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International Standard



8136

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

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## Hydraulic fluid power — Single rod cylinders, 160 bar (16 MPa) medium series — Port dimensions

*Transmissions hydrauliques — Vérins 160 bar (16 MPa) série moyenne à simple tige — Dimensions des orifices*

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Ref. No. ISO 8136-1986 (E)

Descriptors : hydraulic fluid power, hydraulic equipment, hydraulic cylinders, single rod cylinders, dimensions, interchangeability.

## 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 8136 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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# Hydraulic fluid power — Single rod cylinders, 160 bar (16 MPa) medium series — Port dimensions

## 0 Introduction

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

One component of such systems 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.

## 1 Scope and field of application

This International Standard lays down the port dimensions for 160 bar<sup>1)</sup> (16 MPa) medium series cylinders as required for interchangeability of commonly used hydraulic cylinders.

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

The medium series dimensions are applicable to both round or square head cylinders thus allowing a wider range of application. They permit larger ports<sup>2)</sup> with longer cushions that are particularly suitable for applications requiring higher velocity and rapid decelerations.

## 2 References

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

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

ISO 6020/1, *Hydraulic fluid power — Single rod cylinders — Mounting dimensions — 160 bar (16 000 kPa) series — Part 1 : Medium series.*

ISO 6149, *Fluid power systems and components — Metric ports — Dimensions and design.*

ISO 6162, *Hydraulic fluid power — Flange connections — Four-bolt split flanges rated for normal duty applications — PN 35 to PN 415 (3,5 to 41,5 bar) — Dimensions.*<sup>3)</sup>

ISO 6164, *Hydraulic fluid power — Flange connections — Four-bolt, one-piece square flanges rated for normal duty applications — PN 250 and PN 400 (25 MPa and 40 MPa) — Dimensions.*<sup>3)</sup>

## 3 Definitions

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

**3.1 cylinder** : A device which converts fluid power into linear mechanical force and motion.

**3.2 cylinder bore** : The internal diameter of the cylinder.

**3.3 port** : An internal or external terminus of a passage in a component.

1) 1 bar = 0,1 MPa = 10<sup>5</sup> Pa; 1 Pa = 1 N/m<sup>2</sup>

2) This International Standard permits all ISO approved ports that are appropriate to fluid power applications.

3) At present at the stage of draft.

**4 Dimensions**

Port sizes and dimensions for cylinders manufactured in accordance with ISO 6020/1 shall be selected from the table.

**5 Bore sizes**

The following bore sizes<sup>1)</sup> are included in this 160 bar (16 MPa) medium series :

- 25 – 32 – 40 – 50 – 63 – 80 – 100 – 125 – 160 – 200
- 250 – 320 – 400 – 500 mm

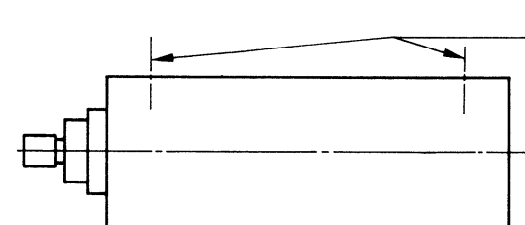
**6 Identification statement** (Reference to this International Standard)

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

“Port dimensions selected in accordance with ISO 8136, Hydraulic fluid power – Single rod cylinders, 160 bar (16 MPa) medium series – Port dimensions.”

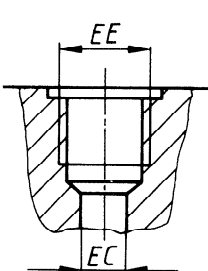
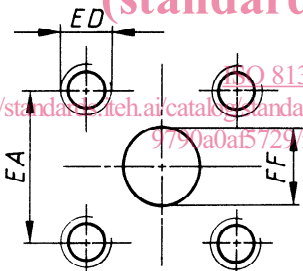
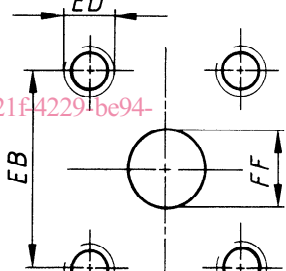
**Table – Port and flange sizes**

Dimensions in millimetres



M    F    MM

ISO 6162  
 ISO 6164  
 ISO 6149

Bore	ISO 6149 Port		ISO 6164 Square flange				ISO 6162 Rectangular flange				
											
	<span style="border: 1px solid black; padding: 2px;">M</span>		<span style="border: 1px solid black; padding: 2px;">F</span>				<span style="border: 1px solid black; padding: 2px;">MM</span>				
	EE	EC min.	Nominal flange size DN	FF 0 – 1,5	EA ± 0,25	ED	Nominal flange size DN	FF 0 – 1,5	EA ± 0,25	EB ± 0,25	ED
25	M14 × 1,5	6									
32	M18 × 1,5	10									
40 50	M22 × 1,5	12									
63 80	M27 × 2	16	13	15	29,7	M8 × 1,25	13	12,7	17,50	38,10	M8 × 1,25
100 125	M33 × 2	20	19	20	35,3	M8 × 1,25	19	19,1	22,25	47,65	M10 × 1,5
160 200	M42 × 2	25	25	25	43,8	M10 × 1,5	25	25,4	26,20	52,35	M10 × 1,5
250 320	M50 × 2	32	32	32	51,6	M12 × 1,75	32	31,8	30,20	58,70	M12 × 1,75
400 500	M60 × 2	38	38	38	60	M14 × 2	38	38,1	35,70	69,85	M14 × 2

1) Selected from ISO 3320.