



SLOVENSKI STANDARD

SIST EN 857:2000

01-december-2000

Gumene cevi in cevni priključki - Z jeklenim kordom ojačene trdne vrste, ki se uporabljajo v hidravlične namene - Specifikacija

Rubber hoses and hose assemblies - Wire braid reinforced compact type for hydraulic applications - Specification

Gummischläuche und -schlauchleitungen - Kompakthydraulikschläuche mit Drahtgeflechteinlage - Spezifikation

Tuyaux et flexibles en caoutchouc - Type hydraulique compact avec armature de fils métalliques - Spécification

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Ta slovenski standard je istoveten z: EN 857:1996

ICS:

23.040.70 Gumene cevi in armature Hoses and hose assemblies

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en

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EUROPEAN STANDARD

EN 857

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 1996

ICS 23.040.70

Descriptors: rubber hoses, hoses, armatures, wire, hydraulic systems, hydraulic fluids, specifications, dimensions, dimensional tolerances, tests, marking

English version

**Rubber hoses and hose assemblies - Wire braid
reinforced compact type for hydraulic applications
- Specification**

Tuyaux et flexibles en caoutchouc - Type
hydraulique compact avec armature de fils
métalliques - Spécification

Gummschläuche und -schlauchleitungen -
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Drahtgeflechteinlage - Spezifikation

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 218 "Rubber and plastics hoses and hose assemblies", the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by April 1997, and conflicting national standards shall be withdrawn at the latest by April 1997.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies requirements for two types of wire braid reinforced compact hoses and hose assemblies of nominal bore from 6 to 25.

They are suitable for use with:

- hydraulic fluids in accordance with ISO 6743-4 with the exception of HFD R, HFD S and HFD T at temperatures ranging from -40 °C +100 °C;

- water based fluids at temperatures ranging from -40 °C to +70 °C;

- water at temperatures ranging from 0 °C to +70 °C.

The Standard does not include requirements for end fittings. It is limited to the performance of hoses and hose assemblies.

NOTE 1: The hoses are not suitable for use with castor oil based nor ester based fluids.

NOTE 2: Hoses and hose assemblies should not be operated outside the limits of this standard.

NOTE 3: Requirements for hydraulic hoses for underground mining are standardised in separate standards.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 24671 Rubber and plastics hose and hose assemblies - Methods of measurement of dimensions (ISO 4671:1984)

EN 24672	Rubber and plastics hoses - Sub-ambient temperature flexibility tests (ISO 4672:1988)
EN 27326	Rubber and plastics hoses - Assessment of ozone resistance under static conditions (ISO 7326:1991)
EN 28033 : 1993	Rubber and plastics hoses - Determination of adhesion between components (ISO 8033:1991)
EN ISO 1402	Rubber and plastics hoses and hose assemblies - Hydrostatic testing (ISO 1402:1994)
EN ISO 6945	Rubber hoses - Determination of abrasion resistance of the outer cover (ISO 6945:1991)
EN ISO 7233	Rubber and plastics hoses and hose assemblies - Determination of suction resistance (ISO 7233:1991)
ISO 1817	Rubber vulcanized - Determination of the effect of liquids
ISO 6743-4	Lubricants, industrial oils and related products (Class L) - Classification - Part 4 : Family H (Hydraulic systems)
ISO 6803	Rubber and plastics hoses and hose assemblies - Hydraulic pressure impulse test without flexing

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3 Types of hoses

Two types of hoses are specified:

- Type 1SC - hoses with a single braid of wire reinforcement;
- Type 2SC - hoses with two braids of wire reinforcement.

4 Materials and construction

4.1 Hoses

Hoses shall consist of an oil and water resistant synthetic rubber lining, one or two layers of high tensile steel wire and an oil and weather resistant synthetic rubber cover.

4.2 Hose assemblies

Hose assemblies shall only be manufactured with those hose fittings whose functionality has been verified in all tests according to this standard.

5 Dimensions

5.1 Diameters and concentricity

When measured in accordance with EN 24671, the diameters of the hoses shall comply with the values given in table 1.

Table 1: Diameters of hoses
Dimensions in millimetres

Nominal bore	All types		Type 1SC			Type 2SC		
	Internal diameter		Diameter over reinforcement		Outside diameter of hose	Diameter over reinforcement		Outside diameter of hose
	min.	max.	min	max.	max.	min.	max.	max.
6	6,1	6,9	9,6	10,8	13,5	10,6	11,7	14,2
8	7,7	8,5	10,9	12,1	14,5	12,1	13,3	16,0
10	9,3	10,1	12,7	14,5	16,9	14,4	15,6	18,3
12	12,3	13,5	15,9	18,1	20,4	17,5	19,1	21,5
16	15,5	16,7	19,8	21,0	23,0	20,5	22,3	24,7
19	18,6	19,8	23,2	24,4	26,7	24,6	26,4	28,6
25	25,0	26,4	30,7	31,9	34,9	32,5	34,3	36,6

When measured in accordance with EN 24671, the concentricity of the hoses shall comply with the values given in table 2.

Table 2: Concentricity of hoses
Dimensions in millimetres

Nominal bore	Maximum variation in wall thickness	
	Between internal diameter and outside diameter	Between internal diameter and reinforcement diameter
6	0,8	0,4
over 6 and including 19	1,0	0,6
over 19	1,3	0,8

5.2 Length

5.2.1 Hoses

Hoses shall be supplied in lengths as specified by the purchaser, subject to a tolerance on the specified lengths of $\pm 2\%$.

When no specific hose lengths have been ordered, the percentages of different lengths in any given delivery shall be as follows:

- over 20 m : not less than 80% of total length;
- over 10 m to 20 m : not more than 20% of total length;
- 1 m to 10 m : not more than 3% of total length.

No length of hose shall be less than 1 m.

5.2.2 Hose assemblies

The tolerances on the length of hose assemblies shall comply with the values given in table 3.

Table 3: Tolerances of length of hose assemblies
Dimensions in millimetres

Hose assembly length	Tolerances
up to and including 630	+ 7 - 3
over 630 and including 1250	+ 12 - 4
over 1250 and including 2500	+ 20 - 6
over 2500 and including 8000	+ 1,5% - 0,5%
over 8000	+ 3% - 1%

6 Requirements

6.1 Hydrostatic requirements

6.1.1 When tested in accordance with EN ISO 1402, the maximum working pressure, the proof pressure and burst pressure of the hoses and hose assemblies shall comply with the values given in table 4.

Table 4: Maximum working pressure, proof pressure and burst pressure

Nominal bore	Maximum working pressure bar ¹⁾		Proof pressure bar		Burst pressure bar	
	Type		Type		Type	
	1SC	2SC	1SC	2SC	1SC	2SC
6	225	400	450	800	900	1600
8	215	350	430	700	860	1400
10	180	330	360	660	720	1320
12	160	275	320	550	640	1100
16	130	250	260	500	520	1000
19	105	215	210	430	420	860
25	88	165	176	330	352	660

¹⁾ 1 bar = 0,1 MPa

6.1.2 When tested in accordance with EN ISO 1402, the change in length of hose at the maximum working pressure shall not exceed + 2 % to - 4 %.

6.2 Minimum bend radius

When bent to the minimum bend radius given in table 5, measured on the inside of the bend, the flatness shall not exceed 10 % of the original outside diameter.

Measure the hose outside diameter with a caliper before bending the hose. Bend the hose to the minimum bend radius and measure the flatness with the caliper.

Table 5: Minimum bend radius
Dimensions in millimetres

Nominal bore	Minimum bend radius	
	Type 1SC	Type 2SC
6	75	75
8	85	85
10	90	90
12	130	130
16	150	170
19	180	200
25	230	250

6.3 Impulse test requirements

6.3.1 The impulse test shall be in accordance with ISO 6803. The test temperature shall be 100 °C.

6.3.2 For type 1SC hose, when tested at impulse pressure equal to 125 % of the maximum working pressure, the hose shall withstand a minimum of 150 000 impulse cycles.

For type 2SC, when tested at impulse pressure equal to 133 % of the maximum working pressure, the hose shall withstand a minimum of 200 000 impulse cycles.

6.3.3 There shall be no leakage or other malfunction before reaching the specified number of cycles.

6.3.4 This test shall be considered a destructive test and the test piece shall be thrown away.

6.4 Leakage of hose assemblies

When tested in accordance with EN ISO 1402 there shall be no leakage or evidence of failure. This test shall be considered a destructive test and the test piece shall be thrown away.