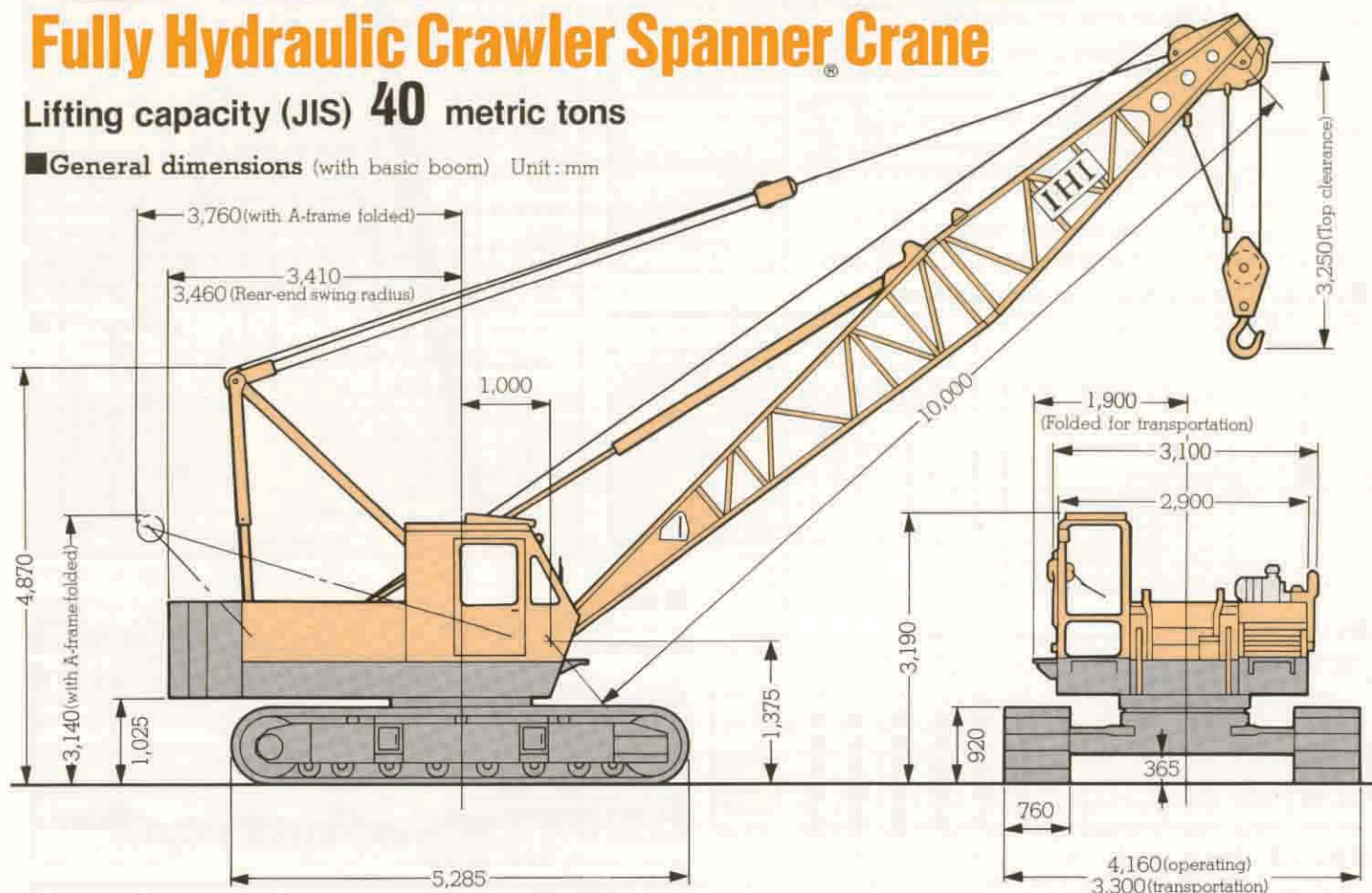




# CCH400

**IHI**

## Fully Hydraulic Crawler Spanner Crane

**Lifting capacity (JIS) 40 metric tons****General dimensions** (with basic boom) Unit: mm**Specifications**

| Performance                 |                                                               |
|-----------------------------|---------------------------------------------------------------|
| Swing speed                 | 3.5 rpm                                                       |
| Travel speed                | *1.6 km/h                                                     |
| Gradeability                | 40% (Approx. 22°)<br>(with 10 m boom and 40 ton hook block)   |
| Operation system            |                                                               |
| Power source                | Hydraulic                                                     |
| Transmission system         | Hydraulic                                                     |
| Drum type                   | Single shaft, dual drum                                       |
| Swing system                | Swing bearing                                                 |
| Hydraulic pump              | Variable displacement axial plunger pump × 2<br>Gear pump × 2 |
| Engine                      |                                                               |
| Model                       | Hino H06CT                                                    |
| Type                        | 4-cycle, water cooled, overhead valve                         |
| Combustion chamber          | Direct injection diesel                                       |
| Cylinder bore stroke        | 6-108 mm × 118 mm                                             |
| Total displacement          | 6.485 l                                                       |
| Rated output                | 150PS/2,100 rpm (with turbocharger)                           |
| Max. torque                 | 52 kg·m/1,600 rpm                                             |
| Rated fuel consumption rate | 165 g/PS·h (at rated output)                                  |
| Fuel tank capacity          | 225l                                                          |

NOTE: Speeds change with load level.

**Safety equipment**

- Counterbalance valve, Check valve, Relief valve.
- Multi-disc traction brake
- Swing lock, Swing parking brake
- Drum lock
- Emergency drum brake
- Boom angle indicator
- Telescopic boom limit stop
- Boom overhoisting prevention
- Hook overwinding prevention

**Optional equipment**

- Electronic moment limiter
- Third drum
- Car cooler
- Combustion type heater
- Flood light, Yellow rotary lamp
- Wireless helmet phone
- Electric level gauge
- Spark arrester

The machine is manufactured in compliance with the Japanese Labor Ministry's "Structural Standards for Mobile Cranes," and it meets the requirements of "Safety Regulations for Crane and Related Machines".

**Ishikawajima Construction Machinery Co., Ltd.**



# CCH400 Crane

## Specifications

NOTE: Speeds change with load level.

|                                                              |                            |                                            |
|--------------------------------------------------------------|----------------------------|--------------------------------------------|
| Maximum lifting load × working radius                        |                            | 40 tons × 3.7 m                            |
| Maximum lift above ground                                    |                            | 43.4 m (46 m boom)                         |
| Rope speed                                                   | Boom hoisting and lowering | 55 m/min (4th layer on drum)               |
|                                                              | Load hoisting and lowering | High speed 80 m/min,<br>Low speed 40 m/min |
|                                                              |                            | Jib load hoisting and lowering             |
|                                                              | Part lines                 | Boom hoisting                              |
| 40 ton hook                                                  |                            | 8 part lines                               |
| 5 ton hook                                                   |                            | 1 part line                                |
| Counterweight                                                |                            | 13.8 tons (7 + 6.8)                        |
| Crane total weight<br>(with 10 m boom and 40 ton hook block) |                            | 39.3 tons                                  |
| Average ground bearing pressure                              |                            | 0.55 kgf/cm <sup>2</sup>                   |

## Boom composition/Jib composition

(Unit: m)

| Boom length | Boom composition      |
|-------------|-----------------------|
| 10          | 6 (inner) + 4 (outer) |
| 13          | 6+3+4                 |
| 16          | 6+3+3+4               |
| 19          | 6+3+6+4               |
| 22          | 6+3+3+6+4             |
| 25          | 6+3+6+6+4             |
| 28          | 6+3+3+6+6+4           |
| 31          | 6+3+6+6+6+4           |
| 34          | 6+3+3+6+6+6+4         |
| 37          | 6+3+6+6+6+6+4         |

| 40         | 6+3+3+6+6+6+4         |
|------------|-----------------------|
| 43         | 6+6+6+6+3+6+6+4       |
| 46         | 6+3+3+6+6+6+6+6+4     |
| Jib length | Jib composition       |
| 1          | 1 (auxiliary jib)     |
| 6          | 3 (inner) + 3 (outer) |
| 9          | 3+3+3                 |
| 12         | 3+6+3*                |
| 15         | 3+3+6+3               |

\* denotes 6 m insert boom w/ lug, which is required for boom length over 40 m.

\* When delivered with 12 m 18t, 6 m insert boom consists of 3m x 3.

## Combination of Boom and Jib (●: available combination)

| Jib length | Boom length (m) |    |    |    |    |    |    |    |    |    |    |    |    |
|------------|-----------------|----|----|----|----|----|----|----|----|----|----|----|----|
| (m)        | 10              | 13 | 16 | 19 | 22 | 25 | 28 | 31 | 34 | 37 | 40 | 43 | 46 |
| 1          | ●               | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●  |    |
| 6          |                 |    |    |    |    | ●  | ●  | ●  | ●  | ●  | ●  |    |    |
| 9          |                 |    |    |    |    | ●  | ●  | ●  | ●  | ●  | ●  |    |    |
| 12         |                 |    |    |    |    | ●  | ●  | ●  | ●  | ●  | ●  |    |    |
| 15         |                 |    |    |    |    | ●  | ●  | ●  | ●  | ●  | ●  |    |    |

## Rated lifting loads (Through out 360°; within 78% of tipping load; forward stability factor over 1.15)

(Unit: metric ton)

| Working radius<br>(m) | Boom length (m) |       |       |       |       |       |       |       |       |       |       |       |      |  |
|-----------------------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|--|
|                       | 10.0            | 13.0  | 16.0  | 19.0  | 22.0  | 25.0  | 28.0  | 31.0  | 34.0  | 37.0  | 40.0  | 43.0  | 46.0 |  |
| 3.5                   | 40.00           | 40.00 |       |       |       |       |       |       |       |       |       |       |      |  |
| 3.7                   | 40.00           | 40.00 |       |       |       |       |       |       |       |       |       |       |      |  |
| 4.0                   | 35.05           | 35.00 | 34.95 |       |       |       |       |       |       |       |       |       |      |  |
| 4.5                   | 29.05           | 29.00 | 28.95 | 28.25 |       |       |       |       |       |       |       |       |      |  |
| 5.0                   | 24.95           | 24.90 | 24.85 | 24.85 | 24.05 | 20.00 |       |       |       |       |       |       |      |  |
| 6.0                   | 19.15           | 19.10 | 19.05 | 19.05 | 19.00 | 18.95 | 18.35 | 15.00 |       |       |       |       |      |  |
| 7.0                   | 15.45           | 15.40 | 15.35 | 15.30 | 15.25 | 15.20 | 15.15 | 15.00 | 14.45 | 13.05 |       |       |      |  |
| 8.0                   | 12.85           | 12.80 | 12.75 | 12.70 | 12.65 | 12.60 | 12.55 | 12.50 | 12.40 | 12.35 | 11.75 | 10.00 |      |  |
| 9.0                   | 11.00           | 10.95 | 10.90 | 10.85 | 10.80 | 10.75 | 10.70 | 10.60 | 10.55 | 10.50 | 10.35 | 10.00 | 8.85 |  |
| 10.0                  | 9.85            | 9.50  | 9.45  | 9.40  | 9.35  | 9.30  | 9.25  | 9.15  | 9.10  | 9.05  | 8.90  | 8.85  | 8.45 |  |
| 12.0                  |                 | 7.45  | 7.40  | 7.35  | 7.30  | 7.25  | 7.20  | 7.15  | 7.05  | 7.00  | 6.85  | 6.80  | 6.75 |  |
| 14.0                  |                 | 7.15  | 6.05  | 6.00  | 5.95  | 5.90  | 5.80  | 5.75  | 5.65  | 5.60  | 5.50  | 5.40  | 5.35 |  |
| 16.0                  |                 |       | 5.50  | 5.00  | 4.95  | 4.90  | 4.80  | 4.75  | 4.65  | 4.60  | 4.50  | 4.40  | 4.35 |  |
| 18.0                  |                 |       |       | 4.40  | 4.20  | 4.15  | 4.05  | 4.00  | 3.90  | 3.85  | 3.75  | 3.65  | 3.60 |  |
| 20.0                  |                 |       |       |       | 3.60  | 3.55  | 3.50  | 3.45  | 3.35  | 3.30  | 3.20  | 3.10  | 3.00 |  |
| 22.0                  |                 |       |       |       |       | 3.15  | 3.10  | 3.00  | 2.95  | 2.85  | 2.80  | 2.70  | 2.55 |  |
| 24.0                  |                 |       |       |       |       |       | 2.95  | 2.65  | 2.60  | 2.50  | 2.45  | 2.30  | 2.15 |  |
| 26.0                  |                 |       |       |       |       |       |       | 2.40  | 2.25  | 2.15  | 2.10  | 1.95  | 1.80 |  |
| 28.0                  |                 |       |       |       |       |       |       |       | 2.00  | 1.90  | 1.80  | 1.65  | 1.45 |  |
| 30.0                  |                 |       |       |       |       |       |       |       |       | 1.65  | 1.55  | 1.40  | 1.20 |  |
| 32.0                  |                 |       |       |       |       |       |       |       |       |       | 1.55  | 1.35  | 1.00 |  |

● All rated loads shown are based on the machine being on a firm level, suitably supporting surface without travelling.

● The weight of the slings, hook block, (s) and auxiliary lifting devices are considered to be a part of the load.

Main hook block (40 ton capacity) — 0.38 ton

Jib hook block (5 ton capacity) — 0.12 ton

● Depending on the number of part lines rated lifting load is limited as follows:

1 part line — up to 5 ton  
2 part line — up to 10 ton  
3 part line — up to 15 ton  
4 part line — up to 20 ton  
5 part line — up to 25 ton  
6 part line — up to 30 ton  
7 part line — up to 35 ton  
8 part line — up to 40 ton

● When boom is equipped with jib, main hook ratings must be reduced the following weight:

Jib length: 1m, 6m, 9m, 12m, 15m  
Weight to be reduced: 0.5t, 0.75t, 0.95t, 1.2t, 1.45t

● The rated loads for jib when the main hook is installed must be reduced by the total weight of the main hook and the jib hook.

● The maximum boom length to which jib booms can be installed are as follows:

With the crawler frame extended, up to 40 m + 15 m or 43 m + 1 m

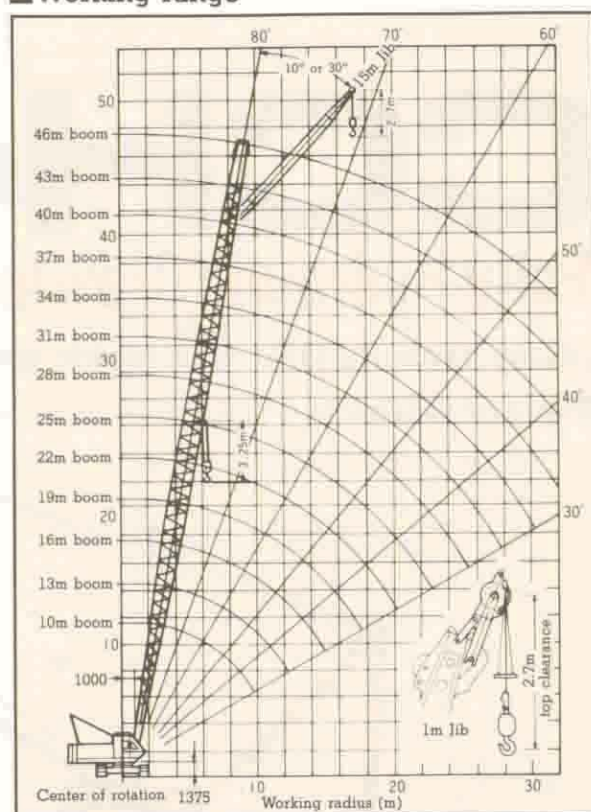
● Buckle and lifting magnet operations cannot be performed by jibs.

● The rated load for jib should not exceed the values in the table below.

| Jib angle | Jib boom length |          |          |          |          |
|-----------|-----------------|----------|----------|----------|----------|
|           | 1 m             | 6 m      | 9 m      | 12 m     | 15 m     |
| 10°       | 5.0 tons        | 4.0 tons | 4.0 tons | 3.5 tons | 2.5 tons |
| 30°       | 4.0 tons        | 3.5 tons | 3.0 tons | 2.0 tons |          |

● The angle formed by the extension line of the main boom and the center line of the jib boom should not exceed 30° under load condition.

## Working range







CCH400

# Flying Leader

## Specifications

NOTE: Speeds change with load level.

|                                                        |                              |              |                                            |
|--------------------------------------------------------|------------------------------|--------------|--------------------------------------------|
| Rope speed                                             | Boom hoisting and lowering   |              | 55 m/min (4th layer of drum)               |
|                                                        | Hammer hoisting and lowering |              | High speed 80 m/min,<br>Low speed 40 m/min |
|                                                        | Pile hoisting and lowering   |              | High speed 80 m/min,<br>Low speed 40 m/min |
| Part lines                                             | Boom hoisting                |              | 12 part lines                              |
|                                                        | Hammer hoisting              | IDH-25       | 2 part lines                               |
|                                                        |                              | IDH-35       | 3 part lines                               |
|                                                        |                              | IDH-45       | 3 part lines                               |
|                                                        | Pile hoisting                | Under 5 tons | 1 part line                                |
| 5-10 tons                                              |                              | 2 part lines |                                            |
| Counterweight                                          |                              |              | 13.8 tons (7 + 6.8)                        |
| Possible travelling weight (on Pile driver attachment) |                              |              | 60 tons                                    |
| Allowable average ground bearing pressure              |                              |              | 0.84 kgf/cm <sup>2</sup>                   |

## Wire rope

| Place of use    | Rope diameter (mm)<br>× overall length (m) | Guaranteed<br>strength (t) |
|-----------------|--------------------------------------------|----------------------------|
| Boom hoisting   | φ14 × 126                                  | 14.9                       |
| Boom suspension | φ28 ×                                      | 59.7                       |
| Hammer hoisting | φ20 × 160                                  | 30.0                       |
| Pile hoisting   | φ20 × 110                                  | 30.0                       |

All the ropes are of 6×Fi (29) IWRC preformed regular Z lay.

## Working performance

R: Working radius (m) W: Pile weight (metric ton)

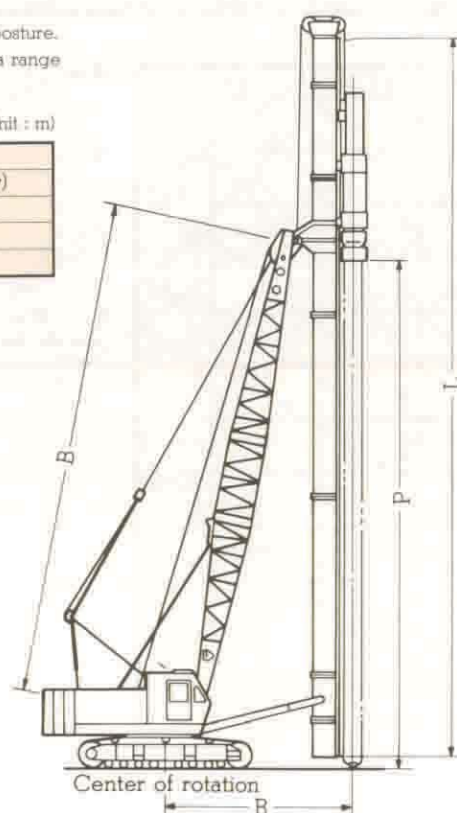
| Leader type         |  | FS500  |     |       |     |       |     |       |     |        |     |       |     |       |     |       |     |        |     |       |     |
|---------------------|--|--------|-----|-------|-----|-------|-----|-------|-----|--------|-----|-------|-----|-------|-----|-------|-----|--------|-----|-------|-----|
| Hammer type         |  | IDH-25 |     |       |     |       |     |       |     | IDH-35 |     |       |     |       |     |       |     | IDH-45 |     |       |     |
| Hammer weight (t)   |  | 5.5    |     |       |     |       |     |       |     | 7.8    |     |       |     |       |     |       |     | 11.0   |     |       |     |
| Cap weight (t)      |  | 0.5    |     |       |     |       |     |       |     | 1.0    |     |       |     |       |     |       |     | 1.8    |     |       |     |
| Boom length (m) B   |  | 13     |     | 16    |     | 19    |     |       |     | 13     |     | 16    |     | 19    |     |       |     | 13     |     | 16    |     |
| Leader length (m) L |  | 17.85  |     | 20.85 |     | 23.85 |     | 26.85 |     | 17.85  |     | 20.85 |     | 23.85 |     | 26.85 |     | 17.85  |     | 20.85 |     |
| Pile length (m) P   |  | 11     |     | 14    |     | 17    |     | 20    |     | 10.5   |     | 13.5  |     | 16.5  |     | 19.5  |     | 10     |     | 13    |     |
| Boom angle          |  | R      | W   | R     | W   | R     | W   | R     | W   | R      | W   | R     | W   | R     | W   | R     | W   | R      | W   | R     | W   |
| 82°                 |  | 4.6    | 6.5 | 5.0   | 6.5 | 5.5   | 6.5 | 5.5   | 6.5 | 4.7    | 8.0 | 5.1   | 8.0 | 5.5   | 5.5 | 5.5   | 5.0 | 4.8    | 3.5 | 5.2   | 3.5 |
| 81°                 |  | 4.9    | 6.5 | 5.3   | 6.5 | 5.8   | 6.5 | 5.8   | 6.0 | 4.9    | 8.0 | 5.4   | 6.5 | 5.9   | 4.0 | 5.9   | 3.5 | 5.0    | 3.5 | 5.5   | 2.0 |
| 80°                 |  | 5.1    | 6.5 | 5.6   | 6.5 | 6.1   | 5.5 | 6.1   | 4.5 | 5.1    | 8.0 | 5.7   | 5.5 | 6.2   | 2.5 | 6.2   | 1.5 | 5.2    | 3.5 |       |     |
| 79°                 |  | 5.3    | 6.5 | 5.9   | 6.5 | 6.5   | 4.0 | 6.5   | 3.0 | 5.4    | 7.5 | 5.9   | 4.0 | 6.5   | 1.0 |       |     | 5.5    | 3.0 |       |     |
| 78°                 |  | 5.5    | 6.5 | 6.1   | 6.0 | 6.8   | 3.0 | 6.8   | 2.0 | 5.6    | 6.5 | 6.2   | 3.0 |       |     |       |     | 5.7    | 2.0 |       |     |
| 77°                 |  | 5.8    | 6.5 | 6.4   | 5.0 | 7.1   | 2.0 | 7.1   | 1.0 | 5.8    | 5.5 | 6.5   | 2.0 |       |     |       |     | 5.9    | 1.0 |       |     |
| 76°                 |  | 6.0    | 6.5 | 6.7   | 4.0 | 7.4   | 1.5 |       |     | 6.0    | 4.5 | 6.7   | 1.0 |       |     |       |     |        |     |       |     |
| 75°                 |  | 6.2    | 6.5 | 7.0   | 3.0 |       |     |       |     | 6.2    | 3.5 |       |     |       |     |       |     |        |     |       |     |
| 74°                 |  | 6.4    | 6.5 | 7.2   | 2.5 |       |     |       |     | 6.5    | 2.5 |       |     |       |     |       |     |        |     |       |     |
| 73°                 |  | 6.6    | 5.0 |       |     |       |     |       |     | 6.7    | 2.0 |       |     |       |     |       |     |        |     |       |     |
| 72°                 |  | 6.8    | 4.0 |       |     |       |     |       |     | 6.9    | 1.0 |       |     |       |     |       |     |        |     |       |     |

- Angle of pile pulling rope with leader below 10°.
- It is not possible to work in leader inclined forward.
- Pile pulling shall be effected with leader in vertical posture.
- Permissible weight for pile pulling does not exceed a range in vertical posture specified in working capacity table.

## Boom combination

(Unit : m)

| Boom length | Boom composition      |
|-------------|-----------------------|
| 10          | 6 (inner) + 4 (outer) |
| 13          | 6+3+4                 |
| 16          | 6+3+3+4               |
| 19          | 6+3+6+4               |





# Lifting Magnet

## Specifications

|                                                  |                            |                                          |
|--------------------------------------------------|----------------------------|------------------------------------------|
| Rope speed                                       | Boom hoisting and lowering | 47m/min (4th layer of drum)              |
|                                                  | Load hoisting and lowering | High speed 68m/min,<br>Low speed 34m/min |
| Part lines                                       | Boom hoisting and lowering | 12 part lines                            |
|                                                  | Load hoisting and lowering | 1-7 part lines                           |
| Counterweight<br>(exclusive for lifting magnet)  |                            | 12.3 tons (5.5+6.8)                      |
| Total weight<br>(13 m boom + $\phi$ 1500 magnet) |                            | 41.7 tons                                |
| Average ground bearing pressure                  |                            | 0.58 kgf/cm <sup>2</sup>                 |

## Magnet specifications

|                    |             |                   |
|--------------------|-------------|-------------------|
| Electromagnet      | Diameter    | $\phi$ 1500       |
|                    | Weight      | 2.7 tons          |
| Voltage            |             | DC-220V           |
| Generator capacity |             | 16.5 kW/1,800 rpm |
| Lifting capacity   | Ingot       | 24 tons           |
|                    | Punch scrap | 0.55-0.9 tons     |
|                    | Iron scrap  | 1.2-1.9 tons      |
|                    | Pig iron    | 1.3-1.9 tons      |

NOTE: Speeds change with load level.

## Wire rope

|                     |                                                 |                         |           |
|---------------------|-------------------------------------------------|-------------------------|-----------|
| Place of use        | Rope diameter (mm) $\times$ overall length (mm) | Guaranteed strength (t) | Rope type |
| Lifting magnet      | $\phi$ 20 $\times$ 110                          | 30.0                    | A         |
| Boom hoisting       | $\phi$ 14 $\times$ 126                          | 14.9                    | A         |
| Boom suspension     | $\phi$ 28                                       | 59.7                    | A         |
| Weight type tagline | $\phi$ 10 $\times$ 38<br>(for 13 m boom)        | 5.5                     | B         |

Rope type A : 6 $\times$  Fi (29) IWRC preformed regular Z lay  
B : 6 $\times$  19 hemp core regular Z lay

## Rated lifting capacity

With 12.3 ton (full) counterweight

(Unit: metric ton)

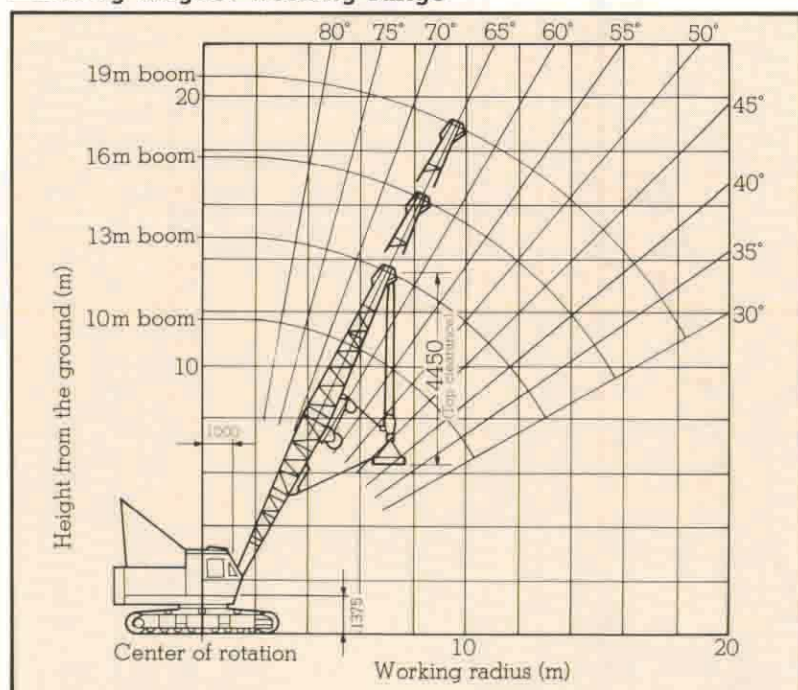
| Boom length<br>(m) | Working radius (m) |                                 |                                 |      |      |      |      |     |                               |     |                                |                                |                                |
|--------------------|--------------------|---------------------------------|---------------------------------|------|------|------|------|-----|-------------------------------|-----|--------------------------------|--------------------------------|--------------------------------|
|                    | 3.7                | 4                               | 4.5                             | 5    | 6    | 7    | 8    | 9   | 10                            | 12  | 14                             | 16                             | 18                             |
| 10                 | 34.6               | 33.0                            | 26.9                            | 22.6 | 17.1 | 13.7 | 11.3 | 9.7 | $\frac{6.0m \times 8.6}{8.6}$ |     |                                |                                |                                |
| 13                 | 34.6               | 33.0                            | 26.8                            | 22.6 | 17.0 | 13.6 | 11.3 | 9.6 | 8.4                           | 6.6 | $\frac{12.4m \times 6.3}{6.3}$ |                                |                                |
| 16                 |                    | $\frac{3.1m \times 32.2}{32.2}$ | 26.8                            | 22.5 | 17.0 | 13.6 | 11.2 | 9.6 | 8.3                           | 6.5 | 5.3                            | $\frac{15.0m \times 4.8}{4.8}$ |                                |
| 19                 |                    |                                 | $\frac{4.6m \times 26.0}{26.0}$ | 22.5 | 17.0 | 13.5 | 11.2 | 9.6 | 8.3                           | 6.5 | 5.3                            | 4.4                            | $\frac{17.6m \times 3.9}{3.9}$ |

With 5.5 ton counterweight

(Unit: metric ton)

| Boom length<br>(m) | Working radius (m) |                                 |                                 |      |      |     |     |     |                               |     |                                |                                |                                |
|--------------------|--------------------|---------------------------------|---------------------------------|------|------|-----|-----|-----|-------------------------------|-----|--------------------------------|--------------------------------|--------------------------------|
|                    | 3.7                | 4                               | 4.5                             | 5    | 6    | 7   | 8   | 9   | 10                            | 12  | 14                             | 16                             | 18                             |
| 10                 | 26.7               | 23.0                            | 18.7                            | 15.7 | 11.8 | 9.4 | 7.8 | 6.6 | $\frac{5.0m \times 5.9}{5.9}$ |     |                                |                                |                                |
| 13                 | 26.7               | 23.0                            | 18.6                            | 15.6 | 11.7 | 9.3 | 7.7 | 6.5 | 5.6                           | 4.4 | $\frac{12.4m \times 4.2}{4.2}$ |                                |                                |
| 16                 |                    | $\frac{3.1m \times 22.4}{22.4}$ | 18.6                            | 15.6 | 11.7 | 9.3 | 7.7 | 6.5 | 5.6                           | 4.3 | 3.5                            | $\frac{15.0m \times 3.1}{3.1}$ |                                |
| 19                 |                    |                                 | $\frac{4.6m \times 18.1}{18.1}$ | 15.6 | 11.7 | 9.3 | 7.6 | 6.5 | 5.6                           | 4.3 | 3.5                            | 2.8                            | $\frac{17.6m \times 2.5}{2.5}$ |

## Lifting magnet working range



● The weight of hook block, magnet and auxiliary lifting devices are considered to be a part of the load.

40 ton hook...380kg 15 ton hook...310 kg

● Depending on the number of part lines rated lifting load is limited as follows.

- |                             |                               |
|-----------------------------|-------------------------------|
| 1 part line... up to 5 ton  | 5 part line... up to 25 ton   |
| 2 part line... up to 10 ton | 6 part line... up to 30 ton   |
| 3 part line... up to 15 ton | 7 part line... up to 34.6 ton |
| 4 part line... up to 20 ton |                               |

● For lifting magnet specification, the rear-end swing radius differs from the standard crane equipped machine. (335 mm greater)



**CCH400****Dragline****■ Specifications**

|                                                      |                            |                                            |
|------------------------------------------------------|----------------------------|--------------------------------------------|
| Rope speed                                           | Boom hoisting and lowering | 55 m/min (4th layer of drum)               |
|                                                      | Bucket hoisting            | High speed 80 m/min,<br>Low speed 40 m/min |
|                                                      | Bucket digging             | High speed 80 m/min,<br>Low speed 40 m/min |
| Part lines                                           | Boom hoisting and lowering | 12 part lines                              |
|                                                      | Bucket hoisting            | 1 part line                                |
|                                                      | Bucket digging             | 1 part line                                |
| Counterweight                                        |                            | 7.0 tons                                   |
| Total weight (13 m boom + 0.8 m <sup>3</sup> bucket) |                            | 33.8 tons                                  |
| Average ground bearing pressure                      |                            | 0.61 kgf/cm <sup>2</sup>                   |

NOTE: Speeds change with load level.

**■ Bucket specifications**

| Classification | Capacity (m <sup>3</sup> ) | Weight (t) | Purpose                      |
|----------------|----------------------------|------------|------------------------------|
| Optional       | 0.6                        | 0.93       | General purpose digging      |
| Standard       | 0.8                        | 1.17       | General purpose digging      |
| Optional       | 1.0                        | 1.40       | Light duty digging, scraping |
| Optional       | 1.2                        | 1.60       | Light duty digging, scraping |

**■ Working rang and hoisting capacity**

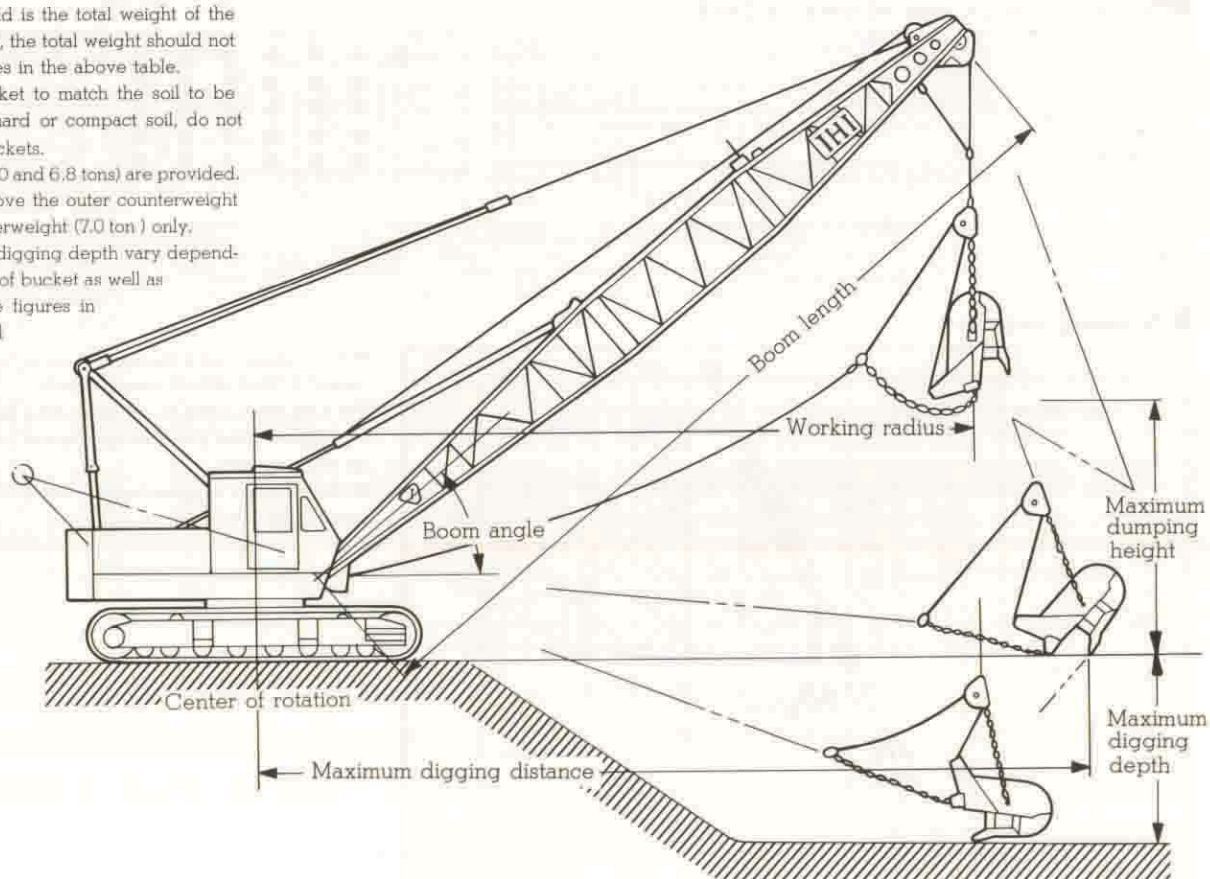
| Boom length (m)                 |                                         | 10   |      |      | 13   |      |      | 16   |      |      |
|---------------------------------|-----------------------------------------|------|------|------|------|------|------|------|------|------|
| Boom angle                      |                                         | 30°  | 40°  | 50°  | 30°  | 40°  | 50°  | 30°  | 40°  | 50°  |
| Working radius (m)              |                                         | 10.0 | 9.0  | 7.8  | 12.6 | 11.3 | 9.8  | 15.2 | 13.6 | 11.7 |
| Rated lifting load (metric ton) |                                         | 4.5  | 4.5  | 4.5  | 4.2  | 4.5  | 4.5  | 3.1  | 3.7  | 4.5  |
| Maximum digging distance (m)    |                                         | 11.9 | 11.4 | 10.6 | 15.0 | 14.3 | 13.3 | 18.1 | 17.3 | 15.9 |
| Maximum digging depth (m)       |                                         | 6.6  | 6.2  | 5.7  | 8.8  | 8.3  | 7.6  | 10.9 | 10.4 | 9.4  |
| Maximum dumping height (m)      | 0.6 m <sup>3</sup>                      | 3.1  | 4.4  | 5.3  | 4.2  | 6.0  | 7.6  | 5.7  | 8.0  | 9.9  |
|                                 | 0.8 m <sup>3</sup>                      | 2.9  | 4.2  | 5.1  | 4.0  | 5.8  | 7.4  | 5.5  | 7.8  | 9.7  |
|                                 | 1.0 m <sup>3</sup> , 1.2 m <sup>3</sup> | 2.5  | 3.8  | 4.7  | 3.6  | 5.4  | 7.0  | 5.1  | 7.4  | 9.3  |

● As the rated lifting load is the total weight of the bucket and selected load, the total weight should not exceed the weight figures in the above table.

● Carefully select a bucket to match the soil to be handled. For unusually hard or compact soil, do not use 1.0m<sup>3</sup> and 1.2m<sup>3</sup> buckets.

● Two counterweights (7.0 and 6.8 tons) are provided. For dragline work, remove the outer counterweight and use the inner counterweight (7.0 ton) only.

● Digging distance and digging depth vary depending on the size and type of bucket as well as working conditions. (The figures in the table are theoretical values.)

**■ Wire rope**

| Place of use    | Rope diameter (mm) × overall length (m) | Guaranteed strength (t) | Rope type |
|-----------------|-----------------------------------------|-------------------------|-----------|
| Hoisting        | φ20 × 45                                | 30.0                    | A         |
| Dragline        | φ20 × 30                                | 29.8                    | B         |
| Boom hoisting   | φ14 × 126                               | 14.9                    | A         |
| Boom suspension | φ28                                     | 59.7                    | A         |
| Dump            | φ12.5 × 5                               | 10.8                    | A         |

Rope type A : 6×F1 (29) IWRC preformed regular Z lay  
 B : 6×S (19) IWRC rung lay



# Clamshell

## Specifications

|                                                      |                                         |                                              |
|------------------------------------------------------|-----------------------------------------|----------------------------------------------|
| Maximum lift above ground                            |                                         | 13 m (19 m boom + 1.0 m <sup>3</sup> bucket) |
| Rope speed                                           | Boom hoisting and lowering              | 55 m/min (4th drum layer)                    |
|                                                      | Bucket opening and closing              | High speed 80 m/min,<br>Low speed 40 m/min   |
|                                                      | Bucket suspension hoisting and lowering | High speed 80 m/min,<br>Low speed 40 m/min   |
| Part lines                                           | Boom hoisting                           | 12 part lines                                |
|                                                      | Bucket opening and closing              | 6 part lines<br>(for all types of buckets)   |
|                                                      | Bucket suspension                       | 1 part line<br>(for all types of buckets)    |
| Counterweight                                        |                                         | 13.8 tons (7 + 6.8)                          |
| Total weight (13 m boom + 1.0 m <sup>3</sup> bucket) |                                         | 42.2 tons                                    |
| Average ground bearing pressure                      |                                         | 0.59 kg/cm <sup>2</sup>                      |

NOTE: Speeds change with load level.

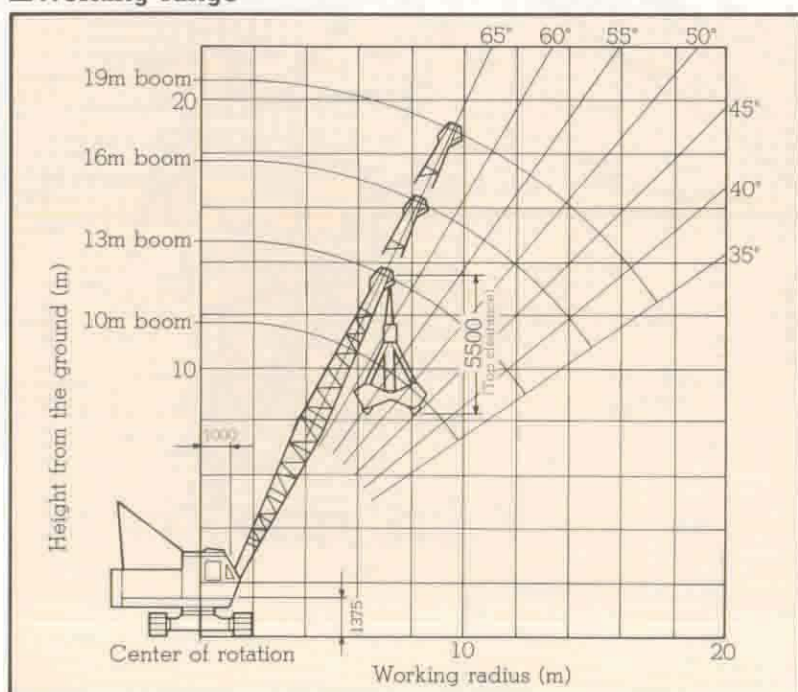
## Wire rope

| Place of use               | Rope diameter (mm) | Guaranteed strength (t) | Rope type | Length (m)                                         |
|----------------------------|--------------------|-------------------------|-----------|----------------------------------------------------|
| Bucket opening and closing | φ20                | 30.0                    | A         | 69 (with 19 m boom)                                |
| Bucket holding             | φ20                | 30.0                    | A         | 55 (with 19 m boom)                                |
| Boom hoisting              | φ14                | 14.9                    | A         | 126 (12 part lines)                                |
| Boom suspension (pendant)  | φ28                | 59.7                    | A         | 5.9 (for outer boom)                               |
|                            |                    |                         |           | 3 (for 3 m insert boom)                            |
|                            |                    |                         |           | 6 (for 6 m insert boom)                            |
| Weight type tagline        | φ10                | 5.5                     | B         | 38 (for 13 m boom)<br>56 (longer than 16 m boom) * |
| Spring type tagline        | φ10                | 5.5                     | B         | 30 *                                               |
| Hydraulic type tagline     | φ10                | 5.5                     | B         | 49 *                                               |

## Working range and allowable load

| Boom length (m)            |               | 10                        |     |     |     | 13   |      |     |     | 16   |      |      |      | 19   |      |      |      |
|----------------------------|---------------|---------------------------|-----|-----|-----|------|------|-----|-----|------|------|------|------|------|------|------|------|
| Boom angle                 |               | 35°                       | 45° | 55° | 65° | 35°  | 45°  | 55° | 65° | 35°  | 45°  | 55°  | 65°  | 35°  | 45°  | 55°  | 65°  |
| Working radius (m)         |               | 9.5                       | 8.4 | 7.1 | 5.7 | 12.0 | 10.6 | 8.9 | 6.9 | 14.4 | 12.7 | 10.6 | 8.2  | 16.9 | 14.8 | 12.3 | 9.5  |
| Rated lifting load (ton)   | Counterweight | 13.8 ton type             |     |     |     | 5.0  |      |     |     | 5.0  |      |      |      | 4.0  |      |      |      |
|                            | type          | 7.0 ton type              |     |     |     | 5.0  |      |     |     | 3.4  |      |      |      | 2.7  |      |      |      |
| Maximum dumping height (m) |               | 1.4                       | 2.7 | 3.9 | 4.8 | 3.1  | 4.9  | 6.4 | 7.5 | 4.8  | 7.0  | 8.8  | 10.2 | 6.5  | 9.1  | 11.3 | 13.0 |
| Maximum digging depth (m)  | Tagline type  | Weight type (stroke 20 m) |     |     |     | 17   |      |     |     | 17   |      |      |      | 17   |      |      |      |
|                            |               | Weight type (stroke 40 m) |     |     |     | —    |      |     |     | 29   |      |      |      | 24   |      |      |      |
|                            |               | Hydraulic type            |     |     |     | 36   |      |     |     | 29   |      |      |      | 24   |      |      |      |
|                            |               | Spring type               |     |     |     | 12   |      |     |     | 12   |      |      |      | 12   |      |      |      |

## Working range



## Clamshell bucket specifications

| Classification | Type | Capacity (m <sup>3</sup> ) | Weight (t) |
|----------------|------|----------------------------|------------|
| Optional       | HD   | 0.6                        | 3.0        |
| Optional       | GP   | 0.8                        | 2.1        |
| Standard       | GP   | 1.0                        | 2.5        |
| Optional       | WR   | 1.0                        | 2.0        |
| Optional       | WR   | 1.25                       | 1.6        |

Bucket type (Purpose)

HD : Heavy duty (Civil engineering, construction)

GP : General purposes (Heavy load handling)

WR : Wide rehandling (Medium load rehandling)

Rope type

A : 6×F1 (29) IWRC preformed regular Z lay

B : 6×19 hemp core regular Z lay

\* : optional.

● Rated lifting load is the upper limit of "bucket weight + load" during clamshell work.

Use a bucket suitable for the kind of the load required so that the allowable load figures in the table are not exceeded.

● The maximum dumping height is for a 1.0 m<sup>3</sup> standard bucket.





# Tower Crane

## Specifications

|                                           |                                  |
|-------------------------------------------|----------------------------------|
| Maximum lifting capacity × working radius | 9 t × 9.5 m                      |
| Maximum lift above ground                 | 52.5 m<br>(36 m post + 19 m jib) |

## Rated lifting loads

(throughout 360°; within 78% of tipping load; forward stability factor over 1.15) (Unit: metric ton)

| Working radius (m) | Post length (m) |          |         |
|--------------------|-----------------|----------|---------|
|                    | Under 30        | 33 – 36  | 27 – 33 |
|                    | Jib length (m)  |          |         |
|                    | Under 19        | Under 19 | 22      |
| 6.5                | 9.0             |          |         |
| 7                  | 9.0             |          |         |
| 7.5                | 9.0             |          |         |
| 8                  | 9.0             |          |         |
| 8.6                | 9.0             | 7.0      |         |
| 9                  | 9.0             | 7.0      |         |
| 9.5                | 9.0             | 7.0      |         |
| 10                 | 8.55            | 7.0      | 7.0     |
| 12                 | 7.0             | 7.0      | 7.0     |
| 13.7               | 6.05            | 6.05     | 6.05    |
| 14                 | 5.9             | 5.9      | 5.9     |
| 15                 | 5.5             | 5.5      | 5.5     |
| 16                 | 5.1             | 5.1      | 5.1     |
| 16.4               | 4.97            | 4.97     | 4.97    |
| 18                 | 4.5             | 4.5      | 4.5     |
| 19.1               | 4.2             | 4.2      | 4.2     |
| 22                 |                 |          | 3.6     |

## Combination of Tower post and Jib

(●: available combination)

| Jib length (m) | Post length (m) |    |    |    |    |    |    |
|----------------|-----------------|----|----|----|----|----|----|
|                | 18              | 21 | 24 | 27 | 30 | 33 | 36 |
| 13             | ●               | ●  | ●  |    |    |    |    |
| 16             | ●               | ●  | ●  | ●  | ●  |    |    |
| 19             |                 | ●  | ●  | ●  | ●  | ●  | ●  |
| 22             |                 |    |    | ●  | ●  | ●  |    |

## Wire rope

| Place of use          | Rope type | Rope dia. (mm) × length (m) | Guaranteed strength (t) |
|-----------------------|-----------|-----------------------------|-------------------------|
| Load hoisting         | B         | 20 × 170                    | 24.8                    |
| Tower jib hoisting    | A         | 16 × 156                    | 19.2                    |
| Tower post hoisting   | A         | 16 × 156                    | 19.2                    |
| Tower jib suspension  | C         | 28                          | 59.3                    |
| Jib strut suspension  | C         | 28                          | 59.3                    |
| Tower post suspension | A         | 31.5                        | 74.9                    |
| Jib limit stop        | A         | 14                          | 13.5                    |

Rope type A: 6 × Fi(29) IWRC preformed regular Z lay

B: 4 × F (a + 40) Monorope Sp C: 6 × Fi(25) IWRC

## Tower crane working range and lifting load

