

Nederlandse norm

# NEN-ISO 4928

(en)

Road vehicles - Elastomeric cups and seals for cylinders for hydraulic braking systems using a non-petroleum base hydraulic brake fluid (Service temperature 120 degrees C max.) (ISO 4928:2006, IDT)

ICS 43.040.40; 83.140.50

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Als Nederlandse norm is aanvaard:

- ISO 4928:2006, IDT

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Preview

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# INTERNATIONAL STANDARD

# ISO 4928

Third edition  
2006-07-15

Preview

ISO 4928

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## Road vehicles — Elastomeric cups and seals for cylinders for hydraulic braking systems using a non-petroleum base hydraulic brake fluid (Service temperature 120 °C max.)

*Véhicules routiers — Coupelles et joints en caoutchouc pour cylindres de dispositifs de freinage hydrauliques utilisant un liquide de frein à base non pétrolière (Température maximale d'utilisation 120 °C)*



Reference number  
ISO 4928:2006(E)

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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.

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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 40421 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 2, *Braking and systems equipment*.

This third edition cancels and replaces the second edition (ISO 4928:1980), which has been technically revised.

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# Road vehicles — Elastomeric cups and seals for cylinders for hydraulic braking systems using a non-petroleum base hydraulic brake fluid (Service temperature 120 °C max.)

## 1 Scope

This International Standard specifies performance tests of brake cups and seals for hydraulic braking systems for road vehicles; it does not include requirements relating to chemical composition, tensile strength and elongation of the rubber compound. Disc brake seals are not covered by this International Standard.

This International Standard is applicable to moulded seals (cups or double-lipped type gland seals), 60 mm in diameter and smaller, compounded from high temperature-resistant rubber, for use in hydraulic actuating cylinders using road vehicle non-petroleum base hydraulic brake fluid conforming to the requirements of ISO 4925.

## 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 48, *Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 188:1998, *Rubber, vulcanized or thermoplastic — Accelerated ageing and heat resistance tests*

ISO 1250, *Mineral solvents for paints — White spirits and related hydrocarbon solvents*

ISO 4925, *Road vehicles — Specification of non-petroleum-base brake fluids for hydraulic systems*

ISO 4926, *Road vehicles — Hydraulic braking systems — Non-petroleum base reference fluids*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### sloughing

release of carbon black on the surface of the rubber

### 3.2

#### scoring

formation of grooves in the rubber parallel to the direction of travel of the piston or seal

### 3.3

#### scuffing

visible erosion of the outer surface of the rubber

## 4 General requirements

### 4.1 Workmanship and finish

Seals shall be free from blisters, pin-holes, cracks, protuberances, embedded foreign material or other physical defects which can be detected by thorough inspection, and shall conform to the dimensions specified on the drawings.

### 4.2 Marking

The identification mark of the manufacturer and other details as specified on drawings shall be moulded into each seal. Each seal in conformity with this International Standard may also have the following mark: "ISO 4928".

### 4.3 Packaging

Seals shall be packaged to meet requirements specified by the purchaser.

### 4.4 Sampling

The minimum lot on which complete specification tests shall be conducted for quality control testing, or the frequency of any specific type test used to control production, shall be agreed upon by the manufacturer and the purchaser.

## 5 Test requirements

### 5.1 Resistance to fluid at elevated temperature

After being subjected to the test for resistance to compatibility fluid at elevated temperature as prescribed in 6.1, the seals shall conform to the requirements specified in Table 1, and shall show no excessive disintegration as evidenced by blisters or sloughing.

Table 1 — Requirements for fluid resistance at elevated temperature (120 °C)

Characteristics	Permitted change
Volume	From 0,0 % to + 20,0 %
Outside diameter, lip	From 0,0 % to + 5,75 %
Outside diameter, base	From 0,0 % to + 5,75 %
Hardness	From – 15 IRHD to 0 IRHD

### 5.2 Precipitation

Not more than 0,3 % sediment by volume shall be formed in the centrifuge tube after the seals have been tested as specified in 6.2.

### 5.3 Wheel cylinder seals heat pressure stroking

#### 5.3.1 General

Wheel cylinder seals, when tested by the procedure specified in 6.3, shall meet the performance requirements specified in 5.3.2 to 5.3.6.



### 5.3.2 Lip diameter change

The minimum lip diameter of wheel cylinder seals after the stroking test shall be greater than the wheel cylinder bore by the minimum dimensions specified in Table 2.

**Table 2 — Lip diameter change of wheel cylinder seals**

Dimensions in millimetres

Diameter of wheel cylinder bore	Minimum excess over bore
≤ 19,05	0,40
> 19,05; ≤ 25,4	0,50
> 25,4; ≤ 38,1	0,65
> 38,1; ≤ 60	0,75

### 5.3.3 Leakage

No constant dampness past the seals or fluid discoloration of the filter paper on two or more inspections shall occur.

### 5.3.4 Corrosion

Pistons and cylinder bore shall not show corrosion as evidenced by pitting to an extent discernible to the naked eye, but staining or discoloration shall be permitted.

### 5.3.5 Change in hardness

Rubber seals shall not decrease in hardness by more than 15 IRHD when tested in accordance with the procedure as specified in 6.4.

### 5.3.6 Condition of test seals

Wheel cylinder seals shall not show excessive deterioration such as scoring, scuffing, blistering, cracking, chipping (heel abrasion) or change in shape from original appearance.

## 5.4 Master cylinder seals heat pressure stroking

### 5.4.1 General

Master cylinder seals, when tested by the procedure specified in 6.4, shall meet the performance requirements specified in 5.4.2 to 5.4.6.

### 5.4.2 Lip diameter change

The minimum lip diameter of master cylinder seals after the stroking test shall be greater than the master cylinder bore by the minimum dimensions specified in Table 3.

**Table 3 — Lip diameter change of master cylinder seals**

Dimensions in millimetres

Diameter of master cylinder bore	Minimum excess over bore
≤ 19,05	0,30
> 19,05; ≤ 25,4	0,40
> 25,4; ≤ 38,1	0,50
> 38,1; ≤ 60	0,65

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