CTL Forwarder
PIN: 1WJ1510G_ _D004721-

OPERATOR'S INSTRUCTIONS
John Deere 1510G
Tier 3

Rotating & Leveling Cabin

F723288 (11/2023) ENGLISH

Worldwide Construction
And Forestry Division

Published in Finland

Original Instructions

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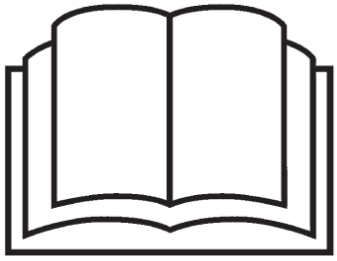


FOREWORD

These instructions describe the operation of your machine and provide you with information about the machine’s design and function, which is necessary in order to use and look after the machine in proper manner.

The information contained in these instructions will assist the operator to operate the machine in a safe and efficient manner. Make sure these instructions are always close at hand and available to all who work on the machine.

Should these instructions be lost or should those deteriorate to an unintelligible state, contact John Deere or your nearest John Deere dealer for a replacement. If you sell the machine, be sure to give these instructions to the new owners.

Continuing product improvement made by John Deere may result in changes to the machines which are not covered in these instructions. Should you need up-to-date information about your machine or should you have questions in regards to these instructions, please contact John Deere or your John Deere dealer.

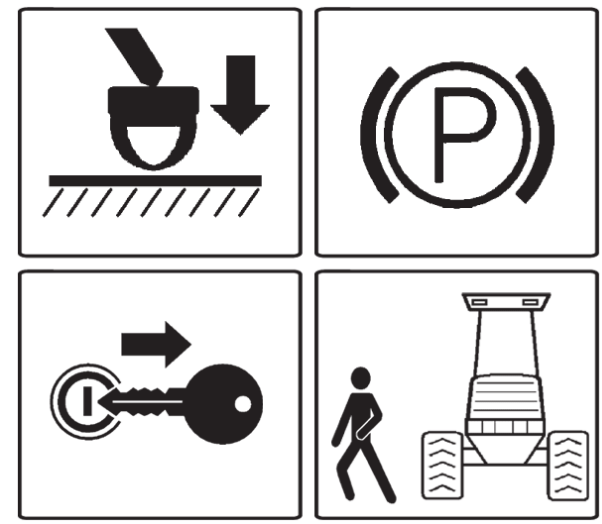
Only persons whose training has been approved by John Deere are permitted to operate John Deere machinery. Furthermore, the operator must have studied and understood the instructions.

Improper operation and maintenance of this machine can be hazardous and could result in serious injury or death. Therefore, it is of paramount importance that all the instructions given in these instructions and during training be followed when the machine is operated or serviced.

CALIFORNIA PROPOSITION 65 WARNING

Diesel engine exhaust, some of its constituents, along with certain machine components contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. In addition, certain fluids contained in the machine and certain products of component wear contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

PREVENT MACHINE RUNAWAY



⚠ CAUTION

The hydrostatic transmission must not be used as a parking brake. ALWAYS put the direction selector in neutral and apply the parking brake before leaving the cab.

When you stop working, even temporarily (for example while using the phone), lower the boom safely to the ground and engage the parking brake.

Never leave the machine unattended while the engine is running.

When parking the machine:

1. Lower all equipment to the ground
2. Apply the parking brake
3. Stop the engine and remove the key
4. Turn the main switch off if the machine is to stand still for a prolonged period of time (overnight, for example)

USE HANDHOLDS AND STEPS

Falling is one of the major causes of personal injury.

When you get on and off the machine, always maintain a three point contact with the steps and handrails, and face the machine. Do not use any controls as handholds.

Keep floors, steps, and running boards clean and free of oil, ice, mud, and loose objects.

Be careful of slippery conditions on platforms, steps, and handrails when leaving the machine. Never jump on or off the machine.

Repair or replace damaged steps, handrails and running boards.

STOP WORKING IF MACHINE GIVES AN ALARM

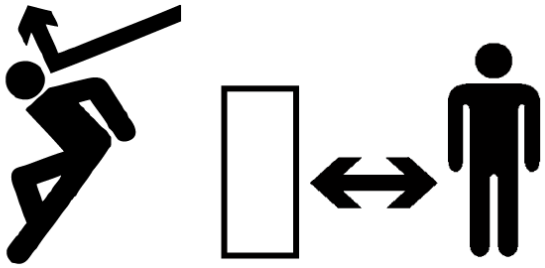
A warning alarm and warning lamp will be activated in the event of machine faults.

Never continue running a machine when the alarm has been given, unless you have checked the cause and taken necessary action.

KEEP DANGER ZONE CLEAR

⚠ CAUTION

Danger zone applies when the machine is in operation. The operator is personally responsible for maintaining this safety rule in the absence of the foreman.



Danger zone for harvesters is 90 meters (300 ft) and for forwarders and bundlers 20 meters (70 ft).

When the engine is running, allow no one in the danger zone of the machine.

Maintain a safe operating distance between the equipment and other personnel. Never swing the boom, attachment, or trees over the heads of bystanders.

Check that no-one is in the line of the blade during sawing. Should the saw chain break, fragments may fly off, causing a risk of accidents.

When you stop working, even temporarily, lower the boom and set the harvester head or grapple safely down so that it cannot move.

SUPPORT CABIN LEVELING SYSTEM

⚠ DANGER

The cabin must be locked with the locking devices when checking or repairing the cabin rotating and leveling system. In an event of a hydraulic hose failure the leveling cylinders are no longer pressurized and the cabin cylinder can fall down.

⚠ DANGER

Always support the cabin with proper lifting device and supports when replacing any components or hoses of the cabin leveling system.

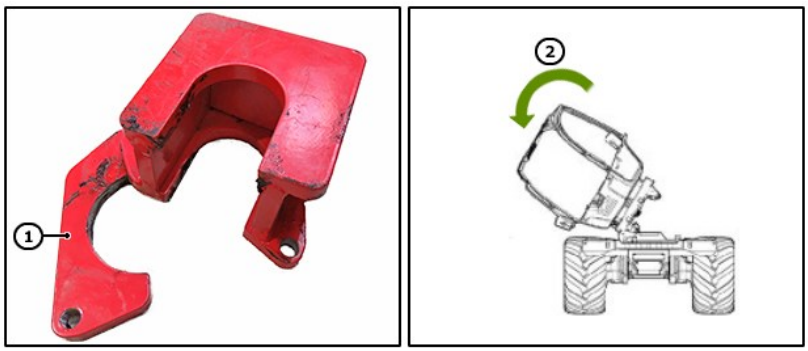
⚠ DANGER

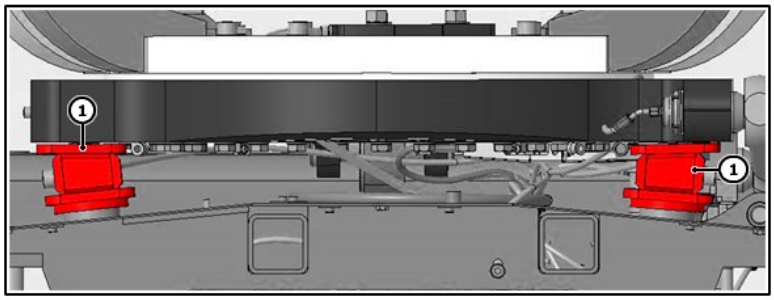
If the hydraulic system of the cabin leveling has air and the cabin platform is tilted, the cabin must be supported mechanically to prevent a runaway situation (2).

IMPORTANT: *Do not mix two different cabin leveling lock devices available for forwarders. The cabin leveling locking devices of harvesters are not suitable for forwarders.*

NOTE: *Type 1 of cabin leveling locking devices (1) are compatible with 910G, 1010G, 1110G, 1210G and 1510G forwarders. Type 2 are compatible with 1910G and 1910E.*

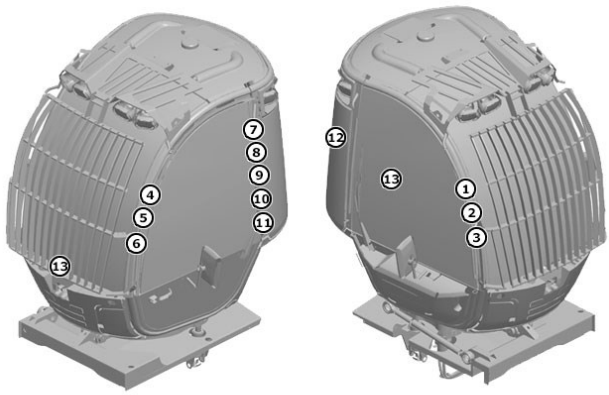
Cabin locking devices (1) are safety devices for locking the cabin leveling system. The cabin locking devices must also be used during transportation or storage.





CABIN NON-TEXT SAFETY DECALS

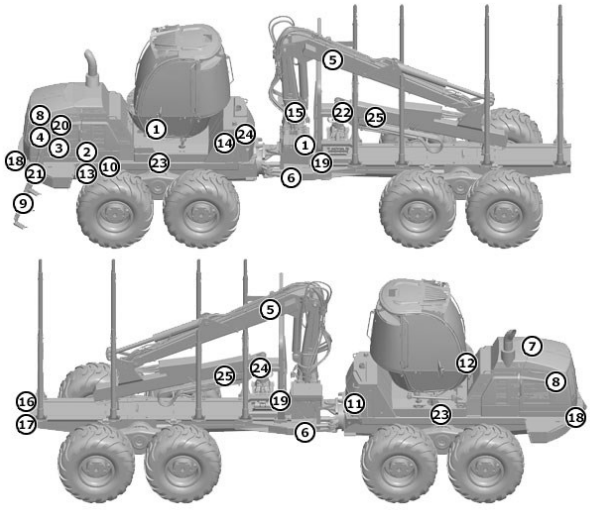
1. Do not stand on the platform and ladders (only forwarder)
2. Electrical power lines, keep clear
3. Danger area for forwarder / Danger area for harvester
4. Before leaving operator's seat
5. Do not overload (only forwarder)
6. Risk of chain shots (only harvester)
7. Use seat belt
8. No passengers
9. Keep doors closed and replace broken windows
10. Driving on ice covered waters
11. Read operators manual
12. Emergency exit
13. Boom control for forwarder / Boom control for harvester



IMPORTANT: *Keep safety decals clear and visible on the machine and replace missing or damaged safety decals. See Parts Catalogue for the correct safety decals placement on your machine.*

MACHINE NON-TEXT SAFETY DECALS

1. Fire extinguisher
2. Main switch
3. Hydraulic system, read technical manual
4. Air conditioner refrigerant (contains flourinated greenhouse gases), no maintenance
5. Danger above, ground the boom
6. Articulation area, keep clear
7. Hot coolant, open slowly
8. Exposed fan and belts, keep clear
9. Hydraulic stairs, stay clear
10. Crushing of upper body, attach support
11. Hydraulic oil filling
12. Wind shield washer
13. Battery disconnect
14. Diesel fuel
15. Boom pillar oil filling
16. Towing hook loads
17. Trailer loads
18. Ground decking blade
19. Movable headboard, stay clear
20. Air conditioner refrigerant information
21. Danger area for hydraulic fan
22. Use of lifting hook is prohibited
23. Crushing of body, stay safe distance
24. Fuel inlet, ultra low sulfur
25. Keep back 20M (70FT)



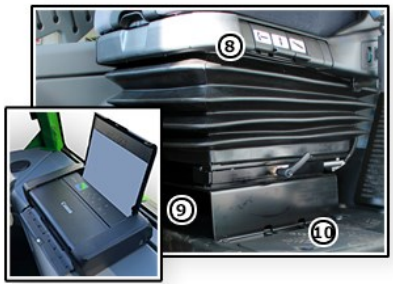
IMPORTANT: *Keep safety decals clear and visible on the machine and replace missing or damaged safety decals. See Parts Catalogue for correct safety decals placement on your machine.*

ROTATING AND LEVELING CABIN

The cabin can be equipped with optional equipment according to base machine and operator requirements.

1. Keyboard and mouse
2. HPC and integrated screen for control system
3. Radio (remote is attached to the right arm rest)
4. Right-hand side storage box (accessory switches and connectors)
5. Dashboard
6. Bracket for scaler calliper or boom weight scale
7. Food heater
8. Seat
9. Printer
10. Floor storage box
11. Fire extinguisher
12. Storage compartments

The first aid kit, preheater control panel and fire protection control panel are located on the cabin ceiling.



General safety instructions

- The progressive centralized lubrication system connected to the lubrication pump must always be secured with a safety valve.
- Incorrect use may result in bearing damage caused by poor or over-lubrication.
- Unauthorized modifications or changes to an installed system are not admissible. Any modification must be subject to prior consultation with the manufacturer of the lubrication system.
- Use only original spare parts.

Regulations for prevention of accidents

- Adhere to the regulations for prevention of accidents, which are effective in the country where the system is to be used.

Operation, repair and maintenance

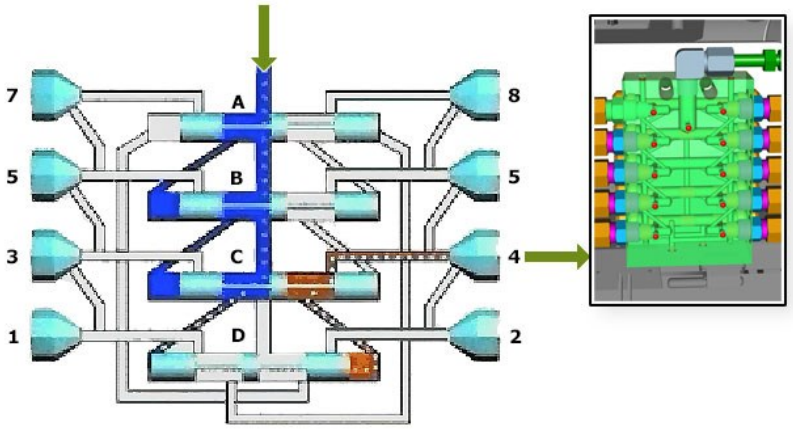
- Only authorized personnel familiar with centralized lubrication systems and trained in operation, repair and maintenance are allowed to maintain the central greasing system.

This is a brief owner manual only.

GREASE DISPENSER

Grease dispenser blocks operate fully automatically and distribute grease to the right locations. Grease supplied from a grease pump moves the grease spools inside a grease dispenser.

1. A grease cycle supplys grease to the right ports (8, 6, 4, 2).
2. When the last grease spool (D) moves to right, a grease passage to the right side of the first grease spool (A) opens.
3. The grease cycle begins to supply grease to the left ports (7, 5, 3, 1).
4. At the end of the cycle a grease passage to the left side of the first grease spool (A) opens.
5. A new cycle begins to supply grease to the right ports.

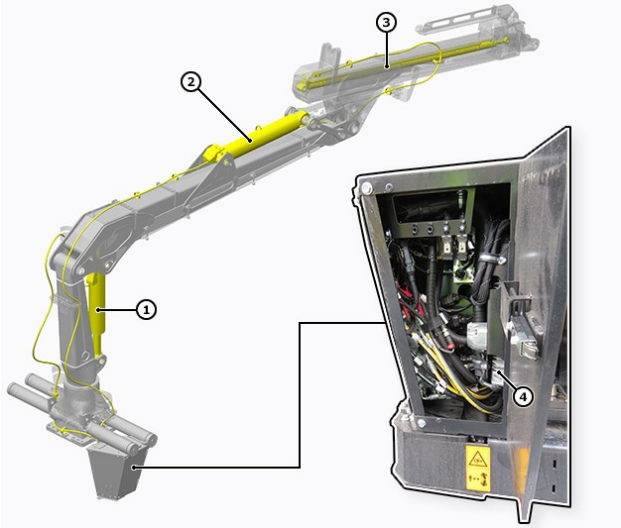


IBC SENSOR BUS

IBC system components:

1. Main boom cylinder
2. Jib boom cylinder
3. Extension boom cylinder
4. Rear MECA controller (RFC)

When operating the IBC system in G-model machines, cylinders with embedded sensoring (1,2,3) provide displacement data via CAN bus to the rear MECA controller (4). The IBC sensors are defined under CAN 3 "sensor bus" in the machine's control system. Rear MECA controller (RFC) processes sensor inputs from cylinders and compares this data through actuator algorithms along with inputs provided by the operator via joystick commands. As a result IBC system provides independent valve control commands to the boom valve. Control commands for the rotator and grapple are not affected by the IBC system.



temperature of minus 8° Celsius (17.5 F°) the flowability reduces at temperatures below 0 °C (32 °F).

Other pre-heater models (M10) can use biodiesel blends up to 10 %.

Heating mode at high altitudes – up to 3500 m

The combustion behaviour of the pre-heater changes with increasing altitude, due to the lower air density. The pre-heater has an automatic altitude detection device. The combustion ratio between fuel and air is adapted to the ambient conditions by reducing the fuel quantity.

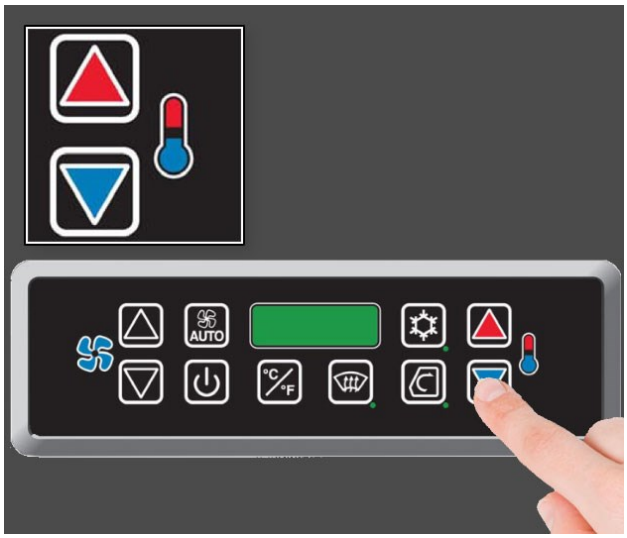
RIGHT KEYPAD IN FORWARDER

- (R02) Right side stake extension down / Valve Y211 (for single and dual clambunk)
- (R03) Right side stake extension up / Valve Y212 (for single and dual clambunk)
- (R04) Cabin rotation (R&L cabin) or electrical seat locking (Fixed cabin)
- (R05) Load space bending to left side (ALS) / Timbergate backward (VLS)
- (R06) Load space bending to right side (ALS) / Timbergate forward (VLS)
- (R07…R14) Assortment buttons
- (R15…R16) Decrease – increase
- (R17…R20 and R23…R28) Numeric buttons
- (R20) Diesel speed boost (*E-IT4*) / ADC boost (*G-model*)
- (R21) Registration
- (R22) Cruise control
- (R26) ADC mode 1 - ECO (*G-model*)
- (R27) ADC mode 2 - Normal (*G-model*)
- (R28) ADC mode 3 - Power (*G-model*)
- (R29) Regulable control for driving percentage (Regulable ECO)
- (R30) Decking blade up/down
- (R31) Drive direction
- (R32) Differential lock rear
- (R33) Differential lock front
- (R34) Decking blade floating
- (R35) High gear – low gear / Limited % driving (ECO drive) – normal drive
- (R60) Additional function button

NOTE: *Cabin manual rotation and levelling = R60 + Left joystick*

All these buttons do not exist in CommandCenter machines.

TEMPERATURE SETTING



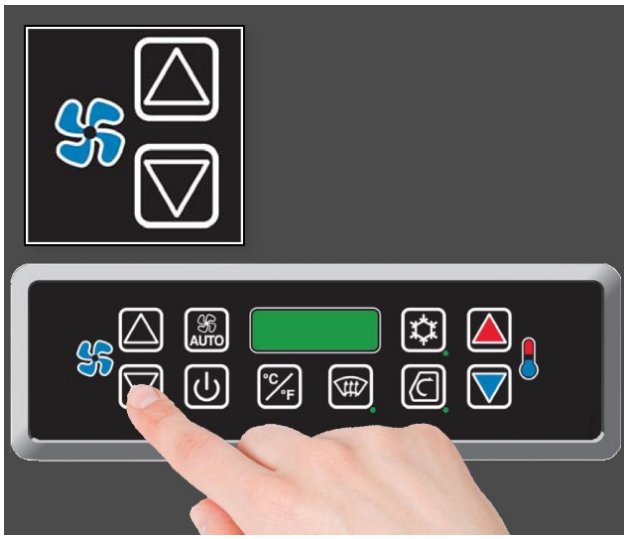
Adjust temperature set point by pressing red or blue arrow buttons.

Set point will be shown in the display. When the set point has been changed, it will take some minutes before the cab temperature reaches the set point level.

Temperature control is always automatic, except when temperature set point is 32°C (max. heating) or 16°C (max. cooling).

NOTE: *If temperature set point is changed or if ambient conditions change, the controller reacts by changing the temperature of the air which is blown to the cab. Therefore the air temperature at air vents can fluctuate. The driver can feel this fluctuation even if the cab temperature generally stays unchanged. It is recommended that the air vents are directed away from the driver.*

FAN CONTROL



The fan up and down keys overrides the automatic speed control (AUTO) feature. Increments fan speed up or down in 11 steps. The digital display indicates the fan speed setting as a percentage or “HI” when maximum fan speed is reached or “LO” when the minimum fan speed is reached. The speed setting will be shown for 5 seconds before returning to the set point temperature display. The point fan speed is maintained until it is changed or if the AUTO key is depressed.

IMPORTANT: *When the system has decreased the blower speed to minimum, the airflow will not be sufficient to remove fog from windows. In that case the blower speed should be increased manually. If conditions are such that the windows are fogging easily, then it is recommended to keep the blower continuously in manual mode and blower speed high enough.*

If the cab temperature differs from the set point temperature, the controller increases the blower speed and adjusts heating or cooling as required. When the set point temperature is reached, the blower speed will automatically decrease to minimum level.

NOTE: *The automatic mode affects only the blower speed, nothing else. The blower can be in manual mode continuously, while the temperature*

NOTE: *Some machines may require a computer reset prior to operation (after engine ignition).*

COLD WEATHER STARTING

NOTE: *When the temperature drops below 5°C (41°F) we strongly recommend that you use the pre-heating of the engine coolant 1/2 - 1 hour before starting the engine.*

⚠ CAUTION

Do not use starting fluid on engines equipped with glow plugs. Ether injector starting fluid is highly flammable and may explode, causing serious injury. Do not use starting fluid near fire, sparks, or flames. Do not incinerate or puncture a starting fluid container.

When the temperature is below 0°C (32°F) the engine is basically started as normally but:

Use the pre-heating of the engine intake air. Turn the ignition key to the RUN2 position and wait until glow indicator light located on dashboard goes out, then start the engine.

If the engine fails to start repeat the glow procedure before attempting to start again.

Once the engine has started you may, where necessary, press the accelerator pedal slightly to assure that the engine remains running. Do not exceed 1200 rpm.

AFTER STARTING

After starting, operate the engine for 1 - 2 minutes at approximately 1200 rpm with no load. Extend this period 2 - 4 minutes when operating at temperatures below freezing.

Operate the engine under a lighter load and at slower than normal speed for first 15 minutes after startup. DO NOT run engine at slow idle.

Avoid any unnecessary strain on the hydrostatic power transmission. Therefore, do not operate the engine at speeds beyond 1400 rpm before the hydraulic oil has warmed up. When the hydraulic oil is still cold, too high an engine speed results, among other things, in excessive pressure in the pumps and motors. This may inflict damage on shaft packing etc.

Do not idle engine more than 5 minutes (during brake-in period more than 2 minutes). Carbon deposits will appear in the engine and the lubrication of various components will not be efficient.

NOTE: *The engine meets emission standards with an exhaust gas recirculation system and a variable geometry turbocharger. Turbocharger rpm varies for an instant after starting, as the variable geometry turbocharger recycles. Also, the exhaust gas recirculation valve will cycle periodically with a momentary loss of engine rpm.*

NOTE: *When coolant temperature is above 113°C (235°F) engine will reduce power automatically. Unless temperature drops quickly, stop engine and determine cause before resuming operation.*

Stop engine immediately if there are any following signs of engine part failure:

- Sudden drop in oil pressure
- Abnormal coolant temperatures
- Unusual noise or vibration
- Sudden loss of power
- Excessive black exhaust
- Excessive fuel consumption
- Excessive oil consumption
- Fluid leaks

NOTE: *Never turn off the main switch while the engine is running (with the exception of a potential emergency).*

- 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.*

DECKING BLADE

Decking blade controls:

1. Decking blade up/down switch: The height adjustment of the blade is done by means of a rocker switch. The blade is hydraulically secured in the desired position as soon as the switch is released.
2. Decking plate floating on-off button: The blade can also be switched to a flotation mode. Flotation mode results that the blade is pressed downwards by its own mass only.
3. Proportional control: The height adjustment of the blade can also be done via proportional valve control by means of the machine's right-hand side joystick when the loader has been disengaged and the slow speed is on.

The system also involves a manual lowering valve which allows the operator to lower the blade to the ground when the engine is not running.

BOOM AND GRAPPLE

You can activate the boom using button "L18". The boom symbol appears on the display when active. The boom is disabled when the high gear is on or when the parking brake is on.

When using the boom, enable the working rpm using button "L20". The working rpm symbol appears on the display when connected.

It is also possible to drive the machine while operating the boom.

First operate the boom smoothly without load in order to allow the grease to warm up and form a coherent lubrication film in the boom joints.

NOTE: *After cold start warm-up the hydraulics before operating the boom. Follow the instructions on Warming up work hydraulics chapter.*

WARMING UP WORK HYDRAULICS

Warm up the work hydraulics before operating the machine, if the temperature of hydraulic fluid is below 0°C (32°F).

Follow the instructions for proper warm up:

BATTERIES AND BATTERY CHARGER

Since the weight scale system uses a spare battery system, two batteries are supplied together with the system. Secondary battery can be charged while primary battery is in use.

Indicator lights in the battery charger:

- GREEN (A) = READY; charging is complete but the battery is still connected to the charger (light goes out when the battery is removed).
- YELLOW (B) + GREEN (A) = CHARGE; charging is in progress.
- RED (C) = FAULT; battery is faulty (does not receive current) or the overcharge timer has disconnected the charging process.

NOTE: *Charging time for the battery from empty to full is approx. 6 hours.*

Tutorial video

Boom weight scale battery changing tutorial video

Tutorial video is in Finnish and subtitles are available for English. Use QR code or direct web link to view to video - https://johndeere.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=060a74ee-a929-46a4-8d17-ad33006a96dc

AFTER USING THE BOOM

1. Carry out the final movements unloaded
2. Lower the boom (and also the center of gravity) onto the load, as far down as possible.
3. Close the grapple around the load or frame in order to prevent the loader from moving sideways.
4. Never leave the boom unsupported by relying on the hydraulic system alone.
5. When you drive the machine from one place to another, make sure that the boom does not make any sudden movements.

the otherwise recommended service interval.

Oil and filter service intervals are based on a combination of type of engine oil and filter used, and sulfur content of the diesel fuel.

Diesel fuel sulfur level will affect engine oil and filter service intervals. Higher fuel sulfur levels reduce oil and filter service intervals as shown in the table:

	Tier 3 /Stage III A	Tier 2 / Stage II
Use of diesel fuel with sulfur content less than	1000 mg/kg (1000 ppm) is RECOMMENDED	2000 mg/kg (2000 ppm) is RECOMMENDED
Use of diesel fuel with sulfur content	1000—2000 mg/kg (1000—2000 ppm) REDUCES the oil and filter service interval	2000—5000 mg/kg (2000—5000 ppm) REDUCES the oil and filter service interval
BEFORE using diesel fuel with sulfur content greater than	2000 mg/kg (2000 ppm), contact your John Deere dealer or qualified service provider	5000 mg/kg (5000 ppm), contact your John Deere dealer or qualified service provider
DO NOT use diesel fuel with sulfur content greater than 10 000 mg/kg (10 000 ppm)		

NOTE: *The 500 hour extended oil and filter change interval is allowed only if ALL the following conditions are met:*

- Engine equipped with an extended drain interval oil pan
- Use of diesel fuel with RECOMMENDED sulfur content
- Use of John Deere Plus-50™ II or John Deere Plus-50™ oil
- Use of an approved John Deere oil filter

Refer to the charts on the following pages to find the proper oil and filter service interval for your engine.

Oil	Fuel sulphur content	Interval
John Deere Plus-50™	Less than RECOMMENDED	500h
	REDUCED	250h
Other oils	RECOMMENDED	250h
	REDUCED	125h

IMPORTANT: *Reduce oil and filter service intervals by 50% when using biodiesel blends greater than B20. Oil analysis may allow longer service intervals.*

Oil analysis may extend the service interval of “Other Oils” and REDUCED, to a maximum not to exceed the interval for Plus-50 Oils. Oil analysis means taking a series of oil samples at 125-hour increments beyond the normal service interval until either the data indicates the end of useful oil life or the maximum service interval of John Deere Plus-50 oils is reached.

DIESEL ENGINE BREAK-IN OIL

New engines are filled at the factory with either John Deere Break-In™ or John Deere Break-In Plus™ Engine Oil. During the break-in period, add John Deere Break-In™ or Break-In Plus™ Engine Oil, respectively, as needed to maintain the specified oil level.

Operate the engine under various conditions, particularly heavy loads with minimal idling, to help seat engine components properly.

TRICKLE CHARGING

Trickle charging is done to keep the battery voltage high enough to prevent sulfation. Sulfation begins when the machine is parked for several days and the battery voltage drops below 24.8 V.

⚠ CAUTION

Sulfation can cause serious damage to the battery capacity. Damaged batteries can prevent starting the engine. If sulfation continues for a long period of time, the battery can become permanently damaged.

IMPORTANT: *Make sure to use a trickle charger compatible with your machine. If you need help, contact an authorized John Deere dealer.*

NOTE: *Make sure to protect the trickle charger against weather conditions.*

⚠ CAUTION

The X65 connector (A, B, C, D) cannot be used to connect the trickle charger, if the main switch is OFF. The main switch must be OFF, if your machine has the fire extinguisher system and you keep the automatic fire extinguishing active during parking. In this case, connect the trickle charger to the battery directly. First connect the positive terminal and then negative terminal. Make sure that you connect the charger to the battery correctly.

Attach the trickle charger to the machine according to the instructions given by the charger manufacturer. In the pictures, a magnetic rack is used to attach the trickle charger to the machine frame.

To connect the trickle charger through the X65 connector:

1. Make sure that the main switch is in the ON position.
2. Connect the trickle charger to the X65 connector.
   A. 1270G, 1470G
   B. 1070G, 1170G
   C. 1110G, 1210G, 1510G, 1910G
   D. 910G, 1010G
3. Plug the charger in.
4. Make sure that there is a connection between the trickle charger and the battery.

NOTE: *Make sure that the charger wire does not get stuck under the harvester engine hood.*

IMPORTANT: *Disconnect the trickle charger connector before you start the engine.*

G-SERIES FORWARDER CAN ARCHITECTURE

Components and lines in G-model forwarders:

1. ECU (engine control unit)
2. CAB (cabin controller)
3. FFC (front forwarder controller)
4. RFC (rear forwarder controller)
5. MTG (Modular Telematics Gateway)
6. ACL (left arm rest controller)
7. SSC (secondary steering controller)
8. ACR (right arm rest controller)
9. PC
10. Machine stability sensor
11. IBC (Intelligent Boom Control)

    NOTE: *IBC is NOT available with Command Center setup.*

12. Diagnostic connector

In Command Center machines, the PC (9) will be replaced with following components:

13. VTC (virtual terminal controller)
14. DTI (Command Center display)

- Green = base machine bus, trunk bus, CAN 1
- Purple = drivetrain bus, CAN 2
- Blue = sensor bus, CAN 3
- Black = seat bus, CAN 2
- Orange = Ethernet
- Cyan = DTI bus

NOTE: *Exact locations for the new major components are listed under the respective machine's electrical system section.*

CAN buses

The forwarder trunk bus establishes the connection to all three MECA controllers: FFC, RFC and CAB. The machine's PC is also directly connected to the main bus. The trunk bus provides high speeds of up to 500 kbit/s.

The drivetrain bus acts as a CAN 2 bus by connecting FFC with a secondary CAN to the ECU and MTG.

The diagnostic connector in between the trunk bus and drivetrain bus can be used to diagnose both CAN buses.

Seat bus operates on CAN 2 bus of the CAB. Other sensor buses act as CAN 3 buses. IBC system which is connected to RFC CAN 3 bus is optional equipment.

ENGINE SENSORS 2/3

A. Crankshaft position sensor (B01)

Crankshaft position sensor is located at the front of the engine, near vibration damper.

Inductive type of pickup sensor that detects teeth on the crankshaft gear. The ECU uses the crank position input to determine engine speed and precise piston position in relation to the firing order.

B. Camshaft position sensor (B02)

Camshaft position sensor is located at the front left-side of the engine block and reads machined slots in the camshaft gear to provide the ECU with input regarding engine speed and precise piston position in relation to the firing order.

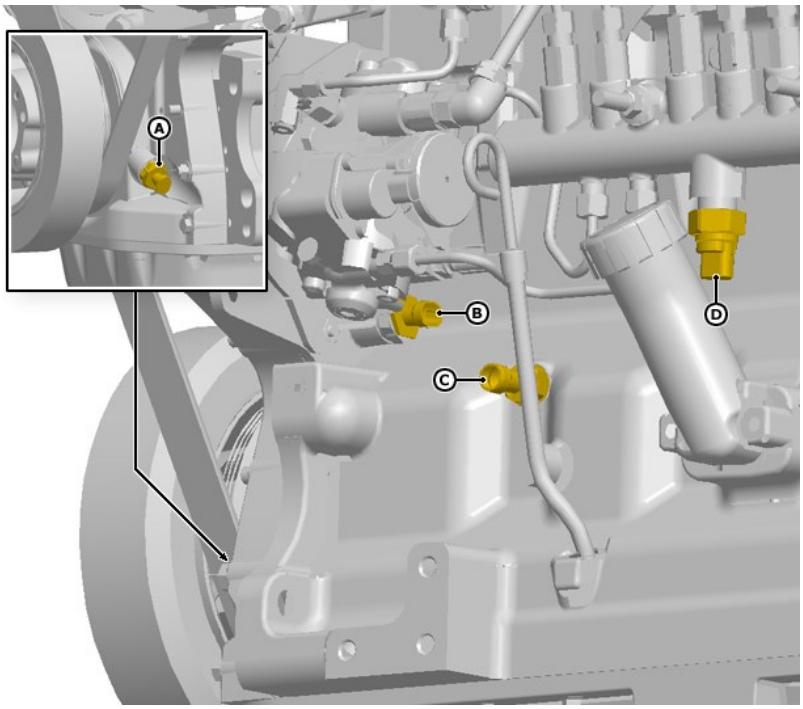
C. Oil pressure sensor (B014)

Oil pressure sensor is located on the cylinder block, left side of the engine. The ECU constantly monitors oil pressure and is a part of the engine protection system.

D. Common rail pressure sensor (B08)

Sensor is located on the common rail of the HPCR fuel system and measures fuel pressure in the high-pressure common rail.

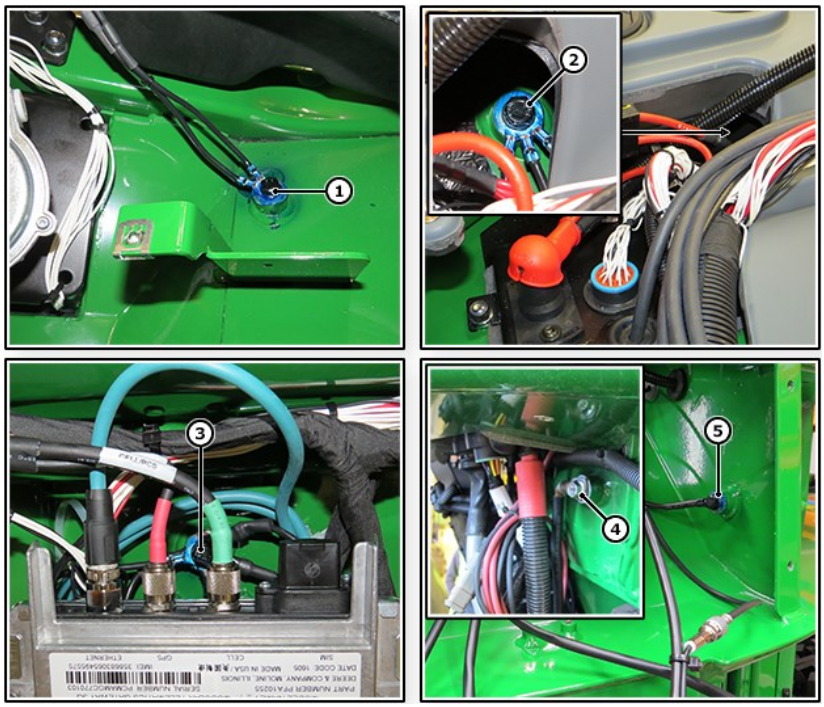
Depending on the pressure, the ECU adjusts the amount of fuel delivery for the desired performance. High pressure readings do not result in engine derate conditions because a manual pressure limiter located on the rail will lift to reduce pressure.



GROUNDING POINTS, R&L CABIN - GEN II

Redesigned R&L cabin (Gen II) contains following grounding points:

1. Front (underneath the front panel, next to the front wiper motor)
   - GND 1.1
   - GND 1.2
2. Rear (at the right rear corner of the cabin)
   - GND 2.1
   - GND 2.2
   - GND 2.3
   - GND 10
3. C-pillar (inside the C-pillar cover, underneath the MTG terminal)
   - GND 1
   - GND 2
   - GND 3
   - GND 4
   - GND 3.1
4. Outside (at the right rear corner of the cabin, next to the air conditioner unit)
   - GND 11
5. Roof (inside the cabin antenna cover box)
   - antenna grounding point



HYDRAULIC PRESSURE MEASUREMENTS

Correct hydraulic pressures are very important. Too low pressure values may reduce the productivity of the machine dramatically and too high pressure can lead to catastrophic component failures.

IMPORTANT: *Before starting pressure measurements, warm up the drive and work hydraulic oils to above 50 °C.*

NOTE: *When adjusting the pressure valves, it is recommended to screw adjustment screws first slightly over the desired pressure level and then adjust to the correct value.*

HYDRAULIC FAN PUMP PRESSURE (MANUAL)

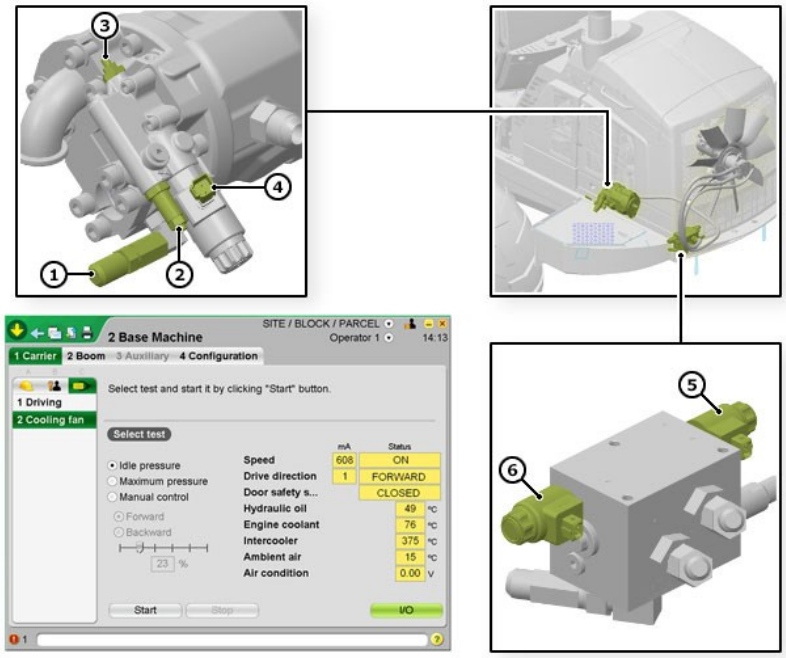
Hydraulic fan pump includes measurements for idle pressure, maximum pressure and pressure on maximum fan speed.

It is recommended to perform the fan pump pressure measurements using a test on TimberMatic™ page 2.1.C.2.

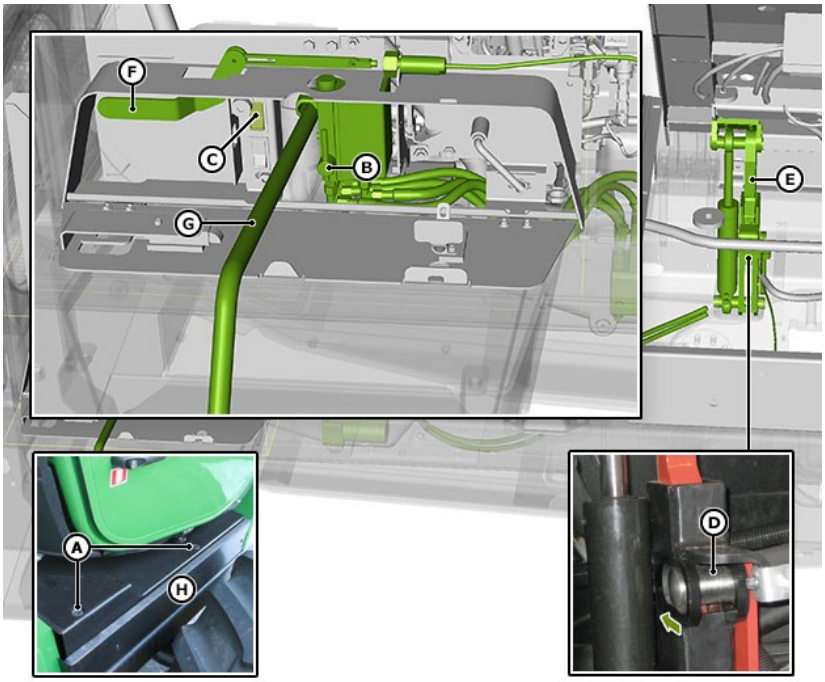
If TimberMatic™ and service laptop are unavailable, use following manual pressure measurement instructions:

Manual measurement

1. Ensure that the machine is in normal operating temperature.
2. Detach fan pump YF1 (4) connector from the fan pump and freewheeling YF2 (5) and reversing YF3 (6) connectors from the hydraulic fan valve.
3. Connect 24V from the machine's power outlet to the solenoids YF1 (4) and YF2 (5) with separate cables.
4. Connect a 40 MPa (5800 psi) gauge to the measuring point 263 (1).
5. Start the engine and read the standby pressure from the gauge. It should 2.2 MPa ± 0.5 MPa (319 ± 73 psi).
6. If necessary, adjust from the screw (2).
7. Detach the cable from the YF1 (4) and read the maximum pressure from the gauge. 28 ± 0.5 MPa (4061 ± 73 psi).
8. If necessary, adjust from the screw (3).



Purpose	Tool	Size
Cabin platform screws	Allen key	19 mm



CENTRAL GREASING SYSTEM MAINTENANCE

The Lincoln Industrial Quicklub automated lube system components are designed, engineered, manufactured, and assembled to the highest of quality standards. This lube system requires little or no maintenance, however, to ensure maximum reliability and to realize maximum service life of all components, it's highly recommended that a weekly walk-around inspection be performed.

Weekly walk-around inspection

The weekly walk-around inspection should include the following:

- Observe lubricant level in reservoir. Fill reservoir if it is low.
- Inspect high pressure relief at pump element, noting any lubricant build-up. If buildup is observed, correct this problem by determining cause of blockage.
- Inspect all valve and lube point connections to verify that no leaks are occurring. Inspect supply/feed lines to insure that no punctures or breaks have occurred since last inspection.
- Inspect lube points to insure that all lube points have a "fresh grease appearance".
- Check pump operation by depressing push-button located in base of pump for 2 seconds to initiate a manual lube event. This will verify that pump is working (Ignition switch must be on).
- Report or repair any problems found in this walk-around inspection immediately.

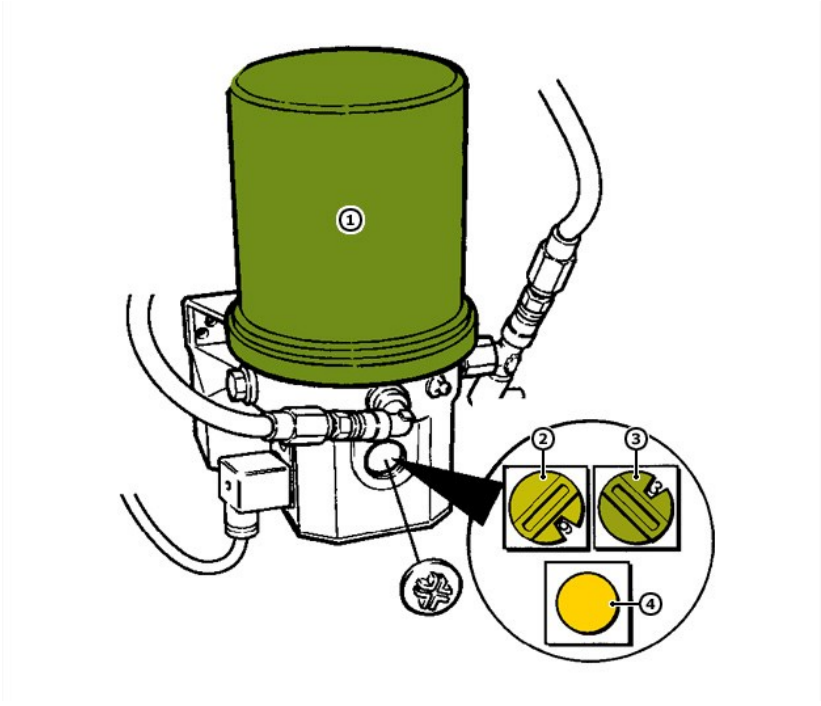
NOTE: *Operator to confirm operation of electric pump while machine is in service.*

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



BOOM WEIGHT SCALE MAINTENANCE

Every 50hours/weekly:

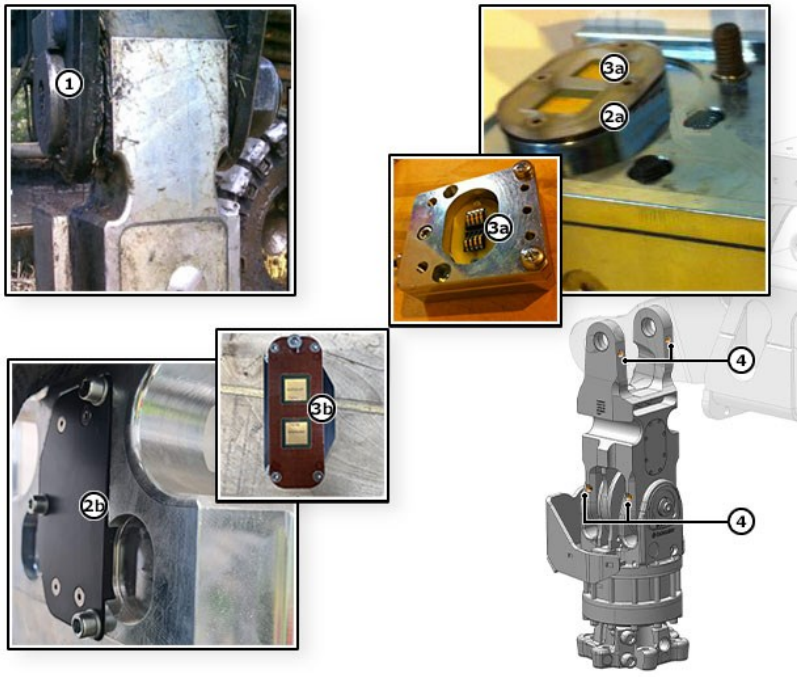
Grease the upper bolt (1) between the boom end and the scale unit. It must be properly greased and the bolt must not be too tight. If your machine is equipped with a boom with a Y-link, put grease on the greasing points (4) of the boom weight scale.

Check that the rubber seal (2a) around the battery contacts is correctly in place and not damaged. The seal protects the contacts from moisture and oxidation and thus ensures the problem-free operation. Do the same to the battery of the Y-link (2b), if it is equipped.

Clean the battery contacts when needed (3a) and remove possible oxidation accumulation. Do the same to the battery contacts (3b) of the Y-link, if it is equipped.

NOTE: *It is recommended to disconnect the scale from the machine when weighing is not needed for longer term. Doing this extends the scale life time and preserves the scale from unnecessary collisions.*

NOTE: *If the boom weight scale is not used, detach it from the boom. Also, remove the battery from the scale and install the protective plate on the scale where the battery was removed. Correct storing of the battery lengthens the battery life.*



CHECK TENSION OF DOUBLE EXTENSION BOOM CHAINS

NOTE: *Check separate instructions for double extension booms equipped with internal hosing (10m XI).*

IMPORTANT: *Read the safety instructions. See the separate safety section at the beginning of the instruction material.*

IMPORTANT: *It is important that the double extension boom chains are tightened correctly. If the chains are too tight, they can break and if they are too loose, they can scratch the surface of the boom.*

NOTE: *If possible, have 2 persons to adjust the chain tension so that one can operate the boom and the other can adjust the chain.*

The double extension boom has two chains, extract chain (A) and retract chain (B).

To check and adjust the tension of the chain:

1. Operate the boom extensions to the outermost position. When the boom extensions are in their outermost positions, operate the second extension inwards for 1 to 2 cm.
2. Push the chain (C) upwards at the middle of the chain with your hand. Make sure that you are able to move the chain for about 2-4 cm.
   - If the movement is less than 2 cm, the chain is too tight.
   - If the movement is more than 4 cm the chain is too loose.
3. If the chain is too tight or too loose, adjust the chains. See separate instructions.

CHECK HUB GEAR OIL LEVEL

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

1. Position the wheel end so that the drain port is on the horizontal centerline of the axle.
2. Remove the drain plug. The oil level must be up to the drain port.
3. If necessary, add oil through the fill port.
4. Install the drain plug.

NOTE: *Every time you remove a plug for servicing, replace the copper washer/o-ring.*

A. Drain plug
B. Fill plug

Usage	Tool	Size
Hub gear oil plug	Allen key	10 mm

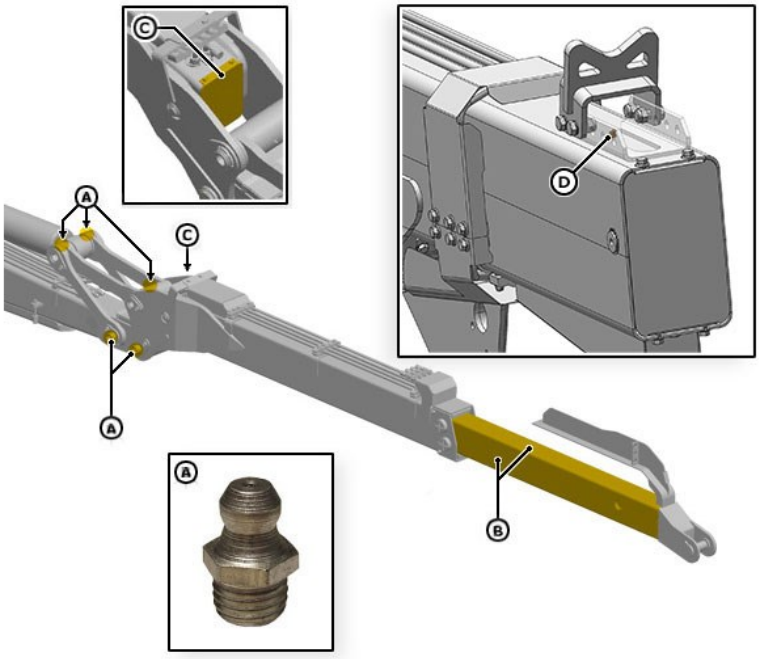
GREASE THE BOOM (SINGLE EXTENSION) 2/2

1. Grease the upper bearing of the jib cylinder, the jib boom rocker bearings via the 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.
4. Lubrication of inner surfaces of XE booms is done through a grease fitting (D).

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
D. Grease fitting for XE boom inner surfaces

Purpose	Tool	Size
Jib boom end plate	Ring spanner	13 mm



CHECK CABIN FRESH-AIR FILTERS

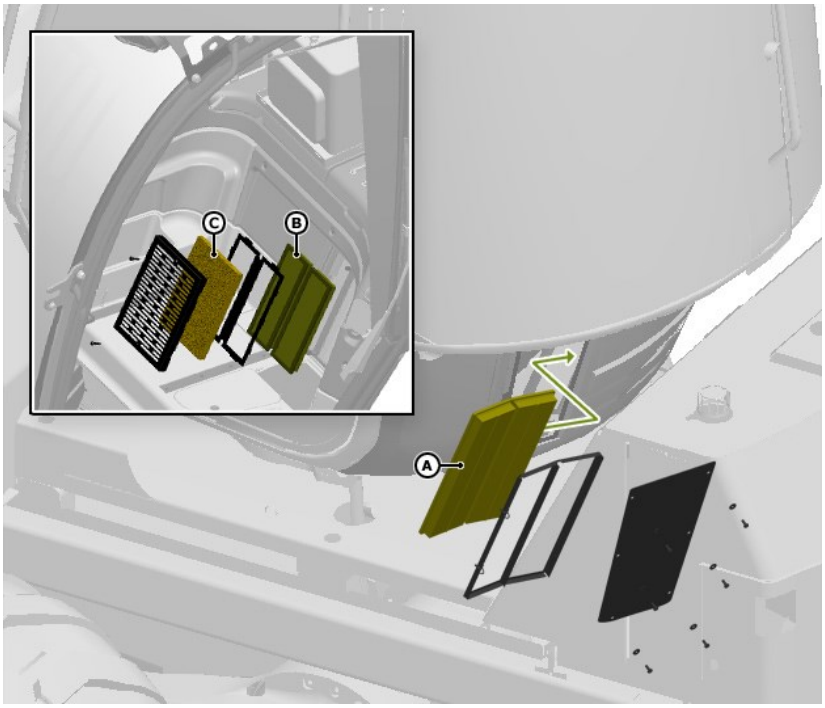
NOTE: *Check every 250 hours when working in extremely dusty conditions and replace if required.*

Fresh air paper filters (A) are located under a cover in the back of the cabin. Filter elements can be accessed from outside. Inspect and clean filters with compressed air or replace them as required.

Check re-circulation air filters (B) and clean or replace them if necessary. They are found under a cover plate inside the cabin.

Clean also coarse filter (C) located in front of the re-circulation air filters.

Usage	Tool	Size
Filter cover plates	Torx key	T30



CHECK COOLING SYSTEM

⚠ WARNING

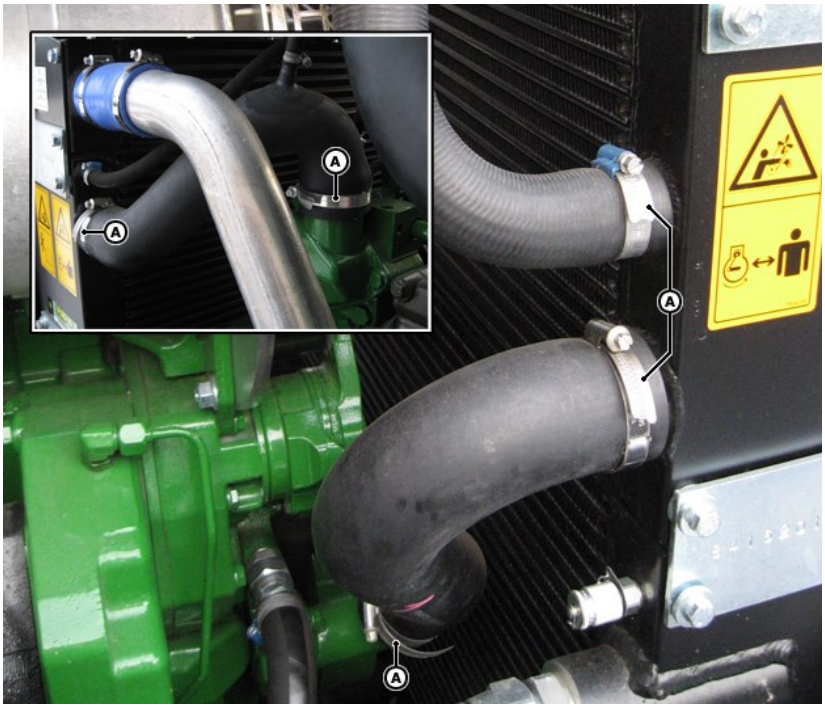
Explosive release of fluids from pressurized cooling system can cause serious burns. Shut off engine and let the cooling system pressure even for a while. Slowly loosen the expansion tank to relieve pressure before removing completely.

1. Check entire cooling system for leaks. Tighten clamps as necessary.
2. Thoroughly inspect all cooling system hoses. Replace hoses when hard, flimsy, or cracked.
3. Visually Inspecting Coolant Pump. Inspect weep hole (B) for oil or coolant leakage.

   NOTE: *Oil leakage indicates a damaged rear seal. Coolant leakage indicates a damaged front seal.*

   NOTE: *Replace complete coolant pump assembly if leakageis detected. A slight weeping of oil or coolant isnormal. If enough oil or coolant leaks from the weephole that it drips from the engine, the coolant pumpassembly should be replaced. Individual repair partsare not available.*

A. Cooling system hose clamps
B. Cooling pump weep hole



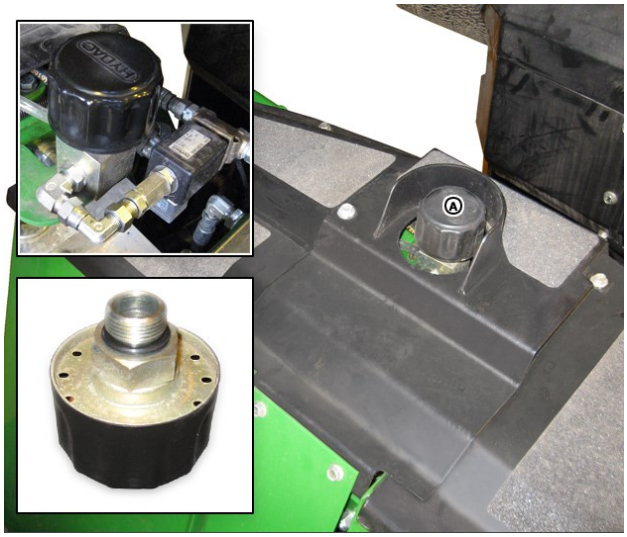
the cover and screw the fastening bolts in. The spring serves to secure the filter joint, thus ensuring that no oil can bypass the filter.

A. Hydraulic tank cover plates
B. Return filter cover
C. Off-line filter cover (optional equipment)
D. Filter canister
E. Filter element

Purpose	Tool	Size
Hydraulic tank cover plate fastening screw	Ring spanner/socket wrench	13 mm
Hydraulic tank filter cover fastening screw	Ring spanner/socket wrench	17 mm
Hose on offline filter cover	Ring spanner	19 mm

REPLACE HYDRAULIC TANK BREATHER/DRYER

The hydraulic tank breather or dryer 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

CLEAN ROTATOR MAGNETIC PLUG

NOTE: *If rotator is equipped with a 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 DIFFERENTIAL OIL

IMPORTANT: *Before changing the oil, allow the machine to stand still for at least 30 minutes to make sure that all impurities in the oil sink to the bottom. Change the oil while it is still warm.*

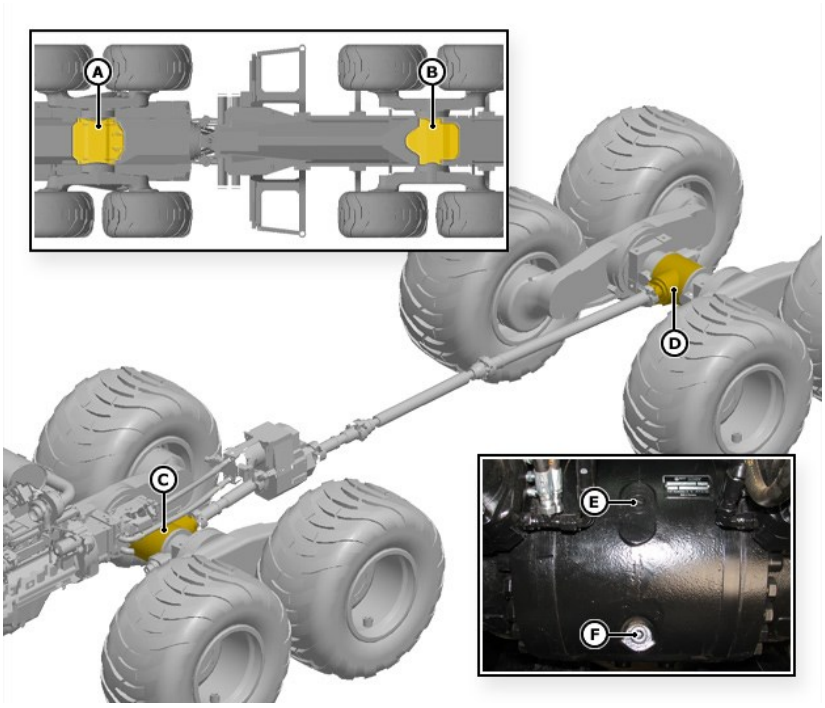
NOTE: *To even the pressure in the oil space, open the filler plug before opening the drain plug.*

Change differential oil as follows:

1. Open the differential access covers.
2. Clean the surrounding area of drain and filler plugs. Open the filler plug.
3. Open the drain plug. Drain the oil off completely into a suitable container. Clean the drain plug. Close and tighten the drain plug.
4. Refill the differential with oil through the filler plug, until there is oil up to the level of the filler plug opening. Close the filler plug.
5. Close the differential access covers.

A. Front frame differential access cover
B. Rear frame differential access cover
C. Front differential
D. Rear differential
E. Filler plug
F. Drain plug

Purpose	Tool	Size
Differential access covers	Allen key	14 mm
Differential drain plug	Allen key	10 mm / 17 mm
Differential filler plug	Allen key	17 mm



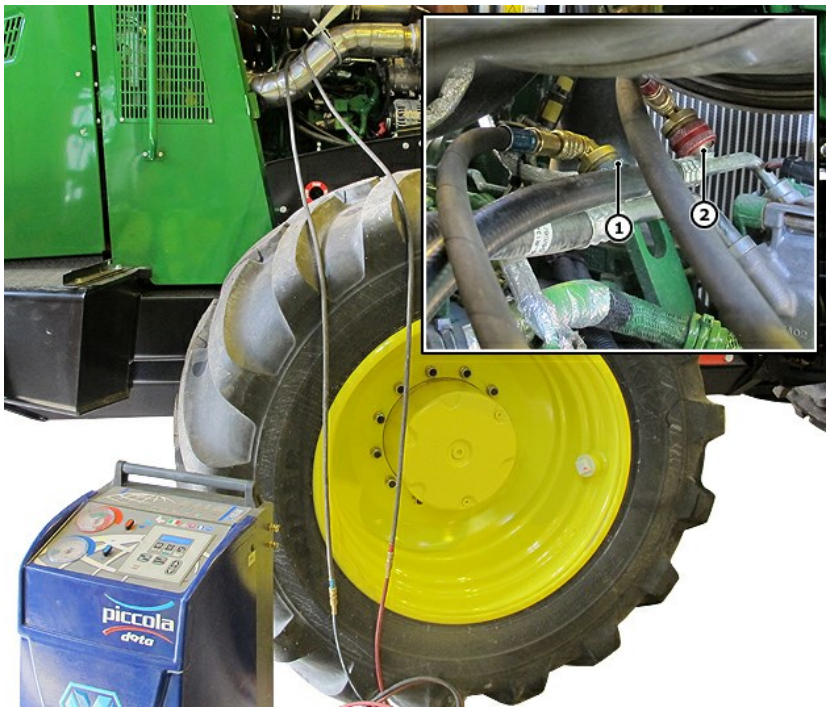
Step 2

Turn the cabin into service position before switching off the engine. In a forwarder, the cabin is turned sideways to the chassis.

Step 3

Empty the air conditioner refrigerant. Connect the service unit hoses into service connections (1) and (2).

NOTE: *Refrigerant removal can be facilitated by running the air conditioner unit at full power approximately 15 minutes before switching off the machine, weather permitting.*



ADJUST TENSION OF DOUBLE EXTENSION BOOM CHAINS

NOTE: *Check separate instructions for double extension booms equipped with internal hosing (10m XI).*

IMPORTANT: *Read the safety instructions. See the separate safety section at the beginning of the instruction material.*

IMPORTANT: *It is important that the double extension boom chains are tightened correctly. If the chains are too tight, they can break and if they are too loose, they can scratch the surface of the boom.*

NOTE: *If possible, have 2 persons to adjust the chain tension so that one can operate the boom and the other can adjust the chain.*

The double extension boom has two chains, extract chain (A) and retract chain (B).

To check and adjust the tension of the chain:

1. Operate the boom extensions to the outermost position. When the boom extensions are in their outermost positions, operate the second extension inwards for 1 to 2 cm.
2. Push the chain (C) upwards at the middle of the chain with your hand. Make sure that you are able to move the chain for about 2-4 cm.
   - If the movement is less than 2 cm, the chain is too tight.
   - If the movement is more than 4 cm the chain is too loose.
3. If the chain is too tight or too loose, adjust the chains.

   NOTE: *When adjusting the chains, keep an eye on the gap (D) between the first and second extension boom. The width of the gap must be about 1-2 cm.*

4. Operate the boom extensions to the innermost position.
5. If necessary, remove the plate (E) under the jib boom by removing the 4 screws to get an access to the lower adjustment nut.
6. Adjust the extract chain at the adjustment nut (F) and the retract chain at the adjustment nut (G).
   - If the gap (D) between the first and second extension boom is less than 1 cm, tighten the upper chain (A) and loosen the lower chain (B).
   - If the gap (D) between the first and second extension boom is more than 2 cm, loosen the upper chain (A) and tighten the lower chain (B).
   - Turn the adjustment nuts 1 or 2 turns at a time, and before adjusting more, check the chain tension by repeating steps 1-3.
7. When the adjustment of the chains is complete, move the boom and operate the extensions in and out to make sure that the boom and extensions function normally.

Usage	Tool	Size
Plate under the jib boom	Ring spanner	19 mm
Chain adjustment nut	Ring spanner	30 mm

RELEASE PARKING BRAKE CYLINDERS

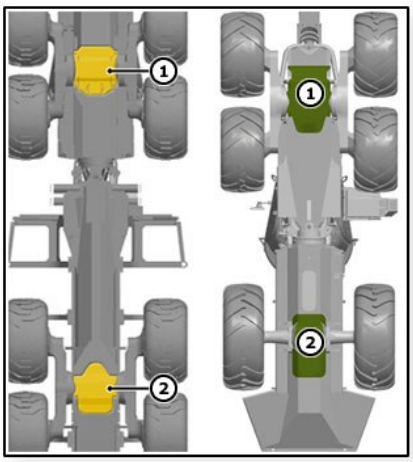
IMPORTANT: *Before maintenance, park the machine on flat, level surface and lower the boom to the ground. Engage the parking brake, stop the engine, install the frame steering lock bar and turn the main switch off.*

1. Open the access covers under the front (1) and rear axle (2).
2. Remove the aluminum cap (3) at the end of the brake cylinder.
3. Screw in the release screw (4) to hand tight, put on the washer (5) and tighten the locking nut (6) to release the brake cylinder.

   NOTE: *Parts 4 to 6 are stored under the aluminum cap (4).*

4. Screw the aluminum cap and tighten to maximum 30Nm.
5. Repeat the procedure for each brake cylinder.
6. After towing, the release screws must be removed from the threads and stored under the aluminum cap as they were (7).

There are four brake cylinders in all. Two of these are for the front axle and two for the rear axle.



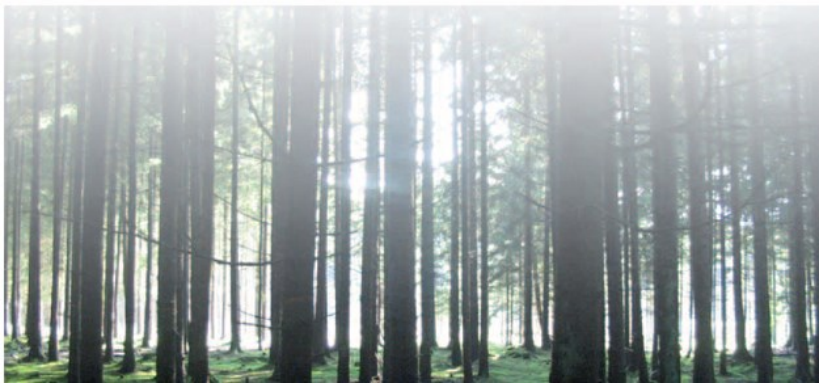
ENVIRONMENT, RECYCLING AND POST-USE

Just like agriculture and silviculture, industry and traffic, forestry machines also leave their mark on the environment – in the forest and in the atmosphere. John Deere does its best to minimize the environmental impact of its forestry machines at all life cycle stages – without compromising other demands like productivity and operational reliability.

The life cycle of a forestry machine is divided into five phases: production of materials, manufacturing of the machine, usage of the machine, maintenance and repairs, and the post-use disposal. Forestry machines cause various environmental impacts during each life cycle phase. Emissions are highest during the usage phase (approx. 90% of total emissions). Carefully thought out technical solutions, material choices and designs, instructions and training reduce the environmental impacts caused by the manufacturing, operating and final disposal of forestry machines.

A product's recyclability is measured in terms of its recyclability rate. The recyclability rate of a forestry machine is determined by comparing the weight of the materials to be recycled to the total weight of the machine. John Deere's forestry machines have a recyclability rate over 90%.

NOTE: *Consult your local dealer in post-use and recyclability issues.*



Attachment

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