

ORIGINAL INSTRUCTIONS

**521G**  
**Tier 4B (Final)**  
Wheel Loader

**OPERATOR'S MANUAL**

**Part number 47887768**

1<sup>st</sup> edition English  
November 2016



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## Electro-Magnetic Compatibility (EMC)

Interference may arise as a result of add on equipment which may not necessarily meet the required standards. Such interference can result in serious malfunction of the unit and/or create unsafe situations, you must observe the following:

- 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 **24 V/m** at any time and at any location in the proximity of electronic components.
- The add on equipment must not interfere with the functioning of the on board electronics.

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

## Personal safety

Most accidents involving machine operation and maintenance can be avoided by following basic safety rules and precautions. Read and understand all the safety messages in this manual, the safety manual and the safety signs on the machine before you operate or service the machine. See your dealer if you have any questions.

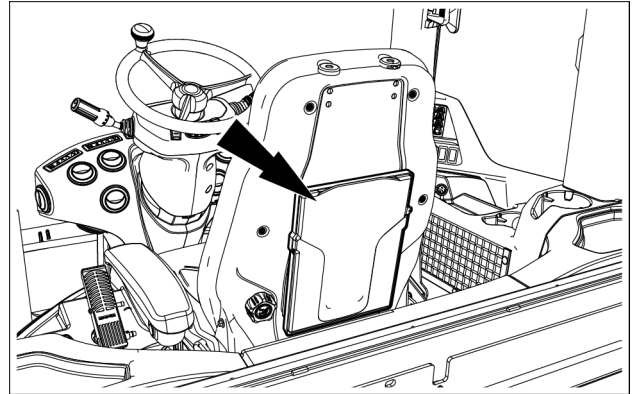
**READ THIS MANUAL COMPLETELY** and make sure you understand the controls. All equipment has a limit. Make sure you understand the speed, brakes, steering, stability, and load characteristics of the machine before you start to operate this machine.

**DO NOT** remove this manual or the safety manual from the machine. See your dealer for additional manuals. Also see the manual information on the Title pages (first and second pages in front of the Table of Contents) of this manual.

The safety information given in this manual does not replace safety codes, insurance needs, federal, state, or local laws. Make sure that your machine has the correct equipment according to these rules or laws.

Additional safety messages are used in the text of the manual to show specific safety hazards.

**NOTICE:** *the safety messages in this chapter point out conditions which can happen during the normal operation and maintenance of your machine. These safety messages also give possible ways of dealing with these conditions.*



LEIL16WHL1253AB 1

## Support strut and service link

### **⚠ WARNING**

#### **Crushing hazard!**

If you service the machine with the loader lift arms raised, always use the support strut. Remove the support strut from the storage position and place the strut onto the cylinder rod. Install the retaining bolt entirely into the strut. Lower lift arms onto the support strut.

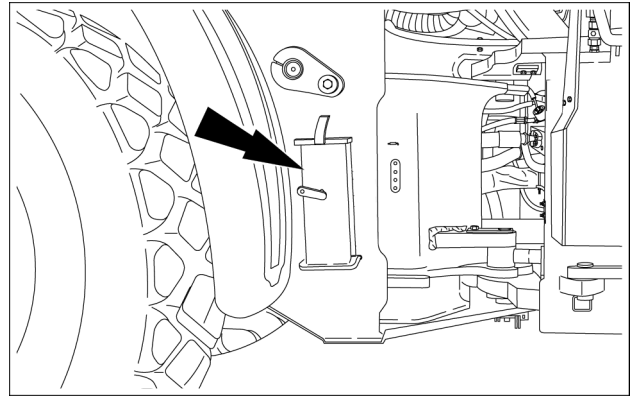
Failure to comply could result in death or serious injury.

W0140A

If you service the machine with the loader lift arms raised, always use the support strut.

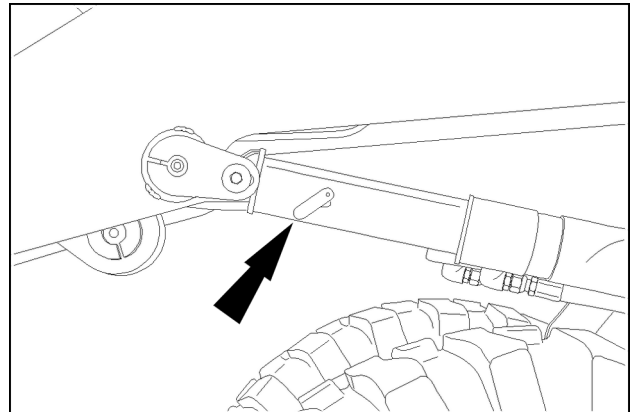
### **Support strut**

1. Empty the loader bucket, park the machine on a level surface, raise the loader lift arm to approximately **2.1 m (7 ft)**, turn the engine off and set the parking brake before exiting the cab. Maintain the bucket in a dumped position. Remove the support strut from the storage position by removing the retaining bolt.



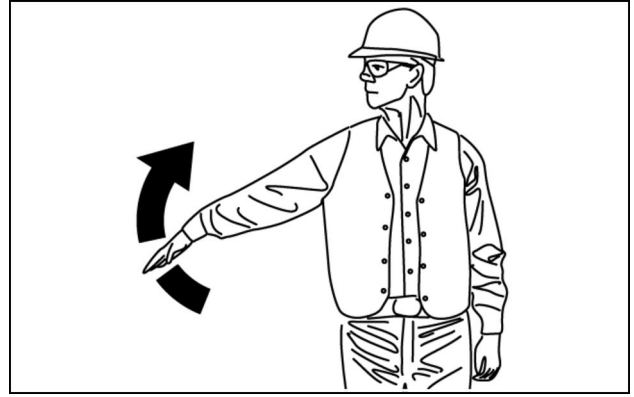
LEIL15WHL1850AA 1

2. Place the support strut onto the cylinder rod with the guide lock tab on the top of the cylinder and pointing toward the bucket. Install the retaining bolt entirely into the support strut using all threads. Slowly lower the lift arms onto the support strut. Maintain the bucket in a dumped position.

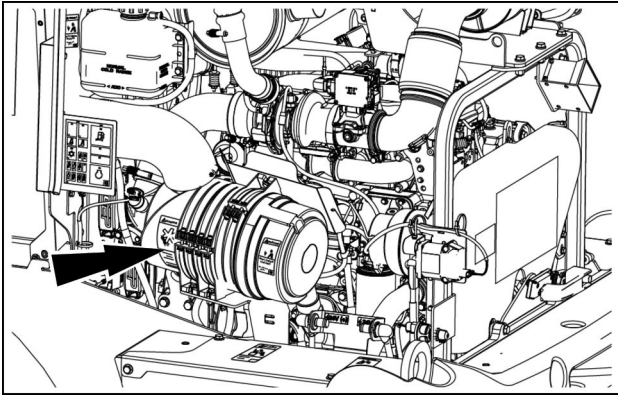


RCPH10WHL061BAL 2

Empty tool



LEEN11T0024AA 20



LEIL16WHL1259AA 35

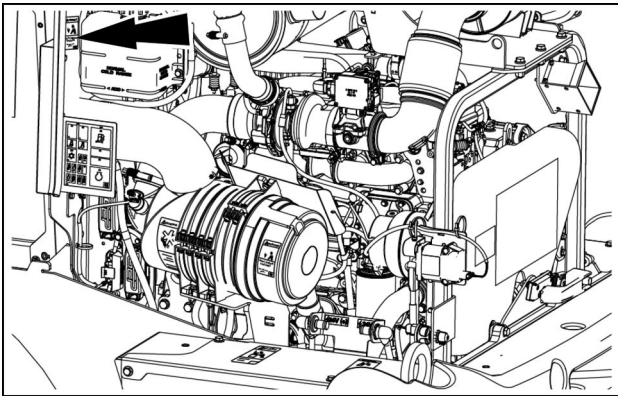
Location: left-hand side of the machine, on the air cleaner housing.

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

North American decal number: 87488606  
French Canadian decal number: 87488607  
Spanish decal number: 87488608



87488606\_1 36



LEIL16WHL1259AA 37

Location: left-hand and right-hand side of the machine, near the fan guard.

**WARNING**  
Explosion hazard!  
Do not use ether.  
Failure to comply with this warning could result in death or serious injury.

North American decal number: 47728994  
French Canadian decal number: 47728074  
Spanish decal number: 8603094



8603092\_ 38

## Operator's seat

### Overview

#### **▲ WARNING**

Loss of control hazard!

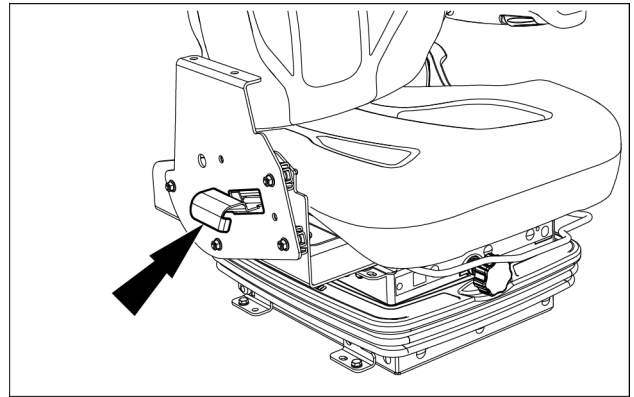
**DO NOT** make seat adjustments while the machine is in motion. All seat adjustment should be made with the machine stationary and the parking brake applied. Failure to comply could result in death or serious injury.

W0293A

### Standard operator seat – Mechanical suspension

#### Console Fore/Aft adjustment

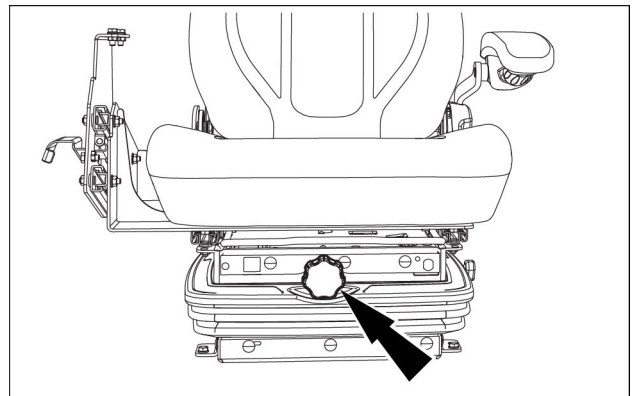
Lift up the handle and adjust the control carrier equipment forward or backward as required.



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#### Weight adjustment

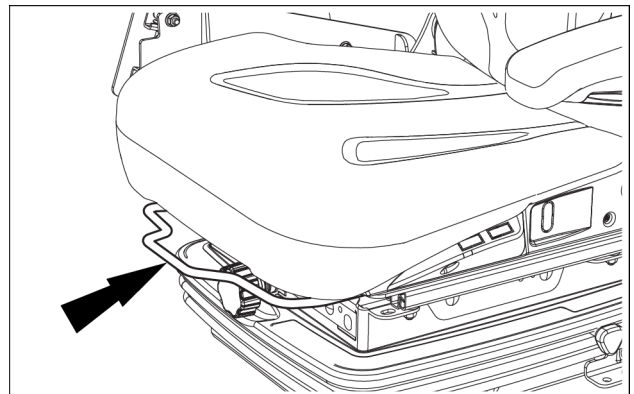
Use the knob to increase or decrease the weight resistance. Adjust the seat as operator preference and comfort.



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#### Seat Fore/Aft adjustment

Pull the slide adjustment lever up and adjust the seat forward or backward as required. Release the lever to lock the seat in position. Always make adjustments from the front center of the adjustment bar.



LEIL16WHL1386AB 3

## Steering column

### ⚠ 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.

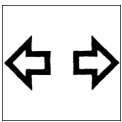
Failure to comply could result in death or serious injury.

W0304A

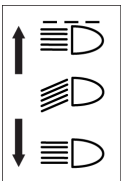
### Right-hand multifunction lever



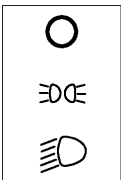
1. Horn  
Push the horn lever in to actuate the horn.



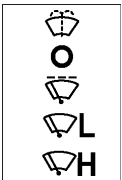
2. Turn signal lever  
Push the control lever up to signal a left turn. Pull the lever down to signal a right turn. Move the lever manually to the center position to stop the signals.



3. High beam headlights and flashing  
Pull the multifunction lever to turn on the high beam headlights. Push the multifunction lever for flashing.

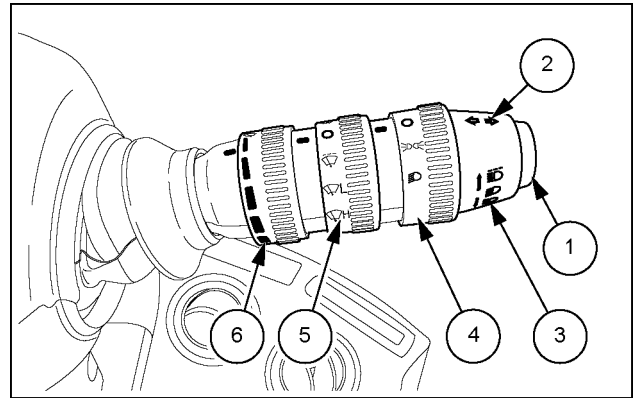


4. Driving light wheel  
Rotate the wheel (4) to set one of the three positions:  
0 – Lights OFF  
1 – Marker/position lights  
2 – Low beam headlights



5. Front wiper/washer wheel  
Rotate the wheel (5) to set one of the four positions:  
0 - OFF position.  
I - ON position – Rotate clockwise the wheel (5) to the first position to activate the front wiper.  
L - INTERMITTENT - Rotate clockwise the wheel (5) to the second position to activate the front wiper at the intermittent speed.  
H - CONTINUOUSLY - Rotate clockwise the wheel (5) to the third position. The front wiper runs continuously.  
WASH - Rotate counterclockwise and hold the wheel (5) for washer fluid.

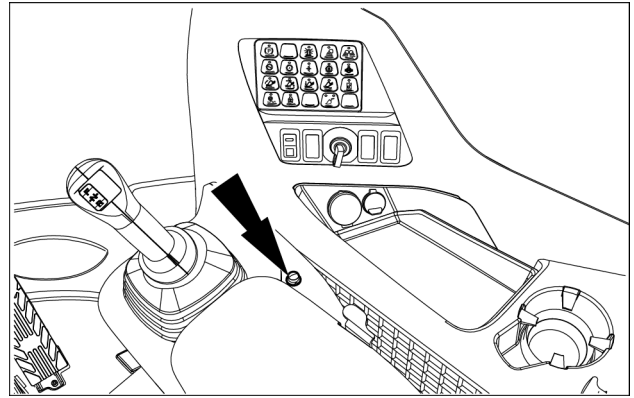
6. Front wiper speed wheel  
Rotate the wheel (6) to adjust and set the front wiper intermittent speed. There are six settings for the front wiper intermittent speed.



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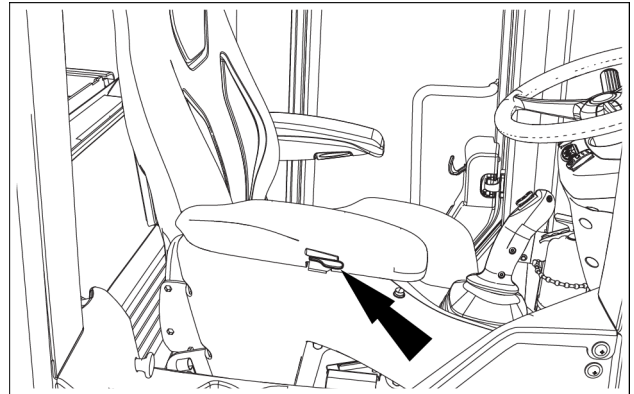
### 9. Horn

Press the switch to activate the horn.

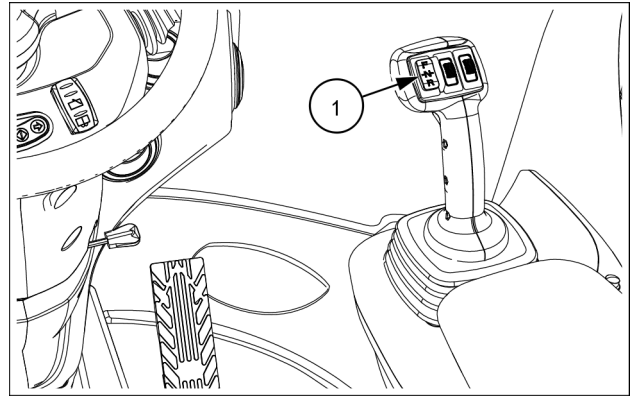


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### 10. Arm pad release

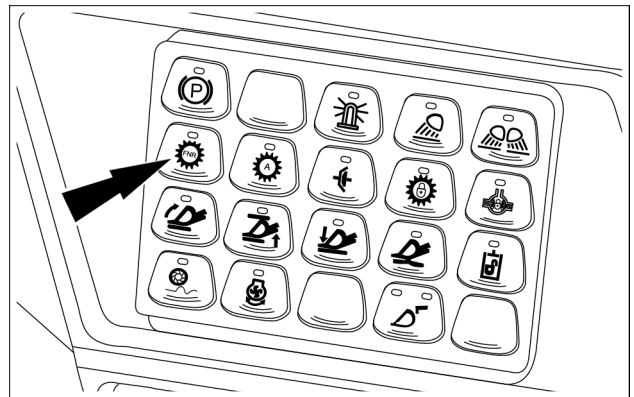


LEIL16WHL1305AB 10



LEIL16WHL1290AA 15

6. Press the auxiliary F-N-R button located on the right-hand side console. The indicator light on the button will illuminate when activated.
7. Press the parking brake button to release the parking brake.
8. Place the auxiliary F-N-R switch **(1)** in either FORWARD or REVERSE to move the machine.



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## DISPLAY OPERATION

### Navigation through the Liquid Crystal Display (LCD) multifunction display screens

A keypad is located on the right-hand external border of the display.

Use this keypad to move from one screen to another, to choose various selections, to monitor the machine functions, and to retrieve information. All selections made with the computerized technology of the LCD screen are essentially programmed in the same manner.

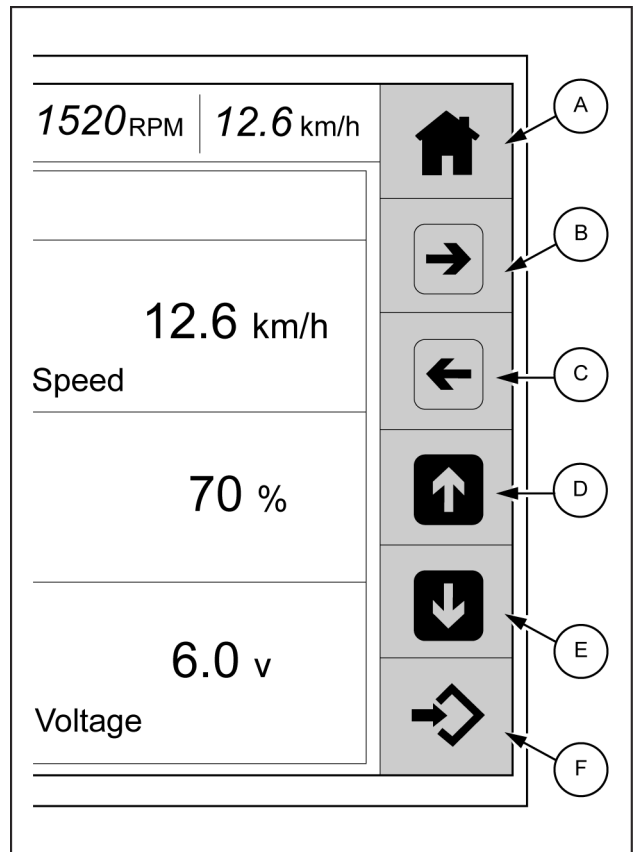
Follow any screen prompts when given and use the confirm key to enter the selection. Use the home key (A) to return to the main menu. This will lock the chosen selection into memory.

You can access all functions in the same basic manner.

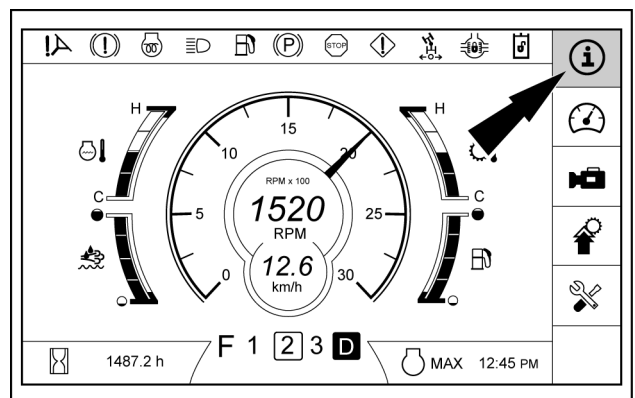
- Home key - Use this key to exit and return to the driving screen. You can use this key anytime to start over and begin again or to exit a field. You can also use this key to electronically check fault codes.
- Right arrow key - Use this key to scroll right to selections/screens.
- Left arrow key - Use this key to scroll left to selections/screens.
- Up arrow key - Use this key to scroll up to selections/screens.
- Down arrow key - Use this key to scroll down to selections/screens.
- Enter/confirm key - Use this key to confirm selections. After selections have been highlighted, use the enter/confirm key to choose selections.

### Machine status

Use the keypad on the right-hand of the display to select the key to access to the "Machine status" screens.



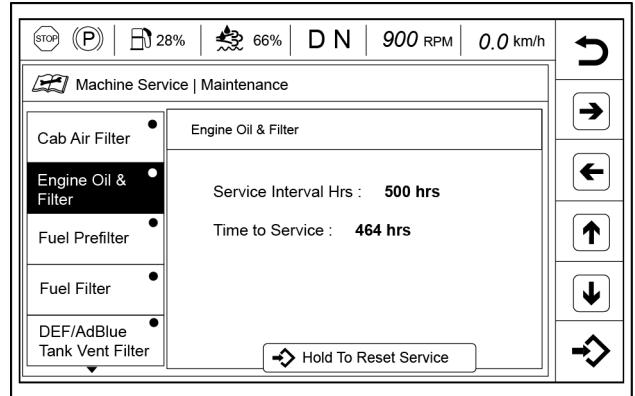
LEIL15WHL0581BB 4



LEIL15WHL0629AA 5

Engine Oil & Filters:

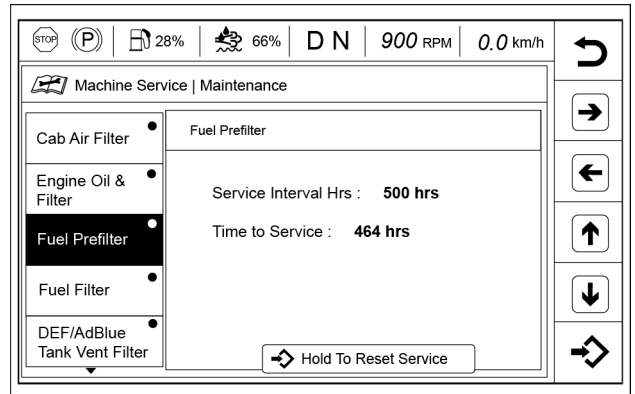
- Service Intervals Hrs: **500 h**
- Time to Service: (hours remaining until service is due)



LEIL16WHL0961AA 33

Fuel Pre-filter:

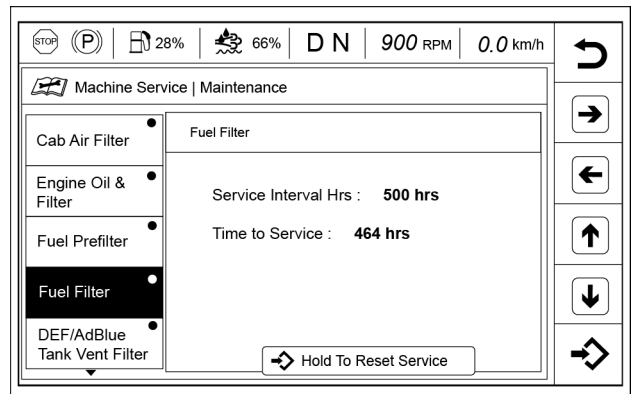
- Service Intervals Hrs: **500 h**
- Time to Service: (hours remaining until service is due)



LEIL16WHL0962AA 34

Fuel Filter:

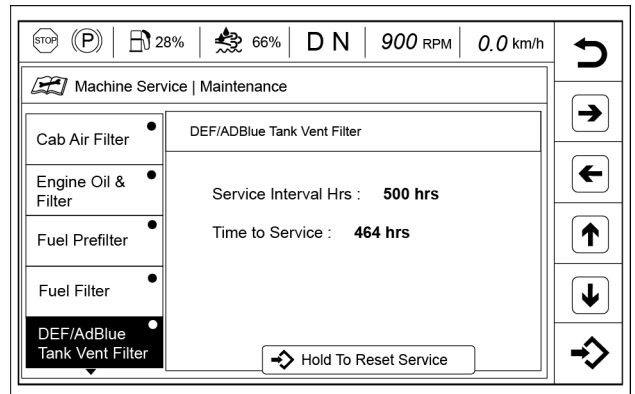
- Service Intervals Hrs: **500 h**
- Time to Service: (hours remaining until service is due)



LEIL16WHL0963AA 35

DEF/AdBLUE® Tank Vent Filter:

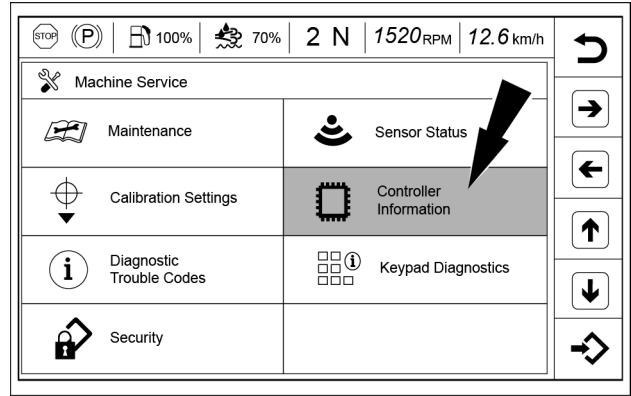
- Service Intervals Hrs: **500 h**
- Time to Service: (hours remaining until service is due)



LEIL16WHL0964AA 36

**Controller Information**

Use the keypad on the right-hand of the display to select the key to switch to the “Controller Information” screens. Screen shows hardware and software information for the selected electronic controller.

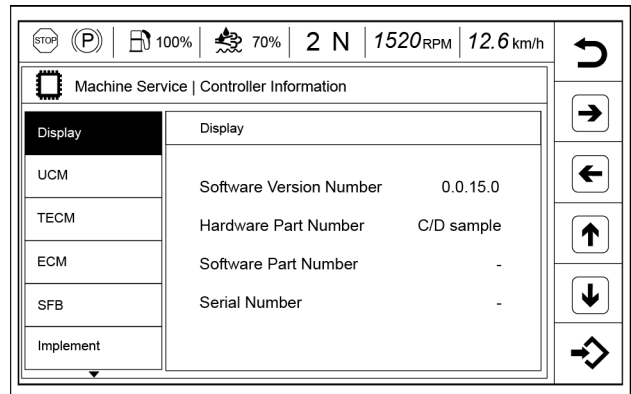


LEIL16WHL0931AA 73

→ Display (Example)

This page shows the following information regarding the display controller:

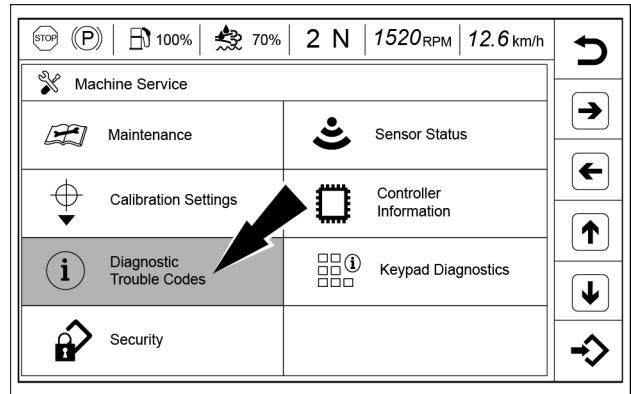
- Software Version Number
- Hardware Part Number
- Software Part Number
- Serial Number



LEIL16WHL0883AA 74

**Diagnostic Trouble Codes**

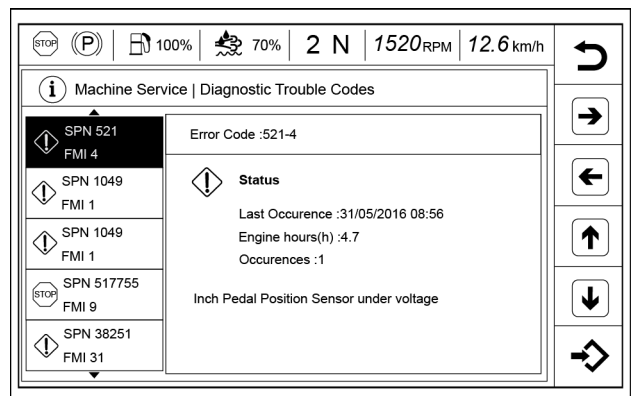
Use the keypad on the right-hand of the display to select the key to switch to the “Diagnostic Trouble Codes” page.



LEIL16WHL0909AA 75

→ Diagnostic Trouble Codes

This page shows the list of the fault codes occurred in the machine.



LEIL16WHL0881AA 76

## Resetting the Selective Catalytic Reduction (SCR) system

After a failure or warning has been set, the SCR system must perform automatic tests to determine if failures or warnings have been resolved. There are two categories of system warnings:

1. Electrical failures which only need key cycle to heal.
2. Failures which need an active Urea Dosing System to heal:
  - Heated up SCR
  - High engine speed and torque

The system must perform the following actions in order to recognize the resolved failures or warnings and reset itself.

1. For **DEF/AdBLUE®** level warnings:
  - a. Key switch must be cycled OFF then ON.
2. For poor **DEF/AdBLUE®** quality warnings:
  - a. Key switch must be cycled OFF then ON.
3. For SCR system warnings, one of the following conditions must occur, depending on the exact cause of the warning:
  - a. Requires the machine to be operated for approximately **20 min** at a minimum of **50 %** load to operate the SCR system.
  - b. Requires starting and running the engine, but does not require the SCR system to operate.
  - c. Requires the key switch to be cycled OFF then ON.

## Validation re-starts

Validation re-starts apply to the scenario “3a” of SCR system warnings (see list above). Validation re-starts allow operation of the machine for up to **30 min** without power loss after a poor **DEF/AdBLUE®** quality or SCR system fault has been detected. Up to three re-starts are permitted. Re-starts are counted if either of the following conditions are met:

1. Key off, wait **2 min** for ECU after-run.
2. Key on, wait **5 - 15 s**
3. Key off, wait **5 - 15 s**
4. Key on, wait **5 - 15 s**
5. Start

Normal operation will resume if a reset is detected within the **30 min** window.

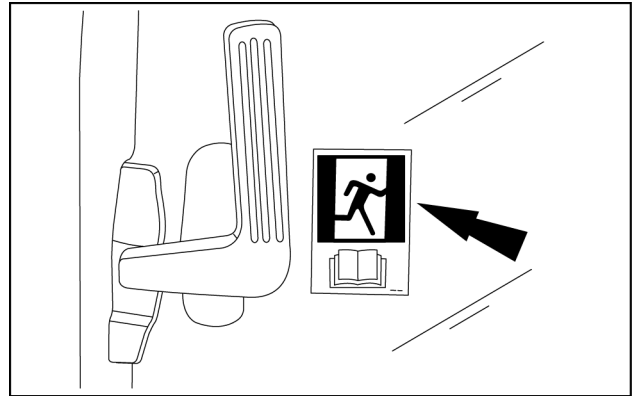
If a reset is not detected within **30 min**, power loss will occur as described in the table above.

Validation re-starts are not available **7 min** before severe inducement, or if inducement is activated a second time within **40 h** (inducements from low tank level are not considered toward validation restart availability)

If all three validation re-starts have been used and the system has not been reset, see your local authorized dealer for repair.

### Emergency exit

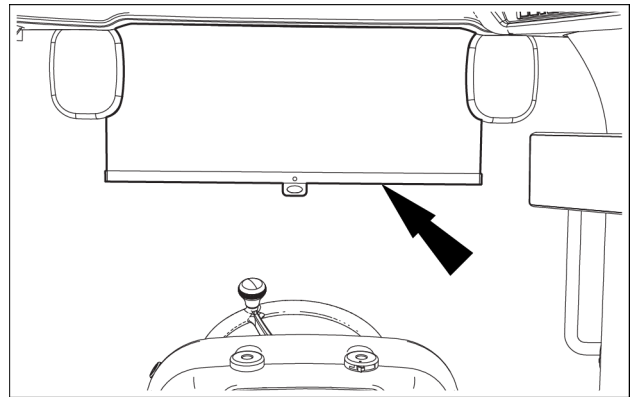
You can use the right-hand window of the cab as an emergency exit. Be proactive and open and close the emergency window exit as a safety measure to become familiar with its operation.



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### Front sunblind

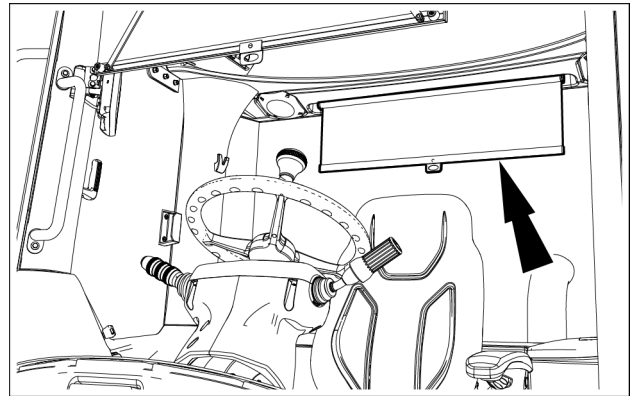
The machine is equipped with a front sunblind. Use the lower eyelet to position the sunblind at the desired height.



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### Rear sunblind (Optional)

The machine can be equipped with a rear sunblind. Use the lower eyelet to position the sunblind at the desired height.



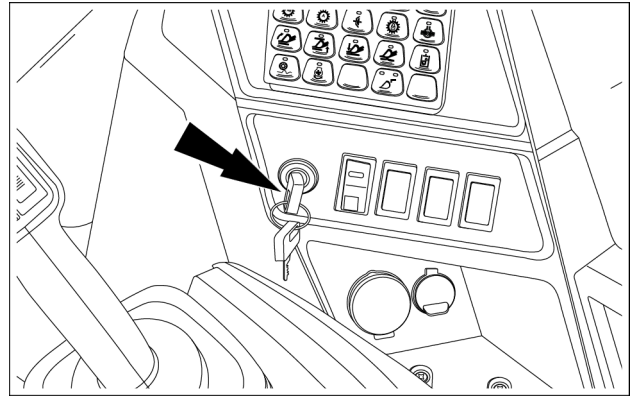
LEIL16WHL1268AB 6

6. Make certain the area is clear of all non-authorized personnel. Sound the horn to warn those around the work area of your intentions.
7. Insert the key into the ignition switch and turn it into the ON position. Monitor the console indicators. Do not attempt to start the engine until the grid heater light is out. When the grid heater light is no longer illuminated, turn the key to the START position. Once the engine starts, allow it to run at low idle until the engine coolant temperature is warm.

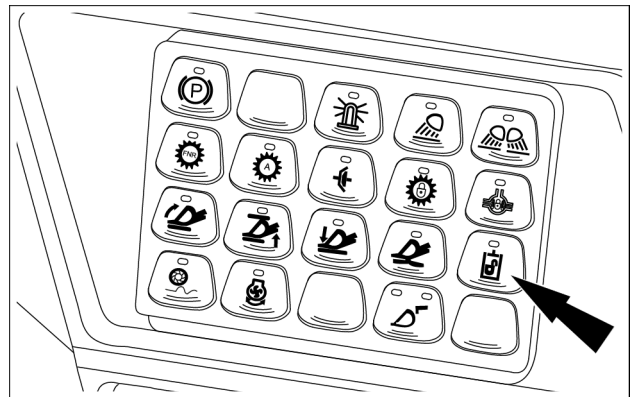
**NOTE:** if the engine starts and then stops, do not engage the starter motor again until the starter motor stops turning. Let the motor cool for two minutes before cranking again.

**NOTICE:** the starter has an automatic cut-out to protect itself. In cold weather conditions, extended cranking may be necessary.

8. Press the hydraulic functions lock-out button to power the equipment.
9. Raise the loader arm so that the equipment is raised approximately **380 mm (15 in)**.
10. To move the machine:
  - Press the parking brake button to the OFF position
  - Place the transmission control lever into the FORWARD or REVERSE position
  - Release the foot brake and accelerate smoothly

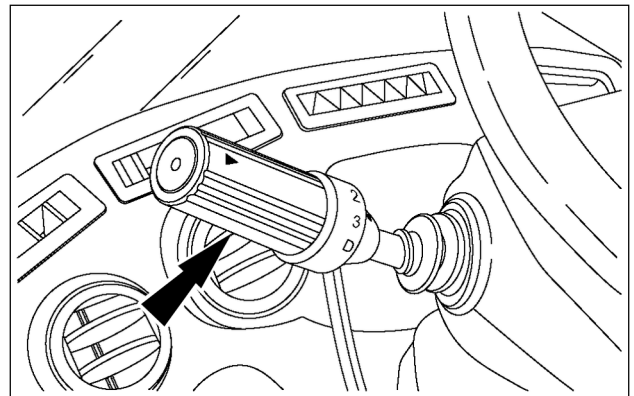


LEIL16WHL0005AA 5



LEIL16WHL1125AA 6

11. Use the transmission control lever to shift manually the transmission gears from first through fourth gear. Turn the transmission control lever away from you to select a higher gear. Turn the lever toward you to select a lower gear. Also use this control lever to put the transmission in FORWARD, NEUTRAL, and REVERSE.
  - Move the control lever away from you for FORWARD.
  - The center position of the control lever is NEUTRAL.
  - Move the control lever toward you for REVERSE.



LEIL16WHL1468AA 7

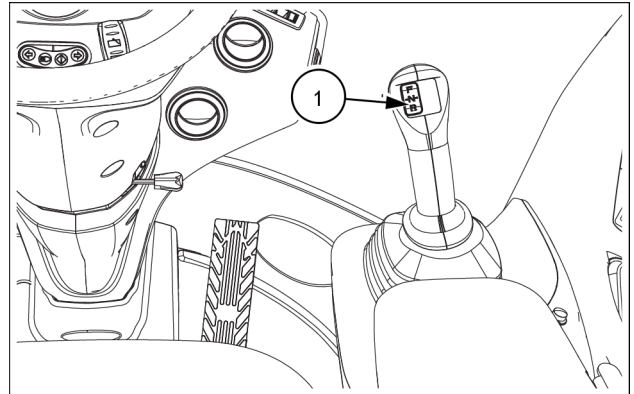
## Auxiliary Forward, Neutral, Reverse (F-N-R) switch

Auxiliary F-N-R switch (1) for all joystick and single axis lever applications.

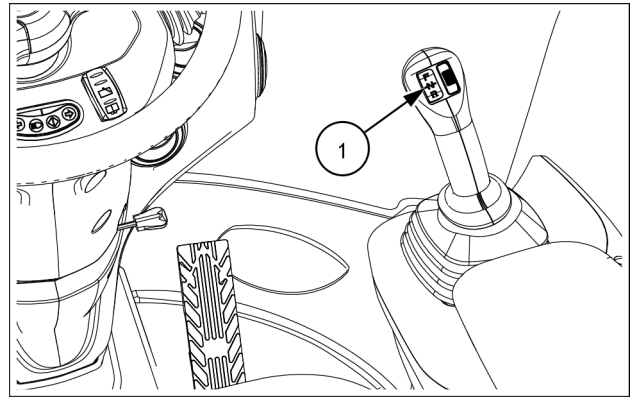
F. FORWARD

N. NEUTRAL

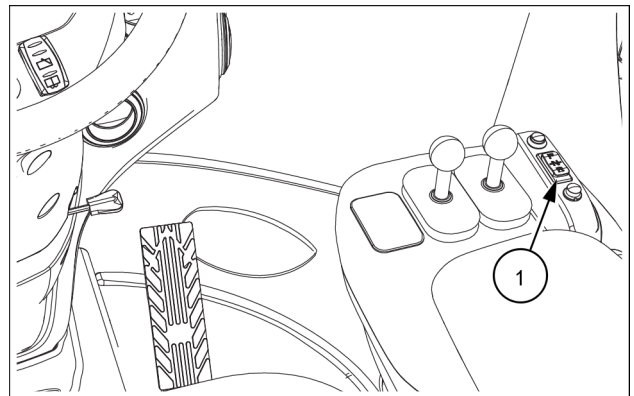
R. REVERSE



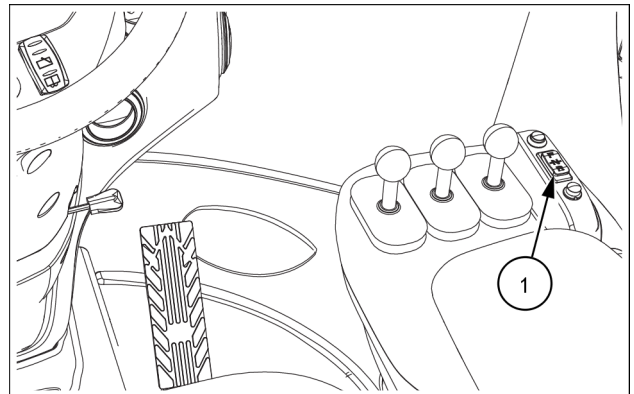
LEIL16WHL1288AB 1



LEIL16WHL1331AA 2



LEIL16WHL1303AA 3



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## Auxiliary hydraulic connection (if equipped)

### **⚠ WARNING**

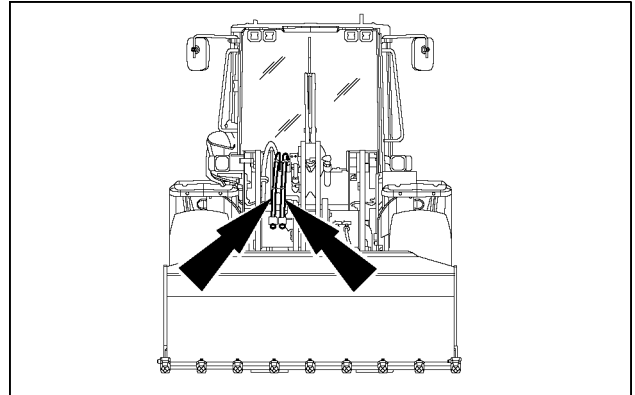
**Escaping fluid!**

**Do not disconnect hydraulic quick coupler under pressurized conditions. Make sure all hydraulic pressure is removed from the system before disconnecting hydraulic quick coupler.**

**Failure to comply could result in death or serious injury.**

W0095A

Your wheel loader may be equipped with an auxiliary hydraulic system.



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## 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.**

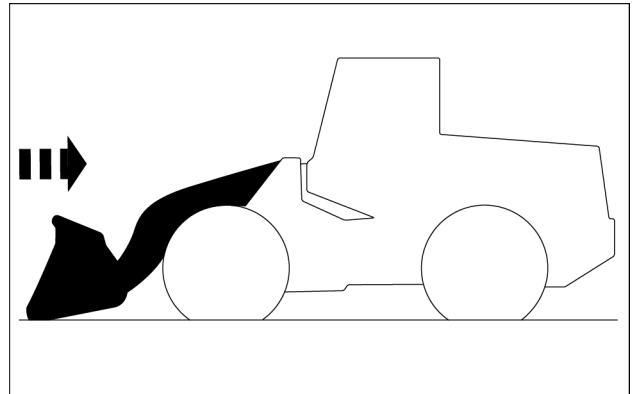
**Failure to comply could result in death or serious injury.**

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.

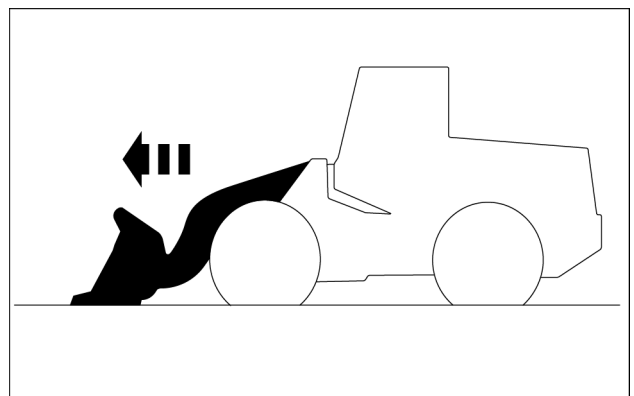


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### Pushing operation

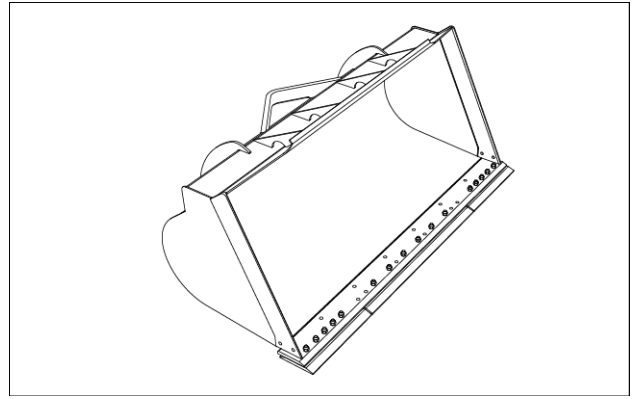
When pushing material, do not set the bucket dumping angle more than **20 °**.

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



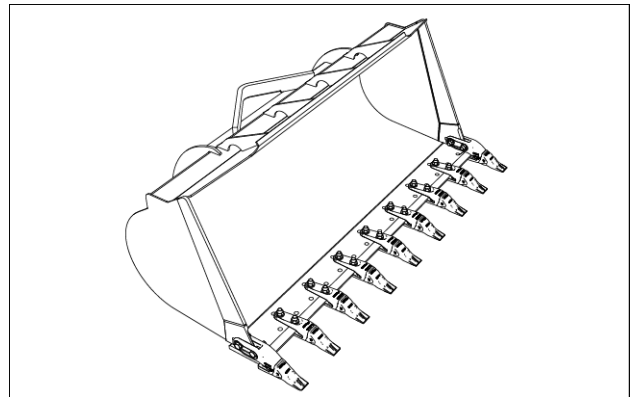
LEIL16WHL0037AB 2

ACS compatible coupler — bucket with cutting edge



LEIL16WHL0301AA 9

ACS compatible coupler — bucket with teeth



LEIL16WHL0302AA 10

**NOTE:** bolt on edge segments between teeth available from service parts.

## Releasing pressure in the hydraulic system

### **⚠ 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

### **⚠ WARNING**

**Escaping fluid!**  
Hydraulic fluid or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury. To prevent personal injury: Relieve all pressure before disconnecting fluid lines or performing work on the hydraulic system. Before applying pressure, make sure all connections are tight and all components are in good condition. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately. Failure to comply could result in death or serious injury.

W0178A

### **⚠ WARNING**

**Escaping fluid!**  
Do not disconnect hydraulic quick coupler under pressurized conditions. Make sure all hydraulic pressure is removed from the system before disconnecting hydraulic quick coupler. Failure to comply could result in death or serious injury.

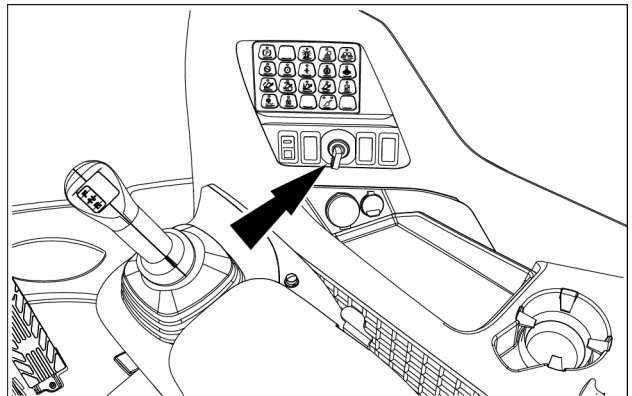
W0095A

### **⚠ WARNING**

**Burn hazard!**  
Before performing any service on the hydraulic system, you must allow it to cool. Hydraulic fluid temperature should not exceed 40 °C (104 °F). Failure to comply could result in death or serious injury.

W0241A

1. Park the machine on firm, level ground, lower the bucket/attachment to the ground and stop the engine.
2. Keep all non-authorized personnel clear of the machine. Turn the ignition switch key to the "ON" position.



LEIL16WHL1286AA 1

## Engine cooling system

### Organic Acid Technology (OAT) coolant

CASE CONSTRUCTION requires the use of a fully formulated Organic Acid Technology (OAT) based coolant. **CASE AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT** is preferred. The coolant must meet the specifications outlined in the CNH Industrial material specification **MAT3624**. Use of coolant not meeting this specification is not allowed. Mixing of different coolant brands is not recommended.

**NOTICE:** OAT coolant is mandatory for all FPT engines compliant to TIER4B emissions using Selective Catalytic Reduction (SCR). NEVER mix OAT coolant with conventional coolant. Under no circumstances should you top off a cooling system with only water. You can use a refractometer to check the concentration level. You should not use Supplemental Coolant Additives (SCA) when using **CASE AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT**. Change the coolant solution at the recommended change interval.

**NOTE:** mix the **CASE AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT** with 50% of clean water. Water for dilution of OAT coolant concentrate: distilled or demineralized. If demineralized water is not available, use water for dilution with the following properties:

Property	Maximum limit
Total Solids	340 ppm
Total Hardness	170 ppm
Chloride (Cl)	40 ppm
Sulfate (SO <sub>4</sub> )	100 ppm
Acidity pH	5.5 to 9.0

This solution ensures protection of the circuit from **-40.0 °C (-40.0 °F)** to **125.0 °C (257.0 °F)**.

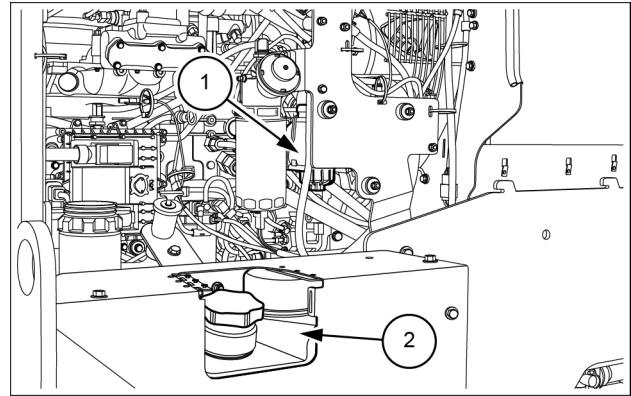
The optimum coolant/water concentration is 50/50. This concentration will protect the cooling system to **-37 °C (-35 °F)**. If a premixed coolant is not available, mix the concentrate with 50 % of water. The coolant concentration in the coolant/water mixture can be determined with a refractometer designed to measure ethylene glycol content. Distilled water or deionized water is recommended for the use in the engine cooling systems. DO NOT use hard water, sea water and softened sea that has been conditioned with salt. The minerals and salts present in potable water can cause corrosion and deposits resulting in shortened engine life.

In the case that the customer may have topped off an OAT coolant system with conventional coolant, follow the "Washing of the cooling system" on the next page to attain the full benefit of the coolant.

## Selective Catalytic Reduction (SCR) main components

### Supply Module (SM)

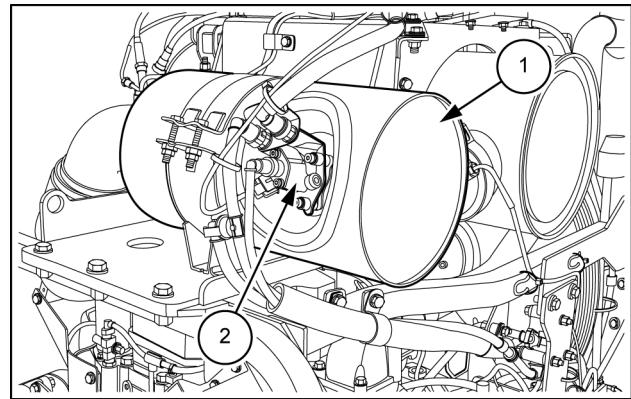
The Supply Module (SM) (1) contains a pump which withdraws the **DEF/AdBLUE®** fluid from the **DEF/AdBLUE®** tank (2). The **DEF/AdBLUE®** fluid is then directed to the dosing module connected to the Diesel Oxidation Catalyst (DOC).



LEIL15WHL0156AB 2

### Diesel Oxidation Catalyst (DOC)

The Diesel Oxidation Catalyst (DOC) (1) oxidizes hydrocarbons and carbon monoxide into water vapor and carbon dioxide, and converts part of the  $\text{NO}$  to  $\text{NO}_2$ . The **DEF/AdBLUE®** is injected in the DOC by the dosing module (2) connected to the DOC.

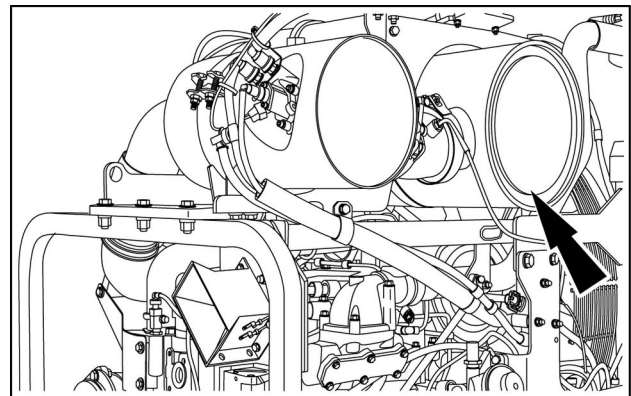


LEIL15WHL0154AB 3

### Selective Catalytic Reduction (SCR) catalyst + Clean Up Catalyst (CUC)

The main reaction involved in the SCR catalyst is the conversion of the  $\text{NO}_x$  to  $\text{N}_2$  and water ( $\text{H}_2\text{O}$ ). An average  $\text{NO}_2/\text{NO}_x$  ratio around 50% is required to give the optimum  $\text{NO}_x$  reduction efficiency in the exhaust system. Excess of ammonia ( $\text{NH}_3$ ) is often used to facilitate the  $\text{NO}_x$  reduction to nitrogen ( $\text{N}_2$ ), resulting in  $\text{NH}_3$  slip. This ammonia must be removed by a secondary step in the Clean Up Catalyst (CUC).

The Clean Up Catalyst (CUC) is located at the end of the Selective Catalytic Reduction (SCR). The CUC converts the ammonia ( $\text{NH}_3$ ) slip to nitrogen ( $\text{N}_2$ ) and water vapor ( $\text{H}_2\text{O}$ ). The CUC ensures that the ammonia slip to ambient is minimal.



LEIL15WHL0153AA 4

## DEF/AdBLUE® decal

The DEF/AdBLUE® decal is located near the DEF/AdBLUE® tank cap, on the inner side of the compartment door. The associated part number is 47657122.



47657122\_A 8

## DIESEL EXHAUST FLUID (DEF)/AdBLUE® consumption

DEF/AdBLUE® consumption is figured against the amount of fuel consumed. Typical DEF/AdBLUE® consumption is approximately **6 %** of fuel consumption when you operate the machine at rated engine speed. DEF/AdBLUE® consumption can be as high as **15 %** when NOx output increases. The consumption rate of DEF/AdBLUE® and fuel also depends on:

- Engine load
- Ambient humidity
- DEF/AdBLUE® fluid concentration
- Gear selection
- Ground drive slip
- Engine RPM during operation

**NOTE:** the “typical” consumption is only a guideline to verify proper function of the SCR system. CASE CONSTRUCTION recommends to fill the DEF/AdBLUE® tanks at every fuel refilling interval.

## Machine fittings - Grease

Grease the machine at the remote locations every 50 hours. In severe conditions, such as immersion in water, it may be necessary to reduce the greasing service intervals.

### Prior operation:

Clean around the area to be greased before service.

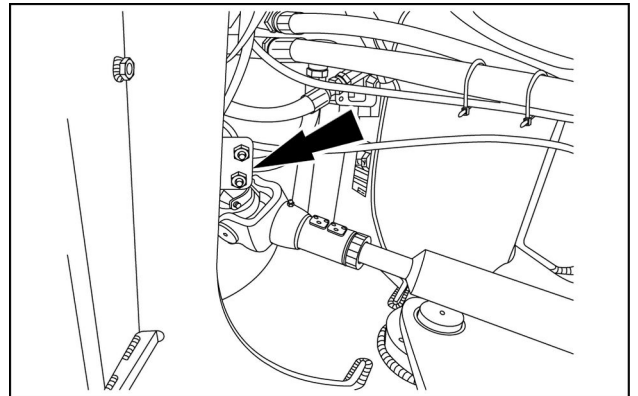
### Machine grease fittings

Service specifications	
Grease Specification	CASE AKCELA MOLY GREASE

### Drive shaft carrier bearing

#### Tilt cylinder

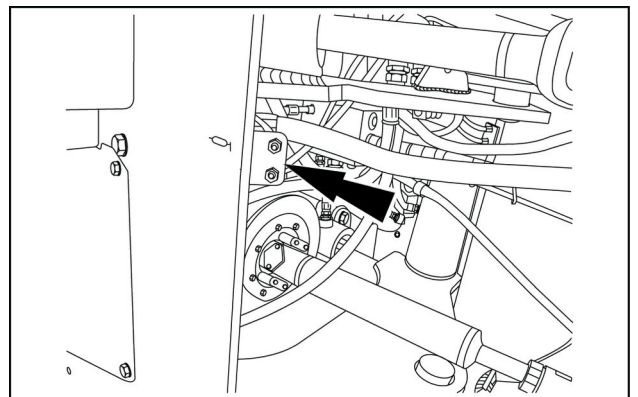
Grease the drive shaft carrier bearing and the tilt cylinder at the remote grease locations (front left-hand of machine).



LEIL15WHL1835AA 1

### Rear axle trunnion

Grease the axle oscillation at the remote grease locations (rear right-hand of machine).



LEIL15WHL1836AA 2

## Front and rear axle oil (Initial) - Change

### ⚠ WARNING

#### Chemical hazard!

When handling fuel, lubricants, and other service chemicals, follow the manufacturer's instructions. Wear Personal Protective Equipment (PPE) as instructed. Do not smoke or use open flame. Collect fluids in proper containers. Obey all local and environmental regulations when disposing of chemicals.

Failure to comply could result in death or serious injury.

W0371A

Drain and change the front and rear axle oil when the hour meter registers the initial 100 hours.

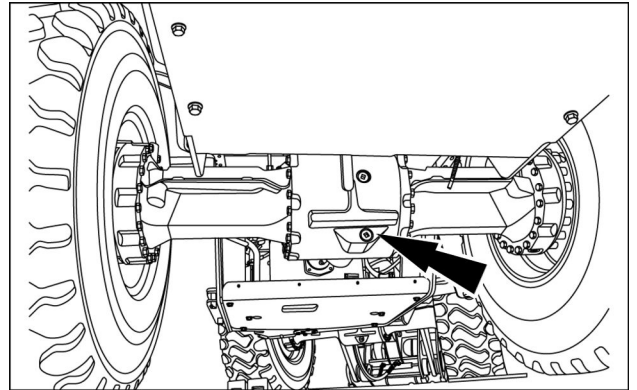
#### Prior operation:

Keep all unauthorized 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. Make sure that all residual pressure is relieved from the circuits before beginning maintenance. Install the service link to prevent unexpected articulation movements.

**NOTE:** do not use GL-5 oil in these axles.

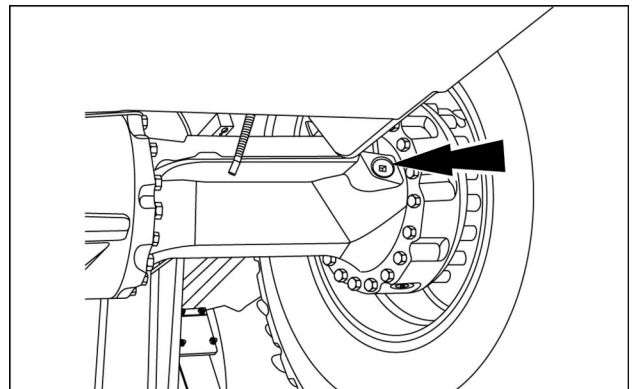
Service specifications - CASE AKCELA TRANSAXLE FLUID 80W-140	
Front axle	22 l (23.2 US qt)
Rear axle	22 l (23.2 US qt)

1. Clean the area around the drain and the fill caps of front and rear axles. Clean the area around the four axle ends.
2. Place a suitable container with sufficient capacity to capture the old oil under the front and the rear axles and the drain. Remove the drain plug, and allow the oil to drain.



RCPH10WHL081AAH 1

3. Place a suitable container with sufficient capacity to capture the old oil under each axle end. Remove the drain plugs to allow the oil to drain.



RCPH10WHL082AAH 2

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

## Drive belts - Check

### ⚠ WARNING

#### Entanglement hazard!

Always stop the engine and engage the parking brake, unless otherwise instructed in this manual, before checking and/or adjusting any drive belt or chain.  
Failure to comply could result in death or serious injury.

W0097A

### ⚠ WARNING

#### Moving parts!

Install all covers, panels, and guards after servicing or cleaning the machine. Never operate the machine with covers, panels, or guards removed.  
Failure to comply could result in death or serious injury.

W0135A

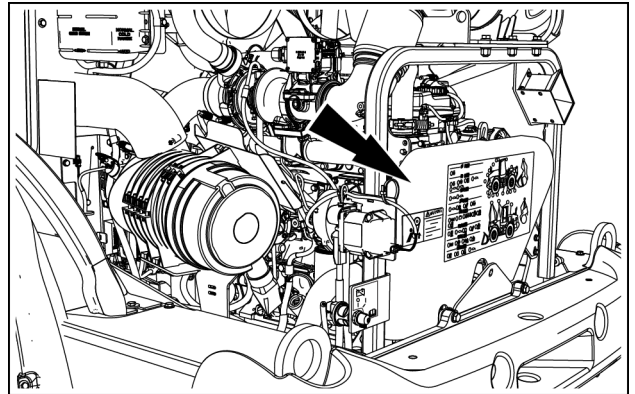
Check the drive belt for correct tension, wear and damage every 250 hours. Wrong belt tension may cause battery charge failure, engine overheating, or belt wear.

#### Prior operation:

Keep all non-authorized personnel clear of the area. Park the machine on a firm, level surface. Lower the attachment to the ground. Apply the parking brake, and install the transport service link to prevent unexpected articulation movements.

**NOTICE:** if the engine runs with the drive belt loose, the drive belt can slip and cause the engine to overheat or the battery to receive insufficient charge.

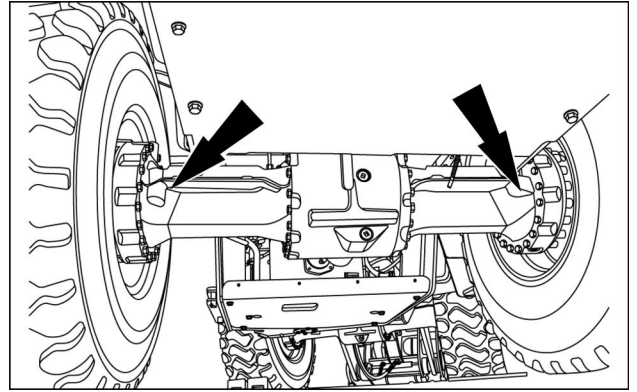
1. Check the drive belt for correct tension, wear and/or damage. Inspect the drive belt for chunking. Chunking is defined as a section of the rib missing. Replace the drive belt if a section longer than **10 mm (0.4 in)** is chunked out.



LEIL16WHL1166AA 1

6. Fill both axles with new **CASE AKCELA TRANSAXLE FLUID 80W-140**. The oil should reach the bottom of the fill plug.  
Fill the rear axle from the axle ends.  
Fill the front axle from the center.

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



RCPH10WHL081AAH 3

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.

### Belt tension

The correct tension for a new belt is:

**623 - 712 N·m (459.5 - 525.1 lb ft).**

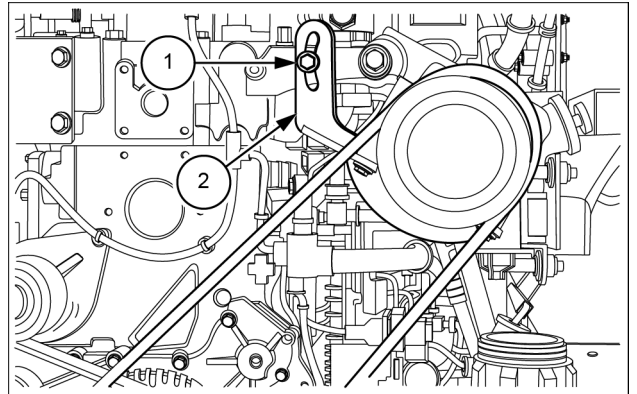
Tension for a used belt is:

**400 - 534 N·m (295.0 - 393.9 lb ft) tension.**

Adjust the belt if required.

### Air conditioning compressor belt

1. If the machine is equipped with air conditioning, replace the compressor belt every 1000 hours.
2. Loosen the screw **(1)** to lower the compressor bracket **(2)** and to release the tension of the drive belt. Remove the compressor drive belt.
3. Install a new belt. Using a crowbar, rotate the compressor until the belt is tight and then tighten the screw **(1)**. Check belt tension by squeezing the belt together with your hand midway between the pulleys. When properly installed, the belt should be able to be squeezed **20 mm (0.8 in)** maximum.



LEIL15WHL0287AB 5

**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

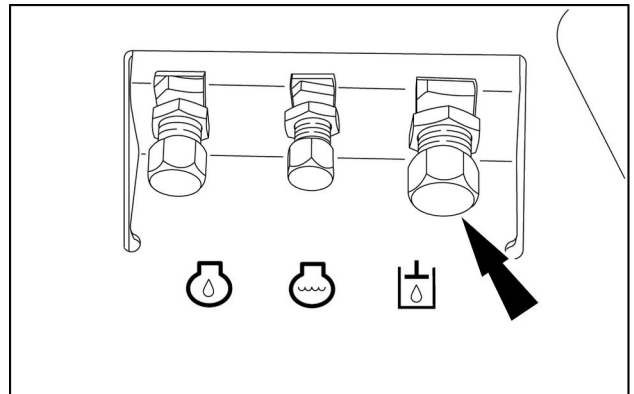
Change the hydraulic oil every 2000 hours of operation or more frequently when operating conditions are severe.

**Prior operation:**

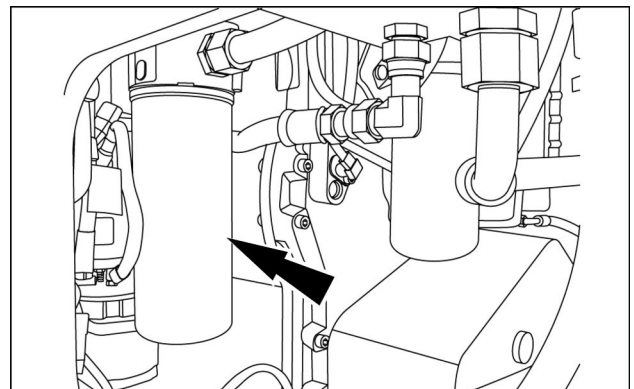
Keep all unauthorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied, and the attachment lowered to the ground. Make sure that all residual pressure is relieved from circuits before beginning maintenance. Install the service link to prevent unexpected articulation movements.

Service specifications	
Type	<b>CASE AKCELA HY-TRAN® ULTRACTION</b>
Total system capacity	<b>102.2 l (27 US gal)</b>
Reservoir capacity (with filter change)	<b>56.8 L (18.0 US gal)</b>

1. Stop the engine. Put a "DO NOT OPERATE" tag on the steering wheel or the key switch.
2. Push down on the brake pedal a minimum of 30 times to discharge completely the accumulators.
3. Relieve the pressure in the Ride control accumulator (if equipped) with the manual bleeder valve located on the top of the ride control valve. Remove the plug and turn the valve two turns counter-clockwise.
4. 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**.
5. Move the hydraulic controller to the float position, and turn the key off.
6. Clean the area around the filler cap, and slowly remove the cap.
7. 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 HY-TRAN® ULTRACTION** 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.



RAPH12WEL1411AA 1



RCPH10WHL127AAH 2

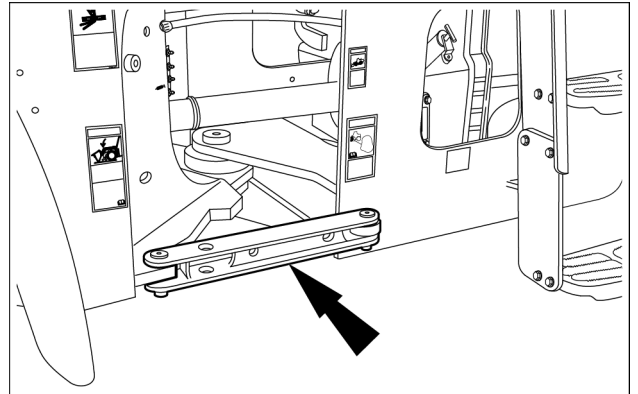
## Diesel Exhaust Fluid (DEF)/AdBlue® tank suction – Cleaning

Clean the **DEF/AdBlue®** tank suction filter every 4000 hours.

### Prior operation:

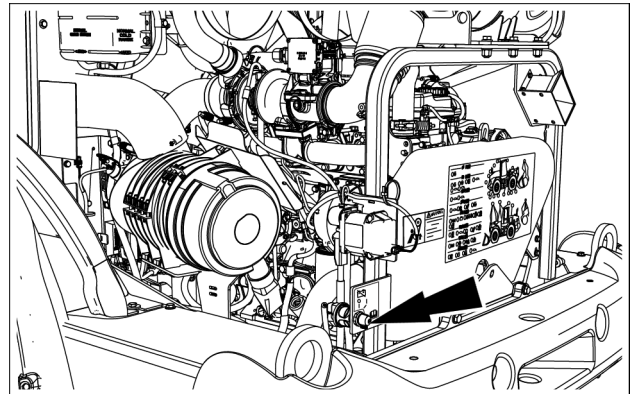
Keep all non-authorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied and the attachment lowered to the ground.

1. Lower the bucket/attachment to the ground and install the transport/service link into the locked position.



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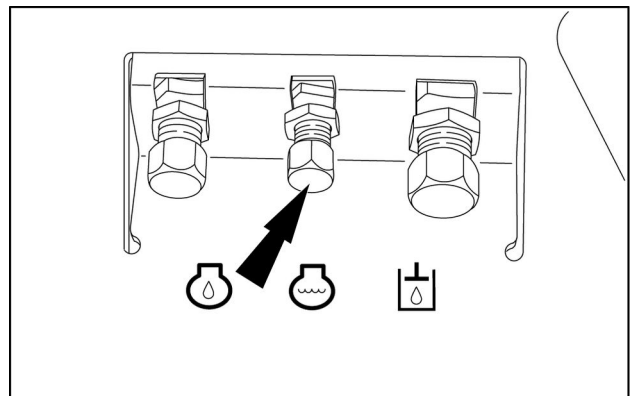
2. Turn the timed disconnect switch to the OFF position.



LEIL16WHL1166AA 2

3. Place a suitable container below the radiator drain located beneath the access cover at rear left-hand side of the machine. Remove the radiator cap. Remove the drain cap. Drain the coolant. Install the tank drain plug and the radiator cap after coolant has drained.

**NOTE:** use compressed air and water to clean debris from around drain plug area.



RAPH12WEL1411AA 3

## Parking brake - Check

### **⚠ WARNING**

**Improper operation or service of this machine can result in an accident. Make sure you perform the required service and adjustments correctly to avoid injury and machine damage. Failure to comply could result in death or serious injury.**

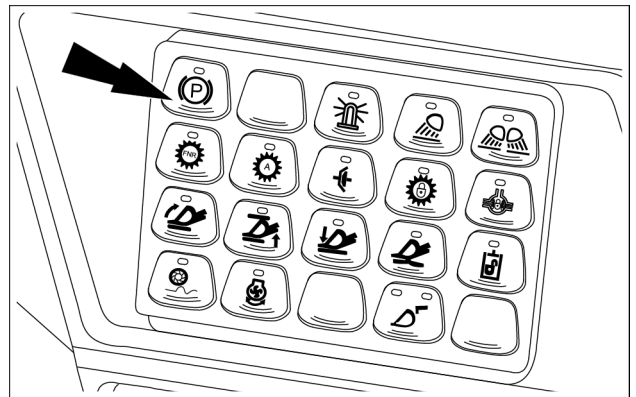
W0352A

### **Prior operation:**

Keep all non-authorized personnel clear of the area when performing the parking brake test. Park the machine with the bucket in the travel position on a firm, level surface clear of any obstructions and any non-authorized personnel or vehicles.

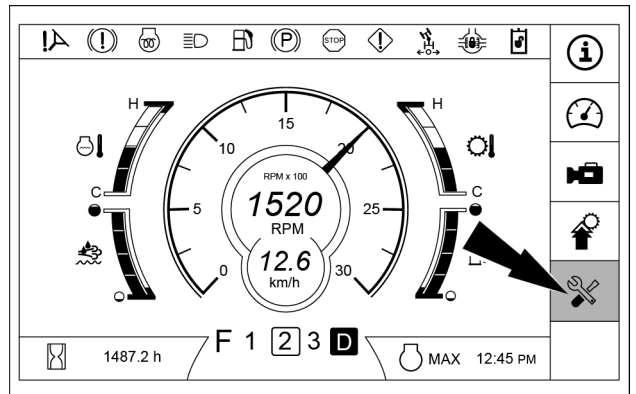
Periodically test the parking brake functions (at a maximum of every **250 h**).

1. Start the machine. Move the transmission control lever to NEUTRAL. Push the parking brake button on the multifunction keypad.



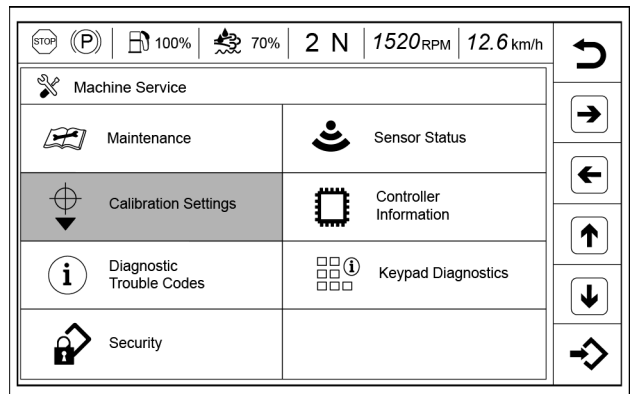
LEIL16WHL1125AA 1

2. The display is ON and shows the main menu.
3. Use the keypad on the right-hand of the display to select the key to access to the "Machine service" screens.



LEIL16WHL0908AA 2

4. Use the keypad on the right-hand of the display to select the key to switch to the "Calibration Settings" screens.



LEIL16WHL0874AA 3

### Cleaning the batteries

Check the batteries and battery compartment regularly for dirt, corrosion and damage. Dirt mixed with electrolyte or moisture on the top of the batteries can cause a discharged condition in the batteries. Use one of the following methods to clean the batteries.

- Use CASE CONSTRUCTION Battery Saver. Follow the instructions on the container. This cleaner does not need water.

Use baking soda or ammonia and flush the outside of the batteries with water. If you do not have CASE CONSTRUCTION Battery Saver, use other special cleaners to prevent corrosion on the battery terminals.

### Battery recycling

Batteries and electric accumulators contain several substances that can have a harmful effect on the environment if they are not properly recycled after use. CASE CONSTRUCTION strongly recommends that you return all used batteries to a CASE CONSTRUCTION dealer who will dispose of or recycle them properly. In some countries, this is a legal requirement.

### Alternator

Service specification	
Check	Every 1000 hours

Ask your dealer to check the alternator.

Do not use steam cleaning equipment or a cleaning solvent to clean the alternator.

### Starter motor

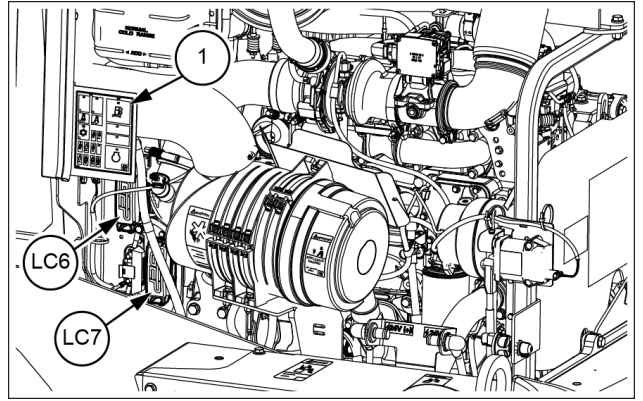
Service specification	
Check	Every 1000 hours

Ask your dealer to check the starter motor.

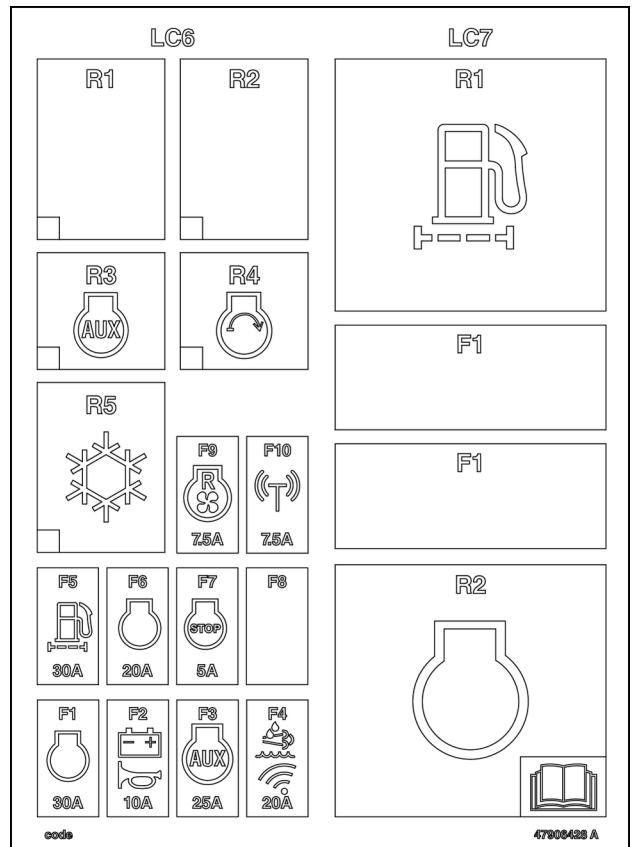
Make sure that the terminal protectors are correctly installed.

1. Additional fuses and relays (**LC6**) and (**LC7**) are located in the engine compartment area, as indicated by the decal (1).

**NOTICE:** never replace a fuse with a fuse of a different amperage.



LEIL16WHL1262AB 4



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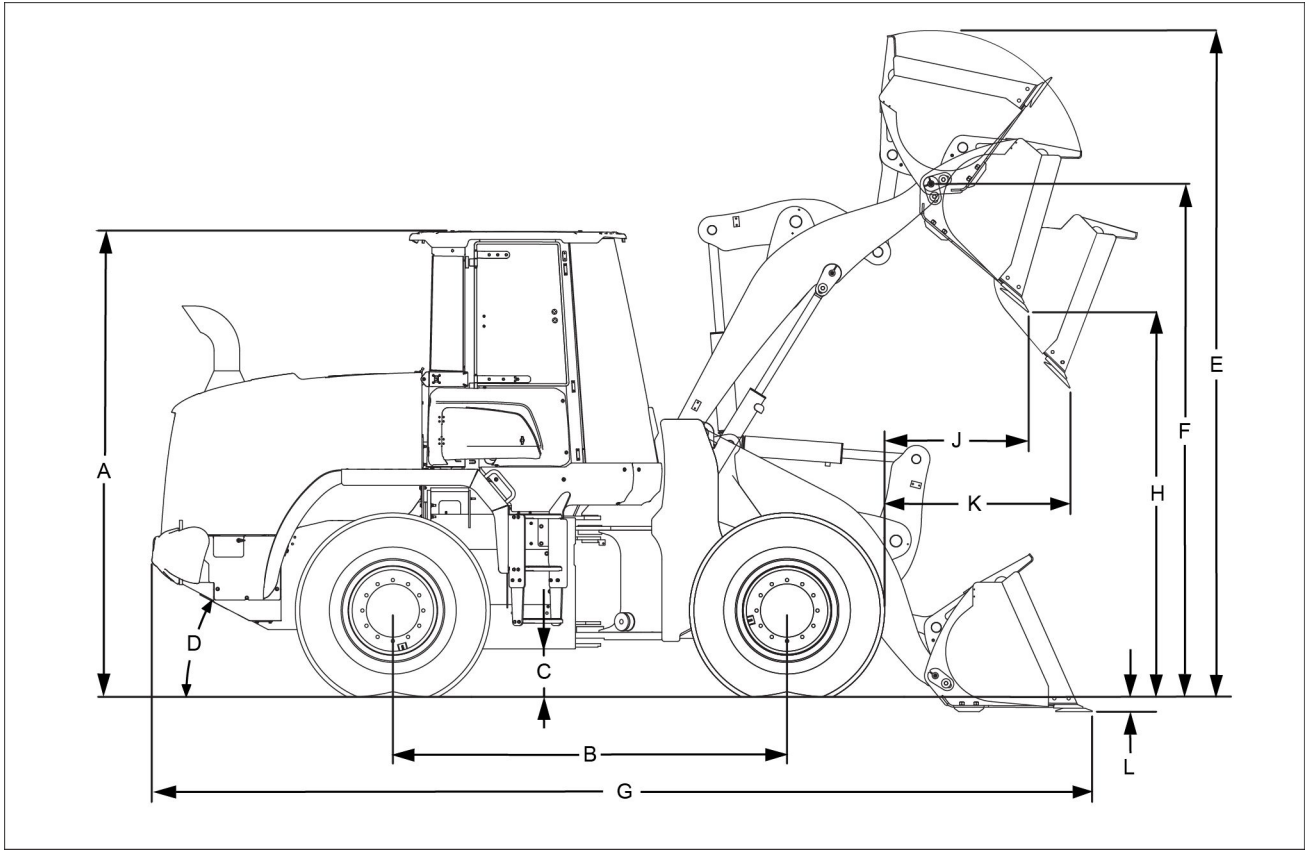
## 8 - SPECIFICATIONS

### General specifications

#### Engine Specifications

Model	FPT F4HFE413NB, TIER4B certified
Type	4-stroke, turbocharged, air-to-air cooled
Cylinders	4
Bore / Stroke	<b>104 mm (4.09 in) x 132 mm (5.20 in)</b>
Displacement	<b>4.5 L (274.6 in<sup>3</sup>)</b>
Fuel Injection	Electronic
<b>Power</b>	
Maximum power (peak)	
Gross	<b>106 kW (142 Hp) @ 1800 RPM</b>
Net	<b>98 kW (131 Hp) @ 1800 RPM</b>
Standard power (peak)	
Gross	<b>99 kW (133 Hp) @ 1800 RPM</b>
Net	<b>91 kW (123 Hp) @ 1800 RPM</b>
Economy power (peak)	
Gross	<b>82 kW (110 Hp) @ 1700 RPM</b>
Net	<b>75 kW (101 Hp) @ 1700 RPM</b>
<b>Torque</b>	
Standard power range (peak)	
Gross	<b>552 N·m (407 lb ft) @ 1300 RPM</b>
Net	<b>530 N·m (391 lb ft) @ 1300 RPM</b>
Maximum power range (peak)	
Gross	<b>608 N·m (448 lb ft) @ 1600 RPM</b>
Net	<b>575 N·m (424 lb ft) @ 1600 RPM</b>
Economy power range (peak)	
Gross	<b>547 N·m (403 lb ft) @ 1200 RPM</b>
Net	<b>528 N·m (389 lb ft) @ 1200 RPM</b>
<b>Economy engine speeds</b>	
Machine idled (standards)	<b>1020 - 1080 RPM</b>
Machine idled (alternate low idle)	<b>870 - 930 RPM</b>
Machine idled (cold weather alternate accelerated low idle)	<b>1270 - 1330 RPM</b>
<b>Electrical</b>	
Batteries	<b>2 - 12 V</b>
Alternator	<b>70 A</b>
Voltage	<b>24 V</b>

8 - SPECIFICATIONS



LEIL16WHL1009FB 7

**521G XR Specifications - 1.8 m<sup>3</sup> (2.3 yd<sup>3</sup>) Blade / 1.7 m<sup>3</sup> (2.2 yd<sup>3</sup>) Teeth - Pin On**

	Bucket with Bolt-on Edge	Bucket with Teeth
<b>ISO Bucket Specifications</b>		
Capacity (heaped)	1.76 m <sup>3</sup> (2.30 yd <sup>3</sup> )	1.68 m <sup>3</sup> (2.20 yd <sup>3</sup> )
Bucket width (maximum outer)	2550 mm (100.4 in)	2563 mm (100.9 in)
<b>Dimensional Outline Specifications</b>		
A (top of cab height)	3279 mm (129.1 in)	3279 mm (129.1 in)
B (wheelbase)	2750 mm (108.3 in)	2750 mm (108.3 in)
C (ground clearance)	341 mm (13.4 in)	341 mm (13.4 in)
D (rear angle of departure)	30 °	30 °
Overall width w/o bucket	2448 mm (96.4 in)	2448 mm (96.4 in)
Centerline tread width	2000 mm (78.7 in)	2000 mm (78.7 in)
Turning radius (outside of tires)	5002 mm (196.9 in)	5002 mm (196.9 in)
Turning angle from center	40 °	40 °
Total turning angle	80 °	80 °
E (fully raised with spillguard)	5061 mm (199.3 in)	5061 mm (199.3 in)
F (hinge pin - fully raised)	3985 mm (156.9 in)	3985 mm (156.9 in)
G (Overall - bucket level on ground)	7033 mm (276.9 in)	7177 mm (282.5 in)
H (dump - fully raised, 45 ° dump)	3091 mm (121.7 in)	2997 mm (118.0 in)
J (reach - fully raised, 45 ° dump)	987 mm (38.8 in)	1092 mm (43.0 in)
K (reach - 2.13 m (7.0 ft), 45 ° dump)	1741 mm (68.6 in)	1801 mm (70.9 in)
L (dig depth)	108 mm (4.3 in)	112 mm (4.4 in)
<b>ISO Load Specifications</b>		
Operating Weight (without load)	11146 kg (24572 lb)	11111 kg (24496 lb)
Operating load	3117 kg (6873 lb)	3160 kg (6966 lb)
Tipping load		
Machine straight	7282 kg (16054 lb)	7375 kg (16258 lb)
40° turn	6235 kg (13745 lb)	6320 kg (13933 lb)

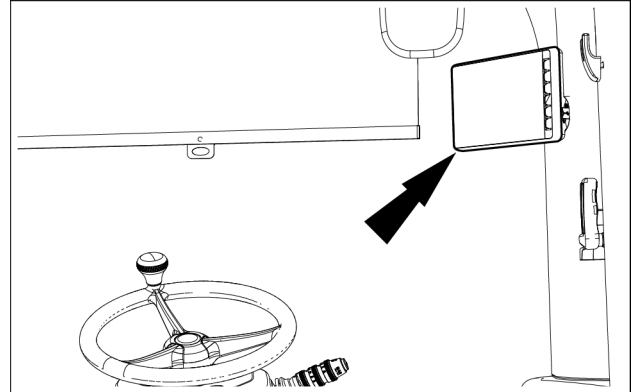
## 9 - ACCESSORIES

### General accessories

#### Rear view backup camera

The rearview backup camera reduces vehicle blind spots during reversing operations. The rearview backup camera assists operators when backing for loading operations and offers a view of other equipment, obstacles, and/or personnel in the work area. Refer to the camera manufacturer's instructions for correct operation of the camera monitor.

The camera monitor is mounted in the operator's compartment, and the camera eye is located behind the rear grille. The camera eye has built-in moisture resistance for equipment that requires power washing and/or equipment that operates in harsh environments.

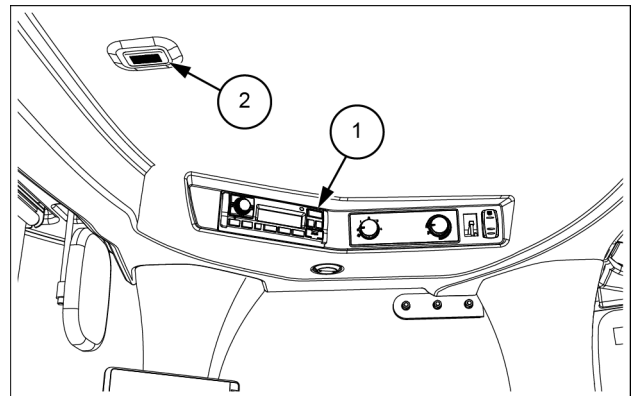


LEIL16WHL1274AB 1

#### Radio and Bluetooth microphone (Optional)

1. Radio
2. Bluetooth microphone

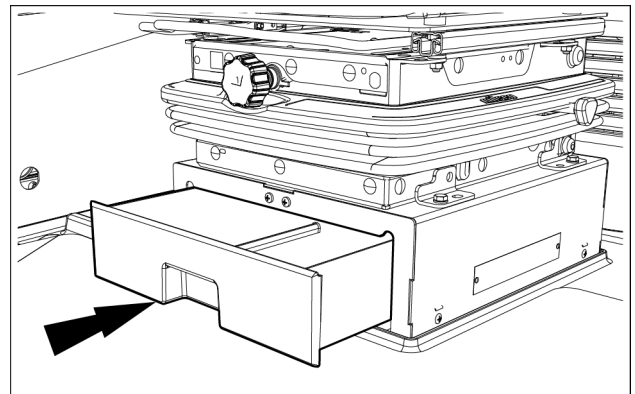
These accessories are available for this machine from your dealer. Refer to the manufacturer's instructions for correct operation.



LEIL16WHL1266AB 2

#### Seat storage (Optional)

The machine can be equipped with seat storage, located at the seat base. Pull the drawer forward to use the room available for private storage.



LEIL16WHL1267AB 3

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