



INGENUITY LEADS TO HIGH PERFORMANCE

Renewable seat insert for low cost and easy repairs

The disc and shaft are designed as an integral component with large diameter shafts to provide strength at a critical location

Retainerless body design with no external holes for zero fugitive emissions

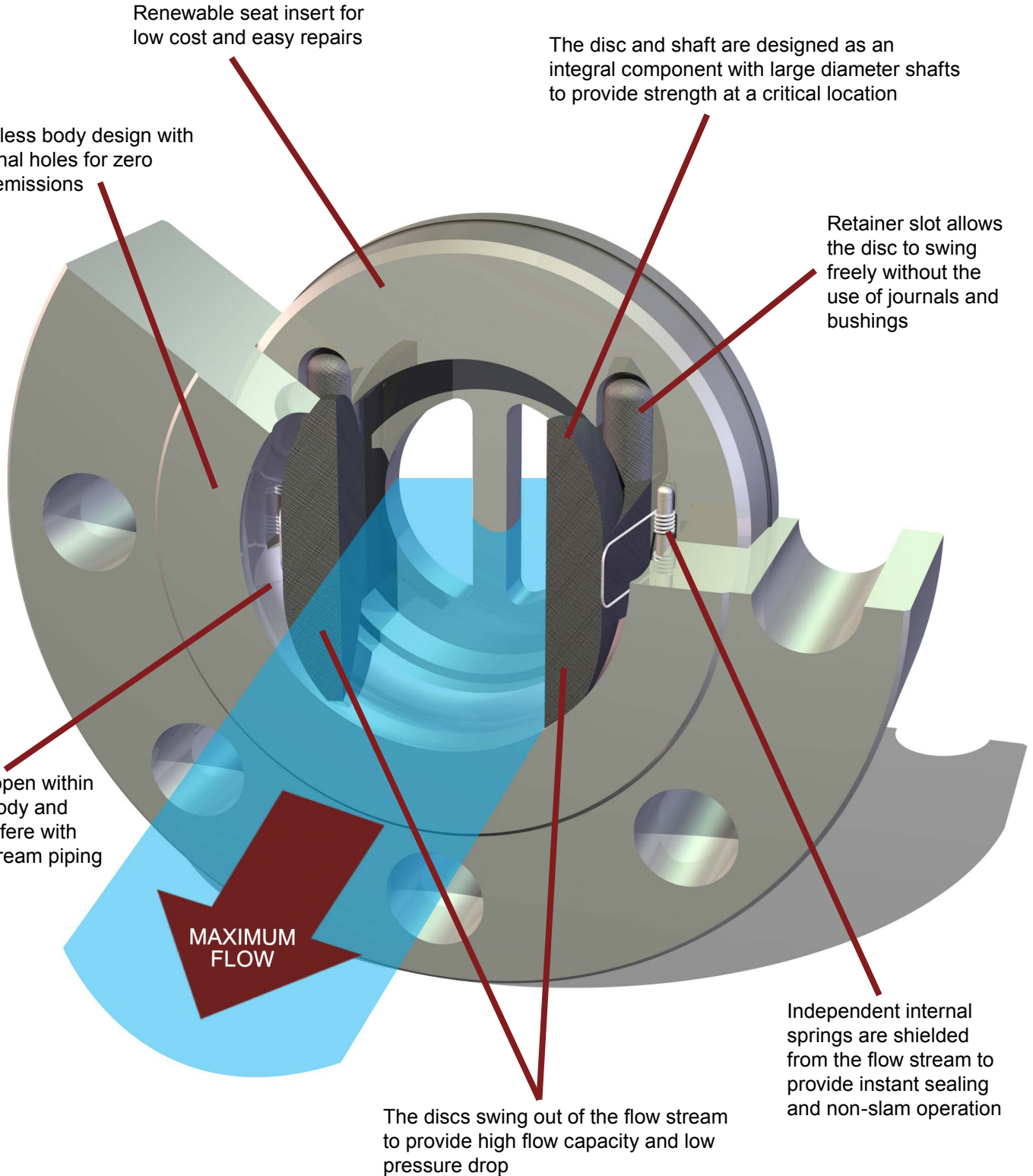
Retainer slot allows the disc to swing freely without the use of journals and bushings

The discs open within the valve body and do not interfere with the downstream piping

MAXIMUM FLOW

Independent internal springs are shielded from the flow stream to provide instant sealing and non-slam operation

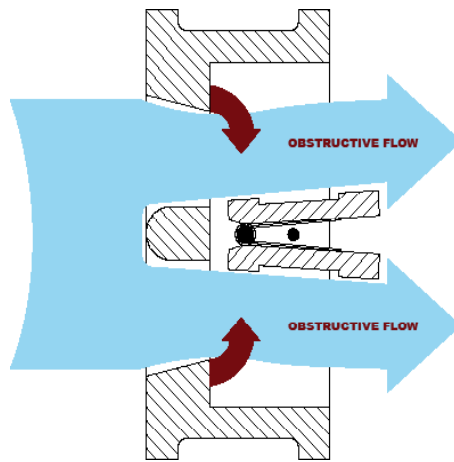
The discs swing out of the flow stream to provide high flow capacity and low pressure drop



COMPARE HY-GRADE VALVE, INC. HI-PERFORMANCE CHECK VALVE

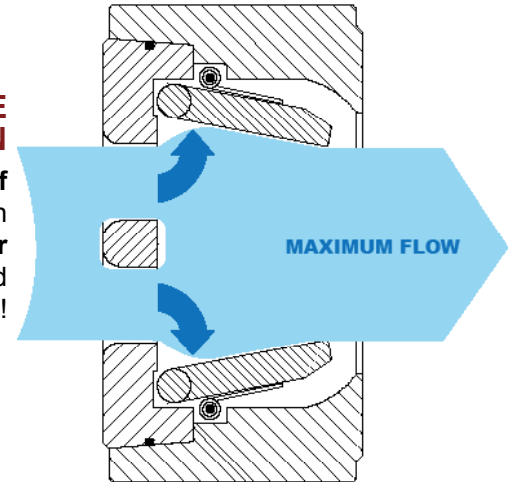
TYPICAL DUAL PLATE DESIGN

Discs swing into the flow path obstructing the flow and exposing the vital components (springs and shafts)



HY-GRADE DESIGN

Discs swing **out** of the flow path leading to **lower** turbulence and pressure drop!



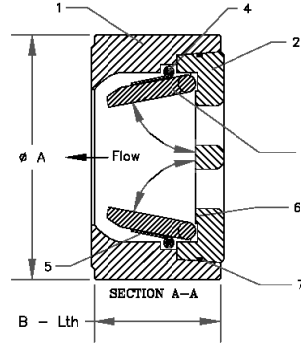
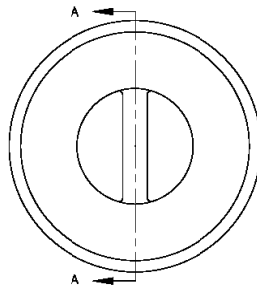
TYPICAL DUAL PLATE DESIGN



HY-GRADE DESIGN



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



PARTS LIST

ITEM	PART NAME
1	BODY
2	SEAT INSERT
3	DISCS (2)
4	SPRING PINS (2)
5	SPRINGS (2)
6	SEAT SEAL
7	ASS'Y RING

Dimensions shown are for installation between ASME B16.5, ASME B16.47 Series A or MSS SP-44 flanges. HY-GRADE check valves are also available in ASME B16.47 Series B (old API 605) or DIN sizes.

Series D Installation Dimensions per API Standard 594

SIZE	ASME CLASS	A-Dia		B-LTH		FLANGE FACE	WEIGHT	
		inch	mm	inch	mm		lbs.	kg.
16" 400mm	150	20-1/4	514	7-1/2	191	RF/FF	335	152
	300	21-1/4	540	9-1/8	232	RF/FF	537	244
	600	22-1/4	565	12	305	RF/RJ-65	621	282
	900	22-5/8	575	15-1/8	384	RF/RJ-66	1092	496
	1500	25-1/4	641	15-1/8	384	RF/RJ-67	1513	688
18" 450mm	150	21-5/8	549	8	203	RF/FF	391	178
	300	23-1/2	597	10-3/8	264	RF/FF	743	338
	600	24-1/8	613	14-1/4	362	RF/RJ-69	1104	502
	900	25-1/8	638	17-3/4	451	RF/RJ-70	1581	719
	1500	27-3/4	705	18-7/16	468	RF/RJ-71	2225	1011
20" 500mm	150	23-7/8	606	8-5/8	219	RF/FF	543	247
	300	25-3/4	654	11-1/2	292	RF/FF	1026	466
	600	26-7/8	683	14-1/2	368	RF/RJ-73	1484	675
	900	27-1/2	699	17-3/4	451	RF/RJ-74	1886	857
	1500	29-3/4	756	21	533	RF/RJ-75	3080	1400
24" 600mm	150	28-1/4	718	8-3/4	222	RF/FF	683	310
	300	30-1/2	775	12-1/2	318	RF/FF	1399	636
	600	31-1/8	791	17-1/4	438	RF/RJ-77	2078	945
	900	33	838	19-1/2	495	RF/RJ-78	2869	1304
26" 650mm	150	30-1/2	775	14	356	RF/FF	1590	723
	300	32-7/8	835	14	356	RF/FF	1960	891
	600	34-1/8	867	18	457	RF/RJ-73	2915	1325
28" 700mm	150	32-3/4	832	15	381	RF/FF	1940	882
	300	35-3/8	899	15	381	RF/FF	2565	1166
	600	36	914	19	483	RF/RJ-94	3410	1550

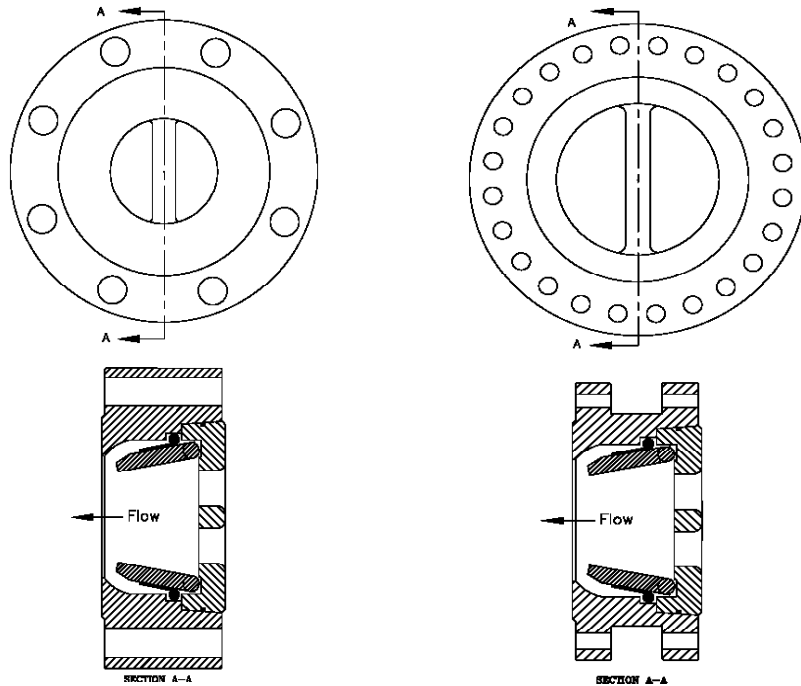
For Sizes 1" to 14" Please Consult Factory

Series D Installation Dimensions per API Standard 594, continued

SIZE	ASME CLASS	A-Dia		B-LTH		FLANGE FACE	WEIGHT	
		inch	mm	inch	mm		lbs.	kg.
30" 750mm	150	34-3/4	883	12	305	RF/FF	1688	767
	300	37-1/2	953	14-1/2	368	RF/FF	2460	1,118
	600	38-1/4	972	19-7/8	505	RF/RJ-95	3720	1,691
32" 800mm	150	37	940	14	356	RF/FF	2088	949
	300	39-5/8	1,006	16	406	RF/FF	3190	1,450
	600	40-1/4	1,022	21	533	RF/RJ-96	4593	2,088
36" 900mm	150	41-1/4	1,048	14-1/2	368	RF/FF	2370	1,077
	300	44	1,118	19	483	RF/FF	4086	1,857
	600	44-1/2	1,130	25	635	RF/RJ-98	6119	2,781
40" 950mm	150	45-3/4	1,162	16	406	RF/FF	3312	1,505
42" 1050mm	150	48	1,219	17	432	RF/FF	3878	1,763
48" 1200mm	150	54-1/2	1,384	20-5/8	524	RF/FF	6460	2,936

Dimensions shown are for installation between ASME B16.47 Series A or MSS SP-44 flanges. HY-GRADE check valves are also available in ASME B16.47 Series B (old API 605) or DIN sizes.

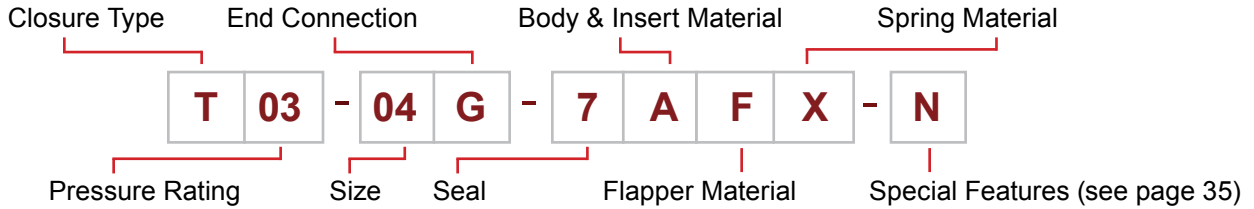
Also Available In:



Lug Style

Double Flanged

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

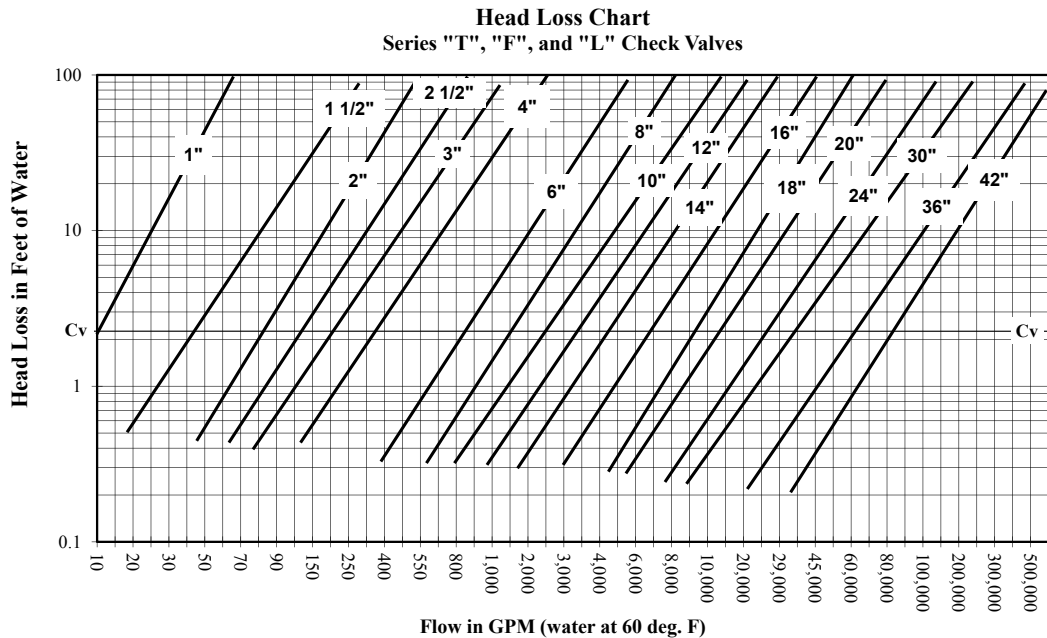
MODEL NUMBER EXAMPLES

- 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.

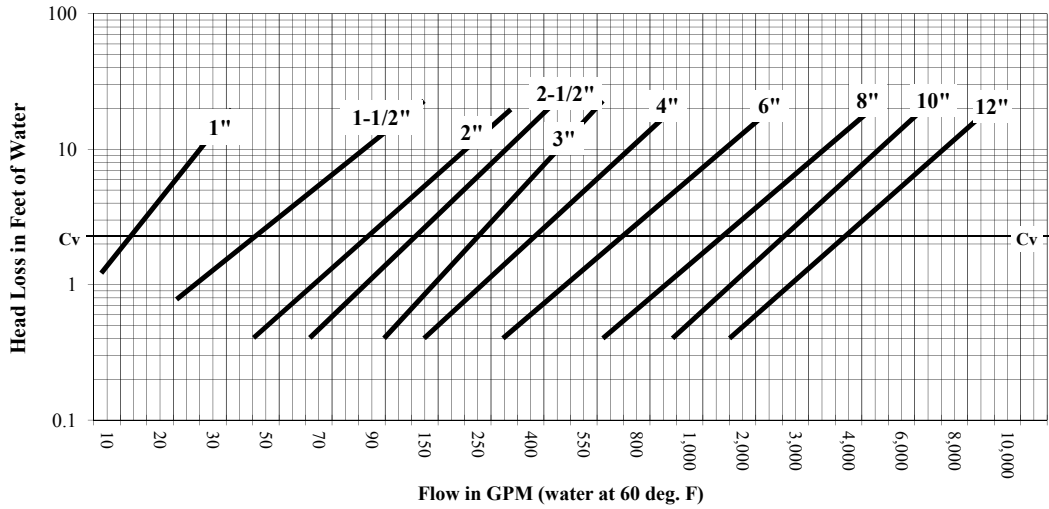
CALCULATED CRACKING PRESSURE

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

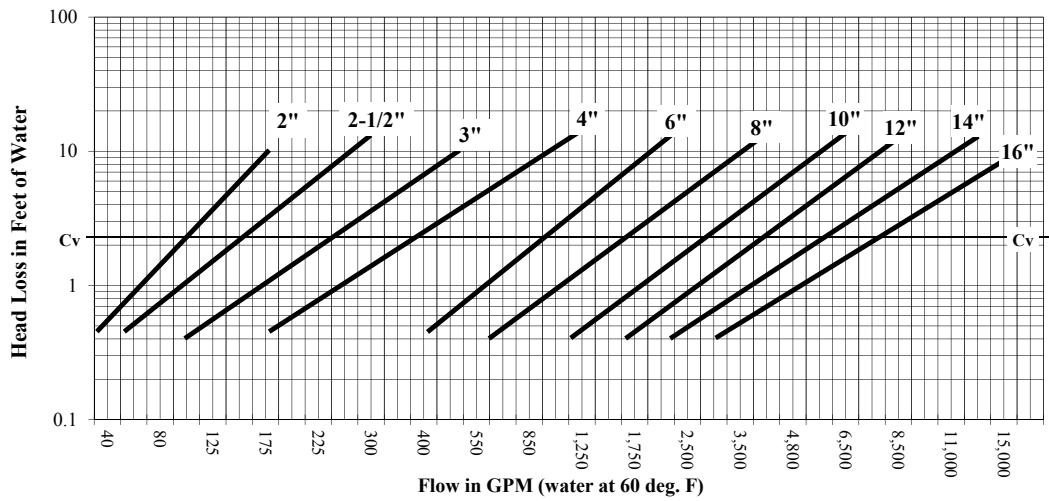
1 PSI = 27.72" water = 0.069 bar



Head Loss Chart
Series "P" Plastic Bodied Check Valves



Head Loss Chart
Series "H" Flanged, Butt-weld or Hub Ended Check Valves



Head Loss Chart
Series "D" Dual Plate Check Valves

