CRAWLER EXCAVATOR

SERVICE MANUAL

R450LC-3

HYUNDAI

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4. WEIGHT

Item	R450-3		R450LC-3	
	kg	lb	kg	lb
Upperstructure assembly	17790	39220	17790	39220
Main frame weld assembly	3080	6790	←	
Engine assembly	950	2090	←	
Main pump assembly	190	420	←	
Main control valve assembly	420	930	←	
Swing motor assembly	200	440	←	
Hydraulic oil tank assembly	340	1410	←	
Fuel tank assembly	240	520	←	
Counterweight	9000	19840	←	
Cab assembly	275	610	←	
Lower chassis assembly	17250	38030	18150	40010
Track frame weld assembly	7100	15660	7390	16300
Swing bearing	540	1190	←	
Travel motor assembly	423	930	←	
Turning joint	50	110	←	
Track recoil spring and idler	320	710	←	
Idler	210	460	←	
Carrier roller	40	80	←	
Track roller	80	180	←	
Track-chain assembly (standard triple grouser shoe)	5590	12300	6050	13330
Front attachment assembly (7.06m boom, 3.38m arm, 2.09m³ PCSA heaped bucket)	8360	18430	←	
7.06m boom assembly	3300	7270	←	
3.38m arm assembly	1640	3620	←	
2.09m³ PCSA heaped bucket	1610	3550	←	
Boom cylinder assembly	400	880	←	
Arm cylinder assembly	540	1190	←	
Bucket cylinder assembly	340	750	←	
Bucket control rod assembly	120	260	←	

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(6) 6.55m(21' 6") boom, 2.4m(7' 10") arm equipped with 2.57m³(PCSA heaped) bucket and 750mm (30") triple grouser shoe.

Load point height		Load radius								At max. reach		
		3.0m(10ft)		4.5m(15ft)		6.0m(20ft)		7.5m(25ft)		Capacity		Reach
												m(ft)
6.0m (20ft)	kg							*9630	8260	*8050	5580	9.44
	lb							*21230	18210	*17750	12300	(31.0)
4.5m (15ft)	kg			*16110	*16110	*12200	11540	*10180	7990	*8060	4980	9.90
	lb			*35520	*35520	*26900	25440	*22440	17610	*17770	10980	(32.5)
3.0m (10ft)	kg			*19190	16710	*13630	10840	*10860	7640	*8120	4700	10.07
	lb			*42310	36840	*30050	23900	*23940	16840	*17900	10360	(33.0)
1.5m (5ft)	kg			*20490	15760	*14610	10270	*11370	7330	*8170	4680	9.98
	lb			*45170	34740	*32210	22640	*25070	16160	*18010	10320	(32.7)
Ground line	kg			*19980	15480	*14790	9940	*11440	7120	*8140	4940	9.60
	lb			*44050	34130	*32610	21910	*25220	15700	*17950	10890	(31.5)
-1.5m (-5ft)	kg	*22370	*22370	*18380	15500	*14030	9850	*10790	7060	*7890	5600	8.91
	lb	*49320	*49320	*40520	34170	*30930	21720	*23790	15540	*17390	12350	(29.2)
-3.0m (-10ft)	kg	*19140	*19140	*15660	*15660	*12140	9950					
	lb	*42200	*42200	*34520	*34520	*26760	21940					
-4.5m (-15ft)	kg			*11140	*11140							
	lb			*24560	*24560							

(7) 9.00m(29' 6") boom, 4.50m(14' 9") arm equipped with 1.35m³(PCSA heaped) bucket and 750mm(30") triple grouser shoe.

Load point height		Load radius												At max. reach		
		3.0m(10ft)		4.5m(15ft)		6.0m(20ft)		7.5m(25ft)		9.0m(30ft)		10.5m(35ft)		Capacity		Reach
																m(ft)
6.0m (20ft)	kg									*6530	6420	*4990	4690	*5610	3420	12.40
	lb									*14400	14150	*11000	10340	*12370	7540	(40.7)
4.5m (15ft)	kg							*7780	*7780	*6990	6150	*6460	4560	*5630	3140	12.73
	lb							*17150	*17150	*15410	13560	*14240	10050	*12410	6920	(41.8)
3.0m (10ft)	kg			*14520	*14520	*10770	*10770	*8780	7960	*7560	5830	*6750	4380	5640	2990	12.86
	lb			*32010	*32010	*23740	*23740	*19360	17550	*16670	12850	*14880	9660	12430	6590	(42.2)
1.5m (5ft)	kg			*17550	16230	*12420	10480	*9740	7420	*8120	5510	*7040	4190	5620	2960	12.79
	lb			*38690	35780	*27380	23100	*21470	16360	*17900	12150	*15520	9240	12390	6530	(42.0)
Ground line	kg	*11140	*11140	*19160	15120	*13560	9790	*10470	6990	*8550	5230	*7210	4030	*5730	3040	12.51
	lb	*24560	*24560	*42240	33330	*29890	21580	*23080	15410	*18850	11530	*15900	8880	*12630	6700	(41.0)
-1.5m (-5ft)	kg	*14110	*14110	*19420	14630	*14020	9370	*10810	6690	*8710	5040	*7140	3930	*5710	3260	12.01
	lb	*31110	*31110	*42810	32250	*30910	20660	*23830	14750	*19200	11110	*15740	8660	*12590	7190	(39.4)
-3.0m (-10ft)	kg	*17960	*17960	*18610	14520	*13740	9200	*10640	6550	*8460	4960			*5580	3680	11.26
	lb	*39590	*39590	*41030	32010	*30290	20280	*23460	14440	*18650	10930			*12300	8110	(36.9)
-4.5m (-15ft)	kg	*22830	*22830	*16790	14660	*12640	9240	*9770	6570	*7460	5020			*5220	4450	10.19
	lb	*50330	*50330	*37020	32320	*27870	20370	*21540	14480	*16450	11070			*11510	9810	(33.4)
-6.0m (-20ft)	kg	*18550	*18550	*13690	*13690	*10410	9480	*7730	6790					*4260	*4260	8.64
	lb	*40900	*40900	*30180	*30180	*22950	20900	*17040	14970					*9390	*9390	(28.3)

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5. ABNORMALITY CODE

Code	Description	Display
00	Normal	*00*
01	Short circuit in governor motor system	*01*
02	Open circuit in governor motor system	*02*
03	Short circuit in potentiometer system	*03*
04	Open circuit in potentiometer system	*04*
05	Short circuit in EPPR valve system	*05*
06	Open circuit in EPPR valve system	*06*
07	Short circuit in 2-stage relief solenoid system	*07*
08	Open circuit in 2-stage relief solenoid system	*08*
09	Short circuit in travel speed solenoid system	*09*
10	Open circuit in travel speed solenoid system	*10*
11	Short circuit in swing lock solenoid system	*11*
12	Open circuit in swing lock solenoid system	*12*
15	Short circuit in Cut-off cancel solenoid system	*15*
16	Open circuit in Cut-off cancel solenoid system	*16*
17	Abnormality in engine speed sensor system	*17*
18	Open circuit in continuous battery power system	*18*
19	Below 18V of input voltage	*19*
20	Open circuit in cluster input voltage	*20*
21	Abnormality in engine rpm setting	*21*
22	Malfunction of CPU controller	*22*
	Open circuit in power source system	*88 (OFF)*

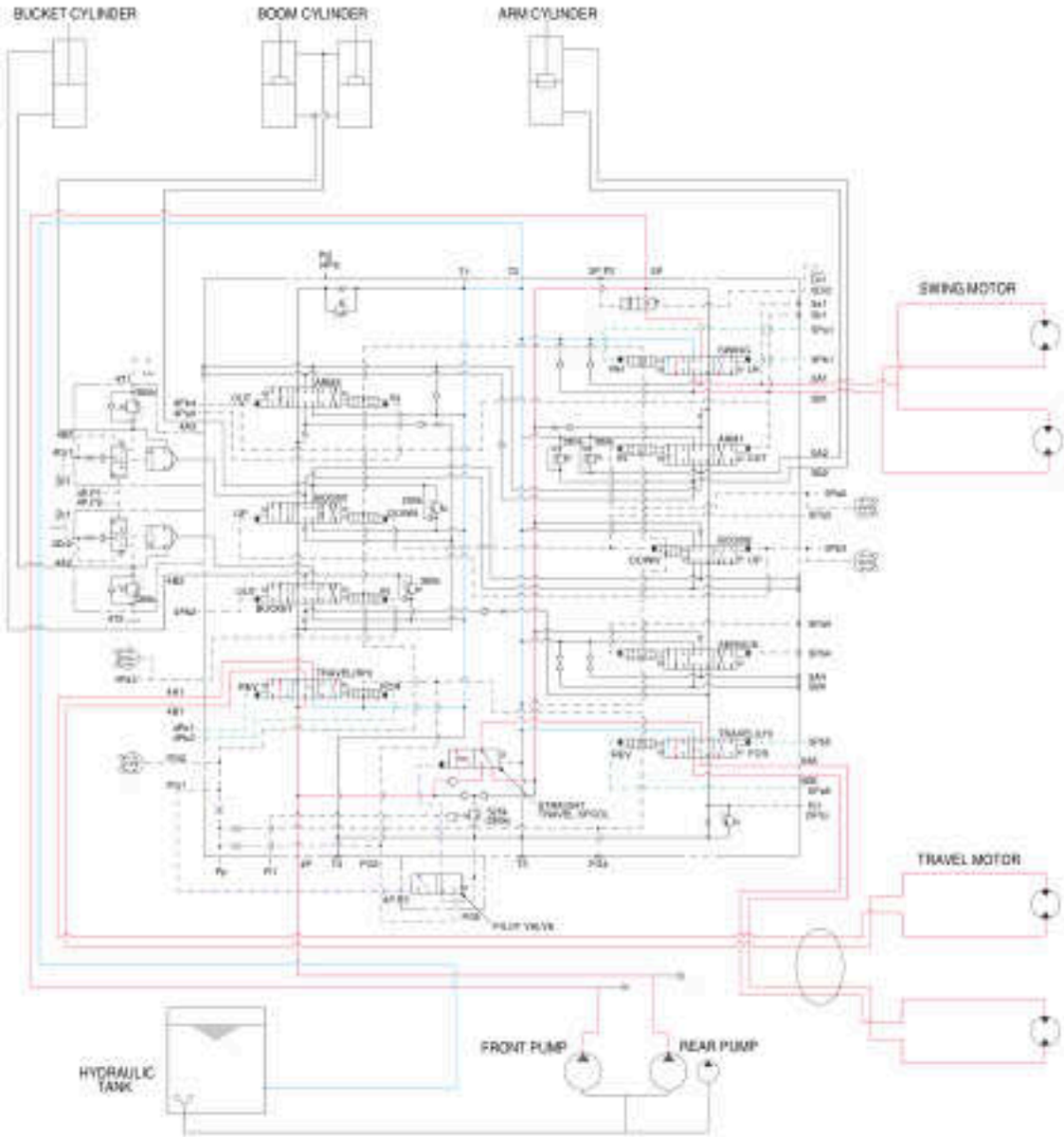
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Error code	Abnormal system	Details of abnormality	Condition when normal (Voltage, resistance and current valve)	Action of controller when abnormality is detected	Symptoms shown by machine when there is abnormality
07	2 stage relief solenoid valve	1. Short circuit inside of solenoid 2. Short circuit because of connection of two wiring harness outside solenoid(24V-control) · Excessive current flows into controller	· Solenoid resistance : 20 ~ 30 Ω	· Related error code is displayed · Warning buzzer sounds · Cut off the current of solenoid (But, In case of returning to the normal state after instant open circuit, the current of solenoid valve return to the normal state, too)	1. The relief pressure is not increased when the power boost function is selected 2. The power boost function does not operate
09	Travel solenoid valve				1. Warning buzzer sounds continuously 2. Travel speed does not change(Stay in **low**) when travel speed switch is operated
11	Swing lock solenoid valve				1. Warning buzzer sounds continuously 2. The motor brake is not released, so the machine does not swing(Stay in swing LOCK state)
15	Cut-off cancel solenoid valve				1. Warning buzzer sounds continuously 2. Cut-off cancel function does not operated, so the power boost does not function and the travel speed is low
08	2 stage relief solenoid valve	1. Open circuit inside of solenoid 2. Open circuit or defective connection of wiring harness between solenoid and controller 3. Connection between pin of wiring harness (Example : CN-52(1) ~ (5)) and GND	· Solenoid resistance : 20 ~ 30 Ω	· Related error code is displayed · Warning buzzer sounds In case of 1 and 2, because control current does not flow to the solenoid valve, solenoid valve does not operate In case of 3, the current flow to the solenoid valve continuously (Solenoid ON) However, the current is not controlled by the controller	1. Warning buzzer sounds continuously 2. In case 1 and 2, it is the same as error code **07**
10	Travel solenoid valve				1. Warning buzzer sounds continuously 2. In case of 1 and 2, It is the same as error code **09** 3. In case of 3, the solenoid becomes ON at any time, so machine maintain **High** speed
12	Swing lock solenoid valve				1. Warning buzzer sounds continuously 2. In case of 1 and 2, It is the same as error code **11** 3. In case of 3, the swing motor brake released at any time, so the upper structure will swing on slopes
16	Cut-off cancel solenoid valve				1. Warning buzzer sounds continuously 2. In case of 1 and 2, it is the same as error code **15**
17	Engine speed sensor	1. Defective sensor (Different resistance) 2. Open circuit of wiring harness between controller and sensor	· Speed sensor resistance : 200 ~ 400 Ω	· Error code is displayed · Warning buzzer sounds · The current of EPPR valve is increased	1. Warning buzzer sounds continuously 2. Engine speed display does not operate or inaccurate 3. Work equipment speed decreases prominently

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6. COMBINED SWING AND TRAVEL OPERATION



When the swing and travel functions are operated, simultaneously the swing spool and travel(LH), travel(RH) spools in the main control valve are moved to the functional position by the pilot oil pressure from the remote control valve. At the same time the spool of pilot valve for straight travel is pushed to the right by the pilot oil pressure from the pilot pump. Thus the straight travel spool is pushed to the right by the oil through the pilot valve for straight travel.

The oil from the rear pump flows into the right travel motor through the right travel spool of the left control valve and the left travel motor through the straight travel spool and left travel spool of the right control valve.

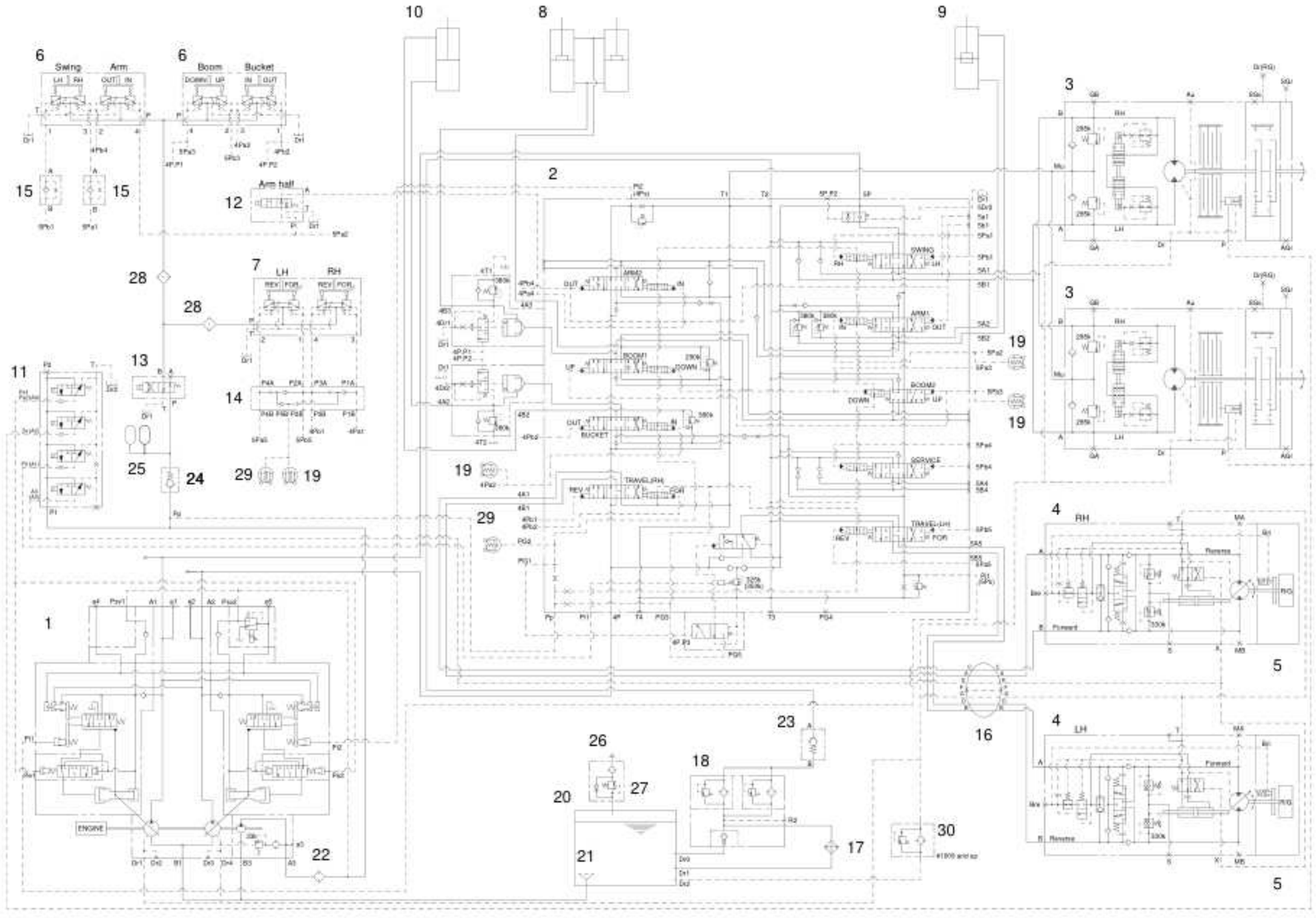
The oil from the front pump flows into the swing motors through the swing spool of the right control valve.

Meanwhile, the oil from the front pump flows into left travel motor through orifice of the straight travel spool. This orifice maintains the operating pressure actuators except traveling and reduce the shock of travel speed reduction.

The superstructure swings and the machine travels straight.

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GROUP 1 HYDRAULIC CIRCUIT



1 Main pump
2 Main control valve
3 Swing motor
4 Travel motor
5 Track drive
6 RCV lever
7 RCV pedal
8 Boom cylinder
9 Arm cylinder
10 Bucket cylinder
11 Solenoid valve
12 Solenoid valve
13 Solenoid valve
14 Shuttle valve
15 Slow return valve
16 Turning joint
17 Oil cooler
18 Return filter assy
19 Pressure switch
20 Hydraulic tank
21 Suction strainer
22 Line filter
23 Return check valve
24 Check valve
25 Accumulator
26 Air breather
27 Strainer
28 Line filter
29 Pressure switch
30 Drain filter

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