CTL Forwarder
1WJ1110E003730-

OPERATOR'S INSTRUCTIONS

John Deere 1110E (Fixed Cabin)

Issue 20150302

F684258

(ENGLISH)

Worldwide Construction
And Forestry Division

Published in Finland

Original Instructions

JOHN DEERE FORWARDER

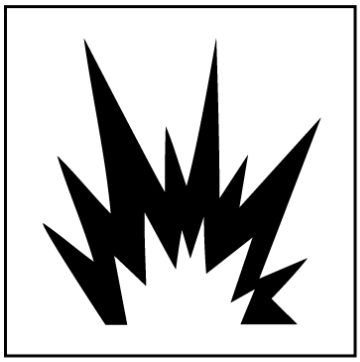
The John Deere forwarder is intended for loading and transporting logs. The machine must not be used for any other purpose.

We have designed the John Deere forwarder to operate under difficult off-road conditions. Nevertheless, it is important that you always adapt your driving speed to your surroundings.

Experience shows that a thorough check of the machine at regular intervals guarantees cost efficiencies that will work in your favour.

HANDLE STARTING FLUIDS SAFELY

CAUTION: *Never use a liquid starting aid, if engine is equipped with the pre-heat device. The use with the pre-heat device will cause an explosion in the intake manifold.*



Keep all sparks and flame away when using it. Keep starting fluid away from batteries and cables.

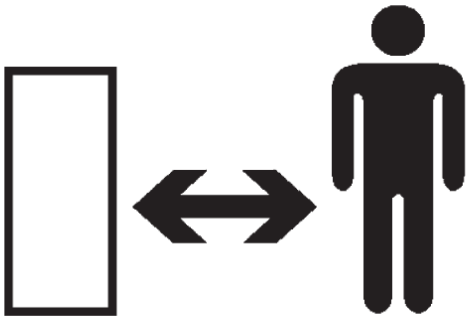
To prevent accidental discharge when storing the pressurized can, keep the cap on the container, and store in a cool, protected location.

Do not incinerate or puncture a starting fluid container.

PAY ATTENTION TO BYSTANDERS

Keep windows clean and the cab floor free from loose articles.

Always keep the reverse warning alarm in working condition.



Use a signal person when moving the machine in congested areas (for example indoor service shop) Coordinate hand signals before starting the machine.

The machine must not be operated by anyone under the influence of alcohol or drugs.

Avoid using the machine when you are tired or ill, as there is a greater risk of accident. Take sufficient breaks and observe local regulations on working hours.

AVOID POWER LINES

CAUTION: *Avoid operating under overhanging electrical power lines for a high voltage can 'jump' over a distance of several meters in the air.*

When planning the work, check with the local power company to find out if there are any overhead cables in the working zone and the safe distance to them.

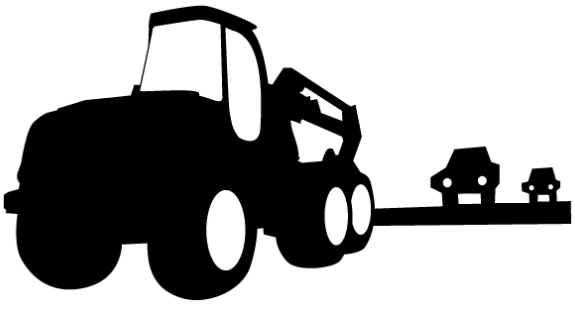
If the machine comes in contact with a power line and engine runs normally, stay in the cab and back up from the power line.

If the engine stops and the machine is in contact with a power line and you have to come out of the machine do as follows:

Grip firmly with a bare hand on the wrist of the other hand holding a handle while pushing the door open. Jump out of the cab both feet together. Keep on jumping feet together until you are at least 10 meters (33 ft) from the machine and the power line. If you fall earlier do not stand up, but keep on rolling on the ground toward the same direction.

You run the greatest risk if you are in simultaneous contact with the machine and the ground. Jump clear from the machine to the ground.

DRIVING/TRANSPORTING ON PUBLIC ROADS



Ensure that the machine is safe for driving. Adhere to local and national traffic regulations.

When traveling on public roads, use accessory lights and other cautionary devices to bring your approach to the attention of other vehicle operators. Ensure that the vehicle meets all regulatory requirements.

Bogie tracks or chains may not be fitted when driving on a public road.

Secure the boom and harvester head or grapple in the transport position and ensure that the boom cannot move during the drive.

By observant of the height of the machine when driving, e.g., tunnels, viaducts, bridges.

If the machine must be transported, make sure it is adequately secured to the transporting vehicle.

Ensure that the overall height does not exceed local or state maximum height regulation.

BEWARE OF EXHAUST FUMES

Engine exhaust fumes can cause sickness or asphyxiation.

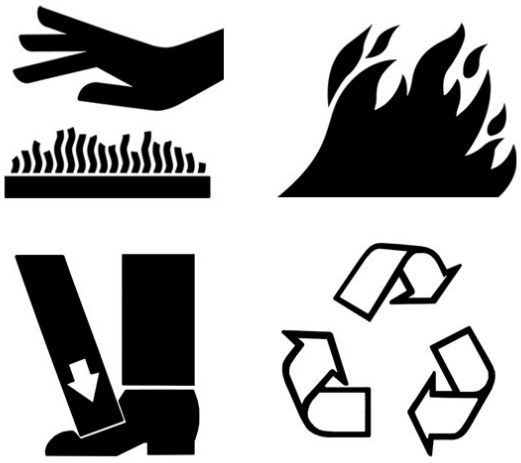
If you must operate in a building, be positive there is adequate ventilation. Either use an exhaust pipe extension to remove the exhaust fumes or open doors and windows to bring enough outside air into the area.

EXHAUST FILTER MAINTENANCE

Closely monitor machine and surrounding area for smoldering debris during and after a regeneration cycle. Cool down time after performing a manual cleaning, or regeneration is about 10 minutes of idling. The exhaust filter will cool down faster with the engine idling than with the engine turned off.

To avoid injury when removing or installing a heavy engine component, ensure that component is properly supported and securely attached to an adequate lifting device to prevent the component from falling.

DPF ash may be considered a hazardous waste under local, state or national laws and/or regulations. DPF ash should be handled and disposed of in accordance with applicable ordinances, regulations or laws.

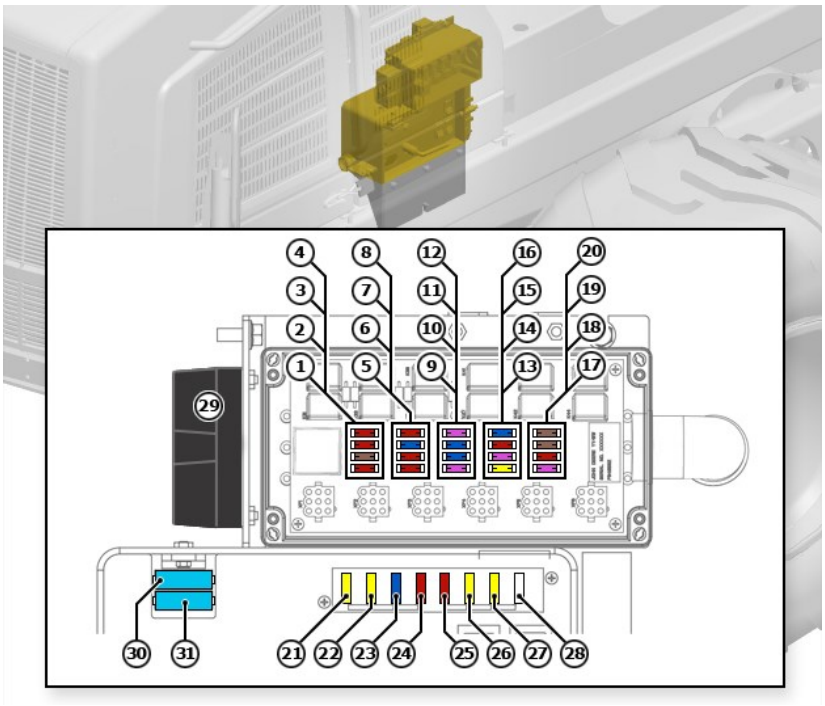


FORWARD CAMERA

The forwarder is equipped a forward camera positioned to the front of the cabin.

The camera continuously monitors the terrain in front of the machine. The image from the camera is automatically transmitted to the screen of control system when the machine starts moving forwards and the seat of the machine operator is facing backwards. The control system of the machine takes the orientation of the seat into account when choosing the camera image. The screen display returns to normal once the machine has stopped.

The forward camera provides better visibility forwards while the seat of the machine operator is facing backwards. The option reduces the need to rotate the operator's seat to face the direction of movement and therefore improves the productivity of the forwarder.

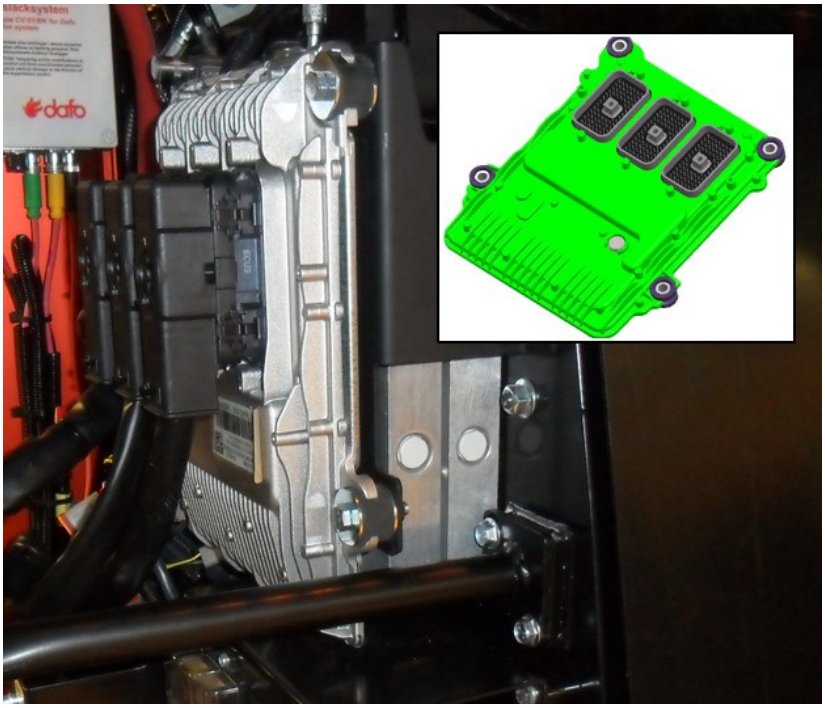

4
8
12
16
20
3
7
11
15
19
2
6
10
14
18
1
5
9
13
17
29
30
31
21
22
23
24
25
26
27
28

ENGINE CONTROL UNIT (ECU)

The ECU is a self-contained unit with an independent microcontroller and computer software to manage the entire electronic control system, including the following functions:

- Converting the electrical signals from the various sensors into digital signals.
- Making decisions on optimum fuel quantity and fuel injection timing based on information from various sensors.
- Limiting maximum fuel for operation on multiple power curves.
- Processing the emission control and exhaust gas aftertreatment.
- Providing all-speed governing and self-diagnostics for the control system.
- Storing trouble codes in memory.

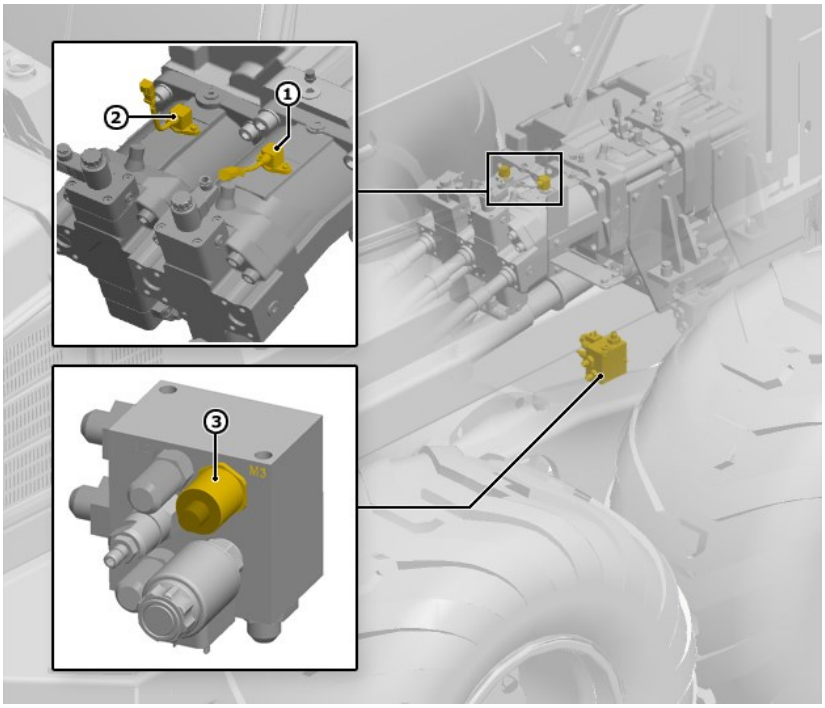
The ECU connects to the wiring harness through three connectors. Each connector is marked with terminal numbering.



SENSORS, VARIOSPEED™ GEAR BOX

The sensors below provide information to the transmission controller:

1. Hydraulic motor 1 speed sensor (B14A)
   - The signal is used for the calculation of speed and distance and for controlling the service brake.
2. Hydraulic motor 2 speed sensor (B14B)
   - The signal is used for the calculation of speed and distance and for controlling the service brake.
3. Clutch pressure sensor (B170)
   - Measures hydraulic pilot pressure of the clutch of hydraulic motor 2.

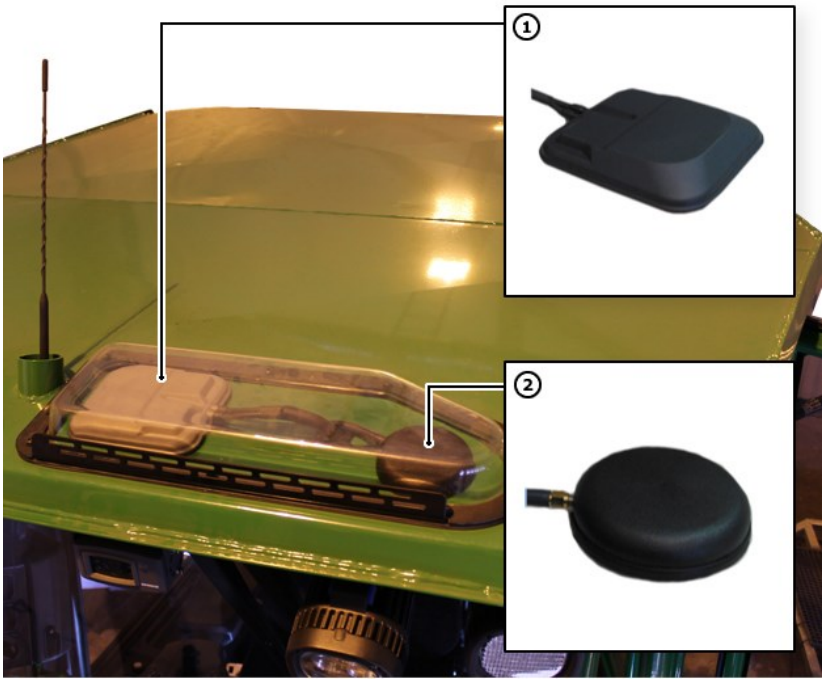


ANTENNAS

The system operates using the low-profile antenna (1) to transmit data via the cellular network.

If the machine is equipped with a satellite option, the satellite antenna (2) is used to transmit data via the satellite connection.

NOTE: *Antenna types are market dependent! Please consult your local dealer for detailed information.*



OPTIONAL EQUIPMENT

The machine can be equipped with various different optional equipment.

CONCEPT

In comparison to traditional boom control systems, where the operator controls each boom cylinder individually, the IBC system refers to a concept where boom control functions are replaced with a system where the operator controls the movements of the boom tip/end (grapple) directly.

When simplifying the boom controlling concept as with IBC, the operator only needs to focus on controlling the boom tip, while the IBC system does the required calculations for the movements in the background, thus making the boom easy and logical to operate. Movements for the three main boom cylinders (main, jib (outer) and extension) are controlled with two joysticks – the right joystick for up/down commands and the left joystick for in/out commands.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
STOP
12V
24V
A/C
PC

WINDOW WIPERS AND WASHERS

The machine is equipped with front window wiper (A) and side window wipers (B) and the wipers are operated by following buttons (1-5).

1. Button (R54) for left window wiper
2. Button (R46) for right window wiper
3. Button (R38) for front wiper
4. Interval button (L22) in left keypad
5. Function F2 -button (L14) in left keypad

Regular wipe

Short press starts regular wipe and wiping is on all the time. Pressing again shortly stops the wiper.

Single wipe

Pressing and holding down the F2 -button (L14) while simultaneously pressing shortly the desired wiper button executes a single wipe with the respective wiper.

Intermittent wipe

Long press on interval button (L22) notifies that now by pressing the button again shortly will activate the intermittent wipe. Time between the presses determines the waiting sequence. Also left and right side wipers go to intermittent mode, if they were on.

Wash wipe

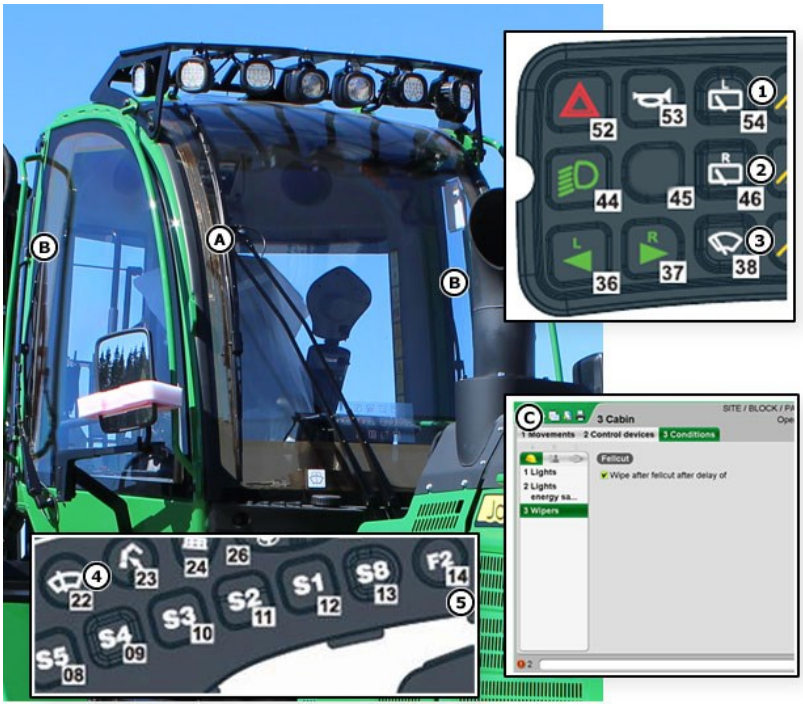
Long press of wiper button starts water spraying to the window. When button is released, wiper wipes window three times and once more after short break.

Extra wipe

Short press on interval button (L22) makes front wiper wipe once.

Fell cut wipe

When fell cut wipe (C) is active, the front wiper wipes once after fell cut. The delay for the wipe and function is activated from TimberMatic™ H cabin settings window.



CHANGING THE HEATING DURATION

TEMPORARILY

Start heating; press the key (3). To reduce heating duration: press the key (4). To increase heating duration (to max. 120 min): press the key (5).

PERMANENTLY

Do not switch heating on. Press the key (4) and hold it down (approximately 3 s) until the display appears and flashes. Release the key. Then set the heating duration (10 — 120 min) using the key (4) or (5). The new heating duration is set when the display disappears.

REMOTE CONTROL

Pre-heater can be controlled with the mobile phone SMS messages.

BEFORE USING THE SYSTEM

PIN-code request must be set on.

1. Check that a SIM-card is working properly by a cell phone.
2. Find the pre-heater's PIN-code label, which is located under the cover of the device.
3. Change the SIM-card PIN-code by the cell phone.
4. Install the SIM-card to the pre-heater.

NOTE: *After programming remove the label, put it to safe place to avoid misuse of SIM card if it get's stolen and make sure that the PIN-code label remains for later use.*

USE OF THE SYSTEM

System control messages are consisted of key words and parameters.

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

CRUISE CONTROL

IMPORTANT: *Cruise control is an optional feature requiring separate license.*

Cruise control automation enables to drive the machine using constant speed.

Activation

- ”Cruise control – R22” button (1) is pressed.

Speed adjustment

- With Plus/Minus buttons
- According to Eco mode %

Deactivation

- ”Cruise control – R22” button (1) is pressed. Auto cruise icon disappears from the work mode display.
- Brake pedal is pressed.
- Drive direction is switched to neutral.
- Cabin is rotated to opposite position than driving direction while high gear is active.
- System fault (secondary steering etc.)

NOTE: *Cruise control status is indicated with Auto cruise icon in TimberMatic™ work mode display.*

- Cetane number of 45 minimum. Cetane number greater than 50 is preferred, especially for temperatures below – 20°C (–4°F) or elevations above 1500 m (5000 ft).
- Cold Filter Plugging Point (CFPP) should be at least 5°C (9°F) below the expected lowest temperature or Cloud Point below the expected lowest ambient temperature.
- Fuel lubricity should pass a maximum scar diameter of 0.45 mm as measured by ASTM D6079 or ISO 12156-1.

Sulfur content:

- Diesel fuel quality and fuel sulfur content must comply with all existing emissions regulations for the area in which the engine operates.
- Use of diesel fuel with sulfur content less than 0.1% (1000 ppm) is STRONGLY recommended.
- Use of diesel fuel with sulfur content 0.1% (1000 ppm) to 0.5% (5000 ppm) may result in REDUCED oil and filter change intervals as shown in the table.
- BEFORE using diesel fuel with sulfur content greater than 0.5% (5000 ppm), contact your John Deere dealer.

IMPORTANT: *Do not mix used diesel engine oil or any other type of lubricating oil with diesel fuel.*

IMPORTANT: *Improper fuel additive usage may cause damage on fuel injection equipment of diesel engines.*

BIO-DIESEL FUEL

Biodiesel is a fuel comprised of mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats. Biodiesel blends are biodiesel mixed with petroleum diesel fuel on a volume basis.

Biodiesel users in the U.S. are strongly encouraged to purchase biodiesel blends from a BQ-9000 Certified Marketer and sourced from a BQ-9000 Accredited Producer (as certified by the National Biodiesel Board). Certified Marketers and Accredited reducers can be found at the following website: http://www.bq-9000.org.

While 5% blends are preferred (B5), biodiesel concentrations up to a 20% blend (B20) in petroleum diesel fuel can be used in all John Deere engines. Biodiesel blends up to B20 can be used ONLY if the biodiesel (100% biodiesel or B100) meets ASTM D6751 (US), EN 14214 (EU), or equivalent specification. Expect a 2% reduction in power and a 3% reduction in fuel economy when using B20.

John Deere approved fuel conditioners containing detergent/dispersant additives are recommended when using lower biodiesel blends, but are required when using blends of B20 or greater.

John Deere engines can also operate on biodiesel blends above B20 (up to 100% biodiesel) ONLY if the biodiesel meets the EN 14214 specification (primarily available in Europe). Engines operating on biodiesel blends above B20 may not fully comply with all applicable emissions regulations. Expect up to a 12% reduction in power and an 18% reduction in fuel economy when using 100% biodiesel. John Deere approved fuel conditioners containing detergent/dispersant additives are required.

The petroleum diesel portion of biodiesel blends must meet the requirements of ASTM D975 (US) or EN 590 (EU) commercial standards.

Biodiesel blends up to B20 must be used within 90 days of the date of biodiesel manufacture. Biodiesel blends from B21 to B100 must be used within 45 days of the date of biodiesel manufacture.

Request a certificate of analysis from your fuel distributor to ensure that the fuel is compliant with the above specifications.

Consult your John Deere dealer for approved biodiesel fuel conditioners to improve storage and performance with biodiesel fuels.

When using biodiesel fuel, the engine oil level must be checked daily. If oil becomes diluted with fuel, shorten oil change intervals. Refer to Diesel Engine Oil and Filter Service Intervals for more details regarding biodiesel and engine oil change intervals.

The following must be considered when using biodiesel blends up to B20:

GEAR OIL

- High/low gear
- Differentials
- Bogie casings
- Hub gears
- Boom slew housing

Use hypoid oil that complies with the classification:

- API
- GL-5 or MIL-L-2105 B or D.

The following viscosity categories can be used:

- SAE 90
- SAE 85W/90
- SAE 80W/90
- SAE 75W/90

IMPORTANT: *In extremely cold conditions (below -25°C) use transmission oil with viscosity category of SAE 75W/90.*

Variospeed gear box

Use hypoid oil that complies with the classification:

- API GL-4 or MIL-L-2105
- API GL-5

The following viscosity categories can be used:

- SAE 80
- SAE 80W/90

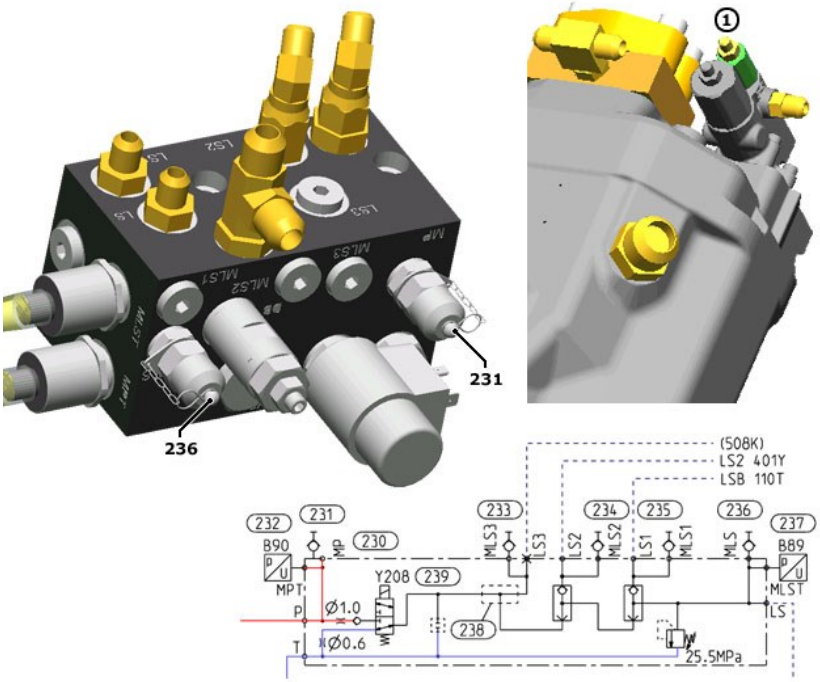
BOOM VALVE LS RELIEF PRESSURES

1. Ensure that the machine is in normal operating temperature.
2. Connect a 40 MPa gauge to the measuring point (236 / MLS) on the LS valve block.
3. Engage the working rpm and boom. All boom functions have to be checked separately.

   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 the function to extreme and then release the lever.
5. Operate the function again to extreme and read the gauge. Adjust from the screw (1) if the pressure differs more than ± 0.5 MPa from the allowed maximum LS-pressure. Values are listed in hydraulic schematic appendix.

IMPORTANT: *Do not use the values shown in the hydraulic schematic itself but in the appendix in the end of the schematic.*



LOWERING THE CABIN

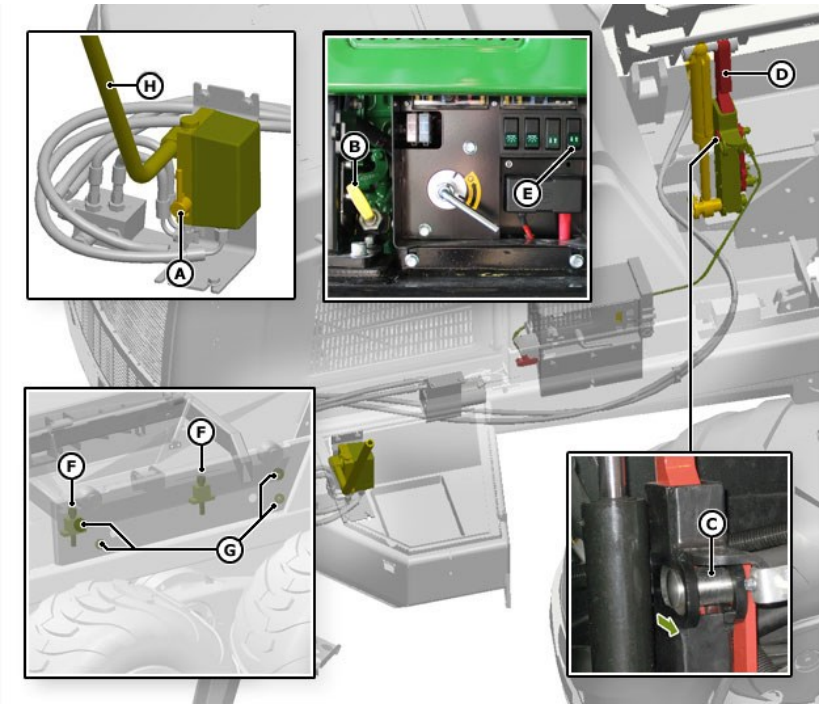
CAUTION: *Before lowering the cabin make sure there is nobody near the machine.*

CAUTION: *Keep all limbs, tools and any other obstructions away from the moving parts of the tilt mechanism.*

1. Turn the lever (A) on the direction valve counter clockwise as far as it will go.
2. Pull the release handle (B) so that the locking pin (C) moves out of its slot in the locking bar (D).
3. Still pulling the release handle, press the operating switch (E) and let the cabin all the way down.
4. Tighten the fastening screws of the cabin platform (F).
5. Tighten the fastening screws of the side protection cover (G).

In the event that there is no power supply to the machine the cabin can be lowered manually by operating the manual hydraulic pump with a lever (H).

A. Direction lever
B. Release handle
C. Locking pin
D. Locking bar
E. Operating switch
F. Fastening screws of the cabin platform
G. Fastening screws of the side protection cover
H. Manual lowering lever



CABIN WINDOWS CLEANING

1. General cleaning

Wash outside with lukewarm water and clean with John Deere LexClean. Inside use John Deere LexClean. Dry thoroughly to avoid water marks, using a soft and clean cloth.

2. Using window washers

Don’t wipe windows dry. Fill tank only with John Deere LexGuard.

3. Removing stains

Remove stains of resin, paint, grease, oil, etc, before the stain has time to dry. Use a soft cloth moistened with John Deere LexGuard or LexClean.

NOTE: *Windows are made of polycarbonate with hard surface coating. Use of other than recommended detergents may damage the windows.*

RESERVOIR FILLING

Always fill through the filling nipple. The best practice is to use standard refinery drums or pails. Impurities in grease can create operational problem.

Requirements for grease classification to be used with central lubrication system in different temperatures:

Above 0°C (32°F): NLGI 2

Below 0°C (32°F): NLGI 1

Below -20°C (-4°F): NLGI 0

It is not necessary to change the grease from NLGI 2 to NLGI 1 unless the period when temperature is below 0°C is expected to last several days. If the temperature drops significantly below zero it is recommended to change the grease immediately.

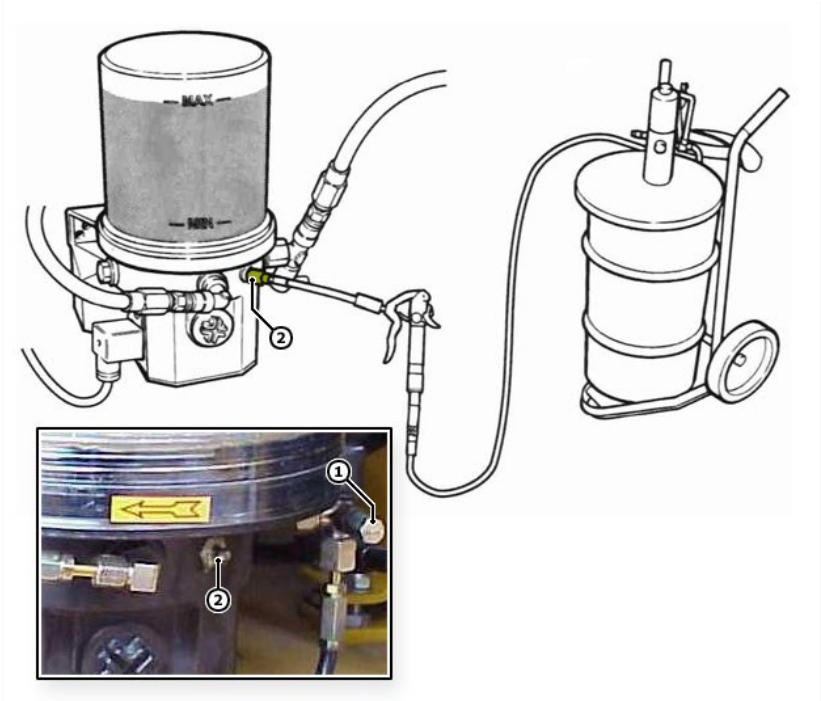
Do not mix two greases - consult your grease supplier first.

IMPORTANT: *Use only HD lithium complex grease. Do not use calcium grease!*

Emergency lubrication

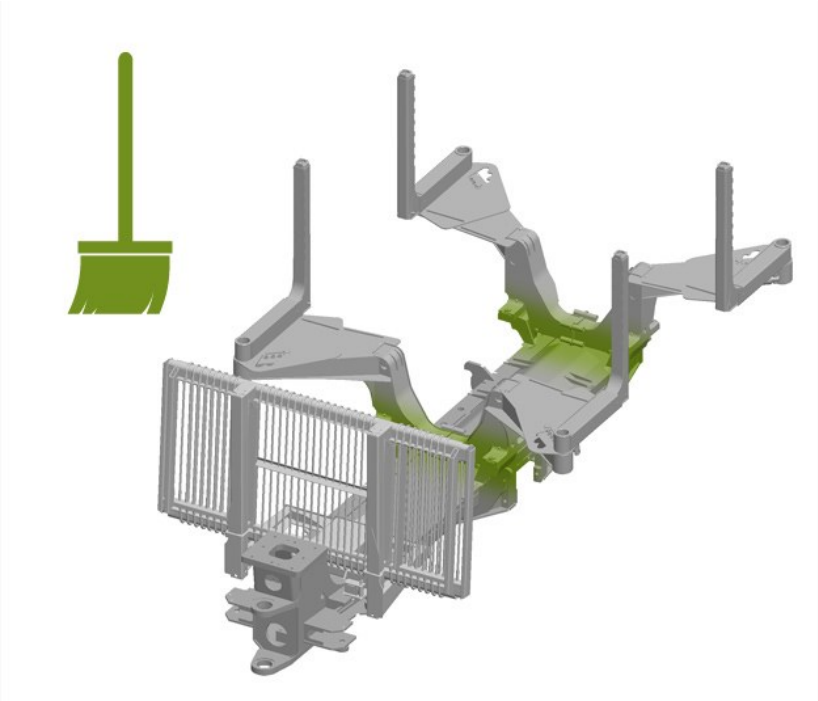
The pump can be by-passed by feeding grease manually through the manual grease fitting attached on the pressure relive valve. In case of system failure this fitting can be used for trouble shooting and manual greasing (all points are lubricated from this one fitting).

1. Pressure relief valve with a by-pass fitting
2. Filling nipple



ALS - MAINTENANCE EVERY 10 HOURS OR DAILY

1. Clear the rear frame, in front of and behind both bunks, so that snow, bark or any other debris does not limit the movement of the bunks.
2. Make sure that the hydraulic hoses are not damaged.
3. Make sure that no damage or cracking have occurred on the equipment. Tighten any loose items and repair any damage.



CHECK THE TENSION OF HOSES

IMPORTANT: *During the first 250 working hours, check the tension and wornness of the hidden hoses of a new machine daily.*

Follow the instructions to inspect and adjust the tension of the boom hidden hoses carefully:

1. Drive the extension booms to their innermost position.
2. Open the protection cage of the jib boom (A).
3. Check visually the wornness of the hoses and fittings (E).
4. Check the tension of the hoses around the sheave (B). The hoses should be moveable sideways on the sheave by fingers, but shouldn't be loose.
5. If necessary, open the locking nuts (C) and adjust the tension using the adjusting bolts (D).

NOTE: *The tolerance for adjustment is the nominal length plus 10 millimeters. The hoses should never be shorter than the nominal length and not tensioned too tight, since the hoses will shorten after pressurized.*

If a hose breaks and other hose are clearly worn or stretched, it is recommended to replace all the hoses at once.

IMPORTANT: *The hoses requires special ratio for bending radius and outer radius. A proper hose types are Parker 471 ST and Parker 471 TC.*

IMPORTANT: *Replace the fittings always with similar as the originals.*

A. Protection cage
B. Sheave
C. Adjusting bolt locking nuts
D. Adjusting bolts
E. Hose connections

Purpose	Tool	Size
Protection cage	Socket wrench	12 mm
Adjusting bolts	Socket wrench	12 mm
Adjusting bolt locking nuts	Fork spanner	12 mm

CHECK DIFFERENTIAL OIL LEVEL

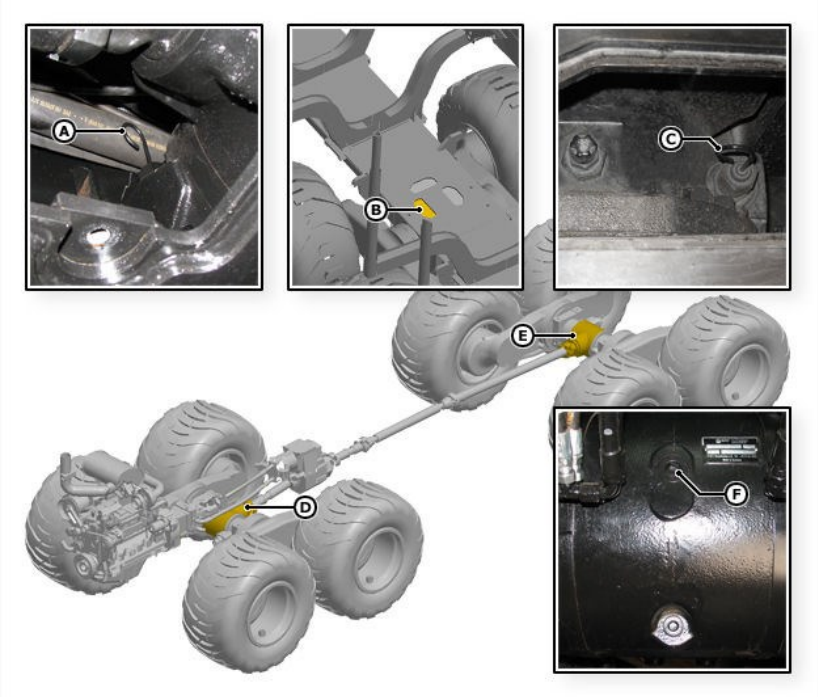
The front differential dipstick can be accessed by opening small access cover next to front frame belly plate.

The rear differential dipstick can be accessed by opening the left-hand side access cover above the rear axle.

If necessary, add oil through the filler port.

A. Front differential dipstick
B. Rear differential dipstick cover
C. Rear differential dipstick
D. Front differential
E. Rear differential
F. Filler plug

Purpose	Tool	Size
Front frame access cover	Allen key	10 mm
Rear frame access cover	Socket wrench	13 mm
Differential filler plug	Allen key	12 mm



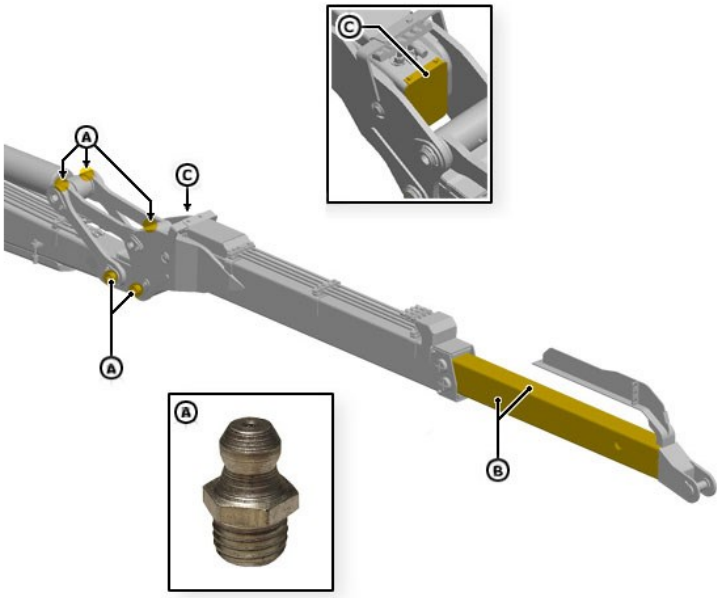
GREASE THE BOOM (SINGLE EXTENSION) 2/2

1. Grease the upper bearing of the jib cylinder, the jib boom rocker bearings via 12 grease fittings (A).
2. Apply a layer of grease on the sliding surfaces of the extension boom (B)
3. Lubricate the inner surfaces of the jib boom and the extension boom. The easiest way is to remove the end plate (C) of the jib boom. Spread lubricant in front of the slide pieces so that it can flow through the jib boom when it is folded or extended. The lower surfaces are lubricated while the jib boom is in its outermost position (extended straight) and the upper surfaces while folded in its innermost position.

IMPORTANT: *Lubricate the extensions with hydraulic oil or grease intended for greasing of open gears. Do not use grease that contains molybdenum sulphide.*

A. Grease fittings of the jib cylinder and jib mechanism.
B. Extension boom surfaces
C. Jib boom end plate

Purpose	Tool	Size
Jib boom end plate	Ring spanner	13 mm



CHECK VERTICAL CLEARANCE OF THE EXTENSION BOOMS

If necessary, make the adjustment by inserting additional adjustment plates (A) under the slide pieces (B).

The aggregate thickness of the fitting plates under the slider parts must not exceed 3 mm (0.12 in). This is to make sure that the slider parts will stay in place.

The top of the slider part must exceed the edges of the bearing housing by at least 2 mm (0.08 in).

The condition of the rearmost slider parts can be checked by opening the plate at the rear end of the extension boom (C). It is recommended this check be performed every time the jib boom is dismantled for maintenance.

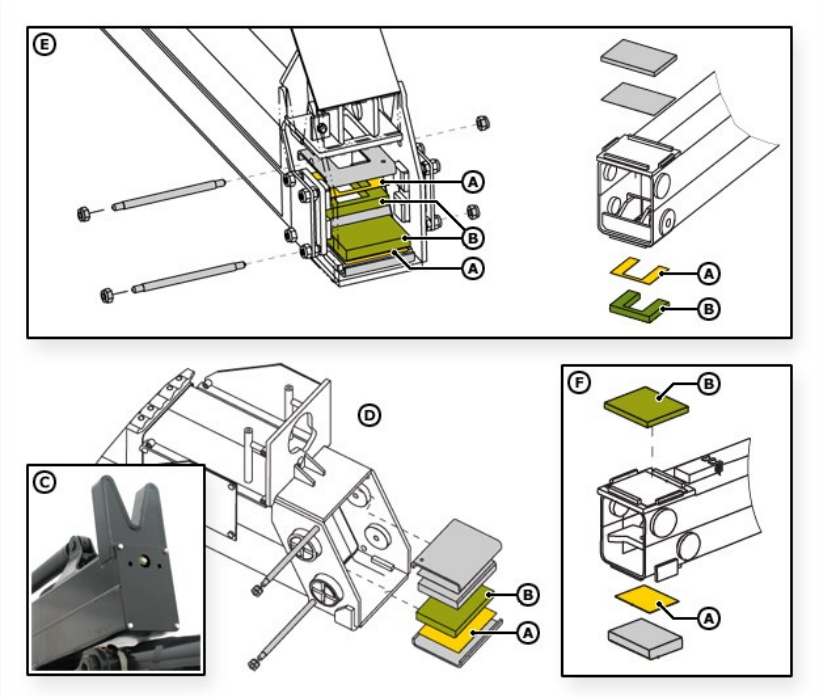
IMPORTANT: *The slider parts must not press against the side of the extension.*

IMPORTANT: *The clearance can be 1-1.5 mm maximum on one side.*

IMPORTANT: *Check that the set clearance works well by ensuring the extensions move smoothly through the whole movement range and that the clearance does not vary.*

1. Jib boom slide pieces
2. 1st extension slide pieces
3. 2nd extension slide pieces

Purpose	Tool	Size
Slide piece mounting pin	Ring spanner	19 mm



CHECK ENGINE COOLANT LEVEL

CAUTION: *Explosive release of fluids from pressurized cooling system can cause serious burns. Shut off engine and let the cooling system pressure even for a while. Slowly loosen the expansion tank to relieve pressure before removing completely.*

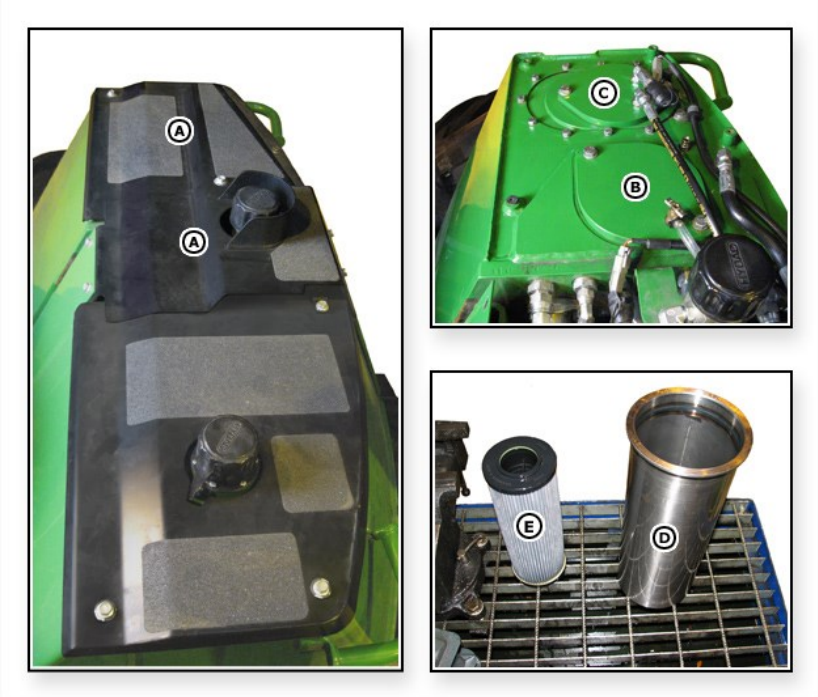
Maintaining required engine coolant level and adequate concentrations of glycol + inhibiting additives in the coolant are critical in protecting the engine and the cooling system against freezing, corrosion, cylinder liner erosion and pitting.

Ensure that the coolant level stays between the “MIN” and “MAX” marks on the expansion tank. Add fluid similar to that contained in the radiator if necessary.

NOTE: *Add coolant anytime TimberMatic™ alarms and service code indicates too low coolant level.*

IMPORTANT: *If expansion tank is empty, check for leaks. Repair as required. Make sure that required amount of coolant is present in the radiator and the expansion tank.*

A. Expansion tank

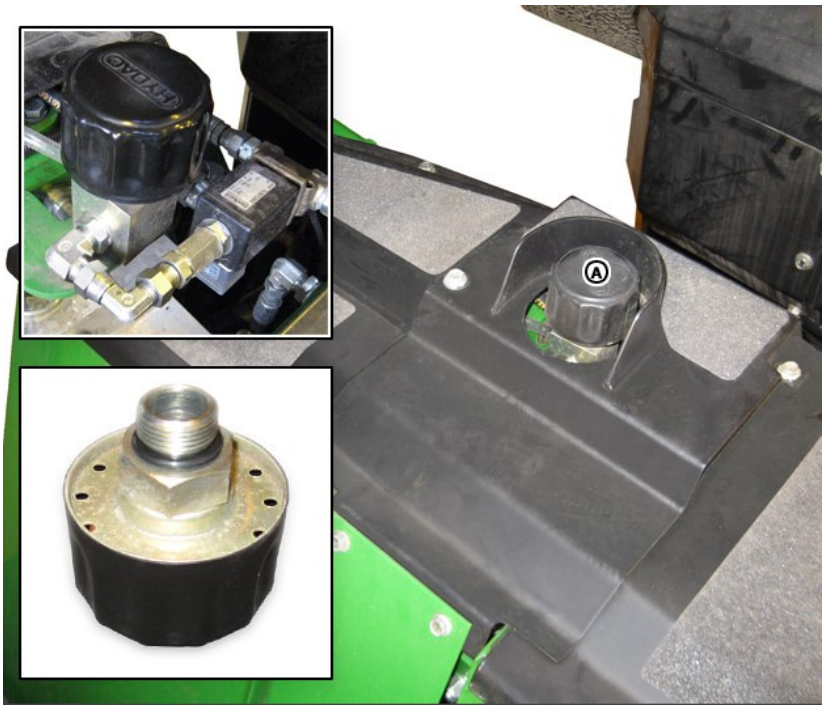


REPLACE HYDRAULIC TANK BREATHER

The hydraulic tank breather is located on the top of the tank.

1. Remove the old filter.
2. Clean the mounting surface.
3. Apply thin film of oil to seal of new filter.
4. Tighten the filter by hand.

A. Hydraulic tank breather



REPLACE PURADYN FILTER ELEMENT

CAUTION: *The unit is hot.*

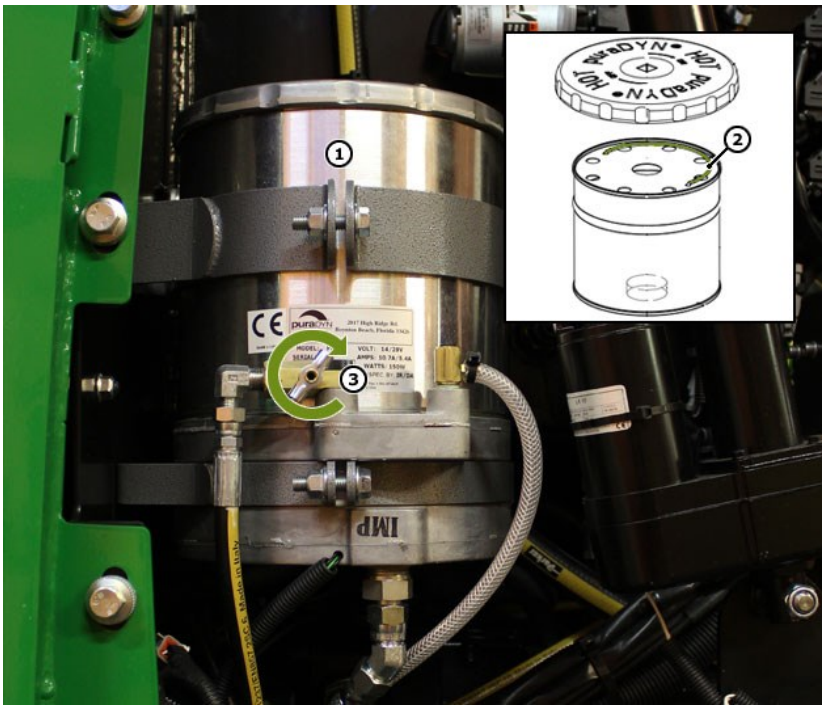
Change the Puradyn filter element every 1000 hours or as required:

1. Using 24” –long flex handle with ½” drive, turn lid (1) counterclockwise and remove.
2. Reuse (new filter packing plastic bag) disposable bag, remove spent filter gently by pulling up on wire handle(s) (2) and drop into the plastic bag for disposal.
3. Install new filter by pushing it gently down into the filter housing; make sure the rubber grommet fits securely over the nipple.
4. Thoroughly clean lid and gasket surface.
5. Lightly lubricate gasket with clean oil.
6. Hand-install and spin lid on clockwise until contact with gasket (hand tight).
7. Tighten the lid to 80 Nm torques or approximately additional half turn using the 24”-long flex handle.

NOTE: *Puradyn filter does not prolong the normal engine oil service intervals.*

NOTE: *This system increases the engine oil volume about 4 Liters.*

NOTE: *If required, take an oil sample. Turn valve (3) and spill the oil to clean container.*



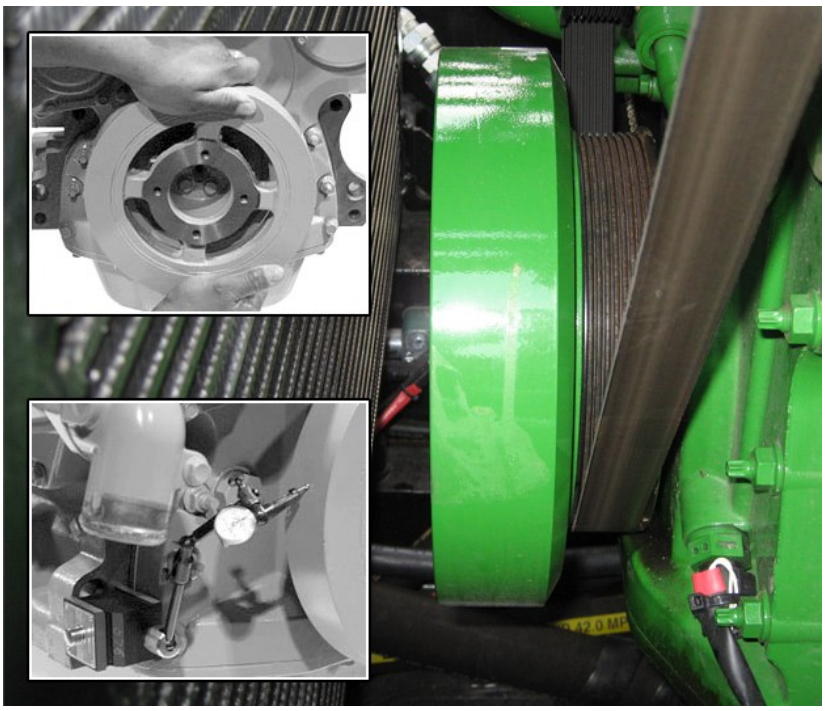
CHECK ENGINE VIBRATION DAMPER

IMPORTANT: *The vibration damper assembly is not repairable and should be replaced every 4500 hours or 5 years, whichever occurs first.*

Check vibration damper as follows:

1. Remove drive belt.
2. Grasp vibration damper with both hands and attempt to turn it in both directions. If rotation is felt, damper is defective and should be replaced.
3. Check vibration damper radial run out by positioning a dial indicator so probe contacts damper outer diameter.
4. With engine at operating temperature, rotate crankshaft using either JDE83 or JDG820 flywheel turning tool. If run out exceeds 1,5 mm (0,060 in), replace vibration damper.

Usage	Tool	Size
Drive belt tensioner	Ratchet spanner	½ in
Vibration damper radial run-out checking	Dial indicator	Suitable range
Crankshaft turning	JDG820 or JDE83 flywheel turning tool	JD special tool



REPLACE DRIVE BELT

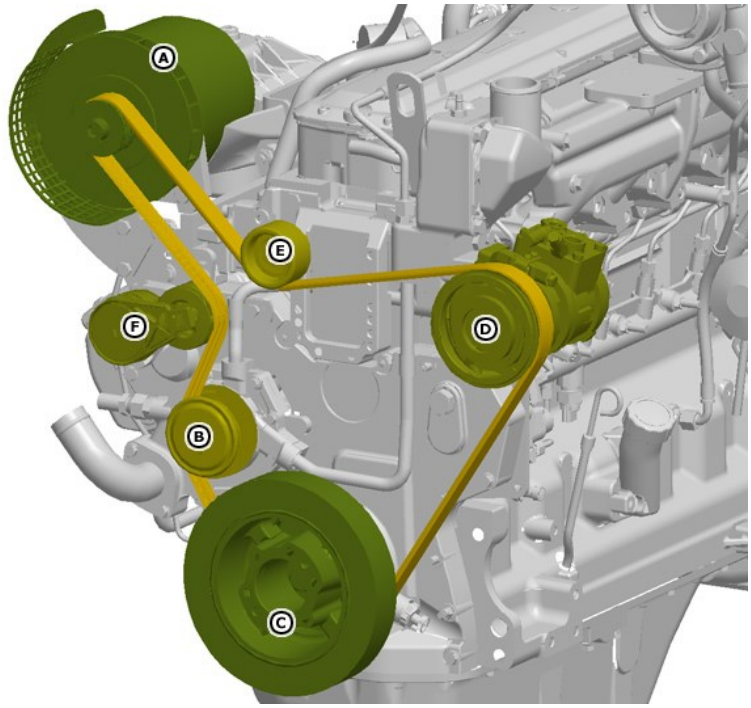
NOTE: *While belt is removed, inspect pulleys and bearings. Rotate and feel for hard turning or any unusual sounds. If pulleys or bearings need replacement, see your John Deere dealer.*

Replace the drive belt as follows:

1. Release tension on belt using a long-handle ½ inch breaker bar in tension arm. Remove belt from pulleys and release tension on tension arm.
2. Install new belt, be sure that belt is correctly seated in all pulley grooves.
3. Apply tension to belt with tensioner. Remove the breaker bar.
4. Start engine and check belt alignment.

A. Alternator
B. Coolant pump
C. Crankshaft pulley
D. A/C compressor
E. Idler
F. Tensioner

Usage	Tool	Size
Drive belt tensioner	Ratchet spanner	½ in



ADJUST BRAKE CYLINDERS

IMPORTANT: *Before maintenance, park machine on flat, level surface and lower boom to the ground. Engage parking brake, stop engine, install frame steering lock bar and turn the main switch off.*

1. Disconnect electrical contact A (Y41W), from the work brake valve.
2. Remove the protective cover B.

   NOTE: *Be careful the loose release screw, locking nut and washer (C) are under the cover.*

3. Screw in the release screw to hand-tight and set the washer and locking nut to release the brake.

   NOTE: *Follow detailed instructions in the towing chapter to release parking brake cylinders.*

4. Open the larger Allen screws D (4 screws, key size 8 mm) and remove the cylinder.

   NOTE: *The smaller Allen screws (2 screws, key size 6 mm) should not be loosened.*

5. Loosen the locking nut F. Hold the piston G in position.
6. Fully open the adjusting screw E. Clean the thread and the locking nut F.
7. Turn the locking nut F to the end of the adjusting screw. Lock the adjusting screw thread E by applying locking fluid (Loctite 242).

   NOTE: *If the locking fluid comes into contact with other areas than the adjusting screw and the locking nut, the excess fluid should be cleaned away.*

8. Insert the adjusting screw E and turn it clockwise until a significant resistance is felt (8…15 Nm or 6… 11 lb-ft). Then turn the adjusting screw E three and half (3 ½) turns anticlockwise while holding the piston G in position.
9. Tighten the locking nut F to approximately 40 Nm (30 lb-ft) while holding the piston G in position.
10. Reinstall the cylinder. Ensure that the O-ring H is in good condition and is correctly positioned. Tighten the four screws D.
11. Remove the release screw. Place the release screw, locking nut and washer (C) under the protective cover (B).
12. Fit the protective cover B. Check that the O ring is in good condition and is correctly positioned.
13. Connect the electrical contact A (Y41W) to the brake valve.

NOTE: *Adjust all the four brake cylinders in the same way.*

A. Electrical contact Y41W
B. Protective cover
C. Release screw, locking nut and washer
D. Cylinder fastening screws
E. Adjusting screw
F. Locking nut
G. Piston
H. O-ring

BY-PASSING THE BOOM VALVE

NOTE: *Do not mix the valves after they have been removed. Replace the valves as originally installed.*

Use machine specific hydraulic schematics to recognize the valve sections that need to be by-passed.

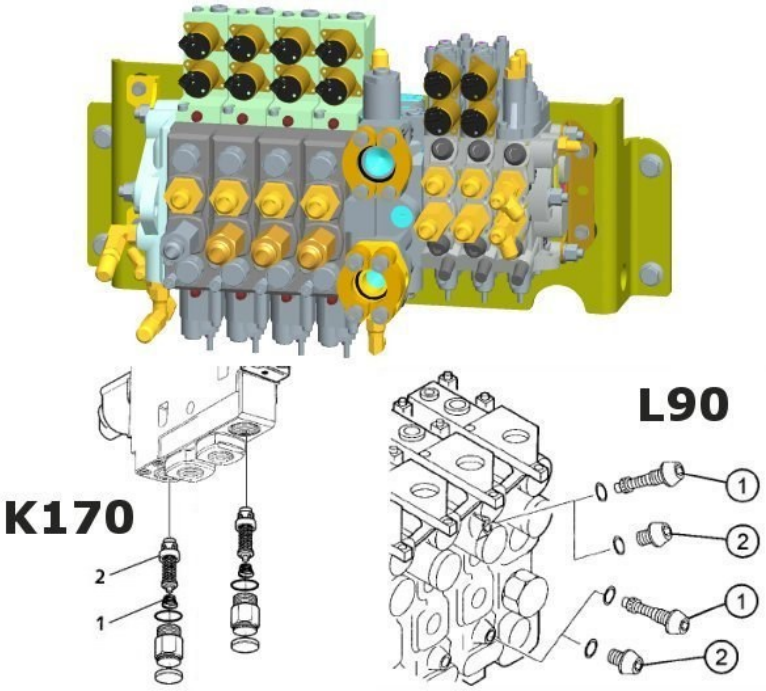
K170 valve section:

1. Open the relief valve plug and remove the spring (1) and cartridge (2).
2. Install the plug with gasket and tighten.
3. After stowing, install the spring and cartridge.

L90 valve section:

1. Remove the pressure relief valves (1).
2. Replace the valves by plugs (2) (F030959) with seals.
3. After stowing, insert the pressure relief valves again with their seals.

NOTE: *Secure all loose parts and the valve housing against dirt.*



Attachments

Declaration of Conformity template_en
810E_1010E_specs_en
1110E_1210E_specs_en
1510E_1910E_specs_en
Fixed_cabin_brochure_en
a03420_Forwarder_arm_silicon
UMP_1110E_1210E_1510E_FFC_EN
Nokian_Heavy_Tyres_Pressure_Handbook_John_Deere

1510E / 1910E technical data

6- and 8-wheel configurations

	1510E	1910E
LOAD RATING	15 metric tons / 16.5 short tons	19 metric tons / 20.9 short tons
DIESEL ENGINE	John Deere 6068 PowerTech™ Plus turbocharged, charge air cooled, 6 cylinders, 6.8l-displacement	John Deere 6090 PowerTech™ Plus turbocharged, charge air cooled, 6 cylinders, 9.0l-displacement
Max. Power	145 kW (1900 rpm) / 195 SAE hp	186 kW (1900 rpm) / 249 SAE hp
Torque	800 Nm @ 1300-1400 rpm / 590 lb.-ft.	1100 Nm @ 1400 rpm / 811 lb.-ft.
Fuel Tank Capacity	167 l / 44 gal. U.S.	184 l / 49 gal. U.S.
TRANSMISSION	Hydrostatic-mechanical, 2-speed gearbox	Hydrostatic-mechanical, 2-speed gearbox
Tractive Force	185 kN / 41,590 lb.	220 kN / 49,458 lb.
Travel Speed, Gear 1	0–7,5 km/h / 0–4.7 mph	0–7 km/h / 0–4.3 mph
Travel Speed, Gear 2	0–23 km/h / 0–4.3 mph	0–21 km/h / 0–13.1 mph
STEERING	Proportional frame steering with mini levers	Proportional frame steering with mini levers
Turning Angle	±42°	±42°
BRAKES	The service brakes are hydraulically actuated, oil-immersed, multi-disc brakes. The parking and emergency brakes are spring actuated. The frame brake is automated.	
AXLES/BOGIES	Heavy-duty Duraxle™ balanced bogie axles at the front and rear. Hydromechanical differential lock at the front and rear. 6-wheel models have rigid axles at the front.	
ELECTRIC SYSTEM		
Voltage	24 V	24 V
Batteries	2x145 Ah	2x149 Ah
Alternator	140 A (28 V)	140 A (28 V)
Lights	Halogen: 8 x Twin Power and 7 x Single Power; xenon lights optional	Halogen: 8 x Twin Power and 7 x Single Power; xenon lights optional
HYDRAULICS	Load sensing, power adjustable	Load sensing, power adjustable
Pump Capacity	140 cm^3 / 8.5 cu. in.	180 cm^3 / 8.5 cu. in.
Operating Pressure	24 MPa / 3480 psi	24 MPa / 3480 psi
Hydraulic Tank	161 liters / 42.5 gal. U.S.	185 liters / 49 gal. U.S.
BOOM	CF7	CF8
Max. Reach Lengths	7.2/8.5/10 m / 23.6/27.9/32.8 ft.	7.2/8.5 m / 23.6/27.9 ft.
Gross Lifting Torque	125 kNm / 92,195 lb.-ft.	151 kNm / 111,372 lb.-ft.
Slewing Torque	32 kNm / 23,602 lb.-ft.	41 kNm / 30,240 lb.-ft.
Slewing Angle	380°	380°
CABIN	Rotating, or rotating and leveling	Rotating, or rotating and leveling
Rotating Angle	290°	290°
Sideways Tilt	10°	10°
Forward and Backward Tilt	6°	6°
CONTROL SYSTEM	PC / Windows®-based TimberMatic™ F-09 or CommandCenter™	PC / Windows®-based TimberMatic™ F-09 or CommandCenter™

*Please note: Measurements are guidelines only and may vary depending on production tolerances. The manufacturer reserves the right to make changes.