PART NO.

TATA HITACHI

Reliable solutions

Technical Manual
Operational Principle

ZAXIS
370
400

GI - SERIES

Hydraulic Excavator

Serial No. :

ZX370GI 000001 ONWARDS
ZX400GI 000001 ONWARDS

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SECTION 1

GENERAL

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CYLINDER		Boom	Arm	Bucket
	Rod Diameter	100 mm (3.94")	115 mm (4.53")	95 mm (3.74")
	Cylinder Bore	145 mm (5.71")	170 mm (6.69")	140 mm (5.51")
	Stroke	1520 mm (4'12")	1740 mm (5'9")	1250 mm (4'1")
	Fully Retracted Length	2145 mm (7'0")	2425 mm (7'12")	1818 mm (5'12")
	Plating Thickness	30 µm (1.18 µm)	30 µm (1.18 µm)	30 µm (1.18 µm)

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Solenoid Valve

The torque control solenoid valve and the maximum pump 2 flow rate limit control solenoid valve are equipped for the outside unit.
The torque control solenoid valve supplies torque control pressure Pps to both the pump 1 and pump 2 regulators and the pump delivery flow rate is reduced.
The maximum pump 2 flow rate limit control solenoid valve reduces pump control pressure Pi to the pump 2 regulator so that the upper limit of pump delivery flow rate is limited.

Operation

1. When in neutral, port P (5) is connected to output port (4) through the notch on spool (3).
2. When current flows to solenoid (7) from MC (main controller), solenoid (7) is excited and pushes piston (6).
3. As piston (6) pushes spool (3), output port (4) is connected to port T (8) through the notch on spool (3).
4. Therefore, pressure at output port (4) begins to decrease.
5. Diameter B is larger than diameter A as for the notch of spool (3).
6. Therefore, when pressure at output port (4) begins to decrease, spool (3) is move toward the right because of the force as Fsol (9)+P1×B+S1>P1×A+S2.
7. When pressure at output port (4) decreases and the following formula exists, Fsol (9)+P1×B+S1=P1×A+S2, spool (3) is stopped.

P1:	Pressure at Output Port (4)
A and B:	Pressure Receiving Area on Spool (3)
S1:	Spring 1 (1) Force (Force pushing spool (3) to the right)
S2:	Spring 2 (2) Force (Force returning spool (3) to the left)
Fsol:	Solenoid (7) Force

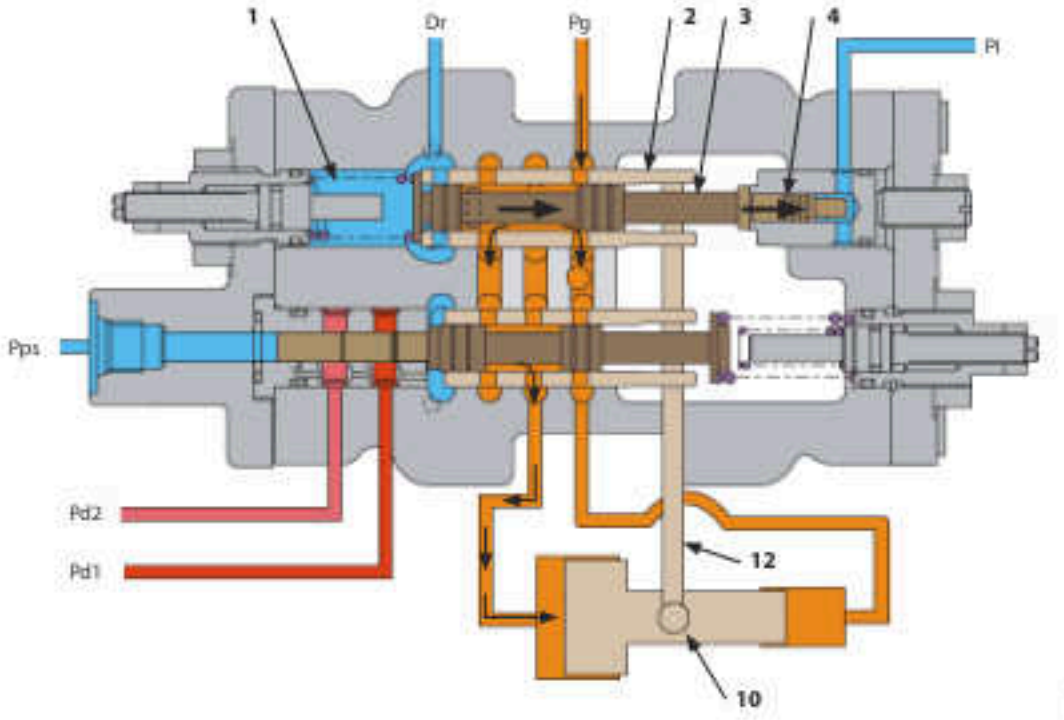
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Make-Up Operation

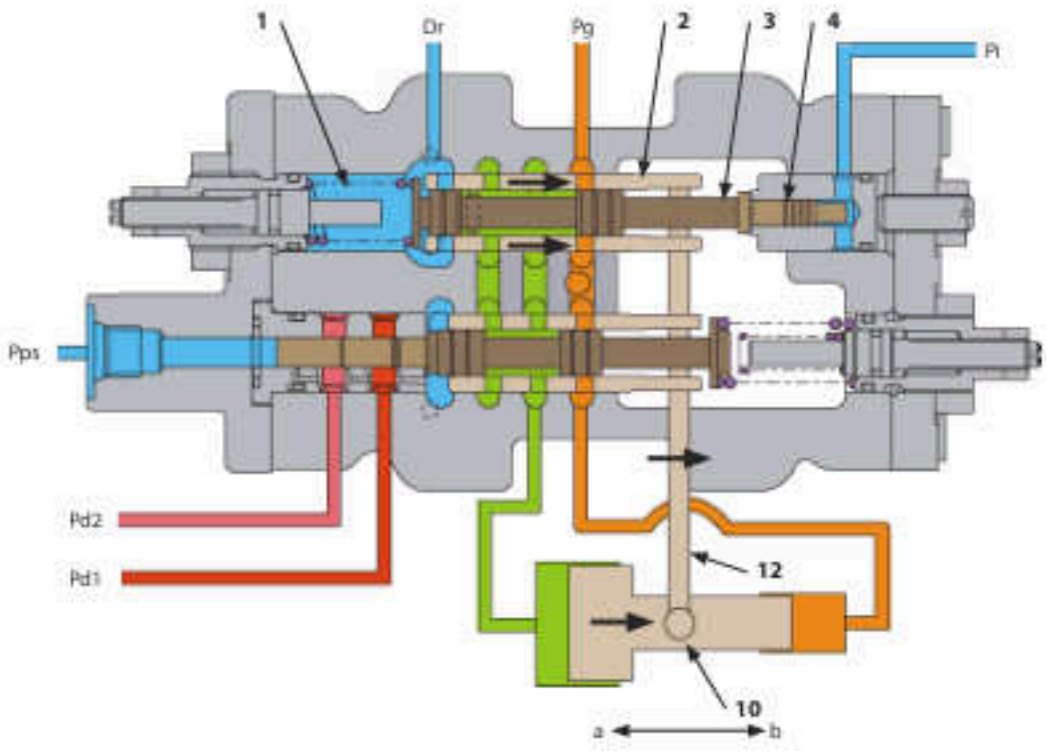
1. When pressure in port HP (actuator circuit) decreases lower than pressure in port LP (hydraulic oil tank), sleeve (3) is moved to the right.
2. Hydraulic oil in port LP flows to port HP and cavitation is prevented.
3. When pressure in port HP increases to the specified pressure, sleeve (3) is closed by the force of spring C (7).

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NOTE: The illustration shows the pump2 regulator.



TDCD-03-01-011



TDCD-03-01-012

Pd1- Pump 1 Delivery Pressure
Pd2- Pump 2 Delivery Pressure

Dr- Returning to Hydraulic Oil Tank

Pi- Pump Control Pressure
Pps- Torque Control Pressure

Pg- Primary Pilot Pressure (From Pilot Pump)

1- Spring
2- Sleeve A

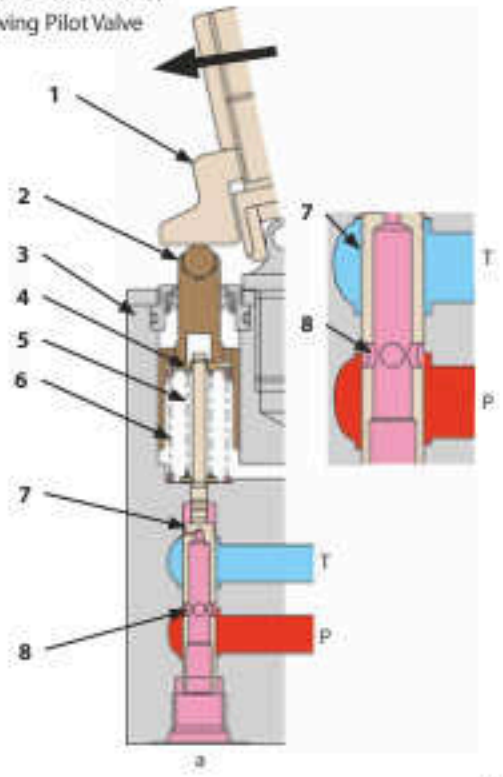
3- Spool A
4- Piston

10- Servo Piston

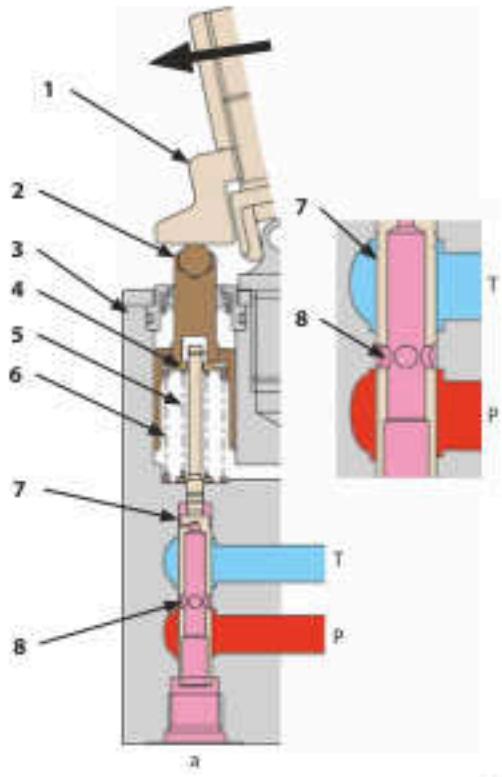
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Front Attachment / Swing Pilot Valve

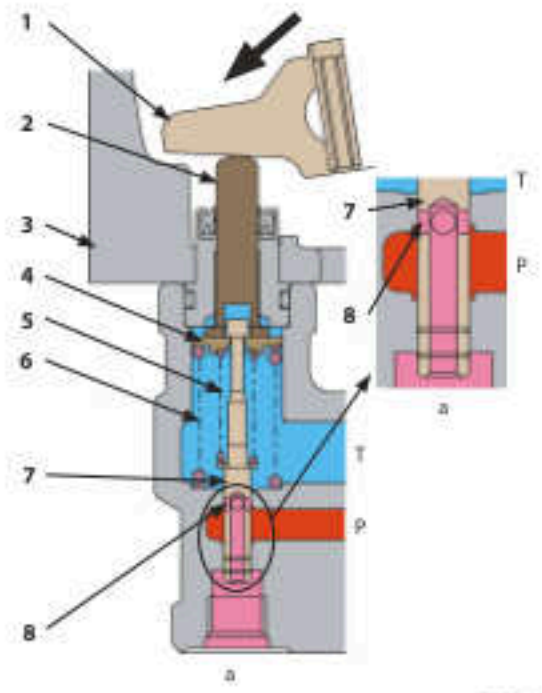


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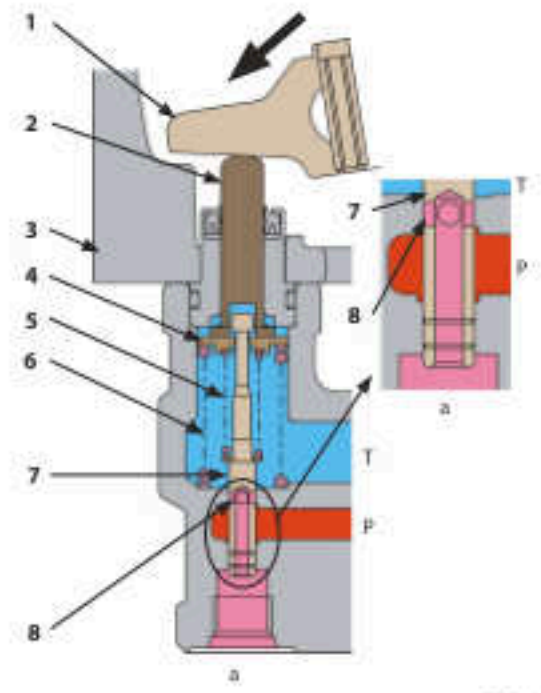


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Travel Pilot Valve



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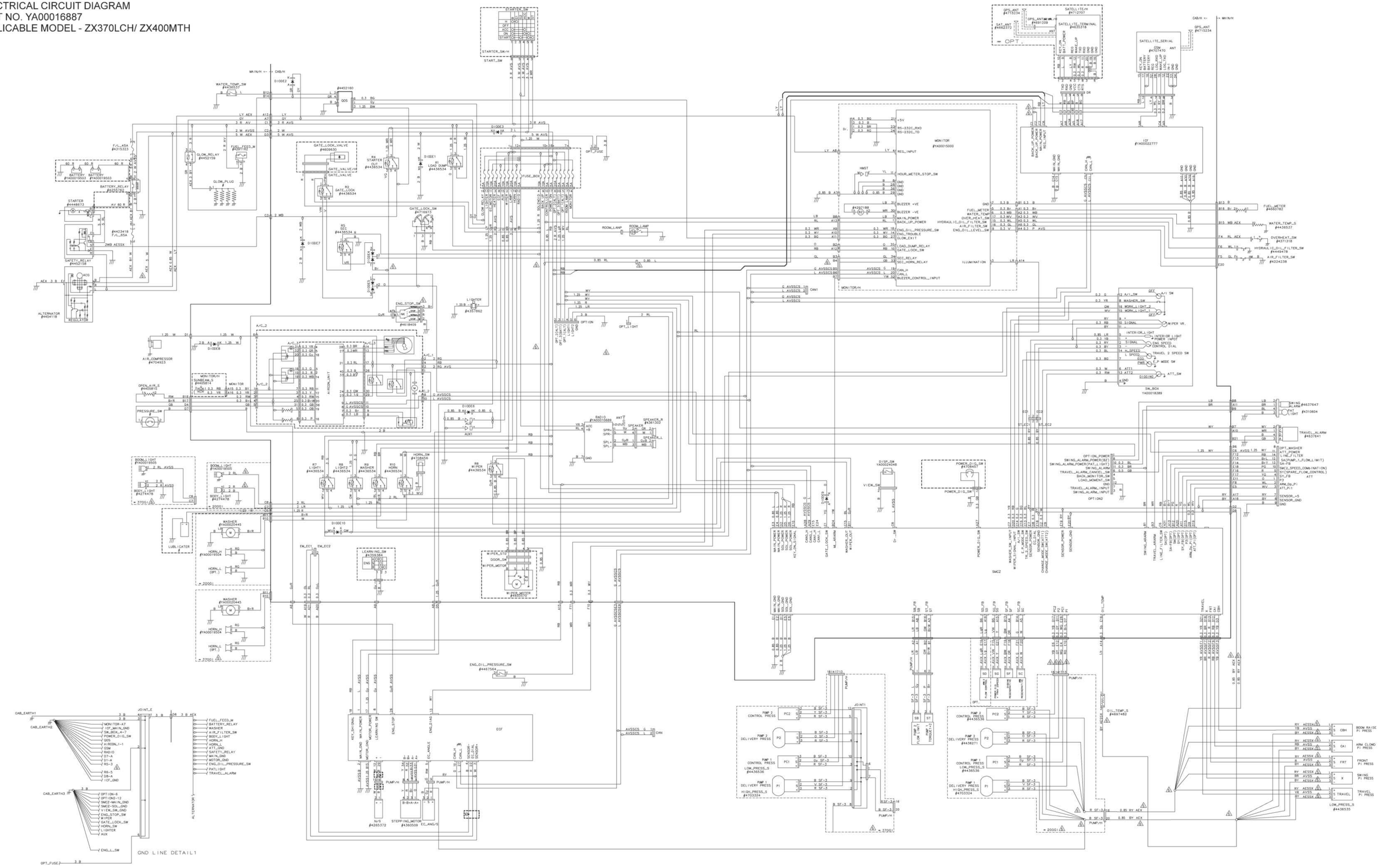
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P- Port P
T- Port T
a- Output Port

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

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ELECTRICAL CIRCUIT DIAGRAM
PART NO. YA00016887
APPLICABLE MODEL - ZX370LCH/ ZX400MTH



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