INTERNATIONAL STANDARD

ISO 16301

First edition
2017-09

Rubber and plastics hoses and hose assemblies, wire- or textile-reinforced, for manually operated hydraulic jacks — Specification

Tuyaux et flexibles en caoutchouc et en plastique, à armature textile ou métallique, pour vérin hydrauliques — Spécifications

Reference number
ISO 16301:2017(E)

© ISO 2017



COPYRIGHT PROTECTED DOCUMENT

© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword ... **iv**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms and definitions ... **2**

4 List of significant hazards ... **2**
4.1 General ... 2
4.2 Hazards due to bursting or leaking of hoses ... 2
4.3 Hazards due to failure of connectors ... 3
4.4 Hazards due to errors by the operator ... 4
4.5 Hazards due to change in length of hose assembly ... 5

5 Classification ... **5**
5.1 Classes ... 5
5.2 Grades ... 5

6 Materials and construction ... **6**
6.1 Hoses ... 6
6.2 Hose assemblies ... 6

7 Dimensions and tolerances ... **6**
7.1 Diameters ... 6
7.2 Cover thickness ... 6
7.3 Concentricity ... 6

8 Physical properties ... **7**
8.1 Fluid resistance ... 7
8.1.1 Test pieces ... 7
8.1.2 Oil resistance ... 7
8.2 Performance requirements ... 7
8.2.1 Hydrostatic requirements ... 7
8.2.2 Change in length ... 7
8.2.3 Minimum bend radius ... 8
8.2.4 Resistance to impulse ... 8
8.2.5 Leakage of hose assemblies ... 9
8.2.6 Cold bending test ... 9
8.2.7 Ozone resistance ... 9
8.2.8 Electrical conductivity ... 10
8.2.9 Visual examination ... 10

9 Frequency of testing ... **10**

10 Marking ... **10**
10.1 Hoses ... 10
10.2 Hose assemblies ... 11

11 Test report ... **11**

12 Recommendations for packaging and storage ... **11**

Annex A (informative) **Selection of hoses** ... **12**

Annex B (normative) **Test frequency** ... **13**

Annex C (informative) **Production tests** ... **14**

Annex D (informative) **Recommendations for lengths of supplied hoses and hose assemblies** ... **15**

Annex E (normative) **Test method for electrical conductivity** ... **16**

Bibliography ... **17**

© ISO 2017 – All rights reserved

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 on 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 the following URL: www.iso.org/iso/foreword.html.

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

© ISO 2017 – All rights reserved

Rubber and plastics hoses and hose assemblies, wire- or textile-reinforced, for manually operated hydraulic jacks — Specification

1 Scope

This document specifies the requirements for three classes of wire- or textile-reinforced hydraulic hoses and hose assemblies of nominal sizes ranging from 5 to 25. The hoses and hose assemblies are used in hydraulic jack applications with manually operated hand pumps. They are suitable for use with hydraulic fluids HH, HL, HM, HR and HV at temperature ranging from −40 °C to +55 °C. For tools that require heavy duty services such as a rescue tool, ISO 19718[3] applies.

This document does not include requirements for the connection ends. It is limited to the performance of hoses and hose assemblies. The maximum working pressure of hose assemblies is regulated by the lowest maximum working pressure of the components.

NOTE 1 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.

NOTE 2 There are two International Standards for hoses for hydraulic jacks and tool applications, i.e. ISO 16301 and ISO 19718. The comparison table is given in Annex A.

NOTE 3 The classification of HH, HL, HM, HR and HV is found in ISO 6743-4[2].

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 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 7326:2016, *Rubber and plastics hoses — Assessment of ozone resistance under static conditions*

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

ISO 8331, *Rubber and plastics hoses and hose assemblies — Guidelines for selection, storage, use and maintenance*

ISO 10619-1:2011, *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*

© ISO 2017 – All rights reserved

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 http://www.iso.org/obp

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

4 List of significant hazards

4.1 General

This clause contains some of the significant hazards, hazardous situations and events, as far as they are dealt with in this document, identified by risk assessment as significant for this type of machinery and which require action to eliminate or reduce the risk.

4.2 Hazards due to bursting or leaking of hoses

Hazards can occur when a hose bursts or leaks. The escaping stream of liquid can cause personal injury or property damage.

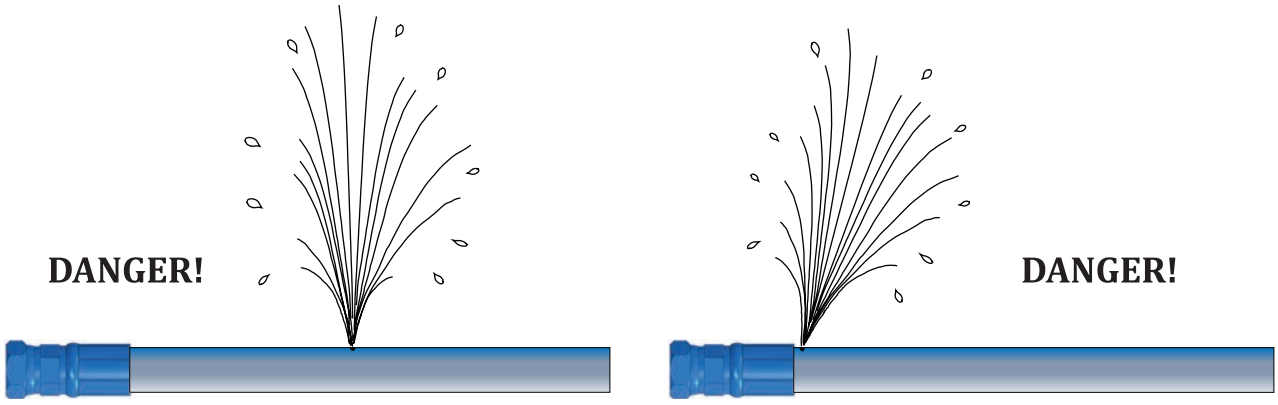


Figure 1 — Hazards due to bursting or leaking of hoses

© ISO 2017 – All rights reserved