



**International  
Standard**

**ISO 22932-5**

**Mining — Vocabulary —  
Part 5:  
Drilling and blasting**

*Exploitation minière — Vocabulaire —  
Partie 5: Forage et abattage à l'explosif*

**Second edition  
2026-06**

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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](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

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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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 82, *Mining*.

A list of all parts in the ISO 22932 series can be found on the ISO website.

This second edition cancels and replaces the first edition (ISO 22932-5:2023) and ISO 18758-1:2018, which have been technically revised.

The main changes are as follows:

- Addition of terms and definitions to new and existing clauses and addition of editorial changes.

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](http://www.iso.org/members.html).

## Introduction

The ISO 22932 series has been prepared in order to standardize and to coordinate the global use of technical terms and definitions in mining, for the benefit of the experts working on different types of mining activities.

The need for the ISO 22932 series arose from the widely varying interpretation of terms used within the industry and the prevalent use of more than one synonym.

To ensure that communication in the domain of drilling and blasting 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).

Others that can benefit from a standardised vocabulary are:

- machine operators;
- service providers, e.g. for maintenance;
- third party system and technology providers.

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# Mining — Vocabulary —

## Part 5: Drilling and blasting

### 1 Scope

This document specifies the drilling and blasting terms used in mining. This includes defining terms relating to rock drill rigs and rock reinforcement rigs, including their intended use, working methods, types, and components.

Vocabulary for safety of rock drill rigs and rock reinforcement rigs is used in ISO 18758 [\[1\]](#).

### 2 Normative references

There are no normative references in this document.

### 3 Terms and definitions

ISO and IEC maintain terminology 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/>

#### 3.1 Rock drilling concepts

##### 3.1.1 drilling

process by which a *borehole* ([3.4.1](#)) is produced in any geological formation by rotary, rotary percussive, percussive or thrust methods and in any predetermined direction in relation to the drill rig

EXAMPLE 1 Rock drilling purpose.

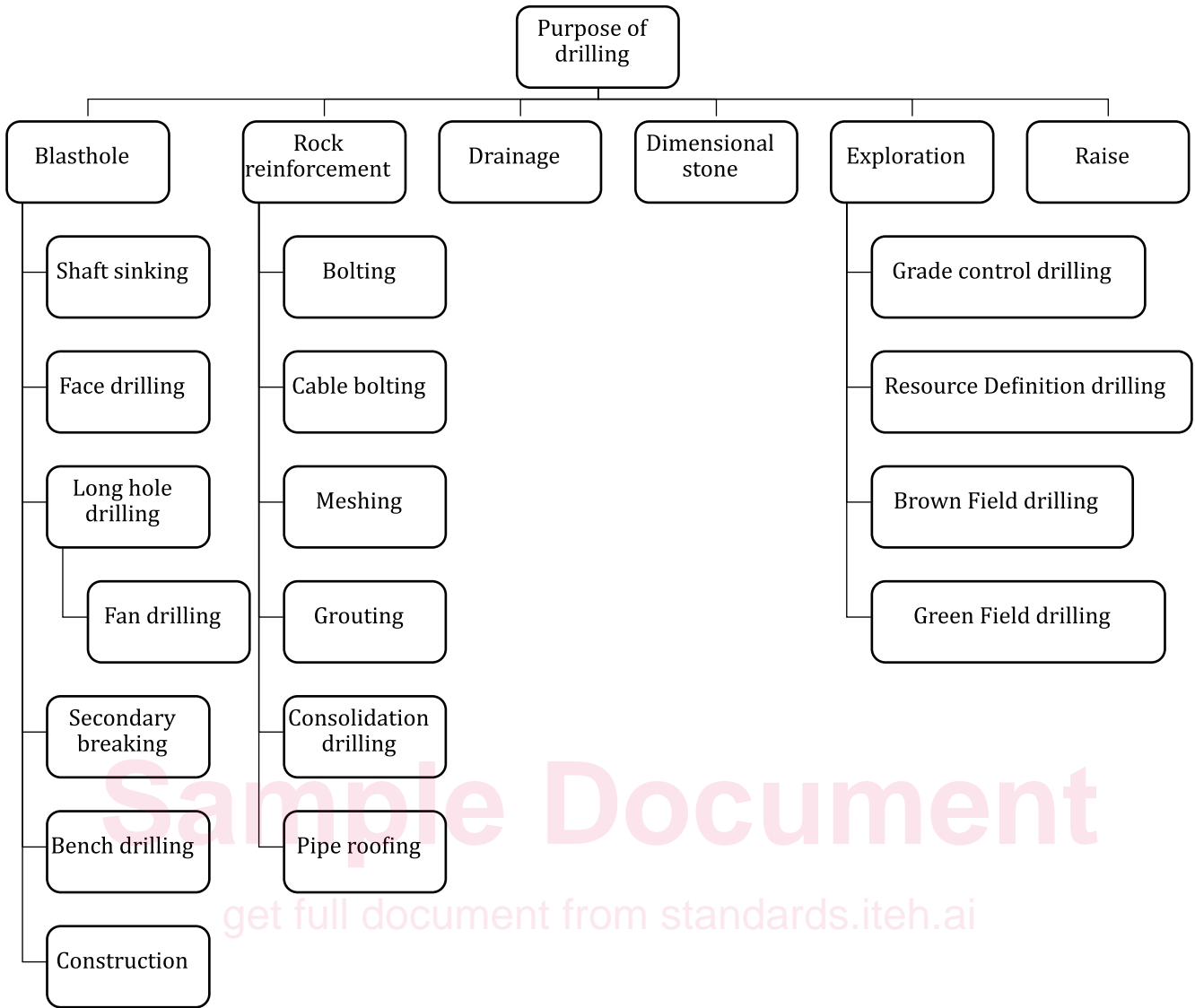


Figure 1 — Rock drilling purpose

EXAMPLE 2 Aspects of drilling.

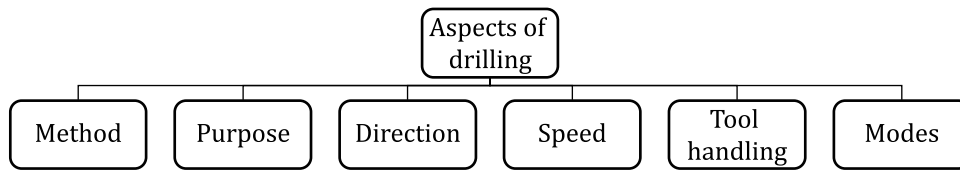


Figure 2 — Aspects of drilling

EXAMPLE 3 Rock drilling technologies.

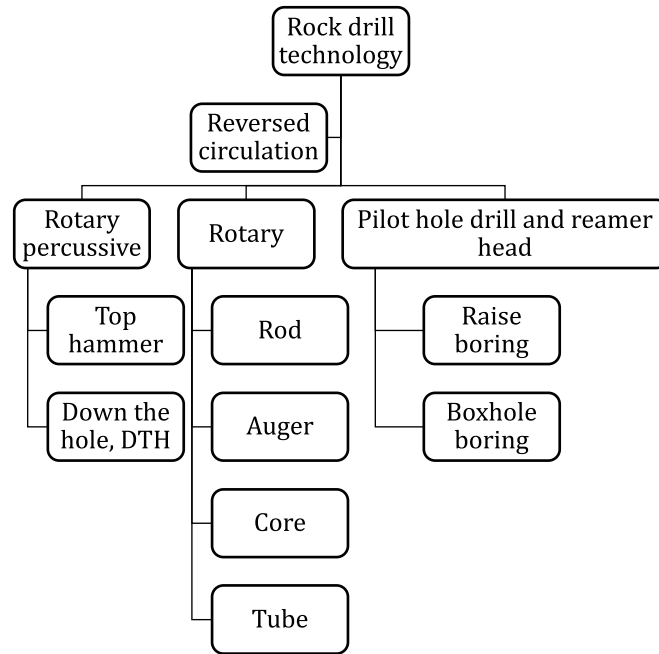


Figure 3 — Rock drilling technologies

[SOURCE: ISO 22475-1:2021 [\[2\]](#), 3.1.5, examples have been added.]

### 3.1.2

#### bench drilling

drilling [\(3.1.1\)](#) of blastholes [\(3.41.1\)](#) on bench [\(3.24.3\)](#) in mines

Note 1 to entry: See *bench blasting* [\(3.46.3\)](#).

### 3.1.3

#### blasthole drilling

drilling [\(3.1.1\)](#) of holes to be charged with explosive [\(3.37.3\)](#) for blasting [\(3.46.1\)](#)

### 3.1.4

#### consolidation drilling

drilling [\(3.1.1\)](#) of long holes in the front or at an angle of the drift direction to be injected with consolidation fluid

EXAMPLE *Grout* [\(3.14.6\)](#).

Note 1 to entry: Drift is defined in ISO 22932-1:2020 [\[3\]](#), 3.1.6.11.

### 3.1.5

#### coverage area

area that the rock drill [\(3.9.1\)](#) can drill from one stationary position of the rock drill rig [\(3.8.1\)](#)

Note 1 to entry: The *coverage area* [\(3.1.5\)](#) depends largely on the boom [\(3.10.16\)](#) configuration and of the rock drill rig [\(3.8.1\)](#), and if there is a turn able superstructure.

Note 2 to entry: *Hole deviation* [\(3.4.13\)](#) is due to the drill bit [\(3.11.1\)](#) changing direction as a result of, for example, inhomogeneity in the rock or a bent drill rod [\(3.10.3\)](#). *Hole deviation* [\(3.4.13\)](#) can be minimised by sturdy drill string [\(3.10.1\)](#) support and proper guidance while collaring [\(3.4.16\)](#).

### 3.1.6

#### dimensional stone drilling

drilling [\(3.1.1\)](#) of holes for quarrying natural stone

### 3.1.7

#### **drainage drilling**

*drilling* (3.1.1) of drainage holes for methane or water

### 3.1.8

#### **drifting**

*drilling* (3.1.1), *blasting* (3.46.1) and excavating rock to create transportation and access openings to ore bodies in an underground mining operation

### 3.1.9

#### **drillability**

relative speed at which a material may be penetrated by a *drill bit* (3.11.1)

Note 1 to entry: High drill-ability denotes easy penetration at a fast rate.

[SOURCE: Dictionary of mining, mineral, and related terms [4].]

### 3.1.10

#### **drilling for secondary breaking**

*drilling* (3.1.1) of *blasthole* (3.41.1) in the boulders remaining after a blast

### 3.1.11

#### **exploration drilling**

exploratory drilling

application of the mechanical engineering technology of deep *drilling* (3.1.1) to determine the profile of the formation and retrieve strata samples to obtain the relevant geological parameters

Note 1 to entry: For *exploration drilling* (3.1.11) see also ISO 22932-4 [5], 3.4 and ISO 22475-1 [6].

[SOURCE: IWA 33-1:2019 [7], 5.19, the term "exploration drilling" and a note have been added.]

### 3.1.12

#### **face drilling**

*drilling* (3.1.1) of *blasthole* (3.41.1) in the front wall at the end of a drift, *rock chamber* (3.24.7) or tunnel

### 3.1.13

#### **long-hole production drilling**

*drilling* (3.1.1) of *blasthole* (3.41.1) of extended length to excavate ore

### 3.1.14

#### **fan drilling**

*long-hole production drilling* (3.1.13) 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

### 3.1.15

#### **line drilling**

technique involving a single row of closely spaced, uncharged, small diameter holes drilled along the required excavation line, thereby providing a plane of weakness to which the primary blast can break

[SOURCE: BS 3618-6:1972 [8].]

### 3.1.16

#### **probe drilling**

*drilling* (3.1.1) of long holes with a *face rock drill rig* (3.8.7) in the direction of the drift to examine the rock ahead of the face

### 3.1.17

#### **reaming**

enlargement of a drill hole by using a larger drill or *blasting* (3.46.1)

Note 1 to entry: The term *reaming* (3.1.17) also refers to widening a shaft, drift or tunnel. See also *back-reaming* (3.1.18).

### 3.1.18

#### **back-reaming**

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

Note 1 to entry: See also *reaming* ([3.1.17](#)).

### 3.1.19

#### **shaft sinking drilling**

*drilling* ([3.1.1](#)) of *blasthole* ([3.41.1](#)) for sinking a shaft

### 3.1.20

#### **grade control drilling**

*exploration drilling* ([3.1.11](#)) to provide high resolution data for short-term excavation design

Note 1 to entry: Typical grid size is 30 m × 30 m.

### 3.1.21

#### **resource definition drilling**

*exploration drilling* ([3.1.11](#)) to provide medium-term data for mine design

Note 1 to entry: *Resource definition drilling* ([3.1.21](#)) uses a larger grid size than grade control to collect data. Typical grid size is 300 m × 300 m.

### 3.1.22

#### **brown field drilling**

*exploration drilling* ([3.1.11](#)) near or adjacent to an existing mine aiming to find or acquire new deposits

### 3.1.23

#### **green field drilling**

*exploration drilling* ([3.1.11](#)) in previously unexplored or undeveloped areas aiming to find or acquire new deposits

## 3.2 Rock drilling technologies

### 3.2.1

#### **boxhole boring**

*drilling* ([3.1.1](#)) 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

### 3.2.2

#### **down-the-hole drilling**

##### **DTH**

in-the-hole drilling

##### **ITH**

*drilling* ([3.1.1](#)) of holes using a *down-the-hole hammer rock drill* ([3.9.6](#))

### 3.2.3

#### **percussive drilling**

method of *drilling* ([3.1.1](#)) whereby repeated strikes are applied by the *drill bit* ([3.11.1](#)), which is repositioned by intermittent rotation

[SOURCE: BS 3618-6:1972 [\[8\]](#)]

### 3.2.4

#### **raise boring**

connection of two levels by *drilling* ([3.1.1](#)) a pilot hole down to the lower level, removing the *drill bit* ([3.11.1](#)) and replacing it by a reamer head which is then rotated and pulled back up towards the machine to create the raise

### 3.2.5

#### rotary drilling

method of *drilling* (3.1.1) in which rotation and thrust are applied to the *drill bit* (3.11.1), producing a continuous cutting action

Note 1 to entry: The ground or rock at the bottom of the *borehole* (3.4.1) is crushed or cut by pressure, shear or tensile stress produced by the different *drilling tool* (3.9.1). The *cuttings* (3.3.1) are periodically or continuously removed out of the bore hole.

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

[SOURCE: BS 3618-6:1972 [8], modified — Notes to entry have been added.]

### 3.2.6

#### rotary-percussive drilling

method of *drilling* (3.1.1) in which repeated strikes are applied to the *drill bit* (3.11.1) which is continually rotated under power

Note 1 to entry: The *piston* (3.9.2) is typically powered by either hydraulic fluid or compressed air. At the same time the *drill bit* (3.11.1) is rotated either continuously or intermittently.

Note 2 to entry: The *cuttings* (3.3.1) can be continuously removed out of the *borehole* (3.4.1) by a *flushing medium* (3.17.1), which is carried to the *drilling* (3.1.1) tool.

[SOURCE: BS 3618-6:1972 [8], modified — Notes to entry have been added.]

#### 3.2.6.1

##### low pressure tri-cone percussive drilling

*rotary-percussive drilling* (3.2.6) using *tri-cone bit* (3.11.8) under low pressure

#### 3.2.7

##### tube drilling

*rotary drilling* (3.2.5) method where a rotation *torque* (3.15.12) is transferred to the *drill bit* (3.11.1) through relatively thin wall tubes rather than rods, with a minimum-sized *flushing fluid canal* (3.17.4)

#### 3.2.8

##### core drilling

*rotary drilling* (3.2.5) method where a hollow centred *drill bit* (3.11.1) is used to produce cylindrical *rock core* (3.3.2) 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 geotechnical investigation by core drilling see ISO 22475-1 [6].

#### 3.2.9

##### auger drilling

*rotary drilling* (3.2.5) method in which rotation and thrust are applied to the auger, producing a continuous cutting action

## 3.3 Rock core and cuttings

### 3.3.1

#### cuttings

drill collarings

particles of geological formations formed in the *borehole* (3.4.1) by the action of the *drilling tool* (3.9.1)

### 3.3.2

#### **rock core**

cylindrical section of intact rock obtained by *drilling* (3.1.1) into the Earth's crust using a *hollow drill bit* (3.11.10)

## 3.4 Bore hole

### 3.4.1

#### **borehole**

drilled hole

hole of any predetermined diameter and length formed in any geological formation by *drilling* (3.1.1)

### 3.4.2

#### **bolt hole**

*borehole* (3.4.1) where *rock bolt* (3.14.2) can be anchored

### 3.4.3

#### **top hole**

horizontal or upwardly inclined *shothole* (3.35.3.6) placed at the foot of a face

Note 1 to entry: Top holes are placed generally in quarries.

[SOURCE: BS 3618-6:1972 [8]]

### 3.4.4

#### **flanking hole**

*shothole* (3.35.3.6) drilled at an acute angle to the face for the purpose of trimming it

[SOURCE: BS 3618-6:1972 [8], modified — the word "coal" has been deleted.]

### 3.4.5

#### **lifter**

*shothole* (3.35.3.6) drilled at floor level

[SOURCE: BS 3618-6:1972 [8]]

### 3.4.6

#### **alignment deviation**

difference of actual and intended alignment of *borehole* (3.4.1)

### 3.4.7

#### **face drill pattern**

pattern of holes drilled to excavate a specified size of opening in mining and tunnelling

### 3.4.8

#### **bench drill pattern**

pattern of holes drilled in a mine *bench* (3.24.3) in preparation for *blasting* (3.46.1) to break or fracture the overburden or ore to a desired size for facilitating removal by other loading or excavation equipment

### 3.4.9

#### **hole depth**

length of the *borehole* (3.4.1) in the vertical/horizontal direction

### 3.4.10

#### **hole depth measurement**

(automation) function for automatic measuring of drilled depth

### 3.4.11

#### **hole length**

length of the hole, parallel to the *drilling* (3.1.1) direction

**3.4.12**

**hole length measurement**

⟨automation⟩ function for automatic measuring of drill length

**3.4.13**

**hole deviation**

difference of actual and intended position of drill holes that occurs during *drilling* ([3.1.1](#))

**3.4.14**

**look-out angle**

angle between the practical (drilled) and the theoretical *tunnel profile* ([3.4.15](#))

Note 1 to entry: See [Figure 4](#).

**3.4.15**

**tunnel profile**

cross-sectional shape or geometry of the tunnel

**3.4.16**

**collaring**

operation of starting to bore a hole

[SOURCE: BS 3618-6:1972 [\[8\]](#)]

**3.5 Rock reinforcement methods**

**3.5.1**

**cable bolting**

process of fixing cables with *cement grout* ([3.14.7](#)) or chemical compounds to stabilize the rock mass, in long holes being drilled in rock

**3.5.2**

**grouting**

injection

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

EXAMPLE Cement, resin and plastic.

Note 1 to entry: See ISO 14824-1 [\[9\]](#) and ISO 16311-1 [\[10\]](#).

**3.5.3**

**meshing**

**netting**

installing a net as rock support on ceiling or walls

**3.5.4**

**pipe roofing**

pre-reinforcement of the ground ahead of the tunnel face with steel pipes, arranged like an umbrella or canopy around the excavation line, to ensure that the excavation can proceed safely

EXAMPLE See [Figure 4](#).

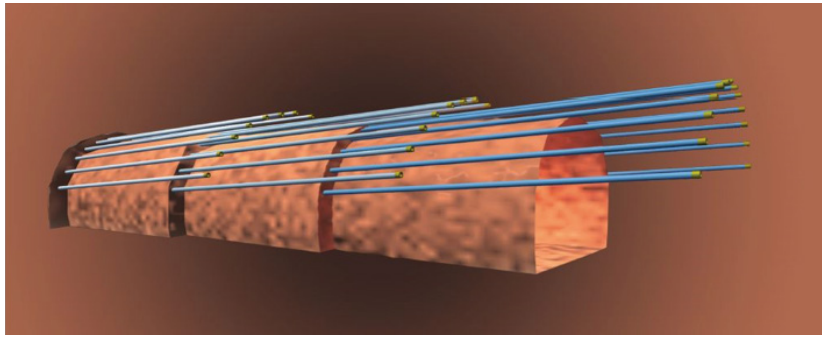


Figure 4 — Pipe roofing

### 3.5.5 bolting

rock bolting

method of securing or strengthening closely jointed or highly fissured rocks by inserting and firmly anchoring *rock bolt* (3.14.2) oriented perpendicular to the rock face or mine opening, in mine workings, tunnels, or rock abutments

### 3.5.6 selective bolting

*bolting* (3.5.5) of weak sections or loose rock

### 3.5.7 systematic bolting

*bolting* (3.5.5) in a pre-determined pattern

## 3.6 Hand-held machines

### 3.6.1 airleg

*device* (3.22.15), incorporating a pneumatic cylinder, providing support and thrust for a *jackhammer* (3.6.5)

[SOURCE: BS 3618-6:1972 [8]]

### 3.6.2 burster

hydraulic mechanism which, when inserted into a large diameter *shothole* (3.35.3.6), breaks down the strata by means of pistons operating transversely

[SOURCE: BS 3618-6:1972 [8]]

### 3.6.3 hammer drill

percussive drill

EXAMPLE ISO 17066:2007 [11], 3.1.3.2, rock drill.

Note 1 to entry: See also ISO 3857-1 [12], ISO 5391 [13], ISO 11148-5 [14] and ISO 17066 [15].

[SOURCE: BS 3618-6:1972 [8]]

### 3.6.4 hydraleg

*device* (3.22.15), incorporating a hydraulic cylinder, providing support and thrust for a *jackhammer* (3.6.5)

[SOURCE: BS 3618-6:1972 [8]]