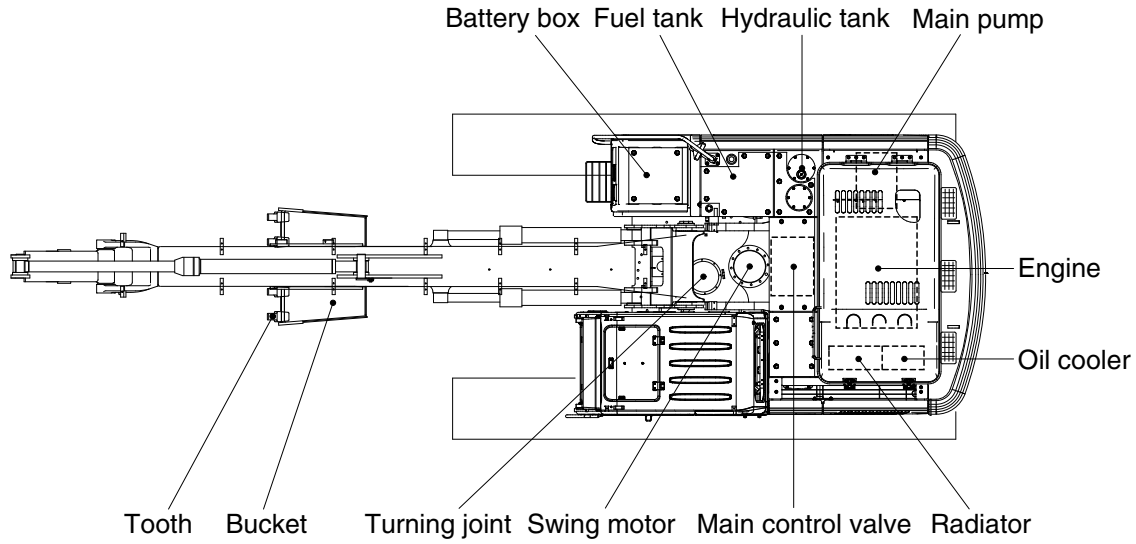
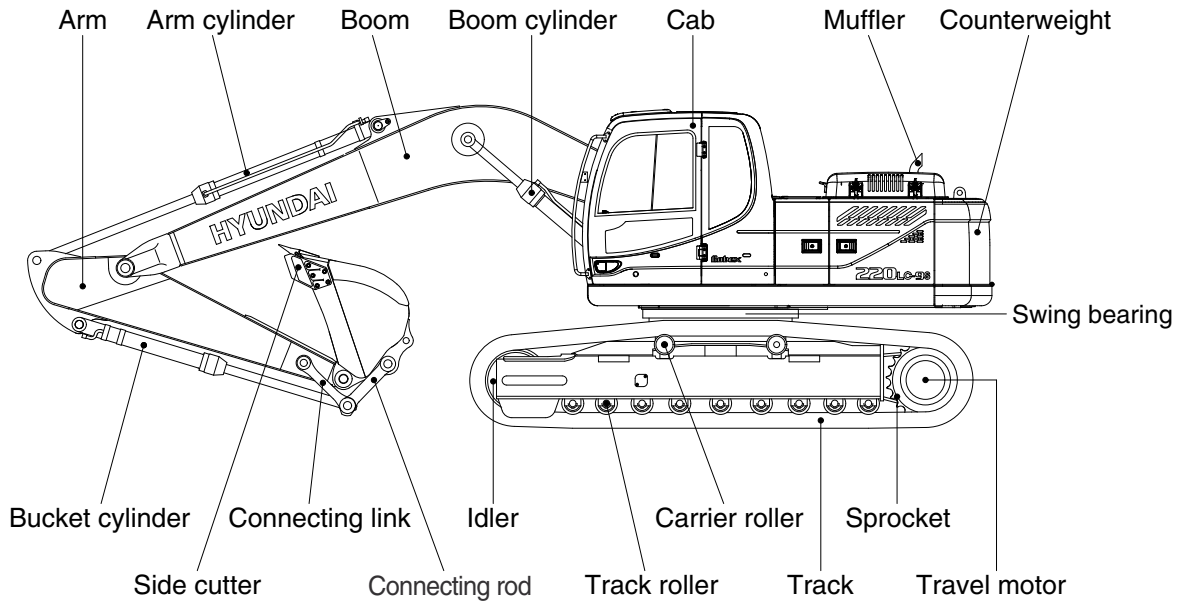
GROUP 2 SPECIFICATIONS

1. MAJOR COMPONENT



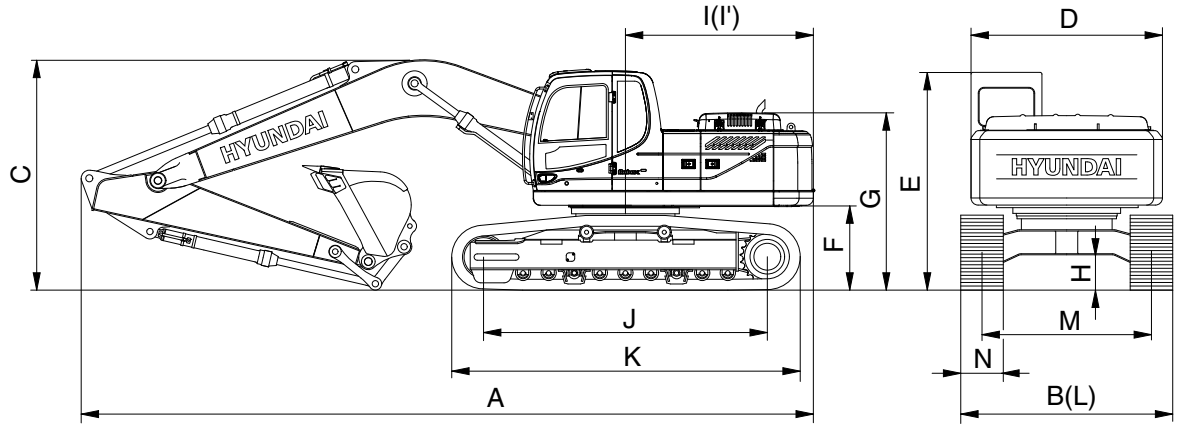


2209S2SP01

2. SPECIFICATIONS

1) R220LC-9S

· 5.68 m (18' 8") BOOM and 2.92 m (9' 7") ARM

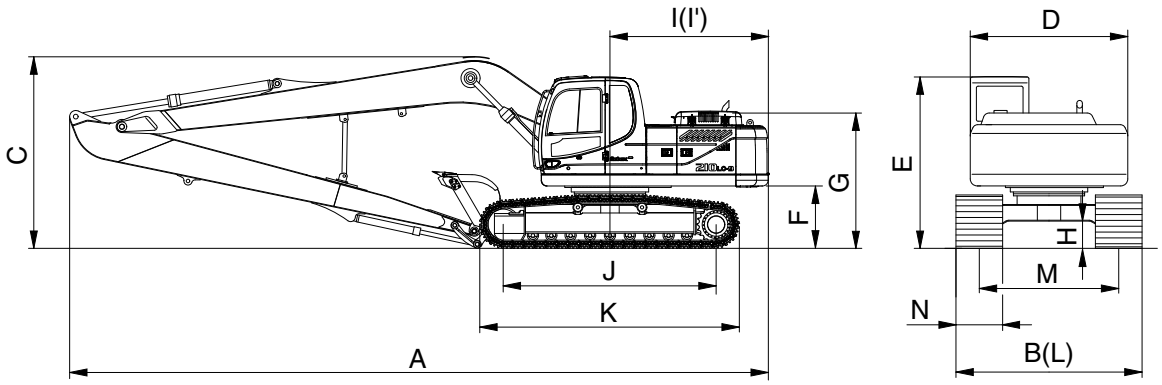


21092SP02

Description		Unit	Specification
Operating weight		kg (lb)	21900 (48280)
Bucket capacity (SAE heaped), standard		m^3 (yd^3)	0.92 (1.20)
Overall length	A	mm (ft-in)	9530 (31' 3")
Overall width, with 600mm shoe	B		2990 (9' 10")
Overall height	C		3030 (9' 11")
Superstructure width	D		2740 (9' 0")
Overall height of cab	E		2920 (9' 7")
Ground clearance of counterweight	F		1060 (3' 6")
Engine cover height	G		2320 (7' 7")
Minimum ground clearance	H		480 (1' 7")
Rear-end distance	I		2770 (9' 1")
Rear-end swing radius	I'		2830 (9' 3")
Distance between tumblers	J		3650 (12' 0")
Undercarriage length	K		4440 (14' 7")
Undercarriage width	L		2990 (9' 10")
Track gauge	M		2390 (7' 10")
Track shoe width, standard	N		600 (24")
Travel speed (low/high)		km/hr (mph)	3.8/5.4 (2.4/3.4)
Swing speed		rpm	11.6
Gradeability		Degree (%)	35 (70)
Ground pressure (600 mm shoe)		kgf/cm^2 (psi)	0.46 (6.54)
Max traction force		kg (lb)	21100 (46500)

2) R220LC-9S LONG REACH

· 8.2 m (26' 11") BOOM and 6.3 m (20' 8") ARM

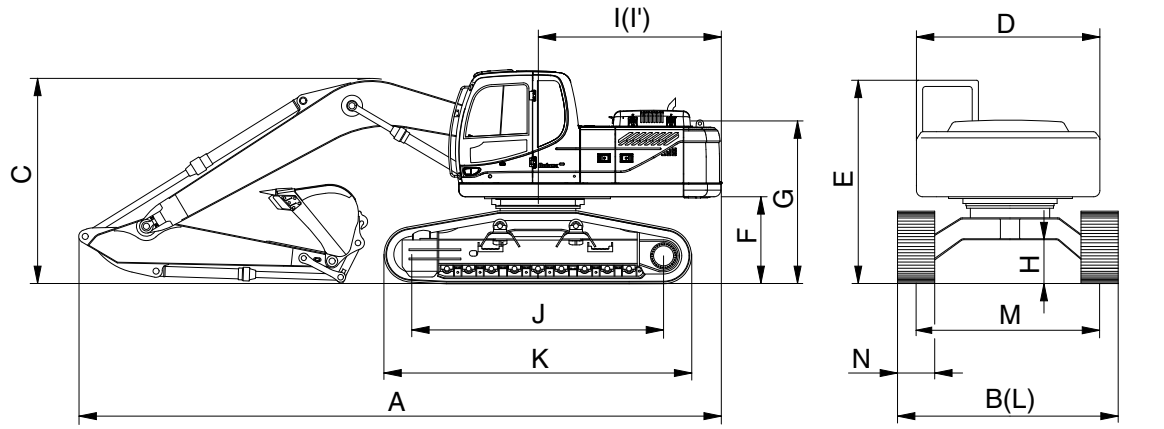


21092SP06

Description		Unit	Specification
Operating weight		kg (lb)	24360 (53700)
Bucket capacity (SAE heaped), standard		m^3 (yd^3)	0.52 (0.68)
Overall length	A	mm (ft-in)	12030 (39' 6")
Overall width, with 800 mm shoe	B		3190 (10' 6")
Overall height	C		3280 (10' 9")
Superstructure width	D		2740 (9' 0")
Overall height of cab	E		2920 (9' 7")
Ground clearance of counterweight	F		1060 (3' 6")
Engine cover height	G		2320 (7' 7")
Minimum ground clearance	H		480 (1' 7")
Rear-end distance	I		2770 (9' 1")
Rear-end swing radius	I'		2830 (9' 3")
Distance between tumblers	J		3650 (12' 0")
Undercarriage length	K		4440 (14' 7")
Undercarriage width	L		3190 (10' 6")
Track gauge	M		2390 (7' 10")
Track shoe width, standard	N		800 (32")
Travel speed (low/high)		km/hr (mph)	3.8/5.4 (2.4/3.4)
Swing speed		rpm	11.6
Gradeability		Degree (%)	35 (70)
Ground pressure (800 mm shoe)		kgf/cm^2 (psi)	0.42 (5.97)
Max traction force		kg (lb)	21100 (46500)

3) R220LC-9S HIGH WALKER

· 5.68 m (18' 8") BOOM and 2.92 m (9' 7") ARM



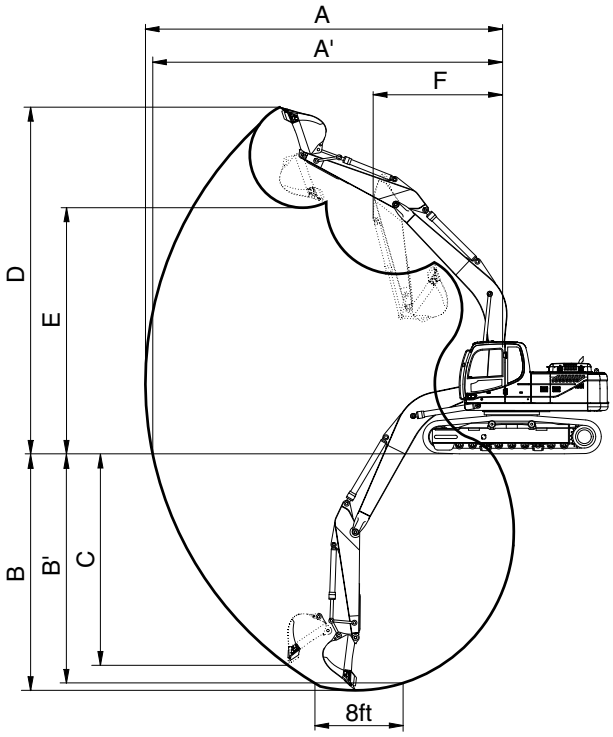
21092SP07

Description		Unit	Specification
Operating weight		kg (lb)	23160 (51060)
Bucket capacity (SAE heaped), standard		m^3 (yd^3)	0.92 (1.20)
Overall length	A	mm (ft-in)	9470 (31' 1")
Overall width, with 600 mm shoe	B		3395 (11' 2")
Overall height	C		3060 (10' 0")
Superstructure width	D		2740 (9' 0")
Overall height of cab	E		3100 (10' 2")
Ground clearance of counterweight	F		1240 (4' 1")
Engine cover height	G		2500 (8' 2")
Minimum ground clearance	H		660 (2' 2")
Rear-end distance	I		2770 (9' 1")
Rear-end swing radius	I'		2830 (9' 3")
Distance between tumblers	J		3650 (12' 0")
Undercarriage length	K		4440 (14' 7")
Undercarriage width	L		3395 (11' 2")
Track gauge	M		2795 (9' 2")
Track shoe width, standard	N		600 (24")
Travel speed (low/high)		km/hr (mph)	3.8/5.4 (2.4/3.4)
Swing speed		rpm	11.6
Gradeability		Degree (%)	35 (70)
Ground pressure (600 mm shoe)		kgf/cm^2 (psi)	0.49 (6.97)
Max traction force		kg (lb)	21100 (46500)

3. WORKING RANGE

1) R220LC-9S

· 5.68 m (18' 8") BOOM



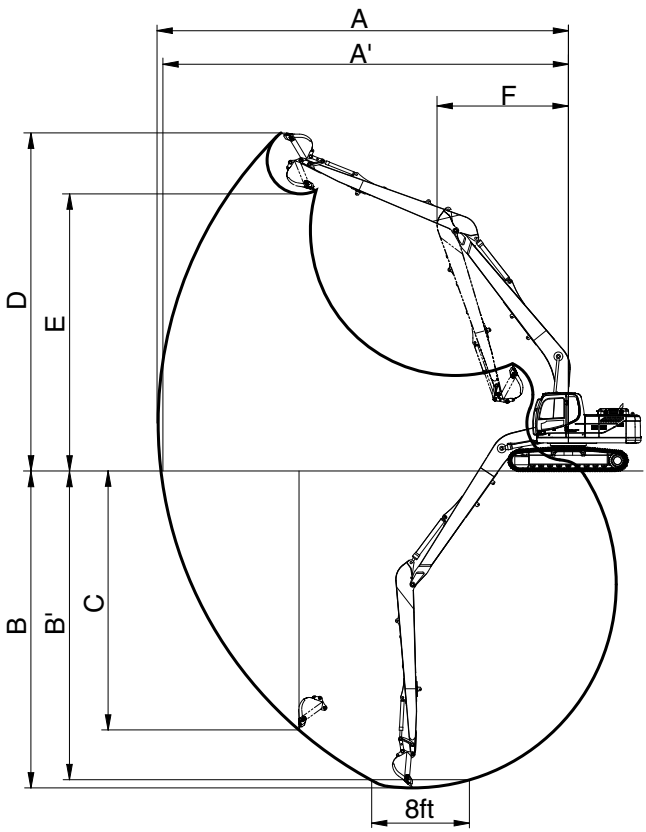
21092SP03

Description		2.0 m (6' 7") Arm	2.40 m (7' 10") Arm	2.92 m (9' 7") Arm	3.90 m (12' 10") Arm
Max digging reach	A	9140 mm (30' 0")	9500 mm (31' 2")	9980 mm (32' 9")	10910 mm (35' 10")
Max digging reach on ground	A'	8960 mm (29' 5")	9330 mm (30' 7")	9820 mm (32' 3")	10770 mm (35' 4")
Max digging depth	B	5820 mm (19' 1")	6220 mm (20' 5")	6730 mm (22' 1")	7720 mm (25' 4")
Max digging depth (8 ft level)	B'	5580 mm (18' 4")	6010 mm (19' 9")	6560 mm (21' 6")	7580 mm (24' 10")
Max vertical wall digging depth	C	5280 mm (17' 4")	5720 mm (18' 9")	6280 mm (20' 7")	7240 mm (23' 9")
Max digging height	D	9140 mm (30' 0")	9340 mm (30' 8")	9600 mm (31' 6")	10110 mm (33' 2")
Max dumping height	E	6330 mm (20' 9")	6520 mm (21' 5")	6780 mm (22' 3")	7290 mm (23' 11")
Min swing radius	F	3750 mm (12' 4")	3740 mm (12' 3")	3740 mm (12' 3")	3650 mm (12' 0")
Bucket digging force	SAE	133.4 [144.8] kN	133.4 [144.8] kN	133.4 [144.8] kN	133.4 [144.8] kN
		13600 [14770] kgf	13600 [14770] kgf	13600 [14770] kgf	13600 [14770] kgf
		29980 [32550] lbf	29980 [32550] lbf	29980 [32550] lbf	29980 [32550] lbf
	ISO	152.0 [165.0] kN	152.0 [165.0] kN	152.0 [165.0] kN	152.0 [165.0] kN
		15500 [16830] kgf	15500 [16830] kgf	15500 [16830] kgf	15500 [16830] kgf
		34170 [37100] lbf	34170 [37100] lbf	34170 [37100] lbf	34170 [37100] lbf
Arm digging force	SAE	144.2 [156.5] kN	119.6 [129.9] kN	102.0 [110.7] kN	84.3 [91.6] kN
		14700 [15960] kgf	12200 [13250] kgf	10400 [11290] kgf	8600 [9340] kgf
		32410 [35190] lbf	26900 [29210] lbf	22930 [24900] lbf	18960 [20590] lbf
	ISO	151.0 [164.0] kN	125.5 [136.3] kN	106.9 [116.1] kN	87.3 [94.8] kN
		15400 [16720] kgf	12800 [13900] kgf	10900 [11830] kgf	8900 [9660] kgf
		33950 [36860] lbf	28220 [30640] lbf	24030 [26090] lbf	19620 [21300] lbf

[ ] : Power boost

2) R220LC-9S LONG REACH

· 8.2 m (26' 11") BOOM

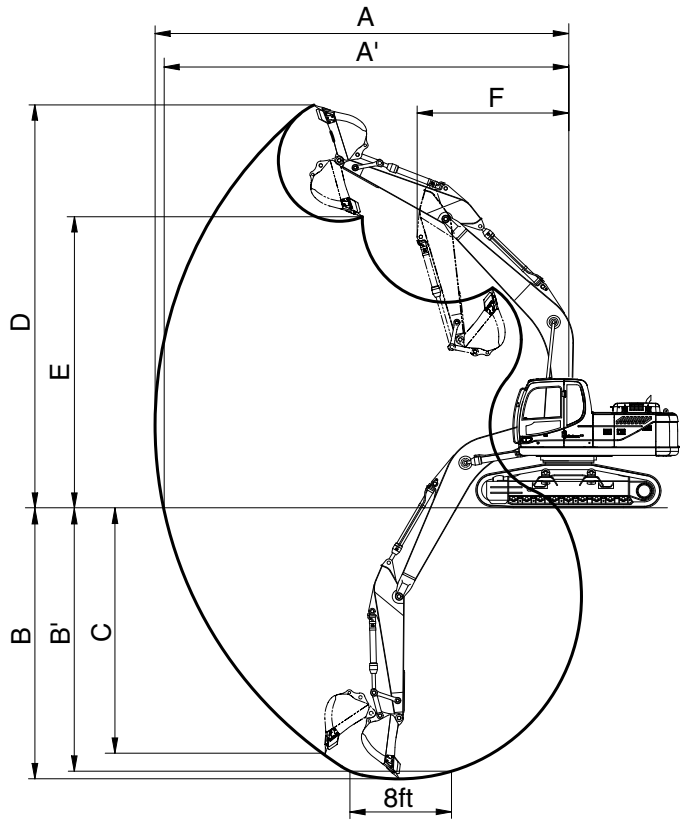


21092SP08

Description		6.3 m (20' 8") Arm
Max digging reach	A	15220 (50' 0")
Max digging reach on ground	A'	15120 (49' 7")
Max digging depth	B	11760 (38' 7")
Max digging depth (8 ft level)	B'	11650 (38' 3")
Max vertical wall digging depth	C	9610 (31' 6")
Max digging height	D	12550 (41' 2")
Max dumping height	E	10280 (33' 8")
Min swing radius	F	4870 (16' 0")
Bucket digging force	SAE	72.6 kN
		7400 kgf
		16310 lbf
	ISO	83.4 kN
		8500 kgf
		18740 lbf
Arm crowd force	SAE	49.0 kN
		5000 kgf
		11020 lbf
	ISO	50.0 kN
		5100 kgf
		11240 lbf

3) R220LC-9S HIGH WALKER

· 5.68 m (18' 8") BOOM



21092SP09

Description		2.0 m (6' 7") Arm	2.40 m (7' 10") Arm	2.92 m (9' 7") Arm	3.90 m (12'10") Arm
Max digging reach	A	9140 mm (30' 0")	9500 mm (31' 2")	9980 mm (32' 9")	10910 mm (35'10")
Max digging reach on ground	A'	8920 mm (29' 3")	9290 mm (30' 6")	9820 mm (32' 3")	10730 mm (35' 2")
Max digging depth	B	5630 mm (18' 6")	6010 mm (19' 9")	6550 mm (21' 6")	7530 mm (24' 8")
Max digging depth (8 ft level)	B'	5390 mm (17' 8")	5820 mm (19' 1")	6380 mm (20'11")	7390 mm (24' 3")
Max vertical wall digging depth	C	5090 mm (16' 8")	5630 mm (18' 6")	6100 mm (20' 0")	7050 mm (23' 1")
Max digging height	D	9330 mm (30' 7")	9530 mm (31' 3")	9780 mm (32' 1")	10300 mm (33' 9")
Max dumping height	E	6520 mm (21' 5")	6710 mm (22' 0")	6960 mm (22'10")	7480 mm (24' 6")
Min swing radius	F	3750 mm (12' 4")	3740 mm (12' 3")	3740 mm (12' 3")	3650 mm (12' 0")
Bucket digging force	SAE	133.4 [144.8] kN	133.4 [144.8] kN	133.4 [144.8] kN	133.4 [144.8] kN
		13600 [14770] kgf	13600 [14770] kgf	13600 [14770] kgf	13600 [14770] kgf
		29980 [32550] lbf	29980 [32550] lbf	29980 [32550] lbf	29980 [32550] lbf
	ISO	152.0 [165.0] kN	152.0 [165.0] kN	152.0 [165.0] kN	152.0 [165.0] kN
		15500 [16830] kgf	15500 [16830] kgf	15500 [16830] kgf	15500 [16830] kgf
		34170 [37100] lbf	34170 [37100] lbf	34170 [37100] lbf	34170 [37100] lbf
Arm crowd force	SAE	144.2 [156.5] kN	119.6 [129.9] kN	102.0 [110.7] kN	84.3 [91.6] kN
		14700 [15960] kgf	12200 [13250] kgf	10400 [11290] kgf	8600 [9340] kgf
		32410 [35190] lbf	26900 [29210] lbf	22930 [24900] lbf	18960 [20590] lbf
	ISO	151.0 [164.0] kN	125.5 [136.3] kN	106.9 [116.1] kN	87.3 [94.8] kN
		15400 [16720] kgf	12800 [13900] kgf	10900 [11830] kgf	8900 [9660] kgf
		33950 [36860] lbf	28220 [30640] lbf	24030 [26090] lbf	19620 [21300] lbf

[ ] : Power boost

4. WEIGHT

1) R220LC-9S

Item	R220LC-9S	
	kg	lb
Upperstructure assembly	9400	20720
Main frame weld assembly	1920	4230
Engine assembly	430	950
Main pump assembly	140	310
Main control valve assembly	220	485
Swing motor assembly	240	530
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	290	640
Travel motor assembly	300	660
Turning joint	55	120
Track recoil spring	140	310
Idler	170	370
Carrier roller	20	45
Track roller	40	90
Track-chain assembly (600 mm standard triple grouser shoe)	1350	2980
Front attachment assembly (5.68 m boom, 2.92 m arm, 0.92 m^3 SAE heaped bucket)	4030	8880
5.68 m boom assembly	1520	3350
2.92 m arm assembly	750	1650
0.92 m^3 SAE heaped bucket	765	1690
Boom cylinder assembly	180	400
Arm cylinder assembly	290	640
Bucket cylinder assembly	175	390
Bucket control link assembly	170	370

2) R220LC-9S LONG REACH

Item	R220LC-9S LONG REACH	
	kg	lb
Upperstructure assembly	9400	20720
Main frame weld assembly	1920	4230
Engine assembly	430	950
Main pump assembly	140	310
Main control valve assembly	220	485
Swing motor assembly	240	530
Hydraulic oil tank assembly	240	530
Fuel tank assembly	195	430
Counterweight	5300	11680
Cab assembly	440	970
Lower chassis assembly	8700	19180
Track frame weld assembly	2720	6000
Swing bearing	290	640
Travel motor assembly	300	660
Turning joint	55	120
Track recoil spring	140	310
Idler	170	370
Carrier roller	20	45
Track roller	40	90
Track-chain assembly (800 mm standard triple grouser shoe)	1660	3660
Front attachment assembly (8.2 m boom, 6.3 m arm, 0.52 m^3 SAE heaped bucket)	4600	10140
8.2 m boom assembly	2105	4640
6.3 m arm assembly	1100	2430
0.52 m^3 SAE heaped bucket	465	1030
Boom cylinder assembly	180	400
Arm cylinder assembly	270	600
Bucket cylinder assembly	130	290
Bucket control rod assembly	170	370

3) R220LC-9S HIGH WALKER

Item	R220LC-9S HIGH WALKER	
	kg	lb
Upperstructure assembly	9430	20790
Main frame weld assembly	1950	4300
Engine assembly	430	950
Main pump assembly	140	310
Main control valve assembly	220	485
Swing motor assembly	240	530
Hydraulic oil tank assembly	240	530
Fuel tank assembly	195	430
Counterweight	3800	8380
Cab assembly	440	970
Lower chassis assembly	9015	19870
Track frame weld assembly	3730	8220
Swing bearing	290	640
Travel motor assembly	300	660
Turning joint	55	120
Track recoil spring	140	310
Idler	170	370
Carrier roller	20	45
Track roller	40	90
Track-chain assembly (600 mm standard triple grouser shoe)	1350	2980
Front attachment assembly (5.68 m boom, 2.92 m arm, 0.92 m^3 SAE heaped bucket)	4030	8880
5.68 m boom assembly	1520	3350
2.92 m arm assembly	750	1650
0.92 m^3 SAE heaped bucket	765	1690
Boom cylinder assembly	180	400
Arm cylinder assembly	290	640
Bucket cylinder assembly	175	390
Bucket control rod assembly	170	370

5. LIFTING CAPACITIES

1) ROBEX 220LC-9S

(1) 5.68 m (18' 8") boom, 2.92 m (9' 7") arm equipped with 0.92 m³ (SAE heaped) bucket, 600 mm (24") triple grouser shoe.

Load point height		Load radius										At max. reach		
		1.5 m (5 ft)		3.0 m (10 ft)		4.5 m (15 ft)		6.0 m (20 ft)		7.5 m (25 ft)		Capacity		Reach
														m (ft)
7.5 m (25 ft)	kg											*3360	3150	7.78
	lb											*7410	6940	(25.5)
6.0 m (20 ft)	kg									*2340	*2340	*3450	2460	8.74
	lb									*5160	*5160	*7610	5420	(28.7)
4.5 m (15 ft)	kg							*4010	*4010	*3830	3180	*3580	2100	9.32
	lb							*8840	*8840	*8440	7010	*7890	4630	(30.6)
3.0 m (10 ft)	kg			*9780	*9780	*6150	*6150	*4840	4460	*4230	3040	3440	1930	9.59
	lb			*21560	*21560	*13560	*13560	*10670	9830	*9330	6700	7580	4250	(31.5)
1.5 m (5 ft)	kg			*8810	*8810	*7960	6490	*5750	4160	*4710	2880	3390	1880	9.59
	lb			*19420	*19420	*17550	14310	*12680	9170	*10380	6350	7470	4140	(31.5)
Ground Line	kg			*9550	*9550	*9160	6090	*6490	3920	4930	2750	3520	1950	9.31
	lb			*21050	*21050	*20190	13430	*14310	8640	10870	6060	7760	4300	(30.5)
-1.5 m (-5 ft)	kg	*8810	*8810	*12610	11870	*9600	5940	*6870	3800	4860	2690	3920	2190	8.72
	lb	*19420	*19420	*27800	26170	*21160	13100	*15150	8380	10710	5930	8640	4830	(28.6)
-3.0 m (-10 ft)	kg	*12190	*12190	*13980	12040	*9320	5960	*6740	3800			*4460	2710	7.75
	lb	*26870	*26870	*30820	26540	*20550	13140	*14860	8380			*9830	5970	(25.4)
-4.5 m (-15 ft)	kg			*11860	*11860	*8120	6140					*4330	4080	6.16
	lb			*26150	*26150	*17900	13540					*9550	8990	(20.2)

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.

(2) 5.68 m (18' 8") boom, 2.40 m (7' 10") arm equipped with 0.92 m³ (SAE heaped) bucket, 600 mm (24") triple grouser shoe.

Load point height		Load radius										At max. reach		
		1.5 m (5 ft)		3.0 m (10 ft)		4.5 m (15 ft)		6.0 m (20ft)		7.5 m (25ft)		Capacity		Reach
														m (ft)
7.5 m (25 ft)	kg											*3700	3640	7.15
	lb											*8160	8020	(23.5)
6.0 m (20 ft)	kg							*4010	*4010			*3780	2760	8.20
	lb							*8840	*8840			*8330	6080	(26.9)
4.5 m (15 ft)	kg							*4490	*4490	*4230	3130	*3900	2340	8.82
	lb							*9900	*9900	*9330	6900	*8600	5160	(28.9)
3.0 m (10 ft)	kg					*6900	*6900	*5280	4400	*4560	3010	3760	2130	9.11
	lb					*15210	*15210	*11640	9700	*10050	6640	8290	4700	(29.9)
1.5 m (5 ft)	kg					*8560	6380	*6120	4130	*4970	2880	3710	2080	9.10
	lb					*18870	14070	*13490	9110	*10960	6350	8180	4590	(29.9)
Ground Line	kg			*8790	*8790	*9490	6080	*6740	3930	4950	2780	3890	2180	8.81
	lb			*19380	*19380	*20920	13400	*14860	8660	10910	6130	8580	4810	(28.9)
-1.5 m (-5 ft)	kg	*9760	*9760	*13510	12060	*9650	6000	*6960	3850			4390	2480	8.18
	lb	*21520	*21520	*29780	26590	*21270	13230	*15340	8490			9680	5470	(26.8)
-3.0 m (-10 ft)	kg	*14150	*14150	*13240	12280	*9090	6080	*6590	3900			*4700	3190	7.12
	lb	*31200	*31200	*29190	27070	*20040	13400	*14530	8600			*10360	7030	(23.4)
-4.5 m (-15 ft)	kg			*10630	*10630	*7400	6330							
	lb			*23440	*23440	*16310	13960							

2) R220LC-9S LONG REACH

(1) 8.2 m (26' 11") boom, 6.3 m (20' 8") arm equipped with 0.52 m³ (0.68yd³)(SAE heaped) bucket, 800 mm (32") triple grouser shoe.

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

Load point height		Load radius														At max. reach		
		4.5 m (15.0 ft)		6.0 m (20.0ft)		7.5 m (25.0 ft)		9.0 m (30.0 ft)		10.5 m (35.0 ft)		12.0 m (40.0 ft)		13.5 m (45.0 ft)		Capacity		Reach
																		m (ft)
10.5 m 35.0 ft	kg lb															*1480 *3260	*1480 *3260	12.11 (39.7)
9.0 m 30.0 ft	kg lb											*930 *2050	*930 *2050			*1510 *3330	*1510 *3330	13.11 (43.0)
7.5 m 25.0 ft	kg lb											*1550 *3420	*1550 *3420			*1550 *3420	1320 2910	13.84 (45.4)
6.0 m 20.0 ft	kg lb									*1600 *3530	*1600 *3530	*1610 *3550	*1610 *3550			*1600 *3530	1160 2560	14.37 (47.1)
4.5 m 15.0 ft	kg lb									*1790 *3950	*1790 *3950	*1730 *3810	1720 3790	*1260 *2780	*1260 *2780	*1660 *3660	1050 2310	14.72 (48.3)
3.0 m 10.0 ft	kg lb					*2520 *5560	*2520 *5560	*2220 *4890	*2220 *4890	*2020 *4450	*2020 *4450	*1880 *4140	1630 3590	*1590 *3510	1220 2690	*1720 *3790	980 2160	14.89 (48.9)
1.5 m 5.0 ft	kg lb	*5620 *12390	*5620 *12390	*3940 *8690	*3940 *8690	*3090 *6810	*3090 *6810	*2590 *5710	*2590 *5710	*2270 *5000	2000 4410	*2050 *4520	1530 3370	*1790 *3950	1170 2580	*1800 *3970	940 2070	14.90 (48.9)
Ground /line	kg lb	*6990 *15410	6720 14820	*4770 *10520	4490 9900	*3620 *7980	3240 7140	*2950 *6500	2430 5360	*2510 *5530	1860 4100	*2220 *4890	1440 3170	*1820 *4010	1110 2450	1880 4140	930 2050	14.75 (48.4)
-1.5 m -5.0 ft	kg lb	*7830 *17260	6210 13690	*5390 *11880	4120 9080	*4060 *8950	2990 6590	*3260 *7190	2260 4980	*2740 *6040	1740 3840	*2380 *5250	1360 3000	*1570 *3460	1070 2360	1930 4250	960 2120	14.42 (47.3)
-3.0 m -10.0 ft	kg lb	*8230 *18140	5990 13210	*5780 *12740	3920 8640	*4370 *9630	2830 6240	*3490 *7690	2140 4720	*2900 *6390	1660 3660	*2490 *5490	1310 2890			2030 4480	1020 2250	13.92 (45.7)
-4.5 m -15.0 ft	kg lb	*8310 *18320	5940 13100	*5950 *13120	3830 8440	*4540 *10010	2740 6040	*3630 *8000	2070 4560	*3000 *6610	1620 3570	2510 5530	1290 2840			*2210 *4870	1140 2510	13.20 (43.3)
-6.0 m -20.0 ft	kg lb	*8100 *17860	6010 13250	*5900 *13010	3840 8470	*4550 *10030	2730 6020	*3640 *8020	2060 4540	*2970 *6550	1620 3570					*2340 *5160	1330 2930	12.25 (40.2)
-7.5 m -25.0 ft	kg lb	*7580 *16710	6180 13620	*5610 *12370	3930 8660	*4350 *9590	2790 6150	*3460 *7630	2120 4670	*2740 *6040	1690 3730					*2460 *5420	1670 3680	10.97 (36.0)
-9.0 m -30.0 ft	kg lb	*6650 *14660	6460 14240	*4980 *10980	4110 9060	*3840 *8470	2940 6480	*2930 *6460	2260 4980									
-10.5 m -35.0 ft	kg lb	*5040 *11110	*5040 *11110	*3730 *8220	*3730 *8220													

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.

3) R220LC-9S HIGH WALKER

(1) 5.68 m (18' 8") boom, 2.92 m (9' 7") arm equipped with 0.92 m³ (SAE heaped) bucket, 600 mm (24") triple grouser shoe.

Load point height		Load radius										At max. reach		
		1.5 m (5 ft)		3.0 m (10 ft)		4.5 m (15 ft)		6.0 m (20 ft)		7.5 m (25 ft)		Capacity		Reach
														m (ft)
7.5 m (25 ft)	kg											*3370	*3370	7.93
	lb											*7430	*7430	(26.0)
6.0 m (20 ft)	kg									*2700	*2700	*3460	3130	8.83
	lb									*5950	*5950	*7630	6900	(29.0)
4.5 m (15 ft)	kg							*4110	*4110	*3870	*3870	*3600	2740	9.37
	lb							*9060	*9060	*8530	*8530	*7940	6040	(30.7)
3.0 m (10 ft)	kg			*10440	*10440	*6400	*6400	*4960	*4960	*4290	3930	3680	2560	9.60
	lb			*23020	*23020	*14110	*14110	*10930	*10930	*9460	8660	8110	5640	(31.5)
1.5 m (5 ft)	kg			*8610	*8610	*8150	*8150	*5860	5380	*4760	3770	3650	2530	9.57
	lb			*18980	*18980	*17970	*17970	*12920	11860	*10490	8310	8050	5580	(31.4)
Ground Line	kg			*9870	*9870	*9260	8080	*6560	5150	*5150	3640	3820	2650	9.25
	lb			*21760	*21760	*20410	17810	*14460	11350	*11350	8020	8420	5840	(30.3)
-1.5 m (-5 ft)	kg	*9210	*9210	*13090	*13090	*9600	7940	*6880	5040	5200	3590	4280	2980	8.62
	lb	*20300	*20300	*28860	*28860	*21160	17500	*15170	11110	11460	7910	9440	6570	(28.3)
-3.0 m (-10 ft)	kg	*12660	*12660	*13780	*13780	*9230	7990	*6670	5060			*4470	3710	7.59
	lb	*27910	*27910	*30380	*30380	*20350	17610	*14700	11160			*9850	8180	(24.9)
-4.5 m (-15 ft)	kg			*11470	*11470	*7860	*7860					*4250	*4250	5.89
	lb			*25290	*25290	*17330	*17330					*9370	*9370	(19.3)

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.

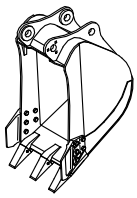
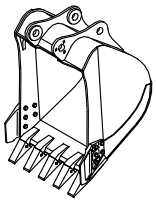
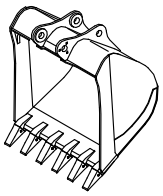
4. *indicates load limited by hydraulic capacity.

(2) 5.68 m (18' 8") boom, 2.4 m (7' 10") arm equipped with 0.92 m³ (SAE heaped) bucket, 600 mm (24") triple grouser shoe.

Load point height		Load radius										At max. reach		
		1.5 m (5 ft)		3.0 m (10 ft)		4.5 m (15 ft)		6.0 m (20 ft)		7.5 m (25 ft)		Capacity		Reach
														m (ft)
7.5 m (25 ft)	kg											*3700	*3700	7.31
	lb											*8160	*8160	(24.0)
6.0 m (20 ft)	kg							*4050	*4050			*3790	3480	8.30
	lb							*8930	*8930			*8360	7670	(27.2)
4.5 m (15 ft)	kg					*5360	*5360	*4580	*4580	*4260	4030	*3920	3020	8.87
	lb					*11820	*11820	*10100	*10100	*9390	8880	*8640	6660	(29.1)
3.0 m (10 ft)	kg					*7130	*7130	*5390	*5390	*4610	3900	4010	2810	9.12
	lb					*15720	*15720	*11880	*11880	*10160	8600	8840	6190	(29.9)
1.5 m (5 ft)	kg					*8720	8370	*6220	5360	*5020	3770	3990	2780	9.08
	lb					*19220	18450	*13710	11820	*11070	8310	8800	6130	(29.8)
Ground Line	kg			*9350	*9350	*9550	8080	*6790	5170	5290	3670	4210	2940	8.75
	lb			*20610	*20610	*21050	17810	*14970	11400	11660	8090	9280	6480	(28.7)
-1.5 m (-5 ft)	kg	*10290	*10290	*14180	*14180	*9620	8020	*6950	5100			*4650	3360	8.07
	lb	*22690	*22690	*31260	*31260	*21210	17680	*15320	11240			*10250	7410	(26.5)
-3.0 m (-10 ft)	kg	*14760	*14760	*12990	*12990	*8950	8120	*6470	5170			*4690	4350	6.94
	lb	*32540	*32540	*28640	*28640	*19730	17900	*14260	11400			*10340	9590	(22.8)
-4.5 m (-15 ft)	kg			*10150	*10150	*7020	*7020							
	lb			*22380	*22380	*15480	*15480							

6. BUCKET SELECTION GUIDE

1) GENERAL BUCKET

		
0.51 m³ SAE heaped bucket	0.80, 0.92, 1.10, 1.20, ★0.52 m³ SAE heaped bucket	1.34 m³ SAE heaped bucket

Capacity		Width		Weight	Recommendation				
					5.68 m (18' 8") boom				8.2 m (26' 11") boom
SAE heaped	CECE heaped	Without side cutter	With side cutter		2.0 m arm (6' 7")	2.4 m arm (7' 10")	2.92 m arm (9' 7")	3.90 m arm (12' 10")	6.3 m arm (20' 8")
0.51 m³ (0.67 yd³)	0.45 m³ (0.59 yd³)	700 mm (27.6")	820 mm (32.3")	570 kg (1260 lb)					
0.80 m³ (1.05 yd³)	0.70 m³ (0.92 yd³)	1000 mm (39.4")	1120 mm (44.1")	770 kg (1700 lb)					
0.92 m³ (1.20 yd³)	0.80 m³ (1.05 yd³)	1150 mm (45.3")	1270 mm (50.0")	770 kg (1700 lb)					
1.10 m³ (1.44 yd³)	0.96 m³ (1.26 yd³)	1320 mm (52.0")	1440 mm (56.7")	830 kg (1830 lb					
1.20 m³ (1.57 yd³)	1.00 m³ (1.31 yd³)	1400 mm (55.1")	1520 mm (59.8")	850 kg (1870 lb)					
1.34 m³ (1.75 yd³)	1.15 m³ (1.50 yd³)	1550 mm (61.0")	1670 mm (65.7")	920 kg (2030 lb)					
★0.52 m³ (0.68 yd³)	0.45 m³ (0.59 yd³)	935 mm (36.8")	1035 mm (40.7")	460 kg (1010 lb)					

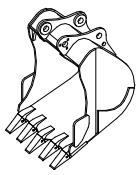
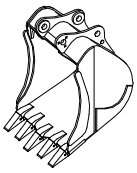
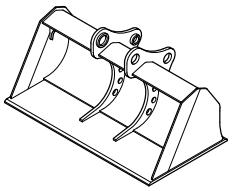
★ : Long reach bucket

Applicable for materials with density of 2000 kgf/m³ (3370 lbf/yd³) or less

Applicable for materials with density of 1600 kgf/m³ (2700 lbf/yd³) or less

Applicable for materials with density of 1100 kgf/m³ (1850 lbf/yd³) or less

2) HEAVY DUTY, ROCK-HEAVY DUTY AND SLOPE FINISHING BUCKET

Heavy duty bucket	Rock-heavy duty bucket	Slope finishing bucket
		
◈ 0.74, 0.90, 1.05 m³ SAE heaped bucket	⊙ 0.87, 1.20 m³ SAE heaped bucket	▣ 0.75 m³ SAE heaped bucket

Capacity		Width		Weight	Recommendation			
					5.68 m (18' 8") boom			
SAE heaped	CECE heaped	Without side cutter	With side cutter		2.0 m arm (6' 7")	2.4 m arm (7' 10")	2.92 m arm (9' 7")	3.90 m arm (12' 10")
◈0.74 m³ (0.97 yd³)	0.65 m³ (0.85 yd³)	985 mm (38.8")	-	770 kg (1700 lb)				
◈0.90 m³ (1.18 yd³)	0.80 m³ (1.05 yd³)	1070 mm (42.0")	-	810 kg (1790 lb)				
◈1.05 m³ (1.37 yd³)	0.92 m³ (1.20 yd³)	1290 mm (50.8")	-	890 kg (1960 lb)				
⊙0.87 m³ (1.14 yd³)	0.75 m³ (0.98 yd³)	1140 mm (44.9")	-	900 kg (1980 lb)				
⊙1.20 m³ (1.57 yd³)	1.00 m³ (1.31 yd³)	1410 mm (55.5")	-	1030 kg (2270 lb)				
▣0.75 m³ (0.98 yd³)	0.65 m³ (0.85 yd³)	1790 mm (70.5")	-	880 kg (1940 lb)				

◈ : Heavy duty bucket ⊙: Rock-heavy duty bucket ▣ : Slope finishing bucket

Applicable for materials with density of 2000 kgf/m³ (3370 lbf/yd³) or less

Applicable for materials with density of 1600 kgf/m³ (2700 lbf/yd³) or less

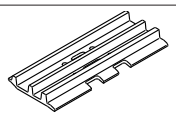
Applicable for materials with density of 1100 kgf/m³ (1850 lbf/yd³) or less

7. UNDERCARRIAGE

1) TRACKS

X-leg type center frame is integrally welded with reinforced box-section track frames. The design includes dry tracks, lubricated rollers, idlers, sprockets, hydraulic track adjusters with shock absorbing springs and assembled track-type tractor shoes with triple grousers.

2) TYPES OF SHOES

Model	Shapes		Triple grouser			
						
R220LC-9S	Shoe width	mm (in)	600 (24)	700 (28)	800 (32)	900 (36)
	Operating weight	kg (lb)	21900 (48280)	22250 (49050)	22515 (49640)	22760 (50180)
	Ground pressure	kgf/cm^2 (psi)	0.46 (6.54)	0.40 (5.69)	0.36 (5.12)	0.32 (4.55)
	Overall width	mm (ft-in)	2990 (9' 10")	3090 (10' 2")	3190 (10' 6")	3290 (10' 10")
R220LC-9S LONG REACH	Shoe width	mm (in)	-	-	800 (32)	-
	Operating weight	kg (lb)	-	-	24605 (54240)	-
	Ground pressure	kgf/cm^2 (psi)	-	-	0.39 (5.55)	-
	Overall width	mm (ft-in)	-	-	3190 (10' 6")	-
R220LC-9S HIGH WALKER	Shoe width	mm (in)	600 (24)	700 (28)	800 (32)	710 (28)*
	Operating weight	kg (lb)	23360 (51500)	23710 (52270)	23975 (52860)	24220 (53400)
	Ground pressure	kgf/cm^2 (psi)	0.50 (7.11)	0.43 (6.12)	0.38 (5.40)	0.43 (6.12)
	Overall width	mm (ft-in)	3395 (11' 2")	3495 (11' 6")	3595 (11' 10")	3505 (11' 6")

* : Double grouser

3) NUMBER OF ROLLERS AND SHOES ON EACH SIDE

Item	Quantity
Carrier rollers	2 EA
Track rollers	9 EA
Track shoes	49 EA

4) SELECTION OF TRACK SHOE

Suitable track shoes should be selected according to operating conditions.

Method of selecting shoes

Confirm the category from the list of applications in **table 2**, then use **table 1** to select the shoe. Wide shoes (categories B and C) have limitations on applications. Before using wide shoes, check the precautions, then investigate and study the operating conditions to confirm if these shoes are suitable.

Select the narrowest shoe possible to meet the required flotation and ground pressure. Application of wider shoes than recommendations will cause unexpected problem such as bending of shoes, crack of link, breakage of pin, loosening of shoe bolts and the other various problems.

※ Table 1

Track shoe	Specification	Category
600 mm triple grouser	Standard	A
700 mm triple grouser	Option	B
800 mm triple grouser	Option	C
800 mm triple grouser (long reach)	Standard	C
900 mm triple grouser	Option	C

※ Table 2

Category	Applications	Precautions
A	Rocky ground, river beds, normal soil	· Travel at low speed on rough ground with large obstacles such as boulders or fallen trees
B	Normal soil, soft ground	· These shoes cannot be used on rough ground with large obstacles such as boulders or fallen trees · Travel at high speed only on flat ground · Travel slowly at low speed if it is impossible to avoid going over obstacles
C	Extremely soft ground (swampy ground)	· Use the shoes only in the conditions that the machine sinks and it is impossible to use the shoes of category A or B · These shoes cannot be used on rough ground with large obstacles such as boulders or fallen trees · Travel at high speed only on flat ground · Travel slowly at low speed if it is impossible to avoid going over obstacles

8. SPECIFICATIONS FOR MAJOR COMPONENTS

1) ENGINE

Item	Specification
Model	Cummins 6BTA
Type	4-cycle turbocharged diesel engine, low emission
Cooling method	Water cooling
Number of cylinders and arrangement	6 cylinders, in-line
Firing order	1-5-3-6-2-4
Combustion chamber type	Direct injection type
Cylinder bore × stroke	102 × 120 mm (4.02" × 4.72")
Piston displacement	5880 cc (359 cu in)
Compression ratio	17.3 : 1
Rated gross horse power (SAE J1995)	160 Hp at 1950 rpm (119 kW at 1950 rpm)
Maximum torque at 1500 rpm	66.8 kgf · m (483 lbf · ft)
Engine oil quantity	24 ℓ (6.3 U.S. gal)
Dry weight	496 kg (1094 lb)
High idling speed	2150 ± 50 rpm
Low idling speed	800 ± 100 rpm
Rated fuel consumption	158 g/Hp · hr at 1950 rpm
Starting motor	Nippon denso (24 V-4.5 kW)
Alternator	Delco Remy (24 V-70 A)
Battery	2 × 12 V × 100 Ah

2) MAIN PUMP

Item	Specification
Type	Variable displacement tandem axis piston pumps
Capacity	2 × 117cc/rev
Maximum pressure	350kgf/cm^2 (4980psi) [380 kgf/cm^2 (5400 psi)]
Rated oil flow	2 × 222 ℓ /min (58.6U.S. gpm/ 48.8U.K. gpm)
Rated speed	1900 rpm

[ ] : Power boost

3) GEAR PUMP

Item	Specification
Type	Fixed displacement gear pump single stage
Capacity	15 cc/rev
Maximum pressure	40 kgf/cm^2 (570 psi)
Rated oil flow	28.5 ℓ/min (7.5 U.S. gpm/6.3 U.K. gpm)

4) MAIN CONTROL VALVE

Item		Specification	
		R220LC-9S	R220LC-9S Long reach
Type		10 spools two-block	
Operating method		Hydraulic pilot system	
Main relief valve pressure		350 kgf/cm^2 (4980 psi) [380 kgf/cm^2 (5400 psi)]	
Port relief valve pressure	Boom	400 kgf/cm^2 (5690 psi)	400 kgf/cm^2 (5690 psi)
	Arm	400 kgf/cm^2 (5690 psi)	300 kgf/cm^2 (4270 psi)
	Bucket	400 kgf/cm^2 (5690 psi)	280 kgf/cm^2 (3980 psi)

[ ]: Power boost

5) SWING MOTOR

Item	Specification	
	Type 1	Type 2
Type	Fixed displacement axial piston motor	
Capacity	151 cc/rev	142.8 cc/rev
Relief pressure	265 kgf/cm^2 (3770 psi)	
Braking system	Automatic, spring applied hydraulic released	
Braking torque	59 kgf · m (427 lbf · ft)	58 kgf · m (420 lbf · ft)
Brake release pressure	33~50 kgf/cm^2 (470~711 psi)	21.3~35.6 kgf/cm^2 (154~257 psi)
Reduction gear type	2 - stage planetary	

6) TRAVEL MOTOR

Item	Specification	
	Type 1	Type 2, 3
Type	Two fixed displacement axial piston motor	
Relief pressure	350 kgf/cm^2 (4980 psi)	
Reduction gear type	2-stage planetary	
Braking system	Automatic, spring applied hydraulic released	
Brake release pressure	11 kgf/cm^2 (156 psi)	15.2 kgf/cm^2 (216 psi)
Braking torque	49.3 kgf · m (357 lbf · ft)	65.4 kgf · m (473 lbf · ft)

7) REMOTE CONTROL VALVE

Item		Specification
Type		Pressure reducing type
Operating pressure	Minimum	6.5 kgf/cm^2 (92 psi)
	Maximum	25 kgf/cm^2 (356 psi)
Single operation stroke	Lever	90 mm (3.5 in)
	Pedal	130 mm (4.4 in)

8) CYLINDER

Item		Specification
Boom cylinder	Bore dia × Rod dia × Stroke	ø 120 × ø 85 × 1290 mm
	Cushion	Extend only
Arm cylinder	Bore dia × Rod dia × Stroke	ø 140 × ø 100 × 1510 mm # ø 140 × ø 100 × 1460 mm
	Cushion	Extend and retract
Bucket cylinder	Bore dia × Rod dia × Stroke	ø 120 × ø 85 × 1055 mm # ø 100 × ø 70 × 870 mm
	Cushion	Extend only

※ Discoloration of cylinder rod can occur when the friction reduction additive of lubrication oil spreads on the rod surface.

※ Discoloration does not cause any harmful effect on the cylinder performance.

: LONG REACH

9) SHOE

Item		Width	Ground pressure	Link quantity	Overall width
R220LC-9S	Standard	600 mm (24")	0.46 kgf/cm^2 (6.54 psi)	49	2990 mm (9' 10")
	Option	700 mm (28")	0.40 kgf/cm^2 (5.69 psi)	49	3090 mm (10' 2")
		800 mm (32")	0.36 kgf/cm^2 (5.12 psi)	49	3190 mm (10' 6")
		900 mm (36")	0.32 kgf/cm^2 (4.55 psi)	49	3290 mm (10' 10")
R220LC-9S LONG REACH	Standard	800 mm (32")	0.39 kgf/cm^2 (5.55 psi)	49	3190 mm (10' 6")
R220LC-9S HIGH WALKER	Standard	600 mm (24")	0.50 kgf/cm^2 (7.11 psi)	49	3395 mm (11' 2")
	Option	700 mm (28")	0.43 kgf/cm^2 (6.12 psi)	49	3495 mm (11' 6")
		800 mm (32")	0.38 kgf/cm^2 (5.40 psi)	49	3595 mm (11' 10")
		※ 710 mm (28")	0.43 kgf/cm^2 (6.12 psi)	49	3505 mm (11' 6")

※ : Double grouser

10) BUCKET

Item	Capacity		Tooth quantity	Width	
	SAE heaped	CECE heaped		Without side cutter	With side cutter
R220LC-9S	0.51 m³ (0.67 yd³)	0.45 m³ (0.59 yd³)	3	700 mm (27.6")	820 mm (32.3")
	0.80 m³ (1.05 yd³)	0.70 m³ (0.92 yd³)	5	1000 mm (39.4")	1120 mm (44.1")
	0.92 m³ (1.20 yd³)	0.80 m³ (1.05 yd³)	5	1150 mm (45.3")	1270 mm (50.0")
	1.10 m³ (1.44 yd³)	0.96 m³ (1.26 yd³)	5	1320 mm (52.0")	1440 mm (56.7")
	1.20 m³ (1.57 yd³)	1.00 m³ (1.31 yd³)	5	1400 mm (55.1")	1520 mm (59.8")
	1.34 m³ (1.75 yd³)	1.15 m³ (1.50 yd³)	6	1550 mm (61.0")	1670 mm (65.7")
	★0.52 m³ (0.68 yd³)	0.45 m³ (0.59 yd³)	5	935 mm (36.8")	1035 mm (40.7")
	◈0.74 m³ (0.97 yd³)	0.65 m³ (0.85 yd³)	5	985 mm (38.8")	-
	◈0.90 m³ (1.18 yd³)	0.80 m³ (1.05 yd³)	5	1070 mm (42.0")	-
	◈1.05 m³ (1.37 yd³)	0.92 m³ (1.20 yd³)	5	1290 mm (50.8")	-
	⊙0.87 m³ (1.14 yd³)	0.75 m³ (0.98 yd³)	5	1140 mm (44.9")	-
	⊙1.20 m³ (1.57 yd³)	1.00 m³ (1.31 yd³)	5	1410 mm (55.5")	-
	▣0.75 m³ (0.98 yd³)	0.65 m³ (0.85 yd³)	-	1790 mm (70.5")	-

★ : Long reach bucket
◈ : Heavy duty bucket
⊙ : Rock-heavy duty bucket
▣ : Slope finishing bucket

9. RECOMMENDED OILS

Use only oils listed below or equivalent.
Do not mix different brand oil.

Service point	Kind of fluid	Capacity ℓ (U.S. gal)	Ambient temperature °C (°F) -50 (-58) -30 (-22) -20 (-4) -10 (14) 0 (32) 10 (50) 20 (68) 30 (86) 40 (104)
Engine oil pan	Engine oil	24 (6.3)	★SAE 5W-40 SAE 30 SAE 10W SAE 10W-30 SAE 15W-40
Swing drive	Gear oil	5.0 (1.3)	★SAE 75W-90
Final drive		5.8×2 (1.5×2)	SAE 85W-140
Hydraulic tank	Hydraulic oil	Tank; 160 (42) System; 275 (73)	★ISO VG 15 ISO VG 46 ISO VG 68
Fuel tank	Diesel fuel	400 (106)	★ASTM D975 NO.1 ASTM D975 NO.2
Fitting (grease nipple)	Grease	As required	★NLGI NO.1 NLGI NO.2
Radiator (reservoir tank)	Mixture of antifreeze and water	35 (9.2)	Ethylene glycol base permanent type (50 : 50) ★Ethylene glycol base permanent type (60 : 40)

SAE : Society of Automotive Engineers
API : American Petroleum Institute
ISO : International Organization for Standardization
NLGI : National Lubricating Grease Institute
ASTM : American Society of Testing and Material

★ : Cold region