INTERNATIONAL STANDARD ISO 5752

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Metal valves for use in flanged pipe systems — Face-to-face and centre-to-face dimensions

Appareils de robinetterie métalliques utilisés dans les tuyauteries à brides — Dimensions face-à-face et face-à-axe

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Descriptors : piping, valves and fittings, industrial valves, valves, cocks, pipe flanges, nomenclature, connecting dimensions.

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FOREWORD

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 5752 was developed by Technical Committee ISO/TC 153, *General purpose industrial valves*, and was circulated to the member bodies in August 1977.

It has been approved by the member bodies of the following countries :

Australia	Italy	Spain
Austria	Japan	Sweden
Canada	Mexico	Switzerland
Denmark	Netherlands	United Kingdom
Finland	Norway	U.S.A.
Germany, F. R.	Poland	
India	Romania	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Belgium
France
South Africa, Rep. of
U.S.S.R.

Printed in Switzerland

Metal valves for use in flanged pipe systems — Face-to-face and centre-to-face dimensions

0 INTRODUCTION

The object of this International Standard is the establishment of face-to-face and centre-to-face dimensions for metal valves to permit a degree of dimensional interchangeability. It is intended for use in preparing product standards for industrial valves.

The pressure/temperature ratings for the different types of valves are those to be specified in the valve product standards for the types of valve and materials used.

Where dimensions from inch series of valves have been converted into millimetres, the exact values obtained have been rounded to the whole millimetre below when the decimal value obtained in conversion has been less than 0,5 mm, and to the whole millimetre above when the decimal value obtained in conversion has been equal to or greater than 0,5 mm.

1 SCOPE AND FIELD OF APPLICATION

1.1 This International Standard specifies the basic series of face-to-face or centre-to-face dimensions for two-way metal valves used in flanged pipe systems. Each basic series of face-to-face or centre-to-face dimensions may be used as required with flanges of mating dimensions conforming to ISO 2084 or ISO 2229.

1.2 The range of pressure ratings, in PN values, is

1 — 1,6 — 2,5 — 4 — 6 — 10 — 16 — 25 and 40

and classes 125 — 150 — 250 — 300 and 600.

1.3 The range of nominal sizes, in DN values, is

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 — 1 200 — 1 400 — 1 600 — 1 800 and 2 000.

2 DEFINITIONS

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

It is designated by the letters DN, followed by a number.

2.2 nominal pressure : The nominal pressures in this International Standard follow one of two systems, the PN rating system or the class rating system.

2.3 face-to-face dimension (for straight pattern 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 products standards.

The face-to-face dimension for butterfly valves is the distance between the extremities of the valve in the installed conditions.

2.4 centre-to-face dimension (for angle pattern 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 other body end port axis.

3 DIMENSIONS AND TOLERANCES

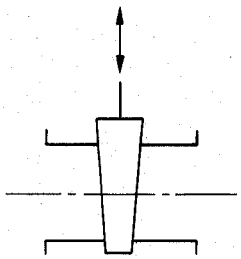
The basic series of face-to-face and centre-to-face dimensions, expressed in millimetres, are given in table 1. The table is a summary of the dimensions in tables 2 to 10 giving the origin of each series, and should be referred to when consideration is given to the standardization of valve types not presently covered by this International Standard. Each particular column does not necessarily include all the valves of the relevant basic series.

The face-to-face or centre-to-face dimensions as appropriate for the types of valves included in this International Standard, shall be in accordance with table 2 for the isomorphic series and tables 3 to 10 for the isobaric series, and the tolerances shall be in accordance with table 11.

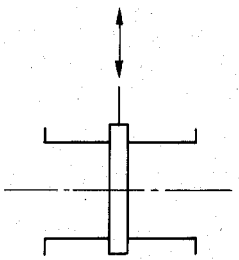
4 TERMINOLOGY*

4.1 Gate valves

4.1.1 *Wedge gate valve*

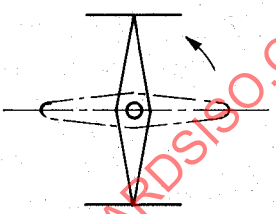


4.1.2 *Parallel slide gate valve*

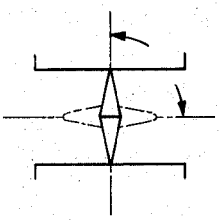


4.2 Butterfly valves

4.2.1 *Wafer butterfly valve*

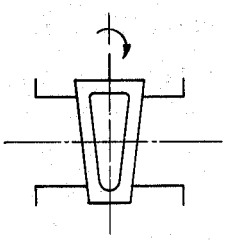


4.2.2 *Double-flanged butterfly valve*

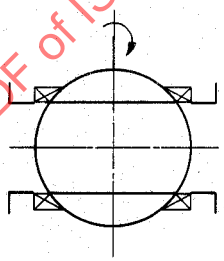


4.3 Plug and ball valves

4.3.1 *Conical or cylindrical plug valve*

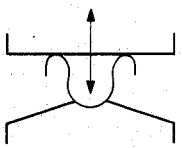


4.3.2 *Ball valve*

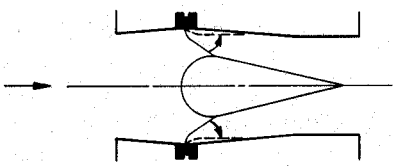


4.4 Diaphragm valves

4.4.1 *Diaphragm valve*



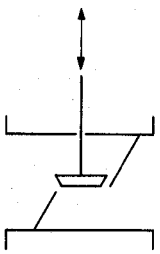
4.4.2 *Non-return diaphragm valve*



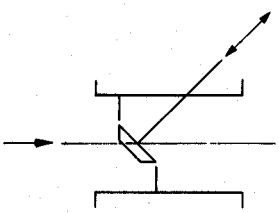
* The illustrations are intended to be a diagrammatic only and should not be used as symbols. They do not assume the principle or the construction details.

4.5 Globe valves

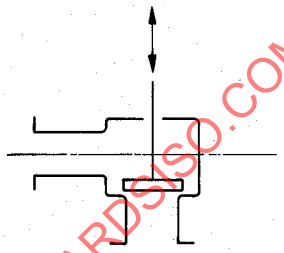
4.5.1 *Globe valve*



4.5.2 *Oblique type of globe valve*

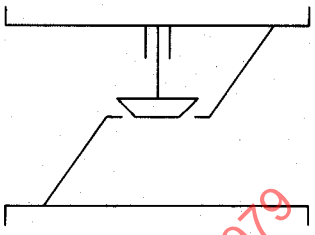


4.5.3 *Globe type angle valve*

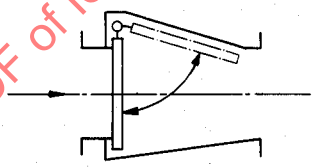


4.6 Check (non-return) valves

4.6.1 *Lift type check valve*



4.6.2 *Swing type check valve*



4.6.3 *Lift type angle check valve*

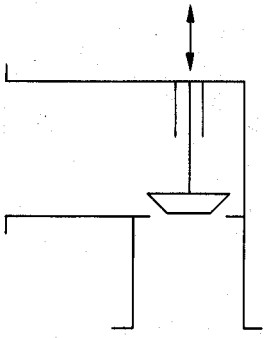


TABLE 1 — **Face-to-face and centre-to-face dimensions — Basic series**

Nominal size (DN)	Basic series																							
	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
	Origin of basic series																								
	DIN 3202/F1	DIN 3203/F	ANSI B16 B16.10	ANSI B16.10	ANSI B16.10		BS 5156	DIN 3202/F32	DIN 3202/F33	ANSI B16.10 BS 1868	ANSI B16.10	ANSI B16.10 BS 1570	BS 3952	DIN 3202/F4	DIN 3202/F5	API 609 BS 3952	API 600	BS 5154	ANSI B16.10	API 609 BS 3952	ANSI B16.10			ANSI B16.10	MSS SP 67
	DN range																								
		15-200 250-500								15-150 200-600		10-40 50-600				40-65 80-900				40-600 700-1200					
10	130	210	102	–	–		108	85	105	–	–	102	–	–	–	–	–	80	–						
15	130	210	108	140	165		108	90	105	108	57	108	–	–	–	–	140	80	140		152			83	
20	150	230	117	152	190		117	95	115	117	64	117	–	–	–	–	152	90	152		178			95	
25	160	230	127	165	216		127	100	115	127	70	127	–	–	–	–	165	100	165		216			108	
32	180	260	140	178	229		146	105	130	140	76	140	–	–	–	–	178	110	178		229			114	
40	200	260	165	190	241		159	115	130	165	82	165	106	140	240	33	190	120	190	33	241			121	
50	230	300	178	216	292		190	125	150	203	102	203	108	150	250	43	216	135	216	43	267			146	
65	290	340	190	241	330		216	145	170	216	108	222	112	170	270	46	241	165	241	46	292			165	
80	310	380	203	283	356		254	155	190	241	121	241	114	180	280	64	283	185	283	46	318			178	49
100	350	430	229	305	432		305	175	215	292	146	305	127	190	300	64	305		305	52	356			216	56
125	400	500	254	381	508		356	200	250	356	178	356	140	200	325	70	381		381	56	400			254	64
150	480	550	267	403	559		406	225	275	406	203	394	140	210	350	76	403		403	56	444			279	70
200	600	650	292	419	660		521	275	325	495	248	457	152	230	400	89	502		419	60	559			330	71
250	730	775	330	457	787		635	325		622	311	533	165	250	450	114	568		457	68	622			394	76
300	850	900	356	502	838		749	375		698	350	610	178	270	500	114	648		502	78	711			419	83
350	980	1 025	381	762	889			425		787	394	686	190	290	550	127	762		572	78	838				92
400	1 100	1 150	406	838	991			475		914	457	762	216	310	600	140	838		610	102	864				102
450	1 200	1 275	432	914	1 092			500		978	483	864	222	330	650	152	914		660	114	978				114
500	1 250	1 400	457	991	1 194					978		914	229	350	700	152	991		711	127	1 016				127
550																									
600	1 450	1 650	508	1 143	1 397					1 295		1 067	267	390	800	178	1 143		787	154	1 346				154
650																									
700	1 650		610							1 448			292	430	900	229				165	1 499				
750																									
800	1 850		660							–			318	470	1 000	241				190	–				
900	2 050		711							1 956			330	510	1 100	241				203	2 083				
1 000	2 250		811										410	550	1 200	300				216	–				
1 200													470	630		350				254					
1 400													530	710											
1 600													600	790											
1 800													670	870											
2 000													760	950											

* Centre-to-face dimensions for angle valves.

TABLE 2 — **Gate valves, isomorphic series**

Nominal size (DN)	Face-to-face dimensions	Maximum working pressure at 20 °C for lamellar graphite cast iron bar[1)]
40	140	10
50	150	
65	170	
80	180	
100	190	
125	200	
150	210	
200	230	6
250	250	
300	270	
350	290	4
400	310	
450	330	
500	350	
600	390	2,5
700	430	
800	470	1,6
900	510	1
1 000	550	
Basic series	14	–

NOTE — "Isomorphic" is the name of a series of flow pressure gate valves of a specified shape, having, for each nominal size the minimum wall thickness meeting the foundry or manufacturing requirements (in contrast to "isobar series", i.e. having the same maximum operating pressure at a temperature of 20 °C). Since the maximum permissible pressure at a temperature of 20 °C in such a series decreases as the nominal size increases, the gate valves may only be used at the maximum permissible pressures at a temperature of 20 °C given in the above table, subject to the material of which the body and the bonnet is formed.

1) 1 bar = 10^5 Pa

TABLE 3 – Gate valves

Nominal size (DN)	Face-to-face dimensions					
	PN 10/16 Class 125/150		PN 25/40 Class 300	Alternative for PN 25 only	Class 250 cast iron	Class 600
	Short	Long				
10	102					
15	108		140		140	165
20	117		152		152	190
25	127		165		165	216
32	140		178		178	229
40	165	240	190	240	190	241
50	178	250	216	250	216	292
65	190	270	241	270	241	330
80	203	280	283	280	283	356
100	229	300	305	300	305	432
125	254	325	381	325	381	508
150	267	350	403	350	403	559
200	292	400	419	400	419	660
250	330	450	457	450	457	787
300	356	500	502	500	502	838
350	381	550	762	550	572	889
400	406	600	838	600	610	991
450	432	650	914	650	660	1 092
500	457	700	991	700	711	1 194
600	508	800	1 143	800	787	1 397
700	610	900				
800	660	1 000				
900	711	1 100				
1 000	811	1 200				
Basic series	3	15	4	15	19	5

TABLE 4 — **Double-flanged butterfly valves and double-flanged butterfly check valves**

Nominal size (DN)	Face-to-face dimensions	
	⩽ PN 16 and Class 125/150	⩽ PN 25 and Class 125/150
	short series	long series
40	106	140
50	108	150
65	112	170
80	114	180
100	127	190
125	140	200
150	140	210
200	152	230
250	165	250
300	178	270
350	190	290
400	216	310
450	222	330
500	229	350
600	267	390
700	292	430
800	318	470
900	330	510
1 000	410	550
1 200	470	630
1 400	530	710
1 600	600	790
1 800	670	870
2 000	760	950
Basic series	13	14

NOTE — ⩽ means equal to or less than.

TABLE 5 — **Wafer butterfly valves and wafer butterfly check valves**

Nominal size (DN)	Face-to-face dimensions		
	⩽ PN 16 and Class 125/150		
	short	medium	long
40	33		33
50	43		43
65	46		46
80	46	49	64
100	52	56	64
125	56	64	70
150	56	70	76
200	60	71	89
250	68	76	114
300	78	83	114
350	78	92	127
400	102	102	140
450	114	114	152
500	127	127	152
600	154	154	178
700	165		229
800	190		241
900	203		241
1 000	216		300
1 200	254		350
Basic series	20	25	16

NOTE — ⩽ means equal to or less than.

TABLE 6 – **Plug valves and ball valves**

Nominal size (DN)	Face-to-face dimensions					
	PN 10/16 Class 125/150			PN 25/40 Class 250/300		Class 600
	short*	medium	long	short	long	
10	102	102	130		130	
15	108	108	130	140	130	165
20	117	117	150	152	150	190
25	127	127	160	165	160	216
32	140	140	180	178	180	229
40	165	165	200	190	200	241
50	178	203	230	216	230	292
65	190	222	290	241	290	330
80	203	241	310	283	310	356
100	229	305	350	305	350	432
125	254	356	400	381	400	508
150	267	394	480	403	480	559
200	292	457	600	419**	600	660
250	330	533	730	457**	730	787
300	356	610	850	502**	850	838
350	381	686	980	762	980	889
400	406	762	1 100	838	1 100	991
450	432	864	1 200	914	1 200	1 092
500	457	914	1 250	991	1 250	1 194
600	508	1 067	1 450	1 143	1 450	1 397
Basic series	3	12	1	4	1	5

* Not applicable :

a) above DN 40 to top entry full bore ball valves;

b) above DN 300 to plug and full bore ball valves.

** For full bore ball valves use :

502 (DN 200)
568 (DN 250)
648 (DN 300).

TABLE 7 — **Diaphragm valves**

Nominal size (DN)	Face-to-face dimensions			
	PN 6	PN 10/16 Class 125/150		PN 25/40 Class 300
		short	long	
10	108	108	130	130
15	108	108	130	130
20	117	117	150	150
25	127	127	160	160
32	146	146	180	180
40	159	159	200	200
50	190	190	230	230
65	216	216	290	290
80	254	254	310	310
100	305	305	350	350
125	356	356	400	400
150	406	406	480	480
200	521	521	600	600
250	635	635	730	730
300	749	749	850	850
Basic series	7	7	1	1

TABLE 8 — **Globe valves and check valves (straight pattern)**

Nominal size (DN)	Face-to-face dimensions					
	PN 10/16 Class 125/150		PN 25/40 Class 250/300		Class 600	
	short	long	short	long	short	long
10		130		130		210
15	108	130	152	130	165	210
20	117	150	178	150	190	230
25	127	160	216	160	216	230
32	140	180	229	180	229	260
40	165	200	241	200	241	260
50	203	230	267	230	292	300
65	216	290	292	290	330	340
80	241	310	318	310	356	380
100	292	350	356	350	432	430
125	356	400	400	400	508	500
150	406	480	444	480	559	550
200	495	600	559	600	660	650
250	622	730	622	730	787	775
300	698	850	711	850	838	900
350	787	980	838	980	889	1 025
400	914*	1 100	864	1 100	991	1 150
450	978	1 200	978	1 200	1 092	1 275
500	978	1 250	1 016	1 250	1 194	1 400
600	1 295	1 450	1 346	1 450	1 397	1 650
700	1 448	1 650	1 499	1 650		
800	—	1 850	—	1 850		
900	1 956	2 050	2 083	2 050		
1 000	—	2 250		2 250		
Basic series	10	1	21	1	5	2

* 864 swing check only.

TABLE 9 — **Globe and lift type check valves angle pattern**

Nominal size (DN)	Centre-to-face dimensions				
	PN 10/16 Class 125/150		PN 25/40 Class 250/300	Class 600	
	short	long		short	long
10		85	85		105
15	57	90	90	83	105
20	64	95	95	95	115
25	70	100	100	108	115
32	76	105	105	114	130
40	82	115	115	121	130
50	102	125	125	146	150
65	108	145	145	165	170
80	121	155	155	178	190
100	146	175	175	216	215
125	178	200	200	254	250
150	203	225	225	279	275
200	248	275	275	330	325
250	311	325	325	394	
300	350	375	375	419	
350	394	425	425		
400	457	475	475		
450	483	500	500		
Basic series	11	8	8	24	9

TABLE 10 — **Copper alloy gate valves, globe valves and check valves**

Nominal size (DN)	Face-to-face dimensions	
	PN 10/16 and PN 25/40 Class 150 and Class 300	
	short*	long**
10	80	108
15	80	108
20	90	117
25	100	127
32	110	146
40	120	159
50	135	190
65	165	216
80	185	254
Basic series	18	7

* Short dimensions shall be preferred for all PN 16 and PN 25 valves with screwed bonnets and integral seats.

** Long dimensions shall be preferred for :

a) all PN 40 valves;
b) parallel slide and double disk gate valves;
c) valves with renewable seats;
d) valves with union or bolted bonnets.

TABLE 11 — **Tolerances**

Face-to-face or centre-to-face dimensions of unlined valves		Tolerances
over	up to and including	
0	250	± 2
250	500	± 3
500	800	± 4
800	1 000	± 5
1 000	1 600	± 6
1 600	2 250	± 8