



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

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**Methods to assess the reliability of pneumatic components -
Part 4: Pressure regulators**

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1. Structure and Drafting Rules of Standardization Documents"

Drafting.

This document is the fourth part of GB/T 38206 "Pneumatic Components Reliability Evaluation Method". GB/T 38206 has released the following

part.

---Part 1. General procedures;

---Part 2. Reversing valve;

---Part 3. Cylinder with piston rod;

---Part 4. Pressure regulator;

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

This document is equivalent to ISO.19973-4.2014 "Test and Evaluation of Reliability of Pneumatic Components Part 4.Pressure Regulator".

This document has made the following minimal editorial changes.

--- In order to coordinate with existing standards, the standard name is changed to "Pneumatic Components Reliability Evaluation Method Part 4.Pressure Regulator".

Introduction

In a pneumatic system, power is transmitted and controlled by compressed air in the loop. The pneumatic system consists of a variety of components, which are various

An important part of the type of machines and equipment. Efficient and economical production requires highly reliable machines and equipment. GB/T 38206 aims to

Establish the reliability assessment method of pneumatic components, which consists of five parts.

---Part 1.General procedures. The purpose is to specify the general procedures, general test conditions, and calculations used to assess the reliability of pneumatic components.

Calculation methods, data evaluation methods, and requirements for writing test reports.

---Part 2.Reversing valve. The purpose is to specify the test equipment, test conditions, test procedures, and reliability for evaluating the reliability of the directional valve

Threshold value and processing method of test results.

---Part 3.Cylinder with piston rod. The purpose is to provide for the evaluation of the reliability of cylinders with piston rods (including single-acting and double-acting)

Test equipment, test conditions, test procedures, reliability thresholds and test results processing methods.

---Part 4.Pressure regulating valve. The purpose is to specify the test procedures, test equipment and reliability thresholds for the reliability evaluation of pneumatic pressure regulators

And how to deal with the test results.

---Part 5.Check valve, shuttle valve, double pressure valve (and valve), one-way throttle valve and quick discharge valve. The purpose is to provide for the evaluation of check valves, first

Pilot check valve, shuttle valve, double pressure valve (and valve), one-way throttle valve and quick exhaust valve reliability test equipment, test conditions, test procedures

Order, reliability thresholds and processing methods of test results.

This document is used to provide the necessary equipment and test conditions in order to evaluate the inherent reliability of the pneumatic pressure regulator.

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

With the reliability characteristics of the components, the manufacturer can build a system model and make decisions about service intervals, spare parts inventory, and future improvements.

Decide.

There are three basic levels to determine the reliability of components.

- 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 own application during the life of the component. Preliminary design analysis helps to identify possible failure modes and eliminate the cause of failure

Or reduce the impact of failure on reliability. When the component samples are obtained, the reliability test can be carried out in the laboratory and the initial availability can be determined.

Reliability. Reliability test, as a continuous evaluation of component reliability, often continues to the initial production and runs through the entire production process. exist

When the component continues to work and its failure data is available, field data can be collected.

Reliability Evaluation Method of Pneumatic Components

Part 4. Pressure regulator

1 Scope

This document specifies the test procedures, test equipment and reliability thresholds for the reliability assessment of pneumatic pressure regulators, as well as the processing methods of test results.

This document applies to direct-acting pressure regulators and external pilot-operated pressure regulators, including relief and non-relief pressure regulators.

This document applies to the first failure without maintenance, except for some abnormal

values.

This document does not apply to pressure regulators with regular drain holes.

Note. See Appendix A for the test procedures specified in this document.

2 Normative references

The contents of the following documents constitute the indispensable clauses of this document through normative references in the text. Among them, dated quotations

Only the version corresponding to that date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

This document.

ISO 1219-1 Graphical symbols and circuit diagrams of fluid power transmission systems and components-Part 1.Used for general purpose and data processing

Graphical symbols

(Fluidpowersystemsandcomponents-Graphicalsymbolsandcircuitdiagrams-Part 1.

Graphicalsymbolsforconventionaluseanddata-processingapplication)

Note. GB/T 786.1-2021 Graphical symbols and circuit diagrams of fluid power transmission systems and components Part 1.Graphical symbols (ISO 1219-1.2012, IDT)

ISO 5598 Fluid power systems and components-Vocabulary

(Fluidpowersystemsandcomponents-Vocabulary)

Note. GB/T 17446-2012 Fluid Power System and Components Vocabulary (ISO 5598.2008, IDT)

ISO 6953-1 Pneumatic Pressure Reducing Valves and Filter Pressure Reducing Valves Part 1.The main characteristics and product identification requirements that should be included in the business documents

Seek (Pneumaticfluidpower-Compressedairpressureregulatorsandfilter-regulators-Part 1.Main

characteristicstobeincludedinliteraturefromsuppliersandproduct-markingrequirements)

Note. GB/T 20081.1-2021 Pneumatic pressure reducing valve and filter pressure reducing valve Part 1.Main characteristics and product identification requirements to be included in commercial documents

Seek (ISO 6953-1.2015, IDT)

ISO 6953-3 Pneumatic pressure reducing valves and filter pressure reducing valves Part 3.Alternative methods for testing the flow characteristics of pressure reducing valves