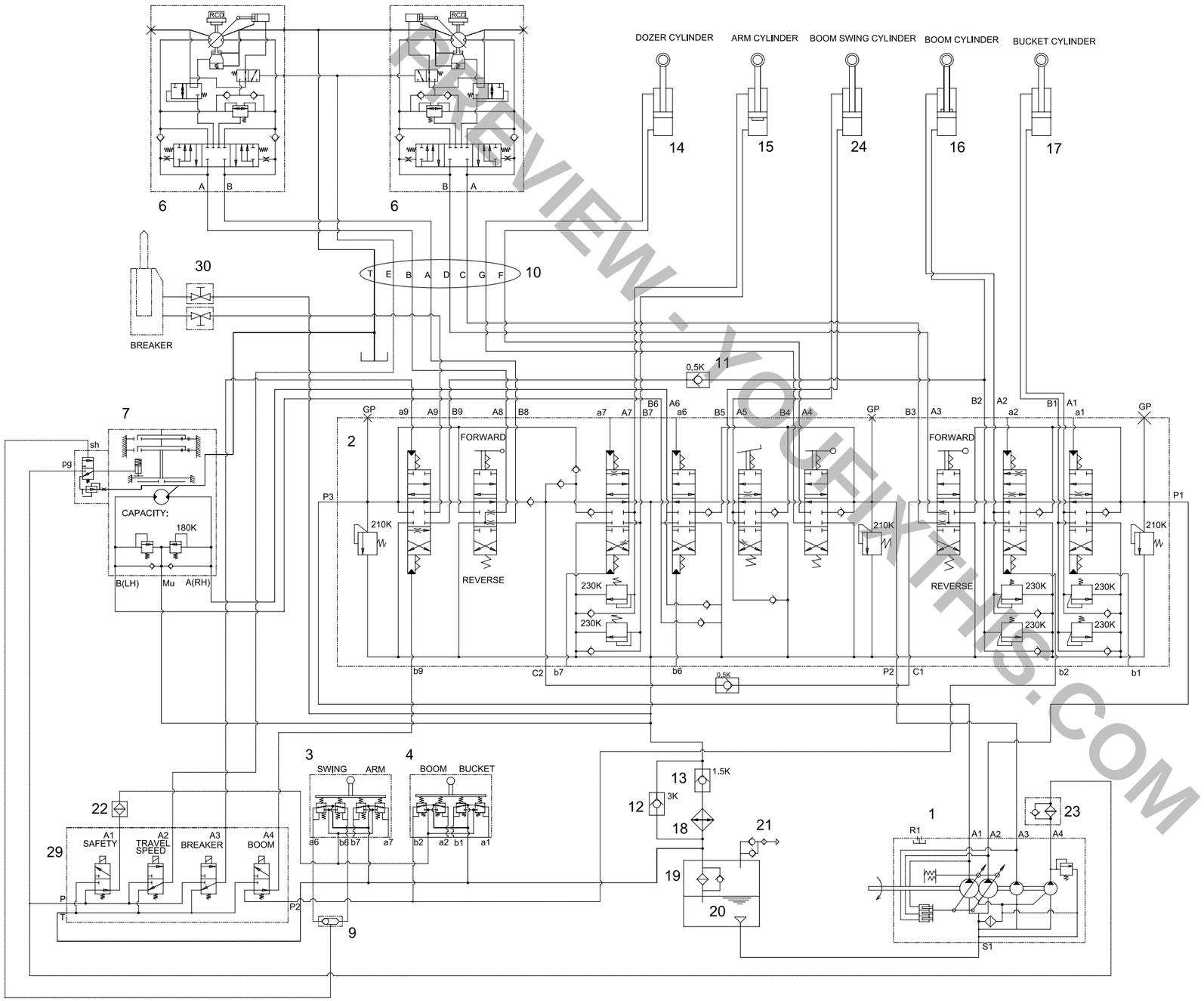
GROUP 1 HYDRAULIC CIRCUIT DIAGRAM

· **Machine serial No : up to #374, except #294, 315 and 355 ~ 362.**



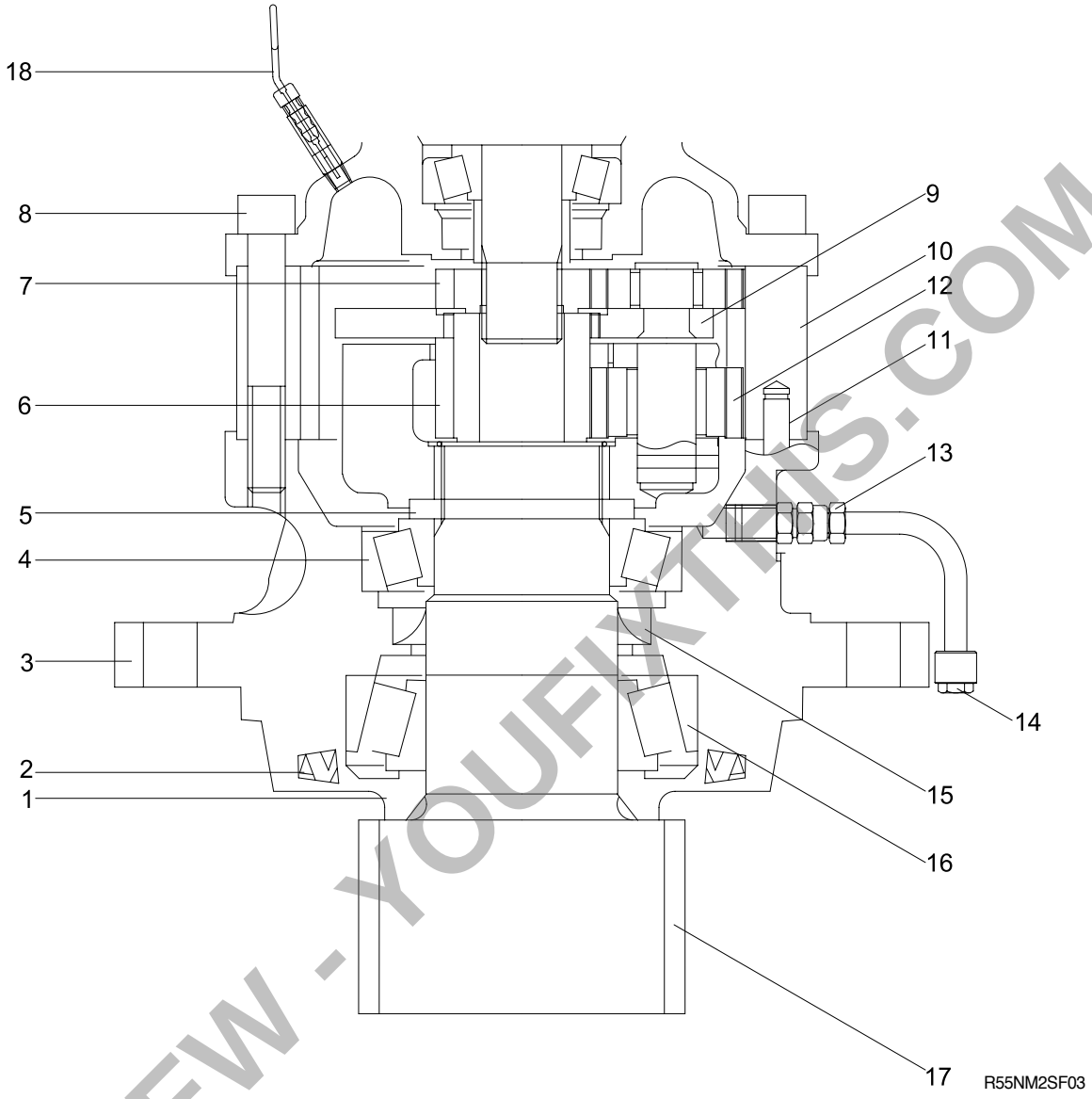
1 MAIN PUMP
2 MAIN CONTROL VALVE
3 R.C.V LEVER(LH)
4 R.C.V LEVER(RH)
6 TRAVEL MOTOR
7 SWING MOTOR
9 SHUTTLE VALVE
10 TURNING JOINT
11 CHECK VALVE
12 CHECK VALVE
13 CHECK VALVE
14 DOZER CYLINDER
15 ARM CYLINDER
16 BOOM CYLINDER
17 BUCKET CYLINDER
18 HYD OIL COOLER
19 ELEMENT-RETURN
20 SUCTION STRAINER
21 AIR BREATHER
22 FILTER-LAST GUARD
23 FILTER-LINE
24 BOOM SWING CYLINDER
29 SOLENOID VALVE
30 STOP VALVE

R55NM2SF11A

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C. REDUCTION GEAR (SG015E, UP TO #0915)



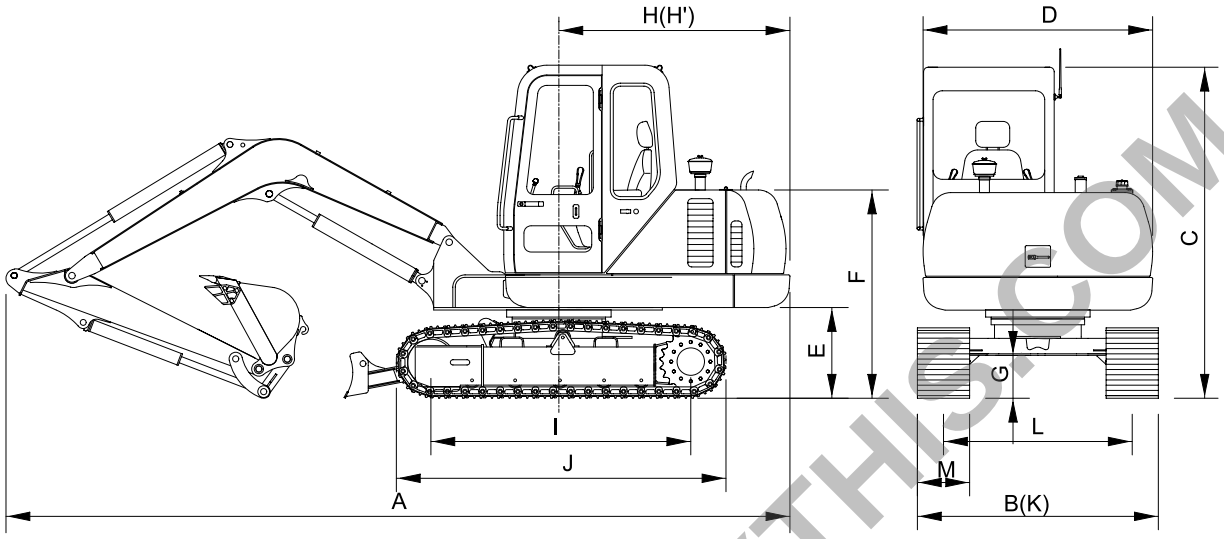
1	Collar	7	Gear	13	Drain pipe
2	Oil seal	8	Bolt (M12×80L)	14	Plug
3	Gear case	9	Holder assembly	15	Oil seal
4	Bearing	10	Ring gear	16	Bearing
5	Collar	11	Parallel pin	17	Pinion shaft
6	Gear	12	Holder assembly	18	Level gauge

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2. SPECIFICATIONS

2.9m(9' 6") ONE PIECE BOOM AND 1.6m(5' 3") ARM



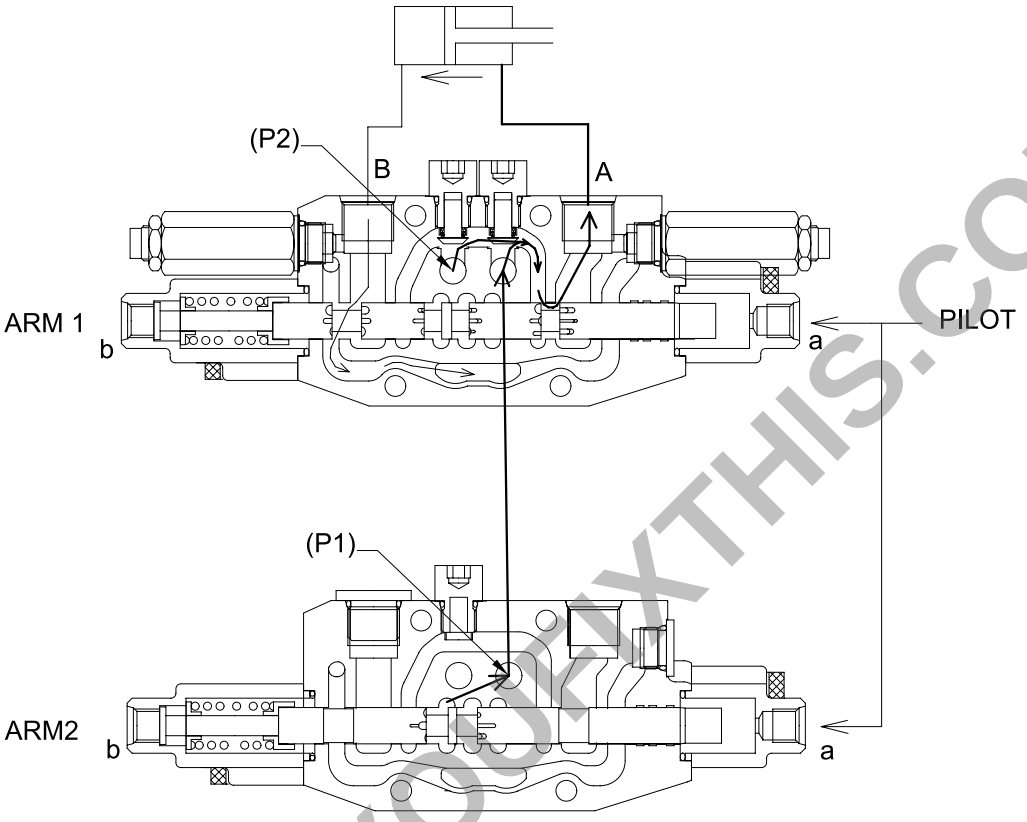
555M2SP02

Description		Unit	Specification
Operating weight		kg(lb)	5400(11905)
Bucket capacity(PCSA heaped), standard		$m^3(yd^3)$	0.18(0.24)
Overall length	A	mm(ft-in)	6000(19' 8")
Overall width, with 400mm shoe	B		1865(6' 1")
Overall height	C		2550(8' 4")
Superstructure width	D		1760(5' 9")
Ground clearance of counterweight	E		695(2' 3")
Engine cover height	F		1595(5' 3")
Minimum ground clearance	G		325(1' 1")
Rear-end distance	H		1760(5' 9")
Rear-end swing radius	H'		1770(5' 10")
Distance between tumblers	I		1990(6' 6")
Undercarriage length	J		2525(8' 3")
Undercarriage width	K		1845(6' 1")
Track gauge	L		1445(4' 9")
Track shoe width, standard	M		400(16")
Travel speed(Low/high)		km/hr(mph)	2.2/4.0(1.4/2.5)
Swing speed		rpm	10.0
Gradeability		Degree(%)	35(70)
Ground pressure(400mm shoe)		$kgf/cm^2(psi)$	0.31(4.41)

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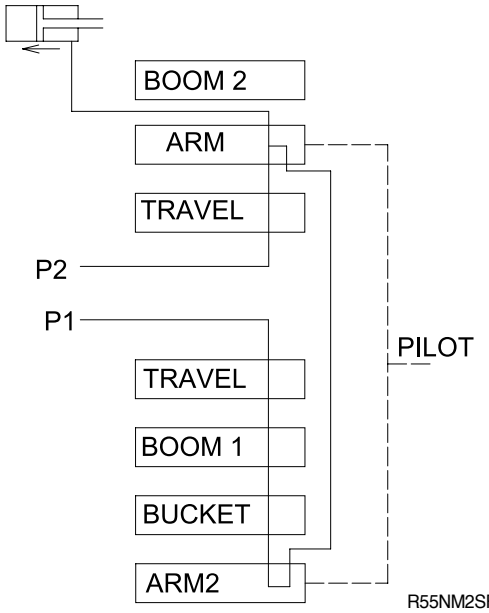
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4) OPERATION OF ARM ROLL IN/OUT (Summation)



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When the pilot pressure is applied to **a** arm1 & arm2 plungers move to the left, then the pressurized oil form pump P2 flows into the arm cylinder via arm1 section.
At the same time, the pressurized oil from pump P1 via arm2 section flows into the arm1 plunger through the inner parallel line of the MCV.



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(3) Changing the hydraulic oil

① After 2000 hours of operation.

② Every 2000 hours of operation or once a year after that.

The change interval may have to be shortened depending on the degree of fouling and the thermal load condition of the hydraulic oil.

If the hydraulic oil is not appropriate and need be changed, pay attention to the following points :

- Be sure to control the oil temperature below the highest temperature and above the lowest temperature during operation in winter and summer.
- Pay attention to the following points during change of the hydraulic oil :
  - Change the hydraulic oil as a whole quantity.
  - Do not allow dust to mix into the circuit.
  - Clean the tank inside.
  - Supply the oil through the filter.

(4) Checking for the oil leakage

① Daily during the initial period after startup.

② Once a week when the operation becomes stable.

(5) Checking the temperature

① Monitor the temperature continuously.

② When the viscosity is above the allowable value because of low hydraulic oil temperature, warm-up operation is necessary.

Start the motor with the speed set to about one half of the rated speed, then operate the actuator under the load for a short period.

When the oil temperature is below the allowable ambient temperature, it is necessary to preheat the oil tank before start of the motor.

Take care not to allow the hydraulic oil temperature to exceed +90°C

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2. ELECTRICAL CIRCUIT DIAGRAM A-2 (Machine serial No : #0375 to #0860, include #0249, #0315, and #0355~#0366)

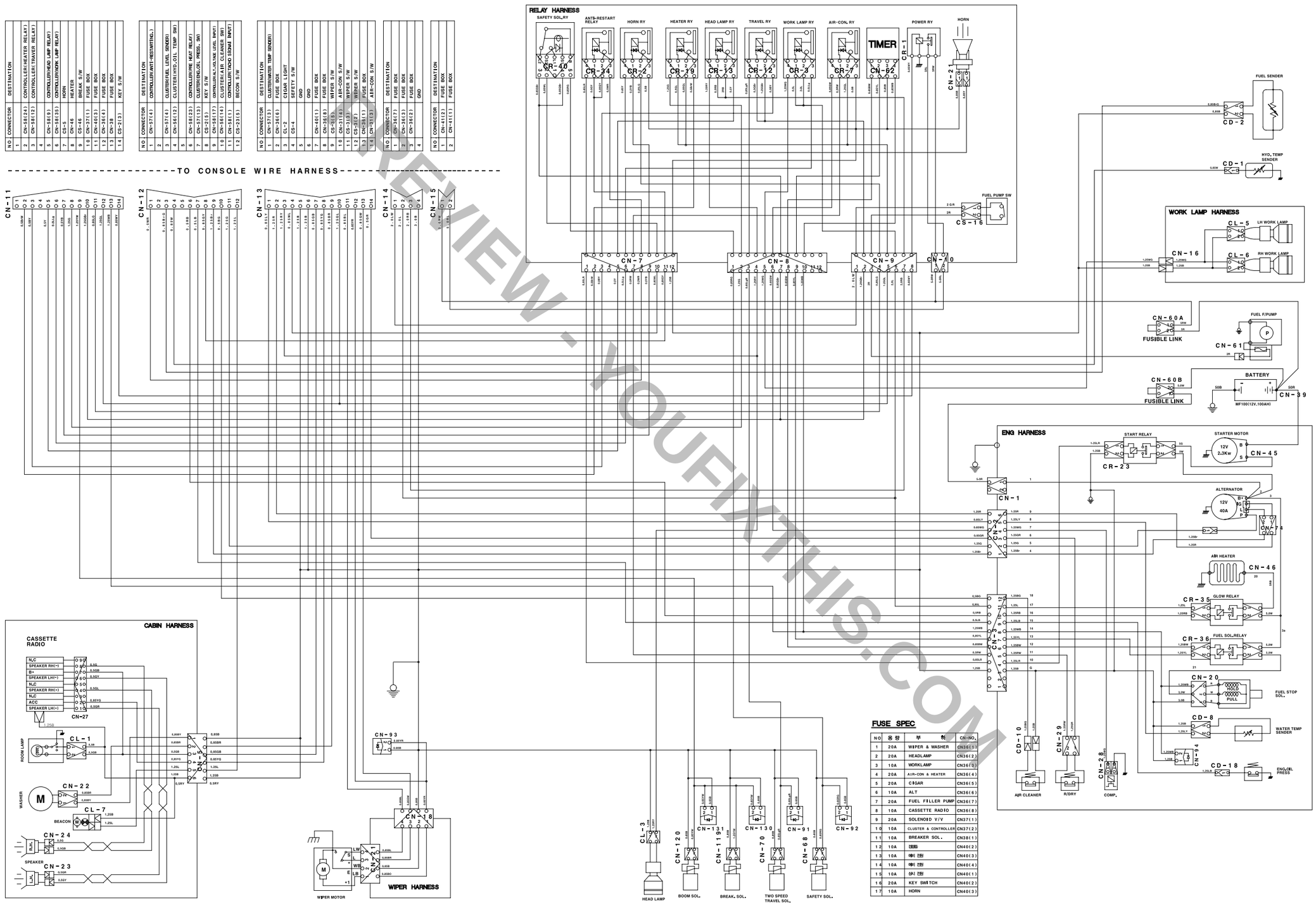
NO	CONNECTOR	DESTINATION
1		
2	CN-58(24)	CONTROLLER(HEATER RELAY)
3	CN-58(12)	CONTROLLER(TRAVER RELAY)
4		
5	CN-58(9)	CONTROLLER(HEAD LAMP RELAY)
6	CN-58(35)	CONTROLLER(WORK LAMP RELAY)
7	CN-58(7)	HORN
8	CN-46	HEATER
9	CS-46	BREAK S/W
10	CN-37(1)	FUSE BOX
11	CN-40(3)	FUSE BOX
12	CN-36(4)	FUSE BOX
13	CN-38	FUSE BOX
14	CS-21(3)	KEY S/W

NO	CONNECTOR	DESTINATION
1	CN-57(4)	CONTROLLER(ANTI-RESTARTING)
2		
3	CN-57(4)	CLUSTER(FUEL LEVEL SENDER)
4	CN-56(12)	CLUSTER(HYD.OIL TEMP. SW)
5		
6	CN-58(23)	CONTROLLER(PRE HEAT RELAY)
7	CN-57(13)	CLUSTER(ACCEL PRESS. SW)
8	CN-57(11)	KEY S/W
9	CN-58(17)	CONTROLLER(A/CON& LEVEL INPUT)
10	CN-56(14)	CLUSTER(AIR CLEANER SW)
11	CN-58(1)	CONTROLLER(TACHO SIGNAL INPUT)
12	CS-23(5)	BECON S/W

NO	CONNECTOR	DESTINATION
1	CN-57(5)	CLUSTER(WATER TEMP SENDER)
2	CN-57(6)	ALTERNATOR
3	CL-2	CIGAR LIGHT
4	CS-4	SAFETY S/W
5		GND
6		GND
7	CN-40(1)	FUSE BOX
8	CN-36(8)	FUSE BOX
9	CS-3(5)	WIPER S/W
10	CN-31(4)	AIR-CON S/W
11	CS-3(2)	WASHER S/W
12	CS-3(3)	WIPER S/W
13	CN-38(1)	FUSE BOX
14	CN-31(3)	AIR-CON S/W

NO	CONNECTOR	DESTINATION
1	CN-36(7)	FUSE BOX
2	CN-36(3)	FUSE BOX
3	CN-36(2)	FUSE BOX
4		GND

NO	CONNECTOR	DESTINATION
1	CN-41(2)	FUSE BOX
2	CN-41(1)	FUSE BOX



FUSE SPEC

NO	용 량	부 하	CN-NO.
1	20A	WIPER & WASHER	CN36(1)
2	20A	HEADLAMP	CN36(2)
3	10A	WORKLAMP	CN36(3)
4	20A	AIR-CON & HEATER	CN36(4)
5	20A	CIGAR	CN36(5)
6	10A	ALT	CN36(6)
7	20A	FUEL FILLER PUMP	CN36(7)
8	10A	CASSETTE RADIO	CN36(8)
9	20A	SOLENOID V/V	CN37(1)
10	10A	CLUSTER & CONTROLLER	CN37(2)
11	10A	BREAKER SOL.	CN38(1)
12	10A	경음기	CN40(2)
13	10A	에어 진한	CN40(3)
14	10A	에어 진한	CN40(4)
15	10A	와셔 진한	CN40(1)
16	20A	KEY SWITCH	CN40(2)
17	10A	HORN	CN40(3)

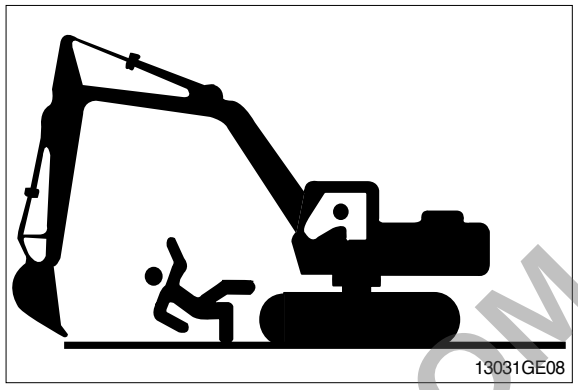
R55NM4EL24

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KEEP RIDERS OFF EXCAVATOR

Only allow the operator on the excavator. Keep riders off.

Riders on excavator are subject to injury such as being struck by foreign objects and being thrown off the excavator. Riders also obstruct the operator's view resulting in the excavator being operated in an unsafe manner.

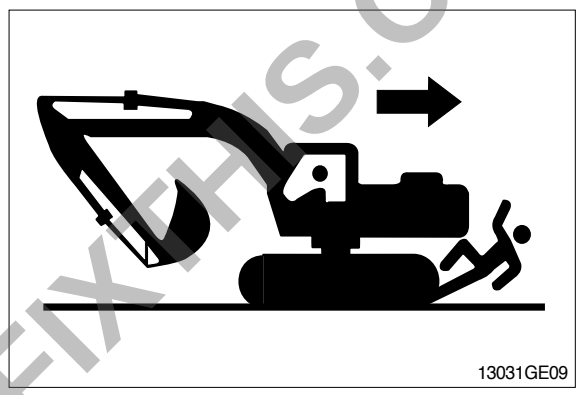


MOVE AND OPERATE MACHINE SAFELY

Bystanders can be run over. Know the location of bystanders before moving, swinging, or operating the machine.

Always keep the travel alarm in working condition. It warns people when the excavator starts to move.

Use a signal person when moving, swinging, or operating the machine in congested areas. Coordinate hand signals before starting the excavator.



OPERATE ONLY FORM OPERATOR'S SEAT

Avoid possible injury machine damage. Do not start engine by shorting across starter terminals.

NEVER start engine while standing on ground. Start engine only from operator's seat.



PARK MACHINE SAFELY

Before working on the machine:

- Park machine on a level surface.
- Lower bucket to the ground.
- Turn auto idle switch off.
- Run engine at 1/2 speed without load for 2 minutes.
- Turn key switch to OFF to stop engine. Remove key from switch.
- Move pilot control shutoff lever to locked position.
- Allow engine to cool.

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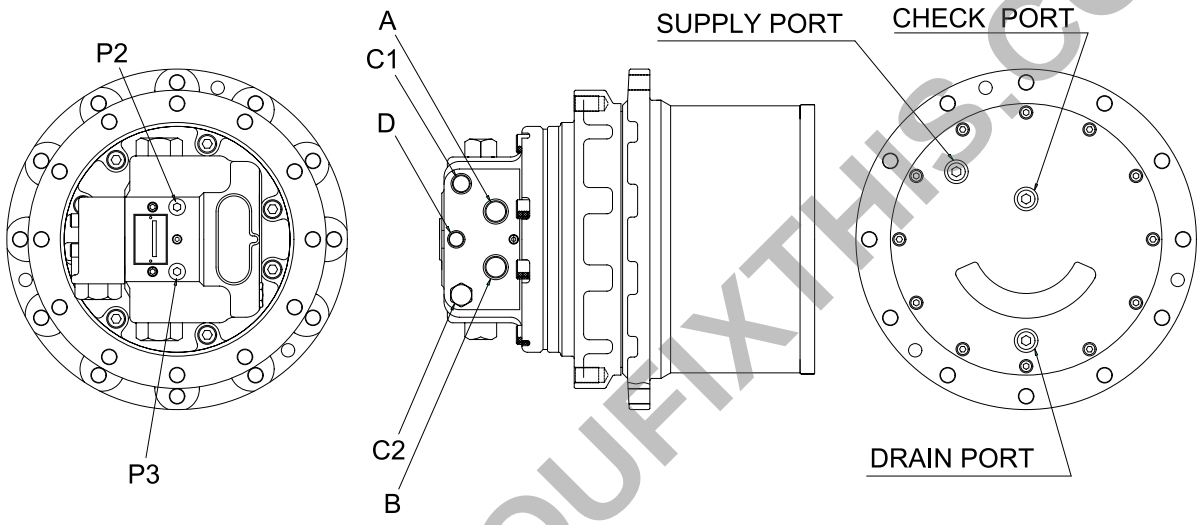
GROUP 4 TRAVEL DEVICE

A. TRAVEL MOTOR (GM09VL, UP TO #0697)

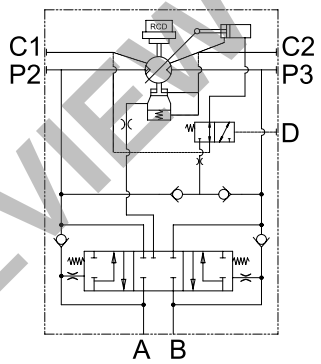
1. CONSTRUCTION

Travel device consists travel motor and gear box.

Travel motor includes brake valve, parking brake and high/low speed changeover mechanism.



R55NM2SF52



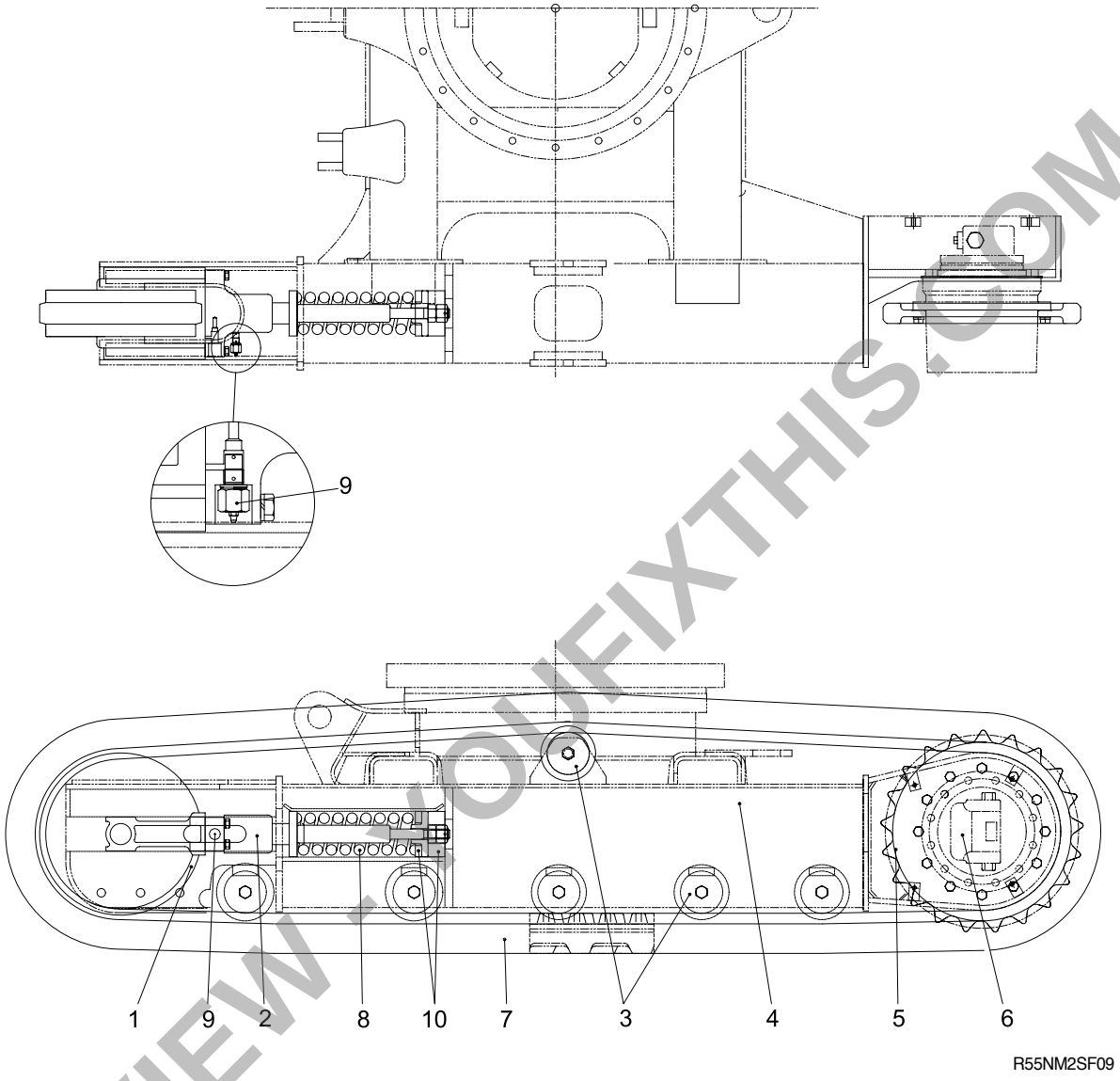
R55NM2SF55

Port	Port name	Port size
A, B	Main port	M24
C1, C2	Drain port	M20
P2, P3	Gauge port	PT 1/8
D	2-speed control port	M14

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2. RUBBER SHOE

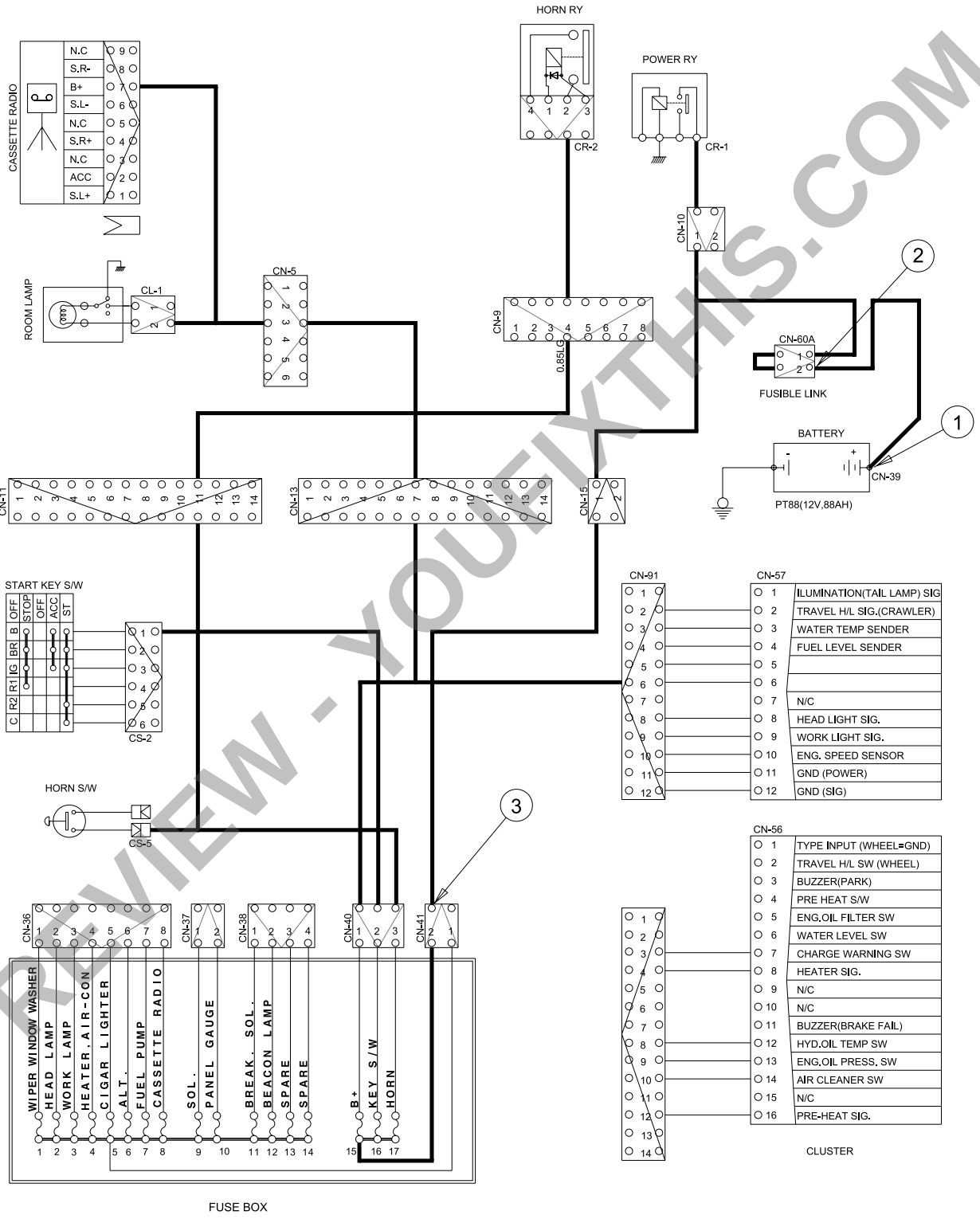


1	Idler	6	Travel motor
2	Plunger	7	Track shoe
3	Carrier roller/Track roller	8	Tension spring
4	Track frame	9	Lubricator
5	Sprocket	10	Spacer

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POWER CIRCUIT



R55NM4EL04

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(4) 4TNE106T

Engine name		Unit	4TNE106T					
Engine specification class		–	CL		VM			
Type		–	Vertical, in-line, 4-cycle, water-cooled diesel engine					
Combustion chamber		–	Direct injection					
Number of cylinders		–	4					
Cylinder bore × stroke		mm × mm	106 × 125					
Displacement		ℓ	4.412					
Continuous rating	Revolving speed	rpm	1500	1800	–			
	Output	kW (hp)	54.8 (73.4)	65.5 (87.8)	–			
Rated output	Revolving speed	rpm	1500	1800	2000	2200	2400	2500
	Output	kW (hp)	60.3 (80.8)	72.1 (96.6)	69.9 (93.7)	75.8 (101.6)	81.6 (109.3)	84.2 (112.8)
Fuel injection timing (FID, bTDC)		deg	11~13					
Fuel injection pressure		MPa (kgf/cm²)	21.57~ 22.55 (220~230)					
Ignition order		–	1–3–4–2 (No. 1 cylinder on flywheel side)					
Power take off		–	Flywheel					
Direction of rotation		–	Counterclockwise (viewed from flywheel)					
Cooling system		–	Radiator					
Lubrication system		–	Forced lubrication with trochoid pump					
Starting system		–	Electric					
Applicable fuel		–	Diesel oil-ISO 8217 DMA, BS 2869 A1 or A2 (cetane No. 45 min.)					
Applicable lubricant		–	API grade class CD					
Battery capacity		V-AH	12–88 (5HR) or above					
Lubricant capacity (oil pan)	Total	ℓ	12.5					
	Effective	ℓ	5.5					
Cooling water capacity (engine only)		ℓ	6.0					
Engine dimensions	Overall length	mm	789					
	Overall width	mm	547					
	Overall height	mm	855					
Engine weight (dry)		kg	306					

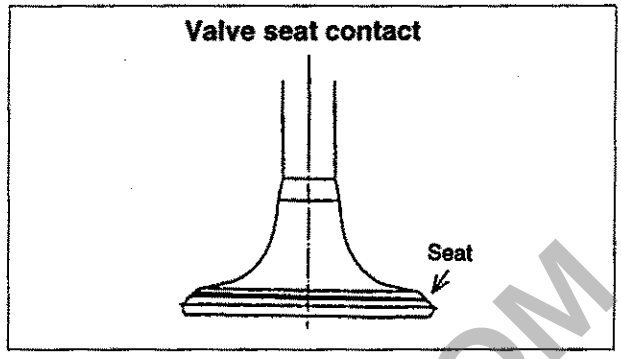
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(d) Seat contact

Apply a thin coat of minium on the valve seat. Insert the valve in the cylinder and push it against the seat to check seat contact.

Standard: Continuous contact all around



(5.2) Valve guide

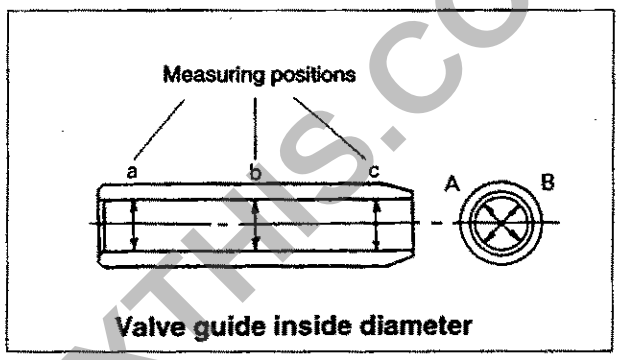
Mainly check damage and wear on the inside wall. Apply supply part code when replacing the part.

–	Service part code
4TNE94•98	129150-11810
4TNE106 (T)	119000-11170

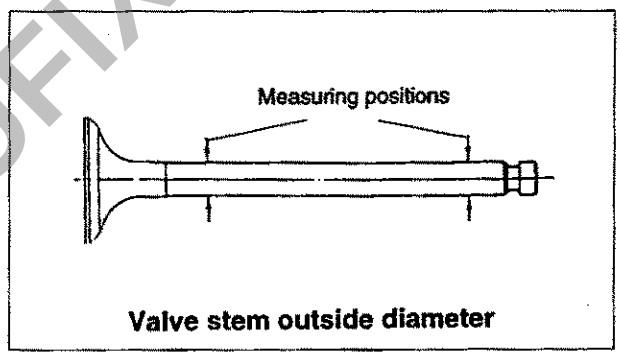
① Inside diameter

(mm)

–		Standard	Limit
4TNE94•98			
Intake value	Guide I.D.	8.015~8.030	8.100
	Stem O.D.	7.965~7.980	7.915
	Clearance	0.035~0.065	0.185
Exhaust value	Guide I.D.	8.015~8.030	8.100
	Stem O.D.	7.955~7.970	7.905
	Clearance	0.045~0.075	0.195
4TNE106 (T)			
Intake value	Guide I.D.	9.000~9.015	9.085
	Stem O.D.	8.950~8.965	8.900
	Clearance	0.035~0.065	0.185
Exhaust	Guide I.D.	9.000~9.015	9.085
	Stem O.D.	8.940~8.955	8.890
	Clearance	0.045~0.075	0.195



Valve guide inside diameter



Valve stem outside diameter

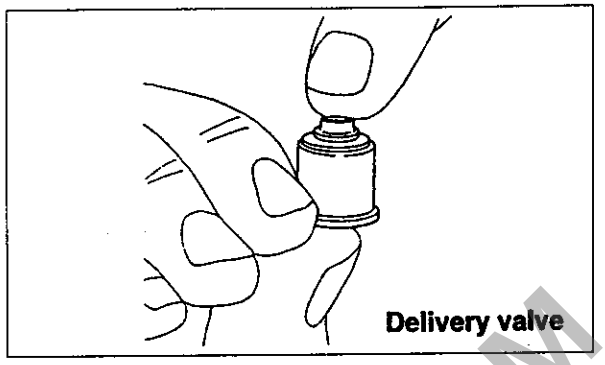
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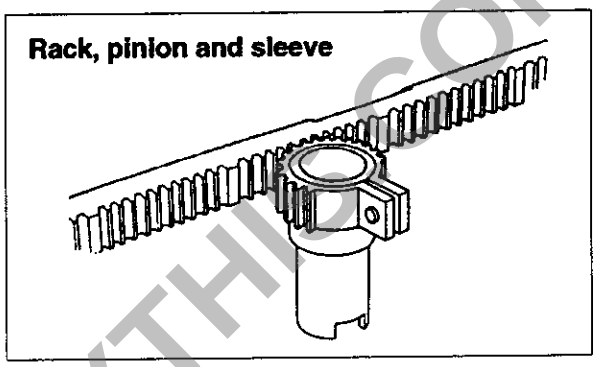
(6.4) Delivery valve

Mainly check for surface defect, corrosion and wear mainly at the piston.



Delivery valve

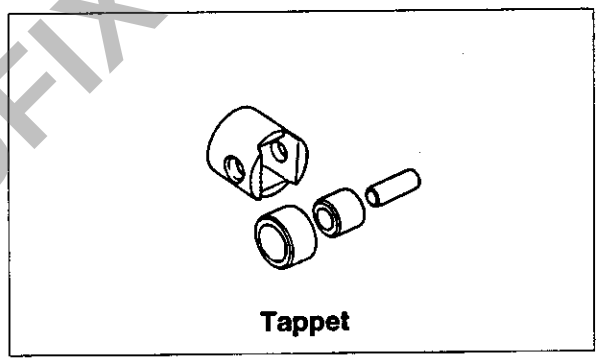
(6.5) Check mainly the control rack for bend, the pinion for wear and damage at the gear portion, and the sleeve for wear at the contact face with the plunger collar portion.



Rack, pinion and sleeve

(6.6) Tappet

Check mainly for wear and damage at the pin hole, roller, pin and bushing.



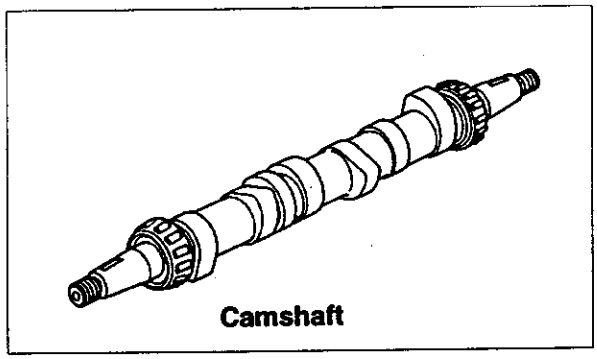
Tappet

(6.7) Camshaft

Check mainly the cam surface for damage and wear, the key groove and thread for deformation, and the shaft for bend.

(6.8) Bearing

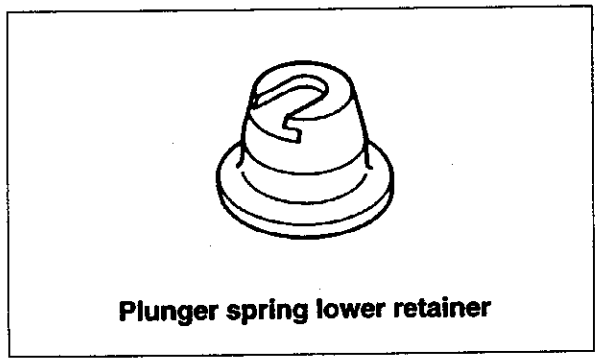
Check mainly the roller bearing for wear, and the outer race for surface defect.



Camshaft

(6.9) Plunger spring lower retainer

Check mainly the portion in contact with the plunger for deformation and wear.



Plunger spring lower retainer

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(b) Series coil continuity test

Check continuity between the S and M terminals. Good if continuity exists.

No continuity

(Coil disconnection)
Replace the magnetic switch.

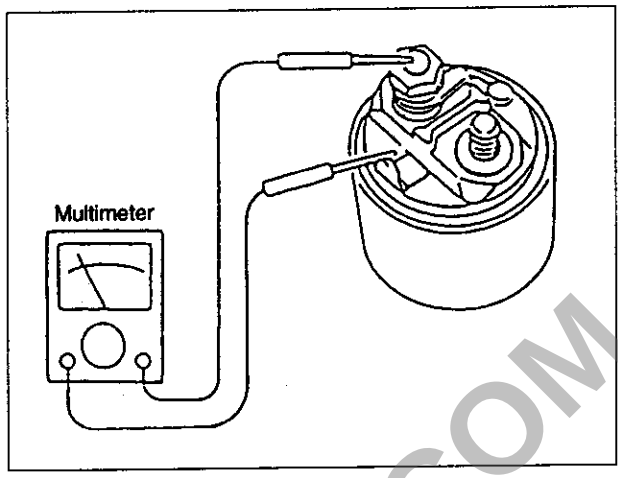


Fig. 22

(c) Contact continuity test

Depress the magnetic switch with the plunger at the bottom. Check continuity between the B and M terminals with a multimeter. Good if continuity exists.

No continuity

(Contact continuity defect)
Replace the magnetic switch.

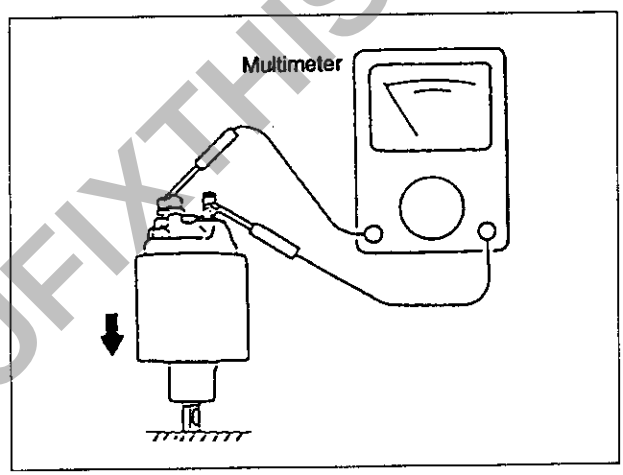


Fig. 23

(6) Pinion clutch

(a) Pinion inspection

Manually rotate the pinion. Inspect if it is rotated smoothly in the driving direction, and is locked in the opposite direction. Replace the pinion clutch if abnormal.

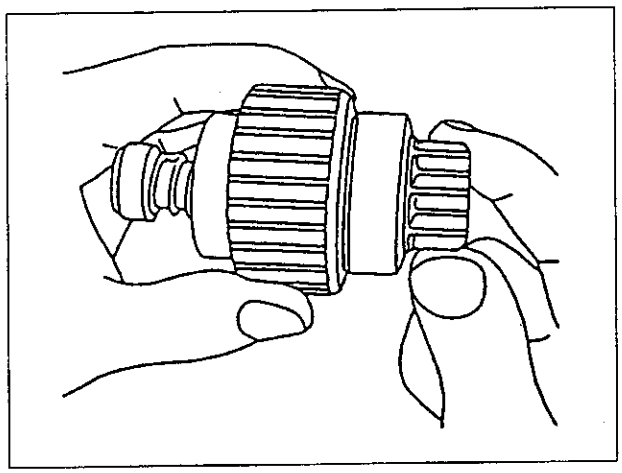


Fig. 24

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e) Extract the pin after the end of reassembly.

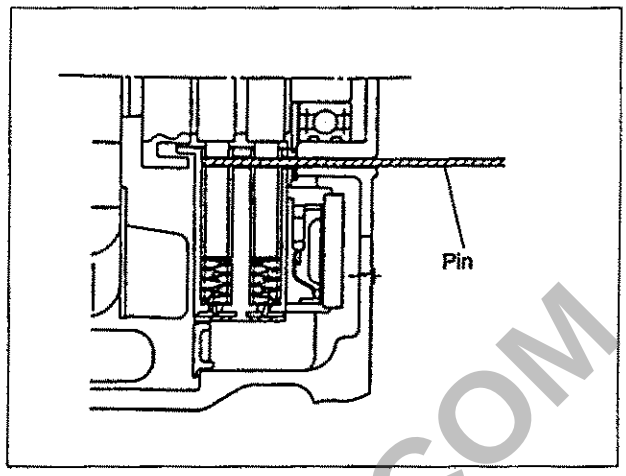
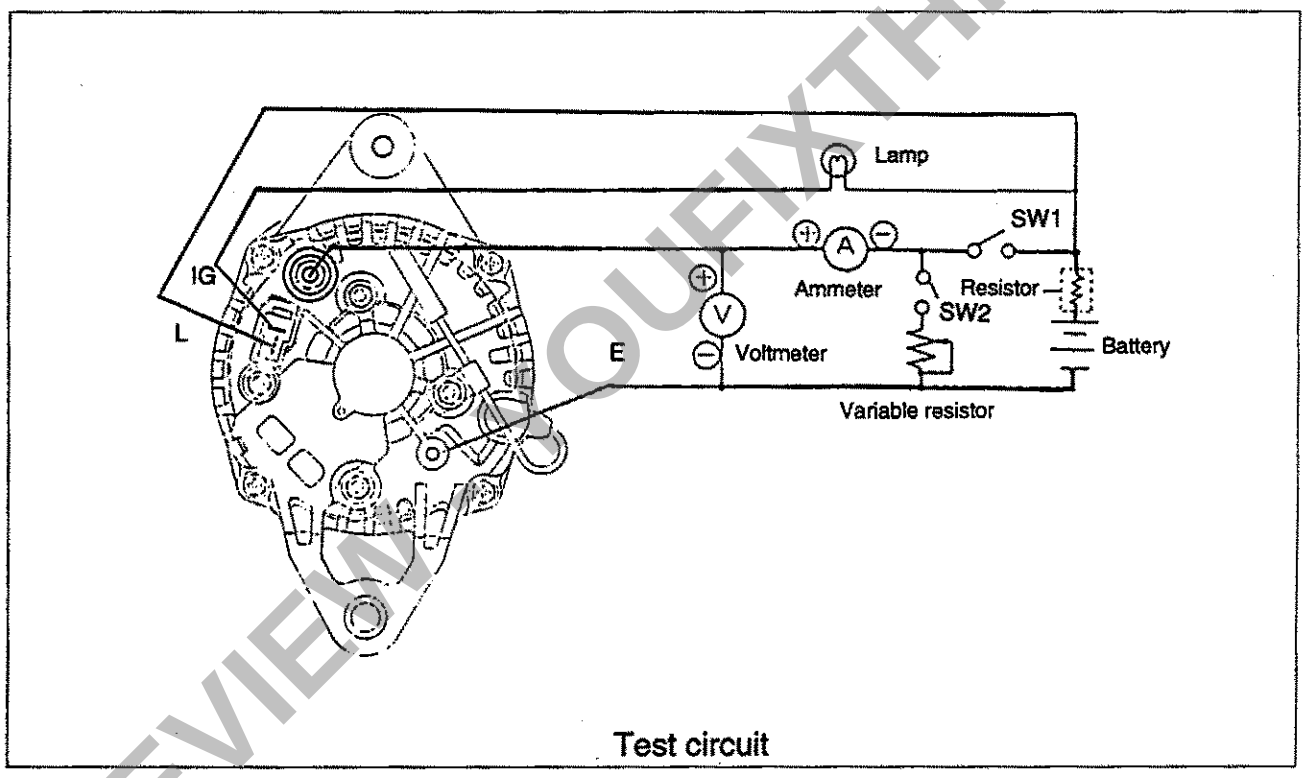


Fig. 29

10.2.7 Performance Test



Test circuit

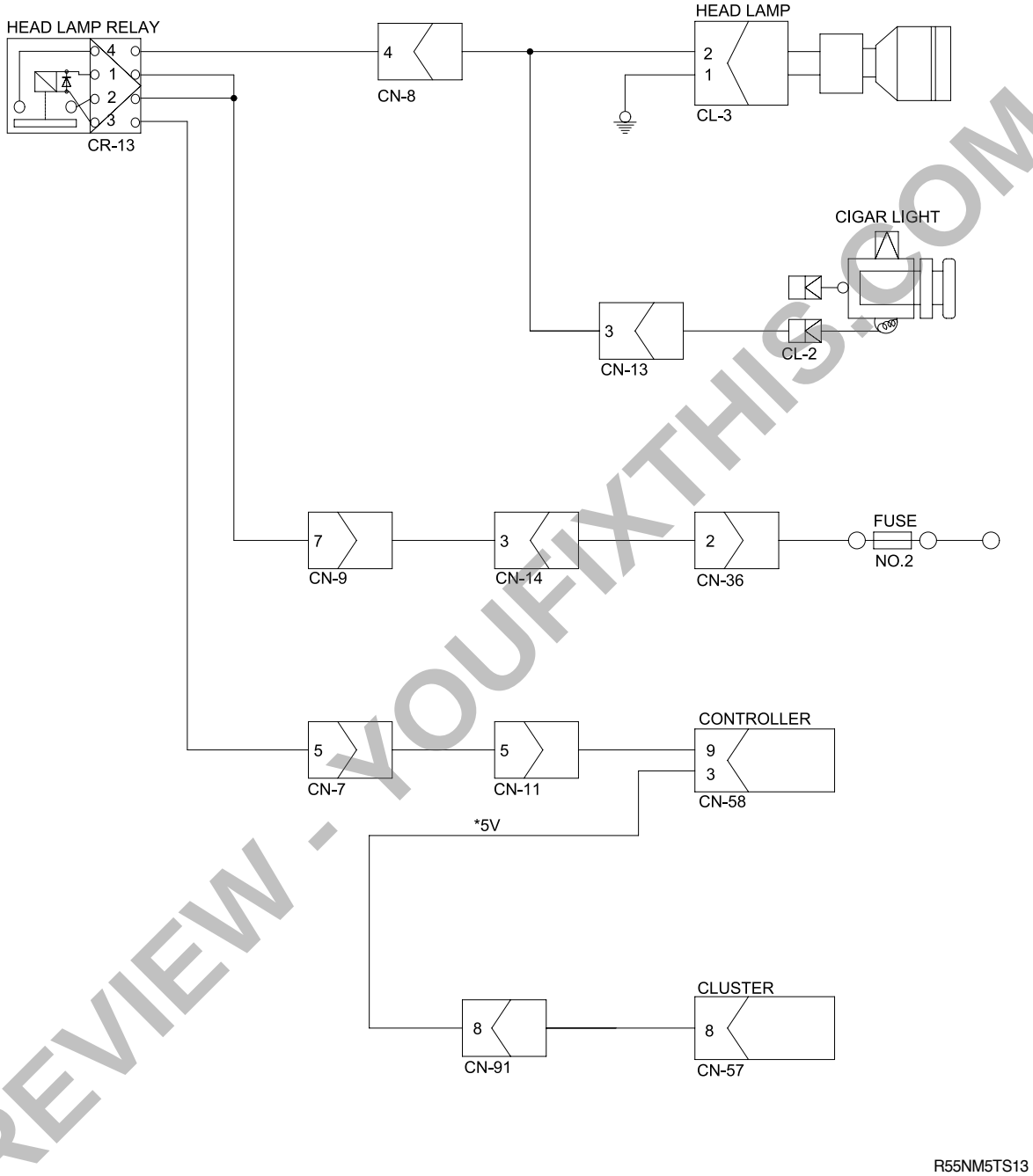
Note: 0.25 Ω resistor (Connect when the battery is discharged.)

Measuring instruments, etc.

- Voltmeter : 0.5 class DC voltmeter for 0 to 30 V.
- Ammeter : 1 class DC ammeter for 0 to 100 A.
- Variable resistor : 0 to 0.25 Ω, 1 kW variable resistor
- Resistor : 0.25 Ω, 25 W

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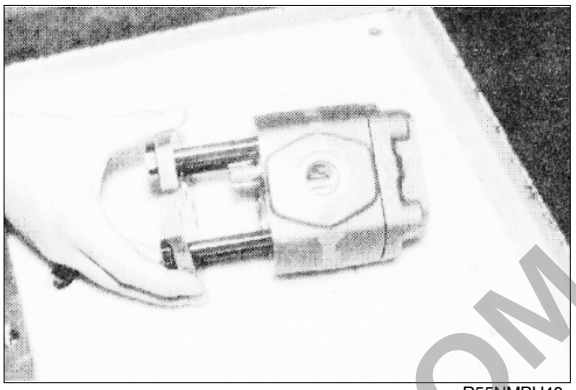
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(5) Remove the front frame.



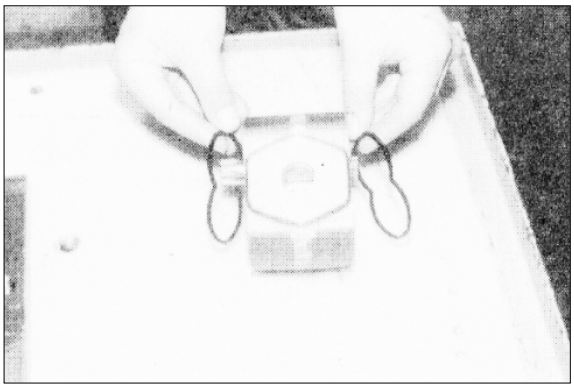
R55NMPH40

(6) Remove the intermediate frame.



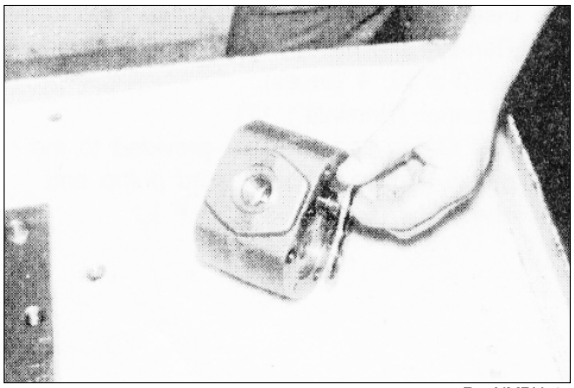
R55NMPH41

(7) Remove the square ring.



R55NMPH42

(8) Remove the plate, guide and O-ring.

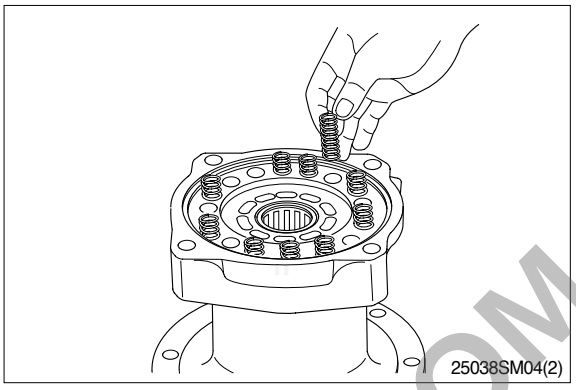


R55NMPH43

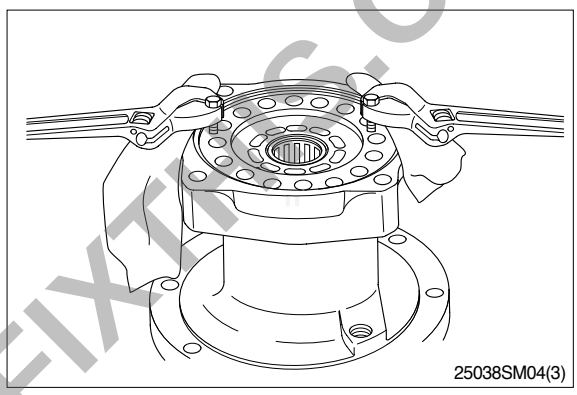
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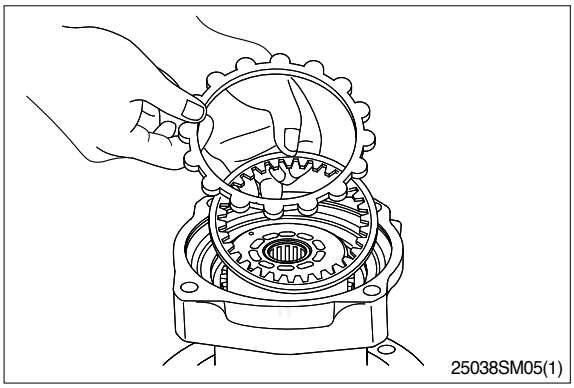
(9) Remove the spring from the piston for brake the inlet parts of needle bearing. Mark to recognize assembly position of spring.



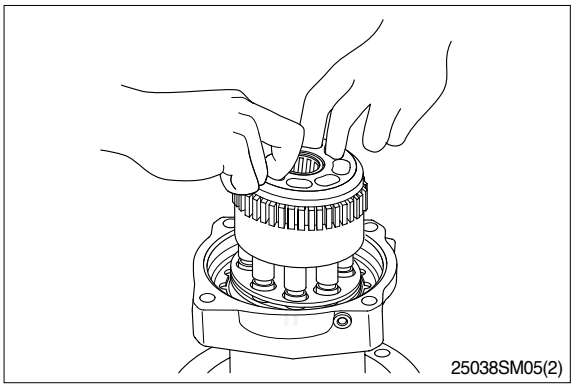
(10) Removal of the piston for brake.
It is difficult for piston th be removed from housing due to resistance, so it is necessary to use tap hole on the piston as shown on the picture.



(11) Remove friction plate and opposite plate.



(12) Removal of cylinder assembly.
Remove cylinder assembly from housing. Wrap the edge of cylinder in a smooth texture to prevent a damage.



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