BRITISH STANDARD

BS ISO
10946:1999

Hydraulic fluid power — Gas-loaded accumulators with separator — Selection of preferred hydraulic ports

ICS 23.100.99

National foreword

This British Standard reproduces verbatim ISO 10946:1999 and implements it as the UK national standard.

The UK participation in its preparation was entrusted to Technical Committee MCE/18, Fluid power systems and components, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

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

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled "International Standards Correspondence Index", or by using the "Find" facility of the BSI Standards Electronic Catalogue.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the ISO title page, pages ii to iv, pages 1 to 3 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.

This British Standard, having been prepared under the direction of the Engineering Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 June 1999

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Hydraulic fluid power — Gas-loaded accumulators with separator — Selection of preferred hydraulic ports

Transmissions hydrauliques — Accumulateurs hydropneumatiques avec séparateur — Sélection des orifices hydrauliques préférentiels

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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 organisations, 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 standardisation.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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 10946 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*.

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Introduction

In hydraulic fluid power systems, power is transmitted and controlled through a liquid under pressure within an enclosed circuit.

Gas-loaded accumulators are components that are able to store and to return energy in accordance with the principle of the compressibility of gases. Hydraulic fluid enters and leaves these accumulators through ports.

1 Scope

This International Standard specifies the types and selection of hydraulic ports of gas-loaded accumulators with separator, which are used in hydraulic fluid power systems.

2 Normative references

The following normative documents contain certain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 1179-1:—, *Connections for general use and fluid power — Ports and stud ends with ISO 228-1 threads with elastomeric or metal-to-metal sealing — Part 1: Threaded ports*[1)].

ISO 5596:—, *Hydraulic fluid power — Gas-loaded accumulators with separator — Range of pressures and volumes and characteristic quantities*[2)].

ISO 5598:1985, *Fluid power systems and components — Vocabulary.*

ISO 6149-1:—, *Connections for fluid power and general use — Ports and stud ends with ISO 261 threads and O-ring sealing — Part 1: Ports with O-ring seal in truncated housing*[3)].

ISO 6162-1:—, *Hydraulic fluid power — Flange connectors with split or one-piece flange clamps and metric or inch screws — Part 1: Flange connectors for use at pressures of 3,5 MPa (35 bar) to 35 MPa (350 bar), DN 13 to DN 127*[4)].

ISO 6162-2:—, *Hydraulic fluid power — Flange connectors with split or one-piece flange clamps and metric or inch screws — Part 2: Flange connectors for use at pressures of 35 MPa (350 bar) to 40 MPa (400 bar), DN 13 to DN 51*[4)].

ISO 6164-1:—, *Hydraulic fluid power — One-piece square-flange connections — Part 1: Four-screw square-flange connections, 25 MPa (250 bar) series, DN 10 to DN 63*[5)].

ISO 6164-2:—, *Hydraulic fluid power — One-piece square-flange connections — Part 2: Four-screw square-flange connections, 40 MPa (400 bar) series, DN 10 to DN 80*[5)].

ISO 6164-3:—, *Hydraulic fluid power — One-piece square-flange connections — Part 3: Four-screw square-flange connections, 50 MPa (500 bar) series, DN 12 to DN 50*[5)].

3 Terms and definitions

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

3.1
bladder type accumulator

gas-loaded accumulator in which the liquid and gas are separated by a flexible bag or bladder that is normally retained at one end of the shell

3.2
diaphragm type accumulator

gas-loaded accumulator in which the liquid and gas are separated by a flexible membrane that is normally retained at its largest diameter to the shell

3.3
piston type accumulator

gas-loaded accumulator in which the liquid and gas are separated by a rigid sliding piston

4 Dimensions

4.1 General requirements

For threaded ports, those specified in ISO 6149-1 shall be preferred. For flange ports, those specified in ISO 6162-1, ISO 6162-2, ISO 6164-1, ISO 6164-2 and ISO 6164-3 shall be preferred. The threaded ports specified in ISO 1179-1 are optional and may be used for existing applications.

[1)] To be published. (Revision of ISO 1179:1981)

[2)] To be published. (Revision of ISO 5596:1982)

[3)] To be published. (Revision of ISO 6149-1:1993)

[4)] To be published. (Revision of ISO 6162:1994)

[5)] To be published. (Revision of ISO 6164:1994)

4.2 Thread connections

Thread connection possibilities are illustrated in Figure 1, which shows ports, as indicated by the arrows.

4.3 Requirements for ports used with diaphragm type accumulators

Ports used with diaphragm type accumulators shall be selected from those given in Table 1.

4.4 Requirements for ports used with bladder or piston type accumulators

Ports used with bladder or piston type accumulators shall be selected from those given in Table 2.

5 Identification statement (reference to this International Standard)

Use the following statement in test reports, catalogues, and sales literature when electing to comply with this International Standard:

"Hydraulic ports for gas-loaded accumulators with separator selected in accordance with ISO 10946:1999, *Hydraulic fluid power — Gas-loaded accumulators with separator — Selection of preferred hydraulic ports*."

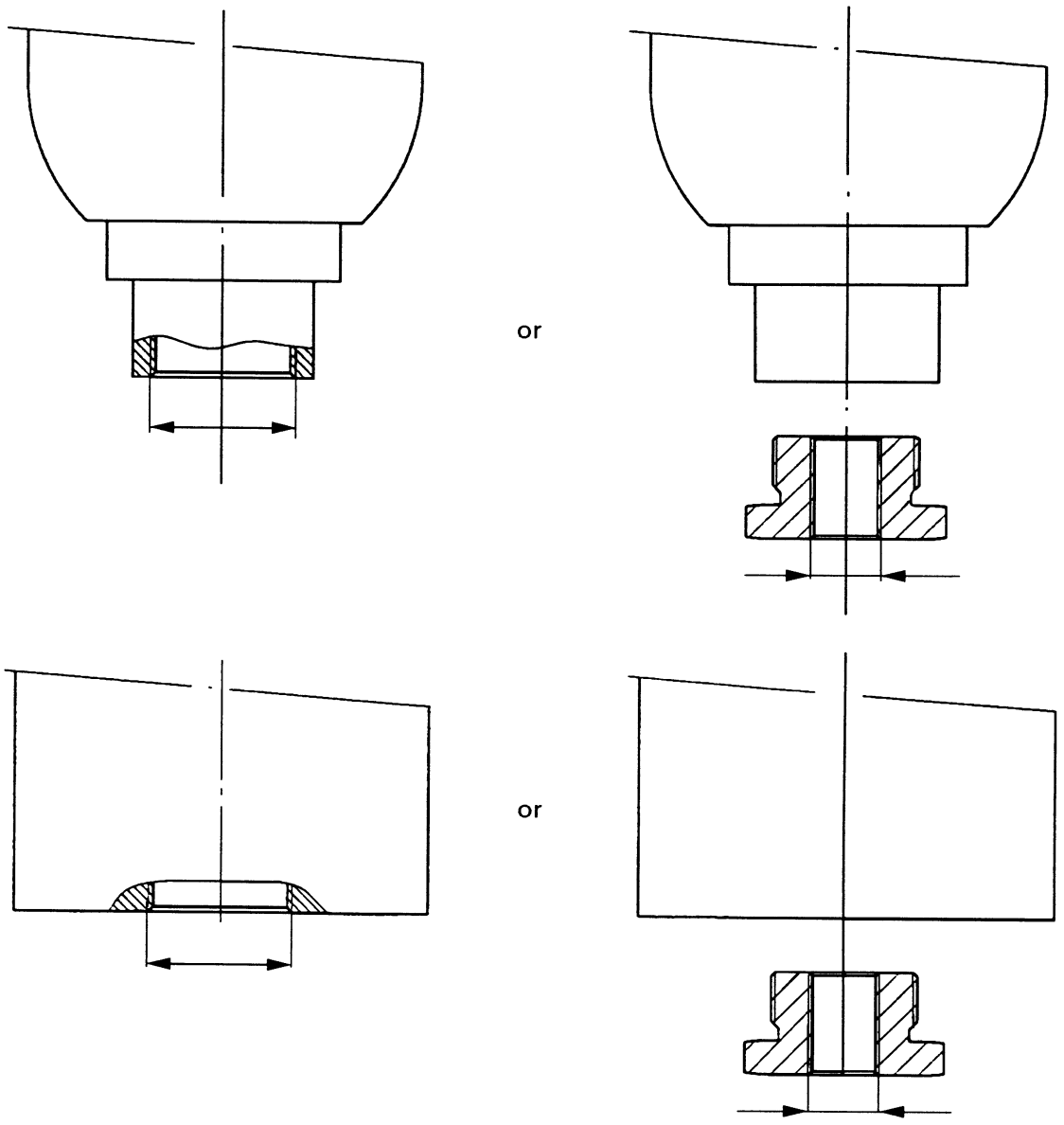

Figure 1 — Thread connection possibilities

Table 1 — Dimensions of ports for diaphragm type accumulators

Preferred port in accordance with ISO 6149-1		**M14 × 1,5**	**M18 × 1,5**	**M22 × 1,5**	**M27 × 2**
Optional port in accordance with ISO 1179-1 for existing applications		**G 1/4**	**G 3/8**	**G 1/2**	**G 3/4**
Volume l	⩽ 0,4				
	> 0,4, ⩽ 1,6				
	> 1,6, ⩽ 6,3				

NOTE Shaded areas indicate preferred port sizes.

Table 2 — Dimensions of ports for bladder or piston type accumulators

Preferred threaded port in accordance with ISO 6149-1		**M14 × 1,5**	**M18 × 1,5**	**M22 × 1,5**	**M27 × 2**	**M33 × 2**	**M42 × 2**	**M48 × 2**	**M60 × 2**
Optional threaded port in accordance with ISO 1179-1 for existing applications		**G 1/4**	**G 3/8**	**G 1/2**	**G 3/4**	**G 1**	**G 1 1/4**	**G 1 1/2**	**G 2**[b]
Flange port[a] **in accordance with ISO 6162 or ISO 6164, DN**		—	—	—	**13**	**19**	**25**	**32**	**38**
Volume l	⩽ 0,4								
	> 0,4, ⩽ 1								
	> 1, ⩽ 10								
	> 10								

NOTE Shaded areas indicate preferred port sizes.

[a] Flange port series shall be selected according to the allowable pressure of the accumulator (p_4), i.e., the maximum permissible pressure for which the accumulator has been designed and/or qualified (see ISO 5596).

[b] ISO 1179-1 does not specify this port for use in hydraulic applications.

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