INTERNATIONAL STANDARD

ISO 8032

Second edition
1997-07-15

Rubber and plastics hose assemblies — Flexing combined with hydraulic impulse test (half-omega test)

Flexibles hydrauliques en caoutchouc et en plastique — Essai de flexion combiné avec des impulsions de pression (essai demi-oméga)

Reference number
ISO 8032:1997(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 8032 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Hoses (rubber and plastics)*.

This second edition cancels and replaces the first edition (ISO 8032:1987), which has been technically revised.

International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
Internet central@iso.ch
X.400 c=ch; a=400net; p=iso; o=isocs; s=central

Printed in Switzerland

Introduction

Hydraulic hose assemblies are frequently flexed in service, especially when used on mobile equipment. This test is designed to accelerate the same type of failure of the test pieces as that which may occur in service.

This International Standard is an alternative method to ISO 6802, which also specifies a method of flexing during impulse testing. ISO 8032 provides a method including more severe bending and higher impulse pressures to accelerate failure results.

NOTE - It shall be clearly understood that this test method uses pressure and bend radius conditions considerably more severe than those specified in the hose product specifications and does not imply that the assemblies may be used in service under these conditions.

This page intentionally left blank

Rubber and plastics hose assemblies — Flexing combined with hydraulic impulse test (half-omega test)

WARNING — Persons using this International Standard should be familiar with normal laboratory practice. This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

1 Scope

This International Standard specifies a method of flexing, in an arrangement known as a 'half-omega", hydraulic hose assemblies during impulse testing.

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 6802 : 1991, Rubber and plastics hose and hose assemblies with wire reinforcements - Hydraulic impulse test with flexing.

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

3 Apparatus and materials

3.1 **Flex test rig**, on which the test pieces can be installed, capable of producing flexing as shown in figure 1, according to the test parameters specified in clause 5.

The test rig comprises a manifold mounted on a revolving arm, and a stationary manifold.

The manifold on the revolving arm is geared so that it stays perpendicular to the stationary manifold at all times (see figure 1).

The vertical centre-line of the stationary manifold is positioned so that the end of the ferrule is at a distance of 2,25 $R_{c\ min}$ from the centre of rotation of the revolving manifold with a tolerance of ± 2 mm, where $R_{c\ min}$ is the minimum bend radius in accordance with the International Standard appropriate to the hose concerned.

The height of the stationary manifold pressure inlet end shall be adjusted to ensure that the end of the ferrule is on the same horizontal centre-line as that of the revolving manifold (see figure 1).

3.2 **Hydraulic equipment**, capable of providing the test parameters given in clause 5 by means of oil circulation through the test pieces. The impulse cycle obtained shall conform to figure 1 of ISO 6803.

3.3 **Test fluid**, in accordance with clause 4 of ISO 6803.

4 Test pieces

The test piece shall be a hose assembly with a free length of exposed hose of 4,14 $R_{c\ min}$ + 3,57 d_e with a tolerance of +15 mm/0 mm or +1 %/0 %, whichever is the greater,

where

$R_{c\ min}$ is as described in clause 3;

d_e is the external diameter of the hose.

A minimum of four test pieces shall be tested.

5 Procedure

Attach one end of the test piece to the manifold on the revolving arm of the rig and the other end to the stationary manifold.

If not otherwise specified in the hose specification use the following test parameters:

Impulse pressure:	150 % of the working pressure specified in the International Standard appropriate to the hose concerned
Test fluid temperature:	100 °C ± 3 °C
Impulse frequency:	0,84 Hz ± 0,1 Hz
Flexing frequency:	1,00 Hz ± 0,05 Hz
Pressure rise rate:	As clause 3.1 of ISO 6803

Bring the test fluid to the specified temperature and then start the impulse and the flexing.

Ensure that the frequencies are never even multiples of each other and monitor the test fluid temperature at the inlet of the stationary manifold.

Continue the test until failure or until the specified number of cycles has been completed.

6 Expression of results

The range of impulse and flexing cycles for the four test pieces shall be noted in the test report.

7 Test report

The test report shall include the following information:

a) a reference to this International Standard;

b) a full description of the hose and hose assembly tested including fitting identification and attachment details such as skive length, crimp diameter, etc;

c) the number of impulse and flexing cycles to failure or the number of cycles completed for each test piece;

d) the position and mode of failure of each test piece or the condition of each test piece on completion of the test;

e) any deviation from the procedure specified;

f) the rate of pressure rise;

g) the test fluid.

h) the date of test;

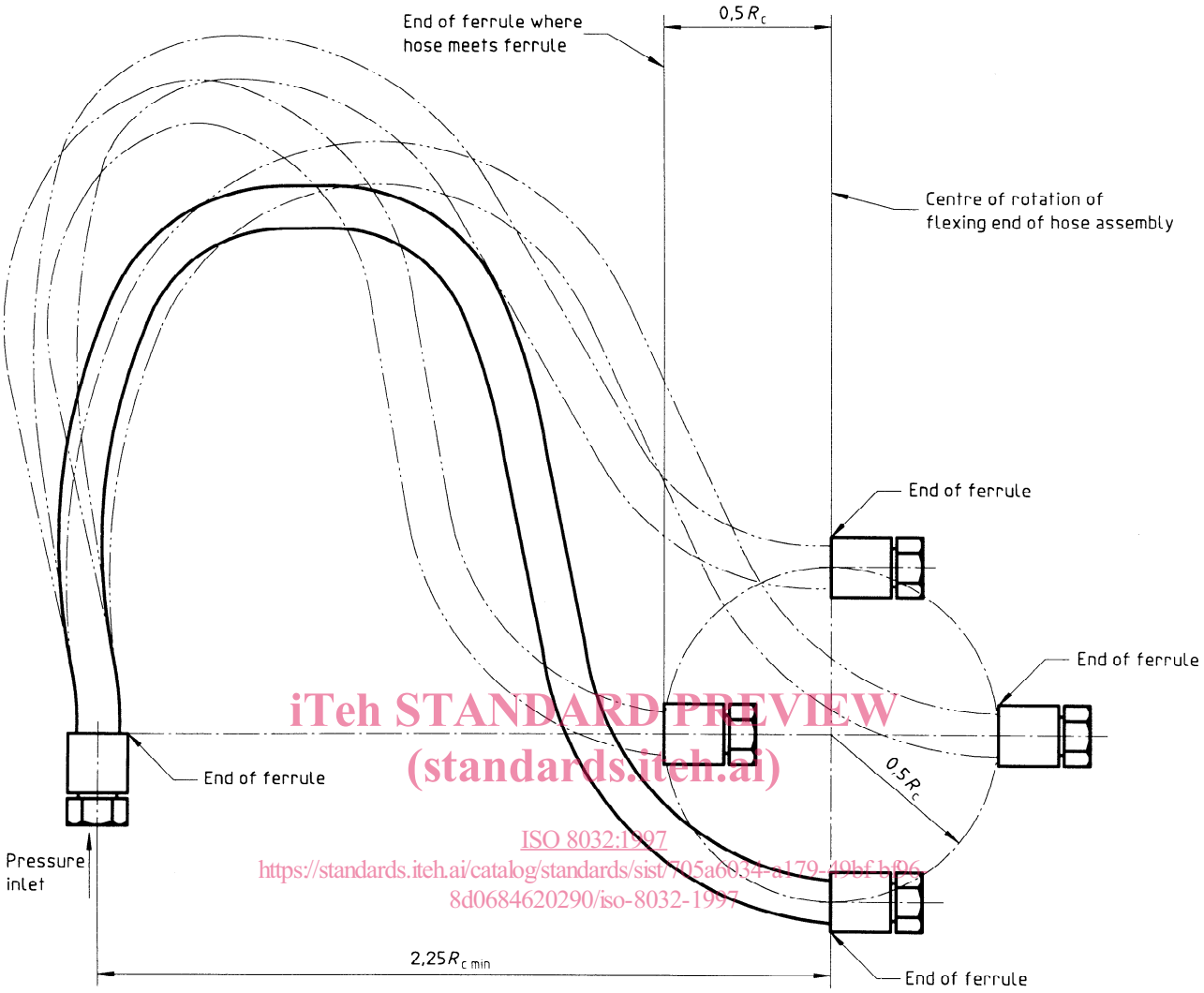

Figure 1 - Schematic arrangement of test piece

This page intentionally left blank