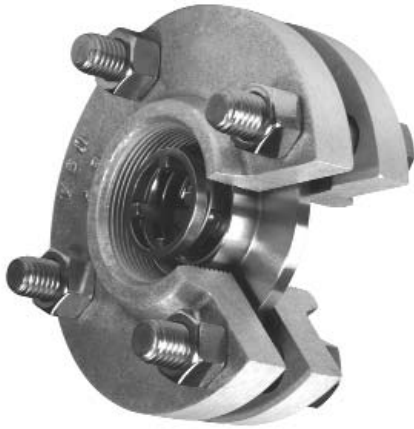


CheckAll[®] VALVE



Dependable, versatile, adaptable, economical...



INSERT



HOUSED



TUBING





MINI-CHECK

FOUR SERIES OF CHECK-ALL VALVES

For nearly every possible application and need, you can economically install a Check-All valve. Lightweight, efficient, and rugged, every Check-All valve is designed and built to perform to exact needs and specifications. There's a wide variety of standard valves immediately available from stock, as well as countless other valves of various materials and design. We are staffed to not only supply you with a quality product but with personal technical services. Please feel free to put us to work on your project. We inspect all Check-All valves at least five times. . .beginning with design; during manufacture; under use conditions through testing; with a thorough inspection; and finally, as your order is packaged and shipped. This constant and very precise program of inspection, test, and re-check assures you a high quality product every time. You can be confident that your Check-All valve is the finest you can get and that it will function exactly as you want. . .and as you need it to function.

Check-All Valve Mfg. Co.
1800 Fuller Road
West Des Moines, IA 50265 U.S.A.
Phone: 515-224-2301
Fax: 515-224-2326
Website: www.checkall.com
E-mail: sales@checkall.com

C O N T E N T S

Introduction to Company and Products	2
Order Information	4
Insert Series Check Valves	
Flange Insert	6
Lined Pipe Insert	8
Glass Pipe Insert	9
Straight Sided Insert	9
 Sanitary Check	10
 Sanitary Check Disassembly Instructions	11
Sanitary Cartridge	12
Sanitary Insert	13
Union Insert	14
Housed Series Check Valves	
Bushing	15
Connector	16
Horizontal-Vertical, Flanged & Drilled	17
Horizontal-Vertical, Flanged & Drilled-TEFLON® Resin Lined	18
Universal Low Pressure	19
Universal High Pressure	20
Universal Socket Weld	21
Mini-Check Series Check Valves	22
Tubing Series Check Valves	
Tubing Check Valve	23
Tubing Check Valve Flared	24
Valve Weights	25
Technical Information	26
Flow Data	27
Application Guidelines	31
Installation and Operating Instructions	32
Pressure Equipment Directive (PED 97/23/EC) Compliance	34
Material Definition for Check-All Valve Products	36
Notes	38
Manufacturer's Terms and Conditions of Sale	40

In the beginning . . . the first **Check-All** valve was designed and built for use as a pump foot valve. The year was 1958. Since then Check-All has grown from an idea to a reality; from one valve to many series of valves; from one use to multiple uses; from one material to a variety of materials and from one man to a factory. **Check-All** has grown in all respects — but one element remains the same — SERVICE TO EACH CUSTOMER. We will never permit this to change.

Design Features — The complete line of **Check-All** valves are in-line spring-loaded piston-type check valves. Many series are available which provide check valves for practically every service application. All valves are available with *metal to metal* or *soft seats*. Sizes range from 1/8" NPT to 20 inch flanged connections. Pressure ratings are available from *full vacuum* to *10,000 psi*. Special materials available are Titanium, *HASTELLOY®*, *MONEL®*, Alloy 20, *INCONEL®* Alloys and many others. A wide range of spring settings is available for all valves. *Teflon®* resin encapsulated springs are available for special corrosion applications. The following are some of the reasons **Check-All** is an outstanding source for all your check valve, vacuum breaker, and pressure relief applications:

SILENT — engineered for silent operation! Check-All valves close quickly and smoothly to minimize hammer noise.

ORIFICE SIZE — engineered from experimental data to give a minimum pressure drop over the full flow range of the valve.

BASIC DESIGN — streamlined so that fluid flows through the valve over smooth contoured surfaces with a minimum change in direction.

INDUCED TURBULENCE — on seating surfaces just before the valve closes, insures positive sealing by removing minute foreign particles suspended in the fluid.

SEATING SURFACES — on all metal to metal seated valves are mated and precision lapped to insure effective sealing. The mated parts remain mated through the assembly process.

DESIGNED — to function *equally well* in either a vertical or horizontal position, with proper spring selection.

DESIGNED — to *reduce* installation costs. Insert series check valves easily fit into existing line components which reduces both initial cost and installation time.

DESIGNED — to *reduce* maintenance costs. The Check-All design is simple, rugged and efficient. The seating surfaces are parallel to each other thereby eliminating the excessive wear occurring in plug, cone and ball seats.

VERSATILE—Check-All valves also can be used as **LOW PRESSURE RELIEF VALVES and VACUUM BREAKERS.**

Certifications:

CE (PED 97/23/EC) Compliance Many Check-All Valve products are compliant with the Pressure Equipment Directive (PED 97/23/EC). Our certificate number is CE62128 and is issued by The British Standards Institution (BSI) who is our Notified Body for compliance under assessment Module H (full quality system). Please see page 34 for additional information regarding CE compliance.

Canadian Registration Number Check-All Valve also has obtained a Canadian Registration Number (OC3651.5C) for many of its products. The CRN is required for some products to be installed in certain applications in Canada. Check-All has registration in all provinces of Canada. Consult the factory if you require a valve with a CRN.

3A[®] Sanitary Standards The Check-All style 3SC check valve is compliant with 3A Sanitary Standards for Vacuum Breakers and Check Valves for Milk and Milk Products, Number 58-00. Among other requirements, this is a standard that requires a 32 Ra finish and specified groove angles and depths, all for sanitary purposes. Consult the factory if finer surface finishes are required.

ISO 9001-2000 Check-All Valve is an ISO 9001-2000 Certified company. Our certificate number is FM 40858 and is issued by The British Standards Institution (BSI). This certification indicates that Check-All products are designed, manufactured and distributed in accordance with ISO 9001 requirements. That means when you order Check-All Valve products you are assured of receiving the highest quality check valves, consistently and on-time.

ORDER INFORMATION

Also See Valve Application Guidelines on Page 31

WARNING: DO NOT INSTALL ON THE DISCHARGE OF A RECIPROCATING AIR COMPRESSOR OR DIRECTLY ON THE OUTLET SIDE OF AN ELBOW. VALVES ARE DESIGNED FOR FULLY DEVELOPED FLOW.

Check-All valves are completely described by — **Style** designation and combinations of **Letters** and **Numbers**. The appropriate combinations will designate: **Style, Size, Body Material, Seat Material, Spring Cracking Pressure**.

a. **Materials:** Internal materials may differ from body materials. Consult the factory for details. Material selection for a specific application is the responsibility of the customer. See page 31 for additional comments regarding material selection.

- | | |
|--|---|
| 1. Body Materials: SS — 316 Stainless Steel | T — <i>TEFLON</i> [®] resin |
| B — Brass | P — PVC |
| C — Carbon Steel | I6 — <i>INCONEL</i> [®] Alloys 600/625 |
| A-20 — Alloy 20 | MO — <i>MONEL</i> [®] Alloys |
| HC — <i>HASTELLOY</i> [®] C Alloys | TI — Titanium |
| HB — <i>HASTELLOY</i> [®] B Alloys | |

2. **Seats Materials:** All valve seats are integral. Valves are supplied with **Metal To Metal** (lapped seats) or **Soft** (o-ring seats). Metal to metal seats are the same material as the valve body unless otherwise specified. Plastic valves have plastic seats. ALL SOFT SEATS MAX. PRESSURE 1500 PSI. Temperature ranges given are for ideal service conditions and may vary. FDA compounds are also available for some seat materials. Consult the factory for assistance.

- | | |
|--|---|
| M — Metal to Metal
(or same as body material) | K — KALREZ [®] (-0°F to 500°F) |
| AS — AFLAS [®] (-20°F to 400°F) | N — Neoprene (-65°F to 260°F) |
| B — Buna-N (-65°F to 250°F) | T — <i>TEFLON</i> [®] resin (-320°F to 400°F)
Not available for plastic valves. |
| E — EPDM (-70°F to 300°F) | V — VITON [®] (-10°F to 400°F) |

b. **Seat Leakage:** Resilient soft seats are required for “bubble tight” shutoff. Consult the factory for information on metal to metal or *Teflon*[®] resin seats. Metal to metal and *Teflon*[®] resin seats are not resilient. See page 31 for allowable leakage rates.

c. ***Teflon*[®] resin Encapsulated Springs:** Springs are incased in heat shrinkable *Teflon*[®] resin tubing. The ends of the tubing are plugged with *Teflon*[®] resin and sealed. When ordering *Teflon*[®] resin encapsulated springs add the letter “T” as a suffix to the cracking pressure specified. Some springs for .348 and .464 orifice diameters are not available with *Teflon*[®] resin encapsulation. Consult the factory for a substituted spring. *Teflon*[®] resin encapsulation may reduce flow capacity and the cracking pressure may vary.

d. **Springs:** All standard springs are 316 stainless steel. Several cracking pressures are available for each valve. Spring sizes are defined by the orifice diameter of the valve. Table 1 lists the standard springs available. Temperature limitations are -320°F to 400°F. *INCONEL*[®] Alloy springs may be used for higher temperatures. Consult the factory for other available spring materials. Higher alloy material valves use higher alloy springs.

e. **Special Springs:** Special alloys or special cracking pressures are available for all valves. Higher cracking pressure springs may reduce flow capacity. Consult the factory for price and delivery.

TABLE 1: STANDARD CRACKING PRESSURES FOR 316 SS SPRINGS ONLY

Orifice Diameter	Cracking Pressure (PSI Differential-Horizontal)			
	-1/8	--1/2	1.5	3.5
.348	-1/8	--1/2	1.5	3.5
.464	-1/8	--1/2	1.5	3.5
.593	-1/8	--1/2	1.5	3.5
.890	-1/8	--1/2	1.5	3.5
1.135	-1/8	--1/2	1.5	3.5
1.385	-1/8	--1/2	1.5	
1.555	-1/8	--1/2	1.5	
2.025	-1/8	--1/2	1.5	
2.560	-1/8	--1/2	1.5	
3.280		--1/2		
3.875		--1/2		
5.110		--1/2		
6.380		--1/2		
7.670		--1/2		
8.460		--1/2		
9.650		--1/2		
10.860		--1/2		
12.110		--1/2		

NOTE: All springs have a tolerance of + or -15%. Temperatures exceeding -320°F to +400°F consult the factory.

-1/8 PSI springs are not recommended for flow vertical down.

--1/2 PSI spring supplied if cracking pressure not specified.

3SC Series Valve: Standard springs for 3SC Series are 1/2 and 1.5 PSI.

ORDERING EXAMPLES

1. Wanted a 2 inch Connector Valve of 316 stainless steel with metal to metal seat and 1/2 psi cracking pressure spring:

Valve Style	Size	Material	Seat	Spring
CON	200	SS	M	1/2

2. Wanted a 1-1/2 inch Union Insert Valve of Carbon Steel with a 1/2 psi cracking pressure spring *Teflon*® resin Encapsulated and metal to metal seat:

Valve Style	Size	Material	Seat	Spring
UIV	150	C	M	1/2 T

3. Wanted a 1 inch Flange Insert Valve of PVC with a Viton o-ring seat and a 1/2 psi cracking pressure spring *Teflon*® resin Encapsulated:

Valve Style	Size	Material	Seat	Spring
FIV	100	P	V	1/2 T

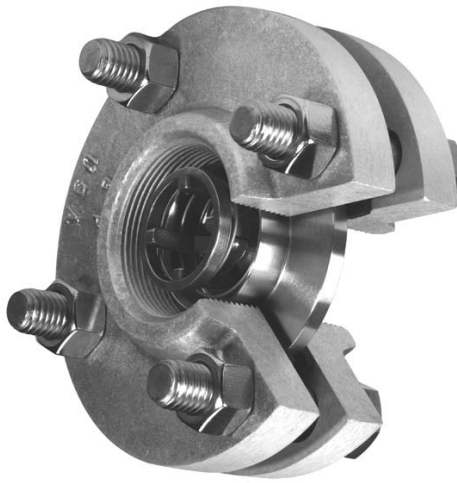
4. Wanted a 6 inch 150# ANSI Flange Insert Valve of 316 stainless steel with a *Teflon*® resin o-ring seat and 1/2 psi cracking pressure spring:

Size	Valve Style	ANSI Rating	Material	Seat	Spring
6"	FIV	15	SS	T	1/2



**INSERT
SERIES**

**FLANGE
INSERT**



STYLE FIV FLANGE INSERT VALVE

NOTE: Flanges pictured above not supplied

INSERT SERIES CHECK VALVES

The **INSERT SERIES** consists of eight styles of check valves designed to be inserted into existing or necessary hardware making up a piping system. The series consists of valves for every service application ranging from air to acid.

Some of the features of the **INSERT SERIES** are:

- Low installation costs.
- Minimal space required.
- Easily removed for cleaning.
- Lightweight, compact and rugged.
- Location in system may be changed without re-piping.
- Economical – no large housing to pay for.
- Easily added to existing systems.

The **Flange Insert Valve** is the ultimate check valve in flanged systems. Designed to be inserted between two mating ANSI flanges, it provides the simplest most economical way to install a check valve in a piping system. The valve body automatically positions the valve and holds it in place while bolts are being installed and tightened. All that is required is two gaskets in place of the one normally used in a flanged joint. Consult the factory for additional installation guidelines.

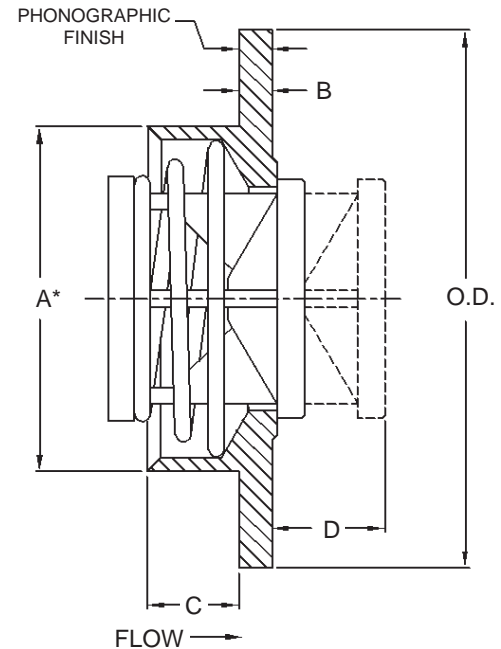
Flange Insert Valves are available in the following materials and sizes:

1. 316 Stainless Steel 1/2 through 20 inches
2. Carbon Steel 1/2 through 20 inches
3. Brass 1/2 through 20 inches
4. Teflon® resin 1/2 through 6 inches
5. PVC 1/2 through 6 inches
6. Other super alloys 1/2 through 20 inches

FLANGE INSERT VALVES are available in most metal alloys for use with ANSI class 150, 300 and 600 flanges. Brass valves are for use with ANSI class 150 and 300 flanges.

FLANGE INSERT VALVES can be used as check valves, low pressure relief valves and vacuum breakers by simply using different spring settings.

FLANGE INSERT VALVES are available in Titanium, **HASTELLOY®** Alloys, **MONEL®** Alloys, Alloy 20 and many other alloys.

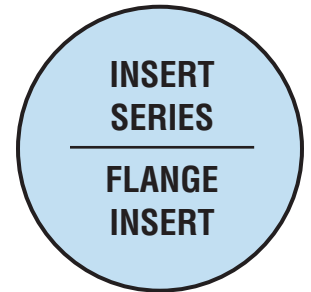


NON-SHOCK PRESSURE – TEMPERATURE RATINGS			
Material	Valve Size	P-T Rating	Recommended *** Service Temp.
Teflon® resin	1/2 – 1-1/2	** 55 psig @ 100°F	-320°F to 400°F
Teflon® resin	2 – 6	** 20 psig @ 100°F	-320°F to 400°F
PVC	1/2 – 6	** 200 psig @ 100°F	+32°F to 150°F
Brass	1/2 – 4	ANSI Class 150 & 300	-320°F to 400°F
	5 – 20	ANSI Class 150	
Metal Valves	1/2 – 4	ANSI Class 150, 300 & 600	-320°F to 700°F
	5 – 20	ANSI Class 150	

*Check "A" dimension for clearance with pipe ID. Generally "A" dimension is designed for use in standard schedule pipe for class 150 & 300 valves. Order class 600 valves for schedule 80 pipe.
 **Consult the factory for reduced P-T ratings above 100°F.
 ***See page 4 for P-T ratings of valve seats & springs. CARBON STEEL -20° TO 700°F
 See page 27 for Flow Data.

CHECK-ALL VALVE MFG. CO.
 Phone: 515-224-2301
 Fax: 515-224-2326
 www.checkall.com
 sales@checkall.com
 ISO 9001-2000 CERTIFIED

FIV INSTALLATION DIMENSIONS



SIZE	ANSI Rating & Material	A	B	C	D**	O.D.	Orifice Diameter*
1/2"	150 & 300	0.605	1/4	17/64	39/64	1-3/8	0.348
	600	N/A	1/4	N/A			0.348
	Plastic	0.600	1/4	17/64			0.348
3/4"	150 & 300	0.762	1/4	1/4	45/64	1-3/4	0.464
	600	0.719	1/4	1/4			0.464
	Plastic	0.720	1/4	1/4			0.464
1"	150 & 300	1.000	1/4	23/64	3/4	2	0.593
	600	0.922	1/4	5/16			0.593
	Plastic	0.925	1/4	25/64			0.593
1-1/4"	150 & 300	1.340	1/4	7/16	7/8	2-1/2	0.890
	600	1.234	1/4	3/8			0.890
	Plastic	1.240	1/4	7/16			0.890
1-1/2"	150 & 300	1.570	1/4	7/16	1-1/64	2-7/8	1.135
	600	1.490	1/4	13/32			1.135
	Plastic	1.470	1/4	1/2			1.135
2"	150 & 300	2.005	1/4	7/16	1-3/16	3-5/8	1.385
	600	1.890	1/4	27/64			1.385
	Plastic	1.890	1/4	33/64			1.385
2-1/2"	150 & 300	2.407	1/4	21/32	1-7/16	4-1/8	1.555
	600	2.266	1/4	37/64			1.555
3"	150 & 300	3.006	5/16	11/16	1-19/32	5	2.025
	600	2.844	5/16	41/64			2.025
	Plastic	2.850	5/16	23/32			2.025
4"	150 & 300	3.964	3/8	1-3/64	2	6-3/16	2.560
	600	3.766	3/8	61/64			2.560
	Plastic	3.766	3/8	1-1/8			2.560
5"	150	4.985	1/2	1-1/16	2-11/64	7-5/16	3.280
6"	150	6.003	3/8	1-33/64	2-23/32	8-1/2	3.875
	Plastic	5.700	9/16	1-35/64			3.875
8"	150	7.919	1/2	2-17/64	3-3/8	10-5/8	5.110
10"	150	9.958	1/2	2-53/64	3-15/32	12-3/4	6.380
	150 Brass	11.876	5/8	3-7/64			4-9/32
12"	Other Metals	11.876	1/2	3-15/64			7.670
	150 Brass	13.062	11/16	3-11/64	4-35/64	16-1/4	8.460
Other Metals	13.062	1/2	3-23/64	8.460			
16"	150 Brass	14.938	3/4	3-11/16	5-11/64	18-1/2	9.650
	Other Metals	14.938	9/16	3-7/8			9.650
18"	150 Brass	16.814	7/8	3-55/64	5-25/32	21	10.860
	Other Metals	16.814	5/8	4-7/64			10.860
20"	150 Brass	18.750	15/16	3-7/8	6-17/32	23	12.110
	Other Metals	18.750	11/16	4-1/8			12.110

*Due to molding process, orifice in plastic valves may vary.

Sizes 5" and larger are only available in class 150. Consult the factory if using Schedule 80 pipe.

**Maximum nominal dimension for valve open with no spring.

CHECK THESE EXCLUSIVE FLANGE INSERT FEATURES:

SMOOTH SILENT OPERATION!
Spring loaded.

LIGHT AND COMPACT!

Why support several hundred percent more weight just to enclose the valve and provide a means to install it in the system. Use the existing piping and flanges to serve this purpose.

TREMENDOUS COST SAVINGS!

Why pay for several hundred percent more material! Pay less freight charges! Pay less for installation costs!

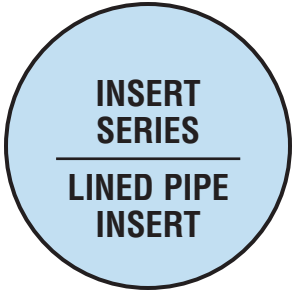
EASE OF INSTALLATION!

No need to alter existing piping to install a check valve. Simply spread the flanged joint, insert the valve and gaskets, and tighten the bolts.

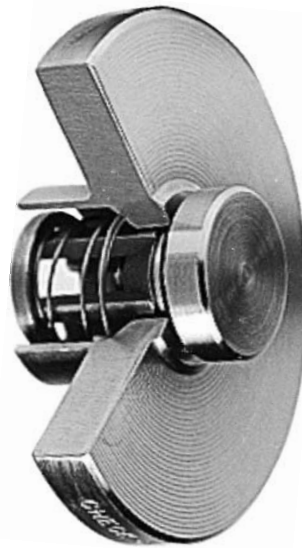
VERSATILITY!

Check valve. Low pressure relief valve. Vacuum breaker.

CHECK-ALL VALVE MFG. CO.
 Phone: 515-224-2301
 Fax: 515-224-2326
www.checkall.com
sales@checkall.com
 ISO 9001-2000 CERTIFIED



STYLE LPI LINED PIPE INSERT



**CHECK-ALL
VALVES
ARE LIGHT
AND
COMPACT –
SAVE
ON MATERIAL
COSTS**

The **Lined Pipe Insert Valve** is designed to mate between two flanges on most lined pipe systems. It provides the simplest most economical way to install a check valve in a lined piping system. No gaskets are required, just spread the flanges, center the valve and bolt the flanges together. Lined Pipe Insert valves are available in *Teflon*[®] resin and *Hastelloy*[®] C Alloy to satisfy the most demanding applications. The standard spring material is *Hastelloy*[®] C Alloy. Other materials are available upon request.

Size	Orifice Diameter*	A	B	C	D***	OD
1	0.348	0.590	1/4	17/64	39/64	2
1-1/2	0.593	1.120	1/4	27/64	47/64	2-7/8
2	1.135	1.570	1/4	7/16	29/32	3-5/8
3	1.555**	2.520	5/16	21/32	29/32	5

*Orifice Diameter for *Teflon*[®] resin valve may vary due to molding process.

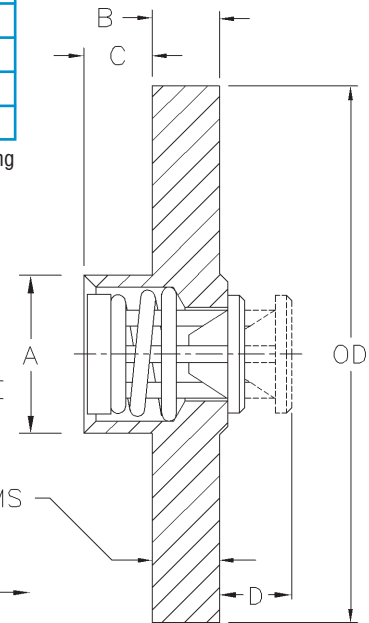
**3" *Teflon*[®] resin valves use 1.385 Orifice Diameter.

***Maximum nominal dimension for valve open with no spring.

A DIMENSION
FITS INSIDE MOST
STANDARD LINED PIPE

63–100 RMS
FINISH

FLOW →



Valve Size NPS	Style Number	PRESSURE-TEMPERATURE RATING*	
		Metal	<i>Teflon</i> [®] resin
1	LPI-100	ANSI CLASS 150/300	**55 PSIG @ 100°F
1-1/2	LPI-150	ANSI CLASS 150/300	**55 PSIG @ 100°F
2	LPI-200	ANSI CLASS 150/300	**55 PSIG @ 100°F
3	LPI-300	ANSI CLASS 150/300	**20 PSIG @ 100°F

*See page 4 for P-T ratings of valve seats & springs.

**Consult the factory for reduced P-T rating above 100°F.

See page 29 for Flow Data.

CHECK-ALL VALVE MFG. CO.
Phone: 515-224-2301
Fax: 515-224-2326
www.checkall.com
sales@checkall.com
ISO 9001-2000 CERTIFIED



PED 97/23/EC
COMPLIANT
See Page 34 for Details

STYLE GPI GLASS PIPE INSERT

The **Glass Pipe Insert** is an all *Teflon*[®] resin check valve with a *Teflon*[®] resin encapsulated spring. The valve is designed to replace the gasket normally used with glass pipe connecting flanges. It is inserted into one end of the glass pipe and the flange bolts are tightened. No extra pipe or fittings are necessary to install a GPI in the line.

The valve works equally well in any position with proper spring selection, which facilitates installing a check valve anywhere in the system.

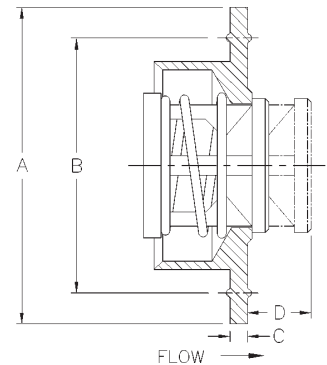
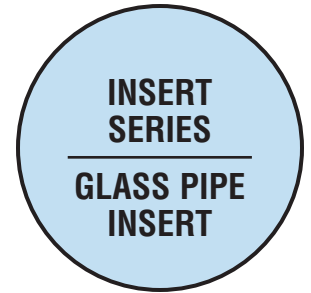
Nominal Pipe Size	Style Number	Non-Shock Pressure-Temperature Rating	A	B	C	D***	Orifice Diameter**
1	GPI-100-T	* 55 psig @ 100°F	1-5/8	1.28	1/8	47/64	0.593
1-1/2	GPI-150-T	* 55 psig @ 100°F	2-1/4	1.81	1/8	55/64	0.890
2	GPI-200-T	* 55 psig @ 100°F	2-3/4	2.31	1/8	29/32	1.135
3	GPI-300-T	* 20 psig @ 100°F	3-7/8	3.39	9/64	1-31/64	2.025
4	GPI-400-T	* 20 psig @ 100°F	5-23/64	4.42	6/64	1-57/64	2.550

*Consult the factory for reduced P-T rating of *TEFLON*[®] resin valves above 100°F and Flow Data.

**Due to molding process, orifice may vary.

***Maximum nominal dimension for valve open with no spring.

Note: 400°F Maximum Recommended Service Temperature for all sizes.

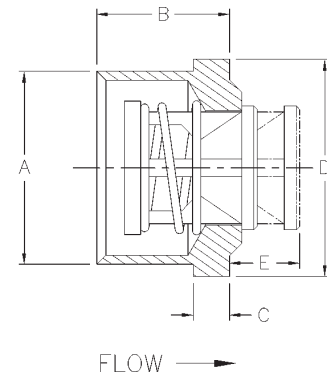
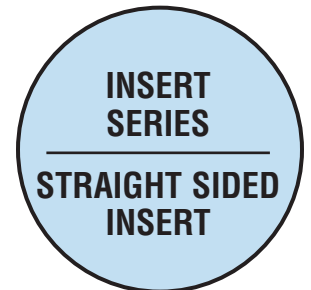


STYLE SSI STRAIGHT-SIDED INSERT

The **Straight Sided Insert** is a **threadless** check valve designed to be inserted into any cavity where a check valve is needed and threads are not desired.

Style Number	A	B	C	D	E*	Orifice Dia.
SSI-050	0.656	9/16	5/32	0.718	17/32	0.348
SSI-075	0.780	19/32	5/32	0.900	39/64	0.464
SSI-100	1.000	11/16	3/16	1.125	23/32	0.593
SSI-125	1.312	13/16	3/16	1.500	25/32	0.890
SSI-150	1.625	7/8	1/4	1.781	1-1/64	1.135
SSI-200	1.875	7/8	1/4	2.187	1-9/64	1.385

*Maximum nominal dimension for valve open with no spring.



NON-SHOCK PRESSURE - TEMPERATURE RATINGS		
Material*	P-T Rating	Max. Recommended Service Temp.
316 Stainless	3000 psig @ 100°F	700°F
Carbon Steel	3000 psig @ 100°F	700°F
Brass	3000 psig @ 100°F	400°F

See page 4 for P-T ratings of valve seats & springs.

See page 29 for Flow Data.

*Other materials are available upon request.

CHECK-ALL VALVE MFG. CO.
Phone: 515-224-2301
Fax: 515-224-2326
www.checkall.com
sales@checkall.com
ISO 9001-2000 CERTIFIED



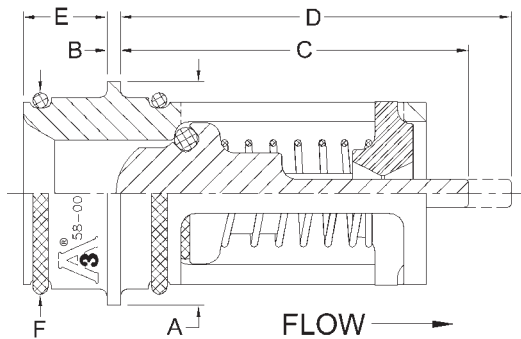
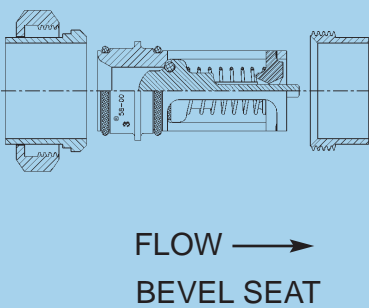
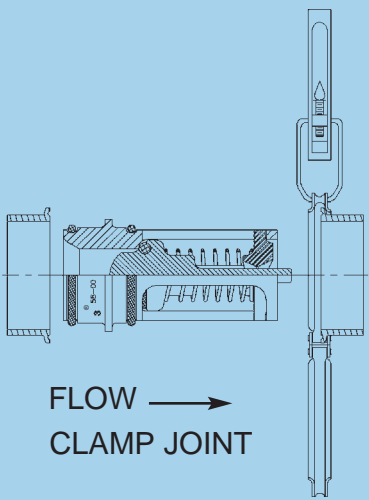
3-A **STYLE 3SC**
3-A **SANITARY CHECK VALVE**
3-A (58-00)

US Patent Numbers: 5,033,503;
 6,039,073; & 6,152,171
 Canadian Patent Number: 2,039,991

The 3-A SANITARY CHECK VALVE is an all 316/316L stainless steel check valve for use in new or existing sanitary systems. The 3SC design seals on the ID of sanitary ferrules with 3-A specified materials (standard is EPDM). The valve seals inside fittings such as Tri-Clover® Bevel Seat and Tri-Clamp®, Waukesha Cherry-Burrell Q-Clamp® and S-Line®, and others with ID dimensions equal to the “F” dimensions listed below. This valve is designed to be easily disassembled and spare parts are available.

The compact 3SC design fits inside a single set of ferrules, and requires no additional space in the line. The insert design makes it extremely economical when compared to full-bodied valves.

The wide variety of seat materials and cracking pressure springs allow this series to be used as a check valve or vacuum breaker. Please specify when ordering.



Size	Orifice Diameter	A	B	C*	D**	E	F***
3/4	****	3/4	1/16	****	****	****	****
1	0.476	1	1/16	1-23/32	2-5/32	12/32	0.870
1-1/2	0.890	1-1/2	1/16	2-17/32	3-15/32	12/32	1.370
2	1.135	2	1/16	3-1/32	4-4/32	15/32	1.870
2-1/2	1.595	2-1/2	1/16	3-9/32	4-19/32	15/32	2.370
3	2.150	3	1/16	4-19/32	5-17/32	15/32	2.870
4	2.699	4	1/16	4-3/4	6-11/16	15/32	3.834

*Dimension for valve closed.
 **Maximum nominal dimension for valve open.
 ***Valves are designed to function with fittings having these internal diameters.
 ****This size will be available in the near future.

NOTE: VALVE CAN BE INSTALLED FOR FLOW IN EITHER DIRECTION. FERRULES SHOWN FOR ILLUSTRATION ONLY AND ARE NOT SUPPLIED WITH THE VALVE.

Nominal Line Size	Style Numbers 316/316L SS Only	Non-Shock Pressure-Temperature Ratings	Max ** Temp. Limit
3/4	3SC-075-SS	*	300°F
1	3SC-100-SS	1000 PSIG @ 100°F	300°F
1-1/2	3SC-150-SS	725 PSIG @ 100°F	300°F
2	3SC-200-SS	725 PSIG @ 100°F	300°F
2-1/2	3SC-250-SS	725 PSIG @ 100°F	300°F
3	3SC-300-SS	725 PSIG @ 100°F	300°F
4	3SC-400-SS	725 PSIG @ 100°F	300°F

*This size will be available in the near future.
 **Consult the factory for applications where higher pressure and temperature is present.
 30 PSI is the maximum recommended pressure drop.
 See page 30 for Flow Data.

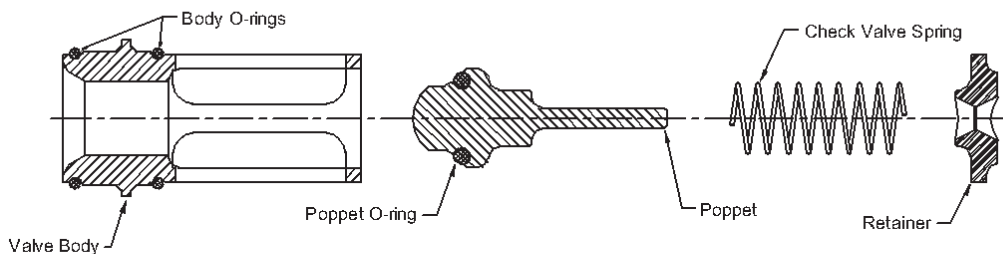
CHECK-ALL VALVE MFG. CO.
 Phone: 515-224-2301
 Fax: 515-224-2326
 www.checkall.com
 sales@checkall.com
 ISO 9001-2000 CERTIFIED

DISASSEMBLY FOR CLEANING INSTRUCTIONS

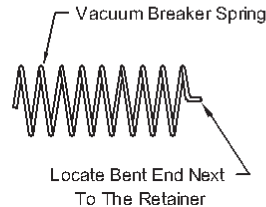
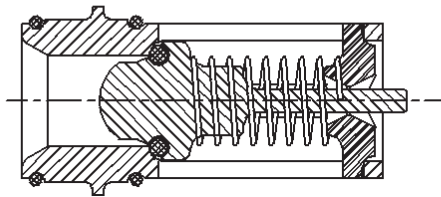
To disassemble the 3SC style valve, start by depressing one side of the retainer as shown in Step 1. With one side of the retainer tipped, rotate the stem of the poppet and remove the retainer as shown in Steps 2, 3, and 4. To reassemble the valve reverse the process. Consult the factory for information on trim kits, o-ring kits, or individual spare parts.



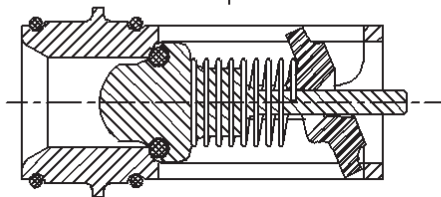
VALVE PARTS



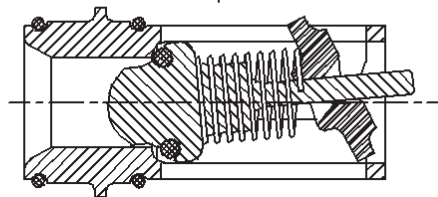
Assembled Valve



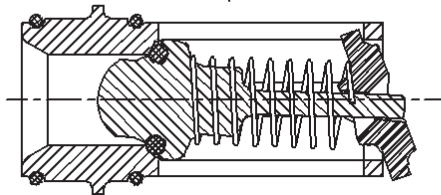
Step 1



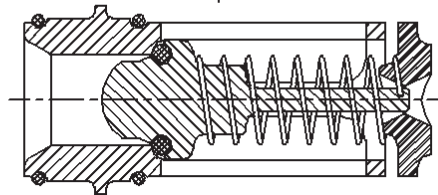
Step 2



Step 3



Step 4



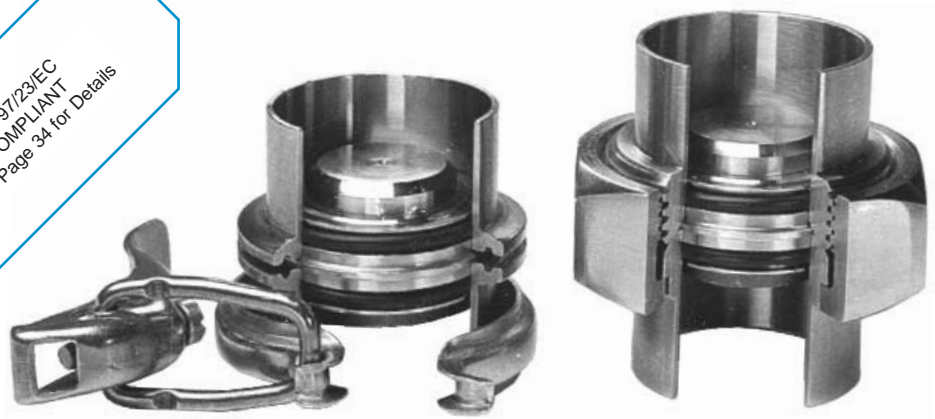
DISASSEMBLY FOR CLEANING INSTRUCTIONS



**INSERT
SERIES**

**SANITARY
CARTRIDGE**

PED 97/23/EC
COMPLIANT
See Page 34 for Details



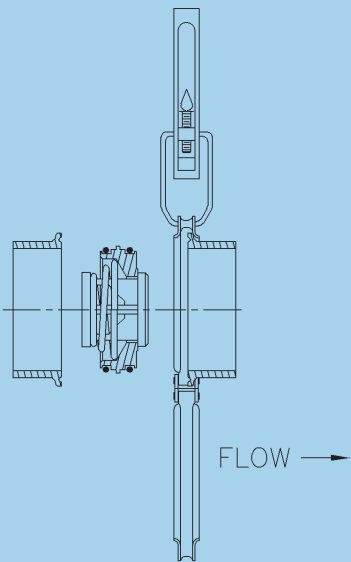
STYLE SCV SANITARY CARTRIDGE VALVE

U.S. Patent Number 5,033,503
Canadian Patent Number 2,039,991

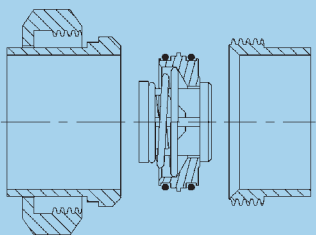
The **Sanitary Cartridge Valve** is a 316 stainless steel check valve for use in new or existing sanitary systems. The SCV design seals on the ID of sanitary ferrules with replaceable food grade seals (Standard is FDA EPDM). The valves fit the Tri-Clover® Bevel Seat and Tri-Clamp® fittings, the Cherry-Burrell Q-Clamp® and S-Line® fittings, and others with ID dimensions equal to the "F" dimensions listed below.

The compact SCV design fits inside a single fitting, and requires no additional space in the line. Its size makes it extremely economical when compared to full-bodied valves.

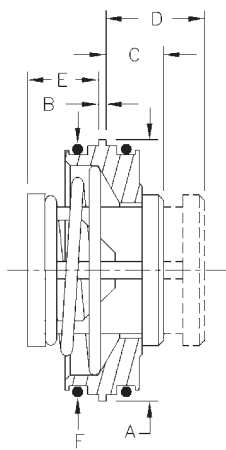
Choose from Check-All's broad selection of seat materials and cracking pressure springs that allow this series to be used as a check valve, relief valve, or a vacuum breaker.



CLAMP JOINT



BEVEL SEAT



FLOW →

Size	Orifice Diameter	A	B	C*	D**	E	F***
3/4	0.348	3/4	1/16	7/16	25/32	9/32	0.625
1	0.464	1	1/16	17/32	57/64	9/32	0.870
1-1/2	0.890	1-1/2	1/16	17/32	1-1/16	5/8	1.370
2	1.135	2	1/16	21/32	1-25/64	21/32	1.870
2-1/2	1.385	2-1/2	1/16	11/16	1-9/16	7/8	2.370
3	2.025	3	1/16	3/4	1-31/32	1-1/4	2.870
4	2.560	4	1/16	7/8	2-13/32	1-5/8	3.834

*Dimension for valve closed.

**Maximum nominal dimension for valve open with no spring.

***Valves are designed to function with fittings having these internal diameters.

Nominal Line Size	Style Numbers 316 SS Only	Non-Shock * Pressure-Temperature Ratings	Max ** Temp. Limit
3/4	SCV-075-SS	1000 PSIG @ 100°F	300°F
1	SCV-100-SS	1000 PSIG @ 100°F	300°F
1-1/2	SCV-150-SS	1000 PSIG @ 100°F	300°F
2	SCV-200-SS	725 PSIG @ 100°F	300°F
2-1/2	SCV-250-SS	725 PSIG @ 100°F	300°F
3	SCV-300-SS	725 PSIG @ 100°F	300°F
4	SCV-400-SS	725 PSIG @ 100°F	300°F

*Consult the factory for applications where higher pressure or temperature is required.

**See page 4 for P-T ratings of valve seats & springs.

See page 30 for Flow Data.

NOTE: VALVE CAN BE INSTALLED FOR FLOW IN EITHER DIRECTION. FERRULES SHOWN FOR ILLUSTRATION ONLY AND ARE NOT SUPPLIED WITH THE VALVE.

CHECK-ALL VALVE MFG. CO.
Phone: 515-224-2301
Fax: 515-224-2326
www.checkall.com
sales@checkall.com
ISO 9001-2000 CERTIFIED

PED 97/23/EC
COMPLIANT
See Page 34 for Details



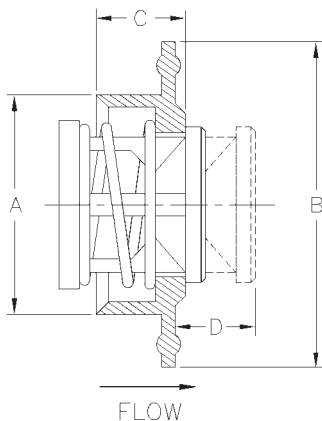
INSERT
SERIES
SANITARY
INSERT

STYLE SIV SANITARY INSERT VALVE



For over 30 years, the compact, *Teflon*[®] resin, **Sanitary Insert Valve** has been used as the most economical solution to providing a check valve in a new or existing sanitary piping system. This valve style is designed to fit into grooved-end clamp-type fittings. Since the Sanitary Insert Valve replaces the gasket normally used with clamp joints, no extra space is required to accommodate the valve.

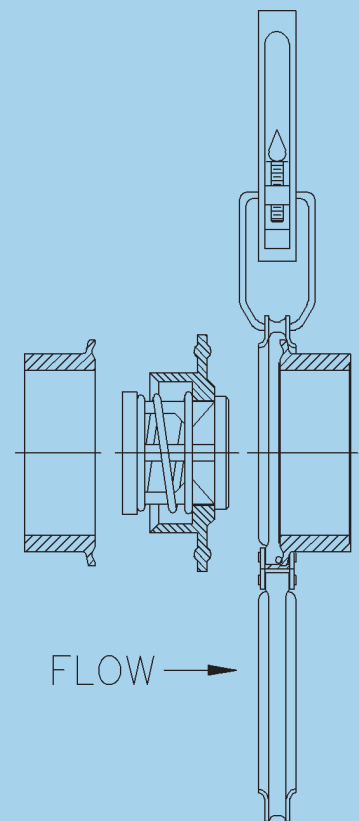
Two different types of Sanitary Insert Valves are available. They are distinguished by the following designations in their part numbers:



TC – Designates fittings manufactured by Tri-Clover[®] Inc. as well as S-Line[®] fittings manufactured by Waukesha Cherry-Burrell.

CB – Designates the Q-Clamp[®] Series of fittings manufactured by Waukesha Cherry-Burrell.

NOTE: – Sanitary Insert Valve types TC and CB are not interchangeable!
– Unless a soft seat is specified, valves are all *TEFLON*[®] resin with 316 Stainless Steel springs.



For Both TC and CB		TC – Tri-Clover Inc. Waukesha Cherry-Burrell S-Line [®]					CB–Waukesha Cherry-Burrell Q Clamp [®] Only				
Line Size	Orifice Dia.*	Style Number	A	B	C	D**	Style Number	A	B	C	D**
3/4	0.348	SIV-075-TC	0.585	55/64	35/64	5/8	–	–	–	–	5/8
1	0.464	SIV-100-TC	0.850	2	35/64	45/64	SIV-100-CB	0.850	1-3/4	35/64	45/64
1-1/2	0.890	SIV-150-TC	1.340	2	35/64	55/64	SIV-150-CB	1.350	2	35/64	55/64
2	1.135	SIV-200-TC	1.840	2-1/2	37/64	59/64	SIV-200-CB	1.850	2-1/2	37/64	59/64
2-1/2	1.385	SIV-250-TC	2.350	3	39/64	29/32	SIV-250-CB	2.250	3-1/4	39/64	29/32
3	2.025	SIV-300-TC	2.840	3-1/2	41/64	1-33/64	SIV-300-CB	2.870	3-55/64	39/64	1-33/64
4	2.560	SIV-400-TC	3.801	4-5/8	25/32	1-61/64	SIV-400-CB	3.830	4-55/64	47/64	1-61/64

*Due to molding process, orifice may vary.

**Maximum nominal dimension for valve open with no spring.

Non-Shock Pressure–Temperature Rating		
Valve Size	Pressure–Temperature Rating *	Recommended Service Temp.**
3/4" – 2"	55 PSIG @ 100°F	-320°F TO 400°F
2-1/2"– 4"	20 PSIG @ 100°F	-320°F TO 400°F

*Consult the factory for reduced P–T rating of *TEFLON*[®] resin valves above 100°F.

**See page 4 for P–T ratings of valve seats & springs.

See page 30 for Flow Data.

NOTE: VALVE CAN BE INSTALLED FOR FLOW IN EITHER DIRECTION. FERRULES SHOWN FOR ILLUSTRATION ONLY AND ARE NOT SUPPLIED WITH THE VALVE.

CHECK-ALL VALVE MFG. CO.
Phone: 515-224-2301
Fax: 515-224-2326
www.checkall.com
sales@checkall.com
ISO 9001-2000 CERTIFIED



See PED statement below

STYLE UIV UNION INSERT VALVE

NOTE: Valve only, Union not supplied

CHECK THESE EXCLUSIVE CHECK-ALL UNION INSERT FEATURES

EASE OF INSTALLATION!

Loosen a union, insert the check valve, tighten the union.

VERSATILITY! Every union is a potential check valve.

PERMANENT IDENTIFICATION!

Metal tag identifies every union that contains a check valve.

SPACE SAVING! No need to modify existing piping to install a check valve.

CLEANING! No need to buy check valves with cleaning ports. Open the union and remove the valve to clean.

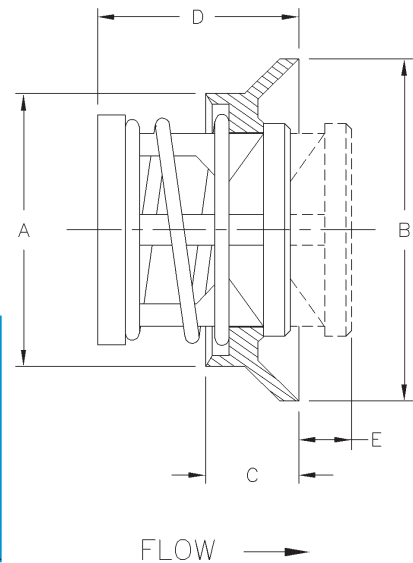
The **Union Insert Valve** is the threaded pipe counterpart of the Flange Insert Valve. Designed to be inserted into most standard ground joint unions, it provides the simplest and most economical way to install a check valve in a threaded pipe system.

A check valve may be installed anywhere in the system where there is a union. The valve works equally well in either a horizontal or vertical position with proper spring selection.

Each Union Insert Valve is furnished with a **metal tag** which is quickly attached to the union. The tag is attached when the valve is installed and provides a **permanent record** that the union contains a check valve.

NOTE: Bore of union must be equal to I.D. of schedule 40 pipe. 45 degree ground joint unions only.

PED Compliance Statement: Due to the unique design of the Union Insert Valve, this series is not considered a pressure vessel but rather a gasket. According to PED Guideline 1/8, gaskets are not governed by the Pressure Equipment Directive. As a result, the UIV series is available for sale in the European Community and no CE Mark is required.



Nom. Pipe Size	Style Number	A	B	C	D	E*	Orifice Diameter
1/2	UIV-050	0.625	0.938	13/32	0.734	35/64	0.348
3/4	UIV-075	0.812	1.125	13/32	0.769	29/64	0.464
1	UIV-100	1.032	1.437	31/64	0.960	37/64	0.593
1-1/4	UIV-125	1.360	1.750	33/64	1.060	43/64	0.890
1-1/2	UIV-150	1.593	2.000	35/64	1.230	27/32	1.135
2	UIV-200	2.000	2.500	39/64	1.476	15/16	1.385

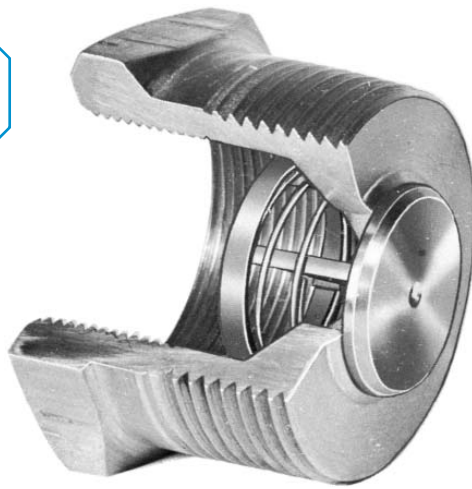
*Maximum nominal dimension for valve open with no spring.

Non-Shock Pressure-Temperature Rating		
Material*	P-T Rating	Max. Recommended Service Temp.
316 Stainless	3000 PSIG @ 100°F	700°F
Carbon Steel	3000 PSIG @ 100°F	700°F
Brass	3000 PSIG @ 100°F	400°F

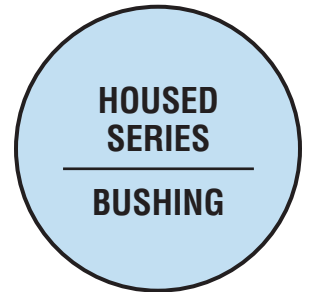
See page 4 for P-T ratings of valve seats & springs.
See page 30 for Flow Data.

*Also available in Alloy 20, HASTELLOY® Alloys, and MONEL® Alloys.

CHECK-ALL VALVE MFG. CO.
Phone: 515-224-2301
Fax: 515-224-2326
www.checkall.com
sales@checkall.com
ISO 9001-2000 CERTIFIED

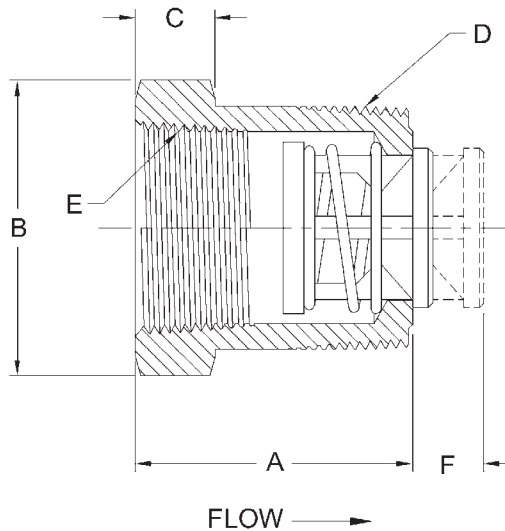


STYLE BU BUSHING VALVE



The **Bushing Valve** is a check valve with a standard bushing housing. The valve is adaptable to many types of service applications. It has very little restriction and produces a low pressure drop. It can be used quite effectively in systems where flow and pressure drop are critical by the use of a reducer coupling. The Bushing Valve also makes an excellent **vacuum breaker**. The high flow rate insures maximum effectiveness for vacuum breaker service. By reversing the direction of flow it can also be used as a low-pressure **relief valve**.

The bushing thread sizes are designated by two sets of numbers; the first being the male thread, the second the female thread.



HOUSED SERIES CHECK VALVES

The **Housed Series** consists of seven **Styles** of check valves. All the valves in this series are in-line check valves contained in a housing or body. The housing is engineered and designed to make the check valve as versatile as possible for different service applications. The Series consists of valves for every service application ranging from refrigeration to vacuum breakers.

NOMINAL PIPE SIZE	STYLE NUMBER	A	HEX* SIZE B	C	D	E	F**	ORIFICE DIAMETER
1/2 - 3/8	BU-050X0375	1-9/32	7/8	1/4	1/2 NPT	3/8 NPT	17/32	0.348
3/4 - 1/2	BU-075X050	1-9/32	1-1/8	1/4	3/4 NPT	1/2 NPT	39/64	0.464
1 - 3/4	BU-100X075	1-13/16	1-3/8	1/2	1 NPT	3/4 NPT	23/32	0.593
1-1/4 - 1	BU-125X100	1-13/16	1-3/4	1/2	1-1/4 NPT	1 NPT	25/32	0.890
1-1/2 - 1-1/4	BU-150X125	2-5/32	2	5/8	1-1/2 NPT	1-1/4 NPT	1-1/64	1.135
2 - 1-1/2	BU-200X150	2-5/32	2-1/2	5/8	2 NPT	1-1/2 NPT	1-1/8	1.385
2-1/2 - 2	BU-250X200	2-17/32	3	5/8	2-1/2 NPT	2 NPT	1-23/64	1.555
3 - 2-1/2	BU-300X250	3-3/32	3-1/2	1	3 NPT	2-1/2 NPT	1-35/64	2.025

*May be larger and/or round.

**Maximum nominal dimension for valve open with no spring.

Non-Shock Pressure-Temperature Rating		
Material*	P-T Rating	Max. Recommended Service Temp.
316 Stainless	3000 PSIG @ 100°F	700°F
Carbon Steel	3000 PSIG @ 100°F	700°F
Brass	3000 PSIG @ 100°F	400°F

See page 4 for P-T ratings of valve seats & springs.

See page 28 for Flow Data.

*Also available in Alloy 20, HASTELLO[®] Alloys, and MONEL[®] Alloys.



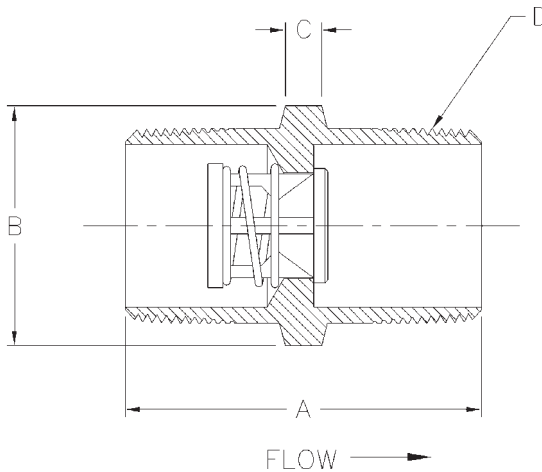
**HOUSED
SERIES
CONNECTOR**



STYLE CON CONNECTOR VALVE



**REDUCE
YOUR
MAINTENANCE
COSTS
WITH
CHECK-ALL
VALVES**



The **Connector Valve** is a check valve with a hex nipple or connector housing. It is designed to be used in installations where a check valve with male pipe threads are required. The Connector Valve is adaptable for use as a check valve, vacuum breaker, or low pressure relief valve. Two valves used in combination make an excellent low pressure relief/vacuum breaker.

- Standard materials are:
1. 316 Stainless Steel
 2. Carbon Steel
 3. Brass

Also available in Alloy 20, *HASTELLOY*® Alloys, and *MONEL*® Alloys.

Nom. Pipe Size	Style Number	A	Hex* Size B	C	D	Orifice Diameter
1/2	CON-050	2-11/32	7/8	5/16	1/2 NPT	0.348
3/4	CON-075	2-11/32	1-1/8	5/16	3/4 NPT	0.464
1	CON-100	3	1-3/8	13/16	1 NPT	0.593
1-1/4	CON-125	3	1-3/4	13/16	1-1/4 NPT	0.890
1-1/2	CON-150	3-3/16	2	13/16	1-1/2 NPT	1.135
2	CON-200	3-11/16	2-1/2	13/16	2 NPT	1.385
2-1/2	CON-250	3-25/64	3	15/32	2-1/2 NPT	1.555
3	CON-300	3-25/64	3-1/2	1/2	3 NPT	2.025
4	CON-400	5	5	15/16	4 NPT	2.560

*May be larger and/or round.

Non-Shock Pressure-Temperature Rating			
Nominal Pipe Size	P-T Rating	Max. Recommended Service Temp. Stainless & Carbon Steel	Max. Recommended Service Temp. Brass
1/2 - 3	3000 PSIG @ 100°F	700°F	400°F
4	1500 PSIG @ 100°F	700°F	400°F

See page 4 for P-T ratings of valve seats & springs.
See page 28 for Flow Data.

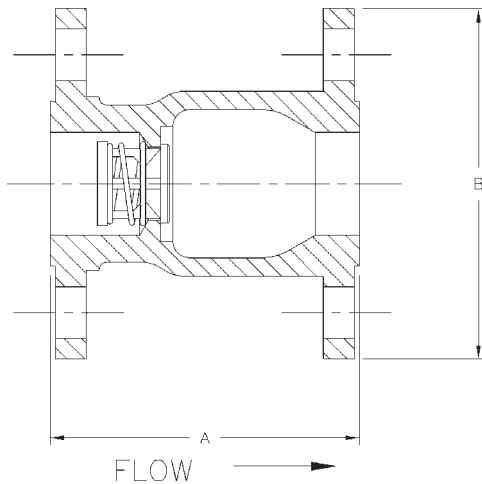
CHECK-ALL VALVE MFG. CO.
Phone: 515-224-2301
Fax: 515-224-2326
www.checkall.com
sales@checkall.com
ISO 9001-2000 CERTIFIED



**STYLE HVFD
HORIZONTAL
VERTICAL
FLANGED & DRILLED**



The **Check-All Flanged & Drilled** check valve is a one piece cast body valve with ANSI flanged ends. The HVFD series valve is used when higher flow rates and lower pressure drops are required. This valve is available in sizes 1 through 10 inches and standard materials of 316 stainless steel, brass and carbon steel. The HVFD series valve is designed for use with mating ANSI class 150 flanges. Other materials are available upon request.



- 1. Stainless — 150 lb.
- 2. Carbon Steel — 150 lb.
- 3. Brass — 150 lb.

Nom. Pipe Size	Style Number	A	B	Orifice Diameter
1	HVFD-100	3-3/4	4-1/4	0.890
1-1/4	HVFD-125	3-13/16	4-5/8	1.135
1-1/2	HVFD-150	4-3/8	5	1.385
2	HVFD-200	5-1/8	6	2.025
2-1/2	HVFD-250	7-9/32	7	2.560
3	HVFD-300	8-3/8	7-1/2	3.280
4	HVFD-400	9-11/16	9	3.875
6	HVFD-600	13-3/4	11	6.380
8	HVFD-800	15-3/32	13-1/2	7.670
10	HVFD-1000	19-1/4	16	9.650

See page 4 for P-T ratings of valve seats & springs.
See page 27 for Flow Data.

**CHECK-ALL
VALVES
ARE DESIGNED
TO FUNCTION
EQUALLY WELL
IN EITHER
VERTICAL OR
HORIZONTAL
POSITION
WITH PROPER
SPRING
SELECTION**

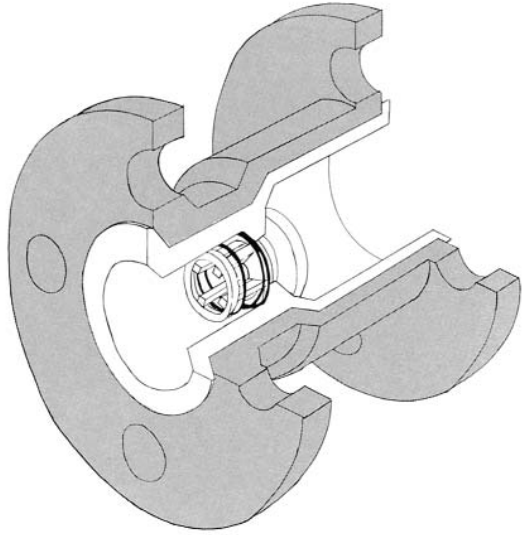
CHECK-ALL VALVE MFG. CO.
Phone: 515-224-2301
Fax: 515-224-2326
www.checkall.com
sales@checkall.com
ISO 9001-2000 CERTIFIED



HOUSED
SERIES
HORIZONTAL
VERTICAL

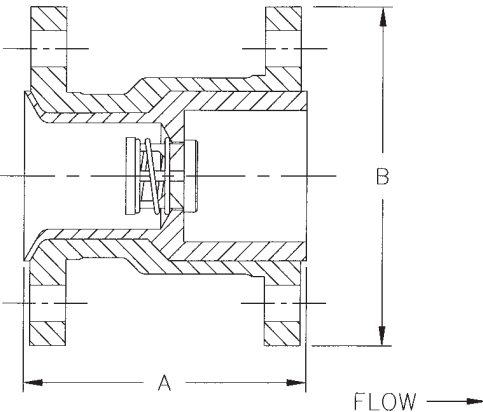
PED 97/23/EC
COMPLIANT
See Page 34 for Details

**STYLE HVFD - T
HORIZONTAL
VERTICAL
FLANGED & DRILLED
TEFLON® RESIN LINED**



The **Check-All Flanged & Drilled — Teflon® resin Lined** check valve is a one piece body with ANSI flanged ends. The valve has a solid one piece *Teflon®* resin Liner which covers the flange faces out to the raised face diameter. All wetted surfaces are *Teflon®* resin including the *Teflon®* resin encapsulated stainless steel spring.

Style HVFD-T bodies are made of **carbon steel only**. The liner is made of TFE virgin *Teflon®* resin. It is installed as one solid piece of *Teflon®* resin and the internal geometrical shape is machined. The *Teflon®* resin liner has a **minimum wall** thickness of 3/32 inch which guarantees against pin holes which can be present in fused liners.



Nom. Pipe Size	Style Number	A	B	Orifice Diameter*
1	HVFD-T-100	3-3/4	4-1/4	0.890
1-1/4	HVFD-T-125	3-13/16	4-5/8	1.135
1-1/2	HVFD-T-150	4-3/8	5	1.385
2	HVFD-T-200	5-1/8	6	2.025

*Due to molding process, orifice may vary.

Non-Shock Pressure-Temperature Rating		
Nom. Pipe Size	Pressure - Temperature Rating	Recommended Service Temp.
1	*55 psig @ 100°F	-20°F to 400°F
1-1/4	*55 psig @ 100°F	-20°F to 400°F
1-1/2	*20 psig @ 100°F	-20°F to 400°F
2	*20 psig @ 100°F	-20°F to 400°F

*Consult The Factory For Reduced P-T Rating Of *TEFLON®* resin Valves Above 100°F.
See page 27 for Flow Data.

**GOT A
SPECIAL
PROBLEM?
LET OUR
ENGINEERING
HELP YOU
SOLVE IT!**

CHECK-ALL VALVE MFG. CO.
Phone: 515-224-2301
Fax: 515-224-2326
www.checkall.com
sales@checkall.com
ISO 9001-2000 CERTIFIED



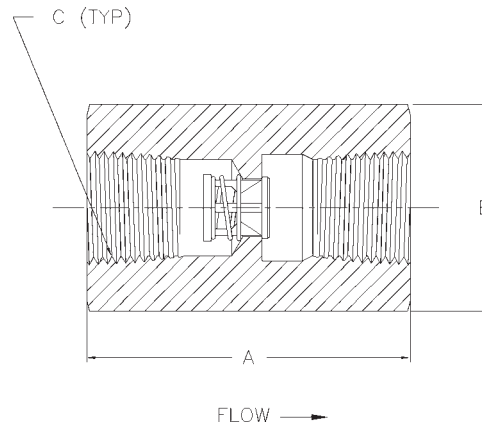
STYLE UN-3 UNIVERSAL LOW PRESSURE

The **Universal Low Pressure** check valve is a one piece body machined from bar stock and is designed for minimum pressure drop. The valve is light, compact and provides maintenance free dependable service.

Standard Materials are:

1. 316 Stainless Steel
2. Carbon Steel
3. Brass

Also available in Alloy 20, HASTELLOY® Alloys, and MONEL® Alloys.



Nom. Pipe Size	Style Number	A	Hex* Size B	C	Orifice Diameter
3/8	UN-3-0375	2-5/32	13/16	3/8 NPT	0.348
1/2	UN-3-050	2-23/32	1-1/8	1/2 NPT	0.464
3/4	UN-3-075	2-15/16	1-1/4	3/4 NPT	0.593
1	UN-3-100	3-41/64	1-5/8	1 NPT	0.890
1-1/4	UN-3-125	3-29/32	2-1/4	1-1/4 NPT	1.135
1-1/2	UN-3-150	4-23/64	2-1/2	1-1/2 NPT	1.385
2	UN-3-200	5-27/32	3	2 NPT	1.555
2-1/2	UN-3-250	5-1/2	3-3/4	2-1/2 NPT	1.555
3	UN-3-300	6-1/4	4-1/2	3 NPT	2.025
4	UN-3-400	7-1/8	5-1/2	4 NPT	2.560

*May be larger and/or round.

Non-Shock Pressure-Temperature Rating			
Nominal Pipe Size	P-T Rating	Max. Recommended Service Temp. Stainless & Carbon Steel	Max. Recommended Service Temp. Brass
3/8 - 3	3000 PSIG @ 100°F	700°F	400°F
4	1500 PSIG @ 100°F	700°F	400°F

See page 4 for P-T ratings of valve seats & springs.
See page 28 for Flow Data.

**CHECK-ALL
VALVES
ARE
PRECISION
ENGINEERED
FOR
POSITIVE
SEALING
AND
SEATING**

CHECK-ALL VALVE MFG. CO.
Phone: 515-224-2301
Fax: 515-224-2326
www.checkall.com
sales@checkall.com
ISO 9001-2000 CERTIFIED



**HOUSED
SERIES**

**UNIVERSAL
HIGH
PRESSURE**



STYLE UN-10 UNIVERSAL HIGH PRESSURE

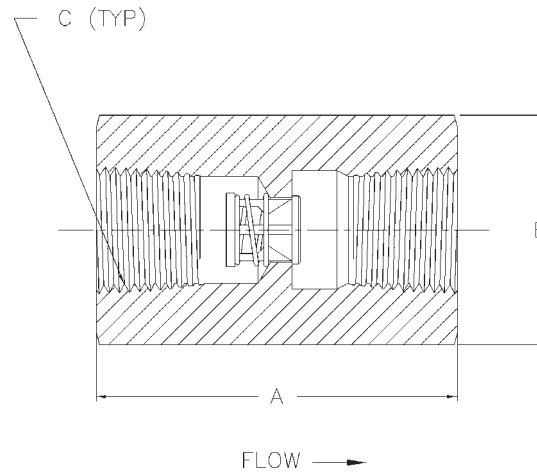
The **Universal High Pressure** check valve is a one piece body machined from bar stock with female pipe threads. The valve is designed and manufactured for high pressure applications.

**CHECK-ALL
VALVES
ARE
DESIGNED
TO REDUCE
INSTALLATION
COST**

Standard Materials are:

1. 316 Stainless Steel
2. Carbon Steel

Also available in Alloy 20, *HASTELLOY*® Alloys, and *MONEL*® Alloys.



Nom. Pipe Size	Style Number	A	Hex* Size B	C	Orifice Diameter
3/8	UN-10-0375	2-5/32	1	3/8 NPT	0.348
1/2	UN-10-050	2-45/64	1-1/4	1/2 NPT	0.464
3/4	UN-10-075	2-15/16	1-5/8	3/4 NPT	0.593
1	UN-10-100	3-5/8	2-1/4	1 NPT	0.890
1-1/4	UN-10-125	3-29/32	2-3/4	1-1/4 NPT	1.135
1-1/2	UN-10-150	4-23/64	3-1/4	1-1/2 NPT	1.385

*May be larger and/or round.

Non-Shock Pressure-Temperature Rating		
Nominal Pipe Size	P-T Rating	Max. Recommended Service Temp. Stainless & Carbon Steel
3/8 - 1-1/2	10,000 PSIG @ 100°F	700°F

See page 4 for P-T ratings of valve seats & springs.
See page 28 for Flow Data.

CHECK-ALL VALVE MFG. CO.
Phone: 515-224-2301
Fax: 515-224-2326
www.checkall.com
sales@checkall.com
ISO 9001-2000 CERTIFIED



STYLE UN-SW UNIVERSAL SOCKET WELD

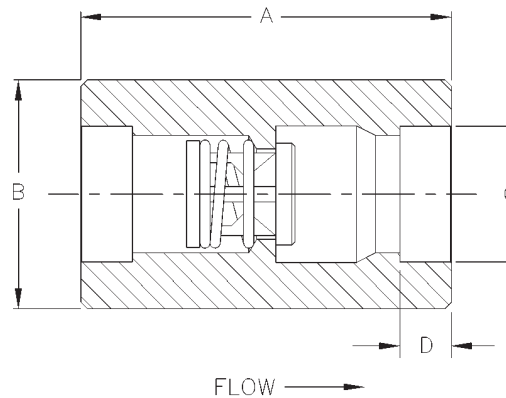
The **Universal Socket Weld** check valve is machined from bar stock and is designed for a minimum pressure drop. It carries rugged, dependable Check-All trim and there is a wide variety of seat materials and cracking pressures to choose from. This valve series is particularly attractive when weld joints are required.

Standard Materials are:

1. Stainless Steel
ASTM A-479 GR 316L
2. Carbon Steel
ASTM A-108 GR 1018

Also available in Alloy 20, HASTELLOY® Alloys, and MONEL® Alloys.

Sockets Per ANSI B16.11



Nom. Pipe Size	Style Number	A	B*	C	D	Orifice Diameter
3/8	UN-SW-0375	2-5/32	1-1/8	0.695	0.385	0.348
1/2	UN-SW-050	2-23/32	1-5/16	0.860	0.385	0.464
3/4	UN-SW-075	2-15/16	1-5/8	1.070	0.505	0.593
1	UN-SW-100	3-41/64	2-1/4	1.335	0.505	0.890
1-1/4	UN-SW-125	3-29/32	2-3/4	1.680	0.505	1.135
1-1/2	UN-SW-150	4-23/64	3-1/4	1.920	0.505	1.385
2	UN-SW-200	5-55/64	3-1/2	2.411	0.625	1.555
2-1/2	UN-SW-250	5	3-3/4	2.919	0.625	1.555
3	UN-SW-300	5-7/16	4-1/2	3.545	0.625	2.025
4	UN-SW-400	6-51/64	5-1/2	4.550	0.755	2.560

*May be larger and/or hex.

Non-Shock Pressure-Temperature Rating		
Nominal Pipe Size	P-T Rating	Max. Recommended Service Temp. Stainless & Carbon Steel
3/8 - 2-1/2	5000 PSIG @ 100°F	700°F
3	3000 PSIG @ 100°F	700°F
4	1500 PSIG @ 100°F	700°F

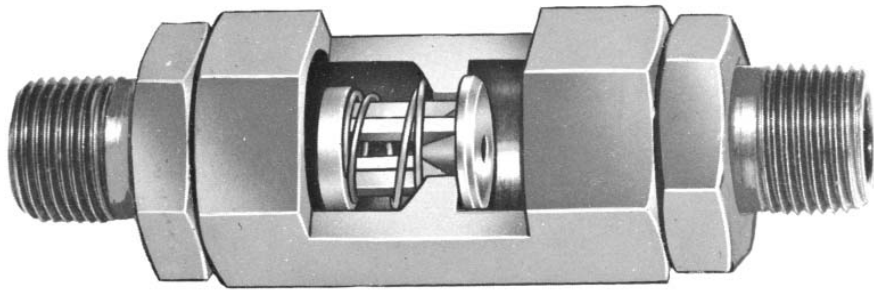
See page 4 for P-T ratings of valve seats & springs.
See page 28 for Flow Data.

**CHECK-ALL
VALVES
ARE
MANUFACTURED
IN
ACCORDANCE
WITH
ISO 9001
QUALITY
STANDARDS**

CHECK-ALL VALVE MFG. CO.
Phone: 515-224-2301
Fax: 515-224-2326
www.checkall.com
sales@checkall.com
ISO 9001-2000 CERTIFIED



**MINI-CHECK
SERIES**



**STYLE MCV
MINI-CHECK VALVE**

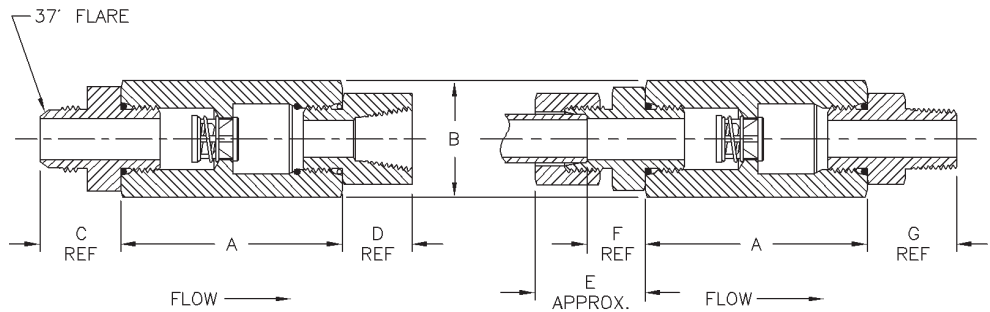
PED 97/23/EC
COMPLIANT
See Page 34 for Details

**THERE ARE
EIGHT TYPES
OF
MINI-CHECK
VALVES
•
CHOOSE
THE ONE
TO
FIT YOUR
SPECIFIC
REQUIREMENT**

The **Check-All Mini-Check** is a three piece constructed check valve. The valve is designed for minimum pressure drops. The three piece construction permits many combinations of end fittings which makes the valve adaptable for nearly every application.

The Mini-Check is available with 1/8, 1/4 and 3/8 inch pipe threads, both male and female. It can also be adapted with a 1/4 or 3/8 inch **tubing end** and with a **pipe thread end** just by changing the end fitting. **Combinations** of male and female threads are also available.

Standard valve materials are: 1. 316 Stainless Steel 2. Carbon Steel 3. Brass



When ordering Mini-Check Valves the following end TYPE should follow the spring cracking pressure designation.

- Type 1 – Male pipe threads both ends.
- Type 2 – Female pipe threads both ends.
- Type 3 – Male pipe **inlet** – female pipe **outlet**.
- Type 4 – Female pipe **inlet** – male pipe **outlet**.
- Type 5 – Male pipe **inlet** – tubing **outlet**.
- Type 6 – Female pipe **inlet** – tubing **outlet**.
- Type 7 – Tubing **inlet** – male pipe **outlet**.
- Type 8 – Tubing **inlet** – female pipe **outlet**.

NOTE: When ordering Types 5 through 8 be sure to specify tubing size and whether **compression or 37° flare**.

Nom. Pipe Size	Style Number	A	Body Hex* B	C	D	E	F	G	Orifice Diameter
1/8	MCV-0125	2-5/32	7/8	N/A	23/32	N/A	N/A	23/32	0.348
1/4	MCV-0250	2-5/32	7/8	13/16	27/32	1-15/64	37/64	15/16	0.348
3/8	MCV-0375	2-15/32	1-1/8	13/16	29/32	1-5/8	19/32	1	0.464

*May be larger and/or round.

Non-Shock Pressure-Temperature Rating			
Nominal Pipe Size	Stainless Steel	Carbon Steel	Brass
1/8 - 3/8	5000 PSIG @ 100°F	5000 PSIG @ 100°F	3000 PSIG @ 100°F

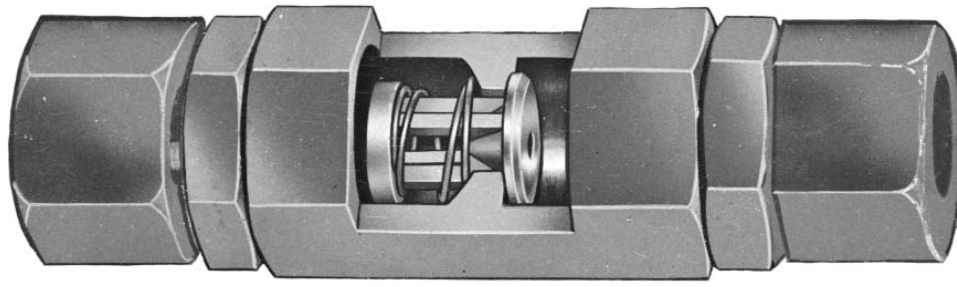
See page 4 for P-T ratings of valve seats & springs.

See page 29 for Flow Data.

Maximum Recommended Service Temperature is limited by thread boss o-ring capability.

Consult the factory for more information.

CHECK-ALL VALVE MFG. CO.
Phone: 515-224-2301
Fax: 515-224-2326
www.checkall.com
sales@checkall.com
ISO 9001-2000 CERTIFIED



**TUBING
SERIES**

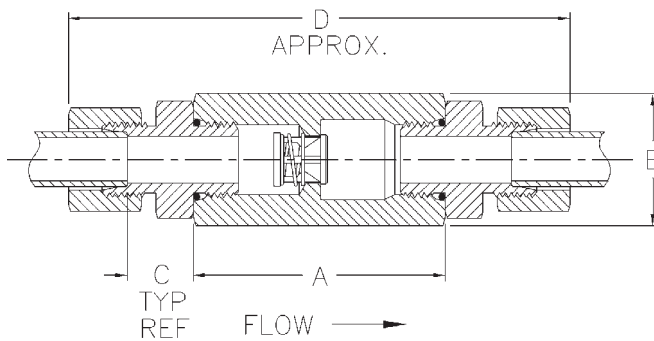


STYLE TCV TUBING CHECK VALVE

The **Tubing Check Valve** is a three piece constructed check valve with **flareless** tube ends. The valve is designed for minimum pressure drops. The valves are furnished complete with ferrules and nuts.

Standard Valve Materials are:

1. 316 Stainless Steel
2. Carbon Steel
3. Brass Body - Steel Fittings



Tubing O.D. Size	Style Number	A	Body Hex* B	C	D	Orifice Diameter
1/4	TCV-0250	2-5/32	7/8	37/64	4-39/64	0.348
3/8	TCV-0375	2-5/32	7/8	37/64	4-25/32	0.348
1/2	TCV-0500	2-15/32	1-1/8	41/64	5-13/32	0.464
5/8	TCV-0625	2-5/8	1-1/4	23/32	5-29/32	0.464
3/4	TCV-0750	2-59/64	1-1/2	55/64	6-17/32	0.593
7/8	TCV-0875	3-21/64	1-3/4	55/64	6-63/64	0.890
1	TCV-100	3-21/64	1-7/8	13/16	7-1/8	0.890
1-1/4	TCV-125	3-31/64	2-1/4	57/64	7-37/64	1.135
1-1/2	TCV-150	3-51/64	2-1/2	57/64	8-3/32	1.385
2	TCV-200	5-3/32	3-1/2	1-1/16	9-21/32	2.025

*May be larger and/or round.

Non-Shock Pressure-Temperature Rating			
Tubing O.D. Sizes	Stainless Steel	Carbon Steel	Brass
1/4 - 1/2	8500 PSIG @ 100°F	7000 PSIG @ 100°F	2000 PSIG @ 100°F
5/8 - 1	6600 PSIG @ 100°F	5000 PSIG @ 100°F	1600 PSIG @ 100°F
1-1/4 & 1-1/2	4800 PSIG @ 100°F	4000 PSIG @ 100°F	1600 PSIG @ 100°F
2	3000 PSIG @ 100°F	2500 PSIG @ 100°F	1600 PSIG @ 100°F

See page 4 for P-T ratings of valve seats & springs.

See page 29 for Flow Data.

Maximum Recommended Service Temperature is limited by thread boss o-ring capability.

Consult the factory for more information.

**CHECK-ALL
VALVES
ARE
LIGHT &
COMPACT!**

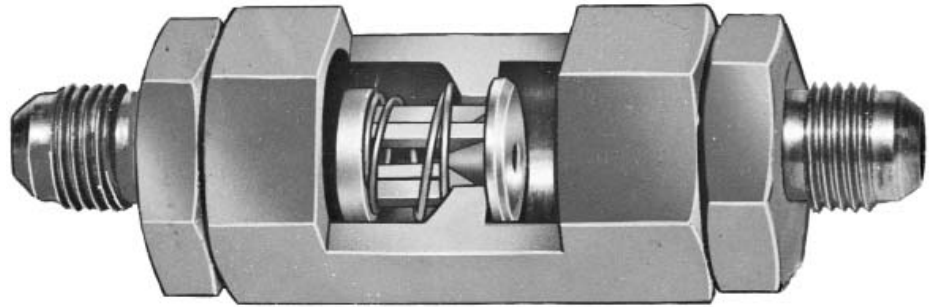
**EASY TO
INSTALL**

VERSATILE!

CHECK-ALL VALVE MFG. CO.
Phone: 515-224-2301
Fax: 515-224-2326
www.checkall.com
sales@checkall.com
ISO 9001-2000 CERTIFIED



**TUBING
SERIES**



**STYLE TCVF
TUBING CHECK VALVE-FLARED**



**CHECK-ALL
VALVES
ARE
LIGHT
& COMPACT!**

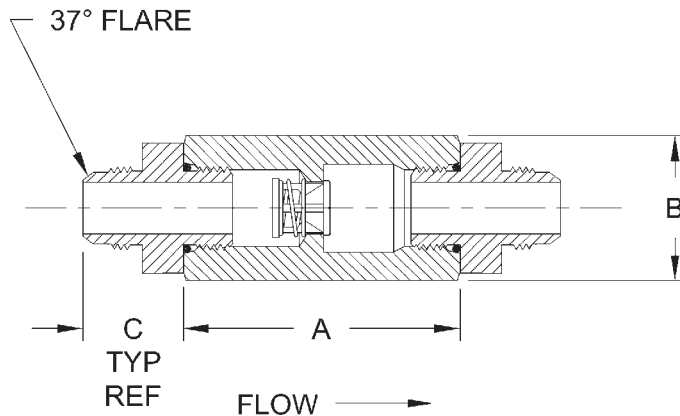
**SAVE ON
WEIGHT!**

**EASY TO
INSTALL**

The **Tubing Check Valve-Flared** is a three piece constructed check valve with 37° flared ends which conform to J. I. C. and S. A. E. Hydraulic Standards. These valves are designed for maximum flow with minimal pressure drop.

Standard Valve Materials are:

1. 316 Stainless Steel
2. Carbon Steel
3. Brass Body - Steel Fittings



Tubing O.D. Size	Style Number	A	Body Hex B	C	Orifice Diameter
1/4	TCVF-0250	2-5/32	7/8	7/8	0.348
3/8	TCVF-0375	2-5/32	7/8	29/32	0.348
1/2	TCVF-0500	2-15/32	1-1/8	1-1/32	0.464
5/8	TCVF-0625	2-5/8	1-1/4	1-3/16	0.464
3/4	TCVF-0750	2-59/64	1-1/2	1-3/8	0.593
7/8	TCVF-0875	3-21/64	1-3/4	1-13/32	0.890
1	TCVF-100	3-21/64	1-7/8	1-15/32	0.890
1-1/4	TCVF-125	3-31/64	2-1/4	1-19/32	1.135
1-1/2	TCVF-150	3-51/64	2-1/2	1-25/32	1.385
2	TCVF-200	5-3/32	3-1/2	2-3/16	2.025

*May be larger and/or round.

Tubing O.D. Sizes	Non-Shock Pressure-Temperature Rating		
	Stainless Steel	Carbon Steel	Brass
1/4 - 1/2	8500 PSIG @ 100°F	7000 PSIG @ 100°F	2000 PSIG @ 100°F
5/8 - 1	6600 PSIG @ 100°F	5000 PSIG @ 100°F	1600 PSIG @ 100°F
1-1/4 & 1-1/2	5800 PSIG @ 100°F	4600 PSIG @ 100°F	1600 PSIG @ 100°F
2	3000 PSIG @ 100°F	2500 PSIG @ 100°F	1600 PSIG @ 100°F

See page 4 for P-T ratings of valve seats & springs.

See page 29 for Flow Data.

Maximum Recommended Service Temperature is limited by thread boss o-ring capability. Consult the factory for more information.

CHECK-ALL VALVE MFG. CO.
Phone: 515-224-2301
Fax: 515-224-2326
www.checkall.com
sales@checkall.com
ISO 9001-2000 CERTIFIED

VALVE WEIGHTS (Approx.)

STYLE FIV (FLANGE INSERT VALVE)

Size	SS & CS	BRASS	TEFLON® RESIN	PVC
1/2	1.7 oz.	1.9 oz.	0.5 oz.	0.3 oz.
3/4	2.9 oz.	3.2 oz.	0.8 oz.	0.5 oz.
1	4.2 oz.	4.6 oz.	1.1 oz.	0.7 oz.
1-1/4	7.0 oz.	7.4 oz.	1.9 oz.	1.4 oz.
1-1/2	9.5 oz.	9.8 oz.	2.6 oz.	1.7 oz.
2	16.3 oz.	17.3 oz.	3.8 oz.	2.6 oz.
2-1/2	1.4 lb.	1.5 lb.	---	---
3	2.3 lb.	2.6 lb.	9.6 oz.	6.1 oz.
4	4.5 lb.	4.9 lb.	1.2 lb.	12.7 oz.
5	7.8 lb.	8.3 lb.	---	---
6	10.4 lb.	11.7 lb.	1.8 lb.	1.2 lb.
8	21.2 lb.	26.4 lb.	---	---
10	36 lb.	42 lb.	---	---
12	54 lb.	70 lb.	---	---
14	74 lb.	93 lb.	---	---
16	105 lb.	130 lb.	---	---
18	157 lb.	201 lb.	---	---
20	207 lb.	262 lb.	---	---

STYLE LPI

SIZE	PART NUMBER	HC	TEFLON® RESIN
1	LPI-100	4.0 oz.	1.0 oz.
1-1/2	LPI-150	8.8 oz.	2.2 oz.
2	LPI-200	14.4 oz.	3.2 oz.
3	LPI-300	2.3 lb.	9.0 oz.

STYLE UN-3

SIZE	PART NUMBER	SS & CS	BRASS
3/8	UN-3-0375	3.0 oz.	3.3 oz.
1/2	UN-3-050	8.5 oz.	9.1 oz.
3/4	UN-3-075	9.6 oz.	10.1 oz.
1	UN-3-100	1.2 lb.	1.3 lb.
1-1/4	UN-3-125	2.9 lb.	3.2 lb.
1-1/2	UN-3-150	3.6 lb.	3.9 lb.
2	UN-3-200	6.5 lb.	7.2 lb.
2-1/2	UN-3-250	9.2 lb.	10.0 lb.
3	UN-3-300	14.3 lb.	15.5 lb.
4	UN-3-400	21.5 lb.	23.3 lb.

STYLE HVFD-T

SIZE	PART NUMBER	TEFLON® RESIN LINED
1	HVFD-T-100	4.0 lb.
1-1/4	HVFD-T-125	5.4 lb.
1-1/2	HVFD-T-150	7 lb.
2	HVFD-T-200	11 lb.

STYLE GPI

SIZE	PART NUMBER	TEFLON® RESIN
1	GPI-100-T	0.6 oz.
1-1/2	GPI-150-T	1.6 oz.
2	GPI-200-T	2.4 oz.
3	GPI-300-T	3.3 oz.
4	GPI-400-T	7.0 oz.

STYLE MCV

SIZE	PART NUMBER	ALL MATL
1/8	MCV-0125	6.2 oz.
1/4	MCV-0250	7.3 oz.
3/8	MCV-0375	11.8 oz.

STYLE UN-10 & UN-SW

SIZE	UN-10 SS & CS	UN-SW SS & CS
3/8	5.9 oz.	5.1 oz.
1/2	11.8 oz.	11.5 oz.
3/4	1.4 lb.	1.2 lb.
1	3.5 lb.	3.1 lb.
1-1/4	5.4 lb.	4.9 lb.
1-1/2	8.1 lb.	7.4 lb.
2	--	9.8 lb.
2-1/2	--	8.8 lb.
3	--	13.0 lb.
4	--	22.3 lb.

STYLE SSI

SIZE	PART NUMBER	ALL MATL
1/2	SSI-050	0.6 oz.
3/4	SSI-075	1.0 oz.
1	SSI-100	1.7 oz.
1-1/4	SSI-125	3.3 oz.
1-1/2	SSI-150	5.3 oz.
2	SSI-200	8.2 oz.

STYLE UIV

SIZE	PART NUMBER	ALL MATL
1/2	UIV-050	0.5 oz.
3/4	UIV-075	0.8 oz.
1	UIV-100	1.6 oz.
1-1/4	UIV-125	2.8 oz.
1-1/2	UIV-150	4.3 oz.
2	UIV-200	7.8 oz.

STYLE SIV & SCV

SIZE	SIV TEFLON® RESIN	SCV 316 SS
3/4	0.2 oz.	0.3 oz.
1	0.6 oz.	1.0 oz.
1-1/2	1.1 oz.	2.9 oz.
2	1.8 oz.	6.1 oz.
2-1/2	2.3 oz.	11.2 oz.
3	5.1 oz.	11.4 oz.
4	11.2 oz.	2.3 lb.

STYLE BU

SIZE	PART NUMBER	ALL MATL
1/2x3/8	BU-050X0375	1.7 oz.
3/4x1/2	BU-075X050	2.9 oz.
1x3/4	BU-100X075	6.4 oz.
1-1/4x1	BU-125X100	10.8 oz.
1-1/2x1-1/4	BU-150X125	13.8 oz.
2x1-1/2	BU-200X150	1.6 lb.
2-1/2x2	BU-250X200	2.3 lb.
3x2-1/2	BU-300X250	5.4 lb.

STYLE 3SC

SIZE	PART NUMBER	316 SS
3/4	3SC-075	---
1	3SC-100	2.3 oz.
1-1/2	3SC-150	6.2 oz.
2	3SC-200	13.9 lb.
2-1/2	3SC-250	1.5 lb.
3	3SC-300	1.9 lb.
4	3SC-400	3.9 lb.

STYLE TCV & TCVF

SIZE	PART NUMBER	ALL MATL
1/4	TCV/F-0250	6.6 oz.
3/8	TCV/F-0375	7.2 oz.
1/2	TCV/F-0500	13.0 oz.
5/8	TCV/F-0625	1.8 lb.
3/4	TCV/F-0750	2.3 lb.
7/8	TCV/F-0875	2.7 lb.
1	TCV/F-100	3.0 lb.
1-1/4	TCV/F-125	5.7 lb.
1-1/2	TCV/F-150	7.8 lb.
2	TCV/F-200	15.0 lb.

STYLE HVFD

SIZE	PART NUMBER	SS & CS	BRASS
1	HVFD-100	4.2 lb.	4.5 lb.
1-1/4	HVFD-125	5.5 lb.	5.5 lb.
1-1/2	HVFD-150	7.7 lb.	6.7 lb.
2	HVFD-200	10.9 lb.	13.9 lb.
2-1/2	HVFD-250	20.7 lb.	23 lb.
3	HVFD-300	24.6 lb.	26.2 lb.
4	HVFD-400	43.8 lb.	48 lb.
6	HVFD-600	86 lb.	93 lb.
8	HVFD-800	174 lb.	190 lb.
10	HVFD-1000	263 lb.	290 lb.

STYLE CON

SIZE	PART NUMBER	ALL MATL
1/2	CON-050	2.5 oz.
3/4	CON-075	3.9 oz.
1	CON-100	7.5 oz.
1-1/4	CON-125	10.9 oz.
1-1/2	CON-150	1.8 lb.
2	CON-200	2.7 lb.
2-1/2	CON-250	2.7 lb.
3	CON-300	3.2 lb.
4	CON-400	7.8 lb.

TECHNICAL DATA

Valve Sizing – Check-All furnishes two methods to aid the customer in the selection of the correct valve size to meet their flow requirements; **Flow Curves and C_V Factor**.

Flow Curves show the relationship between the rate of flow (water, gpm) and the pressure drop across the valve produced by that flow.

C_V Factor is a valve flow coefficient which mathematically gives the relationship between the rate of flow and the pressure drop.

Definition: C_V is defined as the quantity of 60° F. water, in gallons per minute, which will pass through a specific valve at maximum lift, at one (1) psi pressure drop.

It is experimentally determined by dividing the water flow through the valve by the square root of the pressure drop produced by that flow. Conversely, given the **C_V**, the water flow through the valve at any given pressure drop may be calculated by multiplying the **C_V** by the square root of the pressure drop. Therefore, for a given pressure drop, the higher the **C_V**, the higher the rate of flow.

For liquids other than water, for gases and for saturated steam, the formulae given below will show the relationship between the **C_V** (as obtained from water flow tests) and the flow of these fluids.

FLOW FORMULAE (Non-Choked Turbulent Flow Only)

I. LIQUIDS

$$V = C_V \sqrt{\frac{dP}{G}}$$

$$dP = \left(\frac{V}{C_V} \right)^2 G$$

$$C_V = \frac{V}{\sqrt{\frac{dP}{G}}}$$

Where V = Liquid flow (gpm)
dP = Pressure drop (psi)
G = Sp. Gravity of liquid (water = 1.0)
C_V = Valve coefficient

II. GASSES

$$Q = 1360 C_V \sqrt{\frac{dP}{GT}} \sqrt{\frac{P_1 + P_2}{2}}$$

$$dP = P_1 - \sqrt{P_1^2 - 2GT \left(\frac{Q}{1360 C_V} \right)^2}$$

$$C_V = \frac{Q}{1360 \sqrt{\frac{dP}{GT}} \sqrt{\frac{P_1 + P_2}{2}}}$$

Where Q = Gas flow (scfh)
dP = Pressure drop (psi)¹
T = Absolute temp of flowing medium (degrees Rankin)
P₁ = Inlet pressure (psia)
P₂ = Outlet pressure (psia)
C_V = Valve coefficient
G = Sp. Gravity of gas (air = 1.0)

III. SATURATED STEAM

$$W = 3 C_V \sqrt{dP} \sqrt{\frac{P_1 + P_2}{2}}$$

$$dP = P_1 - \sqrt{P_1^2 - 2 \left(\frac{W}{3 C_V} \right)^2}$$

$$C_V = \frac{W}{3 \sqrt{dP} \sqrt{\frac{P_1 + P_2}{2}}}$$

Where W = Saturated steam flow (lbs. per hour)
dP = Press drop (psi)¹
P₁ = Inlet pressure (psia)
P₂ = Outlet pressure (psia)
C_V = Valve coefficient

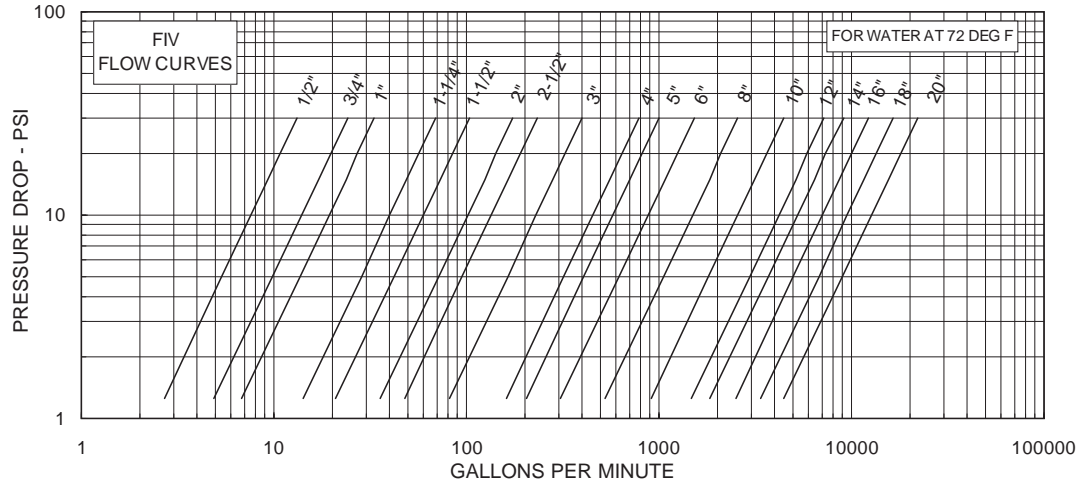
¹ – For calculation purposes, dP should never exceed 1/2 the inlet pressure, P₁.

Note: All flow curves and C_v values presume the valves are fully open with 1/2 PSI cracking pressure springs.
Consult the factory for more information.

FIV	
Size	C_v
1/2	2.4
3/4	4.4
1	6.1
1-1/4	12.7
1-1/2	18.8
2	32.0
2-1/2	42.5
3	73.0
4	144
5	182
6	277
8	470
10	810
12	1320
14	1650
16	2230
18	3010
20	4000

Flange Insert Valve

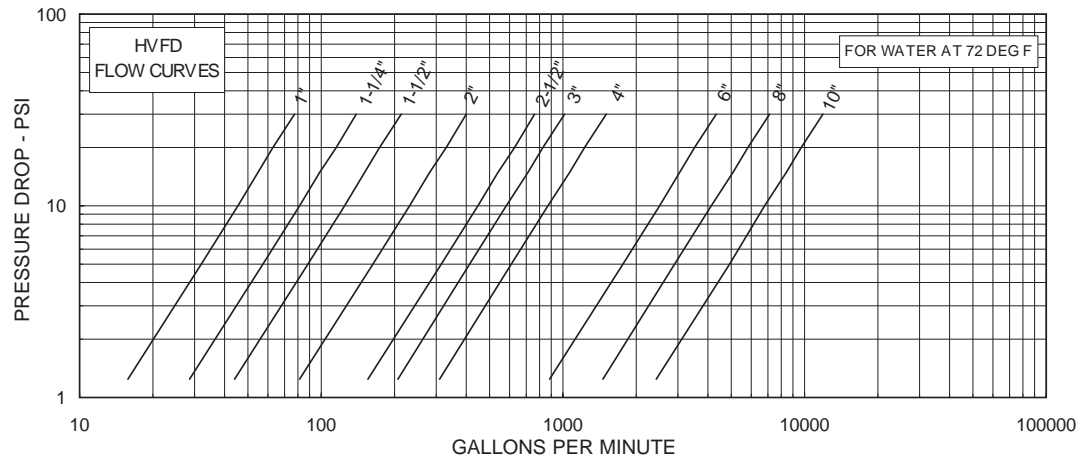
Flow Curves assume Schedule 40 pipe



C_v values assume Schedule 40 pipe

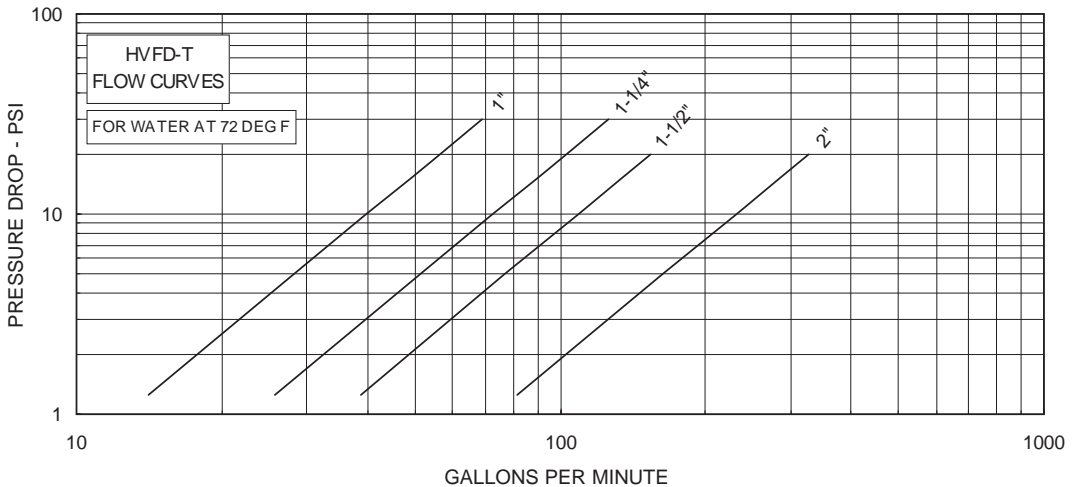
Horizontal-Vertical Flanged & Drilled

HVFD	
Size	C_v
1	14.2
1-1/4	25.6
1-1/2	39.2
2	73.0
2-1/2	140
3	185
4	275
6	790
8	1300
10	2175



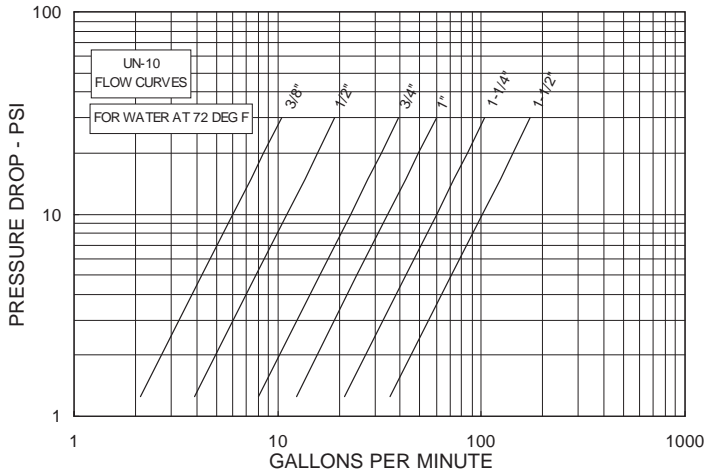
Horizontal-Vertical Flanged & Drilled *Teflon*® Resin Lined

HVFD-T	
Size	C_v
1	12.6
1-1/4	23.0
1-1/2	34.5
2	73.0



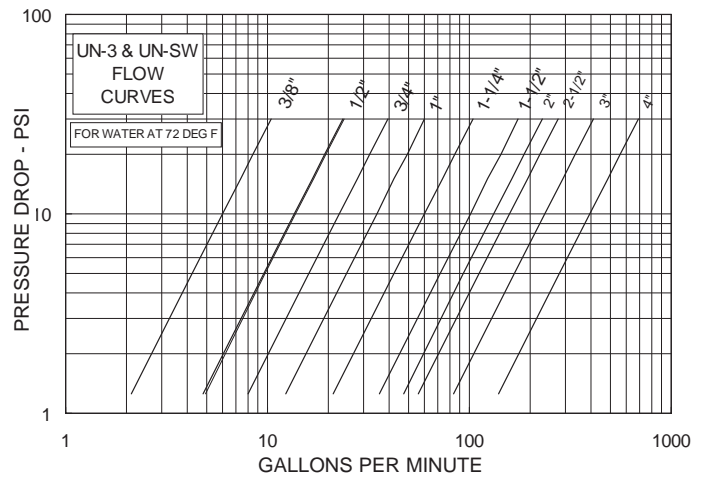
Note: All flow curves and C_v values presume the valves are fully open with 1/2 PSI cracking pressure springs. Consult the factory for more information.

Universal High Pressure Valve



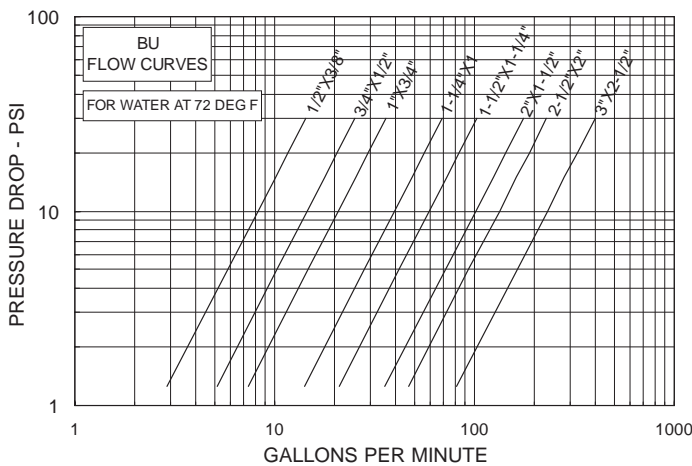
UN-10	
Size	C_v
3/8	1.9
1/2	3.5
3/4	7.2
1	11.0
1-1/4	19.0
1-1/2	31.9

Universal Low Pressure Valve & Universal Socket Weld Valve



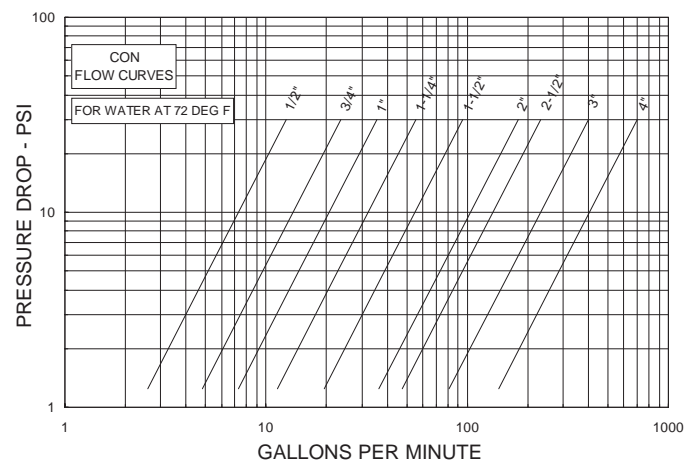
UN-3 & UN-SW	
Size	C_v
3/8	1.9
1/2	4.3
3/4	7.2
1	11.0
1-1/4	19.0
1-1/2	31.9
2	42.0
2-1/2	50.0
3	75.0
4	125

Bushing Valve



BU	
Size	C_v
1/2X3/8	2.6
3/4X1/2	4.6
1X3/4	6.6
1-1/4X1	12.6
1-1/2X1-1/4	18.8
2X1-1/2	32.0
2-1/2X2	42.5
3X2-1/2	73.0

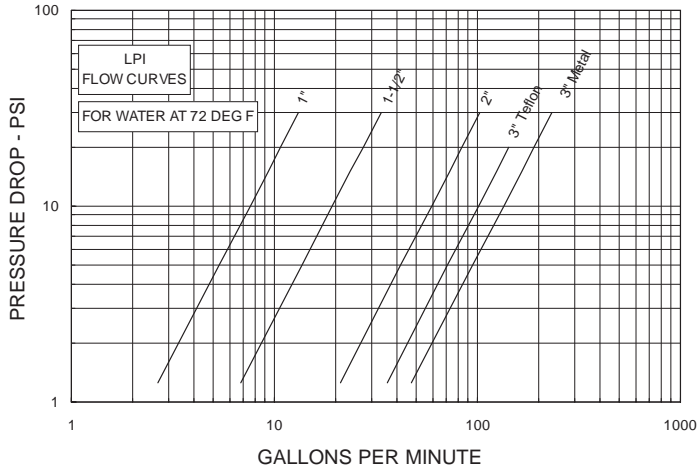
Connector Valve



CON	
Size	C_v
1/2	2.3
3/4	4.3
1	6.5
1-1/4	10.2
1-1/2	17.4
2	33.8
2-1/2	42.5
3	73.0
4	128

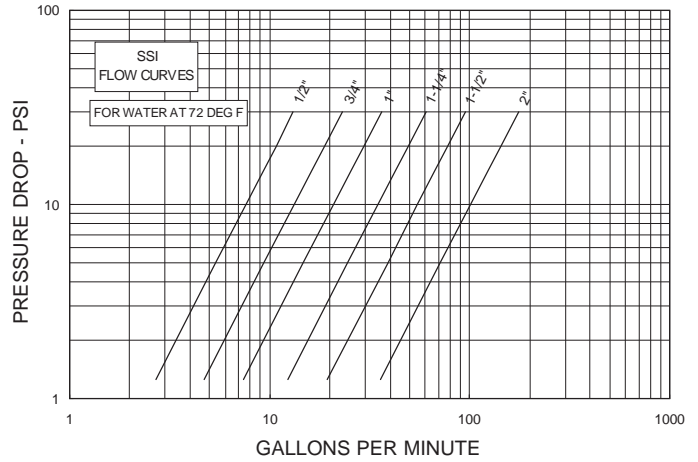
Note: All flow curves and C_v values presume the valves are fully open with 1/2 PSI cracking pressure springs. Consult the factory for more information.

Lined Pipe Insert



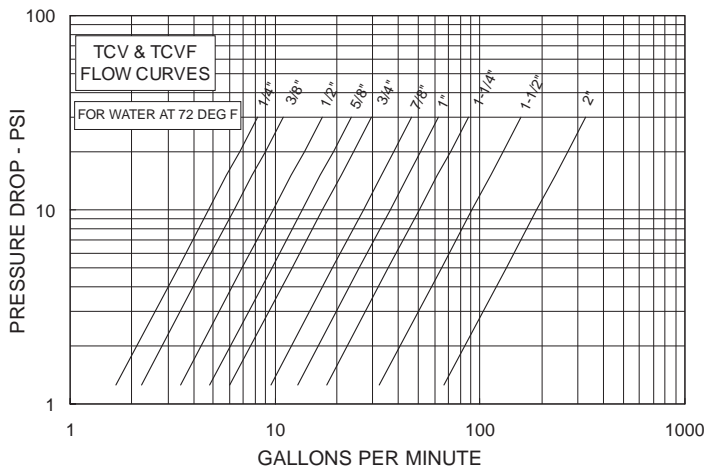
LPI		
	METAL	TEFLON
Size	C_v	C_v
1	2.4	2.4
1-1/2	6.1	6.1
2	18.8	18.8
3	42.5	32

Straight Sided Insert



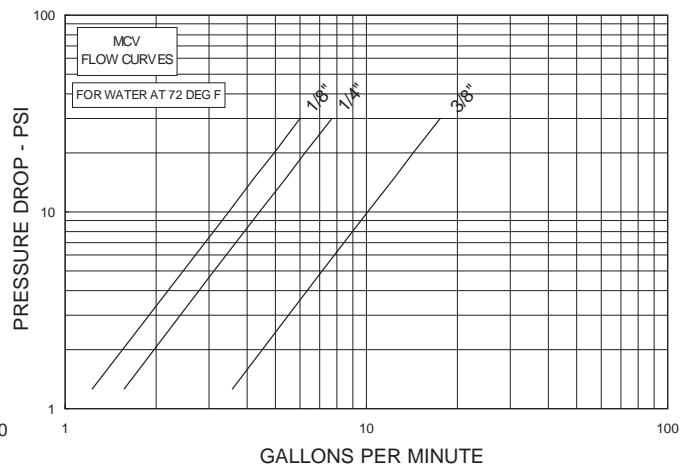
SSI	
Size	C_v
1/2	2.4
3/4	4.2
1	6.6
1-1/4	11.0
1-1/2	17.4
2	32.0

Tube Check Valve & Tube Check Valve Flared



TCV&TCVF	
Size	C_v
1/4	1.5
3/8	2.0
1/2	3.1
5/8	4.3
3/4	5.4
7/8	8.5
1	11.5
1-1/4	16.0
1-1/2	29.0
2	60.0

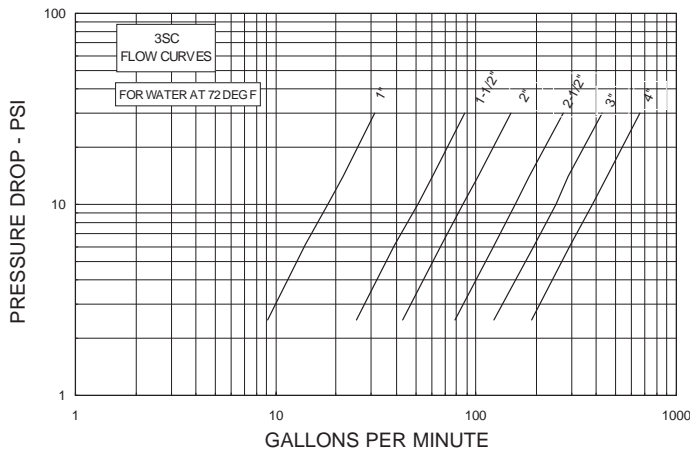
Mini-Check Valve



MCV	
Size	C_v
1/8	1.1
1/4	1.4
3/8	3.2

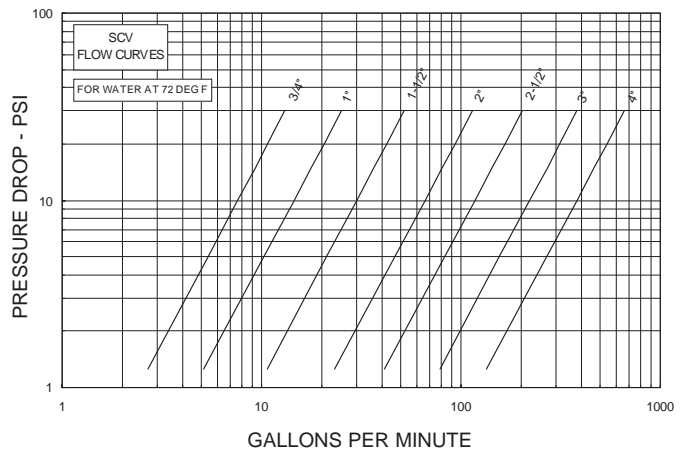
Note: All flow curves and C_v values presume the valves are fully open with 1/2 PSI cracking pressure springs. Consult the factory for more information.

3SC Sanitary Valve



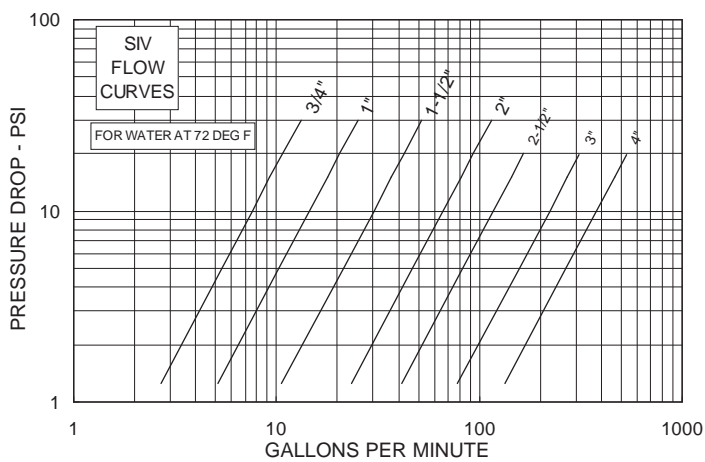
3SC	
SIZE	C_v
3/4	***
1	5.2
1-1/2	16.1
2	27.2
2-1/2	49.4
3	77.9
4	120

Sanitary Cartridge Valve



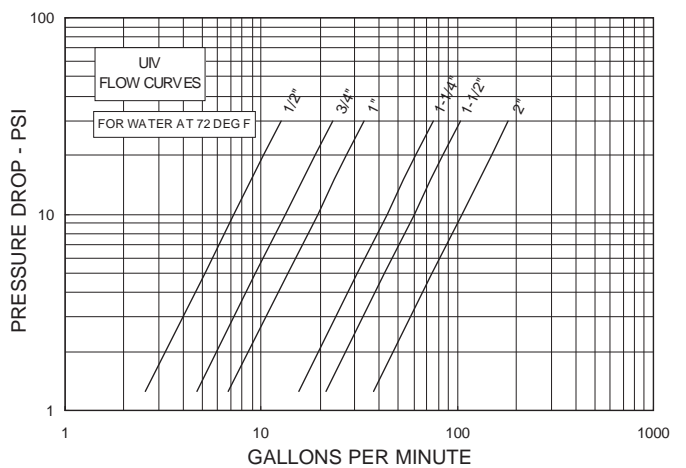
SCV	
Size	C_v
3/4	2.4
1	4.6
1-1/2	9.5
2	20.9
2-1/2	37.0
3	70.0
4	120

Sanitary Insert Valve



SIV	
Size	C_v
3/4	2.4
1	4.6
1-1/2	9.5
2	20.9
2-1/2	37.0
3	70.0
4	120

Union Insert Valve



UIV	
Size	C_v
1/2	2.3
3/4	4.2
1	6.1
1-1/4	13.8
1-1/2	19.0
2	33.3

Check-All Valve Application Guidelines

The following information is provided to assist in the selection of components when specifying or using Check-All Valve products. They are presented for general information only and should not be considered an all inclusive list, nor should it replace the on sight process engineering required to properly apply any valve.

Installation/Mounting

Check-All valves can be used in horizontal or vertical applications, with proper spring selection. This is most evident in vertical flow down installations. The spring selected must be heavy enough to support the weight of the trim in addition to any column of liquid desired to be retained. Consult the factory or your local Check-All Valve representative for further information.

Elbow, Tee or other Flow Skewing Device

Check-All valves are best suited for use with fully developed flow. Although there are many factors affecting the achievement of fully developed flow, such as media, pipe roughness and velocity, usually 10 pipe diameters of straight pipe immediately upstream of the valve is sufficient. This is particularly important after flow skewing devices such as elbows, tees, centrifugal pumps, etc.

Valve Material Selection

There are many factors that influence the resistance of materials to corrosion, such as temperature, concentration, aeration, contaminants, and media interaction/reaction. Check-All Valve will provide any assistance it can regarding the selection of products, however the decision as to specific application of the valves and the materials of construction is beyond the scope of supply of Check-All Valve products. This is the sole responsibility of the customer based upon his or her own evaluation.

Seat Material Selection

The standard seat material for Check-All valves is metal to metal. The allowable leakage rate associated with the metal to metal as well as the *Teflon*[®] resin o-ring seat, is 190 cc/min per inch of line size, when tested with air at 80 PSI. Resilient o-ring seats are available for a tighter shut-off (no visible leakage allowed at 80 PSI air). All o-ring seats are limited to a maximum operating pressure of 1500 PSI.

Sizing and Spring Selection

Check-All Valve recommends sizing check valves to ensure proper valve operation and service life. Valves can be sized using the equations or flow charts located toward the back of the Check-All catalog. Sizing accuracy requires the valve be fully open which occurs when the pressure drop across the valve reaches or exceeds three times the spring cracking pressure (five times for 3SC valves). Contact the factory or your local Check-All Valve representative for further information or assistance.

Shock-Load Applications

Check-All valves are not designed for use in a shock-load environment, such as the discharge of a reciprocating air compressor. These types of applications produce excessive impact stresses which can adversely affect valve performance.

Fluid Quality

Check-All valves are best suited for clean, particle-free liquids or gasses. Debris such as sand or fibers can prevent the valve from sealing properly or it can erode internal components or otherwise adversely affect valve travel. These particles should be filtered out prior to entering the valves.

Insert Series Valves

Check-All Insert series valves such as the FIV, LPI, UIV, etc. are designed to use the existing pipe as part of the valve body. This provides a very cost effective solution for valve requirements. As such, part of the valve functions inside the existing pipe, therefore dimensional clearance must be maintained for proper valve operation. See the pertinent catalog pages or contact the factory or your local Check-All representative for more information.

INSTALLATION AND OPERATING INSTRUCTIONS

WARNING!!! READ ALL OF THESE INSTRUCTIONS BEFORE PROCEEDING. ONLY EXPERIENCED PERSONNEL SHOULD BE ALLOWED TO INSTALL OR HANDLE THE ENCLOSED VALVE(S). ANY DAMAGE RESULTING FROM MISHANDLING OR IMPROPER INSTALLATION IS NOT COVERED BY THE MANUFACTURERS WARRANTY. FOR WARRANTY DETAILS, REFER TO THE LATEST REVISION OF CHECK-ALL VALVE MANUFACTURING COMPANY MANUFACTURER'S TERMS AND CONDITIONS.

The following instructions are meant as a guideline only. They do not cover every situation and rely on the common sense and expertise of the person installing the valve. In no way is Check-All liable for any damage to the valve, the system, or for personal injury resulting from use of these guidelines.

GENERAL INSTRUCTIONS

Inspection. Prior to installation, inspect valves for any damage. Refer to Check-All Valve Terms and Conditions for warranty information.

Flow arrows. Install each check valve in the line with the arrow pointing in the direction of the flow. To verify proper installation, make sure each valve opens in the direction of desired flow. Note: From the closed position the poppet moves away from the seat in the direction of flow.

Valve support. Valves must be adequately supported with pipe hangers etc. to prevent additional loading on the valve body.

Valve alignment. Piping on either side of the valve must be properly aligned prior to installation. Refer to ASME B31 Pressure Piping Code for alignment and gap requirements.

Safe connection. Valves must be adequately connected (threaded, welded, etc.) to surrounding piping to prevent unsafe discharge during filling and/or operation.

Insert series valves. Insert series valves may not be visible after installation. It is the end user's responsibility to verify that there is adequate identification of the presence of a check valve that is installed in the system, and take any necessary precautions to avoid injuries or spills when the line is disassembled for maintenance or other reasons. Please consult the factory or your local Check-All representative for tagging options or further information.

Intended Use. Valves compliant with the European Union Pressure Equipment Directive (97/23/EC) that have been classified under Sound Engineering Practice may be limited in their use. They will be identified as such with either marking on the valve body or an additional tag. If such classification is marked on an additional tag it is the end-users responsibility to reattach such identification to the installed valve or surrounding piping.

NPT PIPE THREADED VALVES (CON, UN-3, UN-10, BU, AND MCV SERIES)

Handle NPT threads on these valves carefully to avoid damage. Use an anti-seize thread sealant to prevent galling. Note: Because Bushing Series (BU) valves open into downstream connections, ensure adequate clearance for the travel of the poppet.

VALVES WITH TUBING CONNECTIONS (TCV, TCVF, AND MCV SERIES)

For a valve with flared fittings, slide the nut (not provided with the valve) onto the tubing and flare the tubing end. Tighten the nut onto the flared end of the valve. Note: Leakage can result if the flared surface is damaged. For a valve with compression fittings, first slide the nut on the tubing then the ferrule. Insert the tubing end into the valve fitting and tighten the nut. Note: the fittings are supplied as accessories only and as such are not governed by the European Union Pressure Equipment Directive 97/23/EC.

HVFD SERIES VALVES

Install each valve between ANSI class 150 raised face flanges with a gasket between each flanged joint and tighten the bolts per gasket manufacturer's torque recommendations.

HVFD-T SERIES VALVES

Install each valve between ANSI class 150 raised face flanges (no gaskets are necessary) and tighten the bolts only enough to ensure no leakage. Note: The valve liner may be damaged by over-tightening the bolts and/or by piping systems that add additional loads to the flanged joints.

FLANGE, LINED PIPE, AND WAFER INSERT VALVES (FIV, LPI, SHR, AND WIV SERIES)

Make sure the piping inside diameter is adequate because this type of valve extends into upstream and downstream piping. Additionally, make sure there are no obstructions that would disrupt fluid flow or interfere with poppet travel. Install each valve between ANSI raised face flanges with a gasket on each side of the valve (*Teflon*[®] resin valves need no gaskets). Ensure that each valve is centered inside the bolt circle and tighten the bolts. Note: *Teflon*[®] resin and plastic material valves can be damaged by over-tightening the bolts and by piping systems that add additional loads to valve flanged joints. If a valve flag with a flow arrow is attached to the valve, the tag shall not be rotated or removed so that the flow arrow on the tag remains accurate.

SANITARY INSERT AND GLASS PIPE INSERT VALVES (SIV AND GPI SERIES)

Verify that ferrules (SIV) or flanges (GPI) are correct for each valve to be installed by comparing the fit between the two. If the fit is correct, center the valve in the ferrules or flanges and tighten the clamp or bolts. A valve can be damaged by misalignment, by over tightening, and by piping system loads that affect the joint that contains the valve.

SANITARY CARTRIDGE VALVES (3SC AND SCV SERIES)

The inside diameter of the sanitary tubing must be the size listed in the catalog description of the valve. Lubricate the body o-rings, push the valve into the piping, and then secure the clamp or nut. Note: A valve may leak if piping is misaligned. Also refer to "3SC Installation Instructions" and "SCV Installation Instructions". See www.checkall.com or request a copy from the factory.

UNION INSERT VALVES (UIV SERIES)

Note that the bore of the union must be equal to the ID of schedule 40 pipe. Use only 45-degree ground joint unions. Center each valve in the union so the angles match and tighten the union nut enough to seal. Attach the metal identification tag to the union according to its instruction sheet.

STRAIGHT-SIDED INSERT VALVES (SSI SERIES)

This series is designed to fit in a customer-designed cavity. Note: Forcing a valve into a cavity could cause the seat to deflect or warp and cause leakage.

UNIVERSAL SOCKET WELD VALVES (UN-SW SERIES)

This series is designed to socket weld into a system. When welding, use standard welding procedures and safety precautions. A material data safety sheet for the body material will be provided upon request. **WARNING:** A valve can be damaged by excessive heat that may warp or melt the seat and cause it to leak. Use a heat sink or other means to prevent valve damage from occurring.

MAINTENANCE & INSPECTION:

Corrosive media. For valves installed in corrosive media, Check-All recommends establishing inspection schedules to ensure the continued safe use of the valve.

Depressurization & draining. To avoid potential hazards due to discharge, depressurize and drain the surrounding system prior to removing the valve from the system.

Surface temperature. To avoid personal injury, do not touch surface of valves if the media within is colder or hotter than room temperature. Allow the valve to return to room temperature prior to removing from the system.

Valve inspection. For applications that necessitate periodic valve inspection, Check-All can provide, upon request, the critical pressure boundary dimensions of valve bodies. Maintenance or other qualified personnel should also visually inspect the valves for signs of wear that could adversely affect valve performance.

Cleaning. Care should be exercised when cleaning valves (with steam, chemicals, etc.) to protect them against excessive pressure, temperature, and/or corrosion.

Field repair. Check-All does not recommend field repair. If field repair is absolutely necessary contact the factory or the local representative for instructions. A defective valve may be returned to the factory and **MUST** be accompanied by a completed and signed Return Material Authorization.

HAZARDS & DAMAGE DUE TO MISUSE:

Installation next to an "ell". Do not install the valve next to the discharge of an elbow "ell" or directly after any component that could alter or disrupt the flow pattern. Check-All valves are best suited for use with fully developed flow. Although there are many factors affecting the achievement of fully developed flow, such as media, pipe roughness, and velocity, usually (10) pipe diameters of straight pipe immediately upstream of the valve is sufficient. This is particularly important after flow skewing devices such as elbows, tees, centrifugal pumps, etc.

Shock-load applications. Do not install the valve on the discharge of a reciprocating compressor or any other element that will cause a physical and/or thermal shock-load.

Pressure limit. Maximum allowed room temperature pressure rating is shown on the pertinent catalog pages, or in the case of valves ordered with CE marks, is on the valve or valve flag supplied. Over-pressurization (due to fluid heating, chemical reaction, explosion, external fire, etc.) can cause failure of the valve body and/or the valve internals; therefore, other means must be taken in the surrounding system to prevent this.

Additional loads & considerations. Pressure ratings are based on internal pressure only. Additional loadings (environmental, head pressure, line-loads, etc.) on valves must be accounted for by the end-user. Valve weights are listed in the Check-All catalog or at www.checkall.com.

Temperature limits. Allowable operating temperature limits are shown on the appropriate catalog pages, or in the case of valves ordered with CE marks, the limitations are marked on the valve body or accompanying valve flag. Temperatures higher or lower (due to the media, chemical reactions, environmental, conduction, convection, etc.) than those allowed can cause failure of the valve body and/or internals. Contact Check-All for temperature range information and reduced pressure ratings at elevated temperatures.

Corrosive applications. Corrosion allowances are available upon request for all valves. It is the end-users responsibility to determine the suitability of the valve material for the internal and external environment in which it is used as well as to establish inspection schedules. Refer to the latest revision of "Material Definition for Check-All Valve Products" to determine from what material valve bodies are made. Where the possibility of condensation of gaseous fluids exist, external means in the surrounding system may need to be provided for drainage and removal of deposits from low areas to avoid damage from corrosion. Carbon steel valves are supplied with an oil coating but are not plated.

Media debris, leakage, & erosion. Check-All valves are best suited for clean, particle-free liquids or gases. Debris such as sand or fibers can prevent the valve from sealing properly, erode the body and/or internal components, or otherwise adversely affect valve travel. These particles should be filtered out prior to entering the valves.

Valve sizing. Proper operation requires correct valve sizing. If valves are oversized for the operating conditions, trim can chatter and cause excessive wear to the entire valve. Sizing accuracy requires the valve be fully open which occurs when the pressure drop across the valve reaches or exceeds approximately three times the spring cracking pressure. If valve is undersized, pressure drop may be excessive and cause the o-ring to come out of the groove. Valves can be sized using the equations or flow charts located toward the back of the Check-All catalog or the Flow Data section of the Check-All website www.checkall.com. Contact the factory, sales@checkall.com or your local Check-All representative for further information or assistance.

Seat leakage. *Teflon*[®] resin o-rings, plastic-to-plastic seats, and metal-to-metal seats do not have zero seat-leakage. Allowable leakage rates are listed in the Check-All catalog or at www.checkall.com in the Application Guidelines section.

Decomposition of unstable media. Check-All valves are not designed to withstand excessive temperature and/or pressure beyond their marked limits due to the decomposition of unstable media.

Fatigue life. CE marked valves have been evaluated using the ASME Boiler and Pressure Vessel Code latest revision or material manufacturer literature. Contact Check-All Valve for minimum number of cycle information. Exceeding the fatigue life of the valve may result in sudden valve failure.

Safety accessory. Valves are not to be used as safety accessories as defined in the Pressure Equipment Directive (PED) 97/23/EC.

External fire. Any risk arising from external fire must be accounted for in the surrounding system.

Galvanic reactions. Suitability of the valve body material when connected with the surrounding piping material is the sole responsibility of the end-user. Galvanic reactions can lead to material loss that can lead to failure of the pressure boundary. Refer to "Material Definition for Check-All Valve Products" to determine from what material valve bodies are made.

Check-All Valve Mfg. Co. seeks for the highest level of quality and performance in its products. If you have comments regarding its products, the instructions, require documents referred herein, or need further assistance, please contact your local representative or:

Check-All Valve Mfg. Co. 1800 Fuller Road West Des Moines, IA 50265 U.S.A.

Phone: 515-224-2301 Fax: 515-224-2326 Website: www.checkall.com E-mail: sales@checkall.com

Pressure Equipment Directive (PED 97/23/EC) Compliance

Many Check-All Valve products are compliant with the Pressure Equipment Directive (PED 97/23/EC). In order for pressure equipment products such as check valves to be placed on the open market in the European Community, they must comply with this law, which became mandatory May 29, 2002. Due to the flexibility of the PED, some valves may require them to be CE marked while the identical valve, in another application, may not require a CE mark. Information necessary to make this determination is the valve size, pressure rating, media type (gas or liquid), and the danger presented by the media (dangerous vs. nondangerous). Refer to European Directive 67/548/EC "Classification, packaging, and labelling of dangerous substances" and any subsequent Directives amending it for a list of dangerous substances.

The below table lists all the valve styles, materials, and sizes that are compliant with the PED. Please note that some valve styles and/or materials are limited to Sound Engineering Practice (SEP) as indicated in the PED Annex II Conformity Assessment Tables 6, 7, 8, & 9. Refer to the European Commission's PED website at ped.eurodyn.com for more information or consult the factory for assistance. Note: Article 3 paragraph 3 of the PED is commonly referred to as SEP.

If the ultimate destination of this product is to the European Economic Union, please indicate this as such at the time of the inquiry so the necessary arrangements can be made.

Style	Material (See Note 1 Below)	Sizes	Comments
3SC	316SS/316L	1 to 4	SEP only. Consult the factory for other materials
BU	A20 B C HB HC I6 MO SS	1/2x3/8 to 3X2-1/2 1/2x3/8 to 3X2-1/2 1/2x3/8 to 3X2-1/2 1/2x3/8 to 3X2-1/2 1/2x3/8 to 3X2-1/2 1/2x3/8 to 3X2-1/2 1/2x3/8 to 3X2-1/2 1/2x3/8 to 3X2-1/2	See Note 2 Below SEP only SEP only See Note 2 Below See Note 2 Below See Note 2 Below See Note 2 Below See Note 2 Below
CON	A20 B C HB HC I6 MO SS	1/2 to 4 1/2 to 4 1/2 to 4 1/2 to 4 1/2 to 4 1/2 to 4 1/2 to 4 1/2 to 4	See Note 2 Below SEP only SEP only See Note 2 Below See Note 2 Below See Note 2 Below See Note 2 Below See Note 2 Below
FIV	A20 B C HB HC I6 MO P SS T	1/2 to 20 1/2 to 20 1/2 to 20 1/2 to 20 1/2 to 20 1/2 to 20 1/2 to 20 1/2 to 6 1/2 to 20 1/2 to 6	1-1/4 & 1-1/2 SEP only 1-1/4 & 1-1/2 SEP only SEP only SEP only
GPI	T	1 to 4	SEP only
HVFD	A20 B C HB HC I6 MO SS	1 to 10 1 to 10 1 to 10 1 to 10 1 to 10 1 to 10 1 to 10 1 to 10	
HVFD-T	T-LINED CS	1 to 2	SEP only
LPI	HC T	1 to 3 1 to 3	SEP only
MCV	A20 B C HB HC I6 MO SS	1/8 to 3/8 1/8 to 3/8 1/8 to 3/8 1/8 to 3/8 1/8 to 3/8 1/8 to 3/8 1/8 to 3/8 1/8 to 3/8	
SCV	SS	3/4 to 4	SEP only
SIV	T	3/4 to 4	SEP only

Style	Material (See Note 1 Below)	Sizes	Comments
SSI	A20 B C HB HC I6 MO SS	1/2 to 2 1/2 to 2 1/2 to 2 1/2 to 2 1/2 to 2 1/2 to 2 1/2 to 2 1/2 to 2	1-1/4, 1-1/2, & 2 SEP only 1-1/4, 1-1/2, & 2 SEP only
TCV	A20 B C HB HC I6 MO SS	1/4 to 2 1/4 to 2 1/4 to 2 1/4 to 2 1/4 to 2 1/4 to 2 1/4 to 2 1/4 to 2	1-1/4, 1-1/2, & 2 SEP only 1-1/4, 1-1/2, & 2 SEP only
TCV/F	A20 B C HB HC I6 MO SS	1/4 to 2 1/4 to 2 1/4 to 2 1/4 to 2 1/4 to 2 1/4 to 2 1/4 to 2 1/4 to 2	1-1/4, 1-1/2, & 2 SEP only 1-1/4, 1-1/2, & 2 SEP only
UIV	A20 B C HB HC I6 MO SS	N/A	Due to the unique design of the Union Insert Valve, this series is not considered a pressure vessel but rather a gasket. According to PED Guidelines 1/8, gaskets are not governed by the Pressure Equipment Directive. As a result, the UIV series is available for sale in the European Community and no CE mark is required.
UN-10	A20 C HB HC I6 MO SS	3/8 to 1-1/2 3/8 to 1-1/2 3/8 to 1-1/2 3/8 to 1-1/2 3/8 to 1-1/2 3/8 to 1-1/2 3/8 to 1-1/2	See Note 2 Below 1-1/4 & 1-1/2 SEP only See Note 2 Below See Note 2 Below See Note 2 Below See Note 2 Below See Note 2 Below
UN-3	A20 B C HB HC I6 MO SS	3/8 to 4 3/8 to 4 3/8 to 4 3/8 to 4 3/8 to 4 3/8 to 4 3/8 to 4 3/8 to 4	See Note 2 Below 1-1/4 to 4 SEP only 1-1/4 to 4 SEP only See Note 2 Below See Note 2 Below See Note 2 Below See Note 2 Below See Note 2 Below
UN-SW	A20 C HB HC I6 MO SS	3/8 to 4 3/8 to 4 3/8 to 4 3/8 to 4 3/8 to 4 3/8 to 4 3/8 to 4	See Note 2 Below 1-1/4 to 4 SEP only See Note 2 Below See Note 2 Below See Note 2 Below See Note 2 Below See Note 2 Below
WIV	A20 C HB HC I6 MO SS	1/2 to 4 1/2 to 4 1/2 to 4 1/2 to 4 1/2 to 4 1/2 to 4 1/2 to 4	See Note 2 Below 1-1/4 to 4 SEP only See Note 2 Below See Note 2 Below See Note 2 Below See Note 2 Below See Note 2 Below

Notes:

- 1) For a description of the material abbreviations, see the Material Definition for Check-All Products.
- 2) Some of the sizes and materials may have reduced pressure-ratings as defined by the PED requirements. Consult the factory for details.

Material Definition for Check-All Valve Products

To determine the specific material definition, use the following procedure. This grid is the typical designation of materials. Slight variations may occur due to raw material availability.

- 1) Note the material designation imprinted on the valve body or associated tag. The marking includes the valve style, size, and material. Some examples include:
 - a) FIV: 1-1/2" FIV-15/30-SS this means the size is 1-1/2" NPS, the style is FIV (flange insert valve), it is designed for ANSI class 150 or 300 flanges, or similar and schedule 40 or lighter pipe and the material code is SS.
 - b) UN-3: UN-3-150-SS this means the style is UN-3, the size is 1-1/2" NPS (150 = 1-1/2", 200 = 2", etc.) and the material code is SS.
- 2) Now check the material code in the valve marking in the following material definition table to determine the ASTM (American Society of Testing and Materials) material designation. The style size and material code will be needed to define the material. In general, the material codes are as follows:

<u>A20</u>	<u>Alloy 20</u>	<u>MO</u>	<u>MONEL® Alloy</u>
<u>B</u>	<u>Brass or Bronze</u>	<u>P</u>	<u>PVC</u>
<u>C</u>	<u>Carbon Steel</u>	<u>SS</u>	<u>316 Stainless Steel</u>
<u>HB</u>	<u>HASTELLOY® B Alloy</u>	<u>T</u>	<u>Teflon® resin</u>
<u>HC</u>	<u>HASTELLOY® C Alloy</u>		

STYLE	SIZE RANGE	MATERIAL CODE	ASTM MATERIAL (UNS)
3SC	1" – 4"	SS	ASTM A479 Gr 316/316L (S31600/S31603)
BU	½"X3/8" to 3"X2-1/2"	A20	ASTM B473 (N08020)
		B	ASTM B16 H02 TEMPER (C36000)
		C	ASTM A108 Gr 1215 (G12150)
		HB	ASTM B335 (N10665 or N10675)
		HC	ASTM B574 (N10276)
		MO	ASTM B164 (N04400 or N04405)
		SS	ASTM A479 Gr 316 (S31600)
CON	½" – 4"	A20	ASTM B473 (N08020)
		B	ASTM B16 H02 TEMPER (C36000)
		C	ASTM A108 Gr 1215 (G12150)
		HB	ASTM B335 (N10665 or N10675)
		HC	ASTM B574 (N10276)
		MO	ASTM B164 (N04400 or N04405)
		SS	ASTM A479 Gr 316 (S31600)
FIV	½" – 1-1/4"	A20	ASTM B473 (N08020)
		B	ASTM B16 H02 TEMPER (C36000)
		C	ASTM A108 Gr 1215 (G12150)
		HB	ASTM B335 (N10665 or N10675)
		HC	ASTM B574 (N10276)
		MO	ASTM B164 (N04400 or N04405)
		P	ISO 1163-PVC-U,ED,078-05-33
		SS	ASTM A479 Gr 316 (S31600)
T	ASTM D1710 Type 1, Grade 1, Class A or B PTFE <i>Teflon®</i> resin		
FIV	1-1/2" – 20"	A20	ASTM A351 Gr. CN7M (N08007)
		B	ASTM B062 (C83600)
		C	ASTM A216 Gr. WCB (J03002)
		HB	ASTM A494 Gr. N7M (N30007)
		HC	ASTM A494 Gr. CW12MW (N30002)
		MO	ASTM A494 Gr. M-35-2 (N04400)
		P	ISO 1163-PVC-U,ED,078-05-33
		SS	ASTM A351 Gr. CF8M (J92900)
		T	ASTM D1710 Type 1, Grade 1, Class A or B PTFE <i>Teflon®</i> resin
GPI	1" – 3"	T	ASTM D1710 Type 1, Grade 1, Class A or B PTFE <i>Teflon®</i> resin
HVFD	1" – 10"	A20	ASTM A351 Gr. CN7M (N08007)
		B	ASTM B062 (C83600)
		C	ASTM A216 Gr. WCB (J03002)
		HB	ASTM A494 Gr. N7M (N30007)
		HC	ASTM A494 Gr. CW12MW (N30002)
		MO	ASTM A494 Gr. M-35-2 (N04400)
		SS	ASTM A351 Gr. CF8M (J92900)

HVFD-T	1" – 2"	C	ASTM A216 Gr. WCB (Liner = ASTM D1710 Type 1, Grade 1, Class A or B PTFE <i>Teflon</i> [®] resin)
LPI	1" – 3"	HC T	ASTM A494 Gr. CW12MW (N30002) ASTM D1710 Type 1, Grade 1, Class A or B PTFE <i>Teflon</i> [®] resin
MCV	1/8" – 3/8"	A20 B C HB HC MO SS	ASTM B473 (N08020) ASTM B16 H02 TEMPER (C36000) ASTM A108 Gr 1215 (G12150) ASTM B335 (N10665 or N10675) ASTM B574 (N10276) ASTM B164 (N04400 or N04405) ASTM A479 Gr 316 (S31600)
SCV	3/4" – 4"	SS	ASTM A479 Gr 316 (S31600)
SIV	3/4" – 4"	T	ASTM D1710 Type 1, Grade 1, Class A or B PTFE <i>Teflon</i> [®] resin
SSI	1/2" – 2"	A20 B C HB HC MO SS	ASTM B473 (N08020) ASTM B16 H02 TEMPER (C36000) ASTM A108 Gr 1215 (G12150) ASTM B335 (N10665 or N10675) ASTM B574 (N10276) ASTM B164 (N04400 or N04405) ASTM A479 Gr 316 (S31600)
TCV	1/4" – 2"	B C SS	ASTM B16 H02 TEMPER (C36000) ASTM A108 Gr 1215 (G12150) ASTM A479 Gr 316 (S31600)
TCV/F	1/4" – 2"	B C SS	ASTM B16 H02 TEMPER (C36000) ASTM A108 Gr 1215 (G12150) ASTM A479 Gr 316 (S31600)
UIV	1/2" – 2"	A20 B C HB HC MO SS	ASTM B473 (N08020) ASTM B16 H02 TEMPER (C36000) ASTM A108 Gr 1215 (G12150) ASTM B335 (N10665 or N10675) ASTM B574 (N10276) ASTM B164 (N04400 or N04405) ASTM A479 Gr 316 (S31600)
UN-10	3/8" – 1-1/2"	A20 C HB HC MO SS	ASTM B473 (N08020) ASTM A108 Gr 1215 (G12150) ASTM B335 (N10665 or N10675) ASTM B574 (N10276) ASTM B164 (N04400 or N04405) ASTM A479 Gr 316 (S31600)
UN-3	3/8" – 4"	A20 B C HB HC MO SS	ASTM B473 (N08020) ASTM B16 H02 TEMPER (C36000) ASTM A108 Gr 1215 (G12150) ASTM B335 (N10665 or N10675) ASTM B574 (N10276) ASTM B164 (N04400 or N04405) ASTM A479 Gr 316 (S31600)
UN-SW	3/8" – 4"	A20 C HB HC MO SS	ASTM B473 (N08020) ASTM A108 Gr 1018 (G10180) ASTM B335 (N10665 or N10675) ASTM B574 (N10276) ASTM B164 (N04400 or N04405) ASTM A479 Gr 316/316L (S31600/S31603)
WIV	1/2" – 4"	A20 B C HB HC MO SS	ASTM B473 (N08020) ASTM B16 H02 TEMPER (C36000) ASTM A108 Gr 1215 (G12150) ASTM B335 (N10665 or N10675) ASTM B574 (N10276) ASTM B164 (N04400 or N04405) ASTM A479 Gr 316 (S31600)

Other valve materials are available. If you have a valve made of another material, please consult the factory for the material identification. Please supply the style, size and material code of the valve when contacting the factory.

Check-All Valve Mfg. Co.
1800 Fuller Road
West Des Moines, IA 50265 U.S.A.
Phone: 515-224-2301
Fax: 515-224-2326
Website: www.checkall.com

Notes

Notes

Manufacturer's Terms and Conditions of Sale

1. CONSTRUCTION AND LEGAL EFFECT: Except as otherwise specifically agreed in writing, our sale to you is limited to and expressly made conditional on your assent to the written terms and conditions of sale on the face and reverse side hereof, all of which form a part of this order and which supersede and reject all prior writings, representations, negotiations with respect hereto and any conflicting terms and conditions of yours, any statement therein to the contrary notwithstanding. The sending of the purchase order for the goods referred to herein, whether or not signed by you, or your acceptance of the goods or payment operates as acceptance by you of our terms and conditions of sale. We will furnish only the quantities and goods specifically listed on the face hereof or the pages attached hereto. We assume no responsibility to terms or conditions or for furnishing other equipment or material shown in any plans and/or specifications for a project to which the goods quoted or ordered herein pertain or refer. Our published or quoted terms and conditions are subject to change without notice.

2. PRICES: Unless otherwise noted on the face hereof, prices are net, FOB carrier, our factory. Stenographic, clerical and mathematical errors are subject to correction. Until order is accepted by us, quoted prices are subject to change without notice.

3. DELIVERY: Dates for the furnishing of services and/or delivery or shipment of goods are approximate only and are subject to change. Quoted lead times are figured from the date of receipt of complete technical data and approved drawings as such may be necessary. We shall not be liable, directly or indirectly, for any delay in or failure to deliver caused by carriers or delays from labor difficulties, shortages, strikes or stoppages of any sort, failure or delay in obtaining materials from ordinary sources, fires, floods, storms, accidents, causes designated acts of God or force majeure by any statute or court of law or other causes beyond our reasonable control. In no event shall we be liable for any damages or penalties whatsoever, whether direct, indirect, special or consequential, resulting from our failure to perform or delay in performing.

4. SHORTAGES, DAMAGE, AND ERRORS IN SHIPMENT: Our responsibility ceases upon delivery to carrier. Risk of loss, injury or destruction of property, shall be borne by you, and such loss, injury or destruction of property shall not release you from payment of purchase price. You shall note receipt for goods that are not in accordance with bill of lading or express receipt without proper notation to the carrier, and you shall make claim against such carrier for any shortage, damage or discrepancy in the shipment promptly. You shall inspect and examine all items and goods covered by the order when unpacking crated or boxed goods, and if damage is discovered, leave as is until the carrier's agent makes examination and notation on freight or express bill of concealed damage. We will render assistance to help trace and recover lost goods and collect just claims as a business courtesy, but without obligation. We do not guarantee safe delivery.

5. TAXES: Our prices do not include sales, use, excise, occupation, processing, transportation or other similar taxes which we may be required to pay or collect with respect to any of the materials covered hereby under the existing or future law. Consequently, in addition to the price specified herein, such taxes shall be paid by you, or you shall provide us with a tax exemption certificate acceptable to the appropriate taxing authorities. You shall also assume and pay any import or export duties, with respect to the materials covered by the order, and shall save us harmless there from.

6. CREDIT AND PAYMENT: Unless otherwise noted on the face hereof, payment of goods shall be (30) days net. Prorata payments shall become due with partial shipments. We reserve the right at any time to suspend credit or to change credit terms provided herein, when, in our sole opinion, your financial condition so warrants. Failure to pay invoices at maturity date, at our election, makes all subsequent invoices immediately due and payable irrespective of terms, and we may withhold all subsequent deliveries until the full account is settled and we shall not, in such event, be liable for non-performance of contract in whole or in part.

7. DOCUMENTS: Unless otherwise agreed to in writing, all documents furnished shall be in the English language.

8. TECHNICAL DOCUMENTS AVAILABILITY: Check-All Valve Mfg. Co. will supply technical documents to competent governmental authorities upon request as required by law.

9. CANCELLATIONS AND CHANGES: Orders which have been accepted by us are not subject to cancellation or changes in specifications; except upon our written consent, and we may require as a condition of such consent, reimbursement for any cost incurred in performance in accordance with the order in original form.

10. DEFERRED SHIPMENT: If shipment is deferred at your request, payment of the contract price shall become due when you are notified that the valves are ready for shipment. If you fail to make payment and furnish shipping instructions, we may either extend time for so doing or cancel contract. In case of deferred shipment at your request, storage and other reasonable expenses attributable to such delay shall be payable by you.

11. WARRANTY: Check-All Valve Mfg. Co., hereinafter called "Check-All" warrants as follows:

(a) That each new Check-All valve is free from defects in material and workmanship when installed and used in accordance with current Check-All publications.

(b) That each new Check-All valve is fit for the purpose for which similar type valves are ordinarily intended. Purchaser shall be solely responsible for determining suitability for use and in no event shall Check-All be liable in this respect.

DURATION—The warranty period shall begin on the date of shipment to the first purchaser and extend for twelve (12) months.

EXCLUSIVE REMEDY—Check-All will repair or replace at its discretion, any valve it finds to be defective under this warranty, upon return of the valve, prepaid, to Check-All at 1800 Fuller Road, West Des Moines, IA 50265 or any warehouse designated by Check-All. Except for such repairs or replacements, **CHECK-ALL SHALL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGES RESULTING FROM BREACH OF THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY.**

DISCLAIMER—Check-All excludes from this warranty compressor discharge applications; valves mounted on the discharge of an elbow ("ell"); and failures due corrosion, erosion, abrasion, cavitation, or other application-related failures and **DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.** Further, it is the end user's responsibility to account for environmental influences such as traffic, wind, earthquake or other external loadings, decomposition of unstable fluids, simultaneous loadings or loadings due to fluid weight. There are no warranties that extend beyond the terms hereof and no one is authorized to assume for Check-All any other liability in connection with the sale of Check-All valves. This warranty supercedes all previous warranties.

12. LIMITATION OF LIABILITY: IN NO EVENT SHALL *CHECK-ALL* BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES WHATSOEVER, AND *CHECK-ALL'S* LIABILITY, UNDER NO CIRCUMSTANCES, WILL EXCEED THE CONTRACT PRICE FOR THE GOODS AND/OR SERVICES FOR WHICH LIABILITY IS CLAIMED. ANY ACTION FOR BREACH OF CONTRACT MUST BE COMMENCED WITHIN 1 YEAR AFTER THE CAUSE OF ACTION HAS ACCRUED.

13. EUROPEAN UNION: For purposes of defining Check-All Valve products according to the Pressure Equipment Directive, 97/23/EC, these valves are not intended for use as the sole means of isolation.

14. TEXAS: Buyers who are business consumers as described in section 17.42 of the Texas Deceptive Trade Practices Act (the "DTPA") waive all provisions of the DTPA to the fullest extent allowed by the DTPA.

15. APPLICABLE LAW: The rights and duties of the parties shall be governed by the laws of the State of Iowa.

16. NO OTHER CONTRACT PROVISIONS: Except as otherwise previously and specifically agreed in writing by the parties, terms and conditions of your order shall be without force and effect, except as they are identical herewith. No dealer, broker, branch manager, agent, employee or representative of ours has any power or authority except to take orders for our products and to submit the same to us, at our factory, for our approval and acceptance or rejection. There are no representations, agreements, obligations, or conditions, expressed or implied, statutory or otherwise, relating to the subject matter hereof, other than herein contained, and these terms and conditions shall be incorporated in and become a part of any agreement between the parties with reference to purchase of our products.

WARRANTY

Check-All Valve Mfg. Co., hereinafter called "Check-All" warrants as follows:

- (a) That each new Check-All valve is free from defects in material and workmanship when installed and used in accordance with current Check-All publications.
- (b) That each new Check-All valve is fit for the purpose for which similar type valves are ordinarily intended. Purchaser shall be solely responsible for determining suitability for use and in no event shall Check-All be liable in this respect.

DURATION—The warranty period shall begin on the date of shipment to the first purchaser and extend for twelve (12) months.

EXCLUSIVE REMEDY—Check-All will repair or replace at its discretion, any valve it finds to be defective under this warranty, upon return of the valve, prepaid, to Check-All at 1800 Fuller Road, West Des Moines, IA 50265 or any warehouse designated by Check-All. Except for such repairs or replacements, CHECK-ALL SHALL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGES RESULTING FROM BREACH OF THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY.

DISCLAIMER—Check-All excludes from this warranty compressor discharge applications; valves mounted on the discharge of an elbow ("ell"); and failures due to corrosion, erosion, abrasion, cavitation, or other application-related failures and DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. Further, it is the end user's responsibility to account for environmental influences such as traffic, wind, earthquake or other external loadings, decomposition of unstable fluids, simultaneous loadings or loadings due to fluid weight. There are no warranties that extend beyond the terms hereof and no one is authorized to assume for Check-All any other liability in connection with the sale of Check-All valves. This warranty supercedes all previous warranties.

TERMS AND CONDITIONS OF SALE

Terms: Net 30 days with approved credit.

Prices: FOB FACTORY, West Des Moines, Iowa. List prices are subject to discount. All prices subject to change without notice. Any manufacturers' or sales tax or use tax payable on any transaction under any effective statutes will be added to the price of the goods.

Design: We reserve the right to make design changes without notice.

Returns: All returns must be factory authorized within one year of purchase and are subject to restocking charges. Special valves and valves with permanent tags attached, are not returnable. Contact the factory for a Return Material Authorization form.

Shipment Data: All statements of prospective shipping dates are estimates made in good faith. Maximum effort will be made to ship within the time estimated.

Cancellations: Firm orders which have been accepted are not subject to cancellation or changes except by written agreement to reimburse the company for costs incurred.

Check-All Valve / Registered Trade Mark
Check-All / Registered Trade Mark



CHECK-ALL VALVE MFG. CO.
 1800 Fuller Road West Des Moines, IA 50265
 PHONE: (515) 224-2301 FAX: (515) 224-2326
 Home Page: www.checkall.com
 E-Mail: sales@checkall.com


Check-All Valve Mfg. Co. is a division of
 International Valve Corporation.

Service to Each Customer.

Since its origin in 1958, Check-All Valve Mfg. Co. has grown from an idea to a reality; from one type of valve to many styles; from a single use to multiple applications; from one material to many. Check-All Valve Mfg. Co. has grown in all respects, yet one element has remained unchanged...service to each and every customer. Please feel free to put **our** personal and technical services to work on **your** particular project.

For Additional Details or Specifications contact Check-All Valve Mfg. Co. or Your Local Representative.

TRADEMARKS USED IN THIS CATALOG:

HASTELLOY®Haynes International, Inc.
 MONEL® Special Metals Family of Companies
 INCONEL® Special Metals Family of Companies
 VITON®Du Pont Dow Elastomers, L.L.C.
 KALREZ®Du Pont Dow Elastomers, L.L.C.
 TRI-CLAMP®Alfa Laval Inc.
 TRI-CLOVER®Alfa Laval Inc.
 Q-CLAMP®Waukesha Cherry-Burrell
 S-LINE®Waukesha Cherry-Burrell
3-A Sanitary Standards Inc.
 AFLAS®Asahi Glass Co., Ltd.
 TEFLON® E. I. du Pont de Nemours and Company
 "Teflon® is a registered trademark of E.I. du Pont de Nemours and Company used under license." Only DuPont makes Teflon®.

2003 INDUSTRIAL AND RESEARCH APPLICATION CATALOG