CRAWLER EXCAVATOR

SERVICE MANUAL

R60CR-9

HYUNDAI

MidWestTech | Hyundai R60CR-9 Crawler Excavator Service Manual | Publication R60CR-9

Order the manual at mid-west-tech.com >

4. WEIGHT

Item	kg	lb
Upperstructure assembly	2895	6380
Main frame weld assembly	570	1260
Engine assembly	280	620
Main pump assembly	30	65
Main control valve assembly	40	90
Swing motor assembly	50	110
Hydraulic oil tank assembly	60	130
Fuel tank assembly	55	120
Boom swing post	135	300
Counterweight	470	1040
Cab assembly	350	770
Lower chassis assembly	2275	5020
Track frame weld assembly	790	1740
Swing bearing	90	200
Travel motor assembly	80 × 2	180 × 2
Turning joint	30	65
Track recoil spring	20	45
Idler & tension body	60	130
Carrier roller	10	20
Track roller	10	20
Sprocket	20	45
Track-chain assembly (380 mm standard triple grouser shoe)	320	710
Dozer blade assembly	210	460
Front attachment assembly (3.0 m boom, 1.6 m arm, 0.18 m^3 SAE heaped bucket)	730	1610
2.9 m boom assembly	240	530
1.48 m arm assembly	120	260
0.18 m^3 SAE heaped bucket	170	370
Boom cylinder assembly	70	150
Arm cylinder assembly	55	120
Bucket cylinder assembly	35	80
Bucket control link assembly	40	90
Dozer cylinder assembly	35	80
Boom swing cylinder assembly	70	150

MidWestTech | Hyundai R60CR-9 Crawler Excavator Service Manual | Publication R6... Order the manual at mid-west-tech.com >

5. LIFTING CAPACITIES

1) 2.9 m (9' 6") boom, 1.48 m (4' 10") arm equipped with 0.18 m³ (SAE heaped) bucket and 380 mm (15") triple grouser shoe, the dozer blade down with 470 kg (1040 lb) counterweight.

· : Rating over-front · : Rating over-side or 360 degree

Load point height		Load radius								At max. reach		
		2.0 m (7 ft)		3.0 m (10 ft)		4.0 m (13 ft)		5.0 m (16 ft)		Capacity		Reach
												m (ft)
4.0 m (13 ft)	kg					*1120	*1120			*1050	790	4.99
	lb					*2470	*2470			*2310	1740	(16.4)
3.0 m (10 ft)	kg					*1180	*1130			*1080	640	5.56
	lb					*2600	*2490			*2380	1410	(18.2)
2.0 m (7 ft)	kg			*1890	*1710	*1430	1080	*1250	740	*1120	580	5.82
	lb			*4170	*3770	*3150	2380	*2760	1630	*2470	1280	(19.1)
1.0 m (3 ft)	kg			*2670	1580	*1740	1020	*1360	720	*1160	560	5.84
	lb			*5890	3480	*3840	2250	*3000	1590	*2560	1230	(19.2)
Ground Line	kg	*1980	*1980	*3000	1520	*1930	980	*1430	700	*1190	590	5.61
	lb	*4370	*4370	*6610	3350	*4250	2160	*3150	1540	*2620	1300	(18.4)
-1.0 m (-3 ft)	kg	*3230	3030	*2890	1500	*1910	970			*1210	690	5.09
	lb	*7120	6680	*6370	3310	*4210	2140			*2670	1520	(16.7)
-2.0 m (-7 ft)	kg	*3960	3080	*2370	1530					*1110	990	4.12
	lb	*8730	6790	*5220	3370					*2450	2180	(13.5)

Note 1. Lifting capacity are based on SAE J1097 and ISO 10567.
2. Lifting capacity of the ROBEX series does not exceed 75% of tipping load with the machine on firm, level ground or 87% of full hydraulic capacity.
3. The load point is a hook located on the back of the bucket.
4. *indicates load limited by hydraulic capacity.

MidWestTech | Hyundai R60CR-9 Crawler Excavator Service Manual | Publication R6... Order the manual at mid-west-tech.com >

2) 2.9 m (9' 6") boom, 1.48 m (4' 10") arm equipped with 0.18 m³ (SAE heaped) bucket and 380 mm (15") triple grouser shoe, the dozer blade up with 470 kg (1040 lb) counterweight.

· : Rating over-front · : Rating over-side or 360 degree

Load point height		Load radius								At max. reach		
		2.0 m (7.0 ft)		3.0 m (10.0 ft)		4.0 m (13.0 ft)		5.0 m (16.0 ft)		Capacity		Reach
												m (ft)
4.0 m (13.0 ft)	kg					*1120	1070			1040	740	4.99
	lb					*2470	2360			2290	1630	(16.4)
3.0 m (10.0 ft)	kg					*1180	1060			860	600	5.56
	lb					*2600	2340			1900	1320	(18.2)
2.0 m (7.0 ft)	kg			*1890	1600	1430	1010	990	690	780	540	5.82
	lb			*4170	3530	3150	2230	2180	1520	1720	1190	(19.1)
1.0 m (3.0 ft)	kg			2150	1470	1370	960	970	670	770	520	5.84
	lb			4740	3240	3020	2120	2140	1480	1700	1150	(19.2)
Ground Line	kg	*1980	*1980	2080	1410	1330	920	950	650	810	550	5.61
	lb	*4370	*4370	4590	3110	2930	2030	2090	1430	1790	1210	(18.4)
-1.0 m (-3.0 ft)	kg	*3230	2770	2070	1400	1320	900			940	650	5.09
	lb	*7120	6110	4560	3090	2910	1980			2070	1430	(16.7)
-2.0 m (-7.0 ft)	kg	*3960	2820	2090	1420					*1110	920	4.12
	lb	*8730	6220	4610	3130					*2450	2030	(13.5)

MidWestTech | Hyundai R60CR-9 Crawler Excavator Service Manual | Publication R6... Order the manual at mid-west-tech.com >

8. SPECIFICATIONS FOR MAJOR COMPONENTS

1) ENGINE

Item	Specification
Model	Yanmar 4TNV98-EPHYBU
Type	4-cycle diesel engine, low emission
Cooling method	Water cooling
Number of cylinders and arrangement	4 cylinders, in-line
Firing order	1-3-4-2
Combustion chamber type	Direct injection type
Cylinder bore×stroke	98 × 110 mm (3.85" × 4.33")
Piston displacement	3319 cc (203 cu in)
Compression ratio	18.5 : 1
Rated gross horse power (SAE J1995)	57.0 Hp at 2400 rpm (42.5 kW at 2400 rpm)
Maximum torque at 1550 rpm	20.5 kgf · m (148 lbf · ft)
Engine oil quantity	11.6 ℓ (3.1 U.S. gal)
Dry weight	270 kg (595 lb)
High idling speed	2200±50 rpm
Low idling speed	1050 ± 100 rpm
Rated fuel consumption	175.6 g/Hp · hr at 2400 rpm
Starting motor	12 V-3.0 kW
Alternator	12 V-80 A
Battery	1 × 12 V × 100 Ah

2) MAIN PUMP (P1, P2)

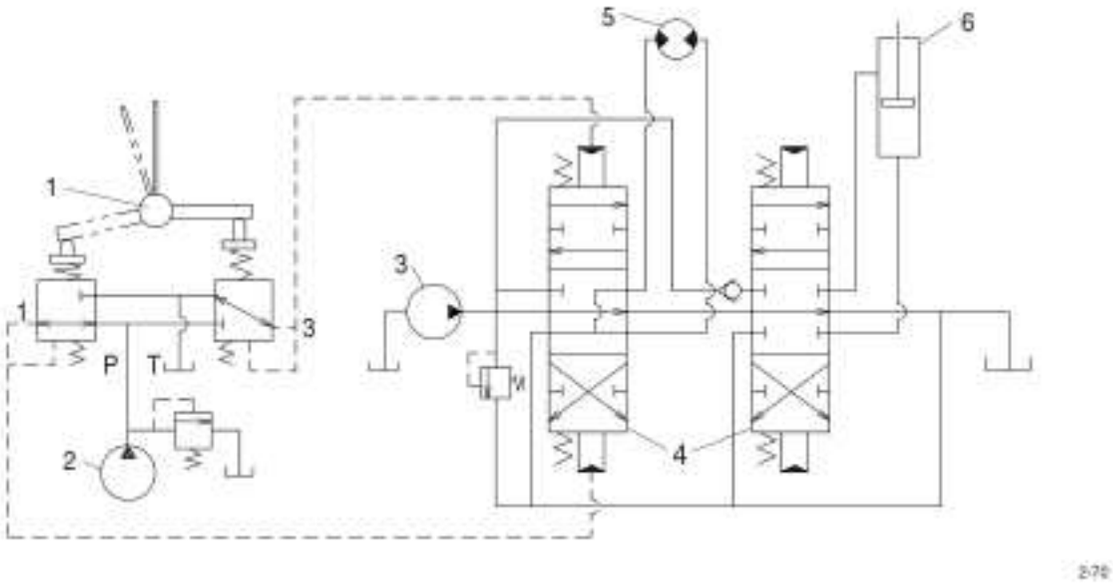
Item	Specification
Type	Variable displacement axis piston pumps
Capacity	2 × 27.5 cc/rev
Maximum pressure	220 kgf/cm² (3130 psi)
Rated oil flow	2 × 57.8 ℓ/min (15.3 U.S. gpm / 12.7 U.K. gpm)
Rated speed	2100 rpm

MidWestTech | Hyundai R60CR-9 Crawler Excavator Service Manual | Publication R6... 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.



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

MidWestTech | Hyundai R60CR-9 Crawler Excavator Service Manual | Publication R6... Order the manual at mid-west-tech.com >

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 and Electrical system system.

At each system part, an operator can check the machine according to the troubleshooting process diagram.



MidWestTech | Hyundai R60CR-9 Crawler Excavator Service Manual | Publication R6... Order the manual at mid-west-tech.com >

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

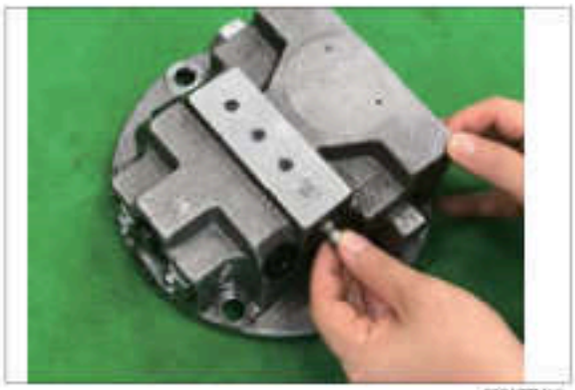
① Loosen the ROH plug (302) and remove the restrictor (310).

※ 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.



MidWestTech | Hyundai R60CR-9 Crawler Excavator Service Manual | Publication R6... Order the manual at mid-west-tech.com >

(2) Cylinder block

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



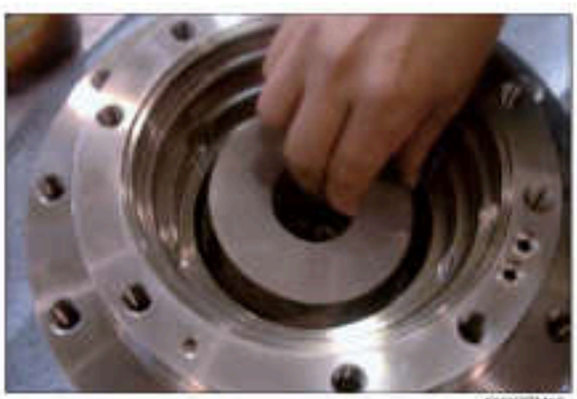
② Disassemble cylinder block (11), ball guide (16) and pin (15) in that order.



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.

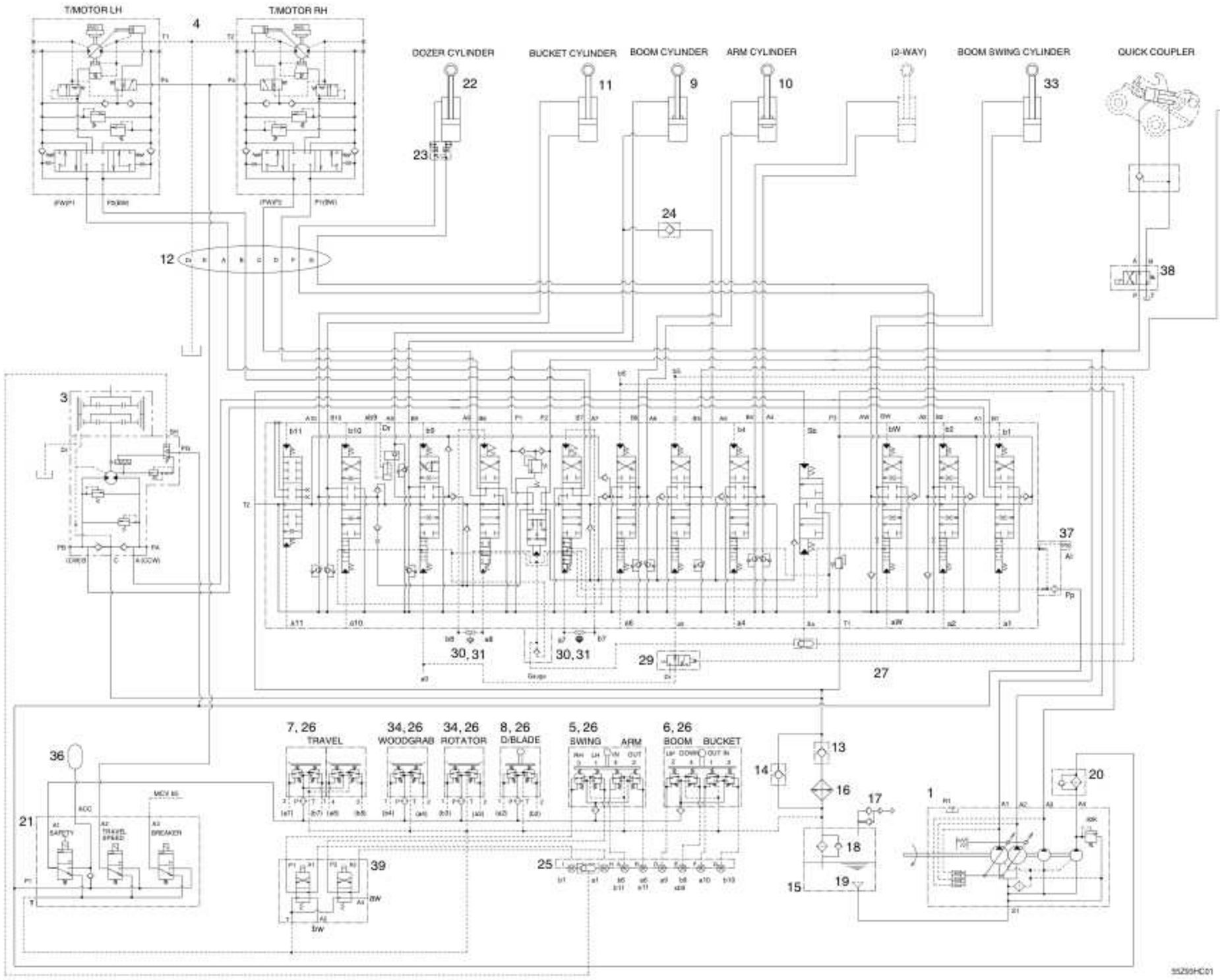


④ Disassemble shoe plate (10) from shaft casing (1).



MidWestTech | Hyundai R60CR-9 Crawler Excavator Service Manual | Publication R6... Order the manual at mid-west-tech.com >

GROUP 1 HYDRAULIC CIRCUIT



1 Main pump
2 Main control valve
3 Swing motor
4 Travel motor
5 RCV lever (LH)
6 RCV lever (RH)
7 RCV pedal
8 RCV dozer
9 Boom cylinder
10 Arm cylinder
11 Bucket cylinder
12 Turning joint
13 Check valve
14 Check valve
15 Hydraulic tank
16 Oil cooler
17 Air breather
18 Bypass valve & return element
19 Suction strainer
20 Pilot filter
21 Solenoid valve
22 Dozer cylinder
23 Check valve
24 Check valve
25 Terminal
26 Last guard filter
27 Shuttle valve
28 Stop valve
29 Solenoid valve
30 Pressure switch
31 Shuttle valve
33 Boom swing cylinder (option)
34 2 way pedal (option)
36 Accumulator
37 Pressure sensor
38 Solenoid valve (option)
39 Solenoid valve

MidWestTech | Hyundai R60CR-9 Crawler Excavator Service Manual | Publication R60CR-9
Order the manual at mid-west-tech.com >