
**Cranes — Information to be
provided —**

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

*Appareils de levage à charge suspendue — Informations à fournir —
Partie 5: Ponts roulants et ponts portiques*

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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.

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 96, *Cranes*, Subcommittee SC 9, *Bridge and gantry cranes*.

This second edition cancels and replaces the first edition (ISO 9374-5:1991), which has been technically revised.

The main changes compared to the previous edition are as follows:

- new [Clause 3](#) Terms and definitions has been added;
- [Figures 1](#) to [6](#) have been redrawn;
- [Annex A](#) has been rearranged.

A list of all parts in the ISO 9374 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Cranes — Information to be provided —

Part 5:

Overhead travelling cranes and portal bridge cranes

1 Scope

This document specifies information to be provided by:

- a) a purchaser in enquiring about or ordering an overhead travelling crane or portal bridge crane;
- b) a manufacturer in tendering for or supplying an overhead travelling crane or portal bridge crane.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 7363, *Cranes and lifting appliances — Technical characteristics and acceptance documents*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/>
- IEC Electropedia: available at <https://www.electropedia.org/>

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

The purchaser should provide the information given in [Annex A](#) to enable the crane manufacturer to offer or to supply the most suitable overhead travelling crane or portal bridge crane and equipment to satisfy the duty requirements and service conditions.

5 Information to be provided by the manufacturer

5.1 Technical information

The information provided by the manufacturer shall include:

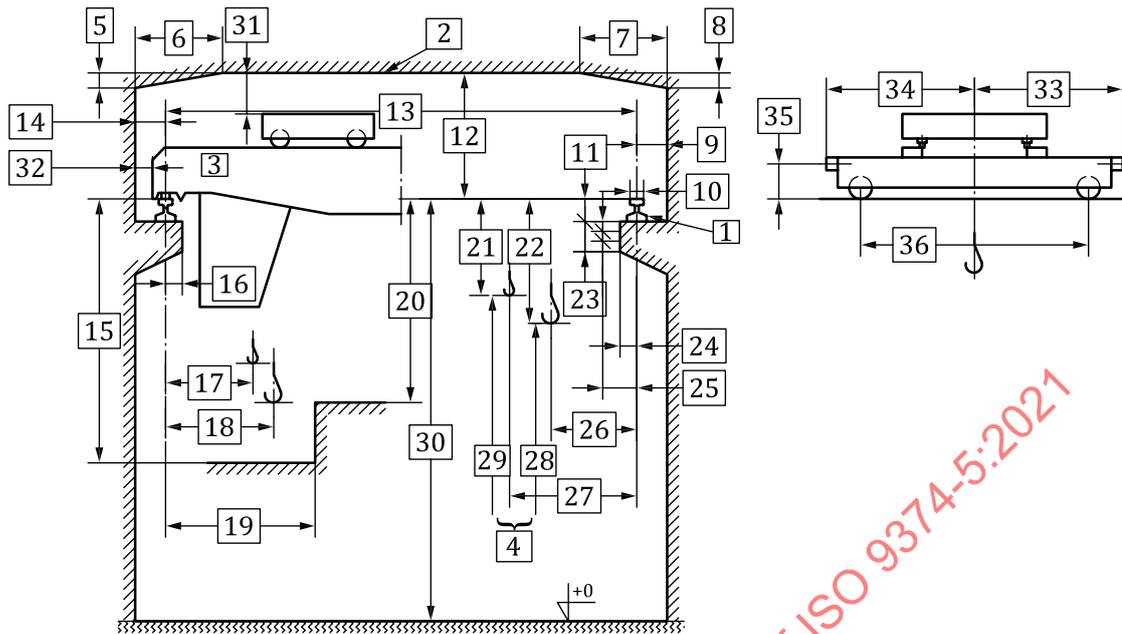
- a) technical information and test certificates for the crane to facilitate its installation, testing and use in accordance with ISO 7363 and as appropriate for the appliance;
- b) an instruction manual which should include details of routine servicing, inspection and maintenance of the crane;
- c) erection information, when requested.

All loads applied by the crane to its runway should be calculated in accordance with ISO 8686-5 or as agreed between the manufacturer and the purchaser.

5.2 Dimensions

The manufacturer should provide general arrangement drawings, with dimensions, showing that the purchaser's requirements, including the restrictions stated in [Figures 1](#) to [6](#), are met.

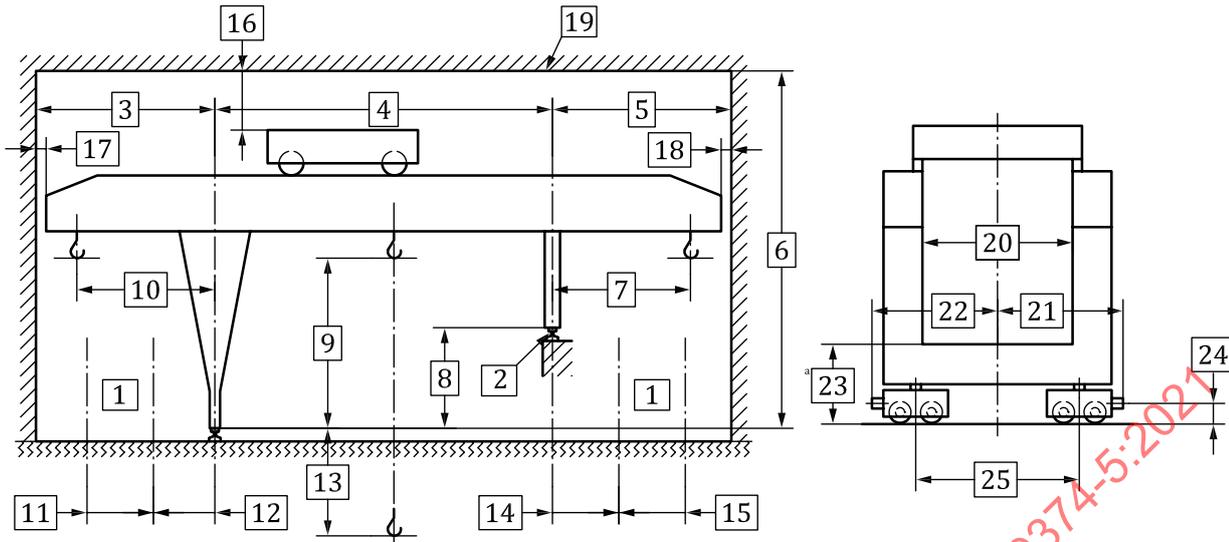
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Key

- | | | | |
|----|--|----|---|
| 1 | type of rail | 19 | distance between centre of rail and obstruction 2 |
| 2 | clearance line | 20 | distance between the top of rail and the top of obstruction 2 |
| 3 | crane | 21 | distance between the top of rail and the highest working position of auxiliary hook |
| 4 | lifting range | 22 | distance between the top of rail and the highest working position of main hook |
| 5 | inclination of the clearance line on left side | 23 | rail support beam outline |
| 6 | inclination of the clearance line on left side | 24 | distance between centre of rail and edge of rail support beam on right side |
| 7 | inclination of the clearance line on right side | 25 | distance between centre of rail and conductor |
| 8 | inclination of the clearance line on right side | 26 | main hook approach on right side |
| 9 | dimension from right side rail to clearance line | 27 | auxiliary hook approach on right side |
| 10 | rail width | 28 | main hook lifting range |
| 11 | rail height | 29 | auxiliary hook lifting range |
| 12 | distance between the top of rail and the clearance line | 30 | crane track height |
| 13 | span | 31 | clearance between highest point of crane and clearance line |
| 14 | dimension from left side rail to clearance line | 32 | clearance between outermost point of crane and clearance line |
| 15 | distance between the top of rail and the top of obstruction 1 | 33 | width on right side |
| 16 | distance between centre of rail and edge of rail support beam on left side | 34 | width on left side |
| 17 | auxiliary hook approach on left side | 35 | buffer height |
| 18 | main hook approach on left side | 36 | crane wheel base |

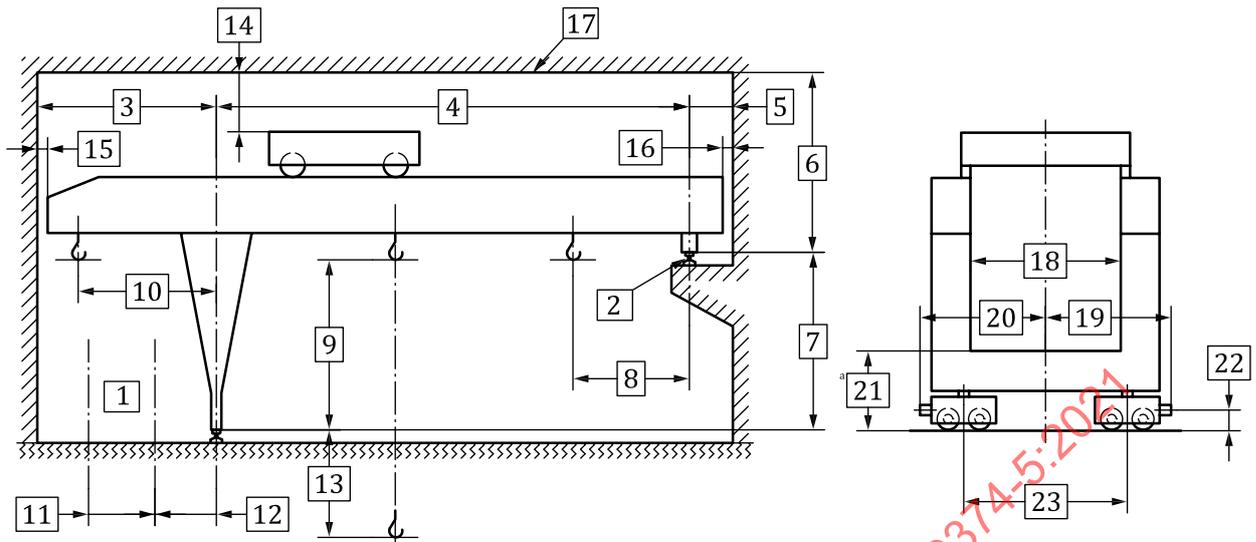
Figure 1 — Overhead travelling crane



Key

- | | | | |
|----|--|----|--|
| 1 | axis of railways | 14 | distance between centre of rail and railway on right side |
| 2 | type of rail | 15 | width of railway on right side |
| 3 | dimension from left side rail to clearance line | 16 | clearance between highest point of crane and clearance line |
| 4 | span | 17 | clearance between outermost point on left of crane and clearance line |
| 5 | dimension from right side rail to clearance line | 18 | clearance between outermost point on right of crane and clearance line |
| 6 | distance between the top of rail and the clearance line | 19 | clearance line |
| 7 | outreach from right side rail | 20 | clearance between the legs |
| 8 | rail height difference | 21 | width on right side |
| 9 | load-lifting height | 22 | width on left side |
| 10 | outreach from left side rail | 23 | height of the sill beam |
| 11 | width of railway on left side | 24 | buffer height |
| 12 | distance between centre of rail and railway on left side | 25 | crane wheel base |
| 13 | load-lowering height | a | Maximum, if restricted. |

Figure 2 — Portal bridge crane



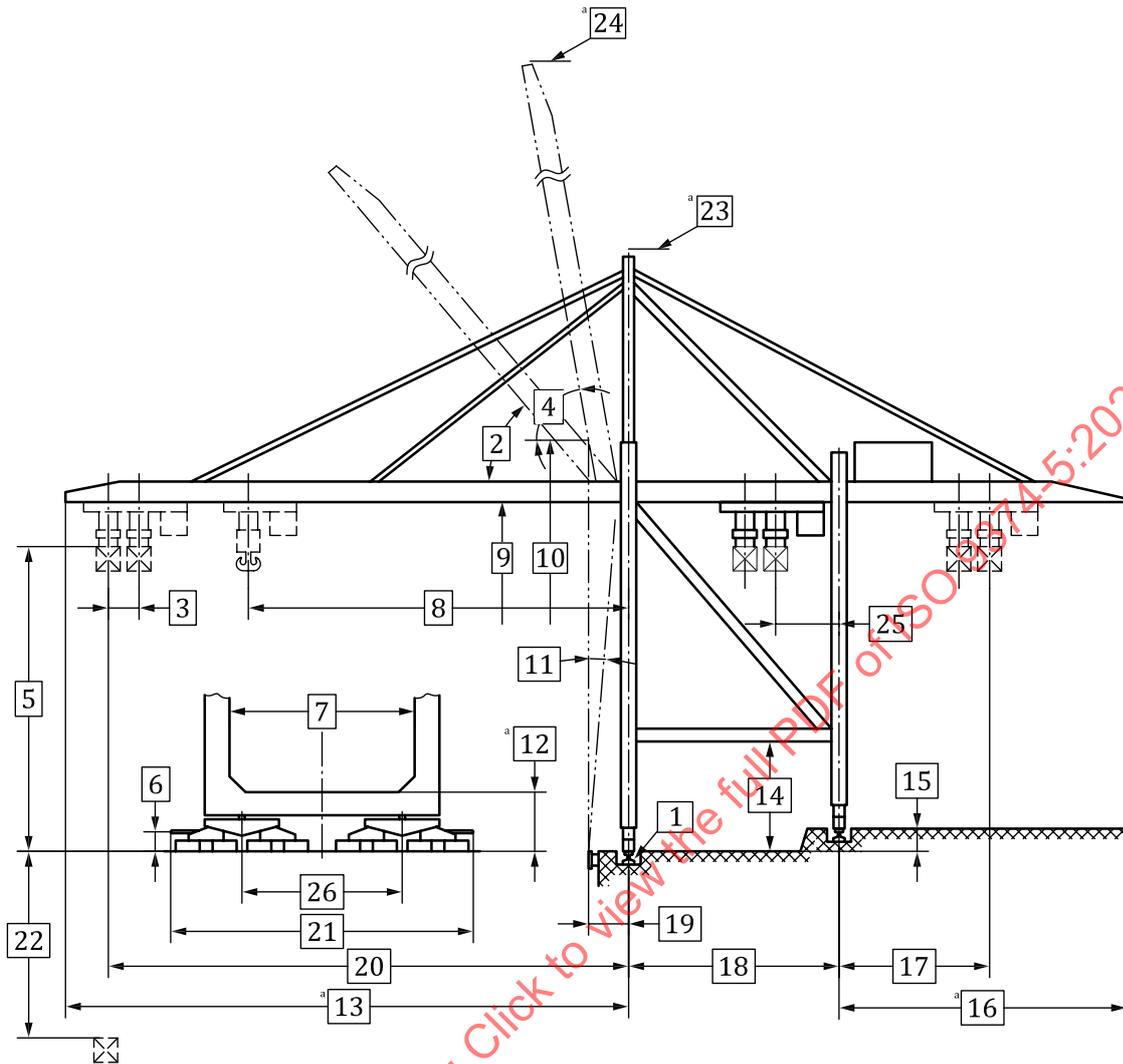
Key

- | | | | |
|----|--|----|--|
| 1 | axis of railways | 13 | load-lowering height |
| 2 | type of rail | 14 | clearance between highest point of crane and clearance line |
| 3 | dimension from left side rail to clearance line | 15 | clearance between outermost point on left of crane and clearance line |
| 4 | span | 16 | clearance between outermost point on right of crane and clearance line |
| 5 | dimension from right side rail to clearance line | 17 | clearance line |
| 6 | distance between the top of rail and the clearance line | 18 | clearance between the legs |
| 7 | rail height difference | 19 | width on right side |
| 8 | hook approach on right side | 20 | width on left side |
| 9 | load-lifting height | 21 | height of the sill beam |
| 10 | outreach from left side rail | 22 | buffer height |
| 11 | width of railway on left side | 23 | crane wheel base |
| 12 | distance between centre of rail and railway on left side | a | Maximum, if restricted. |

Figure 3 — Semi-portal bridge crane

The main differences between the various ship-to-shore cranes are as follows.

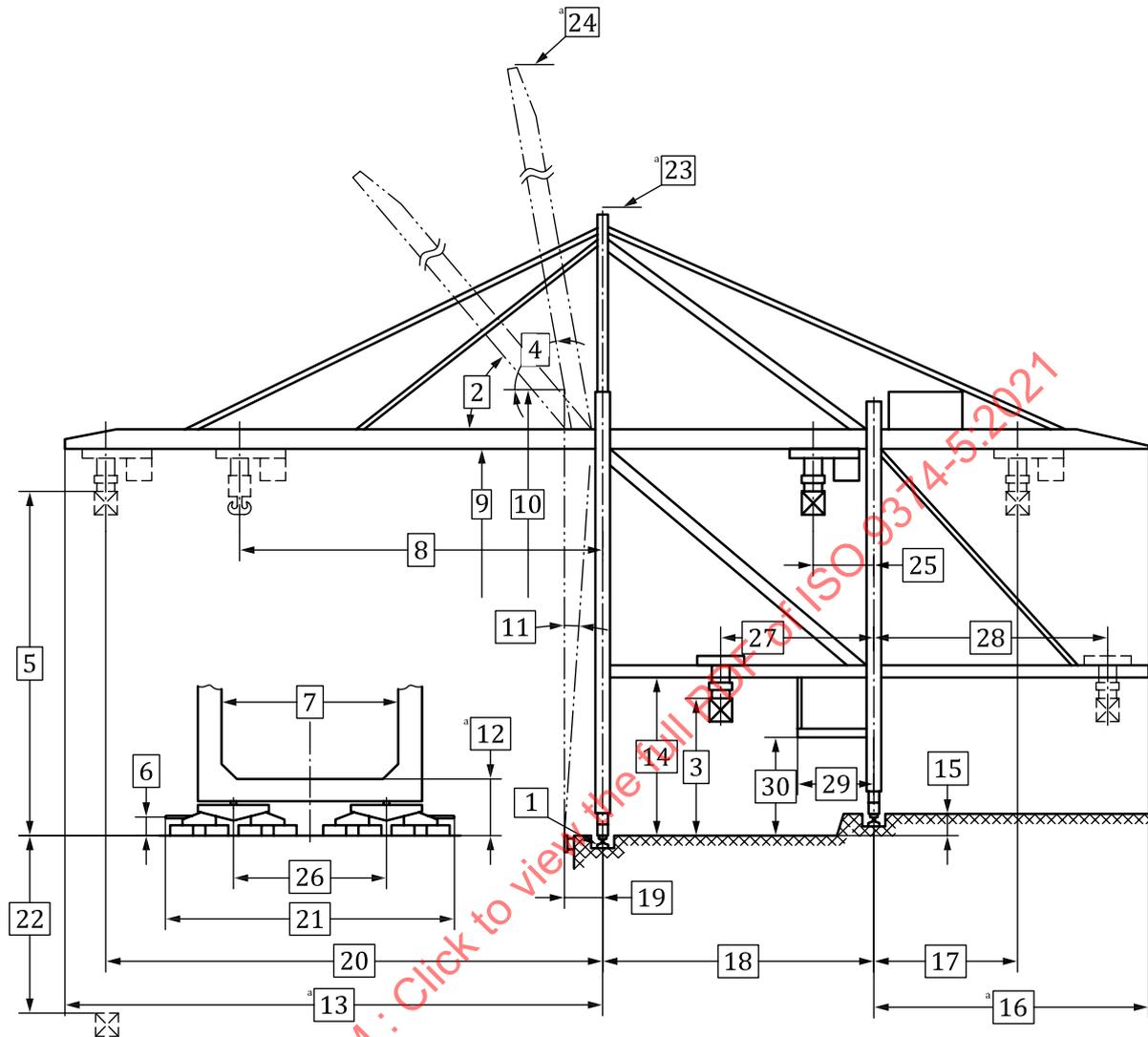
- a) [Figure 4](#): the dual (single) hoist ship-to-shore container crane should be capable of handling containers for loading onto or discharging from a container vessel. Two 40-ft (45-ft) or four 20-ft containers can be lifted together by the dual hoist crane. One 40-ft (45-ft) or two 20-ft containers can be lifted by the single hoist crane. On [Figure 4](#) the dual hoist crane is drawn. There is no key 3 for the single hoist crane.
- b) [Figure 5](#): the double trolley ship-to-shore container crane should be capable of handling containers for loading onto or discharging from a container vessel. There are main trolley operating on the upper girder and auxiliary trolley operating on the portal beam.
- c) [Figure 6](#): the bridge type grab ship unloader should be capable of handling bulk material for discharging from a bulk cargo vessel.



Key

- | | | | |
|----|---|----|--|
| 1 | type of rail | 15 | rail height difference |
| 2 | luffing angle from operating position to stowed or vessel avoiding position | 16 | distance from the end of the girder to landside rail |
| 3 | distance between two spreaders | 17 | backreach |
| 4 | luffing angle from operating position to stowed or maintenance position | 18 | span |
| 5 | load-lifting height above waterside rail top | 19 | distance from the fender to waterside rail |
| 6 | buffer height | 20 | outreach for spreader |
| 7 | clearance between the legs | 21 | buffer to buffer (buffer uncompressed) |
| 8 | outreach for cargo beam | 22 | load-lowering height below waterside rail top |
| 9 | clearance under boom down position | 23 | maximum height to the top of pylon |
| 10 | clearance under boom up position | 24 | maximum height to the top of the boom (boom up) |
| 11 | maximum vessel inclination angle | 25 | trolley parking position |
| 12 | height of the sill beam | 26 | crane wheel base |
| 13 | distance from the top of the boom to waterside rail centre | a | Maximum, if restricted. |
| 14 | clearance under portal | | |

Figure 4 — Dual (single) hoist ship-to-shore container crane



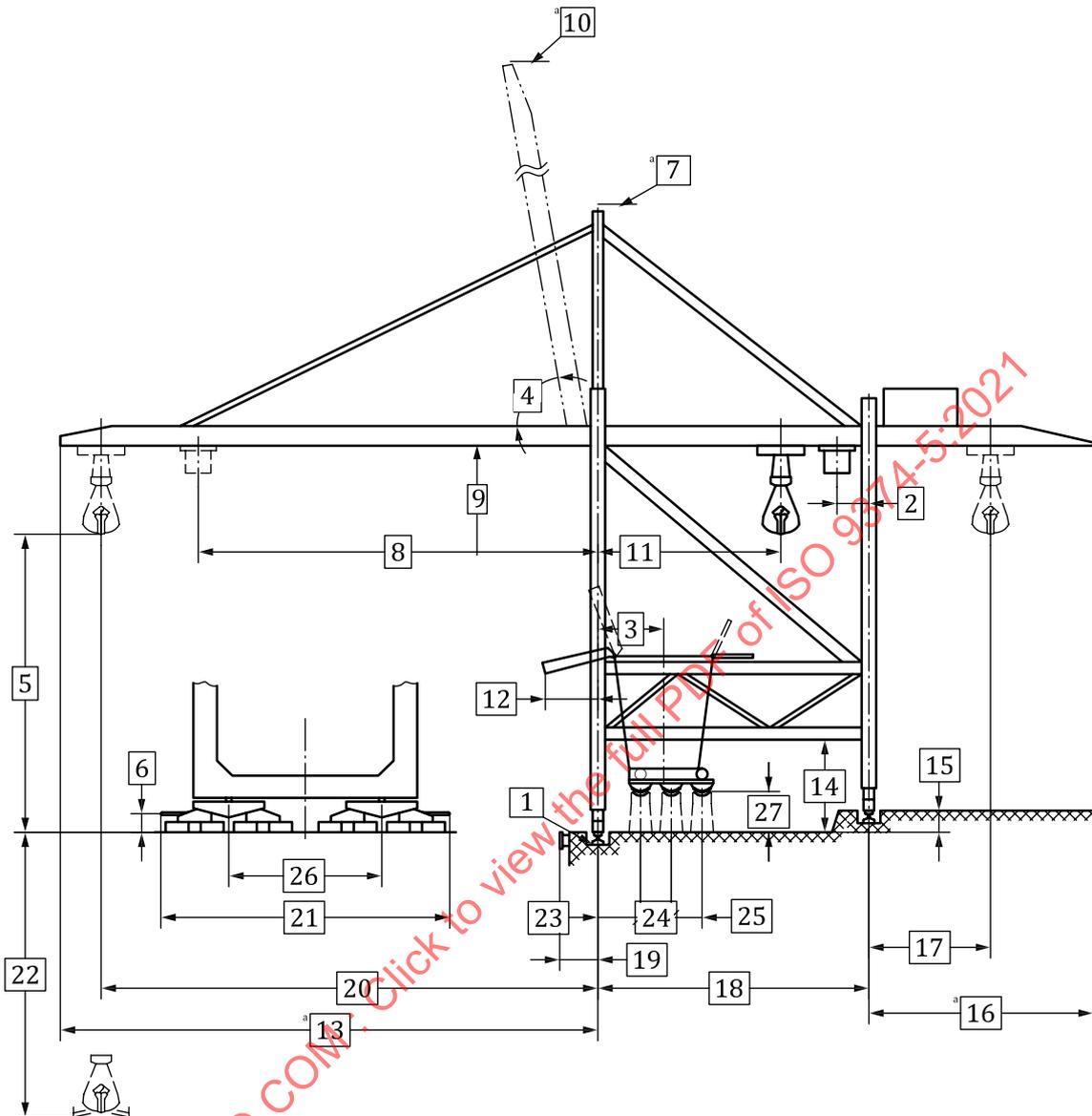
Key

- | | | | |
|----|---|----|--|
| 1 | type of rail | 17 | backreach of main trolley |
| 2 | luffing angle from operating position to stowed or vessel avoiding position | 18 | span |
| 3 | auxiliary trolley load-lifting height above waterside rail top | 19 | distance from the fender to waterside rail |
| 4 | luffing angle from operating position to stowed or maintenance position | 20 | outreach for spreader of main trolley |
| 5 | main trolley load-lifting height above waterside rail top | 21 | buffer to buffer (buffer uncompressed) |
| 6 | buffer height | 22 | main trolley load-lowering height below waterside rail top |
| 7 | clearance between the legs | 23 | maximum height to the top of pylon |
| 8 | outreach for cargo beam | 24 | maximum height to the top of the boom (boom up) |
| 9 | clearance under boom down position | 25 | trolley parking position |
| 10 | clearance under boom up position | 26 | crane wheel base |
| 11 | maximum vessel inclination angle | 27 | outreach of auxiliary trolley |
| 12 | height of the sill beam | 28 | backreach of auxiliary trolley |
| 13 | distance from the top of the boom to waterside rail centre | 29 | lashing platform width |
| | | 30 | |

- | | | | |
|----|--|--------------|----------------------------------|
| 14 | clearance under portal | 30 | clearance under lashing platform |
| 15 | rail height difference | ^a | Maximum, if restricted. |
| 16 | distance from the end of the girder to landside rail | | |

Figure 5 — Double trolley ship-to-shore container crane

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Key

- | | |
|---|---|
| 1 type of rail | 15 rail height difference |
| 2 operator's cabin parking position | 16 distance from the end of the girder to landside rail |
| 3 distance from unloading hopper centre to waterside rail | 17 backreach |
| 4 luffing angle from operating position to stowed or maintenance position | 18 span |
| 5 load-lifting height above waterside rail top | 19 distance from the fender to waterside rail |
| 6 buffer height | 20 outreach |
| 7 maximum height to the top of pylon | 21 buffer to buffer (buffer uncompressed) |
| 8 operator's cabin position from waterside rail | 22 load-lowering height below waterside rail top |
| 9 clearance under boom down position | 23 distance from conveyor 1 to waterside rail |
| 10 maximum height to the top of the boom (boom up) | 24 distance from conveyor 1 to conveyor 2 |
| 11 trolley parking position | 25 distance from conveyor 2 to conveyor 3 |

- | | | | |
|----|--|----|-------------------------|
| 12 | distance from spillage plate to waterside rail | 26 | crane wheel base |
| 13 | distance from the top of the boom to waterside rail centre | 27 | height of the conveyors |
| 14 | clearance under portal | a | Maximum, if restricted. |

Figure 6 — Bridge type grab ship unloader

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Annex A (informative)

Format for information to be provided by the purchaser with the enquiry or order

Purchase enquiry or order form		
Name of equipment:		
Name of company:		
Address:		
Name of person who can be contacted:		
E-mail address:		
Telephone number:		
Telefax number:		
Crane to be installed in:	(town)	(country)
Number of cranes required:		
Short description of works:		

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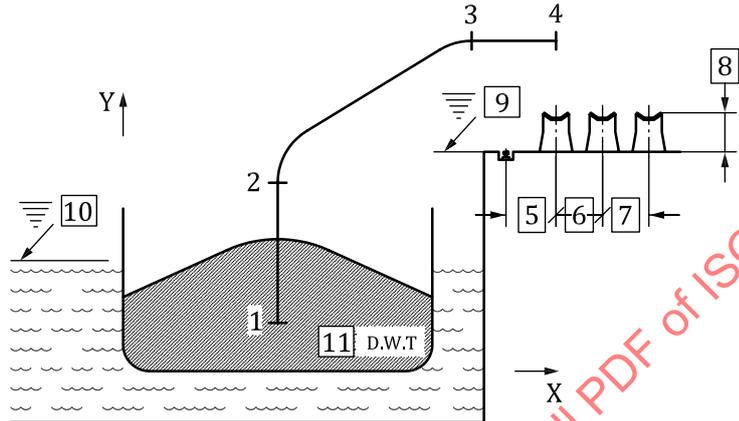
Required rated capacity (payload plus non-fixed lifting attachment)

- a) Main hoist: t
- b) Auxiliary hoist: t
- c) Cargo beam hoist: t

Rated throughput

If bulk material handling machinery is enquired or ordered, the following information should be provided.

- a) Path of movements (The coordinates can be negotiated by the purchaser and manufacturer.)



i	1	2	3	4
X_i (m)				
Y_i (m)				

- b) Throughput with 100 % rated payload: t/h
- c) If several conveyors are applied on terminal, the positions should be provided.

Symbol	Dimension mm	Remarks
5		From conveyor 1 to waterside rail
6		From conveyor 1 to conveyor 2
7		From conveyor 2 to conveyor 3
8		Height of the conveyors

- d) Other information should be provided.

Symbol	Value	Remarks
9		Elevation of wharf
10		Mean water level
11		Tonnage of vessel

Span, centre-to-centre of gantry rail(s):				m
Load-lifting height above waterside rail top:				m
Load-lowering height below waterside rail top:				m
Outreach from rail:				m
Backreach from rail:				m
Description of type of crane and crab:				
Are platforms required on the bridge:				
Position access point(s):				
Type of payload:				
Material to be handled:				
Specific weight of bulk material:				
Type of load-lifting attachment:				
Weight of the non-fixed load-lifting attachment:				t
Operating speeds	Nominal speed (rated load)	Slow or creep speed (if required)	Maximum speed with reduced load (if required)	
Main hoist:	..... m/min	..... m/min	..... m/min	
Acceleration	..... m/s ²	..... m/s ²	..... m/s ²	
Deceleration	..... m/s ²	..... m/s ²	..... m/s ²	
Auxiliary hoist:	..... m/min	..... m/min	..... m/min	
Acceleration	..... m/s ²	..... m/s ²	..... m/s ²	
Deceleration	..... m/s ²	..... m/s ²	..... m/s ²	
Cargo beam hoist:	..... m/min	..... m/min	..... m/min	
Acceleration	..... m/s ²	..... m/s ²	..... m/s ²	
Deceleration	..... m/s ²	..... m/s ²	..... m/s ²	
Traverse:	..... m/min	..... m/min	..... m/min	
Acceleration	..... m/s ²	..... m/s ²	..... m/s ²	
Deceleration	..... m/s ²	..... m/s ²	..... m/s ²	
Auxiliary traverse:	..... m/min	..... m/min	..... m/min	
Acceleration	..... m/s ²	..... m/s ²	..... m/s ²	
Deceleration	..... m/s ²	..... m/s ²	..... m/s ²	
Travel:	..... m/min	..... m/min	..... m/min	
Acceleration	..... m/s ²	..... m/s ²	..... m/s ²	
Deceleration	..... m/s ²	..... m/s ²	..... m/s ²	
Boom hoist:	..... m/min			

Use of crane and its mechanisms

a) Where detailed information is available about the operations that the appliance is expected to perform and the individual loads to be carried at each stage of the operations, it should be provided as follows:

Utilizations:

- 1) Main hoist
 Average lift: m
 Average number of lifts per hour:
- 2) Auxiliary hoist
 Average lift: m
 Average number of lifts per hour:
- 3) Traverse
 Average movement: m
 Average number of moves per hour:
- 4) Travel
 Average movement: m
 Average number of moves per hour:

Crane operating hours per day:
 or per month:

If the operation of a movement of the crane is not evenly distributed over the day or over the hour, indicate the maximum rate of lifts:

Payloads:

- 1) Percentage of lifts with approximately full load:
- 2) Percentage of lifts with approximately 75 % load:
- 3) Percentage of lifts with approximately 50 % load:
- 4) Percentage of lifts with approximately 25 % load:

Alternatively, the crane should be classified in accordance with ISO 4301-1, as follows:

Classification of crane:
 Class of utilisation:
 State of loading:
 Group classification:
 Group classification of mechanisms:

Mechanism	Class of utilization	Load spectrum	Classification
Hoisting			
Traversing			
Travelling			
Luffing			

Intended design life: years

b) Where insufficient information is available about the operations that the appliance is expected to perform, the purchaser should request the manufacturer to recommend the most suitable classification for the appliance as a whole and each mechanism for the anticipated duty.

State any special environmental conditions

Humidity:

The in service wind speed: m/s

The out of service wind speed: m/s

Earthquake loads:

Air temperature conditions

a) ambient: °C

b) maximum: °C

c) minimum: °C

Crane is situated: indoors , under shelter or outdoors

For outdoor cranes, a layer drawing of the site with the points of the compass is required.

Special service conditions

Specify any special conditions that apply, such as:

- a) handling molten metal;
- b) use in hazardous gases, vapours, solids or volatile liquids;
- c) use in mines and quarries;
- d) use for processes such as galvanizing, pickling and hot dipping;
- e) use in saline atmospheres, where the degree of exposure should be stated;
- f) the presence of any local heat sources such as furnaces or radiant space heating panels;
- g) the need for special precautions against termites;
- h) any physical obstructions not apparent from the dimensions provided for clearances (see [Figures 1 to 6](#));
- i) in the case of pedestrian-controlled cranes, any differences in the operating floor level;
- j) any variation in electrical supply greater than $\pm 6\%$ on nominal voltage;
- k) any particular requirements concerning headroom above servicing platforms and if the crane servicing platforms are to be used for other activities. The need, if any, for fine mesh screen to prevent the dropping of articles from the servicing areas;
- l) limitations in use of radio control;
- m) any other conditions

Type of rails:

Allowable wheel loading: kN

Allowable load per metre of rail: kN/m