PD ISO/TR 16194:2017

BSI Standards Publication

Pneumatic fluid power — Assessment of component reliability by accelerated life testing — General guidelines and procedures

bsi.

National foreword

This Published Document is the UK implementation of ISO/TR 16194:2017.

The UK participation in its preparation was entrusted to Technical Committee MCE/18, Fluid power systems and components.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Published by BSI Standards Limited 2017

ISBN 978 0 580 84995 4

ICS 23.100.01

Compliance with a British Standard cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 July 2017.

Amendments/corrigenda issued since publication

Date	Text affected

PD ISO/TR 16194:2017

TECHNICAL REPORT

ISO/TR 16194

First edition
2017-04

Pneumatic fluid power — Assessment of component reliability by accelerated life testing — General guidelines and procedures

Transmissions pneumatiques — Évaluation de la fiabilité du composant par essai de durée de vie accélérée — Lignes directrices générales et modes opératoires

Reference number
ISO/TR 16194:2017(E)

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Foreword

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ISO/TR 16194 was prepared by Technical Committee ISO/TC 131, *Fluid power systems.*

Introduction

This document is being released to document progress that the working group has developed for accelerated testing. It is a new method with which the working group members have very little experience, but has been used by institutional laboratories and taught at academic levels.

Some experimentation on air cylinders has been done at the Korean Institute of Machinery and Materials (KIMM), but the application to pneumatic components in general has not been evaluated.

This document is offered to members as a reference and model procedure, so that they can develop experience with its use in their own laboratories.

TECHNICAL REPORT **ISO/TR 16194:2017(E)**

Pneumatic fluid power — Assessment of component reliability by accelerated life testing — General guidelines and procedures

1 Scope

This document provides general procedures for assessing the reliability of pneumatic fluid power components using accelerated life testing and the method for reporting the results. These procedures apply to directional control valves, cylinders with piston rods, pressure regulators, and accessory devices – the same components covered by the ISO 19973 series of standards.

This document does not provide specific procedures for accelerated life testing of components. Instead, it explains the variability among methods and provides guidelines for developing an accelerated test method.

The methods specified in this document apply to the first failure, without repairs.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5598, ISO 19973-1 and the following apply. ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
B_x life
life of a component or assembly that has not been altered since its production, where its reliability is $(100-x)$ %; or the time at which $(100-x)$ % of the population has survived

Note 1 to entry: The cumulative failure fraction is x %. For example, if x = 10, the B_{10} life has a cumulative failure probability of 10 %.

3.2
acceleration factor
AF
ratio between the life at the normal use stress level and the life at the accelerated stress level

3.3
accelerated life test
ALT
process in which a component is forced to fail more quickly that it would have under normal use conditions and which provides information about the component's life characteristics