

September 19, 2020

Attention: Tanya Francis
TECHNICAL STANDARDS & SAFETY AUTHORITY
345 CARLINGVIEW DRIVE
TORONTO, ON M9W 6N9

The design submission, tracking number 2020-04386, originally received on September 02, 2020 was surveyed and accepted for registration as follows:

CRN : 0C00719.92 **Accepted on:** September 19, 2020
Reg Type: ADDITION TO ACC. FITTING **Expiry Date:** September 08, 2030
Drawing No. : CATALOG NO 1113
Fitting type: CHECK VALVES
Design registered in the name of : HY-GRADE VALVE INC

The registration is conditional on your compliance with the following notes:

*** The Scope of Registration: Catalog # 1113 excluding series FF, P & API 6A class series T*

As indicated on AB-41 Statutory Declaration form and submitted documentation, the code of construction is other engineering analysis.

- It is our understanding that the fitting(s), included as the scope of this submission, that is(are) subject to the Safety Codes Act shall comply with the requirements of the indicated Standard or Code of Construction on the AB-41 Statutory Declaration as supported by the attached data which identifies the dimensions, materials of construction, press./temp. ratings and the basis for such ratings, and the identification marking of the fittings.*
- This registration is valid only for fittings fabricated at the location(s) covered by the QC certificate attached to the accepted AB-41 Statutory Declaration form.*
- This registration is valid only until the indicated expiry date and only if the Manufacturer maintains a valid quality management system approved by an acceptable third-party agency until that date.*
- Should the approval of the quality management system lapse before the expiry date indicated above, this registration shall become void.*

An invoice covering survey and registration fees will be forwarded from our Revenue Accounts.

If you have any question don't hesitate to contact me by phone at (780) 433-0281 ext 3337 or fax (780) 437-7787 or e-mail Dick@absa.ca.

Sincerely,



DICK, ASHLING, P. Eng.
DOP Cert. No. D00007936



Technical Standards and Safety Authority
 345 Carlingview Drive
 Toronto, Ontario M9W 6N9
 www.tssa.org

Show facsimile of manufacturer's logo or trademark, as it will appear on the fitting, in the space below

HY-GRADE VALVE, INC. FAIRHOPE, AL
 MODEL _____ S/N _____ SIZE _____
 CLASS _____ STYLE _____ RATED _____ TEMP _____
 BODY _____ TRIM _____
 API 594 MADE IN USA

STATUTORY DECLARATION Registration of Fittings

I, Wayne Teumer, President
(Name and Position, e.g. President, Plant Manager, Chief Engineer)

of Hy-Grade Valve, Inc.
(Name of Manufacturer)

Located at 16250 Greeno Road, Fairhope, AL 36532 251-928-1992 251-928-3444
(Plant Address) (Telephone No.) (Fax No.)

do solemnly declare that the fittings listed hereunder, which are subject to the **Technical Standards and Safety Act**, Boilers and Pressure Vessels Regulation, comply with all of the requirements of
API Standard 594, 8th Edition, July 2017

(Title of recognized North American Standard)

which specifies the dimensions, materials of construction, pressure/temperature ratings, identification marking the fittings and service;

or are not covered by the provisions of a recognized North American standard and are therefore manufactured to comply with _____ as supported by the attached data which identifies the dimensions, material of construction, pressure/temperature ratings and the basis for such ratings, the marking of the fitting for identification and service.

I further declare that the manufacture of these fittings is controlled by a quality system meeting the requirements of ISO 9001:2015 which has been verified by the following authority, SAI Global Assurance

The items covered by this declaration, for which I seek registration, are category C. Valves type fittings. In support of this application, the following information and/or test data are attached as follows:

ISO 9001 Cert, API 6FA/6FD Fire Test Reports, DNV Inspection Reports, Wall Thickness, Catalogue 1113 (exclusions noted)
(drawings, calculations, test reports, etc.)

Declared before me at Fairhope, Baldwin Co in the state of Alabama
 the 12 day of August AD 2020.

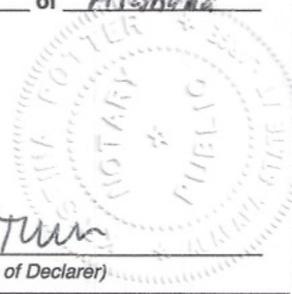
Commissioner for Oaths:

Kristina Potter - Notary
(Printed name)

[Signature]
(Signature)

My commission expires September 12, 2021

Wayne Teumer
(Signature of Declarer)



FOR OFFICE USE ONLY

To the best of my knowledge and belief, the application meets the requirements of the **Technical Standards and Safety Act**, Boilers and Pressure Vessels Regulation, and CSA Standard B51 and is accepted for registration in Category _____.

CRN: _____

Registered by: _____

Dated: _____

NOTE: This registration expires on: _____

2020-04386

ABSA

SAFETY CODES ACT - PROVINCE OF ALBERTA

ACCEPTED: 0C00719.92

See acceptance letter for conditions of registration.

Date: 2020-09-19 By: [Signature]
ASHLING DICK, P. Eng.

This stamp and signature have been affixed electronically to this registered design as required by Section 20(1) of the Pressure Equipment Safety Regulation, in accordance with the Electronic Transactions Act.

**Information provided in this application is releasable under the Freedom of Information and Privacy Protection Act and may be disclosed upon request.*

PV 09553 (04/17)

**** Scope of Registration: Catalog # 1113 excluding series FF, P & API 6A class series T**

2020-04386

ABSA

SAFETY CODES ACT - PROVINCE OF ALBERTA

ACCEPTED: 0C00719.92

See acceptance letter for conditions of registration.

Date: 2020-09-19 By: *Ashling Dick*
ASHLING DICK, P. Eng.

This stamp and signature have been affixed electronically to this registered design as required by Section 20(1) of the Pressure Equipment Safety Regulation, in accordance with the Electronic Transactions Act.



Introduction to HY-GRADE	1
Product Summary	3
Standard Features and Benefits of HY-GRADE Check Valves	5
Plastic Bodied Check Valves	8
Optional Features	
Tilted Seat	9
Extended Face-to-Face Wafer	10
Severe Service	11
Dual Plate Check Valves	13
Installation Dimensions	
Wafer Check Valves - Series T	15
Lug Wafer Check Valves - Series F or L	18
Flanged End Check Valves - Series H	21
Buttweld Check Valves - Series H	23
Extended Body Check Valves - Series X	25
Full Opening / Full Flow Check Valves - Series FF	27
Plastic Bodied Check Valves - Series P	29
API 6A Wafer Check Valve	30
Dual Plate Check Valve Series D	31
Ordering Information	
Metallic Check Valves - Series T, F, L, H, D and FF	33
Material Options	34
Plastic Bodied Check Valves - Series P	36
Technical Information	
Cracking Pressures and Pressure Drop	37
Pressure-Temperature Ratings	39



HY-GRADE VALVE, INC.

PRECISION ENGINEERED
CHECK VALVES

HY-GRADE Valve, Inc. manufactures check valves which are engineered with advanced features that solve common check valve problems. Since our founding in 1984, HY-GRADE has built a reputation for complete customer satisfaction by employing stringent quality guidelines and precise manufacturing techniques. Customers throughout the



world have come to rely on HY-GRADE to solve their check valve problems time and time again. HY-GRADE offers a full line of check valves that are used in a wide range of applications for industries such as Oil & Gas, Pulp & Paper, Chemical, Petrochemical, Refining, Mining, Marine and Power.





HY-GRADE check valves are manufactured at our facility in Fairhope, Alabama, USA, using advanced machining technology and computer numerical control (CNC) equipment.



All exterior pressure containing components (bodies and seat inserts) are 100% machined from wrought or centrifugal cast raw materials with no welding or weld repairs to insure the highest quality.



HY-GRADE maintains a program of continuous quality improvement to assure that our products meet and/or exceed the standards established by our customers. Our quality management system is registered to ISO 9001 and PED 2014/68/EU Module H. In addition, HY-GRADE's quality management system has been audited by various international inspection agencies to verify strict compliance of total quality.



In house hydrostatic testing ensures the integrity of HY-GRADE Check Valves. Additional nondestructive examinations (magnetic particle, liquid penetrant, or ultrasonic) to ASME or API practices are available to meet customer specifications.



Series T

Wafer Pattern Check Valve

Sizes: 1"-54"

Classes: ASME 150-2500
API 3,000-15,000

See page 15 for installation dimensions
See page 33 for ordering information



Series F and L

Solid Lug Pattern Wafer Check Valve

Threaded or thru holes

Sizes: 1"-54"

Classes: ASME 150-2500
API 3,000-15,000

See page 18 for installation dimensions
See page 33 for ordering information



Series X

Swing Check Valve

ASME B16.10 face-to-face

Sizes: 1"-14"

Classes: ASME 150-2500

See page 25 for installation dimensions
See page 33 for ordering information



Series H

Flanged, Buttwelding, & Hub Ends

Sizes: 2"-24"

Classes: ASME 150-2500
API 3,000- 15,000

See page 21 for installation dimensions
See page 33 for ordering information



Flanged Ends



See page 29 for installation dimensions
See page 36 for ordering information

Series P

Plastic Bodied Check Valve
Combination of plastics
and
alloys for maximum
performance
under corrosive conditions.
Sizes: 1"-12"



See page 31 for installation dimensions
See page 33 for ordering information

Series D

High Performance Dual Disc
Wafer Check Valve
Sizes: 16"-54"
Classes: ASME 150-2500

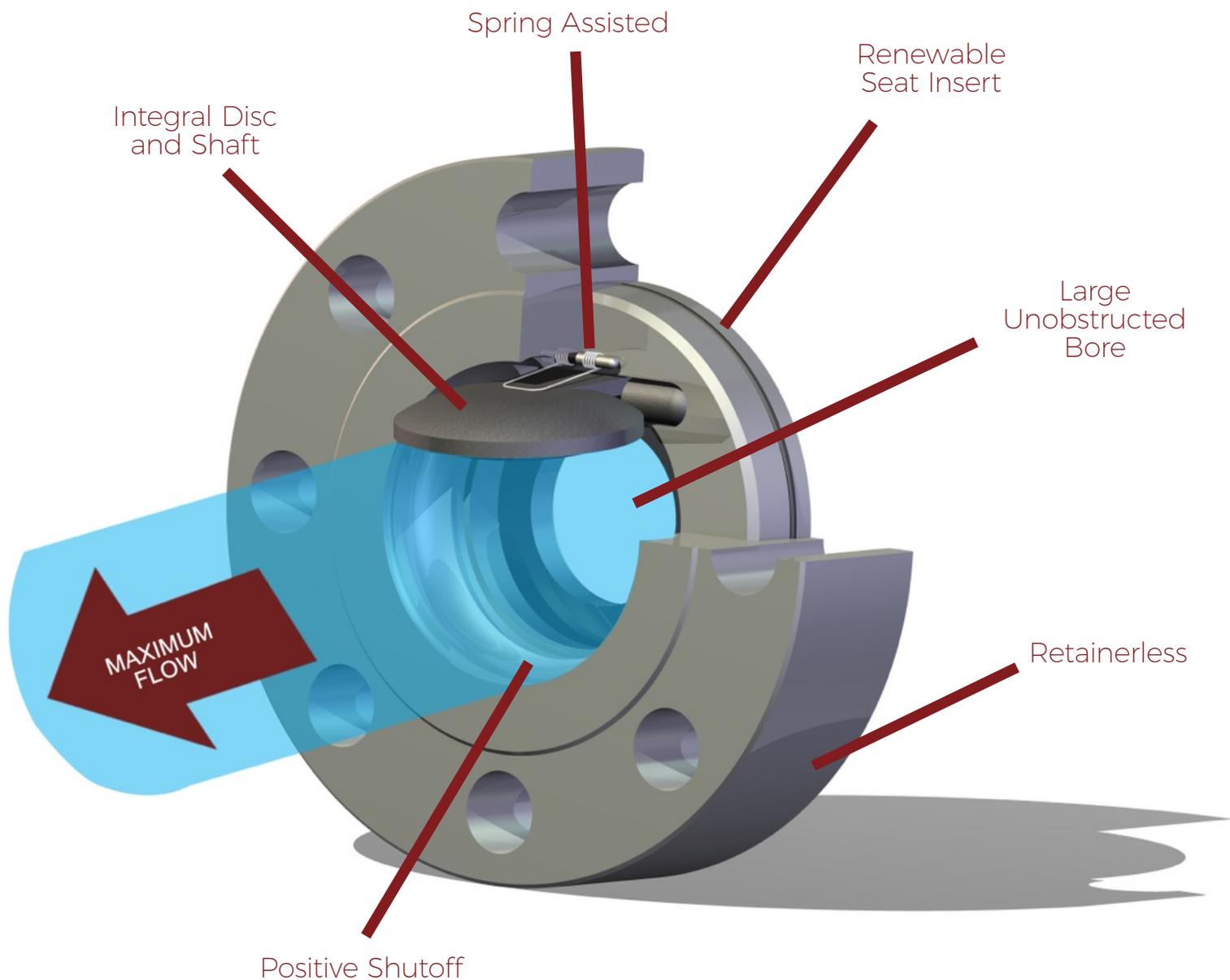


See page 27 for installation dimensions
See page 33 for ordering information

Series FF

Full Open / Full Flow Check Valve
Capable of passing pigs, scrapers
or spheres; suitable for sub-sea service
Sizes: 3"-36"
Classes: ASME 150-2500
API 3,000-10,000

THE PROOF IS IN THE DETAILS





Integral Flapper and Shaft

HY-GRADE's flapper and shaft are designed as an integral component with large diameter shafts to provide strength at a critical location. In contrast, typical check valves have multiple components which are assembled together using bushings, nuts, bolts, and hinge pins. Over time these multiple components tend to come apart leading to valve failure. HY-GRADE's integral flapper and shaft design has a long and proven history of providing reliable service in the harshest of applications.



High flows with Low Pressure Drop

HY-GRADE's Large Unobstructed Bore provides maximum flow capacity with extremely low pressure drops. The unobstructed bore also allows HY-GRADE check valves to be used in slurry, high consistency or abrasive applications.

COMPARE:



HY-GRADE's
3" Swing
Check Valve
Taper Style



Typical 3"
Dual Disc
Check Valve

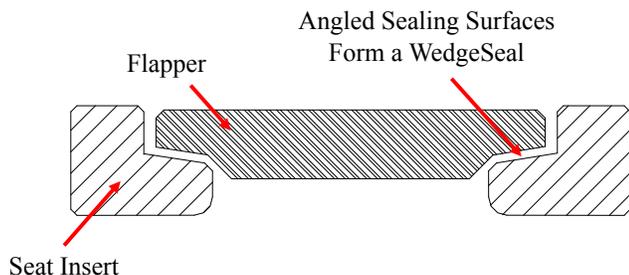


Instant sealing and Anti-Chatter Operation

A double wound torsion spring assists the flapper closure for instant sealing and anti-chatter operation. The spring is securely held in the valve body on an

Renewable Seats

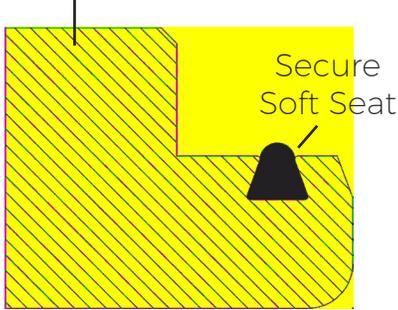
HY-GRADE check valves have a renewable seat insert for low cost and easy repairs.



Improved Special Metal-to-Metal Seal

HY-GRADE developed the WedgeSeal to improve metal-to-metal sealing. As shown, the WedgeSeal has seating surfaces which are machined at slight angles. As a result, positive shut off is obtained due to the wedging action of the sealing surfaces. Note, the sealing surfaces are machined only at slight angles to prevent the valve from sticking in the closed position in high back pressure applications. The WedgeSeal technology pioneered by HY-GRADE makes HY-GRADE metal seated check valves excellent for both low and high pressure applications.

Seat Insert

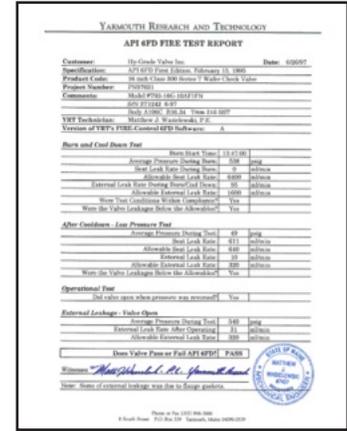


Secure Soft Seals

Soft seals are mechanically held in an insert for secure and bubble tight sealing. In addition, there is a metal-to-metal back up seal as tested by API Fire test. The soft seal is not in the direct flow and cannot be lost due to suction, even at high working pressure or extreme conditions.

Retainerless

A standard feature of HY-GRADE check valves is a retainerless design. There are no external holes or shafts therefore there are no external leak paths or fugitive emissions. Helium leak tests were conducted by an independent laboratory to verify zero fugitive emissions. The results of the test showed 0.00 ppm external leakage.



Fire Safe

The design of the standard HY-GRADE check valve assures positive shut off under fire conditions and is certified to API 6FA and 6FD. Both soft seated and metal seated HY-GRADE check valves were tested by accredited independent laboratories at temperatures of 1400-1800°F and pressures up to 3750 psi. All HY-GRADE check valves tested passed the external and internal leakage requirements.

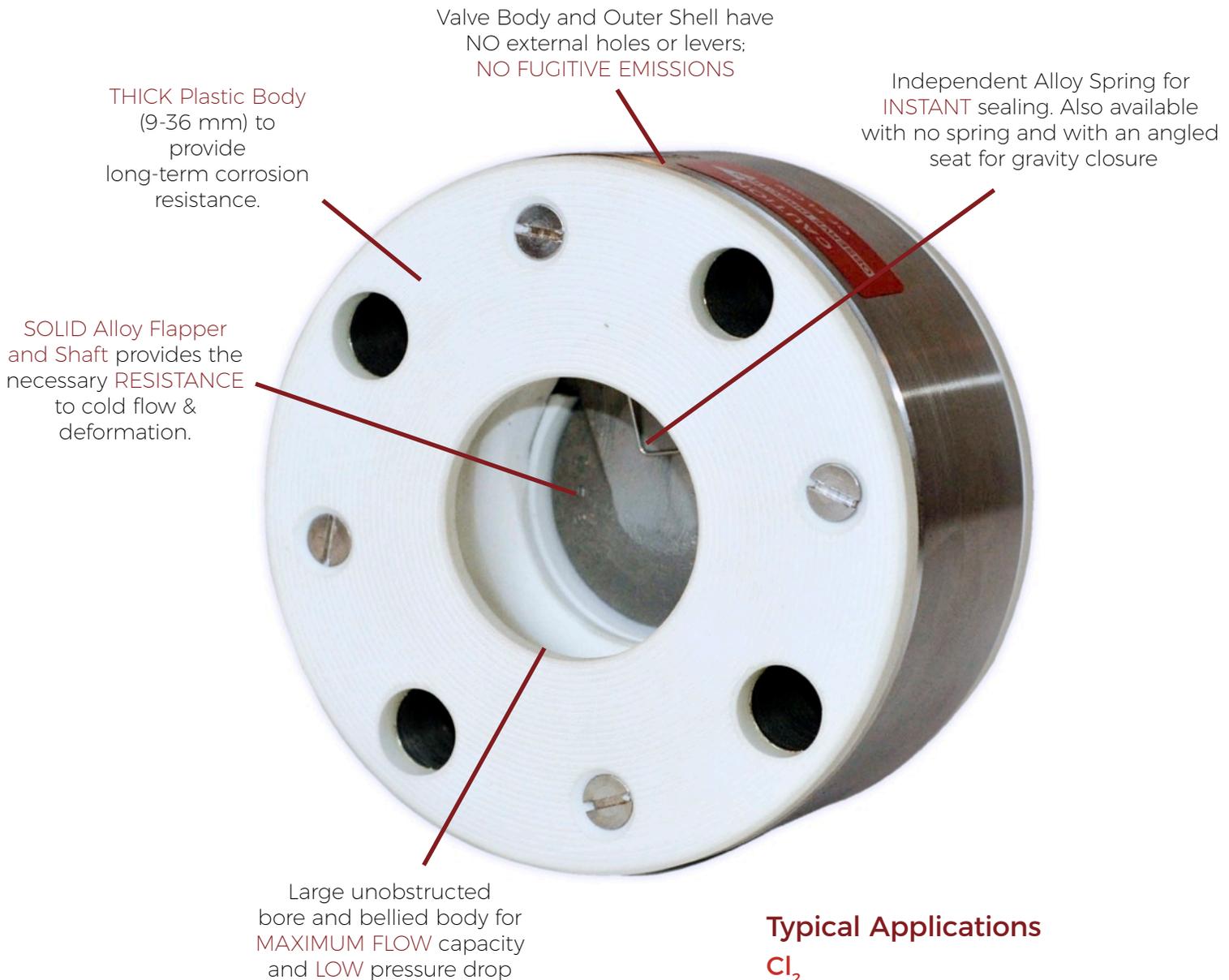


The API Fire tests also demonstrate that HY-GRADE check valves provide a positive shutoff after the removal of the resilient seating material as required by U.S. Coast Guard Category "A" and "Positive Shutoff" valves. Because of this, HY-GRADE check valves are extensively used in Marine and Offshore piping systems which are governed by U.S. Coast Guard regulations.



HY-GRADE Series P Corrosion-Resistant Check Valves

A wafer check valve with a **unique combination** of plastics (Teflon, Kynar, or UHMWPE) and alloys (Hastelloy, Titanium or Zirconium) designed to provide **MAXIMUM** performance and **long term** dependability under the most corrosive conditions.



Typical Applications

Cl_2

ClO_2

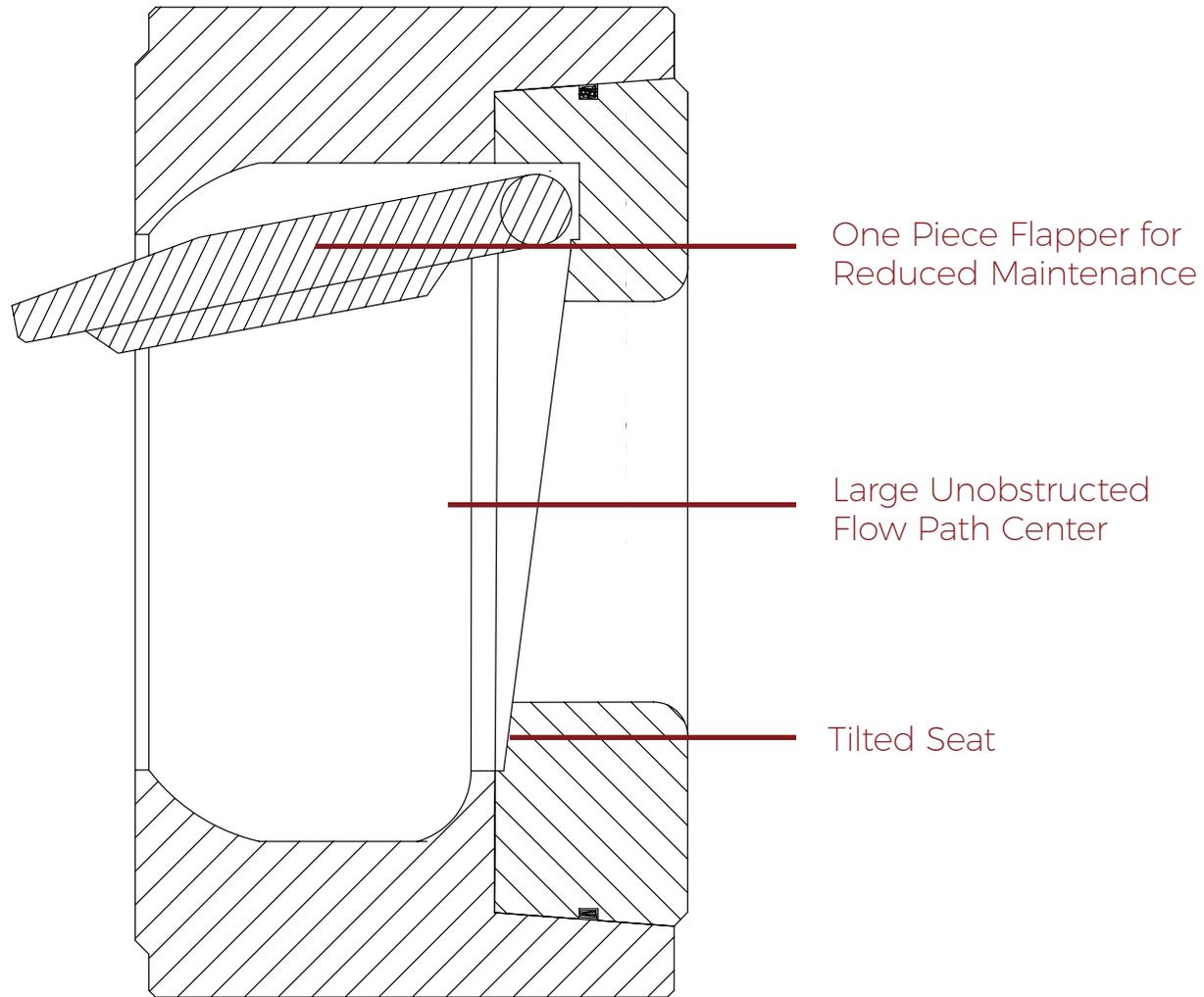
CH_3COOH

H_2SO_4

HCl

HF

Tilt Seat / Non Spring Assisted



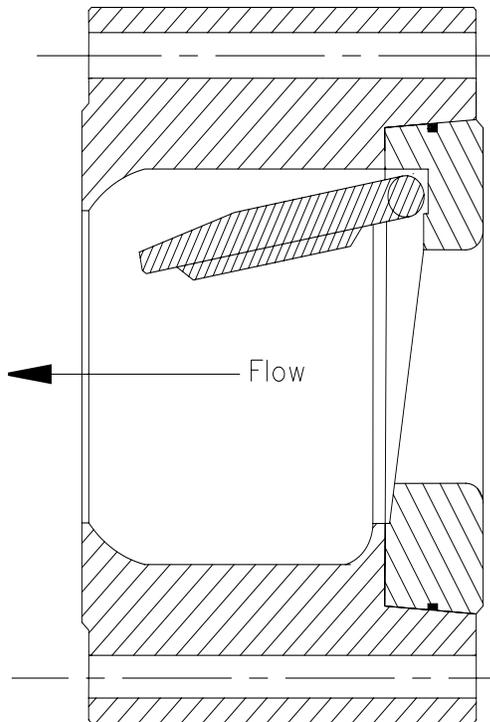
Added Features

Tilted Seat for Reduced Hammer
 Low Cracking Pressures
 Positive Shutoff with Gravity Closure
 Low Maintenance Requirements

Typical Applications Include:

Low Pressure Systems
 High Cycling

Extended Face-to-Face

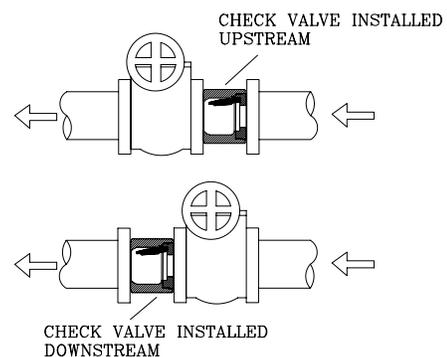


Added Features

Greater Flapper Opening for Maximum Flow. The Check Valve can be installed upstream or downstream of other valves, except butterfly valves, for flexibility during engineering and design (see illustrations below)

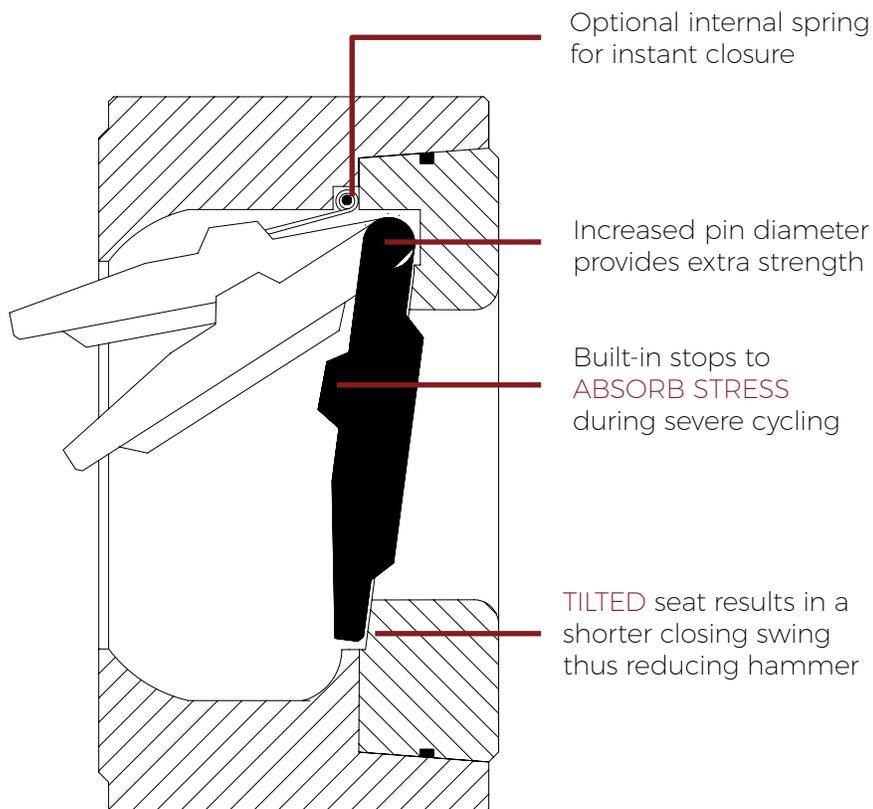
Available in the Following Body Patterns:

Wafer Pattern - Series T
Lug Wafer Pattern - Series F or L
ANSI B16.10 face-to-face - Series X
Plastic Bodied Check Valve - Series P



Severe Service Design

The HY-GRADE Severe-Service Check Valve offers exceptional strength and durability for applications involving harsh operating conditions. The design includes HY-GRADE's patented and proven "one-piece" flapper and pin arrangement, but also provides extra strength by utilizing increased pin diameters and built-in stops.



Typical Applications Include:

- Pulp mill digester steam
- Centrifugal compressor discharge
- Boiler feed water

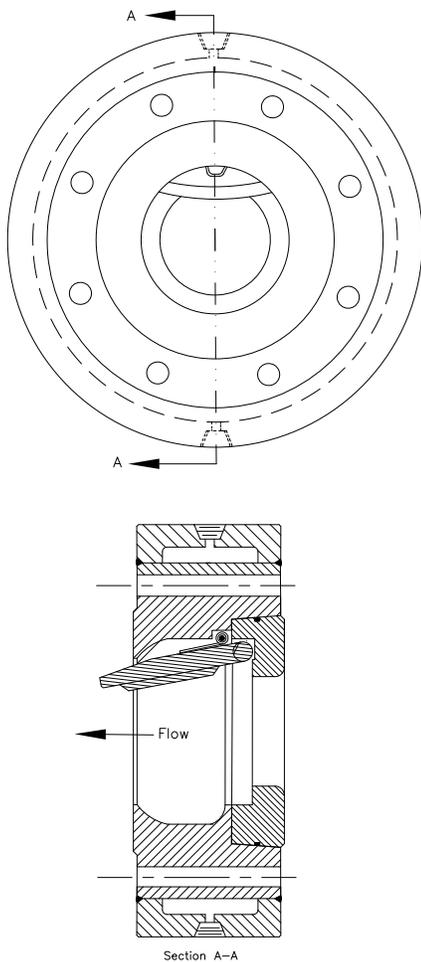
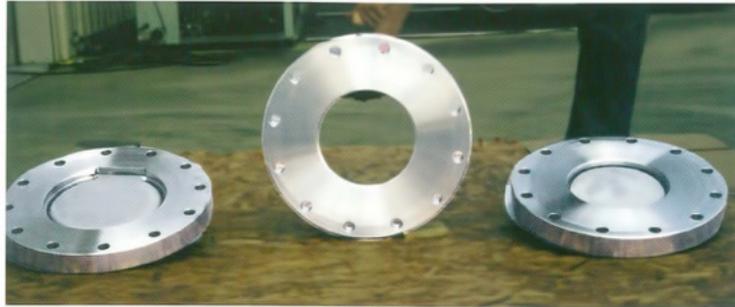
Available in the Following Body Patterns:

- Wafer Pattern - Series T
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- ANSI B16.10 face-to-face - Series X
- Plastic Bodied Check Valve - Series P

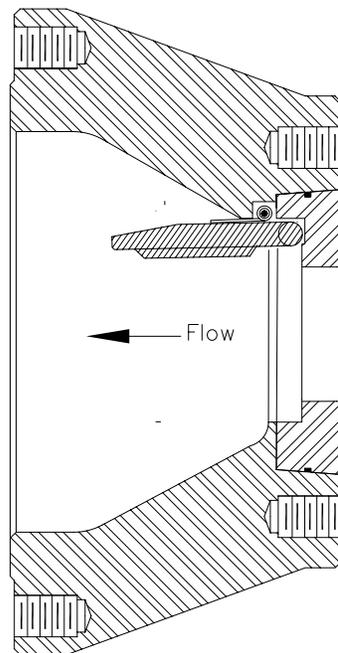


CUSTOM ENGINEERED DESIGNS

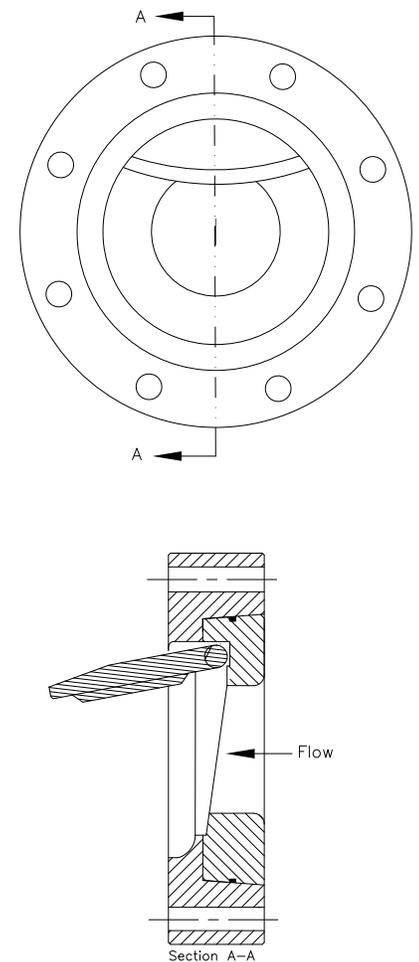
HY-GRADE can custom engineer check valves to meet unique applications.



Steam
Jacketed

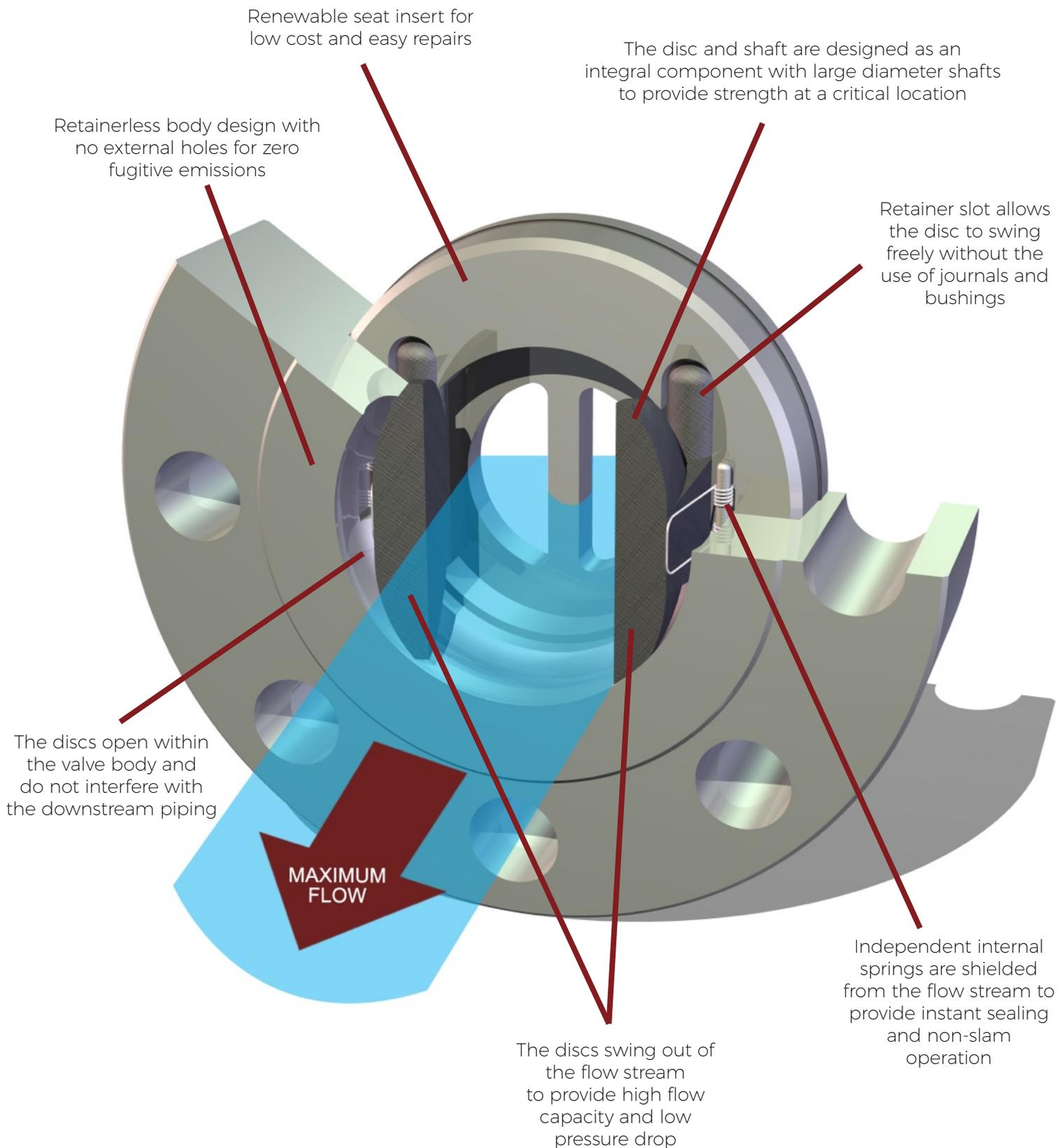


Reduction or Expansion
Valves



Thin Pattern
with a Tilted Seat

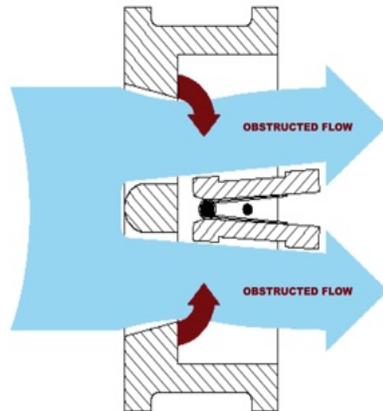
INGENUITY LEADS TO HIGH PERFORMANCE



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

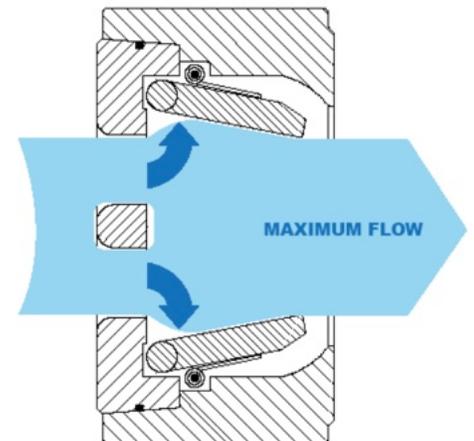
TYPICAL DUAL PLATE DESIGN

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

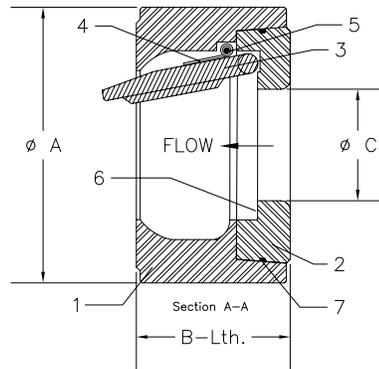
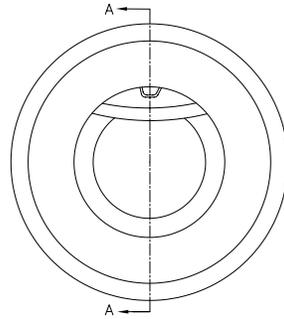


HY-GRADE DESIGN

SERIES T WAFER PATTERN 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

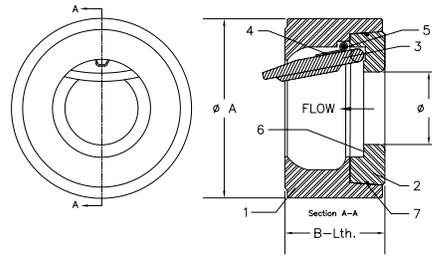
Series T Installation Dimensions per API Standard 594

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

SIZE	ASME CLASS	A-Dia		B-LTH		C-Dia		FLANGE FACE	WEIGHT	
		inch	mm	inch	mm	inch	mm		lbs.	kg.
1" 25mm	150	2-1/2	64	1-7/8	48	7/8	22	RF/FF	3	1
	300-600	2-3/4	70	1-7/8	48	7/8	22	RF/FF	4	2
	900-1500	3-1/8	79	1-7/8	48	7/8	22	RF/RJ-16	5	2
	2500	3-3/8	86	2-1/8	54	7/8	22	RF/RJ-18	6	3
1-1/2" 40mm	150	3-3/8	86	2-3/8	60	1-1/3	33	RF/FF	5	2
	300-600	3-3/4	95	2-3/8	60	1-1/3	33	RF/FF	6	3
	900-1500	3-7/8	98	2-3/8	60	1-1/3	33	RF/RJ-20	8	4
	2500	4-1/2	114	2-3/4	70	1-1/3	33	RF/RJ-23	9	4
2" 50mm	150	4-1/8	105	2-3/8	60	1-3/4	44	RF/FF	7	3
	300-600	4-3/8	111	2-3/8	60	1-3/4	44	RF/FF	8	4
	900-1500	5-5/8	143	2-3/4	70	1-3/4	44	RF/RJ-24	17	8
	2500	5-3/4	146	2-3/4	70	1-3/4	44	RF/RJ-26	18	8
2-1/2" 65mm	150	4-7/8	124	2-5/8	67	1-7/8	48	RF/FF	10	5
	300-600	5-1/8	130	2-5/8	67	1-7/8	48	RF/FF	12	5
	900-1500	6-1/2	165	3-1/4	83	1-7/8	48	RF/RJ-27	21	10
	2500	6-5/8	168	3-1/4	83	1-7/8	48	RF/RJ-28	22	10
3" 80mm	150	5-3/8	137	2-7/8	73	2-11/16	68	RF/FF	12	5
	300-600	5-7/8	149	2-7/8	73	2-11/16	68	RF/FF	14	6
	900	6-5/8	168	3-1/4	83	2-11/16	68	RF/RJ-31	27	12
	1500	6-7/8	175	3-1/4	83	2-11/16	68	RF/RJ-35	29	13
	2500	7-3/4	197	3-3/8	86	2-11/16	68	RF/RJ-32	38	17
4" 100mm	150	6-7/8	175	2-7/8	73	3-3/8	86	RF/FF	21	10
	300	7-1/8	181	2-7/8	73	3-3/8	86	RF/FF	23	10
	600	7-5/8	194	3-1/8	79	3-3/8	86	RF/RJ-37	33	15
	900	8-1/8	206	4	102	3-3/8	86	RF/RJ-37	46	21
	1500	8-1/4	210	4	102	3-3/8	86	RF/RJ-39	54	25
	2500	9-1/4	235	4-1/8	105	3-3/8	86	RF/RJ-38	67	30

Series T Installation Dimensions
per API Standard 594, continued

SIZE	ASME CLASS	A-Dia		B-LTH		C-Dia		FLANGE FACE	WEIGHT	
		inch	mm	inch	mm	inch	mm		lbs.	kg.
6" 150mm	150	8-3/4	222	3-7/8	98	4-3/4	121	RF/FF	42	19
	300	9-7/8	251	3-7/8	98	4-3/4	121	RF/FF	59	27
	600	10-1/2	267	5-3/8	137	4-3/4	121	RF/RJ-45	93	42
	900	11-3/8	289	6-1/4	159	4-3/4	121	RF/RJ-45	140	64
	1500	11-1/8	283	6-1/4	159	4-3/4	121	RF/RJ-46	132	60
	2500	12-1/2	318	6-1/4	159	4-3/4	121	RF/RJ-47	168	76
8" 200mm	150	11	279	5	127	6-3/4	171	RF/FF	71	32
	300	12-1/8	308	5	127	6-3/4	171	RF/FF	97	44
	600	12-5/8	321	6-1/2	165	6-3/4	171	RF/RJ-49	135	61
	900	14-1/8	359	8-1/8	206	6-3/4	171	RF/RJ-49	220	100
	1500	13-7/8	352	8-1/8	206	6-3/4	171	RF/RJ-50	210	95
	2500	15-1/4	387	8-1/8	206	6-3/4	171	RF/RJ-51	280	127
10" 250mm	150	13-3/8	340	5-3/4	146	8	203	RF/FF	115	52
	300	14-1/4	362	5-3/4	146	8	203	RF/FF	146	66
	600	15-3/4	400	8-3/8	213	8	203	RF/RJ-53	270	123
	900	17-1/8	435	9-1/2	241	7-7/8	200	RF/RJ-53	415	189
	1500	17-1/8	435	9-3/4	248	7-3/4	197	RF/RJ-54	431	196
	2500	18-3/4	476	10	254	7-3/4	197	RF/RJ-55	561	255
12" 300mm	150	16-1/8	410	7-1/8	181	9-7/8	251	RF/FF	196	89
	300	16-5/8	422	7-1/8	181	9-7/8	251	RF/FF	222	101
	600	18	457	9	229	9-7/8	251	RF/RJ-57	352	160
	900	19-5/8	498	11-1/2	292	9-3/4	248	RF/RJ-57	555	252
	1500	20-1/2	521	12	305	9-1/2	241	RF/RJ-58	842	383
	2500	21-5/8	549	12	305	9-1/2	241	RF/RJ-60	968	440
14" 350mm	150	17-3/4	451	7-1/4	184	11-1/2	292	RF/FF	250	114
	300	19-1/8	486	8-3/4	222	11-1/2	292	RF/FF	352	160
	600	19-3/8	492	10-3/4	273	11-1/4	286	RF/RJ-61	445	202
	900	20-1/2	521	14	356	11-1/4	286	RF/RJ-62	846	385
	1500	22-3/4	578	14	356	11	279	RF/RJ-63	1147	521
16" 400mm	150	20-1/4	514	7-1/2	191	13	330	RF/FF	335	152
	300	21-1/4	540	9-1/8	232	13	330	RF/FF	537	244
	600	22-1/4	565	12	305	13	330	RF/RJ-65	621	282
	900	22-5/8	575	15-1/8	384	12-3/4	324	RF/RJ-66	1092	496
	1500	25-1/4	641	15-1/8	384	12-3/4	324	RF/RJ-67	1513	688



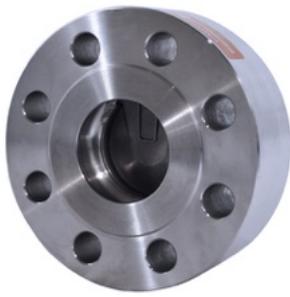
PARTS LIST

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

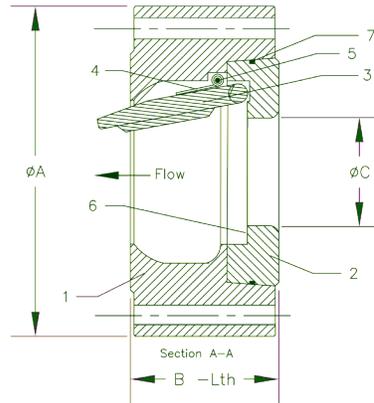
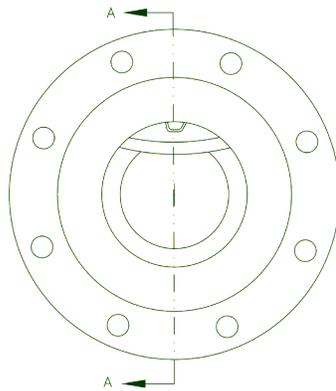
Series T Installation Dimensions per API Standard 594, continued

SIZE	ASME CLASS	A-Dia		B-LTH		C-Dia		FLANGE FACE	WEIGHT	
		inch	mm	inch	mm	inch	mm		lbs.	kg.
18" 450mm	150	21-5/8	549	8	203	14-1/2	368	RF/FF	391	178
	300	23-1/2	597	10-3/8	264	14-1/2	368	RF/FF	743	338
	600	24-1/8	613	14-1/4	362	14-1/2	368	RF/RJ-69	1104	502
	900	25-1/8	638	17-3/4	451	14	356	RF/RJ-70	1581	719
	1500	27-3/4	705	18-7/16	468	14	356	RF/RJ-71	2225	1011
20" 500mm	150	23-7/8	606	8-5/8	219	15-3/4	400	RF/FF	543	247
	300	25-3/4	654	11-1/2	292	15-1/2	394	RF/FF	1026	466
	600	26-7/8	683	14-1/2	368	15-1/2	394	RF/RJ-73	1484	675
	900	27-1/2	699	17-3/4	451	15	381	RF/RJ-74	1886	857
	1500	29-3/4	756	21	533	15	381	RF/RJ-75	3080	1400
24" 600mm	150	28-1/4	718	8-3/4	222	19-1/2	495	RF/FF	683	310
	300	30-1/2	775	12-1/2	318	19-1/2	495	RF/FF	1399	636
	600	31-1/8	791	17-1/4	438	19-1/2	495	RF/RJ-77	2078	945
	900	33	838	19-1/2	495	19	483	RF/RJ-78	2869	1304
26" 650mm	150	30-1/2	775	14	356	20-1/2	521	RF/FF	1590	723
	300	32-7/8	835	14	356	20-1/2	521	RF/FF	1960	891
	600	34-1/8	867	18	457	20	508	RF/RJ-73	2915	1325
28" 700mm	150	32-3/4	832	15	381	21-1/2	546	RF/FF	1940	882
	300	35-3/8	899	15	381	21	533	RF/FF	2565	1166
	600	36	914	19	483	20	508	RF/RJ-94	3410	1550
30" 750mm	150	34-3/4	883	12	305	22	559	RF/FF	1688	767
	300	37-1/2	953	14-1/2	368	22	559	RF/FF	2460	1118
	600	38-1/4	972	19-7/8	505	22	559	RF/RJ-95	3720	1691
32" 800mm	150	37	940	14	356	25	635	RF/FF	2088	949
	300	39-5/8	1006	16	406	24	610	RF/FF	3190	1450
	600	40-1/4	1022	21	533	23	584	RF/RJ-96	4593	2088
36" 900mm	150	41-1/4	1048	14-1/2	368	26-1/2	673	RF/FF	2370	1077
	300	44	1118	19	483	26-1/2	673	RF/FF	4086	1857
	600	44-1/2	1130	25	635	26	660	RF/RJ-98	6119	2781
40" 950mm	150	45-3/4	1162	16	406	30-1/2	775	RF/FF	3312	1505
42" 1050mm	150	48	1219	17	432	32	813	RF/FF	3878	1763
48" 1200mm	150	54-1/2	1384	20-5/8	524	37-1/2	953	RF/FF	6460	2936

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



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

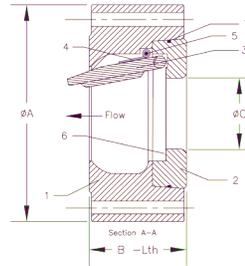
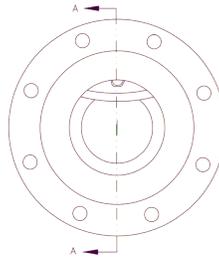
Series F/L Installation Dimensions
per API Standard 594

SIZE	ASME CLASS	A-Dia		B-LTH		C-Dia		Bolt Holes				Bolt Circle		Flange Face	WEIGHT	
		inch	mm	inch	mm	inch	mm	Qty	Diameter		inch	mm	lbs.		kg.	
									inch	mm						Thrds
1" 25mm	150	4-1/4	108	1-7/8	48	7/8	22	4	5/8	16	1/2-13	3-1/8	79	RF/FF	6	3
	300-600	4-7/8	124	1-7/8	48	7/8	22	4	3/4	19	5/8-11	3-1/2	89	RF/RJ-16	8	4
	900-1500	5-7/8	149	1-7/8	48	7/8	22	4	1	25	7/8-9	4	102	RF/RJ-16	13	6
	2500	6-1/4	159	2-1/8	48	7/8	22	4	1	25	7/8-9	4-1/4	108	RF/RJ-18	18	8
1-1/2" 40mm	150	5	127	2-3/8	60	1-5/16	33	4	5/8	16	1/2-13	3-7/8	98	RF/FF	12	5
	300-600	6-1/8	156	2-3/8	60	1-5/16	33	4	7/8	22	3/4-10	4-1/2	114	RF/RJ-20	18	8
	900-1500	7	178	2-3/8	60	1-5/16	33	4	1-1/8	29	1-8	4-7/8	124	RF/RJ-20	22	10
	2500	8	203	2-3/4	70	1-5/16	33	4	1-1/4	32	1-1/8-8	5-3/4	146	RF/RJ-23	38	17
2" 50mm	150	6	152	2-3/8	60	1-3/4	44	4	3/4	19	5/8-11	4-3/4	121	RF/FF	16	7
	300-600	6-1/2	165	2-3/8	60	1-3/4	44	8	3/4	19	5/8-11	5	127	RF/RJ-23	18	8
	900-1500	8-1/2	216	2-3/4	70	1-3/4	44	8	1	25	7/8-9	6-1/2	165	RF/RJ-24	35	16
	2500	9-1/4	235	2-3/4	70	1-3/4	44	8	1-1/8	29	1-8	6-3/4	171	RF/RJ-26	45	20
2-1/2" 65mm	150	7	178	2-5/8	67	1-7/8	48	4	3/4	19	5/8-11	5-1/2	140	RF/FF	24	11
	300-600	7-1/2	191	2-5/8	67	1-7/8	48	8	7/8	22	3/4-10	5-7/8	149	RF/RJ-26	26	12
	900-1500	9-5/8	244	3-1/4	83	1-7/8	48	8	1-1/8	29	1-8	7-1/2	191	RF/RJ-27	61	28
	2500	10-1/2	267	3-1/4	83	1-7/8	48	8	1-1/4	32	1-1/8-8	7-3/4	197	RF/RJ-28	73	33
3" 80mm	150	7-1/2	191	2-7/8	73	2-11/16	68	4	3/4	19	5/8-11	6	152	RF/FF	28	13
	300-600	8-1/4	210	2-7/8	73	2-11/16	68	8	7/8	22	3/4-10	6-5/8	168	RF/RJ-31	35	16
	900	9-1/2	241	3-1/4	83	2-11/16	68	8	1	25	7/8-9	7-1/2	191	RF/RJ-31	53	24
	1500	10-1/2	267	3-1/4	83	2-11/16	68	8	1-1/4	32	1-1/8-8	8	203	RF/RJ-35	61	28
	2500	12	305	3-3/8	86	2-11/16	68	8	1-3/8	35	1-1/4-8	9	229	RF/RJ-32	92	42

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 or DIN sizes. Double flanged wafer check valves are offered in certain sizes. Consult HY-GRADE for availability.



SERIES F/L LUG WAFER PATTERN CHECK VALVE



PARTS LIST

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

Series F/L Installation Dimensions per API Standard 594, continued

SIZE	ASME CLASS	A-Dia		B-LTH		C-Dia		Bolt Holes				Bolt Circle		Flange Face	WEIGHT	
		inch	mm	inch	mm	inch	mm	Qty	Diameter			inch	mm		lbs.	kg.
									inch	mm	Thrds					
4" 100mm	150	9	229	2-7/8	73	3-3/8	86	8	3/4	19	5/8-11	7-1/2	191	RF/FF	39	18
	300	10	254	2-7/8	73	3-3/8	86	8	7/8	22	3/4-10	7-7/8	200	RF/FF	52	24
	600	10-3/4	273	3-1/8	79	3-3/8	86	8	1	25	7/8-9	8-1/2	216	RF/RJ-37	65	30
	900	11-1/2	292	4	102	3-3/8	86	8	1-1/4	32	1-1/8-8	9-1/4	235	RF/RJ-37	91	41
	1500	12-1/4	311	4	102	3-3/8	86	8	1-3/8	35	1-1/4-8	9-1/2	241	RF/RJ-39	115	52
	2500	14	356	4-1/8	105	3-3/8	86	8	1-5/8	41	1-1/2-8	10-3/4	273	RF/RJ-38	170	77
6" 150mm	150	11	279	3-7/8	98	4-3/4	121	8	7/8	22	3/4-10	9-1/2	241	RF/FF	73	33
	300	12-1/2	318	3-7/8	98	4-3/4	121	12	7/8	22	3/4-10	10-5/8	270	RF/FF	103	47
	600	14	356	5-3/8	137	4-3/4	121	12	1-1/8	29	1-8	11-1/2	292	RF/RJ-45	182	83
	900	15	381	6-1/4	159	4-3/4	121	12	1-1/4	32	1-1/8-8	12-1/2	318	RF/RJ-45	247	112
	1500	15-1/2	394	6-1/4	159	4-3/4	121	12	1-1/2	38	1-3/8-8	12-1/2	318	RF/RJ-46	255	116
	2500	19	482	6-1/4	159	4-3/4	121	8	2-1/8	54	2-8	14-1/2	368	RF/RJ-47	453	205
8" 200mm	150	13-1/2	343	5	127	6-3/4	171	8	7/8	22	3/4-10	11-3/4	298	RF/FF	138	63
	300	15	381	5	127	6-3/4	171	12	1	25	7/8-9	13	330	RF/FF	190	86
	600	16-1/2	419	6-1/2	165	6-3/4	171	12	1-1/4	32	1-1/8-8	13-3/4	349	RF/RJ-49	286	130
	900	18-1/2	470	8-1/8	206	6-3/4	171	12	1-1/2	38	1-3/8-8	15-1/2	394	RF/RJ-49	465	211
	1500	19	483	8-1/8	206	6-3/4	171	12	1-3/4	44	1-5/8-8	15-1/2	394	RF/RJ-50	487	221
	2500	21-3/4	552	8-1/8	206	6-3/4	171	12	2-1/8	54	2-8	17-1/4	438	RF/RJ-51	622	282
10" 250mm	150	16	406	5-3/4	146	8	203	12	1	25	7/8-9	14-1/4	362	RF/FF	205	93
	300	17-1/2	445	5-3/4	146	8	203	16	1-1/8	29	1-8	15-1/4	387	RF/FF	260	118
	600	20	508	8-3/8	213	8	203	16	1-3/8	35	1-1/4-8	17	432	RF/RJ-53	560	255
	900	21-1/2	546	9-1/2	241	7-7/8	200	16	1-1/2	38	1-3/8-8	18-1/2	470	RF/RJ-53	705	320
	1500	23	584	9-3/4	248	7-3/4	197	12	2	51	1-7/8-8	19	483	RF/RJ-54	944	429
	2500	26-1/2	673	10	254	7-3/4	197	12	2-5/8	67	2-1/2-8	21-1/4	540	RF/RJ-55	1342	610
12" 300mm	150	19	483	7-1/8	181	9-7/8	251	12	1	25	7/8-9	17	432	RF/FF	335	152
	300	20-1/2	521	7-1/8	181	9-7/8	251	16	1-1/4	32	1-1/8-8	17-3/4	451	RF/FF	440	220
	600	22	559	9	229	9-7/8	251	20	1-3/8	35	1-1/4-8	19-1/4	489	RF/RJ-57	693	314
	900	24	610	11-1/2	292	9-3/4	248	20	1-1/2	38	1-3/8-8	21	533	RF/RJ-57	1022	464
	1500	26-1/2	673	12	305	9-1/2	241	16	2-1/8	54	2-8	22-1/2	572	RF/RJ-58	1596	725
	2500	30	762	12	305	9-1/2	241	12	2-7/8	73	2-3/4-8	24-3/8	619	RF/RJ-60	2123	965
14" 350mm	150	21	533	7-1/4	184	11-1/2	292	12	1-1/8	29	1-8	18-3/4	476	RF/FF	413	187
	300	23	584	8-3/4	222	11-1/2	292	20	1-1/4	32	1-1/8-8	20-1/4	514	RF/FF	635	288
	600	23-3/4	603	10-3/4	273	11-1/4	286	20	1-1/2	38	1-3/8-8	20-3/4	527	RF/RJ-61	996	453
	900	25-1/4	641	14	356	11-1/4	286	20	1-5/8	41	1-1/2-8	22	559	RF/RJ-62	1524	693
	1500	29-1/2	749	14	356	11	279	16	2-3/8	60	2-1/4-8	25	635	RF/RJ-63	2247	1021

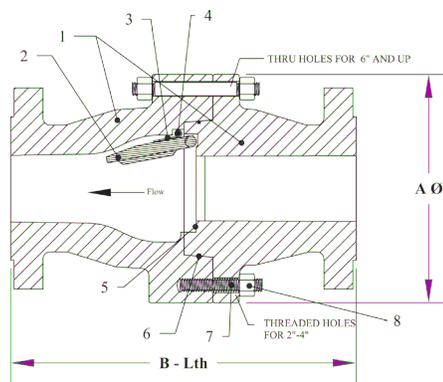
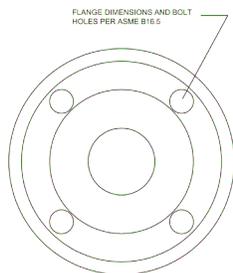
Dimensions shown are for installation between ASME B16.5, ASME B16.47 Series A or MSS SP-44 flanges. HY-GRADE check valves are also available in ASME B16.47 Series B or DIN sizes

Series F/L Installation Dimensions per API Standard 594, continued

SIZE	ASME CLASS	A-Dia		B-LTH		C-Dia		Bolt Holes				Bolt Circle		Flange Face	WEIGHT	
		inch	mm	inch	mm	inch	mm	Qty	Diameter			inch	mm		lbs.	kg.
									inch	mm	Thrds					
16" 400mm	150	23-1/2	597	7-1/2	191	13	330	16	1-1/8	29	1-8	21-1/4	540	RF/FF	573	260
	300	25-1/2	648	9-1/8	232	13	330	20	1-3/8	35	1-1/4-8	22-1/2	572	RF/FF	833	378
	600	27	686	12	305	13	330	20	1-5/8	41	1-1/2-8	23-3/4	603	RF/RJ-65	1246	566
	900	27-3/4	705	15-1/8	384	12-3/4	324	20	1-3/4	44	1-5/8-8	24-1/4	616	RF/RJ-66	1615	733
	1500	32-1/2	826	15-1/8	384	12-3/4	324	16	2-5/8	67	2-1/2-8	27-3/4	705	RF/RJ-67	2411	1094
18" 450mm	150	25	635	8	203	14-1/2	368	16	1-1/4	32	1-1/8-8	22-3/4	578	RF/FF	671	305
	300	28	711	10-3/8	264	14-1/2	368	24	1-3/8	35	1-1/4-8	24-3/4	629	RF/FF	1279	581
	600	29-1/4	743	14-1/4	362	14-1/2	368	20	1-3/4	44	1-5/8-8	25-3/4	654	RF/RJ-69	1717	779
	900	31	787	17-3/4	451	14	356	20	2	51	1-7/8-8	27	686	RF/RJ-70	2884	1311
	1500	36	914	18-7/16	468	14	356	16	2-7/8	73	2-3/4-8	30-1/2	775	RF/RJ-71	4385	1993
20" 500mm	150	27-1/2	699	8-5/8	219	15-3/4	400	20	1-1/4	32	1-1/8-8	25	635	RF/FF	889	404
	300	30-1/2	775	11-1/2	292	15-1/2	394	24	1-3/8	35	1-1/4-8	27	686	RF/FF	1710	777
	600	32	813	14-1/2	368	15-1/2	394	24	1-3/4	44	1-5/8-8	28-1/2	724	RF/RJ-73	2437	1108
	900	33-3/4	857	17-3/4	451	15	381	20	2-1/8	54	2-8	29-1/2	749	RF/RJ-74	3400	1545
	1500	38-3/4	984	21	533	15	381	16	3-1/8	79	3-8	32-3/4	832	RF/RJ-75	6098	2772
24" 600mm	150	32	813	8-3/4	222	19-1/2	495	20	1-3/8	35	1-1/4-8	29-1/2	749	RF/FF	1123	510
	300	36	914	12-1/2	318	19-1/2	495	24	1-5/8	41	1-1/2-8	32	813	RF/FF	2417	1099
	600	37	940	17-1/4	438	19-1/2	495	24	2	51	1-7/8-8	33	838	RF/RJ-77	3615	1643
	900	41	1041	19-1/2	495	19	483	20	2-5/8	67	2-1/2-8	35-1/2	902	RF/RJ-78	5440	2473
26" 650mm	150	34-1/4	870	14	356	20-1/2	521	24	1-3/8	35	1-1/4-8	31-3/4	806	RF/FF	2270	1032
	300	38-1/4	972	14	356	20-1/2	521	28	1-3/4	44	1-5/8-8	34-1/2	876	RF/RJ-93	3030	1377
	600	40	1016	18	457	20	508	28	2	51	1-7/8-8	36	914	RF/RJ-93	4480	2036
28" 700mm	150	36-1/2	927	15	381	21-1/2	546	28	1-3/8	35	1-1/4-8	34	864	RF/FF	2720	1236
	300	40-3/4	1035	15	381	21	533	28	1-3/4	44	1-5/8-8	37	940	RF/RJ-94	3790	1723
	600	42-1/4	1073	19	483	20	508	28	2-1/8	54	2-8	38	965	RF/RJ-94	5273	2397
30" 750mm	150	38-3/4	984	12	305	22	559	28	1-3/8	35	1-1/4-8	36	914	RF/FF	2395	1089
	300	43	1092	14-1/2	368	22	559	28	1-7/8	48	1-3/4-8	39-1/4	997	RF/RJ-95	3747	1703
	600	44-1/2	1130	19-7/8	505	22	559	28	2-1/8	54	2-8	40-1/4	1022	RF/RJ-95	5780	2627
32" 800mm	150	41-3/4	1060	14	356	25	635	28	1-5/8	41	1-1/2-8	38-1/2	978	RF/FF	3137	1426
	300	45-1/4	1149	16	406	24	610	28	2	51	1-7/8-8	41-1/2	1054	RF/RJ-96	4720	2145
	600	47	1194	21	533	23	584	28	2-3/8	60	2-1/4-8	42-1/2	1080	RF/RJ-96	7070	3214
36" 900mm	150	46	1168	14-1/2	368	26-1/2	673	32	1-5/8	41	1-1/2-8	42-3/4	1086	RF/FF	3575	1625
	300	50	1270	19	483	26-1/2	673	32	2-1/8	54	2-8	46	1186	RF/RJ-98	6320	2873
40" 950mm	150	50-3/4	1289	16	406	30-1/2	775	36	1-5/8	41	1-1/2-8	47-1/4	1200	RF/FF	4860	2209
42" 1050mm	150	53	1346	17	432	32	813	36	1-5/8	41	1-1/2-8	49-1/2	1257	RF/FF	5599	2545

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 or DIN sizes

SERIES H FLANGED END CHECK VALVE



PARTS LIST

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

NO EXTERNAL HOLES
INTEGRAL DISC/SHAFT
SPRING ASSISTED
CLOSURE FOR
INSTANT SEALING

Pressure/Temperature rating to ASME B16.34

Series H Flanged Installation Dimensions per ASME B16.10

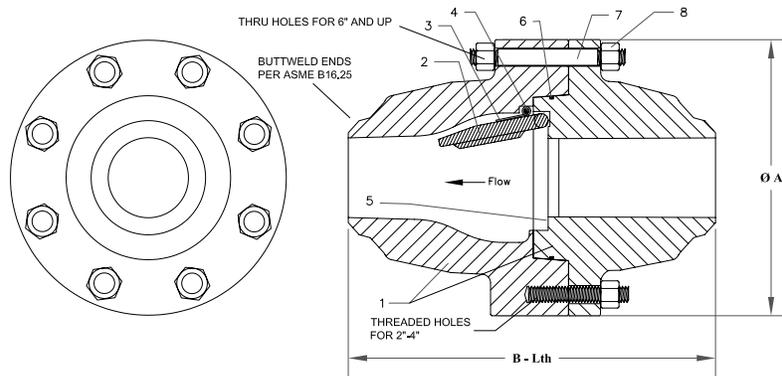
SIZE	ASME CLASS	A-Dia		B-LTH				WEIGHT	
				RF		RTJ			
		inch	mm	inch	mm	inch	mm	lbs.	kg.
2" 50mm	150	8	203	8	203	8-1/2	216	31	314
	300	9	229	10-1/2	267	11-1/8	283	43	20
	600	9	229	11-1/2	292	11-5/8	295	46	21
	900	11	279	14-1/2	368	14-5/8	371	108	49
	1500	11	279	14-1/2	368	14-5/8	371	108	49
	2500	13	330	17-3/4	451	17-7/8	454	162	74
2-1/2" 65mm	150	9	229	8-1/2	216	9	229	43	20
	300	10	254	11-1/2	292	12-1/8	308	63	829
	600	10	254	13	330	13-1/8	333	68	31
	900	11	279	16-1/2	419	16-5/8	422	145	66
	1500	11	279	16-1/2	419	16-5/8	422	145	66
	2500	12	305	20	508	20-1/4	514	249	113
3" 80mm	150	9	229	9-1/2	241	10	254	55	25
	300	10	254	12-1/2	318	13-1/8	333	82	37
	600	10	254	14	356	14-1/8	358	88	40
	900	11	279	15	381	15-1/8	384	131	60
	1500	12	305	18-1/2	470	18-5/8	473	212	96
	2500	13-1/2	343	22-3/4	578	23	584	346	157
4" 100mm	150	10-1/2	267	11-1/2	292	12	305	147	67
	300	11-1/2	292	14	356	14-5/8	371	127	58
	600	13	330	17	432	17-1/8	435	184	84
	900	14	356	18	457	18-1/8	460	262	119
	1500	15	381	21-1/2	546	21-5/8	549	364	165
	2500	16-1/2	419	26-1/2	673	26-7/8	683	595	270

ASME B16.34 Pressure-Temperature Ratings for Standard Class
for Alloy 400 (Group 3.4), Alloy C-276 and Alloy 625 (Group 3.8)

Temperature		Working Pressures by Class, bar/psig											
°F	°C	Series 150				Series 300				Series 600			
		400 (3.4)		C-276/ 625 (3.8)		400 (3.4)		C-276/ 625 (3.8)		400 (3.4)		C-276/ 625 (3.8)	
		psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
-20 to	-29 to 38	230	15.9	290	20.0	600	41.4	750	51.7	1200	82.7	1500	103.4
200	93	200	13.8	260	17.9	525	36.2	750	51.7	1050	72.4	1500	103.4
300	149	190	13.1	230	15.9	490	33.8	730	50.3	980	67.6	1455	100.3
400	204	180	12.4	200	13.8	475	32.8	700	48.3	945	65.2	1395	96.2
500	260	170	11.7	170	11.7	475	32.8	665	45.9	945	65.2	1330	91.7
600	316	140	9.7	140	9.7	475	32.8	605	41.7	945	65.2	1210	83.4
650	343	125	8.6	125	8.6	475	32.8	590	40.7	945	65.2	1175	81.0
700	371	110	7.6	110	7.6	470	32.4	570	39.3	940	64.8	1135	78.3
750	399	95	6.6	95	6.6	465	32.1	530	36.5	930	64.1	1065	73.4
800	427	80	5.5	80	5.5	460	31.7	510	35.2	915	63.1	1015	70.0
850	454	65	4.5	65	4.5	375	25.9	485	33.4	755	52.1	975	67.2
900	482	50	3.4	50	3.4	275	19.0	450	31.0	550	37.9	900	62.1
950	510	-	-	35	2.4	-	-	385	26.5	-	-	775	53.4
1000	538	-	-	20	1.4	-	-	365	25.2	-	-	725	50.0
Hydrostatic Shell		350	24	450	30	900	62	1125	78	1800	124	2250	155
°F	°C	Series 900				Series 1500				Series 2500			
		psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
-20 to	-29 to 38	1800	124.1	2250	155.1	3000	206.8	3750	258.6	5000	344.7	6250	430.9
200	93	1575	108.6	2250	155.1	2630	181.3	3750	258.6	4380	302.0	6250	430.9
300	149	1470	101.4	2185	150.7	2450	168.9	3640	251.0	4080	281.3	6070	418.5
400	204	1420	97.9	2095	144.4	2365	163.1	3490	240.6	3940	271.7	5820	401.3
500	260	1420	97.9	1995	137.6	2365	163.1	3325	229.3	3940	271.7	5540	382.0
600	316	1420	97.9	1815	125.1	2365	163.1	3025	208.6	3940	271.7	5040	347.5
650	343	1420	97.9	1765	121.7	2365	163.1	2940	202.7	3940	271.7	4905	338.2
700	371	1410	97.2	1705	117.6	2350	162.0	2840	195.8	3920	270.3	4730	326.1
750	399	1395	96.2	1595	110.0	2330	160.6	2660	183.4	3880	267.5	4430	305.4
800	427	1375	94.8	1525	105.1	2290	157.9	2540	175.1	3820	263.4	4230	291.6
850	454	1130	77.9	1460	100.7	1885	130.0	2435	167.9	3145	216.8	4060	279.9
900	482	825	56.9	1350	93.1	1370	94.5	2245	154.8	2285	157.5	3745	258.2
950	510	-	-	1160	80.0	-	-	1930	133.1	-	-	3220	222.0
1000	538	-	-	1090	75.2	-	-	1820	125.5	-	-	3030	208.9
Hydrostatic Shell		2700	186	3375	233	4500	310	5625	388	7500	517	9375	646



NO EXTERNAL HOLES
INTEGRAL DISC/SHAFT
SPRING ASSISTED
CLOSURE FOR
INSTANT SEALING



Pressure/Temperature rating to ASME B16.34

PARTS LIST

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

Series H Butt Weld Installation Dimensions per ASME B16.10

SIZE	ASME CLASS	A-Dia		B-LTH		WEIGHT	
		inch	mm	inch	mm	lbs.	kg.
2" 50mm	150	8	203	8	203	51	23
	300	9	229	10-1/2	267	35	16
	600	9	229	11-1/2	292	55	25
	900	11	279	14-1/2	368	157	71
	1500	11	279	14-1/2	368	132	60
	2500	13	330	11	279	126	57
2 1/2" 65mm	150	9	229	8-1/2	216	36	16
	300	10	254	11-1/2	292	59	27
	600	10	254	13	330	69	31
	900	11	279	10	254	110	50
	1500	11	279	10	254	110	50
	2500	12	305	13	330	148	67
3" 80mm	150	9	229	9-1/2	241	76	34
	300	10	254	12-1/2	318	57	26
	600	10	254	10	254	40	18
	900	11	279	12	305	172	78
	1500	12	305	12	305	132	60
	2500	13-1/2	343	14-1/2	368	161	73
4" 100mm	150	10-1/2	267	11-1/2	292	71	32
	300	11-1/2	292	14	356	177	80
	600	13	330	12	305	180	82
	900	14	356	14	356	140	64
	1500	15	381	16	406	183	83
	2500	16-1/2	419	18	457	293	133

Series H Butt weld Installation Dimensions per ASME B16.10

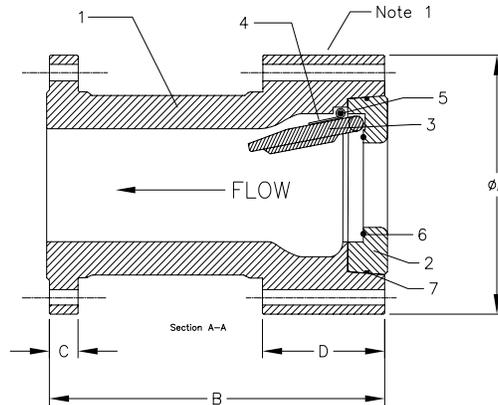
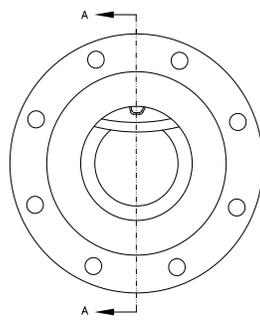
SIZE	CLASS	A-Dia		B-LTH		WEIGHT	
		inch	mm	inch	mm	lbs.	kg.
6" 150mm	150	13	330	14	356	198	90
	300	15	381	17-1/2	445	220	100
	600	18	457	18	457	490	223
	900	19	483	20	508	695	315
	1500	20	508	22	559	436	198
8" 200mm	150	16	406	19-1/2	495	294	134
	300	17	432	21	533	325	147
	600	19	483	23	584	510	232
	900	22	559	26	660	585	266
	1500	24	610	28	711	724	329
10" 250mm	150	18	457	24-1/2	622	361	164
	300	20	508	24-1/2	622	560	255
	600	23	584	28	711	972	442
	900	26	660	31	787	1435	652
12" 300mm	150	21	533	27-1/2	699	814	370
	300	23	584	28	711	1042	474
	600	25	635	32	813	1491	677
	900	28	711	36	914	1653	751
14" 350mm	150	23	584	31	787	1080	491
	300	26	660	33	838	1433	651
	600	27	686	35	889	1610	732
	900	29	737	39	991	1825	830
16" 400mm	150	26	660	34	864	1593	724
	300	28	711	34	864	1666	757
	600	31	787	39	991	2634	1197
18" 450mm	150	28	711	38-1/2	978	1753	797
	300	31	787	38-1/2	978	2244	1020
20" 500mm	150	31	787	38-1/2	978	2244	1020
	300	34	864	40	1016	3550	1613
24" 600mm	150	35	889	51	1295	4379	1990
	300	39	991	53	1346	5698	2590

Consult HY-GRADE for sizes/classes not shown

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

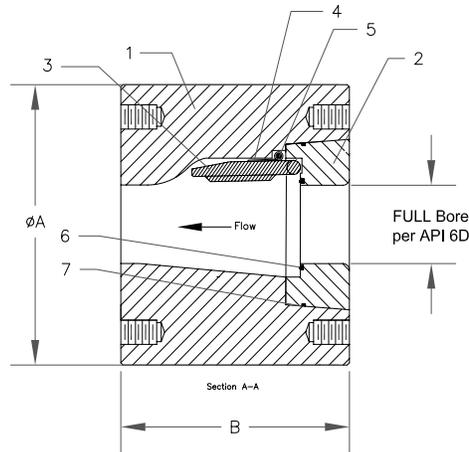
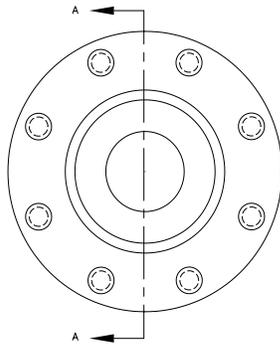
SIZE	ASME CLASS	A-Dia		B-LTH Raised Face		B-LTH RTJ Face		C-LTH		D-LTH		E-Holes			Bolt Circle		WEIGHT	
		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	Qty	Diameter		inch	mm	lbs.	kg.
													inch	mm				
3" 80mm	150	7-1/2	191	9-1/2	241	10	254	15/16	24	3-1/2	89	4	3/4	19	6	152	55	25
	300	8-1/4	210	12-1/2	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.

SERIES FF FULL OPENING CHECK VALVE



HIGH PERFORMANCE
FULL 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 FF Installation Dimensions

SIZE	ASME CLASS	A-Dia		B-LTH		Bolt Holes				Bolt Circle		Flange Face	WEIGHT	
		inch	mm	inch	mm	Qty	Depth			inch	mm		lbs.	kg.
							inch	mm	Threads					
4" 100mm	150	9	229	8-3/4	222	8	1	25	5/8-11	7-1/2	191	RF/FF	127	58
	300	10	254	9-1/4	235	8	1-1/8	29	3/4-10	7-7/8	200	RF/FF	173	79
	600	10-3/4	273	10	254	8	1-3/8	35	7/8-9	8-1/2	216	RF/RJ-37	222	101
	900	11-1/2	292	11-3/8	289	8	1-3/4	44	1-1/8-8	9-1/4	235	RF/RJ-37	295	134
	1500	12-1/4	311	12-1/2	318	8	1-7/8	48	1-1/4-8	9-1/2	241	RF/RJ-39	373	170
	2500	14	356	13-1/2	343	8	2-1/4	57	1-1/2-8	10-3/4	273	RF/RJ-38	553	251
6" 150mm	150	11	279	11-1/4	286	8	1-1/8	29	3/4-10	9-1/2	241	RF/FF	213	97
	300	12-1/2	318	11-1/2	292	12	1-1/8	29	3/4-10	10-5/8	270	RF/FF	308	140
	600	14	356	12-3/4	324	12	1-1/2	38	1-8	11-1/2	292	RF/RJ-45	454	206
	900	15	381	13-3/4	349	12	1-3/4	44	1-1/8-8	12-1/2	318	RF/RJ-45	579	263
	1500	15-1/2	394	15-1/2	394	12	2-1/8	54	1-3/8-8	12-1/2	318	RF/RJ-46	715	325
	2500	19	483	18-1/4	464	8	3	76	2-8	14-1/2	368	RF/RJ-47	1355	616
8" 200mm	150	13-1/2	343	13-1/4	337	8	1-1/8	29	3/4-10	11-3/4	298	RF/FF	349	159
	300	15	381	14-1/4	362	12	1-3/8	35	7/8-9	13	330	RF/FF	511	232
	600	16-1/2	419	15-3/4	400	12	1-3/4	44	1-1/8-8	13-3/4	349	RF/RJ-49	731	332
	900	18-1/2	470	17-1/4	438	12	2-1/8	54	1-3/8-8	15-1/2	394	RF/RJ-49	1069	486
	1500	19	483	19-1/4	489	12	2-1/2	64	1-5/8-8	15-1/2	394	RF/RJ-50	1299	590
	2500	21-3/4	552	21-1/4	540	12	3	76	2-8	17-1/4	438	RF/RJ-51	1999	909
10" 250mm	150	16	406	16	406	12	1-3/8	35	7/8-9	14-1/4	362	RF/FF	556	253
	300	17-1/2	445	16-3/4	425	16	1-1/2	38	1-8	15-1/4	387	RF/FF	769	350
	600	20	508	18-1/2	470	16	1-7/8	48	1-1/4-8	17	432	RF/RJ-53	1236	562
	900	21-1/2	546	19-3/4	502	16	2-1/8	54	1-3/8-8	18-1/2	470	RF/RJ-53	1594	725
	1500	23	584	22-3/4	578	12	2-7/8	73	1-7/8-8	19	483	RF/RJ-54	2223	1010
	2500	26-1/2	673	25-1/2	648	12	3-3/4	95	2-1/2-8	21-1/4	540	RF/RJ-55	3541	1610

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

Series FF Installation Dimensions, continued

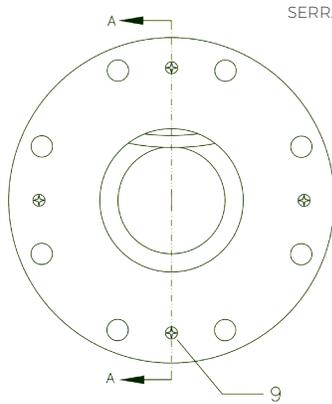
SIZE	CLASS	A-Dia		B-LTH		Bolt Holes				Bolt Circle		Flange Face	WEIGHT	
		inch	mm	inch	mm	Qty	Depth		Threads	inch	mm		lbs.	kg.
							inch	mm						
12" 300mm	150	19	483	18	457	12	1-3/8	35	7/8-9	17	432	RF/FF	870	395
	300	20-1/2	521	19-1/2	495	16	1-3/4	44	1-1/8-8	17-3/4	451	RF/FF	1200	545
	600	22	559	20-3/4	527	20	1-7/8	48	1-1/4-8	19-1/4	489	RF/RJ-57	1571	714
	900	24	610	22-1/4	565	20	2-1/8	54	1-3/8-8	21	533	RF/RJ-57	2141	973
	1500	26-1/2	673	26	660	16	3	76	2-8	22-1/2	572	RF/RJ-58	3318	1508
	2500	30	762	29	737	12	4-1/8	105	2-3/4-8	24-3/8	619	RF/RJ-60	5101	2319
14" 350mm	150	21	533	19-3/4	502	12	1-1/2	38	1-8	18-3/4	476	RF/FF	1168	531
	300	23	584	20-3/4	527	20	1-3/4	44	1-1/8-8	20-1/4	514	RF/FF	1634	743
	600	23-3/4	603	22-3/4	578	20	2-1/8	54	1-3/8-8	20-3/4	527	RF/RJ-61	1969	895
	900	25-1/4	641	23-3/4	603	20	2-1/4	57	1-1/2-8	22	559	RF/RJ-62	2513	1142
	1500	29-1/2	749	28-1/4	718	16	3-3/8	86	2-1/4-8	25	635	RF/RJ-63	4493	2042
16" 400mm	150	23-1/2	597	22	559	16	1-1/2	38	1-8	21-1/4	540	RF/FF	1567	712
	300	25-1/2	648	23-1/2	597	20	1-7/8	48	1-1/4-8	22-1/2	572	RF/FF	2186	994
	600	27	686	25-1/2	648	20	2-1/4	57	1-1/2-8	23-3/4	603	RF/RJ-65	2820	1282
	900	27-3/4	705	26-3/4	679	20	2-1/2	64	1-5/8-8	24-1/4	616	RF/RJ-66	3292	1496
18" 450mm	150	25	635	24-1/2	622	16	1-3/4	44	1-1/8-8	22-3/4	578	RF/FF	1787	812
	300	28	711	25-1/2	648	24	1-7/8	48	1-1/4-8	24-3/4	629	RF/FF	2763	1256
	600	29-1/4	743	28-1/4	718	20	2-1/4	64	1-5/8-8	25-3/4	654	RF/RJ-69	3511	1596
	900	31	787	30	762	20	2-7/8	73	1-7/8-8	27	686	RF/RJ-70	4547	2067
20" 500mm	150	27-1/2	699	26-1/2	673	20	1-3/4	44	1-1/8-8	25	635	RF/FF	2277	1035
	300	30-1/2	775	27-3/4	705	24	1-7/8	48	1-1/4-8	27	686	RF/FF	3459	1572
	600	32	813	30-1/2	775	24	2-1/2	64	1-5/8-8	28-1/2	724	RF/RJ-73	4439	2018

Dimensions shown are for installation between ASME B16.5 flanges.
Consult HY-GRADE for sizes not shown

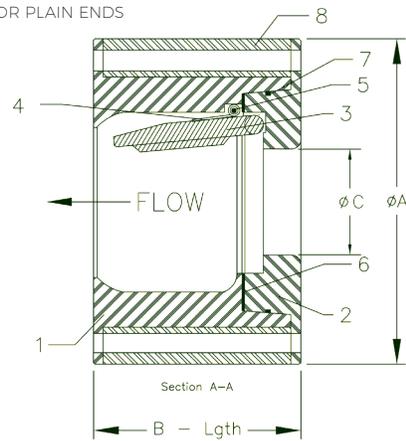
SERIES P PLASTIC BODIED CHECK VALVE



SOLID ALLOY DISK
THICK LINER
LARGE UNOBSTRUCTED
FLOW PATH



SERRATED OR PLAIN ENDS



PARTS LIST

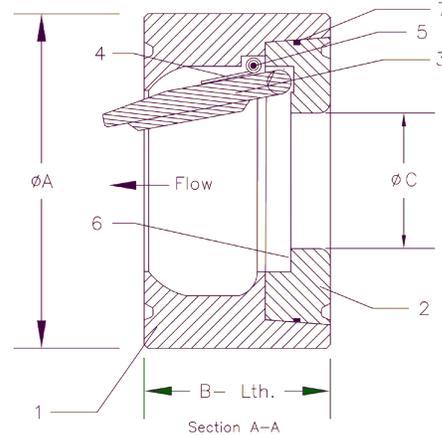
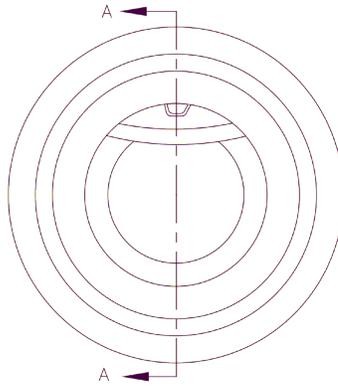
ITEM	PART NAME
1	BODY
2	SEAT INSERT
3	FLAPPER
4	SPRING
5	SPRING PIN
6	SEAT SEAL
7	INSERT RING
8	OUTER SHELL
9	SCREW (4)

Series P Installation Dimensions

SIZE	CWP	A-Dia		B-LTH		C-Dia		Bolt Holes				Bolt Circle		Flange Face	WEIGHT	
		inch	mm	inch	mm	inch	mm	Qty	Diameter			inch	mm		lbs.	kg.
									inch	mm	Thrds					
1" 25mm	200	4-1/4	108	2-3/8	60	7/8	22	4	5/8	16	1/2-13	3-1/8	79	S/-FF	5	2
1-1/2" 40mm	200	5	127	2-7/8	73	1-5/16	33	4	5/8	16	1/2-13	3-7/8	98	S/-FF	10	5
2" 50mm	200	6	152	3	76	1-3/4	44	4	3/4	19	5/8-11	4-3/4	121	S/-FF	14	6
2-1/2" 65mm	200	7	178	3-1/4	83	1-7/8	48	4	3/4	19	5/8-11	5-1/2	140	S/-FF	20	9
3" 80mm	200	7-1/2	191	3-5/8	92	2-11/16	68	4	3/4	19	5/8-11	6	152	S/-FF	29	13
4" 100mm	200	9	229	3-3/4	95	3-3/8	86	8	3/4	19	5/8-11	7-1/2	191	S/-FF	40	18
6" 150mm	200	11	279	4-3/4	121	4-3/4	121	8	7/8	22	3/4-10	9-1/2	241	S/-FF	61	28
8" 200mm	200	13-1/2	343	6-1/4	159	6-3/4	171	8	7/8	22	3/4-10	11-3/4	298	S/-FF	136	62
10" 250mm	200	16	406	7-1/4	184	8	203	12	1	25	7/8-9	14-1/4	362	S/-FF	180	82
12" 300mm	200	19	483	9	229	9-7/8	251	12	1	25	7/8-9	17	432	S/-FF	340	155



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 T Installation Dimensions

API 6A CLASS						
SIZE	CLASS	(A) DIA.	(B) DIA.	(C) DIA.	FLANGE FACE	APPROXIMATE WEIGHT
1-13/16"	API-10000	5	2-3/4	1-5/16	BX-151	12
2-1/16"	API-3000-5000	5-5/8	2-3/4	1-3/4	RJ-24	17
	API-10000	5-1/2	2-7/8	1-11/16	BX-152	17
2-9/16"	API-3000-5000	6-1/2	3-1/4	1-7/8	RJ-27	20
	API-10000	6-3/8	3-1/2	1-7/8	BX-153	21
3-1/8"	API-3000	6-5/8	3-1/4	2-11/16	RJ-31	27
	API-5000	6-7/8	3-3/8	2-11/16	RJ-35	31
3-1/16"	API-10000	7-1/2	3-1/2	2-5/8	BX-154	36
4-1/16"	API-3000	8-1/8	4	3-3/8	RJ-37	46
	API-5000	8-1/4	4-1/8	3-3/8	RJ-39	50
	API-10000	9	4-3/4	3-3/8	BX-155	70
7-1/16"	API-3000	11-3/8	6-1/4	4-3/4	RJ-45	130
	API-5000	11-1/8	6-1/4	4-3/4	RJ-46	125
9"	API-3000	14-1/8	8-1/8	6-3/4	RJ-49	220
	API-5000	13-7/8	8-1/8	6-3/4	RJ-50	210

Consult factory for sizes larger than 9". Also available in Lug Wafer or Hub End patterns. Optional features listed on pages 9-11 are also available for API 6A Check Valves.

**ALSO AVAILABLE
IN THE FOLLOWING
BODY TYPES**



Lug Wafer



Buttweld

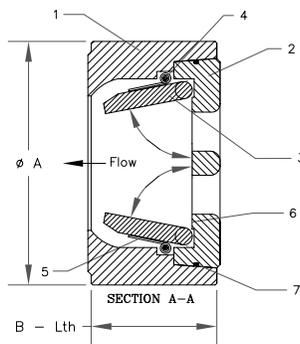
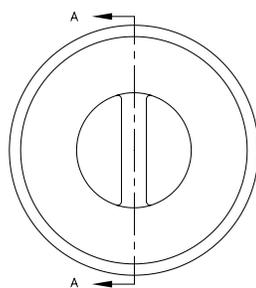
Hub
Ended

Flanged

Full Flow
Full Open
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	DISCS (2)
4	SPRING PINS (2)
5	SPRINGS (2)
6	SEAT SEAL
7	ASSY RING

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

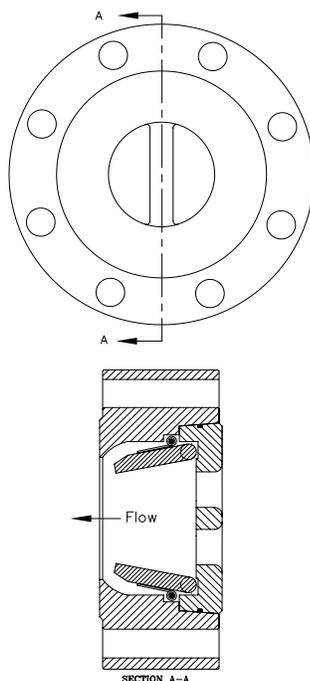
Dimensions shown are for installation between ASME B16.5, ASME B16.47 Series A or MSS SP-44 flanges. HY-GRADE check valves are also available in ASME B16.47 Series B (old API 605) or DIN sizes. For Sizes 1" to 14" Please Consult HY-GRADE

Series D Installation Dimensions per API Standard 594, continued

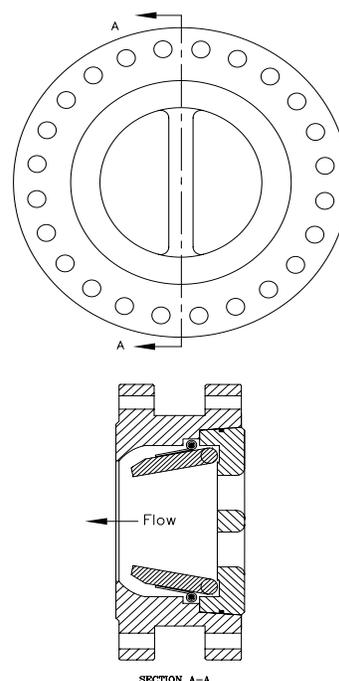
SIZE	ASME CLASS	A-Dia		B-LTH		FLANGE FACE	WEIGHT	
		inch	mm	inch	mm		lbs.	kg.
30" 750mm	150	34-3/4	883	12	305	RF/FF	1688	767
	300	37-1/2	953	14-1/2	368	RF/FF	2460	1,118
	600	38-1/4	972	19-7/8	505	RF/RJ-95	3720	1,691
32" 800mm	150	37	940	14	356	RF/FF	2088	949
	300	39-5/8	1,006	16	406	RF/FF	3190	1,450
	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:

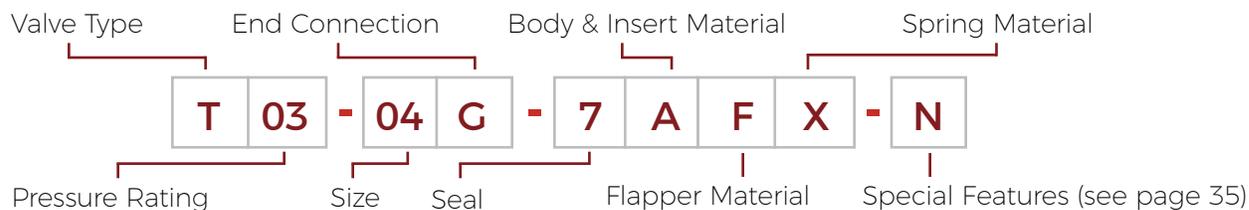


Lug Style



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
15K	15,000 API 6A

Size Code	
Code	Size
01 to 54	1" to 54"

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

** Tilt Seat Option not available for Series H

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

*Examples of Modifiers

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 Lug with Threaded Holes

AET = Tilt Seat, Extended face-to-face Wafer

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 R6702	B550 R6702	B551 R6702	
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
Cl ₂	Cleaned for Chlorine Service

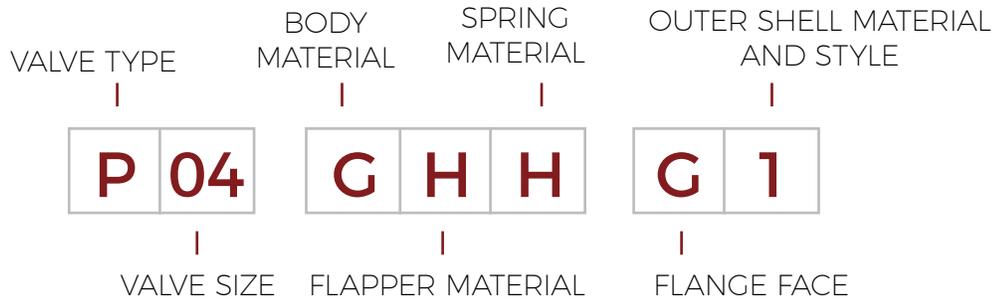
MODEL NUMBER EXAMPLES

- 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.

SERIES P MODEL NUMBER EXAMPLE

P04-GHH-G1 = 4" spring-assisted check valve with a Teflon glass filled body. Alloy C-276 flapper, Alloy C276 spring, Serrated face, and a 316 S.S. Outer Shell (with thru holes)

PA06-GT-G4 = 6" spring-assisted check valve with a Teflon glass filled body. Titanium Gr.2 Disc, Serrated face, and a Carbon Steel Outer Shell (with thru holes)



Closure Type	
Code	Description
P	Spring-Assisted Closure
PA	Gravity Closure with Angled Seat (no spring)

Body Material	
Code	Description
G	Teflon® (25% glass filled)
K	Kynar®
U	Ultra High Molecular Weight Polyethylene® (UHMWPE)
O	OTHER

Spring Material	
Code	Description
H	Alloy C276
T	Titanium
M	Monel
<i>Note: Spring Code is Omitted When Ordering Closure Type "PA"</i>	

Valve Size	
AVAILABLE IN SIZES 1" - 12"	
<i>Meet ANSI Series 125 or 150 Flanges with Maximum Operating Pressure of 200 PSI.</i>	

Flapper Material	
Code	Description
H	Alloy C276
T	Titanium Gr. 2
B	Alloy B-2
Z	Zirconium

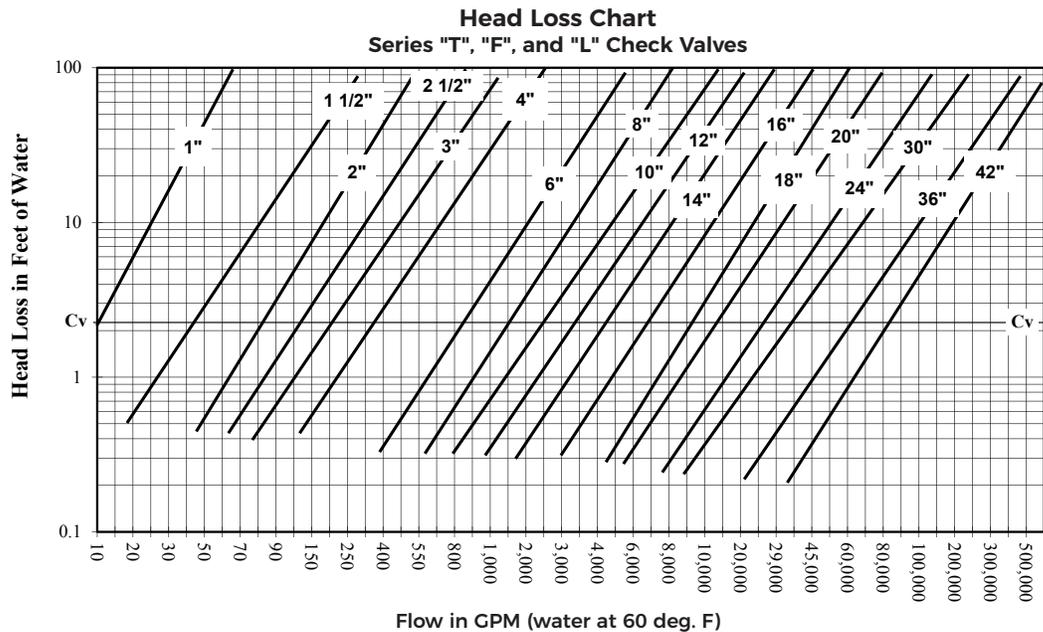
Flange Face	
Code	Description
F	Non-Serrated
G	Serrated
<i>Note: Gaskets are NOT required for installation.</i>	

Outside Shell Material & Style	
Code	Description
1	316 SS - with Thru-Holes
2	316 SS - with Threaded Holes
4	Carbon Steel with Thru-Holes
5	Carbon Steel with Threaded Holes

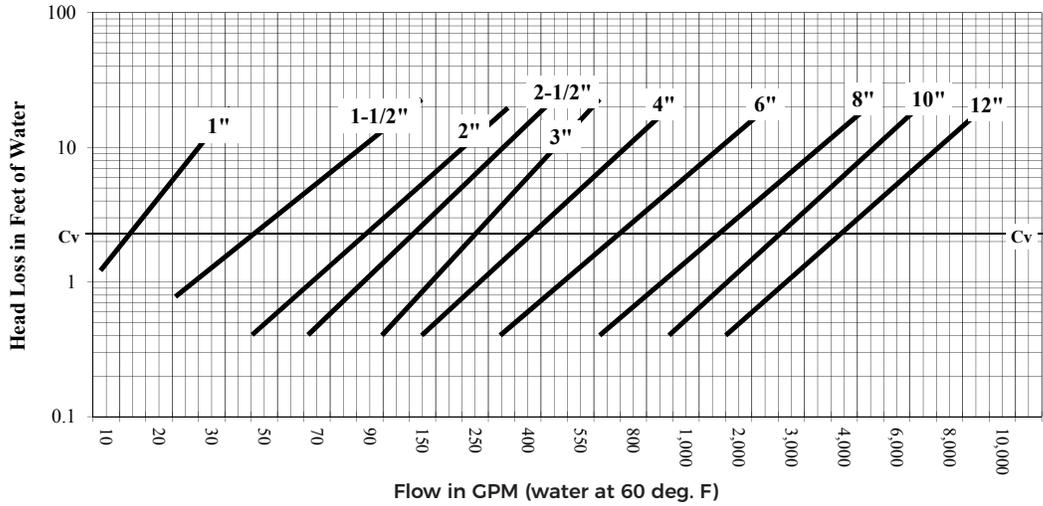
CALCULATED CRACKING PRESSURE (PSI)

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

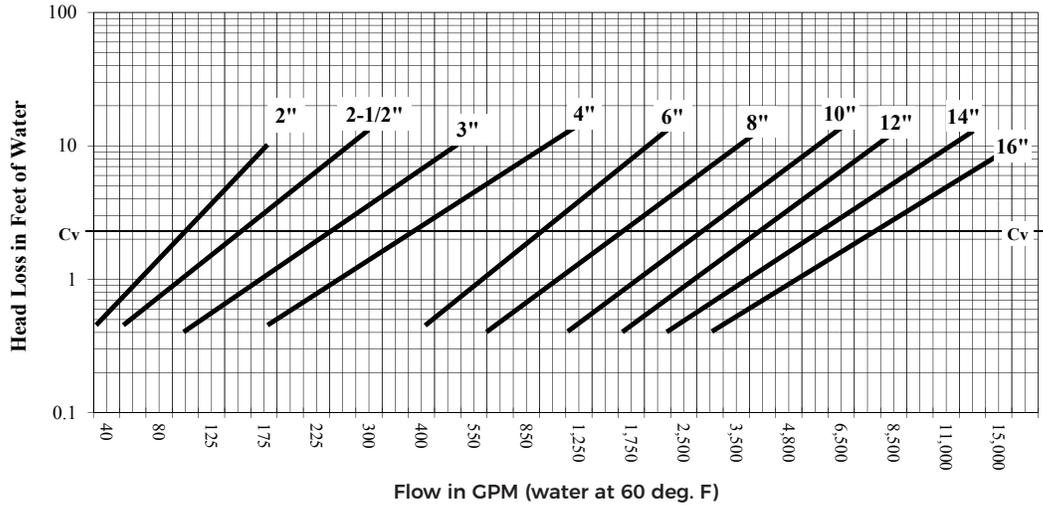
1 PSI = 2.772" water = 0.069 bar



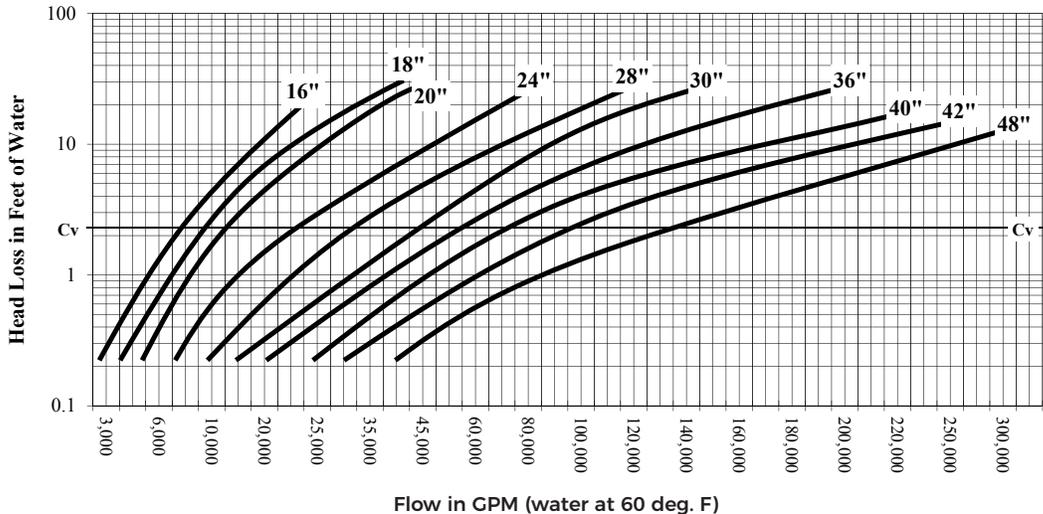
Head Loss Chart
Series "P" Plastic Bodied Check Valves



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



Head Loss Chart
Series "D" Dual Plate Check Valves



ASME B16.34 Pressure-Temperature Ratings for Standard Class
for Duplex Stainless Steel (Group 2.8) and Alloy 20 (Group 3.1)

Temperature		Working Pressures by Class, bar/psig											
°F	°C	Series 150				Series 300				Series 600			
		Duplex (2.8)		Alloy 20 (3.1)		Duplex (2.8)		Alloy 20 (3.1)		Duplex (2.8)		Alloy 20 (3.1)	
		psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
-20 to	-29 to 38	290	20.0	290	20.0	750	51.7	750	51.7	1500	103.4	1500	103.4
200	93	260	17.9	260	17.9	745	51.4	740	51.0	1490	102.7	1485	102.4
300	149	230	15.9	230	15.9	665	45.9	710	49.0	1335	92.0	1420	97.9
400	204	200	13.8	200	13.8	615	42.4	680	46.9	1230	84.8	1365	94.1
500	260	170	11.7	170	11.7	580	40.0	655	45.2	1160	80.0	1310	90.3
600	316	140	9.7	140	9.7	555	38.3	605	41.7	1115	76.9	1210	83.4
650	343	125	8.6	125	8.6	545	37.6	590	40.7	1095	75.5	1175	81.0
700	371	110	7.6	110	7.6	540	37.2	570	39.3	1085	74.8	1135	78.3
750	399	95	6.6	95	6.6	530	36.5	530	36.5	1065	73.4	1065	73.4
800	427	-	-	80	5.5	-	-	510	35.2	-	-	1015	70.0
Hydrostatic Shell Test		450	30	450	30	1125	78	1125	78	2250	155	2250	155
°F	°C	Series 900				Series 1500				Series 2500			
		Duplex (2.8)		Alloy 20 (3.1)		Duplex (2.8)		Alloy 20 (3.1)		Duplex (2.8)		Alloy 20 (3.1)	
		psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
-20 to	-29 to 38	2250	155.1	2250	155.1	3750	258.6	3750	258.6	6250	430.9	6250	430.9
200	93	2230	153.8	2225	153.4	3720	256.5	3710	255.8	6200	427.5	6180	426.1
300	149	2000	137.9	2130	146.9	3335	229.9	3550	244.8	5560	383.3	5920	408.2
400	204	1845	127.2	2045	141.0	3070	211.7	3410	235.1	5120	353.0	5680	391.6
500	260	1740	120.0	1965	135.5	2905	200.3	3275	225.8	4840	333.7	5460	376.5
600	316	1670	115.1	1815	125.1	2785	192.0	3025	208.6	4640	319.9	5040	347.5
650	343	1640	113.1	1765	121.7	2735	188.6	2940	202.7	4560	314.4	4905	338.2
700	371	1625	112.0	1705	117.6	2710	186.8	2840	195.8	4520	311.6	4730	326.1
750	399	1595	110.0	1595	110.0	2660	183.4	2660	183.4	4430	305.4	4430	305.4
800	427	-	-	1525	105.1	-	-	2540	175.1	-	-	4230	291.6
Hydrostatic Shell Test		3375	233	3375	233	5625	388	5625	388	9375	646	9375	646

ASME B16.34 Pressure-Temperature Ratings for Standard Class
for Carbon Steel (Group 1.1) and 316 Stainless Steel (Group 2.2)

Temperature		Working Pressures by Class, bar/psig											
°F	°C	Series 150				Series 300				Series 600			
		Steel (1.1)		316SS (2.2)		Steel (1.1)		316SS (2.2)		Steel (1.1)		316SS (2.2)	
		psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
-20 to 100	-29 to 38	285	19.7	275	19.0	740	51.0	720	49.6	1480	102.0	1440	99.3
200	93	260	17.9	235	16.2	680	46.9	620	42.7	1360	93.8	1240	85.5
300	149	230	15.9	215	14.8	655	45.2	560	38.6	1310	90.3	1120	77.2
400	204	200	13.8	195	13.4	635	43.8	515	35.5	1265	87.2	1025	70.7
500	260	170	11.7	170	11.7	605	41.7	480	33.1	1205	83.1	955	65.8
600	316	140	9.7	140	9.7	570	39.3	450	31.0	1135	78.3	900	62.1
650	343	125	8.6	125	8.6	550	37.9	440	30.3	1100	75.8	885	61.0
700	371	110	7.6	110	7.6	530	36.5	435	30.0	1060	73.1	870	60.0
750	399	95	6.6	95	6.6	505	34.8	425	29.3	1015	70.0	855	59.0
800	427	80	5.5	80	5.5	410	28.3	420	29.0	825	56.9	845	58.3
850	454	65	4.5	65	4.5	320	22.1	420	29.0	640	44.1	835	57.6
900	482	50	3.4	50	3.4	230	15.9	415	28.6	460	31.7	830	57.2
950	510	35	2.4	35	2.4	135	9.3	385	26.5	275	19.0	775	53.4
1000	538	20	1.4	20	1.4	85	5.9	365	25.2	170	11.7	725	50.0
Hydrostatic Shell Test		450	31	425	30	1125	78	1100	76	2225	154	2175	150
°F	°C	Series 900				Series 1500				Series 2500			
		psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
-20 to 100	-29 to 38	2220	153.1	2160	148.9	3705	255.5	3600	248.2	6170	425.4	6000	413.7
200	93	2035	140.3	1860	128.2	3395	234.1	3095	213.4	5655	389.9	5160	355.8
300	149	1965	135.5	1680	115.8	3270	225.5	2795	192.7	5450	375.8	4660	321.3
500	260	1810	124.8	1435	98.9	3015	207.9	2390	164.8	5025	346.5	3980	274.4
600	316	1705	117.6	1355	93.4	2840	195.8	2255	155.5	4730	326.1	3760	259.2
650	343	1650	113.8	1325	91.4	2745	189.3	2210	152.4	4575	315.4	3680	253.7
700	371	1590	109.6	1305	90.0	2665	183.7	2170	149.6	4425	305.1	3620	249.6
750	399	1520	104.8	1280	88.3	2535	174.8	2135	147.2	4230	291.6	3560	245.5
800	427	1235	85.2	1265	87.2	2055	141.7	2110	145.5	3430	236.5	3520	242.7
850	454	955	65.8	1255	86.5	1595	110.0	2090	144.1	2655	183.1	3480	239.9
900	482	690	47.6	1245	85.8	1150	79.3	2075	143.1	1915	132.0	3460	238.6
950	510	410	28.3	1160	80.0	685	47.2	1930	133.1	1145	78.9	3220	222.0
1000	538	255	17.6	1090	75.2	430	29.6	1820	125.5	715	49.3	3030	208.9
Hydrostatic Shell Test		3350	231	3250	225	5575	385	5400	373	9275	640	9000	621

Series H Flanged Installation Dimensions
per ASME B16.10

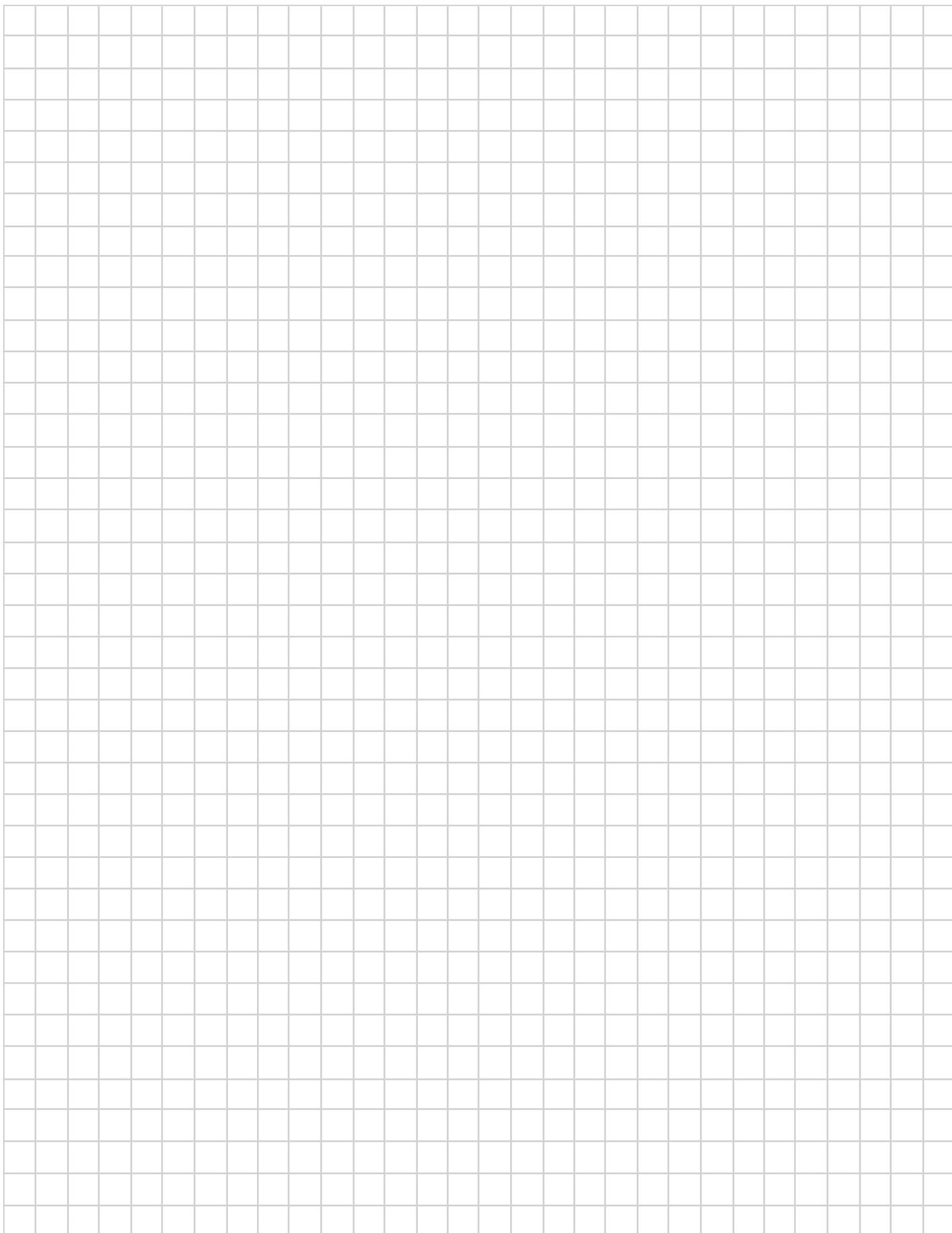
SIZE	ASME CLASS	A-Dia		B-LTH				WEIGHT	
				RF		RTJ			
		inch	mm	inch	mm	inch	mm	lbs.	kg.
6" 150mm	150	13	330	14	356	14-1/2	368	167	76
	300	15	381	17-1/2	445	18-1/8	460	295	134
	600	18	457	22	559	22-1/8	562	501	228
	900	19	483	24	610	24-1/8	613	590	268
	1500	20	508	27-3/4	705	28	711	725	330
8" 200mm	150	16	406	19-1/2	495	20	508	337	153
	300	17	432	21	533	21-5/8	549	480	218
	600	19	483	26	660	26-1/8	664	710	323
	900	22	559	29	737	29-1/8	740	1040	473
	1500	24	610	32-3/4	832	33-1/8	841	1090	495
10" 250mm	150	18	457	24-1/2	622	25	635	595	270
	300	20	508	24-1/2	622	25-1/8	638	730	332
	600	23	584	31	787	31-1/8	791	1320	600
	900	26	660	33	838	33-1/8	841	1848	840
12" 300mm	150	21	533	27-1/2	699	28	711	941	428
	300	23	584	28	711	28-5/8	727	1180	536
	600	25	635	33	838	33-1/8	841	1811	823
	900	28	711	38	965	38-1/8	968	2253	1024
14" 350mm	150	23	584	31	787	31-1/2	800	1280	582
	300	26	660	33	838	33-5/8	854	1929	877
	600	27	686	35	889	35-1/8	892	2000	909
	900	29	737	40-1/2	1029	40-7/8	1038	2305	1048
16" 400mm	150	26	660	34	864	34-1/2	876	1664	756
	300	28	711	34	864	34-5/8	879	2627	1194
	600	31	787	39	991	39-1/8	994	3953	1797
18" 450mm	150	28	711	38-1/2	978	39	991	2231	1014
	300	31	787	38-1/2	978	39-1/8	994	3379	1536
20" 500mm	150	31	787	38-1/2	978	39	991	2828	1285
	300	34	864	40	1016	40-3/4	1035	4105	1866
24" 600mm	150	35	889	51	1295	51-1/2	1308	4475	2034
	300	39	991	53	1346	53-7/8	1368	6309	2868

Consult HY-GRADE for sizes/classes not shown

ASME B16.34 Pressure-Temperature Ratings for Standard Class
for 9% Cr - 1% Mo Steel (Group 1.14)

Temperature		Working Pressures by Class, bar/psig					
°F	°C	Series 150		Series 300		Series 600	
		9Cr-1Mo (1.14)		9Cr-1Mo (1.14)		9Cr-1Mo (1.14)	
		psi	bar	psi	bar	psi	bar
-20 to 100	-29 to 38	290	20.0	750	51.7	1500	103.4
200	93	260	17.9	750	51.7	1500	103.4
300	149	230	15.9	730	50.3	1455	100.3
400	204	200	13.8	705	48.6	1410	97.2
500	260	170	11.7	665	45.9	1330	91.7
600	316	140	9.7	605	41.7	1210	83.4
650	343	125	8.6	590	40.7	1175	81.0
700	371	110	7.6	570	39.3	1135	78.3
750	399	95	6.6	530	36.5	1065	73.4
800	427	80	5.5	510	35.2	1015	70.0
850	454	65	4.5	485	33.4	975	67.2
900	482	50	3.4	450	31.0	900	62.1
950	510	35	2.4	375	25.9	755	52.1
1000	538	20	1.4	255	17.6	505	34.8
Hydrostatic Shell Test		450	30	1125	78	2250	155
°F	°C	Series 900		Series 1500		Series 2500	
-20 to 100	-29 to 38	2250	155.1	3750	258.6	6250	430.9
200	93	2250	155.1	3750	258.6	6250	430.9
300	149	2185	150.7	3640	251.0	6070	418.5
400	204	2115	145.8	3530	243.4	5880	405.4
500	260	1995	137.6	3325	229.3	5540	382.0
600	316	1815	125.1	3025	208.6	5040	347.5
650	343	1765	121.7	2940	202.7	4905	338.2
700	371	1705	117.6	2840	195.8	4730	326.1
750	399	1595	110.0	2660	183.4	4430	305.4
800	427	1525	105.1	2540	175.1	4230	291.6
850	454	1460	100.7	2435	167.9	4060	279.9
900	482	1350	93.1	2245	154.8	3745	258.2
950	510	1130	77.9	1885	130.0	3145	216.8
1000	538	760	52.4	1270	87.6	2115	145.8
Hydrostatic Shell Test		3375	233	5625	388	9375	646

NOTES





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