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**Pneumatic fluid power - Rules of non-ferrous metallic cylinder  
body**

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### Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the redrafting method to modify and adopt ISO 6537.1982 "Pneumatic cylinder requirements for non-ferrous metal pipes".

The technical differences between this standard and ISO 6537.1982 and the reasons are as follows.

--- With regard to normative quotation documents, this standard has been adjusted with technical differences to adapt to my country's technical conditions and adjustments

The situation is reflected in Chapter 2 "Regulatory Reference Documents", with specific adjustments as follows.

\* Replace ISO 286-1 (see 8.1.1) with GB/T 1800.1 modified to adopt international standards;

\* Replace ISO 5598 with GB/T 17446 equivalent to international standards (see Chapter 3);

\* Added reference to GB/T 1031 (see 9.1.1);

\* Added reference to GB/T 2346 (see 6.1);

\* Deleted ISO 468 cited in ISO 6537.1982 (see Chapter 4 and 9.1.1 of ISO 6537.1982)

\* Deleted ISO 3322 cited by ISO 6537.1982 (see 6.1 of ISO 6537.1982);

--- Modify the maximum height symbol of the outline, according to the provisions of GB/T 1031-2009, change Rma to Rz (see Chapter 4);

--- Increase the maximum working temperature from 100 degrees C to 120 degrees C to meet the current technical requirements (see Chapter 7);

--- In order to adapt to the current technical requirements and improve the accuracy

requirements, the inner diameter tolerance level was modified (see 8.1.1 and Appendix A, Table A.1 and

Table A.2);

--- Change "maintain outer diameter tolerance" to "adjust outer diameter tolerance", because the inner hole roughness and inner diameter tolerance have relevant requirements, so according to the needs

The outer diameter tolerance should be adjusted (see 8.2.2);

--- Because the straightness of the inner hole is an important indicator, the "straightness" is changed to "the straightness of the inner hole", which is also based on GB/T 11336-2004

Added straightness measurement method (see 8.3.1);

--- Adapt to the current technical requirements, improve the accuracy requirements, and modify the surface roughness value (see Table 3);

--- Change "test report" to "order", unify the original test certification and logo description as "order", and modify and add requirements

To meet current technical requirements (see Chapter 11);

--- Increase the instructions for recommended wall thickness to ensure the safety of the cylinder at the minimum wall thickness (see Table A.1 and Table A.2);

--- Modified the ordering method and added the "Cylinder Shape Requirements" and "Cylinder Inner Hole Roughness Requirements" to meet the current technical requirements (See Appendix B).

For ease of use, the following editorial changes have been made to this standard.

--- Change the standard name to "Technical Requirements for Pneumatic Nonferrous Metal Cylinder".

This standard was proposed by the China National Machinery Industry Federation.

This standard is under the jurisdiction of the National Hydraulic and Pneumatic Standardization Technical Committee (SAC/TC3).

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## Introduction

In pneumatic systems, power is transmitted and controlled by compressed air in a closed loop.

The cylinder is a device that converts gas energy into mechanical energy and realizes linear motion. The cylinder consists of a cylinder barrel and a piston and piston moving in it Rod and other components.

In most applications, the outer diameter and wall thickness of the tube are specified. But for the cylinder, consider the reason for the output force and pressure level,

The inner diameter and wall thickness of the cylinder are very important.

Pneumatic non-ferrous metal cylinder technical requirements

## 1 Scope

This standard specifies the mechanical properties, dimensional tolerances, surface roughness and technical requirements of cylinder cylinders made of non-ferrous metal tubes.

This standard is applicable to round seamless or welded after the tensile stress has been eliminated or fully heat-treated, and the inner hole has been specially processed with or without chipping.

Connected to non-ferrous metal cylinders, it is also suitable for special-shaped cylinders with round inner holes.

Note. This standard is mainly for brass alloy and aluminum alloy materials, but not limited to such materials.

## 2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this article

Pieces. For the cited documents without date, the latest version (including all amendments) applies to this document.

GB/T 1031 Product Geometric Technical Specification (GPS) Surface Structure Profile Method Surface Roughness Parameters and Values

GB/T 1800.1 Geometrical Product Specifications (GPS) Limits and Fittings Part 1.Tolerances, Deviations and Fitting Basis

(GB/T 1800.1-2009, ISO 286-1.1988, MOD)

GB/T 2346 Nominal pressure series of fluid transmission systems and components (GB/T 2346-2003, ISO 2944..2000, MOD)

GB/T 17446 Glossary of fluid transmission systems and components (GB/T 17446-2012, ISO 5598..2008, IDT)

### 3 Terms and definitions

The terms and definitions defined in GB/T 17446 apply to this document.

### 4 Symbol

The following symbols apply to this document.

A --- gauge length (5.65  $S_0$ ) elongation after break;

$\alpha$  --- the nominal wall thickness of the cylinder;

D --- the nominal outer diameter of the cylinder;

d --- the nominal inner diameter of the cylinder;

L --- length;

Ra --- arithmetic mean deviation of contour;

ReL --- Lower yield strength (only for aluminum alloy);

Rm --- tensile strength;

Rp0.2 --- 0.2% elongation strength (this value is only used when the yield stress is not obvious);

Rz --- the maximum height of the contour;

$S_0$  --- original cross-sectional area.