Manual No. : TO16J-E-02

Technical Manual

(Operational Principle)

ZAXIS

450 450H
450LC 450LCH
460LCH

HITACHI

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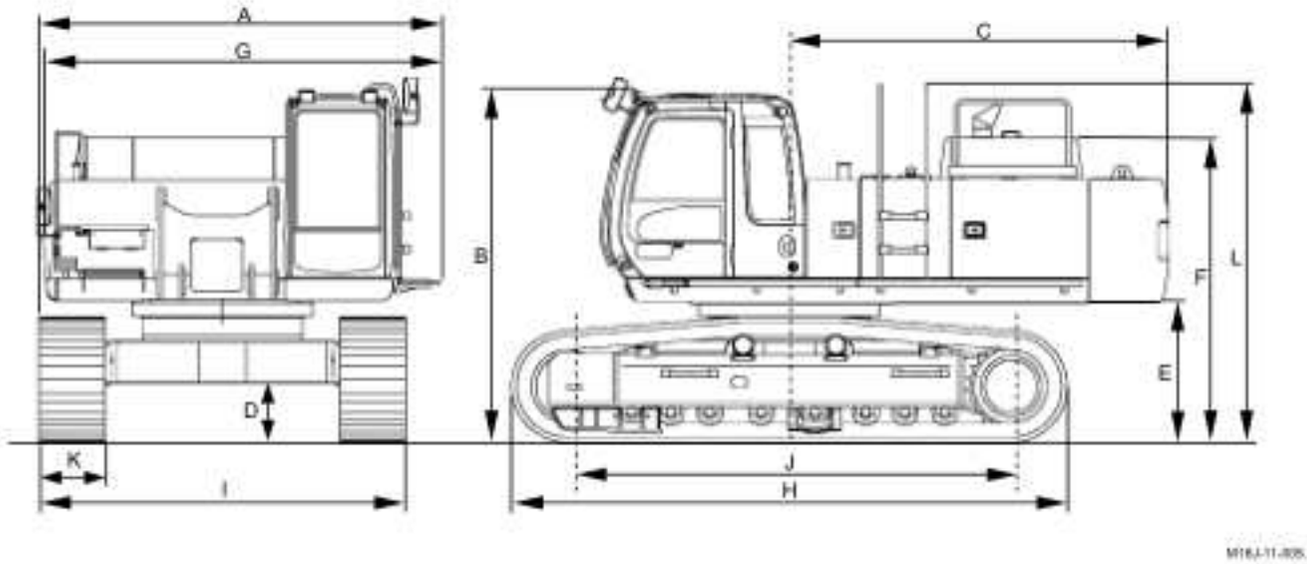
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ZAXIS450 (LOADING SHOVEL)



Model	ZX450 Hydraulic Excavator	
Type of Front-End Attachment	Loading shovel front attachment	
Bucket Capacity (Heaped)	2.6 m^3 (3.4 yd^3)	2.8 m^3 (3.7 yd^3)
Operating Weight	44000 kg (97000 lb)	43800 kg (96600 lb)
Basic Machine Weight	32700 kg (72800 lb)	
Engine	235 kW/1800 min^{-1} (320 PS/1800 rpm)	
A: Overall Width (Excluding Back Mirrors)	3670 mm (12 ft 0 in)	
B: Cab Height	3260 mm (10 ft 8 in)	
C: Rear End Swing Radius	3480 mm (11 ft 5 in)	
D: Minimum Ground Clearance	*496 mm (20 in)	
E: Counterweight Clearance	*1230 mm (4 ft 0 in)	
F: Engine Cover Height	2770 mm (9 ft 1 in)	
G: Coverall Width of Upperstructure	3610 mm (11 ft 10 in)	
H: Undercarriage Length	5050 mm (16 ft 7 in)	
I: Undercarriage Width	3430 mm (11 ft 3 in)	
J: Sprocket Center to Idler Center	4050 mm (13 ft 3 in)	
K: Track Shoe Width	600 mm (24 in) (Grouser shoe)	
L: Overall Height	3250 mm (10 ft 8 in)	
Ground Pressure	82 kPa (0.84 kgf/cm^2, 12 psi)	81 kPa (0.83 kgf/cm^2, 12 psi)
Swing Speed	9.0 min^{-1} (rpm)	
Travel Speed (Fast/Slow)	5.5/3.4 km/h (3.4/2.1 mph)	
Gradeability	35° (tanθ = 0.70)	

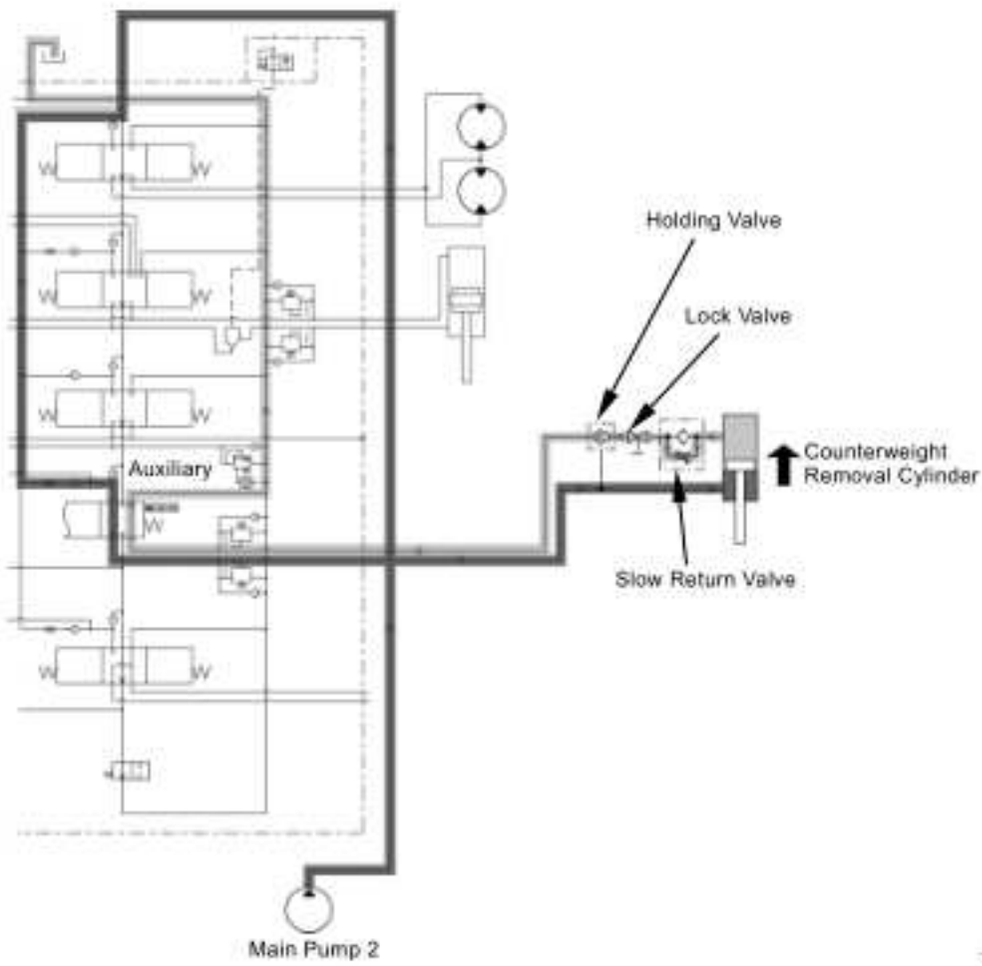
*NOTE: * The dimensions do not include the height of the shoe lug.*

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COUTERWEIGHT REMOVAL / INSTALLATION CIRCUIT (Optional)

When the counterweight hoist/lower control lever (optional) is operated, pressure oil from the pilot pump flows through the counterweight pilot valve and shifts the auxiliary spool in the 5-spool control valve to remove/install the counterweight.
Pressure oil from main pump 2 flows into the counterweight removal cylinder via the parallel passage and auxiliary spool in the 5-spool control valve.
When hoisting the counterweight, pressure oil flows into the cylinder bottom via the check valve in the slow return valve.

When lowering the counterweight, pressure oil flows into the cylinder rod side.
The return oil flow from the cylinder bottom is regulated by the slow return valve and flows to the hydraulic oil tank via the holding valve.
The holding valve is opened by the pressure in the rod side, allowing the return oil from the bottom side to flow through.

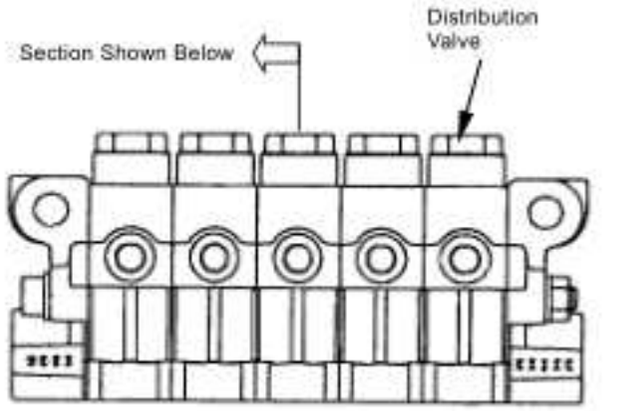


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DISTRIBUTION VALVE (OPTIONAL)

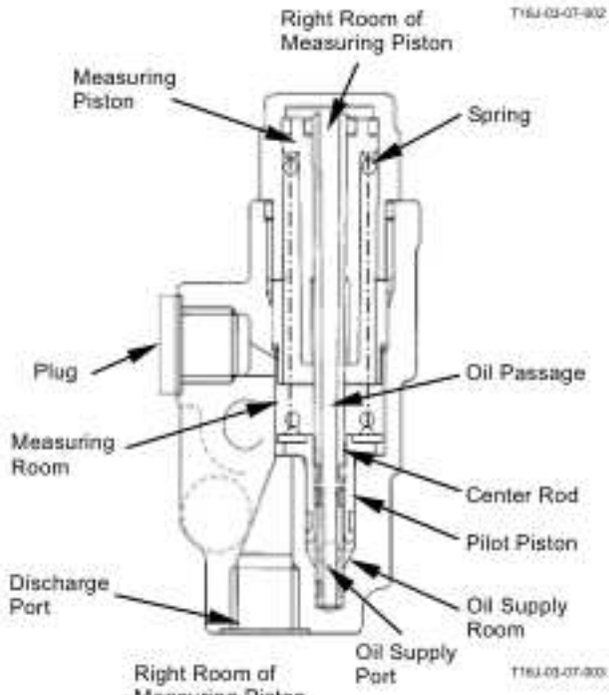
The distribution valve, provided in the auto lubrication circuit, measures the grease supplied by pressurizing with the pump, and discharges it.

NOTE: Refer to "CONTROL SYSTEM / Auto Lubrication Control".

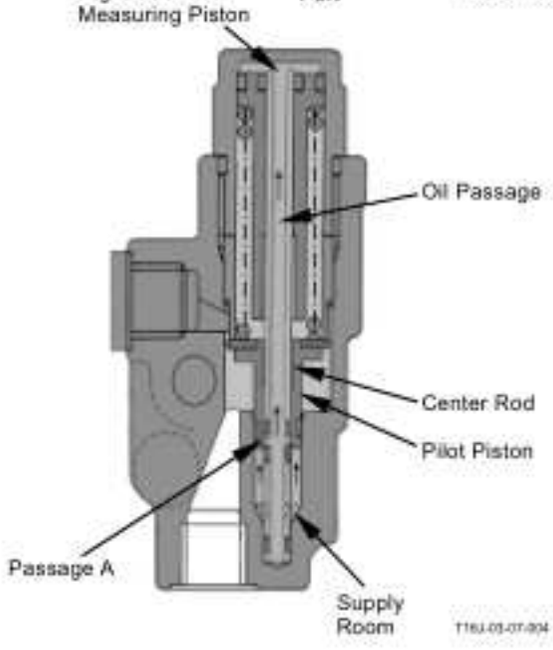


Operation

1. The distribution valve is ready for operation (when not pressurized with the pump), as shown at right.

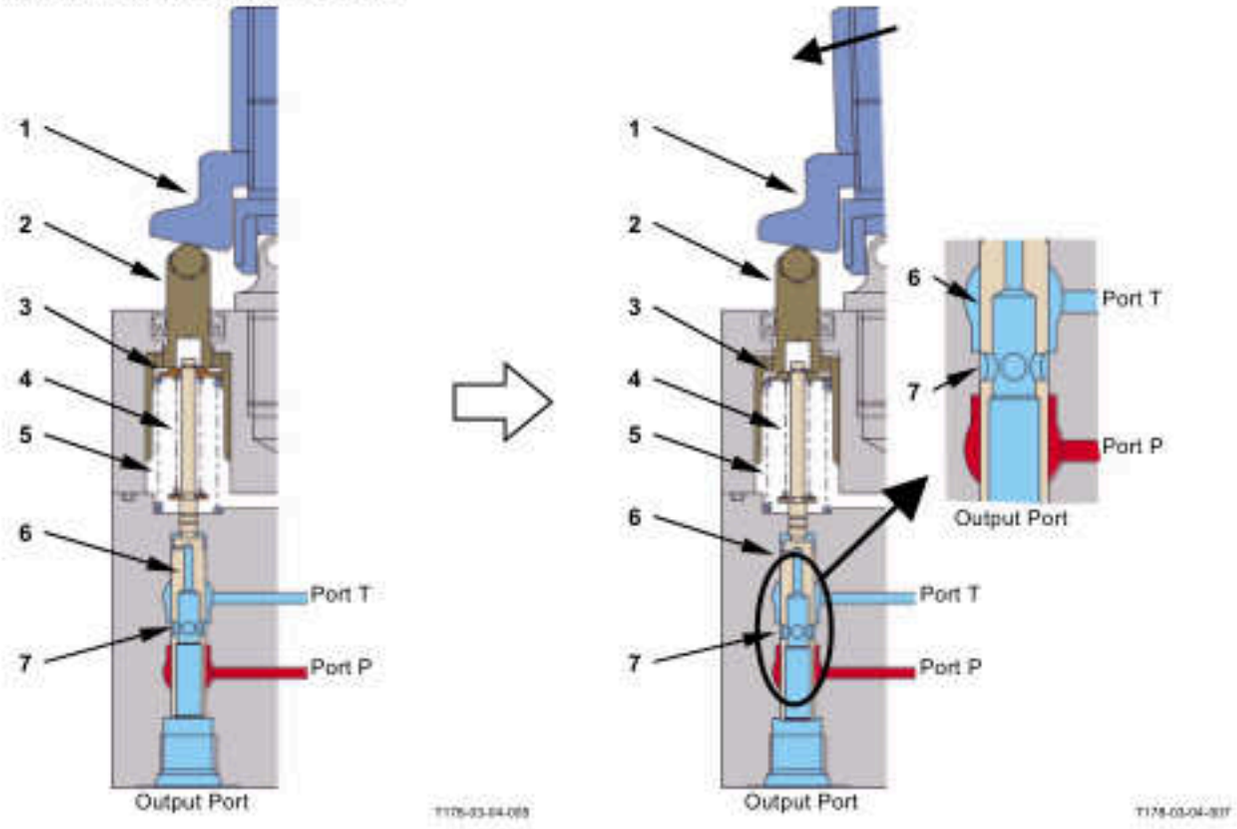


2. When the supply room is pressurized with the pump, the pilot piston is pressed upward. Then, the grease passes through the oil passage in the center rod via the passage A, and enters the right room of the measuring piston.

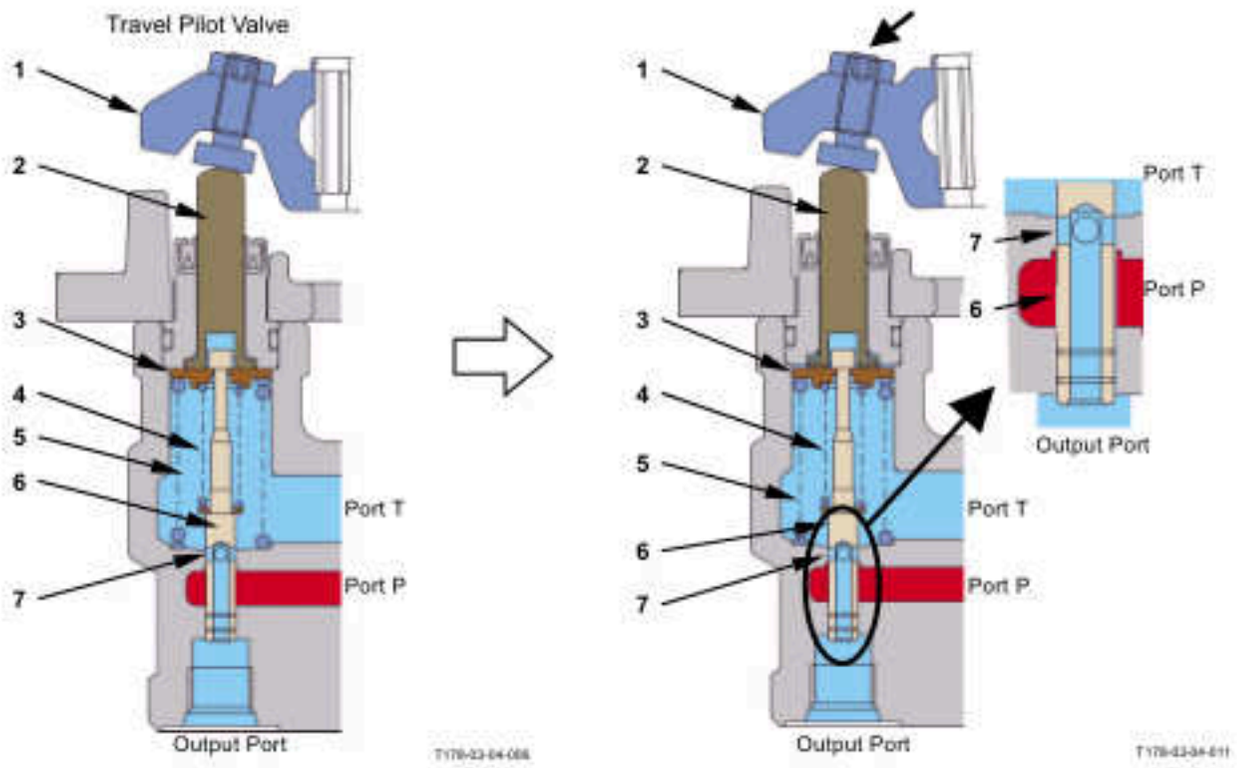


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Front Attachment / Swing Pilot Valve

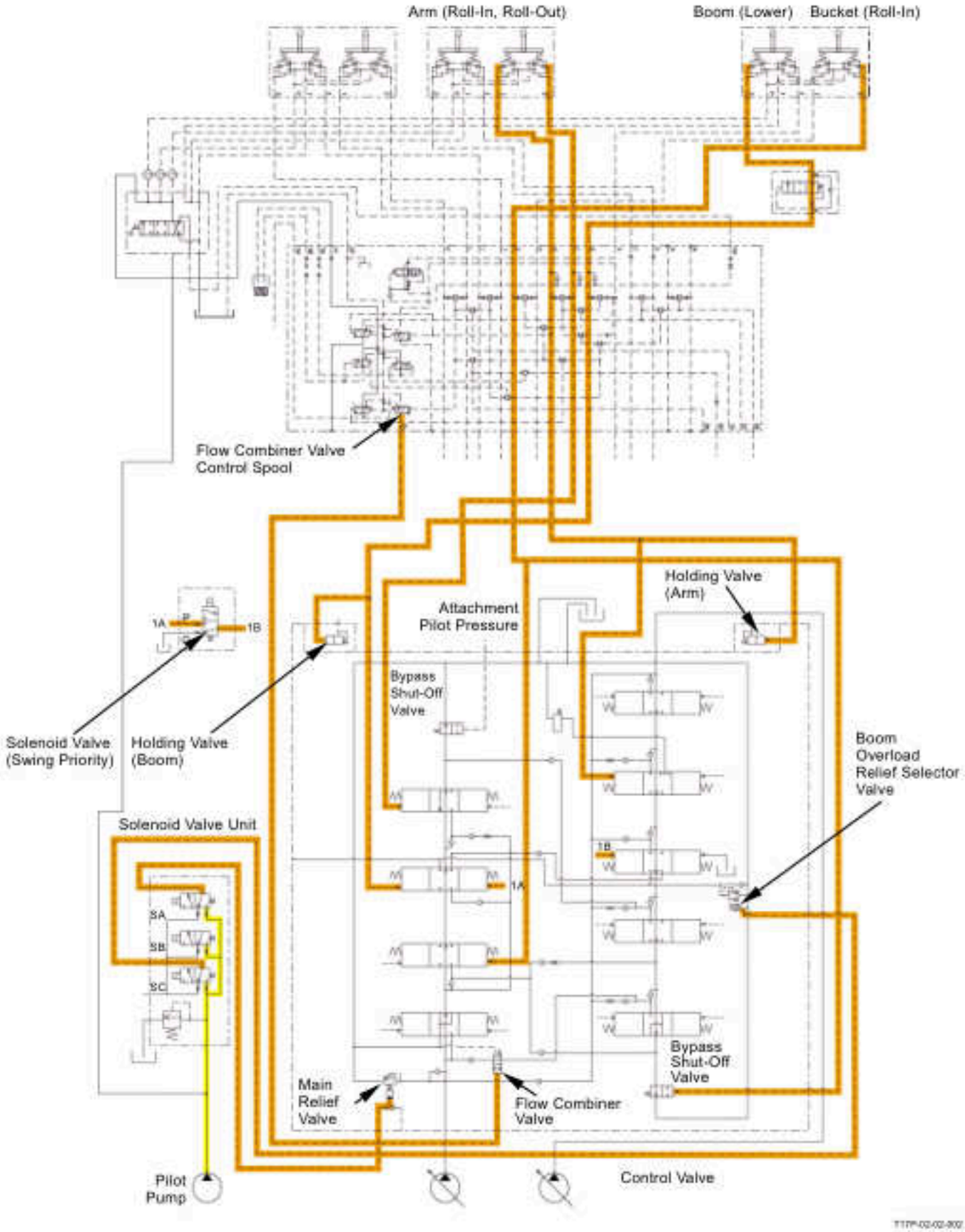


Travel Pilot Valve



1 - Cam
2 - Pusher
3 - Spring Guide
4 - Balance Spring
5 - Return Spring
6 - Spool
7 - Hole

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