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Pneumatic fluid power — Assessment of component reliability by testing —

Part 2: Directional control valves

Transmissions pneumatiques — Évaluation par essais de la fiabilité des composants —

Partie 2: Distributeurs



Reference number ISO 19973-2:2007(E)

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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.

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ISO 19973-2 was prepared by Technical Committee ISO/TC 131, Fluid power systems.

ISO 19973 consists of the following parts, under the general title *Pneumatic fluid power* — Assessment of component reliability by testing:

- Part 1: General procedures
- Part 2: Directional control valves
- Part 3: Cylinders with piston rod
- Part 4: Pressure regulators

Introduction

In pneumatic fluid power systems, power is transmitted and controlled through a gas under pressure within a circuit. Pneumatic fluid power systems are composed of components and are an integral part of various types of machines and equipment. Efficient and economical production requires highly reliable machines and equipment. Within the ISO 19973 series, this Part 2 is intended to provide requirements and test conditions that permit the assessment of the inherent reliability of pneumatic and electro-pneumatic directional control valves.

It is necessary that machine producers know the reliability of the components that make up their machine's pneumatic fluid power system. Knowing the reliability characteristic of the component, the producers can model the system and make decisions on service intervals, spare parts inventory and areas for future improvements.

There are three primary levels in the determination of component reliability:

a)	preliminary design analysis:	finite element analysis (FEA), failure mode and effect analysis (FMEA);
b)	laboratory testing and reliability modelling:	physics of failure, reliability prediction, pre-production evaluation;
c)	collection of field data:	maintenance reports, warranty analysis.

Each level has its application during the life of a component. A preliminary design analysis is useful to identify possible failure modes and eliminate them or reduce their effect on reliability. When prototypes are available, in-house laboratory reliability tests are run and initial reliability can be determined. Reliability testing is often continued into the initial production run and throughout the production lifetime as a continuing evaluation of the component. Collection of field data is possible when products are operating and data on their failures are available.