

Australian Standard™

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

This Australian Standard was prepared by Committee ME-035, Fluid Power Systems and Components. It was approved on behalf of the Council of Standards Australia on 15 April 2003 and published on 5 June 2003.

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This Standard was issued in draft form for comment as DR 03062.

Australian Standard™

**Fluid power systems and components—
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mounting dimensions and mounting
types**

Originated as AS 2821—1985.
Second edition 2003.

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Published by Standards Australia International Ltd
GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 5269 1

PREFACE

This Standard was prepared by the Standards Australia Committee ME-035, Fluid Power Systems and Components to supersede AS 2821—1985 which has been technically revised.

The objective of this Standard is to provide designers, manufacturers and operators of fluid power systems with a convention for the identification of fluid power cylinder dimensions.

This Standard is identical with and has been reproduced from ISO 6099:2001, *Fluid power systems and components—Cylinders—Identification code for mounting dimensions and mounting types*.

As this Standard is reproduced from an International Standard, the following applies:

- (a) Its number appears on the cover and title page while the International Standard number appears only on the cover.
- (b) In the source text, 'this International Standard' should read this 'Australian Standard'.

Reference to ISO 5598, *Fluid power systems and components—Vocabulary* should be replaced by reference to AS 4061, *Fluid power systems and components—Vocabulary*.

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

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

AUSTRALIAN STANDARD

Fluid power systems and components—Cylinders—Identification code for mounting dimensions and mounting types**1 Scope**

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

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

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

3 Terms and definitions

For the purpose of this International Standard, the terms and definitions given in ISO 5598 apply.

4 Reference point

4.1 General

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.

4.2 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.

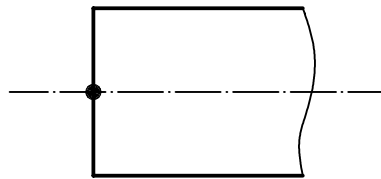


Figure 1 — Plain rod end

4.3 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.

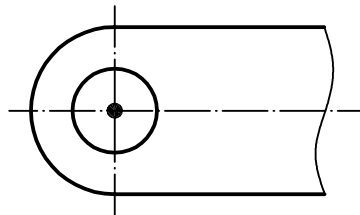


Figure 2 — Pin rod end

4.4 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.

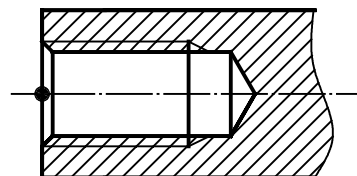


Figure 3 — Female threaded rod end

4.5 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.

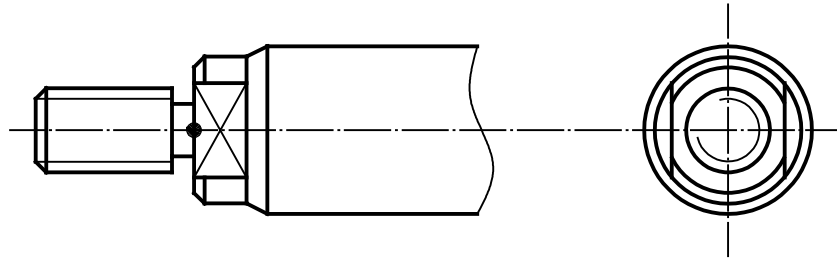


Figure 4 — Male threaded rod end

4.6 Wrench flat piston rod end

For a wrench flat piston rod end, the reference point is located on the wrench flat centreline and the piston rod centreline. See Figure 5.

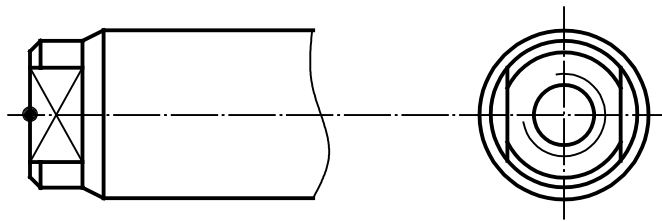


Figure 5 — Wrench flat rod end

4.7 Flanged piston rod end — Alternative reference points

For a flanged 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).

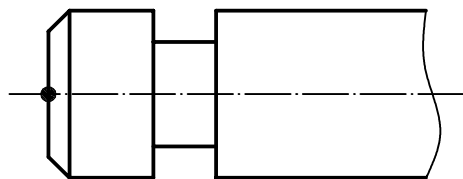


Figure 6 — Flanged piston rod end with TRP at the end of the piston rod

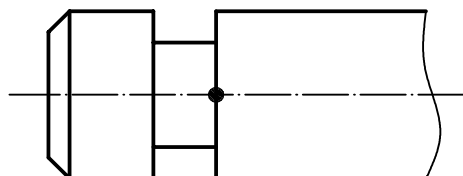


Figure 7 — Flanged piston rod end with TRP at the shoulder level

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 +/.

The meaning of these letters and signs is given in 5.2 to 5.5.

5.2 Letter *Z*

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

5.3 Letter *U*

Any group of two letters beginning with *U* identifies an end view 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

The general dimensions are shown in Figure 8, while the rod-end dimensions are shown in Figure 9.

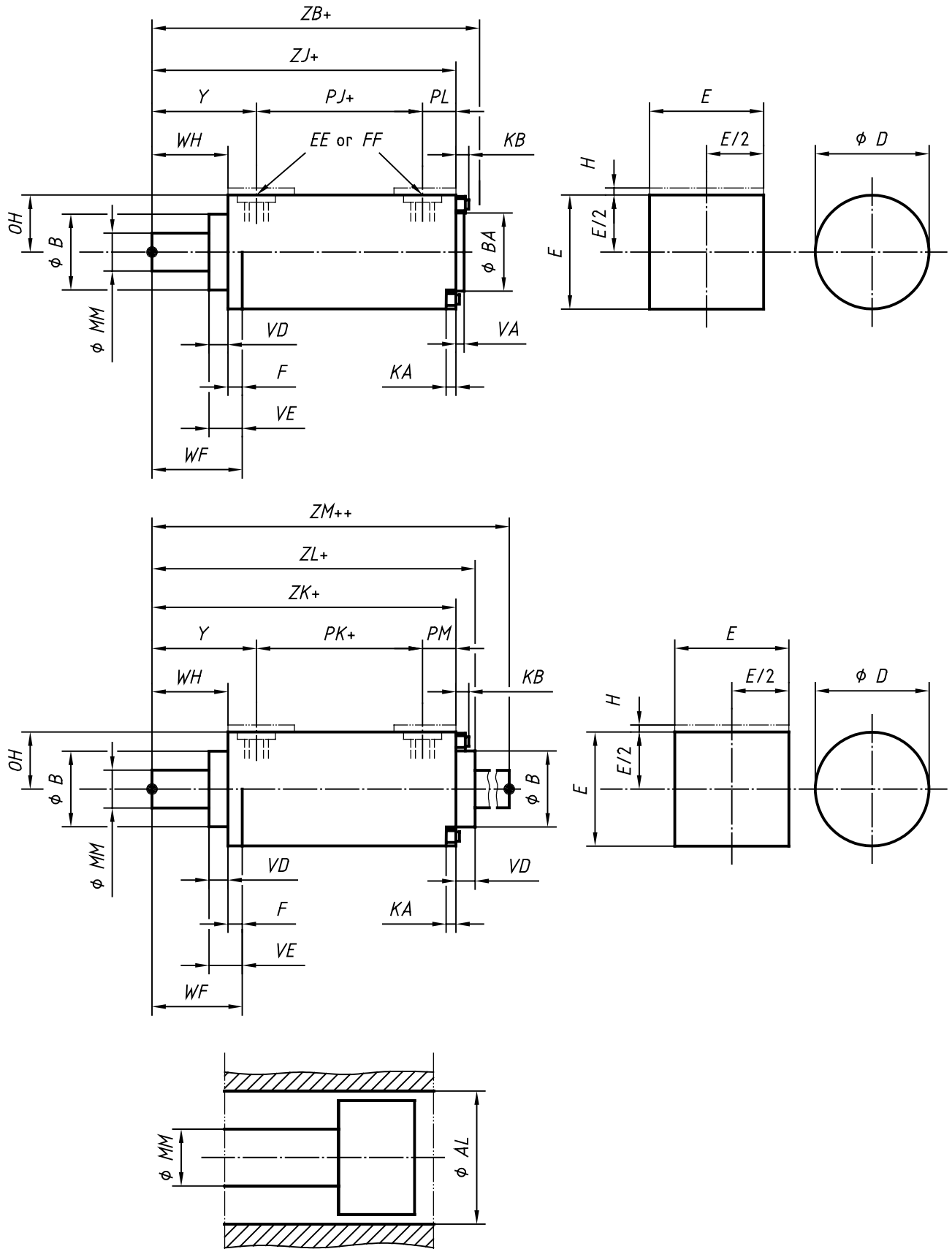


Figure 8 — Arrangement of general cylinder dimensions

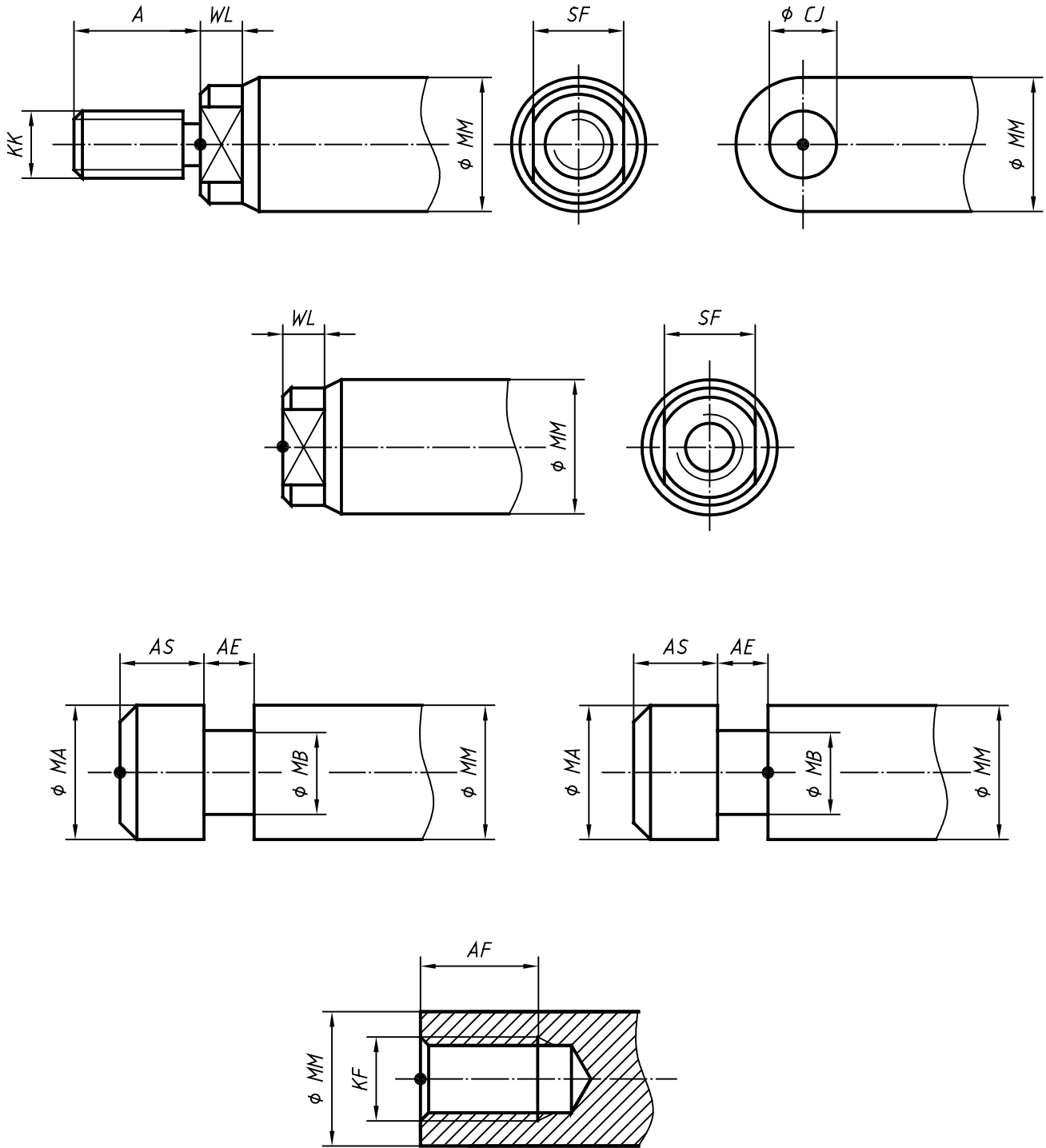


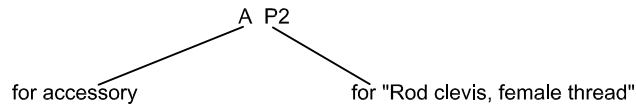
Figure 9 — Rod end dimensions

6 Identification code for accessory types

6.1 General

The identification code for cylinder accessory types consists of two letters and a number.

EXAMPLE



6.2 Accessory types

The accessory types defined in this International Standard are given with their identification code in Table 1.

Table 1 — Accessory types

Identification code	Description	Figure
AA4	Pivot pin, plain	20
AA6	Pivot pin, spherical bearing	21
AA7	Pivot pin, spherical bearing, locking plate	22
AB2	Eye bracket	13
AB3	Clevis bracket, in angle	15
AB4	Clevis bracket, straight	14
AB5	Clevis bracket, spherical eye, in angle	17
AB6	Clevis bracket, spherical eye, straight	16
AB7	Eye bracket, in angle	24
AF3	Rod flange, circular	18
AL7	Locking plate for pivot pin	23
AP2	Rod clevis, female thread	10
AP4	Rod eye plain, female thread	11
AP6	Rod eye spherical, female thread	12
AT4	Trunnion bracket	19

7 Letter codes of accessories according to accessory type

The letter code for accessories according to type is shown in Figures 10 to 24.

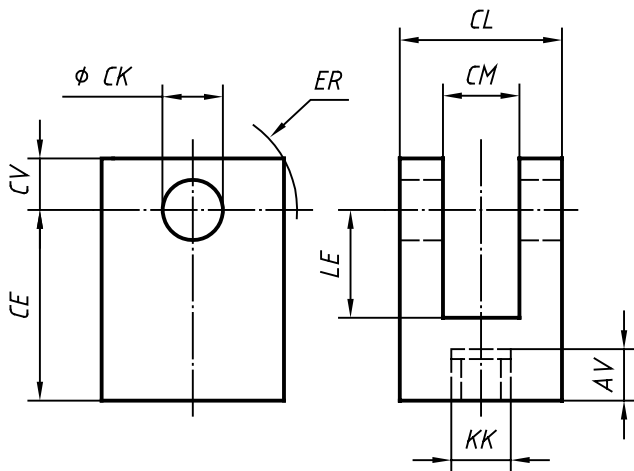


Figure 10 — AP2: Rod clevis, female thread

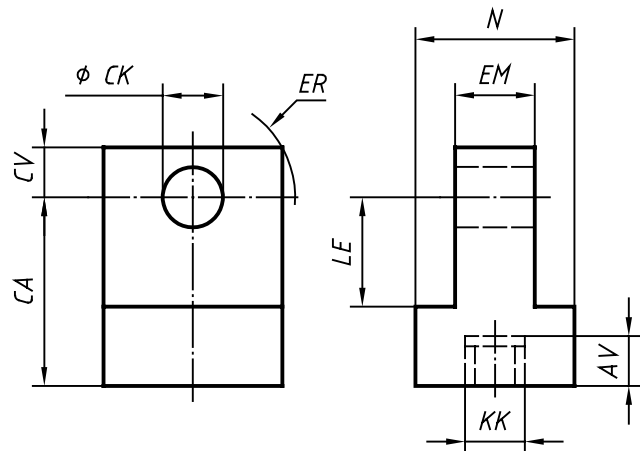


Figure 11 — AP4: Rod eye plain, female thread

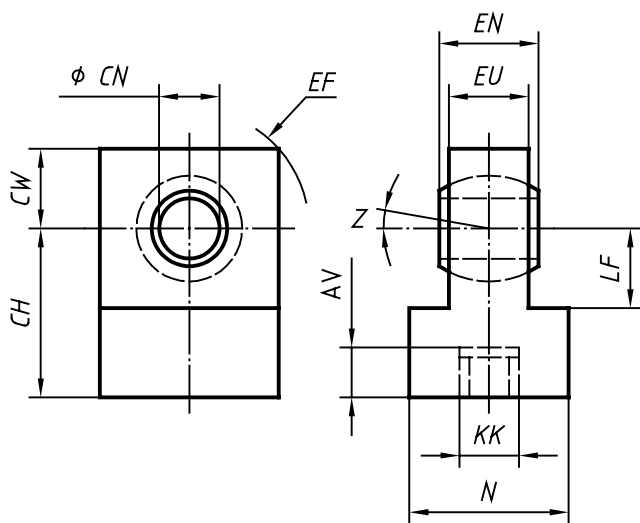


Figure 12 — AP6: Rod eye spherical, female thread

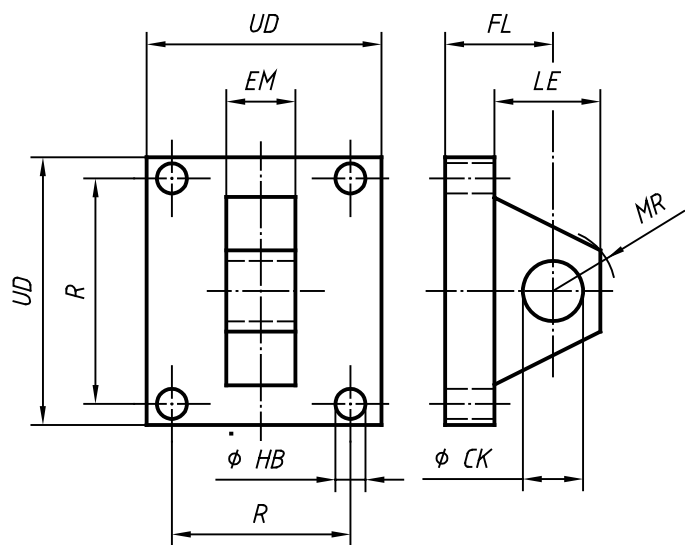


Figure 13 — AB2: Eye bracket

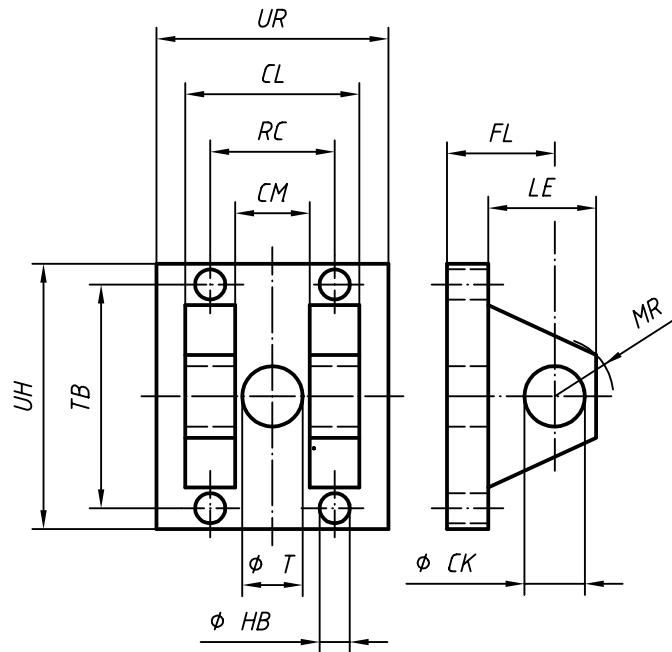


Figure 14 — AB4: Clevis bracket, straight

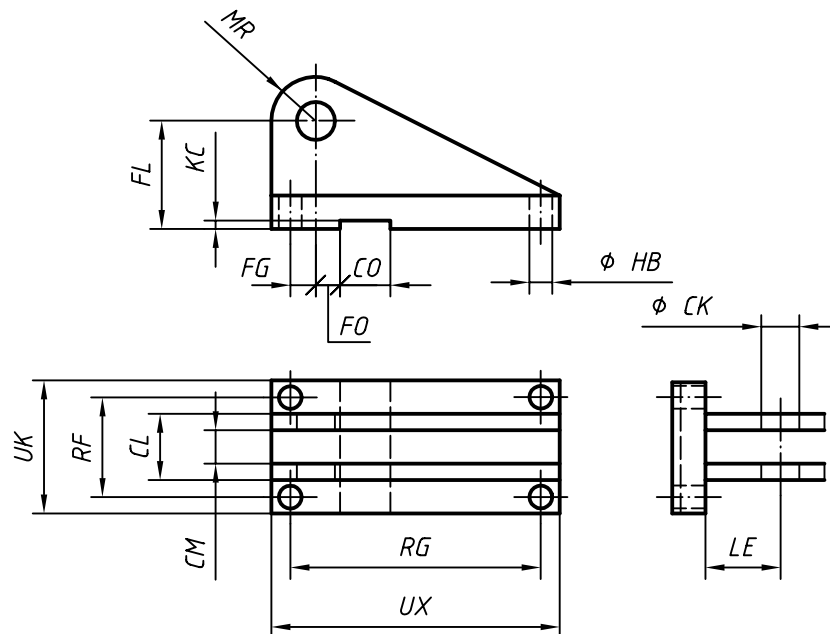


Figure 15 — AB3: Clevis bracket, in angle

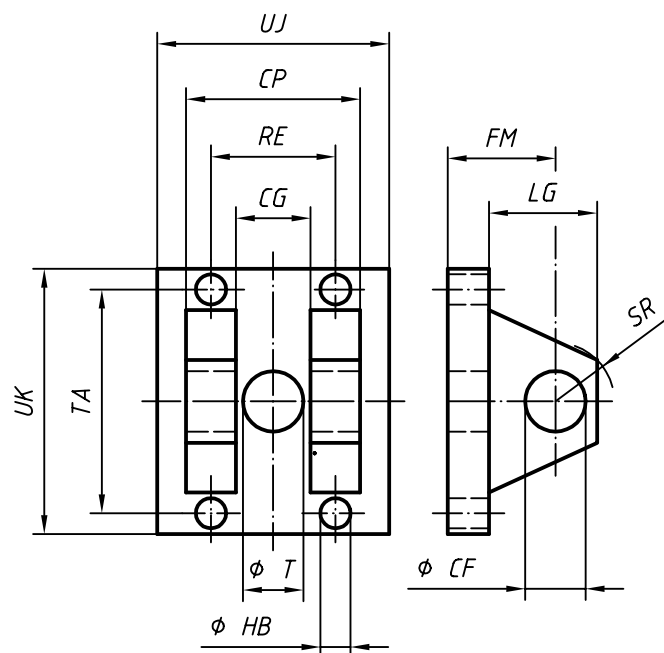


Figure 16 — AB6: Clevis bracket, spherical eye, straight

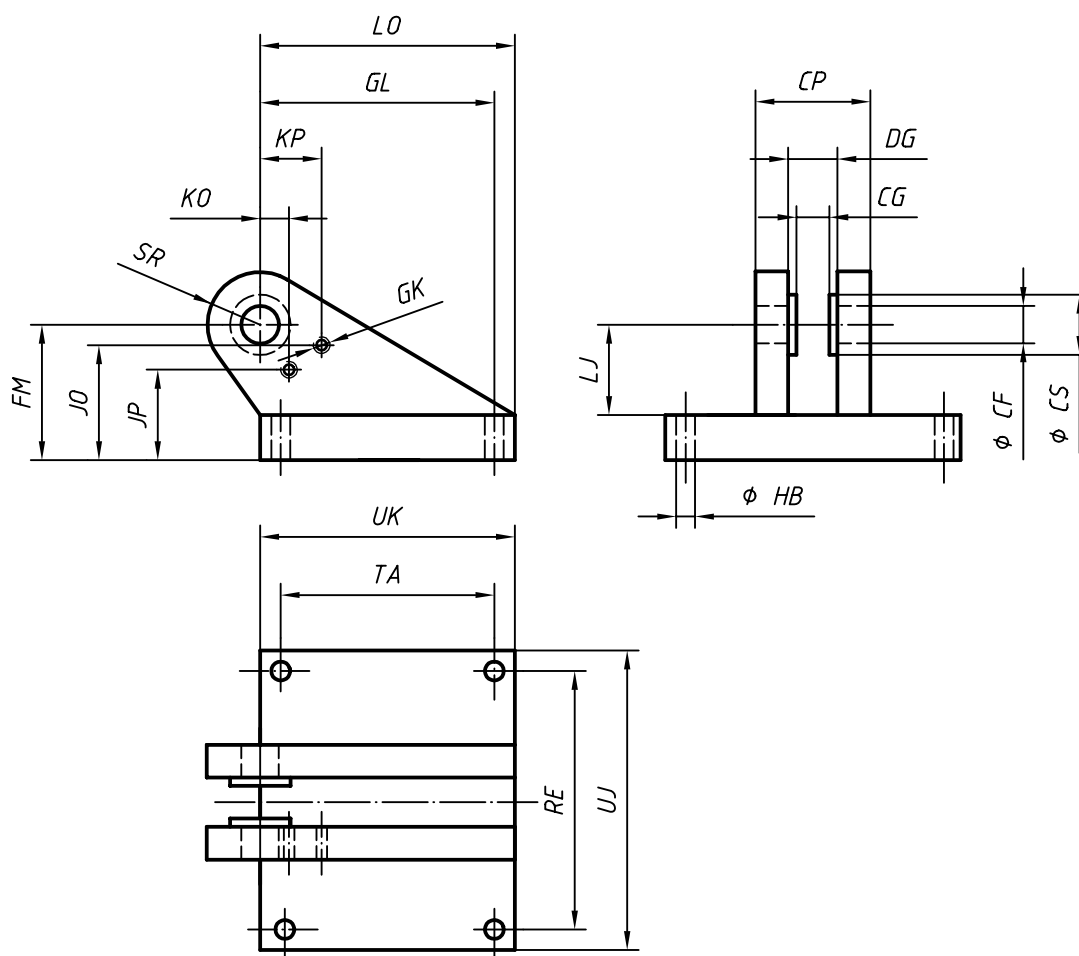


Figure 17 — AB5: Clevis bracket, spherical eye, in angle

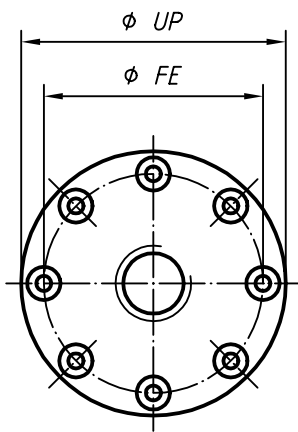


Figure 18 — AF3: Rod flange, circular

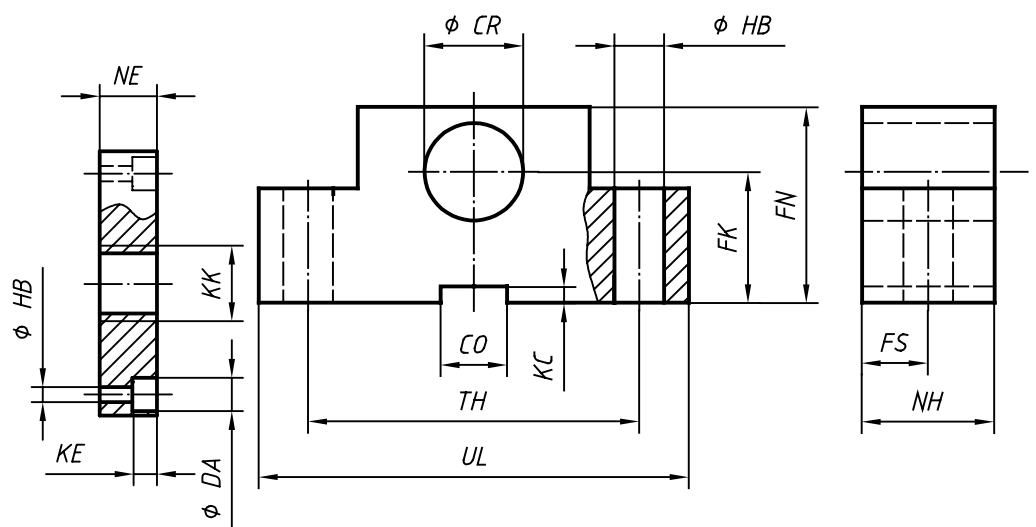


Figure 19 — AT4: Trunnion bracket

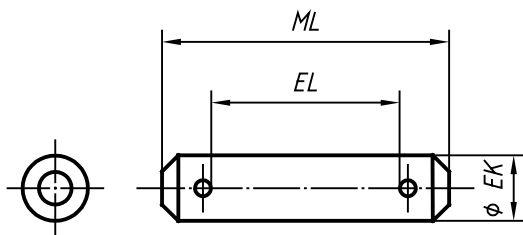


Figure 20 — AA4: Pivot pin, plain

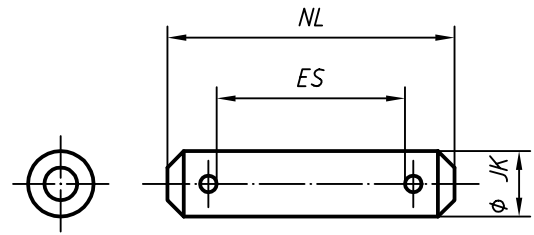


Figure 21 — AA6: Pivot pin, spherical bearing

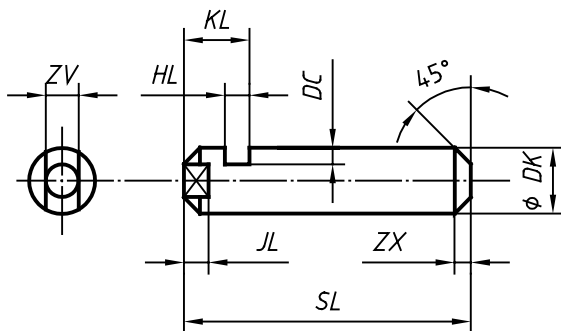
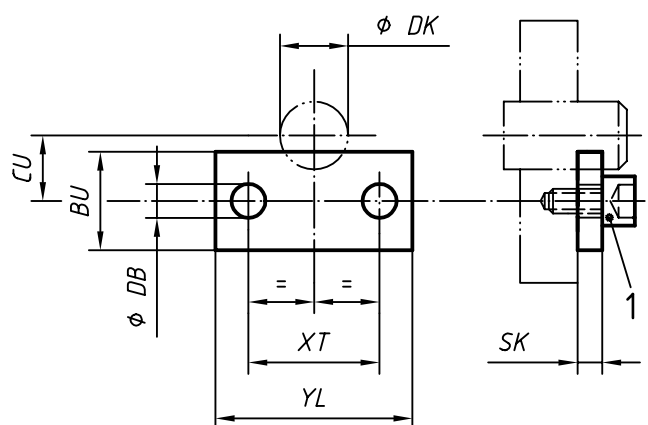


Figure 22 — AA7: Pivot pin, spherical bearing, locking plate



Key

1 Screw

Figure 23 — AL7: Locking plate for pivot pin

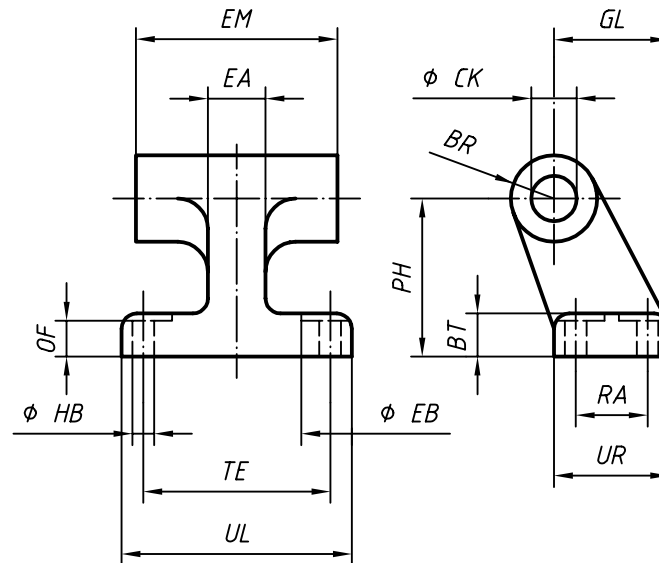


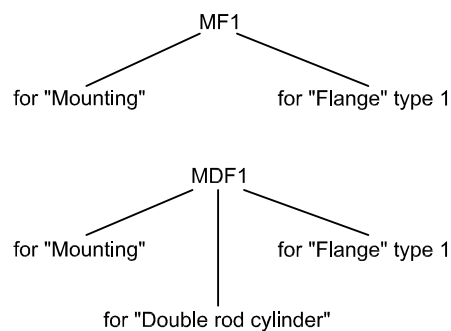
Figure 24 — AB7: Eye bracket, in angle

8 Identification code for mounting types

8.1 General

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

EXAMPLES



The following letters may 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

8.2 Mounting types

The mounting types defined in this International Standard are given with their identifying code in Table 2.

Table 2 — Mounting types

Identification code	Description	Figure
MB 1	Body, through bolt hole	25
MDB 1	Body, through bolt hole — Double rod	26
MB 2	Round, through bolt hole	27
MDB 2	Round, through bolt hole — Double rod	28
ME 5	Head, rectangular	29
MDE 5	Head, rectangular — Double rod	30
ME 6	Cap, rectangular	31
ME 7	Head, round	32
MDE 7	Head, round — Double rod	33
ME 8	Cap, round	34
ME 9	Head, square	35
MDE 9	Head, square — Double rod	36
ME 10	Cap, square	37
ME 11	Head, square	38
MDE 11	Head, square — Double rod	39
ME 12	Cap, square	40
MF 1	Head, rectangular flange	41
MDF 1	Head, rectangular flange — Double rod	42
MF 2	Cap, rectangular flange	43
MF 3	Head, circular flange	44
MDF 3	Head, circular flange — Double rod	45
MF 4	Cap, circular flange	46
MF 5	Head, square flange	47
MDF 5	Head, square flange — Double rod	48
MF 6	Cap, square flange	49
MF 7	Head, circular flange centred on the rear side	50
MDF 7	Head, circular flange centred on the rear side — Double rod	51
MF 8	Head, rectangular flange with two holes	52
MP 1	Cap, fixed clevis	53
MP 2	Cap, detachable clevis	54
MP 3	Cap, fixed plain eye	55
MP 4	Cap, detachable plain eye	56
MP 5	Cap, fixed eye with spherical bearing	57
MP 6	Cap, detachable eye with spherical bearing	58
MP 7	Head, detachable clevis	59
MR 3	Head, threaded	60
MDR 3	Head, threaded — Double rod	61

Table 2 (Continued)

Identification code	Description	Figure
MR 4	Cap, threaded	62
MS 1	End angles	63
MDS 1	End angles — Double rod	64
MS 2	Side lugs	65
MDS 2	Side lugs — Double rod	66
MS 3	Head angle	67
MT 1	Head, integral trunnion (male)	68
MDT 1	Head, integral trunnion (male) — Double rod	69
MT 2	Cap, integral trunnion (male)	70
MT 4	Intermediate fixed or movable trunnion (male)	71
MDT 4	Intermediate fixed or movable trunnion (male) — Double rod	72
MT 5	Head, detachable trunnion (male)	73
MT 6	Cap, detachable trunnion (male)	74
MX 1	Both ends studs or tie rods extended	75
MDX 1	Both ends studs or tie rods extended — Double rod	76
MX 2	Cap studs or tie rods extended	77
MDX 2	Cap studs or tie rods extended — Double rod	78
MX 3	Head studs or tie rods extended	79
MX 4	Both ends 2 studs or tie rods extended	80
MDX 4	Both ends 2 studs or tie rods extended — Double rod	81
MX 5	Head, tapped	82
MDX 5	Head, tapped — Double rod	83
MX 6	Cap, tapped	84
MX 7	Head tapped and cap studs or tie rods extended	85
MDX 7	Head tapped and cap studs or tie rods extended — Double rod	86
MX 8	Head and cap tapped	87
MDX 8	Head and cap tapped — Double rod	88

9 Letter codes of mounting and envelope dimensions according to cylinder mounting type

The letter code for mounting and envelope dimensions according to cylinder mounting type is shown in Figures 25 to 88.

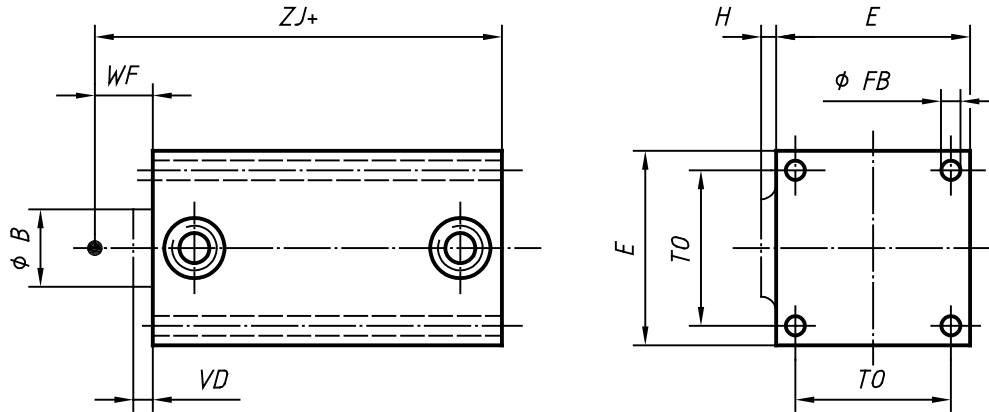


Figure 25 — MB 1: Body, through bolt hole

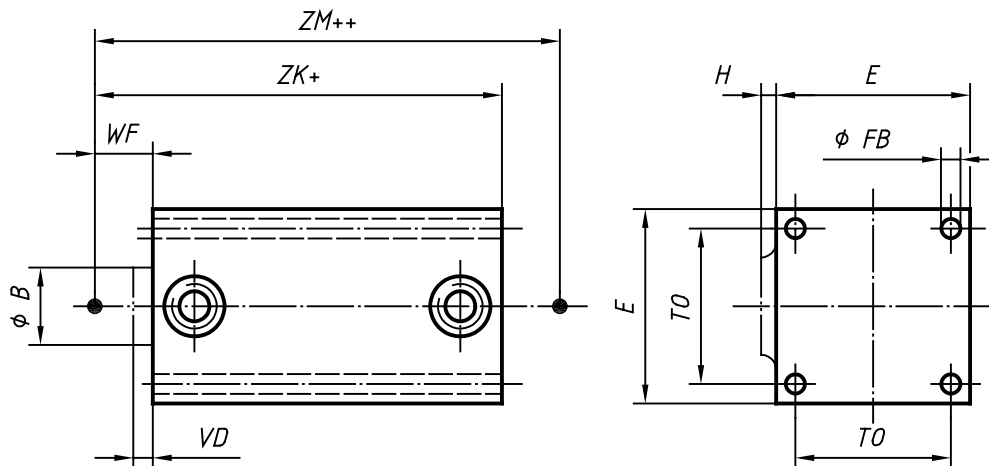


Figure 26 — MDB 1: Body, through bolt hole — Double rod

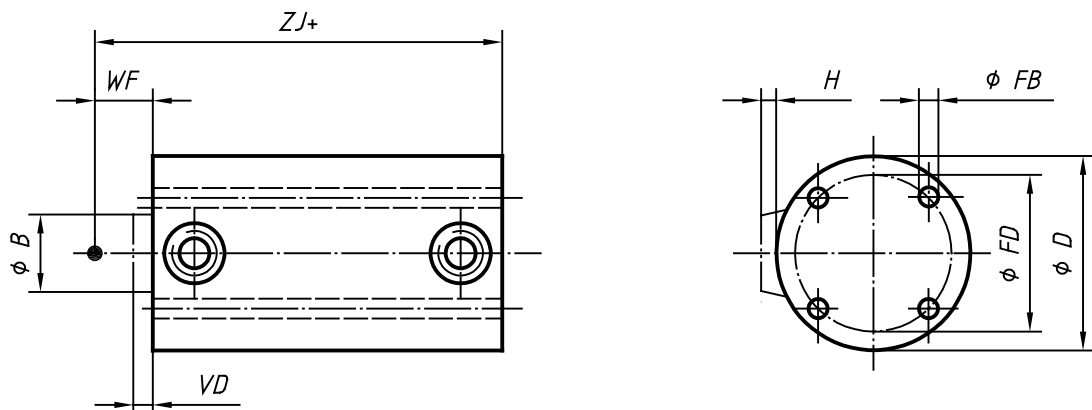


Figure 27 — MB 2: Round, through bolt hole