SERVICE MANUAL

Boomer™ 40 ROPS / Boomer™ 50 ROPS

Compact Tractor

Boomer™ 40 - From PIN 0 to 2103012735; From PIN 2103012736 to 2106014859; PIN 2106014860 and above;
Boomer™ 50 - From PIN 0 to 2105012137; From PIN 2105012138 to 2105013791; PIN 2105013792 and above

Part number 47917001
1st edition English
December 2016

NEW HOLLAND AGRICULTURE

Safety rules

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

Personal safety

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

Throughout this manual you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury.

WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.

CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

Machine safety

NOTICE: *Notice indicates a situation that, if not avoided, could result in machine or property damage.*

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine or property damage. The word Notice is used to address practices not related to personal safety.

Information

NOTE: *Note indicates additional information that clarifies steps, procedures, or other information in this manual.*

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

⚠ Personal Protective Equipment (PPE) ⚠

Wear Personal Protective Equipment (PPE) such as hard hat, eye protection, heavy gloves, hearing protection, protective clothing, etc.

⚠ Do Not Operate tag ⚠

Before you start servicing the tractor, attach a 'Do Not Operate' warning tag to the tractor in an area that will be visible.

⚠ Hazardous chemicals ⚠

If you are exposed to or come in contact with hazardous chemicals you can be seriously injured. The fluids, lubricants, paints, adhesives, coolant, etc. required for the function of your tractor can be hazardous. They may be attractive and harmful to domestic animals as well as humans.

Material Safety Data Sheets (MSDS) provide information about the chemical substances within a product, safe handling and storage procedures, first aid measures and procedures to be taken in the event of a spill or accidental release. MSDS are available from your dealer.

Before you service your tractor check the MSDS for each lubricant, fluid, etc. used in this tractor. This information indicates the associated risks and will help you service the tractor safely. Follow the information in the MSDS, on manufacturer containers, as well as the information in this manual when servicing the tractor.

Dispose of all fluids, filters, and containers in an environmentally safe manner according to local laws and regulations. Check with local environmental and recycling centers or your dealer for correct disposal information.

Store fluids and filters in accordance with local laws and regulations. Use only appropriate containers for the storage of chemicals or petrochemical substances.

Keep out of reach or children or other unauthorized persons.

Additional precautions are required for applied chemicals. Obtain complete information from the manufacturer or distributor of the chemicals before using them.

⚠ Utility safety ⚠

When digging or using ground-engaging equipment, be aware of buried cables and other services. Contact your local utilities or authorities, as appropriate to determine the locations of services.

Make sure the tractor has sufficient clearance to pass in all directions. Pay special attention to overhead power lines and hanging obstacles. High voltage lines may require significant clearance for safety. Contact local authorities or utilities to obtain safe clearance distances from high voltage power lines.

Retract raised or extended components, if necessary. Remove or lower radio antennas or other accessories. Should a contact between the tractor and an electric power source occur, the following precautions must be taken:

- Stop the tractor movement immediately.
- Apply the park brake, stop the engine, and remove the key.
- Check if you can safely leave the cab or your actual position without contact with electrical wires. If not, stay in your position and call for help. If you can leave your position without touching lines, jump clear of the tractor to make sure you do not make contact with the ground and the tractor at the same time.
- Do not permit anyone to touch the tractor until power has been shut off to the power lines.

Torque values for four-bolt flange connections (Inch Screws, Grade 8)

Metric size mm	Imperial size in	Screw code 61	Code 61 N·m (lb ft) ± 10 %	Screw code 62	Code 62 N·m (lb ft) ± 10 %
13	1/2	5/16-18	34 (25.1)	5/16-18	34 (25.1)
19	3/4	3/8-16	63 (46.5)	3/8-16	63 (46.5)
25	1	3/8-16	63 (46.5)	7/16-14	97 (71.5)
32	1-1/4	7/16-14	97 (71.5)	1/2-13	158 (116.5)
38	1-1/2	1/2-13	158 (116.5)	5/8-11	310 (228.6)
51	2	1/2-13	158 (116.5)	3/4-10	473 (348.9)
64	2-1/2	1/2-13	158 (116.5)	–	–
76	3	5/8-11	310 (228.6)	–	–
89	3-1/2	5/8-11	310 (228.6)	–	–
102	4	5/8-11	310 (228.6)	–	–
127	5	5/8-11	310 (228.6)	–	–

Tapered thread connection tightening

British Standard Pipe Taper (BSPT) thread size (inch)	National Pipe Thread Fuel (NPTF) thread size (inch)	Turns from finger tight
1/8-28	1/8-27	2 - 3
1/4-19	1/4-18	2 - 3
3/8-19	3/8-18	2 - 3
1/2-14	1/2-14	2 - 3
3/4-14	3/4-14	2 - 3
1-11	1-11 1/2	1.5 - 2.5
1-1/4-11	1-1/4-11 1/2	1.5 - 2.5
1-1/2-11	1-1/2-11 1/2	1.5 - 2.5
2-11	2-11 1/2	1.5 - 2.5

Torque values for banjo bolt connections (Copper washer style)

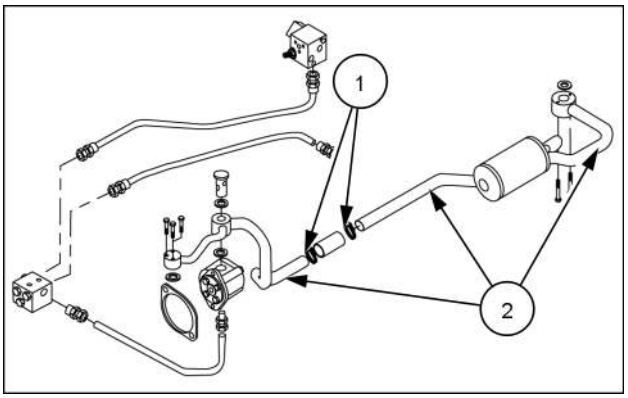
Bolt thread (metric)	Hex size (mm)	Torque N·m (lb ft) ± 10 %
M8 x 1.25	13	13 (9.6)
M10 x 1.25	17	16 (11.8)
M12 x 1.5	17	40 (29.5)
M14 x 1.5	19	45 (33.2)
M16 x 1.5	22	48 (35.4)
M18 x 1.5	24	50 (36.9)
M20 x 1.5	27	73 (53.8)
M22 x 1.5	32	73 (53.8)
M24 x 1.5	32	73 (53.8)

Capacities

Boomer™ 40	WE
Boomer™ 50	WE

CAPACITIES		
Fuel Tank	**36.0 l** (**9.5 US gal**)	**36.0 l** (**9.5 US gal**)
Cooling System	**6.0 l** (**6.3 US qt**)	**6.0 l** (**6.3 US qt**)
Engine Crankcase:		
With Filter	**6.6 l** (**7.0 US qt**)	**6.6 l** (**7.0 US qt**)
Rear Axle & Transmission (Includes Hydraulics)		
Gear	**43.0 l** (**11.4 US gal**)	**43.0 l** (**11.4 US gal**)
HST	**43.0 l** (**11.4 US gal**)	**43.0 l** (**11.4 US gal**)
Front Axle	**8.0 l** (**8.4 US qt**)	**8.0 l** (**8.4 US qt**)

9. Position a drain pan to collect drain oil and unfasten clamps **(1)**.
10. Disassemble suction tube assembly **(2)**.



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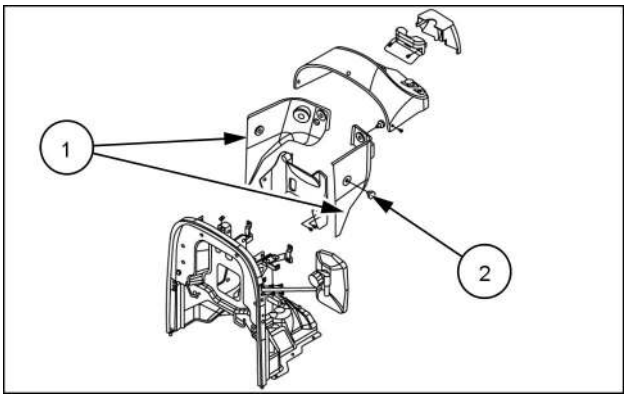
11. Remove the knobs **(2)** on both rear cover halves **(1)** and remove.



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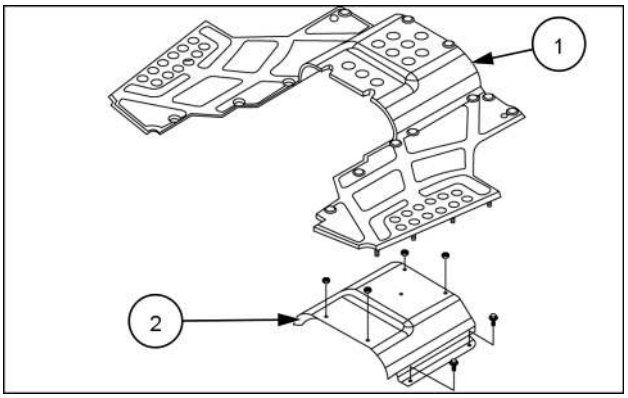
12. Remove the mat **(1)**.
13. Remove the M8 nuts and bolts and remove cover **(2)**.



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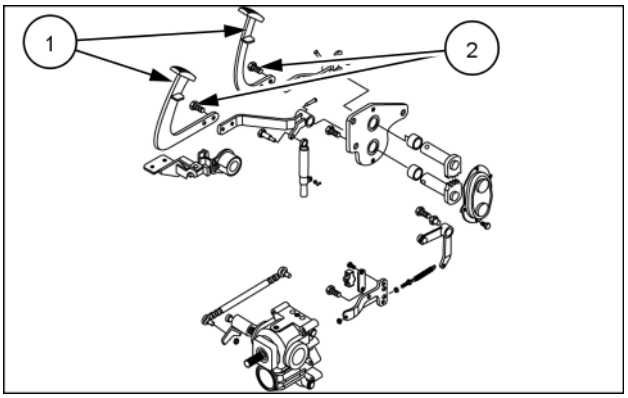
14. Remove the bolts **(2)** and remove the pedals **(1)**.

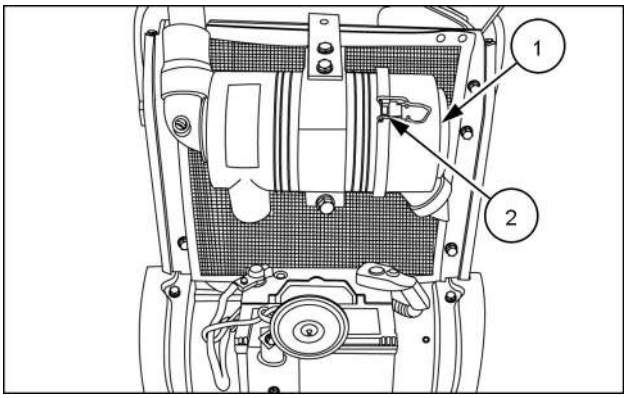


93102243 7

Air cleaners and lines - Check

The air cleaner **(1)** is accessed by opening the tractor hood.
The air cleaner assembly contains two elements: an outer primary element and an inner safety element.

1. To remove the primary element, release the clips **(2)** on the end cap.



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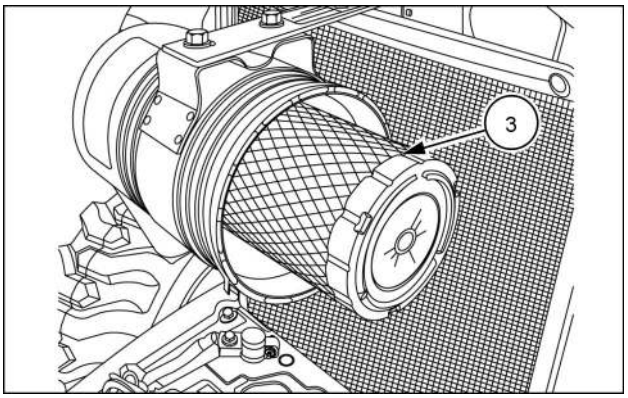
2. Remove the end cap from the air cleaner body to expose the primary element **(3)**.



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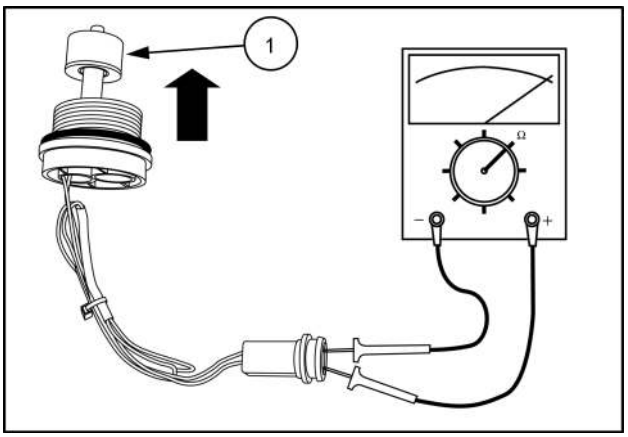
Fuel filters - Test - Fuel filter sensor

Float in "TOP" position

1. Install an ohmmeter across the terminals of the sensor connector.



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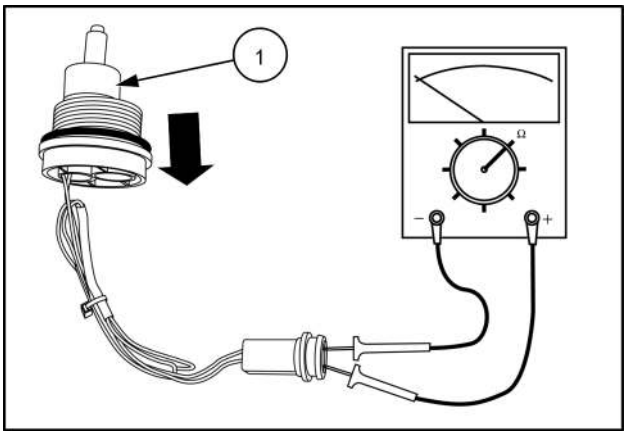
2. Move the float **(1)** to the full top position.
3. There should be continuity across the terminals.
4. If continuity reading does not match as stated in the test procedure, replace the sensor.

Float in "BOTTOM" position

1. Install an ohmmeter across the terminals of the sensor connector.



76110377 2

2. Move the float **(1)** to the full bottom position.
3. There should not be any continuity across the terminals.
4. If continuity reading does not match as stated in the test procedure, replace the sensor.

NOTE: *(Refer to figure **1** for locations.)*

(4) Dimensions		
(KF) = The distance between the' Barrel' and the 'Plunger' before increase of 'Head' pressure.	**5.700 - 5.900 mm** (**0.224 - 0.232 in**)	**5.700 - 5.900 mm** (**0.224 - 0.232 in**)
(MS) = Distance between governor sleeve and control lever. Controls fuel quantity when starting.	**0.900 - 1.100 mm** (**0.035 - 0.043 in**)	**0.900 - 1.100 mm** (**0.035 - 0.043 in**)
(K) = The distance between the' Barrel' and the 'Plunger' after increase of 'Head' pressure.	**3.200 - 3.400 mm** (**0.126 - 0.134 in**)	**3.200 - 3.400 mm** (**0.126 - 0.134 in**)
(BCS)		

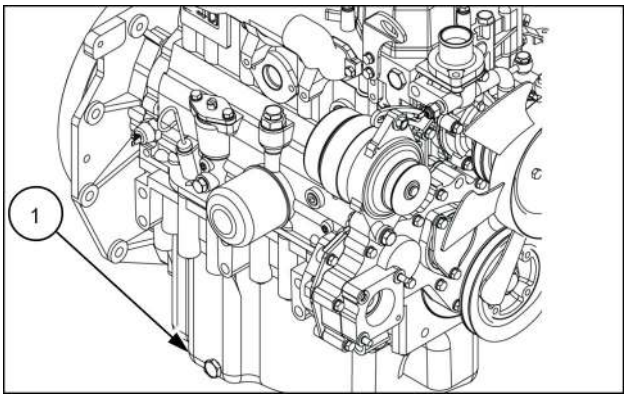
Control lever angle		
(a)	**14 - 22 °**	**14 - 22 °**
(A)	mm	mm
(b)	**33 - 43 °**	**33 - 43 °**
(B)	mm	mm

Engine lubrication system - Change fluid and engine oil filter

NOTE: *Change the engine oil and filter after the first 50 hours of operation, then every 300 hours thereafter. If the tractor is operated for extended periods of time at maximum rated power and speed, or under other types of continuous, severe operating conditions, the engine oil and filter should be changed at 200 hour intervals following the initial oil change.*

To change the engine oil:

1. Place a suitable container beneath the drain opening to catch the used oil. With the tractor engine off but at normal operating temperature, remove the drain plugs, **(1)**. Reinstall the plug after all of the oil has been drained.



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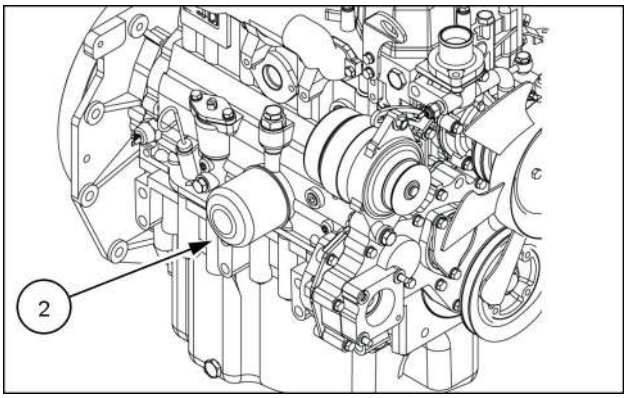
2. Next, place a container below the oil filter, **(2)** to catch the used oil and unscrew the oil filter. Discard the used oil and filter.
3. Coat the gasket on the new filter with a film of clean oil. Screw the filter into place until the gasket contacts its mating surface, then turn the filter approximately three-quarters of a turn by hand. Do not overtighten.
4. Add the proper type and level of new oil, then start the engine and check the filter for leaks.



93100924 2

NOTE: *Oil Capacity, with filter* ***6.6 l*** *(****7.0 US qt****)*

Recommended Oils

Ambient Temp (°F)	Recommended Oil
-12 - 49 °C (**10 - 120 °F**)	**NEW HOLLAND AMBRA MASTERGOLD™ HSP ENGINE OIL SAE 15W-40**
-23.3 - 49 °C (**-10 - 120 °F**)	**NEW HOLLAND AMBRA MASTERGOLD™ HSP ENGINE OIL SAE 10W-30**
-29 - 16 °C (**-20 - 60 °F**)	**NEW HOLLAND AMBRA MASTERGOLD HSP SAE 5W-30**
Oil Specification API CF-4 or CH-4	

NOTE: *Tractors are originally shipped with (15W40) oil.*

Contents

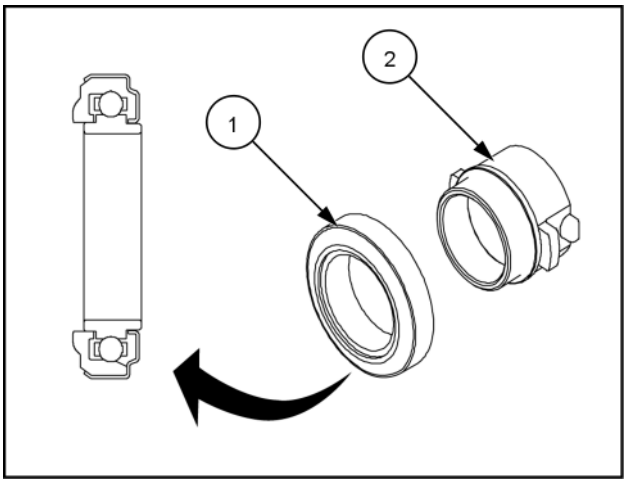
Clutch - 18

Clutch mechanical release control - Assemble - release bearing

Assembly

NOTE: *Check release bearing components for rust, cleaning and greasing as needed before assembling.*

1. Use a hydraulic press to assemble the release bearing **(1)**, hub **(2)** and sleeve. Assemble the bearing and hub with the rounded side of the bearing facing front.



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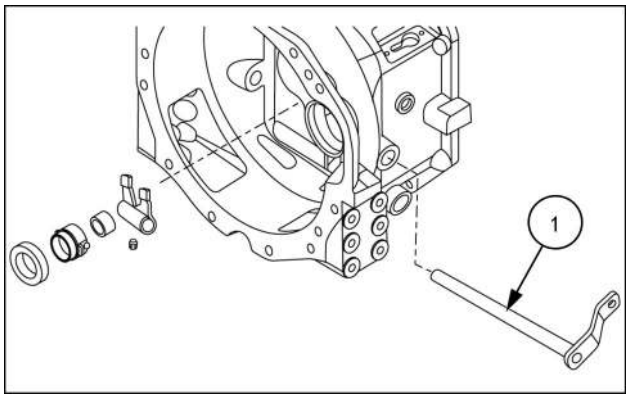
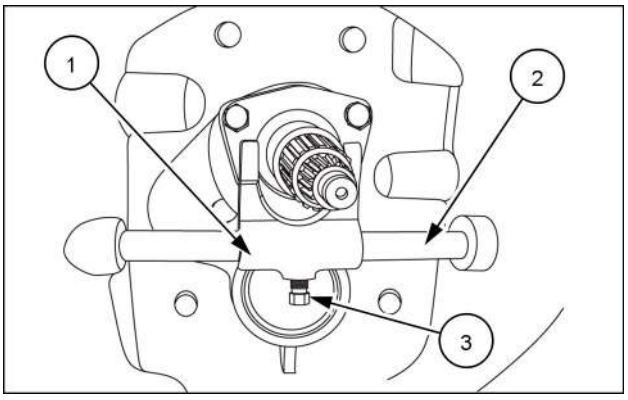
2. Insert release bearing shaft **(1)** into hole in left-hand side of clutch housing.



93102269A 2

3. With the release bearing fork **(1)** facing up and the flat side of the fork to the rear, insert the shaft **(2)** through the fork and out of the other side of the clutch housing.
4. Align hole in fork with the hole in the shaft. Apply **LOCTITE® 242®** to threads of bolt. Insert bolt **(3)** in fork **(1)**, and torque to **75 N·m** (**55 lb ft**).



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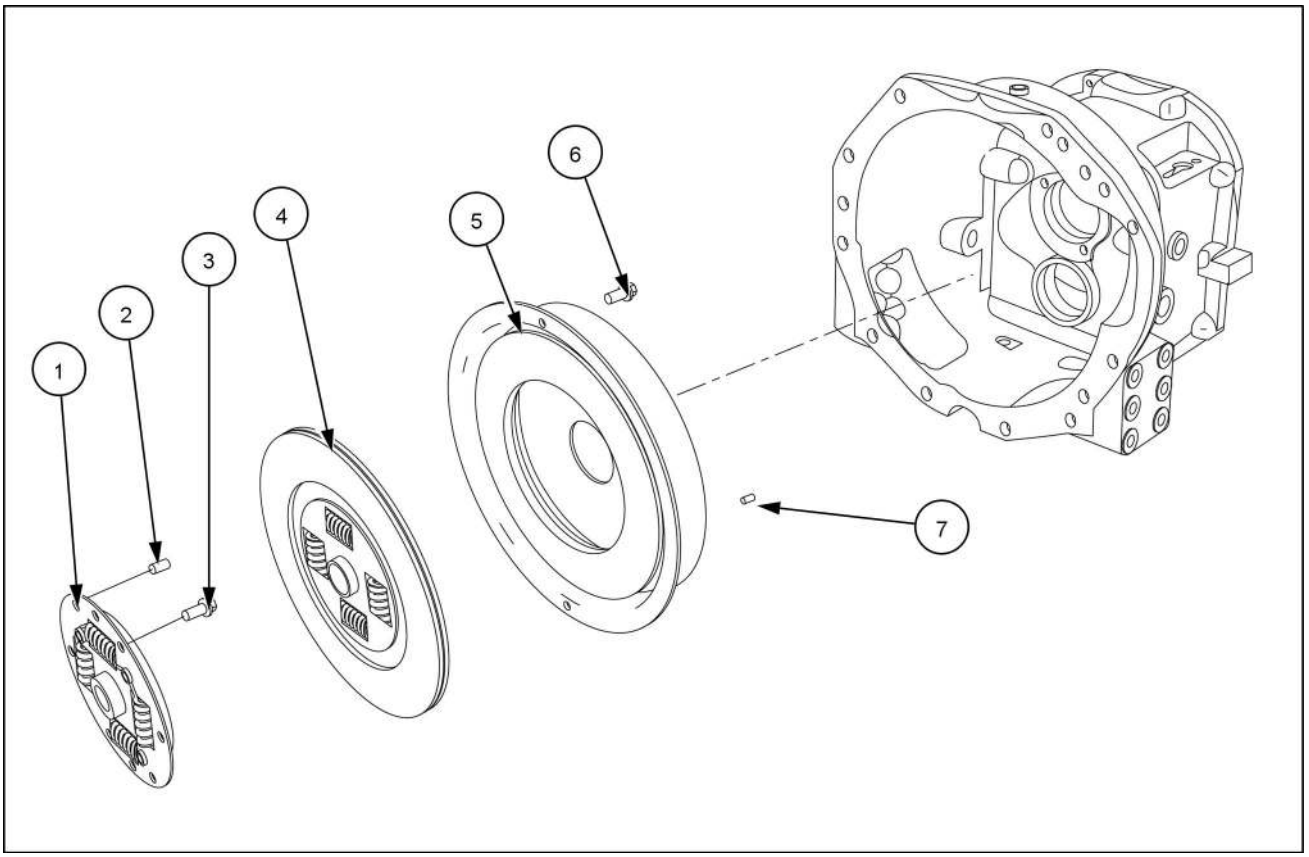
Clutch - Exploded view



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Exploded view of the clutch

(1) Damper assembly

(2) Pin, D8 x 16L (Qty. two)

(3) Hex bolt, M8 x 20 (Qty. six)

(4) Clutch disc assembly

(5) Clutch cover

(6) Hex bolt, M8 x 25 (Qty. twelve)

(7) Pin, D6 x 12L (Qty. two)

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SERVICE - Technical Publications & Tools

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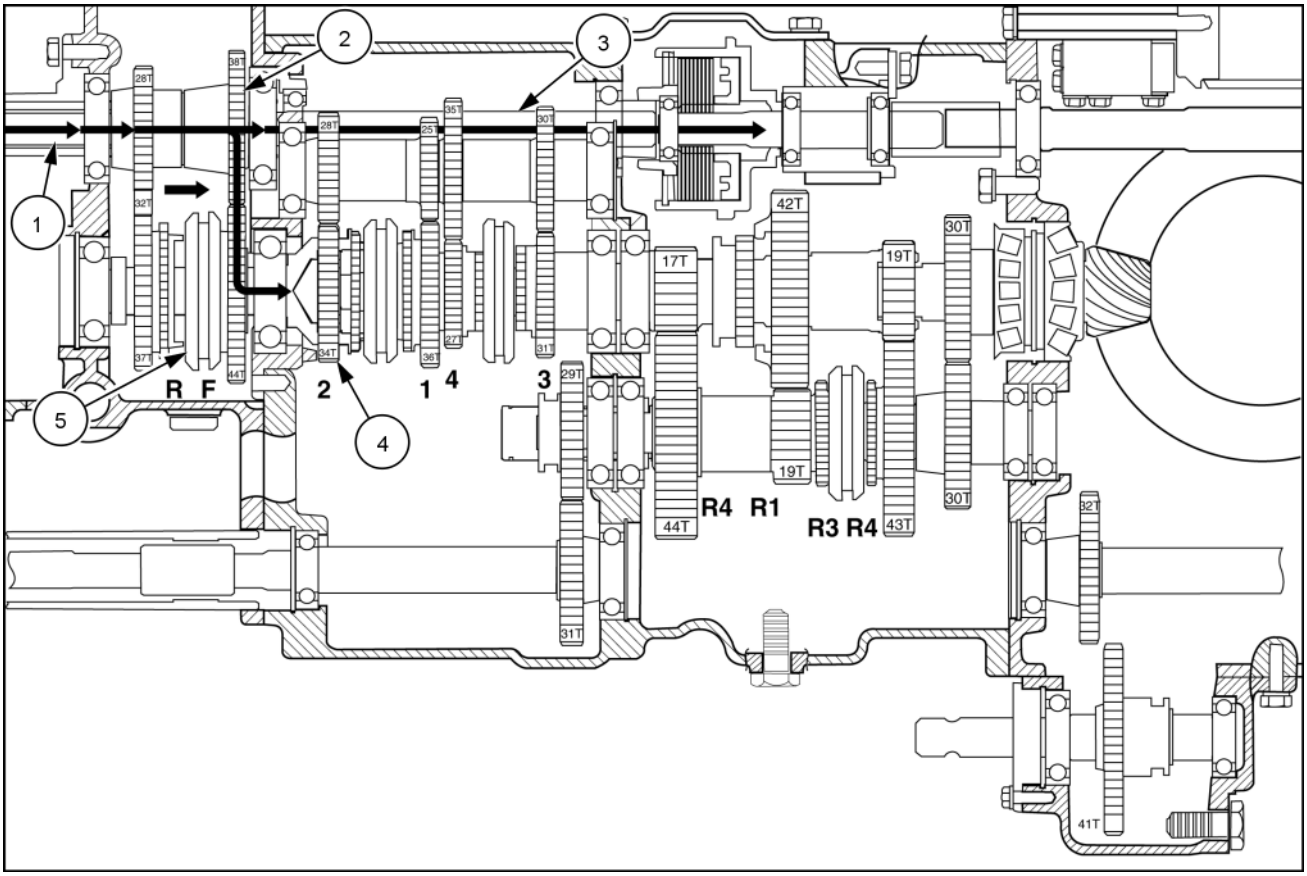
Power Distribution of the 16 x 16 Transmission



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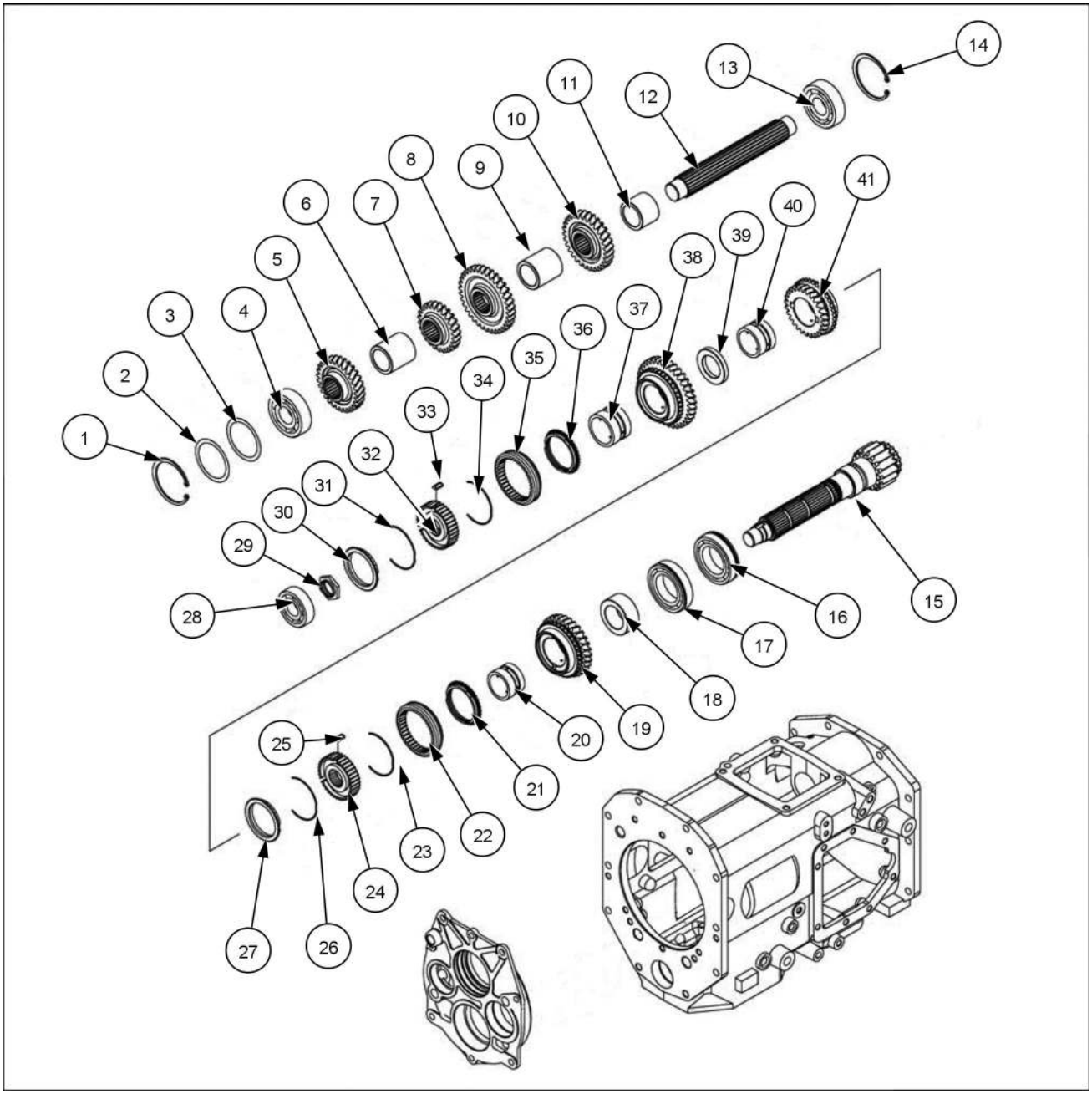
Power distribution - Forward

Forward

Forward torque is applied to the forward/reverse drive shaft **(1)** and PTO input shaft **(3)** directly from the engine. The 16 x 16 transmission has 16 forward and 16 reverse gear and range selections. When the forward/reverse lever is in the FORWARD position the lever moves the forward/reverse synchromesh selector **(5)** rearward, engaging the forward drive gear (38T) **(2)** with the forward driven gear (44T) applying power to the forward/reverse driven shaft **(4)** in the forward direction.

Mechanical transmission - Exploded view Tractors with mechanical (Gear) transmissions



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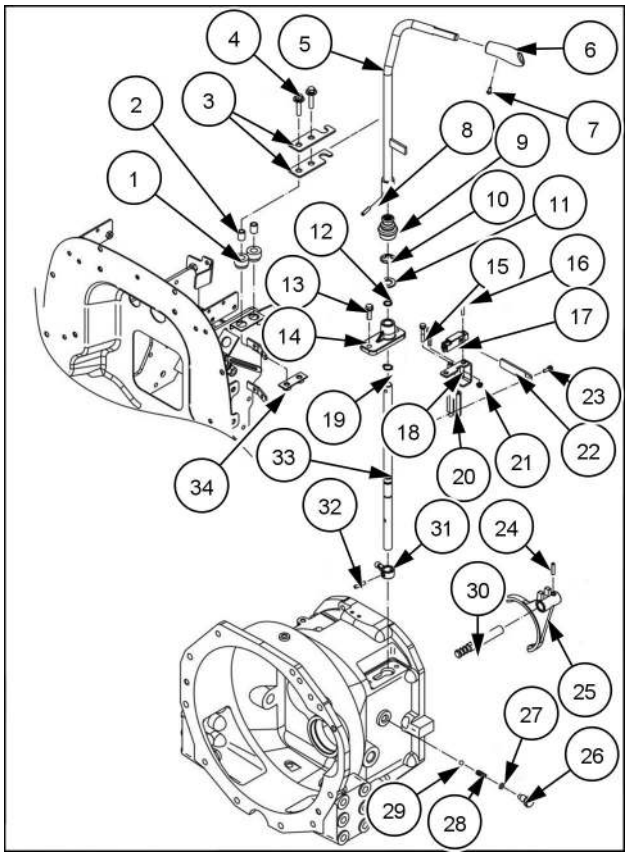
Main gear shaft mechanical transmission

Mechanical transmission - Exploded view shift lever and fork mechanical transmission



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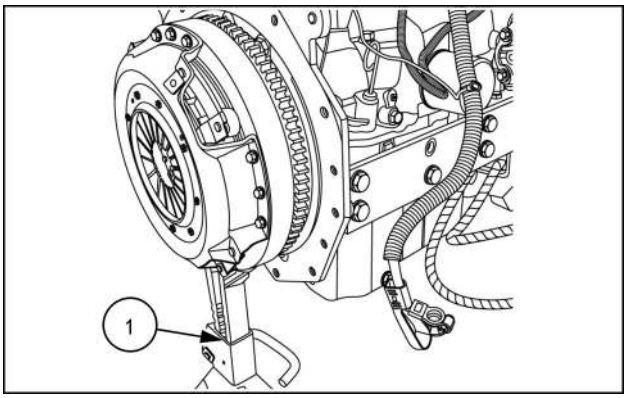
Shift lever and fork mechanical transmission components

(1) Pedal frame mount	**(8)** Spring pin	**(15)** Hex bolt, M6 x 35mm	**(22)** Target plate	**(29)** Shift fork ball
(2) Mount spacers	**(9)** Dust cover	**(16)** Hex bolt, M5 x 30mm	**(23)** Hex bolt with washer, M5 x 16mm	**(30)** Forward and reverse rail
(3) Forward / reverse lever guide	**(10)** Snap ring	**(17)** Proximity switch	**(24)** Spring pin	**(31)** Shift arm
(4) Hex bolt with washer, M8 x 1.25 x 40mm	**(11)** Washer	**(18)** Neutral switch bracket	**(25)** Forward and reverse fork	**(32)** Spring pin
(5) Hand lever, forward and reverse shift	**(12)** O - ring	**(19)** Snap ring	**(26)** Rail bolt	**(33)** Forward and reverse lever
(6) Knob	**(13)** Hex bolt, M8 x 1.25 x 25mm	**(20)** Neutral switch support	**(27)** O - ring	**(34)** Lock plate
(7) Screw , M5 x 10mm	**(14)** Forward and reverse lever guide	**(21)** Flange nut, M5	**(28)** Spring	

3. Remove jack stand **(1)** from flywheel area.



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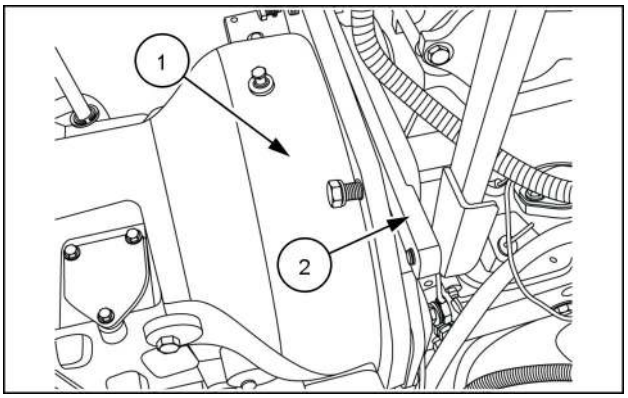
4. Mate the clutch housing **(1)** and engine block **(2)**.



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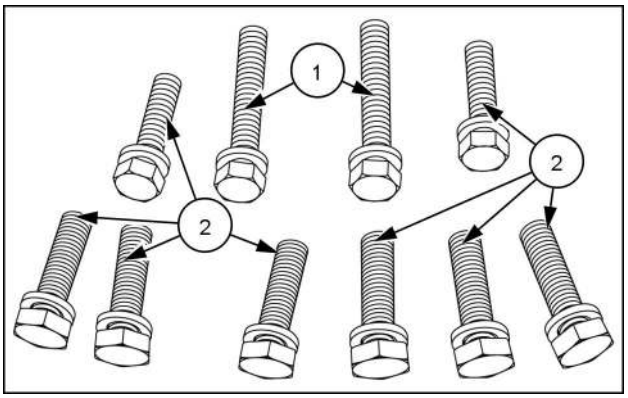
5. Install the two **M12x70 mm** bolts **(1)** into the bottom two holes **(A)** of the clutch housing.
6. Install the eight **M12x45 mm** bolts **(2)** in the remaining holes of the clutch housing.
7. Torque M12 bolts to **93.2 - 108 N·m** (**69 - 80 lb ft**).



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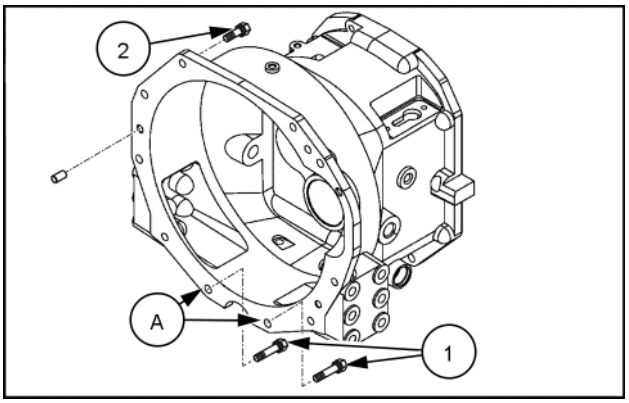

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Transmission internal parts - Overview - Forward and reverse shuttle lever (Mechanical)

⚠ WARNING

Loss of control hazard!
When traveling downhill, the ground speed control lever may not sufficiently reduce machine speed. To prevent a runaway machine, shift into a lower gear that is appropriate for the steepness of the hill.
Failure to comply could result in death or serious injury.

W0092A

⚠ WARNING

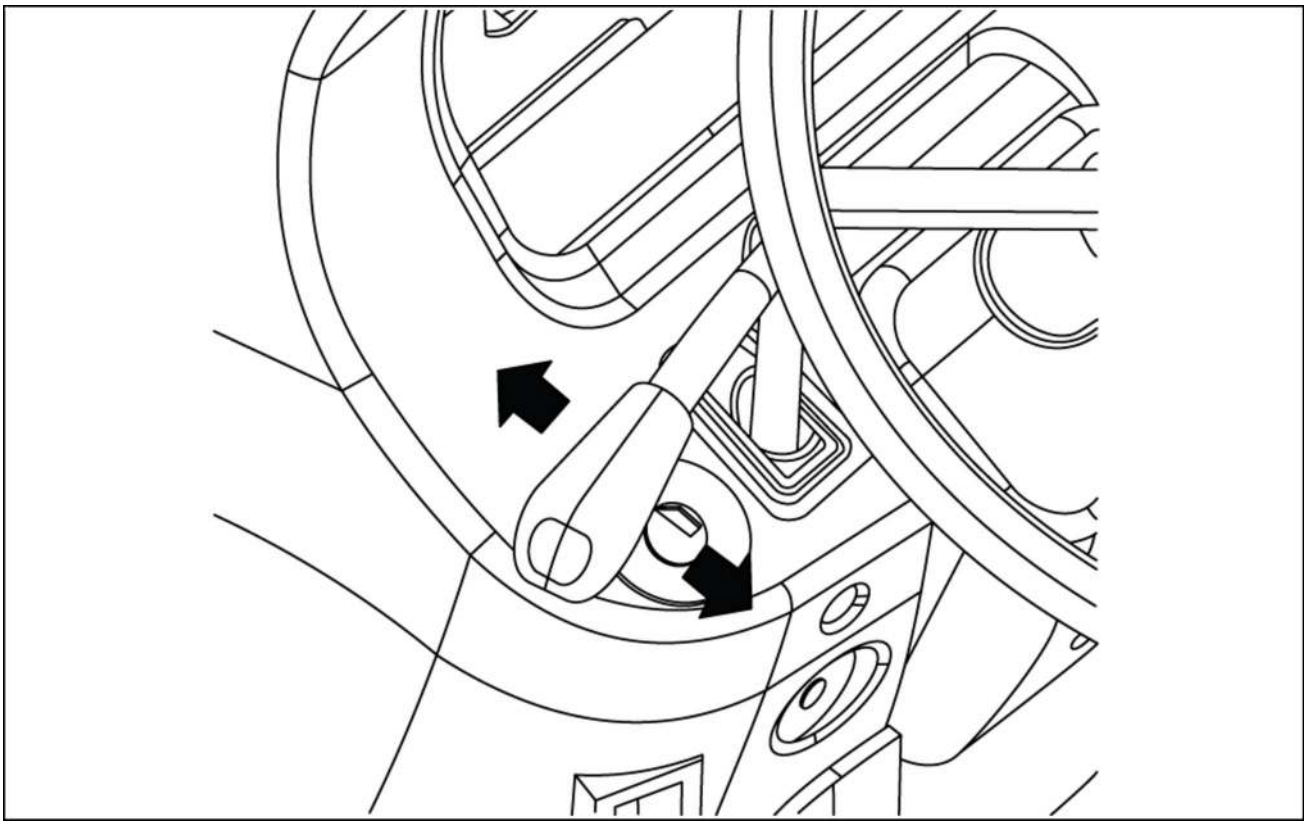
Loss of control hazard!
To prevent inadvertent machine movement, take care to avoid accidental contact with the gearshift levers. Always stop the engine, firmly apply the parking brake, and place all gearshift levers in neutral before leaving the machine.
Failure to comply could result in death or serious injury.

W0130A

⚠ WARNING

Unexpected machine movement!
Before starting the engine, be sure all controls are in neutral or disengaged. This prevents the accidental start up of power-driven equipment.
Failure to comply could result in death or serious injury.

W0169A



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Forward and reverse shuttle lever (Mechanical transmission)

- Select a direction.
- Pushing the lever to the forward position allows the tractor to move forward.
- Pulling the lever towards the operator allows the tractor to move in reverse.

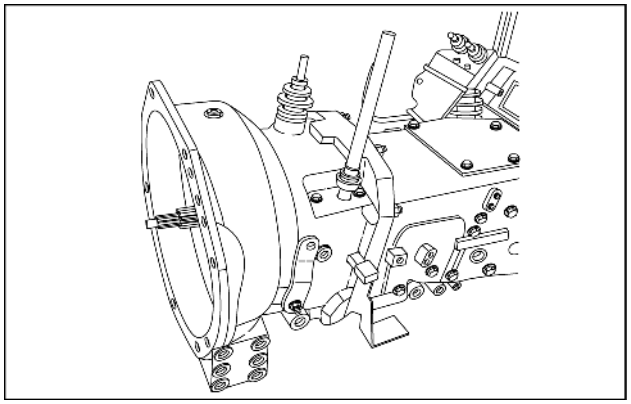
Transmission internal parts - Disassemble - Creeper gears

Boomer™ 40 [0 - 2103012735]	WE
Boomer™ 40 [2103012736 - 2106014859]	WE
Boomer™ 40 [2106014860 -]	WE

⚠ WARNING

Heavy object!
ALWAYS use a hoist or get assistance to lift the component.
Failure to comply could result in death or serious injury.

W0086A



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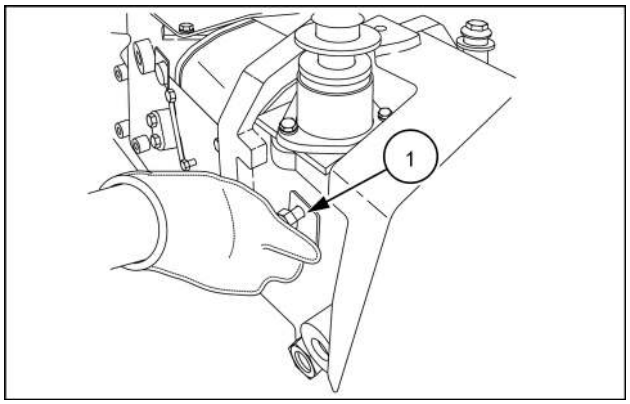
Front view of mechanical transmission with creeper gear option

1. Remove the creeper shift lever rail bolt **(1)**, spring **(2)** and ball **(3)**.



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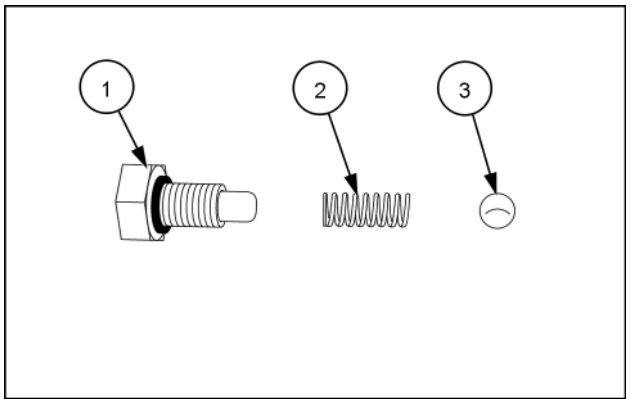
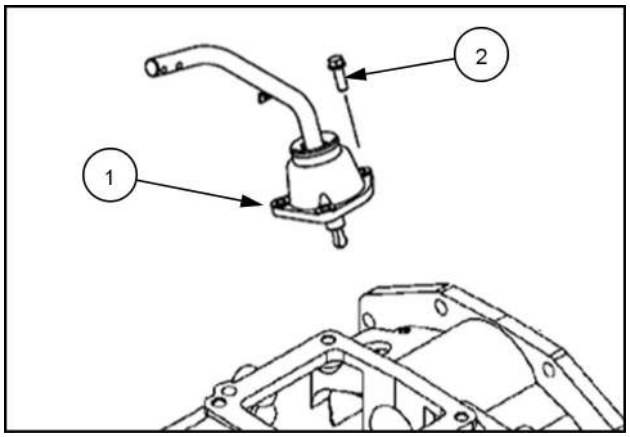


NHIL16CT00253AA 3

Gear shift lever removal

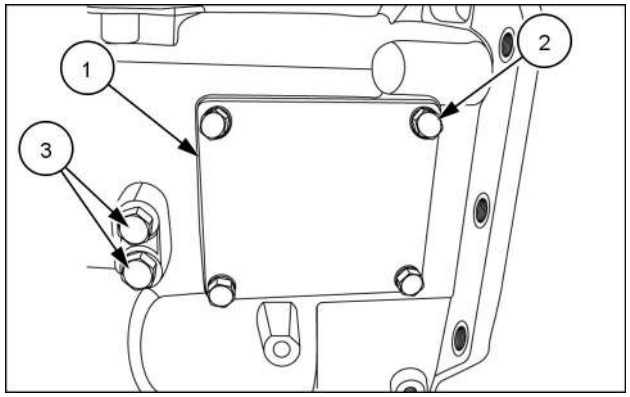
1. Remove gear shift lever **(1)** by removing three M8 x 25 bolts **(2)** that attach the gear shift lever to the center casing.



761002991 13

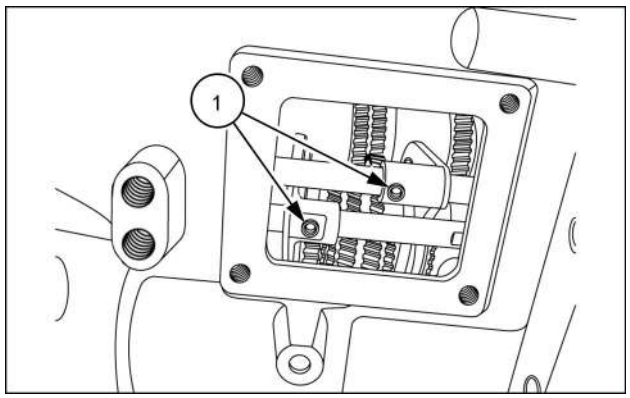
Main gear shift rail and fork assembly removal

1. Remove the main gear shift fork cover **(1)** by removing the four M10 x 25 bolts **(2)** that attach the cover to the center casing.
2. Remove rail bolts, springs and balls **(3)** from the center casing. Use a magnet to remove springs and balls.



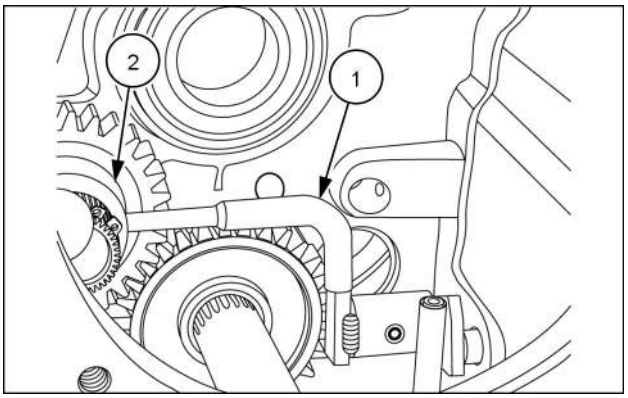
93112259 14

3. Remove the spring pins **(1)** from the main shift rail and fork assembly.



93112260 15

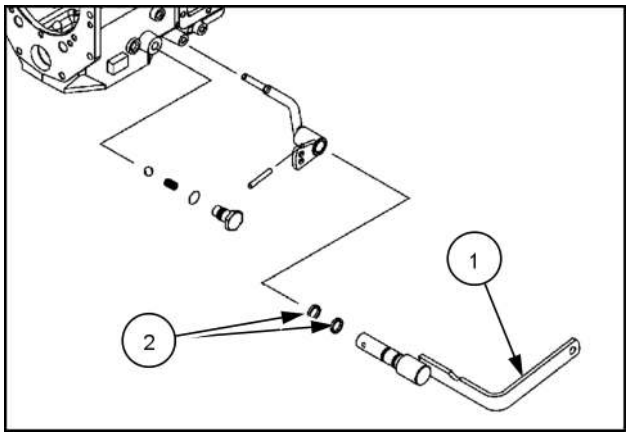
10. Insert the four wheel drive lever **(1)** into the center casing with the lever in the slot of the four wheel drive gear (31T) **(2)**.



93112236 11

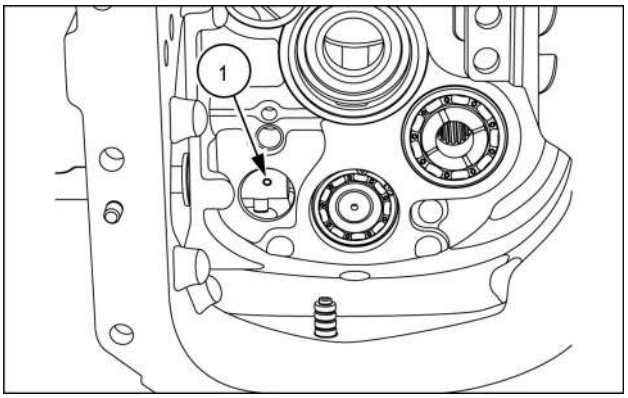
11. Install four wheel drive arm **(1)** into center casing and into the four wheel drive lever.

NOTE: *Inspect O-rings* ***(2)*** *on four wheel drive arm and replace if damaged or worn.*



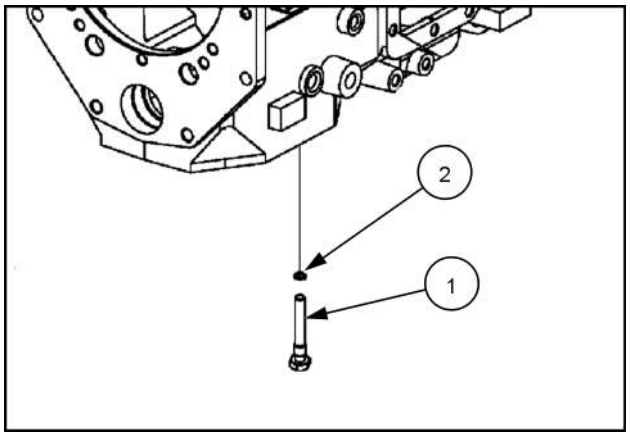
7610029804 12

12. With the four wheel drive arm toward the rear, align the holes in the drive arm and the four wheel drive lever. Insert spring pin into hole **(1)** in four wheel drive lever. Access the hole through the rear of the center casing.



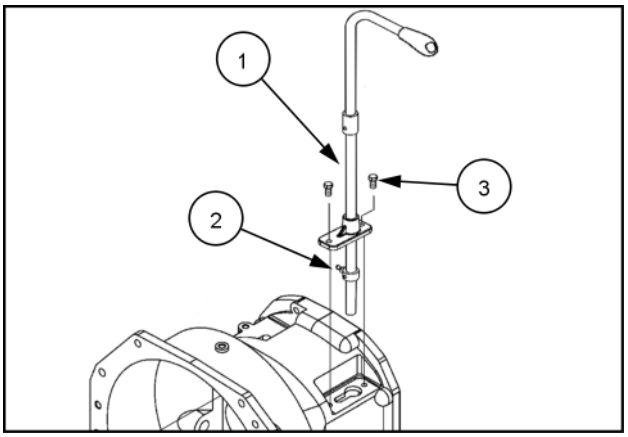
93112270 13

13. Install four wheel drive arm retaining bolt **(1)**. Inspect O-ring **(2)**, replace if damaged or worn.



7610029803 14

3. Install forward/reverse shift lever assembly **(1)**. Rotate shift lever assembly **(1)** until the shift arm **(2)** aligns with the slot in the clutch housing. Insert the shift arm through the clutch housing and rotate 90°, inserting the shift arm into the forward/reverse shift fork.
4. Install two M8 x 25 bolts **(3)**.



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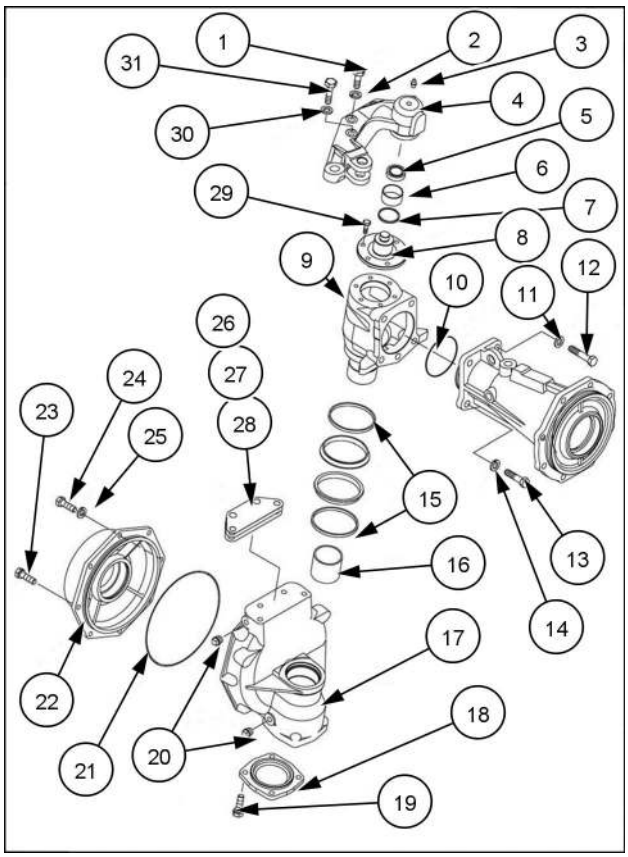
Front axle system - 25

Powered front axle - Exploded view



NHIL14CT00338BA 1

King pin and gear box components - right hand side

(1) Hex bolt, M12 x 30	**(7)** Dust seal	**(13)** Bolt, M14 x 40	**(19)** Hex bolt, M10 x 35	**(25)** Lock washer
(2) Lock washer	**(8)** Arm holder	**(14)** Lock washer	**(20)** Plug	**(26)** Shim
(3) Grease zerk	**(9)** King pin case	**(15)** Seal assembly	**(21)** O - ring	**(27)** Shim
(4) Arm (RH)	**(10)** O - ring	**(16)** Bushing	**(22)** Front axle shaft cover	**(28)** Shim
(5) Taper bearing	**(11)** Lock washer	**(17)** Gear case (RH)	**(23)** Hex bolt, M10 x 30	**(29)** Hex bolt, M8 x 25
(6) Bushing	**(12)** Bolt, M14 x 50	**(18)** Cover with bearing case	**(24)** Hex bolt, M10 x 35	**(30)** Lock washer
				(31) Bolt, M12 x 35

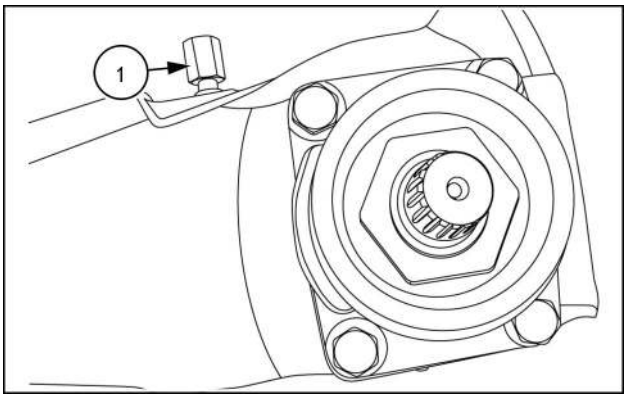
Powered front axle - Filling

Boomer™ 40	WE
Boomer™ 50	WE

Prior operation:
Powered front axle - Drain fluid (25.100)

NOTICE: *The automatic vent is made up of small parts, use care in removal. Removing , allows for accelerated filling.*

1. Remove the automatic vent **(1)** to accelerate the fill process.

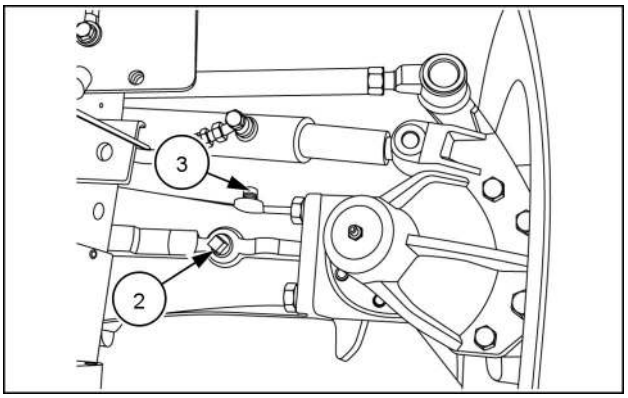


93112187 1

2. Remove filler plug **(2)** and check plug **(3)**.
3. Install oil into plug opening **(2)** until oil flows out of plug opening **(3)**.

NOTE: *Remove the plug at opposite end of the axle to accelerate oil refill.*

4. Use **NEW HOLLAND AMBRA HYPOIDE 90** gear oil.
5. Install all plugs when complete.



93109782 2

Differential - Disassemble

⚠ 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

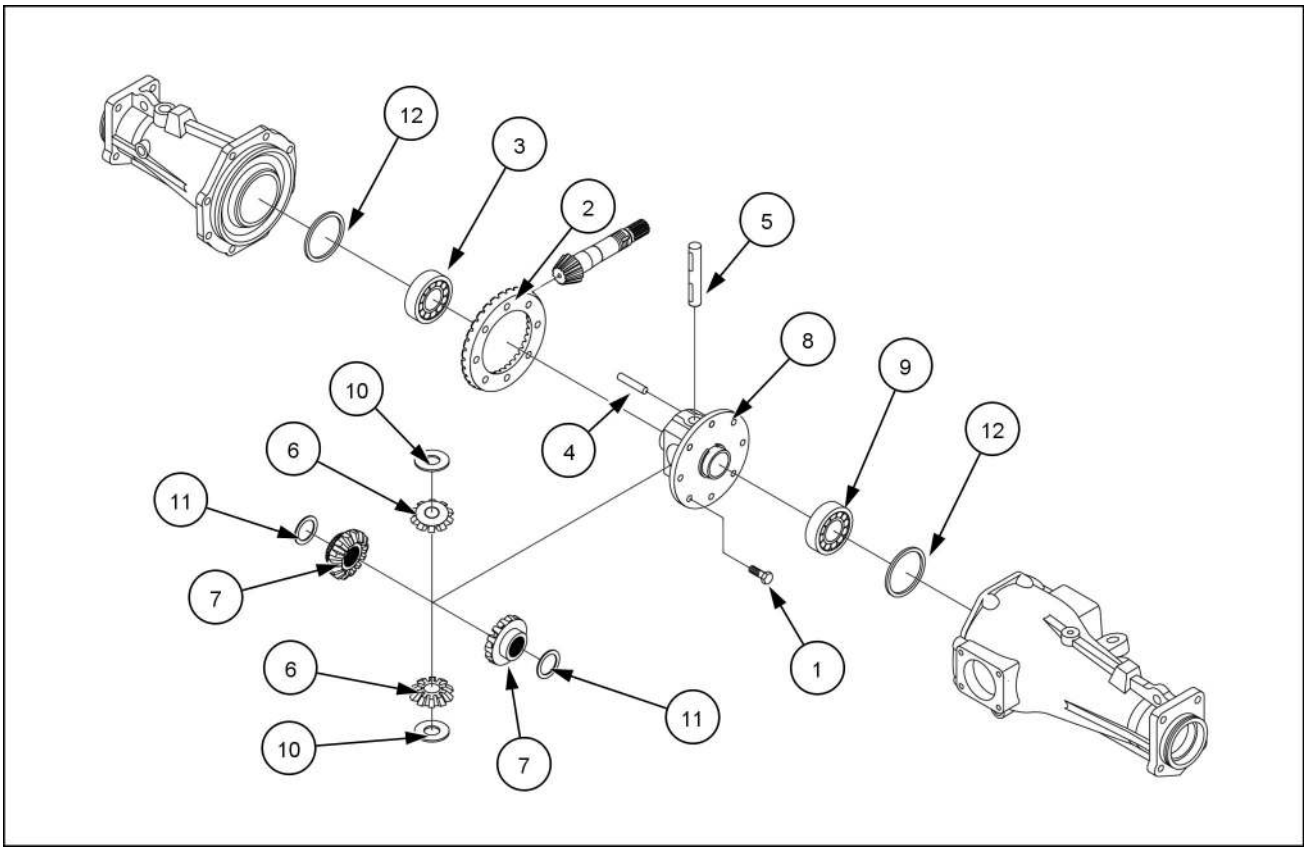
⚠ WARNING

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

NOTE: *Before servicing the axle, drain the axle of oil by removing the dip stick* ***(1)*** *and the drain plug* ***(2)****, use an adequately sized container to receive the oil.*

Differential disassemble



NHIL16CT00167FA 1

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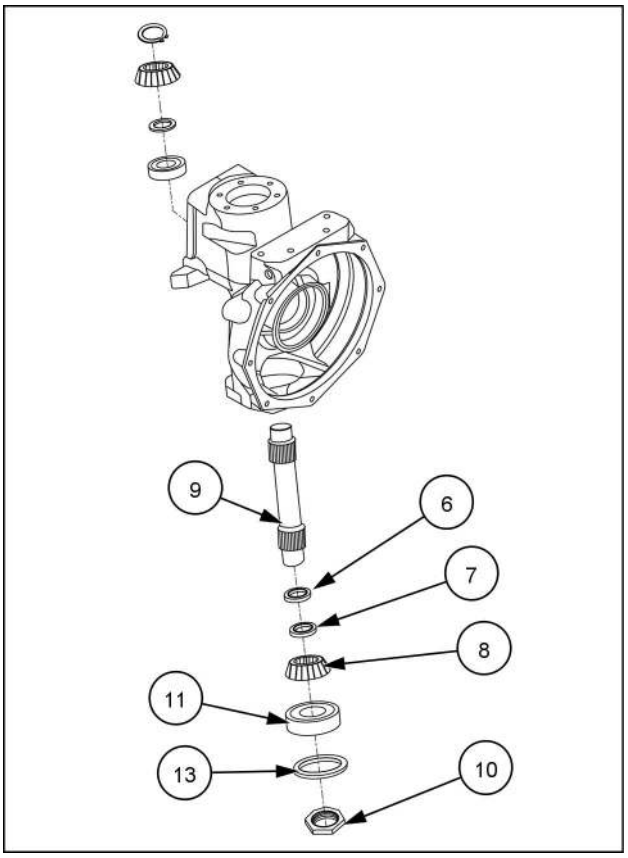
Front axle system - 25

Front bevel gear set and differential - 102

(*) See content for specific models

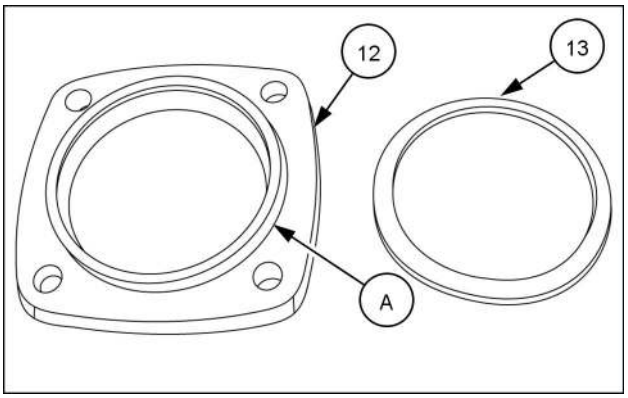
4. Install thrust bearing **(6)**, spacer **(7)** and bevel gear (14T) **(8)** onto shaft **(9)**
5. Install nut **(10)** onto bottom end of shaft.
6. Torque nut to **10 - 20 N·m** (**8 - 15 lb ft**)
7. Install taper bearing and race **(11)** into gear case housing



NHIL14CT00483BA 2

8. Install end cap **(12)** with shim(s) **(13)**.

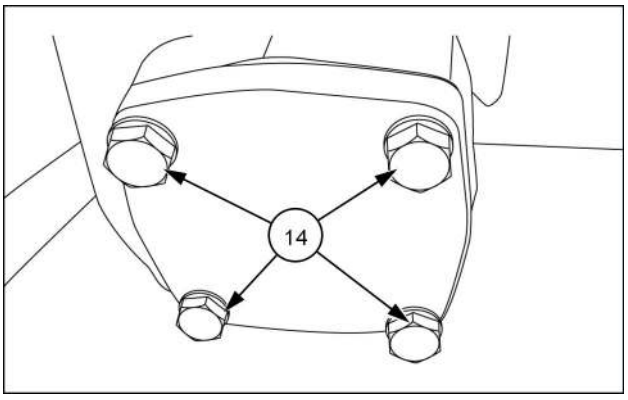
NOTE: *Apply* ***LOCTITE® 518™ GASKET ELIMINATOR®*** *at* ***(A)*** *.*



93112137 3

9. Secure the end cap with four M10 x 30mm bolts **(14)**.
10. Torque the M10 bolts to **49 - 54 N·m** (**36 - 40 lb ft**)

NOTICE: *After tightening the end cap bolts , the king pin housing should pivot freely without any vertical end play. Adjust by adding or removing shims* ***(13)****. Available shim sizes are 0.1 mm (0.004 in) and .2mm (0.008 in)*



93112136 4

Planetary and final drives - Disconnect the housing 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

⚠ WARNING

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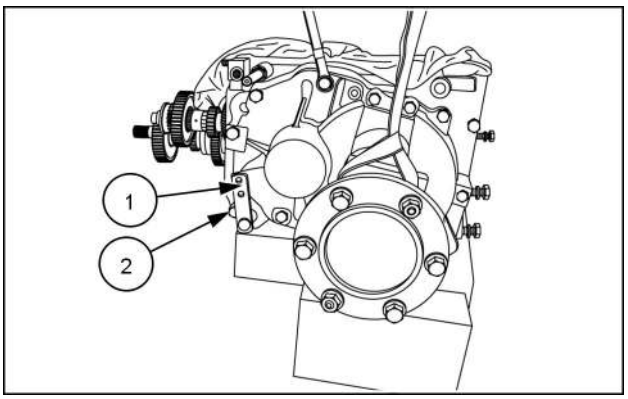
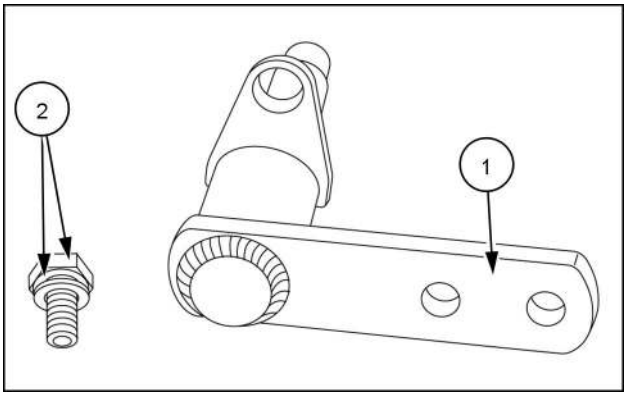
Failure to comply could result in death or serious injury.

W0208A

1. Remove brake lever **(1)** and **10 mm** stop bolt, and washer **(2)**.

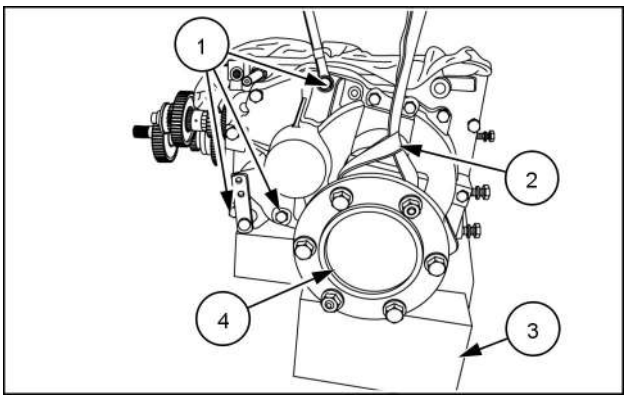


93109718 1



93109719 2

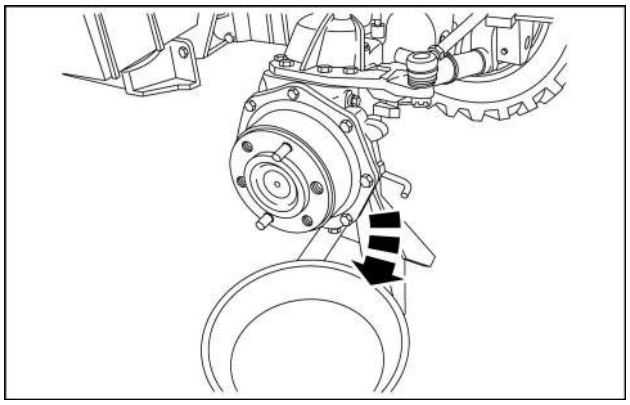
2. Remove eight bolts **M14x40 mm**, two nuts, **M14 mm** and ten lock washers **(1)**.
3. Use an overhead hoist with strap **(2)**, and blocks **(3)** to support the final drive **(4)**.



93109718 3

6. Drain the oil from the gear housing.
7. Install the drain plug after the oil is drained.

NOTE: *Apply Teflon® tape sealer to both the drain plug and the fill plug.*



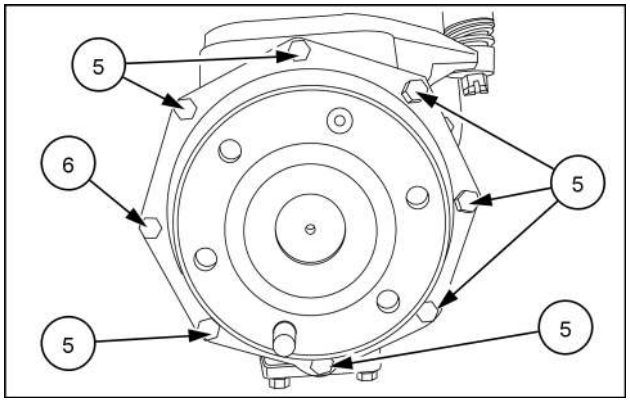
NHIL14CT00359AA 3

8. Remove the seven M10 x 30mm bolts **(5)**.

NOTE: *Mark the cover and gear case for reference during assembly.*

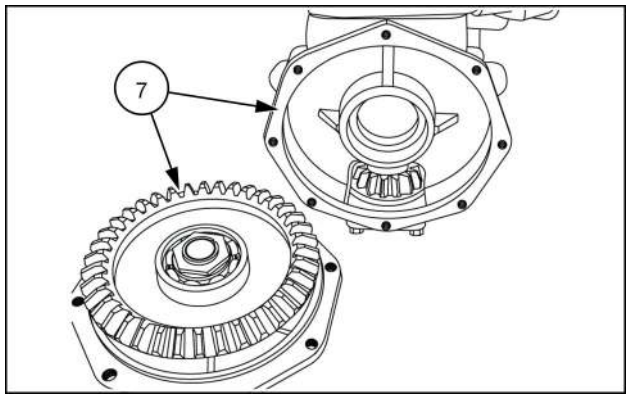
9. Remove one M10 x 35mm bolt **(6)**.

NOTICE: *The M10 x 35mm bolt **(6)** will only fit in the hole that it came out of. This is to insure correct reassembly of the housing.*



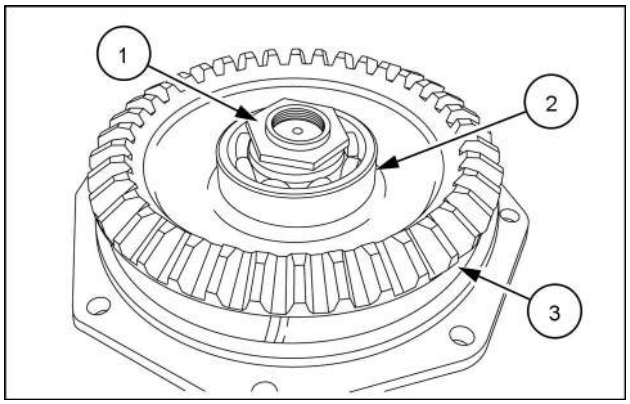
NHIL14CT00361AA 4

10. Separate the housings **(7)**.



93112123 5

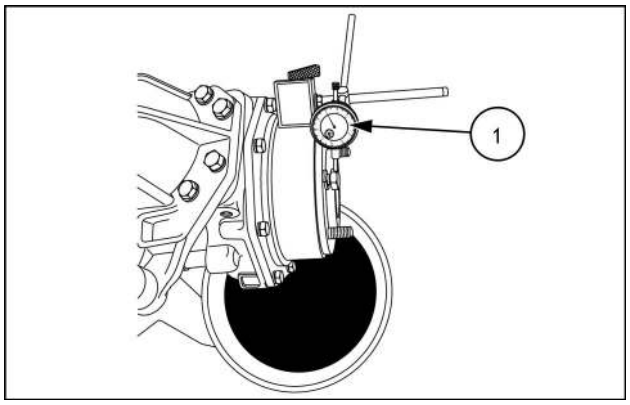
11. Un-peen and remove the lock nut **(1)** and bearing **(2)**.
12. Remove the gear **(3)**.



NHIL14CT00364AA 6

14. Read the dial indicator **(1)** to determine the amount of backlash.

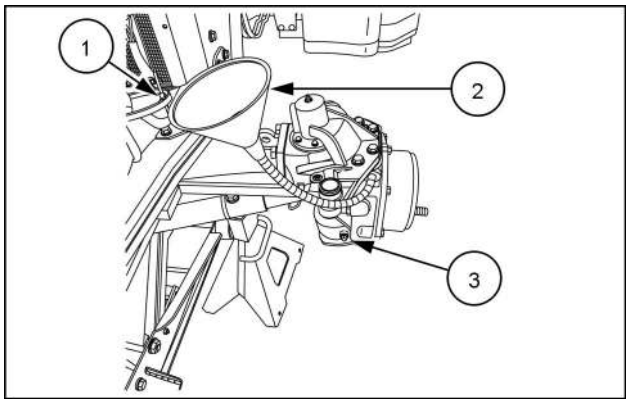
NOTE: *The tolerance for backlash is* ***0.2 - 0.4 mm*** *(****0.008 - 0.016 in****)*



NHIL15CT00113AA 12

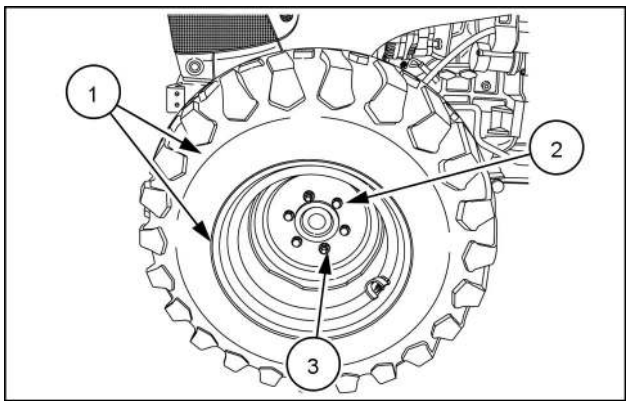
15. Remove the blocking device and the dial indicator.
16. Install the drain plug **(3)**.
17. Fill the front axle final drive with the oil that was removed initially or replace the amount that was removed with **NEW HOLLAND AMBRA MULTI G 134™ HYDRAULIC TRANSMISSION OIL**.

NOTE: *The funnel* ***(2)*** *can be secured by using wire ties* ***(1)*** *during the fill process.*



NHIL15CT00114AA 13

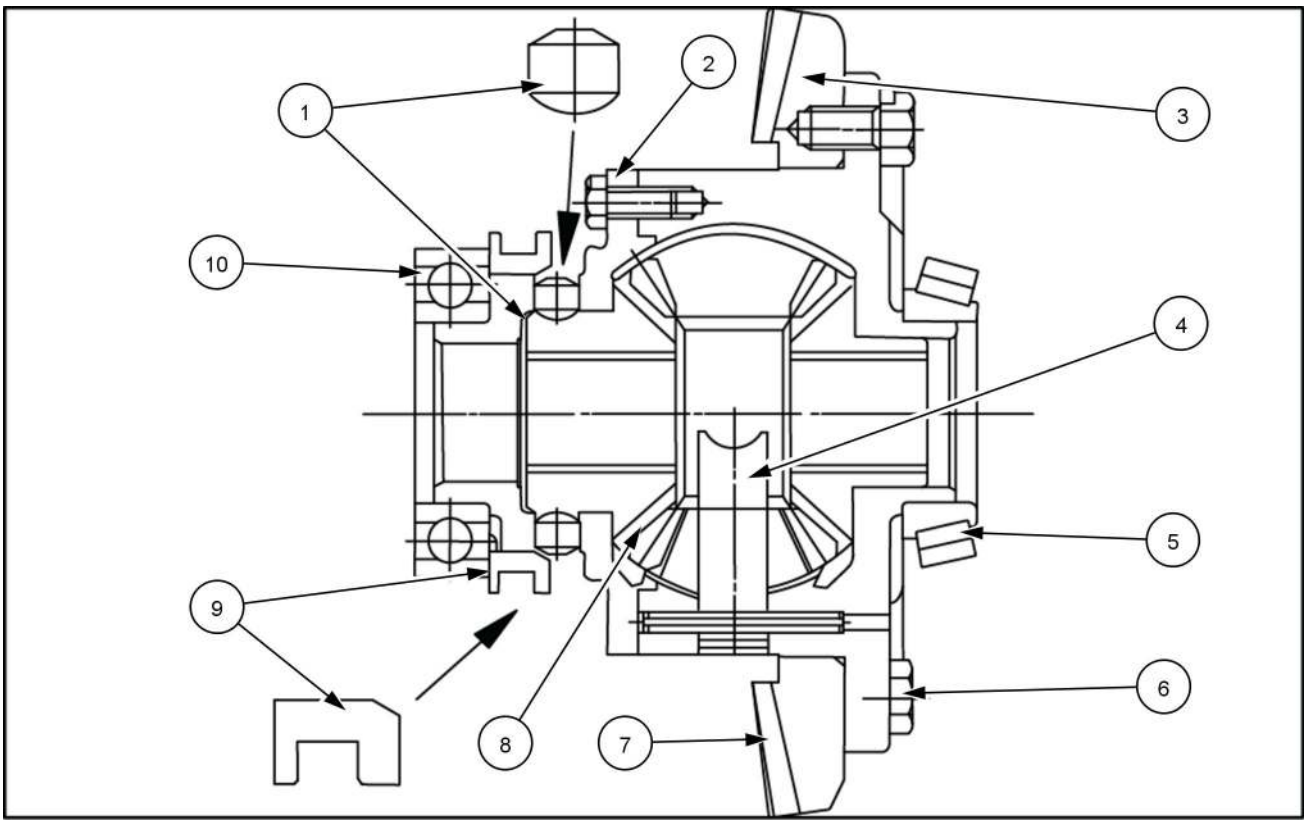
18. Install the tire and wheel assembly **(1)**.
19. Secure the tire and wheel assembly with four M16 x 30mm wheel bolts **(1)** and the two M16 wheel nuts **(2)**.
20. Torque the nuts and bolts to **176 - 196 N·m** (**130 - 145 lb ft**).
21. Remove the jack stands, and the lifting device.



NHIL15CT00108AA 14

NOTE: *To adjust backlash see* ***Final drive - Adjust backlash (25.310)****.*

Differential - Detailed view



MHIL14CT00520AA 1

Rear differential assembly

(1) Ball direction
(2) Bolt M8 x 20
(3) Ring gear
(4) Pin
(5) Taper bearing
(6) Bolt M12 x 22
(7) Ring gear
(8) Spider gear
(9) Sleeve
(10) Ball bearing

Differential - Assemble

⚠ 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

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.
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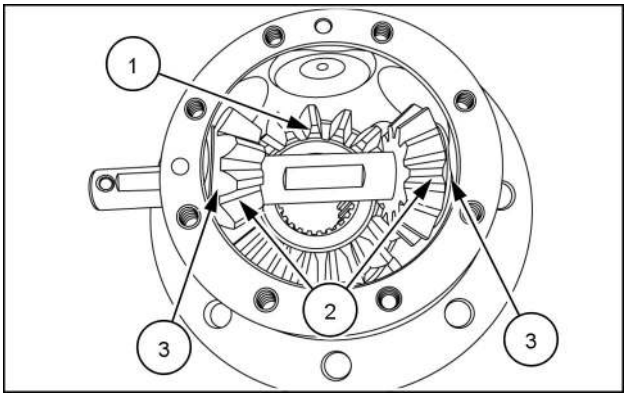
W0398A

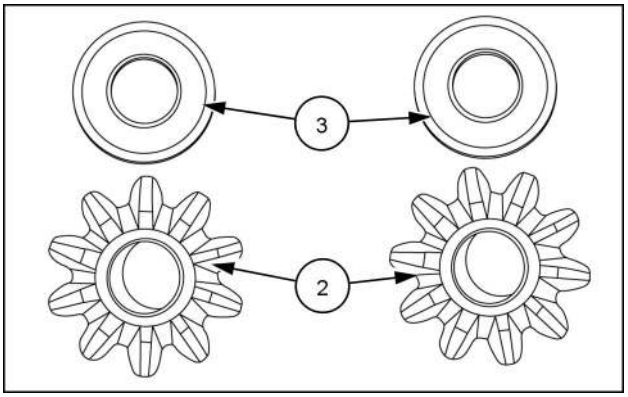
Prior operation:
Differential - Disassemble (27.106)

1. Install the drive shaft spider gear **(1)**.



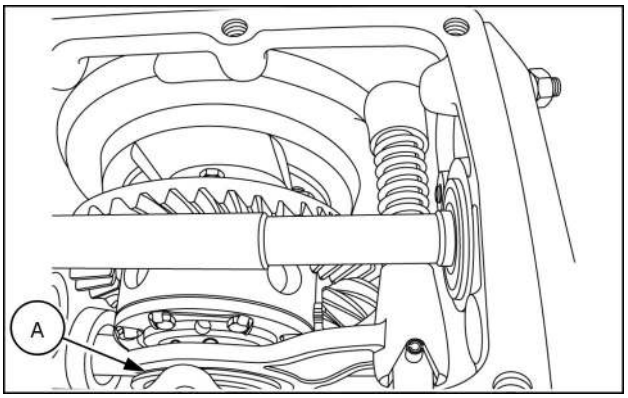
93104582 1

2. Install the two spider gears **(2)** and shims **(3)**.(Refer to figure **1**.)



93104583 2

6. Check the clearance at point **(A)** to be **0.05 mm** (**0.0197 in**).



93109750 4

Driving wheel shaft - Install Rear axle seal

⚠ WARNING

Heavy objects!
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W0398A

⚠ WARNING

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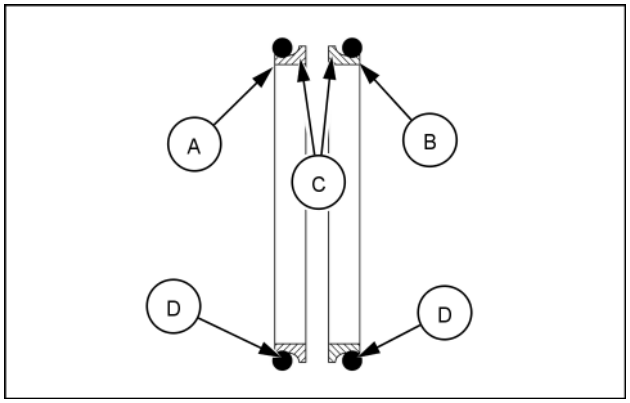
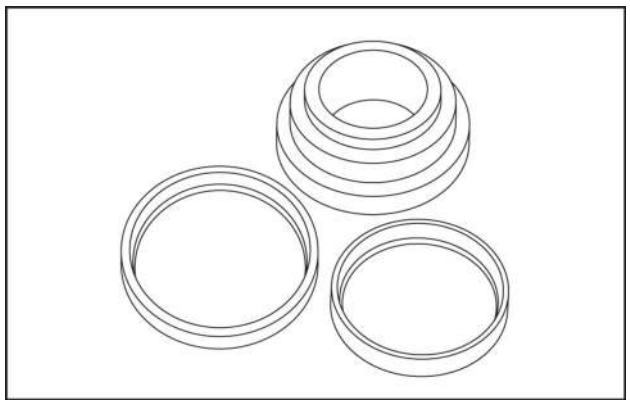
W0208A

The rear axle seal is a two piece metal to metal sealing surface type seal. One side of the seal **(A)** is installed in the rear axle housing and the other side of seal **(B)** is installed on the axle shaft, with the sealing taking place on the metal surfaces **(C)**.
The seal halves are held in place with an O-ring **(D)** that is pressed into the housings.



NHIL13CT00308AA 1

A three piece special tool **380003350** is required to properly install seal into rear axle shaft and housing.



NHIL13CT00311AA 2

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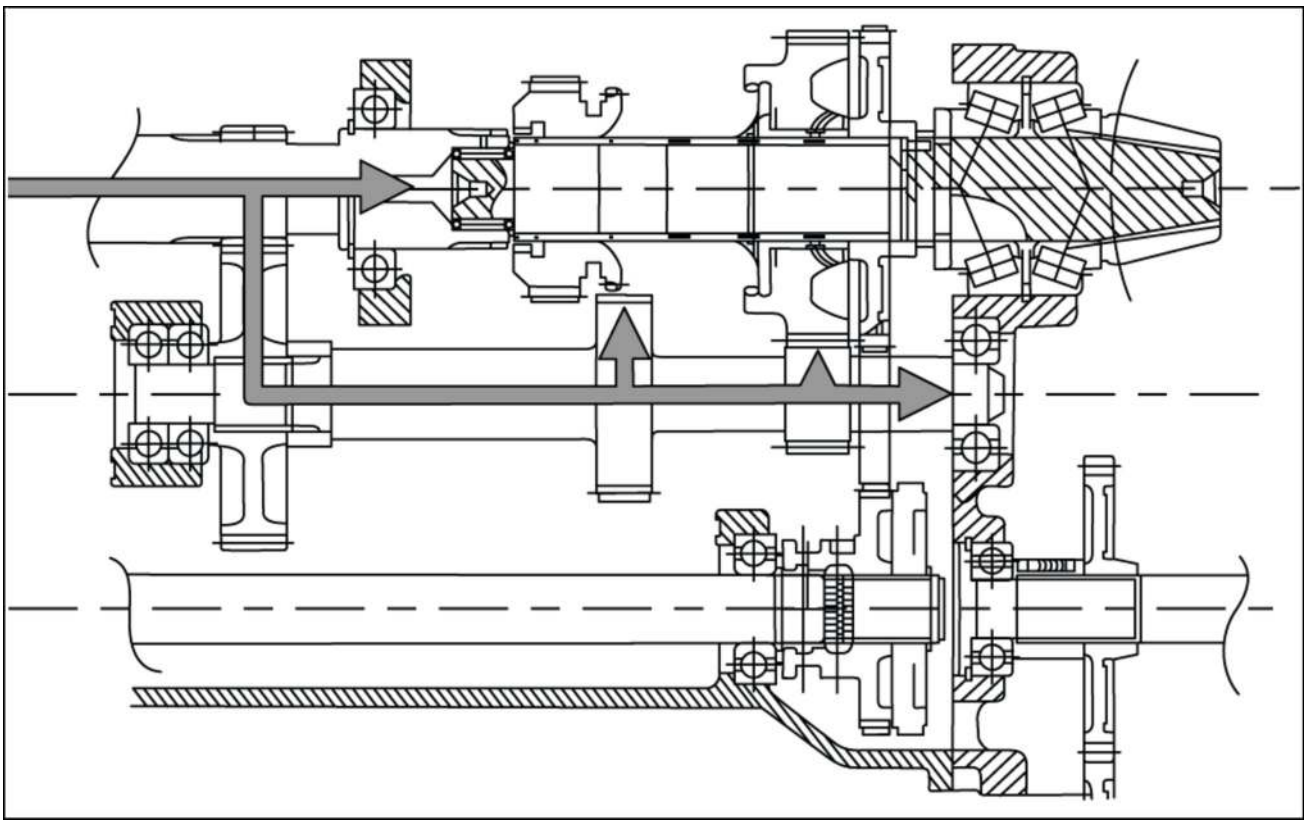
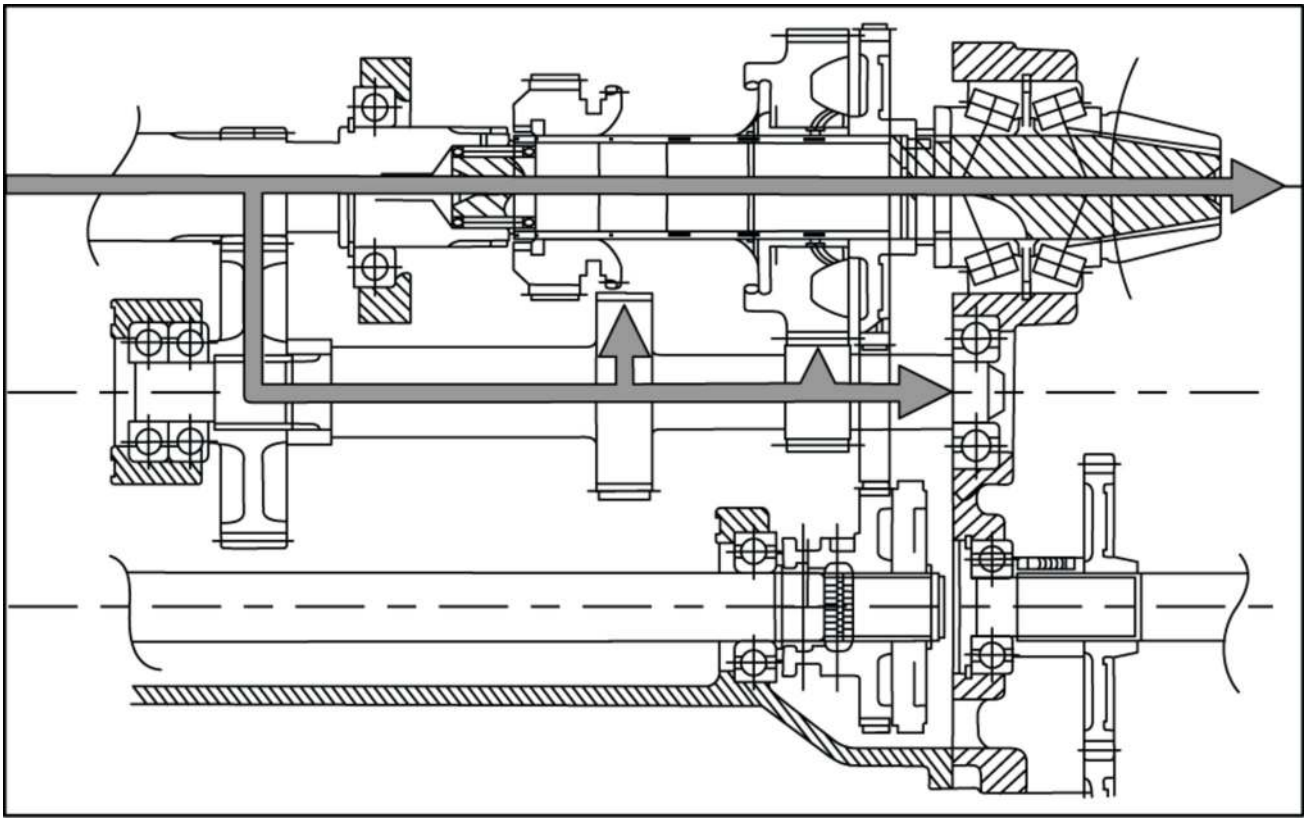


93102501 4

Neutral

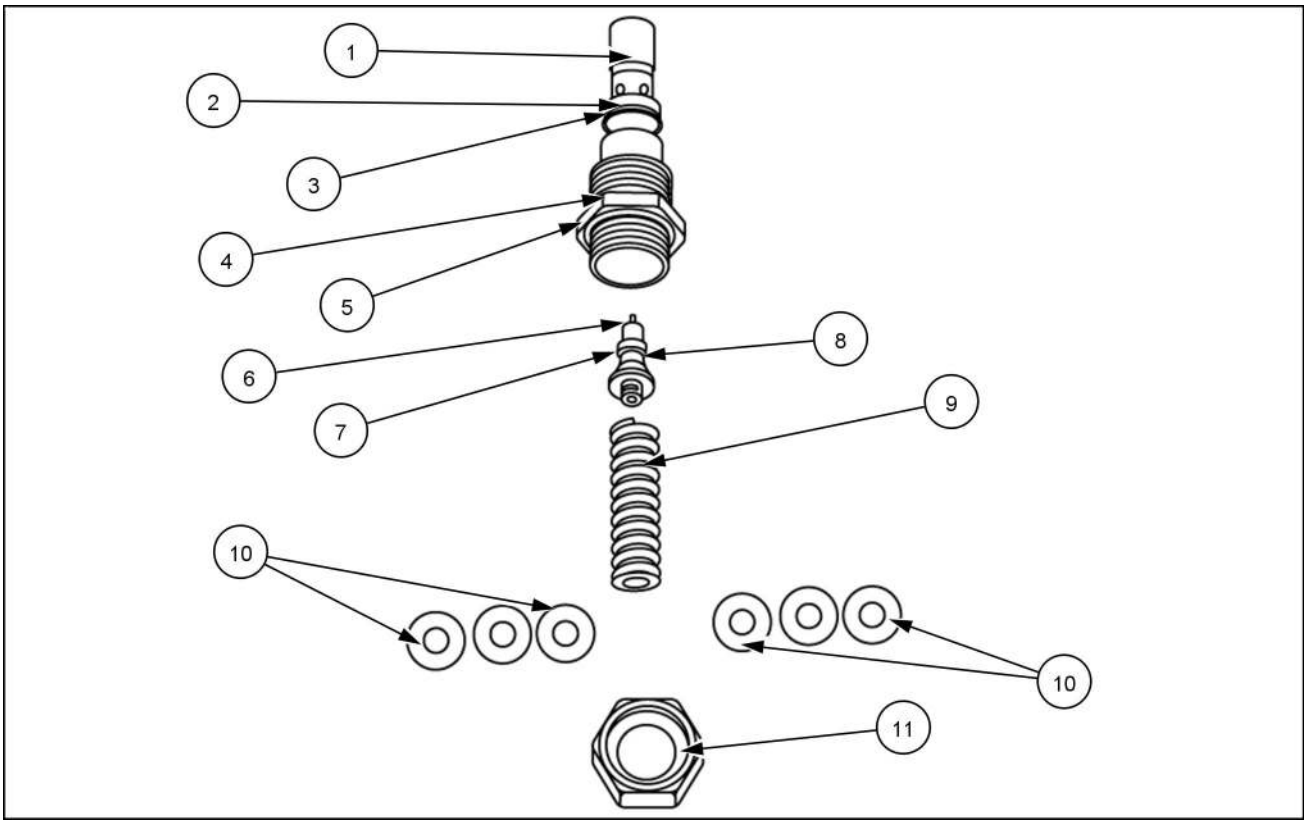


93102502 5

High range gear

Hydrostatic transmission - Exploded view high pressure relief valve

Boomer™ 40	WE
Boomer™ 50	WE



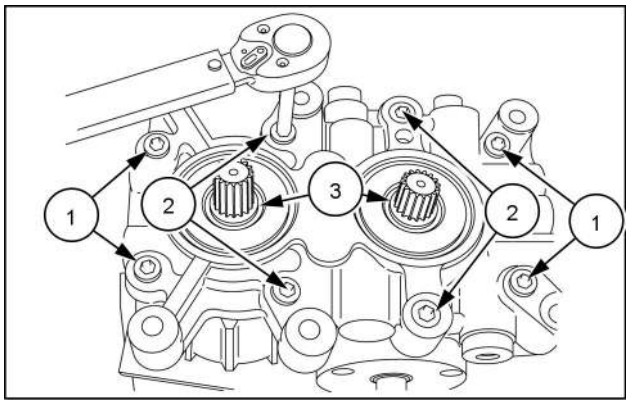
93109699 1

High pressure relief valve

(1) Relief valve housing
(2) O - ring
(3) Teflon seal
(4) Housing nut **26 mm**
(5) O - ring
(6) Relief poppet
(7) O - ring
(8) Teflon seal
(9) Spring
(10) Shims
(11) Outer nut **26 mm**

Hydrostatic unit disassembly

1. Remove the snap rings **(3)**.
2. Remove two M10 x 35 mm hex socket head cap screws **(2)**.
3. Remove six M10 x 40 mm hex socket head cap screws **(1)**.

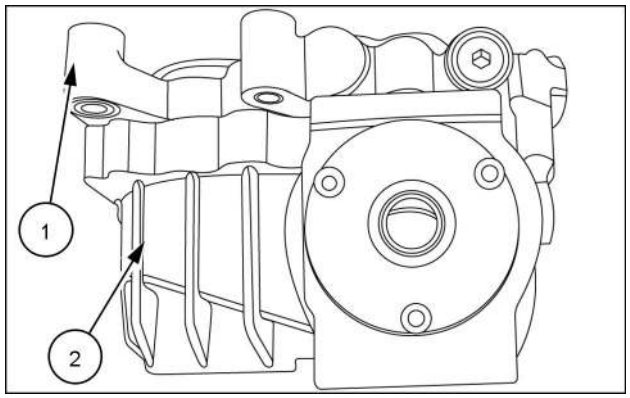


NHIL12CT01042AA 1

NOTE: *The hydrostatic pump and the hydrostatic motor are contained in the same housing.*

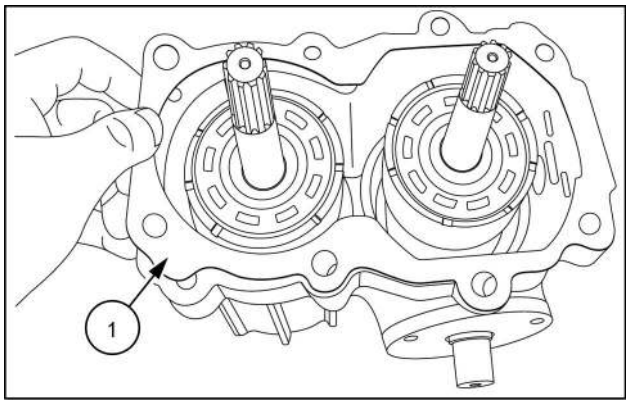
NOTICE: *When separating the housing, the charge pressure relief poppet and spring will be exposed. DO NOT LOSE THE POPPET AND SPRING.*

4. Separate the port block **(1)** from the pump and motor housing **(2)**.
5. Remove the port block **(1)**.



93104591 2

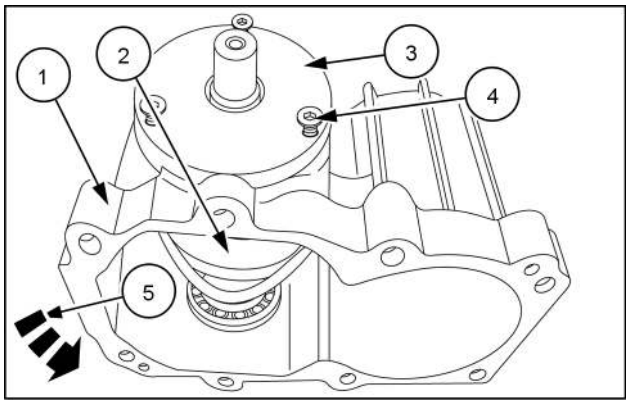
6. Remove the gasket **(1)**.



NHIL12CT01043AA 3

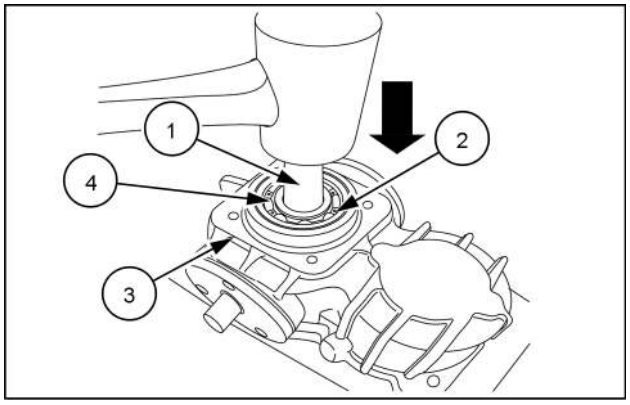
Swash plate assembly

1. Install the swash plate **(2)**, into the body **(1)**.
2. Install cover **(5)** (Not shown), and cover **(3)**.Secure with three screws **(4)** in each cover.
3. Torque the screws **(4)** to **3.92 N·m** (**3 lb ft**)



NHIL12CT01054AA 10

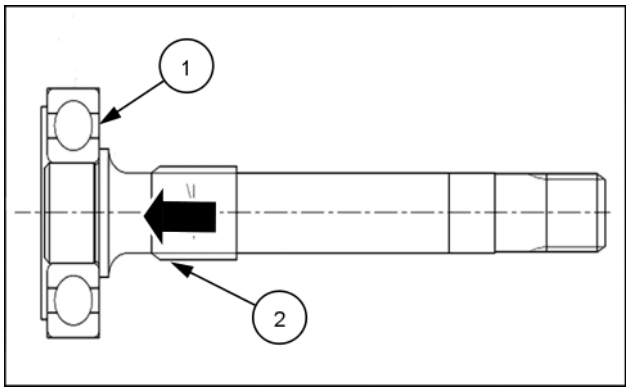
4. Install pump shaft **(1)** and bearing **(4)** assembly.
5. Secure with snap ring **(4)**, in the body **(3)**.



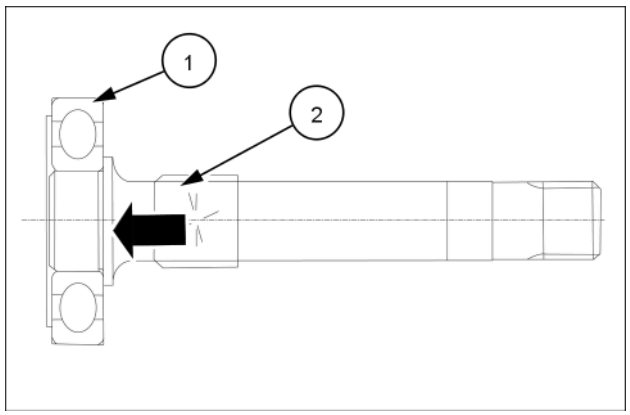
NHIL12CT01058AA 11

Motor shaft assembly

1. Press bearing **(1)** on the motor shaft **(2)** as shown.

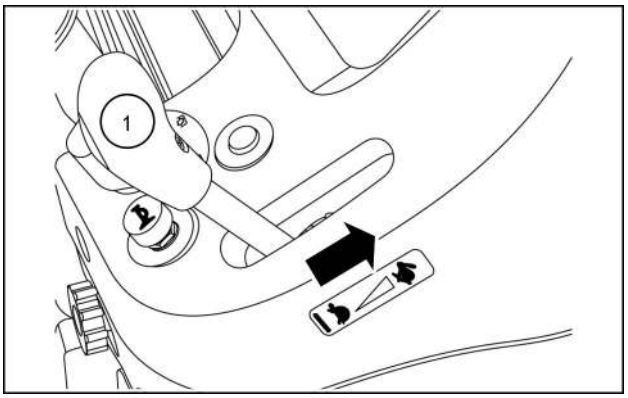


NHIL14CT00478AA 12

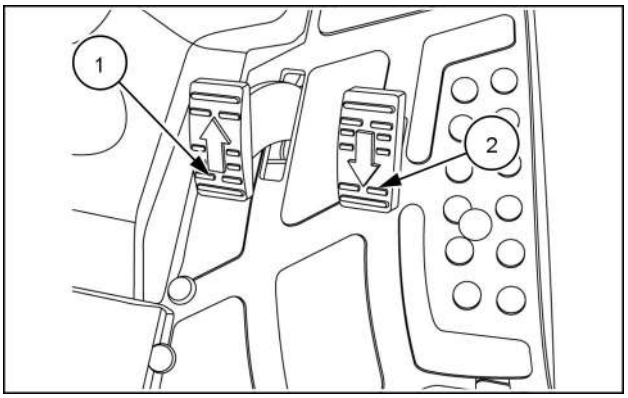


NHIL12CT01077FA 13

7. Start engine, place hand throttle **(1)** at full RPM.



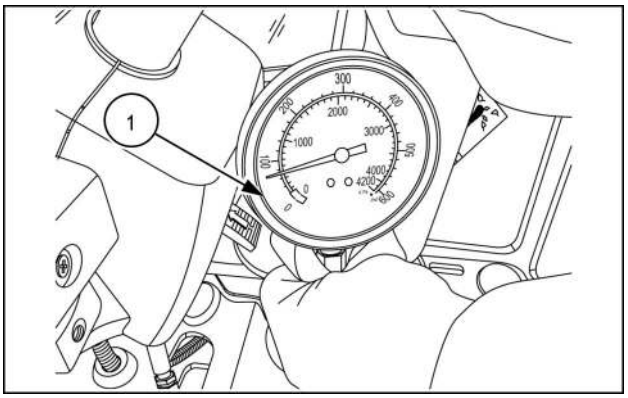
93109706 7



93109705 8

NOTICE: *Do NOT operate either forward **(1)** or reverse **(2)** pedals.*

8. With the HST in the neutral position, HST charge pressure should read **490 kPa** (**71 psi**) **(1)**.
9. With the test completed, remove gages and hoses, and install test port plugs, torque to **30 N·m** (**22 lb ft**) MAXIMUM.

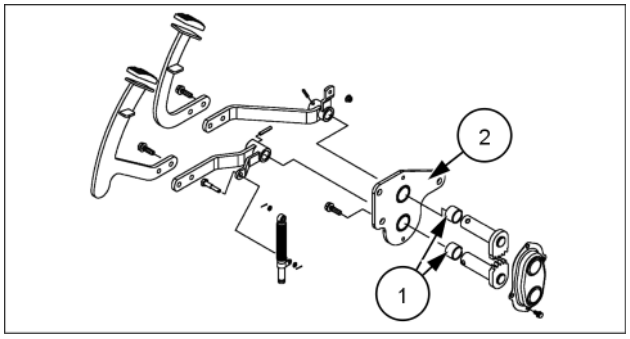


93109711 9

Assembly

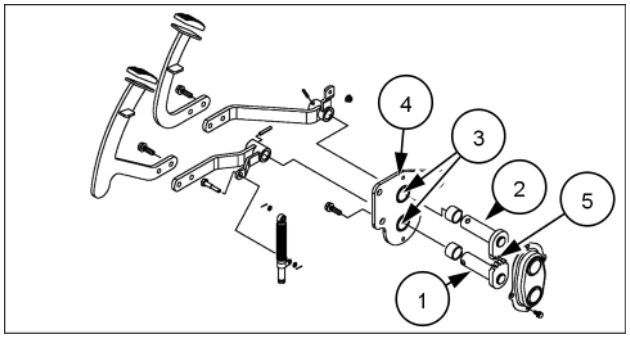
NOTICE: *Lubricate bushings with grease.*

1. Insert bushings **(1)** in the base plate **(2)**.



76117010 6

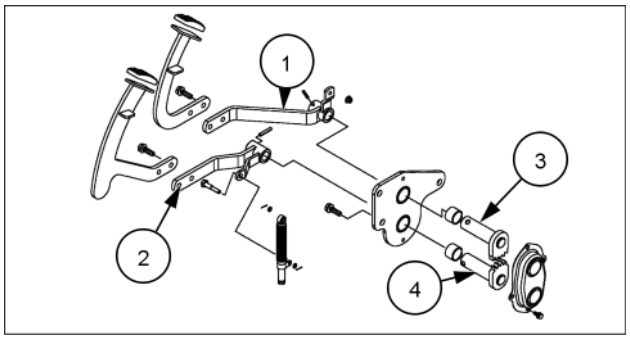
2. Install forward shaft **(1)** and reverse shaft **(2)** through the bushings **(3)** in the base plate **(4)**.



76117010 7

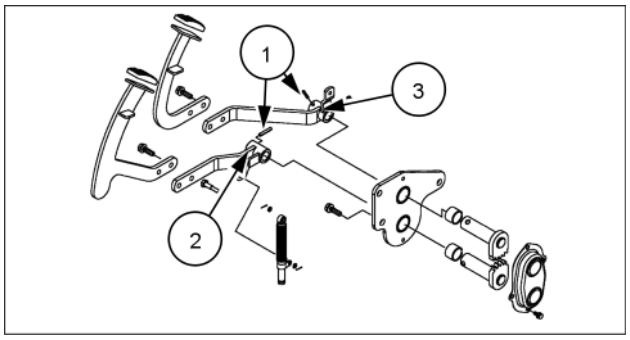
NOTICE: *Insure the timing teeth **(5)** are in the same position as at disassembly.*

3. Install reverse pedal arm **(1)** and forward pedal arm **(2)** onto the reverse **(3)** and forward **(4)** shafts.



76117010 8

4. Install spring pins **(1)** into the forward **(2)** and reverse **(3)** arms and shafts.



76117010 9

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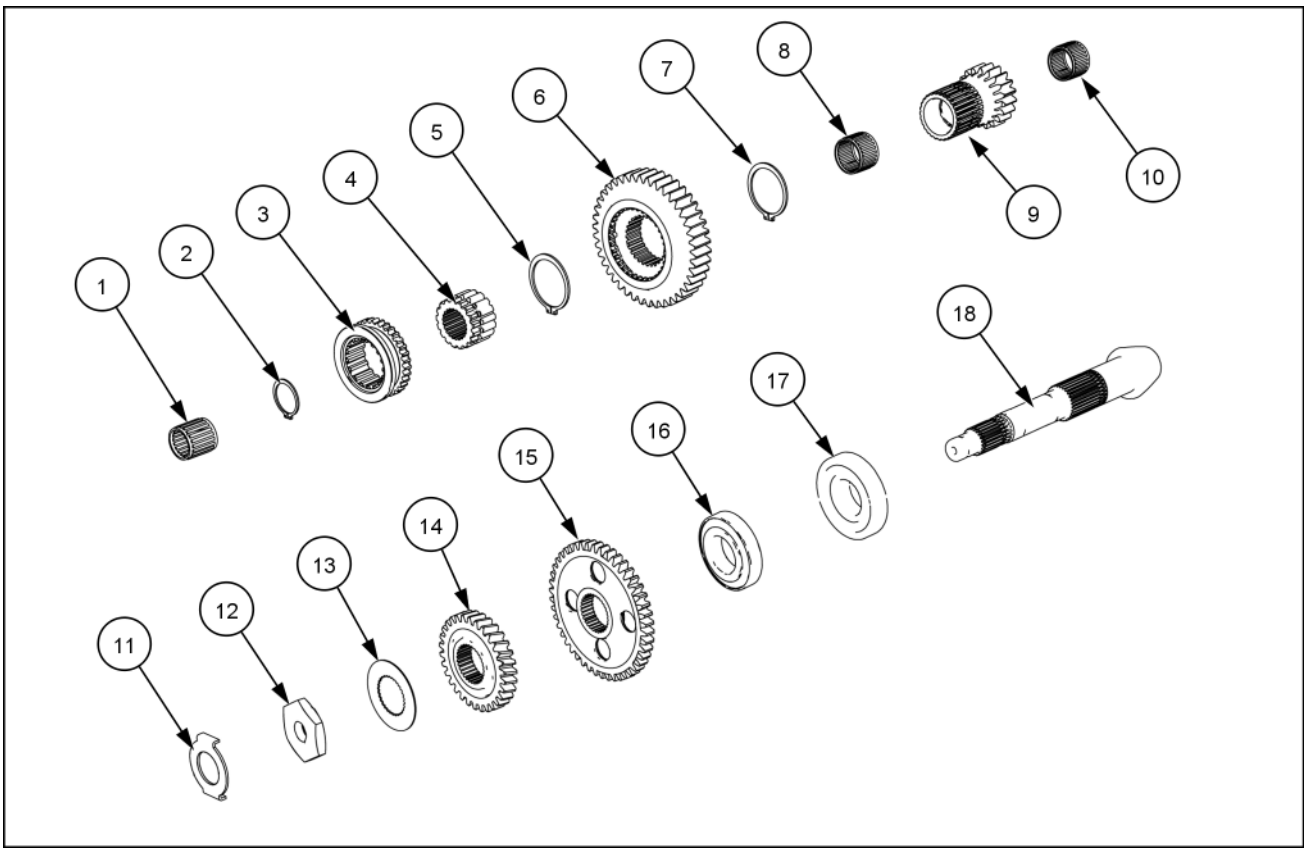
Pump and motor components - 218

(*) See content for specific models

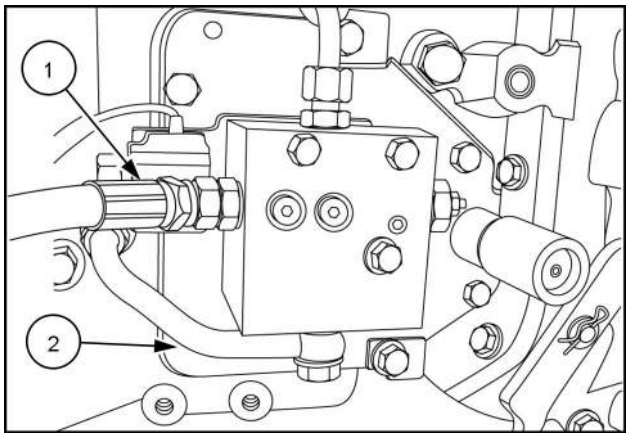
Rear mechanical control - Disassemble - Ground drive PTO



NHILCT000255FA 1

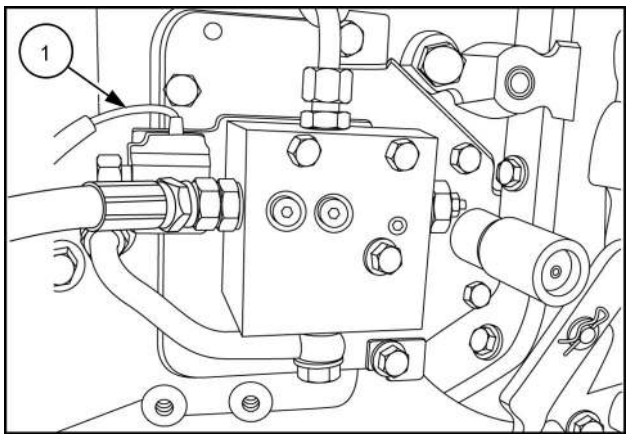
Components located on pinion shaft		
(1) Needle bearing	**(7)** Snap ring	**(13)** Thrust washer
(2) Snap ring	**(8)** Needle bearing	**(14)** Gear, 30 tooth
(3) Sliding coupler	**(9)** Gear, 19 tooth,	**(15)** Gear, ground drive PTO, 46 tooth
(4) Hub	**(10)** Needle bearing	**(16)** Tapered bearing
(5) Snap ring	**(11)** Lock washer	**(17)** Tapered bearing
(6) Gear, 42 tooth	**(12)** Lock nut	**(18)** Pinion shaft

4. Install the return to sump line **(2)** to the bottom of the PTO control valve and the hydraulic supply hose **(1)** to the front of the valve.



93110378A 4

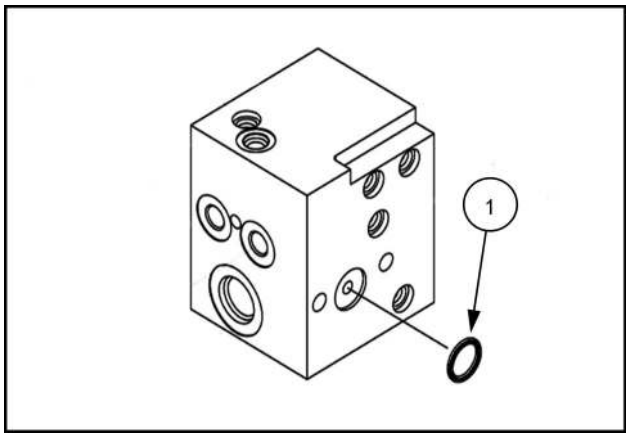
5. Connect the PTO solenoid electrical wire harness **(1)** to the tractor's wiring harness.



93110378A 5

Install Power Take-Off (PTO) Control Valve (Hydrostatic Transmission (HST) tractor)

1. Inspect the O-ring **(1)** in the mounting surface of the PTO control valve for damage. Replace O-ring if necessary.



76110420 6

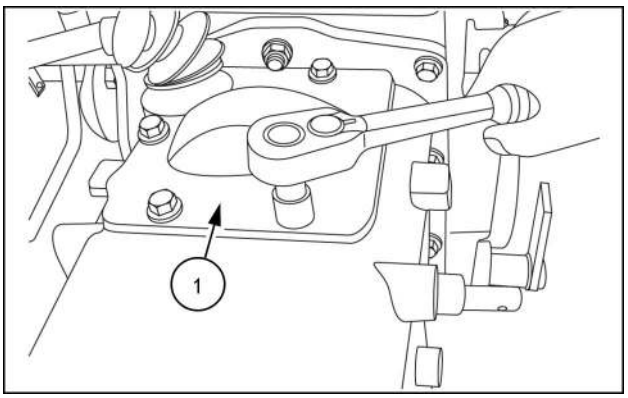
Power Take-Off (PTO) clutch - Remove

⚠ WARNING

Heavy object!
ALWAYS use a hoist or get assistance to lift the component.
Failure to comply could result in death or serious injury.

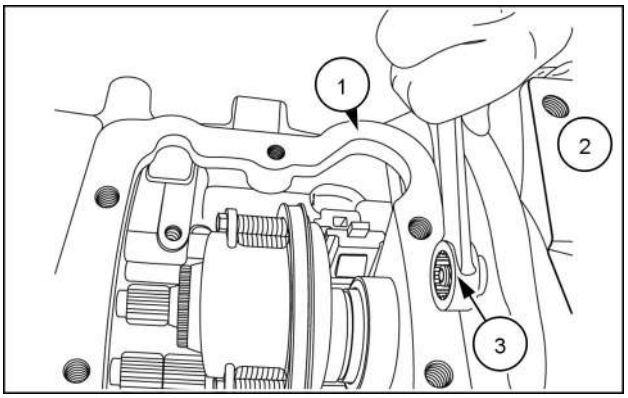
W0086A

1. Remove the PTO cover **(1)**.



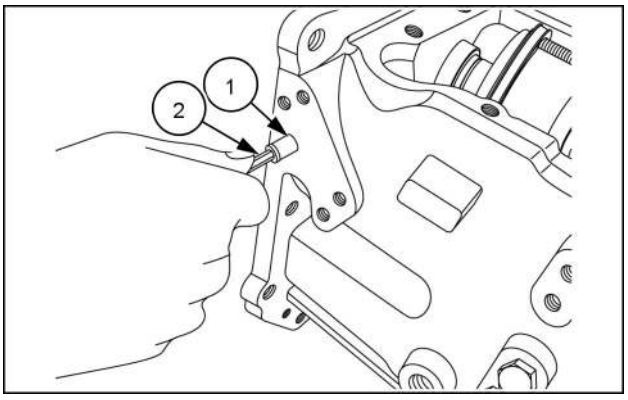
93102339 1

2. Separate the center housing **(1)** from the axle housing **(2)** by removing bolts **(3)**.



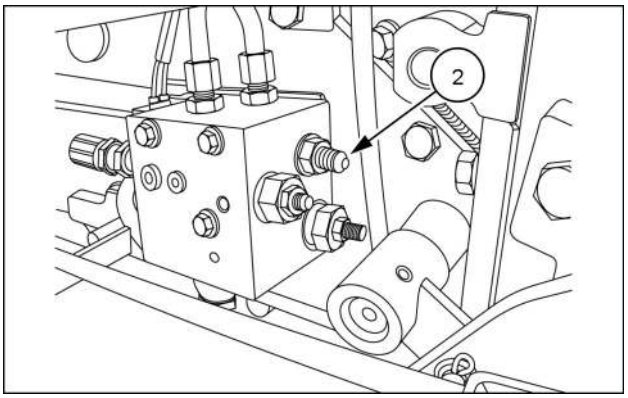
93102341 2

3. Remove pipe **(1)** with a **6 mm** bolt **(2)**.

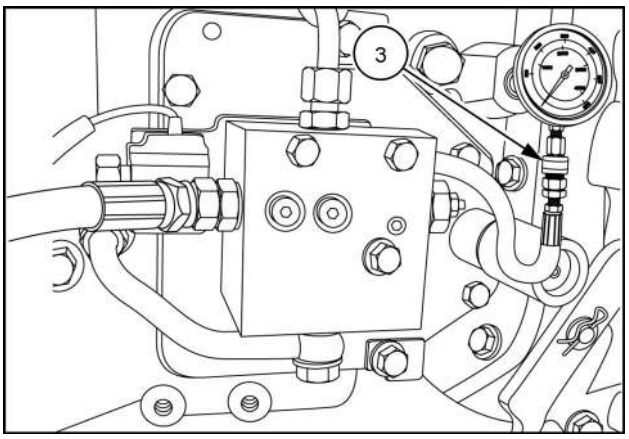


93102342 3

4. Install test fitting **(2) 380200141** (1/4 BSPP O-ring x 7/16 JIC) and pressure gauge **(3)** capable of reading **2068 kPa** (**300 psi**).
5. Start the engine.
6. The pressure at the G2 port with the PTO switch in the "OFF" position should read **414 - 552 kPa** (**60 - 80 psi**), due to the circuit lube pressure.

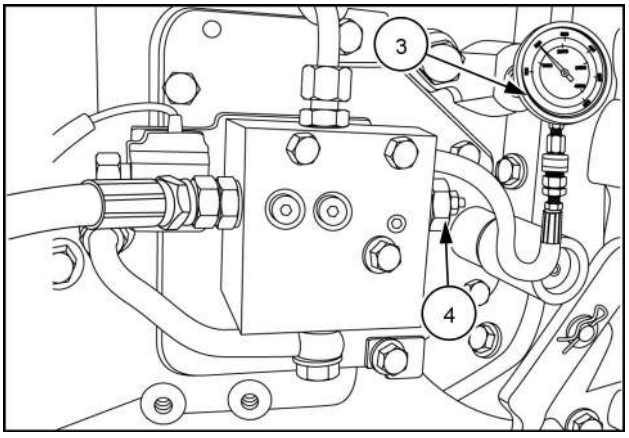


93110418 3



76110416 4

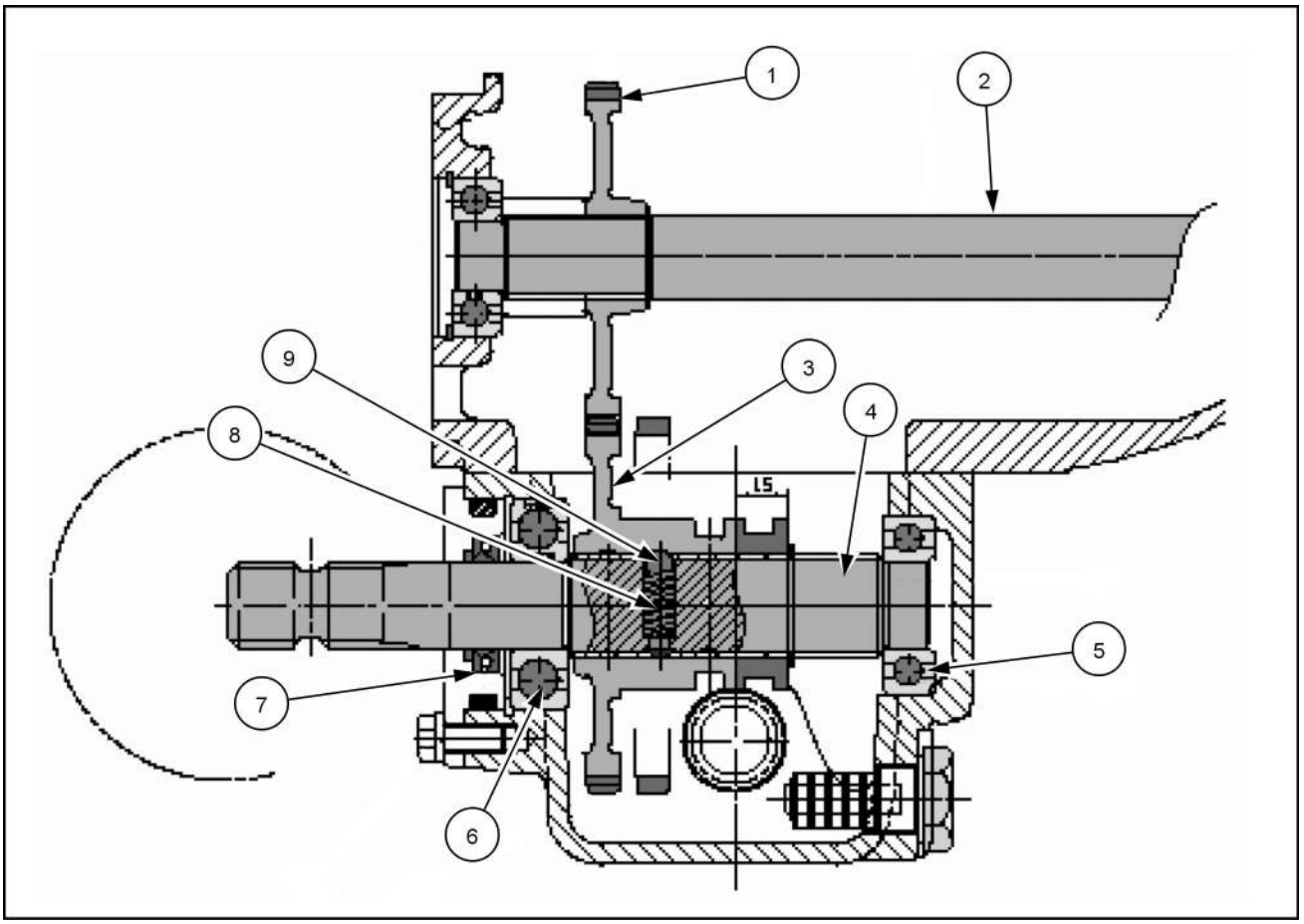
7. Push and turn the PTO switch to the "ON" position. After a 1 second delay, the pressure gauge **(3)** should read **1373 - 1569 kPa** (**200 - 227 psi**). If the pressure needs adjustment, turn the adjusting screw on the sequence valve **(4)** to increase or decrease the pressure to the PTO clutch . A quarter turn of the adjusting screw will increase or decrease the pressure by approximately **138 kPa** (**20 psi**).
8. Turn the engine OFF. Remove test fitting and insert the plug into G2 port.
9. If the hydraulic pressure to the PTO clutch cannot be adjusted to **1373 - 1569 kPa** (**200 - 227 psi**) check the system hydraulic pressure for adequate supply pressure and volume.



76110413 5

Central Power Take-Off (PTO) - Detailed view

Boomer™ 40	WE
Boomer™ 50	WE



76106759 1

(1) Middle PTO drive gear
(2) Middle PTO drive shaft
(3) Driven gear
(4) Middle PTO shaft
(5) Bearing
(6) Bearing
(7) PTO oil seal
(8) Spring
(9) Ball

CNH Industrial America New Holland Site 100 Brubaker Avenue New Holland, Pennsylvania United States 17557

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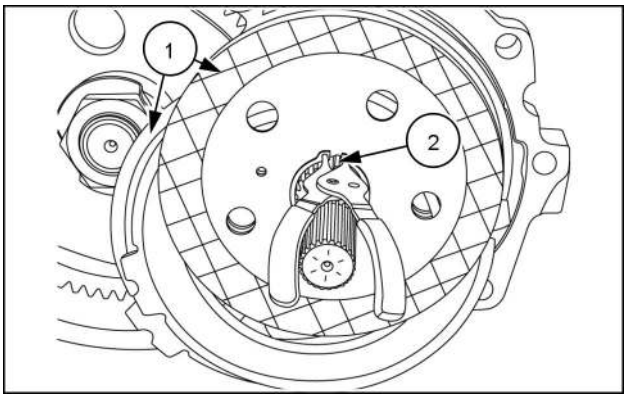
5. Install the brake disc package **(1)** by sliding package onto shaft and installing snap ring **(2)**.



93109728 3

Hydraulic systems - General specification

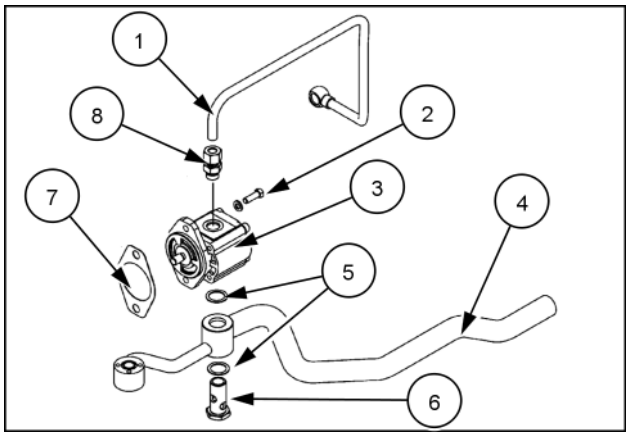
Hydraulic System Specifications

System Type	Open Center
Pump Type	Gear
Pump Capacity	**31 L** (**8.3 US gal**) @ 2600 engine rpm,
Reservoir Capacity	43.0 l (11.4 US gal) HST and Gear models
System relief valve setting	16671 kPa (2418 psi)
Safety relief valve setting	19609 kPa(2844 psi)
Maximum 3-pt hitch lift capacity at ball ends	1250 kg (2756 lb)
Lift Cylinder Diameter	80 mm (3.15 in)
Recommended Hydraulic Oil	**NEW HOLLAND AMBRA MULTI G 134™ HYDRAULIC TRANSMISSION OIL**

Pump - Install

Prior operation:
Pump - Remove (35.104)

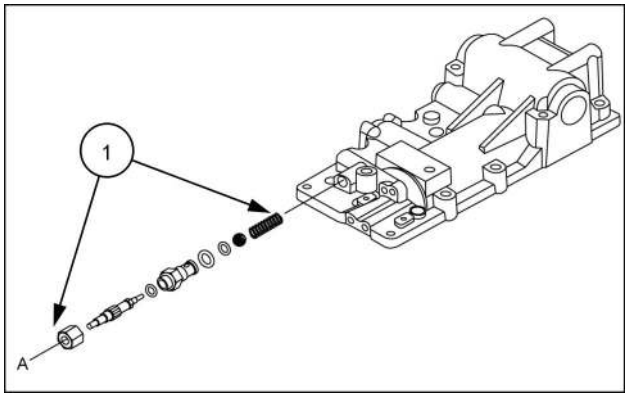
1. Install gasket **(7)** between engine mounting surface and hydraulic pump **(3)**.
2. Install hydraulic pump to the engine with two M10 x 30 mm bolts and lock washers **(2)**.
3. Install top outlet tube **(1)** with fitting **(8)** to the top of the hydraulic pump.
4. Install bottom inlet tube **(4)** to the bottom of the hydraulic pump with banjo bolt **(6)** and O-rings **(5)**.



76110362 1

Next operation:
Pump - Flow test (35.104)

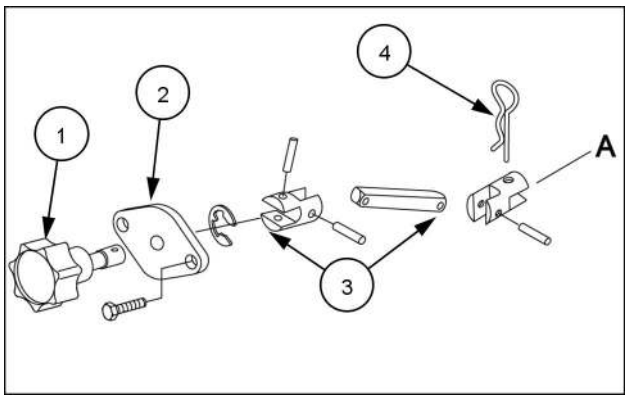
Hitch control valve - Static description - Hydraulic Power Lift (HPL) drop rate valve



76109554 1

The Hydraulic Power Lift (HPL) drop rate valve **(1)** is located on the front of the HPL housing. The drop rate valve is an adjustable valve that meters the exhaust oil from the HPL lift cylinder when the HPL is in the lowering mode. Rotating the valve clockwise will slow the rate of drop of the 3pt hitch and rotating counterclockwise will speed up the rate of drop of the hitch. If the valve is rotated completely clockwise, the hitch will not lower .

Drop rate valve control linkage



93105774 2

The drop rate valve has a control linkage that extends toward the front of the tractor. The linkage consists of a knob **(1)** plate **(2)** pivot link **(3)** and hairpin cotter pin **(4)**. The linkage connects to the valve stem with the hairpin cotter pin.

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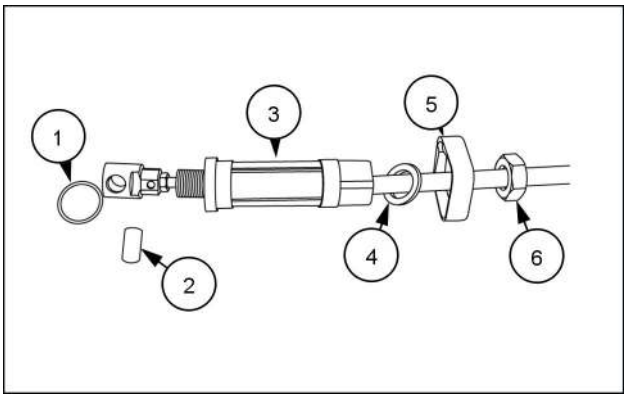
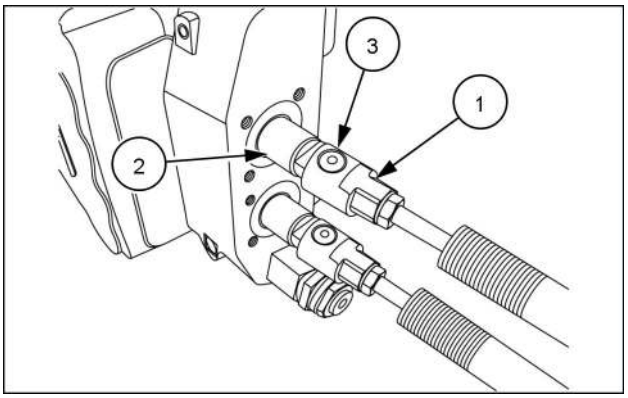
(*) See content for specific models

8. The valve end of the cable components are O-ring **(1)** pin **(2)** cap **(3)** seal **(4)** cap retainer **(5)** and nut **(6)**.



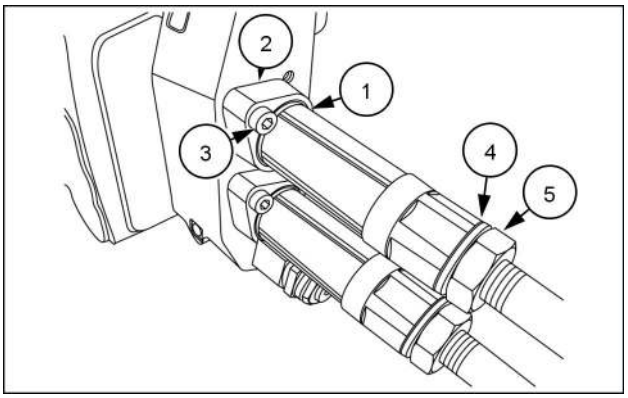
93109600 8

9. Install cable end **(1)** to valve spool **(2)** with pin **(3)**.



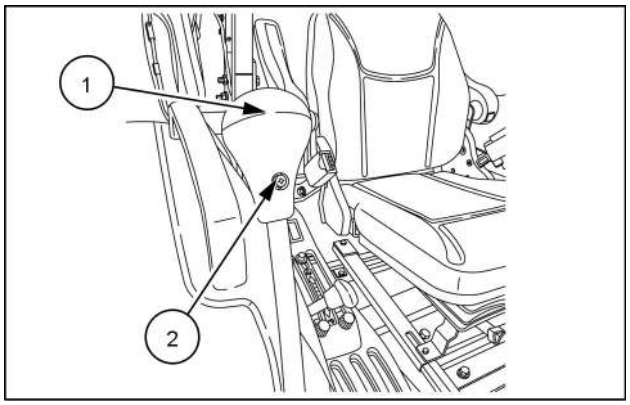
93109606 9

10. Install O-ring into end of cap **(1)**. Thread cap onto cable until cap is hand tight against valve body. Secure cap with cap retainer **(2)** and two M5 x 18 mm socket head machine screws **(3)**. Install seal **(4)** against cap and secure cable to cap with nut **(5)**.



93109607 10

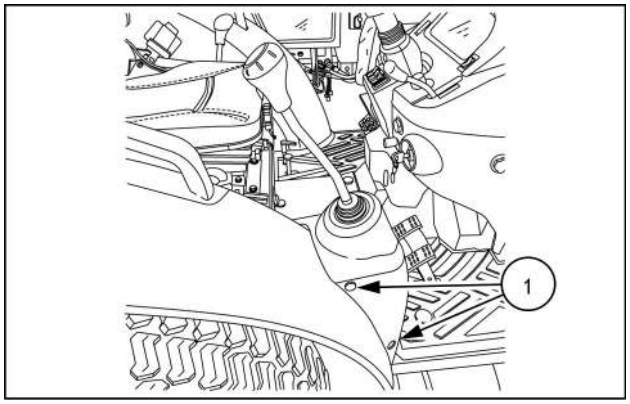
5. Install the joystick knob **(1)**.
6. Secure the knob with a machine screw **(2)**.



NHIL13CT01300AA 5

7. Install four trim caps **(1)**.

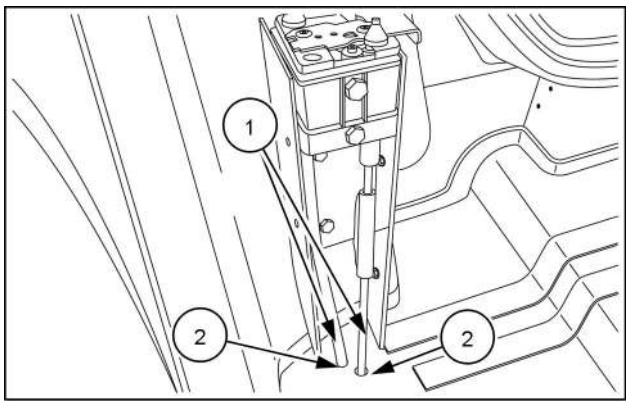
NOTE: *Two trim caps are shown. Two more trim caps are located on opposite side of cover.*



NHIL13CT01294AA 6

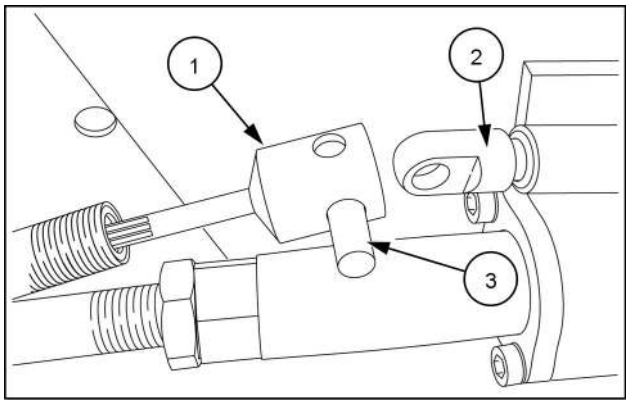
Joystick cable installation

8. Install the cables **(1)** downward through the holes in the operator platform **(2)**.



NHIL13CT00524AA 7

9. Attach the cable ends **(1)** to the spool valve **(2)** by inserting pins **(3)** through the cable end **(1)** and the spool valve **(2)**.



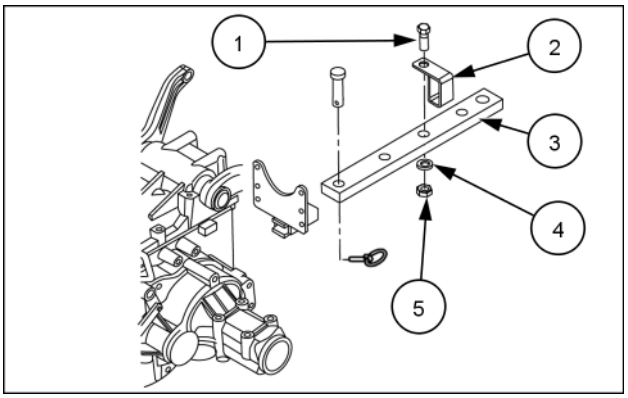
NHIL13CT00447AA 8

Rear three-point hitch - Remove drawbar

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

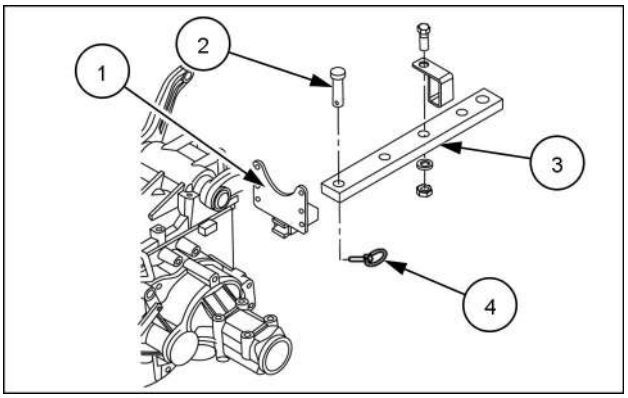
NOTE: *Drawbar thickness on Class II tractors, (Boomer 30 / Boomer 35), is* ***25 mm*** *(****0.98 in****). Drawbar thickness on Class III tractors, (Boomer 40 / Boomer 50), is* ***30 mm*** *(****1.18 in****).*

1. Remove the M20 nut **(5)**, M20 lock washer **(4)**, M20 x 60 mm bolt **(1)**, and chain support **(2)** from the draw bar **(3)**.



93109571 1

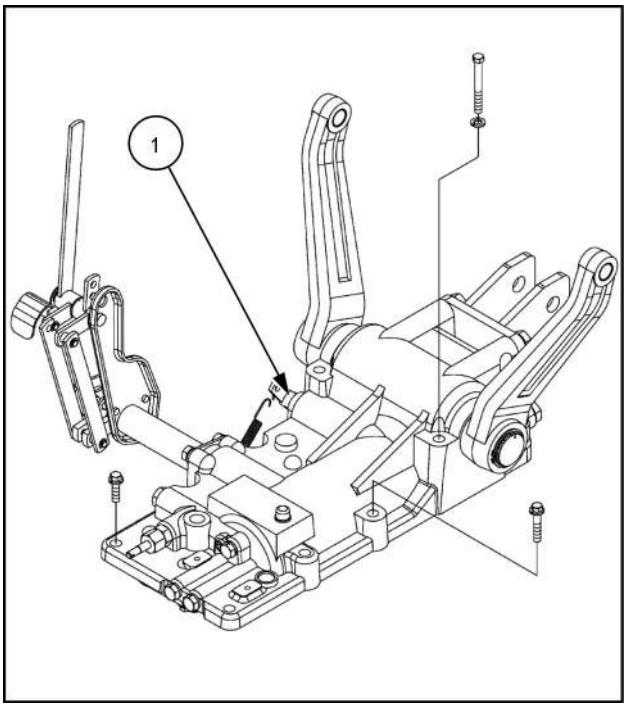
2. Remove the lynch pin **(4)** and the clevis pin **(2)**.
3. Remove the drawbar **(3)** from the hitch support **(1)**.



93109571 2

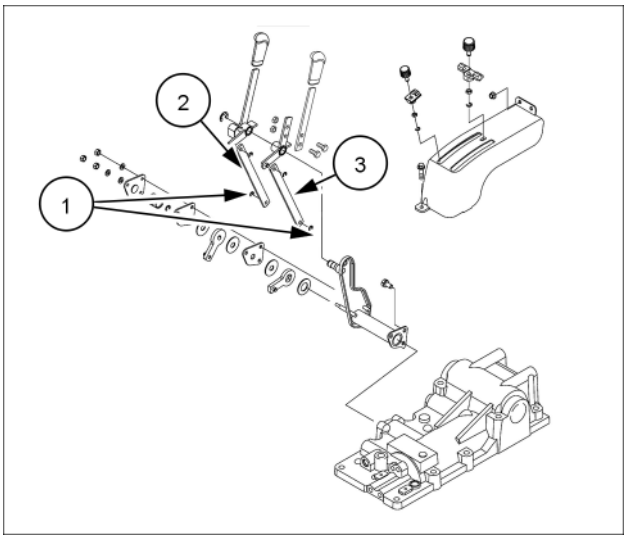
Rear three-point hitch external controls - Remove

1. Remove the Hydraulic Power Lift (HPL) housing **(1)** from the tractor.



76109580 1

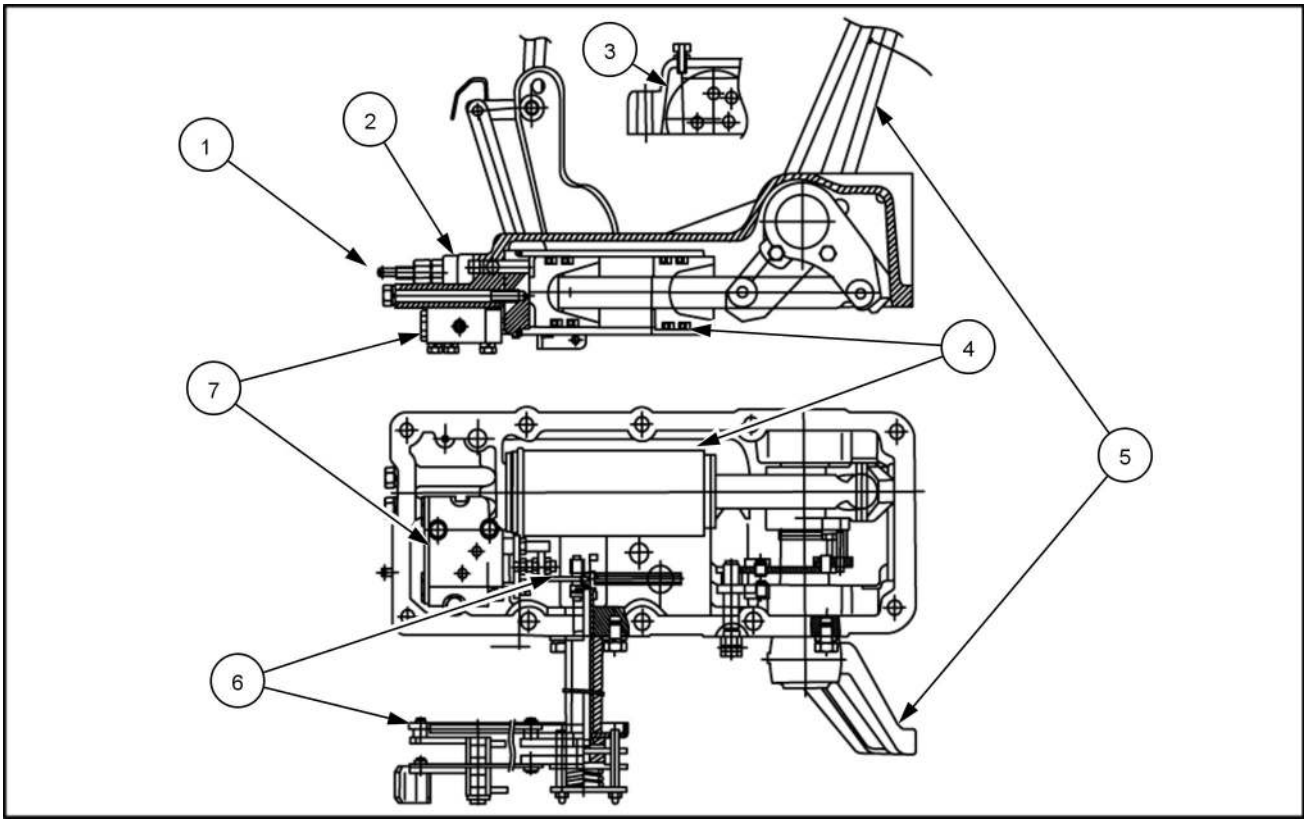
2. Remove the two "E" rings **(1)**.
3. Disconnect the draft link **(3)**.
4. Disconnect the position link **(2)**.



76109566B 2

Rear three-point hitch - Dynamic description - Hydraulic Power Lift (HPL) system

Boomer™ 40	WE
Boomer™ 50	WE



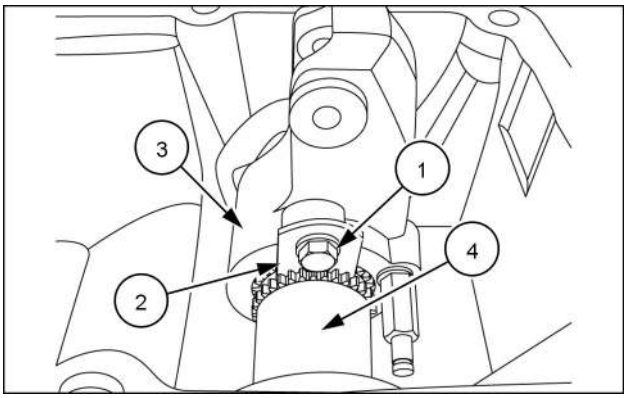
93102612 1

(1) Drop rate valve
(2) Safety relief valve
(3) Air breather
(4) Lift cylinder
(5) Lift arms
(6) External and Internal linkage
(7) Control valve

System operation

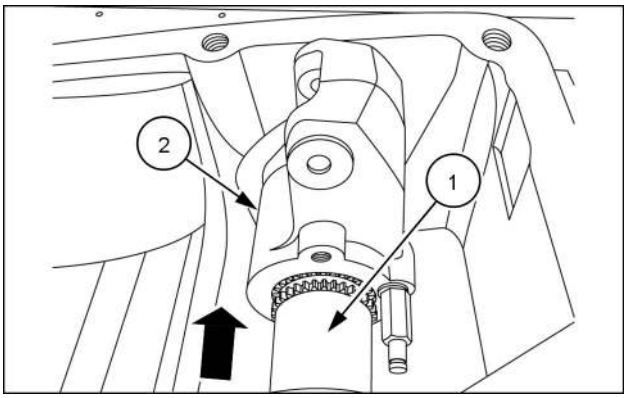
The Hydraulic Power Lift (HPL) system is supplied oil by the main hydraulic pump located on the left side of the engine. The hydraulic system pressure of **16671 kPa** (**2418 psi**) is regulated by the system relief valve located in the mid mount two spool valve. The control valve located internally in the HPL housing, routes the oil to a single acting lift cylinder. The lift cylinder extends when in the raise position, causing the lift arms to rotate upwards and lift the lower links of the three-point hitch. When the HPL is placed in the lower position, the weight on the three-point hitch pushes the oil out of the lift cylinder, past the adjustable drop rate valve, which regulates the drop rate of the three-point hitch, and the oil returns to the tractor reservoir. The HPL system also incorporates a system safety relief valve, with a pressure setting of **19609 kPa** (**2844 psi**), which protects the hydraulic system from shock loads produced from the weight on the three-point lift arms. The air breather located on top of the HPL housing relieves any air pressure that may be created in the transmission housing.

11. Remove bolt **(1)** and lock plate **(2)** from the pivot arm **(3)** and cross shaft **(4)**.



93109586 11

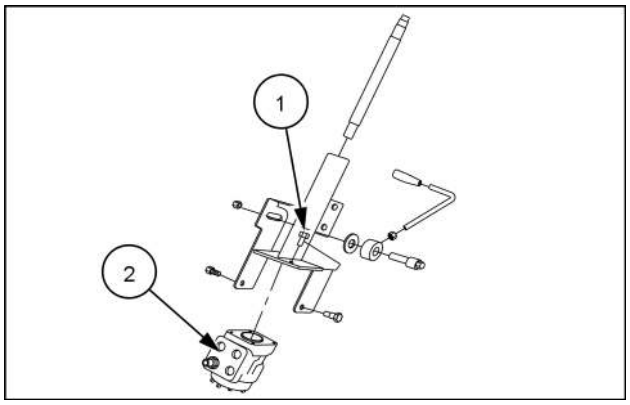
12. Drive the cross shaft **(1)** out of the HPL housing, from the right side towards the left side. Remove the pivot arm **(2)** from the housing.



93109587 12

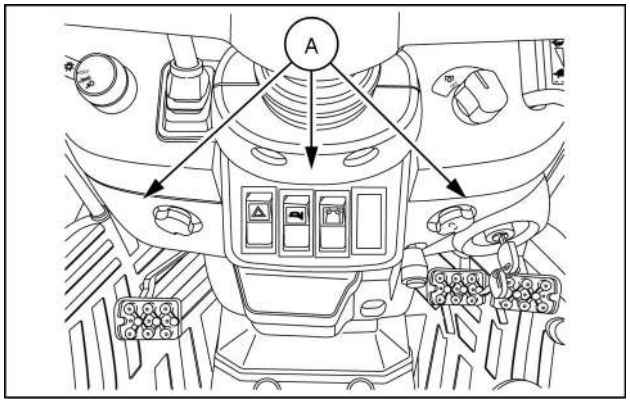
6. Install the four M10 x 1.5 x 25mm bolts **(1)** that secure the steering valve **(2)**, and tighten.

NOTE: *The steering hydraulic lines may still be connected to the steering valve* ***(2)****.*



NHIL14CT00518AA 4

7. Install the cowling **(A)**.



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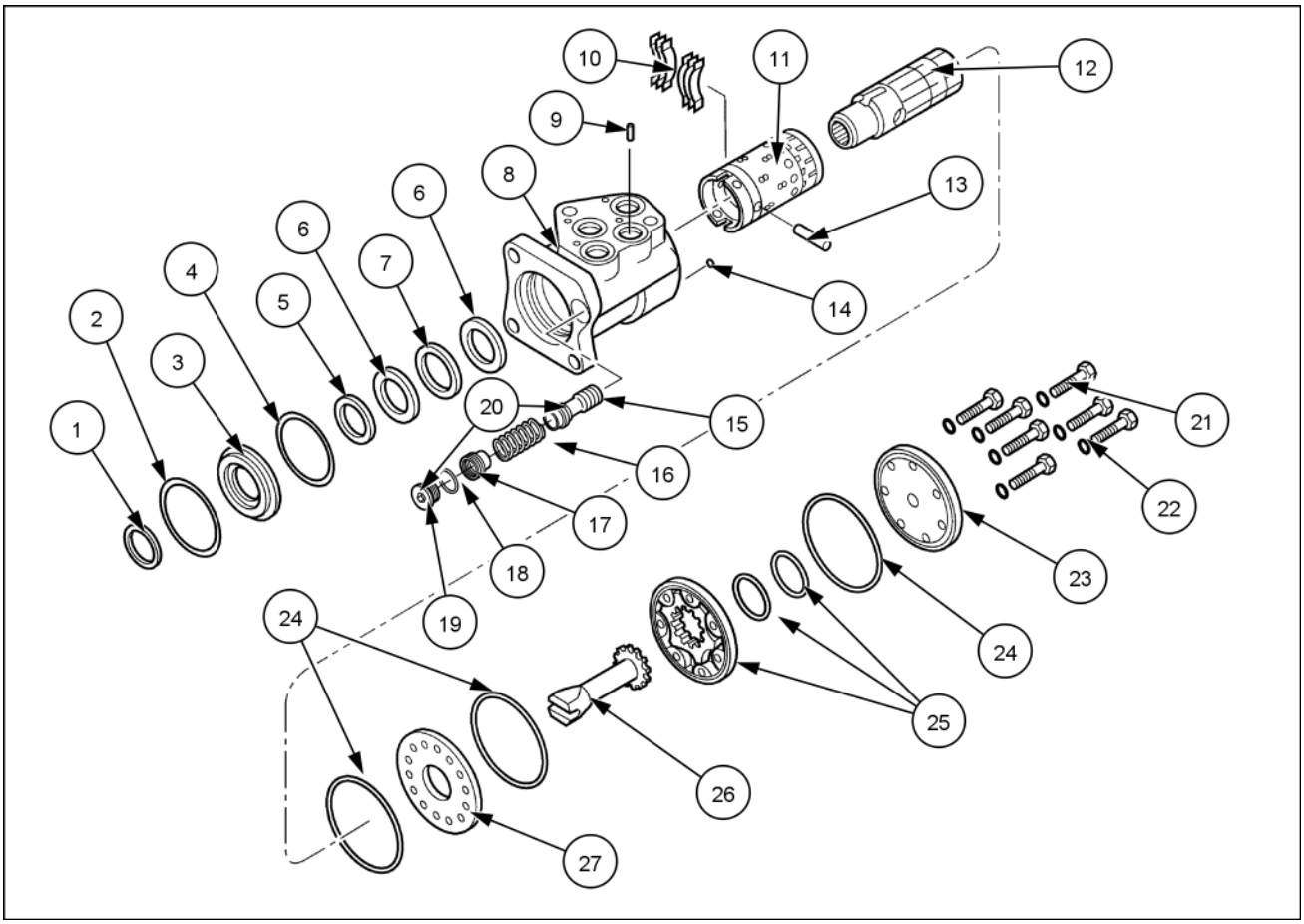
Steering - 41

Hydraulic control components - 200

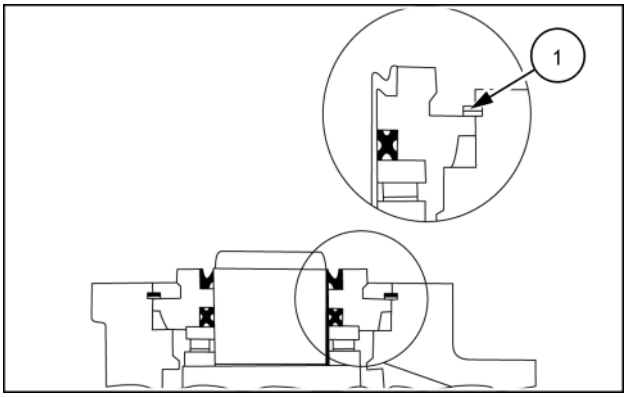
Hydraulic control components - Exploded view



76096183 1

(1) Dust seal
(2) Retaining ring
(3) Gland bushing
(4) O - ring
(5) Quad ring
(6) Bearing race
(7) Thrust bearing
(8) Motor housing
(9) Spring pin
(10) Centering springs
(11) Spool
(12) Sleeve
(13) Pin
(14) Ball
(15) Relief valve poppet
(16) Spring
(17) Adjuster screw
(18) O - ring
(19) Relief adjust plug
(20) Relief valve assembly
(21) Cover bolt
(22) Washer
(23) End cap
(24) O - ring
(25) Gerotor assembly
(26) Drive (Shaft)
(27) Plate

15. Install the retaining ring **(1)** in the housing, making sure it is properly seated in the groove as shown in figure **10**.

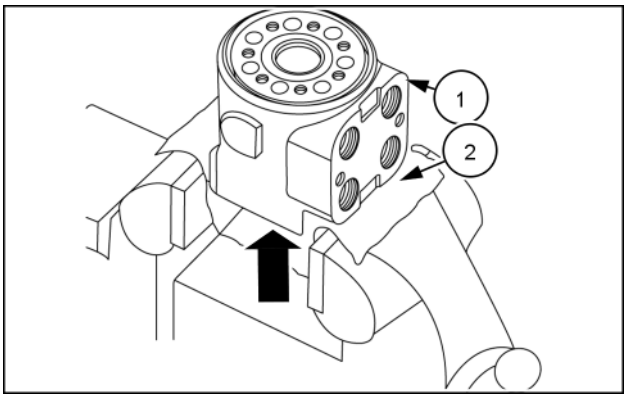


93102661 10

Assembly of the rotor shaft

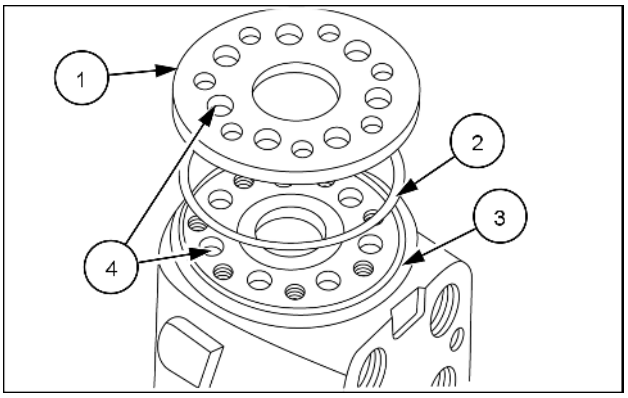
1. Place the housing **(1)** facing upward, grip the unit in a vice and protect the surface of the unit against scarring or damage, with a suitable material **(2)**.

NOTE: *Make sure that the spool and sleeve assembly is flush with the surface of the housing.*



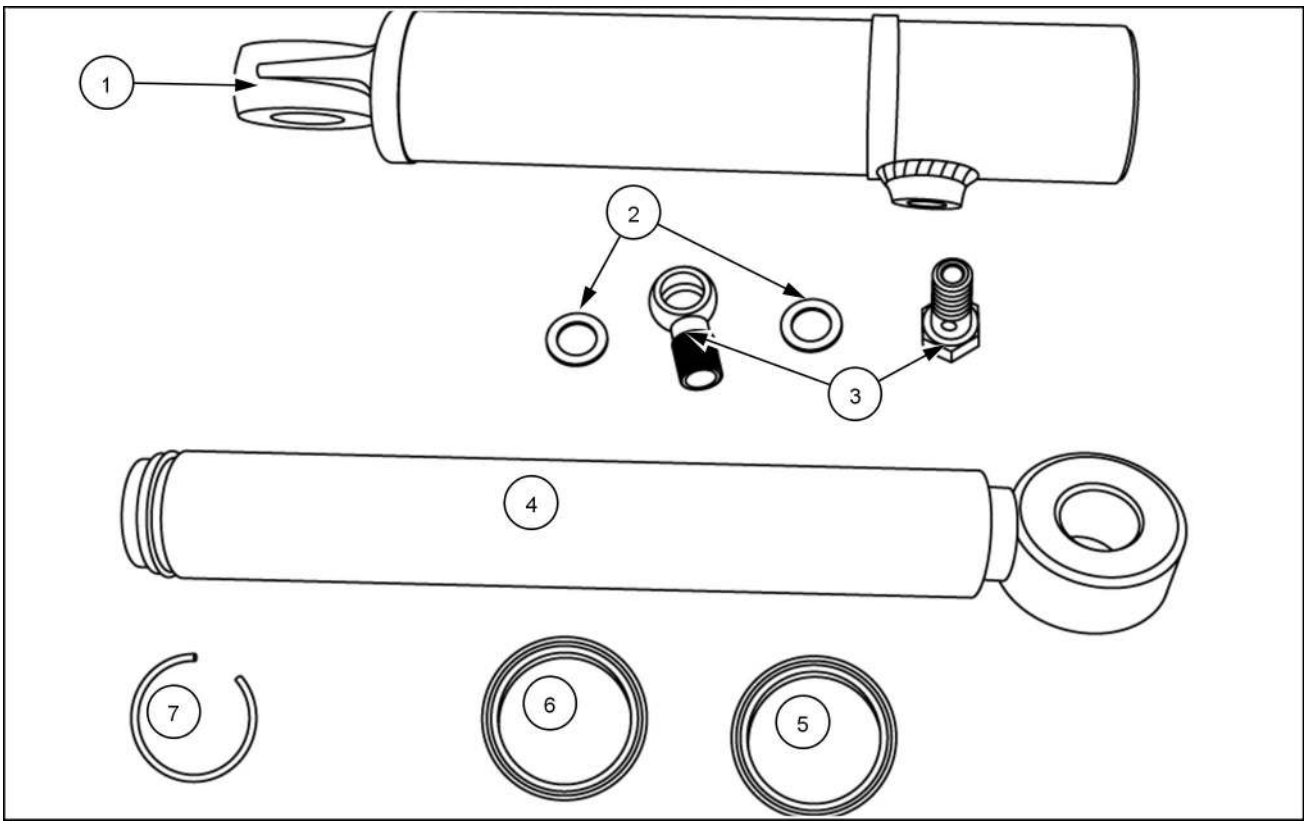
93102662 11

2. Install O-ring **(2)** in housing **(3)**.
3. Place the spacer plate **(1)** on the housing, aligning the holes **(4)**.



93102663 12

Steering cylinder - Exploded view



93112112 1

Steering cylinder parts

(1) Cylinder housing
(2) Copper gaskets
(3) Banjo bolt
(4) Piston rod
(5) Gasket
(6) Dust seal
(7) Wire retaining ring

Steering cylinder - Install

⚠ 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.

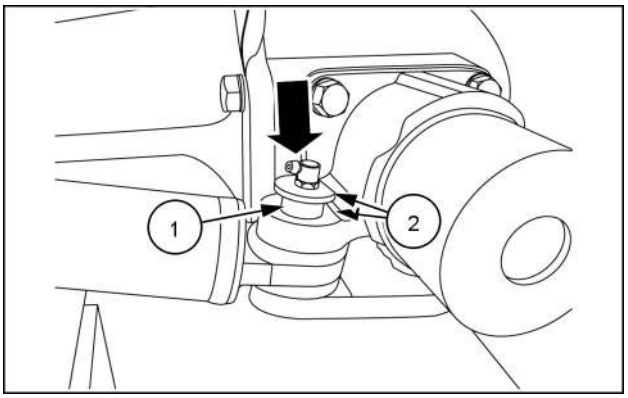
W0208A

Prior operation:
Steering cylinder - Overhaul assembly (41.216)

NOTICE: *Install zerked pins at the same location as removal.*

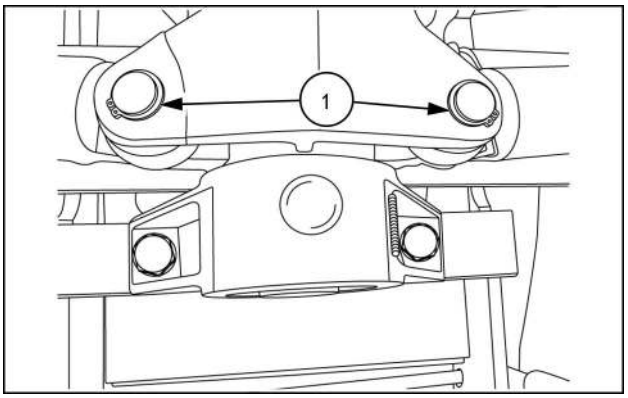
1. Install the steering cylinders **(1)** as shown.
2. Secure the cylinder end by placing the zerked pin **(1)** through each end.

NOTICE: *Take care to align flats **(2)**.*



93112119 1

3. Secure with a snap ring **(1)** at each end.



93109789 2

Next operation:
Steering cylinder - Connect (41.216)

Front wheels - Remove

⚠ WARNING

Explosion hazard!
When inflating tires, use a clip-on air chuck with a gauge, remote valve, and hose long enough to allow you to stand to one side and NOT in front of or over the wheel assembly. Keep others out of the DANGER AREA. Never inflate a tire beyond the maximum allowable pressure printed on the tire.
Failure to comply could result in death or serious injury.

W0059A

⚠ WARNING

Explosion hazard!
Tires must be replaced by skilled personnel with the proper tools and technical knowledge. Unskilled personnel replacing wheels or tires could result in serious physical injuries, tire damage, and/or wheel distortion. Always have a qualified tire mechanic service wheels and tires.
Failure to comply could result in death or serious injury.

W0171A

⚠ WARNING

Crushing hazard!
Before performing service under the machine, park the machine on a level surface, engage the parking brake, and stop the engine. Put blocks at the front and rear of the tires.
Failure to comply could result in death or serious injury.

W0350A

⚠ WARNING

Roll-over 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.

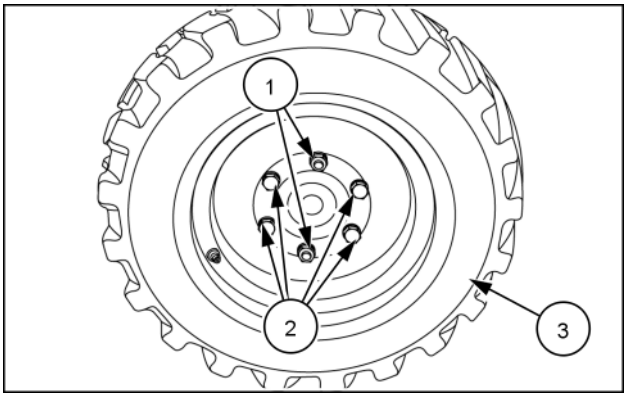
W0242A

⚠ WARNING

Heavy parts!
The wheels are very heavy. Handle with care. Make sure that the wheels, when stored, cannot fall over and cause injury.
Failure to comply could result in death or serious injury.

W0403A

1. Lift the tractor at appropriate side with the hydraulic jack.
2. Use appropriate jack stands, or lifting device.
3. Remove two M16 nuts **(1)**.
4. Remove the four M16 x 30 bolts **(2)**.
5. Remove the tire and wheel assembly.



93100874 1

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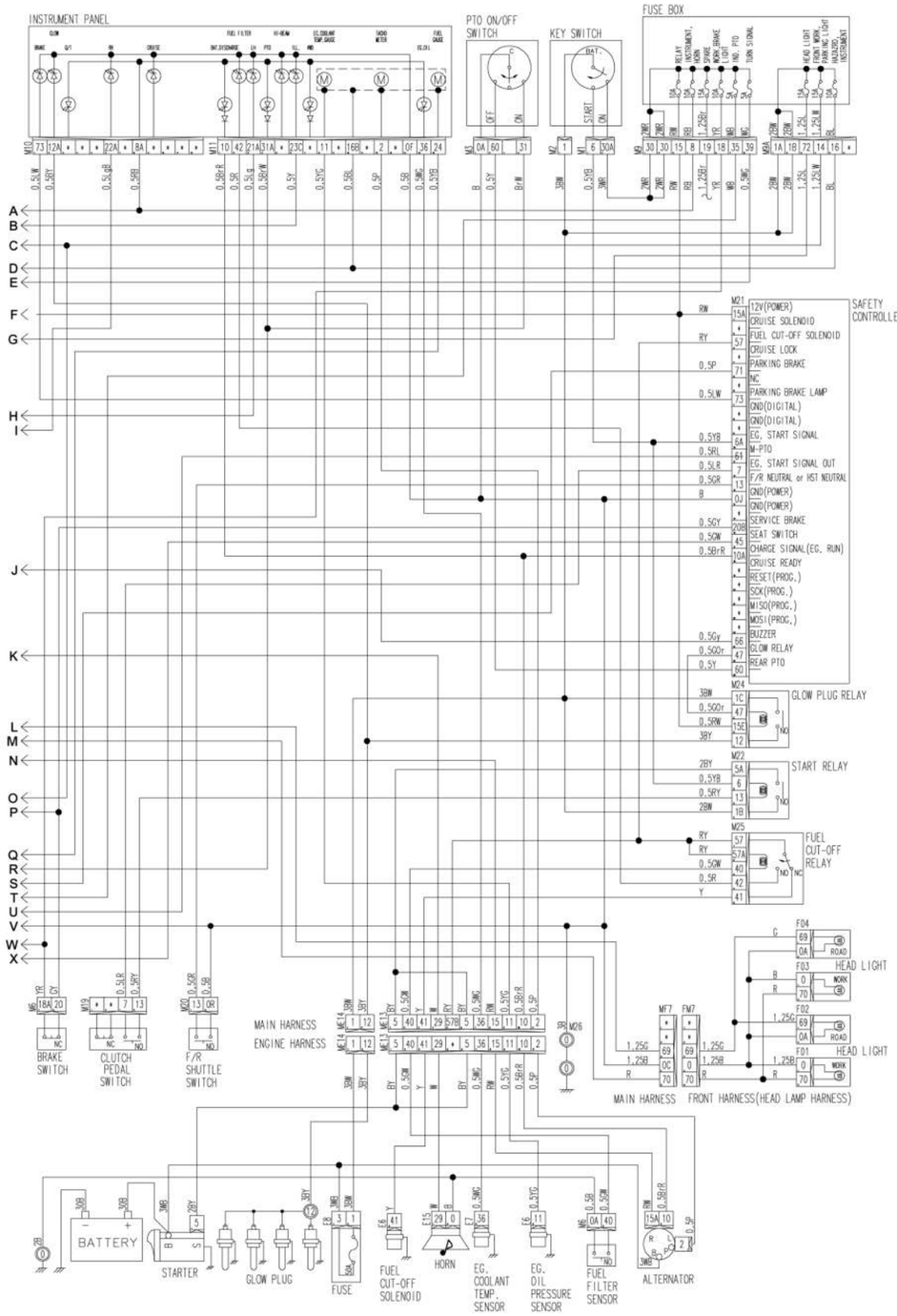
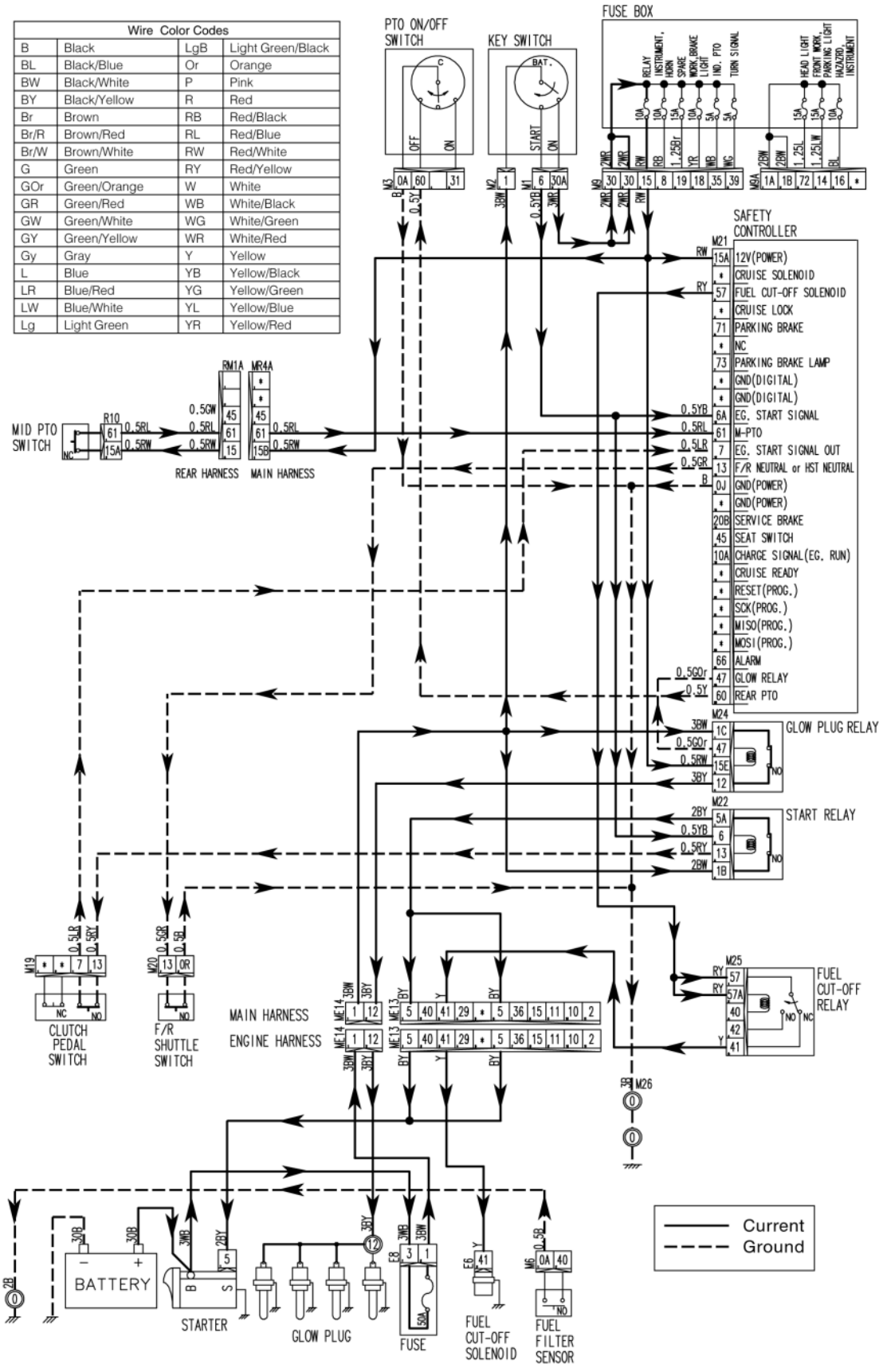
Electrical systems - 55


INSTRUMENT PANEL
PTO ON/OFF SWITCH
KEY SWITCH
FUSE BOX
SAFETY CONTROLLER
GLOW PLUG RELAY
START RELAY
FUEL CUT-OFF RELAY
HEAD LIGHT
MAIN HARNESS
ENGINE HARNESS
FRONT HARNESS(HEAD LAMP HARNESS)
BRAKE SWITCH
CLUTCH PEDAL SWITCH
F/R SHUTTLE SWITCH
BATTERY
STARTER
GLOW PLUG
FUSE
FUEL CUT-OFF SOLENOID
HORN
EG. COOLANT TEMP. SENSOR
EG. OIL PRESSURE SENSOR
FUEL FILTER SENSOR
ALTERNATOR

76110345A 2

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



76110383 1

the fuel cut-off solenoid, when the solenoid is energized, the solenoid plunger retracts and allows fuel to flow to the engine injection pump and the engine continues running.

See: **Fuel shutoff solenoid - Troubleshooting - Safe operation circuit (operator not present) HST transmission (55.010)**

Electrical system - Electrical schematic sheet 10 - Work lights

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

Cruise Control Magnet Functions

1. When terminal "56" is supplied current from the safety controller and a ground source is supplied to terminal "OD" of the magnet, the magnet becomes energized. The magnet energizes and locks the HST linkage in the desired position.
2. The magnet can be deactivated by either:

   · Placing the cruise control switch in the "OFF" position.
   · Placing the key switch in the "OFF" position.
   · Depressing BOTH the left and right brake pedals.

   Any of these actions will interrupt the current to the magnet causing the magnet to activate and release the HST linkage.

Instrument Panel Functions

1. When the HST cruise control is activated, an indicator light will illuminate in the instrument panel to inform the operator that the cruise control is on.

Ground Sources

1. The safety controller, cruise magnet and instrument panel all share a common ground source, located on the right rear side of the fire wall.

See: **Throttle control - Troubleshooting - Cruise control circuit, HST transmission (55.525)**

1. Current starts at the battery and flows through the positive (+) battery cable to the engine starter motor.
2. From the starter motor, current flows through the 50-amp main fuse and to the main harness connector. From the connector the current flows to the "BATTERY" terminal of the key switch.
3. When the key switch is placed in the "ON" position, current is transferred from the "BATTERY" to the "ON" terminal of the key switch.

"ON" terminal of key switch

1. Current flows from the "ON" terminal of the key switch to the fuse panel bussbar, from the bussbar current travels through: · Fuse #2 - 10 amp

Fuse Functions

1. The #2, 10amp fuse, sends current to terminal "8A" of the instrument panel.

Instrument Panel Indicator Light Function

1. The instrument panel is provided with current to terminal "8A" and the ground source for the indicator light is provided by terminal "36". The ground path for indicator light travels through the engine oil pressure switch which is grounded directly to the engine block. When the engine oil pressure drops below **41.4 kPa** (**6.0 psi**) the switch closes, to complete the ground path to terminal "36" of the instrument panel. This allows the low oil pressure indicator light to illuminate, warning the operator of a potential engine problem.

Contents

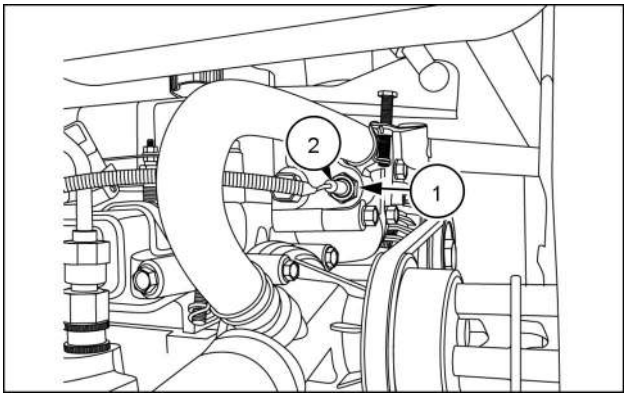
Electrical systems - 55

Fuel tank system - 011

Engine coolant temperature sensor - Install - Sender

Prior operation:
Engine coolant temperature sensor - Test (55.012)

1. Apply thread sealant to the threads of the temperature sender and install sender **(1)** to the engine.
2. Connect wire harness connector **(2)** to the terminal on the sender.



93105590 1

3. Install coolant that was drained during removal of sender.
4. Connect negative (-) battery cable to the negative (-) battery terminal.

Contents

Electrical systems - 55

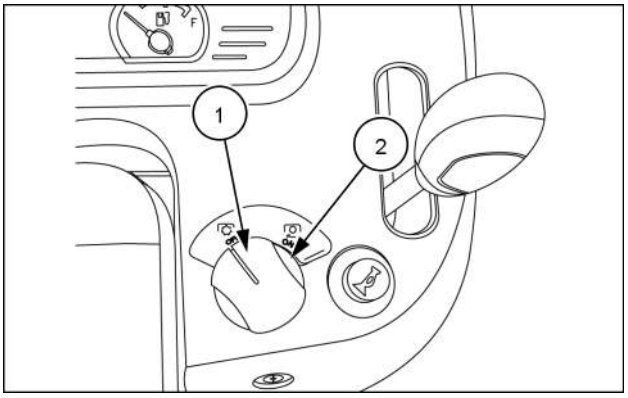
Parking brake electrical system - 031

SERVICE

Power Take-Off (PTO) speed sensor - Install - PTO Switch

Prior operation:
Power Take-Off (PTO) speed sensor - Test - PTO Switch (55.048)

1. Install switch from the bottom side of the dash panel and install retaining nut.
2. Install knob **(1)** on switch stem and retain knob with machine screw **(2)**.



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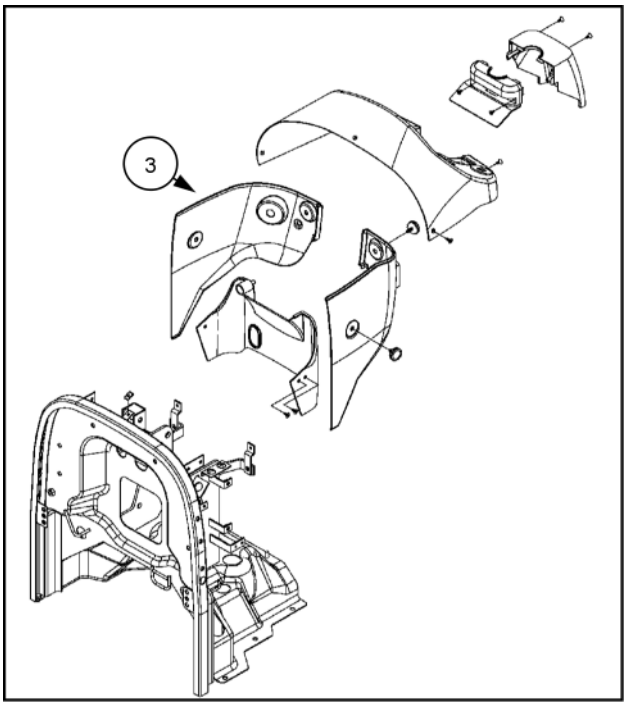
3. Connect switch connector to tractor wire harness.
4. Reinstall right-hand side console panel **(3)**.



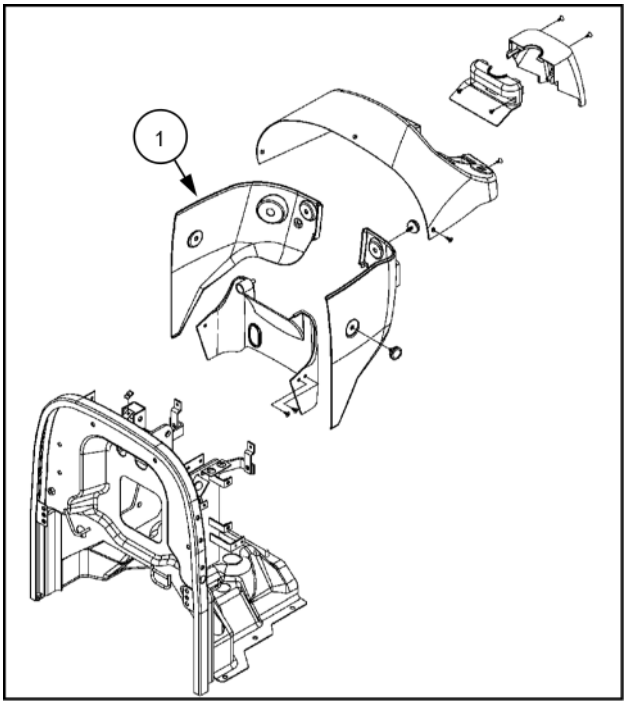
76105667 2

5. Reconnect negative (-) battery cable to the negative (-) battery terminal.

Ignition switch - Remove

Prior operation:
Ignition switch - Service instruction (55.201)

1. Remove negative (-) battery cable from negative (-) battery terminal.
2. Remove right-hand side console panel **(1)**.



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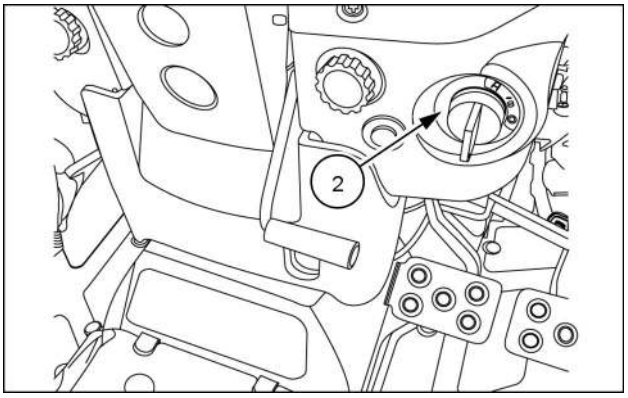
3. Disconnect the two wire harness connectors from the switch harness.
4. Remove retaining nut **(2)** from the switch and remove switch from the back side of the console panel.



93099330 2

Next operation:
Ignition switch - Test (55.201)

Contents

Electrical systems - 55

Cold start aid - 202

SERVICE

DIAGNOSTIC

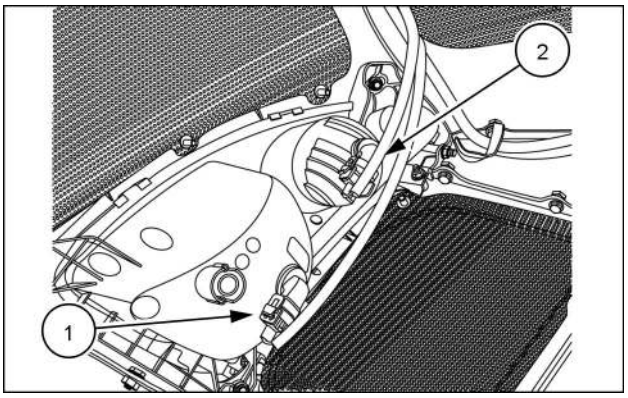
Headlight - Replace - Bulb

If head lamps, fail to operate, the bulb must be replaced. To change the bulb:

1. Open the tractor hood.
2. Bulb Removal:
   - Road **(1)** and Work lights **(2)**. Turn bulb assembly ¼ turn and remove bulb from holder.
3. Bulb Replacement:
   - Road and Work lights: Insert bulb assembly into slots and turn ¼ turn clockwise to secure.
4. Rotate the socket counter-clockwise a quarter turn and remove the socket from the housing.
5. Remove the bulb assembly from the harness.
6. Place a new bulb in the socket, then reinstall the socket in the housing.

NOTICE: *Be careful not to touch the bulb with bare fingers. Oil from the fingers can shorten the life of bulb. Use protective cloth or glove when installing bulb.*

NOTE: *Replacement bulbs are:*
Road lights (upper) : Bulb size 894, ***37.5 W****, Halogen.*
Work lights (lower) : Bulb size 886, ***50 W****, Halogen.*



93100884 1

Headlight - Troubleshooting

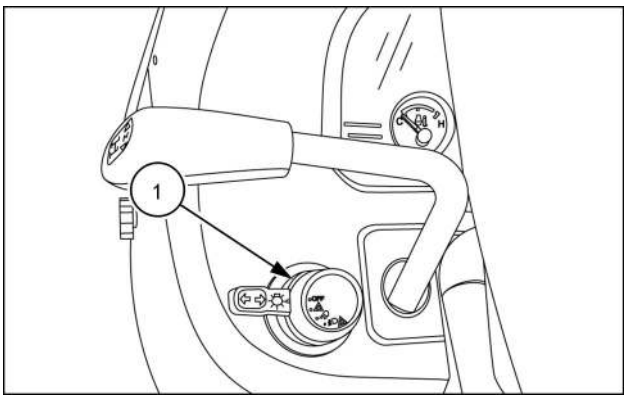
NOTE: *See* ***Electrical system - Electrical schematic sheet 11 - Road lights (55.000)***

Problem	Possible Cause	Correction
Inoperative road lights	Blown #7 15-amp fuse	Replace 15-amp fuse
	Blown #9 10-amp fuse	Replace 10-amp fuse
	Faulty combination light switch	Test switch, replace if necessary
	Faulty head light relay	Test relay, replace if necessary
	Improper ground	Check ground location, for clean contact area

Turn signal switch - Service instruction

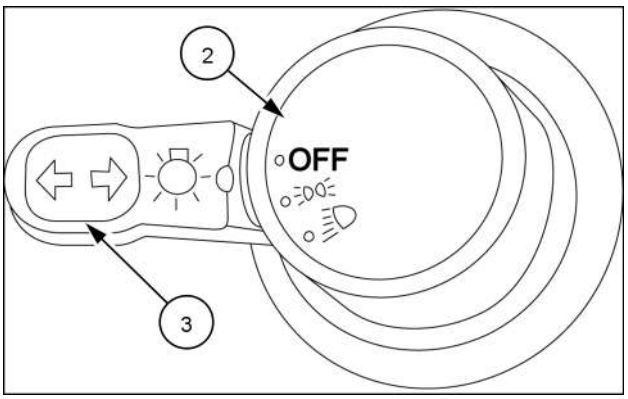
Description

The multifunction lights / turn signal switch **(1)** is located on the left-hand side of the dash console.



93099335 1

The switch knob **(2)** controls the headlights and tail-lights. The switch arm **(3)** controls the turn signals.



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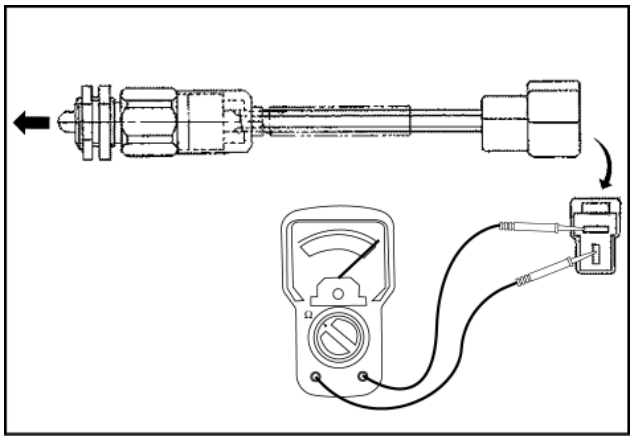
Next operation:
Turn signal switch - Remove (55.405)
Next operation:
Turn signal switch - Test (55.405)
Next operation:
Turn signal switch - Install (55.405)

Brake light switch - Test

Prior operation:
Brake light switch - Remove (55.405)

1. Disconnect the switch from the tractor wire harness.
2. Use an ohmmeter to test the switch for continuity.
3. With the switch in the extended position, there will be continuity across the switch terminals.



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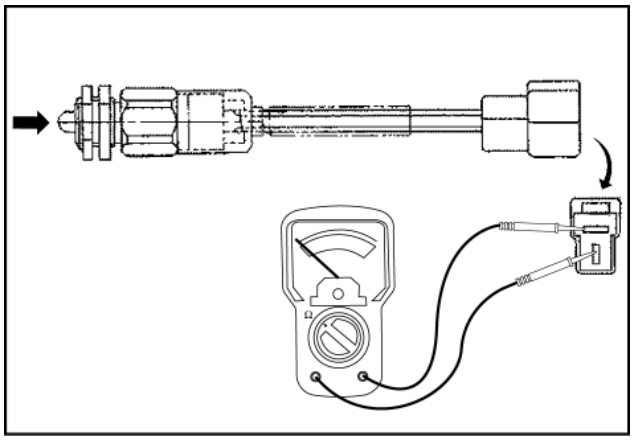
4. With the switch in the retracted position continuity will not exist across the switch terminals.

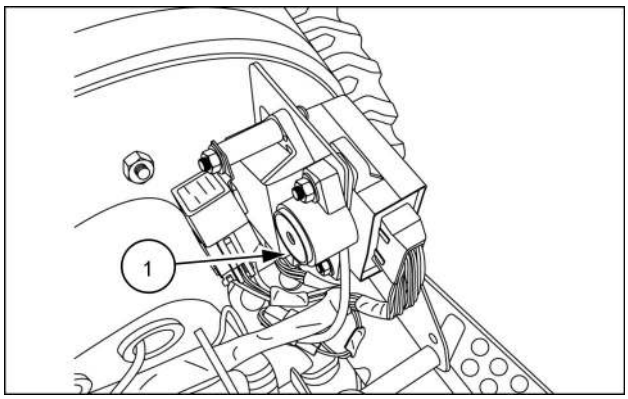


76105637 2

Next operation:
Brake light switch - Install (55.405)

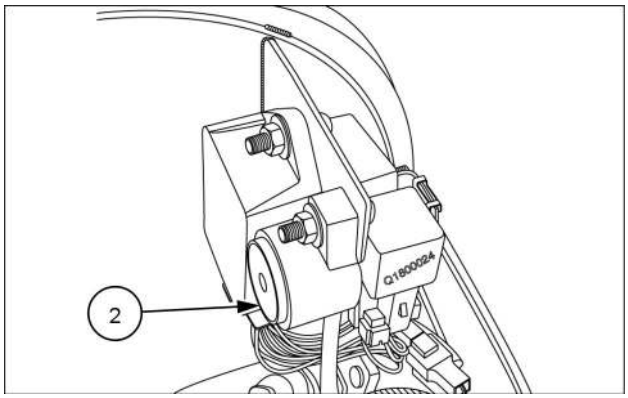
Instrument cluster - Overview - Safety alarm

The safety alarm **(1)** (HST model) or **(2)** (Gear model) are located on the right-hand side of the tractor underneath the instrument panel console. The alarm sounds if the operator leaves the seat without the park brake being engaged with the tractor engine running or when the tractor is shut off with the key switch without the park brake being engaged.



93105596 1

HST model



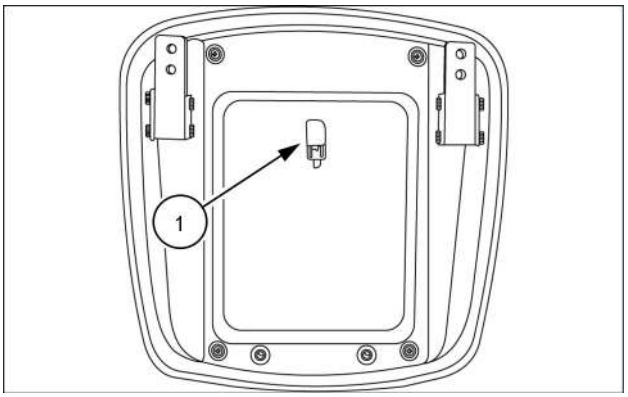
93105612 2

Gear model

Operator presence switch Seat switch - Install

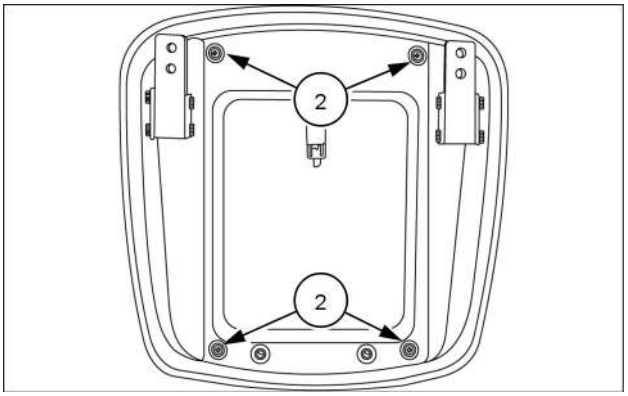
Prior operation:
Operator presence switch Seat switch - Test (55.408)

1. Insert the seat switch **(1)** from the top side of the seat pan. Push the switch through the pan until the retaining tabs lock in place against the bottom side of the pan.



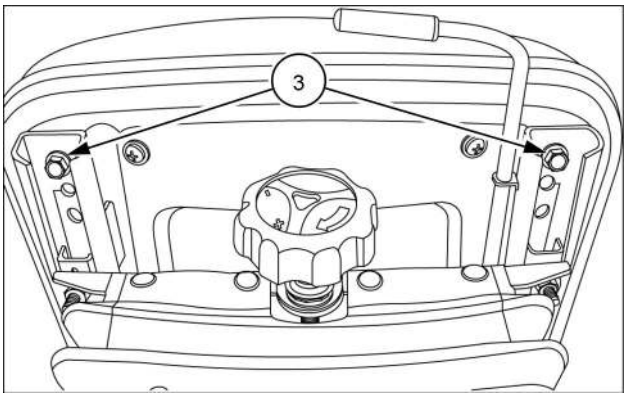
93105611 1

2. Install the seat pan to the seat cushion with the four sheet metal screws **(2)**.



93105611 2

3. Install the seat belt brackets to the seat pan using two M8 x 20mm flange head bolts
4. Install seat the slide track using two M8 x 15mm flange head bolts **(3)** in front side of track and two M8 x 20mm on rear side of track. Torque all M8 hardware to **25 N·m** (**18 lb ft**).

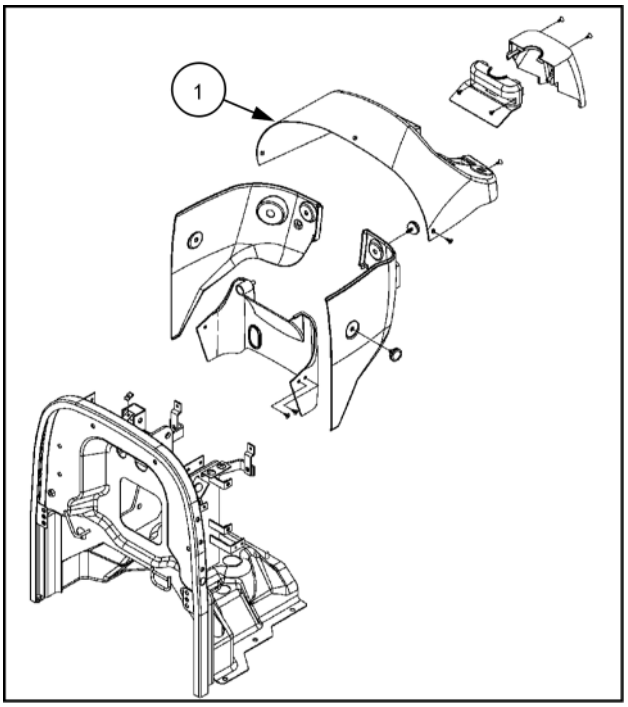


93105609 3

Instrument cluster Analog instrument cluster - Remove

Prior operation:
Instrument cluster Analog instrument cluster - Overview (55.408)

1. Remove the negative (-) battery cable from the negative (-) battery terminal.
2. Disconnect wire harness connectors from the instrument panel.
3. Remove instrument panel console **(1)** from the tractor.



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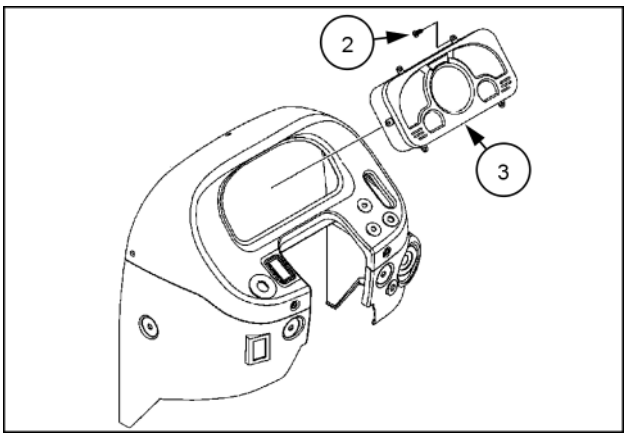
4. Remove the six screws **(2)** from the instrument panel and remove panel **(3)** from the underside of the console



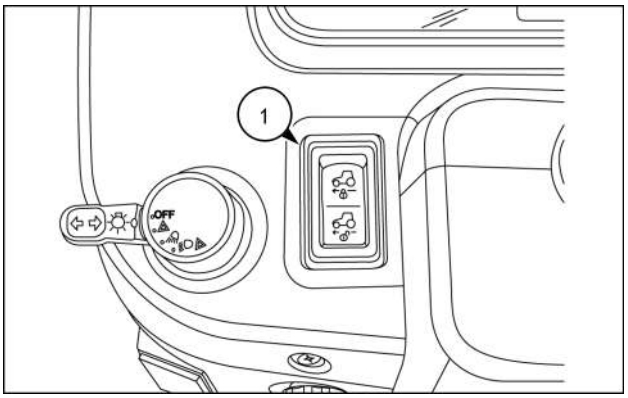
76105695 2

Next operation:
Instrument cluster Analog instrument cluster - Test (55.408)

Throttle control - Install - Cruise control switch

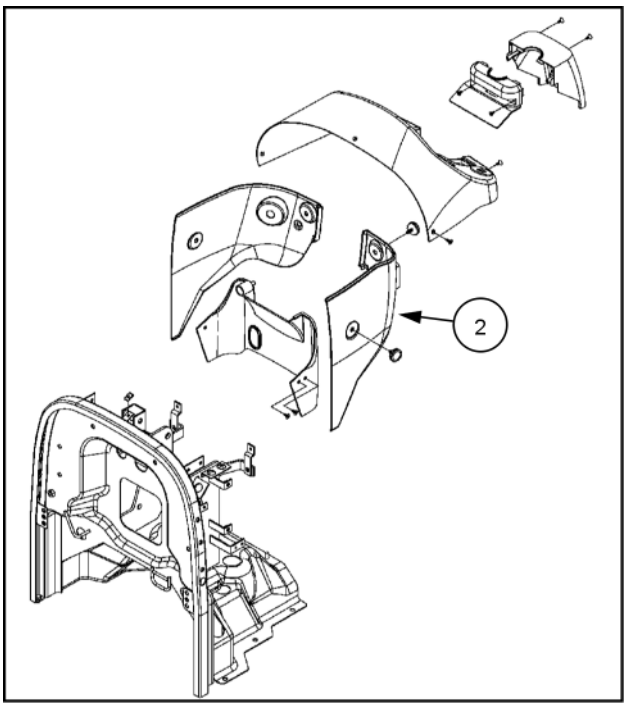
Prior operation:
Throttle control - Test - Cruise control switch (55.525)

1. Insert the cruise control switch **(1)** from the top side of the dash panel until switch locking tabs snap in place.



93099336 1

2. Connect switch connector to the tractor wire harness.
3. Reinstall the left-hand side console panel **(2)**.



76105667 2

4. Reconnect the negative (-) battery terminal to the negative (-) battery terminal.

Lever neutral position switch - Install Forward/Reverse Shuttle Switch (55.610)

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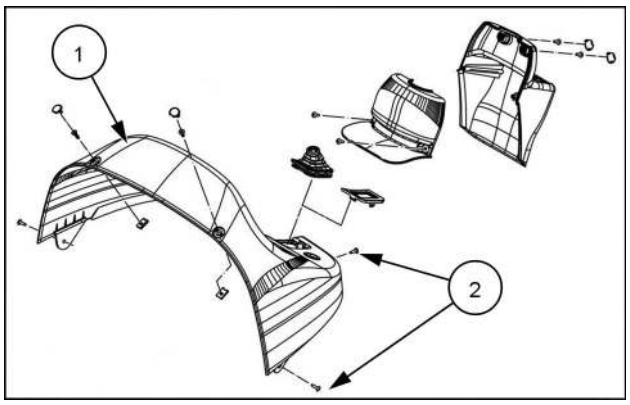
Operator platform less cab - Install - Dash console

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

1. Position the dash console panel **(1)** in place on the tractor.
2. Install the six screws **(2)** to secure the dash console panel.



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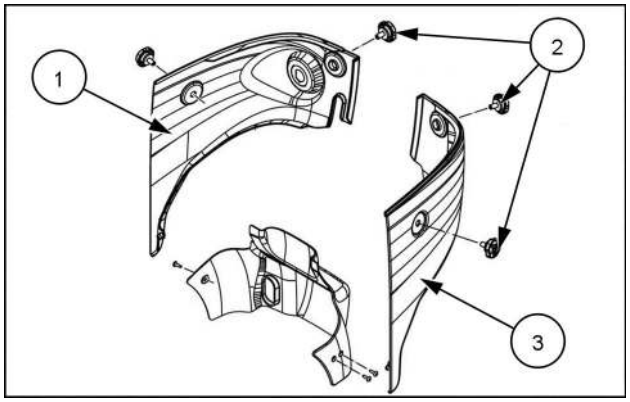
3. Position the right-hand **(1)** and left-hand **(3)** console panels onto the tractor.
4. Install the knob screws **(2)** to secure the console panels in place.



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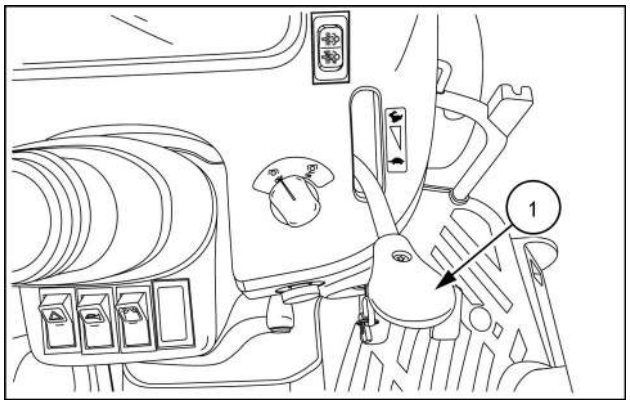
5. Install the throttle lever knob **(1)** on the throttle lever.



NHIL14CT01049AA 3

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(*) See content for specific models