
**Rubber hoses and hose assemblies —
Textile-reinforced hydraulic types
for oil-based or water-based fluids —
Specification**

*Tuyaux et flexibles en caoutchouc — Types hydrauliques avec
armature de textile pour fluides à base d'huile ou à base d'eau —
Spécifications*

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ISO 4079:2015

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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.

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 documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Rubber and plastics hoses and hose assemblies*.

This fourth edition cancels and replaces the third edition (ISO 4079:2009), of which it constitutes a minor revision.

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

1 Scope

This International Standard specifies requirements for five types of textile-reinforced hydraulic hose and hose assembly of nominal size from 5 to 100. They are suitable for use with water-based hydraulic fluids HFC, HFAE, HFAS and HFB as defined in ISO 6743-4 at temperatures ranging from $-40\text{ }^{\circ}\text{C}$ to $+60\text{ }^{\circ}\text{C}$ or oil-based hydraulic fluids HH, HL, HM, HR and HV as defined in ISO 6743-4 at temperatures ranging from $-40\text{ }^{\circ}\text{C}$ to $+100\text{ }^{\circ}\text{C}$.

This International Standard does not include requirements for end fittings. It is limited to requirements for hoses and hose assemblies.

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

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.

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 — Hoses and hose assemblies — Test methods*

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

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 7326:2006, *Rubber and plastics hoses — Assessment of ozone resistance under static conditions*

ISO 8033:2006, *Rubber and plastics hoses — Determination of adhesion between components*

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

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

ISO 10619-2:2011, *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.

4 Classification

Five types of hose are specified, distinguished by their construction, working pressure and minimum bend radius:

- Type 1TE: hoses with a single braid of textile reinforcement.
- Type 2TE: hoses with one or more braid(s) of textile reinforcement.
- Type 3TE: hoses with one or more braid(s) of textile reinforcement (higher working pressure).
- Type R3: hoses with two braids of textile reinforcement.
- Type R6: hoses with a single braid of textile reinforcement.

NOTE Type 1TE is not subjected to the impulse or vacuum resistance tests. Type R3 is not subjected to the vacuum resistance test. Type R6 is not subjected to the impulse or vacuum resistance tests.

5 Materials and construction

5.1 Hoses

Hoses shall consist of a rubber lining that is resistant to water and oil-based hydraulic fluids, one or more layers of suitable textile yarn and a weather- and oil-resistant rubber cover.

Hoses shall be designed to enable end fittings to be assembled without removal of the cover.

5.2 Hose assemblies

Hose assemblies shall be manufactured only with those hose fittings whose functionality has been verified in accordance with [7.2](#), [7.4](#), [7.5](#) and [7.6](#). The manufacturer's instructions shall be followed for the preparation and fabrication of hose assemblies.

6 Dimensions

6.1 Hose diameters and hose concentricity

When measured in accordance with ISO 4671, the inside and outside diameters of hoses shall conform to the values given in [Table 1](#).

When measured in accordance with ISO 4671, the concentricity of hoses shall conform to the values given in [Table 2](#).

Table 1 — Dimensions of hoses

Nominal size ^a	Inside diameter mm						Outside diameter mm									
	Types 1TE, 2TE, 3TE ^b		Type R6		Type R3		Type 1TE		Type 2TE		Type 3TE		Type R6		Type R3	
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
5	4,4	5,2	4,2	5,4	4,5	5,4	10,0	11,6	11,0	12,6	12,0	13,6	10,3	11,9	11,9	13,5
6,3	5,9	6,9	5,6	7,2	6,1	7,0	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	7,2	8,8	7,6	8,5	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	8,7	10,3	9,2	10,1	14,7	16,3	15,7	17,3	17,7	19,3	15,1	16,7	18,3	19,8
12,5	12,1	13,3	11,9	13,5	12,4	13,5	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	15,1	16,7	15,6	16,7	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	18,3	19,9	18,7	19,8	—	—	26,0	28,0	28,0	30,0	25,4	27,8	31,0	32,5
25	24,6	26,2	—	—	25,1	26,2	—	—	32,9	35,9	34,4	37,4	—	—	36,9	39,3
31,5	30,8	32,8	—	—	31,4	32,9	—	—	—	—	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	—	—	—	—

^a The nominal sizes correspond to those given in ISO 1307.

^b Inside dimensions apply to type 3TE only for nominal sizes larger than 25.

Table 2 — Concentricity of hoses

Nominal size	Maximum variation in wall thickness between internal diameter and outside diameter
	mm
Up to and including 6,3	0,8
Greater than 6,3 and up to and including 19	1,0
Greater than 19	1,3

6.2 Length

The length of supplied hoses and hose assemblies shall be the subject of agreement between the manufacturer and the purchaser.

NOTE Recommendations for supplied lengths of hoses and hose assemblies are given in [Annex C](#).

7 Performance requirements

7.1 General

The requirements for type and routine testing are given in [Annex A](#) and recommendations for periodic testing in [Annex B](#).

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7.2 Hydrostatic requirements (standards.iteh.ai)

When tested in accordance with ISO 1402 or ISO 6605 at the relevant proof pressure given in [Table 3](#) and the relevant minimum burst pressure given in [Table 4](#), the hoses and hose assemblies shall not leak.

When determined in accordance with ISO 1402 or ISO 6605, the change in length of hoses at the maximum working pressure (see [Table 5](#)) shall not exceed +2 % or -4 % for hoses up to and including nominal size 31,5 and +5 % or 0 % for hoses above nominal size 31,5.

Table 3 — Proof pressure

Nominal size	Type 1TE MPa (bar)	Type 2TE MPa (bar)	Type 3TE MPa (bar)	Type R6 MPa (bar)	Type R3 MPa (bar)
5	5,0 (50)	16,0 (160)	32,0 (320)	7,0 (70)	21,0 (210)
6,3	5,0 (50)	15,0 (150)	29,0 (290)	6,0 (60)	17,6 (176)
8	4,0 (40)	13,6 (136)	26,0 (260)	6,0 (60)	16,8 (168)
10	4,0 (40)	12,6 (126)	22,0 (220)	6,0 (60)	15,6 (156)
12,5	3,2 (32)	11,6 (116)	18,6 (186)	6,0 (60)	14,0 (140)
16	3,2 (32)	10,0 (100)	16,0 (160)	5,2 (52)	12,2 (122)
19	—	9,0 (90)	14,0 (140)	4,4 (44)	10,4 (104)
25	—	8,0 (80)	11,0 (110)	—	7,8 (78)
31,5	—	—	9,0 (90)	—	5,2 (52)
38	—	—	8,0 (80)	—	—
51	—	—	6,6 (66)	—	—
60	—	—	5,0 (50)	—	—
80	—	—	3,6 (36)	—	—
100	—	—	2,0 (20)	—	—

Table 4 — Minimum burst pressure

Nominal size	Type 1TE MPa (bar)	Type 2TE MPa (bar)	Type 3TE MPa (bar)	Type R6 MPa (bar)	Type R3 MPa (bar)
5	10,0 (100)	32,0 (320)	64,0 (640)	14,0 (140)	42,0 (420)
6,3	10,0 (100)	30,0 (300)	58,0 (580)	12,0 (120)	35,2 (352)
8	8,0 (80)	27,2 (272)	52,0 (520)	12,0 (120)	33,6 (336)
10	8,0 (80)	25,2 (252)	44,0 (440)	12,0 (120)	31,2 (312)
12,5	6,4 (64)	23,2 (232)	37,2 (372)	12,0 (120)	28,0 (280)
16	6,4 (64)	20,0 (200)	32,0 (320)	10,4 (104)	24,4 (244)
19	—	18,0 (180)	28,0 (280)	8,8 (88)	20,8 (208)
25	—	16,0 (160)	22,0 (220)	—	15,6 (156)
31,5	—	—	18,0 (180)	—	10,4 (104)
38	—	—	16,0 (160)	—	—
51	—	—	13,2 (132)	—	—
60	—	—	10,0 (100)	—	—
80	—	—	7,2 (72)	—	—
100	—	—	4,0 (40)	—	—

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 Table 5 — Maximum working pressure
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Nominal size	Type 1TE MPa (bar)	Type 2TE MPa (bar)	Type 3TE MPa (bar)	Type R6 MPa (bar)	Type R3 MPa (bar)
5	2,5 (25)	8,0 (80)	16,0 (160)	3,5 (35)	10,5 (105)
6,3	2,5 (25)	7,5 (75)	14,5 (145)	3,0 (30)	8,8 (88)
8	2,0 (20)	6,8 (68)	13,0 (130)	3,0 (30)	8,4 (84)
10	2,0 (20)	6,3 (63)	11,0 (110)	3,0 (30)	7,8 (78)
12,5	1,6 (16)	5,8 (58)	9,3 (93)	3,0 (30)	7,0 (70)
16	1,6 (16)	5,0 (50)	8,0 (80)	2,6 (26)	6,1 (61)
19	—	4,5 (45)	7,0 (70)	2,2 (22)	5,2 (52)
25	—	4,0 (40)	5,5 (55)	—	3,9 (39)
31,5	—	—	4,5 (45)	—	2,6 (26)
38	—	—	4,0 (40)	—	—
51	—	—	3,3 (33)	—	—
60	—	—	2,5 (25)	—	—
80	—	—	1,8 (18)	—	—
100	—	—	1,0 (10)	—	—

7.3 Minimum bend radius

Use test pieces having a length at least four times the minimum bend radius. Measure the hose outside diameter with callipers in the straight-lay position before bending the hose. Bend the hose through 180° to the minimum bend radius and measure the flatness with the callipers according to ISO 10619-1 method.

When the hose is bent to the minimum bend radius given in [Table 6](#), measured on the inside of the bend, the flatness shall not exceed 10 % of the original outside diameter.