OPERATION MANUAL

UH122

Hydraulic Excavator

HITACHI

EM171-1-4

CONTENTS

2.3 Air System

Fig. 2-3 shows a schematic diagram of the air system.
The compressed air acts as follows.

(1) To pressurize the oil tank to aid the suction of the oil pumps.

(2) To supply fuel oil to the fuel tank by deflating it.

(3) To sound the air horn.

The following description is about the function of the major devices and the compressed air flow.

In the schematic diagram of the air system, the compressed air from the compressor is sent to the air tank through the air filter and check valve.

The air tank is of horizontal type and provided with a drain hose and cock. And also it is provided with a high pressure safety valve which is actuated by the air pressure of the air tank in the range of about 8.2 to 9.0 bar (8.2 to 9.0 kg/cm^2).

The governer is also built in the circuit, which stops the compressor by means of actuating the unload valve when the air tank pressure is more than that specified.

[Since the compressor is unloaded when the air tank pressure is more than 7.5 bar (7.5 kg/cm^2), and started when the pressure is always maintained in the range of 6.5 to 7.5 bar (6.5 to 7.5 kg/cm^2)]

The compressed air (primary pressure) from the air tank is reduced into 1.0 bar [1.0 kg/cm^2 (secondary pressure)] by means of the pressure reducing valve, and sent to the air chamber of the oil tank through the check valve.

Further, the primary pressure is sent to the air horn and fuel oil suction device.

To prevent the oil cooler piping system from the trouble caused by abnormal high pressure, the oil tank is provided with a oil level gauge, air meter (mounted on the right side meter panel by the operator's seat) which indicates always the air pressure in the tank, and low pressure safety valve [to be set at 1.8 bar (1.8 kg/cm^2)] which governs the maximum pressure in the oil tank.

When checking oil level, be sure to position the front as shown in Fig. 4-3, because the oil level of the oil tank shows a violent variation due to the stroke of each cylinder.

Note 1: Keep the engine idling until air pressure reads greater than 0.8 bar (0.8 kg/cm^2) on the air meter.

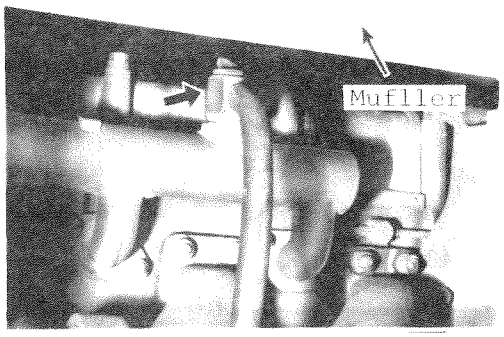
2: It is necessary to extend the warming-up period in winter or extremely low temperature.

3.6 Operation in Winter or Cold Time

(1) In winter or cold area, warm-up the engine sufficiently.
When the ambient temperature is below freezing point, prolong warming-up operation time, and cover the oil cooler front with sheets.
Prior to the operation after warming-up the engine, make sure that each actuator can be moved normally.
However, never control the lever radically, especially swing and propelling lever.

(2) In winter or cold time, even if each control lever is moved, the machine sometimes moves with some appreciable time lag or does not move at all.
At that time, warm-up the engine sufficiently, then, control the bucket lever in accordance with Table 3-4, item ② to increase hydraulic oil temperature into proper valve.
At that time, never control the swing, propelling, boom and arm.

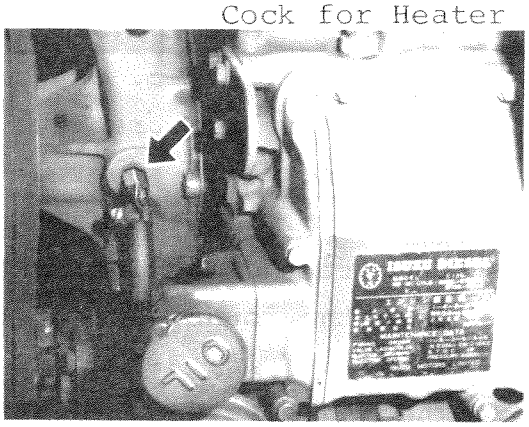
(3) The machine is provided with a car heater in the operator's cab. Use it when the temperature is low.
When using it, open both cocks on the inlet and outlet mounted on the engine to lead the hot water to the heater, then, put the heater switch in "ON", and warm air will come out.



Photograph 3-3 Hot Water Outlet Cock for Heater

Note:

(i) When the car heater is not used (in summer etc.) do not forget to close both hot water inlet and outlet on the engine. (Refer to Photograph 3-3 and 3-4)


Photograph 3-4 Hot Water Inlet Cock for Heater

4. MAINTENANCE AND ADJUSTMENT

4.1 Periodic Inspection and Maintenance

The purpose of the periodic maintenance service is to detect minor irregularities and prevent them from developing into serious conditions. A few minutes spent daily will be repaid in longer machine life and reduced maintenance.
The following topics give detailed instructions with regards to the care and adjustment of the various parts of the Hitachi UH122 excavator.

Periodic Maintenance Schedule

Daily inspection	Every day before commencing day's work
Monthly inspection	Every month
Yearly inspection	Every year
Oil grease and element replacement	Performed when daily and monthly inspections are carried out (based on hour meter)

4.1.1 Daily inspection (Before-operation service)

	Items to be inspected	Page
ENGINE	1. Levels of oil and cooling water; fouling	41, 43, 44
	2. V-belt tension and damage to V-belt	Refer to Diesel Engine Operator's Manual.
	3. Easiness of starting, exhaust color or abnormal noise	
	4. Water and oil leaks; damaged hose and piping	
	5. Damage to radiator	44
	6. Loose or missing bolt and nut	
UPPER WORKS	1. Level of fuel in fuel tank, leak or presence of foreign matter	52, 53
	2. Oil level; leak	48, 49
	3. Operation, operating force and play of levers and pedals	
	4. Operation of hydraulic components; leaky or damaged pipe and hose	
	5. Deformation, damage or abnormal noise	
	6. Loose or missing bolt, nut and washer	

4.4 Inspections before Operating Excavator

While warming up the engine, make the following inspections to be sure it is ready for operation:

Table 4-2 Inspections before Operating Excavator

1	Check oil tank to be sure that there is enough oil to run through the shift. If level is low, raise to proper level. (For the posture of the machine while inspecting refer to Fig. 4-3.)
2	Look around the entire machinery to see if there is any evidence of water, fuel or oil leaks.
3	Check to make sure the oil pressure alarm lamp goes off.
4	Check to make sure the battery charge warning lamp goes off.
5	Check engine for any unusual noise or exhaust smoke color.
6	See that air pressure is 0.8 ∿ 1.4 bar (0.8 ∿ 1.4 kg/cm^2) on the air pressure gauge dial.

Notes:

(1) The needle of the water temperature gauge should be in the NORMAL (green) range on the gauge dial. Operate the excavator with the load reduced to half until the needle reaches the NORMAL range.

(2) Check the engine and hydraulic system for any unusual noise, water or oil leaks or improper lever operations or gauge readings, or any other abnormal functions.
Stop the engine immediately if the warning lamp or alarm lamps come on during operation; isolate the cause of trouble and have it remedied.

(3) Before attempting to operate the machine, be sure to release the swing lock. Failure to do so could lead to damage to the swing lock pin or frame if the upper works are rotated.

(4) Prior to the operation, be sure to release the left lever locking device.
Be careful not to move the left lever under locked condition, lest the lever should be bent or the locking function be damaged.

ii) Hydraulic oil

After tightening the deflating plug, remove the flange plug and supply oil. At that time, be sure to use the funnel with wire cloth belonging to the machine.

When the oil is filled up to overflowing from the oil inlet with tightened deflating plug, the correct oil level is kept. (Refer to Fig. 4-4)

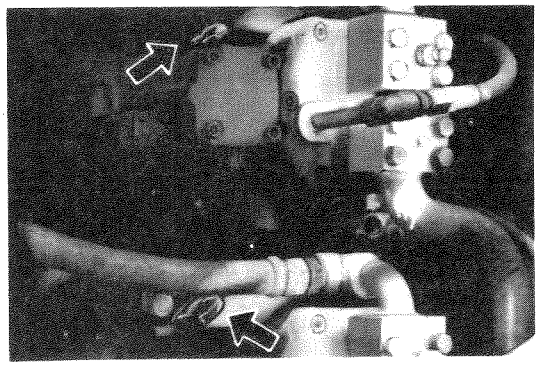
Then, remove both upper plugs (Photograph 4-19) on the upper and lower pump, and fill both pumps with hydraulic oil.

Since the engine start without oil in the pump breaks the pump, be sure to fill the pump with oil.

iii) Deflating air out of the oil circuit

When filling an empty oil circuit with oil, smooth operation cannot be expected at the beginning because of the air left in the oil circuit.

So that, to deflate the air out of the oil circuit after filling oil, move each control lever slowly to repeat full stroke motion of each actuator for 5 minutes or more, and the air will automatically be deflated.



Photograph 4-19

iv) Checking oil level

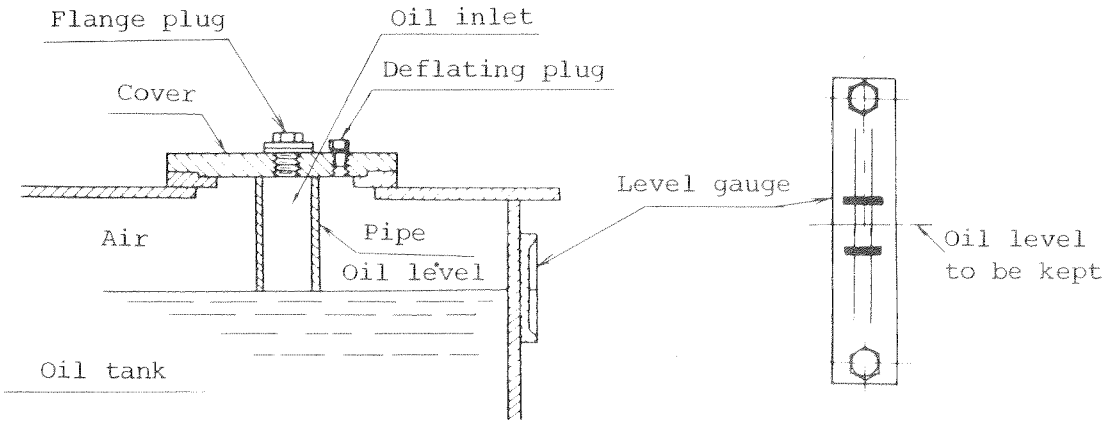


Fig. 4-4

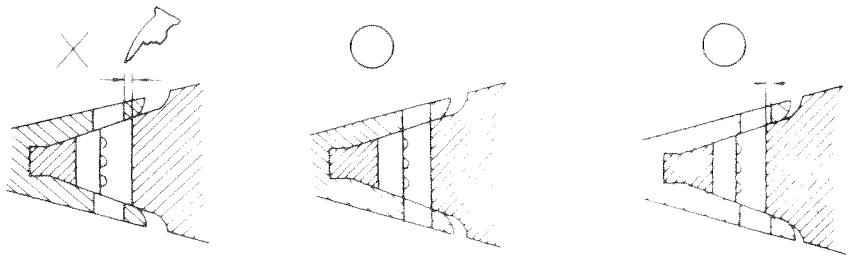


Fig. 4-16

For ease of confirming the alignment, use a ruler to insert it into the hole as shown in Fig. 4-38.
Do not drive the locking pin, if the point is on the nose as shown in the illustration above. In this case, there must be some foreign substances between the mating surface. After removing them, clean the mating surface, then, re-install and push the point fully and drive the lock pin into the hole.

vi) Put the locking pin into the hole of the point, and drive it until the top of the pin reaches the surface of the point. (Refer to Photograph 4-39 and Fig. 4-17)

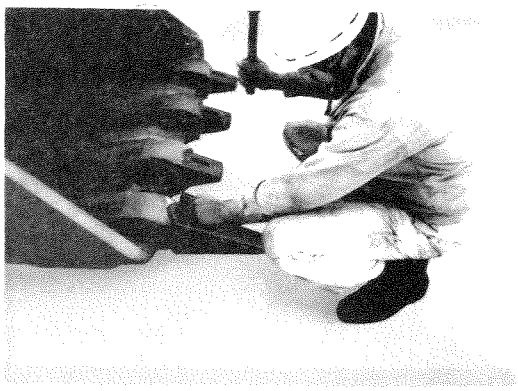


Photo 4-39

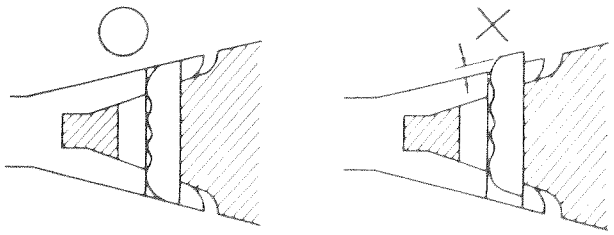


Fig. 4-17

4.6.18 Reinstalling bucket pin seal

Reinstall the O-ring for the bucket pin seal as follows.
If the O-ring used is damaged or broken, replace it with new one.

i) Put the O-ring on the boss of the bucket as shown in Fig. 4-18.

ii) Insert the pin. (Fig. 4-19)

iii) Set the O-ring in the groove (Fig. 4-20) after cleaning the groove.