

This is a preview of "ISO 18413:2015". [Click here to purchase the full version from the ANSI store.](#)

Second edition
2015-03-15

Hydraulic fluid power — Cleanliness of components — Inspection document and principles related to contaminant extraction and analysis, and data reporting

*Transmissions hydrauliques — Propreté des composants —
Documents d'inspection et principes d'extraction et d'analyse des
contaminants et d'expression des résultats*



Reference number
ISO 18413:2015(E)

© ISO 2015

This is a preview of "ISO 18413:2015". [Click here to purchase the full version from the ANSI store.](#)



COPYRIGHT PROTECTED DOCUMENT

© ISO 2015

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

This is a preview of "ISO 18413:2015". Click here to purchase the full version from the ANSI store.

Contents

	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Inspection document principles	4
4.1 Content.....	4
4.2 Component cleanliness requirement.....	4
4.3 Inspection method.....	4
4.4 Effectivity.....	5
4.5 Conformance.....	5
4.6 Verification of conformance to specified component cleanliness requirements.....	5
4.7 Additional information.....	5
5 Guidelines for selecting contamination extraction and analysis procedures	6
5.1 Overview.....	6
5.2 Contaminant extraction.....	6
5.3 Contaminant analysis.....	6
6 Contaminant extraction principles	7
6.1 General.....	7
6.2 Overview.....	7
6.3 Extraction procedure setup and validation.....	7
6.3.1 Setup environment.....	7
6.3.2 Validation.....	8
6.4 Agitation.....	11
6.5 Pressure rinse.....	11
6.6 Ultrasonic vibration.....	12
6.7 Functional test method.....	12
7 Contaminant analysis principles	13
7.1 General.....	13
7.2 Overview.....	13
7.3 Gravimetric analysis.....	13
7.4 Determination of the largest particle size.....	13
7.5 Chemical composition.....	13
7.6 Particle size distribution.....	14
8 Data reporting principles	14
8.1 General.....	14
8.2 Overview.....	14
8.3 Contaminant mass.....	15
8.4 Particle size.....	15
8.5 Particle size distribution.....	15
8.6 Chemical composition.....	15
9 Criterion for acceptance	15
10 Identification statement (reference of this International Standard)	15
Annex A (normative) Contaminant extraction principles — Agitation method	16
Annex B (normative) Contaminant extraction principles — Pressure rinse method	21
Annex C (normative) Contaminant extraction principles — Ultrasonic vibration method	26
Annex D (normative) Contaminant extraction principles — Functional test method	32
Annex E (normative) Contaminant analysis principles and data reporting principles	38

This is a preview of "ISO 18413:2015". [Click here to purchase the full version from the ANSI store.](#)

Annex F (informative) Guidelines for the design of a functional test method test stand	40
Annex G (informative) Determination of geometric characteristics of components	43
Bibliography	46

This is a preview of "ISO 18413:2015". [Click here to purchase the full version from the ANSI store.](#)

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [Foreword — Supplementary information](#).

The committee responsible for this document is ISO/TC 131, *Fluid power systems*, Subcommittee SC 6, *Contamination control*.

This second edition cancels and replaces the first edition (ISO 18413:2002), of which it constitutes a minor revision.

Introduction

In hydraulic fluid power systems, power is transmitted and controlled through a pressurized liquid within an enclosed circuit. Contaminants present in the circulating working liquid can degrade system performance. The presence of particles residual from the manufacturing and assembly processes can cause a substantial increase in the wear rates to the system during the initial run-up and early life and can even cause catastrophic failures. In order to achieve reliable performance of components and the system, control over the amount of particles introduced during the build phase is necessary. Accurate assessment of the effectiveness of part and component cleaning requires documentation of both the cleanliness requirement and the methods used for contaminant extraction and analysis and data reporting.