CTL Harvester
1WJ1070E002224-
1WJ1170E002359-

OPERATOR'S INSTRUCTIONS
John Deere 1070E / 1170E
Interim Tier 4

F680525 (06/2017) ENGLISH

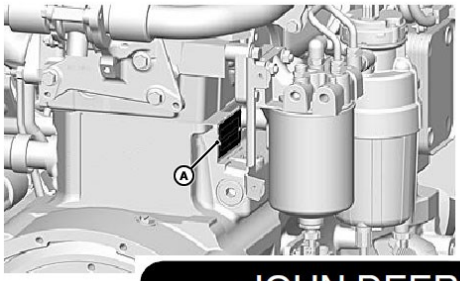
Worldwide Construction
And Forestry Division

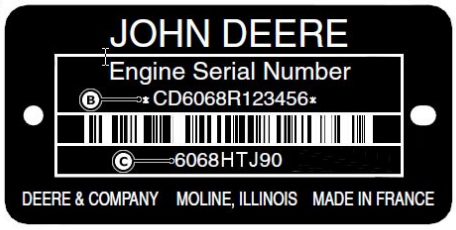
Published in Finland

Original Instructions

ENGINE IDENTIFICATION

The engine serial number plate is located on the right-hand side of engine block behind the fuel filter.





A. Serial number plate location
B. Serial number, for example:
   CD6068R000000
   CD = Manufacturing unit, Saran, France
   6 = Number of cylinders
   68 = Liter designation
   R = Interim Tier 4/Stage IIIB emission certified engine
C. Engine model number, for example: 6068HTJ90
   6 = Number of cylinders
   68 = Liter designation
   H = Aspiration, turbo + air to air intercooler
   TJ = Engine user, JD Forestry
   90 = User's type code

NON-ROAD EMISSIONS CONTROL WARRANTY STATEMENT

U.S. AND CANADA EMISSION CONTROL WARRANTY STATEMENT

YOUR WARRANTY RIGHTS AND OBLIGATIONS

To determine if the John Deere engine qualifies for the additional warranties set forth below, look for the "Emissions Control Information" label located on the engine. If the engine is operated in the United States or Canada and the Emissions Control information label states: "This engine complies with US EPA regulations for nonroad and stationary diesel engines", or "This engine conforms to US EPA nonroad compression-ignition regulations", refer to the "U.S. and Canada Emission Control Warranty Statement." If the engine is operated in California, and the label states: "This engine complies with US EPA and CARB regulations for nonroad diesel engines", or "This engine conforms to US EPA and California nonroad compression-ignition emission regulations", also refer to the "California Emission Control Warranty Statement."

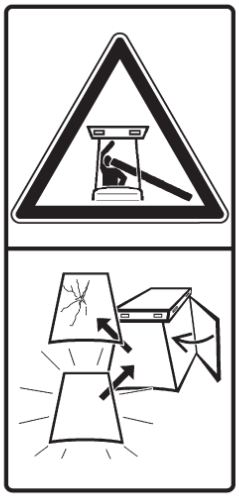
Warranties stated on this certificate refer only to emissions-related parts and components of your engine. The complete engine warranty, less emissions-related parts and components, is provided separately. If you have any questions about your warranty rights and responsibilities, you should contact John Deere at 1-319-292-5400.

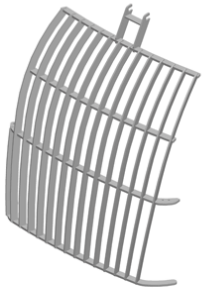
JOHN DEERE'S WARRANTY RESPONSIBILITY

John Deere warrants to the ultimate purchaser and each subsequent purchaser that this off-road diesel engine including all parts of its emission-control system was designed, built and equipped so as to conform at the time of the sale with Section 213 of the Clean Air Act and is free from defects in materials and workmanship which would cause the engine to fail to conform with applicable US EPA regulations for a period of five years from the date the engine is placed into service or 3,000 hours of operation, whichever first occurs.

Where a warrantable condition exists, John Deere will repair or replace, as it elects, any part or component with a defect in materials or workmanship that would increase the engine's emissions of any regulated pollutant within the stated warranty period at no cost to you, including expenses related to diagnosing and repairing or replacing emission-related parts. Warranty coverage is subject to the limitations and exclusions set forth herein. Emission- related components include engine parts developed

CABIN PROTECTIVE STRUCTURES





Cabin is tested according to international ROPS, FOPS and OPS standards.

Do not operate the machine with the door open, secondary exit open or any of the safety covers or protective devices removed.

It is important to keep the operator protective structure in place (doors, screens, windows, windshield, etc.) to minimize hazards from whipping or intruding objects.

The protection offered by ROPS, FOPS and OPS will be impaired if cabin

- is subjected to structural damage
- is involved in an overturn incident
- is in any way altered by welding, bending, drilling, or cutting

To maintain ROPS, FOPS and OPS protection, replace damaged cabin parts immediately. A damaged structure should be replaced, not reused. It is forbidden to modify the window fastening.

Following issues must be considered when the machine is used or equipped for other purpose than it is designed for by the manufacturer:

- Overall weight of the machine without load (towed equipment and any load excluded) must not exceed the maximum weight defined for the cabin and mentioned below the machine type plate (ROPS-weight, Roll Over Protection Structure). Contact manufacturer's representative to clarify the demands of the ROPS standard when necessary.
- If the machine's center of gravity is changed due to machine buildup the maneuverability of the machine will also change and does not necessarily correspond to the original demands determined by the manufacturer.

The manufacturer can not guarantee machine safety if the machine has been used contrary to the operator's instructions given or has been equipped with accessories not approved by the manufacturer.

NOTE: *An optional heavy duty window guard is recommended for operations in late thinning and regeneration felling sites.*

CABIN WINDOWS

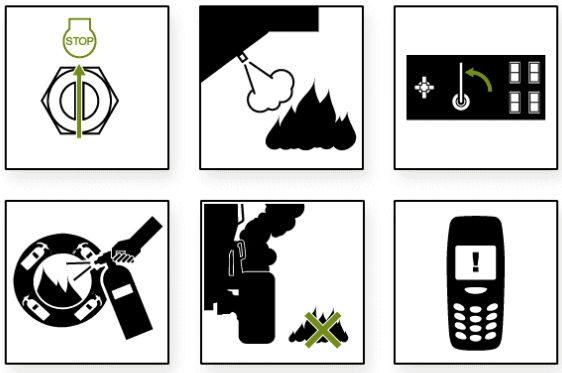
Polycarbonate windows are part of cabin protective structures and important for the protection of the operator and the safe operation of the machine. Inspect the windows system regularly, and if surface crazing or cracks are observed, replace windows using only John Deere replacement parts to ensure the original operator protection level. Inspect the windows after any significant impact to the windows or

- Temperature in engine compartment may go up immediately after engine is stopped. Be on guard for fires during this period. If necessary, open access doors to cool the engine faster.
- Keep machine clean. Check and clean covered compartments, including engine bay, belly plates etc.
- Remove dust and debris especially from the surroundings of the exhaust pipe and the engine heater (if equipped).
- Wash the machine regularly.
- Clean the radiator grille and cooling ducts regularly.
- Inspect the machine daily for potential fire hazards and make any necessary repairs immediately.
- Inspect electrical wiring and connections, fuel and hydraulic hose runs and fixation to ensure they are secure and not rubbing against other components.
- Clean up any excess grease and oil accumulation and repair the leak immediately.
- Use only nonflammable solutions for cleaning the machine or components.
- Store rags in a safe, fireproof location.
- Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.
- Anti-slip chains and tracks can cause sparks and fire in dry terrain. Avoid using these appliances in such conditions unless other safety risks are involved.
- Before starting repair work, such as welding, the surrounding area should be cleaned and a fire extinguisher should be close by.
- Maintain a charged fire extinguisher on the machine at all times and know how to use it.

WHAT TO DO IF THE MACHINE CATCHES FIRE?

- Turn the engine off.
- Turn the master disconnect switch off.
- If possible, fight the fire using the portable fire extinguisher or other fire suppression equipment.
- Ensure that the fire does not spread to the surrounding area.
- Call for help if necessary.

Hand-held fire extinguishers can be used through the arpertures that are bordered with the extinguisher decals.



SERVICE TIRES SAFELY

Explosive separation of a tire and rim parts can cause serious injury or death.

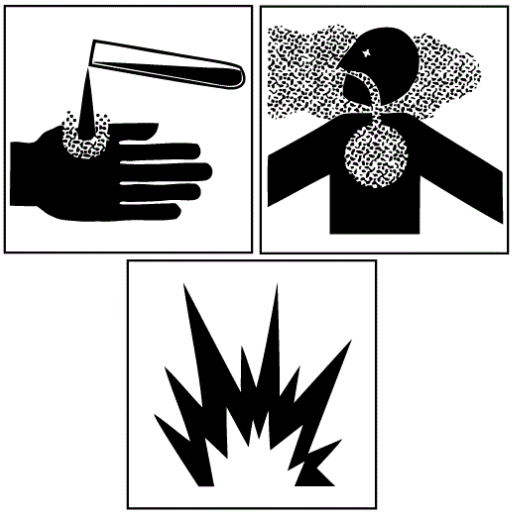
Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job.

Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion.

When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.

Check wheels for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.

SERVICE AIR CONDITIONER SAFELY



The air conditioner must be serviced and repaired by authorized personnel only.

Air conditioner fluid (R134a) contains fluorinated greenhouse gases. 2.3 kg air conditioner fluid contains 3.0 equivalent tonnes of carbon dioxide.

Heating of the refrigerant cylinder implies increase of pressure and the danger of explosion. The refrigerant dryer must not be heated above 50°C (122°F), as this may otherwise cause it to explode due to excessive pressure of the refrigerant. In the event of fire spray the dryer liberally with water to keep it cool.

The gas is asphyxiating without forewarning. The gas is colourless, it is heavier than air and spreads close to the ground.

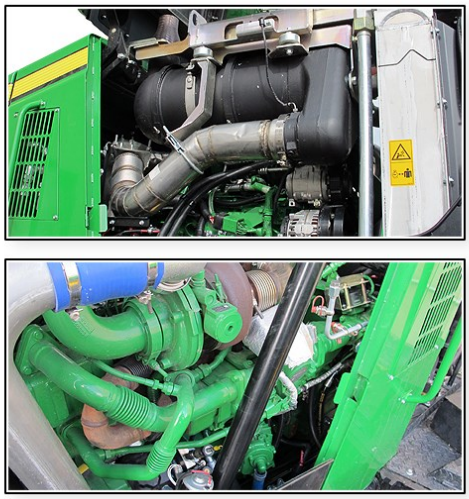
Splashes of the fluid cause frost injuries to the skin and serious eye damage. Spilled refrigerant fluid has extremely low temperature and it vaporizes quickly. Dissipates in contact with fire, giving off toxic fumes.

AFTERTREATMENT SYSTEM

In accordance with emissions regulations, a reduction of 50 per cent in nitrogen oxide and a reduction of 90 per cent in particulate matter is a requirement of the latest IT4 engines.

To reduce nitrogen oxide emissions, the engine combustion temperatures must be lowered. This is achieved by recirculating a greater and cooler amount of exhaust gas using a VGT turbocharger and an EGR cooler.

However, lower combustion temperatures cause PM levels to rise. Therefore, a catalysed exhaust filter that contains a diesel oxidation catalyst (DOC) and diesel particulate filter (DPF) is used to control the PM levels.



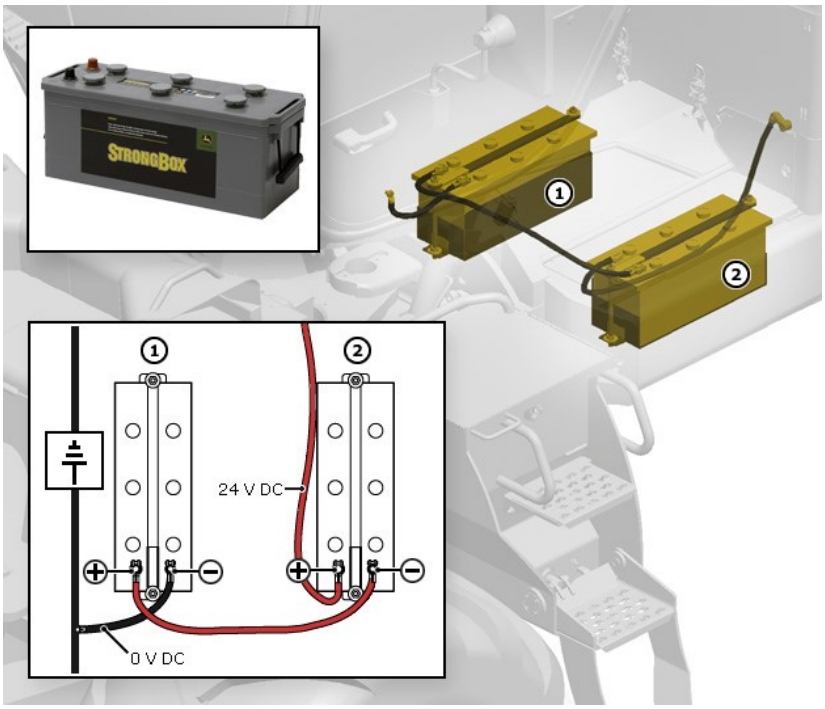
BATTERIES

Harvesters are equipped with two 12 V lead/acid batteries. The first battery (1) supplies 12 V and it is connected through cascading connection to the second battery (2), which totally supplies 24 V.

In harvesters batteries are located both sides of the rear frame.

Battery nominals:

- Capacity: 154 Ah
- Cold crank (EN): 1150 A
- Top dimensions (mm): 513x178x223



WIRING HARNESS FUSES AND RELAYS

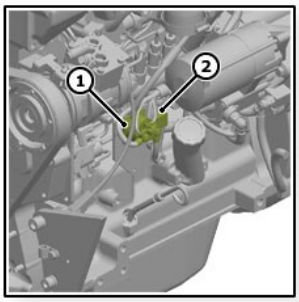
Some fuses and relays of special equipment are located near each equipment.

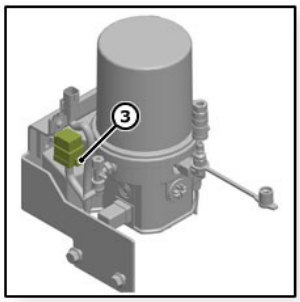
Glow relay and fuse, K49 (1) and F49 (2), are only on the 4.5 liter and 6.0 liter engines.

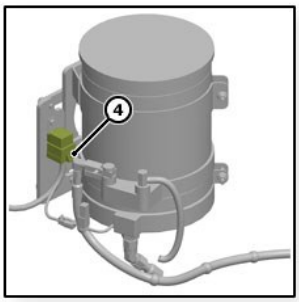
Centralized lubrication system relay K55 (3) is located next to the lubrication pump.

Puradyn filter relay K56 (4) is located next to the puradyn filter.

Position	Relay number	Object
1.	K49	Glow relay
2.	F49	Glow fuse (50A)
3.	K55	Centralized lubrication system relay
4.	K56	Puradyn filter relay







ELECTRICAL ENGINE COMPONENTS 5/6

1. Fuel dosing pump (Y5502)

The variablespeed dosing pump is controlled by the ECU. During active regeneration and fuel purging, the pump draws fuel from the fuel filter and directs it to the fuel dosing unit. The ECU controls the fuel dosing pump operation with enable and speed commands.

2. Water-In-Fuel sensor (B5600)

The Water-In-Fuel (WIF) sensor is located on the bottom of the primary fuel filter in the water separator bowl. The WIF sensor measures fluid resistance to detect the presence of water in the fuel. Sensor information is used by the ECU for engine protection purposes. If water is detected, the ECU will derate the amount of fuel supplied to the engine.

3. HCI fuel dosing inlet sensor (B5000)

The fuel temperature and pressure at the inlet of the fuel dosing unit are measured by the fuel dosing inlet sensor. The ECU uses these measurements to control fuel delivery to the fuel dosing nozzle.

4. HCI fuel dosing shut-off valve (Y5000)

The ECU controls the opening and closing of the fuel dosing shut-off valve according to the regeneration phases. Normally the fuel dosing shut-off valve is closed.

5. HCI fuel dosing control valve (Y5001)

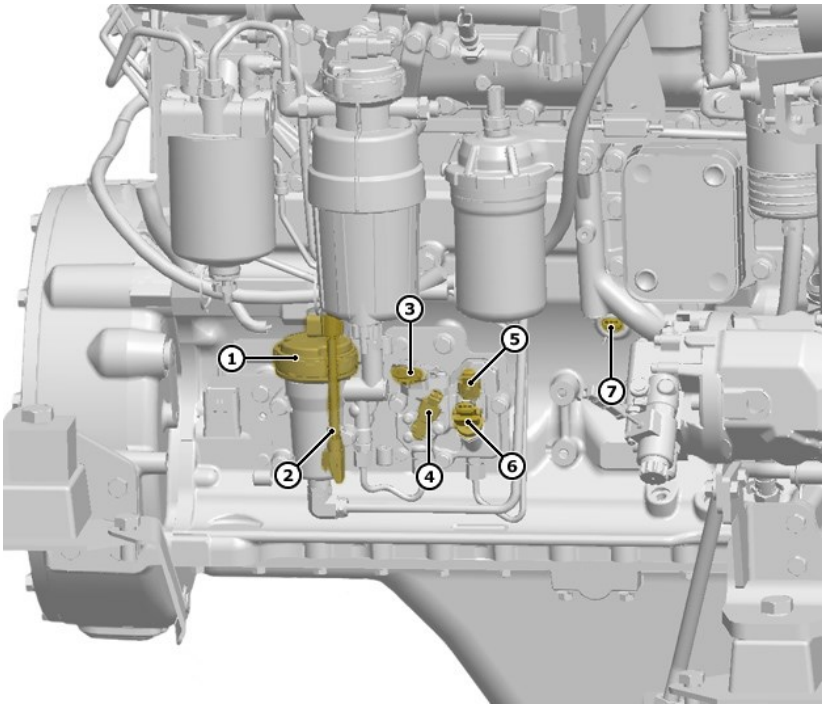
The control valve operation is controlled by the ECU according to the current regeneration phase. The fuel dosing control valve regulates the fuel dosing unit operation.

6. HCI fuel dosing outlet sensor (B5106)

The ECU uses the sensor to detect abnormal fuel pressures after the fuel leaves the fuel dosing unit.

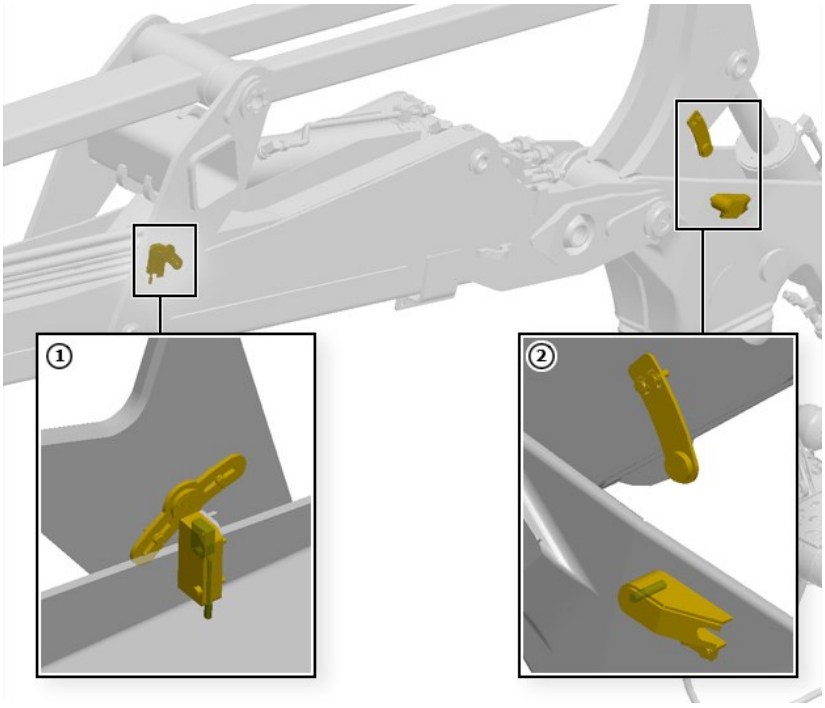
7. Engine crankcase pressure sensor (B5105)

The ECU uses the engine crankcase pressure sensor to monitor the amount of pressure in the crankcase of the engine. This pressure value indicates when the crankcase ventilation filter needs replacing, or if there is a problem with the crankcase pressure relief valve.



DAMPING SENSORS, CH6 AND CH7 BOOMS

1. Jib boom end damping sensor (B26.3)
   - The sensor controls the end damping of the jib boom movements. The function speed is slowed when the sensor is activated.
2. Boom lift end damping sensor (B26.2)
   - The sensor controls the end damping of the main boom lifting movement. The function speed is slowed when the sensor is activated.



IGNITION SWITCH

1. STOP, power off (the key can be removed)
2. RUN1, power supply to most systems
3. RUN2, power supply also to engine (driving and operating mode)
4. START, starter motor running (spring-return to RUN2 position)

The ignition switch prevents double ignition. The key must be returned to position STOP after an unsuccessful attempt at starting.

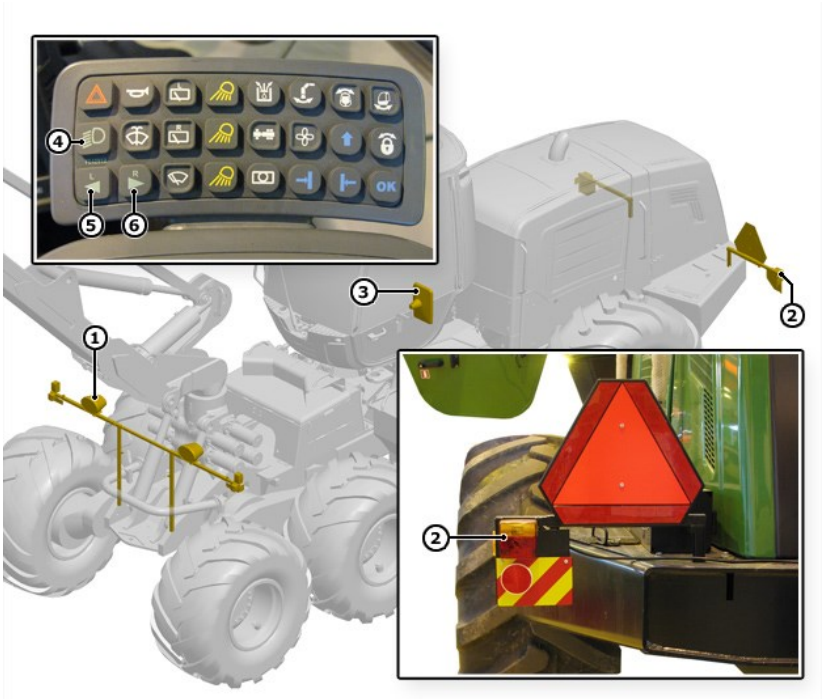
NOTE: *The PC starts automatically after the engine is running in cabins equipped with XL4 or XM4 PC.*

DRIVING LIGHTS

To drive the machine on public roads additional driving lights must be installed on it. The lights are controlled from right arm rest panel.

Machine on-road driving equipment and operating switches are following:

1. Front driving lights
2. Rear driving lights
3. Side-view mirrors
4. Switch for front and rear driving lights
5. Left blinker switch
6. Right blinker switch



PRE-HEATER MODEM

If the machine is equipped with pre-heater remote controller (1), the pre-heater can be remote controlled with web browser client, phone calls, SMS messages or cell phone application.

A window mountable antenna (2) is installed to rear window with double sided adhesive tape.

Every remote controller has a device specific QR code (3). The QR code is a picture that presents a unique 16 character identification code of device. The QR code is used to identify the device when logged in with a web browser or cell phone.

1. Activate a SIM-card
2. Check that the SIM-card is working properly by a cell phone.
3. If required, change the SIM-card PIN-code by the cell phone.
4. Install the SIM-card to the pre-heater remote controller.

NOTE: *PIN code for the SIM card must be one of the following: ”1234”, ”0000” or the PIN code query must be disabled completely.*

NOTE: *If the SIM card installed in REMUC does not have any kind of fixed rate data plan, switch data connection off by sending SMS “IP OFF” to REMUC.*

SMS INTERFACE

Pre-heater can be controlled with the mobile phone SMS messages. System control messages are consisted of key words and parameters.

NOTE: *The commands must be send in English as described below.*

FILTER CLEANING SWITCH

The control panel is equipped with a three-position control switch for controlling the regeneration.

1. Request stationary filter cleaning (3 second press) – Activates stationary (manual) regeneration with elevated idle speed up to 1800 rpm. The parking brake must be ON and the soot level must be above 3.
2. Auto filter cleaning – Enables filter cleaning by allowing active regeneration when requested by the ECU.
3. Disable filter cleaning – Disables filter cleaning by preventing active regeneration.

⚠ CAUTION

It is preferable to keep the filter cleaning switch in the auto position for optimal engine operation. Use the disabled setting only when required. Disabled filter cleaning and repeatedly aborted regeneration reduces DPF lifetime.

NOTE: *Passive regeneration occurs at all times during normal engine operation.*

USING THE BOOM

Observe the lifting ratings given on the boom decal. The weight of the harvester head is included in the load to be lifted. When handling a maximum load, exercise great caution.

Operate the control levers smoothly; avoid jerky movements. Always exercise extra caution when a boom or the booms are in their extreme positions.

Keep an eye on the machine stability. Constant alertness is required, particularly when operating on sloping ground. If necessary, decrease loads or drive the machine closer.

When you notice that the machine is about to fall over, pull extension in, move the outer boom in, and lower the load smoothly onto the ground.

It is possible that you exceed the lifting capacity of the boom (the booms will go over relief) if you pick up a load that is close to the machine and then move this load away from the machine. When this happens you must bring the load closer to the machine by pulling the outer boom or extension inwards. This is necessary because otherwise the power of the main boom cylinder will not be sufficient to handle the load.

Bear in mind the potential deactivation of the frame brake, should you move the machine while also operating the boom.

Always when possible move the extension boom in before processing a stem to avoid excessive strain on the outer boom.

Handle fuel carefully. Do not fill the fuel tank when engine is running. DO NOT smoke while you fill the fuel tank or service the fuel system.

Fill the fuel tank at the end of each day's operation to prevent water condensation and freezing during cold weather.

Keep all storage tanks as full as practicable to minimize condensation.

Ensure that all fuel tank caps and covers are installed properly to prevent moisture from entering.

Monitor water content of the fuel regularly.

When using bio-diesel fuel, the fuel filter may require more frequent replacement due to premature plugging.

Check engine oil level daily prior to starting engine. A rising oil level may indicate fuel dilution of the engine oil.

When fuel is stored for an extended period or if there is a slow turnover of fuel, add a fuel conditioner to stabilize the fuel and prevent water condensation. Contact your fuel supplier for recommendations.

LUBRICITY OF DIESEL FUEL

Most diesel fuels manufactured in the United States, Canada, and the European Union have adequate lubricity to ensure proper operation and durability of fuel injection system components. However, diesel fuels manufactured in some areas of the world may lack the necessary lubricity.

IMPORTANT: *Make sure the diesel fuel used in your machine demonstrates good lubricity characteristics.*

Fuel lubricity should pass a maximum scar diameter of 0.45 mm as measured by ASTM D6079 or ISO 12156-1.

If fuel of low or unknown lubricity is used, add John Deere Fuel-Protect Diesel Fuel Conditioner (or equivalent) at the specified concentration.

LUBRICITY OF BIODIESEL FUEL

Significant improvement in lubricity can occur with biodiesel blends up to B20. The gain in lubricity above a 20% blend is limited.

NOTE: *Biodiesel blends above 20% should not be used on Interim Tier 4 engines.*

This section includes instructions for measuring and adjusting of hydraulics pressures using a separate pressure gauge or by utilizing on-board pressure sensors connected to TimberMatic™. Further information over TimberMatic™ measurements can be obtained from TimberMatic ™ manuals.

⚠ DANGER

Carry out pressure checks on a flat surface and ensure there is sufficient space around the machine in case it moved. No-one should be allowed near the machine.

⚠ CAUTION

Due to safety reasons, only authorized and trained professionals are allowed to adjust hydraulic pressures of the machine.

⚠ CAUTION

Always switch off the diesel engine when a gauge is connected to the machine.

⚠ CAUTION

Inspect pressure gauges regularly and do not use damaged fittings or hoses.

IMPORTANT: *Use calibrated pressures gauges only. If you are unsure about adjusting pressures, contact an authorized service workshop.*

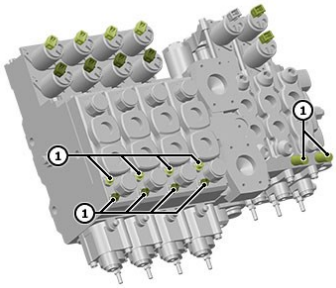
DRIVE HYDRAULICS

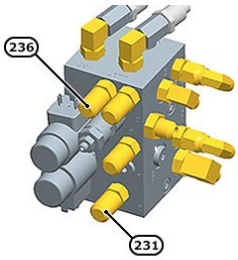
- Charge pressure
- Charge pressure valve setting

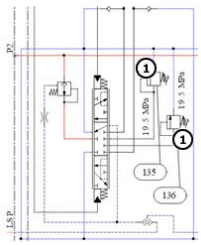
  NOTE: *TimberMatic™ service lock must be opened.*

- Maximum drive pressure / Drive pump cut-off setting
- Drive motor flushing pressure
- Drive motor cut-off setting

BOOM VALVE LS RELIEF PRESSURES







IMPORTANT: *Do not use the values shown in the hydraulic schematics. Use the values in the attached PDF appendix.*

1. Ensure that the machine is in normal operating temperature.
2. Connect a 40 MPa (5800 psi) gauge to the measuring point (236 / MLS) on the LS valve block of A10 pump.

   NOTE: *Boom movement requests, work pump and LS pressures can also been seen in the TimberMatic™ page 2.2.C.1.*

3. Active the working rpm and boom.

   NOTE: *Be careful when operating function to extreme to avoid collision or hose failures. Grapple a tree or otherwise prevent rotating when the rotator pressures are measured.*

4. Operate each boom function separately to extreme and read the gauge.

   IMPORTANT: *All boom functions have to be checked separately.*

   IMPORTANT: *Some boom functions have separate LS pressures for A and B movements.*

5. If the pressure differs more than ± 0.5 MPa (72 psi) from the allowed maximum LS-pressure, adjust from the screw (1) on the boom valve block of the specific boom function.

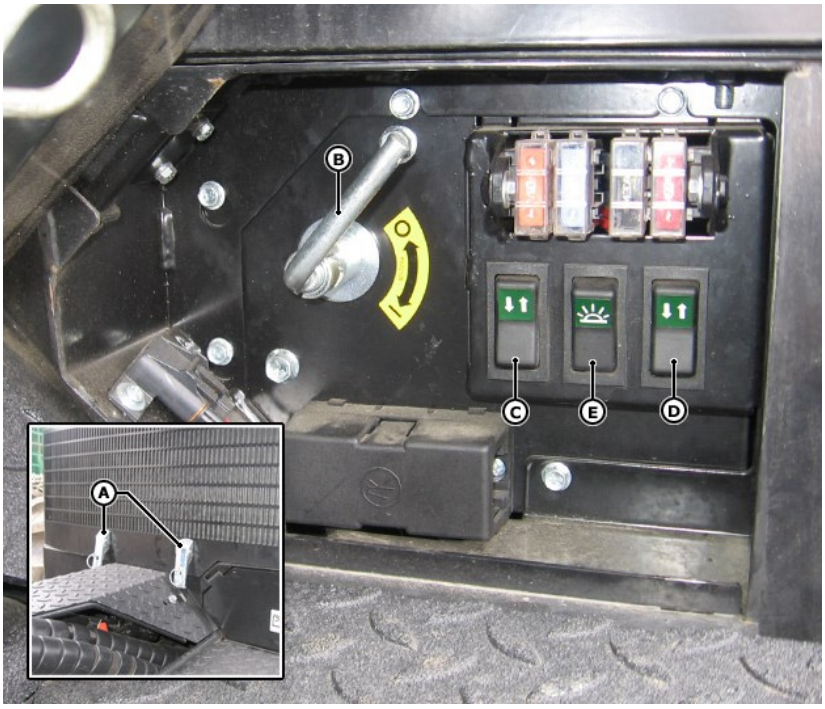
   NOTE: *In K170 sections inner adjustment screws are for A movements and in L90 sections right adjustment screws are for A movements.*

LIFTING THE HOODS

To lift the hood, proceed as follows:

1. Open the latches (front hood).
2. Turn on the main switch.
3. Hood lifting switches are located on the main switch panel.

A. Locking latches
B. Main switch
C. Front hood lifting
D. Rear hood lifting
E. Service lights

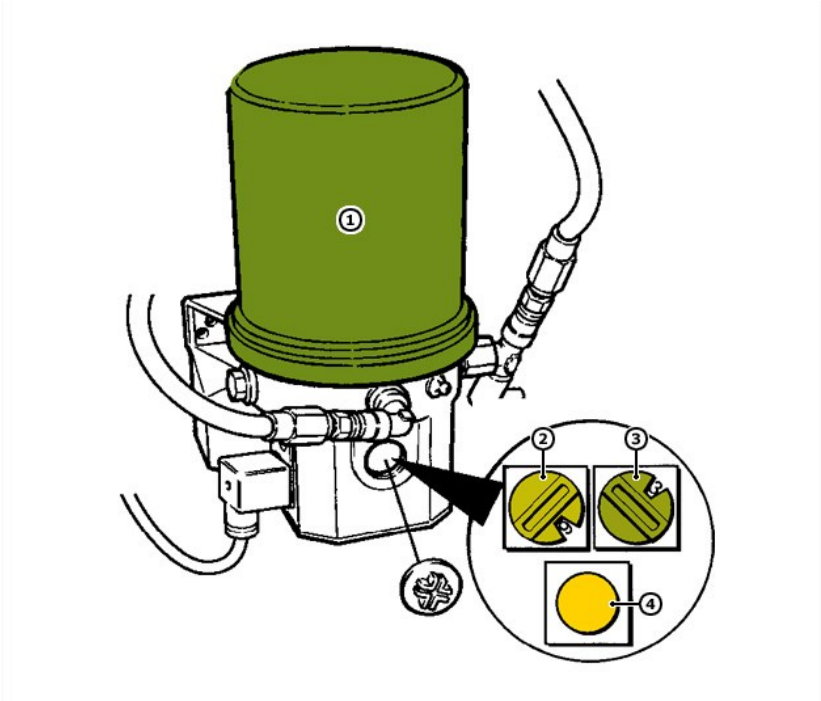


LUBRICATION FREQUENCY AND VOLUME AMOUNT ADJUSTMENT

NOTE: *Time settings are pre-set by John Deere. Pause time 2 hour and working time 4 mins.*

Adjustment switches

1. Reservoir
2. Pause time setting switch (lubrication interval, pre-set pos. 2 / 2 hour)
3. Operating time setting switch (amount per lubrication event, pre-set pos. 2 / 4 mins
4. Test button

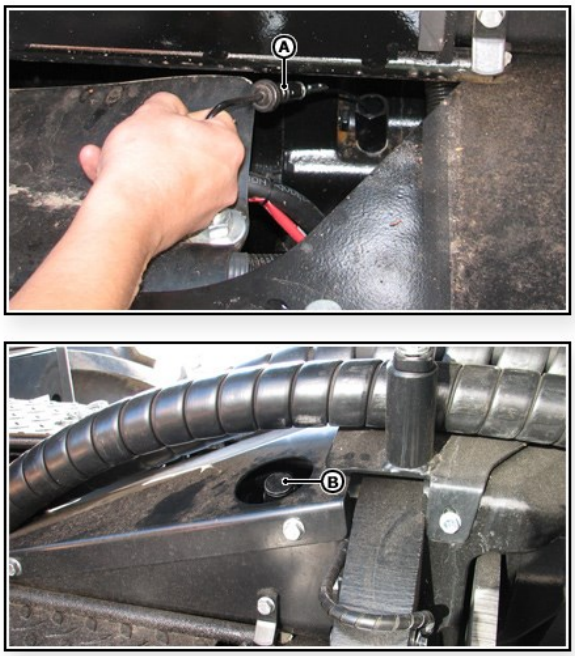


CHECK HIGH/LOW GEAR OIL LEVEL

Check oil level in the high/low gear with the dipstick. Oil level should be within ± 5mm from the dipstick mark. Dipstick can be accessed by opening the right side battery access cover.

If necessary, add oil through the filling pipe up to the mark of the dipstick.

A. Dipstick
B. Filling pipe



GREASE THE BOOM

The boom contains multiple greasing points on boom tilt bearings (A), slewing system bearings (B), rocker system bearings (C), lift boom bearings (D) and jib boom bearings (E).

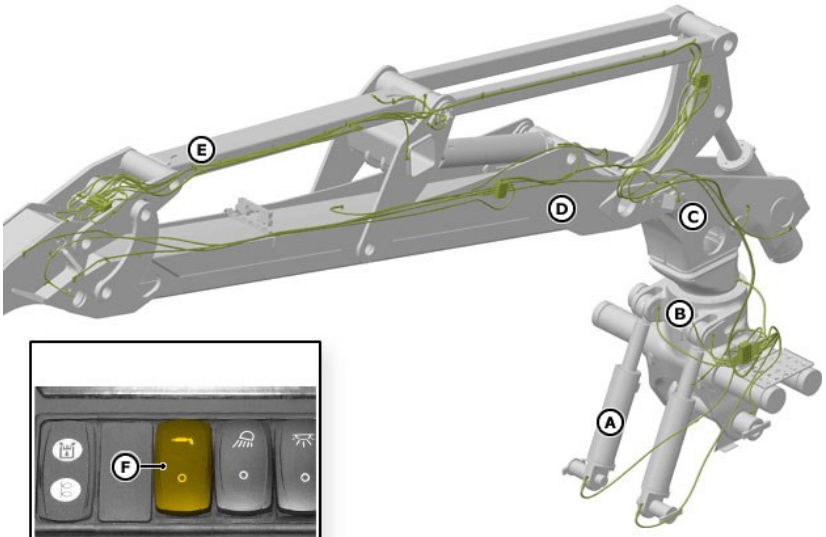
The boom is greased by automatic lubrication system, manual centralized greasing or manual greasing.

NOTE: *The automatic grease pump can be forced to run for four minutes by holding down the operating switch (F) on the dashboard for two seconds.*

The rotator and linkage are not part of automatic lubrication system and must be greased separately.

For optimum greasing of the upper slew housing bearing do the following:

1. Tilt the boom towards the cab and extend the boom.
2. Swing the boom to its full extent on one side and grease.
3. Swing to the other side and grease.



REPLACE FUEL FILTERS

⚠ CAUTION

Due to High Pressure Common Rail system design, fuel in filter is likely to be under high pressure. To avoid possible personal harm, open drain valves on bottom of both filters to relieve pressure prior to removing filter.

IMPORTANT: *Replace fuel filter elements anytime TimberMatic™ alarms and service code indicates plugged fuel filters (low fuel pressure).*

IMPORTANT: *Primary and final filters must be replaced at the same time.*

IMPORTANT: *If the machine is equipped with an optional water separator, also the separator filter must be drained and replaced at the same time.*

NOTE: *Location of fuel system components may vary depending on engine specification.*

Replace fuel filters as follows:

1. Thoroughly clean fuel filter assembly and surrounding area. Disconnect water in fuel sensor wiring (D) from primary fuel filter (A).
2. Connect a hose to primary filter drain valve (C) on bottom of filter and drain fuel into a suitable container.
3. Remove water separator bowl from primary fuel filter (A). Drain and clean bowl.

   NOTE: *Dry bowl with compressed air. Check the water separator bowl and seal for shape and cleanliness.*

4. Remove the filter element by pulling filter element down.
5. Inspect filter mounting base for cleanliness. Clean as required.
6. Connect a hose to final filter drain valve (E) on bottom of filter and drain fuel into a suitable container.
7. Remove the final fuel filter element (B) by rotating counterclockwise.
8. If the machine is equipped with an optional water separator filter (F):
   a. Disconnect the optional fuel heater connector (H).
   b. Connect a hose to the optional water separator drain valve (G) on bottom of filter and drain fuel into a suitable container.
   c. Remove water separator bowl from the optional fuel filter (F). Drain and clean bowl.

      NOTE: *Dry bowl with compressed air. Check the water separator bowl and seal for shape and cleanliness.*

   d. Place a new O-ring on the optional fuel filter bowl.

      NOTE: *Apply a thin film of fuel on O-ring.*

   e. Replace a new filter element and screw the separator bowl to the filter.
   f. Reconnect the optional fuel heater connector (H).
9. Install new dust seal onto mounting base of the final fuel filter making certain it is in place on filter base.

   NOTE: *Apply a thin film of fuel on dust seal.*

10. Screw a new final fuel filter element into fuel filter header then tighten to 10 Nm (7.5 lb.-ft.).
11. Place new O-ring on primary fuel filter bowl.

    NOTE: *Apply a thin film of fuel on O-ring.*

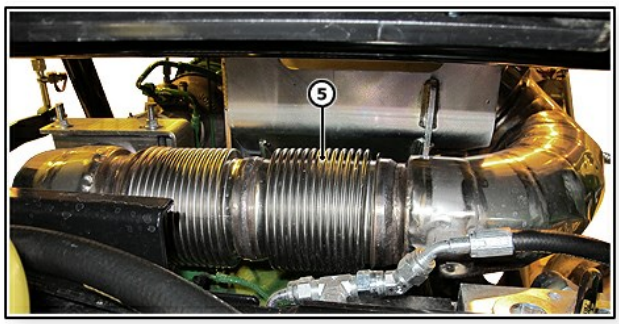
Step 2

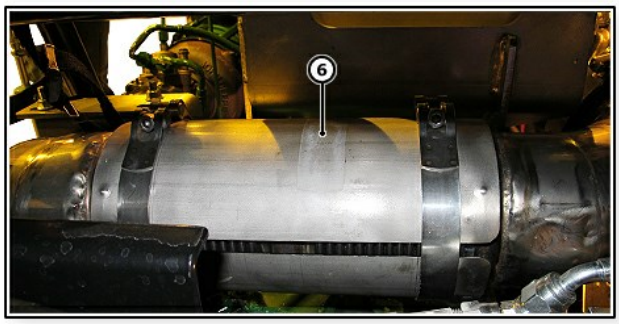
Undo the bolt (3) in the left hinge of the hood and tilt the hood backwards as far as the slot (4) allows. Support the hood as shown.

Usage	Tool	Size
Hinge bolt	Hex socket wrench	8 mm

Step 3

Install the transport support sleeve (5) over the flexible section (6) of the exhaust pipe and tighten sufficiently to prevent the pipe from bending. Do not over-tighten.



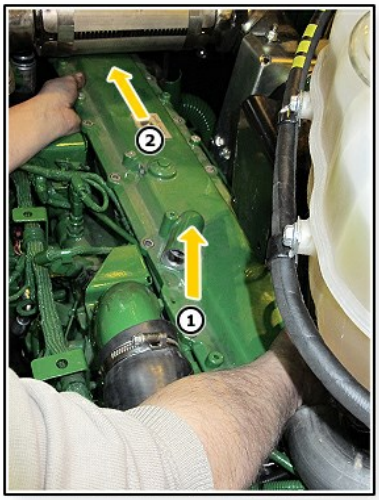


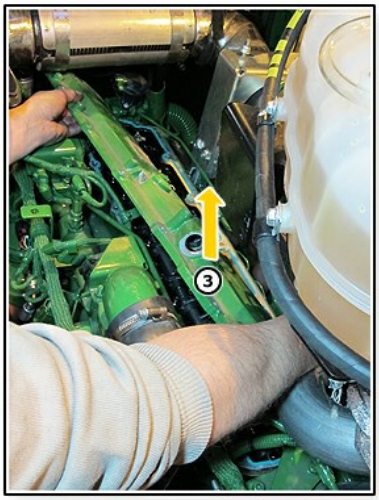
Step 13

Undo the mounting screws of the rocker cover (15 in total). Lift the rocker cover off the engine as follows:

1. First, lift the right edge of the cover.
2. Lift the cover slightly and push it backwards so that the front edge has enough room to be lifted up between the CAC pipes.
3. Bringing the right edge first, lift the cover forward right away from the engine bay.

Usage	Tool	Size
Cover mounting screws	Socket wrench	13 mm





REPLACE HYDRAULIC TANK OIL FILTERS

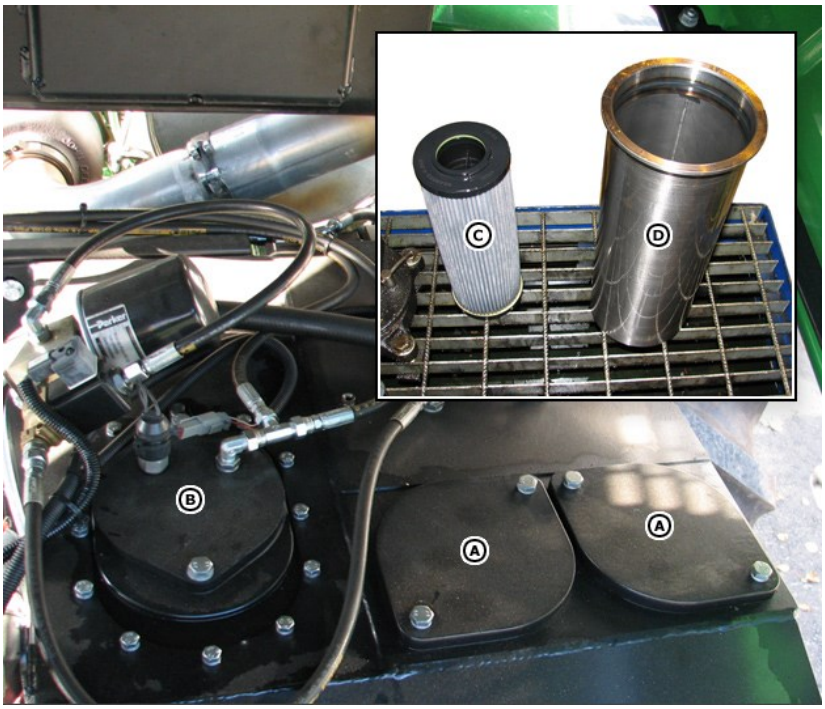
IMPORTANT: *The return case (A) filter is equipped with pressure sensor for clogging. If the pressure sensor sets off an alarm, renew the filters. Otherwise, stick to maintenance periods.*

IMPORTANT: *The off-line filter (B) is optional equipment without pressure sensor for clogging. It must be renewed at the same time as the return filter.*

1. Clean the hydraulic tank around the cover.
2. Screw cover fastening screws and remove cover.
3. Remove the filter assemblies. Filter element and the canister must be lifted together from the tank. If the filter element is removed from the canister in or on the tank, the contaminants of the filter can spoil hydraulic fluid.
4. Put the filter elements and the canisters into a proper container. Remove filter elements from canisters by twisting in counterclockwise.
5. Clean the canisters.
6. Replace the filters. Filter element locks easier if it's slightly pressed while twisting. Secure that the filter elements are locked inside the canisters before bringing the filter assemblies into the tank.
7. Place springs on the filter assemblies, close the cover and screw in fastening bolts. The spring serves to secure the filter joint, thus ensuring that no oil will bypass the filter.

A. Return filter covers
B. Off-line filter cover
C. Filter element
D. Filter canister

Usage	Tool	Size
Hydraulic tank filter cover fastening screw	Ring spanner/socket wrench	17 mm
Hose on offline filter cover	Ring spanner	19 mm



CLEAN ROTATOR MAGNETIC PLUG

1. Position the rotator unit to upright position so that the magnetic plug is at the lowest point.
2. Place a container below the plug.
3. Unscrew the plug, clean it and drain two liters of oil.
4. Screw in the magnetic plug and tighten it with a torque of 20 Nm (15 lb-ft).

A. Magnetic plug

Usage	Tool	Size
Magnetic plug opening	Allen key	6 mm

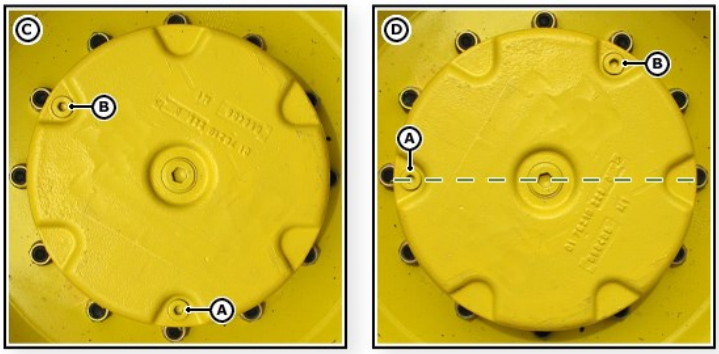
CHANGE HUB GEAR OIL

Oil level must be checked separately on each single axle and HD-bogie axle hub gear as follows:

1. Position the wheel end so that the drain port in lowest possible position. Clean the surrounding area of wheel hub plugs.
2. Drain the oil. First remove the upper plug. Then remove the drain plug and let the oil flow completely into a container.
3. Then turn the wheel hub so that the drain port is on the horizontal centerline of the axle.
4. Add new oil through the fill port until the oil comes out from the drain port.
5. Close the plugs with renewed copper washers/o-rings.

A. Drain plug
B. Fill plug
C. Wheel hub at draining position
D. Wheel hub at filling position

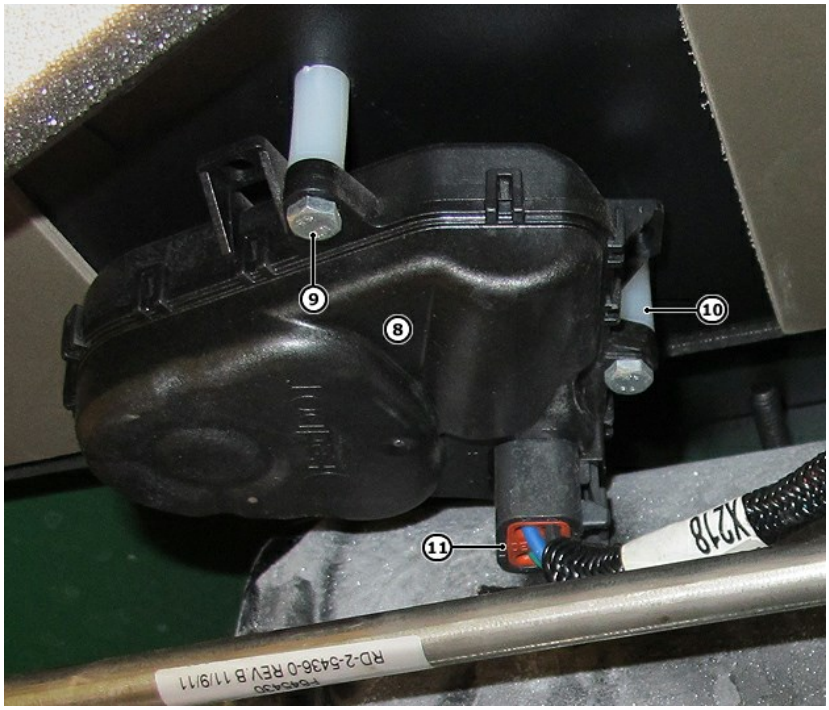
Usage	Tool	Size
Wheel hub oil plugs	Allen key	10 mm



Step 5

Remove the fresh air valve actuator (8) by opening the cap screws (9), three in total. Retain the cap screw ferrules (10). Remove the connector X218 (11) from the actuator.

Operation	Tool	Size
Actuator cap screws	Socket wrench	7 mm



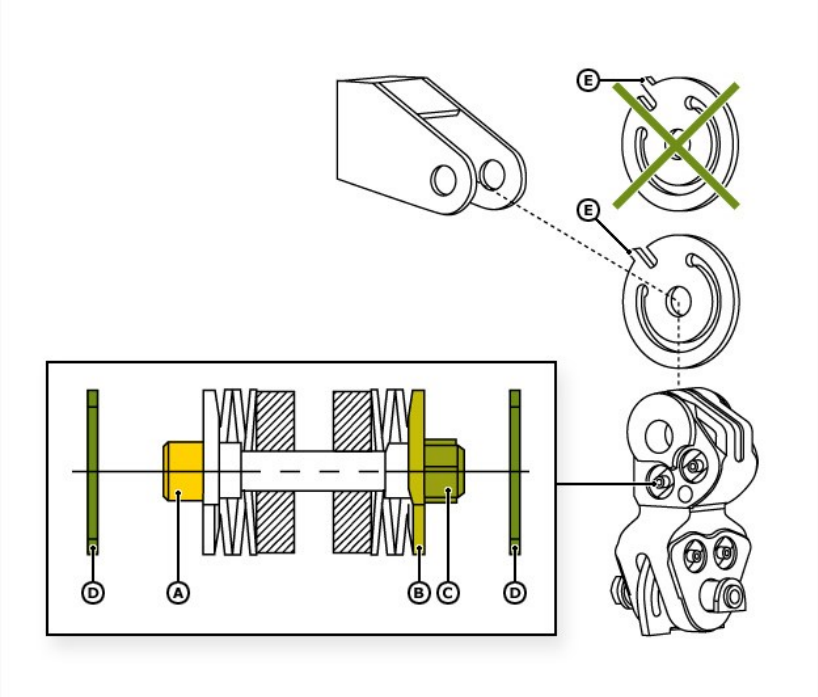
ADJUST ROTATOR LINK BRAKES

The bolted joint of the link brake pads is tightened through screw (A) while securely holding flanged nut (B). The maximum tightening torque of the bolted joint is 30 Nm (22 lb-ft). As soon as the adjustment has been made the bolt joint is secured with locknut (C).

When the bolted joint is opened for the replacement or check of the brake pads, tension washers (D) must not be removed before loosening the bolted joint.

NOTE: *For safety reasons the tension washers must be in place before the bolted joint is tightened.*

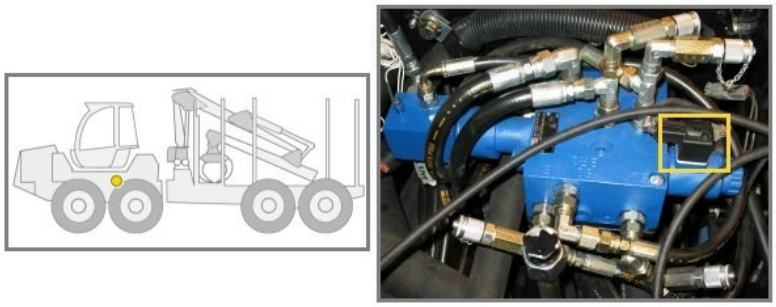
NOTE: *The upper brake disk has to be installed with the mark (E) downwards.*

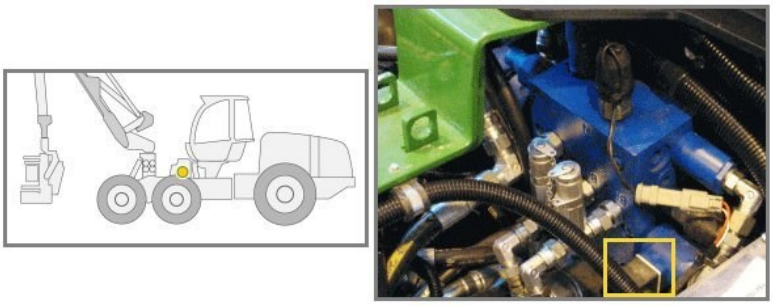


RELEASING THE WORK BRAKE

The brake valve is located under the cabin in forwarder and in the instrument compartment in front of the cabin in harvester.

1. Disconnect the solenoid valve (Y41W) connector of the work brake.
2. Re-connect the connector after towing.





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