INTERNATIONAL STANDARD

ISO 3320

Third edition
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Fluid power systems and components — Cylinder bores and piston rod diameters and area ratios — Metric series

Transmissions et composants hydrauliques et pneumatiques — Alésages des vérins et diamètres des tiges de piston et rapports de surface — Série métrique

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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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 131, *Fluid power systems*, Subcommittee SC 3, *Cylinders*.

This third edition of ISO 3320 cancels and replaces the second edition (ISO 3320:1987) and the second edition of ISO 7181:1991, which have been combined and technically revised.

Introduction

In fluid power systems, power is transmitted and controlled through a liquid (for hydraulics) or a gas (for pneumatics) under pressure within an enclosed circuit.

One component of such systems is the fluid power cylinder. This is a device that 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.

Fluid power systems and components — Cylinder bores and piston rod diameters and area ratios — Metric series

1 Scope

This International Standard establishes a metric series of cylinder bore and piston rod diameters for hydraulic and pneumatic cylinders, and specifies for each pair of diameters a corresponding standard ratio between the useful areas.

This International Standard applies only to the dimensional criteria of products manufactured in conformity with this International Standard; it does not apply to their functional characteristics.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3, *Preferred numbers — Series of preferred numbers*

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 Terms and definitions

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

4 Symbols and units

Symbols and units used in this International Standard are shown in Table 1.

Table 1 — Symbols and units

Symbol	Designation	Unit
AL[a]	Cylinder bore diameter	mm
MM[a]	Piston rod diameter	mm
$A_1 = \frac{\pi}{4} \cdot AL^2$	Area cylinder cap side	cm^2
$A_2 = \frac{\pi}{4} \cdot \left(AL^2 - MM^2 \right)$	Area cylinder rod side	cm^2
$\phi = \frac{A_1}{A_2}$	Area ratio	-

[a] Letter codes are in accordance with ISO 6099.