BRITISH STANDARD

BS 5153:1974

Incorporating Amendment Nos. 1, 2 and 3

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Specification for

Cast iron check valves for general purposes

UDC 621.646.248:669.13

Co-operating organizations

The Mechanical Engineering Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and professional and industrial organizations:

Associated Offices Technical Committee*
Association of Consulting Engineers
Association of Hydraulic Equipment Manufacturers Ltd.
Association of Mining Electrical and Mechanical Engineers
British Compressed Air Society*
British Electrical and Allied Manufacturers' Association
British Gas Corporation*
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British Internal Combustion Engine Manufacturers' Association
British Mechanical Engineering Confederation
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The organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

Association of Bronze and Brass Founders
British Chemical Engineering Contractors' Association
British Industrial Measuring and Control Apparatus Manufacturers' Association
British Ship Research Association
British Valve Manufacturers' Association Ltd.
CBMPE
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Institution of Civil Engineers
Institution of Municipal Engineers
Institution of Water Engineers
Metropolitan Water Board
National Brassfoundry Association
Oil Companies' Materials Association
Society of British Gas Industries
Water Companies' Association

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Contents

Foreword

BS 5153 replaces BS 4090, first published in 1966. This revision, prepared under the authority of the Mechanical Engineering Industry Standards Committee, is in metric units. It is one of a series of new and revised standards in metric units for general purpose valves which have a new series of consecutive numbers.

There are no International or European Standards in this field but account has been taken of all relevant proposals under consideration in the ISO Technical Committee and CEN[1)] Working Group concerned with general purpose valves.

For flanged valves, the standard is based on the use of flanges complying with the requirements of BS 4504 "Flanges and bolting for pipes, valves and fittings. Metric series" but, by the use of Appendix A, the appropriate modifications can be made when using ANSI Class 125 flanges.

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 12, 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)] European Committee for Standardization.

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Section 1. General

1 Scope

This British Standard specifies requirements for flanged and screwed end cast iron check valves, copper alloy faced, nickel alloy faced, stainless steel faced, resilient seated, or all-iron for general purposes.

It covers swing check valves of nominal pressure (PN) designations of 6 bar[2] to 25 bar and lift check valves of nominal pressure (PN) designations of 10 bar to 25 bar. Flanged end valves are in accordance with the appropriate tables of BS 4504 for nominal sizes (DN) 10 to 1 000 and screwed end valves comply with the requirements of BS 21 for nominal sizes ½ to 6. However, when valves are required for use in ANSI (BS 1560) flanged systems, reference should be made to clause **33** and Appendix A.

Where there is an appropriate application standard or code of practice it is the responsibility of the purchaser to ensure that its requirements are complied with; for example, attention is drawn to BS 806 and BS 759-1.

2 References

The titles of the British Standards and international publications referred to in this standard are listed on the inside back cover.

3 Terminology and definitions

For the purposes of this British Standard the following definitions apply for flanged valves:

face-to-face dimension

the distance between the two planes perpendicular to the valve axis located at the extremities of the body end ports

centre-to-face dimension

the distance between the plane located at the extremity of either body end port and perpendicular to its axis and the other body end port axis

4 Types

Valves shall be of one of the following types:

a) *swing* (not including tilting disk type)

straight pattern (for use with the axis of the body end ports horizontal or vertical):

b) *lift*

1) straight pattern (for use with the axis of the body end ports horizontal);

2) straight pattern (for use with the axis of the body end ports vertical);

3) angle pattern (for use in applications where the axes of the body end ports are at 90°).

When swing check valves are used in vertical lines, the flow shall be in an upward direction.

5 Nominal sizes

5.1 For flanged ends the ranges of nominal sizes (DN) shall be as follows:

a) *Swing* 10, 15, 20, 25, 32, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1 000.

b) *Lift* 10, 15, 20, 25, 32, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450.

5.2 For screwed ends the range of nominal sizes shall be as follows:

$\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $2\frac{1}{2}$, 3, 4, 5, 6[3].

[2] 1 bar = 10^5 N/m^2 = 100 kPa.

[3] This size is included for replacement purposes with BS 21 threads or for use with other thread forms (see **9.2**).

6 Nominal pressure

Valves shall be designated by nominal pressure (PN), defined as the maximum permissible gauge working pressure (bar[4)]) at 20 °C, as follows:

PN 6, PN 10, PN 16, and PN 25.

7 Pressure/temperature ratings

7.1 The valves specified in this standard shall have maximum ratings for liquid, gas and steam as detailed in Table 1.

7.2 Restrictions on temperature may be placed by the manufacturer on valves in accordance with this standard by reason of valve type, trim materials or other factors in which case valves shall be marked with the limiting temperature [see clause **28** b)]. All valves, however, shall be suitable for continuous use at their PN designation within the temperature range of –10 °C to 65 °C.

Table 1 — Pressure/temperature ratings

1	2	3	4	5	6	7
Nominal pressure PN	**For flanged end valves only: BS 4504 table number**	**Maximum permissible gauge working pressures at temperatures (°C) of:**				
		– 10 to 120	**150**	**180**	**200**	**220**
		bar[a]	bar[a]	bar[a]	bar[a]	bar[a]
6	6/11	6	5.6			
10	10/11	10	9.2	8.5	8.0	8.0
16	16/11	16	14.8	13.9	13.0	13.0
25	25/11	25	23.0	21.2	20.0	19.0

NOTE Intermediate values may be obtained by linear interpolation.

[a] 1 bar = 10^5 N/m2 = 10^2 kPa.

Section 2. Body ends

8 Flanged body ends

8.1 Flange dimensions shall comply with the relevant requirements of BS 4504.

8.2 Flanges shall be at right angles to the axis of the bore and concentric with the bore. Flanges shall be drilled unless otherwise specified and bolt holes shall be “off centres”.

8.3 The face-to-face and centre-to-face dimensions shall be as detailed in Table 2.

8.4 The tolerances on the face-to-face and centre-to-face dimensions detailed in Table 2 shall be as follows:

Face-to-face or centre-to-face dimensions			Tolerance
mm			mm
Above	0 up to and including	200	± 1
Above	200 up to and including	400	± 2
Above	400 up to and including	600	± 3
Above	600 up to and including	800	± 4
Above	800 up to and including	1 000	± 5
Above	1 000 up to and including	1 600	± 6
Above	1 600 up to and including	2 250	± 8

[4)] 1 bar = 10^5 = 10^2 kPa.

9 Screwed body ends

Screwed body ends shall have female threads complying with the requirements of BS 21 either taper or parallel at the manufacturer's option unless the particular form is specified in the purchase order.

9.1 End faces of parallel threaded valves shall have a smooth finish at right angles to the thread axis. The minimum outside diameters of sealing faces shall be in accordance with Table 3.

9.2 Other forms of thread may be provided as specified by the purchaser.

9.3 Body ends shall be of appropriate shape to facilitate tightening.

Table 2 — Face-to-face and centre-to-face dimensions

1	2	3	4	5	6	7	8	9	10
Nominal size DN	Face-to-face dimensions of straight pattern valves for nominal pressure of:						Centre-to-face dimensions of angle pattern valves for nominal pressure of:		
	(swing type)			(lift type)			(lift type)		
	PN 6, PN 10, PN 16		PN 25	PN 10, PN 16		PN 25	PN 10, PN 16		PN 25
	short	long		short	long		short	long	
	mm	mm	mm	mm	mm	mm	mm	mm	mm
10	—	130	130	—	130	130	—	85	85
15	—	130	130	—	130	130	—	90	90
20	—	150	150	—	150	150	—	95	95
25	—	160	160	—	160	160	—	100	100
32	—	180	180	—	180	180	—	105	105
40	165	200	200	165	200	200	(82)[a]	115	115
50	203	230	230	203	230	230	(102)[a]	125	125
65	216	290	290	216	290	290	(108)[a]	145	145
80	241	310	310	241	310	310	(121)[a]	155	155
100	292	350	350	292	350	350	146	175	175
125	330	400	400	330	400	400	165	200	200
150	356	480	480	356	480	480	178	225	225
200	495	600	600	495	600	600	248	275	275
250	622	730	730	622	730	730	311	325	325
300	698	850	850	698	850	850	350	375	375
350	787	980	980	787	980	980	394	425	425
400	914	1 100	1 100	914	1 100	1 100	457	475	475
450	965	1 200	1 200	965	1 200	1 200	483	500	500
500	1 067	1 250	1 250	—	—	—	—	—	—
600	1 219	1 450	—	—	—	—	—	—	—
700	—	1 650	—	—	—	—	—	—	—
800	—	1 850	—	—	—	—	—	—	—
900	—	2 050	—	—	—	—	—	—	—
1 000	—	2 250	—	—	—	—	—	—	—

[a] These values for DN 40 to DN 80 are not suitable for use with BS 4504 flanges and are included only for use with ANSI Class 125 flanges which are the subject of Appendix A.

Table 3 — Minimum outside diameters of sealing faces for parallel threaded valves

1	2
Thread nominal size	**Outside diameter of sealing face (min.)**
	mm
$\frac{1}{2}$	26
$\frac{3}{4}$	32
1	39
$1\frac{1}{4}$	49
$1\frac{1}{2}$	55
2	68

NOTE The dimensions given in Table 3 comply with the requirements of ISO 1179.

Section 3. Design and manufacture

10 Bodies

10.1 Body end ports. The body end ports shall be circular. Table 4 gives approximate values, for guidance only, for the bore dimensions at the body end ports of flanged valves.

10.2 Seat bores. Seat bores shall be circular and not less than the dimensions given in Table 4 but any lugs required to facilitate the fitting of seat rings may intrude into the bore. In the case of lift check valves the bore may be reduced by the minimum extent necessary to permit the use of plug type disks, disks guided from below or special proprietary designs.

10.3 Flow way area. The area of the flow way between the body end ports shall be not less than the area of a circle of which the diameter is the bore dimension given in Table 4 except that this area may be reduced by not more than 15 % for PN 10 and PN 16 "short" lift check valves.

Table 4 — Dimensions of body end ports and seat bores

1	2	3	4
Nominal size DN	**Bore dimensions for PN ratings of:**		
	PN 6 and PN 10	**PN 16**	**PN 25**
	mm	mm	mm
10	10	10	10
15	15	15	15
20	20	20	20
25	25	25	25
32	32	32	32
40	40	40	40
50	50	50	50
65	65	65	65
80	80	80	80
100	100	100	100
125	125	125	125
150	150	150	150
200	200	200	200
250	250	250	250
300	300	300	300
350	350	335	335
400	400	385	385
450	450	440	430
500	500	490	485
600	600	590	—
700	700	690	—
800	800	792	—
900	900	891	—
1 000	1 000	989	—

11 Body tappings

Provision shall be made for a body tapping on valves of DN 40 or nominal size $1\frac{1}{2}$ and above. Body tappings, when required, shall be of the following sizes and shall comply with the requirements of BS 21.

Flanged valve (DN)	40 to 100	125 to 300	350 to 1 000
Screwed valve (nominal size)	$1\frac{1}{2}$ to 4	5 and 6	—
Body tapping size	$\frac{1}{2}$	$\frac{3}{4}$	1

12 Body to cover connection

The attachment of the cover to the body shall be adequate to withstand the appropriate test pressures, service conditions and the mechanical loads encountered in operation. Valves larger than DN 40 or nominal size $1\frac{1}{2}$ shall have bolted connections.

13 Bolting

Bolting threads shall be in accordance with ISO metric or Unified inch standards. The dimensions and finish of bolting shall comply with the requirements of the following British Standards as may be appropriate:

Metric: BS 3692, BS 4190, BS 4439, BS 4882

Inch: BS 1768 (below $\frac{1}{2}$ in), BS 1769, BS 2693-1, BS 4882

NOTE Bolting with other head forms otherwise complying with the requirements of the specified standards is not precluded.

14 Seats

Body seat rings shall be so fitted as to avoid their becoming loose in service. Threaded seat rings shall be designed to facilitate removal.

15 Disks and hinge assemblies

15.1 Swing check. The disk shall have a flat seating face. When attached to the valve by a separate hinge means shall be provided to prevent the disk and hinge pin and retainers, if provided, becoming detached in service.

NOTE See **7.2** and clause **28** b) regarding any temperature limitations.

15.2 Lift check. Disk faces may be flat, mitre, ball/cone, plug or of a proprietary design at the manufacturer's option unless a particular form is specified.

Disks shall be guided from below and/or above the body seat. The top guide, where used, may form a dashpot.

15.3 Valve integrity. Any part of the valve which can become detached in service, such as hinge pin and disk, hinge pin plugs, hinge pin stuffing boxes and two piece disks, shall be locked.

Section 4. Materials

16 Choice of materials

This standard is based on materials specified in Table 5. Unless otherwise agreed, the manufacturer has the option of selecting materials listed in Table 5 or using other materials, providing they are at least as suitable in all relevant respects.

17 Trim

Where valves are required with a particular trim, this shall be specified by the purchaser and, in this case, the materials used shall be subject to agreement between the manufacturer and the purchaser.

Table 5 — Basic materials

1 and 14		2	3	4	5	6	7
Component		**Copper alloy faced**			**Nickel alloy faced or stainless steel faced**		
		Material	**BS**	**Grade or designation**	**Material**	**BS**	**Grade or designation**
Body and cover		Cast iron	1452	220 180[b]	Cast iron	1452	220 180[b]
Hinge		Cast iron	1452	220 180[b]	Cast iron	1452	220 180[b]
		Bronze	1400	G1 LG2 LG4	Bronze	1400	G1 LG2 LG4
Hinge pin Hinge pin retainer Disk guide pin		Brass	2872 2874	CZ114 CZ116	Brass	2872	CZ114 CZ116
		Aluminium bronze	2872 2874	CA104 CA107	Aluminium bronze	2872 2874	CA104 CA107
		Gunmetal	1400	LG2 LG4 G1	Gunmetal	1400	LG2 LG4 G1
		Stainless steel	970-1	410S21 302S31 420S29 431S29	Stainless steel	970-1	410S21 302S31 420S29 431S29
Hinge to disk connection		Brass Aluminium bronze Gunmetal Stainless steel Not inferior to hinge pin material			Brass Aluminium bronze Gunmetal Stainless steel Not inferior to hinge pin material		
Disk	With integral face	Gunmetal	1400	LG2 LG4 G1	Nickel alloy Stainless steel Manufacturer's standard		
		Aluminium bronze	1400	AB2			
	With separate facing ring	Cast iron	1452 2789	220 180[b] 350/22, 400/18, 420/12, 500/7, 600/3	Cast iron	1452 2789	220 180[b] 350/22, 400/18, 420/12, 500/7, 600/3
Disk facing ring		Gunmetal	1400	LG2 LG4 G1	Nickel alloy Stainless steel Manufacturer's standard		
		Aluminium bronze	1400	AB2			
Body seat		Gunmetal	1400	LG2 LG4 G1	Nickel alloy Stainless steel Manufacturer's standard		
		Aluminium bronze	1400	AB2			
Bolting		Carbon steel; Tensile strength 390 N/mm^2 (= MPa)[a]			Carbon steel; Tensile strength 390 N/mm^2 (= MPa)[a]		
Seals and gaskets when fitted		Manufacturer's standard; suitable for duty			Manufacturer's standard; suitable for duty		

Table 5 — Basic materials

8	9	10	11	12	13	14 and 1	
Resilient seated			**All iron**			**Component**	
Material	**BS**	**Grade or designation**	**Material**	**BS**	**Grade or designation**		
Cast iron	1452	220 180[b]	Cast iron	1452	220 180[b]	Body and cover	
same as copper alloy faced or all iron			Cast iron	1452	220 180[b]	Hinge	
same as copper alloy faced or all iron			Carbon steel	970-1	220M07	Hinge pin Hinge pin retainer Disk guide pin	
			Stainless steel	970-1	410S21 302S31 420S29 431S29		
same as copper alloy faced or all iron			Carbon steel	970-1	220M07	Hinge to disk connection	
			Cast iron	1452	220 180[b]	Disk	With integral face
Cast iron	1452 2789	220 180[b] 350/22 400/18 420/12 500/7 600/3				Disk	With separate facing ring
Resilient material						Disk facing ring	
Same as copper alloy faced or all iron			If separate, not inferior to body material			Body seat	
Carbon steel; Tensile strength 390 N/mm^2 (= MPa)[a]			Carbon steel; Tensile strength 390 N/mm^2 (= MPa)[a]			Bolting	
Manufacturer's standard; suitable for duty			Manufacturer's standard; suitable for duty			Seals and gaskets when fitted	

[a] Free cutting steel shall not be used. If different bolting is fitted because of design or performance requirements it shall be readily identifiable.
[b] Grade 180 cast iron for this application is permitted as an alternative to grade 220 only where the section thickness at any point does not exceed 15 mm.

Section 5. Testing and inspection

18 Production pressure testing

18.1 General. All valves shall be hydrostatically pressure tested by the manufacturer before despatch in accordance with BS 6755-1. The pressure test durations shall be as given in Table 4 of BS 6755-1:1986.

NOTE The back seat test does not apply.

18.2 Leakage rates. The maximum permissible seat test leakage rates, as defined in Table 1 of BS 6755-1:1986 shall be:

a) Rate B for metal seated valves;

b) Rate A for resilient seated valves;

NOTE If specified by the purchaser on his enquiry and/or order, metal seated valves having leakage rate A may be supplied.

19 Test certificate

When specified by the purchaser, the manufacturer shall issue a test certificate confirming that the valves have been tested in accordance with this standard, and stating the actual pressures and medium used in the test.

20 inspection

If inspection is required, this shall be stated in the enquiry and order. The purchaser or his authorized representative shall have access to the manufacturer's works at all reasonable times to inspect the assembled valves to his order.

21 Witnessing of tests

When the purchaser desires to witness the tests the manufacturer shall notify him to enable his inspector to be present.

22 Certificate of conformity

The manufacturer shall, when so stated in the order, supply a certificate stating that the valves and valve parts comply in all respects with the requirements of this standard and the order.

Section 6. Preparation for despatch

23 After testing

Each valve shall be drained, cleaned, prepared and suitably protected (painting of finished valves shall be at the option of the manufacturer unless specified by the purchaser) for despatch in such a way as to minimize the possibility of damage and deterioration during transit and storage.

24 Disk position

The disk shall be secured for transit to prevent hammering on the body seat or body stop.

25 Body ends

When specified, body ends shall be suitably sealed to exclude foreign matter during transit and storage.

Section 7. Marking

26 General

Each valve shall be clearly marked with the body and identification plate markings specified in clauses **27** to **29** (except as provided for in clauses **28** a) and **32**).

27 Body markings

Body markings shall be integral with the body or on a plate securely fixed to the body. If on a plate, this shall be separate and distinct from the identification plate referred to in clause **28**. Body markings shall be as follows:

a) Nominal size, DN (see **5.1**) or nominal size (see **5.2**).

b) Nominal pressure rating (PN..).

c) Body material designation (e.g. "CI") (see clause **30**).

d) Manufacturer's name or trademark.

e) Arrow to indicate direction of flow.

28 Identification plate markings

Identification plate markings shall be as follows:

a) Trim materials identification (see clause **30**). Not mandatory for copper alloy faced valves (except where the trim is aluminium bronze).

Trim marking shall indicate trim in the following order:

HINGE PIN[5)] DISK SEAT

Symbols indicating trim material may either be preceded by the words "hinge pin" [5)], "disk" or "seat" or used in the order indicated above.

b) Any limiting temperature (°C) when the valve is not suitable for the range of temperatures given in Table 1 (see **7.2**).

29 Body or identification plate markings

Body or identification plate markings shall be as follows:

a) The number of this British Standard, i.e. BS 5153.

b) The reference for body end threads when these do not comply with the requirements of BS 21 (see **9.2**).

30 Material symbols

Where appropriate the following symbols shall be used for body material designation [clause **27** c)], trim material identification [clause **28** a)] and identification of the type of seat.

Cast iron,	grey	CI	Carbon steel	CS or STEEL
	malleable	MI	13 % chromium steel	CR13
	spheroidal graphite	SG	Other stainless steel	SS
Gunmetal		GM		
Brass		BR		
Aluminium bronze		AB	Integral seat	INT
Nickel alloy		NA	Resilient seat	RES

The symbol for the identification of the type of seat shall be marked immediately after the appropriate body material designation [clause **27** c)] or seat or disk material identification [clause **28** a)].

31 Additional markings

Additional markings may be used at the option of the manufacturer providing they do not conflict with any of the specified markings.

[5)] For swing type check valves.

32 Omission of markings

On valves smaller than DN 50 or nominal size 2 the following body markings may be omitted provided they are shown on the identification plate:

Body material designation.

Nominal size, DN (see **5.1**) or nominal size (see **5.2**).

Section 8. Valves for use in ANSI flanged piping systems

33 Requirements

The requirements for valves to be used in ANSI flanged piping systems are specified in Appendix A.

Section 9. Enquiry or order information

34 Information to be supplied

The following information should be supplied by the purchaser in an enquiry or order.

a) Nominal size, DN (see **5.1**) or nominal size (see **5.2** or **4.2**).

b) Nominal pressure (PN) designation (see clause **6**) or ANSI Class 125 rating (see **A.2**).

c) Type of valve

1) Swing (straight or angle) or lift (straight or angle) for horizontal or vertical use [see clause **4** a) and b)].

2) Copper alloy faced, nickel alloy faced, stainless steel faced, resilient seated, or all iron (see clause **1** and Table 5).

d) The body ends required

1) If flanged, state whether in accordance with BS 4504 or in accordance with ANSI Class 125 (see **8.1** or Appendix A) and if flanges are to be undrilled (see **8.2**).

2) If screwed, state whether a specific thread form (parallel or taper) is required (see clause **9**) and, if other than in accordance with BS 21, the type required (see **9.2**).

e) If possible the specific purpose for which the valve is required and any preference for materials (see clauses **16** and **17**).

f) State if any of the following is required:

1) a body tapping and, if plug is required, its material (see clause **11**);

2) test certificate (see clause **19**):

3) inspection or witnessing of tests or certificate of conformity (see clauses **20**, **21** and **22**);

4) body ends sealed for despatch (see clause **25**).

Appendix A Cast iron check valves for general purposes with ANSI Class 125 flanges

When valves in accordance with this standard are required for use in ANSI (BS 1560) flanged piping systems, all the requirements for valves of nominal pressure PN 16 in accordance with this standard apply, with the following qualifications.

A.1 Nominal sizes. The range of nominal sizes is listed in Table 7.

A.2 Pressure classification. Valves complying with the requirements of this appendix shall be designated Class 125 valves. The numerals in the class designation represent the primary service pressure rating of the valve in pounds-force per square inch.

A.3 Face-to-face and centre-to-face dimensions. Valves with ANSI Class 125 flanges shall conform to the "short" series of face-to-face and centre-to-face dimensions for PN 10/16 valves given in Table 2.

A.4 Flange dimensions. The dimensions of ANSI Class 125 flanges for these valves shall be in accordance with Table 7.

A.5 Flange thickness tolerance. The tolerance on flange thickness in Table 7 shall be:

a) up to and including 32 mm thick $^{+\ 3.0}_{-\ 0}$ mm;

b) over 32 mm thick $^{+\ 4.5}_{-\ 0}$ mm.

A.6 Pressure/temperature ratings. The pressure/temperature ratings of valves with ANSI Class 125 flanges shall be as given in Table 8 (see also **7.2**).

A.7 Testing and inspection. Valves with ANSI Class 125 flanges shall be tested and inspected in accordance with section 5 of this standard except that the test pressures given in Table 9 shall apply:

Table 7 — Dimensions of ANSI Class 125 flanges[a]

1	2	3	4	5	6	7	8
Nominal size of valve		**Diameter of flange**	**Minimum thickness of flange**	**Diameter of bolt circle**	**Number of bolts**	**Diameter of bolt holes**	
DN	in	mm	mm	mm		mm	in
40	$1\frac{1}{2}$	127	14.3	98.4	4	15.9	$\frac{5}{8}$
50	2	152	15.9	120.6	4	19.0	$\frac{3}{4}$
(65)[b]	$(2\frac{1}{2})$[b]	178	17.5	139.7	4	19.0	$\frac{3}{4}$
80	3	190	19.0	152.4	4	19.0	$\frac{3}{4}$
100	4	229	23.8	190.5	8	19.0	$\frac{3}{4}$
150	6	279	25.4	241.3	8	22.2	$\frac{7}{8}$
200	8	343	28.6	298.4	8	22.2	$\frac{7}{8}$
250	10	406	30.2	362.0	12	25.4	1
300	12	483	31.8	413.8	12	25.4	1
350	14	533	34.9	476.2	12	28.6	$1\frac{1}{8}$
400	16	597	36.5	539.8	16	28.6	$1\frac{1}{8}$
450	18	635	39.7	577.8	16	31.8	$1\frac{1}{4}$
500	20	698	42.9	635.0	20	31.8	$1\frac{1}{4}$
600	24	813	47.6	749.3	20	34.9	$1\frac{3}{8}$

[a] Source of data: ANSI B 16.1.

[b] This size has been retained only for the purpose of replacing existing valves. Its use for new construction in piping systems using BS 1560-2 flanges should be avoided.

A.8 Marking. Valves with ANSI Class 125 flanges shall be marked in accordance with section 7 of this standard except that the valves shall be marked "Class 125"[6] and with the nominal diameter in inches. These markings may be in place of, or additional to, those required in clause **27**, at the manufacturer's option.

Table 8 — Pressure/temperature ratings[a] for Class 125 valves

1	2	3
Temperature	**Maximum permissible gauge working pressure for nominal size up to and including**	
	DN 300 (1½ to 12)	**DN 350 to DN 600 (14 to 24)**
C	bar[b]	bar[b]
– 10 to 66	13.8	10.3
93	13.1	9.3
107	12.4	9.0
121	12.1	8.6
135	11.7	8.3
149	11.4	7.6
163	10.7	7.2
177	10.3	6.9
19l	10.0	—
204	9.7	—
218	9.0	—

NOTE Intermediate values may be obtained by linear interpolation.

[a] Source of data: BS 5150 and MSS SP 71. "Cast iron swing check valves—flanged and threaded ends", published by Manufacturers' Standardization Society for the Valve and Fittings Industry, 1815 North Fort Myer Drive, Arlington, VA 22209, USA.

[b] 1 bar = 10^5 N/m^2 = 10^2 kPa.

Table 9 — Test pressure (gauge) for Class 125 valves

1	2	3
Nominal size	**Gauge test pressure for:**	
	body	**seat**
Up to and including	bar[a]	bar[a]
DN 300 or 12 in	24.1	13.8
DN 350 or 14 in and above	18.3	10.3

[a] 1 bar = 10^5 N/m^2 = 10^2 kPa.

[6] Where, due to the small size of the valve, it is impracticable to incorporate the word "Class" this may be omitted.

Publications referred to

This standard makes reference to the following British Standards and international publications:

BS 21, *Specification for pipe threads for tubes and fittings where pressure-tight joints are made on the threads (metric dimensions).*

BS 759, *Valves, gauges and other safety fittings for application to boilers and to piping installations for and in connection with boilers.*

BS 759-1, *Specification for valves, mounting and fittings.*

BS 806, *Specification for design and construction of ferrous piping installations for and in connection with land boilers.*

BS 970, *Specification for Wrought steels for mechanical and allied engineering purposes.*

BS 970-1, *General inspection and testing procedures and specific requirements for carbon, carbon manganese and stainless steels.*

BS 1400, *Specification for copper alloy ingots and copper alloy and high conductivity copper castings.*

BS 1452, *Grey iron castings.*

BS 1560, *Steel pipe flanges and flanged fitting. (nominal size ½ in to 24 in) for the petroleum industry.*

BS 1560-2, *Metric dimensions.*

BS 1768, *Unified precision hexagon bolts, screws and nuts (UNC and UNF threads). Normal series.*

BS 1769, *Unified black hexagon bolts, screws and nuts (UNC and UNF threads). Heavy series.*

BS 2693, *Screwed studs.*

BS 2693-1, *General purpose studs.*

BS 2789, *Specification for spheroidal graphite or nodular cast iron.*

BS 2872, *Copper and copper alloys. Forging stock and forgings.*

BS 2874, *Copper and copper alloys. Rods and sections (other than forging stock).*

BS 3692, *ISO metric precision hexagon bolts, screws and nuts.*

BS 4190, *ISO metric black hexagon bolts, screws and nuts.*

BS 4439, *Screwed studs for general purposes.*

BS 4504, *Flanges and bolting for pipes, valves and fittings. Metric series.*

BS 4882, *Bolting for flanges and pressure containing purposes.*

BS 6755, *Testing of valves.*

BS 6755-1, *Specification for production pressure testing requirements.*

ISO 1179, *Pipe connections for plain end steel and other metal tubes in industrial applications.*

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