

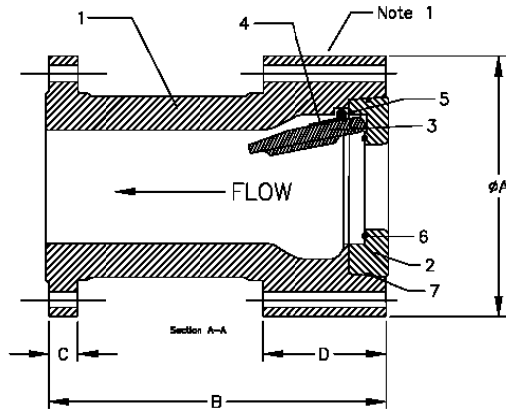
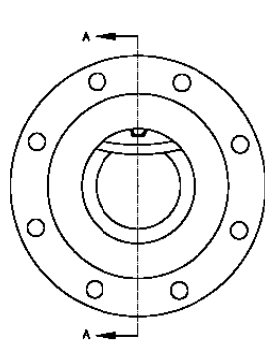


PRECISION ENGINEERED CHECK VALVES

SERIES X EXTENDED BODY CHECK VALVE



HIGH PERFORMANCE
HIGH FLOW
LARGE UNOBSTRUCTED
FLOW PATH
RUGGED, HIGH INTEGRITY
CONSTRUCTION



PARTS LIST

ITEM	PART NAME
1	BODY
2	SEAT INSERT
3	FLAPPER
4	SPRING
5	SPRING PIN
6	SEAT SEAL
7	INSERT RING

Series X Installation Dimensions

SIZE	ASME CLASS	A-Dia		B-LTH Raised Face		B-LTH RTJ Face		C-LTH		D-LTH		E-Holes		Bolt Circle		WEIGHT		
		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	Qty	Diameter		inch	mm	lbs.	kg.
													inch	mm				
1" 25mm	150	4-1/4	108	5	127	5-1/2	140	--	--	--	--	4	5/8	16	3-1/8	79	19	9
	300	4-7/8	124	8-1/2	216	9	229	11/16	17	3	76	4	3/4	19	3-1/2	89	22	10
	600	4-7/8	124	8-1/2	216	8-1/2	216	11/16	17	3	76	4	3/4	19	3-1/2	89	22	10
	900-1500	5-7/8	149	10	254	10	254	1-1/8	29	3-1/4	83	4	1	25	4	102	38	17
	2500	6-1/4	159	12-1/8	308	12-1/8	308	1-3/8	35	3-1/4	83	4	1	25	4-1/4	108	52	24
1-1/2" 40mm	150	5	127	6-1/2	165	7	178	--	--	--	--	4	5/8	16	3-7/8	98	33	15
	300	6-1/8	156	9-1/2	241	10	254	7/8	22	3-1/8	79	4	7/8	22	4-1/2	114	38	17
	600	6-1/8	156	9-1/2	241	9-1/2	241	7/8	22	3-1/8	79	4	7/8	22	4-1/2	114	38	17
	900-1500	7	178	12	305	12	305	1-1/4	32	3-1/2	89	4	1-1/8	29	4-7/8	124	63	29
	2500	8	203	15-1/8	384	15-1/8	384	1-3/4	44	3-1/2	89	4	1-1/4	32	5-3/4	146	104	47
2" 50mm	150	6	152	8	203	8-1/2	216	3/4	19	3	76	4	3/4	19	4-3/4	121	31	14
	300	6-1/2	165	10-1/2	267	11-1/8	283	7/8	22	3	76	8	3/4	19	5	127	43	20
	600	6-1/2	165	11-1/2	292	11-5/8	295	1	25	3	76	8	3/4	19	5	127	46	21
	900	8-1/2	216	14-1/2	368	14-5/8	371	1-1/2	38	3-1/4	83	8	1	25	6-1/2	165	108	49
	1500	8-1/2	216	14-1/2	368	14-5/8	371	1-1/2	38	3-1/4	83	8	1	25	6-1/2	165	108	49
	2500	9-1/4	235	17-3/4	451	17-7/8	454	2	51	3-1/2	89	8	1-1/8	29	6-3/4	171	162	74
2-1/2" 65mm	150	7	178	8-1/2	216	9	229	7/8	22	3	76	4	3/4	19	5-1/2	140	43	20
	300	7-1/2	191	11-1/2	292	12-1/8	308	1	25	3-1/8	79	8	7/8	22	5-7/8	149	63	29
	600	7-1/2	191	13	330	13-1/8	333	1-1/8	29	3-1/8	79	8	7/8	22	5-7/8	149	68	31
	900	9-5/8	244	16-1/2	419	16-5/8	422	1-5/8	41	3-1/2	89	8	1-1/8	29	7-1/2	191	145	66
	1500	9-5/8	244	16-1/2	419	16-5/8	422	1-5/8	41	3-1/2	89	8	1-1/8	29	7-1/2	191	145	66
	2500	10-1/2	267	20	508	20-1/4	514	2-1/4	57	3-3/4	95	8	1-1/4	32	7-3/4	197	249	113

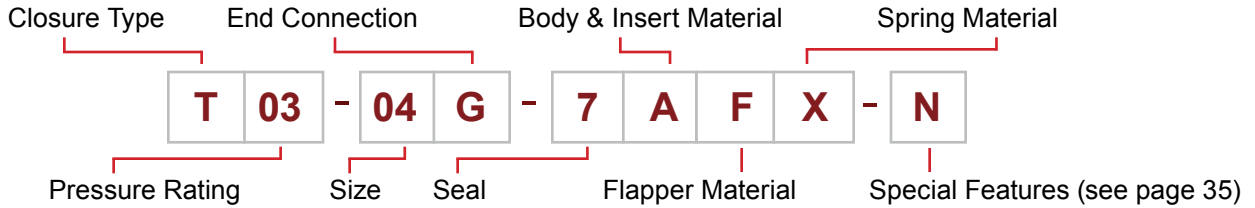
Dimensions shown are for installation between ASME B16.5 flanges.

Series X Installation Dimensions, continued

SIZE	ASME CLASS	A-Dia		B-LTH Raised Face		B-LTH RTJ Face		C-LTH		D-LTH		E-Holes			Bolt Circle		WEIGHT	
		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	Qty	Diameter		inch	mm	lbs.	kg.
													inch	mm				
3" 75mm	150	7-1/2	191	9-1/2	241	10	254	15/16	24	3-1/2	89	4	3/4	19	6	152	55	25
	300	8-1/4	210	12-1/2	318	13-1/8	333	1-1/8	29	3-1/2	89	8	7/8	22	6-5/8	168	82	37
	600	8-1/4	210	14	356	14-1/8	359	1-1/4	32	3-1/2	89	8	7/8	22	6-5/8	168	88	40
	900	9-1/2	241	15	381	15-1/8	384	1-1/2	38	3-1/2	89	8	1	25	7-1/2	191	131	60
	1500	10-1/2	267	18-1/2	470	18-5/8	473	1-7/8	48	3-3/4	95	8	1-1/4	32	8	203	212	96
	2500	12	305	22-3/4	578	23	584	2-5/8	67	4	102	8	1-3/8	35	9	229	346	157
4" 100mm	150	9	229	11-1/2	292	12	305	15/16	24	3-1/2	89	8	3/4	19	7-1/2	191	87	40
	300	10	254	14	356	14-5/8	371	1-1/4	32	3-1/2	89	8	7/8	22	7-7/8	200	127	58
	600	10-3/4	273	17	432	17-1/8	435	1-1/2	38	3-1/2	89	8	1	25	8-1/2	216	184	84
	900	11-1/2	292	18	457	18-1/8	460	1-3/4	44	3-3/4	95	8	1-1/4	32	9-1/4	235	262	119
	1500	12-1/4	311	21-1/2	546	21-5/8	549	2-1/8	54	4	102	8	1-3/8	35	9-1/2	241	364	165
	2500	14	356	26-1/2	673	26-7/8	683	3	76	4-1/2	114	8	1-5/8	41	10-3/4	273	595	270
6" 150mm	150	11	279	14	356	14-1/2	368	1	25	4-3/4	121	8	7/8	22	9-1/2	241	167	76
	300	12-1/2	318	17-1/2	445	18-1/8	460	1-7/16	37	4-3/4	121	12	7/8	22	10-5/8	270	295	134
	600	14	356	22	559	22-1/8	562	1-7/8	48	5-1/2	140	12	1-1/8	29	11-1/2	292	501	228
	900	15	381	24	610	24-1/8	613	2-3/16	56	5-1/2	140	12	1-1/4	32	12-1/2	318	590	268
	1500	15-1/2	394	27-3/4	705	28	711	3-1/4	83	6-1/2	165	12	1-1/2	38	12-1/2	318	725	330
8" 200mm	150	13-1/2	343	19-1/2	495	20	508	1-1/8	29	7	178	8	7/8	22	11-3/4	298	337	153
	300	15	381	21	533	21-5/8	549	1-5/8	41	7-1/4	184	12	1	25	13	330	480	218
	600	16-1/2	419	26	660	26-1/8	664	2-3/16	56	8	203	12	1-1/4	32	13-3/4	349	710	323
	900	18-1/2	470	29	737	29-1/8	740	2-1/2	64	8-1/2	216	12	1-1/2	38	15-1/2	394	1040	473
10" 250mm	150	16	406	24-1/2	622	25	635	1-3/16	30	8-1/4	210	12	1	25	14-1/4	362	595	270
	300	17-1/2	445	24-1/2	622	25-1/8	638	1-7/8	48	8-1/4	210	16	1-1/8	29	15-1/4	387	730	332
	600	20	508	31	787	31-1/8	791	2-1/2	64	9-1/4	235	16	1-3/8	35	17	432	1320	600
12" 300mm	150	19	483	27-1/2	699	28	711	1-1/4	32	9	229	12	1	25	17	432	941	428
	300	20-1/2	521	28	711	28-5/8	727	2	51	9-1/2	241	16	1-1/4	32	17-3/4	451	1180	536
14" 350mm	150	21	533	31	787	31-1/2	800	1-3/8	35	12	305	12	1-1/8	29	18-3/4	476	1280	582

Dimensions shown are for installation between ASME B.16.5 flanges.

Metallic Check Valves – Series T, F, L, D, H and FF



Codes for Valve Type	
Code	Valve Type
T	Wafer Single Disc
F	Lug wafer with Thru Holes Single Disc
L	Lug wafer with Threaded Holes Single Disc
D	Wafer Dual Disc
FD	Lug wafer with Thru Holes Dual Disc
LD	Lug wafer with Threaded Holes Dual Disc
X	Swing Check - ANSI B16.10 end-to-end
H	Buttweld, Hub, Flanged
FF	Full Bore/Full Opening
Modifiers	
S*	Severe Service Option
A*	Tilt Seat Option
E*	Extended face-to-face Option

Codes for ANSI/API Pressure Rating	
Code	Rating
01	Class 150
03	Class 300
06	Class 600
09	Class 900
15	Class 1500
25	Class 2500
30	3,000 API 6A
50	5,000 API 6A
10	10,000 API 6A
15	15,000 API 6A

Size Code	
Code	Size
01 to 48	1" to 48"
Code for End Connection	
Code	End Connection Type
G	Raised Face (serrated)
F	Flat Face
R	Ring Joint or BX groove
H	Hub Ends
B	Buttwelding ends
O	per customer requirement

*Examples of Modifiers for Valve Types

- ST = Severe Service Wafer
- SX = Severe Service Swing Check - ANSI B16.10 end-to-end
- AF = Tilt Seat Lug with Thru Holes
- EL = Extended face-to-face with Threaded Holes
- AET = Tilt Seat, Extended face-to-face Wafer

Codes for Seal Materials			
Code	Material	Temperature Range**	
		°C	°F
1	Buna-N	-51 to 107	-60 to 225
2	Neoprene	-40 to 107	-40 to 225
3	Butyl	-54 to 163	-65 to 325
4	Kalrez®	-29 to 316	-20 to 600
5	Chemraz®	-29 to 232	-20 to 450
6	AFLAS®	-40 to 218	-40 to 425
7	Viton®	-29 to 204	-20 to 400
8	Teflon®	-157 to 232	-250 to 450
9	EPDM	-54 to 149	-65 to 300
10	Metal-to-Metal	extreme	extreme
11	13% Chrome (410 S.S.) seating surfaces	extreme	extreme
12	316 S.S. seat insert	extreme	extreme
13	Stellite® seat overlay on disc and seat insert	extreme	extreme
14	Stellite® seat overlay on disc only	extreme	extreme
15	Stellite® seat overlay on seat insert only	extreme	extreme
16	FKM 58/90	-27 to 210	-17 to 410
0	As specified by customer		

** Temperatures are for general guidance and may vary per application

Codes for Body, Seat Insert, and Disc Material

Code	Material	ASME B16.34 Group	ASTM Specifications			
			Forgings	Round Bar	Plate	Investment or Centrifugal Castings
A	Carbon Steel	1.1	A105	A105	A516 Gr. 70	
B	Bronze (Navy)					B148 / B271 C92200
C	Nickel-Aluminum Bronze			B150 C63200		B148 / B271 C95800
D	Low Temp. Steel (-50°F)	1.1	A350 Gr. LF 2	A350 Gr. LF 2	A516 Gr. 70	
E	Low Temp. Steel (-150°F)	1.1	A350 Gr. LF 3	A350 Gr. LF 3		
F	316 Stainless Steel	2.2	A182-F316	A182-F316 / A479 316	A240 316	A351 Gr. CF8M
G	5% Cr Steel	1.13	A182-F5a	A182-F5a		
H	Alloy C276	3.8	B462 N10276 / B564 N10276	B462 N10276 / B574 N10276	B575 N10276	A494 Gr. CW12MW
I	Inconel® 625	3.8	B564 N06625	B446 N06625	B443 N06625	A494 Gr. CW6MC
J	317 Stainless Steel	2.2	A182-F317	A182-F317	A240 317	A351 Gr. CG8M
K	347H Stainless Steel	2.5	A182-F347	A182-F347 / A479-F347	A240 347	A351 Gr. CF8C
L	410 Stainless Steel		A182-F6a	A182-F6a	A240 410	A217 Gr. CA15
M	Monel®	3.4	B564 N04400	B164 N04400	B127 N04400	A494 Gr. M-35-2
N	Super Duplex Stainless Steel	2.8	A182-F55	A182-F55 / A479 S32760	A240 S32760	A995 Gr. CD3MWCuN (6A)
P	6% Moly S.S. (type 254 SMO®)	2.8	A182-F44	A182-F44 / A479 S31254	A240 S31254	A351 Gr. CK3MCuN
R	Incoloy® 825	3.8	B564 N08825	B425 N08825	B424 N08825	
S	Nickel	3.2	B564 N02200	B160 N02200	B162 N02200	
T	Titanium Grade 2		B381 F2	B348 Gr. 2	B265 Gr. 2	
U	Duplex Stainless Steel	2.8	A182-F51	A182-F51 / A479 S31803	A240 S31803	A351-CD3MN
W	API 60K Low Alloy Steel		A694 Gr. F65			
X	9% Cr - 1% Mo Steel	1.14	A182-F9	A182-F9		
Y	Alloy 20	3.1	B462 N08020	B462 N08020 / B473 N08020	B463 N08020	A351 Gr. CN7M
Z	Zirconium		B493 R60702	B550 R60702	B551 R60702	
O	As specified by customer		Contact HY-Grade for materials not shown above.			

Due to continuous product improvement, HY-GRADE VALVE, Inc. reserves the right to change designs, materials or specifications without prior notice.

Codes for Spring Material

Code	Description	Max Temperature**	
		°C	°F
I	Inconel 600	327	620
X	Inconel X750 (standard)	537	1000
E	Elgiloy	327	620
H	Alloy C276	427	800
M	Monel K500	232	450
T	Titanium	288	550
S	316 Stainless Steel	249	480
O	Per customer specifications		

** Temperatures are for general guidance and may vary per application

Codes for Special Features	
	Description
N	Material per NACE MR01-75 / ISO 15156
1	1/8"-27 NPTF tapped gage port
2	1/4"-18 NPTF tapped gage port
3	1/2"-14 NPTF tapped gage port
4	1/4"-18 NPTF tapped drain
5	1/2"-14 NPTF tapped drain
6	3/4"-14 NPTF tapped drain
SP	Special Trim or Design as specified by the customer
O ₂	Cleaned for Oxygen service

MODEL NUMBER EXAMPLES

- T03-04G-7AFX = Series T Wafer check valve, 4" (100mm), Class 300, Raised Face Ends, Viton® seal, Carbon Steel Body & Seat Insert, 316 S.S. Flapper, Inconel® X750 Spring.
- T01-08G-10FFX = Series T Wafer, 8" (200mm), Class 150, Raised Face ends, Metal seal, 316 S.S. Body & Seat Insert, 316 S.S. Flapper, Inconel® X750 Spring.
- F09-16R-8AFE-N = Series F Lug Wafer check valve with thru holes, 16" (400mm), Class 900, RTJ ends, Teflon® seal, Carbon Steel Body & Seat Insert, 316 S.S. Flapper, Elgiloy Spring, NACE MR01-75 certification.
- ST03-06G-10FN = Severe Service - Series T Wafer check valve, 6" (150mm), Class 300, Raised Face ends, 316 S.S. Body & Seat Insert, Duplex S.S. Flapper.
- X15-02G-15ALX = Series X Swing Check with ANSI B16.10 face-to-face, 2" (50mm), Class 1500, Raised Face Ends, Stellite® seat overlay on seat insert, Carbon Steel Body & Seat Insert, type 410 S.S. Flapper, Inconel® X750 Spring
- H15-14B-14GLX = Series H check valve with Buttwelding ends, 14" (350mm), Class 1500, Stellite® seat overlay on flapper, 5% Cr Body & Seat Insert, 410 S.S. Flapper, Inconel® X750 Spring.
- AET09-10R-10AF = Series T Wafer check valve with Tilt Seat and Extended body, 10" (250mm), Class 900, RTJ ends, Metal seal, Carbon Steel Body & Seat Insert, 316 S.S. Flapper.
- D03-36G-10AFX = Series D High Performance Dual Plate Wafer check valve, 36"(900mm), Class 300, Raised Face ends, Metal Seal, Carbon Steel Body & Seat Insert, 316 S.S. Flapper, Inconel® X750 Spring.

CALCULATED CRACKING PRESSURE

SIZE	SPRING ASSISTED		NON-SPRING ASSISTED	
	HORIZONTAL FLOW	VERTICAL UP FLOW	HORIZONTAL FLOW	VERTICAL UP FLOW
1"	0.67	0.78	0.01	0.12
1-1/2"	0.28	0.39	0.01	0.11
2"	0.32	0.43	0.01	0.12
2-1/2"	0.52	0.64	0.01	0.13
3"	0.21	0.31	0.01	0.11
4"	0.17	0.31	0.01	0.13
6"	0.25	0.43	0.02	0.18
8"	0.12	0.31	0.02	0.18
10"	0.16	0.38	0.02	0.22
12"	0.21	0.43	0.02	0.22
14"	0.19	0.41	0.02	0.21
16"	0.15	0.49	0.02	0.34
18"	0.12	0.34	0.02	0.22
20"	0.08	0.37	0.02	0.29
24"	0.06	0.31	0.02	0.24
30"	0.06	0.28	0.02	0.23
36"	0.06	0.29	0.02	0.24

1 PSI = 27.72" water = 0.069 bar

