. Drain the engine oil.
2. Remove the oil pan bolts **(3)**.
3. Remove the oil pan retaining plate **(2)**.
4. Remove the oil pan **(1)**.



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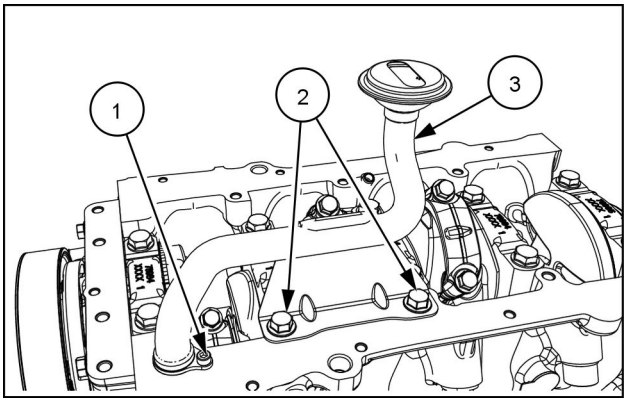
5. Remove the pick up tube support bolts **(2)**.
6. Remove the Allen head bolt **(1)** from the pick up tube.
7. Remove the pick up tube **(3)** from the engine block.



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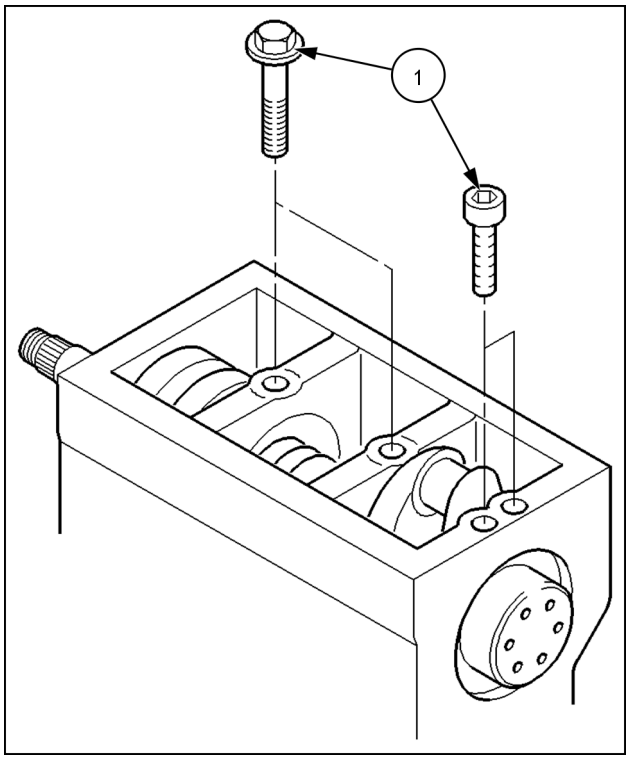
Next operation:
Engine oil pan - Install (10.102)

Crankshaft - Install with Bearing Holder

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Prior operation:
Timing gear housing - Visual inspection (10.102) ..

1. Install the crankshaft with bearing holder through the rear of the cylinder block.
2. Align the threaded holes on the bearing holders with the bolt holes in the cylinder block.
3. At the flywheel end install the socket head hex bolts, at each center bearing install the hex head bolt. Torque the socket head bolts to **24 - 31 N·m** (**18 - 22 lb ft**). Torque the hex head bolts to **49 - 54 N·m** (**36 - 40 lb ft**).



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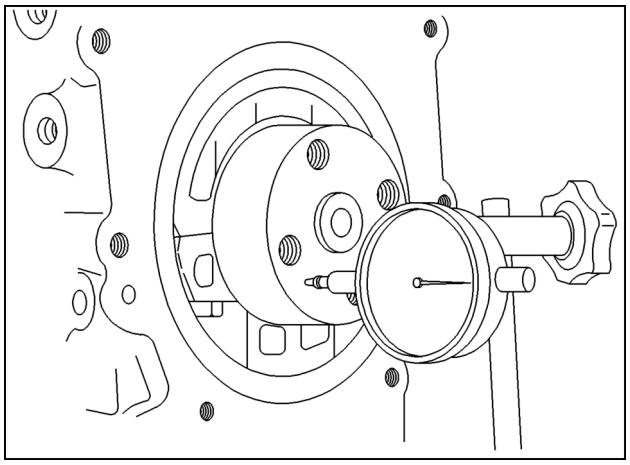
(1) Bearing Holder Bolts

4. Using a dial indicator, measure the crankshaft end float (thrust). If the thrust is not within the allowable limit, remove the crankshaft and check the thrust washers.
   - Standard Thrust: **0.1 - 0.4 mm** (**0.0039 - 0.0156 in**).
   - Allowable Limit: **0.5 mm** (**0.0195 in**).



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Next operation:
Engine flywheel - Install (10.103).

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Connecting rods and pistons - 105

(*) See content for specific models

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SERVICE

(*) See content for specific models

Injection pump - Calibration

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Use the following standards when checking the fuel injection pump.

Rotation	Clockwise, viewed from driving side
Nozzle	NP-DN4PDN117
Nozzle Holder	105148-1210
Nozzle Valve Opening Pressure	**14824 kPa** (**2150 psi**)
Injection Pipe	**1.2 mm** (**0.047 in**) inside diameter x **6 mm** (**0.236 in**) outside diameter - **320 mm** (**12.6 in**) long
Oil Flowing Pressure	**19.99 kPa** (**2.9 psi**)
Test Oil	Light Oil

Injection pump - Torque

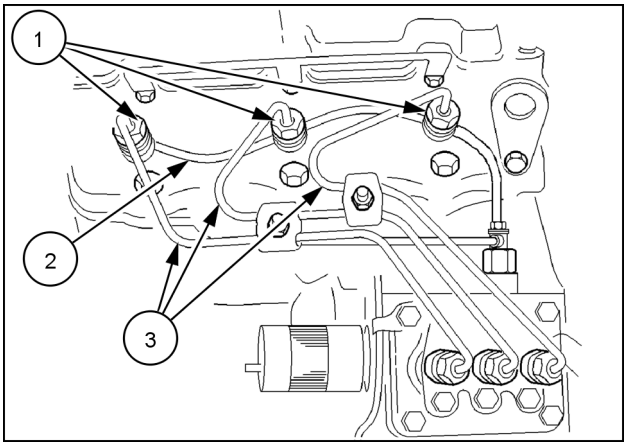
Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Torque Specifications	All models
Delivery Valve Holder	**39.2 - 44.1 N·m** (**28.9 - 32.5 lb ft**)
Injector Assembly	**59 - 69 N·m** (**43 - 51 lb ft**)
Injection Pump Retaining Nuts and Bolts	**4.5 - 6.8 N·m** (**3.3 - 5.0 lb ft**)

Fuel injectors - Remove

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

1. Clean all dirt, oil, and grease from the injectors, **(1)**, and surrounding areas.
2. Disconnect the fuel leak-off lines, **(2)**, and injector lines, **(3)**, from the injectors.



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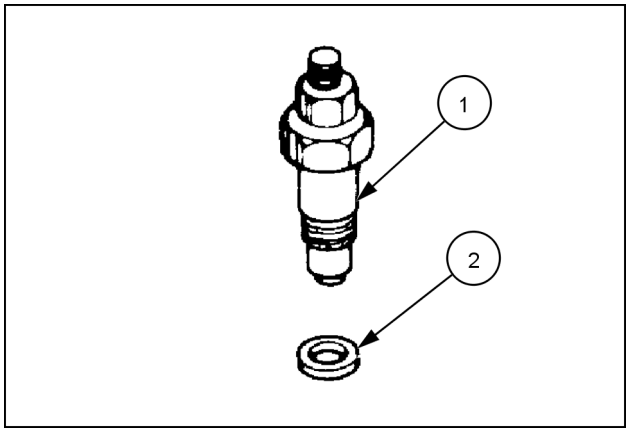
3. Remove the injectors, **(1)**, and sealing washers, **(2)**, from the cylinder head.



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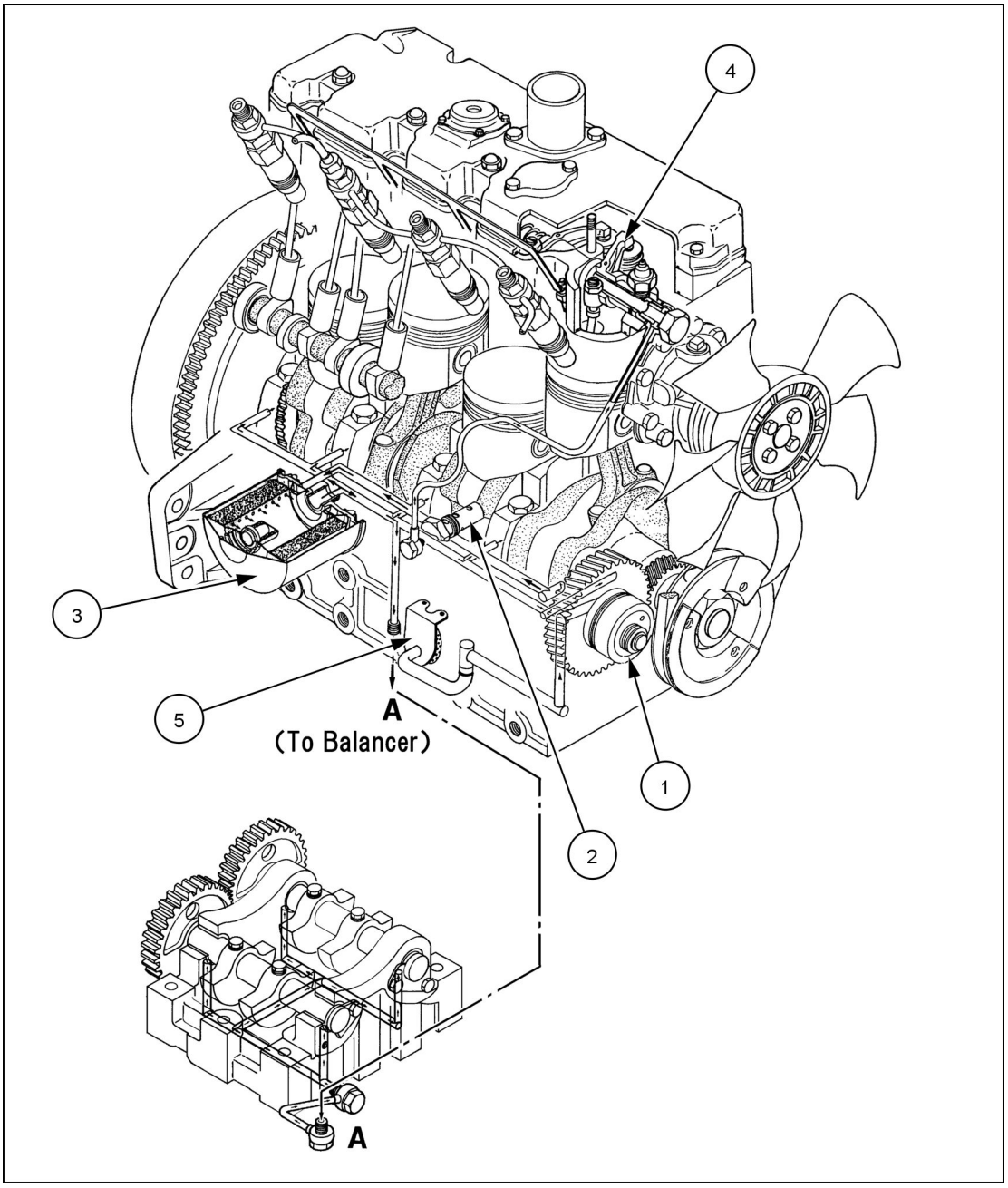

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(1) Oil Pump

(2) Relief Valve

(3) Oil Filter

(4) Oil Pressure Switch

(5) Suction Strainer

Engine cooling system - General specification

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

	Boomer 3040	Boomer 3045	Boomer 3050
Engine Model	ISM N844	ISM N844L	ISM N844L
Type of System	Pressurized liquid w/recirculating by-pass		
Water Pump	Centrifugal		
Drive Belt Deflection (Tension)	**5 - 10 mm** (**0.2 - 0.4 in**) when **2.3 kg** (**5 lb**) force is applied midway between pulleys.		
Thermostat			
Starts to Open	**80 - 84 °C** (**176 - 183 °F**)		
Fully Open	**95 °C** (**203 °F**)		
Radiator Cap Pressure Rating	**0.9 bar** (**13 psi**)		
Coolant	Ethylene glycol and water in a 50/50 mixture.		
Capacity	**7.9 l** (**8.3 US qt**)	**8.0 l** (**8.4 US qt**)	**8.0 l** (**8.4 US qt**)

Engine cooling system - General specification

	Boomer™ 3040	**Boomer™ 3045**	**Boomer™ 3050**
Engine Model	ISM N844	ISM N844L	ISM N844L
Type of System	Pressurized liquid with recirculating by-pass		
Water Pump	Centrifugal		
Drive Belt Deflection (Tension)	**5 - 10 mm** (**0.2 - 0.4 in**) when **2.3 kg** (**5 lb**) force is applied midway between pulleys.		
Thermostat			
Starts to Open	**80 - 84 °C** (**176 - 183 °F**)		
Fully Open	**95 °C** (**203 °F**)		
Radiator Cap Pressure Rating	**0.9 bar** (**13 psi**)		
Coolant	**NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT**		
Capacity	**7.9 l** (**8.3 US qt**)	**8.0 l** (**8.4 US qt**)	**8.0 l** (**8.4 US qt**)

Water pump - Inspect

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Prior operation:
Water pump - Remove (10.400).

1. Inspect the water pump for indications of coolant leakage from around the pump shaft. If coolant leakage is evident, or if the water pump is noisy when running, replace the water pump.

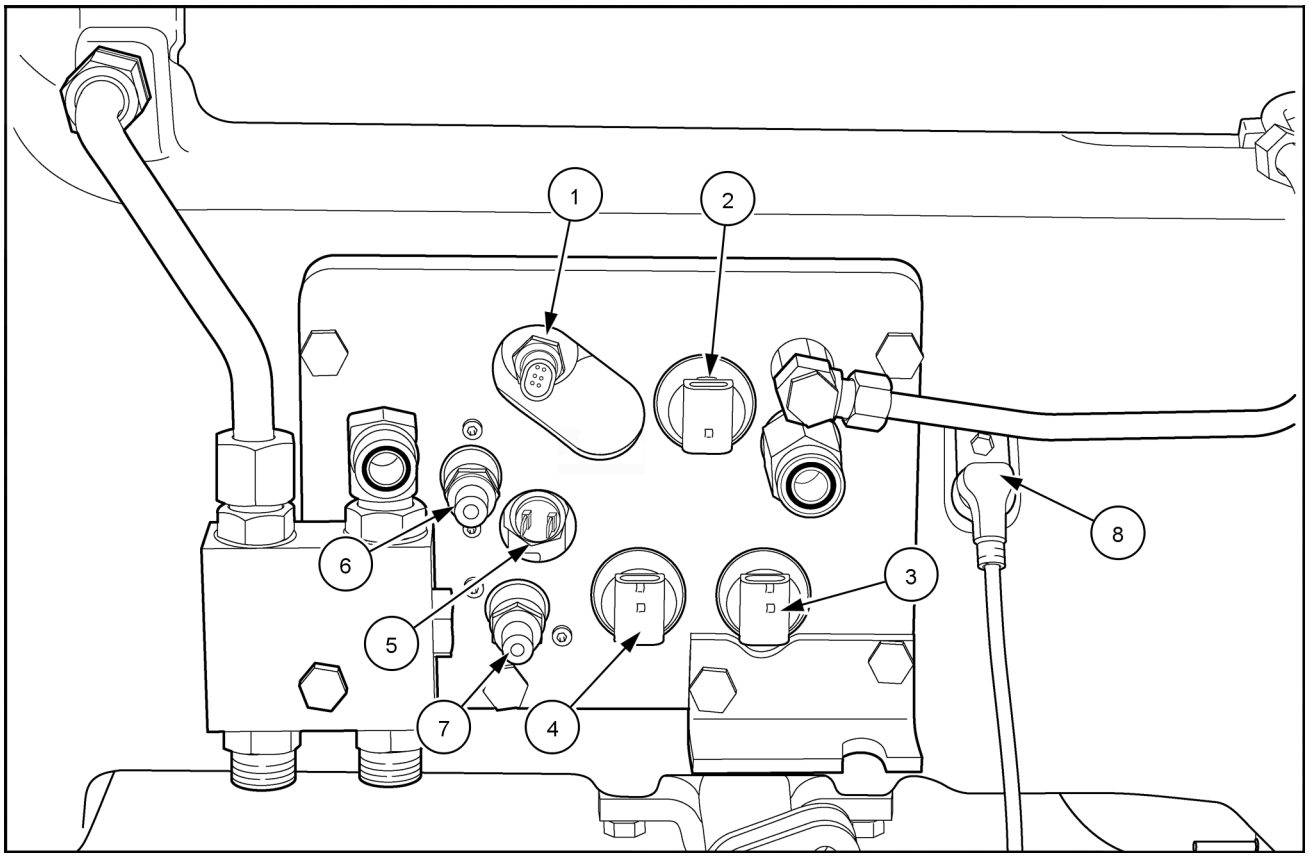
Next operation:
Water pump - Install (with Cooling Fan) (10.400).

(*) See content for specific models

Continuously Variable Transmission (CVT) - Component identification CVT transmission sensors, valves and switches

Boomer™ 3040 CVT [ZCMB11001 -]	WE
Boomer™ 3045 CVT [ZCMB11001 -]	WE
Boomer™ 3050 CVT [ZCMB11001 -]	WE

NOTE: *The following components are located on the left side of the transmission case.*



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(1) Transmission Oil Temperature Sensor

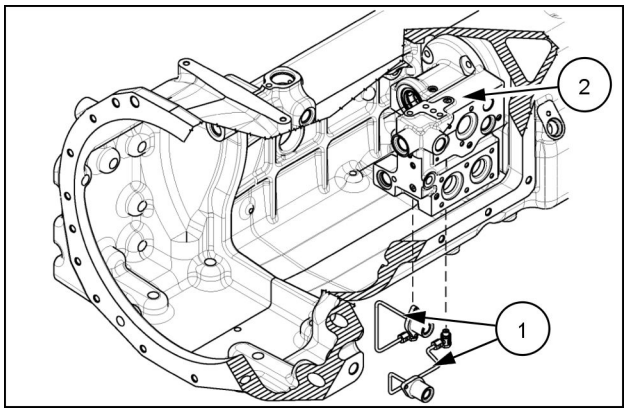
The transmission oil temperature sensor operates off of a **5 V** power supply and varies the resistance of the circuit with varying oil temperature. The transmission control unit (TCU) depends on the input from this sensor when determining if the maximum allowable ground speed should be reduced.

Temperature C° (F°)	Min. Resistance (Ohms)	Max. Resistance (Ohms)
-30 °C (-22 °F)	**4432 Ω**	**5203 Ω**
0 °C (32 °F)	**1140 Ω**	**1339 Ω**
25 °C (77 °F)	**460 Ω**	**540 Ω**
40 °C (104 °F)	**285 Ω**	**335 Ω**
130 °C (266 °F)	**34 Ω**	**40 Ω**

Hydraulic Components		
(1) Suction filter	**(6)** Oil cooler	**(11)** PTO clutch
(2) Steering hydraulic pump	**(7)** Oil cooler bypass valve **580 kPa** (**84 psi**)	
(3) Steering control valve	**(8)** Lube regulating valve **450 kPa** (**65 psi**)	
(4) Pressure hydraulic filter	**(9)** Lubrication of clutche	
(5) Regulating valve **1800 kPa** (**261 psi**)	**(10)** PTO solenoid	

1. Oil is drawn through the suction filter **(1)** by the steering hydraulic pump **(2)**.
2. Oil is routed through the power steering control valve **(3)** and the pressure filter **(4)**.
3. Hydraulic pressure is regulated to **1800 kPa** (**261 psi**) by regulating valve **(5)**.
4. Oil that passes by the regulating valve is routed to the oil cooler **(6)** .The oil cooler circuit is protect from excessive pressure by the oil cool by pass valve **(7)**. Whenever there is a pressure differential greater than **580 kPa** (**84 psi**) between the inlet and outlet of the oil cooler the bypass valve will open and divert oil around the oil cooler.
5. The lube regulating valve **(8)** regulates the lubrication oil pressure to the clutch **(9)** to **450 kPa** (**65 psi**).
6. Oil that is pressurized by the regulating valve **(5)** is routed to the PTO solenoid **(10)**
7. When the PTO solenoid valve is energized the valve opens allowing oil to be routed to the or PTO clutch **(11)**

12. Remove the forward and reverse test port hydraulic tubes, **(1)**, from the underside of the electrical/hydraulic transmission controls housing, **(2)**.



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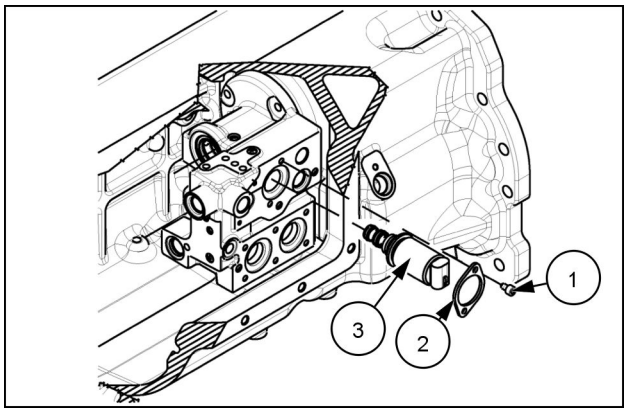
13. Using a 5mm Allen wrench, remove the two M6 x 1 x 10mm Allen bolts, **(1)**, dump valve fixing plate, **(2)**, and dump valve, **(3)**.



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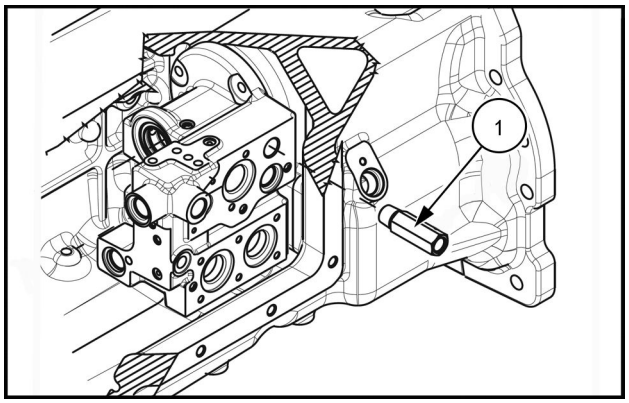
14. Remove the banjo fitting adapter, **(1)**.



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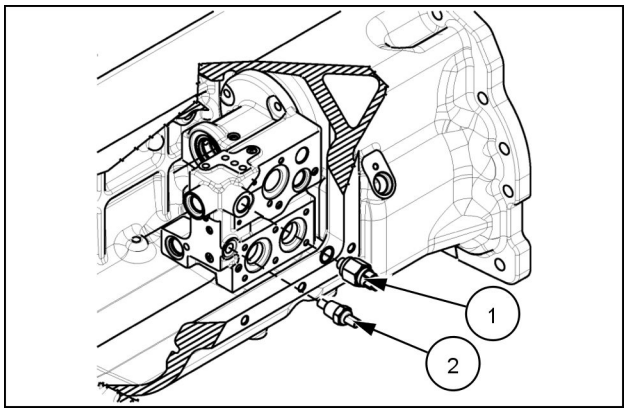
15. Remove the oil temperature sensor, **(1)**, and oil pressure switch, **(2)**.



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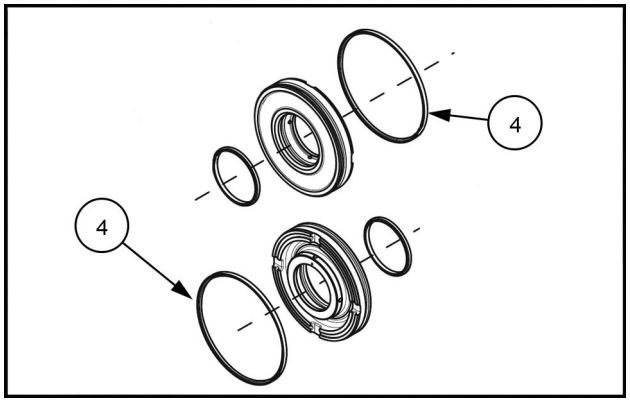
NOTICE: *Tool 380003194 must be used to install piston into drum support to prevent outer piston seal damage during installation*

2. Install outer piston seal **(4)** on outer diameter of piston.



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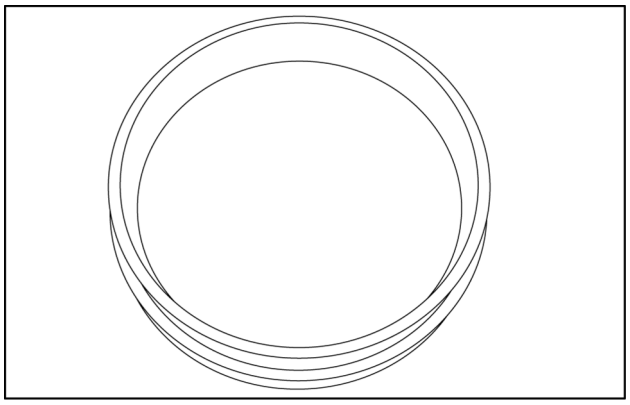
3. Lubricate inner and outer piston seals with hydraulic oil before Installing pistons into drum support. Use tool **380003194** and a press **(5)** to install piston **(6)** into drum support **(7)**.

NOTE: *Tool **380003194** has a taper in the inner bore to compress the outer piston seal during installation of piston into drum support.*



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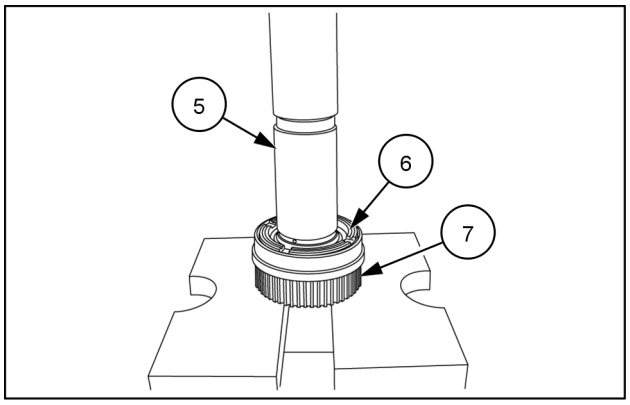

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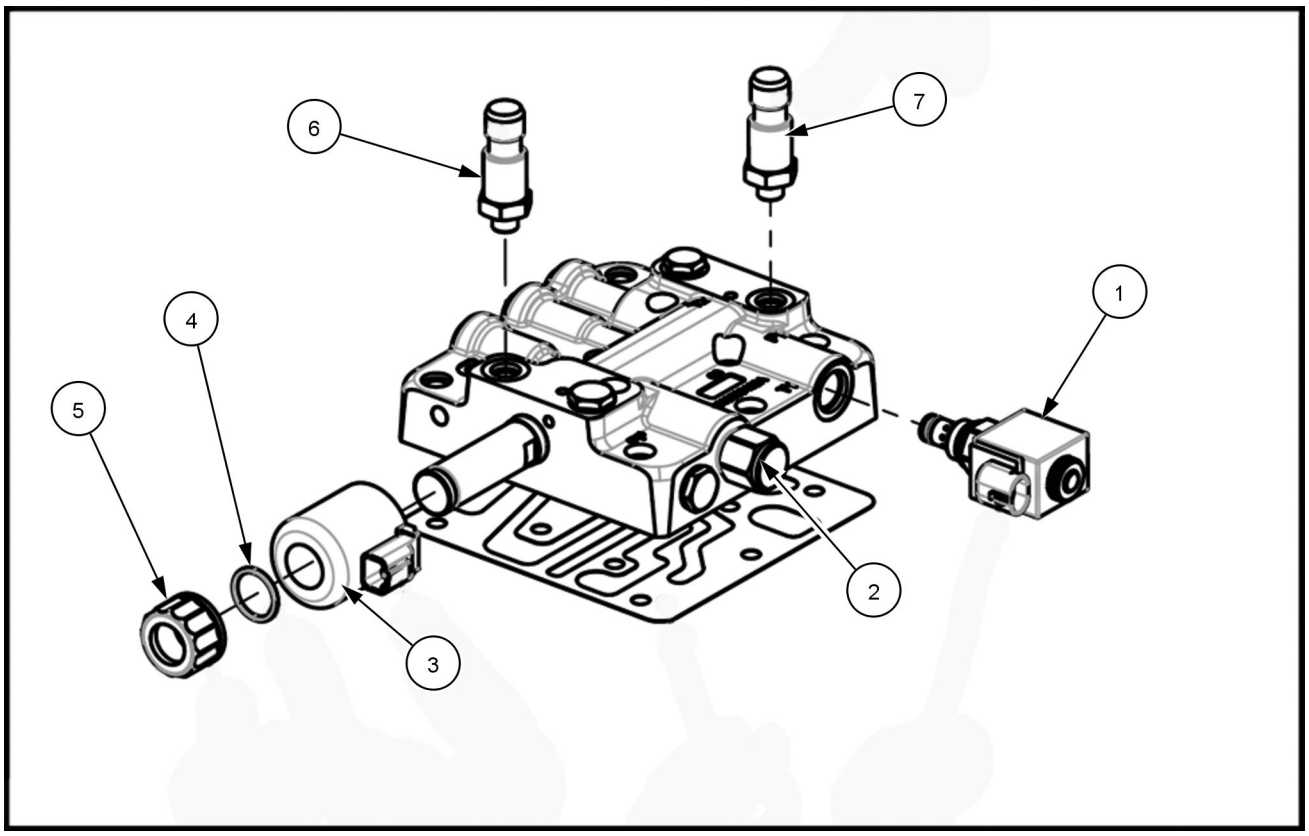

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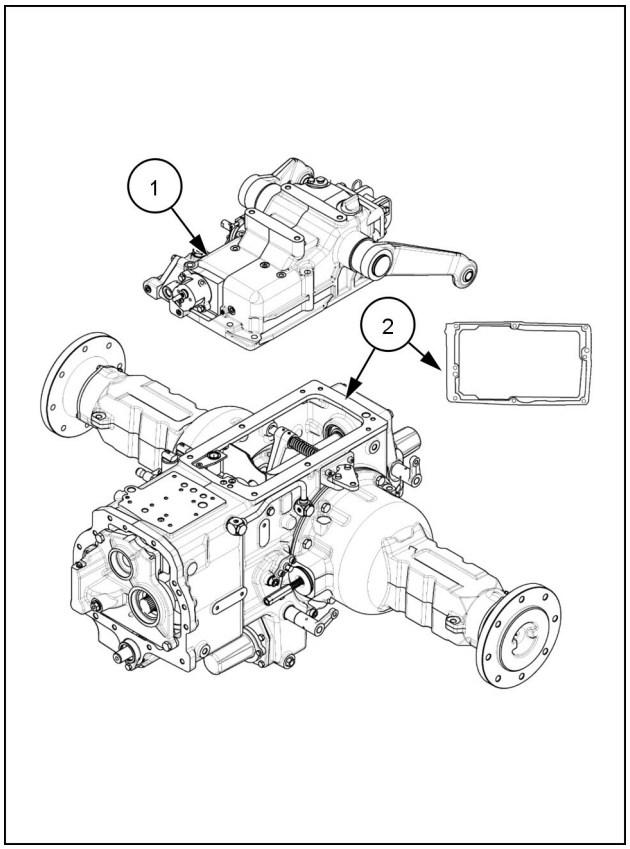
Valve assembly with following components installed:

- Stand Still valve **(1)**
- Relief valve **(2)**
- Solenoid **(3)** with O-ring **(4)** and ring nut **(5)**
- P2 (output pulley) **(6)** and P1 (Input Pulley) **(7)** into the valve body.

8. Thoroughly clean and degrease the mating surfaces of the HPL cover **(1)** and the top of the transmission housing **(2)** and apply a bead of **LOCTITE® 518™** sealer.



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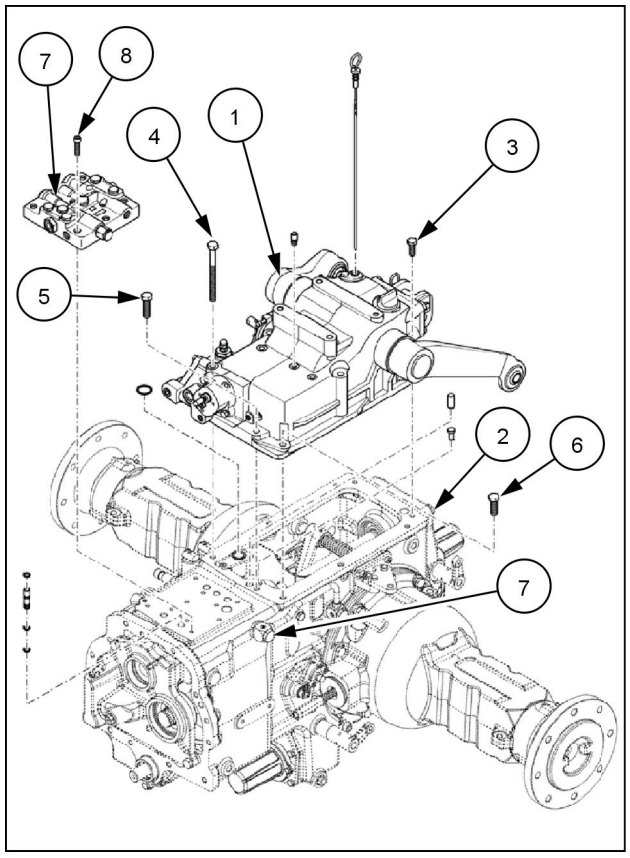
9. Install the hydraulic lift assembly **(1)** using a suitable hoist.
10. Secure the hydraulic lift assembly **(1)** to the transmission housing **(2)** using:
    A. Four, M10 x 1.25 x 30 bolts **(3)**
    B. Three, M12 x 1.25 x 130 bolts **(4)**
    C. One, M12 x 1.25 x 45 bolt **(5)**
    D. One, M12 x 1.25 x 35 bolt **(6)**
11. Torque M10 bolts to **55 N·m** (**41 lb ft**) and M12 bolts to **84 N·m** (**62 lb ft**).
12. Place PIV hydraulic valve block **(7)** onto transmission housing and secure with ten M8 x1.25 x 40 socket head bolts **(8)**. Torque M8 bolts to **40 N·m** (**30 lb ft**).
13. Connect hydraulic oil delivery tube **(7)**.



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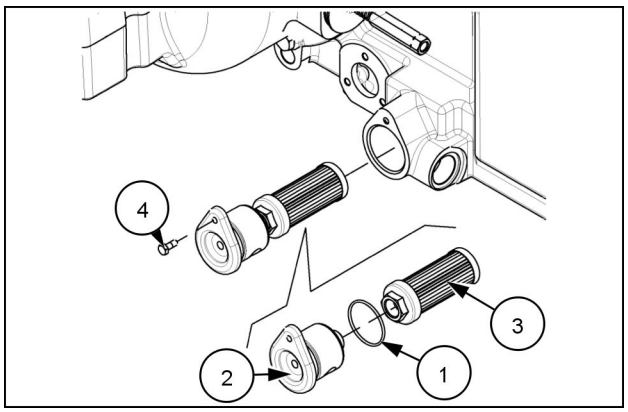
Continuously Variable Transmission (CVT) - Install Gerotor Pump Inner Filter

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Installation

1. Lubricate and install O-ring, **(1)**, onto the filter carrier, **(2)**.
2. Screw filter cartridge, **(3)**, onto filter carrier, **(2)**.
3. Secure filter assembly to the differential housing using M16 x 16mm bolt, **(4)**. Apply a small amount of **LOCTITE® 242®** to the threads of the bolt, **(4)**, and torque bolt to **60 - 70 N·m** (**44 - 52 lb ft**).



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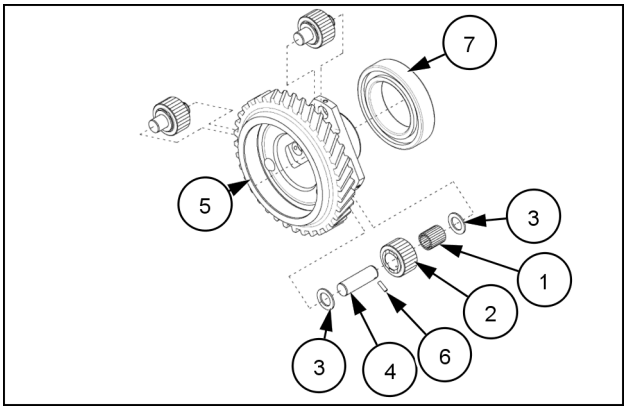
NOTICE: *Clean the Gerotor inner filter,* ***(3)****, after every 600 hours of operation.*

Continuously Variable Transmission (CVT) - Assemble Planetary Reduction Gear

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

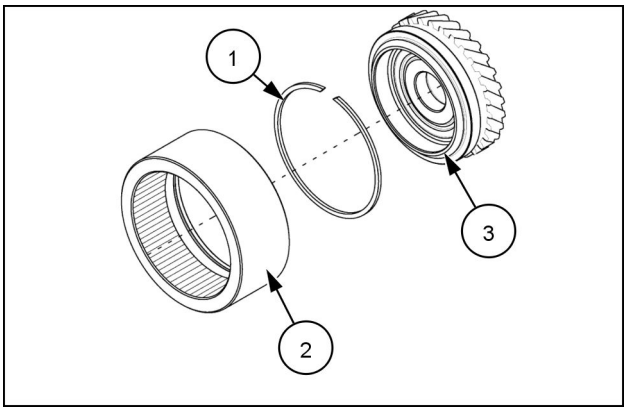
Assembly

1. Press needle bearing, **(1)** into planet gear (18T), **(2)**.
2. Install planet gear, **(2)**, thrust washers, **(3)**, and pin, **(4)**, into planetary gear carrier (54T), **(5)**.
3. Secure planet gear, **(2)**, into position using locating pin, **(6)**.
4. Repeat steps one through three for remaining two planet gears.
5. Press bearing, **(7)**, onto planetary gear carrier (54T), **(5)**.



36084060N 1

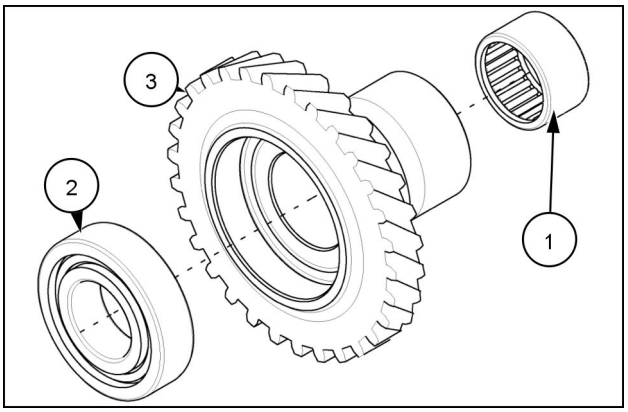
6. Insert snap ring, **(1)**, into groove on the inside bore of the pinion, **(2)** . Using two small **90 °** picks spread snap ring, **(1)**, while lowering crown gear (26T), **(3)**, into position until completely below snap ring, **(1)**.



36084059N 2

NOTE: *The assistance of a second person is needed to ease assembly procedure.*

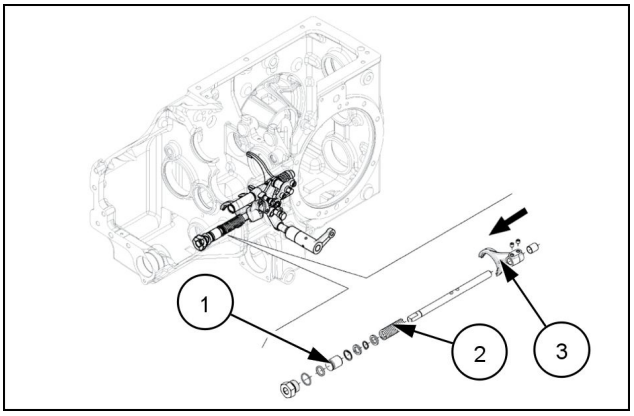
7. Press needle bearing, **(1)** , and bearing, **(2)**, onto the sun gear (49T), **(3)**.



36084058N 3

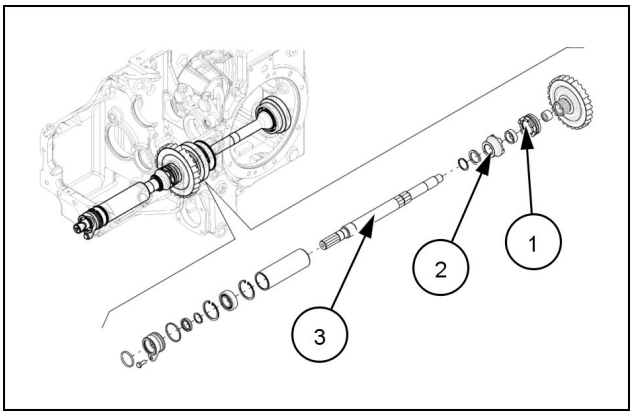
Engage

1. When the 2WD/4WD switch is in the 4WD position, the 4WD solenoid stops hydraulic flow to piston, **(1)**. This relieves hydraulic pressure on spring, **(2)**, allowing the shift fork, **(3)**, to move towards the front of the transmission.



36084796N 2

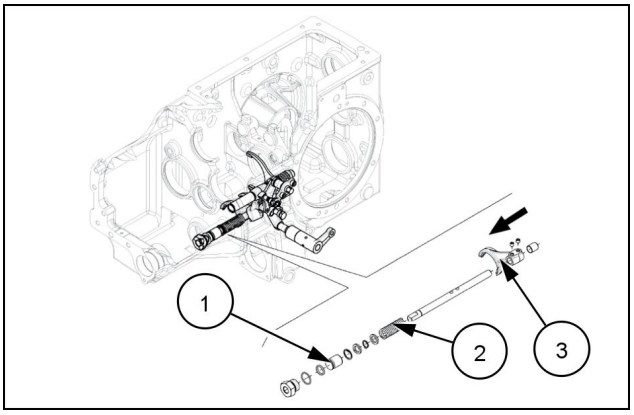
2. The 4WD couplers, **(1)**, and, **(2)**, engage, allowing rotation of the 4WD output shaft, **(3)**.



36084797N 3

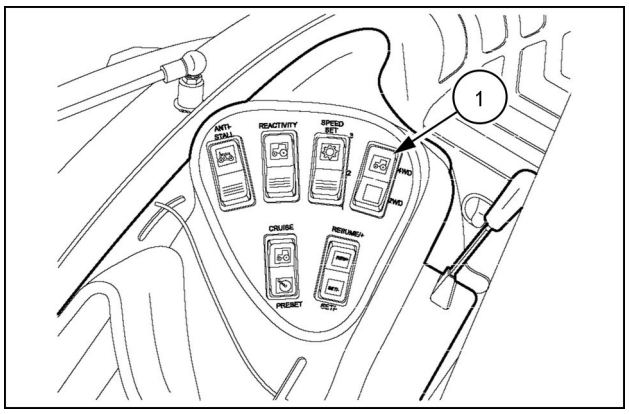
Disengage

3. When the 2WD/4WD switch is in the 2WD position, the 4WD solenoid allows hydraulic flow to piston, **(1)**. This applies pressure to spring, **(2)**, allowing the shift fork, **(3)**, to move towards the rear of the transmission.



36084796N 4

The front powered axle is activated by the FWD switch **(1)** located on the left hand pod inside the cab.



86083737N 2

Powered front axle - Install Supersteer™ AXLE

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

⚠ WARNING

Heavy objects!
Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders.
Failure to comply could result in death or serious injury.

W0398A

⚠ WARNING

Pressurized hydraulic fluid can penetrate the skin and cause severe injuries.
Tighten all of the connections before starting the engine. If hydraulic fluid has penetrated the skin, seek medical assistance immediately.
Failure to comply could result in death or serious injury.

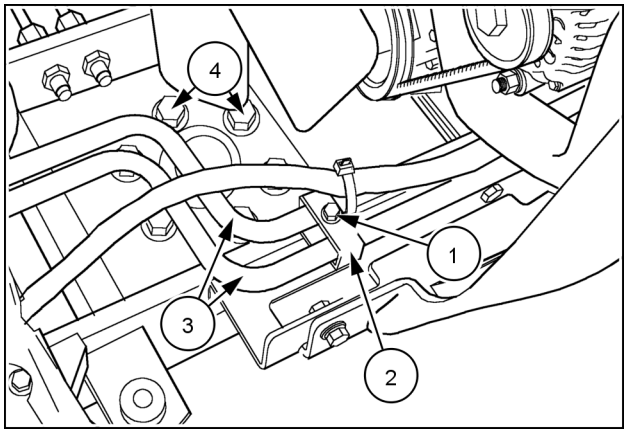
W0117A

Installation

1. With the axle properly supported by a floor jack or a chain hoist, and the tractor supported by jackstands, carefully roll the axle under the tractor and into position.
2. Raise the axle slowly, aligning the axle pivot bolt holes in the tractor frame with the bolt holes in the axle pivot bearing collar.

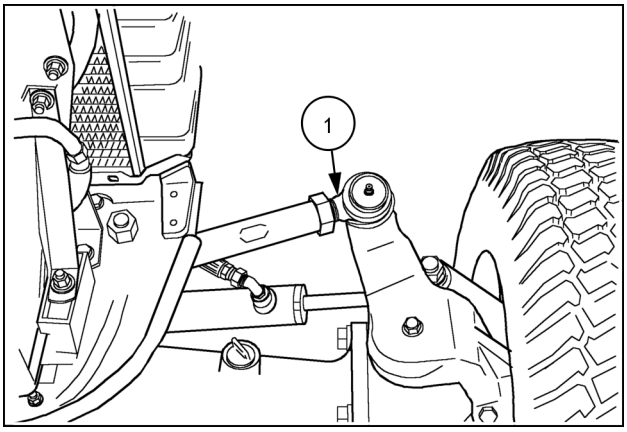
NOTE: *It may be necessary to raise or lower the jack/ hoist to properly align the axle pivot bolt holes.*

3. Install the axle pivot bolts through the frame and into the axle pivot bearing collar.
4. Tighten the axle pivot bearing M16 x 60 mm —10.9 bolts, **(4)**.to **266 N·m** (**196 lb ft**).
5. Install and tighten the clamp, **(2)**, and bolt, **(1)**, on the transmission oil cooler lines, **(3)**.



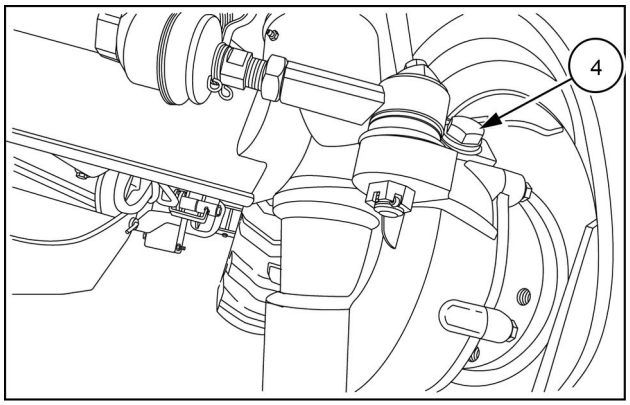
30996398 1

6. Install the left and right side tie rod ends into the frame and secure with the castle nuts, **(1)** . Tighten the castle nuts, **(1)**, to **95 - 115 N·m** (**70 - 85 lb ft**).
7. Install the Sensitrack™ assembly. Refer to SENSITRACK™ INSTALLATION, discussed earlier in this section.



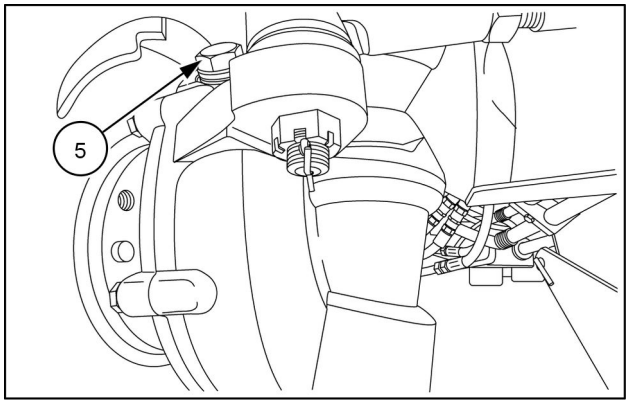
30996391 2

4. (Filler plug) Left side axle case top side **(4)**.



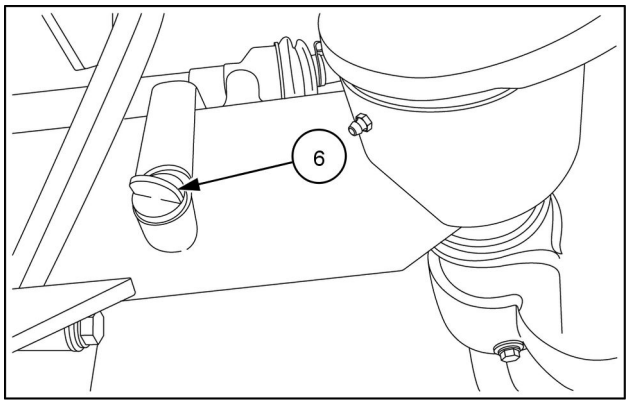
NHIL13CT00739AA 4

5. (Filler plug) Right side axle case top side **(5)**.



NHIL13CT00737AA 5

6. (Filler plug) Right side axle housing top side **(6)**.



NHIL13CT00608AA 6

Draining the entire axle housing

Oil capacity of the front axle is **8.0 L** (**8.5 US qt**) .

1. Use containers of adequate capacity.
2. Place a container under each drain plug.
3. Remove the filler plugs to allow air to replace the draining oil.
4. Remove the drain plugs.

NOTE: *When draining the oil is complete, install the drain plugs.*

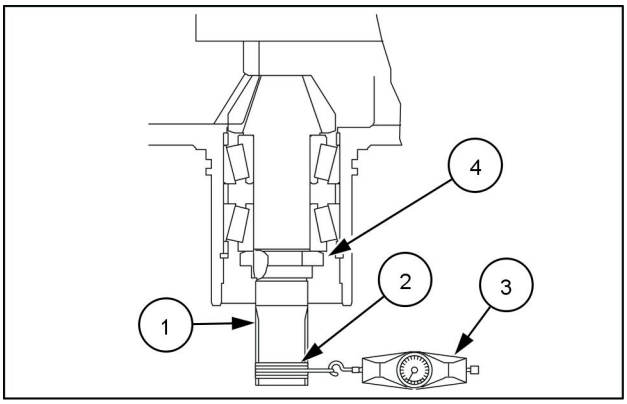
Powered front axle - Preload of pinion shaft taper roller bearings - PIN break ZDMB11925

Boomer™ 3040 CVT [ZDMB11925 -]	WE
Boomer™ 3045 CVT [ZDMB11925 -]	WE
Boomer™ 3050 CVT [ZDMB11925 -]	WE

Measuring rolling pre-load of taper roller bearings

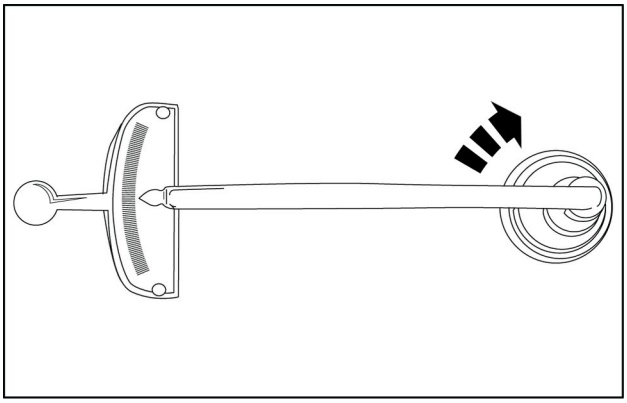
NOTICE: *Measure the pre-load of the bearings assembled to the front axle before installing oil seal and 22T bevel gear. Lubricate bearings with oil before measuring preload.*

1. Measure the rolling pre-load with a pull scale.
2. Wrap the pinion shaft **(1)** with a string **(2)**, measure the rolling pre-load by pulling the string with a pull scale **(3)** . Rolling pre-load should be **8 - 10 kgf** (**18 - 22 lbf**)
3. If the rolling pre-load measurement is low, tighten nut **(4)** and if measurement is high, loosen nut.



NHIL13CT00622AA 1

4. Rolling pre-load can also be measured by installing a torque wrench to the spline of the pinion shaft. Rolling torque should be **1.0 - 1.2 N·m** (**8.7 - 10.4 lb in**) .



NHIL13CT00622AC 2

Differential - Disassemble Front Axle and Differential

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

⚠ WARNING

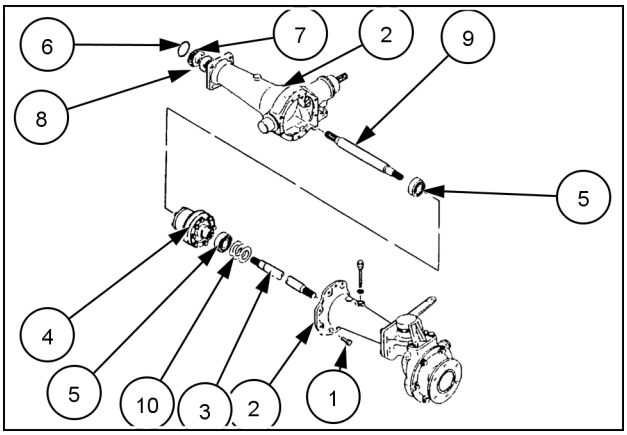
Heavy objects!
Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders. Failure to comply could result in death or serious injury.

W0398A

FRONT AXLE AND DIFFERENTIAL

Disassembly

1. Remove the left axle housing retaining bolts, **(1)**, and remove the axle housing, **(2)**, and the axle shaft, **(3)**, as an assembly.
2. Remove the differential assembly, **(4)**, and differential carrier bearings, **(5)**, from the axle housing, **(2)**.
3. Remove the O-ring, **(6)**, the axle outer pinion gear, **(7)**, and bearing, **(8)**, from each end, and gently drive the axle shaft, **(3)** and **(9)**, inward to remove from the housing.



76075783 1

NOTICE: *Observe the quantity and the size of the shims,* ***(10)****, between the axle shaft inner bearing and the axle housing. Shim sizes are* ***0.1 mm*** *(****0.004 in****) ,* ***0.2 mm*** *(****0.008 in****) and* ***0.5 mm*** *(****0.020 in****).*

4. Check the differential side gear to pinion back- lash. Replace the gears if backlash exceeds **0.3 mm** (**0.012 in**) .

Axle pinion - Assemble

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

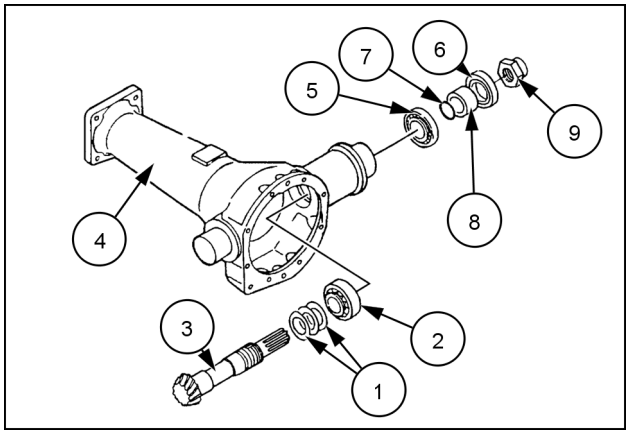
⚠ WARNING

Heavy objects!
Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders. Failure to comply could result in death or serious injury.

W0398A

FWD DRIVE PINION Assembly

1. Install the shims, **(1)**, and the front pinion bearing, **(2)**, on the drive pinion, **(3)**.



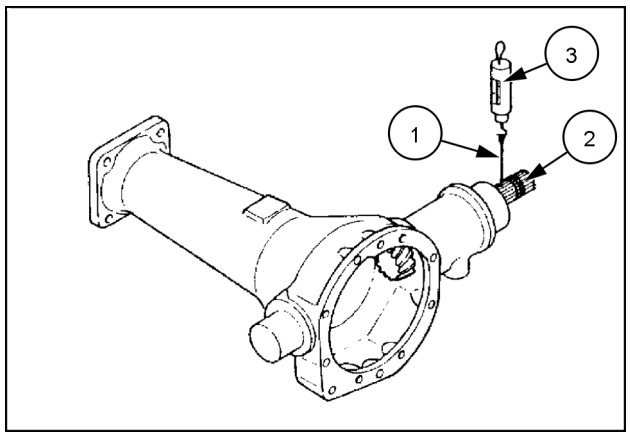
76075785 1

NOTICE: *Observe the quantity and the size of the shims, used on the pinion shaft. Shim sizes are* ***0.1 mm*** *(****0.004 in****),* ***0.2 mm*** *(****0.008 in****) and* ***0.5 mm*** *(****0.020 in****).*

2. Insert the drive pinion, **(3)**, in place in the differential housing, **(4)** .
3. Install the outer bearing, **(5)**, on the pinion shaft, **(3)**, in the differential housing, **(4)**.

NOTICE: *Install the oil seal,* ***(6)****, to a depth of* ***2 mm*** *(****0.08 in****) from the outer most surface of the housing.*

4. Using a suitable driver, install the oil seal, **(6)**, the O-ring, **(7)**, and the collar, **(8)**, on the pinion shaft, **(3)**.
5. Install the pinion locknut, **(9)**, and tighten to obtain the correct bearing preload as follows:
   - Wrap a strong cord, **(1)**, around the pinion shaft, **(2)**. Using a pull scale, **(3)**, measure the pounds of pull required to rotate the pinion shaft.
   - Tighten or loosen the locknut as necessary to obtain a preload of **14.4 - 17.6 kgf** (**32 - 39 lbf**) pull.

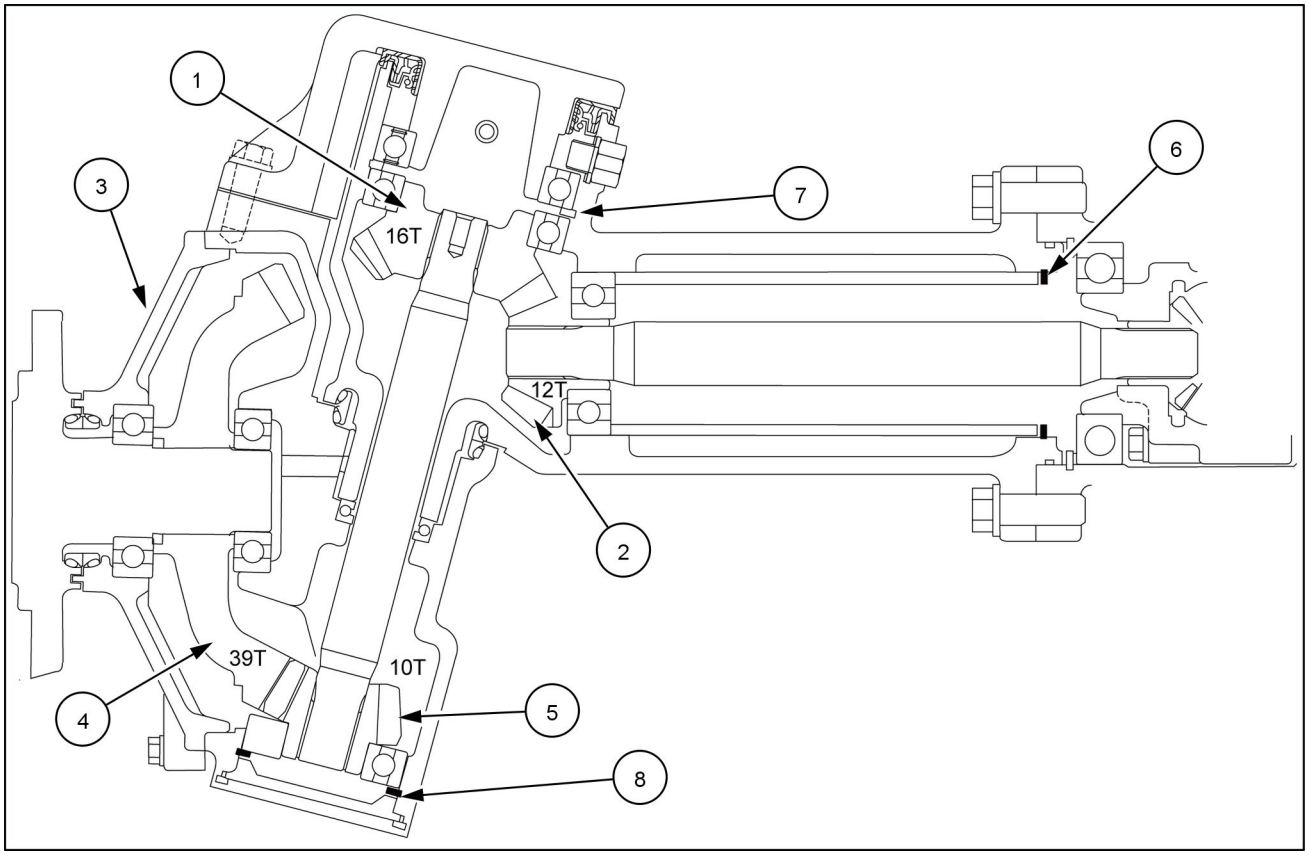


76113181 2

Final drives - Gear tooth contact upper bevel gears and final drive bevel gears PIN break ZDMB11925

Boomer™ 3040 CVT [ZDMB11925 -]	WE
Boomer™ 3045 CVT [ZDMB11925 -]	WE
Boomer™ 3050 CVT [ZDMB11925 -]	WE

Tooth Contact for Upper Bevel Gears and Final Drive Bevel Gears



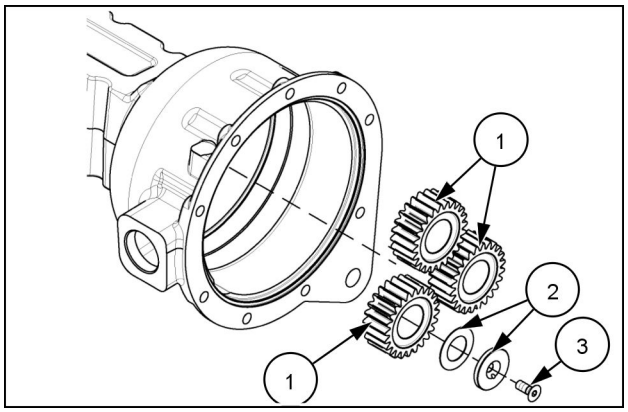
NHIL13CT00633FA 1

1. Lift the front axle using a hydraulic jack or a hoist, remove the front tires and drain oil from the axle completely.
2. Remove the 16T bevel gear **(1)** and 12T bevel gear **(2)**. See **Powered front axle - Remove front axle cover - PIN break ZDMB11925 (25.100)**.
3. Clean then coat all the teeth of the 12T gear **(2)** with contact grease and reassemble axle.
4. Remove the axle cover **(3)** See **Powered front axle - Remove front axle cover - PIN break ZDMB11925 (25.100)** . Clean the teeth of the 39T **(4)** and 10T **(5)** bevel gears
5. Coat all the teeth of the 10T bevel gear **(5)** with contact grease.
6. Install the axle cover **(3)**.See **Powered front axle - Install front axle cover - PIN break ZDMB11925 (25.100)** .Rotate the axle by hand to check for proper operation.

Contents

Rear axle system - 27

12. Secure the planetary gears, **(1)**, to the planetary gear carrier by installing the washers, **(2)**, and M10 x 25mm countersunk socket screws, **(3)** . Torque the bolts to **43 N·m** (**32 lb ft**).

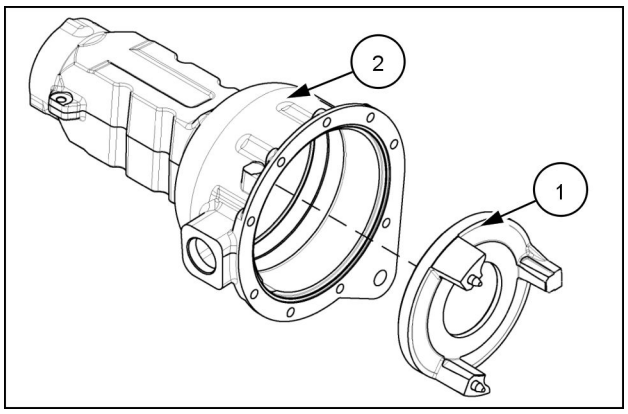


36084221N 8

NOTICE: *When installing the washers onto the planetary gears, make sure the holes in the outer washers are lined up with the pins on the carrier.*

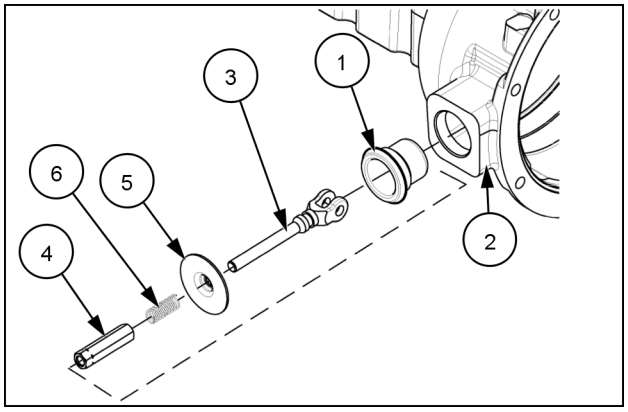
NOTE: *Use* ***LOCTITE® 242®*** *on the bolts.*

13. Install the brake disc support, **(1)**, into the axle housing, **(2)**.



36084220N 9

14. Install a new brake rod rubber bellow, **(1)**, onto the axle housing, **(2)**.
15. Install the rear brake rod, **(3)**, through the anti-dust seal, **(1)**, and then install the dust cover, **(4)**, onto the rear brake rod, **(3)**.
16. Install the spring, **(5)**, onto the rear brake rod, **(3)**.
17. Screw the tie-rod, **(6)**, onto the end of the rear brake rod, **(3)**.



36083227N 10

NOTICE: *When installing the brake actuator, stator, and brake discs back into the axle housing. Make sure the actuator, stator, and brake disc are properly aligned with the brake disc support.*

NOTE: *Before installing the brake actuator, stator, and brake discs. Install the brake rod linkage pin to the rear brake rod.*

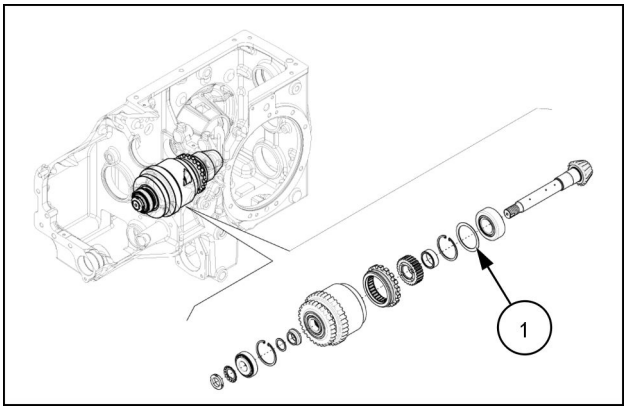
that of the new pinion (allowances of the old pinion minus that of the new pinion). When the value of the clearances is zero, the value is not stamped on the drive pinion.

The following is the formula for the rear pinion gear shim, **(1)**, calculation:

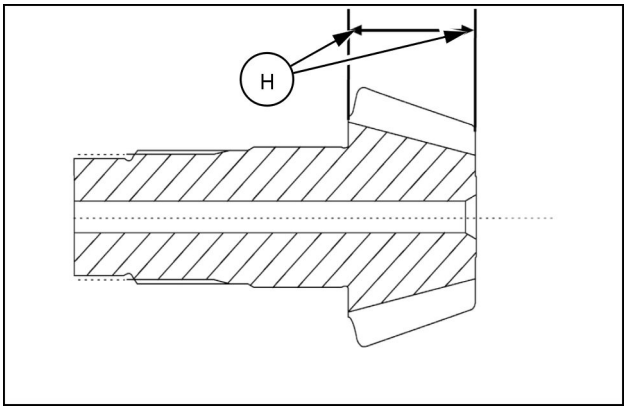
- S2 = S1 + (D1–D2) / 100 + (H1 — H2)
- D1 = Deviation value of original pinion
- D2 = Deviation value of replacement pinion
- H1 = Pinion head height of original pinion
- H2 = Pinion head height of replacement pinion
- S1 = Shim amount of original pinion
- S2 = Shim amount of replacement pinion

NOTE: *D1 and D2 values engraved on pinion heads are expressed in hundredths of mm. All other dimensions are in mm.*

NOTE: *H1 and H2 dimensions are found by measuring the height **(H)** of the pinion gear.*



36080701N 2



36084030N 3

Replacement Shim Amount (S2) Calculation

S2 = S1 + (D1 —D2) / 100 + (H1 —H2)

Example:

- D1 = 15
- D2 = 5
- H1 = 36.9
- H2 = 37.1
- S1 = 1.4

S2 = S1 + (D1 —D2) / 100 + (H1 —H2)

S2 = + 1.4 + (15 –5) / 100 + (36.9 + 37.1)

S2 = 1.4 + (10 / 100) + (-0.2)

S2 = 1.4 + 0.1 + (-0.2)

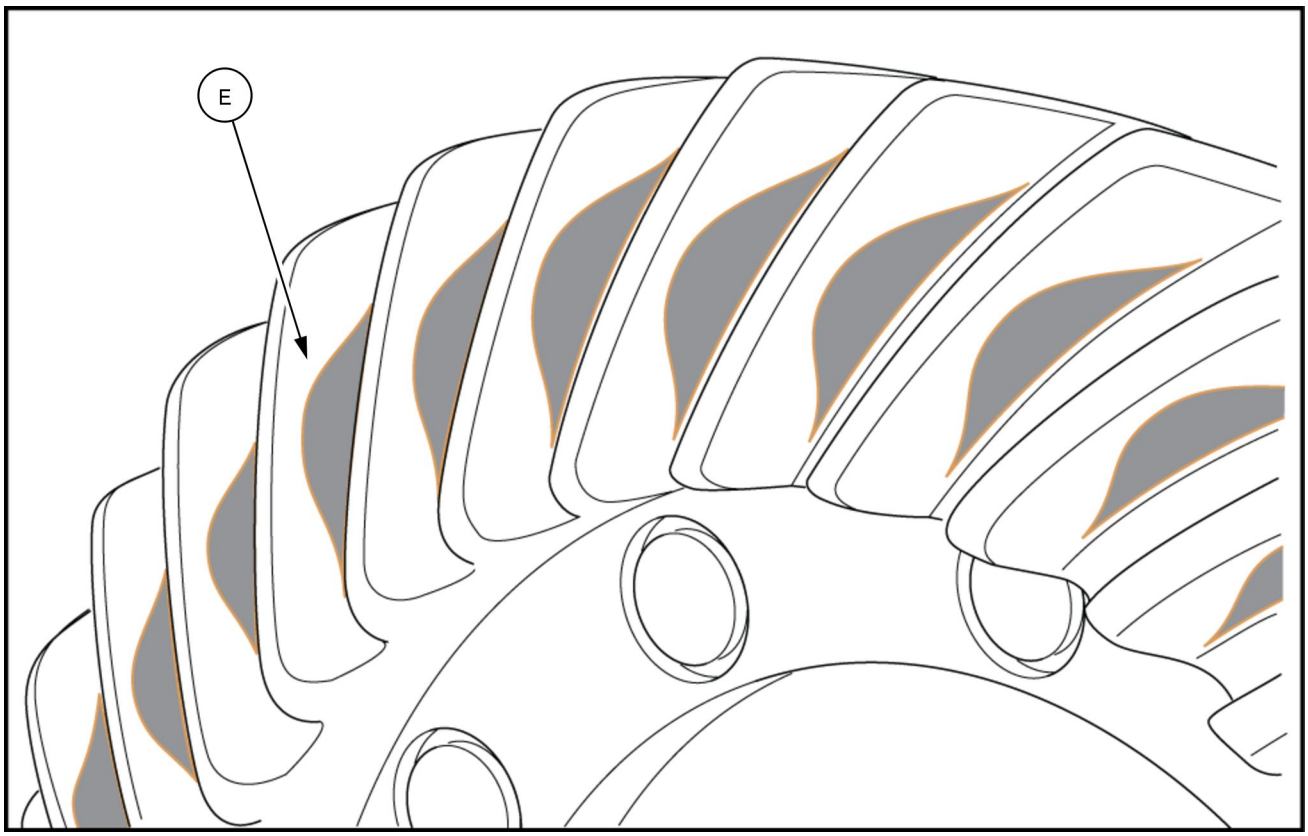
S2 = 1.5 + (-0.2)

S2 = 1.3

NOTE: *Replacement shim amount is **1.3 mm** (**0.051 in**)*

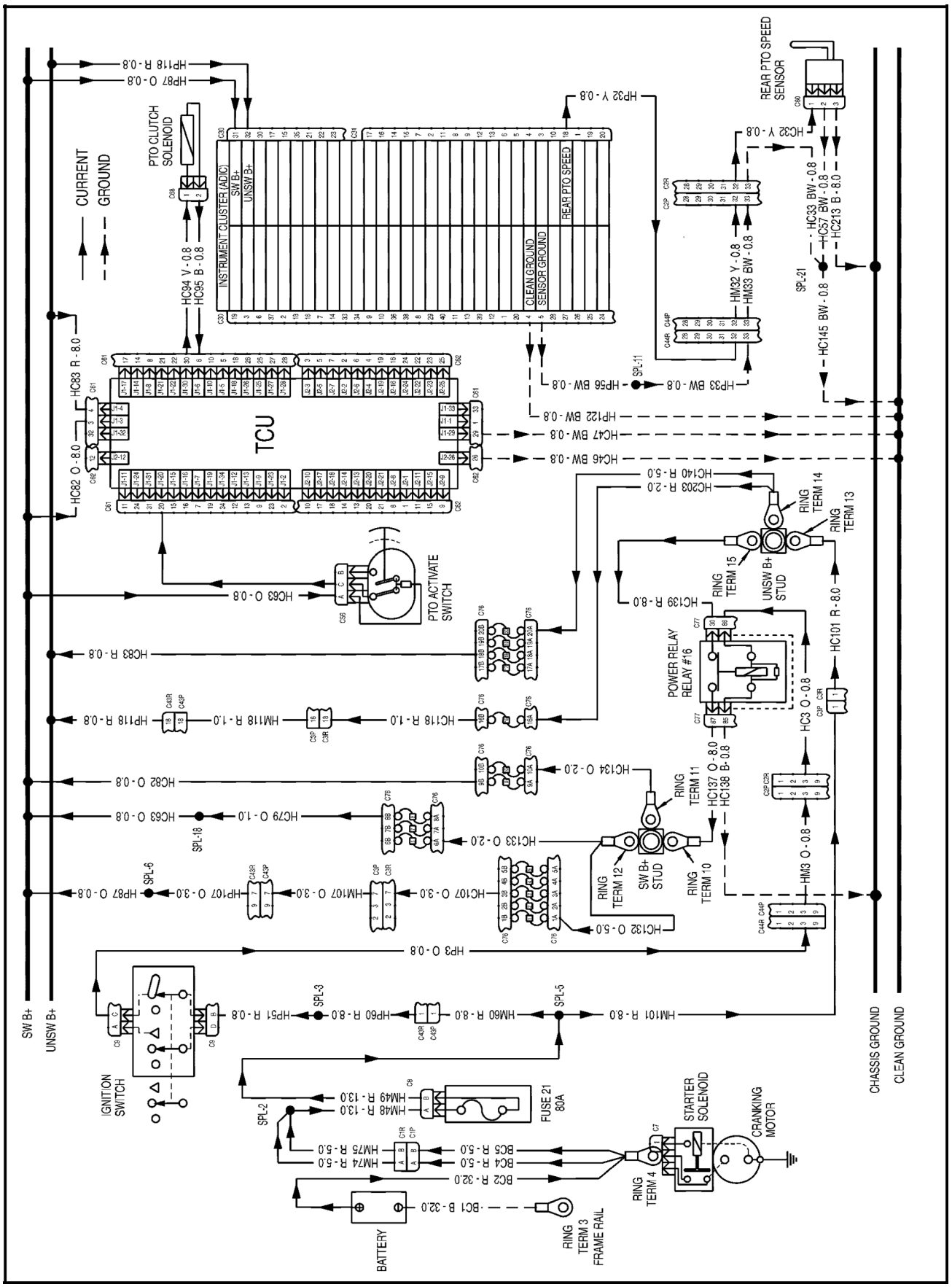
Incorrect tooth contact

NOTE: *The distance of the pinion from the ring gear must be increased. (As shown in figures* ***7*** *and* ***8***



NHIL12CT00579AA 7

(E) Concave side (Ring Gear)


CURRENT
GROUND
TCU
INSTRUMENT CLUSTER (ADIC)
SW B+
UNSW B+
CLEAN GROUND
SENSOR GROUND
REAR PTO SPEED
REAR PTO SPEED SENSOR
PTO CLUTCH SOLENOID
PTO ACTIVATE SWITCH
POWER RELAY RELAY #16
RING TERM 15
RING TERM 14
RING TERM 13
RING TERM 12
RING TERM 11
RING TERM 10
UNSW B+ STUD
SW B+ STUD
IGNITION SWITCH
FUSE 21 80A
STARTER SOLENOID
CRANKING MOTOR
RING TERM 4
BATTERY
RING TERM 3 FRAME RAIL
CHASSIS GROUND
CLEAN GROUND
HP118 R - 0.8
HP87 O - 0.8
HP32 Y - 0.8
HC32 Y - 0.8
HC33 BW - 0.8
HC57 BW - 0.8
HC213 B - 8.0
HC145 BW - 0.8
HM32 Y - 0.8
HM33 BW - 0.8
HP33 BW - 0.8
HP56 BW - 0.8
HP122 BW - 0.8
HC47 BW - 0.8
HC46 BW - 0.8
HC140 R - 5.0
HC203 R - 2.0
HC139 R - 8.0
HC101 R - 8.0
HC3 O - 0.8
HM3 O - 0.8
HC137 O - 8.0
HC138 B - 0.8
HC134 O - 2.0
HC133 O - 2.0
HC132 O - 5.0
HC107 O - 3.0
HM107 O - 3.0
HP107 O - 3.0
HC79 O - 1.0
HC63 O - 0.8
HC82 O - 0.8
HC118 R - 1.0
HM118 R - 1.0
HC83 R - 0.8
HC83 O - 0.8
HC83 R - 8.0
HC82 O - 8.0
HC94 V - 0.8
HC95 B - 0.8
HP3 O - 0.8
HP51 R - 0.8
HP60 R - 8.0
HM60 R - 8.0
HM101 R - 8.0
HM49 R - 13.0
HM48 R - 13.0
HM75 R - 5.0
HM74 R - 5.0
BC5 R - 5.0
BC4 R - 5.0
BC2 R - 32.0
BC1 B - 32.0
SPL-2
SPL-3
SPL-5
SPL-6
SPL-10
SPL-11
SPL-21

76086813N 1

Power Take-Off (PTO) case - Remove

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

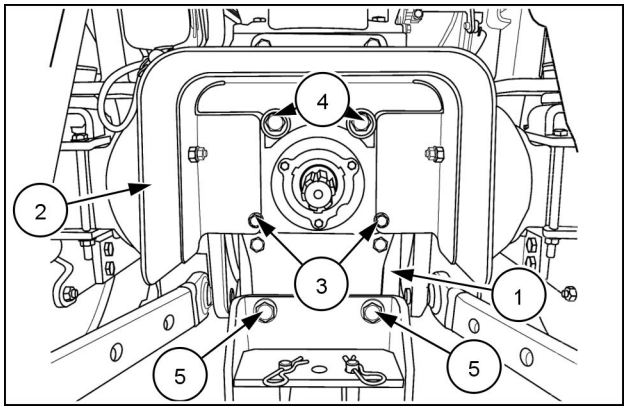
⚠ WARNING

Avoid injury!
Handle all parts carefully. Do not place your hands or fingers between parts. Use Personal Protective Equipment (PPE) as indicated in this manual, including protective goggles, gloves, and safety footwear.
Failure to comply could result in death or serious injury.

W0208A

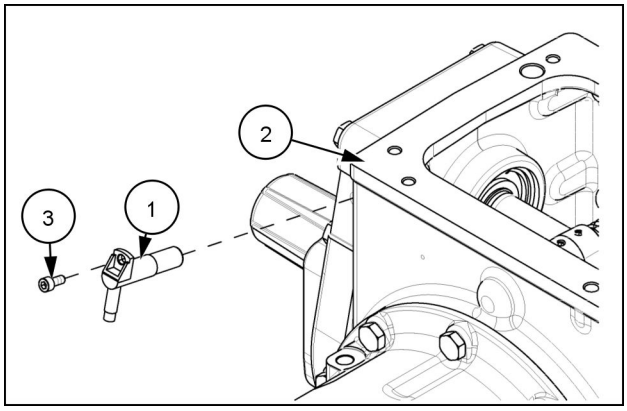
The PTO cover can be removed from the differential housing without removing the transmission or housing from the tractor.
In order to remove the rear PTO cover, the differential hosing will need to be drained. The drain plug for the differential housing is located on the right side of the housing, by the rear axle.

1. Remove the tractors drawbar assembly in order to remove the PTO cover **(1)** . To remove the drawbar assembly remove the two bolts **(5)** and the four bolts located under the drawbar assembly.
2. Remove the four bolts **(3)** and **(4)** to remove the PTO shield **(2)**. This will allow removal of the PTO cover **(1)** from the differential housing in **5** .



76086812N 1

3. Remove the inductive speed sensor **(1)** from the right side of the PTO cover **(2)** by removing the M6 x 14 socket head bolts **(3)**.

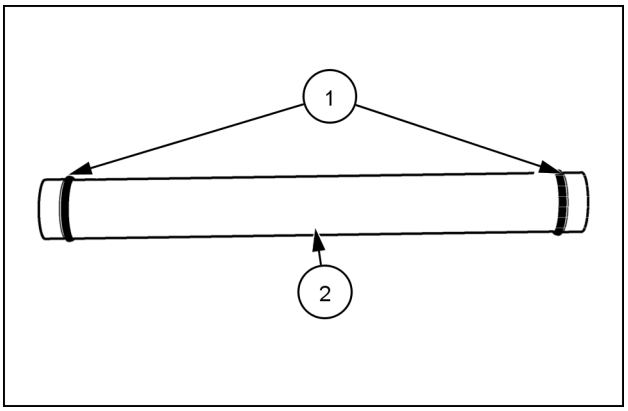


36084261N 2

Power Take-Off (PTO) clutch - Visual inspection

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

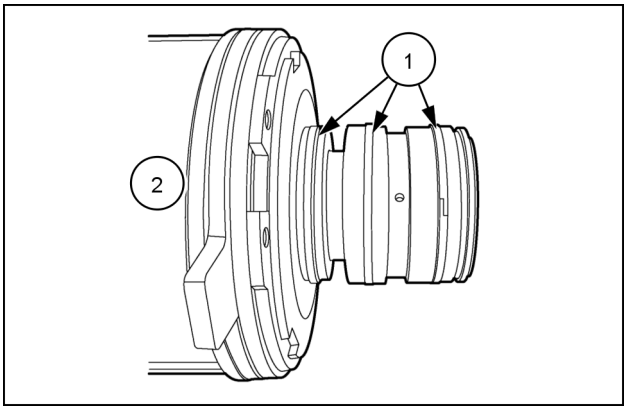
1. Remove and discard all the O-rings, **(1)**, on each hydraulic fluid transport tube, **(2)**, and replace with new O-rings.



86086728N 1

NOTE: *Lubricate the new O-rings with clean hydraulic oil before installing them on the transport tubes.*

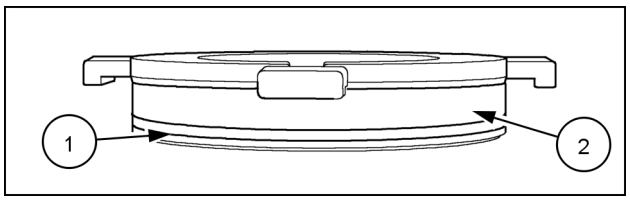
2. Remove the seal rings, **(1)**, from the clutch housing, **(2)**, and inspect them for excess wear and damage. Replace as needed.



86084285N 2

NOTE: *The clutch housing is shown with the brake pressure plates and brake disc installed.*

3. Remove the seal ring, **(1)**, from the clutch piston, **(2)**, and inspect the ring for excess wear and damage. Replace as needed.



30000380 3

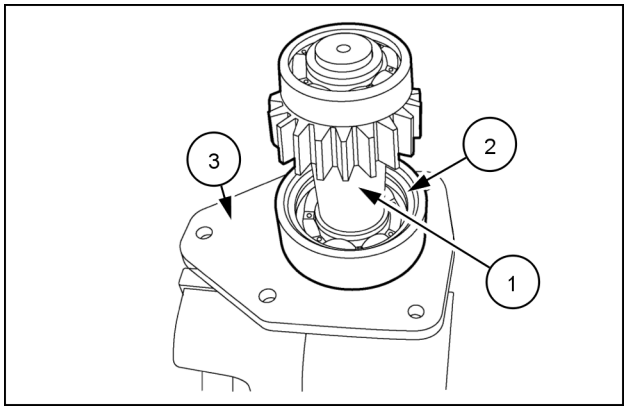
Central Power Take-Off (PTO) - Disassemble

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Prior operation:
Central Power Take-Off (PTO) - Remove (31.120)

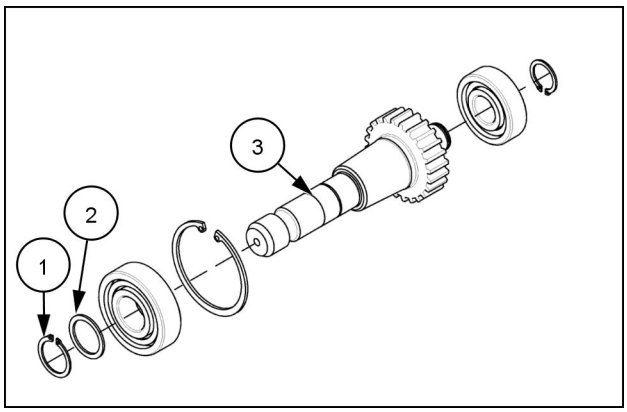
Disassembly

1. Place the mid PTO shaft, **(1)**, into a vice.
2. Remove the snap ring, **(2)**, from the mid PTO cover, **(3)**.
3. Remove the mid PTO shaft, **(1)**, from the vise then use a dead blow hammer to remove the mid PTO shaft from the mid PTO cover, **(3)**.
4. Use a seal removal tool to remove the oil seal from the mid PTO cover, **(3)**.



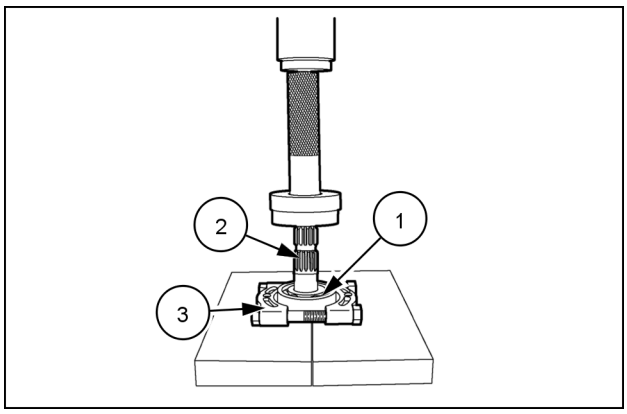
86084250N 1

5. Remove the snap ring, **(1)**, and thrust washer, **(2)**, from the mid PTO shaft, **(3)**.



36084251N 2

6. To remove the bearing, **(1)**, from the mid PTO shaft, **(2)**, place a bearing splitter, under the bearing, **(1)**, and place the mid PTO shaft, **(2)**, in a hydraulic press with the splined end of the shaft facing up.



86084252N 3

NOTE: *The bearing splitter **(3)** will rest on the press plates on the hydraulic press.*

7. Carefully press the mid PTO shaft, **(2)**, down through the bearing, **(1)**.

Contents

Brakes and controls - 33

Mechanical service brakes - 120

(*) See content for specific models

Mechanical service brakes - Adjust

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

⚠ WARNING

Avoid injury!
Handle all parts carefully. Do not place your hands or fingers between parts. Use Personal Protective Equipment (PPE) as indicated in this manual, including protective goggles, gloves, and safety footwear.
Failure to comply could result in death or serious injury.

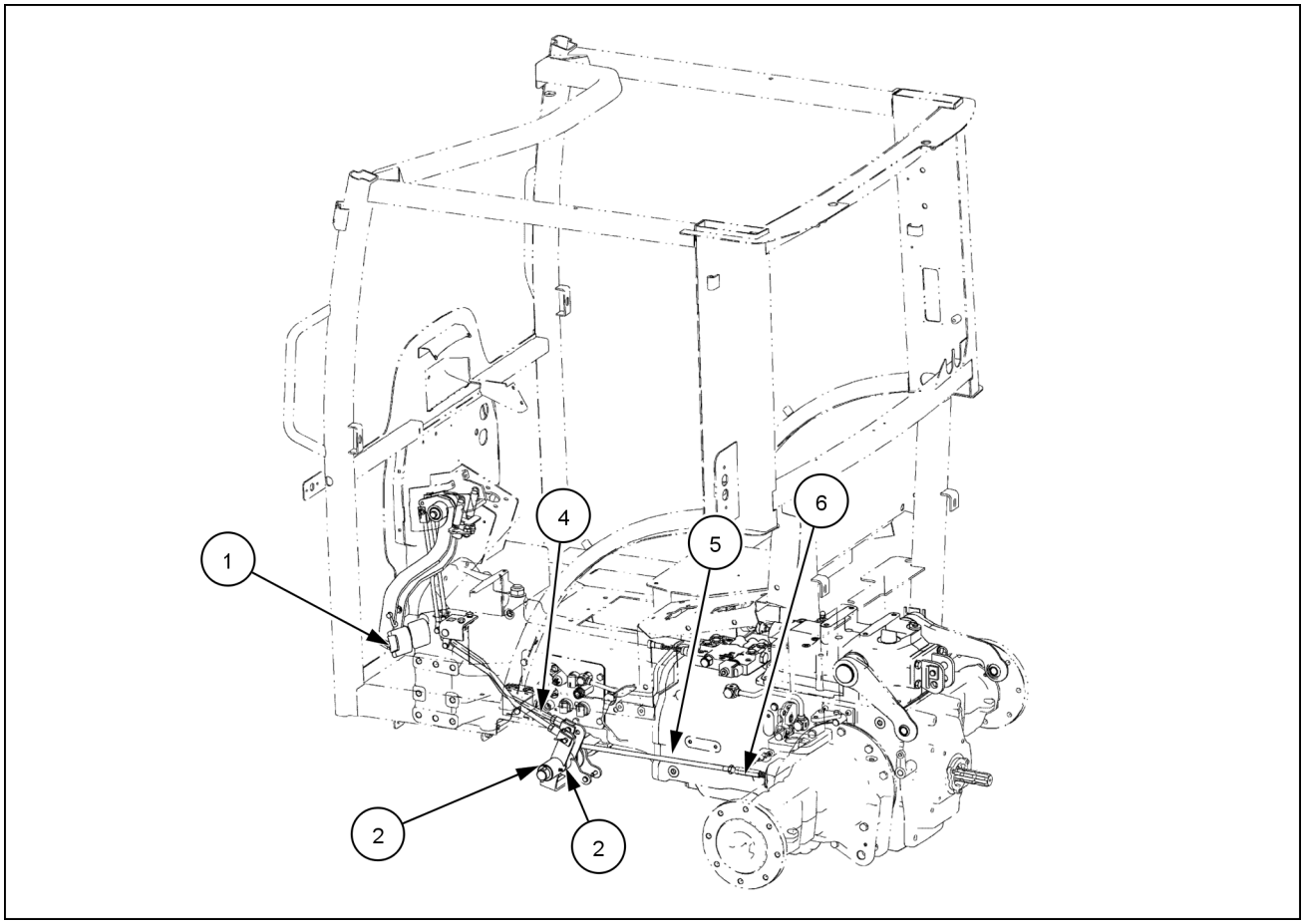
W0208A

⚠ WARNING

Equipment rolling hazard!
Always try to park the machine on firm level ground. Avoid parking on slopes. Block the wheels in both directions.
Failure to comply could result in death or serious injury.

W0265A

Adjustment



36083744 1

Linkage

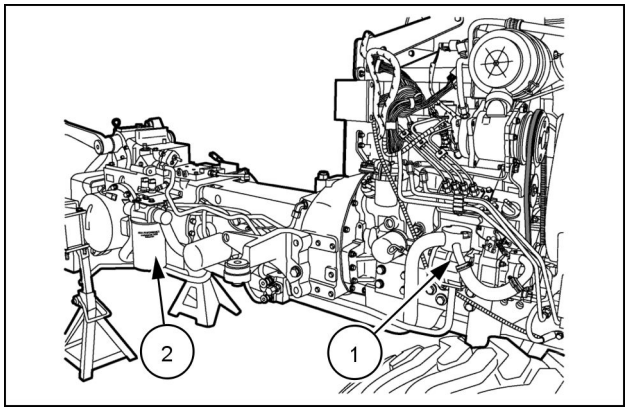
1. Measure the brake pedal free play, **(1)**. The free play should be between **30 - 40 mm** (**1 - 2 in**).
2. If adjustment is required verify that the cross shaft levers, **(2)**, located on the cross shaft, **(3)**, are near the one o'clock position.

Hydraulic systems - Static description

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

INTRODUCTION AND CIRCUIT IDENTIFICATION

The hydraulic system on tractors is a mechanical lift assembly able to raise and lower the lift arms, in turn, three point linkages
. The high pressure hydraulic circuit is of open center type. In this system, the hydraulic lift is connected to the hydraulic pump, and pump flow is continuously circulating through the hydraulic system even when the circuit are not being operated.
The open center high pressure hydraulic circuit with mechanical lift is shown in figure **1** and includes the components shown on the following pages.



86090153N 1

Pump

The open center hydraulic pump assembly, **(1)** , is a high pressure gear pump.

Filter

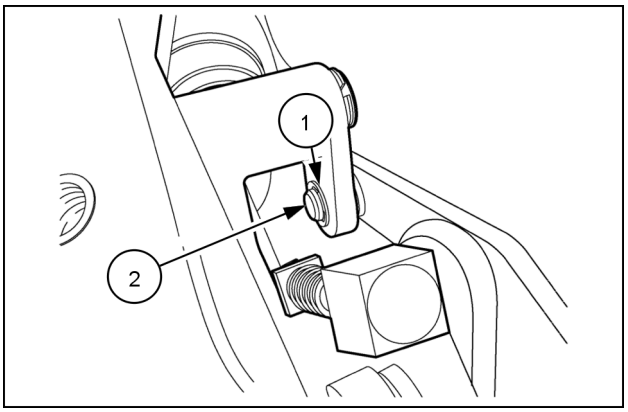
Full-flow spin on type filter, **(2)** mounted on right side of the transmission housing.

NOTE: *Refer to figure* ***2****.*

Bucket Control - Dumping/Lift Control - Neutral

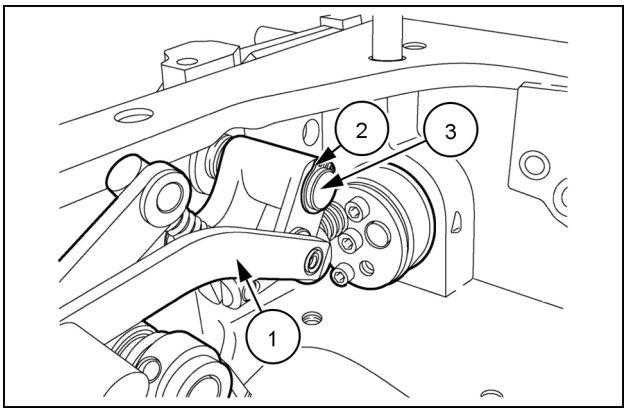
When the control lever, **(1)**, is moved to the dumping position, the bucket control spool, **(2)**, is moved inward. Fluid flow from the hydraulic pump, **(3)**, is directed into the valve body, opening through check valve **(#1)** , to passage **(C)**, From passage **(C)**, fluid is directed to the piston side of the bucket cylinder, this pressurized oil will extend the bucket cylinder and allow the bucket to dump. Hydraulic fluid contained on the rod side of the bucket cylinder flows out of the cylinder, through passage **(D)**, and exits the valve body through the tank port, **(T)**, Hydraulic fluid is then returned to the hydraulic fluid reservoir, **(4)**, through the relief/diverter valve manifold, **(5)** .
Since the lift control spool, **(6)**, remains in neutral, the lift control cylinders, **(7)**, remain in a fixed position.

8. Remove e-clip, **(1)** , from shaft, **(2)**.



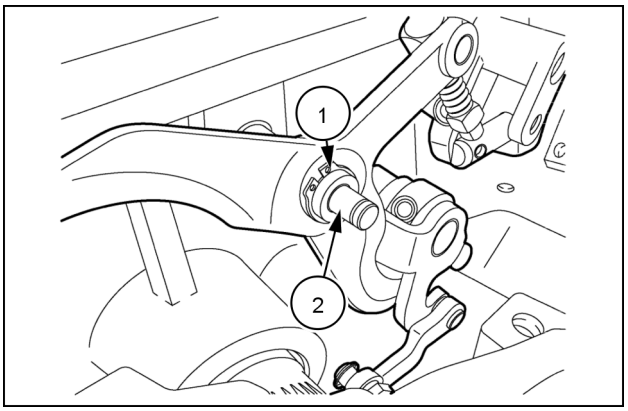
86083835N 8

9. Remove arm, **(1)** , from linkage assembly.
10. Remove snap ring, **(2)** , from front shaft, **(3)**.



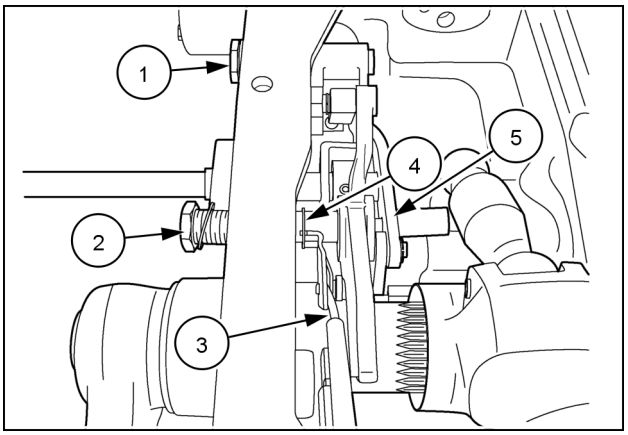
86083836N 9

11. Remove snap ring, **(1)** , from rear shaft, **(2)**.



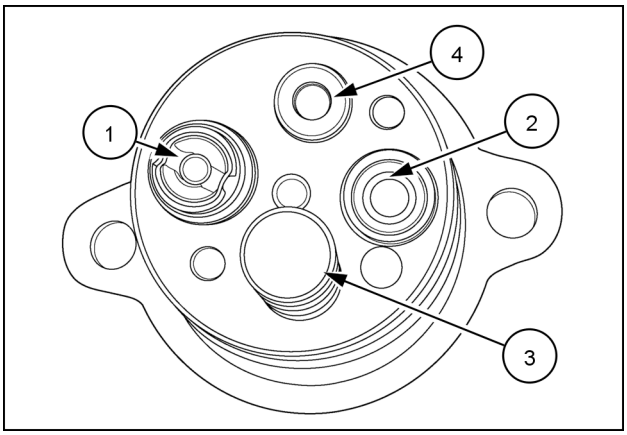
86083837N 10

12. Remove bolt, **(1)** , that secures the front of the linkages.
13. While removing the linkage bolt, **(2)** , use a pair of snap ring pliers, **(3)** , to keep the snap ring, **(4)** , open.
14. Remove the linkage assembly, **(5)** , from the housing.



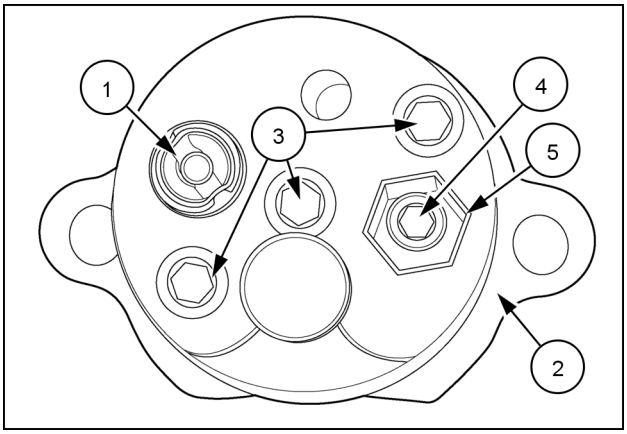
86070606 11

5. Install the following components into the valve body:
   - Regulator valve assembly, **(1)**
   - Safety valve assembly, **(2)**
   - Control valve assembly, **(3)**
   - Pilot valve, **(4)**



86072001 5

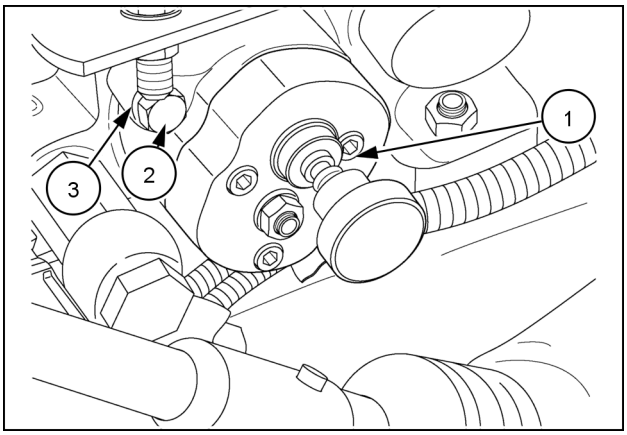
6. Install the rear plate, **(1)** , and three spacers (not shown), onto the valve body, **(2)** , and secure with three M6 x 18mm Allen head bolts, **(3)**.
7. Torque three M6 Allen head bolts, **(3)** , to **8 - 11 N·m** (**6 - 8.5 lb ft**).
8. Install the safety valve set screw, **(4)** , to the proper height (measured during disassembly) and secure with jam nut, **(5)**.



86072000 6

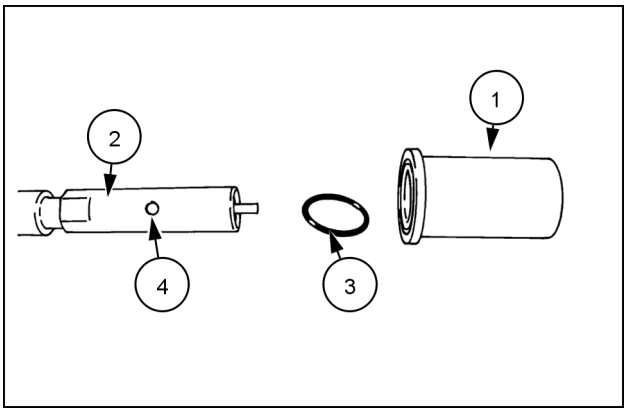
Installation

1. Insert the control valve assembly, **(1)** , into the hydraulic lift cover and secure with two M8 x 35mm bolts, **(2)** , and two M8 lock washers, **(3)**.
2. Torque two M8 bolts, **(2)** , to **20 - 25 N·m** (**15 - 18 lb ft**).



86071999 7

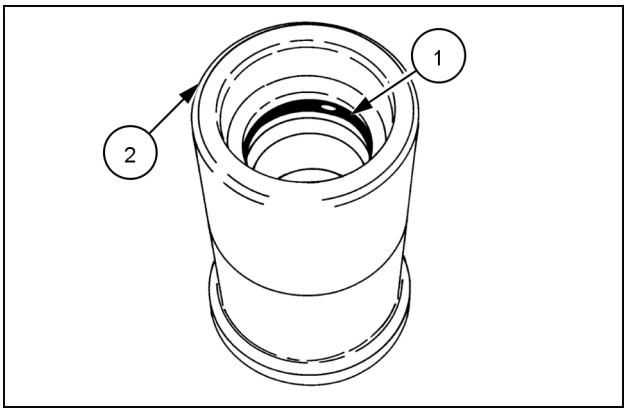
23. Slide the bushing, **(1)** , off the spool, **(2)**.
24. Remove the large O-ring, **(3)** , from the flanged side of the bushing.



20035105N 9

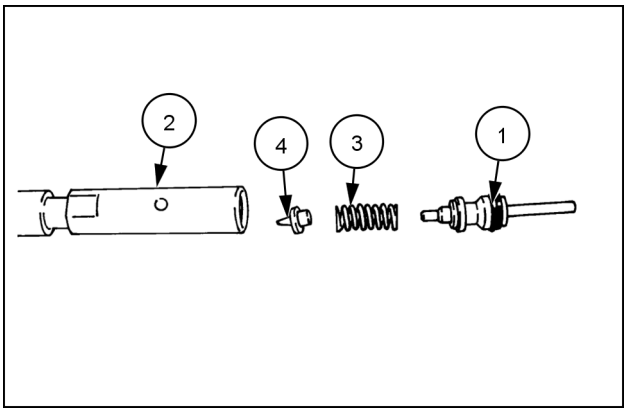
NOTICE: *Use care not to lose the three check balls, **(4)** , from the spool when removing the bushing, **(1)**.*

25. Remove the three check balls, **(4)** , from the spool, **(2)**.
26. Remove the O-ring, **(1)** , from the small end of the bushing, **(2)**.



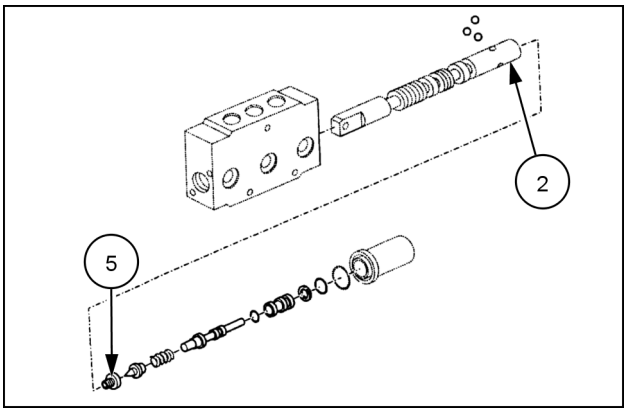
20035106N 10

27. Pull the auto kick-out pin assembly, **(1)** , from the spool, **(2)**.
28. Remove the spring, **(3)** , and poppet, **(4)** , from the spool, **(2)** .



20035107N 11

29. Remove the poppet seat, **(5)** , from the spool, **(2)**.



20035108N 12

Refer to figure **1**.

9. Using a brass drift and hammer, tap the rear of the pump drive shaft, **(12)** , and remove the drive shaft from the pump body.
10. Using a brass drift and hammer, tap the rear of the pump gear, **(13)** , and remove the pump gear from the pump body, **(1)**.
11. Using a brass drift and hammer, remove the rear wear blocks, **(14)** , noting the orientation of each, for ease of assembly.

Inspection and Repair

1. Wash all parts in clean solvent and air dry.
2. Discard all seals and back up rings.
3. Inspect the gears, wear blocks, and pump bore for excess wear and scoring. If necessary, re- place the pump.

NOTE: *Refer to table and figure **1**.*

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

Assembly

NOTE: *Refer to table and figure **1**.*

1. Lightly lubricate and replace all O-rings on valve plugs and spool orifices.
2. Install each load check poppet, **(27)**, spring, **(26)**, and check plug, **(25)**, into the load check ports Torque the check plugs to **27 - 34 N·m** (**20 - 25 lb ft**).
3. Install plugs, **(23)** and **(24)**, into the valve body Torque the plugs to **27 - 34 N·m** (**20 - 25 lb ft**)
4. If the detent retainer, **(20)**, washer, **(19)**, spring, **(18)**, and stop cup, **(17)**, were removed from either spool, reassemble parts onto spool and torque to **7 - 10 N·m** (**5 - 7 lb ft**)
5. Carefully install the regen spool, **(22)**, into the spool′s respective bore in the valve body.
6. Install the spacer, **(15)**, and retainer, **(14)**, over the spool assembly.

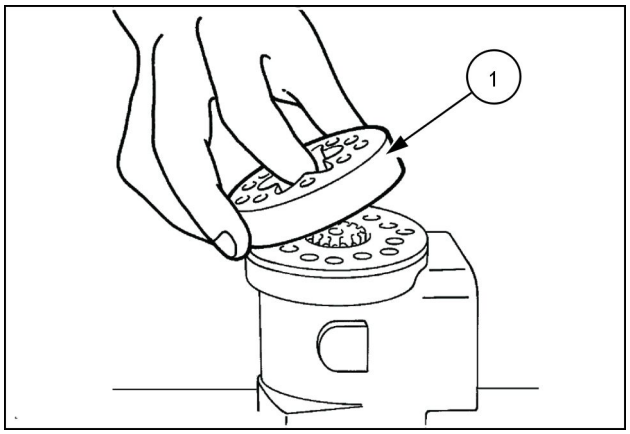
NOTICE: *The float detent sleeve, **(11)**, has a groove on the inside bore, the regen detent sleeve, **(28)**, does not.*

7. Using a punch or other suitable device, compress the spring, **(13)**, and poppet, **(12)**, into the detent retainer, **(20)** Install the detent balls, **(10)**, and regen detent sleeve, **(28)**, over the detent retainer, **(20)**.
8. Install the end cap, **(9)**, onto the regen spool assembly Secure the cap with cap screws, **(8)** Torque the cap screws to **11 - 15 N·m** (**8 - 11 lb ft**).
9. Install the float spool assembly into the valve body following assembly steps 6 - 9.
10. Install the clevis, **(5)**, onto the valve body and secure with cap screws, **(7)** and **(6)** Torque the cap screws to **11 - 15 N·m** (**8 - 11 lb ft**).
11. Install the lockout handle, **(3)**, and spring, **(4)**, into the clevis, **(5)**, and secure with E-clip, **(2)**.

CONSUMABLES INDEX

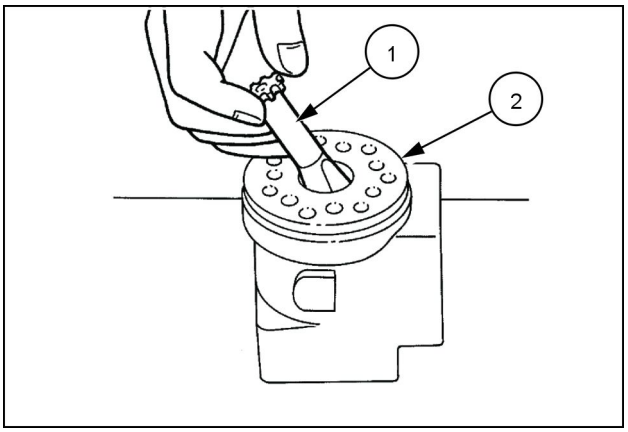
Consumable	Reference	PAGE
NEW HOLLAND AMBRA MULTI G 134™ HYDRAULIC TRANSMISSION OIL	Hydraulic control components - General specification	41.1 / 4
NEW HOLLAND AMBRA MULTI G 134™ HYDRAULIC TRANSMISSION OIL	Power steering control valve - Inspect	41.1 / 27

3. Remove the rotor fixed ring **(1)**, and the rotor.
4. Remove and discard the two O-rings from the rotor fixed ring.



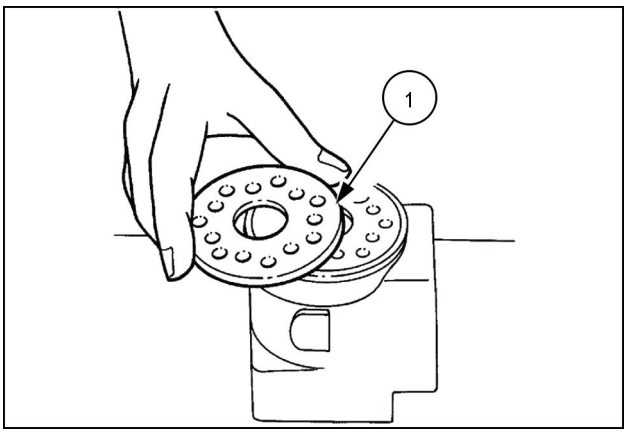
24703 3

5. Lift the drive shaft **(1)**, from the housing **(2)**.



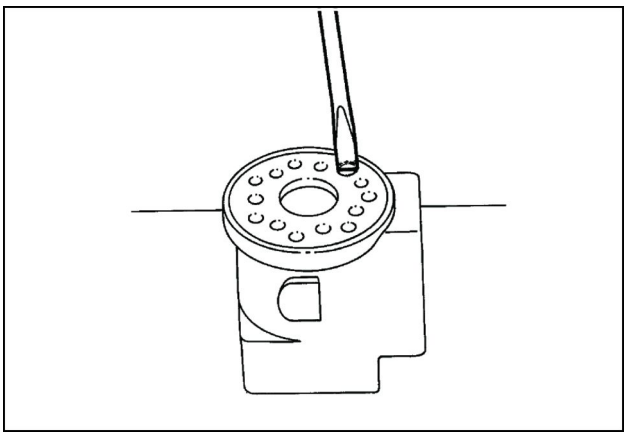
24704 4

6. Remove the thrust plate **(1)**, by sliding it to the side.



24705 5

7. Remove the threaded plug in the check valve hole.



24706 6

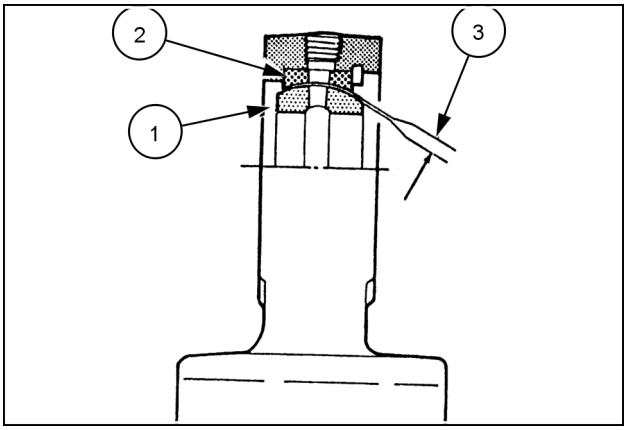
Steering - 41

Pump - 206

Boomer™ 3040 CVT [ZCMB11001 -], Boomer™ 3040 CVT [ZDMB11925 -] , Boomer™ 3045 CVT [ZCMB11001 -] , Boomer™ 3045 CVT [ZDMB11925 -] , Boomer™ 3050 CVT [ZCMB11001 -] , Boomer™ 3050 CVT [ZDMB11925 -]

NOTE: *If the spherical bearing is seized in the bore, both the spherical bearing and the cylinder barrel must be replaced.*

8. On the two wheel drive model, measure the inside diameter of the cylinder spherical bearing bore **(2)**, and the diameter of the spherical bearing **(1)**. Replace the spherical bearing and the cylinder barrel if the clearance **(3)**, is greater than **0.5 mm** (**0.019 in**).
9. On assembly, replace all O-rings and seals with new.



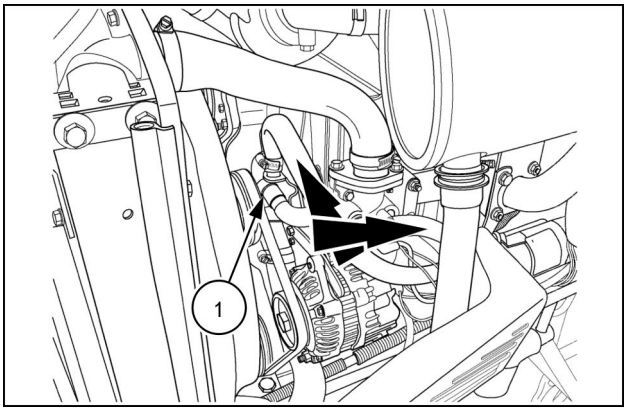
20000926 4

Cab heater - Dynamic description

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

HEATER SYSTEM

The water pump, **(1)**, sends coolant through the engine block and back through the cylinder head to the thermostat. The coolant then flows to the heater core and back to the water pump.

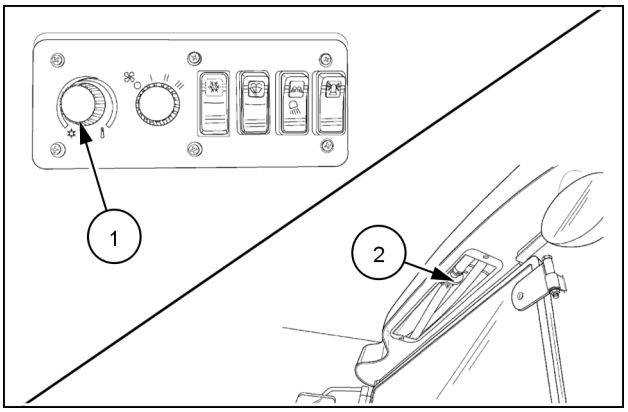


86064535N 1

Coolant Flow Chart:

- Thermostat (Out) to Heater Valve
- Heater Valve to Heater Core
- Heater Core (In) to Water Pump
- Water Pump to Engine Block
- Engine Block to Cylinder Head
- Cylinder Head to Thermostat

As the coolant reaches operating temperature, turn the temperature knob, **(1)**, clockwise to open the heater valve, **(2)**.

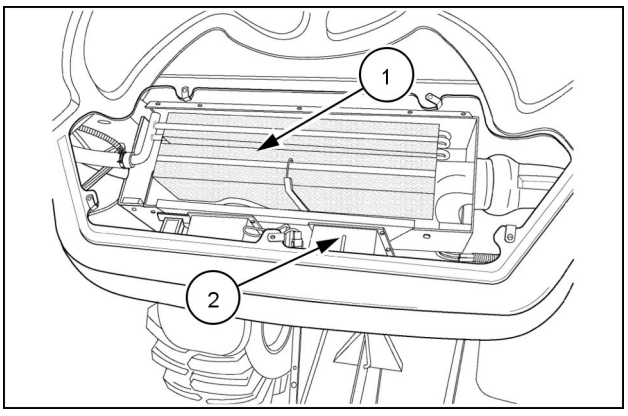


86064000NAND860 2

The temperature knob mechanically controls the opening or closing of the heater valve.

NOTE: *To increase cab temperature, turn knob, **(1)**, clockwise and to decrease cab temperature, turn knob, **(1)**, counterclockwise.*

As the hot coolant is flowing through the heater core, **(1)**, the blower motor, **(2)**, is blowing across the heater core coils to produce the hot air coming out of the vents.



86063998N 3

NOTE: *The A/C and Heater utilizes the same fans and vents.*

Air-conditioning compressor - General specification Air Conditioning

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

COMPRESSOR		
Type		Sanden International (U.S.A) Inc.
Bore		**35 mm** (**1.8 in**)
Stroke		**22.6 mm** (**0.9 in**)
Displacement per revolution		**108 cm³/rev**
Number of Cylinders		Five
Rotation		Clockwise
REFRIGERANT		
System Capacity		**1.1 kg** (**2.4 lb**) **R134A**
REFRIGERANT OIL		
System Capacity		**135 ml** (**5 US fl oz**) **PAG SP20**
LOW PRESSURE SWITCH		
Opening Pressure		**28 kPa** (**4 psi +/- 2**)
Closing Pressure		**138 kPa** (**20 psi +/- 3**)
HIGH PRESSURE SWITCH		
Opening Pressure		**2758 kPa** (**400 psi +/- 10**)
Closing Pressure		**1793 kPa** (**260 psi +/- 20**)

Air-conditioning compressor - Special tools

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Tool Number	Description
380050012	Sanden Compressor Tool Kit
380001327	Refrigerant Gas Leak Detector
FNH00890	Air Conditioning Spring Lock Coupling Tool
380002714	Service Gauge Set (R134A)
OEM1598	R-134A Recovery/Recycle and Recharging Station
291979	Thermometer

7. Disconnect the hoses from the system.

NOTE: *Attach the hoses to recovery or recycling equipment whenever disconnecting the manifold gauge set from the air conditioning system, emptying refrigerant from it, or moving the center hose to another device which cannot accept refrigerant pressure. Remove the refrigerant, lubricant, and contaminants from the hoses.*

Checking Refrigerant for Excess Air

At times you may question whether or not a container of refrigerant has been recycled. One check which can be done in the shop is to determine if there is excess air mixed in with the refrigerant. This check is a simple comparison of the container pressure with theoretical pressure at a known temperature. If the pressure is equal to or less than a theoretical value of usable purity established for **R134A**, the container does not have excess air.

NOTICE: *Using **R134A** with excess air will result in higher system operating pressures and may cause damage to the air conditioning system.*

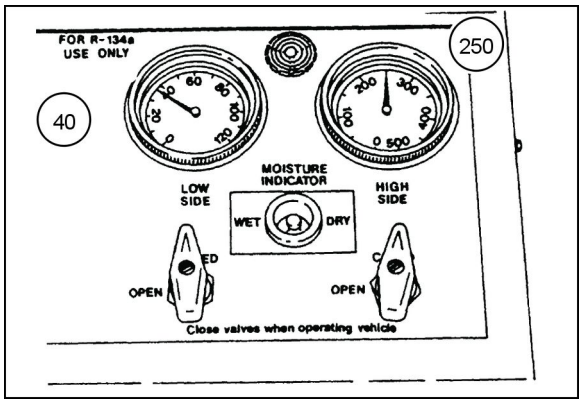
Do this check in the following manner:

1. Store the container for at least 12 hours at a known temperature of **18.3 °C** (**65 °F**) or higher. The container must not be in direct sunlight or under the influence of any other direct source of heat.
   Carry out all of the next steps in the same area in which the container is stored, as it is very important that the temperature of the container remain stable.
2. Attach an appropriate pressure gauge to the container. This pressure gauge should read in increments of **6.9 kPa** (**1 psi**).
3. Use a calibrated thermometer to measure the air temperature within **10 cm** (**4 in**) of the container surface.
4. Compare the pressure in the container with the pressure shown for the temperature of the tank for **R134A**. If the pressure in the container is equal to or less than the pressure in the table, the refrigerant in the container meets the requirements for excess air.
   If the pressure is greater than shown in the table, you may still be able to use the refrigerant by proceeding to step 5.
5. If the pressure exceeds that of the table, connect the tank to recovery or recycling equipment in such a way as to allow you to continue to monitor tank pressure.
6. Bleed a small amount of vapor from the tank into the recovery or recycling equipment until the tank pressure is below that shown in the table for the temperature at which the tank was stored. Close the shutoff valves in the recovery/recycling equipment service hose.

NOTE: *This process may cause the temperature of the tank to drop.*

Air conditioning - Pressure test - Example 8

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE



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Symptoms

1. Insufficient or no cooling.
2. The low side pressure reading is too high. The gauge should read **21 - 207 kPa** (**3 - 30 psi**).
3. The high side pressure reading is normal but drops when the low side reading shows a vacuum. Reference pressure-temperature chart: for correct gauge readings.
4. Evaporator air is sufficiently cold until the low side pressure gauge shows a vacuum; then it becomes warm.

DIAGNOSIS: Thermostatic expansion valve is allowing too much refrigerant to flow through the evaporator coils. The valve may be stuck open, or the temperature sensing bulb may be incorrectly mounted.

Corrective Procedures

1. Check for a sticking expansion valve:
   1. Operate the system at maximum cooling.
   2. Check the low side gauge. The pressure should drop slowly.
2. If the test indicates that the expansion valve is defective, proceed as follows:
   1. Extract the refrigerant from the system.
   2. Replace the expansion valve.
   3. Evacuate the system.
   4. Charge the system.
   5. Performance test the system.

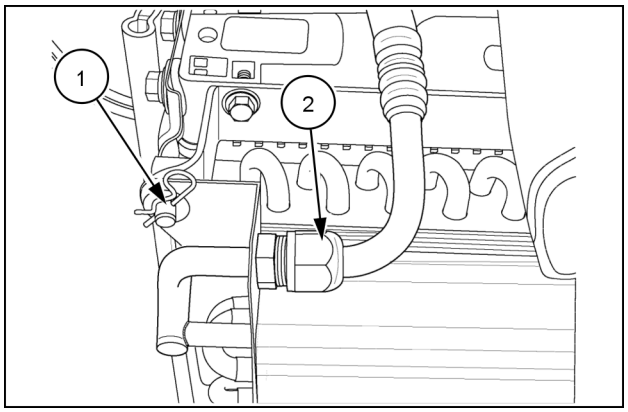
Ambient Temperature* °C (°F)	High Pressure Gauge Reading kPa (psi)
21 °C (**70 °F**)	**786 - 924 kPa** (**114 - 134 psi**)
24 °C (**75 °F**)	**869 - 1007 kPa** (**126 - 146 psi**)
26 °C (**80 °F**)	**972 - 1110 kPa** (**141 - 161 psi**)
29.5 °C (**85 °F**)	**1096 - 1234 kPa** (**159 - 179 psi**)
32 °C (**90 °F**)	**1158 - 1296 kPa** (**168 - 188 psi**)

Air conditioning - Decontaminating - Post flushing procedures

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Prior operation:
Air conditioning - Decontaminating - Complete circuit flushing (50.200)
Prior operation:
Air conditioning - Decontaminating - Component flushing (50.200)

1. Identify and remove the source of the contamination.
2. Install a new O-ring onto line. Lubricate the O-ring with PAG 20 A/C oil before attaching the line.
3. Attach the A/C line, **(2)**, onto the condenser.



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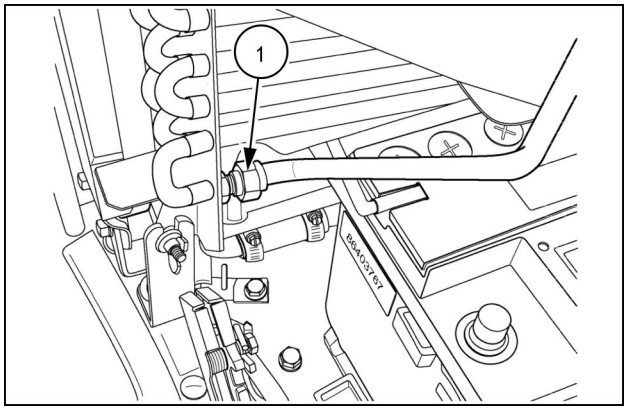
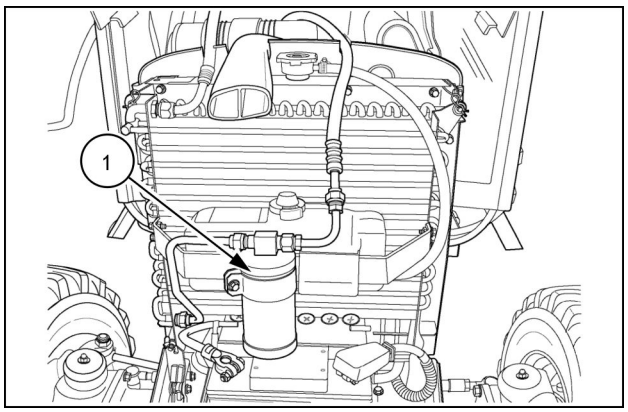
4. Install a new O-ring onto line. Lubricate the O-ring with PAG 20 A/C oil before attaching the line.
5. Attach the A/C line, **(1)**, onto the condenser.



86064004N 2

6. Install a new receiver-dryer **(1)**.

NOTE: *The receiver-dryer should be replaced just before the system is drawn to a deep vacuum to avoid saturating it with moisture.*



86064003N 3

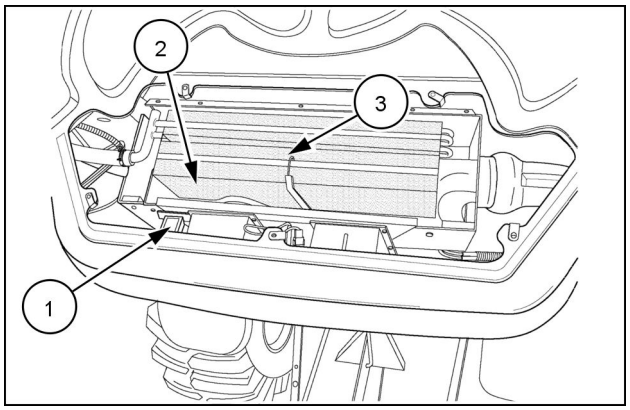
Air conditioning - Install - Temperature Sensor

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Prior operation:
Air conditioning - Remove - Temperature Sensor (50.200)

1. Install the switch **(1)** into the HVAC box.
2. Secure the switch to the box with screws **(2)**. Torque hardware to **2.2 - 0.2 N·m** (**20 - 2 lb in**)
3. Connect the harness at the switch.
4. Install the temperature sensor probe **(3)** in the evaporator core at a distance of **90 mm** (**3.54 in**).

NOTICE: *Make sure the probe is covered with insulation tubing.*



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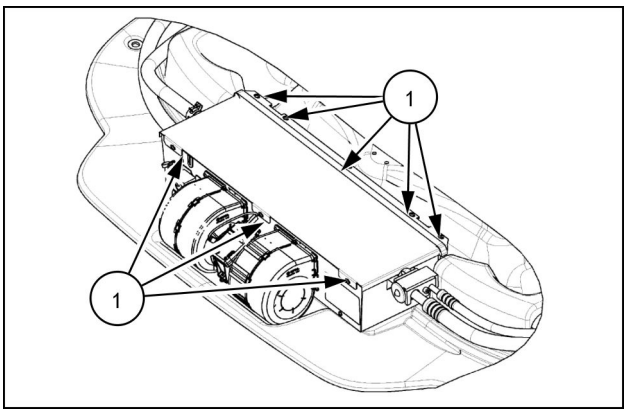
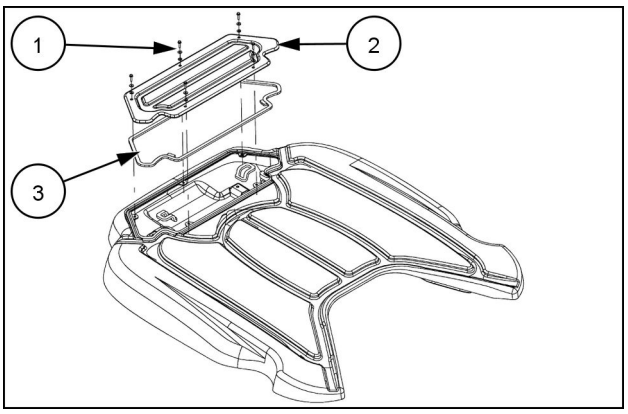
5. Install the cover and secure with screws **(1)**.



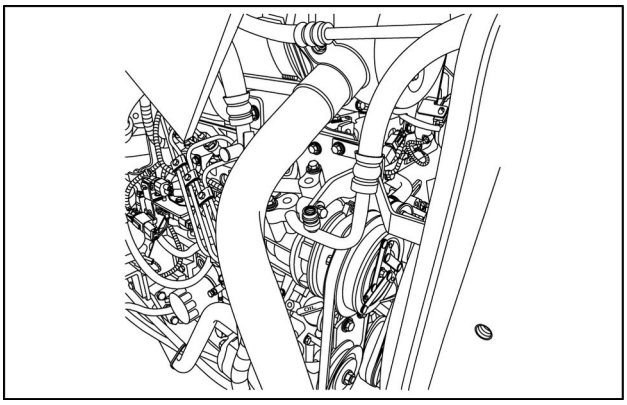
86064008N 2

6. Install the cab roof access panel **(1)**. When installing the cover make sure the seal **(2)** is intact.
7. Install the five M6 bolts **(3)**. Each bolt will have a flat washer and a rubber washer. Torque the hardware to **3.4 N·m** (**30 lb in**).



86064006N 3

5. Install a new compressor if required.



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6. Adjust the level of SP-20 PAG oil in the system. When each component was flushed, some SP-20 PAG oil was removed from the system. Use the following guidelines when adjusting PAG oil:
   - If the compressor is to be replaced and the entire system was flushed, the new compressor will contain all the SP-20 PAG oil needed and no further adjustment is required.
   - If the compressor is not to be replaced and the entire system was flushed, drain the oil from the compressor to remove any remaining contaminants. Add back to the compressor one container, **250 ml** (**8.5 US fl oz**), of new SP-20 PAG oil. (Some oil, about **35 ml** (**1.2 US fl oz**), will remain in the compressor even after it has been drained.)
   - If the entire system was not flushed, drain the oil from the compressor to be installed. Add back new SP-20 PAG oil equal to **250 ml** (**8.5 US fl oz**) minus oil amounts still in the components that were not flushed. Use the table below.

NOTE: *Total system PAG oil should be **265 mL** (**9 US fl oz**) and about **35 ml** (**1.2 US fl oz**) will remain in a drained compressor.*

Component flushed	SP-20 PAG oil to add
Condenser	**50 ml** (**1.7 US fl oz**)
Evaporator	**40 ml** (**1.4 US fl oz**)
Receiver-Drier	**25 ml** (**0.85 US fl oz**)
Each Hose	**10 ml** (**0.34 US fl oz**)

Air-conditioning condenser - Remove

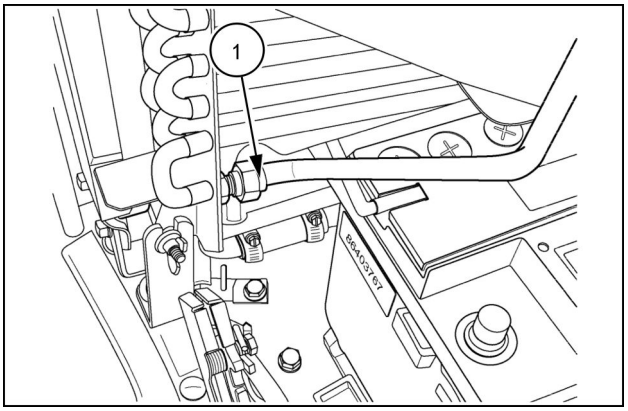
Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

NOTICE: *This component can only be removed after the entire system has been discharged using an appropriate recovery system.*

NOTICE: *When the system is open for service, it is required that the receiver/drier be replaced as well to avoid future complication.*

1. Disconnect the A/C line, **(1)**, going into the condenser from the receiver/drier.

NOTICE: *Cap off the lines to keep moisture and debris from entering the system.*



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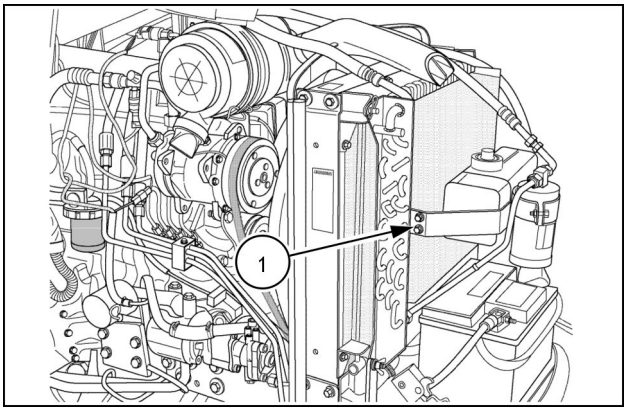
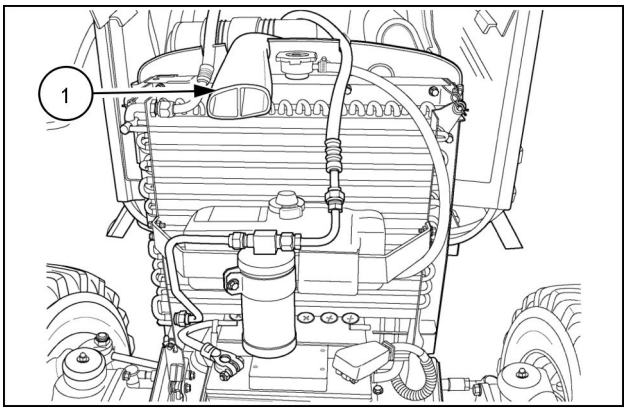
2. Remove the hardware, **(1)**, that secures the coolant bottle and receiver/drier bracket to the condenser.
3. Remove the coolant bottle and receiver/drier bracket assembly.



86063996N 2

4. Remove the air dam, **(1)**.



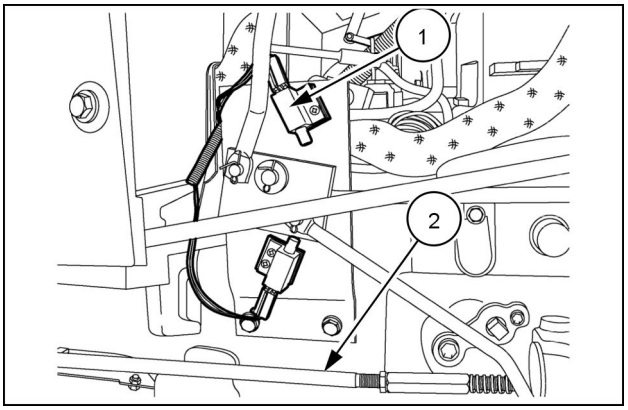
86064003N 3

(*) See content for specific models

Electrical system - Static description Mid PTO switch (optional)

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

The mid PTO safety switch, **(1)**, is a single pole, single throw, push button type switch. This switch is located on the left side of the tractor, above the brake rod, **(2)**.



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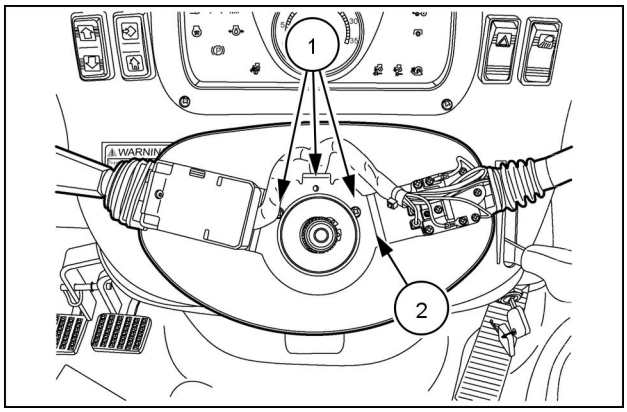
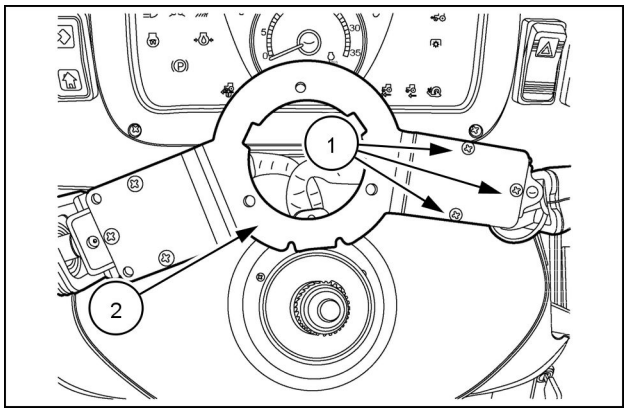
10. Remove the three retaining screws, **(1)**, from the mounting bracket, **(2)**. Then remove the bracket from the steering column.



86085895N 7

11. To remove the stalk switch, remove the three screws, **(1)**, securing the switch to the mounting bracket, **(2)** .



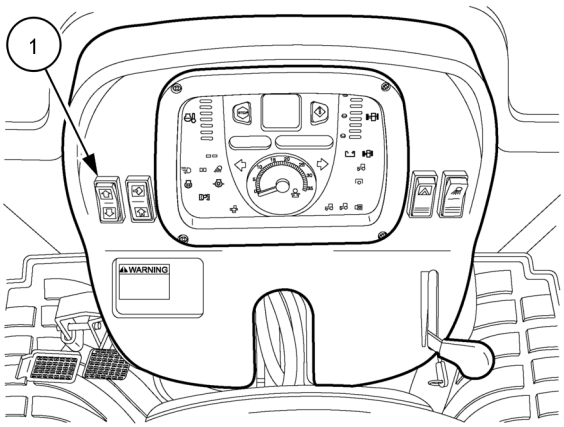
86085896N 8

Electrical system - Install Scroll Up / Down Switch

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Prior operation:
Electrical system - Test Scroll Up / Down Switch (55.000)

1. Plug the wire harness connector back into the program select switch.
2. Push the switch **(1)** back into the dash panel switch opening.
3. Reconnect the negative (-) battery cable to the negative (-) battery terminal.



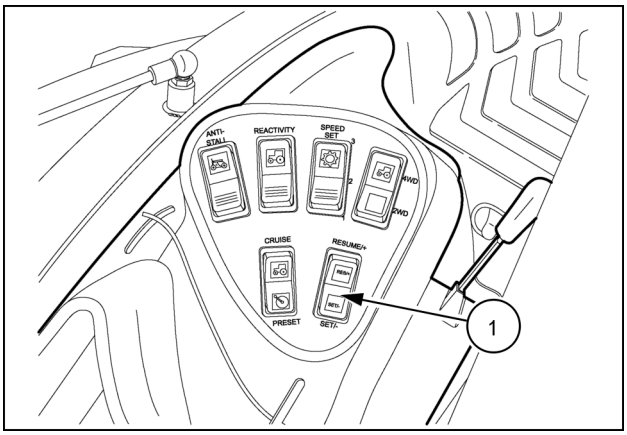
86084088 1

Electrical system - Remove Cruise Resume / Set Switch

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Prior operation:
Electrical system - Static description Cruise Set/Resume switch (55.000)

1. Disconnect the negative (-) battery cable from the negative (-) battery terminal.
2. To remove the cruise resume/set switch, **(1)**, from the left control pod. Use a flat tip screwdriver to pry the switch out of the control pod.
3. Once the switch is removed from the control pod, unplug the wire harness connector from the cruise resume/set switch.



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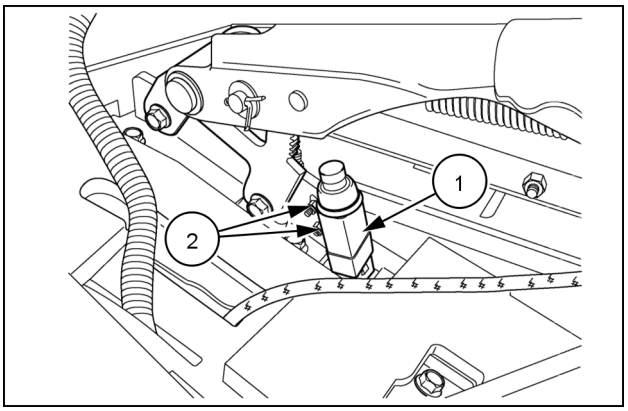
Next operation:
Electrical system - Test Cruise Resume / Set Switch (55.000)

Electrical system - Install Park Brake Safety Switch

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

1. Connect the wire harness connector to the park brake switch **(1)**.
2. Attach the park brake switch to the mounting bracket using the two machine screws and nuts **(2)**.
3. Reconnect the negative (-) battery cable to the negative (-) battery terminal.



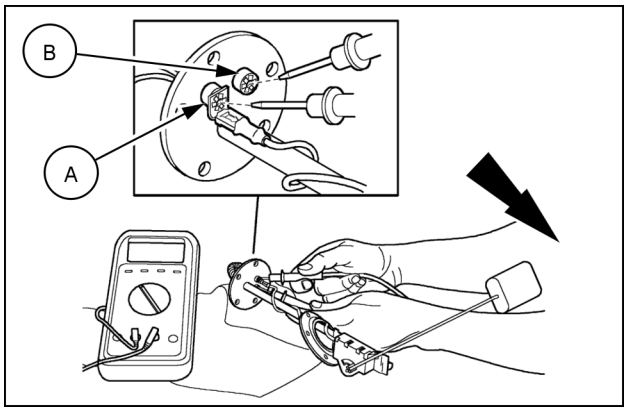
86085947N 1

Electrical system - Test Fuel Level Sending Unit

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

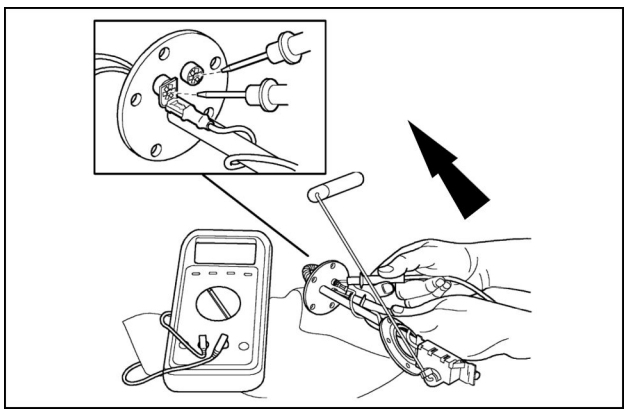
Prior operation:
Electrical system - Remove Fuel Level Sending Unit (55.000)

1. Using an ohmmeter, touch one test probe to terminal **(A)** of the sending unit, touch the other test probe to terminal **(B)** of the sending unit. Observe the reading on the ohmmeter.
2. With the sending unit float in the down position (tank empty), the ohmmeter should indicate between **248-252 Ω**. If the ohmmeter reading is not within these specifications, the sending unit is defective and needs replaced.



30004010N 1

3. With the sender in the up position (tank full), the ohmmeter should indicate between **28-32 Ω**. If the ohmmeter reading is not within these specifications, the sending unit is defective and needs replaced.



30004011N 2

Next operation:
Electrical system - Install Fuel Level Sending Unit (55.000)

Electrical system - Troubleshooting - Safety start circuit

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Problem	Possible Cause	Correction
Starter will not energize.	Insufficient battery charge	Recharge or replace battery
	Blown **80 A** fuse	Replace **80 A** fuse
	Faulty ignition switch	Check switch, replace if necessary
	Blown No. 8, **7.5 A** fuse	Replace **7.5 A** fuse
	Faulty forward/reverse shuttle safety switch	Check switch, replace if necessary
	Faulty Mid PTO safety switch	Check switch, replace if necessary
	Faulty engine run diode	Check diode, replace if necessary
	Faulty mid PTO interlock relay	Check relay, replace if necessary
	Faulty neutral safety start relay	Check relay, replace if necessary
	Faulty crank relay	Check relay, replace if necessary
	Faulty Starter motor	Check starter, replace if necessary
Starter will energize but engine will not start	Blown No. 12, **10 A** fuse	Replace **10 A** fuse
	Faulty operator safety module	Check module, replace if necessary
	Faulty fuel shutoff relay	Check relay, replace if necessary
	Faulty fuel shutoff solenoid	Check solenoid, replace if necessary

Electrical system - Troubleshooting - Safe operation circuit (Operator present)

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Problem	Possible Cause	Correction
Tractor will not operate with operator present.	Blown No. 8, **7.5 A** fuse	Replace **10 A** fuse
	Blown No. 12 **10 A** fuse	Replace **10 A** fuse
	Faulty operator seat safety switch	Check switch, replace if necessary
	Faulty fuel shutoff relay	Check relay, replace if necessary
	Faulty operator safety module	Check module, replace if necessary
	Faulty fuel shutoff solenoid	Check solenoid, replace if necessary

Electrical system - Troubleshooting - Safe operation circuit (operator not present)

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Problem	Possible Cause	Correction
Tractor will not operate without operator present.	Blown No. 8, **7.5 A** fuse	Replace **7.5 A** fuse
	Blown No. 12, **10 A** fuse	Replace **10 A** fuse
	Faulty Forward/Reverse shuttle safety switch	Check switch, replace if necessary
	Faulty neutral relay	Check relay, replace if necessary
	Faulty Mid PTO safety switch	Check switch, replace if necessary
	Faulty engine run with stationary rear PTO diode	Check diode, replace if necessary
	Faulty fuel shutoff relay	Check relay, replace if necessary
	Faulty operator safety module	Check module, replace if necessary
	Faulty fuel shutoff solenoid	Check solenoid, replace if necessary

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Electrical systems - 55

Fuel injection system - 010

(*) See content for specific models

Wiring harnesses - Electrical schematic sheet 08

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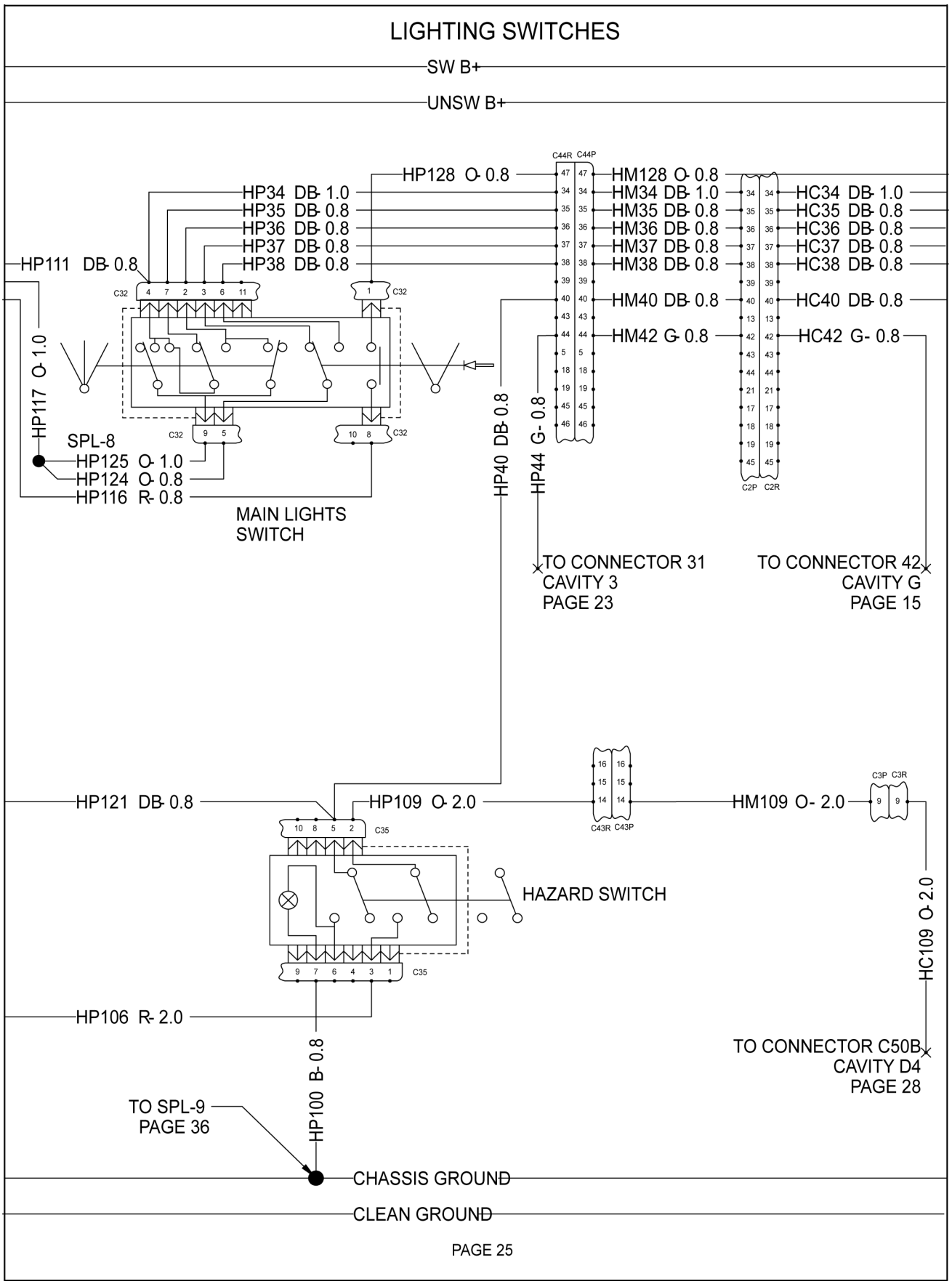
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

Wiring harnesses - Electrical schematic sheet 17

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE



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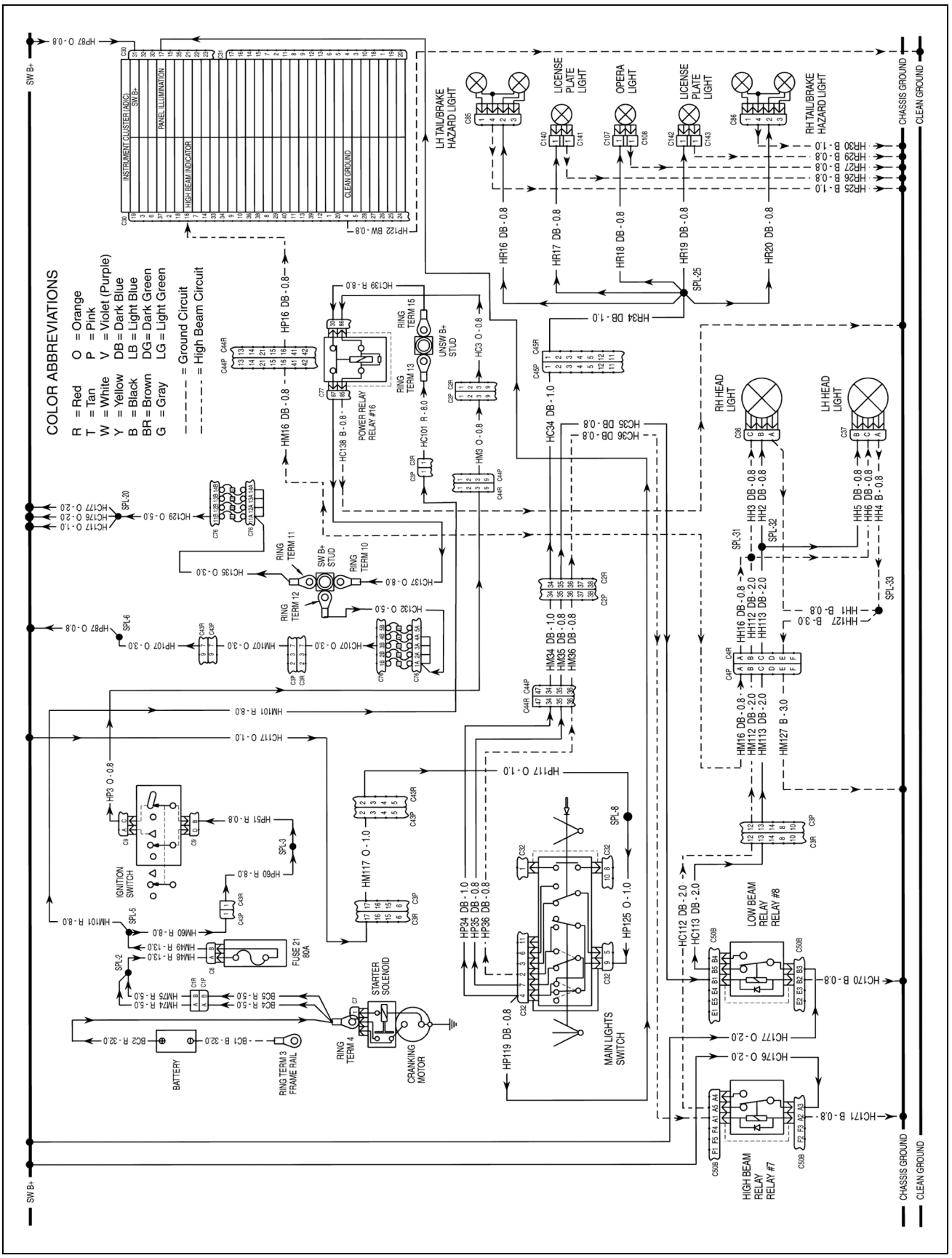
Wiring harnesses - Electrical schematic sheet 35

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE



76083203N 1

Main headlights circuit (position, low and high beams)

NOTE: *The headlights are controlled by a stalk switch, located at the right side of the steering column.*

4. Current flows from the “C” terminal of the ignition switch to terminal No. 86 of the cab power relay.

Un-switched Battery Power Stud

1. The un-switched battery power stud sends current to:

- Ring terminal **(15)**. Ring terminal **(15)** sends current to terminal No. 30 of the cab power relay.

Cab Power Relay

1. When current is provided to terminal No. 86 of the cab power relay from terminal “C” of the ignition switch and a ground circuit is completed to the chassis ground from terminal No. 85 of the power relay, the cab power relay is energized.
2. When the relay is energized, terminals No. 30 and No. 87 are latched, providing current to ring terminal 10 of the switched battery power stud.

Switched Battery Power Stud

3. The switched battery power stud sends current to:

- Ring terminal **(19)**, to cab fuse No. 24, 20-amp fuse. Current flows through fuse No. 24 to terminal 1-1 and terminal 1-3 of the HVAC relay.

HVAC Relay

1. When current is provided to the HVAC relay by fuse No. 24 and the ground circuit (terminal 1-2) is completed by the chassis ground, the HVAC relay is energized.
2. When the relay is energized, terminals **(1)**- **(3)** and **(1)**- **(5)** are latched, providing current to the HVAC fan switch.

HVAC Fan Switch

1. When the HVAC fan switch is placed in the “LOW” “MED” or “HIGH” speed positions, current is transferred from terminal C-111 to C-114, C-113 and C-112 of the switch.
2. Terminal C-115 provides current to terminal No. 2 of the HVAC mode switch.

HVAC Mode Switch

1. When the HVAC mode switch is placed in the “ON” position, current is transferred from terminal No. 2 to terminal No. 3.
2. Terminal No. 3 provides current to the thermostat switch.

HVAC Thermostat Switch

1. When the thermostat switch reads the correct temperature from the evaporator coils, the switch closes.
2. When the thermostat switch closes current is sent to the A/C low pressure switch.

- To splice-3, then to terminal “B” of the ignition switch.
- To ring terminal 13 on the un-switched power stud.

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

4. Current flows from the “C” terminal of the ignition switch to terminal No. 86 of the cab power relay.

Un-switched Battery Power Stud

1. The un-switched battery power stud sends current to:

- Current flows from the unswitched battery power stud to ring terminal 15. Ring terminal 15 sends current to terminal No. 30 of the cab power relay.

Cab Power Relay

1. When current is provided to terminal No. 86 of the cab power relay from terminal “C” of the ignition switch and a ground circuit is completed to the chassis ground from terminal No. 85 of the power relay, the cab power relay is energized.
2. When the relay is energized, terminals No. 30 and No. 87 are latched, providing current to ring terminal 10 of the switched battery power stud.

Switched Battery Power Stud

1. The switched power stud sends current to:

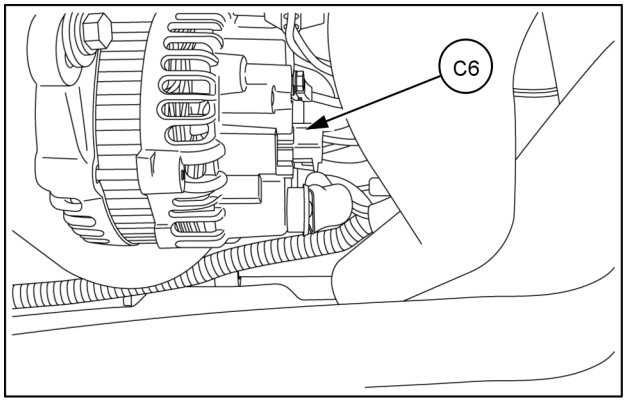
- Ring terminal 12, to fuse No. 3, **20 A** fuse. Current flows through fuse No. 3 to splice-6 then to terminal No. 31 of the ADIC instrument cluster.

Temperature Gauge/ADIC Instrument Cluster

1. Two ground paths allow the engine coolant temperature gauge to function.
2. The first ground source is provided by terminal No. 4 of the ADIC instrument cluster. Terminal No. 4 is a clean ground source.
3. The light bars within the temperature gauge are controlled by the second ground path. The second ground path exits the gauge at terminal No. 3 of the ADIC instrument cluster to terminal No. 1 of the engine coolant temperature sending unit. At the sending unit, the resistance to ground changes as the engine temperature rises or lowers. The temperature gauge translates this resistance into movement of the light bars on the temperature gauge. The greater the resistance, fewer LED light bars will be illuminated and the lesser the resistance, more LED light bars will illuminate.
4. Terminal No. 31 provides switched power to the ADIC instrument cluster.

C6 - ALTERNATOR

CONNECTOR C6 - ALTERNATOR			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
1	HM102	SW B+	**SHEET 08**
2	HM54	Battery Charge Lt.	



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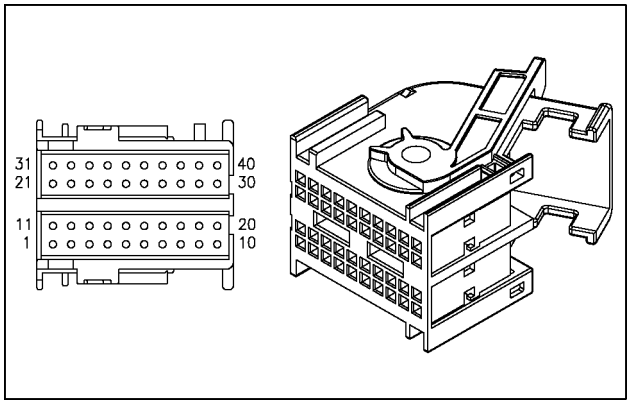

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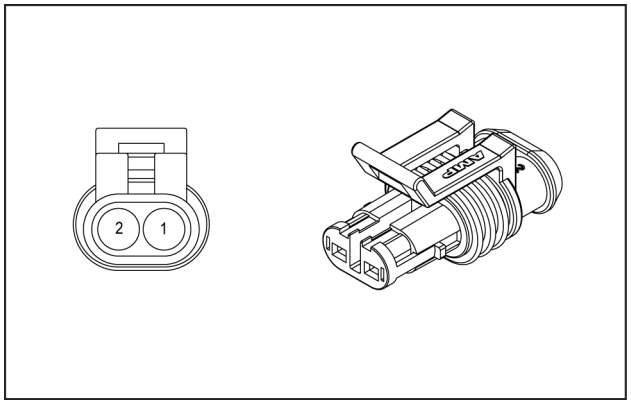
CONNECTOR C47 - WIPER MOTOR

CONNECTOR C47 - WIPER MOTOR			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
1	HP6	Wiper Park	**SHEET 33**
2	HP4	Wiper Speed	
3	HP7	Wiper Park Feed	
4	HP65	Ground	

CONNECTOR C66 - REVERSE CLUTCH SOLENOID

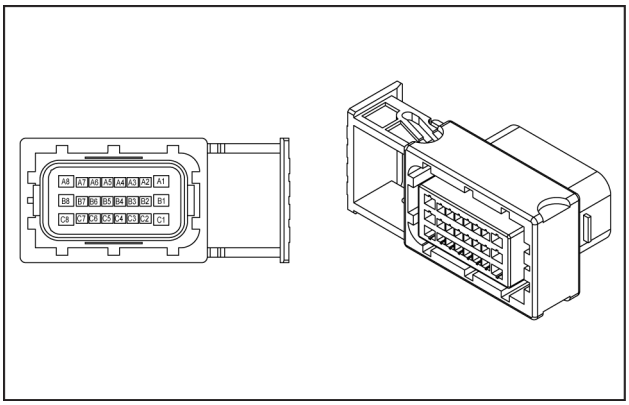
CONNECTOR C66 - REVERSE CLUTCH SOLENOID			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
1	HC90	Reverse Solenoid	**SHEET 17**
2	HC91	Reverse Return	



82012083 7

CONNECTOR C84 - FLASHER MODULE

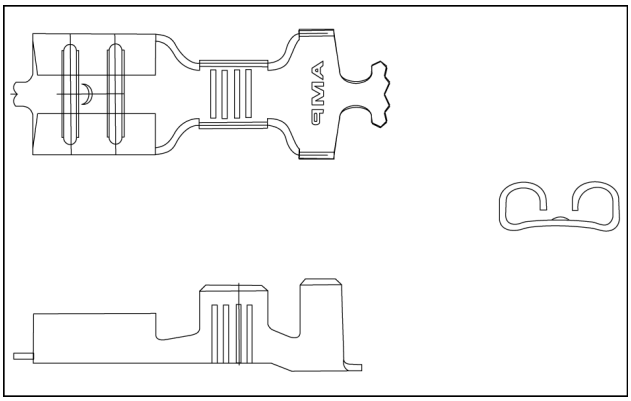
CONNECTOR C84 - FLASHER MODULE			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
A1	HC152	SW B+	**SHEET 28**
A2	HC153	RH hazard light	
A3	**	RH hazard light	
A4	HC154	LH hazard light	
A5	**	LH hazard light	
A6	**	Hazard lights	
A7	**	Open	
A8	HC76	WER Config	
B1	HC75	SW B+	
B2	HC38	RH turn signal	
B3	HC37	LH turn signal	
B4	HC151	Hazard signal	
B5	HC25	Trailer 1	
B6	**	Open	
B7	**	Open	
B8	HC162	Ground	
C1	**	Open	
C2	**	Open	
C3	**	Open	
C4	**	Open	
C5	**	Open	
C6	**	Open	
C7	**	Open	
C8	**	Open	



87699386 8

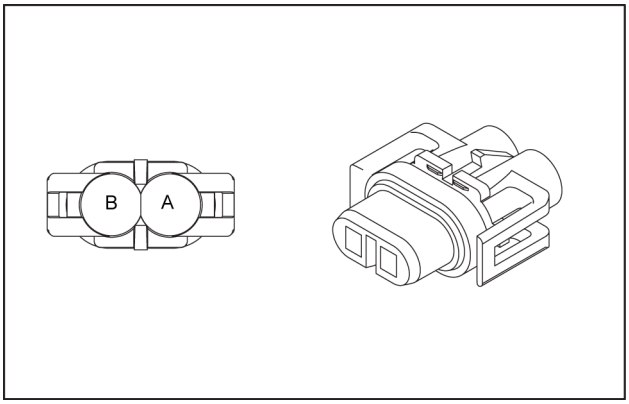
CONNECTOR C102 - GROUND

CONNECTOR C102 - GROUND			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
1	HR66	Ground	**SHEET 32**

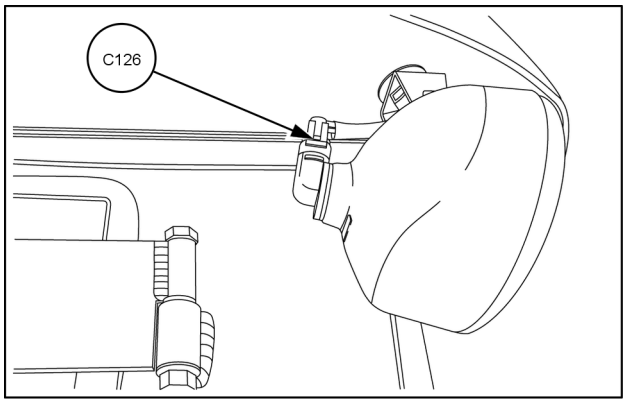


CONNECTOR C123 - LH REAR CAB WORK LIGHT

CONNECTOR C123 - LH REAR CAB WORK LIGHT			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
A	HR63	Ground	**SHEET 34**
B	HR58	LH Rear Work Lt.	



82003123 4

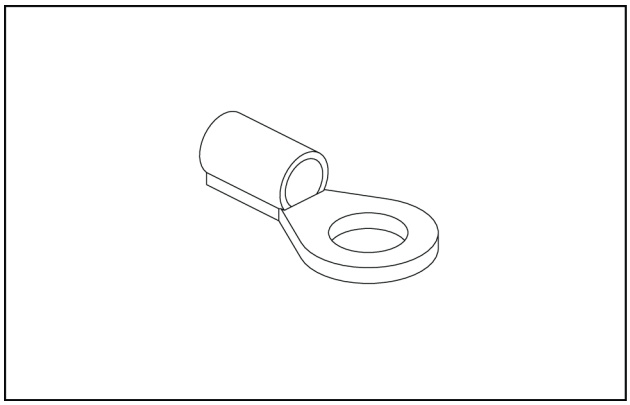


NHIL12CT00542AA 5

Left hand rear upper corner of cab

CONNECTOR RT10 - CHASSIS HARNESS SWITCHED B+ FEED

CONNECTOR RT10 - CHASSIS HARNESS SWITCHED B+ FEED			
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**	**ELECTRICAL SCHEMATIC FRAME**
1	HC137	Switched B+ feed	**SHEET 20**



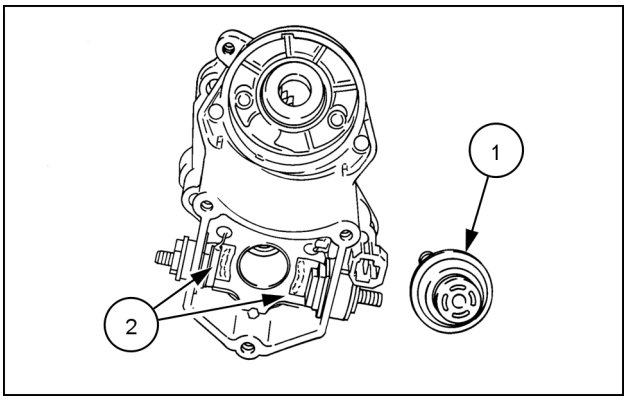
NHIL12CT00620AA 12

Electrical systems - 55

Engine starting system - 201

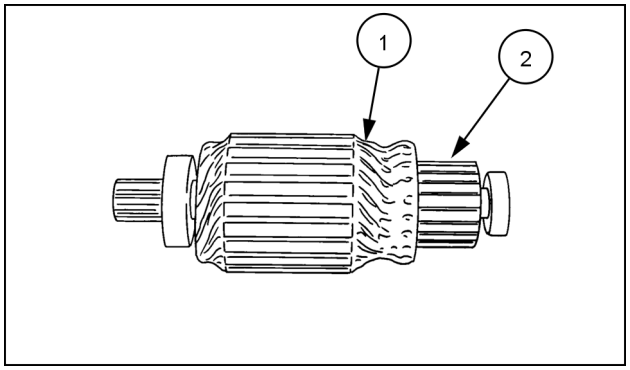
Boomer™ 3040 CVT [ZCMB11001 -], Boomer™ 3040 CVT [ZDMB11925 -] , Boomer™ 3045 CVT [ZCMB11001 -] , Boomer™ 3045 CVT [ZDMB11925 -] , Boomer™ 3050 CVT [ZCMB11001 -] , Boomer™ 3050 CVT [ZDMB11925 -]

5. Clean and inspect the solenoid plunger contact ring, **(1)** and solenoid contacts **(2)**. Dirty contacts or pitting may be cleaned with fine grit sandpaper or a fine abrasive pad.
6. Inspect that all bearings rotate freely when rotated manually by hand and are not damaged or have excessive play. Replace any damaged bearings.



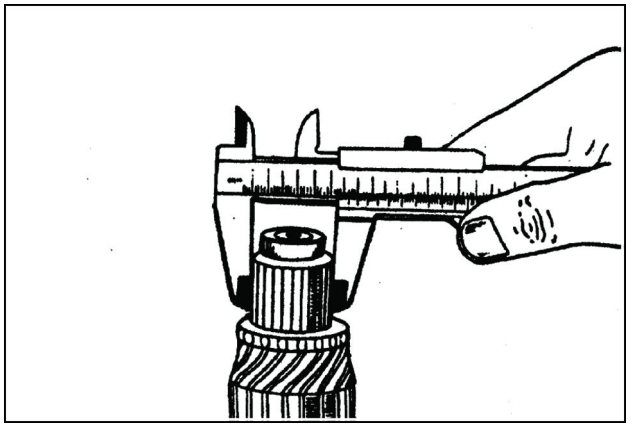
20002308 2

7. Inspect the armature windings **(1)**, for burnt, broken or loose connections.
8. Inspect the commutator contacts **(2)** for burnt segments, indicating an open winding.



20002279 3

9. Use a suitable measuring device to measure the commutator diameter. The minimum commutator diameter is **34.0 mm** (**1.339 in**). If the commutator is worn beyond these specifications, replace the armature.



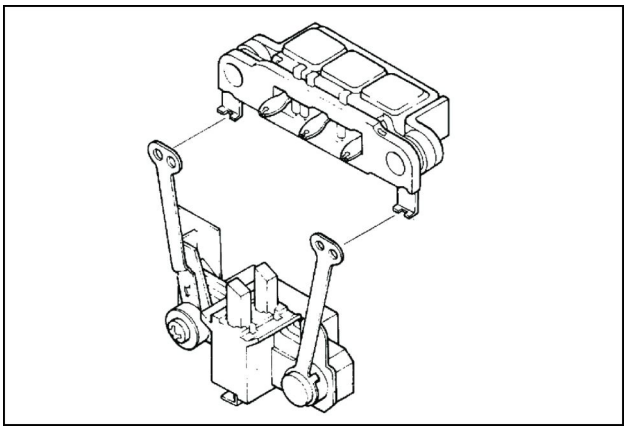
SEC55CH4PG36_3 4

Alternator - General specification

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

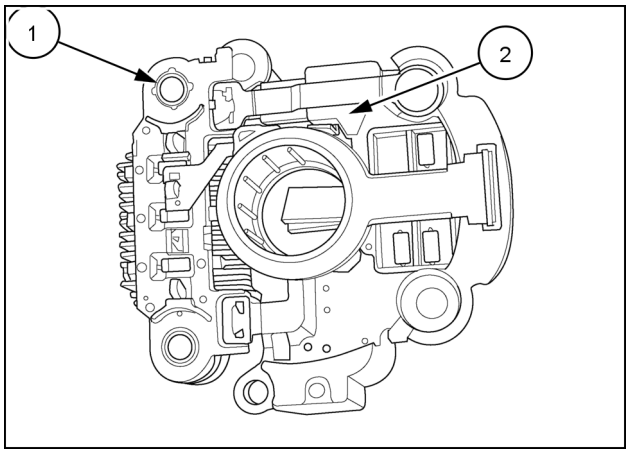
Manufacturer	Mitsubishi
Model	A007TA1777 (55 amp) Standard A5TB2177 (75 amp) Optional
Output Rating	55 amp (Standard) 75 amp (Optional)
Polarity	Negative Ground
Rotational Direction (viewed from pulley)	Clockwise
Drive Belt Tension	**10 - 15 mm** (**0.39 - 0.59 in**) deflection @ **9 - 11 kg** (**20 - 25 lb**) of force
Adjusting Voltage	**14.5 - 15.0 V**
Load Characteristics	
Terminal voltage	**13.5 V**
Current	**30 A** minimum
Rpm	2500
Brush Length	
Wear Limit (min. length)	**5 mm** (**0.20 in**)
Original	**18.5 mm** (**0.728 in**)
Brush Contact Rings	
Wear Limit (min. diameter)	**22.1 mm** (**0.871 in**)
Original Diameter	**22.7 mm** (**0.894 in**)
Bearing	
Front	ECSC8
Rear	6303DDG
Stator Coil Resistance	less than **1.0 Ω**
Rotor Coil Resistance	**3.0 Ω**

5. Use the following guidelines when soldering alternator components.
   - Clean all terminals to be soldered and remove excess solder.
   - Preheat the soldering iron and use rosin-core solder to solder terminals and/or wires. To avoid damage to the rectifier diodes, use a pair of needle nose pliers to remove excess heat from the area being soldered. Hold the pliers just below the solder joint on the rectifier to remove excess heat.
   - Make good, solid, solder joints for best alternator performance.
   - After soldering, quickly cool the solder joint with a damp cloth.



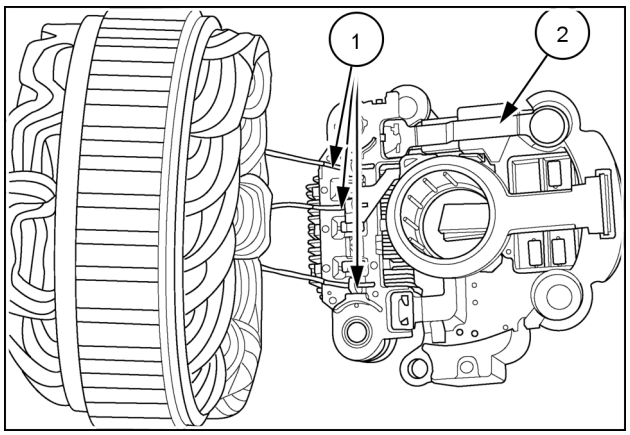
SEC55CH4PG21_1 4

6. Solder the IC regulator, **(1)** and rectifier **(2)** together.



10002263 5

7. Solder the stator leads, **(1)** to the terminals on the rectifier/regulator assembly **(2)**.



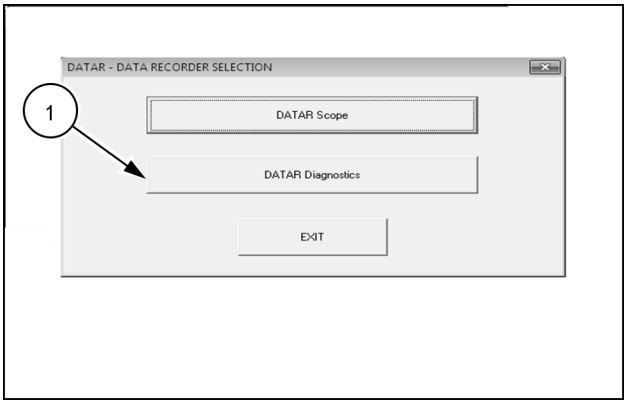
10002262 6

NOTICE: *Secure the regulator/rectifier assembly to the rear alternator frame before pressing the stator into the rear frame.*

Battery - Electrical test using DATAR

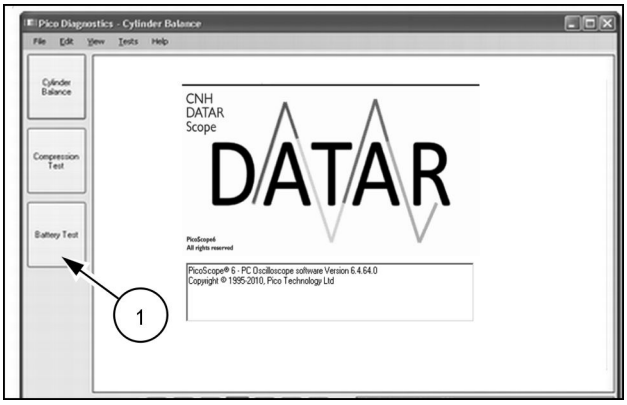
Boomer™ 3040 CVT [ZCMB11001 -]	WE
Boomer™ 3045 CVT [ZCMB11001 -]	WE
Boomer™ 3050 CVT [ZCMB11001 -]	WE

1. Select the DATAR application in the Electronic Service Tool (EST). When the DATAR recorder screen appears, select DATAR diagnostics **(1)**.



NHPH11GEN0002AA 1

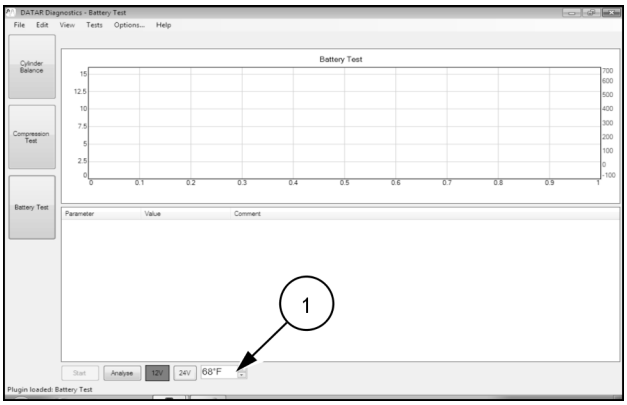
2. Once the DATAR diagnostics main screen is open, select the Battery Test button **(1)**.



NHPH11GEN0001AA 2

3. When the battery test screen appears, use the UP and Down arrows to set the battery temperature **(1)**.

NOTE: *It is important to put in the actual battery temperature and not ambient temperature.*



NHPH11GEN0003AA 3

Index

Electrical systems - 55

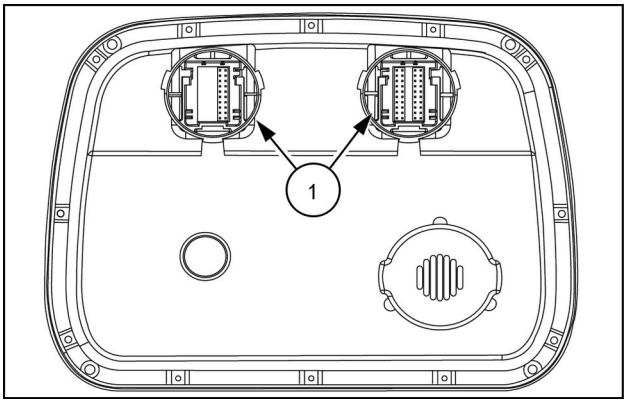
External lighting - 404

(*) See content for specific models

Instrument cluster - Install

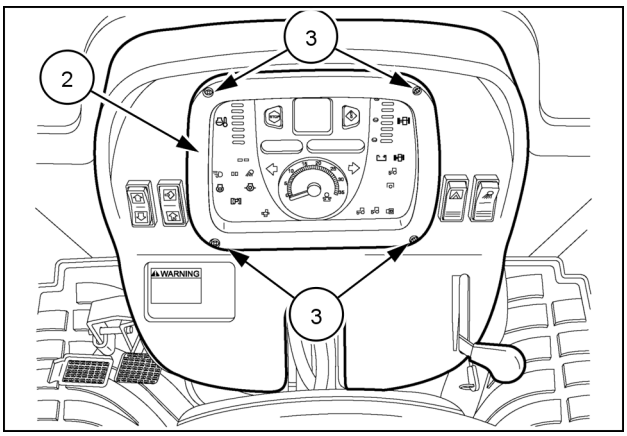
Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

1. Install the two electrical connectors **(1)** to the back of instrument cluster.



NHIL14CT00521AA 1

2. Install the instrument cluster **(2)** into the console panel.
3. Secure the instrument cluster with four M4 x 25 socket head bolts **(3)**.

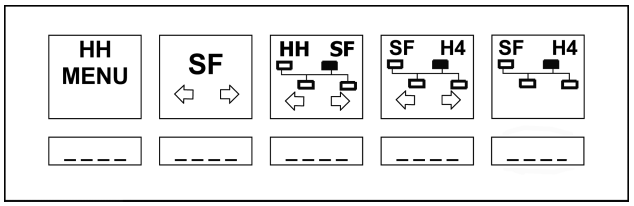


86084088 2

Electronic modules - H4 - View software revision level

Boomer™ 3040 CVT [ZCMB11001 -]	WE
Boomer™ 3045 CVT [ZCMB11001 -]	WE
Boomer™ 3050 CVT [ZCMB11001 -]	WE

1. Use the H4 menu to check the revision of software that is installed in the module selected. Once the software revision is displayed the LCD will return to the main HH menu.



NHIL12CT00255AA 1

With the shuttle in reverse position, measure the resistance between the component side of connector:
C12 pin 1 (P) and **C12** pin 3 (V) should indicate approximately **0.560K Ω**

If resistances are not okay, remove and replace the shuttle lever switch.

B. If the shuttle lever switch is okay, continue to step **4**

4. Check for a short circuit.

   A. Check on the harness side between connector **C12** pin 2 (V) and **C12** pin 3 (V). If a short is indicated, repair or replace the harness as required.

   B. If a short circuit is not indicated, continue to step **5**

5. Check for a short to "key on" voltage.

   A. Turn the ignition swich ON. Measure the voltage between connectors:
   C12 pin 2 (V) and ground.
   C12 pin 3 (V) and ground.
   If a voltage is indicated, repair or replace the harness as required.

   B. If the harness is okay, download the correct level of software. If the fault reoccurs, remove and replace the controller.

Wiring harnesses - Electrical schematic sheet 16 (55.100.DP-C.20.E.16)
Wiring harnesses - Electrical schematic sheet 17 (55.100.DP-C.20.E.17)

5. Check for voltage in the signal line: On the harness side of connector **C22**, test for voltage from pin 1 (V) to chassis ground.

   A. If any voltage is indicated, there is a short to voltage in this signal line; repair or replace as required.

   B. If no voltage is indicated, proceed to step **6**.

6. Check for voltage in the signal line: On the harness side of connector **C22**, test for voltage from pin 3(V) to chassis ground.

   A. If any voltage is indicated, there is a short to voltage in this signal line; repair or replace as required.

   B. If no voltage is indicated, reload the correct level of software. If the error reoccurs, replace the TCU.

Wiring harnesses - Electrical schematic sheet 12 (55.100.DP-C.20.E.12)

2620-Input Pulley Speed Sensor Shorted to 12V or Open Circuit

Control Module : TCU

Context:
The TCU is sensing greater than **4.76 V** on connector **C61**, pin J1-22 (Y).

Cause:
The input speed sensor circuit is open or shorted to **12.0 V**.

Possible failure modes:

1. Faulty Input Speed Sensor
2. Faulty Connector
3. Faulty Harness
4. Faulty TCU

Solution:

1. Check for correct voltage at TCU connector: Disconnect connector **C61**. With the ignition switch in the ON position, measure the voltage on the harness side of connector **C61**, pin J1-22 (Y).
   A. If voltage indicated is **12 V**, continue to step **2**.
   B. If voltage indicated is **0 V**, continue to step **3**.
   C. If the voltage indicated is otherwise, reload the proper level software. If error reoccurs, replace TCU.
2. Check for a short to **12 V** in the signal line: Disconnect connector **C70** and check for voltage between pin 2 (Y), and chassis ground.
   A. If any voltage is indicated, a short exists somewhere in the signal line.
   B. If no voltage is indicated, replace the input speed sensor.
3. Check for correct source voltage: With connector **C70** disconnected and the ignition switch in the ON position, on the harness side of the connector measure the voltage between connector **C70**, pin 1 (O), and chassis ground.
   A. If **12 V** are indicated, go to step **4**.
   B. If **0 V** are indicated, there is a break in the source wire.
4. Check for clean ground: With connector **C70** disconnected check for continuity from pin 3 (BW) to chassis ground.
   A. If **0 Ω** are indicated, replace the input speed sensor.
   B. If anything other than **0 Ω** are indicated, repair or replace wire to clean ground.

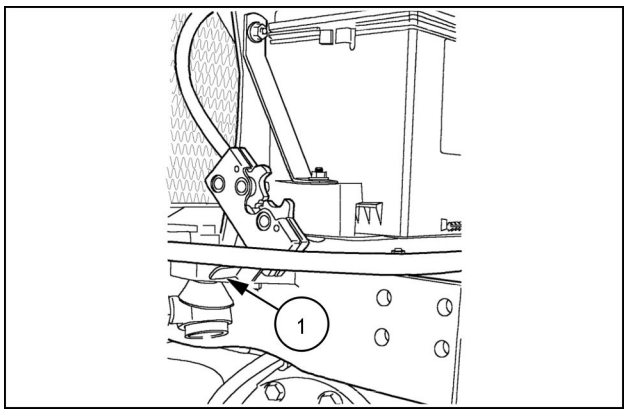
Wiring harnesses - Electrical schematic sheet 16 (55.100.DP-C.20.E.16)
Wiring harnesses - Electrical schematic sheet 18 (55.100.DP-C.20.E.18)

Wiring harnesses - Electrical schematic sheet 23 (55.100.DP-C.20.E.23)
Wiring harnesses - Electrical schematic sheet 10 (55.100.DP-C.20.E.10)
Wiring harnesses - Electrical schematic sheet 13 - PTO, seat, and brake switches (55.100.DP-C.20.E.13)

Hood - Remove

Boomer™ 3040 CVT	WE
Boomer™ 3045 CVT	WE
Boomer™ 3050 CVT	WE

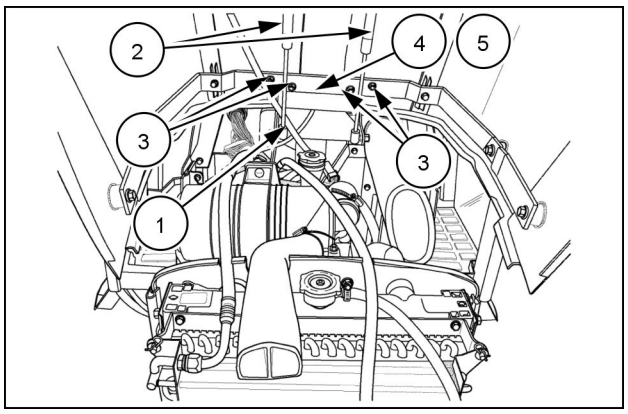
1. Release the hood latch, **(1)**, and open the hood.



30997551N 1

2. Disconnect the headlight wire harness connector, **(1)**.
3. Remove the hood struts, **(2)**.
4. Loosen and remove the four hood mounting nuts, **(3)**.
5. Remove the hood from the tractor.

NOTE: *When removing hood take note of quantities and placement of adjustment shims between the mounting hinge,* ***(4)****, and the rear hood support bracket,* ***(5)****.*



86064824N 2

Next operation:
Hood - Install (90.100)