

INTERNATIONAL  
STANDARD

**ISO**  
**8131**

Second edition  
1992-08-01

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**Hydraulic fluid power — Single rod  
cylinders, 16 MPa (160 bar) compact  
series — Tolerances**

**iTeh STANDARD PREVIEW**

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

ISO 8131:1992

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Reference number  
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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 8131 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*, Sub-Committee SC 3, *Cylinders*.

This second edition cancels and replaces the first edition (ISO 8131:1986), tables 1 to 3 of which have been technically revised.

Annex A of this International Standard is for information only.

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## 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.

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# Hydraulic fluid power — Single rod cylinders, 16 MPa (160 bar) compact series — Tolerances

## 1 Scope

This International Standard specifies dimensional tolerances for 16 MPa [160 bar<sup>1)</sup>] compact series cylinders in accordance with ISO 6020-2 as required for interchangeability of commonly used hydraulic cylinders.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 5598:1985, *Fluid power systems and components — Vocabulary*.

ISO 6020-2:1991, *Hydraulic fluid power — Mounting dimensions for single rod cylinders, 16 MPa (160 bar) series — Part 2: Compact series*.

ISO 6099:1985, *Fluid power systems and components — Cylinders — Identification code for mounting dimensions and mounting types*.

## 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

The stroke tolerance shall be  $^{+2}_0$  mm on all strokes up to 1 250 mm.

For longer strokes, select tolerances from national standards or by agreement between the manufacturer and user.

### 4.2 Tolerances for mounting dimensions

See table 1 for tolerances which are dependent on stroke, and table 2 for tolerances which are independent of stroke.

## 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 8131:1992, *Hydraulic fluid power — Single rod cylinders, 16 MPa (160 bar) compact series — Tolerances*."

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

Table 1 — Tolerances which are dependent on stroke

Values in millimetres

| Code for mounting style <sup>1)</sup> | Code for mounting dimensions <sup>1)</sup> | Nominal stroke          |               | Table in ISO 6020-2:1991 |
|---------------------------------------|--|-------------------------|---------------|--------------------------|
|                                       |  | up to 1250 mm           | above 1250 mm |                          |
|                                       |  | Tolerances              |               |                          |
| Positions of ports                    | <i>Y</i>                                   | ± 2                     |               | 1                        |
|                                       | <i>PJ</i>                                  | ± 1,25                  |               | 2                        |
| ME5                                   | <i>ZB</i>                                  | max.                    |               | 3                        |
| ME6                                   | <i>ZJ</i> <sup>2)</sup>                    | ± 1                     |               | 4 and 5                  |
| MP1<br>MP3                            | <i>XC</i> <sup>2)</sup>                    | ± 1,25                  |               | 6                        |
| MP5                                   | <i>XO</i> <sup>2)</sup>                    | ± 1,25                  |               | 7                        |
| MS2                                   | <i>XS</i> <sup>2)</sup>                    | ± 2                     |               |                          |
|                                       | <i>ZB</i>                                  | max.                    |               |                          |
| MT1                                   | <i>SS</i> <sup>2)</sup>                    | ± 1,25                  |               | 8                        |
|                                       | <i>XG</i> <sup>2)</sup>                    | ± 2                     |               | 9                        |
| MT2                                   | <i>ZB</i>                                  | max.                    |               |                          |
|                                       | MT4  | <i>XJ</i> <sup>2)</sup> |               | ± 1,25                   |
| MX1<br>MX2<br>MX3                     |  | <i>ZB</i>               |               | max.                     |
|                                       | <i>XV</i> <sup>2)</sup>                    | ± 2                     |               |                          |
| MX3                                   | <i>ZB</i>                                  | max.                    | 13            |                          |
| MX1<br>MX3                            | <i>WH</i> <sup>2)</sup>                    | ± 2                     | 11 and 13     |                          |
| MX1<br>MX2<br>MX3                     | <i>ZJ</i> <sup>2)</sup>                    | ± 1                     | 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 the manufacturer and user.

Table 2 — Tolerances which are independent of stroke

| Table in ISO 6020-2:1991                   |  | 2    |       |      |      |      |     |      |      |      |      | 3    |      |      | 4   |      |      |            |     |     |      |      |      |                   |  |  |           |  |  |
|--|--|------|-------|------|------|------|-----|------|------|------|------|------|------|------|-----|------|------|------------|-----|-----|------|------|------|-------------------|--|--|-----------|--|--|
| Code for mounting style <sup>1)</sup>      |  | ME5  |       |      |      |      |     |      |      |      |      | ME6  |      |      | MP1 |      |      |            |     |     |      |      |      |                   |  |  |           |  |  |
| Code for mounting dimensions <sup>1)</sup> |  | A    | E     | H    | B    | F    | FB  | R    | RD   | TO   | UO   | VE   | VL   | WF   | FB  | R    | TO   | UO         | UO  | CD  | CB   | L    | MR   |                   |  |  |           |  |  |
| tol.                                       |  | max. | ± 1.5 | ± 2  | max. | max. | H13 | js13 | f8   | js13 | max. | max. | min. | ± 2  | H13 | js13 | js13 | max.       | A16 | H9  | min. | max. |      |                   |  |  |           |  |  |
| Table in ISO 6020-2:1991                   |  | 5    |       |      |      |      |     |      |      |      |      | 6    |      |      | 7   |      |      | 8 and 9    |     |     | 10   |      |      | 11 to 13          |  |  | 11 and 13 |  |  |
| Code for mounting style <sup>1)</sup>      |  | MP3  |       |      |      |      |     |      |      |      |      | MP5  |      |      | MS2 |      |      | MT1<br>MT2 |     |     | MT4  |      |      | MX1<br>MX2<br>MX3 |  |  |           |  |  |
| Code for mounting dimensions <sup>1)</sup> |  | CD   | EW    | L    | MR   | CX   | EP  | EX   | LT   | MS   | Z    | LH   | SB   | TS   | TC  | TD   | UT   | TD         | UM  | UM  | TG   | B    | VD   |                   |  |  |           |  |  |
| tol.                                       |  | H9   | h14   | min. | max. | 2)   | h15 | 2)   | min. | max. | min. | h10  | H13  | js13 | h14 | f8   | h15  | f8         | h14 | h15 | js13 | f9   | min. |                   |  |  |           |  |  |

1) See ISO 6039.

2) See table 6 of ISO 6020-2:1991.

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**Annex A**  
(informative)

**Bibliography**

- [1] ISO 286-1:1988, *ISO system of limits and fits — Part 1: Bases of tolerances, deviations and fits.*
- [2] ISO 286-2:1988, *ISO system of limits and fits — Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts.*
- [3] ISO 3320:1987, *Fluid power systems and components — Cylinder bores and piston rod diameters — Metric series.*
- [4] ISO 4393:1978, *Fluid power systems and components — Cylinders — Basic series of piston strokes.*

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