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Rubber hoses and hose assemblies — Compact wire-braid-reinforced hydraulic types for oil-based or water-based fluids — Specification

Tuyaux et flexibles en caoutchouc — Types hydrauliques compacts avec armature de fils métalliques tressés pour fluides à base d'huile ou à base d'eau — Spécifications

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part- 1. In particular, the different approval criteria needed for the different types of ISO documentsdocument should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part- 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Rubber and plastics hoses and hose assemblies*.

This third edition cancels and replaces the second edition (ISO 11237:2017), which has been technically revised.

The main changes are as follows:

— revision of the scope has been revised to align the water- -based fluids and water temperatures with ISO 1436, ISO 3862 and ISO 18752;

— deletion of subclauses 7.5.2 and 7.5.3 on water based and optional impulse tests have been deleted;

— subclause 7.10.1 has been revisedrevision of subclause 7.10.1 to align the document with ISO 1817 fluid immersion requirements specified in ISO 1817;

— a newaddition of subclause 7.10.3, on water based fluid resistance, has been added;

— addition of new hose sizes have been added to type 2SC in Tables 1, 3, 4, 5, 6 and 7;

— revision of Clause 8 has been revised to cite Annex A;

— revision of Clause 9 has been revised;

— ;

— revision of Annex A has been revised to align the document with ISO 1436 and has been deleted.

— A list of all parts in the ISO 11237 series can be found on the ISO website.

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Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Rubber hoses and hose assemblies — Compact wire-braid-reinforced hydraulic types for oil-based or water-based fluids — Specification

1 Scope

This document specifies requirements for five types of compact, wire-braid-reinforced hoses and hose assemblies of nominal size from 5 to 76.

They are suitable for use with:

— oil-based hydraulic fluids HH, HL, HM, HR and HV as defined in ISO 6743-4 at temperatures ranging from −40 °C to +100 °C;

— water-based fluids HFC, HFAE, HFAS and HFB as defined in ISO 6743-4 at temperatures ranging from 0 °C to +70 °C;

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

This document does not include requirements for end fittings. It is limited to requirements for hoses and hose assemblies. The hose assembly maximum working pressure is governed by the lowest maximum working pressure of the components.

NOTE It is the responsibility of the user, in consultation with the hose manufacturer, to establish the compatibility of the hose with the fluid to be used.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1307, *Rubber and plastics hoses — Hose sizes, minimum and maximum inside diameters, and tolerances on cut-to-length hoses*~~

ISO 1402, *Rubber and plastics hoses and hose assemblies — Hydrostatic testing*

ISO 1817, *Rubber, vulcanized or thermoplastic — Determination of the effect of liquids*

ISO 4671, *Rubber and plastics hoses and hose assemblies — Methods of measurement of the dimensions of hoses and the lengths of hose assemblies*

ISO 6605, *Hydraulic fluid power — Test methods for hoses and hose assemblies*

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

ISO 7233, *Rubber and plastics hoses and hose assemblies — Determination of resistance to vacuum*

ISO 7326, *Rubber and plastics hoses — Assessment of ozone resistance under static conditions*

ISO 8033:2016, *Rubber and plastics hoses — Determination of adhesion between components*

ISO 8330, *Rubber and plastics hoses and hose assemblies — Vocabulary*

ISO 10619-1:2017, *Rubber and plastics hoses and tubing — Measurement of flexibility and stiffness — Part 1: Bending tests at ambient temperature*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8330 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Classification

Five types of hose are specified, distinguished by their construction, working pressure and minimum bend radius. These hoses have thin covers designed to permit fitting assembly without the removal of the cover or a portion of the cover.

a) Type 1SC: Hoses with a single braid of wire reinforcement.

b) Type 2SC: Hoses with two braids of wire reinforcement.

c) Type R16S: Hoses with one or two braids of wire reinforcement.

d) Type R17: 21 MPa (210 bar) constant pressure hoses with one or two braids of wire reinforcement.

e) Type R19: 28 MPa (280 bar) constant pressure hoses with one or two braids of wire reinforcement.

NOTE Types R16S, R17 and R19 are not subjected to the vacuum resistance tests.

5 Materials and construction

5.1 Hoses

Hoses shall consist of a rubber lining resistant to oil- or water-based hydraulic fluids, one or two layers of high-tensile steel wire and a weather- and oil-resistant rubber cover.

5.2 Hose assemblies

Hose assemblies shall be manufactured using hoses conforming to the requirements of this document.

Hose assemblies shall be manufactured only with those hose fittings whose correct functioning has been verified in accordance with 7.2, 7.3, 7.5, 7.6 and 7.7. The manufacturer's instructions shall be followed for the preparation and fabrication of hose assemblies.

6 Dimensions

6.1 Hose diameters

The test shall be carried out in accordance with ISO 4671. The hose diameters shall conform to the values given in Table 1.

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Table 1 — Dimensions of hoses

Nominal size[a]	All types		Type 1SC			Type 2SC			Type R16S		Type R17		Type R19	
	Inside diameter		Diameter over wire		Outside diameter of hose	Diameter over wire		Outside diameter of hose	Diameter over wire	Outside diameter of hose	Diameter over wire	Outside diameter of hose	Diameter over wire	Outside diameter of hose
	mm		mm		mm	mm		mm	mm	mm	mm	mm	mm	mm
	min.	max.	min.	max.	max.	min.	max.	max.	max.	max.	max.	max.	max.	max.
5	4,6	5,4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10,1	11,6	10,8	12,7
6,3	6,1	6,9	9,6	10,8	13,5	10,6	11,7	14,2	12,3	14,5	11,0	13,2	12,4	14,4
8	7,7	8,5	10,9	12,1	14,5	12,1	13,3	16,0	13,3	15,8	13,0	15,0	14,2	16,3
10	9,3	10,1	12,7	14,5	16,9	14,4	15,6	18,3	15,9	18,8	15,0	17,0	16,0	18,0
12,5	12,3	13,5	15,9	18,1	20,4	17,5	19,1	21,5	19,1	22,0	18,8	21,1	20,4	22,6
16	15,5	16,7	19,8	21,0	23,0	20,5	22,3	24,7	22,5	25,4	23,6	25,9	25,9	27,5
19	18,6	19,8	23,2	24,4	26,7	24,6	26,4	28,6	26,3	29,0	27,7	30,3	29,7	32,5
25	25,0	26,4	30,7	31,9	34,9	32,5	34,3	36,6	34,0	36,6	35,6	38,6	N/A	N/A
31,5	31,4	33,0	37,8	39,0	42,2	39,3	41,7	44,3	41,9	44,3	N/A	N/A	N/A	N/A
38	37,7	39,3	–	–	–	45,6	48,7	52,6	–	–	–	–	–	–
51	50,4	52,0	–	–	–	58,7	61,6	65,2	–	–	–	–	–	–
63	62,3	64,7	–	–	–	70,5	74,0	77,5	–	–	–	–	–	–
76	74,6	77,4	–	–	–	82,5	88,0	91,5	–	–	–	–	–	–

N/A = Not available.

[a] Nominal sizes are in accordance with ISO 1307.