BS 2080 : 1989

UDC 621.646-181.1

British Standard Specification for

Face-to-face, centre-to-face, end-to-end and centre-to-end dimensions of valves

Dimensions face-à-face, face à axe, entre extrémités et axe à extrémité des appareils de robinetterie — Spécifications

Baulängen von Armaturen

Foreword

This revision of this British Standard has been prepared under the direction of the Piping Systems Components Standards Policy Committee and supersedes BS 2080 : 1974 which is withdrawn.

The main differences between this British Standard and BS 2080 : 1974 are as follows.

(a) Dimensions of steel valves used for general purposes are included for the first time in addition to dimensions for steel valves for use in the petroleum, petrochemical and allied industries.

(b) Dimensions of cast iron and copper alloy valves for general purposes are included for the first time.

(c) The general format is based on that given in ISO 5752 published by the International Organization for Standardization (ISO). Table 1 indicates where each series of valve dimensions is equivalent to an ISO 5752 basic series and also gives the origin of the series.

Although not included in ISO 5752, this British Standard has retained face-to-face and centre-to-face dimensions of valves with ring-joint flanges in accordance with BS 1560 : Section 3.1. It has also retained end-to-end and centre-to-end dimensions for butt-weld end valves and the rules for establishing face-to-face and centre-to-face dimensions of valves with flanges in accordance with BS 1560 : Section 3.1 but with facings other than 1.6 mm or 6.4 mm raised face or ring joint.

Basic series numbers 51 to 65 in table 1 are the additional series needed to cover butt-weld end valves and those flanged valves detailed in British Standard valve product standards but which are not included in ISO 5752.

Series 15 and 17 detailed in ISO 5752 are not included in this British Standard because they are not in common use in the UK or included in any British valve product standard.

Dimensions given in table 1 but which are not in agreement with ISO 5752 or are not included in ISO 5752 are shown in bold type.

(d) Dimensions for Class 400 valves have been omitted as this rating is no longer in common use.

This British Standard applies when specified by any one of the following valve product standards:

BS 1414	BS 5153	BS 5159
BS 1868	BS 5154	BS 5160
BS 1873	BS 5155	BS 5163
BS 5150	BS 5156	BS 5351
BS 5151	BS 5157	BS 5352
BS 5152	BS 5158	BS 5353

In certain valve product standards 'short' and 'long' series of valves are listed but reference to these terms has been omitted in this British Standard. When the valve product standards are revised the terms 'short' and 'long' will be omitted and instead reference will be made to the 'basic series' given in this standard.

Although this British Standard is intended for use in conjunction with the appropriate valve product standard, it may be used for specifying face-to-face, centre-to-face, end-to-end and centre-to-end dimensions of valves not covered by product standards.

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

STANDARDS

Amendment No. 1
published and effective from 15 May 1995
to BS 2080 : 1989

Specification for face-to-face, centre-to-face, end-to-end and centre-to-end dimensions of valves

Obsolescence

Foreword

Delete the first paragraph and insert the following.

'This British Standard has been reviewed under the direction of the Engineering Sector Board and should be regarded as obsolescent. Its use for new flanged valve designs is not therefore recommended, as it has been partly superseded by BS EN 558 : Part 1 : 1994 (PN designated) and BS EN 558 : Part 2 : 1994 (Class designated).

This standard will be withdrawn in due course on the publication of a European Standard for end-to-end dimensions for weld end valves.'

In paragraph 2, delete lines 1 and 2 and insert the following.

'The main differences between this British Standard and BS 2080 : 1974, which has been withdrawn, are as follows.'

AMD 8434/May 1995

Contents

Specification

1 Scope

This British Standard specifies the basic series of face-to-face, centre-to-face, end-to-end and centre-to-end dimensions for flanged and butt-weld end valves in steel, cast iron and copper alloy. The ranges of nominal size covered are ½ in to 42 in for Class designated valves in the range Class 125 to Class 2500 and DN 10 to DN 2000 in the range of nominal pressures PN 6 to PN 40.

NOTE 1. The full ranges of size and pressure are not applicable to all types of valve (see tables 2 to 24).

NOTE 2. PN 40 is a 'non preferred' nominal pressure and should be avoided for 'new design' valves.

NOTE 3. The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this British Standard the following definitions apply.

2.1 nominal size (DN). A numerical designation of size which is common to all components in a piping system other than components designated by outside diameters or by thread size.

It is a convenient round number for reference purposes and is only loosely related to manufacturing dimensions.

NOTE 1. Nominal size is designated by the letters DN followed by the appropriate reference number.

NOTE 2. This definition is identical to that given in ISO 6708.

2.2 nominal pressure (PN). A numerical designation which is a convenient round number for reference purposes.

All equipment of the same nominal size (DN) designated by the same PN number shall have compatible mating dimensions.

NOTE 1. The maximum allowable working pressure depends on materials, design and working temperatures, and should be selected from the tables of pressure/temperature ratings given in the appropriate standards.

NOTE 2. Nominal pressure is designated by the letters PN followed by the appropriate reference number.

NOTE 3. This definition is identical to that given in ISO 7268.

2.3 face-to-face dimension (for straight pattern flanged end valves). The distance, expressed in millimetres, between the two planes perpendicular to the valve axis located at the extremities of the body end ports or as may be specified in the relevant valve product standard.

For butterfly valves, the distance between the extremities of the valve in the installed condition.

2.4 centre-to-face dimension (for angle pattern flanged end valves). The distance, expressed in millimetres, between the plane located at the extremity of either body end port and perpendicular to its axis and the axis of the other body end port.

2.5 end-to-end dimension (for straight pattern butt-weld end valves). The distance, expressed in millimetres, between the extremities of the body end ports.

2.6 centre-to-end dimension (for angle pattern butt-weld end valves). The distance, expressed in millimetres, between the intersection of the axes of the two branches and the extremities of the body end ports.

3 Dimensions

The basic series of face-to-face, centre-to-face, end-to-end and centre-to-end dimensions, expressed in millimetres, shall be as given in table 1.

NOTE 1. Each series of dimensions in table 1 lists the full range of sizes covered in the original national standard for that series. Individual valve product standards may not call up every size from the original series and this is reflected in tables 2 to 24. Any dimensions listed in tables 2 to 24 which are not in accordance with table 1 are indicated by notes in the relevant table.

NOTE 2. Dimensions of valves having flanges in accordance with BS 1560 : Section 3.1 with ring-joint facings have been derived from the basic series given in table 1. To assist in the identification of those derived series they are designated in tables 3, 6, 9, 12, 15, 20 and 23 by the basic series number and the suffix letter R.

NOTE 3. To avoid the proliferation of new series of dimensions it is recommended that the dimensions for a range of valves are selected where possible from one series only and not from more than one series. Due consideration should also be given to the original national standard of the series in respect to the intended usage of the dimensions selected.

Valves shall have face-to-face, centre-to-face, end-to-end and centre-to-end dimensions given in tables 2 to 24, as appropriate, for the following types of body end connections.

(a) *Flanged, flat face or raised face*

NOTE 1. These are designated by face-to-face or centre-to-face dimensions and have the reference letters *A* or *E* respectively in tables 2, 5, 8, 11, 14, 17, 18, 19 and 22 and figure 1.

NOTE 2. Raised face is the regular flange facing for valves having flanges in accordance with the following:

BS 1560 : Section 3.1, Classes 150 to 2500 in steel

BS 1560 : Section 3.2, Class 250 in grey and ductile cast iron and Classes 150 and 300 in ductile cast iron

BS 4504 : Section 3.1, PN 6 to PN 40 in steel

BS 4504 : Section 3.2, PN 6 to PN 40 in grey cast iron and ductile cast iron.

Reference should be made to the relevant flange standard for the actual height of the raised face.

NOTE 3. Flat face is the regular flange facing for valves having flanges in accordance with the following:

BS 1560 : Section 3.2, Class 125 in grey and malleable cast iron

BS 1560 : Section 3.3, Classes 150 and 300 in copper alloy

BS 4504 : Section 3.2, PN 6 to PN 40 in malleable cast iron

BS 4504 : Section 3.3, PN 6 to PN 40 in copper alloy.

(b) *Flanged, ring-joint facing*

NOTE 1. Valves having steel flanges in accordance with BS 1560 : Section 3.1 with ring-joint facings are designated by face-to-face or centre-to-face dimensions and have the reference letters *B* and *F* respectively in tables 3, 6, 9, 12, 15, 20 and 23 and figure 2.

NOTE 2. The face-to-face dimension of valves with ring-joint facings, not included in tables 3, 6, 9, 12, 15, 20 and 23, is established by adding to the face-to-face dimension (dimension *A*) for the valves with raised face flanges the distance *X* given in table 25 (see appendix A). For angle

pattern valves the centre-to-face dimension is established by adding $X/2$ to the respective centre-to-face dimension (dimension B). Dimensions established by this method may be rounded to the nearest whole millimetre.

(c) *Flanged, other facings*

For valves having Classes 150 to 2500 flanges in accordance with BS 1560 : Section 3.1 with large or small male and female faces and large or small tongue and groove faces, the face-to-face or centre-to-face dimensions relative to dimensions A and E respectively shall be as indicated in figure 2.

NOTE. The face-to-face and centre-to-face dimensions of valves having flanges in accordance with BS 4504 : Section 3.1 but with other than raised or flat faces have not been established in this standard. It is recommended that the manufacturer is consulted for this information.

(d) *Butt-weld ends*

NOTE. These are designated by end-to-end or centre-to-end dimensions and have the reference letters D or G respectively in tables 4, 7, 10, 13, 16, 21 and 24 and figure 1.

(e) *Lined valves*

For valves other than butterfly type provided with resilient lining which extends over the pipe end flanges, the face-to-face dimension given in tables 2, 5, 11, 18, 19 and 22 shall be increased by the total thickness of the linings on the two flanges in the installed conditions.

For angle pattern valves, the thickness of the lining on one flange only shall be added to the centre-to-face dimension given in tables 8 and 14.

4 Tolerances

Unless specified otherwise in the individual valve product standard, the allowable tolerances for face-to-face, centre-to-face, end-to-end and centre-to-end dimensions given in tables 2 to 24 inclusive shall be as follows.

(a) **Face-to-face (dimension A) and end-to-end (dimension D)**

Valves sizes	*Tolerance*
10 in or DN 250 and smaller	± 2.0 mm
12 in or DN 300 and larger	± 3.5 mm

(b) **Centre-to-face (dimension B) and centre-to-end (dimension E)**

Valve sizes	*Tolerance*
10 in or DN 250 and smaller	± 1.0 mm
12 in or DN 300 and larger	± 2.0 mm

5 Flange, flange facing and butt-weld end dimensions

NOTE. For the dimensions of flanges and flange facings, reference should be made to BS 1560 : Sections 3.1, 3.2 or 3.3, BS 4504 : Sections 3.1, 3.2 or 3.3, BS 3293 or API Standard 605 as appropriate to the material, nominal size and rating. For the dimensions of butt-weld ends, reference should be made to the individual valve product standard.

Table 1. Face-to-face, centre-to-face, end-to-end and centre-to-end dimensions* (basic series)

Nominal size		ISO 5752 basic series																			
		1	2	3	4	5	7	8	9	10	11	12	13	14	16	18	19	20	21	24	25
		ISO 5752 basic series																			
		DIN 3202 : Part 1 : F1	DIN 3202 : Part 1 : F2	ANSI B16.10	ANSI B16.10	ANSI B16.10	BS 5156	DIN 3202 : Part 1 : F32	DIN 3202 : Part 1 : F33	ANSI B16.10	ANSI B16.10	ANSI B16.10 BS 5353	BS 5155	DIN 3202 : Part 1 : F4	API 609 BS 5155	BS 5154	ANSI B16.10	API 609 BS 5155	ANSI B16.10	ANSI B16.10	MSS SP 67
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
10		130	210	102			108	85	105			130				80					
15	½	130	210	108	140	165	108	90	105	108	57	130				80	140		152	83	
20	¾	150	230	117	152	190	117	95	115	117	64	130				90	152		178	95	
25	1	160	230	127	165	216	127	100	115	127	70	140				100	165		**203**/216†	108	
32	1¼	180	260	140	178	229	146	105	130	140	76	165				110	178		**216**/229†	114	
40	1½	200	260	165	190	241	159	115	130	165	**83**	165	106	140	33	120	190	33	**229**/241†	121	
50	2	230	300	178	216	292	190	125	150	203	102	203	108	150	43	135	216	43	267	146	
65	2½	290	340	190	241	330	216	145	170	216	108	222	112	170	46	165	241	46	292	165	
80	3	310	380	203	283	356	254	155	190	241	121	241	114	180	64	185	283	46	318	178	49
100	4	350	430	229	305	432	305	175	215	292	146	305	127	190	64	**229**	305	52	356	216	56
125	5	400	500	254	381	508	356	200	250	330†/**356**	**165**/178	356	140	200	70		381	56	400	254	64
150	6	480	550	267	403	559	406	225	275	356†/**406**	**178**/203	394	140	210	76		403	56	444	279	70
200	8	600	650	292	419/502‡	660	521	275	325	495	248	457	152	230	89		419	60	533†/**559**	330	71
250	10	730	775	330	457/568‡	787	635	325		622	311	533	165	250	114		457	68	622	394	76
300	12	850	900	356	502/648‡	838	749	375		698	**349**	610	178	270	114		502	78	711	419	83
350	14	980	1025	381	762	889		425		787	394	686	190	290	127		572	78	838		92
400	16	1100	1150	406	838	991		475		864†/914	457	762	216	310	140		610	102	864		102
450	18	1200	1275	432	914	1092		500		978†/**965**	483	864	222	330	152		660	114	978		114
500	20	1250	1400	457	991	1194				978†/**1067**		914	229	350	152		711	127	1016		127
	22			483	1092	1295				1067		1016			170		749	154	1118		
600	24	1450	1650	508	1143	1397				1295†/1219		1067	267	390	178		787	154	1346		154
	26			559	1245	1448				1295					210			165	1346		
700	28	1650		610	**1346**					1448			292	430	229			165	1499		
750	30	1750		610	1397	1651				1524					230			190	1594		
800	32	1850		660		1778							318	470	241			190			
900	36	2050		711	**1727**	2083				1956			330	510	241			203	2083		
1000	42	2250		**813**	**1981**								410	550	300			216			
1200													470	630	350			254			
1400													530	710	390						
1600													600	790	440						
1800													670	870	490						
2000													760	950	540						

*Dimensions not given in ISO 5752 or which are different from those given in ISO 5752 are shown in bold type.
†Swing check valves only.
‡Full bore ball valves only.

Used for																					
	Face-to-face	Flanged end valves	√	√	√	√	√	√			√		√	√	√	√	√	√	√		√
	Centre-to-face								√	√		√								√	
	End-to-end	Butt-weld end valves				√	√				√								√		
	Centre-to-end											√								√	

Table 1 *(concluded)*

Nominal size		BS 2080 basic series														
		51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
		Origin of basic series														
		ANSI B16.10	ANSI B16.10	ANSI B16.10	ANSI B16.10	ANSI B16.10	ANSI B16.10	ANSI B16.10	ANSI B16.10 ISO 7121	ANSI B16.10	ANSI B16.10	ANSI B16.10	ANSI B16.10	BS 5154	BS 5154	BS 5155
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
10														65	70	
15	½	108		216++	264¶	140				76		108	132	65	70	
20	¾	117	229**	229++	273¶	152				89	114	114	137	70	75	
25	1	127	254¶	254¶	308¶	165				102	127	127	154	80	85	
32	1¼	140	279¶	279¶	349¶	184				108	140	140	175	90	95	
40	1½	165	305¶	305¶	384¶	203	152		190	114	152	152	192	95	100	
50	2	216	368	368	451	229	178	267	216	133	184	184	225	105	115	
65	2½	241	419	419	508	279	216	305	273	146	210	210	254	115	125	
80	3	283	381	470	578	318	254	330	310	159	190	235	289	125	135	49
100	4	305	457	546	673	368	305	356	350	178	229	273	337			56
125	5	381	559	673	794		381			200	279	337	397			64
150	6	403	610	705	914	470	457	457	457	222	305	352	457			70
200	8	419	737	832	1022	597	584	521	521	279	368	416	511			71
250	10	457	838	991	1270	673	711	559	559	311	419	495	635			76
300	12	502	965	1130	1422	775	813	635	635	356	483	565	711			83
350	14	572	1029	1257§			889	762	762		514	629				127
400	16	610	1130‖	1384‖			991	838	838		660					140
450	18	660	1219‖	1537‖			1092	914			737					160
500	20	711	1321‖	1664‖			1194	991			825					170
	22	762														
600	24	813	1549‖	1943‖			1397	1143			991					200
	26	902§														
700	28	991§														
750	30	991§														
800																
900	36	1219§														
1000	42	1397§														
1200																

§ Dimensions are not in ANSI B16.10.
‖ Gate and swing check valves only.
¶ Not used for double disk and conduit gate valves.
** Globe and check valves only.
++ Globe, check and plug valves only.

Used for																	
	Face-to-face	Flanged end valves		√	√	√	√	√									√
	Centre-to-face										√	√	√	√	√	√	
	End-to-end	Butt-weld end valves	√	√	√	√	√	√	√	√							
	Centre-to-end										√	√	√	√			

Table 2. Gate valves, flanged ends, raised or flat facings

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		18	19	20	21		22	23	24	25	26
Nominal size		PN 6	PN 10/16 Class 125/150								PN 25/40 Class 250/300									Class 600				Class 900	Class 1500		Class 2500
		Face-to-face dimension *A* (see figure 1)																									
		BS 5150 (see Note)	BS 1414	BS 5150	BS 5151	BS 5154		BS 5157	BS 5163	BS 5352	BS 1414	BS 5150	BS 5151	BS 5154		BS 5157		BS 5163	BS 5352	BS 1414	BS 5157		BS 5352	BS 1414	BS 1414	BS 5352	BS 1414
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
10				102		80	108							80	108												
15	½			108		80	108			108		140		80	108				140				165			216	
20	¾			117		90	117			117		152		90	117				152				190			229	
25	1		127	127		100	127			127	165	165		100	127				165	216			216		254	254	308
32	1¼		140	140		110	146			140	178	178		110	146				178	229			229		279	279	349
40	1½	140	165	165	165	120	159	165		165	190	190	190	120	159	190	190		190	241	152	241	241		305	305	384
50	2	150	178	178	178	135	190	178	178	178	216	216	216	135	190	216	216	216	216	292	178	292	292		368	368	451
65	2½	170	190	190	190	165	216	190	190		241	241	241	165	216	241	241	241		330	216	330			419		508
80	3	180	203	203	203	185	254	203	203		283	283	283	185	254	283	283	283		356	254	356		381	470		578
100	4	190	229	229	229	229	305	229	229		305	305	305	229	305	305	305	305		432	305	432		457	546		673
125	5	200		254	254			254	254			381	381			381	381	381			381	508					
150	6	210	267	267	267			267	267		403	403	403			403	403	403		559	457	559		610	705		914
200	8	230	292	292	292			292	292		419	419	419			419	419	419		660	584	660		737	832		1022
250	10	250	330	330	330			330	330		457	457	457			457	457	457		787	711	787		838	991		1270
300	12	270	356	356	356			356	356		502	502	502			502	502	502		838	813	838		965	1130		1422
350	14	290	381	381	381			381	381		762	572	572			572	762	572		889	889	889		1029	1257		
400	16	310	406	406	406			406	406		838	610	610			610	838	610		991	991	991		1130	1384		
450	18	330	432	432	432			432	432		914	660	660			660	914	660		1092	1092	1092		1219	1537		
500	20	350	457	457	457			457	457		991	711	711			711	991	711		1194	1194	1194		1321	1664		
600	24		508	508	508			508	508		1143	787	787			787	1143	787		1397	1397	1397		1549	1943		
	26		559								1245																
700	28		610	610	620*						1346																
750	30		610								1397																
800				660	680*																						
900	36		711	711	740*						1727																
1000	42		813	811*	760*						1981																
Basic series		14	3	3	3	18	7	3	3	3	4	19	19	18	7	19	4	19	4	5	56	5	5	52	53	53	54

NOTE. Maximum cold working pressures/rating differs from ISO 5752.

*Dimension differs from basic series in table 1.

Table 3. Gate valves, flanged ends, ring-joint facings

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Nominal size		Class 150			Class 300				Class 600				Class 900	Class 1500		Class 2500
		Face-to-face dimension *B* (see figure 2)														
		BS 1414	BS 5157	BS 5352	BS 1414	BS 5157		BS 5352	BS 1414	BS 5157		BS 5352	BS 1414	BS 1414	BS 5352	BS 1414
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
15	½			119				151				164			216	
20	¾			130				165				190			229	
25	1	140		140	178			178	216			216		254	254	308
32	1¼	152		152	190			190	229			229		279	279	352
40	1½	178	178	178	203	203	203	203	241	152	241	241		305	305	387
50	2	190	190	190	232	232	232	232	295	181	295	295		371	371	454
65	2½	203	203		257	257	257		333	219	333			422		514
80	3	216	216		298	298	298		359	257	359		384	473		584
100	4	241	241		321	321	321		435	308	435		460	549		683
125	5		267			397	397			384	511					
150	6	279	279		419	419	419		562	460	562		613	711		927
200	8	305	305		435	435	435		664	587	664		740	841		1038
250	10	343	343		473	473	473		791	714	791		841	1000		1292
300	12	368	368		518	518	518		841	816	841		968	1146		1445
350	14	394	394		778	587	778		892	892	892		1038	1276		
400	16	419	419		854	625	854		994	994	994		1140	1407		
450	18	444	444		930	676	930		1095	1095	1095		1232	1559		
500	20	470	470		1010	730	1010		1200	1200	1200		1334	1686		
600	24	521	521		1165	810	1165		1407	1407	1407		1568	1972		
Derived series		3R	3R	3R	4R	19R	4R	4R	5R	56R	5R	5R	52R	53R	53R	54R

Table 4. Gate valves, butt-weld ends

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Nominal size		Class 150			Class 300				Class 600				Class 900	Class 1500		Class 2500
		End-to-end dimension *D* (see figure 1)														
		BS 1414	BS 5157	BS 5352	BS 1414	BS 5157		BS 5352	BS 1414	BS 5157		BS 5352	BS 1414	BS 1414	BS 5352	BS 1414
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
15	½			108				140				165				
20	¾			117				152				190				
25	1	127		127	165			165	216			216		254	254	308
32	1¼	140		140	178			178	229			229		279	279	349
40	1½	165	165	165	190	190*	190	190	241	152	241	241		305	305	384
50	2	216	216	216	216	216	216	216	292	178	292	292		368	368	451
65	2½	241	241		241	241	241		330	216	330			419		508
80	3	283	283		283	283	283		356	254	356		381	470		578
100	4	305	305		305	305	305		432	305	432		457	546		673
125	5		381			381	381			381	508					
150	6	403	403		403	403	403		559	457	559		610	705		914
200	8	419	419		419	419	419		660	584	660		737	832		1022
250	10	457	457		457	457	457		787	711	787		838	991		1270
300	12	502	502		502	502	502		838	813	838		965	1130		1422
350	14	572	572		762	572	762		889	889	889		1029	1257		
400	16	610	610		838	610	838		991	991	991		1130	1384		
450	18	660	660		914	660	914		1092	1092	1092		1219	1537		
500	20	711	711		991	711	991		1194	1194	1194		1321	1664		
600	24	813	813		1143	787*	1143		1397	1397	1397		1549	1943		
	26	902			1245											
700	28	991			1346											
750	30	991			1397											
800																
900	36	1219			1727											
1000	42	1397			1981											
Basic series		51	51	51	4	51	4	4	5	56	5	5	52	53	53	54

*Dimension differs from basic series in table 1.

Table 5. Globe valves, straight pattern, flanged ends, raised or flat facings

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Nominal size		PN 10/16 Class 125/150									PN 25/40 Class 250/300							Class 600				Class 900	Class 1500		Class 2500
		Face-to-face dimension *A* (see figure 1)																							
		BS 1873		BS 5152		BS 5154		BS 5160		BS 5352	BS 1873	BS 5152	BS 5154		BS 5160		BS 5352	BS 1873	BS 5160		BS 5152	BS 1873	BS 1873	BS 5352	BS 1873
			(see Note)																						
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
10					130	80	108					130	80	108											
15	½	108	140		130	80	108	108	130	108	152	130	80	108	152	130	152	165	165	210	165		216	216	264
20	¾	117	152		150	90	117	117	150	117	178	150	90	117	178	150	178	190	190	230	190		219	229	273
25	1	127	165		160	100	127	127	160	127	203	160	100	127	216*	160	203	216	216	230	216		254	254	308
32	1¼	140	184		180	110	146	140	180	140	216	180	110	146	229*	180	216	229	229	260	229		279	279	349
40	1½	165	203	165	200	120	159	165	200	165	229	200	120	159	241*	200	229	241	241	260	241		305	305	384
50	2	203	229	203	230	135	190	203	230	203	267	230	135	190	267	230	267	292	292	300	292		368	368	451
65	2½	216	279	216	290	165	216	216	290		292	290	165	216	292	290		330	330	340			419		508
80	3	241	318	241	310	185	254	241	310		318	310	185	254	318	310		356	356	380		381	470		578
100	4	292	368	292	350	229	305	292	350		356	350	229	305	356	350		432	432	430		457	546		673
125	5			330*	400			356	400			400			400	400			508	500					
150	6	406	470	356*	480			406	480		444	480			444	480		559	559	550		610	705		914
200	8	495	597	495	600			495	600		559*	600			533*	600		660	660	650		737	832		1022
250	10	622	673	622	730			622	730		622	730			622	730		787	787	775		838	991		1270
300	12	698	775	698	850			698	850		711	850			711	850		838	838	900		965	1130		1422
350	14	787		787	980			787	980			980			838	980			889	1025		1029	1257		
400	16	914		914	1100			914	1100			1100			864	1100			991	1150					
450	18			965	1200			978	1200			1200			978	1200			1092	1275					
Basic series		10	55	10	1	18	7	10	1	10	21	1	18	7	21	1	21	5	5	2	5	52	53	53	54

NOTE. For oblique (Y) pattern valves only.

*Dimension differs from basic series in table 1.

Table 6. Globe valves, straight pattern, flanged ends, ring-joint facings

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Nominal size		Class 150				Class 300			Class 600			Class 900	Class 1500		Class 2500
		Face-to-face dimension *B* (see figure 2)													
		BS 1873		BS 5160	BS 5352	BS 1873	BS 5160	BS 5352	BS 1873	BS 5160	BS 5352	BS 1873	BS 1873	BS 5352	BS 1873
			(see Note)												
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
15	½	119	151	119	119	164	164	164	164	164	164		216	216	264
20	¾	130	165	130	130	190	190	190	190	190	190		229	229	273
25	1	140	178	140	140	216	229*	216	216	216	216		254	254	308
32	1¼	152	197	152	152	229	241*	229	229	229	229		279	279	352
40	1½	178	216	178	178	241	254*	241	241	241	241		305	305	387
50	2	216	241	216	216	283	283	283	295	295	295		371	371	454
65	2½	229	292	229		308	308		333	333			422		514
80	3	254	330	254		333	333		359	359		384	473		584
100	4	305	381	305		371	371		435	435		460	549		683
125	5			368			416			511					
150	6	419	483	419		460	460		526	562		613	711		927
200	8	508	610	508		575	549*		664	664		740	841		1038
250	10	635	686	635		638	638		791	791		841	1000		1292
300	12	711	787	711		727	727		841	841		968	1146		1445
350	14	800		800			854			892		1038	1276		
400	16	927		927			879			994					
450	18			991			994			1095					
Derived series		10R	55R	10R	10R	21R	21R	21R	5R	5R	5R	52R	53R	53R	54R

NOTE. For oblique (Y) pattern valves only.

*Dimension differs from basic series in table 1.

Table 7. Globe valves, straight pattern, butt-weld ends

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Nominal size		PN 10/16 Class 150				PN 25/40 Class 300			Class 600			Class 900	Class 1500		Class 2500
		End-to-end dimension *D* (see figure 1)													
		BS 1873		BS 5160	BS 5352	BS 1873	BS 5160	BS 5352	BS 1873	BS 5160	BS 5352	BS 1873	BS 1873	BS 5352	BS 1873
			(see Note)												
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
15	½	108	140	108	108	152	152	152	165	165	165		216	216	264
20	¾	117	152	117	117	178	178	178	190	190	190		229	229	273
25	1	127	165	127	127	203	203	203	216	216	216		254	254	308
32	1¼	140	184	140	140	216	216	216	229	229	229		279	279	349
40	1½	165	203	165	165	229	229	229	241	241	241		305	305	384
50	2	203	229	203	203	267	267	267	292	292	292		368	368	451
65	2½	216	279	216		292	292		330	330			419		508
80	3	241	318	241		318	318		356	356		381	470		578
100	4	292	368	292		356	356		432	432		457	546		673
125	5			356			400			508					
150	6	406	470	406		444	444		559	559		610	705		914
200	8	495	597	495		559	559		660	660		737	832		1022
250	10	622	673	622		622	622		787	787		838	991		1270
300	12	698	775	698		711	711		838	838		965	1130		1422
350	14	787		787								1029	1257		
400	16	914		914											
450	18			978*											
Basic series		10	55	10	10	21	21	21	5	5	5	52	53	53	54

NOTE. For oblique (Y) pattern valves only.

*Dimension differs from basic series in table 1.

Table 8. Globe valves, angle pattern, flanged ends, raised or flat facings

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Nominal size		PN 10/16 Class 125/150								PN 25/40 Class 250/300						Class 600				Class 900	Class 1500		Class 2500
		Centre-to-face dimension *E* (see figure 1)																					
		BS 1873	BS 5152		BS 5154		BS 5160		BS 5352	BS 1873	BS 5152	BS 5154		BS 5160	BS 5352	BS 1873	BS 5160		BS 5352	BS 1873	BS 1873	BS 5352	BS 1873
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
10				85	65	70					85	65	70										
15	½	57		90	65	70	57	90	57	76	90	65	70	90	76	83	83	105	83		108	108	132
20	¾	64		95	70	75	64	95	64	89	95	70	75	95	89	95	95	115	95		114	114	137
25	1	70		100	80	85	70	100	70	102	100	80	85	100	102	108	108	115	108		127	127	154
32	1¼	76		105	90	95	76	105	76	108	105	90	95	105	108	114	114	130	114		140	140	175
40	1½	83		115	95	100	83	115	83	114	115	95	100	115	114	121	121	130	121		152	152	192
50	2	102		125	105	115	102	125	102	133	125	105	115	125	133	146	146	150	146		184	184	225
65	2½	108		145	115	125	108	145		146	145	115	125	145		165	165	170			210		254
80	3	121		155	125	135	121	155		159	155	125	135	155		178	178	190		190	235		289
100	4	146	146	175	135	146	146	175		178	175	135	146	175		216	216	215		229	273		337
125	5		165	200			178	200			200			200			254	250					
150	6	203	178	225			203	225		222	225			225		279	279	275		305	352		457
200	8	248	248	275			248	275		279	275			275		330	330	325		368	416		511
250	10	311	311	325			311	325		311	325			325		394	394			419	495		635
300	12	349	349	375			349	375		356	375			375		419	419			483	565		711
350	14	394	394	425			394	425			425			425						514	629		
400	16	457	457	475			457	475			475			475									
450	18		483	500			483	500			500			500									
Basic series		11	11	8	63	64	11	8	11	59	8	63	64	8	59	24	24	9	24	60	61	61	62

Table 9. Globe valves, angle pattern, flanged ends, ring-joint facings

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Nominal size		Class 150			Class 300			Class 600			Class 900	Class 1500		Class 2500
		Centre-to-face dimension *F* (see figure 2)												
		BS 1873	BS 5160	BS 5352	BS 1873	BS 5160	BS 5352	BS 1873	BS 5160	BS 5352	BS 1873	BS 1873	BS 5352	BS 1873
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
15	½	63	63	63	82	96	82	81	81	81		108	108	132
20	¾	70	70	70	95	101	95	95	95	95		114	114	137
25	1	76	76	76	108	106	108	108	108	108		127	127	154
32	1¼	83	83	83	114	111	114	114	114	114		140	140	176
40	1½	89	89	89	121	121	121	121	121	121		152	152	194
50	2	108	108	108	141	133	141	148	148	148		186	186	227
65	2½	114	114		154	153		167	167			211		257
80	3	127	127		167	163		179	179		192	236		292
100	4	152	152		186	183		217	217		230	275		341
125	5		184			208			256					
150	6	210	210		230	233		281	281		306	356		464
200	8	254	254		287	283		332	332		370	421		519
250	10	318	318		319	333		395	395		421	500		646
300	12	356	356		364	383		421	421		484	573		722
350	14	400	400			433					519	638		
400	16	464	464			483								
450	18		489			508								
Derived series		11R	11R	11R	59R	8R	59R	24R	24R	24R	60R	61R	61R	62R

Table 10. Globe valves, angle pattern, butt-weld ends

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Nominal size		PN 10/16 Class 150			PN 25/40 Class 300			Class 600			Class 900	Class 1500		Class 2500
		Centre-to-end dimension *G* (see figure 1)												
		BS 1873	BS 5160	BS 5352	BS 1873	BS 5160	BS 5352	BS 1873	BS 5160	BS 5352	BS 1873	BS 1873	BS 5352	BS 1873
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
15	½	57	57	57	76	76	76	83	83	83		108	108	132
20	¾	64	64	64	89	89	89	95	95	95		114	114	137
25	1	70	70	70	102	102	102	108	108	108		127	127	154
32	1¼	76	76	76	108	108	108	114	114	114		140	140	175
40	1½	83	83	83	114	114	114	121	121	121		152	152	192
50	2	102	102	102	133	133	133	146	146	146		184	184	225
65	2½	108	108		146	146		165	165			210		254
80	3	121	121		159	159		178	178		190	235		289
100	4	146	146		178	178		216	216		229	273		337
125	5		178			200			254					
150	6	203	203		222	222		279	279		305	352		457
200	8	248	248		279	279		330	330		368	416		511
250	10	311	311		311	311		394	394		419	495		635
300	12	349	349		356	356		419	419		483	565		711
350	14	394	394								514	629		
400	16	457	457											
450	18		483											
Basic series		11	11	11	59	59	59	24	24	24	60	61	61	62

Table 11. Check valves (swing and lift types), straight pattern, flanged ends, raised or flat facings

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Nominal size		Swing check valves													Lift check valves																							
		PN 6/10/16 Class 125/150					PN 25/40 Class 250/300				Class 600	900	1500	2500	PN 10/16 Class 125/150								PN 25/40 Class 250/300							Class 600					Class 900	Class 1500		Class 2500
		Face-to-face dimension *A* (see figure 1)																																			
		BS 1868	BS 5153		BS 5154		BS 1868	BS 5153	BS 5154		BS 1868				BS 1868	BS 5153		BS 5154		BS 5160		BS 5352	BS 1868	BS 5153	BS 5154		BS 5160		BS 5352	BS 1868	BS 5160		BS 5352	BS 1868	BS 1868	BS 5352	BS 1868
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
10				130	80	108		130	80	108							130	80	108					130	80	108											
15	½	108		130	80	108	140*	130	80	108	165		216	264	108		130	80	108	108	130	108	152	130	80	108	152	130	152	165	165	210	165		216	216	264
20	¾	117		150	90	117	152*	150	90	117	190		229	273	117		150	90	117	117	150	117	178	150	90	117	178	150	178	190	190	230	190		229	229	273
25	1	127		160	100	127	216	160	100	127	216		254	308	127		160	100	127	127	160	127	203	160	100	127	216*	160	203	216	216	230	216		254	254	308
32	1¼	140		180	110	146	229	180	110	146	229		279	349	140		180	110	146	140	180	140	216	180	110	146	229*	180	216	229	229	260	229		279	279	349
40	1½	165	165	200	120	159	241	200	120	159	241		305	384	165	165	200	120	159	165	200	165	229	200	120	159	241*	200	229	241	241	260	241		305	305	384
50	2	203	203	230	135	190	267	230	135	190	292		368	451	203	203	230	135	190	203	230	203	267	230	135	190	267	230	267	292	292	300	292		368	368	451
65	2½	216	216	290	165	216	292	290	165	216	330		419	508	216	216	290	165	216	216	290		292	290	165	216	292	290		330	330	340			419		508
80	3	241	241	310	185	254	318	310	185	254	356	381	470	578	241	241	310	185	254	241	310		318	310	185	254	318	310		356	356	380		381	470		578
100	4	292	292	350	229	305	356	350	229	305	432	457	546	673	292	292	350	229	305	292	350		356	350	229	305	356	350		432	432	430		457	546		673
125	5		330	400				400								330*	400			356	400			400			400	400			508	500					
150	6	356	356	480			444	480			559	610	705	914	406	356*	480			406	480		444	480			444	480		559	559	550		610	705		914
200	8	495	495	600			533	600			660	737	832	1022	495	495	600			495	600		559	600			533*	600		660	660	650		737	832		1022
250	10	622	622	730			622	730			787	838	991	1270	622	622	730			622	730		622	730			622	730		787	787	775		838	991		1270
300	12	698	698	850			711	850			838	965	1130	1422	698	698	850			698	850		711	850			711	850		838	838	900		965	1130		1422
350	14	787	787	980			838	980			889	1029	1257		787	787	980			787	980			980			838	980			889	1025		1029	1257		
400	16	864	914	1100			864	1100			991	1130	1384		914	914	1100			914	1100			1100			864	1100			991	1150					
450	18	978	965	1200			978	1200			1092	1219	1537			965	1200			978*	1200			1200			978	1200			1092	1275					
500	20	978	1067	1250			1016	1250			1194	1321	1664																								
600	24	1295	1219	1450			1346				1397	1549	1943																								
700	28			1650																																	
750	30																																				
800				1850																																	
900	36			2050																																	
1000	42			2250																																	
Basic series		10	10	1	18	7	21	1	18	7	5	52	53	54	10	10	1	18	7	10	1	10	21	1	18	7	21	1	21	5	5	2	5	52	53	53	54

*Dimension differs from basic series in table 1.

Table 12. Check valves (swing and lift types), straight pattern, flanged ends, ring-joint facings

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Nominal size		Swing check valves						Lift check valves												
		Class 150	Class 300	Class 600	Class 900	Class 1500	Class 2500	Class 150			Class 300			Class 600			Class 900	Class 1500		Class 2500
		Face-to-face dimension *B* (see figure 2)																		
		BS 1868	BS 1868	BS 1868	BS 1868	BS 1868	BS 1868	BS 1868	BS 5160	BS 5352	BS 1868	BS 5160	BS 5352	BS 1868	BS 5160	BS 5352	BS 1868	BS 1868	BS 5352	BS 1868
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
15	½	119	151*	164		216	264	119	119	119	164	164	164	164	164	164		216	216	264
20	¾	130	165*	190		229	273	130	130	130	190	190	190	190	190	190		229	229	273
25	1	140	229	216		254	308	140	140	140	216	229*	216	216	216	216		254	254	308
32	1¼	152	241	229		279	352	152	152	152	229	241*	229	229	229	229		279	279	352
40	1½	178	254	241		305	387	178	178	178	241	254*	241	241	241	241		305	305	387
50	2	216	283	295		371	454	216	216	216	283	283	283	295	295	295		371	371	454
65	2½	229	308	333		422	514	229	229		308	308		333	333			422		514
80	3	254	333	359	384	473	584	254	254		333	333		359	359		384	473		584
100	4	305	371	435	460	549	683	305	305		371	371		435	435		460	549		683
125	5								368			416			511					
150	6	368	460	562	613	711	927	419	419		460	460		526	562		613	711		927
200	8	508	549	664	740	841	1038	508	508		575	549*		664	664		740	841		1038
250	10	635	638	791	841	1000	1292	635	635		638	638		791	791		841	1000		1292
300	12	711	727	841	968	1146	1445	711	711		727	727		841	841		968	1146		1445
350	14	800	854	892	1038	1276		800	800			854			892		1038	1276		
400	16	877	880	994	1140	1407		927	927			879			994					
450	18	991	994	1095	1232	1559			991			994			1095					
500	20	991	1035	1200	1334	1686														
600	24	1308	1368	1407	1568	1972														
Derived series		10R	21R	5R	52R	53R	54R	10R	10R	10R	21R	21R	21R	5R	5R	5R	52R	53R	53R	54R

*Dimension differs from basic series in table 1.

Table 13. Check valves (swing and lift types), straight pattern, butt-weld ends

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Nominal size		Swing check valves						Lift check valves												
		PN10/16 Class 150	PN 25/40 Class 300	Class 600	Class 900	Class 1500	Class 2500	PN 10/16 Class 150			PN 25/40 Class 300			Class 600			Class 900	Class 1500		Class 2500
		End-to-end dimension *D* (see figure 1)																		
		BS 1868	BS 1868	BS 1868	BS 1868	BS 1868	BS 1868	BS 1868	BS 5160	BS 5352	BS 1868	BS 5160	BS 5352	BS 1868	BS 5160	BS 5352	BS 1868	BS 1868	BS 5352	BS 1868
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
15	½	108	140*	165		216	264	108	108	108	152	152	152	165	165	165		216	216	264
20	¾	117	152*	190		229	273	117	117	117	178	178	178	190	190	190		229	229	273
25	1	127	216	216		254	308	127	127	127	203	203	203	216	216	216		254	254	308
32	1¼	140	229	229		279	349	140	140	140	216	216	216	229	229	229		279	279	349
40	1½	165	241	241		305	384	165	165	165	229	229	229	241	241	241		305	305	384
50	2	203	267	292		368	451	203	203	203	267	267	267	292	292	292		368	368	451
65	2½	216	292	330		419	508	216	216		292	292		330	330			419		508
80	3	241	318	356	381	470	578	241	241		318	318		356	356		381	470		578
100	4	292	356	432	457	546	673	292	292		356	356		432	432		457	546		673
125	5								356			400			508					
150	6	356	444	559	610	705	914	406	406		444	444		559	559		610	705		914
200	8	495	533	660	737	832	1022	495	495		559	559		660	660		737	832		1022
250	10	622	622	787	838	991	1270	622	622		622	622		787	787		838	991		1270
300	12	698	711	838	965	1130	1422	698	698		711	711		838	838		965	1130		1422
350	14	787	838	889	1029	1257		787	787								1029	1257		
400	16	864	864	991	1130	1384		914	914											
450	18	978	978	1092	1219	1537		978	978											
500	20	978	1016	1194	1321	1664														
600	24	1295	1346	1397	1549	1943														
Basic series		10	21	5	52	53	54	10	10	10	21	21	21	5	5	5	52	53	53	54

*Dimension differs from basic series in table 1.

Table 14. Check valves (lift type), angle pattern, flanged ends, raised or flat facings

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Nominal size		PN 10/16 Class 125/150								PN 25/40 Class 250/300						Class 600				Class 900	Class 1500		Class 2500
		Centre-to-face dimension *E* (see figure 1)																					
		BS 1868	BS 5153		BS 5154		BS 5160		BS 5352	BS 1868	BS 5153	BS 5154		BS 5160	BS 5352	BS 1868	BS 5160		BS 5352	BS 1868	BS 1868	BS 5352	BS 1868
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
10				85	65	70		85			85	65	70	85									
15	½	57		90	65	70	57	90	57	76	90	65	70	90	76	83	83	105	83		108	108	132
20	¾	64		95	70	75	64	95	64	89	95	70	75	95	89	95	95	115	95		114	114	137
25	1	70		100	80	85	70	100	70	102	100	80	85	100	102	108	108	115	108		127	127	154
32	1¼	76		105	90	95	76	105	76	108	105	90	95	105	108	114	114	130	114		140	140	175
40	1½	83	82†	115	95	100	83	115	83	114	115	95	100	115	114	121	121	130	121		152	152	192
50	2	102	102†	125	105	115	102	125	102	133	125	105	115	125	133	146	146	150	146		184	184	225
65	2½	108	108†	145	115	125	108	145		146	145	115	125	145		165	165	170			210		254
80	3	121	121†	155	125	135	121	155		159	155	125	135	155		178	178	190		190	235		289
100	4	146	146	175			146	175		178	175			175		216	216	215		229	273		337
125	5		165	200			178	200			200			200			254	250					
150	6	203	178	225			203	225		222	225			225		279	279	275		305	352		457
200	8	248	248	275			248	275		279	275			275		330	330	325		368	416		511
250	10	311	311	325			311	325		311	325			325		394	394			419	495		635
300	12	349	350*	375			349	375		356	375			375		419	419			483	565		711
350	14	394	394	425			394	425			425			425						514	629		
400	16	457	457	475			457	475			475			475									
450	18		483	500			483	500			500			500									
Basic series		11	11	8	63	64	11	8	11	59	8	63	64	8	59	24	24	9	24	60	61	61	62

*Dimension differs from basic series in table 1.
†For Class 125 only.

Table 15. Check valves (lift type), angle pattern, flanged ends, ring-joint facings

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Nominal size		Class 150			Class 300			Class 600			Class 900	Class 1500		Class 2500
		Centre-to-face dimension *F* (see figure 2)												
		BS 1868	BS 5160	BS 5352	BS 1868	BS 5160	BS 5352	BS 1868	BS 5160	BS 5352	BS 1868	BS 1868	BS 5352	BS 1868
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
15	½	63	63	63	82	96	82	82	82	82		108	108	132
20	¾	70	70	70	95	101	95	95	95	95		114	114	137
25	1	76	76	76	108	106	108	108	108	108		127	127	154
32	1¼	83	83	83	114	111	114	114	114	114		140	140	176
40	1½	89	89	89	121	121	121	121	121	121		152	152	194
50	2	108	108	108	141	133	141	148	148	148		186	186	227
65	2½	114	114		154	153		167	167			211		257
80	3	127	127		167	163		179	179		192	236		292
100	4	152	152		186	183		217	217		230	275		341
125	5		184			208			256					
150	6	210	210		230	233		281	281		306	356		464
200	8	254	254		287	283		332	332		370	421		519
250	10	318	318		319	333		395	395		421	500		646
300	12	356	356		364	383		421	421		484	573		722
350	14	400	400			433					519	638		
400	16	464	464			483								
450	18		489			508								
Derived series		11R	11R	11R	59R	8R	59R	24R	24R	24R	60R	61R	61R	62R

Table 16. Check valves (lift type), angle pattern, butt-weld ends

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Nominal size		PN 10/16 Class 150			PN 25/40 Class 300			Class 600			Class 900	Class 1500		Class 2500
		Centre-to-end dimension *G* (see figure 1)												
		BS 1868	BS 5160	BS 5352	BS 1868	BS 5160	BS 5352	BS 1868	BS 5160	BS 5352	BS 1868	BS 1868	BS 5352	BS 1868
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
15	½	57	57	57	76	76	76	83	83	83		108	108	132
20	¾	64	64	64	89	89	89	95	95	95		114	114	137
25	1	70	70	70	102	102	102	108	108	108		127	127	154
32	1¼	76	76	76	108	108	108	114	114	114		140	140	175
40	1½	83	83	83	114	114	114	121	121	121		152	152	192
50	2	102	102	102	133	133	133	146	146	146		184	184	225
65	2½	108	108		146	146		165	165			210		254
80	3	121	121		159	159		178	178		190	235		289
100	4	146	146		178	178		216	216		229	273		337
125	5		178			200			254					
150	6	203	203		222	222		279	279		305	352		457
200	8	248	248		279	279		330	330		368	416		511
250	10	311	311		311	311		394	394		419	495		635
300	12	349	349		356	356		419	419		483	565		711
350	14	394	394								514	629		
400	16	457	457											
Basic series		11	11	11	59	59	59	24	24	24	60	61	61	62

Table 17. Butterfly valves, (wafer and double flanged types)

Wafer						Double flanged, raised or flat facings	
1	2	3	4	5	6	7	8
Nominal size		≤ PN 25 and Class 150			PN 40 and Class 300	≤PN 25 and Class 150	PN 40 Class 300
		Face-to-face dimension *A* (see figure 1)					
		BS 5155				BS 5155	BS 5155
DN	in	mm	mm	mm	mm	mm	mm
40	1½	33				106	140
50	2	43				108	150
65	2½	46				112	170
80	3	46		64	49	114	180
100	4	52		64	56	127	190
125	5	56		70	64	140	200
150	6	56		76	70	140	210
200	8	60		89	71	152	230
250	10	68		114	76	165	250
300	12	78		114	83	178	270
350	14		92	127	127	190	290
400	16		102	140	140	216	310
450	18		114	152	160	222	330
500	20		127	152	170	229	350
600	24		154	178	200	267	390
700				229		292	430
800				241		318	470
900				241		330	510
1000				300		410	550
1200				350		470	630
1400				390		530	710
1600				440		600	790
1800				490		670	870
2000				540		760	950
Basic series		20	25	16	65	13	14

NOTE. In ISO 5752, Basic Series 13, 16, 20 and 25 are limited to PN 16 max. and series 14 to PN 25 max.

Table 18. Diaphragm valves, flanged ends, raised or flat facings

1	2	3
Nominal size		PN 6/10/16 Class 125/150
		Face-to-face dimension *A* (see figure 1)
		BS 5156
DN	in	mm
10		108
15	½	108
20	¾	117
25	1	127
32	1¼	146
40	1½	159
50	2	190
65	2½	216
80	3	254
100	4	305
125	5	356
150	6	406
200	8	521
250	10	635
300	12	749
Basic series		7

Table 19. Ball valves, flanged ends, raised or flat facings

1	2	3	4	5	6	7	8	9	10	11	12	13
Nominal size		PN 10/16						PN 25/40				
		Class 125/150		Class 150		Class 125/150	Class 150	Class 300				Class 600
		Face-to-face dimensions *A* (see figure 1)										
		BS 5159		BS 5351		BS 5159	BS 5351	BS 5159	BS 5351	BS 5159	BS 5351	BS 5351
		Reduced bore				Full bore		Reduced bore		Full bore		Full and reduced bore
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
10		102				102						
15	½	108		108		108	108	140	140	140	140	165
20	¾	117		117		117	117	152	152	152	152	190
25	1	127		127		127	127	165	165	165	165	216
32	1¼	140		140		140	140	178	178	178	178	229

Table 20. Ball valves, flanged ends, ring-joint facings

1	2	3	4	5	6	7	8	9	10	11	12	13
Nominal size		Class 150						Class 300				Class 600
		Face-to-face dimension *B* (see figure 2)										
		BS 5159		BS 5351		BS 5159	BS 5351	BS 5159	BS 5351	BS 5159	BS 5351	BS 5351
		Reduced bore				Full bore		Reduced bore		Full bore		Full and reduced bore
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
15	½	119		119		119	119	151	151	151	151	164
20	¾	130		130		130	130	165	165	165	165	190
25	1	140		140		140	140	178	178	178	178	216
32	1¼	152		152		152	152	190	190	190	190	229
40	1½	178		178		178	178	203	203	203	203	241
50	2	190	216	190	216	216	216	232	232	232	232	295
65	2½	203	235	203	235	235	235	257	257	257	257	333
80	3	216	254	216	254	254	254	298	298	298	298	359
100	4	241	318	241	318	318	318	321	321	321	321	435
125	5	267	368			368		397		397		
150	6	279	406	279	406	406	406	419	419	419	419	562
200	8	305	470	305	470	470	470	435	435	435	435	664
250	10	343	546	343	546	546	546	473	473	473	473	791
300	12	368	622	368	622	622	622	518	518	518	518	841
350	14	394	698	394	698	698	698	778	778	778	778	892
400	16	419	775	419	775	775	775	854	854	854	854	994
450	18	444	876			876		930		930		
500	20	470	927			927		1010		1010		
600	24	521	1080			1080		1165		1165		
Derived series		3R	12R	3R	12R	3R/12R (see note)	3R/12R (see note)	4R	4R	4R	4R	5R

NOTE. Columns 7 and 8 are a combination of two basic series, series 3 DN 10 to DN 40 and series 12 DN 50 and larger.

Table 21. Ball valves, butt-weld ends

1	2	3	4	5	6
Nominal		PN 10/16 Class 150		PN 25/40 Class 300	
		End-to-end dimension *D* (see figure 1)			
		BS 5351		BS 5351	

Table 22. Plug valves, flanged ends, raised or flat facings

1	2	3	4	5	6	7	8	9	10	11	12
Nominal size		PN 10/16				PN 25/40		Class 600	Class 900	Class 1500	Class 2500
		Class 125/150		Class 150		Class 300					
		Face-to-face dimension *A* (see figure 1)									
		BS 5158		BS 5353		BS 5158	BS 5353	BS 5353			
			(regular and venturi)		(regular and venturi)						
DN	in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
10		102	130								
15	½	108	130	108		140	140	165		216	264
20	¾	117	130	117		152	152	190		229	273
25	1	127	140	127		165	165	216		254	308
32	1¼	140	165	140		178	178	229		279	349
40	1½	165	165	165		190	190	241		305	384
50	2	178	203	178	203	216	216	292		368	451
65	2½	190	222	190	222	241	241	330		419	508
80	3	203	241	203	241	283	283	356	381	470	578
100	4	229	305	229	305	305	305	432	457	546	673
125	5	254	356			381					
150	6	267	394	267	394	403	403	559	610	705	914
200	8	292	457	292	457	419	419	660	737	832	1022
250	10	330	533	330	533	457	457	787	838	991	1270
300	12	356	610	356	610	502	502	838	965	1130	1422
350	14		686		686	762	762	889		1257	
400	16		762		762	838	838	991		1384	
450	18		864		864	914	914	1092			
500	20		914		914	991	991	1194			
600	24		1067		1067	1143	1143	1397			
Basic series		3	12	3	12	4	4	5	52	53	54

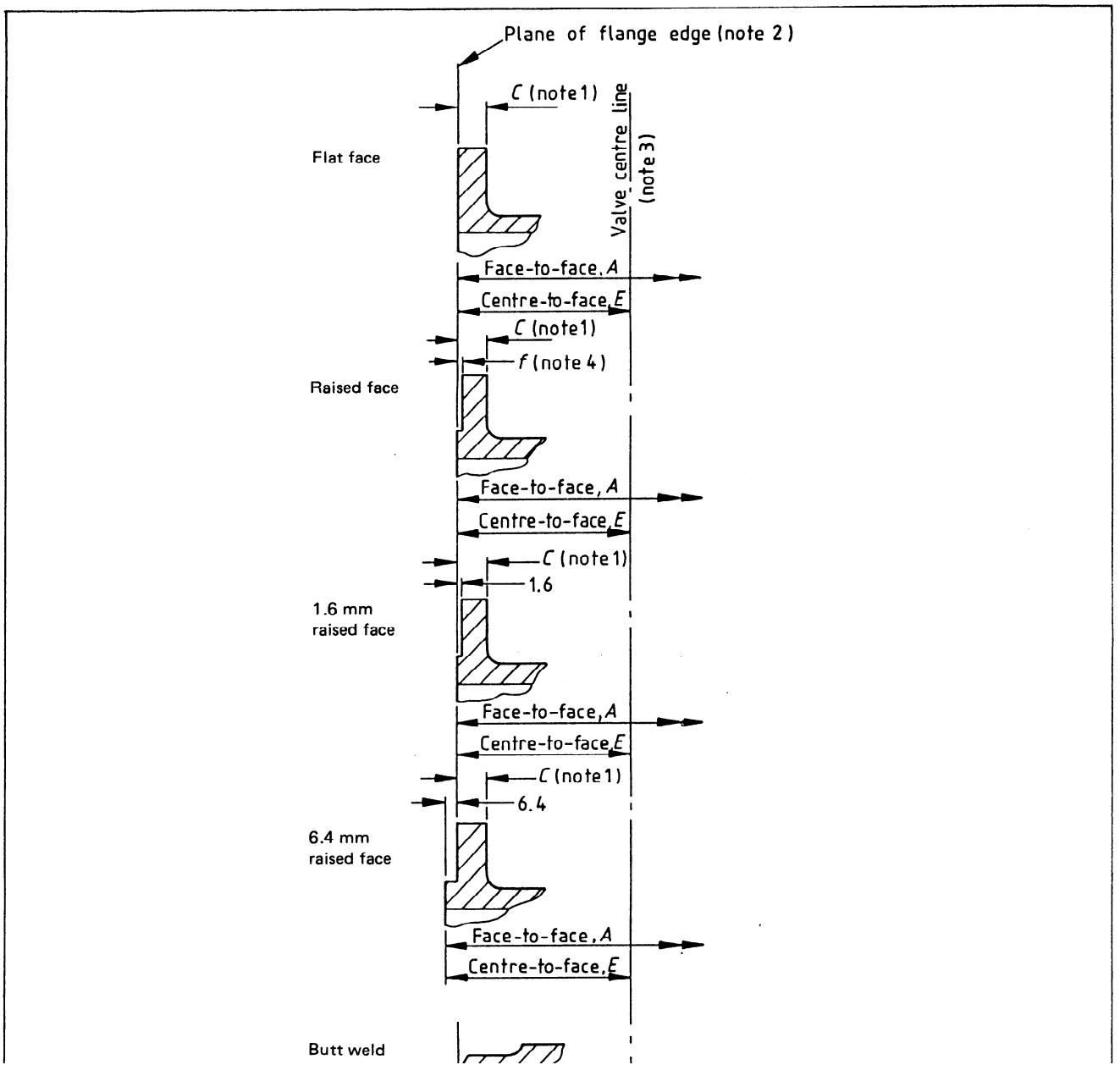
Table 23. Plug valves, flanged ends, ring-joint facings

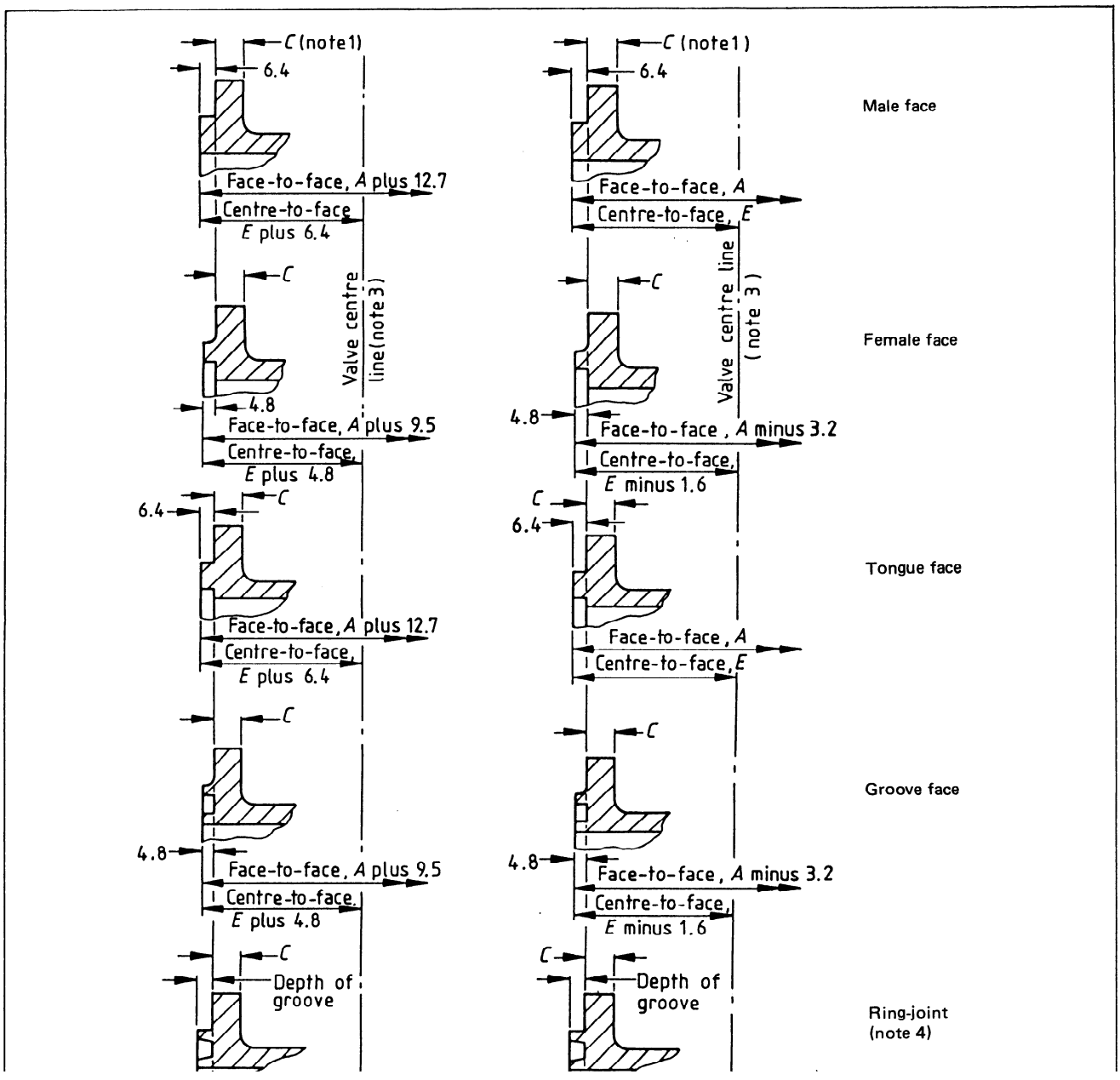
1	2	3	4	5	6	7	8	9
Nominal size		Class 150		Class 300	Class 600	Class 900	Class 1500	Class 2500
		Face-to-face dimension *B* (see figure 2)						
		BS 5353						
			(regular and venturi)					
DN	in	mm	mm	mm	mm	mm	mm	mm
15	½	119		151	164		216	264
20	¾	130		165	190		229	273
25	1	140		178	216		254	308
32	1¼	152		190	229		279	352
40	1½	178		203	241		305	387
50	2	190	216	232	295		371	454
65	2½	203	235	257	333		422	514
80	3	216	254	298	359	384	473	584
100	4	241	318	321	435	460	549	683
150	6	279	406	419	562	613	711	927
200	8	305	470	435	664	740	841	1038
250	10	343	546	473	791	841	1000	1292
300	12	368	622	518	841	968	1146	1445
350	14		698	778	892		1276	
400	16		775	854	994		1407	
450	18		876	930	1095			
500	20		927	1010	1200			
600	24		1080	1165	1407			
Derived series		3R	12R	4R	5R	52R	53R	54R

Table 24. Plug valves, butt-weld ends

1	2	3	4	5	6	7	8
		PN 10/16 Class 150	PN 25/40 Class 300	Class 600	Class 900	Class 1500	Class 2500
Nominal size		End-to-end dimension *D* (see figure 1)					
		BS 5353		BS 5353			
		short and regular	short, regular and venturi	regular and venturi	regular and venturi	regular and venturi	regular
DN	in	mm	mm	mm	mm	mm	mm
15	½						
20	¾						
25	1			216‡		254‡	308
32	1¼					279‡	349
40	1½			241‡		305‡	384
50	2	267	267*	292		368‡	451
65	2½	305	305*	330		419‡	508
80	3	330	330*	356	381‡	470‡	578
100	4	356	356*	432	457†	546‡	673
150	6	457	457	559	610	705	914
200	8	521	521	660	737	832	1022
250	10	559	559	787	838	991	1270
300	12	635	635	838	965	1130	1422
350	14		762	889		1257	
400	16		838	991		1384†	
450	18		914	1092†			
500	20		991	1194†			
600	24		1143	1397†			
Basic series		57	57	5	52	53	54

*Short pattern only.
†Venturi pattern only.
‡Regular pattern only.


Plane of flange edge (note 2)
C (note 1)
Valve centre line (note 3)
Flat face
Face-to-face, A
Centre-to-face, E
C (note 1)
f (note 4)
Raised face
Face-to-face, A
Centre-to-face, E
C (note 1)
1.6
1.6 mm raised face
Face-to-face, A
Centre-to-face, E
C (note 1)
6.4
6.4 mm raised face
Face-to-face, A
Centre-to-face, E
Butt weld


C (note1)
6.4
Face-to-face, A plus 12.7
Centre-to-face, E plus 6.4
C (note1)
6.4
Face-to-face, A
Centre-to-face, E
Male face
C
Valve centre line (note 3)
4.8
Face-to-face, A plus 9.5
Centre-to-face, E plus 4.8
C
Valve centre line (note 3)
4.8
Face-to-face, A minus 3.2
Centre-to-face, E minus 1.6
Female face
6.4
C
Face-to-face, A plus 12.7
Centre-to-face, E plus 6.4
C
6.4
Face-to-face, A
Centre-to-face, E
Tongue face
C
4.8
Face-to-face, A plus 9.5
Centre-to-face, E plus 4.8
C
4.8
Face-to-face, A minus 3.2
Centre-to-face, E minus 1.6
Groove face
C
Depth of groove
C
Depth of groove
Ring-joint (note 4)

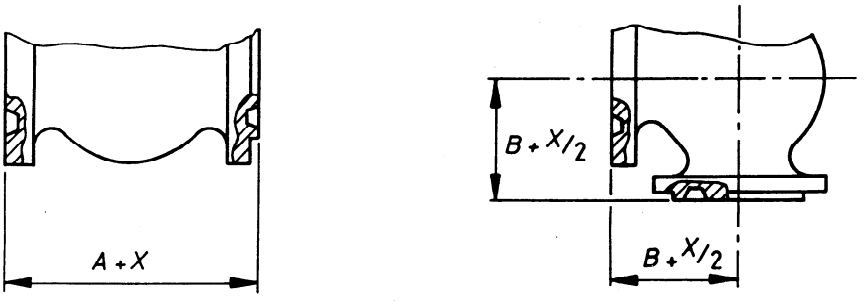
Appendix

Appendix A. Additional lengths of valves with ring-joint flanges in accordance with BS 1560 : Section 3.1

A.1 This appendix is for use when there is a need to calculate face-to-face and centre-to-face dimensions for valves having ring-joint flanges in accordance with BS 1560 : Section 3.1, not covered in tables 3, 6, 9, 12, 15, 20 and 23. See figure 3 for dimensions.

A.2 For straight pattern valves, the values of X given in table 25 shall be added to (or subtracted from) the basic raised face flange face-to-face dimension selected from the appropriate table.

A.3 For angle pattern valves, one half of the values of X given in table 25 shall be added to (or subtracted from) the basic raised face flange face-to-face dimension selected from the appropriate table.



Straight pattern *Angle pattern*

A = Face-to-face dimension for valve with raised face flanges (see figures 1 and 2).

B = Centre-to-face dimension for valve with raised face flanges (see figures 1 and 2).

Figure 3. Dimensions for calculating face-to-face and centre-to-face dimensions for valves having ring-joint flanges

Table 25. Additional lengths for ring-joint flanges

Nominal size		Additional length *X*					
		Class 150	Class 300	Class 600	Class 900	Class 1500	Class 2500
DN	in	mm	mm	mm	mm	mm	mm
15	½	11.1	11.1	−1.6			
20	¾						0
25	1		12.7	0	0	0	
32	1¼						
40	1½						3.2
50	2						
65	2½						6.4
80	3					3.2	
100	4						9.5
125	5						12.7
150	6	12.7	15.9	3.2	3.2	6.4	
200	8						15.9
250	10					9.5	
300	12						22.2
350	14					15.9	
400	16				9.5	19.1	
450	18						
500	20		19.1	6.4	12.7	22.2	
	22						
600	24		22.2	9.5	—	—	
	26				19.1	28.6	
700	28		25.4	12.7			
750	30						
800	32						
900	36		28.6	15.9			
1000	42						

Publications referred to

BS 1414	Specification for steel wedge gate valves (flanged and butt-welding ends) for the petroleum, petrochemical and allied industries
BS 1560	Circular flanges for pipes, valves and fittings (Class designated) Part 3 Steel, cast iron and copper alloy flanges Section 3.1 Specification for steel flanges Section 3.2 Specification for cast iron flanges Section 3.3 Specification for copper alloy and composite flanges
BS 1868	Specification for steel check valves (flanged and butt-welding ends) for the petroleum, petrochemical and allied industries
BS 1873	Specification for steel globe and globe stop and check valves (flanged and butt-welding ends) for the petroleum, petrochemical and allied industries
BS 3293	Specification for carbon steel pipe flanges (over 24 inches nominal size) for the petroleum industry
BS 4504	Circular flanges for pipes, valves and fittings (PN designated) Part 3 Steel, cast iron and copper alloy flanges Section 3.1 Specification for steel flanges Section 3.2 Specification for cast iron flanges Section 3.3 Specification for copper alloy and composite flanges
BS 5150	Specification for cast iron wedge and double disk gate valves for general purposes
BS 5151	Specification for cast iron gate (parallel slide) valves for general purposes
BS 5152	Specification for cast iron globe and globe stop and check valves for general purposes
BS 5153	Specification for cast iron check valves for general purposes
BS 5154	Specification for copper alloy globe, globe stop and check, check and gate valves
BS 5155	Specification for butterfly valves
BS 5156	Specification for diaphragm valves
BS 5157	Specification for steel gate (parallel slide) valves for general purposes
BS 5158	Specification for cast iron and carbon steel plug valves for general purposes
BS 5159	Specification for cast iron and carbon steel ball valves for general purposes
BS 5160	Specification for flanged steel globe valves, globe stop and check valves and lift type check valves for general purposes
BS 5163	Specification for predominantly key-operated cast iron gate valves for waterworks purposes
BS 5351	Specification for steel ball valves for the petroleum, petrochemical and allied industries
BS 5352	Specification for steel wedge gate, globe and check valves 50 mm and smaller for the petroleum, petrochemical and allied industries
BS 5353	Specification for plug valves
ISO 5752	Metal valves for use in flanged pipe systems – Face-to-face and centre-to-face dimensions
ISO 6708	Pipe components – Definition of nominal size
ISO 7121	Flanged steel ball valves
ISO 7268	Pipe components – Definition of nominal pressure
ANSI B16.10	Face-to-face and end-to-end dimensions of ferrous valves
API 605	Large diameter carbon steel flanges
API 609	Butterfly valves, lug type and wafer type
MSS SP 67	Butterfly valves
DIN 3202 : Part 1	Face-to-face and centre-to-face dimensions: Flanged valves

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