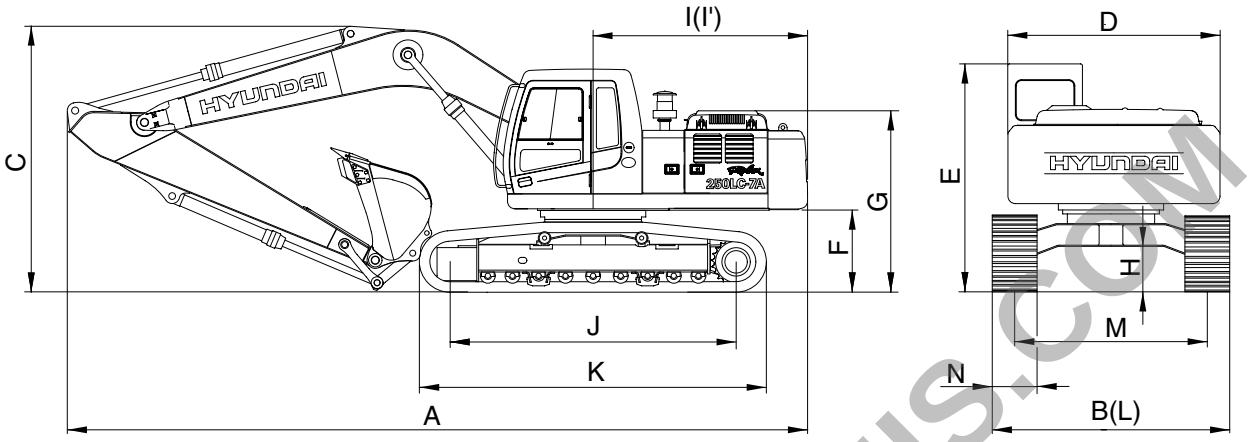
2. SPECIFICATIONS

1) R250LC-7A



2507A2SP01

Description		Unit	Specification
Operating weight		kg(lb)	25200(55600)
Bucket capacity(SAE heaped), standard		$m^3(yd^3)$	1.08(1.41)
Overall length	A	mm(ft-in)	9920(32' 7")
Overall width, with 600mm shoe	B		3180(10' 5")
Overall height	C		3220(10' 7")
Superstructure width	D		2840(9' 4")
Overall height of cab	E		2990(9' 10")
Ground clearance of counterweight	F		1115(3' 8")
Engine cover height	G		2427(7' 12")
Minimum ground clearance	H		480(1' 7")
Rear-end distance	I		2870(9' 5")
Rear-end swing radius	I'		2965(9' 9")
Distance between tumblers	J		3830(12' 7")
Undercarriage length	K		4640(15' 3")
Undercarriage width	L		3180(10' 5")
Track gauge	M		2580(8' 6")
Track shoe width, standard	N		600(24")
Travel speed(Low/high)		km/hr(mph)	3.5/5.5(2.2/3.4)
Swing speed		rpm	12
Gradeability		Degree(%)	35(70)
Ground pressure(600mm shoe)		$kgf/cm^2(psi)$	0.51(7.25)

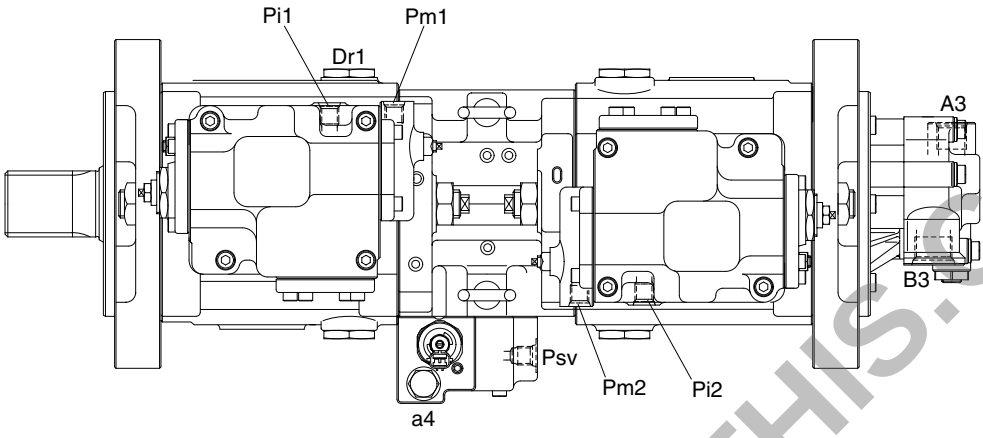
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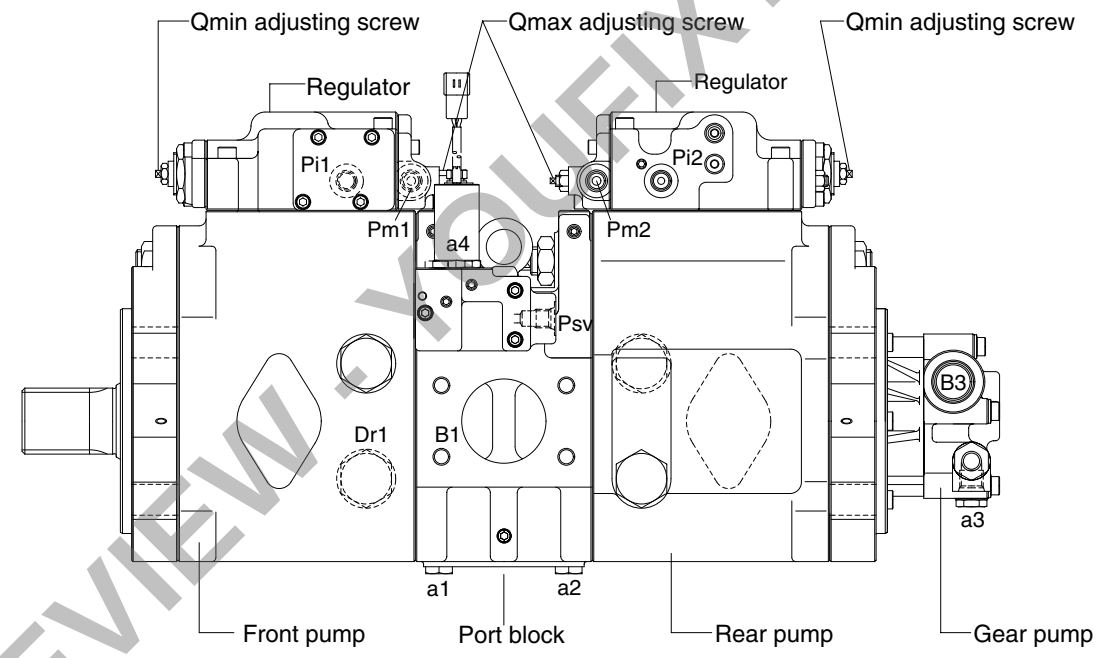
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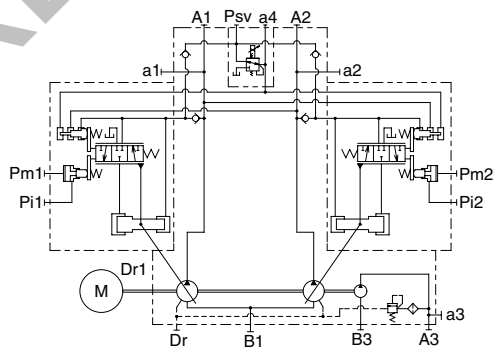
GROUP 1 PUMP DEVICE

1. STRUCTURE

The pump device consists of main pump, regulator and gear pump.







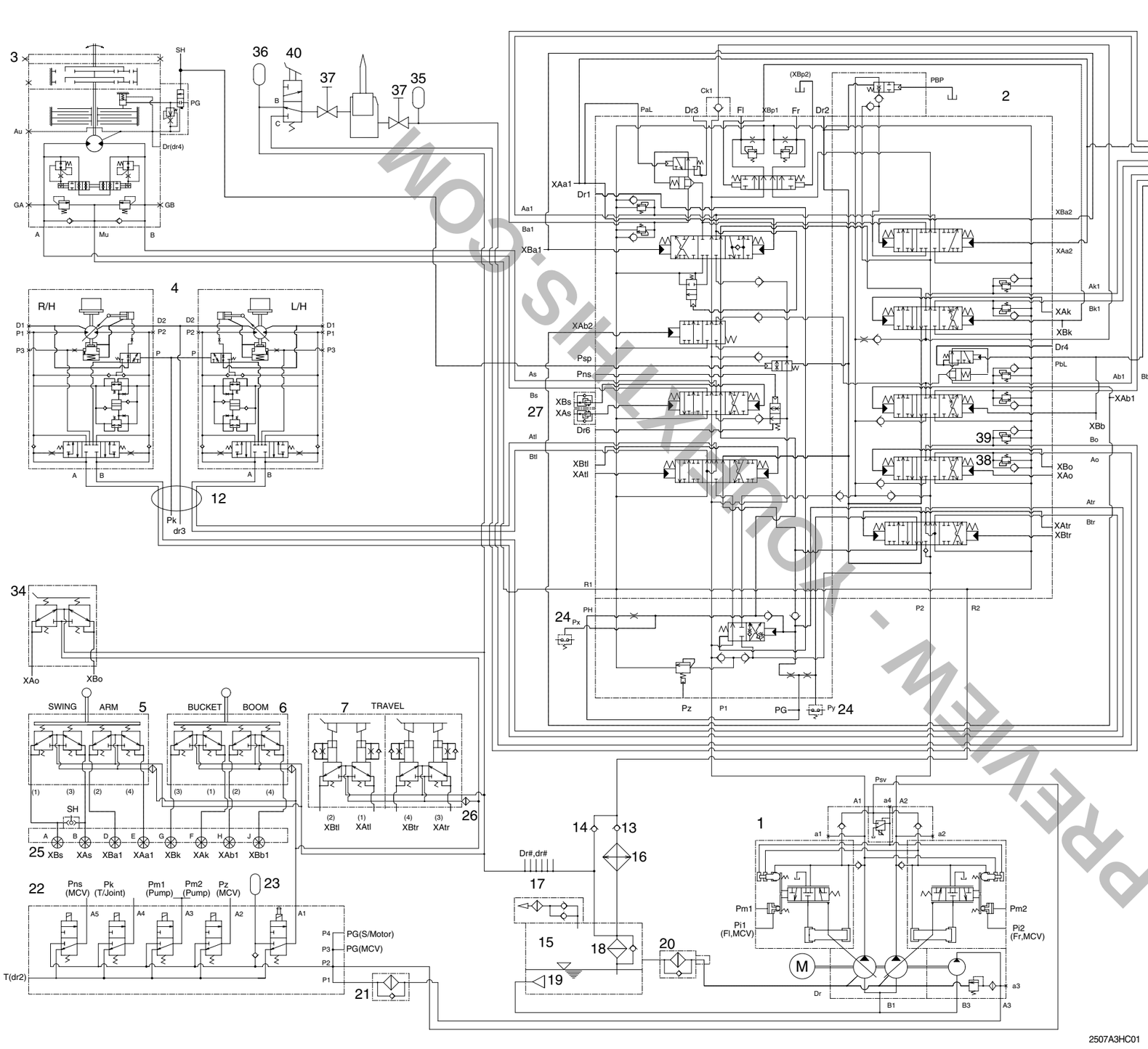
2507A2MP01

Port	Port name	Port size
A1,2	Delivery port	SAE6000psi 3/4"
B1	Suction port	SAE2500psi 2 1/2"
Dr	Drain port	PF 3/4 - 20
Pi1,i2	Pilot port	PF 1/4 - 15
Pm1,m2	Qmax cut port	PF 1/4 - 15
Psv	Servo assist port	PF 1/4 - 15
a1,2,4	Gauge port	PF 1/4 - 15
a3	Gauge port	PF 1/4 - 14
A3	Gear pump delivery port	PF 1/2 - 19
B3	Gear pump suction port	PF 3/4 - 20.5

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GROUP 1 HYDRAULIC CIRCUIT



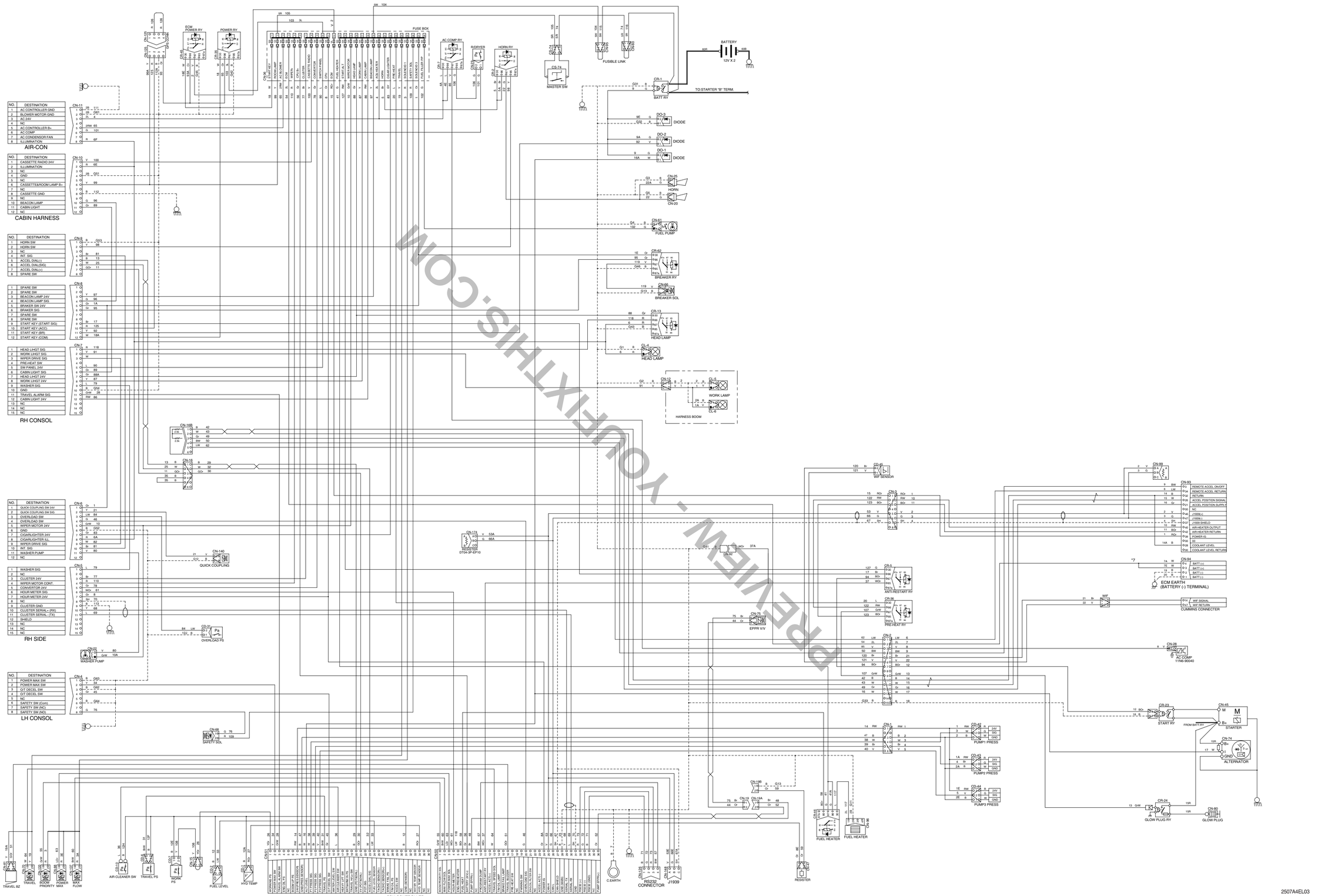
1	Main pump	20	Spin filter
2	Main control valve	21	Line filter
3	Swing motor	22	Solenoid valve
4	Travel motor	23	Accumulator
5	RCV lever(LH)	24	Pressure switch
6	RCV lever(RH)	25	Terminal
7	RCV pedal	26	Last guard filter
8	Boom cylinder(LH)	27	Shockless valve
9	Boom cylinder(RH)	30	Safety lock valve
10	Arm cylinder	31	Safety lock valve
11	Bucket cylinder	32	Pressure switch
12	Turning joint	33	Shutoff valve
13	Check valve	34	Single pedal
14	Check valve	35	Accumulator
15	Hydraulic tank	36	Accumulator
16	Oil cooler	37	Stop valve
17	Air breather	38	Port relief valve
18	Return filter	39	Port relief valve
19	Strainer	40	3 Way joint

2507A3HC01

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GROUP 2 ELECTRICAL CIRCUIT(1/2)



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2507A4EL03

6. ERROR CODES TABLE

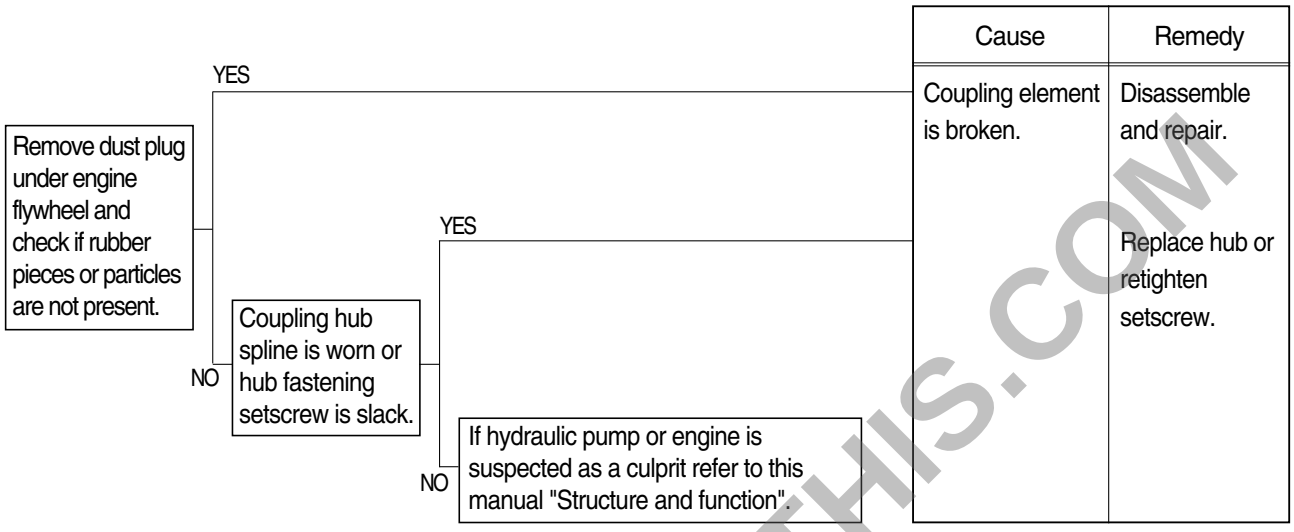
Error code No.	Description
1	Short circuit in accel actuator system
2	Potentiometer circuit is shorted to Vcc(5V) or battery +
3	Short circuit in pump EPPR valve system
4	Short circuit in boom down EPPR valve system
5	Short circuit in travel speed solenoid system
6	Short circuit in power boost solenoid system
7	Short circuit in max flow solenoid system
10	Short circuit in hour-meter system
11	Accel dial circuit is shorted to Vcc(5V) or battery +
12	P1 pressure sensor circuit is shorted to power supply(24V) line
13	P2 pressure sensor circuit is shorted to power supply(24V) line
14	P3 pressure sensor circuit is shorted to power supply(24) line
15	Boom down pressure circuit is shorted to power supply(24V) line
16	Accel actuator circuit is open or shorted to ground
17	Potentiometer circuit is open or shorted to ground
18	Pump EPPR valve circuit is open or shorted to ground
19	Boom down EPPR valve circuit is open or shorted to ground
20	Travel speed solenoid circuit is open or shorted to ground
21	Power boost solenoid circuit is open or shorted to ground
22	Max flow solenoid circuit is open or shorted to ground
25	Hour-meter circuit is open or shorted to ground
26	Accel dial circuit is open or shorted to ground
27	P1 pressure sensor circuit is open or shorted to ground
28	P2 pressure sensor circuit is open or shorted to ground
29	P3 pressure sensor circuit is open or shorted to ground
30	Boom down pressure sensor circuit is open or shorted to ground
31	Engine preheater circuit is open or shorted to ground
32	Travel alarm buzzer circuit is open or shorted to ground
33	Alternator circuit is open or shorted to ground
34	Controller input voltage is below 18V
35	Controller input voltage is over 38V
36	Communication error with cluster
37	Engine speed sensor circuit is open or shorted to ground
38	Anti-restart relay circuit is open or shorted to ground
39	Accel actuator does not stop at a target position
40	There is more than 500rpm difference between target speed and actual speed

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2. DRIVE SYSTEM

1) UNUSUAL NOISE COMES OUT OF PUMP CONNECTION



Cause	Remedy
Coupling element is broken.	Disassemble and repair.
	Replace hub or retighten setscrew.

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1. REMOVAL AND INSTALL

1) REMOVAL

(1) Lower the work equipment to the ground and stop the engine.

(2) Loosen the breather slowly to release the pressure inside the hydraulic tank.

⚠ Escaping fluid under pressure can penetrate the skin causing serious injury.

(3) Loosen the drain plug under the hydraulic tank and drain the oil from the hydraulic tank.

· Hydraulic tank quantity : 190 ℓ

(4) Remove bolts(13) and disconnect pipe (1,2).

(5) Disconnect pilot line hoses(4, 5, 6, 7, 8, 9, 10, 11).

(6) Remove bolts(12) and disconnect pump suction tube (3).

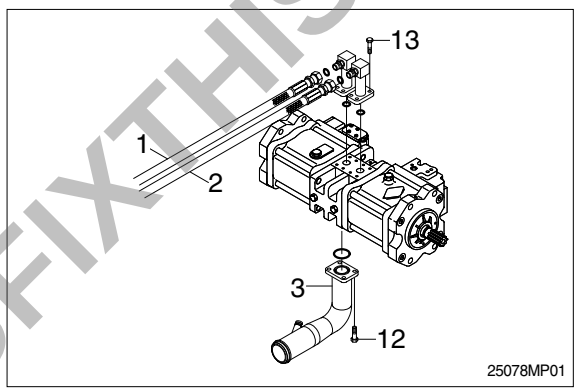
※ When pump suction tube is disconnected, the oil inside the piping will flow out, so catch it in oil pan.

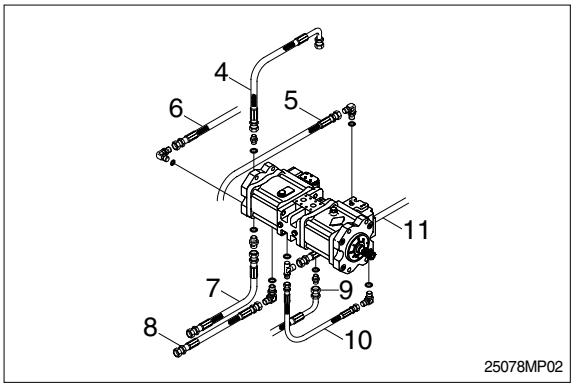
(7) Sling the pump assembly and remove the pump mounting bolts.

· Weight : 120kg(260lb)

※ Pull out the pump assembly from housing. When removing the pump assembly, check that all the hoses have been disconnected.







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GROUP 2 TIGHTENING TORQUE

1. MAJOR COMPONENTS

No.	Descriptions		Bolt size	Torque	
				kgf · m	lbf · ft
1	Engine	Engine mounting bolt, nut(FR)	M20 × 2.5	55 ± 3.5	398 ± 25
2		Engine mounting bolt, nut(RR)	M24 × 3.0	90 ± 7.0	651 ± 51
3		Radiator mounting bolt	M16 × 2.0	29.7 ± 4.5	215 ± 32.5
4		Coupling mounting socket bolt	M18 × 2.5	32 ± 1.0	231 ± 7.2
5		Main pump housing mounting bolt	M10 × 1.5	4.8 ± 0.3	29 ± 2.2
6	Hydraulic system	Main pump mounting socket bolt	M20 × 2.5	42 ± 4.5	304 ± 32.5
7		Main control valve mounting nut	M12 × 1.75	12.3 ± 1.3	88.2 ± 9.4
8		Fuel tank mounting bolt	M20 × 2.5	46 ± 5.1	333 ± 37
9		Hydraulic oil tank mounting bolt	M20 × 2.5	46 ± 5.1	333 ± 37
10		Turning joint mounting bolt, nut	M12 × 1.75	12 ± 1.3	86.8 ± 9.4
11	Power train system	Swing motor mounting bolt	M24 × 3.0	97.8 ± 10	707 ± 72.3
12		Swing bearing upper part mounting bolt	M22 × 2.5	77.4 ± 8.0	560 ± 57.8
13		Swing bearing lower part mounting bolt	M24 × 3.0	100 ± 10	723 ± 72.3
14		Travel motor mounting bolt	M16 × 2.0	23 ± 2.5	166 ± 18
15		Sprocket mounting bolt	M16 × 2.0	26 ± 2.5	188 ± 18
16	Under carriage	Carrier roller mounting bolt, nut	M16 × 2.0	23 ± 2.5	166 ± 18
17		Track roller mounting bolt	M20 × 2.5	54.7 ± 5.0	396 ± 36.1
18		Track tension cylinder mounting bolt	M16 × 2.0	29.7± 4.5	215 ± 32.5
19		Track shoe mounting bolt, nut	M20 × 1.5	81 ± 4.0	586 ± 29
20		Track guard mounting bolt	M20 × 2.5	57.9 ± 8.7	419 ± 63
21	Others	Counterweight mounting bolt	M36 × 3.0	308 ± 46	2228 ± 333
22		Cab mounting bolt	M12 × 1.75	12.8 ± 3.0	92.6 ± 21.7
23		Operator's seat mounting bolt	M 8 × 1.25	4.05 ± 0.8	29.3 ± 5.8

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CONTENTS

SECTION 1 GENERAL

Group 1 Safety Hints — 1-1
Group 2 Specifications — 1-9

SECTION 2 STRUCTURE AND FUNCTION

Group 1 Pump Device — 2-1
Group 2 Main Control Valve — 2-21
Group 3 Swing Device — 2-47
Group 4 Travel Device — 2-58
Group 5 RCV Lever — 2-68
Group 6 RCV Pedal — 2-75

SECTION 3 HYDRAULIC SYSTEM

Group 1 Hydraulic Circuit — 3-1
Group 2 Main Circuit — 3-2
Group 3 Pilot Circuit — 3-5
Group 4 Single Operation — 3-13
Group 5 Combined Operation — 3-23

SECTION 4 ELECTRICAL SYSTEM

Group 1 Component Location — 4-1
Group 2 Electrical Circuit — 4-3
Group 3 Electrical Component Specification — 4-20
Group 4 Connectors — 4-28

SECTION 5 MECHATRONICS SYSTEM

Group 1 Outline — 5-1
Group 2 Mode selection System — 5-3
Group 3 Automatic Deceleration System — 5-6
Group 4 Power Boost System — 5-7
Group 5 Travel Speed Control System — 5-8
Group 6 Automatic Warming Up Function — 5-9
Group 7 Engine Overheat Prevention Function — 5-10
Group 8 Anti-Restart System — 5-11
Group 9 Self-Diagnostic System — 5-12

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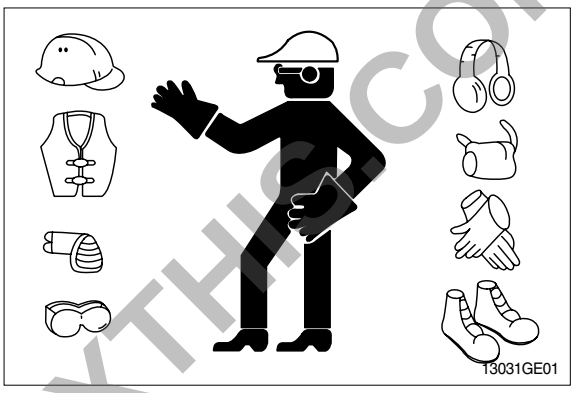
GROUP 1 SAFETY

FOLLOW SAFE PROCEDURE

Unsafe work practices are dangerous. Understand service procedure before doing work; Do not attempt shortcuts.

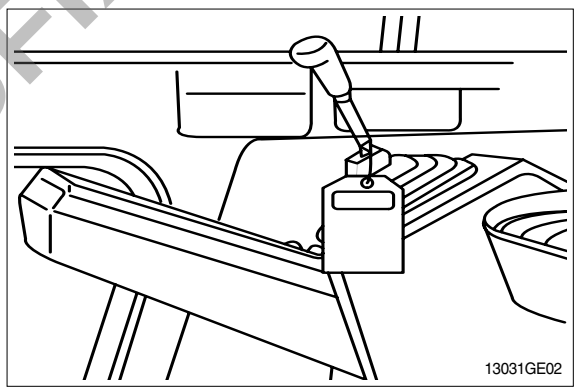
WEAR PROTECTIVE CLOTHING

Wear close fitting clothing and safety equipment appropriate to the job.



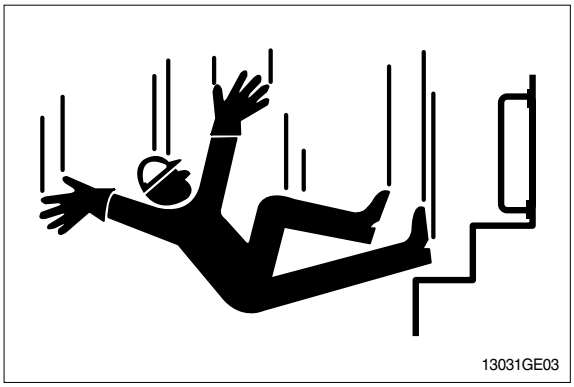
WARN OTHERS OF SERVICE WORK

Unexpected machine movement can cause serious injury.
Before performing any work on the excavator, attach a 「**Do Not Operate**」 tag on the right side control lever.



USE HANDHOLDS AND STEPS

Falling is one of the major causes of personal injury.
When you get on and off the machine, always maintain a three point contact with the steps and handrails and face the machine. Do not use any controls as handholds.
Never jump on or off the machine. Never mount or dismount a moving machine.
Be careful of slippery conditions on platforms, steps, and handrails when leaving the machine.



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Millimeters to inches

1mm = 0.03937in

	0	1	2	3	4	5	6	7	8	9
0		0.039	0.079	0.118	0.157	0.197	0.236	0.276	0.315	0.354
10	0.394	0.433	0.472	0.512	0.551	0.591	0.630	0.669	0.709	0.748
20	0.787	0.827	0.866	0.906	0.945	0.984	1.024	1.063	1.102	1.142
30	1.181	1.220	1.260	1.299	1.339	1.378	1.417	1.457	1.496	1.536
40	1.575	1.614	1.654	1.693	1.732	1.772	1.811	1.850	1.890	1.929
50	1.969	2.008	2.047	2.087	2.126	2.165	2.205	2.244	2.283	2.323
60	2.362	2.402	2.441	2.480	2.520	2.559	2.598	2.638	2.677	2.717
70	2.756	2.795	2.835	2.874	2.913	2.953	2.992	3.032	3.071	3.110
80	3.150	3.189	3.228	3.268	3.307	3.346	3.386	3.425	3.465	3.504
90	3.543	3.583	3.622	3.661	3.701	3.740	3.780	3.819	3.858	3.898

Kilogram to Pound

1kg = 2.2046lb

	0	1	2	3	4	5	6	7	8	9
0		2.20	4.41	6.61	8.82	11.02	13.23	15.43	17.64	19.84
10	22.05	24.25	26.46	28.66	30.86	33.07	35.27	37.48	39.68	41.89
20	44.09	46.30	48.50	50.71	51.91	55.12	57.32	59.5.	61.73	63.93
30	66.14	68.34	70.55	72.75	74.96	77.16	79.37	81.57	83.78	85.98
40	88.18	90.39	92.59	94.80	97.00	99.21	101.41	103.62	105.82	108.03
50	110.23	112.44	114.64	116.85	119.05	121.25	123.46	125.66	127.87	130.07
60	132.28	134.48	136.69	138.89	141.10	143.30	145.51	147.71	149.91	152.12
70	154.32	156.53	158.73	160.94	163.14	165.35	167.55	169.76	171.96	174.17
80	176.37	178.57	180.78	182.98	185.19	187.39	189.60	191.80	194.01	196.21
90	198.42	200.62	202.83	205.03	207.24	209.44	211.64	213.85	216.05	218.26

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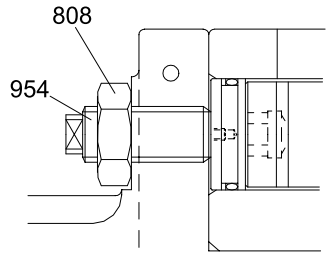
(4) Adjustment of maximum and minimum flows

① Adjustment of maximum flow

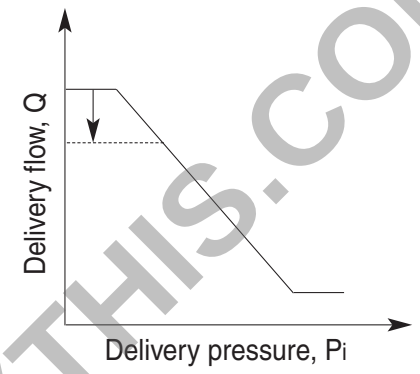
Adjust it by loosening the hexagon nut(808) and by tightening(or loosening) the set screw(954).

The maximum flow only is adjusted without changing other control characteristics.

Speed	Adjustment of max flow	
	Tightening amount of adjusting screw (954)	Flow change amount
(min $^{-1}$)	(Turn)	(ℓ /min)
1900	+1/4	-5.5



2507A2MP10

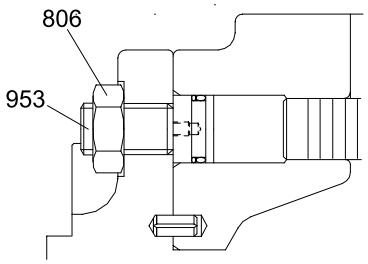


② Adjustment of minimum flow

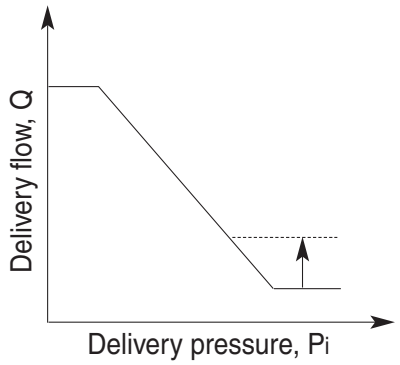
Adjust it by loosening the hexagon nut(806) and by tightening(or loosening) the hexagonal socket head set screw (953). Similarly to the adjustment of the maximum flow, other characteristics are not changed.

However, remember that, if tightened too much, the required horsepower during the maximum delivery pressure(or during relieving) may increase.

Speed	Adjustment of min flow	
	Tightening amount of adjusting screw (953)	Flow change amount
(min $^{-1}$)	(Turn)	(ℓ /min)
1900	+1/4	+4.4



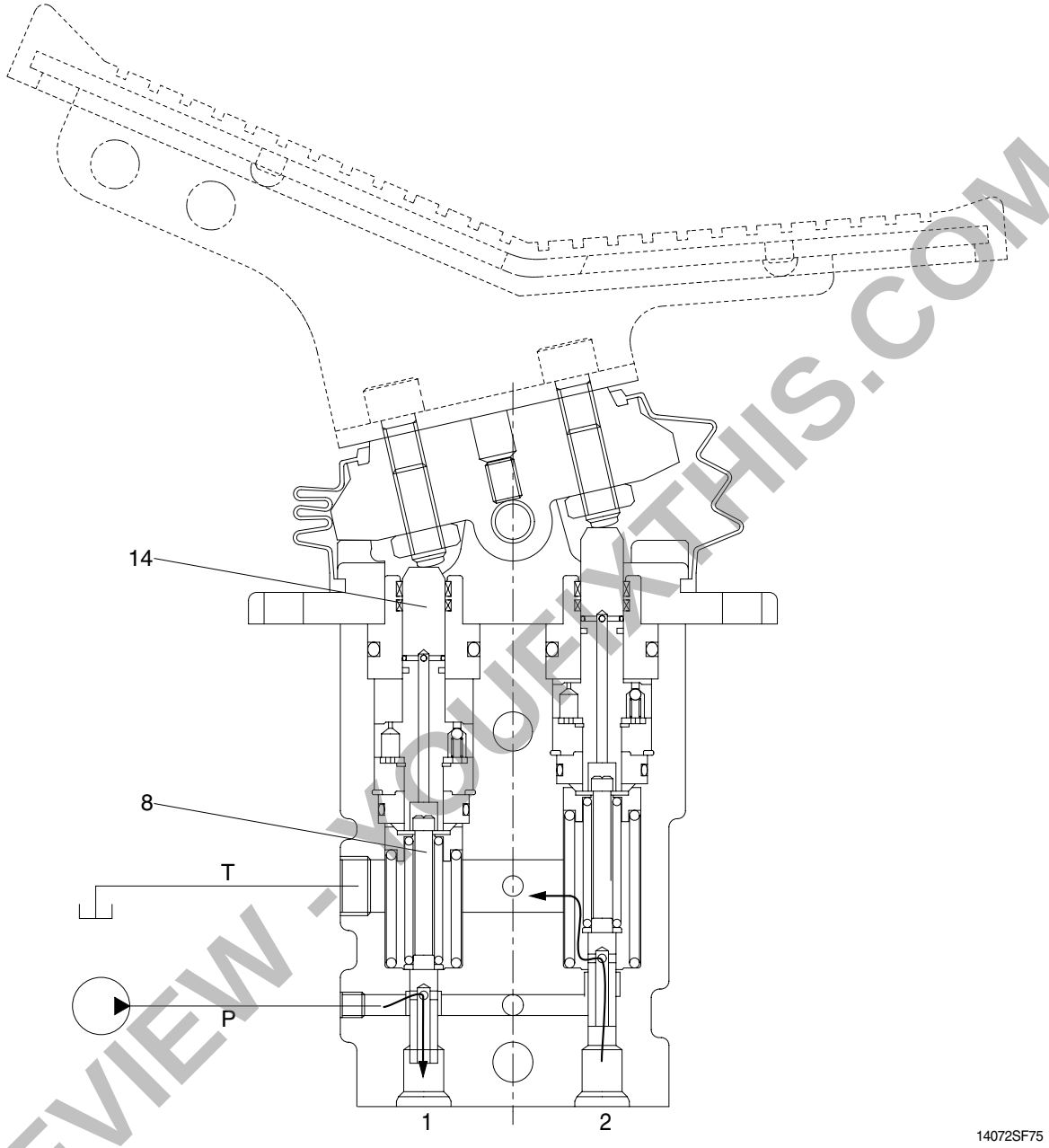
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(2) Case where pedal is tilted



When the push rod(14) is stroked, the spool(8) moves downwards.
Then port P is connected with port 1, and the oil supplied from the pilot pump flows through port 1 to generate the pressure.
When the pressure at port 1 increases to the value corresponding to the spring force set by tilting the handle, the hydraulic pressure force balances with the spring force. If the pressure at port 1 increases higher than the set pressure, port P is disconnected from port 1 and port T is connected with port 1. If it decreases lower than the set pressure, port P is connected with port 1 and port T is disconnected from port 1.
In this manner the secondary pressure is kept at the constant value.
Besides, in some type, when the handle is tilted more than a certain angle, the upper end of the spool contacts with inside bottom of the push rod and the output pressure is left to be connected with port P.

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GROUP 4 CONNECTORS

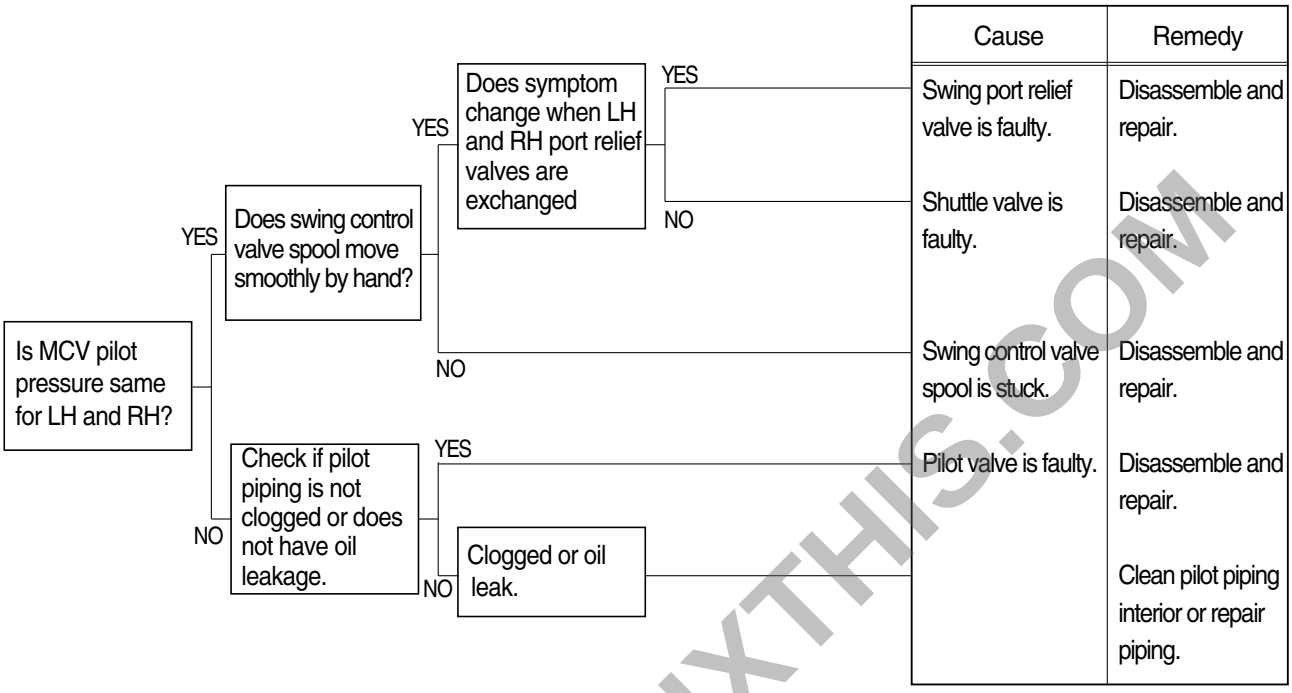
1. CONNECTOR DESTINATION

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-1	AMP	6	I/conn(Engine harness-Frame harness)	S816-006002	S816-106002
CN-2	AMP	15	I/conn(Engine harness-Frame harness)	2-85262-1	368301-1
CN-3	AMP	8	I/conn(Engine harness-Frame harness)	S816-008002	S816-108002
CN-4	AMP	8	I/conn(Frame harness-Console harness LH)	S816-008002	S816-108002
CN-5	AMP	15	I/conn(Frame harness-Side harness RH)	2-85262-1	368301-1
CN-6	AMP	12	I/conn(Frame harness-Side harness RH)	S816-012002	S816-112002
CN-7	AMP	15	I/conn(Frame harness-Console harness RH)	2-85262-1	368301-1
CN-8	AMP	12	I/conn(Frame harness-Console harness RH)	S816-012002	S816-112002
CN-9	AMP	8	I/conn(Frame harness-Console harness RH)	S816-008002	S816-108002
CN-10	DEUTSCH	12	I/conn(Frame harness-Cab harness)	DT06-12S	DT04-12P
CN-11	DEUTSCH	8	I/conn(Frame harness-Aircon harness)	DT06-8S	-
CN-12	DEUTSCH	2	I/conn(Frame harness-Boom wire harness)	DT06-2S-P012	DT06-2P
CN-15	AMP	2	Auto idle pressure	S816-002002	S816-102002
CN-16	AMP	6	Emergency engine speed control	S816-006002	S816-106002
CN-17	DEUTSCH	8	I/conn(Wipor harness)	DT06-8S	DT04-8P
CN-19	AMP	2	Emergency CPU controller	S816-002002	S816-102002
CN-20	MOLEX	2	Horn	35825-0211	-
CN-21	AMP	6	Wiper motor	925276-0	-
CN-22	KET	2	Washer tank	MG640605	-
CN-23	KET	2	Speaker-LH	MG610070	-
CN-24	KET	2	Speaker-RH	MG610070	-
CN-25	MOLEX	2	Horn	35825-0211	-
CN-27	AMP	14	Cassette radio	173852	-
CN-28	MWP	1	Aircon compressor	NMWP01F-B	-
CN-29	KET	2	Receiver dryer	MG640795	-
CN-36	DEUTSCH	3	Fuse box	21N8-20041	-
CN-45	RING-TERM	-	Starter	S820-414000	-
CN-47	FASTEN	2	Resistor	S810-002202	-
CN-47A	FASTEN	2	Resistor	-	S810-102202
CN-48	AMP	2	Hour meter	GP890469	-
CN-50	AMP	36	CPU Controller	3441111-1	-
CN-51	AMP	36	CPU Controller	3441111-1	-
CN-56	DEUTSCH	4	Cluster	-	DT04-4P-E004
CN-60	YAZAKI	2	Fusible link	21N4-01320	7122-4125-50
CN-61	DEUTSCH	2	Fuel filler pump	DT06-2S-P012	-

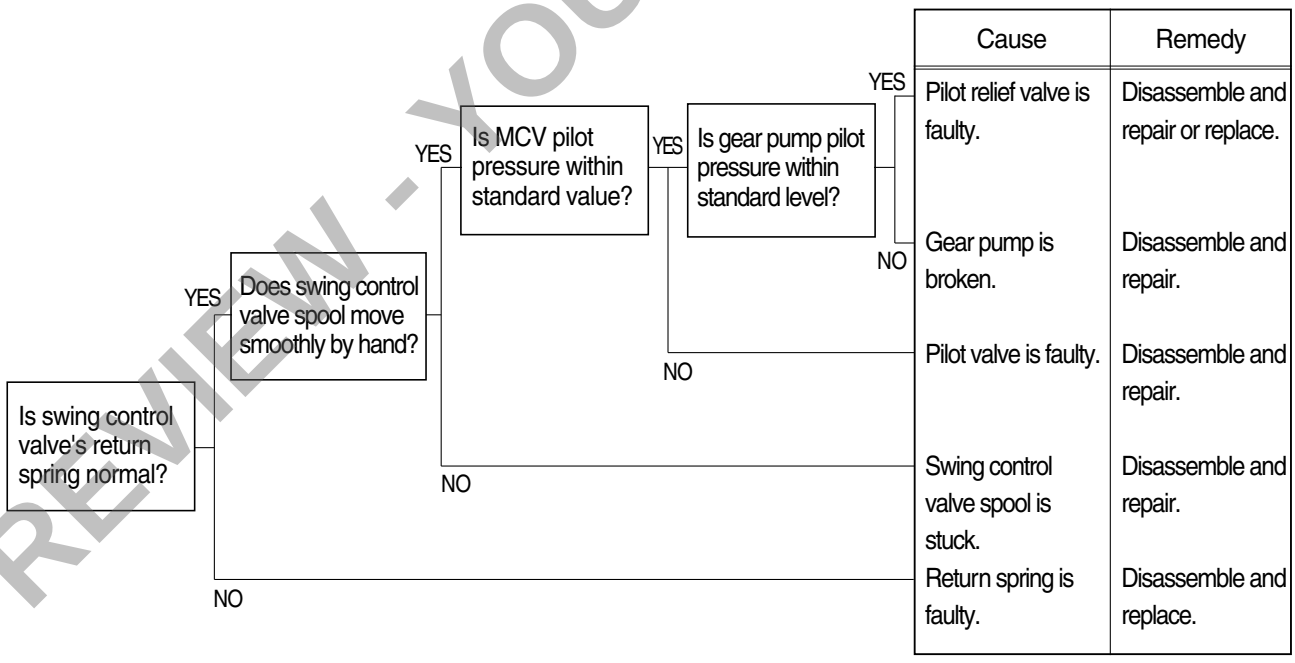
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3) SWING MOTION IS IMPOSSIBLE IN ONE DIRECTION



4) MACHINE SWINGS BUT DOES NOT STOP



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2. MAIN CONTROL VALVE

Part name	Inspection item	Criteria & measure
Casing	· Existence of scratch, rusting or corrosion.	· In case of damage in following section, replace part. - Sliding sections of casing fore and spool, especially land sections applied with holded pressure. - Seal pocket section where spool is inserted. - Seal section of port where O-ring contacts. - Seal section of each relief valve for main, travel, and port. - Other damages that may damage normal functions.
Spool	· Existence of scratch, gnawing, rusting or corrosion. · O-ring seal sections at both ends. · Insert spool in casing hole, rotate and reciprocate it.	· Replacement when its outside sliding section has scratch(Especially on seals-contacting section). · Replacement when its sliding section has scratch. · Correction or replacement when O-ring is damaged or when spool does not move smoothly.
Poppet	· Damage of poppet or spring · Insert poppet into casing and function it.	· Correction or replacement when sealing is incomplete. · Normal when it can function lightly without being caught.
Around spring	· Rusting, corrosion, deformation or breaking of spring, spring seat, plug or cover.	· Replacement for significant damage.
Around seal for spool	· External oil leakage. · Rusting, corrosion or deformation of seal plate.	· Correction or replacement. · Correction or replacement.
Main relief valve, port relief valve & negative control relief valve	· External rusting or damage. · Contacting face of valve seat. · Contacting face of poppet. · Abnormal spring. · O-rings, back up rings and seals.	· Replacement. · Replacement when damaged. · Replacement when damaged. · Replacement. · 100% replacement in general.
Balance plate	· Worn less than 0.03mm · Worn more than 0.03mm · Sliding surface has a seizure(Even through small).	· Lapping · Replace · Replace

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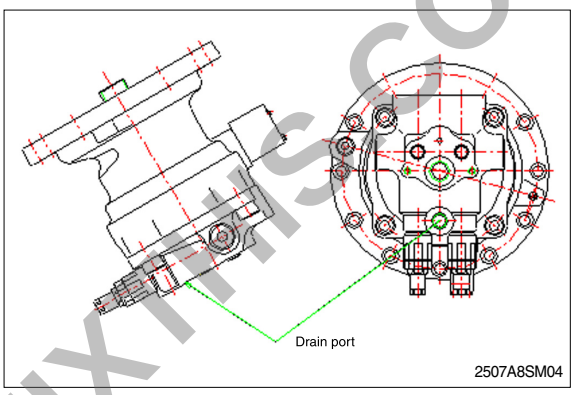
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3) DISASSEMBLY

(1) Wind the wire rope at motor outside, lift up the motor, and clean the motor with cleaning oil.
After cleaning, dry with compress air.

※ Polish the dirts blocking each ports with tape, couldn't enter the dirts into the motor.

(2) Draw the oil out the casing(301).

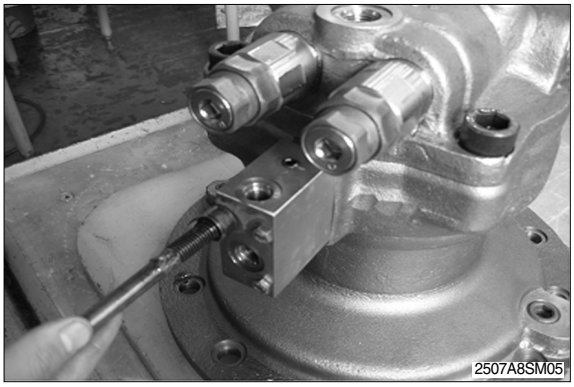


(3) Mount on a suitable table for the driven-axis(101) below.
Before disassembling make a match mark on motor casing(301) and valve casing(303).

※ Select a clean place.
Put a rubber sheet on the work bench to prevent parts from being damaged.



(4) Remove time delay valve(031).



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1 Case
2 Plug
3 Plug
4 O-ring
5 Spool
6 Shim
7 Spring
8 Spring seat
9 Stopper
10 Spring
11 Plug
12 Rod seal
13 O-ring
14 Push rod
15 Push rod
16 Plate
17 Bushing
18 Joint assembly
19 Swash plate
20 Boot
21 Adjusting nut
22 Lock nut
23 O-ring
24 Handle bar
25 Nut
26 Boot
27 Handle assembly
28 Spring
29 Spring seat

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