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# International Standard



# 8131

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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) compact series — Tolerances

*Transmissions hydrauliques — Vérins 160 bar (16 MPa) série compacte à simple tige — Tolérances*

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

Price based on 2 pages

## 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 8131 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) compact series — Tolerances

## 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 dimensional tolerances for 160 bar<sup>1)</sup> (16 MPa) compact series cylinders in accordance with ISO 6020/2 as required for interchangeability of commonly used hydraulic cylinders.

## 2 References

ISO 286, *ISO system of limits and fits*.<sup>2)</sup>

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

ISO 6020/2, *Hydraulic fluid power — Single rod cylinders — Mounting dimensions — 160 bar (16 000 kPa) series — Part 2: Compact series*.

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

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

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

## 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 piston rod:** The element transmitting mechanical force and motion from the piston.

## 4 Tolerances

### 4.1 Stroke tolerances

**4.1.1** The nominal strokes, *S*, shall be selected from the recommended values shown in ISO 4393.

**4.1.2** See table 1 for the nominal stroke tolerances.

Table 1 — Nominal stroke tolerances

Values in millimetres

Cylinder bore <sup>1)</sup>	Nominal stroke <i>S</i>	Nominal stroke tolerance <sup>2)</sup>
25 32 40 50	<i>S</i> < 500	+ 2 0
	<i>S</i> > 500	+ 3,2 0
63 80 100	<i>S</i> < 500	+ 2,5 0
	<i>S</i> > 500	+ 4 0
125 160 200	<i>S</i> < 500	+ 4 0
	<i>S</i> > 500	+ 5 0

1) See ISO 3320.

2) The tolerances referred to apply to strokes up to and including 1 250 mm. For longer strokes, select tolerances from national standards or by agreement between manufacturer and user.

4.2 Tolerances for mounting dimensions

See table 2 for tolerances which are dependent on bore size, and table 3 for tolerances which are independent of bore size.

Table 2 — Tolerances which are dependent on bore size

Values in millimetres

Code for mounting types <sup>1)</sup>	Code for mounting dimensions <sup>1)</sup>	Bore size			Table in ISO 6020/2
		25, 32, 40, 50	63, 80, 100	125, 160, 200	
		Tolerances			
ME 5	WF <sup>2)</sup>	± 1,6	± 2	± 2,5	2
	VE	+1 0	+1 0	+1 0	
ME 6	ZJ <sup>2)</sup>	± 1,6	± 1,6	± 1,6	3
MP 1 MP 3	XC <sup>2)</sup>	± 1,6	± 1,6	± 2	4 and 5
MP 5	XO <sup>2)</sup>	± 1,6	± 1,6	± 2	6
MS 2	XS <sup>2)</sup>	± 1,6	± 2	± 2,5	7
	SS <sup>2)</sup>	+1,6	± 1,6	± 2	
MT 1	XG <sup>2)</sup>	± 1,6	± 2	± 2,5	8
MT 2	XJ <sup>2)</sup>	± 1,6	± 1,6	± 2	9
MT 4	XV <sup>2)</sup>	± 2	± 2	± 2,5	10
MX 1 MX 2 MX 3	BB	+3 0	+3 0	+5 0	11 to 13
MX 1 MX 3	WH <sup>2)</sup>	± 1,6	± 2	± 2,5	11 and 13
MX 1 MX 2 MX 3	ZJ <sup>2)</sup>	± 1,6	± 1,6	± 1,6	11 to 13

1) See ISO 6099.

2) The tolerances referred to apply to strokes up to and including 1 250 mm. For longer strokes, select tolerances from national standards or by agreement between manufacturer and user.

Table 3 — Tolerances which are independent of bore size

Table in ISO 6020/2	1	2					3		4				5					
Code for mounting types <sup>1)</sup>	Basic dimensions		ME 5					ME 6		MP 1				MP 3				
Code for mounting dimensions <sup>1)</sup>	A		TO	R	F	VD	B	TO	R	CB	CD	MR	L	EW	CD	MR	L	
tol.	max.		js14	js14	max.	min.	f9	js14	js14	A16	f8	max.	min.	h14	H9	max.	min.	
Table in ISO 6020/2	6					7			8 and 9			10				11 to 13		
Code for mounting types <sup>1)</sup>	MP 5					MS 2			MT 1 MT 2			MT 4				MX 1 MX 2 MX 3		
Code for mounting dimensions <sup>1)</sup>	EP	MS	LT	CX	EX	TS	LH	TC	UT	TD	UW	TM	UM	TD	TG			
tol.	h14	max.	min.	H7	h12	js14	h10	h14	h15	f9	max.	h14	h15	f9	js14			

1) See ISO 6099.

5 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 :

“Tolerances selected in accordance with ISO 8131, *Hydraulic fluid power — Single rod cylinders, 160 bar (16 MPa) — Tolerances.*”