BS EN 16722:2015

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Industrial valves — End-to-end and centre-to-end dimensions for valves with threaded ends

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National foreword

This British Standard is the UK implementation of EN 16722:2015.

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Industriearmaturen - Baulängen für Armaturen mit Innengewinde-Anschluss

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European foreword

This document (EN 16722:2015) has been prepared by Technical Committee CEN/TC 69 “Industrial valves”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2016, and conflicting national standards shall be withdrawn at the latest by March 2016.

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Introduction

The basic series given in this European Standard are taken from the original series shown in Annex B. Changes made to the original series will not be automatically incorporated into this European Standard.

1 Scope

This European Standard specifies the end-to-end and centre-to-end dimensions for valves with threaded ends with connecting dimensions in compliance with EN ISO 228-1 or EN 10226-1, used in PN and Class designated piping systems.

The range of PN is:

— PN 10; PN 16; PN 25; PN 40; PN 63; PN 100; PN 160; PN 250; PN 320; PN 400.

The range of Class is:

— Class 150, Class 300, Class 600, Class 900, Class 1 500, Class 2 500.

The range of nominal size is:

— DN 4; DN 6; DN 8; DN 10; DN 15; DN 20; DN 25; DN 32; DN 40; DN 50; DN 65; DN 80; DN 100.

NOTE 1 See Annex C for the relationship between nominal size (DN) and nominal pipe size (NPS).

NOTE 2 Valves having screwed end profiles different from those specified in EN ISO 228-1 or EN 10226–1, may use the same dimensions than those specified in Table 1.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 736-1:1995, *Valves — Terminology — Part 1: Definition of types of valves*

EN 736-2:1997, *Valves — Terminology — Part 2: Definition of components of valves*

EN 736-3:2008, *Valves — Terminology — Part 3: Definition of terms*

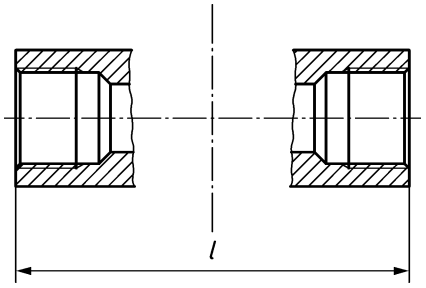
3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 736-1:1995, EN 736-2:1997 and EN 736-3:2008 and the following apply.

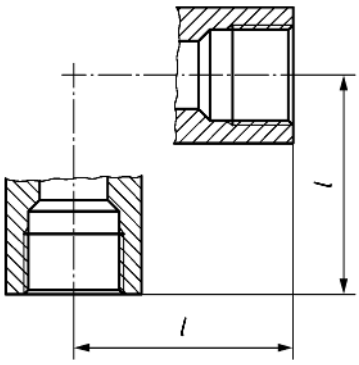
3.1
end-to-end dimensions (ETE)
(straight pattern valves)
distance expressed between the ends of the body for straight and oblique pattern valves

3.2
centre-to-end dimensions (CTE)
(angle pattern valves)
distance expressed between one of the ends of the body and the centre of the body for angle pattern valves

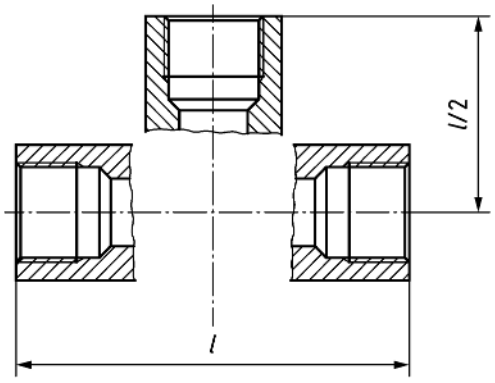
3.3
end-to-end and centre-to-end dimensions (ETE+CTE)
(three-way valves)
distance expressed between the ends of the body (ETE) in the run and distance expressed between the end of the body in the branch and the centre of the body (CTE)



a) Straight and oblique pattern valve



b) Angle pattern valve



c) Three-way valve

Key

Figure 1 a) ETE with ETE = *l*

Figure 1 b) CTE with CTE = *l*

Figure 1 c) ETE+CTE with ETE = *l* and CTE = *l* / 2

Figure 1 — ETE and CTE dimensions

4 Dimensions and tolerances

4.1 Basic series

The basic series of *l* for ETE and CTE dimensions are given in Table 1.

For each type of valve, the basic series to be taken into consideration shall be in accordance with Tables 3 to 7.

Other dimensions are subject of agreement between manufacturer and purchaser.

NOTE 1 Table 1 gives complete series. In Tables 3 to 7 the columns of series may be reduced.

NOTE 2 For certain sizes/types of valves, alternative dimensions are permitted and are specified in Tables 3 to 7.

4.2 Tolerances

Tolerances on ETE and CTE dimensions shall be in accordance with Table 2.

Table 1 — Dimensions *l* of basic series

Dimensions in millimetres

DN	Basic series																						
	M2	**M3**	**M4**	**M5**	**X1**	**X2**	**X3**	**X4**	**X5**	**X6**	**X7**	**X8**	**X9**	**X10**	**X11**	**X12**	**X13**	**X14**	**X15**	**X16**	**X17**	**X18**	**X19**	**X20**
4	–	50	70	50	–	–	–	–	–	–	–	–	–	69	69	69	–	–	–	–	–	–	–	–
6	–	50	70	50	–	–	–	–	–	–	–	–	–	69	69	69	–	85	–	–	–	–	–	–
8	–	55	70	55	–	–	–	70	65	78	–	–	–	69	69	–	–	85	–	–	–	55	67	75
10	70	60	75	55	95	–	–	70	65	78	55	–	–	73	73	72	–	85	–	–	–	55	67	75
15	85	75	85	65	95	49	200	70	65	90	65	117	104	84	–	–	–	–	95	–	–	65	75	90
20	100	80	95	75	95	49	200	80	65	95	80	117	104	96	97	95	–	100	95	–	–	70	90	105
25	115	90	105	90	95	61	200	90	–	–	–	139	104	113	113	113	120	110	95	65	80	85	105	120
32	130	110	120	95	95	61	200	–	–	–	–	186	–	110	115	110	120	130	–	65	80	95	120	–
40	150	120	130	100	130	72	255	–	–	–	–	186	–	120	135	130	140	145	165	70	87	105	135	–
50	180	140	150	112	230	72	255	–	–	–	–	209	–	140	140	140	150	160	165	70	91	125	155	–
65	–	185	185	132	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	167	190	–
80	–	205	205	160	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	192	205	–
100	–	240	240	180	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	230	–

Table 1 (continued)

Dimensions in millimetres

DN	Basic series									
	X21	**X22**	**X23**	**X24**	**X25**	**X26**	**X27**	**X28**	**X29**	**X30**
4	–	–	–	–	–	–	–	–	–	–
6	–	–	–	–	–	–	–	–	–	–
8	70	72	–	–	42	–	–	–	–	–
10	70	72	–	75	49	60	59	83	–	105
15	75	82	75	85	56	65	74	90	90	114
20	85	92	75	100	61	78	80	97	100	125
25	102	102	75	115	69	92	91	110	115	142
32	118	118	–	130	77	105	110	124	134	160
40	125	134	–	150	81	120	120	130	150	170
50	149	144	–	180	95	145	141	155	168	200
65	–	–	–	170	112	–	–	–	–	–
80	–	–	–	220	122	–	–	–	–	–
100	–	–	–	–	160	–	–	–	–	–

Table 2 — Tolerances

Dimensions in millimetres

Dimension ETE or CTE [a]		**Tolerance**
above	**up to and including**	
0	250	±2
250	500	±3
500	800	±4
800	1 000	±5
1 000	1 600	±6
1 600	2 500	±8

[a] Dimensions ETE or CTE in accordance with Figure 1.

Table 3 — Gate valves

PN/Class	ETE series				CTE series							
	M2	M4	X13	X14	X16[a]	X17	X25	X26	X27	X28	X29	X30
PN 10 to PN 16	x	x	x	x	x	x	x	x	x	x	x	x
PN 25 to PN 40	–	–	–	–	–	–	–	–	–	–	–	–
PN 63 to PN 100	–	–	–	–	–	–	–	–	–	–	–	–
PN 160	–	–	–	–	–	–	–	–	–	–	–	–
PN 250 to PN 320	–	–	–	–	–	–	–	–	–	–	–	–
PN 400	–	–	–	–	–	–	–	–	–	–	–	–
Class 150	–	–	–	–	–	–	–	–	–	–	–	–
Class 300	–	–	–	–	–	–	–	–	–	–	–	–
Class 600	–	–	–	–	–	–	–	–	–	–	–	–
Class 900	–	–	–	–	–	–	–	–	–	–	–	–
Class 1 500	–	–	–	–	–	–	–	–	–	–	–	–
Class 2 500	–	–	–	–	–	–	–	–	–	–	–	–

[a] The dimensions in column X16 of Table 1 refer to the horizontal dimensions of a vertical gate valve type.

Table 4 — Ball valves

PN/Class	ETE series																		
	M2	**M4**	**X10**	**X11**	**X12**	**X13**	**X14**	**X18** [a]	**X19** [a]	**X20** [a]	**X21** [a]	**X22** [a]	**X24**	**X25**	**X26**	**X27**	**X28**	**X29**	**X30**
PN 10 to PN 16	–	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	X
PN 25 to PN 40	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
PN 63 to PN 100	–	x	x	x	x	x	x	x	x	x	x	–	–	–	–	–	–	–	–
PN 160	–	–	x	x	x	x	–	–	x	x	–	–	–	–	–	–	–	–	–
PN 250 to PN 320	–	–	x	x	x	x	–	–	x	x	–	–	–	–	–	–	–	–	–
PN 400	–	–	x	x	x	x	–	–	–	x	–	–	–	–	–	–	–	–	–
Class 150	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Class 300	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Class 600	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Class 900	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Class 1 500	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Class 2 500	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

[a] Additional ETE+CTE series for three-way valves

Table 5 — Globe valves and lift check valves; straight and oblique patterns

PN/Class	ETE series												
	X1	X2	X8	X9	X25	X26	X27	X28	X29	X30	M3	M4	M5
PN 10 to PN 16	x	x	x	x	x	x	x	x	x	x	x	x	x
PN 25 to PN 40	x	–	x	x	x	x	x	x	x	x	x	x	x
PN 63 to PN 100	–	–	–	–	–	–	–	–	–	–	–	–	–
PN 160	–	–	–	–	–	–	–	–	–	–	–	–	–
PN 250 to PN 320	–	–	–	–	–	–	–	–	–	–	–	–	–
PN 400	–	–	–	–	–	–	–	–	–	–	–	–	–
Class 150	x	x	x	x	x	x	x	x	x	x	x	x	x
Class 300	x	–	x	x	–	–	–	–	–	–	x	x	x
Class 600	–	–	–	–	–	–	–	–	–	–	–	–	–
Class 900	–	–	–	–	–	–	–	–	–	–	–	–	–
Class 1 500	–	–	–	–	–	–	–	–	–	–	–	–	–
Class 2 500	–	–	–	–	–	–	–	–	–	–	–	–	–

Table 6 — Globe control valves; straight pattern

PN/Class	ETE series			
	X8	M3	M4	M5
PN 10 to PN 16	x	x	x	x
PN 25 to PN 40	x	x	x	x
PN 63 to PN 100	–	–	–	–
PN 160	–	–	–	–
PN 250 to PN 320	–	–	–	–
PN 400	–	–	–	–
Class 150	x	x	x	x
Class 300	x	x	x	x
Class 600	–	–	–	–
Class 900	–	–	–	–
Class 1 500	–	–	–	–
Class 2 500	–	–	–	–

Table 7 — Automatic steam traps

PN/Class	ETE series													
	X1	**X2**	**X3**	**X4**	**X5**	**X6**	**X7**	**X8**	**X9**	**X15**	**X23**	**M3**	**M4**	**M5**
PN 10 to PN 16	x	x	x	x	x	x	x	x	x	x	x	x	x	x
PN 25 to PN 40	x	–	x	x	x	x	x	x	x	x	x	x	x	x
PN 63 to PN 100	–	–	x	x	–	–	x	–	–	–	–	–	–	–
PN 160	–	–	–	–	–	–	–	–	–	–	–	–	–	–
PN 250 to PN 320	–	–	–	–	–	–	–	–	–	–	–	–	–	–
PN 400	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Class 150	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Class 300	x	–	x	x	x	x	x	x	x	x	x	x	x	x
Class 600	–	–	x	x	–	–	x	–	–	–	–	–	–	–
Class 900	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Class 1 500	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Class 2 500	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Annex A
(informative)

Relationship between DN (nominal size) and internal thread

For the relationship between DN and internal thread, see Table A.1.

Table A.1 — Relationship between DN and internal thread

DN	EN 10226–1	EN ISO 228-1	ASME B1.20.1
6	Rp ⅛	G ⅛	NPT ⅛
8	Rp ¼	G ¼	NPT ¼
10	Rp ⅜	G ⅜	NPT ⅜
15	Rp ½	G ½	NPT ½
20	Rp ¾	G ¾	NPT ¾
25	Rp 1	G 1	NPT 1
32	Rp 1 ¼	G 1 ¼	NPT 1 ¼
40	Rp 1 ½	G 1 ½	NPT 1 ½
50	Rp 2	G 2	NPT 2
65	Rp 2 ½	G 2 ½	NPT 2 ½
80	Rp 3	G 3	NPT 3
100	Rp 4	G 4	NPT 4

Annex B
(informative)

Origin of basic series

For origins of basic series, see Table B.1.

Table B.1 — Origin of basic series

Basic series	Origin
M2- M5	DIN 3202–4:1982
X1 – X30	According to agreements between and proposals of CEN/TC 69 experts involved in the preparation of this European Standard

Annex C
(informative)

Relationship between DN (nominal size) and nominal pipe size (NPS)

For the relationship between DN (nominal size) and nominal pipe size (NPS) see Table C.1.

Table C.1 — Relationship between DN (nominal size) and nominal pipe size (NPS)

Nominal size	**DN**	6	8	10	15	20	25	32	40	50	65	80	100
	NPS	1/8	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3	4

Bibliography

[1] EN 558, *Industrial valves — Face-to-face and centre-to-face dimensions of metal valves for use in flanged pipe systems — PN and Class designated valves*

[2] EN 10226-1, *Pipe threads where pressure tight joints are made on the threads — Part 1: Taper external threads and parallel internal threads — Dimensions, tolerances and designation*

[3] EN 12516-1, *Industrial valves — Shell design strength — Part 1: Tabulation method for steel valve shells*

[4] EN 12627, *Industrial valves — Butt welding ends for steel valves*

[5] EN ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation (ISO 228-1)*

[6] DIN 3202-4:1982, *Face-to-face and centre-to-face dimensions of valves — Valves with female thread connection*

[7] ASME B16.10, *Face-to-Face and End-to-End Dimensions of Valves*

[8] ASME B16.11, *Forged Fittings, Socket-Welding and Threaded*

[9] ASME B16.34, *Valves — Flanged, Threaded, and Welding End*

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