

***DOOSAN***

950106-00283CE  
July 2014

EXCAVATOR

**Operation &  
Maintenance  
Manual**

**DX255LC**

**Serial Number 5150 - 5151; 5153 and Up**

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## TO THE OPERATOR OF A DOOSAN EXCAVATOR

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### AVOID DEATH

**Unsafe use of the excavator could lead to serious injury or death. Operating procedures, maintenance and equipment practices or traveling or shipping methods that do not follow the safety guidelines on the following pages could cause serious, potentially fatal injuries or extensive damage to the machine or nearby property.**

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Please respect the importance of taking responsibility for your own safety, and that of other people who may be affected by your actions.

The safety information on the following pages is organized into the following sections:

1. "Safety Decals" on page 1-4
2. "Visibility Information" on page 1-17
3. "Summary of Safety Precautions for Lifting in Digging Mode" on page 1-19
4. "Unauthorized Modifications" on page 1-20
5. "General Hazard Information" on page 1-20
6. "Before Starting Engine" on page 1-29
7. "Machine Operation" on page 1-33
8. "Maintenance" on page 1-41
9. "Battery" on page 1-50
10. "Towing" on page 1-52
11. "Shipping and Transportation" on page 1-53
12. "Excavator Rated Lift Capacity Tables" on page 1-54

9. Flying Debris or Objects (950205-03866)



**WARNING**

**HIGH-PRESSURE GREASE CAN CAUSE  
DEATH OR SERIOUS INJURY**

- Track adjusting systems use grease under high-pressure which can penetrate body if improperly serviced.
- **NEVER LOOSEN** track tension grease valve more than one complete turn from the fully tightened position.
- Bleed off pressure slowly and keep body away from grease valve.
- Wear eye protection.
- Read and follow instructions in Operation & Maintenance Manual for more information on track adjustment.



EX1301185

10. Crush Hazard (950205-03805)



**WARNING**

**AVOID DEATH OR SERIOUS INJURY**

**Stay clear of the boom, arm, and attachment.**



EX1301186

11. Pressurized Gas and Fluid (950205-03782)



**WARNING**

**AVOID DEATH OR SERIOUS INJURY**

- Heat or impact can cause the accumulator to explode.
- Keep away from flame.
- Do not weld on or drill into accumulator.



EX1301187

## Safety Features

Be sure that all guards and covers are installed in their proper position. Have guards and covers repaired immediately if damaged.

Be sure that you understand the method of use of safety features such as safety lock lever and the seat belt, and use them properly.

Never remove any safety features. Always keep them in good operating condition.

Failure to use safety features according to the instructions in the Operation and Maintenance Manual could result in serious bodily injury.

## Inside Operator's Cabin

When entering the operator's cabin, always remove all mud and oil from the soles of your shoes. If you operate the travel pedal with mud or oil stuck to your shoes, your foot may slip and this can cause a serious accident.

After using the ashtray, make sure that any matches or cigarettes are properly extinguished, and be sure to close the ashtray. If the ashtray is left open, there is a danger of fire.

Do not stick suction pads to the window glass. Suction pads act as a lens and can cause fire.

Do not leave lighters laying around the operator's cabin. If the temperature inside the operator's cabin becomes high, there is a danger that lighter may explode.

Do not use cellular telephones inside the operator's cabin when driving or operating the machine. There is a danger that this may lead to an unexpected accident.

Never bring any dangerous objects such as flammable or explosive items into the operator's cabin.

To ensure safety, do not use the radio or music headphones when operating the machine. There is a danger that this may lead to a serious accident.

When operating the machine, do not put your hands or head out of the window.

When standing up from the operator's seat, always place safety lock lever securely in the "LOCK" position. If you accidentally touch the work equipment levers when they are not locked, the machine may suddenly move and cause serious injury or damage.

When leaving the machine, completely lower the work equipment to the ground, set safety lock lever to "LOCK" position and stop engine. Use the key to lock all the equipment. Always remove key and take it with you.

Check gauges and monitor displays for normal operation before starting the engine. Listen for unusual noises and remain alert for other potentially hazardous conditions at the start of the work cycle.

Do not short-circuit the starting motor to start the engine. This is not only dangerous, but may also damage the machine.

When starting the engine, sound the horn as an alert.

Start and operate the machine only while seated.

## Before Operating Machine

If checks are not carried out properly after starting the engine, it can result in a delay in discovering abnormalities in the machine, and this may lead to personal injury or damage to the machine.

Carry out the checks in an open area where there are no obstructions. Do not let anyone near the machine when carrying out the checks.

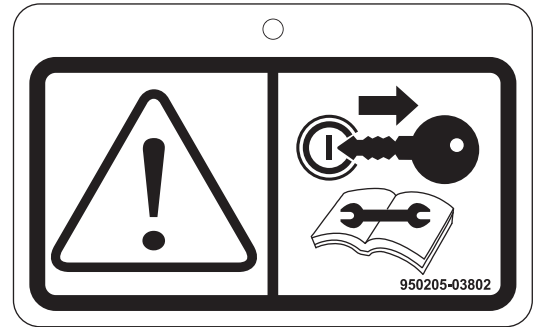
- Check the operating condition of the equipment, and the movement of the bucket, arm, boom, travel, and swing systems.
- Check the machine for any abnormal noise, vibration, heat, smell, or abnormality with the gauges. Check also for leakage of air, oil, and fuel.
- If any abnormality is found, repair the problem immediately. If the machine is used without repairing the problems, it may lead to unexpected injury or failure.
- Clear all personnel from directly around machine and from the area.
- Clear all obstacles from the machine's path. Beware of hazards.
- Be sure that all windows are clean. Secure the doors and the windows in the open position or in the shut position.
- Adjust the rearview mirrors for best visibility close to the machine. Make sure that horn, the travel alarm (if equipped), and all other warning devices are working properly.
- Fasten the seat belt securely.
- Warm up the engine and hydraulic oil before operating machine.
- Before moving the machine, check undercarriage position. The normal travel position is with idler wheels to the front under the cabin and the drive sprockets to the rear. When the undercarriage is in the reversed position, the travel controls must be operated in opposite directions.

# MAINTENANCE

## Warning Tag

Alert others that service or maintenance is being performed and tag operator's cabin controls – and other machine areas if required – with a warning notice. OSHA mandated control lever lockout can be made with any OSHA certified lockout device and a length of chain or cable to keep the safety lever in the fully lowered, nonactive position.

Warning tags, for controls are available from DOOSAN distributors.



EX1301177

Figure 34

## Clean Before Inspection or Maintenance

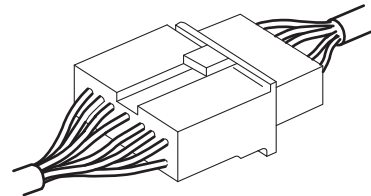
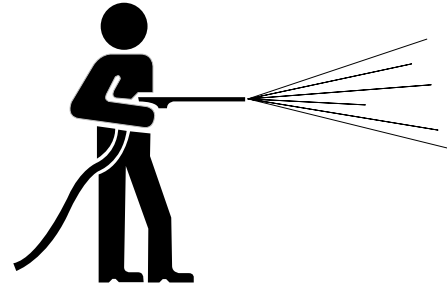
Clean the machine before carrying out inspection and maintenance. This prevents dirt from getting into the machine and ensures safety during maintenance.

If inspection and maintenance are carried out when the machine is dirty, it will become more difficult to locate the problems, and there is a danger that you may get dirt or mud in your eyes or that you may slip and injure yourself.

When washing the machine, do the following:

- Wear shoes with nonslip soles to prevent yourself from slipping and falling on wet places.
- Wear safety glasses and protective clothing when washing the machine with high-pressure steam.
- Take action to prevent touching high-pressure water and cutting your skin or having mud fly into your eyes.
- Do not spray water directly on electrical components (sensors, connector). If water gets into the electrical system, there is a danger that it will cause defective operation and malfunction.

Pick up any tools or hammers that are laying in the workplace. Wipe up any grease or oil or any other slippery substances, and clean the area to make it possible to carry out the operation in safety. If the workplace is left untidy, you may trip or slip and suffer injury.



ARO1330L

Figure 35

## Boost Starting or Charging Engine Batteries

If any mistake is made in the method of connecting the booster cables, it can cause an explosion or fire. Always do the following:

- Turn off all electrical equipment before connecting leads to the battery. This includes electrical switches on the battery charger or boost starting equipment.
- When boost starting from another machine or vehicle do not allow the two machines to touch. Wear safety glasses or goggles while required battery connections are made.
- 24 volt battery units consisting of two series connected twelve volt batteries have a cable connecting one positive terminal on one of the 12 volt batteries to a negative terminal on the other battery. Booster or charger cable connections must be made between the nonseries connected positive terminals and between the negative terminal of the booster battery and the metal frame of the machine being boosted or charged. Refer to the procedure and illustration in "Starting Engine With a Booster Cable" on page 3-8 of this manual.
- Connect positive cable first when installing cables and disconnect the negative cable first when removing them. The final cable connection, at the metal frame of the machine being charged or boost started, must be as faraway from the batteries as possible.

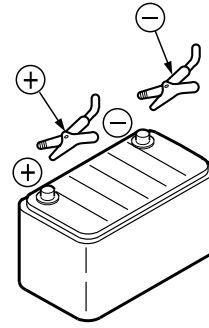
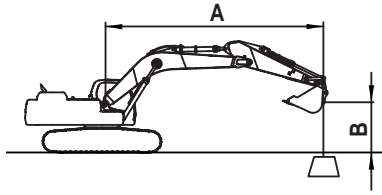


Figure 50

HAOA310L



TRACK WIDTH : 3.0 m (9' 10") NARROW TRACK  
 BOOM : 5.9 m (19' 4")  
 ARM : 2.5 m (8' 2")  
 BUCKET : SAE 1.17 m<sup>3</sup> (CECE 1.0 m<sup>3</sup>)  
 SHOE : 600mm (24")

: RATING OVER FRONT  
 : RATING OVER SIDE OR 360 degree  
 UNIT : 1,000 kg (1,000 lb)

### METRIC

A(m) B(m)	2		3		4		5		6		7		8		MAX. REACH		A(m)								
7									*	5.51	*	5.51				*	4.91	*	4.91	6.47					
6										*	5.65	*	5.65	*	5.46	4.39			*	4.85	4.21	7.16			
5										*	6.04	5.64	*	5.71	4.31			*	4.91	3.66	7.65				
4			*	12.52	*	12.52	*	9.17	*	9.17	*	7.55	7.3	*	6.61	5.43	*	6.03	4.19		*	5.07	3.32	7.98	
3					*	11.11	9.74	*	8.64	6.9	*	7.27	5.19	*	6.43	4.05	5.41	3.23			5.21	3.1	8.18		
2					*	12.74	9.13	*	9.65	6.54	*	7.92	4.97	6.61	3.91	5.32	3.14				5.06	2.98	8.26		
1					*	13.67	8.78	*	10.40	6.28		8.28	4.79	6.48	3.79	5.24	3.07				5.04	2.95	8.20		
0 (GROUND)			*	9.21	*	9.21	*	13.95	8.63	*	10.81	6.12	8.14	4.67	6.38	3.71	5.19	3.02				5.16	3.01	8.03	
-1	*	9.49	*	9.49	*	12.73	* 12.73	*	13.77	8.61	*	10.88	6.06	8.07	4.6	6.33	3.66					5.46	3.17	7.72	
-2	*	13.03	*	13.03	*	16.62	14.49	*	13.21	8.66	*	10.60	6.06	8.07	4.6	6.34	3.67					6.02	3.49	7.25	
-3	*	16.81	*	16.81	*	15.34	14.7	*	12.23	8.78	*	9.92	6.14	* 8.12	4.66							7.01	4.06	6.61	
-4	*	16.79	*	16.79	*	13.20	* 13.20	*	10.67	8.99	*	8.66	6.3									*	7.36	5.17	5.71
-5					*	8.08	* 8.08															*	7.31	* 7.31	4.42

### FEET

A (ft) B (ft)	5'		10'		15'		20'		25'		MAX. REACH		A (ft)				
25											*	10.57	*	10.57	19' 8"		
20							*	12.36	*	12.36			*	10.69	9.44	23' 3"	
15					*	16.30	16.30	*	13.71	11.92	*	12.50	8.07	*	10.95	7.7	25' 8"
10					*	20.80	17.52	*	15.75	11.19	12.97	7.75	11.51	6.85		26' 10"	
5					*	24.68	16.12	*	17.75	10.5	12.59	7.42	11.09	6.51		27' 1"	
0 (GROUND)			*	20.94	* 20.94	* 26.42	15.45	17.5	10.05	12.33	7.18	11.38	6.63		26' 4"		
-5	*	23.84	*	23.84	*	32.95	30.83	*	26.09	15.33	17.32	9.9		12.59	7.31	24' 7"	
-10	*	34.99	*	34.99	*	33.25	31.45	*	23.76	15.59	* 17.47	10.06		15.6	9.04	21' 7"	
-15			*	25.16	* 25.16	* 18.24	16.3						*	16.30	14.07	16' 6"	

- LOAD POINT IS THE END OF THE BUCKET HOOK.
- CAPACITIES MARKED WITH AN ASTERISK (\*) ARE LIMITED BY HYDRAULIC CAPACITIES.
- LIFT CAPACITIES SHOWN DO NOT EXCEED 75 % OF MINIMUM TIPPING LOADS OR 87 % OF HYDRAULIC CAPACITIES.
- THE LEAST STABLE POSITION IS OVER THE SIDE.
- THE TOTAL MASS OF MACHINE IS 24300 kg INCLUDED IN THIS MASS BOOM 5.90 m, ARM 2.50 m, 4700 kg COUNTERWEIGHT, BUCKET WEIGHT 824 kg, ALL OPERATING FLUIDS AND A 75 kg OPERATOR.
- LIFT CAPACITIES ARE IN COMPLIANCE WITH ISO 10567.

FG018040

Reference Number	Description
1	Starter Switch
2	Heater and Air Conditional Control Panel
3	Power Socket For 12v
4	Cigarette Lighter
5	Engine Emergency Stop Switch
6	Engine Speed Control Dial
7	Travel Speed Selector Switch
8	Light Switch
9	Breaker/Booster/Shear Selector Switch
10	Cabin Work Light Switch (Optional)
11	Audio Control Panel
12	Wiper Control Panel
13	Warning Light Switch (Optional)

Reference Number	Description
14	Lower Wiper Switch (Optional)
15	Quick Coupler Switch (Optional)
16	Travel/Swing Alarm Switch (Optional)
17	Fuel Heater Switch (Optional)
18	Overload Warning Switch (Optional)
19	Power Socket For 12v (Optional)
20	Horn Button
21	Rotating Buttons
22	Shear Buttons
23	Breaker/Booster Button
24	Instrument Panel
25	Photo Sensor
26	Safety Lever
27	Auxiliary Mode Switch

## 22. Shear Buttons

For a machine equipped with shear, press the two upper buttons on the top of the right-hand work lever (joystick) to open or close the shear. Left button is for closing (crowd), right button is for opening (Dump).

**NOTE:** *These buttons work with the breaker/boost/shear selector switch. See “9. Breaker/Boost/Shear Selector Switch” on page 2-11.*



### CAUTION

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#### AVOID INJURY

Before using any attachment in a work application, be sure to check its functional control. Make sure that the desired movement or action is being activated by the control. e.g. opening/closing, CW/CCW, crowd/dump, etc.

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## 23. Breaker/Booster Button (Right-hand Work Lever)

Press the lower button on the top of the right-hand work lever (joystick) to boost the hydraulic pressure. Refer to “Boost Mode” on page 3-23.

**NOTE:** *This button works with the breaker/boost/shear selector switch. See “9. Breaker/Boost/Shear Selector Switch” on page 2-11.*

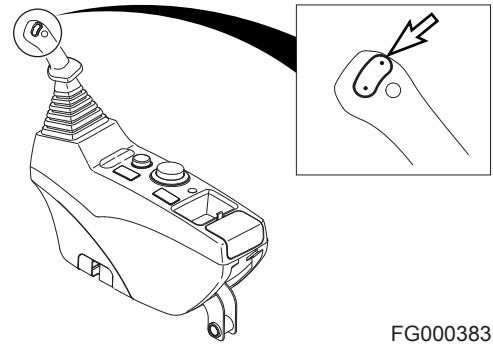


Figure 32

FG000383

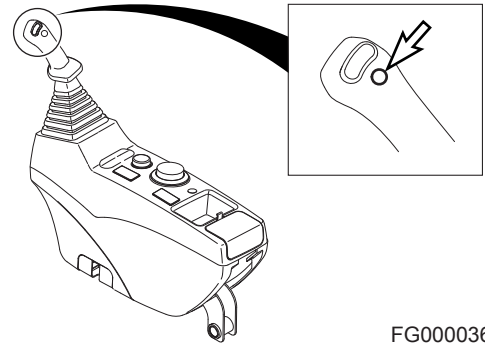


Figure 33

FG000036

## 24. Instrument Panel

See “Instrument Panel” on page 2-19.

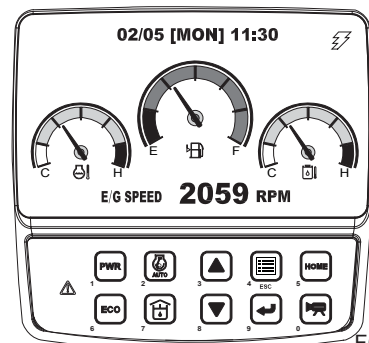


Figure 34

FG013662

## Front Hydraulic Pump Pressure

The front pump pressure is numerically displayed.

**NOTE:** *This pump is closest to engine flywheel housing or is the upper one of hydraulic pump.*

It displays the reading in BARs.

**FRONT PUMP 320 BAR**

FG000051

Figure 57

## Rear Hydraulic Pump Pressure

The rear pump pressure is numerically displayed.

**NOTE:** *This pump is the farthest from engine flywheel housing or is the lower one of hydraulic pump.*

It displays the reading in BARs.

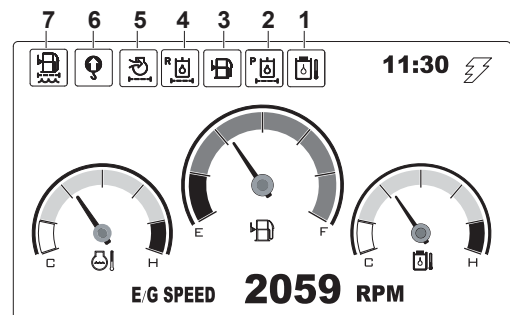
**REAR PUMP 313 BAR**

FG000052

Figure 58

## Abnormal State Warning Symbols

1. Hydraulic Oil Overheating Warning
2. Pilot Filter Clogged Warning
3. Fuel Shortage Warning
4. Return Filter Clogged Warning
5. Air Cleaner Clogged Warning
6. Overload Warning (Optional)
7. Water in Fuel Warning

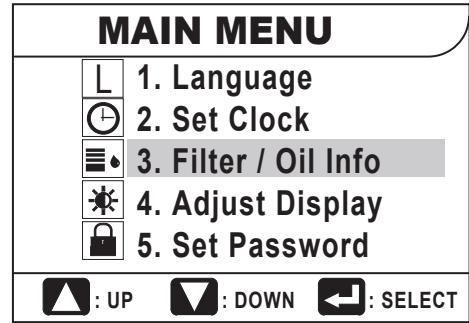


FG013702

Figure 59

## Filter/Oil Info

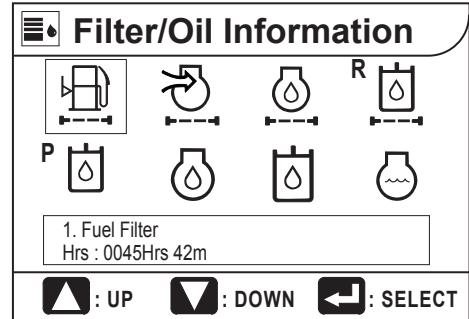
When the cursor is on "Filter/Oil Info", press the "SELECT" (↵) button. The filter/oil information submenu will appear.



FG013567

Figure 87

Each symbol can be selected by pressing the "UP" (▲) or "DOWN" (▼) buttons. At the bottom of the screen the operating hour (Hrs) of each filter and/or oil is displayed.

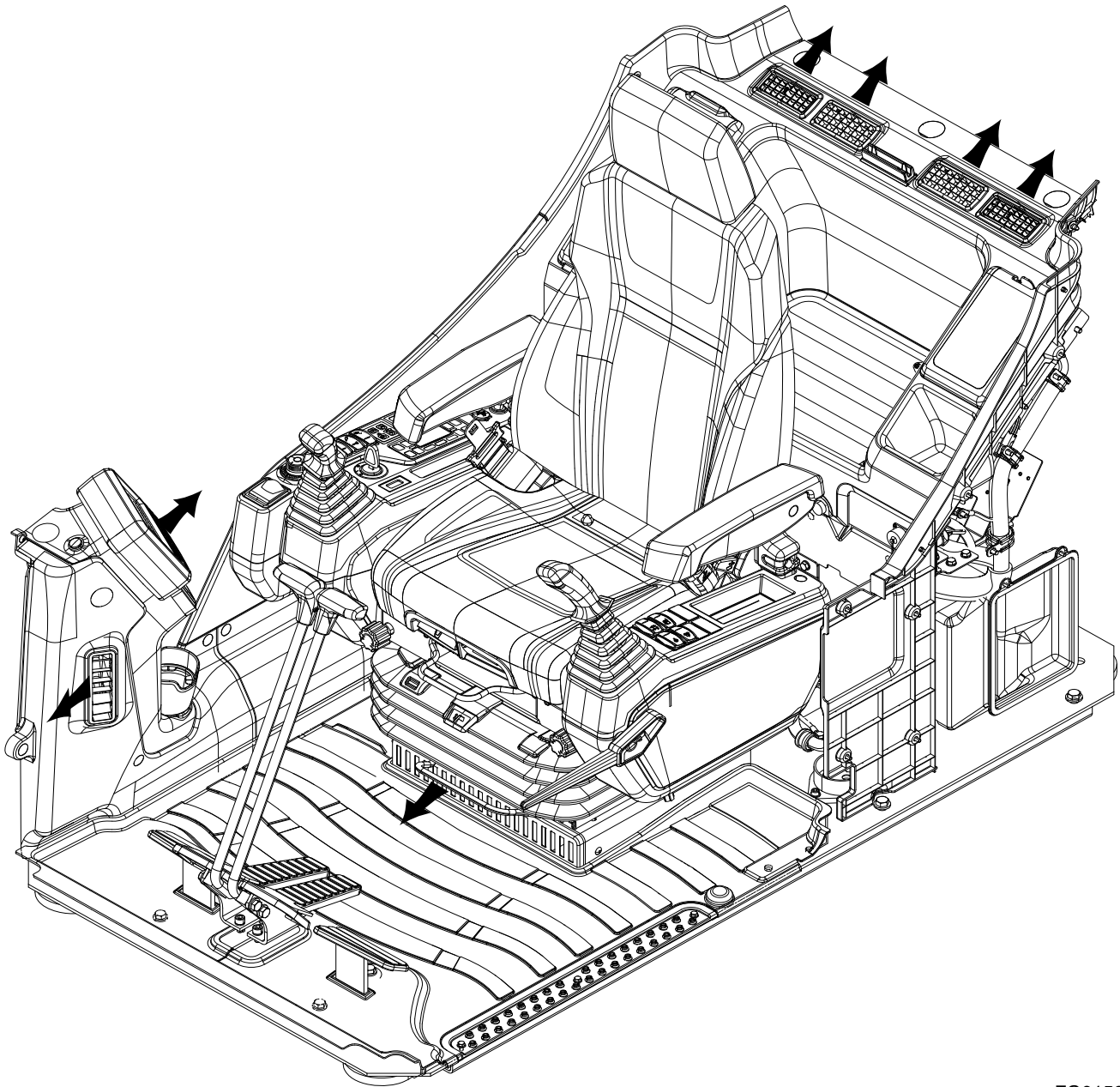


FG013568

Figure 88

# HEATER AND AIR CONDITIONER CONTROL PANEL

## Location of Controls and Vents



FG015819

**Figure 113**

The heater and air conditioner are combined into one unit in the rear cover behind the operator's seat.

The operator can control cabin temperature using the control panel installed in the switch panel.

### 3. Reclining Position Adjustment

Pulling up left lever allows 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.

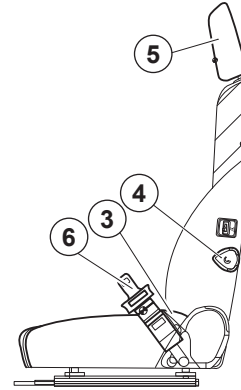
### 4. Lumbar Support Adjustment

A lumbar support is located in the seat back.

Turn the dial (4, Figure 138) counterclockwise to increase the force of the lumbar support

### 5. Headrest

The headrest (5, Figure 138) can be adjusted forward/backward and up/down. Move it by holding both sides.



FG015815

Figure 138

### 6. Seat Belt



## WARNING

### AVOID DEATH OR SERIOUS INJURY

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 can 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.

# MISCELLANEOUS ACCESS COVERS AND DOORS

## Side Door

Open side access door and slide prop rod (1, Figure 162) in slot (2) until it locks at end of slot.

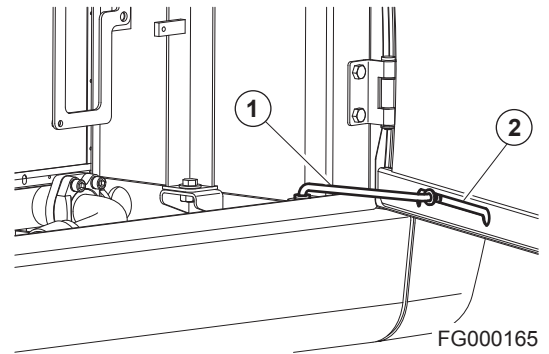


Figure 162

## Battery Box Door

### Opening

Open door until locking device (1, Figure 163) latches.

### Closing

While holding door, press locking device to release lock and close door.

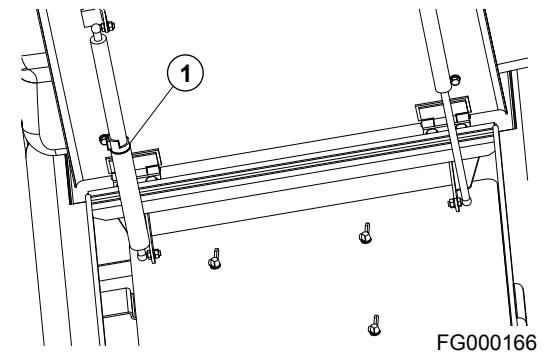


Figure 163

## Engine Cover

Open the cover and slide prop rod (1, Figure 164) in slot (2) until it locks in notch at end of slot to support cover.

To close cover, move end of prop rod out of notch so it can slide in slot.

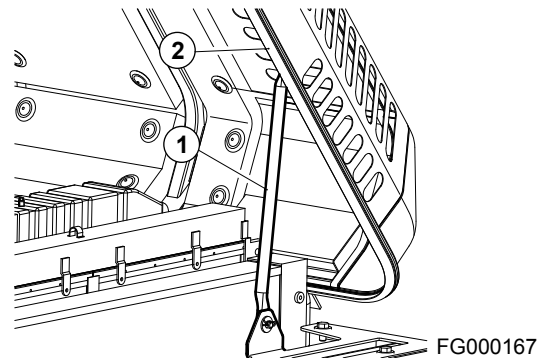


Figure 164

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### Connecting the Booster Batteries

1. Stop engine of the machine on which booster batteries (3, Figure 12) are mounted.
2. Connect one end of red cable (1, Figure 12) to the positive (+) terminal of the machine batteries (4), and the other end to the positive (+) terminal of the booster batteries.
3. Connect one end of black cable (2, Figure 12) to the negative (-) terminal of the booster batteries (3), and then make ground connection to the upper frame (5) of the machine to be started with the other end of black (-) cable (2, Figure 12). When making the last connection to upper frame, be sure to connect the cable end as far away from the machine batteries as possible. **DO NOT CONNECT DIRECTLY TO THE NEGATIVE BATTERY TERMINAL.**
4. Start the engine.

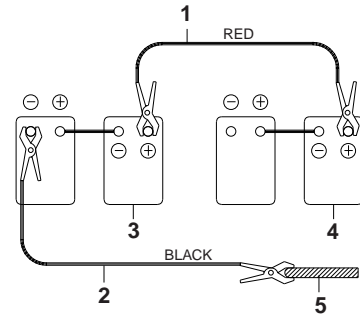


Figure 12

ARO0440L

### Disconnecting the Booster Batteries

1. Disconnect black negative (-) cable (2, Figure 12) from the machine frame (5) first.
2. Disconnect the other end of black negative (-) cable (2, Figure 12) from the booster batteries (3).
3. Disconnect red positive (+) cable (1, Figure 12) from the booster batteries (3).
4. Disconnect red positive (+) cable (1, Figure 12) from the machine batteries (4).

5. On rough, frozen or uneven terrain, travel slowly.



## WARNING

### AVOID DEATH OR SERIOUS INJURY

When traveling, keep bucket from 20 - 30 cm (8 - 12 in) above ground.

Do not travel backward on a slope.

Never turn or travel crosswise on a slope.

Choose a safe alternate route before climbing a slope.

If excavator starts to slip or becomes unstable, lower the bucket immediately into the ground, using it as a brake.

Avoid working on slopes, because there is a danger of overturning by becoming unbalance while swinging and performing front attachment operations.

It is very dangerous to swing towards bottom of slope with a loaded bucket.

In unavoidable cases level the slope with fill soil, to make the vehicle as horizontal as possible. See Figure 34.

Do not travel on slopes more than 30° because of turnover danger.

6. Travel straight up or down slopes, never diagonally across the slope. See Figure 35 and Figure 36. Extend the arm and lower the boom to keep the bucket about 20 - 30 cm (8 - 12 in) off the ground. If the machine starts to slide or becomes unstable, lower the bucket to regain control. If the engine stalls, lower the bucket, make sure that all controls are in the neutral position and restart the engine.

**NOTE:** Even though engine stops on a slope, do not operate swing control. The hydraulic accumulators can cause the unit to swing.

**NOTE:** Do not open or close operator's door on a slope. Make sure door is latched.

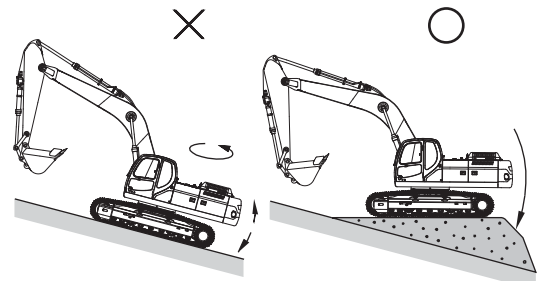
7. If dirt or mud builds up in the track frame, raise each track and rotate and clean that track.



## CAUTION

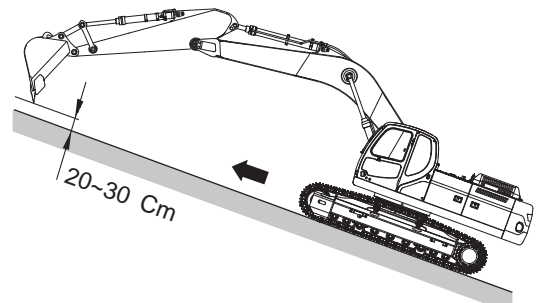
### AVOID INJURY

When using the boom and arm to lift any portion of the machine, roll the bucket until round base is against the ground. The angle of the arm to the boom must be at 90°.



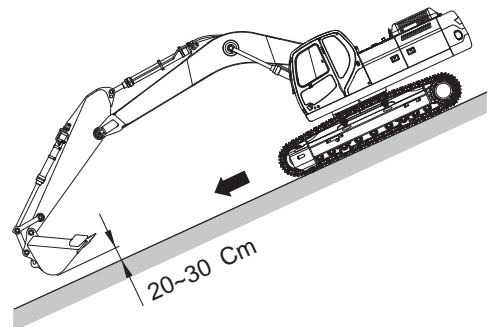
FG006916

Figure 34



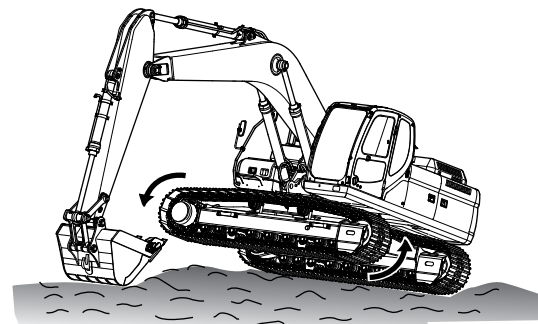
FG006917

Figure 35



FG006918

Figure 36



FG000376

Figure 37

11. Make sure there is adequate clearance from overhead electrical supply lines. See Figure 60.

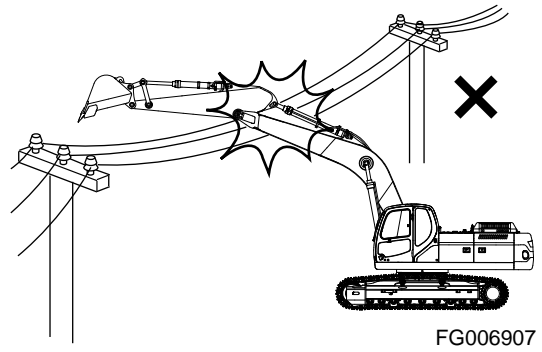


Figure 60

12. If the excavation is in an underground location or in a building, make sure there is adequate overhead clearance and there is adequate ventilation. See Figure 61.

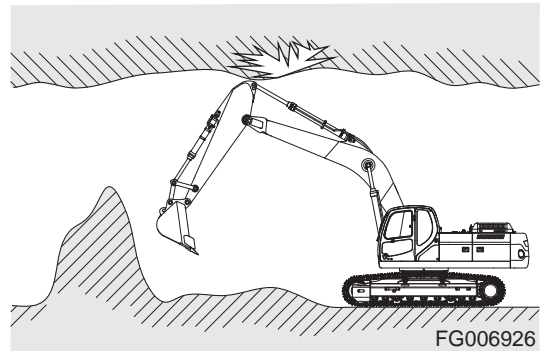


Figure 61

13. Do not use the bucket as a hammer or ramming device. This is dangerous and causes damage to the front attachment. See Figure 62.

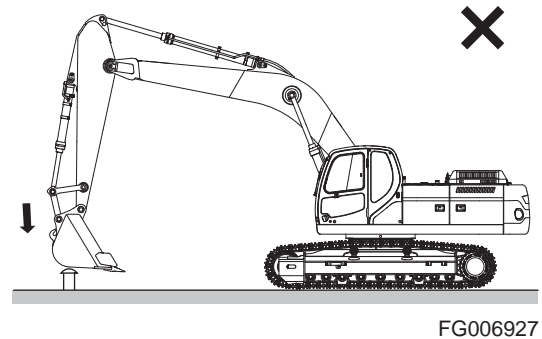


Figure 62

14. Do not dig with the excavator tracks raised. This can result in structural and mechanical failures.

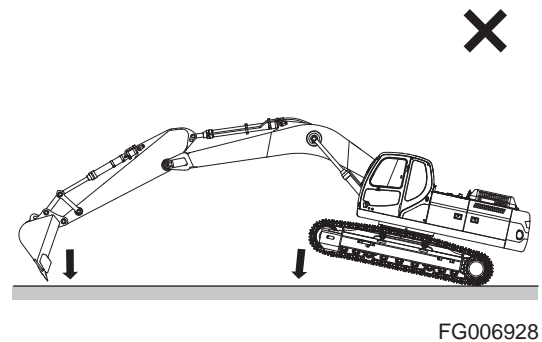

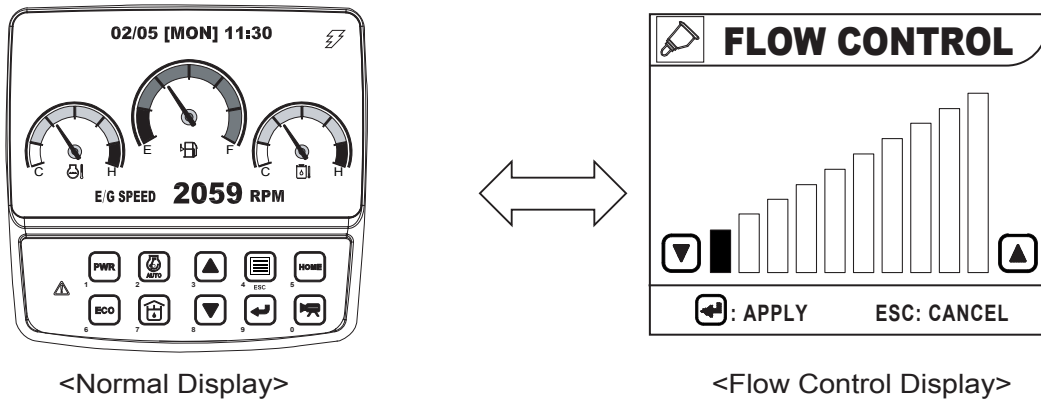


Figure 63

# ADJUSTING THE PUMP FLOW

**NOTE:** For further information, see "Flow Control" on page 2-42.

1. On the instrument panel, press the flow control button , the flow control screen (Figure 82) will be displayed.
2. Use "UP" (▲) or "DOWN" (▼) buttons to adjust flow rate.
3. Press "SELECT" (←) button, to return to normal display screen and save the flow rate setting.



FG013831

**Figure 82**

Setting	Flow Rate (l/min)
0	48
1	53
2	71
3	89
4	109
5	128
6	148
7	167
8	187
9	207
10	219

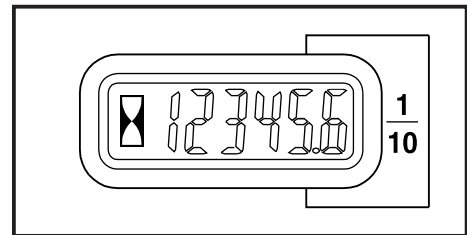
# Inspection, Maintenance and Adjustment

## PREVENTIVE MAINTENANCE

Routine maintenance and inspections are required to keep your machine in the correct operating condition. The following pages list the inspection intervals, the system or component checks, and location references.

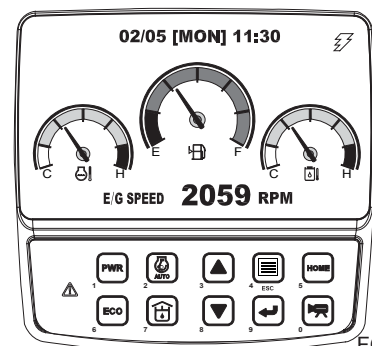
**NOTE:** *The following pages list the service checks and their required intervals. The service cycles may need to be shortened depending on the working conditions. Extremely hot or dusty conditions will require more frequent service. Operational hours are determined by the amount of time accumulated on the engine hour meter on the control console in the cabin.*

**NOTE:** *Besides the normal hour meter, the multifunction gauge can be used to keep track of the hours on individual filters. See "Filter/Oil Info" on page 2-37.*



HAOA601L

Figure 1



FG013662

Figure 2

SERVICE DATA									
No.	Items to Check	Service	Qty.	Service Interval					
				10	50	250	500	1000	2000
1	Arm, Bucket Joint Pin	Grease	6	F100	W10				
2	Boom, Arm Joint Pin	Grease	11	F100		W10			
3	Swing Bearing	Grease	2		W10				
4	Pinion Gear (Swing)	Grease	1						
5	Swing Reduction Gear	Grease	1					W10	
6	Swing Reduction Gear	Gear Oil	7 ℓ	V			F		
7	Track Spring	Grease	2				W10		
8	Travel Reduction Gear	Gear Oil	2 x 3 ℓ				F, V		
9	Engine Oil	Engine Oil	27 ℓ	V					
10	Hydraulic Oil Tank (Full)	Hydraulic Oil	240 ℓ	V					
11	Fuel Tank	Diesel	410 ℓ	V					
12	Fuel Prefilter	Cartridge	1	V					
13	Radiator	Coolant	30 ℓ	V					
14	Hydraulic Oil Return Filter	Element	1			F			
15	Pilot Filter	Element	1			F			
16	Hydraulic Oil Suction Strainer	Strainer	1						C
17	Engine Oil Filter	Cartridge	1						
18	Fuel Filter	Cartridge	1						
19	Air Cleaner (Outer)	Element	1				C		
	Air Cleaner (Inner)	Element	1						
20	Air Conditioner Filter (Outer)	Cartridge	1				C		
	Air Conditioner Filter (Inner)	Cartridge	1				C		
21	Air Breather Filter*	Element	1						
22	Fuel Cap Filter	Element	1						
V: Maintenance and Refill.									
C: Cleaning.									
F: First Time Exchange Only.									
F100: Every 10 Hours For First 100 Hours.									
W10: Every 10 Hours If Operating In Water.									
EG: Ethylene Glycol - Doosan Genuine Antifreeze Solution (Drain and replace using this interval.) See "Engine Cooling System" on page 4-75, for further explanation.									
: Replacement On Every Interval.									
<b>NOTE:</b> For additional service items see list of "Maintenance Intervals" on page 4-12.									
*: When the machine is operated under dusty work sites, the air breather filter needs to be cleaned or replaced on a regular basis even before the expected replacement date.									

## Check Level of Window Washer Liquid

1. Open left front access door and check fluid level in windshield washer tank.
2. Open fill cap and add fluid.

**NOTE:** Use a washer liquid that is rated for all seasons. This will prevent freezing during cold weather operation.

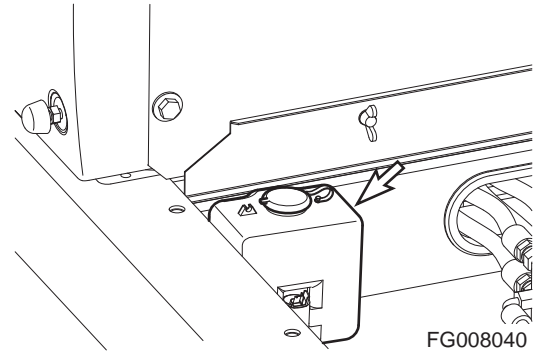
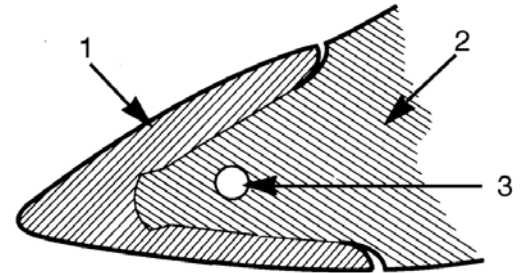


Figure 31

## Inspect Bucket Teeth and Side Cutters for Signs of Wear

1. Daily, inspect the bucket teeth to make sure that tooth wear or breakage has not developed.
2. Do not allow the replaceable bucket teeth to wear down to the point that bucket adapter is exposed. See Figure 32.

**NOTE:** These instructions are only for DOOSAN OEM buckets. If you are using other manufacturers' buckets, refer to their specific instructions.



HAOE870P

Figure 32

Reference Number	Description
1	Point
2	Adapter
3	Pin

## Inspect Cooling Fan Blade

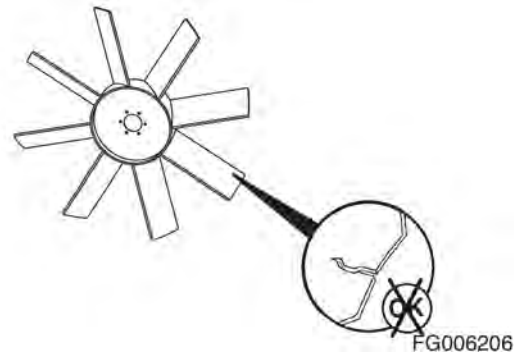


### WARNING

**AVOID DEATH OR SERIOUS INJURY**

Personal injury can result from a fan blade failure. Never pull or pry on the fan. This can damage the fan blade (s) and cause fan failure.

1. An inspection of the cooling fan is required daily. Check for cracks, loose bolts, bent or loose blades, and for contact between the blade tips and the fan shroud. Check the fan to make sure it is securely mounted. Tighten the bolts if necessary. Replace any fan that is damaged.



FG006206

Figure 33

## Check Engine Fan Belt Wear



### WARNING

AVOID DEATH OR SERIOUS INJURY

Keep clear of engine fan and fan drive belts when the engine is running. Rotating fan and belt contact can cause injury.

---



### WARNING

AVOID DEATH OR SERIOUS INJURY

When checking, adjusting or replacing drive belts, care must be taken to prevent accidental cranking of the engine. Be sure the starter switch is in the "OFF" position and the controls are tagged.

---

1. Replace badly worn, greasy or severely cracked belts immediately. These conditions prevent proper belt function. Visually inspect the belt. Check the belt for intersecting cracks. Transverse (across the belt width) cracks are acceptable. Longitudinal (direction of belt length) cracks that intersect with transverse cracks are not acceptable. Replace the belt if it is frayed or has pieces of material missing.
2. Before installing new belts, make sure all pulley grooves are clean and not worn. Replace pulley, if damaged, or if the grooves are worn.
3. All pulley support bearings, shafts, and brackets must be in working order.
4. When replacing belts and pulleys, pulley alignment must be checked with belts tensioned and brackets securely clamped. A misalignment that can be detected by the eye is detrimental to belt performance.
5. Do not force the belts into the pulley grooves by prying with a screwdriver or pry bar. This will damage the belt side cords which will cause the belts to turn and result in complete destruction of the belts in operation.
6. Belts on new machines and replacement belts lose their tension as they seat into the pulley grooves. Check the tension of new belts at 50 hour intervals until tension is stabilized and thereafter, every 250 hours. If the tension falls below the required minimum, the belt slips damaging the belts and pulley grooves.

**NOTE:** *When operating in abrasive conditions, check tension every 100 hours.*

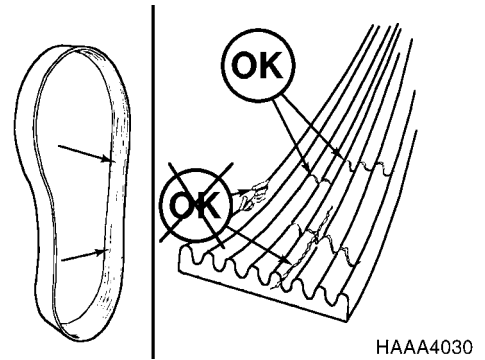


Figure 47

HAAA4030

## Change of Fuel Prefilter

1. Open the left rear side door to access fuel prefilter.
2. Position a small container under prefilter. Drain fuel by opening drain valve on bottom of filter.

**NOTE:** *Dispose of drained fluids in compliance with all applicable environmental laws and regulations.*

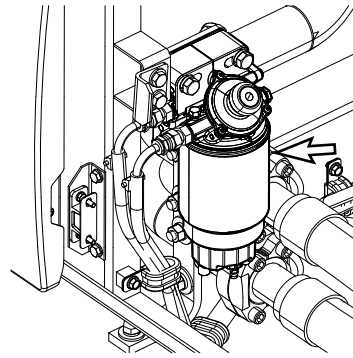


Figure 65

FG006961

3. Remove bowl using supplied tool.
4. Remove cartridge.

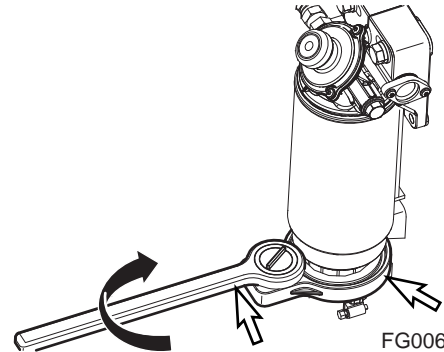


Figure 66

FG006962

5. Coat surface of packing (2, Figure 67) with fuel on new cartridge (1).
6. Tighten the cartridge by hand until the packing comes into contact with the surface of the filter housing head.
7. When it reach the surface, tighten the cartridge about 3/4 of a turn more.
8. Coat surface of seal (3, Figure 67) with fuel, and tighten the bowl with tool.

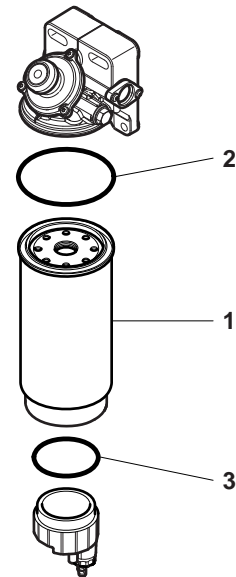


Figure 67

FG000428

## Change Fuel Cap Filter



### WARNING

AVOID DEATH OR SERIOUS INJURY

External shock or damages to fuel cap may lead to permanent damage to filter.

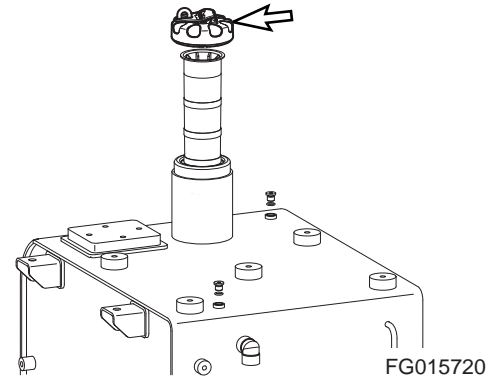


Figure 89

1. See under the fuel cap as shown on (Figure 90). Rotate bolt to CCW direction to loosen.

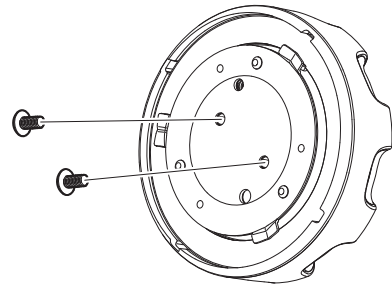


Figure 90

2. After disengaging it as shown on (Figure 91), carefully lay it on floor.

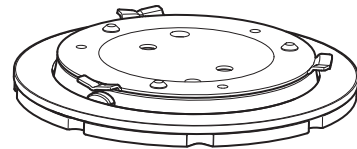


Figure 91

3. After disengaging (Figure 91), disengage rubber as shown on (Figure 92).

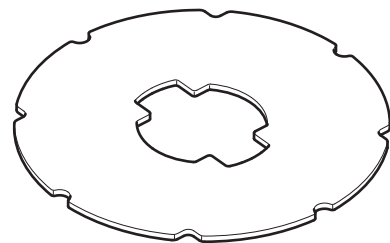


Figure 92

# BOLT AND NUT INSPECTION

Inspect ALL fasteners after the first 50 hours of operation and every 250 hours thereafter. If any are loose or are missing tighten them or install new hardware. Always use a calibrated torque wrench.

## IMPORTANT

Always clean fasteners before tightening.

If counterweight is loose, contact a DOOSAN distributor or sales agent.

No.	Point to be Inspected	Bolt Dia. mm	Qty.	Bolt Head Size	Torque			
					kg•m	Nm	ft lb	
1	Joint bolt with engine mounting bracket and engine	pump side	16	8	24	24.5	240	177
		fan side	10	8	17	5	49	36
2	Joint bolt and nut between engine mounting bracket and frame	pump side	20	2	30	46	451	333
		fan side	20	2	30	46	451	333
3	Radiator mounting bolt	16	4	24	27	265	195	
4	Tightening bolt for hydraulic oil tank	16	6	24	27	265	195	
5	Tightening bolt for fuel tank	16	6	24	27	265	195	
6	Tightening bolt for pump	20	4	17 (S)	49	480	354	
7	Tightening bolt for control valve	16	4	24	27	265	195	
8	Tightening bolt for swing reduction device	24	12	36	95	931	687	
9	Tightening bolt for swing motor	12	12	10 (S)	14.4	141	105	
10	Tightening bolt for battery	10	2	17	5	49	36	
11	Joint bolt with cabin mounting rubber and frame	24	35	36	95	931	687	
	Joint nut with cabin mounting rubber and cabin	24	35	36	95	931	687	
12	Joint bolt with swing bearing and upper frame	20	36	30	55	539	398	
	Joint bolt with swing bearing and bottom frame	20	36	30	55	539	398	
13	Tightening bolt for travel device	20	40	30	49	480	354	
	Tightening bolt for sprocket	18	52	27	45	441	325	
14	Tightening bolt for upper roller	20	4	30	55	539	398	
15	Tightening bolt for bottom roller	16	80	24	27	265	195	
16	Tightening bolt for track guard	16	16	24	27	265	195	
17	Bolt for track shoes	20	408	27	78	765	564	
18	Fixing bolt for front pin	16	10	24	27	265	195	
19	Breaker Filter (Optional)		1	30	27	265	195	
20	Grease valve for track adjuster	PF 1/2	2	27	14	137	101	
21	Mounting bolt for the ROPS	39 x 3 (Thin Screw)	1	60	250	2450	1807	

# ELECTRICAL SYSTEM

**NOTE:** *Never disassemble electrical or electronic parts. Consult with a DOOSAN distributor or sales agency before servicing.*

## Battery

---



### WARNING

---

#### AVOID DEATH OR SERIOUS INJURY

Battery electrolyte contains sulfuric acid and can quickly burn the skin and eat holes in clothing. If you spill acid on yourself, immediately flush the area with water.

Battery acid could cause blindness if splashed into the eyes. If acid gets into the eyes, flush them immediately with large quantities of water and see a doctor at once.

If you accidentally drink acid, drink a large quantity of water or milk, beaten egg or vegetable oil. Call a doctor or poison prevention center immediately.

When working with batteries, always wear safety glasses or goggles.

Battery generates hydrogen gas, so there is danger of an explosion. Do not bring lighted cigarettes near the battery, or do anything that will cause sparks.

Before working with batteries, stop engine and turn the starter switch to "O" (OFF) position.

Avoid short circuiting the battery terminals through accidental contact with metallic objects, such as tool.

When removing or installing, check which is the positive (+) terminal and negative (-) terminal.

When removing the battery, first disconnect the negative (-) terminal. When installing the battery, first connect the positive (+) terminal.

If the terminals are loose, there is danger that the defective contact may generate sparks that will cause an explosion. When installing the terminals, install them tightly.

---

#### Batteries in Cold Weather

In colder weather a greater drain is placed on the batteries when they are used for the preheat cycle and when starting a cold engine. Battery performance decreases as the temperature gets lower.

In extremely cold weather, remove batteries at night and move them to a warm location. This will help to keep them at a higher power level.

# HANDLING OF ACCUMULATOR

---

## WARNING

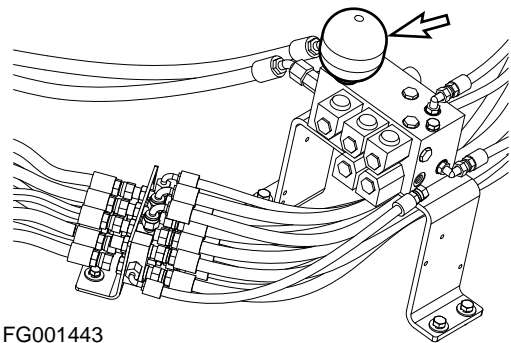
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Even though the engine is stopped, the hydraulic accumulators for the pilot system are still charged. Do not disconnect any pilot system hoses until accumulator pressure has been released from the circuit. To release pressure, turn the starter switch to "I" (ON) position and operate all hydraulic control levers and forward/reverse travel levers. Even though the engine is shutdown hydraulic actuated components may move while releasing pilot pressure. Keep all personnel away from excavator while performing this operation.

- Move safety lever to "LOCK" position after stopping engine.
  - DO NOT mishandle accumulator (s). They are very dangerous because they contain high-pressure nitrogen gas.
  - DO NOT punch a hole or apply heat or fire to an accumulator.
  - DO NOT weld on accumulator, or try attaching anything to it.
  - When replacing an accumulator, contact a DOOSAN distributor or sales agency so the gas can be properly released.
  - Wear safety goggles and protective gloves when working on an accumulator. Hydraulic oil under pressure can penetrate the skin and cause serious injuries.
- 

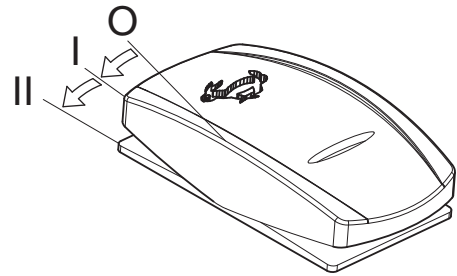
Release pilot accumulator pressure using the following procedure:

1. Park machine on firm, level ground. Lower the front attachment to the ground and stop engine.
2. Move safety lever to "RELEASED" position.
3. Turn starter switch to "I" (ON) position.
4. Fully stroke work and travel levers in all directions.
5. Move safety lever to "LOCK" position.
6. Turn key to "O" (OFF) position and remove from starter switch.
7. Remove accumulator by unscrewing it slowly.



FG001443  
**Figure 145**

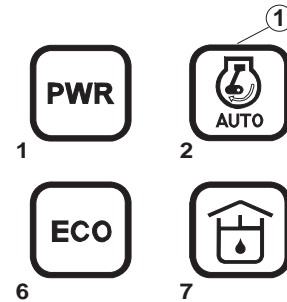
- Set the travel speed selector switch to "O" (OFF) position. See Figure 3.



FG016016

Figure 3

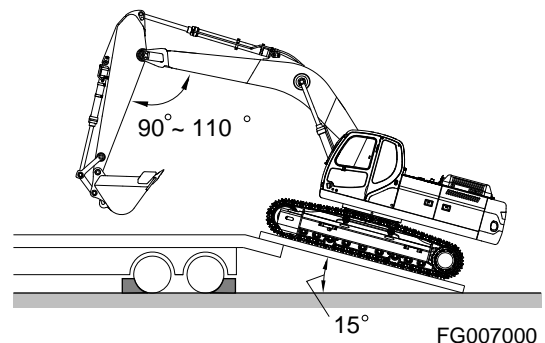
- Turn "OFF" auto idle selector button (1, Figure 4). The indicator symbol will not be lit.
- Move engine speed to "LOW IDLE".



FG013833

Figure 4

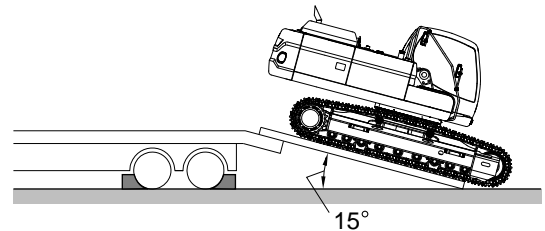
- If the machine is equipped with work equipment, set the work equipment at the front, and travel forward to load it.



FG007000

Figure 5

- The unit does not require disassembly for normal over-the-road transportation. If the boom and arm need to be removed, the counterweight will place more weight on the rear of the machine. Make sure to back the excavator onto the trailer so the counterweight end of the excavator is positioned on the ramp first. See Figure 6.



FG007002

Figure 6

# Specification

## STANDARD SPECIFICATION

Component			Specification	
			Metric	English
Bucket Capacity	CECE		0.95 m <sup>3</sup>	1.24 yd <sup>3</sup>
	PCSA		1.1 m <sup>3</sup>	1.44 yd <sup>3</sup>
Operating Weight		Standard Track	24.7 metric tons	27.2 tons
		Narrow Track	24.6 metric tons	27.1 tons
Engine	Model		DL06	
	Type		Water Cooled - 6 Cylinders	
	Rated Net Output		163 ps @1,900 rpm	161 hp @1,900 rpm
	Maximum Torque		76 kg•m @ 1,400 rpm	550 ft lb @ 1,400 rpm
	Fuel Tank Capacity		410 liters	108 U.S. gal.
Hydraulic Pump	Type		Axial Piston	
	Discharging Pressure		350 kg/cm <sup>2</sup>	5,000 psi
	Maximum Discharge Quantity		2 x 219 liters/min	2 x 57.9 U.S. gpm
	Hydraulic Oil Capacity	Tank Level	150 liters	39.6 U.S. gal.
		Full	240 liters	63.4 U.S. gal.
System		280 liters	74 U.S. gal.	
Performance	Digging Capability	Bucket	16.1 metric tons	17.5 tons
		Arm	12.1 metric tons	13.3 tons
	Swing Speed		10.0 rpm	
	Travel Speed	High-speed	5.2 km/h	3.2 MPH
		Low-speed	3.1 km/h	1.9 MPH
	Traction Force	High-speed	11 metric tons	12.2 tons
		Low-speed	21.6 metric tons	23.8 tons
	Gradeability		35° (70% slope)	
Ground Pressure		0.5 kg/cm <sup>2</sup>	7.1 psi	
Ground Clearance			450 mm	17.7 in
Track Shoe Width			600 mm	23.6 in
Upper Roller Qty.			2 per side	
Bottom Roller Qty.			10 per side	

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