CRAWLER EXCAVATOR

SERVICE MANUAL

R60CR-9A

HYUNDAI

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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 2-9
Group 3 Swing Device 2-31
Group 4 Travel Device 2-38
Group 5 RCV Lever 2-47

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 3-10
Group 5 Combined Operation 3-22

SECTION 4 ELECTRICAL SYSTEM

Group 1 Component Location 4-1
Group 2 Monitoring system 4-3
Group 3 Electrical Circuit 4-59
Group 4 Electrical Component Specification 4-75
Group 5 Connectors 4-82
Group 6 Fault codes 4-100

SECTION 5 TROUBLESHOOTING

Group 1 Before Troubleshooting 5-1
Group 2 Hydraulic and Mechanical System 5-4
Group 3 Electrical System 5-24

SECTION 6 MAINTENANCE STANDARD

Group 1 Operational Performance Test 6-1
Group 2 Major Components 6-21
Group 3 Track and Work Equipment 6-35

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SECTION 7 DISASSEMBLY AND ASSEMBLY

Group 1 Precaution 7-1
Group 2 Tightening Torque 7-4
Group 3 Pump Device 7-7
Group 4 Main Control Valve 7-38
Group 5 Swing Device 7-51
Group 6 Travel Device 7-74
Group 7 RCV Lever 7-102
Group 8 Turning Joint 7-116
Group 9 Boom, Arm and Bucket Cylinder 7-121
Group 10 Undercarriage 7-140
Group 11 Work Equipment 7-152

SECTION 8 COMPONENT MOUNTING TORQUE

Group 1 Introduction Guide 8-1
Group 2 Engine System 8-2
Group 3 Electric System 8-4
Group 4 Hydraulic System 8-5
Group 5 Undercarriage 8-7
Group 6 Structure 8-8
Group 7 Work Equipment 8-10

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3) GEAR PUMP (P3, P4)

Item	Specification
Type	Fixed displacement gear pump double stage
Capacity	18.3/4.5 cc/rev
Maximum pressure	220/30 kgf/cm² (3130/430 psi)
Rated oil flow	36.6/9 ℓ /min (9.7/2.4 U.S. gpm / 8.1/2.0 U.K. gpm)

4) MAIN CONTROL VALVE

Item	Specification
Type	Sectional, 10 spools+1 option
Operating method	Hydraulic pilot system+Mechanical control system
Main relief valve pressure	220 kgf/cm² (3130 psi)
Overload relief valve pressure	240 kgf/cm² (3410 psi)

5) SWING MOTOR

Item	Specification	
Type	Fixed displacement axial piston motor	
	Type 1	Type 2
Capacity	28 cc/rev	31.5 cc/rev
Gear ratio	23.2	19.46
Relief pressure	220 kgf/cm² (3130 psi)	220 kgf/cm² (3130 psi)
Braking torque	11.8 kgf · m (85 lbf · ft)	14.5 kgf · m (105 lbf · ft)
Brake release pressure	30–50 kgf/cm² (427–711 psi)	12–20 kgf/cm² (171–284 psi)
Reduction gear type	2 - stage planetary	2 - stage planetary
Braking system	Automatic, spring applied hydraulic released	

6) TRAVEL MOTOR

Item	Specification
Type	Variable displacement axial piston motor
Relief pressure	220 kgf/cm² (3130 psi)
Reduction gear type	2-stage planetary
Braking system	Automatic, spring applied hydraulic released
Brake release pressure	9 kgf/cm² (128 psi)
Braking torque	8.4 kgf · m (61 lbf · ft)
Capacity (1st speed / 2nd speed)	43.7 / 22.7 cc/rev
Gear ratio	53.706

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(4) Emergency warning lamp



21090CC00

① This lamp pops up and the buzzer sounds when each of the below warnings are happened.
- Engine coolant overheating (over 115˚C)
- Hydraulic oil overheating (over 105˚C)
- MCU input voltage abnormal
- Accel dial circuit abnormal or open

※ The pop-up warning lamp moves to the original position and lights ON when the buzzer stop switch is pushed or pop-up is touched. Also the buzzer stops.
This is same as following warning lamps.

② When this warning lamp lights ON, machine must be checked and serviced immediately.

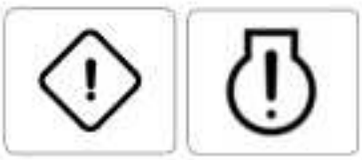
(5) Engine oil pressure warning lamp



21090CC02

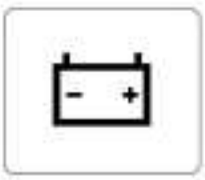
① This lamp lights ON when the engine oil pressure is low.
② If the lamp lights ON, shut OFF the engine immediately. Check oil level.

(6) Check engine warning lamp



① This lamp lights ON when the communication between MCU and engine ECM on the engine is abnormal, or if the cluster received any fault code from engine ECM.
② Check the communication line between them.
If the communication line is OK, then check the fault codes on the cluster.
③ Also, this lamp pops up when the level of DPF soot is high.
※ Refer to the page 4-8 for the DPF warning lamp.

(7) Battery charging warning lamp



21090CC04

① This lamp lights ON when the battery charging voltage is low.
② Check the battery charging circuit when this lamp is ON.

(8) Air cleaner warning lamp



① This lamp lights ON when the filter of air cleaner is clogged.
② Check the filter and clean or replace it.

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GROUP 2 HYDRAULIC AND MECHANICAL SYSTEM

1. INTRODUCTION

1) MACHINE IN GENERAL

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

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

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

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

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

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(8) The following operations should be carried out if necessary.

① Loosen the ROH plug (302) and remove the restrictor (310).

※ If there is no problem with the 1st / 2nd speed switching, no special disassembly is required.



② Release ROH plug (302) and disassemble in the following order: Seat casing (433) → steel ball (503) → seat (432).

※ If there is no problem with the 1st / 2nd speed switching, no special disassembly is required. Please be careful about the loss of the steel ball. Please be careful not to damage the inner diameter of the seat casing and seat.



(9) Loosen socket bolt (301) and remove valve casing (201) from casing (202).

※ (Due to the force of the brake spring E (117), when the socket bolt (301) is unscrewed, the valve casing (201) is raised from the casing (202). Further, remove the valve plate (108) from the valve casing (201).



Carefully work so that the valve plate does not fall off the valve casing.

※ In some cases, the valve plate is attached to the cylinder block.
Be careful not to scratch the sliding surface and mating surface when you disassemble the mating surface with a screwdriver or the like.



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(2) Cylinder block

① Disassemble set plate (17), piston assembly (18) from cylinder block assembly (11).



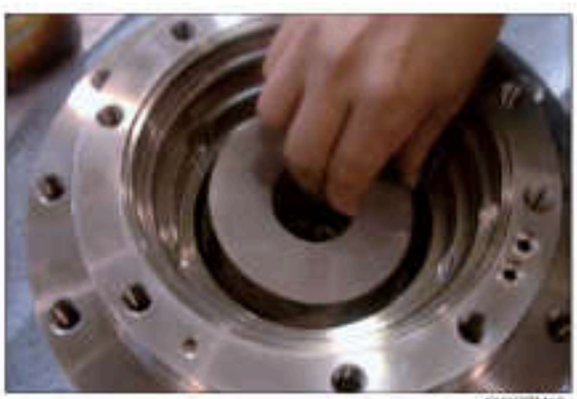
② Disassemble cylinder block (11), ball guide (16) and pin (15) in that order.



③ Put the cylinder block (11) on the air assembling jig and dissemble snap ring (14) by using a plier.
Dissemble spring seat (12), spring (13) and spring seat (12) in that order.

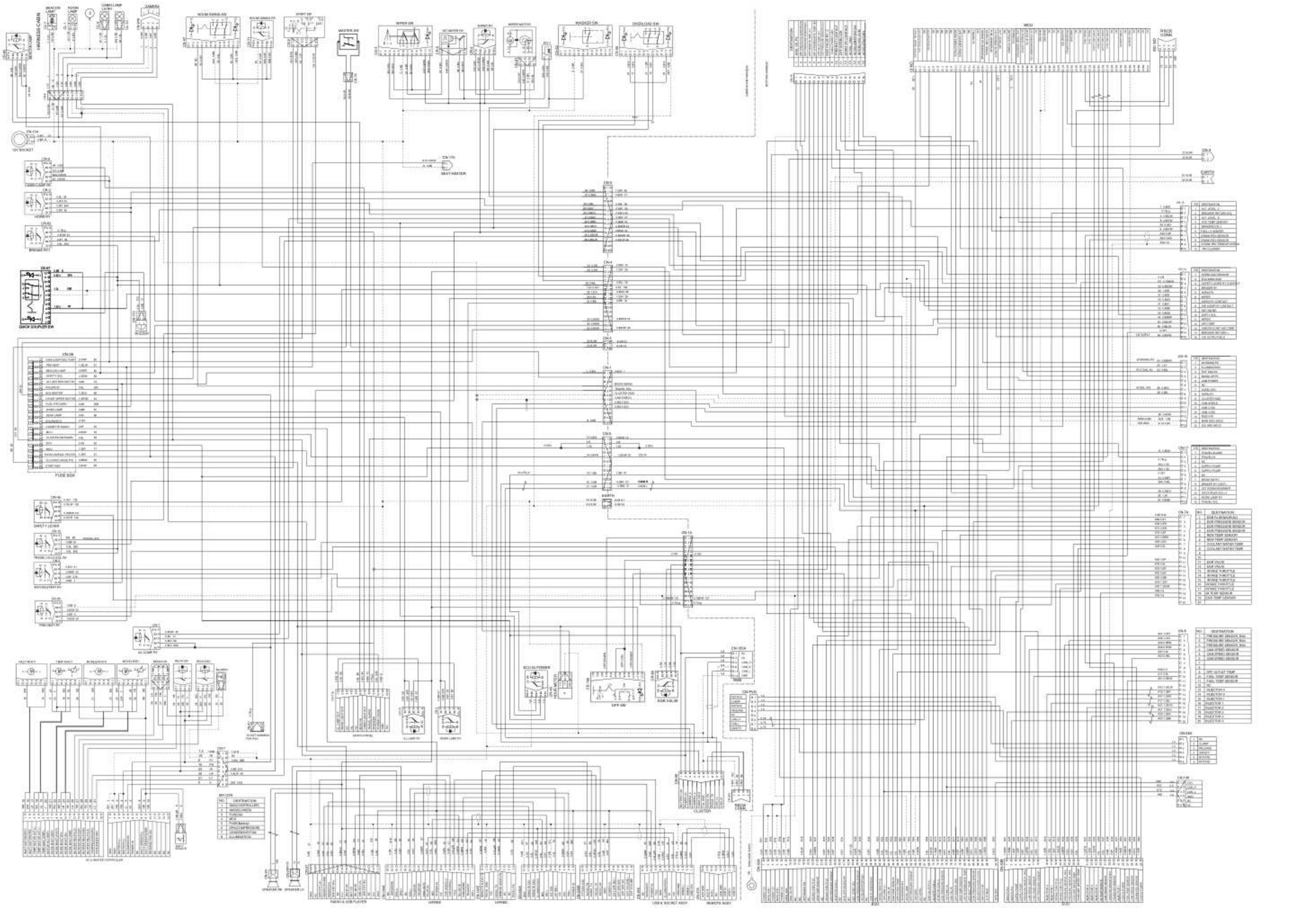


④ Disassemble shoe plate (10) from shaft casing (1).



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- MACHINE SERIAL NO. : #2077-



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