INTERNATIONAL STANDARD

**ISO 18758-1**

First edition
2018-06

# Mining and earth-moving machinery — Rock drill rigs and rock reinforcement rigs —

## Part 1: Vocabulary

*Engins d'exploitation minière et de terrassement — Appareils de forage et de renfort de roches —*

*Partie 1: Vocabulaire*



Reference number
ISO 18758-1:2018(E)



ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

# Contents

Page

# 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 82, *Mining*, in cooperation with Technical Committee ISO/TC 127, *Earth-moving machinery*.

A list of all parts in the ISO 18758 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.



 

# Introduction

To ensure that communication in the domain of rock drill rigs is effective and that difficulties in understanding are minimized, it is essential that the various stakeholders use the same concepts and concept representations.

This document is of relevance, in particular, for the following stakeholder groups:

— machine manufacturers;

— mining companies;

— health and safety bodies (regulators, accident prevention organisations, market surveillance, etc.).

Others that can benefit from a standardised terminology are:

— machine operators;

— service providers, e.g. for maintenance;

— third party system and technology providers.

# Mining and earth-moving machinery — Rock drill rigs and rock reinforcement rigs —

# Part 1: Vocabulary

## 1 Scope

This document defines terms relating to rock drill rigs and rock reinforcement rigs, including their intended use, working methods, types, and main components.

It also provides (see Annex A) several classifications of rock drill rigs, based on intended use, mobility and type of operation.

The primary use of this document is in instruction handbooks for rock drill rigs and in marketing material. Safety related terminology is used in ISO 18758-2.

This document is not applicable to drill rigs for soil and rock mixture.

NOTE Documents covering vocabulary of related subjects are found in the bibliography.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

Refer to Clauses 4 to 20.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

## 4 Terms and definitions related to rock drilling intended use

**4.1**
**blast hole drilling**
drilling of holes to be charged with explosives for blasting

**4.1.1**
**shaft sinking drilling**
drilling of blast holes for sinking a shaft

**4.1.2**
**face drilling**
drilling of blast holes in the front wall at the end of a drift, rock chamber or tunnel

**4.1.3**
**drilling for secondary breaking**
drilling of blast holes in the boulders remaining after a blast

**4.1.4**
**long hole production drilling**
drilling of blast holes of extended length to excavate ore

**4.1.4.1**
**fan drilling**
*long hole production drilling* (4.1.4) where the holes are drilled in the same plane but at different angles, both left and right of vertical, to form a fan like array

**4.1.5**
**bench drilling**
drilling of blast holes on benches in open pit mines

**4.2**
**dimensional stone drilling**
drilling of holes for quarrying natural stone

**4.3**
**drainage drilling**
drilling of drainage holes for methane or water

**4.4**
**raise boring**
connecting two levels by drilling a pilot hole down to the lower level, removing the *drill bit* (11.5) and replacing it by a reamer head which is then rotated and pulled back up towards the machine to create the raise

**4.5**
**reaming**
enlargement of a drill hole by using a larger drill or blasting

Note 1 to entry: The term reaming also refers to widening a shaft, drift or tunnel.

**4.5.1**
**back-reaming**
enlargement of a bore by pulling back a tool of larger diameter than that previously used to form the bore

## 5 Terms and definitions related to rock drilling methods

**5.1**
**rock drilling**
**drilling**
process by which a borehole is produced in rock by rotary, rotary percussive or percussive methods and in any predetermined direction in relation to the *rock drill rig* (7.1)

[SOURCE: ISO 22475-1:2006, 3.1.5, modified — The synonym “rock drilling” has been added. In the definition, “produced in any geological formation” has been replaced with “produced in rock” and the “thrust” methods have been deleted.]

**5.1.1**
**percussive drilling**
drilling method where the hole is produced by crushing the rock at the bottom of the drill-hole by striking it with the drilling tool and removing the cuttings out of the borehole

Note 1 to entry: Cuttings are defined in ISO 22475-1:2006, 3.3.7.

**5.1.2**
**rotary-percussive drilling**
drilling method where a piston is used to strike the bid either directly (down the hole hammer drills) or by percussive energy transmitted via a *drill string* (11.1)

Note 1 to entry: The piston is typically powered by either hydraulic fluid or compressed air. At the same time the drill bit is rotated either continuously or intermittently.

Note 2 to entry: The cuttings can be continuously removed out of the borehole by a flushing medium, which is carried to the drilling tool.

**5.1.3**
**down-the-hole drilling**
**in-the-hole drilling**
**DTH**
**ITH**
drilling of holes using a *down-the-hole hammer rock drill* (10.2)

**5.1.4**
**rotary drilling**
drilling method where the drilling tool at the bottom of the borehole is rotated and, at the same time, a feed force is applied by a feed system

Note 1 to entry: The ground or rock at the bottom of the borehole is crushed or cut by pressure, shear or tensile stress produced by the different drilling tools. The cuttings are periodically or continuously removed out of the bore hole.

Note 2 to entry: Drill bits can be of the roller or drag types.

**5.1.5**
**core drilling**
drilling method where a hollow centred *drill bit* (11.5) is used to produce cylindrical rock cores to investigate the properties of a rock mass

Note 1 to entry: Core drilling is performed with hard cutters, usually with annular diamond rebar, and pipes for the extraction of the drill core.

Note 2 to entry: Core drilling is performed from the surface to find orebodies and in underground mines to find out how the orebody extends.

Note 3 to entry: For terms related to core drilling see ISO 22475-1.

**5.1.6**
**boxhole boring**
<mining> drilling method where an opening upwards from a drift to a production room is achieved by boring it to its full diameter in a single pass with a machine designed specifically for the purpose

**5.1.7**
**tube drilling**
drilling method where a rotation torque is transferred to the *drill bit* (11.5) through relatively thin wall tubes rather than rods, with a minimum-sized flushing fluid canal

## 6 Terms and definitions related to rock reinforcement methods

**6.1**
**rock bolting**
**bolting**
in mine workings, tunnels, or rock abutments, method of securing or strengthening closely jointed or highly fissured rocks by inserting and firmly anchoring *rock bolts* (13.1) oriented perpendicular to the rock face or mine opening

**6.1.2**
**cable bolting**
in long holes being drilled in rock, process of fixing cables with cement grout or chemical compounds to stabilize the rock mass

**6.1.3**
**selective bolting**
bolting of weak sections or loose rock

**6.1.4**
**systematic bolting**
bolting in a pre-determined pattern

**6.2**
**meshing**
**netting**
installing a mesh as rock support on ceiling or walls

**6.3**
**grouting**
input of material (which normally hardens) in joints and voids of the rock for sealing or reinforcement

Note 1 to entry: Examples of grouting materials are cement, resin and plastic.

## 7 Terms and definitions related to rock drill rig types

**7.1**
**rock drill rig**
machine for drilling holes in rock

Note 1 to entry: Rock drill rigs are designed to provide one or more of the rock drilling functions of Clause 4, using one or more of the rock drilling methods of Clause 5. They can be designed for use on the surface or underground or both. Rock drill rigs normally consist of a *carrier* (8.1) carrying one or more rock drills and the supporting systems needed to carry out the drilling.

Note 2 to entry: See Figures 1, 2 and 3.

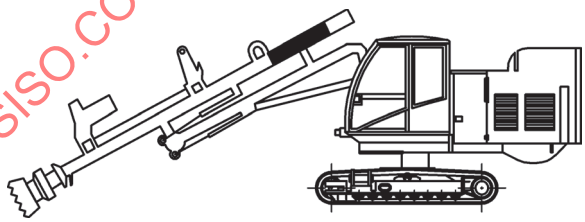

**Figure 1 — Crawler based variable reach rock drill rig normally used to drill blast holes on the surface**

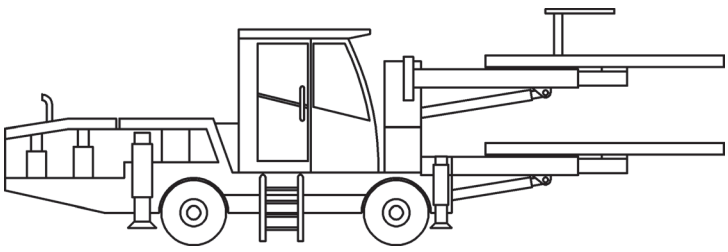

**Figure 2 — Rubber-tyred multiple boom rock drill rig for drilling blast holes underground**

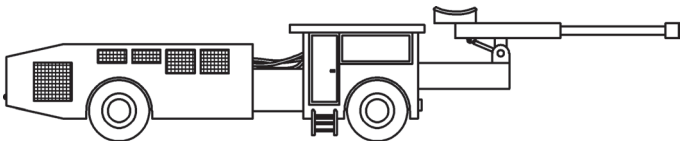

**Figure 3 — Low profile rubber-tyred rock drill rig for drilling blast holes underground**

**7.2**
**rock reinforcement rig**
*rock drill rig* (7.1) equipped for *bolting* (6.1), *meshing* (6.2) or *grouting* (6.3) or a combination of them

**7.3**
**rock boring machine**
*rock drill rig* (7.1) used to create an underground opening, drift or tunnel by mechanically boring out the rock

**7.3.1**
**raise bore machine**
**RBM**
*rock drill rig* (7.1) for *raise boring* (4.4)

**7.4**
**raise climber**
*rock drill rig* (7.1) on rails, designed for drilling and blasting vertical or near vertical shaft or raise

## 8 Terms and definitions related to general components and systems

**8.1**
**carrier**
machine that provides mobility for, and supports, the mass of a *rock drill rig* (7.1) or *rock reinforcement rig* (7.2)

**8.2**
**hose reel**
on a *rock drill rig* (7.1), drum-like structure around which the water hose is wrapped when *tramming* (14.11) the rig

**8.3**
**power pack**
unit consisting of a power source and a means of transmitting that power to one or more functions on a machine

Note 1 to entry: Note to entry: Typical power sources are diesel engine and electric motors. The typical output is hydraulic or pneumatic.

**8.4**
**cable reel**
on a *rock drill rig* (7.1), electrical cable drum used to store the power cable during *tramming* (14.11)

**8.5**
**battery isolation switch**
switch used to isolate the battery from the electrical circuit

## 9 Terms and definitions related to the operator station

**9.1**
**operator cab**
enclosure on the machine from where the machine is operated

[SOURCE: ISO 13333:1994, 3.3]

**9.2**
**operator canopy**
overhead operator protective structure on an open enclosure on the machine from where the machine is operated

Note 1 to entry: The canopy roof can be vertically adjusted.

**9.3**
**elevating operator station**
*operator cab* (9.1) or *operator canopy* (9.2) that can be elevated

**9.4**
**boom-mounted working platform**
working platform used for raising or lowering personnel, consisting of a platform fitted onto an articulated or telescopic *boom* (12.3)

**9.5**
**temporary roof support system**
**TRS**
device on a *rock drill rig* (7.1) to provide temporary roof support, protecting the bolting rig *operator* (17.4) from roof falls

**9.6**
**tramming stand**
platform on the *rock drill rig* (7.1) from where the standing *operator* (17.4) controls the *tramming* (14.11)

## 10 Terms and definitions related to rock drilling and rock reinforcement units

**10.1**
**top hammer rock drill**
machine mounted on a *drill feed* (12.2) that transfers percussive and rotary energy to the *drill bit* (11.5) through one or more *drill rods* (11.2)

Note 1 to entry: See Figure 4.

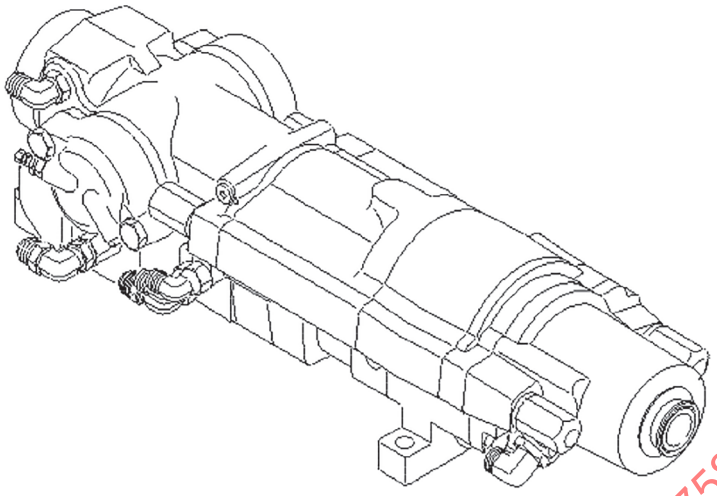

**Figure 4 — Top hammer rock drill (from ISO 5391:2003, Figure 46)**

**10.1.1**
**shank**
internal part of a *top hammer rock drill* (10.1) to transfer energy, rotation and impact

Note 1 to entry: It is normally equipped with one threaded end and one end with splines for transfer of rotation energy.

**10.1.2**
**front head**
forward housing of a *top hammer rock drill* (10.1)

**10.1.3**
**piston rod**
element transmitting mechanical force and motion from the piston

**10.2**
**down-the-hole hammer rock drill**
**down-the-hole drill**
**DTH hammer**
cylindrical pneumatic percussive rock drill, fitted with a *drill bit* (11.5) and attached directly to the bottom of the *drill string* (11.1) so that it can be inserted into the hole as it drills

Note 1 to entry: See Figure 5.

**Figure 5 — Down-the-hole hammer rock drill (from ISO 5391:2003, Figure 47)**

**10.2.1**
**top sub**
short threaded tube forming the upper part of a *DTH hammer* (10.2)

**10.3**
**rotation unit**
set of gears enclosed in a housing, with a protruding threaded spindle that attaches to the *drill pipes* (11.2), that is rotated by a hydraulic, electric or pneumatic motor

Note 1 to entry: Rotation units are used on DTH drill rigs (for rotary drilling).

**10.4**
**bolting unit**
rock *bolting* (6.1) equipment on the machine

**10.5**
**grouting unit**
on a *rock reinforcement rig* (7.2), unit for mixing, pumping or injecting grout, cement, concrete or drilling fluids

## 11 Terms and definitions related to drilling tools (consumables)

**11.1**
**drill string**
all components, such as *drill rods* (11.2), bit, stabilizers, etc., that are coupled together for transforming the rotation and/or percussion energy from the drill or rotation unit and are inserted into the hole when drilling

**11.2**
**drill rod**
drill pipe
drill steel
rod (bar) designed to transfer flushing media, rotation and percussion energy from the rock drill to the *drill bit* (11.5)

Note 1 to entry: It can have either threaded or tapered ends, or integral with a drill bit at one end and a striking surface at the other.

**11.3**
**extension rod**
threaded or tapered rod that transfers flushing media, rotation and percussion energy between the rock drill and the *drill bit* (11.5)

**11.4**
**shank adapter**
rod that connects the *drill string* (11.1) to a rock drill

**11.5**
**drill bit**
device attached to, or forming an integral part of, the *drill string* (11.1), used as a cutting tool to penetrate the formation being drilled by the drilling method employed

[SOURCE: ISO 22475-1:2006, 3.2.2]

**11.6**
**chuck**
component of the drill head that provides the connection to the *drill rod* (11.2) to transmit *torque* (14.14) and thrust from the rock drill or *shank* (10.1.1) to the drill rod

**11.7**
**deep chuck**
*chuck* (11.6) type to provide overlapping connection to a *drill rod* (11.2) of 75 mm minimum

Note 1 to entry: This is typical for roof *bolting* (6.1).

**11.8**
**flushing medium**
liquid or gaseous medium used to move cuttings or samples and to lubricate and cool the drilling tool from the borehole

Note 1 to entry: It is normally water or air or a combination of both.

[SOURCE: ISO 22475-1:2006, 3.2.5, modified - Note 1 to entry added.]

## 12 Terms and definitions related to drill string and bolt handling systems

**12.1**
**feed beam**
structure on which a drill head is mounted providing linear movement to the head, with all its attachments and parts, and fitted with a *rock drill cradle* (12.6) that is connected to a hydraulic cylinder or motor by pulleys and a cable, or by chains and sprockets

**12.2**
**drill feed**
mechanism for advancing the drill

**12.3**
**boom**
structure for positioning of the *mast* (12.5) or *feed beam* (12.1) or *boom-mounted working platform* (9.4)

**12.4**
**boom extension**
part of the *boom* (12.3) which is capable of telescopic movement to vary its length

**12.5**
**mast**
structure for supporting and guiding the drilling tools on large surface *rock drill rigs* (7.1)

**12.6**
**rock drill cradle**
mechanical part used to contain and transfer the rock drill along the *feed beam* (12.1)

**12.7**
**cradle indexer**
device used to move the *rock drill cradle* (12.6) laterally

**12.8**
**cradle position**
cradle position on the feeder

**12.9**
**drill rod rack**
**drill pipe rack**
structure that holds *drill rods* (11.2) or drill pipes

**12.10**
**carousel**
device used for storage and transport of rods or pipes which rotates about an axis, and from which the *drill rods* (11.2) or drill pipes are being fed into the *drill string* (11.1)

**12.11**
**bolt magazine**
storage magazine on a bolting rig used to hold a number of *rock bolts* (13.1)

**12.12**
**drill rod jaws**
device having jaws that are able to grip the *drill rod* (11.2) to couple and uncouple them

**12.13**
**breakout wrench**
device used on a *rock drill rig* (7.1) to grip and turn threaded drill tubes to uncouple them

Note 1 to entry: Common when using *down-the-hole hammers* (10.2).

**12.14**
**vertical drill string support**
device temporarily supporting the *drill string* (11.1) from falling down the hole during adding or removal of drill sections on multi-pass or deep hole surface drill rigs

**12.15**
**horizontal drill string support**
structure for supporting the free length of the *drill rod* (11.2)

## 13 Terms and definitions related to rock support components

**13.1**
**rock bolt**
bolt for anchoring in solid rock to stabilise the rock

Note 1 to entry: Examples of bolts are solid steel bar, hollow steel bar, steel cable. The bolts may be grouted with, for example, cement, resin or plastic.

Note 2 to entry: Rock bolts exist that can be equipped with an instrument for measuring, e.g. stress or deformation, in the bolt material.

**13.2**
**chemical grout**
grout with solution that hardens

## 14 Terms and definitions related to movement and force

**14.1**
**cradle index**
movement of the drill cradle laterally

**14.2**
**feed**
to move a drill stem to cause the bit to cut and penetrate the formation being drilled

**14.3**
**feed extension**
linear movement of the feeder to extend and retract its length

**14.4**
**auto-feed**
feed function that advances the drill head at a set rate

**14.5**
**feed rotation**
rotational movement of the feeder

**14.6**
**feed force**
force acting on the rock drill in the drilling direction

**14.7**
**boom lift**
up and downward movement of the *boom* (12.3)

**14.8**
**boom swing**
right and left movement of the *boom* (12.3)

**14.9**
**boom rotation**
angle, in degrees, from the longitudinal axis of the machine to the longitudinal centre of the *boom* (12.3) at maximum swing position

**14.10**
**breakout**
action of loosening the threaded joints between *drill string* (11.1) components such as *drill rod* (11.2), *drill bit* (11.5) or any other subs

**14.11**
**tramming**
short movements of a *rock drill rig* (7.1) in drilling condition on site

**14.11.1**
**sweep radius**
the outer radius, *R*, of the turning circle for a *rock drill rig* (7.1) with *booms* (12.3) in *tramming* (14.11)

Note 1 to entry: See Figure 6.

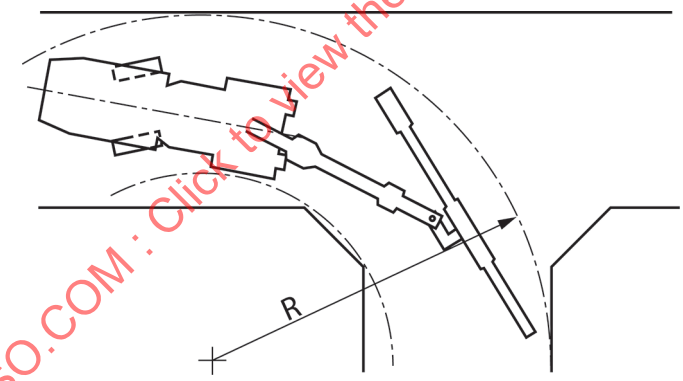


**Figure 6 — Sweep radius**

**14.12**
**travelling**
moving of the *rock drill rig* (7.1) in non-operating condition

**14.13**
**transport**
moving the *rock drill rig* (7.1) by trailer, ship, etc.

**14.14**
**torque**
drill head rotational torque

[SOURCE: ISO 22476-15:2016, 3.9]

## 15 Terms and definitions related to rock drill rig operation modes

**15.1**
**full drill cycle automation mode**
operating mode in which the *rock drill rig* (7.1) drills a pre-programmed hole pattern automatically

Note 1 to entry: This includes automatic boom and feed positioning.

**15.2**
**single hole automation mode**
operating mode in which the *rock drill rig* (7.1), initiated by the *operator* (17.4), drills the full length of the *drill rod* (11.2) and then adds rods automatically; when the pre-programmed hole length has been drilled, the rock drill rig stops and the rods can be removed automatically or semi-automatically

**15.3**
**single rod automation mode**
operating mode in which the *rock drill rig* (7.1), initiated by the *operator* (17.4), drills the full length of the single *drill rod* (11.2) and then returns automatically

**15.4**
**manual rod handling mode**
operating mode in which the *rock drill rig* (7.1), initiated by the *operator* (17.4), drills one rod and then stops with the possibility of additional rods being added and removed manually using clamps or directly into the *drill string* (11.1)

## 16 Terms and definitions related to rock drill rig performance

**16.1**
**coverage area**
area that the rock drill can drill in from one stationary position of the *rock drill rig* (7.1)

Note 1 to entry: The coverage area depends largely on the boom configuration of the rock drill rig.

**16.2**
**angular deviation**
difference of actual and intended alignment of drill

**16.3**
**hole deviation**
difference of actual and intended position of drill holes that occurs during drilling

Note 1 to entry: Hole deviation is due to the drill bit changing direction as a result of, for example, inhomogeneity in the rock or the fact that the *drill rod* (11.2) is bent.

**16.4**
**look-out angle**
angle between the practical (drilled) and the theoretical tunnel profile

## 17 Terms and definitions related to operation

**17.1**
**hazard zone**
zone within or around a *rock drill rig* (7.1) in which a person is exposed to risk of injury or damage to health

Note 1 to entry: For a rock drill rig, this means the area in which a person can be reached by an operational movement of the rock drill rig, its working devices, its auxiliary equipment or swinging or falling equipment.

**17.2**
**rotating drill string hazard zone**
*hazard zone* (17.1) formed by the rotating *drill string* (11.1)

**17.3**
**working area**
area near a machine in which its tools are moved in order to carry out work

**17.4**
**operator**
person operating the *rock drill rig* (7.1) while drilling

Note 1 to entry: The operator can also be the driver of the rock drill rig.

**17.5**
**driver**
person operating the *tramming* (14.11) and *travelling* (14.12) of the *rock drill rig* (7.1)

Note 1 to entry: The driver can be transported on the rock drill rig, can be on foot (pedestrian driver) or can control the rock drill rig by remote control.

## 18 Terms and definitions related to winching

**18.1**
**hook load**
actual load carried by the hook of the bottom block, including the weight of the bottom block and the running ropes

Note 1 to entry: Note to entry: A distinction shall be made between the normal hook load and the exceptional hook load as defined in 18.1.1 and 18.1.2.

**18.1.1**
**normal hook load**
maximum permissible *hook load* (18.1) under *normal operating conditions* (18.2)

**18.1.2**
**exceptional hook load**
maximum permissible *hook load* (18.1) under *exceptional operating conditions* (18.3)

**18.2**
**normal operating condition**
normal or usual operating conditions such as those occurring mainly during the sinking and clearing out of bore holes

**18.3**
**exceptional operating condition**
operating conditions that do not arise frequently or are of limited duration, during which the normal *hook load* (18.1) can be exceeded

Note 1 to entry: Examples are drill tool retrieval jobs and casing operations. Casing is defined in ISO 22475-1:2006, 3.2.4.

**18.4**
**safety factor of rope**
ratio between the minimum breaking load of a rope, as specified by the manufacturer, and the maximum pulling force of a rope on the first layer of a winch

**18.5**
**line pull**
pulling force to the rope by the winch at the outer diameter of the drum or outer layer of the rope

## 19 Terms and definitions related to stability

**19.1**
**rig stabiliser**
device and system used to stabilise the machine by supporting or levelling of the complete structure

EXAMPLE Jacks, suspension locking devices, outriggers, extending axles.

**19.2**
**stability angle**
angle between the vertical plane passing through the tipping line and the plane passing through the centre of gravity and the tipping line

Note 1 to entry: The stability angle thus defines the tilt angle to overturning.

**19.3.1**
**tipping line**
<rock drill rigs, crawler- and wheel-mounted, in the direction of travel> lines connecting the lowest support points of contact of the idlers, rollers or the drives of the tracks or the front wheels

Note 1 to entry: see Figures B.2 to B.6 in ISO 18758-2:2018.

**19.3.2**
**tipping line**
<rock drill rigs, crawler- and wheel-mounted, in sideward direction (perpendicular to the direction of travel)> lines passing through the centres of the support contact areas on each side of the chassis

Note 1 to entry: See Figures B.2 to B.6 in ISO 18758-2:2018.

**19.3.3**
**tipping line**
<rock drill rigs on support legs> lines connecting the centres of the support legs or jacks on each side of the chassis

Note 1 to entry: see Figures B.2 and B.5 in ISO 18758-2:2018.

**19.4**
**total vertical resultant force**
sum of the total weight force of the *rock drill rig* (7.1) and all other working forces in the vertical direction

Note 1 to entry: Resultant horizontal forces (wind forces, etc.) have an influence only on the position of the total vertical resultant force.

## 20 Terms and definitions related to maintenance and repair

**20.1**
**maintenance**
act of upkeep, including inspection, lubrication, cleaning, adjustment and scheduled parts replacement

[SOURCE: ISO 11525-1:2012]

**20.2**
**examination**
periodic thorough visual inspection by a competent person to determine faults or damage, of all components important to safety, and functional testing including all necessary measurements

**20.3**
**check**
frequent inspection of components by the *operator* (17.4) or the maintenance personnel to detect obvious damages or faults, and to determine, by means of spot checks, their ability to function



 

**20.4**
**drill grinding**
grinding of worn *drill bit* (11.5)

**20.5**
**gauge wear**
wear on the *drill bit* (11.5) diameter

# Annex A
(informative)

# Classification

## A.1 Classification of rigs according to intended use

See Figure A.1.

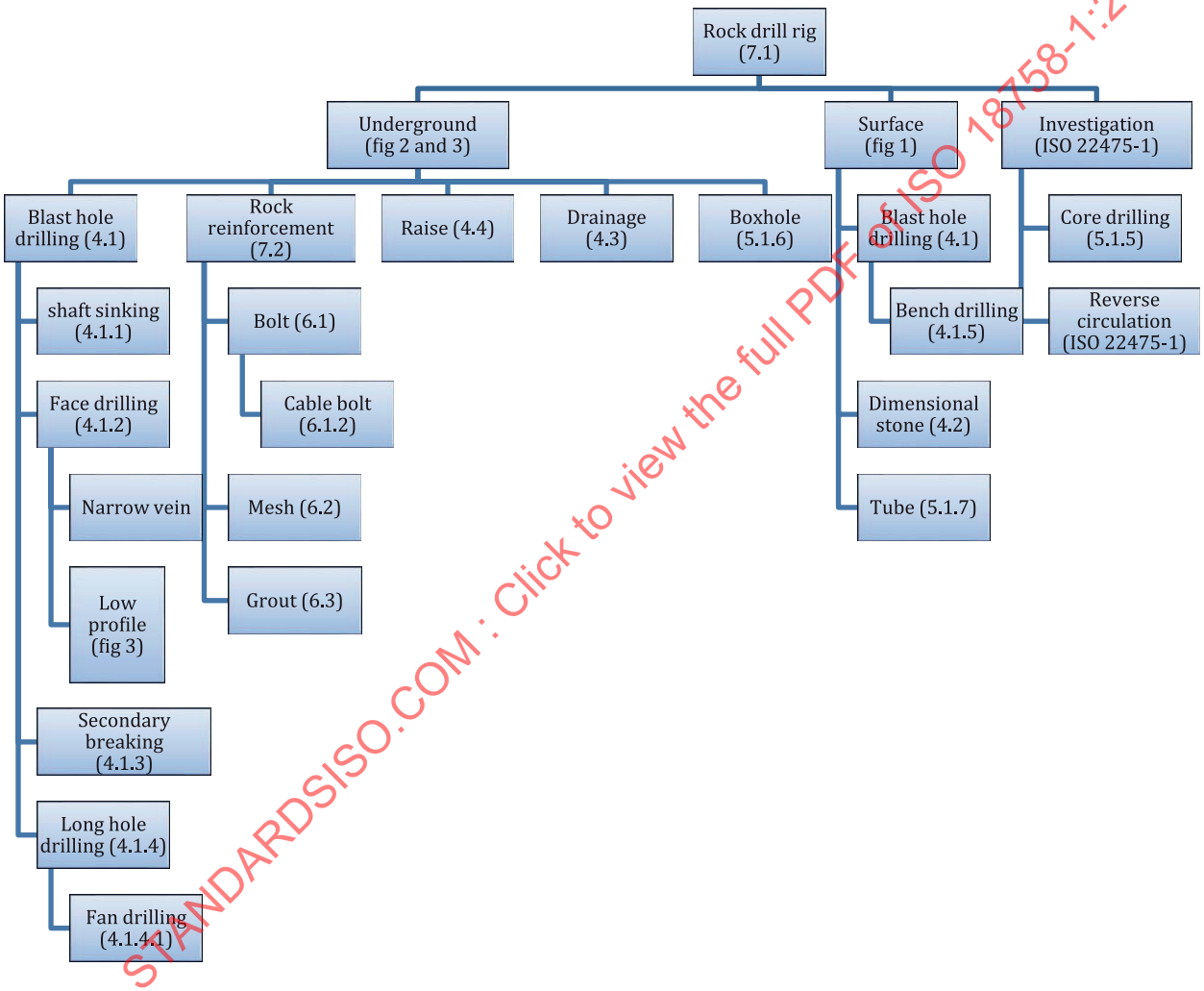




**Figure A.1**