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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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 ---------- 2-73
Group 6 RCV Pedal ---------- 2-80

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 ---------- 4-19
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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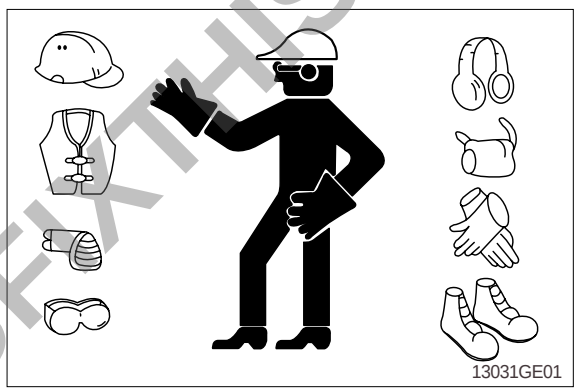
GROUP 1 SAFETY

FOLLOW SAFE PROCEDURE

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

WEAR PROTECTIVE CLOTHING

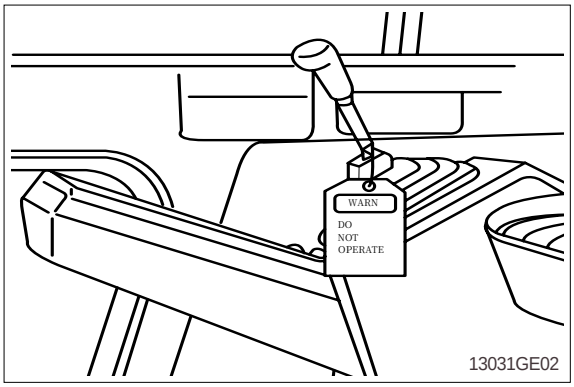
Wear close fitting clothing and safety equipment appropriate to the job.



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.



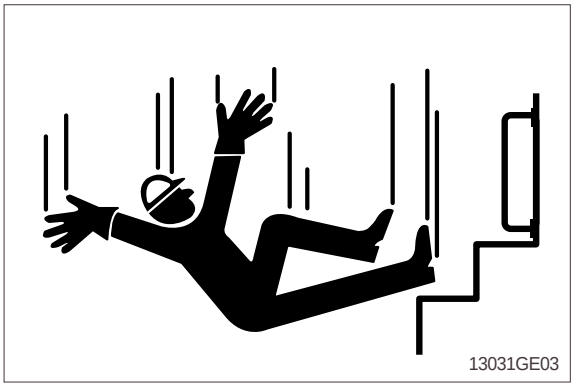
USE HANDHOLDS AND STEPS

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.

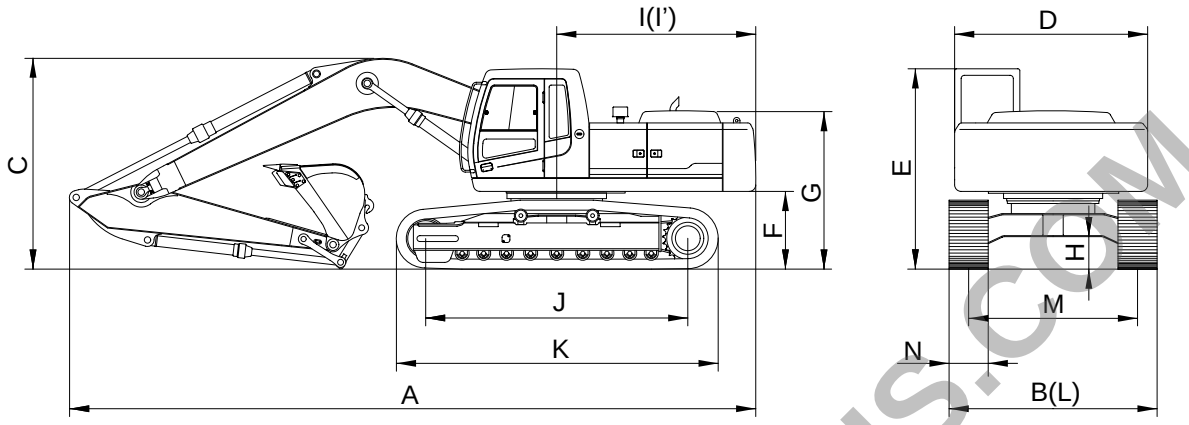
Be careful of slippery conditions on platforms, steps, and handrails when leaving the machine.



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2. SPECIFICATIONS

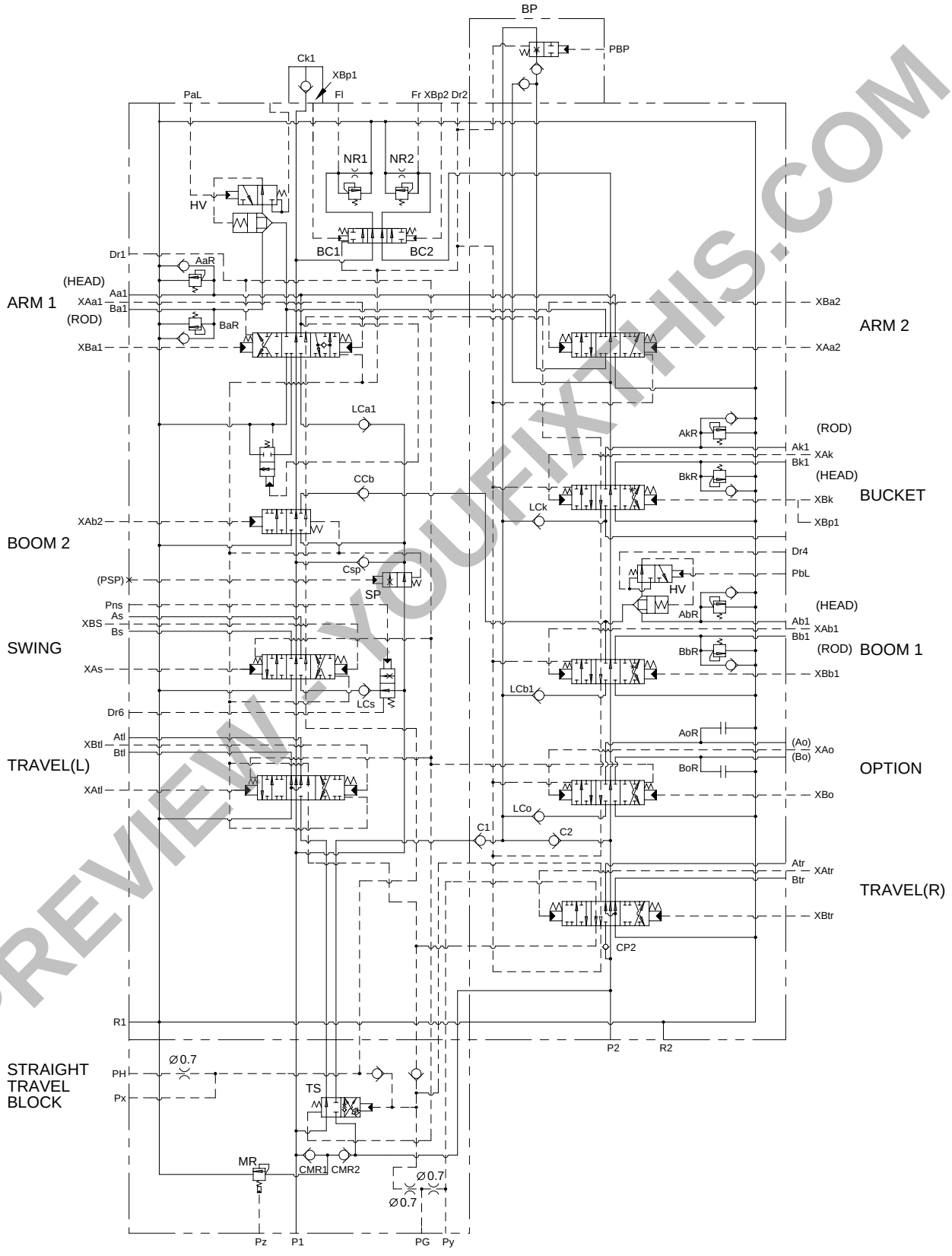


Description		Unit	Specification
Operating weight		kg(lb)	32200(70990)
Bucket capacity(PCSA heaped), standard		$m^3(yd^3)$	1.44(1.88)
Overall length	A	mm(ft-in)	10980(36' 0")
Overall width, with 600mm shoe	B		3280(10' 9")
Overall height	C		3380(11' 1")
Superstructure width	D		2980(9' 9")
Overall height of cab	E		3110(10' 2")
Ground clearance of counterweight	F		1215(3' 12")
Engine cover height	G		2580(8' 6")
Minimum ground clearance	H		500(1' 8")
Rear-end distance	I		3265(10' 9")
Rear-end swing radius	I'		3330(10' 11")
Distance between tumblers	J		4030(13' 3")
Undercarriage length	K		4940(16' 2")
Undercarriage width	L		3280(10' 9")
Track gauge	M		2680(8' 10")
Track shoe width, standard	N		600(23.6")
Travel speed(Low/high)		km/hr(mph)	3.2/5.4(2.0/3.4)
Swing speed		rpm	9.1
Gradeability		Degree(%)	35(70)
Ground pressure(600mm shoe)		$kgf/cm^2(psi)$	0.62(8.82)

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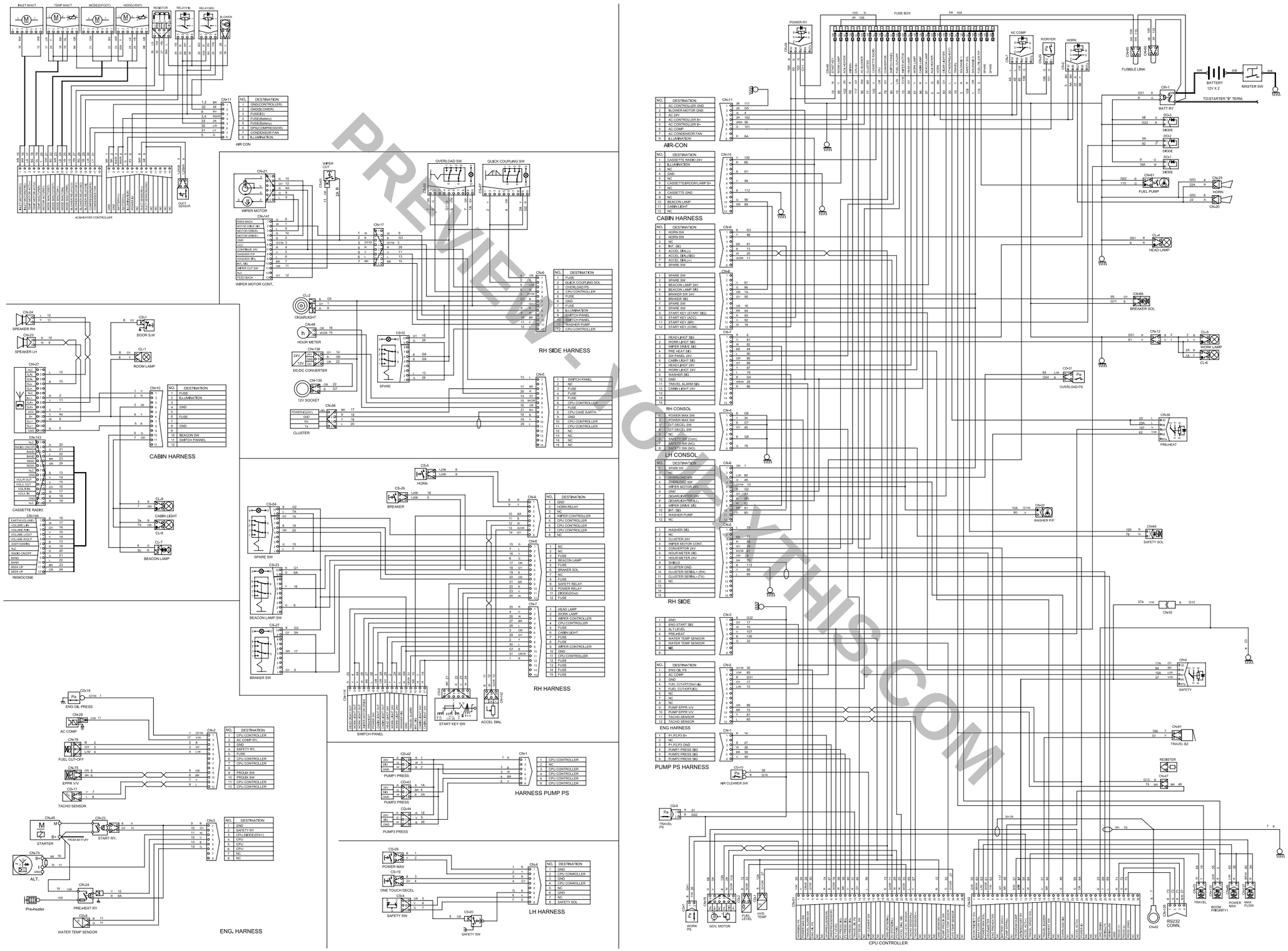
2. HYDRAULIC CIRCUIT



29072MC24

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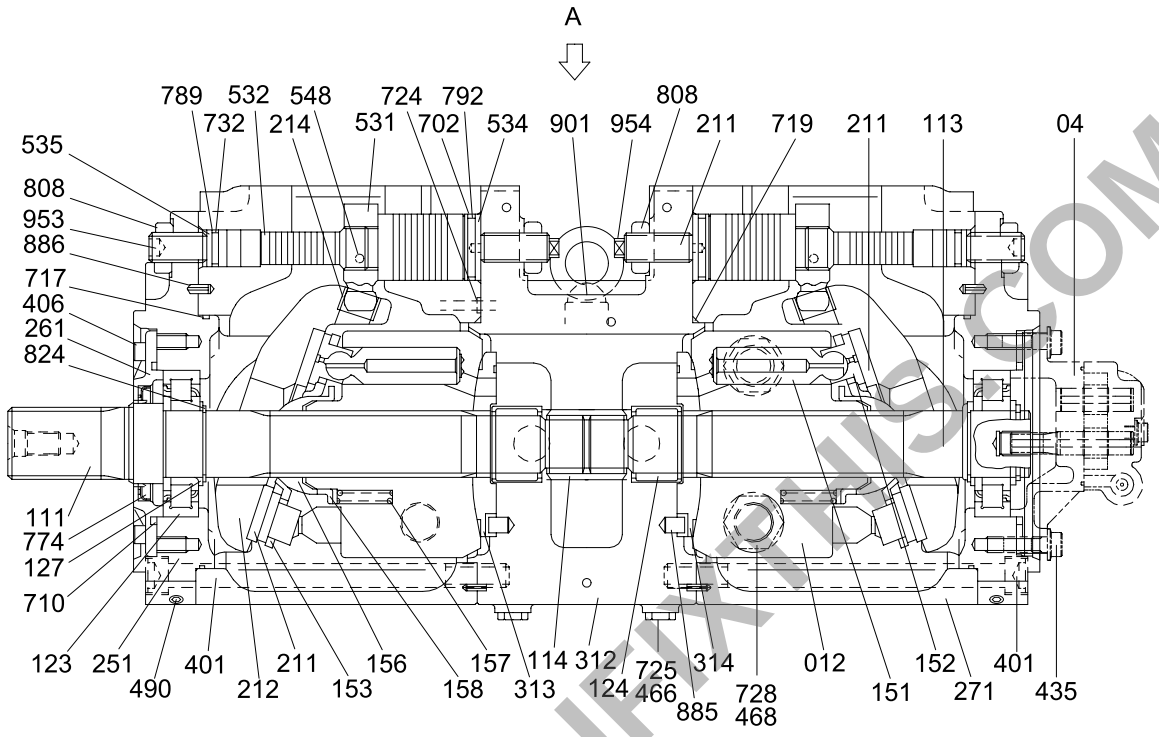
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1) MAIN PUMP(1/2)

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



32072ST03

04	Gear pump	261	Seal cover(F)	717	O-ring
111	Drive shaft(F)	271	Pump casing	719	O-ring
113	Drive shaft(R)	312	Valve block	724	O-ring
114	Spline coupling	313	Valve plate(R)	725	O-ring
123	Roller bearing	314	Valve plate(L)	728	O-ring
124	Needle bearing	401	Hexagon socket bolt	732	O-ring
127	Bearing spacer	406	Hexagon socket bolt	774	Oil seal
141	Cylinder block	435	Flange socket bolt	789	Back up ring
151	Piston	466	VP plug	792	Back up ring
152	Shoe	468	VP plug	808	Hexagon head nut
153	Push plate	490	VP plug	824	Snap ring
156	Bushing	531	Tilting pin	885	Pin
157	Cylinder spring	532	Servo piston	886	Spring pin
158	Spacer	534	Stopper(L)	901	Eye bolt
211	Shoe plate	535	Stopper(S)	953	Set screw
212	Swash plate	548	Pin	954	Set screw
214	Bushing	702	O-ring		
251	Swash plate support	710	O-ring		

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GROUP 3 PUMP DEVICE

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 : 210 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).

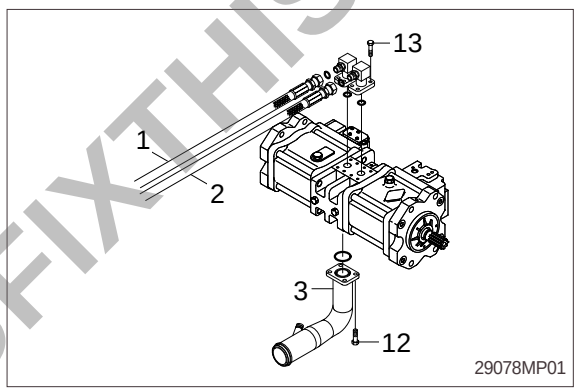
※ When pump suction tube is disconnected, the oil inside the piping will flow out, so catch it in oil pan.

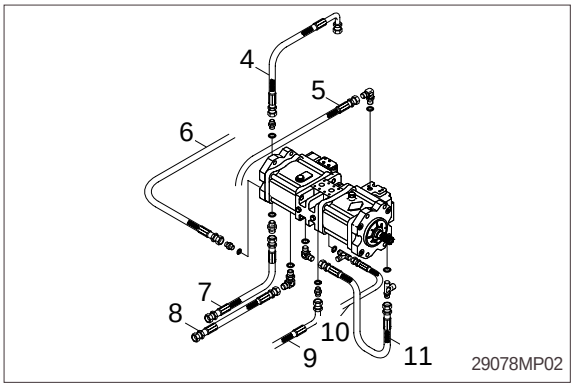
(7) Sling the pump assembly and remove the pump mounting bolts.

· Weight : 155kg(342lb)

※ 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	M24 × 3.0	90 ± 7.0	651 ± 51
2		Radiator mounting bolt	M16 × 2.0	29.7 ± 4.5	215 ± 32.5
3		Coupling mounting socket bolt	M20 × 2.5	46.5 ± 2.5	336 ± 18.1
4		Main pump housing mounting bolt	M10 × 1.5	2.81 ± 0.3	20.3 ± 2.2
5	Hydraulic system	Main pump mounting socket bolt	M20 × 2.5	42 ± 4.5	304 ± 32.5
6		Main control valve mounting bolt	M12 × 1.75	12.2 ± 1.3	88.2 ± 9.4
7		Fuel tank mounting bolt	M20 × 2.5	45 ± 5.1	32.5 ± 37
8		Hydraulic oil tank mounting bolt	M20 × 2.5	46 ± 5.0	333 ± 36
9		Turning joint mounting bolt, nut	M12× 1.75	12.3 ± 1.3	88.9 ± 9.4
10	Power train system	Swing motor mounting bolt	M20 × 3.0	100 ± 1.0	723 ± 72
11		Swing bearing upper part mounting bolt	M24 × 3.0	97.8 ± 10	707 ± 72.3
12		Swing bearing lower part mounting bolt	M24 × 3.0	97.8 ± 10	707 ± 72.3
13		Travel motor mounting bolt	M24 × 3.0	84 ± 8	608 ± 58
14		Sprocket mounting bolt	M20 × 2.5	57 ± 6.0	412 ± 43.3
15	Under carriage	Carrier roller mounting bolt, nut	M16 × 2.0	29.7 ± 4.5	215 ± 32.5
16		Track roller mounting bolt	M20 × 2.5	57.9 ± 8.6	419 ± 62.2
17		Track tension cylinder mounting bolt	M12 × 1.75	15 ± 0.5	108 ± 3.6
18		Track shoe mounting bolt, nut	M22 × 1.5	115 ± 5.0	831 ± 36
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 each component disassembly and assembly.

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5. ERROR CODES TABLE

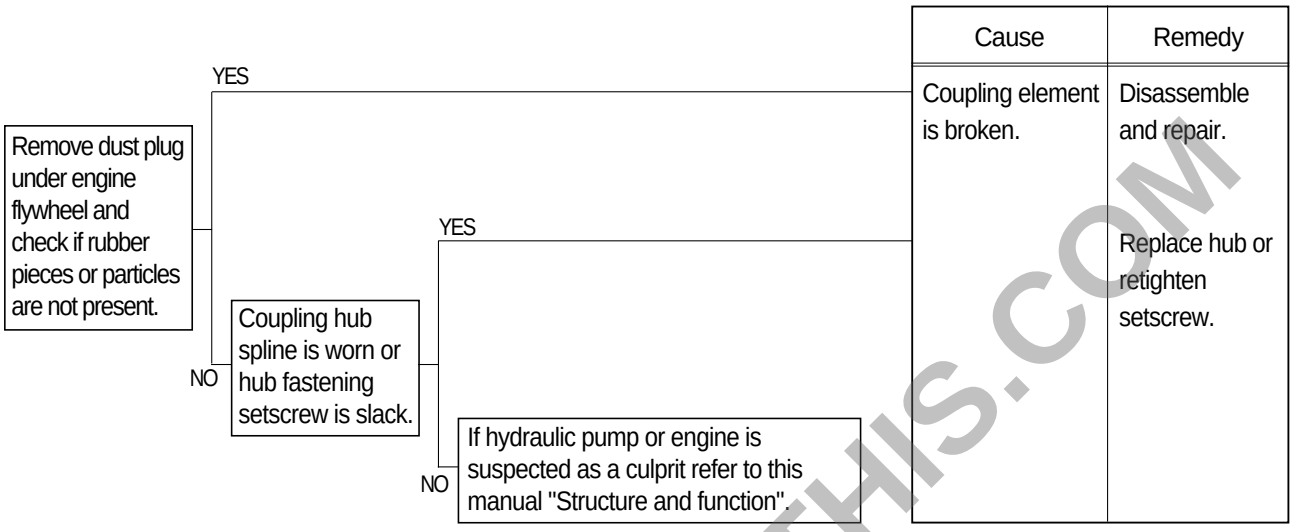
Fault code No.	Description
1	Short circuit in governor motor system
2	Potentiometer circuit is shorted to Vcc(5V) or battery +
3	Short circuit in pump EPPR valve system
4	Short circuit in boom down EPPR valve system
5	Short circuit in travel speed solenoid system
6	Short circuit in power boost solenoid 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	Governor motor 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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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

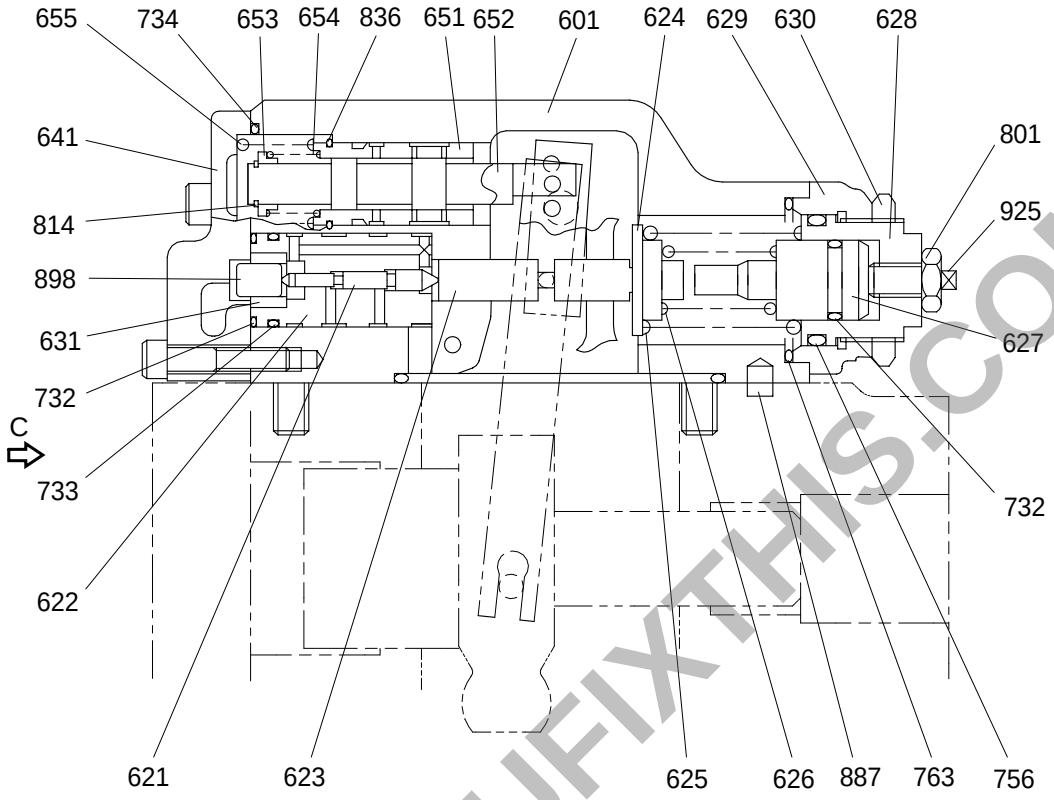
1kg = 2.2046lb

	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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REGULATOR(2/2)



SECTION A-A

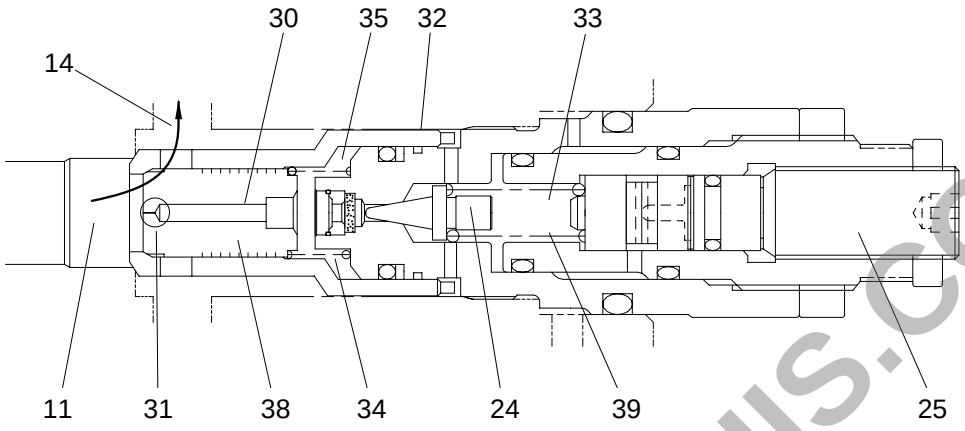
29072RE02

412	Hexagon socket screw	631	Sleeve, pf	730	O-ring
413	Hexagon socket screw	641	Pilot cover	732	O-ring
436	Hexagon socket screw	642	Adjust screw(QMC)	733	O-ring
438	Hexagon socket screw	643	Pilot piston	734	O-ring
496	Plug	644	Spring seat(Q)	735	O-ring
601	Casing	645	Adjust stem(Q)	755	O-ring
611	Feed back lever	646	Pilot spring	756	O-ring
612	Lever(1)	647	Stopper	763	O-ring
613	Lever(2)	648	Piston(QMC)	801	Nut
614	Fulcrum plug	651	Sleeve	814	Snap ring
615	Adjust plug	652	Spool	836	Snap ring
621	Compensator piston	653	Spring seat	858	Snap ring
622	Piston case	654	Return spring	874	Spring pin
623	Compensator rod	655	Set spring	875	Pin
624	Spring seat(C)	656	Block cover	887	Pin
625	Outer spring	708	O-ring	897	Pin
626	Inner spring	722	O-ring	898	Pin
627	Adjust stem(C)	723	O-ring	924	Set screw
628	Adjust screw(C)	724	O-ring	925	Adjust screw(QI)
629	Cover(C)	725	O-ring		
630	Lock nut	728	O-ring		

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· **Main relief operation while working**



29072MC44

While the pressure in path(11) is lower than the set pressure of main relief valve(601), the poppet (24) is seated and the hydraulic fluid in path(11) can not escape to the return(14). When the pressure in path(11) approaches the pressure setting, poppet(24) opens against the spring(39). As the flow in chamber(33) escapes into the return(14) through path(32), its pressure decreases. At the same time, hydraulic fluid in path(11) flows into path(30) with a pressure drop across orifice(31). Then pressure in spring chamber(35) becomes lower because it bleeds off through path(30). The pressure from path(11) pushes the plunger(38) in the left direction against the spring(34). Then plunger(38) opens and hydraulic fluid in path(11) escapes into the return(14) and maintains the pressure setting. The pressure setting is adjusted with adjustment screw(25).

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(2) External pilot pressure : Pi ≥ 20kgf/cm²(small displacement)

If the force operating on spool(64) of the displacement changeover valve is stronger than the spring(68), and the spool moves to the left side.

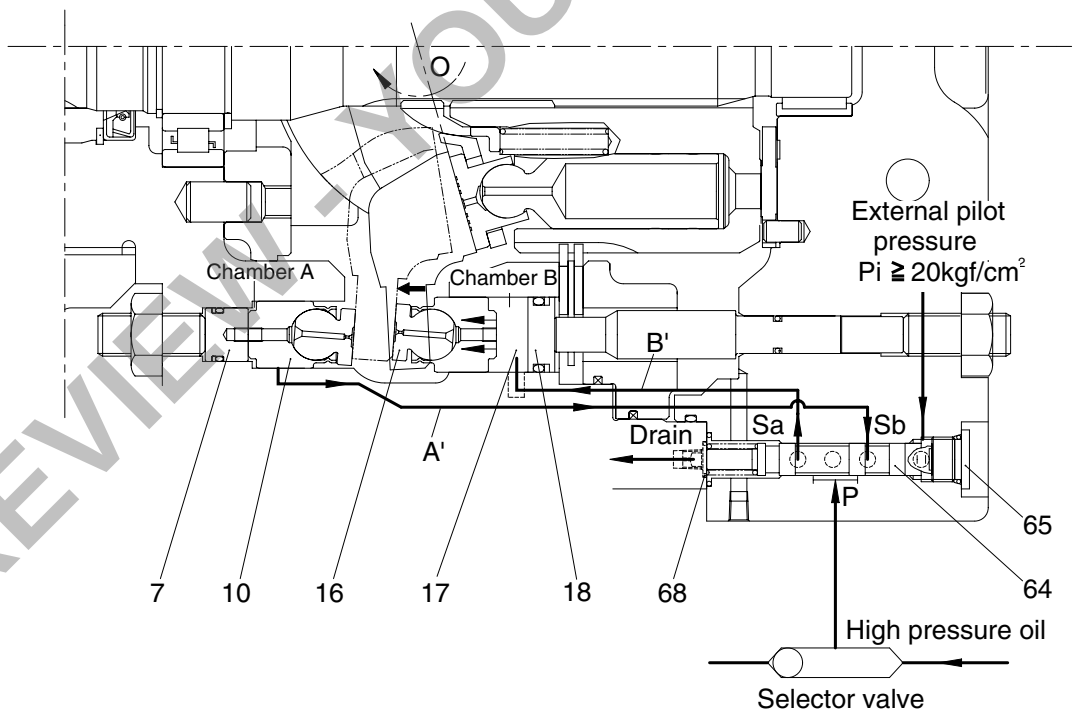
The high pressure oil is works on room B through passage Sa → B' from port P.

The oil in chamber A flows into the drain line through the passage A' → Sb.

The displacement changeover piston(17) is pushed left and the swash plate(16) moves in the arrowed direction around rotation center 'O'. The swash plate moves until it touches stopper(7), and then is fixed there.

If the load increase while the motor is working with its small displacement(Pi ≥ 20kgf/cm², 2nd speed) until the motor inlet port pressure reaches the preset value, the motor increase its displacement in response to the load, while maintaining the pressure at the preset value(automatic 2 -speed function). As motor inlet port pressure reaches the preset value and then spool(64) moves right side, inlet pressure oil flows into chamber A through port Sb and the swash plate moves until it touches stopper(17). If the load further increase until the displacement of the motor reaches the maximum value, the inlet port pressure increase further.

If the load decreases under this condition, the motor continues reducing its displacement in the reverse sequence. As the load and inlet port pressure decreases and reaches the preset value, spool(64) moves left side by the pilot pressure(Pi). Therefore inlet port pressure flow into chamber B through port Sa and the swash plate moves until it touches stopper(10).



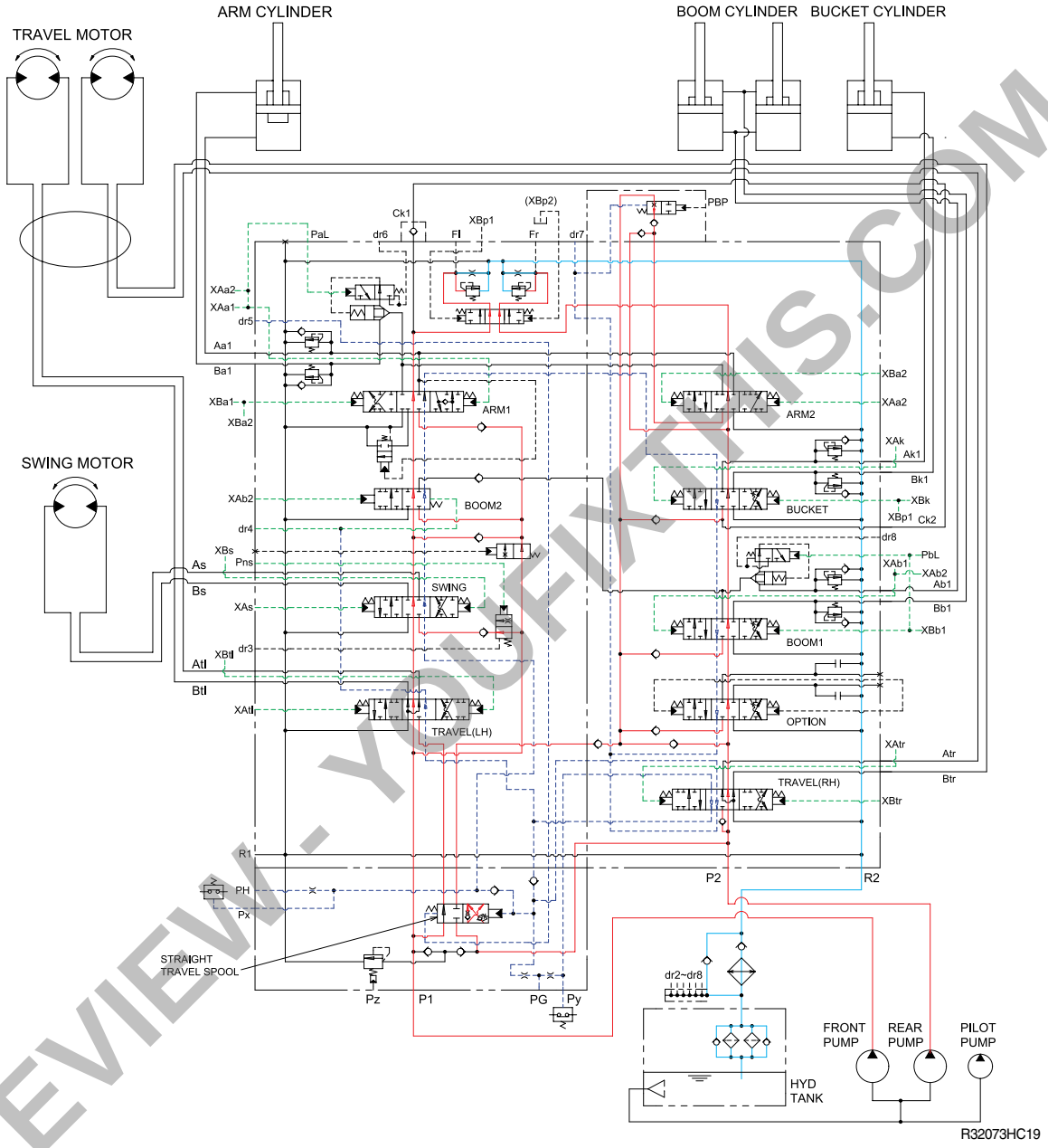
2907A2TM06

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GROUP 5 COMBINED OPERATION

1. OUTLINE



The oil from the front and rear pump flows through the neutral oil passage, bypass oil passage and confluence oil passage in the main control valve. Then the oil goes to each actuator and operates them. Check valves and orifices are located on these oil passage in the main control valve. These control the oil from the main pumps so as to correspond to the operation of each actuator and smooth the combined operation.

STRAIGHT TRAVEL SPOOL

This straight travel spool is provided in the main control valve.

If any actuator is operated when traveling, the straight travel spool is pushed to the left by the pilot oil pressure from the pilot pump.

Consequently, the left and right travel oil supply passage are connected, and equivalent amount of oil flows into the left and right travel motors. This keeps the straight travel.

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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(Frame harness-main pump)	S816-006002	S816-106002
CN-2	AMP	12	I/conn(Frame harness-engine harness)	S816-012002	S816-112002
CN-3	AMP	8	I/conn(Frame harness-engine harness)	S816-008002	S816-108002
CN-4	AMP	8	I/conn(Wire harness LH-frame harness)	S816-008002	S816-108002
CN-5	AMP	15	I/conn(Side harness RH-frame harness)	2-85262-1	368301-1
CN-6	AMP	12	I/conn(Side harness RH-frame harness)	S816-012002	S816-112002
CN-7	AMP	15	I/conn(Wire harness RH-frame harness)	2-85262-1	368301-1
CN-8	AMP	12	I/conn(Wire harness RH-frame harness)	S816-012002	S816-112002
CN-9	AMP	8	I/conn(Wire harness RH-frame harness)	S816-008002	S816-108002
CN-10	DEUTSCH	12	I/conn(Cab harness-frame harness)	DT06S-12S	DT04-12P
CN-11	DEUTSCH	8	I/conn(Air con harness-frame harness)	DT06-8S	DT06-8P
CN-12	DEUTSCH	2	Boom wire harness	DT06-2S	DT06-2P
CN-16	AMP	6	Pump pressure harness	S816-006002	S816-106002
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	AC compressor	NMWP01F-B	-
CN-29	KET	2	Receiver dryer	MG640795	-
CN-36	-	-	Fuse box	S820-106000	-
CN-45	RING-TERM	-	Start motor B+	21N8-20041	-
CN-47	AMP	2	Resistor	S810-002202	S810-102202
CN-48	KET	1	Hour meter	GP890469	-
CN-50	AMP	36	CPU controller	3441110	-
CN-51	AMP	36	CPU controller	3441110	-
CN-56	DEUTSCH	4	Cluster	-	DT04-4P
CN-60	YAZAKI	2	Battery relay contact	7122-4125-50	21N4-01320
CN-61	DEUTSCH	2	Fuel filler pump	DT06-2S	DT04-2P
CN-66	DEUTSCH	2	Breaker solenoid	DT06-2S	DT04-2P
CN-68	DEUTSCH	2	Safety solenoid	DT06-2S	DT04-2P
CN-70	DEUTSCH	2	Travel solenoid	DT06-2S	DT04-2P

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GROUP 11 EPPR VALVE

1. COMPOSITION OF EPPR VALVE

EPPR(Electro Proportional Pressure Reducing) valve consists of electro magnet and spool valve installed at main hydraulic pump.

1) ELECTRO MAGNET VALVE

Receive electric current from CPU controller and move the spool proportionally according to the specific amount of electric current value.

2) SPOOL VALVE

Is the two way direction control valve for pilot pressure to reduce hydraulic pump flow.
When the electro magnet valve is activated, pilot pressure enters into flow regulator of hydraulic pump. So, pump flow decreases to prevent engine stall.

3)

Mode		Pressure		Electric current (mA)	Engine rpm (At accel dial 10)
		kgf/cm²	psi		
Standard (Ver : 1.x)	M	4 ± 3	71 ± 40	230 ± 30	1960 ± 50
	H	6 ± 3	85 ± 40	270 ± 30	1850 ± 50
	S	6 ± 3	85 ± 40	270 ± 30	1750 ± 50
Option (Ver : 2.x)	M	0 ± 3	0 ± 40	160 ± 30	1960 ± 50
	H	4 ± 3	57 ± 40	230 ± 30	1960 ± 50
	S	6 ± 3	85 ± 40	270 ± 30	1850 ± 50
★		10 ± 3	142 ± 40	320 ± 30	-

★ Manually operated condition when prolix resistor is connected in emergency operation.

2. HOW TO SWITCH THE VERSION(1.x ↔ 2.x) ON THE CLUSTER

You can switch the EPPR valve pressure set by selecting the version(1.x ↔ 2.x).

Step 1. Turn the key switch **ON**.

Step 2. Press the **SELECT** switch 3 times.

Step 3. While 7 segment on the cluster shows the version of the CPU controller program, for example **32C1.0** press the buzzer stop switch( ) + travel speed control switch( ) at the same time for 2 seconds.

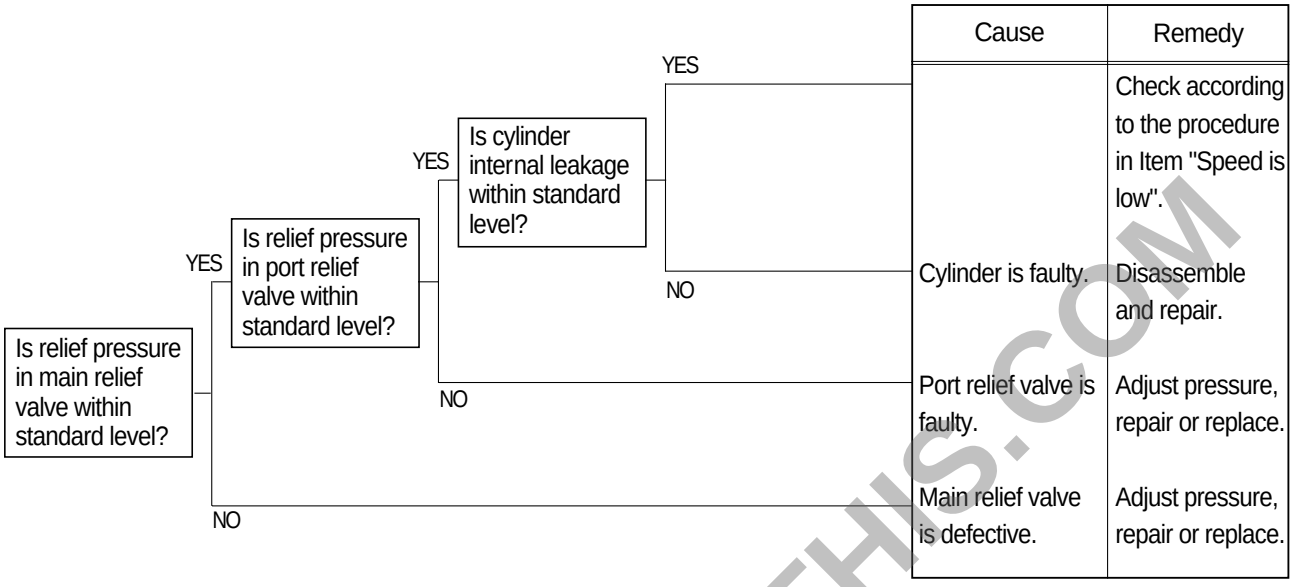
The display changes to **32C2.0**, and it indicates that version 2.0(Option) is selected.

※ If you want to get back to ver:1.x, go to step 1~3.

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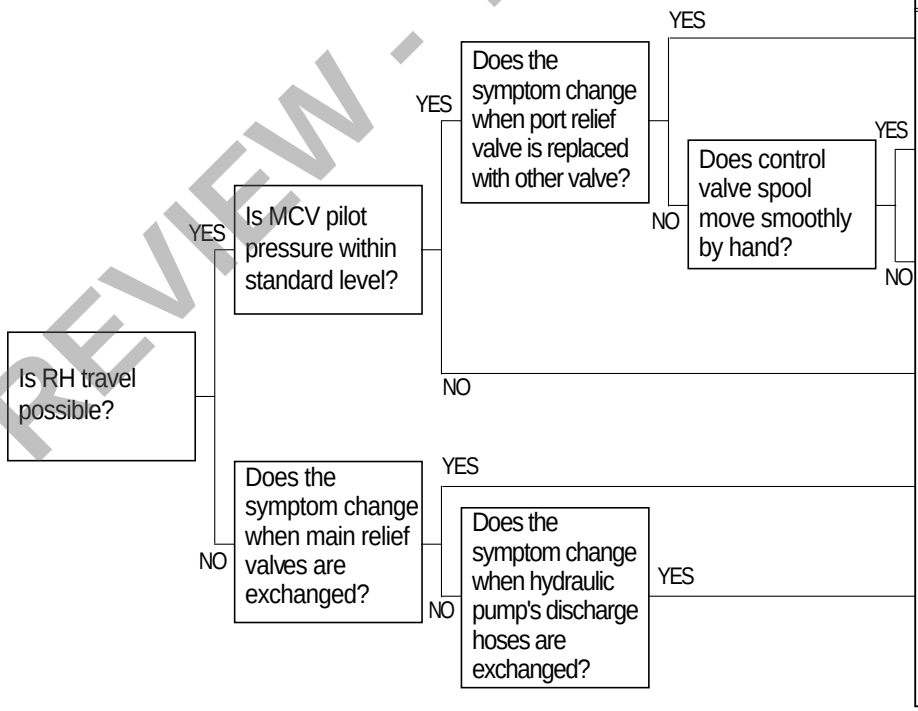
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4) BOOM, ARM OR BUCKET POWER IS WEAK



Cause	Remedy
Cylinder is faulty.	Check according to the procedure in Item "Speed is low". Disassemble and repair.
Port relief valve is faulty.	Adjust pressure, repair or replace.
Main relief valve is defective.	Adjust pressure, repair or replace.

5) ONLY BUCKET OPERATION IS TOTALLY IMPOSSIBLE



Cause	Remedy
Port relief valve is defective.	Disassemble and repair or replace.
Cylinder interior is broken.	Disassemble and repair.
Control valve spool is stuck.	Disassemble and repair.
Pilot valve is faulty.	Disassemble and repair.
Main relief valve is faulty.	Adjust pressure, repair or replace.
Hydraulic pump is broken.	Disassemble and repair.

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SECTION 7 MAINTENANCE STANDARD

GROUP 1 OPERATIONAL PERFORMANCE TEST

1. PURPOSE

Performance tests are used to check:

1) **OPERATIONAL PERFORMANCE OF A NEW MACHINE**

Whenever a new machine is delivered in parts and reassembled at a customer's site, it must be tested to confirm that the operational performance of the machine meets **Hyundai spec**.

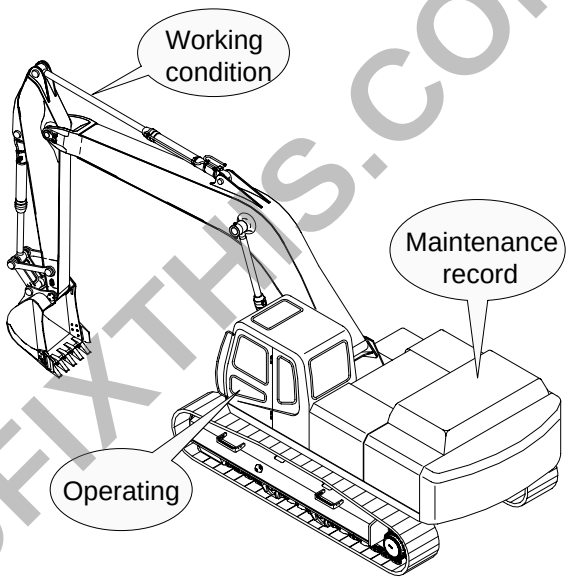
2) **OPERATIONAL PERFORMANCE OF A WORKING MACHINE**

With the passage of time, the machine's operational performance deteriorates, so that the machine needs to be serviced periodically to restore it to its original performance level.

Before servicing the machine, conduct performance tests to check the extent of deterioration, and to decide what kind of service needs to be done(by referring to the "Service Limits" in this manual).

3) **OPERATIONAL PERFORMANCE OF A REPAIRED MACHINE**

After the machine is repaired or serviced, it must be tested to confirm that its operational performance was restored by the repair and/or service work done.



21077MS01

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2. INSTALL WORK

1) Tighten all bolts and nuts(Sleeve nuts) to the specified torque.
2) Install the hoses without twisting or interference.
3) Replace all gaskets, O-rings, cotter pins, and lock plates with new parts.
4) Bend the cotter pin or lock plate securely.
5) When coating with adhesive, clean the part and remove all oil and grease, then coat the threaded portion with 2-3 drops of adhesive.
6) When coating with gasket sealant, clean the surface and remove all oil and grease, check that there is no dirt or damage, then coat uniformly with gasket sealant.
7) Clean all parts, and correct any damage, dents, burrs, or rust.
8) Coat rotating parts and sliding parts with engine oil.
9) When press fitting parts, coat the surface with antifriction compound(LM-P).
10) After installing snap rings, check that the snap ring is fitted securely in the ring groove(Check that the snap ring moves in the direction of rotation).
11) When connecting wiring connectors, clean the connector to remove all oil, dirt, or water, then connect securely.
12) When using eyebolts, check that there is no deformation or deterioration, and screw them in fully.
13) When tightening split flanges, tighten uniformly in turn to prevent excessive tightening on one side.
14) When operating the hydraulic cylinders for the first time after repairing and reassembling the hydraulic cylinders, pumps, or other hydraulic equipment or piping, always bleed the air from the hydraulic cylinders as follows:
    (1) Start the engine and run at low idling.
    (2) Operate the control lever and actuate the hydraulic cylinder 4-5 times, stopping 100㎜ before the end of the stroke.
    (3) Next, operate the piston rod to the end of its stroke to relieve the circuit. (The air bleed valve is actuated to bleed the air.)
    (4) After completing this operation, raise the engine speed to the normal operating condition.

※ If the hydraulic cylinder has been replaced, carry out this procedure before assembling the rod to the work equipment.

※ Carry out the same operation on machines that have been in storage for a long time after completion of repairs.

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(8) Negative control relief valve

① Remove plug(551).

· Hexagon wrench : 12㎜



21078MC15

② Remove poppet(611), spring(621) and damping rod(631).



21078MC16

(9) Swing logic valve and check valve

① Loosen hexagon socket head bolts(251) and remove logic valve(251) and take check valve(254).

② Remove plug(551) or (552) and take out poppet(511) or (515, 516) and spring (521) or (523).

· Hexagon wrench : 6, 12㎜



21078MC17

(10) Boom priority valve

Loosen hexagon socket head bolts(104) and remove boom priority valve(104).

· Hexagon wrench : 10㎜

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(10) Disassembling carrier 2 assembly

※ When carrier pins 2(12) are to be reused, mark each pin with its mated hole of carrier 2(11) to assure the same combinations as before.

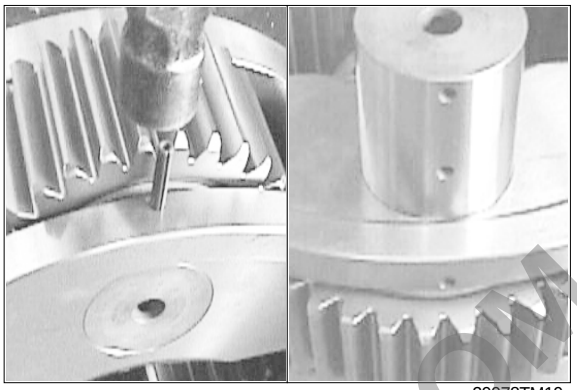
① Knock spring pins(15) fully into carrier pins 2(12).

② Tap carrier pins 2(12) out from carrier 2(11).

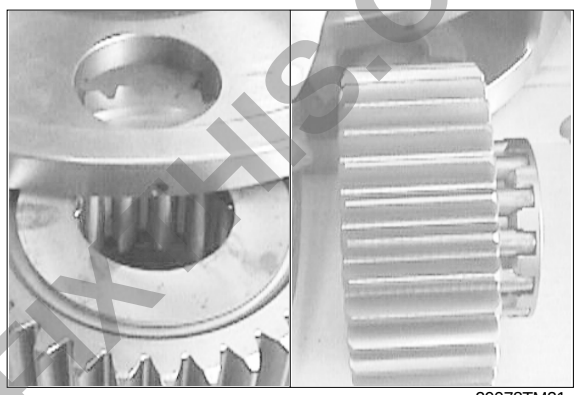
③ Remove planetary gears 2(14) and spherical roller bearings(13).

④ Knock out spring pins(15) from carrier pins 2(12) for reassembling.

※ When carrier pin 2(12) or planetary gear 2(14) is needed to be exchanged, three pins or three gears should be all exchanged.



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3) DISASSEMBLING TRAVEL MOTOR

(1) Removing accessory valves

Before disassembling motor, remove accessory valves.

① Remove brake valve(42).

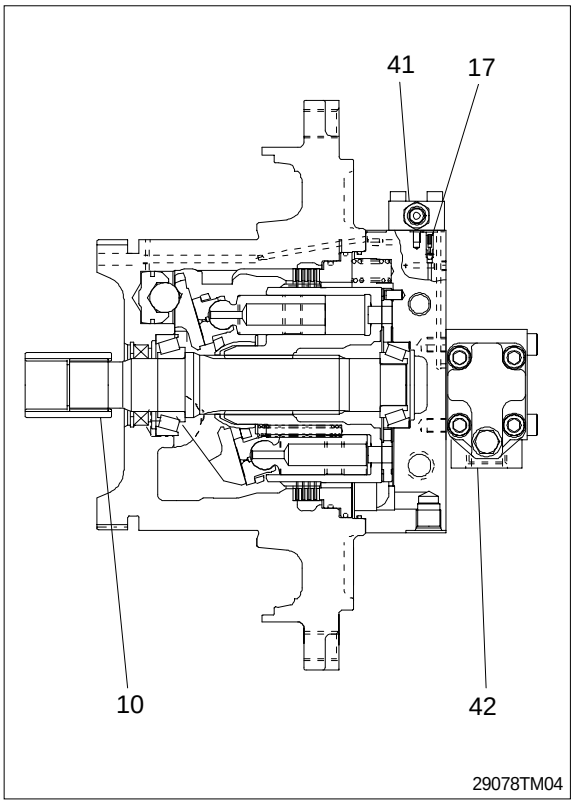
② Remove pilot valve(41).

③ Remove check valve(17).

④ Remove overload relief valves(40).

⑤ Remove coupling(10).

※ According to disassembling purpose, select the valves to be removed.
However, you cannot disassemble the motor without removing valves.



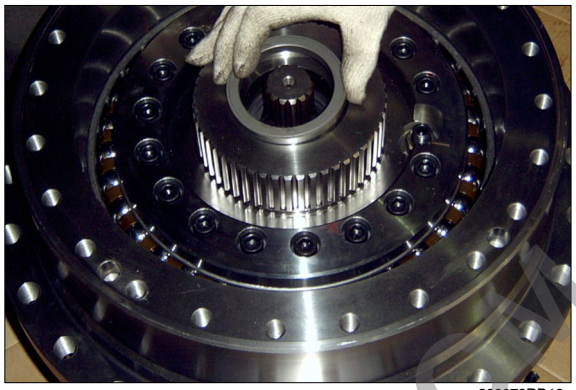
29078TM04

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9) Remove motor ring

(1) Remove motor ring using hand.

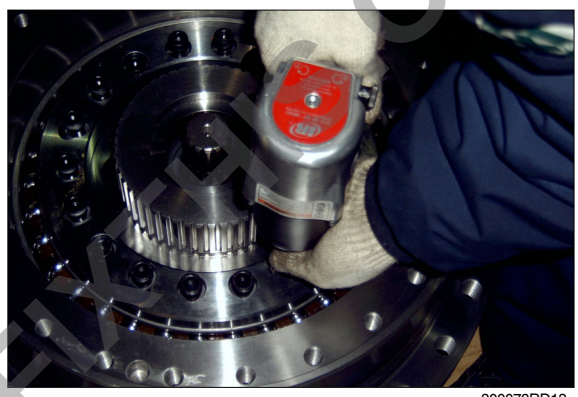


300078RD12

10) Removing retainer & shim

(1) Remove hexagon socket(M12) head bolts that retainer and motor.

(2) Remove retainer & shim.



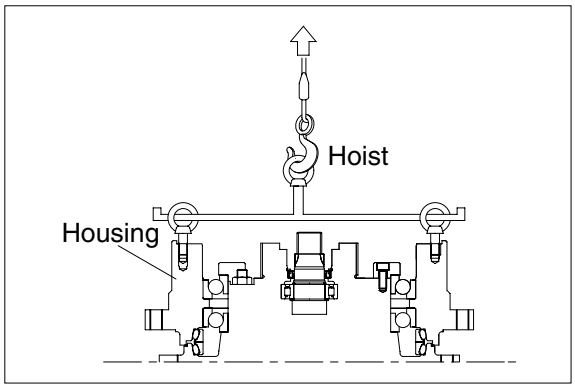
300078RD13

11) Removing housing sub assy

(1) Screw eye bolt(M14) in housing and lift up housing assembly including angular bearing and floating seal.

12) Removing floating seal

(1) Lift up a piece of floating seal of motor side.

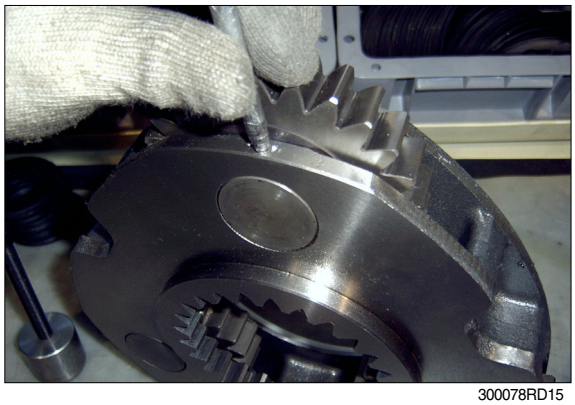


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13) Dissembling housing assembly

(1) After turning housing, lift up a piece of floating seal from housing and then remove it.

※ Don't disassemble angular bearing.

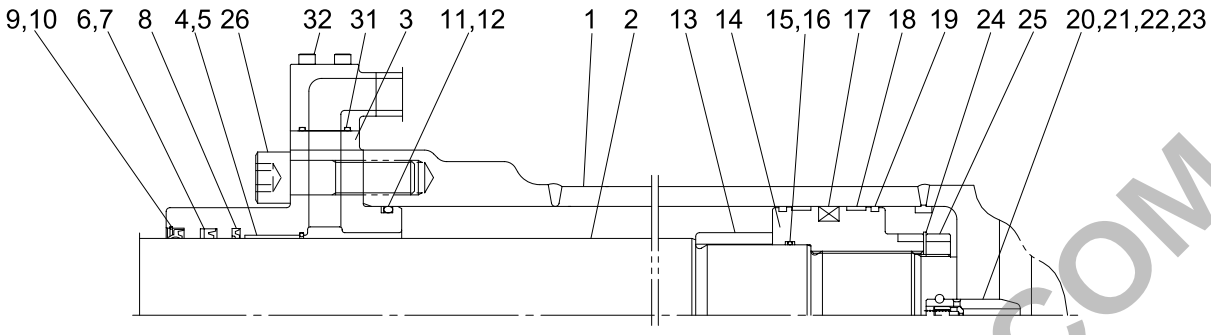


300078RD15

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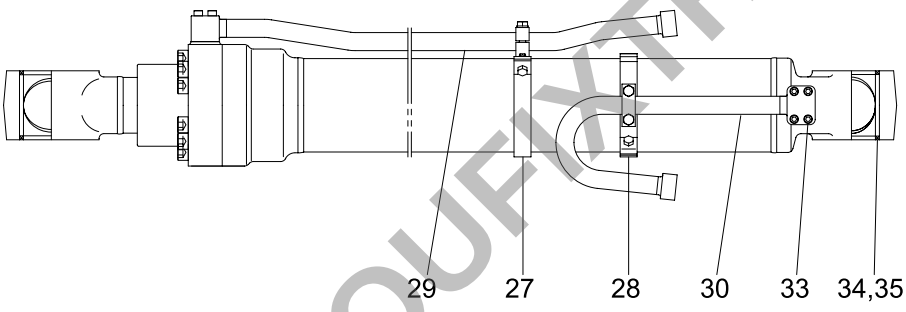
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(2) Arm cylinder



Internal detail

32078AC01



32078AC02

1	Tube assembly	13	Cushion ring	25	Lock nut
2	Rod assembly	14	Piston	26	Hexagon socket head bolt
3	Gland	15	O-ring	27	Band assembly
4	DD2 bushing	16	Back up ring	28	Band assembly
5	Snap ring	17	Piston seal	29	Pipe assembly
6	Rod seal	18	Wear ring	30	Pipe assembly
7	Back up ring	19	Dust ring	31	O-ring
8	Buffer ring	20	Cushion spear	32	Hexagon socket head bolt
9	Dust wiper	21	Check valve	33	Hexagon socket head bolt
10	Snap ring	22	Coil spring	34	Pin bushing
11	O-ring	23	Stop ring	35	Dust seal
12	Back up ring	24	Lock washer		

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