



**SLOVENSKI STANDARD
SIST EN ISO 20763:2004**

01-november-2004

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Petroleum and related products - Determination of anti-wear properties of hydraulic fluids
- Vane pump method (ISO 20763:2004)

Mineralölerzeugnisse und verwandte Produkte - Bestimmung des
Verschleißschutzvermögens von Druckflüssigkeiten - Prüfung in der Flügelzellenpumpe
(ISO 20763:2004)

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Pétrole et produits connexes - Détermination des propriétés anti-usure des fluides
hydrauliques - Méthode de la pompe a palettes (ISO 20763:2004)

Ta slovenski standard je istoveten z: EN ISO 20763:2004

ICS:

75.120 Pã|æ|ã } ã~ ãã Hydraulic fluids

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 20763

July 2004

ICS 75.120

English version

Petroleum and related products - Determination of anti-wear
properties of hydraulic fluids - Vane pump method (ISO
20763:2004)

Pétrole et produits connexes - Détermination des propriétés
anti-usure des fluides hydrauliques - Méthode de la pompe
à palettes (ISO 20763:2004)

This European Standard was approved by CEN on 9 February 2004.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

EN ISO 20763:2004 (E)**Foreword**

This document (EN ISO 20763:2003) has been prepared by Technical Committee ISO/TC 28 "Petroleum products and lubricants" in collaboration with Technical Committee CEN/TC 19 "Petroleum products, lubricants and related products", the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2005, and conflicting national standards shall be withdrawn at the latest by January 2005.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of ISO 20763:2004 has been approved by CEN as EN ISO 20763:2004 without any modifications.

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INTERNATIONAL
STANDARD

ISO
20763

First edition
2004-07-01

**Petroleum and related products —
Determination of anti-wear properties of
hydraulic fluids — Vane pump method**

*Pétrole et produits connexes — Détermination des propriétés anti-usure
des fluides hydrauliques — Méthode de la pompe à palettes*

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Reference number
ISO 20763:2004(E)

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Published in Switzerland

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ISO 20763:2004(E)**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.

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 20763 was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants*.

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Petroleum and related products — Determination of anti-wear properties of hydraulic fluids — Vane pump method

WARNING — The use of this International Standard may involve hazardous materials, operations and equipment. This International Standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this International Standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This International Standard specifies procedures for the determination of steel-on-steel anti-wear properties of hydraulic fluids by means of performance in a vane-type hydraulic pump. It covers a range of hydraulic fluids, both anhydrous and aqueous, intended for applications where high-speed sliding contacts, such as those found in a vane pump, are encountered.

For mineral oils of categories HM and HV, and fire-resistant fluids of category HFD, the method is applicable to viscosity classes ISO VG 32, ISO VG 46 and ISO VG 68, as specified in ISO 3448^[1]. Under different specified conditions, the method is applicable to aqueous fire-resistant hydraulic fluids in categories HFA, HFB and HFC, as specified in ISO 12922^[3], within the same viscosity classes.

NOTE Viscosity classes below ISO VG 32 and above ISO VG 68 can be tested by this technique, but require different conditions of pump inlet viscosity, and have not been widely assessed. This International Standard is confined to the specified limiting values defined.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3104:1994, *Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity*

ISO 3170:2004, *Petroleum liquids — Manual sampling*

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods*

ISO 4406:1999, *Hydraulic fluid power — Fluids — Method for coding the level of contamination by solid particles*

3 Principle

Approximately 70 litres of the fluid under test is circulated for 250 h by a vane pump under conditions of output flow, operational pressure and fluid temperature related to the type and viscosity grade of the fluid. At the end of the test period, the mass loss of the 12 vanes and the ring on the test cartridge are determined. Measurement of decrease in output flow during the test run, and mass loss of the two side bushings and the rotor are also taken as control measures within the limiting test conditions, but the mass losses do not constitute a requirement of method conformance.

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4 Reagents and materials

4.1 Water, conforming to the requirements of grade 3 of ISO 3696.

4.2 Cleaning solvents

4.2.1 General

The choice of solvent in some applications will be related to the fluid under test or being removed from previous tests, and the user shall select the most appropriate, related to his/her experience. Light hydrocarbon solvents are chosen for the removal of oily residues, and oxygenated solvents for the removal of water-containing residues. Acetone is specified as a high-volatility final rinse solvent, which also removes the last traces of water.

4.2.2 Light hydrocarbons, either heptane, 2,2,4-trimethylpentane or petroleum spirit having a boiling range essentially between 60 °C and 80 °C.

4.2.3 Oxygenated hydrocarbons, either methanol, ethanol or propan-2-ol (isopropyl alcohol).

4.2.4 Acetone, of commercial grade.

4.2.5 1,2-Propyleneglycol (propandiol), of 99 % minimum purity.

4.3 Abrasive stone, of fine grade for removing sharp edges and burrs from all steel cartridge parts.

4.4 Abrasive cloth or paper, including fine grade 2/0 (approximately 27 µm grit size [European grade P1 200]) and coarser grades including 37 µm and 53 µm grit size (grades P360 and P320) as required.

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5 Apparatus

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5.1 Test rig, consisting of a hydraulic circuit as illustrated in Figure 1. Pipes and fittings shall include facilities so that the rig can be bled free of air and the test fluid can be completely drained. The major components of the rig are given in 5.1.1 to 5.1.12. The rig shall be protected by means of automatic cut-off covering the electrical circuits to the motor and limiting values for temperature, pressure and fluid level.

WARNING — The test rig operates at high pressures and temperatures, and the automatic protection devices should be regularly tested for appropriate cut-off performance.

5.1.1 Fluid reservoir, constructed of corrosion-resistant material with a sealed lid and fitted pressure-relief valve, and capable of holding the test fluid volume of 70 litres with the fluid level approximately 500 mm above the pump inlet. An illustration of a suitable reservoir is given in Figure 2.

5.1.2 Vane pump, Vickers, of type V-104-C-10 or V-105-C-10¹⁾. The seals of the pump shall be compatible with the fluid type/test temperature conditions of the test. The main shaft, seals and ball bearings of the pump shall be replaced after five runs or when any signs of wear, as evidenced by test conditions, is apparent.

NOTE The life of the main shaft and ball bearings is decreased when testing aqueous fluids.

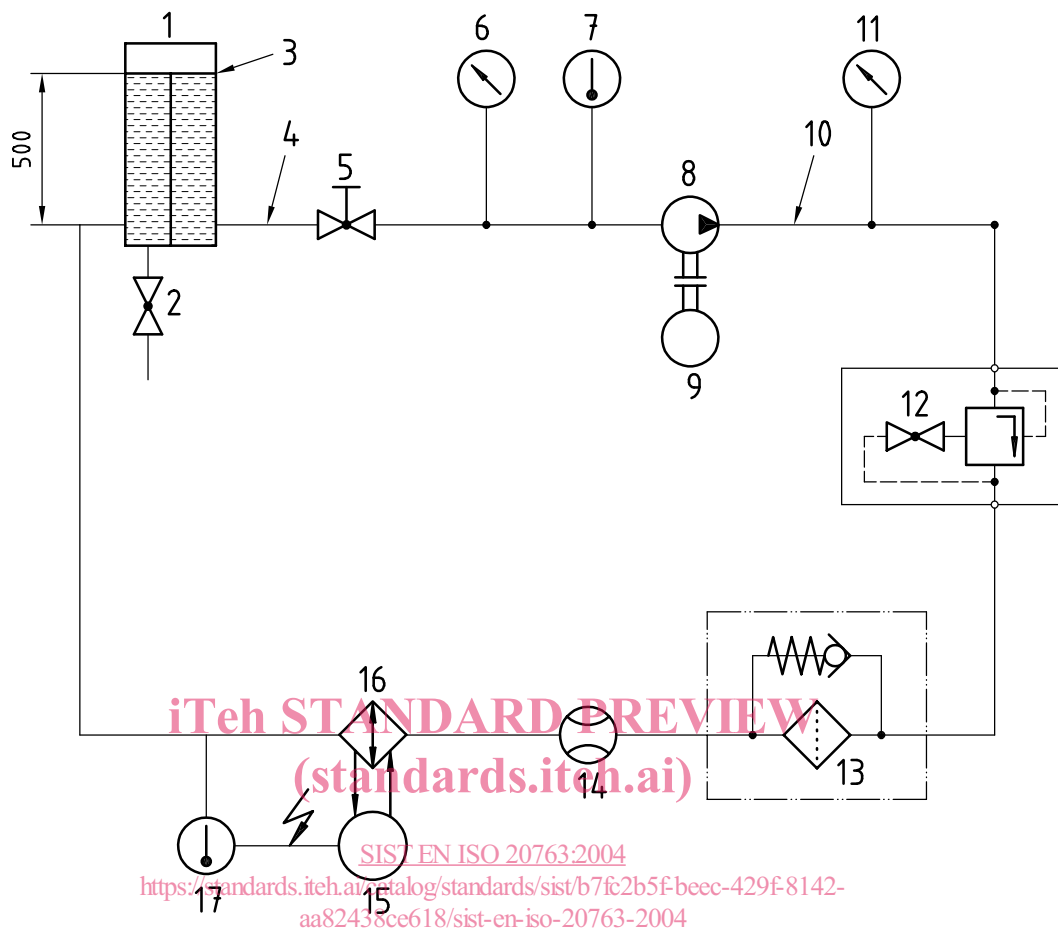
5.1.3 Test cartridge

The availability of test cartridges and components is under review following the decision of Eaton (formerly Vickers) to discontinue manufacturing these as separate items. See Annex B for the position at the time of publication of this International Standard.

5.1.4 Drive motor, with a rated power minimum of 11 kW, and a rated speed of 1 440 r/min ± 50 r/min.

1) This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of these products.

Dimensions in millimetres

**Key**

- 1 reservoir
- 2 drainage valve
- 3 level above pump inlet
- 4 pipe 28 × 2
- 5 ball valve
- 6 suction pressure gauge
- 7 temperature meter (test temperature)
- 8 vane pump
- 9 electric motor
- 10 pipe 25 × 5
- 11 test pressure gauge
- 12 relief valve
- 13 return filter
- 14 flow meter
- 15 cooling water regulator
- 16 fluid cooler
- 17 temperature controller

Figure 1 — Test rig layout