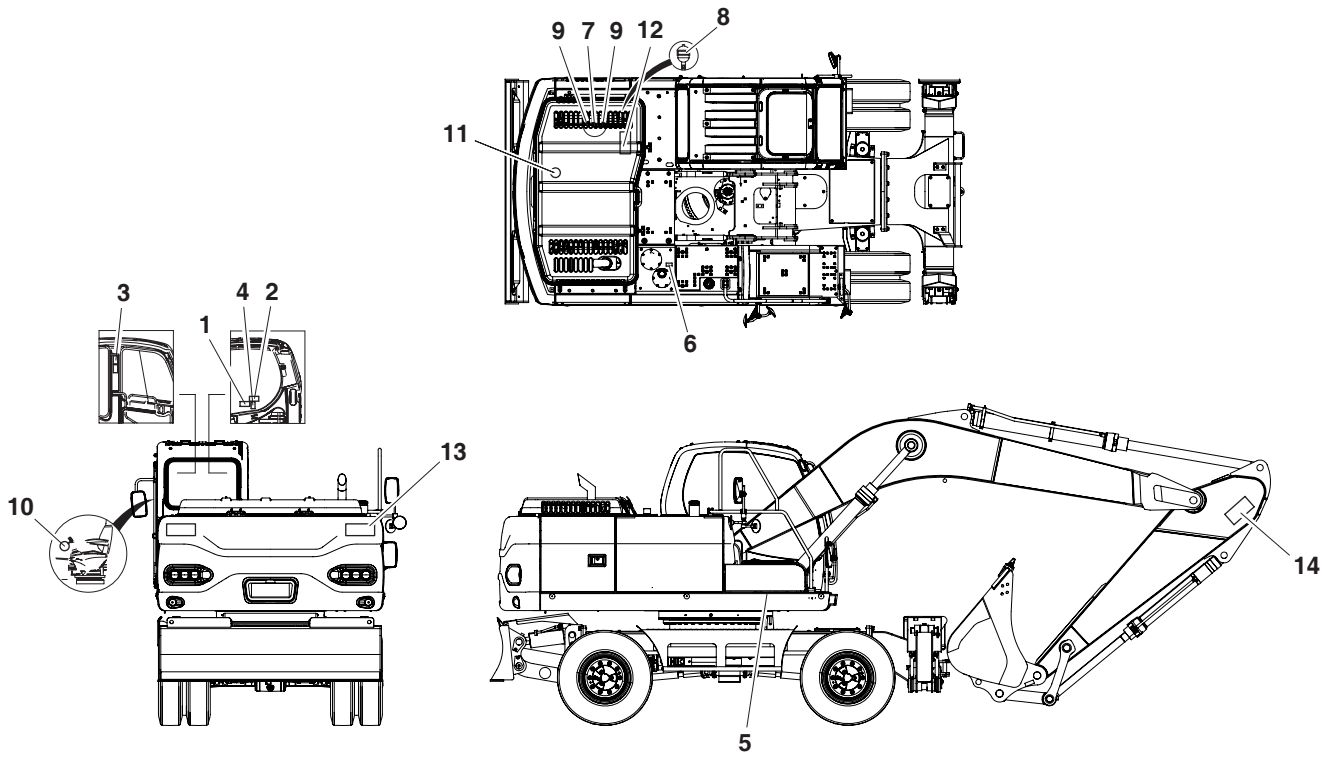
LOCATION OF SAFETY LABELS



FG008689

Figure 1

There are several specific warning signs on this machine. The exact location of hazards and the description of the hazards are reviewed in this section.

Please become familiarized with all warning signs.

Make sure that all of the warning signs are legible. Clean the warning signs or replace the warning signs if you cannot read the words. Replace the illustrations if the illustrations are not visible. When you clean the warning signs, use a cloth, water and soap. Do not use solvent, gasoline, or other harsh chemicals to clean the safety signs.

Solvents, gasoline, or other harsh chemicals could loosen the adhesive that secures the warning sign. Loose adhesive will allow the warning sign to fall off.

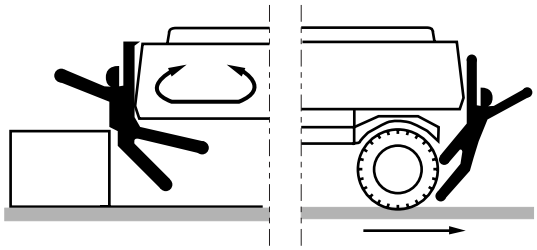
Replace any safety sign that is damaged, or missing. If a safety sign is attached to a part that is replaced, install a safety sign on the replacement part.

When Swinging or Changing Direction of Travel

Before operating the machine or the work equipment, always observe the following precautions to prevent serious injury or death.

- Start and operate the machine only while seated.
- When changing the direction of travel from forward to reverse or from reverse to forward, reduce speed early and stop the machine before changing the direction of travel.
- Sound the horn to warn people in the area.
- Check that there is no one in the area around the machine. There are blind spots behind the machine, so if necessary, swing the upper structure to check that there is no one behind the machine before traveling in reverse.
- When operating in areas that may be hazardous or have poor visibility, designate a person to direct work site traffic.
- Ensure that no unauthorized person can come within the turning radius or direction of travel.

Be sure to observe the above precautions even if a travel alarm or mirrors are installed.



HGB1014L-1

Figure 17

Travel Precautions

Never turn the starting switch to the "O" (OFF) position when traveling. It is dangerous if the engine stops when the machine is traveling. It will be impossible to operate the steering.

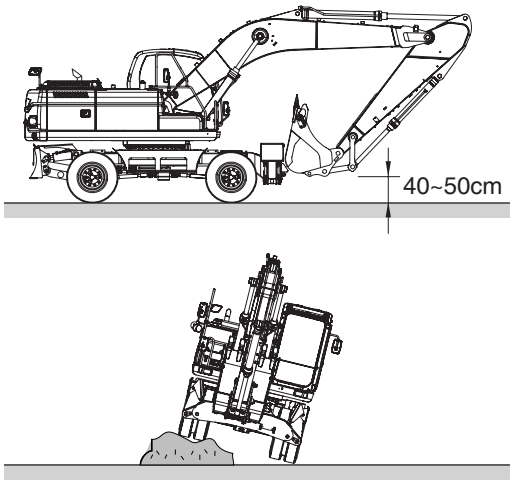
Attachment control levers should not be operated while traveling.

Do not change selected travel mode (FAST/SLOW/CLEEP) while traveling.

Fold in work equipment so that the outer end of the boom is as close to the machine as possible, and is 40 ~ 50 cm (16 ~ 20 in) above ground.

Never travel over obstacles or slopes that will cause the machine to tilt severely. Travel around any slope or obstacle that causes the machine to tilt 10 degrees or more to the right or left, or 30 degrees or more from front to rear.

Do not operate the steering suddenly. The work equipment may hit the ground and cause the machine to lose its balance, and this may damage the machine or structures in the area.



FG006536

Figure 18

6. After welding, carefully reassemble the connector.
7. Connect the battery terminal cables.
8. Reassemble the undercover under the engine.
9. Reassemble the cover over the battery.
10. Close the cover of the battery.

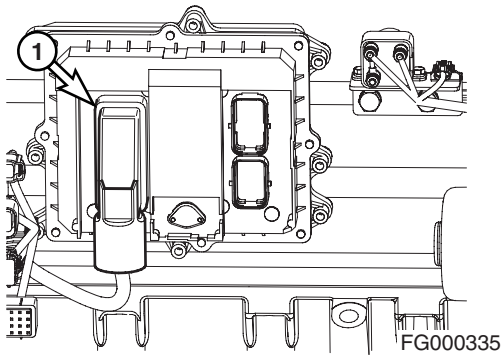


Figure 37

Warning for Counterweight and Front Attachment Removal

DANGER!

DOOSAN **warns any user, that the removal of the counterweight from the machine, front attachment or any other part, may affect the stability of the machine. This could cause unexpected movement, resulting in death or serious injuries.** ***DOOSAN*** **is not liable for any misuse.**

Never remove the counterweight or front attachment unless the upper structure is in-line with the lower structure.

Never rotate the upper structure once the counterweight or front attachment has been removed.

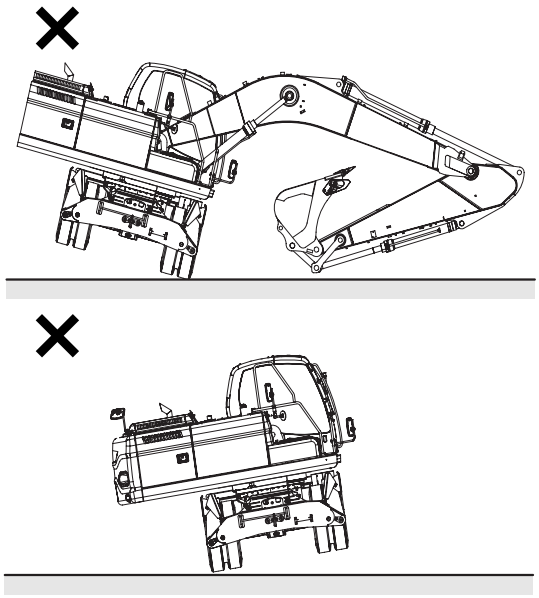


Figure 38

Precautions for Removal, Installation, and Storage of Attachments

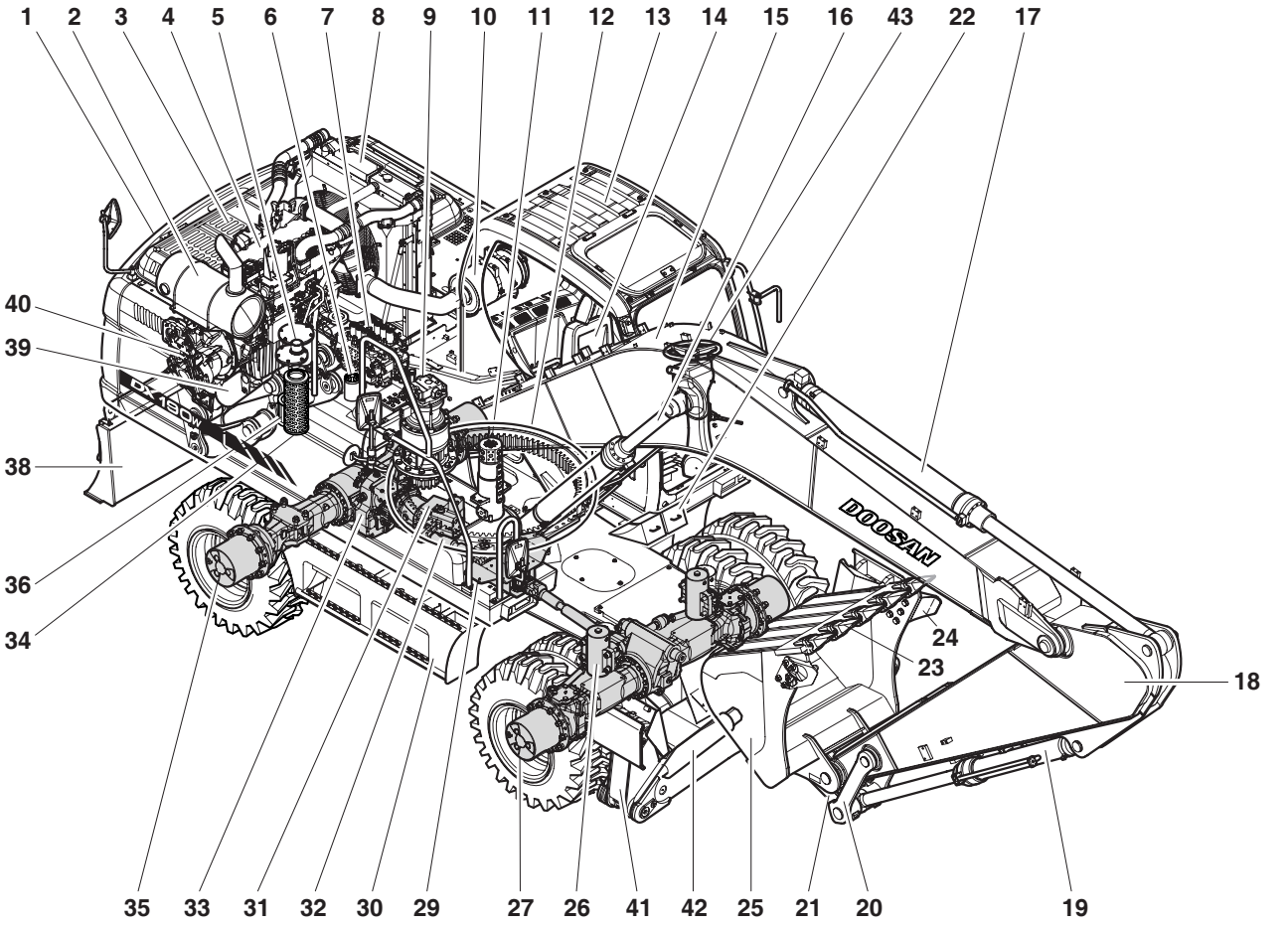
Before starting removal and installation of attachments, decide the team leader.

Do not allow anyone except the authorized workers close to the machine or attachment.

Place attachments that have been removed from the machine in a safe place so that they do not fall. Put up a fence around the attachments and take other measures to prevent unauthorized persons from entering.

Figure 39

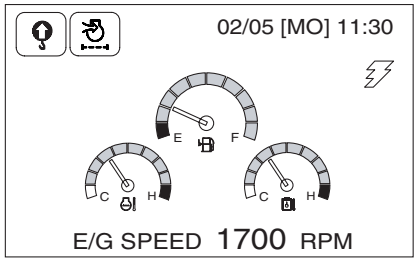
COMPONENT LOCATIONS



FG008697

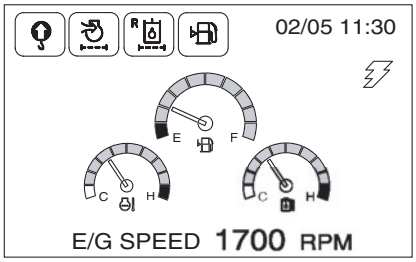
Figure 1

Examples of Warning Display



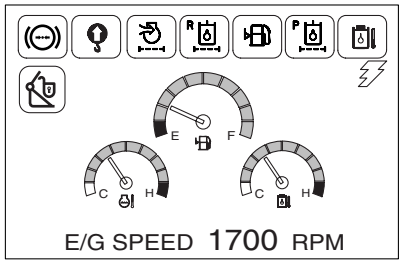
FG000059

<2 kinds of warning displayed>



FG000060

<4 kinds of warning displayed>



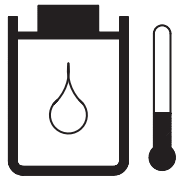
FG006167

<6 kinds of warning displayed>

Figure 69

1. Hydraulic Oil Overheat Warning

If the hydraulic oil temperature is too high, this symbol appears on the screen.



FG000056

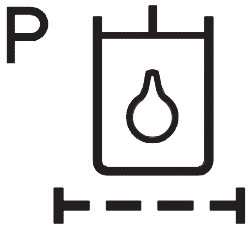
Figure 70

2. Pilot Filter Clogged Warning

This symbol indicates when the pilot filter clogged.

If this symbol is displayed, immediately stop operation and replace the pilot filter.

After the pilot filter has been serviced, restart machine operation to remove the warning symbol.



FG000055

Figure 71

4. Reclining Position Adjustment

Pulling up the right lever (4,Figure 141) allows the seat backrest to be moved forward or backward.

Sit with your back against the seat back when adjusting it. If your back is not touching the seat back, the seat back may suddenly move forward.

5. Armrest Angle Adjustment

The angle of each armrest can be adjusted by turning a dial (5, Figure 142) on bottom of armrest. When adjusting the angle, manually raise the armrest before turning the dial.

6. Lumbar Support Adjustment

A lumbar support is located in the seat back.

Turn the dial (6, Figure 142) counterclockwise to increase the force of the lumbar support

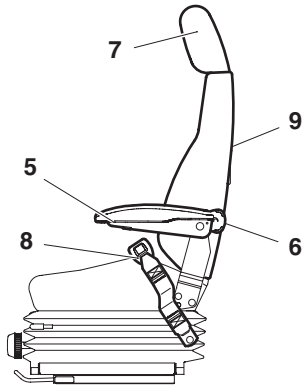


Figure 142

7. Headrest

The headrest (7, Figure 142) can be adjusted forward/ backward and up/down. Move it by holding both sides.

8. Seat Belt

⚠ WARNING!

The seat belt is for the operator's safety and should always be worn. Before driving the machine, adjust the seat to the desired position for maximum comfort and machine control, then fasten the seat belt. Seat belts must be worn across the pelvic region and adjusted snugly to lessen the chance and severity of injury in case of an accident. Never fasten a seat belt across the abdomen.

Under no circumstances should the operator be standing in the cabin when operating the excavator.

Do not adjust the seat position while the vehicle is moving because a loss of control may result. Stop the machine, apply the parking brake, and then adjust the seat.

Always, check the condition of seat belt and belt bracket before fastening it. Do not use it with twists in it. Replace belt or bracket if damaged or worn.

Over the Road Traveling Procedures

1. Make sure that the "Brake Oil Pressure" warning light is "OFF".
2. After making sure that the front attachment is facing forward, release the parking brake.
3. Using the right-hand control arm, select either forward or reverse travel direction and step on the accelerator pedal.

   NOTE: *The accelerator pedal functions in two ways. If the manual engine speed control dial is at the lowest setting, the accelerator pedal controls both engine speed and a hydraulic proportioning valve that controls the actual travel speed. If the manual engine speed control dial has been set to a higher rpm, the accelerator pedal functions only as a hydraulic proportioning valve control, enabling control of only travel speed and not engine rpm.*
4. Test the brakes before beginning over the road travel.
5. During forward motion you can shift from speed range II to speed range III. Downshifting from speed range III to speed range II should not be done if the machine is traveling at a high rate of speed. Damage to the transmission could result.

⚠ WARNING!

Don’t change to creep speed during running in low or high speed.
It cause a damage to equipment.
You should select creep speed after stopping an equipment.
In normal travelling drive in low or high speed.

---

6. To stop the machine, slowly release the accelerator pedal. The dynamic braking action of the machine's momentum against the engine's back pressure will begin to slow the machine. Step on the brake to bring the machine to a full and controlled stop.

IMPORTANT

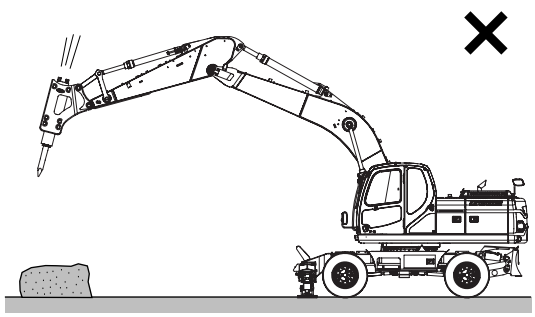
If the engine speed is controlled by the manual engine speed control dial, when the machine comes to a stop, the engine will continue to run at the preset rpm. If the engine speed is being controlled by the accelerator pedal, it will decrease and the machine will slow down as the pedal is released.

---

3. Do not use the breaker as a hammer. (Figure 82.)

   Do not drop breaker from extreme heights.

   The breaker is relatively heavy and drops fast. Do not drop breaker from extreme heights or damage to upper structure may result

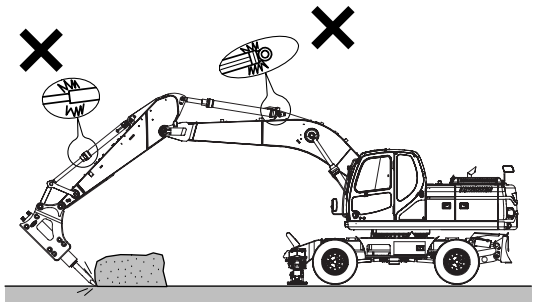


FG006582

Figure 82

4. Do not operate the breaker with the boom or arm cylinders fully extended (bottomed out). (Figure 83.)

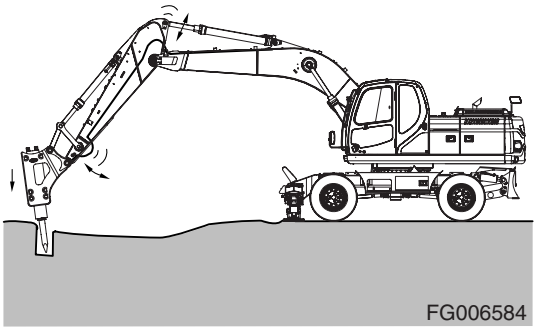
   Leave over 100 mm (4 in) of clearance between rod end of cylinder and cylinder head. This will help prevent damage to cylinders during breaker operation.



FG006583

Figure 83

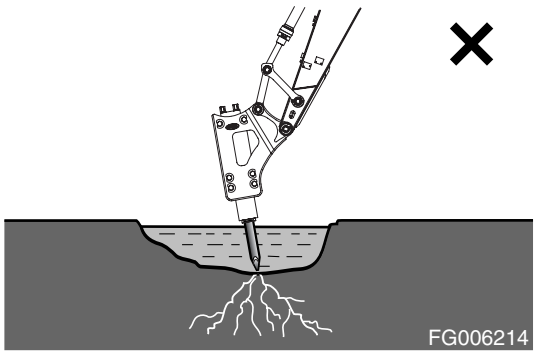
5. Do not use the breaker if the hydraulic hoses vibrate excessively. (Figure 84.) Check the breaker's hydraulic accumulator for damage and repair as required. If excavator is operated under this condition, structural and hydraulic components can become damaged.



FG006584

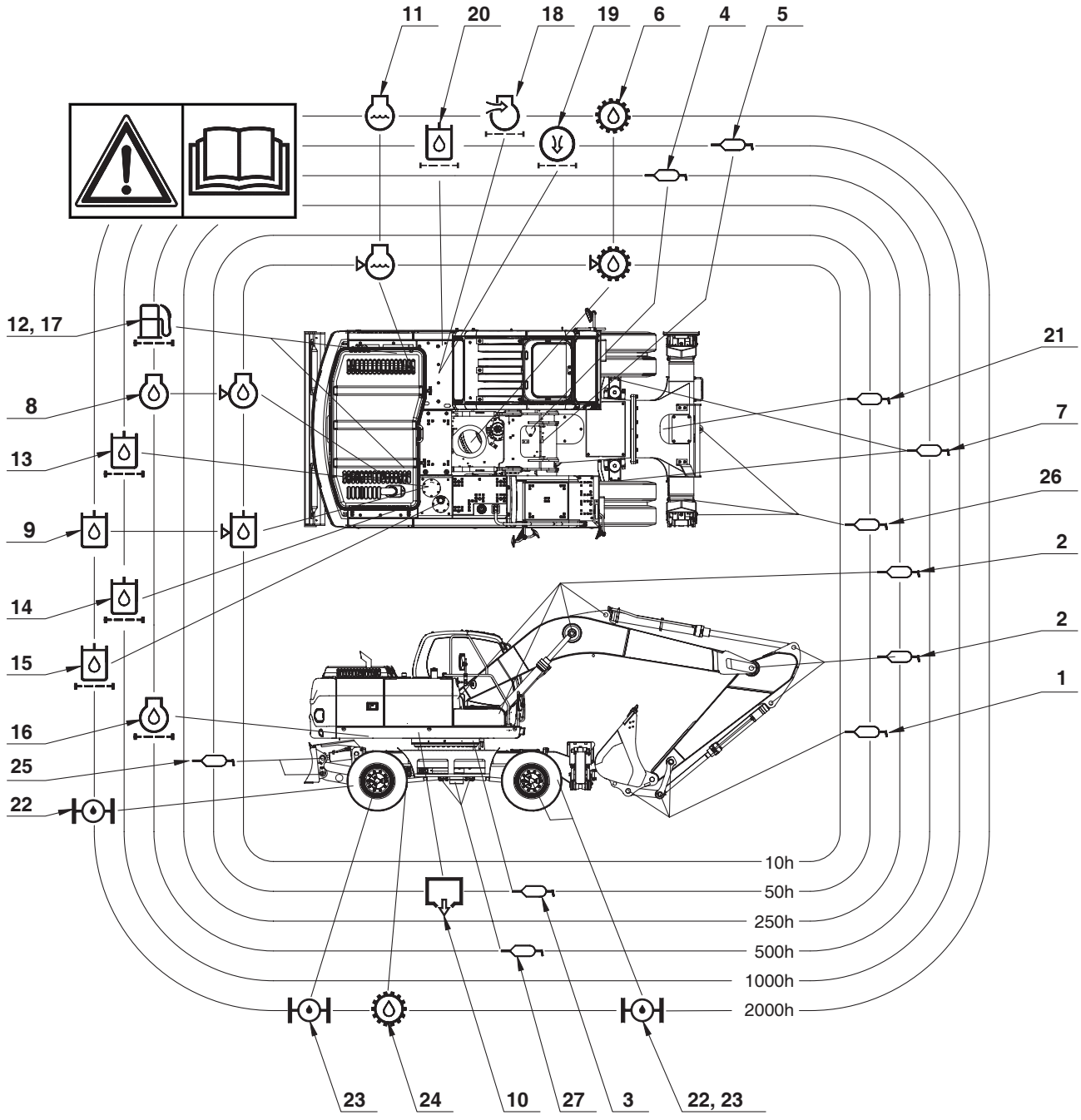
Figure 84

6. Do not allow the breaker body to go into water if not equipped for underwater operation. The breaker seal can be damaged and allow rust, foreign material or water to enter the hydraulic system and cause damage. Only insert the breaker tool into water. (Figure 85.)



FG006214

Figure 85



FG008698

Figure 11

Change Engine Oil and Filter

NOTE: *Change engine oil and filter after first 50 hours of operation or rebuild, then every 500 thereafter.*

⚠ WARNING!

DO NOT change oil on a hot engine. Allow the engine to cool down before attempting to change the engine oil and filter to avoid burns by touching hot engine parts.

1. Position a larger container under the engine. Remove cap (1, Figure 54) and install hose (2) to drain the engine oil. Remove hose (2) and install cap (1).

   NOTE: *Dispose of drained fluids according to local regulations.*

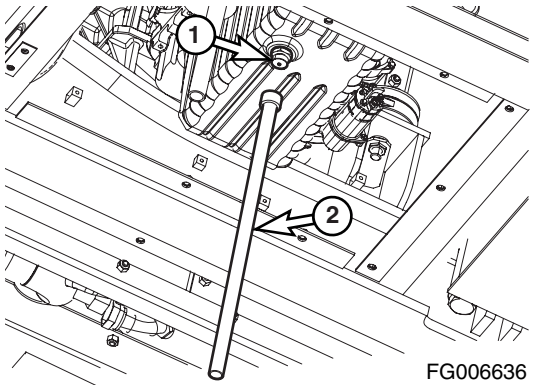


Figure 54

2. Replace engine oil filter by using filter wrench. The engine oil filter is a spin-on type. See Figure 55. Remove and discard filter.
3. Install new filter. Apply a small amount of oil around filter gasket. Screw filter on head until gasket contacts head, turn filter 1/2 turn more.

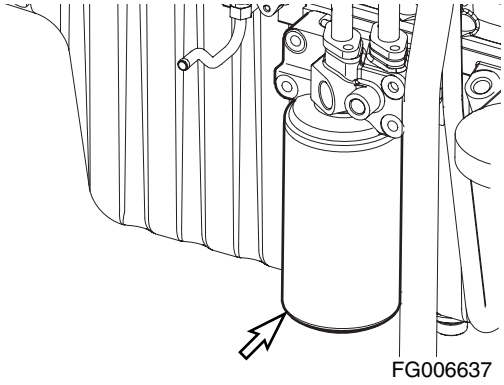


Figure 55

4. Refill the engine with the correct oil through the oil fill port (Figure 56). Refer to the Lubrication Table of this manual for the recommended oil for the operating conditions.

   NOTE: *See "Fluid Capacities" on page 4-8. for capacity.*

5. Start engine. Run engine for five minutes at "LOW IDLE," and check engine oil pressure light.
6. Shut down engine. Look for signs of leaks at filter. Recheck oil level after fifteen minutes.

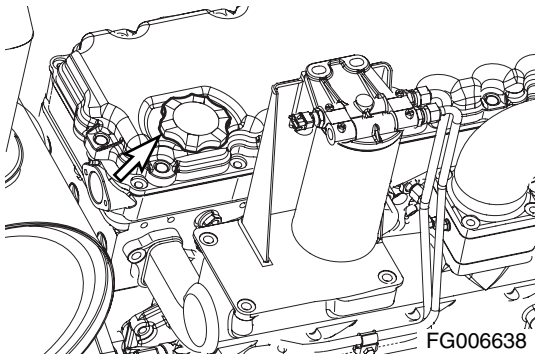


Figure 56

Change Fuel Filter

⚠ WARNING!

Exchange filter after waiting for engine to cool. Be careful of fire hazards. Do not smoke.

1. Locate fuel filter inside engine compartment.
2. Open the engine cover to access fuel prefilter.
3. Position a small container under fuel filter.
4. Unscrew fuel filter from head assembly. Discard fuel filter.

   NOTE: *Dispose of drained fluids according to local regulations.*

5. After cleaning filter head, install new fuel filter. Screw filter on head until gasket contacts head, and turn filter 1/2 turn more with a filter wrench.

   NOTE: *Coat fuel filter gasket with fuel.*

   NOTE: *Fill fuel filter with clean fuel. This will help reduce fuel system priming.*

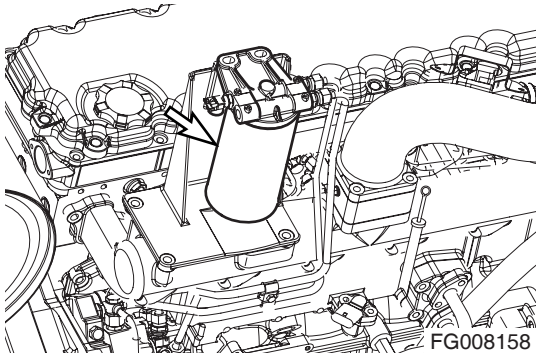


Figure 77

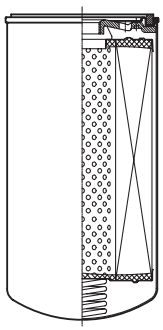


Figure 78

Fuel System Priming

If air remains in the fuel inlet line to the engine, it may cause the engine to run in an abnormal condition. Air may impact the starting capability of the engine, and may also result in surging engine speeds.

If the machine happens to have run out of fuel, or if the fuel filter has been replaced, air may need to be bleed using the following procedure:

1. Shut down engine.
2. Loosen plug (1, Figure 79) on the fuel prefilter head.
3. Pump the hand operated primer pump (2, Figure 79) on the fuel prefilter. Pump primer until fuel is present at plug hole in fuel prefilter head.
4. Tighten plug (1, Figure 79) in fuel prefilter head.
5. Continue to pump primer pump until a strong resistance is felt.
6. Start engine and look for signs of leaks.
7. Repeat procedure if necessary.

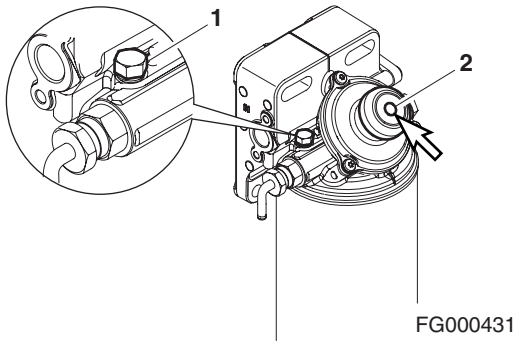


Figure 79

6. Clean the fill plug. Inspect the fill plug O-ring for deterioration or damage and replace if necessary. Reinstall the fill plug.

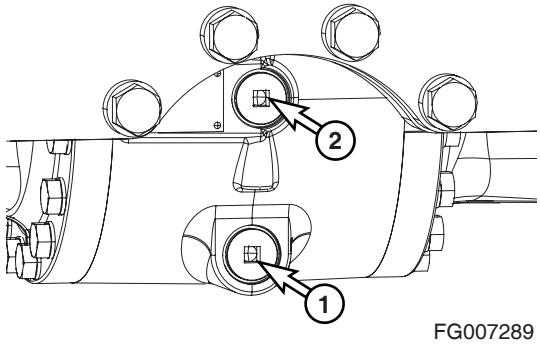
Drain and Refill Rear Axle Case Oil

NOTE: *The rear axle case oil should be drained and refilled after the first 500 hours of operation and at every 2,000 hours there after.*

NOTE: *The oil level must be checked on level ground. When replacing fluid, only use approved grade axle fluid.*

1. The oil drain (1, Figure 111) hole is located in the lower section of the axle case and the fill (2) hole is located in the rear section of the rear axle case.
2. Clean off any dirt, grease and other foreign materials from area surrounding the drain (1, Figure 111) and fill (2) holes of the axle case.
3. Place a drain pan under the drain plug and remove the drain plug.
4. Clean the drain plug. Inspect the O-ring for deterioration or damage and replace if necessary. Reinstall drain plug.
5. Remove the fill plug (2, Figure 111) and fill to the bottom of the fill hole with approved gear oil.

   NOTE: *See "Fluid Capacities" on page 4-8, for capacity.*
6. Clean the fill plug. Inspect the fill plug O-ring for deterioration or damage and replace if necessary. Reinstall the fill plug.



FG007289

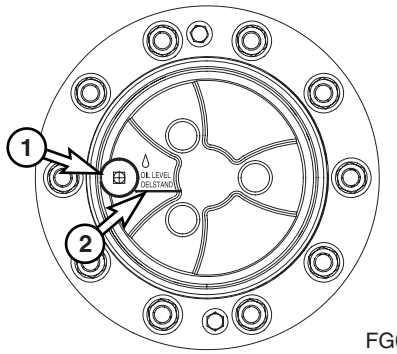
Figure 111

Drain and Refill Hub Reduction Gear Oil

NOTE: *The hub reduction gear oil should be drained and refilled after the first 500 hours of operation and at every 2,000 hours there after.*

NOTE: *The oil level must be checked on level ground. When replacing fluid, only use approved grade axle fluid.*

1. Move the excavator slowly and position the drain / fill hole to the lowest position.
2. Clean off any dirt, grease and other foreign materials from area surrounding the drain / fill (1) hole of the reduction gear.
3. Place a drain pan under the drain plug and remove the plug.
4. Move the excavator slowly and position the oil level mark (2) on the gear housing parallel to the ground.
5. Fill to the bottom of the fill hole with approved gear oil.



FG003412

Figure 112

17. Tightening Bolt for Center Joint

- Tool : 19 mm ( )
- Torque : 11 kg•m

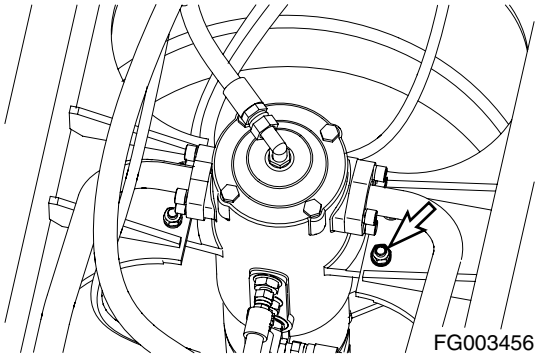


Figure 134

18. Tire Wheel Nut

- Tool : 32 mm ( )
- Torque : 55 ~ 60 kg•m

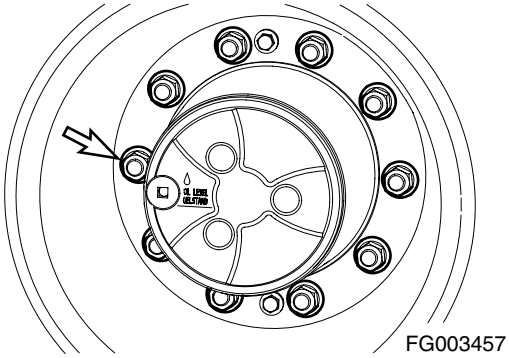


Figure 135

19. Front Pin Mounting Bolt

- Tool : 24 mm ( )
- Torque : 27 kg•m

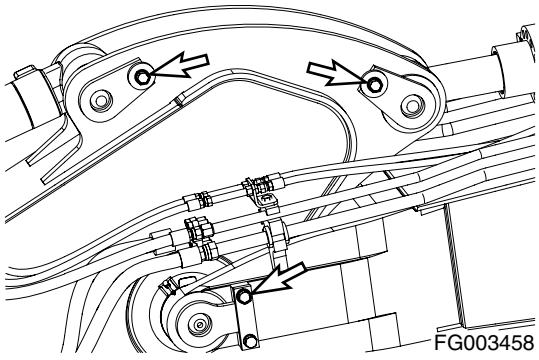


Figure 136

20. Breaker Filter (Optional)

- Tool : 19 mm ( )
- Torque : 11 kg•m

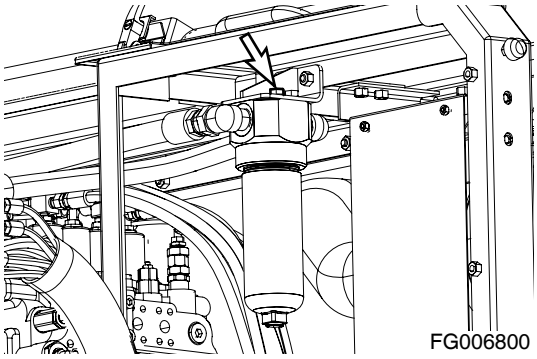
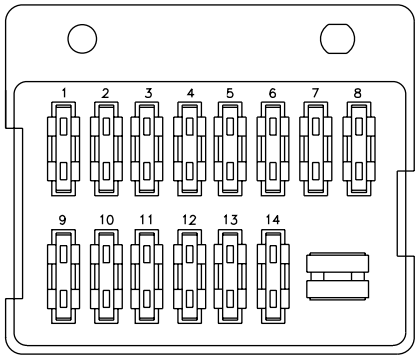
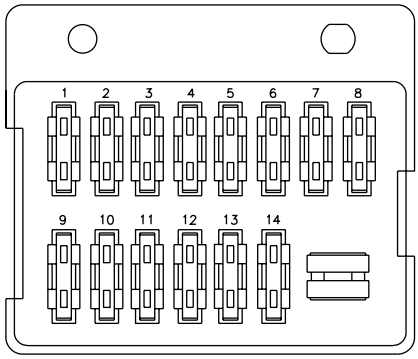


Figure 137

Fuse Box (1)



Fuse Box (2)

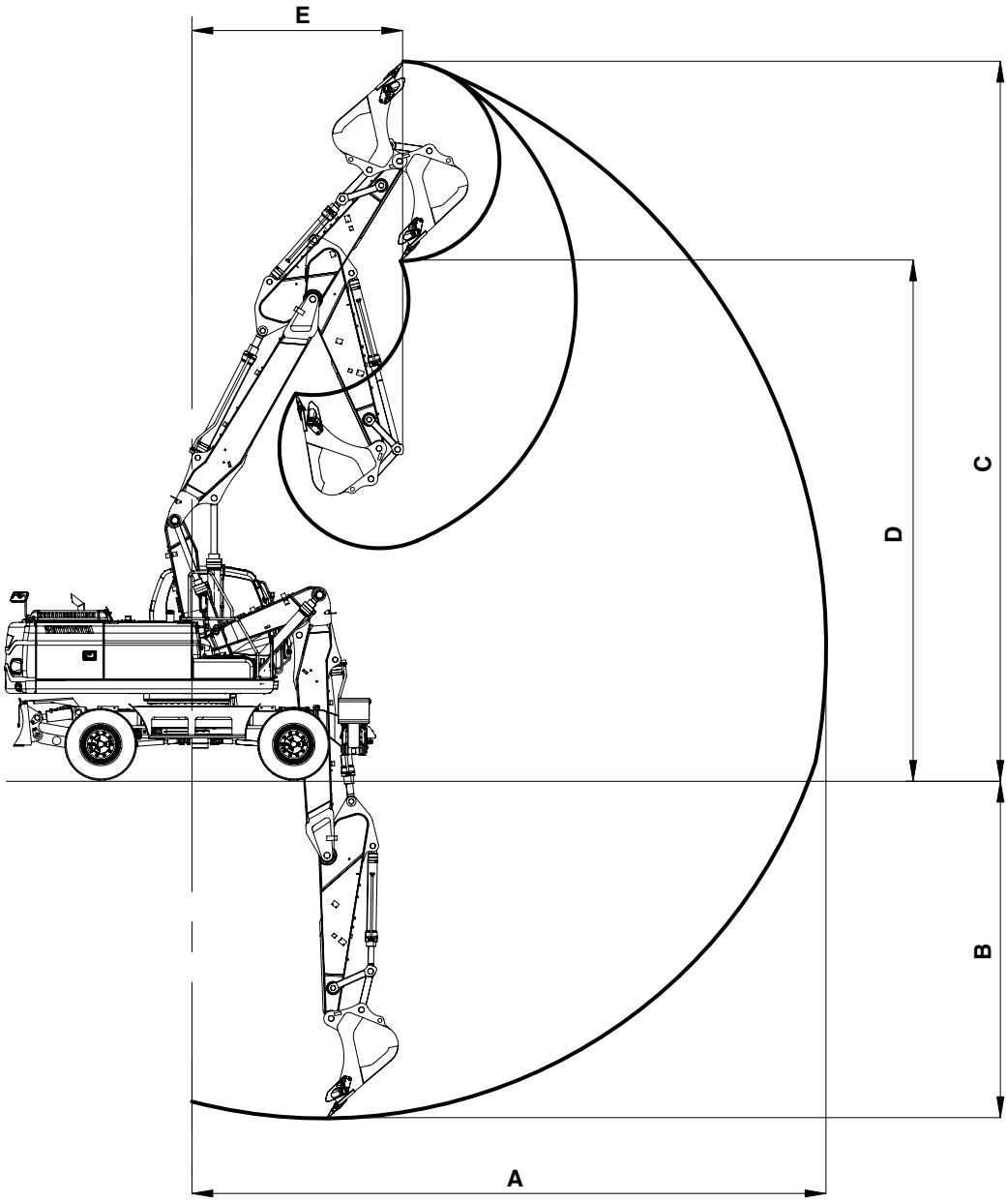


FG009158

Figure 146

No.	Fuse Box (1)	
	Name	**Capacity**
1	Transmission Lever	10A
2	Reverse Solenoid	10A
3	Forward/Cruise Solenoid	10A
4	Pilot Cut Off/Ram Lock/ Inching/Hi/Low Solenoid	10A
5	Forward/Reverse/Cruise Switch	10A
6	Beacon (Option) 12v Power Socket	10A
7	Room Lamp/Hazard/Position Lamp/Turn Signal Lamp	10A
8	Starter Switch/Hour Meter	10A
9	Head Lamp	30A
10	Airconditioner/Heater	20A
11	Fuel Heater	20A
12	Seat Heater (Option)/ Air Suspension (Option)	15A
13	Window Washer/Low Wiper (Option)	15A
14	Fuel Pump/Stereo/Memory Backup	15A

No.	Fuse Box (2)	
	Name	**Capacity**
1	Gauge Panel/Press. Sensor	10A
2	Aux. Mode Switch/Check Connector	10A
3	Working Lamp	10A
4	Stop Lamp	10A
5	Quick Clamp (Option)/ Breaker (Option)	10A
6	Horn	10A
7	Position Lamp (LH)	10A
8	Position Lamp (RH)	10A
9	Cabin Lamp (Option)	30A
10	Spare	20A
11	e-EPOS Controller	20A
12	Swing Priority Sol./Outrigger	15A
13	Power Max/Cigar Lighter	15A
14	ECU	15A



FG008673

Figure 4

Reference	Description	Dimension			
		5.36 m (17' 7") Two-Piece Boom			
		2.3 m (7' 7") Arm		2.6 m (8' 6") Arm	
A	Max. Digging Reach	9,230 mm	30' 3"	9,530 mm	31' 3"
B	Max. Digging Depth	5,600 mm	18' 4"	5,900 mm	19' 4"
C	Max. Digging Height	10,260 mm	33' 8"	10,510 mm	34' 6"
D	Max. Dump Height	7,415 mm	24' 4"	7,660 mm	25' 2"
E	Min. Swing Radius	2,965 mm	9' 9"	3,160 mm	10' 4"