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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 38206.3-2019

Methods to assess the reliability of pneumatic components -- Part 3: Cylinders with piston rod

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Foreword

GB/T 38206 "Pneumatic component reliability assessment method" is divided into five parts.

--- Part 1. General procedures;

--- Part 2. Reversing valve;

---Part 3. Cylinders with piston rods;

--- Part 4. Pressure regulating valve;

--- Part 5. Check valves, shuttle valves, dual pressure valves (and valves), one-way throttle valves and quick-discharge valves.

This part is the third part of GB/T 38206.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This section uses the redrafting method to modify the use of ISO .19973-3.2015 "Pneumatic Transmission Components Reliability Test Evaluation Part 3

Minute. Cylinder with piston rod.

The technical differences between this part and ISO .19973-3.2015 and their reasons are as follows.

--- In the scope, the description of the cylinder life representation method is deleted (see Chapter 1);

---About the normative reference documents, this part has made technical adjustments to adapt to China's technical conditions, adjustments

The situation is reflected in Chapter 2, "Regulatory Citations", and the specific adjustments

are as follows.

* Replace ISO 1219-1 with GB/T 786.1 equivalent to the international standard (see Chapter 4);

* Replace IEC 60050-191 with GB/T 2900.13 equivalent to the international standard (see Chapter 3);

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

* Replace ISO .19973-1 with GB/T 38206.1-2019 using international standards (see Chapters 3 and 6.1, etc.).

--- Modified Figure 1, with the addition of number 9 and a description of the muffler (see Figure 1).

This section also made the following editorial changes.

--- Change the standard name to "Pneumatic component reliability assessment method Part 3. Cylinder with piston rod";

--- Removed the unit bar in parentheses in Table 4 of ISO .19973-3.2015 and the values in parentheses.

This part was proposed by the China Machinery Industry Federation.

This part 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 the compressed air in a closed loop. The pneumatic system is made up of a variety of components.

It is an important part of all types of machines and equipment. Efficient and economical production requires highly reliable machinery and equipment. This section is used to mention

Provide the necessary equipment and test conditions to evaluate the inherent reliability of the cylinder with piston rod.

It is necessary for producers to understand the reliability of the pneumatic system components in their equipment. The reliability of the components can be determined by laboratory tests.

The reliability characteristics of the components, the producer can build a system model and make service intervals, spare parts inventory and future improvements

Decide.

There are three basic levels in determining component reliability.

a) preliminary design analysis. finite element analysis (FEA), failure mode and consequence analysis (FMEA);

b) laboratory testing and establishment of reliability models. physical mechanisms of failure, reliability prediction, pre-production assessment;

c) On-site data collection. maintenance report, quality analysis report.

Each level has its own application during the life of the component. Preliminary design analysis helps identify possible failure modes and eliminates failures

Factors or reduce the impact of failure on reliability. When the component sample is obtained, the reliability test can be performed in the laboratory and the initial can be determined.

Rely on sex. Reliability testing as a continuous evaluation of component reliability often continues into the initial production and throughout the entire production process. in

Field data can be collected when the component continues to work and its failure data is available.

Pneumatic component reliability assessment method

Part 3. Cylinders with piston rods

1 Scope

This part of GB/T 38206 specifies test equipment for evaluating the reliability of cylinders with piston rods (including single-acting and double-acting).

Test conditions, test procedures, reliability thresholds, and treatment methods for test results.

This section applies to cylinders with piston rods in accordance with GB/T 8102, GB/T 28781, GB/T 32336 or JB/T 7377; however,

For cylinders with piston rods that are not in compliance with these national and industrial standards but are used within the same operating conditions,

Tests were performed on one of the grades identified in Tables 1 and 2.

This section applies to the first failure of the cylinder without repair, except for some abnormal values.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 786.1 Fluid transmission systems and components - Graphical symbols and circuit diagrams - Part 1. General use and data processing

Graphic symbol (GB/T 786.1-2009, ISO 1219-1.2006, IDT)

GB/T 2900.13 Electrotechnical terminology credibility and service quality (GB/T 2900.13-2008, IEC 60050-191.1990, IDT)

GB/T 17446 fluid drive system and component vocabulary (GB/T 17446-2012, ISO 5598.2008, IDT)

GB/T 23252-2009 Inspection and acceptance of finished cylinder products (ISO 10099.2001, IDT)

GB/T 38206.1-2019 Reliability evaluation methods for pneumatic components - Part 1. General procedures (ISO .19973-1.2015, MOD)

ISO 80000-1 quantities and units Part 1. General (Quantitiesandunits-Part 1. General)

3 Terms and definitions

The terms and definitions defined in GB/T 2900.13, GB/T 17446 and GB/T 38206.1 apply to this document.

Note. If there is a contradiction between the definition of a term in three files, the order of precedence is as follows. first GB/T 38206.1; secondly GB/T 17446; third

GB/T 2900.13.

4 symbols and units

The unit of measurement shall comply with the provisions of ISO 80000-1, and the graphical symbols shall comply with the provisions of GB/T 786.1.