KOBELCO

OPERATOR'S MANUAL

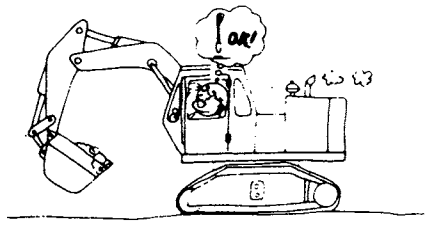
HYDRAULIC EXCAVATOR

MD140BLC

Applicable: MD140BLC YP-1001~

S2YP1002E-01

15) Be sure to engage swing lock during transportation or when travelling.

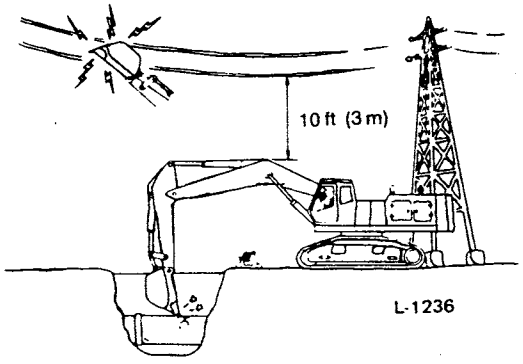


L-1663

16) Ascertain the exact location of buried gas pipes, water pipes and telephone lines before starting the job and appoint an experienced groundman in a good position to give signals. The operator should take instructions from this appointed groundman only.

WARNING

1. Never operate any part of machine closer than 10 ft (3 m) to any live power lines. (Check local power company codes and regulations, and conform to them if different from above)
2. The design and construction of this machine does not incorporate any electrical in-sulating members in any part of the front attachement components, that would afford protection against electrical shock and/or possible electrocution from contact with live power lines, not to mention possible machine damage that could occur under these circumstances.



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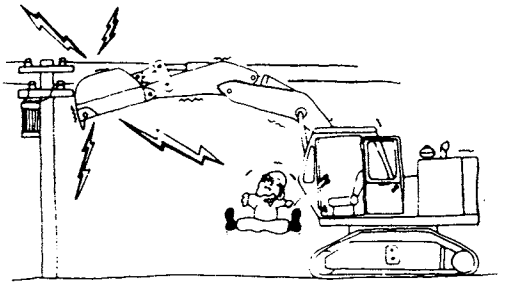
17) In case the machine comes into contact with live power lines, the operator should remain in his seat until the power is cut off.
If he must leave the machine, he should jump off, not climb down.
Also, do not let anybody on the ground touch the machine. While any part of it is in contact with a live power line.



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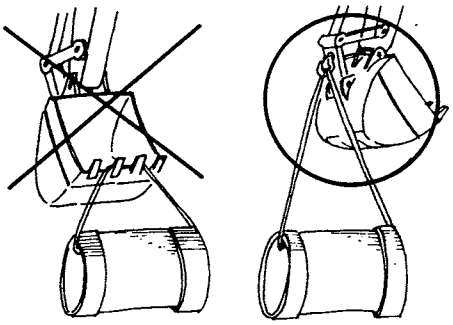
18) Since this machine is an excavator, please use extreme caution when handling heavy loads.



WARNING (Option)

Heavy Lift Caution!
Operator must **Never** turn heavy lift switch to off position while supporting load.
Boom could lower unexpectedly with extreme heavy loods.

WARNING

Do not exceed the machine's capacity charts.
Use only approued slings and shackles (clevises).
Never lift a load from the bucket teeth.

COMBINATION OF ATTACHMENTS

Bucket				Applicable Arm			
Type	JIS heaped capacity cu yd (m³)	SAE heaped capacity cu yd(m³)	JIS -SAE struck capacity cu yd (m³)	With 6ft-11in(2.1m) arm	With 8ft-2in (2.5m) arm	With 9ft-10in(3.0m)	With 8ft-2in(2.5m) + 3ft-3in (1.0m) ext.arm
Hoe bucket	0.39 (0.30)	0.43 (0.33)	0.34 (0.26)	○	○	○	◎
	0.45 (0.35)	0.51 (0.39)	0.39 (0.30)	○	○	◎	△
	0.52 (0.40)	0.58 (0.45)	0.44 (0.34)	○	○	△	×
	0.58 (0.45)	0.66 (0.51)	0.38 (0.49)	○	◎	△	×
	0.58 (0.45) (For heavy duty digging)	0.66 (0.51) ←	0.49 (0.38) ←	○	○	×	×
	0.65 (0.50)	0.73 (0.56)	0.54 (0.42)	◎	△	×	×
	0.78 (0.60)	0.88 (0.68)	0.64 (0.49)	△	×	×	×
Bucket With Ejector	0.26 (0.20)	0.28 (0.22)	0.24 (0.19)	○	○	○	○
Side slope finishing bucket	0.52 (0.40)	0.68 (0.52)	0.30 (0.29)	△	△	△	△
Ripper	—	—	—	○	○	×	×
V-shape bucket	0.49 (0.38)	0.60 (0.46)	0.39 (0.3)	○	○	○	○
Scraper bucket	0.72 (0.55)	0.85 (0.65)	0.55 (0.42)	△	△	△	△
Ripper bucket	0.39 (0.30)	0.44 (0.34)	0.34 (0.26)	○	○	×	×
Clamshellbucket	0.52 (0.40)	—	—	○	○	×	×

◎ Standard combination

○ General use: Digging and loading of gravel, sand and clayey soil

△ Light duty: Work mainly loading loose gravel or clayey soil

× Not usable: Not warranted

CAUTION

If a bucket other than the hoe bucket is turned over for operation, the arm and the bucket may be broken.

WARNING

A seat belt is available as an option. For safety purposes it is recommended to use a seat belt for heavy work, working on slope (s, or at sites where seat belts are necessary. Be sure to replace the seat belts every 3 years.

OPERATOR'S CAB WINDOWS

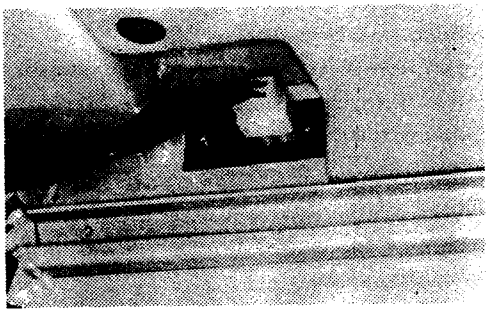
(1) Front window

The front window can be moved in overhead. The can be done from inside of the operator's cab as follows.

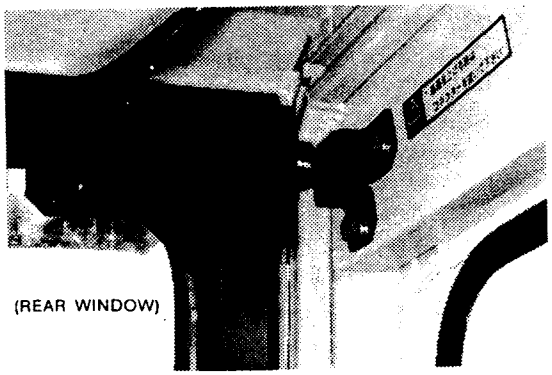
1) Place the machine on flat level ground.
2) Disconnect wiring of the wiper.
3) Remove the upper and lower locks of the front window.
4) Lift and move the front window upward until the window is seated in the ceiling.
5) After lifting the window to the ceiling, be sure to lock it at the rear of the cab.

WARNING

1. Do not open or close windows on a slope.
2. When closing the front window, draw it down slowly and be careful not to place your fingers between the window.



(Upper Lock When the Front Window is Closed)



(Locked Condition of the Front Window When Rested in the Upper Position)

(2) Right window

On the right side of the cab is a sliding window which can be opened and closed to the up and down.

(3) Left door

The window in the door at the left can be wound up and down with the handle. When operating the machine with the left door open, be sure to engage the door lock.

(4) Ceiling window

The ceiling window is of full open type. Lift it up and turn it back.

WARNING

Exercise care so as not to pinch your fingers in the window when operating it. Lock the window positively after opening/closing.

2. SELECTION OF THE MODES

MODE CHANGEOVER SYSTEM

The mode changeover switch (H, S, F.C) changes the operation modes according to working conditions and purposes, in order to achieve efficient operation.

(1) Three modes signify:

H mode (Heavy duty mode)	The engine output can be used to 100%. The mode is used when speed and power are required.
S mode (Energy saving mode)	Is used to save fuel when work is light.
FC mode (Fine operation mode)	Is used to work on a slope or perform finish work slowly when work is light.

(2) How to read the table and select the mode

In each type of operation, select the most effective mode suitable for the type of operation and the nature of soil to be handled.

General mode selections are given in the below table.

· Type of work

I: For large volume of work to be done in a short time

II: For general operation

III: For such operations which are not urgent but require fuel savings in particular.

NOTE

As an option, a double element type air cleaner is available.

2) Make a frequent check of the radiator and keep the cooling fins clean.
3) Keep the filler cap of the fuel tank tight to prevent sand or dust from entering the fuel tank. Service fuel filters frequently to keep them free from sand and dust.
4) Keep the breather cap of hydraulic oil tank tight to prevent sand and dust from entering the hydraulic system. Also, service hydraulic oil filters frequently.
5) Always keep the pins and bushings clean and clean all grease fittings before lubrication.

OPERATION IN HIGH HUMIDITY OR SOFT GROUND

1) Moisture and muddy water will cause deterioration and corrosion of paint, wiring and metallic parts. Keep parts dry and well lubricated when working in such areas.
2) If any part of the machine is rusted or corroded, dry the part thoroughly and paint the exposed surfaces. Apply a film of lubricant or grease on all machined surfaces which can not be painted.
3) After work, wash the machine and inspect all parts and perform lubrication as soon as possible.
   If the swing bearing has been immersed in water or mud for any length of time, grease the bearing until the old grease oozes out, and the fresh grease becomes visible !

OPERATION AT SEASHORES

1) Check whether all plugs, cocks and bolts on the machine are tightened properly so as to prevent entry of salt water.
2) After work, clean the machine thoroughly washing off salt water and take adequate measures to prevent corrosion to the electrical components and the hydraulic cylinders.

12. MAINTENANCE PROCEDURE

ENGINE

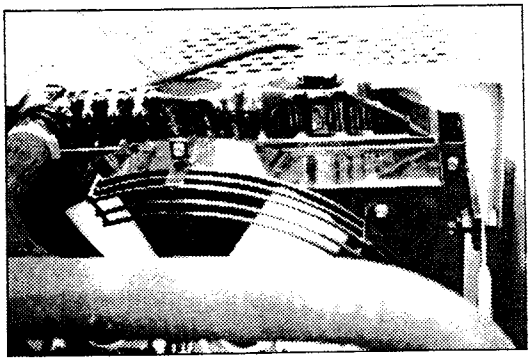
WARNING

Stop the engine before carrying out any inspection and maintenance checks.

(1) Check water level in radiator. (E-1)
Check the level of the cooling water and add water if necessary. The water level should be more than 1 ~ 2 cm (0.39" ~ 0.78") above the radiator core. Use the type and amount of anti-freeze as recommended by the engine manufacturer.

WARNING

Use extreme care when removing the radiator cap when the engine is hot as boiling water may gush out. If possible, wait until the engine has cooled down.



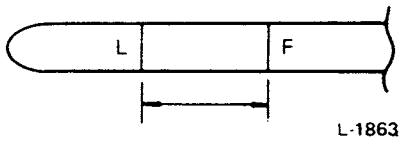
[Radiator]

(2) Check and fill engine oil. (E-2)
Check the engine oil level before starting operation. For accurate readings, check the oil level approximately 15 minutes after stopping the engine. Remove the oil dipstick, wipe it with a clean cloth, reinsert and withdraw it again. Check that the oil level is between the upper and lower marks and if the oil level is low, fill and maintain the oil level between the upper and lower marks. The appearance of the oil should also be noted to see if it is dirty or too thin.

CAUTION

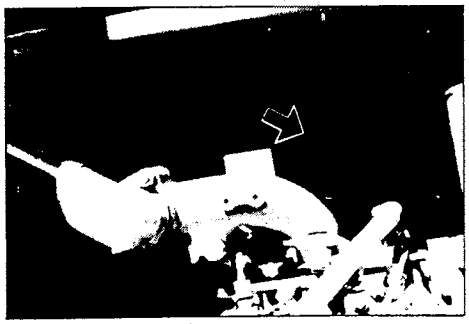
Never operate the engine with the oil level below the low mark or above the upper mark on the dipstick.

[Engine Oil Dipstick]



[Proper Oil Level of Engine Oil Dipstick]

(3) Change engine oil filter. (E-3)
Change the engine oil filter at the first 50 hours of operation. After this, change every 500 hours (before, if the engine oil filter lamp in cluster gauge lights and the buzzer sounds.) Refer to the Engine Manual.



[Engine Oil Filter]

(4) Check fuel water separator and drain water. (E-4)
Check the float and the marked level. Before float reaches the level, loosen the drain plug and drain out water.

16. HYDRAULIC OIL CARE

POINTS IN HYDRAULIC OIL CARE

All the digging, travelling and swinging motions of the hydraulic excavator are operated by the pressure and flow rate of the hydraulic oil generated by the hydraulic pumps moving the hydraulic motors and cylinders. Therefore, for the maintenance of the hydraulic excavator, care of the hydraulic oil system is vitally important.

Flow rate is the amount of oil that a pump will force through the system in a given amount of time and determines the speed of operation. The greater the flow rate, the faster a cylinder is filled with hydraulic oil and the faster its rod moves. A large volume of hydraulic oil entering into the hydraulic motor will rotate it faster, increasing the swinging or travelling speed.

Pressure is the amount of force of the hydraulic oil delivered from the pumps; acting as the operating force of the actuators.

When the level of hydraulic oil is low or when there is air, water, dirt, metallic particles or sludge in the hydraulic oil, not only can it cause cavitation, change in viscosity, drop in lubricancy, rise in oil temperature, internal leakage and corrosion inside the pipes, but it can also be the cause of faulty operation of the whole system.

Therefore, the following three points are most effective in order to maintain the performance and life of the hydraulic system and the machine:

1) Change filters and hydraulic oil periodically.
2) Use clean hydraulic oil of the designated quality and always maintain the proper level in the hydraulic oil tank.
3) Keep the connecting parts firmly tight so air will not enter the hydraulic system.

Also, relief valves are provided to control and limit the pressure for safe operation of the hydraulic system. The settings of these relief valves must never be changed.

EXAMINATION AND CARE OF HYDRAULIC OIL

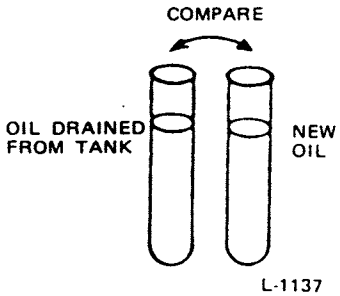
(1) Examination of hydraulic oil

1) When draining oil from the hydraulic oil tank, check if there is any foreign matter, such as metallic particles in the strainer. If metallic particles are found, this is a sign of damage in the hydraulic components.
2) Sample about 2 liters of hydraulic oil while it is still warm every 6 months and have the sample analyzed by a qualified specialist. If the hydraulic oil is dirty or has deteriorated, change the oil in the entire system immediately regardless of the change interval.
3) Although an accurate analysis of hydraulic oil can not be made unless proper equipment is used, the following simple method can be used to inspect the oil condition locally:

a) Examination of external appearance

Compare the oil from the tank with new oil and check if there is any sludge, dirt, metallic particles, vinegary or burnt smell or if the oil has changed to a milky or dark brown color.

Check and compare with the chart of next page.



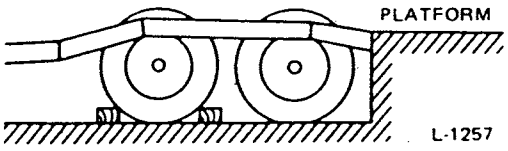
Serviceability of Hydraulic Oil

External Appearance	Smell	Condition	Serviceability
Transparent and not discolored	Good	Good	Serviceable for further use.
Transparent but washy color	Good	Foreign oil in fluid	Serviceable for further use, if viscosity is good.
Milky color	Good	Air and/or water in fluid	Separate water by oil manufacturer's instruction.
Dark brown color	Bad smell	Inferior fluid	Change fluid.
Transparent but with dark spots	Good	Foreign particles in fluid	Filter fluid by oil manufacturer's instruction.
Contains bubbles	–	Grease in fluid	Change fluid.

WARNING

1. The center-of-gravity changes abruptly between the footboard and the bed. Travel slowly, keeping the attachment at a height from which it may be brought down to the ground at any moment.
2. Swinging on a sloped footboard is very dangerous. Lock the swinging motion by inserting the swing lock pin.
3. If the front attachment is off, the machine has its center-of-gravity on the counterweight side and is extremely unstable. Always climb up and down a slope, directing the counterweight toward the top of the slope, and do not swing the machine in a tilted position.

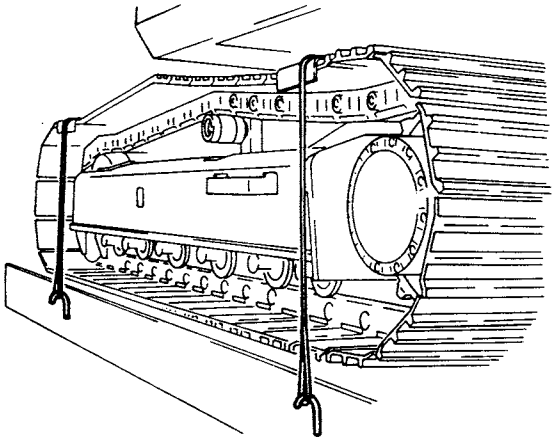
8) When using a platform, bring the end of the truck or trailer to the platform and unload or load the machine.



9) Place wooden blocks or something at both the front and the back of each track shoe so as not to prevent the machine body from moving on the platform of a transportation means. Then place a metal block at the edge of the shoe and secure it firmly with a wire sling or a chain.

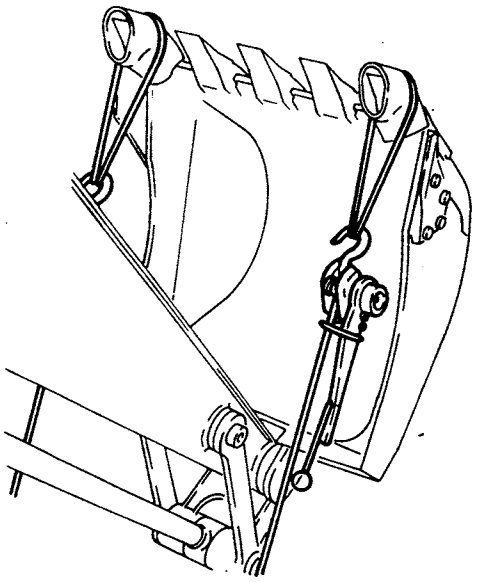
CAUTION

1. If the arm is fully retracted on the arm-equipped machine, the boom and the bucket tooth may hit each other. Therefore, when fully retracting the arm, bring the bucket to a fully raked-in position.
2. When the bucket is attached in a reversed position (face shovel), adjust the bucket position so the clearance between the boom and the bucket tooth is more than 1.96" (50 mm). In that case the overall transporting height is a little higher than the standard height.



[Shoe plate attachment and fixing of wire rope]

10) When transporting the machine, fully embrace the bucket and the arm and secure the top end of the bucket with wire slings.



[Fixing of bucket tip]