

Petroleum	Health, Safety & Environment Management System Lifting Operations Standard	
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PETROLEUM CSG


HSE MANAGEMENT SYSTEM STANDARD

LIFTING OPERATIONS STANDARD

Petroleum HSE Standard No: PHSE-TS-009-3.10-01-PET	
Reference: HSEC Management Standard 009-3.10 – Operations and Maintenance	
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1.0 PURPOSE

The purpose of this document is to ensure that a uniform approach is adopted with regards to the safe use of lifting equipment and accessories worldwide

2.0 SCOPE


This document applies to all BHP Billiton owned, managed, controlled sites and/or managed controlled activities and to all BHP Billiton contractors. It is intended to support the FRCP Standard, specifically FRC 10, Lifting Operations. It is intended to be universal and valid worldwide. This is achieved by ensuring that as a minimum, the information and guidance contained therein complies with the requirements of all international legislation and regulations in the area of oil and gas exploration and production

3.0 REFERENCES

This standard is to be used in conjunction with the following procedures:

- Lifting Operations Procedure
 - PHSE-PR-009-3.10-02-PET
- Drilling Equipment Inspection
 - PHSE-PR-009-3.10-03-PET
- Lifting Equipment Inspection
 - PHSE-PR-009-3.10-04-PET
- Lifting Equipment - Planned Maintenance Routines
 - PHSE-PR-009-3.10-05-PET
- Lifting Operations Training
 - PHSE-PR-009-3.10-06-PET
- Lifting Operations Planning and Risk Assessment
 - PHSE-PR-009-3.10-07-PET
- Lifting Equipment Procurement
 - PHSE-PR-009-3.10-08-PET
- Personnel Transfer and Man Riding
 - PHSE-PR-009-3.10-09-PET
- Repair and Re-Certification
 - PHSE-PR-009-3.10-10-PET
- Illustrated Technical Reference Manual

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4.0 DEFINITIONS

“**Shall**” or “**Must**” means a mandatory requirement.

Should means a guideline that is strongly recommended.

See **Attachment 9.1** for the full list of definitions and abbreviations.

5.0 STANDARDS

Introduction


This standard addresses the safe use of lifting equipment and accessories it is intended:

- To increase safety in lifting operations
- To ensure compliance with relevant legislation / regulations
- To ensure the supply of suitable equipment
- To ensure all lifting equipment is fully identified, traceable and marked accordingly.
- To ensure that lifting equipment is held in a secure location and that its movements are controlled.
- To ensure continuing integrity of lifting equipment by appropriate maintenance and inspection programs
- To ensure that lifting equipment is examined prior to and after use.
- To inform personnel of their obligations to perform lifting operations safely
- To ensure that all lifts are risk assessed and risks are reduced to acceptable levels.
- To ensure that all lifting operations are planned and implemented with the required levels of competence, organization and supervision
- To ensure that accurate and meaningful records are maintained

5.1 Personnel Requirements

All individuals involved in lifting operations shall be trained in the use of lifting equipment and accessories. Where applicable, they should also be familiar with crane operational characteristics and parameters. The minimum number of personnel involved in each lifting team shall be three. Further guidance can be found in the Lifting Operations Training Procedure PHSE-PR-009-3.10-06-PET.

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5.2 Hands-Off Policy

No personnel are to put their hands on any suspended loads, except where previously approved as a result of performing a Risk Assessment to plan the job and manage the risks.

Each BHPB site is to complete and implement a “Hands-off Lifting Procedure.”

This policy shall be followed by all personnel while handling a suspended load on BHPB sites / installations to ensure all hazards to performing the job safely are identified prior to the task taking place. This shall cover all suspended loads in all departments.

5.3 Responsible Person

While there is a shared responsibility for the safety of each lifting operation (e.g. Crane Operator, Dogman/Banksman/Flagman and Slinger/Load-Handler) the Dogman/Banksman/Flagman remains the person in charge of the activity. He will not become involved in the handling or positioning of loads but must remain in a position where he can oversee and direct the operation. Specific roles and responsibilities are detailed in the Lifting Operations Procedure PHSE-PR-009-3.10-02-PET.


5.4 Planning and Risk Assessment

Every lift shall be planned by a competent person, each lift shall be subject to an appropriate ‘risk assessment’ as detailed in the Lifting Operations Planning and Risk Assessment Procedure PHSE-PR-009-3.10-07-PET and the Job Risk Assessment Procedure PP03.02.

5.5 Taglines

Taglines shall only be used after a risk assessment has been undertaken, taglines should only be attached to loads being offloaded from a supply vessel if their use shall improve the safety of the lift. Taglines must be made up from a single continuous length of rope of appropriate diameter for the weight of the load. They should be constructed from a material that is resistant to coiling. Tag lines must be of sufficient length to allow personnel handling cargo to work at a safe distance well clear of the immediate vicinity of the load. All sections of the line, including the slack, must be kept in front of the body, between the handler and the load.

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Tag lines must be held in such a manner that they can be quickly and totally released. They must not be looped around wrists or other parts of the body.

5.6 Personnel Transfer and Man-Riding

Personnel transfer and man-riding shall only be carried out as a last resort, only when all other viable options have been explored shall personnel transfer and man-riding be considered. A vigorous risk assessment shall be carried out prior to these operations taking place. More specific guidance can be obtained from the Personnel Transfer and Man-Riding Procedure PHSE-PR-009-3.10-09-PET.

5.7 Inspection

All lifting equipment and accessories shall be inspected by a competent person every six months, a register shall be kept detailing the results of this periodic examination. The equipment shall be color coded in accordance with the schedule detailed in the “written scheme of examination” Inspections shall be carried out in accordance with the Lifting Equipment Inspection Procedure PHSE-PR-009-3.10-04-PET.


5.8 Maintenance, Repair and Re-Certification

Lifting equipment and accessories shall be maintained on a regular basis. No attempt shall be made to repair damaged equipment. The minimum requirements for the maintenance, repair and recertification of lifting equipment and accessories can be found in the Lifting Equipment Maintenance Routines Procedure PHSE-PR-009-3.10-05-PET and the Repair and Re-Certification Procedure PHSE-PR-009-3.10-10-PET.

5.9 Procurement

Lifting equipment and accessories should only be purchased from approved manufacturers and suppliers. It is vital that only equipment of the right quality, proven in the environment, which we operate, is provided for use on BHPB worksites. Specific guidelines are provided in the Lifting Equipment Procurement Procedure PHSE-PR-009-3.10-08-PET.

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5.10 Drilling Equipment

Lifting equipment used in drilling operations is highly specialized, only personnel who are trained in this type of equipment shall carry out the detailed examination required. Minimum inspection criteria is contained within the Drilling Equipment Inspection Procedure PHSE-PR-009-3.10-08-PET.

6.0 RECORDS

The following records are to be maintained to show objective evidence of compliance with this procedure.

- List of appointed persons, their position and qualifications
- Lifting Equipment Register
- Written Scheme of Examination
- Lifting Plan Register and associated Risk Assessments
- Maintenance Records for all lifting equipment

7.0 LIFTING OPERATIONS AUDITS

Compliance will be monitored through regular audits to ensure that:


- All lifting operations fully comply with relevant legislation and guidance
- All personnel involved in lifting operations and the maintenance of equipment are appropriately trained and assessed as competent for any task they undertake

The audit shall be carried out on a bi-annual basis and will be documented. It shall provide actions and recommendations for improvement where necessary. They will also be carried out whenever there is “cause” such as an incident or at the discretion of the worksite manager or appointed responsible person. External auditors or competent consultants should carry out the audit.

In the case of contractors and their sub-contractors they will be required to demonstrate standards and practices that are compatible with BHPB requirements.

An example of the protocol can be found as an appendix to the Lifting Operations Procedure PHSE-PR-009-3.10-02-PET.


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8.0 UPDATES TO THIS DOCUMENT

This is a Petroleum HSE Controlled Document. Requests for updates to Petroleum HSE Controlled Documents shall be documented on the Petroleum HSE Document – Update Request Form and sent to the **Petroleum HSE Systems Support** email in the GAL.

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9.0 ATTACHMENTS

9.1 Definitions

Alpha / numeric - A combination of letters and / or numbers used for identification.

Calculated Deflections - The deflections due to the safe load and proof loads, computed by using the formula applicable to the particular circumstances.

Cantilever Beam - Section of beam supported at one end only.

Cargo - Any liquid, solid or gaseous matter transported in a container.

Certificate of Examination - A written declaration that an examination has been carried out to the satisfaction of the independent competent person.

Color Code - A method of marking equipment (normally with plastic tie-wraps or paint) to give a visual indication of its certification status. This color is changed every six months.

Competent Person - Someone who is considered, by either the Installation Manager or his employer, to be experienced in the use of lifting equipment and who is familiar with, and has experience in, its operation. This person must also have the requisite knowledge and experience, both theoretical and practical, of the type of material under examination to certify with confidence whether it is free from patent defect and suitable in every way for the duty for which the material is required.

Container - Any form of unit or device used for the transportation of cargo as defined in BS EN 12079 (previous standard BS 7072). Also known as a cargo carrying unit (CCU).


Dangerous Goods - Substances defined as such but not limited to those in the CSG Code (e.g. CAA, COSHH, IMDG etc).

Drawn-up Dimension - The minimum distance between the suspension level and the bottom hook saddle. (Also known as closed-height).

Effective Span - The distance between the centers of the adjacent supports, due to allowance being made for the end fixing, continuous beams and cantilevers.

Effort - The pull on the hand chain or lever required to lift a specific load (chain blocks and pullifts). The maximum effort allowable is relative to the maximum working load limit of the block.

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Examination - A visual examination by a competent person, carried out carefully and critically, and supplemented by other means, such as measurement and where necessary non-destructive testing, in order to arrive at a reliable conclusion as to the condition and safety of the appliance. If necessary for the examination, part of the appliance shall be dismantled.

Extended Dimension - The distance between the suspension level and the bottom hook saddle of a chain block, when the bottom hook is in the extended position. It equals the sum of the drawn up dimension and the range of lift (or height of lift).

Factor of Safety - The ratio of the load that would cause failure of an item of lifting equipment to the load that is imposed upon it in service i.e. SWL (This is to allow for detrimental criteria such as wear and tear, dynamic loadings etc.).

Ferrule - A compression fitting used to secure the eye of a wire rope.

Frame - The primary load bearing elements of the container.

Gross Weight - The maximum allowable weight of a loaded appliance which is equal to the Tare weight (weight of empty appliance) plus the Safe Working Load (weight of cargo which may be carried by the appliance).

Hand Operated Chain Hoist - A block reeved with a load chain and operated by a hand chain so as to give a mechanical advantage (also known as a chain block).

Headroom - The maximum vertical distance between the item to be lifted and the point of suspension of the hoisting machine. e.g. Between the lifting padeyes and the underside of runway beam.

Height of Lift - The amount of possible travel between the top and bottom connection points (e.g. hooks) of a hoisting machine.

Hook Load - The total weight suspended from the hook.


Inertia Forces - The forces produced by a change of velocity.

Inspection - A visual inspection by a competent person, looking carefully and critically for anything which may impair the safe and efficient working of the lifting equipment.

Lifting Appliances - Means work equipment (mechanical devices) capable of lifting or lowering loads and includes its attachments used for anchoring, fixing or supporting it e.g., Cranes, forklift trucks, lifts, suspended cradles, powered hoists, manual hoists, lever hoists, rope hoists, winches, beam trolleys, beam clamps, sheave blocks, runway beams, padeyes, etc.

Lifting Accessory - A device, such as a sling, hook, shackle or eyebolt, used to connect a load to a lifting appliance.

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Lifting Equipment - Means work equipment for lifting, lowering and suspending loads, which includes lifting appliances and lifting accessories.

Lifting Equipment Register - A register, which identifies the type, description and location of all BHPB lifting equipment, e.g. platform's fixed lifting equipment registers

Lifting Equipment Contractor - Contractor who has been appointed to provide lifting equipment to BHPB Operations In addition, the carrying out of thorough examination of designated lifting equipment as directed

Lifting Operation - An operation concerned with the lifting, lowering or suspension of a load.

Lifting Set - Loose equipment and accessories used to connect the container to the lifting appliance.

Live Loads - Any load except wind load that gives rise to a variation of stress in a member. Such variation may be due to any change of position or magnitude of an externally applied load, or to the movement of the crane structure itself.

Load - Encompasses the concept of either mass or force, and is expressed in the appropriate units.

Load Sensor - A piece of equipment used for detecting the actual loadings at a rigging point e.g. load cell shackle, test clock or compression load cell etc.

Measured Deflections - The deflections measured in such a manner that they relate to precisely the same conditions as those covering the calculated deflection.

Mode Factor - A factor which takes into account the geometry of the sling assembly, the number of parts and other constants as specified in the appropriate standard.

Nominated Competent Person - Person who has been designated competent by virtue of training and experience, for the control and where necessary the thorough examination of lifting equipment and accessories Is also responsible for the safe use of lifting equipment.


Operating Level - The level on which the operator stands.

Permissible Working Stress - The stress numerically equal to the basic stress, multiplied by the relevant duty factor corresponding to the load.

Plant / Identification Number - A unique number given to an item of lifting equipment for registration purposes and to facilitate traceability.

Proof Load Test - The deliberate application of a predetermined overload to a piece of lifting equipment.

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Range of Lift - The vertical distance which the bottom hook travels between the lowest (extended) and highest positions.

Rigging Loft - A container modified specifically to suit the storage of lifting equipment (quite often fitted with lighting and heating).

Runway Beam - An overhead track for carrying loads which are moved along it.

Safe Working Load (SWL) - The maximum load (as certified by an independent competent person) which an item of lifting equipment may raise, lower or suspend under particular service conditions. This can be lower than the working load limit (WLL).

Sling Assembly - A sling comprising various components eg. sling legs, master links, etc.

Structural Integrity - The strength of materials and their arrangement to provide reliability of the load bearing structure.

Tank Container - A container which consists of the tank or tanks, and the load bearing structure.

Thorough Examination - A thorough examination by a competent person, looking carefully and critically for anything which may impair the safe and efficient working of the lifting equipment. This examination is to include testing by the competent person where appropriate and may also include disassembly.

Tare - The weight of the container without cargo. Tare weight shall include all fixtures normally fixed to the container in service.

Thimble - A fitting used to protect the eye of the wire rope termination.

Trigonometrical Method - A method traditionally used to calculate the Working Load Limit (WLL) of slings at various angles of the legs.

Uniform Load Method - A method of rating multi-legged slings for use at any included angle between the sling legs of up to 90°, and in special cases for two-legged and four-legged slings at any included angle between 90° and 120°.


This is the preferred method for rating general purpose slings.

Webbing - A part of a flat lifting sling, comprising a woven narrow fabric, generally of a coarse weave and multiple plies, the prime function of which is load bearing.

Wind Load - The forces produced by the velocity of the wind, which is assumed to act horizontally.

Written Scheme of Examination - Document, which identifies the statutory inspections and periods between inspections required to comply with regulations internationally.

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Working Load Limit (WLL) - The maximum load which an item of lifting equipment is designed to raise, lower or suspend.

9.2 Abbreviations

ASMEV - American Standards for non-destructive testing

BS - British Standards

FC - Fiber Core

IMDG Code - International Maritime Dangerous Goods Code

IWRC - Independent Wire Rope Core

LOLER - Lifting Operations and Lifting Equipment Regulations SI 1998 No 2307.

MBL - Minimum Breaking Load. This is the load specified in the relevant British Standard from which are derived other values such as the working load limit.

MPI - Magnetic Particle Inspection. A technique used to detect surface breaking discontinuities in ferro-magnetic materials.

NDE - Non-destructive Examination. A visual inspection to detect any defects in a material.


NDT - Non-destructive Test. Any technique used to detect defects in a material without subjecting it to physical stress. These techniques include ultrasonics, dye penetrants, magnetic particle inspection and radiography.

SWL - Safe Working Load. The maximum load as certified by a competent person that an item of lifting equipment may raise, lower or suspend under particular service conditions.

SWL / Payload - Safe Working Load / Payload. This is the maximum permissible weight of cargo which may be safely be transported by container.

WLL - Working Load Limit. The maximum load that an item of lifting equipment is designed to raise, lower or suspend.

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9.3 Reference Standards

9.3.1 Australian Standards

AS B291	Lifting rings and links (Withdrawn)
AS 1138	Thimbles for Wire Rope
AS1380	Fiber-rope slings
AS 1418.1	Cranes, hoists and winches – General requirements
AS 1418.2	Cranes (including hoists and winches) – Serial hoists and winches
AS 1418.3	Cranes, hoists and winches – Bridge, gantry, portal (including container cranes) and jib cranes
AS 1418.4	Cranes, hoists and winches – Tower cranes
AS 1418.5	Cranes, hoists and winches – Mobile cranes
AS 1418.6	Cranes, hoists and winches – Guided storage and retrieving appliances
AS 1418.7	Cranes (including hoists and winches) – Builders hoists and associated equipment
AS 1418.8	Cranes, hoists and winches – Special purpose appliances
AS/NZS 1418.9	Cranes (including hoists and winches) – Vehicle hoists
AS 1418.10	Cranes, hoists and winches – Elevating work platforms
AS 1418.11	Cranes, hoists and winches – Vehicle-loading cranes
AS 1418.12	Cranes (including hoists and winches) – Crane collector systems
AS 1418.13	Cranes (including hoists and winches) – Building maintenance units
AS 1418.14	Cranes (including hoists and winches) – Requirements for cranes subject to arduous working conditions
AS 1418.15	Cranes (including hoists and winches) – Concrete placing equipment
AS 1418.16	Cranes (including hoists and winches) – Mast climbing work platforms
AS 1418.17	Cranes (including hoists and winches) – Design and construction of workboxes
AS 1418.18	Cranes, hoists and winches – Crane runways and monorails
AS 1418.19	Cranes, hoists and winches – Telescopic handlers
AS1438.2	Wire coil Flat slings – care and use
AS1666.1	Wire Rope Slings

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AS1666.2	Wire Rope Slings – Care and use
AS/NZS 1891.1	Industrial fall arrest systems and devices – Harnesses and ancillary equipment
AS2076	Wire Rope Grips for non-lifting applications
AS2089	Sheave blocks for lifting purposes
AS2317	Collared eyebolts
AS2318	Swivels for lifting applications
AS2319	Rigging screws and Turnbuckles
AS2321	Short chain for lifting purposes
AS2550	Cranes, Hoists and winches – Safe use
AS2740	Wedge type sockets
AS2741	Shackles
AS3569	Steel Wire Rope
AS3585	End fittings for synthetic flat webbing and round slings
AS3775.1	Chain slings grade T – Production specification
AS3775.2	Chain slings grade T – care and use
AS 3776	Lifting components for grade T chains
AS 3777	Shank hook and large eye hooks – maximum 25 tonne
AS3990	Mechanical equipment – steelwork
AS4100	Steel structures

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9.3.2 American Standards

Federal Specifications

Federal specifications are a prescribed set of rules, conditions and requirements established to achieve uniformity in materials and products for interchangeability of parts. The General Services Administration, issues and controls federal specifications and are mandatory for use by all federal agencies.

Standards Issued by Institutes and Societies

These standards differ from OSHA standards and can be defined as a set of technical definitions and guidelines, which can be used by designers, manufacturers and users.

Therefore this type of standard is considered voluntary and serves as a set of guidelines, which do not have the force of law.

ANSI

The American National Standards Institute (ANSI) is a private non-profit organization that oversees the development of voluntary standards. The organisation also coordinates US standards with international standards so that American products can be used worldwide.

ASME

The American Society of Mechanical Engineers (ASME) is a professional body, specifically an engineering society, focused on mechanical engineering. The organization is known for setting codes and standards for mechanical devices.


API

The American Petroleum Institute (API) is the main US trade association for the oil and natural gas industry, representing about 400 corporations involved in production, refinement, distribution, and many other aspects of the industry. One of the association's chief functions is the establishment and certification of industry standards.

OSHA


The OSHA standards, relating to lifting equipment, listed below, are primarily aimed at the owners and users of lifting equipment.

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1910.66	Personnel Fall Arrest Systems
1910.179	Overhead and Gantry Cranes
1910.180	Crawler Locomotive and Truck Cranes
1910.184	Slings
1915	Tables
1915.111	Inspection
1915.112	Ropes, Chains and Slings
1915.113	Shackle and Hooks
1915.114	Chain Falls and Pull-lifts
1915.115	Hoisting and Hauling Equipment
1915.116	Use of Gear
1915.117	Qualifications of Operators
1917.45	Cranes and Derricks
1917.50	Certification of Marine Terminal Material Handling Devices
1918	Cargo Gear Register and Certificates (Non mandatory)
1918.54	Vessel's Cargo Handling Gear
1918.55	Cranes
1918.62	Miscellaneous Auxiliary Gear
1918.66	Cranes and Derricks Other Than Vessel's Gear
1919.14	Initial Tests of Cargo Gear and Tests After Alterations, Renewals or Repairs
1926.251	Rigging Equipment for Material Handling Cranes and Derricks
1926.550	Cranes and derricks
1926.751	Definitions
1926.753	Hoisting and Rigging
1926.761	Steel Erection Training

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Fed Spec RR-W-410E, API SPC 9A API RP 9B, API RP 2D	Wire Rope
ASME B30.9	Wire Rope Slings
ASME B30.9	Man-made Fibre Slings
ASME B30.9	Chain Slings
ASME B30.26, Fed Spec RR-C-271D	Shackles
ASME B30.10	Hooks
ASME B30.26	Wedge Sockets
ASME B30.26, ASME B30.20a	Eyebolts / Pad Eyes
ASME B30.26	Rigging Screws / Turnbuckles
ASME B30.16	Chain Hoists
ASME B30.21	Lever Hoists
ASME B30.16	Rope Hoists
ASME B30.20a	Beam Clamps
ASME B30.20a	Beam Trolleys
ASME B30.20a	Lifting Clamps
ASME B30.26	Sheave / Snatch Blocks
ASME B30.1	Jacks
ASME PALD-2005	Safety Standard for Portable Automotive Lifting Devices
ANSI/ASSE A10.31-2006	American National Standard- for Construction and Demolition Operations- Safety Requirements, Definitions and Specifications for Digger Derricks
ANSI/ASME B30.22-2005	Articulating Boom Cranes
ANSI/ASME B30.23-1998	Personnel Lifting Systems
ANSI/ASME B30.25-2003	Scrap and Material Handlers
ANSI/ASME B30.7-2006	Base-Mounted Drum Hoists
ASME B30.3	Construction Tower Cranes
ASME B30.2	Overhead & Gantry Cranes
ASME B30.5	Mobile and Locomotive Cranes
ASME B30.8	Floating Cranes and Floating Derricks

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9.3.3 British and European Standards

There are a number of standards which may provide useful information / guidance. The list of British and / or European Standards below includes, but is not limited to, those which may prove useful. Where a standard has been withdrawn or superseded, both the previous and current standards may be listed if it is felt that the information contained therein may be relevant. Where applicable, other standards (such as US Federal Specifications) have been added.

BS302 Pt 2	Specification for ropes for general purposes. WITHDRAWN – see BS EN12385 Part 4.
BS302 Pt 7 1989	Stranded steel wire ropes. Specification for large diameter ropes for general purposes.
BS302 Pt 8 1989	Stranded steel wire ropes. Specification for higher breaking load ropes.
BS466 1984	Specification for power driven overhead travelling cranes, semi-goliath and goliath cranes for general use.
BS1290 1983	Specification for wire rope slings and sling legs for general lifting purposes. WITHDRAWN – see BS EN 13414-1 2003
BS2573 Pt 1 1983 (BS13001)	Rules for the design of cranes. Specification for classification, stress calculations and design criteria for structures.
BS2573 Pt 2 1980 (BS13001)	Rules for the design of cranes. Specification for classification, stress calculations and design of mechanisms.
BS2830 1994	Specification for suspended access equipment (suspended chairs, traditional steeplejack's seats, work cages, cradles and platforms) for use in the building, engineering construction, steeplejack and cleaning industries.
BS2853 1957	Specification for the design and testing of steel overhead runway beams.

BS3032 1958	Specification for higher tensile steel shackles (Withdrawn, but still specified and a few manufacturers continue to employ).
BS3243 1990	Specification for hand operated chain blocks (previous edition 1973 withdrawn).
BS3481 Pt 2	Flat lifting slings. Specification for flat woven webbing slings


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1983 (ISO 4878)	made of man-made fibre for general service (WITHDRAWN).
ISO 668:1979	Freight containers. General. Specification for series 1 freight containers: Classification, dimensions and ratings. (Revised / withdrawn).
BS3951-1.2: 1985 ISO 1161-1984	Freight containers. General. Specification for corner fittings for series 1 freight containers.
BS3951-2.1:1991 ISO 1496-1:1990	Freight containers. Specification and testing of series 1 freight containers. General cargo containers for general purposes.


BS4018 1966	Specification for pulley blocks for use with wire rope for a maximum lift of 25 tonf in combination.
BS4278 1984	Specification for eyebolts for lifting purposes.
BS4429 1987	Specification for rigging screws and turnbuckles for general engineering, lifting purposes and pipe hanger applications. (previous edition 1969 withdrawn).
BS4536 1970	Specification for heavy-duty pulley blocks for use with wire rope.
BS4898 1973	Specification for chain lever hoists.
BS7072 1989	Code of practice for inspection and repair of offshore containers (withdrawn, superseded by BS EN12079).
BS7121 Pt 1 1989	Code of practice for safe use of cranes. General.
BS7121 Pt 3 2000	Code of practice for safe use of cranes. Mobile cranes.
BS EN 353-1 2002	Personal protective equipment against falls from a height. Guided type fall arresters including a rigid anchor line.
BS EN 353-2 2002	Personal protective equipment against falls from a height. Guided type fall arresters including a flexible anchor line.
BS EN 354:2002	Personal protective equipment against falls from a height. Lanyards.
BS EN 355 2002	Personal protective equipment against falls from a height. Energy absorbers.
BS EN 358 2000	Personal protective equipment for work positioning and prevention of falls from a height. Belts for work positioning and restraint and work positioning lanyards.
BS EN 360 2002	Personal protective equipment against falls from a height. Retractable type fall arresters.
BS EN 361 2002	Personal protective equipment against falls from a height. Full body harnesses.

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BS EN 362 2004	Personal protective equipment against falls from a height. Connectors.
BS EN 363 2002	Personal protective equipment against falls from a height. Fall arrest systems.
BS EN 364 1993	Personal protective equipment against falls from a height. Test methods.
BS EN 365 2004	Personal protective equipment against falls from a height. General requirements for instructions for use and for marking.
BS EN818 Pt 1 1996	Short link chain for lifting purposes. Safety. General conditions of acceptance.
BS EN818 Pt 2 1997	Short link chain for lifting purposes. Safety. Medium tolerance chain for chain slings. Grade 8.
BS EN818 Pt 3 1999	Short link chain for lifting purposes. Safety. Medium tolerance chain for chain slings. Grade 4.
BS EN818 Pt 4 1997	Short link chain for lifting purposes. Safety. Chain slings. Grade 8.
BS EN818 Pt 5 1999	Short link chain for lifting purposes. Safety. Chain slings. Grade 4.
BS EN818 Pt 6 2000	Short link chain for lifting purposes. Safety. Chain slings. Specification for information for use and maintenance to be provided by the manufacturer.
BS EN818 Pt 7 2002	Short link chain for lifting purposes. Safety. Fine tolerance hoist chain, Grade T (Types T, DAT and DT).
BS EN1492 Pt 1 2000	Textile slings. Safety. Flat woven webbing slings, made of man-made fibres, for general-purpose use.
BS EN1492 Pt 2 2000	Textile slings. Safety. Round slings, made of man-made fibres, for general-purpose use.
BS EN12079 1999	Offshore containers. Design, construction, testing, inspection and marking.
BS EN12385 Pt 1 2002	Steel wire ropes. Safety. General requirements.
BS EN12385 Pt 4 2002	Steel wire ropes. Safety. Stranded ropes for general lifting applications.
US Fed Spec RR-C-271 Rev D Inc Amend 1	US Fed Spec shackles (very common in many parts of the world).


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9.3.4 International Standards for Lifting Equipment


ISO 509:1996	Pallet trucks – Principal dimensions
ISO 1074:1991	Counterbalanced fork-lift trucks – Stability tests
ISO 2262:1984	General purpose thimbles for wire rope
ISO 2374:1983	Lifting appliances – Range of maximum capacities for basic models
ISO 2408:2004	Steel wire ropes for general purposes – Minimum requirements
ISO 2415:1987	Forged shackles for general lifting purposes – Dee shackles and bow shackles
ISO 3076:1984	Short link chain for lifting purposes – Grade T (8), non-calibrated, for chain slings etc.
ISO 3077:2001	Short-link chain for lifting purposes – Grade T, (types T, DAT and DT), fine-tolerance hoist chain
ISO 3078:1987	Shipbuilding – Cargo winches
ISO 3184:1998	Reach and straddle fork-lift trucks – Stability tests
ISO 3189-1:1985	Wire rope sockets – Characteristics and conditions of acceptance
ISO 3189-2:1985	Produced by forging or machining
ISO 3189-3:1985	Produced by casting
ISO 3266:1984	Eyebolts for general lifting purposes
ISO 3691:1980	Powered industrial trucks – Safety code
ISO 4301-1:1986	Cranes and lifting appliances – Classification - Part 1: General
ISO 4301-2:1985	Lifting appliances - Classification – Part 2: Mobile cranes
ISO 4301-4:1989	Cranes and related equipment – Classification - Part 4: Jib cranes
ISO 4301-5:1991	Cranes – Classification – Part 5: Overhead travelling and portal bridge cranes
ISO 4302:1981	Cranes – Wind load assessment
ISO 4304:1987	Cranes other than mobile and floating cranes – General requirements for stability
ISO 4305:1991	Mobile cranes – Determination of stability
ISO 4309:1990	Cranes - Wire ropes – Code of practice for examination and discard
ISO 4310:1981	Cranes – Test code and procedures
ISO 4779:1986	Point and eye hooks grade M
ISO 4878:1981	Textiles – Flat woven webbing slings made of

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	man-made fibre
ISO 5766:1990	Pallet stackers and high-lift platform trucks – Stability tests
ISO 7363:1986	Cranes and lifting appliances – Technical characteristics and acceptance documents
ISO 7593:1986	Chain slings assembled by methods other than welding – Grade T(8)
ISO 7595:1984	Molten metal socketing wire ropes
ISO 7596:1982	Resin socketing wire ropes
ISO 7597:1987	Forged steel lifting hooks with point and eye for use with steel chains of grade T(8)
ISO 7752-1:1983	Lifting appliances – Controls – Layout and characteristics – Part 1: General principles
ISO 7752-2:1985	Lifting appliances – Controls – Layout and characteristics – Part 2: Basic arrangement and requirements for mobile cranes
ISO 7752-4:1989	Cranes - Controls – Layout and characteristics – Part 4: Jib cranes
ISO 7752-5:1985	Lifting appliances – Controls – Layout and characteristics – Part 5: Overhead travelling cranes and portal bridge cranes
ISO 8087:1985	Mobile cranes – Drum and sheave sizes
ISO 8306:1985	Cranes – Overhead travelling cranes and portal bridge cranes – Tolerances for cranes and tracks
ISO 8379:1998	Rough terrain trucks – Stability tests
ISO 8431:1988	Shipbuilding – Fixed jib cranes – Ship-mounted type for general cargo handling
ISO 8539:1986	Forged steel lifting components for use with grade T(8) chain
ISO 8566-1:1992	Cranes – Cabins – Part 1: General
ISO 8566-2:1995	Cranes – Cabins – Part 2: Mobile cranes
ISO 8566-3:1992	Cranes – Cabins – Part 3: Tower cranes
ISO 8566-4:1998	Cranes – Cabins – Part 4: Jib cranes
ISO 8566-5: 1992	Cranes – Cabins – Part 5: Overhead travelling and portal bridge cranes
ISO 8686-1:1989	Cranes – Design principles for loads and load combinations – Part 1: General
ISO 8686-3:1998	Cranes – Design principles for loads and load combinations – Part 3: Tower cranes
ISO 8686-5:1992	Cranes – Design principles for loads and load combinations – Part

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	5: Overhead travelling and portal bridge cranes
ISO 8792:1986	Wire rope slings – Safety criteria and inspection procedures for use
ISO 8793:1986	Steel wire ropes – Ferrule-secured eye terminations
ISO 8794:1986	Steel wire ropes – Spliced eye terminations for slings
ISO 9373:1989	Cranes and related equipment – Accuracy requirements for measuring parameters during testing
ISO 9374-1:1989	Cranes – Information to be provided – Part 1: General
ISO 9374-3:2002	Cranes – Information to be provided for enquiries, orders, offers and supply – Part 3: Tower cranes
ISO 9374-4:1989	Cranes – Information to be provided – Part 4: Jib cranes
ISO 9374-5:1991	Cranes – Information to be provided – Part 5: Overhead travelling cranes and portal bridge cranes
ISO 9926-1:1990	Cranes – Training of drivers – Part 1: General
ISO/DIS 9927-1:1994	Cranes – Inspections – Part 1: General
ISO 9928-1:1990	Cranes – Crane driving manual – Part 1: General
ISO 9942-1:1994	Cranes – Information labels – Part 1: General
ISO 9942-3:1999	Cranes – Information labels – Part 3: Tower cranes
ISO 10245-1:1994	Cranes – Limiting and indicating devices – Part 1: General
ISO 10245-2:1994	Cranes – Limiting and indicating devices – Part 2: Mobile cranes
ISO 10245-3:1999	Cranes – Limiting and indicating devices – Part 3: Tower cranes
ISO 10245-5:1995	Cranes – Limiting and indicating devices – Part 5: Overhead travelling and portal bridge cranes
ISO 10972-1:1998	Cranes – Requirements for mechanisms – Part 1: General
ISO 10972-3:2003	Cranes – Requirements for mechanisms – Part 3: Tower cranes
ISO 10973:1995	Cranes – Spare parts manual
ISO 11630:1997	Cranes – Measurement of wheel alignment
ISO 11660-1:1999	Cranes – Access, guards and restraints – Part 1: General
ISO 11660-2:1994	Cranes – Access, guards and restraints – Part 2: Mobile cranes
ISO 11660-3:1999	Cranes – Access, guards and restraints – Part 3: Tower cranes
ISO 11660-5:2001	Cranes – Access, guards and restraints – Part 5: Bridge and gantry cranes
ISO 11661:1998	Mobile cranes – Presentation of rated capacity charts
ISO 11662-1:1995	Mobile cranes – Experimental determination of crane performance

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	– Part 1: Tipping loads and radii
ISO 11994:1997	Cranes – Availability – Vocabulary
ISO 12210-1:1998	Cranes – Anchoring devices for in-service and out-of-service conditions – Part 1: General
ISO 12210-4:1998	Cranes – Anchoring devices for in-service and out-of-service conditions – Part 4: Jib cranes
ISO 12478-1:1997	Cranes – Maintenance manual – Part 1: General
ISO 12480-1:1997	Cranes – Safe use – Part 1: General
ISO/DIS 12482-1:1995	Cranes – Condition monitoring – Part 1: General
ISO 13562-1:2000/1-2	Industrial variable-reach trucks – Part 1: Stability tests. Industrial variable-reach trucks – Part 2: Additional stability tests for trucks handling freight containers of 6 m length and above
ISO 16368:2003	Mobile elevating work platforms – Design calculations, safety requirements and test methods

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