

Code of practice for

Safe use of cranes —

Part 11: Offshore cranes

ICS 53.020.20

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by Technical Committee MHE/3, Cranes and derricks, upon which the following bodies were represented:

- Associated British Ports
- Association of Lorry Loader Manufacturers and Importers
- British Iron and Steel Producers' Association
- Building Employers' Confederation
- Construction Plant-hire Federation
- Electricity Association
- Engineering Equipment and Materials Users' Association
- Federation of Wire Rope Manufacturers of Great Britain
- Health and Safety Executive
- Institute of Logistics
- Institute of Mechanical Engineers
- Institute of Occupational Health and Safety
- Institute of Plant Engineers
- Institute of Structural Engineers
- Lifting Equipment Engineers Association
- Lloyd's Register of Shipping
- Safety Assessment Federation

The following bodies were also represented in the drafting of the standard, through a subcommittee:

- British Marine Equipment Council
- Federation of Manufacturers of Construction Equipment and Cranes
- Independent Engineering Insurers Committee
- Institute of Petroleum
- International Marine Contractors' Association
- Ministry of Defence
- Shipbuilders' and Shiprepairers' Association

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Foreword

This part of BS 7121 has been prepared by subcommittee MHE/3/10 under the direction of Technical Committee MHE/3. The subcommittee wishes to acknowledge the contribution of the International Crane Forum to the preparation of this standard.

This part of BS 7121 provides recommendations for safe use of offshore cranes.

It is in the interest of all involved in lifting operations to ensure that these operations are carried out efficiently and safely. The offshore environment is sufficiently hostile that wave action can subject the crane and/or its load to motion, imposing demands on the crane and the crane operator that are more severe than in most other lifting operations. Accordingly, this part of BS 7121 provides guidance on understanding the crane's performance, and makes recommendations for the competence of operatives and other personnel.

This part of BS 7121 is directed to owners and users of offshore cranes, who are encouraged to implement all of the recommendations, and, if possible, upgrade existing equipment and operating procedures.

Whilst it is recognized that the recommendations do not relate to design and manufacture of offshore cranes, designers are strongly advised to take these into consideration.

This part of BS 7121 is one of a forthcoming series of standards, *Safe use of cranes*, consisting of the following:

- *Part 1: General;*
- *Part 2: Inspection, testing and examination;*
- *Part 3: Mobile cranes;*
- *Part 4: Lorry loaders;*
- *Part 5: Tower cranes;*
- *Part 6: Derrick cranes;*
- *Part 7: Overhead/underhung travelling and goliath cranes;*
- *Part 8: High pedestal and portal jib cranes;*
- *Part 9: Container handling cranes;*
- *Part 10: Rail mounted cranes;*
- *Part 11: Offshore cranes.*

It has been assumed in the drafting of this British Standard that the execution of its provisions is entrusted to appropriately qualified and experienced personnel.

As a code of practice, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 19 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This part of BS 7121 gives recommendations for safe use of offshore cranes (including supporting structures affixed to offshore installations), primarily operating in an open sea environment. The following activities are not covered in this part of BS 7121:

- a) slinging practices;
- b) crane erection practices;
- c) use of all non-slewing cranes used offshore [e.g. blowout preventer (BOP) cranes, overhead travelling cranes, gantry cranes, hoists and davits].

2 References

The following normative documents contain provisions that, through reference in this text, constitute provisions of this part of this British Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the latest edition of the publication referred to applies.

BS 7072:1989, *Code of practice for inspection and repair of offshore containers*.

Health and Safety at Work etc. Act 1974. London: The Stationery Office.

The Control of Substances Hazardous to Health Regulations 1988. Statutory Instrument 1657. London: The Stationery Office.

The Docks Regulations 1988. Statutory Instrument 1655. London: The Stationery Office.

The Shipbuilding and Ship Repairing Regulations 1960. Statutory Instrument 1932. London: The Stationery Office.

The Factories Act 1961. London: The Stationery Office.

The Construction (Lifting Operations) Regulations 1961. Statutory Instrument 1581. London: The Stationery Office.

The Merchant Shipping (Hatches and Lifting Plant) Regulations 1988. Statutory Instrument 1639. London: The Stationery Office.

3 Terminology and definitions

3.1 Terminology

3.1.1 Comparison of terms

Certain terms used in the offshore crane industry have similarities with terms used in other lifting industries. For the purposes of this part of BS 7121, the distinctions given in Table 1 apply.

Table 1 — Comparative terms used in offshore crane and other lifting industries

Offshore crane industry term	Otherwise known as
Slew/slewing	Swing/swinging
Booming	Luffing/derricking/jibbing
Hoisting (load)	Winching, whip/main hoist
Slew bearing	Slewing/race, slew/swing circle
Boom	Jib, stick
Extension (tip)	Fly jib
A-frame	Gantry, apex, struts/backties/legs
Machinery bed/house	Carbody
Sheaves	Pulleys
Counterweight	Backweight, ballast
Crane operator	Crane driver

3.1.2 Safe working load and safe load indicator (rated capacity and rated capacity indicator and limiter)

The terms “safe working load” and “safe load indicator” are long established in the British crane industry, and used in BS 7262:1990. During preparation of this part of BS 7121, however, several European Standards for cranes were being developed, and the CEN committees responsible adopted the alternative terms “rated capacity” and “rated capacity indicator”. These terms have gained wide acceptance in the European crane industry, and for this reason the drafting committee for this part of BS 7121 decided to align with the European Standards, and use “rated capacity” and “rated capacity indicator”.

3.1.3 Appointed person and responsible person

During preparation of this part of BS 7121 it was recognized that the terms “appointed person” and “responsible person” are equivalent in the offshore crane industry. The term “appointed person” is used in this part of BS 7121, in common with BS 7121-1.

3.2 Definitions

For the purposes of this part of BS 7121 the following definitions apply.

3.2.1

appointed person

competent person authorized by the duty holder to ensure that the crane and associated equipment are safe for use

3.2.2 cabin

permanent control position on or off a crane, with protective enclosure

3.2.3 check

visual and functional assessment (not a test) of the condition of a crane, without dismantling, prior to use (e.g. detection of defects or fluid levels)

3.2.4 competent person

person with practical and theoretical knowledge of a crane and its equipment, experience of operation in an offshore environment, ability to detect deficiencies and to assess their criticality in relation to strength and performance, and to recommend remedial action to ensure that conditions are appropriate for safe use

3.2.5 dynamic rated load

maximum permissible load that can be lifted in the prevailing sea state, if there is relative motion between the crane and load

3.2.6 gross overload/overmoment protection (GOP)

device or system safeguarding a crane and its primary load-carrying elements against failure, in conditions where uncontrolled loading of the hoist line may occur (e.g. if the load becomes snagged on the supply vessel)

3.2.7 inspection

visual check of a crane for defects, and operation of the controls and limiting and indicating devices without loading

NOTE An inspection does not normally require dismantling of any part of the crane.

3.2.8 installation

- a) fixed or mobile unit, primarily operating in an open sea environment, used to develop, explore and recover natural hydrocarbons in subsea formations

NOTE Typically, installations include platforms fixed to the sea bed, semi-submersible vessels, mono-hull vessels, tension-leg platforms, guyed towers and jackup platforms.

- b) specialized crane vessel that can be used to deploy equipment for constructing or modifying units in a) offshore

3.2.9 installation manager

competent person appointed by the operator or owner to manage the installation and personnel

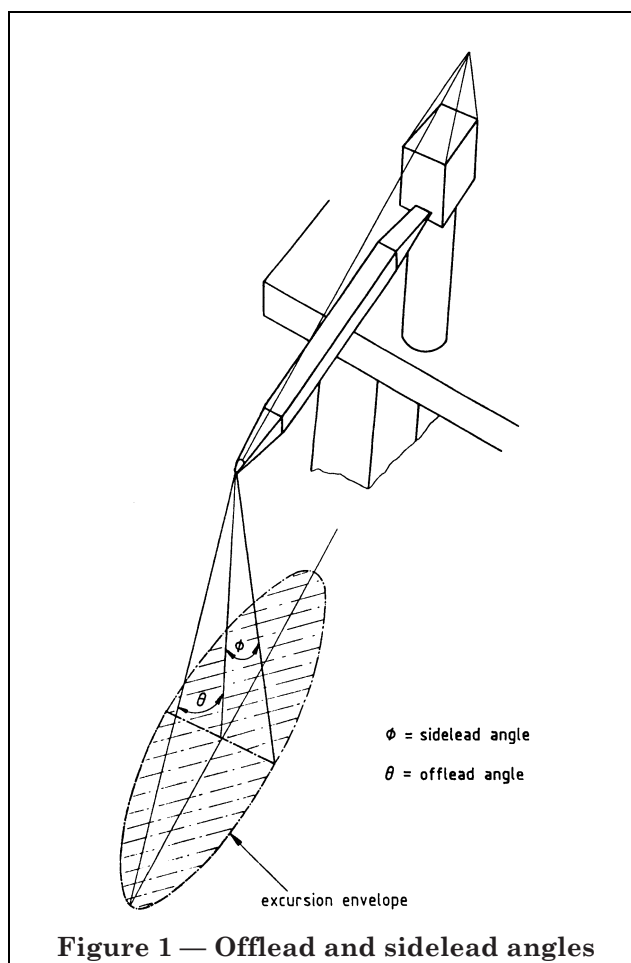
3.2.10 offlead

condition where the load line, under tension, deviates outwardly from the crane (see Figure 1)

3.2.11 offshore crane

machine with slewing facility, used to lift, lower or move loads in an offshore environment, operating from a fixed location on an offshore installation

NOTE Examples of offshore cranes are shown in Figure 2.

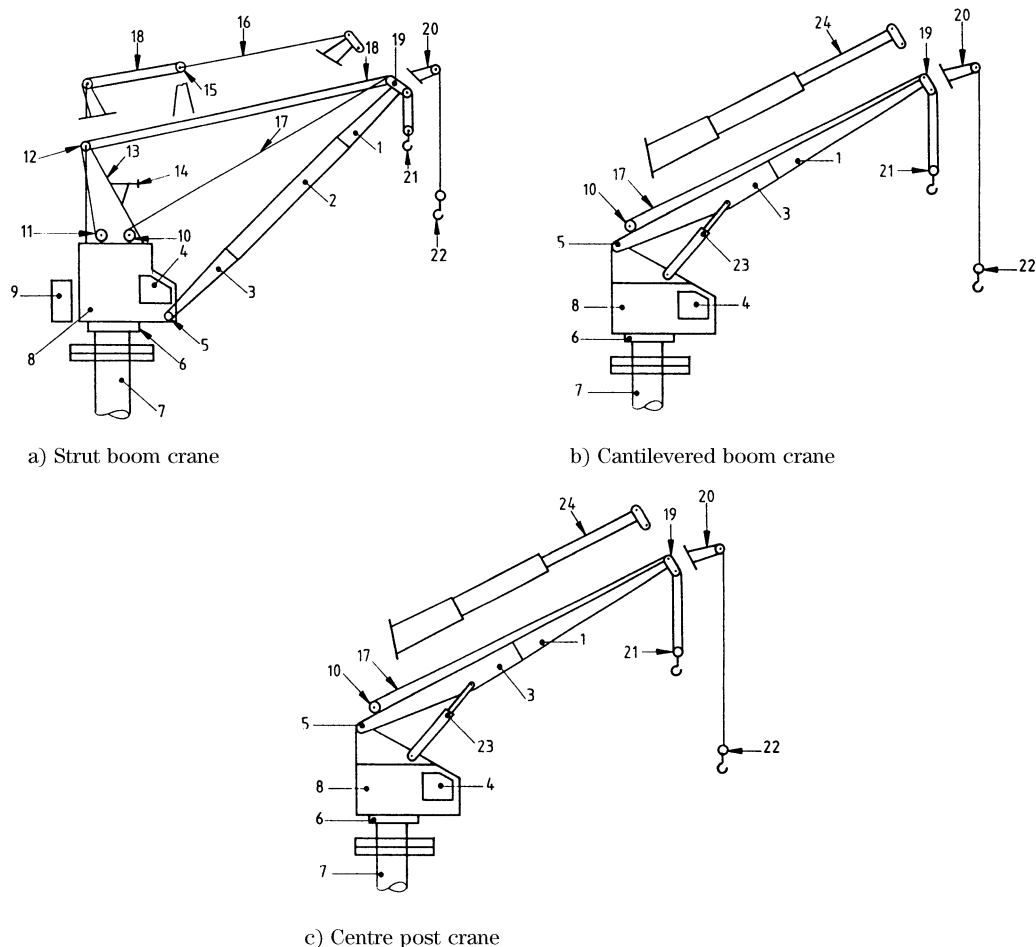


3.2.12 pennant

single part-line of wire rope or chain suspended from the crane hook, permitting safe connection of the hook to the load

3.2.13 rated capacity

load(s) a crane is designed to lift for a given operating condition (configuration, sea state, wind speed, radius)

**Key**

- | | |
|-------------------------------------|--------------------------------|
| 1 Boom head section | 14 Boom back stops |
| 2 Boom mid-section | 15 Suspension bridle/live mast |
| 3 Boom foot section | 16 Boom pendant rope |
| 4 Cabin | 17 Load hoist rope |
| 5 Boom foot pin | 18 Boom hoist rope(s) |
| 6 Slew bearing/hook roller assembly | 19 Boom head sheaves |
| 7 Pedestal mounting | 20 Boom head extension |
| 8 Machinery house | 21 Multi-fall hook block |
| 9 Counterweight (if fitted) | 22 Hook and overhauling weight |
| 10 Load hoist winch ¹⁾ | 23 Boom hoist ram |
| 11 Boom hoist winch | 24 Telescoping boom |
| 12 A-frame or mast sheaves | 25 Centre post/mast |
| 13 A-frame or mast | |

¹⁾ Same cranes are fitted with two load hoist winches.

Figure 2 — Examples of offshore cranes

3.2.14 rated capacity indicator

device that continuously indicates, within specified tolerance limits, as the rated capacity is approached, and continuously indicates, in another manner, if the rated capacity is exceeded

NOTE The specified tolerance limits for rated capacity include a higher wind speed than permitted for the in-service conditions.

3.2.15 sidelead

condition where the load line, under tension, deviates sideways from the crane (see Figure 1)

3.2.16 static rated load

maximum permissible load that can be lifted from, or lowered onto, the installation supporting a crane

3.2.17 structure

steelwork to which a crane is affixed

3.2.18 test

specific operation of a crane, with or without a defined load, to establish whether it may be used

3.2.19 thorough examination

verification that a crane can safely continue in service, including a functional test of all safety devices (e.g. limiting and indicating equipment, brakes, clutches)

NOTE A thorough examination is not an inspection (see 3.2.7), and can involve non-destructive examination or testing techniques, and including dismantling.

4 Crane management

4.1 Safe system of work

A safe system of work should be established for each lifting operation, whether an individual special lift or a group of repetitive or routine operations. The sensitivities and limitations of the crane, its permissible duties and operational performance should be understood.

The safe system of work should include at least the following:

- a) planning of the operation;
- b) crane selection;
- c) maintenance, examination and, if necessary, testing of the crane and equipment;
- d) provision of suitably trained and competent personnel who are aware of their relevant responsibilities regarding the Health and Safety at Work etc. Act 1974 and any other current statutory offshore regulations;
- e) adequate supervision by suitably trained and competent personnel;
- f) assurance that all necessary test certificates and other documents are available;
- g) assurance that all other statutory requirements are in place;
- h) identification of all hazardous and restricted areas;
- i) emergency procedures in case of damage or impairment to the crane during operation, and for safe recovery of the crane to a holding location on the installation;
- j) means of preventing unauthorized movement or use at all times;
- k) completion of any preparatory work at the location of the lifting operation;
- l) an English language communication system;
- m) assurance of safety of personnel not involved in the lifting operation;
- n) assurance that an adverse weather policy is in place;

NOTE The Beaufort scale of wind forces and related sea states is given in Annex A.

- o) provision of an effective system for storage and use of spare parts.

4.2 Control of the lifting operation

To ensure effective implementation of the safe system of work, an appointed person should take control of the lifting operation and ensure compliance with 4.1

The appointed person should also be responsible for:

- a) assessment of the lifting operation and provision of lifting gear, equipment, instruction and supervision for the task to be undertaken safely;
- NOTE This should include consultation with other responsible bodies as necessary, and ensuring that if different organizations are involved, they collaborate effectively.
- b) provision of an effective procedure for reporting defects and incidents, and for taking remedial action as appropriate;
 - c) authorization of any work permits that may be necessary;
 - d) provision and availabilities of personal protective equipment appropriate for the operational location, such as helmets, safety spectacles, safety boots and clothing, ear defenders, life jackets and emergency escape equipment;
 - e) ensuring that personnel are instructed in the correct use of the appropriate personal protective equipment;