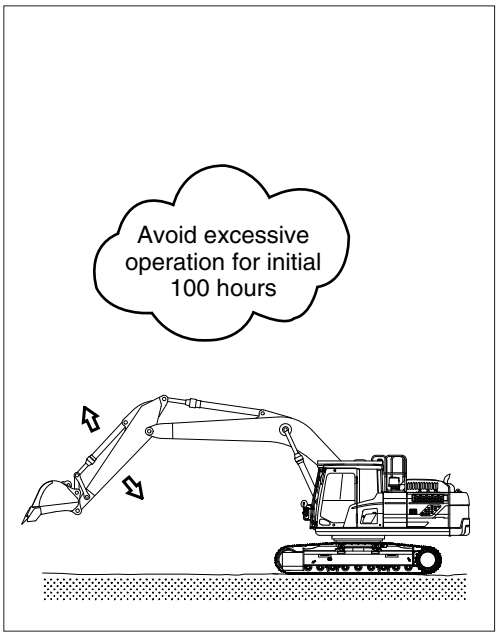
1. INSTRUCTION FOR NEW MACHINE

1) It takes about 100 operation hours to enhance its designed performance.

2) Operate according to the 3 steps below and avoid excessive operation for the initial hours.

Service meter	Load
Until 10 hours	About 60 %
Until 100 hours	About 80 %
After 100 hours	100 %

※ **Excessive operation may deteriorate the performance of the machine and shorten the life of the machine.**



260A4OP01

3) Be careful during the initial 100 hours operation

(1) Check daily for the level and leakage of fluids.

(2) Check greasing points on a regular basis and grease all points as needed. Refer to greasing chart located on the machine.

(3) Check over all hose connections, bolts, nuts and screws, on a daily basis.

(4) Warm up the machine fully before operating.

(5) Check all gauges occasionally during the operation.

(6) Check if the machine is operating normally during operation of the machine.

4) After the initial 250 hours of operation replace the following:

Checking items	Hours
Engine oil	250
Engine oil filter	
Fuel filter element	
Fuel pre-filter element	
Hydraulic oil return filter	
Drain filter	
Pilot line filter element	
Swing reduction gear oil	
Travel reduction gear oil	

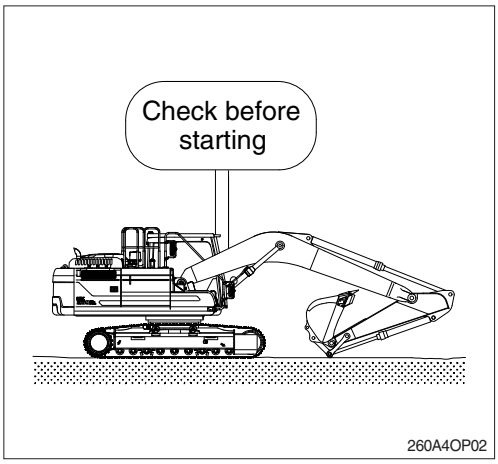
2. CHECK BEFORE STARTING THE ENGINE

1) Look around and under the machine to check:
   - · Check for loose nuts, bolts or wiring
   - · Collection of dirt
   - · Collection of dust at places which reach high temperature
   - · Leakage of oil, fuel or coolant
   - · Condition of the work equipment and hydraulic system.

※ **Refer to section, Maintenance check list in chapter 4.**

2) Adjust operator seat to best fit the operator.

3) Adjust all mirrors to best fit the operator.



260A4OP02

3. STARTING AND STOPPING THE ENGINE

1) CHECK INDICATOR LIGHTS

(1) Confirm all operating levers are in the neutral position.

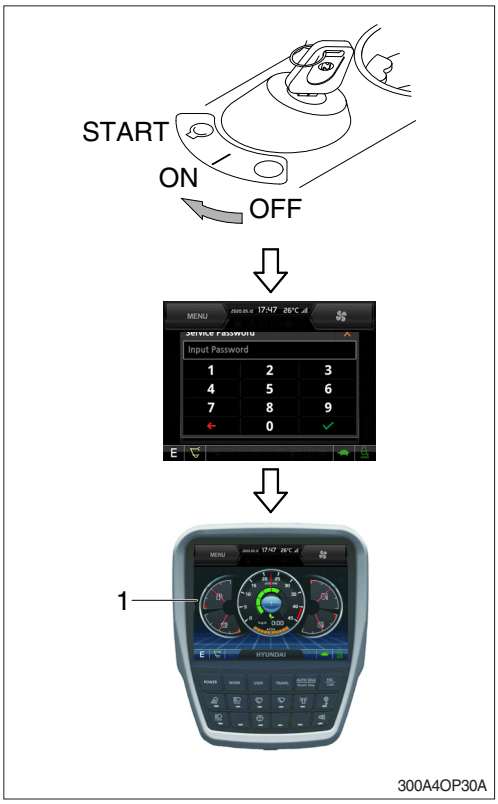
(2) Turn the starting switch to the ON position. Buzzer will sound for 4 seconds with HYUNDAI logo on cluster.

※ **If the ESL mode is set to enable mode, enter the password to start engine.**

※ **If the incorrect password in entered a total of 5 times, you must wait 30 minutes before trying again.**

※ **Refer to page 3-28 for ESL mode.**

(3) After initialization of cluster, the operating screen is displayed on LCD (1).
Also, self-diagnostic function is carried out.



2) STARTING ENGINE IN NORMAL

⚠ **Check if any obstacles or people are in the working area. Sound the horn to warn anyone in the vicinity that you are starting the engine.**

(1) Turn the multimodal dial to low idle position.

(2) Turn the starting switch to START position to start the engine.

△ **Do not hold the starting switch in the START position for longer than 20 seconds. The start system may be seriously damaged.**

※ **If the engine does not start, allow the stater to cool for about 2 minutes before re-attempting to start the engine again.**

(3) Release the starting switch instantly after the engine starts to avoid possible damage to the starting motor.

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.

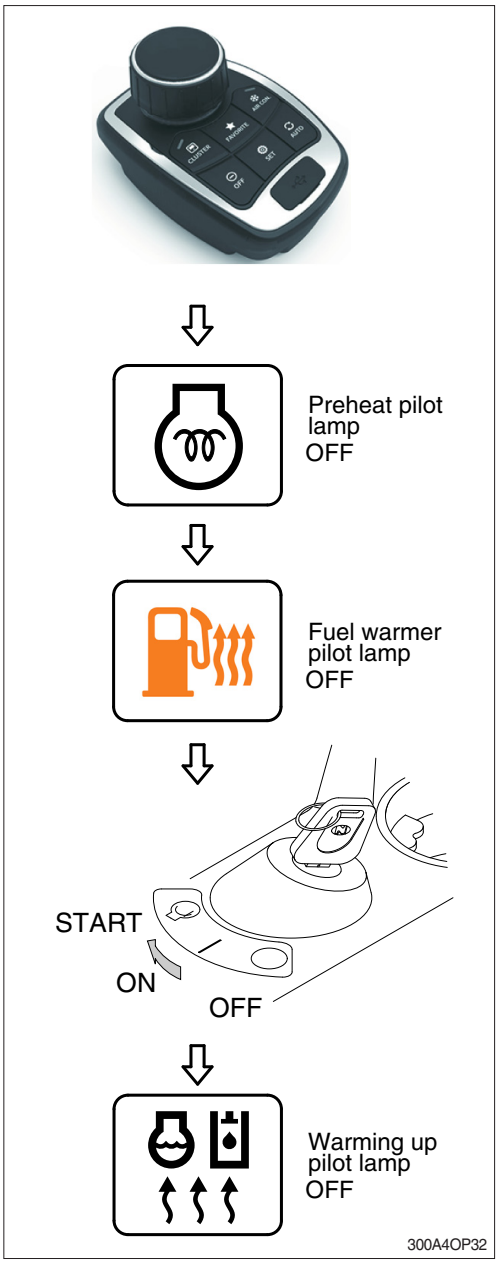
(4) Wait for five minutes to warm up the engine after the preheating pilot lamp truns off, and then turn the starting switch to the START position to start the engine.

※ **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 ℃ (86 ℉) the warming up process automatically starts.

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



4) INSPECTION AFTER ENGINE START

Inspect and confirm the following after engine starts.

(1) Is the oil level gauge of hydraulic tank in the normal operation range?

(2) Is there any leakage of oil or water?

(3) Are any warning lamps ON? (1-13)?
The seat belt reminder warning lamp (16) pops up and the buzzer sounds until seat belt is fastened.

(4) Are indicators for coolant temperature gauge (14) and hydraulic temperature gauge (15) in the normal operating range?

(5) Is the engine sound and the color of exhaust gas normal?

(6) Are the sound and vibration normal?

△ **Do not increase engine speed quickly after starting, it can damage engine or turbocharger.**

※ **If there are problems in the cluster, stop the engine immediately and correct problems as required.**

5) WARMING-UP OPERATION

※ **The most suitable temperature for the hydraulic oil is about 50˚C (122˚F).**

△ **If the hydraulic oil temperature drops below 25˚C (77˚F), sudden operation can damage the hydraulic system. So temperature must be raised to at least 25˚C (77˚F) before starting work.**

(1) Run the engine at low idle speed for 5 minutes.

(2) Speed up the engine by multimodal dial and run the engine at mid-range speed.

(3) Operate bucket lever for 5 minutes.

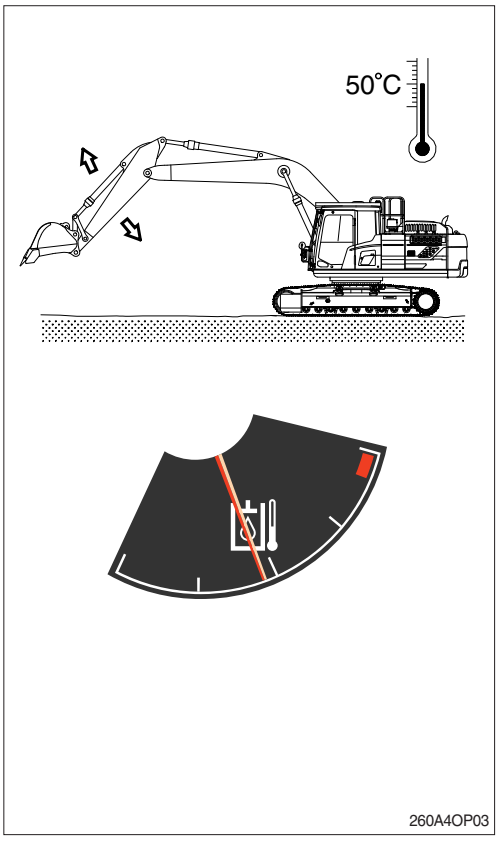
※ **Do not operate anything except bucket lever.**

(4) Run the engine at high speed and operate the bucket lever and arm lever for 5-10 minutes.

※ **Operate only the bucket lever and arm lever.**

(5) Finally this warming-up process will be completed by operating all cylinders several times along with the operation of swing and traveling.

※ **Increase the time for warming-up during winter.**



6) TO STOP THE ENGINE

※ **If the engine is abruptly stopped before it has cooled down, engine life may be greatly shortened. Consequently, do not abruptly stop the engine apart from an emergency.**

※ **In particular, if the engine has overheated, do not abruptly stop it but run it at low speed to allow it to cool gradually, then stop the engine.**

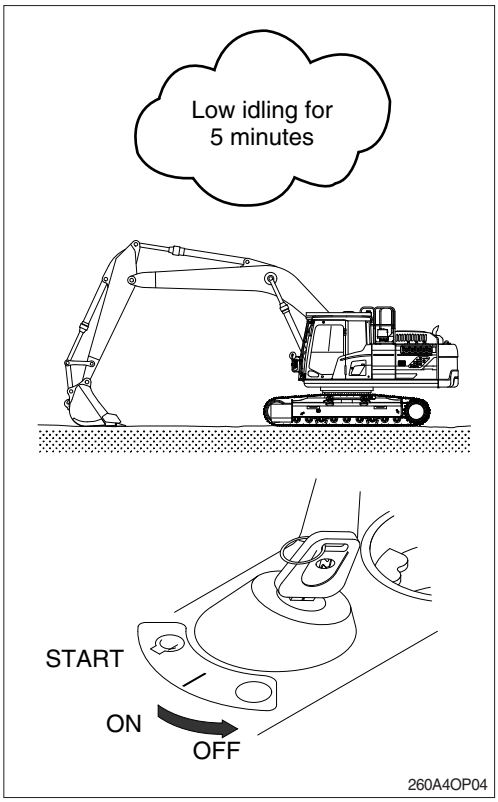
(1) Lower the bucket to the ground then put all the levers in the neutral position.

(2) Run the engine at low idle for about 5 minutes.

(3) Return the key of starting switch to the OFF position.

(4) Remove the key to prevent other people using the machine and the safety knob.

(5) Lock the cab door.



4. MODE SELECTION SYSTEM

1) STRUCTURE OF MECHATRONICS SYSTEM

CAPO, Computer Aided Power Optimization system, is the name of mode selection system developed by HD Hyundai Construction Equipment.

※ Please refer to chapter 3, cluster for below modes setting.

(1) Power mode

Power mode designed for various work loads supports high performance and reduces fuel consumption.

- · P mode : Heavy duty power
- · S mode : Standard power
- · E mode : Economy power

(2) Work mode

One of the two work modes can be selected for the optimal work condition of the machine operation.

① General work mode (bucket)

When key switch is turned ON, this mode is selected automatically.

② Work tool mode (breaker, crusher)

It controls the pump flow and system pressure for the optimal operation of breaker or crusher.

③ Lifiting mode

Lifting mode is mainly used for precise positioning work with workers. Lifting mode helps fine manipulation.

※ The engine rpm reduces when entering lift mode.

※ When lifting mode is selected, the overload switch automatically turns on.

※ When lifting mode is selected, the auto power boost function is always on.

△ An operation shock may occur due to sudden change in pump flow rate between mode conversions.

△ The work mode conversion is restricted during the machine operation.

⚠ The sudden movement of the machine not only damages surrounding structures, but can also cause human casualties.

300A4OP35A

1	Power mode switch
2	Work mode switch
3	User mode switch
4	Travel mode switch
5	Auto idle mode switch
6	LCD

(3) User mode

① User mode is useful for setting the user preperable power quickly.
(engine speed, power shift and idle speed)

② There are two methods for use of user mode.

a. In operation screen

User mode switch is used to memorize the current machine operating status and activate the memorized user mode.
Refer to page 3-17.

b. In menu

Engine high idle rpm, auto idle rpm and pump torque (power shift) can be modulated and memorized separately in menu status.

- Each memory mode has a initial setting which is mid-range of max engine speed, power shift and auto idle speed.
- High idle rpm, auto idle rpm and EPPR pressure can be adjusted and memorized in the U-mode.

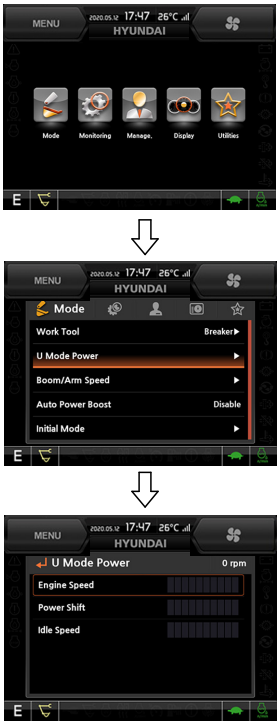
※ Refer to page 3-21 for setting the user mode (available on U mode only).

※ LCD segment vs parameter setting

Step (▮)	Engine speed (rpm)	Idle speed (rpm)	Power shift
1	1300	750	10%
2	1400	800	20%
3	1500	850	30%
4	1600	900	40%
5	1700	950	50%
6	1800	1000	60%
7	1850	1050	70%
8	1900	1100 (auto decel)	80%
9	1950	1150	85%
10	2000	1200	90%

※One touch decel & low idle : 1000 rpm

300A4OP36A



300A4OP37B

(4) Travel mode

: Low speed traveling.

: High speed traveling.

(5) Auto idle mode

Pilot lamp ON : Auto idle function is activated.

Pilot lamp OFF : Auto idle function is canceled.

(6) Monitoring system

Information of machine performance as monitored by the MCU can be displayed on the LCD. Refer to page 3-25.

(7) Self diagnostic system

① **MCU** (Machine Control Unit)

The MCU diagnoses machine status and problems and displays fault code in the cluster (fault code detected by MCU is composed of HCESPN and FMI).

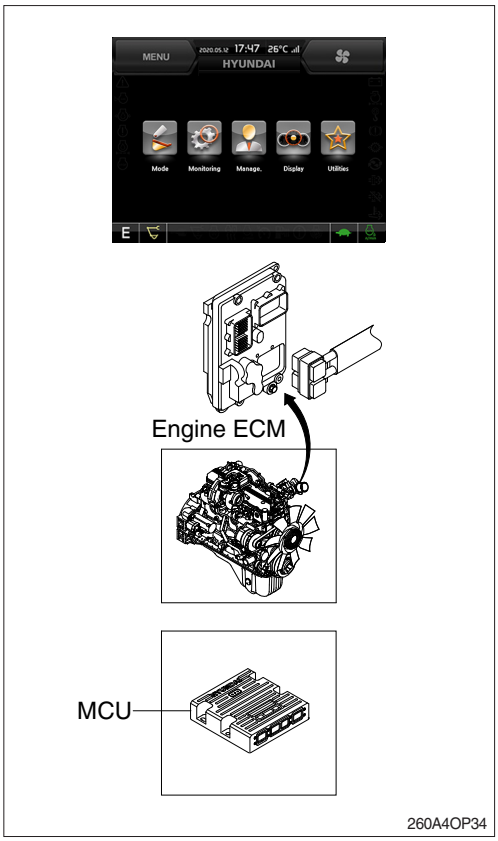
② **Engine ECM** (Electronic Control Module)

If the engine or relevant system has problem, engine ECM detects and displays on the LCD as fault codes (this code is composed of SPN and FMI).

※ **Refer to page 3-24 for LCD display.**

(8) Anti-restart system

The system protects the starter from inadvertent restarting after the engine is already operational.



260A4OP34

2) HOW TO OPERATE MODE SELECTION SYSTEM

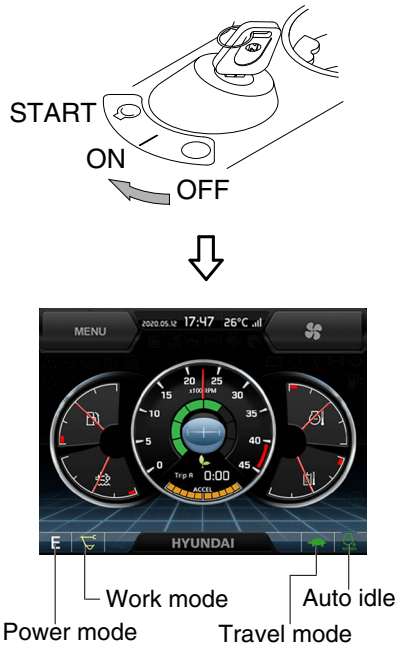
(1) When start key switch is turned ON

① When start key switch is turned on, the cluster turns on and buzzer sounds for 4 seconds. Information including gauges and engine speed will be displayed on the LCD.

② Initial default mode settings are displayed in the cluster.

Mode		Status
Power mode	E	ON
Work mode		ON
Travel mode	Low ( )	ON
Auto idle		ON

③ Self-diagnostic function can be carried out from this point.



300A4OP38A

(2) After engine start

① When the engine is started, rpm display indicates low idle, 1000 rpm.

② If coolant temperature is below 30˚C, the warming up pilot lamp lights up. After 4 seconds the engine speed increases to 1100 rpm automatically to warm up the machine.

· After 2-3 minutes, you can select any mode depending on job requirement.

300A4OP39A

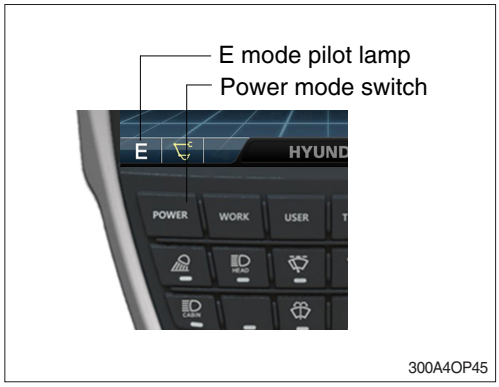
3) SELECTION OF POWER MODE

(1) E mode

The multimodal dial is set to 10 and the auto idle mode is canceled.

Engine rpm	Effect
1500	Variable power control in proportion to lever stroke (improvement in fuel efficiency) ※ Same power as S mode in full lever operation.

※ **When the multimodal dial is located below 9 the engine speed decreases about 50~100 rpm per dial set.**



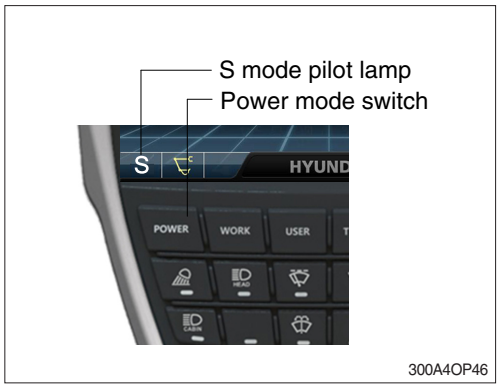
300A4OP45

(2) S mode

The multimodal dial is set to 10 and the auto idle mode is canceled.

Engine rpm	Effect
1600	Standard power

※ **When the multimodal dial is located below 9 the engine speed decreases about 50~100 rpm per dial set.**



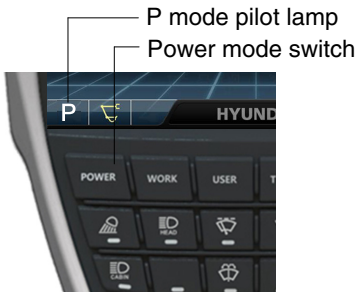
300A4OP46

(3) P mode

The multimodal dial is set to 10 and the auto idle mode is canceled.

Engine rpm	Effect
1700	Approximately 120 % of power and speed available than S mode.

※ **When the multimodal dial is located below 9 the engine speed decreases about 50~100 rpm per dial set.**



300A4OP47

5. OPERATION OF THE WORKING DEVICE

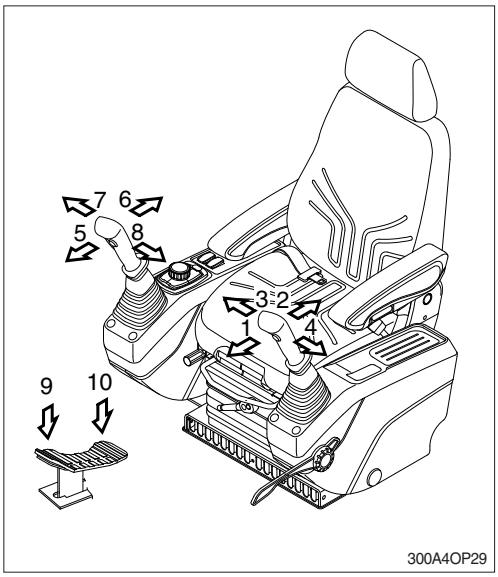
※ Confirm the operation of control lever and working device.

1) Left control lever controls arm and swing.

2) Right control lever controls boom and bucket.

3) When you release the control lever, control lever returns to neutral position automatically.

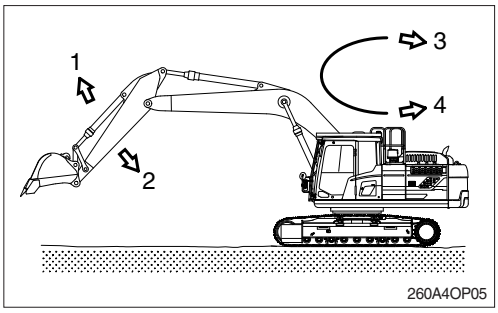
※ When operating swing, consider the swing distance by inertia.



300A4OP29

※ Left control lever

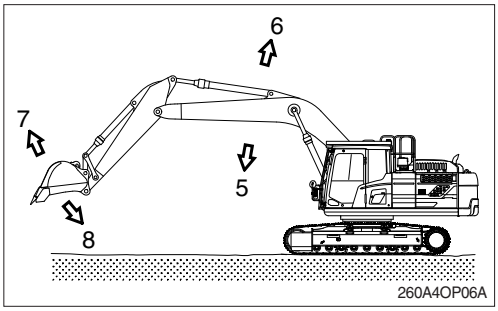
1 Arm roll-out
2 Arm roll-in
3 Swing right
4 Swing left



260A4OP05

※ Right control lever

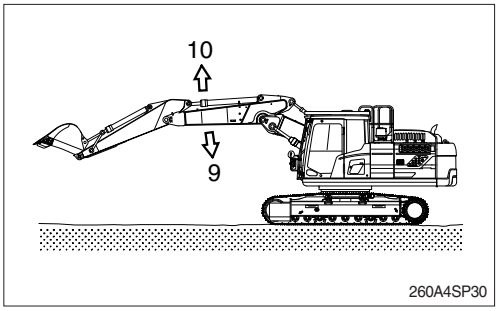
5 Boom (or 1st boom) lower
6 Boom (or 1st boom) raise
7 Bucket roll-out
8 Bucket roll-in



260A4OP06A

※ Single pedal (option)

9 2nd boom lower
10 2nd boom raise



260A4SP30

6. TRAVELING OF THE MACHINE

1) BASIC OPERATION

(1) Traveling position

The trave motor is in the rear and the working device is forward.

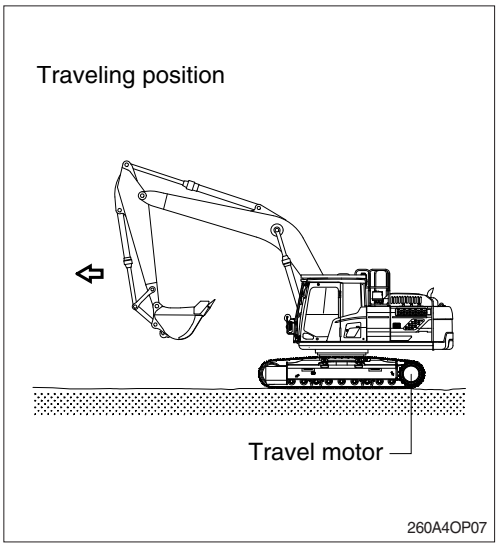
⚠ Be careful as the traveling direction will be the opposite when the machine is rotated 180˚.

(2) Traveling operation

It is possible to travel by either travel lever or pedal.

※ Do not travel continuously for a long time.

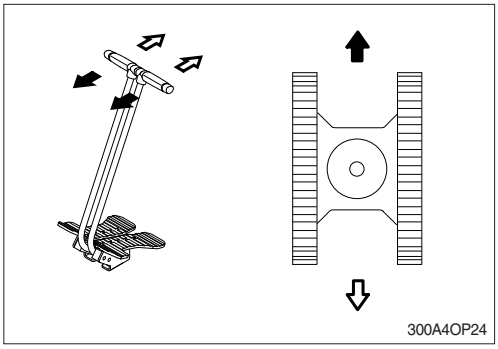
※ Reduce the engine speed and travel at a low speed when traveling on uneven ground.



(3) Forward and backward traveling

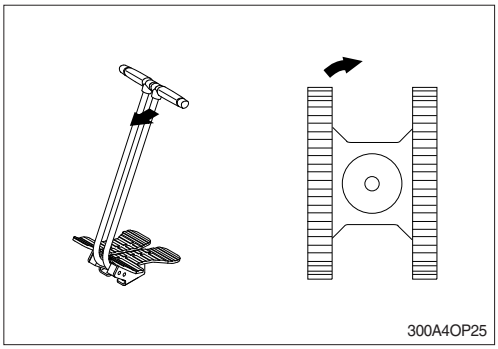
When the left and right travel levers or pedals are pushed at the same time, the machine will travel forward or backward depending on your selection.

※ The speed can be controlled by the operation stroke of lever or pedal and change of direction will be controlled by difference of the left and right stroke.



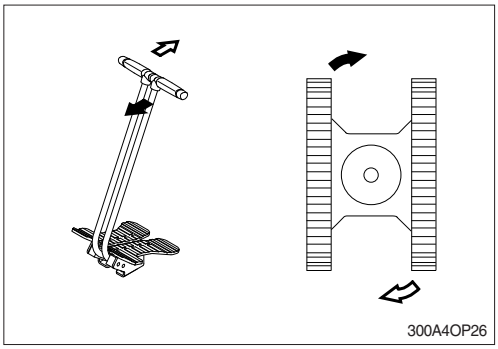
(4) Pivot turning

Operating only one side of lever or pedal makes the change of direction possible by moving only one track.



(5) Counter rotation

It is to rotate the undercarriage (only) while not advancing the machine forward or backward. This is accomplished by moving the travel levers and or pedals in the opposite direction of each other.



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 ㎝ (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.

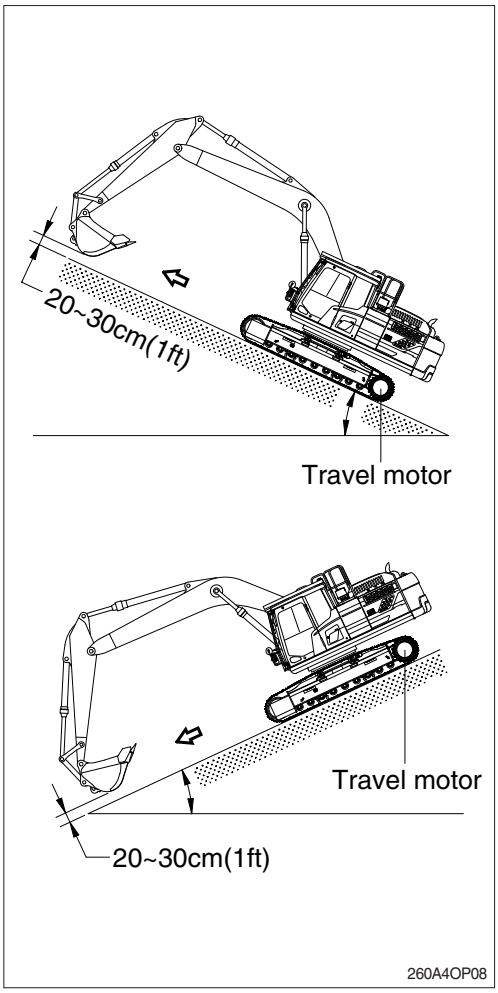
(4) When parking on a slope, use the bucket as a brake.

※ **Machine cannot travel effectively on a slope when the oil temperature is low. Do the warming-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).**



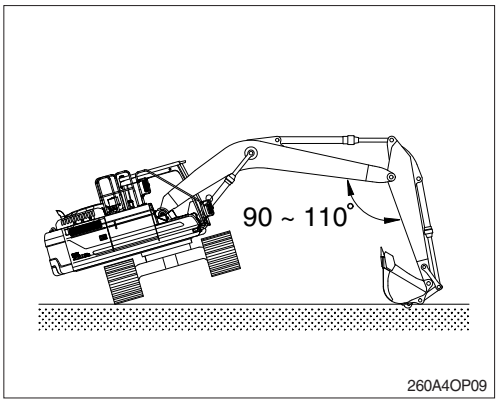
3) TRAVELING ON SOFT GROUND

※ **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.



4) TOWING THE MACHINE

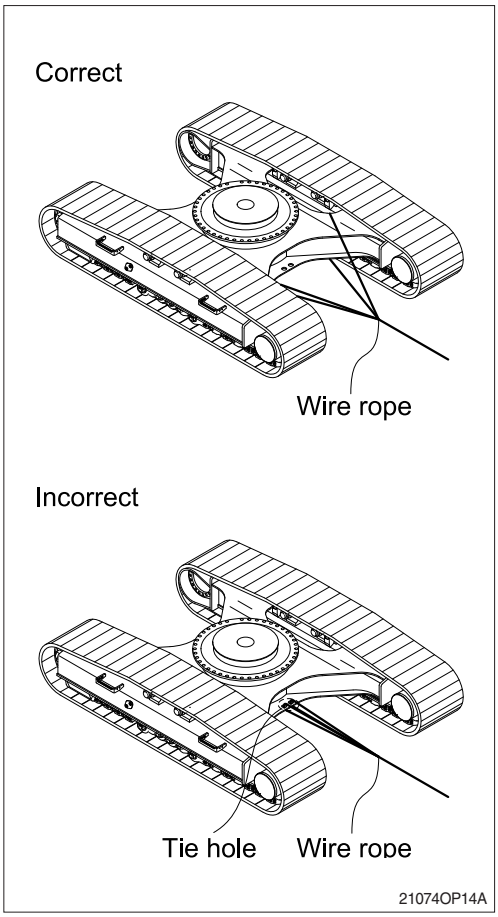
Tow the machine as follows when it can not move on its own.

(1) Tow the machine after hooking the wire rope to the frame as shown in the upper right illustration.

(2) Hook the wire rope to the frame and put a support under each part of wire rope to prevent damage.

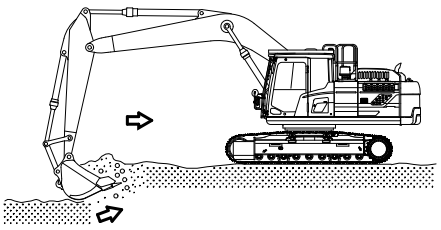
※ **Never tow the machine using only the tie hole, because this may break.**

⚠ **Make sure no personnel are standing close to the tow rope as serious injury or death could occur if it breaks.**

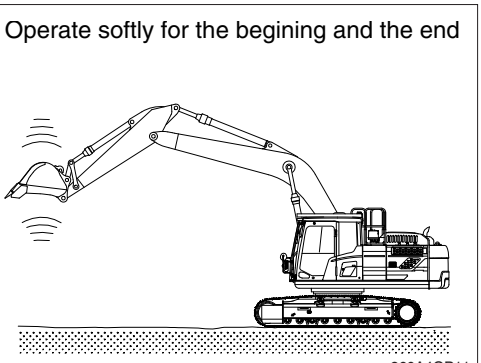


7. EFFICIENT WORKING METHOD

1) Do the digging work by arm.
   Use the pulling force of arm for digging and use together with the digging force of the bucket if necessary.

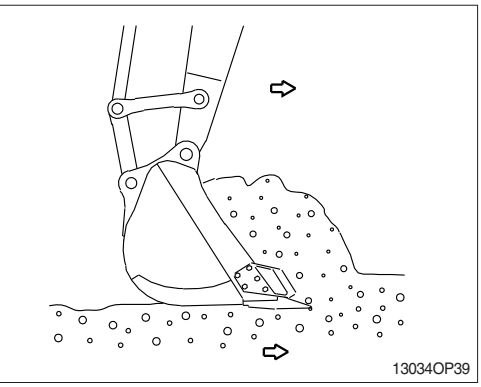

260A4OP10

2) When lowering and raising the boom operate softly for the beginning and the end.
   In particularly, sudden stops while lowering the boom may cause damage to the machine.

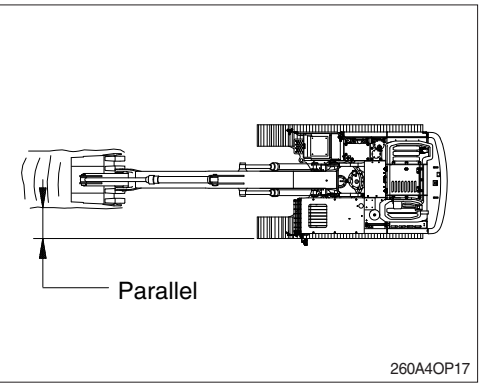


260A4OP11

3) The digging resistance and wearing of tooth can be reduced by putting the end of bucket tooth to the digging direction.

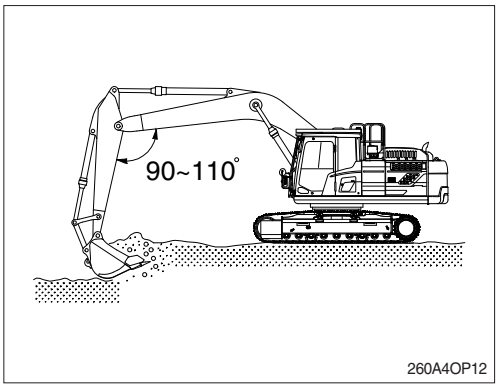

13034OP39

4) Set the tracks parallel to the line of the ditch to be excavated when digging ditch. Do not swing while digging.

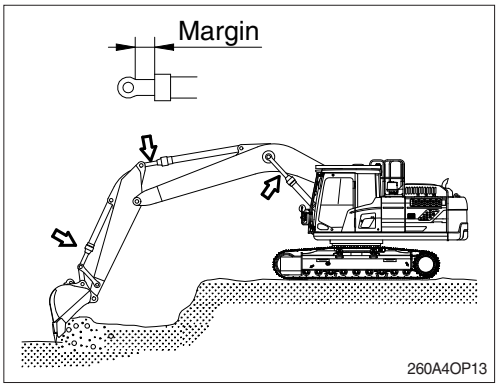


260A4OP17

5) Dig slowly while keeping the angle of boom and arm at a 90-110˚ when maximum digging force is required.

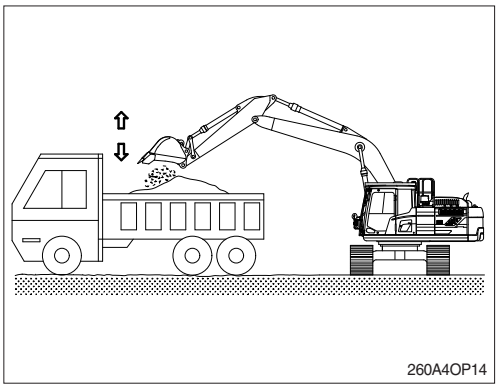


6) Leave a small margin of cylinder stroke to prevent damage of cylinder when working with the machine.

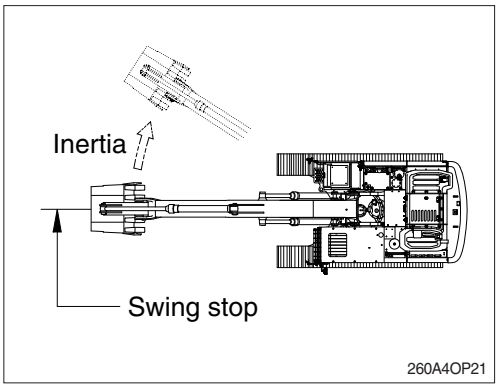


7) Keep the bucket to the dumping position and the arm horizontal when dumping the soil from the bucket.
Operate bucket lever 2 or 3 times when hard to dump.

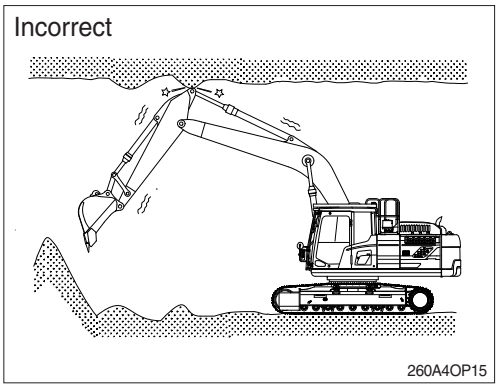
※ **Do not use the impact of bucket tooth when dumping.**



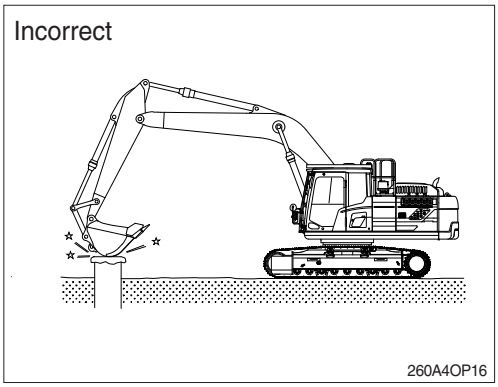
8) Operate stop of swing considering the swing slip distance is created by inertia after neutralizing the swing lever.



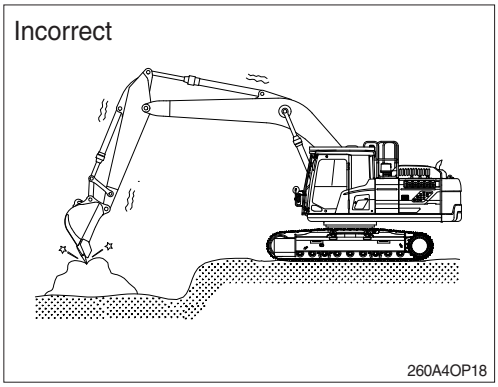
9) If the excavation is in an underground location or in a building, make sure that there is adequate overhead clearance and that there is adequate ventilation.



10) Do not use the dropping force of the work equipment for digging.
The machine can be damaged by the impact.



11) Do not use the bucket to crack hard objects like concrete or rocks.
This may break a tooth or pin, or bend boom.



12) NEVER CARRY OUT EXCESSIVE OPERATIONS

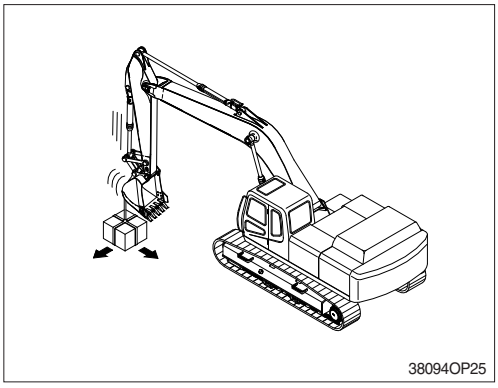
Operation exceeding machine performance may result in accident or failure, causing serious injury or death.

Carry out lifting operation within specified load limit.

Never carry out operations which may damage the machine such as overload or over-impact-load.

Never travel while carrying a load.

If you need an overload warning device installed for object handling procedure, please contact your local HD Hyundai Construction Equipment distributor.



12) BUCKET WITH HOOK

When carrying out lifting work, the special lifting hook is necessary.

The following operations are prohibited.

- Lifting loads with a wire rope fitted around the bucket teeth.
- Lifting loads with the wire rope wrapped directly around the boom or arm.

When performing lifting operation, securely hook the wire rope onto the special lifting hook.

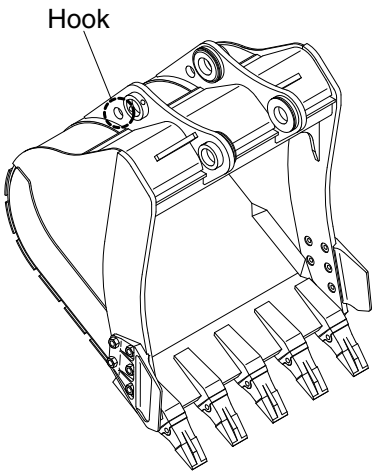
When performing lifting operation, never raise or lower a person.

Due to the possible danger of the load falling or of collision with the load, no persons shall be allowed in the working area.

Before performing lifting operation, designate an operation supervisor.
Always execute operation according to their instructions.

- Execute operating methods and procedures under their direction.
- Select a person responsible for signaling. Operate only on signals given by such person.

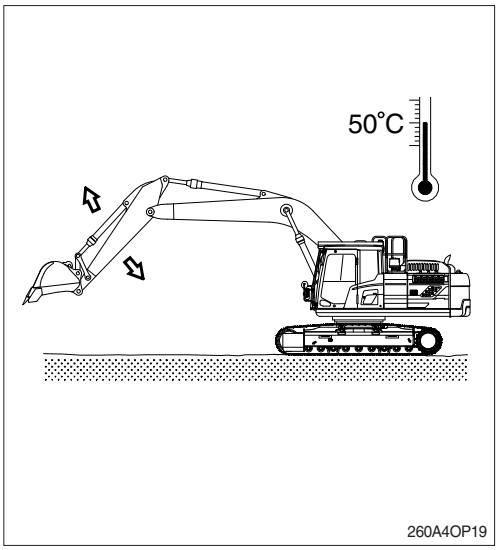
Never leave the operator's seat while lifting a load.



290F4OP42

8. OPERATION IN THE SPECIAL WORK SITES

1) OPERATING THE MACHINE IN A COLD WEATHER



(1) Use proper engine oil and fuel for the weather.

(2) Fill the required amount of antifreeze in the coolant.

(3) Refer to the starting engine in cold weather. Start the engine and extend the warming up operation.

(4) Be sure to open the heater cock when using the heater.

(5) Always keep the battery completely charged.

※ **Discharged batteries will freeze more easily than fully charged.**

(6) Clean the machine and park on wood plates.

2) OPERATION IN SANDY OR DUSTY WORK SITES

(1) Inspect air cleaner element frequently. Clean or replace element more frequently if warning lamp ligts up and buzzer sounds simultaneously, regardless of inspection period.

※ **Replace the inner and outer element after 4 times of cleaning.**

(2) Inspect radiator, oil cooler and condenser frequently, and keep cooling fins clean.

(3) Prevent sand or dust from getting into fuel tank and hydraulic tank during refilling.

(4) Prevent sand or dust from penetrating into hydraulic circuit by tightly closing breather cap of hydraulic oil tank. Replace hydraulic oil filter and air breather element frequently. Also, replace the fuel filter frequently.

(5) Keep all lubricated parts, such as pins and bushings, clean at all times.

(6) If the air conditioner and heater filters clog, the heating or cooling capacity will drop. Clean or replace the filter element more frequently.

(7) Clean electrical components, especially the starting motor and alternator, to avoid accumulation of dust.

3) SEA SHORE OPERATION

(1) Prevent ingress of salt by securely tightening plugs, cocks and bolts of each part.

(2) Wash machine after operation to remove salt residue.
Pay special attention to electrical parts, hydraulic cylinders and track tension cylinder to prevent corrosion.

(3) Inspection and lubrication must be carried out more frequently.
Supply sufficient grease to replace all old grease in bearings which have been submerged in water for a long time.

4) OPERATION IN MUD, WATER OR RAIN WORK SITES

(1) Perform a walk around inspection to check for any loose fittings, obvious damage to the machine or any fluid leakage.

(2) After completing operations, clean mud, rocks or debris from the machine. Inspect for damage, cracked welds or loosened parts.

(3) Perform all daily lubrication and service.

(4) If the operations were in salt water or other corrosive materials, make sure to flush the affected equipment with fresh water.

5) OPERATION IN ROCKY WORK SITES

(1) Check for damage to the undercarriage and for looseness, flaws, wear and damage in bolts and nuts.

(2) Loosen the track tension slightly when working in such areas.

(3) Do not turn the undercarriage directly over the sharp edge rock.

6) OPERATION IN HIGH-ALTITUDE AREA

(1) The high altitude areas may lack cooling performance and the air is thin. Due to a lack of oxygen in the atmosphere a degradation in the performance of the turbocharger may occur.

(2) The performance of the machine can be implemented by using the user mode.

(3) The recommended setting value is below.

Engine Speed (rpm)	Altitude					
	~ 2000 m		2000 ~ 3000 m		3000 ~ 4000 m	
	Power Shift (step)	Idle Speed (rpm)	Power Shift (step)	Idle Speed (rpm)	Power Shift (step)	Idle Speed (rpm)
1300	10	Min. 800	10	Min. 800	10	Min. 800
1400	10		10		10	
1500	10		10		10	
1600	10		10		10	
1700	9		9		9	
1800	8		8		8	
1850	8		8		8	
1900	7		7		7	
1950	7		7		7	
2000	7		7		7	

Engine Speed (rpm)	Altitude			
	4000 ~ 4500 m		4500 m ~	
	Power Shift (step)	Idle Speed (rpm)	Power Shift (step)	Idle Speed (rpm)
1300	10	Min. 800	9	Min. 800
1400	10		9	
1500	10		10	
1600	10		10	
1700	9		9	
1800	8		8	
1850	8		8	
1900	7		7	
1950	7		7	
2000	7		7	

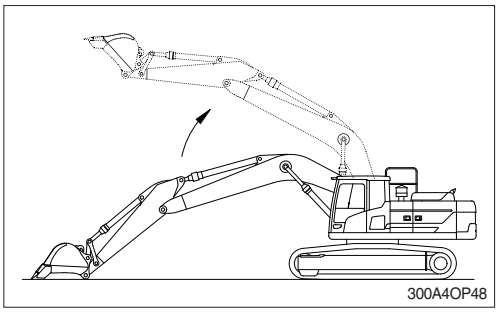
(4) Performance test

① Check how much the engine rpm drops during the boom up operation compared to the basic state.

② If the rpm drop amount is excessive, adjust the power shift value in the user mode by +1 step, and then recheck amount of rpm drop. Repeat the above steps until amount rpm drop is enough.

- Allowable amount : 300±50 rpm

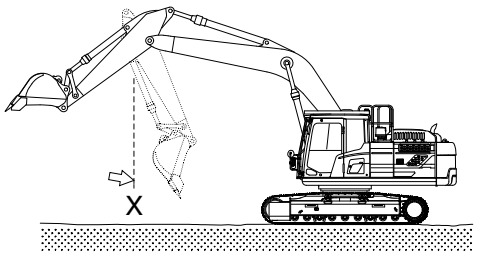
※ **The time it takes to recover the engine rpm should be less than 1 second.**



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 momentary 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.



260A4OP20

10. ATTACHMENT LOWERING (when engine is stopped)

1) On machines equipped with an accumulator, for a short time (within 1 minute) after the engine is stopped, the attachment will lower under its own weight when the attachment control lever is shifted to LOWER. This happens only when the starting switch is ON and the safety knob is the in the UNLOCK position. After the engine is stopped, set the safety knob to the LOCK position.

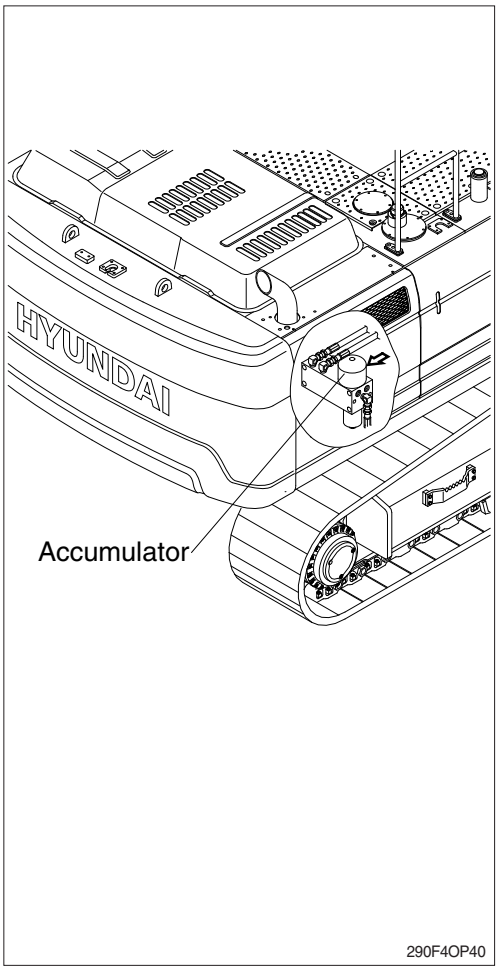
⚠ **Be sure no one is under or near the attachment before lowering the boom. Failure to comply could result in serious injury or death.**

2) 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 hole in the accumulator, expose it to flames 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.



11. STORAGE

When storing the machine for longer than 1 month, follow these procedures:

1) BEFORE STORAGE

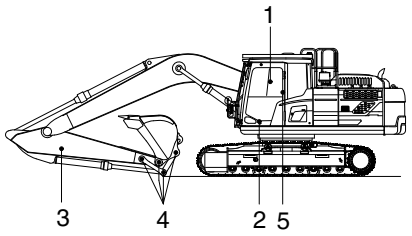
(1) Cleaning the machine

Clean the machine. Check and adjust tracks. Grease each lubrication part.

(2) Lubrication position of each part

Change all oil.

※ **Be particularly careful when you reuse the machine. As oil can be diluted during storage. Apply an anticorrosive lubricant on the exposed part of piston rod of cylinder and in places where the machine rusts easily.**



1 Lubricating manifold at boom (5EA)
2 Boom cylinder pin (2EA)
3 Lubricating manifold at arm (3EA)
4 Arm and bucket (6EA)
5 Boom rear bearing center (1EA)

260A4OP22

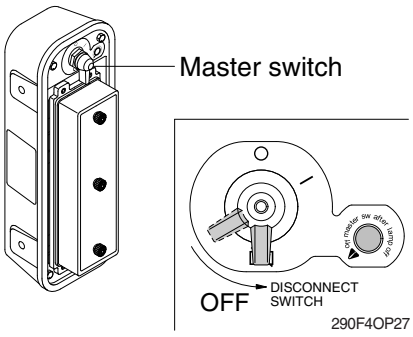
(3) Master switch

Turn OFF the master switch mounted electric box and store the machine.

⚠ **Turn OFF the master switch after the lamp gose OFF.**

⚠ **It may cause severe failure of aftertreatment device. Because aftertreatment system still is working while the lamp lights up.**

(4) Be sure to mix anticorrosive antifreezing solution in the radiator.



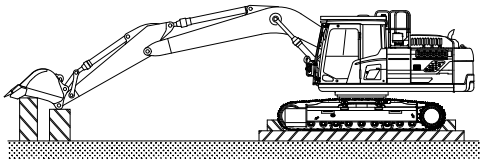
290F4OP27

(5) Prevention of dust and moisture

Keep machine dry. Store the machine setting wood on the ground.

※ **Cover exposed part of piston rod on cylinder.**

※ **Lower the bucket to the ground and set a support under track.**



260A4OP23

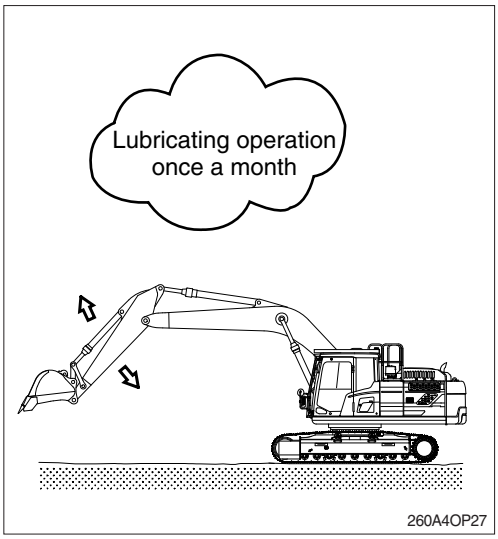
2) DURING STORAGE

Start engine and move the machine and work equipment once a month and apply lubrication to each part.

※ **Check the level of engine oil and coolant and fill if required when starting engine.**

※ **Clean the anticorrosive on the piston rod of cylinder.**

※ **Operate the machine such as traveling, swing and work equipment operation to make sure enough lubrication of all functional components.**



※ BATTERY

① Once a month, start the engine for 15 minutes (or use a charger) to charge the battery.

② Every 2 months, check the battery voltage and keep battery voltage over 25.08V.

③ If the machine stock period is over 6 months, disconnect the battery negative (-) terminal.

3) AFTER STORAGE

Carry out the following procedure when taking out of a long time storage.

(1) Wipe off the anticorrosive lubricant on the hydraulic piston rod.

(2) Completely fill fuel tank, lubricate and add oil.

(3) When storage period is over 6 months.

If the machine stock period is over 6 months, carry out the following procedure.

This procedure is to drain condensation water for the **swing reduction gear** durability.

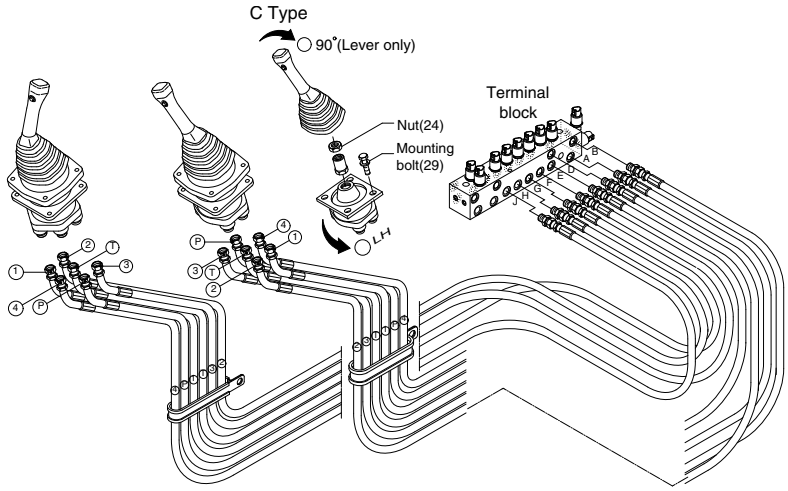
※ **Remove the drain port plug and drain the water until the gear oil comes out and then tighten the drain plug.**

※ **Refer to chapter 4, Maintenance for the drain plug location.**

※ **If the machine is stored without carrying out the monthly lubricating operation, consult your HD Hyundai Construction Equipment dealer for service.**

12. RCV LEVER OPERATING PATTERN

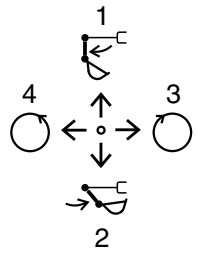
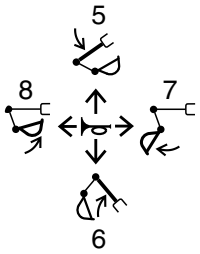
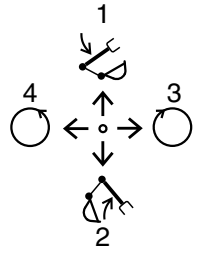
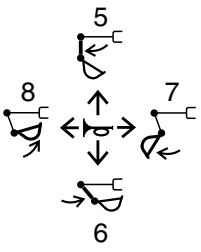
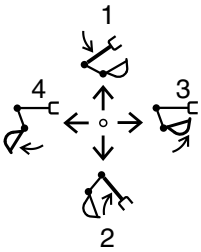
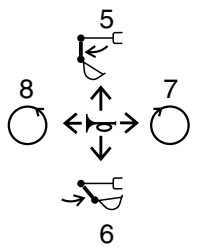
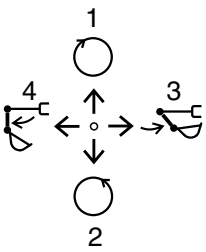
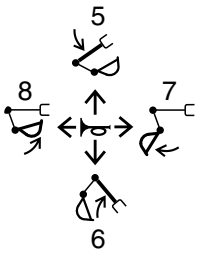
1) PATTERN CHANGE VALVE NOT INSTALLED (standard)



※ Whenever a change is made to the machine control pattern, also exchange the pattern label in the cab to match the new pattern.

※ The hose modification works must be carried out between RCV lever and terminal block (Not between terminal block and MCV).

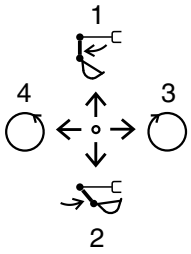
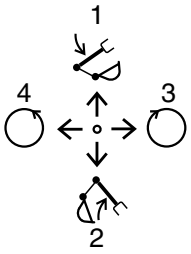
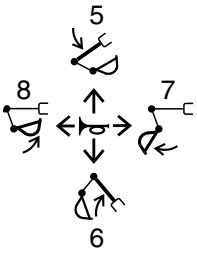
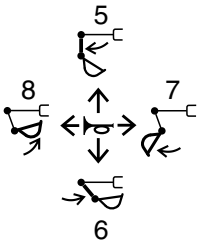
260A4OP41

Pattern	Operation		Control function		Hose connection (port)		
	Left RCV lever	Right RCV lever			RCV lever	Change of Terminal block	
						From	To
ISO Type HD Hyundai Construction Equipment			Left	1Arm out	②	D	-
				2Arm in	④	E	-
				3Swing right	③	B	-
				4Swing left	①	A	-
			Right	5Boom lower	④	J	-
				6Boom raise	②	H	-
				7Bucket out	①	G	-
				8Bucket in	③	F	-
A Type			Left	1Boom lower	②	D	J
				2Boom raise	④	E	H
				3Swing right	③	B	-
				4Swing left	①	A	-
			Right	5Arm out	④	J	D
				6Arm in	②	H	E
				7Bucket out	①	G	-
				8Bucket in	③	F	-
B Type			Left	1Boom lower	②	D	J
				2Boom raise	④	E	H
				3Bucket in	③	B	F
				4Bucket out	①	A	G
			Right	5Arm out	④	J	D
				6Arm in	②	H	E
				7Swing right	①	G	B
				8Swing left	③	F	A
C Type			Left	① Loosen the RCV lever mounting bolt (29) and rotate lever assy 90˚ counterclockwise; then install. ② To put lever in correct position, disassemble nut (24) and rotate only lever 90˚ clockwise.			
			Right	Same as ISO type			

2) PATTERN CHANGE VALVE INSTALL (option)

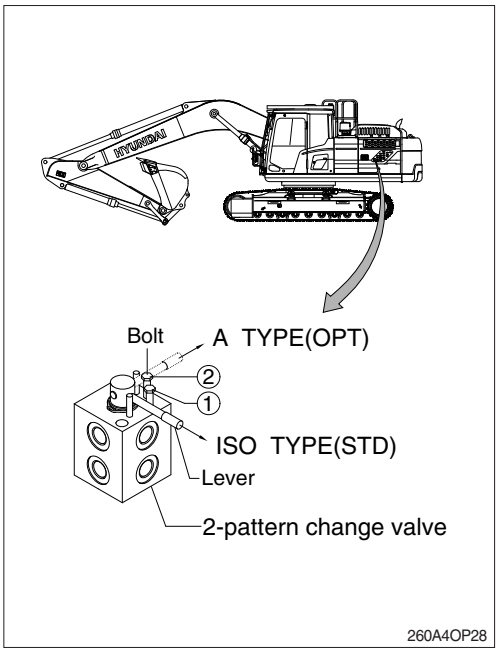
※ If the machine is equipped with the pattern change valve, the machine operation pattern can be easily changed.

※ Whenever a change is made to the machine control pattern also exchange the pattern label in the cab to match the new pattern.

Operation	ISO type	A type
Left RCV lever		
Right RCV lever		

(1) The machine control pattern can be changed from the "ISO type" to "A type" by changing the position of the lever.

⚠ Before starting the machine, check the lever position of pattern change valve and actual operating of attachment.



(2) Change of operating pattern

① Loosen bolt.

② Move lever to the "ISO" or "A" position.

③ After the lever is set, tighten the bolt in order to secure the lever.

- Position ① for "ISO" pattern.
- Position ② for "A" pattern.

13. EXHAUST SYSTEM CLEANING

※ Exhaust system cleaning events for the catalyst system will happen automatically under normal engine conditions and are controlled by the ECM as long as the exhaust system cleaning Inhibit switch is not engaged. During automatic exhaust system cleaning, any warning lamps or fault codes will not occur so the operator can not notice the cleaning is being performed.

※ If automatic exhaust system cleaning does not occur, the exhaust system cleaning lamp will illuminate, indicating to the operator that they will need to perform a manual exhaust system cleaning.

※ The HEST Lamp will be illuminated during the entire exhaust system cleaning.

※ While the exhaust system cleaning occurs, fuel consumption will be increased 20~30% more than usual due to post fuel injection to the exhaust system to reach enough exhaust temperature for regeneration.

※ The operator can check logs of exhaust system cleaning events on an engine diagnostic tool (INSITE).

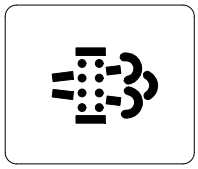
⚠ Tampering, modifying, or removing any component of the exhaust system is strictly prohibited by law.

⚠ Exhaust system cleaning generates hot exhaust and causes hot exhaust system components.

⚠ Exhaust system components get very hot and can cause severe burns. Risk of fire.

⚠ Do not perform exhaust system cleaning in a flammable environment.

(1) Exhaust system cleaning warning lamp



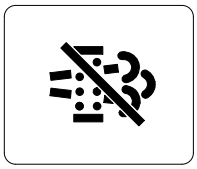
2609A3CD19

This warning lamp will light up or blink when the exhaust system cleaning is needed or activated.

※ Refer to page 3-9 for details.

※ The machine must be in a fireproof area during the entire exhaust system cleaning process.

(2) Exhaust system cleaning inhibit warning lamp

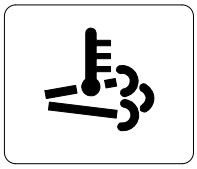


2609A3CD20

This warning lamp will light up when the exhaust system cleaning switch is pushed inhibit position.

※ Refer to page 3-9 for details.

(3) HEST (high exhaust system temperature) warning lamp

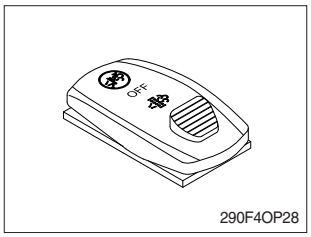


2609A3CD21

This warning lamp will light up when the exhaust temperatures are high due to exhaust system cleaning.

※ Refer to page 3-10 for details.

(4) Exhaust system cleaning switch



290F4OP28

This switch is used to select the exhaust system cleaning.

※ If system conditions are not met, the exhaust system cleaning will not start.

※ Refer to page 3-41 for details.

※ Manual exhaust system cleaning : refer to page 3-10 for details.