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

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Foreword

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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* (3.3.1.1)

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)