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Pneumatic fluid power — Cylinders — Acceptance test

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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 10099 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*.

Annex A of this International Standard is for information only.

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Introduction

In pneumatic fluid power systems, power is transmitted and controlled through a gas under pressure within a circuit.

One component of such systems is the pneumatic 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.

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Pneumatic fluid power — Cylinders — Acceptance test

1 Scope

This International Standard specifies acceptance and function tests for double-acting pneumatic cylinders, such as those manufactured in accordance with ISO 6430, ISO 6431 and ISO 6432.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was 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 edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

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

3 Definitions

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

4 Identity check

Record the following information about the cylinder to be tested:

- a) type;
- b) port dimensions;
- c) stroke length;
- d) model label;
- e) bore;
- f) rod diameter;

- g) overall length;
- h) mounting dimensions.

5 Functional test at manufacturer's specified minimum operating pressure

With the cushion adjusting screw, if any, fully open, cycle the cylinder at the manufacturer's specified minimum operating pressure. Breakaway and full-stroke movement shall occur in both directions and the rod shall extend and retract smoothly.

6 Leakage tests at 100 kPa (1 bar) and 1 000 kPa (10 bar)

6.1 Apply air at 100 kPa (1 bar) and then at 1 000 kPa (10 bar) to rear port. Check for significant leakage from

- a) front port;
- b) joint between rear end cap and tube and around check valve, if any;
- c) around rear cushion adjusting screw;
- d) porosity in rear end cap;
- e) any other external joints.

6.2 Apply air to front port. Check for significant leakage from

- a) rear port;
- b) joint between front end cap and tube;
- c) around front cushion adjusting screws and around check valve, if any;
- d) around piston rod nose seal;
- e) joint between front end cap and bearing;

- f) porosity in front end cap;
- g) any other external joints.

6.3 If special requirements for leakage are specified by customers, the amount of leakage and test method shall be agreed between customer and manufacturer.

7 Cushioning test at 630 kPa (6,3 bar) (applicable to cushioned cylinders only)

Adjust the cushion screw, if any, and cycle the cyl-

inder at 630 kPa (6,3 bar). The piston rod shall be effectively retarded before it reaches the end of stroke in both directions.

8 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:

“Acceptance test for pneumatic cylinders in accordance with ISO 10099, *Pneumatic fluid power — Cylinders — Acceptance test.*”

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Annex A (informative)

Bibliography

- [1] ISO 3320:1987, *Fluid power systems and components — Cylinder bores and piston rod diameters — Metric series*.
- [2] ISO 6430:1983, *Pneumatic fluid power — Single rod cylinders with integral mountings — 10 bar (1 000 kPa) series — Bores from 32 to 250 mm — Mounting dimensions*.
- [3] ISO 6431:1983, *Pneumatic fluid power — Single rod cylinders with detachable mountings — 10 bar (1 000 kPa) series — Bores from 32 to 320 mm — Mounting dimensions*.
- [4] ISO 6432:1985, *Pneumatic fluid power — Single rod cylinders — 10 bar (1 000 kPa) series — Bores from 8 to 25 mm — Mounting dimensions*.

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