INTERNATIONAL STANDARD

ISO 9374-3

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2002-08-15

Cranes — Information to be provided for enquiries, orders, offers and supply

Part 3: Tower cranes

Appareils de levage à charge suspendue — Informations à fournir pour la recherche, la commande, la soumission et la fourniture

Partie 3: Grues à tour

Reference number
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 9374 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 9374-3 was prepared by Technical Committee ISO/TC 96, *Cranes*, Subcommittee SC 7, *Tower cranes*.

ISO 9374 consists of the following parts, under the general title *Cranes — Information to be provided for enquiries, orders, offers and supply*:

— *Part 1: General*

— *Part 3: Tower cranes*

— *Part 4: Jib cranes*

— *Part 5: Overhead travelling cranes and portal bridge cranes*

Annexes A and B form a normative part of this part of ISO 9374.

Cranes — Information to be provided for enquiries, orders, offers and supply

Part 3:
Tower cranes

1 Scope

This part of ISO 9374 specifies information to be provided

a) by the purchaser when enquiring for a tower crane,

b) by the purchaser when ordering a tower crane,

c) by a manufacturer when offering (tendering) for a tower crane,

d) by the manufacturer when supplying a tower crane.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 9374. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 9374 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 4306 (all parts), *Cranes — Vocabulary*

ISO 7363:1986, *Cranes and lifting appliances — Technical characteristics and acceptance document*

3 Terms and definitions

For the purposes of this part of ISO 9374, the terms and definitions given in ISO 4306 (all parts) apply.

4 Information to be provided by the purchaser with enquiry or order

The purchaser shall provide all data listed in annex A, to the fullest extent possible. This information should enable the crane manufacturer/supplier to provide a tower crane equipped to meet the purchaser's specifications.

Figures 1 and 3 illustrate the dimensions to be supplied, as applicable, by the purchaser.

NOTE The format of the data presented in annex A is shown as an example only.

5 Information to be provided by the manufacturer

5.1 Information to be provided when offering for a tower crane

The manufacturer/supplier shall provide the information, as applicable, listed in annex B.

NOTE The format of the data presented in annex B is shown as an example only.

5.2 Information to be provided when supplying a tower crane

5.2.1 Technical information

5.2.1.1 Site preparation and crane support design data

Data to be used by the crane support designers should be provided, as listed below:

a) vertical and horizontal forces and torsional and overturning moments applicable to the crane configuration(s) furnished. This data should indicate whether governing forces are due to in-service or out-of-service winds, and the applicable speed and direction of wind. For travelling cranes the data can be stated in terms of wheel or bogie loads;

b) maximum wind speed for which the travelling crane possesses adequate resistance to sliding, as determined by calculation, in the configuration(s) provided, and precautions that shall be taken at higher wind speeds than in-service speed;

c) rail track installation requirements;

d) anchorage arrangements for cranes to be installed on stationary (fixed) bases;

e) ballast requirements, as applicable;

5.2.1.2 Erection instructions

Data to be used by crane erection personnel should be provided, such as the following:

a) mass and dimensions of components and sub-assemblies;

b) recommended lifting attachment points, when applicable;

c) centre of gravity location for non-uniform components and sub-assemblies, if handled in normal sequence of erection/dismantling;

d) method and recommended sequence of assembly. Where applicable, warnings should be given to alert erection personnel when member strength or stability requires a particular method or sequence of erection;

e) details of critical component connections, including diagrams where necessary, describing and identifying.

   1) bolts, pins and other parts needed,

   2) the method of assembling the joint,

   3) the torque or tension to be applied to prestressed bolts,

   4) the point in time during the erection process for applying final torque or tension,

   5) the means for retaining components such as pins.

5.2.1.3 Installation, testing and use

The manufacturer shall provide technical information such as listed in annex B and test certificates for the crane to facilitate its installation, testing and use in accordance with ISO 7363 and as appropriate for the appliance.

5.2.1.4 Operating instructions, limitations and precautions

Information, data and recommendations should be provided for the use of the crane driver and supervisory personnel, which, in the judgement of the manufacturer, would foster operation of the crane within the requirements of the design and would reduce the possibility of mishap or damage.

5.2.1.5 Maintenance requirements and recommendations

This information should include identification of those members or locations it is advisable to periodically observe or test by non-destructive means for the purpose of detecting the onset of metal fatigue, the loosening of prestressed bolts, or wear affecting the ability of the crane to support rated loads.

5.2.1.6 Design characteristics affecting competent use of the crane

In addition to the information called for in 5.2.1.2, data such as those listed below should be provided:

a) location, proper settings and adjustments, and functioning of limiting and indicating devices;

b) location and required settings of hydraulic or pneumatic pressure-relief valves and locations of points where circuit pressures can be checked;

c) the manufacturer's recommendations for frequency of inspection as a function of the severity of service.

5.2.2 Dimensions

The manufacturer shall provide dimensional data appropriate to the configuration(s) of the crane furnished, such as those dimensions shown in Figures 2, 4 and 5.

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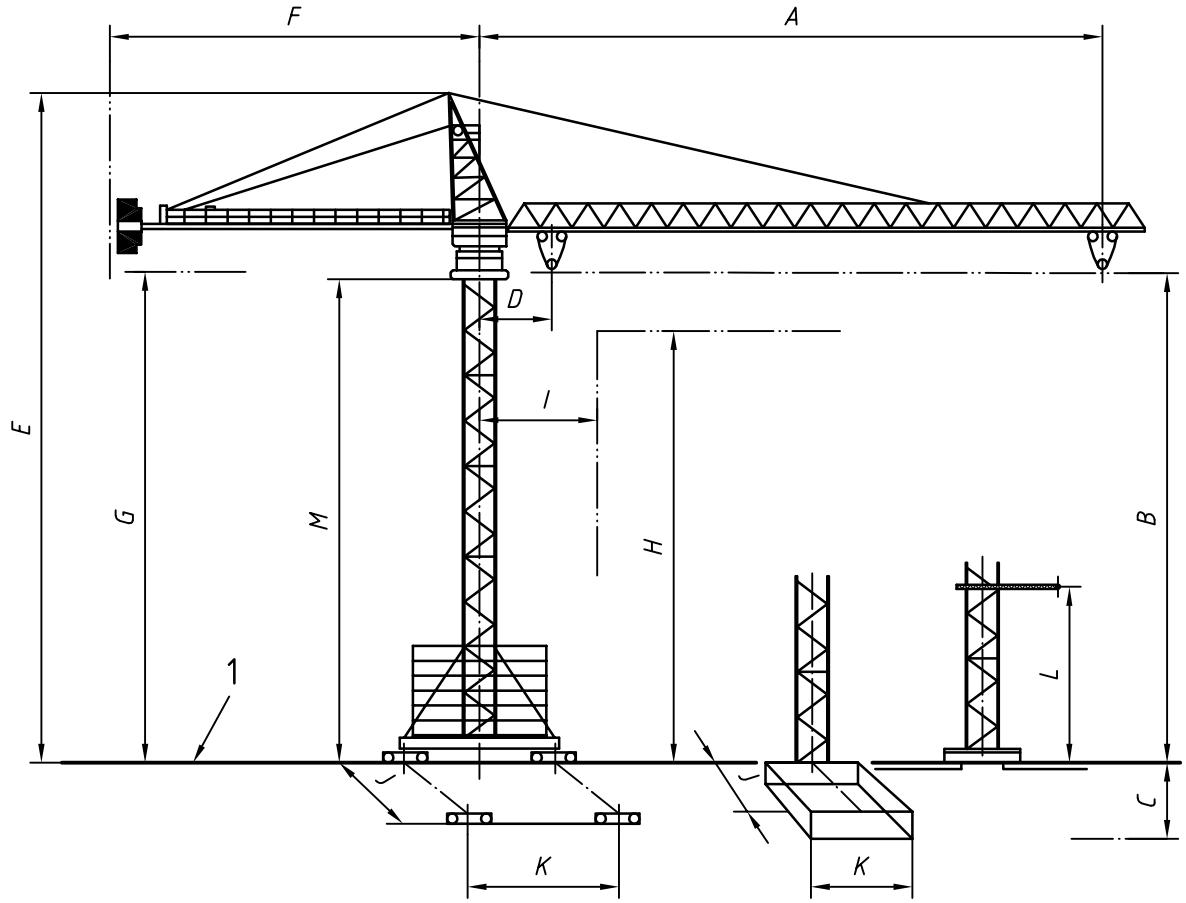
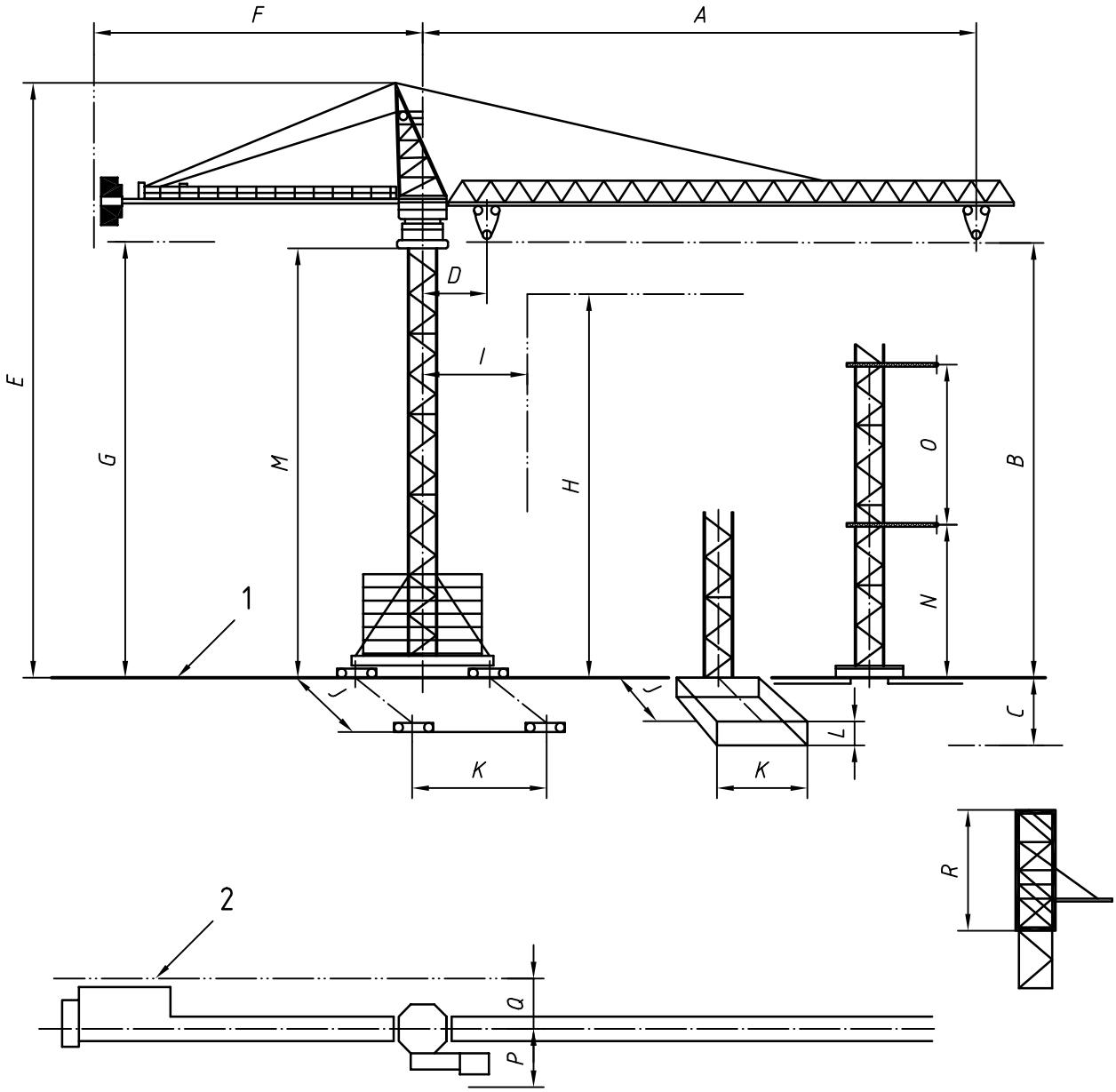


Key

1	Datum	*G*	Clearance under tail swing
A	Maximum radius	*H*	Maximum height of the obstruction
B	Maximum hook height above the datum	*I*	Minimum distance to the obstruction
C	Maximum hook movement below the datum	*J*	Track rail gauge, or foundation width
D	Minimum radius	*K*	Track rail wheelbase, or foundation length
E	Maximum height to the top of the cat head	*L*	Maximum free-standing height of tower
F	Tail radius	*M*	Distance to the first tie

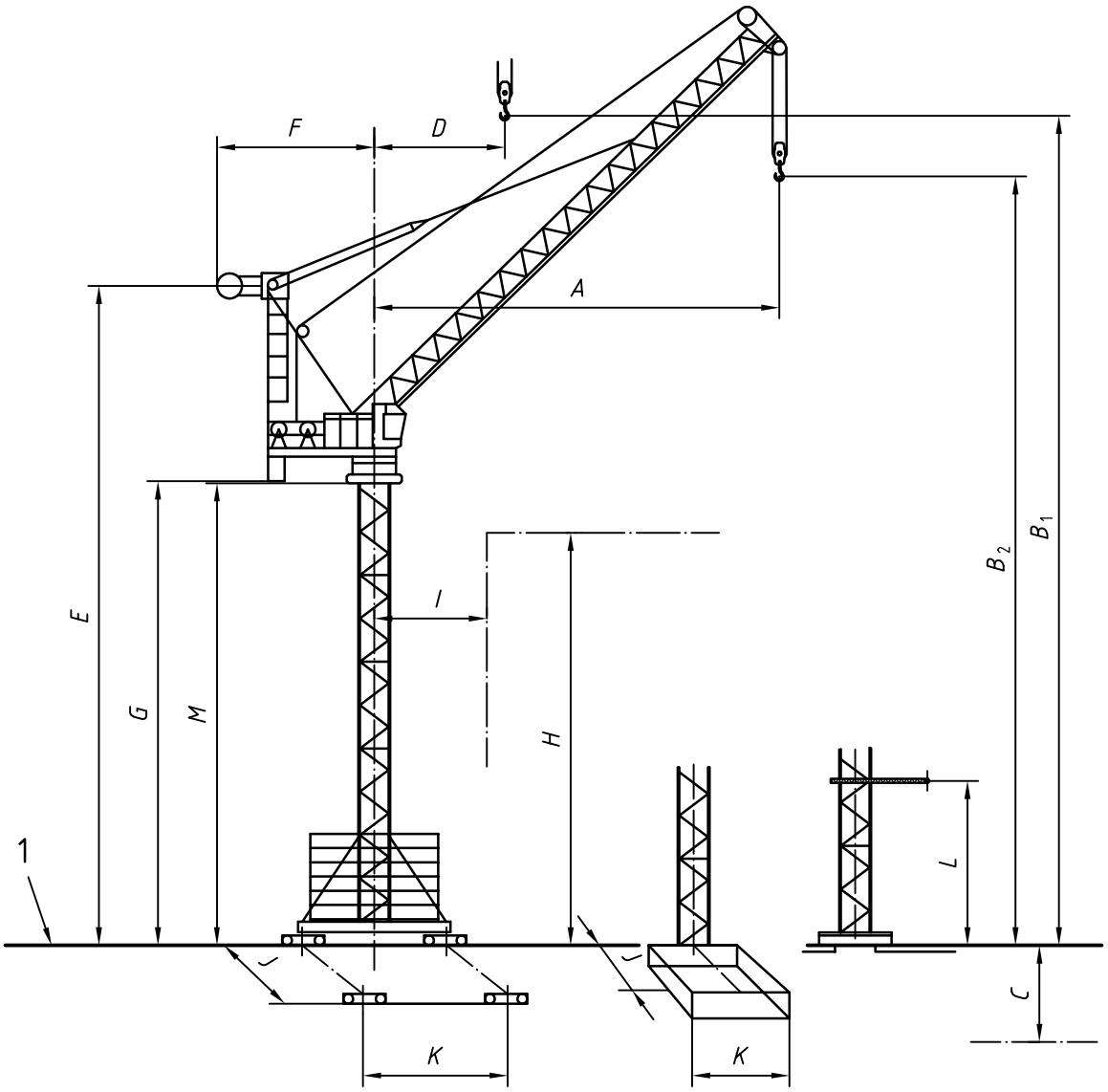
Figure 1 — Examples of dimensions to be provided by the purchaser, as applicable



Key

1	Datum	*I*	Minimum distance to the obstruction
2	Building line	*J*	Track rail gauge, or foundation width
A	Maximum radius	*K*	Track rail wheelbase, or foundation length
B	Maximum hook height above the datum	*L*	Depth of foundation
C	Maximum hook movement below the datum	*M*	Maximum free-standing height of tower
D	Minimum radius	*N*	Distance to the first tie
E	Maximum height to the top of the cat head	*O*	Distance between the ties
F	Tail radius	*P*	Minimum clearance, cab side
G	Clearance under tail swing	*Q*	Minimum clearance, other side
H	Maximum height of the obstruction	*R*	Height of climbing frame

Figure 2 — Examples of dimensions to be provided by the manufacturer, as applicable



Key

1	Datum	G	Clearance under tail swing
A	Maximum radius	H	Maximum height of the obstruction
B_1	Maximum hook height above the datum	I	Minimum distance to the obstruction
B_2	Maximum hook height above the datum	J	Track rail gauge, or foundation width
C	Maximum hook height below the datum	K	Track rail wheelbase, or foundation length
D	Minimum radius	L	Distance to the first tie
E	Maximum height to the top of the cat head	M	Maximum free-standing height of tower
F	Tail radius		

Figure 3 — Examples of dimensions to be provided by the purchaser, as applicable

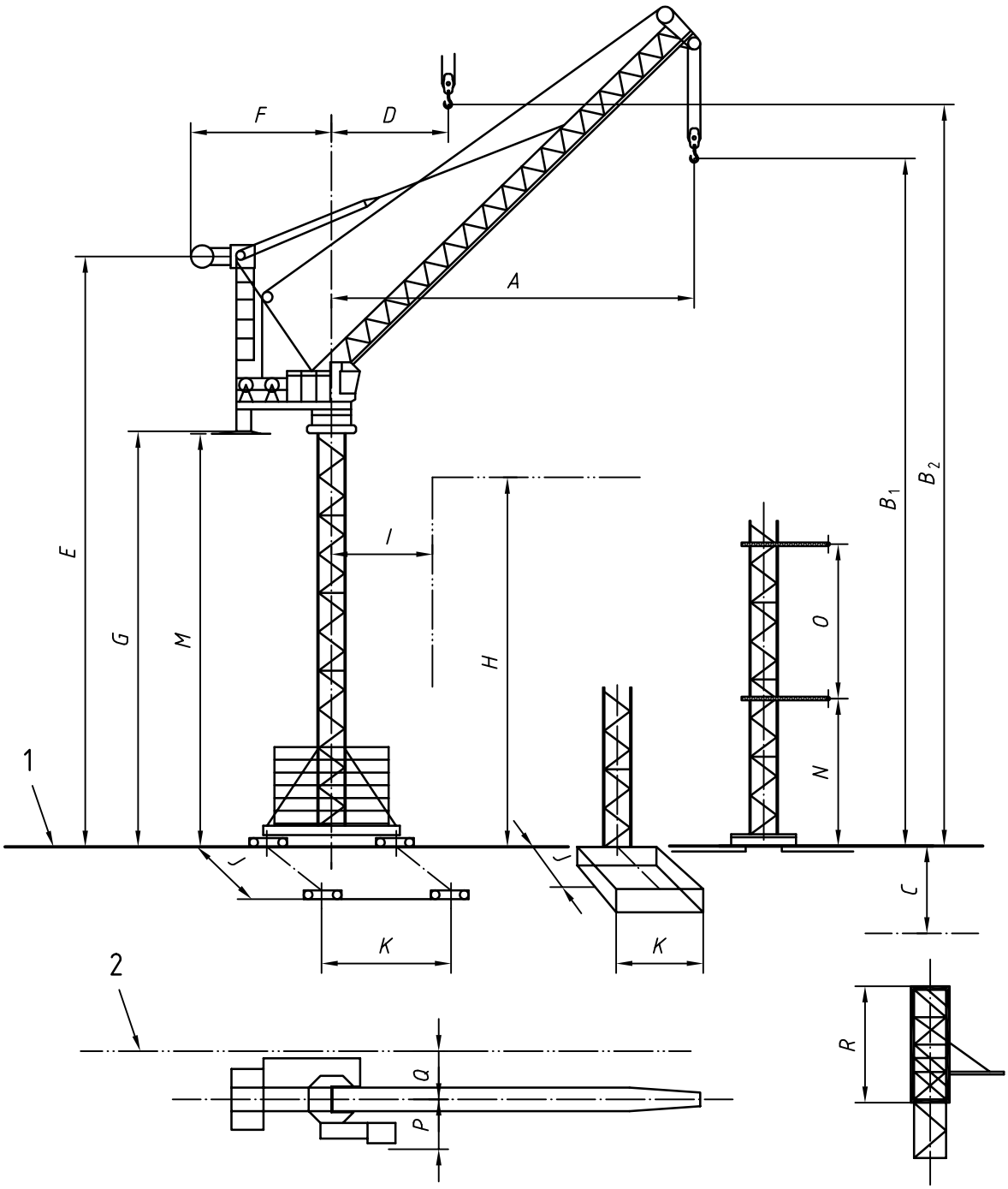


Figure 4 — Examples of dimensions to be provided by the manufacturer, as applicable *(continued)*

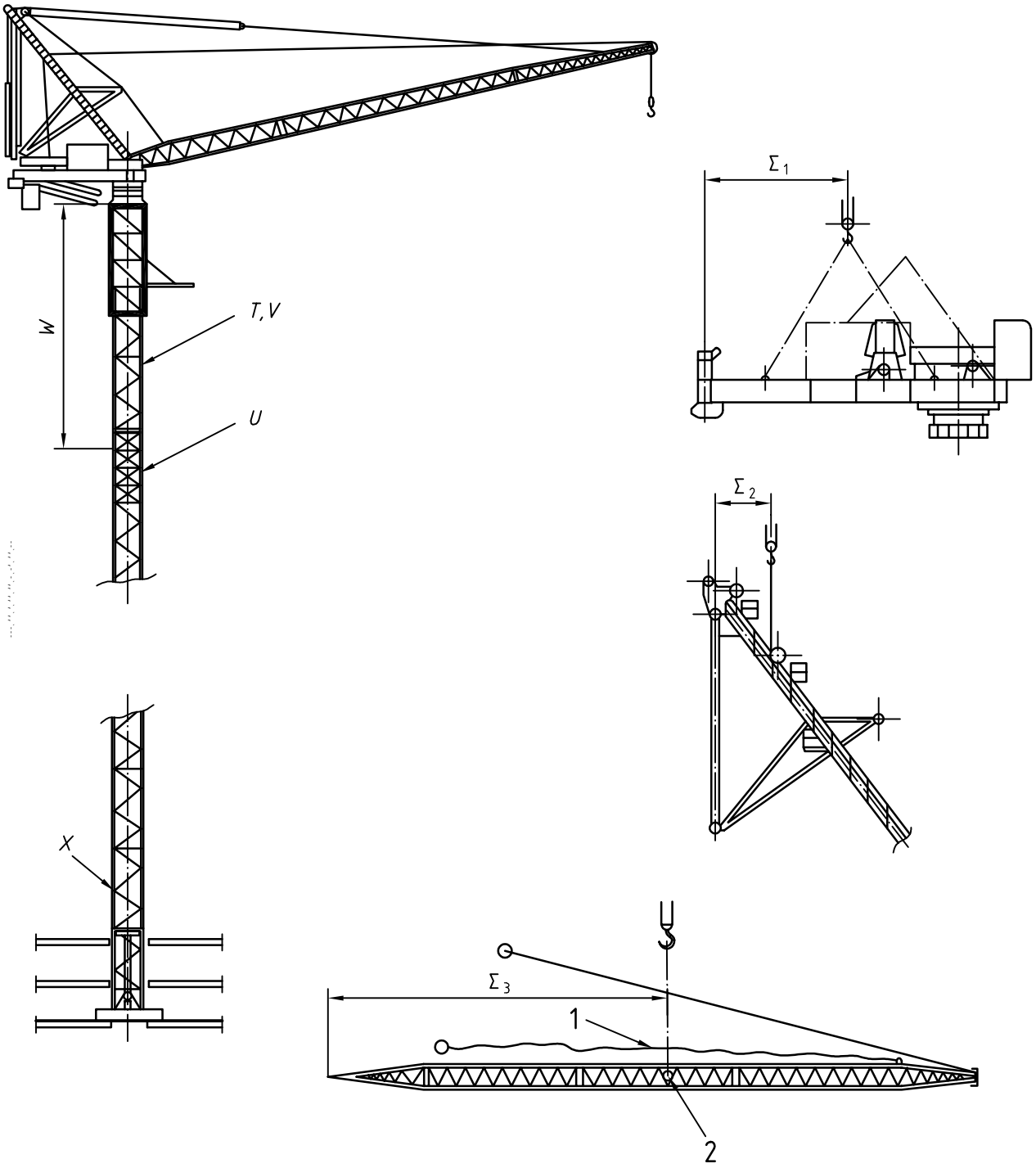
Table (example only)

Number of tower sections	Hook heights (m)	
	B_1	B_2
1	3,90	10,00
2	8,43	14,52
3	12,93	15,98

Key

1 Datum
2 Building line
A Maximum radius
B_1 Maximum hook height above the datum
B_2 Maximum hook height above the datum
C Maximum hook movement below the datum
D Minimum radius
E Maximum height to the top of the cat head
F Tail radius
G Clearance under tail swing
H Maximum height of the obstruction
I Minimum distance to the obstruction
J Track rail gauge, or foundation width
K Track rail wheelbase, or foundation length
L Depth of foundation
M Maximum free-standing height
N Distance to the first tie
O Distance between the ties
P Minimum clearance, cab side
Q Minimum clearance, other side
R Height of climbing frame

Figure 4 — Examples of dimensions to be provided by the manufacturer, as applicable



Key

1 Erection pendants
2 Centre of gravity
T Number of tower sections (standard)
U Number of reinforced tower sections
V Overall dimensions of a tower section - and mass
W Maximum projection above the top tie
X Data on internal climbing section - and mass
Σ Examples of schedule of component masses and location of the centres of gravity, for shipping and erection purposes

Figure 5 — Examples of additional data to be provided by the manufacturer, as applicable

Annex A
(normative)

Information to be provided by the purchaser with enquiry or order

Purchase enquiry or order form[a]		
Name of company		
Address		
Name of contact person		
Telephone number		
Crane to be installed in: ..... (town) ..... (country)		
Description of type of crane		
Number of cranes required		
Rated lifting capacity (net load)		
a) Main hoist:		
Maximum load and radius at that load: ..... t at ..... m		
Maximum outreach and load at that outreach; ..... m ..... with ..... t		
b) Auxiliary hoist:		
Maximum load and radius at that load: ..... t at ..... m		
Maximum outreach/radius at that outreach/radius: ..... m ..... with ..... t		
Vertical movement of hook required		
	"Hammerhead" Type Fig. 1	"Luffing Jib (boom)" Type Fig. 3
a) Main hoist:		
Above datum level: ..... m		at maximum radius ..... m
		at minimum radius ..... m
Below datum level: ..... m		..... m
b) Auxiliary hoist:		
Above datum level: ..... m		at maximum radius ..... m
		at minimum radius ..... m
Below datum level: ..... m		..... m
Location of driver's position ..... m		
Rail centres (if applicable) ..... m		
Description of crane duties:		
Classification to be used for the crane as a whole and for each mechanism as a whole to enable the crane and each mechanism to be matched to the duty for which it is required (either in accordance with ISO 4301-1 and ISO 4301-3, or as agreed between the manufacturer and the purchaser.)		
Type of load: ..... Material to be handled:		
Type of hook or lifting device:		
General state of atmosphere or climate (to include, for example, wind speed, rainfall and pollution):		
In-service wind speed: ..... m/s		
Air temperature conditions		
a) ambient: ..... °C		
b) maximum: ..... °C		
c) minimum: ..... °C		

[a] The format of the order form presented in this annex is given as an example only.

Power supply system <u>Diesel generator or Mains electric</u>

a) Cable drum or current collector system (specify):.....

b) Length of cable.....m

Power supply

a) Voltage: V

b) Phases:.....

c) Frequency:.....Hz

d) Conductors: .....

e) Is there a neutral?.....

If so, is it earthed? .....

Special service conditions

Specify any special service conditions that apply, typically:

a) use in hazardous gases, vapours, solids or volatile liquids;

b) use for processes such as galvanizing, pickling and hot dipping;

c) use in saline atmospheres, when the degree of exposure shall be stated;

d) the need for special precautions against termites;

e) any physical obstructions not apparent from the dimensions provided for clearances;

f) any variation in electrical supply greater than 6 % of nominal voltage;

g) any other conditions.

Rail centres:.....m

Types of rails:.....

Allowable wheel loading:.....N

Allowable load per metre of rail:.....N

Limit switches

State any special limit switching requirements.

Operating speeds

	Normal speed	Slow or creep speed (if supplied)
Main hoist	m/min	m/min
Auxiliary hoist	m/min	m/min
Traverse	m/min	m/min
Travel	m/min	m/min
Slew	m/min	m/min
Luff (time for maximum radius)	m/min	m/min

Any special requirements, statutory or technical:.....

.....

.....

.....

.....

Any clearance requirements (see Figure 1):

G:.....

H:.....

I:.....

Annex B
(normative)

Information to be provided by the manufacturer when offering tower crane(s)

Tender or Crane description[a]		
Name of supplier:		
Address:		
Name of person who may be contacted:		
Telephone number:		
Crane to be installed in: ..... (town) ..... (country)		
Description of crane type: ..... Model Number:		
Number of cranes:		
Rated lifting capacity (net load) (Rated load chart to be provided separately, as required):		
a) Main hoist:		
Number of falls of line:		
Maximum load and radius at that load: ..... t	at:	m
Maximum outreach and load at that outreach: ..... m	with:	t
b) Auxiliary hoist:		
Number of falls of line:		
Maximum load and radius at that load: ..... t	at:	m
Maximum outreach and load at that outreach: ..... m	with:	t
Vertical movement of hook required:		
	"Hammerhead" Type Fig. 1	"Luffing Jib (boom)" Type Fig. 3
a) Main hoist:		
Above rail level.		mrn
Below rail level:		mrn
b) Auxiliary hoist:		
Above rail level.		mrn
Below rail level:		mrn
Operating speeds:		
	Normal speed	Slow or creep speed (if supplied)
Main hoist	m/min	..... m/min
Auxiliary hoist	m/min	..... m/min
Traverse	m/min	..... m/min
Travel	m/min	..... m/min
Slew	m/min	..... m/min
Luff (time for maximum radius)	m/min	..... m/min
Wind conditions:		
Design wind conditions (as taken into account in the calculation of the crane):		
Type of load ..... Material to be handled:		
Type of hook or lifting device		
Type of rope:		
Main hoist:		
Auxiliary hoist:		
Traverse:		
Luff:		

[a] The format of the tender/crane description presented in this annex is given as an example only.

Height of driver's position:.....

Rail centres (if applicable):.....

Types of rails:.....

Wheel loading; In-service.....N Out-of-service.....N

Load per metre of rail: In-service .....N Out-of-service.....N

Limits switches/indicator fitted by motion: .....

The form of limit switches/indicators provided:.....

General state of atmosphere or climate (to include, for example, wind speed, rainfall, and pollution):.....

Air temperature conditions

a) ambient:..... °C

b) maximum:..... °C

c) minimum:..... °C

Description of crane duties .....

Classification to be used for the crane as a whole and for each mechanism as a whole to enable the crane and each mechanism to be matched to the duty for which it is required (either in accordance with ISO 4301-1 and ISO 4301-3 or as agreed between the manufacturer and the purchaser) .....

Power supply system

a) Cable drum or current collector system (specify):.....

b) Length of cable. ..... m

Power supply

a) Voltage: V

b) Phases:.....

c) Frequency:..... Hz

d) Conductors: .....

e) Is there a neutral?.....

If so, is it earthed? .....

Special service conditions

Specify any special service conditions that apply, typically:

a) use in hazardous gases, vapours, solids or volatile liquids;

b) use for processes such as galvanising, pickling and hot dipping;

c) use in saline atmospheres, when the degree of exposure shall be stated;

d) the need for special precautions against termites;

e) any physical obstructions not apparent from the dimensions provided for clearances;

f) any variation in electrical supply greater than 6 % of nominal voltage;

g) any other conditions.

Any special requirements, statutory or technical:

.....

.....

.....

.....

Any clearance requirements (see Figure 1):

G:.....

H: .....

I:.....

Bibliography

[1] ISO 4301-1:1986, *Cranes and lifting appliances — Classification — Part 1: General*

[2] ISO 4301-3:1993, *Cranes — Classification — Part 3: Tower cranes*

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