CRANE

Description

Rough terrain crane with maximum lifting capacity 20 ton

Crane specification

Maximum rated lifting capacity

<table>
<thead>
<tr>
<th>Height (m)</th>
<th>Boom (Parts of line: 1)</th>
<th>Jib (Parts of line: 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.5</td>
<td>20,000 kg</td>
<td>750 kg</td>
</tr>
<tr>
<td>10.5</td>
<td>10,000 kg</td>
<td>1,500 kg</td>
</tr>
<tr>
<td>15.4</td>
<td>6,000 kg</td>
<td>1,000 kg</td>
</tr>
<tr>
<td>19.6</td>
<td>4,500 kg</td>
<td>2,500 kg</td>
</tr>
<tr>
<td>23.5</td>
<td>3,000 kg</td>
<td>2,000 kg</td>
</tr>
<tr>
<td>28.0</td>
<td>1,500 kg</td>
<td>1,000 kg</td>
</tr>
</tbody>
</table>

Boom length 6.5m
Jib length 4.0m

Maximum rated lifting height

<table>
<thead>
<tr>
<th>Height (m)</th>
<th>Boom (Parts of line: 1)</th>
<th>Jib (Parts of line: 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.5</td>
<td>25.1m (boom)</td>
<td>14.5m (jib)</td>
</tr>
<tr>
<td>10.5</td>
<td>24.5m (boom)</td>
<td>14.5m (jib)</td>
</tr>
<tr>
<td>15.4</td>
<td>24.0m (boom)</td>
<td>14.0m (jib)</td>
</tr>
<tr>
<td>19.6</td>
<td>22.5m (boom)</td>
<td>13.5m (jib)</td>
</tr>
<tr>
<td>23.5</td>
<td>21.0m (boom)</td>
<td>12.5m (jib)</td>
</tr>
<tr>
<td>28.0</td>
<td>20.0m (boom)</td>
<td>12.0m (jib)</td>
</tr>
</tbody>
</table>

Outriggers

One hydraulic cylinder of direct acting type with pressure-compensated flow control valve

Slewing bearing

Ball bearing type

Outriggers

Extension

<table>
<thead>
<tr>
<th>Type</th>
<th>Diameter x Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main</td>
<td>14mm x 195m</td>
</tr>
<tr>
<td>Extension</td>
<td>14mm x 76m</td>
</tr>
</tbody>
</table>

Hydraulic oil capacity 250L

Safety devices

Air conditioner, Working light (on boom, table and cab), Windshield wiper, Wiper (2 speed wiper), Roof window wiper & washer, AM/FM Radio, Step lamp, Floor mat, Accessory socket (24V), Emergency set

Standard equipment

Air conditioner, Working light (on boom, table and cab), Windshield wiper, Wiper (2 speed wiper), Roof window wiper & washer, AM/FM Radio, Step lamp, Floor mat, Accessory socket (24V), Emergency set

Operator's cab

Adjustable steering wheel, Adjustable seat, Power Window/Exterior control switch, Front windshield wiper & washer (2 speed wiper), Roof window wiper & washer, AM/FM Radio, Step lamp, Floor mat, Accessory socket (24V), Emergency set

Optional equipment

ACS outside indicator, PA system, Windshield wiper, Door visor, Fire extinguisher

CRANE

Maximum traveling speed 49km/h

Grade ability

60% (computed at G.V.W. = 19,715 kg)

Minimum turning radius

12,500m x 4.0m (Parts of line: 16)

Engine

Model

Cummins QSB6.7-4A (Tier Interim / Stage III B)

Type

4 cycle, 6 cylinders, water cooled, direct injection turbocharged diesel engine with intercooling

Transmission

Remote mounted full automatic

 Aux. Winch

175kW at 2,300 rpm

Retracting equipment

Two hydraulic cylinders and wire ropes used together

Suspension

Front Taper-leaf spring, Hydraulic locking device with suspension cylinder

Brake

Front Ventilated disc, Rear Drum type

Steering

Full hydraulic power steering, Completely independent front and rear steering (with automatic rear wheel steering lock system)

Service brake lock

Full hydraulic power steering, Completely independent front and rear steering (with automatic rear wheel steering lock system)

Auxiliary brake

Emergency brake, Service brake lock

Air filter service warning device, Low air warning device

Standard equipment

Hydraulic oil cooler, Centralized lubricating system, Aluminum outrigger plate, Discharge head lamp

Optional equipment

Wheel stopper, Way side lamp, Side marker lamp, Rear view camera, Storage box, Electrically retractable side view mirrors with defroster

GENERAL Dimensions

Overall length

8,710mm

Overall width

2,290mm

Overall height

3,210mm

Wheel base

3,290mm

Tread

Front 1,920mm

Rear 1,930mm

Passenger capacity

1 person

Gross vehicle weight

 approx. 19,715kg

Front weight

 approx. 9,875kg

Rear weight

 approx. 9,840kg

Before you use this machine, read the precautions in the instruction manual thoroughly to operate it correctly.

KATO products and specifications are subject to improvements and changes without notice.

Stow the hooks in place before traveling.

Before you use this machine, read the precautions in the instruction manual thoroughly to operate it correctly.

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### RATED LIFTING CAPACITY

**Based on ISO 4305**

**Not exceed 75% of static tipping loads**

#### 6.5m — 28.0m Boom

<table>
<thead>
<tr>
<th>Working radius (m)</th>
<th>Outriggers fully extended</th>
<th>Outriggers intermediately extended (4.8m) - over side</th>
<th>Outriggers intermediately extended (4.3m) - over side</th>
<th>Outriggers intermediately extended (3.2m) - over side</th>
<th>Outriggers completely retracted (1.95m) — over side (H-type outrigger only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.5m Boom</td>
<td>6.50</td>
<td>6.10</td>
<td>5.80</td>
<td>5.50</td>
<td>5.20</td>
</tr>
<tr>
<td>10.95m Boom</td>
<td>10.60</td>
<td>10.20</td>
<td>9.80</td>
<td>9.40</td>
<td>9.00</td>
</tr>
<tr>
<td>14.4m Boom</td>
<td>14.10</td>
<td>13.70</td>
<td>13.30</td>
<td>12.90</td>
<td>12.50</td>
</tr>
<tr>
<td>18.3m Boom</td>
<td>18.00</td>
<td>17.60</td>
<td>17.20</td>
<td>16.80</td>
<td>16.40</td>
</tr>
<tr>
<td>22.6m Boom</td>
<td>22.30</td>
<td>22.00</td>
<td>21.70</td>
<td>21.40</td>
<td>21.00</td>
</tr>
</tbody>
</table>

#### When outriggers are not used

<table>
<thead>
<tr>
<th>Working radius (m)</th>
<th>Stationary on rubber</th>
<th>Pick &amp; carry (less than 2km/h)</th>
<th>Working radius (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.5m Boom</td>
<td>6.50</td>
<td>6.50</td>
<td>6.50</td>
</tr>
<tr>
<td>10.95m Boom</td>
<td>9.00</td>
<td>9.00</td>
<td>9.00</td>
</tr>
<tr>
<td>16.0m Boom</td>
<td>15.50</td>
<td>15.50</td>
<td>15.50</td>
</tr>
<tr>
<td>19.6m Boom</td>
<td>19.10</td>
<td>19.10</td>
<td>19.10</td>
</tr>
</tbody>
</table>

#### Parts of line

<table>
<thead>
<tr>
<th>Hook mass</th>
<th>Parts of line</th>
</tr>
</thead>
<tbody>
<tr>
<td>150kg</td>
<td>2</td>
</tr>
<tr>
<td>150kg</td>
<td>4</td>
</tr>
</tbody>
</table>
### 19.6m Boom+4.0m Jib

#### Parts of line 1

<table>
<thead>
<tr>
<th>Working radius (m)</th>
<th>Load (ton)</th>
<th>Parts of line 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.8m Jib</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7° 5.8m Jib</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35° 5.8m Jib</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44° 5.8m Jib</td>
<td></td>
<td></td>
</tr>
<tr>
<td>59° 5.8m Jib</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Critical boom angles

- 44°: 17.6, 0.88, 18.3, 0.93, 18.8, 0.90, 19.1, 0.86
- 59°: 19.7, 0.97, 20.2, 0.67

#### Based on ISO 4305

Not exceed 75% of static tipping loads

### 19.6m Boom+5.8m Jib

#### Parts of line 1

<table>
<thead>
<tr>
<th>Working radius (m)</th>
<th>Load (ton)</th>
<th>Parts of line 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>6° 7° 24° 44° 59°</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Critical boom angles

- 24°: 16.1, 0.92, 16.7, 0.87, 17.1, 0.82
- 44°: 18.5, 0.26, 18.9, 0.25

#### Based on ISO 4305

Not exceed 75% of static tipping loads

### 19.6m Boom+5.8m Jib

#### Parts of line 1

<table>
<thead>
<tr>
<th>Working radius (m)</th>
<th>Load (ton)</th>
<th>Parts of line 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>6° 24° 44° 59°</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Critical boom angles

- 24°: 15.8, 15.8, 15.8, 15.8
- 44°: 16.2, 1.26, 16.8, 1.19, 17.1, 1.15
- 59°: 17.4, 1.05, 17.8, 0.98

#### Based on ISO 4305

Not exceed 75% of static tipping loads
## 28.0m Boom + 4.0m Jib

<table>
<thead>
<tr>
<th>Boom angle (°)</th>
<th>Offset 7</th>
<th>Offset 25°</th>
<th>Offset 45°</th>
<th>Offset 60°</th>
<th>Load (ton)</th>
<th>Load (ton)</th>
<th>Load (ton)</th>
<th>Load (ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5°</td>
<td>4.7</td>
<td>3.0</td>
<td>2.0</td>
<td>1.2</td>
<td>0.71</td>
<td>0.56</td>
<td>0.44</td>
<td>0.34</td>
</tr>
<tr>
<td>10°</td>
<td>4.7</td>
<td>3.0</td>
<td>2.0</td>
<td>1.2</td>
<td>0.71</td>
<td>0.56</td>
<td>0.44</td>
<td>0.34</td>
</tr>
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</tr>
<tr>
<td>40°</td>
<td>4.7</td>
<td>3.0</td>
<td>2.0</td>
<td>1.2</td>
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<td>0.44</td>
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<td>0.71</td>
<td>0.56</td>
<td>0.44</td>
<td>0.34</td>
</tr>
</tbody>
</table>

### Illustrated beam angle
- For 3.2 ton
- Hook mass: 60kg
- Parts of line: 1

## 28.0m Boom + 5.8m Jib

<table>
<thead>
<tr>
<th>Boom angle (°)</th>
<th>Offset 7</th>
<th>Offset 25°</th>
<th>Offset 45°</th>
<th>Offset 60°</th>
<th>Load (ton)</th>
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<td>5°</td>
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<td>2.0</td>
<td>1.2</td>
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<td>0.44</td>
<td>0.34</td>
</tr>
<tr>
<td>10°</td>
<td>4.7</td>
<td>3.0</td>
<td>2.0</td>
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<td>0.34</td>
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<tr>
<td>40°</td>
<td>4.7</td>
<td>3.0</td>
<td>2.0</td>
<td>1.2</td>
<td>0.71</td>
<td>0.56</td>
<td>0.44</td>
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<tr>
<td>50°</td>
<td>4.7</td>
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<td>1.2</td>
<td>0.71</td>
<td>0.56</td>
<td>0.44</td>
<td>0.34</td>
</tr>
</tbody>
</table>

### Illustrated beam angle
- For 3.2 ton
- Hook mass: 60kg
- Parts of line: 1

### Illustrated light beam angle
- For 3.2 ton
- Hook mass: 60kg
- Parts of line: 1
Notes for the lifting capacity chart

● When the outriggers are used

1. The lifting capacity chart indicates the maximum load which can be lifted by this crane provided it is level and standing on firm level ground. The values in the chart include the mass of the main hook and slings for boom operation, and auxiliary hook and slings for jib operation.

2. The working radii are the actual values allowing for boom and jib deflection. Therefore you must always operate the crane on the basis of working radius.

3. The jib working radii are based on the jib mounted on the end of 19.6m boom or the 28.0m boom. When operating the jib with the boom length 19.6m and 28.0m, refer the boom angle only at the 28.0m boom instead of its working radii.

4. Do not operate the jib when the outriggers are completely retracted.

5. The lifting capacities for the over sides vary with the outriggers extension width. Therefore for each outriggers extension condition you should work according the lifting capacity chart. Use the lifting capacity chart of outriggers full extension for both front and rear areas lifting capacities.

6. The lifting capacity of the rooster sheave is the lifting capacity of the boom minus the mass of all attached hook, slings etc. to the boom, with an upper limit of 3,200 kg. [The hook for use with the rooster sheave is the 3.2 ton hook (mass: 60 kg) with one part of line.]

7. If the boom length, boom angle, working radius and/or jib angle exceeds the rated value, use the lifting capacity for the rated value or for the next one, whichever gives the smaller lifting capacity.

8. If you are working with the boom while the jib is rigged, subtract 1500 kg plus the mass of all attached hook, slings, etc. to the boom from the each lifting capacity of the boom, with an upper limit of 10 ton.

9. Do not use the rooster sheave in this situation. And do not operate the boom while the jib is rigged, when the outriggers are completely retracted.

10. In whatever working conditions the corresponding boom critical angle is shown in the chart. The crane can tip over if the boom is lowered below the critical angle even if unloaded. Therefore, never lower the boom below these angles.

11. The standard parts of line for each boom length are as indicated in the chart. If you work with a non-standard number of parts of line, do not exceed 28.4 kN (2.9 tf) per wire rope respectively.

12. Crane operation is permissible up to a wind speed of 10 m/s. Even in relatively light wind conditions, extra care should be taken when handling loads presenting large wind catching areas.

13. If you work with a load in excess of the lifting capacity or use incorrect working procedures, you are risking damaging the crane or tipping it over. In such cases, the crane will not be guaranteed.

When the outriggers are not used

1. The lifting capacity chart indicates the maximum load the crane can lift when its body is level on firm level ground with all tires inflated to the rated pressure and the suspension cylinder completely retracted. The values in the chart include the mass of the main hook and slings.

2. The working radii are the actual values allowing for boom deflection. Therefore you must always operate the crane on the basis of the working radius.

3. The lifting capacity differs between the front area capacity and the full range capacity. When slewing from the front to the side, take care that the crane could not be over loaded.

4. The lifting capacity of the rooster sheave is the lifting capacity of the boom minus the mass of all attached hook, slings etc. to the boom, with an upper limit of 3,200 kg. [The hook for use with the rooster sheave is the 3.2 ton hook (mass: 60 kg) with one part of line.]

5. Do not work with the jib or with a boom length of more than 19.6 m.

6. For stationary crane-on-rubber operation, the parking brake and service brake lock device must be engaged.

7. For pick and carry operation, the high/low speed switch must be switched to “ON” (low range) and the shift lever set to speed 1.

8. For pick and carry operation, lower the load to just above the ground and keep your speed strictly below 2 km/h to avoid swinging the load.

9. Never operate the crane during pick and carry operation. The slewing brake must be applied.

10. If the boom length, boom angle, working radius and/or jib angle exceeds the rated value, use the lifting capacity for the rated value or for the next one, whichever gives the smaller lifting capacity.

11. In whatever working conditions the corresponding boom critical angle is shown in the chart. The crane can tip over if the boom is lowered below the critical angle even if unloaded. Therefore, never lower the boom below these angles.

12. The standard parts of line for each boom length are as indicated in the chart. If you work with a non-standard number of parts of line, do not exceed 28.4 kN (2.9 tf) per wire rope respectively.

13. High-speed lowering operation should only be performed to allow descent of the hook alone. Avoid sudden lever operation.

14. Crane operation is permissible up to a wind speed of 10 m/s. Even in relatively light wind conditions, extra care should be taken when handling loads presenting large wind catching areas.

15. If you work with a load in excess of the rated lifting capacity or use incorrect working procedures, you are risking damaging the crane or tipping it over. In such cases, the crane will not be guaranteed.
Notes:
1. This diagram does not include deflection of Boom and Jib.
2. The outriggers are fully extended.
Minimum path width

- Right turn in two-wheel steering mode
  - R1=8.00m (Minimum turning radius)
  - A=4.26m (Width of entrance)
  - B=8.85m (Turning radius of extremely outer tire)
  - R2=8.18m (Boom end turning radius)
  - R3=5.19m (Turning radius extremely chassis inner)

- Right turn in 4-wheel steering mode
  - R1=4.70m (Minimum turning radius)
  - A=3.97m (Width of chassis entrance)
  - B=2.96m (Width of wheel entrance)
  - C=4.91m (Turning radius of extremely outer tire)
  - D=4.54m (Width of exit at end of boom)

Overall view

Note: The above values are based on calculations.

Reduced scale: 1/100 Unit (mm)
Overall view

Ramp break over angle: 23°
When the suspension is locked, the height shall be the overall height: - 40 mm.
(Suspension cylinder completely retracted)

Reduced scale: 1/100 Unit (mm)

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