
**Earth-moving machinery — Hydraulic
breakers — Terminology and
commercial specifications**

*Engins de terrassement — Brise-roche hydrauliques — Terminologie
et spécifications commerciales*

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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).

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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.

This document was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*, Subcommittee SC 4, *Terminology, commercial nomenclature, classification and ratings*.

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.

Earth-moving machinery — Hydraulic breakers — Terminology and commercial specifications

1 Scope

This document establishes the terminology and content of commercial specifications for hydraulic breakers which are mounted as an attachment on a carrier, typically earth-moving machinery such as an excavator, backhoe loader, skid steer loader, and compact loader as defined in ISO 6165, or mounted on a rig, pedestal boom system, demolition robot, etc., at the end of an arm.

Hydraulic breakers are typically used to demolish or break rock, concrete, brickwork, asphalt, etc.

This document does not cover breakers powered by pneumatic, thermomechanical, or electromagnetic energy. This document does not cover portable or hand-held breakers either.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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 <http://www.electropedia.org/>

3.1

carrier

mobile or stationary machinery that provides power and a range of motion for the mounted item

Note 1 to entry: Mobile machinery is typically an excavator, backhoe loader, skid steer loader, or compact loader. Stationary machinery is typically a pedestal boom system, demolition robot, etc.

3.2

attachment

assembly of components that can be mounted onto the *carrier* (3.1) for specific use

[SOURCE: ISO 6746-2:2003, 3.5, modified — The term “base machine and equipment” has been replaced with “carrier”.]

3.3

hydraulic breaker

percussive hydraulic *attachment* (3.2) used for breaking up concrete, rock, brickwork, asphalt, etc.

3.3.1 Accumulator

3.3.1.1

hydraulic accumulator

pressure storage reservoir that enables a hydraulic system to cope with extremes of demand and to smooth out pulsations

3.3.1.2

piston accumulator

energy storage chamber charged with nitrogen into which the upper end of the *piston* (3.3.8) reciprocally projects and which imparts stored energy onto the upper surface area of the piston to assist with piston acceleration

3.3.2

back head

device that closes the upper end of the cylinder and has a space into which the upper end of the *piston* (3.3.8) reciprocally projects

3.3.3

bracket

side plate

device that supports the *power cell* (3.3.7) which includes mounting holes to either bolt on to the *carrier* (3.1) *mounting adapter* (3.3.11) or to connect directly to the mounting flange holes on the carrier

3.3.4

tool

device that transmits the impact energy of the reciprocating *piston* (3.3.8) to the material to be broken

3.3.5

front head

device that attaches to the lower end of the cylinder to guide and support the *tool* (3.3.4)

3.3.6

housing

device that encloses the *power cell* (3.3.7) on all sides and has mounting holes or is connected to the *carrier* (3.1) with a *mounting adapter* (3.3.11)

Note 1 to entry: Types of housings can be side-mount open, top-mount open, side-mount closed, and top-mount closed.

Note 2 to entry: The reference to open or closed refers to whether the power cell is exposed or not, respectively.

3.3.7

power cell

assembly generating impact energy, having *piston* (3.3.8), *piston control valve* (3.3.10), *front head* (3.3.5) and *back head* (3.3.2)

3.3.8

piston

device that transfers the energy of pressurized fluid and optionally nitrogen by moving reciprocally to impact the *tool* (3.3.4) generating an impact force

3.3.9

through bolt

tie rod

device that ties the parts of the *power cell* (3.3.7) together

3.3.10

piston control valve

device that controls the reciprocating motion of the *piston* (3.3.8)

3.3.11

mounting adapter

device that connects the *hydraulic breaker* (3.3) to the *carrier* (3.1) for adapter-type hydraulic breakers

3.4 Masses

3.4.1

carrier operating mass

mass of the *carrier* (3.1) in its most usual configuration as specified by the manufacturer, with the operator (75 kg), full fuel tank and all fluid systems (e.g. hydraulic oil, transmission oil, engine oil, engine coolant) at the levels specified by the manufacturer and, when applicable, with sprinkler water tanks half full

[SOURCE: ISO 6016:2008, 3.2.1, modified — The term “carrier” has been added to the term being defined, and in the definition the term “base machine” has been replaced by “carrier” and “i.e.” replaced by “e.g.”; the abbreviated term “OM” and Notes 1 and 2 to entry have been removed.]

3.4.2

breaker operating mass

total assembled mass, including the *hydraulic breaker* (3.3), *mounting adapter* (3.3.11) and mounting hardware, if applicable, and the *tool* (3.3.4) but excluding the hydraulic hose, the hydraulic tubing and mounting pins

3.4.3

breaker mass

mass of *hydraulic breaker* (3.3) including the *power cell* (3.3.7) and the *bracket* (3.3.3) or the *housing* (3.3.6), but excluding the *tool* (3.3.4), hydraulic hoses, the *mounting adapter* (3.3.11), mounting hardware and mounting pins

3.5 Working condition

3.5.1 Hydraulic fluid

3.5.1.1

flow rate

volume of hydraulic fluid supplied from the *carrier* (3.1) per unit of time

3.5.1.2

flow rate range

permitted upper and lower *flow rate* (3.5.1.1) at the *hydraulic breaker* (3.3) inlet port

Note 1 to entry: Determined under normal operating conditions according to the manufacturer specifications.

3.5.1.3

hydraulic fluid temperature range

permitted upper and lower hydraulic fluid temperature limits at the *hydraulic breaker* (3.3) inlet port

Note 1 to entry: Determined under normal operating conditions according to the manufacturer specifications.

3.5.2 Hydraulic pressure

3.5.2.1

operating pressure range

permitted inlet operating pressure, measured as close to the *hydraulic breaker* (3.3) inlet port as possible

Note 1 to entry: Determined under normal operating conditions according to the manufacturer's specifications.

3.5.2.2

maximum allowed return flow back pressure

maximum permitted hydraulic outlet pressure, measured as close to the *hydraulic breaker* (3.3) outlet port as possible

Note 1 to entry: Determined under normal operating conditions according to the manufacturer's specifications.

3.6 Dimensions

3.6.1

overall length

L_1

distance from the *tool* (3.3.4) tip when retracted into the *power cell* (3.3.7) to the top of the *hydraulic breaker* (3.3) including the *bracket* (3.3.3) or the *housing* (3.3.6) but not including the *mounting adapter* (3.3.11)

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

3.6.2

overall length without tool

L_2

overall length (3.6.1) excluding the *tool* (3.3.4)

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

3.6.3

overall width

maximum width of the *hydraulic breaker* (3.3) including the *bracket* (3.3.3) or the *housing* (3.3.6) and mounting hardware, but not including the *mounting adapter* (3.3.11)

Note 1 to entry: The overall width can be different at the top and the bottom dependent upon the design.

3.6.3.1

overall width, top

W_1

overall width (3.6.3) near the top of the *hydraulic breaker* (3.3)

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

3.6.3.2

overall width, bottom

W_2

overall width (3.6.3) near the bottom of the *hydraulic breaker* (3.3)

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

3.6.4

power cell length

L_3

length without the *bracket* (3.3.3) or the *housing* (3.3.6) and the *tool* (3.3.4)

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

3.6.5

power cell width

width without the *bracket* (3.3.3) or the *housing* (3.3.6) and the *tool* (3.3.4)

Note 1 to entry: The power cell width can be different at the top and the bottom dependent upon the design.

3.6.5.1

power cell width, top

W_3

power cell width (3.6.5) near the top of the *power cell* (3.3.7)

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

3.6.5.2**power cell width, bottom** W_4

power cell width (3.6.5) near the top of the power cell (3.3.7)

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

3.6.6**effective length of tool** L_4

exposed length of the tool (3.3.4) from the hydraulic breaker (3.3) when contact pressure is applied

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

3.6.7**working length of tool** L_5

exposed length of the tool (3.3.4) from the hydraulic breaker (3.3) when the tool is fully extended

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

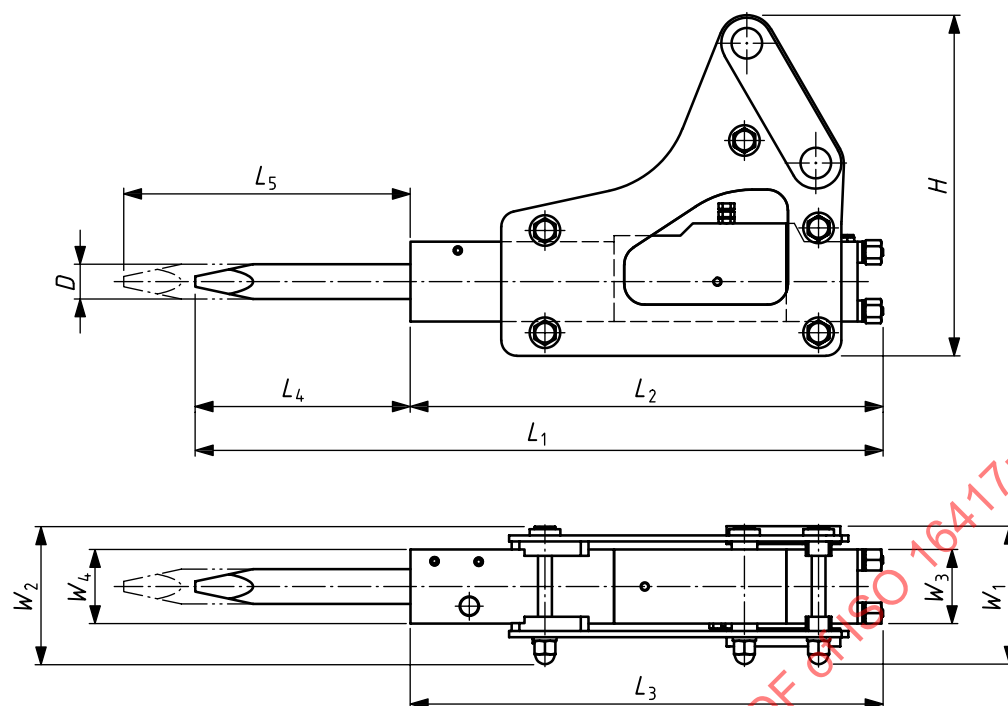
3.6.8**tool diameter** D

dimension of the tool (3.3.4) that is outside the hydraulic breaker (3.3)

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

3.6.9**shank diameter**

dimension of the tool (3.3.4) that goes inside the hydraulic breaker (3.3)



Key

L_1	overall length (3.6.1)	H	overall height
L_2	overall length without tool (3.6.2)	W_1	overall width, top (3.6.3.1)
L_3	power cell length (3.6.4)	W_2	overall width, bottom (3.6.3.2)
L_4	effective length of tool (3.6.6)	W_3	power cell width, top (3.6.5.1)
L_5	working length of tool (3.6.7)	W_4	power cell width, bottom, (3.6.5.2)
D	tool diameter (3.6.8)		

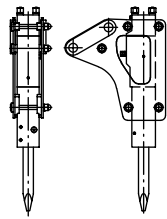
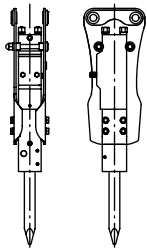
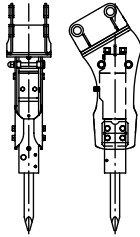
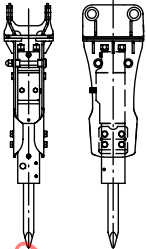
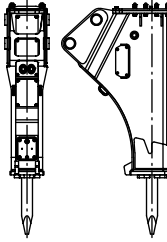
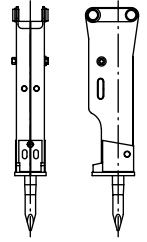
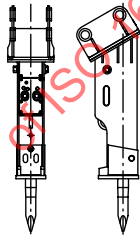
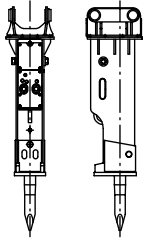
NOTE Depending on the design of the bracket or housing, L_2 and L_3 can be the same dimension.

Figure 1 — Dimensions of a hydraulic breaker (3.3)

4 Types and classifications

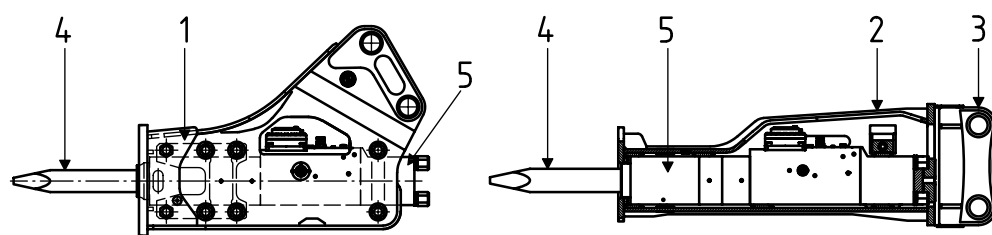
Mount types (side or top) are determined by the mounting direction; and mount methods refer to whether a mounting adapter is used. See Table 1. For each type, the housing of the power cell may be either open or closed.

Table 1 — Types and classifications of hydraulic breakers

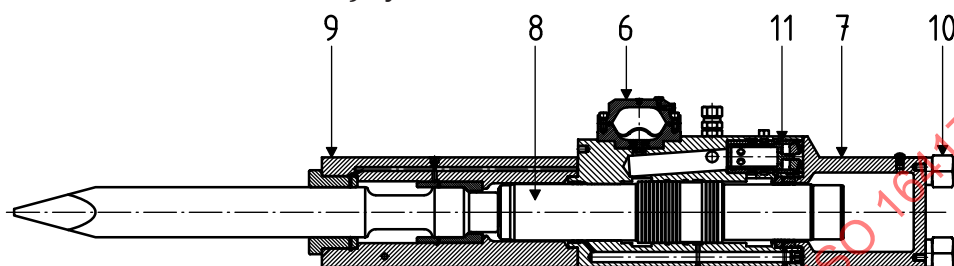
Assembly				
Mount direction	Side	Top	Side	Top
Housing type	Open	Open	Open	Open
Mount method	Direct		Mounting adapter	
Assembly				
Mount direction	Side	Top	Side	Top
Housing type	Closed	Closed	Closed	Closed
Mount method	Direct		Mounting adapter	

5 Nomenclature

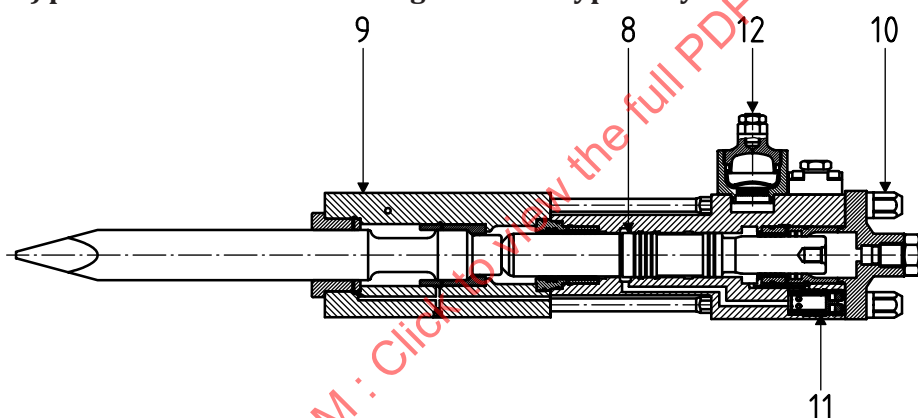
See [Figure 2](#).



a) hydraulic breakers



b) power cell for oil and nitrogen driven type of hydraulic breakers



c) power cell for oil driven type of hydraulic breakers

Key

1	bracket/side plate	7	back head
2	housing	8	piston
3	mounting adapter	9	front head
4	tool	10	through bolt/tie rod
5	power cell	11	piston control valve
6	hydraulic accumulator	12	piston accumulator

Figure 2 — Nomenclature of a hydraulic breaker

6 Commercial specifications

6.1 Manufacturer's information

- Manufacturer's name
- Manufacturer's full address (optionally including website)