

Contents

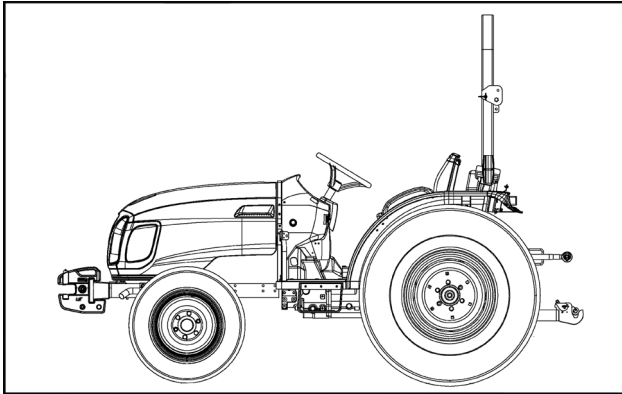
INTRODUCTION

Engine.....	10
[10.001] Engine and crankcase	10.1
[10.202] Air cleaners and lines	10.2
[10.206] Fuel filters	10.3
[10.218] Fuel injection system.....	10.4
[10.304] Engine lubrication system.....	10.5
[10.400] Engine cooling system	10.6
Clutch	18
[18.100] Clutch mechanical release control	18.1
[18.110] Clutch and components	18.2
[18.112] Slip clutch or flywheel damper	18.3
Transmission.....	21
[21.114] Mechanical transmission	21.1
[21.140] Mechanical transmission internal components.....	21.2
Front axle system	25
[25.100] Powered front axle	25.1
[25.102] Front bevel gear set and differential	25.2
[25.108] Final drive hub, steering knuckles, and shafts	25.3
[25.310] Final drives	25.4
Rear axle system.....	27
[27.106] Rear bevel gear set and differential	27.1
[27.120] Planetary and final drives	27.2
Hydrostatic drive.....	29
[29.100] Transmission and steering hydrostatic control	29.1
[29.202] Hydrostatic transmission	29.2

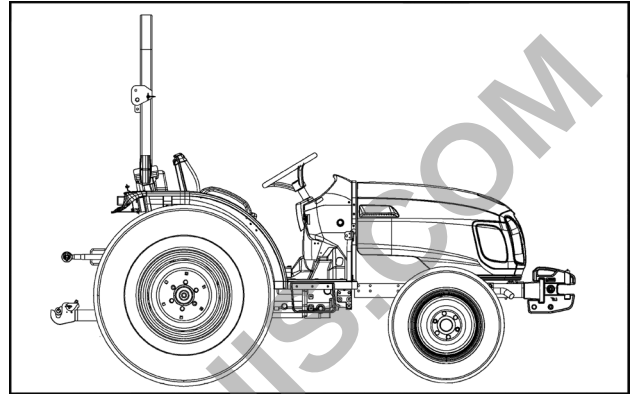
Product identification Machine orientation

Boomer™ 40	WE
Boomer™ 50	WE

NOTE: On this equipment, left-hand and right-hand are determined by standing behind the unit, looking in the direction of travel.



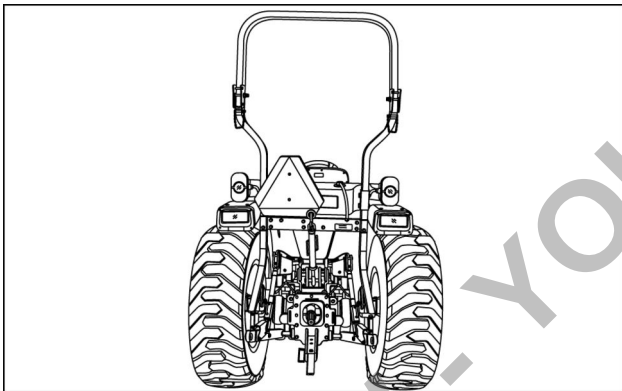
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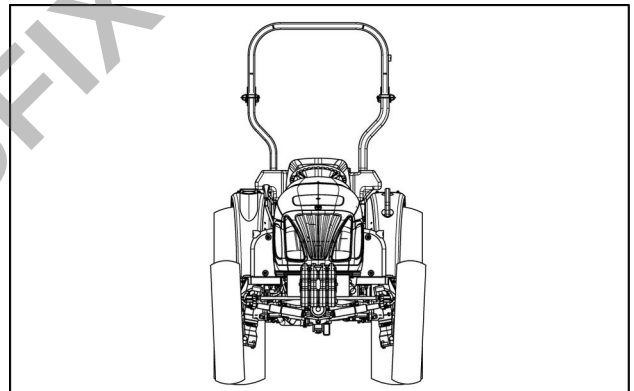
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Left-hand view

Right-hand view



93110438 3



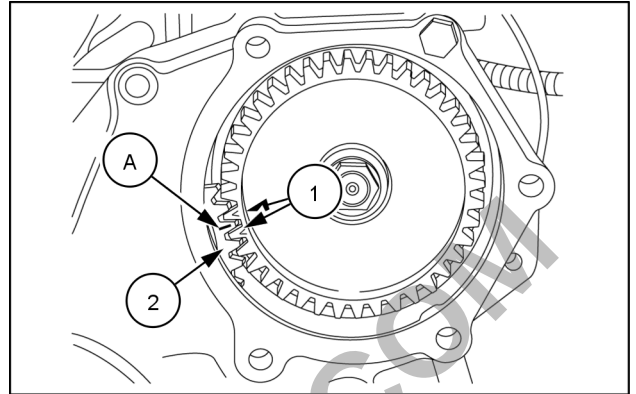
NHIL13CT00928AA 4

Rear view

Front view

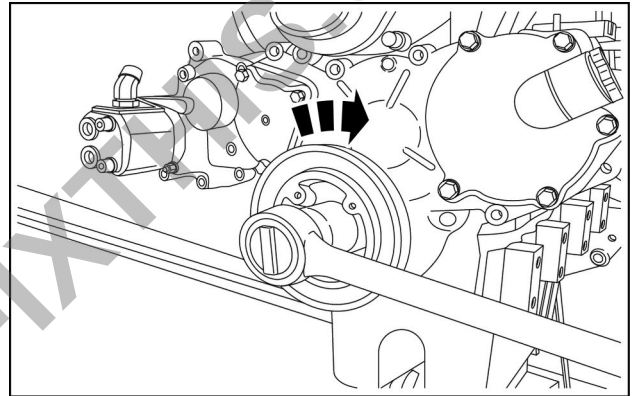
NOTICE: Read the following procedure before removing the injection pump from the engine.

8. Rotate the crankshaft clockwise until the “V V” timing marks **(1)** on the injection pump gear are at approximately 8 o'clock position and are in full tooth engagement with the idler gear **(2)**. Mark the idler gear tooth **(A)** with a paint pen at this time.

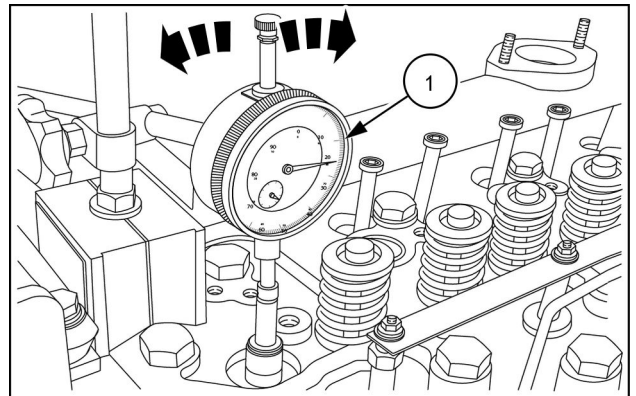


NHIL12ENG0075AA 8

9. Rotate the crankshaft clockwise until the valve travel shown on the dial indicator **(1)** reverses direction. The point at when the valve direction reverses is top dead center or “TDC” of the #1 piston travel.

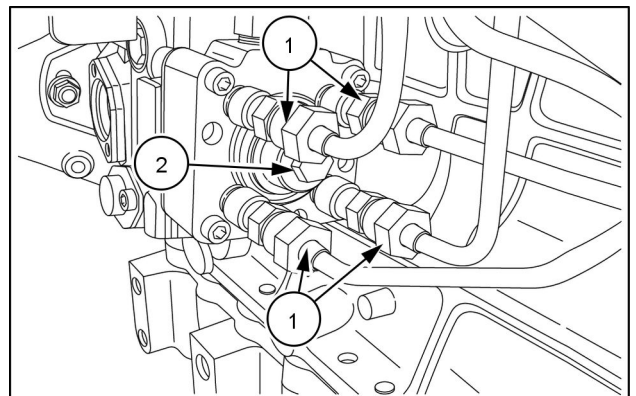


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NHIL13CT00759AA 10

10. Remove injector lines **(1)** and head bolt **(2)** from the rear of the fuel injection pump.



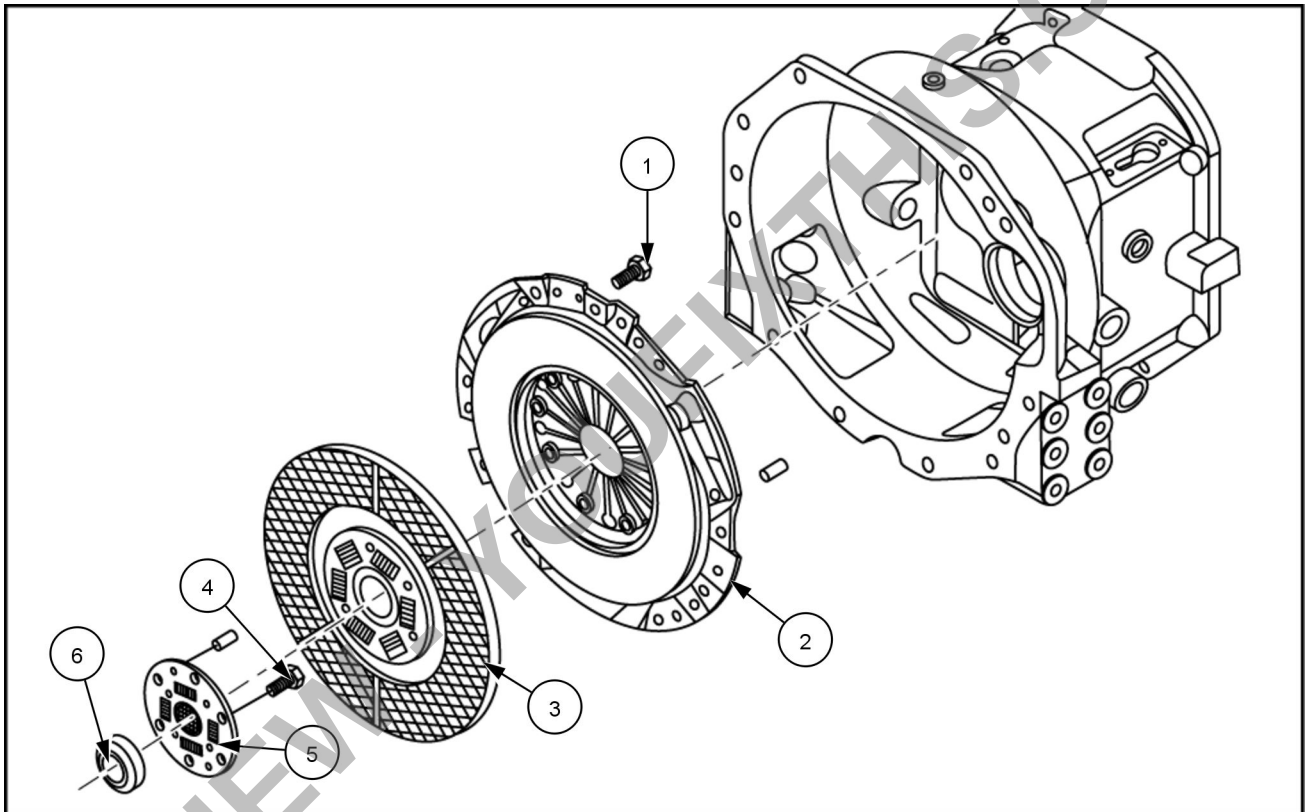
NHIL13CT00755AA 11

Clutch - Disassemble

Prior operation:

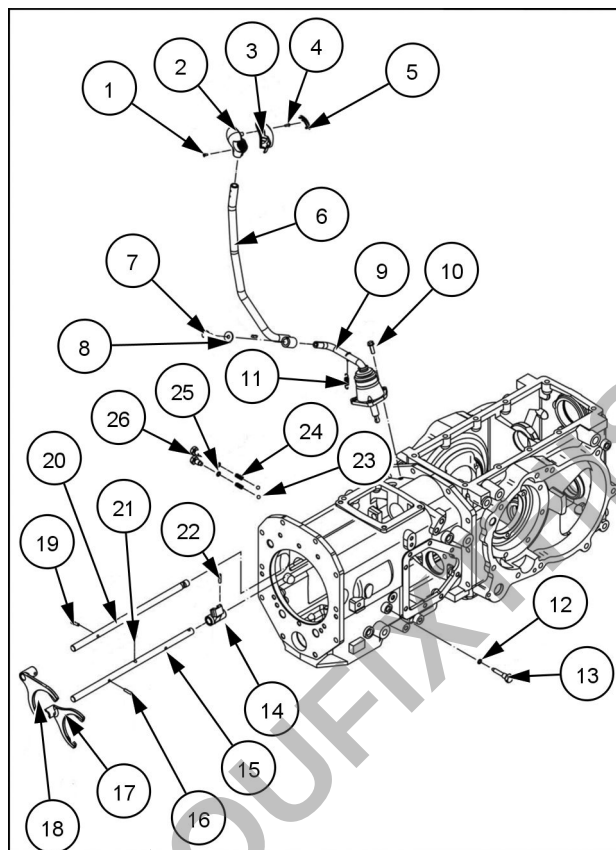
Engine - Remove - Separating the tractor at the clutch housing/engine (10.001) .

1. Loosen evenly and remove bolts (1) by sets of three.
2. Remove pressure plate (2) from the flywheel.
3. Remove clutch disc (3).
4. Loosen evenly and remove bolts (4).
5. Remove damper (5).
6. Inspect pilot bearing (6) and remove if necessary.



76110398 1

Mechanical transmission - Exploded view shift lever and fork (range gear) HST transmission



NHIL 14CT00290BA 1

Shift lever and fork (range gear) HST transmission components

- | | | | |
|---|--|--|-----------------------------|
| (1) Countersunk screw, M4 x 10mm | (8) Washer | (15) Range shift rail, 2nd and 3rd gear | (22) Spring pin |
| (2) Knob rear | (9) Main lever assembly | (16) Spring pin | (23) Shift fork ball |
| (3) Knob front | (10) Hex bolt, M8 x 1.25 x 25mm | (17) Main shift fork, 3rd and 4th gear | (24) Spring |
| (4) Screw, M4 x 10mm | (11) Spring | (18) Main shift fork, 1st and 2nd gear | (25) O - ring |
| (5) Knob cap | (12) O - ring | (19) Spring pin | (26) Rail bolt |
| (6) Shift lever | (13) Lock bolt | (20) Main shift rail, 1st and 2nd gear | |
| (7) Hex bolt, M8 x 1.25 x 25mm | (14) Main shift adapter, 3rd and 4th gear | (21) Pin | |

Separate the center casing from the axle casing

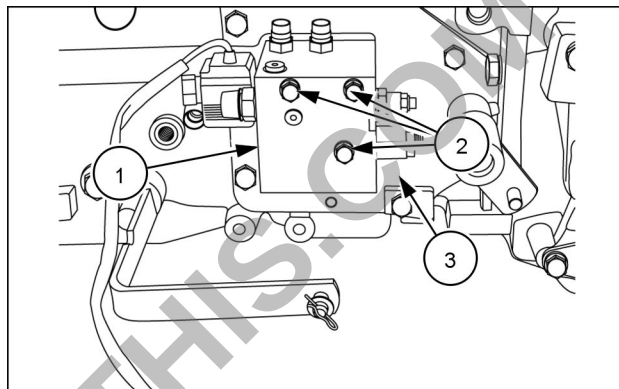
⚠ WARNING

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

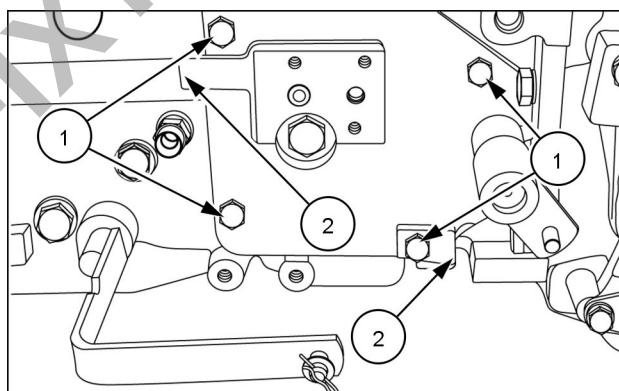
1. Remove the Power Take-Off (PTO) control valve (1) from the range shift cover assembly (3) by disconnecting all the hydraulic lines and the three bolts (2) that attach the control valve to the range shift cover.



93112267 20

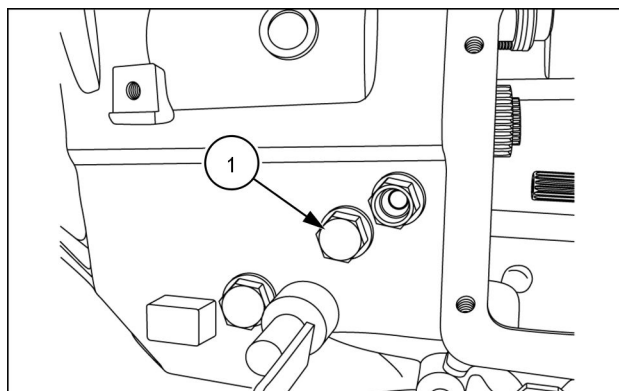
2. Remove range shift cover by removing five M10 x 25 bolts (1).
3. Pry the cover away from the casing using the tabs on the cover casting (2). It may be necessary to move the range lever cam to the neutral (center) position to remove the range cover and cam assembly can be removed.

NOTICE: It is not necessary to disassemble the range cover and range lever cam to remove them from the center casing. The range cover and range lever cam assembly can only be removed with the range lever in the neutral (center position).



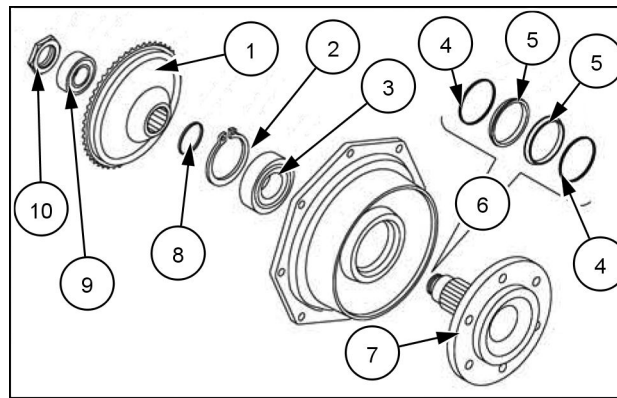
93112268A 21

4. Remove the range fork pin (1).



93112269 22

Powered front axle - Exploded view front drive shaft seal



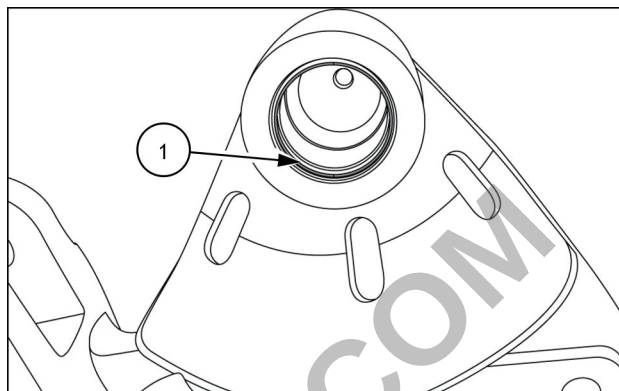
NHIL14CT00341AA 1

Front drive shaft seal components

- | | | | |
|------------------|-------------------|----------------------|---------------|
| (1) Gear | (4) O - ring | (7) Front axle shaft | (10) Lock nut |
| (2) Snap ring | (5) Seal ring | (8) Shims | |
| (3) Ball bearing | (6) Seal assembly | (9) Ball bearing | |

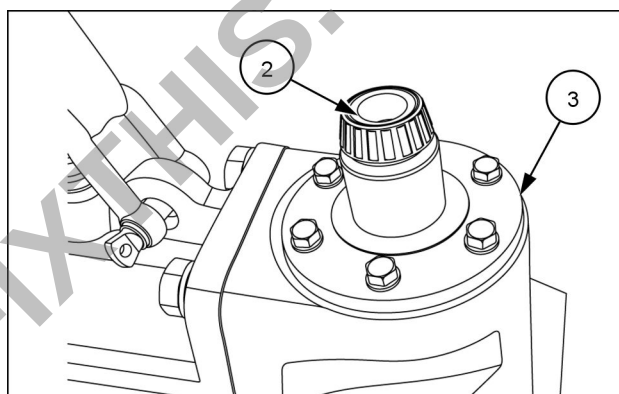
Steering knuckle and king pin - Install - Steering arm installation

1. Inspect the tapered bearing race (1) installed in the steering arm housing.



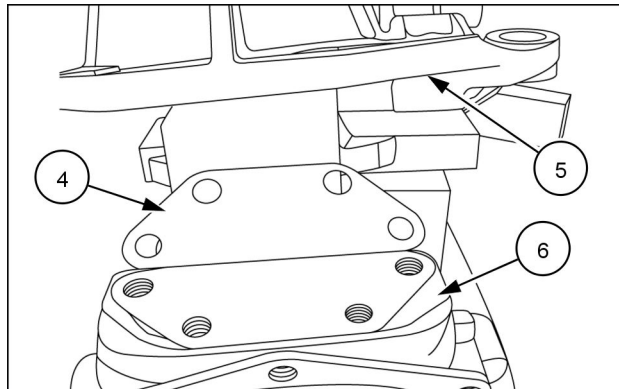
93112152 1

2. Place the steering arm housing onto the tapered bearing (2) and king pin housing (3)



93112153 2

3. Install shim(s) (4) that were removed during disassembly, between the steering arm housing (5) and gear case housing (6).

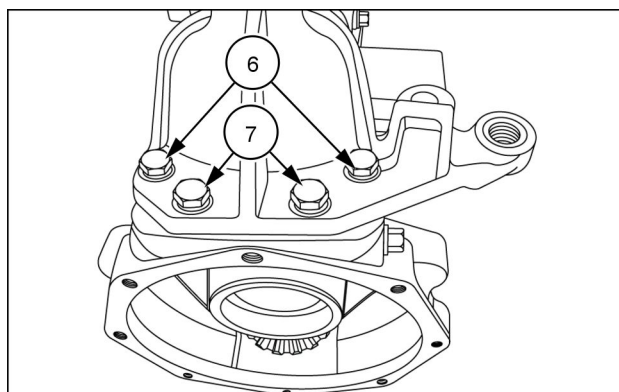


93112143 3

4. Install four M12 bolts at the top of the steering arm housing.

NOTE: Two different length bolts are used.

- Two outer M12 x 35 (6).
- Two inner M12 x 30 (7).



93112142 4

Differential lock - Overview

⚠ WARNING

Steering is difficult with the differential lock engaged. An accident could result. During field operation, use the differential lock for traction improvement but release for turning at row end. Do not drive at high speeds or on roads with the differential lock engaged. Failure to comply could result in death or serious injury.

W0292A

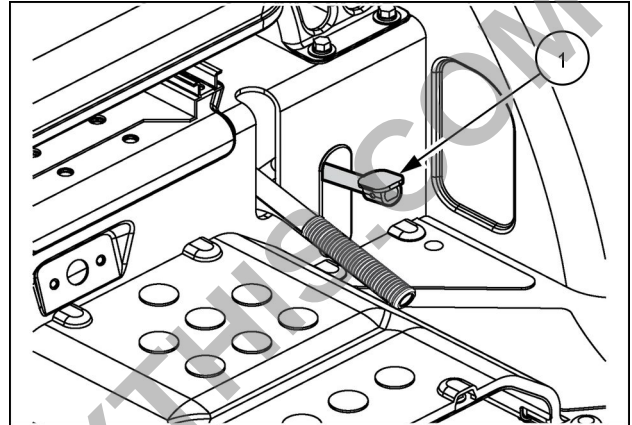
The differential lock pedal is located on the left-hand foot platform on HST models (1) and on the right-hand foot platform on gear models (2). The differential lock is used to obtain additional traction in wet or loose soil.

When the differential lock pedal is depressed, both final drive pinion gear shafts are locked together, preventing one wheel from rotating independently of the other. Whenever one wheel begins to slip in wet or loose soil, use the lock to obtain additional traction from the opposite wheel.

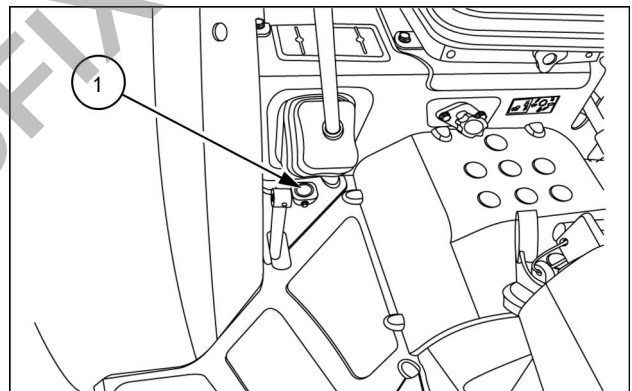
To operate the differential lock, depress and hold the pedal down until the lock is positively engaged. It is best to engage the lock while the wheels are turning slowly to minimize shock loads to the driveline. If a wheel spins at high speed, such as on ice, reduce engine speed to idle before engaging the lock or damage may result. Release the pedal to disengage the differential lock.

NOTE: In some instances, the lock may remain engaged after the pedal is released. This can occur if one rear wheel is turning at a faster speed than the other. The lock can be disengaged in one of two ways if this occurs:

- Decrease the drawbar pull by raising or disengaging the implement so that neither wheel tends to slip.
- Depress the clutch pedal and rapidly apply and release a light braking load to the wheel with less traction.



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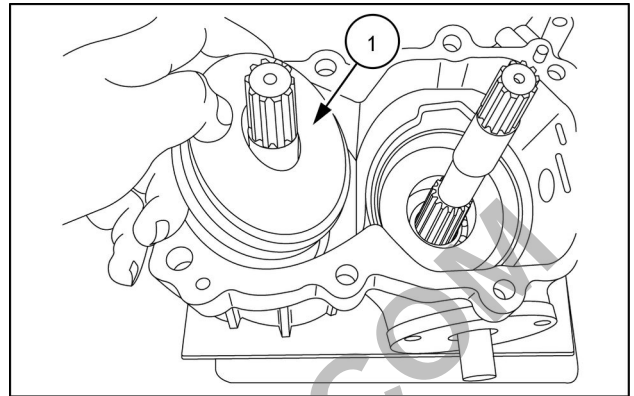
Hydrostatic drive - 29

Transmission and steering hydrostatic control - 100

**Boomer™ 40 [0 - 2103012735] , Boomer™ 40 [2103012736 - 2106014859] ,
Boomer™ 40 [2106014860 -] , Boomer™ 50 [0 - 2105012137] , Boomer™ 50
[2105012138 - 2105013791], Boomer™ 50 [2105013792 -]**

Swash plate removal

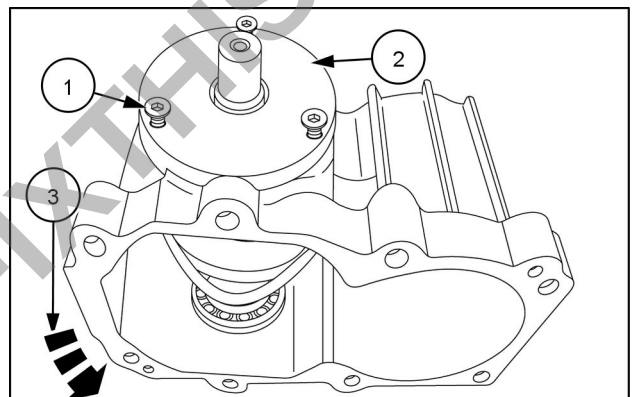
1. Remove the swash plate (1) from the motor side.



NHIL12CT01053AA 12

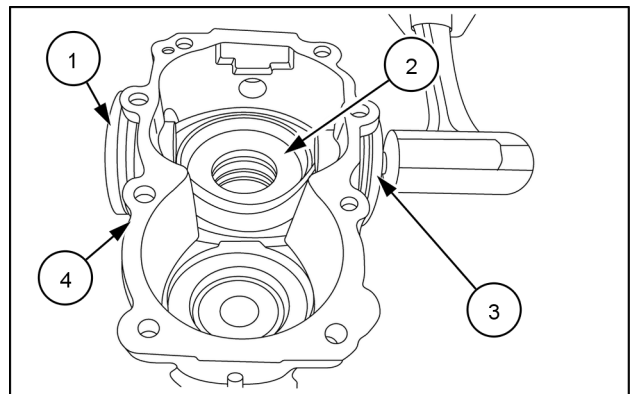
NOTICE: To prevent stripping of the screw heads, use an impact tool with the correct bit.

2. Remove the six screws (1) (three on each cover), on both sides of the pump shaft, from cover (2) (Not shown), and from cover (3).



NHIL12CT01054AA 13

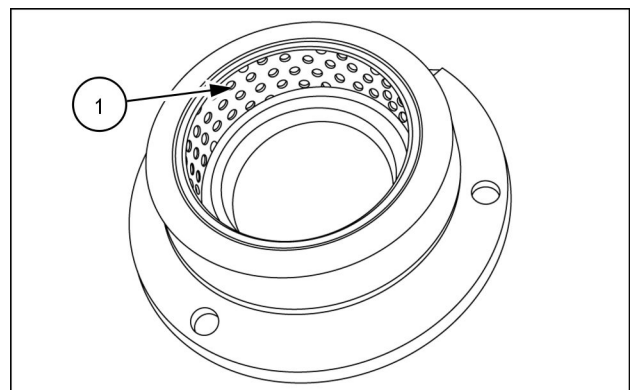
3. Use a soft faced hammer to separate the cover (1) from the body (2), and also tap lightly the section of swash plate (3), to remove the cover (4).



NHIL12CT01055AA 14

NOTICE: If scoring is found in the metallic bushings (1), replace bushing and swash plate cover as a unit.

4. Inspect the swash plate covers (1) and (2).
5. Inspect the bushings (1).



93109680 15



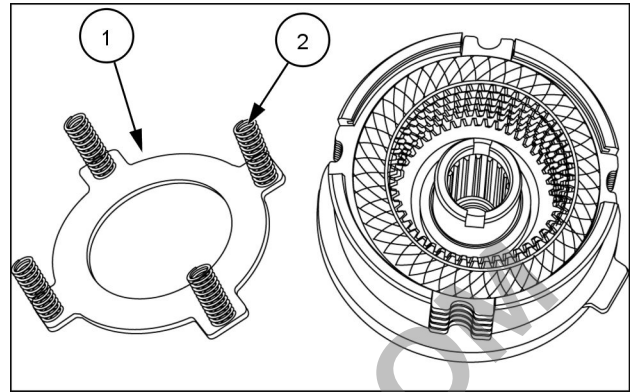
SERVICE MANUAL

Power Take-Off (PTO)

**Boomer™ 40 [0 - 2103012735] , Boomer™ 40 [2103012736 - 2106014859] ,
Boomer™ 40 [2106014860 -] , Boomer™ 50 [0 - 2105012137] , Boomer™ 50
[2105012138 - 2105013791], Boomer™ 50 [2105013792 -]**

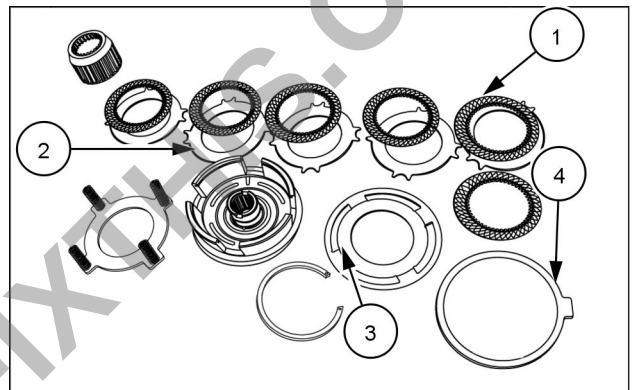
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5. Remove the top plate **(1)** and springs **(2)** the from clutch housing. Check for broken springs and damage to the top plate.



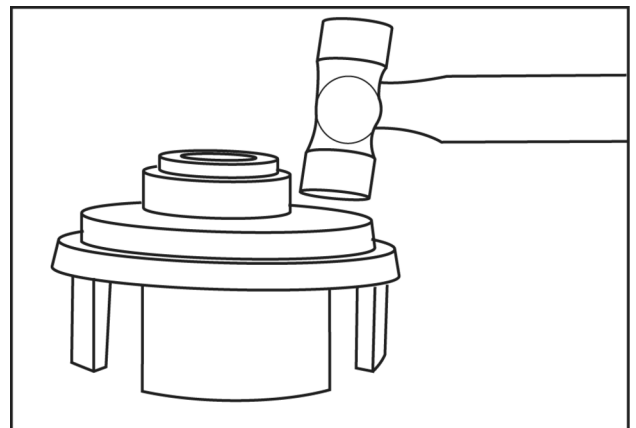
93106753 4

6. Remove the six friction disks **(1)** and the five clutch plates **(2)**. Check for damage and wear and replace if necessary.
7. Remove the slotted disk **(3)** and brake disk **(4)**.



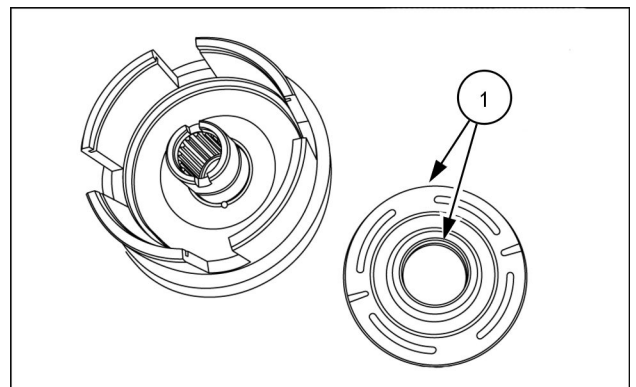
93106752 5

8. To remove the clutch cylinder, place the hub on a protective surface and strike the hub as shown with a plastic hammer or piece of wood to dislodge the cylinder.



76106756 6

9. Inspect the O-rings **(1)** on the cylinder for damage or wear and replace if necessary.



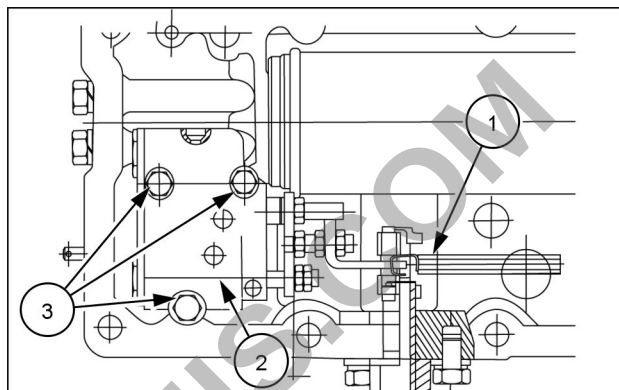
93106754 7

Brake drums - General specification

Service Brakes	Specification
Type	Wet disc, oil bath, axle shaft mounted
Control	Mechanical ; two suspended pedals
Parking brake	Engages service brake
Disc material	Paper
Discs per brake	4 sides of 2 discs
Disc thickness	5.00 - 5.14 mm (0.1969 - 0.2024 in)

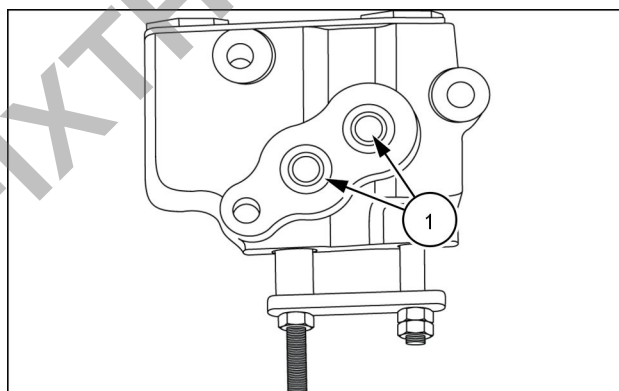
Hitch control valve - Remove

1. Lower three-point hitch completely, to relieve all oil pressure in Hydraulic Power Lift (HPL) system.
2. Remove HPL housing from the transmission case.
3. Remove spring **(1)** and the three retaining bolts **(3)**.
4. Remove control valve **(2)** from the HPL housing.



93102615 1

5. Verify the two O-rings **(1)** are present on the control valve and are not damaged.



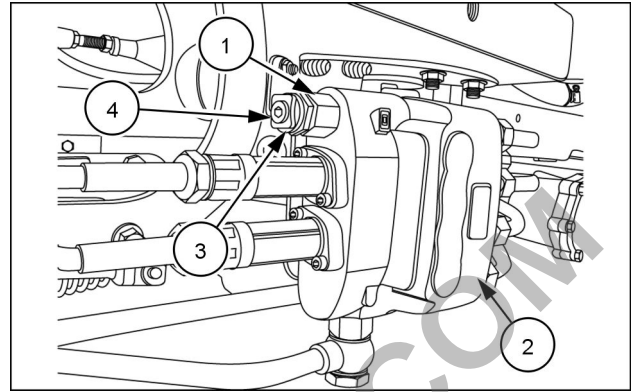
93102617 2

Next operation:

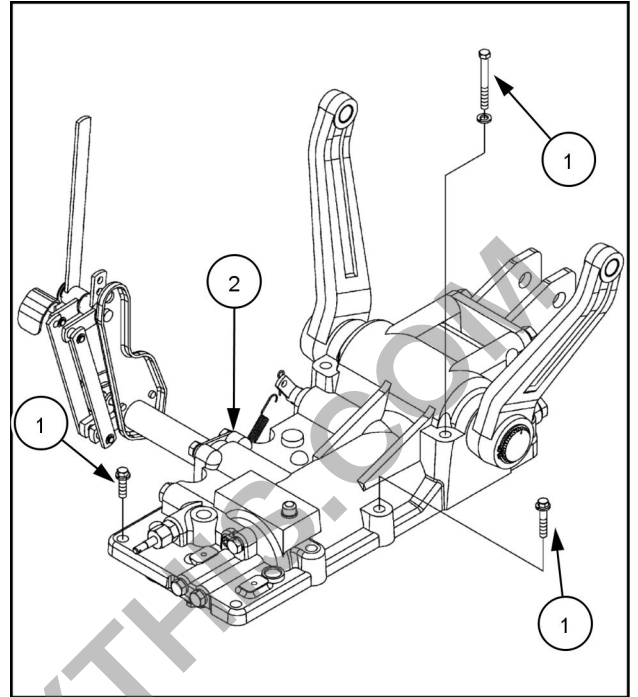
Hitch control valve - Disassemble (35.114)

Main relief valve - Static description

The hydraulic system relief valve (1) is located on the rear side of the mid mount two spool valve (2). The mid mount valve is located underneath the right side of the operator's platform. The relief valve pressure setting is **16671 kPa (2418 psi)**. The relief valve is adjustable, by loosening the jam nut (3) and turning the valve stem (4) clockwise to increase relief pressure or counterclockwise to decrease pressure.



5. Remove the ten bolts **(1)** that retain the HPL housing **(2)** to the top of the transmission case.
6. Strike the HPL housing with a dead blow hammer to break the seal loose on top of the transmission case and lift housing from the tractor.

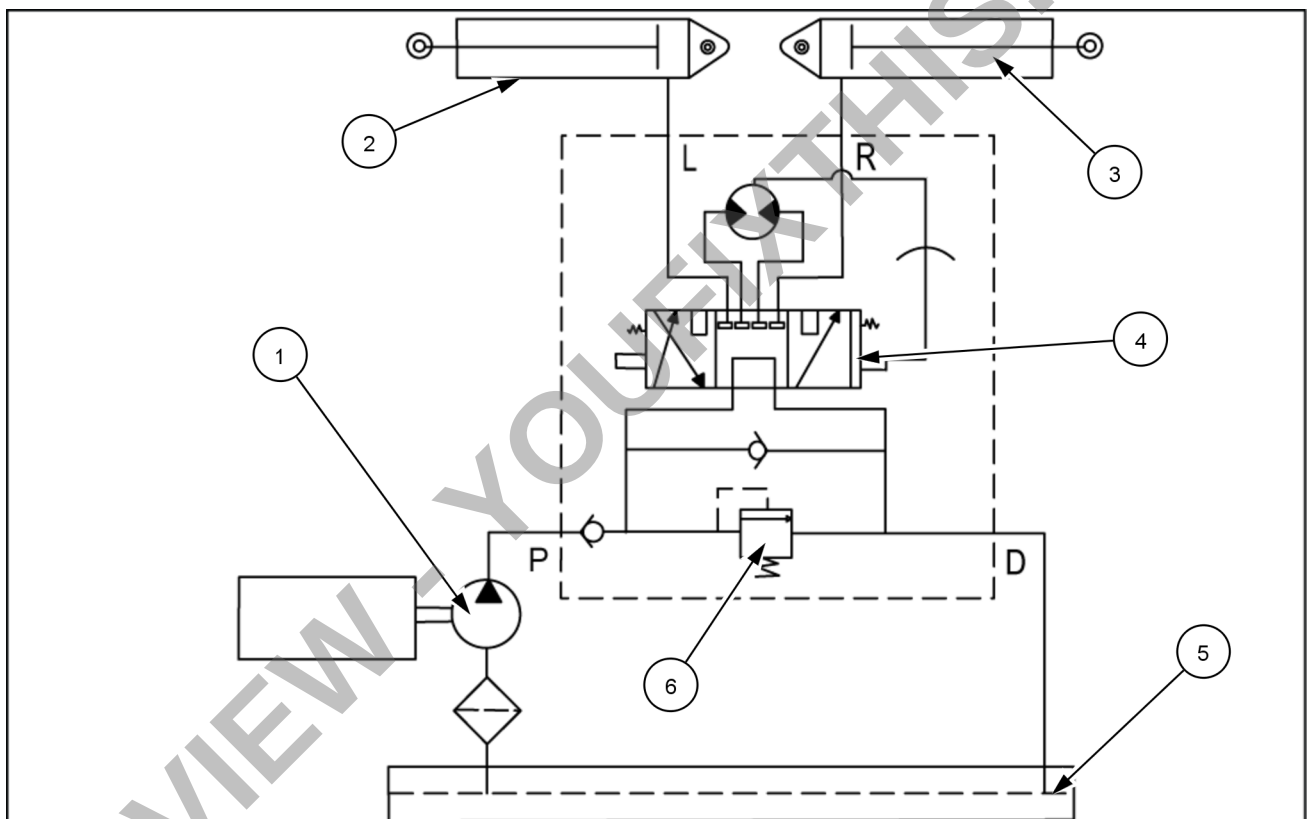


76109580 4

Hydraulic control components - Overview

Characteristics

1. The oil for the hydraulic steering system is accumulated in the transmission sump.
2. The same oil is used for the transmission, and the hydraulic lift.
3. The hydraulic steering system consists of the following:
 - Hydraulic pump
 - Steering unit
 - Steering cylinder
4. The system is simple in construction, has good endurance and is easy to overhaul.
5. The hydraulic steering pump (1) is separate from the hydraulic lift, therefore it is never starved for oil.



NHIL16CT00598FA 1

Hydraulic circuit

- | | |
|----------------------------------|------------------|
| (1) Pump | (4) Spool valve |
| (2) Left-hand steering cylinder | (5) Sump |
| (3) Right-hand steering cylinder | (6) Relief valve |

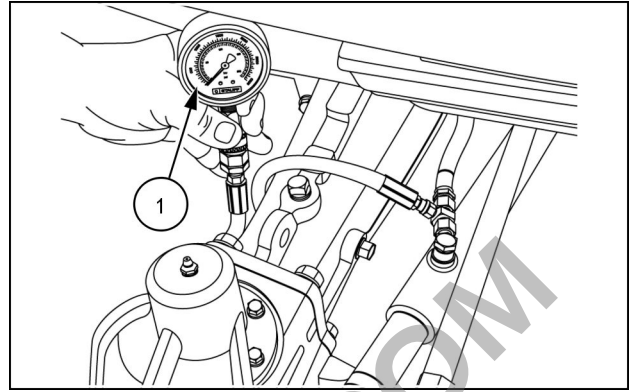
When the steering wheel is stationary, the oil returns from the spool of the steering valve (3) to the transmission sump (4).

When the steering wheel is turned, however, the returning oil flow to the sump is interrupted, and turned into "High pressure" oil to perform work.

The steering valve controls the oil flow to the steering cylinder (2) which in turn, turns the wheels to the left or to the right.

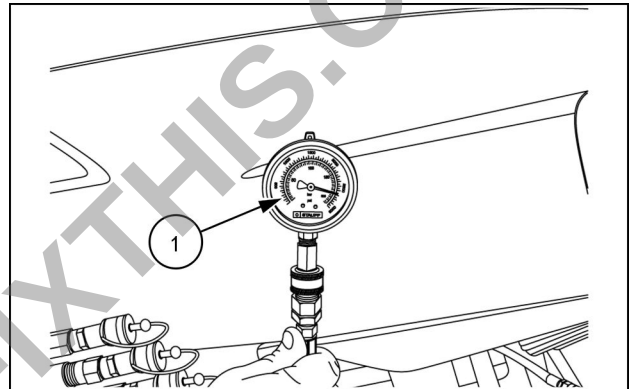
If the steering system pressure ever increases above the relief valve (5) setting, the oil will then return to the transmission sump through the steering relief valve.

3. The gauge indicates **0 psi (1)**.



93112186 2

4. With the engine speed at **2600 RPM** turn the wheel to the left, the pressure will rise to approximately **14217 kPa (2062 psi) (1)**.
5. The gauge (1) indicates pressure.

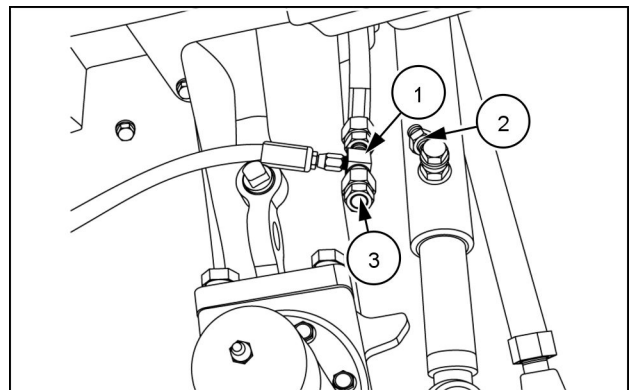


93112192 3

NOTE: If the gauge pressure rises and then begins to fall off, this is an indication of steering cylinder leakage.

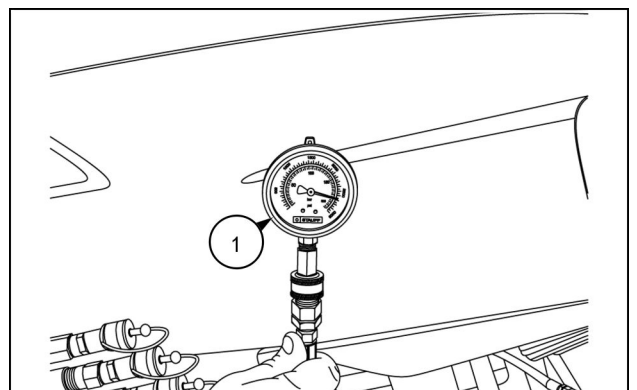
Steering relief valve operation test

1. Use a pan to receive oil leakage.
2. Disassemble the " TEE " (1) on the steering cylinder side.
3. Install a cap (2) here.
4. Install a plug (3) in the " TEE " .



93112190 4

5. Turn on the tractor engine.
6. Increase engine speed to **2600 RPM**.
7. Turn the steering wheel hard to the left or to the right. The pressure gauge will rise to a point and no higher.
8. Approximate location of **14217 kPa (2062 psi)** on the gauge (1).



93112192 5

Electrical system - Electrical schematic sheet 03 - Starting system, gear transmission

Boomer™ 40 [0 - 2103012735]	WE Platform - With ROPS
Boomer™ 40 [2103012736 - 2106014859]	WE Platform - With ROPS
Boomer™ 40 [2106014860 -]	WE Platform - With ROPS
Boomer™ 50 [0 - 2105012137]	WE Platform - With ROPS
Boomer™ 50 [2105012138 - 2105013791]	WE Platform - With ROPS
Boomer™ 50 [2105013792 -]	WE Platform - With ROPS

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Index

Electrical systems - 55

Electrical system - 000

Electrical system - Component identification	3
Electrical system - Electrical schematic sheet 01 - Complete tractor schematic - Gear (*)	14
Electrical system - Electrical schematic sheet 01 - Complete tractor schematic - HST	8
Electrical system - Electrical schematic sheet 01 - Complete tractor schematic, Gear	11
Electrical system - Electrical schematic sheet 01 - Complete tractor schematic, HST	6
Electrical system - Electrical schematic sheet 02 - Starting system, HST transmission	17
Electrical system - Electrical schematic sheet 02 - Starting system, HST transmission (*)	20
Electrical system - Electrical schematic sheet 03 - Starting system, gear transmission	24
Electrical system - Electrical schematic sheet 03 - Starting system, gear transmission (*)	27
Electrical system - Electrical schematic sheet 04 - Safe operation, operator present; HST transmission (*)	31
Electrical system - Electrical schematic sheet 05 - Safe operation, operator not present; HST transmission	34
Electrical system - Electrical schematic sheet 06 - Safe operation, operator present; gear transmission	37
Electrical system - Electrical schematic sheet 07 - Safe operation, operator not present; gear transmission (*)	40
Electrical system - Electrical schematic sheet 08 - Glow plugs (*)	43
Electrical system - Electrical schematic sheet 09 - Hazard lights (*)	45
Electrical system - Electrical schematic sheet 10 - Work lights (*)	48
Electrical system - Electrical schematic sheet 11 - Road lights (*)	51
Electrical system - Electrical schematic sheet 12 - Right turn signal (*)	54
Electrical system - Electrical schematic sheet 13 - Left turn signal (*)	56
Electrical system - Electrical schematic sheet 14 - HST cruise control (*)	58
Electrical system - Electrical schematic sheet 15 - Tachometer (*)	61
Electrical system - Electrical schematic sheet 16 - Battery charge (*)	63
Electrical system - Electrical schematic sheet 17 - Fuel filter sensor	65
Electrical system - Electrical schematic sheet 18 Engine Coolant Temperature (*)	67
Electrical system - Electrical schematic sheet 19 - Fuel Level	69
Electrical system - Electrical schematic sheet 20 - Engine Low Oil Pressure Indicator Light (*) ...	71
Electrical system - Electrical schematic sheet 21 - Park Brake Indicator Light (*)	73

(*) See content for specific models



Electrical systems - 55

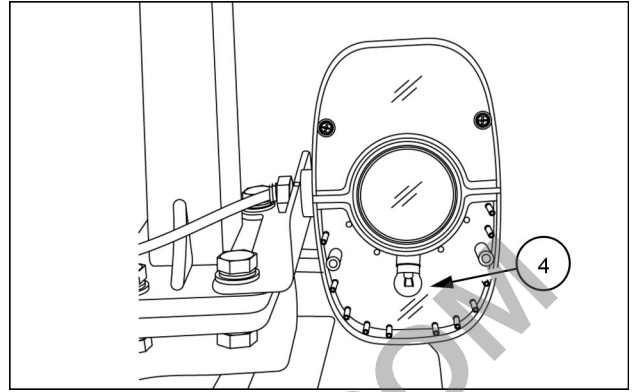
Harnesses and connectors - 100

**Boomer™ 40 [0 - 2103012735] , Boomer™ 40 [2103012736 - 2106014859] ,
Boomer™ 40 [2106014860 -] , Boomer™ 50 [0 - 2105012137] , Boomer™ 50
[2105012138 - 2105013791], Boomer™ 50 [2105013792 -]**

6. Push in on the bulb **(4)** and rotate bulb counter-clockwise in socket to remove.

NOTE: Replace with a R10 watt bulb.

7. Insert the new bulb into the socket and turn it clockwise until the bulb locks into place.
8. Install lenses and retaining screws.



93100886 4

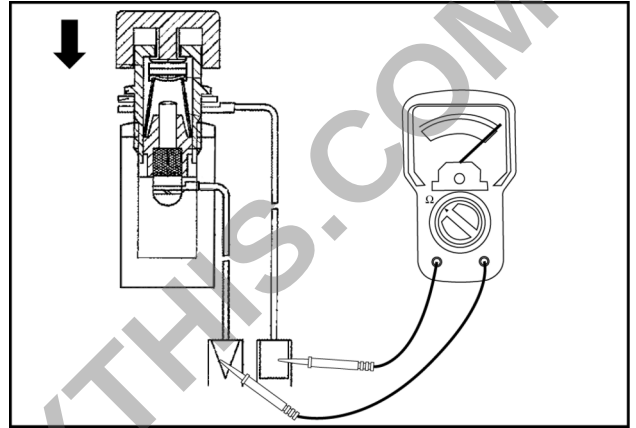
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Buzzer - Test - Switch

Prior operation:

Buzzer - Remove - Switch (55.408)

1. Disconnect horn switch from tractor wire harness.
2. Place an ohmmeter across the two wire leads of the horn switch
3. Depress switch, there should be continuity across the two switch leads.



76106734 1

4. If continuity does not exist when switch is depressed, replace the switch.

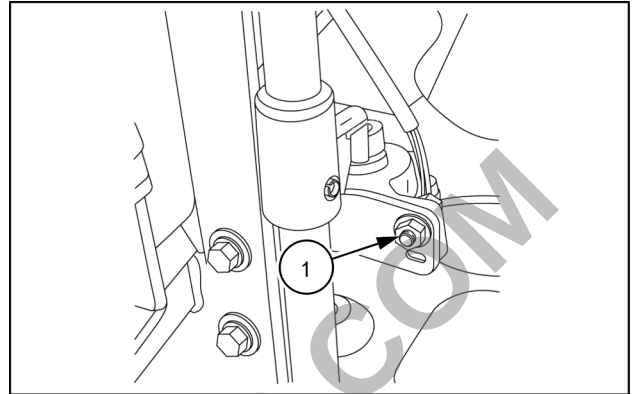
Next operation:

Buzzer - Install - Switch (55.408)

Adjustment

To adjust the FNR switch, do the following:

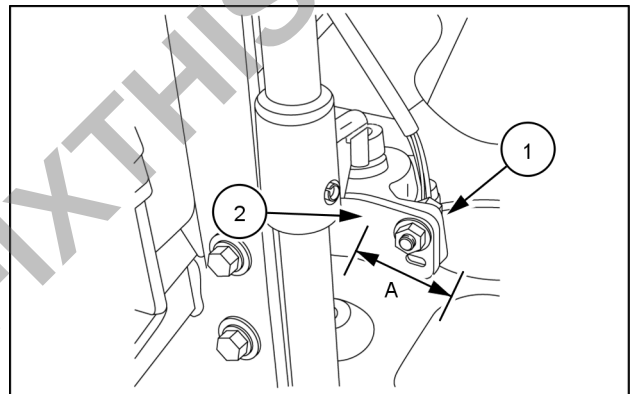
1. Loosen the switch mounting hardware (1).



RAIL12TR00719AA 2

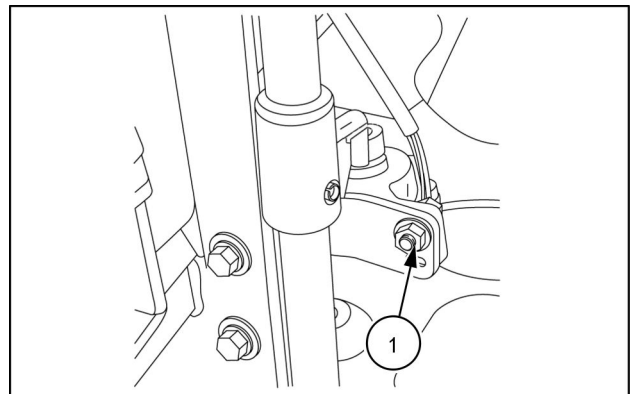
2. Adjust the neutral start position by moving the FNR switch (1) in the slot of the FNR bracket (2).

NOTICE: The FNR switch has 25 to 30 degrees of lever movement for the neutral start band. It is required to adjust the FNR switch so that the unit does not start when the FNR lever is in the Forward or Reverse position. Center the neutral start band with the FNR lever in the neutral position.



RAIL12TR00719AA 3

3. After the FNR switch is properly adjusted, tighten switch mounting hardware (1).



RAIL12TR00719AA 4

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