
International Standard



8139

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Pneumatic fluid power — Cylinders, 10 bar (1 000 kPa) series — Rod end spherical eyes — Mounting dimensions

Transmissions pneumatiques — Vérins 10 bar (1 000 kPa) — Tenons à rotule d'extrémité de tige de piston — Dimensions d'interchangeabilité

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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 8139 was prepared by Technical Committee ISO/TC 131,
Fluid power systems.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Pneumatic fluid power — Cylinders, 10 bar (1 000 kPa) series — Rod end spherical eyes — Mounting dimensions

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0 Introduction

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

One component of such systems is the pneumatic 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.

1 Scope and field of application

This International Standard lays down the mounting dimensions required for interchangeability of rod end spherical eyes of pneumatic cylinders. The rod end spherical eyes have been designed specifically for use with 10 bar¹⁾ (1 000 kPa) series cylinders manufactured in accordance with ISO 6430, ISO 6431 and ISO 6432 but this does not limit their application.

The spherical bearing end eyes are used on piston rods of pneumatic cylinders for mechanically transmitting the cylinder force under oscillatory rotational and tilting movements. The design of the rod end spherical eyes is based on the maximum forces resulting from the specified internal diameter of the cylinders and pressure according to ISO 6430, ISO 6431 and ISO 6432.

2 References

ISO 286, *ISO system of limits and fits.*²⁾

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

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.*

ISO 6432, *Pneumatic fluid power — Single rod cylinders, 10 bar (1 000 kPa) series — Bores from 8 to 25 mm — Mounting dimensions.*

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 5598 apply.

1) 1 bar = 100 kPa = 10⁵ Pa; 1 Pa = 1 N/m²

2) At present at the stage of draft. (Revision of ISO/R 286-1962.)

4 Mounting dimensions

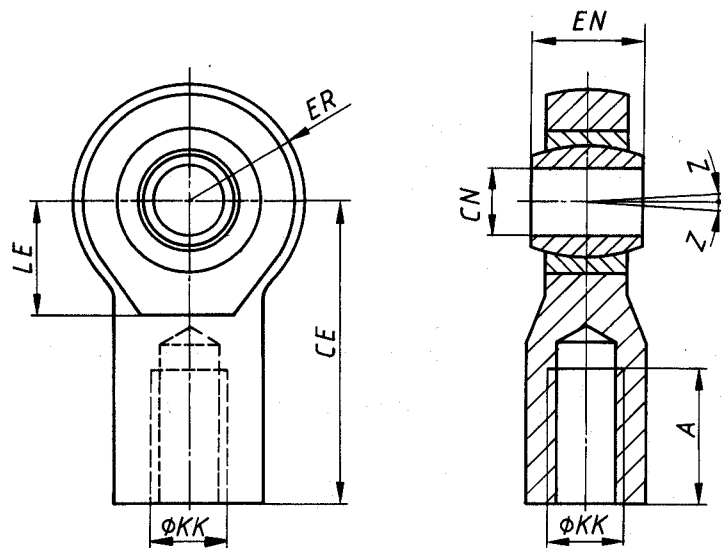


Figure — Rod end spherical eyes

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Table — Dimensions of rod end spherical eyes

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Dimensions in millimetres

KK	CN H9	EN h12	CE	LE min.	ER max.	A min.	Tilting angle Z min.
M4 × 0,7	5	8	27	10	9	10	4°
M6 × 1	6	9	30	11	10	12	
M8 × 1,25	8	12	36	13	12	16	
M10 × 1,25	10	14	43	15	14	20	
M12 × 1,25	12	16	50	17	16	22	
M16 × 1,5	16	21	64	22	21	28	
M20 × 1,5	20	25	77	26	25	33	
M24 × 2 ¹⁾	25	31	94	31	30	42	
M27 × 2	30	37	110	36	35	51	
M36 × 2	35	43	125	41	40	56	
M42 × 2	40	49	142	46	45	60	
M48 × 2	50	60	160	59	58	65	

1) This thread will be progressively abandoned and shall not be considered for new designs.

5 Application instructions

5.1 Installation

5.1.1 Usually a tolerance of m6 will be used for the shaft fitting the spherical plain bearing bore (see ISO 286).

NOTE — However, in exceptional cases (for example, cylinder installation difficulties) a tolerance of f7 can be admitted. In this instance, a case-hardened shaft is recommended as movement will occur between the shaft and the bearing bore. Lubrication must then be effected through the shaft.

5.1.2 The specified tilting angle of $\pm 4^\circ$ can still be obtained when the clevis inner faces abut the side faces of the inner ring of the spherical plain bearing.

5.1.3 The rod end spherical eyes shall be locked with a locking nut.

5.2 Bearing life

5.2.1 The life of the spherical plain bearing is influenced by many factors such as specified load, direction of load, angle of oscillation, type of lubricant and frequency of lubrication.

5.2.2 The spherical plain bearings are designed to give an acceptable bearing life under normal operation conditions.

5.2.3 Where a constant unidirectional load is applied or other unusual operating conditions exist, consultation with the supplier is recommended.

5.3 Lubrication

5.3.1 Sufficient lubrication shall be provided for the satisfactory performance of the rod end spherical eyes.

5.3.2 The method and frequency of such lubrication depends on the particular operating conditions.

6 Example of ordering designation

A rod end spherical eye with a bore of $CN = 20$ mm and steel on steel surface shall be designated as follows :

Rod end ISO 8139-20

7 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 :

"Cylinder rod end spherical eye mounting dimensions selected in accordance with ISO 8139, *Pneumatic fluid power — Cylinders, 10 bar (1 000 kPa) series — Rod end spherical eyes — Mounting dimensions.*"

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