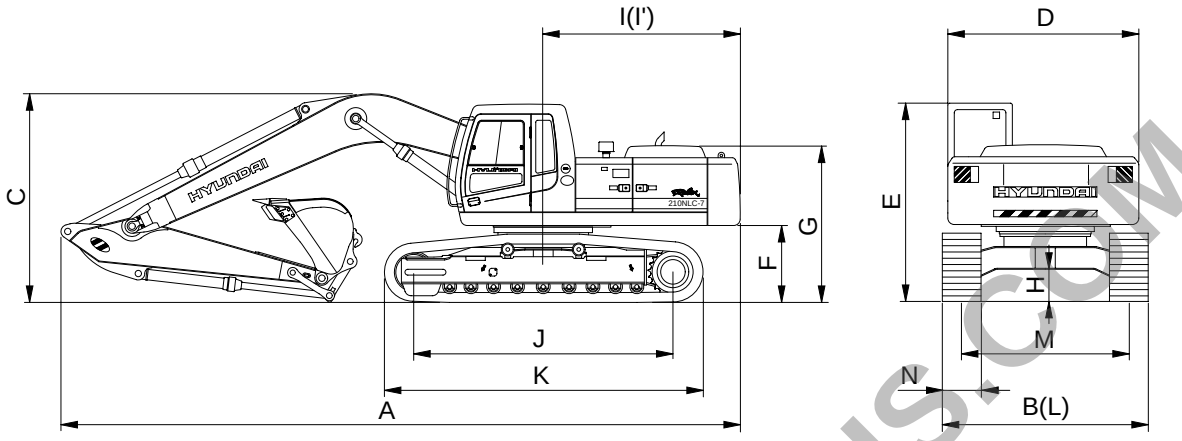
2. SPECIFICATIONS

1) 5.68m(18' 8") MONO BOOM



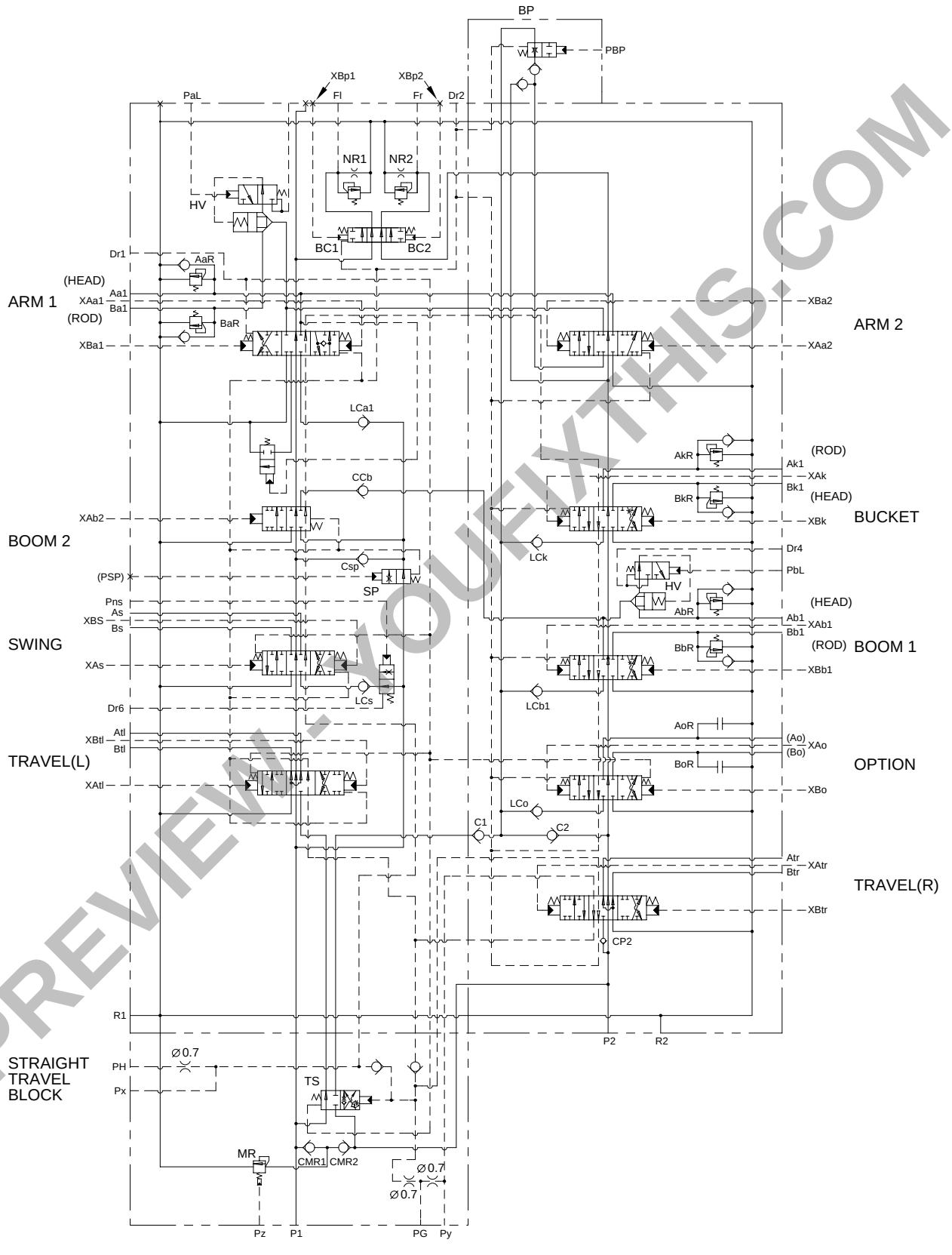
21072SP02

Description		Unit	Specification
Operating weight		kg(lb)	22000(48500)
Bucket capacity(SAE heaped), standard		$m^3(yd^3)$	0.87(1.14)
Overall length	A	mm(ft-in)	9540(31' 4")
Overall width, with 500mm shoe	B		2500(8' 2")
Overall height	C		3070(10' 1")
Superstructure width	D		2530(8' 4")
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'		2800(9' 2")
Distance between tumblers	J		3650(12' 0")
Undercarriage length	K		4440(14' 7")
Undercarriage width	L		2500(8' 2")
Track gauge	M		2000(6' 7")
Track shoe width, standard	N		500(20")
Travel speed(Low/high)		km/hr(mph)	3.4/5.3(2.1/3.3)
Swing speed		rpm	12.5
Gradeability		Degree(%)	35(70)
Ground pressure(500mm shoe)		$kgf/cm^2(psi)$	0.56(7.96)

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2. HYDRAULIC CIRCUIT



21072MC24

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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(13) and disconnect pipe (1,2).

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

(7) Remove socket bolts(12) and disconnect pump suction pipe (3).

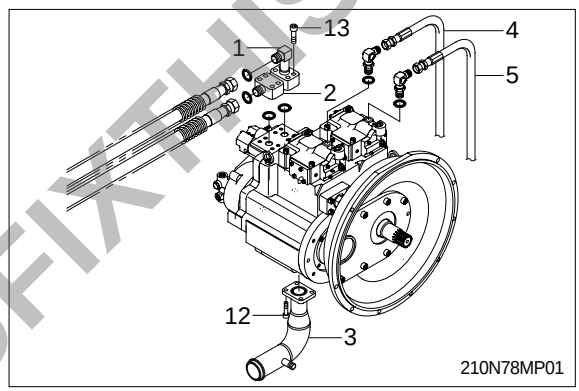
※ When pump suction pipe is disconnected, the oil inside the piping will flow out, so catch it in oil pan.

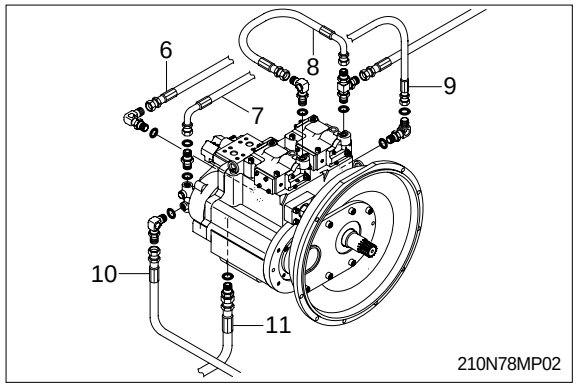
(8) Sling the pump assembly and remove the pump mounting bolts.

· Weight : 170kg(370lb)

※ 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	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	Hydraulic system	Main pump mounting socket bolt	M10 × 1.5	4.8 ± 0.3	34.7 ± 2.2
5		Main control valve mounting nut	M12 × 1.75	12.2 ± 1.3	88.2 ± 9.4
6		Fuel tank mounting bolt	M20 × 2.5	46 ± 5.1	333 ± 36.9
7		Hydraulic oil tank mounting bolt	M20 × 2.5	46 ± 5.1	333 ± 36.9
8		Turning joint mounting bolt, nut	M12 × 1.75	12.3 ± 1.3	88.9 ± 9.4
9	Power train system	Swing motor mounting bolt	M20 × 2.5	57.9 ± 8.7	419 ± 62.9
10		Swing bearing upper part mounting bolt	M20 × 2.5	57.8 ± 6.4	418 ± 46.3
11		Swing bearing lower part mounting bolt	M20 × 2.5	57.8 ± 6.4	418 ± 46.3
12		Travel motor mounting bolt	M16 × 2.0	23 ± 2.5	166 ± 18.1
13		Sprocket mounting bolt	M16 × 2.0	26 ± 2.5	188 ± 18.1
14	Under carriage	Carrier roller mounting bolt, nut	M16 × 2.0	23 ± 2.5	166 ± 18.1
15		Track roller mounting bolt	M20 × 2.5	54.7 ± 5.0	396 ± 36.2
16		Track tension cylinder mounting bolt	M16 × 2.0	29.7 ± 4.5	215 ± 32.5
17		Track shoe mounting bolt, nut	M20 × 1.5	78 ± 8.0	564 ± 57.9
18		Track guard mounting bolt	M20 × 2.5	57.9 ± 8.7	419 ± 62.9
19	Others	Counter weight mounting bolt	M36 × 3.0	297 ± 33	2148 ± 239
20		Cab mounting bolt	M12 × 1.75	12.8 ± 3.0	92.6 ± 21.7
21		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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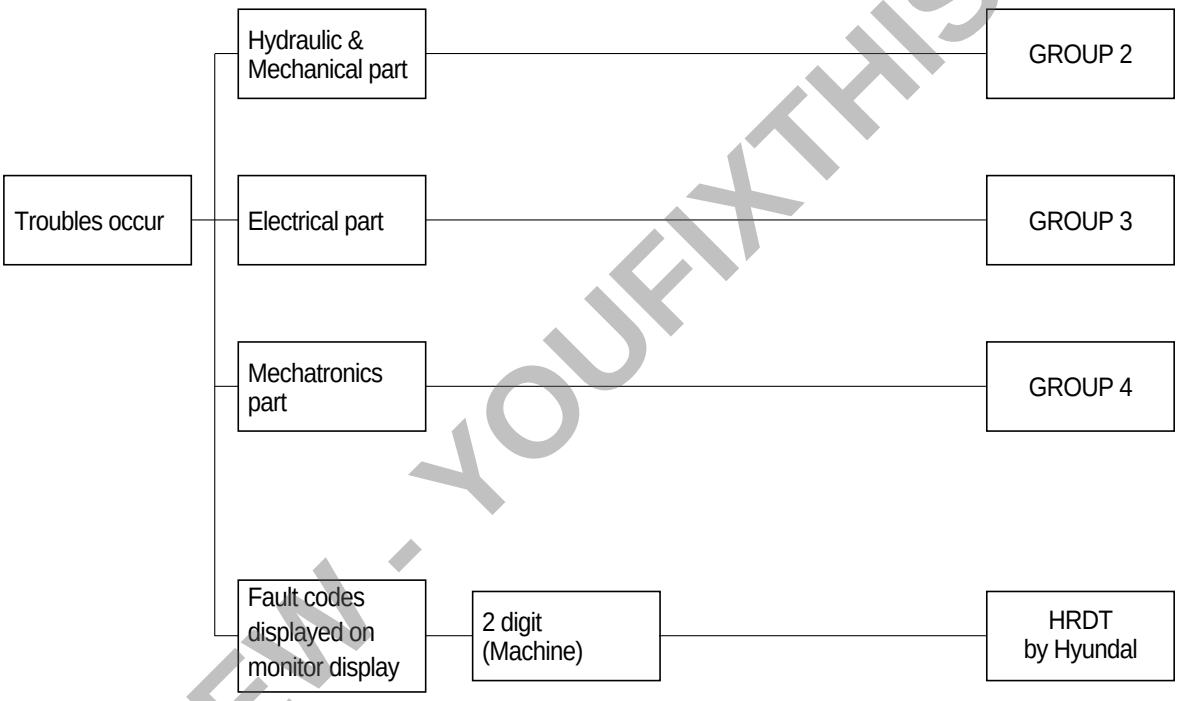
SECTION 6 TROUBLESHOOTING

GROUP 1 BEFORE TROUBLESHOOTING

1. INTRODUCTION

When a trouble is occurred in the machine, this section will help an operator to maintain the machine with easy.

The trouble of machine is parted Hydraulic & Mechanical system, Electrical system and Mechatronics system. At each system part, an operator can check the machine according to the troubleshooting process diagram.

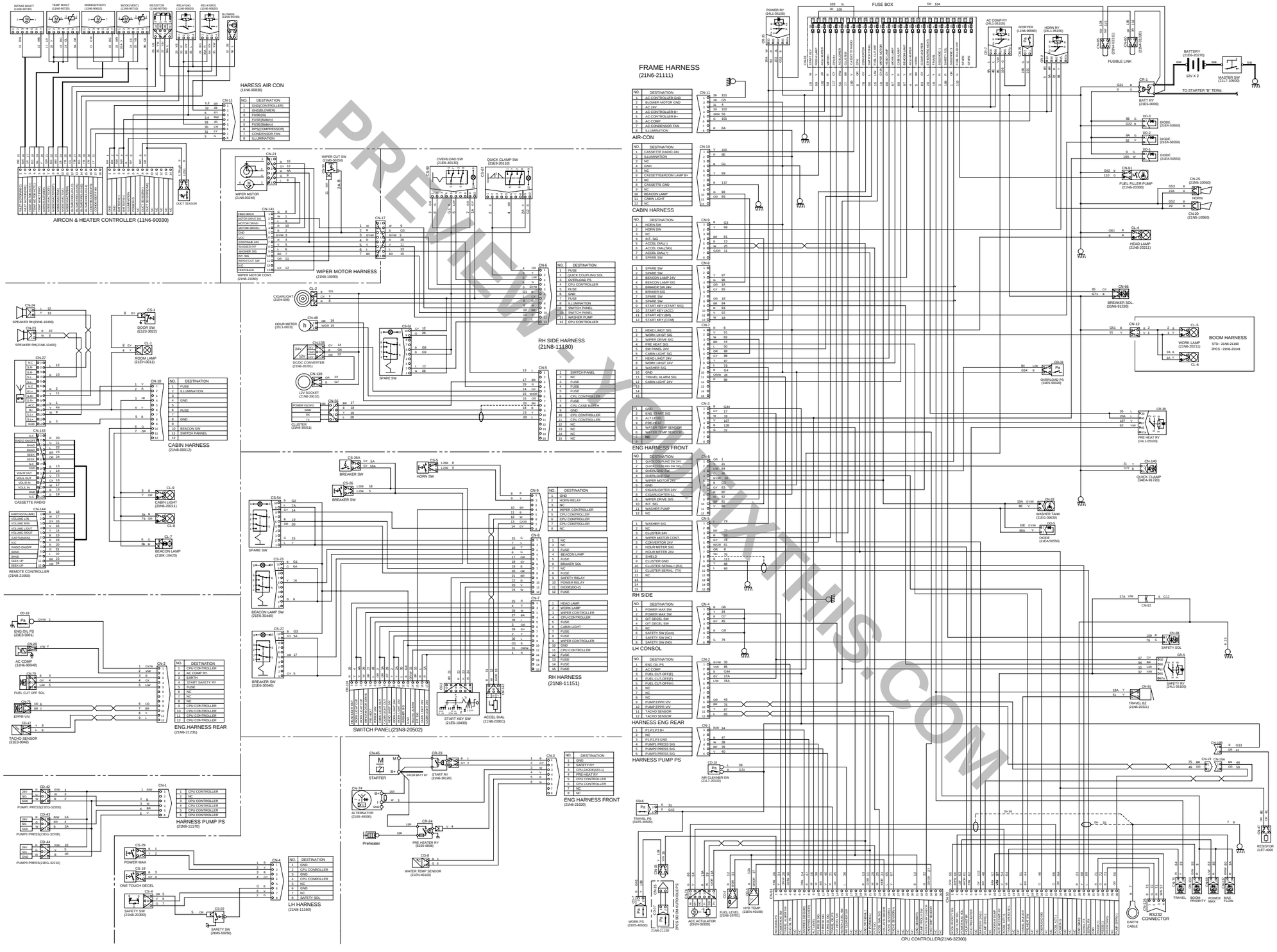


※ If fault codes are displayed on the monitor, please contact Hyundai.

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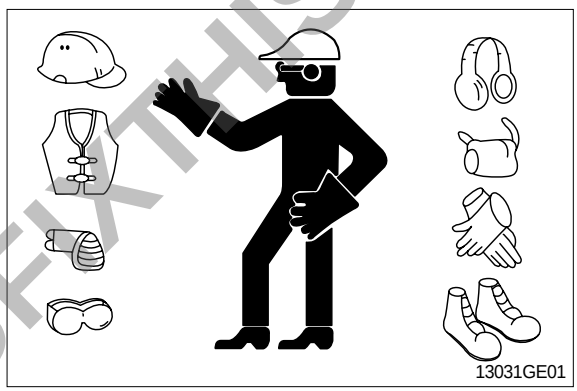
GROUP 1 SAFETY

FOLLOW SAFE PROCEDURE

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

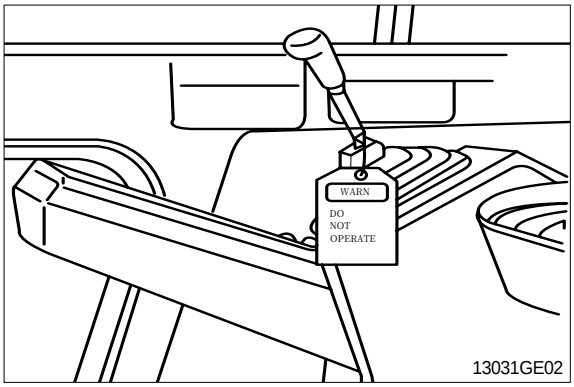
WEAR PROTECTIVE CLOTHING

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


13031GE01

WARN OTHERS OF SERVICE WORK

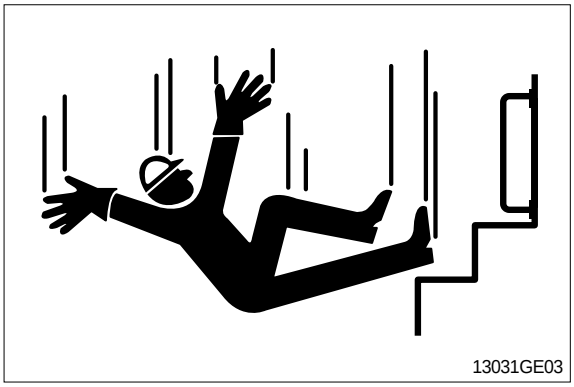
Unexpected machine movement can cause serious injury.
Before performing any work on the excavator, attach a「**Do Not Operate**」tag on the right side control lever.



13031GE02

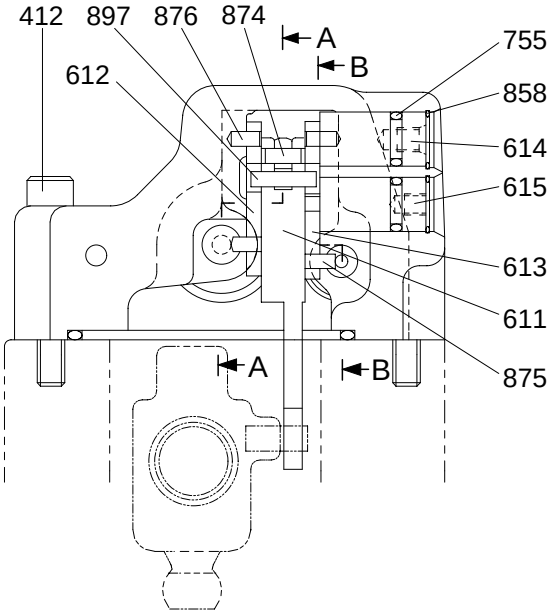
USE HANDHOLDS AND STEPS

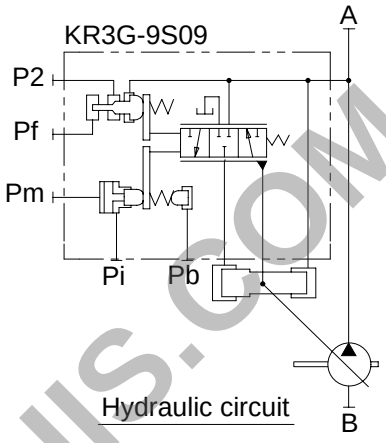
Falling is one of the major causes of personal injury.
When you get on and off the machine, always maintain a three point contact with the steps and handrails and face the machine. Do not use any controls as handholds.
Never jump on or off the machine. Never mount or dismount a moving machine.
Be careful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


13031GE03

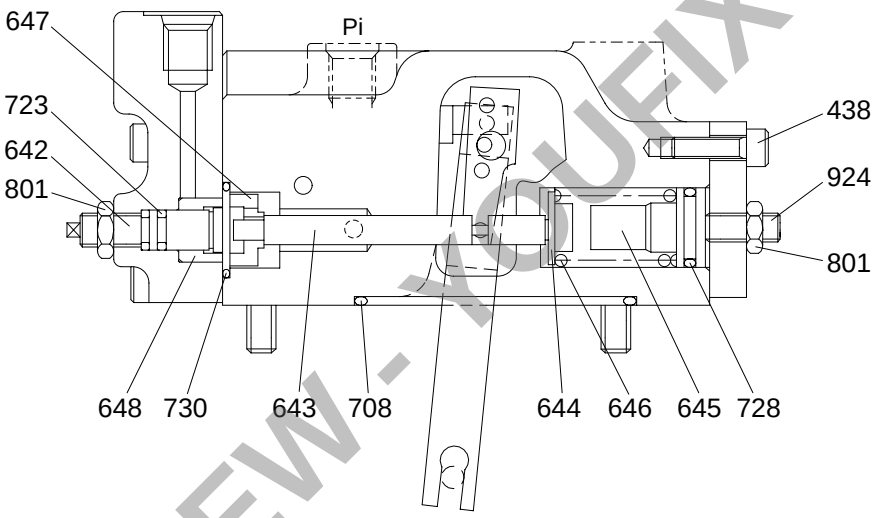
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2) REGULATOR(1/2)

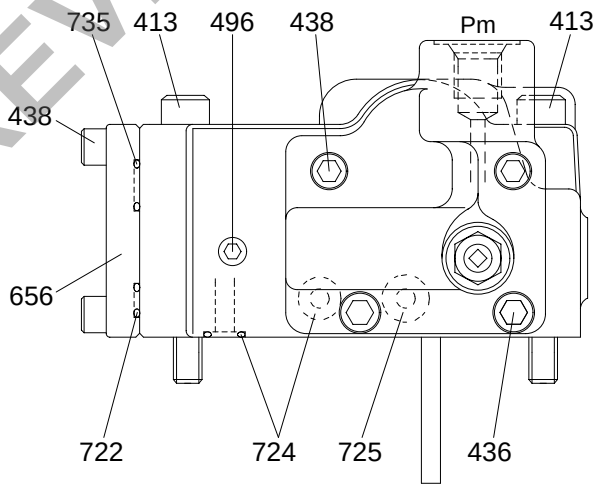




Hydraulic circuit



SECTION B-B



VIEW C

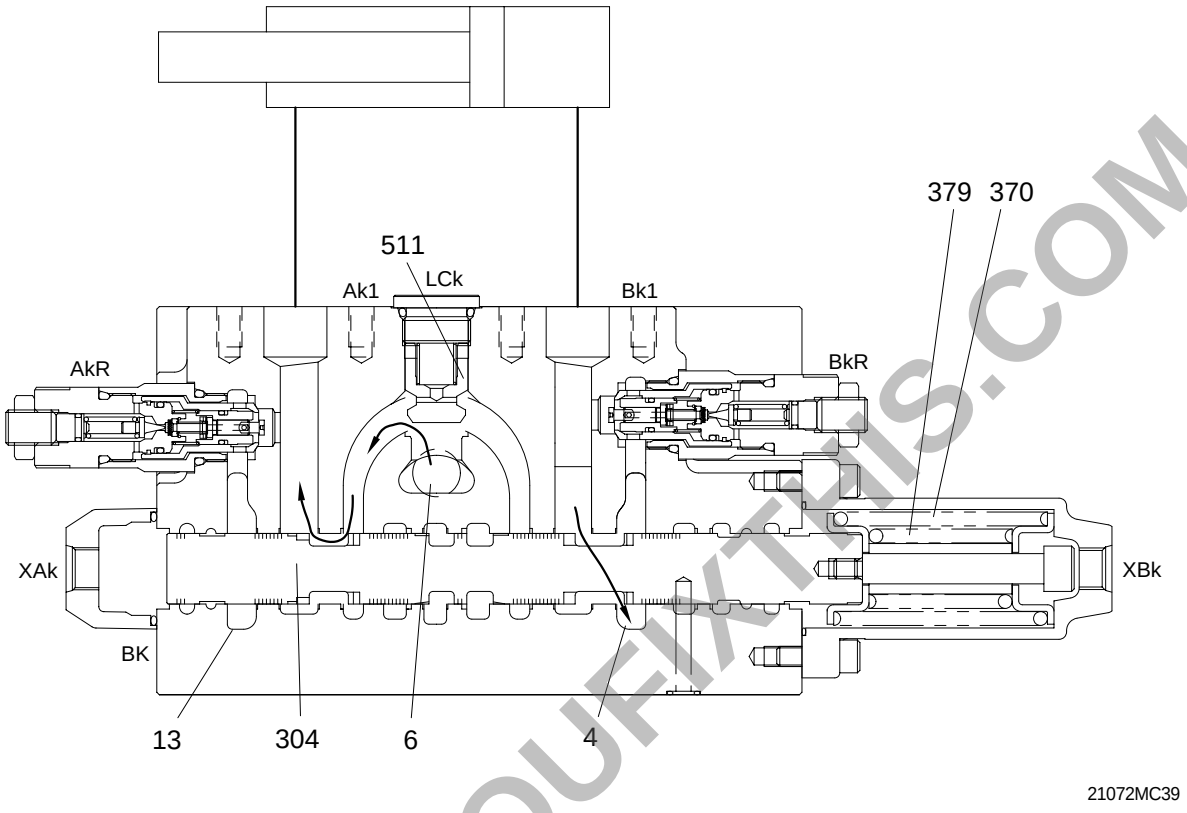
210N72RG01

Port	Port name	port size
Pi	Pilot port	PF 1/4 - 15
Pm	Qmax cut port	PF 1/4 - 15

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② **Bucket out operation**



During the bucket roll out operation, the pilot pressure from the pilot control valve is supplied to port XAk and shifts the bucket spool(304) in the right directed agains the springs (370) and (370).
The hydraulic fluid from the pump P2 enters the parallel path(6) and is directed to the port AK1 through the load check valve LCk(511). Following this it flows into the rod side of the bucket cylinder.
The return flow from the head side of the bucket cylinder returns to the bucket spool(304) through the port Bk1. Thereafter it is directed to the return port R2 through path(4).

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② **Brake applied**(Stopping / Stalling)

When the pressurized oil supplied from port Ⓐ is stopped during traveling, no hydraulic pressure is applied and spool(323) which has slid to the left will return on the right(Neutral) via stopper (325) by the force of spring(328).

At the same time, the hydraulic motor will rotate by the inertia even if the pressurized oil stopped, so the port D of the motor will become high pressure.

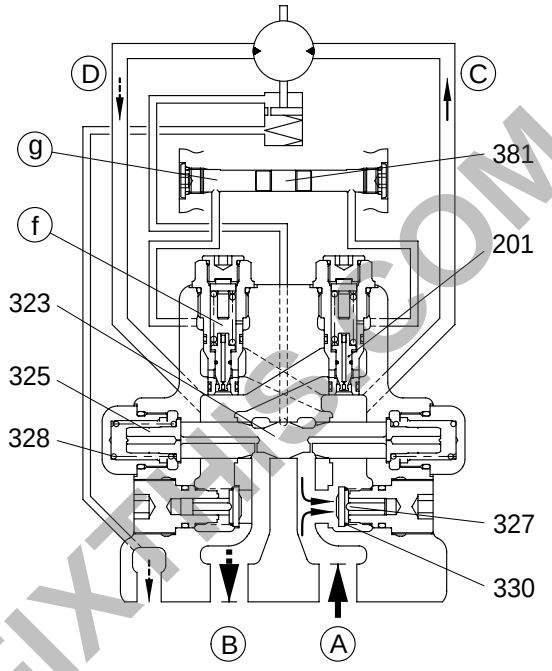
This pressurized oil goes from chamber ⓕ to chamber ⓖ through the left-hand valve(201).

When the oil enters chamber ⓖ, the piston(381) slids to the right so as not to rise the pressure, as shown in the figure. Meanwhile, the left-hand valve(201) is pushed open by the pressurized oil in port D.

Therefore, the pressurized oil in port D flows to port C at a relatively low pressure, controlling the pressure in port D and preventing cavitation in port C.

When the piston(381) reaches the stroke end, the pressure in chamber ⓖ and ⓕ increase and the left-hand valve(201) closes again, allowing the oil pressure in port D to increase further. Then, the right-hand valve(201) opens port C with pressure higher than that machine relief set pressure.

In this way, by controlling the pressure in port D in two steps, the hydraulic motor is smoothly braked and brought to a stop.

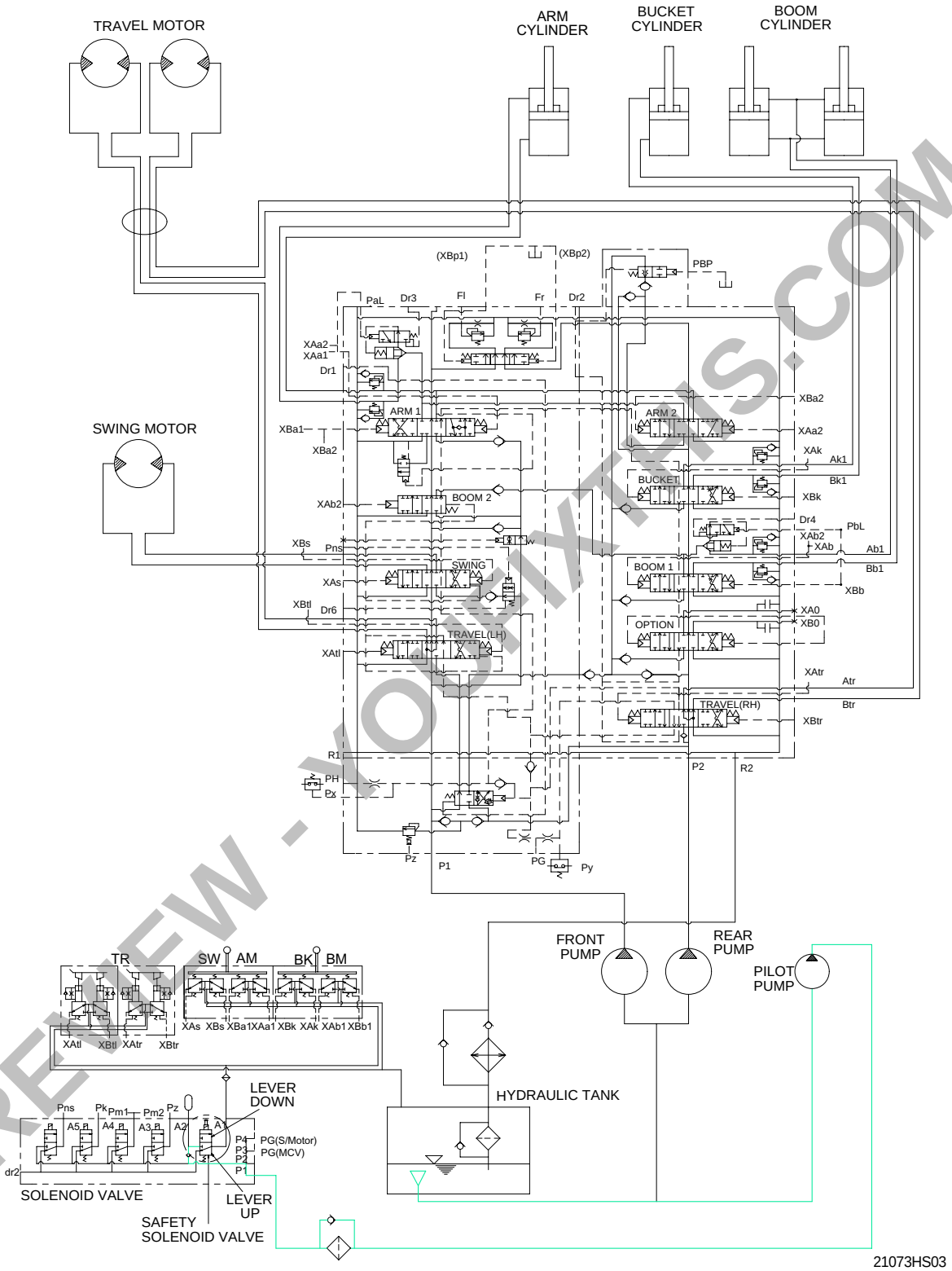


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2. SAFETY SOLENOID VALVE(SAFETY LEVER)

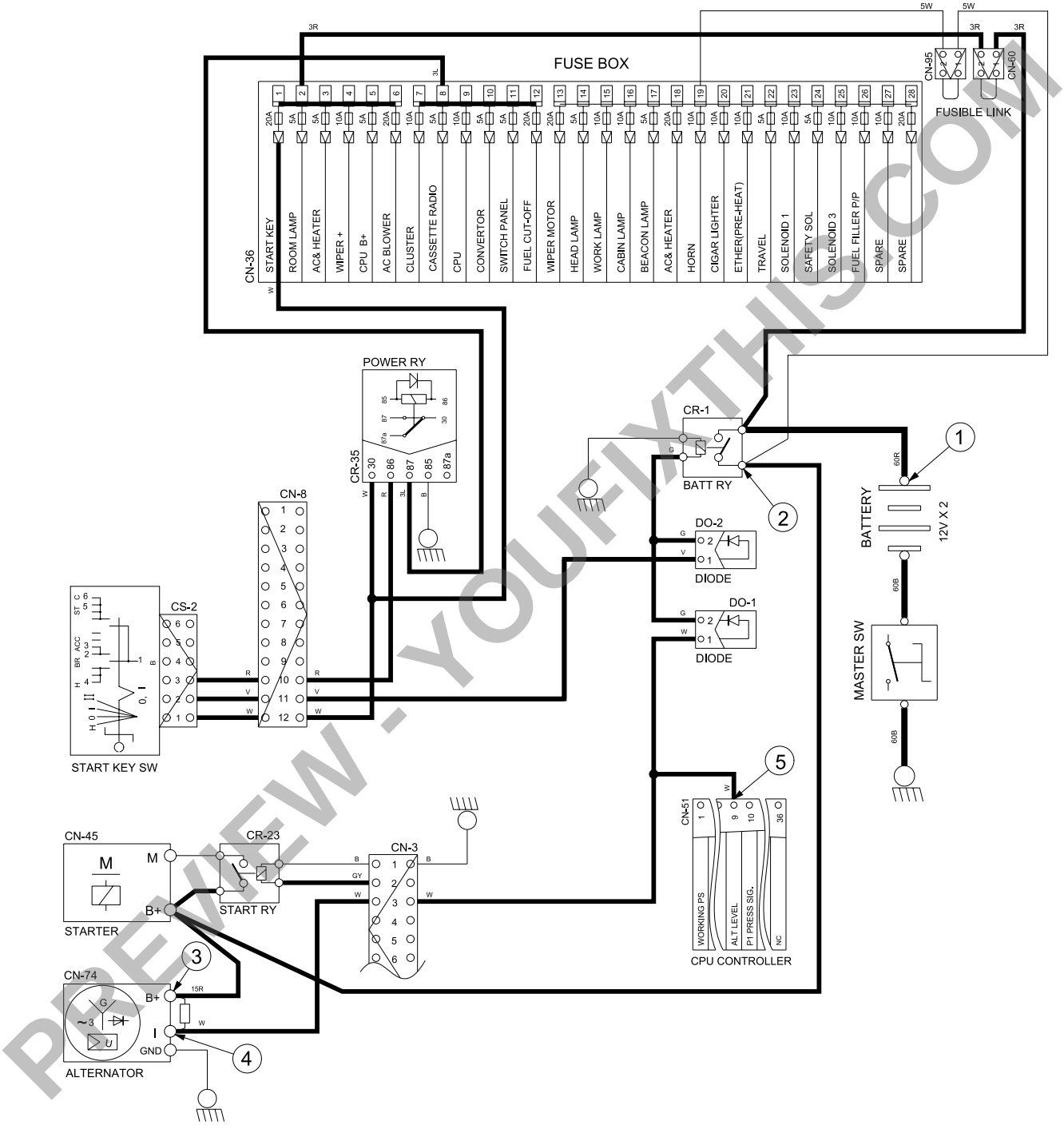


When the lever of the safety solenoid valve is moved downward, oil flows into the remote control valve through solenoid valve and line filter.

When the lever of the safety solenoid valve is moved upward, oil does not flow into the remote control valve, because of the blocked port.

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CHARGING CIRCUIT

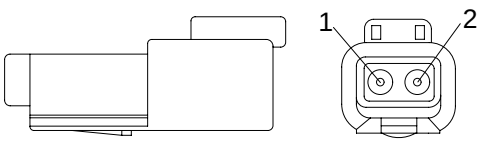
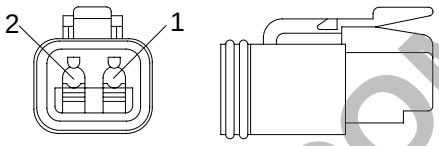
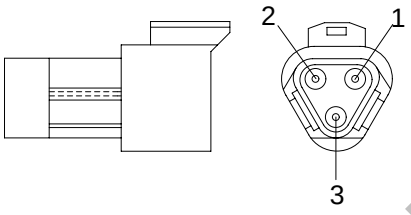
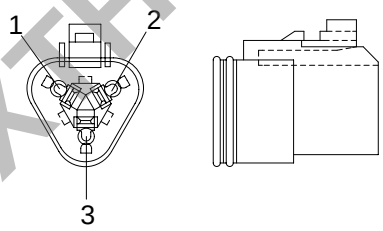
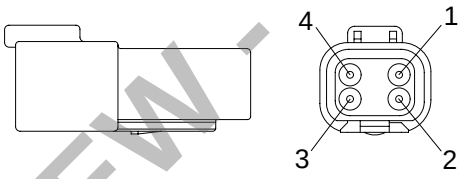
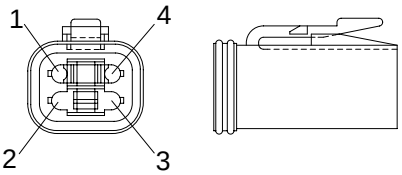
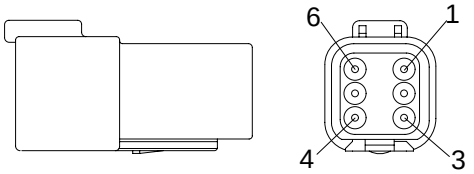
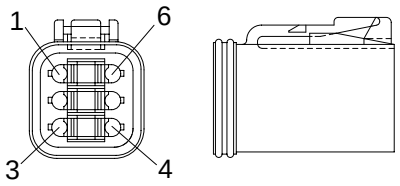


21074EL53

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14) DEUTSCH DT CONNECTORS

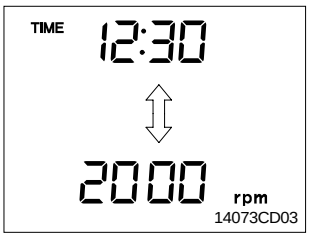
No. of pin	Receptacle connector(Female)	Plug connector(Male)
2	 DT06-2S	 DT06-2P
3	 DT06-3S	 DT06-3P
4	 DT06-4S	 DT06-4P
6	 DT06-6S	 DT06-6P

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4. CLUSTER FUNCTION

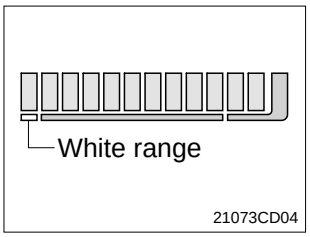
1) MONITORING DISPLAY



(1) This displays the current time and machine information such as engine rpm, coolant/hydraulic oil temperature, hydraulic oil pressure and also error codes.

※ Refer to the page 5-33 for details.

2) FUEL GAUGE

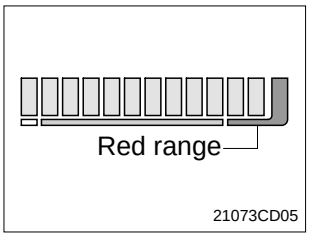


(1) This gauge indicates the amount of fuel in the fuel tank.

(2) Fill the fuel when the white range or warning lamp blinks.

※ **If the gauge illuminates the white range or warning lamp blinks even though the machine is on the normal condition, check the electric device as that can be caused by the poor connection of electricity or sensor.**

3) HYDRAULIC OIL TEMPERATURE GAUGE



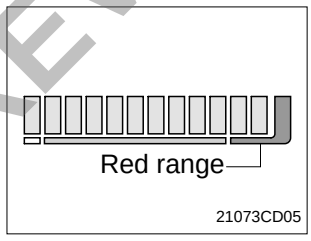
(1) This indicates the temperature of coolant.
- White range : Below 30°C(86°F)
- Green range : 30-105 °C(86-221°F)
- Red range : Above 105°C(221°F)

(2) The green range illuminates when operating.

(3) Keep idling engine at low speed until the green range illuminates before operation of machine.

(4) When the red range illuminates, reduce the load on the system. If the gauge stays in the red range, stop the machine and check the cause of the problem.

4) ENGINE COOLANT TEMPERATURE GAUGE



(1) This indicates the temperature of coolant.
- White range : Below 30°C(86°F)
- Green range : 30-105 °C(86-221°F)
- Red range : Above 105°C(221°F)

(2) The green range illuminates when operating.

(3) Keep idling engine at low speed until the green range illuminates before operation of machine.

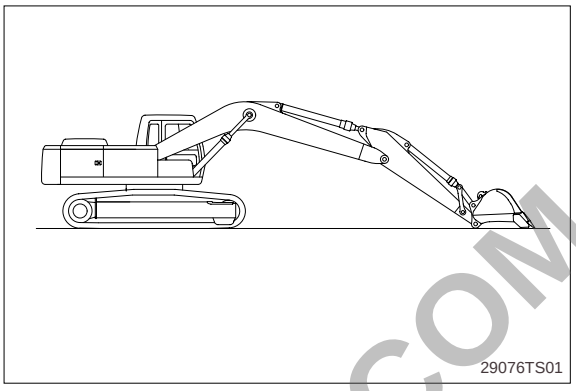
(4) When the red range illuminates, turn OFF the engine, check the radiator and engine.

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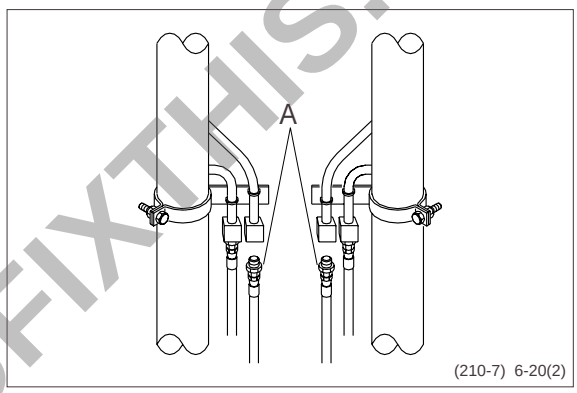
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※ HOW TO CHECK INTERNAL BOOM CYLINDER LEAKAGE

1. Lower the bucket teeth to the ground with bucket cylinder fully retracted and arm cylinder rod retracted almost in full.

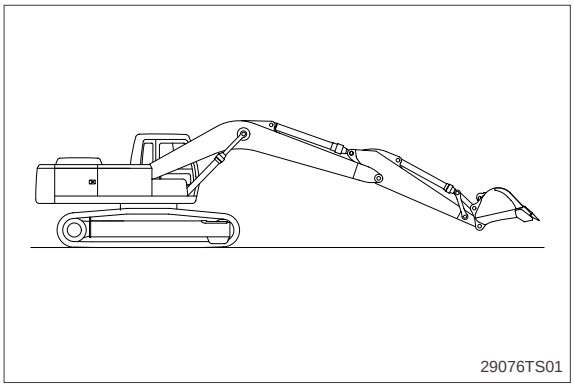


2. Disconnect hose(A) from rod side of boom cylinder and drain oil from cylinders and hose.(Put cups on piping and hose ends)



3. Raise bucket OFF the ground by retracting the arm cylinder rod.

   If oil leaks from piping side and boom cylinder rod is retracted there is an internal leak in the cylinder.
   If no oil leaks from piping side and boom cylinder rod is retracted, there is an internal leak in the control valve.



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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**.

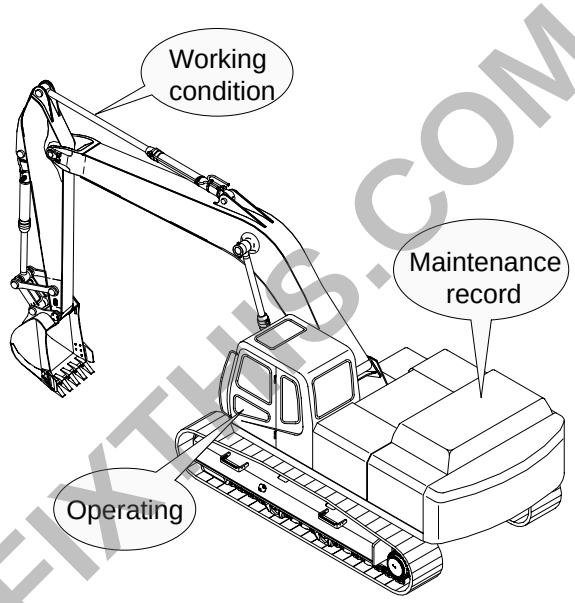
2) **OPERATIONAL PERFORMANCE OF A WORKING MACHINE**

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.

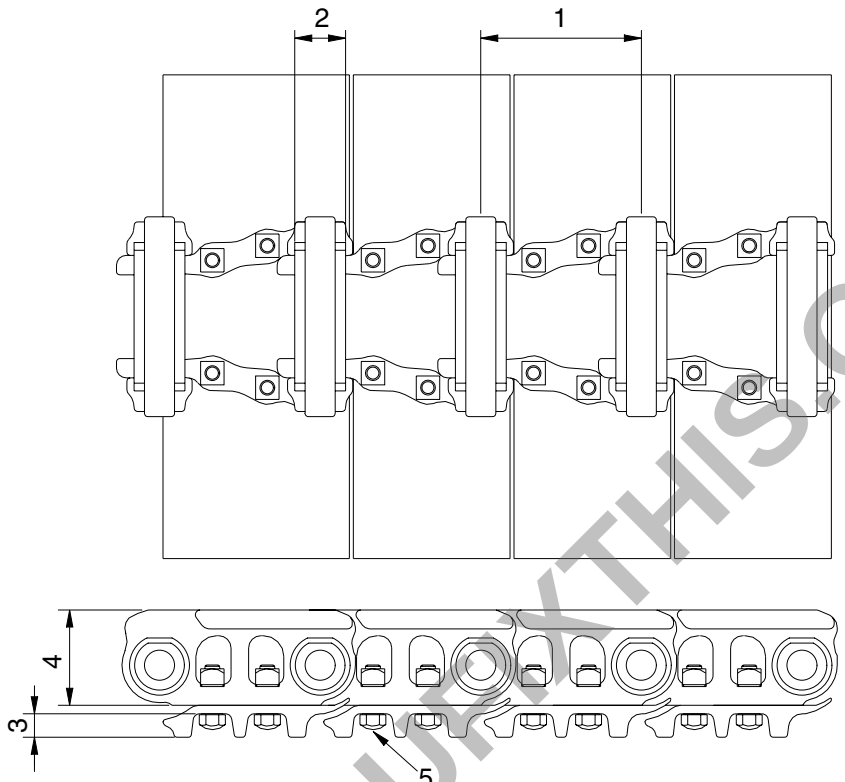


21077MS01

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4) TRACK



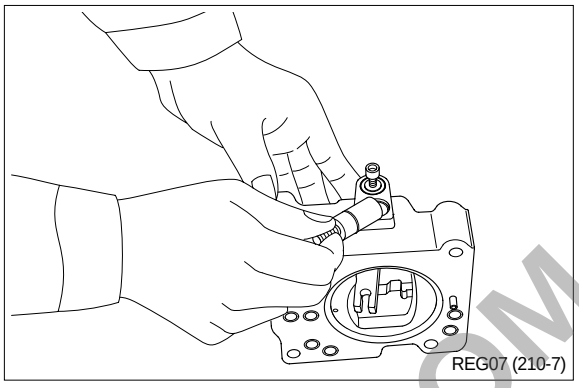
210N77MS18

Unit : mm

No.	Check item	Criteria		Remedy
1	Link pitch	Standard size	Repair limit	Turn or replace
		190	194.4	
2	Outside diameter of bushing	ø 59	ø 51	Rebuild or replace
3	Height of grouser	26	16	
4	Height of link	105	97	
5	Tightening torque	Initial tightening torque : 78 ± 8kgf · m		Retighten

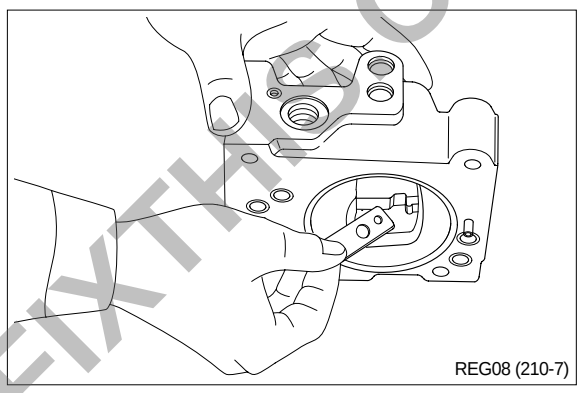
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REG07 (210-7)

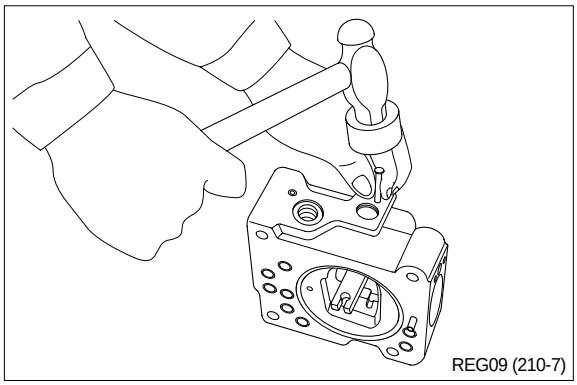
(9) Remove lever(2, 613). Do not draw out pin(875).

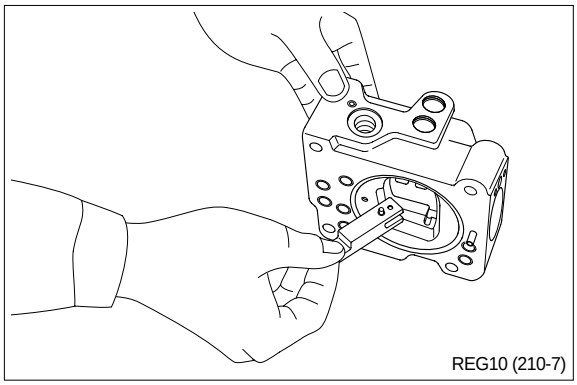
※ Work will be promoted by using pincers or so on.


REG08 (210-7)

(10) Draw out pin(874) and remove feedback lever(611).

※ Push out pin(874, 4㎜ in dia.) from above with slender steel bar so that it may not interfere with lever(1, 612).


REG09 (210-7)


REG10 (210-7)

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3. REMOVAL AND INSTALL OF REDUCTION GEAR

1) REMOVAL

(1) Remove the swing motor assembly.
For details, see **removal of swing motor assembly**.

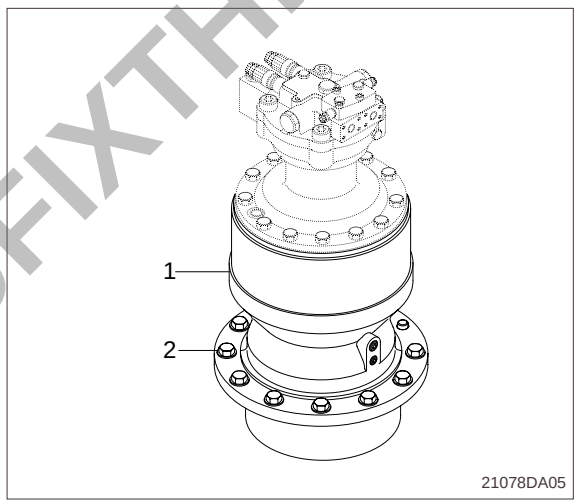
(2) Sling reduction gear assembly(1) and remove mounting bolts(2).

(3) Remove the reduction gear assembly.
· Reduction gear device weight : 180kg (396lb)


13031GE18

2) INSTALL

(1) Carry out installation in the reverse order to removal.
· Tightening torque : 49.2~66.6kgf · m (356~481lbf · ft)

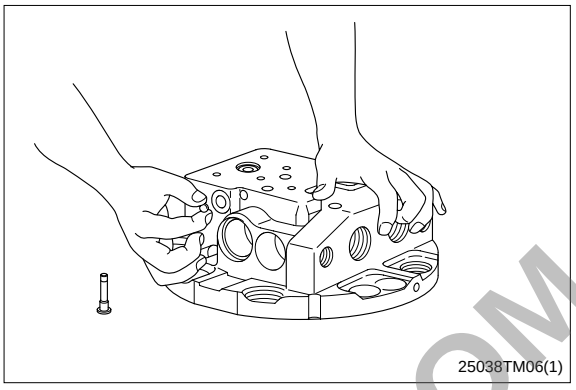


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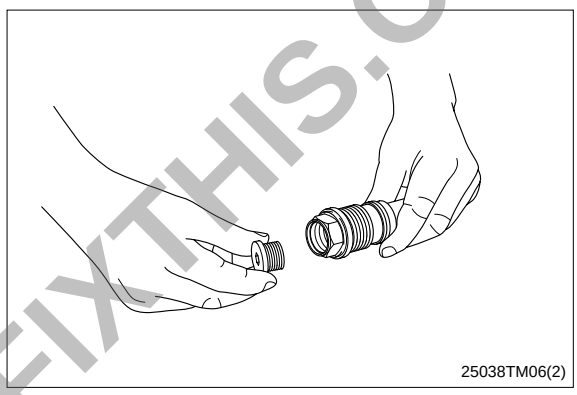
⑥ 3Take out two steel balls(385) from the rear flange.


25038TM06(1)

(5) Removal of the valve kit

① Remove the plug(204) from sleeve(202).

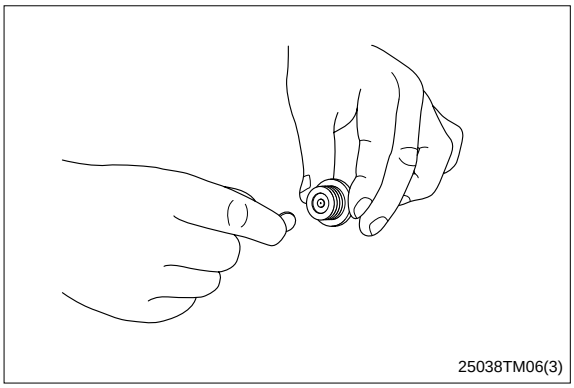
※ The valve kit is pressure adjusted by shim(205), when replacing of inner parts, therefore, the valve kit should be replaced.


25038TM06(2)

② Remove the O-ring(210) from plug(204).

③ Take out shim(205) from plug(204).

※ Do not reuse removed the O-ring(210).


25038TM06(3)

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3. OUTLINE OF DISASSEMBLING

1) GENERAL SUGGESTIONS

(1) Select a clean place for dismantling.
Spread a rubber plate on a working table in order to prohibit the damage of parts.

(2) Clean a deceleration equipment and a motor part, washing out dirt and unnecessary substances.

(3) Without any damage of O-ring, oil seal, the adhered surface of other seals, a gear, a pin, the adhered surface of other bearings, and the surface of moisturized copper, treat each parts.

(4) Numbers written in the parenthesis, ( ), next to the name of a part represent the part numbers of a cross-sectional view annexed with a drawing.

(5) The side of a pipe in a motor can be written as a rear side; the side of out-put as a front side.

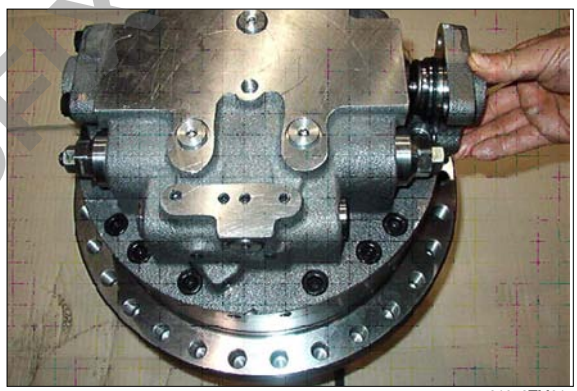
(6) Using and combining a liquid gasket, both sides must be dried completely before spraying a liquid gasket.

(7) In case of bonding volts, combine a standard torque by torque wrench after spraying rocktight 262 on the tab parts. (It can be dealt as assembling NPTF screws and an acceleration equipment.)

3.1 DISASSEMBLING

1) Unloosing wrench bolt and disassemble cover(37).

※ Wrench bolt = M12×40L-8EA(Purchasing goods)



21078TM21

2) Disassemble parts related to C.B.V.

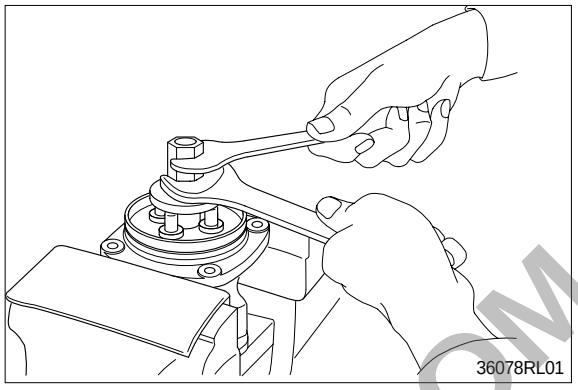


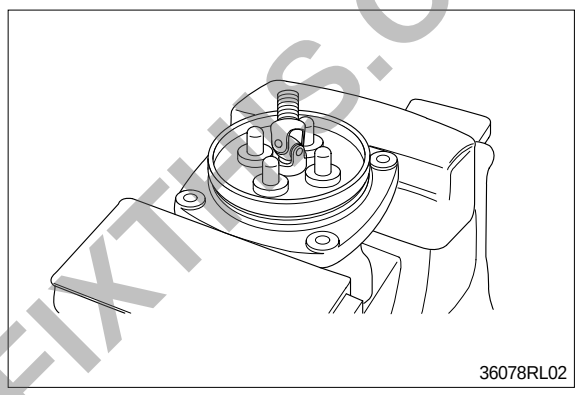
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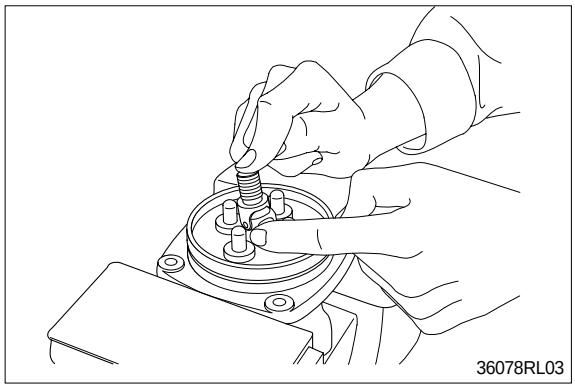
(6) Loosen adjusting nut(19) and plate(18) with spanners on them respectively, and remove them.

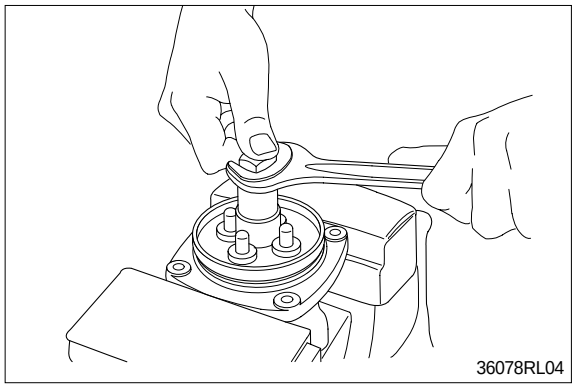




(7) Turn joint anticlockwise to loosen it, utilizing jig(Special tool).

※ When return spring(10) is strong in force, plate(15), plug(11) and push rod(14) will come up on loosening joint.
Pay attention to this.





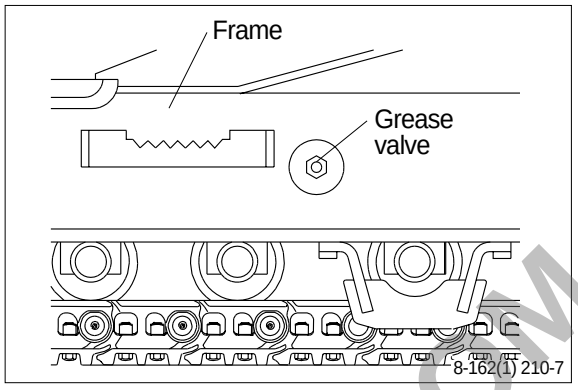
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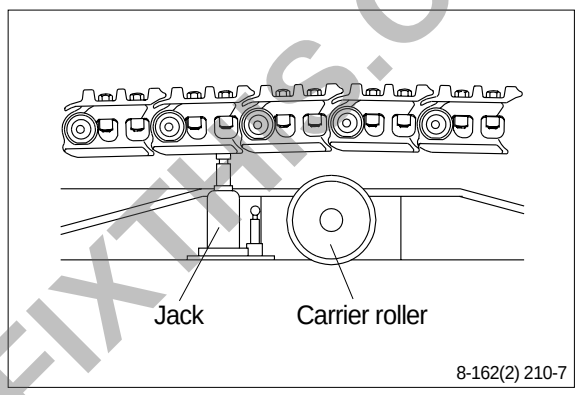
2. CARRIER ROLLER

1) REMOVAL

(1) Loosen tension of the track link.

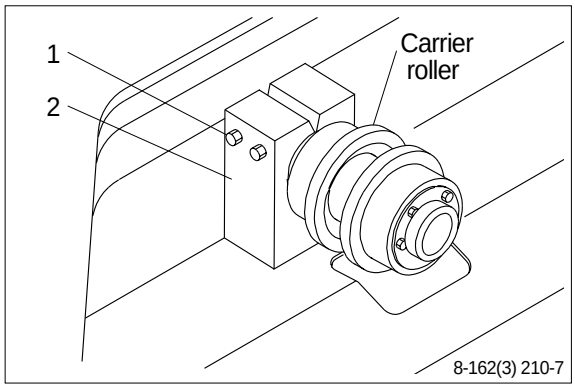


(2) Jack up the track link height enough to permit carrier roller removal.



(3) Loosen the lock nut (1).

(4) Open bracket(2) with a screwdriver, push out from inside, and remove carrier roller assembly.
· Weight : 21kg(46lb)



2) INSTALL

(1) Carry out installation in the reverse order to removal.

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