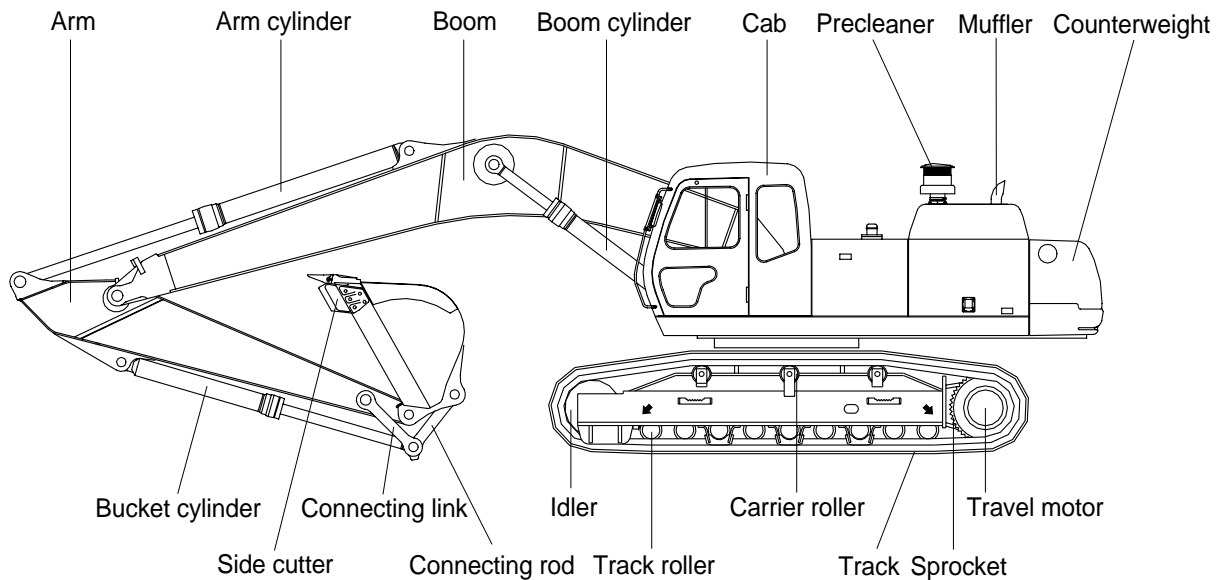
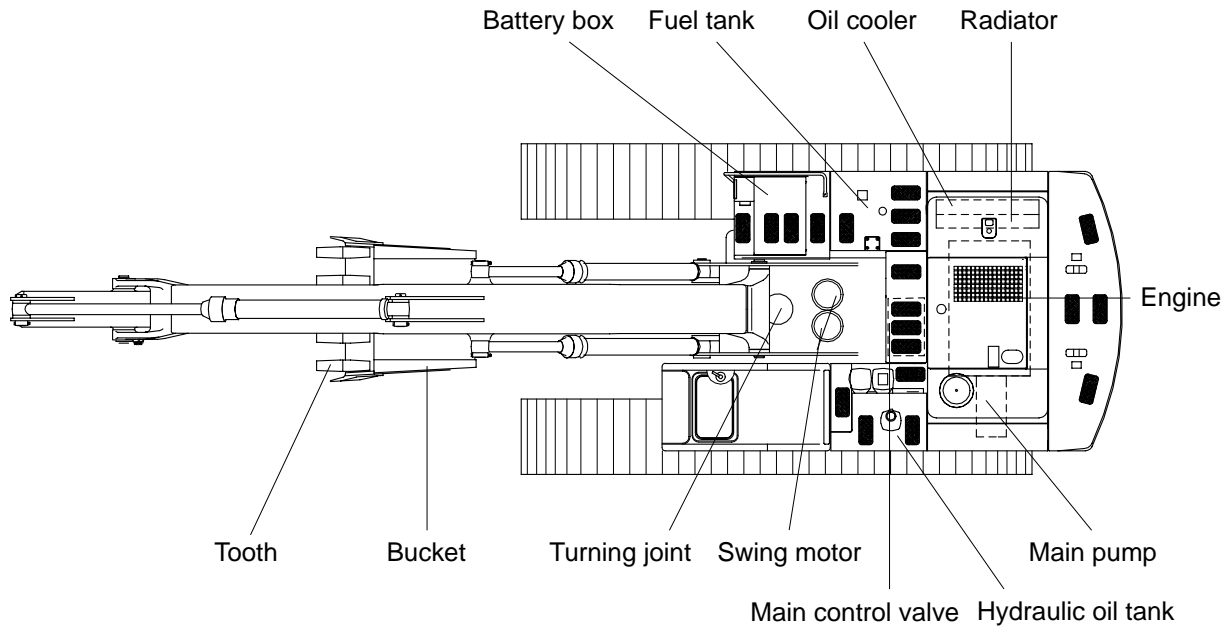


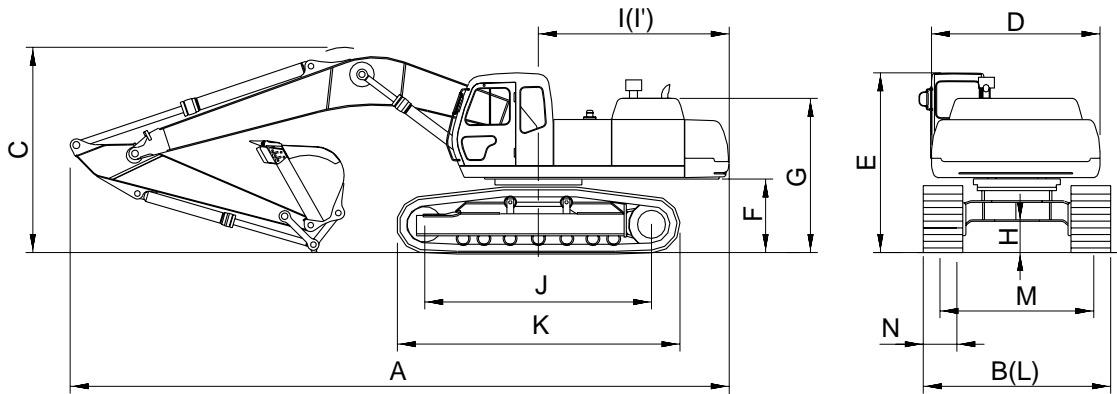
GROUP 2 SPECIFICATION

1. MAJOR COMPONENT



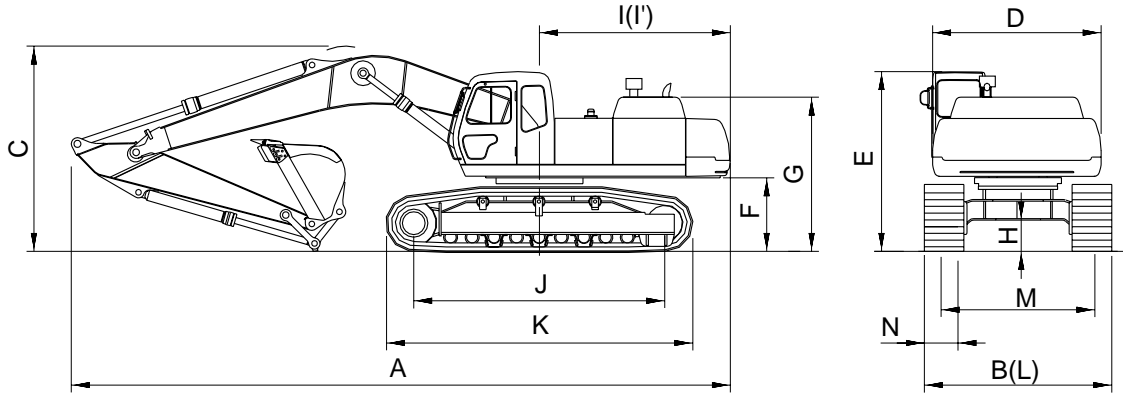
2. SPECIFICATIONS

1) ROBEX450-3 (7.06m(23'2") boom and 3.38m(11'1") arm)



Description		Unit	Specification
Operating weight		kg(lb)	43400(95680)
Bucket capacity(PCSA heaped) ,standard		m ³ (yd ³)	1.97(2.58)
Overall length	A	mm(ft-in)	11700(38' 5")
Overall width, with 750mm shoe	B		3490(11' 5")
Overall height	C		3540(11' 7")
Superstructure width	D		3000(9' 10")
Cab height	E		3200(10' 6")
Ground clearance of counterweight	F		1335(4' 5")
Engine cover height	G		2745(9' 0")
Minimum ground clearance	H		555(1' 10")
Rear-end distance	I		3400(11' 2")
Rear-end swing radius	I'		3400(11' 2")
Distance between tumblers	J		4038(13' 3")
Undercarriage length	K		5030(16' 6")
Undercarriage width	L		3490(11' 5")
Track gauge	M		2740(9' 0")
Track shoe width, standard	N		750(30")
Travel speed (low/high)		km/hr(mph)	3.2/5.1(2.0/3.2)
Swing speed		rpm	10.0
Gradeability		Degree(%)	40(84)
Ground pressure(750mm shoe)		kg/cm ² (psi)	0.66(9.39)

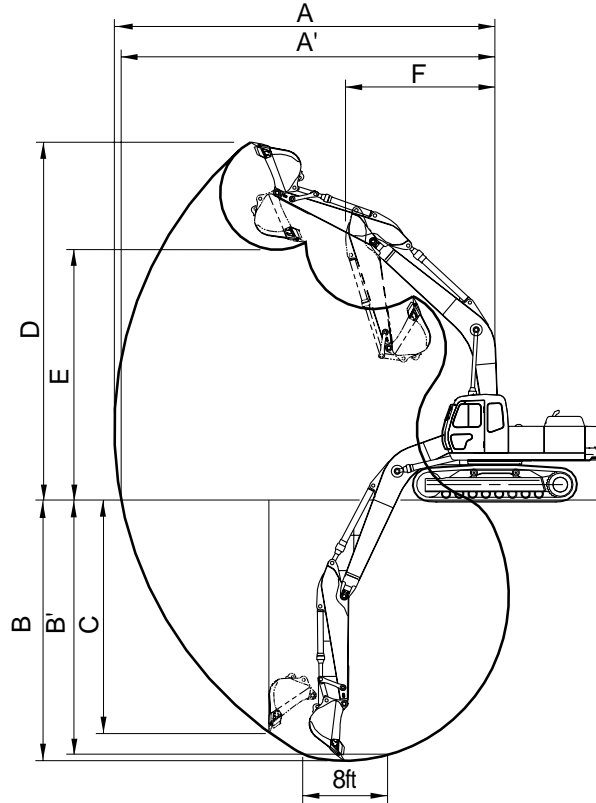
2) ROBEX450LC-3 (7.06m(23'2") boom and 3.38m(11'1") arm)



Description		Unit	Specification
Operating weight		kg (lb)	44300(97660)
Bucket capacity(PCSA heaped) ,standard		m ³ (yd ³)	2.09(2.74)
Overall length	A	mm(ft-in)	11700(38' 5")
Overall width, with 750mm shoe	B		3490(11' 5")
Overall height	C		3540(11' 7")
Superstructure width	D		3000(9' 10")
Cab height	E		3200(10' 6")
Ground clearance of counterweight	F		1335(4' 5")
Engine cover height	G		2745(9' 0")
Minimum ground clearance	H		555(1' 10")
Rear-end distance	I		3400(11' 2")
Rear-end swing radius	I'		3400(11' 2")
Distance between tumbler	J		4470(14' 8")
Undercarriage length	K		5462(17' 11")
Undercarriage width	L		3490(11' 5")
Track gauge	M		2740(9' 0")
Track shoe width, standard	N		750(30")
Travel speed (low/high)			km/hr(mph)
Swing speed		rpm	9.3
Gradeability		Degree(%)	40(84)
Ground pressure(750mm shoe)		kg/cm ² (psi)	0.61(8.68)

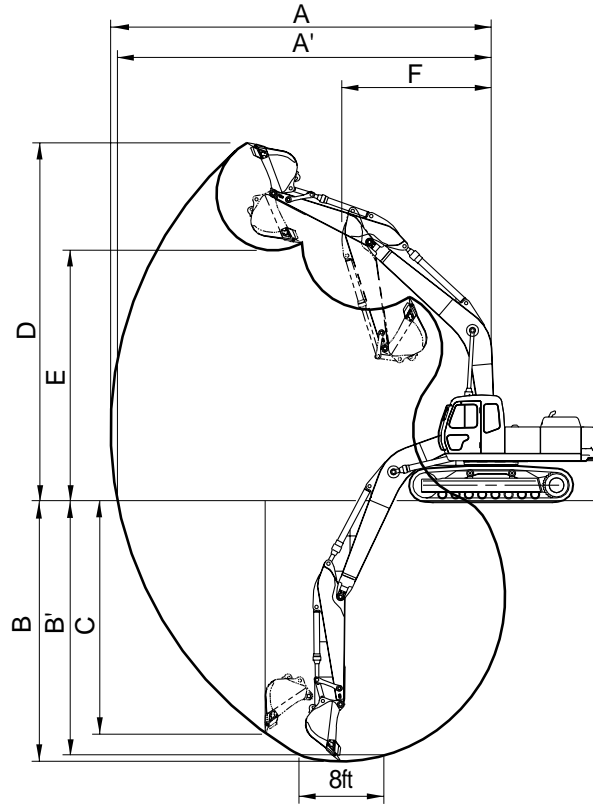
3. WORKING RANGE

1) 7.06m(23'2") Boom and 2.09m³ PCSA Heaped Bucket



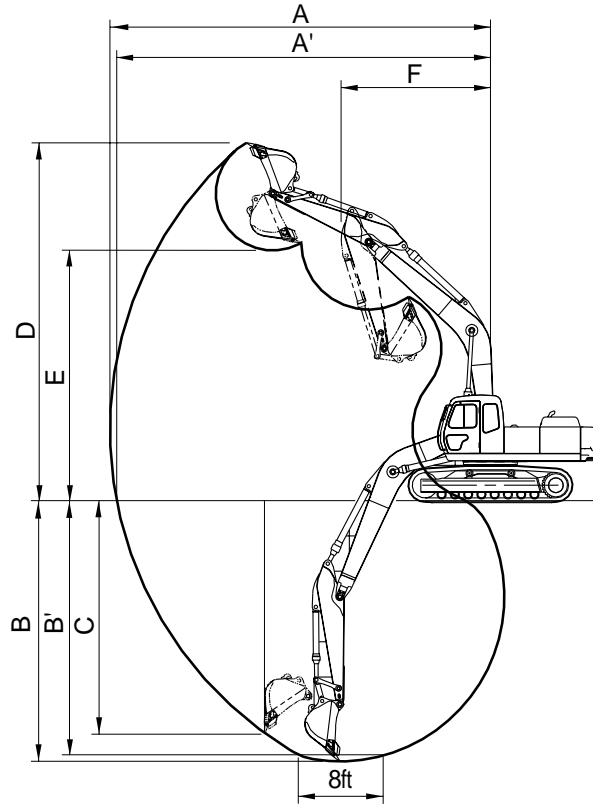
Description		2.4m(7' 10")Arm	2.9m(9' 6")Arm	3.38m(11'1")Arm	4.0m(13' 1")Arm	4.5m(14' 9")Arm
Max. digging reach	A	11010mm (36' 1")	11435mm (37' 6")	12010mm (39' 5")	12575mm (41' 3")	13255mm (43' 6")
Max. digging reach on ground	A'	10790mm (35' 5")	11230mm (36' 10")	11800mm (38' 9")	12385mm (40' 8")	13075mm (42' 11")
Max. digging depth	B	6810mm (22' 4")	7310mm (24' 0")	7790mm (25' 7")	8410mm (27' 7")	8910mm (29' 3")
Max. digging depth (8ft level)	B'	6600mm (21' 8")	7120mm (23' 4")	7650mm (25' 1")	8280mm (27' 2")	8790mm (28' 10")
Max. vertical wall digging depth	C	5210mm (17' 1")	5375mm (17' 8")	6800mm (22' 4")	6860mm (22' 6")	8080mm (26' 6")
Max. digging height	D	10130mm (33' 3")	10270mm (33' 8")	10890mm (35' 9")	11065mm (36' 4")	12005mm (39' 5")
Max. dumping height	E	6950mm (22' 10")	7080mm (23' 3")	7550mm (24' 9")	7765mm (25' 6")	8555mm (28' 1")
Max. swing radius	F	5075mm (16' 8")	4750mm (15' 7")	4660mm (15' 3")	4840mm (15' 11")	4790mm (15' 9")
Bucket digging force		221 kN	221 kN	221 kN	221 kN	221 kN
		22600 kgf	22600 kgf	22600 kgf	22600 kgf	22600 kgf
		49800 lbf	49800 lbf	49800 lbf	49800 lbf	49800 lbf
Arm digging force		272 kN	226 kN	190 kN	181 kN	146 kN
		27800 kgf	23000 kgf	19300 kgf	18400 kgf	15000 kgf
		61300 lbf	50700 lbf	42550 lbf	40560 lbf	33000 lbf

2) 6.55m(21'6") Mass Boom and 2.2m³ PCSA Heaped Bucket



Description		2.4m(7' 10") Arm
Max. digging reach	A	10470mm (34' 4")
Max. digging reach on ground	A'	10235mm (33' 7")
Max. digging depth	B	6590mm (21' 7")
Max. digging depth (8ft level)	B'	6360mm (20' 10")
Max. vertical wall digging depth	C	4225mm (13' 10")
Max. digging height	D	9490mm (31' 2")
Max. dumping height	E	6370mm (20' 11")
Max. swing radius	F	4780mm (15' 8")
Bucket digging force		221 kN
		22600 kgf
		49800 lbf
Arm digging force		282 kN
		28800 kgf
		63490 lbf

3) 9.0m(29'6") Long Boom and 1.3m³ PCSA Heaped Bucket



Description		2.4m(7' 10") Arm
Max. digging reach	A	10470mm (34' 4")
Max. digging reach on ground	A'	10235mm (33' 7")
Max. digging depth	B	6590mm (21' 7")
Max. digging depth (8ft level)	B'	6360mm (20' 10")
Max. vertical wall digging depth	C	4225mm (13' 10")
Max. digging height	D	9490mm (31' 2")
Max. dumping height	E	6370mm (20' 11")
Max. swing radius	F	4780mm (15' 8")
Bucket digging force		221 kN
		22600 kgf
		49800 lbf
Arm digging force		282 kN
		28800 kgf
		63490 lbf

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	←	

5. LIFTING CAPACITIES

1) ROBEX 450-3













(1) 7.06m(23' 2") boom, 2.4m(7' 10") arm equipped with 1.97m³(PCSA heaped) bucket and 750mm (30") triple grouser shoe.

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













Load point height		Load radius										At max. reach		
		3.0m(10ft)		4.5m(15ft)		6.0m(20ft)		7.5m(25ft)		9.0m(30ft)		Capacity		Reach
														kg
6.0m (20ft)	kg lb					*10570 *23300	*10570 *23300	*9160 *20190	8080 17810			7440 16400	4880 10760	10.03 (32.9)
4.5m (15ft)	kg lb			*16460 *36290	*16460 *36290	*12010 *26480	11060 24380	*9840 *21690	7730 17040			6780 14950	4390 9680	10.45 (34.3)
3.0m (10ft)	kg lb					*13480 *29720	10290 22690	*10600 *23370	7340 16180			6490 14310	4150 9150	10.61 (34.8)
1.5m (5ft)	kg lb					*14430 *31810	9730 21450	10950 24140	7010 15450	8220 18120	5260 11600	6490 14310	4130 9110	10.52 (34.5)
Ground line	kg lb			*19300 *42550	14740 32500	*14580 *32140	9450 20830	10710 23610	6790 14970			6800 14990	4330 9550	10.17 (33.4)
-1.5m (-5ft)	kg lb			*17910 *39480	14830 32690	*13960 *30780	9380 20680	10630 23440	6720 14820			*7510 *16560	4850 10690	9.53 (31.3)
-3.0m (-10ft)	kg lb	*18390 *40540	*18390 *40540	*15710 *34630	15060 33200	*12480 *27510	9490 20920							
-4.5m (-15ft)	kg lb			*12210 *26920	*12210 *26920	*9640 *21250	*9640 *21250							

- 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) 7.06m(23' 2") boom, 2.9m(9' 6") arm equipped with 1.97m³(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)		Capacity		Reach
														m(ft)
6.0m (20ft)	kg lb							*8580 *18920	8160 17990			6890 15190	4490 9900	10.48 (34.4)
4.5m (15ft)	kg lb			*15030 *33140	*15030 *33140	*11270 *24850	11220 24740	*9320 *20550	7790 17170	*8170 *18010	5650 12460	6310 13910	4040 8910	10.89 (35.7)
3.0m (10ft)	kg lb			*18320 *40390	15930 35120	*12850 *28330	10400 22930	*10160 *22400	7360 16230	8410 18540	5430 11970	6040 13320	3830 8440	11.04 (36.2)
1.5m (5ft)	kg lb			*19920 *43920	14880 32800	*14010 *30890	9750 21500	*10840 *23900	6980 15390	8180 18030	5220 11510	6020 13270	3790 8360	10.95 (35.9)
Ground line	kg lb			*19770 *43590	14570 32120	*14450 *31860	9370 20660	10640 23460	6720 14820	8010 17660	5060 11160	6280 13850	3950 8710	10.62 (34.8)
-1.5m (-5ft)	kg lb	*19830 *43720	*19830 *43720	*18670 *41160	14570 32120	*14120 *31130	9230 20350	10500 23150	6590 14530			6910 15230	4370 9630	10.01 (32.8)
-3.0m (-10ft)	kg lb	*21300 *46960	*21300 *46960	*16740 *36910	14740 32500	*12970 *28590	9280 20460	*10070 *22200	6620 14590			*6920 *15260	5230 11530	9.06 (29.7)
-4.5m (-15ft)	kg lb	*16940 *37350	*16940 *37350	*13670 *30140	*13670 *30140	*10700 *23590	9520 20990							
















(3) 7.06m(23' 2") boom, 3.38m(11' 1") arm equipped with 1.97m³(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)		Capacity		Reach
														m(ft)
6.0m (20ft)	kg lb							*8050 *17750	*8050 *17750	*7420 *16360	5880 12960	6210 13690	4000 8820	11.09 (36.4)
4.5m (15ft)	kg lb					*10560 *23280	*10560 *23280	*8830 *19470	7840 17280	*7780 *17150	5680 12520	5730 12630	3630 8000	11.47 (37.6)
3.0m (10ft)	kg lb			*17210 *37940	16340 36020	*12230 *26960	10510 23170	*9730 *21450	7390 16290	*8250 *18190	5430 11970	5500 12130	3440 7580	11.62 (38.1)
1.5m (5ft)	kg lb			*19400 *42770	15060 33200	*13580 *29940	9800 21610	*10520 *23190	6970 15370	8150 17970	5180 11420	5480 12080	3410 7520	11.54 (37.9)
Ground line	kg lb	*12200 *26900	*12200 *26900	*19850 *43760	14520 32010	*14260 *31440	9340 20590	10590 23350	6660 14680	7950 17530	5000 11020	5690 12540	3530 7780	11.22 (36.8)
-1.5m (-5ft)	kg lb	*17450 *38470	*17450 *38470	*19140 *42200	14400 31750	*14180 *31260	9130 20130	10410 22950	6490 14310	7840 17280	4900 10800	6190 13650	3870 8530	10.65 (34.9)
-3.0m (-10ft)	kg lb	*22880 *50440	*22880 *50440	*17510 *38600	14500 31970	*13310 *29340	9120 20110	*10330 *22770	6470 14260			*6430 *14180	4540 10010	9.78 (32.1)
-4.5m (-15ft)	kg lb	*19320 *42590	*19320 *42590	*14820 *32670	14810 32650	*11440 *25220	9290 20480	*8650 *19070	6630 14620					
-6.0m (-20ft)	kg lb			*10430 *22990	*10430 *22990									











(4) 7.06m(23' 2") boom, 4m(13' 1") arm equipped with 1.97m³(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
																
6.0m (20ft)	kg lb									*6750 *14880	5890 12990			5640 12430	3570 7870	11.63 (38.2)
4.5m (15ft)	kg lb							*8080 *17810	7870 17350	*7180 *15830	5650 12460			5210 11490	3230 7120	11.99 (39.3)
3.0m (10ft)	kg lb			*15570 *34330	*15570 *34330	*11270 *24850	10610 23390	*9050 *19950	7370 16250	*7710 *17000	5360 11820	6360 14020	3980 8770	5000 11020	3050 6720	12.13 (39.8)
1.5m (5ft)	kg lb			*18300 *40340	15200 33510	*12810 *28240	9790 21580	*9940 *21910	6900 15210	8050 17750	5080 11200	6190 13650	3820 8420	4970 10960	3010 6640	12.05 (39.5)
Ground line	kg lb	*12860 *28350	*12860 *28350	*19440 *42860	14370 31680	*13760 *30340	9220 20330	10460 23060	6530 14400	7800 17200	4850 10690			5130 11310	3100 6830	11.75 (38.5)
-1.5m (-5ft)	kg lb	*16890 *37240	*16890 *37240	*19270 *42480	14070 31020	*13990 *30840	8910 19640	10210 22510	6300 13890	7650 16870	4700 10360			5530 12190	3370 7430	11.21 (36.8)
-3.0m (-10ft)	kg lb	*21660 *47750	*21660 *47750	*18090 *39880	14070 31020	*13460 *29670	8820 19440	10120 22310	6210 13690	7610 16780	4660 10270			*6160 *13580	3900 8600	10.39 (34.1)
-4.5m (-15ft)	kg lb	*21790 *48040	*21790 *48040	*15880 *35010	14300 31530	*12040 *26540	8920 19670	*9230 *20350	6290 13870					*5810 *12810	4920 10850	9.20 (30.2)
-6.0m (-20ft)	kg lb	*16100 *35490	*16100 *35490	*12250 *27010	*12250 *27010	*9290 *20480	9240 20370									

(5) 7.06m(23' 2") boom, 4.5m(14' 9") arm equipped with 1.97m³(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
																
6.0m (20ft)	kg lb									*6230 *13730	5920 13050	*5110 *11270	4240 9350	4910 10820	3010 6640	12.40 (40.7)
4.5m (15ft)	kg lb							*7480 *16490	*7480 *16490	*6700 *14770	5660 12480	*6180 *13620	4120 9080	4570 10080	2750 6060	12.73 (41.8)
3.0m (10ft)	kg lb			*14220 *31350	*14220 *31350	*10470 *23080	*10470 *23080	*8490 *18720	7410 16340	*7280 *16050	5350 11790	6330 13960	3940 8690	4400 9700	2600 5730	12.86 (42.2)
1.5m (5ft)	kg lb			*17310 *38160	15440 34040	*12150 *26790	9860 21740	*9470 *20880	6890 15190	*7850 *17310	5030 11090	6130 13510	3760 8290	4380 9660	2570 5670	12.79 (42.0)
Ground line	kg lb	*11450 *25240	*11450 *25240	*18950 *41780	14380 31700	*13320 *29370	9190 20260	*10210 *22510	6470 14260	7730 17040	4770 10520	5960 13140	3600 7940	4520 9960	2650 5840	12.51 (41.0)
-1.5m (-5ft)	kg lb	*14430 *31810	*14430 *31810	*19230 *42390	13910 30670	*13790 *30400	8790 19380	10110 22290	6190 13650	7530 16600	4580 10100	5860 12920	3500 7720	4840 10670	2870 6330	12.01 (39.4)
-3.0m (-10ft)	kg lb	*18270 *40280	*18270 *40280	*18440 *40650	13810 30450	*13530 *29830	8640 19050	9960 21960	6060 13360	7450 16420	4510 9940			*5330 *11750	3290 7250	11.26 (36.9)
-4.5m (-15ft)	kg lb	*23130 *50990	*23130 *50990	*16620 *36640	13960 30780	*12430 *27400	8680 19140	*9540 *21030	6080 13400	*7220 *15920	4570 10080			*4980 *10980	4040 8910	10.19 (33.4)
-6.0m (-20ft)	kg lb	*18450 *40680	*18450 *40680	*13520 *29810	*13520 *29810	*10200 *22490	8920 19670	*7500 *16530	6300 13890					*4030 *8880	*4030 *8880	8.64 (28.3)














(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 lb							*9630 *21230	8050 17750	*8050 *17750	5420 11950	9.44 (31.0)
4.5m (15ft)	kg lb			*16110 *35520	*16110 *35520	*12200 *26900	11260 24820	*10180 *22440	7780 17150	7410 16340	4830 10650	9.90 (32.5)
3.0m (10ft)	kg lb			*19190 *42310	16290 35910	*13630 *30050	10560 23280	*10860 *23940	7430 16380	7060 15560	4550 10030	10.07 (33.0)
1.5m (5ft)	kg lb			*20490 *45170	15340 33820	*14610 *32210	9990 22020	11070 24410	7120 15700	7070 15590	4530 9990	9.98 (32.7)
Ground line	kg lb			*19980 *44050	15060 33200	*14790 *32610	9660 21300	10840 23900	6910 15230	7470 16470	4780 10540	9.60 (31.5)
-1.5m (-5ft)	kg lb	*22370 *49320	*22370 *49320	*18380 *40520	15080 33250	*14030 *30930	9570 21100	10760 23720	6840 15080	*7890 *17390	5430 11970	8.91 (29.2)
-3.0m (-10ft)	kg lb	*19140 *42200	*19140 *42200	*15660 *34520	15310 33750	*12140 *26760	9670 21320					
-4.5m (-15ft)	kg lb			*11140 *24560	*11140 *24560							

2) ROBEX 450LC-3

(1) 7.06m(23' 2") boom, 2.4m(7' 10") arm equipped with 2.09m³(PCSA heaped) bucket and 750mm (30") triple grouser shoe.

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

Load point height		Load radius										At max. reach		
		3.0m(10ft)		4.5m(15ft)		6.0m(20ft)		7.5m(25ft)		9.0m(30ft)		Capacity		Reach
														
6.0m (20ft)	kg lb					*10540 *23240	*10540 *23240	*9130 *20130	8260 18210			*7420 *16360	5000 11020	10.03 (32.9)
4.5m (15ft)	kg lb			*16420 *36200	*16420 *36200	*11980 *26410	11310 24930	*9810 *21630	7910 17440			*7450 *16420	4500 9920	10.45 (34.3)
3.0m (10ft)	kg lb					*13450 *29650	10540 23240	*10560 *23280	7520 16580			*7520 *16580	4260 9390	10.61 (34.8)
1.5m (5ft)	kg lb					*14390 *31720	9980 22000	*11130 *24540	7190 15850	*9110 11900	5400	*7590 *16730	4240 9350	10.52 (34.5)
Ground line	kg lb			*19260 *42460	15120 33330	*14550 *32080	9690 21360	*11290 *24890	6970 15370			*7610 *16780	4450 9810	10.17 (33.4)
-1.5m (-5ft)	kg lb			*17870 *39400	15210 33530	*13920 *30690	9630 21230	*10880 *23990	6900 15210			*7480 *16490	4970 10960	9.53 (31.3)
-3.0m (-10ft)	kg lb	*18350 *40450	*18350 *40450	*15670 *34550	15440 34040	*12440 *27430	9740 21470							
-4.5m (-15ft)	kg lb			*12170 *26830	*12170 *26830	*9610 *21190	*9610 *21190							

- 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) 7.06m(23' 2") boom, 2.9m(9' 6") arm equipped with 2.09m³(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)		Capacity		Reach
														m(ft)
6.0m (20ft)	kg lb							*8550 *18850	8350 18410			*6880 *15170	4600 10140	10.48 (34.4)
4.5m (15ft)	kg lb			*15000 *33070	*15000 *33070	*11240 *24780	*11240 *24780	*9290 *20480	7970 17570	*8140 *17950	5790 12760	*6940 *15300	4150 9150	10.89 (35.7)
3.0m (10ft)	kg lb			*18280 *40300	16310 35960	*12810 *28240	10650 23480	*10120 *22310	7540 16620	*8540 *18830	5570 12280	*7030 *15500	3930 8660	11.04 (36.2)
1.5m (5ft)	kg lb			*19880 *43830	15260 33640	*13980 *30820	10000 22050	*10810 *23830	7160 15790	*8880 *19580	5360 11820	*7130 *15720	3900 8600	10.95 (35.9)
Ground line	kg lb			*19730 *43500	14950 32960	*14420 *31790	9620 21210	*11140 *24560	6900 15210	*8980 *19800	5200 11460	*7200 *15870	4060 8950	10.62 (34.8)
-1.5m (-5ft)	kg lb	*19850 *43760	*19850 *43760	*18630 *41070	14950 32960	*14080 *31040	9480 20900	*10950 *24140	6770 14930			*7170 *15810	4490 9900	10.01 (32.8)
-3.0m (-10ft)	kg lb	*21260 *46870	*21260 *46870	*16700 *36820	15130 33360	*12930 *28510	9530 21010	*10040 *22130	6800 14990			*6890 *15190	5370 11840	9.06 (29.7)
-4.5m (-15ft)	kg lb	*16900 *37260	*16900 *37260	*13640 *30070	*13640 *30070	*10670 *23520	9770 21540							

(3) 7.06m(23' 2") boom, 3.38m(11' 1") arm equipped with 2.09m³(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)		Capacity		Reach
														m(ft)
6.0m (20ft)	kg lb							*8020 *17680	*8020 *17680	*7390 *16290	6020 13270	*6390 *14090	4100 9040	11.09 (36.4)
4.5m (15ft)	kg lb					*10530 *23210	*10530 *23210	*8800 *19400	8030 17700	*7750 *17090	5820 12830	*6430 *14180	3720 8200	11.47 (37.6)
3.0m (10ft)	kg lb			*17170 *37850	16730 36880	*12190 *26870	10760 23720	*9700 *21380	7570 16690	*8220 *18120	5570 12280	*6500 *14330	3530 7780	11.62 (38.1)
1.5m (5ft)	kg lb			*19360 *42680	15440 34040	*13540 *29850	10050 22160	*10480 *23100	7150 15760	*8640 *19050	5320 11730	6540 14420	3500 7720	11.54 (37.9)
Ground line	kg lb	*12230 *26960	*12230 *26960	*19810 *43670	14900 32850	*14220 *31350	9590 21140	*10950 *24140	6840 15080	*8860 *19530	5140 11330	*6630 *14620	3640 8020	11.22 (36.8)
-1.5m (-5ft)	kg lb	*17470 *38510	*17470 *38510	*19100 *42110	14780 32580	*14150 *31200	9380 20680	*10940 *24120	6670 14700	*8710 *19200	5040 11110	*6610 *14570	3980 8770	10.65 (34.9)
-3.0m (-10ft)	kg lb	*22910 *50510	*22910 *50510	*17470 *38510	14890 32830	*13270 *29260	9360 20640	*10300 *22710	6650 14660			*6400 *14110	4660 10270	9.78 (32.1)
-4.5m (-15ft)	kg lb	*19280 *42510	*19280 *42510	*14780 *32580	*14780 *32580	*11410 *25150	9540 21030	*8620 *19000	6810 15010					
-6.0m (-20ft)	kg lb			*10390 *22910	*10390 *22910									











(4) 7.06m(23' 2") boom, 4m(13' 1") arm equipped with 2.09m³(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 lb									*6720 *14820	6030 13290			*5750 *12680	3660 8070	11.63 (38.2)
4.5m (15ft)	kg lb							*8050 *17750	*8050 *17750	*7140 *15740	5790 12760			*5820 *12830	3320 7320	11.99 (39.3)
3.0m (10ft)	kg lb			*15540 *34260	*15540 *34260	*11230 *24760	10860 23940	*9010 *19860	7550 16640	*7680 *16930	5500 12130	*6800 *14990	4090 9020	*5910 *13030	3140 6920	12.13 (39.8)
1.5m (5ft)	kg lb			*18270 *40280	15580 34350	*12770 *28150	10040 22130	*9910 *21850	7080 15610	*8180 *18030	5220 11510	*7020 *15480	3930 8660	5970 13160	3100 6830	12.05 (39.5)
Ground line	kg lb	*12890 *28420	*12890 *28420	*19410 *42790	14760 32540	*13730 *30270	9460 20860	*10530 *23210	6710 14790	*8530 *18810	4980 10980			*6120 *13490	3200 7050	11.75 (38.5)
-1.5m (-5ft)	kg lb	*16920 *37300	*16920 *37300	*19230 *42390	14450 31860	*13960 *30780	9150 20170	*10730 *23660	6480 14290	*8570 *18890	4840 10670			*6180 *13620	3470 7650	11.21 (36.8)
-3.0m (-10ft)	kg lb	*21690 *47820	*21690 *47820	*18050 *39790	14460 31880	*13430 *29610	9060 19970	*10360 *22840	6390 14090	*8110 *17880	4800 10580			*6130 *13510	4010 8840	10.39 (34.1)
-4.5m (-15ft)	kg lb	*21740 *47930	*21740 *47930	*15850 *34940	14680 32360	*12010 *26480	9170 20220	*9190 *20260	6470 14260					*5780 *12740	5060 11160	9.20 (30.2)
-6.0m (-20ft)	kg lb	*16060 *35410	*16060 *35410	*12210 *26920	*12210 *26920	*9250 *20390	*9250 *20390									














(5) 7.06m(23' 2") boom, 4.5m(14' 9") arm equipped with 2.09m³(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 lb									*6200 *13670	6060 13360	*5080 *11200	4360 9610	*5300 *11680	3100 6830	12.40 (40.7)
4.5m (15ft)	kg lb							*7450 *16420	*7450 *16420	*6670 *14700	5800 12790	*6140 *13540	4230 9330	*5320 *11730	2830 6240	12.73 (41.8)
3.0m (10ft)	kg lb			*14190 *31280	*14190 *31280	*10440 *23020	*10440 *23020	*8460 *18650	7590 16730	*7240 *15960	5490 12100	*6440 *14200	4050 8930	5320 11730	2690 5930	12.86 (42.2)
1.5m (5ft)	kg lb			*17270 *38070	15820 34880	*12120 *26720	10110 22290	*9430 *20790	7070 15590	*7820 *17240	5170 11400	*6730 *14840	3870 8530	5300 11680	2660 5860	12.79 (42.0)
Ground line	kg lb	*11480 *25310	*11480 *25310	*18920 *41710	14760 32540	*13280 *29280	9440 20810	*10180 *22440	6650 14660	*8250 *18190	4910 10820	*6920 *15260	3710 8180	*5440 *11990	2740 6040	12.51 (41.0)
-1.5m (-5ft)	kg lb	*14450 *31860	*14450 *31860	*19190 *42310	14300 31530	*13760 *30340	9040 19930	*10530 *23210	6370 14040	*8420 *18560	4720 10410	*6850 *15100	*3620 7980	*5420 *11950	2960 6530	12.01 (39.4)
-3.0m (-10ft)	kg lb	*18300 *40340	*18300 *40340	*18400 *40570	14200 31310	*13490 *29740	8880 19580	*10370 *22860	6240 13760	*8170 *18010	4650 10250			*5300 *11680	3390 7470	11.26 (36.9)
-4.5m (-15ft)	kg lb	*23160 *51060	*23160 *51060	*16580 *36550	14350 31640	*12400 *27340	8930 19690	*9510 *20970	6260 13800	*7180 *15830	4710 10380			*4950 *10910	4160 9170	10.19 (33.4)
-6.0m (-20ft)	kg lb	*18420 *40610	*18420 *40610	*13480 *29720	*13480 *29720	*10160 22400	9170 20220	*7460 *16450	6480 14290					*4000 *8820	*4000 *8820	8.64 (28.3)

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

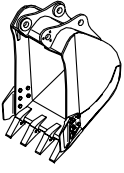
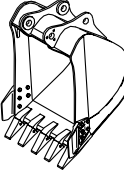
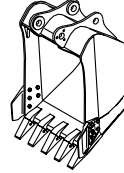
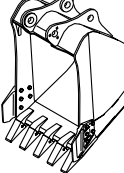
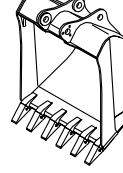
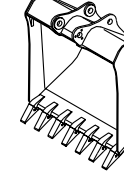
Load point height		Load radius								At max. reach			
		3.0m(10ft)		4.5m(15ft)		6.0m(20ft)		7.5m(25ft)		Capacity		Reach	
												m(ft)	
6.0m (20ft)	kg lb								*9630 *21230	8260 18210	*8050 *17750	5580 12300	9.44 (31.0)
4.5m (15ft)	kg lb			*16110 *35520	*16110 *35520	*12200 *26900	11540 25440	*10180 *22440	7990 17610	*8060 *17770	4980 10980	9.90 (32.5)	
3.0m (10ft)	kg lb			*19190 *42310	16710 36840	*13630 *30050	10840 23900	*10860 *23940	7640 16840	*8120 *17900	4700 10360	10.07 (33.0)	
1.5m (5ft)	kg lb			*20490 *45170	15760 34740	*14610 *32210	10270 22640	*11370 *25070	7330 16160	*8170 *18010	4680 10320	9.98 (32.7)	
Ground line	kg lb			*19980 *44050	15480 34130	*14790 *32610	9940 21910	*11440 *25220	7120 15700	*8140 *17950	4940 10890	9.60 (31.5)	
-1.5m (-5ft)	kg lb	*22370 *49320	*22370 *49320	*18380 *40520	15500 34170	*14030 *30930	9850 21720	*10790 *23790	7050 15540	*7890 *17390	5600 12350	8.91 (29.2)	
-3.0m (-10ft)	kg lb	*19140 *42200	*19140 *42200	*15660 *34520	*15660 *34520	*12140 *26760	9950 21940						
-4.5m (-15ft)	kg lb			*11140 *24560	*11140 *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 lb									*6530 *14400	6420 14150	*4990 *11000	4690 10340	*5610 *12370	3420 7540	12.40 (40.7)
4.5m (15ft)	kg lb							*7780 *17150	*7780 *17150	*6990 *15410	6150 13560	*6460 *14240	4560 10050	*5630 *12410	3140 6920	12.73 (41.8)
3.0m (10ft)	kg lb			*14520 *32010	*14520 *32010	*10770 *23740	*10770 *23740	*8780 *19360	7960 17550	*7560 *16670	5830 12850	*6750 *14880	4380 9660	5640 12430	2990 6590	12.86 (42.2)
1.5m (5ft)	kg lb			*17550 *38690	16230 35780	*12420 *27380	10480 23100	*9740 *21470	7420 16360	*8120 *17900	5510 12150	*7040 *15520	4190 9240	5620 12390	2960 6530	12.79 (42.0)
Ground line	kg lb	*11140 *24560	*11140 *24560	*19160 *42240	15120 33330	*13560 *29890	9790 21580	*10470 *23080	6990 15410	*8550 *18850	5230 11530	*7210 *15900	4030 8880	*5730 *12630	3040 6700	12.51 (41.0)
-1.5m (-5ft)	kg lb	*14110 *31110	*14110 *31110	*19420 *42810	14630 32250	*14020 *30910	9370 20660	*10810 *23830	6690 14750	*8710 *19200	5040 11110	*7140 *15740	3930 8660	*5710 *12590	3260 7190	12.01 (39.4)
-3.0m (-10ft)	kg lb	*17960 *39590	*17960 *39590	*18610 *41030	14520 32010	*13740 *30290	9200 20280	*10640 *23460	6550 14440	*8460 *18650	4960 10930			*5580 *12300	3680 8110	11.26 (36.9)
-4.5m (-15ft)	kg lb	*22830 *50330	*22830 *50330	*16790 *37020	14660 32320	*12640 *27870	9240 20370	*9770 *21540	6570 14480	*7460 *16450	5020 11070			*5220 *11510	4450 9810	10.19 (33.4)
-6.0m (-20ft)	kg lb	*18550 *40900	*18550 *40900	*13690 *30180	*13690 *30180	*10410 *22950	9480 20900	*7730 *17040	6790 14970					*4260 *9390	*4260 *9390	8.64 (28.3)

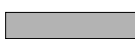
6. BUCKET SELECTION GUIDE


1) ROBEX450-3

					
1.35m ³ PCSA heaped bucket	1.97m ³ PCSA heaped bucket	2.09m ³ PCSA heaped bucket	2.33m ³ PCSA heaped bucket	2.57m ³ PCSA heaped bucket	2.8m ³ PCSA heaped bucket

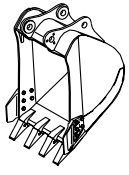
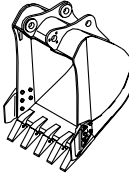
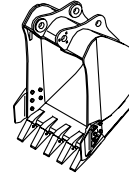
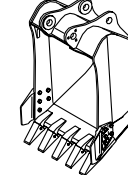
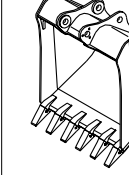
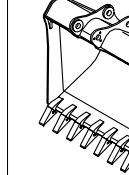
Capacity		Width		Weight	Recommendation						
PCSA heaped	CECE heaped	Without side cutter	With side cutter		7.06m Boom					6.55m	
					2.4m Arm	2.9m Arm	3.38m Arm	4.0m Arm	4.5m Arm	2.4m Arm	
1.35m ³ (1.77yd ³)	1.2m ³ (1.57yd ³)	1144mm (45")	1294mm (51")	1430kg (3150lb)							
1.97m ³ (2.58yd ³)	1.7m ³ (2.23yd ³)	1474mm (58")	1624mm (64")	1530kg (3370lb)							
2.09m ³ (2.74yd ³)	1.8m ³ (2.36yd ³)	1550mm (61")	1700mm (67")	1570kg (3460lb)							
2.33m ³ (3.05yd ³)	2.0m ³ (2.62yd ³)	1695mm (67")	1845mm (73")	1640kg (3620lb)							
2.57m ³ (3.37yd ³)	2.2m ³ (2.88yd ³)	1845mm (73")	1995mm (79")	1730kg (3810lb)							
2.8m ³ (3.67yd ³)	2.4m ³ (3.14yd ³)	1995mm (79")	2145mm (84")	1830kg (4030lb)							

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


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


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


2) ROBEX450LC-3

					
1.35m ³ PCSA heaped bucket	1.97m ³ PCSA heaped bucket	2.09m ³ PCSA heaped bucket	2.33m ³ PCSA heaped bucket	2.57m ³ PCSA heaped bucket	2.8m ³ PCSA heaped bucket

Capacity		Width		Weight	Recommendation							
PCSA heaped	CECE heaped	Without side cutter	With side cutter		7.06m Boom					6.55m	9.0m	
					2.4m Arm	2.9m Arm	3.38m Arm	4.0m Arm	4.5m Arm	2.4m Arm	4.5m Arm	
1.35m ³ (1.77yd ³)	1.2m ³ (1.57yd ³)	1144mm (45")	1294mm (51")	1430kg (3150lb)								
1.97m ³ (2.58yd ³)	1.7m ³ (2.23yd ³)	1474mm (58")	1624mm (64")	1530kg (3370lb)								
2.09m ³ (2.74yd ³)	1.8m ³ (2.36yd ³)	1550mm (61")	1700mm (67")	1570kg (3460lb)								
2.33m ³ (3.05yd ³)	2.0m ³ (2.62yd ³)	1695mm (67")	1845mm (73")	1640kg (3620lb)								
2.57m ³ (3.37yd ³)	2.2m ³ (2.88yd ³)	1845mm (73")	1995mm (79")	1730kg (3810lb)								
2.8m ³ (3.67yd ³)	2.4m ³ (3.14yd ³)	1995mm (79")	2145mm (84")	1830kg (4030lb)								

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

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

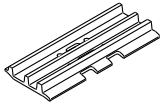
 Applicable for materials with density of 1100kg/m³(1850lb/yd³) or less

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			
						
R450-3	Shoe width	mm(in)	600(24)	700(28)	750(30)	800(32)
	Operating weight	kg(lb)	42600(93920)	43160(95150)	43400(95680)	43640(96210)
	Ground pressure	kg/cm ² (psi)	0.81(11.5)	0.70(10.0)	0.66(9.4)	0.62(8.8)
	Overall width	mm(ft-in)	3340(10' 11")	3440(11' 3")	3490(11' 5")	3540(11' 7")
R450LC-3	Shoe width	mm(in)	600(24)	700(28)	750(30)	800(32)
	Operating weight	kg(lb)	43500(95900)	43850(96670)	44300(97660)	44570(98260)
	Ground pressure	kg/cm ² (psi)	0.75(10.7)	0.64(9.1)	0.61(8.7)	0.58(8.2)
	Overall width	mm(ft-in)	3340(10' 11")	3440(11' 3")	3490(11' 5")	3540(11' 7")

3) NUMBER OF ROLLERS AND SHOES ON EACH SIDE

Item	Quantity	
	ROBEX 450-3	ROBEX 450LC-3
Carrier rollers	2EA	3EA
Track rollers	7EA	9EA
Track shoes	49EA	53EA

8. SPECIFICATIONS FOR MAJOR COMPONENTS

1) ENGINE

Item	Specification
Model	Cummins M11-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	125 × 147mm(4.92" × 5.79")
Piston displacement	10800cc(659cu in)
Compression ratio	16.0 : 1
Rated gross horse power	310 Ps at 2000rpm
Maximum torque at 1300rpm	126kg f · m(911lb · ft)
Engine oil quantity	38 l (10U.S. gal)
Dry weight	929kg(2048lb)
High idling speed	2200 ± 50rpm
Low idling speed	800 ± 100rpm
Rated fuel consumption	150g/Ps · hr
Starting motor	Delco Remy 42MT(24V)
Alternator	DAC HC60(24V-60AMP)
Battery	2 × 12V × 200Ah

2) MAIN PUMP

Item	Specification
Type	Variable displacement tandem axial piston pump
Capacity	2 × 180cc/rev
Maximum pressure	350kg/cm ² (4980psi)
Rated oil flow	2 × 360 l /min(95.1U.S. gpm/79.2U.K. gpm)
Rated speed	2000rpm

3) PILOT PUMP

Item	Specification
Type	Fixed displacement gear pump single stage
Capacity	15cc/rev
Maximum pressure	33 ⁺² kg/cm ² (470 ⁺²⁸ psi)
Rated oil flow	30 l /min(7.9 U.S. gpm/6.6U.K. gpm)

4) MAIN CONTROL VALVE

Item	Specification
Type	9 spools mono-block
Operating method	Hydraulic pilot assist
Main relief valve pressure	325kg/cm ² (4620psi) [350kg/cm ² (4980psi)]
Overload relief valve pressure	380kg/cm ² (5400psi)

[]: power boost

5) SWING MOTOR

Item	Specification
Type	Fixed displacement axial piston motors
Capacity	151cc/rev
Relief pressure	285kg/cm ² (5054psi)
Braking system	Automatic spring applied, hydraulic released
Braking torque	48kg f · m(347lb · ft)
Brake release pressure	20-50kg/cm ² (285-711psi)
Reduction gear type	2 - stage planetary
Swing speed	10.0rpm

6) TRAVEL MOTOR

Item	Specification
Type	Variable displacement axial piston motor
Relief pressure	330kg/cm ² (4690psi)
Reduction gear type	3-stage planetary
Braking system	Automatic spring applied, hydraulic released
Brake release pressure	17-50kg/cm ² (242-711psi)
Braking torque	103kgf · m(745lb · ft)

7) REMOTE CONTROL VALVE

Item		Specification
Type		Pressure reducing type
Operating pressure	Minimum	6kg/cm ² (85psi)
	Maximum	28kg/cm ² (398psi)
Single operation stroke	Lever	72mm(2.8in)
	Pedal	130mm(5.1in)

8) CYLINDER

Item		Specification
Boom cylinder	Bore dia × Rod dia × Stroke	∅ 160 × ∅ 110 × 1570mm
	Cushion	Extend only
Arm cylinder	Bore dia × Rod dia × Stroke	∅ 185 × ∅ 125 × 1820mm
	Cushion	Extend and retract
Bucket cylinder	Bore dia × Rod dia × Stroke	∅ 160 × ∅ 110 × 1270mm
	Cushion	-

9) SHOE

Item		Width	Ground pressure	Link quantity	Overall width
R450-3	Standard	750mm(30")	0.66kg/cm ² (9.4psi)	49	3490mm(11' 5")
	Option	600mm(24")	0.81kg/cm ² (11.5psi)	49	3340mm(10' 11")
		700mm(28")	0.70kg/cm ² (10.0psi)	49	3440mm(11' 3")
		800mm(32")	0.62kg/cm ² (8.8psi)	49	3540mm(11' 7")
R450LC-3	Standard	750mm(30")	0.61kg/cm ² (8.7psi)	53	3490mm(11' 5")
	Option	600mm(24")	0.75kg/cm ² (10.7psi)	53	3340mm(10' 11")
		700mm(28")	0.64kg/cm ² (9.1psi)	53	3440mm(11' 3")
		800mm(32")	0.58kg/cm ² (8.2psi)	53	3540mm(11' 7")

10) BUCKET

(1) R450-3

Item	Capacity		Tooth quantity	Width	
	PCSA heaped	CECE heaped		With side cutter	With side cutter
Standard	1.97m ³ (2.58yd ³)	1.7m ³ (2.23yd ³)	5	1474mm(58")	1624mm(64")
Option	1.35m ³ (1.77yd ³)	1.2m ³ (1.57yd ³)	4	1144mm(45")	1294mm(51")
	2.09m ³ (2.74yd ³)	1.8m ³ (2.36yd ³)	5	1550mm(61")	1700mm(67")
	2.33m ³ (3.05yd ³)	2.0m ³ (2.62yd ³)	5	1695mm(67")	1845mm(73")
	2.57m ³ (3.37yd ³)	2.2m ³ (2.88yd ³)	6	1845mm(73")	1995mm(79")
	2.80m ³ (3.67yd ³)	2.4m ³ (3.14yd ³)	7	1995mm(79")	2145mm(84")

(2) R450LC-3

Item	Capacity		Tooth quantity	Width	
	PCSA heaped	CECE heaped		With side cutter	With side cutter
Standard	2.09m ³ (2.74yd ³)	1.8 m ³ (2.36yd ³)	5	1550mm(61")	1700mm(67")
Option	1.35m ³ (1.77yd ³)	1.2m ³ (1.57yd ³)	4	1144mm(45")	1294mm(51")
	1.97m ³ (2.58yd ³)	1.7m ³ (2.23yd ³)	5	1474mm(58")	1624mm(64")
	2.33m ³ (3.05yd ³)	2.0m ³ (2.62yd ³)	5	1695mm(67")	1845mm(73")
	2.57m ³ (3.37yd ³)	2.2m ³ (2.88yd ³)	6	1845mm(73")	1995mm(79")
	2.80m ³ (3.67yd ³)	2.4m ³ (3.14yd ³)	7	1995mm(79")	2145mm(84")

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)						
			-20 (-4)	-10 (14)	0 (32)	10 (50)	20 (68)	30 (86)	40 (104)
Engine oil pan	Engine oil	39(10.3)							
							SAE 30		
			SAE 10W						
			SAE 10W-30						
				SAE 15W-40					
Swing drive	Gear oil	5×2 (1.3×2)							
Final drive		6×2 (1.6×2)		SAE 85W-140					
Hydraulic tank	Hydraulic oil	Tank: 230(60.8) System: 460(121.5)	ISO VG 32						
				ISO VG 46					
				ISO VG 68					
Fuel tank	Diesel fuel	500(132)	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	50(13.2)		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