PART NO.

HITACHI

Technical Manual

Operational Principle

EX

EX1900-5

Hydraulic Excavator

Service Manual consists of the following separate Part No.
Technical Manual (Operational Principle)
Technical Manual (Troubleshooting)
Workshop Manual

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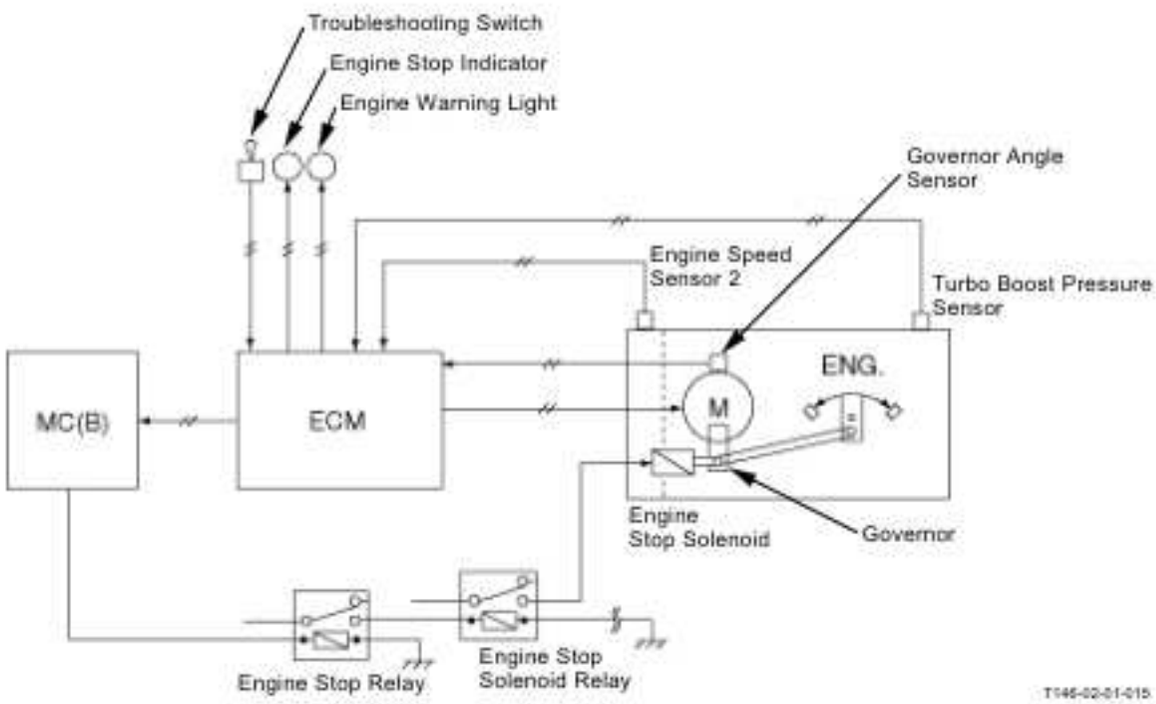
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Troubleshooting by ECM

Function: The ECM detects any failures in the engine by means of electrical signals sent from various sensors connected to the ECM. Depending on the detected failure status, the ECM takes corrective measures such as controlling the engine speed and/or the amount of fuel injection, or stopping the engine. In addition, the ECM indicates the failure by flashing the engine warning light or engine stop indicator in the troubleshooting mode.

Operation:

1. Electrical signals from the various sensor are input to the ECM. Then, if any input signals outside the specified range arrive in the ECM, the ECM judges that the engine is displaying trouble.
2. If the ECM judges that the engine is displaying trouble, depending on the location of the trouble, the ECM moves the governor reducing the engine speed to 1000 min^{-1}, switches the engine stop indicator ON and flashes engine warning light, and/or sends the engine stop signal to MC (B).
3. When the engine stop signal from the ECM reaches MC (B), MC (B) activates the stop solenoid relay via the engine stop relay, driving the engine stop solenoid. Thereby, the engine is stopped.
4. When the troubleshooting switch in the cab is turned ON, the ECM makes the engine warning light on the monitor panel flash the fault code pertaining to the failure.



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ELECTRICAL / HYDRAULIC COMBINED CIRCUIT CONTROL

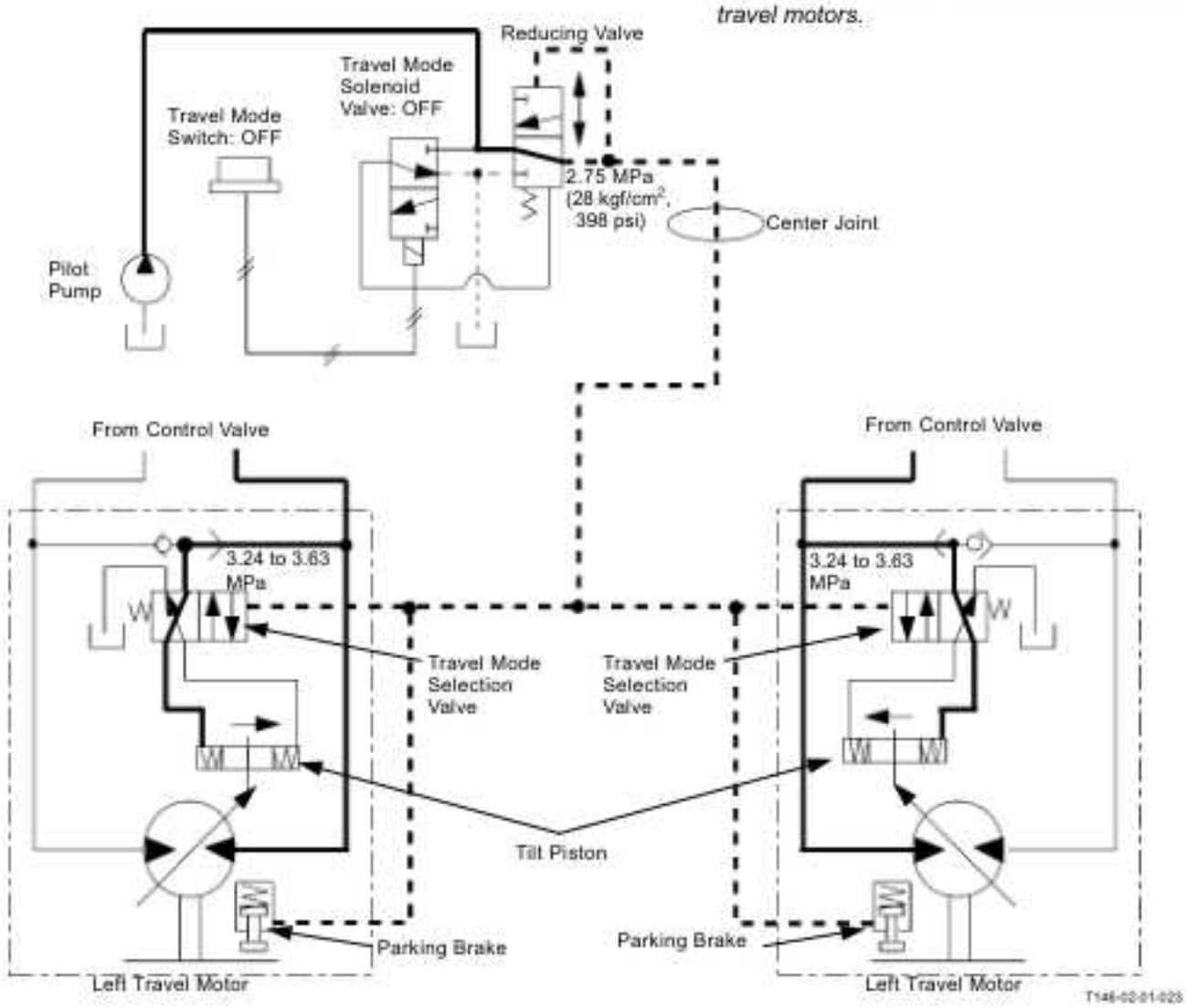
Travel Mode Selection

Function: Controls the travel motor displacement angle by operating the travel mode switch to change the travel mode.

Operation:
(Slow Mode)

1. When the travel mode switch is OFF (slow mode), the travel mode solenoid valve is turned OFF. Therefore, the pilot oil pressure is routed to the travel mode selection valve spool ends after being reduced to 2.75 MPa (28 kgf/cm^2, 398 psi) by the reducing valve.
3. As the travel mode selection valve spool is set so that it starts shifting at a pilot oil pressure of 3.24 MPa (33 kgf/cm^2, 469 psi) and is fully shifted at 3.63 MPa (37 kgf/cm^2, 526 psi), the spool is still immovable.
4. Accordingly, the main system pressure oil from the control valve is routed to the slow speed side tilt piston through the travel mode selection valve, maximizing the travel motor displacement angle. Then, the travel speed becomes slow. (Refer to the COMPONENT OPERATION / Travel Device group.)

NOTE: The following circuit diagram shows the travel mode selection circuit to the left side travel motors.



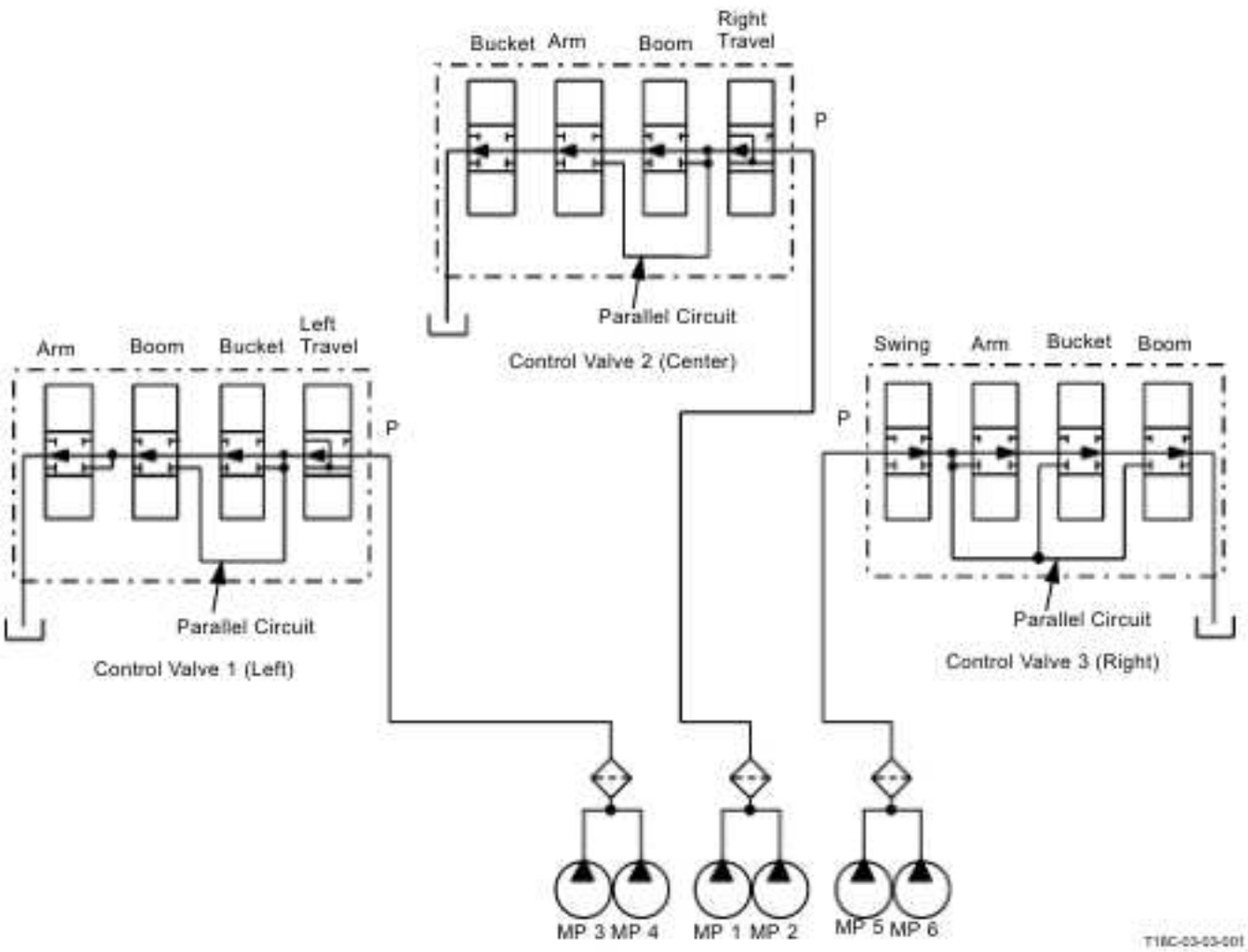
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HYDRAULIC CIRCUIT

Backhoe

The control valve 1 (left) controls the pressure oil delivered from main pumps MP3 and MP4. The spools for the left travel, bucket, boom, and arm are arranged from port P in this order. The control valve 2 (center) controls the pressure oil delivered from main pumps MP1 and MP2. The spools for the right travel, boom, arm and bucket are arranged from port P in this order. The control valve 3 (right) controls the pressure oil delivered from main pumps MP5 and MP6. The spools for the swing, arm, bucket, and boom are arranged from port P in this order.

The control circuit is a combined circuit consisting of tandem circuits and parallel circuits. The parallel circuits are provided between the bucket and boom sections in the control valve 1 (left), the boom and arm sections in the control valve 2 (center), and the arm, bucket, and boom sections in the control valve 3 (right), making the machine to perform combined operations.

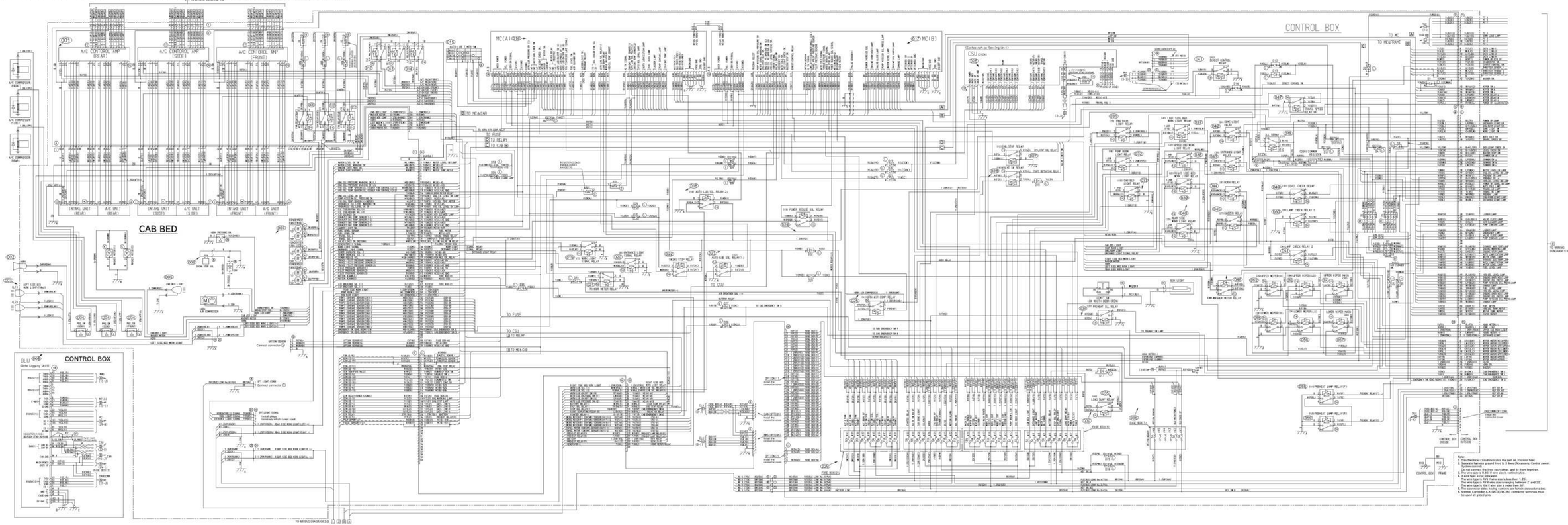


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EX1900-5 ELECTRICAL CIRCUIT DIAGRAM 2/3

Authorized Hitachi Dealer Use Only.
Parts numbers on the drawing are provided only for reference.
To order parts on the drawing,be sure to consult the parts catalog.

IMPORTANT:
The numbers (001) to (059) indicate the No. in the cross reference table.
Refer to the cross reference table in T5-2 group.



Notes:
1. This Electrical Circuit indicates this part on (Control Box).
2. Separate harness ground lines to 3 lines (Accessory, Control power, Engine).
   Do not connect the lines each other, and fix them together.
3. The wire size is 0.85 if wire size is not indicated.
4. The wire color is changeable.
   The wire type is AVS if wire size is less than 1.25 ;
   The wire type is AV if wire size is ranging between 2 and 30 ;
   The wire type is AVSS if wire size is more than 40.
5. The connector slides having numbers are female connector sides.
6. Maintain Controller A,B (MC(A),MC(B)) connector terminals must be used all global pins.

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