

# Hydraulic fluid power valve mounting surfaces —

## Part 3: Specification for pressure-relief valves

[ISO title: Hydraulic fluid power — Pressure-relief valves —  
Mounting surfaces]

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- Advanced Manufacturing Technology Research Institute
- Association of British Mining Equipment Companies
- Bath University
- 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)
- Electrical Supply Industry in England and Wales
- Federation of Manufacturers of Construction Equipment and Cranes
- Institution of Mechanical Engineers
- Ministry of Defence

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# National foreword

This Part of BS 6494 has been prepared under the direction of the Machinery and Components Standards Committee and is one of a series of standards specifying dimensions and tolerances for subplate surfaces upon which hydraulic control valves are mounted. It is identical with ISO 6264:1987 “*Hydraulic fluid power — Pressure-relief valves — Mounting surfaces*”, published by the International Organization for Standardization (ISO).

The identification codes used throughout this standard are explained in ISO 5783.

The other Parts of BS 6494 are as follows, the International Standards with which they are identical being given in brackets.

- *Part 1: Specification for four-port directional control valves (ISO 4401:1980);*
- *Part 2: Specification for four-port and five-port servo-valves;*
- *Part 4: Specification for clamping dimensions of four-port, sizes 03 and 05, modular stack valves and directional control valves (ISO 7790:1986);*
- *Part 5: Specification for compensated flow-control valves (ISO 6263:1987);*
- *Part 6: Specification for pressure-control valves (excluding pressure-relief valves), sequence valves, unloading valves, throttle valves and check valves (ISO 5781:1987).*

Similar British Standards specifying the dimensions of mounting surfaces for hydraulic stacking valves and the dimensions of cavities for cartridge types of hydraulic valve are in preparation.

**Terminology and conventions.** The text of the International Standard has been approved as suitable for publication as a British Standard without deviation. Some terminology and certain conventions are not identical with those used in British Standards; attention is drawn especially to the following.

The comma has been used as a decimal marker. In British Standards it is current practice to use a full point on the baseline as the decimal marker.

Wherever the words “International Standard” appear, referring to this standard, they should be read as “Part of BS 6494”.

In clause 6 and Figure 1 to Figure 23, the first letters “ISO 6264” in the codification should be read as “BS 6494-3”.

The identification statement specified in clause 10 should be read as follows.

“Mounting surface dimensions conform to BS 6494 “*Hydraulic fluid power valve mounting surfaces*”, Part 3 “*Specification for pressure-relief valves*”.”

## Cross-references

| International Standard            | Corresponding British Standard                                                                                                                        |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISO 129:1985 and<br>ISO 1302:1978 | BS 308 <i>Engineering drawing practice</i><br>Part 2:1985 <i>Recommendations for dimensioning and tolerancing of size</i><br>(Technically equivalent) |
| ISO 286:1962                      | BS 4500 <i>ISO limits and fits</i><br>Part 1:1969 <i>General, tolerances and deviations</i><br>(Technically equivalent)                               |
| ISO 965-1:1980                    | BS 3643 <i>Specification for ISO metric screw threads</i><br>Part 1:1981 <i>Principles and basic data</i><br>(Technically equivalent)                 |
| ISO 1219:1976 <sup>a</sup>        | BS 2917:1977 <i>Specification for graphical symbols used on diagrams for fluid power systems and components</i><br>(Identical)                        |

<sup>a</sup> A revision is in preparation.

| International Standard | Corresponding British Standard                                                                                                                           |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISO 4401:1980          | BS 6494 <i>Hydraulic fluid power valve mounting surfaces</i><br>Part 1:1984 <i>Specification for four-port directional control valves</i><br>(Identical) |

The Technical Committee has reviewed the provisions of ISO 468, ISO 1101, ISO 5598 and ISO 5783, to which reference is made in the text, and has decided that they are acceptable for use in conjunction with this standard. Related British Standards for ISO 468 and ISO 1101 are as follows.

|               |                                                                                                                                                                    |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISO 468:1982  | BS 1134 <i>Assessment of surface texture</i><br>Part 1:1988 <i>Methods and instrumentation</i><br><sup>a</sup> Part 2:1972 <i>General information and guidance</i> |
| ISO 1101:1983 | BS 308 <i>Engineering drawing practice</i><br>Part 3:1972 <i>Geometrical tolerancing</i>                                                                           |

<sup>a</sup> A revision is in preparation.

There are no corresponding British Standards for ISO 5598 and ISO 5783. ISO 5783 is currently under review by the relevant ISO committee. It will not be considered for implementation as a Part of BS 6494 until a revised edition is published.

NOTE *Typographical errors.* In the titles of Figure 1 and Figure 22, “pressure relief” should be read as “pressure-relief”.

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 to iv, pages 1 to 26, 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

In hydraulic fluid power systems, power is transmitted and controlled through a liquid under pressure within an enclosed circuit. Typical components found in such systems are hydraulic valves. The devices control flow direction, pressure or flow rate of liquids in the enclosed circuit.

## 1 Scope and field of application

This International Standard specifies the dimensions and other data relating to surfaces on which hydraulic pressure-relief valves are mounted in order to ensure interchangeability.

It applies to mounting surfaces for hydraulic pressure-relief valves which represent current practice. They are generally applicable to industrial equipment.

## 2 References

ISO 468, *Surface roughness — Parameters, their values and general rules for specifying requirements*.

ISO 1101, *Technical drawings — Geometrical tolerancing — Tolerances of form, orientation, location and run-out — Generalities, definitions, symbols, indications on drawings*.

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

ISO 1302, *Technical drawings — Method of indicating surface texture on drawings*.

ISO 4401, *Hydraulic fluid power — Four-port directional control valves — Mounting surfaces*.

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

ISO 5783, *Hydraulic fluid power — Code for identification of valve mounting surfaces*.

## 3 Definitions

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

## 4 Symbols

4.1 For the purposes of this International Standard, the following symbols apply:

- a) A, B, L, P, T and X identify ports;
- b)  $F_1$ ,  $F_2$ ,  $F_3$ ,  $F_4$ ,  $F_5$  and  $F_6$  identify threaded holes for fixing bolts;
- c) G identifies the location of pin holes;
- d)  $D$  identifies the fixing bolt diameter;
- e)  $r_{\max}$  identifies mounting surface edge radius.

4.2 The graphical symbols used in Figure 2, Figure 4, Figure 5, Figure 7, Figure 9, Figure 11, Figure 13, Figure 15, Figure 17, Figure 19, Figure 21 and Figure 23 are in accordance with ISO 1219.

4.3 The code system used in this International Standard defined in ISO 5783.

NOTE For size 03 mounting surfaces for all valves, the maximum diameter of main ports, which used to be 6,3 mm, has been increased to 7,5 mm in line with widespread usage. This amendment will be made to ISO 5783 at the next revision stage.

## 5 Tolerances

5.1 The following values shall be applied to the mounting surface, i.e. that area within the chain thick lines:

- Surface roughness:  $R_a \leq 0,8 \mu\text{m}$  (see ISO 468 and ISO 1302)
- Surface flatness: 0,01 mm over a distance of 100 mm (see ISO 1101)
- Locating pin holes, tolerance for diameters: H12

5.2 The following tolerances shall be complied with along  $x$  and  $y$  axes with respect to the origin:

- Pin holes:  $\pm 0,1 \text{ mm}$
- Bolt holes:  $\pm 0,1 \text{ mm}$
- Port holes:  $\pm 0,2 \text{ mm}$

As for the other dimensions, see the figures.

## 6 Dimensions

**6.1** Mounting surface dimensions for hydraulic pressure-relief valves shall be selected from the figures and tables specified in **6.2** to **6.12**.

**6.2** Mounting surface dimensions for pressure-relief valves with main ports of 4 mm maximum port diameter (code: ISO 6264 – AA – 02 – 4 – C) are given in Figure 1.

**6.3** Mounting surface dimensions for pressure-relief valves with main ports of 7,5 mm maximum port diameter (code: ISO 6264 – AB – 03 – 4 – C) are given in Figure 3.

**6.4** Mounting surface dimensions for pressure-relief valves with main ports of 14,7 mm maximum port diameter (code: ISO 6264 – AG – 06 – 2 – A) are given in Figure 6.

**6.5** Mounting surface dimensions for pressure-relief valves with main ports of 14,7 mm maximum port diameter (code: ISO 6264 – AR – 06 – 2 – A) are given in Figure 8.

**6.6** Mounting surface dimensions for pressure-relief valves with main ports of 14,7 mm maximum port diameter (code: ISO 6264 – AR – 06 – 2 – B) are given in Figure 10.

**6.7** Mounting surface dimensions for pressure-relief valves with main ports of 23,4 mm maximum port diameter (code: ISO 6264 – AH – 08 – 2 – B) are given in Figure 12.

**6.8** Mounting surface dimensions for pressure-relief valves with main ports of 23,4 mm maximum port diameter (code: ISO 6264 – AS – 08 – 2 – A) are given in Figure 14.

**6.9** Mounting surface dimensions for pressure-relief valves with main ports of 23,4 mm maximum port diameter (code: ISO 6264 – AS – 08 – 2 – B) are given in Figure 16.

**6.10** Mounting surface dimensions for pressure relief valves with main ports of 32 mm maximum port diameter (code: ISO 6264 – AJ – 10 – 2 – B) are given in Figure 18.

**6.11** Mounting surface dimensions for pressure relief valves with main ports of 32 mm maximum port diameter (code: ISO 6264 – AT – 10 – 2 – A) are given in Figure 20.

**6.12** Mounting surface dimensions for pressure-relief valves with main ports of 32 mm maximum port diameter (code: ISO 6264 – AT – 10 – 2 – B) are given in Figure 22.

## 7 Port marking

**7.1** The port symbols for pressure-relief valves shall be selected from the figures specified in **7.2** to **7.13**.

**7.2** Directly-operated pressure-relief valves with main ports of 4 mm maximum port diameter are given in Figure 2 (code: ISO 6264 – AA – 02 – 4 – C).

**7.3** Directly-operated pressure-relief valves with main ports of 7,5 mm maximum port diameter are given in Figure 4 (code: ISO 6264 – AB – 03 – 4 – C).

**7.4** Pilot-operated pressure-relief valves with main ports of 7,5 mm maximum port diameter are given in Figure 5 (code: ISO 6264 – AB – 03 – 4 – C).

**7.5** Pilot-operated pressure-relief valves with main ports of 14,7 mm maximum port diameter are given in Figure 7 (code: ISO 6264 – AG – 06 – 2 – A).

**7.6** Pilot-operated pressure-relief valves with main ports of 14,7 mm maximum port diameter are given in Figure 9 (code: ISO 6264 – AR – 06 – 2 – A).

**7.7** Pilot-operated pressure-relief valves with main ports of 14,7 mm maximum port diameter are given in Figure 11 (code: ISO 6264 – AR – 06 – 2 – B).

**7.8** Pilot-operated pressure-relief valves with main ports of 23,4 mm maximum port diameter are given in Figure 13 (code: ISO 6264 – AH – 08 – 2 – B).

**7.9** Pilot-operated pressure relief valves with main ports of 23,4 mm maximum port diameter are given in Figure 15 (code: ISO 6264 – AS – 08 – 2 – A).

**7.10** Pilot-operated pressure-relief valves with main ports of 23,4 mm maximum port diameter are given in Figure 17 (code: ISO 6264 – AS – 08 – 2 – B).

**7.11** Pilot-operated pressure-relief valves with main ports of 32 mm maximum port diameter are given in Figure 19 (code: ISO 6264 – AJ – 10 – 2 – B).

**7.12** Pilot-operated pressure-relief valves with main ports of 32 mm maximum port diameter are given in Figure 21 (code: ISO 6264 – AT – 10 – 2 – A).

**7.13** Pilot-operated pressure-relief valves with main ports of 32 mm maximum port diameter are given in Figure 23 (code: ISO 6264 – AT – 10 – 2 – B).

## **8 Modular stack valves**

For modular stack valves, mounting surfaces and port marking shown in ISO 4401 shall be used.

## **9 Working pressure**

For indication of the maximum limit of the working pressure, see note 5 on the figures.

## **10 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:

“Mounting surface dimensions conform to ISO 6264, *Hydraulic fluid power — Pressure-relief valves — Mounting surfaces*.”

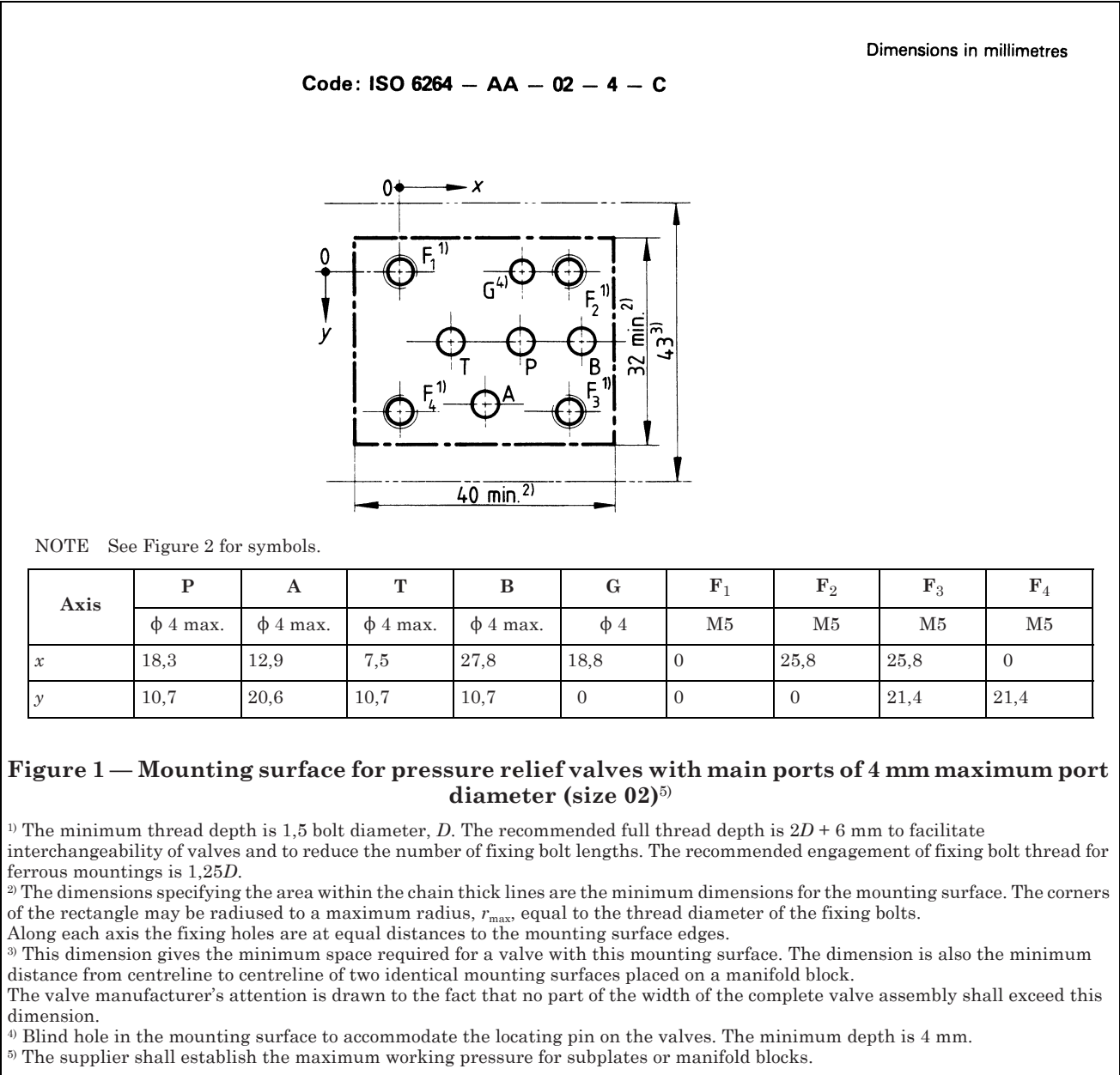
Bibliography

The following documents served as a reference in the preparation of this International Standard and will be helpful when using it:

ISO 129, *Technical drawings — Dimensioning — General principles, definitions, methods of execution and special indications.*

ISO 286, *ISO system of limits and fits.*

ISO 965-1, *ISO general purpose metric screw threads — Tolerances — Part 1: Principles and basic data.*



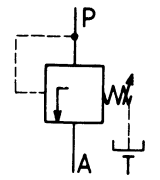
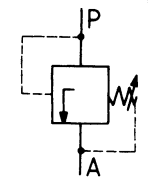
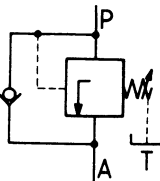
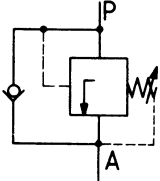
| Description                                     | External drain                                                                    | Internal drain                                                                      |
|-------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Pressure-relief valves                          |  |  |
| Pressure-relief valves with by-pass check valve |  |  |

**Figure 2 — Directly-operated pressure-relief valves with main ports of 4 mm maximum port diameter (code ISO 6264 – AA – 02 – 4 – C)**