

Specification for

Engineers' ratchet braces and drilling pillars

Confirmed
January 2011

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British Compressed Air Society	Institution of Mechanical Engineers (Automobile Division)
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British Electricity Authority and Area Boards	Locomotive Manufacturers’ Association*
British Engineers’ Association*	Machine Tool Trades’ Association
British Internal Combustion Engine Manufacturers’ Association	Ministry of Fuel and Power
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D.S.I.R. — Mechanical Engineering Research Organization	Ministry of Works
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Institute of Marine Engineers	Office of the High Commissioner for India
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The Government departments and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:—

Association of U.K. Plier Manufacturers	Institution of Engineering Inspection
Edge Tool Manufacturers’ Association	London Transport Executive
Engineers’ and Allied Hand Tool Makers’ Association	National Association of Tool Dealers
Federation of British Hand Tool Manufacturers	National Coal Board
Gas Council	Saw Trades Association
General Post Office	Society of British Aircraft Constructors
J.E.S.C. Sub-Committee on Hand Tools	Society of Motor Manufacturers and Traders Ltd.
Light Edge Tool and Allied Trades Association	Co-opted manufacturers

This British Standard, having been approved by the Mechanical Engineering Industry Standards Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council on 10 February 1953

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MEE/120

ISBN 0 580 35987 5

Amendments issued since publication

Amd. No.	Date	Comments

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Foreword

This standard makes reference to the following British Standards:—

BS 51, *Wrought iron for general engineering purposes (grades A, B and C)*.

BS 328, *Twist drills and combined drills and countersinks (centre drills)*.

BS 427, *Tables of diamond pyramid hardness numbers*.

BS 970, *Wrought steels*.

This British Standard has been prepared under the authority of the Mechanical Engineering Industry Standards Committee and forms one of a series relating to hand tools.

The various types of brace and the component parts are defined and the clauses specify requirements for the materials, heat treatment and hardness, finish and assembly of the tools. A series of tables gives a range of dimensions for the ratchet braces, the range being extended to include the dimensional requirements of drilling pillars, in view of the need to ensure that the correct brace and pillar are associated in some applications. While the drilling pillar dimensions have thus been associated with the range of ratchet braces, they have also been correlated with the drill lengths given in BS 328¹⁾

The standard is intended to apply only to the most commonly used types of tool and pillar; certain types, particularly of drilling pillar, although popular in certain branches of industry, are considered to be special to those branches and have therefore been omitted.

The conversion of nozzles from Morse taper to square taper is effected by adaptors, the range of which is given in the Appendix.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 16, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

¹⁾ BS 328, “*Twist drills and combined drills and countersinks (centre drills)*.”

Section 1. General

1 Scope

This British Standard specifies requirements for engineers' ratchet braces and drilling pillars.

The ratchet braces are of the following types:—

- a) *Long head (box) type*, having an open or totally enclosed ratchet and available with either
 - i) Square taper nozzle, or
 - ii) Morse taper nozzle.
- b) *Short head type*, having an open or totally enclosed ratchet. Suitable for square taper shank drills only.
- c) *Extra short head type (pin brace)*, having an open or totally enclosed ratchet. Suitable for square taper shank drills only.
- d) *Short head type heavy duty (boiler brace)*, having totally enclosed ratchet, available with square taper nozzle.
- e) *Bit stock type*, having an open or totally enclosed ratchet. Suitable for bit stock drills only.

Nomenclature and definitions are given, together with requirements for materials, heat treatment, hardness, finish and accuracy of assembly. Ranges of dimensions of the various types of brace and of the drilling pillars are also included.

2 Nomenclature and definitions

2.1 Types of brace

2.1.1

engineers' ratchet brace

a hand tool designed for rotating drills, reamers or similar small tools having Morse taper or square taper shanks

a reciprocating handle actuates the cutting tool through a pawl and toothed wheel, while an adjustable screwed member having a jack action provides the feed into the work

2.1.2

long head (box) type

the type suitable for general purposes, for use where the working space is not limited. The feed is designed for application by spanner, but can also be applied by hand. (See Figure 1)

2.1.3

short head type

for use where space is limited. The feed is designed for application by tommy bar. (See Figure 2)

2.1.4

extra short head type (pin brace)

for use in more confined spaces than those for which the short head type is intended. (See Figure 3)

2.1.5

short head type heavy duty (boiler brace)

a short head type of much more robust construction than the types defined in 2.1.3 and 2.1.4, and designed for use on boiler plates and pressure vessels or similar heavy material. (See Figure 4)

2.1.6

bit stock type

a light design intended solely for use with bit stock drills. (See Figure 5)

2.2 Component parts

2.2.1

frame

the housing for the nozzle and rack integral with the handle. (See Figure 6, Figure 7 and Figure 9)

2.2.2

nozzle

the member which accommodates the drill; it is designed to support and be turned by the rack, and incorporates the means for applying the feed. (See Figure 6, Figure 7, Figure 8 and Figure 9)

2.2.3

rack

the circular toothed member, actuated by the pawl through which the torque is applied. (See Figure 6, Figure 7, Figure 8 and Figure 9)

2.2.4

pawl

the member controlling the rack. (See Figure 6, Figure 7 and Figure 9)

2.2.5

spring

the member through which the pressure is applied to the pawl. (See Figure 6, Figure 7 and Figure 9)

2.2.6

screw centre

a centering device having an external thread through which the feed is applied on the short head or pin type. (See Figure 6, Figure 7 and Figure 9)

2.2.7

box

the hexagon member carrying the centering device, having an internal thread. Used on the long head type. (See Figure 8)

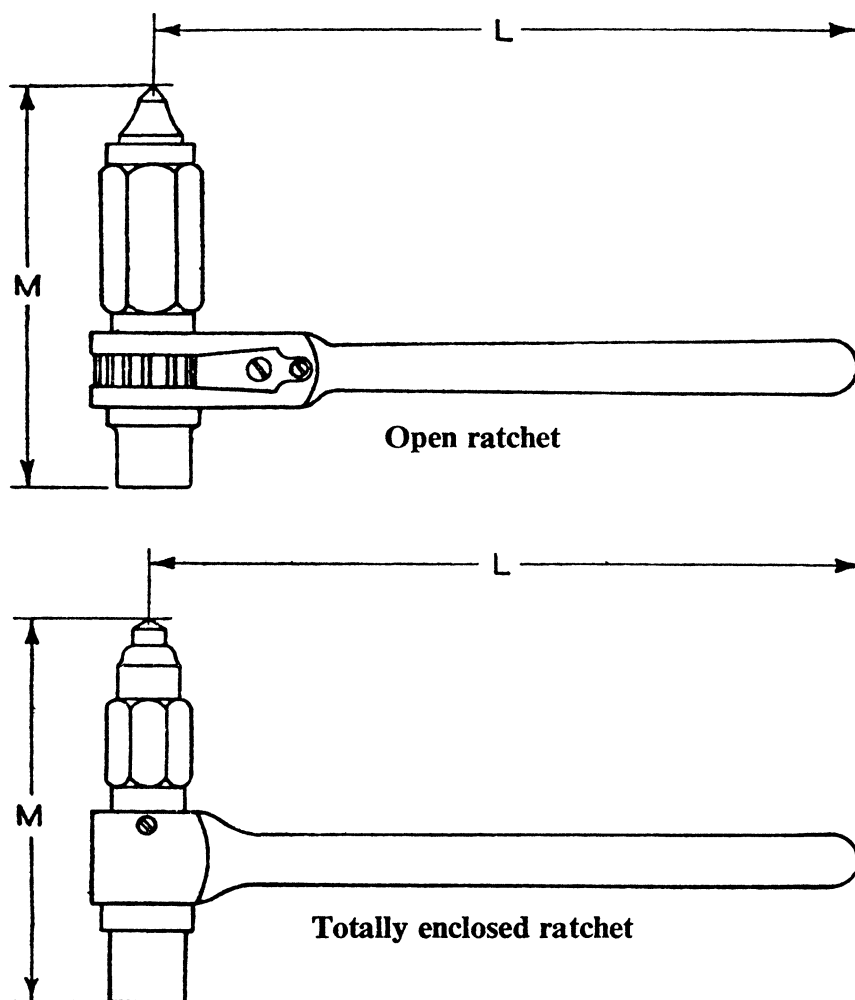


Figure 1 — Long head (box) type

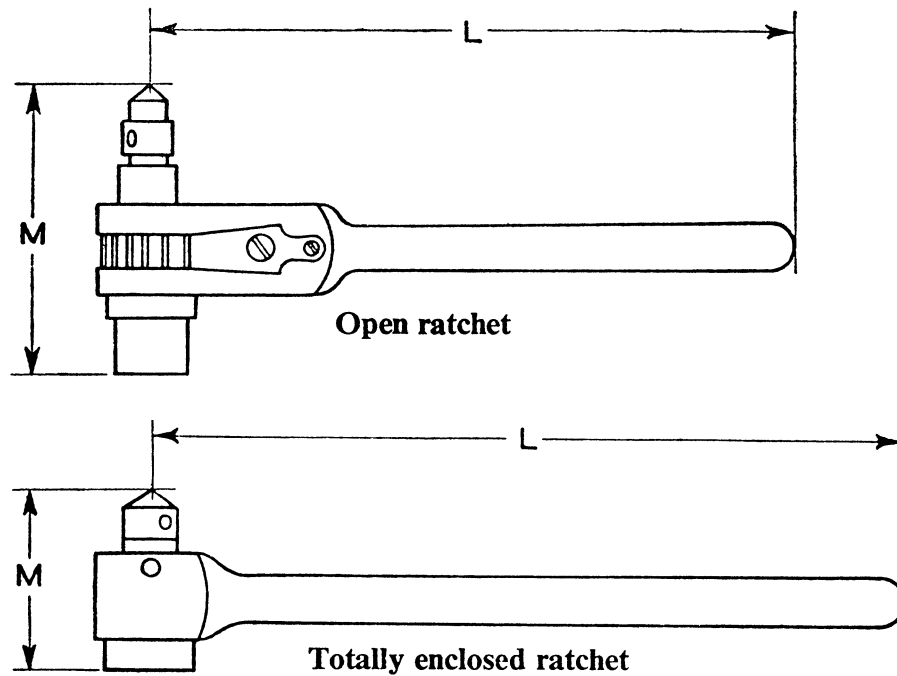


Figure 2 — Short head type

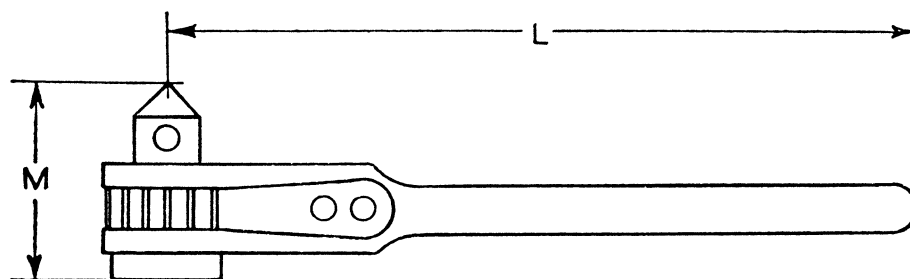


Figure 3 — Extra short head type (pin brace)

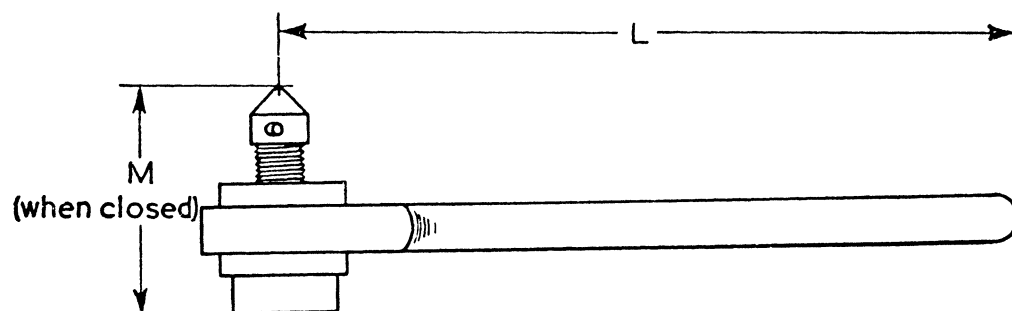


Figure 4 — Short head heavy duty type (boiler brace)