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# International Standard



# 6432

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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## **Pneumatic fluid power — Single rod cylinders — 10 bar (1 000 kPa) series — Bores from 8 to 25 mm — Mounting dimensions**

*Transmissions pneumatiques — Vérins à simple tige — Série 10 bar (1 000 kPa) — Alésages de 8 à 25 mm — Dimensions de montage*

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**Descriptors :** pneumatic fluid power, pneumatic equipment, pneumatic cylinders, single rod cylinders, dimensions, connecting dimensions.

## 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6432 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*.

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# Pneumatic fluid power — Single rod cylinders 10 bar<sup>1)</sup> (1 000 kPa) series — Bores from 8 to 25 mm — Mounting dimensions

## 0 Introduction

In pneumatic fluid power systems, power is transmitted and controlled through a gas under pressure within an enclosed circuit.

One component of such systems is the pneumatic cylinder. This is a device which converts the power brought by the gas into mechanical energy or force applied in a direction defined by the motion of an element, the piston, following the axis of a bore.

This piston is fastened to another element, the rod, which is the main point where the cylinder force is applied.

To enable them to be fastened to user mechanisms, pneumatic cylinders comprise in addition some devices called "mountings".

## 1 Scope and field of application

This International Standard establishes a metric series of mounting dimensions required for interchangeability of commonly used pneumatic cylinders for a maximum working pressure of 10 bar (1 000 kPa).

NOTE — This International Standard allows manufacturers freedom of design in metric cylinders and does not restrict technical development but provides basic guidelines.

## 2 References

ISO 228/1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1 : Designation, dimensions and tolerances.*

ISO 724, *ISO metric screw threads — Basic dimensions.*

ISO 3320, *Fluid power systems and components — Cylinder bores and piston rod diameters — Metric series.*

ISO 4393, *Fluid power systems and components — Cylinders — Basic series of piston strokes.*

ISO 4395, *Fluid power systems and components — Cylinders — Piston rod thread dimensions and types.*

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

ISO 6099, *Fluid power systems and components — Cylinders — Identification code for mounting dimensions and mounting types.*

## 3 Definitions

For definitions of terms used in this International Standard, see ISO 5598.

## 4 Dimensions

Select mounting dimensions for cylinders manufactured in accordance with this International Standard from tables 1 to 5.

NOTE — The tolerance of dimensions dependent on stroke included in the tables apply for strokes up to and including 100 mm. If strokes are longer than 100 mm, select tolerances from national standards or by agreement between manufacturer and user.

## 5 Nominal stroke

5.1 Select the nominal strokes from the recommended values shown in ISO 4393.

5.2 The nominal stroke tolerance is  ${}^{+1,5}_0$  mm for strokes up to and including 100 mm. If strokes are longer than 100 mm, select tolerances from national standards or by agreement between manufacturer and user.

## 6 Bore sizes

Included in this series are the following bore sizes :

8 — 10 — 12 — 16 — 20 — 25 mm

1) 1 bar = 100 kPa = 10<sup>5</sup> Pa; 1 Pa = 1 N/m<sup>2</sup>

**7 Mounting styles**

This International Standard includes a combination of the following mounting styles as described in ISO 6099 :

- MR3 — Head threaded mounting
- MP3 — Cap fixed eye mounting
- MS3 — Head angle mounting
- MF8 — Head rectangular flange (two hole) mounting

The dimensions of the piston rod threads are chosen in accordance with ISO 4395.

**9 Identification statement** (Reference to this International Standard)

Use the following statement in test reports, catalogues and sales literature when electing to comply with this International Standard :

“Interchangeable cylinder mounting dimensions selected in accordance with ISO 6432, *Pneumatic fluid power — Single rod cylinders — 10 bar (1 000 kPa) series — Bores from 8 to 25 mm — Mounting dimensions.*”

**8 Piston rod characteristics**

This International Standard applies to the following piston rod characteristics :

- Shouldered or unshouldered male threads

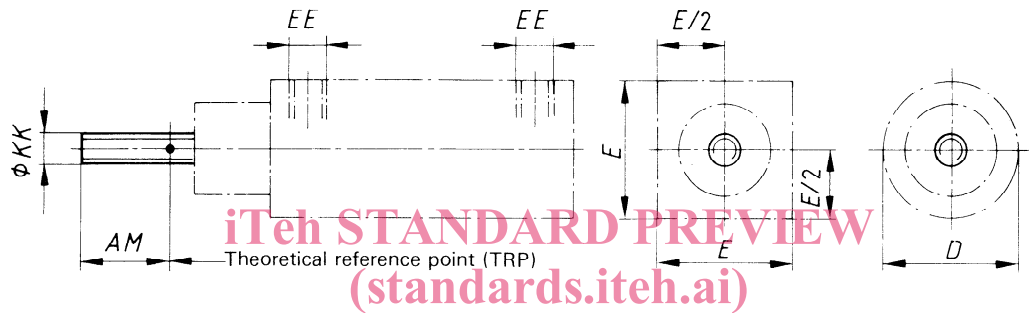


Figure 1 — Basic dimensions

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Table 1 — Basic dimensions

Dimensions in millimetres

Bore	AM		KK	EE <sup>1),2)</sup>		E max.	D max.
	nom.	tol.		metric	inch		
8	12		M4 × 0,7	M5 × 0,8		18	20
10	12		M4 × 0,7	M5 × 0,8		20	22
12	16	0	M6 × 1	M5 × 0,8		24	26
16	16	- 2	M6 × 1	M5 × 0,8		24	27
20	20		M8 × 1,25		G1/8	34	40
25	22		M10 × 1,25		G1/8	34	40

1) The inch series is chosen in accordance with ISO 228/1.  
 2) A definite choice of port thread sizes EE will be made subsequently.



Figure 2 – Head rectangular flange (two hole) mounting (MF8)

Table 2 – Dimensions for head rectangular flange (two hole) mounting (MF8)

Dimensions in millimetres

Bore	$W^{1)}$ $\pm 1,4$	$FB$ H13	$TF$ Js14	$UF$ max.	$UR$ max.
8	13	4,5	30	45	25
10	13	4,5	30	53	30
12	18	5,5	40	55	30
16	18	5,5	40	55	30
20	19	6,6	50	70	40
25	23	6,6	50	70	40

1) See note in clause 4.

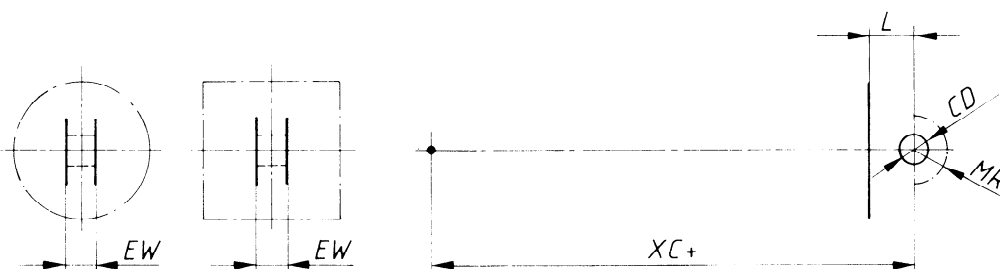


Figure 3 – Cap fixed eye mounting (MP3)

Table 3 – Dimensions for cap fixed eye mounting (MP3)

Dimensions in millimetres

Bore	$EW$ d13	$XC^{1)}$ $\pm 1$	$L$ min.	$CD$ H9	$MR$ max.
8	8	64	6	4	18
10	8	64	6	4	18
12	12	75	9	6	22
16	12	82	9	6	22
20	16	95	12	8	25
25	16	104	12	8	25

1) See note in clause 4.

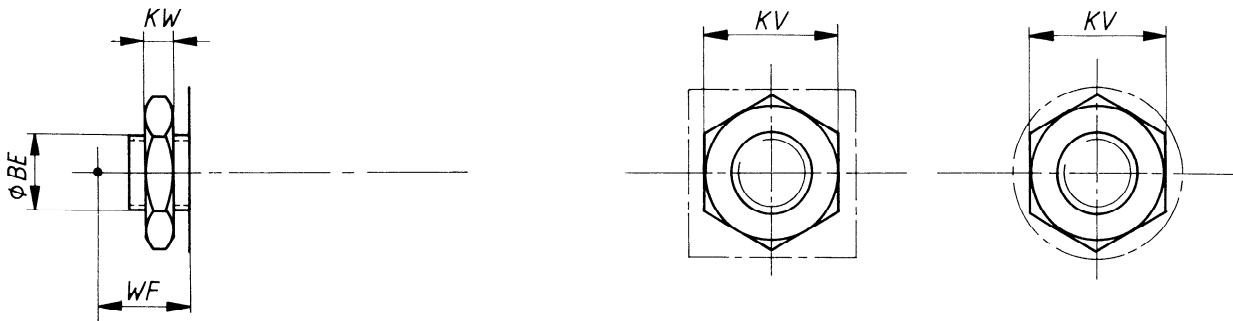


Figure 4 — Head threaded mounting (MR3)

Table 4 — Dimensions for head threaded mounting (MR3)

Dimensions in millimetres

Bore	BE	KW max.	KV max.	WF ± 1,2
8	M12 × 1,25	7	19	16
10	M12 × 1,25	7	19	16
12	M16 × 1,5	8	24	22
16	M16 × 1,5	8	24	22
20	M22 × 1,5	11	32	24
25	M22 × 1,5	11	32	28



Figure 5 — Head angle mounting (MS3)

Table 5 — Dimensions for head angle mounting (MS3)

Dimensions in millimetres

Bore	XS ± 1,4	AU max.	AO max.	NH ± 0,3	TR Js14	US max.	AB H13
8	24	14	6	16	25	35	4,5
10	24	14	6	16	25	42	4,5
12	32	16	7	20	32	47	5,5
16	32	16	7	20	32	47	5,5
20	36	20	8	25	40	55	6,6
25	40	20	8	25	40	55	6,6

## Bibliography

The following documents served as a reference in the preparation of ISO 6432 and will be helpful in the utilization of this International Standard :

ISO 3322, *Fluid power systems and components — Cylinders — Nominal pressures.*

ISO 6430, *Pneumatic fluid power — Single rod cylinders with integral mountings — 10 bar (1 000 kPa) series — Bores from 32 to 250 mm — Mounting dimensions.*

ISO 6431, *Pneumatic fluid power — Single rod cylinders with detachable mountings — 10 bar (1 000 kPa) series — Bores from 32 to 320 mm — Mounting dimensions.*

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