



SLOVENSKI STANDARD
SIST EN 854:2000

01-december-2000

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Rubber hoses and hose assemblies - Textile reinforced hydraulic type - Specification

Gummischläuche und -schlauchleitungen - Hydraulikschläuche mit Textileinlage -
Spezifikation

Tuyaux et flexibles en caoutchouc - Type hydraulique avec armature de textile -
Spécification

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Ta slovenski standard je istoveten z: EN 854:1996

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ICS:

23.040.70 Gumene cevi in armature Hoses and hose assemblies

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en

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EUROPEAN STANDARD

EN 854

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 1996

ICS 23.040.70

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

English version

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CEN

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Contents	Page
Foreword	3
1 Scope	3
2 Normative references	3
3 Types of hose	4
4 Materials and construction	4
4.1 Hose	4
4.2 Hose assemblies	4
5 Dimensions	5
5.1 Diameters and concentricity	5
5.2 Length	6
6 Requirements	6
6.1 Hydrostatic requirements	6
6.2 Minimum bend radius	7
6.3 Impulse test requirements (not applicable to type ITE nor R6)	8
6.4 Leakage of hose assemblies	8
6.5 Cold flexibility	8
6.6 Adhesion between components	8
6.7 Vacuum resistance (not applicable to type ITE nor R6)	9
6.8 Abrasion resistance	9
6.9 Fluid resistance	9
6.10 Ozone resistance	10
7 Designation	10
8 Marking	11
8.1 Hoses	11
8.2 Hose assemblies	11

CORRECTED 96-12-17

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 standard is based on ISO 4079.

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publication of an identical text or by endorsement, at the latest by December 1996, and conflicting standards shall be withdrawn at the latest by December 1996.

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 United Kingdom.

1 Scope

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This European Standard specifies requirements for five types of textile reinforced rubber hoses and hose assemblies of nominal bore from 5 to 100.

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They are suitable for use with:

- hydraulic fluids in accordance with ISO 6743-4 with the exception of HRD R, HFD S and HFD T at temperatures ranging from -40 °C to 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 standardized 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 amendment

CORRECTED 96-12-17

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

3 Types of hose

Five types of hoses, Types 1TE, 2TE, 3TE, preferred for new applications, and Types R3, R6 are specified, distinguished by their maximum working pressure (see table 4) and minimum bend radius (see table 5).

NOTE: Hose types 1TE and R6 are preferentially used for low pressure applications, so they are not subjected to impulse test and vacuum resistance test.

4 Materials and construction

4.1 Hoses

Hoses shall consist of an oil and water resistant synthetic rubber lining, one or more layers of suitable textile yarn and an oil and weather resistant synthetic rubber cover.

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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 European 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	Internal diameter		Outside diameter of hoses									
	All types		Type 1TE		Type 2TE		Type 3TE		Type R6		Type R3	
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
5	4,4	5,2	10,0	11,6	11,0	12,6	12,0	13,6	10,3	11,9	11,9	13,5
6	5,9	6,9	11,6	13,2	12,6	14,2	13,6	15,2	11,9	13,5	13,5	15,1
8	7,4	8,4	13,1	14,7	14,1	15,7	16,1	17,7	13,5	15,1	16,7	18,3
10	9,0	10,0	14,7	16,3	15,7	17,3	17,7	19,3	15,1	16,7	18,3	19,8
12	12,1	13,3	17,7	19,7	18,7	20,7	20,7	22,7	19,0	20,6	23,0	24,6
16	15,3	16,5	21,9	23,9	22,9	24,9	24,9	26,9	22,2	23,8	26,2	27,8
19	18,2	19,8	-	-	26,0	28,0	28,0	30,0	25,4	27,8	31,0	32,5
25	24,6	26,2	-	-	32,9	35,9	34,4	37,4	-	-	36,9	39,3
31	30,8	32,8	-	-	-	-	40,8	43,8	-	-	42,9	46,0
38	37,1	39,1	-	-	-	-	47,6	51,6	-	-	-	-
51	49,8	51,8	-	-	-	-	60,3	64,3	-	-	-	-
60	58,8	61,2	-	-	-	-	70,0	74,0	-	-	-	-
80	78,8	81,2	-	-	-	-	91,5	96,5	-	-	-	-
100	98,6	101,4	-	-	-	-	113,5	118,5	-	-	-	-

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

Table 2: Concentricity of hoses

Dimensions in millimetres

Nominal bore	Maximum variation in wall thickness
	Between internal diameter and outside diameter
Up to and including 6	0,8
Over 6 and including 25	1,0
Over 25	1,3

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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 hose length shall be less than 1 m.

5.2.2 Hose assemblies

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

Table 3: Tolerances of length of hose assemblies

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Dimensions in millimetres

Hose assembly length	Nominal bore		
	Up to and including 25	Over 25 and including 50	Over 50
Up to and including 630	+ 7	+ 12	+25
Over 630 and including 1250	+ 12 - 4	+ 20 - 6	
Over 1250 and including 2500	+ 20 - 6	+ 25 - 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.

CORRECTED 96-12-17

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				
	1TE	2TE	3TE	R6	R3	1TE	2TE	3TE	R6	R3	1TE	2TE	3TE	R6	R3
5	25	80	160	34	103	50	160	320	68	206	100	320	640	136	412
6	25	75	145	28	86	50	150	290	56	172	100	300	580	112	344
8	20	68	130	28	83	40	136	260	56	166	80	272	520	112	332
10	20	63	110	28	78	40	126	220	56	156	80	252	440	112	312
12	16	58	93	28	69	32	116	186	56	138	64	232	372	112	276
16	16	50	80	24	60	32	100	160	48	120	64	200	320	96	240
19	-	45	70	21	52	-	90	140	41	104	-	180	280	83	208
25	-	40	55	-	39	-	80	110	-	78	-	160	220	-	156
31	-	-	45	-	26	-	-	90	-	52	-	-	180	-	104
38	-	-	40	-	-	-	-	80	-	-	-	-	160	-	-
51	-	-	33	-	-	-	-	66	-	-	-	-	132	-	-
60	-	-	25	-	-	-	-	50	-	-	-	-	100	-	-
80	-	-	18	-	-	-	-	36	-	-	-	-	72	-	-
100	-	-	10	-	-	-	-	20	-	-	-	-	40	-	-

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 % up to and including nominal bore 31 and 0 % to +5 % above nominal bore 31. (standards.iteh.ai)

6.2 Minimum bend radius

SIST EN 854:2000

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 1TE	Type 2TE	Type 3TE	Type R6	Type R3
5	35	25	40	50	80
6	45	40	45	65	80
8	65	50	55	80	100
10	75	60	70	80	100
12	90	70	85	100	125
16	115	90	105	125	140
19	-	110	130	150	150
25	-	150	150	-	205
31	-	-	190	-	255
38	-	-	240	-	-
51	-	-	300	-	-
60	-	-	400	-	-
80	-	-	500	-	-
100	-	-	600	-	-