WSM

WORKSHOP MANUAL

TRACTOR,FRONT LOADER, BACKHOE,ROTARY MOWER

BX23S,LA340,BT603, RCK54D,RCK60D, RCK54,RCK60B

Kubota

KiSC issued 03, 2017 A

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4. Backhoe specifications

4.1 Backhoe specifications

Digging force (Per SAE J49)

With bucket cylinder	8610 N (1936 lbs)
With dipperstick cylinder	5209 N (1171 lbs)

Cycle time (Seconds)

Boom cylinder, extend	4.5 s
Boom cylinder, retract	3.7 s
Swing cylinder, from 90 degrees to center	1.5 s
Dipperstick cylinder, extend	4.1 s
Dipperstick cylinder, retract	3.4 s
Bucket cylinder, extend	3.1 s
Bucket cylinder, retract	2.4 s
Stabilizer cylinder, max. height to ground	2.9 s
Stabilizer cylinder, ground to max. height	2.3 s

Hydraulic cylinders

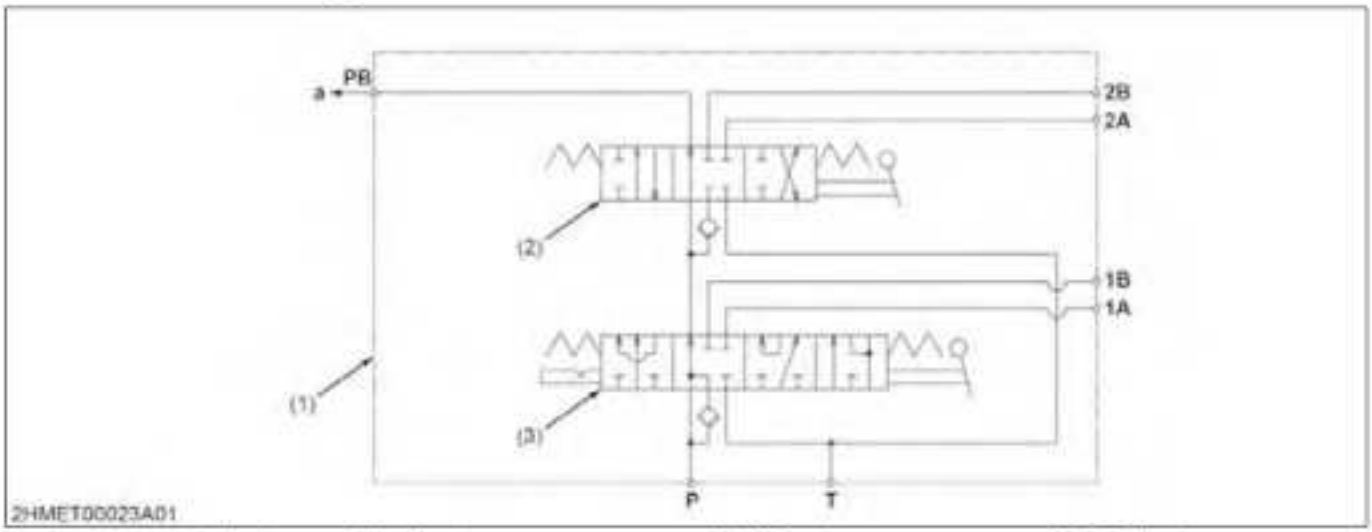
	Boom	Dipperstick	Bucket	Stabilizer	Swing
Rod diameter	3.0 cm (1.2 in.)	2.5 cm (0.98 in.)	2.5 cm (0.98 in.)	2.5 cm (0.98 in.)	3.0 cm (1.2 in.)
Cylinder bore	6.5 cm (2.6 in.)	6.0 cm (2.4 in.)	5.0 cm (2.0 in.)	6.0 cm (2.4 in.)	6.0 cm (2.4 in.)

Bucket sizes

	Width	SAE truck capacity	SAE heaped capacity	Number of teeth	Weight
Trenching 8 in.	20.3 cm (7.99 in.)	0.009 m^3 (0.317 cu.ft.)	0.011 m^3 (0.388 cu.ft.)	2	10 kg (22 lbs)
Trenching 12 in.	30.5 cm (12.0 in.)	0.014 m^3 (0.494 cu.ft.)	0.020 m^3 (0.706 cu.ft.)	3	13 kg (29 lbs)
Trenching 16 in.	40.6 cm (16.0 in.)	0.020 m^3 (0.706 cu.ft.)	0.029 m^3 (1.024 cu.ft.)	3	16 kg (35 lbs)

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10.2 Front loader hydraulic circuit



(1) Front loader control valve
(2) Bucket control valve
(3) Boom control valve
1A: 1A port
1B: 1B port
2A: 2A port
2B: 2B port
P: Pump port
PB: Power beyond port
T: Tank port
a: To hydraulic block

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SERVICING

1. Troubleshooting for backhoe

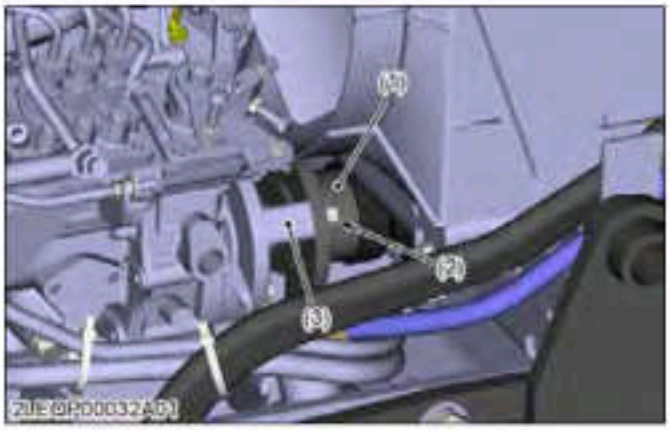
Symptom	Probable cause and checking procedure	Solution	Reference page
All functions inoperative (Front loader is OK)	1. Quick coupler disconnected	Reconnect	11-29
All functions including front loader, are inoperative	1. Insufficient transmission fluid	Fill	2-26
	2. Relief valve spring damaged	Replace	7-36
	3. Hydraulic pump malfunctioning	Repair or replace	7-4
	4. Oil filter clogged	Replace	2-26
Hydraulic oil overheats	1. Continuous operation against relief	Operate properly	7-36
	2. Transmission fluid improper brand and viscosity	Use proper fluid	2-7
	3. Relief valve mis-adjusted	Readjust	7-36
	4. Insufficient transmission fluid	Fill	2-26
	5. Oil filter clogged	Replace	2-26
Individual cylinder circuit weak or inoperative (Others OK)	1. Valve spool not moving fully	Adjust linkage	3-24
	2. Valve spool stick (especially when warm)	Repair or replace	11-35
	3. Overload relief valve mis-adjusted	Readjust	11-35
	4. Piston seal ring worn or damaged	Replace	10-31
	5. Cylinder tube worn or damaged	Replace	11-35
	6. Oil leaks from joint	Repair or replace	10-31
	7. Hydraulic hose damaged	Replace	11-35
	8. Dust in overload relief valve	Flush hydraulic line	11-35
Excessive cylinder movement	1. Piston seal ring worn or damage	Replace	10-31
	2. Excessive valve spool to bore tolerance	Replace	11-35

(Continued)

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5.1.7 Disconnecting propeller shaft assembly

1. Disconnect the propeller shaft assembly (1) from the propeller spacer (3).



(1) Propeller shaft assembly (3) Propeller spacer
(2) Bolt

(When reassembling)

Tightening torque	Propeller shaft assembly bolt	24 to 27 N·m 2.4 to 2.8 kgf·m 18 to 20 lbf·ft

5.1.8 Separating engine

WARNING

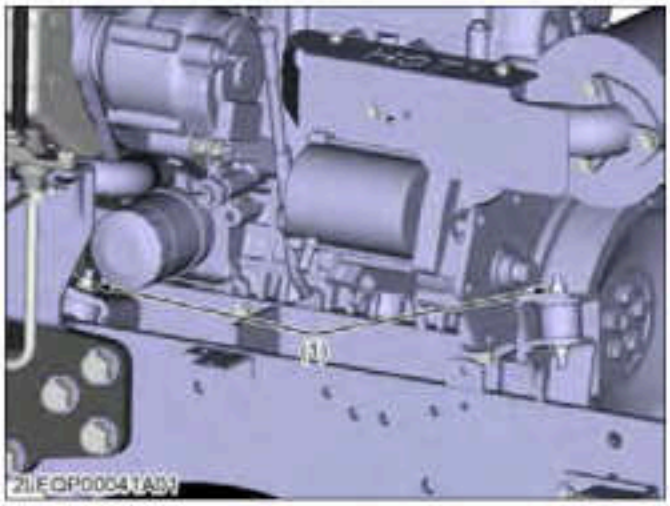
To avoid serious injury or death:

- **The engine is heavy. Use a hoist or crane when removing the engine.**

1. Remove the engine mounting nuts (1) from both sides of the engine.

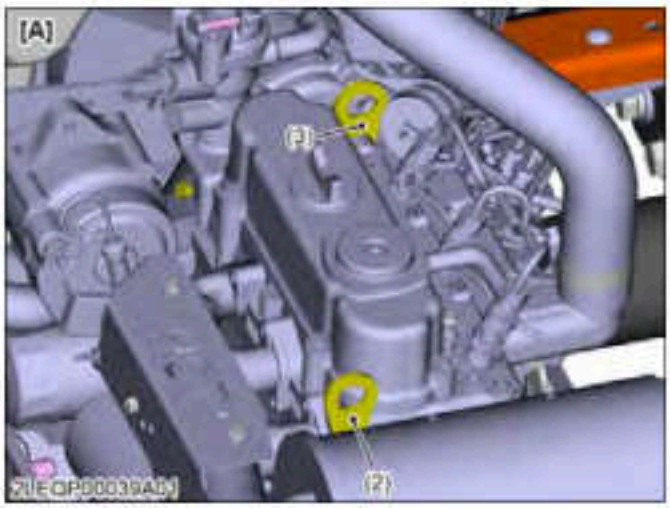
NOTE

- **The rear engine mounting nuts secure ground cables to the L.H. and R.H. engine supports. If the rear engine mounting nuts have already been removed from a previous step, just remove the front engine mounting nuts.**



(1) Engine mounting nut

2. Securely attach the lifting chain to the engine hooks (2), (3) and separate the engine assembly with the radiator from the frame.





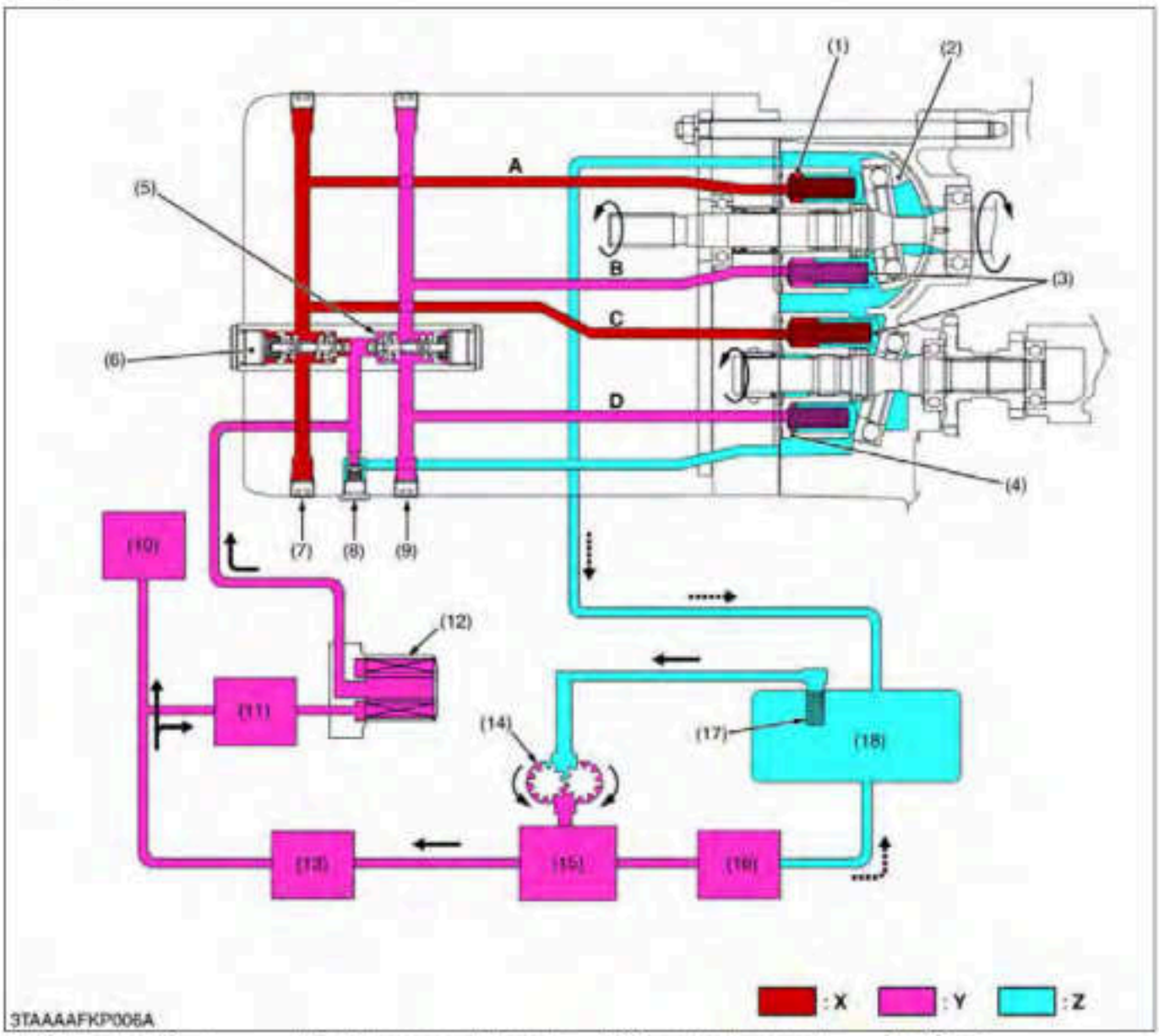
(2) Front engine hook [A] D902-E4
(3) Rear engine hook
(4) Engine support

3. Remove the L.H. and R.H. engine supports (4).

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2.1.2.4 Relief (reverse position)

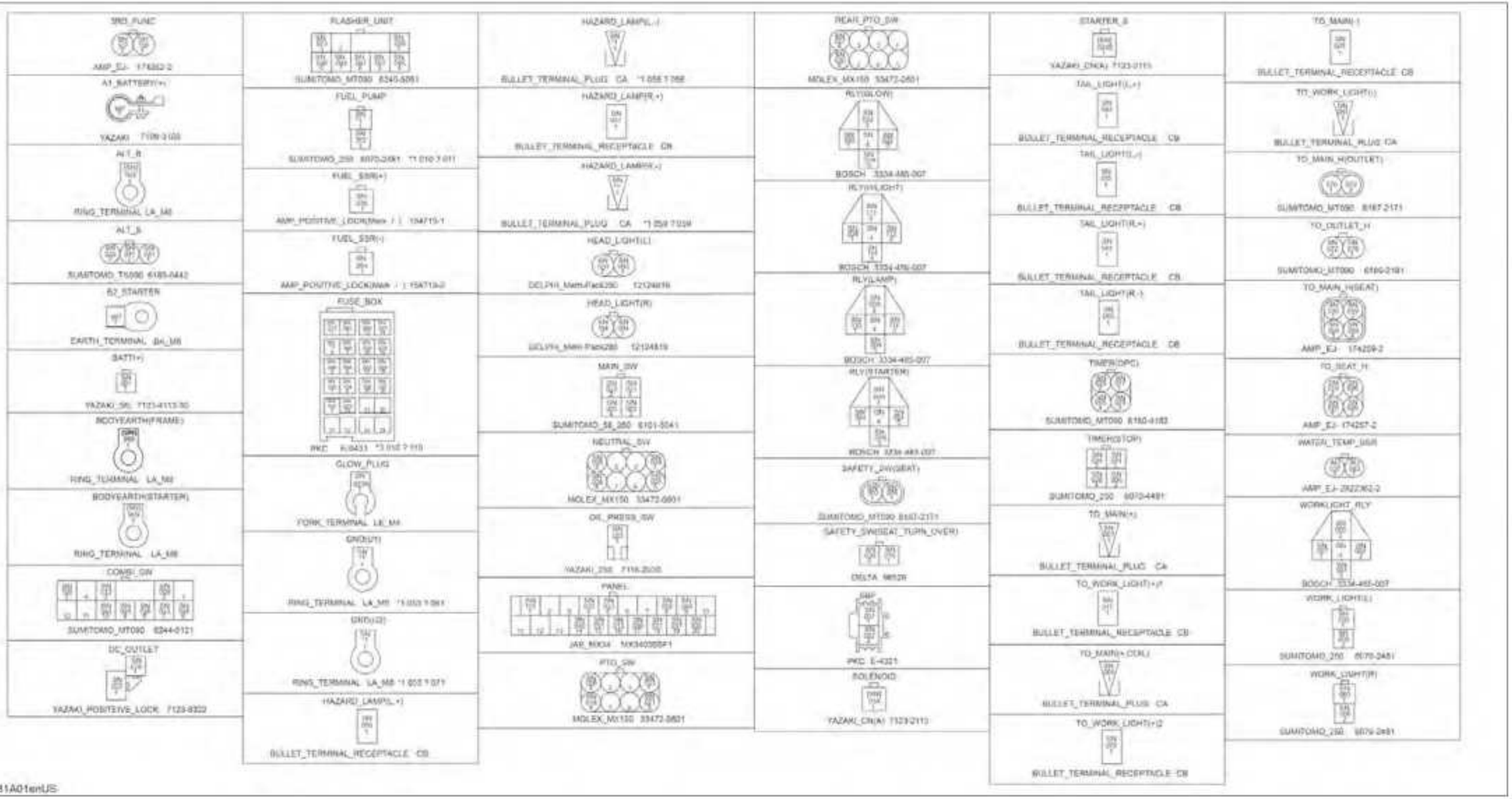
When the speed control pedal is in reverse, the variable swashplate is tilted as shown in figure.
As the pump cylinder block rotates with the input shaft, oil is forced out of pump port A at high pressure. As pressure oil enters motor port C, the pistons, which align with port C, are pushed against the swashplate and slide down the inclined surface. Since the oil pressure in the check and high pressure relief valve (reverse) increase, the high oil pressure opens the check and high pressure relief valve (reverse) and the flows through the charge relief valve to the transmission case.
Then the output shaft rotates with the motor cylinder block. This drives the machine rearward and the angle of pump swashplate determines the output shaft speed.
As the motor cylinder block continues to rotate, oil is forced out of motor port D at low pressure and returns to the pump.



(1) Cylinder block (Pump)
(2) Swashplate
(3) Piston
(4) Cylinder block (Motor)
(5) Check and high pressure relief valve (Forward)
(6) Check and high pressure relief valve (Reverse)
(7) High pressure relief port plug (Forward)
(8) Charge relief valve
(9) High pressure relief port plug (Reverse)
(10) PTO clutch valve
(11) PTO relief valve
(12) Oil filter cartridge
(13) Power steering controller
(14) Hydraulic pump
(15) Flow priority valve (Hydraulic control valve)
(16) Position control valve
(17) Oil strainer
(18) Transmission case
A: A port
B: B port
C: C port
D: D port
X: High pressure
Y: Low pressure
Z: Free oil

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2. Electrical connector chart



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