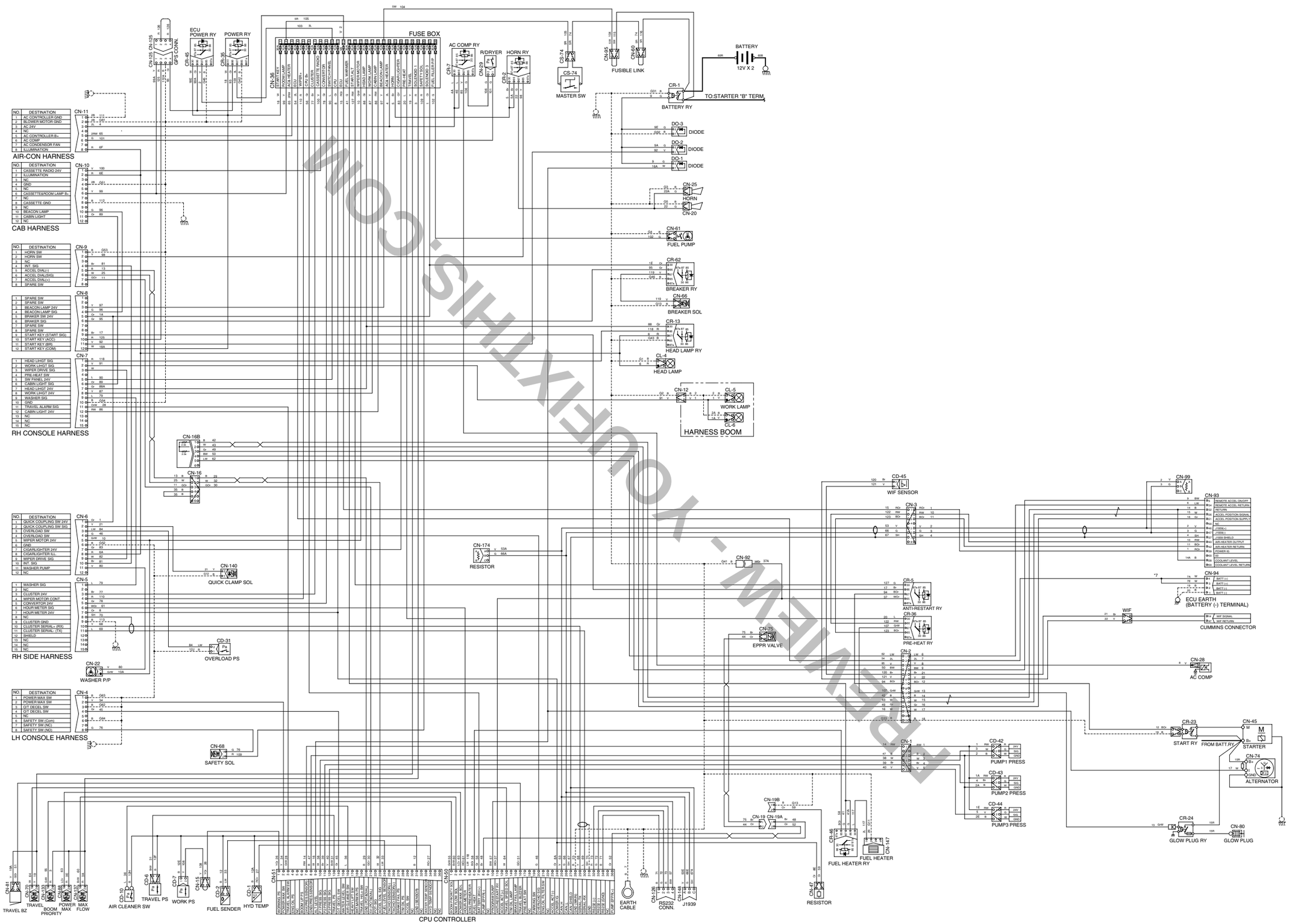
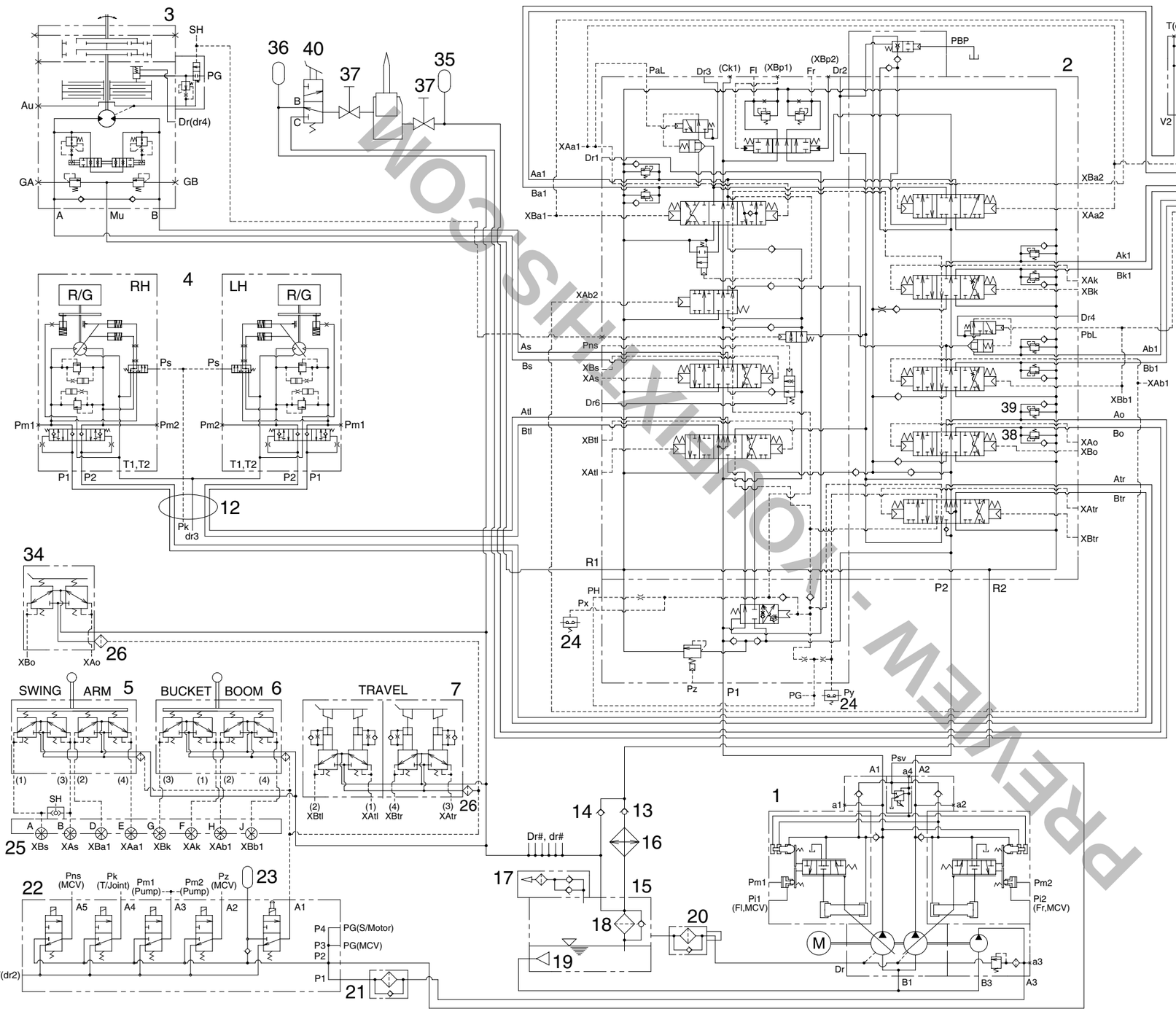


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GROUP 1 HYDRAULIC CIRCUIT



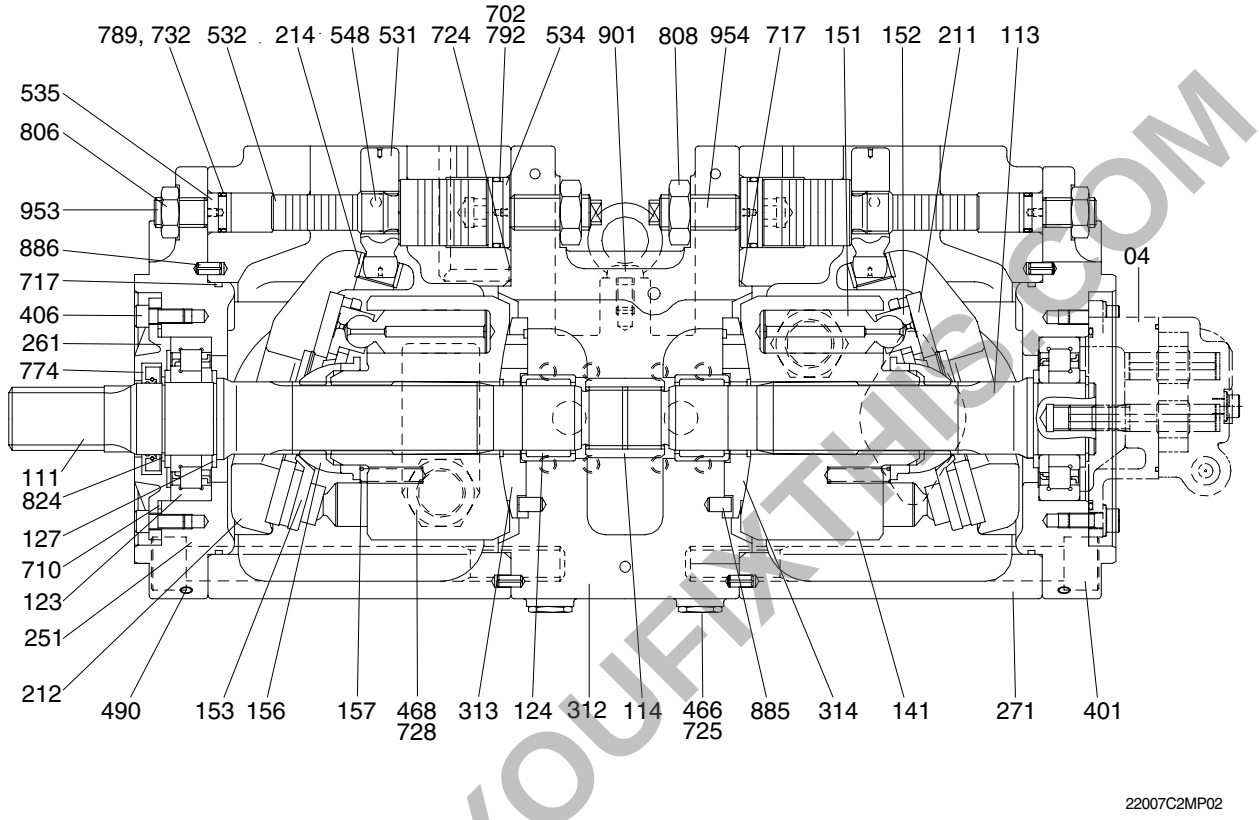
1	Main pump
2	Main control valve
3	Swing motor
4	Travel motor
5	RCV lever(LH)
6	RCV lever(RH)
7	RCV pedal
8	Boom cylinder(LH)
9	Boom cylinder(RH)
10	Arm cylinder
11	Bucket cylinder
12	Turning joint
13	Check valve
14	Check valve
15	Hydraulic tank
16	Oil cooler
17	Air breather
18	Bypass valve
19	Strainer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

2107A3HC01

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1) MAIN PUMP(1/2)

The main pump consists of two piston pumps(front & rear) and valve block.



04	Gear pump	261	Seal cover(F)	717	O-ring
111	Drive shaft(F)	271	Pump casing	724	O-ring
113	Drive shaft(R)	312	Valve block	725	O-ring
114	Spline coupling	313	Valve plate(R)	728	O-ring
123	Roller bearing	314	Valve plate(L)	732	O-ring
124	Needle bearing	401	Hexagon socket bolt	774	Oil seal
127	Bearing spacer	406	Hexagon socket bolt	789	Back up ring
141	Cylinder block	466	VP Plug	792	Back up ring
151	Piston	468	VP Plug	806	Hexagon head nut
152	Shoe	490	Plug	808	Hexagon head nut
153	Set plate	531	Tilting pin	824	Snap ring
156	Bushing	532	Servo piston	885	Pin
157	Cylinder spring	534	Stopper(L)	886	Spring pin
211	Shoe plate	535	Stopper(S)	901	Eye bolt
212	Swash plate	548	Pin	953	Set screw
214	Bushing	702	O-ring	954	Set screw
251	Support	710	O-ring		

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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(Front)	M20 × 2.5	55 ± 3.5	398 ± 25
1		Engine mounting bolt, nut(Rear)	M24 × 3.0	90 ± 7.0	651 ± 51
2		Radiator mounting bolt	M12 × 1.75	12.8 ± 3.0	92.6 ± 21.7
3		Coupling mounting socket bolt	M18 × 2.5	32 ±1.0	231 ±7.2
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 ± 32.5
6		Main control valve mounting nut	M12 × 1.75	12.2 ± 1.3	88.2 ± 9.4
7		Fuel tank mounting bolt	M20 × 2.5	45 ± 5.1	325 ± 36.9
8		Hydraulic oil tank mounting bolt	M20 × 2.5	46 ± 5.1	333 ± 36.9
9		Turning joint mounting bolt, nut	M12 × 1.75	12 ± 1.3	86.8 ± 9.4
10	Power train system	Swing motor mounting bolt	M20 × 2.5	57.9 ± 8.7	419 ± 62.9
11		Swing bearing upper part mounting bolt	M20 × 2.5	57.8 ± 6.4	418 ± 46.3
12		Swing bearing lower part mounting bolt	M20 × 2.5	57.8 ± 6.4	418 ± 46.3
13		Travel motor mounting bolt	M16 × 2.0	23 ± 2.5	166 ± 18.1
14		Sprocket mounting bolt	M16 × 2.0	26 ± 2.5	188 ± 18.1
15	Under carriage	Carrier roller mounting bolt, nut	M16 × 2.0	29.7± 4.4	215 ± 31.8
16		Track roller mounting bolt	M20 × 2.5	54.7 ± 5.0	396 ± 36.2
17		Track tension cylinder mounting bolt	M16 × 2.0	29.7 ± 4.5	215 ± 32.5
18		Track shoe mounting bolt, nut	M20 × 1.5	78 ± 8.0	564 ± 57.9
19		Track guard mounting bolt	M20 × 2.5	57.9 ± 8.7	419 ± 62.9
20	Others	Counter weight mounting bolt	M36 × 3.0	308 ± 46	2228 ± 333
21		Cab mounting bolt	M12 × 1.75	12.8 ± 3.0	92.6 ± 21.7
22		Operator's seat mounting bolt	M 8 × 1.25	4.05 ± 0.8	29.3 ± 5.8

※ For tightening torque of engine and hydraulic components, see engine maintenance guide and service manual.

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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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1. REMOVAL AND INSTALL

1) REMOVAL

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

(2) Operate the control levers and pedals several times to release the remaining pressure in the hydraulic piping

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

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

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

- Hydraulic tank quantity : 180 ℓ

(5) Remove socket bolts(74) and disconnect pipe(1, 2).

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

(7) Remove socket bolts(72) and disconnect pump suction tube(3).

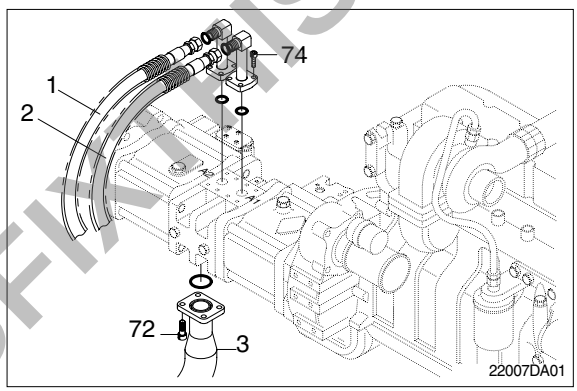
※ When pump suction tube is disconnected, the oil inside the piping will flow out, so catch it in oil pan.

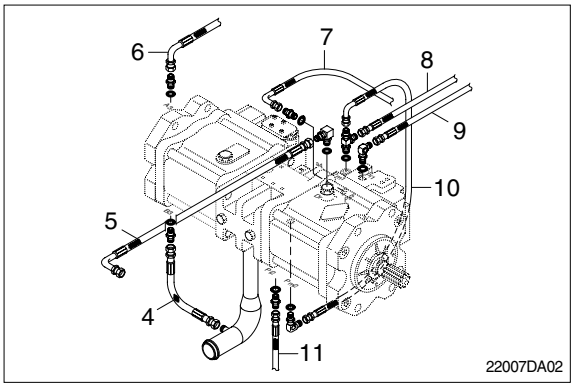
(8) Sling the pump assembly and remove the pump mounting bolts.

- Weight : 120kg(265lb)

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







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4. TROUBLESHOOTING

1) GENERAL COMMENTS

(1) When any abnormal phenomenon is noticed, investigate whether it is a failure of the control valve itself or a problem in the pump proper, pilot pump or circuit.
For this purpose, the pilot pressure, pump discharge pressure, load pressure, etc. should be measured.
Additionally, even when partial disassembly and checking is carried out, follow the previously mentioned disassembly and assembly procedures.

(2) Since dust is very harmful to hydraulic components, pay full attention to dust prevention.
Even for partial disassembly dust prevention measures should be carried out.

(3) Handle movable parts carefully. Even for a small damage, correction using an oilstone should be carried out.

(4) Carefully carry out your investigation, paying due attention not to damage the sealing faces of O-rings. Such damage will cause both internal and external oil leakage.

2) TROUBLESHOOTING

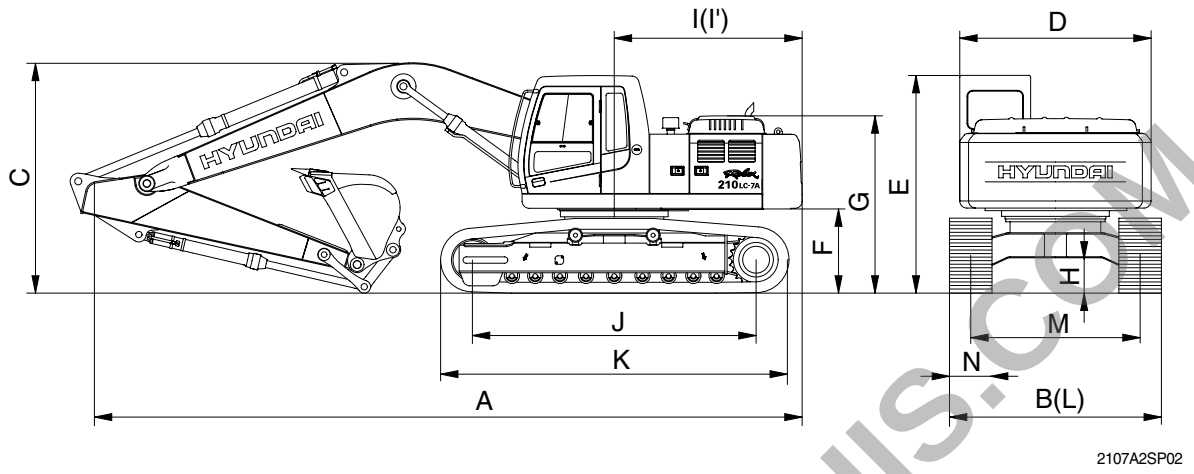
Phenomenon	Possible cause	Remedy
Machine cannot travel or swing or functions poorly at low speed(Insufficient force) or generally responds slowly.	· Main relief valve malfunctions.	· Measure pressure of main relief valve.
	- Dirt is jammed between main plunger and seat.	- Disassemble valve and clean parts. Replace assembly, if damaged severely.
	- Dirt is jammed between poppet and seat.	- Same as above.
	- Main plunger is stuck.	- Correct stuck section with oilstone.
	- Spring is broken or fatigued.	- Remove spring.
	- Restriction in main plunger is clogged.	- Remove dirt.
	- Adjusting screw is loose.	- Readjust it and tighten locknut to specified torque.
	· Orifice just before control valve in pilot line is clogged.	· Remove dirt.
Cylinder falls significantly under its own weight when the spool is in neutral.	· Clearance between spool and casing is excessive.	· Replace spool.
	· Spool does not return to correct neutral position.	· Measure secondary pilot pressure.
	- Dirt is jammed between casing and spool, or casing and spool are stuck together.	- Disassemble valve and clean parts. Correct stuck section with oilstone.
	- Spring is broken or fatigued.	- Replace spring.
	- Pilot line is clogged with dirt.	- Remove dirt.
	· Main relief valve malfunctions.	· Measure pressure of main relief valve.
	· Port relief valve malfunctions.	· Measure pressure of main relief valve.
	· Lock valve assembly malfunctions.	· Replace lock valve assembly.
	· Lockvalve poppet malfunctions	
	- Dirt is jammed between poppet and casing.	- Disassemble poppet and clean parts
	- Poppet is stuck.	- Correct stuck section with oilstone.
	- Spring is broken or fatigued.	- Replace spring.

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2. SPECIFICATIONS

1) ROBEX 210LC-7A



Description		Unit	Specification
Operating weight		kg(lb)	21700(47840)
Bucket capacity(SAE heaped), standard		$m^3(yd^3)$	0.92(1.20)
Overall length	A	mm(ft-in)	9520(31' 3")
Overall width, with 600mm shoe	B		2990(9' 10")
Overall height	C		2990(9' 10")
Superstructure width	D		2700(8' 10")
Overall height of cab	E		2920(9' 7")
Ground clearance of counterweight	F		1060(3' 6")
Engine cover height	G		2320(7' 7")
Minimum ground clearance	H		480(1' 7")
Rear-end distance	I		2770(9' 1")
Rear-end swing radius	I'		2830(9' 3")
Distance between tumblers	J		3650(12' 0")
Undercarriage length	K		4440(14' 7")
Undercarriage width	L		2990(9' 10")
Track gauge	M		2390(7' 10")
Track shoe width, standard	N		600(24")
Travel speed(Low/high)		km/hr(mph)	3.4/5.3(2.1/3.3)
Swing speed		rpm	12.0
Gradeability		Degree(%)	35(70)
Ground pressure(600mm shoe)		$kgf/cm^2(psi)$	0.46(6.54)

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1. STRUCTURE

This service manual has been prepared as an aid to improve the quality of repairs by giving the serviceman an accurate understanding of the product and by showing him the correct way to perform repairs and make judgements. Make sure you understand the contents of this manual and use it to full effect at every opportunity.
This service manual mainly contains the necessary technical information for operations performed in a service workshop.
For ease of understanding, the manual is divided into the following sections.

SECTION 1 GENERAL
This section explains the safety hints and gives the specification of the machine and major components.

SECTION 2 STRUCTURE AND FUNCTION
This section explains the structure and function of each component. It serves not only to give an understanding of the structure, but also serves as reference material for troubleshooting.

SECTION 3 HYDRAULIC SYSTEM
This section explains the hydraulic circuit, single and combined operation.

SECTION 4 ELECTRICAL SYSTEM
This section explains the electrical circuit, monitoring system and each component. It serves not only to give an understanding electrical system, but also serves as reference material for trouble shooting.

SECTION 5 MECHATRONICS SYSTEM
This section explains the computer aided power optimization system and each component.

SECTION 6 TROUBLESHOOTING
This section explains the troubleshooting charts correlating **problems** to **causes**.

SECTION 7 MAINTENANCE STANDARD
This section gives the judgement standards when inspecting disassembled parts.

SECTION 8 DISASSEMBLY AND ASSEMBLY
This section explains the order to be followed when removing, installing, disassembling or assembling each component, as well as precautions to be taken for these operations.

SECTION 9 COMPONENT MOUNTING TORQUE
This section shows bolt specifications and standard torque values needed when mounting components to the machine.

The specifications contained in this shop manual are subject to change at any time and without any advance notice. Contact your HYUNDAI distributor for the latest information.

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(2) 5.68m(18' 8") boom, 2.40m(7' 10") arm equipped with 0.92m³(SAE heaped) bucket, 600mm (24") triple grouser shoe and 3800kg counterweight.

Load point height		Load radius										At max. reach		
		1.5m(5ft)		3.0m(10ft)		4.5m(15ft)		6.0m(20ft)		7.5m(25ft)		Capacity		Reach
														m(ft)
7.5m (25ft)	kg											*3450	*3450	7.15
	lb											*7610	*7610	(23.5)
6.0m (20ft)	kg							*3750	*3750			*3520	2780	8.20
	lb							*8270	*8270			*7760	6130	(26.9)
4.5m (15ft)	kg							*4190	*4190	*3940	3140	*3630	2350	8.82
	lb							*9240	*9240	*8690	6920	*8000	5180	(28.9)
3.0m (10ft)	kg					*6420	*6420	*4920	4400	*4240	3020	3770	2150	9.11
	lb					*14150	*14150	*10850	9700	*9350	6660	8310	4740	(29.9)
1.5m (5ft)	kg					*7960	6360	*5690	4130	*4620	2890	3720	2100	9.10
	lb					*17550	14020	*12540	9110	*10190	6370	8200	4630	(29.9)
Ground Line	kg			*8300	*8300	*8820	6050	*6260	3930	*4920	2790	3890	2200	8.81
	lb			*18300	*18300	*19440	13340	*13800	8660	*10850	6150	8580	4850	(28.9)
-1.5m (-5ft)	kg	*9220	*9220	*12750	11960	*8970	5970	*6460	3850			*4300	2490	8.18
	lb	*20330	*20330	*28110	26370	*19780	13160	*14240	8490			*9480	5490	(26.8)
-3.0m (-10ft)	kg	*13340	*13340	*12280	12180	*8430	6040	*6110	3890			*4360	3190	7.12
	lb	*29410	*29410	*27070	26850	*18580	13320	*13470	8580			*9610	7030	(23.4)
-4.5m (-15ft)	kg			*9840	*9840	*6850	6300							
	lb			*21690	*21690	*15100	13890							

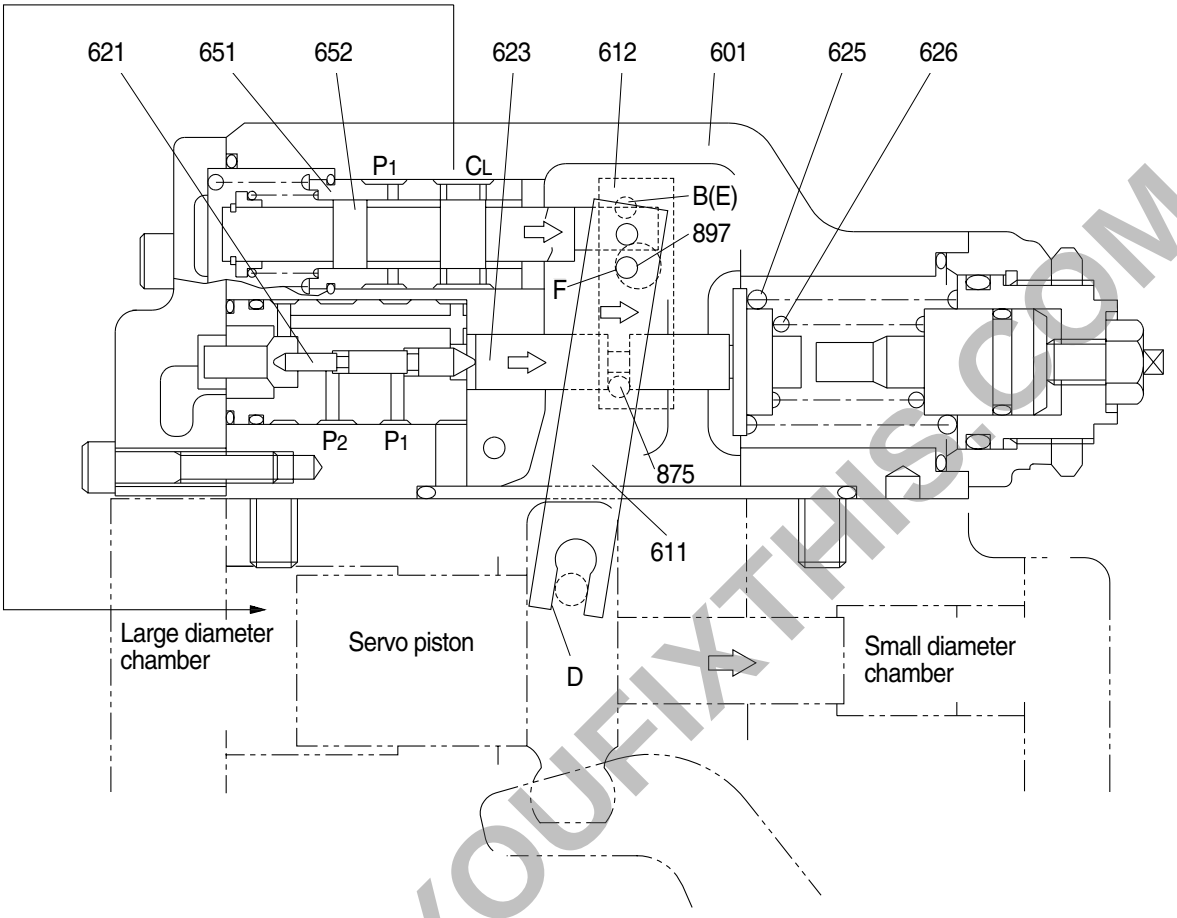
(3) 5.68m(18' 8") boom, 2.00m(6' 7") arm equipped with 0.92m³(SAE heaped) bucket, 600mm (24") triple grouser shoe and 3800kg counterweight.

Load point height		Load radius								At max. reach		
		3.0m(10ft)		4.5m(15ft)		6.0m(20ft)		7.5m(25ft)		Capacity		Reach
												m(ft)
7.5m (25ft)	kg									*3750	*3750	6.64
	lb									*8270	*8270	(21.8)
6.0m (20ft)	kg					*4150	*4150			*3800	3060	7.78
	lb					*9150	*9150			*8380	6750	(25.5)
4.5m (15ft)	kg			*5360	*5360	*4540	*4540			*3910	2560	8.43
	lb			*11820	*11820	*10010	*10010			*8620	5640	(27.7)
3.0m (10ft)	kg			*6970	6830	*5240	4380	*4500	3020	*4050	2340	8.74
	lb			*15370	15060	*11550	9660	*9920	6660	*8930	5160	(28.7)
1.5m (5ft)	kg			*8380	6310	*5950	4120	*4820	2900	4000	2280	8.73
	lb			*18470	13910	*13120	9080	*10630	6390	8820	5030	(28.6)
Ground Line	kg			*9020	6080	*6430	3960	4980	2830	4210	2400	8.42
	lb			*19890	13400	*14180	8730	10980	6240	9280	5290	(27.6)
-1.5m (-5ft)	kg	*13020	12190	*8960	6050	*6510	3910			*4550	2770	7.76
	lb	*28700	26870	*19750	13340	*14350	8620			*10030	6110	(25.5)
-3.0m (-10ft)	kg	*11620	*11620	*8210	6160	*5910	3990			*4510	3660	6.61
	lb	*25620	*25620	*18100	13580	*13030	8800			*9940	8070	(21.7)
-4.5m (-15ft)	kg	*8770	*8770									
	lb	*19330	*19330									

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① Overload preventive function



2-14

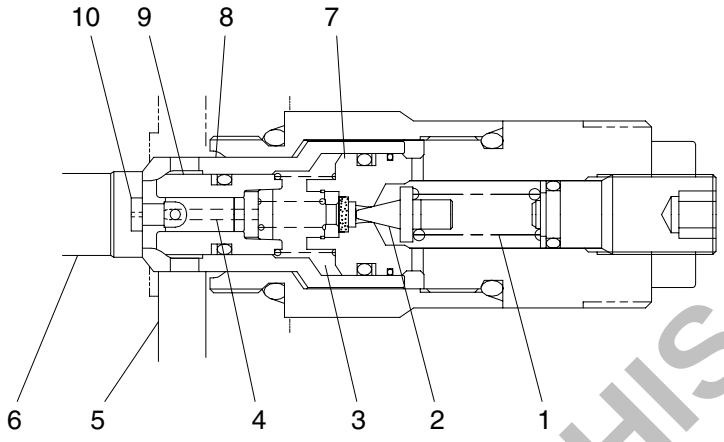
When the self pump delivery pressure P1 or the companion pump delivery pressure P2 rises, it acts on the stepped part of the compensating piston(621). It presses the compensating rod(623) to the right till the force of the outer spring(625) and inner spring(626) balances with the hydraulic force. The movement of the compensating rod is transmitted to lever 1(612) via pin(875).
Lever 1 rotates around the pin(875) (E) fixed to the casing(601).
Since the large hole section(F) of lever 1 contains a protruding pin(897) fixed to the feedback lever(611), the feedback lever rotates around the fulcrum of point D as lever 1 rotates, and then the spool(652) is shifted to the right. As the spool moves, the delivery pressure P1 is admitted to the large diameter section of the servo piston via port CL, causes the servo piston move to the right, reduces the pump delivery, flow rate, and prevents the prime mover from being overloaded.
The movement of the servo piston is transmitted to the feedback lever via point D. Then the feedback lever rotates around the fulcrum of point F and the spool is shifted to the left. The spool moves till the opening between the spool(652) and sleeve(651) is closed.

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(2) Port relief valve

Limits the service pressure in a cylinder circuit.



21072MC44

Port relief valves and make up valves are fitted between the cylinders of the working devices(Boom, arm, bucket) and their spools. In the case of an external force acting on the cylinder rod with its spool in neutral, the pressure in the cylinder could become excessive. The port relief valve(602) restricts this pressure to the set pressure of the valve.

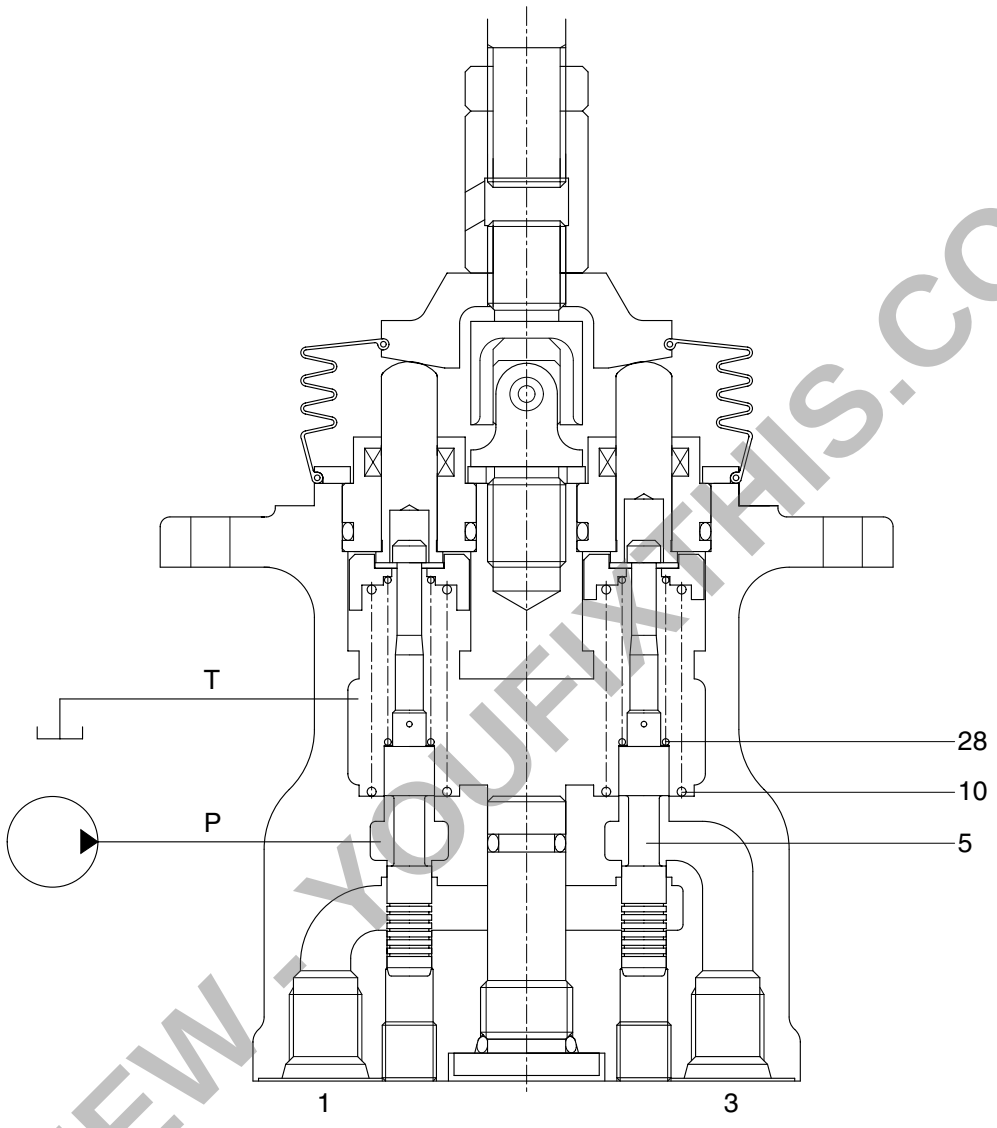
Port relief valve(602) have also the additional function of a make up valve. It is possible, under the influence of an external force acting on a cylinder that a condition can occur where insufficient flow is available to match cylinder velocity. If this occurs then a vacuum and thereby cavitation could exist. To eliminate such an occurrence, a make up valve operates to break this vacuum by supplying the return flow into the cylinder.

The hydraulic fluid between the cylinder and its spool flows into the path(6) to pressurize the port relief valve(602). The hydraulic fluid in the path(6) flows into the spring chamber(3) through the path(4) in the piston(10). If the pressure is lower than the pressure setting, the poppet(2) is shut off because the force of the spring(1) overcomes the pressure. So the path(6) and the spring chamber(3) have the same pressure. Because the spring chamber(3) side pressured area of the seat(8) and the plunger(9) is larger than that of the path(6) side, seat(8) and the plunger(9) are pushed in the right direction to be seated securely and then the hydraulic fluid in the path(6) doesn't escape into the return path(5).

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(1) Case where handle is in neutral position



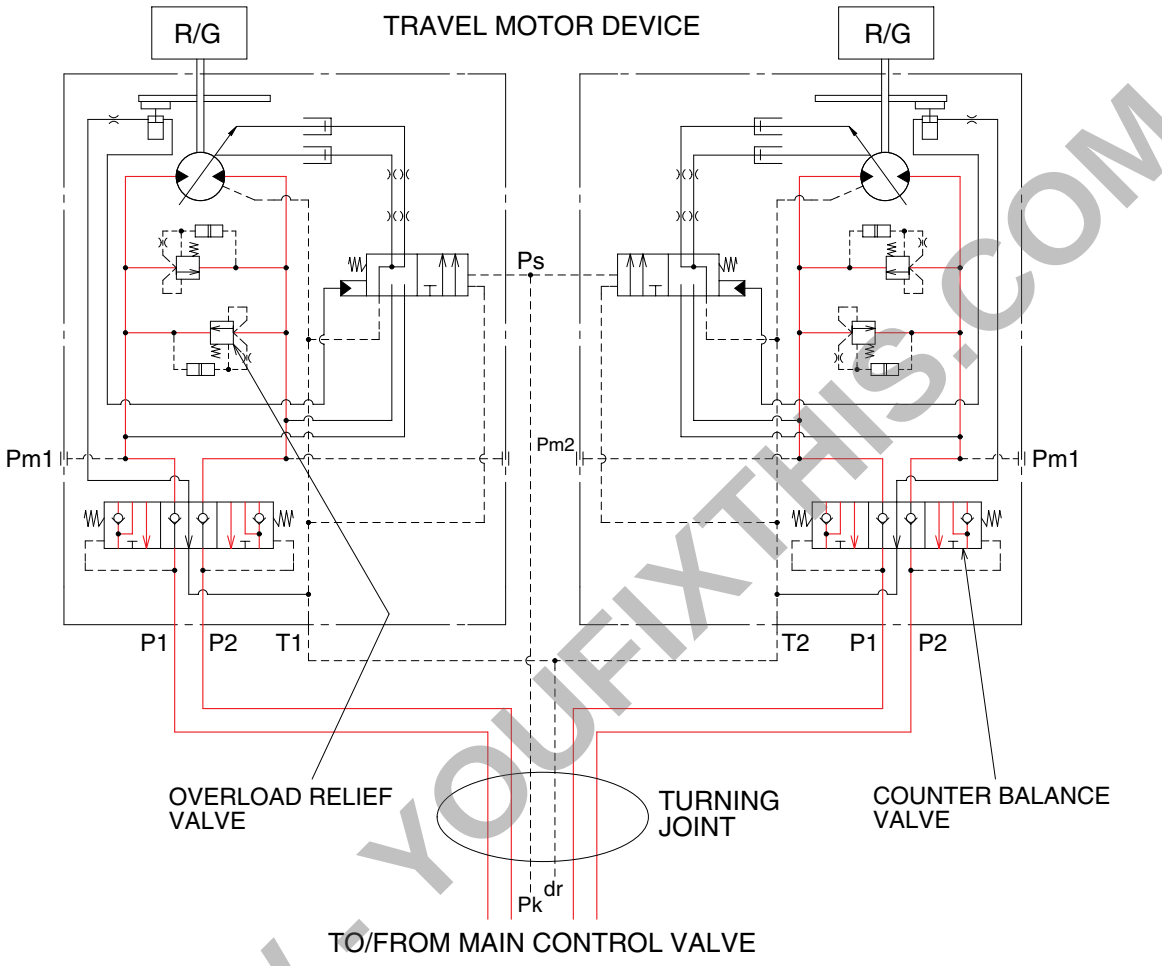
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The force of the spring(28) that determines the output pressure of the pilot valve is not applied to the spool(5). Therefore, the spool is pushed up by the spring(10) to the position of port(1, 3) in the operation explanation drawing. Then, since the output port is connected to tank port T only, the output port pressure becomes equal to tank pressure.

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TRAVEL CIRCUIT OPERATION



21073HS16A

Valves are provided on travel motors to offer the following functions.

1) COUNTER BALANCE VALVE

When stopping the motor of slope descending, this valve to prevent the motor over run.

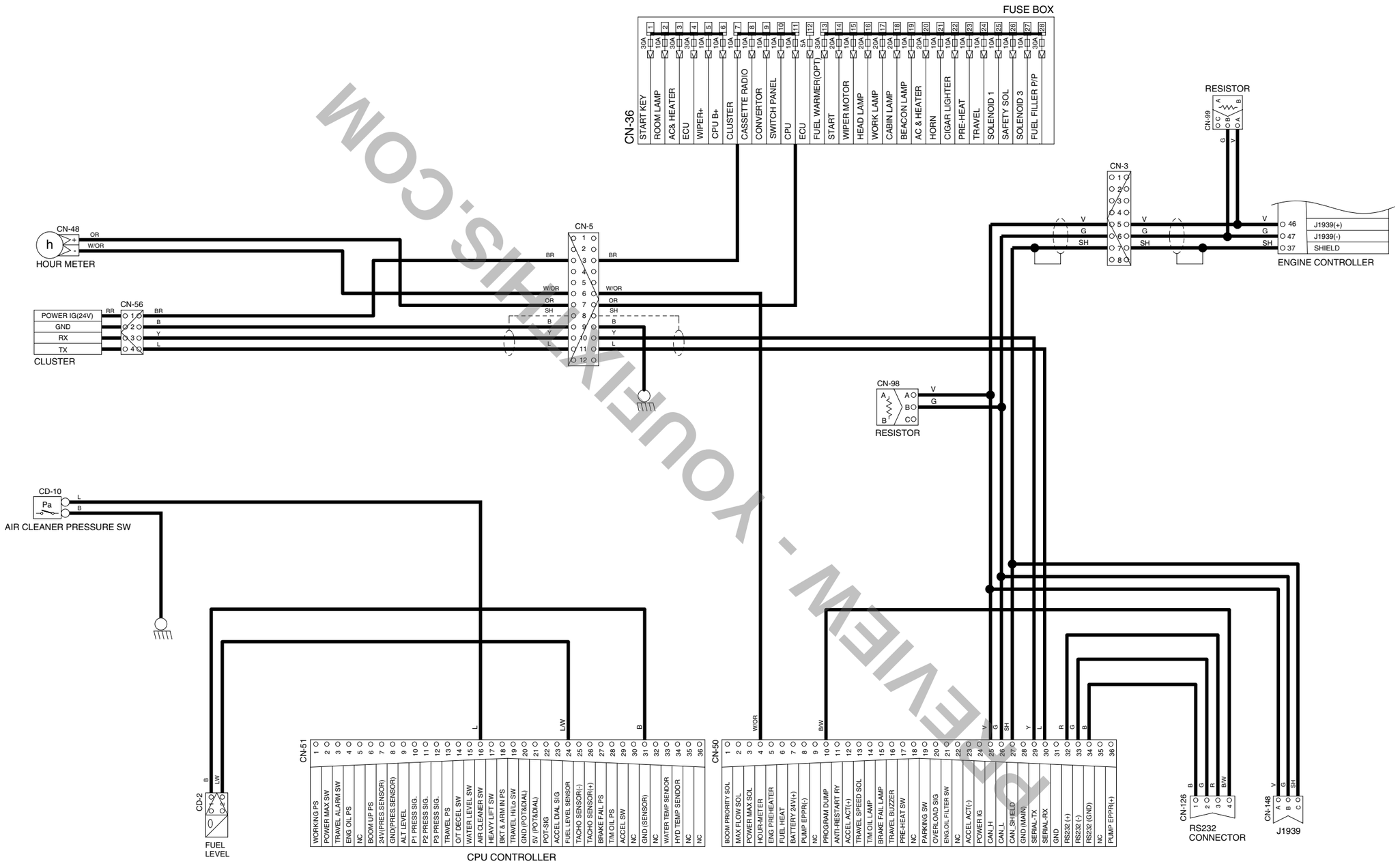
2) OVERLOAD RELIEF VALVE

Relief valve limit the circuit pressure below 365kgf/cm^2 to prevent high pressure generated at at time of stopping the machine. Stopping the motor, this valve sucks the oil from lower pressure passage for preventing the negative pressure and the cavitation of the motor.

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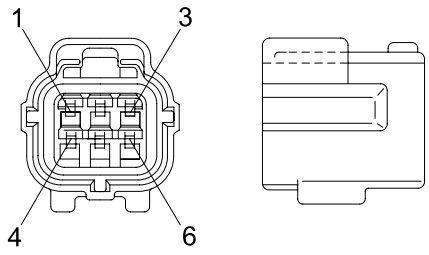
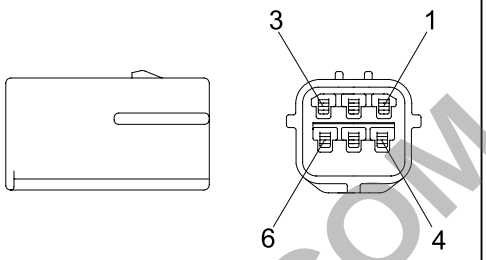
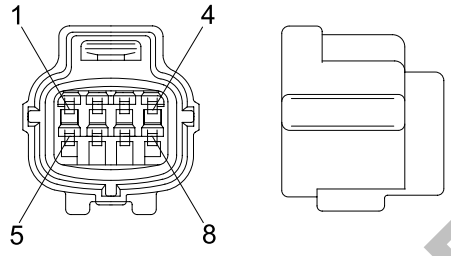
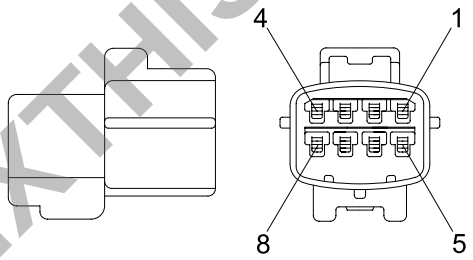
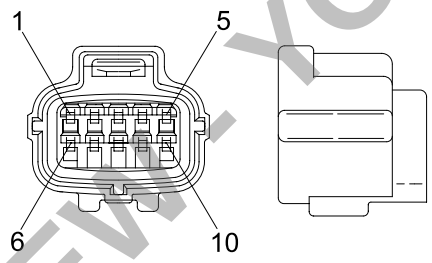
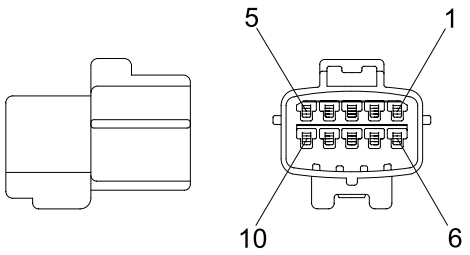
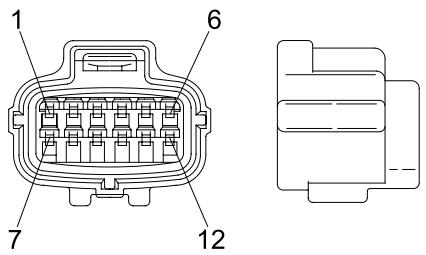
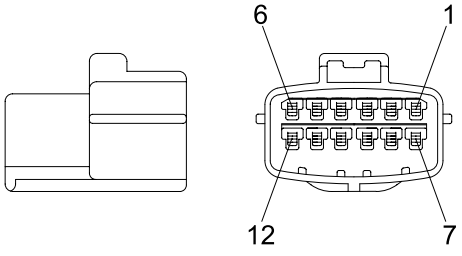
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MONITORING CIRCUIT



2107A4EL11

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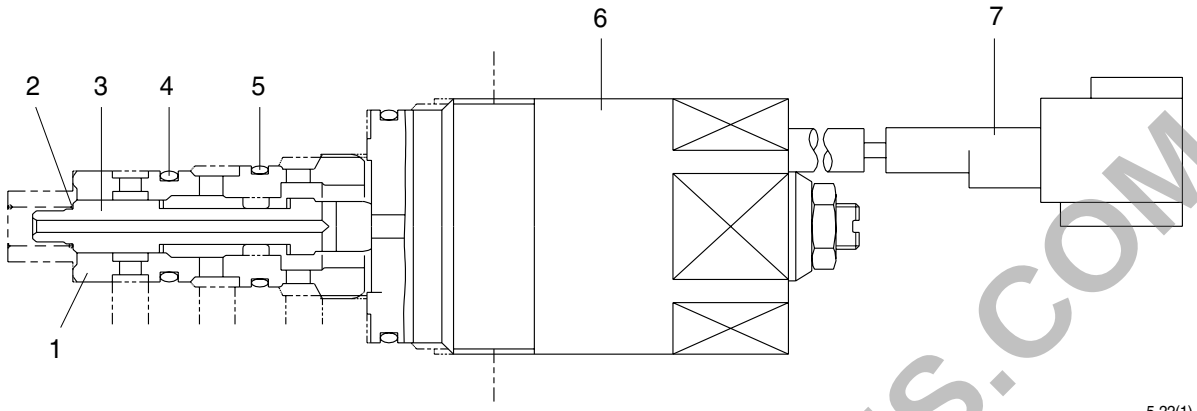
No. of pin	Receptacle connector(Female)	Plug connector(Male)
6	 S816-006002	 S816-106002
8	 S816-008002	 S816-108002
10	 S816-010002	 S816-110002
12	 S816-012002	 S816-112002

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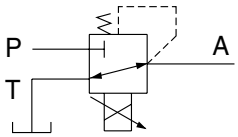
2. OPERATING PRINCIPLE

1) STRUCTURE



5-22(1)

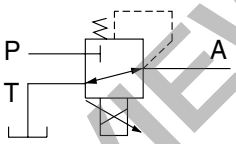
1	Sleeve	4	O-ring	6	Solenoid valve
2	Spring	5	O-ring	7	Connector
3	Spool				

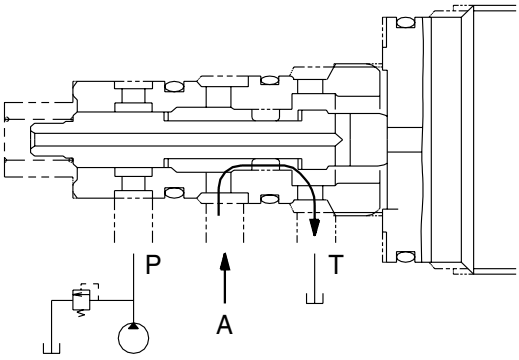


P Pilot oil supply line(Pilot pressure)
T Return to tank
A Secondary pressure to flow regulator at hydraulic pump

2) AT H MODE

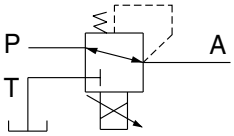
Pressure line is blocked and A oil returns to tank.

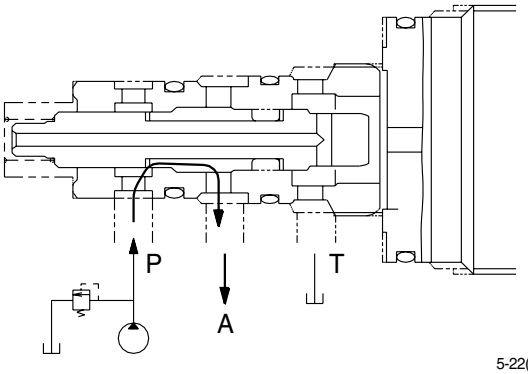




3) AT S MODE

Secondary pressure enters into A.



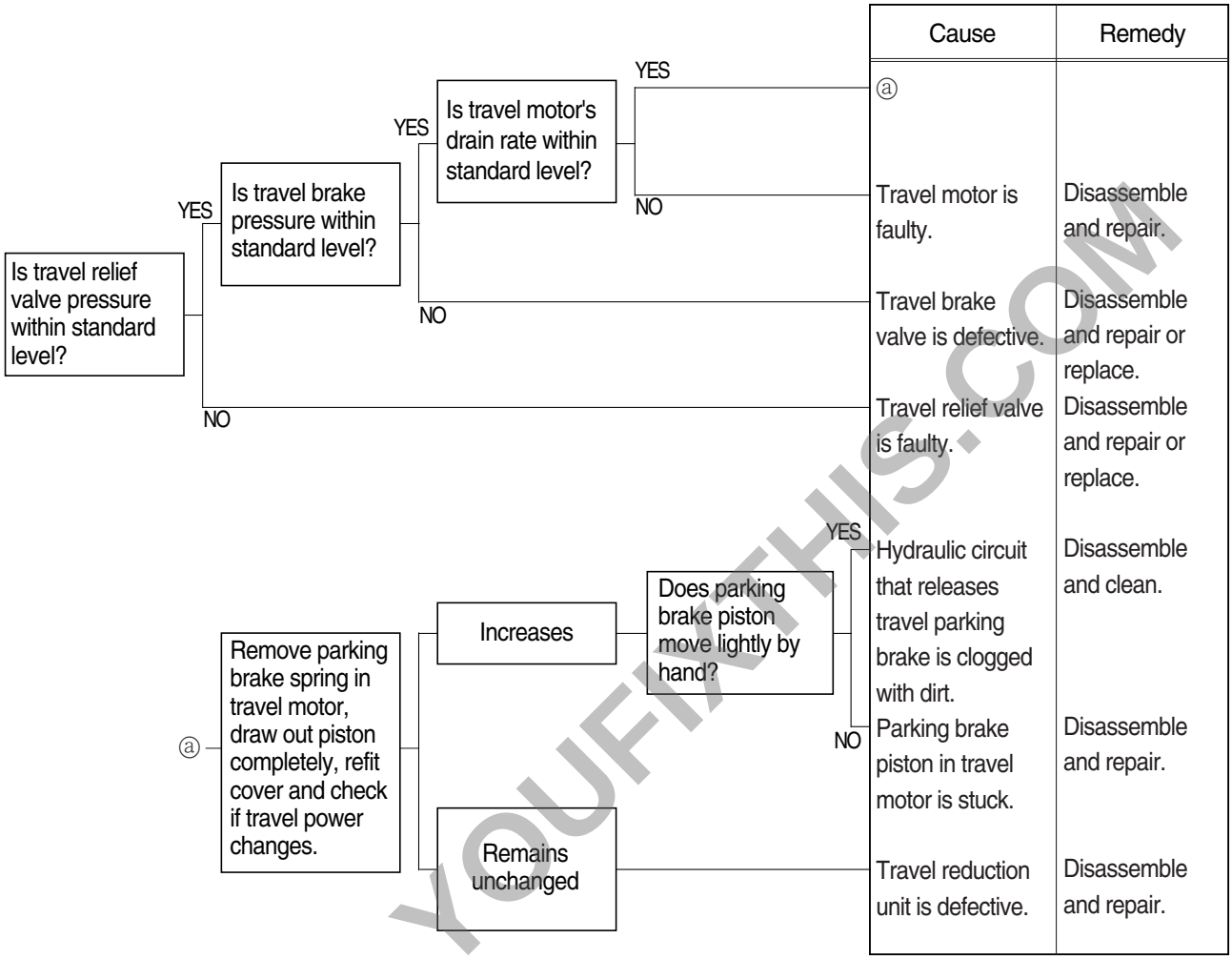


5-22(2)

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5) TRAVEL ACTION IS POWERLESS(Travel only)



Cause	Remedy
ⓐ	
Travel motor is faulty.	Disassemble and repair.
Travel brake valve is defective.	Disassemble and repair or replace.
Travel relief valve is faulty.	Disassemble and repair or replace.
Hydraulic circuit that releases travel parking brake is clogged with dirt.	Disassemble and clean.
Parking brake piston in travel motor is stuck.	Disassemble and repair.
Travel reduction unit is defective.	Disassemble and repair.

6) MACHINE RUNS RECKLESSLY ON A SLOPE



Cause	Remedy
	Disassemble and repair or replace.

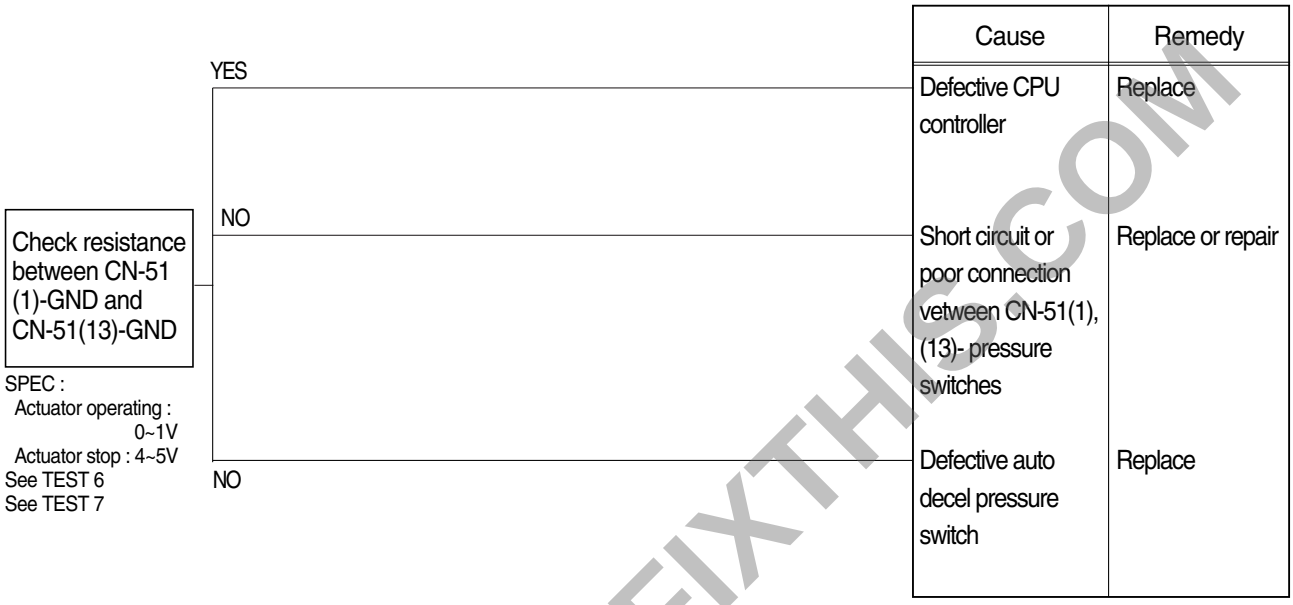
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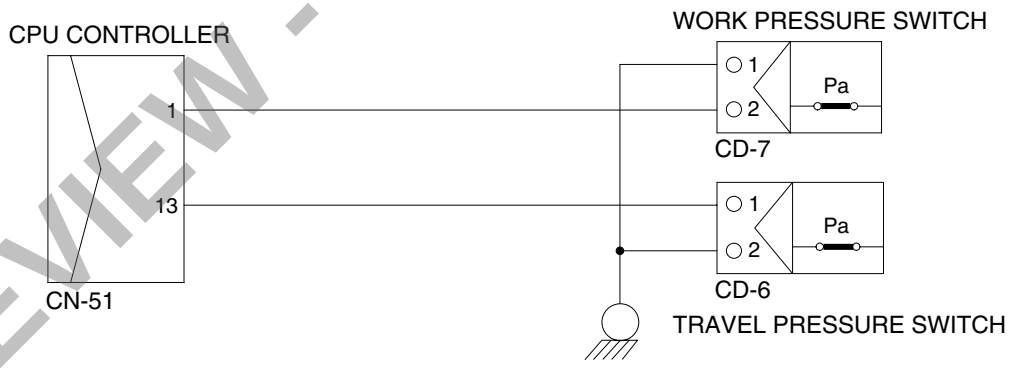
4. AUTO DECEL SYSTEM DOES NOT WORK

※ Before carrying out below procedure, check all the related connectors are properly inserted.

1) INSPECTION PROCEDURE



Wiring diagram



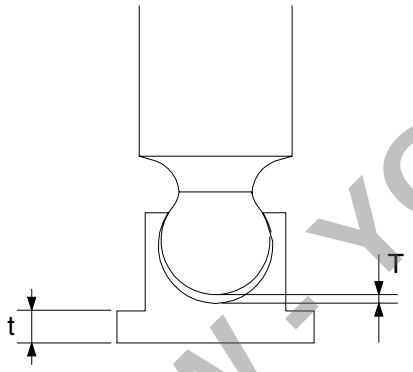
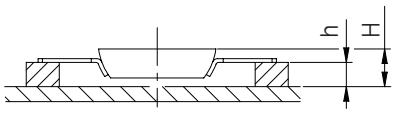
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4. TRAVEL MOTOR

1) WEARING PARTS

Inspection item	Standard dimension	Recommended replacement value	Counter measures
Clearance between piston and cylinder block bore	0.025	0.050	Replace piston or cylinder block
Play between piston and shoe caulking section(T)	0	0.3	Replace assembly of piston and shoe
Thickness of shoe(t)	4.5	4.3	Replace assembly of piston and shoe
Combined height of set plate and ball guide(H)	7.3	7.0	Replace set of set plate and ball guide
Thickness of friction plate	3.0	2.6	Replace
			

2) SLIDING PARTS

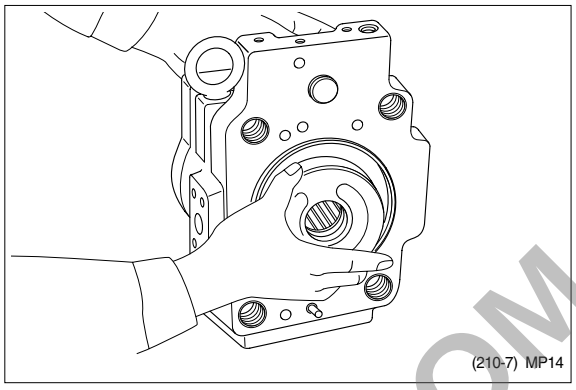
Part name	Standard roughness	Remark
Shoe	0.8S	-
Shoe plate	0.8S	-
Cylinder	0.8S	-
Valve plate	0.8S	-

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(7) Fit valve plate(313) to valve block(312), entering pin into pin hole.

※ Take care not to mistake suction / delivery directions of valve plate.



(210-7) MP14

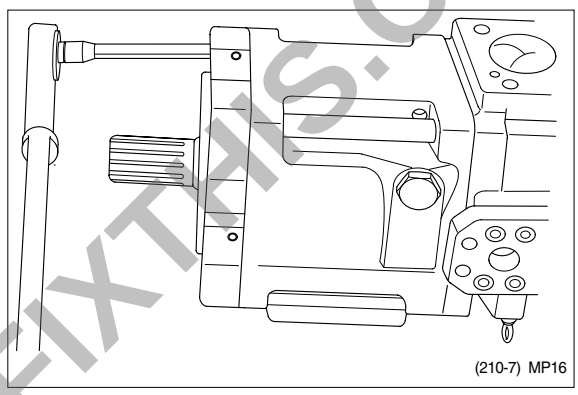
(8) Fit valve block(312) to pump casing(271) and tighten hexagon socket head bolts (401).

※ At first assemble this at rear pump side, and this work will be easy.

※ Take care not to mistake direction of valve block.

※ Clockwise rotation(Viewed from input shaft side) - Fit block with regulator up and with delivery flange left, viewed from front side.

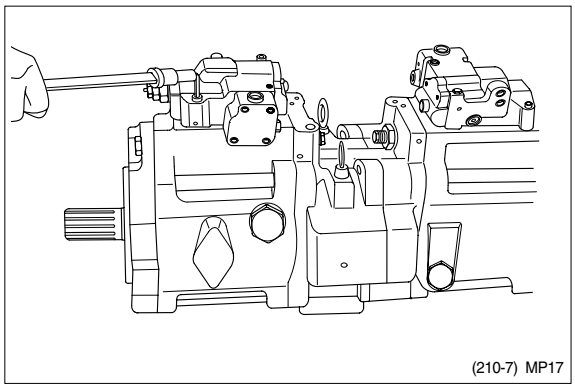
※ Counter clockwise rotation(Viewed from input shaft side) - Fit block with delivery flange right, viewed from front side.



(210-7) MP16

(9) Putting feedback pin of tilting pin into feedback lever of regulator, fit regulator and tighten hexagon socket head bolts (412, 413).

※ Take care not to mistake regulator of front pump for that of rear pump.



(210-7) MP17

(10) Fit drain port plug(468).

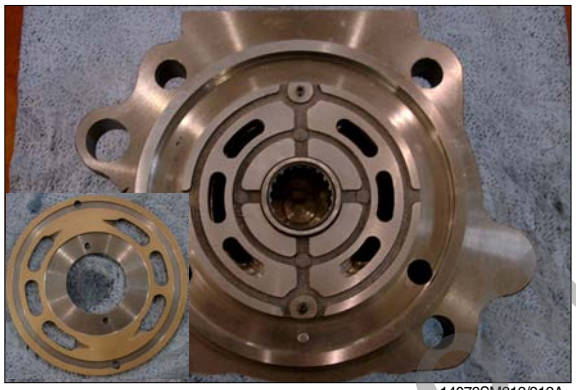
This is the end of reassembling procedures.

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(3) Disassemble rear cover assy sub

① Disassemble pin(8, 23), valve plate(24) from rear cover(21).



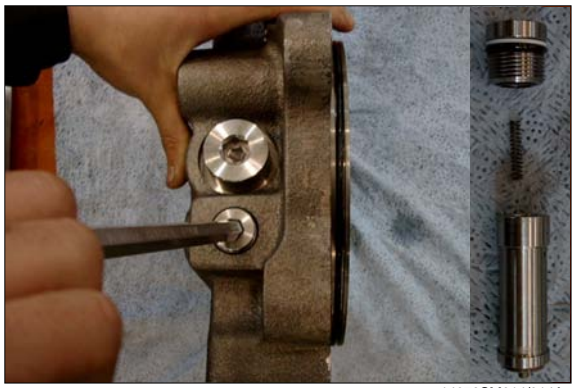
14078SM212/212A

② Using a torque wrench, disassemble relief valve assy(33) 2 set from rear cover(21).



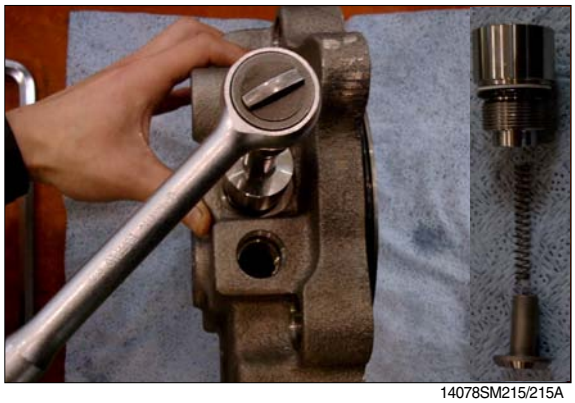
14078SM213/213A

③ After disassembling plug with a L-wrench from rear cover(21), disassemble respectively back up ring, O-ring, O-ring, spring, anti-inversion valve assy(34)



14078SM214/214A

④ Disassemble make up check valve assy with a torque wrench from rear cover(21).



14078SM215/215A

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4. OUTLINE FOR ASSEMBLING

1) GENERAL SUGGESTIONS

(1) After washing each parts cleanly, dry it with compressed air.
Provided that you do not wash friction plate with treated oil.

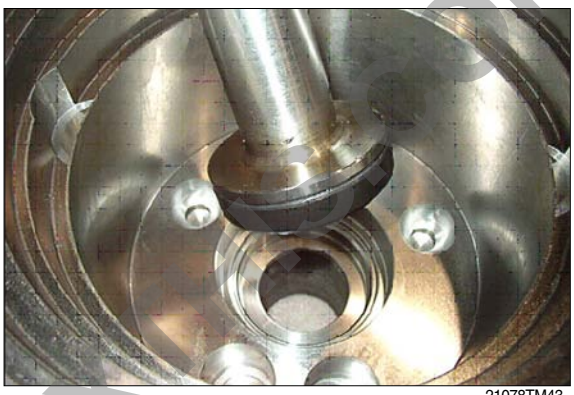
(2) In bonding each part, fasten bond torque.

(3) When using a hammer, do not forget to use a plastic hammer.

4.1 ASSEMBLING

■ Assemble the sub of turning axis

1) Using a jig, assemble oil seal(3) into shaft casing(1)



21078TM43

2) Have a bearing(8) thermal reacted into shaft(6).



21078TM44

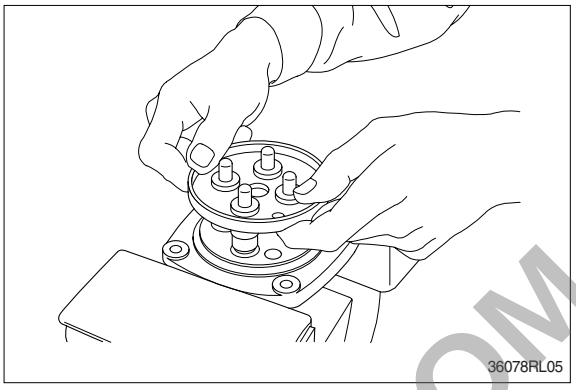


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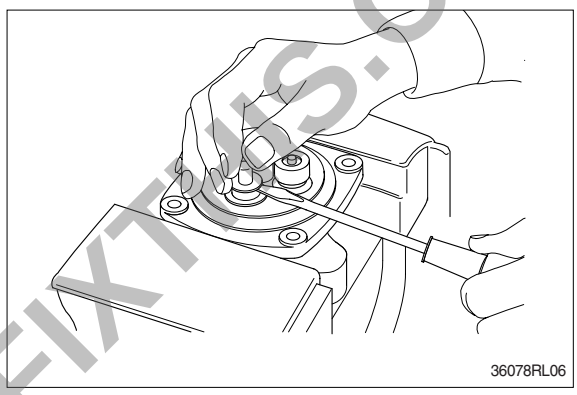
(8) Remove plate(16).



(9) When return spring(10) is weak in force, plug(11) stays in casing because of sliding resistance of O-ring.

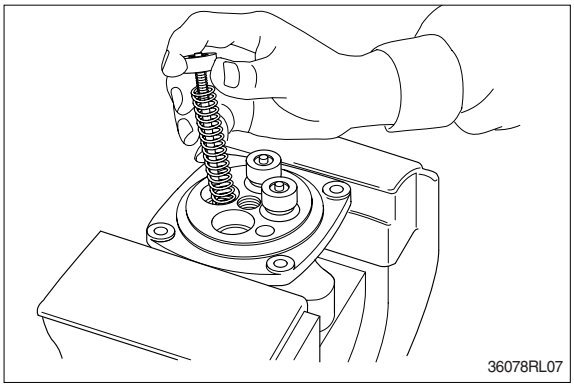
※ Take it out with minus screwdriver.
Take it out, utilizing external periphery groove of plug and paying attention not to damage it by partial loading.

※ During taking out, plug may jump up due to return spring(10) force.
Pay attention to this.

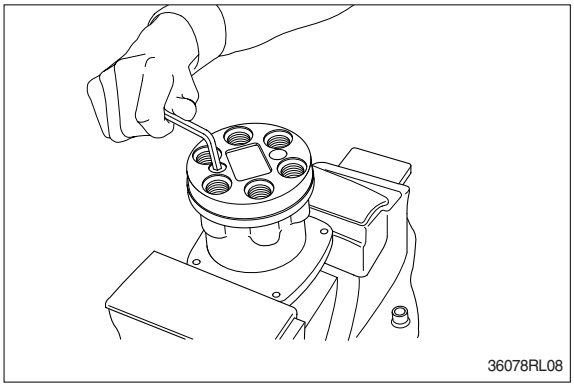


(10) Remove reducing valve subassembly and return spring(10) out of casing.

※ Record relative position of reducing valve subassembly and return springs.



(11) Loosen hexagon socket head plug(2) with hexagon socket screw key.



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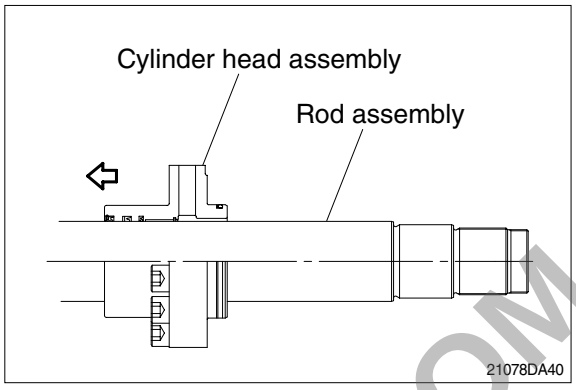
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(3) Install piston and cylinder head

① Fix the rod assembly to the work bench.

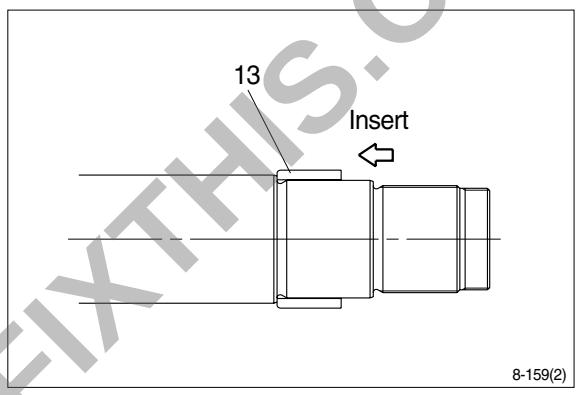
② Apply hydraulic oil to the outer surface of rod assembly(2), the inner surface of piston and cylinder head.

③ Insert cylinder head assembly to rod assembly.



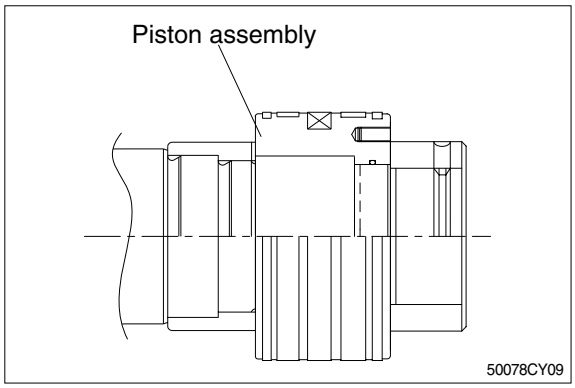
④ Insert cushion ring(13) to rod assembly.

※ Note that cushion ring(13) has a direction in which it should be fitted.



⑤ Fit piston assembly to rod assembly.

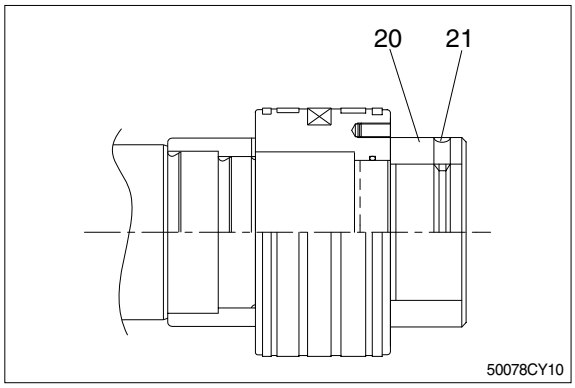
· Tightening torque : 100±10.0kgf · m
(723±72.3lbf · ft)



⑥ Fit lock nut(20) and tighten the screw(21).

· Tightening torque :

Item		kgf · m	lbf · ft
Bucket Boom Arm	20	200±20	1447±145
	21	2.7±0.3	19.6±2.2



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