

Methods of

Determining the derived capacity of hydraulic fluid power positive displacement pumps and motors

Committees responsible for this British Standard

The preparation of this British Standard 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 Hydromechanics Research Association
- British Steel Industry
- British Telecommunications plc
- Department of Trade and Industry (National Engineering Laboratory)
- Electricity Supply Industry in England and Wales
- Federation of Manufacturers of Construction Equipment and Cranes
- Health and Safety Executive
- Institution of Mechanical Engineers
- Ministry of Defence

The following bodies were also represented in the drafting of the standard, through sub-committees and panels:

- British Railways Board
- Society of Motor Manufacturers and Traders Limited

This British Standard, 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 31 October 1989

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The following BSI references relate to the work on this standard:
Committee reference MCE/18
Draft for comment 86/75953 DC

ISBN 0 580 17836 6

Amendments issued since publication

Amd. No.	Date of issue	Comments

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National foreword

This British Standard has been prepared under the direction of the Machinery and Components Standards Policy Committee. It is identical to ISO 8426:1988 “*Hydraulic fluid power — Positive displacement pumps and motors — Determination of derived capacity*”, published by the International Organization for Standardization (ISO).

Cross-references

International Standard	Corresponding British Standard
ISO 1219:1976	BS 2917:1977 <i>Specification for graphical symbols used on diagrams for fluid power systems and components</i> (Identical)
ISO 3448:1975	BS 4231:1982 <i>Classification for viscosity grades of industrial liquid lubricants</i> (Identical)
ISO 6743-4:1982	BS 6413 <i>Lubricants, industrial oils and related products (class L)</i> Part 4:1983 <i>Classification for family H (hydraulic systems)</i> (Identical)

The Technical Committee has reviewed the provisions of ISO 4391 and ISO 5598, to which reference is made in the text, and has decided that they are acceptable for use in conjunction with this standard.

Additional information. For the purpose of this British Standard, the identification statement specified in clause 9 should be read as follows.

“Test for the determination of derived capacity characteristics conforms to BS 7250:1989 *Methods of determining the derived capacity of hydraulic fluid power positive displacement pumps and motors.*”

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

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.

0 Introduction

This International Standard is intended to unify testing methods for fluid power positive displacement hydraulic pumps and motors so as to enable the performance of different components to be compared.

Requirements for test installations, procedures and presentation of results are described.

1 Scope and field of application

This International Standard specifies the methods for determining the derived capacity of fluid power positive displacement hydraulic pumps and motors under steady-state conditions and at defined, continuously rotating shaft speeds.

The unit may be tested as a pump, with mechanical energy applied to the shaft and hydraulic energy obtained at the fluid connections, or as a motor, with the hydraulic energy supplied to the fluid connections and mechanical energy obtained at the shaft.

Accuracy of measurement is divided into three classes (A, B and C) which are explained in Annex A.

2 References

ISO 1219, *Fluid power systems and components — Graphic symbols*.

ISO 3448, *Industrial liquid lubricants — ISO viscosity classification*.

ISO 4391, *Hydraulic fluid power — Pumps, motors and integral transmissions — Parameter definitions and letter symbols*.

ISO 5598, *Fluid power systems and components — Vocabulary*.

ISO 6743-4, *Lubricants, industrial oils and related products (class L) — Classification — Part 4: Family H (Hydraulic systems)*.

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 5598 and the following definitions apply.

NOTE Some of the following definitions have been taken from ISO 5598 and are included, for convenience, in this International Standard.

3.1

direction of rotation

direction of rotation as viewed looking at the shaft end

NOTE In dubious cases, a sketch should be provided.

3.2

hydrostatic power unit

device for the transmission of energy by means of a pressurized fluid

3.3

volume flow rate

the volume of a fluid crossing the transverse plane of a flow path per unit of time

3.4

derived capacity

the volume of fluid displaced by a pump or motor per shaft revolution, calculated from measurements at different speeds under test conditions

3.5

fluid temperature

temperature of the fluid at a stated point

4 Symbols and units

4.1 The symbols and units used throughout this International Standard are shown in Table 1.

4.2 The graphical symbols used in the figures depicting test circuits are in accordance with ISO 1219.

5 Test installation — General requirements

5.1 General

5.1.1 Pre-test condition

Before commencing the tests, the unit shall be run in accordance with the manufacturer's recommendation.

5.1.2 Unit installation

5.1.2.1 The test installation shall be designed to prevent air entrainment and precautions shall be taken to remove all free air from the system before testing.

5.1.2.2 The unit shall be installed and operated in the test circuit (see 5.2) in accordance with the manufacturer's operating instructions.

5.1.2.3 The tests shall be carried out in still air and the ambient temperature shall be recorded.

5.1.2.4 If any additional means of controlling temperature are used, it shall be stated in the test report.

5.1.3 Filtration

5.1.3.1 Filters of sufficient number and appropriate type shall be installed to provide a standard of filtration in the test circuit which is at least equal to that recommended by the unit manufacturer.

5.1.3.2 Details on such filtration used in the test circuit shall be stated in the test report.