

SC400-2



SC 400-2

40-M ton Hydraulic Crawler Crane & Cable Excavator

Technical Data

 **SUMITOMO (S.H.I.) CONSTRUCTION MACHINERY CO., LTD.**

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We are constantly improving our products and therefore reserve the right to change designs and specifications without notice.

Address Inquires to:

SUMITOMO

Upper Machinery

UPPER FRAME: All-welded, precision machined unit.

TURNTABLE BEARING WITH INTEGRAL RING GEAR:

Outer race is bolted to upper frame, inner race with internal ring gear is bolted to lower frame. Swing pinion meshes with internal, integral ring gear. A machined surface is provided for mounting turntable bearing.

CONTROL SYSTEM: Pilot-controlled hyd. servo for front/rear main hoist, boom hoist and travel motions, and conventional hyd. control for swing motion with an arrangement of new armchair operator control station. Working speed can be precisely controlled by lever stroke for each motion.

PUMP CONTROL SYSTEM: System reducing pump displacement enables both minute operation and saving energy.

HYDRAULIC SYSTEM: System combining variable displacement axial pumps and fixed displacement gear pumps provides both independent and combined operations of all functions.

Main hoist/aux. hoist/boom hoist — Axial piston motor with counterbalance valve.

Swing motor — Axial piston motor.

Travel motor — Shoe-in type axial piston motors with brake valves. Spring-applied/hydraulically-released multiple disc brake is fitted.

Hydraulic oil reservoir — 160 liter capacity.

LOAD HOIST ASSEMBLY: Front (main) and rear (aux.) operating drums. Each driven by the bi-directional, axial piston motor through reduction gear powering the rope drum in either direction for hoisting or lowering load. 3rd drum is available as an optional extra.

Clutches — Power hydraulic actuated, internal expanding, self adjusting 2-shoe type.

Brakes — External contracting band type operated by foot pedal with locking latch. For crane mode, automatic brake (spring applied, hydraulically released) is applied when control lever in neutral position. For bucket mode, free-fall is available when control lever in neutral position.

Locks — Electrically operated drum lock pawl.

BOOM HOIST ASSEMBLY: Driven by the bi-directional, axial piston motor through reduction gear powering the rope drum in either direction for hoisting or lowering boom.

Brake — Spring applied, hydraulically released multiple disc type.

Lock — Power hydraulically operated pawl (with automatic locking device).

SWING: Driven by axial piston motor, through reduction gear.

Brake — Applied by spring, and released by hydraulic cylinder.

Lock — Mechanically operated drop pin.

Speed — 3.3 min⁻¹.

OPERATOR'S CAB: Full vision, full compartment with safety glass panels; the completely independent cab is insulated against noise and vibration.

COUNTERWEIGHT: Removable, 2 blocks mounted on rear of upper frame by bolts.

POWER UNIT:

Make & Model	Isuzu A-6BG1-T
Type	Water-cooled, 4-cycle diesel engine
No. of cylinders	6
Bore & Stroke	105 mm x 125 mm
Displacement	6.494 liters
Rated output	117 kW/2,150 min ⁻¹
Max. torque	539N.m/1,700 min ⁻¹
Fuel tank	290 liters

Notes: This engine meets international smoke emission legislations like EU Emission Regulations for Off-road Diesel Engines-Stage 1, and American EPA's smoke emission regulation - Tier 1.

Lower Machinery

LOWER FRAME: All welded robust rolled steel, box construction.

SIDE FRAMES: All welded robust rolled steel. Connected to lower frame by links and pins.

ROLLERS: Heat treated, mounted on bushings with floating seals requiring no further lubrication.

Bottom — 8 pcs. per side frame.

Top — 2 pcs. per side frame.

DRIVE SPROCKETS: Cast steel, heat treated; one per side frame. Track drive sprocket assembly bolt-coupled to a planetary reduction gear unit outer case as an integral part of shoe-in type traction motor. Sealed between parts of rotation and non-rotation of the motor with floating seal.

IDLERS: Cast steel, heat treated; one per side frame. Mounted on two bronze bushings with floating seals for lifetime lubrication.

TRACKS: Heat treated, self cleaning, one lug type, multiple hinged shoes, 46 pcs. per side frame.

Shoe width — 760 mm

TRACK TENSION ADJUSTER: Adjusted by hydraulic cylinders at the idler blocks. Tension can be automatically released whenever abnormal load occurred on tracks.

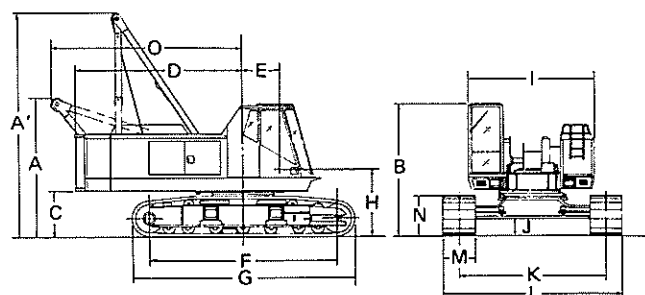
TRAVEL AND STEER: Shoe-in type axial piston motor with reduction gear is located at inner drive end of each crawler side frame. Each track is driven simultaneously or individually for straight-line travel, or pivot turn, or the tracks can be counter-rotated for spin turn.

Brake — Spring applied, hydraulically released multiple disc brakes applied automatically when control lever in neutral position.

Speed — Four-speed range:
3.6/2.1 km/hr. Pump control "OFF" (ordinary).
0.53/0.30 km/hr. Pump control "ON".

General Dimensions

- A : Height over low gantry unit 3.350m
- A' : Height over high gantry unit 5.295m
- B : Height of cab 3.205m
- C : Counterweight ground clearance 1.155m
- D : Radius of rear end 3.905m
- E : Center of rotation to boom foot pin 0.900m
- F : Center to center distance of tumbler 4.475m
- G : Overall length of crawler 5.375m
- H : Height from ground to boom foot pin 1.655m
- I : Overall width of house 2.985m
- J : Ground clearance 0.420m
- K : Center to center distance of crawler: extended 3.400m
retracted 2.540m
- L : Overall width of crawler: extended 4.160m
retracted 3.300m
- M : Shoe width 0.760m
- N : Height of shoe 0.985m
- O : Tail swing radius at low gantry 4.595m



CRANE BOOMS: Lattice construction; round tubular main chords, alloy, hi-ten steel, with bracing of round steel tubing.

Boom connections In-line pin connections.

Basic boom Two-piece, 10.0m basic length; 5.0m base and 5.0m top section; 1.15m deep and 1.15m wide at connections.

Boom point machinery Four head sheaves mounted on antifriction bearings.

Boom extensions Available in 3.0m and 6.0m lengths with pendants. Maximum boom length 49.0m.

Jib Two-piece; 6.1m basic length with 3.05m long base and top sections; 0.5m deep and 0.61m wide at connections.

Jib extensions Available in 3.05m jib extensions. Maximum jib length 15.25m.

Boom plus jib length 40.0m + 15.25m

HOOK BLOCK:

40 t, four sheaves Standard.

15 t, one sheave Optional extra.

5 t, no sheave Standard for jib.

GANTRY: Retractable high gantry.

LINE SPEED:

Drums	Root dia.	Type	Line speed (Hoisting, Lowering)		Cable dia.
			Pump control "OFF" (Ordinary)	Pump control "ON"	
Main hoist (Front)	400mm	Parallel grooved	High 80 m/min Low 40 m/min	High 11.1 m/min Low 5.5 m/min	20mm
Aux. hoist (Rear)	400mm	Parallel grooved	High 80 m/min Low 40 m/min	High 11.1 m/min Low 5.5 m/min	20mm
Boom hoist	320mm	Parallel grooved	59 m/min	7.9 m/min	16mm

Notes:

1. Above line speed varies with load.

2. Above line speed is based on first layer.

HOIST REEVING:

No. of parts of line	Main hoist								Aux. hoist
	8	7	6	5	4	3	2	1	1
Max. load (t)	40.0	39.2	33.6	28.0	22.4	16.8	11.2	5.6	5.0

WORKING WEIGHT AND GROUND PRESSURE:

Shoe width	Weight	Pressure
760mm	41.8t	60.3 kPa

With basic boom and counterweights "A" and "B".

Weight without counterweight and front attachment: approx. 27.7t.

COUNTERWEIGHT: "A" (6,350kg)+ "B" (5,540kg), Total11,890kg.

SAFETY DEVICES: Hook over-hoist limiting device, boom over-hoist limiting device, boom angle indicator, boom back stop, drum pawl lock for main, aux. and boom hoist drum, swing lock, safety valve in hydraulic circuit, swing alarm, dual boom over-hoist limiting device, and fool proof shut-off system as standard. SUMITOMO SML-10 Load Moment Limiter, a computerized automatic over-load preventing device is available as an optional extra with a 15-kind of annunciating alarm.

GRADEABILITY:

40% (22°)

with 10.0m basic boom and 11.89t counterweight.

SC 400-2 CRANE CAPACITIES:

Working radius (m)	Boom length (m)														Working radius (m)	
	10.00	13.00	16.00	19.00	22.00	25.00	28.00	31.00	34.00	37.00	40.00	43.00	46.00	49.00		
3.0	40.00														3.0	
3.7	40.00	40.00													3.7	
4.0	36.00	35.90	34.50/4.1												4.0	
4.5	30.10	30.00	29.90	28.70/4.6											4.5	
5.0	25.30	25.20	25.10	25.00	23.70/5.2	19.80/5.8									5.0	
6.0	19.25	19.15	19.10	19.05	18.95	18.90	17.30/6.4								6.0	
7.0	15.50	15.40	15.35	15.25	15.20	15.10	15.05	14.95	13.60/7.5						7.0	
8.0	12.90	12.80	12.75	12.65	12.60	12.50	12.45	12.35	12.30	12.20	11.00/8.5				8.0	
9.0	11.00	10.95	10.85	10.80	10.70	10.65	10.55	10.50	10.40	10.35	10.30	10.20	9.15/9.5		9.0	
10.0	10.00/9.7	9.50	9.45	9.35	9.30	9.20	9.15	9.10	9.00	8.95	8.90	8.80	8.50	8.30	10.0	
12.0		7.50	7.45	7.35	7.25	7.20	7.10	7.05	7.00	6.90	6.85	6.80	6.70	6.55	12.0	
14.0		7.25/12.3	6.10	6.00	5.90	5.80	5.75	5.70	5.60	5.55	5.50	5.40	5.30	5.15	14.0	
16.0			5.60/14.9	5.05	4.95	4.85	4.80	4.70	4.60	4.55	4.45	4.35	4.30	4.20	16.0	
18.0				4.50/17.5	4.25	4.15	4.10	4.00	3.90	3.80	3.75	3.65	3.60	3.50	18.0	
20.0					3.70	3.60	3.50	3.45	3.35	3.25	3.20	3.10	3.05	2.95	20.0	
22.0						3.10	3.00	2.90	2.85	2.75	2.65	2.60	2.55	2.45	22.0	
24.0							2.90/22.7	2.60	2.50	2.45	2.35	2.25	2.20	2.15	2.05	24.0
26.0								2.40/25.3	2.20	2.10	2.00	1.90	1.85	1.80	1.70	26.0
28.0									1.95	1.85	1.75	1.60	1.55	1.50	1.40	28.0
30.0										1.60	1.45	1.35	1.25	1.20	1.10	30.0
32.0											1.55/30.5	1.25	1.15	1.05	0.90	32.0
No. of parts-of-line	8	8	7	6	5	4	4	3	3	3	2	2	2	2	No. of parts-of-line	

Notes:

- Capacities shown are in metric tons and are based on 78% of minimum tipping loads — over the side — with machine standing level on firm supporting surface under ideal job conditions. Deductions from the lifting crane capacities must be made for weight of hook block.

Kind of hook block	40 t	15 t	5 t
Weight of hook block (t)	0.40	0.30	0.12

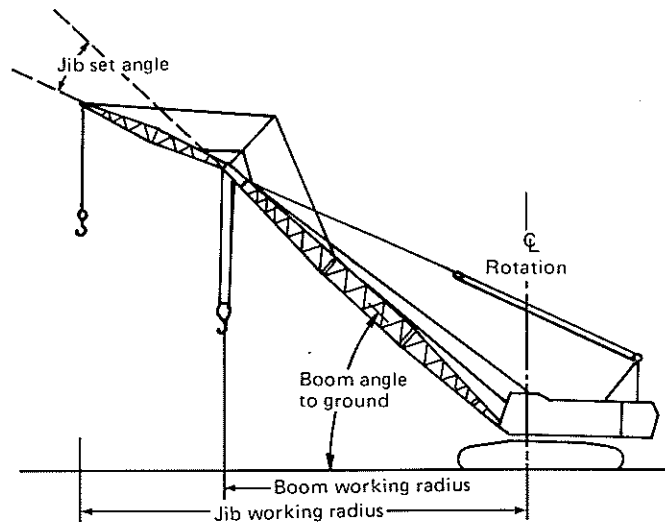
- Capacities when handling load off main boom peak sheaves in case of mounting fly jib must take the following deductions in machine lifting capacities.

Jib length (m)	6.10	9.15	12.20	15.25
Weight to be deducted (t)	0.75	0.90	1.05	1.20

- High gantry is required and side frames must be extended for all operating conditions.

SC 400-2 JIB CAPACITIES:

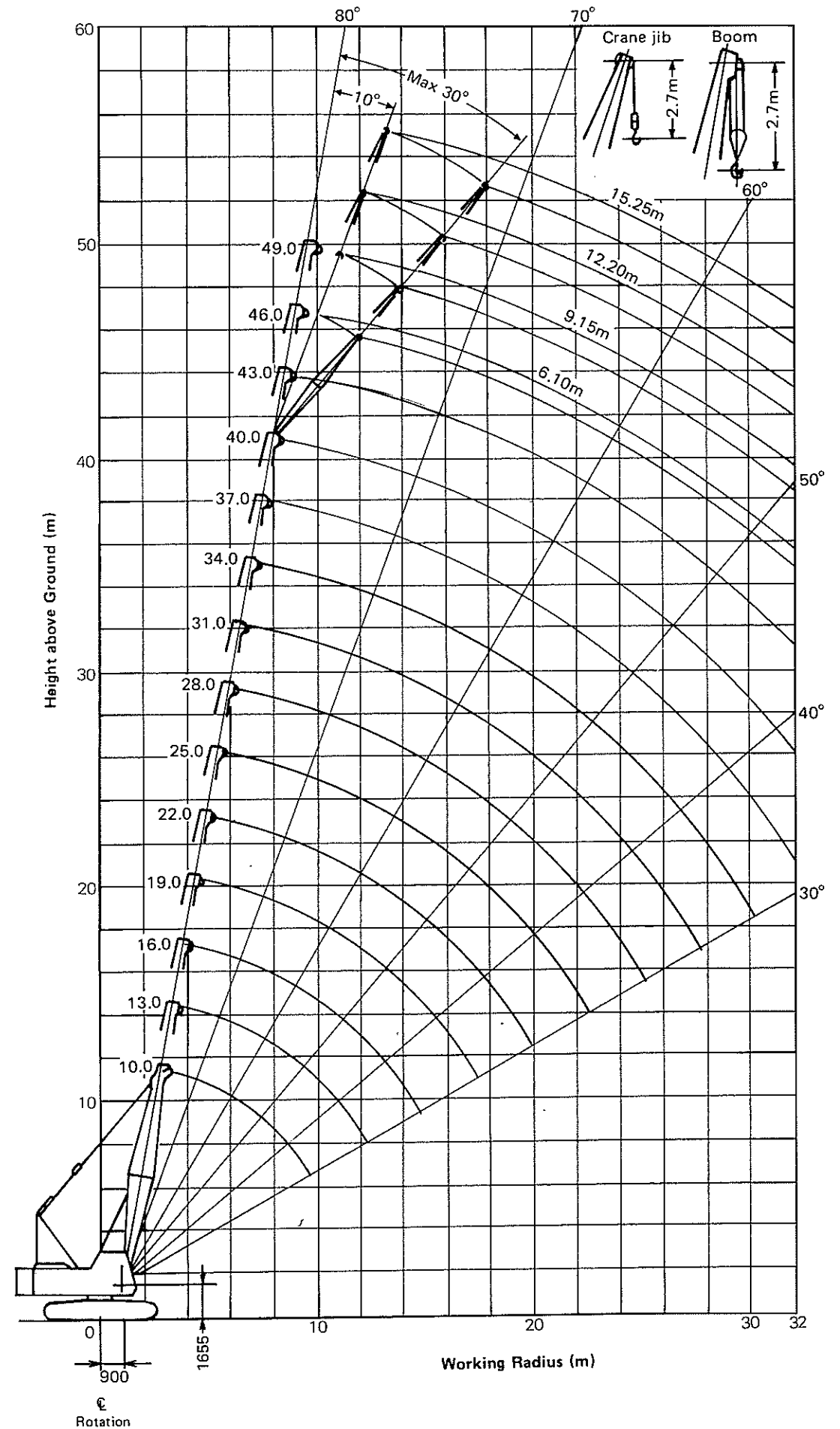
(in metric tons)		
Jib length (m)	Jib set angle	Max. jib Capacities
6.10	10°	5.0
	30°	5.0
9.15	10°	5.0
	30°	5.0
12.20	10°	4.1
	30°	4.1
15.25	10°	3.3
	30°	3.3



Notes:

- The jib capacities are equal to the crane lifting capacities of the main boom on which the jib is fixed except that they are restricted by the maximum jib capacities shown left.
- Jib working radius does not exceed the working radius of the main boom which fits the jib.
- Deductions from the jib capacities must be made for weight of jib hook block (0.12t).
- Available boom length to attach the jib is from 19.0m to 40.0m. The maximum jib length is 15.25m.
- The jib set angle to boom must not exceed 30°.

SC 400-2 CRANE WORKING RANGES:



Clamshell 1.0m³ over

CLAMSHELL BOOMS: Lattice construction; round tubular main chords, alloy, hi-ten steel, with bracing of round steel tubing.

Boom connections.....In-line pin connections.

Basic boom.....Two-piece, 10.0m basic length; 5.0m base and 5.0m top section; 1.15m deep and 1.15m wide at connections.

Boom point machinery.....Four head sheaves mounted on anti-friction bearings.

Boom extensions.....Available in 3.0m and 6.0m lengths with pendants. Maximum boom length 19.0m.

MAXIMUM CLAMSHELL RATING: 5.0t

LINE SPEED:

Drums	Root dia.	Type	Line speed (Hoisting, Lowering)		Cable dia.
			Pump control "OFF" (Ordinary)	Pump control "ON"	
Holding	400mm	Parallel grooved	High 80 m/min Low 40 m/min	High 11.1 m/min Low 5.5 m/min	20mm
Closing	400mm	Parallel grooved	High 80 m/min Low 40 m/min	High 11.1 m/min Low 5.5 m/min	20mm
Boom hoist	320mm	Parallel grooved	59 m/min	7.9 m/min	16mm

Notes:

- Above line speed is based on first layer.
- Above line speed varies with load.

GANTRY: Retractable high gantry

WORKING WEIGHT AND GROUND PRESSURE:

Shoe width	Weight	Pressure
760mm	44.1t	63.6 kPa

Notes:

- With basic boom, 1.0m³ bucket and counterweight.
- Weight without counterweight and front attachment: approx. 27.7t

SC 400-2 CLAMSHELL CAPACITIES AND WORKING RANGES:

(in metric tons)

Boom length (m)											
10.0			13.0			16.0			19.0		
R (m)	A (°)	L (t)	R (m)	A (°)	L (t)	R (m)	A (°)	L (t)	R (m)	A (°)	L (t)
6.0	62.5	5.0									
7.0	55.6	5.0	7.0	64.5	5.0						
8.0	48.0	5.0	8.0	59.3	5.0	8.0	65.6	5.0			
9.0	39.2	5.0	9.0	53.9	5.0	9.0	61.6	5.0			
			10.0	48.1	5.0	10.0	57.3	5.0	10.0	63.1	5.0
			12.0	33.9	5.0	12.0	48.1	5.0	12.0	55.9	5.0
						14.0	37.1	5.0	14.0	48.1	5.0
									16.0	39.1	4.5

R : Working radius A : Boom angle L : Rated load

Notes:

- Following weight of bucket plus load should not exceed above rated loads.

Bucket capacity	0.6m ³	0.8m ³	1.0m ³	1.2m ³
Bucket weight	1.6t	2.1t	2.5t	3.1t

- Boom length shall not exceed 19.0m.

- Apparent specific gravity of lifting material:

Earth1.7 ~ 1.8t/m³
Gravel1.8 ~ 2.0t/m³

- High gantry is required and side frames must be extended for all operating conditions.

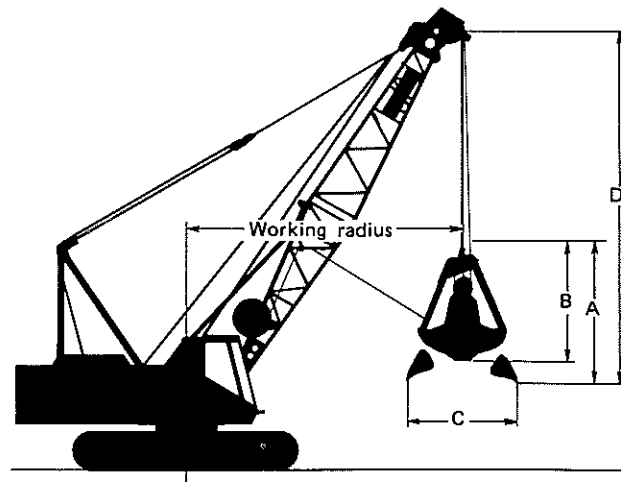
COUNTERWEIGHT: 11.89t.

SAFETY DEVICES: Boom over-hoist limiting device, drum pawl lock for closing, holding and boom hoist drum, swing lock, safety valve in hydraulic circuit, boom angle indicator, boom back stop, dual boom over-hoist limiting device, and fool proof shaf-off system.

TAGLINE WINDER: Spring-wound, drum-type mounted on boom, single stage typeStandard Spring-wound, drum-type mounted on boom, double stage typeOptional extra Hydraulic type mounted in front of the revolving frame.....Optional extra

GRADEABILITY: 40% (22°)

with basic boom, 1.0m³ bucket and counterweight.



(in meters)

Bucket capacity	0.6m ³	0.8m ³	1.0m ³	1.2m ³
A Bucket overall height (opened)	2.9	2.8	3.1	2.9
B Bucket overall height (closed)	2.4	2.2	2.4	2.3
C Bucket opening width	2.3	2.3	2.6	2.6
D Bucket clearance	4.6	5.1	5.1	5.0

Dragline 1.0m³ over

DRAGLINE BOOMS: Lattice construction; round tubular main chords, alloy, hi-ten steel, with bracing of round steel tubing.

Boom connections.....In-line pin connections

Basic boom.....Two-piece, 10.0m basic length; 5.0m base and 5.0m top section; 1.15m deep and 1.15m wide at connections.

Boom point machinery.....One head sheave mounted on anti-friction bearings.

Boom extensions.....Available in 3.0m and 6.0m lengths with pendants.

MAXIMUM DRAGLINE RATING: 5.0t

GANTRY: Retractable high gantry.

LINE PULL AND LINE SPEED:

Drums	Root dia.	Type	Line speed (Hoisting, Lowering)		Cable dia.
			Pump control "OFF" (Ordinary)	Pump control "ON"	
In haul (Front)	400mm	Parallel grooved	High 80 m/min Low 40 m/min	High 11.1 m/min Low 5.5 m/min	20mm
Hoisting (Rear)	400mm	Parallel grooved	High 80 m/min Low 40 m/min	High 11.1 m/min Low 5.5 m/min	20mm
Boom hoist	320mm	Parallel grooved	59 m/min	7.9 m/min	16mm

Above line speed varies with load.

SC 400-2 DRAGLINE CAPACITIES AND WORKING RANGES:

(in metric tons)

Boom length (m)		10.0			13.0			16.0			19.0			
Boom angle (°)		30	40	50	30	40	50	30	40	50	30	40	50	
Rated load (t)		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.3	4.9	5.0	
A	Max. dumping radius (m)	0.6m ³	10.4	9.5	8.3	13.0	11.6	10.1	15.6	14.0	12.1	18.2	16.4	14.1
		0.8 ~ 1.0m ³	10.5	9.6	8.4	13.1	11.8	10.3	15.7	14.1	12.2	18.3	16.5	14.2
		1.2m ³	10.6	9.7	8.5	13.2	11.9	10.4	15.8	14.2	12.3	18.4	16.6	14.3
B	Working radius (m)	10.0	9.0	7.8	12.6	11.3	9.8	15.2	13.6	11.7	17.8	15.9	13.6	
C	Digging radius on G.L. (m)	12.8	12.5	11.9	16.1	15.7	14.9	19.4	18.9	17.8	22.7	22.0	20.8	
D	Digging depth (m)	6.6	6.3	6.1	9.0	8.7	8.1	11.5	11.1	10.3	14.0	13.5	12.6	
E	Dumping height (m)	0.6 ~ 0.8m ³	2.5	3.9	5.2	4.0	5.9	7.5	5.5	7.8	9.8	7.0	9.7	12.1
		1.0 ~ 1.2m ³	1.7	3.1	4.4	3.2	5.1	6.7	4.7	7.0	9.0	6.2	8.9	11.3
F	Bucket clearance (m)	0.6 ~ 0.8m ³	3.95											
		1.0 ~ 1.2m ³	4.75											

- Weight of bucket plus material shall not exceed above rated loads.
- Boom length shall not exceed 19.0m.
- High gantry is required and side frame must be extended for all operating conditions. Dimension C and D vary considerably depending on digging conditions and skill of the operator.
- Apparent specific gravity of lifting material:
Earth1.7 ~ 1.8t/m³
Gravel1.8 ~ 2.0t/m³

Kind of bucket (manufacturer's specification)

Bucket capacity (m ³)	Weight (t)
0.6	0.93
0.8	1.17
1.0	1.40
1.2*	1.60

*medium or light duty use.

WORKING WEIGHT AND GROUND PRESSURE:

Shoe width	Weight	Pressure
760 mm	43.2 t With basic boom	62.3 kPa
	43.9 t With 19m boom	63.3 kPa

(With boom, 1.0m³ bucket and counterweight)

COUNTERWEIGHT: 11.89t.

SAFETY DEVICES: Boom over-hoist limiting device, boom angle indicator, boom back stop, drum lock pawl for front, rear and boom hoist, swing lock, safety valve in hydraulic circuit, dual boom over-hoist limiting device and fool proof shaf-off system.

FAIRLEAD: Full-revolving type.

GRADEABILITY: 40% (22°)

