

BS ISO 4306-3:2016



BSI Standards Publication

Cranes — Vocabulary

Part 3: Tower cranes

National foreword

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Cranes — Vocabulary —
Part 3:
Tower cranes

Appareils de levage à charge suspendue — Vocabulaire —
Partie 3: Grues à tour



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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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The committee responsible for this document is ISO/TC 96, *Cranes*, Subcommittee SC 7, *Tower cranes*.

This fourth edition cancels and replaces the third edition (ISO 4306-3:2003), which has been technically revised. It also incorporates the Amendment ISO 4306-3:2003/Amd 1:2011.

ISO 4306 consists of the following parts, under the general title *Cranes — Vocabulary*:

- *Part 1: General*
- *Part 2: Mobile cranes*
- *Part 3: Tower cranes*
- *Part 5: Bridge and gantry cranes*

Cranes — Vocabulary —

Part 3: Tower cranes

1 Scope

ISO 4306 as a whole establishes a vocabulary of the most commonly used terms in the field of cranes.

This part of ISO 4306 gives the general definition of a tower crane and illustrates the terminology used with each type of tower crane by the use of figures with referenced term numbers.

It is applicable to

- tower cranes that can be assembled and dismantled (by element or self-erecting cranes),
- permanently erected tower cranes, and
- mobile self-erecting tower cranes.

It is not applicable to

- mobile cranes, or
- erection masts, with or without jibs.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1

tower crane

power-driven slewing jib type crane with the jib located at the top of a tower, which stays approximately vertical in the working position

Note 1 to entry: A tower crane is equipped with means for raising and lowering suspended loads and for the configuration of such loads by changing the load-lifting radius, travelling of the load, slewing or travelling of the complete appliance. Some tower cranes perform several, but not necessarily all of these movements.

2.1.1

tower crane erected from parts

tower crane (2.1) which is transported to site in parts and erected with use of a separate lifting appliance where the design of the crane allows the crane to remain in the erected position in out-of-service conditions and to be dismantled for transportation to another site

2.1.2

self-erecting tower crane

tower crane (2.1) which is transported to site and mostly erected without use of a separate lifting appliance, where the design of the crane allows the crane to remain in the erected position in out-of-service conditions and to be lowered for transportation to another site

2.1.3

mobile self-erecting tower crane

self-erecting tower crane (2.1.2) mounted on a self-propelled or trailer mounted chassis

3 Types of tower crane

The following four groups of characteristics describe tower cranes:

- a) assembly:
 - erected from parts;
 - self-erecting (rapid erection without use of an auxiliary appliance);
- b) slewing level:
 - top slewing;
 - bottom slewing;
- c) type of jib (boom):
 - horizontal jib (also hammerhead type);
 - luffing jib (boom);
 - articulated jib (also gooseneck jib);
 - extending jib;
 - jack-knife jib (boom);
- d) configuration:
 - travelling;
 - stationary (fixed);
 - climbing.

4 Nomenclature

4.1 General

A selection of different types of tower crane is shown in [Table 1](#), which refers to the appropriate figure.

The figures illustrate the terms, for which the definitions are self-evident. The terms are identified by their reference numbers.

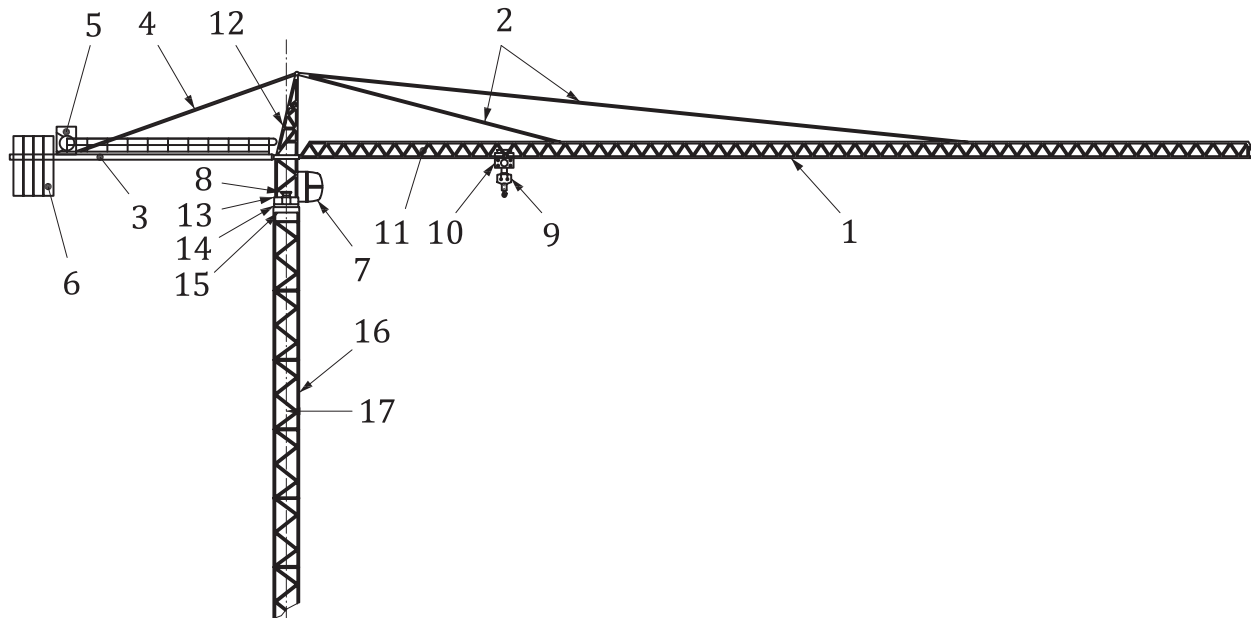
Table 1 — Types of tower crane

Type of crane	Section	Characteristic	Top slewing tower crane	Bottom slewing tower crane
Tower cranes erected from parts	Upper part	Horizontal jib	Figure 1	
		Luffing jib	Figure 2	
		Articulated jib	Figure 3	
		Extending jib	Figure 4	
		Jack-knife jib	Figure 5	
	Lower part	Travelling	Figure 8	
		Stationary	Figure 9	
	Climbing components	Climbing components for climbing inside a building (bottom climbing)	Figure 6	
Climbing components for climbing outside a building (top climbing)		Figure 7		
Self-erecting tower cranes				Figure 10
				Figure 11
Mobile self-erecting tower cranes				Figure 12

4.2 Tower cranes erected from parts

4.2.1 Upper part

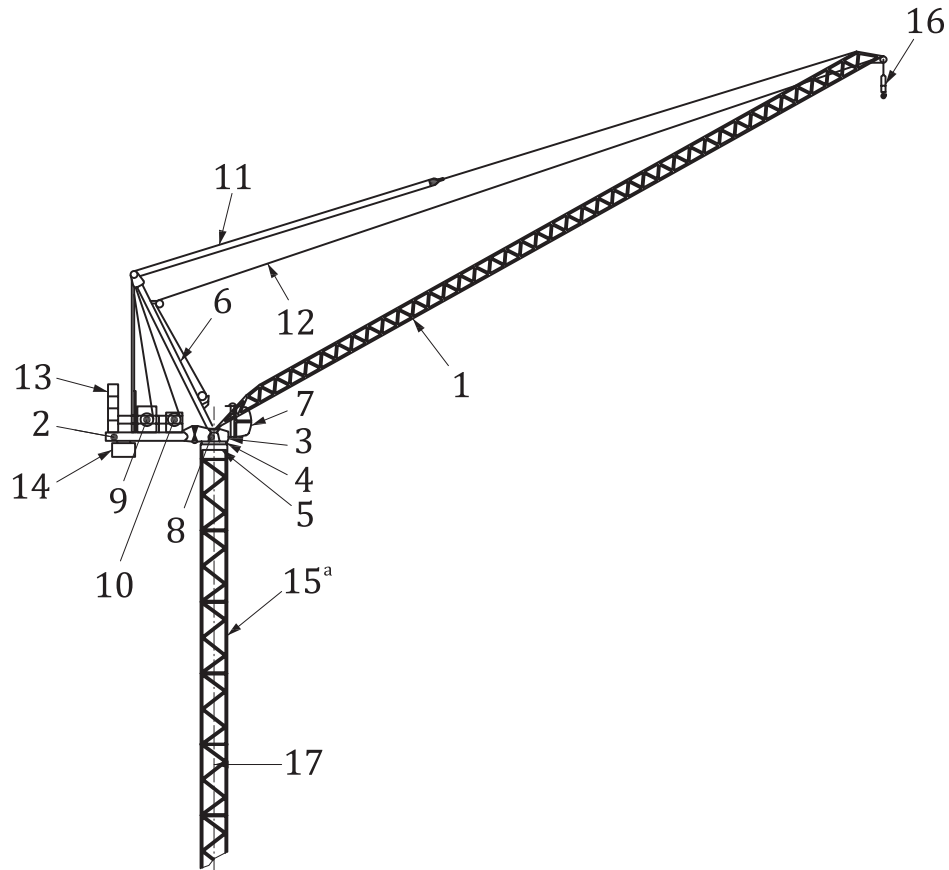
Examples are given in [Figure 1](#) to [Figure 5](#).



Key

- 1 jib
- 2 jib tie bar
- 3 counter-jib
- 4 counter jib tie bar
- 5 hoisting winch
- 6 counterweight
- 7 cabin
- 8 slewing mechanism
- 9 hook block
- 10 trolley
- 11 trolley travelling mechanism
- 12 tower top
- 13 slewing pivot
- 14 slewing ring
- 15 slewing ring support
- 16 tower
- 17 slewing axis

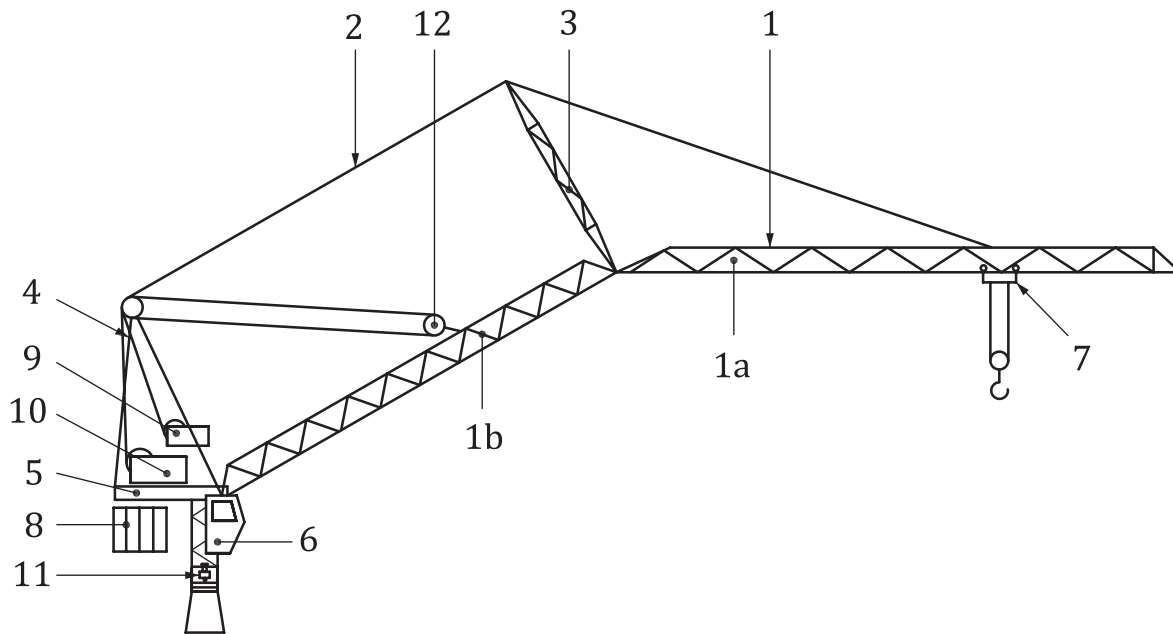
Figure 1 — Top slewing with horizontal jib



Key

- 1 luffing jib
- 2 counter jib
- 3 slewing pivot
- 4 slewing ring
- 5 slewing ring support
- 6 A-frame (gantry)
- 7 cabin
- 8 slewing mechanism
- 9 luffing mechanism
- 10 hoisting winch
- 11 luffing rope
- 12 auxiliary hoisting rope
- 13 fixed counterweight
- 14 movable ballast
- 15 tower
- 16 hook block
- 17 slewing axis
- a See [Figure 1](#).

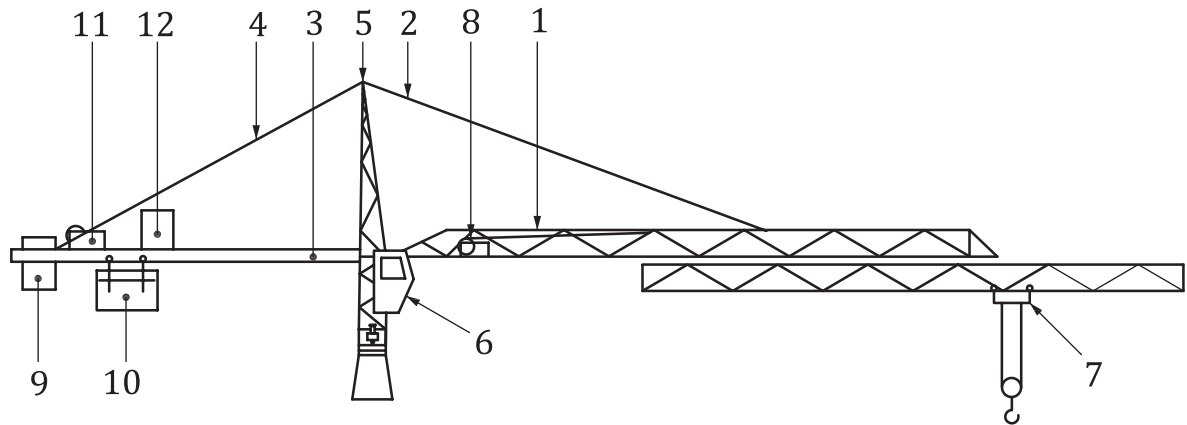
Figure 2 — Top slewing with luffing jib



Key

- 1 articulated jib
- 1a outer jib
- 1b inner jib
- 2 jib tie bar
- 3 jib guy frame
- 4 A-frame (gantry)
- 5 machinery platform
- 6 cabin
- 7 trolley
- 8 counterweight
- 9 luffing mechanism
- 10 hoisting winch
- 11 slewing mechanism
- 12 luffing rope pulley block

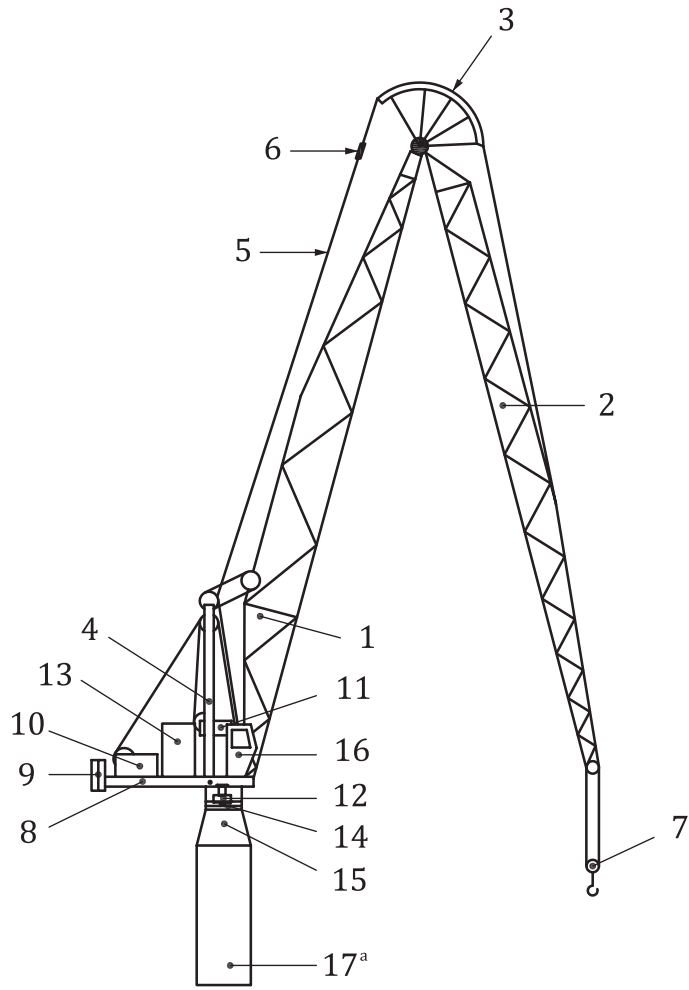
Figure 3 — Top slewing with articulated jib



Key

- 1 extending jib
- 2 jib tie bar
- 3 counter-jib
- 4 counter-jib tie bar
- 5 tower top
- 6 cabin
- 7 trolley
- 8 extending mechanism
- 9 fixed counterweight
- 10 movable counterweight
- 11 hoisting winch
- 12 electrical control cabinet

Figure 4 — Top slewing with extending jib



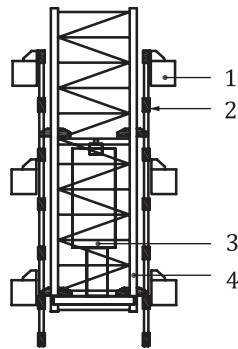
Key

- | | | | |
|---|--------------------|----|--------------------------------|
| 1 | inner jib | 10 | hoisting winch |
| 2 | outer jib | 11 | jack-knife luffing unit |
| 3 | rope guide support | 12 | slewing mechanism |
| 4 | A-frame (gantry) | 13 | electrical control cabinet |
| 5 | tie ropes | 14 | slewing ring |
| 6 | yoke | 15 | slewing ring support |
| 7 | hook block | 16 | cabin |
| 8 | counter-jib | 17 | tower |
| 9 | counterweight | a | See Figure 1 . |

Figure 5 — Top slewing with jack-knife jib

4.2.2 Climbing components

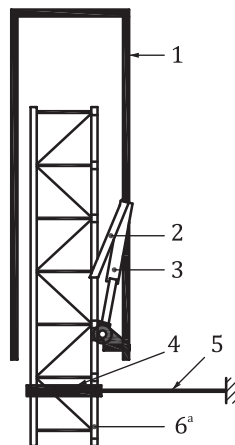
Examples are given in [Figure 6](#) and [Figure 7](#).



Key

- 1 climbing support frame
- 2 climbing ladder
- 3 hydraulic climbing cylinder
- 4 climbing tower section

Figure 6 — Climbing element for climbing inside a building (bottom climbing)



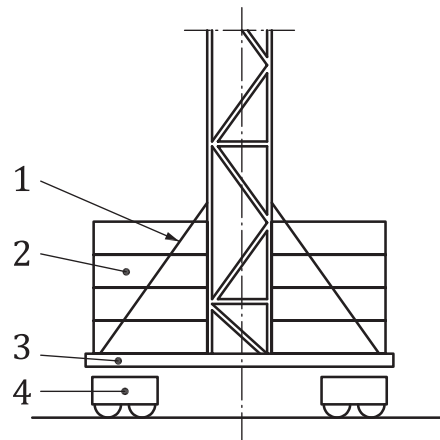
Key

- 1 climbing section
- 2 supporting shoe
- 3 hydraulic climbing cylinder
- 4 tie-in collar
- 5 tie in struts
- 6 tower
- a See [Figure 1](#).

Figure 7 — Climbing section for climbing outside a building (top climbing)

4.2.3 Lower part

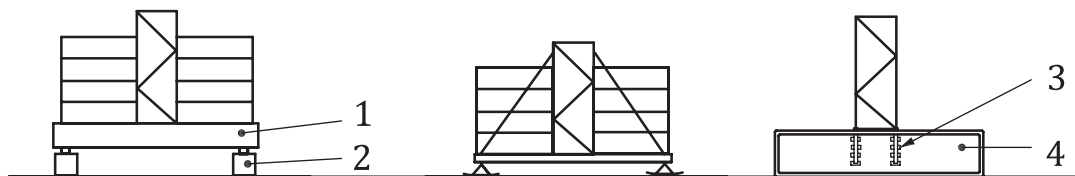
Examples are given in [Figure 8](#) and [Figure 9](#).



Key

- 1 tower strut
- 2 base ballast
- 3 undercarriage
- 4 bogie

Figure 8 — Travelling configuration



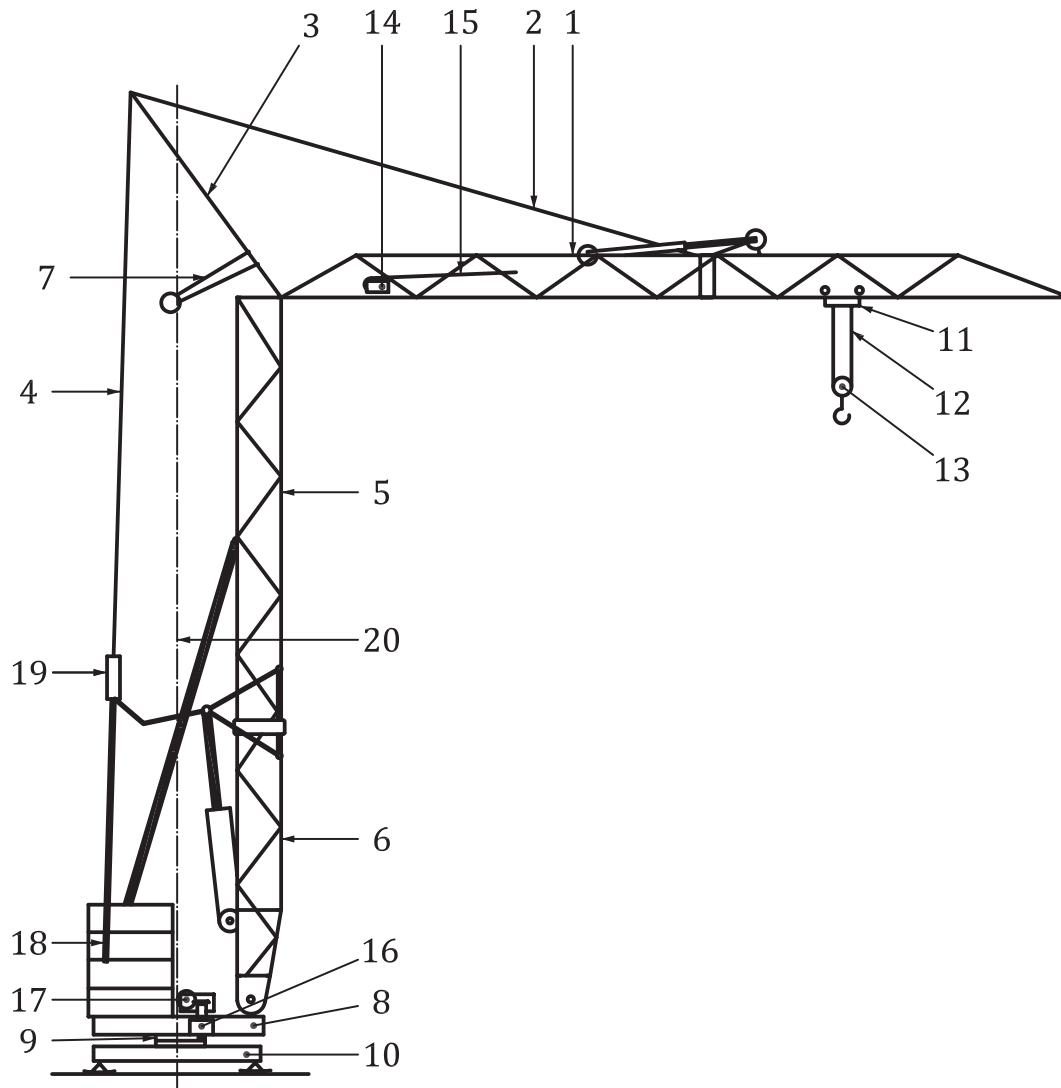
Key

- 1 base frame
- 2 footing blocks
- 3 foundation anchor
- 4 foundation

Figure 9 — Stationary configurations

4.3 Self-erecting tower cranes

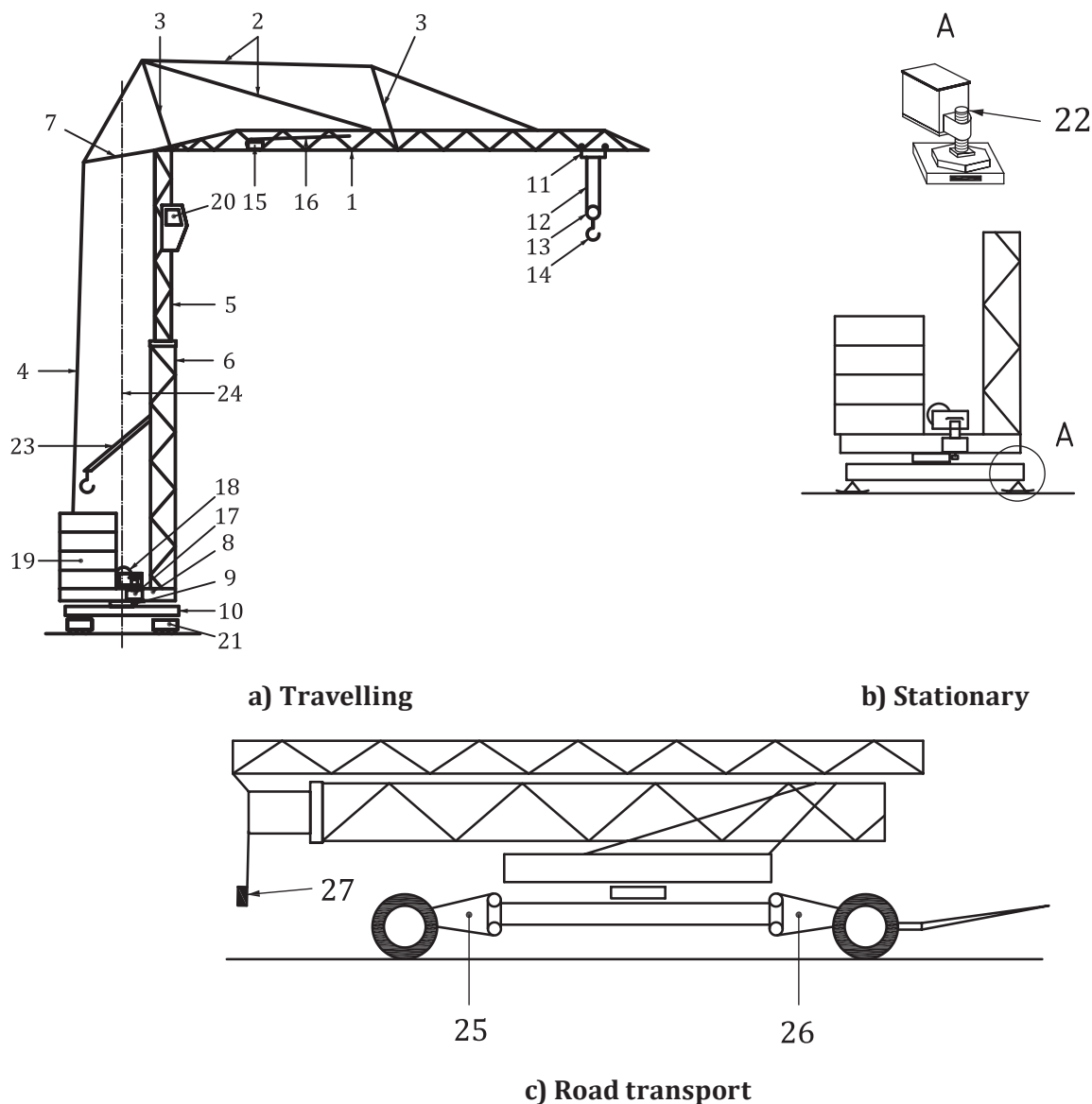
Examples are given in [Figure 10](#) and [Figure 11](#).



Key

- | | | | |
|----|--------------------|----|--|
| 1 | folding jib | 11 | trolley |
| 2 | jib tie bar (rope) | 12 | hoisting rope |
| 3 | jib support | 13 | hook block |
| 4 | tie bar (rope) | 14 | trolley travelling mechanism |
| 5 | tower, upper part | 15 | trolley travelling rope |
| 6 | tower, lower part | 16 | slewing mechanism |
| 7 | support truss | 17 | hoisting winch |
| 8 | slewing section | 18 | counterweight |
| 9 | slewing ring | 19 | adjusting connection lug for jib inclination |
| 10 | undercarriage | 20 | slewing axis |

Figure 10 — Bottom slewing with folding jib and folding tower



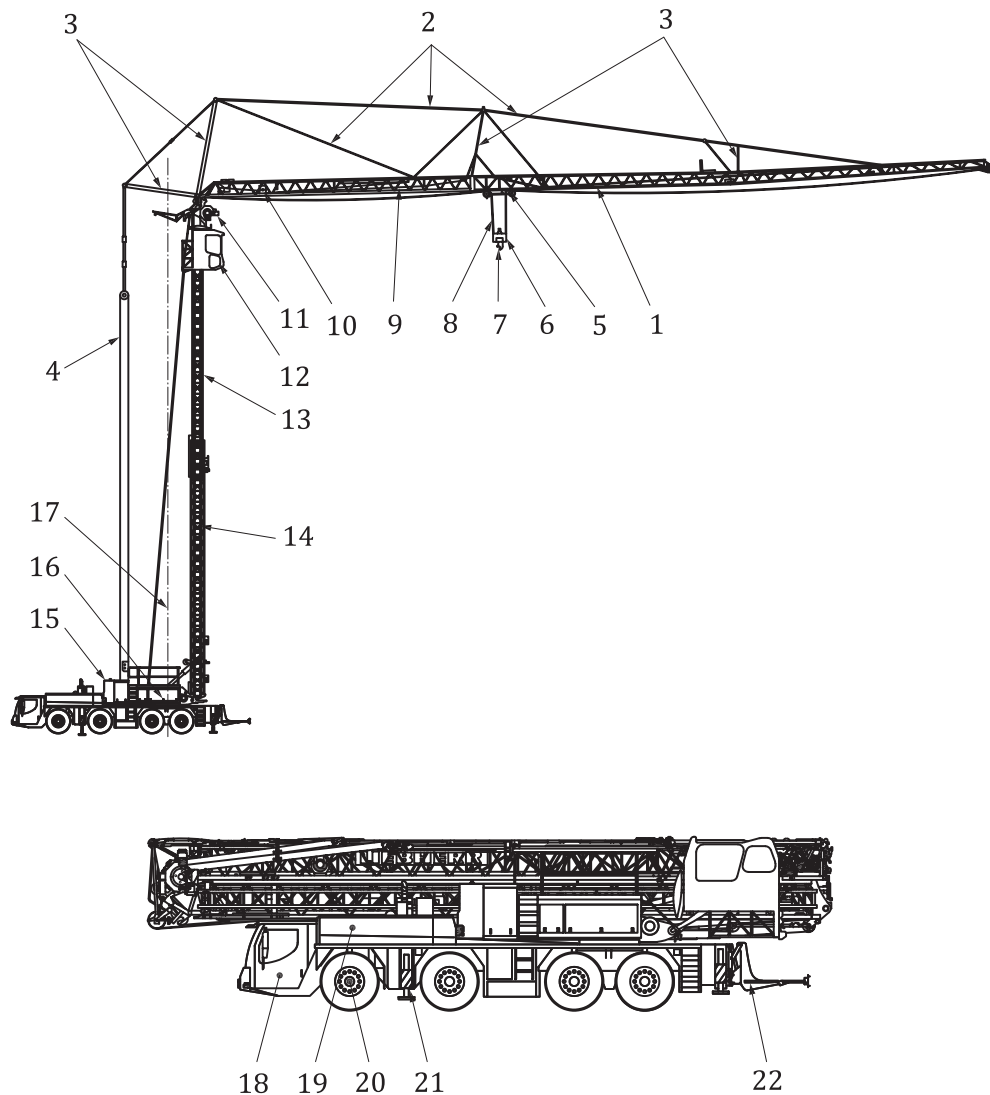
Key

- | | |
|------------------------------------|-----------------------------------|
| 1 jib | 15 trolley travelling mechanism |
| 2 jib tie bar (rope) | 16 trolley travelling rope |
| 3 jib support truss | 17 slewing mechanism |
| 4 tie bar (rope) | 18 hoisting winch |
| 5 tower upper section (telescopic) | 19 counterweight |
| 6 tower lower section | 20 cabin |
| 7 support truss | 21 bogie |
| 8 slewing section | 22 screw jack |
| 9 slewing ring | 23 ballasting device |
| 10 undercarriage | 24 slewing axis |
| 11 trolley | 25 rear axle |
| 12 hoisting rope | 26 front axle, steering type axle |
| 13 hook block | 27 lighting of road undercarriage |
| 14 hook | |

Figure 11 — Bottom slewing with horizontal jib and telescoping tower

4.4 Mobile self-erecting tower crane

An example is given in [Figure 12](#).



Key

- | | | | |
|----|----------------------------------|----|----------------------------|
| 1 | jib | 14 | tower lower section |
| 2 | jib tie bar (rope) | 15 | counterweight |
| 3 | jib support truss | 16 | slewing section, including |
| 4 | tie bar (rope) | — | hoisting winch, |
| 5 | trolley | — | slewing mechanism, |
| 6 | hook block | — | jib erecting winch, and |
| 7 | hook | — | switchgear cabinet. |
| 8 | hoist rope | 17 | slewing axis |
| 9 | trolley travelling rope | 18 | driver cabin |
| 10 | trolley travelling mechanism | 19 | engine |
| 11 | elevating cabin drive | 20 | axle |
| 12 | crane operator's cabin | 21 | outrigger |
| 13 | tower upper section (telescopic) | 22 | working equipment carrier |

Figure 12 — Mobile self-erecting tower crane

Bibliography

- [1] ISO 4306-1, *Cranes — Vocabulary — Part 1: General*

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