PART NO. TO18P-E-00

HITACHI

Technical Manual
Operational Principle

EX
8000-6
Hydraulic Excavator

Service Manual consists of the following separate Part No.

Technical Manual (Operational Principle)	: Vol. No.TO18P-E
Technical Manual (Troubleshooting)	: Vol. No.TT18P-E
Workshop Manual	: Vol. No.W18P-E

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- Fault Code Display
  IDU displays the fault codes on the display in response to the abnormal signal from the controllers through Ke-CAN.

- Failure Information Display
  Failure information is displayed on the display by entering data of the keypad connected to IDU.

- Buzzer Output
  IDU sounds the buzzer in response to the specific alarm signal from the controllers through Ke-CAN.

- Status Display
  The date on temperature and pressure in response to the signal from the controllers through Ke-CAN are displayed on the display.

- Automatic Snapshot Display
  At the occurrence of warning, the data on temperature and pressure for five minutes before warning and one minute after warning are logged automatically.
  The log can be later checked by using the keypad.

- Manual Snapshot Display
  Any data on temperature and pressure can be checking manually when necessary. The date can be logged and later checked.

- Maintenance History
  Maintenance warning output
  The warnings on the replacement of air filters, engine oil, and hydraulic oil are output on the display at every preset interval.

- Maintenance History Output/Maintenance Record
  The history of replacement, including hour meter reading, quantity of maintenance times, and remaining hours to next maintenance is displayed.
  As a list of maintenance items is displayed, select the concerned item and record the replacement data.

  Setting Intervals and Warning ON/OFF
  The intervals of replacement items are individually set.
  The warnings ON/OFF of all replacement items are set at a time.

- Life Data Display
  IDU receives cumulative information, including cumulative engine running hours and machine operating hours from DLU through Ke-CAN, and displays it on the display.

- Property (Machine Information) Display
  The property of the machine, including controller configuration, hardware, and software (version) is displayed.

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RADIATOR FAN MOTOR SPEED CONTROL

Purpose: The radiator fan motor speed control controls the radiator fan motor speed at three stages to maintain the engine coolant and intake-air temperatures in the proper temperature range.

Operation:

1. The coolant temperature sensor (for radiator fan motor speed control) and LTA outlet temperature sensors electrical signals to MC depending on the detected temperatures.
2. MC controls the radiator fan motor speed control solenoid valve according to the delivered signals in order to deliver pilot pressure oil to the radiator fan drive pump regulator. (Refer to COMPONENT OPERATION/Pump Device as for regulator operation.)
3. Thus, the delivery flow rate from the radiator fan drive pump is controlled and the radiator fan motor speed is changed.
4. The detected data from the coolant temperature sensor and intake air temperature sensor is transmitted to IDU through Ke-CAN. Then, detected values are displayed on the monitor.

1st Speed Conditions:
Coolant temperature is 80 °C (176 °F) or lower, and intake air temperature is 44 °C (111 °F) or lower.

2nd Speed Conditions:
Coolant temperature is 85 °C (185 °F) or higher, or intake air temperature is 49 °C (120 °F) or lower.

3rd Speed Conditions:
Coolant temperature is 90 °C (194 °F) or higher, or intake air temperature is 49 °C (120 °F) or higher.

Radiator Fan Motor Speed

	Pilot Pressure from Solenoid Valve (Current from ECU)	Radiator Fan Motor Speed (min^{-1})
1st Speed	3.51 MPa (36 kgf/cm^2, 512 psi) [400 mA]	400
2nd Speed	1.65 MPa (17 kgf/cm^2, 242 psi) [270 mA]	1150
3rd Speed	0 MPa (0 kgf/cm^2, 0 psi) [50 mA]	1580±80

NOTE: The listed radiator fan motor speeds are those at the rated engine speed (1800 min^{-1}).

NOTE: In case the coolant temperature sensor or intake air temperature or radiator front air temperature sensor becomes abnormal, fan speed is fixed at 3rd speed.

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Cooling Operation

The cooling circuit consists of compressor (10), condenser (1), receiver dryer (9), expansion valve (3), evaporator (5), thermistor (6), thermo sensor tube (4), and blower fan (2). The cooling circuit is charged with refrigerant. Air from the fresh and / or circulation air inlet is sent to evaporator (5) by blower fan (2). As evaporator (5) is cool, air is cooled while passing through evaporator (5). Then, cooled air is sent into the cab from the vents.

Each component functions as follows:

- Compressor
  It suctions, compresses refrigerant from the low pressure circuit (between the evaporator and the compressor), and sends it to the condenser. (Refrigerant generates heat when compressed.)
- Condenser
  It cools hot refrigerant.
- Receiver Dryer
  It removes moisture from refrigerant and stores refrigerant.
- Expansion Valve
  It atomizes high-pressure liquid refrigerant into low-pressure gas via an orifice.
- Evaporator
  It vaporizes refrigerant and absorbs heat from atmosphere.
- Thermo Sensor Tube
  It checks air temperature after passing through the evaporator and adjusts the orifice on the expansion valve in response to air temperature change in order to control the refrigerant flow rate.
- Thermistor
  It stops the compressor if temperature on the fin surface of the evaporator falls lower than 0 °C.
- Blower Fan
  It sends air from the fresh and/or circulation air inlet to the evaporator.

Heating Operation

During heating operation, valve (8) is opened so that high-temperature engine coolant circulates through heater (7). Therefore, heater (7) becomes hot. Air from blower fan (2) is warmed as it passes through heater (7) and is sent into the cab from the vents.

Dehumidifying and Heating Operation

During dehumidifying and heating operation, the cooling and heating systems are operated at the same time. Air from blower fan (2) is cooled and dehumidified at evaporator (5) and air is warmed at heater (7) before being sent into the cab.

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