

INTERNATIONAL STANDARD

ISO
11425

First edition
1996-04-15

Rubber hoses and hose assemblies for automobile power-steering systems — Specification

*Tuyaux et flexibles en caoutchouc pour circuits de direction assistée —
Spécifications*



Reference number
ISO 11425:1996(E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 11425 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Hoses (rubber and plastics)*.

Annexes A and B form an integral part of this International Standard. Annex C is for information only.

© ISO 1996

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

Rubber hoses and hose assemblies for automobile power-steering systems — Specification

1 Scope

This International Standard specifies requirements for five types of hose and hose assembly used in automobile power-steering systems, the five types differing in their pressure ratings and volumetric expansion. They are for use with fluids in the temperature range $-40\text{ }^{\circ}\text{C}$ to $+135\text{ }^{\circ}\text{C}$.

This International Standard is based on performance tests and, in order to take account of technological developments, no requirements are included for specific materials, detailed construction or manufacturing methods.

WARNING — Attention is drawn to the need to ensure that appropriate precautions are taken to ensure the safety of personnel carrying out the methods of test specified in this International Standard.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1402:1994, *Rubber and plastics hoses and hose assemblies — Hydrostatic testing*.

ISO 2719:1988, *Petroleum products and lubricants —*

Determination of flash point — Pensky-Martens closed cup method.

ISO 2909:1981, *Petroleum products — Calculation of viscosity index from kinematic viscosity.*

ISO 2977:—¹⁾, *Petroleum products and hydrocarbon solvents - Determination of aniline point and mixed aniline point.*

ISO 3016:1994, *Petroleum products — Determination of pour point.*

ISO 3819:1985, *Laboratory glassware — Beakers.*

ISO 4671:1984, *Rubber and plastics hose and hose assemblies — Methods of measurement of dimensions.*

ISO 4672:—²⁾, *Rubber and plastics hoses — Subambient temperature flexibility tests.*

ISO 4788:1986, *Laboratory glassware — Graduated measuring cylinders.*

ISO 4793:1980, *Laboratory sintered (fritted) filters — Porosity grading, classification and designation.*

ISO 6803:1994, *Rubber or plastics hoses and hose assemblies — Hydraulic-pressure impulse test without flexing.*

ISO 7326:1991, *Rubber and plastics hoses — Assessment of ozone resistance under static conditions.*

ISO 8033:1991, *Rubber and plastics hose — Determination of adhesion between components.*

1) To be published. (Revision of ISO 2977:1989)

2) To be published. (Revision of ISO 4672:1988)

ISO 9227:1990, *Corrosion tests in artificial atmospheres — Salt spray tests*.

ISO/TR 11340:1994, *Rubber and rubber products — Hydraulic hose assemblies — External leakage classification for hydraulic systems*.

3 Definition

For the purposes of this International Standard, the following definition applies.

3.1 hose assembly: A hose with either permanent or re-usable end fittings attached.

4 Types of hose

Hoses shall be one of the following five types:

Type 1: low-pressure hydraulic fluid return hoses and hose assemblies

Type 2: medium-pressure low volumetric expansion hoses and hose assemblies

Type 3: medium-pressure medium volumetric expansion hoses and hose assemblies

Type 4: medium-pressure high volumetric expansion hoses and hose assemblies

Type 5: high-pressure low volumetric expansion hoses and hose assemblies

5 Construction and materials

The hose shall consist of

- a) a rubber lining;
- b) a reinforcement;
- c) a rubber cover or alternatively, for type 5 only, a textile cover.

The hose shall be uniform in quality and free from porosity, air holes and foreign inclusions.

6 Dimensions and tolerances

6.1 The hose shall have a nominal bore in accordance with the requirements of table 1. When determined in accordance with ISO 4671, the actual bore shall be within $\pm 0,4$ mm of the nominal bore.

Table 1 — Nominal bore

Dimensions in millimetres

Type 1	Type 2	Type 3	Type 4	Type 5
—	6,3	—	—	—
9,5	9,5	9,5	9,5	9,5
—	12,7	—	—	12,7

6.2 The concentricity based on a total indicator reading between the bore and the outside surface of the cover, determined in accordance with ISO 4671, shall be not more than 0,75 mm.

NOTE 1 Typical ranges of outside diameters available are given in annex C.

7 Performance requirements

7.1 Impulse resistance

When subjected to a pulse test carried out in accordance with ISO 6803, using the following conditions, each of at least four test pieces shall withstand a minimum of 225 000 cycles with no more than ISO/TR 11340 class 3 leakage at fittings, and no rupture or ballooning of the hose.

Test fluid temperature: $135\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$

Ambient temperature during test: $100\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$

Cycle rate: 30 to 40 per min

Cycle data:

Pressure rise time: $0,20\text{ s} \pm 0,10\text{ s}$

Pressure dwell time: $0,65\text{ s} \pm 0,20\text{ s}$

Pressure drop time: $0,20\text{ s} \pm 0,10\text{ s}$

Test pressure: Design working pressure as given in table 2.

7.2 Burst pressure requirement

When tested in accordance with ISO 1402, the hose or hose assembly shall withstand the minimum burst pressure given in table 2.