INTERNATIONAL STANDARD

ISO 6020-2

Fourth edition
2015-08-15

Hydraulic fluid power — Mounting dimensions for single rod cylinders, 16 MPa (160 bar) series —

Part 2: Compact series

Transmissions hydrauliques — Dimensions d'interchangeabilité des vérins 16 MPa (160 bar) à simple tige —
Partie 2: Série compacte

Reference number
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Foreword

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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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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 fourth edition cancels and replaces the third edition (ISO 6020-2:2006), which has been technically revised to incorporate Technical Corrigendum 1, published 2008-10-15.

ISO 6020 consists of the following parts, under the general title *Hydraulic fluid power — Mounting dimensions for single rod cylinders, 16 MPa (160 bar) series*:

— *Part 1: Medium series*

— *Part 2: Compact series*

— *Part 3: Compact series with bores from 250 mm to 500 mm*

Introduction

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

One component of such systems is the cylinder. This is a device that converts fluid power into linear mechanical force and motion. It consists of a moveable element, i.e. a piston and piston rod, operating within a cylindrical bore.

Hydraulic fluid power — Mounting dimensions for single rod cylinders, 16 MPa (160 bar) series —

Part 2: Compact series

1 Scope

This part of ISO 6020 establishes metric mounting dimensions for compact series cylinders, 16 MPa [160 bar[1)]], as required for interchangeability of commonly-used hydraulic cylinders.

NOTE 1 This part of ISO 6020 allows manufacturers of hydraulic equipment flexibility in the design of metric cylinders and does not restrict technical development; however, it does provide basic guidelines.

NOTE 2 The compact series dimensions are most applicable to square head cylinders.

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 273, *Fasteners — Clearance holes for bolts and screws*

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

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 Dimensions

4.1 Mounting dimensions for cylinders manufactured in accordance with this part of ISO 6020 shall be selected from Figures 1 to 13 and Tables 1 to 13.

4.2 Port and flange sizes and dimensions shall be selected from Table 14 and in the respective International Standards cited therein.

4.3 All the dimensions and methods of mounting in this part of ISO 6020 are identified by codes in accordance with ISO 6099.

4.4 Tolerances for mounting dimensions shall be in accordance with Table 15.

1) 1 bar = 0,1 MPa = 10^5 Pa; 1 MPa = 1 N/mm^2.

5 Bore sizes

This part of ISO 6020 includes the following bore sizes, in millimetres, in accordance with ISO 3320:

25 — 32 — 40 — 50 — 63 — 80 — 100 — 125 — 160 — 200.

NOTE Mounting dimensions for compact hydraulic single rod cylinders with bores from 250 mm to 500 mm are specified in ISO 6020-3.

6 Piston stroke tolerances

The tolerance on piston strokes shall be as follows:

— piston strokes ≤ 1 250 mm: +2/-0 mm;

— piston strokes > 1 250 mm and ≤ 3 150: +5/−0 mm;

— piston strokes > 3 150 mm and ≤ 8 000: +8/−0 mm.

7 Mounting types

This part of ISO 6020 includes the following mounting types, in accordance with ISO 6099:

— ME 5 — Head, rectangular (see Figure 2 and Table 2)

— ME 6 — Cap, rectangular (see Figure 3 and Table 3)

— MP 1 — Cap, fixed clevis (see Figure 4 and Table 4)

— MP 3 — Cap, fixed plain eye (see Figure 5 and Table 5)

— MP 5 — Cap, fixed eye with spherical bearing (see Figure 6 and Table 6)

— MS 2 — Side lugs (see Figure 7 and Table 7)

— MT 1 — Head, integral trunnion (male) (see Figure 8 and Table 8)

— MT 2 — Cap, integral trunnion (male) (see Figure 9 and Table 9)

— MT 4 — Intermediate trunnion (male) with selectable position (see Figure 10 and Table 10)

— MX 1 — Both ends studs or tie rods extended (see Figure 11 and Table 11)

— MX 2 — Cap studs or tie rods extended (see Figure 12 and Table 12)

— MX 3 — Head studs or tie rods extended (see Figure 13 and Table 13)

8 Piston rod characteristics

8.1 This part of ISO 6020 covers piston rods that have shouldered male thread ends; see Figure 1 and Table 1 for basic dimensions.

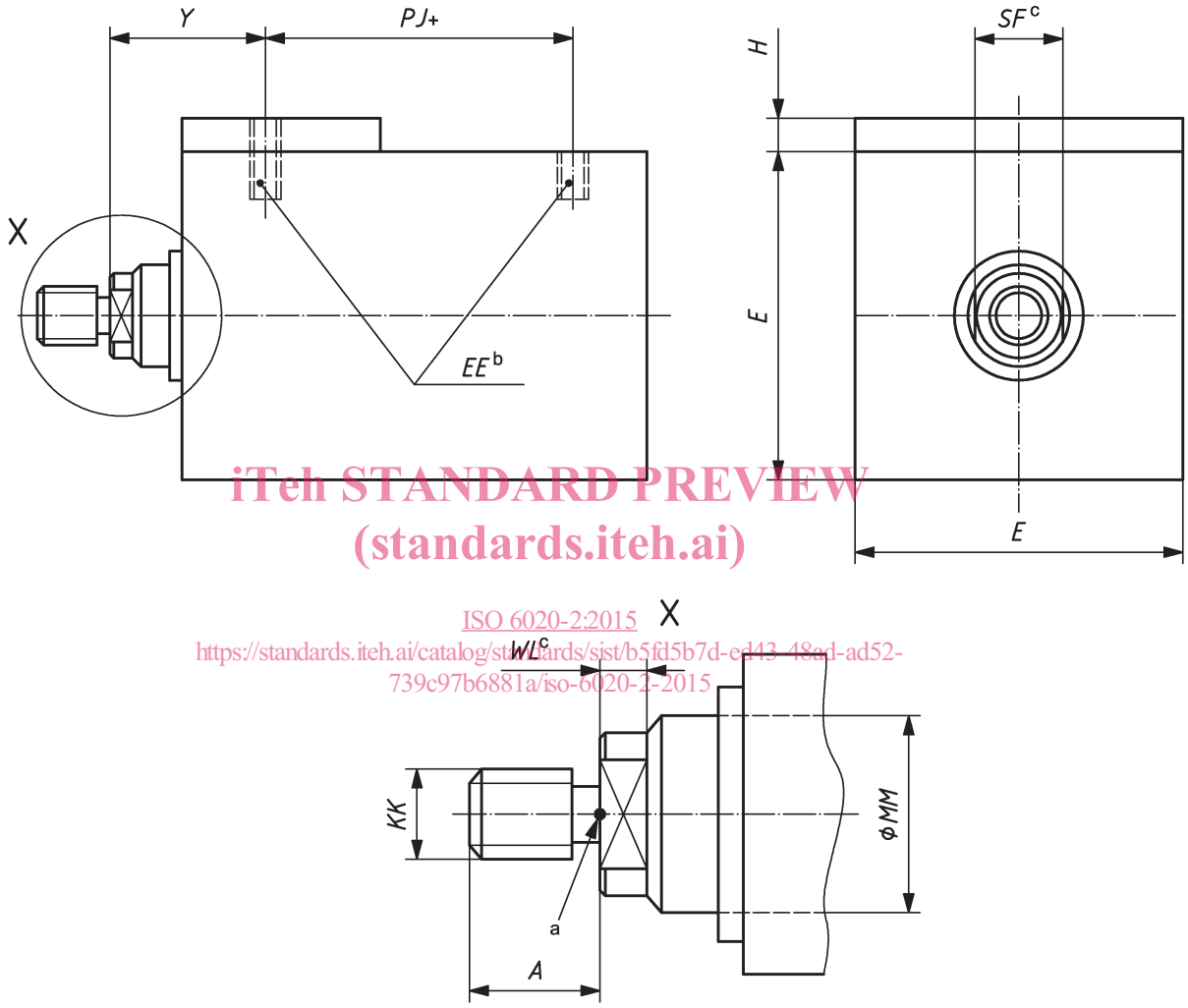
8.2 For rod end types, see ISO 4395.

8.3 For accessories, see ISO 8133.

9 Identification statement (reference to this part of ISO 6020)

It is strongly recommended to fabricators who elect to conform to this part of ISO 6020 to use the following statement in test reports, catalogues and sales literature:

"Interchangeable mounting dimensions selected in accordance with ISO 6020-2, *Hydraulic fluid power — Mounting dimensions for single rod cylinders, 16 MPa (160 bar) series — Part 2: Compact series.*"



Key

a Reference point.

b See Table 14 for port options.

c Dimensions *SF* and *WL* are controlled by ISO 4395.

Figure 1 — General dimensions

Table 1 — General dimensions

Dimensions in millimetres

Bore	Rod *MM*[a]	*KK*[a] 6g	*A* max.	*H* max.	*E*	*Y*[b]	*PJ*[c] ±1,5
25	12	M10 × 1,25	14	5	40 ± 1,5	50	53
	18	M10 × 1,25 M14 × 1,5	14 18				
32	14	M12 × 1,25	16	5	45 ± 1,5	60	56
	22	M12 × 1,25 M16 × 1,5	16 22				
40	18	M14 × 1,5	18	—	63 ± 1,5	62	73
	22	M14 × 1,5 M16 × 1,5	18 22				
	28	M14 × 1,5 M20 × 1,5	18 28				
50	22	M16 × 1,5	22	—	75 ± 1,5	67	74
	28	M16 × 1,5 M20 × 1,5	22 28				
	36	M16 × 1,5 M27 × 2	22 36				
63	28	M20 × 1,5	28	—	90 ± 1,5	71	80
	36	M20 × 1,5 M27 × 2	28 36				
	45	M20 × 1,5 M33 × 2	28 45				
80	36	M27 × 2	36	—	115 ± 1,5	77	93
	45	M27 × 2 M33 × 2	36 45				
	56	M27 × 2 M42 × 2	36 56				
100	45	M33 × 2	45	—	130 ± 2	82	101
	56	M33 × 2 M42 × 2	45 56				
	70	M33 × 2 M48 × 2	45 63				
125	56	M42 × 2	56	—	165 ± 2	86	117
	70	M42 × 2 M48 × 2	56 63				
	90	M42 × 2 M64 × 3	56 85				
160	70	M48 × 2	63	—	205 ± 2	86	130
	90	M48 × 2 M64 × 3	63 85				

a If other piston rod diameters or other piston rod threads are required, use those identified in ISO 3320 and ISO 4395.

b The tolerance on dimension *Y* is dependent on stroke; see Table 15.

c The tolerance on dimension *PJ* shall be added to the tolerance on the stroke.

Table 1 *(continued)*

Bore	Rod *MM*[a]	*KK*[a] 6g	*A* max.	*H* max.	*E*	*Y*[b]	*PJ*[c] ±1,5
	110	M48 × 2 M80 × 3	63 95				
200	90	M64 × 3	85	—	245 ± 2	98	165
	110	M64 × 3 M80 × 3	85 95				
	140	M64 × 3 M100 × 3	85 112				

a If other piston rod diameters or other piston rod threads are required, use those identified in ISO 3320 and ISO 4395.

b The tolerance on dimension *Y* is dependent on stroke; see Table 15.

c The tolerance on dimension *PJ* shall be added to the tolerance on the stroke.

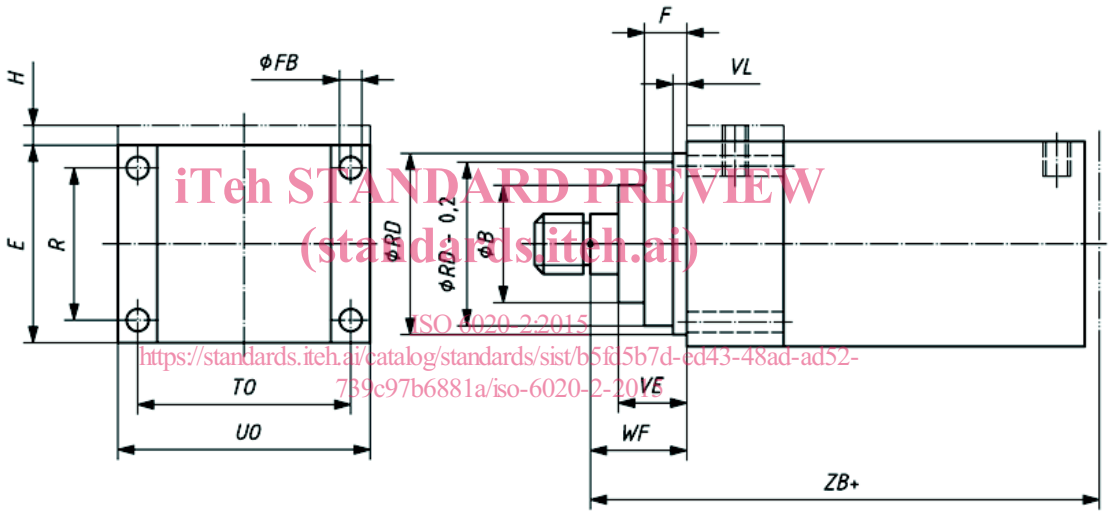


Figure 2 — ME 5 — Head, rectangular

Table 2 — Dimensions of head, rectangular

Dimensions in millimetres

Bore	Rod *MM*	*RD* f8	OD	E	*TO* js13	*FB*[b] H13	*R* js13	*WF* ±2	*F* max.	*VE* max.	*VL* min.	*B* max.	*UO* max.	*ZB*[c]	*H* max.
25	12	38		40 ± 1,5	51	5,5	27	25	10	16	3	24	65	121	5
	18											30			
32	14	42		45 ± 1,5	58	6,6	33	35	10	22	3	26	70	137	5
	22											34			
	18											30			

a *OD* shall be smaller than *RD*.

b Hole in accordance with ISO 273, medium series.

c The tolerance for dimension *ZB* is dependent on stroke; see Table 15.