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Fluid power systems and components — Cylinders — Identification code for mounting dimensions and mounting types

Transmissions hydrauliques et pneumatiques — Vérins — Code d'identification des dimensions de montage et des modes de fixation

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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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This document was prepared by Technical Committee ISO/TC 131, *Fluid power systems*, Subcommittee SC 3, *Cylinders*.

This fifth edition cancels and replaces the fourth edition (ISO 6099:2009), which has been technically revised.

The main changes compared to the previous edition are as follows:

— Amendments have been made to figures.

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

In fluid power systems, power is transmitted and controlled through a fluid (liquid or gas) under pressure within an enclosed circuit. Systems and their components are generally designed and marketed for a specific fluid pressure.

One such component is the fluid power cylinder. This is a device which converts power into linear mechanical force and motion. It consists of a movable element, i.e. a piston and piston rod, operating within a cylindrical bore.

Although this document provides a code and means of dimensioning for cylinder mounting, it is not intended that all dimensions be standardized. The code specified in this document is not to be considered as complete for the development of future interchangeability standards. It establishes uniform descriptions for dimensions and achieves conformity of language.

The code can be used for analogous dimensions when this involves neither confusion nor misunderstanding.

Fluid power systems and components — Cylinders — Identification code for mounting dimensions and mounting types

1 Scope

This document establishes a convention for the identification of mounting dimensions and types used in the mounting of fluid power cylinders. It specifies a code for identifying cylinder mounting, envelope, accessory and connector dimensions, and for cylinder mounting and accessory types.

This document does not represent a standard list of all fluid power cylinder mounting and accessory types.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 5598, *Fluid power systems and components — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5598 apply.

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

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

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

4 Identification code for rod end types

4.1 Reference points and letter codes

4.1.1 General

4.1.1.1 First point of reference

Axial dimensions are determined from a reference point that is the same for all cylinders, whatever their mounting method. This theoretical reference point (TRP) is the point of force transfer from the piston rod to the movable element. This point of reference (TRP) is named the first TRP.

4.1.1.2 Second point of reference

For double rod cylinders, the second TRP is defined by the letter code ZM directly attached to the first point of TRP (see Figure 8). This second TRP is used for accessories on the second rod side.

4.1.2 Plain rod end

For a plain rod end the reference point is located on the rod centreline at the end of the piston rod. See Figure 1.

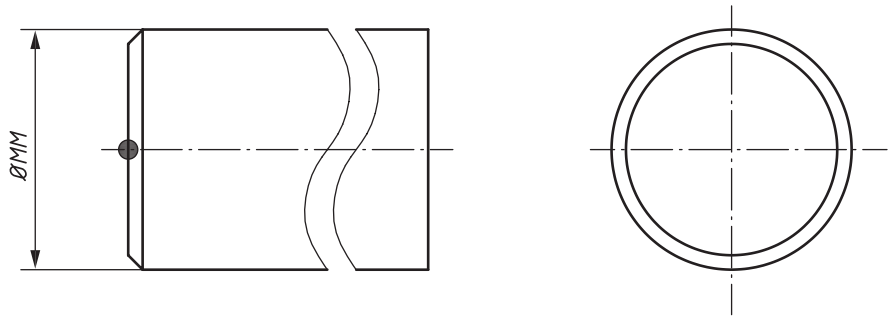


Figure 1 — RPE$_x$ — Plain rod end

4.1.3 Pin rod end

For a pin rod end, the reference point is located at the intersection of the pin and piston rod centrelines. See Figure 2.

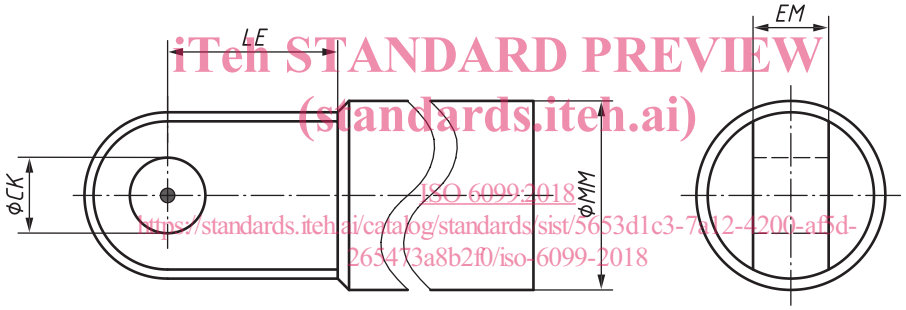


Figure 2 — RPR$_x$ — Pin rod end

4.1.4 Female threaded rod end

For a female threaded rod end, the reference point is located on the rod centreline at the end of the piston rod. See Figure 3.

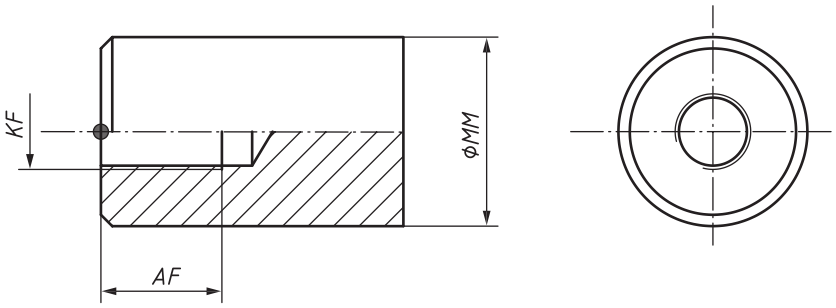


Figure 3 — RTF$_x$ — Female threaded rod end

4.1.5 Male threaded rod end

For a male threaded rod end, the reference point is located on the rod centreline, at the shoulder level. See Figure 4.

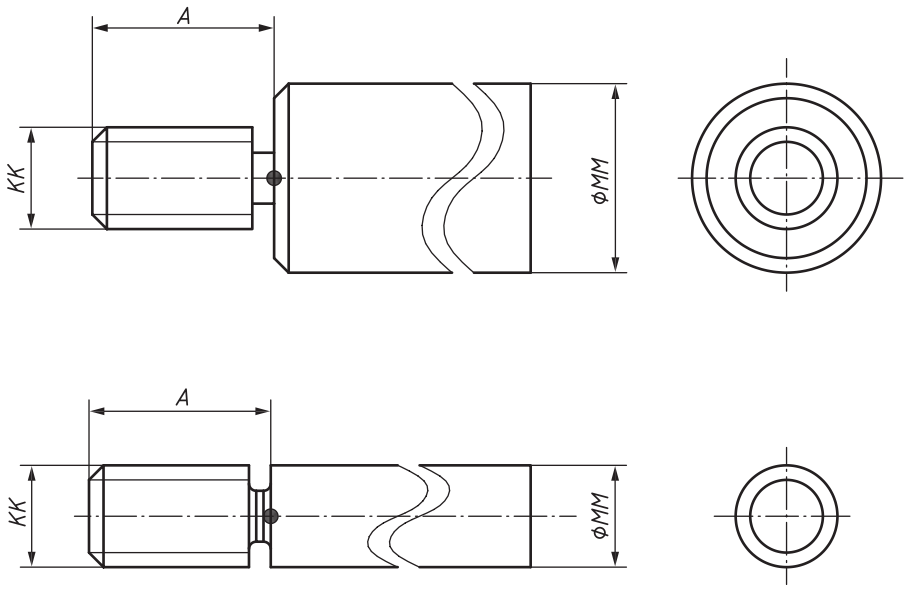
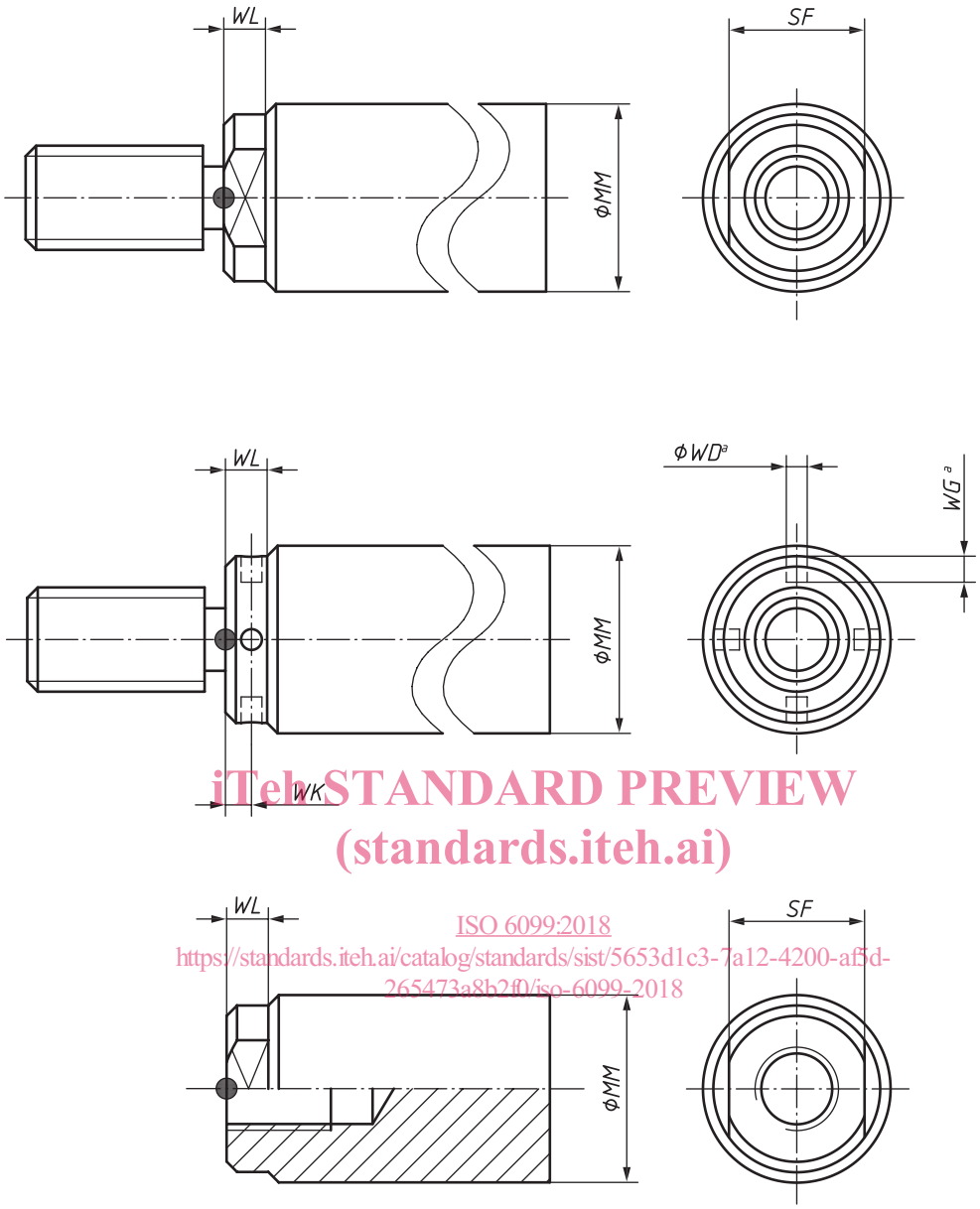


Figure 4 — RTM$_X$ — Male threaded rod end

4.1.6 Wrench flat piston rod end or hook wrench holes

For a wrench flat piston rod end or hook wrench holes piston rod end, the reference point is located on the rod centreline at the shoulder level. See Figure 5.



[a] Optional.

Figure 5 — Wrench flat piston rod end or hook wrench holes

4.1.7 Grooved piston rod end — Alternative reference points

For a grooved piston rod end, the reference point is either located on the rod centreline at the end of the piston rod (see Figure 6) or on the rod centreline at the shoulder level (see Figure 7).

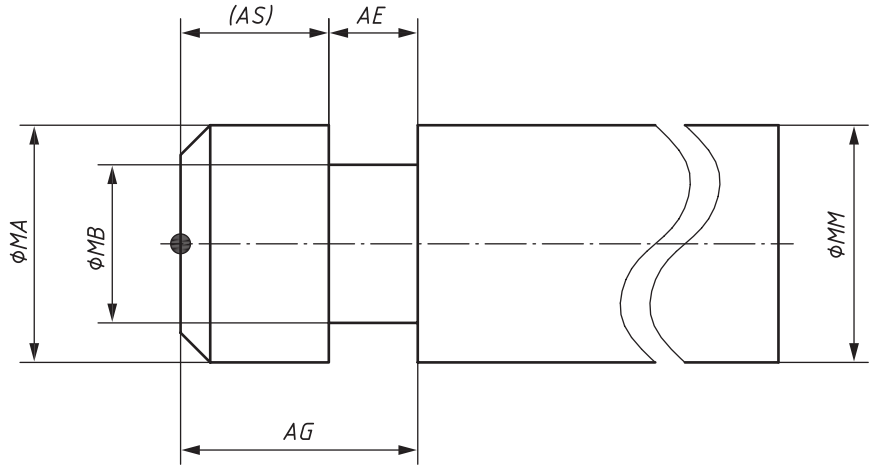


Figure 6 — RFE$_x$ — Grooved piston rod end with TRP at the end of the piston rod

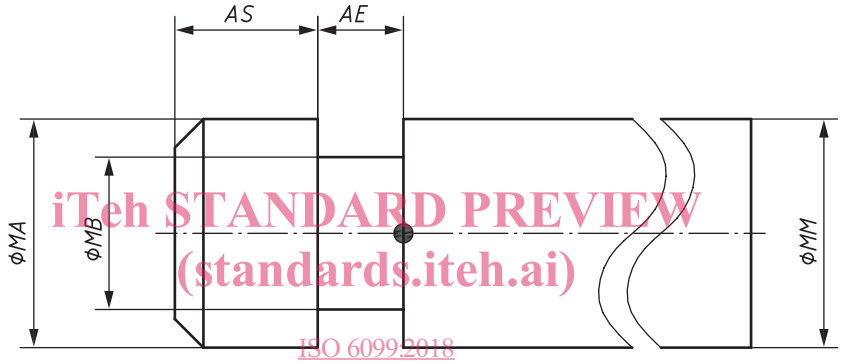


Figure 7 — RFS$_x$ — Grooved piston rod end with TRP at the shoulder level

4.2 Identification code

Table 1 shows the identification code for the rod end types.

Table 1 — Identification code

Identification code	Description
RTM$_x$	Male threaded rod end
RTF$_x$	Female threaded rod end
RPE$_x$	Plain rod end
RPR$_x$	Pin rod end
RFE$_x$	Grooved piston rod end with TRP at the end of the piston rod
RFS$_x$	Grooved piston rod end with TRP at the shoulder level
x	Is designated for the wrench flats or hook wrench: 0 = none 1 = wrench flats 2 = hook wrench

5 Letter code for identifying cylinder mounting, envelope and accessory dimensions

5.1 General

The code for identifying cylinder mounting, envelope and accessory dimensions is composed of one or two letters and, in some cases, the signs: '+', '++' or '+/'.

For the meaning of these letters and signs, see 5.2 to 5.5.

5.2 Letter *U*

Any group of two letters beginning with *U* identifies an 'end view envelope' dimension.

5.3 Letter *Z*

Any group of two letters beginning with *Z* identifies a longitudinal envelope dimension.

5.4 Letters *W*, *X*, *Y*, *Z*

Any group of two letters beginning with *W*, *X*, *Y* or *Z* identifies a dimension end from the reference point.

5.5 Signs

The sign + after letters means that the stroke is to be added:

ZJ + = *ZJ* plus stroke.

The sign ++ after letters means that twice the stroke is to be added:

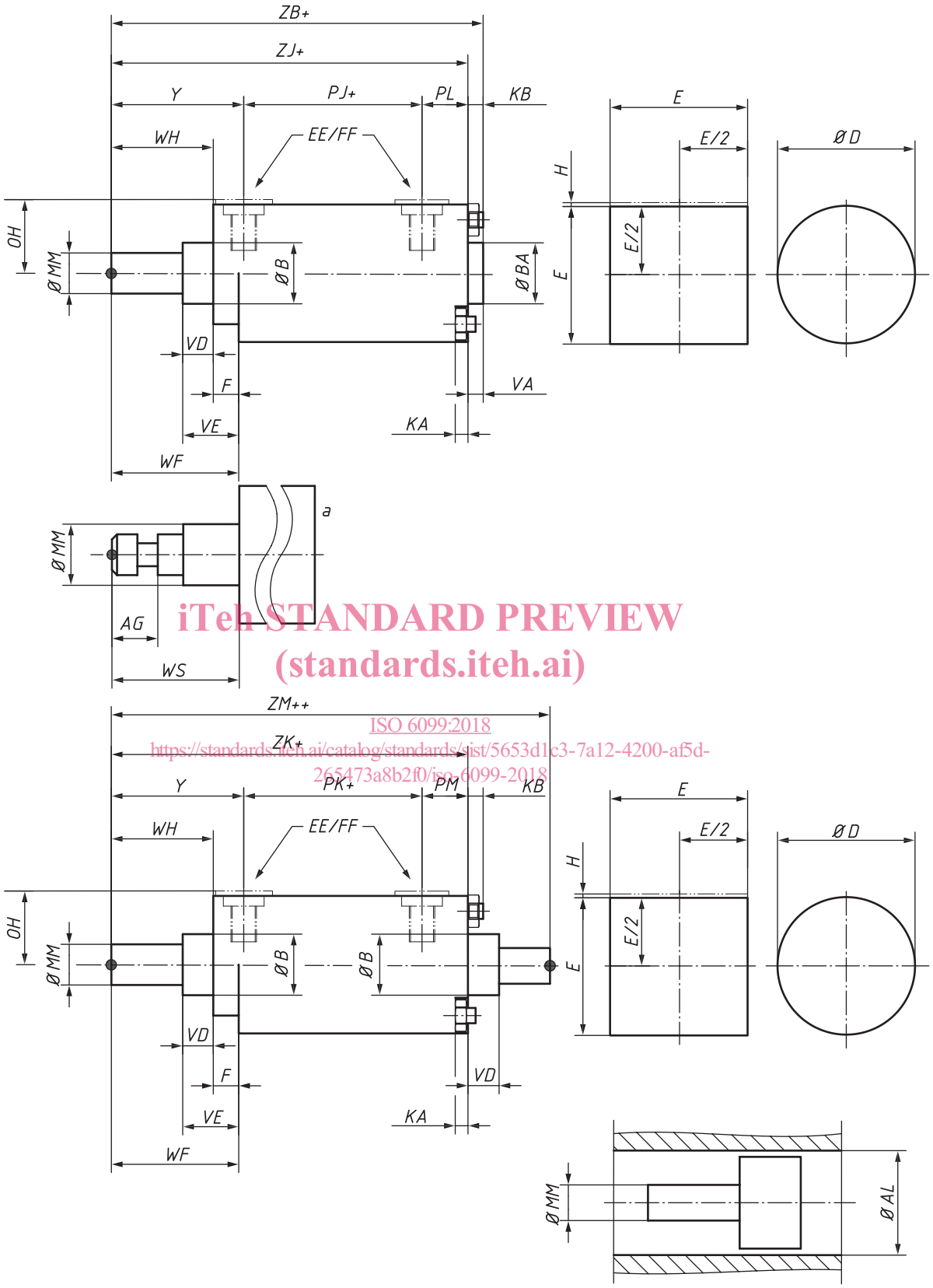
ZM ++ = *ZM* plus twice the stroke.

The sign +/ after letters means that half the stroke is to be added:

XV +/ = *XV* plus half the stroke.

5.6 Dimensioning

General dimensions are shown in Figure 8.



[a] Refer to Figure 6.

Figure 8 — Arrangement of general cylinder dimensions

6 Identification code for mounting types

6.1 General

The identification code for cylinder mounting types consists of two or three letters and a number.

EXAMPLE 1 Identification code for cylinder mounting types:

MF1

where:

M = mounting

F1 = flange type 1

EXAMPLE 2 Identification code for cylinder mounting types:

MDF2

where:

M = mounting

D = double rod cylinder

F2 = flange type 2

The following letters can be used in place of the letter designating flanges used in the above examples.

Letter	Mounting type
B	body
E	cap or head
F	flange (detachable)
P	pivot
R	threaded nose
S	foot or lugs
T	trunnion
X	studs or tie rods

6.2 Mounting types

The mounting types defined in this document with their identifying code are shown in Table 2.

Table 2 — Mounting types

Identification code	Description	Figure
MB1	Body, through bolt hole	Figure 9
MDB1	Body, through bolt hole — double rod	Figure 10
MB2	Round, through bolt hole	Figure 11
MDB2	Round, through bolt hole — double rod	Figure 12
ME5	Head, rectangular	Figure 13
MDE5	Head, rectangular — double rod	Figure 14
ME6	Cap, rectangular	Figure 15
ME7	Head, round	Figure 16
MDE7	Head, round — double rod	Figure 17
ME8	Cap, round	Figure 18
ME9	Head, square	Figure 19
MDE9	Head, square — double rod	Figure 20
ME10	Cap, square	Figure 21
ME11	Head, square	Figure 22
MDE11	Head, square — double rod	Figure 23
ME12	Cap, square	Figure 24
MF1	Head, rectangular flange	Figure 25
MDF1	Head, rectangular flange — double rod	Figure 26
MF2	Cap, rectangular flange	Figure 27
MF3	Head, circular flange	Figure 28
MDF3	Head, circular flange — double rod	Figure 29
MF4	Cap, circular flange	Figure 30
MF5	Head, square flange	Figure 31
MDF5	Head, square flange — double rod	Figure 32
MF6	Cap, square flange	Figure 33
MF7	Head, circular flange centred on the rear side	Figure 34
MDF7	Head, circular flange centred on the rear side — double rod	Figure 35
MF8	Head, rectangular flange with two holes	Figure 36
MP1	Cap, fixed clevis	Figure 37
MP2	Cap, detachable clevis	Figure 38
MP3	Cap, fixed plain eye	Figure 39
MP4	Cap, detachable plain eye	Figure 40
MP5	Cap, fixed eye with spherical bearing	Figure 41
MP6	Cap, detachable eye with spherical bearing	Figure 42
MP7	Head, detachable clevis	Figure 43
MR3	Head, threaded	Figure 44
MDR3	Head, threaded — double rod	Figure 45
MR4	Cap, threaded	Figure 46
MS1	End angles	Figure 47
MDS1	End angles — double rod	Figure 48
MS2	Side lugs	Figure 49