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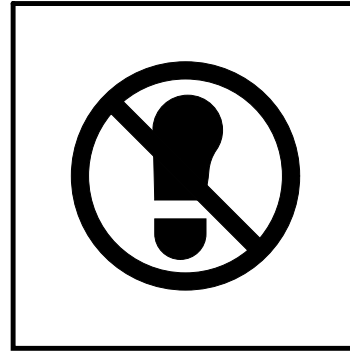
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13) NO STEP-ENGINE HOOD(Item 14)

This warning label is positioned on the engine hood.

△ Do not step on the engine hood.



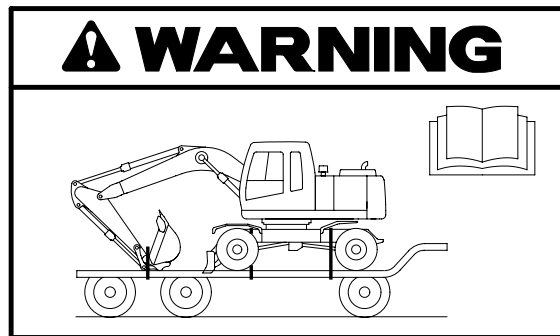
21070FW16

14) TRANSPORTING(Item 15)

This warning label is positioned right side of upper frame.

▲ Study the operator's manual before transporting the machine, if provided and tie down arm and track to the carrier with lashing wire.

※ See page 5-7 for details.



20W70FW17

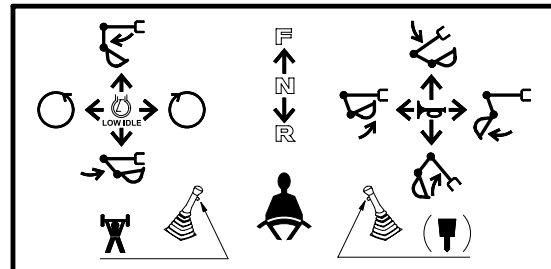
15) CONTROL IDEOGRAM(Item 17)

This warning label is positioned in right window of the cab.

▲ Check the machine control pattern for conformance to pattern on this label. If not, change label to match pattern before operating machine.

▲ Failure to do so could result in injury or death.

※ See page 4-11 for details.



20W70FW19

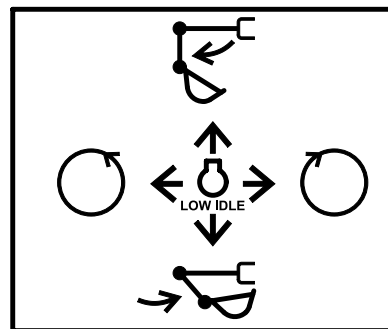
16) CONTROL IDEOGRAM-LH(Item 18)

This warning label is positioned on the LH console box.

▲ Check the machine control pattern for conformance to pattern on this label. If not, change label to match pattern before operating machine.

▲ Failure to do so could result in injury or death.

※ See page 4-11 for details.



20W70FW20

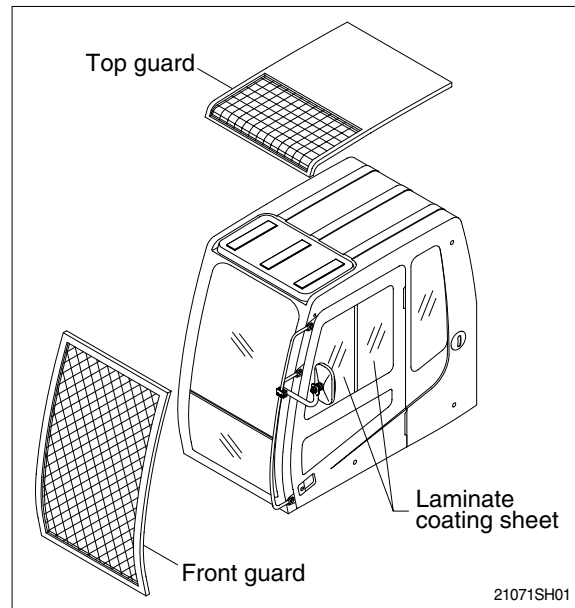
PROTECTION AGAINST FALLING OR FLYING OBJECTS

If there is any danger of falling or flying objects hitting the operator, install protective guards in place to protect the operator as required for each particular situation.

Be sure to close the front window before commencing work.

Make sure to keep all persons other than operator outside the range of falling or flying objects.

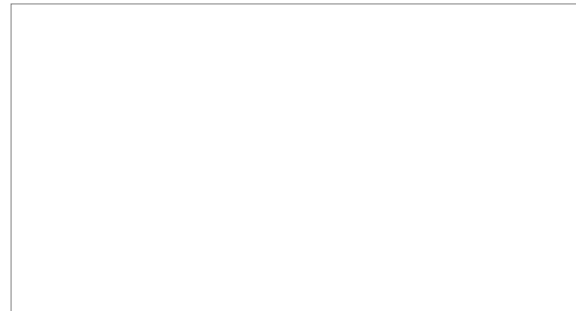
In case you need top guard, front guard and FOPS(Falling object protective structure), please contact Hyundai distributor in Europe.



UNAUTHORIZED MODIFICATION

Any modification made without authorization from Hyundai can create hazards.

Before making a modification, consult your Hyundai distributor. Hyundai will not be responsible for any injury or damage caused by any unauthorized modification.



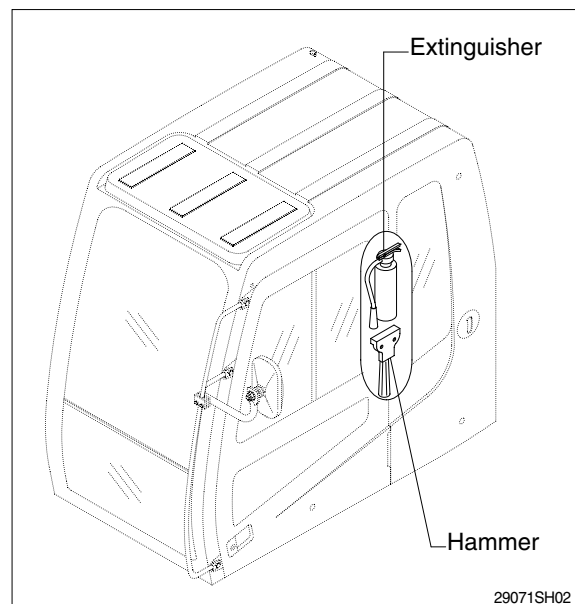
PREPARE FOR EMERGENCY

Only in case of emergency, use the installed hammer for breaking the windshield of the cab, and then exit carefully.

Have a fire extinguisher and first aid kit ready for emergencies such as fires or accidents.

Learn how to use the fire extinguisher.

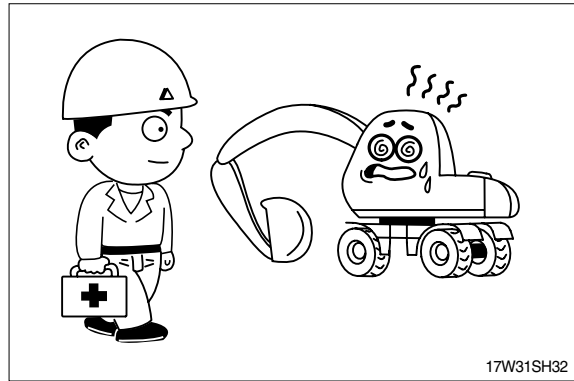
Be sure you know the phone numbers of persons you should contact in case of an emergency.



3. DURING MAINTENANCE

Stop the engine immediately when the trouble of the machine is found.

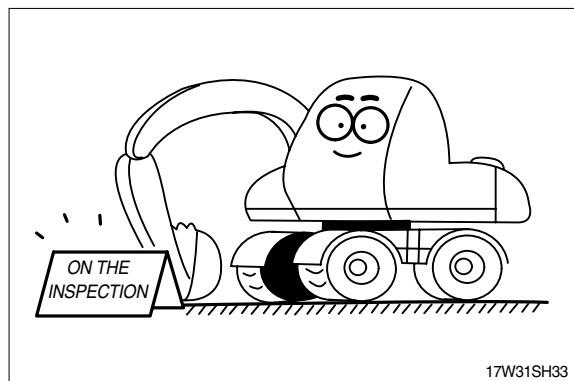
Inspect immediately the cause of trouble such as vibration, overheating and trouble in the cluster then repair.



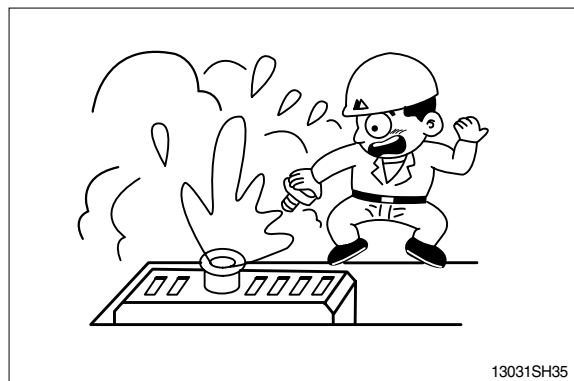
Park on a flat place and stop the engine for inspecting and repairing. Properly TAG machine is not operational. (Remove start key)

Extreme care shall be taken during maintenance work. Parts may require additional safe guard.

Lower the dozer blade and outrigger to the ground.



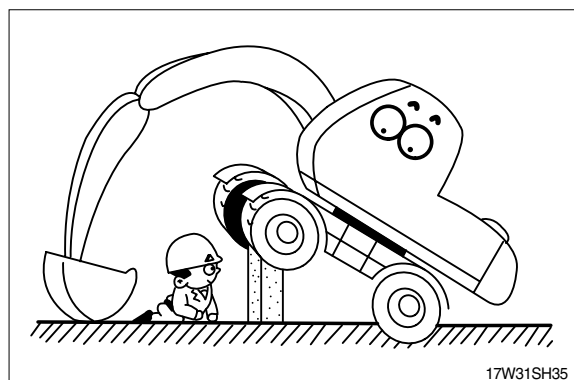
Do not remove the radiator cap from hot engine. Open the cap after the engine cools, below 50° C(122°F) to prevent personal injury from heated coolant spray or steam.













Do not work below the machine.

Be sure to work with proper safety supports.











Do not depend on the hydraulic cylinders to hold up the equipment and attachment.



(2) 4.60m (15' 1") boom, 1.9m (6' 3") arm equipped with 0.58m³ (SAE heaped) bucket and rear dozer blade down with 1900kg counterweight.

Load point height		Load radius								At max. reach		
		1.5m (5ft)		3.0m (10ft)		4.5m (15ft)		6.0m (20ft)		Capacity		Reach
												m (ft)
6.0m (20ft)	kg lb					*3120 *6880	*3120 *6880			*2920 *6440	2070 4560	6.22 (20.4)
4.5m (15ft)	kg lb					*3470 *7650	*3470 *7650	*2660 *5860	2100 4630	*3020 *6660	1590 3510	7.05 (23.1)
3.0m (10ft)	kg lb			*6620 *14590	6380 14070	*4370 *9630	3310 7300	*3600 *7940	2040 4500	*3150 *6940	1400 3090	7.42 (24.3)
1.5m (5ft)	kg lb			*7370 *16250	5730 12630	*5320 *11730	3070 6770	*4000 *8820	1940 4280	*3300 *7280	1360 3000	7.42 (24.3)
Ground Line	kg lb			*8890 *19600	5580 12300	*5850 *12900	2930 6460	*4230 *9330	1880 4140	*3450 *7610	1470 3240	7.06 (23.2)
-1.5m (-5ft)	kg lb	*7740 *17060	*7740 *17060	*8710 *19200	5630 12410	*5740 *12650	2910 6420			*3530 *7780	1820 4010	6.24 (20.5)
-3.0m (-10ft)	kg lb			*7070 *15590	5810 12810							

(3) 4.60m (15' 1") boom, 2.5m (8' 2") arm equipped with 0.58m³ (SAE heaped) bucket and rear dozer blade down with 1900kg counterweight.

Load point height		Load radius								At max. reach		
		1.5m (5ft)		3.0m (10ft)		4.5m (15ft)		6.0m (20ft)		Capacity		Reach
												m (ft)
6.0m (20ft)	kg lb									*2600 *5730	1710 3770	6.92 (22.7)
4.5m (15ft)	kg lb					*2880 *6350	*2880 *6350	*2860 *6310	2160 4760	*2700 *5950	1370 3020	7.66 (25.1)
3.0m (10ft)	kg lb			*5330 *11750	*5330 *11750	*3820 *8420	3380 7450	*3240 *7140	2070 4560	2820 *6220	1210 2670	8.00 (26.2)
1.5m (5ft)	kg lb			*8040 *17730	5910 13030	*4900 *10800	3110 6860	*3730 *8220	1950 4300	2910 6420	1170 2580	8.00 (26.2)
Ground Line	kg lb	*3740 *8250	*3740 *8250	*8820 *19440	5580 12300	*5650 *12460	2920 6440	*4110 *9060	1860 4100	3100 6830	1250 2760	7.67 (25.2)
-1.5m (-5ft)	kg lb	*6380 *14070	*6380 *14070	*9070 *20000	5540 12210	*5820 *12830	2860 6310	*4140 *9130	1820 4010	*3240 *7140	1490 3280	6.94 (22.8)
-3.0m (-10ft)	kg lb	*9660 *21300	*9660 *21300	*7960 *17550	5650 12460	*5210 *11490	2900 6390			*3210 *7080	2170 4780	5.64 (18.5)

CONTROL DEVICES

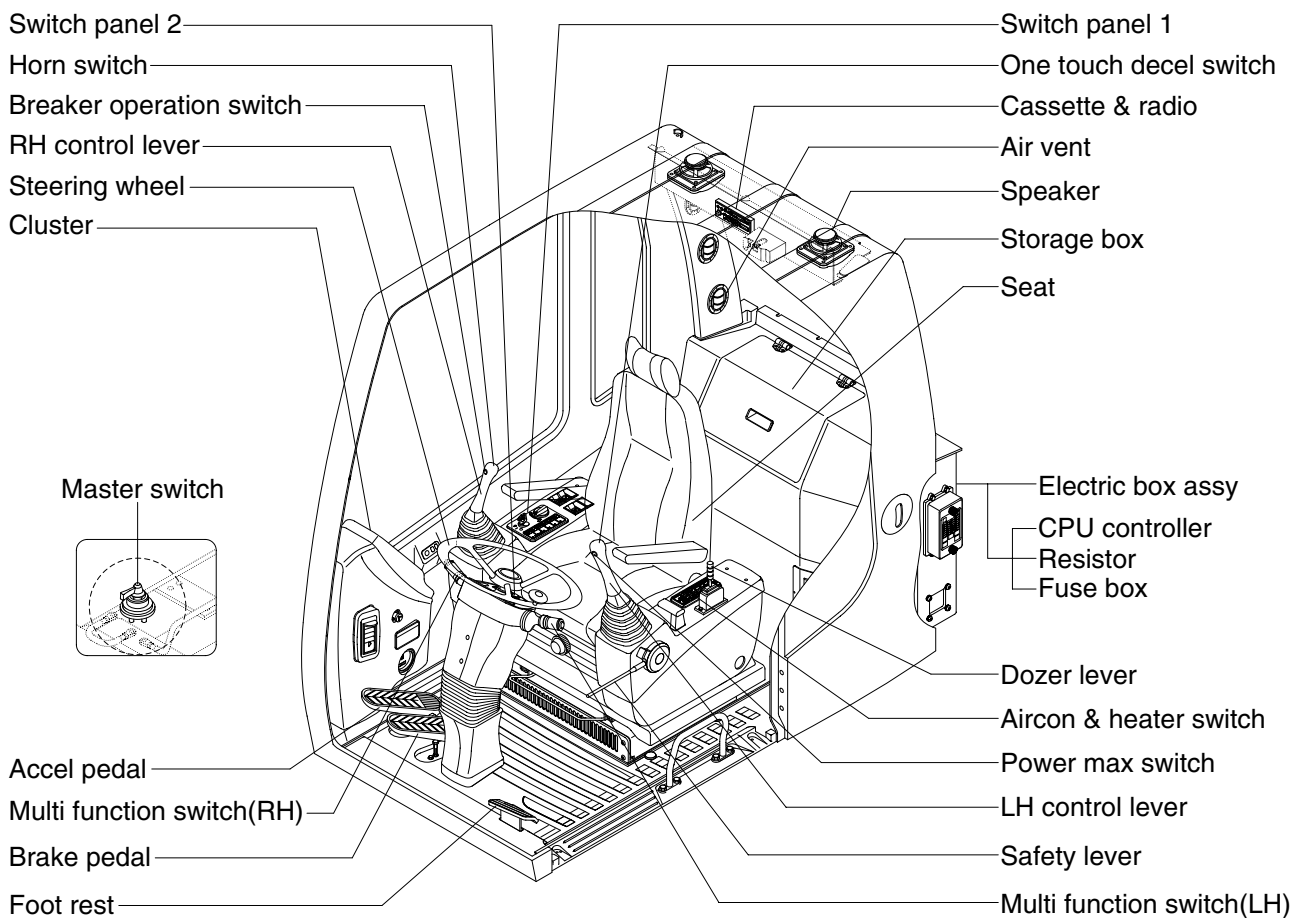
1. CAB DEVICES

1) The ergonomically designed console box and suspension type seat provide the operator with comfort.

2) ELECTRONIC MONITOR SYSTEM

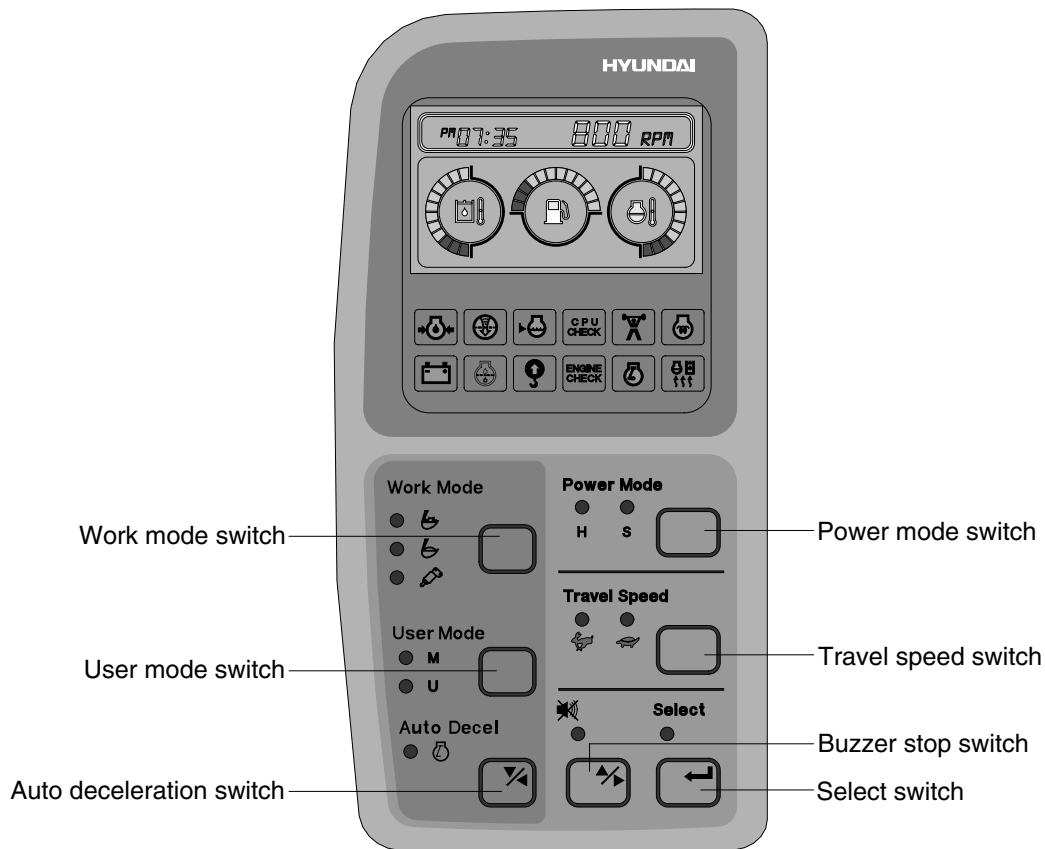
(1) The centralized electronic monitor system allows the status and conditions of the machine to be monitored at a glance.

(2) It is equipped with a safety warning system for early detection of machine malfunction.



17W7A3CD01

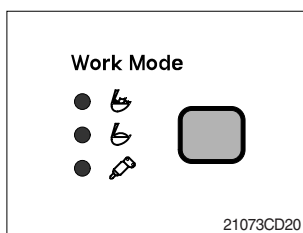
6) SWITCH PANEL



1607A3CD19

- ※ When the switches (Work mode, Power mode, Auto decel, Travel speed control) are selected, the pop-up icon is displayed on the LCD.
Refer to the page 3-4 for details.

(1) Work mode switch

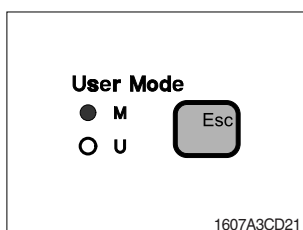


- ① This switch is to select the machine operation mode, which shifts from general operation mode to heavy operation mode and breaker mode in a row by pressing the switch.

- : Heavy duty work mode
- : General work mode
- : Breaker operation mode

※ Refer to the page 4-6 for details.

(2) User mode switch

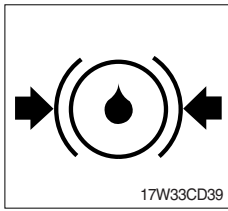


- ① This switch is to select the maximum power or user mode.

- M : Maximum power
- U : Memorizing operators preferable power setting.

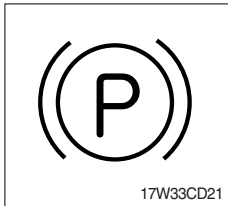
※ Refer to the page 4-6 for details.

(5) Brake oil pressure warning lamp



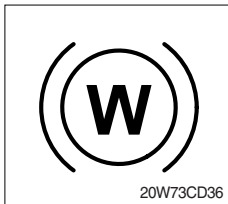
- ① The lamp lights ON when the oil pressure of service brake drops below the normal range.
 - ② When the lamp is ON, stop the engine and check for its cause.
- ※ **Do not operate until any problems are corrected.**

(6) Parking lock pilot lamp



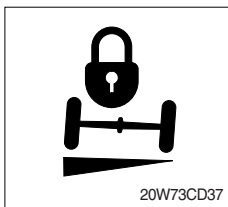
- ① When the parking brake is actuated, the lamp lights ON.
- ※ **Check the lamp is OFF before driving.**

(7) Working lock pilot lamp



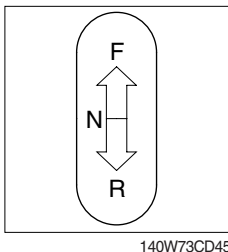
- ① This lamp lights ON when the service brake is applied.
- ② Refer to **service brake pedal** at page 3-24 for details.

(8) Ram lock pilot lamp



- ① This warning lamp lights ON when ram lock switch is rear position.
- ② Also, the warning lamp lights ON when the parking switch is ON or service brake is applied.

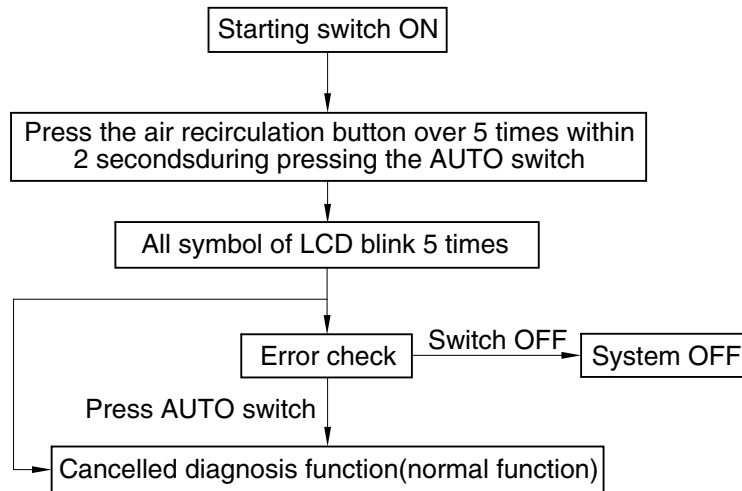
(9) Forward/Revers pilot lamp



- ① This pilot lamp indicates the travel direction of machine.
 - F : Forward direction
 - N : Neutral position
 - R : Reverse direction
- ▲ **Travel direction will be reversed if low structure is positioned with dozer in front.**

8) SELF DIAGNOSIS FUNCTION

(1) Procedure



3607A3CD69

(2) Error check

- The corresponding error code flickers on the setup temperature display panel, the other symbol will turn OFF.
- Error code flickers every 0.5 second.
- If error code is more than two, each code flickers 2 times in sequence.
- Error code

Error code	Description	Error code	Description
11	Ambient sensor	14	Duct(evaporator) sensor
12	Cabin inside sensor	15	Temp actuator
13	Coolant temp sensor	16	Mode actuator

(3) Fail safe function

Error description	Fail safe function
Ambient sensor(11)	25°C alternate value control
Cabin inside sensor(12)	20°C alternate value control
Coolant temp sensor(13)	More than 10 minutes after engine start up, the alternate value is ON
Duct(evaporator) sensor(14)	1°C alternate value control
Temp actuator(15)	If opening amount is 0%, the alternate value is 0%
	If not, the alternate value is 100%
Mode actuator(16)	The alternate value is Vent

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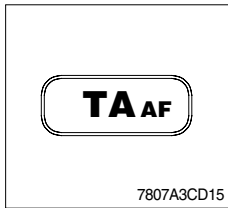
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■ RADIO DATA SYSTEM(RDS) ON FM



More and more stations broadcasts RDS informations in order to offer you many advantages including:

(1) Program service name(PS)


Allows the radio to display the name of the station instead of its frequency.

(2) Automatic returning(AF)

The set remains tuned to the current station by continually searching the best alternative frequency for best reception.

You can switch AF off.

- Activate/Deactivate AF

This set continuously search for other alternative frequencies for the tuned radio station and automatically selects the best frequency for reception. Long press  for more than 2 second to activate/deactivate AF.

(3) Alarm messages(PHY ALARM)


This set automatically receives emergency messages made by the broadcaster.

- During the messages the display shows 'ALARM' and the station-name alternately.

(4) Traffic announcements(TA)

You can activate the TA modes to give priority so as to hear traffic announcements related to these subjects(even if you play a cassettes/CD or mute the set).

- Activate/Deactivate TA


- Short press BAND to select an FM band.
- Press  to activate/deactivate TA.

- If you activate TA mode

- You will hear the traffic announcements when broadcast by station(even if you play a cassette/CD or mute the set).
- If the tuned station does not enable the reception of traffic announcements, the display shows 'NO TA'. The radio automatically searches and appropriate station.

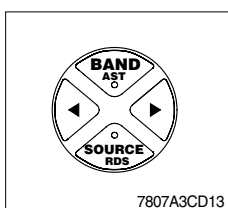
- Interrupting traffic announcement mode

If you do not wish to continue listening to a particular traffic announcement

- Short press  key to interrupt traffic announcement without switching off the mode
- The set will return to the previous operating mode.

※ You can switch off RDS features if not required.

- Long press RDS key to switch off RDS.
- All RDS related features e.g., TA, etc...will be deactivated when RDS is switch off.



4. MODE SELECTION SYSTEM

1) STRUCTURE OF CAPO SYSTEM

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

(1) Work mode

3 work modes can be selected for the optimal work speed of the machine operation.

① Heavy duty work mode

The boom priority solenoid is activated to make the boom operation speed faster.

② General work mode

When key switch is turned ON, this mode is selected automatically and swing operation speed is faster than heavy duty work mode.

③ Breaker operation mode

It sets the pump flow to the optimal operation of breaker by activating the max flow cut-off solenoid.

(2) Power mode

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

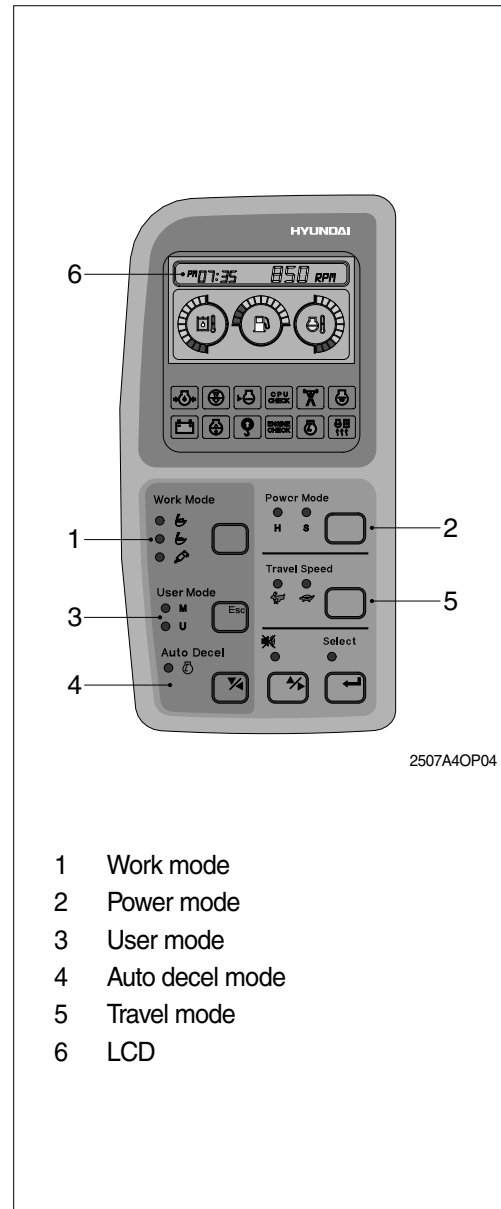
- H mode : High power
- S mode : Standard power

(3) User mode

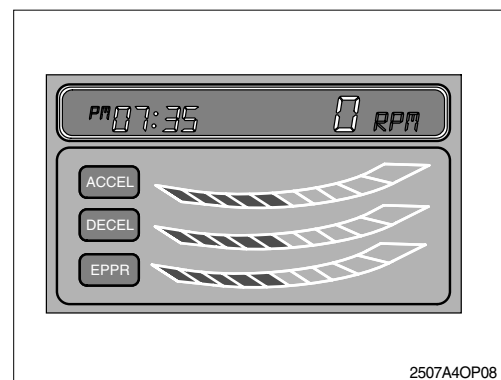
- M : Maximum power
- U : You can change the engine and pump power and memorize it for your preference

How to modulate the memory set

- ① Each memory mode has a initial set which are mid-range of max engine speed, auto decel rpm, and EPPR valve input current.



- 1 Work mode
- 2 Power mode
- 3 User mode
- 4 Auto decel mode
- 5 Travel mode
- 6 LCD



(2) Towing the machine

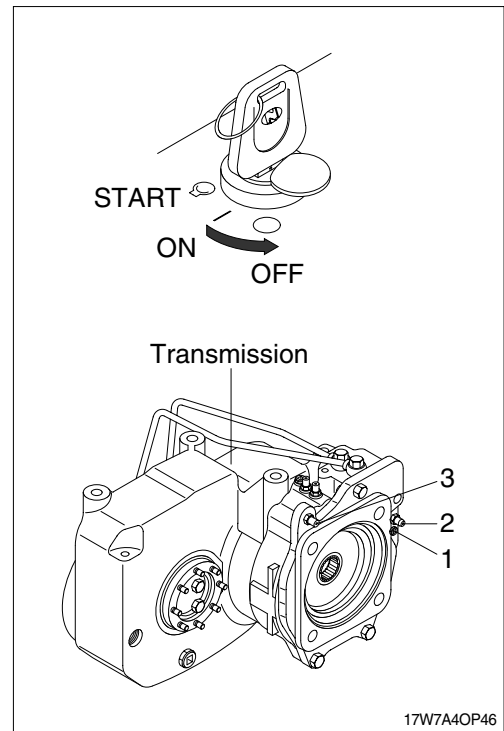
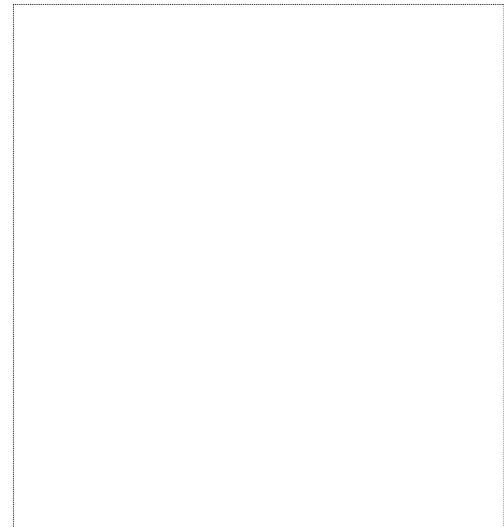
- ① The emergency device is to interrupt the power flow between input and output in case of control pressure failure or a travel motor defect and thus allows an emergency towing of the machine.
 - Towing speed : Max 10km/h
 - Towing distance : Max 5km
- ② Since there is no transmission lubrication, damages may occur due to lacking oil supply if the instruction are no observed. For a long distance it is best to have transported the defective machine on a trailer.

③ Activate the emergency device.

- Turn the start key OFF position.
- Block the machine against rolling away.
- By means of a grease gun pump in the grease on the grease nipple(1) until it comes visibly out at the pressure relief valve(3) of the emergency device.

④ Deactivate the emergency device.

- The bleeder(2) of the emergency device must be opened and then shift into the road speed(apply a control pressure of 30 to 35 bar at the connection of the brake).
- Then close the bleeder again.



10. ATTACHMENT LOWERING(When engine is stopped)

1) On machines equipped with an accumulator, for a short time(within 2 minutes) after the engine is stopped, the attachment will lower under its own weight when the attachment control lever is shifted to LOWER. That is happen only starting switch ON position and safety lever UNLOCK position. After the engine is stopped, set the safety lever to the LOCK position.

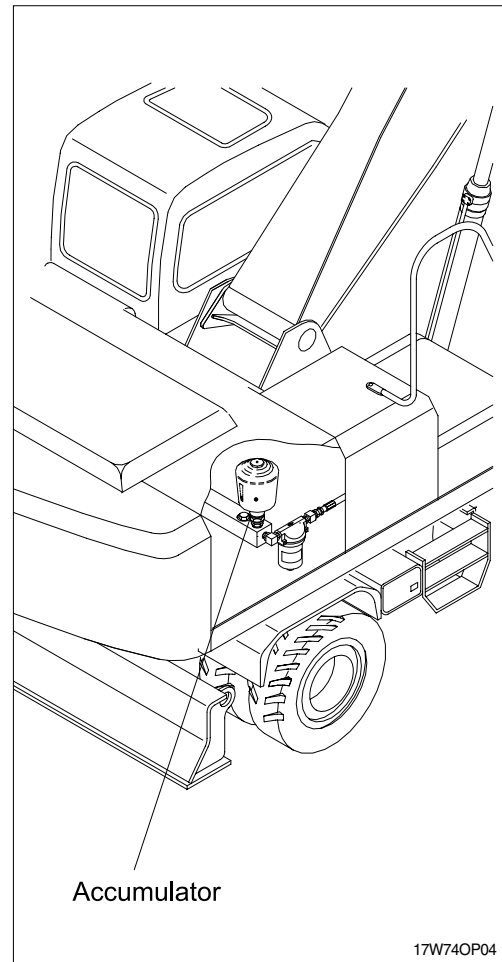
▲ Be sure no one is under or near the attachment before lowering the boom.

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 flame or fire.

▲ Do not weld anything to the accumulator.

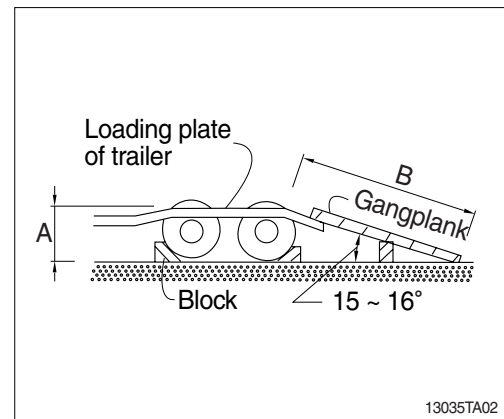
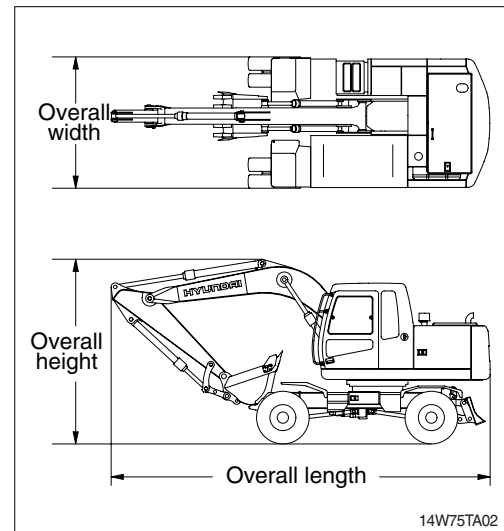
※ When carrying out disassembly or maintenance of the accumulator, it is necessary to release the gas from the accumulator. A special air bleed valve is necessary for this operation, so please contact your Hyundai distributor.



2. PREPARATION FOR TRANSPORTATION

- 1) When transporting the machine, observe the various road rules, road transportation vehicle laws and vehicle limit ordinances, etc.
- 2) Select proper trailer after confirming the weight and dimension from the chapter 2, specification.
- 3) Check the whole route such as the road width, the height of bridge and limit of weight and etc., which will be passed.
- 4) Get the permission from the related authority if necessary.
- 5) Prepare suitable capacity of trailer to support the machine.
- 6) Prepare gangplank for safe loading referring to the below table and illustration.

A	B
1.0	3.65 ~ 3.85
1.1	4.00 ~ 4.25
1.2	4.35 ~ 4.60
1.3	4.75 ~ 5.00
1.4	5.10 ~ 5.40
1.5	5.50 ~ 5.75



6) PERIODICAL REPLACEMENT OF SAFETY PARTS

(1) It is desirable to do periodic maintenance the machine for using the machine safely for a long time.

However, recommend to replace regularly the parts related safety not only safety but maintain satisfied performance.

(2) These parts can cause the disaster of life and material as the quality changes by passing time and it is worn, diluted, and gets fatigued by using repeatedly.

These are the parts which the operator can not judge the remained lifetime of them by visual inspection.

(3) Repair or replace if an abnormality of these parts is found even before the recommended replacement interval.

Periodical replacement of safety parts			Interval
Engine		Fuel hose (Tank-engine)	Every 2 years
		Heater hose (Heater-engine)	
Hydraulic system	Main circuit	Pump suction hose	Every 2 years
		Pump delivery hose	
		Swing hose	
	Working device	Boom cylinder line hose	Every 2 years
		Arm cylinder line hose	
		Bucket cylinder line hose	
	Brake line	Service brake line hose	Every 2 years
		Parking brake line hose	
		Steering line hose	

- ※ 1. Replace O-ring and gasket at the same
- 2. time when replacing the hose.

Replace clamp at the same time if the hose clamp is cracked when checking and replacing the hose.

12) WHEN REQUIRED

Whenever you have trouble in the machine, you must perform the service of related items, system by system.

Check items	Service	Page
Fuel system		
· Fuel tank	Drain or Clean	6-25
· Prefilter	Clean or Replace	6-26
· Fuel filter element	Replace	6-26-1
Engine lubrication system		
· Engine oil	Change	6-18, 19
· Engine oil filter	Replace	6-18, 19
Engine cooling system		
· Coolant	Add or Change	6-20, 21, 22, 23
· Radiator	Clean or Flush	6-20, 21, 22, 23
· Charge air cooler	Check	6-23
Engine air system		
· Air cleaner element	Replace	6-25
Hydraulic system		
· Hydraulic oil	Add or Change	6-28
· Return filter	Replace	6-29
· Drain filter cartridge	Replace	6-30
· Pilot line filter	Replace	6-30
· Air breather element	Replace	6-30
· Suction strainer	Clean	6-29
Tire pressure	Check, Inflate	6-35
Bucket		
· Tooth	Replace	6-40
· Side cutter	Replace	6-40
· Linkage	Adjust	6-39
· Bucket assy	Replace	6-39
Air conditioner and heater		
· Fresh filter	Clean, Replace	6-46
· Recirculation filter	Clean	6-47

9) CLEANING OF AIR CLEANER

- (1) Loosen the wing nut and remove the element.
- (2) Clean the inside of the body.
- (3) Clean the element either with pressurized air or washing.

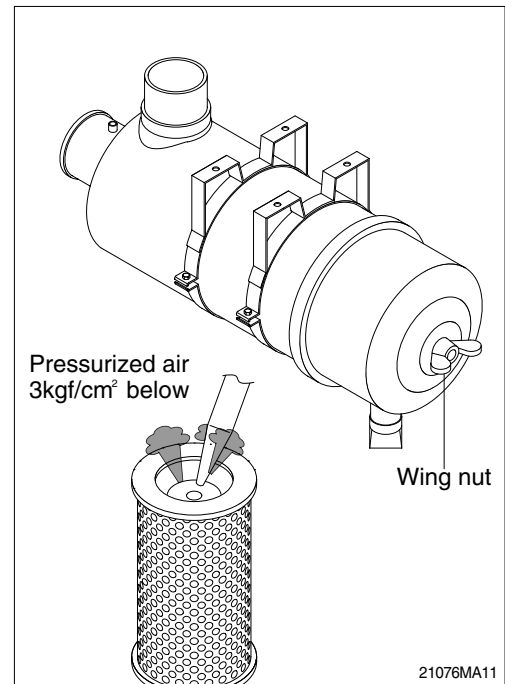
① Using pressurized air

Remove the dust inside of the element by the pressurized air (below 3kgf/cm², 40psi) forward and backward equally.

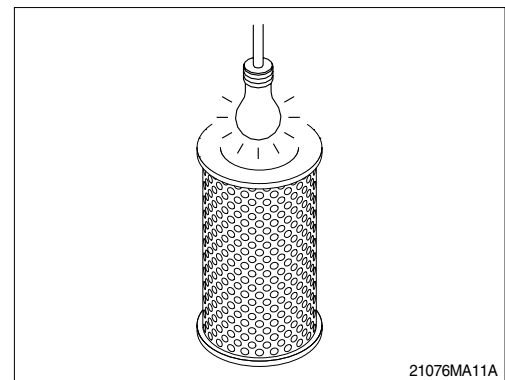
② Washing

Wash the element with a neutral detergent which does not cause bubbles.

Dry off after washing with water.

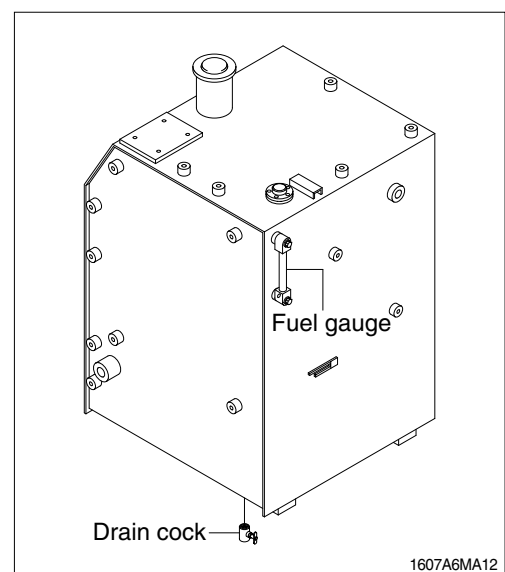


- (4) Inspect for cracks or damage of element by putting a light bulb inside of the element.
 - (5) Insert element and tighten wing nut.
- ※ **Replace the element with new one after use 500hours (6 times washing), or if damage is found.**
 - ※ **Clean the air cleaner element when the air cleaner warning lamp on the cluster lights ON.**



10) FUEL TANK

- (1) Fill fuel fully when system the operation to minimize water condensation, and check it with fuel gauge before starting the machine.
 - (2) Drain the water and sediment in the fuel tank by opening the drain cock.
 - ※ **Be sure to LOCK the cap of fuel tank.**
 - ※ **Remove the strainer of the fuel tank and clean it if contaminated.**
- ▲ **Stop the engine when refueling.**
All lights and flames shall be kept at a safe distance while refueling.



30) TIRE

(1) Air pressure

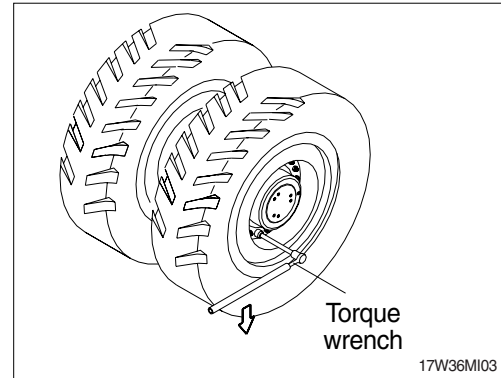
It is important to keep air pressure properly for maximizing tire life. Both excessive and insufficient air pressure of tires should be avoided not to damage tires.

Specification : 7.0 kgf/cm² (100psi)

(2) Handling of tire

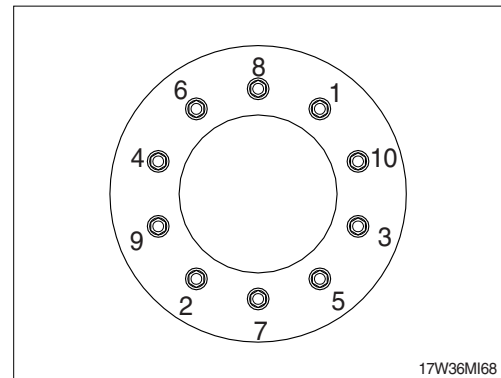
① Removal of tire

- Lift the main body until a tire separate from the ground, and place the block under front and rear axle.
- Loosen wheel nut with torque wrench and remove tire.



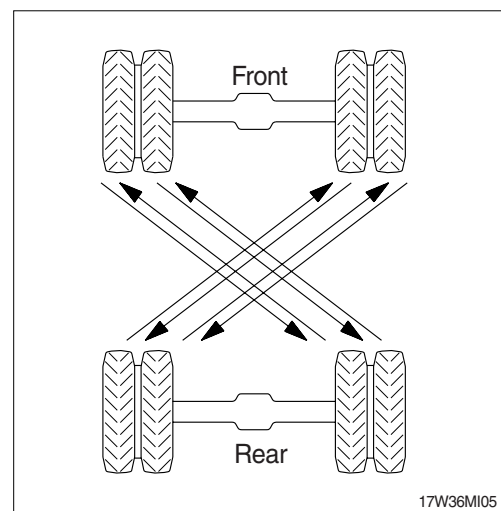
② Installation of tire

- Coat some grease on wheel stud and nut screw.
 - Install the tires and tighten a nut slightly and get down a tire on the ground, and then tighten the torque in the order as figure.
- Tightening torque : 62.0 ± 3.0 kgf · m
(448 ± 21.7 lbf · ft)



③ Position change of tire

- Tire is worn out differently part by part according to installing position, so change position regularly as figure.
- ※ Keep air pressure at standard.
- ※ Use same pattern of groove and same maker's tire.
- ※ Always check the tire before operation.



(4) Welding repair

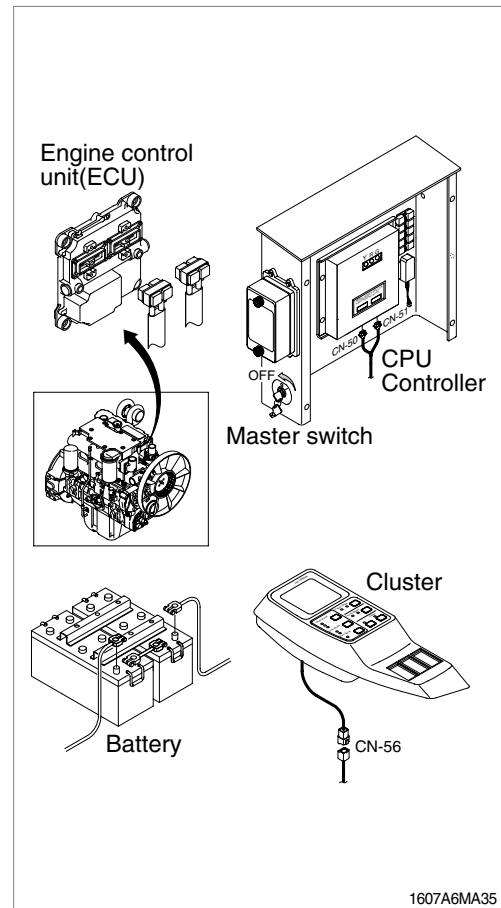
Before start to welding, follow the below procedure.

- ① Shut off the engine and remove the starting switch.
- 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(CPU, cluster etc).
- ④ Connect the earth(ground) lead of the welding equipment as close to the welding point as possible.

※ Do not weld or flame cut on pipes or tubes that contain flammable fluids. Clean them thoroughly with nonflammable solvent before welding or flame cutting on them.

▲ Do not attempt to welding work before carry out the above.

If not, it will caused serious damage at electric CAPO system.



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