ORIGINAL INSTRUCTIONS *- according to Directive 2006/42/EC, Annex I, 1.7.4.1*

821F
921F
Stage IV
Wheel Loader

OPERATOR'S MANUAL

Part number 47920004
1st edition English
October 2016

CASE CONSTRUCTION

Electro-Magnetic Compatibility (EMC)

This machine complies strictly with the European Regulations on the electro-magnetic emissions. However, interference may arise as a result of add-on equipment which may not necessarily meet the required standards. As such interference can result in serious malfunction of the unit and/or create unsafe situations, you must observe the following:

- Ensure that each piece of non- CASE equipment fitted to the machine bears the CE mark.
- The maximum power of emission equipment (radio, telephones, etc.) must not exceed the limits imposed by the national authorities of the country where you use the machine.
- The electromagnetic field generated by the add on system should not exceed **100 V/m** at any time and at any location in the proximity of electronic components.

Failure to comply with these rules will render the CASE CONSTRUCTION warranty null and void.

Declaration of conformity

The following page provides a facsimile copy of the “EC” Declaration of Conformity. The EC Declaration of Conformity is the manufacturer’s declaration about machine compliance to relevant EU provisions. Please keep the original document in a safe place. Local authorities may require you to show this document in order to assure compliance of your machine.

Translation of this declaration in your own country language is provided on the reverse page of the original document.

For your better and easier understanding of the document
hereafter you’ll find some explanatory notes.

1. Under section 1.2 are listed those options or variants which have safety related functions. Some of them are standard provided, like FOPS or ROPS.
2. Under point **(2)** are listed all information required by EU "Outdoor Noise" Directive **2000/14/EC**. Please refer your own original EC Declaration of Conformity for specific machine information.
3. Generic serial number for this machine type. Sequence of letters and numbers may vary depending on machine configuration.
4. EC Declaration of Conformity serial number. Please make reference to this number when requiring information or support about declaration.
5. Signature of a person authorized to sign the document on behalf of the company.

Burn prevention

⚠ WARNING

Battery acid causes burns. Batteries contain sulfuric acid.
Battery electrolyte contains sulfuric acid. Contact with skin and eyes could result in severe irritation and burns. Always wear splash-proof goggles and protective clothing (gloves and aprons). Wash hands after handling.
Failure to comply could result in death or serious injury.

W0120A

⚠ CAUTION

Burn hazard!
Hot coolant can spray out if you remove the filler cap while the system is hot. After the system has cooled, turn the filler cap to the first notch and wait for all pressure to release before proceeding.
Failure to comply could result in minor or moderate injury.

C0043A

⚠ CAUTION

Burn hazard!
The engine and exhaust system become hot during operation. To prevent burns, open the engine compartment and allow the components to cool to a comfortable touch temperature before you work inside the engine compartment.
Failure to comply could result in minor or moderate injury.

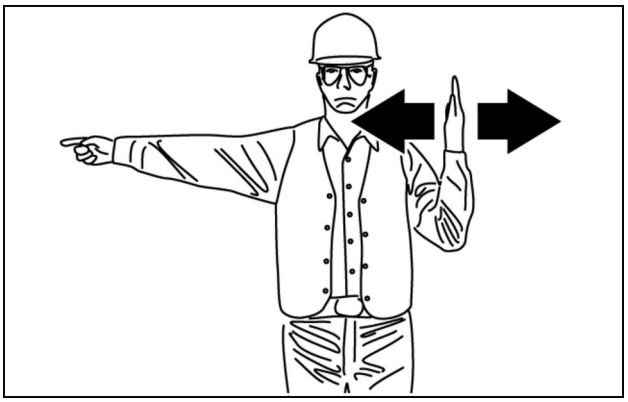
C0178A

- When the battery electrolyte is frozen, the battery can explode if you try to charge the battery or if you try to boost start and run the engine. To prevent the battery electrolyte from freezing, try to keep the battery at full charge. If you do not follow these instructions, you or others in the area can be injured.
- Hot coolant can spray out if the cooling system cap is removed. To remove the cap, let the cooling system cool, turn to the first notch, wait until the pressure is released, then remove the cooling system tank cap.
- Hot surfaces within the engine compartment can cause burns: the engine and the exhaust system will be very hot. To prevent burns, open the engine compartment and allow components to cool to comfortable touch temperature before working inside the engine compartment.

Lower load or tool slowly

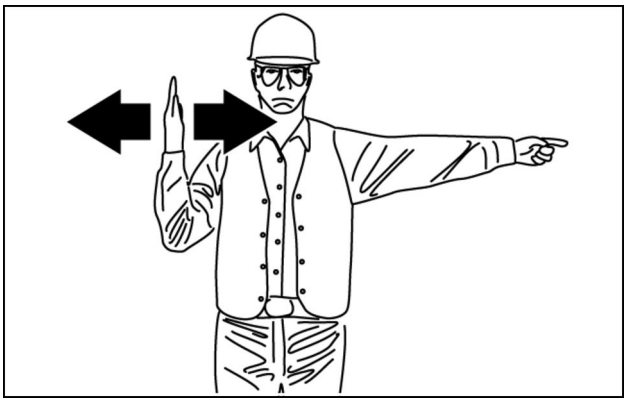
LEEN11T0016AA 12

Turn machine left swing load left
To stop movement, stop moving hand and make a fist.



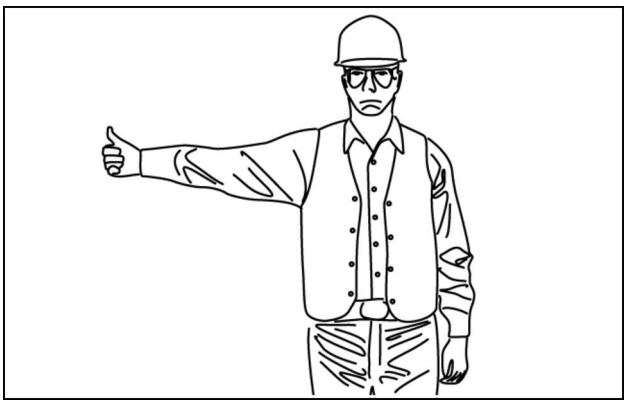
LEEN11T0017AA 13

Turn machine right swing load right
To stop movement, stop moving hand and make a fist



LEEN11T0018AA 14

Raise boom



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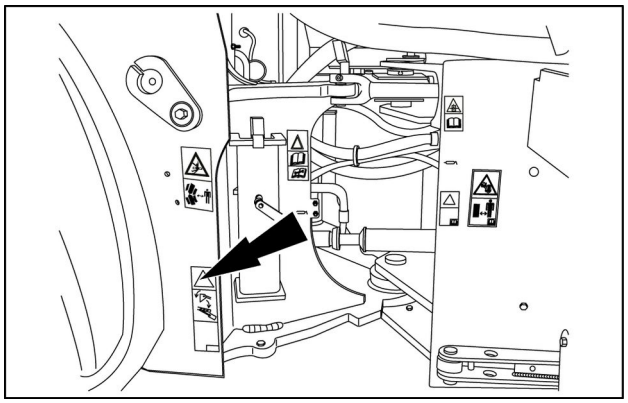
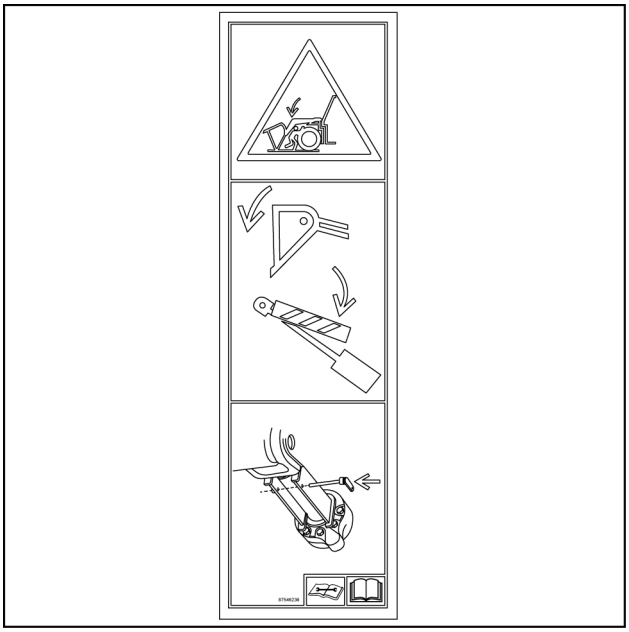


LEIL15WHL0078AA 15

Location: left-hand side of the machine. See **2-12** in this manual for more information.

DANGER
Crush hazard!
Always install the lift arm support before maintenance or repair.
Failure to comply will result in death or serious injury.

ISO decal number: 87546236



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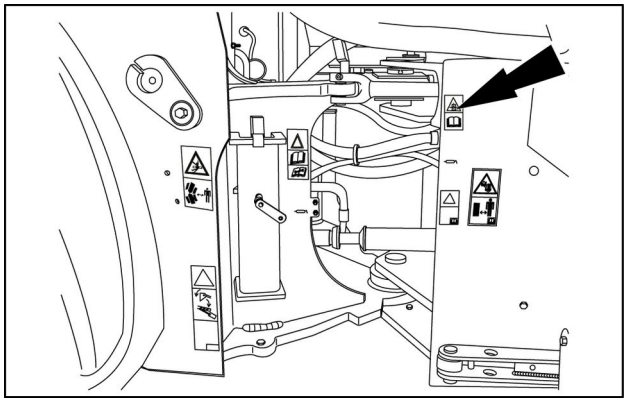
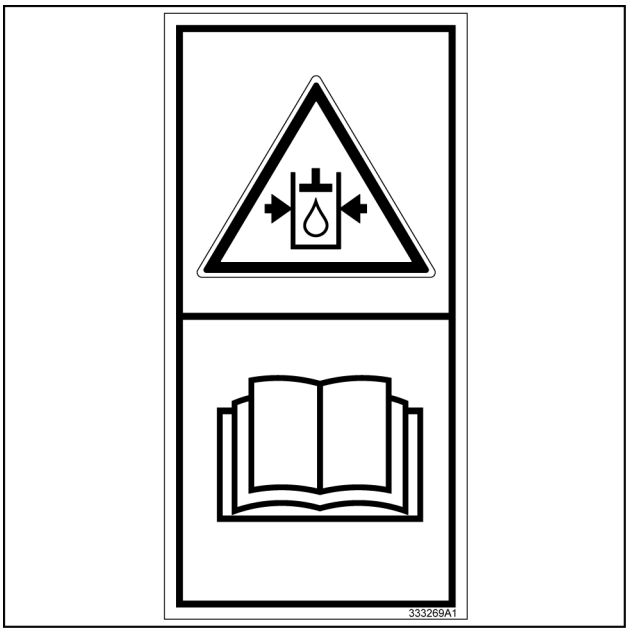


LEIL15WHL0078AA 17

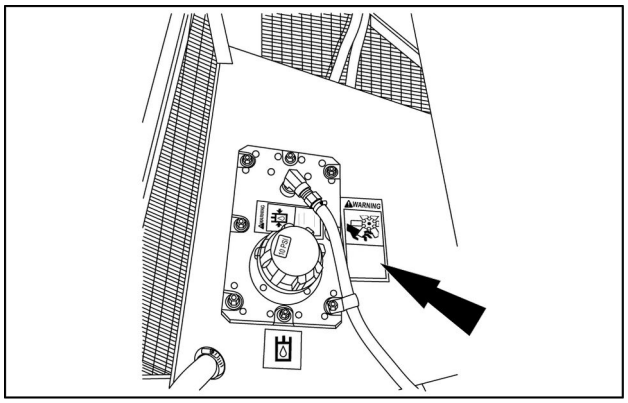
Location: right-hand and left-hand side of the machine, near the articulation area. See **7-5** in this manual for more information.

WARNING
Pressurized system hazard!
Release pressure before maintenance.
Failure to comply with this warning could result in death or serious injury.

ISO decal number: 333269A1



333269A1 18

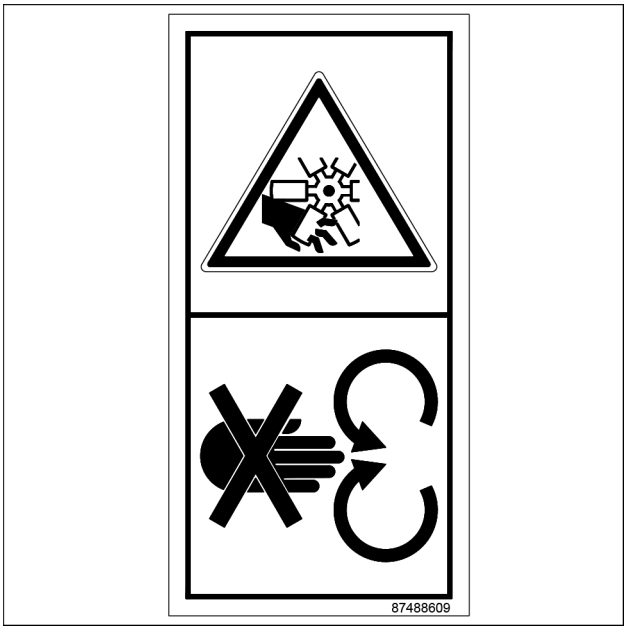


LEIL13WHL0313AA 55

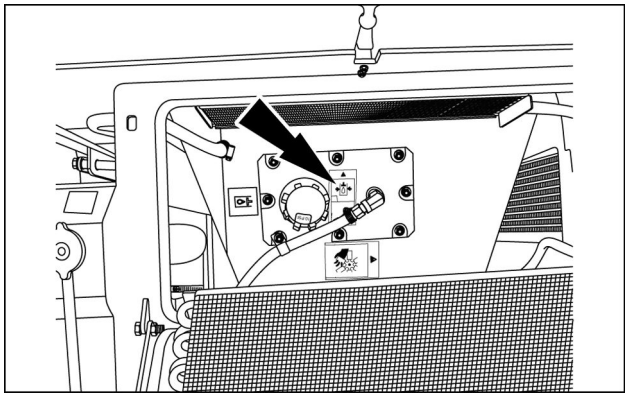
Location: access compartment on the top of the machine, behind the cab.

WARNING
Entanglement hazard!
Keep clear or stop the engine before servicing.
Failure to comply with this warning could result in death or serious injury.

ISO decal number: 87488609



87488609_ 56



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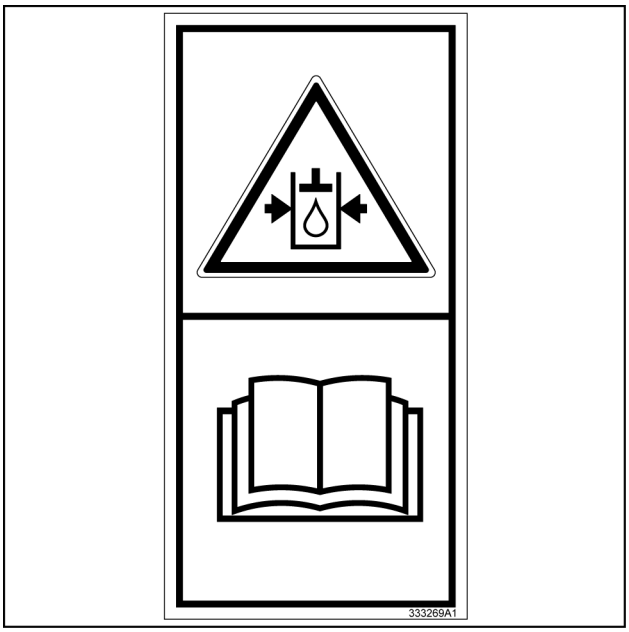
Location: access compartment on the top of the machine, behind the cab.

WARNING
Pressurized system hazard!
Release pressure before maintenance.
Failure to comply with this warning could result in death or serious injury.

ISO decal number: 333269A1



333269A1 58

Operator's seat

Overview

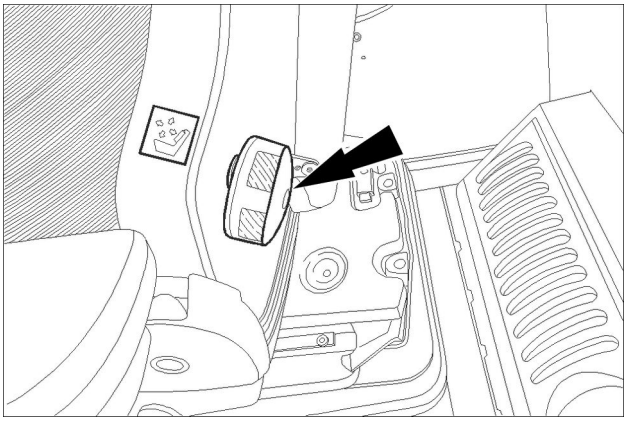
⚠ WARNING

Loss of control hazard!
DO NOT make seat adjustments while the machine is in motion. All seat adjustment should be made with the machine stationary and the parking brake applied.
Failure to comply could result in death or serious injury.

W0293A

Standard operator's seat

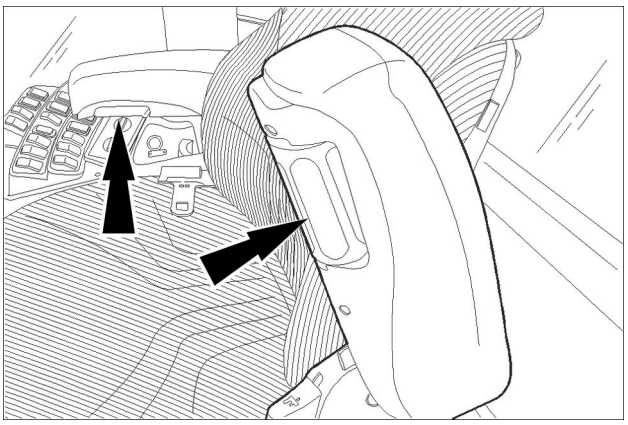
1. Lumbar adjustment knob - Turn the knob clockwise to increase the lumbar support. Turn the knob counter-clockwise to decrease the lumbar support.



RCPH10WHL087BAL 1

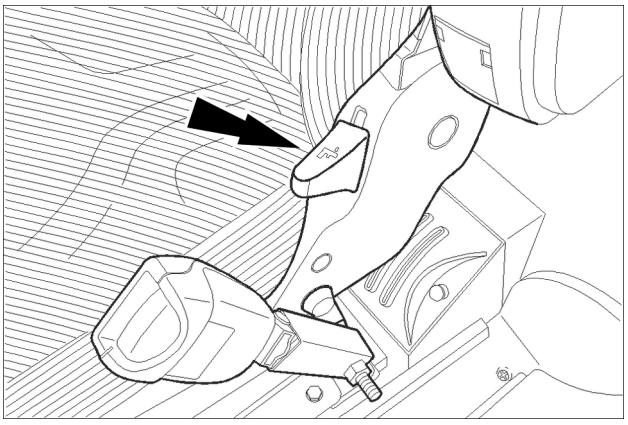
2. Armrest height control adjustment - Turn the knob to raise or lower the armrest to the desired position.

   NOTE: *each armrest will pivot to the up position.*



RCPH10WHL085BAL 2

3. Recliner adjustment handle - Lift up on handle, move the backrest to the desired position, release the handle to lock in position.

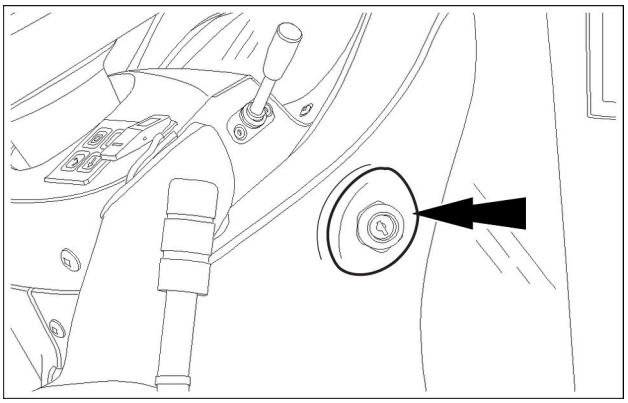


RCPH10WHL084BAL 3

Steering column

Ignition switch

The ignition switch has four positions:



LEIL16WHL0092AB 1

Accessory position

This position will energize the optional radio only. It will not energize the instruments or start the engine.

OFF position

In this position, all switch controlled current is OFF. Turn the key to OFF to stop the engine. Remove the key and turn the Master Disconnect Switch to OFF.

START position

Turn the key to this position to engage the starter motor to start the engine. The switch is spring loaded and will return to the ON position when released.

ON position

This position will energize all electrical systems. The key will return to this position after you release the key from the start position.

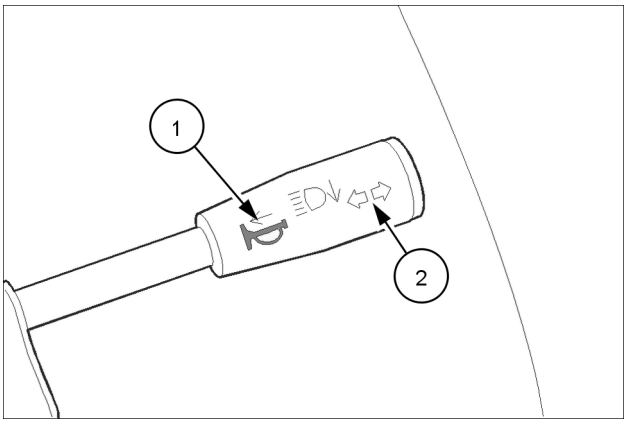
Horn and turn signal

The horn and the turn signal lever is located on the right-hand side of the steering wheel.

⚠ WARNING

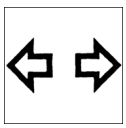
Hazard to bystanders!
Always sound the horn before starting the machine. Make sure the work area is clear of other persons, domestic animals, tools, etc. before you operate the machine. Never allow anyone in the work area during machine operation.
Failure to comply could result in death or serious injury.

W0304A



RCPH10WHL115BAL 2

1. Horn - Push the horn lever in to actuate the horn.

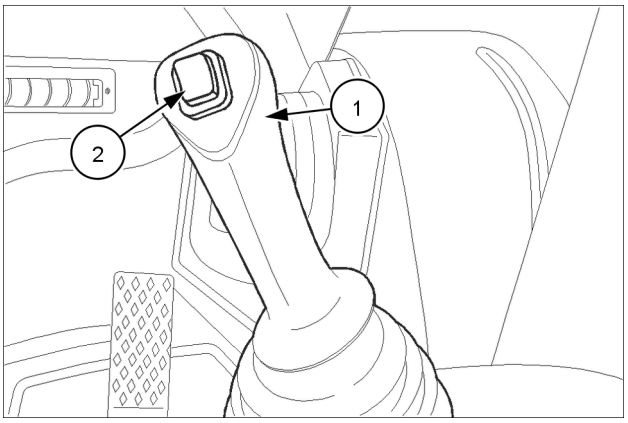


2. Turn signal lever - Push the control lever up to signal a left turn. Pull the lever down to signal a right turn. The lever must be moved manually to the center position to stop the signals.

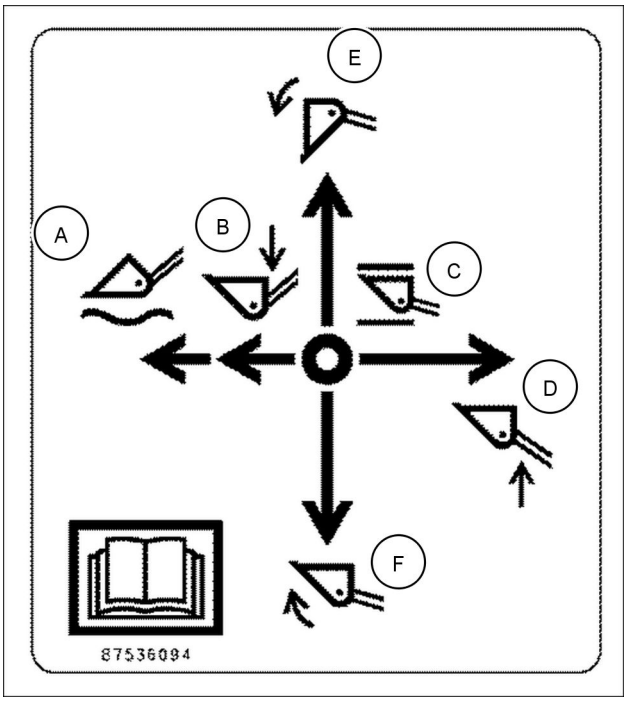
Two function valve

Two function valve - one control lever

1. LIFT ARM AND BUCKET CONTROL
   A. FLOAT (DETENT) - This is a detent position. When in the FLOAT (detent) position, the loader bucket can follow the level of the ground without movement of the control lever
   B. LOWER
   C. HOLD - The loader arms and bucket will not move when the control lever is in the HOLD position. When released, the control lever will automatically return to the HOLD position. You must manually move the control lever from the FLOAT position to the HOLD position.
   D. RAISE
   E. DUMP
   F. ROLLBACK



RCPH10WHL121BAL 1



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Exterior controls

Hood switch and master disconnect

⚠ WARNING

Automatic closure!
Keep your hands and body and all personnel clear of the machine hood as it closes.
Failure to comply could result in death or serious injury.

W0048A

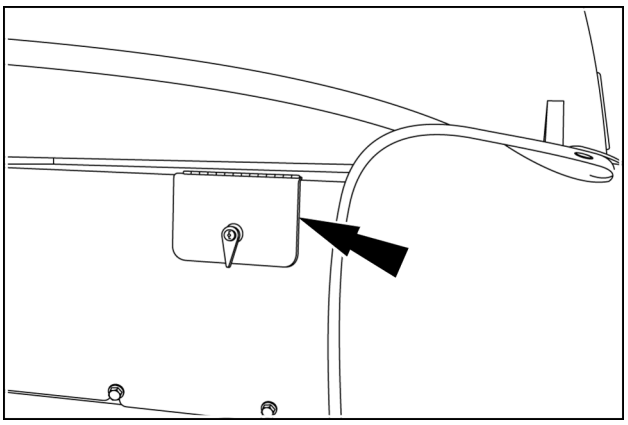
Hood switch

The hood switch is located on the left-hand side of the machine. The hood, left-hand, and right-hand side engine covers allow access to both engine sides, air cleaner and coolers. A locking mechanism is provided for the hood switch cover. Use the machine key to open and close this cover.

1. Insert the key. Make sure to completely insert the key for proper operation.

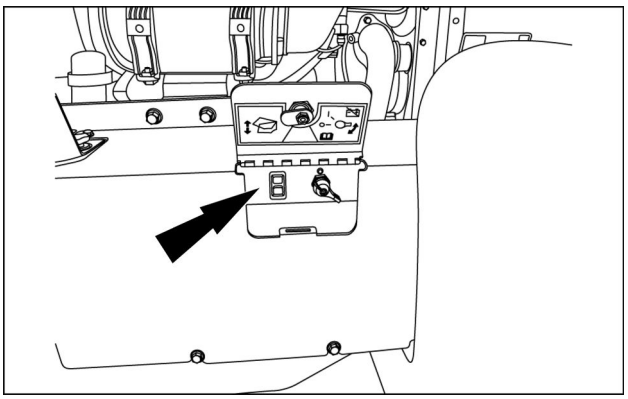
   NOTICE: *damage can occur to the key or locking mechanism if key is improperly inserted and turned.*

2. After releasing the lock, remove the key and open the cover.



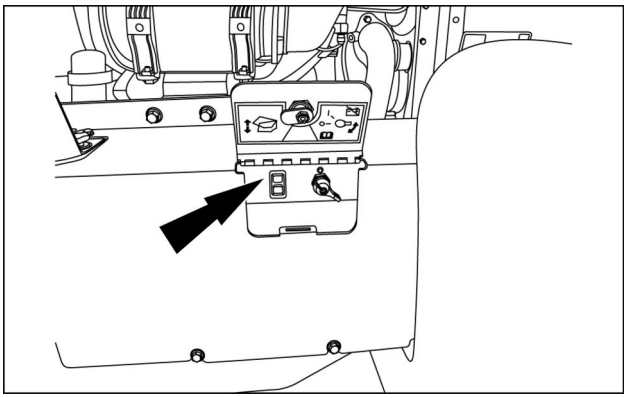
RCPH10WHL425AAH 1

3. The hood switch will automatically raise the hood on the machine. Keep all tools, service equipment, and personnel away from the hood when it is automatically opening and closing.



RCPH10WHL106AAH 2

4. Push up on the switch to raise the hood. The switch will remain in the up position for hands free opening. To close the hood, push down on the switch. As a built in safety measure, the down control must be held in order to lower the hood.



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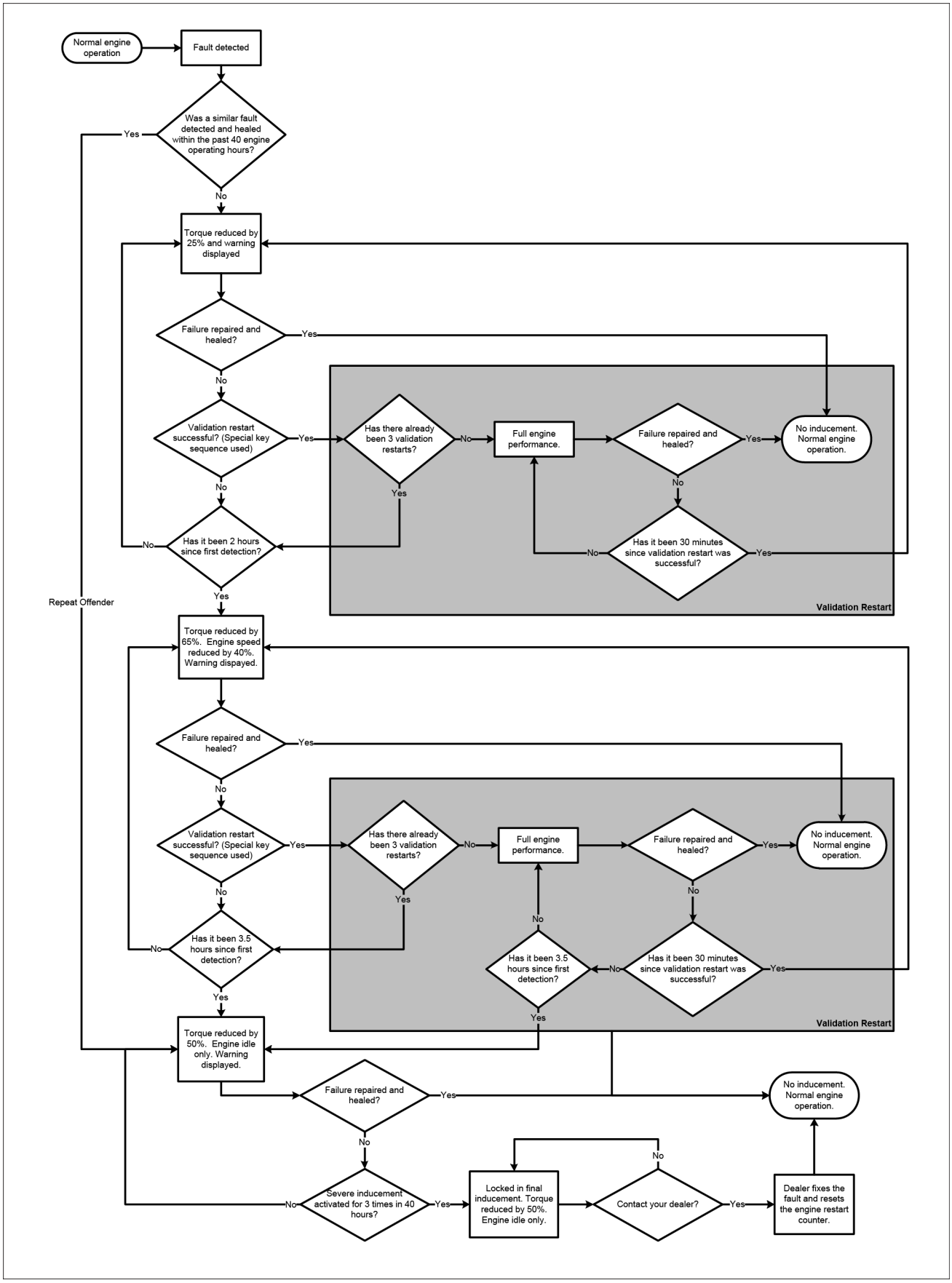
Inducement and validation re-starts

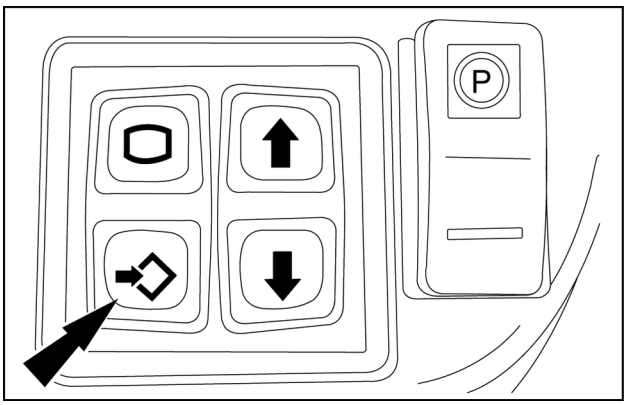


LEIL14WHL0394HA 3

Press the confirm key to reset to the desired trip screen.

The trip screen will indicate a reset message. At this screen, press the confirm key to clear the numbers and reset the trip information. The current date and time will display automatically. The hours, fuel consumption, and fuel used per hour will reset and revert to zero.

Press the escape key to return to the main driving screen and lock settings into memory. The screen will begin to record time and fuel usage immediately.



LEIL15WHL1707AA 11

WARNING DISPLAY AND ERRORS

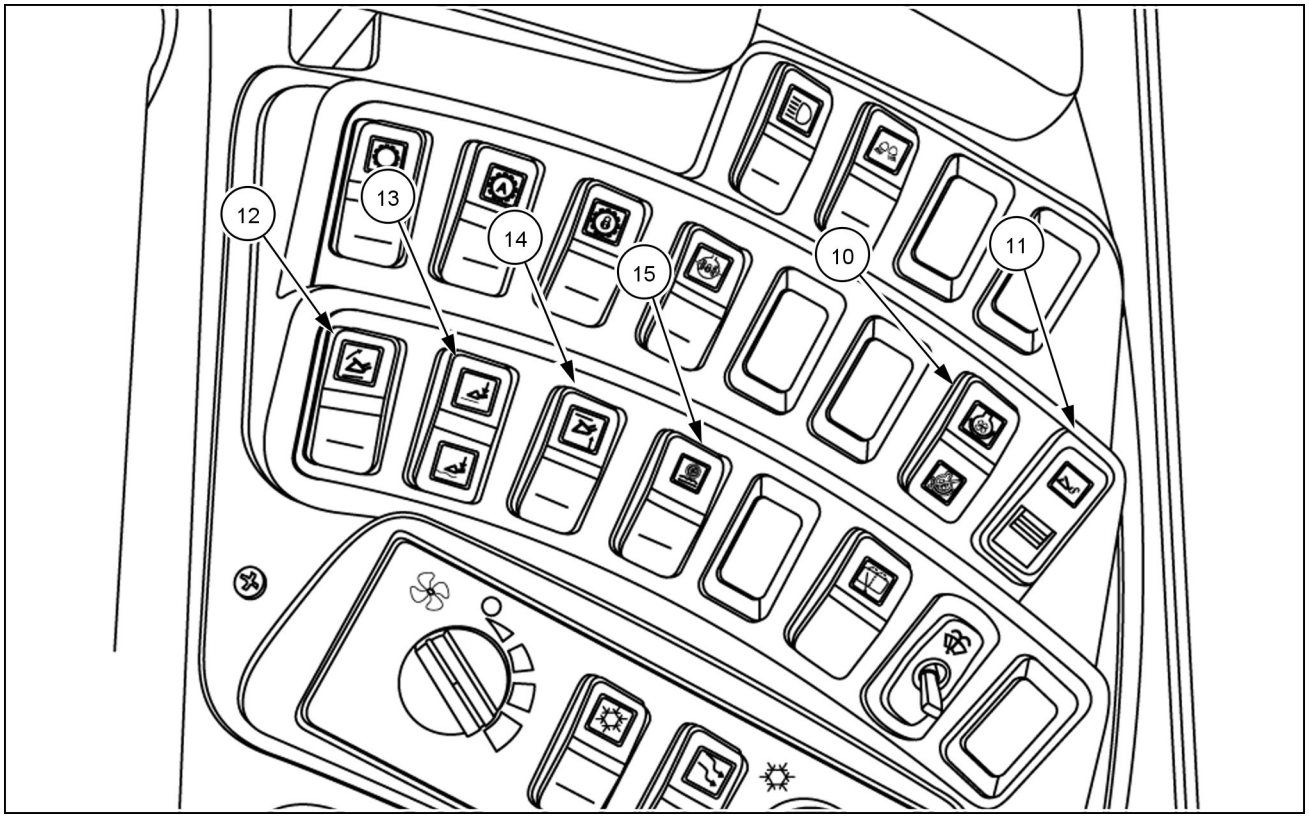
JOYSTICK STEERING RELATED ERROR HANDLING

All JSS related errors will be displayed only while the JSS activation switch is in ON position except for the red error “Short to power on power supply” and the failure of the activation switch which will be always displayed when present.

All JSS related errors will be reset by switching the JSS activation switch to the OFF position.

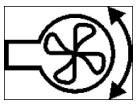
While ignition is ON and JSS is deactivated the software will check if the JSS Power Supply is off. Check JSS Output Control is low/open → if not a red error will be displayed “Short on JSS power supply JSS active”.

Error Item	Location of Error Detection	Message
1812y	JSC	Open Circuit, Short to Battery or Short to Ground at JSS armrest switch.
1816y	JSC	Open Circuit / JSS activation switch mechanical defect.
1820y	JSC	Check JSS Relay, JSS Valve, JSS Joystick power supply connections.
1821r	JSC	Short to ground on JSS Relay 85/AIC1.21 or short to Power on Relay 86/87a. Or Activation Switch failure.
1823y	JSC	JSS RELAY, GROUND CONNECT., BAD ELEC. CONNCT. Permanent ground at JSS Relay (87) open circuit or short to power.
1824y	JSC	Short to battery at activation button. Activation switch failure.
1829y	JSC	Joystick Steering is not calibrated.
1830y	JSC	Open circuit between activation switch Pin 3 and C5.E Pin 1.
1831y	JSC	JSC CONTROLLER, WRONG OPERATION. JSC controller internal fault.
1832y	JSC	JSC CONTROLLER, JSC SIGNAL IN, OUT OF LIMITS. Input signal from JSS joystick to JSC controller out of limits. (Joystick Neutral: USignal>40%UBat + <60%Ubat; Joystick Actuated: USignal>20%UBat + <80%UBat)
1833y	JSC	Output signal from JSC controller to valve out of limits. Check connector of JSS valve and JSC controller.
1834y	JSC	JSS CONTROLLER, JSC OUTPUT, SC to BAT Power is applied to one of the JSC controller outputs. Check electrical connection for short to power. Or JSC internal Relay is defect.
1835y	AIC	JSS-valve/Pin4 JSC/Pin5 short to power, short to ground or open circuit.
1836y	JSC	JSS CONTROLLER, BOARD TEMPERATURE, OUT OF LIMITS Temperature on the JSC board is <-40°C or >+85°C; Check ambient temperature or short circuit at JSC power outputs.
1837y	JSC	JSS CONTROLLER, SWITCHED POWER, OUT OF LIMITS Switched power supply at JSC Pin3 is out of limit; Check elect connection for electrical transients, burst or drifts.
1838y	JSC	Neutral Sw out of range.
1841y	JSC	JSS valve internal error, spool position not accurate or signal voltage out of range.
1842y	JSC	JSS valve Pin2 (alarm signal) open circuit.
1843y	JSC	Pilot pressure switch open when JSS is deactivated. High pilot pressure on JSS valve even when JSS is not active. Pilot Dump valve stuck close or short to power on valve power supply. Or open circuit on JSS pilot pressure switch lines or JSC/Pin8.
1844y	JSC	Pilot pressure switch short to ground.



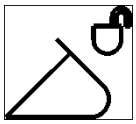
RCPH10WHL079FAH 4

10. Fan reverse switch



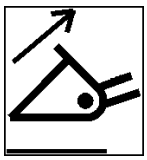
To use the fan reverser let the machine idle in neutral. Depress the fan reverser switch and depress the throttle to high idle for a minimum of 10 seconds or until debris stops blowing out of the coolers. Return the machine to idle and release the fan reverser switch. This is a three-position switch. Push the upper part of the switch for momentary reversal as described above. The center position of the switch is the automatic position, and the lower position disables the automatic fan.

11. Coupler engagement switch (if equipped)



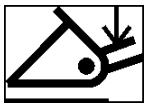
This switch allows engagement of the attachment from the operator's compartment. Slide the locking plate toward the center of the switch. Push down on the top of the switch to retract pins for the attachment. The switch lamp will illuminate when the pins have been retracted. The switch will lock the pin in the extended position when the bottom of the switch has been pressed and the pins are extended.

12. Return to dig switch



Push on the top of the function switch for the ON position. This will allow the bucket to return to level with the ground for digging.

13. Return to travel detent switch



The return-to-travel switch is used to automatically return the loader bucket to the travel position after you have dumped the loader bucket. Push down on the top of the return-to-travel switch to engage the return to travel detent. Push the bottom of the switch for the float detent position.

Starting the unit

Starting the engine

⚠ WARNING

IMPROPER OPERATION OF THIS MACHINE CAN CAUSE DEATH OR SERIOUS INJURY.
MAKE SURE THAT EVERY OPERATOR:
-is instructed in the safe and proper use of this machine.
-reads and understands the operator's manual for this machine.
-reads and understands ALL safety signs on the machine.
Failure to comply could result in death or serious injury.

W0188A

Before operating the machine

Before operating this machine, complete the following procedures:

1. Check the level of all fluids (engine oil, fuel, **DEF/ ADBLUE®**, hydraulic fluid, and coolant) and make sure that the fluids and lubricants are suitable for prevailing conditions.
2. Carry out the daily maintenance operations.
3. Inspect the machine, look for any signs of possible leakage and check the hoses. Tighten or replace as necessary.
4. See “Run in period of a new machine” in this chapter, if the machine is new or if the engine has been reconditioned.
5. Check the tires for any visible damage. Replace or repair as necessary. Check for correct tire air pressure and adjust pressure if necessary.
6. Clean the steps and hand holds. Grease, oil, mud, or ice in winter on the steps and access handles can cause accidents. Make sure they are kept clean at all times.
7. Clean or replace any decals which are illegible. See “Safety signs” – Chapter 2.
8. Make sure that the engine access panels and all doors are properly closed and latched.
9. Secure the cab door in either fully closed or fully opened position.
10. Remove any obstructions which hinder visibility. Clean the windshield, the windows and the rear view mirrors.
11. Check that no tools or other items have been left on the machine or in the operator's compartment.
12. Make sure no one is on or under the machine. The operator must be alone on the machine.
13. Make sure no one is standing in the machine working area.
14. Find out about current safety measures in use on the work site.
15. Work out a convenient means of escape from the machine (emergency exit via the windshield, the rear or side window glass) in the event of the cab door being jammed or the machine turning over.
16. Before undertaking any travel or working operations during hours of darkness, make sure the lighting and signaling equipment is fully operative.
17. Adjust the seat so that you can apply the foot brakes when your back is against the seat backrest.
18. Fasten and adjust the seat belt.
19. With the engine running and at operating temperature, check the instrument panel for correct indications.
20. Check the loader controls for correct operation.

Ride control

Ride control is an optional feature that increases the ride comfort of the wheel loader over all types of terrain with either an empty or loaded bucket. It allows faster speeds during operation, resulting in increased productivity and operator comfort. It will also reduce shock loads to the wheel loader for reduced tire flex, structural fatigue and vibration, resulting in longer component life and reduced costs. Ride control will reduce fore and aft pitching motion during travel to allow faster speeds in load and carry applications.

The machine is equipped with a 3-position Ride control switch (manual, auto, and off). Most commonly, the operator will choose to leave this switch in the automatic (center) position. With ride control active, the green indicator light will illuminate anytime the machine is traveling faster than **5 km/h** (**3.1 mph**) indicating that the ride control is functioning. Ride control will disengage automatically at slower speeds for loading and unloading. Ride control can be left ON at all times, whether loading or roading.

To turn Ride control OFF, push on the bottom of function switch for the OFF position.

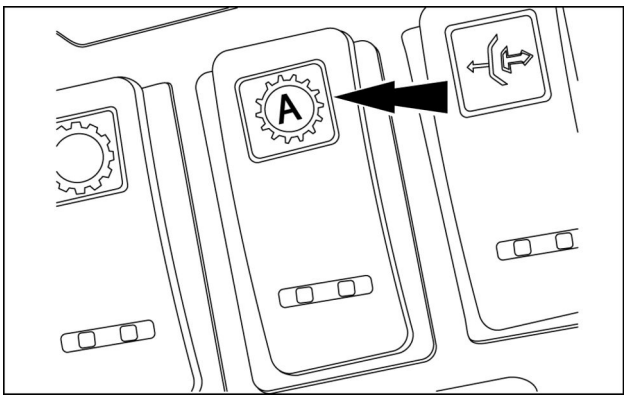
The top position of the switch turns ride control on in the manual position.

NOTE: *turn Ride control OFF when you operate the bucket in fine grading operations or when precision placement of a load suspended from the bucket or other attachment is required*

Automatic mode

Automatic mode operation

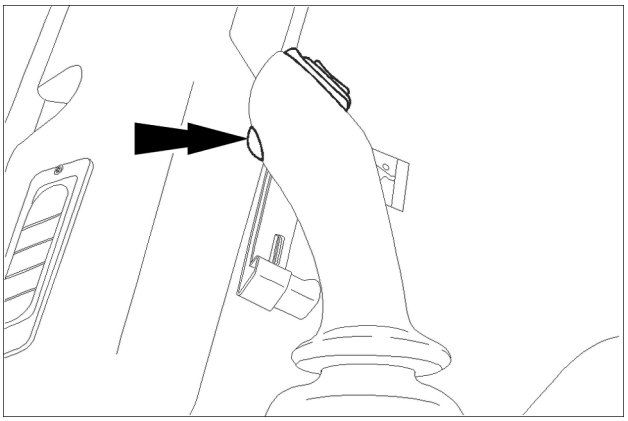
Press the top of the auto shift switch to put the transmission in the automatic mode.



RCIL10WHL197BAL 1

Automatic shifting mode

When the transmission is in the automatic mode, the transmission will start out in first gear or second gear (dependent upon gear minimum setting), and automatically up-shift until the gear selected has been reached. The transmission will also down-shift automatically as the speed decreases.

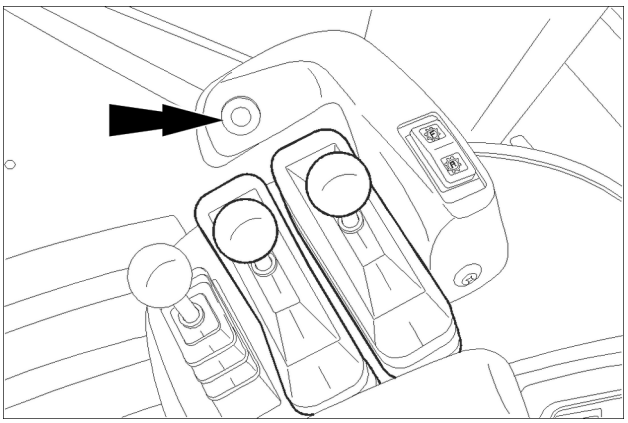


RCPH10WHL120BAL 2

Down-shift button, automatic mode

Use the down-shift button to shift down through the gears in single steps. Each time you press the switch, the transmission shifts down one gear range until reaching the first gear. Once the down-shift button has been pressed down, the transmission maximum gear allowed is lowered. It will return to the automatic mode when **(1)** the transmission control lever gear changes, or **(2)** the transmission control lever is moved to NEUTRAL and then to FORWARD or to REVERSE.

NOTE: *when the operator selects the Automatic Mode, the Automatic Mode indicator will be shown on the multi-function display.*



RCPH10WHL110BAL 3

5 - TRANSPORT OPERATIONS

Road transport

Safety rules

⚠ WARNING

Crushing hazard!
Engage the safety lock link before service or transport.
Failure to comply could result in death or serious injury.

W1154A

⚠ WARNING

Driving hazard!
Know all rules, regulations, laws, and required safety equipment for transporting or operating this machine on a road or highway. See your dealer to obtain a rotating beacon, backup alarm, Slow Moving Vehicle (SMV) emblem, and other safety equipment.
Failure to comply could result in death or serious injury.

W0154A

⚠ WARNING

Transport hazard!
The machine can slip or fall from a ramp or trailer. Make sure the ramp and trailer are not slippery. Remove all oil, grease, ice, etc. Move the machine on or off the trailer with machine centered on the trailer or ramp.
Failure to comply could result in death or serious injury.

W0152A

⚠ WARNING

Transport hazard!
Always use the primary steering when loading or unloading the machine for transport. Do not use joystick steering when loading or unloading the machine from a truck or trailer.
Failure to comply could result in death or serious injury.

W0448A

Make sure you know the safety rules and regulations before transporting the machine. You must know the rules or laws for transportation and safety that are used in each area that you will be in. Make sure that the truck and machine are equipped with the correct safety equipment.

6 - WORKING OPERATIONS

LOADER OPERATIONS

Operating tips

⚠ WARNING

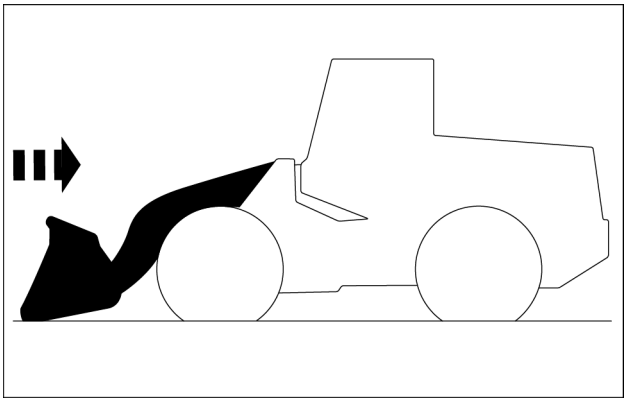
Impact hazard!
Bucket edge or teeth can catch on frozen surfaces or buried objects during surface scraping operations. Before operation, inspect the area for hazardous objects. Operate the machine at slow speed around objects.
Failure to comply could result in death or serious injury.

W0459A

This wheel loader, with standard equipment and authorized attachments, is intended to be used for above ground level digging and general earth moving purpose such as land leveling, truck loading, material rehandling and ditch cleaning. If the machine is to be used for lifting objects, make sure that the machine is properly equipped and follow the instructions and safety precautions in this manual.

Leveling operation

Always operate the machine in reverse when leveling the surface.



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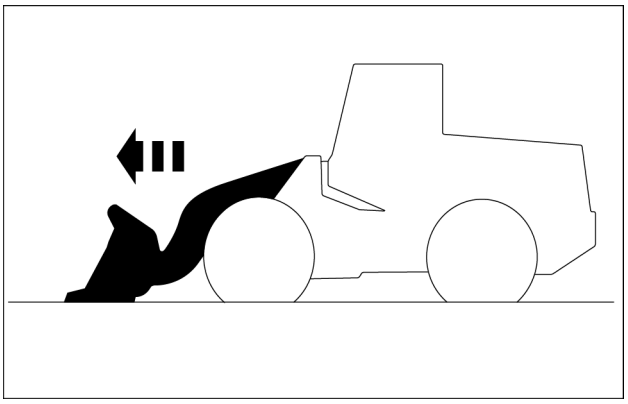
Pushing operation

When pushing material, do not set the bucket dumping angle more than **20 °**.

NOTICE: *the bucket MUST NOT be in the FULL DUMP position during the pushing operation.*



LEIL16WHL0037AB 2

Joystick operation

⚠ WARNING

Driving hazard!
Check all controls and safety devices in a safe, open area before starting work.
Failure to comply could result in death or serious injury.

W0248A

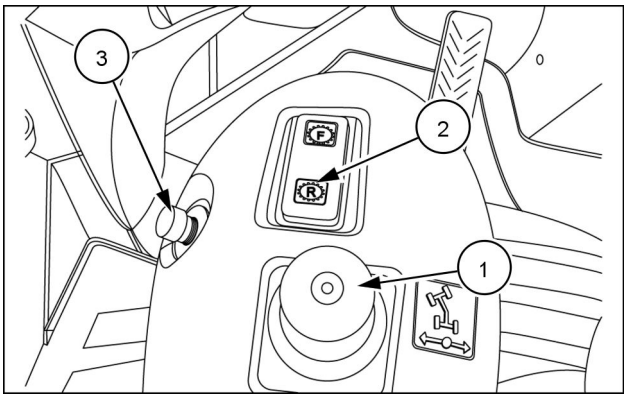
⚠ WARNING

Driving hazard!
Always use the primary steering when traveling on a public road or highway. The left armrest must be raised and in a locked position during travel. Do not use joystick steering when traveling on a public road or highway.
Failure to comply could result in death or serious injury.

W0451A

Joystick steering control lever (optional)

The joystick steering control lever allows to operate the loader using hand controls located on the left-hand operator seat armrest. It allows for steering capabilities at the operator's fingertips. Moving the lever right or left steers the machine in the right or left direction. When the Joystick is released, the lever will return to the neutral position automatically. The machine will remain in the last direction chosen. Forward and reverse are accomplished with the F-N-R switch. Use the joystick steering controls for short cycle, repetitive high production load and carry operations to reduce operator fatigue and increase operating efficiency.



RCIL10WHL188BAL 1

1. Joystick steering control lever
2. Forward-Neutral-Reverse switch
3. Kick-down switch

Support strut for loader lift arm

Loader lift arm support

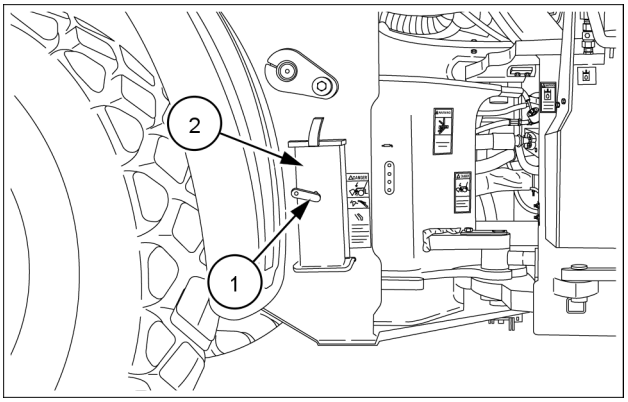
⚠ DANGER

Crushing hazard!
If you service the machine with the loader lift arms raised, always use the support strut. Remove the retaining pin and place the support strut onto the cylinder rod. Install the retaining pin into the support strut. Lower the lift arms onto the support strut.
Failure to comply will result in death or serious injury.

D0084A

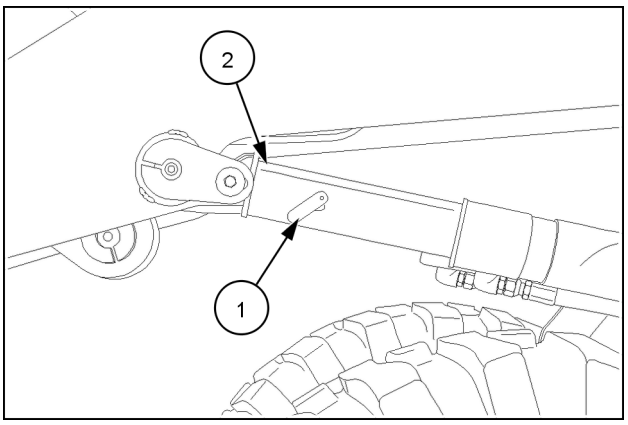
1. Empty the loader bucket, raise the loader lift arms to approximately **2.1 m** (**7 ft**) and stop the engine.
2. Remove the retaining bolt **(1)**. Remove the support strut **(2)** from the storage position.
3. Place the support strut **(2)** on the cylinder rod with the guide lock tab on top of cylinder and pointing toward the bucket.
4. Install the retaining bolt **(1)** entirely into the support strut **(2)** using all threads.
5. Slowly lower the lift arms onto the support strut.

If you do not follow this procedure, you can cause death or serious injury if the loader lift arms are lowered unexpectedly.



LEIL15WHL1850AA 1

NOTE: *support strut in transport position.*



RCPH10WHL061BAL 2

NOTE: *support strut in service position.*

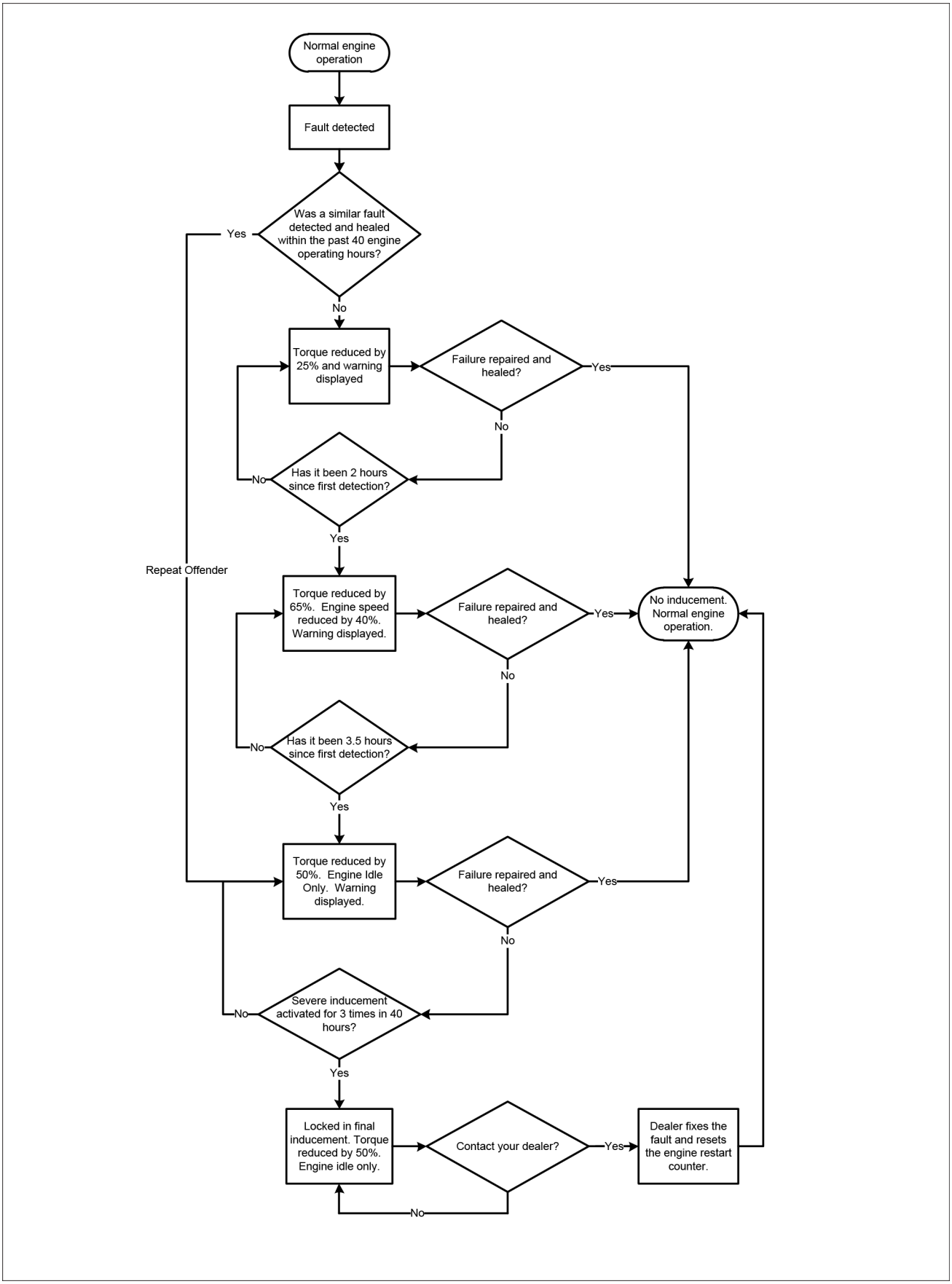
Front and rear axle oil viscosity/temperature range

CASE AKCELA TRANSAXLE FLUID 80W-140									
-40 °C -40 °F	-30 °C -22 °F	-20 °C -4 °F	-10 °C 14 °F	0 °C 32 °F	10 °C 50 °F	20 °C 68 °F	30 °C 86 °F	40 °C 104 °F	50 °C 122 °F

Hydraulic/brake system - temperature range

CASE AKCELA HYDRAULIC EXCAVATOR FLUID									
-40 °C -40 °F	-30 °C -22 °F	-20 °C -4 °F	-10 °C 14 °F	0 °C 32 °F	10 °C 50 °F	20 °C 68 °F	30 °C 86 °F	40 °C 104 °F	50 °C 122 °F

DEF/AdBlue® technical faults



LEIL14WHL0392HA 4

- Your machine is equipped with an internal tank heater to thaw frozen **DEF/ADBLUE®**. Your machine will still function until the **DEF/ADBLUE®** begins to flow. The SCR system will then function normally.

  NOTE: *you may notice a slight reduction in engine torque in high demand situations until the* ***DEF/ADBLUE®*** *is fully thawed.*

- Do not heat **DEF/ADBLUE®** for long periods of time at temperatures above **30 °C** (**86 °F**). This causes the solution to decompose, which very slowly decreases the expected shelf life.

NOTICE: *do not use an anti-gelling or freeze point improver in your* ***DEF/ADBLUE®****. The* ***32.5 %*** *solution is specifically designed to provide the optimum NOx reduction properties. Any further blending or adjusting of the* ***DEF/ADBLUE®*** *mixture will lessen its ability to perform correctly and may cause damage to the SCR components.*

Handling and supply of additives

- Personal Protective Equipment (PPE) is not required under normal conditions. If splashing is likely, wear eye protection. For prolonged or repeated contact, impervious gloves are recommended. Follow the precautions listed in the SAFETY INFORMATION chapter when handling any service fluid.
- No additives are required.

NOTICE: *contaminated* ***DEF/ADBLUE®*** *can affect the performance of your machine. Follow all instructions in this manual when handling* ***DEF/ADBLUE®****.*

Shelf life

Constant ambient storage temperature	Minimum shelf life
Less than or equal to **10 °C** (**50 °F**)	36 months
Less than or equal to **25 °C** (**77 °F**) [1]	18 months
Less than or equal to **30 °C** (**86 °F**)	12 months
Less than or equal to **35 °C** (**95 °F**)	6 months
Greater than **35 °C** (**95 °F**)	-[2]
[1] To prevent decomposition of **DEF/ADBLUE®**, avoid prolonged transportation or storage above **25 °C** (**77 °F**). However, temporary exposure to higher temperatures does not necessarily influence the quality of **DEF/ADBLUE®**.	
[2] Significant loss of shelf life: check every batch before use. See your authorized dealer for more information on testing.	

NOTE: *the main factors taken into account to define the shelf life in the table above are the ambient storage temperature and the initial alkalinity of* ***DEF/ADBLUE®****. The difference in evaporation between vented and non-vented storage containers is an additional factor.*

NOTE: *the information in this table is for reference only and has been provided by the International Organization for Standardization, Document number ISO 22241-3 Diesel engines - NOx reduction agent AUS 32 - Part 3: Handling, transportation and storage.*

NOTE: ***DEF/ADBLUE®*** *that remains in the tank of the machine after the season does not require any special precautions unless storage exceeds the shelf life table above.*

Disposal

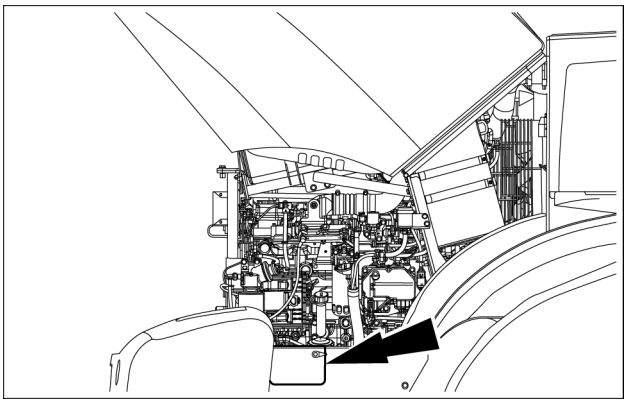
- Dispose of **DEF/ADBLUE®** and any filter accumulations in accordance with all applicable laws governing waste disposal.

After starting the engine

- Did the engine start correctly? Are the exhaust fumes normal? Any strange noises?
- Check for abnormal noise on the hydraulic components.
- Check for water, fuel, or oil leaks on the components.
- Check the audible alarm devices, working lights and windshield wipers.
- Check that all hydraulic circuits are functioning correctly.

Access doors and fill locations

1. Engine hood - right–hand side
   Fuel fill, oil fill, **DEF/ADBLUE®** fill



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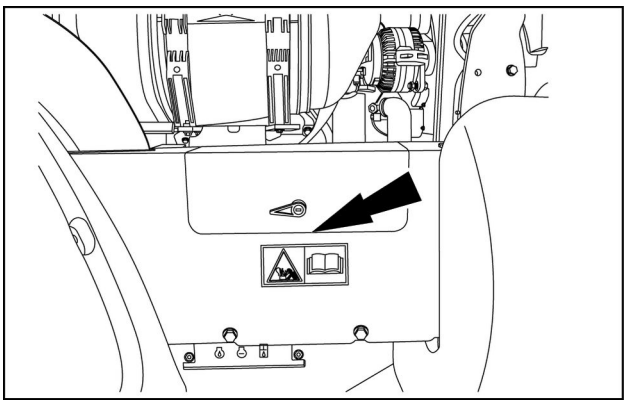
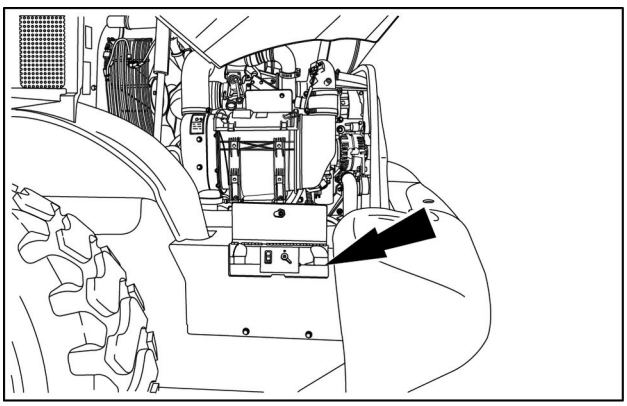
2. Battery access – left-hand side



LEIL15WHL0076AA 2

3. Engine hood - left-hand side
   Electronic disconnect, air filter, transmission oil cooler



LEIL13WHL0304AA 3

Engine coolant level - Check

⚠ WARNING

Burn hazard!
Hot coolant can spray and scald if you remove the radiator or deaeration tank cap while the system is hot. To remove the cap: allow the system to cool, turn the cap to the first notch, and wait for all pressure to release. Remove the cap only after all pressure has released.
Failure to comply could result in death or serious injury.

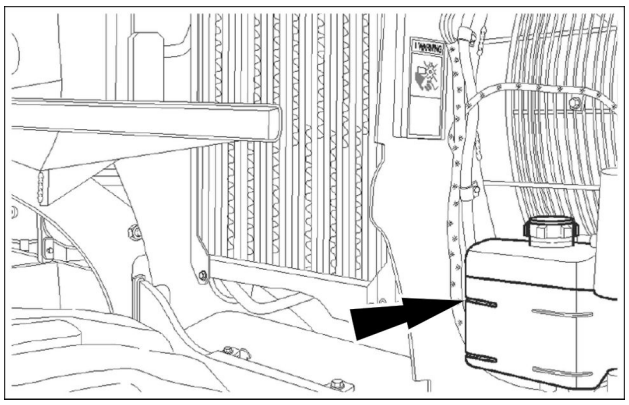
W0367A

Check the coolant reservoir level every 50 hours of operation. Perform this check when the coolant is cold and the engine is stopped.

Prior operation:
Keep all non-authorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied and the attachment lowered to the ground. The transmission oil level sight gauge is on the left side of the machine.

Service specifications	
Type of coolant	**CASE AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT**
821F Coolant capacity	**30.0 l** (**31.7 US qt**)
921F Coolant capacity	**30.0 L** (**31.7 US qt**)

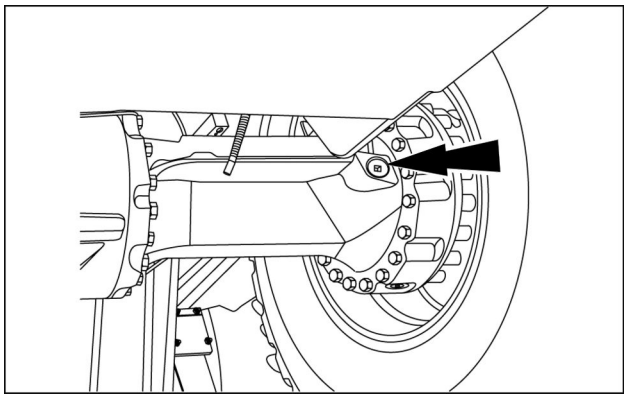
1. Locate the coolant reservoir on the left-hand side of the machine. Do not remove the radiator cap during this check. The coolant level must be between the full and add marks on the reservoir.
2. Add **CASE AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT** as required to raise the coolant level to the full mark.



LEIL16WHL0085AA 1

NOTE: *in the event that the system needs topping off make sure to use the proper ratio of water and antifreeze/ coolant. Do not overfill.*

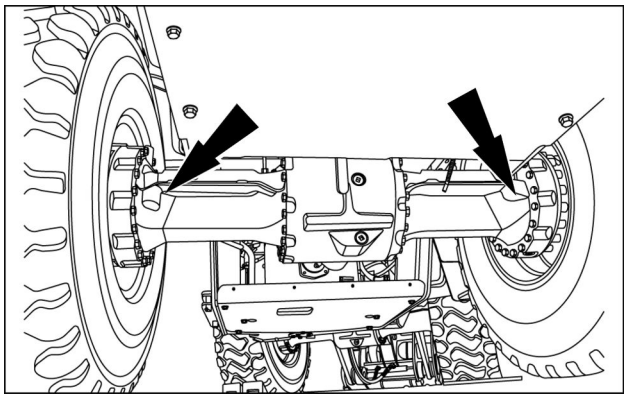
5. Reinstall drain plugs of both axles and the four axle ends. Take care not to damage the drain plug seal.



RCPH10WHL082AAH 2

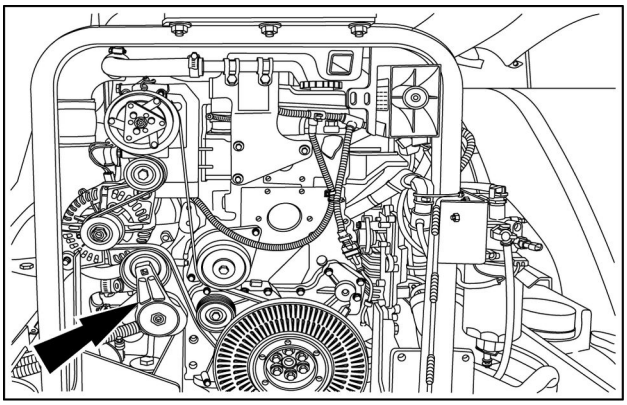
6. Fill the axle with new **CASE AKCELA TRANSAXLE FLUID 80W-140** at axle ends. The oil should reach the bottom of the fill plug.

NOTE: *the oil will take some time to fill each axle. Allow time for the oil to circulate throughout the axle.*



RCPH10WHL081AAH 3

3. Use a 3/8 inch breaker bar to actuate the belt tensioner just enough to release the tension on the drive belt. Remove the drive belt.



LEIL13WHL0257AA 3

4. Place the drive belt around the pulleys of the crankshaft, the fan and the alternator.
5. Raise the belt tensioner and install the drive belt over the water pump pulley.

NOTE: *the water pump pulley has the smallest flange, which allows an easily installation of the drive belt.*

6. Lower the tensioner.
7. Inspect all the pulleys to check if the belt is in the correct position.
8. Start the engine and run at low idle for **60 - 90 s**.
9. Stop the engine.
10. Inspect the tensioner for a correct drive belt alignment.

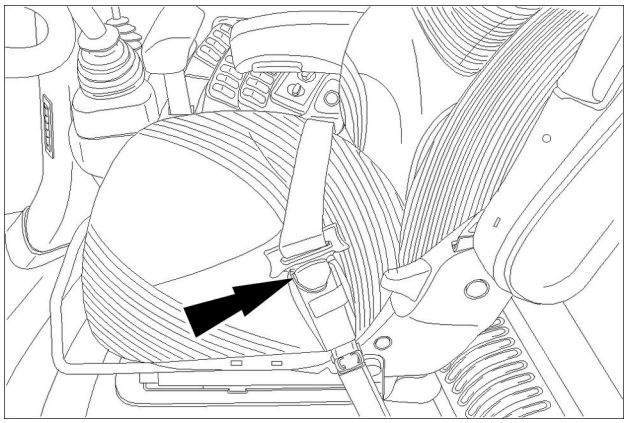
NOTE: *the minimum clearance from the front or the rear flange of the pulley to the belt is **1 mm**.*

11. If the clearance is less than **1 mm**, check that the drive belt runs correctly on all pulleys.
12. If the drive belt does not run correctly, reinstall the drive belt, restart the engine and re-check for a correct alignment.
13. If the clearance is less than **1 mm**, replace the tensioner.

Seat belt

1. Before you operate this machine, always make sure the ROPS and operator's seat belt is correctly installed.

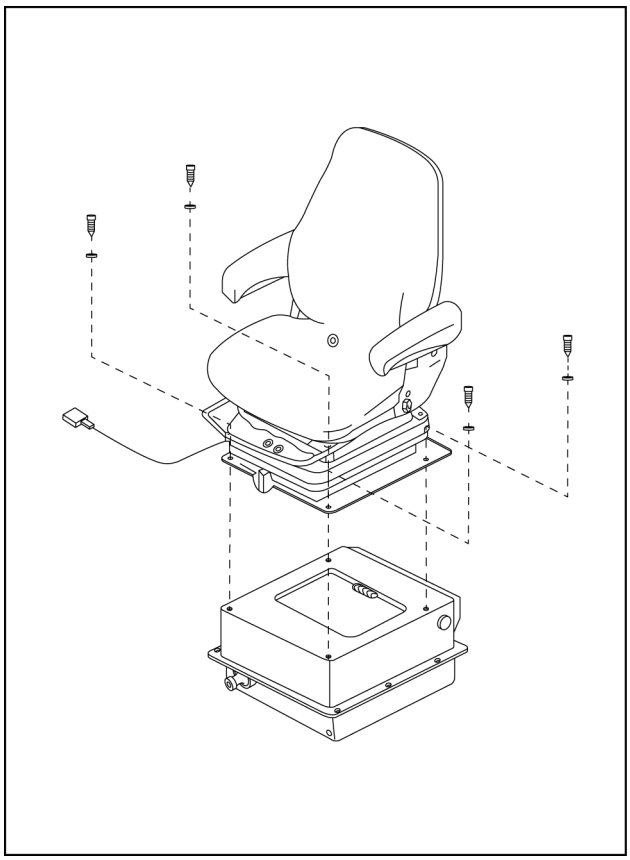
NOTICE: *the seat belt is an important part of the ROPS. You must wear the seat belt at all times when you operate the machine.*



RCPH10WHL090BAL 2

Seat and mounting hardware

1. Make sure all hardware that secures the seat to the cab is properly torqued. Make sure all seat belt hardware is secure and torqued.
2. Keep the seal belts away from objects that can damage the seat belts.
3. Keep the seat belts clean. Wash the seat belts only in soap and water. Do not put the seat belts in bleach or dye. This will weaken the seat belt composition.
4. Torque the seat belt hardware and seat mounting hardware to **73 - 87 N·m** (**53.8 - 64.2 lb ft**)



LEIL15WHL1839BA 3

Cab air filters - Replace

⚠ WARNING

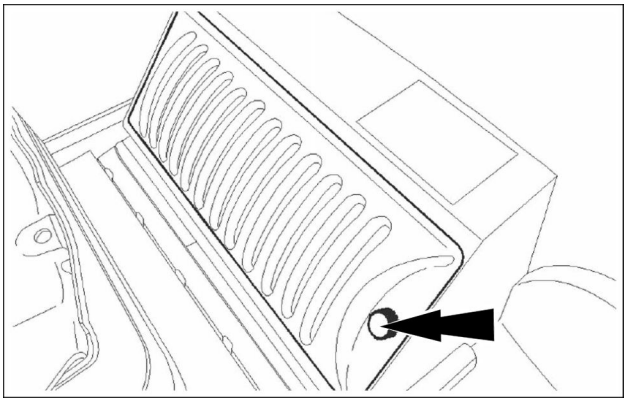
Eye injury hazard!
Wear full coverage safety glasses with side panels when using compressed air. Limit air pressure to 200 kPa (29 psi).
Failure to comply could result in death or serious injury.

W0162A

Replace the cab air filters every 1000 hours or more frequently if conditions so require.

Recirculation air filter

1. Locate the cab recirculation air filter behind the operator's seat. Remove the retaining screw that holds the recirculation air filter cover in place and remove the filter.
2. Replace the filter with a new one.
3. Wipe the housing clean.



LEIL16WHL0138AA 1

4. Reinstall the new filter, and secure the access filter cover.

Every 2000 hours

Hydraulic oil and filters - Change

⚠ WARNING

Pressurized hydraulic fluid can penetrate the skin and cause severe injuries.
Hydraulic fluid is under extreme pressure. Rest the bucket or attachment on the ground. Shut the engine off, turn the key on, and move the hydraulic control lever through all movements several times to relieve residual pressure in the system.
Failure to comply could result in death or serious injury.

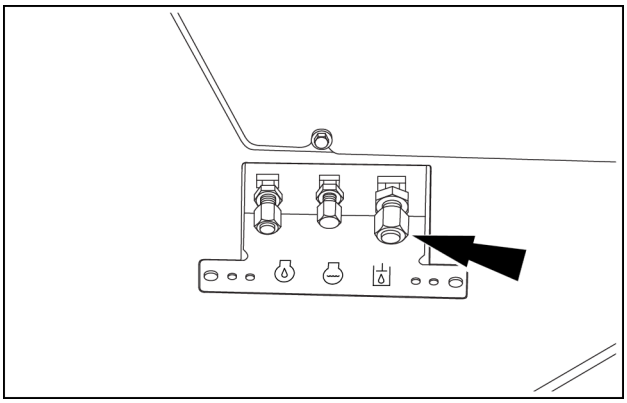
W0161A

Change the hydraulic oil every 2000 hours of operation or more frequently when operating conditions are severe.

Prior operation:
Keep all non-authorized personnel clear of the area. Park the machine on a firm, level surface, lower bucket/attachment to the ground and apply the parking brake.

Service specifications	
Type of oil	**CASE AKCELA HYDRAULIC EXCAVATOR FLUID**
821F total system capacity	**178 L** (**47.0 US gal**)
921F total system capacity	**200 L** (**53.0 US gal**)

1. Stop the engine. Put a “DO NOT OPERATE” tag on the steering wheel or key switch.
2. Place the transport/service link into the locked position to prevent unexpected articulation movements.
3. Push down on the brake pedal a minimum of 30 times to discharge completely the accumulators.
4. Release the pressure in the Ride control accumulators, if equipped.
5. With the ignition key in the ON position, cycle the bucket/attachment control levers repeatedly through their complete range of motion for at least **30 s**.
6. Move the hydraulic controller to the float position and turn the key off.
7. Open the hydraulic reservoir drain and pump the oil into a suitable container.
8. Clean the area around the filler cap and slowly remove the cap.
9. Clean the filter head and the connections. Remove and replace the hydraulic oil filter. To remove the filter, turn filter counter clockwise. When installing new filters, apply a thin coat of clean **CASE AKCELA HYDRAULIC EXCAVATOR FLUID** to the gasket and threads. Tighten the filters firmly to the filter head by hand. Do not use a filter wrench to tighten the filters.



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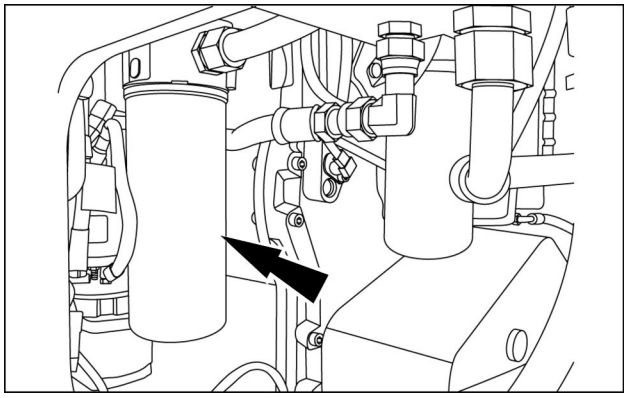

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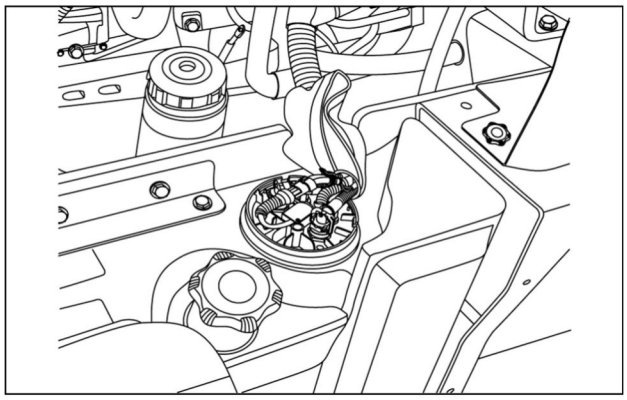
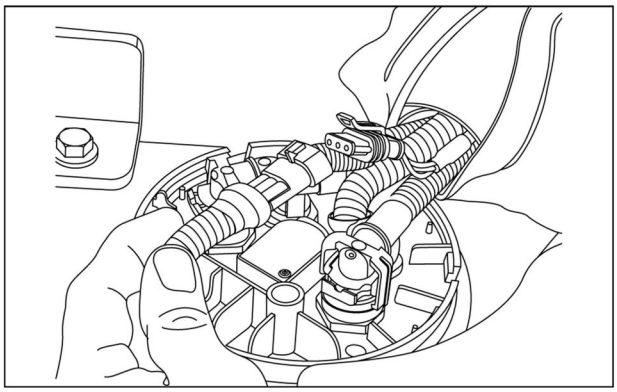
4. Remove the rubber boot cover from the wires of the liquid level/temperature sensor sending unit **DEF/ADBLUE®** and engine coolant supply lines. Mark wire and hose connection positions.



RCPH11WHL704BAU 4

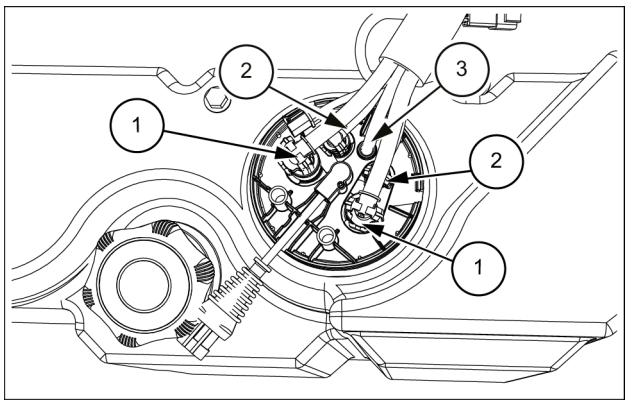
5. Unplug the wiring harness.



RCPH11WHL705BAU 5

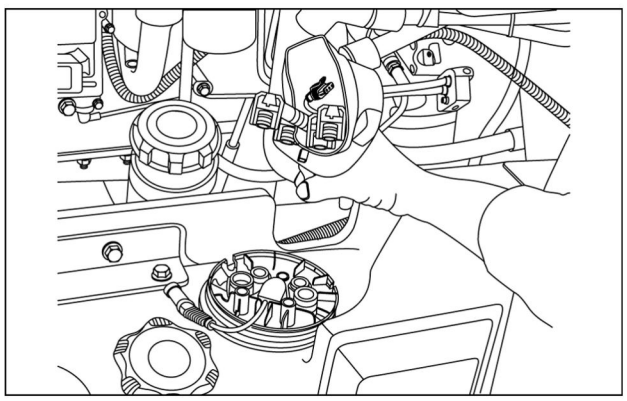
6. Disconnect the engine coolant lines **(1)** and the DEF/ADBLUE® lines **(2)** by pushing coupling together, squeezing the tabs and then pulling the connection apart.
   Remove the purge line **(3)** by pushing collar down with screwdriver and pulling up on the purge line **(3)** .

NOTE: *plug all lines to prevent debris from entering the system.*



LEIL16WHL1567AB 6

7. Move the wiring harness, engine coolant lines, **DEF/ ADBLUE®** supply/return lines and purge line, off to the side. Move the entire bundle off to the side.



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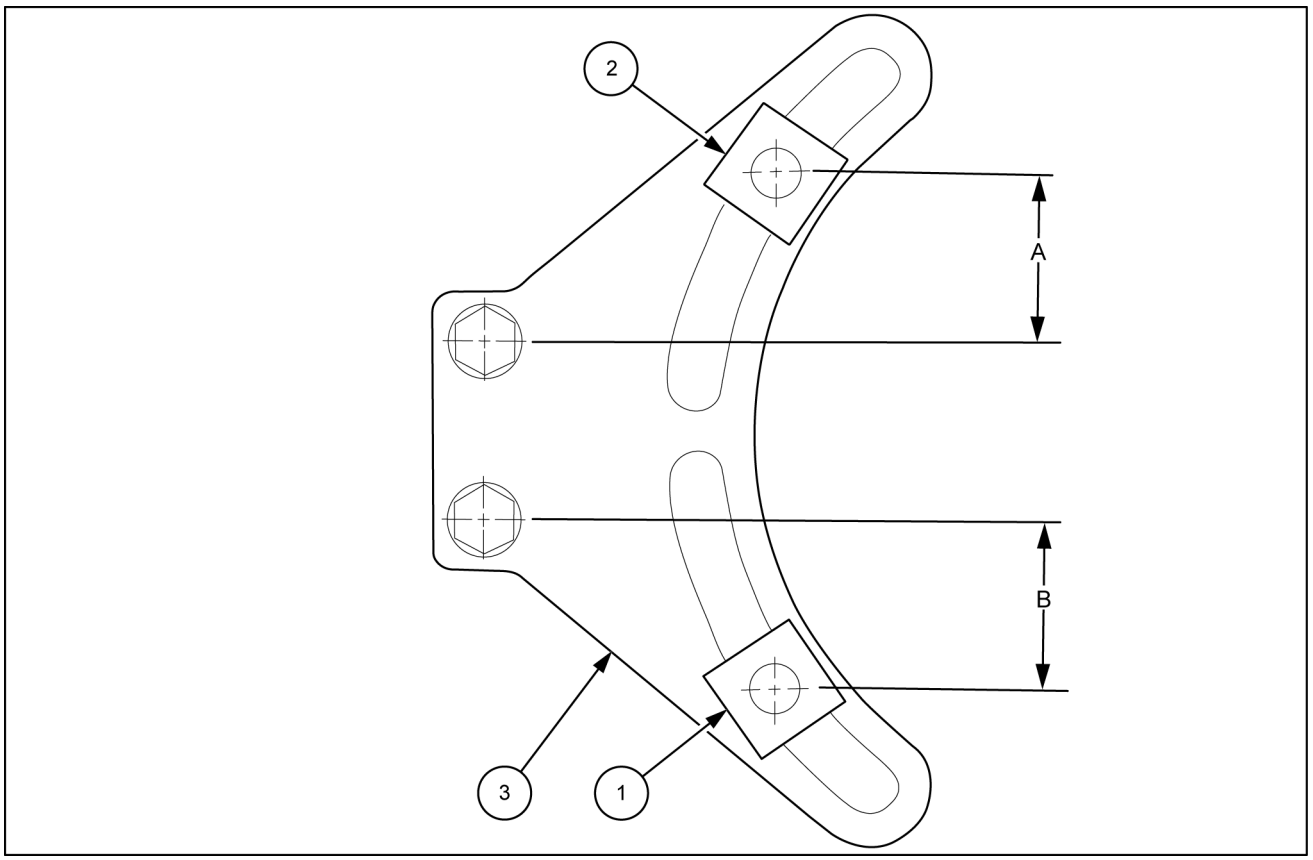

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1. Height control target
2. Return-to-travel target
3. Target mounting plate

Machine	A (mm)	Approximate resulting return-to-travel hinge pin height (mm)	B (mm)	Approximate resulting return-to-travel hinge pin height (mm)
821F Z-Bar	**56 mm** (**2.2 in**)	**414 mm** (**16.3 in**)	**42 mm** (**1.7 in**)	**3302 mm** (**130 in**)
821F XR	**70 mm** (**2.76 in**)	**587 mm** (**23.1 in**)	**61 mm** (**2.4 in**)	**4000 mm** (**157 in**)
921F Z-Bar	**56 mm** (**2.2 in**)	**414 mm** (**16.3 in**)	**42 mm** (**1.7 in**)	**3302 mm** (**130 in**)
921F XR	**70 mm** (**2.76 in**)	**587 mm** (**23.1 in**)	**61 mm** (**2.4 in**)	**4000 mm** (**157 in**)

7. Refer to the table and the illustration on this page. Position the height control target **(1)** on the target mounting plate **(3)** using the table above.

NOTE: *the higher the height control target* ***(1)*** *is positioned in its slot in the target mounting plate* ***(3)****, the lower the lift arms will stop as they are raised.*

8. Tighten the height control target **(1)**.
9. Position the return-to-travel target **(2)** using the table above.

NOTE: *the higher the return-to-travel target* ***(2)*** *is positioned in its slot in the target mounting plate* ***(3)****, the lower the lift arms will stop as they are lowered.*

10. Make sure the proximity switch **(3)** and all the mounting bolts are tight.
11. Start the engine.

Door hinges

Use graphite to lubricate all hinges. DO NOT use oil.

Plastic and resin parts

When cleaning the plastic windows, the console, the instrument panel, the indicators, etc. do not use gasoline, kerosene, paint solvents, etc. Only use water, soap and a soft cloth.

The use of gasoline, kerosene, paint solvents, etc. will cause discoloration, cracks or deformation of these parts.

Checking for cylinder leakage

A cylinder rod should be slightly oily. Check that there are no leaks after a period of work, when the whole hydraulic system is at normal operating temperature.

1. Wipe the rod and bearing clean on the cylinder to be checked.
2. Operate normally for five or ten minutes.
3. Extend the cylinder rod.
4. Carry out the leak test.

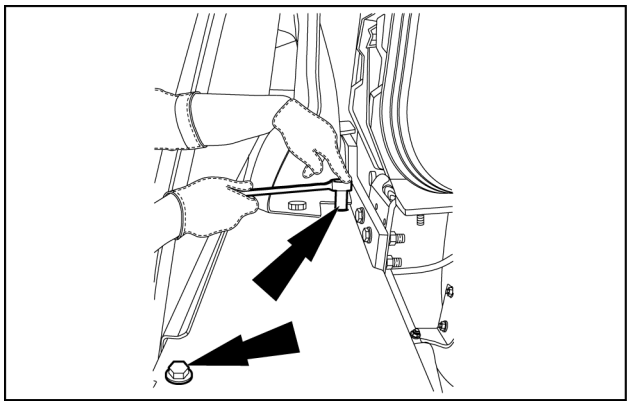
Rod Appearance	Test	Conclusion
Dry	Slight traces of oil when a piece of paper is wiped over **20 cm** (**7.9 in**) of the rod.	Normal
Slightly greasy	Paper remains stuck to rod when run over rod.	Normal
Oily	Paper remains stuck when placed on rod.	Normal
Very oily or weeping	Each time the cylinder rod is extended, a ring of oil can be seen on the rod.	See your dealer
Leakage	Each time the rod retracts, the excess oil drips from the gland.	

Fire extinguisher (not supplied)

It is strongly recommended a fire extinguisher be kept on the machine. An extinguisher is not supplied but can be purchased separately and placed in the rear left-hand side compartment. A specific bracket has been provided for this purpose.

Maintenance specifications	
Every month	Examine the fire extinguisher and make sure it is not damaged.
Every six months	Have an approved specialist empty and refill the fire extinguisher.
Every year	Have an approved specialist examine the fire extinguisher.

4. Remove the two screw of the upper box battery.



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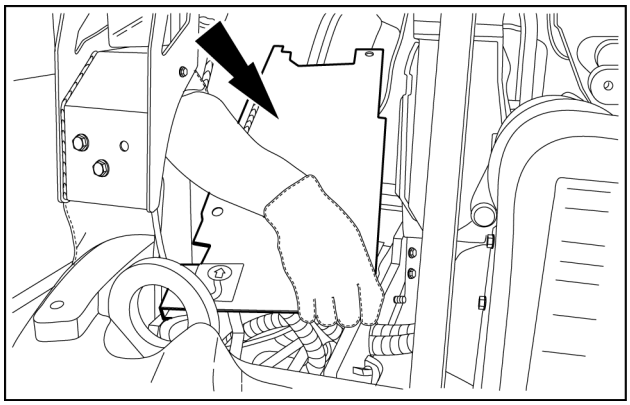
5. Remove the upper box battery.



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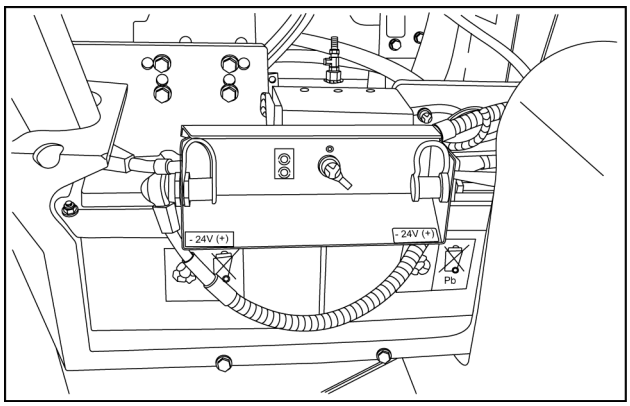
6. Remove the terminal protection caps, disconnect the cables (negative terminals) and then the other cables (positive terminals).
7. Remove the screws, the washers, and retainer. Remove the old batteries.
8. Install new batteries of the correct voltage and replace retainer, washers and screws.
9. Clean the cables and battery terminals, and coat with grease. Install new anti-sulfate pellets. Reconnect the positive cable ends to the positive terminals first. Reconnect the negative cable ends to the negative terminals, and install the terminal protection caps.



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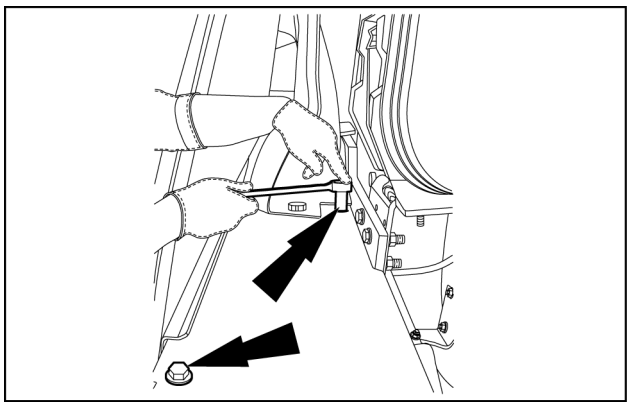
10. Install the upper box battery tightening the two screws.



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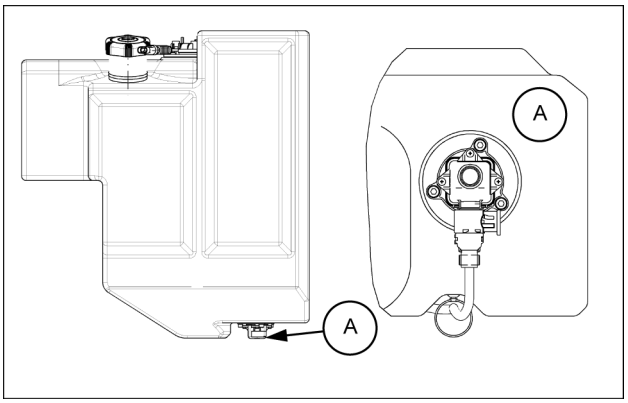
9. Place a suitable container below the **DEF/ADBLUE®** supply tank.
   Remove the Urea Quality Sensor (UQS), allow to drain the **DEF/ADBLUE®** through the UQS hole.
   Reinstall the UQS.
10. Remove the batteries, clean the battery housings and make sure not to leave any traces of acid. Store the batteries safely in a cool and dry location, where the temperature will be higher than **0 °C** (**32.0 °F**).
11. Paint any areas where the paint shows signs of deterioration.
12. Plug the air filter inlet and the exhaust pipe.
13. Remove the starter switch key and place a "DO NOT OPERATE" label on the right-hand control arm.
14. Lock the hoods and the cab door.
15. If equipped with attachment quick coupler, apply anti-seize to the coupler locking pins and bores.



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921F Drivetrain - Optional 5 Speed Transmission

5F/3R Proportional with Electronic Control Module torque sensing autoshift/manual shift and modulation		
Gears	Helical cut	
Gear ratios	Forward	Reverse
1st	3.921	3.718
2nd	2.255	2.138
3rd	1.466	0.894
4th	0.942	
5th	0.613	
Torque converter stall ratio	2.350:1	
Rear axle oscillation	**24 °** total	
Standard Axles	Front	Rear
Differential	Limited slip on front and rear axles	
Differential ratio	4.11	4.11
Planetary ratio	6.00	6.00
Final axle ratio	24.67	24.67
Planetaries	Outboard	
Service brakes	Hydraulically actuated, maintenance-free, multiple wet disc w/accumulator to all four wheels	
Parking brakes	Spring-applied hydraulic release disc on transmission output shaft	
Travel speeds	Forward	Reverse
1st	**6.4 km/h** (**4.0 mph**)	**6.8 km/h** (**4.2 mph**)
2nd	**11.1 km/h** (**6.9 mph**)	**11.7 km/h** (**7.3 mph**)
3rd	**17 km/h** (**10.6 mph**)	**27.7 km/h** (**17.2 mph**)
4th	**26.3 km/h** (**16.3 mph**)	
5th	**40 km/h** (**25 mph**)	

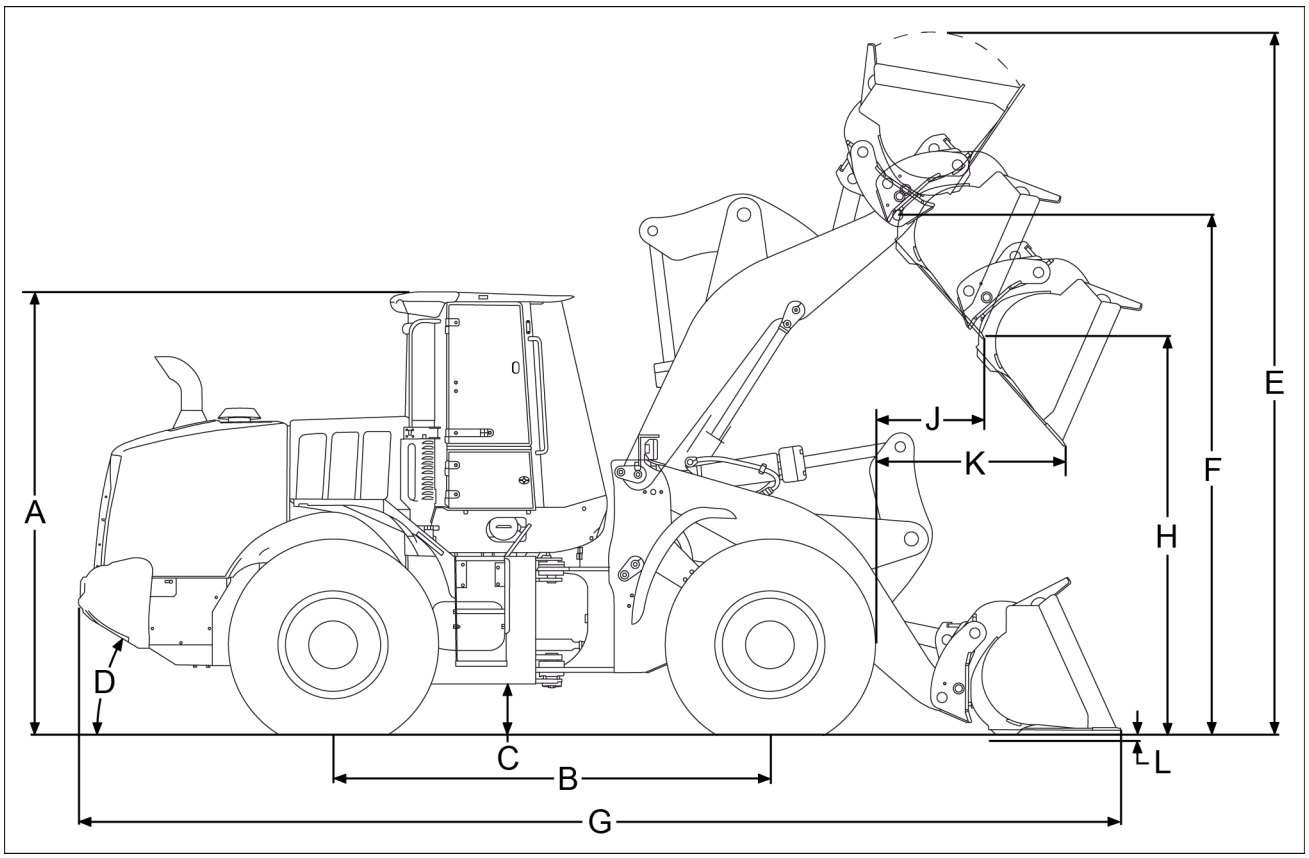
NOTE: *travel speeds @ full engine throttle and lock-up converter engaged.*

921F Cylinder Specifications

Lift cylinder	
Bore diameter	**152.4 mm** (**6.0 in**)
Rod diameter	**88.9 mm** (**3.5 in**)
Stroke	**845.7 mm** (**33.30 in**)
Dump cylinder	
Bore diameter	**177.8 mm** (**7.0 in**)
Rod diameter	**101.6 mm** (**4.0 in**)
Stroke	**599.9 mm** (**23.62 in**)
Steer cylinder	
Bore diameter	**82.6 mm** (**3.25 in**)
Rod diameter	**44.5 mm** (**1.75 in**)
Stroke	**481.9 mm** (**18.97 in**)

Instrumentation Gauges

Speedometer	Engine Coolant Temperature (ECT)	Gear position
Tachometer	Hydraulic oil temperature	Transmission modes
Hourmeter	Transmission oil temperature	Travel selected (FNR)
Fuel level	Selected Catalytic Reduction (SCR)	Work mode



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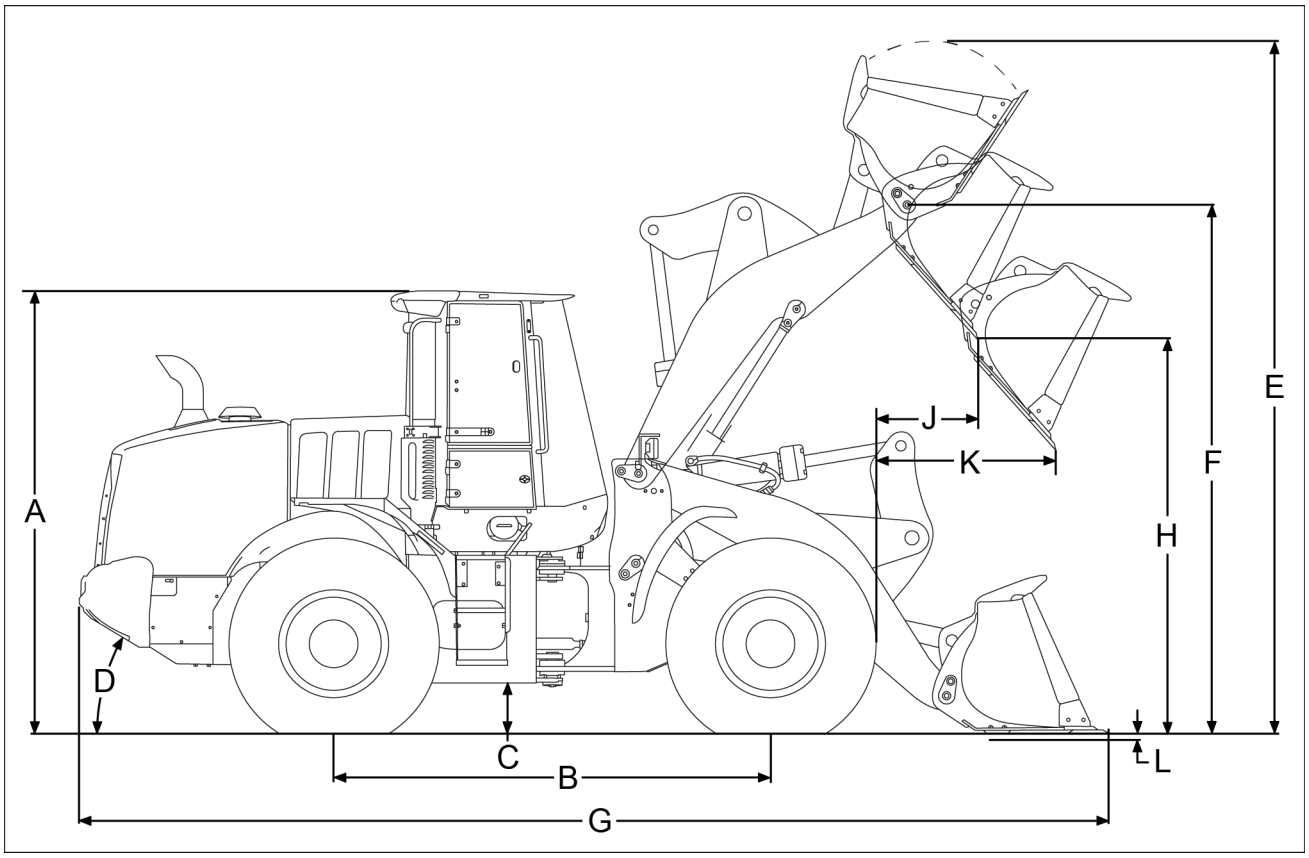
821F Z-Bar Specifications Quick Coupler- 3.0 m³ (4.0 yd³) Bucket (General Purpose Pin On)

	Bolt-on Edge Bucket
ISO Bucket Specifications	
Struck	**2.61 m³** (**2.59 yd³**)
Heaped	**3.60 m³** (**4.00 yd³**)
Bucket width (maximum outer)	**3030 mm** (**119.3 in**)
Dimensional Outline Specifications	
A (top of cab height)	**3450 mm** (**135.8 in**)
B (wheelbase)	**3340 mm** (**131.5 in**)
C (ground clearance)	**415.8 mm** (**16.4 in**)
D (rear angle of departure)	**32 °**
Overall width with bucket guard	**2885 mm** (**113.6 in**)
Centerline tread width	**2230 mm** (**87.8 in**)
Turning radius (outside of tires)	**6032 mm** (**237.5 in**)
Turning angle from center	**40 °**
Total turning angle	**80 °**
E (fully raised with spillguard)	**5516 mm** (**217.2 in**)
F (hinge pin - fully raised)	**4120 mm** (**162.2 in**)
G (overall - bucket level on ground)	**7861 mm** (**309.5 in**)
H (dump - fully raised, **45 °** dump)	**2969 mm** (**116.9 in**)
J (reach - fully raised, **45 °** dump)	**1061 mm** (**41.8 in**)
K (reach - **2.13 m** (**7.0 ft**), **45 °** dump)	**1650 mm** (**65.0 in**)
L (dig depth)	**116 mm** (**4.6 in**)
ISO Load Specifications	
Operating load	**5193 kg** (**11448 lb**)
Tipping load	
Machine straight	**12203 kg** (**26902 lb**)
40° turn	**10386 kg** (**22897 lb**)

921F Loader - Lift Arms Specifications



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921F Z-Bar Specifications - 4 m³ (5.2 yd³) Bucket (General Purpose Pin On)

	Bucket w/Bolt-on Edge	Bucket w/Teeth
ISO Bucket Specifications		
Struck	**3.40 m³** (**4.45 yd³**)	**3.57 m³** (**4.67 yd³**)
Heaped	**3.98 m³** (**5.20 yd³**)	**3.82 m³** (**5 yd³**)
Bucket width (maximum outer)	**2980 mm** (**117.3 in**)	**2980 mm** (**117.3 in**)
Dimensional Outline Specifications		
A (top of cab height)	**3450 mm** (**135.8 in**)	**3450 mm** (**135.8 in**)
B (wheelbase)	**3340 mm** (**131.5 in**)	**3340 mm** (**131.5 in**)
C (ground clearance)	**415.8 mm** (**16.4 in**)	**415.8 mm** (**16.4 in**)
D (rear angle of departure)	**30 °**	**30 °**
Overall width w/o bucket	**2885 mm** (**113.6 in**)	**2885 mm** (**113.6 in**)
Centerline tread width	**2230 mm** (**87.8 in**)	**2230 mm** (**87.8 in**)
Turning radius (outside of tires)	**6032 mm** (**237.5 in**)	**6032 mm** (**237.5 in**)
Turning angle from center	**40 °**	**40 °**
Total turning angle	**80 °**	**80 °**
E (fully raised with spillguard)	**5711 mm** (**224.8 in**)	**5712 mm** (**224.8 in**)
F (hinge pin - fully raised)	**4117 mm** (**162.1 in**)	**4118 mm** (**162.1 in**)
G (overall - bucket level on ground)	**7923 mm** (**311.9 in**)	**8074 mm** (**317.9 in**)
H (dump - fully raised, **45 °** dump)	**2865 mm** (**112.8 in**)	**2758 mm** (**108.6 in**)
J (reach - fully raised, **45 °** dump)	**1055 mm** (**41.5 in**)	**1162 mm** (**45.7 in**)
K (reach - **2.13 m** (**7.0 ft**), **45 °** dump)	**1593 mm** (**62.7 in**)	**1642 mm** (**64.6 in**)
L (dig depth)	**74 mm** (**2.9 in**)	**74 mm** (**2.9 in**)
ISO Load Specifications		
Operating load	**7205 kg** (**15884 lb**)	**7245 kg** (**15973 lb**)
Tipping load		
Machine straight	**16765 kg** (**36961 lb**)	**16867 kg** (**37185 lb**)
40° turn	**14409 kg** (**31766 lb**)	**14491 kg** (**31946 lb**)