Manual No. : KM-141-E
Vol. No. : TO141-E-01

Technical Manual

(Operational Principle)

EX2500-5

Excavator

Service Manual (Manual No. KM-141-E) consists of the following three separate volumes;

Technical Manual (Operational Principle)	: Vol. No. TO141-E
Technical Manual (Troubleshooting)	: Vol. No. TT141-E
Workshop Manual	: Vol. No. W141-E

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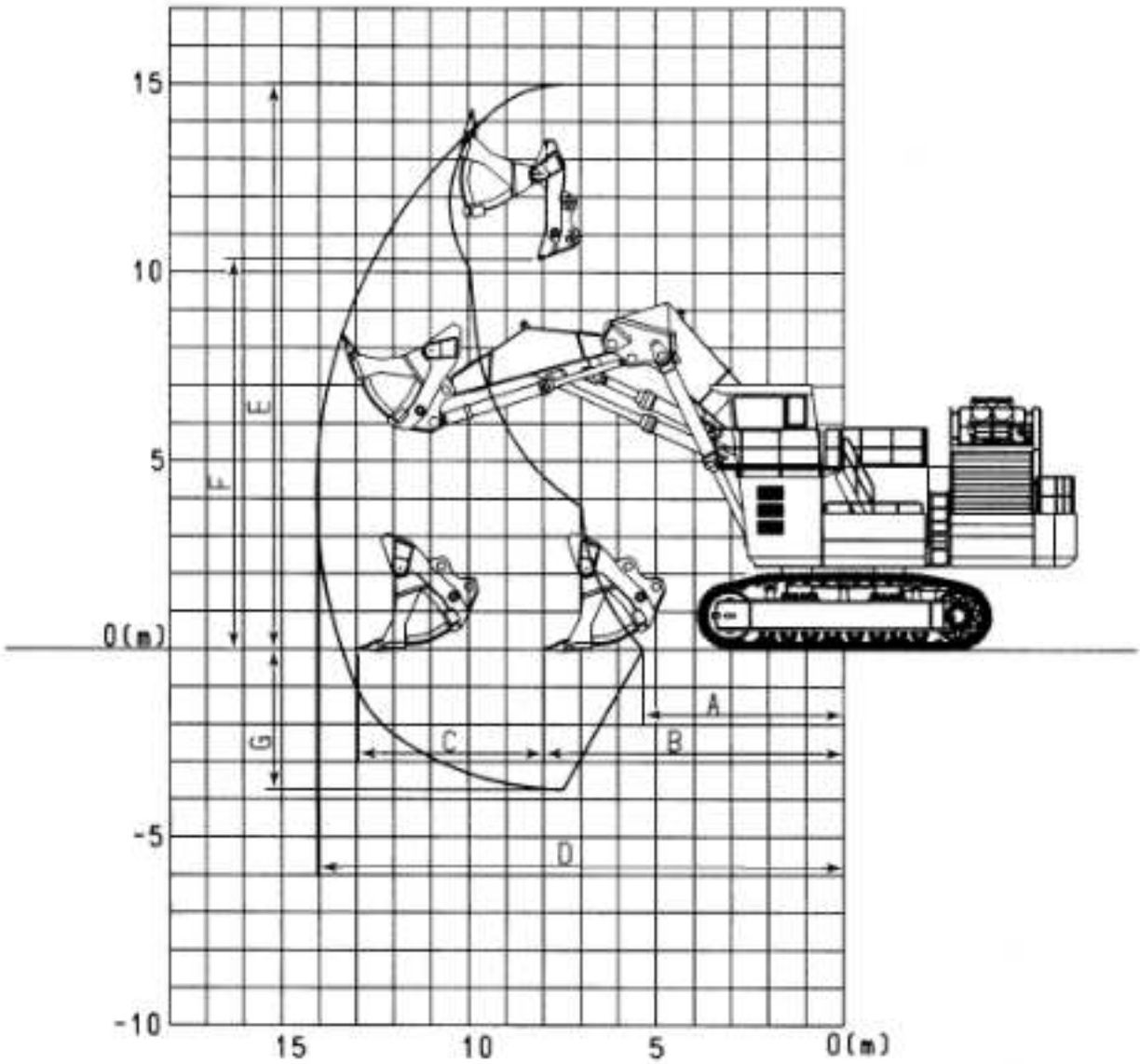
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WORKING RANGE

Loading Shovel



T141-01-01-802

Items	
A : Minimum Digging Distance	5340 mm (17 ft 6 in)
B : Minimum Level Crowding Distance	7980 mm (26 ft 2 in)
C : Level Crowding Distance	4980 mm (16 ft 4 in)
D : Maximum Digging Reach	14060 mm (46 ft 2 in)
E : Maximum Cutting Height	15010 mm (49 ft 3 in)
F : Maximum Dumping Height	10350 mm (34 ft 0 in)
G : Maximum Digging Depth	3720 mm (12 ft 2 in)

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Constant Torque Control
(Main Pump and Fan Motor Drive Pump)

NOTE: The constant torque control has the two following functions.
- *Overload Prevention Operation*
  As load (pressure) increases, the pump delivery flow rate is reduced so that the engine is not overloaded.
- *Flow Rate Recover Operation*
  As load (pressure) decreases, the pump delivery flow rate is increased so that the engine output can be effectively utilized.

- Overload Prevention Operation

1. When pump delivery oil pressure (P) increases from P1 to P2, compensating piston (16) pushes compensating rod (20) to the right until the oil pressure force balance with outer spring (21) and inner spring (22).

2. Compensating rod (20) moves lever 2 (17) via pin (24). Lever 2 (17) rotates around pin (18) (secured in the housing) counterclockwise.

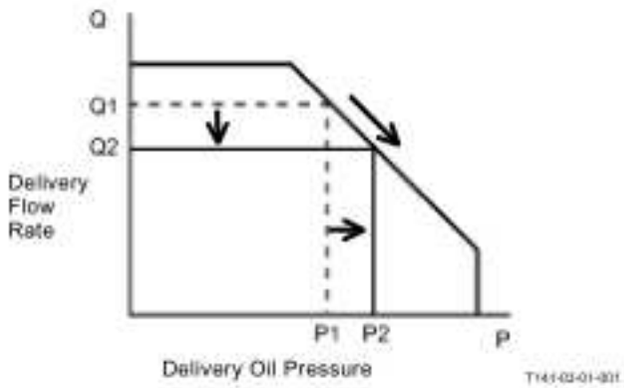
3. As pin (5) installed in feedback lever (12) is inserted into hole (19) on lever 2 (17), feedback lever (12) is rotated around pin (13) by lever (2) (17) clockwise, moving spool (3) to the right.

4. When spool (3) is moved, pump delivery pressure oil is routed into the large chamber of servo piston (14) through spool (3). Although the same pressure oil is routed into the small chamber, servo piston (14) moves to the right due to the difference in the pressure receiving area between the servo piston ends.

5. According to servo piston (14) moving, the pump swash angle is reduced so that the pump flow rate is reduced.

6. As servo piston (14) moves, feedback lever (12) is moved via pin (13). Since compensating rod (20) and lever 2 (17) do not move, feedback lever (12) is rotated around pin (5) counterclockwise, moving spool (3) to the left. Then, when the notches on spool (3) and sleeve (2) close. Thoroughly the oil pressure isn't routed into the large chamber of servo piston (14), then servo piston (14) stops moving.

7. Consequently, the pump flow rate decreases from Q1 to Q2, reducing the pump loads.



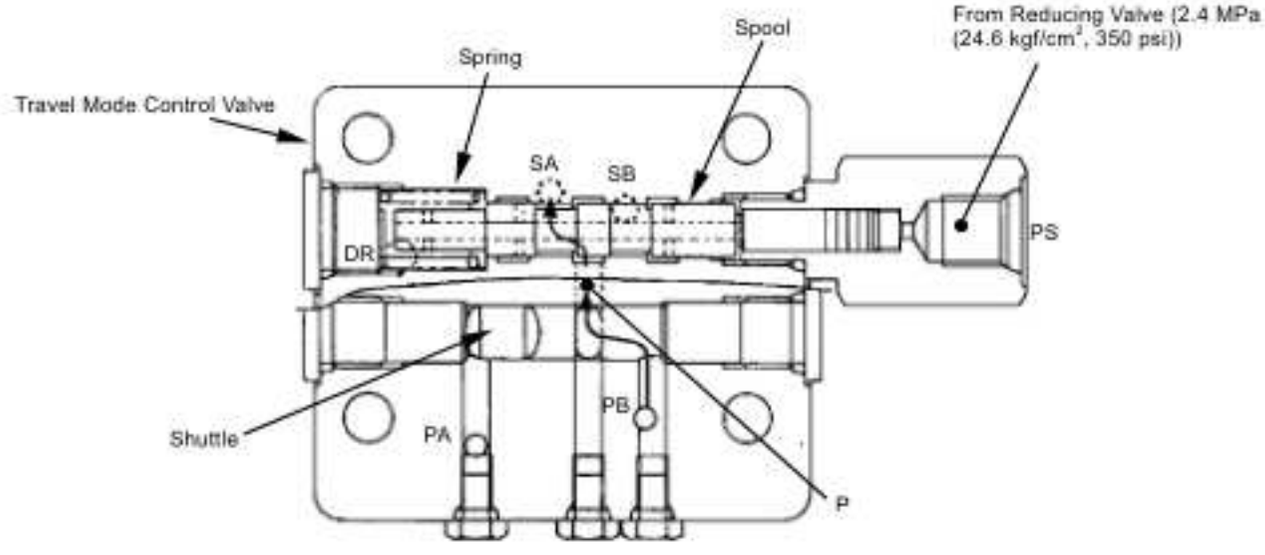
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TRAVEL MODE CONTROL

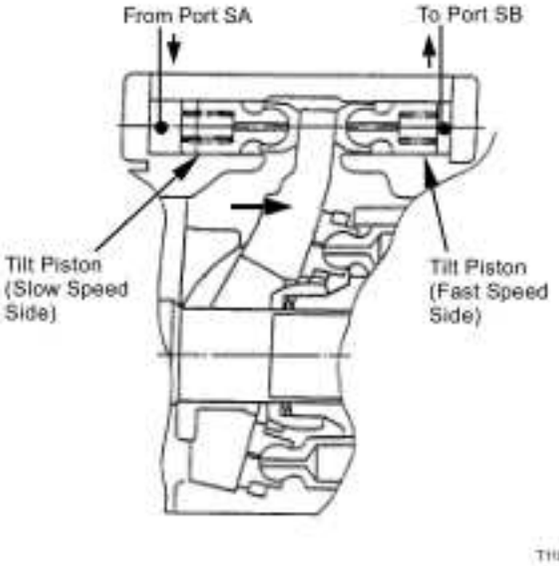
Slow Speed Mode

Ports PA and PB of the travel mode control valve are connected to the travel main hydraulic circuit. When travel operation either forward or reverse is made, the main hydraulic pressure oil passes through port PA or PB, pushes the shuttle, and enters port P. When the travel mode switch is turned OFF (slow mode), the oil pilot pressure is routed to port PS of the travel mode control valve after being reduced to 2.4 MPa (24.6 kgf/cm^2, 350 psi). Although the spool is pushed to the left by the pilot oil pressure in port PS, as long as the pilot oil pressure stays at 2.4 MPa (24.6 kgf/cm^2, 350 psi), the spring force overcomes so that the spool doesn't move to the left. Then, the main hydraulic oil pressure from port PA or PB, through the notch on the spool is routed to port SA, and acts on the slow speed side tilt piston.

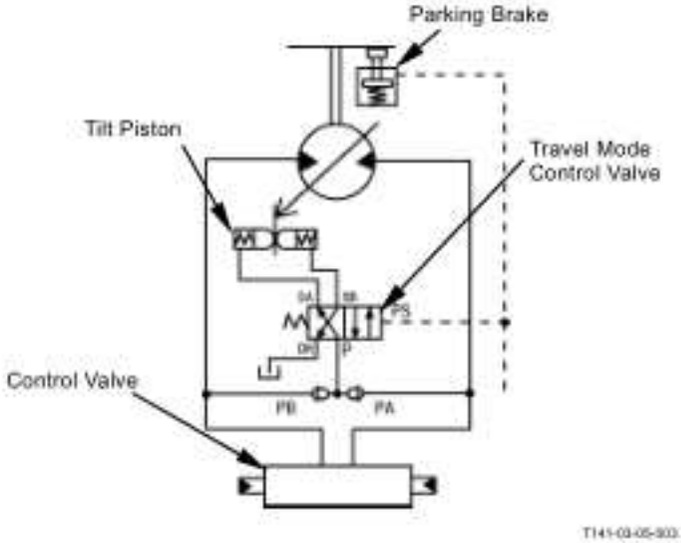
Accordingly, the travel speed is changed to the slow speed mode, increasing the swash plate angle to the maximum. The hydraulic oil in the fast speed side tilt piston is routed to port DR via port SB through the passage in the spool and flows back to the hydraulic oil tank. (Refer to the SYSTEM / Control System group.)



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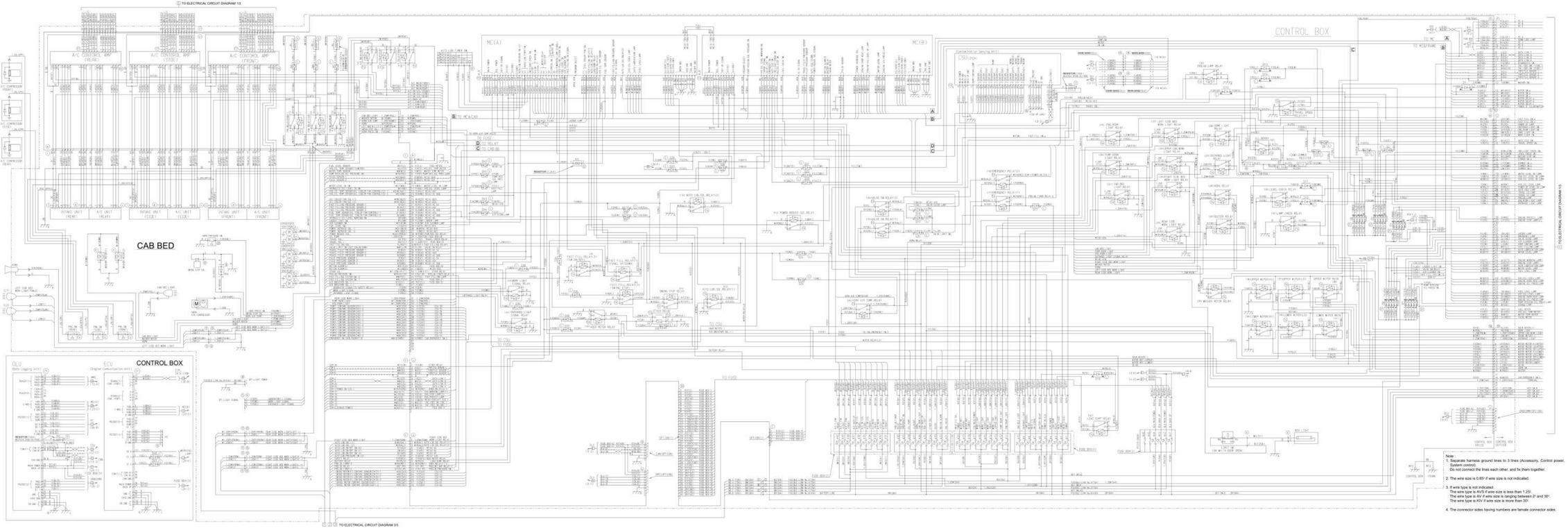
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EX2500-5 ELECTRICAL CIRCUIT DIAGRAM 2/3



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