

HYDRAULIC EXCAVATOR

SHOP MANUAL

model

SK 310 
SK 310LC 

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.

*GENERAL

LC01. SPECIFICATION

- OPERATION AND CONTROLS
(Refer to Operators Manual)

LC03. LOCATION AND
WEIGHT OF COMPONENTS

LC04. MAINTENANCE STANDARD AND
TEST PROCEDURE

- PREVENTIVE MAINTENANCE
(Refer to Operators Manual)

LC07. WORKING STANDARD

LC08. STANDARD MAN-HOUR TABLE

*SYSTEMS

LC12. HYDRAULIC SYSTEM

LC15. SWING FRAME

LC18. TRAVEL SYSTEM

LC21. ATTACHMENTS

LC22. CONTROL SYSTEM

LC25. ELECTRICAL SYSTEM

LC26. AIR-CONDITIONER SYSTEM

LC29. TROUBLE SHOOTING

*COMPONENTS

12. HYDRAULIC PUMP

13. CONTROL VALVE

14. OTHER VALVES

15. HYDRAULIC MOTOR

16. SWIVEL JOINT

17. HYDRAULIC CYLINDER

21. REDUCTION UNIT

50. ENGINE

*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.

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KOBELCO

Book code No. S5LC0005E

Sample of manual. Download All 350 pages at:

<https://www.arepairmanual.com/downloads/kobelco-model-sk310sk310lc-hydraulic-excavator-service-repair-workshop-manual/>

WARNING

SAFETY

WARNING

The proper and safe lubrication and maintenance for this machine, recommended by KOBELCO are outlined in the OPERATION & MAINTENANCE GUIDE for this machine.

Improper performance of lubrication or maintenance procedures is dangerous and could result in injury or death. Read and understand the OPERATION & MAINTENANCE GUIDE before performing any lubrication or maintenance.

The serviceman or mechanic may be unfamiliar with many of the systems on this machine. This makes it important to use caution when performing service work. A knowledge of the system and or components is important before the removal or disassembly of any component.

Because of the size of some of the machine components, the serviceman or mechanic should check the weights noted in this Manual. Use proper lifting procedures when removing any components.

Following is a list of basic precautions that should always be observed.

1. Read and understand all Warning plates and labels on the machine before operating, lubricating or repairing this product.
2. Always wear protective glasses and protective shoes when working around machines. In particular, wear protective glasses when pounding on any part of the machine or its attachments with a hammer or sledge. Use welders gloves, hood/goggles, apron and other protective clothing appropriate to the welding job being performed. Do not wear loose-fitting or torn clothing. Remove all rings from fingers when working on machinery.
3. Disconnect battery and discharge any capacitors before starting to work on machine. Hang "Do Not Operate" tag in the Operator's Compartment.
4. If possible, make all repairs with the machine parked on a level, hard surface. Block machine so it does not roll while working on or under machine.
5. Do not work on any machine that is supported only by lift jacks or a hoist. Always use blocks or jack stands to support the machine before performing any disassembly.

WARNING

Do not operate this machine unless you have read and understand the instructions in the OPERATORS MANUAL. Improper machine operation is dangerous and could result in injury or death.

6. Relieve all pressure in air, oil or water systems before any lines, fittings or related items are disconnected or removed. Always make sure all raised components are blocked correctly and be alert for possible pressure when disconnecting any device from a system that utilizes pressure.
7. Lower the bucket, blade, ripper or other attachments to the ground before performing any work on the machine. If this cannot be done, make sure the bucket, blade, ripper or other attachments is blocked correctly to prevent it from dropping unexpectedly.
8. Use steps and grab handles when mounting or dismounting a machine. Clean any mud or debris from steps, walkways or work platforms before using. Always face machine when using steps, ladders and walkways. When it is not possible to use the designed access system, provide ladders, scaffolds, or work platforms to perform safe repair operations.
9. To avoid back injury, use a hoist when lifting components which weigh 23 kg (50 lbs) or more. Make sure all chains, hooks, slings, etc., are in good condition and are in the correct capacity. Be sure hooks are positioned correctly. Lifting eyes are not to be side loaded during a lifting operation.
10. To avoid burns, be alert for hot parts on machines which have just been stopped and hot fluids in lines, tubes and compartments.
11. Be careful when removing cover plates. Gradually back off the last two bolts or nuts located at opposite ends of the cover or device and pry cover loose to relieve any spring or other pressure, before removing the last two bolts or nuts completely.
12. Be careful when removing filler caps, breathers and plugs on the machine. Hold a rag over the cap or plug to prevent being sprayed or splashed by liquids under pressure. The danger is even greater if the machine has just been stopped because fluids can be hot.

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 capscrews with same part number. Do not use a lesser quality capscrew 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

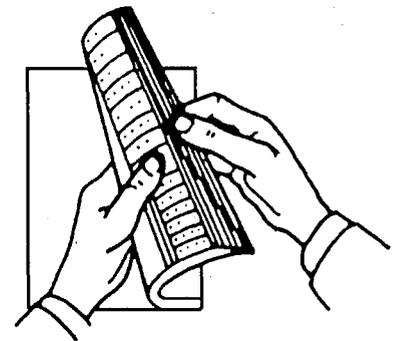
model

SK310 
SK310 **LC** 

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○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

SK310^{III}
 SK310^{LCIII} List of Shop Manual GENERAL Section

Index No.	Title	Book Code No.		
		Distribution Year - Month		
LC01	SPECIFICATION	S5LC0105E 1995-03		
—	OPERATION	S2LC1012E Refer to Operators manual		
LC03	LOCATION AND WEIGHT OF COMPONENTS	S5LC0305E 1995-03		
LC04	MAINTENANCE STANDARDS AND TEST PROCEDURES	S5LC0405E 1995-03		
—	PREVENTIVE MAINTENANCE	S2LC1012E Refer to Operators manual		
LC07	WORKING STANDARDS	S5LC0705E 1995-03		
LC08	STANDARD MAN-HOUR TABLE	S5LC0802E 1995-03		
	Applicable Machines	LC03801~ YC01101~		

Book code No.

S5LC0105E

KOBELCO

SHOP MANUAL

SK310

SK310_{LC}

LC01

SPECIFICATION

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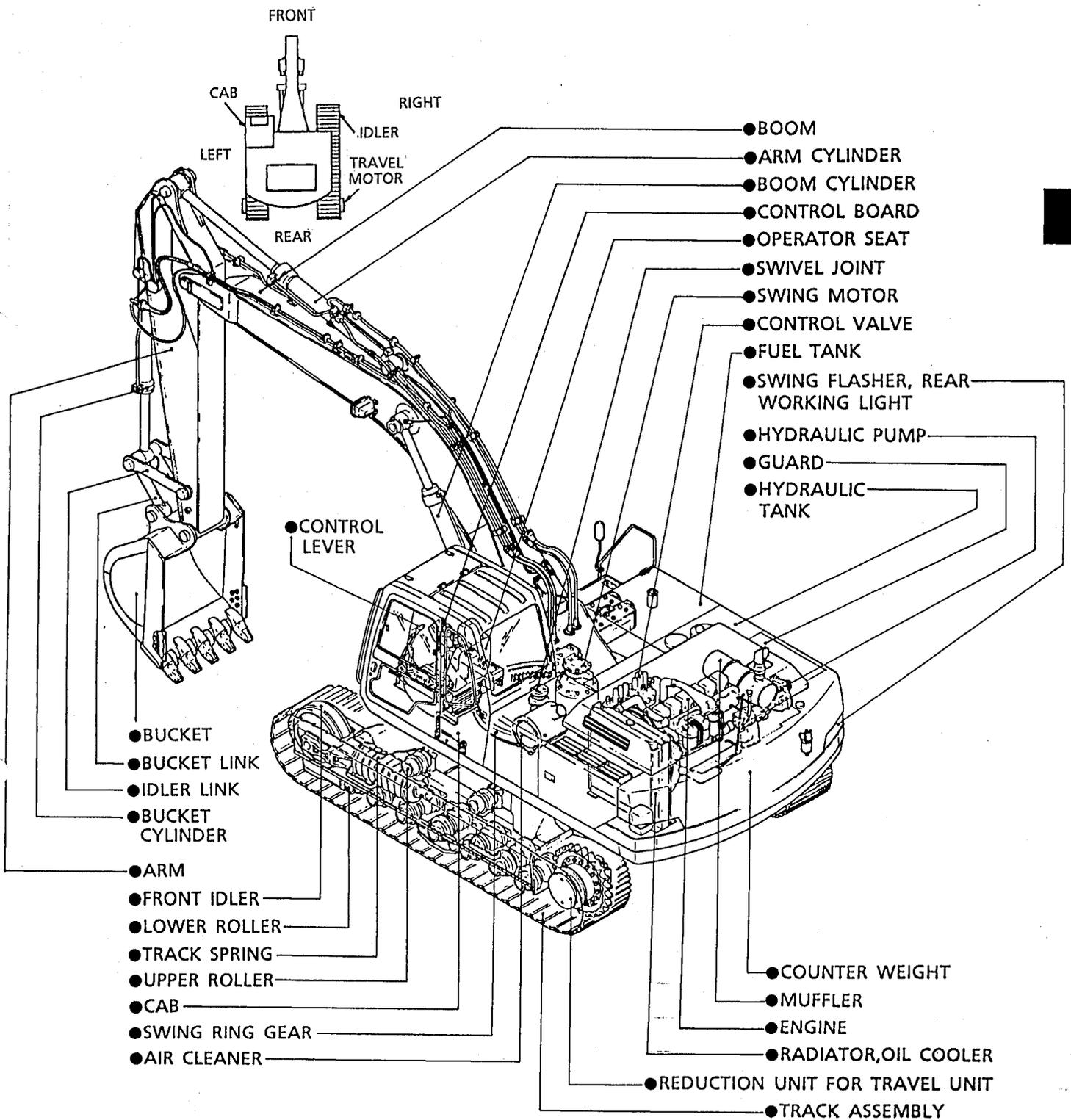
Applicable Machines

LC03801~

YC01101~

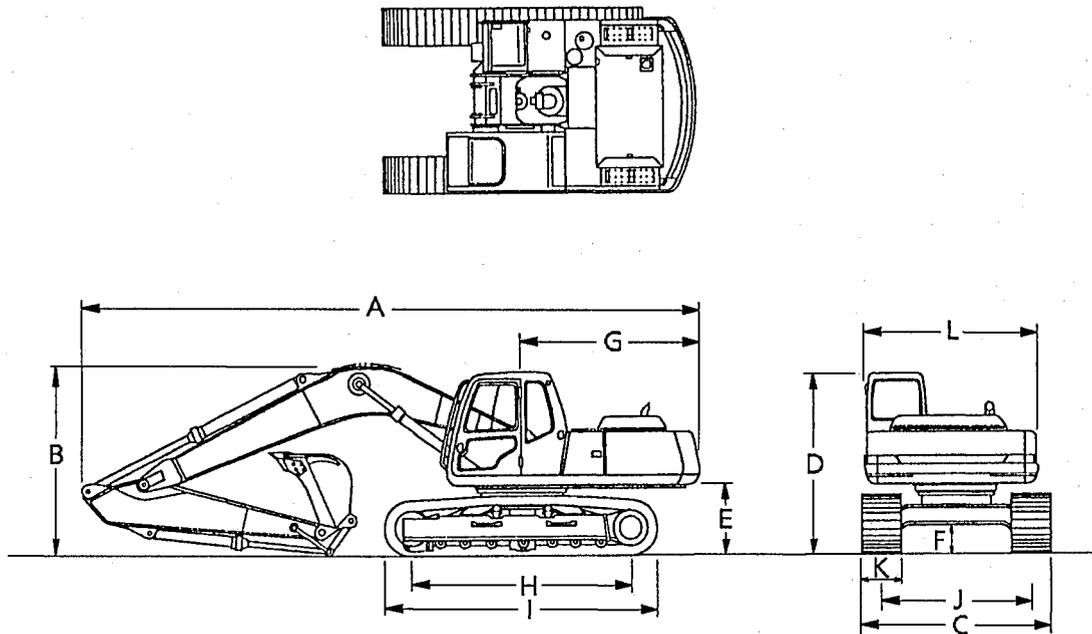
Revision	Date of Issue	Remarks
First edition	March, 1995	S5LC0105E K

1. LOCATION OF COMPONENTS



2. GENERAL DIMENSIONS

SK310III

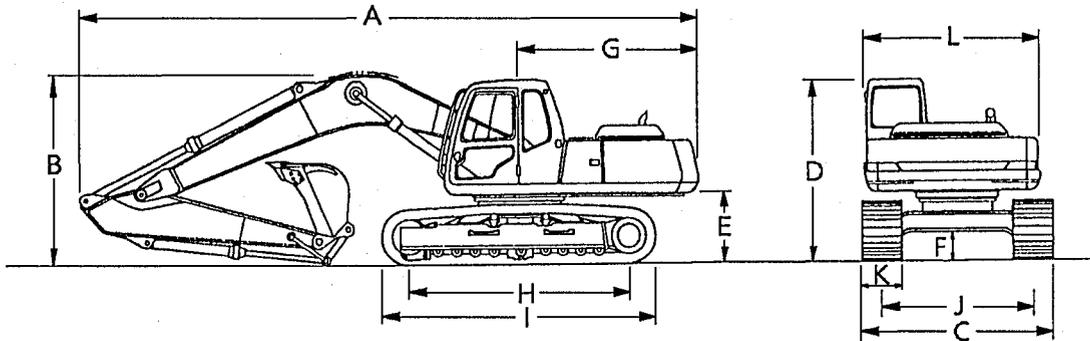
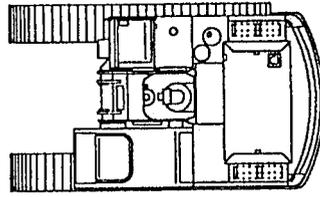


Unit : m (ft)

	Arm length	2.55 (8-4)	3.14 (10-4)	4.1 (13-5)
A	Overall length	10.94 (35-11)	10.85 (35-7)	10.88 (35-8)
B	Overall height (to top of boom)	3.52 (11-6)	3.25 (10-8)	3.36 (11-0)
C-1	Overall width (800mm (31.5in))	3.40 (11-2)	3.40 (11-2)	3.40 (11-2)
C-2	Overall width (600mm (23.6in))	3.20 (10-6)	3.20 (10-6)	3.20 (10-6)
D	Overall height (to top of cab)	3.06 (10-0)	3.06 (10-0)	3.06 (10-0)
E	Ground clearance of rear end*	1.17 (3-10)	1.17 (3-10)	1.17 (3-10)
F	Ground clearance*	470mm (18.5in)	470mm (18.5in)	470mm (18.5in)
G	Tail swing radius	3.20 (10-6)	3.20 (10-6)	3.20 (10-6)
H	Tumbler distance	3.705 (12-2)	3.705 (12-2)	3.705 (12-2)
I	Overall length of crawler	4.645 (15-3)	4.645 (15-3)	4.645 (15-3)
J	Track gauge	2.60 (8-6)	2.60 (8-6)	2.60 (8-6)
K-1	Shoe width	800mm (31.5in)	800mm (31.5in)	800mm (31.5in)
K-2	Shoe width	600mm (24in)	600mm (24in)	600mm (24in)
L	Overall width of upper structure	3.06 (10-0)	3.06 (10-0)	3.06 (10-0)

NOTE : Figure of asterisk (*) apply to value without shoe lug.

SK310LCIII



Unit : m (ft)

	Arm length	2.55 (8-4)	3.14 (10-4)	4.1 (13-5)
A	Overall length	10.94 (35-11)	10.85 (35-7)	10.88 (35-8)
B	Overall height (to top of boom)	3.54 (11-7)	3.25 (10-8)	3.39 (11-1)
C-1	Overall width (800mm (31.5in))	3.40 (11-2)	3.40 (11-2)	3.40 (11-2)
C-2	Overall width (600mm (23.6in))	3.20 (10-6)	3.20 (10-6)	3.20 (10-6)
D	Overall height (to top of cab)	3.06 (10-0)	3.06 (10-0)	3.06 (10-0)
E	Ground clearance of rear end*	1.17 (3-10)	1.17 (3-10)	1.17 (3-10)
F	Ground clearance*	470mm (18.5in)	470mm (18.5in)	470mm (18.5in)
G	Tail swing radius	3.20 (10-6)	3.20 (10-6)	3.20 (10-6)
H	Tumbler distance	4.01 (13-2)	4.01 (13-2)	4.01 (13-2)
I	Overall length of crawler	4.95 (16-3)	4.95 (16-3)	4.95 (16-3)
J	Track gauge	2.60 (8-6)	2.60 (8-6)	2.60 (8-6)
K-1	Shoe width	800mm (31.5in)	800mm (31.5in)	800mm (31.5in)
K-2	Shoe width	600mm (24in)	600mm (24in)	600mm (24in)
L	Overall width of upper structure	3.06 (10-0)	3.06 (10-0)	3.06 (10-0)

NOTE : Figure of asterisk (*) apply to value without shoe lug.

3. SPECIFICATIONS AND PERFORMANCE

■ SPEED AND CLIMBING ABILITY

Item	Model	SK310III · SK310LcIII
Swing speed		10.5rpm
Travel speed		5.5 / 3.7km / h (3.4 / 2.3 mph)
Gradeability		35° (70%)

■ ENGINE

Model		Mitsubishi 6D22-T
Type		Water-cooled 4-cycle, direct injection type diesel engine with turbo-charger
Number of cylinder—Bore×Stroke		6—130mm(5.11in)×140mm(5.51in)
Total displacement		11,149c.c. (680cuin)
Rated output power/revolution	JISD 1005 NET	230 HP / 1,750rpm
	ISO 9249 NET	169 KW / 1,750rpm
Maximum torque/revolution	JISD 1005 NET	106 kgf·m / 1,400rpm
	ISO 9249 NET	1,040 N·m / 1,400rpm

■ HYDRAULIC COMPONENTS

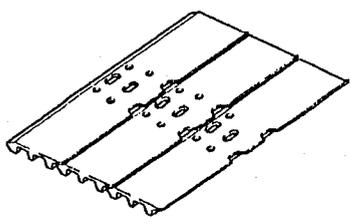
Hydraulic pump	Double-pump variable displacement, axial piston + gear pump
Hydraulic motor (swing)	Axial piston motor
Hydraulic motor (travel)	Axial piston motor
Control valve	6-spool multiple control valve + 1-spool control valve (swing)
Cylinders (boom, arm, and bucket)	Double acting cylinder
Return filter	Safety valve containing filter type
Oil cooler	Air-cooled type

■ WEIGHT

Unit : kg (lbs)

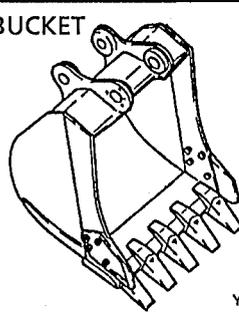
Item	Model	SK310III		SK310LcIII	
		30,100 (66,400)	31,000 (68,400)	30,700 (67,700)	31,700 (69,900)
Fully-equipped weight					
Upper machinery		13,400 (29,500)	←	←	←
Lower machinery with grouser shoe	600 (24")	11,000 (24,100)	—	11,500 (25,400)	—
	800 (32")	—	11,800 (26,100)	—	12,500 (27,600)
Attachment (6.47m(21ft-3in) boom+3.14m (10ft-4in) arm+ m ³ (cuyd) bucket)		5,800 (12,800)	←	←	←

4. TYPE OF SHOES

Shape	Model	Width of track shoe (mm(in))	Overall width of crawler (mm(ft-in))	Ground pressure (kg/cm ² (psi))
 Grouser(equal height)	SK310III	600 (24")	3,200 (10'6")	0.63(8.96)
		48 link	800 (32")	3,400 (11'2")
	SK310LCIII	600 (24")	3,200 (10'6")	0.59(8.39)
		51 link	800 (32")	3,400 (11'2")

NOTE : The 800mm (32") shoes is applied for general civil work, one is used for soft ground operation. Do not use them in rough operations, such as gravel and rock digging.

5. TYPES AND COMBINATIONS OF ATTACHMENTS

HOE BUCKET <th rowspan="2">SAE,JIS Heaped capacity m³(cuyd)</th> <th colspan="2">Outside width of bucket mm (ft in)</th> <th rowspan="2">No. of teeth</th> <th rowspan="2">Equipped with side cutter</th> <th rowspan="2">Possibility of turnover</th> <th rowspan="2">Weight kg (lbs)</th>	SAE,JIS Heaped capacity m ³ (cuyd)	Outside width of bucket mm (ft in)		No. of teeth	Equipped with side cutter	Possibility of turnover	Weight kg (lbs)
		With side cutter	Without side cutter				
 YNK-6-8	1.20 (1.57)	1,240(4'1")	1,120(3'8")	4	Yes	Yes	950 (2,090)
	1.40 (1.83)	1,430(4'8")	1,310(4'4")	5	Yes	Yes	1,070 (2,360)
	1.60 (2.09)	1,610(5'3")	1,490(4'11")	5	Yes	Yes	1,160(2,600)
	1.80 (2.35)	—	1,680(5'6")	5	Yes	Yes	1,200 (2,650)
	—	—	—	—	—	—	—

■ COMBINATIONS OF ATTACHMENTS

Type	Bucket		Applicable arm		
	SAE-JIS heaped capacity m ³ (cuyd)	JIS-SAE struck capacity m ³ (cuyd)	2.55m (8ft-4in) arm	3.14m (10ft-4in) arm	4.1m (13ft-5in) arm
Hoe bucket	1.20 (1.57)	0.84 (1.10)	○	○	◎
	1.40 (1.83)	1.00 (1.31)	○	◎	△
	1.60 (2.09)	1.20 (1.57)	◎	△	×
	1.80 (2,35)	1.40 (1.83)	△	×	×
	—	—	—	—	—

NOTE : ◎ Standard combinations

○ General operation : Digging and loading of sand, gravels and clay-mixed soil

△ Light operation : Operations mainly consisting of loading of loose sand and soil (for instance, operations in paddy fields and loading of sand and gravels)

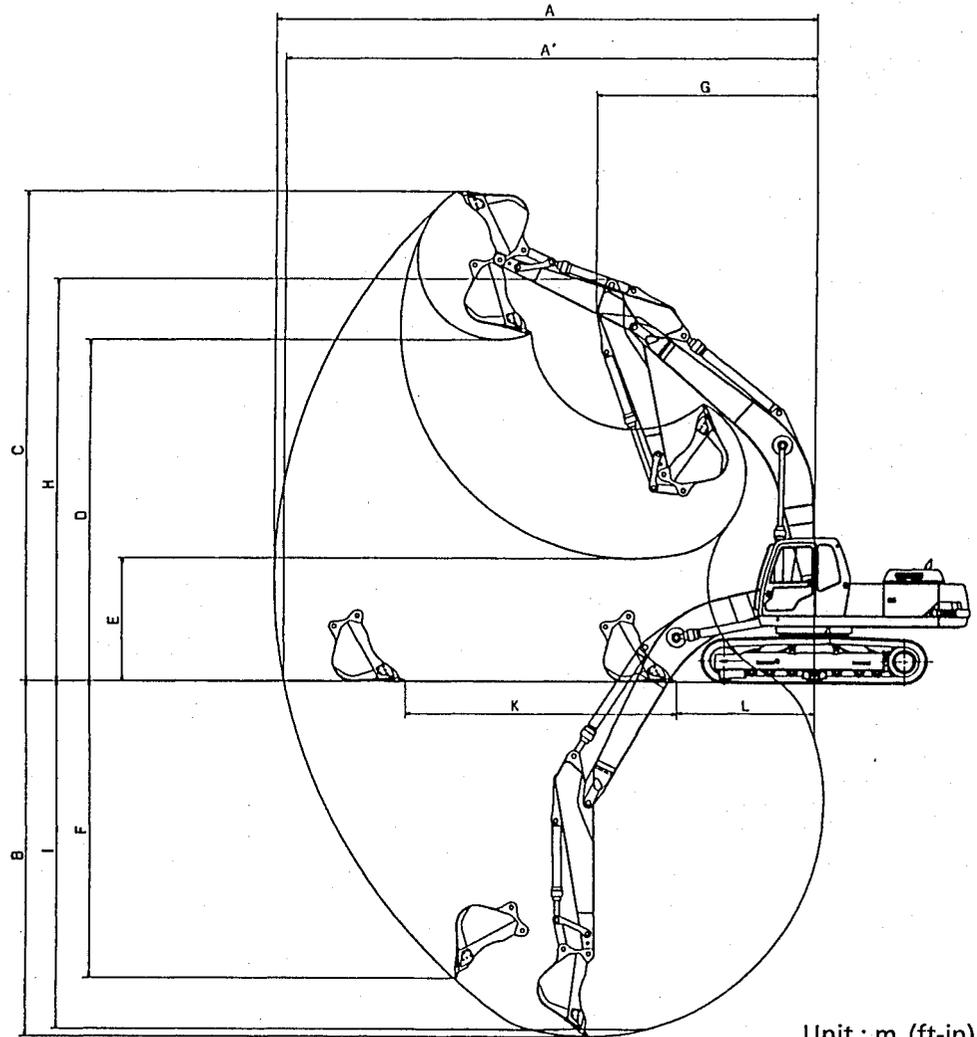
× Not usable : Do not operate in such combinations as guarantee does not cover them.

⚠ CAUTION

- If a bucket other than a hoe bucket is used to execute face shovel operation, it will cause damage to the arm and the bucket.
- The combinations other than those mentioned in the above table cannot be used in principle. For further details, contact KOBELCO.

6. WORKING RANGES OF ATTACHMENTS

■ BACKHOE ATTACHMENT

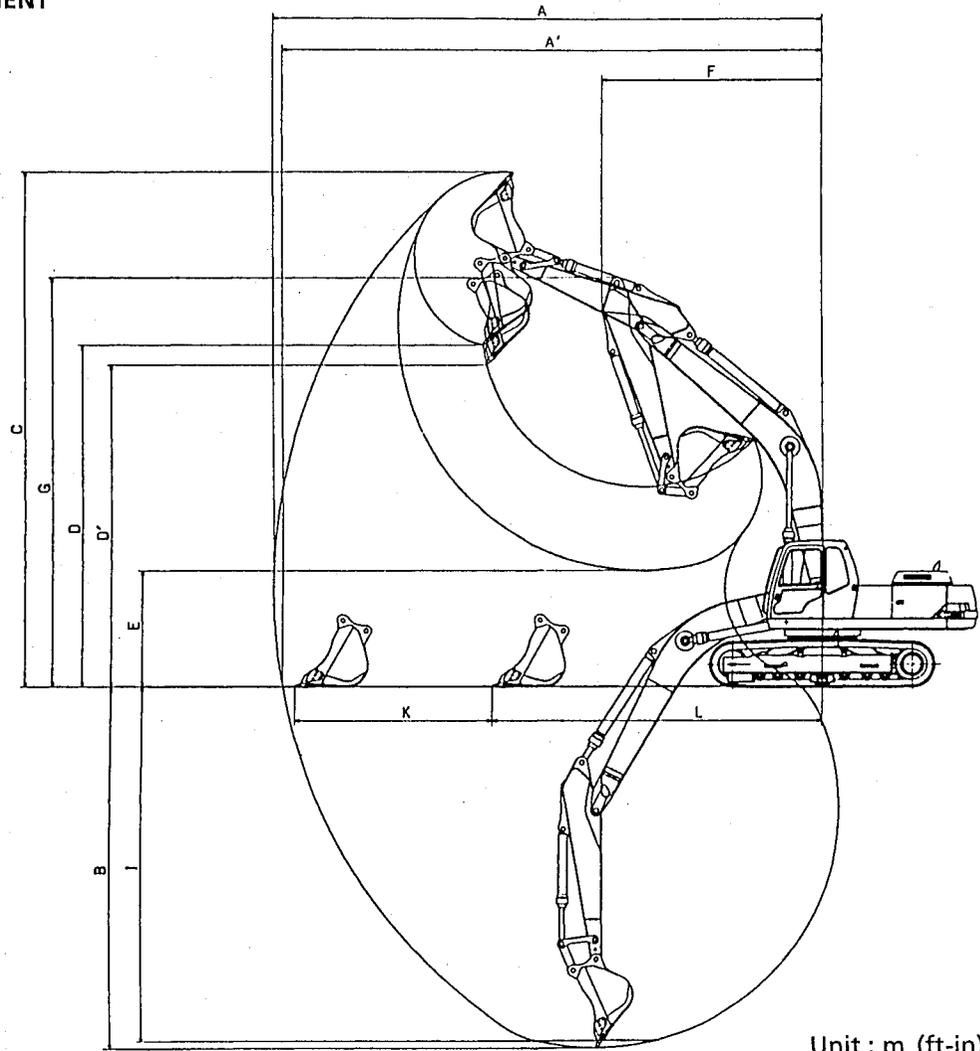


Unit ; m (ft-in)

Item		Range	Type of attachment	2.55m (8ft4in) arm	3.14m (10ft4in) arm	4.1m (13ft5in) arm
				with 1.60m ³ (2.09cuyd) bucket	with 1.40m ³ (1.83cuyd) bucket	with 1.20m ³ (1.57cuyd) bucket
A	Max digging reach			10.60 (34'9")	11.13 (36'6")	11.98 (39'4")
A'	Max. reach at ground level			10.40 (34'1")	10.94 (35'11")	11.80 (38'9")
B	Max. digging depth			6.79 (22'3")	7.38 (24'3")	8.34 (27'4")
C	Max. digging height			10.09 (33'1")	10.27 (33'8")	10.51 (34'6")
D	Max. dumping clearance			6.95 (22'10")	7.15 (23'5")	7.40 (24'3")
E	Min. dumping clearance			3.17 (10'5")	2.59 (8'6")	1.62 (5'4")
F	Max. Vertical digging depth			5.39 (17'8")	6.19 (20'4")	6.98 (22'11")
G	Min. swing radius			4.61 (15'2")	4.53 (14'10")	4.54 (14'11")
H	Height at min. swing radius			8.62 (28'3")	8.43 (27'8")	8.43 (27'8")
I	Digging depth at 8'-flat bottom			6.61 (21'8")	7.22 (23'8")	8.21 (26'11")
K	Horizontal	Stroke		4.26 (14'0")	5.60 (18'4")	7.28 (23'11")
		At min.		3.64 (11'11")	2.82 (9'3")	2.00 (6'7")
L	digging stroke			3.64 (11'11")	2.82 (9'3")	2.00 (6'7")

NOTE : The figures in this table do not include the grouser of shoes [30mm (1.18in)] .

■ FACE SHOVEL ATTACHMENT



Unit ; m (ft-in)

Item		Range	Type of attachment	2.55m (8ft4in) arm	3.14m (10ft4in) arm	4.1m (13ft5in) arm
				with 1.60m ³ (2.09cuyd) bucket	with 1.40m ³ (1.83cuyd) bucket	with 1.20m ³ (1.57cuyd) bucket
A	Max digging reach			10.74 (35'3")	11.30 (37'1")	12.12 (39'9")
A'	Max. reach at ground level			10.54 (34'7")	11.11 (36'5")	11.94 (39'2")
B	Max. digging depth			6.92 (22'8")	7.55 (24'9")	8.47 (27'9")
C	Max. digging height			10.46 (34'4")	10.70 (35'1")	10.92 (35'10")
D	Max. dumping clearance			6.91 (22'8")	7.03 (23'1")	7.34 (24'1")
D'	Max. dumping clearance (45°)			6.35 (20'10")	6.62 (21'9")	6.63 (21'9")
E	Min. dumping clearance			3.04 (10')	2.42 (7'11")	1.49 (4'11")
F	Min. swing radius			4.61 (15'1")	4.53 (14'10")	4.54 (14'11")
G	Height at min. swing radius			8.52 (27'11")	8.43 (27'8")	8.43 (27'8")
I	Digging depth at 8'-flat bottom			6.75 (22'2")	7.39 (24'3")	8.35 (27'5")
K	Horizontal	digging stroke	Stroke	3.01 (9'11")	4.06 (13'4")	5.43 (17'10")
			At min.	7.30 (23'11")	6.80 (22'4")	6.26 (20'6")
L						

NOTE : The figures in this table do not include the grouser of shoes [30mm (1.18in)] .

7. LIFTING-UP ABILITY DIAGRAM

(1) Calculation condition

The lifting-up ability of this drawing is indicated by pound 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.

⚠ Do not use the power boost switch while lifting a load.

⚠ WARNING

Releasing power boost switch while lifting a load can cause unexpected lowering of load, resulting in severe injury or death.

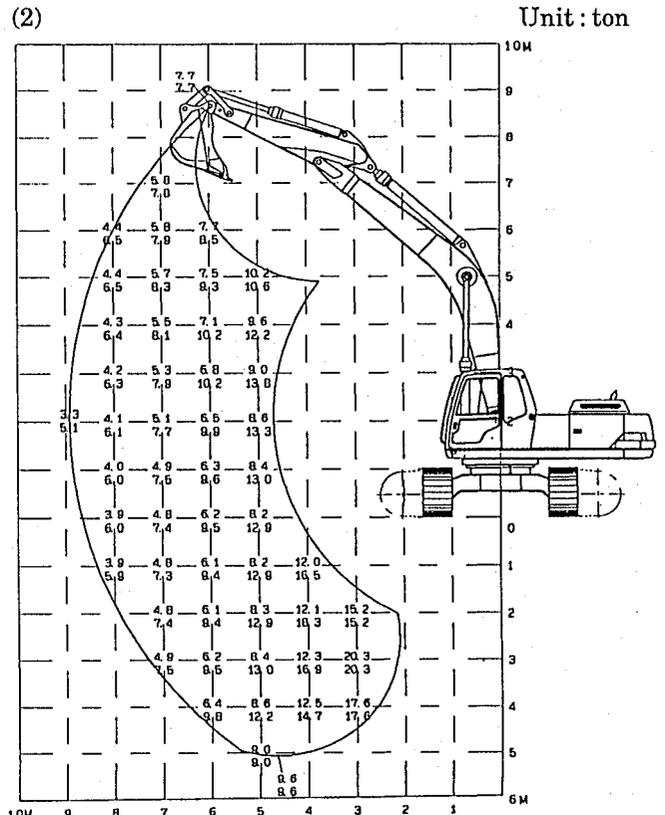
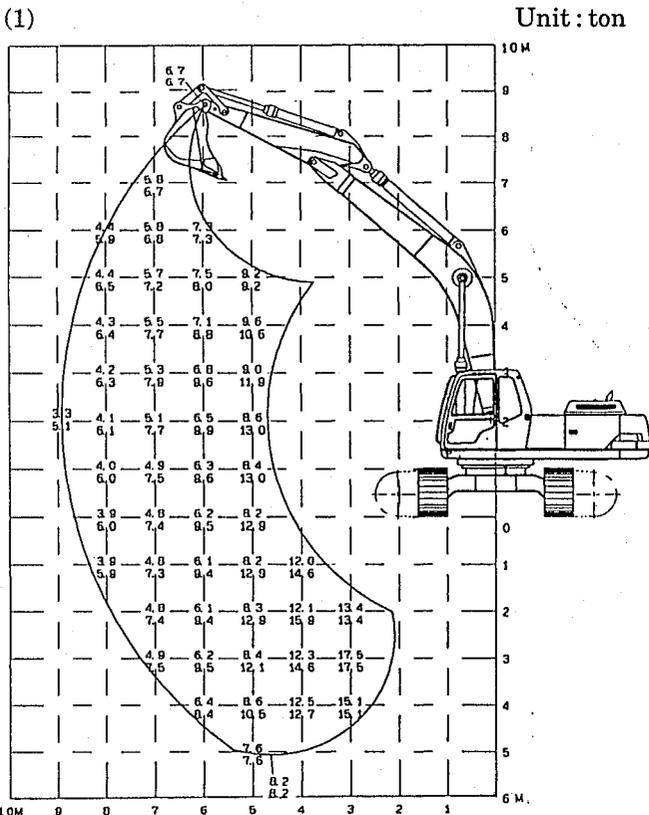
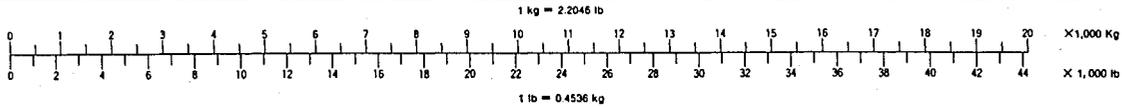
Never use power boost switch for lifting a load.

YN20T01004P1

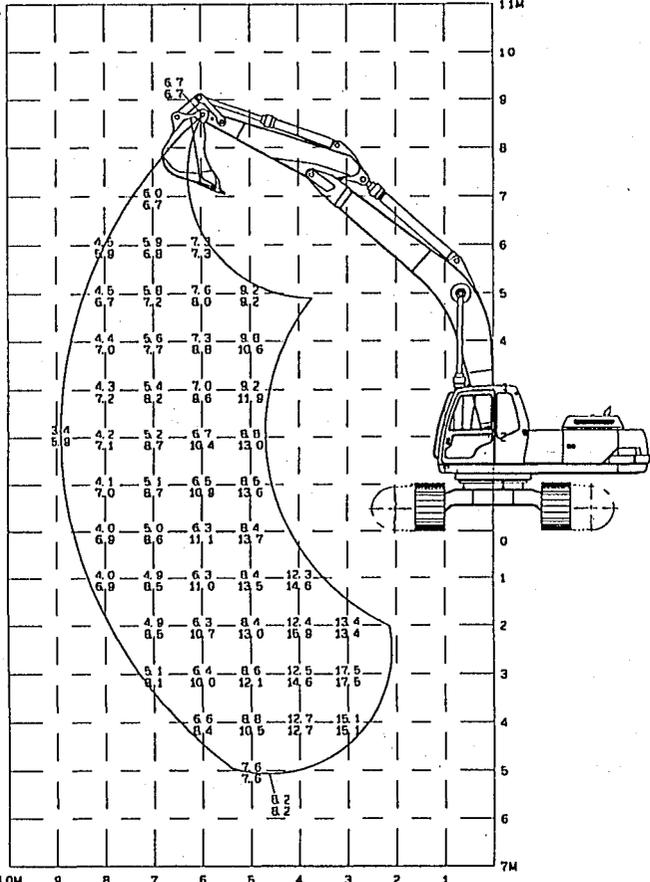
Attached to the right side of the cab interior

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

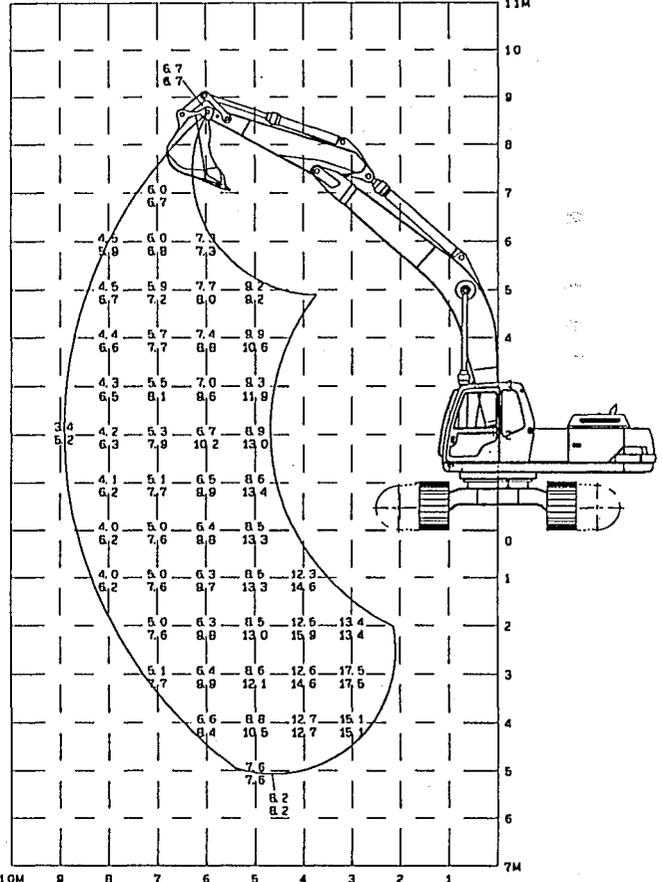
Model	Pressure kgf/cm ² (psi)	Arm length (M) + bucket capacity (M ³)					
		2.55M+1.60M ³ (8ft-4in+2.09cu.yd)		3.14M+1.40M ³ (10ft-4in+1.83cu.yd)		4.1M+1.16M ³ (13ft-5in+1.52cu.yd)	
		600 (24")	800 (32")	600 (24")	800 (32")	600 (24")	800 (32")
SK310III	300 (4270)	1	5	9	13	17	19
	Heavy lift 335 (4760)	2	6	10	14	—	—
SK310LCIII	300 (3270)	3	7	11	15	18	20
	Heavy lift 335 (4760)	4	8	12	16	—	—



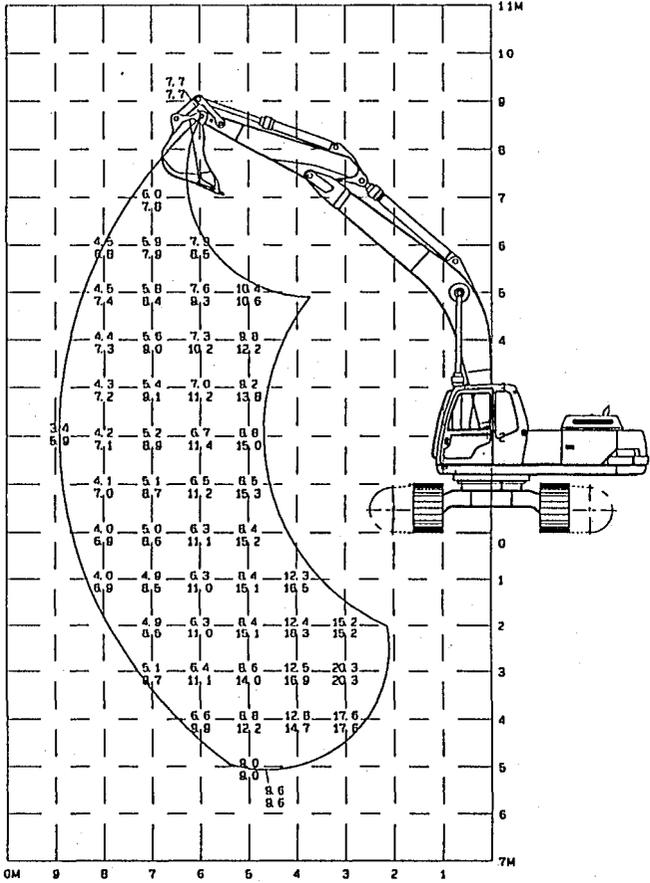
(3) Unit : ton



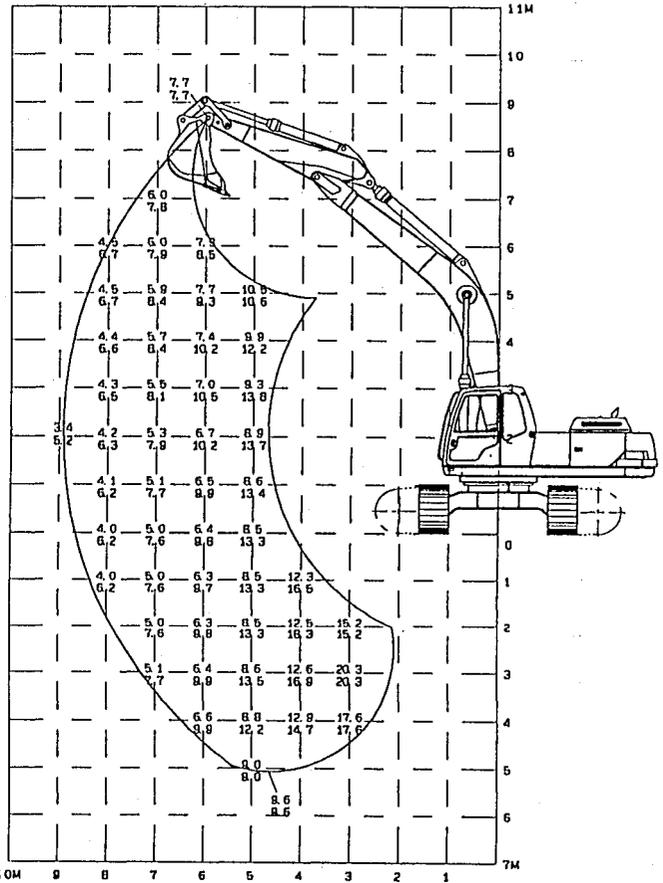
(5) Unit : ton



(4) Unit : ton

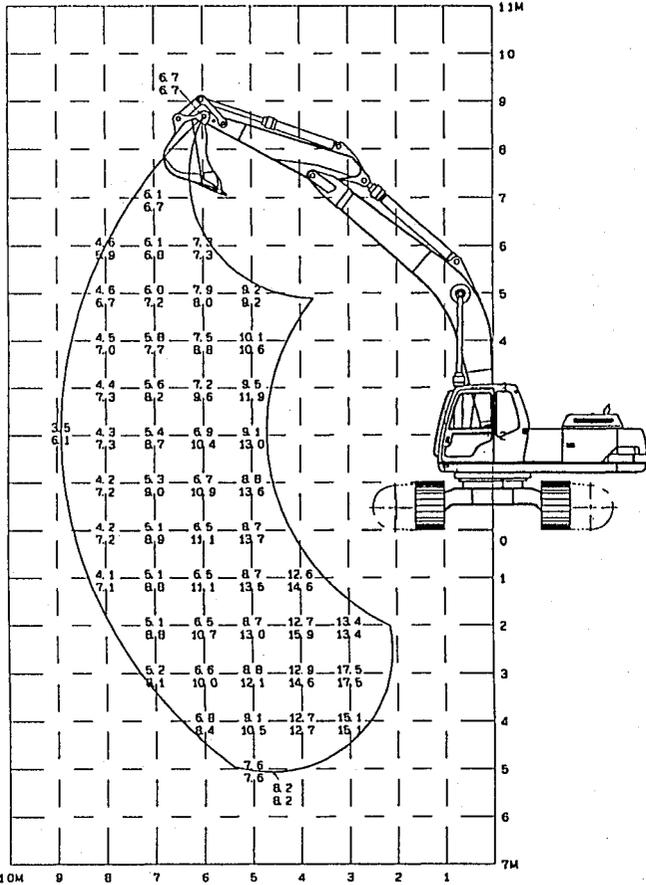


(6) Unit : ton



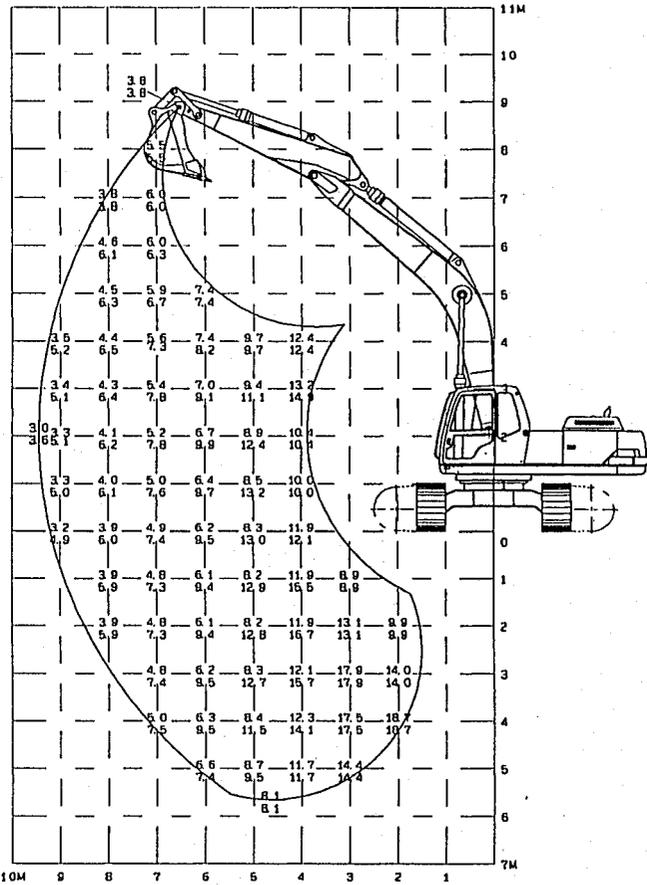
(7)

Unit : ton



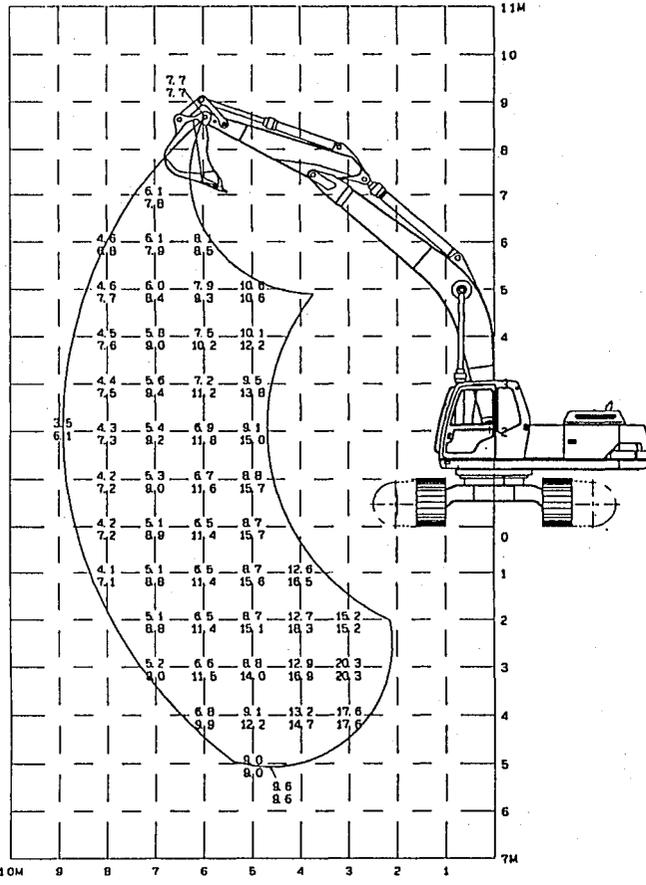
(9)

Unit : ton



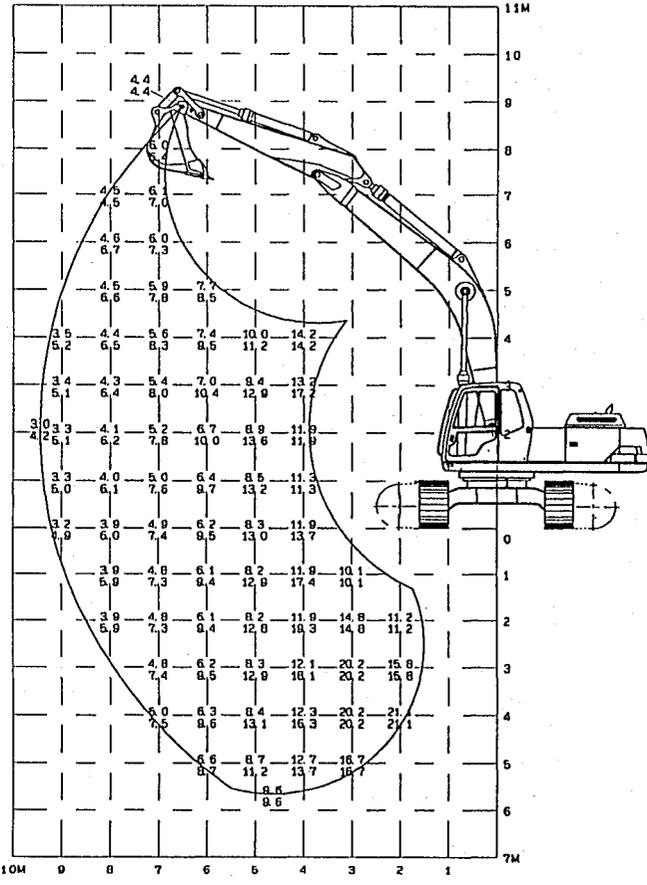
(8)

Unit : ton



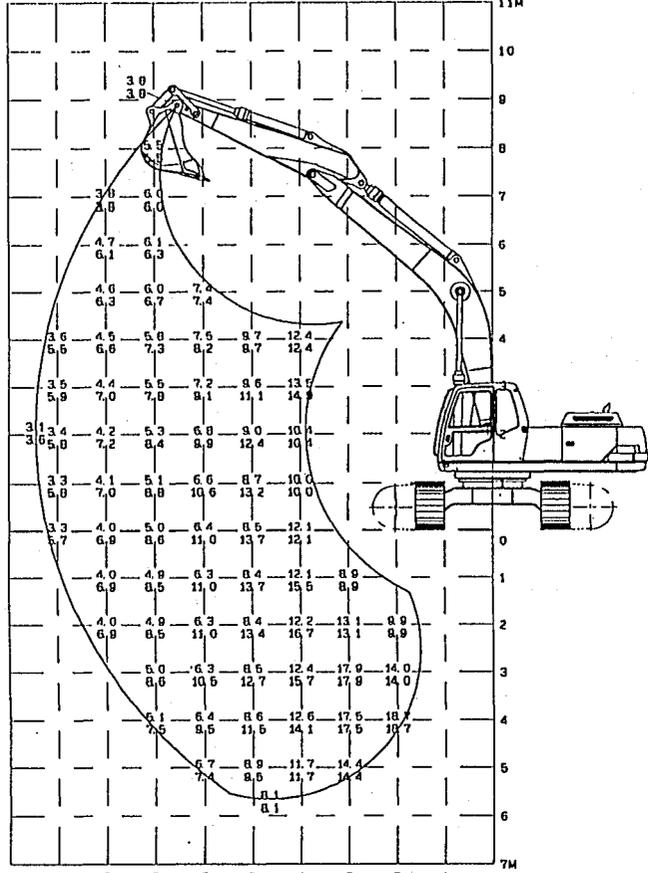
(10)

Unit : ton



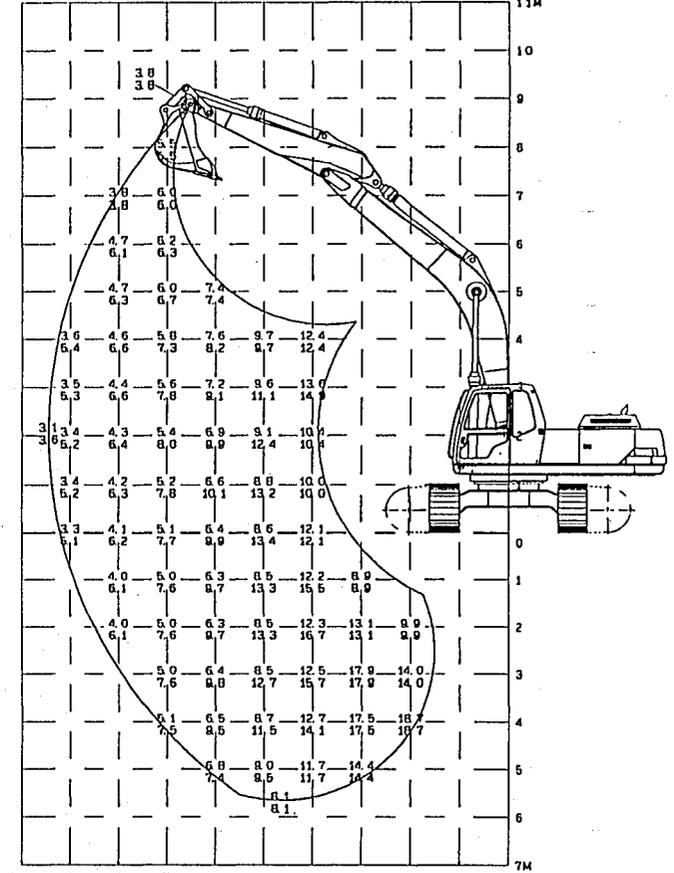
(11)

Unit : ton



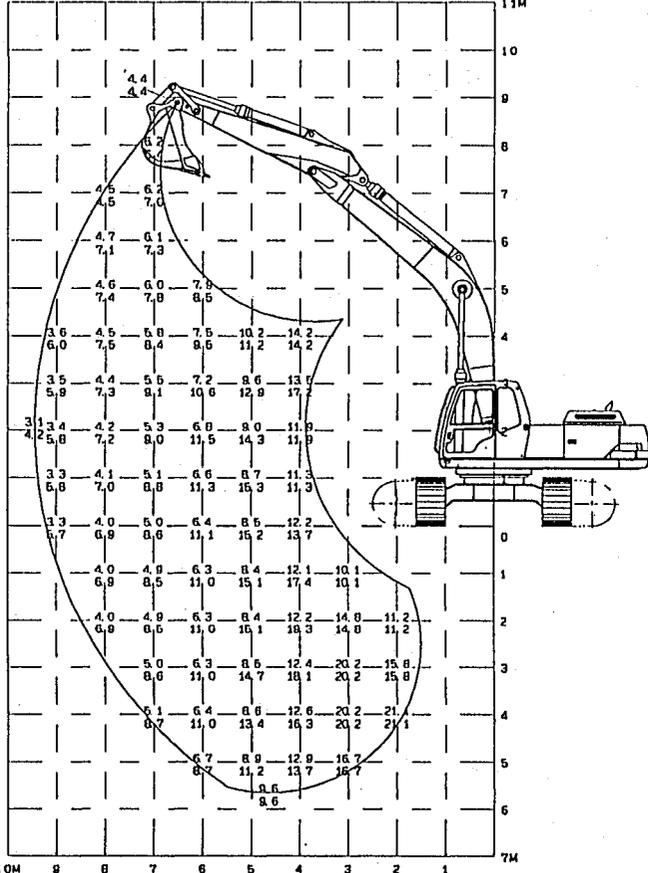
(13)

Unit : ton



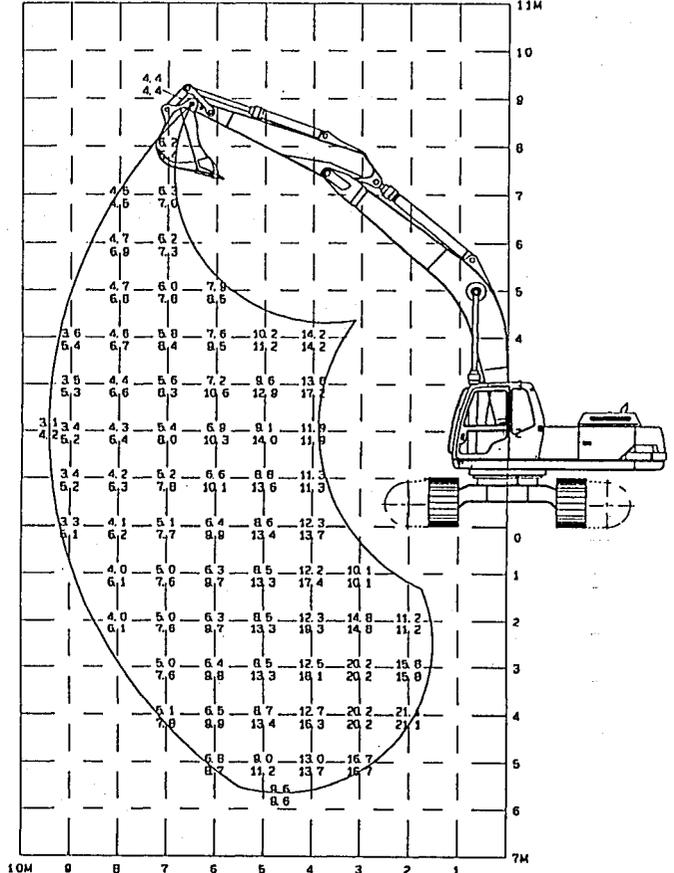
(12)

Unit : ton



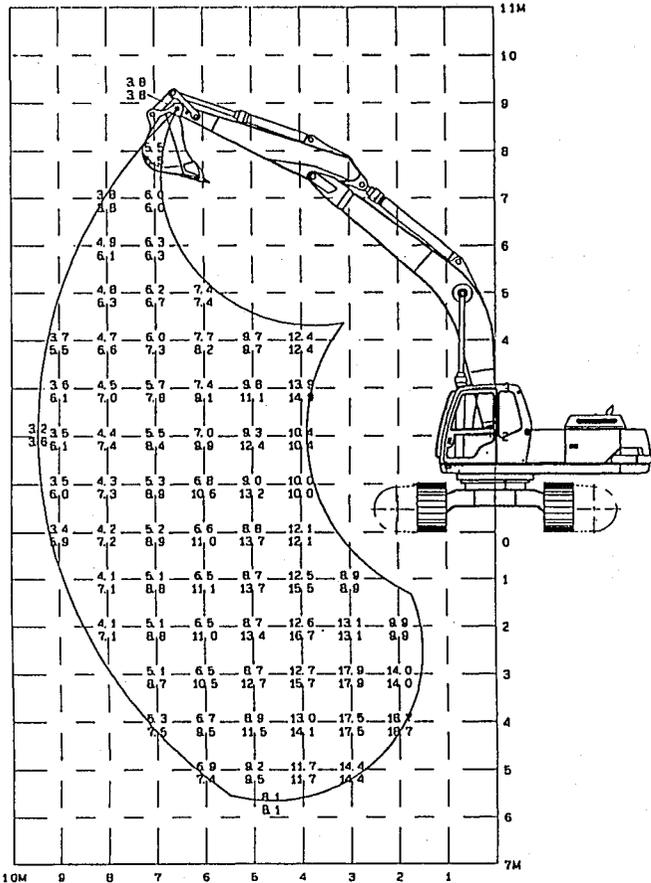
(14)

Unit : ton



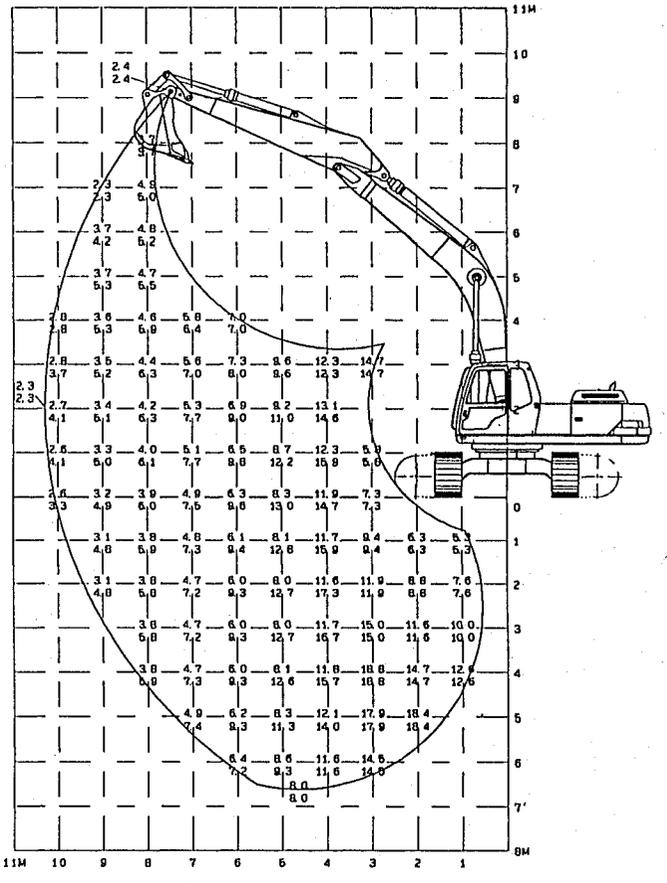
(15)

Unit : ton



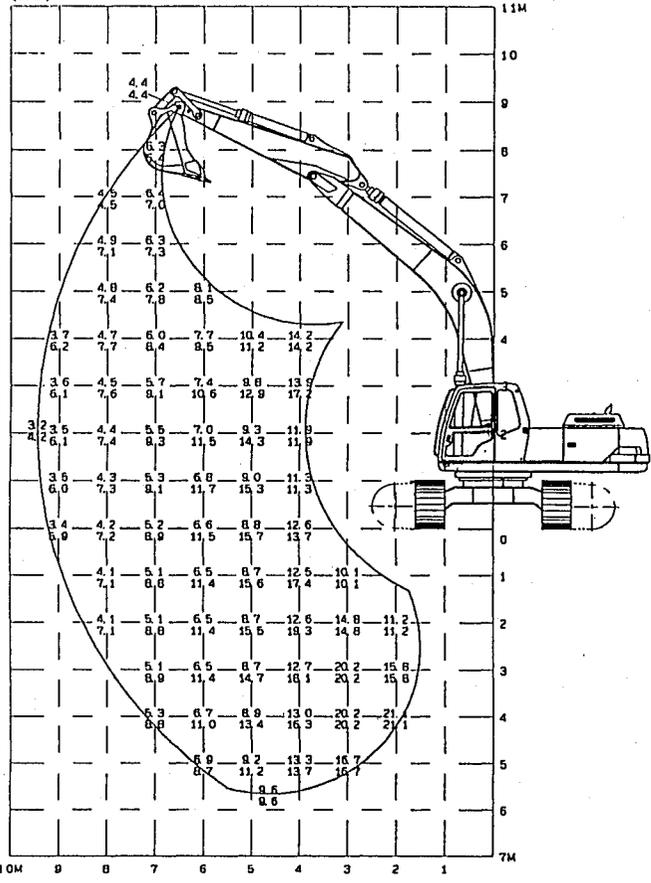
(17)

Unit : ton



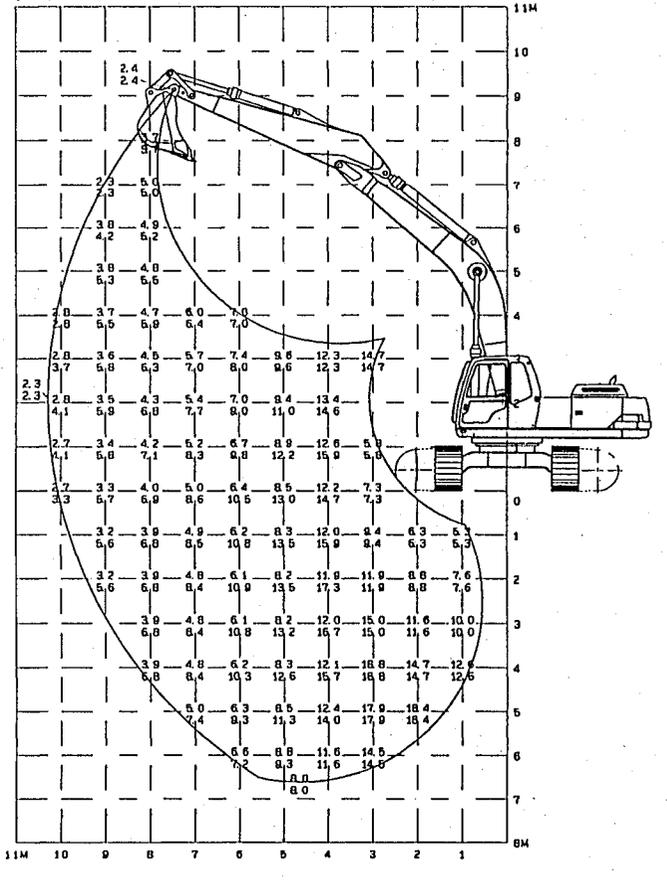
(16)

Unit : ton



(18)

Unit : ton



8. ENGINE SPECIFICATIONS

SPECIFICATIONS

SK310III, SK310LCIII

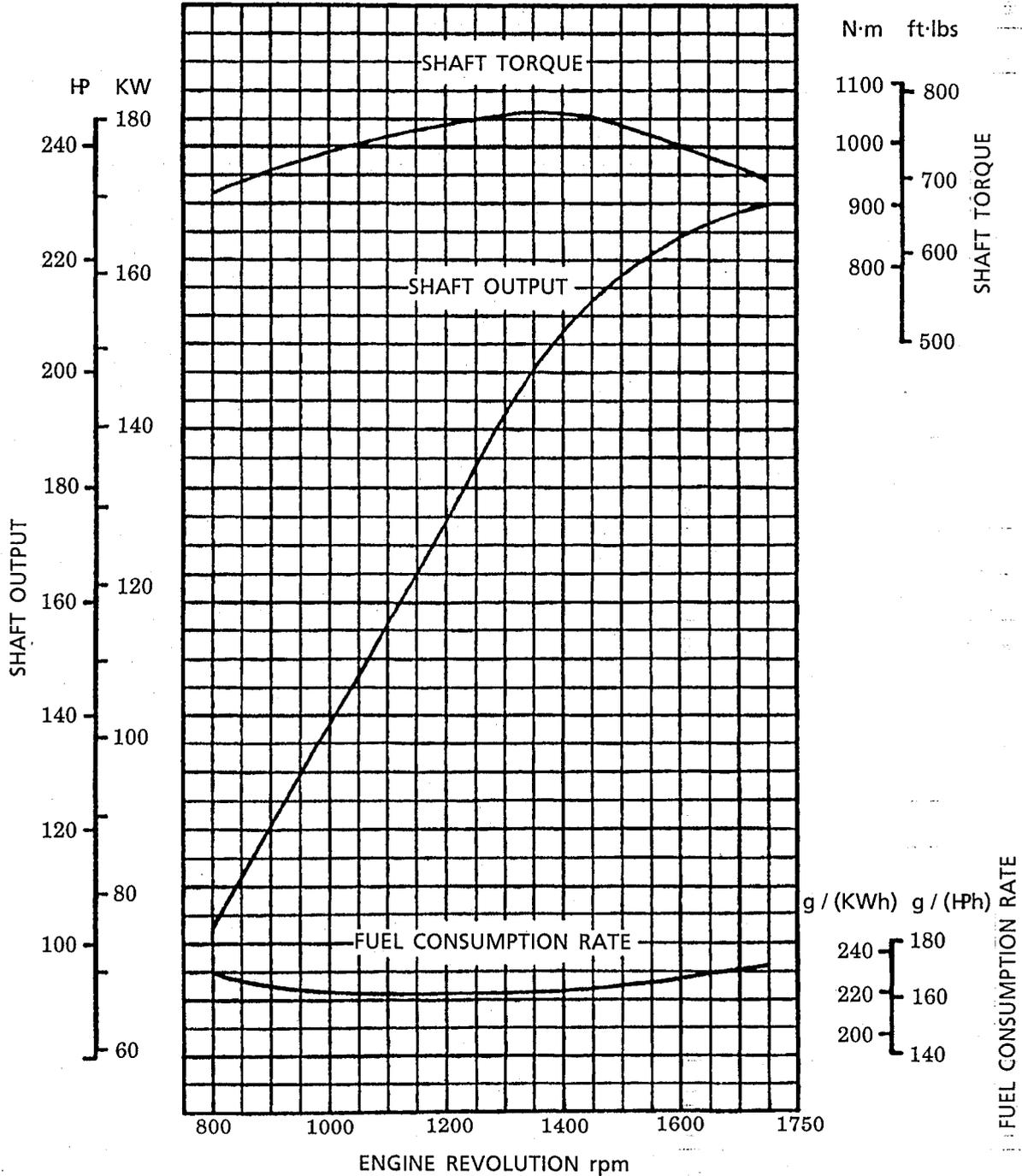
Type	Mitsubishi 6D22-T Diesel engine			
No. of cylinders-Bore×Stroke	6-130mm×140mm (5.12 in×5.51 in)			
Total displacement	11,149cc (680 cuin)			
Compression ratio	16.0			
Output rating	230PS / 1,750 rpm (169kw/ 1,750 rpm)			
Max. torque	101kgf·m (731ft·lbs) / 1,200 rpm			
High idling	1,950±20 rpm			
Low idling	850±30 rpm			
Injection start pressure	180kgf / cm ² (2,560psi)			
Thermostat action	Opening 76.5°C Full open 90°C			
Ignition order	1-5-3-6-2-4			
Compression pressure	28kgf / cm ² (398psi) at 200 rpm			
Lube oil pressure	Rating 1.5~5kgf/cm ² (21.3~71.1psi)			
Fuel injection timing	17°C before the top dead point			
Valve clearance, valve action timing		Valve clearance	Open	Close
	Intake valve	In cold state, in cold condition 0.4mm (0.016")	18° before the top dead point	50° before the bottom dead point
	Exhaust valve	In cold state, in cold condition 0.6mm (0.024")	50° before the bottom dead point	18° before the top dead point
Starter capacity	5.5kw			
Alternator capacity	800W (30A)			
Super Charging type	Turbo type			
Cooling fan drive method	Ø700 (Ø28in)suction type Belt drive pulley ratio:0.95			
Engine oil volume	Engine body 34ℓ (8.98gal)			
Dry weight	990kg (2,180 lbs)			
Fuel consumption rate	172±3% g / (ps·h) / 1,750rpm			
Allowable tilting angles	Back and forth, right and left 35°			
Engine dimension L×W×H mm (in)	1,635×901×1,198 (64.3×35.5×47.2)			
Rotating direction	Counterclockwise as seen from flywheel side			

ENGINE CHARACTERISTIC CURVE

(MITSUBISHI 6D22-T)

Atmospheric condition JIS D1005-1989
 Standard atmospheric temperature 298°K (25°C)
 Standard dry atmospheric pressure 743mmHg (99kpa)
 [Atmospheric pressure 750mmHg (100kpa)
 Partial pressure of water steam 7.5mmHg (1kpa)]

Auxiliary device Fan, air cleaner, with alternator, without silencer



$$\begin{aligned}
 \text{FUEL CONSUMPTION VOLUME} &= \frac{\text{FUEL CONSUMPTION RATE}}{0.835 \times 1000} \times \text{PS} \times \text{LOAD RATIO } (\alpha) \\
 &= \frac{172 \text{g / HP}\cdot\text{h}}{0.835 \times 1000} \times 230 \text{ HP} \times \alpha \\
 &= 47.4 \alpha \text{ } \ell / \text{h}
 \end{aligned}$$

Book code No. S5LC0305E

KOBELCO

SHOP MANUAL

SK310 SK310Lc

LOCATION AND WEIGHT OF COMPONENTS

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LC03

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3. TRANSPORTATION WEIGHT	3



KOBE STEEL, LTD.

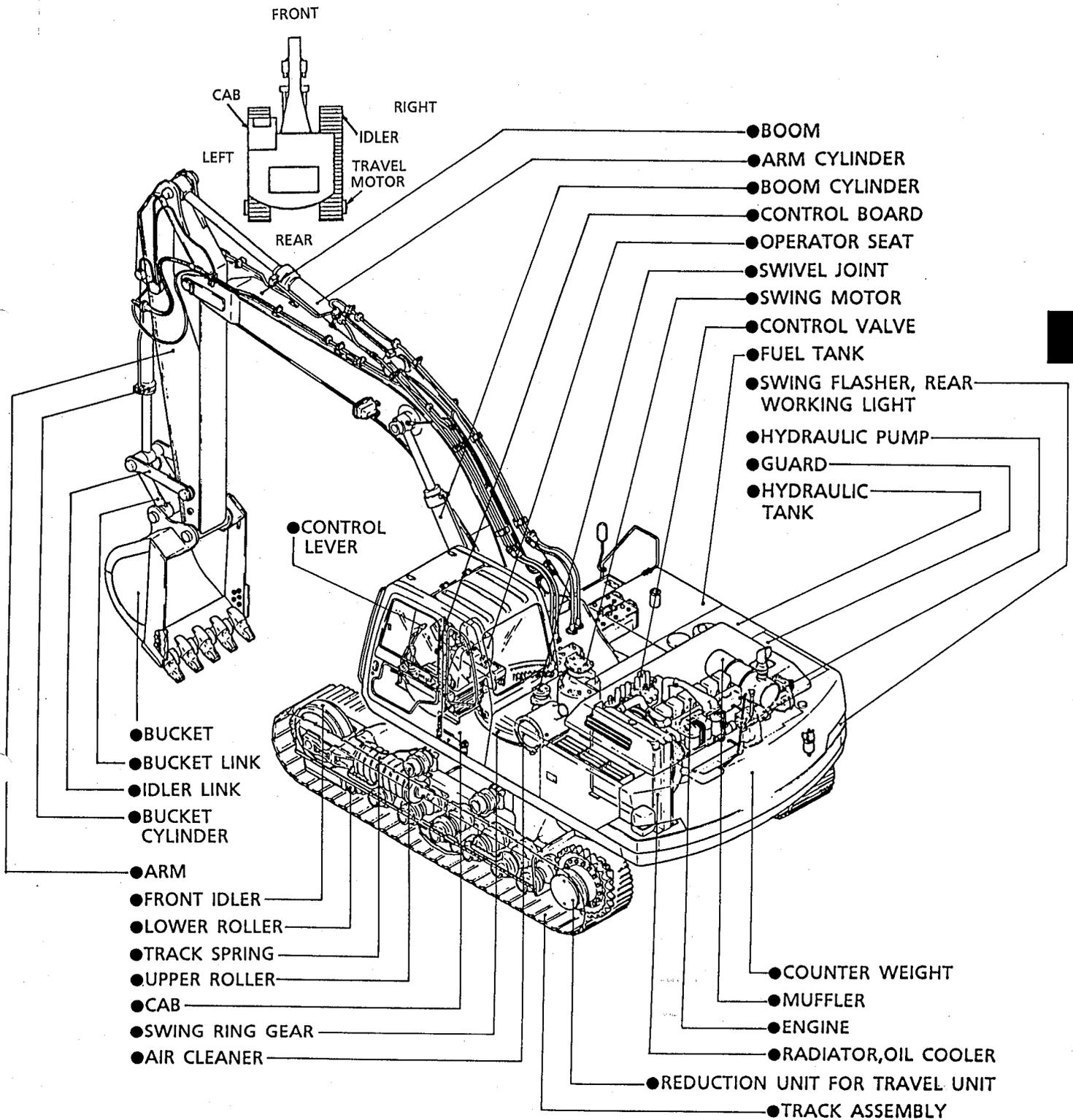
Applicable Machines

LC03801~

YC01101~

Revision	Date of Issue	Remarks
First edition	March, 1995	S5LC0305E K

1. LOCATION OF COMPONENTS



2. WEIGHT OF COMPONENTS

Unit : kg (lbs)

Item	Model	SK310III	SK310LcIII
Complete Machine [Std Export 600mm (24") shoe]		30,100(66,400)	30,700(67,700)
Complete Machine [Opt Export 800mm (32") shoe]		31,000(68,400)	31,700(69,900)
1. Upper Frame Assy (incl. 1.1~1.10)		13,400(29,500)	←
1.1 · Counter-weight		6,150(13,560)	←
1.2 · Cab		240(530)	←
1.3 · Boom cylinder		※ 260(570)×2	←
1.4 · Engine		※ 990(2,180)	←
1.5 · Radiator		※ 120(260)	←
1.6 · Pump assy		175(380)	←
1.7 · Control valve		130(290)	←
1.8 · Fuel tank		※ 190(420)	←
1.9 · Hydraulic tank		※ 230(510)	←
1.10 · Swing motor & reduction unit		※ 470(1,040)	←
2. Lower frame assy (incl. 2.1~2.10)		11,000(24,100)	11,500(25,400)
2.1 · Slewing ring		570(1,260)	←
2.2 · Travel motor & reduction unit		640(1,410)×2	←
2.3 · Idler assy		170(370)×2	←
2.4 · Lower roller assy		60(130)×14	60(130)×18
2.5 · Upper roller assy		20(44)×4	←
2.6 · Track tension assy		170(370)×2	←
2.7 · Sprocket		80(180)×2	←
2.8 · Swivel joint		26(57)	←
2.9 · Track guide		25(55)×2	←
2.10 · Track link with 600mm (24") shoe assy		1,740(3,840)×2	1,850(4,080)×2
· Track link with 800mm (32") shoe assy		2,190(4,830)×2	2,320(5,120)×2
2.10.1 · Track link		750(1,650)×2	790(1,750)×2
3. Attachment (incl. 3.1~3.3)		5,800(12,800)	←
3.1 · Bucket assy [1.40 m ³ (1.83cu yd) STD]		1,060(2,340)	←
3.2 · Arm assy [3.14m (10ft-4in) STD.] (incl. following)		1,610(3,550)	←
3.2.1 · · Arm		1,070 (2,360)	←
3.2.2 · · Bucket cylinder		※ 250(550)	←
3.2.3 · · Idler link		61(130)	←
3.2.4 · · Bucket link		123(270)	←
3.2.5 · · Pin (2 pcs for mounting the arm cylinder and the bucket)		110(240)	←
3.3 · Boom assy (includes the following :)		3,280(7,230)	←
3.3.1 · · Boom		2,742(6,043)	←
3.3.2 · · Arm cylinder		※ 500(1,100)	←
3.3.3 · · Pin (mounting the arm)		38(86)	←
4. Oil, grease, water, etc. (incl. 4.1~4.4)		900(1,980)	←
4.1 · · Hydraulic oil		350(770)	←
4.2 · · Fuel		480(1,060)	←
4.3 · · Water		43(95)	←
4.4 · · Engine oil		28(60)	←

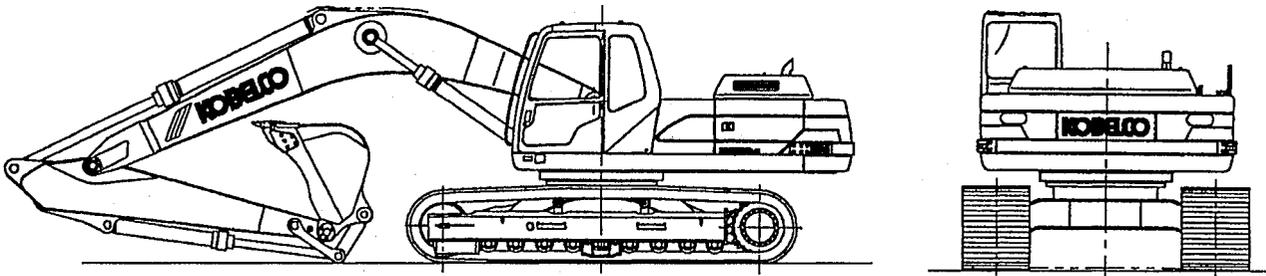
※ Mark dry weight.

3. TRANSPORTATION WEIGHT

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

Model	SK310III		SK310LcIII	
Shoe of type	Width of shoe 600mm (24")	Width of shoe 800mm (32")	Width of shoe 600mm (24")	Width of shoe 800mm (32")
Total width	3,200mm (10ft-6in)	3,400mm (11ft-2in)	3,200mm (10ft-6in)	3,400mm (11ft-2in)
Weight	30.1ton (66,400lbs)	31.0ton (68,400lbs)	30.7ton (67,700lbs)	31.7ton (69,900lbs)

NOTE : With 3.14M (10ft-4in) Arm



LSU-5-1

● MACHINE LIFTING

CAUTION

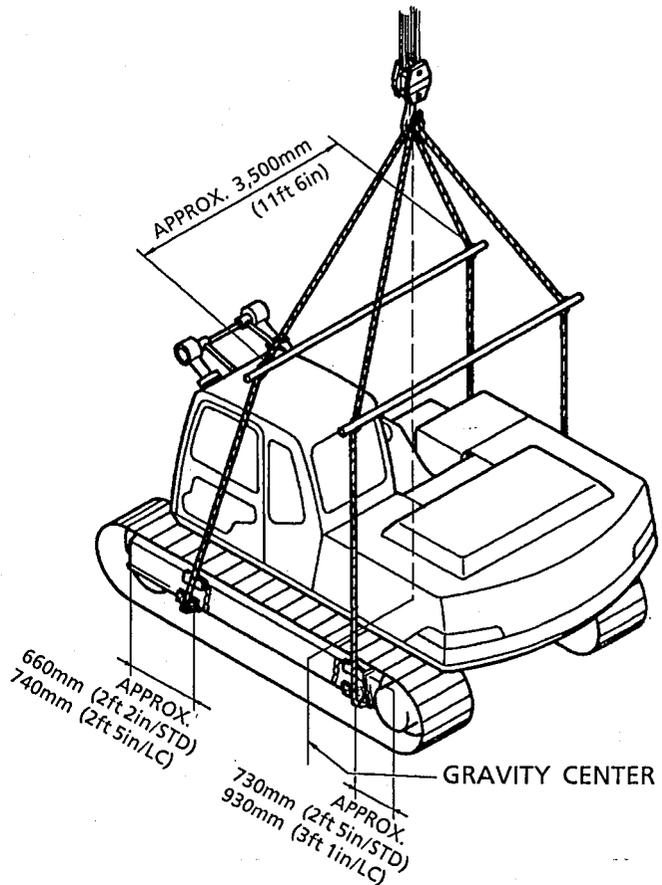
Improper lifting can allow load to shift and cause injury or damage.

1. Weight and instructions given herein apply to machine as manufactured by KOBELCO Inc.

● LIFTING THE WEIGHT

Model	SK310III	SK310LcIII
Shoe of type	Width of shoe 600mm (24")	Width of shoe 600mm (24")
Width	3,200mm (10ft-6in)	3,200mm (10 ft-6in)
Weight	24.4 ton (53,800 lbs)	24.9ton(54,900 lbs)

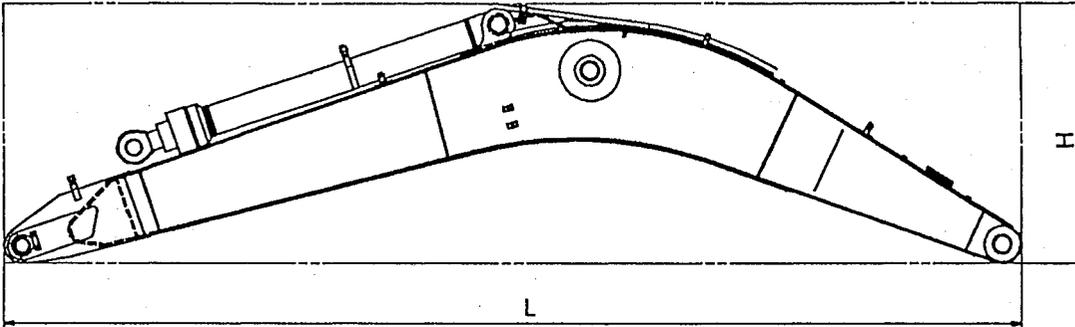
2. Use proper rated cables and slings for lifting. Position crane for level machine lift.
3. Lifting cables should have sufficient length to prevent contact with machine.
4. Use the rear and front eyes on lower frame provided for lifting.



YNK-5-3

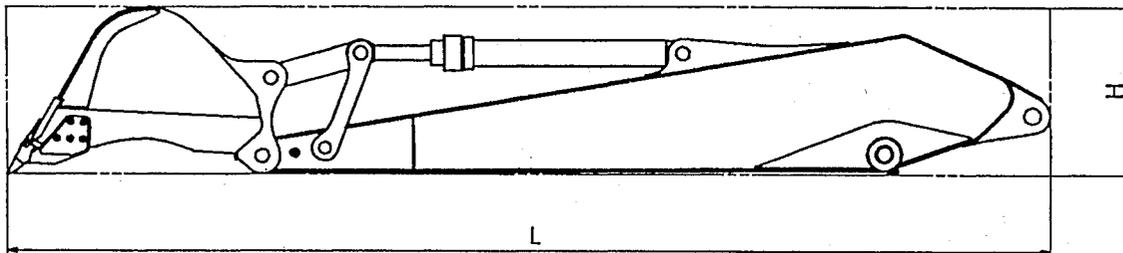
● OVERALL SPECIFICATIONS OF BOOM

	6.47m (21ft-3 in) boom
Total length × total height × total width L×H×W m (ft-in)	6.72×1.72×0.94 (22'1"×5'8"×3'1")
Weight kg (lbs)	2,970 (6,500)



● OVERALL SPECIFICATIONS OF ARM AND BUCKET

Combination	2.55m(8ft-4 in) arm + 1.60m ³ (2.09cuyd) bucket	3.14m(10ft-4 in) arm + 1.40m ³ (1.83cuyd) bucket	4.1m(13ft-5 in) arm + 1.20m ³ (1.57cuyd) bucket
Total length × total height × total width L×H×W m (ft-in)	5.33×1.13×1.61 (17'6"×3'8"×5'3")	5.92×1.13×1.43 (19'5"×3'8"×4'8")	6.89×1.12×1.24 (22'7"×3'8"×4'1")
Weight kg (lbs)	2,690 (5,930)	2,700 (5,950)	2,650 (5,840)



● OVERALL SPECIFICATIONS OF ARM

Length of arm	2.55m(8ft-4in)	3.14m(10ft-4 in)	4.1m(13ft-5 in)
Total length × total height × total width L×H×W m (ft-in)	3.74×1.06×0.55 (12'3"×3'6"×1'10")	4.32×0.95×0.55 (14'2"×3'1"×1'10")	5.30×0.95×0.55 (17'5"×3'1"×1'10")
Weight kg (lbs)	1,540 (3,400)	1,630 (3,590)	1,700 (3,750)

