

CONFIRMED
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Hydraulic couplings —

Part 2: Method of test for couplings intended for use in fluid power systems

Committees responsible for this Draft for Development

The preparation of this Draft for Development was entrusted by the Machinery and Components Standards Policy Committee (MCE/-) to Technical Committee MCE/18, upon which the following bodies were represented:

- Advanced Manufacturing Technology Research Institute
- Association of British Mining Equipment Companies
- Bath University Library
- British Compressed Air Society
- British Fluid Power Association
- British Steel Industry
- Department of Trade and Industry (National Engineering Laboratory)
- Electricity Supply Industry in England and Wales
- Institution of Mechanical Engineers
- Ministry of Defence

The following bodies were also represented in the drafting of the Draft for Development, through subcommittees and panels:

- British Hydromechanics Research Association
- British Railways Board
- Society of Motor Manufacturers and Traders Limited

This Draft for Development, having been prepared under the direction of the Machinery and Components Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on 28 February 1991

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Foreword

This Draft for Development, based upon proposals from the Institution of Mechanical Engineers, has been prepared under the direction of the Machinery and Components Standards Policy Committee.

A recurring problem with some fluid power systems, particularly those using oil as the power transmission medium, is external leakage largely from pipe couplings and their port connections. This was formally identified as an acute problem in a Department of Industry funded project relating to contamination in hydraulic fluid power systems. A related Draft for Development, DD 195-1, describes type tests for coupling port threads and their seals used in association with couplings offered for use in hydraulic fluid power systems.

To help alleviate many of the problems associated with leakage from complete hydraulic systems, BS 7388 gives recommendations for the prevention of leaks from hydraulic fluid power systems.

This publication is not to be regarded as a British Standard

It is being issued in the Draft for Development series of publications and is of a provisional nature because certain requirements contained herein may need modification in the light of practical experience in its use. It should be applied on this provisional basis so that information and experience of its practical operation may be obtained.

A review of this Draft for Development will be carried out not later than two years after its publication. Notification of the start of the review period, with a request for the submission of comments from users of this Draft for Development, will be made in an announcement in the appropriate issue of *BSI News*.

According to the replies received, the responsible BSI Committee will judge whether the Draft for Development can be converted into a British Standard or what other action should be taken.

Observations which it is felt should receive attention before the official call for comments will be welcomed.

These should be sent to the Secretary of BSI Technical Committee MCE/18 at the London BSI Head Office address as shown on the back cover.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This Draft for Development describes a method of type testing any coupling and tube assembly of any size which is intended for use in hydraulic fluid power systems, e.g. flange, welded, single or double bite, compression.

For the purpose of this Draft for Development the port connection thread, face, seal or flange connection of a stud or standpipe coupling and the sealing mechanism at the coupling/component interface, type tested in accordance with DD 195-1, are considered to be integral parts of a coupling and tube assembly to be subjected to the tests described.

NOTE 1 This Draft for Development describes various tests and there are areas where data is missing, suspect or unknown. For this reason field studies and a research programme are underway to determine the missing data. It is anticipated that any British Standard which supersedes this Draft for Development would replace the test method described in BS 4368-4:1984 for fluid power use.

NOTE 2 The titles of the publications referred to in this Draft for Development are listed on the inside back cover.

2 Definitions

For the purposes of this Draft for Development the following definitions apply.

2.1

maximum working pressure, coupling (MWPC)

maximum permissible working pressure at which the coupling is rated by the supplier against a stated factor of safety

2.2

maximum working pressure, tube (MWPT)

maximum permissible working pressure at which the tube is rated by the tube supplier against a stated bending allowance and stated factor of safety

WARNING. Where tests are performed by a user, the MWPC or MWPT may be defined as the relevant system working pressure providing this does not exceed the manufacturer's maximum working pressure.

2.3

proof pressure

test pressure, in excess of maximum rated pressure, which causes no deformation, damage or malfunction

2.4

test manifold block

that part of the test rig possessing port arrangements to accept test coupling assemblies

2.5

test coupling

assembly comprising a threaded male stud end, or flange, which has been type tested in accordance with DD 195-1, being an integral part of a straight coupling assembly into which a blanked off length of appropriate size tubing is assembled

2.6

type test

test of three or more couplings made to a certain design to show that the design meets certain criteria

3 Principle

WARNING. Some of the tests described in clauses 7 and 8 are considered hazardous; it is therefore essential that, in conducting these tests, all appropriate safety precautions are strictly adhered to. Attention is drawn to the danger of bursts, fine jets (which can penetrate the skin), energy release of expanding gases and the use of accumulators.

3.1 General

A test programme is performed involving a series of tests on three test couplings in the sequences shown in Figure 1.

After the proof pressure test the test couplings are re-tightened in accordance with the manufacturer's re-tightening instructions before proceeding to carry out subsequent tests.

3.2 Assessment of leakage

If any one of the three test couplings that have been subjected to the proof pressure test subsequently leaks at the tube/coupling interface on being subjected to one of the further tests described for either hydraulic fluid or gas, conduct no further tests with these three components.

If an assembly leaks due to tube fracture or rupture outside the envelope of the test coupling, conduct a further test as appropriate.

3.3 Test temperature

Unless otherwise stated, the tests described in clauses 7 and 8 are performed at a temperature between 15 °C and 25 °C, the temperature being measured on the test component.

4 Test fluid

4.1 *Fully fortified mineral oil*, having a viscosity grade ISO VG 32 in accordance with BS 4231.