Rubber and plastics hoses and hose assemblies with wire reinforcements — Hydraulic impulse test with flexing (ISO 6802:2005)

ICS 23.040.70



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National foreword

This British Standard is the UK implementation of EN ISO 6802:2008. It is identical to ISO 6802:2005. It supersedes BS EN 26802:1993 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/66, Rubber and plastics tubing, hoses and hose assemblies.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Rubber and plastics hoses and hose assemblies with wire reinforcements - Hydraulic impulse test with flexing (ISO 6802:2005)

Tuyaux et flexibles en caoutchouc et en plastique renforcés par des fils métalliques - Essai d'impulsions hydrauliques avec flexions (ISO 6802:2005)

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Foreword

The text of ISO 6802:2005 has been prepared by Technical Committee ISO/TC 45 "Rubber and rubber products" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 6802:2008 by Technical Committee CEN/TC 218 "Rubber and plastics hoses and hose assemblies" the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2009, and conflicting national standards shall be withdrawn at the latest by May 2009.

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The text of ISO 6802:2005 has been approved by CEN as a EN ISO 6802:2008 without any modification.

Contents

Page

Forewo	ord	iv
Introdu	uction	v
1	Scope	1
2	Normative references	1
3	Test methods	1
4	Apparatus	1
5	Test piece	3
6	Procedure	3
7	Test report	3

Foreword

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ISO 6802 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Hoses (rubber and plastics)*.

This third edition cancels and replaces the second edition (ISO 6802:1991), which has been technically revised.

Introduction

Hydraulic hoses and hose assemblies are frequently flexed in service. As there may be a need to take this into account during testing, this International Standard provides a standard method of flexing during impulse testing.

BS EN ISO 6802:2008

Rubber and plastics hoses and hose assemblies with wire reinforcements — Hydraulic impulse test with flexing

1 Scope

This International Standard describes a pressure impulse test with flexing for wire-reinforced rubber and plastics hydraulic hoses and hose assemblies.

The test is applicable to high-pressure hydraulic hoses and hose assemblies, which are subject to pulsating pressure in service.

This International Standard describes two methods of flexing the hose or hose assembly. The actual pressure impulse test is described in ISO 6803.

2 Normative references

The following referenced documents are indispensable for the application 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 6803, Rubber or plastics hoses and hose assemblies — Hydraulic-pressure impulse test without flexing

3 Test methods

Two methods of flexing are described: method 1 which uses a revolving manifold as shown in Figure 1, and method 2 which uses a horizontally sliding manifold as shown in Figure 2. When no requirement is stated in the product standard, use method 1.

4 Apparatus

The apparatus consists of a flex test rig, on which the test pieces can be installed, capable of producing flexing in the ways shown in Figures 1 and 2. The rig comprises a stationary manifold and a movable manifold, the latter being capable of either executing a revolving motion (see Figure 1) or executing a horizontally reciprocating (to-and-fro) motion (see Figure 2). The centreline of the stationary manifold is at the same height as, and parallel to, the centre of rotation of the revolving manifold or at the same height as the centre of the horizontally reciprocating manifold. The movable manifold is geared so that it stays parallel to the stationary manifold at all times. The number of revolving or to-and-fro cycles executed per minute by the movable manifold shall be within 34 % to 38 % of the number of impulse cycles produced per minute, i.e. the number of flex cycles executed during any given length of time is in a definite proportion to the number of impulse cycles.

The vertical centreline through the stationary manifold at each coupling is a distance l from the centre of rotation or centre of reciprocating motion of the movable manifold. In each case, the hose is subjected to a back-bending motion, with its inside radius being bent to a radius smaller than the minimum bend radius and the radius near each coupling being bent to a radius larger than the minimum bend radius.



Key

- 1 test pressure inlet
- 2 fluid circulation line
- 3 check valve

Figure 1 — Apparatus for hydraulic impulse test with flexing using a revolving manifold



Key

- 1 test pressure inlet
- 2 fluid circulation line
- 3 check valve
- 4 horizontal reciprocating motion



The distance l shall be calculated, to an accuracy of ± 2 mm, using the equation

 $l = 1,75r_{b, \min} + d_{ext}$

where

 $r_{\rm b, min}$ is the minimum bend radius;

 d_{ext} is the external diameter of the hose.

5 Test piece

The free length of hose L measured between the couplings shall be calculated, to an accuracy of \pm 15 mm, using the equation

 $L = 4,14r_{b,\min} + 3,57d_{ext}$

where $r_{b, \min}$ and d_{ext} are as defined in Clause 4.

A minimum of four test pieces shall be tested. The minimum bend radius will be specified in the International Standard for the product concerned.

6 Procedure

Attach one end of the test piece assembly to the movable manifold of the apparatus and attach the other end to the stationary manifold. Carry out the pressure impulse test by the method described in ISO 6803.

Start the test and continue until failure or until the number of cycles specified in the relevant product standard has been completed.

If a failure occurs within 25 mm of one of the end couplings, it shall be regarded as a coupling failure and recorded as such.

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 or hose assembly tested;
- c) the method used (method 1 or method 2);
- d) the test temperature;
- e) the test pressure;
- f) the test fluid;
- g) the rate of pressure rise;
- h) the impulse cycle rate;
- i) the flexing frequency;

BS EN ISO 6802:2008 ISO 6802:2005(E)

- j) the number of impulse cycles to failure, or the number of impulse cycles completed, for each test piece;
- k) the position of the failure and the mode of failure for each test piece, or the condition of each test piece on completion of the test;
- I) the date of the test.

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