CRAWLER EXCAVATOR

SERVICE MANUAL

R220LC-9 (India)

HYUNDAI

MidWestTech | Hyundai R220LC-9 (India) Crawler Excavator Service Manual | Publication... Order the manual at mid-west-tech.com >

CONTENTS

SECTION 1 GENERAL

Group 1 Safety Hints 1-1
Group 2 Specifications 1-10

SECTION 2 STRUCTURE AND FUNCTION

Group 1 Pump Device 2-1
Group 2 Main Control Valve 2-20
Group 3 Swing Device 2-54
Group 4 Travel Device 2-76
Group 5 RCV Lever 2-98
Group 6 RCV Pedal 2-105

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 3-14
Group 5 Combined Operation 3-24

SECTION 4 ELECTRICAL SYSTEM

Group 1 Component Location 4-1
Group 2 Electric Circuit 4-3
Group 3 Electrical Component Specification 4-21
Group 4 Connectors 4-29

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 Variable Power Control System 5-11

MidWestTech | Hyundai R220LC-9 (India) Crawler Excavator Service Manual | Publica... Order the manual at mid-west-tech.com >

Group 9 Attachment Flow Control System 5-12
Group 10 Anti-Restart System 5-13
Group 11 Self-Diagnostic System 5-14
Group 12 Engine Control System 5-18
Group 13 EPPR (Electro Proportional Pressure Reducing) Valve 5-19
Group 14 Monitoring System 5-24
Group 15 Fuel Warmer System 5-47

SECTION 6 TROUBLESHOOTING

Group 1 Before Troubleshooting 6-1
Group 2 Hydraulic and Mechanical System 6-4
Group 3 Electrical System 6-24
Group 4 Mechatronics System 6-56

SECTION 7 MAINTENANCE STANDARD

Group 1 Operational Performance Test 7-1
Group 2 Major Components 7-21
Group 3 Track and Work Equipment 7-31

SECTION 8 DISASSEMBLY AND ASSEMBLY

Group 1 Precaution 8-1
Group 2 Tightening Torque 8-4
Group 3 Pump Device 8-7
Group 4 Main Control Valve 8-30
Group 5 Swing Device 8-51
Group 6 Travel Device 8-106
Group 7 RCV Lever 8-170
Group 8 Turning Joint 8-184
Group 9 Boom, Arm and Bucket Cylinder 8-189
Group 10 Undercarriage 8-206
Group 11 Work Equipment 8-218

MidWestTech | Hyundai R220LC-9 (India) Crawler Excavator Service Manual | Publica... Order the manual at mid-west-tech.com >

SECTION 9 COMPONENT MOUNTING TORQUE

Group 1 Introduction guide 9-1
Group 2 Engine system 9-2
Group 3 Electric system 9-5
Group 4 Hydraulic system 9-8
Group 5 Undercarriage 9-11
Group 6 Structure 9-13
Group 7 Work equipment 9-17

MidWestTech | Hyundai R220LC-9 (India) Crawler Excavator Service Manual | Publica... Order the manual at mid-west-tech.com >

4. WEIGHT

1) R220LC-9

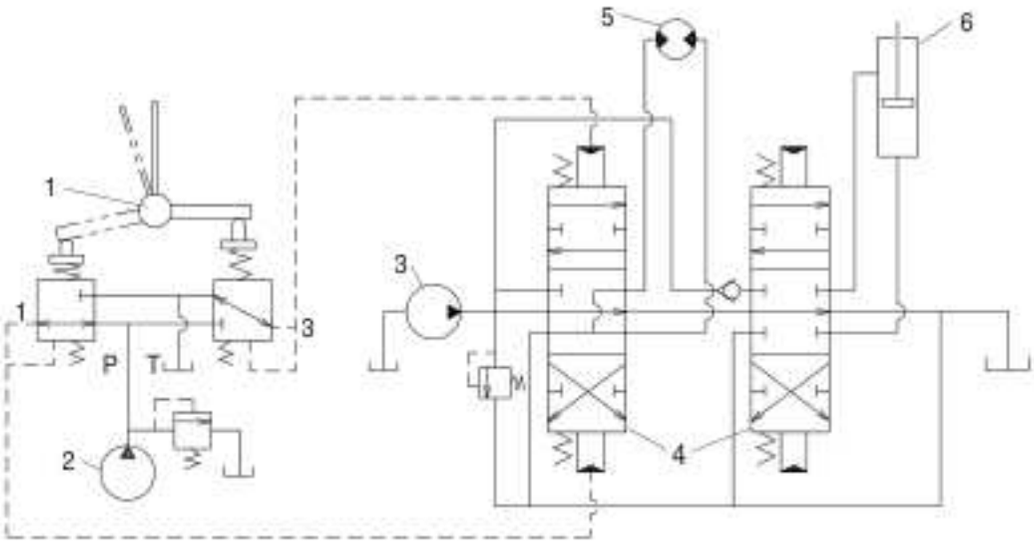
Item	R220LC-9	
	kg	lb
Upperstructure assembly	8950	19730
Main frame weld assembly	1720	3790
Engine assembly	530	1170
Main pump assembly	120	265
Main control valve assembly	200	440
Swing motor assembly	190	420
Hydraulic oil tank assembly	240	530
Fuel tank assembly	195	430
Counterweight	3800	8380
Cab assembly	440	970
Lower chassis assembly	8700	19180
Track frame weld assembly	2720	6000
Swing bearing	260	570
Travel motor assembly	305	670
Turning joint	55	120
Track recoil spring	140	310
Idler	170	370
Carrier roller	20	45
Track roller	50	110
Track-chain assembly (600 mm standard triple grouser shoe)	1400	3090
Front attachment assembly (5.68 m boom, 2.92 m arm, 0.92 m^3 SAE heaped bucket)	4005	8830
5.68 m boom assembly	1530	3370
2.92 m arm assembly	670	1480
0.92 m^3 SAE heaped bucket	810	1790
Boom cylinder assembly	180	400
Arm cylinder assembly	290	640
Bucket cylinder assembly	175	390
Bucket control link assembly	170	370

MidWestTech | Hyundai R220LC-9 (India) Crawler Excavator Service Manual | Publica... Order the manual at mid-west-tech.com >

3) OPERATION

The operation of the pilot valve will be described on the basis of the hydraulic circuit diagram shown below and the attached operation explanation drawing.

The diagram shown below is the typical application example of the pilot valve.



2-70

1	Pilot valve	3	Main pump	5	Hydraulic motor
2	Pilot pump	4	Main control valve	6	Hydraulic cylinder

MidWestTech | Hyundai R220LC-9 (India) Crawler Excavator Service Manual | Publica... Order the manual at mid-west-tech.com >

3. MACHINE ERROR CODES TABLE

Error code		Description
HCESPN	FMI	
101	3	Hydraulic oil temperature sensor circuit - Voltage above normal, or shorted to high source.
	4	Hydraulic oil temperature circuit - Voltage below normal, or shorted to low source.
105	0	Working pressure sensor data above normal range.
	1	Working pressure sensor data below normal range.
	2	Working pressure sensor data error.
	4	Working pressure sensor circuit - Voltage below normal, or shorted to Low source.
108	0	Travel oil pressure sensor data above normal range.
	1	Travel oil pressure sensor data below normal range.
	2	Travel oil pressure sensor data error.
	4	Travel oil pressure sensor circuit - Voltage below normal, or shorted to low source.
120	0	Main pump 1 (P1) pressure sensor data above normal range.
	1	Main pump 1 (P1) pressure sensor data below normal range.
	2	Main pump 1 (P1) pressure sensor data error.
	4	Main pump 1 (P1) pressure sensor circuit - Voltage below normal, or shorted to low source.
121	0	Main pump 2 (P2) pressure sensor data above normal range.
	1	Main pump 2 (P2) pressure sensor data below normal range.
	2	Main pump 2 (P2) pressure sensor data error.
	4	Main pump 2 (P2) pressure sensor circuit - Voltage below normal, or shorted to low source.
122	0	Overhead pressure sensor data above normal range.
	1	Overhead pressure sensor data below normal range.
	2	Overhead pressure sensor data error.
	4	Overhead pressure sensor circuit - Voltage below normal, or shorted to low source.
123	0	Negative 1 pressure sensor data above normal range.
	1	Negative 1 pressure sensor data below normal range.
	2	Negative 1 pressure sensor data error.
	4	Negative 1 pressure sensor circuit - Voltage below normal, or shorted to low source.
124	0	Negative 2 Pressure sensor data above normal range.
	1	Negative 2 Pressure sensor data below normal range.
	2	Negative 2 Pressure sensor data error.
	4	Negative 2 Pressure sensor circuit - Voltage below normal, or shorted to low source.
125	0	Pilot pump (P3) pressure sensor data above normal range.
	1	Pilot pump (P3) pressure sensor data below normal range.
	2	Pilot pump (P3) pressure sensor data error.
	4	Pilot pump (P3) pressure sensor circuit - Voltage below normal, or shorted to low source.
127	0	Boom up pilot pressure sensor data above normal range.
	1	Boom up pilot pressure sensor data below normal range.
	2	Boom up pilot pressure sensor data error.
	4	Boom up pilot pressure sensor circuit - Voltage below normal, or shorted to low source.
135	0	Swing pilot pressure sensor data above normal range.
	1	Swing pilot pressure sensor data below normal range.
	2	Swing pilot pressure sensor data error.
	4	Swing pilot pressure sensor circuit - Voltage below normal, or shorted to low source.

※ Some error codes are not applied to this model.

MidWestTech | Hyundai R220LC-9 (India) Crawler Excavator Service Manual | Publica... Order the manual at mid-west-tech.com >

3) ASSEMBLING PINION GEAR SUB ASSY

(1) Prepare drive shaft pinion gear vertical with ground.

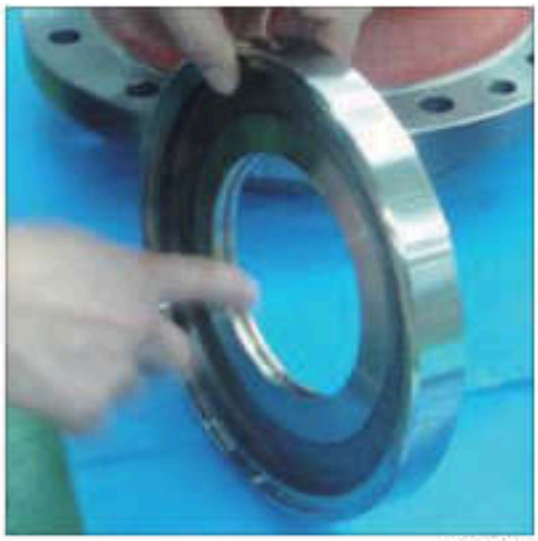


2209A03M21

(2) Fully apply grease (albania EP02) to O-ring groove of sleeve.

※ Be sure to maintain it vertical with ground when assembling it.

(3) Put O-ring into O-ring groove of sleeve. Fully apply grease on O-ring.



2209A03M22

(4) Assemble taper bearing and sleeve into drive shaft using press jig.
Use special jig for pressing. Leave no space between sleeve and taper bearing.

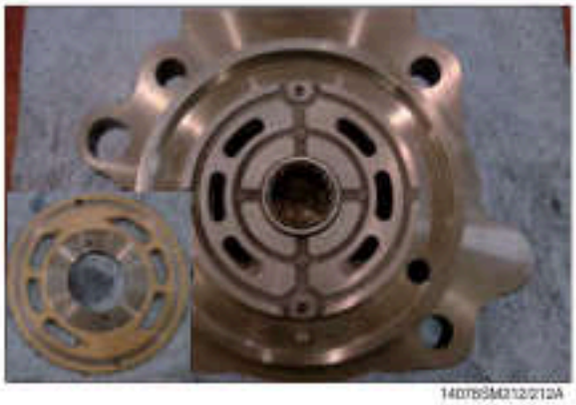


2209A03M23

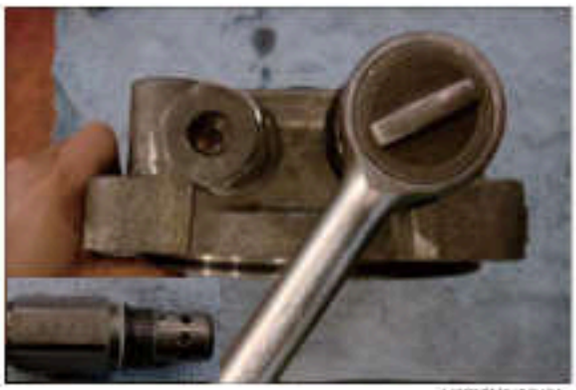
MidWestTech | Hyundai R220LC-9 (India) Crawler Excavator Service Manual | Publica... Order the manual at mid-west-tech.com >

(3) Disassemble rear cover assy sub

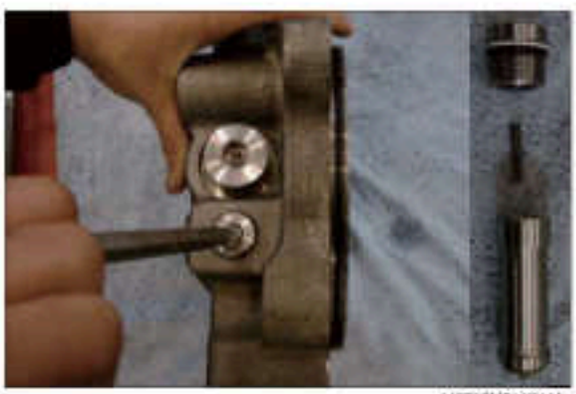
① Disassemble pin (8, 23), valve plate (24) from rear cover (21).



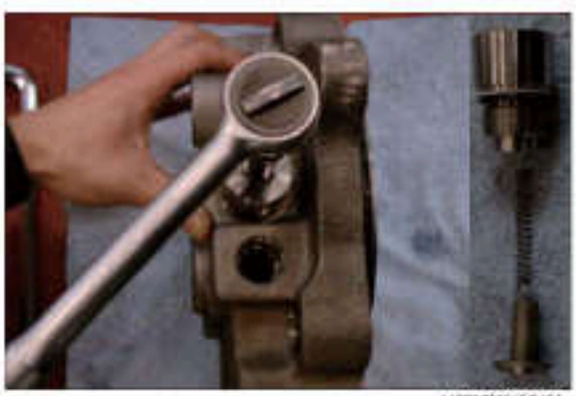
② Using a torque wrench, disassemble relief valve assy (33) 2 set from rear cover (21).



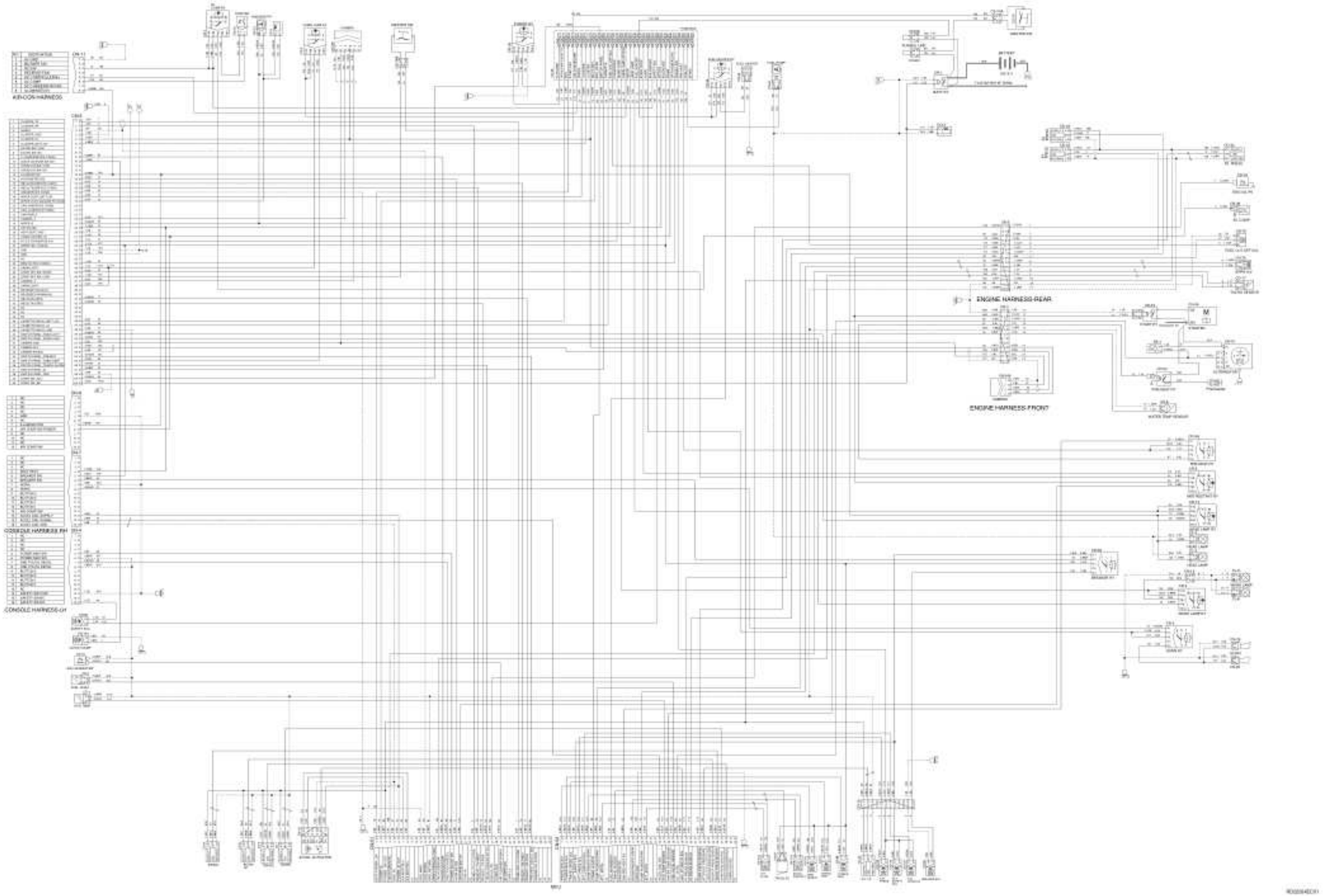
③ After disassembling plug with a L-wrench from rear cover (21), disassemble respectively back up ring, O-ring, O-ring, spring, anti-inversion valve assy (34)



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



MidWestTech | Hyundai R220LC-9 (India) Crawler Excavator Service Manual | Publica... Order the manual at mid-west-tech.com >



MidWestTech | Hyundai R220LC-9 (India) Crawler Excavator Service Manual | Publication R220LC-9 (India)
Order the manual at mid-west-tech.com >