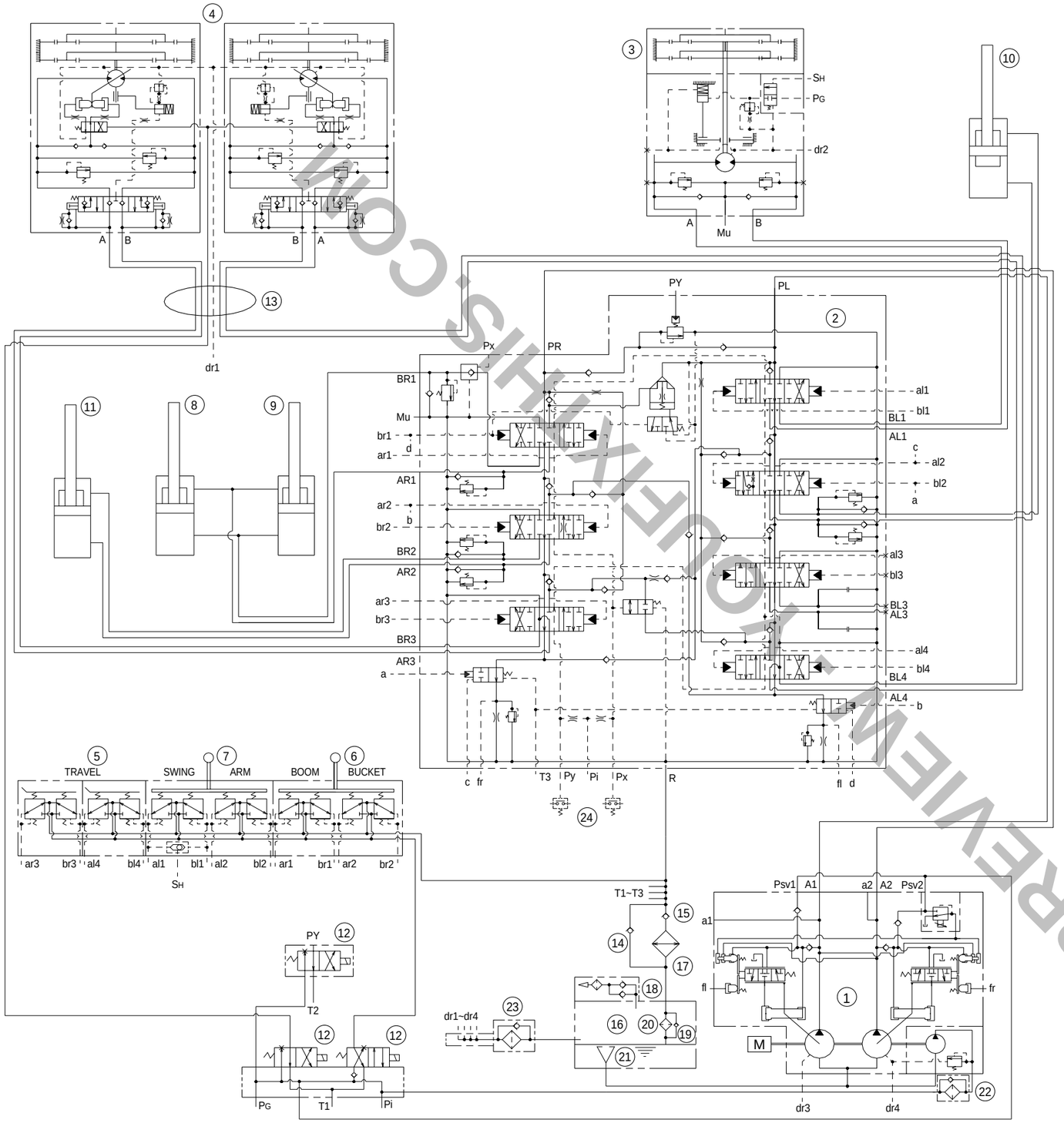
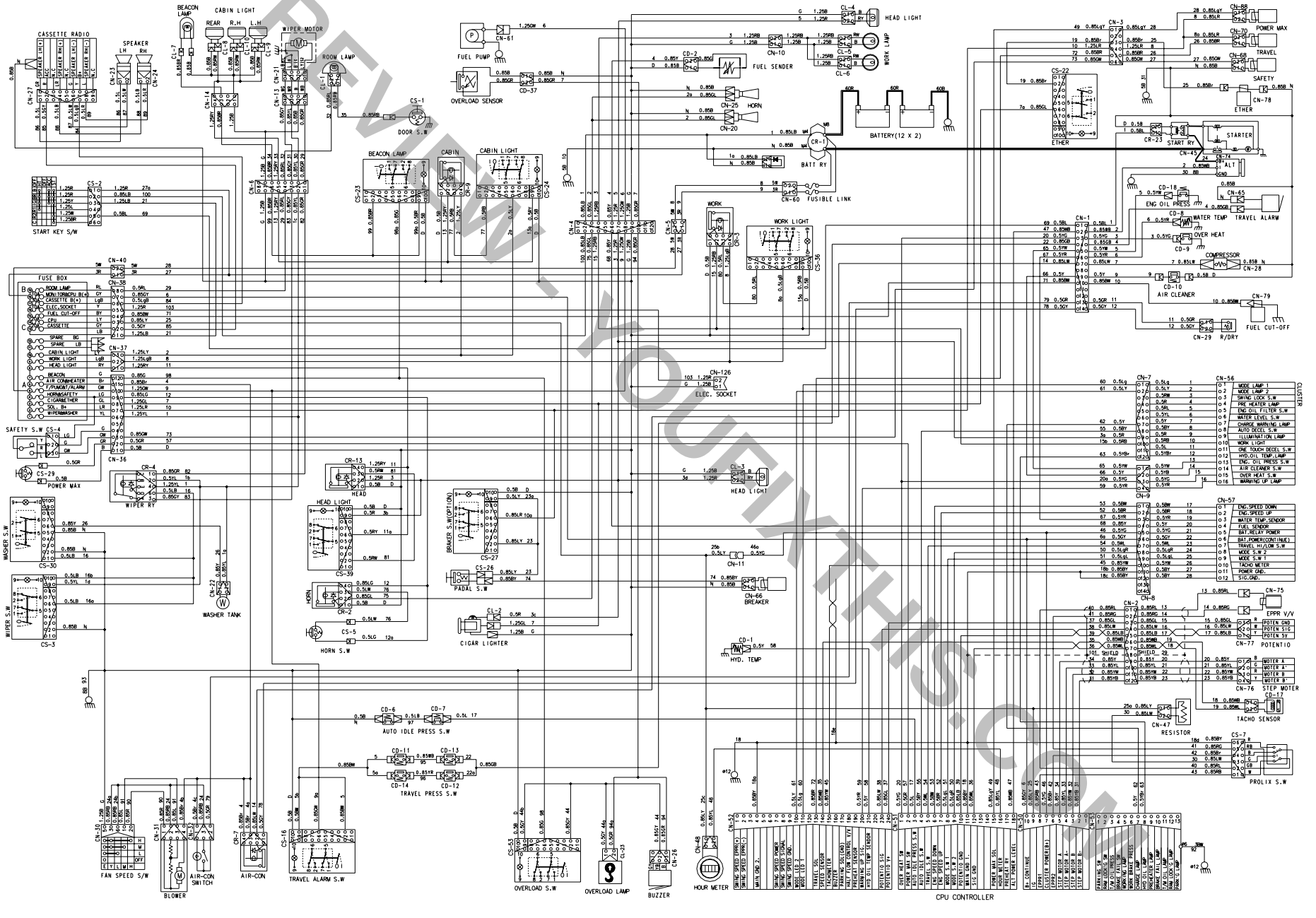
GROUP 1 HYDRAULIC CIRCUIT



1 HYD PUMP
2 MCV
3 SWING MOTOR
4 TRAVEL MOTOR
5 RCV PEDAL
6 RCV REVER
7 RCV REVER
8 BOOM CYL(RH)
9 BOOM CYL(LH)
10 ARM CYL
11 BUCKET CYL
12 SOLENOID VALVE
13 TURNING JOINT
14 CHECK VALVE
15 CHECK VALVE
16 HYD TANK
17 OIL COOLER
18 BREATHER
19 BYPASS VALVE
20 RETURN FILTER
21 SUCTION STRAINER
22 LINE FILTER
23 SPIN FILTER
24 PRESSURE SWITCH

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3) DISASSEMBLY

(1) Select place suitable to disassembling.

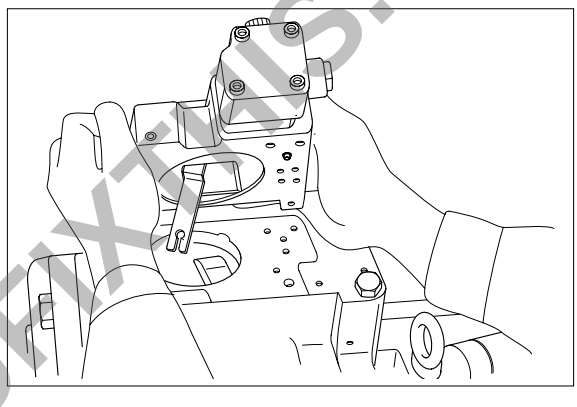
※ Select clean place.

※ Spread rubber sheet, cloth or so on on overhaul workbench top to prevent parts from being damaged.

(2) Remove dust, rust, etc, from pump surfaces with cleaning oil or so on.

(3) Remove drain port plug(469) and let oil out of pump casing.(front and rear pump)

(4) Remove hexagon socket head bolts (412, 413) and remove regulator.



(5) Loosen hexagon socket head bolts(401) which tighten swash plate support(251), pump casing(271) and valve cover(F,311).

※ If gear pump and so on are fitted to rear face of pump, remove them before starting this work.

(6) Loosen hexagon socket head bolts(402) which tighten swash plate support(251), pump casing(271) and valve cover(R, 312).

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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	M16 × 2.0	29.6±3.2	214±23
2		Radiator mounting bolt	M16 × 2.0	15	108
3		Damper mounting bolt	M10 × 1.5	4.8±0.3	34.7±2.2
4		Main pump housing mounting bolt	M10 × 1.5	4.8±0.3	34.7±2.2
5	Hydraulic system	Main pump mounting socket bolt	M20 × 2.5	42±4.5	304±33
6		Control valve mounting nut	M16 × 2.0	29.6±3.2	214±23
7		Fuel tank mounting bolt	M20 × 2.5	46±5.1	333±37
8		Hydraulic oil tank mounting bolt	M20 × 2.5	46±5.1	333±37
9		Turning joint mounting bolt, nut	M16 × 2.0	29.6±3.2	214±23
10	Power train system	Swing motor mounting bolt	M24 × 3.0	94.5±10.5	684±76
11		Swing bearing upper part mounting bolt	M24 × 3.0	97.8±10	707±72
12		Swing bearing lower part mounting bolt	M24 × 3.0	97.8±10	707±72
13		Travel motor mounting bolt	M20 × 2.5	44±4	318±29
14		Sprocket mounting bolt	M20 × 2.5	51±4	369±29
15	Under carriage	Carrier roller mounting bolt, nut	M16 × 2.0	29.7±4	215±29
16		Track roller mounting bolt	M22 × 2.5	77.4±11	560±80
17		Track tension cylinder mounting bolt	M16 × 2.0	29.6±3.2	214±23
18		Track shoe mounting bolt, nut	3/4-16 UNF	$78\ ^{+3}_{0}$	$564\ ^{+22}_{0}$
19		Track guard mounting bolt	M22 × 2.5	77.4±11	560±80
20	Others	Counterweight mounting bolt	M36 × 3.0	308±46.2	228±334
21		Cab mounting bolt, nut	M20 × 2.5	57.9±6.4	418±46

For tightening torque of engine and hydraulic components, see engine service manual and each components disassembly and assembly in this section.

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SECTION 6 TROUBLESHOOTING

GROUP 1 HYDRAULIC AND MECHANICAL SYSTEM

1. INTRODUCTION

1) MACHINE IN GENERAL

(1) If even a minor fault is left intact and operation is continued, a fatal failure may be caused, entailing a large sum of expenses and long hours of restoration.
Therefore when even a small trouble occurs, do not rely on your intuition and experience, but look for the cause based on the troubleshooting principle and perform maintenance and adjustment to prevent major failure from occurring. Keep in mind that a fault results from a combination of different causes.

(2) The following lists up commonly occurring faults and possible causes with this machine. For the troubleshooting of the engine, refer to the cummins troubleshooting and repair.

(3) When carrying out troubleshooting, do not hurry to disassemble the components.
It will become impossible to find the cause of the problem.

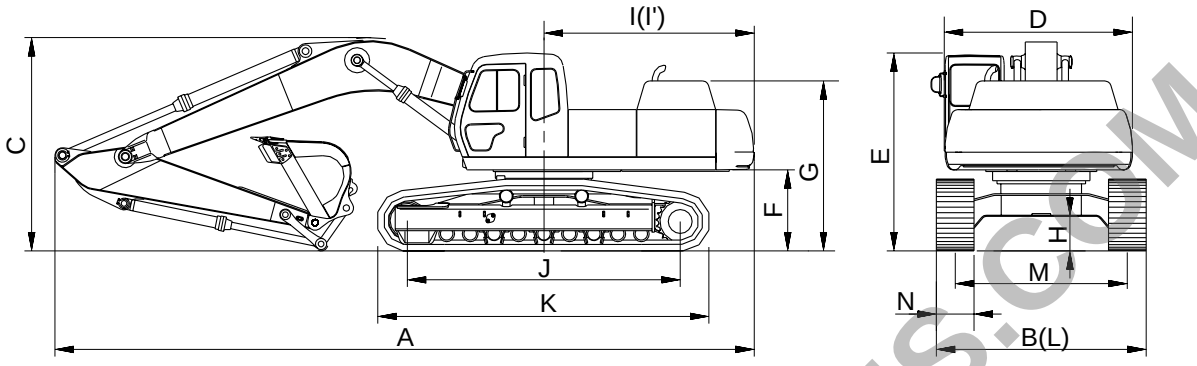
(4) Ask user or operator the following.
① Was the any strange thing about machine before failure occurred?
② Under what conditions did the failure occur?
③ Have any repairs been carried out before the failure?

(5) Check before troubleshooting.
① Check oil and fuel level.
② Check for any external leakage of oil from components.
③ Check for loose or damage of wiring and connections.

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2. SPECIFICATIONS



Description		Unit	Specification
Operating weight		kg (lb)	36000 (79400)
Bucket capacity(CECE heaped) ,standard		m^3 (yd^3)	1.4 (1.83)
Overall length	A	mm(ft-in)	11130 (36' 6")
Overall width, with 600mm shoe	B		3340 (10' 11")
Overall height	C		3390 (11' 1")
Superstructure width	D		2980 (9' 9")
Cab height	E		3150 (10' 4")
Ground clearance of counterweight	F		1290 (4' 3")
Engine cover height	G		2730 (9' 0")
Minimum ground clearance	H		550 (1' 10")
Rear-end distance	I		3350 (11' 1")
Rear-end swing radius	I'		3350 (11' 1")
Distance between tumblers	J		4340 (14' 3")
Undercarriage length	K		5280 (17' 4")
Undercarriage width	L		3340 (11' 0")
Track gauge	M		2740 (9' 0")
Track shoe width, standard	N		600 (2' 0")
Travel speed (low/high)		km/hr(mph)	3.0/4.3 (1.9/2.7)
Swing speed		rpm	8.6
Gradeability		degree (%)	35 (70)
Ground pressure(600mm shoe)		kg/cm^2 (psi)	0.64 (9.1)

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Millimeters to inches

1mm = 0.03937 in

	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 = 2.2046 lb

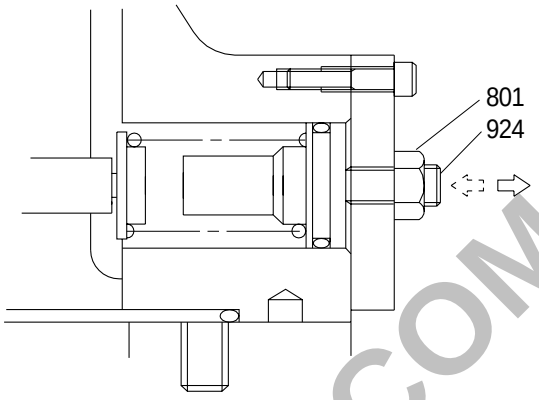
	0	1	2	3	4	5	6	7	8	9
0		2.20	4.41	6.61	8.82	11.02	13.23	15.43	17.64	19.84
10	22.05	24.25	26.46	28.66	30.86	33.07	35.27	37.48	39.68	41.89
20	44.09	46.30	48.50	50.71	51.91	55.12	57.32	59.5.	61.73	63.93
30	66.14	68.34	70.55	72.75	74.96	77.16	79.37	81.57	83.78	85.98
40	88.18	90.39	92.59	94.80	97.00	99.21	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

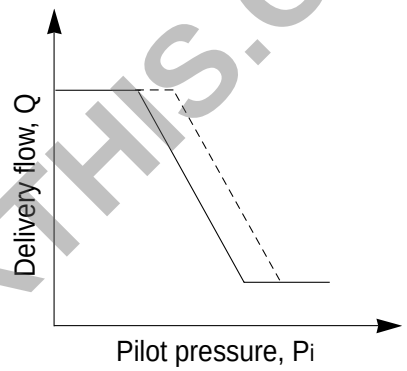
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③ Adjustment of flow control characteristic

The flow control characteristic can be adjusted with the adjusting screw.
Adjust it by loosening the hexagon nut(801) and by tightening(or loosening) the hexagonal socket head screw(924).
Tightening the screw shifts the control chart to the right as shown in the figure.





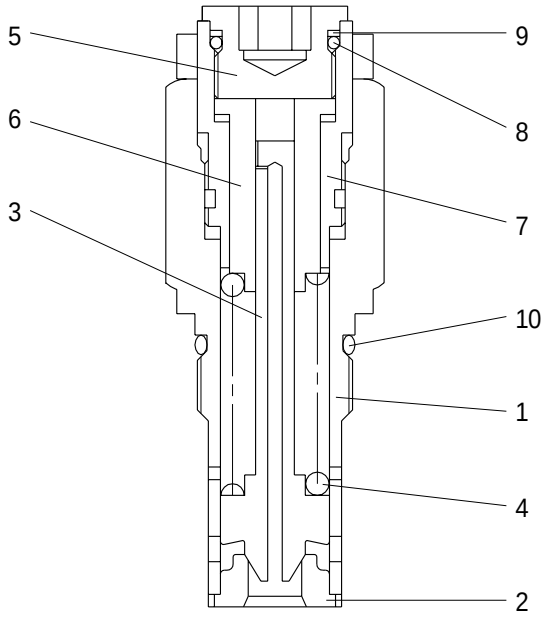
※ **Adjusting values are shown in table.**

Speed	Adjustment of flow control characteristic		
	Tightening amount of adjusting screw(924)	Flow control control starting pressure change amount	Flow change change amount
(min $^{-1}$)	(Turn)	(kgf/cm^2)	(l /min)
2000	+1/4	+1.7	+21

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3) RELIEF VALVE



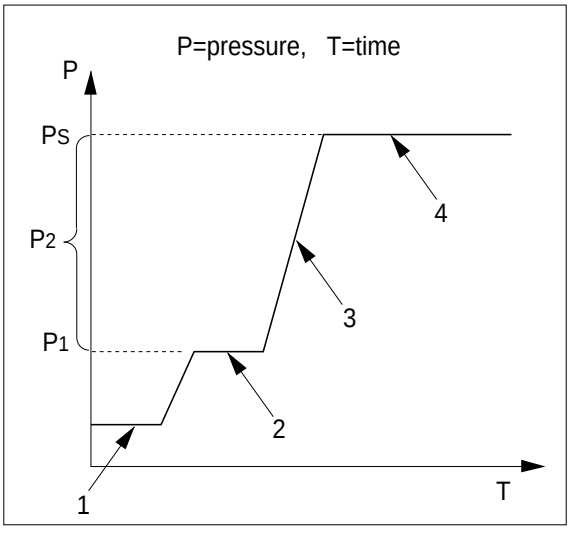
1	Body
2	Seat
3	Plunger
4	Spring
5	Adjusting screw
6	Piston
7	Sleeve
8	O-ring
9	Back up ring
10	O-ring

(1) Construction of relief valve

The valve casing contains two cartridge type relief valves that stop the regular and reverse rotations of the hydraulic motor. The relief valves relieve high pressure at start or at stop of swing motion and can control the relief pressure in two steps, high and low, in order to insure smooth operation.

(2) Function of relief valve

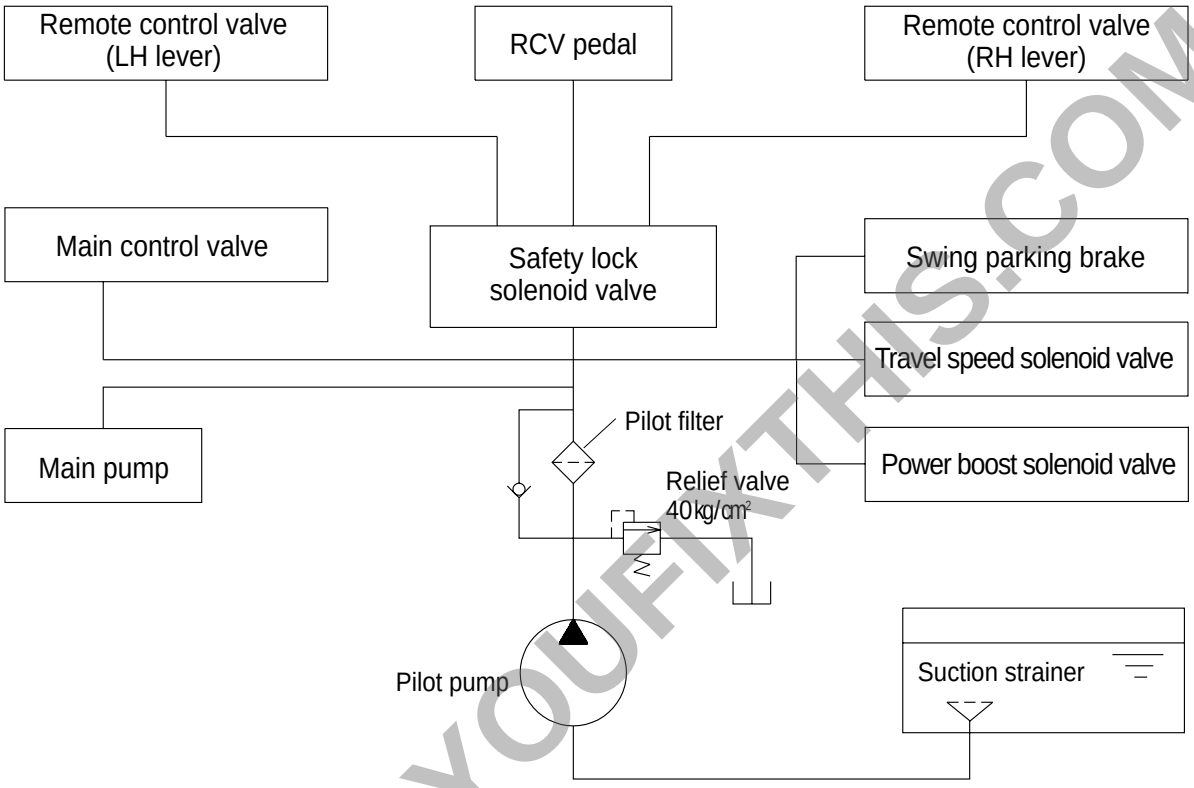
Figure illustrates how the pressure acting on the relief valve is related to its rising process. Here is given the function, referring to the figure following page.



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GROUP 3 PILOT CIRCUIT



The pilot circuit consists of suction circuit, delivery circuit and return circuit.
The pilot pump is provide with relief valve, receives the oil from the hydraulic tank through the suction strainer.
The discharged oil from the pilot pump flows to the remote control valve through pilot filter, EPPR valve, travel speed solenoid valve, swing parking brake, main control valve and safety lock solenoid valve.

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5. WORK LIGHT CIRCUIT

1) OPERATING FLOW

Fuse box (No.9) → I/conn 〔CN-37(2)〕 → Work light switch 〔CS-36(6)〕
Work light switch 〔CR-3(4)〕

※ When light switch ON

Work light switch ON 〔CS-36(2)〕 → Work light relay 〔CR-3(3) → (1)〕 → Ground
Work light relay 〔CR-3(4) → (2)〕 →
→ I/conn 〔CN-7(10)〕 → Cluster work light ON 〔CN-56(10)〕
→ I/conn 〔CN-4(4)〕 → I/conn 〔CN-10(2)〕 → Work light ON 〔CL-6(2), CL-5(2)〕

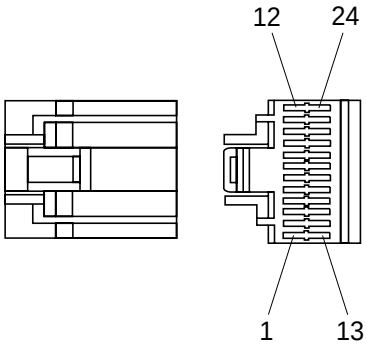
2) CHECK POINT

Engine	Key switch	Check point	Voltage
STOP	ON	① - GND (Fuse box) ② - GND (Switch power input) ③ - GND (Switch power output) ④ - GND (Relay input) ⑤ - GND (Relay coil) ⑥ - GND (Relay output) ⑦ - GND (Work light)	20 ~ 25V

※ GND : Ground

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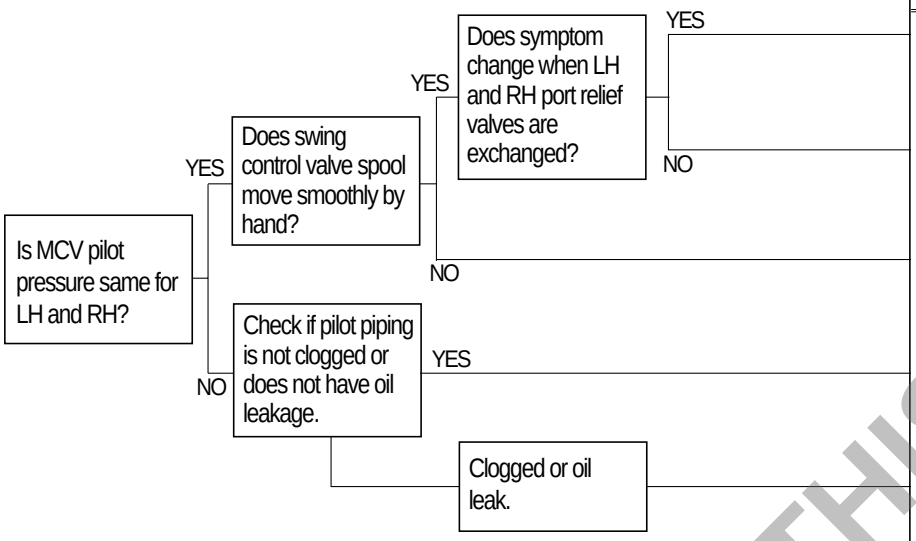
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No. of pin	Receptacle connector(Female)	Plug connector(Male)
24	 S815-024000	

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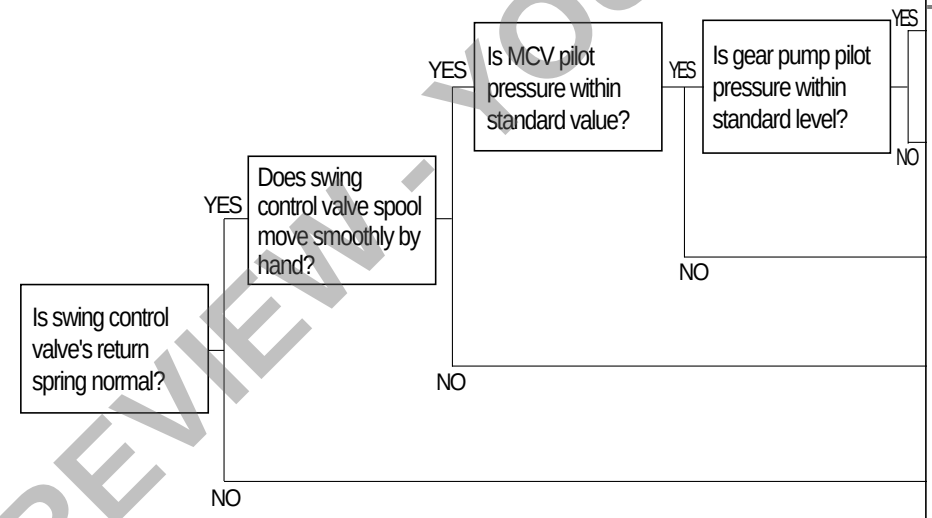
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3) SWING MOTION IS IMPOSSIBLE IN ONE DIRECTION



Cause	Remedy
Swing port relief valve is faulty.	Disassemble and repair.
Shuttle valve is faulty	Disassemble and repair.
Swing control valve spool is stuck.	Disassemble and repair.
Pilot valve is broken.	Disassemble and repair.
	Clean pilot piping interior or repair piping.

4) MACHINE SWINGS BUT DOES NOT STOP



Cause	Remedy
Pilot relief valve is faulty.	Disassemble and repair or replace.
Gear pump is broken.	Disassemble and repair.
Pilot valve is faulty.	Disassemble and repair.
Swing control valve spool is stuck.	Disassemble and repair.
Return spring is faulty.	Disassemble and replace.

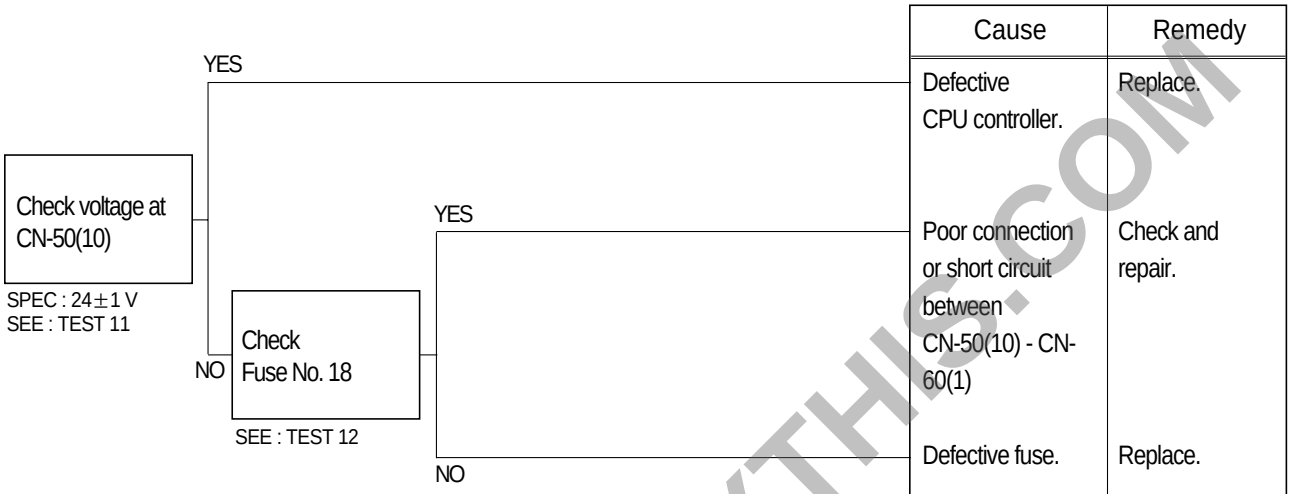
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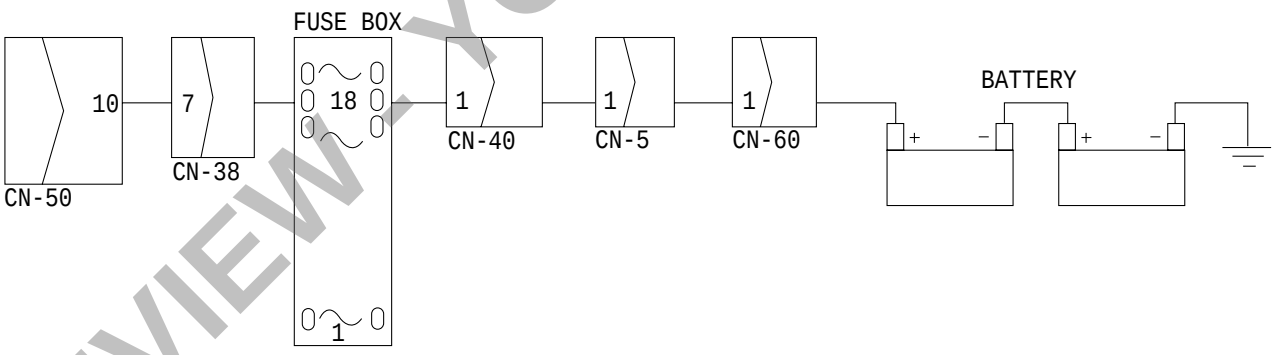
4. CLUSTER LAMPS ARE OFF IMMEDIATELY AFTER KEY SWITCH OFF

※ Before carrying out below procedure, check all the related connector are properly inserted.
Normal condition : Lamps "ON" approx. 3-12 second after key switch OFF.

1) INSPECTION PROCEDURE



Wiring diagram



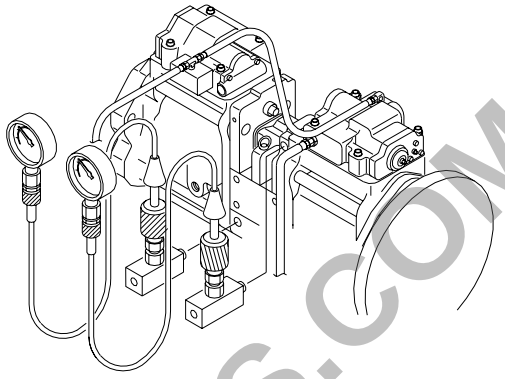
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17) SYSTEM PRESSURE REGULATOR RELIEF SETTING

(1) Preparation

① Stop the engine.
② Remove the top cover of the hydraulic tank oil supply port with a wrench.
③ Push the pressure release button to bleed air.
④ To measure the system relief pressure : Install a connector and pressure gauge assembly main pump gauge port, as shown.
⑤ Start the engine and check for oil leakage from the port.
⑥ Keep the hydraulic oil temperature at 50±5℃.



(2) Measurement

① Select the following switch positions:
- MODE selector : H mode

② Slowly operate each control lever of boom, arm and bucket functions at full stroke over relief and measure the pressure.
③ In the swing function, place bucket against an immovable object and measure the relief pressure.
④ In the travel function, lock undercarriage with an immovable object and measure the relief pressure.

(3) Evaluation

The average measured pressure should be within the following specifications:

Unit : kgf / cm^2

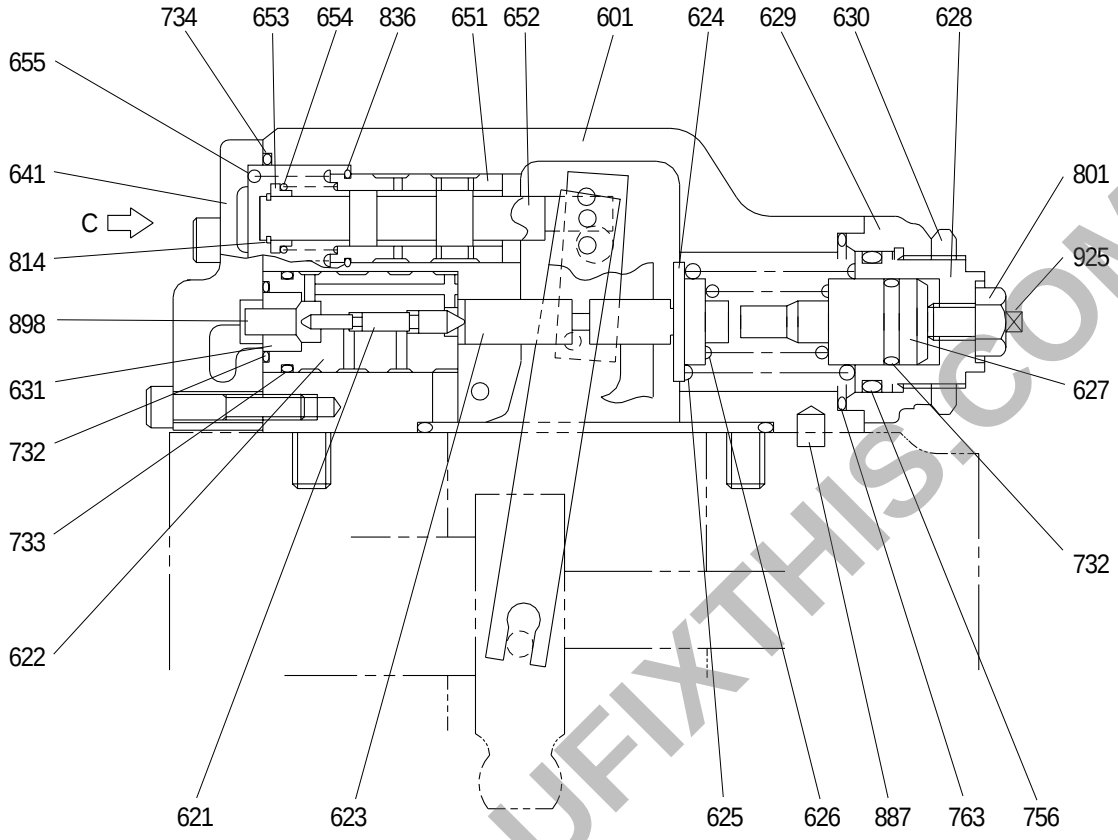
Model	Function to be tested	Normal	Over load
R360LC-3	Boom, Arm, Bucket	320+5(350+5)	380+5
	Travel	320+5(350+5)	-
	Swing	260	-

* ( ) : Power boost

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Front regulator(2/2)



SECTION A-A

408	Hexagon socket screw	627	Adjust stem(C)	728	O-ring
412	Hexagon socket screw	628	Adjust screw(C)	730	O-ring
413	Hexagon socket screw	629	Cover(C)	732	O-ring
436	Hexagon socket screw	630	Lock nut	733	O-ring
438	Hexagon socket screw	631	Sleeve, pf	734	O-ring
496	Plug	641	Pilot cover	735	O-ring
541	Seat	643	Pilot piston	755	O-ring
543	Stopper	644	Spring seat(Q)	756	O-ring
545	Steel ball	645	Adjust stem(Q)	763	O-ring
601	Casing	646	Pilot spring	801	Nut
611	Feed back lever	651	Sleeve	814	Snap ring
612	Lever(1)	652	Spool	836	Snap ring
613	Lever(2)	653	Spring seat	858	Snap ring
614	Fulcrum plug	654	Return spring	874	Pin
615	Adjust plug	655	Set spring	875	Pin
621	Compensator piston	696	Cover	887	Pin
622	Piston case	697	Check valve plate	897	Pin
623	Compensator rod	708	O-ring	898	Pin
624	Spring seat(C)	722	O-ring	924	Set screw
625	Outer spring	724	O-ring	925	Adjust screw(QI)
626	Inner spring	725	O-ring		

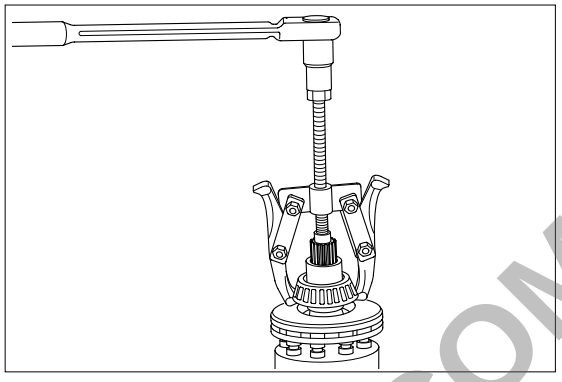
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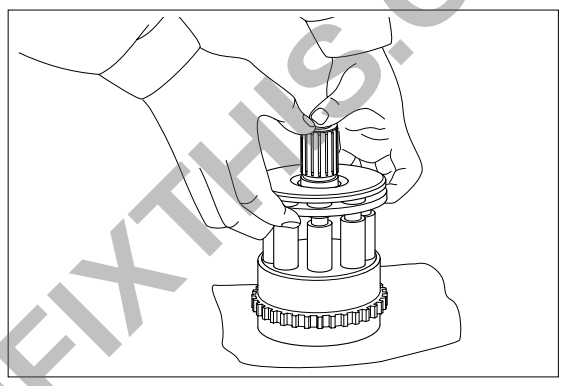
(17) Disassembly of cylinder assembly

① Removal of inner race of taper roller bearing(4).

After removing snap ring, lift out cylinder(9) with 2 inner race of roller bearing(4) by applying gear puller at the end of spline in the cylinder.

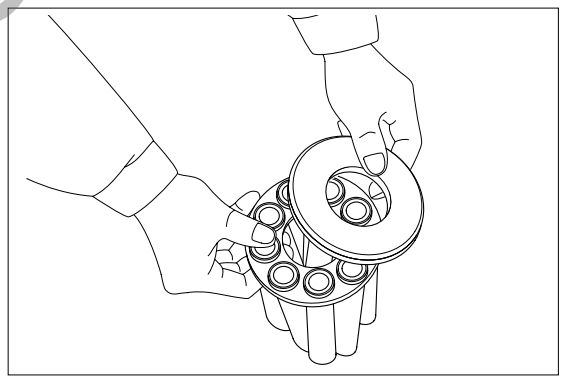


② Separate cam plate(6), piston assembly (10), return plate(7) from cylinder(9).



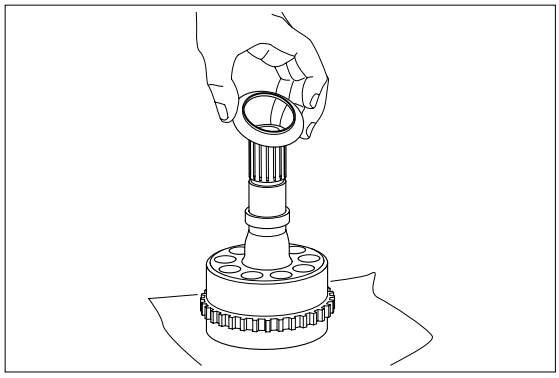
③ Get cam plate(6) slide on sliding face of piston assembly(10) and remove it.

※ Be cautious not to damage on sliding face of cam plate.



④ Remove spring(8) from cylinder(9).

This completes disassembly.

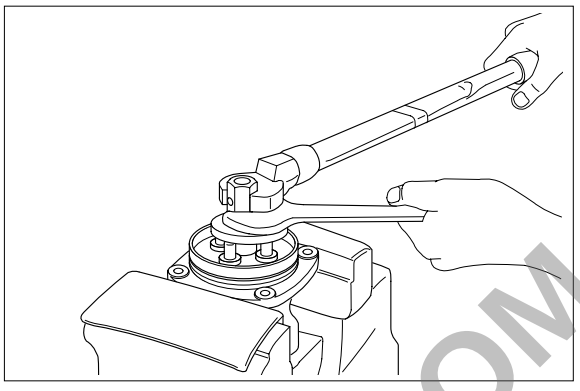


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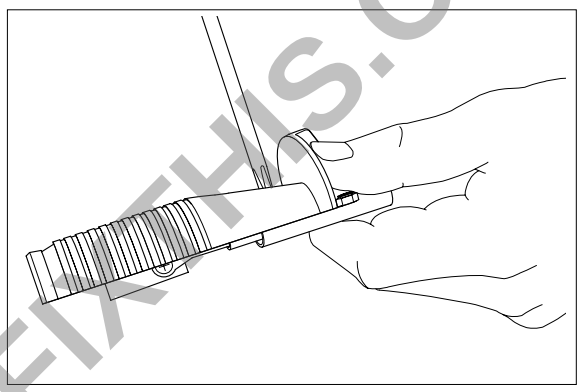
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(15) Assemble adjusting nut(312), apply spanner to width across flat of disk(302) to fix it, and tighten adjusting nut to the specified torque.

※ During tightening, do not change position of disk.

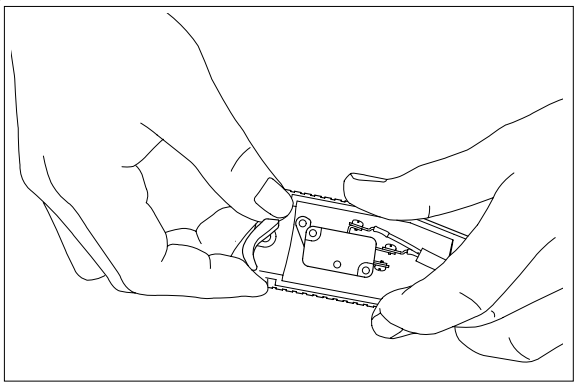


(16) Tighten machine screw 3(431) to the specified torque to fix handle bar and handle.

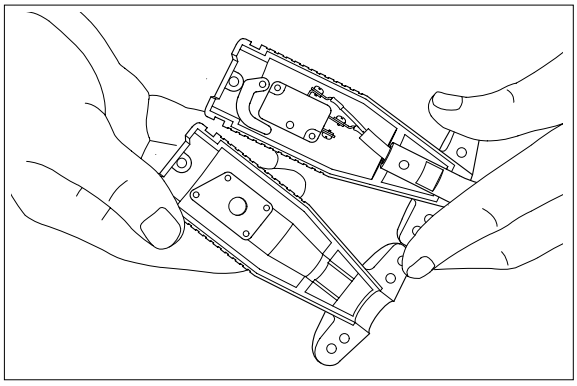


(17) For valve with switch, assemble parts for switch to handle.

※ Pay attention to projections/ depression for assembling on switch seat, switch, switch lever, etc.



(18) Assemble remaining handle(401).



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