

## Superstructure

**UPPER REVOLVING FRAME:** All-welded, precision machined unit; mounts jig-line bored side housings for true alignment of the horizontal shaft assemblies.

**TURNTABLE BEARING WITH INTEGRAL SWING GEAR:** Outer bearing race with integral, external swing (ring) gear bolted to carrier deck; inner bearing race bolted to upper revolving frame.

**CONTROL SYSTEM:** "Speed-O-Matic" power hydraulic system that includes a gear pump to provide a constant flow of oil, an accumulator to maintain operating pressure and variable pressure control valves to regulate this pressure to all the clutches, and to release swing and boomhoist brakes.

**CLUTCHES:** "Speed-O-Matic" power hydraulic actuated, internal expanding, 2-shoe type for all functions. Clutches are interchangeable.

**DRUMS:** Front and rear main, and optional third, operating drums.

**Drum laggings** --- 2-piece, removable; bolted to brake drum which is involute-splined to drum shaft mounted in line bores on ball bearing.

**Brake** --- External contracting band; mechanically foot pedal operated, with locking latch.

**Automatic brake** --- Optional extra; applied when control lever is at neutral position, and available on both front and rear main drums in addition to free-fall brake mode as std.

**INDEPENDENT BOOMHOIST:** Spur gear driven with precision boom raising and lowering through the clutches.

**Drum** --- Involute-splined to shaft; provided with brake drum and drum locking ratchet wheel cast integral.

**Brake** --- External contracting band, spring applied and power hydraulically released; applied automatically whenever control lever is at neutral position.

**Lock** --- Mechanically controlled drum locking pawl.

**SWING:** Spur gear driven; 2 sets of clutches transmit swing power smoothly into the swing pinion. Swing pinion meshes with external teeth of swing gear integral with outer race of turntable bearing.

**Brake** --- Two-directional, external contracting band, spring applied, power hydraulically released; applied manually thru swing brake lever. Brake drum is involute-splined to swing shaft directly.

**Lock** --- Mechanically controlled drop pin.

**Speed** --- 3-speed; 4.1min<sup>-1</sup>(high)/2.7min<sup>-1</sup>(mid.)/1.4min<sup>-1</sup>(low).

**GANTRY:** Retractable high gantry.

**OPERATOR'S CAB:** Full-vision, full compartment with safety glass panels, separated from upper machinery with an inside door.

**COUNTERWEIGHT:** Removable; mounted on rear of upper revolving frame. Counterweight raised or lowered by retractable high gantry.

### POWER UNIT:

Make & model	Mitsubishi 6D14T
Type	Water-cooled, 4-cycle, turbo-charged diesel engine
No. of cylinder	Six (6)
Bore & stroke	110 × 115 mm
Displacement	6,557 cc
Rated output	88.3kW/1,850min <sup>-1</sup> <120PS/1,850r.p.m.>
Maximum torque	500N·m/1,400min <sup>-1</sup> <51kg·m/1,400r.p.m.>
Fuel tank	250 liters
3-speed transmission	Power shift type

## Crane Carrier

**MODEL:** Nissan KL-KG552TN, 8 × 4 drive.

**FRAME:** All-welded construction ladder type.

**ENGINE:** Model Nissan RH8, water-cooled, 4-cycle, 8-cylinder, displacement 21,205cc, diesel engine, max. output 265kW/2,200min<sup>-1</sup> <360ps/2,200rpm>, max. torque 1,255N·m/1,200min<sup>-1</sup> <128kg·m/1,200rpm>, fuel tank 200 liters; provided with an electronic governor control.

**CLUTCH:** Dry single plate, hydraulically operated clutch release mechanism with air booster.

**TRANSMISSION:** Seven forward speeds and one reverse speed, synchromesh on 2nd thru 7th and constantmesh on 1st and reverse gears.

**FINAL DRIVE GEAR:** A 6.833 reduction ratio Hypoid gears under in-line tandem arrangement; provided with 3rd differential lock.

**TRAVELING SPEED:** Max. 65km/h in traveling condition (under a 38t GVW with 9.5m basic boom, c.t.w.t. "A" and "B" and 40t hook block).

**GRADEABILITY:** 0.48 (tan θ) (under a 38t GVW).

**TURNING RADIUS:** 10.9 meters.

**FRONT AXLES:** Welded tubular-section steel beam; provided with reverse-Elliott steering knuckles.

**Suspension** --- Semi-elliptic leaf springs with anchor at front end and sliding contact mount at rear.

**REAR AXLES:** Full-floating, cast steel housing, in-line tandem type.

**Suspension** --- Under-hanging high tensile steel equalizer beams with tow torque rods (no spring).

**WHEELS & TIRES:** Single tire on front wheels, dual tire on rear wheels.

**Front tire** --- 13.00-20-20PR.

**Rear tire** --- 11.00-20-14PR.

**BRAKES:**

**Service** --- Full air brake on all wheels, dual air line system, internal expanding leading and trailing shoe type; provided with automatic struck adjuster.

**Parking** --- Pneumatically-controlled spring brake; applied on four rear wheels. Provided with gradual control device.

**Auxiliary** --- Exhaust brake and engine compression release brake.

**STEERING:** Recirculating ball screw type, with linkage type power steering.

**OUTRIGGERS:** Four-hydraulically operated beam and jack cylinder; simultaneously or individually controlled from either side of carrier with control device arrangement including superstructure engine acceleration device; provided with level gauges.

**Extended width** --- 5,600mm.

**Distance between outriggers** --- 5,100mm.

**FRONT JACK:** Optional extra; available to ensure lifting performance at 360° around the crane. Provided with pressure switch, warning lamp and alarm.

**DRIVER'S CAB:** All steel, semi under-floor type, right-handed one side cap with two seats.

**ELECTRIC SYSTEM:** 24-volt, negative earth; provided with an alternator of 24V-50A and two of 12V-120AH batteries.

**WEIGHT:** Approx. 17,700kg (with outriggers).

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

**Hitachi Sumitomo Heavy Industries Construction Crane Co., Ltd.**

12-14, Ueno 7-chome, Taito-ku, Tokyo 110-0005, Japan

**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, 9.5m basic length, 4.5m bottom and 5.0m top sections; 1.0m deep and 1.0m wide at connections.

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

**Boom extensions** ---- Available in 3.0m, 6.0m and 9.0m lengths with pendants.

**MAXIMUM CLAMSHELL RATING:** 4.2 t.

**BOOM HOIST ASSEMBLY:** With power lowering clutch.

**12-part boom hoist reeving** ----- Standard.

**Boom hoist line speed (raising)** ----- @48m/min (high).  
 @32m/min (mid.).  
 @16m/min (low).

**Boom hoist line speed (lowering)** ----- @39m/min (high).  
 @26m/min (mid.).  
 @13m/min (low).

**GANTRY:** Retractable high gantry.

**WORKING WEIGHT:** 39.8 t with basic boom, counterweight "A" + "B" and 0.8m<sup>3</sup> clamshell bucket.

**COUNTERWEIGHT:** "A"(3,000kg) + "B"(1,150kgx2): Total 5,300kg

**SAFETY DEVICE:** Boom over-hoist limiting device, boom angle indicator, boom backstops, boom hoist drum pawl lock.

**TAGLINE WINDER:** Spring-wound, drum-type mounted on boom.

**Single stage type (under ground lift, max. 10m)** ----- Standard.

**Double stage type (under ground lift, max. 20m)** ----- Optional extra.

**POWER LOAD LOWERING CLUTCH:**

**On front drum** ----- Standard.

**On rear drum** ----- Optional extra.

**LINE PULL AND LINE SPEED:**

Drums	Root dia.	Type	Line pull	Line speed	Cable dia.
Front (holding)	380mm	Parallel Grooved	83.3kN <8,500 kg> with 'high' line speed;	Hoisting: @ 60 m/min (high) @ 40 m/min (mid.) @ 20 m/min (low)	20mm
Rear (closing)	380mm	Parallel Grooved	98kN <10,000 kg> with 'mid.' and 'low' line speeds;	Lowering: @ 48 m/min (high) @ 32 m/min (mid.) @ 16 m/min (low)	20mm

(Available Line Pull - Not based on wire rope strength)

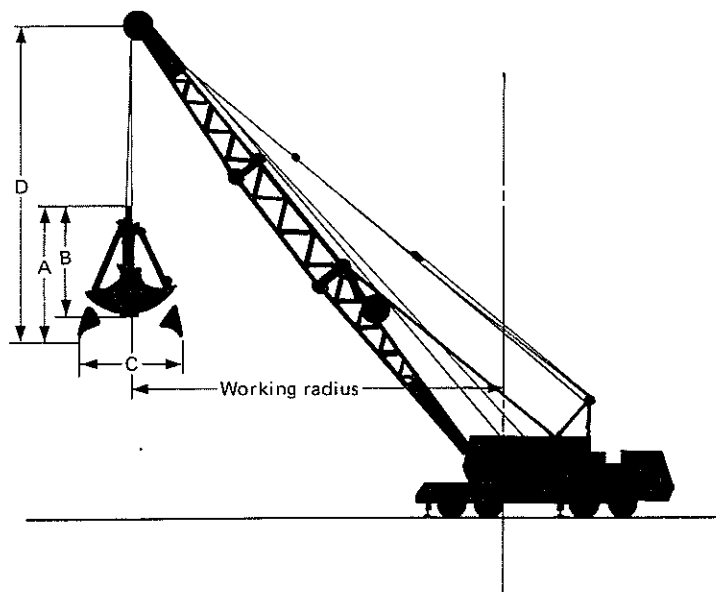
**ST400M CLAMSHELL CAPACITIES AND WORKING RANGES:**

(in metric tons)

Boom length (m)											
9.5			12.5			15.5			18.5		
R (m)	A (°)	L (t)	R (m)	A (°)	L (t)	R (m)	A (°)	L (t)	R (m)	A (°)	L (t)
5.4	65	4.2									
6.0	61	4.2	6.6	65	4.2						
7.0	53	4.2	7.0	63	4.2						
8.0	45	4.2	8.0	58	4.2	7.9	65	4.2			
9.1	35	4.2	9.0	52	4.2	9.0	60	4.2	9.2	65	4.2
			10.0	46	4.2	10.0	56	4.2	10.0	62	4.2
			11.5	35	4.2	12.0	46	4.2	12.0	55	4.2
						14.0	35	4.2	14.0	47	4.2
									16.4	35	4.2

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

- Weight of bucket (2.1 t) plus load should not exceed these capacities.
- Boom length shall not exceed 18.5m.
- Maximum allowable heavy digging bucket size . . . 0.8m<sup>3</sup>
- Larger size bucket can be approved depending on type of material, type of bucket within limitation of rating chart.
- Apparent specific gravity of lifting material:  
 Earth ----- 1.7 ~ 1.8 t/m<sup>3</sup>  
 Gravel ----- 1.8 ~ 2.0 t/m<sup>3</sup>



(in meters)

A	Bucket overall height (opened)	3.30
B	Bucket overall height (closed)	2.69
C	Bucket opening width	2.50
D	Bucket clearance	4.30

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

**Hitachi Sumitomo Heavy Industries Construction Crane Co., Ltd.**

12-14, Ueno 7-chome, Taito-ku, Tokyo 110-0005, Japan

Phone: 81-3-3845-1387 Facsimile: 81-3-3845-1394

**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, 9.5 m basic length; 4.5 m long bottom and 5.0 m top sections; 1.0 m deep and 1.0 m wide at connections.
- Boom point machinery . . . . . Four head sheaves mounted on antifriction bearings.
- Boom extensions (optional extra) . . . Available in 3.0 m, 6.0 m and 9.0 m lengths with pendants.
- Maximum boom length . . . . . 51.5 m.
- Basic fly jib (optional extra) . . . . . Two-piece; 6.10 m basic length with 3.05 m long bottom and top sections.
- Fly jib extension (optional extra) . . . Available in 3.05 m length.
- Maximum fly jib length . . . . . 12.20 m.
- Boom plus fly jib length . . . . . 45.5 m + 6.10 m.  
45.5 m + 9.15 m.  
45.5 m + 12.20 m (max.)
- Aux. short jib (optional extra) . . . . . Available for auxiliary crane hoist of 5 ton or less; mounted on 4.5 m top section.

**HOOK BLOCK:**

- 40 t, four sheaves . . . . . Standard.
- 15 t . . . . . Optional extra.
- 5 t . . . . . Standard for jib and/or auxiliary short jib.

**BOOM HOIST ASSEMBLY:** With power lowering clutch.

- 12-part boom hoist reeving . . . . . Standard.
- Boom hoist line speed (raising) . . . . @ 48m/min.(high)/32m/min.(mid.)/16m/min.(low)
- Boom hoist line speed (lowering) . . . @ 39m/min.(high)/26m/min.(mid.)/13m/min.(low)

**LINE PULL AND LINE SPEED:**

Drums	Root dia.	Type	Line pull	Line speed	Cable dia.
Front (main hoist)	380 mm	parallel grooved	83.3kN <8,500 kg> with 'high' line speed;	Hoisting: @ 60 m/min (high) @ 40 m/min (mid.) @ 20 m/min (low)	20 mm
Rear (aux. hoist)	380 mm	parallel grooved	98kN <10,000 kg> with 'mid.' and 'low' line speeds;	Lowering: @ 48 m/min (high) @ 32 m/min (mid.) @ 16 m/min (low)	20 mm

(Available line pull – Not based on rope strength)

**HOIST REEVING:**

No. of part line	Main hoist								Aux. hoist
	8	7	6	5	4	3	2	1	1
Max. load (t)	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5	5

**GANTRY:** Retractable high gantry.

**WORKING WEIGHT:** 38.0t (with basic boom, counterweight "A" + "B" and 40t hook block).

**COUNTERWEIGHT:** "A" (3,000kg) + "B" (1,150kg × 2) : Total 5,300kg

**POWER LOAD LOWERING CLUTCH:**

- On front drum . . . . . Standard.
- On rear drum . . . . . Optional extra.

**SAFETY DEVICES:** Hook over-hoist alarm, boom over-hoist limiting device, boom angle indicator, boom backstops, boom hoist drum pawl lock.

**MODEL SML-06 LOAD MOMENT ALARM:** Optional extra; this is a computerized automatic over-load warning device.

**MID POINT CABLE:** Optional extra; required for boom length 45.5 m or longer.

**CABLES:**

- For main hoist . . . . . IWRC 6 × WS(26), 20 mm dia.; breaking load 304 kN <31 t>.
- For boom hoist . . . . . IWRC 6 × WS(26), 16 mm dia.; breaking load 187.3 kN <19.1 t>.
- For aux. hoist (optional extra) . . IWRC 6 × WS(26), 20 mm dia.; breaking load 304 kN <31 t>.

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

**Hitachi Sumitomo Heavy Industries Construction Crane Co., Ltd.**

12-14, Ueno 7-chome, Taito-ku, Tokyo 110-0005, Japan

### ST400M CRANE CAPACITIES:

Working radius (m)	On outriggers														Working radius (m)	
	Boom length (m)															
	9.5	12.5	15.5	18.5	21.5	24.5	27.5	30.5	33.5	36.5	39.5	42.5	45.5	48.5	51.5	
3.2	*40.0															3.2
3.6	*40.0	*34.1/3.8														3.6
4.0	*33.0	*32.9	*29.7/4.4													4.0
5.0	*26.2	*26.1	*26.0	*25.0	*22.4/5.7											5.0
6.0	*21.8	*21.7	*21.6	*21.5	*21.4	*20.0/6.3	*17.9/6.9									6.0
7.0	*18.5	*18.4	*18.2	*18.0	*17.9	*17.8	*17.7	*15.0/7.5								7.0
8.0	16.2	16.0	15.8	15.8	15.7	15.7	15.6	15.0	15.0/8.1	13.8/8.8						8.0
9.0	14.4	14.1	13.9	13.8	13.8	13.7	13.6	13.5	13.4	13.3	*11.0/9.4					9.0
10.0	14.0/9.3	12.5	12.3	12.2	12.1	11.9	11.8	11.6	11.5	11.4	11.0	*9.0	*8.0/10.7	*6.7/11.3		10.0
12.0		10.1/11.9	9.8	9.7	9.6	9.4	9.3	9.2	9.1	8.9	8.8	8.7	*8.0	*6.5	*6.0	12.0
14.0			7.9	7.8	7.7	7.6	7.5	7.4	7.3	7.1	7.0	6.9	6.7	*6.0	*5.4	14.0
16.0			7.5/14.5	6.5	6.4	6.3	6.2	6.1	6.0	5.8	5.7	5.6	5.5	5.3	*4.8	16.0
18.0				6.0/17.1	5.4	5.3	5.2	5.1	5.0	4.9	4.8	4.7	4.6	4.4	4.2	18.0
20.0					4.8/19.7	4.5	4.4	4.3	4.2	4.1	4.0	3.9	3.8	3.7	3.6	20.0
22.0						3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.2	3.1	3.0	22.0
24.0							3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5	24.0
26.0							3.2/24.9	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.1	26.0
28.0								2.5/27.5	2.4	2.3	2.2	2.0	1.9	1.8	1.7	28.0
30.0									2.1	2.0	1.9	1.8	1.7	1.6	1.5	30.0
32.0										1.7	1.6	1.5	1.5	1.4	1.3	32.0
34.0											1.6/32.7	1.4	1.3	1.3	1.2	34.0

#### Notes:

- Capacities shown are in metric tons and are based on 85% of minimum tipping loads - over the side - with machine standing level on firm supporting surface under ideal job conditions. Deductions from the 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)	0.4	0.3	0.12

- When handling load off the main boom peak sheaves in case of mounting jib on top of boom, the following deductions from crane capacities shown above must be made:

Jib length (m)	6.1	9.15	12.2
Weight to be deducted (t)	0.8	0.9	1.0

- Asterisk (\*) indicates that capacities are based on factors other than those which would cause a tipping condition.
- A 5.3 t counterweight is required for all capacities on this chart.
- Outriggers must be fully extended to 5.6 m for all operating conditions.

### ST400M JIB CAPACITIES:

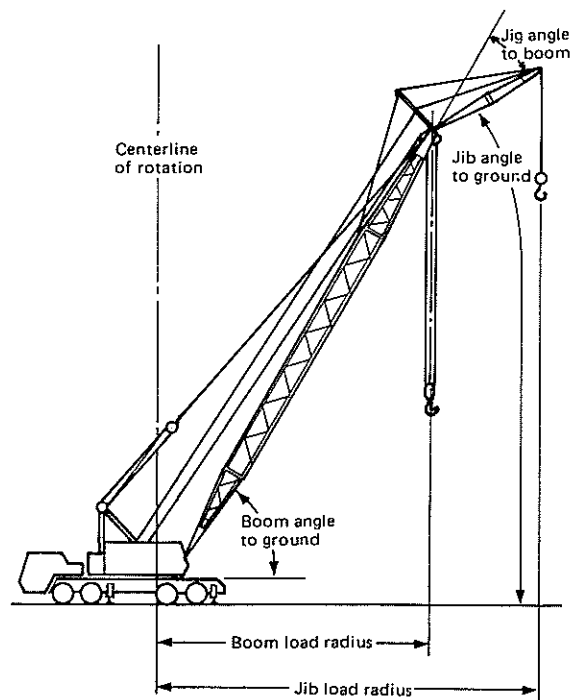
Jib length (m)	Jib angle		
	0°	15°	30°
6.10	5.0	4.5	3.6
9.15	4.5	3.6	2.8
12.20	3.6	2.6	1.8

#### Notes: Determining jib capacities.

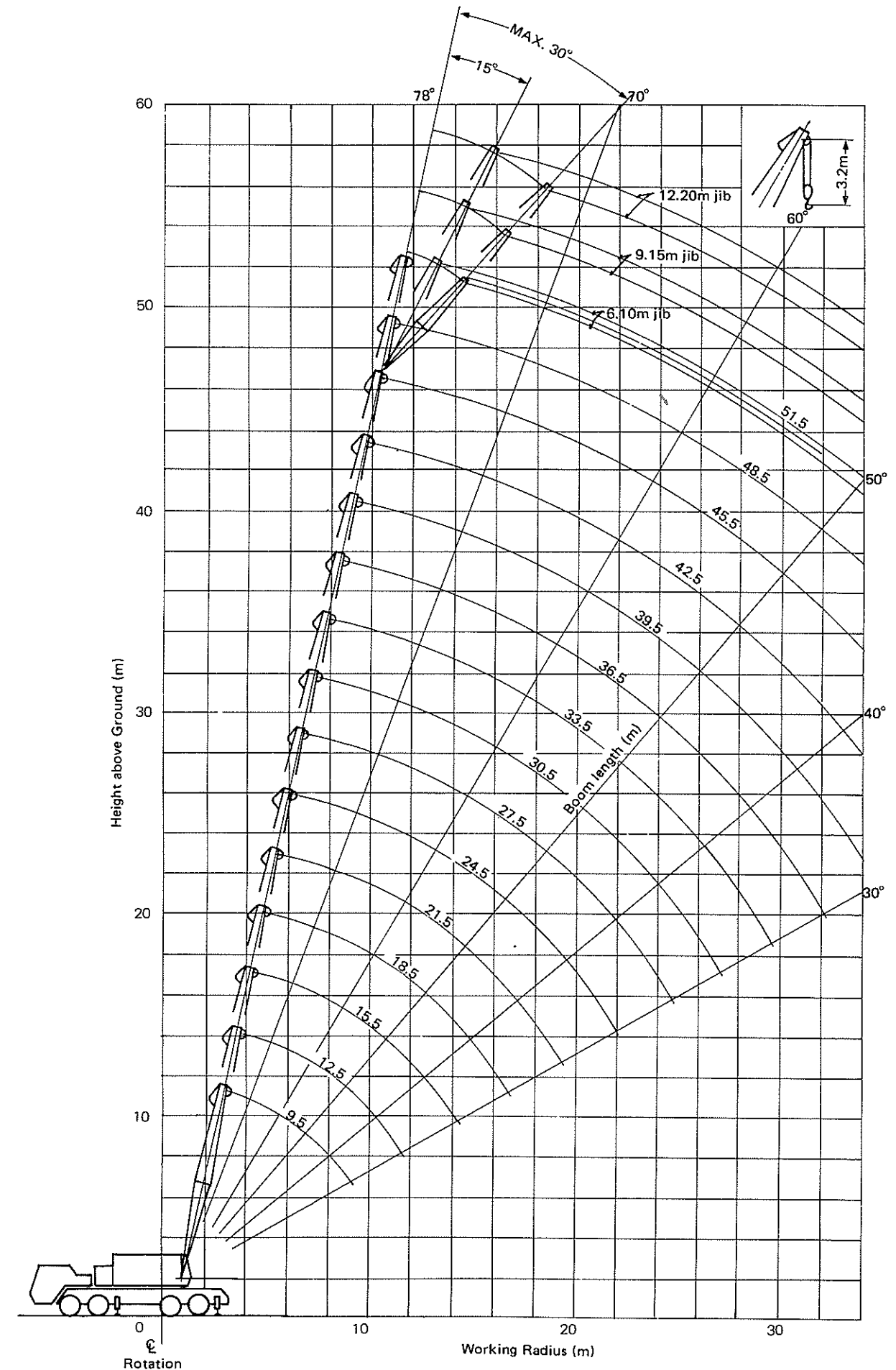
- The jib capacities are equal to the crane capacities of the main boom on which the jib is fixed unless restricted by the maximum jib capacities shown above.
- The jib angle to boom must not exceed 30° when lifting.
- Available boom length to mount jib of all length is from 24.5 thru 45.5 m.

### MAXIMUM BOOM/JIB LENGTHS MACHINE CAN LIFT OFF GROUND UNASSISTED (without load):

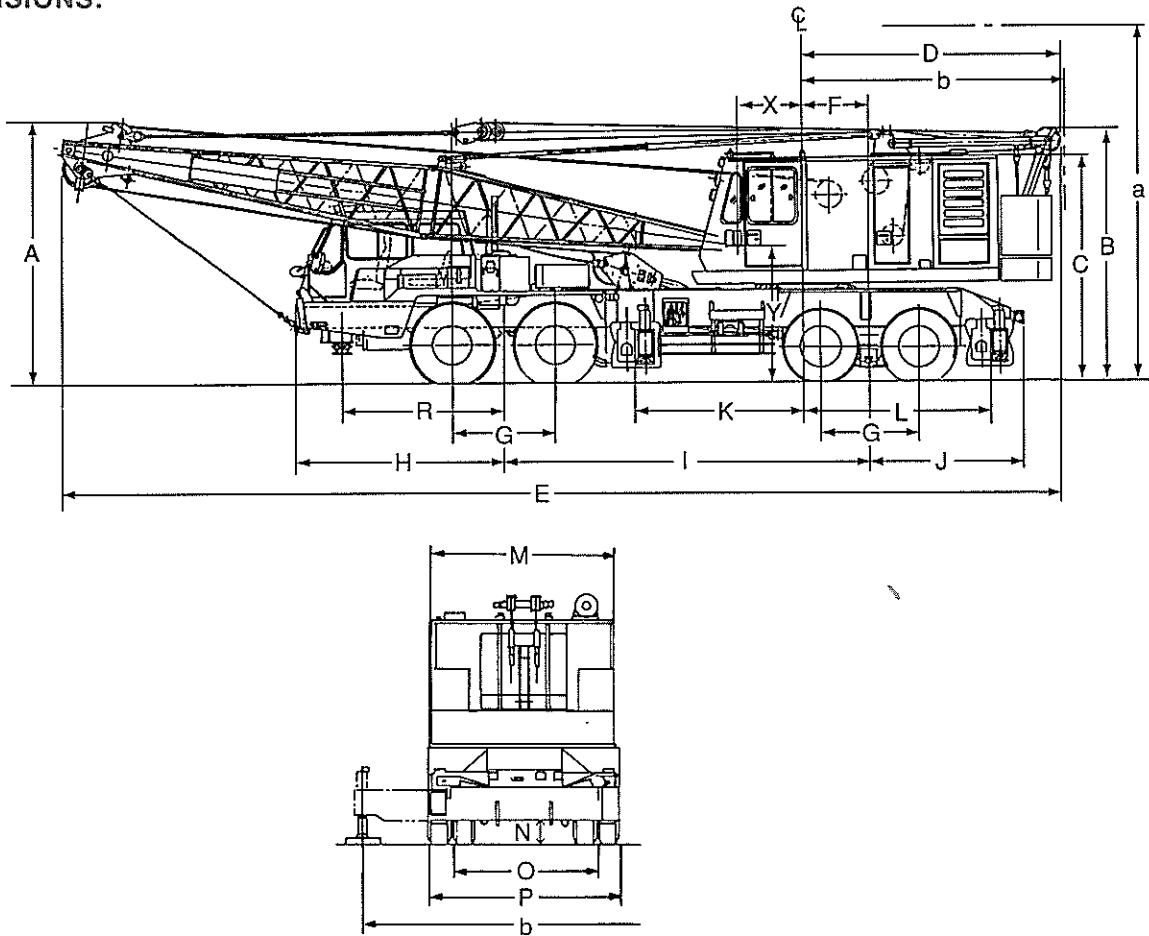
On outriggers				On tires			
Over rear		Over side		Over rear		Over side	
Boom	Boom+Jib	Boom	Boom+Jib	Boom	Boom+Jib	Boom	Boom+Jib
51.50	57.70	48.50	51.50	33.50	36.50	27.50	30.50



### ST400M CRANE WORKING RANGES:



**DIMENSIONS:**



In traveling condition:

A:	Overall height	3.790 m
B:	Height of gantry (lowered)	3.775 m
C:	Height of cab	3.235 m
D:	Radius of rear end (gantry lowered)	3.730 m
E:	Overall length	14.425 m
F:	Center of rotation to center of rear bogie	0.950 m
G:	Distance between axles	
	front	1.470 m
	rear	1.400 m
H:	Center of front bogie to front of carrier	2.975 m
I:	Wheelbase	5.215 m
J:	Center of rear bogie to rear of carrier	2.250 m
K:	Center of rotation to center of front outriggers	2.400 m
L:	Center of rotation to center of rear outriggers	2.700 m
M:	Width of cab	2.685 m
N:	Minimum ground clearance	0.240 m
O:	Tread	
	front	2.230 m
	rear	2.110 m
P:	Overall width	2.820 m
R:	Center of front bogie to center of front jack	2.295 m
X:	Center of rotation to boom foot pin	0.940 m
Y:	Height from ground to boom foot pin	1.940 m

In working condition:

a:	Height of gantry (raised)	5.140 m
b:	Radius of rear end (counterweight)	3.755 m
d:	Width of outriggers extended	5.600 m