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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 38206.2-2020

**Methods to assess the reliability of pneumatic components -
Part 2: Directional control valve**

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Foreword

GB/T 38206 "Reliability Evaluation Method of Pneumatic Components" is divided into 5 parts.

--- Part 1. General procedures;

--- Part 2. Directional valve;

--- Part 3. Cylinder with piston rod;

--- Part 4. Pressure regulating valve;

--- Part 5. Check valve, shuttle valve, double pressure valve (AND valve), one-way throttle valve and quick exhaust valve.

This part is Part 2 of GB/T 38206.

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

This part uses the redrafting method to modify the adoption of ISO .19973-2..2015 "Test Evaluation of Pneumatic Transmission Element Reliability Part 2

Points. directional valve.

The technical differences between this part and ISO .19973-2..2015 and the reasons are as follows.

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

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

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

- * Replace IEC 60050-191 with GB/T 2900.13 equivalent to international standards (see Chapter 3);
- * Replace ISO 5598 with GB/T 17446 equivalent to international standards (see Chapter 3 and A.2);
- * Replace ISO 8778 with GB/T 28783 which is equivalent to adopting international standards (see Table 1);
- * Replace ISO 19973-1 with GB/T 38206.1 modified to adopt international standards (see Chapter 3, 6.1, 7.1.2 and 8.1);
- * Added reference to GB/T 22107 (see A.4.3 and A.4.4);
- * Added reference to ISO 12100 (see A.1);
- * Added reference to ISO 13849 (all parts) (see A.1 and A.2);
- * Increased reference to IEC 62061 (see A.2).

This section also made the following editorial changes.

--- Change the standard name to "Reliability Evaluation Method of Pneumatic Components Part 2. Directional Valve".

This part is proposed by 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 a pneumatic system, power is transmitted and controlled by compressed air in a closed loop. The pneumatic system is composed of various components,

It is an important part of various types of machines and equipment. Efficient and

economical production requires highly reliable machines and equipment. GB/T 38206

This section is used to provide the necessary equipment and test conditions in order to evaluate the inherent reliability of the directional valve.

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

With the reliability characteristics of components, producers can establish system models and make service intervals, spare parts inventory, and future improvements.

Decide.

There are three basic levels in determining product reliability.

- a) Preliminary design analysis. finite element analysis (FEA), failure mode and consequence analysis (FMEA);
- b) Laboratory tests and establishment of reliability models. physical mechanism of failure, reliability prediction, pre-production evaluation;
- c) On-site data collection. maintenance report, quality analysis report.

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

Factors may reduce the impact of failure on reliability. When obtaining component samples, reliability tests can be conducted in the laboratory and the initial available

Rely on sex. Reliability testing as a continuous evaluation of the reliability of components often continues into the initial production and runs through the entire process of its production. In yuan

When the piece continues to work and its failure data can be obtained, the field data can be collected.

Pneumatic component reliability evaluation method

Part 2. Directional valve

1 Scope

This part of GB/T 38206 specifies the test equipment, test conditions, test procedures, reliability thresholds and

Processing method of test results.

This section applies to the first failure of the directional valve without maintenance, except for some abnormal values.

Note. Please refer to the content in Appendix A of GB/T 38206.1-2019 for the treatment

method when the abnormal value occurs at the first failure.

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 786.1 Graphical symbols and circuit diagrams of fluid transmission systems and components. Part 1. Diagrams for general use and data processing

Shape symbol (GB/T 786.1-2009, ISO 1219-1..2006, IDT)

GB/T 2900.13 Credibility of electrician terms and quality of service (GB/T 2900.13-2008, IEC 60050-191..1990, IDT)

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

GB/T 22107 Pneumatic directional control valve switching time measurement (GB/T 22107-2008, ISO 12238..2001, IDT)

GB/T 28783 Pneumatic standard reference atmosphere (GB/T 28783-2012, ISO 8778..2003, IDT)

GB/T 38206.1 Pneumatic components reliability assessment method Part 1. General procedures (GB/T 38206.1-2019, ISO

19973-1..2015, MOD)

ISO 12100 Safety Assessment General Principles of Risk Assessment and Risk Reduction (Safety of machinery-General

principlesfordesign-Riskassessmentandriskreduction)

ISO 13849 (all parts) Safety components related to machinery safety control systems (Safety of machinery-Safety-related

partsofcontrolsystems)

ISO 80000-1 Quantities and Units-Part. 1. General

IEC 62061 Safety of machinery Functional safety of electrical, electronic and programmable electronic control systems related to safety (Safetyof

machinery-Functionalsafetyofsafety-relatedelectrical, electronicandprogrammableelectroniccon-

trolsystems)