

INTERNATIONAL STANDARD

**ISO
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Hydraulic fluid power — Fixed displacement pumps — Flow degradation due to classified AC Fine Test Dust contaminant — Test method

*Transmissions hydrauliques — Pompes à cylindrée fixe — Dégradation de
l'écoulement due à la pollution par ACFTD*



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Foreword

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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.

International Standard ISO 9632 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*, Sub-Committee SC 8, *Product testing and contamination control*.

Annex A of this International Standard is for information only.

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Introduction

The life of a hydraulic fluid power pump is terminated when it can no longer deliver a specified flow rate at a given shaft speed, discharge pressure and fluid condition. The rate of wear in hydraulic pumps is related to the contamination level of the hydraulic fluid exposed to the internal surfaces of the pump. Wear forms critical clearance spaces (leakage paths) and is accompanied by a degradation in flow rate. The construction materials, together with the characteristic size and shape of critical clearance spaces, uniquely establishes the pump's sensitivity to contamination for given operating conditions.

Based on the above considerations, a contamination tolerance for the comparison of hydraulic pumps under the same operating conditions can be determined.

The test specified in this International Standard uses silica dust as a test medium to determine contaminant sensitivity (flow degradation due to contaminant wear) and is not intended to be representative of all types and rates of wear experienced in long-term field applications. It should be realized that many other parameters besides contaminant sensitivity must be considered when selecting a pump for a given duty.

Hydraulic fluid power — Fixed displacement pumps — Flow degradation due to classified AC Fine Test Dust contaminant — Test method

1 Scope

This International Standard specifies a uniform repeatable test method for determining and reporting the contaminant sensitivity (flow degradation) of a fluid power hydraulic positive fixed displacement pump due to wear caused by silica contaminants using classified AC Fine Test Dust (ACFTD).¹⁾

The test is conducted under constant conditions of speed, pressure and temperature. System clean-up between successive injections of ACFTD during the test is not permitted.

The test data will assist in establishing filtration requirements for the protection of a pump when installed and operated in a hydraulic circuit.

This International Standard does not cover pump failure due to

- a) causes other than wear as measured by flow degradation;
- b) the presence of water and the action of oil chemistry plus water on pump wear surfaces;
- c) fatigue, over-pressurization and other catastrophic modes.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

1) ACFTD may be obtained from:

AC Spark Plug, General Motors Corporation, 1300 North Dort Highway, Flint, MI 48556, USA.	or	AC Spark Plug, Sales Department, Milton Keynes, Bucks., UK.
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2) To be published. (Revision of ISO 3448 : 1975)

ISO 3448 : —²⁾, *Industrial liquid lubricants — ISO viscosity classification.*

ISO 3722 : 1976, *Hydraulic fluid power — Fluid sample containers — Qualifying and controlling cleaning methods.*

ISO 4021 : 1977, *Hydraulic fluid power — Particulate contamination analysis — Extraction of fluid samples from lines of an operating system.*

ISO 4405 : 1991, *Hydraulic fluid power — Fluid contamination — Determination of particulate contamination by the gravimetric method.*

ISO 4406 : 1987, *Hydraulic fluid power — Fluids — Method for coding level of contamination by solid particles.*

ISO 4572 : 1981, *Hydraulic fluid power — Filters — Multi-pass method for evaluating filtration performance.*

ISO 5598 : 1985, *Fluid power systems and components — Vocabulary.*

ISO 6743-4 : 1982, *Lubricants, industrial oils and related products (class L) — Classification — Part 4: Family H (hydraulic systems).*

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 5598, together with the following definition, apply.

flow degradation ratio: The ratio of the stabilized flow rate after a contamination injection to the reference flow (initial measured flow), Q_{ref} , of the pump.