

# OPERATOR'S MANUAL

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**FI 40B VHP TIER 3**

**FI 70B VHP TIER 3**

**F200B VHP TIER 3**

Motor Grader

**Part number 90442248**

1<sup>st</sup> edition English

December 2020

*Replaces part number 84498428*



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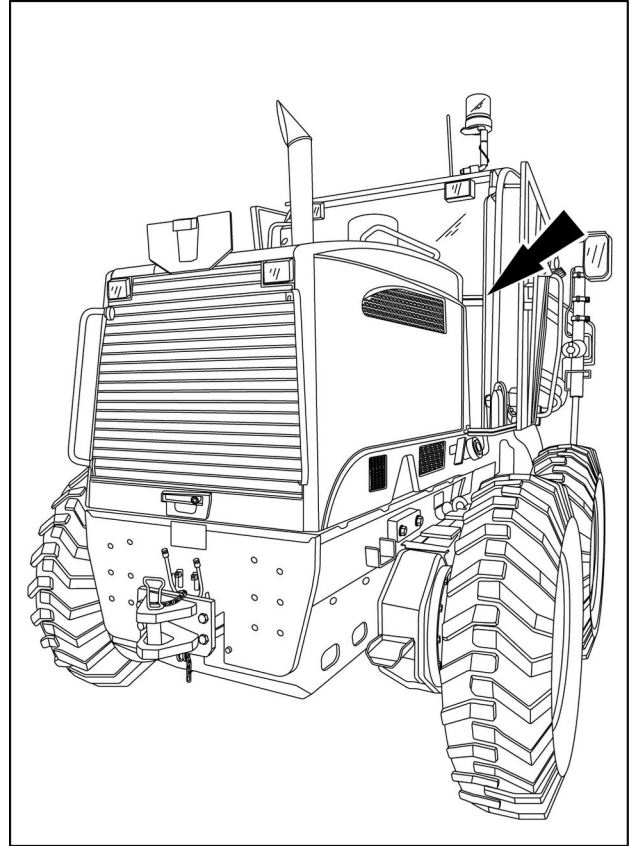
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## **Intended use**

To prevent serious harm to people or damage to the machine, do NOT use your machine for operations other than those specified or which are not described in this manual. The manufacturer and your dealer are not responsible for damages caused by improper use. With standard equipment and authorized implements, your machine was designed for general earth movement operations, such as earthwork and moving material. (described in this manual). If you want to use the machine in applications that require special implements or equipment, see your Authorized NEW HOLLAND CONSTRUCTION Dealer.

**Roll Over Protective Structure (ROPS) frame**



COIL14GRD0218BA 5

ESTRUTURA DE PROTEÇÃO PARA MODELOS PROTECTIVE STRUCTURE FOR MODELS ESTRUCTURA DE PROTECCIÓN PARA MODELOS STRUCTURE DE PROTECTION POUR MODÈLES			
<b>RG140B RG170B RG200B F140B F170B F200B</b>			
APROVAÇÃO STANDARDS APROBACIÓN APPROBATION	ISO 3471 SAE J1040 ISO 3449 SAE J231	MASSA MASS PESO MASSE	21.000 kg 46297 lbs
Nº SÉRIE SERIAL NUMBER NÚMERO DE SERIE N° SÉRIE	<input style="width: 100%; height: 20px;" type="text"/>	CÓDIGO DO PRODUTO PART NUMBER CODIGO DEL PRODUCTO CODE DU PRODUIT	<input style="width: 100%; height: 20px;" type="text"/>

BRIL12MG0007A0A 6

5. Create your user name and click “Check”.



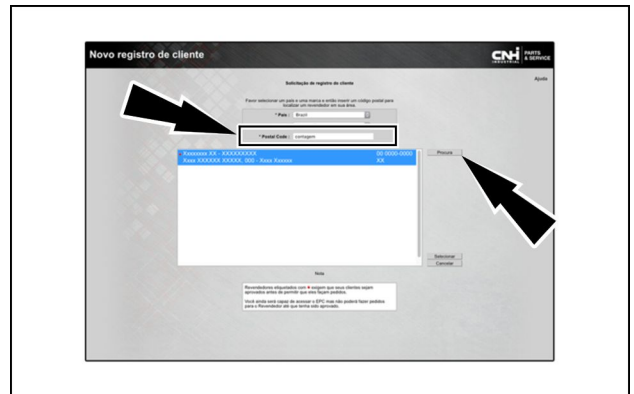
CNHI17ALL0002AA 4

6. Select the country and the brand.



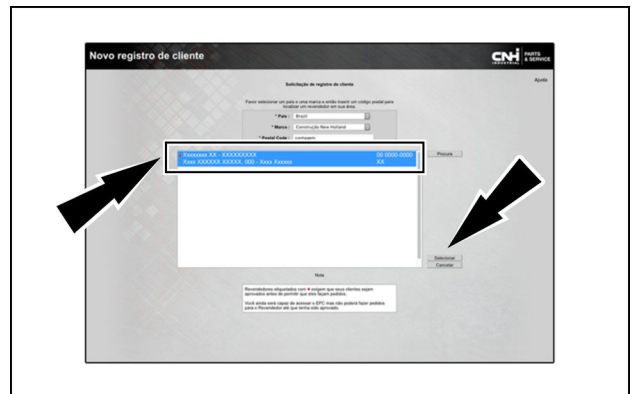
CNHI17ALL0004AA 5

7. In the field “Postal Code”, enter the name of the city and click on the “Search” button.



CNHI17ALL0004AA 6

8. Select the corresponding NEW HOLLAND CONSTRUCTION dealer and click “Select”.



CNHI17ALL0004AA 7

### **Care during a thunderstorm**

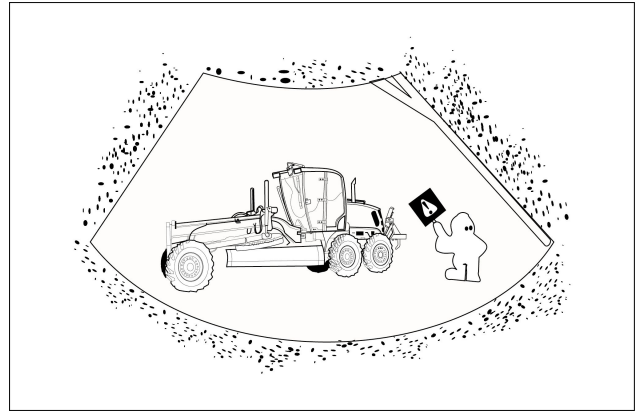
Do not operate machine during an electrical storm.

**NOTE:** *If you are on the ground, move away from machine and look for safe shelter.*

If an electrical storm starts during operation, remain in the cab.

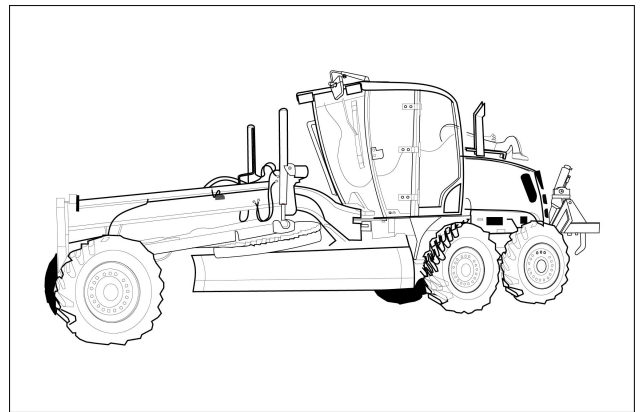
**NOTE:** *Do not exit the operator's compartment or the cab during an electrical storm. Contact with objects outside of the machine may result in serious injury and even death.*

Be careful when working in dusty, smoky or foggy places. Slow down when visibility becomes precarious because accidents could happen.



BRIL12MG0218F0A 10

Do not permit anyone other than the operator to ride on the machine.



BRIL12MG0219F0A 11

Do not allow any part of the machine to come into contact with power lines. If you need to work close to power lines, ensure that the electricity company has shut them down. The machine does not need to come into contact with the power line to become electrified. If the machine does become electrified, do not exit or touch the machine.

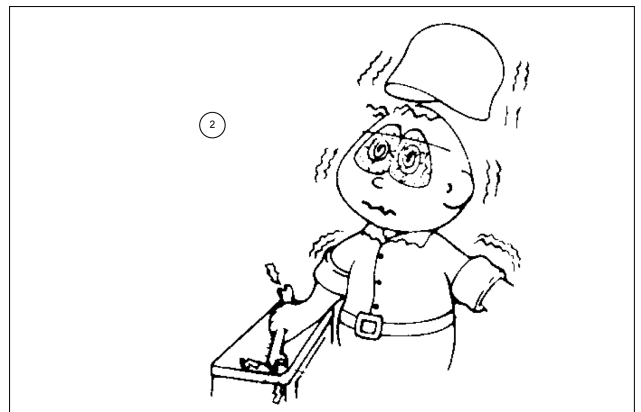
Figure 12: Wrong way.

To remove the battery, leave the starter in the "OFF" position, disconnect the negative (-) cable (ground) first, and to install the battery, always connect the negative (-) cable (ground) last.

Battery storage areas should have good ventilation to prevent the accumulation of hydrogen gas from recently charged batteries.

Before connecting or disconnecting a circuit, familiarize yourself with it. An incorrect connection could cause an accident or injury.

When checking the battery charge, never place a metal object across the terminals. Sparks could cause an explosion. Use a voltmeter or a densitometer.



BRIL12MG0220F0A 12

## General safety and precautions

### Check the start in neutral circuit

- Keep all unauthorized personnel clear of the area.
- Release the park brake.
- Move the transmission control lever to forward gear.
- Turn the ignition key to the START position.
- The starter motor SHOULD NOT work.
- Move the transmission control lever to reverse gear.
- Turn the ignition key to the START position.
- The starter motor SHOULD NOT work.

### Attention

Move the transmission control lever to reverse gear.

- Set the parking brake.
- Turn the ignition key to the START position.
- The starter motor SHOULD work.

Move the transmission control lever to the neutral position.

- Set the parking brake.
- Turn the ignition key to the START position.
- The starter motor SHOULD work.

Move the transmission control lever to forward gear.

- Set the parking brake.
- Turn the ignition key to the START position.
- The starter motor SHOULD work.

### Check the back-up alarm

- Make sure the area around the engine is clear and that no one is very near it.
- Set the parking brake.
- Move the transmission control lever from 1st gear to reverse.

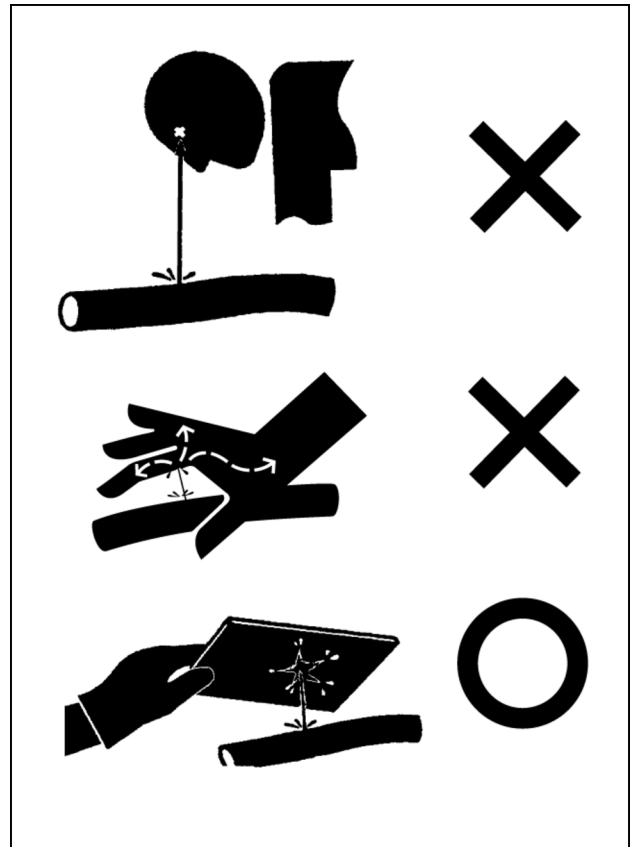
**NOTE:** *The back-up alarm SHOULD sound.*

## Be careful with pressurized fluids

- Fuel or hydraulic fluid under pressure can penetrate the skin or eyes, causing serious injuries, blindness, or death.
- Avoid this hazard by releasing the pressure from the systems before disconnecting the hydraulic or fuel lines.
- Tighten all connections before pressurizing the systems.
- Search for leaks with a piece of cardboard or wood, taking care to protect the hands and body from high pressure fluids.
- Wear a face shield or protective goggles to protect the eyes.
- If an accident occurs, see a doctor immediately.
- Any fluid injected into the skin must be treated quickly to avoid major health problems.
- Never perform repairs on pressurized components until the pressure has been released.
- Use extreme caution when you remove the radiator, the expansion tank or the covers, the drain plugs, the grease fittings, or other pressure components.
- Park the machine and let it cool before opening a pressurized tank.
- Release all pressure before you work on systems with an accumulator.
- Hydraulic fluid or diesel fuel that leaks under pressure can penetrate the skin and cause infection or other injuries.

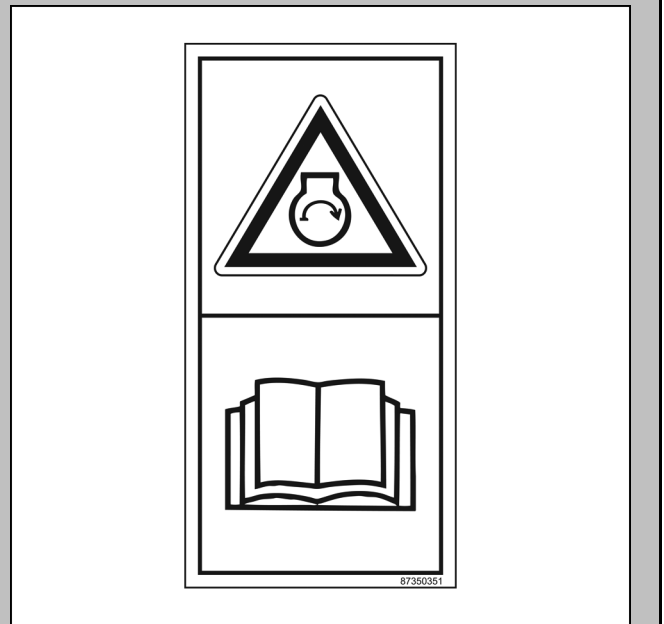
**NOTE:** To prevent personal injury, relieve all pressure before disconnecting fluid lines or performing work on the hydraulic system.

- Before applying pressure, make certain all connections are tight and components are in good condition.
- Use a piece of cardboard, newspaper, or wood to check for any pressurized leaks to prevent fluid penetrating the skin.
- Unexpected movement of the machine could occur.



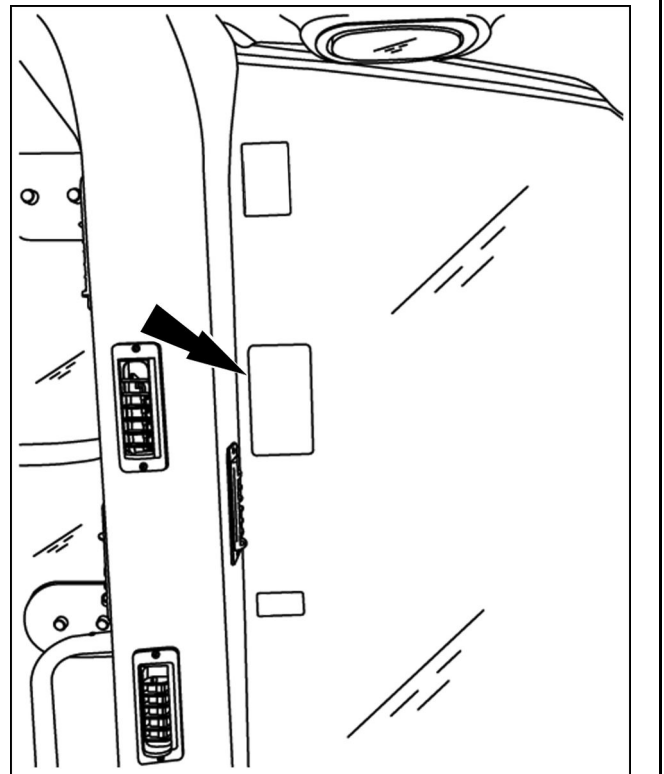
SP0046 17

5 – "Instructions for starting the engine" decal  
Follow the instructions to start the engine.  
Quantity: 1  
87350351



87350351 11

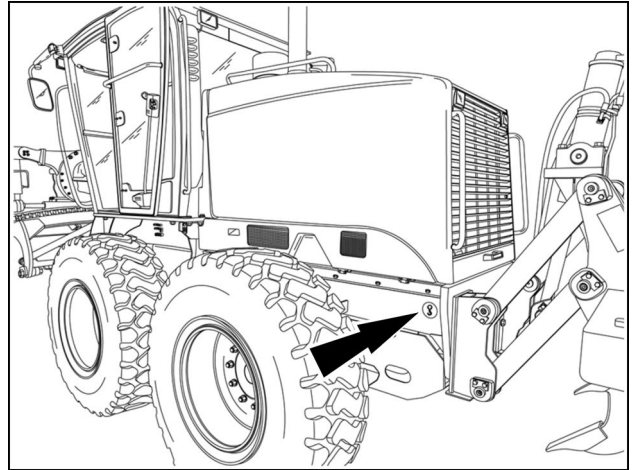
This informational decal is located on the right-hand side window, on the inside of the cab.



COIL14GRD0192BA 12

## 2 - SAFETY INFORMATION

This safety decal is located on the left-hand and right-hand ends of the rear frame.



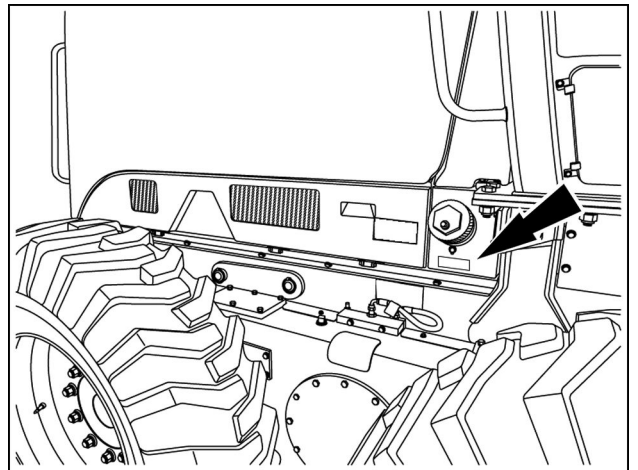
COIL14GRD0190AA 37

15 – "Fuel tank filling nozzle" decal  
This decal indicates the correct location for filling the fuel tank.  
Quantity: 1  
75270830



75270830 38

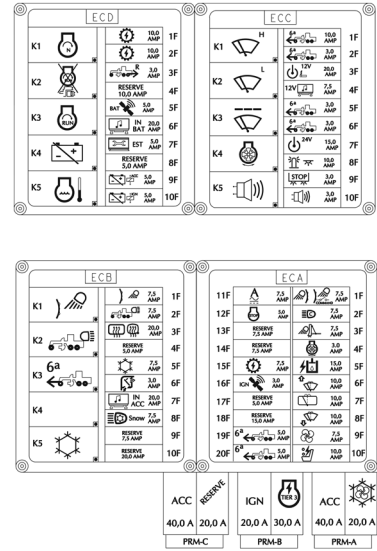
This safety decal is located near the right-hand side cover of the engine compartment.



COIL14GRD0194BA 39

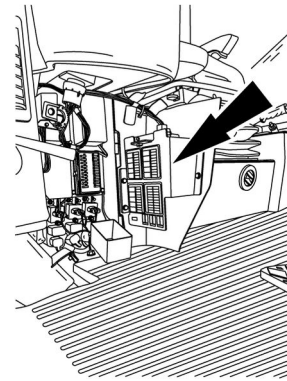
2 - SAFETY INFORMATION

24 – “Positioning of fuses and relays” decal (Models equipped with “Direct Drive” transmission)  
 This decal indicates the position of the fuses and relays installed in the side console fuse compartment.  
 Quantity: 1  
 47494056



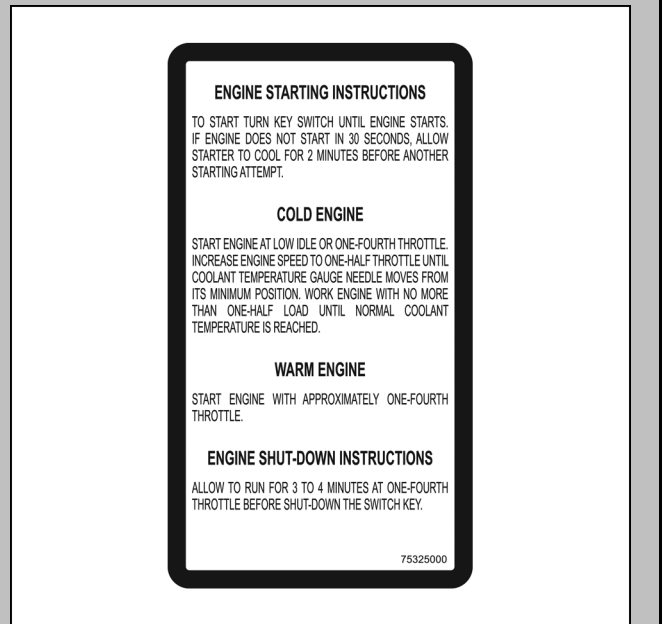
47494056 60

This informational decal is located on the cover of the side console.



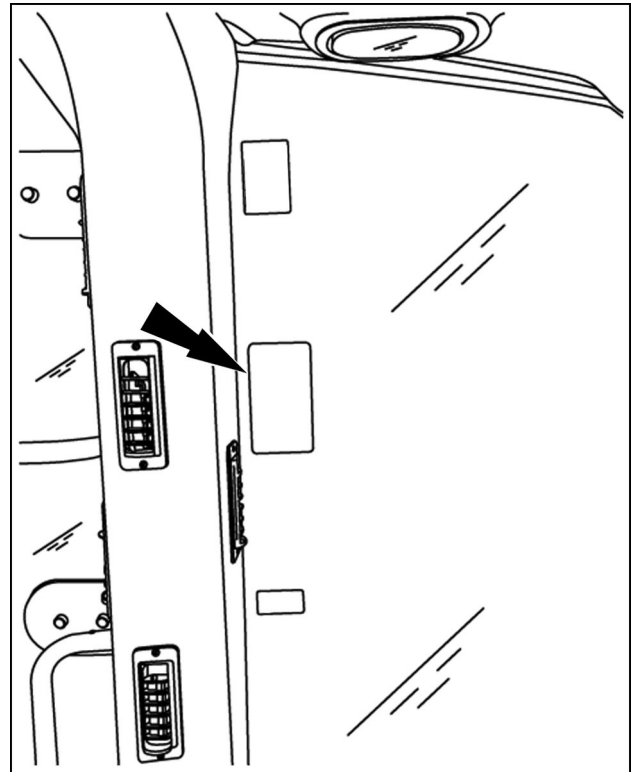
COIL14GRD0162AA 61

5 – "Instructions for starting the engine" decal  
Follow the instructions to start the engine.  
Quantity: 1  
French – 84513330  
Spanish – 75324999  
English – 75325000  
Portuguese – 75324998



75325000A 11

This informational decal is located on the right-hand side window, on the inside of the cab.



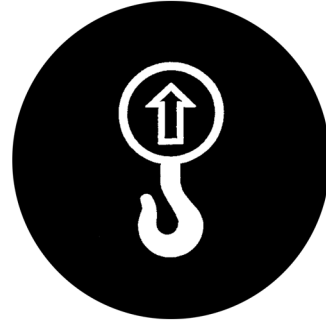
COIL14GRD0192BA 12

## 2 - SAFETY INFORMATION

### 14 – "Hoist point" decal

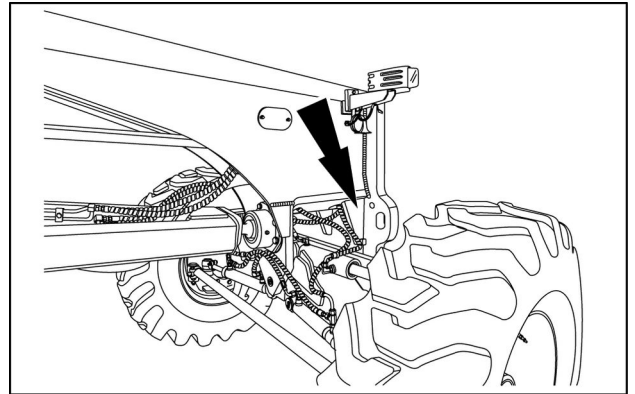
Use a steel cable or chain with sufficient lifting capacity for this machine in the recommended position. The fixing elements should be secured in this location when the machine is to be lifted. Non-compliance with these instructions may result in serious injuries or death.

Quantity : 4  
73163135



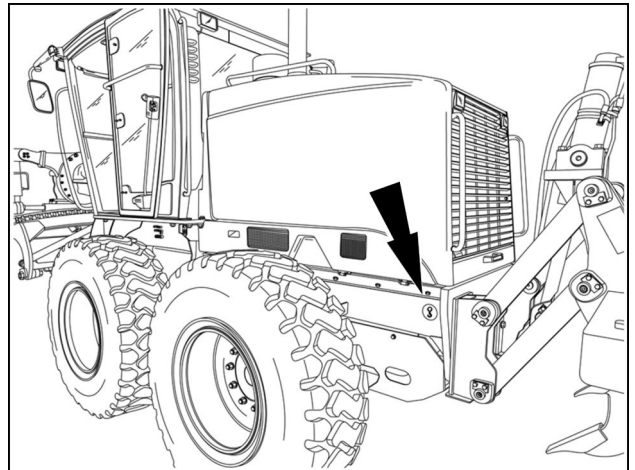
73163135 35

This safety decal is located on the left-hand and right-hand ends of the front chassis.



COIL14GRD0175AA 36

This safety decal is located on the left-hand and right-hand ends of the rear frame.



COIL14GRD0190AA 37

**Move this far**



BRIL12SP0314A0A 5

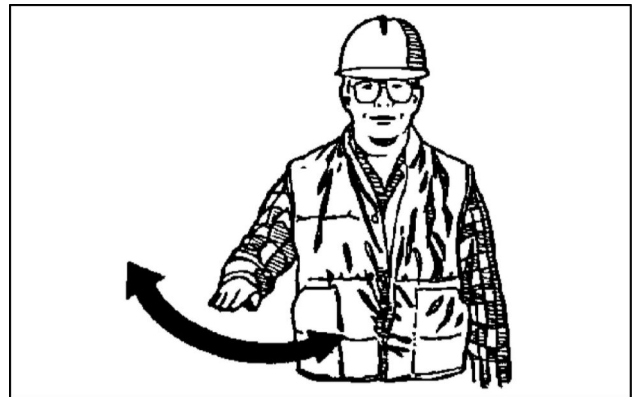
**Stop completely and wait**



BRIL12SP0315A0A 6

**Stop**

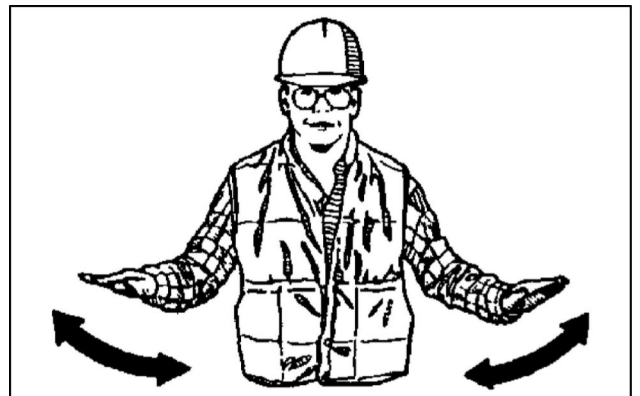
Move one hand from one side to the other



BRIL12SP0379A0A 7

**Emergency stop**

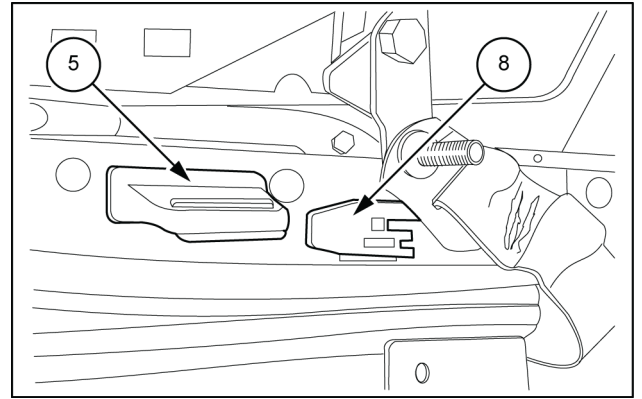
Quickly move both hands from one side to the other.



BRIL12SP0380A0A 8

**(8)** Shock absorber lever

The seat damper adjustment lever has 4 positions from hard to soft. This adjustment can be made by turning the smaller end of the lever toward the outside of the seat.



BRIL12MG0178A0A 3

## Key start switch

The ignition switch is located on the side of the steering column. It is a rotary switch that can only be activated with the ignition key. It has 4 (four) positions.

**NOTICE:** When shutting down the machine, make sure to put the ignition switch in the "OFF" position (Off). Be careful not to leave the ignition switch in the "ACC" position (Accessories). In this position, the electrical circuits of the accessories will be powered and after a long period it may run down the batteries.

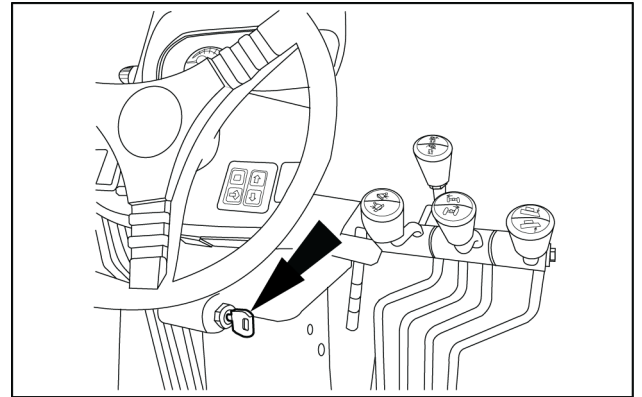
**(1) ACC - Accessories:** In this position, certain circuits like the wipers and the lamps are powered.

**NOTICE:** Never leave the ignition switch in the ACC position with the engine shut down.

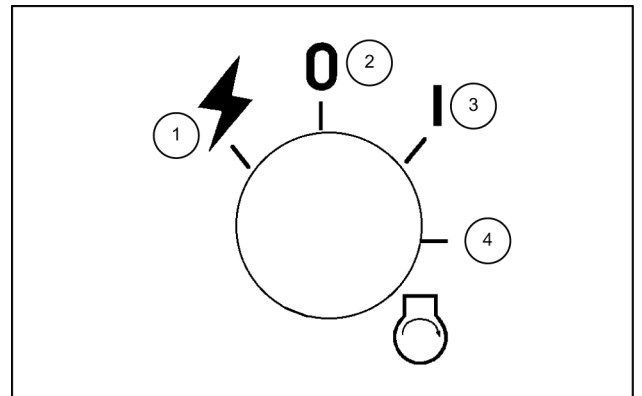
**(2) OFF - Off:** In this position, all the circuits are shut down.

**(3) IGN - On:** In this position, all the machine's circuits are engaged.

**(4) START - Start:** In this position, the start-up circuits are activated.



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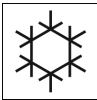


BRIL12MG0157A0A 2

## Air conditioner

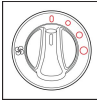
### Climate Control

#### (1) On-off switch (optional)



Press this switch and select one of the 3 fan speeds to turn on the climate control system. Press this switch again to turn off the climate control system. When the system is operating, a blue light will light up on the switch.

#### (2) Fan selector (optional)




The fan selector has 4 positions: OFF and speeds 1, 2, and 3.


Turn the selector to the “0” position for maximum fan speed and to the “3” position for minimum fan speed.

When the selector is placed in the OFF position, the climate control system will automatically turn off.

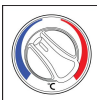
#### (3) Recirculation/fresh air selector (optional)



Turn the selector to the “” position for recirculation of air inside the cab.

Turn the selector to the “” position to allow fresh air inside the cab.

#### (4) Temperature control selector (optional)

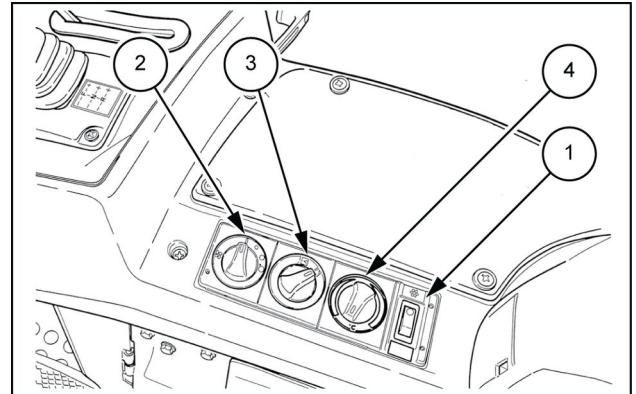


Turn the temperature control selector counter-clockwise for air-conditioning inside the cab.

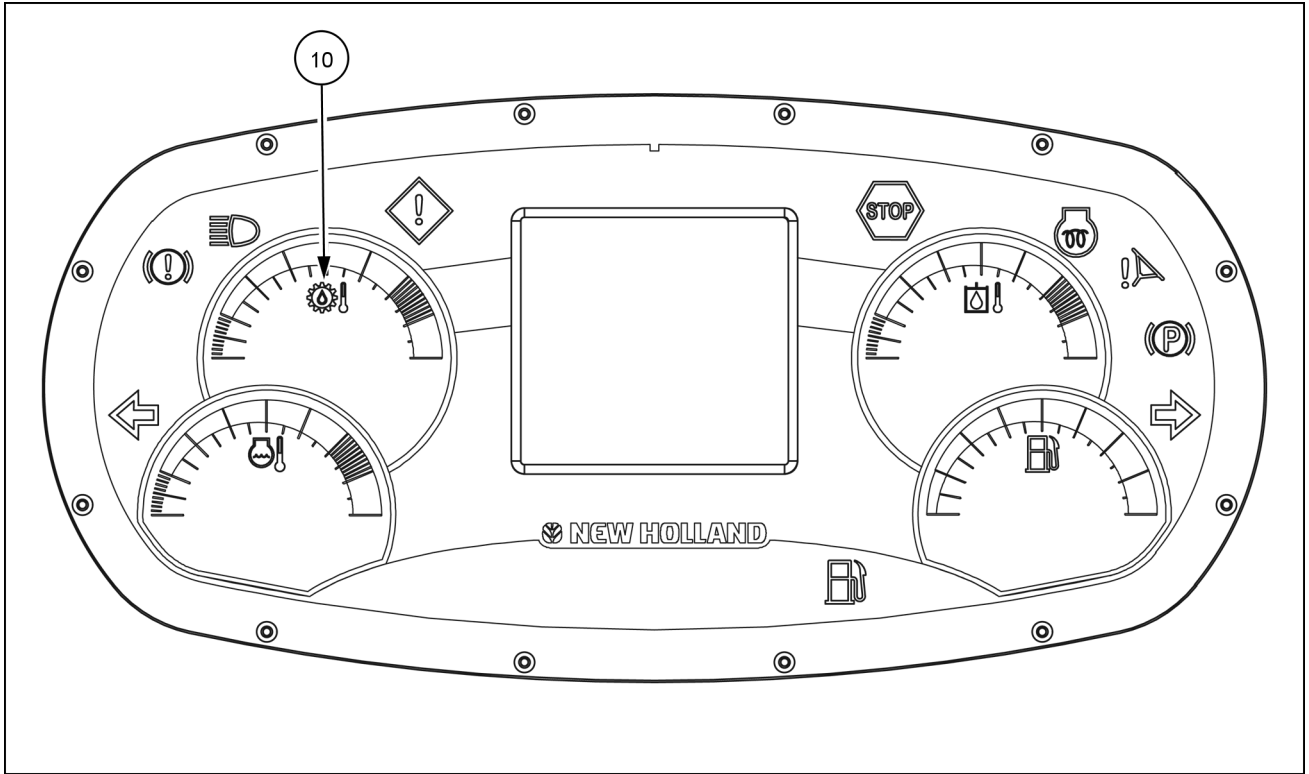
Turn the temperature control selector clockwise for heat inside the cab.

Adjust the temperature control and the fan selector to the desired positions for maximum temperature comfort.

Make sure that the heater water inlet is fully open when you want to get hot air in the cabin.



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COIL14GRD0078FA 5

**10. Transmission fluid temperature indicator light**



The indicator light shows the transmission fluid temperature. Normal operating temperature is in the green area. When the transmission fluid temperature increases, the gauge will move to the yellow area, the warning alarm will sound for three seconds, and the stop master indicator will move to yellow. When the temperature continues to increase, the gauge moves into the red zone, the warning alarm will sound continuously, and the stop master indicator turns red. The machine should not be operated when the temperature is in the red area.

**Transmission fluid temperature indicator**

Indication	Condition	Master indicator	Indicator status	Alarm State
Less than <b>20.0 °C</b> <b>(68.0 °F)</b>	The transmission fluid temperature is too low	Caution (Yellow)	Continuous	<b>3 s</b>
Betw <b>20.0 – 120.0 °C</b> <b>(68.0 – 248.0 °F)</b>	The transmission fluid temperature is normal	-	-	-
Betw <b>120.0 – 125.0 °C</b> <b>(248.0 – 257.0 °F)</b> (see note below)	The transmission fluid temperature is high	Caution (Yellow)	Continuous	-
Above <b>125.0 °C</b> <b>(257.0 °F)</b>	The transmission fluid temperature is too high	Stop (Red)	Continuous	Intermittent <b>( 0,5 s ONand 0,2 s )</b> OFF

**NOTE:** To prevent damage to the transmission, stop the machine in NEUTRAL and run the engine at maximum throttle until the transmission cools. If the transmission fluid temperature does not return to normal operating temperature, run the engine at idle and check the transmission fluid level. Correct the issue before continuing to operate the machine

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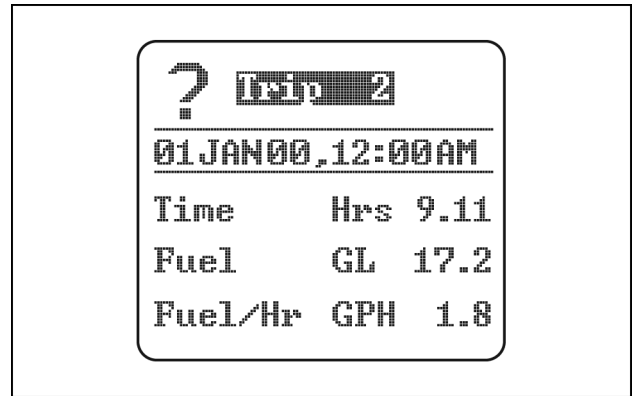
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The screen will begin to record time and fuel consumption immediately.



ALLX16LCD0004AA 5

8. Only fill the reservoir with the specified fuel. Be careful to prevent dirt or inappropriate substances from entering when filling.

**ATTENTION:** *Extinguish any smoking materials or flames before checking or filling the fuel reservoir.*

9. Check the levels of the following fluids:

- A. Engine oil
- B. Engine coolant system fluid
- C. Oil From Transmission
- D. Hydraulic system fluid
- E. Tandem and differential oil

10. Lubricate all the grease points provided. See the Maintenance section for more information.

11. Check tire pressures.

**ATTENTION:** *Do not fill the tires with flammable gases or air systems that use alcohol injectors. This could result in explosions and personal injury.*

**NOTICE:** *Do not use your hands to look for leaks. Leaks of high-pressure fluid can penetrate the skin, causing serious injury.*

**NOTICE:** *Do not start up the machine in enclosed areas, without appropriate ventilation to remove the lethal exhaust fumes.*

*Warn anyone who may be working close to the machine before starting the engine.*

*Sound the horn before starting or operating the machine.*

*Never leave the machine with the engine running.*

13. Start the engine. Check all the instruments and gauges for the indicated pressures. Operate the controls as indicated in the operator instructions. Shut down the engine and check the hoses, tubing and gaskets to prevent possible oil leaks.

**NOTE:** *To start the engine, the parking brake must be applied and the gearshift must be in the "NEUTRAL" position.*



BRIL12MG0054A0A 2

## 5 - TRANSPORT OPERATIONS

### RECOVERY TRANSPORT

## Towing the machine

### Moving a disabled machine

**⚠ WARNING**

**Avoid injury!**

**Incorrect towing procedures can cause accidents. When towing your machine, follow the procedure in this manual.**

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

W0476A

**NOTICE:** *Towing the grader is not recommended.*

If the machine has issues, you must assess whether it can be moved without damage. If possible, repair the machine at the job site.

Before starting the tow operation, be aware of the following precautions:

Models equipped with torque converter transmission:

The towing vehicle must have the ability to steer and the braking force to hold its own weight and that of the grader. The speed at which the disabled machine can be moved during towing should not exceed **10 km/h (6 mph)**. The towing distance should not be greater than **10 km**.

The machines must be attached as closely as possible.

The disabled machine should be moved only the distance necessary to reach a safe repair site.

Before moving a disabled machine you must be able to answer these questions:

- Does the towing machine have steering and braking capacity for both machines?
- Do the towing hardware, chains, cables, have the proper capacity to move the machine safely?
- Will the disabled machine have steering and braking capacity?
- Will movement of the machine cause damage to the traction train or moving parts without lubrication?

Additional considerations:

- Ensure that all personnel are protected in case of breakage of the towing assembly.
- An operator may only be on the towed vehicle if it has steering and braking capacity.
- Always chock the disabled machine's wheels before releasing the brakes or traction train component.

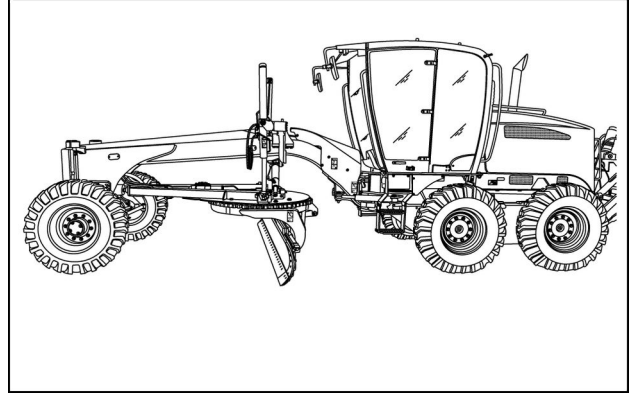
**NOTICE:** *The Grader's engine should not be started while the machine is being towed. The traction train components will be damaged!*

## Machine operation – (Slope cutting)

**NOTE:** To position the blade (in this case, to the right-hand side), proceed as follows.

### Blade perpendicular to the grader

Turn to circle until the blade is perpendicular to the direction of the machine.

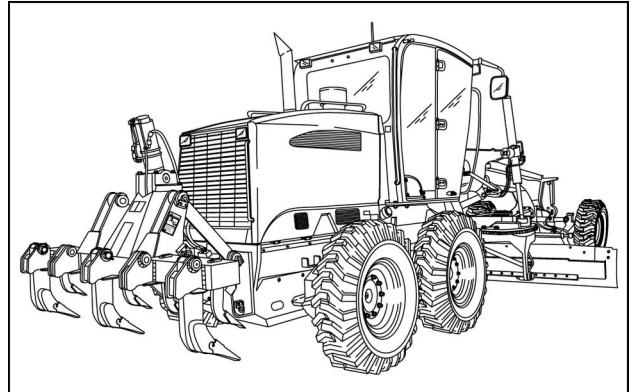


COIL14GRD0276AA 1

### Blade positioned on the right-hand side of the grader

Move the blade to the far right, and then move the circle to the right, until the cylinder rod has an extension of **127 mm (5 in)**.

Lower the blade to the ground with a slight pressure.

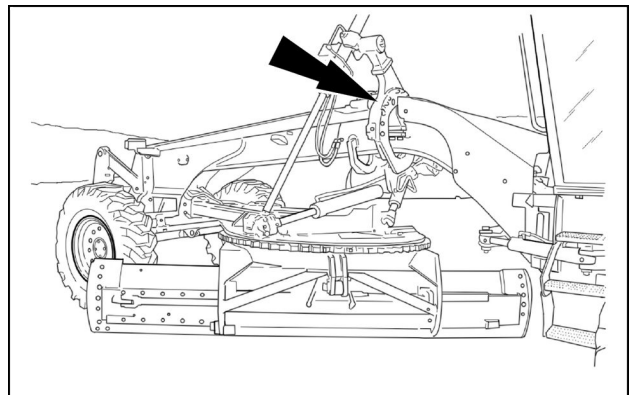


COIL14GRD0278AA 2

### Turning the saddle

Disengage the lock pin from the saddle. Use the blade lift lever to extend the right cylinder rod and pick up the left-hand cylinder rod (the blade on the ground) to rotate the saddle.

After the saddle has been turned to the desired position (fully, in the 90° position), align the pin holes (with the naked eye) and the re-engage the lock pins.

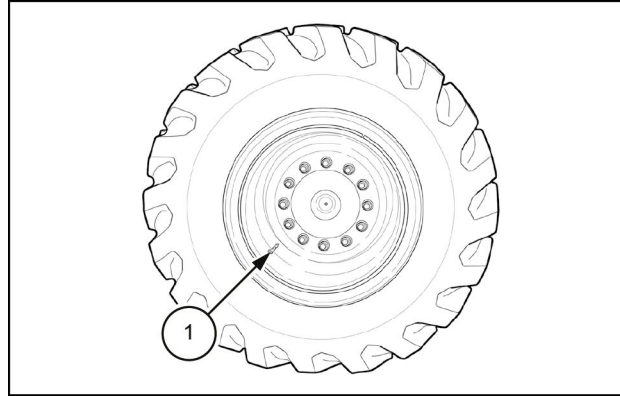


BRIL12MG0239A0A 3

## Tire pressure

### Tires pressure

**NOTICE:** Do not fill the tires with flammable gases or air systems that use alcohol injectors. This could result in explosions and accidents.



BRIL12MG0247A0A 1

(1) Tire inflation nozzle

Check the tire pressure using the pressure dial. Normal pressure is:

#### F140B models

#### F170B models

14.0 x 24-10 PR (Standard) G2	<b>225 kPa (33 psi)</b>
13.0 x 24-12 PR G2	<b>275 kPa (40 psi)</b>
14.0 x 24-12 PR G2	<b>250 kPa (36 psi)</b>
14.0 x 24-16 PR G2	<b>275 kPa (40 psi)</b>
14.0 x 24 Snow Plus L2	<b>300 kPa (44 psi)</b>
16.0 x 24-12 PR G2	<b>225 kPa (33 psi)</b>
17.5 x 25-12 PR L2	<b>225 kPa (33 psi)</b>
17.5 x 25-16 PR L3	<b>350 kPa (51 psi)</b>
17.5 x 25 XTLA	<b>240 kPa (35 psi)</b>
17.5 x 25 Snow Plus L2	<b>240 kPa (35 psi)</b>
14.00 R24 XGLA	<b>310 kPa (45 psi)</b>

#### F200B models

14.0 x 24-12 PR G2	<b>250 kPa (36 psi)</b>
14.0 x 24-16 PR G2	<b>275 kPa (40 psi)</b>
14.0 x 24 Snow Plus L2	<b>300 kPa (44 psi)</b>
16.0 x 24-12 PR G2	<b>225 kPa (33 psi)</b>
17.5 x 25-12 PR (Standard) L2	<b>225 kPa (33 psi)</b>
17.5 x 25 XTLA	<b>240 kPa (35 psi)</b>
17.5 x 25 Snow Plus L2	<b>240 kPa (35 psi)</b>
14.00 R24 XGLA	<b>310 kPa (45 psi)</b>

- When maintenance operations require access to any component or areas that cannot be reached from the ground, use a ladder or platform. If you do not have this equipment, use the means of access available on the machine, such as handrails and steps. Perform these operations with care.
- Disconnect the batteries before working on the electrical system.
- Ensure that all auxiliary electrical equipment (heaters, battery chargers, pumps and other equipment) is properly earthed.
- Prior to starting the engine, warn all persons performing operations or working around the machine. Sound the horn.
- Always lock engine hood before servicing any component inside the engine compartment.
- Keep everyone away from the implements. Avoid accidents.
- Always use suitable tools to align the holes. Do not use hands or fingers.
- Clean the machine regularly. The accumulation of grease, dirt and debris can cause possible injuries or harm to the machine. Keep the workshop clean.
- Before performing any soldering on this machine, disconnect the negative (-) cable from the battery.

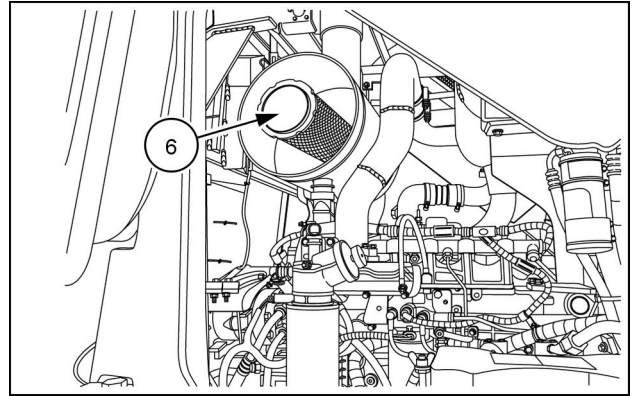
**Specifications for Acceptable No. 2 Diesel Fuel**

API gravity, minimum	34
Flash point, minimum	<b>60 °C (140 °F)</b>
Cloud point (wax formation), maximum	<b>-20 °C (-5 °F)</b> (see note)
Pour point, maximum	<b>-26 °C (-15 °F)</b> (see note)
Distillation temperature, <b>90%</b> point	<b>282 – 338 °C (540 – 640 °F)</b>
Viscosity at <b>38 °C (100 °F)</b>	
Centistokes	2.0 to 4.3
Saybolt universal seconds	32 to 40
Cetane number, minimum	43 (45 to 55 in winter or at high altitudes)
Water and sediment by volume, maximum	0.05 %

**NOTE:** The primary and secondary elements must be replaced at the same time. Never judge the life of a filter element by its appearance. An element that appears to be saturated may have still a life equal to another filter that looks clean.

14. Install the new secondary element (6) in the housing. Take care not to damage the seal.

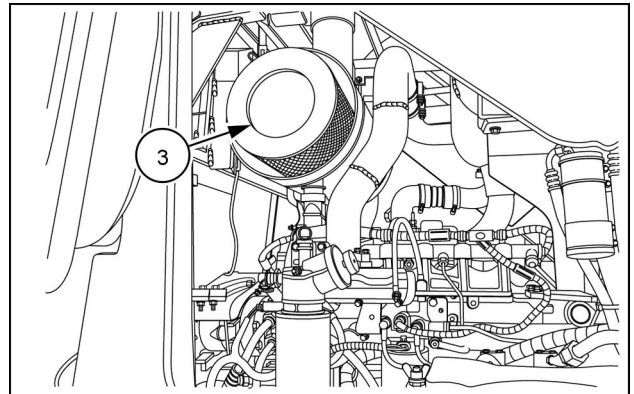
**NOTE:** Make sure that the seal is properly seated on the bottom of the housing.



COIL17GRD0377AA 8

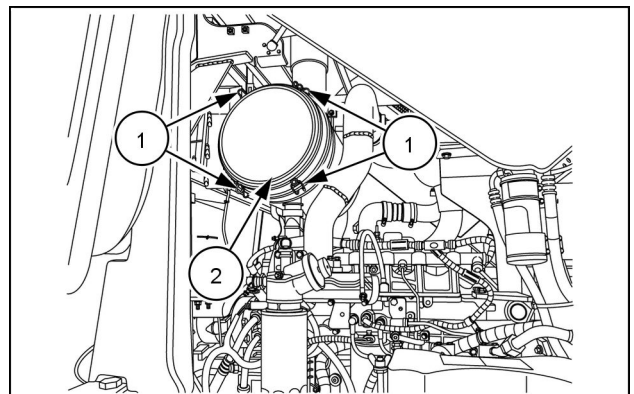
15. Install the new primary element (3) in the housing. Take care not to damage the seal.

**NOTE:** Make sure that the seal is properly seated on the bottom of the housing.



COIL17GRD0375AA 9

16. Put the filter housing cover (2) in place. Secure with the four fastening clips (1).
17. Close the engine hood.



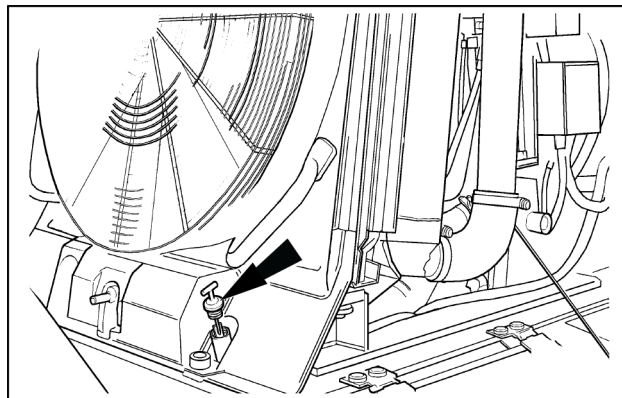
COIL17GRD0374AA 10

5. With the transmission in manual, move the gear selector lever to all positions F-N-R, 1, 2, 3.
6. Position the selector lever in the Neutral position and let the engine idle.
7. If the fluid is cold, idle the engine for **2 – 3 min** and make sure that the level is above the “COLD MIN”(cold minimum) mark.
8. Preferably do this check when the fluid temperature is in the normal operating range ( **80 – 90 °C**).
9. Loosen the dipstick, located on the right-hand side of the engine, by turning it counter-clockwise; remove the tube and clean it.
10. Reinsert the dipstick until it makes contact with the tube nozzle and pull it out again to read the level.

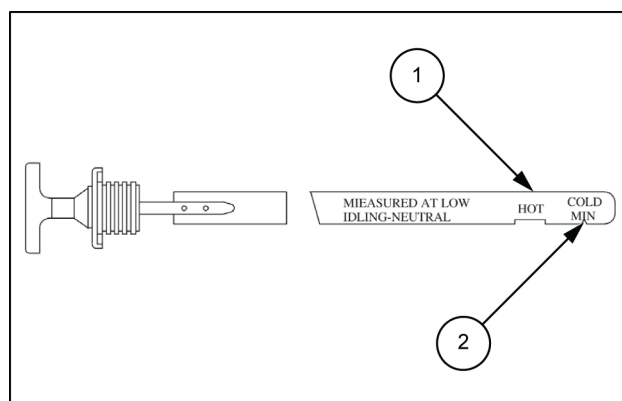
**NOTICE:** The correct level with fluid at working temperature is indicated by item (1) “HOT” (hot). The minimum level with cold fluid is indicated by item (2) “COLD MIN” (cold minimum).

If the fluid level is below the “HOT” interval, it will be necessary to top up the level. If the fluid level is above the “HOT” mark, fluid overheating could occur.

11. Reinsert the dipstick and tighten it by turning it clockwise.



BRIL12MG0032A0A 2



BRIL12MG0075A0A 3

## Alternator drive belt (Checking)

### ⚠ WARNING

Improper operation or service of this machine can result in an accident. Read and understand the **SAFETY INFORMATION** chapter before you perform any maintenance, service, or repairs. Read and understand the specific service procedures for the components you plan to work with before you start servicing the machine. Failure to comply could result in death or serious injury.

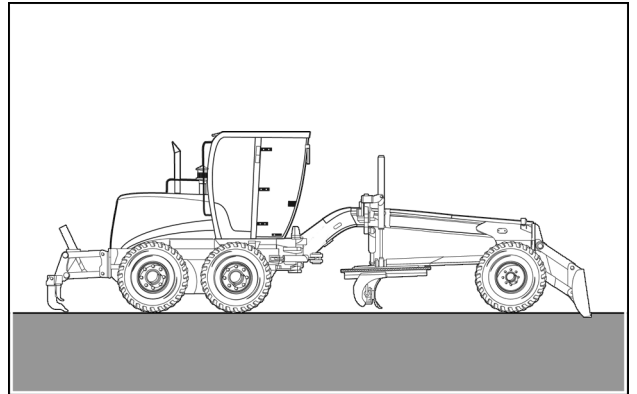
W0138B

### Checking the alternator belt

**NOTICE:** The fan drive belt must be checked for tension or damage every 250 hours of operation or more frequently (shorter periods) when you operate the machine in extreme conditions.

To check the alternator belt, proceed as follows:

1. Keep all unauthorized personnel clear of the area.
2. Park the machine on a flat, level, firm surface, away from any obstacles.
3. Support the implements on the ground.
4. Shut down the engine. Place the ignition key in the OFF position.
5. Set the park brake.



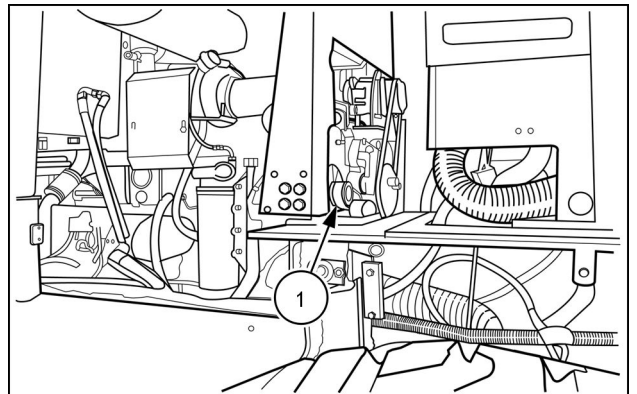
COIL14GRD0079AA 1

6. Remove the panel located behind the driver's seat.
7. Measure the belt deflection at the longest stretch between the pulleys.

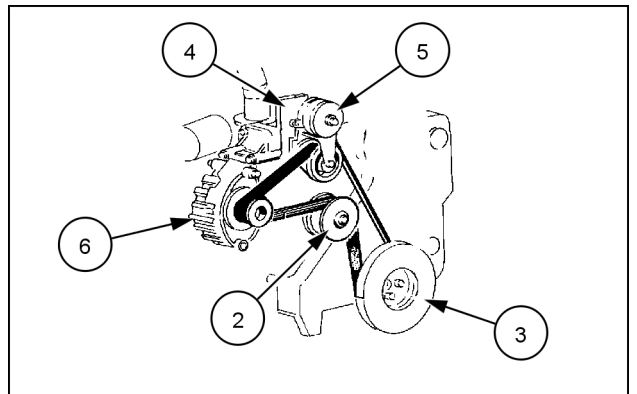
**NOTE:** The maximum allowable deflection should be **9.5 – 12.7 mm (0.4 – 0.5 in)**.

8. Remove the alternator belt (1) using a 1/2 in quad wrench.

- (1) Alternator belt
- (2) Water pump pulley
- (3) Engine flywheel pulley
- (4) 12.7 mm (0.5 in) square
- (5) Belt tensioner
- Alternator (6)



COIL14GRD0098AA 2



COIL14GRD0099AA 3

## Fuel reservoir (Draining)

### ⚠ WARNING

Fuel vapors are explosive and flammable. Do not smoke while handling fuel. Keep fuel away from flames or sparks. Shut off engine and remove key before servicing. Always work in a well-ventilated area. Clean up spilled fuel immediately. Failure to comply could result in death or serious injury.

W0904A

**NOTICE:** Drain the fuel tank of condensation and sediment every 500 hours of operation or more frequently (shorter periods) when you operate the machine in extreme conditions.

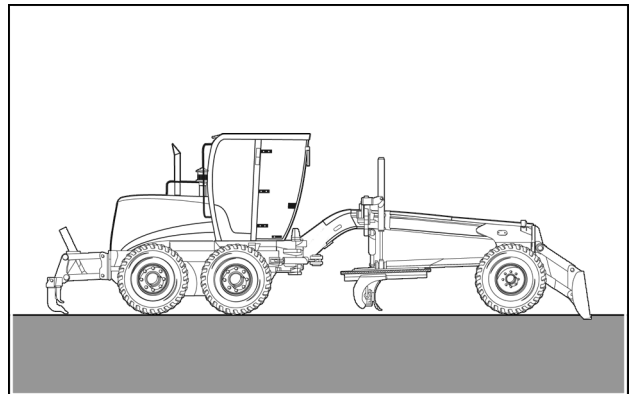
**NOTE:** Handle and dispose of the waste in accordance with environmental regulations, laws and government codes.

### Drainage of condensation and sediments from the fuel tank

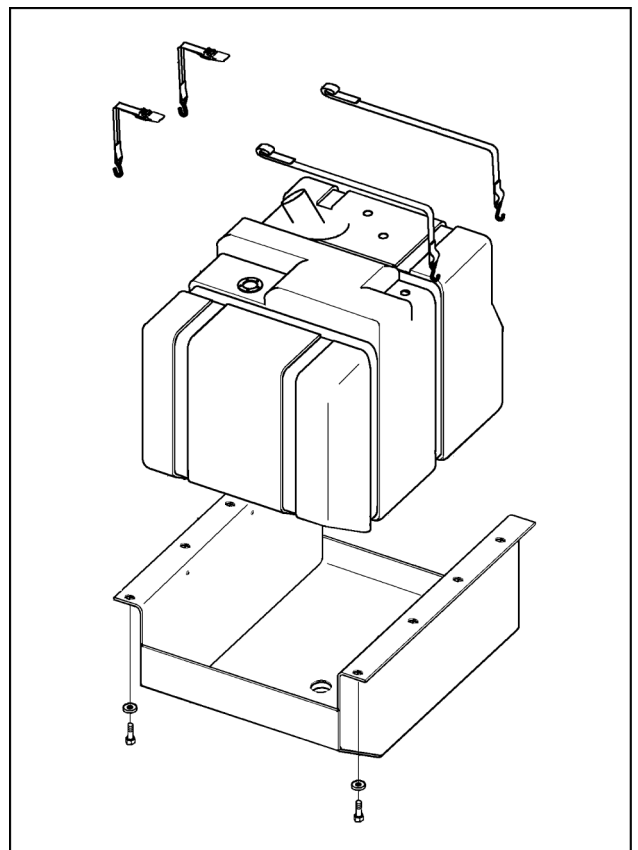
To drain the condensation and the sediment from the fuel tank, proceed as follows:

1. Keep all unauthorized personnel clear of the area.
  2. Park the machine on a flat, level, firm surface, away from any obstacles.
  3. Support the implements on the ground.
  4. Shut down the engine. Place the ignition key in the OFF position.
  5. Set the park brake.
- 
6. Open the fuel drain valve before starting the engine and drain the water and sediments into a suitable container.
  7. Close the fuel drain valve after only clean fuel is discharged.
  8. Check for leaks.

**NOTE:** Handle and dispose of the waste in accordance with environmental regulations, laws, and government codes.



COIL14GRD0079AA 1



BRIL12MG0086B0A 2

## Tandem drive case oil (Checking the level)

### ⚠ WARNING

Improper operation or service of this machine can result in an accident.

Read and understand the **SAFETY INFORMATION** chapter before you perform any maintenance, service, or repairs. Read and understand the specific service procedures for the components you plan to work with before you start servicing the machine.

Failure to comply could result in death or serious injury.

W0138B

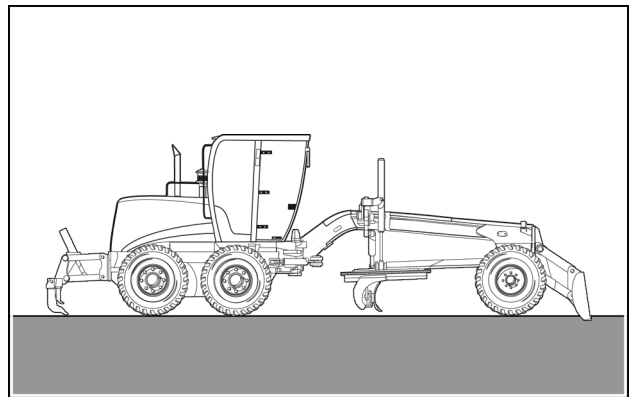
**NOTICE:** Change the tandem oil every 2000 hours of operation or more frequently (shorter periods) when you operate the machine in extreme conditions. Also change the oil when the oil analysis identifies contamination above the recommended level. See page 7-67 for further information.

**NOTE:** For lubricant specifications, see page 8-1.

### Checking the tandem oil level

To check the tandem oil level, proceed as follows:

1. Keep all unauthorized personnel clear of the area.
2. Park the machine on a flat, level, firm surface, away from any obstacles.
3. Support the implements on the ground.
4. Place the ignition key in the "OFF" position to shut down the engine.
5. Set the parking brake.
6. Remove the level plug (3) and check if the oil level is at the height of the plug hole.
7. Add oil until it is at the correct level. Then install the plug.



COIL14GRD0079AA 1

## Operator's seat (Checking)

### ⚠ WARNING

Improper operation or service of this machine can result in an accident. Read and understand the **SAFETY INFORMATION** Section before you perform any maintenance, service, or repairs. Read and understand the specific service procedures for the components you plan to work with before you start servicing the machine. Failure to comply could result in death or serious injury.

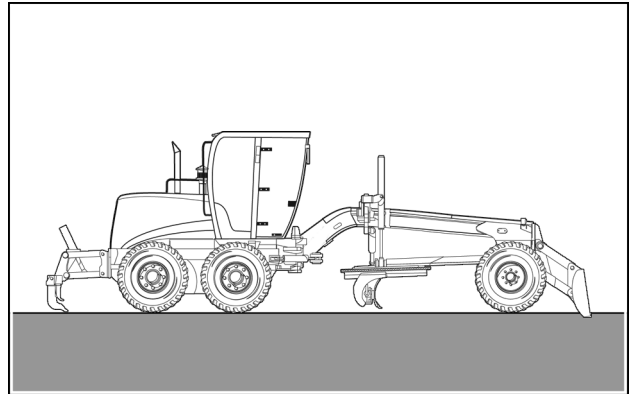
W0138A

### Checking the torque of the operator seat mounting bolts

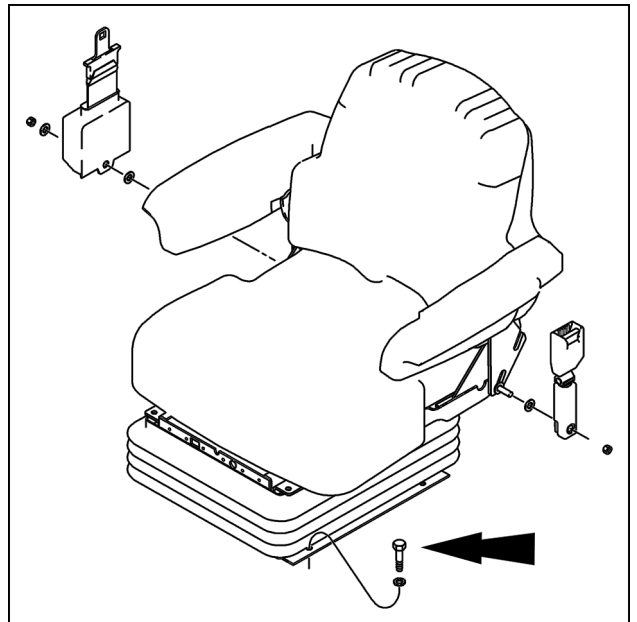
**NOTICE:** The torque of the operator seat mounting bolts must be checked every 500 hours of operation or more frequently (shorter periods) when operating the machine in extreme conditions.

To check the torque of the operator seat mounting bolts, proceed as follows:

1. Keep all unauthorized personnel clear of the area.
  2. Park the machine on a flat, level, firm surface, away from any obstacles.
  3. Support the implements on the ground.
  4. Shut down the engine, placing the ignition key in the OFF position (off).
  5. Set the park brake.
- 
6. Check the torque of the operator seat mounting bolts.
  7. If necessary, torque the bolts to **73.0 – 87.0 N·m (53.8 – 64.2 lb ft)**.



COIL14GRD0079AA 1



COIL14GRD0123BA 2

## Engine valve (Checking clearance and adjustment)

### **⚠ WARNING**

Danger of burns!

Remember that during normal operation the engine can reach high temperatures and that is extremely important allow the machine to cool down before performing this operation.

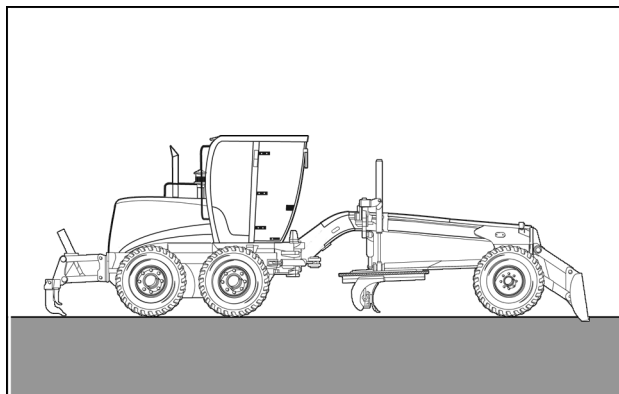
Failure to follow these recommendations may result in serious injury.

### Checking the engine valve clearance and adjustment

**NOTICE:** The engine valve clearance must be checked every 1000 hours of operation or more frequently (shorter periods) when operating the machine in extreme conditions.

To check and adjust the engine valves, proceed as follows:

1. Keep all unauthorized personnel clear of the area.
2. Park the machine on a flat, level, firm surface, away from any obstacles.
3. Support the implements on the ground.
4. Shut down the engine, placing the ignition key in the OFF position (off).
5. Set the park brake.



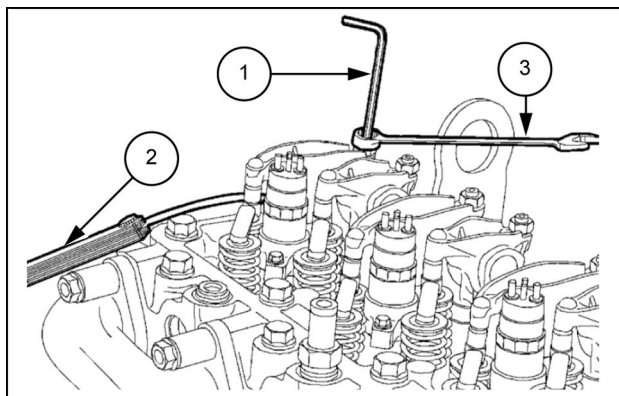
COIL14GRD0079AA 1

**NOTE:** Adjust the clearance between the rocker arms and the valves with an Allen wrench set (1), a closed end spanner (3) and feeler gauge (2).

6. Wait until the machine cools down.

**NOTE:** Always adjust the valve clearance when the engine is cold, i.e., with the water temperature below 60°C.

7. First, determine the (PMS) top dead center in engine cylinder no. 1.
8. To do this, rotate the crankshaft slowly with the aid of the adapter and the gear of the manual rotation tool.
9. Install the timing pin and adjust the following valves: 1A, 1E, 2A, 3E, 4A, 5E.
10. Remove the timing pin, rotate the crankshaft 360° and install the pin again.
11. Adjust the following valves: 2E, 3A, 4E, 5A, 6A, 6E.
12. Check that the valve clearance (with the engine cold) is as follows:
  - Intake: **0.20 – 0.30 mm (0.008 – 0.012 in)**
  - Exhaust: **0.46 – 0.56 mm (0.018 – 0.022 in)**



BRIL12MG0104A0A 2

**NOTE:** The clearance will be correct when you feel a slight resistance when passing a feeler gauge between the valve stem and rocker.

**EVERY 4000 HOURS**

**Engine coolant – (Change) (For models from series NGAF05986)**

**▲ 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

**NOTICE:** Drain, flush, and refill the fluid in the engine cooling system every 4000 hours of operation or every four years, whichever occurs first. Carry out this process more frequently (shorter periods) when you operate the machine in extreme conditions. Clean the system, and replace the coolant. For engine coolant specifications, see 8-1.

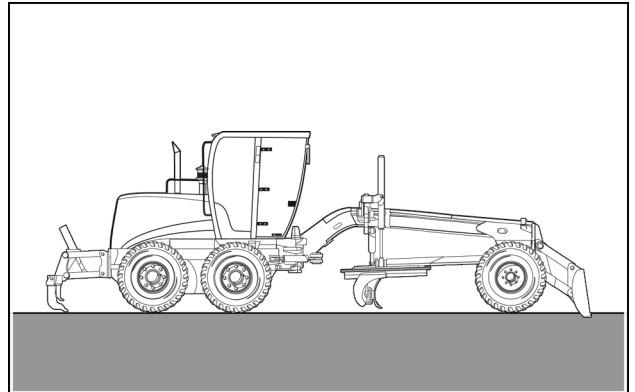
**NOTE:** For information on coolant with Organic Acid Technology (OAT), refer to .7-17.

**NOTE:** Handle and dispose of the waste in accordance with environmental regulations, laws and government codes.

**Draining and cleaning the system and changing the engine coolant**

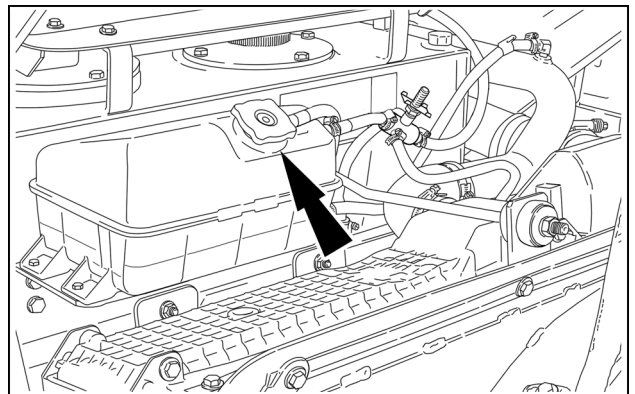
To change the engine coolant, proceed as follows:

1. Keep all unauthorized personnel clear of the area.
2. Park the machine on a flat, level, firm surface, away from any obstacles.
3. Support the implements on the ground.
4. Place the ignition key in the "OFF" position to shut down the engine.
5. Set the parking brake.
6. Wait for the engine to cool.



COIL14GRD0079AA 1

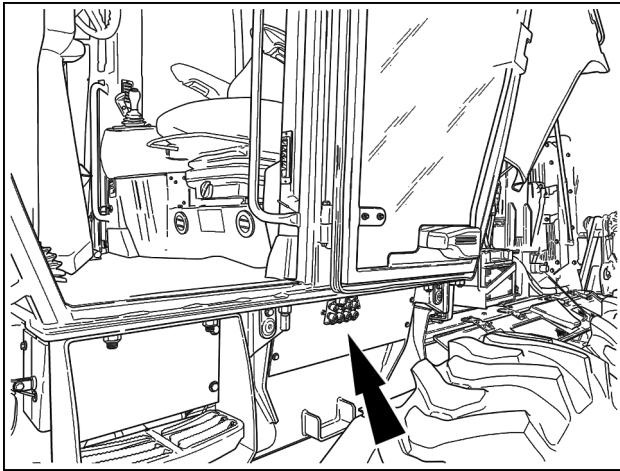
**NOTICE:** The radiator has fluid under pressure. Turn the expansion reservoir cap slowly to release the pressure before removing it or until the pressure has been released. Coolant can blow out and cause burns.



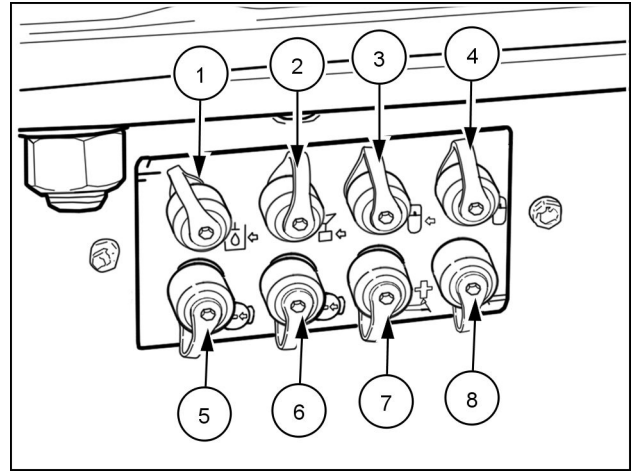
COIL14GRD0125AA 2

## Hydraulic diagnostic panel (Checking)

When pressure failures occur in the hydraulic system, check the pressure sockets centred on the hydraulic diagnostics panel, as described below.

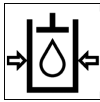


COIL14GRD0134BA 1



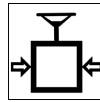
COIL14GRD0135BA 2

1. Hydraulic



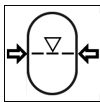
189.6 – 196.4 bar (2749 – 2848 psi)\*<sup>1</sup>

2. Steering



151 bar (2190 psi)\*<sup>2</sup>

3. Brake accumulator (left-hand side)

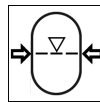


Models equipped with "Torque Converter" transmission

115 – 121 bar (1668 – 1755 psi)\*<sup>1.3</sup>

150 – 156 bar (2175 – 2262 psi)\*<sup>1.4</sup>

4. Brake accumulator (right-hand side)



Models equipped with "Torque Converter" transmission

115 – 121 bar (1668 – 1755 psi)\*<sup>1.3</sup>

150 – 156 bar (2175 – 2262 psi)\*<sup>1.4</sup>

5. Brake pressure (left-hand side)



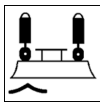
40 – 45 bar (580 – 653 psi)

6. Brake pressure (right-hand side)



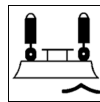
40 – 45 bar (580 – 653 psi)

7. Blade lift (left-hand side)



98 – 113 bar (1421 – 1639 psi)

8. Blade lift (right-hand side)



98 – 113 bar (1421 – 1639 psi)

**NOTE:** \*<sup>1</sup> Engine speed 2200 RPM

\*<sup>2</sup> Engine speed 900 RPM

\*<sup>3</sup> Minimum pressure in the accumulator

\*<sup>4</sup> Maximum pressure in the accumulator

## STORAGE

### Storing the machine (Preparing for storage)

**NOTE:** Any machine that is to remain stationary for more than 30 days must be parked inside a locked shed. If no shed is available, park the machine on planks in a dry place and cover it with a waterproof canvas after taking the following steps.

1. Wash the machine.
2. Lubricate all the grease fittings.
3. Paint any areas where the paintwork has been damaged.
4. Move all the hydraulic controls to relieve pressure in the system.
5. Drain the fuel from the tank.
6. Fill the fuel tank with approximately **8 l** of Diesel flushing oil.
7. Run the engine until the smoke from the exhaust is a blue-white color.
8. Drain the flushing oil from the fuel tank.
9. Put **15 ml** (one tablespoon) of VPI crystals in the fuel tank.
10. Change the engine oil and the oil filters.
11. Drain the cooling system, leaving the drain valves open and the expansion tank cap loose.
12. Place a DO NOT OPERATE tag on the cab.
13. Clean or replace the primary air filter element.
14. Re-cover all the exposed rods of the hydraulic cylinders and of the valve spools of the equipment and of the transmission with an anti-corrosion product.
15. Charge the batteries and remove them from the machine. Store the batteries on a wooden shelf in a cool, dry place.

**NOTE:** If possible, keep the batteries in an area where the ambient temperature is above freezing (**0 °C (32 °F)**).

16. Make sure that the batteries are clean.

## Engine specifications

### F140B models

#### Tier 3 motor – FPT 6.7

Type	“Common Rail” electronic injection system, water cooled, 4 stroke, direct injection, turbocharged, air aftercooled, open combustion chamber
Number of cylinders	6
Volumetric displacement	6.7 l (409 in <sup>3</sup> )
Bore and stroke	104 mm (4.09 in) x 132 mm (5.20 in)
Fuel pump	Bosch
Idle RPM	800 – 900 RPM
Maximum RPM without load	2370 – 2470 RPM
Governed RPM	2200 RPM
Compression ratio	17.5 : 1
Flywheel housing	SAE 3(dry)
Gross power ( SAE J1995)	
Lower curve	110 kW (150 Hp) @ 2200 RPM <sup>*1</sup>
Upper curve	127 kW (173 Hp) @ 2200 RPM <sup>*2</sup>
Net power ( SAE J1349)	
Lower curve	103 kW (140 Hp) @ 2200 RPM <sup>*1</sup>
Upper curve	120 kW (163 Hp) @ 2200 RPM <sup>*2</sup>
Gross torque ( SAE J1995)	
Lower curve	659 N·m (486 lb ft) @ 1500 RPM <sup>*1</sup>
Upper curve	758 N·m (559 lb ft) @ 1500 RPM <sup>*2</sup>
Net torque ( SAE J1349)	
Lower curve	591 N·m (436 lb ft) @ 1500 RPM <sup>*1</sup>
Upper curve	678 N·m (500 lb ft) @ 1500 RPM <sup>*2</sup>
Weight	550 kg (1213 lb)
Firing Order	1-5-3-6-2-4
Water pump flow rate	197 L/min (52 US gpm) @ 2200 RPM
Maximum rejection to coolant	3805 BTU/min (66.9 kW) @ 2200 RPM
Oil pressure	
Idle speed	69 kPa (10 psi)
Maximum no load	380 kPa (55 psi)

For models with Torque Converter transmission:

\*1 1st and 2nd forward gears and 1st and 2nd reverse gears.

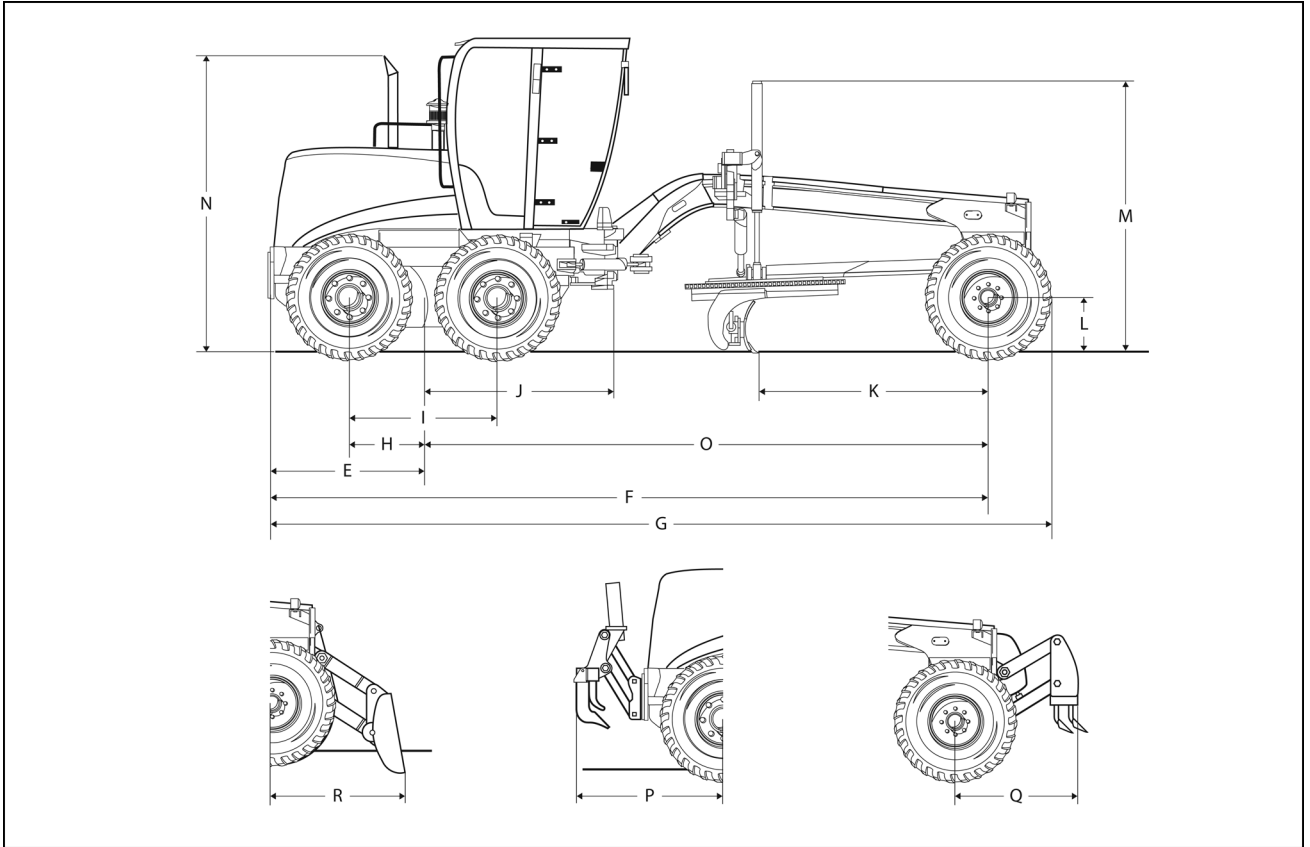
\*2 3rd, 4th, 5th and 6th forward gears and 3rd reverse gear.

#### Noise emission

External sound power SAE 1372 (Jul88) (ISO 6393) [LwA] Machine stopped, engine at nominal speed	107,9 dB(A)
Sound power in the operator's compartment SAE J919 (Jun86) [LpA] Machine stopped, engine at nominal speed	77,0 dB(A)

**NOTE:** Nominal engine speed 2200 RPM and maximum speed without load 2275 – 2400 RPM.

**F200B models (2 of 2)**



COIL14GRD0082FA 6

E.	Tandem centre to machine rear	<b>1661 mm (65.4 in)</b>
F.	Total chassis length	<b>7856 mm (309.3 in)</b>
G.	Total machine length	<b>7856 mm (309.3 in)</b>
H.	Rear axle to centre of rear wheels	<b>812.1 mm (32.0 in)</b>
I.	Between Tandem centres	<b>1624.2 mm (63.9 in)</b>
J.	Centre pivot to rear axle	<b>1958 mm (77.1 in)</b>
K.	Rear axle to blade	<b>2562 mm (100.9 in)</b>
L.	Static tire radius	<b>610 mm (24.0 in)</b>
M.	Lifting cylinders height	<b>3047 mm (120.0 in)</b>
N.	Exhaust pipes maximum height	<b>3323 mm (130.8 in)</b>
O.	Wheelbase	<b>6219 mm (244.8 in)</b>
P.	Distance from the centre of the rear wheels to the ripper	<b>2040 mm (80.3 in)</b>
Q.	Distance from the centre of the front wheels to the ripper	<b>1520 mm (59.8 in)</b>
R.	Distance from the centre of the front wheels to the front blade	<b>1645 mm (64.8 in)</b>
*	Outside turning radius	<b>7289 mm (287.0 in)</b>
*	Free clearance (rear axle)	<b>359 mm (14.1 in)</b>
*	Free clearance (front axle)	<b>622 mm (24.5 in)</b>

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