HYDRAULIC EXCAVATOR

SHOP MANUAL

model SK220V SK220LCV

This is the shop manual for KOBELCO hydraulic excavator. Contained is the necessary technical data concerning the maintenance and repair of this model. The manual is divided into the following four major sections; GENERAL, SYSTEMS, COMPONENTS and PROCEDURE.

When checking or repairing the machine we suggest that you refer to this manual carefully. We hope that reference to this manual will help to maintain a high level of working efficiency and reliability. For further details on maintenance and checks refer to the "OPERATORS MANUAL" which has been supplied with the machine.

Although all data was correct at the time of printing, due to continual design changes and improvements, some contents may not conform to the actual machine. Take special care to order parts only after confirming the validity of the part number in the "PARTS MANUAL".

If you notice any explanatory discrepancies, after consulting one of our representatives, please update your manual according to the latest data. However, in the event of any specification changes, we will issue revised edition.

INDEX

KOBELCO

Book code No. S5LQ0008E③

13. Always use tools that are in good condition and be sure you understand how to use them before performing any service work.

14. Reinstall all fasteners with same part number. Do not use a lesser quality fastener if replacements are necessary.

15. Repairs which require welding should be performed only with the benefit of the appropriate reference information and by personnel adequately trained and knowledgeable in welding procedures. Determine type of metal being welded and select correct welding procedure and electrodes, rods or wire to provide a weld metal strength equivalent at least to that of parent metal. Always disconnect battery during welding operations to protect sensitive electric equipment.

16. Do not damage wiring during removal operations. Reinstall the wiring so it is not damaged nor will it be damaged in operation by contacting sharp corners, or by rubbing against some object or hot surface. Do not connect wiring to a line containing fluid.

17. Be sure all protective devices including guards and shields are properly installed and functioning correctly before starting a repair. If a guard or shield must be removed to perform the repair work, use extra caution.

18. Loose or damaged fuel, lubricant and hydraulic lines, tubes and hoses can cause fires. Do not bend or strike high pressure lines or install ones which have been bent or damaged. Inspect lines, tubes and hoses carefully. Do not check for leaks with your hands. Pin hole (very small) leaks can result in a high velocity oil stream that will be invisible close to the hose. This oil can penetrate the skin and cause personal injury. Use cardboard or paper to locate pin hole leaks.

19. Tighten connections to the correct torque. Make sure that all heat shields, clamps and guards are installed correctly to avoid excessive heat, vibration or rubbing against other parts during operation. Shields that protect against oil spray onto hot exhaust components in event of a line, tube or seal failure must be installed correctly.

20. Do not operate a machine if any rotating part is damaged or contacts any other part during operation. Any high speed rotating component that has been damaged or altered should be checked for balance before reusing.

21. On track-type machines, be careful when servicing or separating tracks. Chips can fly when removing or installing a track pin. Wear safety glasses and long sleeve shirts. Track can unroll very quickly when separated. Keep away from front and rear of machine. The machine can move unexpectedly when both tracks are disengaged from the sprockets. Block the machine to prevent it from moving.

22. Caution should be used to avoid breathing dust that may be generated when handling components containing asbestos fibers. If this dust is inhaled, it can be hazardous to your health. Components in KOBELCO products that may contain asbestos fibers are brake pads, brake band and lining assemblies, clutch plates and some gaskets. The asbestos used in these components is usually bound in a resin or sealed in some way. Normal handling is not hazardous as long as airborne dust which contains asbestos is not generated.

If dust which may contain asbestos is present, there are several common sense guidelines that should be followed.

a. Never use compressed air for cleaning.
b. Avoid brushing or grinding of asbestos containing materials.
c. For clean up, use wet methods or a vacuum equipped with a high efficiency particulate air (HEPA) filter.
d. Use exhaust ventilation on permanent machining jobs.
e. Wear an approved respirator if there is no other way to control the dust.
f. Comply with applicable rules and regulations for the work place.
g. Follow environmental rules and regulations for disposal of asbestos.
h. Avoid areas where asbestos particles may be in the air.

⚠ WARNING

13. Always use tools that are in good condition and be sure you understand how to use them before performing any service work.

14. Reinstall all fasteners with same part number. Do not use a lesser quality fastener if replacements are necessary.

15. Repairs which require welding should be performed only with the benefit of the appropriate reference information and by personnel adequately trained and knowledgeable in welding procedures. Determine type of metal being welded and select correct welding procedure and electrodes, rods or wire to provide a weld metal strength equivalent at least to that of parent metal. Always disconnect battery during welding operations to protect sensitive electric equipment.

16. Do not damage wiring during removal operations. Reinstall the wiring so it is not damaged nor will it be damaged in operation by contacting sharp corners, or by rubbing against some object or hot surface. Do not connect wiring to a line containing fluid.

17. Be sure all protective devices including guards and shields are properly installed and functioning correctly before starting a repair. If a guard or shield must be removed to perform the repair work, use extra caution.

18. Loose or damaged fuel, lubricant and hydraulic lines, tubes and hoses can cause fires. Do not bend or strike high pressure lines or install ones which have been bent or damaged. Inspect lines, tubes and hoses carefully. Do not check for leaks with your hands. Pin hole (very small) leaks can result in a high velocity oil stream that will be invisible close to the hose. This oil can penetrate the skin and cause personal injury. Use cardboard or paper to locate pin hole leaks.

19. Tighten connections to the correct torque. Make sure that all heat shields, clamps and guards are installed correctly to avoid excessive heat, vibration or rubbing against other parts during operation. Shields that protect against oil spray onto hot exhaust components in event of a line, tube or seal failure must be installed correctly.

20. Do not operate a machine if any rotating part is damaged or contacts any other part during operation. Any high speed rotating component that has been damaged or altered should be checked for balance before reusing.

21. On track-type machines, be careful when servicing or separating tracks. Chips can fly when removing or installing a track pin. Wear safety glasses and long sleeve shirts. Track can unroll very quickly when separated. Keep away from front and rear of machine. The machine can move unexpectedly when both tracks are disengaged from the sprockets. Block the machine to prevent it from moving.

22. Caution should be used to avoid breathing dust that may be generated when handling components containing asbestos fibers. If this dust is inhaled, it can be hazardous to your health. Components in KOBELCO products that may contain asbestos fibers are brake pads, brake band and lining assemblies, clutch plates and some gaskets. The asbestos used in these components is usually bound in a resin or sealed in some way. Normal handling is not hazardous as long as airborne dust which contains asbestos is not generated.

If dust which may contain asbestos is present, there are several common sense guidelines that should be followed.

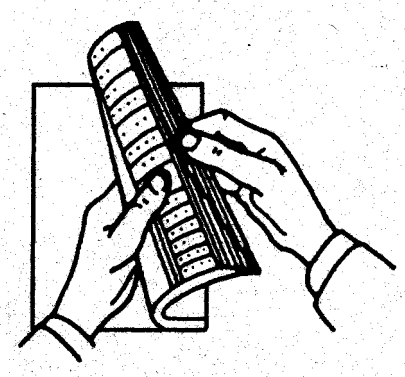
a. Never use compressed air for cleaning.
b. Avoid brushing or grinding of asbestos containing materials.
c. For clean up, use wet methods or a vacuum equipped with a high efficiency particulate air (HEPA) filter.
d. Use exhaust ventilation on permanent machining jobs.
e. Wear an approved respirator if there is no other way to control the dust.
f. Comply with applicable rules and regulations for the work place.
g. Follow environmental rules and regulations for disposal of asbestos.
h. Avoid areas where asbestos particles may be in the air.

SHOP MANUAL

model SK220V SK220LCV

TABLE OF CONTENTS

○How to Index each Shop Manual Section
The GENERAL of this shop manual consists of 8 headings as shown above. Each section can be easily referred to by indexes appended to the margin of the page as indicated on the right. Please use the indexes for speedy reference.



KOBELCO

GENERAL

SK220 V / SK220LC V List of Shop Manual GENERAL Section

Index No.	Title	Book Code No. (Distribution Year-Month)		
LQ01	SPECIFICATION	S5LQ0107E 1996-01		
—	OPERATION	S2YN1011E Refer to Operators manual		
LQ03	LOCATION AND WEIGHT OF COMPONENTS	S5LQ0307E 1996-01		
LQ04	MAINTENANCE STANDARDS AND TEST PROCEDURES	S5LQ0409E① 1996-02		
—	PREVENTIVE MAINTENANCE	S2YN1011E Refer to Operators manual		
LQ07	WORKING STANDARDS	S5LQ0706E 1996-01		
LQ08	STANDARD MAN-HOUR TABLE	S5LQ0806E 1996-01		
	Applicable Machines	LQ03701~ LL02501~		

Book code No. S5LQ0107E

KOBELCO

SHOP MANUAL

SK220V
SK220LCV

LQ01

SPECIFICATION

TABLE OF CONTENTS

KOBE STEEL, LTD.

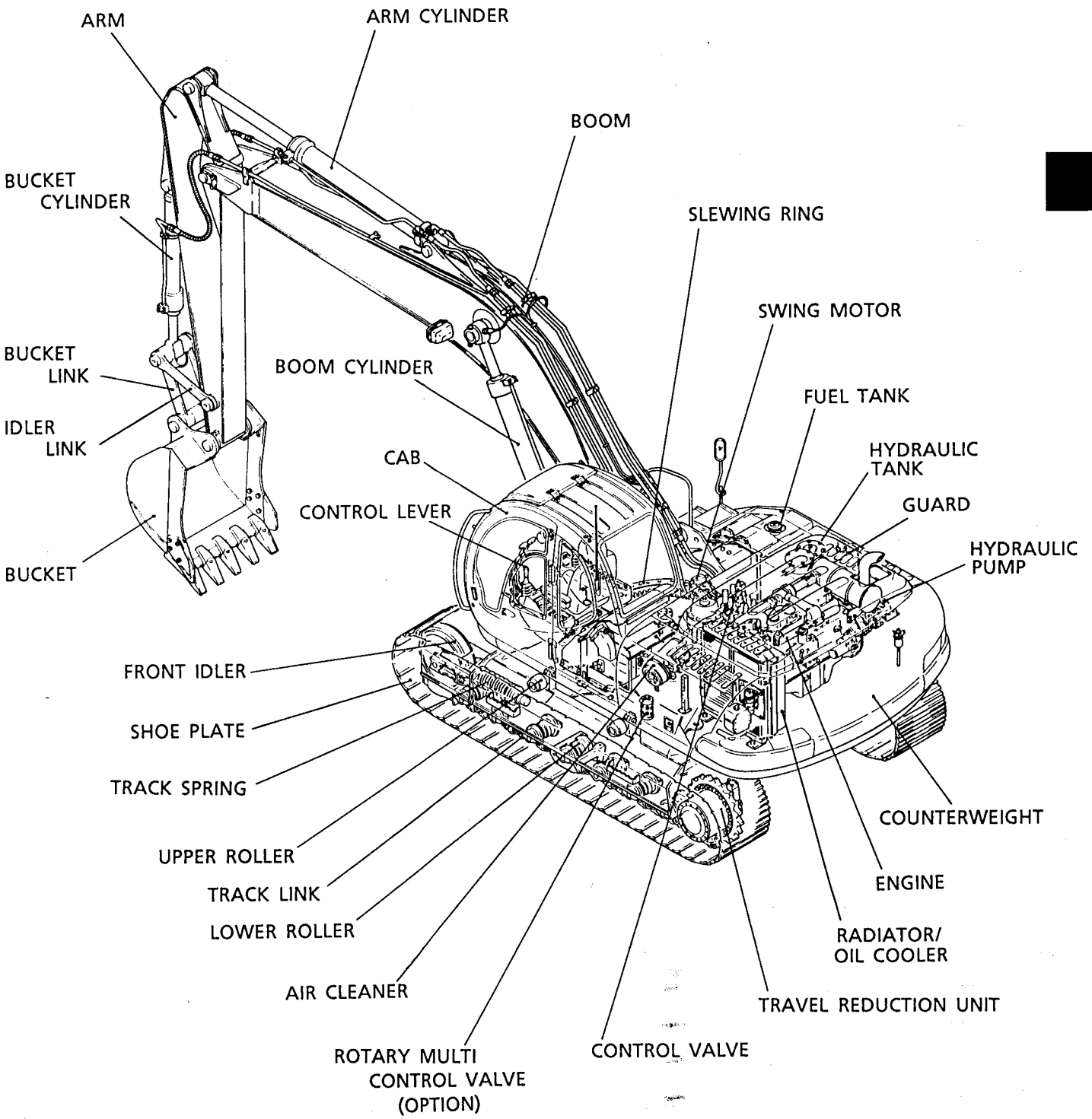
Applicable Machines

LQ03701~

LL02501~

Revision	Date of Issue	Remarks
First edition	January, 1996	S5LQ0107E K

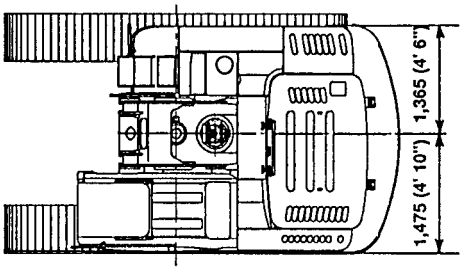
1. NAME OF COMPONENTS



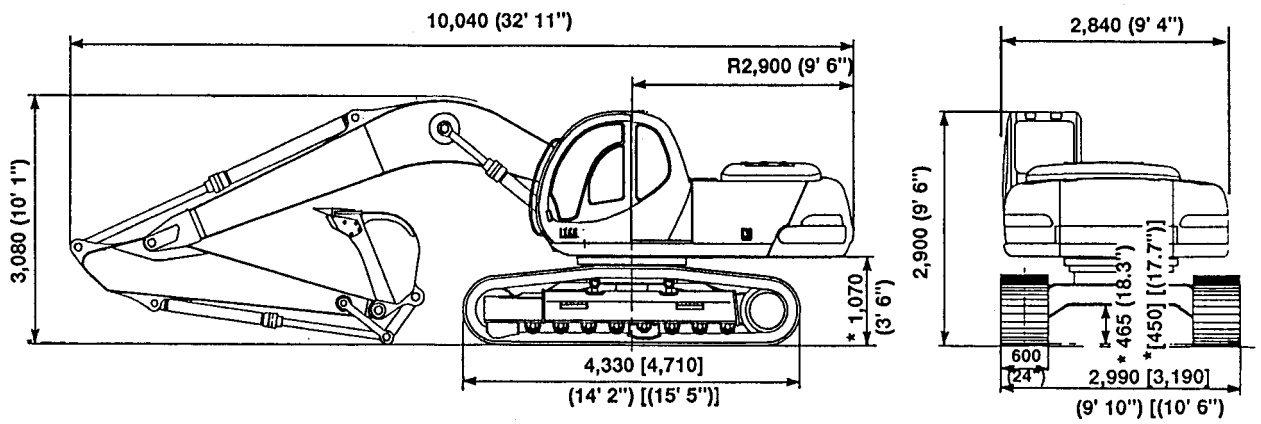
2. GENERAL DIMENSIONS

● SK220V AND SK220LCV (with 6.02m (19ft-9in) boom and 2.98m (9ft-9in) standard arm)

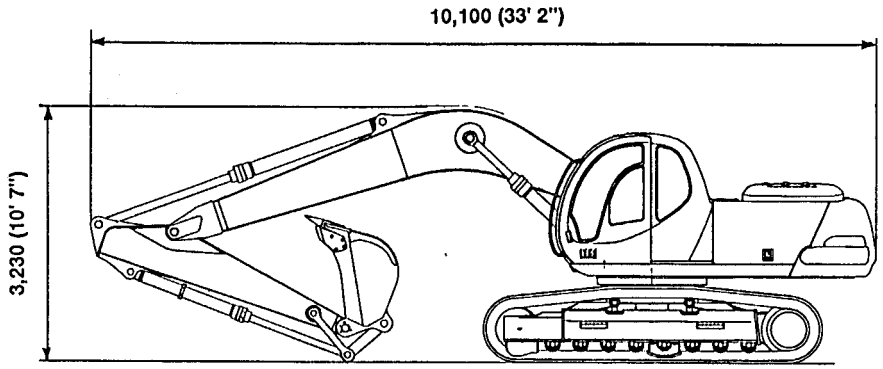
Unit : mm (ft-in)



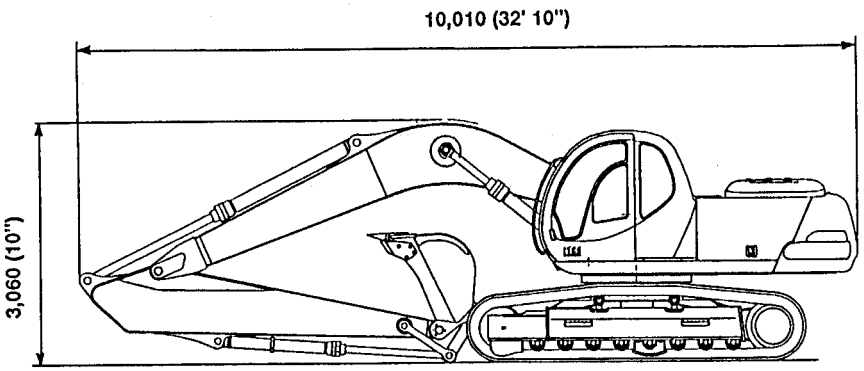
Note : Numerical values marked ⋆ do not include the height of the shoe lug. Numerical value use encloesd in parentheses [ ] indicate LC specifications.



● SK220V AND SK220LCV (with 6.02m (19ft-9in) boom and 2.5m (8ft-2in) short arm)



● SK220V AND SK220LCV (with 6.02m (19ft-9in) boom and 3.66m (12ft) long arm)



3. SPECIFICATIONS AND PERFORMANCE

● SPEED AND CLIMBING CAPABILITY

Item \ Model	SK220V, SK220LCV
Swing speed	11rpm
Travel Speed (high/low)	7 / 4km/h (4.3 / 2.5mph)
Gradeability	70% (35°)

● ENGINE

Item \ Model	SK220V, SK220LCV
Engine model	Mitsubishi 6D16−TE1
Type	Water-cooled 4-cycle direct injection type engine with an exhaust turbocharger
Number of Cylinders Bore×Stroke	6−118mm×115mm (4.65in. × 4.53in.)
Total Displacement	7,545 c.c (460cu·in)
Rated Output / Rotation Speed	165 / 2,000rpm
Maximum Torque / Rotation Speed	63kgf·m / 1,600rpm

● HYDRAULIC COMPONENTS

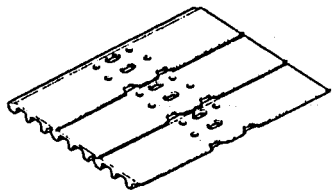
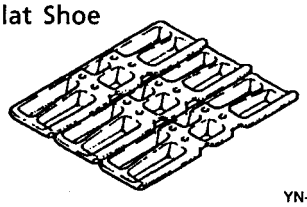
Item \ Model	SK220V, SK220LCV
Hydraulic Pump	Double-pump variable displacement axial piston + gear pump
Hydraulic Motor (swing)	Axial piston motor
Hydraulic Motor (travel)	Axial piston motor
Control Valve	6-function multiple control valve
Cylinder (boom, arm, and bucket)	Double action cylinder
Oil Cooler	Air-cooled type

● WEIGHT

Unit ; kg (lbs)

Item \ Model	SK220V	SK220LCV
Fully equipped Weight	22,700 (50,000)	23,200 (51,000)
Upper Frame machinery	10,100 (22,200)	←
Lower Frame machinery (with 600mm (24in) grouser shoe)	8,600 (19,000)	9,100 (20,000)
Attachment ; 6.02m (19ft9in) boom + 2.98m (9ft-9in) arm + 1.0m^3 (1.30cuyd) bucket	4,000 (8,800)	←

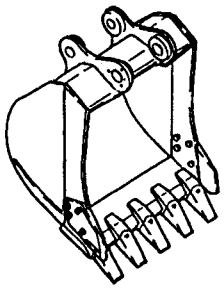
4. TYPE OF SHOES

Shape	Model	Shoe Width mm (in.)	Total Width of Crawler mm (ft-in.)	Ground Pressure kg /cm² (psi)
Grouser Shoe  YN-6-7	SK220V 48 links	600 (24)	2,990 (9´10˝)	0.50 (7.11)
		700 (28)	3,090 (10´2˝)	0.44 (6.25)
		800 (32)	3,190 (10´6˝)	0.39 (5.54)
	SK220LCV 52 links	600 (24)	3,190 (10´6˝)	0.47 (6.68)
		700 (28)	3,290 (10´10˝)	0.41 (5.83)
		800 (32)	3,390 (11´1˝)	0.36 (5.11)
Flat Shoe  YN-6-8	SK220V 48 links	600 (24)	2,990 (9´10˝)	0.51 (7.25)
	SK220LCV 52 links	600 (24)	3,190 (10´6˝)	0.48 (6.82)
		—	—	—
		—	—	—

Note : Use grouser shoes 600mm (24in) on rough ground (areas covered with rocks and gravel). If you drive or excavate with other shoes, this may cause shoe bending, shoe bolt looseness, and track assembly (link, roller, etc.) damage.

5. TYPES OF BUCKETS

Hoe Bucket



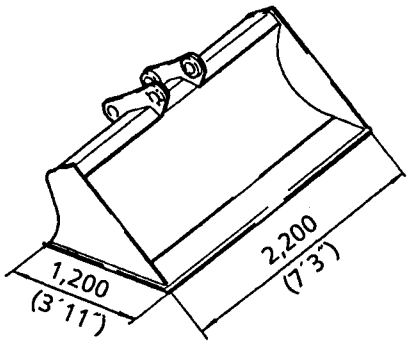
YN-6-10

The numerical value marked* is for heavy digging.

Heaped Capacity m^3 (cu·yd)	Outside Width of Bucket mm (ft-in)		Number of teeth	Equipped with Side Cutters	Can be Turned over	Weight kg (lbs)
	With side cutters	Without side cutters				
0.81 (1.06)	1,060 (3′6″)	960 (3′2″)	4	Yes	Yes	730 (1,610)
STD 1.00 (1.30)	1,280 (4′2″)	1,180 (3′10″)	4	Yes	Yes	790 (1,740)
*1.04 (1.36)	1,210 (4′)	1,170 (3′10″)	5	Yes	Yes	920 (2,030)
1.10 (1.44)	1,390 (4′7″)	1,290 (4′3″)	5	Yes	Yes	850 (1,870)
1.40 (1.83)	——	1,510 (4′11″)	6	No	Yes	900 (1,980)

Slope Finishing Bucket

Weight: 1,050kg (2,310lbs)
Can not be turned over



YN-6-13

6. COMBINATIONS OF ATTACHMENTS

Bucket			Applicable Arm		
Type	SAE heaped capacity m^3 (cu·yd)	JIS, SAE struck capacity m^3 (cu·yd)	2.5m (8ft-2in) Arm (short)	2.98m (9ft-9in) Arm (STD)	3.66m (12ft) Arm (long)
Hoe Bucket	0.81 (1.06)	0.59 (0.77)	○	○	◎
	STD 1.00 (1.31)	0.76 (0.99)	○	◎	△
	*1.04 (1.36)	0.76 (0.99)	○	○	×
	1.10 (1.44)	0.84 (1.09)	◎	△	×
The numerical value marked *is for heavy digging.	1.40 (1.83)	1.00 (1.31)	△	×	×
Slope Finishing Bucket	Width×Depth 2.2m×1.2m (7′3″×3′11″)	—	△	△	×
Breaker	—	—	○	○	×

Note :

◎ Standard combination
○ General operation : Excavation or loading of sand, gravel, and clay
△ Light operation : Mainly loading or loose gravel (e.g., cultivation or loading of sand or gravel)
× Prohibited combination : KOBELCO'S warranty does not cover any damages resulting from theses combinations. Do not use these combinations.

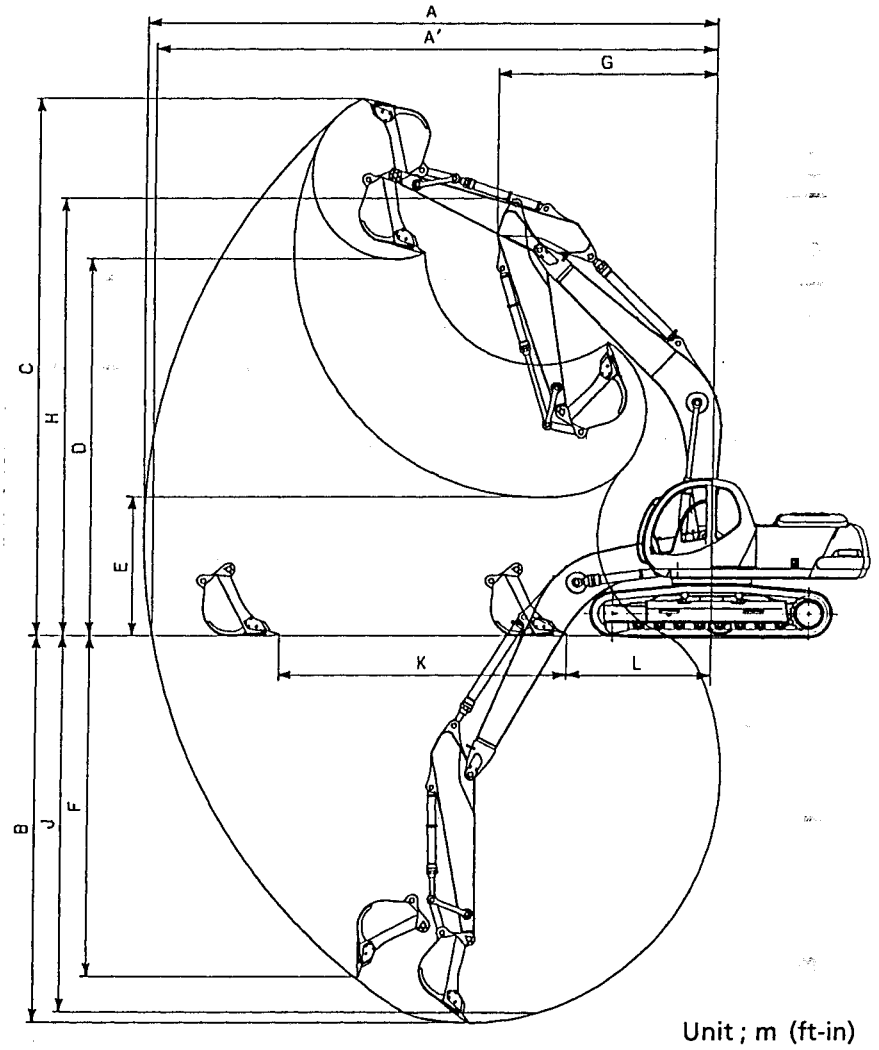
Install only genuine attachment recommended by KOBELCO on the machine. KOBELCO is not liable for any damages to the machine or attachment arising from the installment of attachment other than the specified attachments.

⚠ CAUTION

- If any other bucket, except for the backhoe bucket, is turned over and used for excavation, damage to the arm and bucket may occur.
- Do not operate the power boost switch when the long arm or extension arm is installed.

7. WORKING RANGES OF ATTACHMENTS

● BACKHOE ATTACHMENT

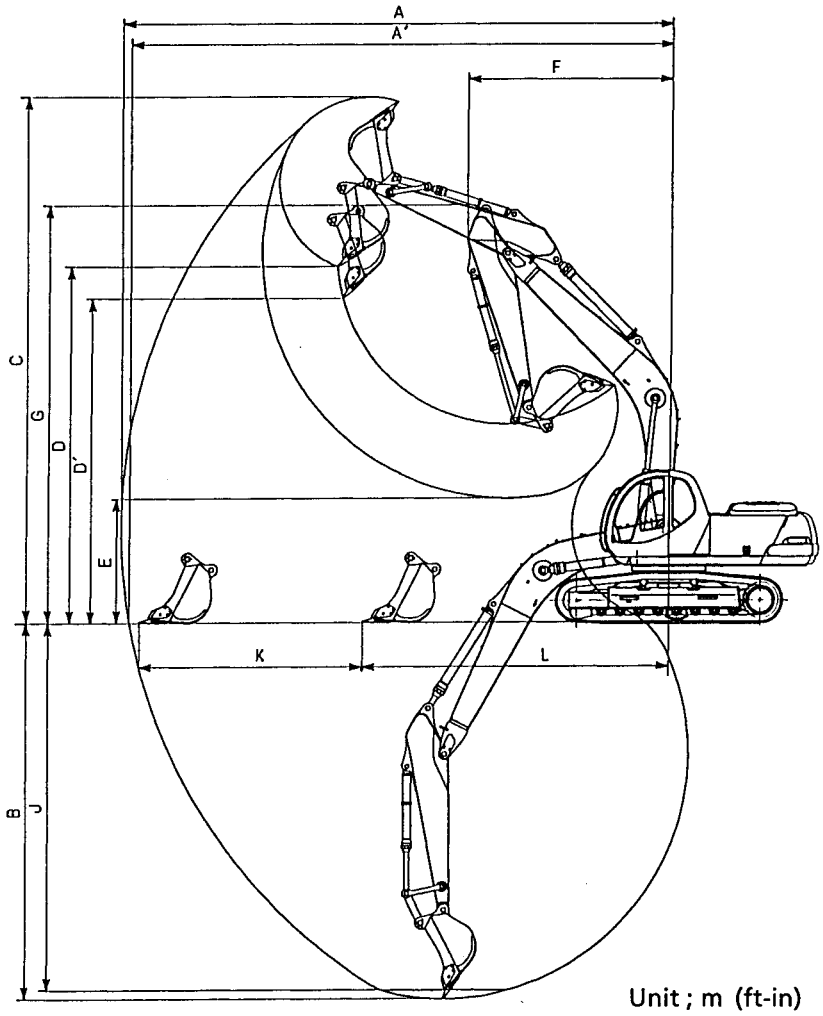


Unit ; m (ft-in)

Item \ Attachment Type			2.5m (8ft2in) arm with 1.10m³ (1.44cuyd) bucket	2.98m (9ft9in) arm with 1.0m³ (1.31cuyd) bucket	3.66m (12ft) arm with 0.81m³ (1.06cuyd) bucket
A : Maximum digging reach			9.89 (32′5″)	10.31 (33′10″)	10.97 (36′)
A′ : Maximum reach at ground level			9.72 (31′11″)	10.14 (33′3″)	10.81 (35′6″)
*B : Maximum digging depth			6.53 (21′5″)	7.01 (23′)	7.69 (25′3″)
*C : Maximum digging height			9.63 (31′7″)	9.77 (32′1″)	10.17 (33′4″)
*D : Minimum dumping height			6.71 (22′)	6.87 (22′6″)	7.25 (23′9″)
*E : Minimum dumping height			3.02 (9′11″)	2.54 (8′4″)	1.86 (6′1″)
*F : Vertical digging depth			5.83 (19′2″)	6.18 (20′3″)	6.79 (22′3″)
G : Minimum swing radius			3.94 (12′11″)	3.90 (12′9″)	4.00 (13′1″)
*H : Height at minimum swing			8.03 (26′4″)	7.96 (26′1″)	7.92 (26′)
*J : Digging depth for 8-feet flat bottom			6.33 (20′9″)	6.83 (22′5″)	7.54 (24′9″)
K	Horizontal digging	Stroke	4.20 (13′9″)	5.26 (17′3″)	6.58 (21′7″)
L	stroke at ground level	Minimum	3.23 (10′7″)	2.58 (8′6″)	1.93 (6′4″)

NOTE : Dimensions marked * do not include the height of the shoe lug.

● FACE SHOVEL ATTACHMENT



Unit ; m (ft-in)

Item			Attachment Type: 2.5m (8ft2in) arm with 1.10m³ (1.44cuyd) bucket	2.98m (9ft9in) arm with 1.0m³ (1.31cuyd) bucket	3.66m (12ft) arm with 0.81m³ (1.06cuyd) bucket
A : Maximum digging reach			10.07 (33′)	10.49 (34′5″)	11.15 (36′7″)
A′ : Maximum reach at ground level			9.90 (32′6″)	10.33 (33′11″)	11.00 (36′1″)
*B : Maximum digging depth			6.71 (20′)	7.19 (23′7″)	7.87 (25′10″)
*C : Maximum digging height			9.92 (32′7″)	10.08 (33′1″)	10.46 (34′4″)
*D : Maximum dumping height			6.65 (21′10″)	6.79 (22′3″)	7.19 (23′7″)
*D′ : Maximum dumping height (45°)			6.05 (19′10″)	6.18 (20′3″)	6.37 (20′11″)
*E : Minimum dumping height			2.84 (9′4″)	2.36 (7′9″)	1.68 (5′6″)
F : Minimum swing radius			3.94 (12′11″)	3.90 (12′10″)	4.00 (13′1″)
*G : Height at minimum swing			8.03 (26′4″)	7.96 (26′1″)	7.92 (26′)
*J : Digging depth for 8-feet flat bottom			6.52 (21′5″)	7.02 (23′)	7.73 (25′4″)
K	Horizontal digging	Stroke	3.51 (11′6″)	4.26 (14′)	5.47 (17′11″)
L	stroke at ground level	Minimum	6.21 (20′4″)	5.87 (19′3″)	5.33 (17′6″)

NOTE : Dimensions marked * do not include the height of the shoe lug.

8. LIFTING-UP ABILITY DIAGRAM

(1) Calculation condition
The lifting-up ability of this drawing is indicated by metric standard. The indicated figures fall within 87% of a set pressure of the main relief valve used in the arm and the boom cylinder and 75% of static tilting load.

1) The load point is the fulcrum of the bucket and the bucket position is an embraced posture.
2) The figures on the upper stage indicate the lifting-up ability of a machine facing sideways, while the figures at the bottom stage represent a machine facing longitudinally.
3) Unit : ton Shoe width : 600mm (24˝) shoe

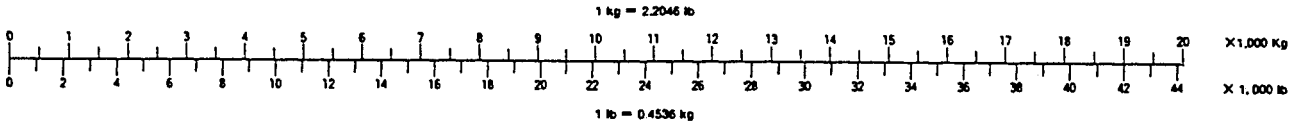
(2) Lifting-up ability diagram Item No. table

Model \ Arm	Pressure kgf/cm²(psi) / Shoe mm (in)	2.5M (8′2˝) Arm +1.10M³ (1.44 cuyd) Bucket	2.98M (9′9˝) Arm +1.0M³ (1.31 cuyd) Bucket	3.66M (12′0˝) Arm +0.81M³ (1.06 cuyd) Bucket
		600 mm shoe (24 in)	600 mm shoe (24 in)	600 mm shoe (24 in)
SK220 V	350 (4980)	1	3	5
	370 (5260)	2	4	—
SK220LC V	350 (4980)	6	8	10
	370 (5260)	7	9	—

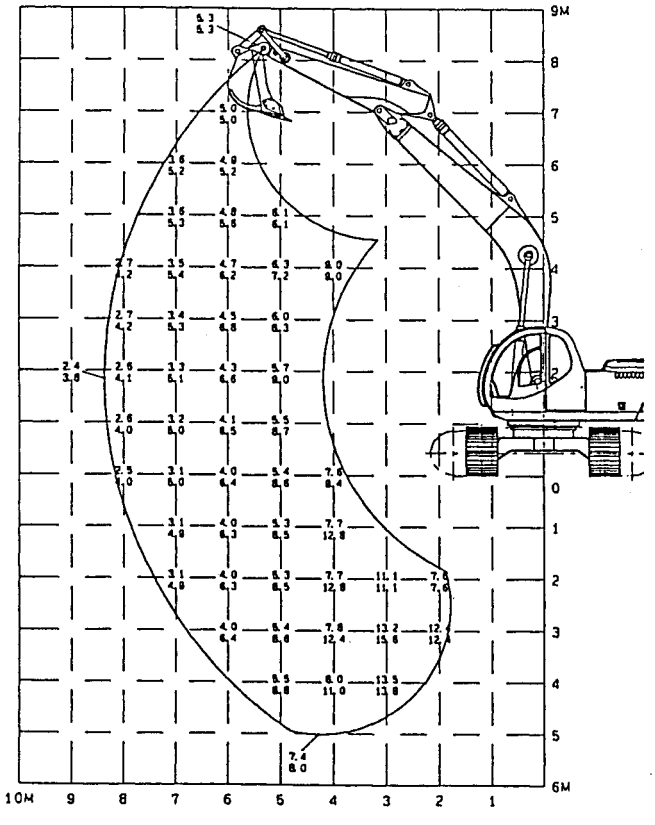
(3) Long Range Spec. [800mm (32in) Shoe]

Model \ Spec.	50Ft		60Ft	
	8.5M (27ft-11in)Boom + 6.6M (21ft-8in)Arm		10.1M (33ft-2in)Boom + 8.25M (27ft-1in)Arm	
	0.76M³ (0.99 cuyd)	0.64M³ (0.84 cuyd)	0.40M³ (0.52 cuyd)	0.34M³ (0.44 cuyd)
SK220 V	11	—	12	—
SK220LC V	—	13	—	14

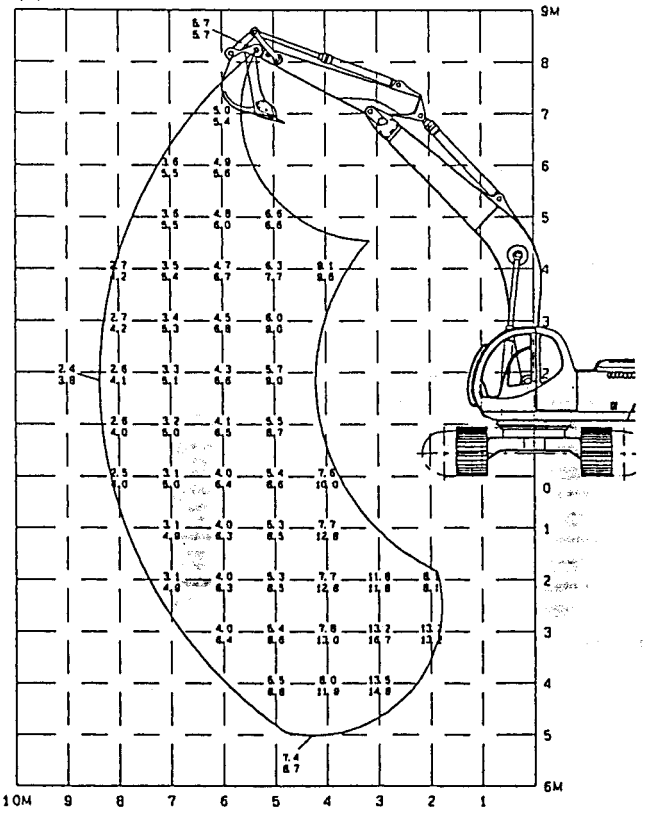
⚠ Do not operate the power boost switch when the long range attachment is installed.

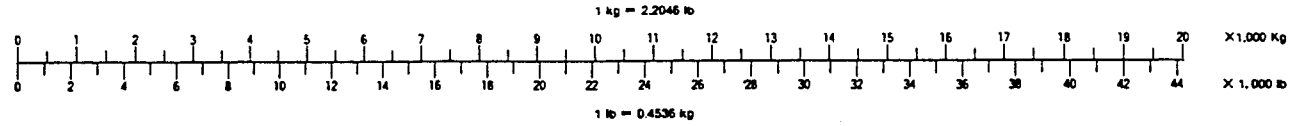


(1) Unit : ton

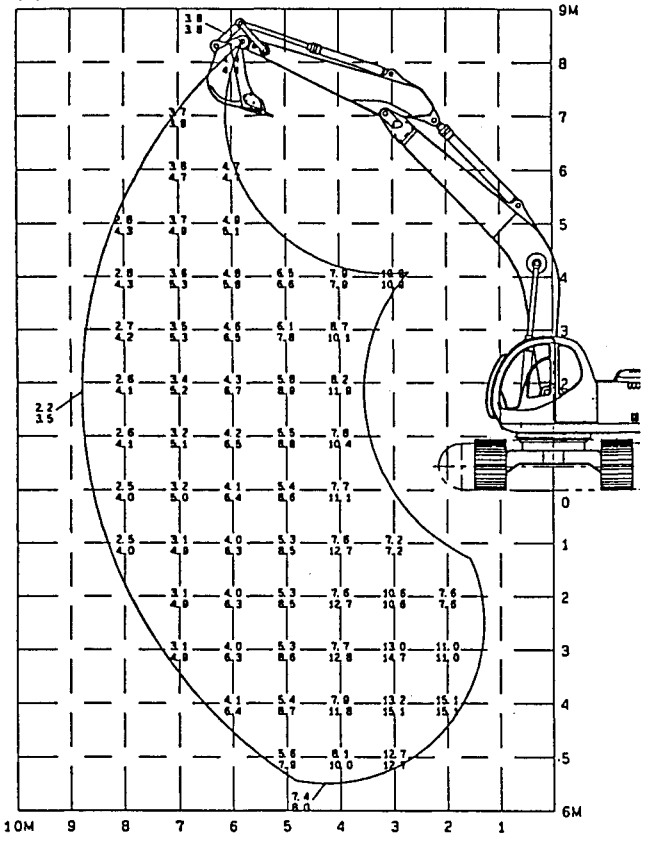


(2) Unit : ton

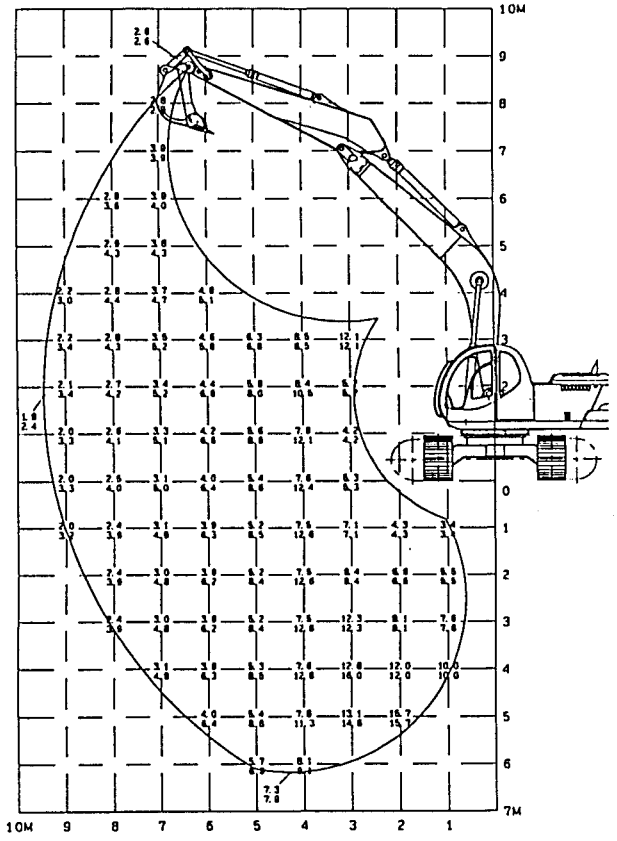




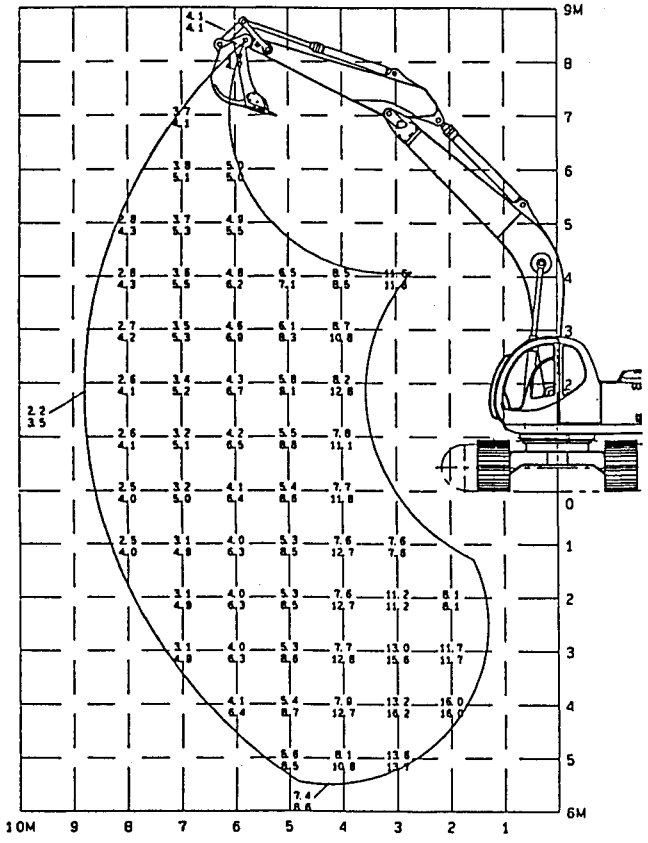
(3) Unit : ton



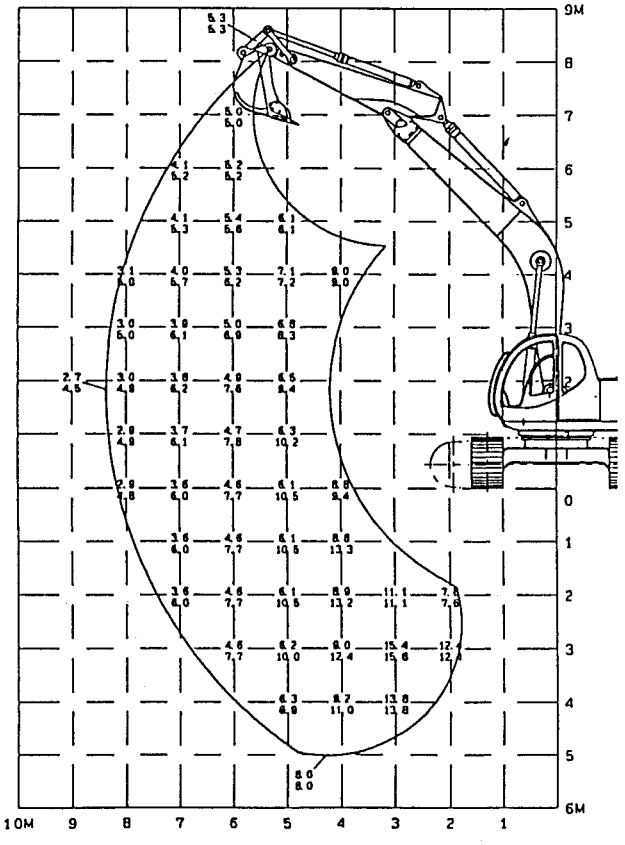
(5) Unit : ton

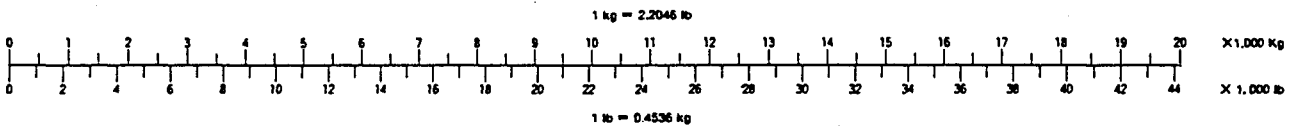


(4) Unit : ton

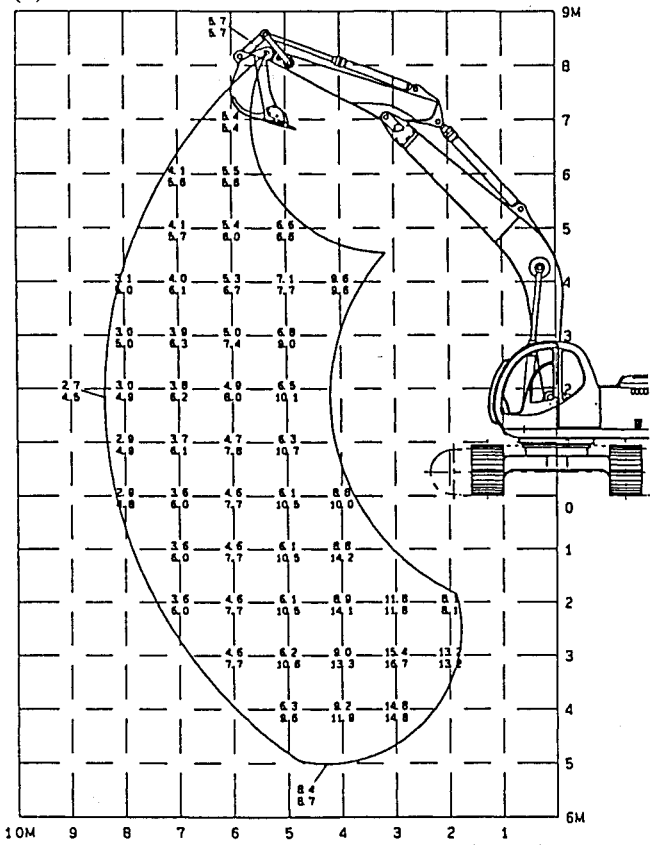


(6) Unit : ton

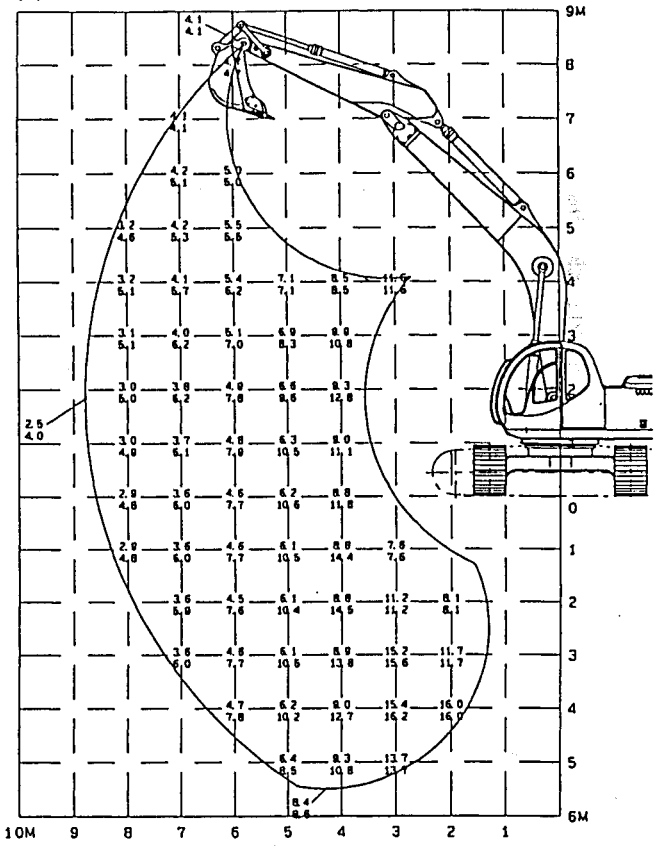




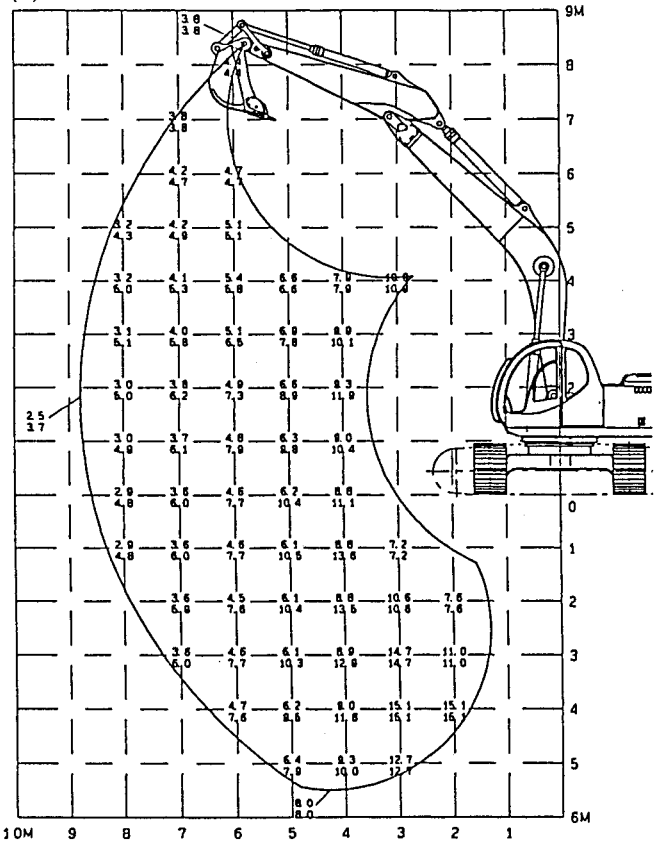
(7) Unit : ton



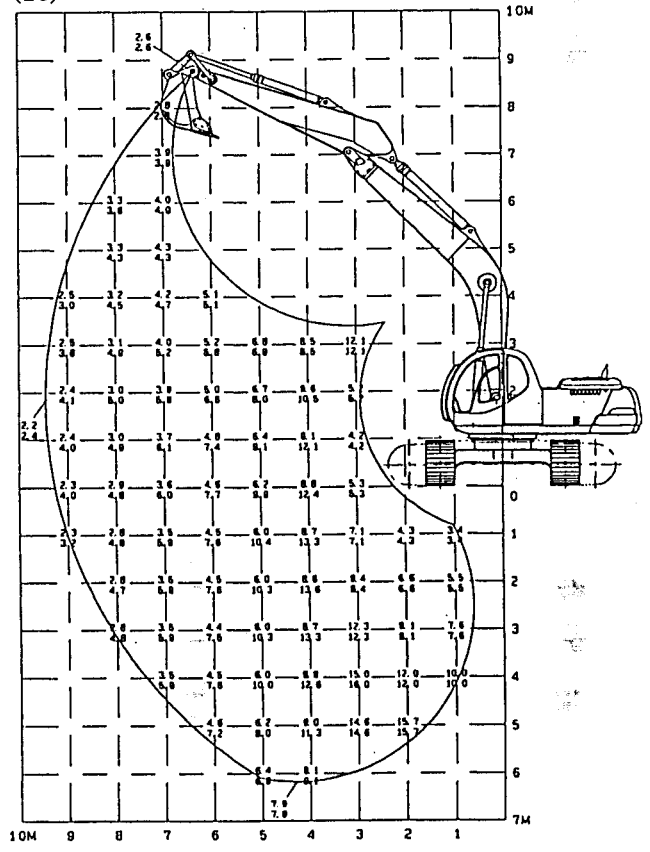
(9) Unit : ton



(8) Unit : ton

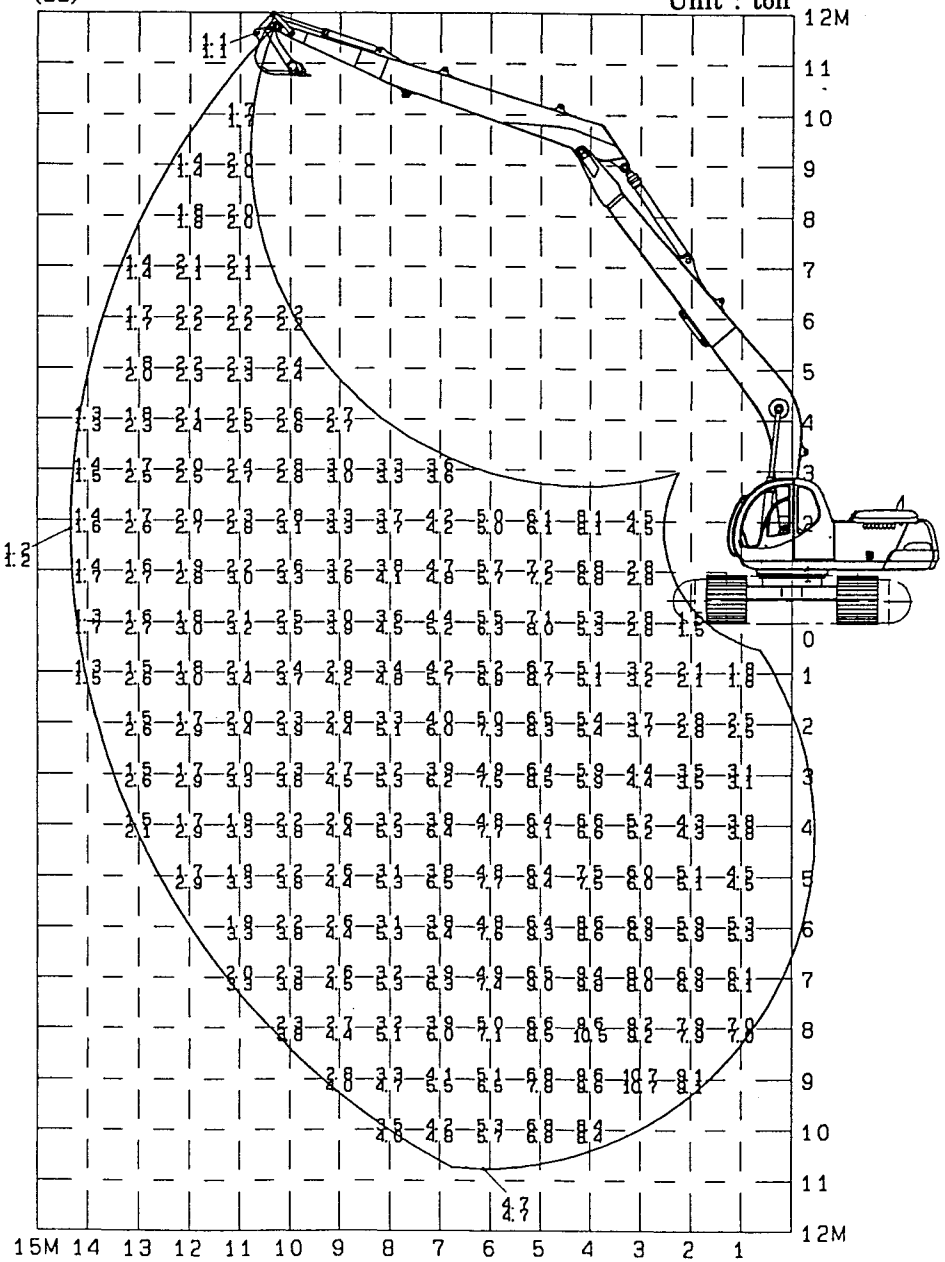


(10) Unit : ton



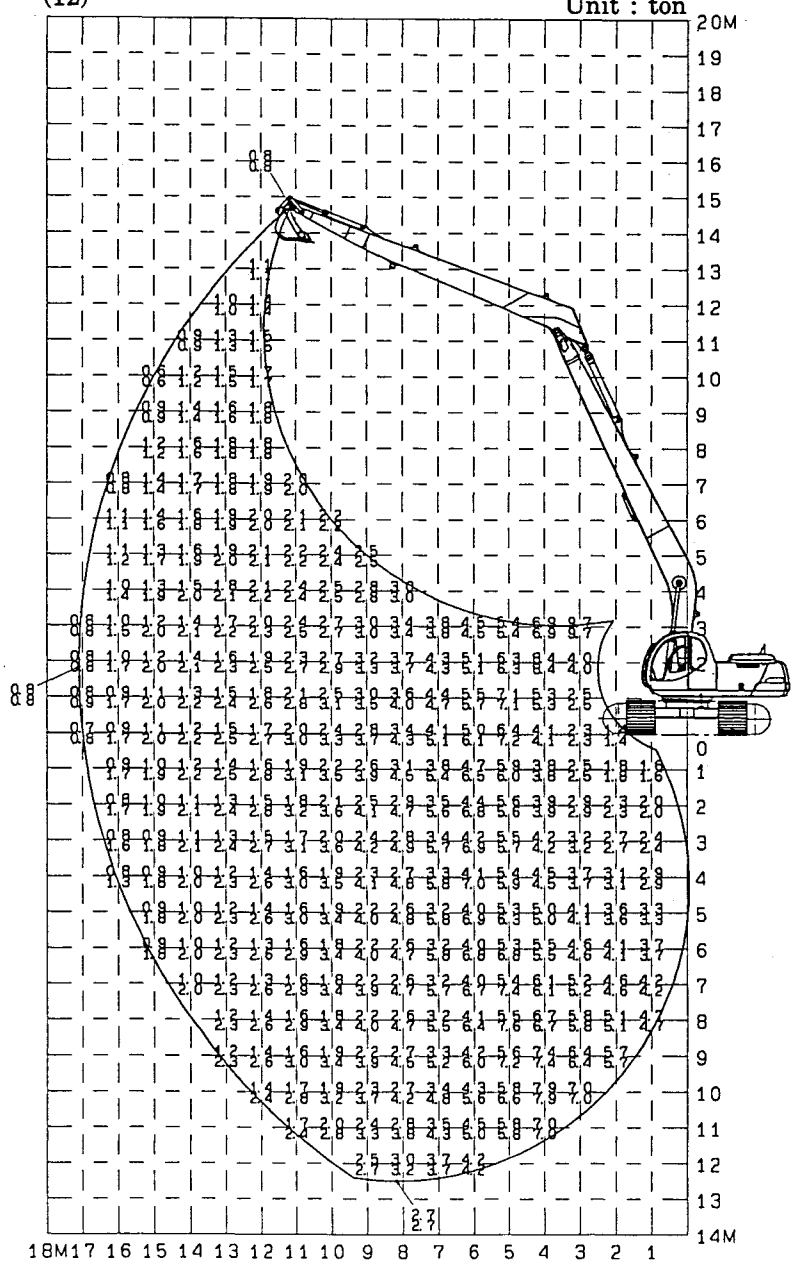
(11)

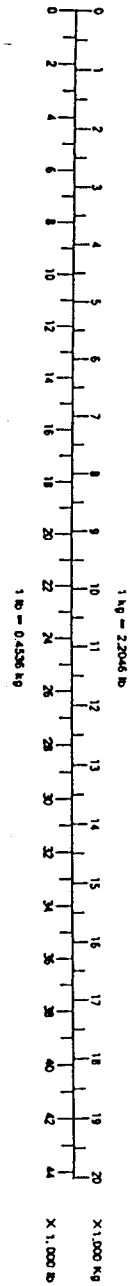
Unit : ton



(12)

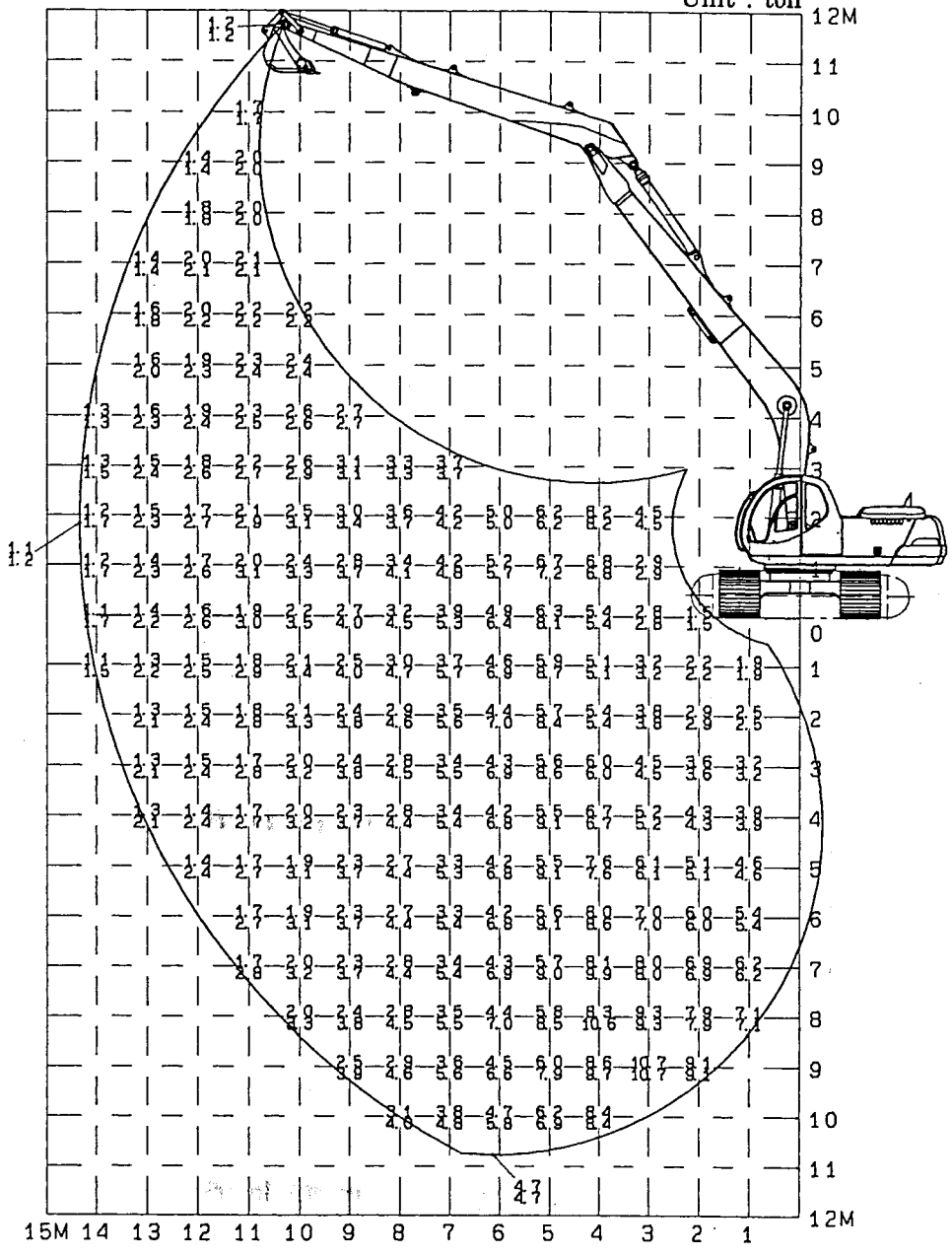
Unit : ton





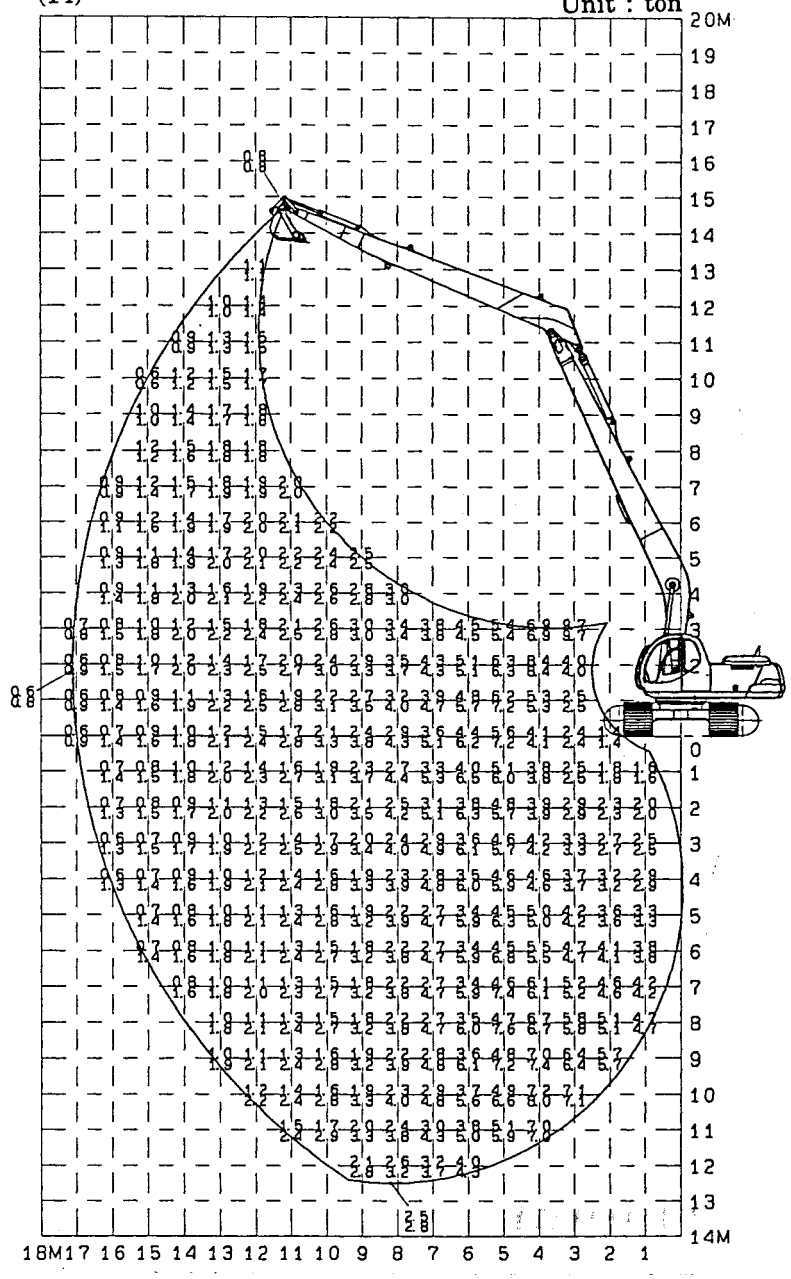
(13)

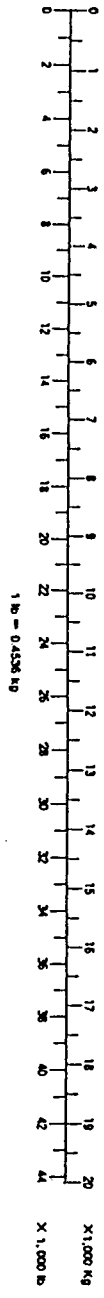
Unit : ton



(14)

Unit : ton





9. ENGINE SPECIFICATIONS

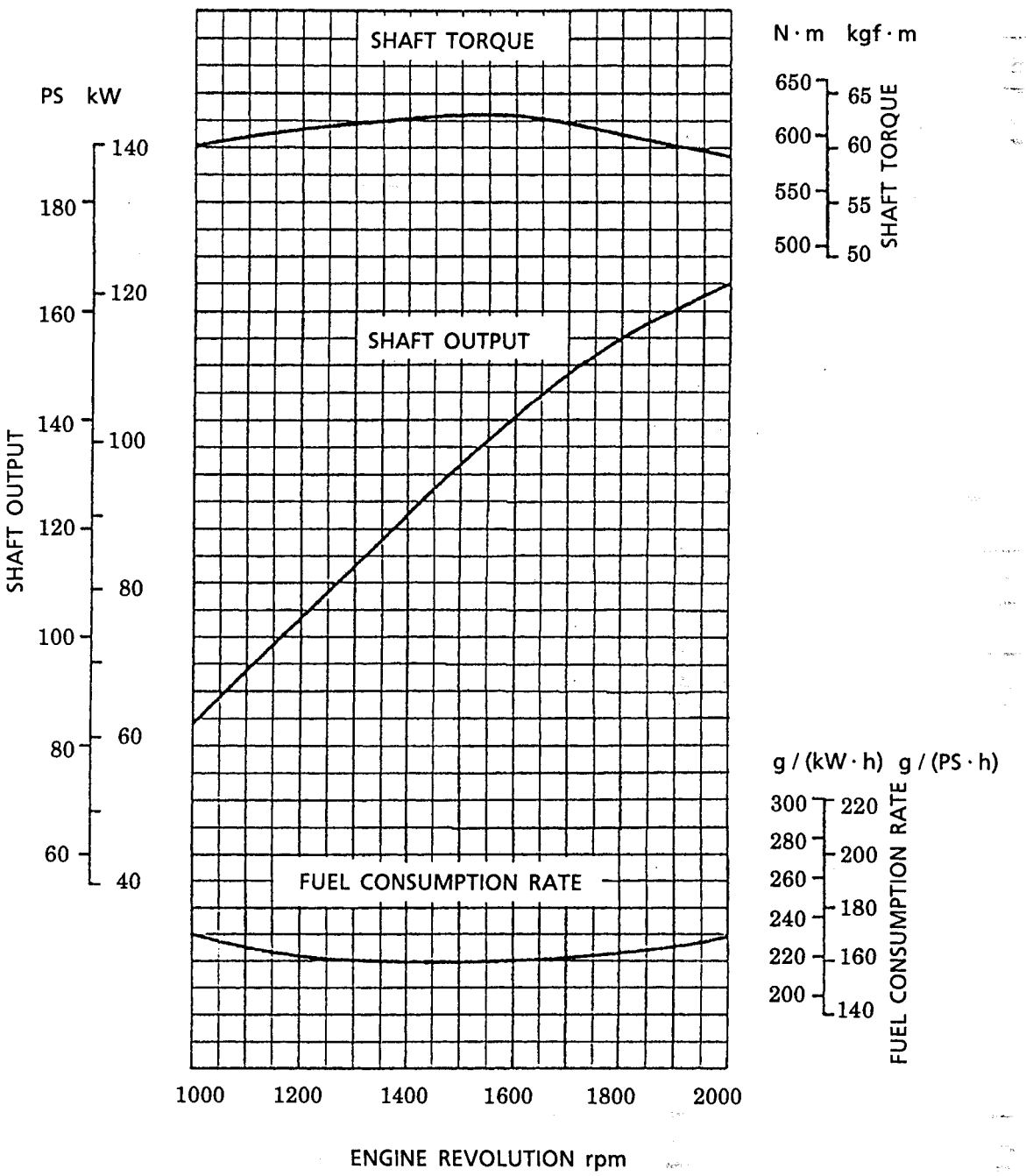
SPECIFICATIONS

SK220 V , SK220LC V

Model		Mitsubishi 6D16-TE1 (Turbocharged)		
Type		Diesel, 4-cycle water-cooled, in-line, Direct injection		
No. of cylinders-Bore×Stroke		6-118mm×115mm (4.65 in×4.53 in)		
Total displacement		7,545cc (460 cuin)		
Compression ratio		16.0		
Output rating		165ps / 2,000 rpm (121kw/ 2,000 rpm)		
Max. torque		63kgf · m / 1,600 rpm		
High idling		2,220±20 rpm		
Low idling		900±20 rpm		
Injection start pressure		180kgf / cm^2 (2,560psi)		
Thermostat temperature		Valve opening 76.5°C Full open 90°C (105±2°C ON)		
Ignition order		1-5-3-6-2-4		
Compression pressure		26kgf / cm^2 (370psi) [at 200 rpm]		
Lube oil pressure		Rating 2~5kgf/cm^2 (28.4~71.1psi) at 850rpm more		
Fuel injection timing		10° before the top dead point		
Valve clearance, valve action timing		Valve clearance	Open	Close
	Suction valve	In cold state, in cold condition 0.4mm (0.016")	21° before the top dead point	39° after the bottom dead point
	Exhaust valve	In cold state, in cold condition 0.4mm (0.016")	62° before the bottom dead point	18° after the top dead point
Starter capacity		5kw×24V		
Generator capacity		24V×(35A)900W		
Cooling fan drive method		Ø640 (Ø25in) suction type eight fans Belt drive pulley ratio:1.1		
Engine oil volume		24ℓ (6.34gal) (High level), 21ℓ (5.54gal) (Low level sensor) operation+4ℓ (1.06gal) (Oil filter)		
Dry weight		550kg (1,210 lbs)		
Fuel consumption rate		175±5 g/ps·h		
Allowable tilting angles		Back and forth, right and left 35°		
Engine dimension L×W×H		1240×760×940 mm (48.8×29.9×37.0 in)		
Rotating direction		Counterclockwise as seen from flywheel side		

ENGINE CHARACTERISTIC CURVE
(MITSUBISHI 6D16-TE1 type)

Accesories :
(with Fan, Aircleaner and Alternator, with out muffler)



$$\text{FUEL CONSUMPTION VOLUME} = \frac{\text{FUEL CONSUMPTION RATE}}{0.835 \times 1000} \times \text{PS} \times \text{LOAD RATIO}(\alpha)$$

$$= \frac{175\ \text{g/PS·h}}{0.835 \times 1000} \times 165\text{PS} \times \alpha$$

$$= 34.6\ \alpha \cdot \ell/\text{h} \qquad \alpha = 0.7 \sim 0.8 \text{ (at standard working)}$$

Book code No. S5LQ0307E

KOBELCO

SHOP MANUAL

SK220v
SK220LCv

LOCATION AND WEIGHT OF COMPONENTS

TABLE OF CONTENTS

LQ03

KOBE STEEL, LTD.

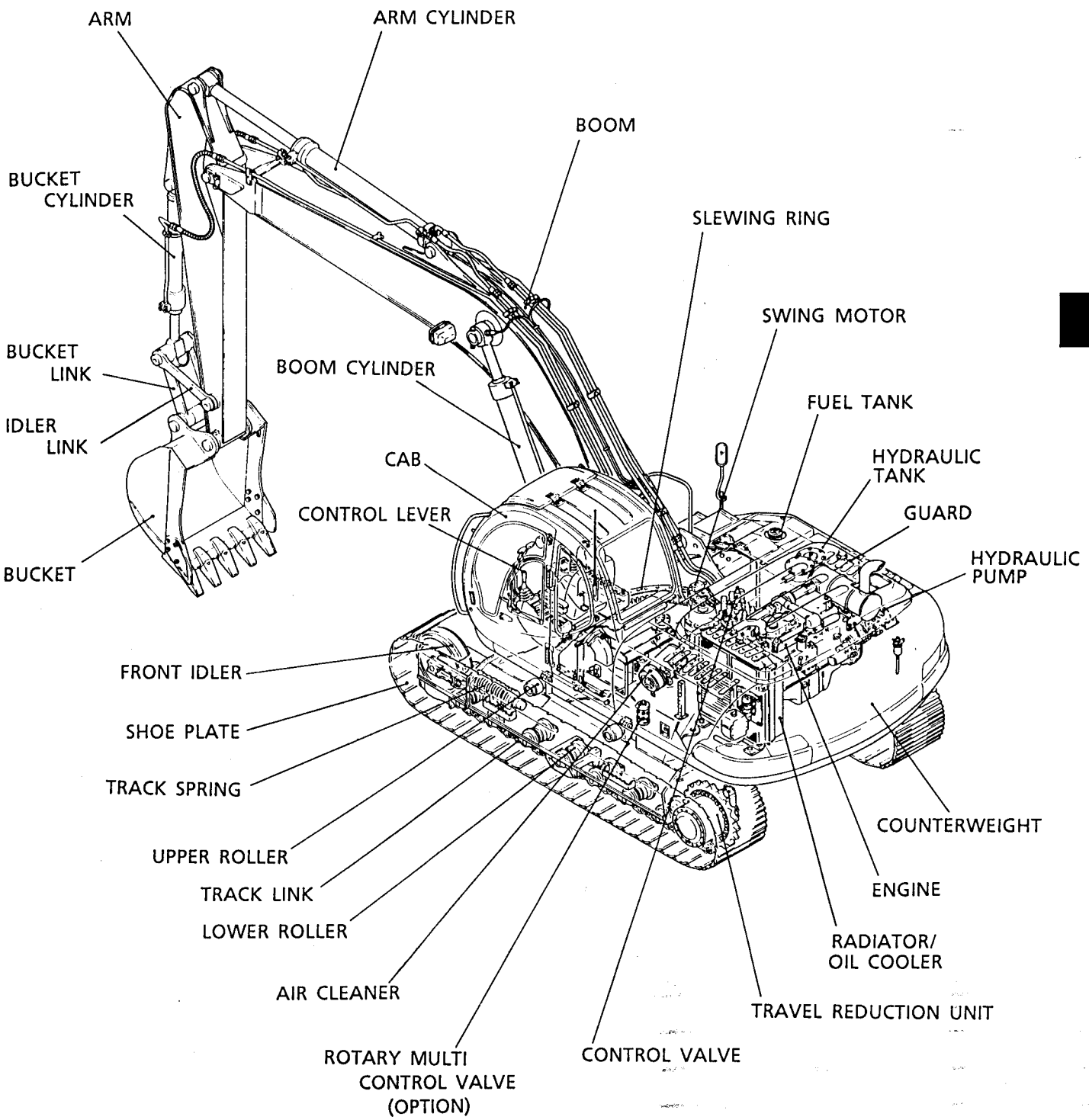
Applicable Machines

LQ03701~

LL02501~

Revision	Date of Issue	Remarks
First edition	January, 1996	S5LQ0307E K

1. LOCATION OF COMPONENTS



2. WEIGHT OF COMPONENTS (DRY WEIGHT)

Unit : kg (lbs)

Item \ Model	SK220V	SK220LCV
Complete Machine (Standard specification)	22,700 (50,120)	23,200 (51,100)
● Upper frame assembly	10,100 (22,200)	←
●● Counterweight	4,500 (9,920)	←
Counterweight (gain)	6,300 (13,900)	←
●● Cab	250 (550)	←
●● Engine	※590 (1,300)	←
●● Hydraulic oil tank	※150 (330)	←
●● Fuel tank	※82 (180)	←
●● Swing motor unit	280 (620)	←
●● Control valve	160 (350)	←
●● Pump	120 (260)	←
●● Boom cylinder	235 (520)×2	←
●● Pin (for mounting the boom)	90 (200)	←
●● Radiator	※130 (290)	←
● Lower frame assembly	8,600 (19,000)	9,100 (20,000)
●● Slewing ring	365 (800)	←
●● Travel motor unit	340 (750)×2	←
●● Upper roller	17 (37)×4	←
●● Lower roller	35 (77)×14	35 (77)×16
●● Front idler	130 (290)×2	←
●● Idler adjustment	155 (340)×2	←
●● Sprocket	64 (140)×2	←
●● Swivel joint	31 (68)	←
●● Track link with 600mm (24 in) shoes	1,400 (3,090)×2	1,520 (3,350)×2
Track link with 700mm (28 in) shoes	1,630 (3,590)×2	1,660 (3,660)×2
Track link with 800mm (32 in) shoes	1665 (3,670)×2	1,810 (3,990)×2
●●● Track link assembly	530 (1,170)×2	580 (1,280)×2
● Attachment ;		
6.02m (19ft-9in) boom + 2.98m (9ft-9in) arm + 1.0m^3 (1.3cu·yd) bucket	4,000 (8,800)	←
●● Bucket assembly (standard)	800 (1,760)	←
●● Standard arm assembly (including the following:)	1,170 (2,580)	←
●●● Standard arm	730 (1,610)	←
●●● Bucket cylinder	190 (420)	←
●●● Idler link	45 (99)	←
●●● Bucket link	90 (200)	←
●●● Pin (mounting the bucket cylinder and bucket)	95 (210)	←
●● Boom assembly (including the following:)	2,070 (4,560)	←
●●● Boom	1,720 (3,790)	←
●●● Arm cylinder	310 (680)	←
●●● Pin (for mounting the arm)	59 (130)	←
● Lubricant and water (including the following:)		
●● Hydraulic oil and engine oil	280 (620)	←
●● Fuel	260 (570)	←
●● Water	24 (53)	←

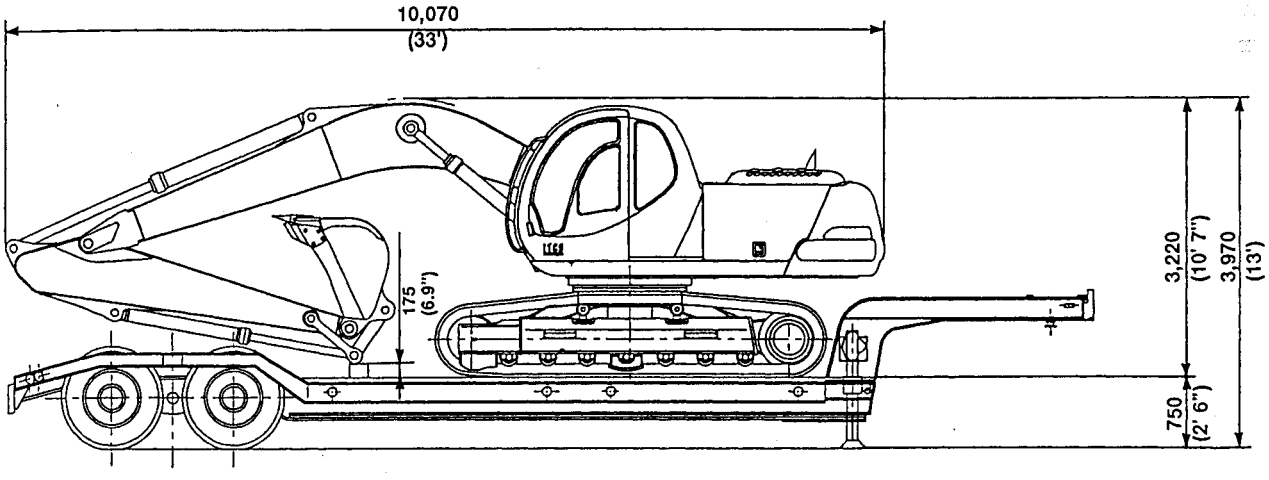
Note : Numerical values marked ※ indicate the dry weight.

3. TRANSPORTATION WEIGHT

● OVERALL SPECIFICATIONS OF A FULLY-EQUIPPED MACHINE ON A TRAILER

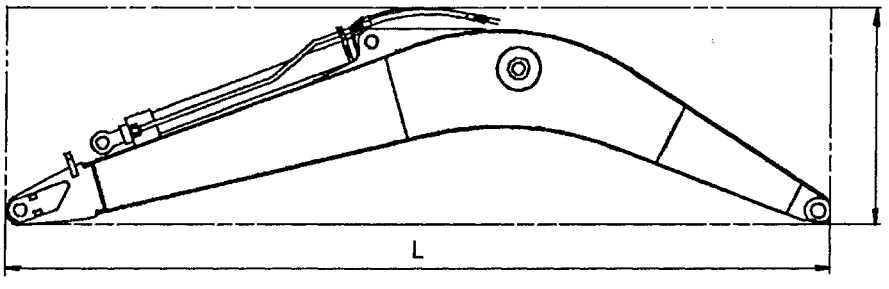
Item \ Model		SK220v	SK220LCv
Total width	mm (ft-in)	2,990 (9′10″)	3,190 (10′6″)
Weight	kg (lbs)	22,700 (50,000)	23,200 (51,100)

NOTE :
With 2.94m (9ft-8in) Arm



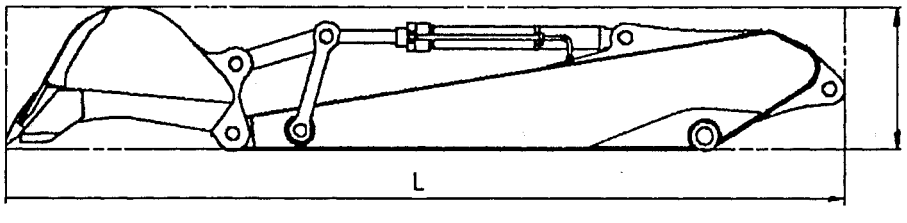
● SK220v, SK220LCv OVERALL SPECIFICATIONS OF BOOM

		6.02m (19ft-9 in) Boom
Total length × Total height × Total width L×H×W	m (ft-in)	6.26×1.68×0.76 (20′6″×5′6″×2′6″)
Weight	kg (lbs)	2,020 (4,450)



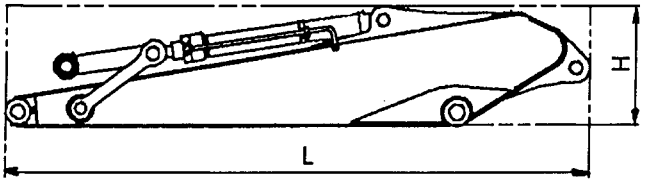
● SK220v, SK220LCv OVERALL SPECIFICATIONS OF ARM+BUCKET

Combination		2.5m (8ft-2 in) Arm + 1.10m³ (1.43cuyd) Bucket	2.98m (9ft-9 in) Arm + 1.00m³ (1.30cuyd) Bucket	3.66m (12ft) Arm + 0.81m³ (1.06cuyd) Bucket
Total length × Total height × Total width L×H×W	m (ft-in)	5.00×0.98×1.38 (16′5″×3′3″×4′6″)	5.47×0.98×1.27 (17′11″×3′3″×4′2″)	6.14×0.98×1.05 (20′2″×3′3″×3′5″)
Weight	kg (lbs)	1,950 (4,300)	1,940 (4,280)	2,020 (4,450)



● SK220V, SK220LCV OVERALL SPECIFICATIONS OF ARM

Arm Length	2.5m (8ft-2 in)	2.98m (9ft-9 in)	3.66m (12ft)
Total length × Total height × Total width L×H×W m (ft-in)	3.59×0.90×0.48 (11′9″×2′11″×1′7″)	4.06×0.90×0.48 (13′4″×2′11″×1′7″)	4.72×0.93×0.48 (15′6″×3′1″×1′7″)
Weight kg (lbs)	1,070 (2,360)	1,170 (2,580)	1,310 (2,890)

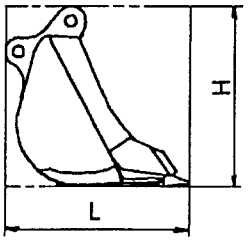


● SK220V, SK220LCV OVERALL SPECIFICATIONS OF BUCKET

Type	Hoe Bucket			
Total length × Total height × Total width L×H×W m (ft-in)	1.49×1.34×1.05 (4′11″×4′5″×3′5″)	1.49×1.34×1.28 (4′11″×4′5″×4′2″)	1.49×1.34×1.39 (4′11″×4′5″×4′7″)	1.49×1.34×1.51 (4′11″×4′5″×4′11″)
Weight kg (lbs)	730 (1,610)	790 (1,740)	850 (1,870)	900 (1,980)
Bucket capacity m^3(cu·yd)	0.81 (1.06)	1.00 (1.31)	1.10 (1.44)	1.40 (1.83)

Type	Slope Finishing Bucket			
Total length × Total height × Total width L×H×W m (ft-in)	1.39×0.96×2.20 (4′7″×3′2″×7′3″)			
Weight kg (lbs)	1,050 (2310)			
Bucket capacity m^3(cu·yd)	0.90 (1.18)			

● Hoe Bucket



● Slope Finishing Bucket