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## Hydraulic fluid power — Methods to assess the reliability of hydraulic components —

### Part 1: General procedures and calculation method

*Transmissions hydrauliques — Méthodes d'évaluation de la fiabilité des composants hydrauliques —*

*Partie 1: Modes opératoires généraux et méthode de calcul*



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/TR 19972-1 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*, Subcommittee SC 8, *Product testing*.

ISO/TR 19972 consists of the following parts, under the general title *Hydraulic fluid power — Methods to assess the reliability of hydraulic components*:

— *Part 1: General procedures and calculation method*

It is possible that other parts will be developed in the future.

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## Introduction

In hydraulic fluid power systems, power is transmitted and controlled through a liquid or gas under pressure within an enclosed circuit. 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.

Machine producers need to know the reliability of the components that comprise their machine's fluid power system. Once they know 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 improvement.

There are different methods used to investigate component reliability.

A preliminary design analysis is useful to identify potential failure modes and to reduce their effect on reliability. In addition, calculation of failure rates is possible. 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. This, in turn, can be utilized for reduced lab testing on improvements to the products or similar, new products. These methods also offer the user an opportunity to choose the most economical and practical procedure to measure reliability for a given application.