SERVICE MANUAL

CR7.90 / CR8.90

Rotary Combine

PREVIEW - YOUFIXTHIS.COM

Part number 48040948
English
December 2017

NEW HOLLAND AGRICULTURE

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Engine - Service instruction Grain tank access to engine

⚠ WARNING

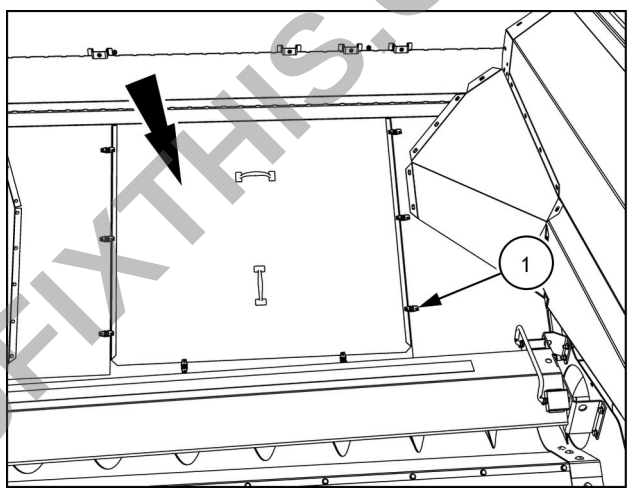
Avoid injury! Always do the following before lubricating, maintaining, or servicing the machine.
1. **Disengage all drives.**
2. **Engage parking brake.**
3. **Lower all attachments to the ground, or raise and engage all safety locks.**
4. **Shut off engine.**
5. **Remove key from key switch.**
6. **Switch off battery key, if installed.**
7. **Wait for all machine movement to stop.**

Failure to comply could result in death or serious injury.

W0047A

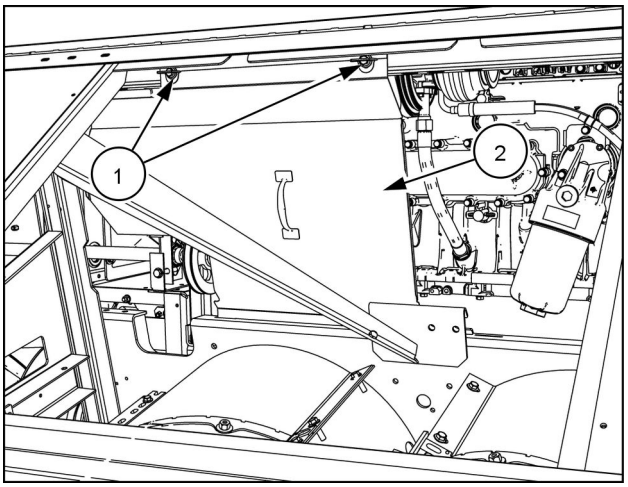
NOTE: *Some components have been removed for better clarity.*

1. To access the front of the engine, you will have to enter through the grain tank door. Turn the locking fasteners **(1)** to remove the door. Place in a safe place out of the way.



NHIL13CR00479AA 1

2. Turn the locking fasteners **(1)** securing the shields **(2)** to the frame. Remove the two shields (left hand side shown removed). Place in a safe place out of the way.



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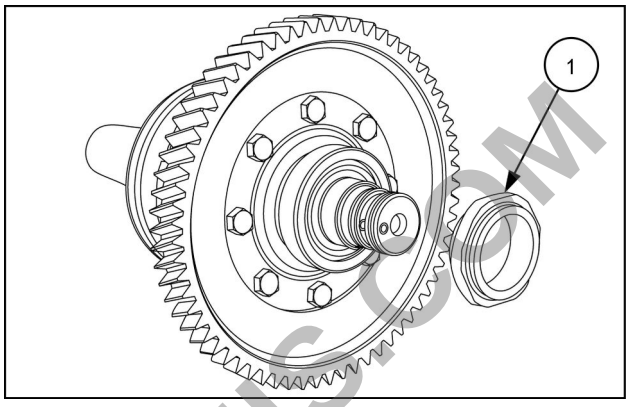
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Main clutch - Disassemble

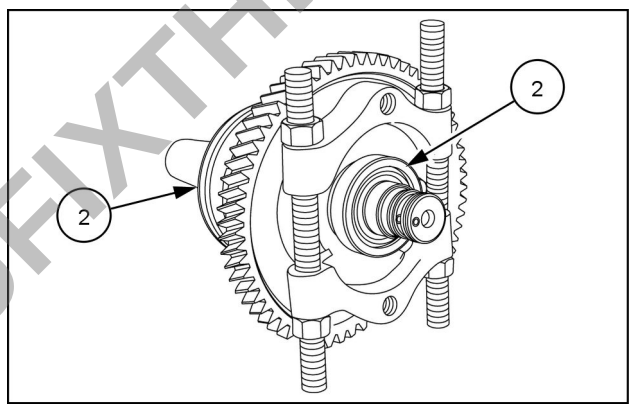
Prior operation:
Main clutch - Remove (14.100).

1. Loosen and remove the retaining nut **(1)**.



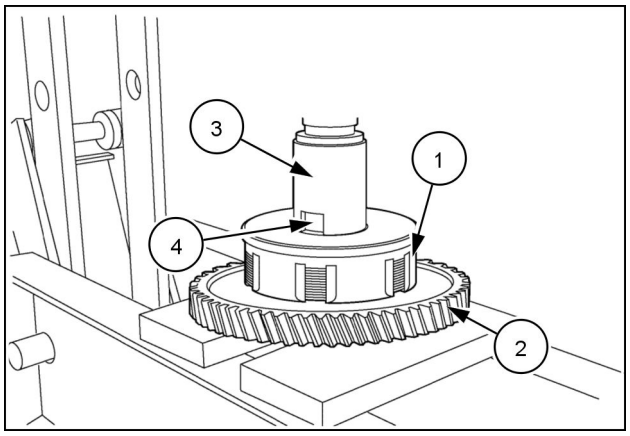
NHIL16CR00076AA 1

2. Remove the outside tapered bearings **(2)** on either end of the unload clutch by means of a bearing puller.



NHIL16CR00077AA 2

3. Place the unload clutch assembly **(1)** on a press, with it resting on the spur gear **(2)**.
4. Place a slotted press sleeve **(3)** over shaft and press piston enough to relieve pressure from snap ring **(4)**.
5. Remove the snap ring.
6. Retract the press and remove clutch assembly from the press.



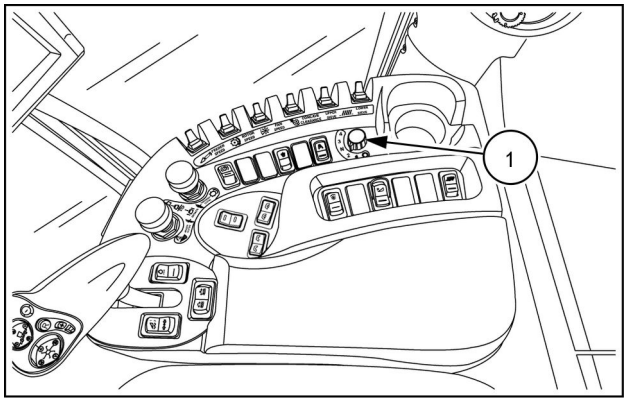
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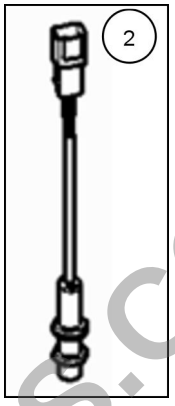
Shifting disk system - Dynamic description

Transmission shifting components



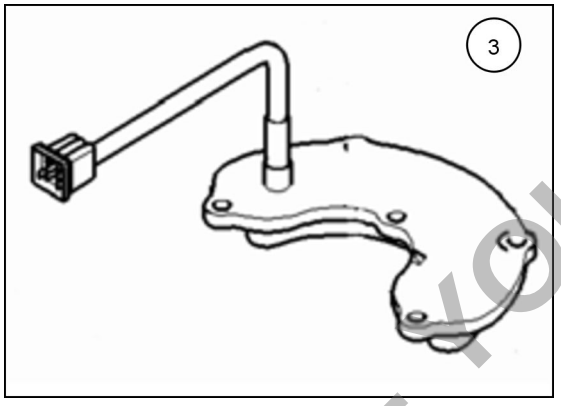
NHPH13CR00123AA 1

Gear selector switch **(1)** - Located on the Right-Hand Console (RHC)



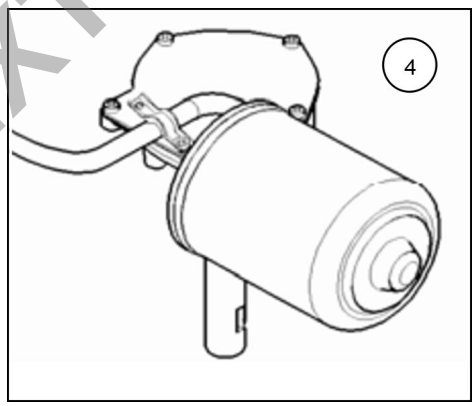
NHIL13CR00416AA 2

Speed sensor **(2)**:
— Installed on transmission cover
— Measures transmission speed
— Used to calculate ground speed



NHIL13CR00417AA 3

Gear position sensor **(3)**:
— A group of five sensors molded into a common base
— One sensor for each transmission gear and one for neutral
— Monitors the position of the shifting disc



NHIL13CRO0418AA 4

Gear shift motor **(4)**:
— Contains an internal thermal breaker to prevent damage to motor

Gear shifting process

1. Operator selects desired gear using gear selector switch
2. When speed sensor reads zero ground speed, parking brake engages.

NOTE: *Machine will not shift gears until combine comes to a complete stop.*

3. Shifting valve, located on hydrostatic motor, energizes. This eliminates drive line lock-up during transmission, by routing flow around motor.
4. Electric motor shifts transmission.
5. Sensor detects new gear.
6. Shifting valve is turned off.
7. Parking brake disengages.

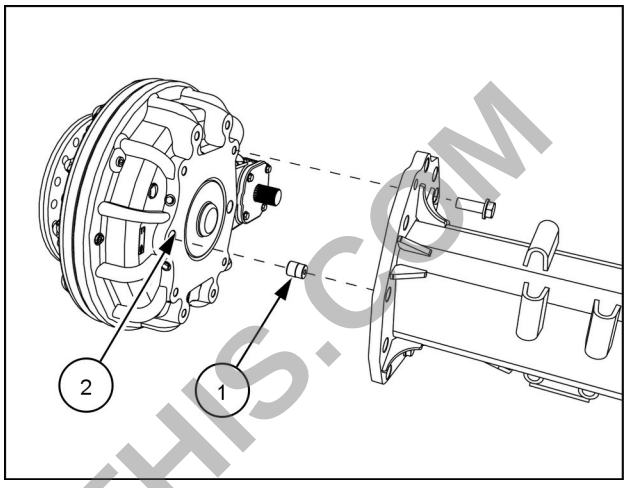
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Final drive - Install - Planetary Type - 1:13.09 ratio and 1:14.93 ratio

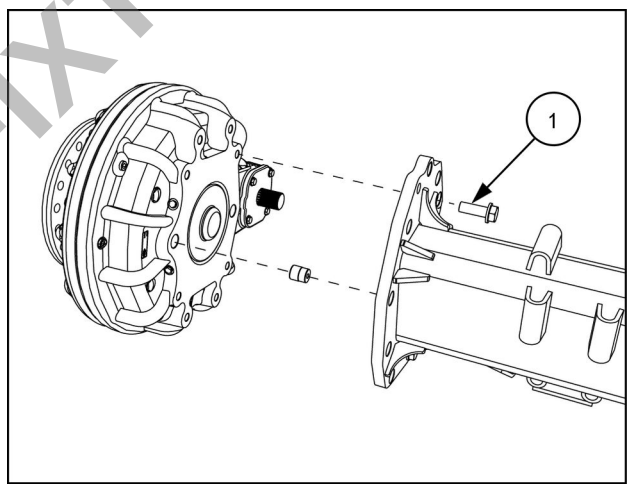
Prior operation:
Final drive - Remove (25.310)

1. Insert two dowel pins **(1)** in the planetary final drive housing **(2)**.
2. Install the planetary final drive onto the drive axle of the combine.



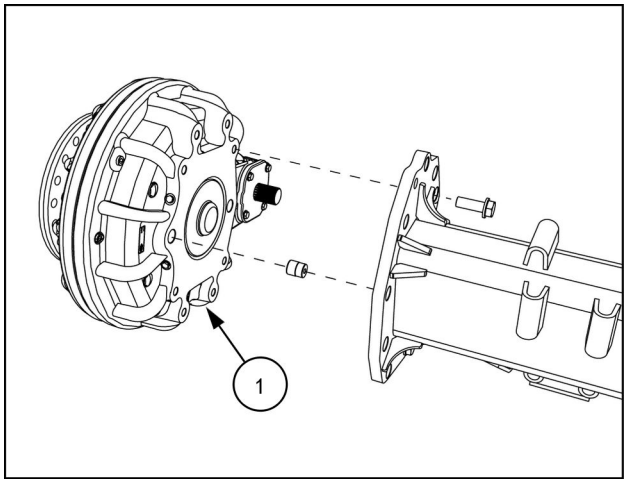
NHIL13AF01944AA 1

3. Apply **LOCTITE® 243™** on bolt threads **(1)** to prevent them from loosening.
4. Torque the bolts to **440 – 500 N·m** (**325 – 369 lb ft**)



NHIL13AF01944AA 2

5. Make sure the magnetic plug **(1)** is cleaned, installed, and torqued to **60 – 80 Nm** (**45 – 59 lb ft**).



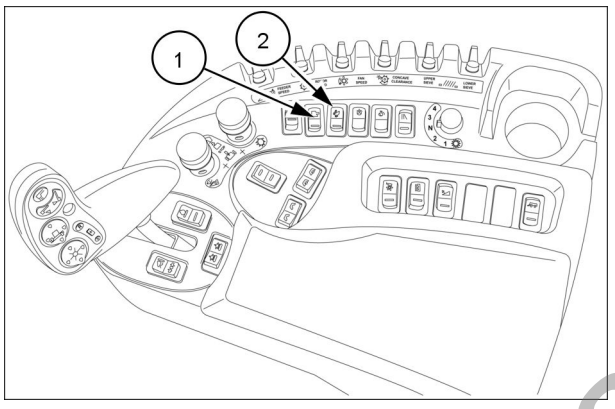
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Powered rear axle - Static description Electrical

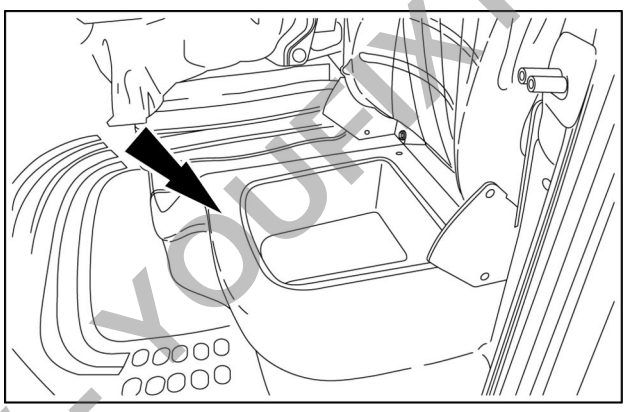
The Power Rear Axle (PRA) system consist of the following:



NHIL13CR00251AA 1

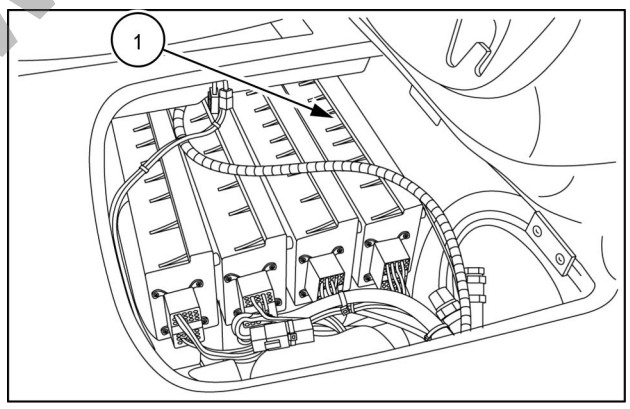
Right Hand Console

1. Rear wheel assist switch (4–wheel drive engagement switch) S-10
2. Dual range switch (Powered rear axle dual speed switch) S-11



NHIL13CR00248AA 2

Under the storage box of the instructional seat

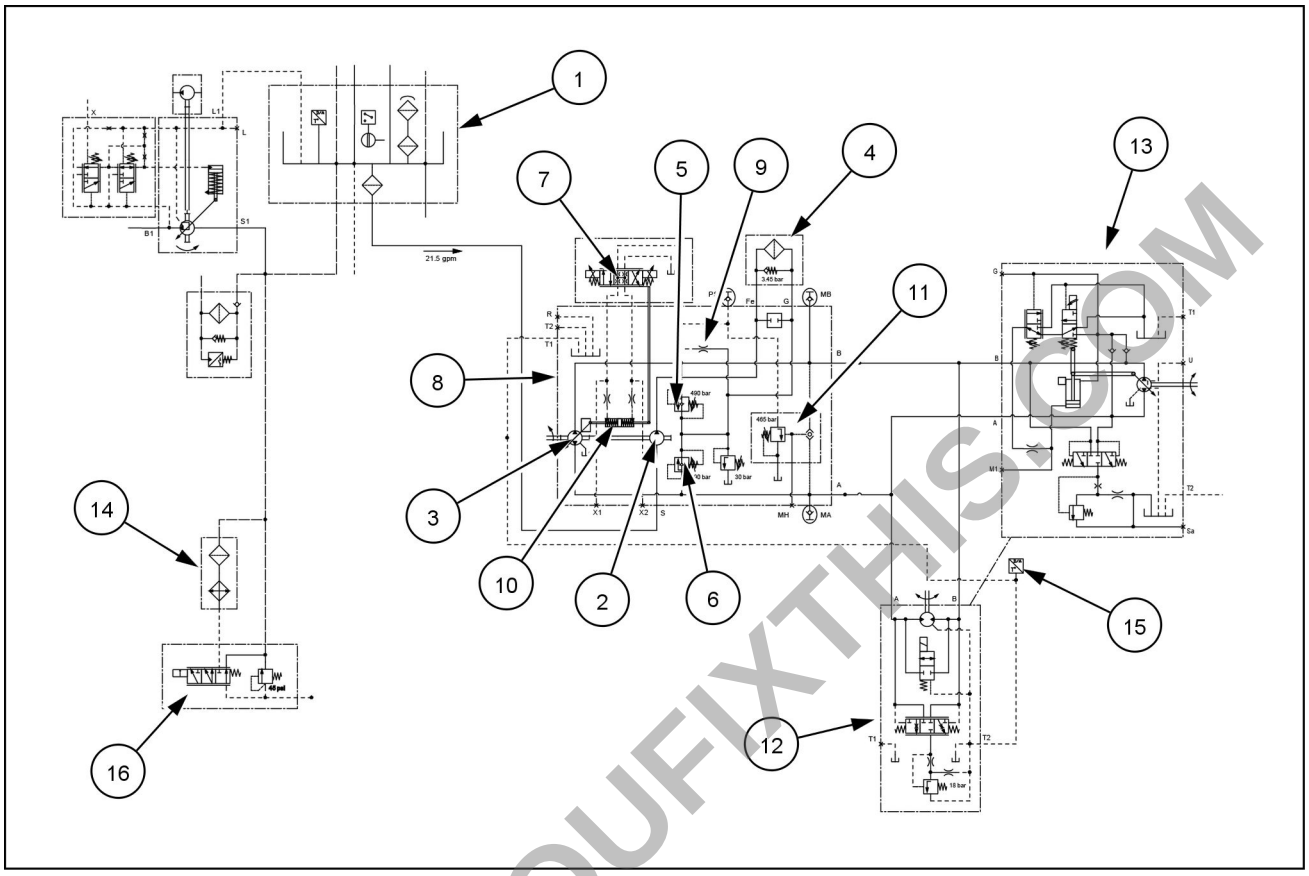


NHIL13CR00250AA 3

1. CCM-1

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Hydrostatic transmission - Hydrostatic schema



NH12CR00052A 1

SCHEMATIC LEGEND			
1.	Reservoir	9.	Control valve supply orifice
2.	Charge pump	10.	Servo pistons
3.	Hydrostatic pump	11.	Pressure cut off valve
4.	Charge filter	12.	Standard ground drive motor (option for CR6090/7090/8080)
5.	Forward high pressure relief valve	13.	Variable ground drive motor (option)
6.	Reverse high pressure relief valve	14.	Oil cooler
7.	Directional control valve	15.	Temperature sensor
8.	Pump assembly	16.	Oil cooler bypass valve

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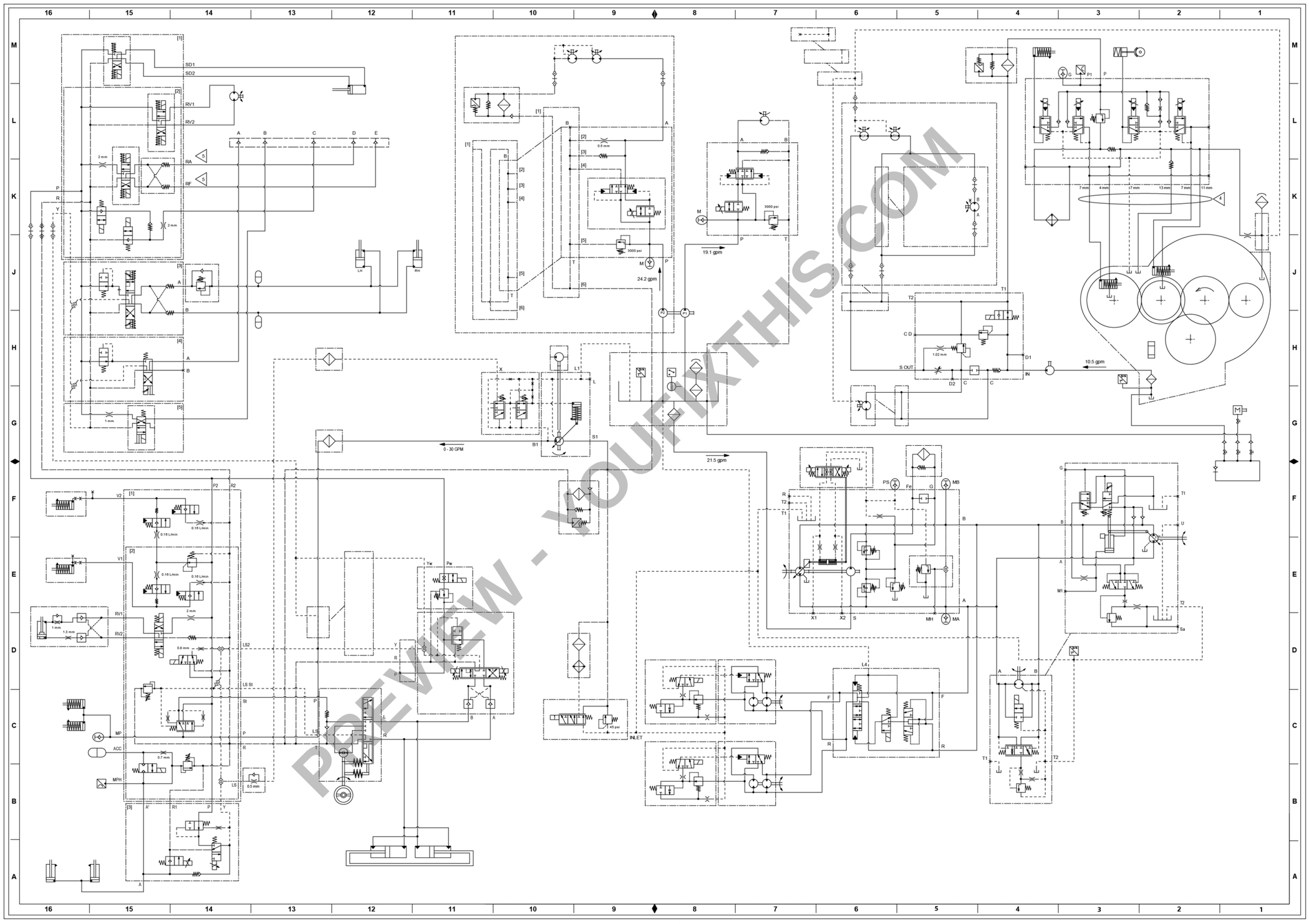
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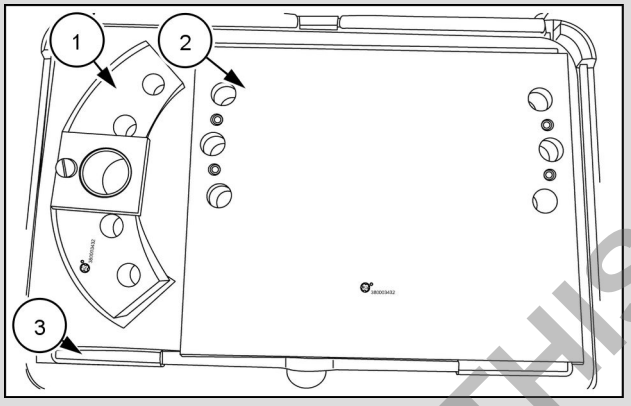
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Front wheels - Overview - Wheel bolt repair kit

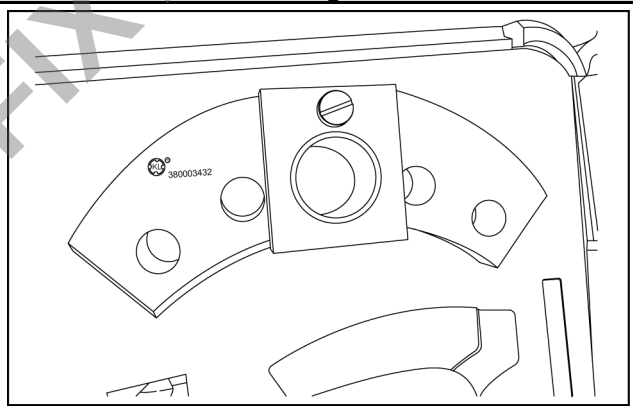
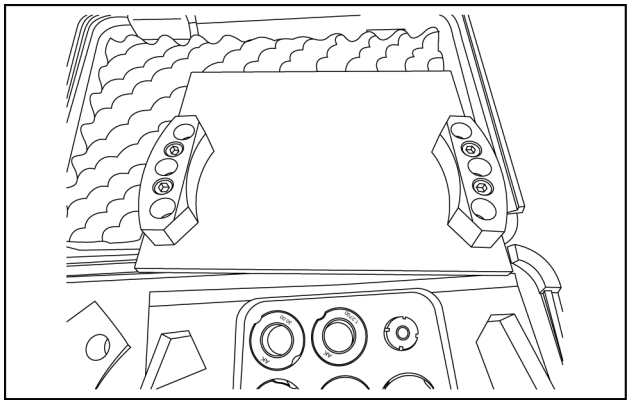
380003432

NOTE: *The use of this kit is described on* ***Front wheels - Repair - Wheel bolts (44.511)****.*

NOTE: *The threaded inserts that this kit installs, 47982965, are available through service parts, and must be purchased separately.*



NHIL16AF00666AA 1

Item	Description	Quantity	Part Number	Image
(1)	Drill guide	1	Not Serviced Separately (NSS)	 NHIL16AF00649AA 2
(2)	Drill plate	1	NSS	 NHIL16AF00648AA 3

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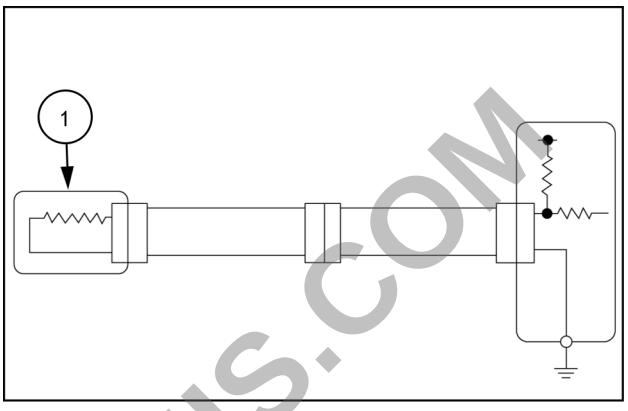
[50.200] Air conditioning 50.3

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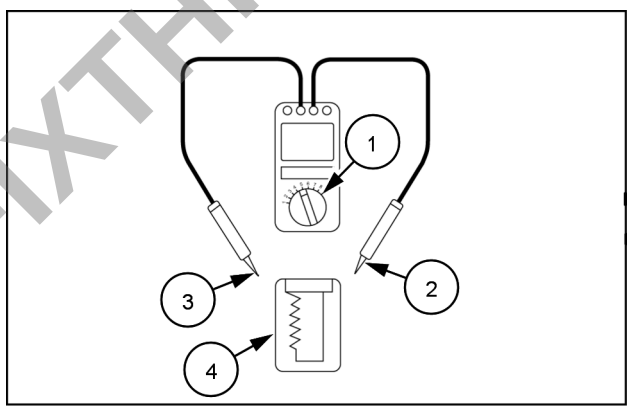
Electrical system - Electrical test - How to measure resistance of a component

1. Place the ignition (key) switch OFF.
2. Disconnect the wiring harness from the component **(1)**.



NHIL13GEN0017AA 1

3. Set the multimeter to the resistance setting **(1)**.
   - Connect one of the multimeter test leads **(2)** into the component connector cavity.
   - Connect the other multimeter test lead **(3)** into the component connector cavity.
   - Measure the resistance of the component **(4)**.
     - If any of the reading are not within the specified range, replace the component.



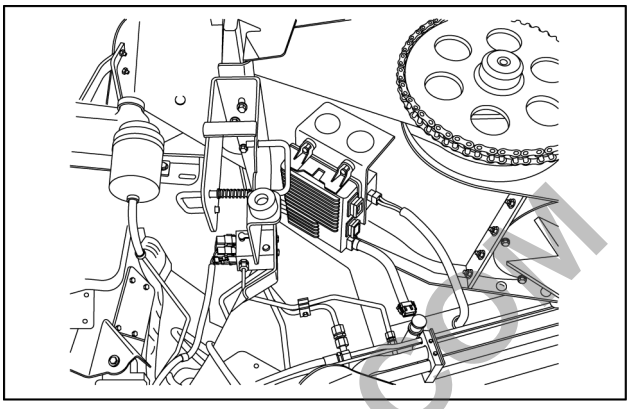
NHIL13GEN0022AA 2

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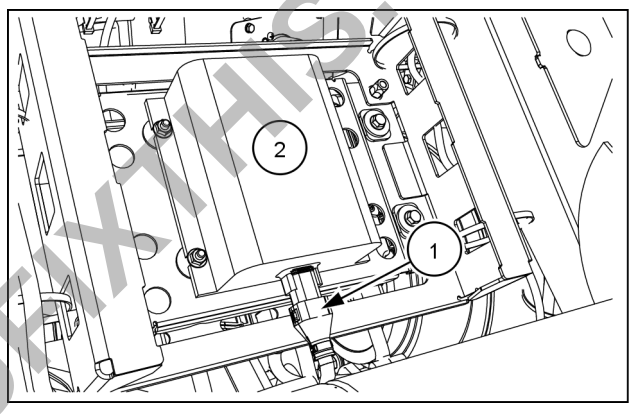
Battery - Remove - Battery equalizer

1. Locate the battery equalizer.
   At the left side of the machine, below the front shield.



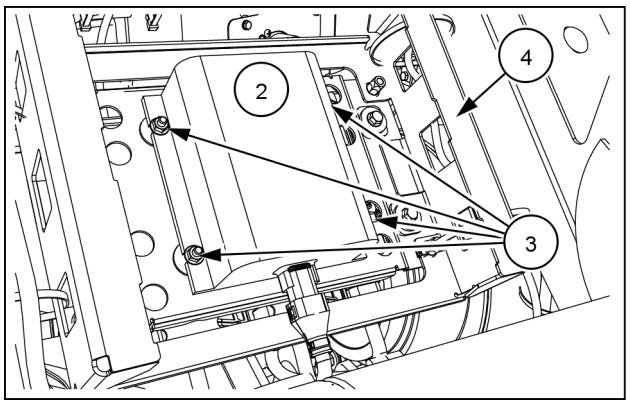
NHIL13AF00274AA 1

2. Disconnect the electrical connector **(1)** from the battery equalizer **(2)**.



NHIL15CR00285AA 2

3. Remove the four screws **(3)** that secures the battery equalizer **(2)** to the bracket **(4)**.



NHIL15CR00285AA 3

Next operation:
Battery - Install - Battery equalizer (55.302)

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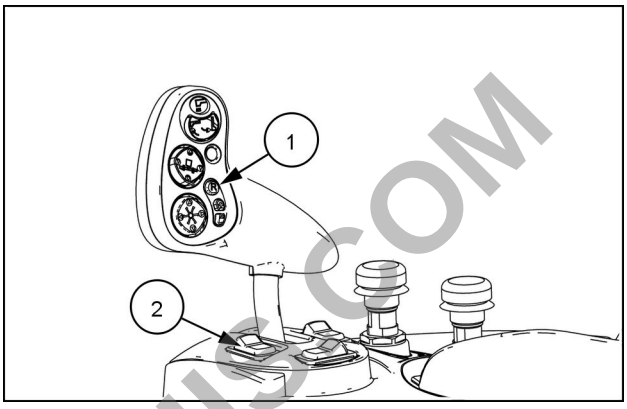
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Header height control - Overview - Automatic Header Height Control

The operator can use the Automatic Header Height Control (AHHC) system to automatically raise, lower, or tilt the header to a preset cutting height. In this mode, the Terrain Tracer lateral float system gives the combine the ability to position the head in response to the changing ground slope.

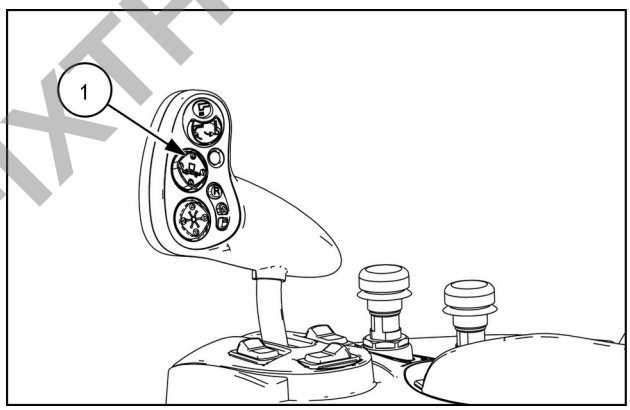
To operate the header with AHHC:

- Press and release the Resume button (“R”) **(1)** one time, to automatically lower the attachment to the preset height (based on the position of the HHC Mode switch **(2)**).
- Press and release the Resume **(1)** button two times to automatically raise the attachment to the preset height (based on the operator-set maximum work height).



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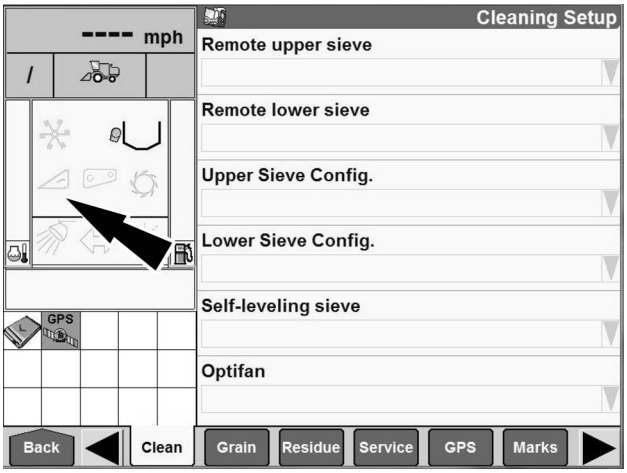
If the head will not go all the way to the top of the feeder house stroke (required to engage the feeder safety latch), release, and then press and hold the manual Raise button **(1)** for several seconds. Electronic control will lift the head all the way to the top of the feeder house cylinder stroke.



NHIL14CR00032AA 2

The operator must set a cutting height within the working range of the head sensors (if installed) using the Resume button for this feature to operate. However, the head and maximum working height must be calibrated before setting the cutting height. See **Header height control - Calibrate - Calibrating a header with CNH HHC (55.662)**.

An icon will appear on the monitor when in AHHC.



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FAULT CODES - DTC

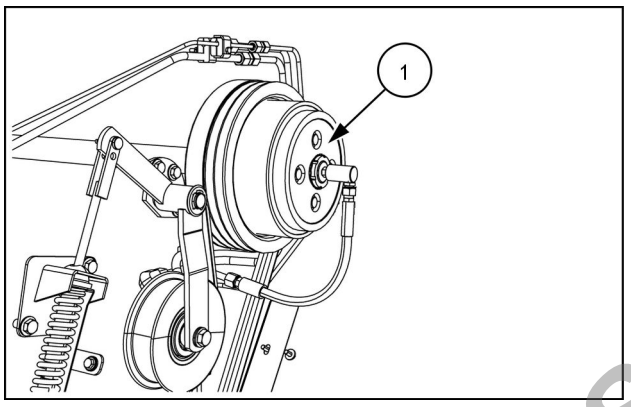
CR7.90 Machine Standard produced in Brazil [JJAY7090VDG118504 -]
CR7.90 Machine Standard produced in Argentina
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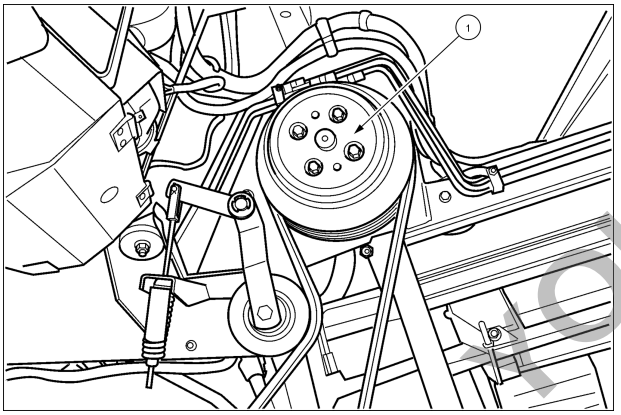
Clutch - Overview - Feeder Drive

CR7.90 Machine Standard produced in Brazil [JJAY7090VDG118504 -]	
CR8.90 Machine Standard produced in Brazil [JHFY8090EFJ405949 -]	

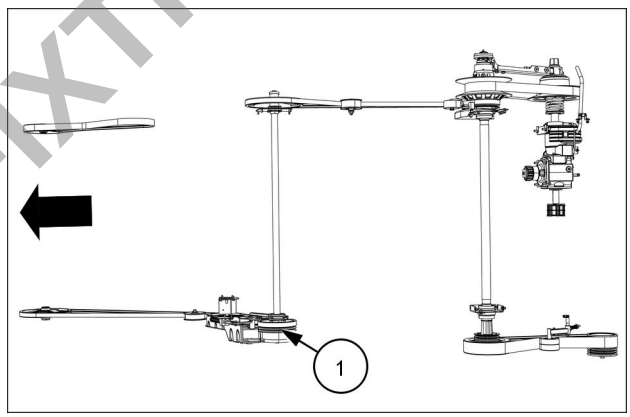


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The feeder and header drive clutch **(1)** is located on the left side of the combine under the side shield. The feeder clutch is hydraulically activated and is operated by a switch in the cab.

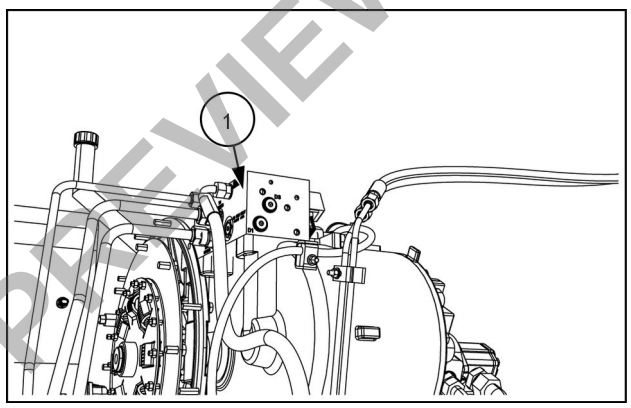


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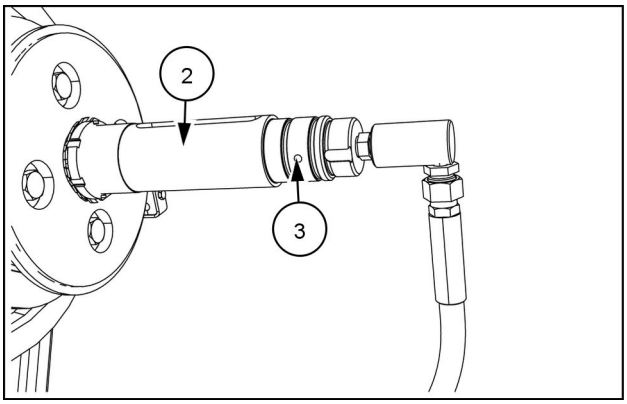


NHIL13CR00411FA 3

The feeder clutch is engaged using a hydraulic valve on the low pressure valve block **(1)**. Low pressure flows from the block into the end of the cross shaft **(2)** and through orifices **(3)** to engage the clutch.



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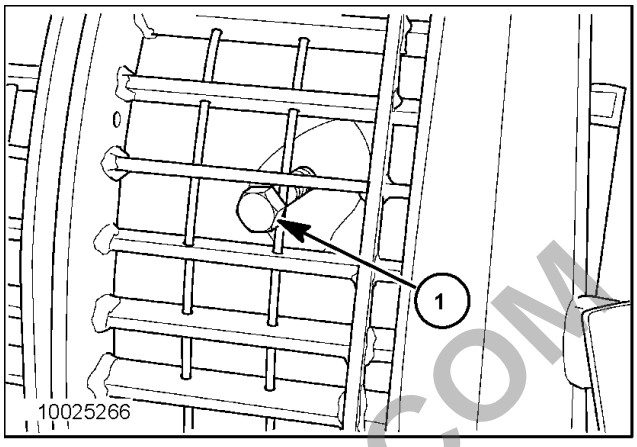


NHIL13CR00414AA 5

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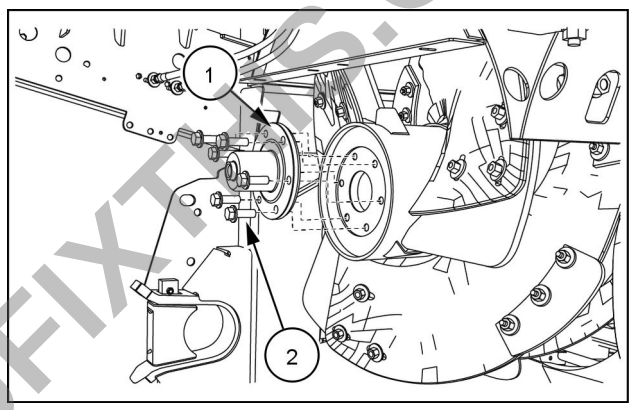
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9. Once the rotor is positioned properly in the combine, install the bolt **(1)** used to secure the rotor. Use tool **380000973** or a high strength (grade 10.9 or better) M16 x 140 mm bolt to secure the rotor in the combine. Thread the bolt into one of the threaded holes in the rotor at the separator grates. Be sure the bolt is threaded completely into the rotor and the upper portion of the bolt is resting against the separator grate.
10. Remove the rotor removal tool.
11. If the remaining rotor was already removed from the combine, follow steps **1** through **10** to install the remaining rotor.



10025266 9

12. Install the front rotor stub shaft **(1)**, and secure using six M10 x 30, CL8.8, ZND bolts **(2)** . Torque to **60.0 – 66.0 N·m** (**45 – 49 lb ft**)
13. Coat the exterior of front rotor stub shaft **(1)** with **LOCTITE® 767**.

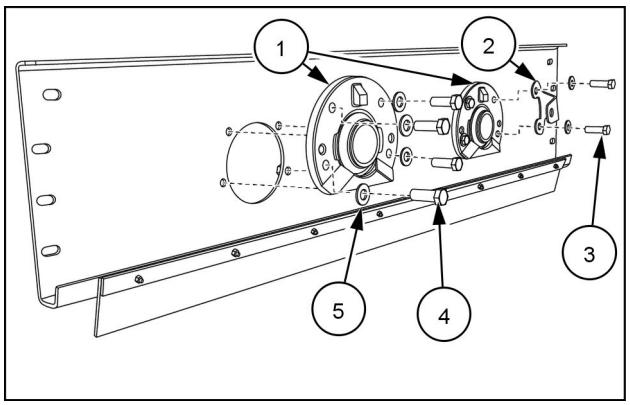


NHIL16AF01277AA 10

14. Replace bearings **(1)**, if required.
15. Install new right-hand bearing **(1)** using four M12 x 35, CL8.8, ZND full thread bolts **(4)** and four M12 belleville washers **(5)** . Tighten to standard torque.
16. Install new left-hand bearing **(1)** and sensor support **(2)**, if equipped, using two M12 x 35, CL8.8, ZND full thread bolts **(4)**, two M12 x 40, CL8.8, ZND full thread bolts **(3)**, and four M12 belleville washers **(5)**. Tighten to standard torque.

NOTE: *Your machine may not have sensor support **(2)**. See note below following step **23**.*

17. Coat the bores of bearings **(1)** with **LOCTITE® 767**.



NHIL16AF01279AA 11

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Beater - Remove Pins and blades

⚠ WARNING

Avoid injury!
1. **Disengage all drives.**
2. **Engage parking brake.**
3. **Lower all attachments to the ground, or raise and engage all safety locks.**
4. **Shut off engine.**
5. **Remove key from key switch.**
6. **Wait for all machine movement to stop.**

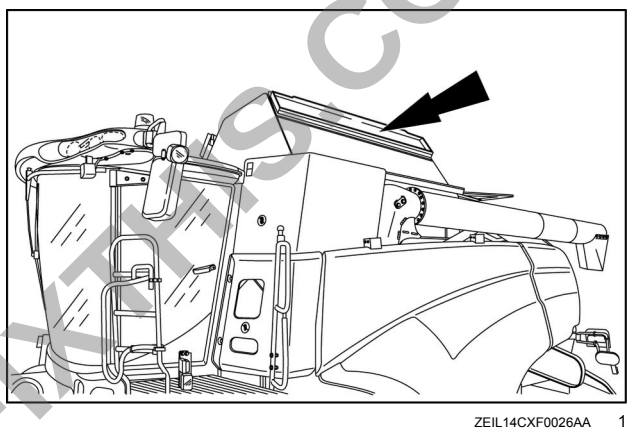
Failure to comply could result in death or serious injury.

W1197A

1. Open the grain tank.

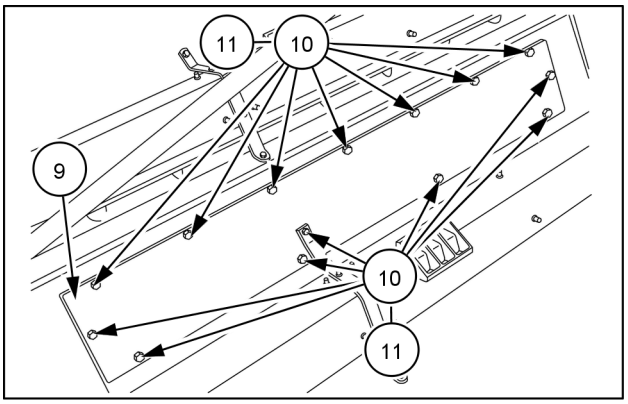
NOTE:
- Refer to the operator's manual of the machine.
- Disengage all drives
- Remove the key from the keyswitch

2. Enter the grain tank.



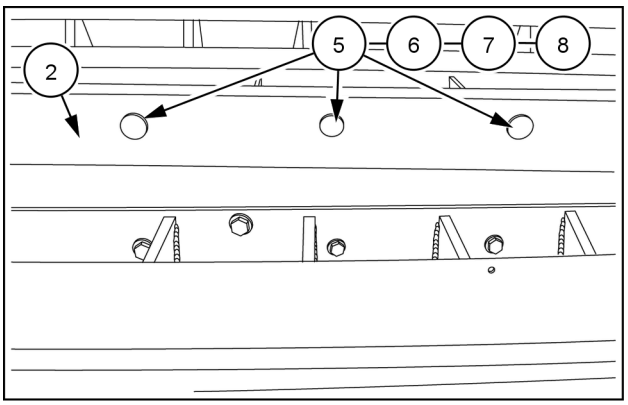
ZEIL14CXF0026AA 1

3. Remove the bolts **(10)** and the washers **(11)** from the cover **(9)**.
4. Remove the cover **(9)**.



ZEIL14CXF0027AA 2

5. Remove the bolts **(5)**, the lock washers **(6)**, the washers **(7)** and the nuts **(8)** over the entire length of the beater blade **(2)**.



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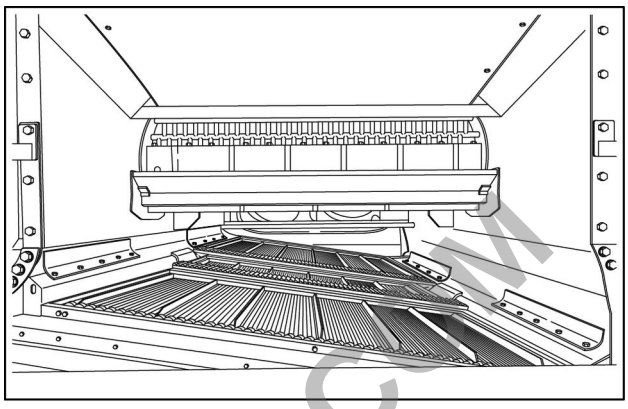
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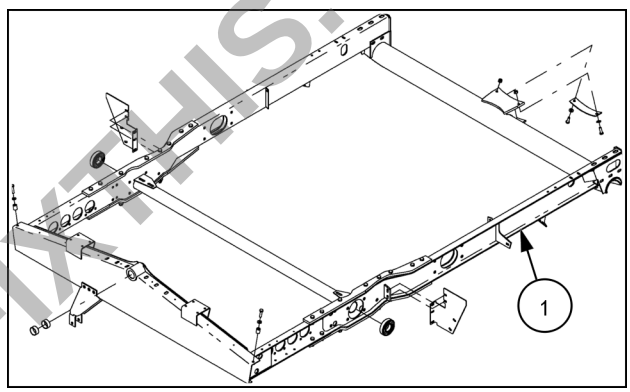
Self-leveling frame - Overview - Theory of operation

The self levelling shoe allows the cleaning system to stay level side-to-side as the combine operates in uneven field conditions.



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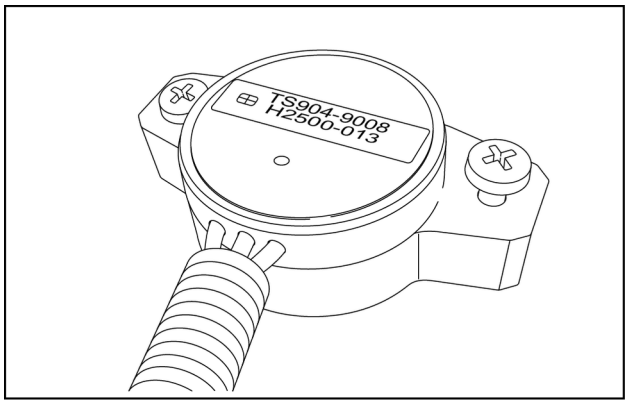
The cleaning system self-leveling frame **(1)** supports all components that make up the cleaning shoe. The frame attaches to the combine at the front through a pivot pin in the center. The rear of the frame rests on a sealed roller bearing mounted to the combine frame. Plastic rollers at the back corners, hold the lateral position of the frame inside the combine while allowing the cleaning shoe assembly to pivot.



63073423 2

Inclinometer

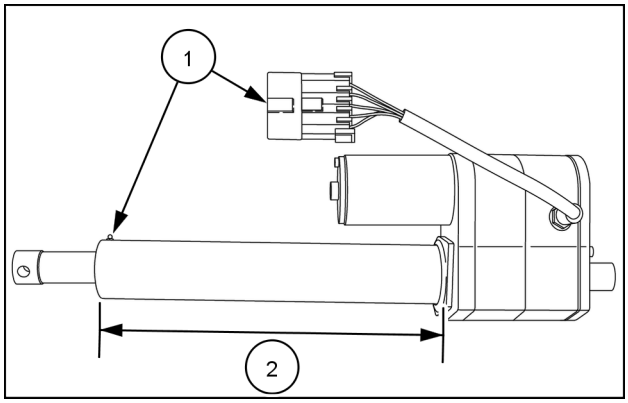
- Sensor mounted under the cab
- Measures lateral position of combine
- Uses oil internally to send a voltage signal



NHIL13CR00608AA 3

Self-leveling shoe actuator

- Used to control shoe position
- Rod on actuator can be screwed in and out to adjust where the center of the stroke is
- Potentiometer in the actuator is used to read shoe position



NHIL13CR00609AA 4

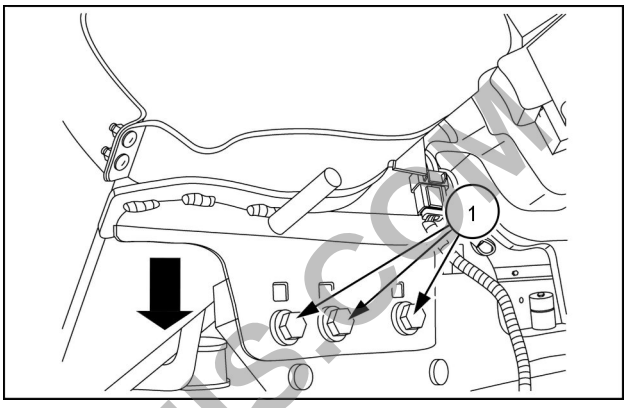
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Grain discharge horizontal tube - Adjust - High capacity unload auger position

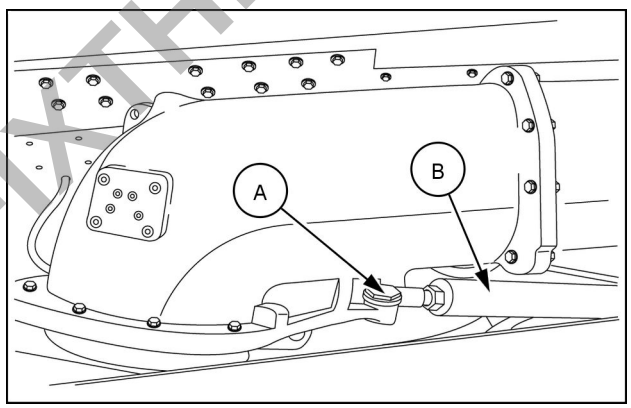
Auger inward swing distance

1. Loosen three bolts and lower the tube saddle to prevent any restrictions when swinging the tube inward.



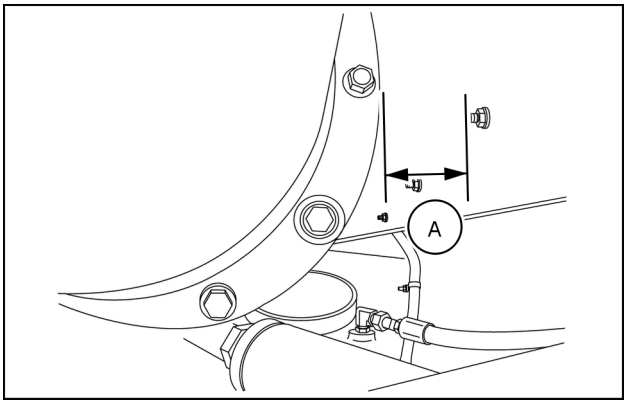
NHIL14CR00063AA 1

2. Swing the unloading tube inward using the hydraulic controls in the cab.
3. Remove the cylinder pin **(1)** at the tube elbow.
4. Retract the cylinder **(2)** completely with the hydraulic controls in the cab.



NHIL14CR00064AA 2

5. Retract the unloading tube inward to obtain a distance of **42.50 – 47.50 mm** (**1.67 – 1.87 in**) **(A)** between the tube mounting flange and the side of the grain tank



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