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

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

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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 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

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 sixth edition cancels and replaces the fifth edition (ISO 1436:2017), which has been technically revised. The main changes compared to the previous edition are as follows:

— R1ATS and R2ATS have been updated to R1AT and R2AT, respectively, throughout the document;

— the temperature of water and water-based fluids has been increased from +60 °C to +70 °C in the Scope;

— the definitions of Table 1, Table 2 and Table 3 have been updated;

— the previous Table 1 has been split into Table 1 and Table 2; all following tables and references have been renumbered;

— Table 1 and Table 2 have been updated with dimensions from EN 853:1996;

— the maximum working pressure, proof pressure and minimum burst pressure have been updated to standardize to the most common pressures, where needed, in Table 4;

— the temperature of water and water-based fluids has been changed from +60 °C to +70 °C in 7.4.2 and 7.10.3;

— “oil No. 3” has been changed to” IRM 903 oil” in 7.10.2;

— some of the marking requirements have been revised in Clause 9 (the old Clause 8, Marking)

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 — Wire-braid-reinforced hydraulic types for oil-based or water-based fluids — Specification

1 Scope

This document specifies requirements for six types of wire-braid-reinforced hoses and hose assemblies of nominal size from 5 to 51. This document also specifies the hose of nominal size 63 for types 2SN and R2AT, and the hose of nominal size 76 for type 2SN.

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 −40 °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.

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 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 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 7326:2016, *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 10619-2:2017, *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 terminological databases for use in standardization at the following addresses:

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

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

4 Classification

Six types of hose are specified, distinguished by their construction, working pressure and oil resistance.

— Type 1ST: hoses with a single braid of wire reinforcement and having a thick cover.

— Type 2ST: hoses with two braids of wire reinforcement and having a thick cover.

— Types 1SN and R1AT: hoses with a single braid of wire reinforcement and having a thin cover.

— Types 2SN and R2AT: hoses with two braids of wire reinforcement and having a thin cover.

Types 1ST and 2ST are not recommended for new design.

NOTE Types 1SN and R1AT and types 2SN and R2AT have the same reinforcement dimensions as type 1ST and type 2ST, respectively, except that they have thinner covers designed to assemble with fittings without removal of the cover or a portion of the cover.

5 Materials and construction

5.1 Hoses

Hoses shall consist of a rubber lining resistant to oil- or water-based hydraulic fluids or water, 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 that conform 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, 7.4, 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 diameter and the diameter over reinforcement of hoses shall conform to the values given in Table 1.

When measured in accordance with ISO 4671, the outside diameter of hoses and cover thickness (where appropriate) shall conform to the values given in Table 2.

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

