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2. SAFETY INSTRUCTIONS

Safety Message

Intended Use

Machines should be operated in accordance with the procedures described in the operator manual.

The products described in the operator manual are designed and manufactured mainly for the following purposes:



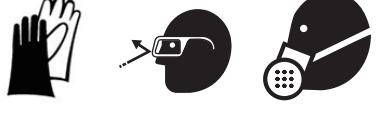




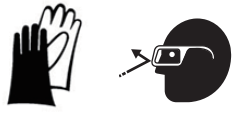
- Excavation work
- Loading work
- Leveling work
- Drainage work
- Lifting work
- Demolition work

Do not operate the machine for any purpose other than those stated above or in areas where potential hazards have been identified. Make sure that you comply strictly with all safety instructions at all times. Please contact HD Hyundai Construction Equipment Co., Ltd. or your local dealer for more information.

HD Hyundai Construction Equipment strictly prohibits the use or operation of the machine in any of the following circumstances:

- Operation by an unskilled worker
- Lifting a worker up
- Transporting flammable or dangerous materials
- Driving down or extracting piles with the bucket
- Towing damaged vehicles

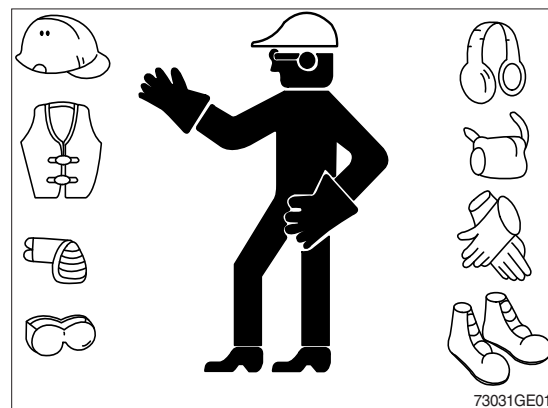
Personal protection gear for various situations

Situation	Symbol
Oil handling	
Battery handling	
Refrigerant handling	
Coolant handling	
Repair by welding	
Working in areas subject to airborne particles and falling objects	
Working in places with a high level of noise	
Handling machines damaged by fire or exposed to excessively high temperature	

WEAR PROTECTIVE CLOTHING

Wear close fitting clothing and safety equipment appropriate to the job.

- Do not wear loose clothing and accessories. Secure long hair. These items can snag on controls or on other parts of equipment.
- Do not wear oily clothes. They are highly flammable.
- Wear a hard hat, safety shoes, safety goggles, mask, leather gloves, earplugs and other protective equipment, as required.
- While working on machine, never use inadequate tools. They could break or slip, or they may not adequately perform intended.

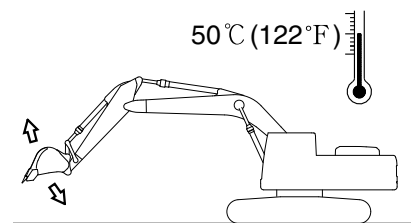


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Cautions when operating in specific areas

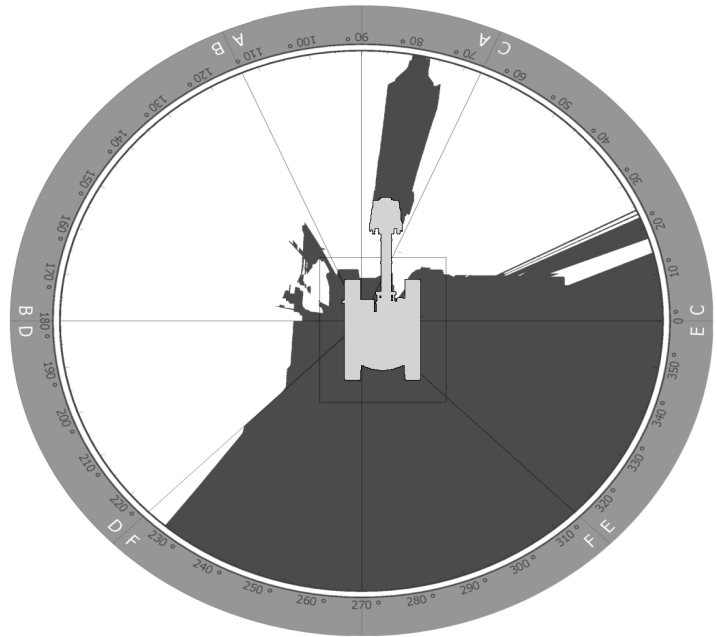
Operating in extremely cold environments

- Do not attempt to start, stop or turn the machine suddenly as this may cause it to slip. There is potential for the machine to slip.
- Snow-covered or frozen ground may be slippery and dangerous.
- Idle operation of the machine may be required to elevate the engine temperature during startup.
- An impact resulting from a sudden movement of the boom or the attachments at an extremely low temperature may cause serious damage to the machine.
- The working cycle or loading weight might be reduced to lower than those under normal conditions.
- Follow these instructions when operation in cold environments:
 - Warm up the engine for 3~4 seconds when starting up the engine.
 - Always fully charge the battery. A discharged battery will freeze earlier than a fully charged battery.
 - Use engine oil and fuel that are appropriate for the temperature.
 - Keep the fuel tank full.
 - Remove any moisture from the fuel tank, and change the fuel filter regularly.
 - If the fuel filter is frozen, the flow of fuel may be blocked.
 - Pour the proper volume of antifreeze into the coolant.
 - Wait until the various parts of the machine reach the operating temperature after starting the engine.
 - Make sure that every controller and function of the machine operates normally.
 - Remove any dirt, snow and ice from the machine after completing the operation.



Operating in extremely hot environments

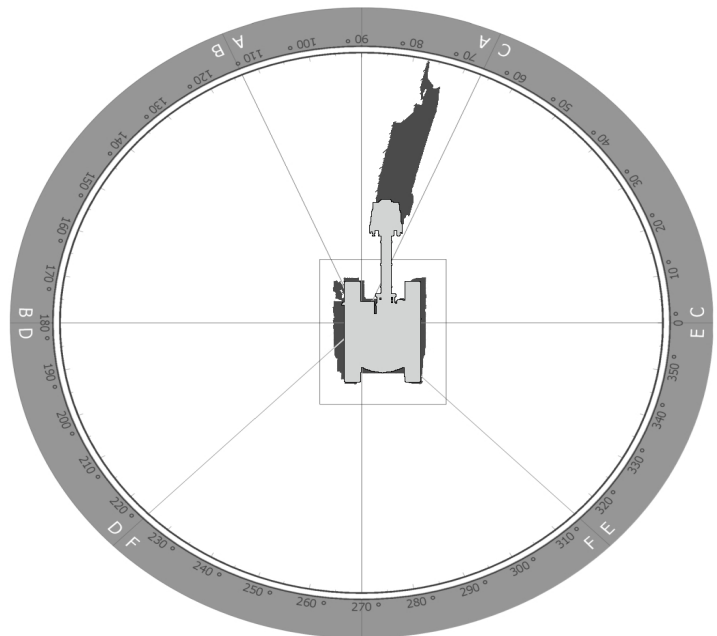
- Continuous operation of the machine for a long period of time may cause the machine to overheat. Pay special attention to prevent overheating of parts such as the engine and the hydraulic system. Stop the machine and take a break if necessary.
- Check the following conditions frequently:
- Check the level of the coolant in the radiator.
 - Check the radiator grill for clogging by any debris, and remove them, if any.
 - Check the level of the battery electrolyte.
 - If the battery will not be used for a long period of time, store it in a cool place.
 - Check the hydraulic system for oil leakage.
 - Check the lubrication oil on the respective parts, and lubricate as needed.
 - If the paint coating of any parts has been effaced or damaged, coat the parts with paints or treat them with an anti-rust additive.
 - Do not park the machine under direct light for a long period of time.
 - When parking or storing the machine outdoors, use the proper cover to protect the machine from sunlight and dust.



< Top view of the machine at ground level visibility without use of optional visual aids >

※ The shaded areas indicate the approximate location of areas with significant restricted visibility.
(Radius = 12 m / 34 ft)

There is restricted visibility to the area directly behind the machine with no optional visual aids. Failure to make sure the area is clear could result in serious injury or death. Make sure that the area is clear before you start the reverse movement.



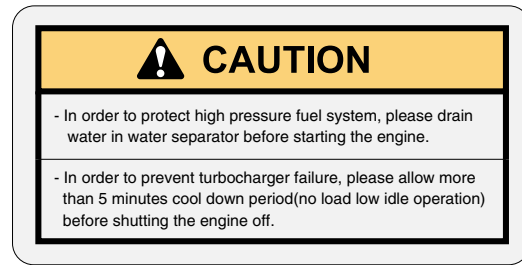
< Top view of the machine at ground level visibility with use of optional visual aids >

※ The shaded areas indicate the approximate location of areas with significant restricted visibility.
(Radius = 12 m / 34 ft)

24) CAUTION (W/SEPARATOR, TURBOCHARGER) (item 41)

This label is positioned on the right window of inside the cab.

- ▲ In order to protect high pressure fuel system, please drain water in water separator before starting the engine.
- ▲ In order to prevent turbocharger failure, please allow more than 5 minutes cool down period (no load low idle operation) before shutting the engine off.



120090SL02

25) REFLECTING (item 42)

This label is positioned on the rear side of the counterweight and both sides of the arm.

- ▲ To prevent serious personal injury or death keep clear of machine swing radius.
- ▲ Do not deface or remove this label from the machine.

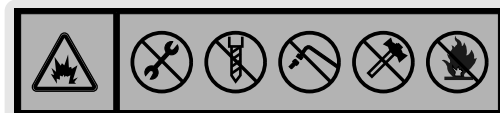


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26) ACCUMULATOR (item 43)

This label is positioned on the accumulator of the solenoid valve.

- ※ The accumulator is filled with high-pressure nitrogen gas, and it is extremely dangerous if it is handled in the wrong way. Always observe the following precautions.
- ▲ Never make any holes in the accumulator or expose it to open flame or fire.
- ▲ Do not weld anything to the accumulator.
- ※ When carrying out disassembly or maintenance of the accumulator, or when disposing of the accumulator. It is necessary to release the gas from the accumulator. A special air bleed valve is necessary for this operation, so please contact your HD Hyundai Construction Equipment distributor.



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3) STARTING ENGINE IN COLD WEATHER

※ By following below steps, you will be able to improve startability and fuel consumption in cold weather.

▲ Always check for obstacles in the area and sound horn before starting the engine.

※ Check engine oil and fuel and replace as necessary. See page 7-33.

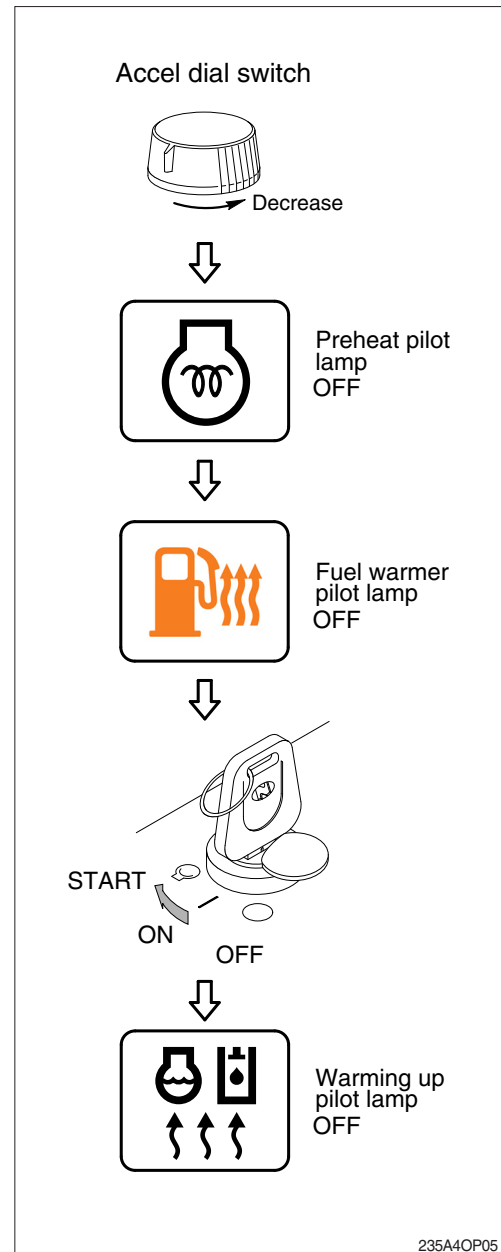
※ Top off coolant as needed.

※ When you turn ON starting switch, the fuel warmer automatically heats the fuel as needed by sensing coolant temperature.

- (1) Confirm all levers are in the neutral position.
- (2) Turn the multimodal dial to low idle position.
- (3) Turn the starting switch to the ON position, and wait 1~2 minutes. More time might be required, it depends on the ambient temperature.
- (4) Wait for five minutes to warm up the engine after the preheating pilot lamp turns off, and then turn the starting switch to the START position to start the engine.

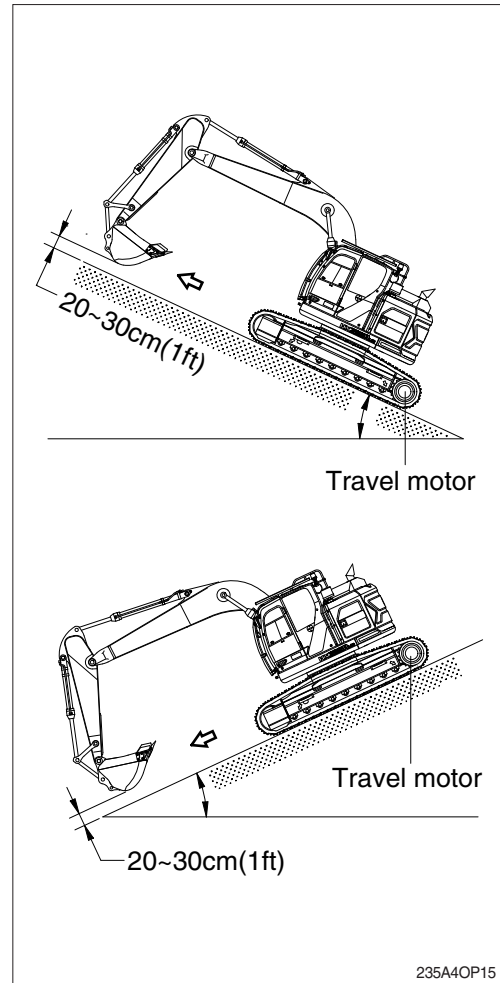
※ If the engine does not start, allow the starter to cool for about 2 minutes before attempting to start the engine again.
- (5) Release the starting switch immediately after starting engine.
- (6) If the temperature of the coolant is lower than 30 °C (86 °F) the warming up process automatically starts.

※ Do not operate the working devices, or change the operation mode during the warming up.



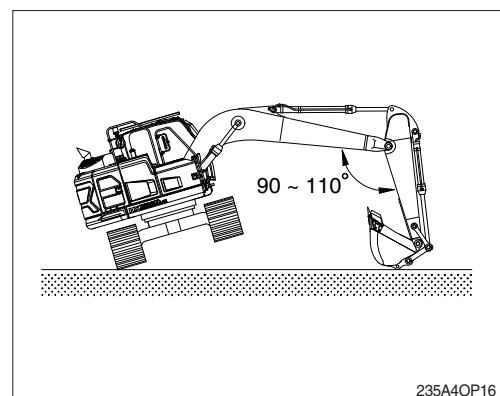
2) TRAVELING ON A SLOPE

- (1) Make sure that the travel lever is properly maneuvered by confirming the travel motor is in the right location.
 - (2) Maintain the bucket 20 to 30 cm (1 ft) from the ground so that it can be used as a brake in the event of an emergency.
 - (3) If the machine starts to slide or loses stability, lower the bucket immediately as it will help slow or stop the machine.
 - (4) When parking on a slope, use the bucket as a brake.
- ※ **Machine cannot travel effectively on a slope when the oil temperature is low. Do the warm-up operation when it is going to travel on a slope.**
- ▲ **Be careful when working on slopes. It may cause the machine to lose its balance and turn over. Serious injury or death could occur.**
- ▲ **Be sure to keep the travel speed switch on the LOW (turtle mark) while traveling on a slope.**
- ▲ **Be sure to keep the swing lock/fine switch on the LOCK while traveling on a slope (if equipped).**



3) TRAVELING ON SOFT GROUND

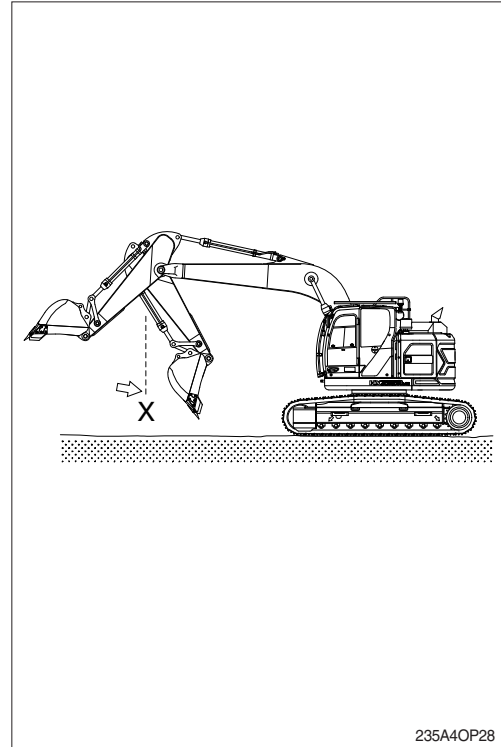
- ※ **If possible, avoid operating on soft ground.**
- (1) Move forward as far as machine can move.
 - (2) Take care not to go beyond the depth where towing is impossible on soft ground.
 - (3) When driving becomes impossible, lower bucket and use boom and arm to pull the machine. Operate boom, arm, and travel lever at the same time to avoid the machine sinking.



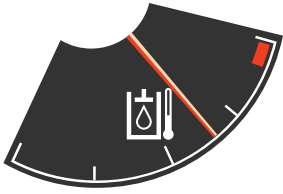
9. NORMAL OPERATION OF EXCAVATOR



The following may occur during operation due to the nature of a hydraulic excavator.

- 1) When rolling in the arm, the roll-in movement stops momentarily at point X in the picture shown, then recovers speed again after passing point X. This is because movement by the arm weight is faster than the speed of oil flow into the cylinder.
- 2) When lowering the boom, you may hear continuous sound. This is caused by oil flow in the valve.
- 3) Overloaded movement will produce sound caused by the relief valves, which are for the protection of the hydraulic systems.
- 4) When the machine is swinging or stopped, a noise near the swing motor may be heard. The noise is generated when the brake valve relieves.

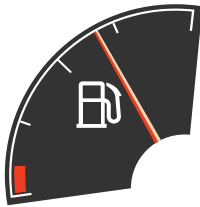




(4) Hydraulic oil temperature gauge



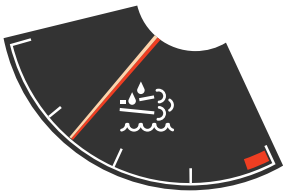
- ① This gauge indicates the temperature of hydraulic oil.
 - White range : 40-105°C (104-221°F)
 - Red range : Above 105°C (221°F)
 - ② If the indicator is in the red range or  lamp pops up and the buzzer sounds reduce the load on the system. If the gauge stays in the red range, stop the machine and check the cause of the problem.
- ※ If the gauge indicates the red range or  lamp blinks in red even though the machine is in the normal condition range, check the electric device as this can be caused by poor connection of electricity or sensor.



(5) Fuel level gauge



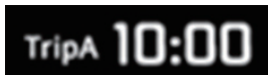
- ① This gauge indicates the amount of fuel in the fuel tank.
 - ② Fill the fuel when in the red range, or  lamp pops up and the buzzer sounds.
- ※ If the gauge indicates the red range or  lamp blinks in red even though the machine is on the normal condition range, check the electric device as this can be caused by poor connection of electricity or sensor.

(6) DEF/AdBlue® Level gauge



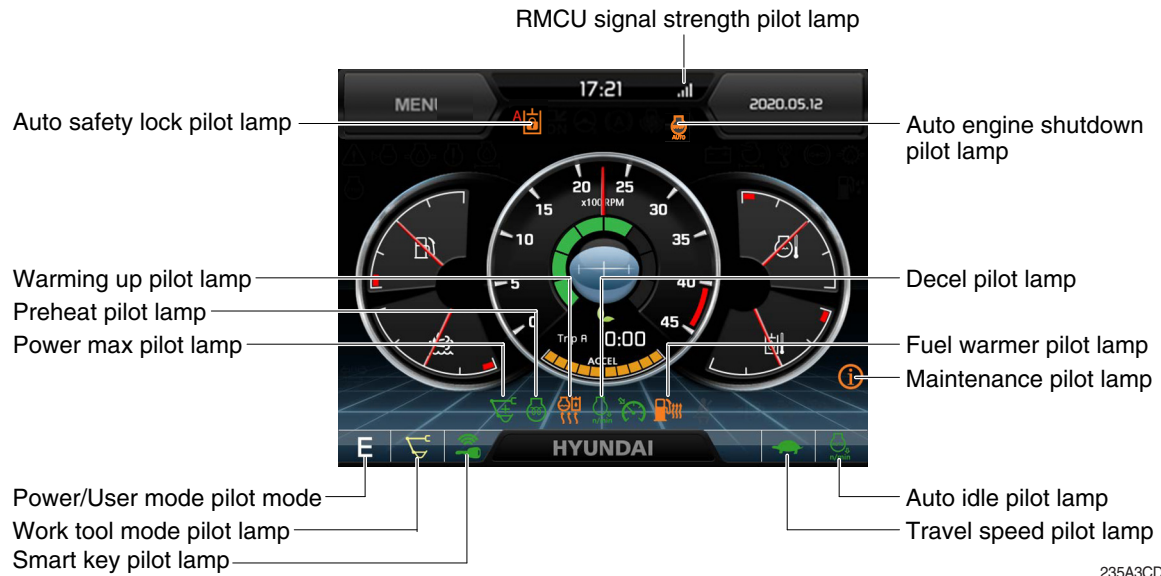
- ① This gauge indicates the amount of liquid in the DEF/AdBlue® tank.
 - ② Fill the DEF/AdBlue® when in the red range, or  lamp pops up and the buzzer sounds.
 - ③ Do not overfull DEF/AdBlue®.
- ※ Refer to page 3-11.
- ※ If the gauge indicates the red range or  lamp blinks in red even though the machine is in the normal condition range, check the electric device as this can be caused by poor connection of electricity or sensor.

(7) Tripmeter display



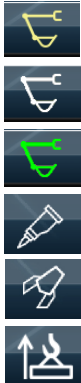




Refer to page 3-34 for details.

4) PILOT LAMPS



(1) Mode pilot lamps

No	Mode	Pilot lamp	Selected mode
1	Power mode		Heavy duty power work mode Standard power mode Economy power mode
2	User mode		User preferable power mode
3	Work tool mode		General operation - IPC speed mode General operation - IPC balance mode General operation - IPC efficiency mode Breaker operation mode Crusher operation mode Lifting mode
4	Travel mode		Low speed traveling High speed traveling
5	Auto idle mode		Auto idle

(2) Power max pilot lamp



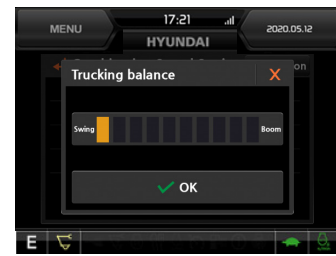
300A3CD32

- ① The lamp will be ON when pushing power max switch on the LH RCV lever.
 - ② The power max function operates for a max period of 8 seconds.
- ※ Refer to the page 3-39 for power max function.

· Trucking balance

This is control the swing and boom up speed when the combined operation is activated.

- It adjusts the ratio of relative speed in the boom up and swing combination operation.
- The segment is close to swing, the swing speed has a priority.
- The segment of swing is recommended for use in work environments that require high swing speed and acceleration, some slow boom up, and more than 45 degrees.
- The segments are close to boom, the boom up speed has a priority.
- The segment of boom is mainly used in work environments that require high boom up work at a short swing angle of about 45 degrees.

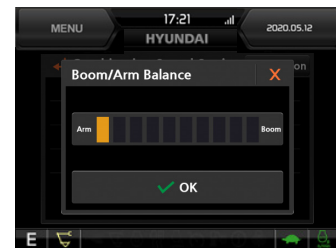


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· Boom / Arm balance

This is control the boom up and arm in speed when the combined operation is activated. It is effective in work place mainly for leveling work.

- When the level is closer to arm, arm in operation speed has more priority than boom up operation.
- When the level is closer to boom, boom up operation speed has more priority than arm in operation.

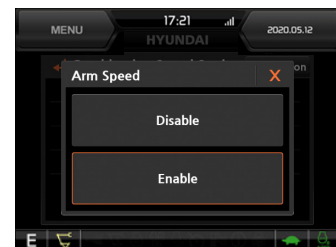


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· Arm speed

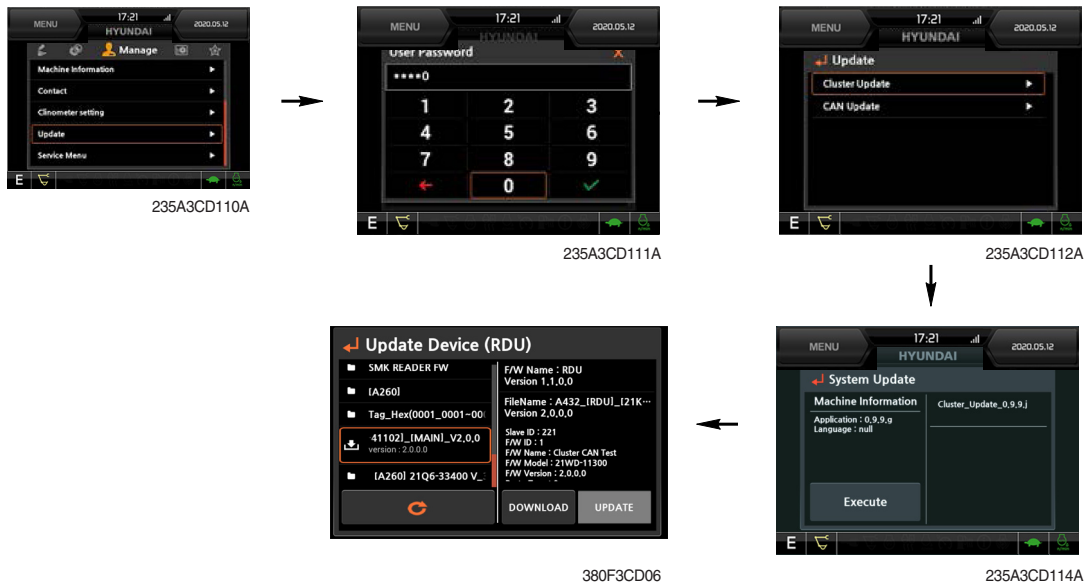
This provides ON and OFF of the regeneration function of the arm in operation.

- Enable means that regeneration is ON, and an energy can be used efficiently through automatic regeneration according to the load.
- Disable means that regeneration is always OFF, and it can be effective for heavy digging work.



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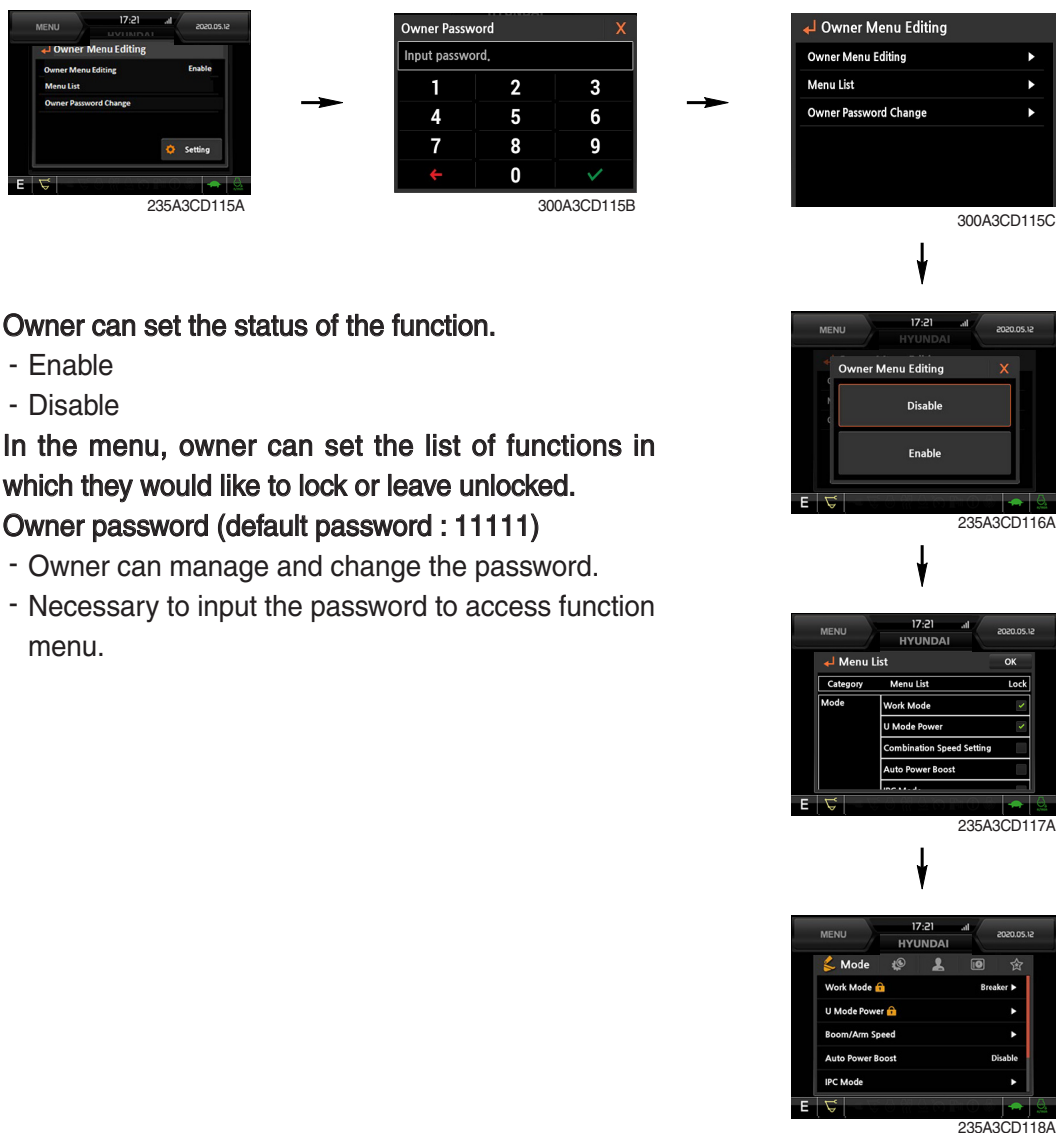
⑨ Update (cluster & ETC devices)



- ETC devices and cluster can be updated through CAN 2 network.
- Insert USB memory stick which includes program files, start download.

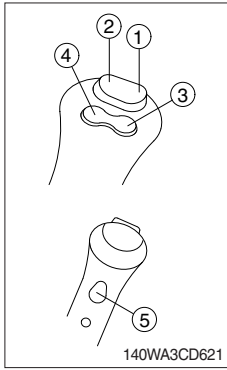
⑩ OME (owner menu editing)

The owner of machine can restrict operator access to set functions.



- **Owner can set the status of the function.**
 - Enable
 - Disable
- In the menu, owner can set the list of functions in which they would like to lock or leave unlocked.
- **Owner password (default password : 1111)**
 - Owner can manage and change the password.
 - Necessary to input the password to access function menu.

(2) Proportional type (option)



The switches on the LH RCV lever is function as below.

① CW rotating switch

When this switch is pressed, the clockwise rotating will operate.

② CCW rotating switch

When this switch is pressed, the counterclockwise rotating will operate.

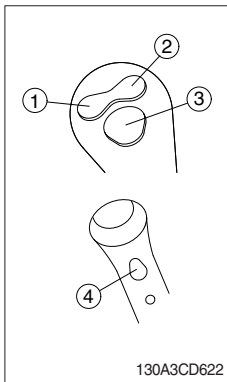
③ One touch decel switch : Refer to (1)-③ above.

④ None.

⑤ Power max switch : Refer to (1)-④ above.

13) RH RCV LEVER SWITCH

(1) Button type



The switches on the RH RCV lever is function as below.

① Quick coupler switch

This switch is used to engage or disengage the moving hook on quick coupler.

Refer to the page 8-6.

② None

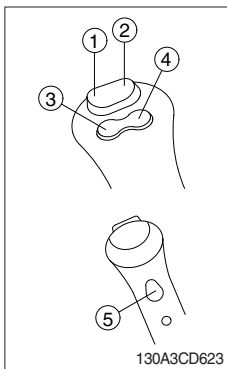
③ Horn switch

When this switch is pressed, the horn will sound.

④ Breaker switch

When this switch is pressed, the breaker will only operate when the breaker operation mode is selected.

(2) Proportional type (option)



The switches on the RH RCV lever is function as below.

① 2-way clamp switch

When this switch is pressed, the clamp will only operate when the crusher operation mode is selected.

② 2-way release switch

When this switch is pressed, the release or breaker will operate when the crusher operation mode or breaker operation mode is selected.

③ Quick coupler switch

This switch is used to engage or disengage the moving hook on quick coupler.

Refer to the page 8-6.

④ Horn switch : Refer to (1)-③ previous page.

⑤ Breaker switch : Refer to (1)-④ previous page.

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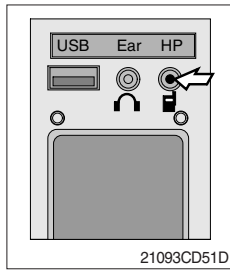
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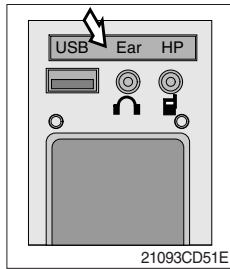
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(4) Handsfree jack socket



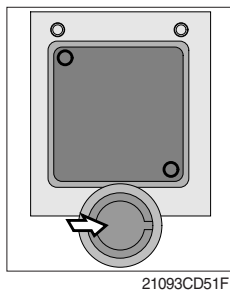
- ① Connect the jack cable when call by handsfree.
- ② Use the special adapter when jack cable is not interchangeable.
- ③ Check the jack type of mobile phone before use.

(5) Indicator lamp



- ① This lamp is turned ON when the handsfree mode selected.

(6) Service socket



- ① Utilize the power of 12 V as your need and do not exceed power of 12 V, 30 W.

(2) Menu Selection



- ① This button can adjust the effect of the sound and other things. Each time you press this button (2), LCD displays as follows :

BAS → TREB → BAL L=R → FAD F=R → EQ → LOUD ON → BEEP 2ND

On each setting, the level can be controlled by turning TUNE knob (2). When the last adjustment is made, after 5 seconds, the display will automatically return to the previous display mode.

② Bass control

To adjust the bass tone level, first select the bass mode by pressing SEL button (2) repeatedly until BASS appears on the display panel. Then turn knob (2) right or left within 5 seconds to adjust the bass level as desired. The bass level will be shown on the display panel from a minimum of BASS-7 to a maximum of BASS+7.

③ Treble control

To adjust the treble tone level, first select the treble mode by pressing SEL button (2) repeatedly until TREB appears on the display panel. Then turn knob (2) right or left within 5 seconds to adjust the treble level as desired. The treble level will be shown on the display panel from a minimum of TREB -7 to a maximum of TREB +7.

④ Balance control

To adjust the left-right speaker balance, first select the balance mode by pressing SEL button (2) repeatedly until BAL indication appears on the display panel. Then turn knob (2) right or left within 5 seconds to adjust the balance as desired. The balance position will be shown by the bars on the display panel from BAL 10R (full right) to BAL 10L (full left).

⑤ Fader control

To adjust the front-rear speaker balance, first select the fader mode by pressing SEL button (2) repeatedly until FADER indication appears on the display panel. Then turn knob (2) right or left within 5 seconds to adjust the front-rear speaker level as desired. The fader position will be shown by the bars on the display panel from FAD 10F (full front) to FAD 10R (full rear).

⑥ EQ control

You can select an equalizer curve for 4 music types (CLASSIC, POP, ROCK, JAZZ). Press button (2) until EQ is displayed, then turn knob (2) right or left to select the desired equalizer curve. Each time you turn the knob, LCD displays as follows :

EQ OFF → CLASSIC → POP → ROCK → JAZZ

- ※ When the EQ mode is activated, the BASS and TREBLE modes are not displayed.

6) Audio transfer between the audio unit and phone

The audio transfer function is for switching the call from the audio unit to the cellular phone for private conversation.



① Press CALL button (4) briefly during conversation, it appears CALL TRANS on the display. To switch back to the audio unit, press button (4) briefly during private conversation, then it appears CALL TRANS on the display again.

※ **This function will be a cause of disconnection of bluetooth link in some nokia phones, but do not worry, just press button (4) during private conversation, then switch back to the audio unit automatically.**

※ **The quality of calling between cellular phone and audio unit is better than calling between one audio unit and another one.**

7) Last call number dialing



① Press CALL button (4) briefly, it appears CALL TO on the display, then simply press CALL button once again, it would make the last call with phone number displayed on LCD.

If Reject call is activated in your phone, then your cellular phone does not support Reject Call function.

※ **If you are using SAMSUNG phone, then you may need to press send button once more. With the first press of button it should show contact list in your phone, then if you press again you should be ready to make the last call.**

(8) To make a call by cellular phone

The audio transfer function is for switching the call from the audio unit to the cellular phone for private conversation.

- ① The audio unit will be activated automatically when you make a call with cellular phone.
- ② When you make a call processing by cellular phone, it shows CALLING on the display.
- ③ When you receive a call, the phone number ***** appears on the display.

5) PRECAUTION WHEN INSTALLING HYDRAULIC HOSES OR PIPES

- (1) Be particularly careful that the joint of hose, pipe and functioning item are not damaged.
Avoid contamination.
- (2) Assemble after cleaning the hose, pipe and joint of functioning item.
- (3) Use genuine parts.
- (4) Do not install hose in a twisted, bent or crimped way.
- (5) Always maintain the specified torque.

11) EVERY 4500 HOURS SERVICE

Check items	Service	Page
DEF/AdBlue® supply module filter★	Replace	4-32

★ When working in dusty environments, inspection per 1500 hours is highly recommended.

12) EVERY 5000 HOURS SERVICE

Check items	Service	Page
Overhead set (shop inspection)	Adjust	4-35, 36, 37
Hydraulic oil* ⁵	Change	4-39

*⁵ HD Hyundai Construction Equipment genuine long life

*⁵ Change hydraulic oil every 1000 hours of continuous hydraulic breaker operation.

13) EVERY 6000 HOURS SERVICE

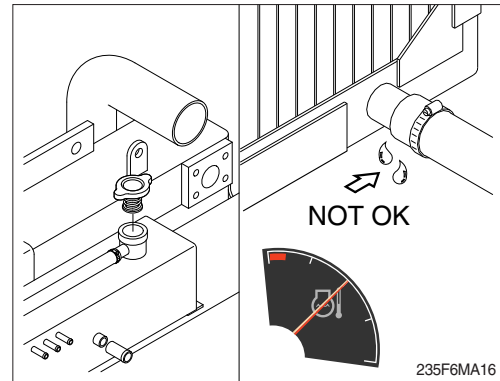
Check items	Service	Page
Coolant, cooling system and antifreeze* ⁵	Change, Flush	4-21, 22, 23, 24

*⁵ HD Hyundai Construction Equipment genuine long life

- ③ Install the pressure cap. Operate the engine until it reaches a temperature 80°C (176°F), and check for coolant leaks.

Check the coolant level again to make sure the system is full of coolant after allow engine to cool.

- ※ If the gasket of the surge tank cap is damaged, discard the old filler cap and install a new cap.



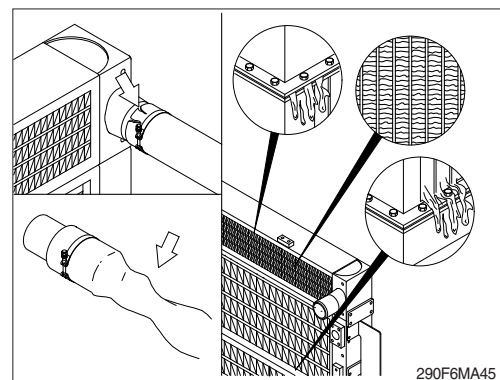
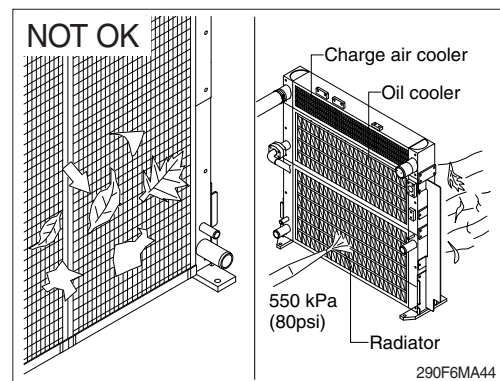
5) CLEAN RADIATOR AND OIL COOLER

Check, and if necessary, clean and dry outside of radiator and oil cooler. After working in a dusty place, clean radiator more frequently.

- (1) Visually inspect the radiator for clogged radiator fins.
- (2) Use 550 kPa (80 psi) air pressure to blow the dirt and debris from the fins.
- (3) Visually inspect the radiator for bent or broken fins.

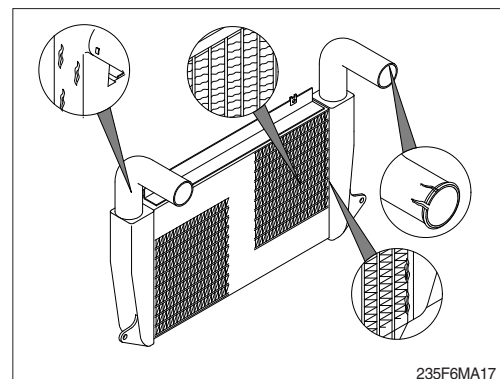
- ※ If the radiator must be replaced due to bent or broken fins which can cause the engine to overheat, refer to the manufacturer's replacement procedures.

- (4) Visually inspect the radiator for core leaks.



6) CHECK CHARGE AIR COOLER

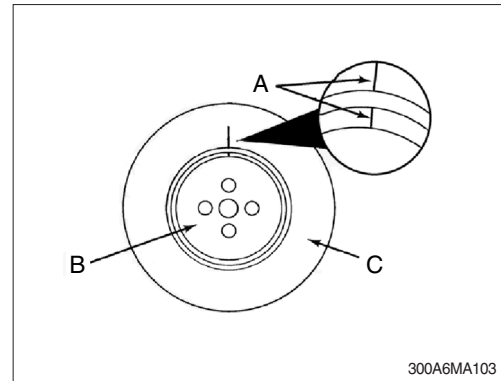
Inspect the charge air cooler for dirt and debris blocking the fins. Check for cracks, holes, or other damage. If damage is found, please contact your local HD Hyundai Construction Equipment dealer.



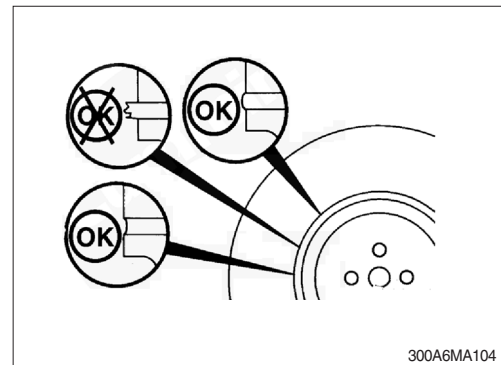
21) VIBRATION DAMPER

(1) Rubber

- ① Check the index lines (A) in the vibration damper hub (B) and the inertia member (C). If the lines are more than 1.59 mm (1/16 in) out of alignment, replace the vibration damper.



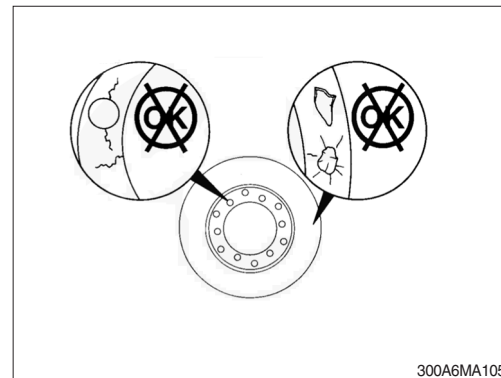
- ② Inspect the rubber member for deterioration. If pieces of rubber are missing or if the elastic member is more than 3.18 mm (1/8 in) below the metal surface, replace the damper.
- ③ Look for forward movement of the damper ring on the hub. Replace the vibration damper if any movement is detected.



(2) Viscous

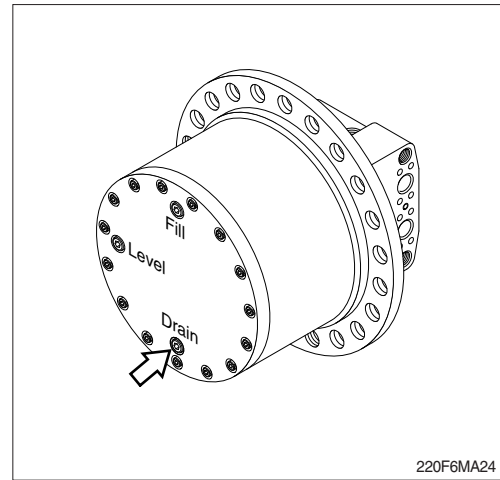
※ **The silicone fluid in the vibration damper will become solid after extended service and will make the damper inoperative. An inoperative vibration damper can cause major engine or drivetrain failures.**

- ① Check the vibration damper for evidence of fluid loss, dents, and wobble. Inspect the vibration damper thickness for any deformation or raising of the damper cover plate.
- ② If any of these conditions are identified, contact your local HD Hyundai Construction Equipment dealer to replace the vibration damper when movement is detected.



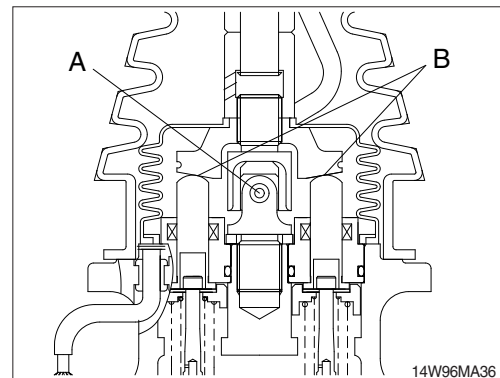
37) CHANGE OF THE TRAVEL REDUCTION GEAR OIL

- (1) Raise the temperature of the oil by operating the machine first.
- (2) Position the travel motor as shown in the illustration and make sure the machine is on flat ground.
- (3) Loosen the level plug, then the drain plug .
- (4) Drain the oil to adequate container with a capacity of 10 ℓ (2.6 U.S. gal).
- (5) Tighten the drain plug and fill specified amount of oil at filling port.
 - Amount of oil : 6.0 ℓ (1.6 U.S. gal)
 - Tightening torque : 10 ± 1.0 kgf·m
(72.3 ± 7.2 lbf·ft)
- (6) Tighten the level plug and travel slowly to check if there is any leakage of oil.



38) LUBRICATE RCV LEVER

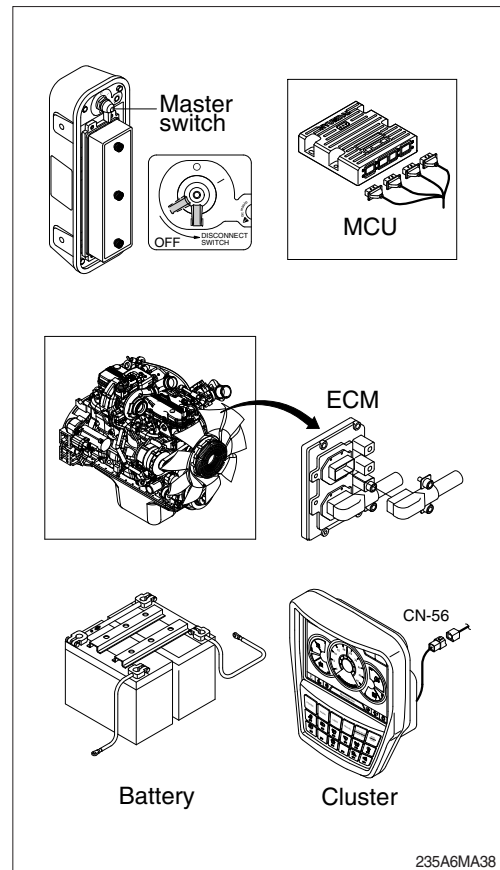
Remove the bellows and with a grease gun grease the joint part (A) and sliding parts (B).



4) WELDING REPAIR

Before welding, follow the below procedure.

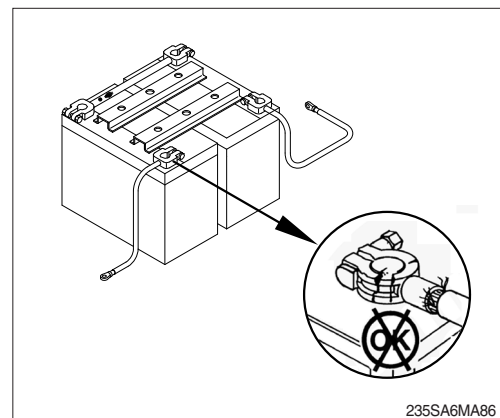
- (1) Shut off the engine and remove the key.
 - (2) Disconnect ground cable from battery by master switch.
 - (3) Before carrying out any electric welding on the machine, the battery cables should be disconnected and the connectors pulled out of the electronic control units (MCU, ECM, cluster etc).
 - (4) Connect the earth (ground) lead of the welding equipment as close to the welding point as possible.
- ※ Remove all paint to ensure a solid ground is achieved.
 - ※ Do not weld or use cutting torch on pipes or tubes that contain flammable fluids. Clean them thoroughly with nonflammable solvent before welding or cutting on them.
- ▲ Do not attempt to weld before carrying out the above.
If not, it will cause serious damage to electric system.



5) BATTERY CABLE AND CONNECTIONS

▲ Batteries can emit explosive gases. To reduce the possibility of personal injury, always ventilate the compartment before servicing the batteries.

- (1) Remove and inspect the battery cables and connections for cracks or corrosion.
- (2) Replace broken terminals, connectors, or cables.
- (3) If the connections are corroded, use a battery brush or wire brush to clean the connections.
- (4) Make sure all debris are removed from the connecting surfaces.
- (5) Install the cables and tighten the battery connections.
- (6) Coat the terminals with grease to prevent corrosion.



5. LOADING AND UNLOADING BY CRANE

▲ The wrong hoisting method or installation of lifting device can cause serious injury, death, or damage to the machine.

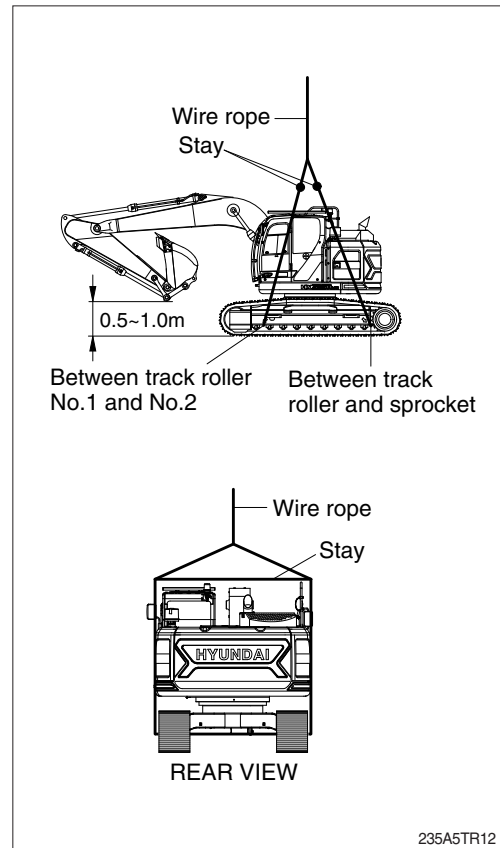
- 1) Check the weight, length, width and height of the machine referring to chapter 7, Specification when you are going to hoist the machine.
- 2) Use approved lifting device and ensure distance between lifting device and machine to avoid contact between the two.
- 3) Place rubber plates at lifting points to avoid any damage to the machine.
- 4) Place crane in the proper place.
- 5) Install approved lifting device as shown in the illustration.

▲ Ensure that lifting device is free from any damage and is approved for the weight being lifted and supported.

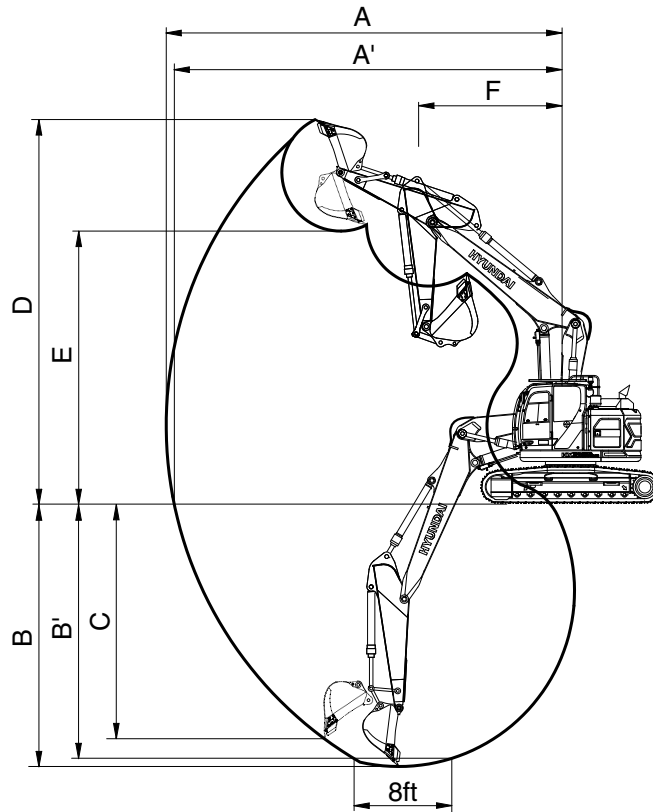
▲ Place the safety knob to LOCK position to prevent the machine from moving when hoisting the machine.

▲ Do not load abruptly.

▲ Keep area clear of any and all personnel.



2) HX235A LCR 2-PIECE BOOM



235A2SP07

Description	m (ft-in)	Boom	5.87 (19' 3")		
		Arm	2.90 (9' 6")	2.00 (6' 7")	2.40 (7' 10")
Max digging reach	mm (ft-in)	A	10215 (33' 6")	9310 (30' 7")	9705 (31' 10")
Max digging reach on ground		A'	10055 (33' 0")	9135 (30' 0")	9535 (31' 3")
Max digging depth		B	6410 (21' 0")	5490 (18' 0")	5895 (19' 4")
Max digging depth (8 ft level)		B'	6305 (20' 8")	5370 (17' 7")	5780 (19' 0")
Max vertical wall digging depth		C	4160 (13' 8")	3305 (10' 10")	3585 (11' 9")
Max digging height		D	11430 (37' 6")	10855 (35' 7")	11225 (36' 10")
Max dumping height		E	8500 (27' 11")	7930 (26' 0")	8300 (27' 3")
Min swing radius		F	2610 (8' 7")	2425 (7' 11")	2330 (7' 8")
Bucket digging force	kN		130.4 [141.6]	130.4 [141.6]	130.4 [141.6]
	kgf	SAE	13300 [14440]	13300 [14440]	13300 [14440]
	lbf		29320 [31830]	29320 [31830]	29320 [31830]
	kN	ISO	152.3 [165.3]	152.3 [165.3]	152.3 [165.3]
	kgf		15530 [16860]	15530 [16860]	15530 [16860]
	lbf		34240 [37170]	34240 [37170]	34240 [37170]
Arm digging force	kN		102.8 [111.6]	144.3 [156.6]	119.3 [129.4]
	kgf	SAE	10480 [11380]	14710 [15970]	12160 [13200]
	lbf		23100 [25090]	32430 [35210]	26810 [29100]
	kN	ISO	106.9 [116.0]	152.0 [165.0]	124.7 [135.4]
	kgf		10900 [11830]	15500 [16830]	12720 [13810]
	lbf		24030 [26080]	34170 [37100]	28040 [30450]

[] : Power boost

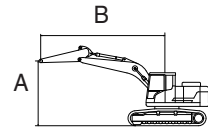
Model	Type	Boom	Arm	Counterweight	Shoe	Wheel	Dozer		Outrigger	
		Length [mm]	Length [mm]	weight [kg]	width [mm]	width [mm]	Front	Rear	Front	Rear
HX235A LCR	MONO BOOM	5700	2400	5300	600	-	Down	-	-	-



: Rating over-front



: Rating over-side or 360 degree



Lift-point height (A)	Lift-point radius (B)								At max. reach			
	3.0 m (9.8 ft)		4.5 m (14.8 ft)		6.0 m (19.7 ft)		7.5 m (24.6 ft)		Capacity		Reach	
											m (ft)	
9.0 m (29.5 ft)	kg *7630	kg *7630								*7480	*7480	3.32 (10.9)
	lb *16820	lb *16820								*16490	*16490	
7.5 m (24.6 ft)	kg		*5900	*5900						*5810	*5810	5.55 (18.2)
	lb		*13010	*13010						*12810	*12810	
6.0 m (19.7 ft)	kg		*6100	*6100	*5500	*5500				*5390	4620	6.78 (22.2)
	lb		*13450	*13450	*12130	*12130				*11880	10190	
4.5 m (14.8 ft)	kg	*9960	*9960	*7070	*7070	*5830	5520	*5230	3880	*5230	3870	7.51 (24.7)
	lb	*21960	*21960	*15590	*15590	*12850	12170	*11530	8550	*11530	8530	
3.0 m (9.8 ft)	kg		*8400	8060	*6380	5290	*5350	3810	*5160	3510	7.90 (25.9)	
	lb		*18520	17770	*14070	11660	*11790	8400	*11380	7740		
1.5 m (4.9 ft)	kg		*9320	7600	*6830	5070	*5480	3710	*5130	3390	7.99 (26.2)	
	lb		*20550	16760	*15060	11180	*12080	8180	*11310	7470		
0.0 m (0.0 ft)	kg		*9380	7400	*6950	4930	*5390	3650	*5100	3470	7.78 (25.5)	
	lb		*20680	16310	*15320	10870	*11880	8050	*11240	7650		
-1.5 m (-4.9 ft)	kg	*9680	*9680	*8690	7370	*6540	4890		*5000	3810	7.27 (23.8)	
	lb	*21340	*21340	*19160	16250	*14420	10780		*11020	8400		
-3.0 m (-9.8 ft)	kg	*9230	*9230	*7230	*7230	*5280	4980		*4690	4620	6.37 (20.9)	
	lb	*20350	*20350	*15940	*15940	*11640	10980		*10340	10190		
-4.5 m (-14.8 ft)	kg		*5130	*5130					*4560	*4560	4.81 (15.8)	
	lb		*11310	*11310					*10050	*10050		

Note 1. Lifting capacity are based on ISO 10567.

2. Lifting capacity of the HX series does not exceed 75% of tipping load with the machine on firm level ground or 87% of full hydraulic capacity.

3. The Lift-point is bucket pivot mounting pin on the arm (without bucket mass).

4. *Indicates load limited by hydraulic capacity.

※ Lifting capacities are based upon a standard machine conditions.

Lifting capacities will vary with different work tools ground conditions and attachments.

The difference between the weight of a work tool attachment must be subtracted.

Consult with your local HD Hyundai Construction Equipment dealer regarding the lifting capacities for specific work tools and attachments.

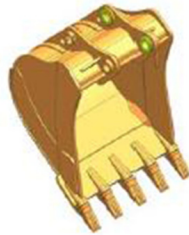
▲ Failure to comply to the rated load can cause serious injury death or property damage. Make adjustments to the rated load as necessary for non-standard configurations.

6. BUCKET SELECTION GUIDE

1) BUCKET SELECTION



General bucket



Heavy duty
(without side cutter)



Heavy duty
(with side cutter)

Type	Capacity		Width		Weight kg (lb)	Tooth EA	MONO			2-PIECE		
	SAE Heaped	CECE heaped	Without side cutter	With side cutter			Recommendation					
							5.70 m (18' 8") Boom			5.87 m (19' 3") Boom		
							mm (in)	mm (in)	mm (in)	2.0 m (6' 7") Arm	2.4 m (7' 10") Arm	2.9 m (9' 6") Arm
General bucket	0.81 (1.06)	0.72 (0.94)	975 (38.4")	1125 (44.3")	700 (1540)	5	●	●	●	●	●	●
	0.86 (1.12)	0.76 (0.99)	1030 (40.6")	1170 (46.1")	710 (1570)	5	●	●	●	●	●	●
	0.92 (1.20)	0.81 (1.06)	1085 (42.7")	1230 (48.4")	750 (1650)	5	●	●	●	●	●	○
	1.05 (1.37)	0.96 (1.26)	1220 (48.0")	1370 (53.9")	790 (1740)	5	●	○	○	●	○	■
	1.28 (1.67)	1.11 (1.45)	1455 (57.3")	1605 (63.2")	885 (1950)	6	○	■	▲	■	■	▲
Heavy duty	0.92 (1.20)	0.83 (1.09)	1050 (41.3")	1095 (43.1")	865 (1910)	5	●	●	○	●	●	○
	1.08 (1.41)	0.97 (1.27)	1200 (47.2")	1245 (49.0")	935 (2060)	5	●	○	■	○	○	■

●	Applicable for materials with density of 2100 kg/m ³ (3500 lb/yd ³) or less
○	Applicable for materials with density of 1800 kg/m ³ (3000 lb/yd ³) or less
■	Applicable for materials with density of 1500 kg/m ³ (2500 lb/yd ³) or less
▲	Applicable for materials with density of 1200 kg/m ³ (2000 lb/yd ³) or less
X	Not recommended

※ These recommendations are for general conditions and average use.

Work tools and ground conditions have effects on machine performance.

Select an optimum combination according to the working conditions and the type of work that is being done.

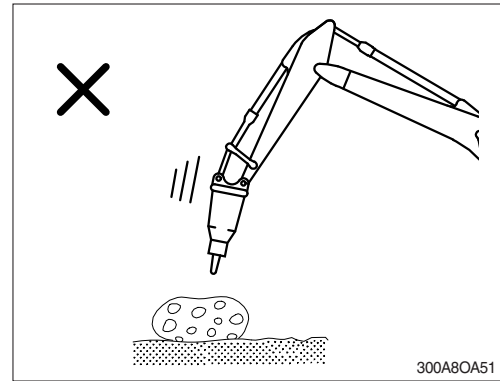
Consult with your HD Hyundai Construction Equipment dealer for information on selecting the correct boom–arm–bucket combination.

4. PRECAUTIONS WHILE OPERATING THE BREAKER

DO NOT BREAK ROCK WHILE LOWERING

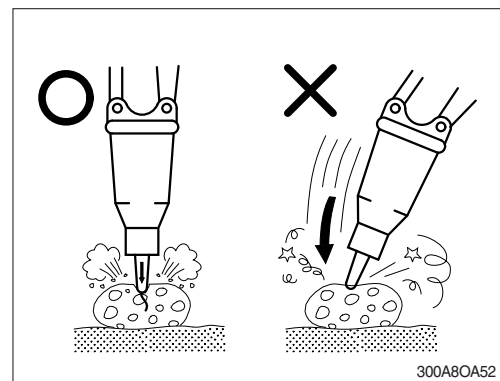
As the breaker is heavy in comparison with bucket, it must be operated slowly.

If breaker is rapidly pushed down, working device may be damaged.



DIRECTION OF THRUST

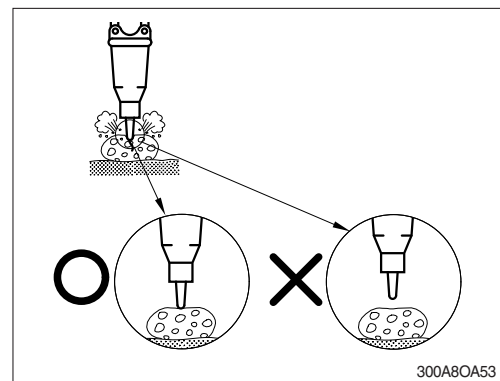
Apply a thrust in a straight line with the tool. Place the tool on a rock with the hammering side as vertically as possible. If the hammering side is oblique, the tool may slip during hammering, causing the chisel and piston to break, or seized. When breaking, select the point of a rock on which hammering can perform stably and fully stabilize the chisel to the hammer.



PROPER THRUST

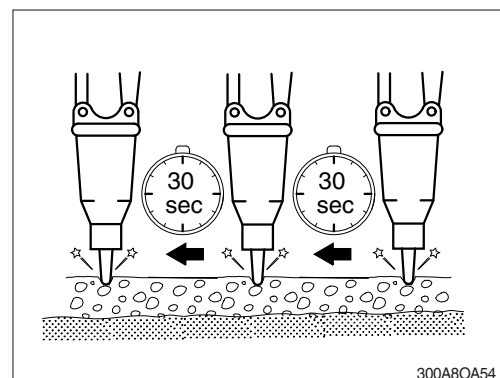
To break effectively, a proper thrust force must be applied to the breaker. If thrust is too low, impact energy of the piston may not be sufficient to break rocks.

Breaking force is transferred to the breaker body, arm and boom resulting in damage of those parts.



Move the impact point from the edge to the interior. Never try to break off a too large block, if the object has not broken within 30 seconds. The object should be broken up piece by piece in small blocks. Large distance steps will not improve working results.

Operating the breaker longer than 30 seconds may cause damage to the breaker.



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