SLOVENSKI STANDARD
SIST EN 856:2015

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Nadomešča:
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Gumene cevi in cevni priključki - S spiralnim gumiranim jeklenim kordom ojačene hidravlične cevi - Specifikacija

Rubber hoses and hose assemblies - Rubber-covered spiral wire reinforced hydraulic type - Specification

Gummischläuche und -schlauchleitungen - Hydraulikschläuche mit Drahtspiraleinlage - Spezifikation

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

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23.040.70 Gumene cevi in armature Hoses and hose assemblies

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EUROPEAN STANDARD

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English Version

Rubber hoses and hose assemblies - Rubber-covered spiral wire reinforced hydraulic type - Specification

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

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This European Standard was approved by CEN on 31 January 2015.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Contents

Page

Foreword

This document (EN 856:2015) 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of an identical text or by endorsement, at the latest by October 2015 and conflicting national standards shall be withdrawn at the latest by October 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 856:1996.

In comparison with EN 856:1996, the following significant changes have been made:

— updated normative references;

— tolerances for inside diameter in Table 1;

— added Annex A;

— added Annex B;

— added Annex C.

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

1 Scope

This European Standard specifies requirements for four types of rubber-covered spiral wire reinforced hydraulic hoses and hose assemblies of nominal bore from 6 to 51: Types 4SP, 4SH, R12 and R13. They are all 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 to +100 °C for types 4SP and 4SH and −40 °C to +120 °C for types R12 and R13;

— water based fluids at temperatures ranging from −40 °C to 70 °C;

— water fluids at temperatures ranging from 0 °C to 70 °C.

This European 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 are not be operated outside the limits of this standard.

NOTE 3 Requirements for hydraulic hoses for underground mining are standardised in a separate standard.

2 Normative references

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

EN ISO 1302, *Geometrical Product Specifications (GPS) - Indication of surface texture in technical product documentation (ISO 1302)*

EN ISO 1402:2009, *Rubber and plastics hoses and hose assemblies - Hydrostatic testing (ISO 1402:2009)*

EN ISO 4671, *Rubber and plastics hoses and hose assemblies - Methods of measurement of the dimensions of hoses and the lengths of hose assemblies (ISO 4671)*

EN ISO 6743-4, *Lubricants, industrial oils and related products (class L) - Classification - Part 4: Family H (Hydraulic systems) (ISO 6743-4)*

EN ISO 6803, *Rubber or plastics hoses and hose assemblies - Hydraulic-pressure impulse test without flexing (ISO 6803)*

EN ISO 7326, *Rubber and plastics hoses - Assessment of ozone resistance under static conditions (ISO 7326)*

EN ISO 8033:2006, *Rubber and plastics hoses - Determination of adhesion between components (ISO 8033:2006)*

EN ISO 10619-2, *Rubber and plastics hoses and tubing - Measurement of flexibility and stiffness - Part 2: Bending tests at sub-ambient temperatures (ISO 10619-2)*

ISO 1817:2005, *Rubber, vulcanized - Determination of the effect of liquids*

ISO 23529, *Rubber - General procedures for preparing and conditioning test pieces for physical test methods*

3 Types of hose

Four types of hose are specified:

1) Type 4SP – a 4-steel wire spiral medium pressure hose;

2) Type 4SH – a 4-steel wire spiral extra high pressure hose;

3) Type R12 – a 4 steel wire spiral heavy duty high temperature hose – medium pressure rating;

4) Type R13 – a multiple steel wire spiral heavy duty high temperature hose – high pressure rating.

4 Materials and construction

4.1 Hoses

Hoses shall consist of an oil and water resistant synthetic rubber lining, spiral plies of steel wire wrapped in alternating directions, and an oil and weather resistant synthetic rubber cover. Each spiral wire ply shall be separated by an insulating layer of synthetic rubber.

4.2 Hose assemblies

Hose assemblies shall only be manufactured with those hose fittings whose functionality has been verified in accordance with subclauses 6.1, 6.3, 6.4 and 6.5 of this European Standard.

5 Dimensions

5.1 Diameters and concentricity

When measured in accordance with EN ISO 4671, the diameters of the hoses shall conform to the values given in Table 1.

Table 1 — Diameters of hoses

Dimensions in millimetres, except nominal bore

Nominal bore	Inside diameter							
	Type 4SP		Type 4SH		Type R12		Type R13	
	min.	max.	min.	max.	min.	max.	min.	max.
6	6,2	7,0	-	-	-	-	-	-
10	9,4	10,1	-	-	9,3	10,1	-	-
12	12,6	13,5	-	-	12,3	13,5	-	-
16	15,8	16,7	-	-	15,5	16,7	-	-
19	18,8	19,8	19,1	19,8	18,6	19,8	18,6	19,8
25	25,4	26,4	25,5	26,4	25,0	26,4	25,0	26,4
31	31,8	33,0	32,0	33,0	31,4	33,0	31,4	33,0
38	38,0	39,3	38,2	39,3	37,7	39,3	37,7	39,3
51	50,6	52,0	50,6	52,0	50,4	52,0	50,4	52,0

When measured in accordance with EN ISO 4671, the diameter over reinforcement and outside diameter of the hoses shall conform to the values given in Table 2.

Table 2 — Diameter over reinforcement and outside diameter

Dimensions in millimetres, except nominal bore

Nominal bore	Type 4SP				Type 4SH				Type R12				Type R13			
	Diameter over reinforcement		Outside diameter of hose		Diameter over reinforcement		Outside diameter of hose		Diameter over reinforcement		Outside diameter of hose		Diameter over reinforcement		Outside diameter of hose	
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
6	14,1	15,3	17,1	18,7	-	-	-	-	-	-	-	-	-	-	-	-
10	16,9	18,1	20,6	22,2	-	-	-	-	16,6	17,8	19,5	21,0	-	-	-	-
12	19,4	21,0	23,8	25,4	-	-	-	-	19,9	21,5	23,0	24,6	-	-	-	-
16	23,0	24,6	27,4	29,0	-	-	-	-	23,8	25,4	26,6	28,8	-	-	-	-
19	27,4	29,0	31,4	33,0	27,6	29,2	31,4	33,0	26,9	28,4	29,9	31,5	28,2	29,8	31,0	33,2
25	34,5	36,1	38,5	40,9	34,4	36,0	37,5	39,9	34,1	35,7	36,8	39,2	34,9	36,4	37,6	39,8
31	45,0	47,0	49,2	52,4	40,9	42,9	43,9	47,1	42,7	45,1	45,4	48,6	45,6	48,0	48,3	51,3
38	51,4	53,4	55,6	58,8	47,8	49,8	51,9	55,1	49,2	51,6	51,9	55,0	53,1	55,5	55,8	58,8
51	64,3	66,3	68,2	71,4	62,2	64,2	66,5	69,7	62,5	64,8	65,1	68,3	66,9	69,3	69,5	72,7

When measured in accordance with EN ISO 4671, the concentricity of the hoses shall comply with the values given in Table 3.

Table 3 — Concentricity of hoses

Dimensions in millimetres, except nominal bore

Nominal bore	Maximum variation in wall thickness	
	Between insidel diameter and outside diameter	Between internal diameter and reinforcement diameter
6	0,8	0,5
Over 6 and including 19	1,0	0,7
Over 19	1,3	0,9

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 ± 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 up to and including 20 m : not more than 20 % of total length;

— 1 m up to and including 10 m : not more than 3 % of total length.

All hose lengths shall be at least 1 m.

5.2.2 Hose assemblies

The tolerances on the length of hose assemblies shall conform to the values given in Table 4.

Table 4 — Tolerances of length of hose assemblies

	Nominal bore Up to and including 25	Over 25 and including 50	Over 50
Hose assembly length mm	**Tolerance**	**Tolerance**	**Tolerance**
Up to and including 630	+ 7 mm - 3 mm	+ 12 mm - 4 mm	+25 mm -6 mm
Over 630 and including 1 250	+ 12 mm - 4 mm	+ 20 mm - 6 mm	
Over 1 250 and including 2 500	+ 20 mm - 6 mm	+ 25 mm - 6 mm	
Over 2 500 and including 8 000	+ 1,5 % - 0,5 %		
Over 8 000	+ 3 % - 1 %		