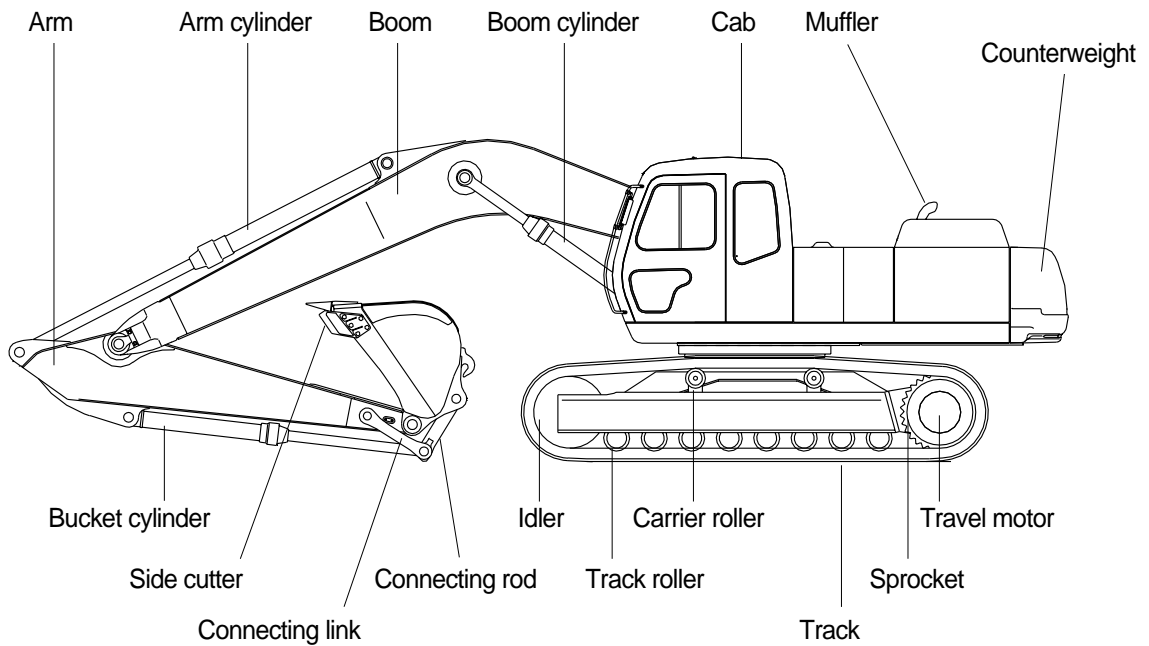
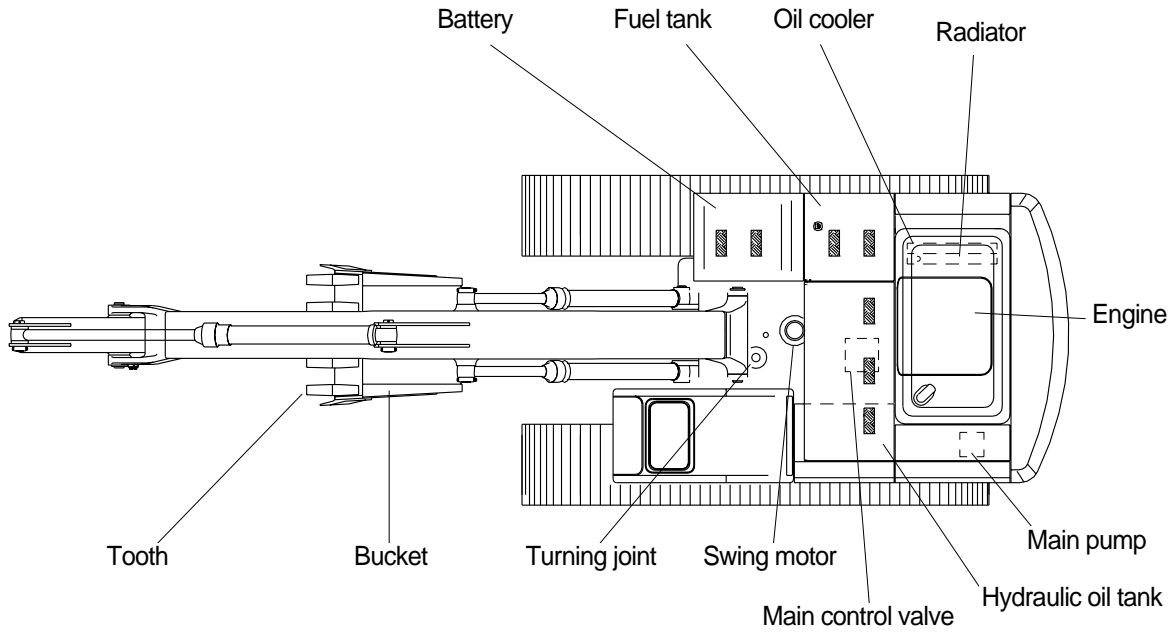


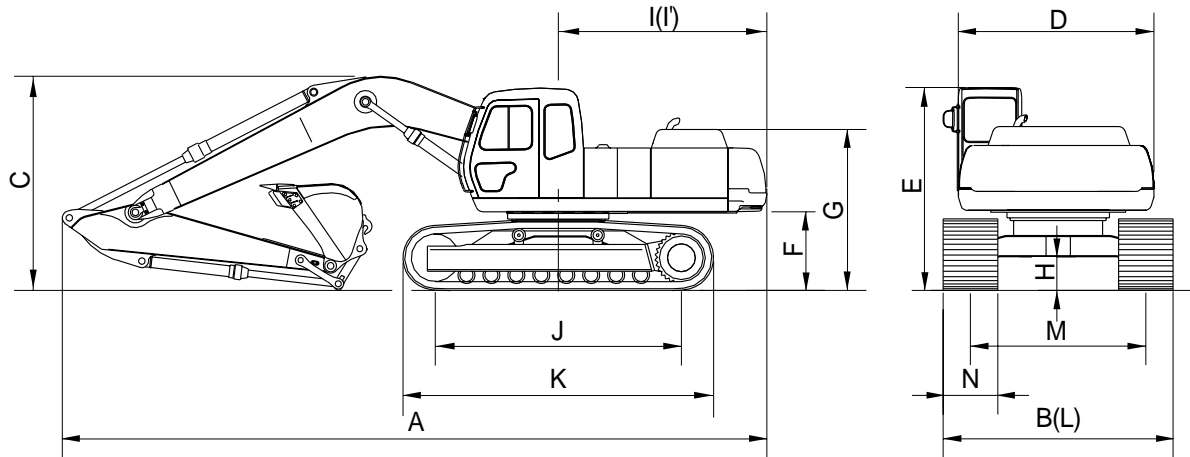
GROUP 2 SPECIFICATIONS

1. MAJOR COMPONENT



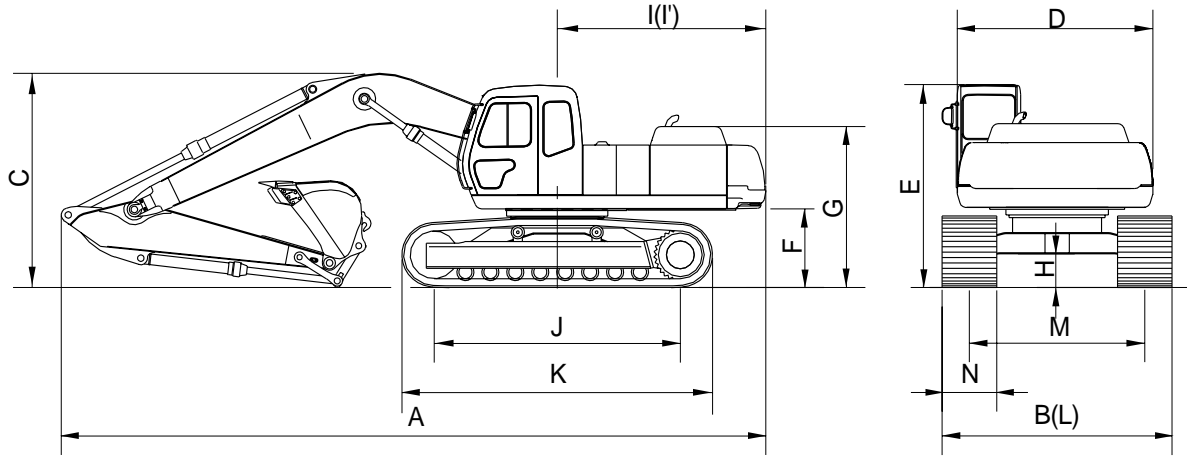
2. SPECIFICATION

1) ROBEX 290-3



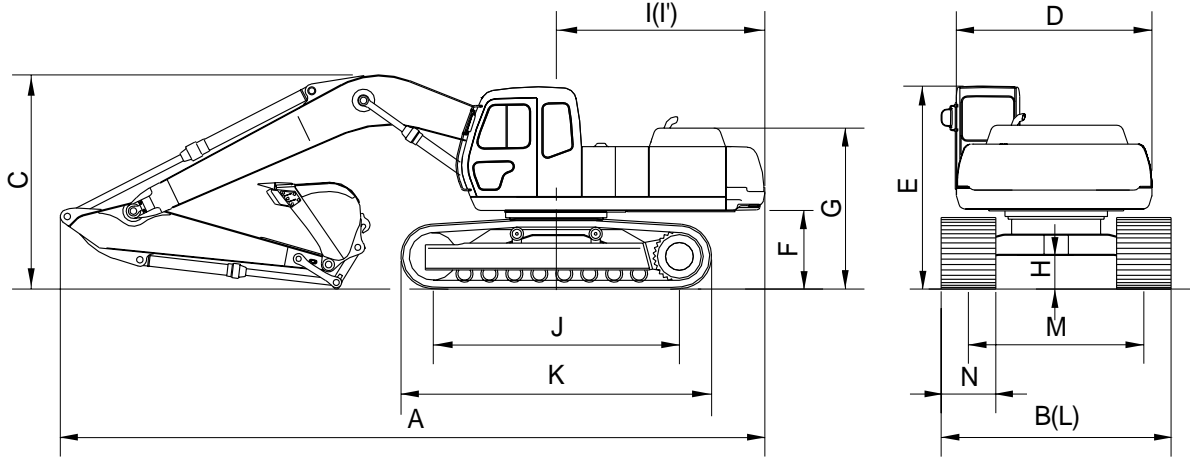
Description	Unit	Specification
Operating weight	kg (lb)	27000 (59600)
Bucket capacity(CECE heaped), standard	m ³ (yd ³)	1.1 (1.44)
Overall length	A	10580 (34' 9")
Overall width, with 810mm shoe	B	3410 (11' 2")
Overall height	C	3320 (10' 11")
Superstructure width	D	2900 (9' 6")
Cab height	E	3040 (9' 12")
Ground clearance of counterweight	F	1185 (3' 11")
Engine cover height	G	2420 (7' 11")
Minimum ground clearance	H	500 (1' 8")
Rear-end distance	I	3100 (10' 2")
Rear-end swing radius	I'	3100 (10' 2")
Distance between tumblers	J	3710 (12' 2")
Undercarriage length	K	4650 (15' 3")
Undercarriage width	L	3410 (11' 2")
Track gauge	M	2600 (8' 6")
Track shoe width, standard	N	810 (32")
Travel speed (low/high)	km/hr (mph)	3.0 / 4.6 (1.9 / 2.9)
Swing speed	rpm	10.2
Gradeability	degree (%)	35 (70)
Ground pressure(810mm shoe)	kg/cm ² (psi)	0.43 (6.12)

2) ROBEX 290LC-3



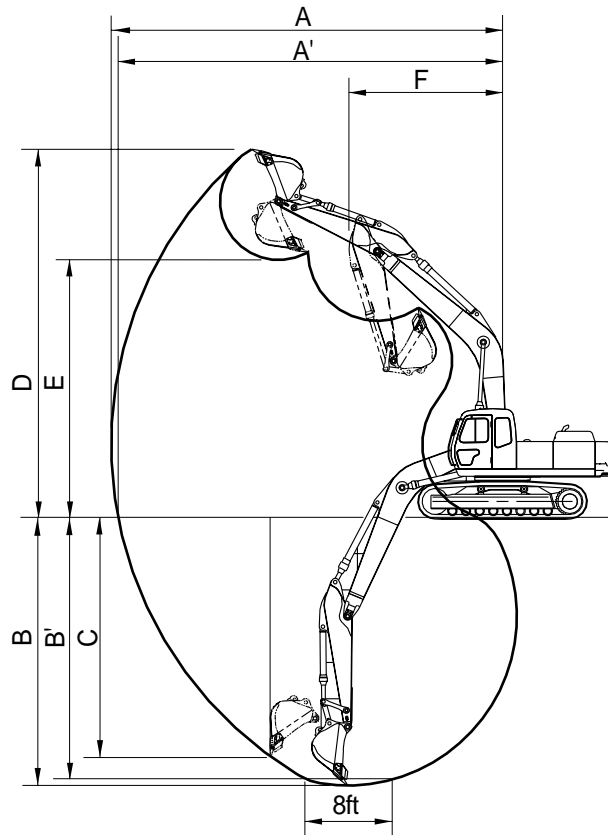
Description		Unit	Specification
Operating weight		kg (lb)	29100 (64200)
Bucket capacity(CECE heaped), standard		m ³ (yd ³)	1.1 (1.44)
Overall length	A	mm (ft-in)	10580 (34' 9")
Overall width, with 810mm shoe	B		3410 (11' 2")
Overall height	C		3320 (10' 11")
Superstructure width	D		2900 (9' 6")
Cab height	E		3040 (9' 12")
Ground clearance of counterweight	F		1185 (3' 11")
Engine cover height	G		242 (7' 11")
Minimum ground clearance	H		500 (1' 8")
Rear-end distance	I		3100 (10' 2")
Rear-end swing radius	I'		3150 (10' 4")
Distance between tumblers	J		4020 (13' 2")
Undercarriage length	K		4940 (16' 2")
Undercarriage width	L		3410 (11' 2")
Track gauge	M		2600 (8' 6")
Track shoe width, standard	N		810 (32")
Travel speed (low/high)		km/hr (mph)	3.0 / 4.6 (1.9 / 2.9)
Swing speed		rpm	10.8
Gradeability		degree (%)	35 (70)
Ground pressure(810mm shoe)		kg/cm ² (psi)	0.41 (5.8)

3) ROBEX 290NLC-3



Description		Unit	Specification
Operating weight		kg (lb)	27100 (59700)
Bucket capacity(CECE heaped), standard		m ³ (yd ³)	1.1 (1.44)
Overall length	A	mm (ft-in)	10580 (34' 9")
Overall width, with 600mm shoe	B		2990 (9' 9")
Overall height	C		3320 (10' 11")
Superstructure width	D		2900 (9' 6")
Cab height	E		3040 (9' 12")
Ground clearance of counterweight	F		1185 (3' 11")
Engine cover height	G		2420 (7' 11")
Minimum ground clearance	H		500 (1' 8")
Rear-end distance	I		3100 (10' 2")
Rear-end swing radius	I'		3100 (10' 2")
Distance between tumblers	J		4020 (13' 2")
Undercarriage length	K		4940 (16' 2")
Undercarriage width	L		2990 (9' 9")
Track gauge	M		2390 (7' 8")
Track shoe width, standard	N		600 (24")
Travel speed (low/high)		km/hr (mph)	3.0 / 4.6 (1.9 / 2.9)
Swing speed		rpm	10.2
Gradeability		degree (%)	35 (70)
Ground pressure(600mm shoe)		kg/cm ² (psi)	0.52 (7.40)

3. WORKING RANGE



Description		2.10m(6' 11")Arm	2.50m(8' 2")Arm	3.05m(10' 0")Arm	3.75m(12' 4")Arm
Max. digging reach	A	10020mm (32' 9")	10360mm (34' 0")	10800mm (35' 5")	11400mm (37' 5")
Max. digging reach on ground	A'	9815mm (32' 2")	10160mm (33' 4")	10600mm (34' 9")	11220mm (36' 10")
Max. digging depth	B	6440mm (21' 10")	6950mm (22' 10")	7500mm (24' 7")	8200mm (26' 11")
Max. digging depth (8ft level)	B'	6240mm (20' 5")	6740mm (22' 1")	7300mm (23' 11")	8010mm (26' 3")
Max. vertical wall digging depth	C	581mm (19' 0")	6060mm (19' 11")	6410mm (21' 0")	7080mm (23' 3")
Max. digging height	D	10070mm (33' 0")	10130mm (33' 3")	10160mm (33' 4")	10340mm (33' 11")
Max. dumping height	E	6930mm (22' 7")	7040mm (23' 1")	7110mm (23' 4")	7300mm (23' 11")
Min. swing radius	F	4380mm (14' 4")	4260mm (14' 0")	4230mm (13' 11")	4140mm (13' 7")
Bucket digging force		164kN	164kN	164kN	164kN
		16700 kgf	16700 kgf	16700 kgf	16700 kgf
		36817 lbf	36817 lbf	36817 lbf	36817 lbf
Arm crowd force		167 kN	140 kN	120 kN	108 kN
		17000 kgf	14300 kgf	12200 kgf	11000 kgf
		34700 lbf	31526 lbf	26896 lbf	24251 lbf

4. WEIGHT











Item	R290-3		R290LC-3		R290NLC-3	
	kg	lb	kg	lb	kg	lb
Upperstructure assembly	12470	27500	12630	27800	12420	27400
Main frame weld assembly	→		2170	4780	←	
Engine assembly	→		590	1300	←	
Main pump assembly	→		160	350	←	
Main control valve assembly	→		120	260	←	
Swing motor assembly	→		320	700	←	
Hydraulic oil tank assembly	→		280	620	←	
Fuel tank assembly	→		160	350	←	
Counterweight	→		4900	10800	←	
Cab assembly	→		300	660	←	
Undercarriage assembly	10600	23400	10930	24100	10700	23600
Track frame weld assembly	3390	7500	3740	8200	3660	8100
Swing bearing	→		410	900	←	
Travel motor assembly	→		410	900	←	
Turning joint	→		50	110	←	
Track recoil spring and idler	→		230	510	←	
Idler	→		210	460	←	
Carrier roller	→		40	80	←	
Track roller	→		50	110	←	
Track-chain assembly (standard triple grouser shoe)	2130	4700	2260	4980	1900	4200
Front attachment assembly (6.25 m boom, 3.05 m arm, 1.1 m ³ (CECE heaped) bucket)	→		4030	8880	←	
6.25 m boom assembly	→		2140	4720	←	
3.05 m arm assembly	→		930	2050	←	
1.1 m ³ (CECE heaped) bucket	→		960	2120	←	
Boom cylinder assembly	→		260	570	←	
Arm cylinder assembly	→		350	770	←	
Bucket cylinder assembly	→		230	500	←	
Bucket control rod assembly	→		110	240	←	

5. LIFTING CAPACITIES

1) ROBEX 290LC-3

(1) 6.25m(20' 6") boom, 2.1m(6' 11") arm equipped with 1.1m³(CECE heaped) bucket and 810mm(32") triple grouser shoe.

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

Load point height		Load radius								At max. reach		
		3.0m(10' 0")		4.5m(15' 0")		6.0m(20' 0")		7.5m(25' 0")		Capacity		Reach
												m(ft)
9.0m (30' 0")	kg lb									*5170 *11400	*5170 *11400	6.25 (21.4)
7.5m (25' 0")	kg lb					*5590 *12320	*5590 *12320			*5140 *11330	4410 9720	7.99 (26.2)
6.0m (20' 0")	kg lb					*5890 *12990	*5890 *12990	*5730 *12630	4750 10470	*5220 *11510	3530 7780	8.89 (29.2)
4.5m (15' 0")	kg lb			*8630 *19030	*8630 *19030	*6810 *15010	6790 14970	*6020 *13270	4630 10210	4660 10270	3080 6790	9.41 (30.9)
3.0m (10' 0")	kg lb			*11280 *24870	9780 21560	*8010 *17660	6340 13980	*6590 *14539	4430 9770	4400 9700	2870 6330	9.64 (31.6)
1.5m (5' 0")	kg lb			*13110 *28900	9100 20060	*9080 *20020	5960 13140	6440 14200	4230 9330	4380 9660	2840 6260	9.58 (31.4)
Ground line	kg lb			*13650 *30090	8900 19620	8920 19670	5740 12650	6300 13890	4100 9040	4620 10190	3010 6640	9.24 (30.3)
-1.5m (-5' 0")	kg lb	*12900 *28440	*12900 *28440	*13380 *29500	8910 19640	8850 19510	5680 12520	6270 13820	4070 8970	5230 11530	3430 7560	8.59 (28.2)
-3.0m (-10' 0")	kg lb	*17110 *37720	*17110 *37720	*12370 *27270	9080 20020	8950 19730	5770 12720			*6000 *13230	4390 9680	7.50 (24.6)
-4.5m (-15' 0")	kg lb	*13840 *30510	*13840 *30510	*10100 *22270	9450 20830							

- Note
1. Lifting capacity are based on SAE J1097
 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) 6.25m(20' 6") boom, 2.5m(8' 2") arm equipped with 1.1m³(CECE heaped) bucket and 810mm(32") triple grouser shoe.

Load point height		Load radius										At max. reach		
		1.5m(5' 0")		3.0m(10' 0")		4.5m(15' 0")		6.0m(20' 0")		7.5m(25' 0")		Capacity		Reach
														m(ft)
9.0m (30' 0")	kg lb											*4770 *10520	*4770 *10520	7.04 (23.1)
7.5m (25' 0")	kg lb											*4810 *10600	4100 9040	8.40 (27.6)
6.0m (20' 0")	kg lb									*5330 *11750	4870 10740	*4920 *10850	3340 7360	9.25 (30.3)
4.5m (15' 0")	kg lb					*7930 *17480	*7930 *17480	*6420 *14150	*6420 *14150	*5730 *12630	4730 10430	4440 9790	2930 6460	9.75 (32.0)
3.0m (10' 0")	kg lb					*10580 *23320	10060 22180	*7670 *16910	6470 14260	*6350 *14000	4500 9920	4190 9240	2740 6040	9.97 (32.7)
1.5m (5' 0")	kg lb					*12690 *27980	9290 20480	*8840 *19490	6060 13360	6500 14330	4290 9460	4170 9190	2700 5950	9.91 (32.5)
Ground line	kg lb					*13600 *29980	8970 19780	8980 19800	5800 12790	6330 13960	4130 9110	4370 9630	2840 6260	9.59 (31.5)
-1.5m (-5' 0")	kg lb			*13070 *28810	*13070 *28810	*13590 *29960	8920 19670	8870 19550	5700 12570	6270 13820	4070 8970	4880 10760	3190 7030	8.96 (29.4)
-3.0m (-10' 0")	kg lb	*14990 *33050	*14990 *33050	*18270 *40280	*18270 *40280	*12810 *28240	9030 19910	8920 19670	5740 12650			*5990 *13210	3970 8750	7.94 (26.0)
-4.5m (-15' 0")	kg lb			*15310 *33750	*15310 *33750	*10950 *24140	9340 20590					*5550 *12240	*5550 *12240	6.28 (20.6)
















(3) 6.25m(20' 6") boom, 3.05m(10' 0") arm equipped with 1.1m³(CECE heaped) bucket and 810mm(32") triple grouser shoe.

Load point height		Load radius										At max. reach				
		1.5m(5' 0")		3.0m(10' 0")		4.5m(15' 0")		6.0m(20' 0")		7.5m(25' 0")		9.0m(30' 0")		Capacity		Reach
																m(ft)
9.0m (30' 0")	kg lb													*4230 *9330	*4230 *9330	7.68 (25.2)
7.5m (25' 0")	kg lb													*4320 *9520	3800 8380	8.92 (29.3)
6.0m (20' 0")	kg lb									*4770 *10520	*4770 *10520			*4460 *9830	3130 6900	9.72 (31.9)
4.5m (15' 0")	kg lb					*5760 *12700	*5760 *12700	*5220 *11510	4880 10760					*4640 *10230	2770 6110	10.20 (33.5)
3.0m (10' 0")	kg lb			*9920 *21870	*9920 *21870	*9490 *20920	*9490 *20920	*7050 *15540	6690 14750	*5900 *13010	4630 10210	*4520 *9960	3340 7360	4480 9880	2590 5710	10.40 (34.1)
1.5m (5' 0")	kg lb					*11860 *26150	9630 21230	*8320 *18340	6230 13730	*6620 *14590	4380 9660	*5360 *11820	3220 7100	4440 9790	2540 5600	10.35 (34.0)
Ground line	kg lb			*9240 *20370	*9240 *20370	*13180 *29060	9160 20190	*9260 *20410	5910 13030	*7200 *15870	4190 9240	*4780 *10540	3120 6880	4620 10190	2640 5820	10.05 (33.0)
-1.5m (-5' 0")	kg lb	*10010 *22070	*10010 *22070	*12980 *28620	*12980 *28620	*13530 *29830	9000 19840	*9710 *21410	5750 12680	7140 15740	4090 9020			5090 11220	2930 6460	9.45 (31.0)
-3.0m (-10' 0")	kg lb	*13560 *29890	*13560 *29890	*17530 *38650	*17530 *38650	*13070 *28810	9050 19950	*9560 *21080	5740 12650	7160 15790	4100 9040			*5800 *12790	3550 7830	8.50 (27.9)
-4.5m (-15' 0")	kg lb	*17740 *39110	*17740 *39110	*16770 *36970	*16770 *36970	*11670 *25730	9280 20460	*8530 *18810	5900 13010					*5790 *12760	5000 11020	7.01 (23.0)
-6.0m (-20' 0")	kg lb					*8360 *18430	*8360 *18430									
















(4) 6.25m(20' 6") boom, 3.75m(12' 4") arm equipped with 1.1m³(CECE heaped) bucket and 810mm(32") triple grouser shoe.

Load point height		Load radius												At max. reach			
		1.5m(5' 0")		3.0m(10' 0")		4.5m(15' 0")		6.0m(20' 0")		7.5m(25' 0")		9.0m(30' 0")		Capacity		Reach	
																	m(ft)
9.0m (30' 0")	kg lb														*3680 *8110	*3680 *8110	8.54 (28.0)
7.5m (25' 0")	kg lb														*3800 *8380	3270 7210	9.65 (31.7)
6.0m (20' 0")	kg lb								*4019 *8860	*4019 *8860	*2620 *5780	*2620 *5780	*3960 *8730	2740 6040	10.39 (34.1)		
4.5m (15' 0")	kg lb								*4550 *10030	*4550 *10030	*4080 *8990	3500 7720	*4130 *9110	2440 5380	10.83 (35.5)		
3.0m (10' 0")	kg lb			*12940 *25830	*12940 *28530	8010 *17660	*8010 *17660	*6190 *16350	*6190 *13650	*5290 *11660	4690 10340	*4810 *10600	3360 7410	4019 8860	2280 5030	11.02 (36.2)	
1.5m (5' 0")	kg lb			*9740 *21470	*9740 *21470	*10670 *23520	9910 21850	*7590 *16730	6330 13960	*6090 *13430	4410 9720	*5270 *11620	3200 7050	3980 8770	2230 4920	10.97 (36.0)	
Ground line	kg lb			*9970 *21980	*9970 *21980	*12480 *27510	9240 20370	*8730 *19250	5930 13070	*6800 *14990	4170 9190	5390 11880	3070 6770	4120 9080	2300 5070	10.69 (35.1)	
-1.5m (-5' 0")	kg lb	*8980 *19800	*8980 *19800	*12330 *27180	*12330 *27180	*13300 *29320	8940 19710	*9430 *20790	5690 12540	7080 15610	4019 8860	5300 11680	2980 6570	4480 9880	2520 5560	10.14 (33.3)	
-3.0m (-10' 0")	kg lb	*11860 *26150	*11860 *26150	*15680 *34570	*15680 *34570	*13290 *29300	8880 19580	*9590 *21140	5620 12390	7020 15480	3970 8750			5200 11460	2970 6550	9.27 (30.4)	
-4.5m (-15' 0")	kg lb	*15200 *33510	*15200 *33510	*18430 *40630	*18430 *40630	*12410 *27360	9020 19890	*9050 *19950	5690 12540					*5590 *12320	3940 8690	7.95 (26.1)	
-6.0m (-20' 0")	kg lb			*14890 *32830	*14890 *32830	*10230 *22550	9380 20680										

(5) 6.25m(20' 6") boom, 3.05m(10' 0") arm equipped with 1.1m³(CECE heaped) bucket and 810mm(32") triple grouser shoe.

Load point height		Load radius												At max. reach			
		1.5m(5' 0")		3.0m(10' 0")		4.5m(15' 0")		6.0m(20' 0")		7.5m(25' 0")		9.0m(30' 0")		Capacity		Reach	
																	m(ft)
9.0m (30' 0")	kg lb														*4230 *9330	*4230 *9330	7.68 (25.2)
7.5m (25' 0")	kg lb														*4320 *9520	3700 8160	8.92 (29.3)
6.0m (20' 0")	kg lb								*4770 *10520	*4770 *10520					*4460 *9830	3040 6700	9.72 (31.9)
4.5m (15' 0")	kg lb							*5760 *12700	*5760 *12700	*5220 *11510	4760 10490			4100 9040	2680 5910	10.20 (33.5)	
3.0m (10' 0")	kg lb			*9920 *21870	*9920 *21870	*9490 *20920	*9490 *20920	*7050 *15540	6520 14370	*5900 *13010	4510 9940	*4520 *9960	3240 7140	3870 8530	2500 5510	10.40 (34.1)	
1.5m (5' 0")	kg lb					*11860 *26150	9630 20680	*8320 *18340	6060 13360	6480 14290	4260 9390	4800 10580	3120 6880	3840 8470	2460 5420	10.35 (34.0)	
Ground line	kg lb			*9240 *20370	*9240 *20370	*13180 *29060	8910 19640	8930 19690	5740 12650	6270 13820	4070 8970	4700 10360	3020 6660	3990 8800	2560 5640	10.05 (33.0)	
-1.5m (-5' 0")	kg lb	*10010 *22070	*10010 *22070	*12980 *28620	*12980 *28620	*13530 *29830	8760 19310	8750 19290	5580 12300	6160 13580	3960 8730			4400 9700	2840 6260	9.45 (31.0)	
-3.0m (-10' 0")	kg lb	*13560 *29890	*13560 *29890	*17530 *38650	*17530 *38650	*13070 *28810	8810 19420	8750 19290	5580 12300	6170 13600	3980 8770			5270 11620	3440 7580	8.50 (27.9)	
-4.5m (-15' 0")	kg lb	*17740 *39110	*17740 *39110	*16770 *36970	*16770 *36970	*11670 *25730	9040 19930	*8530 *18810	5740 12650					*5790 *12760	4870 10740	7.01 (23.0)	
-6.0m (-20' 0")	kg lb					*8360 *18430	*8360 *18430										











(6) 6.25m(20' 6") boom, 3.75m(12' 4") arm equipped with 1.1m³(CECE heaped) bucket and 810mm(32") triple grouser shoe.

Load point height		Load radius												At max. reach			
		1.5m(5' 0")		3.0m(10' 0")		4.5m(15' 0")		6.0m(20' 0")		7.5m(25' 0")		9.0m(30' 0")		Capacity		Reach	
																	m(ft)
9.0m (30' 0")	kg lb														*3680 *8110	*3680 *8110	8.54 (28.0)
7.5m (25' 0")	kg lb														*3800 *8380	3180 7010	9.65 (31.7)
6.0m (20' 0")	kg lb									*4019 *8860	*4019 *8860	*2620 *5780	*2620 *5780	*3960 *8730	2660 5860	10.39 (34.1)	
4.5m (15' 0")	kg lb									*4550 *10030	*4550 *10030	*4080 *8990	3400 7500	3660 8070	2360 5200	10.83 (35.5)	
3.0m (10' 0")	kg lb			*12940 *28530	*12940 *28530	8010 *17660	*8010 *17660	*6190 *13650	*6190 *13650	*5290 *11660	4570 10080	*4810 *10600	3260 7190	3470 7650	2200 4850	11.02 (36.2)	
1.5m (5' 0")	kg lb			*9740 *21470	*9740 *21470	*10670 *23520	9670 21320	*7590 *16730	6160 13580	*6090 *13430	4280 9440	4790 10560	3100 6830	3430 7560	2150 4740	10.97 (36.0)	
Ground line	kg lb			*9970 *21980	*9970 *21980	*12480 *27510	9000 19840	*8730 *19250	5760 12700	6260 13800	4050 8930	4640 10230	2970 6550	3540 7800	2220 4890	10.69 (35.1)	
-1.5m (-5' 0")	kg lb	*8980 *19800	*8980 *19800	*12330 *27180	*12330 *27180	*13300 *29320	8690 19160	8710 19200	5530 12190	6090 13430	3890 8580	4560 10050	2890 6370	3850 8490	2430 5360	10.14 (33.3)	
-3.0m (-10' 0")	kg lb	*11860 *26150	*11860 *26150	*15680 *34570	*15680 *34570	*13290 *29300	8640 19050	8620 19000	5450 12020	6040 13320	3840 8470			4490 9900	2880 6350	9.27 (30.4)	
-4.5m (-15' 0")	kg lb	*15200 *33510	*15200 *33510	*18430 *40630	18360 40480	*12410 *27360	8780 19360	8700 19180	5520 12170					*5590 *12320	3820 8420	7.95 (26.1)	
-6.0m (-20' 0")	kg lb			*14890 *32830	*14890 *32830	*10230 *22550	9140 20150										













2) ROBEX 290LC-3

(1) 6.25m(20' 6") boom, 2.1m(6' 11") arm equipped with 1.1m³(CECE heaped) bucket and 810mm(32") triple grouser shoe.

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

Load point height		Load radius								At max. reach		
		3.0m(10' 0")		4.5m(15' 0")		6.0m(20' 0")		7.5m(25' 0")		Capacity		Reach
												m(ft)
9.0m (30' 0")	kg lb									*5170 *11400	*5170 *11400	6.25 (21.4)
7.5m (25' 0")	kg lb					*5590 *12320	*5590 *12320			*5140 *11330	4530 9990	7.99 (26.2)
6.0m (20' 0")	kg lb					*5890 *12990	*5890 *12990	*5730 *12630	4880 10760	*5220 *11510	3530 8000	8.89 (29.2)
4.5m (15' 0")	kg lb			*8630 *19030	*8630 *19030	*6810 *15010	*6810 *15010	*6020 *13270	4760 10490	*5360 *11820	3170 6990	9.41 (30.9)
3.0m (10' 0")	kg lb			*11280 *24870	10020 22090	*8010 *17660	6500 14330	*6590 *14530	4550 10030	5070 11180	2960 6530	9.64 (31.6)
1.5m (5' 0")	kg lb			*13110 *28900	9350 20610	*9080 *20020	6130 13510	*7170 *15810	4360 9610	5050 11130	2940 6480	9.58 (31.4)
Ground line	kg lb			*13650 *30090	9140 20150	*9730 *21450	5910 13030	7290 16070	4220 9300	5330 11750	3100 6830	9.24 (30.3)
-1.5m (-5' 0")	kg lb	*12900 *28440	*12900 *28440	*13380 *29500	9160 20190	*9820 *21650	5840 12870	7250 15980	4190 9240	6030 13290	3540 7800	8.59 (28.2)
-3.0m (-10' 0")	kg lb	*17110 *37720	*17110 *37720	*12370 *27270	9320 20550	*9190 *20260	5940 13100			*6000 *13230	4510 9940	7.50 (24.6)
-4.5m (-15' 0")	kg lb	*13840 *30510	*13840 *30510	*10100 *22270	9700 21380							


(2) 6.25m(20' 6") boom, 2.5m(8' 2") arm equipped with 1.1m³(CECE heaped) bucket and 810mm(32") triple grouser shoe.











Load point height		Load radius								At max. reach				
		1.5m(5' 0")		3.0m(10' 0")		4.5m(15' 0")		6.0m(20' 0")		7.5m(25' 0")		Capacity		Reach
														m(ft)
9.0m (30' 0")	kg lb											*4770 *10520	*4770 *10520	7.04 (23.1)
7.5m (25' 0")	kg lb											*4810 *10600	4210 9280	8.40 (27.6)
6.0m (20' 0")	kg lb								*5330 *11750	5000 11020	*4920 *10850	3430 7560	9.25 (30.3)	
4.5m (15' 0")	kg lb					*7930 *17480	*7930 *17480	*6420 *14150	*6420 *14150	*5730 *12630	4850 10690	*5080 *11200	3020 6660	9.75 (32.0)
3.0m (10' 0")	kg lb					*10580 *23320	10310 22730	*7670 *16910	6630 14620	*6350 *14000	4630 10210	4830 10650	2830 6240	9.97 (32.7)
1.5m (5' 0")	kg lb					*12690 *27980	9530 21010	*8840 *19490	6220 13710	*7000 *15430	4410 9720	4810 10600	2790 6150	9.91 (32.5)
Ground line	kg lb					*13600 *29980	9210 20300	*9620 *21210	5960 13140	7320 16140	4260 9390	5040 11110	2930 6460	9.59 (31.5)
-1.5m (-5' 0")	kg lb			*13070 *28810	*13070 *28810	*13590 *29960	9160 20190	*9870 *21760	5860 12920	7250 15980	4190 9240	5630 12410	3290 7250	8.96 (29.4)
-3.0m (-10' 0")	kg lb	*14990 *33050	*14990 *33050	*18270 *40280	*18270 *40280	*12810 *28240	9280 20460	*9470 *20880	5910 13030			*5990 *13210	4090 9020	7.94 (26.0)
-4.5m (-15' 0")	kg lb			*15310 *33750	*15310 *33750	*10950 *24140	9580 21120					*5550 *12240	*5550 *12240	6.28 (20.6)

3) ROBEX 290NLC-3













(1) 6.25m(20' 6") boom, 2.1m(6' 11") arm equipped with 1.1m³(CECE heaped) bucket and 810mm(32") triple grouser shoe.

•  : Rating over-front
















•  : Rating over-side or 360 degree

Load point height		Load radius								At max. reach			
		3.0m(10' 0")		4.5m(15' 0")		6.0m(20' 0")		7.5m(25' 0")		Capacity		Reach	
												m(ft)	
9.0m (30' 0")	kg lb										*5170 *11400	*5170 *11400	6.52 (21.4)
7.5m (25' 0")	kg lb					*5590 *12320	*5590 *12320				*5140 *11330	4000 8820	7.99 (26.2)
6.0m (20' 0")	kg lb					*5890 *12990	*5890 *12990	*5730 *12630	4300 9480		*5220 *11510	3180 7010	8.89 (29.2)
4.5m (15' 0")	kg lb			*8630 *19030	*8630 *19030	*6810 *15010	6150 13560	*6020 *13270	4180 9220		5190 11440	2760 6080	9.41 (30.9)
3.0m (10' 0")	kg lb			*11280 *24870	9740 19270	*8010 *17660	5710 12590	*6590 *14539	39870 8770		4900 10800	2560 5640	9.64 (31.6)
1.5m (5' 0")	kg lb			*13110 *28900	8090 17840	*9080 *20020	5340 11770	*7170 *15810	3790 8360		4890 10780	2530 5580	9.58 (31.4)
Ground line	kg lb			*13650 *30090	7890 17390	*9730 *21450	5120 11290	7050 15540	3660 8070		5160 11380	2680 5910	9.24 (30.3)
-1.5m (-5' 0")	kg lb	*12900 *28440	*12900 *28440	*13380 *29500	7900 17420	*9820 *21650	5060 11160	7020 15480	3630 8000		5840 12870	3070 6770	8.59 (28.2)
-3.0m (-10' 0")	kg lb	*17110 *37720	16490 36350	*12370 *27270	8060 17770	*9190 *20260	5150 11350				*6000 *13230	3940 8690	7.50 (24.6)
-4.5m (-15' 0")	kg lb	*13840 *30510	*13840 *30510	*10100 *22270	8420 18560								
















(2) 6.25m(20' 6") boom, 2.5m(8' 2") arm equipped with 1.1m³(CECE heaped) bucket and 600mm(24") triple grouser shoe.

Load point height		Load radius								At max. reach					
		1.5m(5' 0")		3.0m(10' 0")		4.5m(15' 0")		6.0m(20' 0")		7.5m(25' 0")		Capacity		Reach	
														m(ft)	
9.0m (30' 0")	kg lb											*4770 *10520	*4770 *10520	7.04 (23.1)	
7.5m (25' 0")	kg lb											*4810 *10600	3720 8200	8.40 (27.6)	
6.0m (20' 0")	kg lb								*5330 *11750	4420 9740		*4920 *10850	3000 6610	9.25 (30.3)	
4.5m (15' 0")	kg lb					*7930 *17480	*7930 *17480	*6420 *14150	6280 13850	*5730 *12630	4270 9410	4930 10870	2620 5780	9.75 (32.0)	
3.0m (10' 0")	kg lb					*10580 *23320	9010 19860	*7670 *16910	5830 12850	*6350 *14000	4059 8950	4670 10300	2440 5380	9.97 (32.7)	
1.5m (5' 0")	kg lb					*12690 *27980	8270 18230	*8840 *19490	5430 11970	*7000 *15430	3840 8470	4650 10250	2400 5290	9.91 (32.5)	
Ground line	kg lb					*13600 *29980	7960 17550	*9620 *21210	5180 11420	7090 15630	3690 8140	4870 10740	2520 5560	9.59 (31.5)	
-1.5m (-5' 0")	kg lb			*13070 *28810	*13070 *28810	*13590 *29960	7910 17440	*9870 *21760	5080 11200	7020 15480	3630 8000	5450 12020	2850 6280	8.96 (29.4)	
-3.0m (-10' 0")	kg lb	*14990 *33050	*14990 *33050	*18270 *40280	16330 36000	*12810 *28240	8020 17680	*9470 *20880	5120 11290			*5990 *13210	3570 7870	7.94 (26.0)	
-4.5m (-15' 0")	kg lb			*15310 *33750	*15310 *33750	*10950 *24140	8310 18320						*5550 *12240	*5420 *11950	6.28 (20.6)

(3) 6.25m(20' 6") boom, 3.05m(10' 0") arm equipped with 1.1m³(CECE heaped) bucket and 600mm(24") triple grouser shoe.

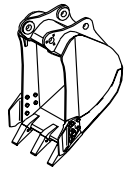
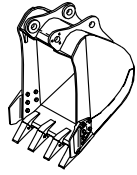
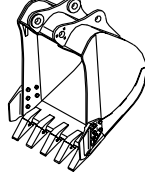
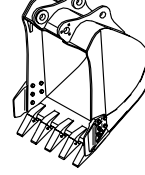
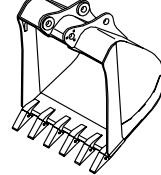
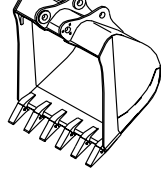
Load point height		Load radius												At max. reach			
		1.5m(5' 0")		3.0m(10' 0")		4.5m(15' 0")		6.0m(20' 0")		7.5m(25' 0")		9.0m(30' 0")		Capacity		Reach	
																	m(ft)
9.0m (30' 0")	kg lb														*4230 *9330	*4230 *9330	7.68 (25.2)
7.5m (25' 0")	kg lb														*4320 *9520	3340 7360	8.92 (29.3)
6.0m (20' 0")	kg lb									*4770 *10520	4490 9900				*4460 *9830	2730 6020	9.72 (31.9)
4.5m (15' 0")	kg lb							*5760 *12700	*5760 *12700	*5220 *11510	4310 9500				4560 10050	2390 5270	10.20 (33.5)
3.0m (10' 0")	kg lb			*9920 *21870	*9920 *21870	*9490 *20920	9240 20370	*7050 *15540	5880 12960	*5900 *13010	4059 8950	*4520 *9960	2900 6390	4320 9520	2220 4890	10.40 (34.1)	
1.5m (5' 0")	kg lb					*11860 *26150	8360 18430	*8320 *18340	5440 11990	*6620 *14590	3820 8420	5360 11820	2770 6110	4290 9460	2170 4780	10.35 (34.0)	
Ground line	kg lb			*9240 *20370	*9240 *20370	*13180 *29060	7900 17420	*9260 *20410	5120 11290	7030 15500	3630 8000	*4780 *10540	2680 5910	4460 9830	2260 4980	10.05 (33.0)	
-1.5m (-5' 0")	kg lb	*10010 *22070	*10010 *22070	*12980 *28620	*12980 *28620	*13530 *29830	7750 17090	*9710 *21410	4970 10960	6910 15230	3520 7760			4920 10850	2520 5560	9.45 (31.0)	
-3.0m (-10' 0")	kg lb	*13560 *29890	*13560 *29890	*17530 *38650	15890 35030	*13070 *28810	7800 17200	*9560 *21080	4960 10930	6930 15280	3540 7800			*5800 *12790	3070 6770	8.50 (27.9)	
-4.5m (-15' 0")	kg lb	*17740 *39110	*17740 *39110	*16770 *36970	16340 36020	*11670 *25730	8020 17680	*8530 *18810	5120 11290					*5790 *12760	4370 9630	7.01 (23.0)	
-6.0m (-20' 0")	kg lb					*8360 *18430	*8360 *18430										

(4) 6.25m(20' 6") boom, 3.75m(12' 4") arm equipped with 1.1m³(CECE heaped) bucket and 600mm(24") triple grouser shoe.


Load point height		Load radius												At max. reach			
		1.5m(5' 0")		3.0m(10' 0")		4.5m(15' 0")		6.0m(20' 0")		7.5m(25' 0")		9.0m(30' 0")		Capacity		Reach	
																	m(ft)
9.0m (30' 0")	kg lb														*3680 *8110	*3680 *8110	8.54 (28.0)
7.5m (25' 0")	kg lb														*3800 *8380	2860 6310	9.65 (31.7)
6.0m (20' 0")	kg lb									*4019 *8860	*4019 *8860	*2620 *5780	*2620 *5780	*3960 *8730	2370 5220	10.39 (34.1)	
4.5m (15' 0")	kg lb									*4550 *10030	4380 9660	*4080 *8990	3050 6720	4090 9020	2090 4610	10.83 (35.5)	
3.0m (10' 0")	kg lb			*12940 *28530	*12940 *28530	*8010 *17660	*8010 *17660	*6190 *13650	6030 13290	*5290 *11660	4110 9060	*4810 *10600	2910 6420	3880 8550	1940 4280	11.02 (36.2)	
1.5m (5' 0")	kg lb			*9740 *21470	*9740 *21470	*10670 *23520	8630 19030	*7590 *16730	5530 12190	*6090 *13430	3840 8470	*5270 *11620	2760 6080	3840 8470	1890 4170	10.97 (36.0)	
Ground line	kg lb			*9970 *21980	*9970 *21980	*12480 *27510	7980 17590	*8730 *19250	5140 11330	*6800 *14990	3600 7940	5200 11460	2620 5780	3970 8750	1950 4300	10.69 (35.1)	
-1.5m (-5' 0")	kg lb	*8980 *19800	*8980 *19800	*12330 *27180	*12330 *27180	*13300 *29320	7690 16950	*9430 *20790	4910 10820	6840 15080	3450 7610	5120 11290	2540 5600	4320 9520	2140 4720	10.14 (33.3)	
-3.0m (-10' 0")	kg lb	*11860 *26150	*11860 *26150	*15680 *34570	15520 34220	*13290 *29300	7630 16820	*9590 *21140	4840 10670	6790 14970	3400 7500			5030 11090	2550 5620	9.27 (30.4)	
-4.5m (-15' 0")	kg lb	*15200 *33510	*15200 *33510	*18430 *40630	15870 34990	*12410 *27360	7770 17130	*9050 *19950	4910 10820					*5590 *12320	3420 7540	7.95 (26.1)	
-6.0m (-20' 0")	kg lb			*14890 *32830	*14890 *32830	*10230 *22550	8109 17880										


6. BUCKET SELECTION GUIDE


1) ROBEX 290-3

					
0.7 m ³ CECE heaped bucket	0.9 m ³ CECE heaped bucket	1.1 m ³ CECE heaped bucket	1.3 m ³ CECE heaped bucket	1.5 m ³ CECE heaped bucket	1.6 m ³ CECE heaped bucket

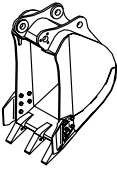
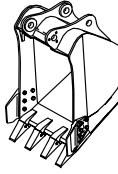
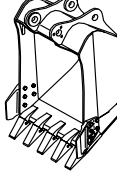
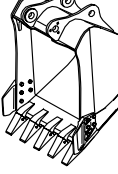
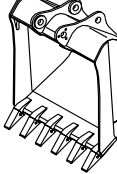
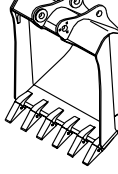
Capacity		Width		Weight	Recommendation			
PCSA heaped	CECE heaped	Without side cutter	With side cutter		2.10 m Arm (6' 11")	2.50 m Arm (8' 2")	3.05 m Arm (10' 0")	3.75 m Arm (12' 4")
0.79 m ³ (1.03 yd ³)	0.7 m ³ (0.92 yd ³)	890 mm (35")	1010 mm (40")	740 kg (1631 lb)				
1.03 m ³ (1.35 yd ³)	0.9 m ³ (1.18 yd ³)	1090 mm (43")	1210 mm (48")	850 kg (1874 lb)				
1.27 m ³ (1.66 yd ³)	1.1 m ³ (1.44 yd ³)	1290 mm (51")	1410 mm (56")	960 kg (2116 lb)				
1.5 m ³ (1.96 yd ³)	1.3 m ³ (1.70 yd ³)	1490 mm (59")	1610 mm (63")	1020 kg (2249 lb)				
1.73 m ³ (2.26 yd ³)	1.5 m ³ (1.96 yd ³)	1696 mm (67")	–	1120 kg (2469 lb)				
1.85 m ³ (2.24 yd ³)	1.6 m ³ (2.09 yd ³)	1800 mm (71")	–	1160 kg (2557 lb)				

 Applicable for materials with density of 2000 kg/m³ (3370 lb/yd³) or less


 Applicable for materials with density of 1600 kg/m³ (2700 lb/yd³) or less


 Applicable for materials with density of 1100 kg/m³ (1850 lb/yd³) or less


2) ROBEX 290LC-3, ROBEX 290NLC-3

					
0.7 m ³ CECE heaped bucket	0.9 m ³ CECE heaped bucket	1.1 m ³ CECE heaped bucket	1.3 m ³ CECE heaped bucket	1.5 m ³ CECE heaped bucket	1.6 m ³ CECE heaped bucket

Capacity		Width		Weight	Recommendation			
PCSA heaped	CECE heaped	Without side cutter	With side cutter		2.10 m Arm (6' 11")	2.50 m Arm (8' 2")	3.05 m Arm (10' 0")	3.75 m Arm (12' 4")
0.79 m ³ (1.03 yd ³)	0.7 m ³ (0.92 yd ³)	890 mm (35")	1010 mm (40")	740 kg (1631 lb)				
1.03 m ³ (1.35 yd ³)	0.9 m ³ (1.18 yd ³)	1090 mm (43")	1210 mm (48")	850 kg (1874 lb)				
1.27 m ³ (1.66 yd ³)	1.1 m ³ (1.44 yd ³)	1290 mm (51")	1410 mm (56")	960 kg (2116 lb)				
1.5 m ³ (1.96 yd ³)	1.3 m ³ (1.70 yd ³)	1490 mm (59")	1610 mm (63")	1020 kg (2249 lb)				
1.73 m ³ (2.26 yd ³)	1.5 m ³ (1.96 yd ³)	1696 mm (67")	–	1120 kg (2469 lb)				
1.85 m ³ (2.24 yd ³)	1.6 m ³ (2.09 yd ³)	1800 mm (71")	–	1160 kg (2557 lb)				

 Applicable for materials with density of 2000 kg/m³ (3370 lb/yd³) or less

 Applicable for materials with density of 1600 kg/m³ (2700 lb/yd³) or less

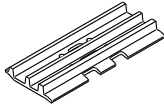
 Applicable for materials with density of 1100 kg/m³ (1850 lb/yd³) or less

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			
						
R290-3	Shoe width	mm (in)	600(24)	710 (28)	810 (32)	900 (35)
	Operating weight	kg (lb)	27500 (60600)	28100 (61900)	28400 (62600)	28700 (63300)
	Ground pressure	kg/cm ² (psi)	0.57 (8.11)	0.49 (6.97)	0.43 (6.12)	0.40 (5.69)
	Overall width	mm (ft-in)	3200 (10' 6")	3310 (10' 10")	3410 (11' 2")	3500 (11' 6")
R290LC-3	Shoe width	mm (in)	600 (24)	710 (28)	810 (32)	900 (35)
	Operating weight	kg (lb)	28400 (62600)	28800 (63500)	29100 (64200)	29400 (64800)
	Ground pressure	kg/cm ² (psi)	0.54 (7.68)	0.47 (6.68)	0.41 (5.83)	0.37 (5.26)
	Overall width	mm (ft-in)	3200 (10' 6")	3310 (10' 10")	3410 (11' 2")	3500 (11' 6")
R290NLC-3	Shoe width	mm (in)	600 (24)	710 (28)	810 (32)	900 (35)
	Operating weight	kg (lb)	28000 (61700)	28500 (62800)	28800 (63500)	29100 (64200)
	Ground pressure	kg/cm ² (psi)	0.52 (7.40)	0.44 (6.26)	0.39 (5.55)	0.35 (4.98)
	Overall width	mm (ft-in)	2990 (9' 9")	3100 (10' 2")	3200 (10' 5")	3300 (10' 9")

3) NUMBER OF ROLLERS AND SHOES ON EACH SIDE

Item	Quantity	
	ROBEX 290LC-3, 290NLC-3	ROBEX 290-3
Carrier rollers	2 EA	2 EA
Track rollers	9 EA	8 EA
Track shoes	51 EA	48 EA

8. SPECIFICATIONS FOR MAJOR COMPONENTS

1) ENGINE

Item	Specification
Model	CUMMINS 6CT8.3-C
Type	4-cycle turbocharged, after cooled diesel engine
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	114 × 135 mm (4.49" × 5.32")
Piston displacement	8270 cc (505 cu in)
Compression ratio	17.3 : 1
Rated gross horse power	198 Hp at 1900 rpm(148.8kw at 1900 rpm)
Maximum torque at 1500rpm	77.6 kgf · m (567 lb · ft)
Engine oil quantity	22.4 l (5.9 U.S. gal)
Dry weight	587 kg (1294 lb)
High idling speed	2050 + 50 rpm
Low idling speed	800 + 100 rpm
Rated fuel consumption	152.6 g/Hp · hr
Starting motor	DELCO REMY 37MT(24V)
Alternator	DAC HC60(24V-60AMP)
Battery	2 × 12V × 160 Ah

2) MAIN PUMP

Item	Specification
Type	Variable displacement tandem axial piston pump
Capacity	2 × 140 cc/rev
Maximum pressure	320 kg/cm ² (4550 psi)
Rated oil flow	2 × 260 l /min (67.9 U.S. gpm/56.5 U.K. gpm)

3) PILOT PUMP

Item	Specification
Type	Fixed displacement gear pump single stage
Capacity	10 cc/rev
Maximum pressure	40 kg/cm ² (570 psi)
Rated oil flow	19.5 l /min (5.3 U.S. gpm/4.4 U.K. gpm)

4) MAIN CONTROL VALVE

Item	Specification
Type	7 spool
Operating method	Hydraulic pilot assist
Main relief valve pressure	320 kg/cm ² (4550 psi)
Overload relief valve pressure	350 kg/cm ² (4980 psi)

5) SWING MOTOR

Item	Specification
Type	Fixed displacement axial piston motor
Capacity	169.4 cc/rev
Relief pressure	240 kg/cm ² (3410 psi)
Braking system	Automatic, spring applied hydraulic released
Braking torque	70 kgf · m (506 lb · ft)
Brake release pressure	26 kg/cm ² (370 psi)
Reduction gear type	2 - stage planetary
Swing speed	10.8 rpm

6) TRAVEL MOTOR

Item	Specification
Type	Variable displacement axial piston motor
Operating pressure	320 kg/cm ² (4550 psi)
Reduction gear type	3 - stage planetary
Braking system	Automatic, spring applied hydraulic released
Brake release pressure	9 kg/cm ² (128 psi)

7) REMOTE CONTROL VALVE

Item		Specification
Type		Pressure reducing type
Operating pressure	minimum	5 kg/cm ² (71 psi)
	maximum	20 kg/cm ² (284 psi)
Single operation stroke	lever	61 mm (2.4 in)
	pedal	123 mm (4.84 in)

8) CYLINDER

Item		Specification
Boom cylinder	Bore dia × Rod dia × Stroke	∅ 140 × ∅ 100 × 1465 mm
	Cushion	Extend only
Arm cylinder	Bore dia × Rod dia × Stroke	∅ 150 × ∅ 105 × 1765 mm
	Cushion	Extend and retract
Bucket cylinder	Bore dia × Rod dia × Stroke	∅ 140 × ∅ 95 × 1185 mm
	Cushion	Extend only

9) SHOE

Item		Width	Ground pressure	Link quantity	Overall width
R 290-3	Standard	810 mm (32")	0.43 kg/cm ² (6.12 psi)	48	3410 mm (11' 2")
	Option	600 mm (24")	0.57 kg/cm ² (8.11 psi)	48	3200 mm (10' 6")
		710 mm (28")	0.49 kg/cm ² (6.97 psi)	48	3310 mm (10' 10")
		900 mm (35")	0.40 kg/cm ² (5.79 psi)	48	3500 mm (11' 6")
R 290LC-3	Standard	810 mm (32")	0.41 kg/cm ² (5.83 psi)	51	3410 mm (11' 2")
	Option	600 mm (24")	0.54 kg/cm ² (7.68 psi)	51	3200 mm (10' 6")
		710 mm (28")	0.47 kg/cm ² (6.68 psi)	51	3310 mm (10' 10")
		900 mm (35")	0.37 kg/cm ² (5.26 psi)	51	3500 mm (11' 6")
R 290NLC-3	Standard	600 mm (24")	0.52 kg/cm ² (7.40 psi)	51	2990 mm (9' 9")
	Option	710 mm (28")	0.44 kg/cm ² (6.26 psi)	51	3100 mm (10' 2")
		810 mm (32")	0.39 kg/cm ² (5.55 psi)	51	3200 mm (10' 5")
		900 mm (35")	0.35 kg/cm ² (4.98 psi)	51	3300 mm (10' 9")

10) BUCKET

Item	Capacity		Tooth quantity	Width	
	PCSA heaped	CECE heaped		Without side cutter	With side cutter
Standard	1.27 m ³ (1.66 yd ³)	1.1 m ³ (1.44 yd ³)	5	1290 mm (51")	1410 mm (56")
Option	0.79 m ³ (1.03 yd ³)	0.7 m ³ (0.92 yd ³)	3	890 mm (35")	1010 mm (40")
	1.03 m ³ (1.35 yd ³)	0.9 m ³ (1.18 yd ³)	4	1090 mm (43")	1210 mm (48")
	1.50 m ³ (1.96 yd ³)	1.3 m ³ (1.70 yd ³)	5	1490 mm (59")	1610 mm (63")
	1.73 m ³ (2.26 yd ³)	1.5 m ³ (1.96 yd ³)	6	1696 mm (67")	—
	1.85 m ³ (2.42 yd ³)	1.6 m ³ (2.09 yd ³)	6	1800 mm (71")	—

10. 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)								
			-20 (-4)	-10 (14)	0 (32)	10 (50)	20 (68)	30 (86)	40 (104)		
Engine oil pan	Engine oil	22.4 (5.9)					SAE 30				
			SAE 10W								
			SAE 10W-30								
						SAE 15W-40					
Swing drive	Gear oil	11 (2.9)					SAE 85W-140				
Final drive		7 × 2 (1.8 × 2)									
Hydraulic tank	Hydraulic oil	Tank; 270 (71.3) System; 380 (100.3)	ISO VG 32								
						ISO VG 46					
					ISO VG 68						
Fuel tank	Diesel fuel	450 (118.8)	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 50 : 50	35 (9.2)	Ethylene glycol base permanent type								

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.