

ORIGINAL INSTRUCTIONS

650M
Tier 4B (final)
Crawler Dozer
PIN NHC100263 and above

OPERATOR'S MANUAL

Part number 51442624

2nd edition English

February 2018

Replaces part number 48000086



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Product identification

Model, Product Identification Number, and year of manufacture

Record the machine Product Identification Number (PIN) and additional machine information including the model and the component serial numbers in the spaces below. Always supply this information to your dealer when you order parts, obtain information, or require assistance. Keep a record of these numbers and your Manufacturer's Statement of Origin in a safe place. If the machine is stolen, report the numbers to your local law enforcement agency.

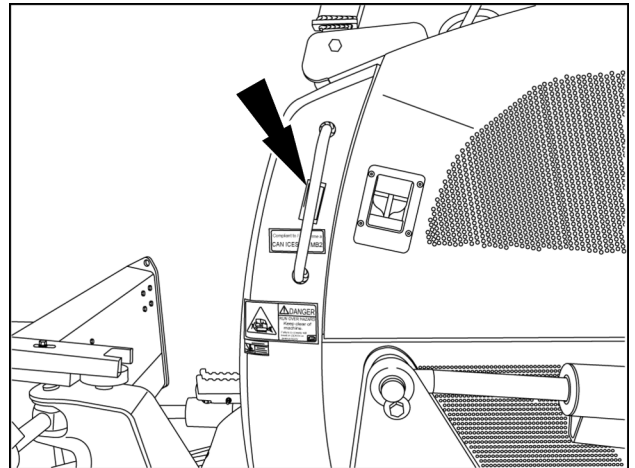
Machine identification

Model name

Product Identification Number (PIN)

Model year

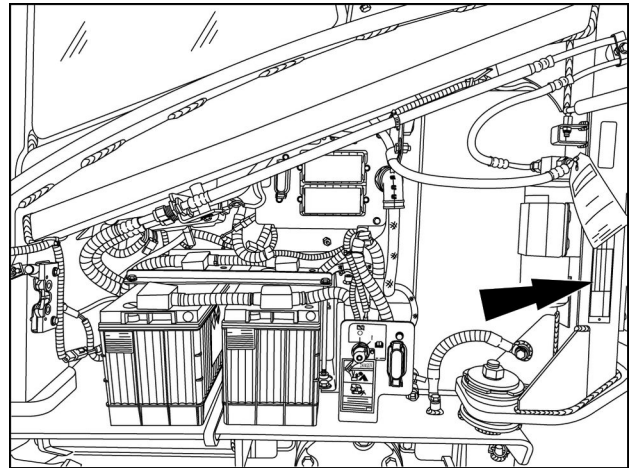
The PIN plate is located on the left-hand side of the machine in front of the engine access door.



RAIL17DOZ0367AA 1

Roll-Over Protective Structure (ROPS)

The ROPS serial number plate is located in the left-hand rear access compartment.



RAIL17DOZ0439BA 2

2 - SAFETY INFORMATION

Safety rules and signal word definitions


Personal safety





This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

Throughout this manual and on machine safety signs, you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

 DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury. The color associated with DANGER is RED.

 WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury. The color associated with WARNING is ORANGE.

 CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury. The color associated with CAUTION is YELLOW.

FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

Machine safety

NOTICE: Notice indicates a situation that, if not avoided, could result in machine damage or property damage. The color associated with Notice is BLUE.

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine damage or property damage. The word Notice is used to address practices not related to personal safety.

Information

NOTE: Note indicates additional information that clarifies steps, procedures, or other information in this manual.

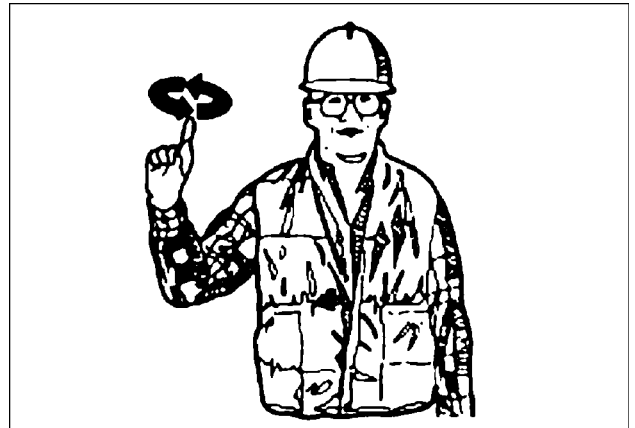
Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

Emergency stop
Move both hands back and forth.



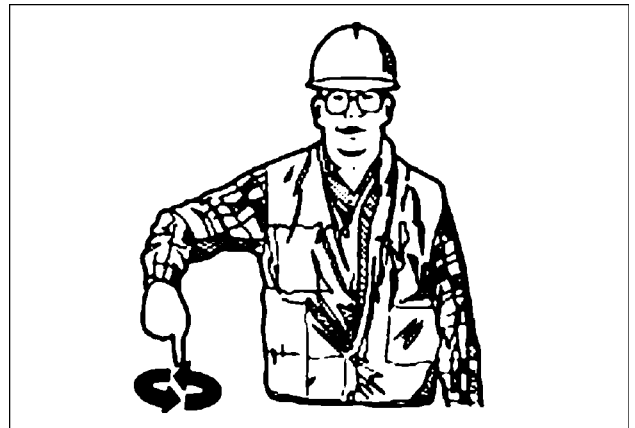
RAIL15DOZ0059AA 8

Raise the tool.



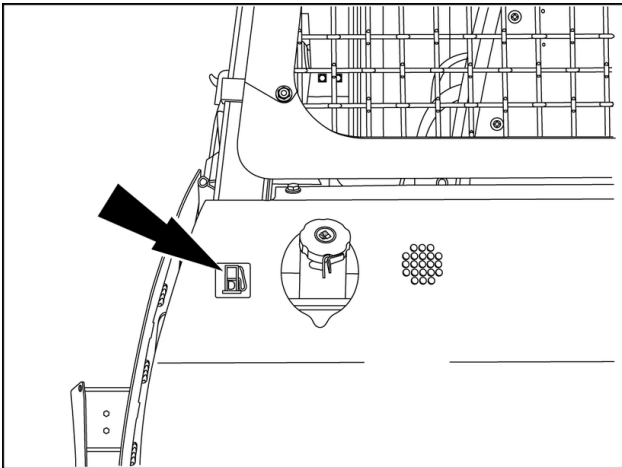
RAIL15DOZ0060AA 9

Lower the tool.



RAIL15DOZ0061AA 10

Diesel fuel fill location



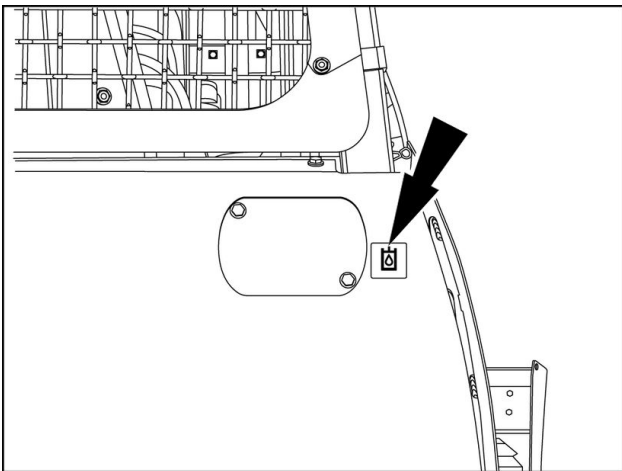
RAIL17DOZ0378AA 33

This informational sign is located next to the diesel fuel fill. It indicates the correct diesel fuel fill location.
ISO sign number: 85804338



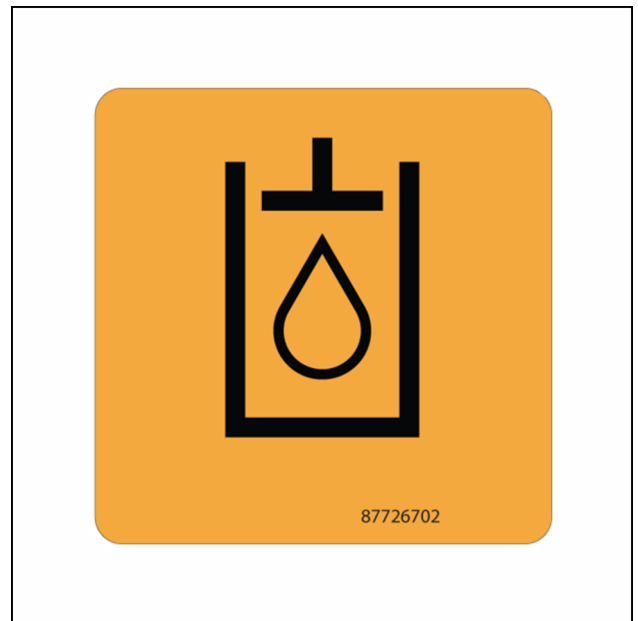
85804338 34

Hydraulic oil fill location



RAIL17DOZ0379AA 35

This informational sign is located next to the hydraulic oil fill. It indicates the correct hydraulic oil fill location.
ISO sign number: 87726702



87726702 36

Foot controls

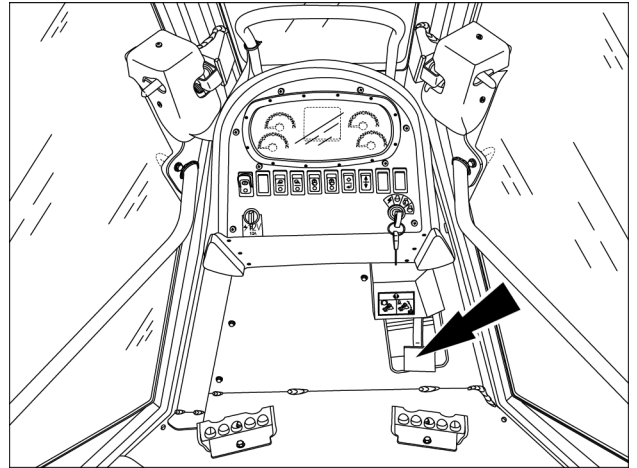
Dual function pedal

The dual function pedal can be switched to operate as a deceleration pedal or a transmission control pedal. As a deceleration pedal, the engine RPM is reduced as the pedal is depressed. As a transmission pedal, the hydraulic system is de-stroked as the pedal is depressed. The transmission pedal is the default function. These settings are made through the transmission selection on the multi-function display.

NOTE: See machine settings on page 4-13 for more information.

Transmission pedal

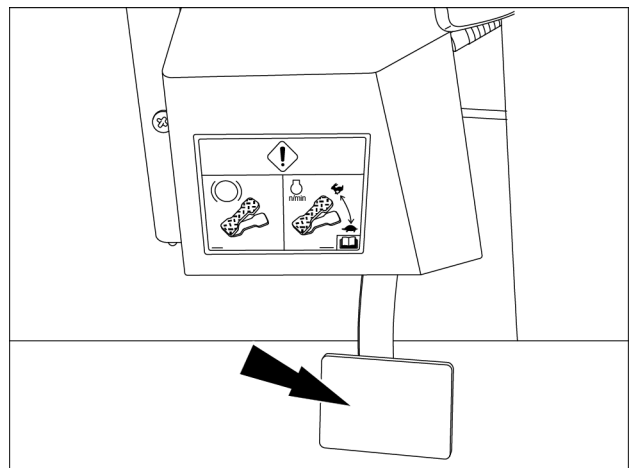
As a transmission pedal, the machine varies the transmission flow (pump/motor displacement) allowing for inching. Pushing the pedal completely down will de-stroke the hydraulics.



RAIL17DOZ0451AA 1

Deceleration pedal

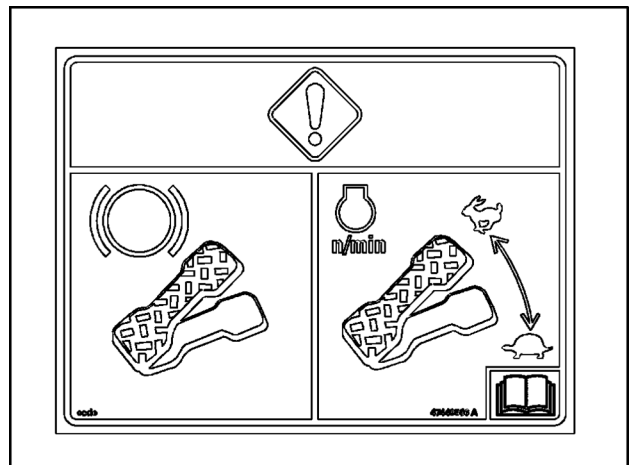
The deceleration pedal reduces the engine RPM and slows the machine. Push the deceleration pedal to slow or stop the machine.



RAIL17DOZ0446AA 2

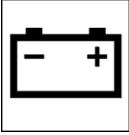
Use the deceleration pedal to reduce the speed all the way to zero by de-stroking the ground drive along with decreasing engine RPM.

NOTE: Use the deceleration pedal to control the dozer for precision work.

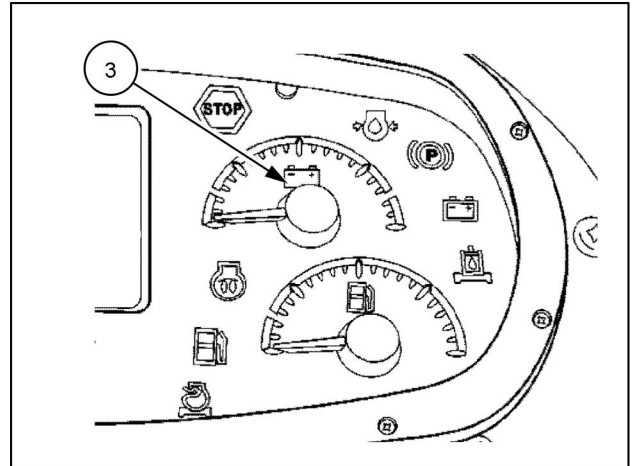


47449566 3

3. Voltage gauge



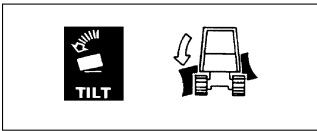
This gauge indicates the voltage in the operating system. The gauge indicates if the battery is properly charging. If the gauge moves into the yellow zone, the engine should be monitored. If the gauge moves into the red zone, the battery is in a discharge condition. Stop the machine and correct the problem if the battery warning light illuminates, and the gauge moves into the red zone.



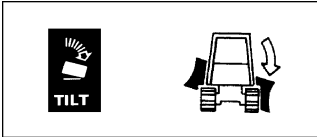
RAIL12DOZ0821AA 6

NOTICE: Do not operate the machine if the indicator turns red and the alarm sounds continuously. Stop the machine and correct the problem.

Tilt

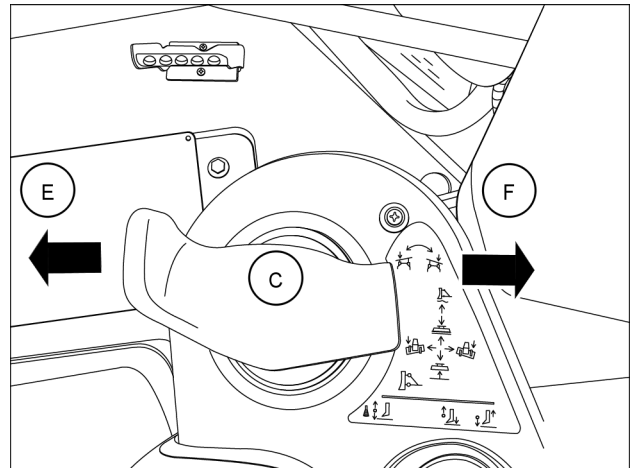


Move the control lever to the left (**E**) to tilt the blade to the left.



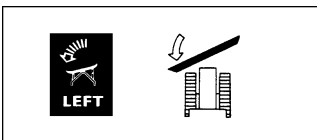
Move the control lever to the right (**F**) to tilt the blade to the right.

The blade will stop moving when the control lever is in the HOLD (**C**) position. When released, the control lever will return automatically to the HOLD position.

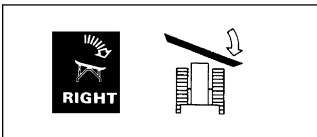


RAIL17DOZ0447AA 4

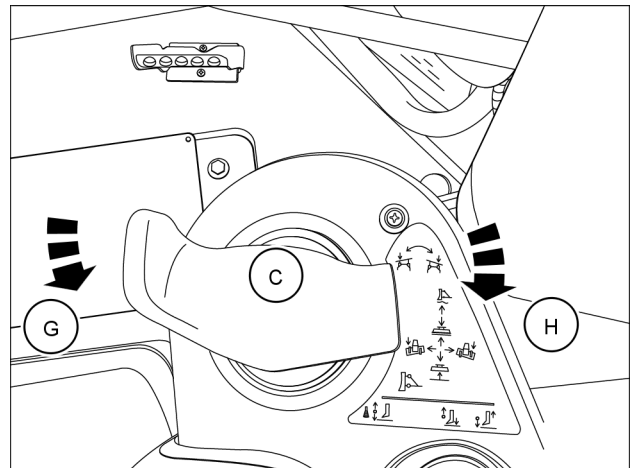
Angling the blade



Rotate the lever counter-clockwise to angle the blade left (**G**).



Rotate the lever clockwise to angle the blade right (**H**).



RAIL17DOZ0447AA 5

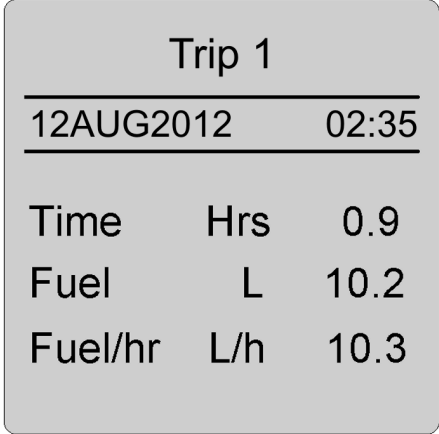
Setting trip screens

Highlight the trip screen you wish to set. (Capacity can be set in United States gallons, Imperial gallons, or metric liters when setting measurement preferences).

Press the enter/confirm switch to reset to the desired trip screen.

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

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



Trip 1		
12AUG2012		02:35
Time	Hrs	0.9
Fuel	L	10.2
Fuel/hr	L/h	10.3

RCPH10WHL353AAH 10

Cold temperature starting aids

▲ WARNING

Explosion hazard!

DO NOT use ether starting fluid. Serious engine damage, explosion, death, or serious personal injury could occur.

Failure to comply could result in death or serious injury.

W0148A

This machine may be equipped with an engine grid heater. Turn the key switch to ON, and wait for the engine grid heater indicator lamp to go out. The indicator light may come on again during cranking and shortly after the engine starts for post heating. This allows for smooth running conditions during cold weather warm up. Contact your authorized dealer for additional cold weather starting aids.

Machine warm up

To properly warm the machine in cold conditions:

1. Set engine speed to **1200 – 1400 RPM**. Operate the ground drive at no greater than speed 8.
2. Cycle the implement system functions by moving each function the full cylinder stroke several times.
3. Repeat Step 2 for **10 min** or until hydraulic oil temperature is at least **10.0 °C (50.0 °F)**.
4. Once the engine has started, run the engine at about half throttle (**1650 RPM**) for a minimum of four minutes under no load. This will help stabilize the engine.
5. Operate the machine in a clear safe area. Check the full operation of the machine.

NOTE: Warm oil to above **20.0 °C (68.0 °F)** for optimized performance.

If the machine idles in cold temperatures, the engine will stay warm, but the hydraulic oil and brake oil will cool. The oil and components can become cold, which will affect hydraulic function response time. If this should happen you **MUST** go through the complete warm up procedure.

Make sure the track system is clean when you park the machine. In cold weather, park the machine on planks. This will prevent the tracks from freezing to the ground.

NOTICE: If the track freezes to the ground, do not try to drive the machine. This will cause damage to the power train.

Adjusting reverse speed ratio differential setting

To adjust the reverse speed ratio differential, follow the same steps as for steering sensitivity, then highlight "RevSpdDiff".

The RevSpdDiff choices are: -2, -1, 0, +1, +2, +3, and +4.

After selecting and highlighting the desired value, press the enter switch to confirm the selection. Press the escape switch to store the choice.

This will produce a reverse speed calculated from the forward speed. For example, if "+4" is selected, this will produce a reverse speed 4 speeds higher than the forward speed. If "-2" is selected, this will produce a reverse speed 2 speeds slower than the forward speed. If "0" is selected, the reverse and forward speeds will be the same.

The reverse speed cannot be below 1 and above the "Max Spd" setting.

Adjusting shuttle parameter

To adjust the shuttle parameter, follow the same steps, highlighting "Shuttle".

The shuttle choices are:

- Smooth
- Moderate (preset from the factory)
- Aggressive

After selecting and highlighting the desired value, press the enter switch to confirm the selection. Press the escape switch to store the choice.

Dual function deceleration or transmission pedal

The deceleration or transmission pedal can be changed at the transmission selection. Highlight "Pedal", and follow the same steps as for steering sensitivity.

Choose between:

- Decel
- Trans - (factory default)

Recovery transport

Tow procedure

⚠ WARNING

Misuse hazard!

Towing is a delicate maneuver that is always carried out at the risk of the user. The manufacturer's warranty does not apply to incidents or accidents that occur during towing. Where possible, carry out the repairs at the site.

Failure to comply could result in death or serious injury.

W0286A

⚠ WARNING

Transport hazard!

Make sure that the weight of a trailed vehicle that is not equipped with brakes **NEVER EXCEEDS** the weight of the machine that is towing the vehicle. Stopping distance increases with increasing speed as the weight of the towed load increases, especially on hills and slopes.

Failure to comply could result in death or serious injury.

W1138A

NOTICE: If you doubt your ability to perform this procedure, contact your authorized dealer. This procedure will require removing the floor mat, the floor panel and seat bolts.

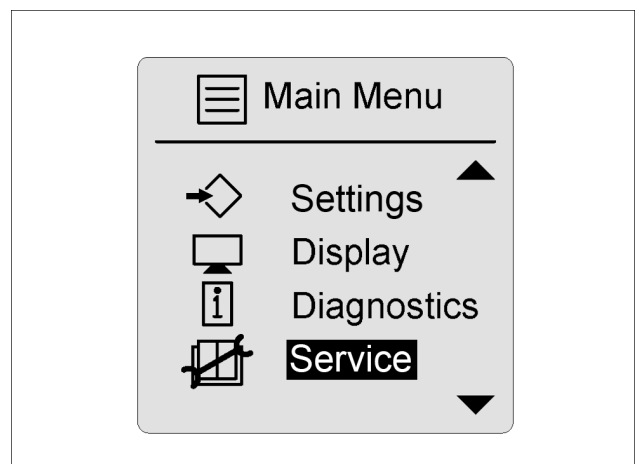
Engine or hydraulic failure

Towing this machine is not recommended. If your machine is disabled, you must make a judgment if the machine can be moved without further damage. If possible, repair the machine at the job location.

If you cannot repair the machine at the job location, you may wish to contact your authorized dealer for assistance. Incorrectly performed towing procedures can severely damage machines with hydrostatic motors.

Keep all unauthorized personnel clear of the area.

1. Use the multi-function screen to select the towing mode. From the main menu, scroll down and select "Service". Press the confirm switch.



RAIL15DOZ0018AA 1

6 - WORKING OPERATIONS

General information

Dozer blade

▲ WARNING

Hazard to bystanders!

Always know the location of all workers in your area. Warn them before you start working on the machine. Always keep all unauthorized bystanders clear of the area.

Failure to comply could result in death or serious injury.

W0176A

▲ WARNING

Avoid injury!

Do not operate the machine while under the influence of alcohol or drugs.

Failure to comply could result in death or serious injury.

W0180A

▲ WARNING

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

Raised equipment or machine movement without an operator can cause serious injury. Always do the following before performing any maintenance:

Park the machine on flat, level ground.

Lower the attachment to the ground.

Shut down the engine and remove the starter switch key.

Lock the tracks.

Failure to comply could result in death or serious injury.

W0269A

▲ WARNING

IMPROPER OPERATION OF THIS MACHINE CAN CAUSE DEATH OR SERIOUS INJURY.

MAKE SURE THAT EVERY OPERATOR:

-learns and practices the safe use of machine controls in a safe, clear area before operating the machine on a job site.

-clears the work area of all bystanders.

-observes pertinent laws and regulations.

-follows the instructions in this operator's manual.

Failure to comply could result in death or serious injury.

W0189A

▲ WARNING

Driving hazard!

Hillside operations can be dangerous. Rain, snow, ice, loose gravel, or soft ground, etc. can change the ground conditions. You must make a judgment if it is safe to operate your machine on any hillside or ramp.

Failure to comply could result in death or serious injury.

W0144A

▲ DANGER

Hazard to bystanders!

ALWAYS make sure the work area is clear of bystanders and domestic animals before starting this procedure. Know the full area of movement of the machine. Do not permit anyone to enter the area of movement during this procedure.

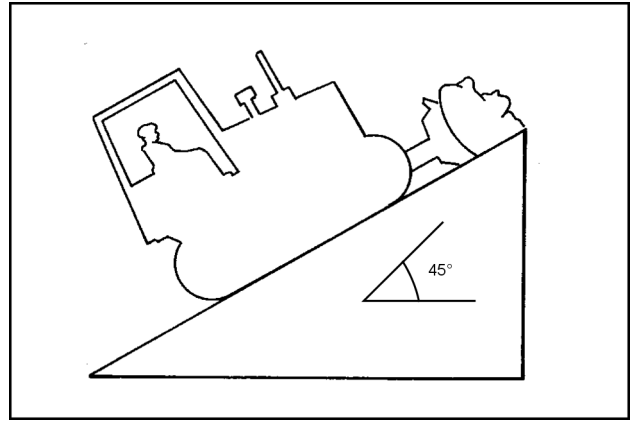
Failure to comply will result in death or serious injury.

D0164A

Terrain

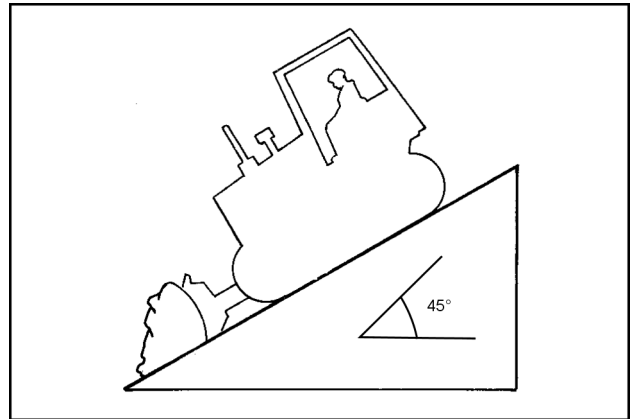
Changes in the terrain shifts the machine center of gravity and increases the weight of the machine on different parts of the undercarriage.

1. Working uphill moves the weight of the machine backward causing increased wear of the rear rollers and increases forward drive wear of the sprockets and bushings.
Uphill limit: **45°**.



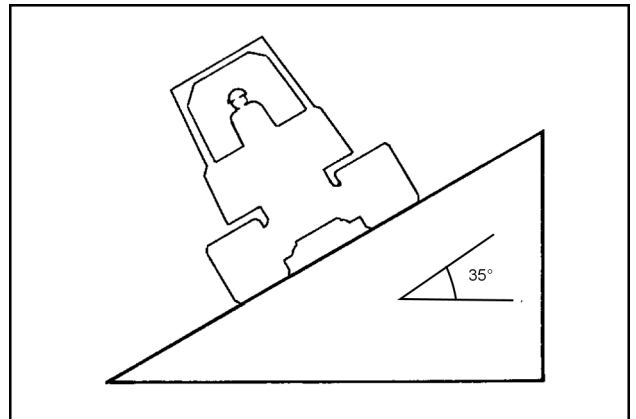
RCIL10CWL004AAL 1

2. Working downhill moves the machine weight forward causing increased wear of the front rollers. Due to the design of the track system, working downhill does reduce the wear of the sprockets and bushings.
Downhill limit: **45°**.



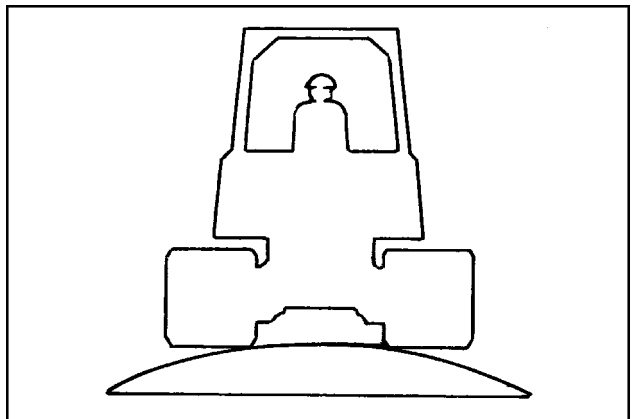
RCIL10CWL005AAL 2

3. Working on the side of a hill moves the weight of the machine toward the downhill side of the machine. Wear is increased on the rail sides, roller and idler flanges, bushing ends and track shoe ends that are on the downside of the hill.
Side hill limit: **35°**.



RCIL10CWL006AAL 3

4. Working on a crown will cause the inner components to carry the heaviest load. The wear is increased on the inner links, roller treads, idler treads and track plate ends. In extreme situations, the inner sprocket/bushing wear is greatly increased.



RCIL10CWL007AAL 4

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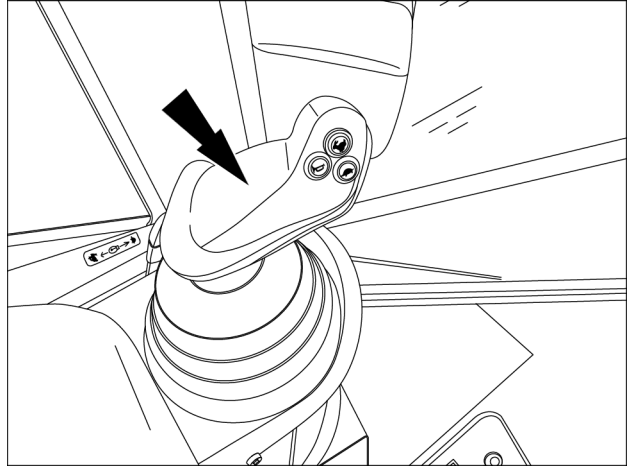


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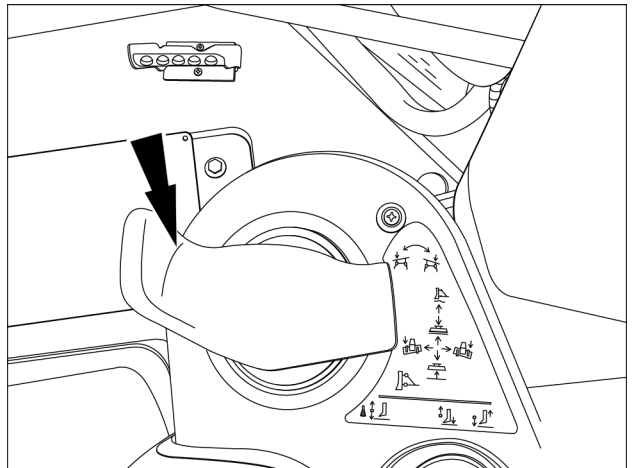
7 - MAINTENANCE

4. Operate the left-hand side control levers from right to left and front to rear approximately a dozen times. Turn the ignition key to the OFF position.

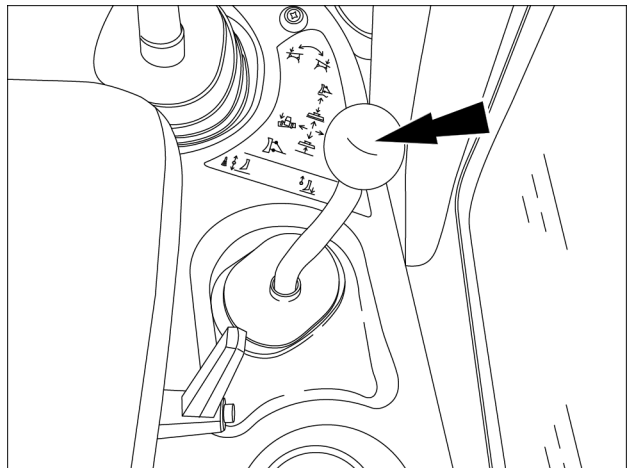


RAIL17DOZ0449AA 2

5. Operate the right-hand side control levers from right to left and front to rear approximately a dozen times.



RAIL17DOZ0447AA 3



RAIL17DOZ0448AA 4

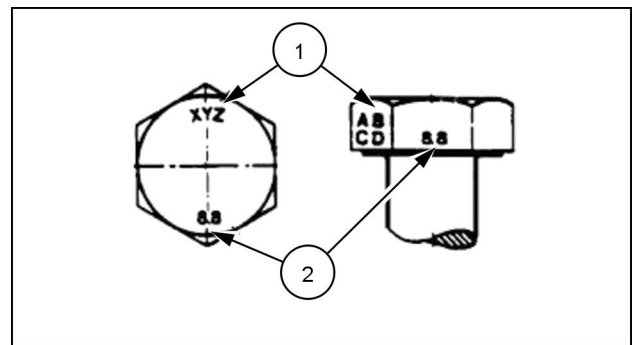
Metric flanged hardware

Nom- inal size	Class 8.8 bolt and Class 8 nut		Class 10.9 bolt and Class 10 nut		Locknut CL.8 W/CL8.8 bolt	Locknut CL.10 W/CL10.9 bolt
	Unplated	Plated W/ZnCr	Unplated	Plated W/ZnCr		
M4	2.4 N·m (21 lb in)	3.2 N·m (28 lb in)	3.5 N·m (31 lb in)	4.6 N·m (41 lb in)	—	—
M5	4.9 N·m (43 lb in)	6.5 N·m (58 lb in)	7.0 N·m (62 lb in)	9.4 N·m (83 lb in)	4.4 N·m (39 lb in)	6.4 N·m (57 lb in)
M6	8.3 N·m (73 lb in)	11 N·m (96 lb in)	12 N·m (105 lb in)	16 N·m (141 lb in)	7.5 N·m (66 lb in)	11 N·m (96 lb in)
M8	20 N·m (179 lb in)	27 N·m (240 lb in)	29 N·m (257 lb in)	39 N·m (343 lb in)	18 N·m (163 lb in)	27 N·m (240 lb in)
M10	40 N·m (30 lb ft)	54 N·m (40 lb ft)	57 N·m (42 lb ft)	77 N·m (56 lb ft)	37 N·m (27 lb ft)	53 N·m (39 lb ft)
M12	70 N·m (52 lb ft)	93 N·m (69 lb ft)	100 N·m (74 lb ft)	134 N·m (98 lb ft)	63 N·m (47 lb ft)	91 N·m (67 lb ft)
M16	174 N·m (128 lb ft)	231 N·m (171 lb ft)	248 N·m (183 lb ft)	331 N·m (244 lb ft)	158 N·m (116 lb ft)	226 N·m (167 lb ft)
M20	350 N·m (259 lb ft)	467 N·m (345 lb ft)	484 N·m (357 lb ft)	645 N·m (476 lb ft)	318 N·m (235 lb ft)	440 N·m (325 lb ft)
M24	607 N·m (447 lb ft)	809 N·m (597 lb ft)	838 N·m (618 lb ft)	1118 N·m (824 lb ft)	552 N·m (407 lb ft)	

Identification

Metric hex head and carriage bolts, Classes 5.6 and up

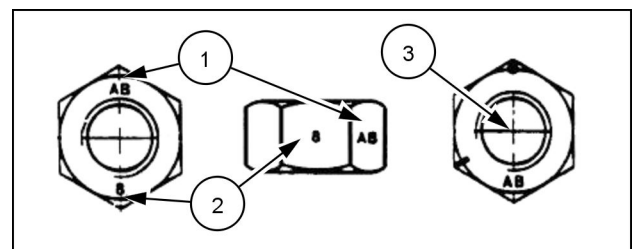
1. Manufacturer's identification
2. Property class



20083680 1

Metric hex nuts and locknuts, Classes 05 and up

1. Manufacturer's identification
2. Property class
3. Clock marking of property class and manufacturer's identification (optional), i.e. marks 60° apart indicate Class 10 properties and marks 120° apart indicate Class 8.



20083681 2

Grease points

⚠ 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

⚠ WARNING

Avoid injury! Always do the following before lubricating, maintaining, or servicing the machine.

1. Disengage all drives.
2. Engage parking brake.
3. Lower all attachments to the ground, or raise and engage all safety locks.
4. Shut off engine.
5. Remove key from key switch.
6. Switch off battery key, if installed.
7. Wait for all machine movement to stop.

Failure to comply could result in death or serious injury.

W0047A

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, turn off the engine, remove the key, and verify that engine components have cooled or avoid contact. Make sure that all residual pressure is relieved from circuits before beginning maintenance.

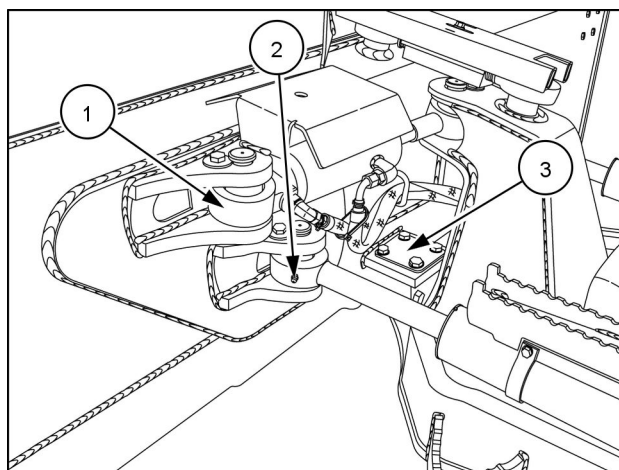
Lubricate the machine and attachments when the hour meter registers 10 hours of operation and every 10 hours thereafter. Lubricate more frequently if conditions so require.

Clean around the area to be greased before service.

NOTE: In severe conditions, such as immersion in water, it may be necessary to grease more frequently.

NOTE: Use **TUTELA MOLY GREASE GR-75** at all grease points.

- (1) Tilt cylinder, closed end
- (2) Angle cylinder, rod end — one each side
- (3) Trunnion



RAIL17DOZ0357AA 1

Replace hydraulic oil filters (Initial)

⚠ 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

Pressurized fluid can penetrate the skin and cause severe injuries. Keep hands and body away from any pressurized leak. DO NOT use your hand to check for leaks. Use a piece of cardboard or paper. If fluid penetrates the skin, seek medical attention immediately. Failure to comply could result in death or serious injury.

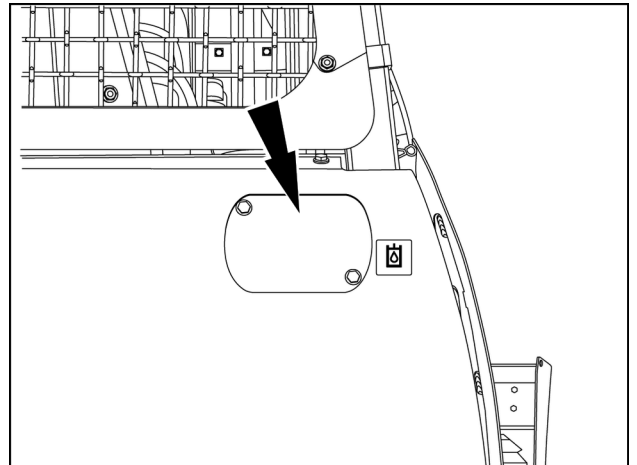
W0158A

Replace the hydraulic and hydrostatic oil filters when the hour meter registers 100 hours for a new machine during the initial run-in period. The filters should be changed every 2000 hours thereafter or more frequently when operating conditions are severe.

Prior operation:

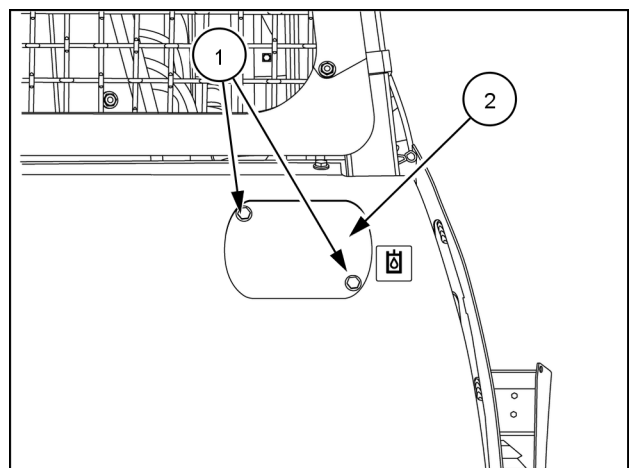
Keep all unauthorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied, and the attachment lowered to the ground, turn off the engine, remove the key, and verify that engine components have cooled or avoid contact. Make sure that all residual pressure is relieved from circuits before beginning maintenance.

1. Stop the engine, and put a Do Not Operate tag on the key switch.
2. Locate the hydraulic oil fill cap cover at the rear of the machine.



RAIL17DOZ0379AA 1

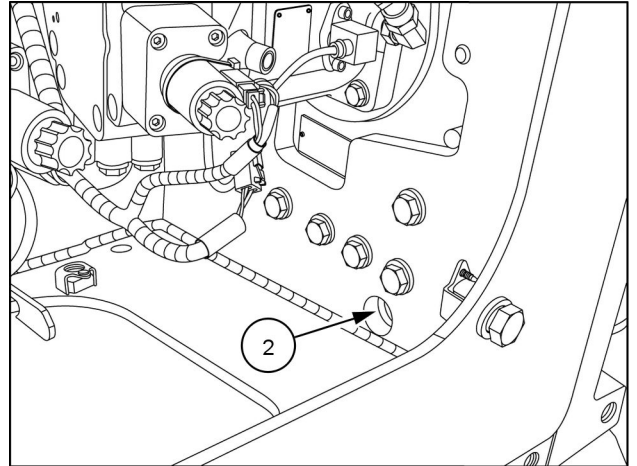
3. Remove the two bolts (1) and the cover (2) to access the hydraulic oil fill cap.
4. Clean the area around the hydraulic oil fill cap, slowly loosen the cap to release any remaining hydraulic system pressure, and remove the cap completely.



RAIL17DOZ0379AA 2

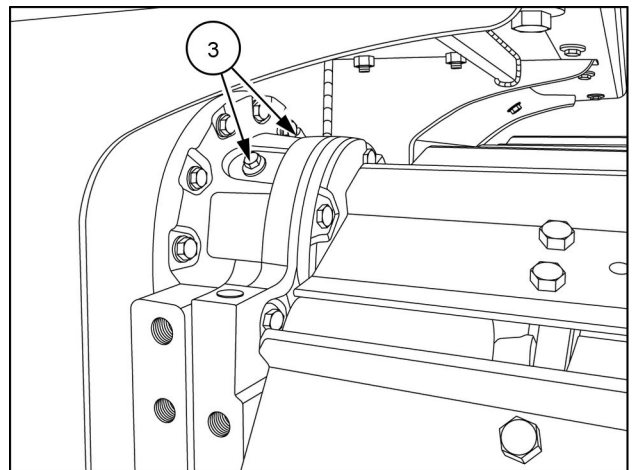
If oil comes out:

9. Install the level plug (2). Torque to **68 – 78 N·m (50 – 58 lb ft)**.



RAIL13DOZ1198AA 7

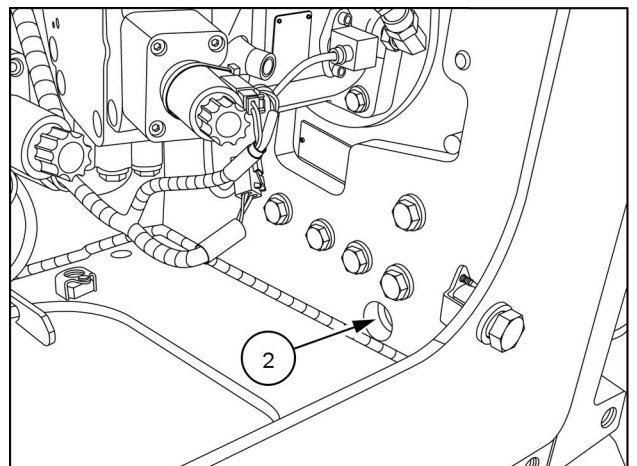
10. Install both of the fill plugs (3). Torque to **170 – 183 N·m (125 – 135 lb ft)**.
11. Repeat this process on the final drive on the other side of the machine.



RAIL13DOZ1198AA 8

If no oil comes out:

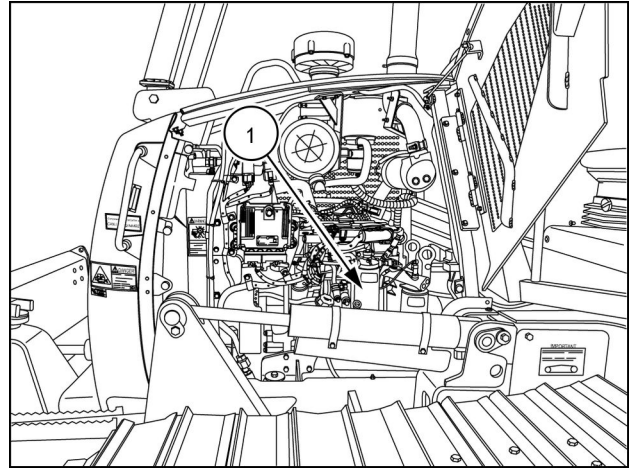
9. Completely remove the level plug (2).
10. Fill the final drive until the oil is level with the bottom of the level plug (2) hole.
11. Install the level plug (2). Torque to **68 – 78 N·m (50 – 58 lb ft)**.



RAIL13DOZ1198AA 9

Primary fuel filter

1. Locate the fuel filter (1) in the front left engine compartment.



RAIL17DOZ0390AA 2

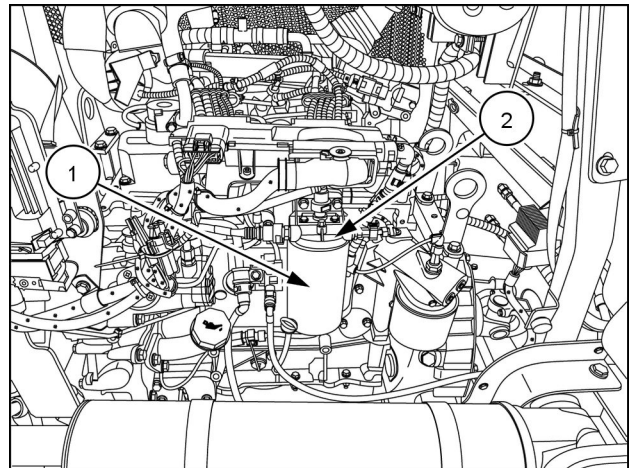
2. Clean the area around the fuel filter (1) the fuel filter head (2) and surrounding area.
3. Remove the fuel filter (1).

NOTE: Turn the filter counterclockwise to remove. Capture any fuel remaining in the lines or the fuel filter cartridge, and discard properly.

4. Apply a thin layer of clean oil to the gasket on the new fuel filter (1).
5. Install and tighten the new fuel filter cartridge (1) by hand. Tighten the filter 1/2 to 3/4 turn after the filter cartridge gasket makes contact with the prefilter head.

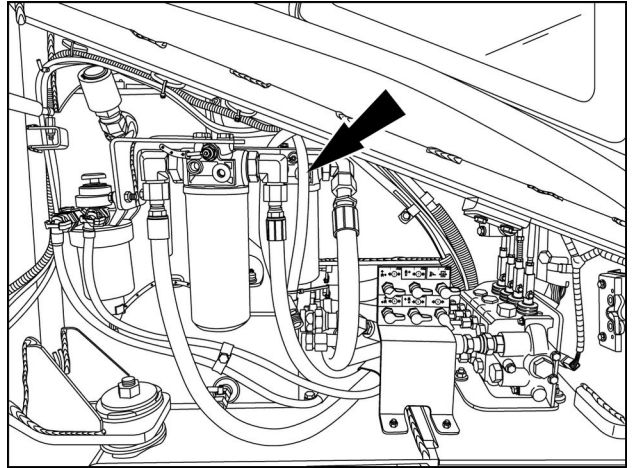
NOTICE: Never use a filter wrench to tighten a new fuel filter on install.

6. Check for leaks.



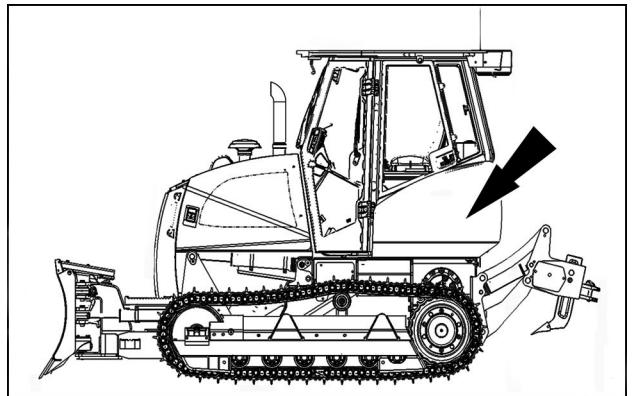
RAIL17DOZ0393AA 3

3. Locate the fuel tank drain hose, and remove it from the machine.



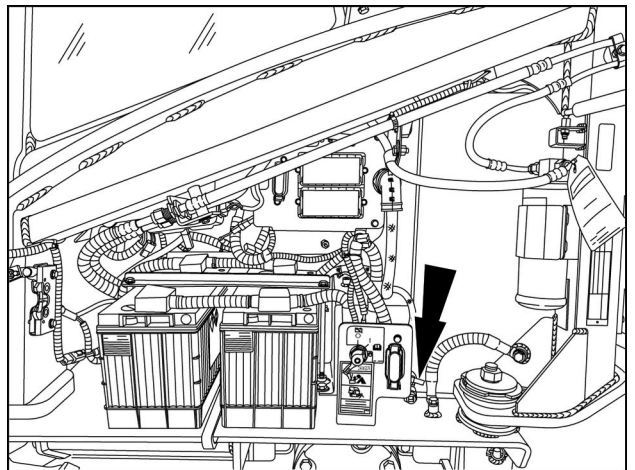
RAIL17DOZ0440BA 3

4. Open the rear, left-hand side access door.



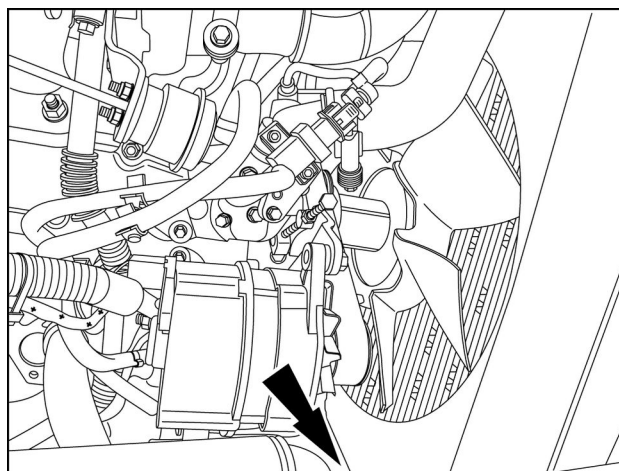
RAIL17DOZ0458AA 4

5. Locate the fuel tank drain valve on the side of the tank.



RAIL17DOZ0439BA 5

7. Locate the coolant drain valve on the lower right-hand side of the radiator.
8. Connect a hose to the coolant drain valve and route it under the machine through the opening where the belly pan was removed.
9. Place a suitable container of the proper capacity under the drain valve hose.
10. Open the drain valve, and drain the coolant from the system.
11. Close the drain valve after all the coolant is drained.

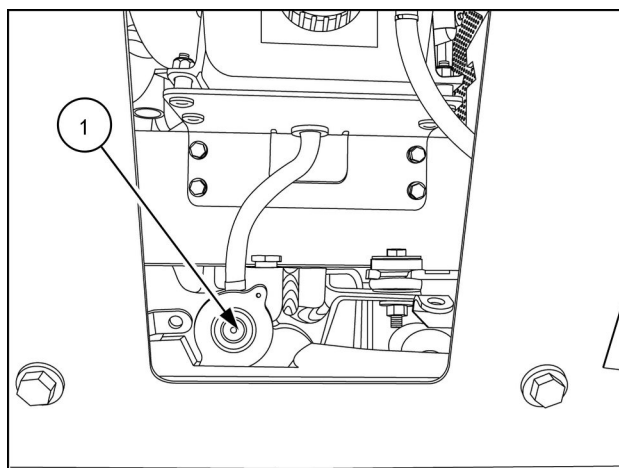


RAIL17DOZ0325AA 5

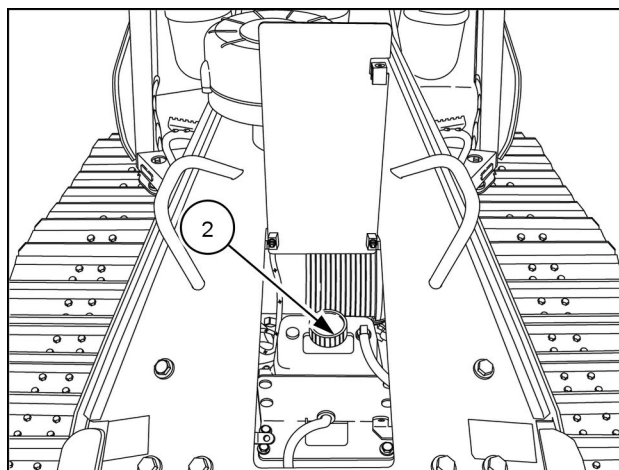
12. Use a suitable cleaning product to flush and clean the system.

NOTE: Contact your authorized CASE CONSTRUCTION dealer for cooling system cleaning products.

13. Follow the cleaning product manufacturer instructions to clean and flush the cooling system.
14. After the system has been cleaned and flushed, close and secure the drain valve.
15. Fill the radiator (1) and reservoir (2) with the proper mix and amount of **CASE AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT** and distilled or demineralized water for the system and the prevailing weather conditions.



RAIL17DOZ0389AA 6



RAIL17DOZ0394AA 7

16. Install the radiator (1) and reservoir (2) caps.

As required

Drive belt

⚠ 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 belt visually each day at the daily walk around for correct tension, wear, and damage. Incorrect belt tension may cause battery charge failure, engine overheating, or drive belt wear.

Prior operation:

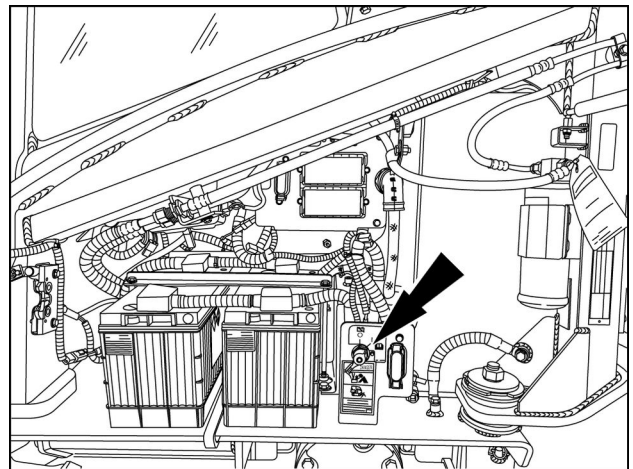
Keep all unauthorized personnel clear of the area. Park the machine on level ground, in neutral with the parking brake applied, and the attachment lowered to the ground, turn off the engine, remove the key, and verify that engine components have cooled or avoid contact. Make sure that all residual pressure is relieved from circuits before beginning maintenance.

Maintenance specifications	
Visual check	Every 10 hours or every day
Replace belts	As needed

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 or an ineffective air conditioning system.

Replacing the drive belt

1. Turn the master disconnect OFF.



RAIL17D0Z0439BA 1

Cab air filters

⚠ WARNING

Eye injury hazard!

Wear full coverage safety glasses with side panels when using compressed air. Limit air pressure to 200 kPa (29 psi).

Failure to comply could result in death or serious injury.

W0162A

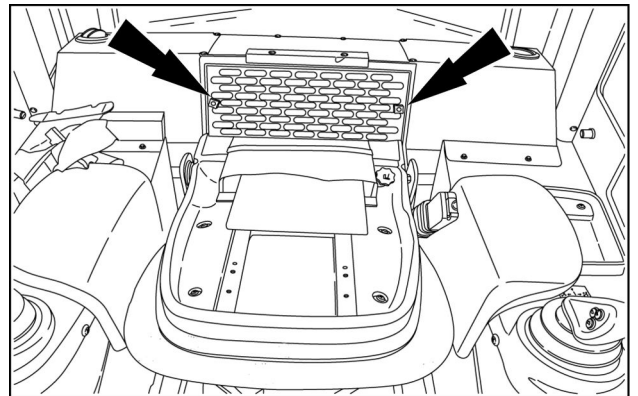
The cab recirculation air filter is located behind the operator's seat. Replace the cab air filters when required. The cab air filter is located behind the operator compartment near the exhaust fan.

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, turn off the engine, remove the key, and verify that engine components have cooled or avoid contact. Make sure that all residual pressure is relieved from circuits before beginning maintenance.

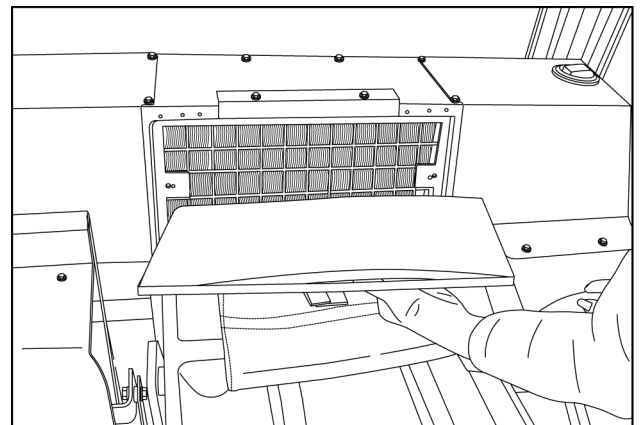
Recirculation filter

1. Remove the retaining screws that hold the recirculation filter cover in place, and remove the recirculation filter.
2. Wipe the housing clean.



RAPH12DOZ0074AA 1

3. Replace the recirculation filter with a new one.
4. Reinstall the new recirculation filter, and secure the access filter cover.



RAIL12DOZ0164AA 2

⚠ WARNING

Improper operation or service of this machine can result in an accident. Welding sparks can cause battery gases to explode. When welding on the machine, always disconnect the B+ and D+ wires from the alternator. Check the wire markings before reconnecting to ensure a correct connection. Failure to comply could result in death or serious injury.

W0253A

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, turn off the engine, remove the key, and verify that engine components have cooled or avoid contact. Make sure that all residual pressure is relieved from circuits before beginning maintenance. Turn the master electrical disconnect switch OFF.

The battery is located in the left rear compartment. Two batteries are an optional feature.

Battery service

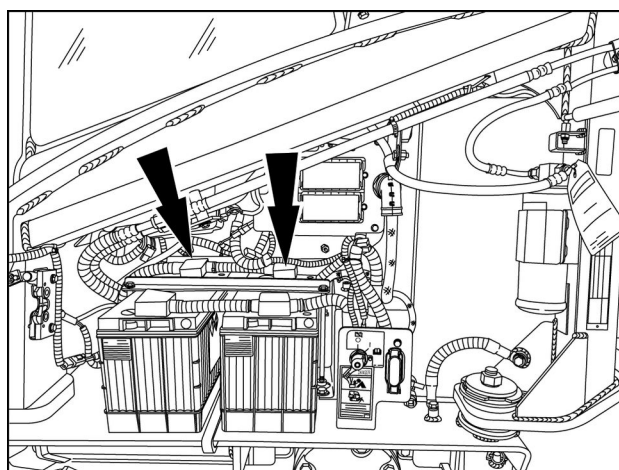
Always disconnect the NEGATIVE (-) battery cables before you service ANY component of the electrical system.

Dirt, moisture, and corrosion on the battery will discharge the battery. Clean the battery with CASE CONSTRUCTION Battery Saver. Follow the instructions on the container.

Disconnect the alternator wires if you must run the engine with the battery wires disconnected.

Disconnect the alternator wires, the instrument cluster, and turn the master disconnect switch to OFF before you use an electric welder.

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



RAIL17DOZ0439BA 1

Battery vents

Keep the battery vents clean. Make sure the vents are not restricted.

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.

If CASE CONSTRUCTION Battery Saver is unavailable, use other special cleaners to prevent corrosion on the battery terminals.

Storage

Preparation for storage

The following procedure applies when the machine is to be stored for a month or more. Store the machine on firm, level ground, inside a building or, if not possible, outside and covered with a tarpaulin. If stored outside in freezing temperatures, park the machine on planks to prevent the tracks from freezing to the ground. Before storing the machine:

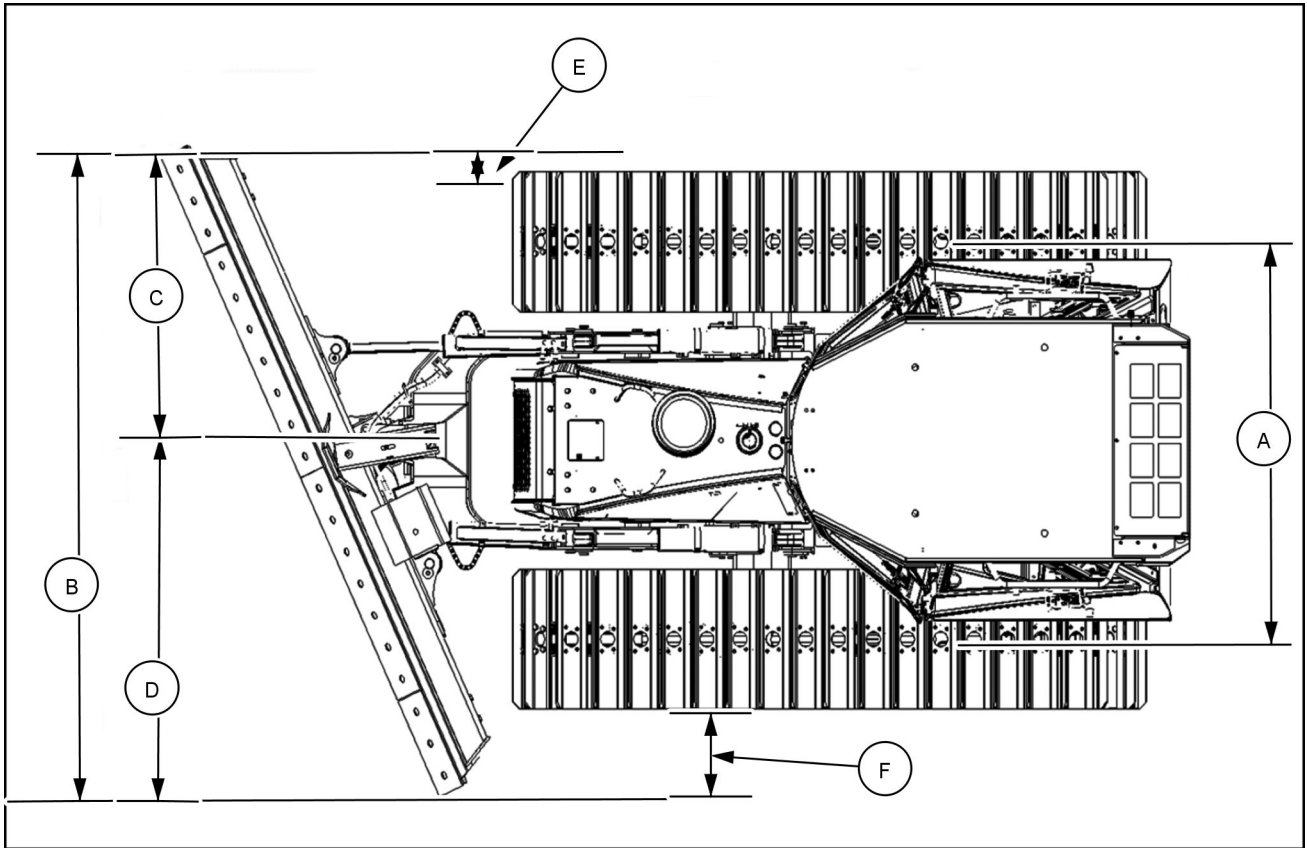
1. Clean the machine.
2. Retract the arm cylinder rod as far as possible, and lower the attachment to the ground.
3. Grease the machine thoroughly. The exposed surfaces of the cylinder rods should be greased or covered with a protective film. See your authorized dealer.

NOTE: *When the machine resumes service, the film will disappear automatically*

4. Drain the fuel tank, and fill with a mixture of 90% diesel fuel and 10% anti-corrosive oil. Run the engine at idle speed for five minutes to allow the anti-corrosive oil to reach the lines, filters, pump and injectors.
5. While the engine is still warm, drain the oil sump, fill with anti-corrosive oil, and replace the engine oil filter.
6. When the engine is cold, clean the exposed engine components.
7. Clean or replace the air filter element.
8. Drain the cooling system. Leave the drain valves open, and do not tighten the radiator cap.
9. Remove the batteries. Clean the battery housing. Make certain that no traces of battery acid remain. Store the batteries safely in a cool and dry location where the temperature will be higher than **0 °C (32.0 °F)**.
10. Paint any areas of the paint that shows signs of deterioration.
11. Plug the air filter inlet and the exhaust pipe.
12. Remove the starter switch key, and place a DO NOT OPERATE label on the right-hand control arm.
13. Lock the hoods and the cab door.

Dozer blade cutting width specifications

Blade cutting width with blade fully angled at 22.7°



RAIL17DOZ0463FA 1

Model	Straight blade width	Track gauge (A)	Track shoe width	Width over tracks	Blade cut width (B)	Cut reach width (C)	Cast reach width (D)	Cut reach track coverage (E)	Cast reach track coverage (F)	* Amount of angle with full blade coverage
650M LT	2286 mm (90 in)	1434.4 mm (56.47 in)	395.0 mm (15.6 in)	1819.9 mm (71.6 in)	2108.3 mm (83.0 in)	905.2 mm (35.6 in)	1203.1 mm (47.4 in)	-9.5 mm (-0.4 in)	288.4 mm (11.4 in)	22.0°
650M LT	2438 mm (96 in)	1434.4 mm (56.47 in)	395.0 mm (15.6 in)	1829.4 mm (72.0 in)	2248.9 mm (88.5 in)	975.5 mm (38.4 in)	1273.4 mm (50.1 in)	60.8 mm (2.4 in)	358.7 mm (14.1 in)	22.7°
650M LT	2731 mm (108 in)	1434.4 mm (56.47 in)	395.0 mm (15.6 in)	1829.4 mm (72.0 in)	2518.3 mm (99.1 in)	1110.2 mm (43.7 in)	1408.1 mm (55.4 in)	195.5 mm (7.7 in)	493.4 mm (19.4 in)	22.7°
650M LT	2779 mm (109 in)	1434.4 mm (56.47 in)	395.0 mm (15.6 in)	1829.4 mm (72.0 in)	2562.6 mm (100.9 in)	1132.3 mm (44.6 in)	1430.3 mm (56.3 in)	217.6 mm (8.6 in)	515.6 mm (20.3 in)	22.7°
650M LT	3058 mm (120 in)	1434.4 mm (56.47 in)	395.0 mm (15.6 in)	1829.4 mm (72.0 in)	2820.3 mm (111.0 in)	1261.2 mm (49.7 in)	1559.1 mm (61.4 in)	346.5 mm (13.6 in)	644.4 mm (25.4 in)	22.7°
650M WT	2438 mm (96 in)	1727.2 mm (68.00 in)	395.0 mm (15.6 in)	2036.6 mm (80.2 in)	2248.9 mm (88.5 in)	975.5 mm (38.4 in)	1273.4 mm (50.1 in)	-85.6 mm (-3.4 in)	212.3 mm (8.4 in)	16.4°
650M WT	2731 mm (108 in)	1727.2 mm (68.00 in)	395.0 mm (15.6 in)	2122.2 mm (83.6 in)	2518.3 mm (99.1 in)	1110.2 mm (43.7 in)	1408.1 mm (55.4 in)	49.1 mm (1.9 in)	347.0 mm (13.7 in)	22.7°
650M WT	2779 mm (109 in)	1727.2 mm (68.00 in)	395.0 mm (15.6 in)	2122.2 mm (83.6 in)	2562.6 mm (100.9 in)	1132.3 mm (44.6 in)	1430.3 mm (56.3 in)	71.2 mm (2.8 in)	369.2 mm (14.5 in)	22.7°
650M WT	2731 mm (108 in)	1727.2 mm (68.00 in)	508.0 mm (20.0 in)	2228.0 mm (87.7 in)	2518.3 mm (99.1 in)	1110.2 mm (43.7 in)	1408.1 mm (55.4 in)	-7.4 mm (-0.3 in)	290.5 mm (11.4 in)	22.3°
650M WT	2779 mm (109 in)	1727.2 mm (68.00 in)	508.0 mm (20.0 in)	2235.2 mm (88.0 in)	2562.6 mm (100.9 in)	1132.3 mm (44.6 in)	1430.3 mm (56.3 in)	14.7 mm (0.6 in)	312.7 mm (12.3 in)	22.7°
650M WT	3058 mm (120 in)	1727.2 mm (68.00 in)	395.0 mm (15.6 in)	2122.2 mm (83.6 in)	2820.3 mm (111.0 in)	1261.2 mm (49.7 in)	1559.1 mm (61.4 in)	200.1 mm (7.9 in)	498.0 mm (19.6 in)	22.7°
650M WT	3058 mm (120 in)	1727.2 mm (68.00 in)	508.0 mm (20.0 in)	2235.2 mm (88.0 in)	2820.3 mm (111.0 in)	1261.2 mm (49.7 in)	1559.1 mm (61.4 in)	143.6 mm (5.7 in)	441.5 mm (17.4 in)	22.7°
650M LGP	2731 mm (108 in)	1727.2 mm (68.00 in)	609.6 mm (24.0 in)	2278.6 mm (89.7 in)	2518.3 mm (99.1 in)	1110.2 mm (43.7 in)	1408.1 mm (55.4 in)	-58.2 mm (-2.3 in)	239.7 mm (9.4 in)	18.8°
650M LGP	2779 mm (109 in)	1727.2 mm (68.00 in)	609.6 mm (24.0 in)	2300.7 mm (90.6 in)	2562.6 mm (100.9 in)	1132.3 mm (44.6 in)	1430.3 mm (56.3 in)	-36.1 mm (-1.4 in)	261.9 mm (10.3 in)	20.4°

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