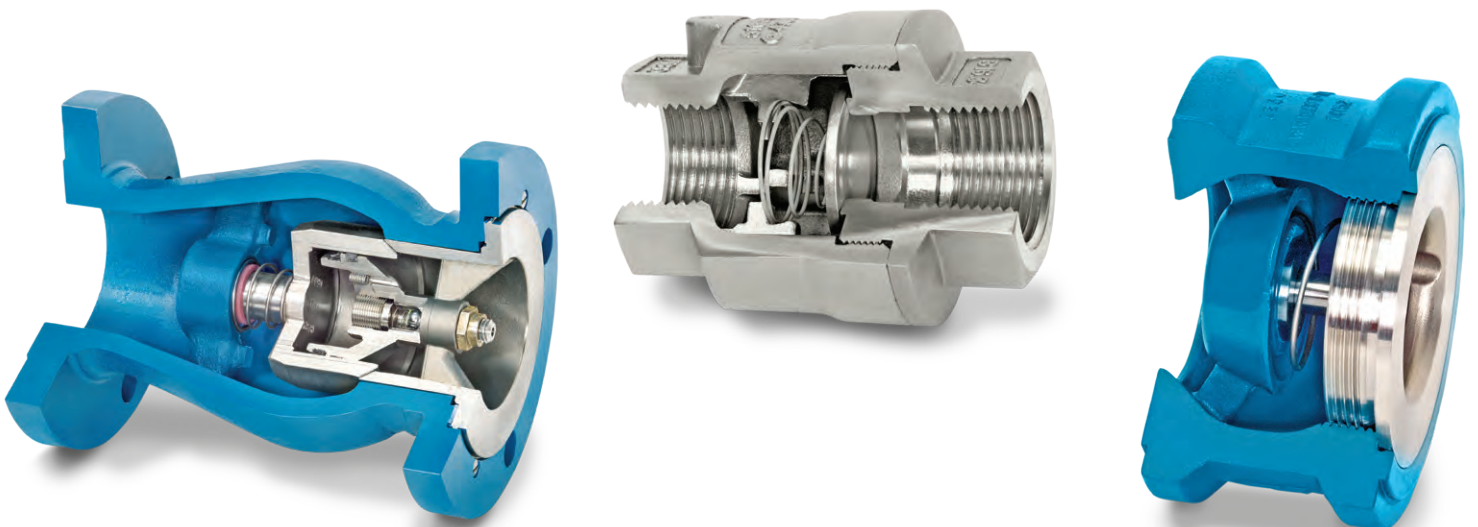


# DFT<sup>®</sup>

World Class Manufacturer of Check Valves

## 2022



Spring-assisted, Non-slam, Axial Flow, Silent Check Valves

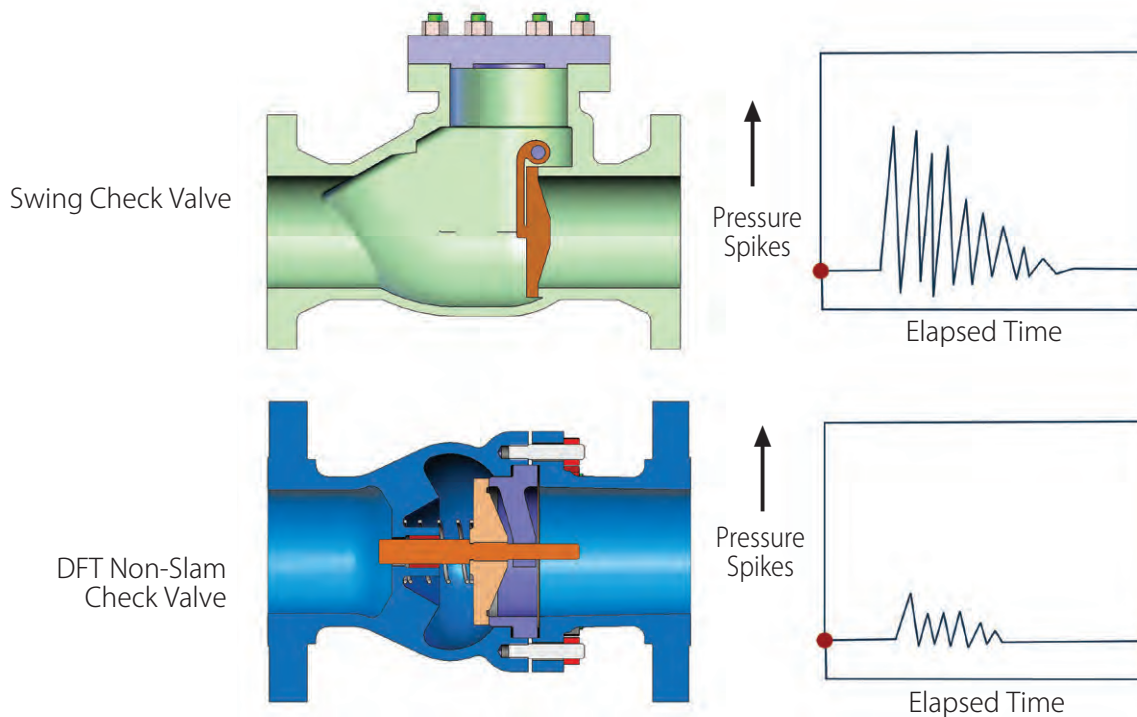


# Water Hammer

## How DFT Non-Slam Check Valves Prevent Water Hammer

Water hammer is the generation and effect of high-pressure shock waves (transients) in relatively incompressible fluids. Water hammer is caused by the shock waves that are generated when a liquid is stopped abruptly in a pipe by an object such as a valve disc. Symptoms include noise, vibration and hammering pipe sounds which can result in flange breakage, equipment damage, ruptured piping and damage to pipe supports. Whenever incompressible fluids exist in a piping system, the potential exists for water hammer. The risks of water hammer developing are particularly high when the velocity of the fluid is high, when there is a large mass of fluid moving and/or when there are large elevation changes within the piping systems. Since the swing check must rely on gravity and/or fluid flow to help it close, flow reversal must occur before closure begins. When the swing check finally closes, it abruptly stops the flow and causes a pressure surge resulting in shock waves. These shock waves continue until the energy generated from this sudden action dissipates.

Visit [www.dft-valves.com](http://www.dft-valves.com) to view DFT's check valve animations.



These high-pressure waves act against the piping and the valve, exerting very high forces. This causes severe stress on the metal and vibrations in the system. If the system is not designed to withstand these high transient forces, the pipe could rupture and/or other components in the system, such as pumps and valves, could possibly be damaged. These problems can be eliminated or greatly minimized by installing a spring assisted non-slam check valve. Non-slam check valves do not rely on gravity or fluid flow for their closure. Instead as the forward velocity of the fluid slows, the spring assist on the valve starts to close the disc. Due to the spring assist and the relatively short distance the disc must travel, by the time the forward velocity has decreased to zero, the valve disc has reached the seat and the valve is closed. With reverse flow eliminated, the forces necessary to produce water hammer on both the upstream and downstream sides of the valves are substantially eliminated.



# DFT Smart Part Number Scheme

DFT® has put into effect a Smart numbering system to assist in identifying and ordering DFT check valves. Within the part number you will be able to identify key elements of your check valve. Below is an example of how the Smart number scheme will work.

Example: Excalibur 4" 600# WCB / 316 / X750 Spring/Spiral Wound gaskets

2 2	2	L	1	C	4	A	5	—	—	—
MODEL	BODY MATERIAL	SIZE	ENDS <sup>(1)</sup>	CLASS <sup>(2)</sup> RATING	TRIM MATERIALS	SEATING	SPRING	SPECIAL <sup>(3)</sup> (Consult Factory)		
22= Excalibur 31= PDC 42= TLW 47= Y-Calibur 52= ALC 61= BNC 94= DLC 21= DSV 95= GLC 83= SCV 84= SCV-R 90= WLC	1= LCB 2= WCB 3= CK3MCuN 5= 316/CF8M <sup>(4)</sup> 6= Monel 7= 317-L 8= LCC 9= Special 0= Repair Kit A=Alloy 20 B=410 SS C=WC9 D= NAB E= Hast C F=Ti Gr 12 G= 316L/CF3M	C=0.5 D=0.75 E=1 F=1.25 G=1.5 H=2 J=2.5 K=3 L=4 M=5 N=6 O=8 P=10 R=12 S=14 T=16 U=18 W=20 X=24 Y=30 1=36 2=42 3=48 Z=Special	1= Raised Face 2= RTJ 3= Flat Face 5= Socket Weld 6=Grooved (Victaulic) 7=Threaded NPT 9= Special A=DSV Vertical B=DSV Horizontal C= SCH 40 Butt Weld D= SCH 80 Butt Weld E= SCH 120 Butt Weld F= SCH 160 Butt Weld	A=150 B=300* C=600 D=900 E=1500* F=2500 Z=Special	4=316 5=Monel 6=Alloy 20 7=Severe Service 8=410 A=NAB E=Hast C F=Ti Gr 12 G=17-4 H=316L	A=Metal B=Buna-N (75 dur.) C=EPDM D=Viton E=Kalrez F=Stellite** Seat & Disc G= Teflon Encapsulated Viton H=Viton F J=Buna 90 durometer S=Special Z=Zelon 8=Stellite Seat only	1=Hast C 3=316 4=Monel 400 5=X-750 6=Alloy 20 7=17-7 8=not used A= Ti 6-4 B=Monel K500	<b>Based on Application, specials are available for:</b> <ul style="list-style-type: none"> <li>• Custom Sizing</li> <li>• Special cracking pressure variation</li> <li>• DSV Internal Finish Electropolish EP =15 Ra R25 = 25 Ra</li> <li>• SCV Body Seals N=BUNA E=EPDM F=Viton TF=TFE/Viton W=Seal Welded</li> <li>• SS=Digester Severe Duty</li> <li>• BF= Boiler Feed Severe Duty (WLC only)</li> </ul>		
<b>NOTES:</b> (1) <b>ENDS:</b> C- F are only for Welded End Valves (2) <b>DUAL CLASS:</b> Use the higher rating when selecting. Ex: 150/300=B (3) <b>SPECIALS:</b> Consult with DFT for Special Options or Alternatives based on application. (4) <b>For DSV Only:</b> Use body material code "5" for 316L * For SCV & SCV-R, Class "B" identifies at 750 CWP, and Class "E" identifies at 3600 CWP ** Includes Seat and Disc										

The Smart part number scheme does not apply to the following DFT models:

† Basic-Check Valves, Reducing Couplings, Restrictor Check Valves, Vacuum Breakers, FBC, GPV, or cast iron valves.

These model part numbers will remain unchanged.

### Body Seal Part Number Reference

Material	Temperature	Old P/N†	Body & Seat	Only Body Seal
BUNA	-70° F to 250°F	- 49	= B	N
VITON	-40°F to 400°F	- 51	= D	F
ZELON	+37°F to 470°F (750CWP) +37°F to 400°F (3600CWP)	- 54	= Z	
EPDM	-75°F to 300°F	- 57	= C	E
TFE/VITON	-40°F to 400°F	- 98	= G	TF

You can also find our full catalog online at [www.dft-valves.com](http://www.dft-valves.com).



# Valve Selection Chart

	THREADED VALVES					FLANGED VALVES					SANITARY VALVES	WAFER VALVES				IN-LINE REPAIRABLE VALVES	BUTT WELD
	Basic-Check®	Restrictor Check	SCV®	SCV-R®	Vacuum Breaker	DLC®	Excalibur®	GLC®	GLC® - CAST IRON	PDC®	DSV®	ALC®/TLW®	FBC®	WLC®	WLC® - CAST IRON	Y-CALIBUR®	BNC®
PAGE	10	12	14	16	18	20	22	24	26	28	30	32-34	36	38	40	42	44
SIZE	¼ to 2-½	¼ to 2-½	½ to 3	½ to 2	1 to 4 (OD)	½ to 3	2 to 24	1 to 42	2-½ to 42	2 to 26	½ to 4	2 to 24	1 to 4	1 to 10	2 to 10	4 to 14	2 to 24
ENDS																	
NPT	X	X	X(1)	X(1)	X												
SW			X(1)	X(1)													
FLG						X	X	X	X	X							
RTJ							X	X		X				X			
BW							X									X	X
FLG/BW							X										
Victaulic®							X										
Wafer												X	X	X	X		
Clamped											X						
ASME CLASS																	
125									X						X		
150						X	X	X		X		X	X	X			X
250									X						X		
300						X	X	X		X		X	X	X			X
600							X	X		X		X(7)		X		X	X
900							X	X		X		X(7)		X		X	X
1500							X	X		X		X(7)		X		X	X
2500								X						X		X	
750 CWP			X	X													
3600 CWP			X														
OTHER	X(2)	X(2)			X(2)			X(3)			X(2)			X(3)			
MATERIALS									BODY/TRIM								
Cast Iron									X(4)						X(4)		
WCB/316 SS*							X	X		X		X		X		X	X
CF8M/316 SS*	X(5)	X(5)	X	X	X(5)	X	X	X		X	X(5)	X	X	X		X	X
Other Alloys			X	X		X	X	X		X	X			X		X	
OPTIONS																	
Soft Seat	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	
X-750 Spring	X	X	X(6)	X(6)	X	X(6)	X	X		X		X(6)	X	X		X	X

**Notes:** 1. NPT x SW available.

2. CWP RATING BSS, BSA, BSE, BSSV, Restrictor Check: 450 to 2500 CWP depending on size; BSSH6, BSSV6: 450 to 6000 CWP depending on size. BSSH7: 800 to 6000 CWP depending on size. DSV: ASME/ANSI Class 108.

3. API 2000 and 5000 ARE AVAILABLE. Contact DFT for sizes.

4. TRIM MATERIAL: BRONZE OR 316 SS

5. BODY & SEAT: BSE, BSS, BSSV. Restrictor Check: 303 SS, BSA: 416 SS, BSSH6, BSSH7, BSSV6: 316 SS, DSV: 316L SS (A351/CF3M)

6. Inconel® X-750 spring is standard.

7. Class 600, 900, & 1500 available for TLW only (not available for ALC).

\* CF8M is the cast grade of 316 SS.

Use the DFT® VALVE DATA SHEET to collect your valve data specifications (see page 9 or download from the resource library at [dft-valves.com](http://dft-valves.com)).

# Features

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## **Designed to prevent “Water Hammer.”**

The spring-assisted, axial flow, in-line, nozzle style, non-slam design featured in all DFT® check valves insures that as the forward flow in a pipeline decreases, the disc begins moving closer to the seat. By the time the flow stops, the disc is closed against the seat preventing flow reversal. This prevents the valve from slamming closed which can cause “Water Hammer” and the resultant noise and damage to piping systems.

## **Designed to open at approx. 0.5 psi differential pressure and fully open at 1.0 psi differential pressure.**

See product tables for specific cracking pressures.

## **Can be installed in ANY orientation.**

Including vertical with flow up or down. (Special springs may be required)

## **MSS SP 126-2000 Steel Non-slam Spring-Assisted Center Guided Check Valves Standard**

DFT carbon steel, stainless steel and alloy valves meet this standard. (Does not apply to the Basic-Check, Restrictor Check or Vacuum Breaker)

## **API 6D- Pipeline Valves**

API 6D specification holds hydrostatic and pneumatic testing to an elite new standard. Unlike the base API 598 testing, API 6D testing requires increased pressure testing durations, rust inhibitor, medium PH testing and more stringent design and manufacturing process controls. Contact DFT about products that meet API 6D.

## **API 6FA- Fire Test for Check Valves**

ASME Class 150 and 300 GLC meet API 6FA. (Line sizes 2-24”)

For Excalibur check valves that meet API 6FA, contact DFT Factory for class and line sizes.

## **Meet or exceed MSS SP-61 leakage requirements.**

Metal-to-metal seating is standard in all DFT non-slam check valves. Cast iron valves meet AWWA seat leakage requirements. DFT’s standard test medium is water and meets or exceeds testing requirements.

## **Additional Quality Tests for Check Valves**

FaroArm® Inspection ensures bolt hole alignment and face-to-face parallelism.

## **Available with soft seats for bubble-tight shutoff.**

Soft seat material selected based on operating temperature and chemical compatibility. See page 48 for available options.

## **Dual-guided stems.**

The stem is guided upstream and downstream to guard against vibrations and insure proper disc seating. (Does not apply to the ALC®, Basic-Check®, DLC®, DSV® (1/2”-2”), Restrictor Check, SCV®, SCV-R® or Vacuum Breaker)

## **Custom sizing available.**

The following DFT check valves can be sized to the appropriate flow conditions: ALC®, BNC®, Excalibur®, GLC®, TLW®, WLC®, and Y-Calibur®.

## **Pulse-damping design.**

The DFT Model PDC® is specifically designed for use on the discharge of reciprocating air or gas compressors. The design includes a pulse-damping chamber to protect against premature seat wear due to chattering.

## **Liquids, gas or steam.**

All DFT non-slam check valves provide positive shutoff for applications involving liquids, gas or steam and can be used in most industries including oil and gas, petrochemical, pulp and paper, textiles, food and beverage and commercial construction. Applications include chemical lines, fluid injection, condensate recovery, steam, nitrogen, pump and compressor discharge, chiller and boiler feed systems. See page 7 for additional information.

## **NACE (AMPP - The Association for Material Protection and Performance)**

Optional body and trim materials to meet the (AMPP) NACE standards MR0103/ISO 17945 and MR0175/ISO 15156. See page 47.

## **Maintenance and Installation guides available for all DFT non-slam check valves.**

# Applications

## Chemical Processing

Boiler Feed & Discharge  
Compressor Discharge  
Condensate Lines  
Cooling Towers  
Cryogenics  
Evaporators  
Nitrogen Purge  
Process Lines  
Pump Discharge  
Metering Pumps  
Mineral Dewatering  
Steam Lines  
Vacuum Lines & Breakers  
Water Treatment

## Petroleum Production & Refining

Boiler Feed & Discharge  
Condensate Lines  
Cooling Towers  
Crude & Refined Product Lines  
Compressor Discharge  
Desalination  
Evaporators  
Generator Inlet & Discharge  
Pump Discharge  
Steam Lines  
Vacuum Lines & Breakers  
Water Treatment

## Mining

Autoclaves  
Boiler Feed & Discharge  
Mine Dewatering

## Pulp & Paper

Boiler Feed & Discharge  
Chemical Lines  
Condensate Lines  
Generator Inlet & Discharge  
Metering Pumps  
Pump Discharge  
Steam Lines  
(Digester & Paper Machines)  
Water Treatment

## Textiles

Boiler Feed & Discharge  
Chemical Dye Lines  
Compressor Discharge  
Condensate Lines  
Metering Pumps  
Pump Discharge  
Steam Lines

## Power Generation

Boiler Feed & Discharge  
Compressor Discharge  
Cooling Towers  
Desalination  
Evaporators  
Pump Discharge  
Steam Lines  
Vacuum System  
(Fly Ash System)  
Water Lines

## Food, Beverage & Drug

Autoclaves  
Boiler Feed & Discharge  
Chemical Lines  
Compressor Discharge  
Condensate Lines  
Cookers  
Evaporators  
Metering Pumps  
Pump Discharge  
Refrigeration (Hot Gas Defrost)  
Steam Lines  
Vacuum Lines & Breakers

## Primary Metals

Chemical Lines  
Compressor Discharge  
Condensate Lines  
Extrusion Equipment  
Evaporators  
Hydraulic Lines  
Presses - Water Inlet & Outlet  
Pump Discharge  
Steam Lines  
Water Lines  
Water Treatment

## Building Maintenance

Condensate Lines  
Compressor Discharge  
Pump Discharge  
Steam Lines  
Water Lines



DFT Recommends to  
Always Size Your Check Valves



# The Importance of Check Valve Selection and Sizing

---

Knowing which check valves can withstand different environmental factors, and how check valve sizing works is the key to a longer lifetime of use, proper flow and overall efficiency of your fluid, steam or gas flow system.

It is important that check valves be sized for their application and flow, not based just on their line size. Choosing the appropriate-sized check valve means it will be working at its highest level, providing efficient service with maximum protection. Proper check valve sizing will optimize a system's reliability, providing the longest and most trouble free service.

An undersized valve will cause higher pressure losses and create excessive noise and vibration, and an oversized valve can lead to premature wear and failure of the valve's internal components. When the valve's disc is stable and in the fully open position against the internal stop or fully closed position against the seat, no disc fluttering will occur.

The correct valve selection not only allows the valves to last longer, but pumps and other related components on the same system will have increased longevity as well, resulting in reduced overall maintenance and costs. Well- functioning check valves also enhance the safety of their applications.

## **Lower Lifetime Maintenance Costs**

Every fluid handling system has its own unique requirements. When customers purchase inappropriately sized valves, it can create costs that go far beyond the valves themselves. When a valve fails, the labor costs to fix it can be very high. For example, if a maintenance team is needed only two people are sent to replace a valve, the costs will accumulate depending on time and number of crew needed.

When you add in down time and lost production time on top of that, the costs can be staggering—sometimes exceeding up into thousands of dollars per hour or higher.

The price of poor valve choice could be even higher when working with potentially hazardous materials. A valve malfunction could create a spill that could harm the environment. Most chemical spills need to be reported, impacting environmental safety, worker safety, and damage to the reputation of the company as well as the potential for large fines.

When maintenance, safety and replacement costs are included in the purchasing decision, it becomes clear that higher-quality check valves are a much more cost-effective option. DFT® check valves are made to last, designed for durability and superior sealing.

A professional consultation to get the most appropriate and best-sized valve is far more cost effective when considering lifetime maintenance costs, system reliability and optimizing system performance through maintenance reductions. Contact DFT Inc. for more information.



# Valve Data Sheet



TEL: (610) 363-8903  
FAX: (610) 524-9242  
dft@dft-valves.com  
www.dft-valves.com

**VALVE DATA SHEET**  
**NON-SLAM CHECK VALVE**  
"CHECK VALVE DOCTOR"<sup>™</sup>

Customer: _____ Contact: _____ Phone: _____ Fax: _____ email: _____	Date: _____ Page: _____ of _____ QUOTE NO.: _____ ITEM NO. _____
--	---

<b>GENERAL INFORMATION</b>	Quantity: *		
	Line Size: *		
	Class (ANSI/API):*		
	Model:		
	End Connections: *		
	Material: Body*		
	Trim *		
	Spring		
	Seating	Metal <input type="checkbox"/>	Soft <input type="checkbox"/>
	Gaskets/O-ring		
Bolting			
Tag No: _____	Brass ___	Stainless ___	Other: _____

<b>FLUID DATA</b>	Fluid State *	Liquid <input type="checkbox"/>	Gas <input type="checkbox"/>	Steam <input type="checkbox"/>
	Fluid: *			
	Specific Gravity: *			
	Design Conditions:	Pressure:	Temp.:	
	Operating Conditions:	Flow*	Pressure *	Temperature*
	Units: (i.e. GPM, PSI, °F, etc.)	_____	_____	° _____
	Normal *			
	Maximum			
Minimum				

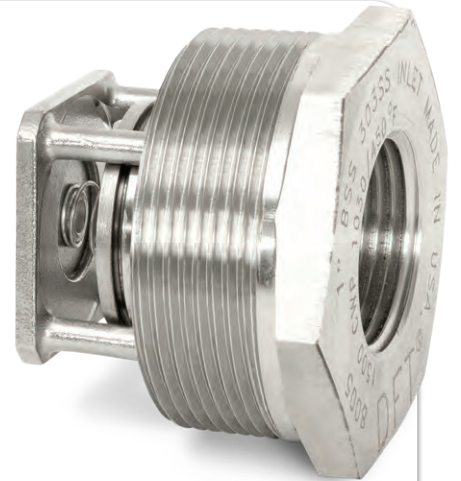
<b>INSTALLATION DATA</b>	Orientation: *	Horizontal <input type="checkbox"/>	Vert. flow: <b>Up</b> <input type="checkbox"/>	<b>Down</b> <input type="checkbox"/>
	Service Application:			

<b>SPECIAL REQUIREMENTS</b>	Specification Nos.:			
	CE MARK	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
	Cert. of Compliance:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
	CMTRs:	Body <input type="checkbox"/>	Trim <input type="checkbox"/>	
	Drawings:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
	NACE MR 0175/ISO 15156	Yes <input type="checkbox"/>	No <input type="checkbox"/>	% H <sub>2</sub> S: _____
	NACE MR 0103-2003	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
	NDE: (Specify)			
	Packaging:			
	Other:			

<b>NOTES</b>			
<b>DELIVERY:</b> _____ wks.	* Denotes Required		

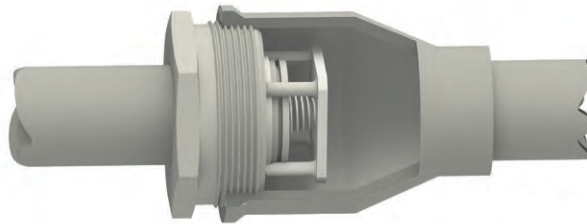
# Basic-Check®

The **DFT® Basic-Check Valve** is a versatile all-purpose, non-slam valve that provides reliable, low-maintenance service for a wide range of liquids, steam and gases at various pressure/temperature combinations. The valve consists of a guard cage, spring, valve disc, retaining ring and seat. It can be combined with pipe fittings such as reducing couplings, drain elbows, etc. to form a complete check valve unit ideally suited for a broad range of pipeline applications or incorporated into machinery for OEM applications. The metal-to-metal sealing area of the Basic-Check valve's disc and seat is precision-lapped, providing very tight shutoff of gas, steam and liquid. If bubble-tight shutoff is required, optional resilient soft seats are available.



## FEATURES:

- 1/4" to 2 1/2" Line size
- 450 to 6000 CWP
- Threaded ends
- Stainless steel construction
- Spring-assisted silent closing
- Horizontal or vertical installation
- Tight shutoff - lapped disc & seat
- Easy maintenance
- Versatile
- Options:
  - Inconel® X-750 spring
  - Soft seat (for bubble-tight shutoff)



Can be used with reducing coupling

Basic-Check				Cracking Pressure	
A Line Size Inlet (FNPT)	B Outside Thread (MNPT)	Weight	Cv	PSI	Inches of Water
1/4	1	0.38	5.8	0.60 (1)	16.7
3/8	1	0.38	5.8	0.60 (1)	16.7
1/2	1	0.38	5.8	0.60 (1)	16.7
3/4	1 1/2	0.88	13.2	0.45	12.5
1	2	1.25	23.1	0.38	10.5
1 1/4	2 1/2	2.25	36	0.20	5.5
1 1/2	3	3.75	57.4	0.14	3.9
2	4	7	90	0.15	4.3
2 1/2	4	7	90	0.15	4.3

\*Cracking pressure shown for horizontal installation. Cracking pressure for vertical flow will be slightly different: upward flow, slightly higher; downward flow, slightly less.

Not recommended for use on discharge of reciprocating compressors.

Consult pages 48 and 49 for Pressure/Temperature ratings and soft seat materials.



# Basic-Check®

## COLD, NON-SHOCK PRESSURE RATING (PSIG) (2)

	1/4", 3/8", 1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"
Basic-Check BSS	2500	2000	1500	850	700	450	450
Basic-Check BSA				850	700	450	
Basic-Check BSE	2500	2000					
High-Pressure BSSH6	6000	5500	3000	1100	900	450	450
High-Pressure BSSH7	6000	6000	6000	4000	2700	800	800

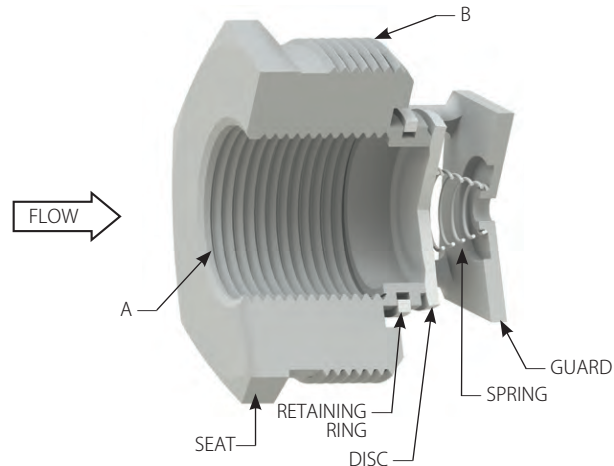
Sat. Steam Pressure (PSIG) Ref. (3)	Temperature (°F)	Adjusted Rating as Percent of Cold Rating
-3	200	86%
15	250	82%
52	300	78%
232	400	71%
407	450	69%
665	500	66%
1526	600	62%
3075	700	60%

All stainless steel construction is suitable for cryogenic service. For pressure rating at elevated temperatures for standard metal-seated valves, reduce rating per chart above.

Maximum valve temperature rating is limited by soft seat (if any) and spring materials. For ratings of soft seals using some other elastomers, consult DFT.

Warning: Use with extra deep, bell reducer only.

SOFT SEAT	
Maximum operating temperatures of materials	
MATERIALS	MAX. TEMP. (°F)
BUNA-N	-70 to 250
EPDM	-75 to 300
VITON® & TFE-Encapsulated VITON®	-40 to 400
ZELON®	37 to 450



## MATERIALS OF CONSTRUCTION

COMPONENT	Basic-Check BSS	Basic-Check BSA	Basic-Check BSE	High Pressure Basic-Check BSSH6	High Pressure Basic-Check BSSH7
Seat	303 SS	416 SS	303 SS	316 SS	316 SS
Disc	316 SS	316 SS	316 SS	316 SS	17-7 SS
Guard	CF8M	CF8M	17-4 SS	CF8M	CF8M
Spring	316 SS	316 SS	Inconel® X-750	316 SS	316 SS
Retaining Ring	316 SS	316 SS	316 SS	316 SS	316 SS

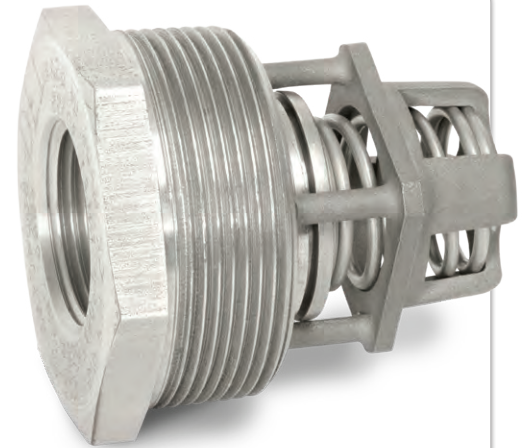
- Notes:**
1. Light spring available: Cracking Pressure = .24 PSI (6.5 inches of water)
  2. Contingent on service ratings of matching pipe and fittings.
  3. Saturated steam pressure is given for reference only; pressure limit of valve is the adjusted rating at the given temperature.

All dimensions are in inches. Weights are in pounds. For metric measurements, visit [www.dft-valves.com](http://www.dft-valves.com). CP: Cracking Pressure (psig)

THREADED VALVES

# Restrictor Check

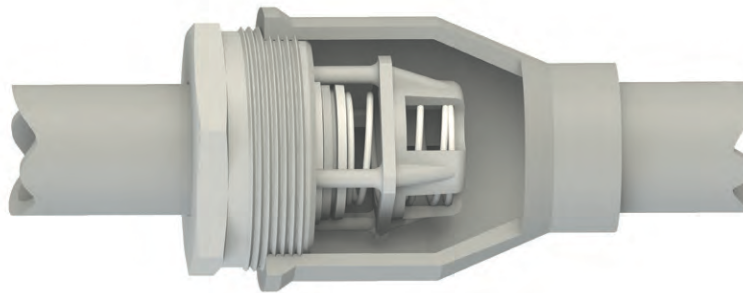
The **DFT® Restrictor Check Valve (RCV)** is a versatile, all-purpose, spring-assisted, non-slam check valve for applications that require higher cracking pressures to open the check valve than those offered by other DFT check valves. Cracking pressures are available from 2 to 40 psi depending on valve size. Like the Basic-Check® valve, the Restrictor Check provides reliable, low maintenance service for a wide range of fluids and gases at various pressure/temperature combinations. The valve consists of a guard cage, spring, valve disc, retaining ring and seat. It can be combined with pipe fittings such as couplings, drain elbows, etc. (not provided by DFT) to form a complete check valve unit ideally suited for a broad range of applications. The RCV should not be considered a substitute for a Pressure Relief Valve.



## FEATURES:

- Higher cracking pressures (2 to 40 psi — See chart)
- 1/4" to 2 1/2" Line size
- 450 to 2500 CWP
- Threaded ends
- Stainless steel construction
- Spring-assisted silent closing
- Horizontal or vertical installation
- Tight shutoff - lapped disc & seat
- Easy maintenance
- Versatile
- Options:
  - Soft seat (for bubble-tight shutoff)

Warning: Use with extra deep, bell reducer only



Typical Installation

## COLD, NON-SHOCK PRESSURE RATING (1)

Size	1/4", 3/8", 1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"
Rated Working Pressure	2500	2000	1500	850	700	450	450

Consult pages 48 and 49 for Pressure/Temperature ratings and soft seat materials.

# Restrictor Check

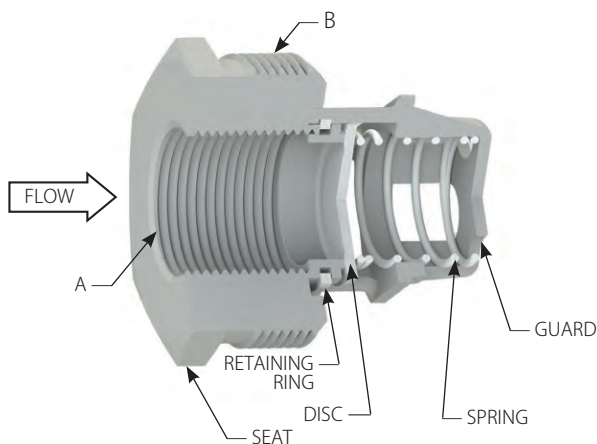
Sat. Steam Pressure (PSIG) Ref. (2)	Temperature (°F)	Adjusted Rating as Percent of Cold Rating
-3	200	86%
15	250	82%
52	300	78%
232	400	71%
407	450	69%
665	500	66%
1526	600	62%
3075	700	60%

All stainless steel construction is suitable for cryogenic service. For pressure rating at elevated temperatures for standard metal-seated valves, reduce above rating per chart above.

Maximum valve temperature rating is limited by soft seal (if any) and spring materials in chart below. For ratings of soft seals using some other elastomers, consult DFT.

## MATERIALS OF CONSTRUCTION

Component	Restrictor Check
Seat	303 SS
Disc	316 SS
Guard	CF8M
Spring	302 SS
Retaining Ring	316 SS



Warning: Use with extra deep, bell reducer only

## SOFT SEAT

Maximum operating temperatures of materials

MATERIALS	MAX. TEMP. (°F)
BUNA-N	-70 to 250
EPDM	-75 to 300
VITON® & TFE-Encapsulated VITON®	-40 to 400
ZELON®	37 to 450

All dimensions are in inches. Weights are in pounds. For metric measurements, visit [www.dft-valves.com](http://www.dft-valves.com). CP: Cracking Pressure (psig)

## Restrictor Check

<b>1/4"</b>	<b>A</b>	0.25
	<b>B</b>	1
	<b>Weight</b>	0.38
	<b>Cv</b>	5.8
<b>3/8"</b>	<b>CP</b>	3.3 to 20.4
	<b>A</b>	0.38
	<b>B</b>	1
	<b>Weight</b>	0.38
<b>1/2"</b>	<b>Cv</b>	5.8
	<b>CP</b>	3.3 to 20.4
	<b>A</b>	0.50
	<b>B</b>	1
<b>3/4"</b>	<b>Weight</b>	0.38
	<b>Cv</b>	5.8
	<b>CP</b>	3.3 to 20.4
	<b>A</b>	0.75
<b>1"</b>	<b>B</b>	1.50
	<b>Weight</b>	0.88
	<b>Cv</b>	13.2
	<b>CP</b>	3.3 to 15.5
<b>1 1/4"</b>	<b>A</b>	1.00
	<b>B</b>	2.00
	<b>Weight</b>	1.25
	<b>Cv</b>	23.1
<b>1 1/2"</b>	<b>CP</b>	4.2 to 40.7
	<b>A</b>	1.25
	<b>B</b>	2.50
	<b>Weight</b>	2.25
<b>2"</b>	<b>Cv</b>	36
	<b>CP</b>	1.8 to 18.8
	<b>A</b>	1.50
	<b>B</b>	3.00
<b>2 1/2"</b>	<b>Weight</b>	3.75
	<b>Cv</b>	57.4
	<b>CP</b>	2.4 to 19.1
	<b>A</b>	2.00
<b>3"</b>	<b>B</b>	4.00
	<b>Weight</b>	7.00
	<b>Cv</b>	90
	<b>CP</b>	1.7 to 9.4
<b>3 1/2"</b>	<b>A</b>	2.50
	<b>B</b>	4.00
	<b>Weight</b>	7.00
	<b>Cv</b>	90
<b>4"</b>	<b>CP</b>	4.6 to 10.8

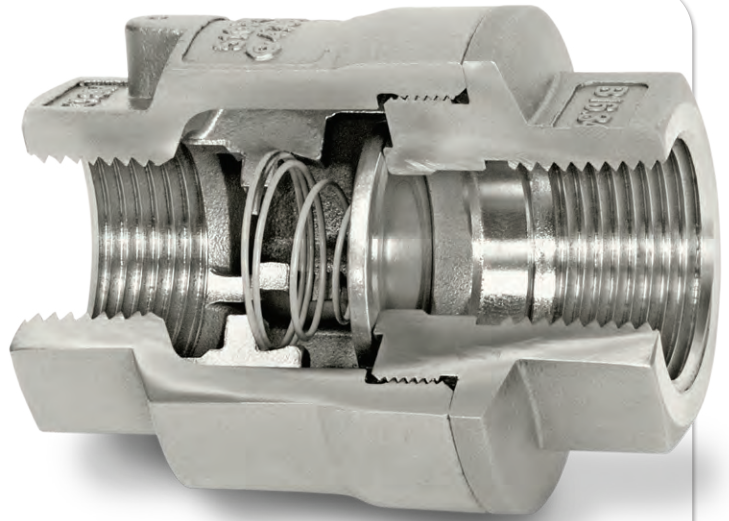
Not recommended for use on discharge of reciprocating compressors.

### Notes:

- Contingent on service ratings of matching pipe and fittings.
- Saturated steam pressure is given for reference only; pressure limit of valve is the adjusted rating at the given temperature.

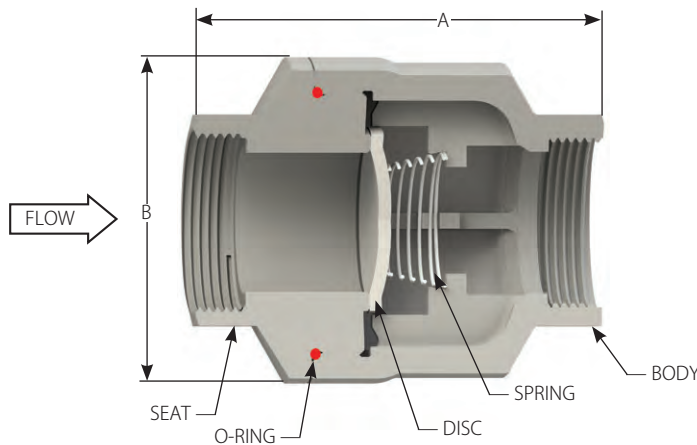


The **DFT® Model SCV Check Valve** is a corrosion-resistant, dependable, versatile and economical spring-assisted, non-slam check valve for a wide range of applications. Whether the fluid is liquid, gas or steam, the SCV provides tight shutoff and protects other equipment in the system from water hammer. Its stainless steel construction assures a long service life.



## FEATURES:

- 1/2" to 3" Line size
- 750 & 3600 CWP
- NPT & SW ends
- Stainless steel construction
- Inconel® X-750 spring
- Spring-assisted silent closing, non-slam
- Zelon® "O" ring body seal
- Horizontal or vertical installation
- Body-guided disc
- Tight shutoff lapped disc & seat
- Simplified 5-part construction
- Easy maintenance
- Versatile
- Options:
  - 316 SS springs
  - Body seal weld
  - Soft seat (for bubble-tight shutoff)
- Alloy 20 body & seat (ASME 300)
- Hastelloy® C body & seat (ASME 300)
- NPT x socket weld ends
- SCV-R (higher cracking pressure)
- NACE (Page 47)



## MATERIALS OF CONSTRUCTION

COMPONENT	750 CWP	3600 CWP
Body	A351 CF8M	A351 CF8M
Seat (1)	A351 CF8M	A351 CF8M
Disc	A240 316	A240 316
Spring	Inconel® X-750	Inconel® X-750
Body Seal (7)	Standard: Zelon (470°F max.) Option: Body seal weld (700°F max.)	Standard: Zelon (400°F max.)(2) Option: Body seal weld (700°F max.)

Consult pages 48 and 49 for Pressure/Temperature ratings and soft seat materials.



Class		750 CWP/ 500 WSP	3600 CWP
<b>1/2"</b>	A	2.68	3.16
	B	1.62	1.88
	<b>Weight</b>	1.1	1.5
	<b>Cv</b>	7	6
<b>3/4"</b>	<b>CP</b>	0.29	0.62
	A	3	3
	B	2.13	2.33
	<b>Weight</b>	1.5	3
<b>1"</b>	<b>Cv</b>	13	11
	<b>CP</b>	0.24	0.26
	A	3.32	3.75
	B	2.54	2.75
<b>1 1/4"</b>	<b>Weight</b>	1.9	4.5
	<b>Cv</b>	22	19
	<b>CP</b>	0.36	0.36
	A	3.85	
<b>1 1/2"</b>	B	3.06	
	<b>Weight</b>	3.9	
	<b>Cv</b>	39	
	<b>CP</b>	0.28	
<b>2"</b>	A	4.75	5.50
	B	3.44	3.75
	<b>Weight</b>	4.7	10
	<b>Cv</b>	54	49
<b>3"</b>	<b>CP</b>	0.24	0.24
	A	5	6.38
	B	4.4	4.31
	<b>Weight</b>	7.7	14.0
<b>3"</b>	<b>Cv</b>	93	65
	<b>CP</b>	0.42	0.36
	A	6.75	7.50
	B	6.19	6.75
<b>3"</b>	<b>Weight</b>	18.8	40
	<b>Cv</b>	180	158
	<b>CP</b>	0.20	0.20

Not recommended for use on discharge of reciprocating compressors.

### PRESSURE TEMPERATURE RATING (PSIG) (3)

Temp. (F°)	A351 CF8M		Alloy 20 (CN7M)	Hastelloy® C (CW-12MW)
	750 CWP	3600 CWP	ASME 300	ASME 300
100	750	3600	600	600
200	645	3095	520	550
250 (4)	610	2945	490	535
300	580	2795	465	520
400 (5)	535	2570	420	490
470 (6)	510			

### SOFT SEAT - Maximum operating temperatures of materials

MATERIALS	BUNA-N	EPDM	VITON® & TFE-EN-CAPSULATED VITON®	ZELON®
TEMP. (F°)	-70 to 250	-75 to 300	-40 to 400	37 to 450

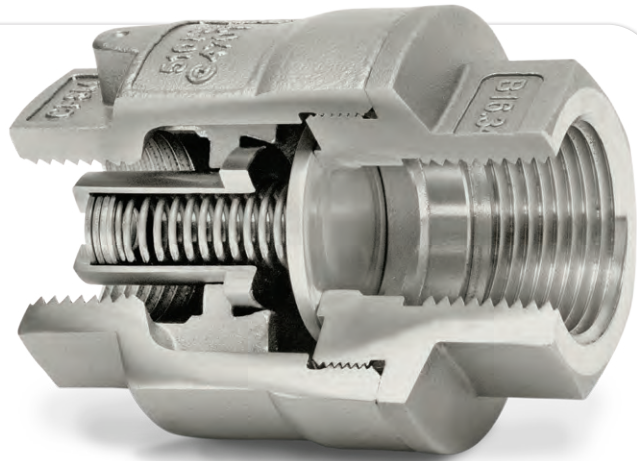
- Notes:**
1. Soft seats are available for bubble-tight shutoff. Body seal and soft seat material are the same unless otherwise requested.
  2. Buna-N CO<sub>2</sub> resistant "O" ring is available upon request.
  3. ASME B16.34

4. Maximum temperature for Buna-N.
5. Maximum temperature for Viton® and Zelon® w/3600 CWP SCV.
6. Maximum temperature for Zelon® w/750 CWP SCV. (Body Seal)
7. Only Zelon is recommended for steam service.

All dimensions are in inches. Weights are in pounds. For metric measurements, visit [www.dft-valves.com](http://www.dft-valves.com). CP: Cracking Pressure (psig)

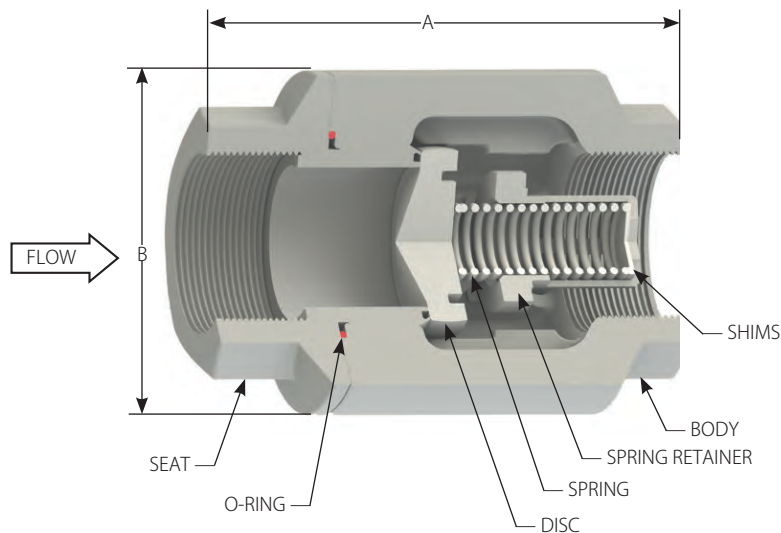
# SCV-R®

The **SCV-R Check Valve** is a non-slam spring-assisted check valve designed for applications requiring “higher cracking pressures” than the DFT Model SCV® check valve. The SCV-R check valve is a self-contained check valve that installs directly in a pipeline and contains all of the proven features of the SCV check valve.



## FEATURES:

- 1/2" to 2" Line size
- 750 CWP
- NPT & SW ends
- Stainless steel construction
- Inconel® X-750 spring
- Spring-assisted silent closing, non-slam
- Cracking Pressures: 0.8 to 40.8 psig (See chart)
- Zelon® "O" ring body seal
- Horizontal or vertical installation
- Body guided disc
- Tight shutoff lapped disc & seat
- Easy maintenance
- Versatile
- Options:
  - 316 SS springs
  - Body seal weld
- Soft seat (for bubble-tight shutoff)
- Alloy 20 body & seat (ASME 300)
- Hastelloy® C body & seat (ASME 300)
- NPT x socket weld ends
- Repair kits
- Field conversion kits



Consult pages 48 and 49 for Pressure/Temperature ratings and soft seat materials.



# SCV-R®

## PRESSURE TEMPERATURE RATING (PSIG) (2)

Temp. (F°)	750 CWP
100	750
200	645
250	610
300	580
400	535
470	510

## MATERIALS OF CONSTRUCTION

COMPONENT	750 CWP
Body	A351 CF8M
Seat (1)	A351 CF8M
Disc	A240 316
Spring	Inconel® X-750
"O" Ring	Zelon (470°F max.)
Spring Retainer	A479 316
Shims	A240 316

## SOFT SEAT

Maximum operating temperatures of materials

MATERIALS	MAX. TEMP. (°F)
BUNA-N	-70 to 250
EPDM	-75 to 300
VITON® & TFE-Encapsulated VITON®	-40 to 400
ZELON®	37 to 450

- Notes:**
1. Soft seats are available for bubble-tight shutoff. See chart. Body seal and soft seat material are the same unless otherwise requested.
  2. ASME B16.34

All dimensions are in inches. Weights are in pounds. For metric measurements, visit [www.dft-valves.com](http://www.dft-valves.com). CP: Cracking Pressure (psig)

## Class 750 CWP

Class	750 CWP	
<b>1/2"</b>	<b>A</b>	2.68
	<b>B</b>	1.62
	<b>Weight</b>	1.1
	<b>Cv</b>	6
	<b>CP</b>	1 to 25
<b>3/4"</b>	<b>A</b>	3
	<b>B</b>	2.13
	<b>Weight</b>	1.5
	<b>Cv</b>	10
	<b>CP</b>	0.80 to 20
<b>1"</b>	<b>A</b>	3.32
	<b>B</b>	2.54
	<b>Weight</b>	1.9
	<b>Cv</b>	17
	<b>CP</b>	1.2 to 23.5
<b>1 1/4"</b>	<b>A</b>	3.87
	<b>B</b>	3.06
	<b>Weight</b>	3.9
	<b>Cv</b>	33
	<b>CP</b>	7.7 to 22
<b>1 1/2"</b>	<b>A</b>	4.75
	<b>B</b>	3.44
	<b>Weight</b>	4.7
	<b>Cv</b>	36
	<b>CP</b>	1.4 to 40.8
<b>2"</b>	<b>A</b>	5
	<b>B</b>	4.4
	<b>Weight</b>	7.7
	<b>Cv</b>	64
	<b>CP</b>	0.9 to 21.4

Not recommended for use on discharge of reciprocating compressors.

Contact DFT for other cracking pressures.

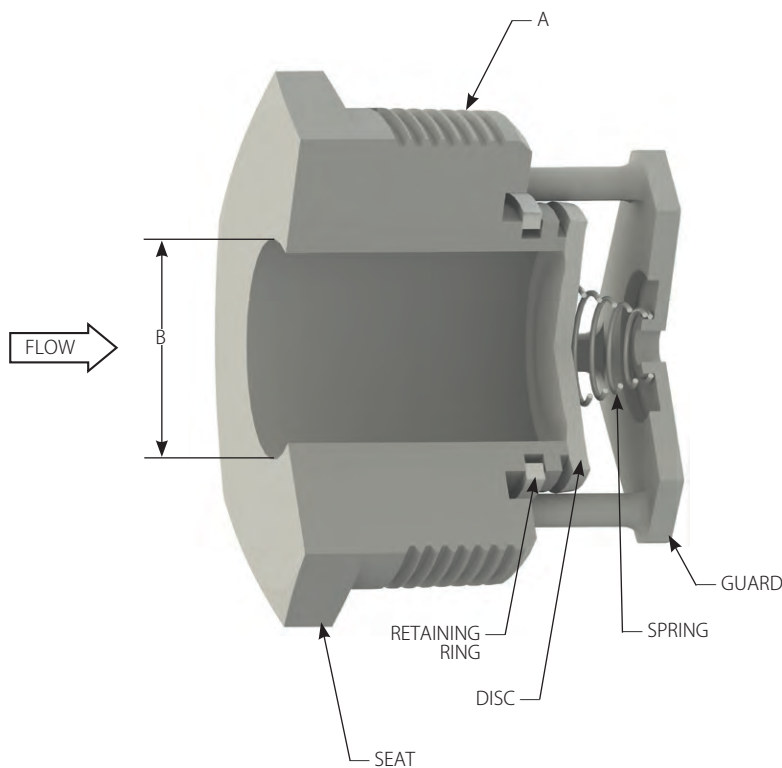
# Vacuum Breaker

**DFT® Vacuum Breakers** provide effective protection against collapse of pressure vessels, tanks and rolls. They prevent condensate “back-up” when equipment is shut down or inlet steam is reduced by modulating control valves. In piping systems, DFT Vacuum Breakers are used to break siphons, prevent pipe collapse during transient pressure drops, and to provide addition of air on the downstream side of check valves to dampen water hammer.



## FEATURES:

- 1" to 4" size (Outside diameter)
- 450 to 6000 CWP
- Threaded O.D. (MNPT)
- Unthreaded inlet bore
- Stainless steel construction
- Spring-assisted silent closing
- Horizontal or vertical installation
- Tight shutoff - lapped disc & seat
- Easy maintenance
- Versatile
- Options:
  - Inconel® X-750 spring
  - Soft seat (for bubble-tight shutoff)



Consult pages 48 and 49 for Pressure/Temperature ratings and soft seat materials.

# Vacuum Breaker

Vacuum Breaker				Cracking Pressure	
A Nominal Size (MNPT)	B Unthreaded Inlet Bore	Weight	Cv	PSI	Inches of Water
1	0.56	0.38	5.8	0.60 (1)	16.7
1 1/2	0.88	0.88	13.2	0.45	12.5
2	1.09	1.25	23.1	0.38	10.5
2 1/2	1.50	2.25	36	0.20	5.5
3	1.72	3.75	57.4	0.14	3.9
4	2.22	7.00	90	0.15	4.3

\*Cracking pressure for vertical flow will be slightly different: upward flow, slightly higher; downward flow, slightly less.

## COLD, NON-SHOCK PRESSURE RATING (PSIG) (2)

	1"	1 1/2"	2"	2 1/2"	3"	4"
Vacuum Breaker BSSV	2500	2000	1500	850	700	450
Vacuum Breaker BSSV6	6000	5500	3000	1100	900	450

## MATERIALS OF CONSTRUCTION

COMPONENT	Vacuum Breaker BSSV	High Pressure Vacuum Breaker BSSV6
Seat	303 SS	316 SS
Disc	316 SS	316 SS
Guard	CF8M	CF8M
Spring	316 SS	316 SS
Retaining Ring	316 SS	316 SS

Sat. Steam Pressure (PSIG) Ref. (3)	Temperature (°F)	Adjusted Rating as Percent of Cold Rating
-3	200	86%
15	250	82%
52	300	78%
232	400	71%
407	450	69%
665	500	66%
1526	600	62%
3075	700	60%

SOFT SEAT	
Maximum operating temperatures of materials	
MATERIALS	MAX. TEMP. (°F)
BUNA-N	-70 to 250
EPDM	-75 to 300
VITON® & TFE-Encapsulated VITON®	-40 to 400
ZELON®	37 to 450

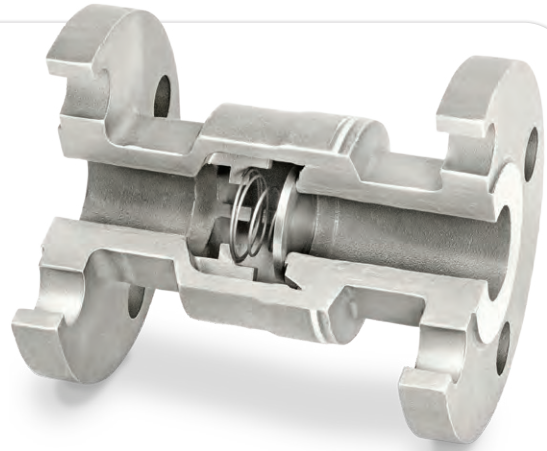
All stainless steel construction is suitable for cryogenic service. For pressure rating at elevated temperatures for standard metal-seated valves, reduce above rating per chart above.

Maximum valve temperature rating is limited by soft seal (if any) and spring materials in chart above.

- Notes:**
1. Light spring available: Cracking Pressure = .24 PSI (6.5 inches of water)
  2. Contingent on service ratings of matching pipe and fittings.
  3. Saturated steam pressure is given for reference only; pressure limit of valve is the adjusted rating at the given temperature.

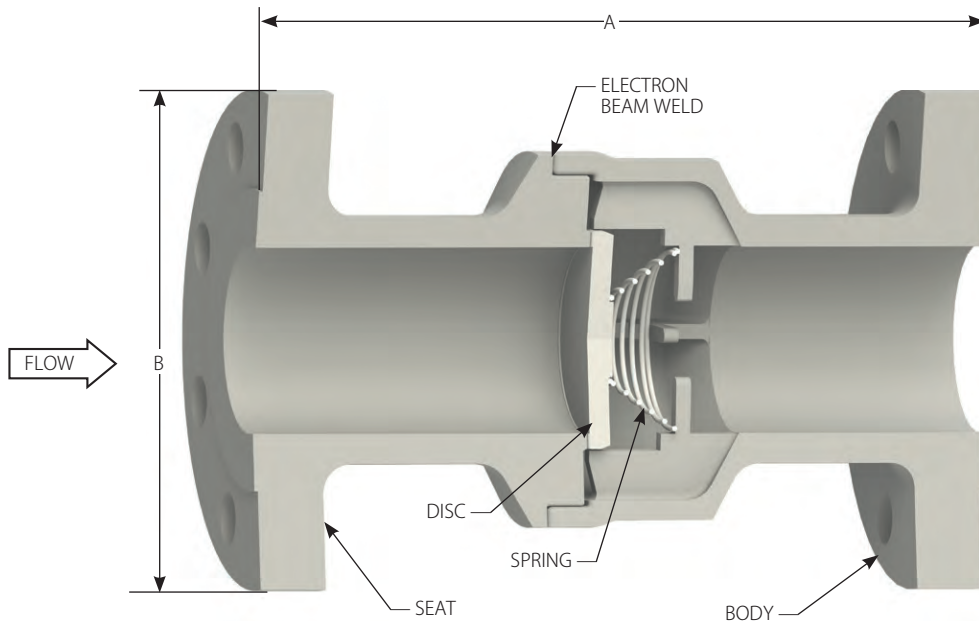
All dimensions are in inches. Weights are in pounds. For metric measurements, visit [www.dft-valves.com](http://www.dft-valves.com). CP: Cracking Pressure (psig)

The **DFT® Model DLC Check Valve** is a corrosion-resistant, dependable, versatile and economical spring assisted, non-slam check valve for a wide range of applications. Whether the fluid is liquid, gas or steam, the DLC check valve provides tight shutoff and protects other equipment in the system from water hammer. Its stainless steel construction insures a long service life.



## FEATURES:

- ASME B16.10 Face-to-Face dimensions
- ASME B16.5 flanged end connections
- Spring-assisted silent closing, non-slam
- 1/2" to 3" Line size
- ASME Class 150 and 300
- Standard body material: - A351 CF8M
- Optional body materials:
  - Alloy 20
  - Hastelloy®
- Stainless steel construction
- Raised face flanged ends
- Inconel® X-750 spring
- Electron beam welded body
- Meets ASME B16.34
- Horizontal or vertical installation
- Body-guided disc
- Tight shutoff - lapped disc & seat
- Simplified construction - 4 parts
- Versatile
- Options:
  - 316 SS Springs
  - NACE (Page 47)
  - Soft seat (only Teflon® Encapsulated Viton® available. Max. Temp. -40 to 400 °F)





## PRESSURE TEMPERATURE RATING (PSIG) (1)

Temp. (°F)	A351 CF8M		Temp. (°F)	Alloy 20 (CN7M)		Hastelloy® C (CW-12MW)	
	ASME 150	ASME 300		ASME 150	ASME 300	ASME 150	ASME 300
-460	275	720	-325	230	600	230	600
100	275	720	100	230	600	230	600
200	235	620	200	200	520	210	550
300	215	560	300	180	465	200	520
400	195	515	400	160	420	190	490
500	170	480	500	150	390	170	465
600	140	450	600	140	360	140	440
700	110	435	700			110	420

## MATERIALS OF CONSTRUCTION

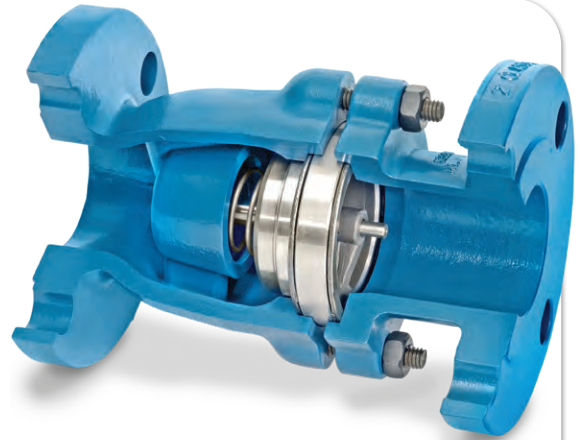
COMPONENT	
Body	A351 CF8M
Seat	A351 CF8M
Disc	316 SS
Spring	Inconel® X-750

Class		150 RF	300 RF
1/2"	A	4.25	6.00
	B	3.50	3.75
	Weight	3.2	4.5
	Cv	7	7
	CP	0.29	0.29
3/4"	A	4.62	7.00
	B	3.88	4.62
	Weight	4.5	7.2
	Cv	13	13
	CP	0.24	0.24
1"	A	5.00	8.50
	B	4.25	4.88
	Weight	6.0	9.9
	Cv	22	22
	CP	0.36	0.36
1 1/2"	A	6.50	9.50
	B	5.00	6.12
	Weight	11.7	18.5
	Cv	54	54
	CP	0.24	0.24
2"	A	8.00	10.50
	B	6.00	6.50
	Weight	19.1	24.3
	Cv	93	93
	CP	0.42	0.23
3"	A	9.50	12.50
	B	7.50	8.25
	Weight	39.2	50.5
	Cv	180	180
	CP	0.20	0.20

**Notes:** 1. Pressure/temperature ratings in accordance with ANSI/ASME B16.34. All dimensions are in inches. Weights are in pounds. For metric measurements, visit [www.dft-valves.com](http://www.dft-valves.com). CP: Cracking Pressure (psig)

# Excalibur®

The **DFT® Excalibur Silent Check Valve** is a spring-assisted, center guided, non-slam check valve that provides reliable, low-maintenance service for a wide range of fluids and pressure/temperature combinations. The valve consists of a body, gasket, seat, spring, disc with stem and guide bushing. Excalibur check valves are available in a wide range of sizes and pressure ratings and in a variety of metals to meet most check valve requirements.

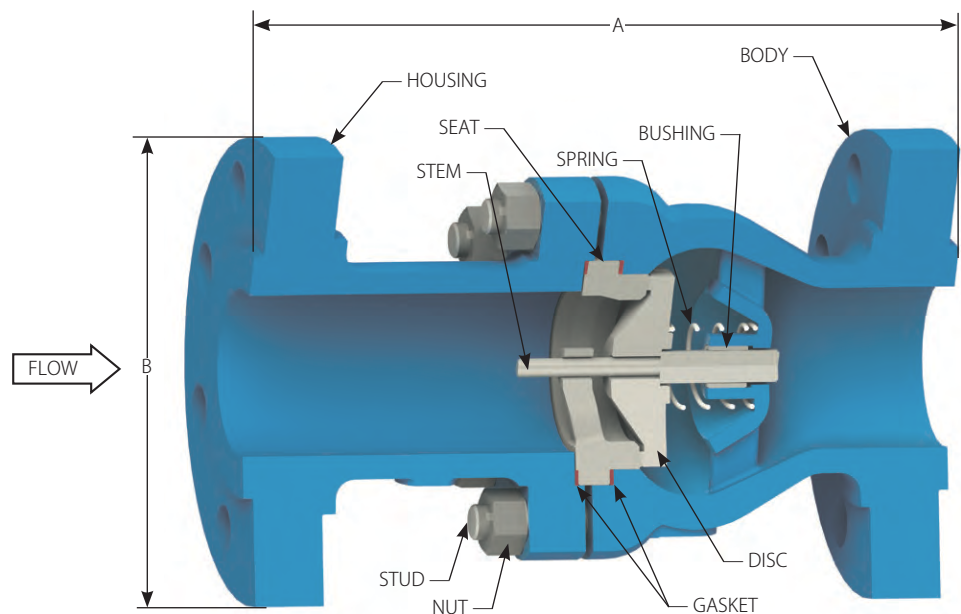
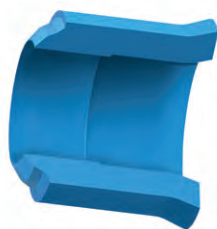


## FEATURES:

- ASME B16.10 Face-to-Face dimensions
- ASME B16.5 flanged end connections
- Spring-assisted silent closing, non-slam
- 2" to 24" Line size
- ASME Class 150 to 1500 (See chart)
- Standard body materials:
  - A216 Grade WCB carbon steel
  - A351 CF8M stainless steel
- API 6FA Fire Test\*
- Optional body materials:
  - Alloy 20
  - Duplex SS
  - Hastelloy®
- Inconel® 600
- Monel®
- Nickel-Aluminum Bronze (See page 45)
- Standard ends:
  - RF Flanged
- Optional ends (4):
  - Butt weld
  - Flanged x Butt weld
  - RTJ
  - Victaulic®
- Stainless steel trim
- Center-guided
- Dual-guided stem
- Horizontal or vertical installation
- Tight shutoff
- Two-piece body
- Protected spring
- Easy maintenance
- Versatile
- Axial flow
- Nozzle style
- Options:
  - Soft seat (for bubble-tight shutoff)
  - Inconel® X-750 Spring
  - Custom sizing low flow
  - Severe service trim
  - Stellite® trim
  - NACE (Page 47)

\* Consult DFT factory for applicable sizes and classes.

FLANGED VALVES



Standard Raised Face ends

Consult pages 48 and 49 for Pressure/Temperature ratings and soft seat materials.

# Excalibur®

## MATERIALS OF CONSTRUCTION

COMPONENT	CARBON STEEL BODY	STAINLESS STEEL BODY
Body/Housing	A216 Grade WCB	A351 CF8M
Disc/Stem Assembly	A351 CF8M/A479 316	A351 CF8M/A479 316
Seat	A351 CF8M	A351 CF8M
Spring (1)	A313 316	A313 316
Bushing	A479 316	A479 316
Bolting (2)	A193-B7 (Stud) & A194-2h (Nut)	
Gasket (3)	Class 150 & 300	Corrugated Flexible Graphite
	Class 600+	316 Spiral wound with Flexible Graphite Filler

Class	150 RF	300 RF	600 RF	900 RF	1500 RF	
2"	A	8	10.50	11.50	14.50	14.50
	B	6	6.50	6.50	8.50	8.50
	Weight	22	29	35	81	81
	Cv	65	65	65	51	51
2 1/2"	CP	0.64	0.64	0.64	0.85	0.85
	A	8.50	11.50	*	*	*
	B	7.00	7.50			
	Weight	30	42			
3"	Cv	105	105			
	CP	0.44	0.37			
	A	9.50	12.50	14	15	18.50
	B	7.50	8.25	8.25	9.50	10.50
4"	Weight	32.5	52	69	100	158
	Cv	155	155	155	138	109
	CP	0.26	0.26	0.26	0.22	0.28
	A	11.50	14	17	18	21.50
6"	B	9	10	10.75	11.50	12.25
	Weight	64	92	139	176	267
	Cv	265	265	265	242	187
	CP	0.60	0.41	0.51	0.58	0.74
8"	A	14	17.50	22	24	27.75
	B	11	12.50	14	15	15.50
	Weight	114	181	300	498	780
	Cv	685	685	584	512	512
10"	CP	0.40	0.40	0.73	0.83	0.83
	A	19.50	21	26	29	32.75
	B	13.50	15	16.50	18.50	19
	Weight	207	294	481	638	1270
12"	Cv	1050	1050	985	777	777
	CP	0.58	0.60	0.67	0.54	0.83
	A	24.50	24.50	31	33	39
	B	16	17.50	20	21.50	24.31
14"	Weight	377	462	981	1650	1890
	Cv	1650	1650	1650	1449	1240
	CP	0.52	0.52	0.47	0.58	0.53

Class	150 RF	300 RF	600 RF	900 RF	1500 RF	
12"	A	27.50	28	33	38	*
	B	19	20.50	22	24	
	Weight	457	696	1218	1925	
	Cv	2400	2400	2400	1190	
14"	CP	0.53	0.53	0.50	0.53	
	A	31	33	35	*	*
	B	21	23	23.75		
	Weight	642	725	1549		
16"	Cv	3600	3600	*		
	CP	0.28	0.28	*		
	A	34	34	39	44.5	*
	B	23.50	25.50	27	27.75	
18"	Weight	825	1337	2250	2534	
	Cv	5200	5200	*	*	
	CP	0.51	0.51	*	*	
	A	38.50	38.50	*	*	*
20"	B	25	28.00			
	Weight	1225	1900			
	Cv	6250	6250			
	CP	0.50	0.50			
22"	A	38.50	39	47	52	*
	B	27.50	30.50	32	33.75	
	Weight	1500	2375	4338	5220	
	Cv	7850	7850	*	6240	
24"	CP	0.50	0.50	0.66	0.82	
	A	51	53	55	*	*
	B	32	36	37		
	Weight	2450	4110	6670		
26"	Cv	11300	11310	11070		
	CP	0.42	0.42	0.42		

- Notes:**
1. Inconel® X-750 spring is available.
  2. Contact DFT for stainless steel or other bolting materials.
  3. 316 graphite material.
- \* Consult DFT for valve availability.

### SOFT SEAT - Maximum operating temperatures of materials

MATERIALS	BUNA-N	EPDM	VITON® & TFE-EN-CAPSULATED VITON®	ZELON®
TEMP. (°F)	-70 to 250	-75 to 300	-40 to 400	37 to 450

All dimensions are in inches. Weights are in pounds. For metric measurements, visit [www.dft-valves.com](http://www.dft-valves.com). CP: Cracking Pressure (psig)

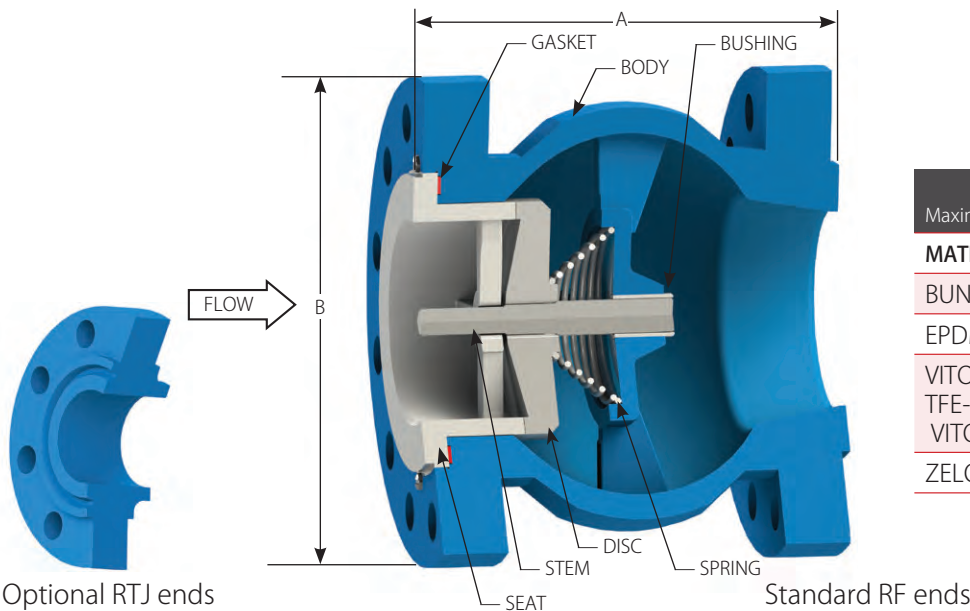
FLANGED VALVES

The **DFT® Model GLC Silent Check Valve** is a spring-assisted, center-guided, non-slam, flanged check valve that provides reliable, low-maintenance service for a wide range of fluids and pressure/ temperature combinations. The valve consists of a body, seat, spring, disc with stem, guide bushing and gasket. The DFT GLC check valve has the advantage of minimum pressure loss with silent operation.



## FEATURES:

- "Short" Face-to-Face dimensions
- API 6FA Fire Test
  - ASME Class 150 and 300
  - 2" to 24"
- Meets API 6D
- Standard body materials:
  - A216 Grade WCB carbon steel
  - A351 CF8M stainless steel
- Optional body materials:
  - Alloy 20
  - Duplex SS
  - Hastelloy®
  - Monel®
- Nickel-Aluminum Bronze (See page 45)
- One-piece body
- Spring-assisted silent closing, non-slam
- Center-guided
- Dual-guided stem
- Horizontal or vertical installation
- Protected spring
- Easy maintenance
- Versatile
- ASME Class 150 To 2500 (See chart)
- 1" to 42" Line size
- 316 SS trim
- RF Flanged ends
- API 6D seat leakage
- Axial flow
- Nozzle style
- OPTIONS:
  - Inconel® X-750 Spring
  - Soft seat (for bubble-tight shutoff)
  - Custom sizing low flow
  - Severe service trim
  - Stellite® trim
  - RTJ Ends (3)
  - NACE (Page 47)



SOFT SEAT	
Maximum operating temperatures of materials	
MATERIALS	MAX. TEMP. (°F)
BUNA-N	-70 to 250
EPDM	-75 to 300
VITON® & TFE-Encapsulated VITON®	-40 to 400
ZELON®	37 to 450

## MATERIALS OF CONSTRUCTION

COMPONENT	CARBON STEEL BODY	STAINLESS STEEL BODY
Body	A216 WCB	A351 CF8M
Disc/Stem Assembly	A351 CF8M/A479 316	A351 CF8M/A479 316
Seat	A351 CF8M	A351 CF8M
Spring (1)	A313 316	A313 316
Bushing	A479 316	A479 316
Gasket (2)	CFG/316 SS/Graphite	

Consult pages 48 and 49 for Pressure/Temperature ratings and soft seat materials.



Class	150 RF	300 RF	600 RF	900 RF	1500 RF	2500 RF	
<b>1"</b>	<b>A</b>	4.50	4.75	5.25	6.38	6.38	*
	<b>B</b>	4.25	4.88	4.88	5.88	5.88	
	<b>Weight</b>	6.2	8.2	10.2	20	20	
	<b>Cv</b>	19	19	17	17	17	14
	<b>CP</b>	0.85	0.85	0.85	0.50	0.50	0.50
<b>1 1/2"</b>	<b>A</b>	5.75	6	6.63	7.38	7.38	*
	<b>B</b>	5	6.12	6.12	7	7	
	<b>Weight</b>	13	16.2	19	30	30	
	<b>Cv</b>	35	35	35	26	26	
	<b>CP</b>	0.29	0.29	0.29	0.64	0.40	
<b>2"</b>	<b>A</b>	6.25	6.50	7.25	8.25	8.25	9.25
	<b>B</b>	6	6.50	6.50	8.50	8.50	9.25
	<b>Weight</b>	17	23	25	56	56	77
	<b>Cv</b>	63	63	63	46	46	32
	<b>CP</b>	0.29	0.29	0.29	0.32	0.32	0.47
<b>2 1/2"</b>	<b>A</b>	7.00	7.25	*	9	9	*
	<b>B</b>	7.00	7.50		9.63	9.63	
	<b>Weight</b>	31	41		78	78	
	<b>Cv</b>	100	100		81	81	
	<b>CP</b>	0.18	0.18		0.11	0.11	
<b>3"</b>	<b>A</b>	7.50	7.88	8.63	9.13	9.88	14
	<b>B</b>	7.50	8.25	8.25	9.50	10.50	12
	<b>Weight</b>	33	46	57	87	110	211
	<b>Cv</b>	148	148	125	114	114	77
	<b>CP</b>	0.20	0.20	0.41	0.26	0.52	0.43
<b>4"</b>	<b>A</b>	8.50	9.12	10.13	10.62	11.38	15.50
	<b>B</b>	9	10	10.75	11.50	12.25	14
	<b>Weight</b>	51	71.4	115	127	166	332
	<b>Cv</b>	260	267	237	217	192	133
	<b>CP</b>	0.49	0.48	0.54	0.49	0.67	1.15
<b>5"</b>	<b>A</b>	9.50	10.38	*	*	*	*
	<b>B</b>	10	11				
	<b>Weight</b>	72	89				
	<b>Cv</b>	415	415				
	<b>CP</b>	0.28	0.28				
<b>6"</b>	<b>A</b>	10	11	12.38	13	15.13	*
	<b>B</b>	11	12.50	14	15	15.50	
	<b>Weight</b>	91	140	215	271	385	
	<b>Cv</b>	620	620	549	549	441	
	<b>CP</b>	0.41	0.39	0.46	0.46	0.42	

Class	150 RF	300 RF	600 RF	900 RF	1500 RF	2500 RF	
<b>8"</b>	<b>A</b>	12	13	14.62	15.25	17.50	*
	<b>B</b>	13.5	15	16.50	18.50	19	
	<b>Weight</b>	172	232	332	396	670	
	<b>Cv</b>	1030	933	1115	851	742	650
	<b>CP</b>	0.41	0.45	0.45	0.50	0.55	0.50
<b>10"</b>	<b>A</b>	14	15.38	17.13	17.63	23	*
	<b>B</b>	16	17.50	20	21.50	23	
	<b>Weight</b>	266	348	450	539	1281	
	<b>Cv</b>	1630	1704	1782	1499	1231	
	<b>CP</b>	0.55	0.52	0.35	0.64	0.53	
<b>12"</b>	<b>A</b>	18	19.50	21.25	24	44.50†	*
	<b>B</b>	19	20.50	22	24	26.50	
	<b>Weight</b>	387	550	730	1324	2550	
	<b>Cv</b>	2370	2370	2272	2063	1689	
	<b>CP</b>	0.47	0.49	0.41	0.60	0.60	
<b>14"</b>	<b>A</b>	21	23	24	*	*	*
	<b>B</b>	21	23	23.75			
	<b>Weight</b>	456	724	975			
	<b>Cv</b>	3500	3465	3369			
	<b>CP</b>	0.52	0.43	0.43			
<b>16"</b>	<b>A</b>	22.50	24	26	25.81	*	*
	<b>B</b>	23.50	25.5	27	27.75		
	<b>Weight</b>	700	1035	1450	1940		
	<b>Cv</b>	4600	4600	5100	4950		
	<b>CP</b>	0.51	0.59	0.59	0.57		
<b>18"</b>	<b>A</b>	24	24	*	*	*	*
	<b>B</b>	25	30.88				
	<b>Weight</b>	753	1367				
	<b>Cv</b>	*	*				
	<b>CP</b>	0.59	0.59				
<b>20"</b>	<b>A</b>	24	24	30	*	*	*
	<b>B</b>	27.50	30.50	32			
	<b>Weight</b>	1442	1686	2636			
	<b>Cv</b>	*	*	*			
	<b>CP</b>	0.49	0.55	0.59			
<b>24"</b>	<b>A</b>	28	28	29.33	*	*	*
	<b>B</b>	32	36	37			
	<b>Weight</b>	1571	2514	3470			
	<b>Cv</b>	*	*	*			
	<b>CP</b>	0.44	0.46	0.57			
<b>30"</b>	<b>A</b>		36	39.75			
	<b>B</b>		43	50.13			
	<b>Weight</b>		4570	7517			
	<b>Cv</b>		11969	10817			
	<b>CP</b>		0.50	0.3			

- Notes:**
1. Inconel® X-750 spring is available.
  2. CFG corrugated flexible graphite (Class 150 & 300), 316 SS/Graphite Spiral Wound (Class 600 & up).  
1" and 1 1/2" does not contain a gasket.
  3. Contact DFT for availability.

\* Consult DFT for valve availability.  
† Alternate RTJ A dimension for 12" Class 1500 is 45.12

All dimensions are in inches. Weights are in pounds. For metric measurements, visit [www.dft-valves.com](http://www.dft-valves.com). CP: Cracking Pressure (psig)

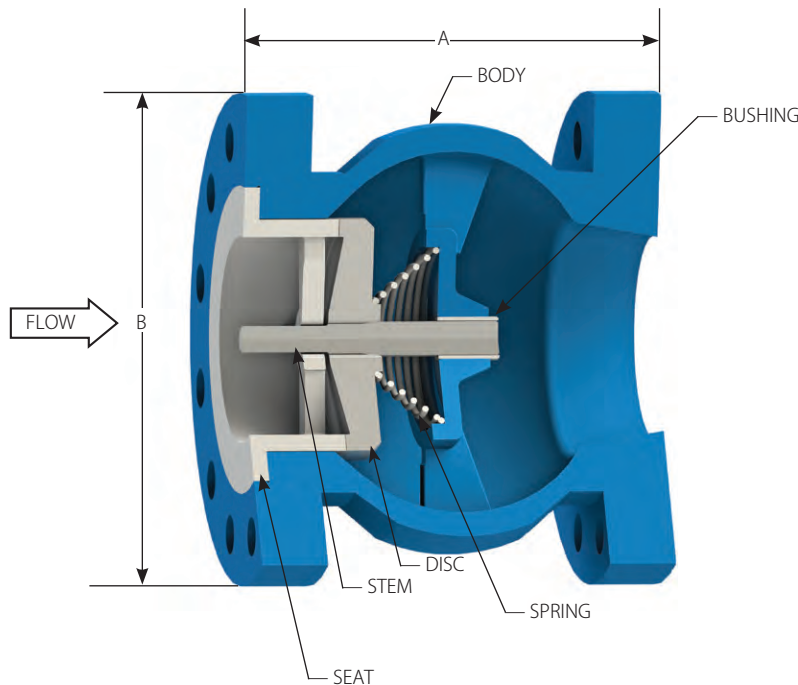
# GLC<sup>®</sup>-Cast Iron

The **DFT<sup>®</sup> Model GLC Silent Check Valve** is a spring-assisted, center-guided, non-slam, flanged check valve that provides reliable, low-maintenance service for a wide range of fluids and pressure/ temperature combinations. The valve consists of a body, seat, spring, disc with stem and guide bushing. Some valves have O-ring or gasket body seals. The DFT GLC check valve has the advantage of minimum pressure loss with silent operation.



## FEATURES:

- "Short" Face-to-Face dimensions
- One-piece body
- Spring-assisted silent closing
- Center-guided
- Dual-guided stem
- Horizontal or vertical installation
- Easy maintenance
- Versatile
- ASME Class 125 & 250
  - 2 1/2" to 24" Line size (CI.125)
  - 2 1/2" to 8" Line size (CI.250)
  - Cast Iron Body
  - Bronze or 316 SS trim
  - Ends:
- Flat Face Flanged
  - AWWA seat leakage
- Axial flow
- Nozzle style
  - Options:
    - Buna-N Soft Seat (for bubble-tight shutoff)



Consult pages 48 and 49 for Pressure/Temperature ratings and soft seat materials.

# GLC®-Cast Iron

	Class	125 CAST IRON FF	250 CAST IRON FF
2 1/2"	A	5.50	5.50
	B	7	7.50
	Weight	24	30
	Cv	110	110
3"	A	6	6
	B	7.50	8.25
	Weight	29	36
	Cv	155	155
4"	A	7.25	7.25
	B	9	10
	Weight	42	59
	Cv	278	278
5"	A	8.50	8.50
	B	10	11
	Weight	52	78
	Cv	435	435
6"	A	9.75	9.75
	B	11	12.50
	Weight	73	103
	Cv	625	625
8"	A	12.50	12.50
	B	13.50	15
	Weight	126	179
	Cv	1115	1115
10"	A	15.5	
	B	16	
	Weight	205	
	Cv	1770	

	Class	125 CAST IRON FF	250 CAST IRON FF
12"	A	14.25	
	B	19	
	Weight	306	
	Cv	2500	
14"	A	15.75	
	B	21	
	Weight	380	
	Cv	3400	
16"	A	17.63	
	B	23.50	
	Weight	501	
	Cv	4400	
18"	A	18.75	
	B	25	
	Weight	724	
	Cv	5600	
20"	A	20.63	
	B	27.50	
	Weight	890	
	Cv	6900	
24"	A	24	
	B	32	
	Weight	1220	
	Cv	10000	

## MATERIALS OF CONSTRUCTION

COMPONENT	CAST IRON BODY/BRONZE TRIM	CAST IRON BODY/316 TRIM (1)
Body	A126 Class B Cast Iron	A126 Class B Cast Iron
Disc/Stem Assembly	B584 836 - Bronze	A351 CF8M
Seat (2)	B584 836 - Bronze	A351 CF8M
Spring	A313 T302 SS	A313 T302 SS
Bushing	B584 836 - Bronze	316 SS

## MAXIMUM OPERATING TEMPERATURES OF MATERIALS

	SOFT SEAT (2)
MATERIALS	BUNA-N
TEMP. °F	-70 to 250

## PRESSURE TEMPERATURE RATING FOR CAST IRON (PSIG)

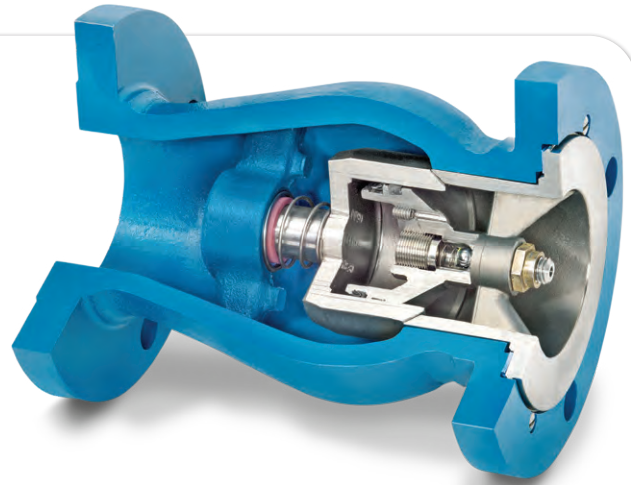
	CLASS 125		CLASS 250	
Temp. (°F)	2 1/2" to 12"	14" +	2 1/2" to 12"	14" +
0-150°	200 psig	150 psig	400 psig	300 psig
200° Max (1)	190 psig	135 psig	370 psig	280 psig

**Notes:** 1. 316 stainless steel trim recommended for temperatures from 180°F to 200°F.  
2. Buna-N soft seat available for bubble-tight shutoff.

All dimensions are in inches. Weights are in pounds. For metric measurements, visit [www.dft-valves.com](http://www.dft-valves.com). CP: Cracking Pressure (psig)

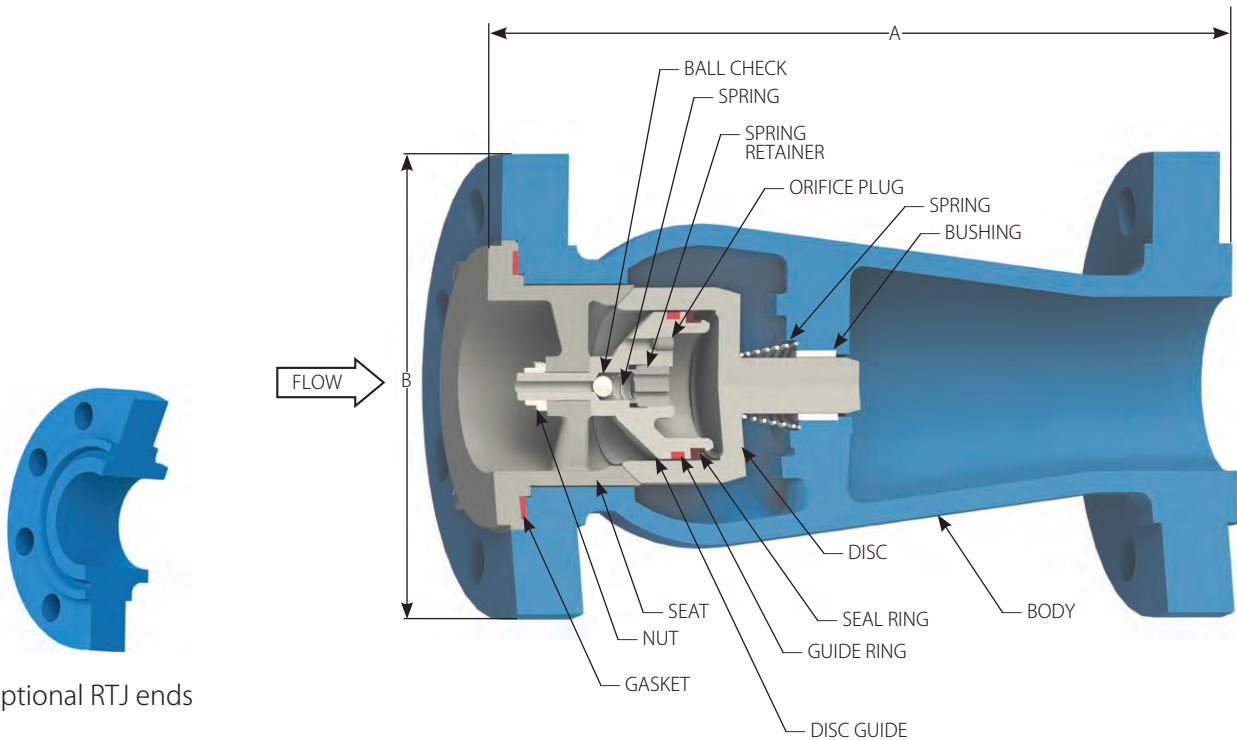
FLANGED VALVES

The **DFT® Model PDC Check Valve** is a silent, non-slam check valve specially designed for use on the discharge side of reciprocating air or gas compressors. It includes a pulse-damping chamber to maintain the disc in the open position during the momentary reductions in flow associated with each cycle of a reciprocating compressor and to protect against premature seat wear.



## FEATURES:

- Pulse-damped design
- Modulating "air" or "gas" applications:
  - Discharge of reciprocating air/gas compressors
  - Self sizing accommodates varying flows without chattering
- Meets API 6D
- ASME B16.10 Face-to-Face dimensions
- One-piece body
- Spring-assisted silent closing
- 2" to 26" Line size\*
- ASME Class 150 to 1500
- Standard body materials:
  - Carbon steel
  - Stainless steel
- Stainless steel trim
- Stainless steel spring
- Ends:
  - RF Flanged
  - RTJ
- Horizontal or vertical installation
- Center guided trim
- Tight shutoff
- Protected spring
- Easy maintenance
- Versatile
- Axial flow
- Nozzle style
- OPTIONS:
  - Soft seat (for bubble-tight shutoff)
  - Inconel® X-750 spring
  - NACE (Page 47)



Optional RTJ ends

Standard RF ends

\* Other sizes available on application

Consult pages 48 and 49 for Pressure/Temperature ratings and soft seat materials.

Class	150 RF	300 RF	600 RF	900 RF	1500 RF	
<b>2"</b>	<b>A</b>	8	10.50	11.50	14.50	14.50
	<b>B</b>	6	6.50	6.50	8.50	8.50
	<b>Weight</b>	20	27	30	65	65
	<b>Cv</b>	62	62	62	55	55
	<b>CP</b>	0.41	0.49	0.41	0.35	0.35
<b>3"</b>	<b>A</b>	9.50	12.50	14	15	18.50
	<b>B</b>	7.50	8.25	8.25	9.50	10.50
	<b>Weight</b>	40	50	56	84	171
	<b>Cv</b>	148	148	142	118	118
	<b>CP</b>	0.62	0.62	0.66	0.78	0.78
<b>4"</b>	<b>A</b>	11.50	14	17	18	*
	<b>B</b>	9	10	10.75	11.50	
	<b>Weight</b>	64	87	120	144	
	<b>Cv</b>	255	255	255	224	
	<b>CP</b>	0.68	0.68	0.31	0.82	
<b>6"</b>	<b>A</b>	14	17.50	22	24	27.75
	<b>B</b>	11	12.50	14	15	15.5
	<b>Weight</b>	105	152	265	322	526
	<b>Cv</b>	660	660	660	567	567
	<b>CP</b>	0.51	0.51	0.49	0.63	0.63
<b>8"</b>	<b>A</b>	19.50	21	26	29	32.75
	<b>B</b>	13.50	15	16.50	18.50	19
	<b>Weight</b>	158	293	450	575	1051
	<b>Cv</b>	1005	1005	1005	740	*
	<b>CP</b>	0.66	0.66	0.42	0.60	*

Class	150 RF	300 RF	600 RF	900 RF	1500 RF	
<b>10"</b>	<b>A</b>	24.50	24.50	31	*	39
	<b>B</b>	16	17.50	20		23
	<b>Weight</b>	325	452	708		1818
	<b>Cv</b>	1610	1580	1540		*
	<b>CP</b>	0.50	0.38	0.46		0.81
<b>12"</b>	<b>A</b>	27.50	28	33	38	44.50
	<b>B</b>	19	20.50	22	24	26.50
	<b>Weight</b>	445	673	1021	1940	2590
	<b>Cv</b>	2300	2300	2300	1990	1590
	<b>CP</b>	0.29	0.29	0.29	0.70	0.70
<b>16"</b>	<b>A</b>	*	34	39	44.5	*
	<b>B</b>		25.5	27	27.75	
	<b>Weight</b>		1352	2041	2797	
	<b>Cv</b>		5100	5100	3170	
	<b>CP</b>		0.51	0.46	0.60	
<b>20"</b>	<b>A</b>	38.5	39	47	*	*
	<b>B</b>	27.50	30.50	32		
	<b>Weight</b>	2192	2447	4019		
	<b>Cv</b>	6990	6780	6780		
	<b>CP</b>	0.50	0.50	0.50		
<b>26"</b>	<b>A</b>	*	*	*	76.50	*
	<b>B</b>				42.75	
	<b>Weight</b>				7920	
	<b>Cv</b>				5820	
	<b>CP</b>				0.51	

Contact DFT for additional sizes/pressure classes.

## MATERIALS OF CONSTRUCTION

COMPONENT	CARBON STEEL BODY	STAINLESS STEEL BODY
Body	A216 Grade WCB	A351 CF8M
Disc	A351 CF8M	A351 CF8M
Seat	A351 CF8M	A351 CF8M
Spring (1)	A313 316 (450°F max.)	A313 316 (450°F max.)
Spring for ball check	Inconel® X-750	Inconel® X-750
Disc Guide	A479 316	A479 316
Bushing	Rulon® (2)	Rulon® (2)
Seal Ring	Teflon®/Hastelloy® C276	Teflon®/Hastelloy® C276
Spring Retainer - Ball Check	A479 316	A479 316
Guide Ring	Teflon®	Teflon®
Ball Check	440C SS	440C SS
Orifice Plug	A479 316	A479 316
Gasket	Durlon® 9000 for 150 & 300, Stainless/Graphite for 600/900/1500 (500°F Max.)	Durlon® 9000 for 150 & 300, Stainless/Graphite for 600/900/1500 (500°F Max.)

PDC temperature rating is limited by the spring material and nonmetallic components.

### SOFT SEAT - Maximum operating temperatures of materials

MATERIALS	BUNA-N	EPDM	VITON® & TFE-EN-CAPSULATED VITON®	ZELON®
TEMP. (°F)	-70 to 250	-75 to 300	-40 to 400	37 to 450

**Notes:** 1. Inconel® X-750 spring is available. (500°F maximum)  
2. 500°F maximum.

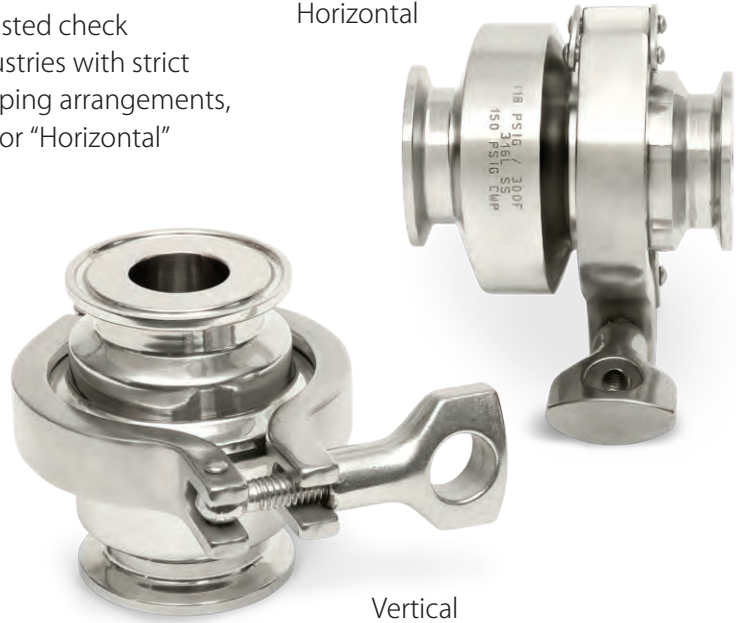
\* Consult DFT for valve availability.

All dimensions are in inches. Weights are in pounds. For metric measurements, visit [www.dft-valves.com](http://www.dft-valves.com). CP: Cracking Pressure (psig)



The **DSV Check Valve** is a non-slam spring-assisted check valve designed to prevent flow reversal in industries with strict cleanliness codes. To accommodate various piping arrangements, the DSV Check Valve is available as a "Vertical" or "Horizontal" valve. The Horizontal valve is for Horizontal lines requiring a self-draining valve. The "Vertical" design is for "Vertical" installations and "Horizontal" lines when a self-draining valve is not required. The DSV Check Valve, with a 316L stainless steel body and seat, is fastened with a quick release clamp and elastomeric gasket body seal to permit fast and easy access to the internals. The disc and seat are lapped to provide excellent shutoff.

Horizontal



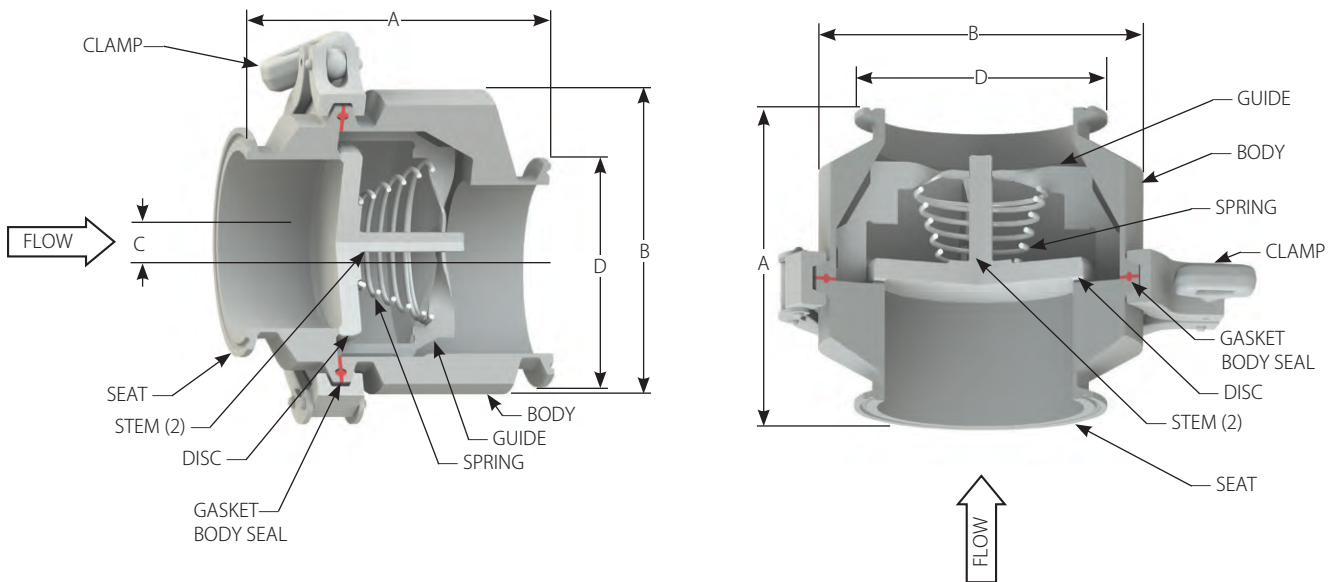
Vertical

### FEATURES:

- Meets 3A Sanitary Standard 58-02
- Spring-assisted silent closing
- Horizontal or vertical installation
- Sizes 1/2" thru 4"
- 150 CWP, 108 ANSI Pressure Class
- 316L body and seat (A351 CF3M)
- 316 disc, spring and guide assembly
- 32 Ra Internal Surface Finish (#4 Ground Finish)
- Edge-guided disc: 1/2" thru 2"
- Edge/center-guided disc: 2 1/2", 3", 4"
- Lapped "metal" seat and disc
- Springs:
  - Low cracking pressures
  - .16 psig to .66 psig
  - Conical design
  - Electropolished finish
- Standard gasket body seal:
  - EPDM (300°F max temperature)
- Optional gasket body seal:
  - Tuf-Steel® (1) (450°F max temperature)
  - Viton® (400°F max temperature)
- CIP (Clean in Place)
- Clamped ends
- Seat leakage per MSS SP-61
- Options:
  - 15 Ra Internal Finish
  - Electropolishing

Horizontal

Vertical



Consult pages 48 and 49 for Pressure/Temperature ratings and soft seat materials.

HORIZONTAL		
1/2"	A	2.50
	B (Dia.)	1.50
	D (Dia.)	0.98
	Weight	1.4
	C	0.44
	Cv	2.4
CP	0.29	
3/4"	A	2.50
	B	1.50
	D (Dia.)	0.98
	Weight	1.4
	C	0.31
	Cv	7
CP	0.29	
1"	A	3.48
	B (Dia.)	3.00
	D (Dia.)	1.98
	Weight	3.7
	C	0.50
	Cv	12
CP	0.36	
1 1/2"	A	3.67
	B (Dia.)	3.12
	D (Dia.)	1.98
	Weight	4.0
	C	0.50
	Cv	36
CP	0.28	
2"	A	4.41
	B (Dia.)	3.62
	D (Dia.)	2.52
	Weight	5.8
	C	0.50
	Cv	47
CP	0.23	
2 1/2"*	A	5.56
	B (Dia.)	4.75
	D (Dia.)	3.05
	Weight	11.2
	C	0.73
	Cv	69
CP	0.54	
3"*	A	4.88
	B (Dia.)	4.75
	D (Dia.)	3.58
	Weight	9.9
	C	0.48
	Cv	90
CP	0.54	
4"*	A	6.25
	B (Dia.)	7.00
	D (Dia.)	4.68
	Weight	22.2
	C	0.97
	Cv	137
CP	0.50	

VERTICAL		
1/2"	A	2.50
	B (Dia.)	1.5
	D (Dia.)	0.98
	Weight	1.4
	Cv	2.4
	CP	0.26
3/4"	A	2.25
	B (Dia.)	1.5
	D (Dia.)	0.98
	Weight	1.3
	Cv	7
	CP	0.26
1"	A	2.92
	B (Dia.)	2.00
	D (Dia.)	1.98
	Weight	2.3
	Cv	18
	CP	0.31
1 1/2"	A	3.29
	B (Dia.)	2.50
	D (Dia.)	1.98
	Weight	2.8
	Cv	38
	CP	0.23
2"	A	4.03
	B (Dia.)	3.00
	D (Dia.)	2.52
	Weight	3.9
	Cv	53
	CP	0.16
2 1/2"*	A	5.5
	B (Dia.)	4.75
	D (Dia.)	3.05
	Weight	9.9
	Cv	81
	CP	0.42
3"*	A	4.38
	B (Dia.)	4.00
	D (Dia.)	3.58
	Weight	6.1
	Cv	109
	CP	0.42
4"*	A	5.50
	B (Dia.)	6.00
	D (Dia.)	4.68
	Weight	14.9
	Cv	174
	CP	0.40

## MATERIALS OF CONSTRUCTION

COMPONENT	
Body	A351 CF3M
Seat	A351 CF3M
Disc	316 SS
Spring	316 SS
	(electropolished)
Guide Assembly	316 SS
Gasket Body Seal	EPDM**
	(-75°F to 300°F)
Clamp	304 SS

\*\* Other gasket body seal materials available upon request

## PRESSURE/TEMPERATURE RATING

Temp. (°F)	Pressure	Material Temp. Limit
100	150	
200	125	
300	115	EPDM
400	105	Viton <sup>®</sup>
450	90	Tuf-Steel <sup>®</sup> (1)

- Notes:**
- Blend of non-pigmented PTFE and 316L passivated and atomized Stainless Steel. Good for steam applications. Meets USDA, FDA and 3A Sanitary Standards and U.S. Pharmacopeia Class VI Certification.
  - Sizes 2 1/2", 3", 4"
- \* Edge/Center Guided Disc

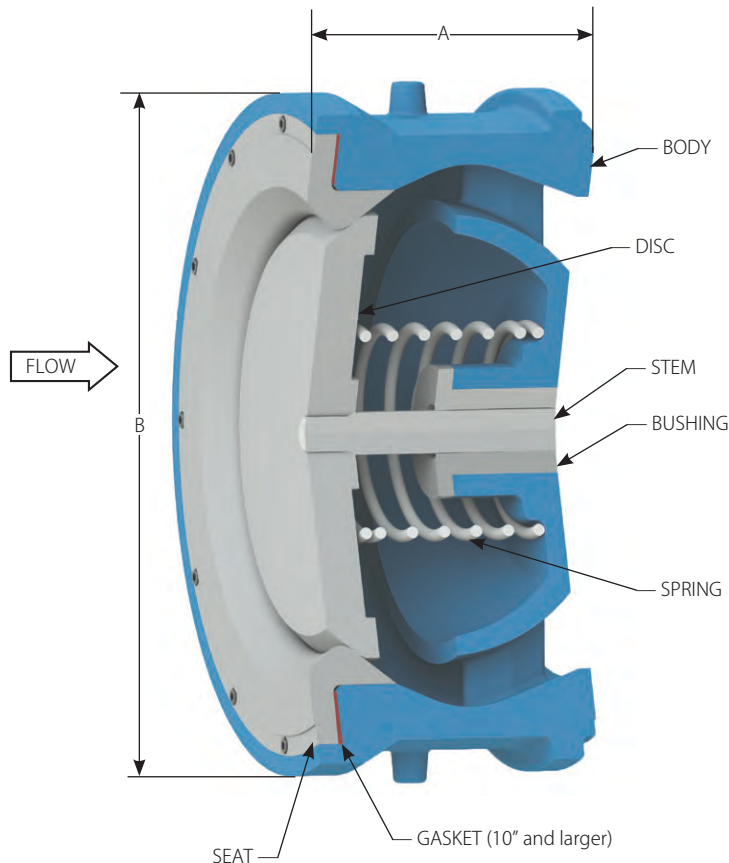
All dimensions are in inches. Weights are in pounds. For metric measurements, visit [www.dft-valves.com](http://www.dft-valves.com). CP: Cracking Pressure (psig)

The **ALC Check Valve** is a non-slam spring-assisted, center-guided “wafer” check valve designed to prevent “water hammer” and “reverse” flow. The lightweight compact design fits between mating flanges and meets API 594 Face-to-Face dimensions. The ALC Check Valve is an easy-to-maintain check valve for applications involving liquids, gases or steam. Tapped holes are provided in the body for lifting lugs to assist with installation (10” and larger sizes only).



## FEATURES:

- API 594 Face-to-Face dimensions
- RF Wafer ends
- Spring-assisted silent closing
- Sizes 2” thru 24”
- Horizontal or vertical installation
- ASME Class 150 and 300
- Standard body materials:
  - A216 Grade WCB carbon steel
- A351 CF8M stainless steel
- Stainless steel seat, disc & bushing
- Nitronic<sup>®</sup> 60 stem
- Inconel<sup>®</sup> X-750 Spring
- Seat Leakage per MSS SP-61
- Tapped holes in body for lifting lugs (10” size and larger)
- Axial flow
- Nozzle style
- Options:
  - 316 SS spring
  - Custom sizing - low flow
  - Soft seat (for bubble-tight shutoff)
  - NACE (Page 47)
  - Tapped lug design available (Consult DFT for availability)



Consult pages 48 and 49 for Pressure/Temperature ratings and soft seat materials.

Class	150 RF	300 RF	
<b>2"*</b>	<b>A</b>	2.38	2.38
	<b>B</b>	4.25	4.25
	<b>Weight</b>	5.7	5.7
	<b>Cv</b>	120	120
	<b>CP</b>	0.65	0.65
<b>2 1/2"*</b>	<b>A</b>	2.62	2.62
	<b>B</b>	5.00	5.00
	<b>Weight</b>	7.5	7.5
	<b>Cv</b>	205	205
	<b>CP</b>	0.69	0.69
<b>3"*</b>	<b>A</b>	2.88	2.88
	<b>B</b>	5.75	5.75
	<b>Weight</b>	12.25	12.25
	<b>Cv</b>	260	260
	<b>CP</b>	0.63	0.63
<b>4"*</b>	<b>A</b>	2.88	2.88
	<b>B</b>	7.00	7.00
	<b>Weight</b>	17.4	17.4
	<b>Cv</b>	430	430
	<b>CP</b>	0.59	0.59
<b>6"*</b>	<b>A</b>	3.88	3.88
	<b>B</b>	9.75	9.75
	<b>Weight</b>	38	38
	<b>Cv</b>	825	825
	<b>CP</b>	0.59	0.59

Class	150 RF	300 RF	
<b>8"*</b>	<b>A</b>	5.00	5.00
	<b>B</b>	12.00	12.00
	<b>Weight</b>	70	70
	<b>Cv</b>	1310	1310
	<b>CP</b>	0.55	0.55
<b>10"*</b>	<b>A</b>	5.75	5.75
	<b>B</b>	14.00	14.00
	<b>Weight</b>	115	115
	<b>Cv</b>	1875	1875
	<b>CP</b>	0.53	0.53
<b>12"*</b>	<b>A</b>	7.12	7.12
	<b>B</b>	16.38	16.38
	<b>Weight</b>	200	200
	<b>Cv</b>	2525	2525
	<b>CP</b>	0.53	0.53
<b>14"*</b>	<b>A</b>	7.25	8.75
	<b>B</b>	17.63	19.00
	<b>Weight</b>	225	320
	<b>Cv</b>	2950	3275
	<b>CP</b>	0.55	0.55

Class	150 RF	300 RF	
<b>16"*</b>	<b>A</b>	7.56	9.12
	<b>B</b>	20.00	21.00
	<b>Weight</b>	315	430
	<b>Cv</b>	3330	4100
	<b>CP</b>	0.50	0.50
<b>18"*</b>	<b>A</b>	8.00	10.38
	<b>B</b>	21.50	23.25
	<b>Weight</b>	390	594
	<b>Cv</b>	3475	5040
	<b>CP</b>	0.55	0.55
<b>20"*</b>	<b>A</b>	8.62	11.50
	<b>B</b>	23.75	25.63
	<b>Weight</b>	545	760
	<b>Cv</b>	3750	6050
	<b>CP</b>	0.54	0.57
<b>24"*</b>	<b>A</b>	8.75	12.50
	<b>B</b>	28.13	30.38
	<b>Weight</b>	745	1200
	<b>Cv</b>	5150	8325
	<b>CP</b>	0.52	0.57

\* Sizes 2" to 12" are Dual Rated

## MATERIALS OF CONSTRUCTION

COMPONENT	CARBON STEEL BODY	STAINLESS STEEL BODY
Body	A216 Grade WCB	A351 CF8M
Disc/Stem Assembly	316 SS/Nitronic® 60	316 SS/Nitronic® 60
Seat	316 SS	316 SS
Spring	Inconel® X-750	Inconel® X-750
Bushing	316 SS (1)	316 SS (1)
Gasket (2)	CFG (3)	CFG (3)

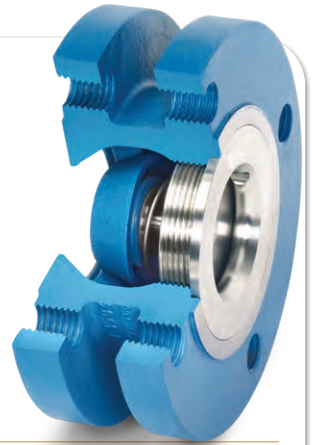
### SOFT SEAT - Maximum operating temperatures of materials

MATERIALS	BUNA-N	EPDM	VITON® & TFE-EN-CAPSULATED VITON®	ZELON®
TEMP. (°F)	-70 to 250	-75 to 300	-40 to 400	37 to 450

- Notes:**
1. Teflon® bearing on 14", 16", 18", 20" and 24". Max temperature 450° F.
  2. Gaskets only used on valves 10" and larger.
  3. 316/Graphite material.

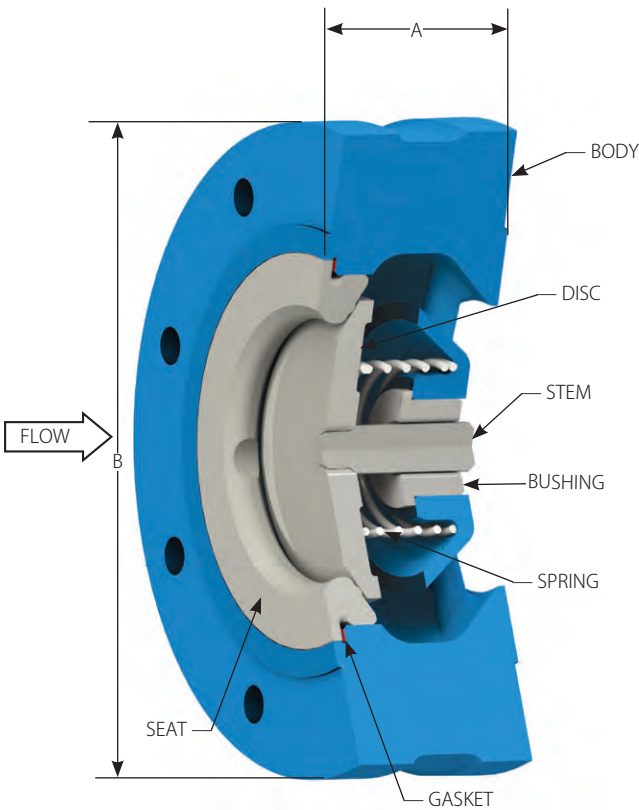
All dimensions are in inches. Weights are in pounds. For metric measurements, visit [www.dft-valves.com](http://www.dft-valves.com). CP: Cracking Pressure (psig)

The **TLW<sup>®</sup> Check Valve** (Tapped Lug Wafer) was engineered for applications where exposed bolts are not suitable. This non-slam spring-assisted, center-guided, lugged pattern wafer check valve is designed to prevent water hammer and reverse flow. The lightweight compact design fits between mating flanges and meets API 594 Face-to-Face dimensions. The TLW Check Valve body design eliminates potential leak paths to the environment and is an easy-to-maintain check valve for applications involving liquids, gases, or steam. Tapped holes are provided in the body for lifting lugs to assist with installation (10" and larger sizes only).

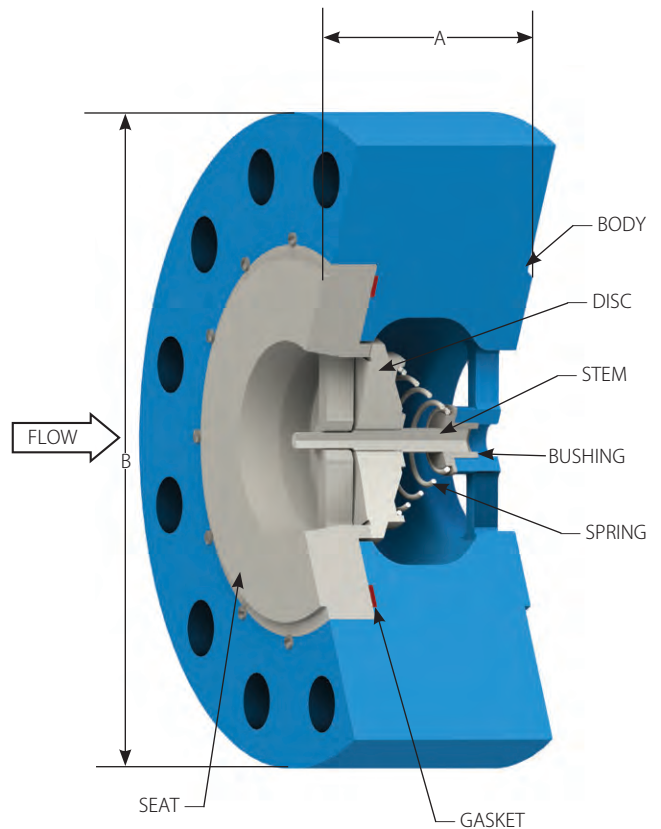


## FEATURES:

- API 594 Face-to-Face dimensions
- Threaded Lug Design
- ASME B16.5 bolt hole pattern
- RF Wafer ends
- Spring-assisted silent closing
- Sizes 2" thru 24"
- Horizontal or vertical installation
- ASME Class 150 and 300
- Standard body materials:
  - A216 Grade WCB carbon steel
  - A351 CF8M stainless steel
- Stainless steel seat, disc & bushing
- Nitronic<sup>®</sup> 60 stem
- Inconel<sup>®</sup> X-750 Spring
- Seat Leakage per MSS SP-61
- Tapped holes in body for lifting lugs (10" size and larger)
- Axial flow
- Nozzle style
- Options:
  - 316 SS spring
  - Custom sizing - low flow
  - Soft seat (for bubble-tight shutoff)
  - NACE (Page 47)



TLW<sup>®</sup> Body Style for Class 150/300



TLW<sup>®</sup> Dual Guided Body Style for  
2" to 12"  
Class 600 / 900 / 1500

Consult pages 48 and 49 for Pressure/Temperature ratings and soft seat materials.



Class	150 RF	300 RF	
<b>2"</b>	<b>A</b>	2.38	2.38
	<b>B</b>	6.00	6.50
	<b>Weight</b>	15	17
	<b>Cv</b>	120	120
	<b>CP</b>	0.65	0.65
<b>2 1/2"</b>	<b>A</b>	2.62	2.62
	<b>B</b>	7.00	7.50
	<b>Weight</b>	20	22
	<b>Cv</b>	205	205
	<b>CP</b>	0.69	0.69
<b>3"</b>	<b>A</b>	2.88	2.88
	<b>B</b>	7.50	8.25
	<b>Weight</b>	29	32
	<b>Cv</b>	260	260
	<b>CP</b>	0.63	0.63
<b>4"</b>	<b>A</b>	2.88	2.88
	<b>B</b>	9.00	10.00
	<b>Weight</b>	38	42
	<b>Cv</b>	430	430
	<b>CP</b>	0.59	0.59
<b>6"</b>	<b>A</b>	3.88	3.88
	<b>B</b>	11	12.50
	<b>Weight</b>	71	79
	<b>Cv</b>	825	825
	<b>CP</b>	0.59	0.59

Class	150 RF	300 RF	
<b>8"</b>	<b>A</b>	5.00	5.00
	<b>B</b>	13.50	15.00
	<b>Weight</b>	123	134
	<b>Cv</b>	1310	1310
	<b>CP</b>	0.55	0.55
<b>10"</b>	<b>A</b>	5.75	5.75
	<b>B</b>	16.00	17.50
	<b>Weight</b>	197	210
	<b>Cv</b>	1875	1875
	<b>CP</b>	0.53	0.53
<b>12"</b>	<b>A</b>	7.13	7.12
	<b>B</b>	19	20.50
	<b>Weight</b>	289	302
	<b>Cv</b>	2525	2525
	<b>CP</b>	0.53	0.53
<b>14"</b>	<b>A</b>	7.25	8.75
	<b>B</b>	21.00	23.00
	<b>Weight</b>	317	440
	<b>Cv</b>	2950	3275
	<b>CP</b>	0.55	0.55

Class	150 RF	300 RF	
<b>16"</b>	<b>A</b>	7.50	9.31
	<b>B</b>	23.50	25.50
	<b>Weight</b>	440	635
	<b>Cv</b>	3300	4100
	<b>CP</b>	0.50	0.50
<b>18"</b>	<b>A</b>	8.00	10.38
	<b>B</b>	25.00	28.00
	<b>Weight</b>	520	810
	<b>Cv</b>	3475	5040
	<b>CP</b>	0.55	0.55
<b>20"</b>	<b>A</b>	8.65	11.50
	<b>B</b>	27.50	30.50
	<b>Weight</b>	708	1012
	<b>Cv</b>	3750	6050
	<b>CP</b>	0.54	0.57
<b>24"</b>	<b>A</b>	8.75	12.50
	<b>B</b>	32.00	36.00
	<b>Weight</b>	945	1550
	<b>Cv</b>	5150	8325
	<b>CP</b>	0.52	0.57

For Class 600 / 900 / 1500 / 2500, consult DFT factory.

## MATERIALS OF CONSTRUCTION

COMPONENT	CARBON STEEL BODY	STAINLESS STEEL BODY
Body	A216 Grade WCB	A351 CF8M
Disc/Stem Assembly	316 SS/Nitronic® 60	316 SS/Nitronic® 60
Seat	316 SS	316 SS
Spring	Inconel® X-750	Inconel® X-750
Bushing	316 SS (1)	316 SS (1)
Gasket (2)	CFG (3)	CFG (3)

### SOFT SEAT - Maximum operating temperatures of materials

MATERIALS	BUNA-N	EPDM	VITON® & TFE-EN-CAPSULATED VITON®	ZELON®
TEMP. (°F)	-70 to 250	-75 to 300	-40 to 400	37 to 450

- Notes:**
1. Teflon® bearing on 14", 16", 18", 20" and 24".
  2. Gaskets only used on valves 10" and larger.
  3. 316/Graphite material.

Contact DFT for additional sizes/pressure classes.

WARNING: It is NOT recommended that any DFT check valve be used for dead end service.

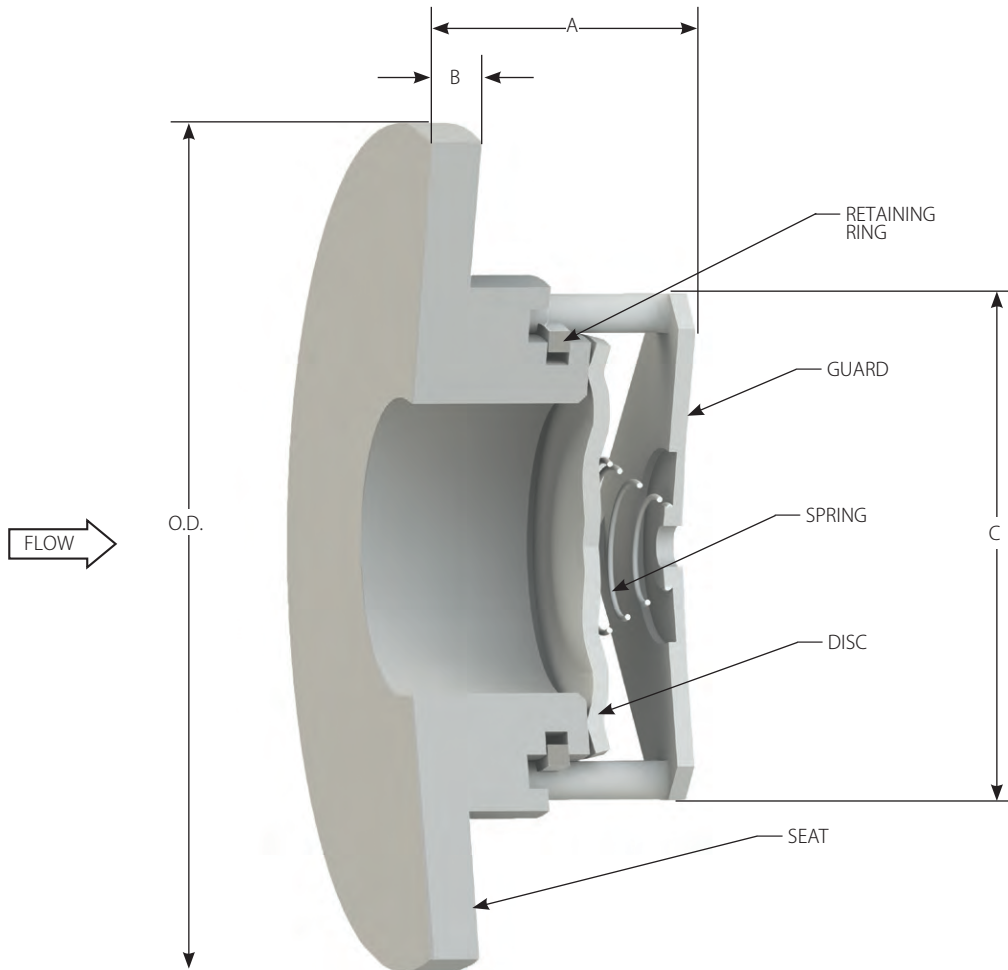
All dimensions are in inches. Weights are in pounds. For metric measurements, visit [www.dft-valves.com](http://www.dft-valves.com). CP: Cracking Pressure (psig)

The **FBC Check Valve** is a compact, lightweight, insert wafer check valve that easily installs between two flanges. The non-slam, spring-assisted design prevents “water hammer” and “reverse flow”. The FBC Check Valve contains all of the proven features of the Basic-Check® valve developed originally by DFT® and still in use after 75 years. Like the Basic-Check® Valve, the metal-to-metal sealing area of the disc and seat is precision lapped, providing tight shutoff for applications involving liquids, gases or steam. Resilient soft seats are available for applications requiring bubble-tight shutoff.



## FEATURES:

- Spring-assisted silent closing
- Horizontal or vertical installations
- Sizes 1” through 4”
- ASME/ANSI Class 150 and 300
- Stainless steel seat, disc, guard, retaining ring & spring
- Cracking pressure: 0.6 to 0.15 psi (See chart)
- Temperatures to 450°F for standard valves
- Extended tag for easy identification of the installed valve
- Use in Schedule 40 or Schedule 80 pipe (See chart on pg. 37)
- Meets ASME B16.34 & MSS SP-126
- Flange finish per MSS SP-6
- Seat leakage per MSS SP-61
- Options:
  - Soft seat (for bubble-tight shutoff)
  - Inconel® X-750 spring



Consult pages 48 and 49 for Pressure/Temperature ratings and soft seat materials.

## MATERIALS OF CONSTRUCTION

COMPONENT		
Seat		A479 316
Disc	1" to 3"	316 SS
	4"	17-7 SS
Guard		316 SS
Spring		316 SS
Retaining Ring		316 SS

## PRESSURE TEMPERATURE RATING — 316 SS (PSIG) (1)

Temp. (°F)	ASME/ANSI CLASS	
	150	300
100	275	720
200	235	620
250 (2)	225	590
300 (3)	215	560
400 (4)	195	515
450	180	495

## SOFT SEAT

Maximum operating temperatures of materials

MATERIALS	MAX. TEMP. (°F)
BUNA-N	-70 to 250
EPDM	-75 to 300
VITON® & TFE-Encapsulated VITON®	-40 to 400
ZELON®	37 to 450

- Notes:**
1. Pressure/temperature ratings in accordance with ASME/ANSI B16.34
  2. Maximum temperature for Buna
  3. Maximum temperature for EPDM
  4. Maximum temperature for Viton®, TFE-encapsulated Viton® and Zelon®
- \* Fits schedule 40 pipe only.  
\*\* Fits schedule 40 and schedule 80 pipe ID.

All dimensions are in inches. Weights are in pounds. For metric measurements, visit [www.dft-valves.com](http://www.dft-valves.com). CP: Cracking Pressure (psig)

Class	150/300	150
1"*	A	0.87
	B	0.25
	C	1.03
	O.D.	2.00
	Weight	0.2
	Cv	5.8
	CP	0.60
1 1/2"*	A	1.10
	B	0.25
	C	1.56
	O.D.	2.88
	Weight	0.6
	Cv	13.2
	CP	0.45
2"***	A	1.22
	B	0.25
	C	1.94
	O.D.	3.62
	Weight	0.9
	Cv	23.1
	CP	0.38
2 1/2"*	A	1.31
	B	0.25
	C	2.40
	O.D.	4.12
	Weight	1.2
	Cv	36
	CP	0.2
3"*	A	1.47
	B	0.31
	C	2.97
	O.D.	5.00
	Weight	2.2
	Cv	57.4
	CP	0.14
4"***	A	2.11
	B	0.38
	C	3.70
	O.D.	6.19
	Weight	5.2
	Cv	90
	CP	0.15

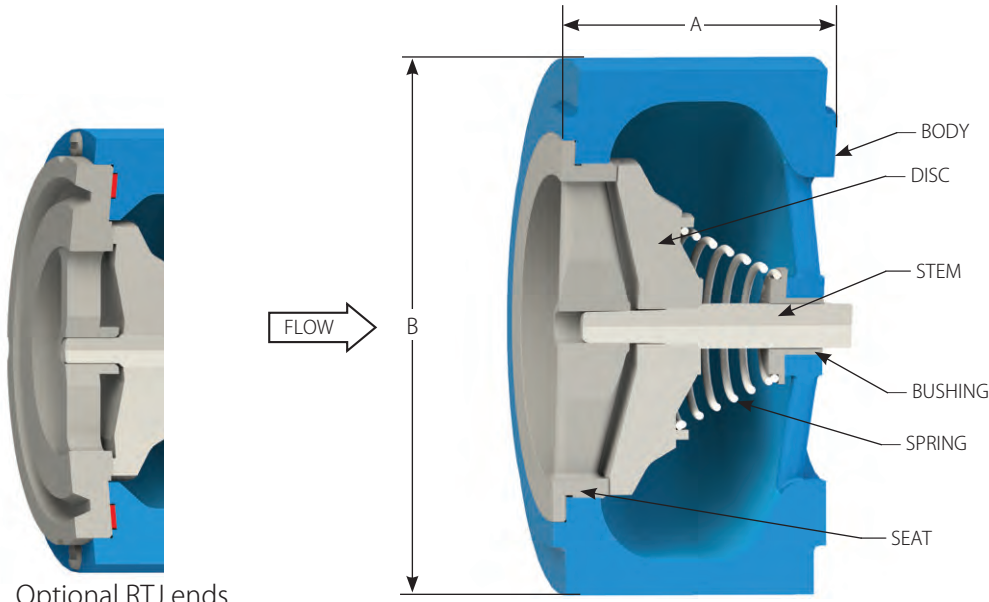
Not recommended for use on discharge of reciprocating compressors.

The **DFT® Model WLC Wafer Style Check Valve** is a lightweight, spring-assisted, center-guided, non-slam check valve that provides reliable, low-maintenance service for a wide range of fluids and pressure/ temperature combinations. The joint between the seat ring and body is sealed by the flange gasket upon installation preventing any leakage through the joint when the valve is in service.



## FEATURES:

- Wafer design
- Standard body material:
  - A216 Grade WCB carbon steel
  - A351 CF8M stainless steel
- Optional body materials:
  - Alloy 20
  - Hastelloy®
  - Inconel® 625
  - Duplex SS
  - Titanium
- Center-guided/Dual-guided stem
- Horizontal or vertical installation
- Protected spring
- Spring-assisted silent closing
- ASME Class 150 to 1500
  - 1" to 10" Line Size
  - 316 SS trim
  - Ends:
    - Wafer RF
    - Wafer RTJ
  - MSS-SP 61 seat leakage
  - MSS 126 Face-to-Face dimension:
    - Class 150 & 300 RF
  - API 594 Face-to-Face dimension:
    - Class 600 RF
    - Class 900 & 1500 RF
- Axial flow
- Nozzle style
- Lightweight
- Options:
  - Inconel® X-750 spring
  - Soft seat (for bubble-tight shutoff)
  - Custom sizing - low flow
  - Stellite® trim
  - NACE (page 47)
  - Severe Service
  - Tapped lug design available



Optional RTJ ends  
Consult factory for more details.

Standard RF ends

## MATERIALS OF CONSTRUCTION

COMPONENT	CARBON STEEL BODY	STAINLESS STEEL BODY
Body	A216 Grade WCB	A351 CF8M
Disc/Stem Assembly	A351 CF8M/A479 316	A351 CF8M/A479 316
Seat	A351 CF8M	A351 CF8M
Spring	A313 316	A313 316
Bushing	A479 316	A479 316

### SOFT SEAT - Maximum operating temperatures of materials

MATERIALS	BUNA-N	EPDM	VITON® & TFE-Encapsulated VITON®	ZELON®
TEMP. (°F)	-70 to 250	-75 to 300	-40 to 400	37 to 450

Consult pages 48 and 49 for Pressure/Temperature ratings and soft seat materials.

Class	150 RF	300 RF	600 RF	900 RF	1500 RF	1500 RTJ	2500 RF	2500 RTJ
<b>1" *</b>	<b>A</b>	2	2	2.38	2.38	2.38	2.38	2.38
	<b>B</b>	2.88	2.88	2.88	3.13	3.13	3.13	3.25
	<b>Weight</b>	2	2	2.50	4	4	4	4.75
	<b>Cv</b>	19	19	19	19	19	19	19
	<b>CP</b>	0.36	0.36	0.36	0.44	0.44	0.44	0.44
<b>1 1/2"*</b>	<b>A</b>	2.50	2.50	2.88	2.88	2.88	2.88	**
	<b>B</b>	3.75	3.75	3.75	3.88	3.88	3.88	
	<b>Weight</b>	4	4	6.5	8	8	7	
	<b>Cv</b>	36	36	23	23	23	23	
	<b>CP</b>	0.17	0.17	0.44	0.54	0.54	0.54	
<b>2" *</b>	<b>A</b>	2.63	2.63	2.38	2.75	2.75	3.13	2.81
	<b>B</b>	4.38	4.38	4.38	5.50	5.50	5.50	5.75
	<b>Weight</b>	4	4	5	14	14	14	17
	<b>Cv</b>	57	57	53	48	48	48	35
	<b>CP</b>	0.24	0.24	0.26	0.24	0.24	0.24	0.97
<b>2 1/2"*</b>	<b>A</b>	2.88	2.88		3.63	3.63	3.63	
	<b>B</b>	5.13	5.13		6.40	6.40	6.40	
	<b>Weight</b>	10	10		20	20	20	
	<b>Cv</b>	95	95		70	70	70	
	<b>CP</b>	0.37	0.37		0.18	0.18	0.18	
<b>3" *</b>	<b>A</b>	3.13	3.13	2.88	3.25	3.25	3.25	3.38
	<b>B</b>	5.75	5.75	5.75	6.75	6.75	6.75	7.50
	<b>Weight</b>	12	12	11	21	21	21	33
	<b>Cv</b>	140	140	133	113	113	113	80
	<b>CP</b>	0.19	0.19	0.26	0.19	0.19	0.19	0.56
<b>4" *</b>	<b>A</b>	4	4	3.13	4	4	4.13	4.13
	<b>B</b>	7.09	7.09	7.50	8.19	8.19	8.25	9.13
	<b>Weight</b>	20	20	21	38	38	38	113
	<b>Cv</b>	265	265	234	211	211	211	130
	<b>CP</b>	0.19	0.19	0.49	0.46	0.46	0.46	0.69
<b>5" *</b>	<b>A</b>	4.63	4.63		6.25	6.25		
	<b>B</b>	8.50	8.50		11.25	11.25		
	<b>Weight</b>	35	35		100	100		
	<b>Cv</b>	360	360		370	370		
	<b>CP</b>	0.29	0.29		0.58	0.58		
<b>6" *</b>	<b>A</b>	5.50	5.50	5.38	6.25	6.25	6.25	6.25
	<b>B</b>	9.81	9.81	10.38	11.25	11.25	11.25	12.48
	<b>Weight</b>	41	41	68	100	100	100	180
	<b>Cv</b>	506	506	441	370	370	370	150
	<b>CP</b>	0.45	0.45	0.66	0.58	0.58	0.58	0.62
<b>8" *</b>	<b>A</b>	6.50	6.50	6.50	8.13	8.13	8.13	
	<b>B</b>	12.13	12.13	12.63	13.81	13.81	13.81	
	<b>Weight</b>	86	86	134	237	244	237	
	<b>Cv</b>	860	860	780	620	620	620	
	<b>CP</b>	0.56	0.56	0.56	0.66	0.66	0.66	
<b>10"</b>	<b>A</b>	8.25		8.38	9.50	9.75	9.75	
	<b>B</b>	17.62		15.5	17.06	17.06	17.06	
	<b>Weight</b>	138		270	430	430	426	
	<b>Cv</b>	1355		755	755	755	755	
	<b>CP</b>	0.45		0.51	0.61	0.61	0.61	

\* Sizes 1" to 8" are Dual Rated Class 150 / 300

\*\* Consult DFT factory

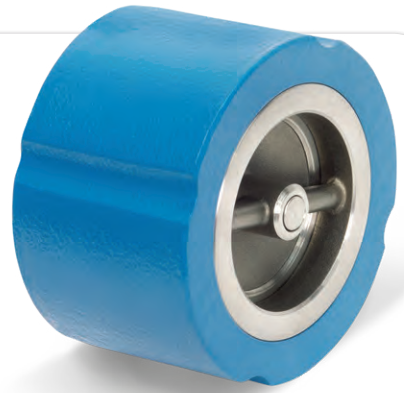
Consult DFT for 2500 RF availability.

All dimensions are in inches. Weights are in pounds. For metric measurements, visit [www.dft-valves.com](http://www.dft-valves.com). CP: Cracking Pressure (psig)



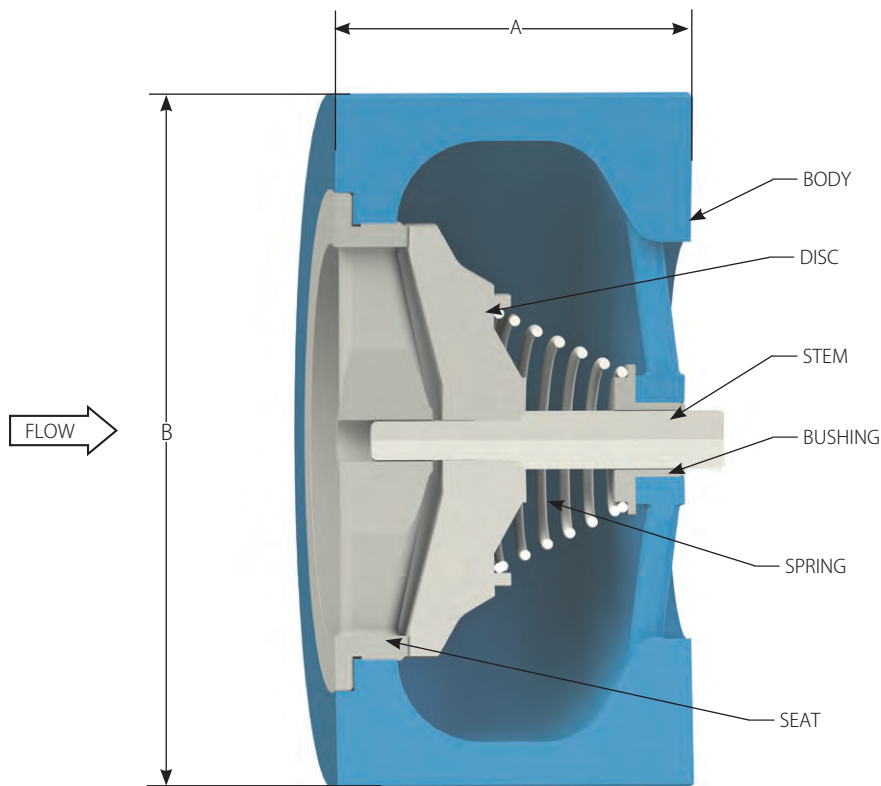
# WLC®-Cast Iron

The **DFT® Model WLC-Cast Iron Wafer Style Check Valve** is a lightweight, spring-assisted, center-guided, non-slam check valve that provides reliable, low-maintenance service for a wide range of fluids and pressure/ temperature combinations. The joint between the seat ring and body is sealed by the flange gasket upon installation, preventing any leakage through the joint when the valve is in service.



## FEATURES:

- Wafer design
- Lightweight
- Spring-assisted silent closing
- Center-guided / dual-guided stem
- Horizontal or vertical installation
- Protected spring
- ASME Class 125 & 250
  - 2" to 10" line size
  - Cast iron body
  - Bronze or 316 SS trim
  - Ends: Wafer FF
  - AWWA seat leakage
- Axial flow
- Nozzle style
- Options:
  - Buna-N Soft Seat (for bubble-tight shutoff)



Consult pages 48 and 49 for Pressure/Temperature ratings and soft seat materials.

# WLC<sup>®</sup>-Cast Iron

Class	125 CAST IRON FF	250 CAST IRON FF	
2"	A	2.63	2.63
	B	4.25	4.25
	Weight	6	6
	Cv	66	66
2 1/2"	A	2.88	2.88
	B	5	5
	Weight	7	7
	Cv	88	88
3"	A	3.13	3.13
	B	5.75	5.75
	Weight	12	12
	Cv	130	130
4"	A	4	4
	B	7	7
	Weight	18	18
	Cv	228	228
5"	A	4.75	4.75
	B	8.38	8.38
	Weight	27	27
	Cv	350	350
6"	A	5.50	5.50
	B	9.75	9.75
	Weight	42	42
	Cv	520	520
8"	A	6.50	6.50
	B	13.38	13.38
	Weight	85	86
	Cv	900	900
10"	A	8.25	8.25
	B	16	16
	Weight	129	137
	Cv	1450	1450

## PRESSURE TEMPERATURE RATING FOR CAST IRON (PSIG)

Temp. (°F)	CLASS 125	CLASS 250
0-150°	200 psig	400 psig
200° Max (1)	190 psig	370 psig

## MATERIALS OF CONSTRUCTION

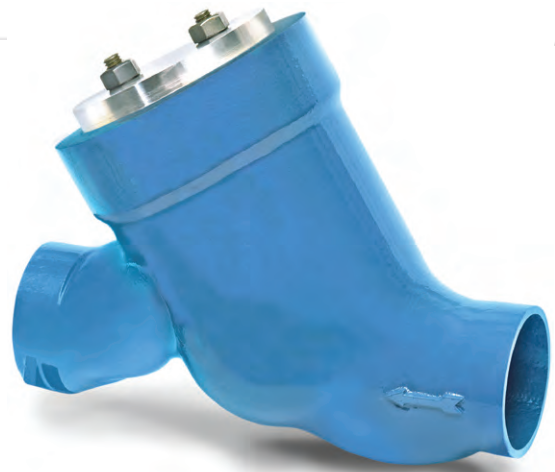
COMPONENT	CAST IRON BODY/BRONZE TRIM	CAST IRON BODY/316 TRIM (1)
Body	A126 Class B Cast Iron	A126 Class B Cast Iron
Disc/Stem Assembly	B584 836 - Bronze	A351 CF8M
Seat (2)	B584 836 - Bronze	A351 CF8M
Spring	A313 T302 SS	A313 T302 SS
Bushing	B584 836 - Bronze	316 SS

- Notes:**
1. 316 stainless steel trim recommended for temperatures from 180°F to 200°F.
  2. Buna-N soft seat available for bubble-tight shutoff.

All dimensions are in inches. Weights are in pounds. For metric measurements, visit [www.dft-valves.com](http://www.dft-valves.com). CP: Cracking Pressure (psig)

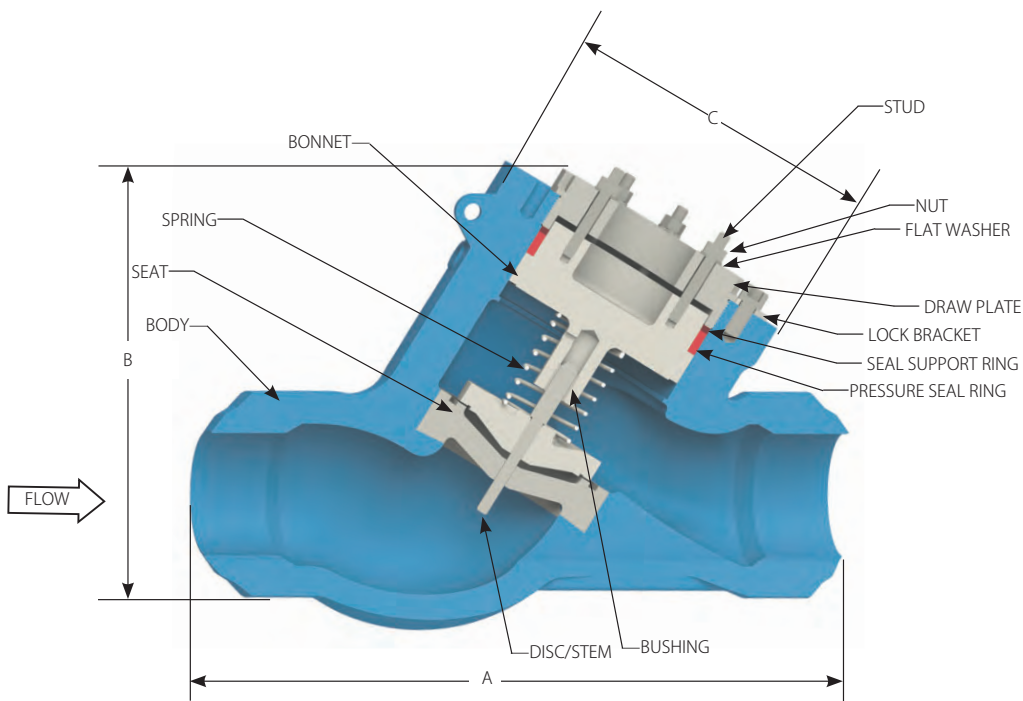
# Y-Calibur®

The **DFT® Y-Calibur® Silent Check Valve** is an in line repairable, spring-assisted, center guided, non-slam check valve that provides reliable, low-maintenance service for a wide range of fluids and pressure/temperature combinations. The valve consists of a body, bonnet, gasket, seat, spring, disc with stem and guide bushing. Y-Calibur check valves are available in a wide range of sizes and pressure ratings and in a variety of materials to meet most check valve requirements.



## FEATURES:

- ASME B16.10 Face-to-Face dimensions
- Spring-assisted silent closing, non-slam
- 4" to 14" Line size \*
- ASME Class 600 to 2500 (See chart)
- Standard body materials:
  - A216 WCB carbon steel
  - A351 CF8M stainless steel
- Optional body materials:
  - Duplex SS
- Hastelloy®
- Inconel® 600
- Monel®
- Standard ends:
  - Butt weld
- Stainless steel trim
- Other materials available
- Center-guided
- Dual-guided stem & disc
- Horizontal or vertical installation
- Tight shutoff
- Protected spring
- Fully repairable in-line
- Versatile
- Axial flow/non-slam design
- Options:
  - Inconel® X-750 Spring
  - Custom sizing low flow
  - Severe service trim
  - Stellite® trim
  - NACE (Page 47)



\* other sizes available on application

Consult pages 48 and 49 for Pressure/Temperature ratings and soft seat materials.

# Y-Calibur®

## MATERIALS OF CONSTRUCTION

COMPONENT	CARBON STEEL BODY	STAINLESS STEEL BODY
Body and Bonnet	A216 WCB (3)	A351 CF8M (3)
Disc/Stem Assembly	A351 CF8M/A479 316	A351 CF8M/A479 316
Seat	A351 CF8M	A351 CF8M
Spring (1)	A313 316	A313 316
Bushing	A479 316	A479 316
Bolting (2)	A193-B7 (Stud) & A194-2H (Nut)	
Seal	Graphite	

Class	600	900	1500	2500	
4"	A	17	18	21.5	*
	B	13.29	13.85	14.73	*
	C	8.38	8.88	10.00	*
	Weight	103	150	211	*
	Cv	265	265	265	*
	CP	0.84	0.84	0.84	*
6"	A	22	24	27.75	*
	B	18.67	19.87	19.87	*
	C	11.63	12.25	13.75	*
	Weight	250	312	479	*
	Cv	685	685	685	*
	CP	0.73	0.73	0.73	*
8"	A	26	29	32.75	*
	B	24.78	24.32	24.95	*
	C	14.50	15.38	15.25	*
	Weight	461	597	1020	*
	Cv	1050	1050	1050	*
	CP	0.84	0.84	0.84	*
10"	A	31	33	39	*
	B	29.79	28.26	29.57	*
	C	18.50	19.63	21.88	*
	Weight	801	1084	1886	*
	Cv	1650	1650	1650	*
	CP	1.11	1.11	1.11	*
12"	A	33	38	44.5	*
	B	30.26	30.77	35.19	*
	C	22.38	22.38	24.00	*
	Weight	1058	1440	2625	*
	Cv	2400	2400	2400	*
	CP	1.24	1.24	1.24	*

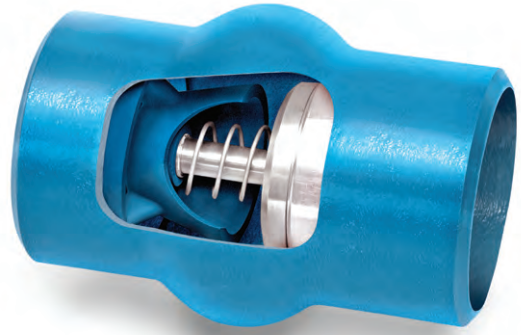
\* Contact DFT for additional sizes/pressure classes. (4)

- Notes:**
1. Inconel® X-750 spring is available.
  2. Contact DFT for stainless steel or other bolting materials.
  3. Mating pipe schedule required when ordering.
  4. CP values listed are standard, other CP's are available.

All dimensions are in inches. Weights are in pounds. For metric measurements, visit [www.dft-valves.com](http://www.dft-valves.com). CP: Cracking Pressure (psig)

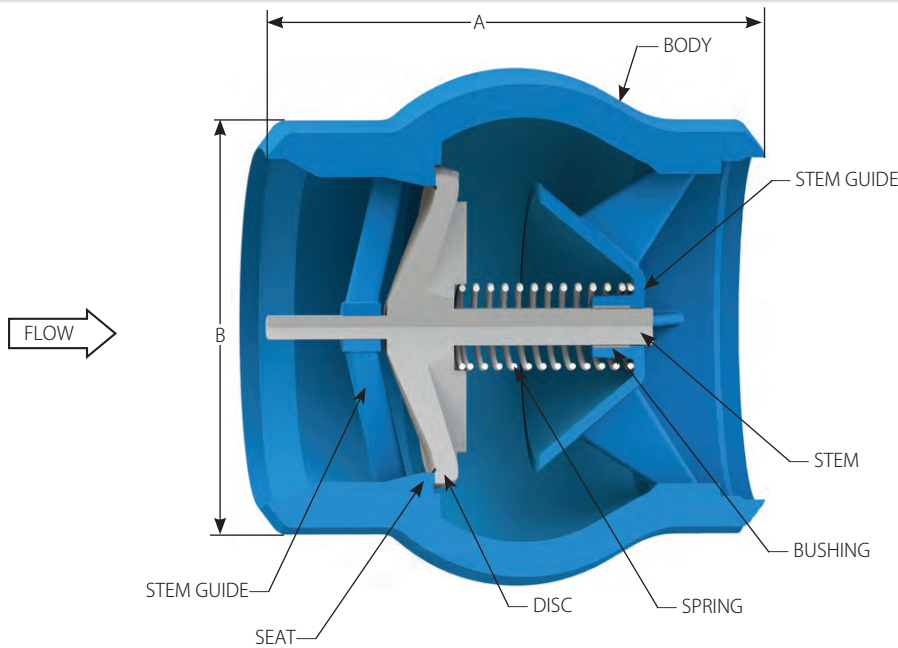
IN-LINE REPAIRABLE VALVES

The **DFT<sup>®</sup> BNC<sup>®</sup> Check Valve** is a spring-assisted, center-guided, non-slam check valve. The valve has an inline globe style body with butt weld ends. The seat is integral to the valve body. The valve is designed for long life and low maintenance. Because it is welded into piping for service, the valve does not have any inline maintenance capabilities.



## FEATURES:

- Inline globe style with butt weld end connections
- Buttweld ends per ASME B16.25
- Design meets ASME B16.34 Valves - Flanged, threaded, and welding end
- Testing meets MSS SP-61 & API 598 (shell and seat)
- Allowable seat leakage per MSS SP-61
- Available in 2" to 24" line size
- One-piece body
- Standard body materials:
  - A216 grade WCB carbon steel
  - Other alloys per ASME 16.34 by request
- Trim materials:
  - Carbon steel and stainless steel
  - Hardfaced seat and disc
- Spring-assisted silent closing, non-slam
- Center-guided
- Dual-guided stem
- Horizontal or vertical installation
- Protected spring
- ASME Classes
  - 150, 300, 600, 900, 1500
- Maximum Temperature
  - WCB: 700° F (375° C)
- Compatible fluids:
  - Steam, water or gaseous media
- OPTIONS:
  - Custom sizing available



## MATERIALS OF CONSTRUCTION

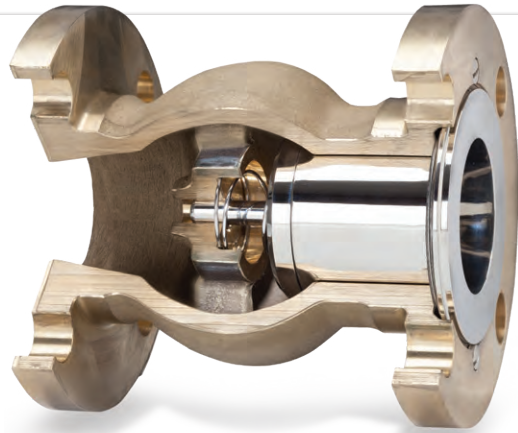
COMPONENT	CARBON STEEL BODY
Body	A216 WCB
Disc/Stem Assembly	A216 WCB*
Seat	A216 WCB*
Spring	Inconel <sup>®</sup> X-750 (special Alloys by request)

Consult pages 48 and 49 for Pressure/Temperature ratings and soft seat materials.



# GLC® - NAB

The **DFT® GLC® NAB (Nickel-Aluminum Bronze) Silent Check Valve** is a spring-assisted, nozzle style, non-slam check valve that is designed to withstand the harsh environments of salt and brackish water applications where corrosion resistance and marine life deterrents are a must. DFT's center guided check valves provide reliable, low-maintenance service and solve the problems associated with water hammer and severe applications and environments.



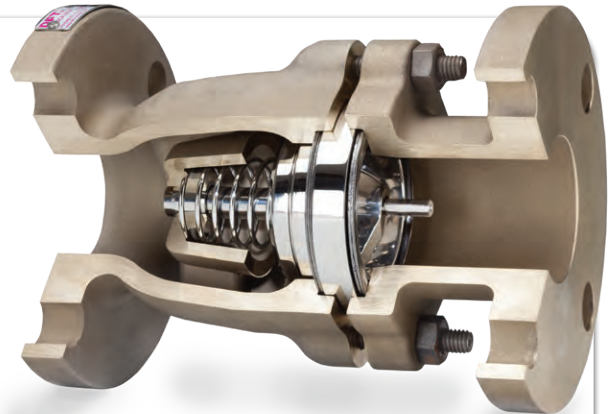
## FEATURES:

- "Short" Face-to-Face dimensions
- Standard body materials:
  - Nickel-Aluminum Bronze
- One-piece body
- Spring-assisted silent closing, non-slam
- Center-guided
- Dual-guided stem
- Horizontal or vertical installation
- Protected spring
- Easy maintenance
- Versatile
- ASME Class 150 & 300
  - 1" to 24" Line size
  - Flat face flanged ends
  - MSS-SP61 seat leakage
- Axial flow
- Nozzle style
- Options:
  - Inconel® X-750 Spring
- Soft seat (for bubble-tight shutoff)
- Custom sizing low flow
- Severe service trim
- Stellite® trim
- Trim Options:
  - Nickel-Aluminum Bronze
  - Monel®
  - Stainless Steel
  - Duplex SS

For more information see GLC® page 24-25

# Excalibur® - NAB

The **DFT® Excalibur® NAB (Nickel-Aluminum Bronze) Silent Check Valve** is a spring-assisted, nozzle style, non-slam check valve that is designed to withstand the harsh environments of salt and brackish water applications where corrosion resistance and marine life deterrents are a must. DFT's center guided check valves provide reliable, low-maintenance service and solve the problems associated with water hammer and severe applications and environments.



## FEATURES:

- ASME B16.10 Face-to-Face dimensions
- Spring-assisted silent closing, non-slam
- 2" to 24" Line size
- ASME Class 150 & 300
- Standard body materials:
  - Nickel-Aluminum Bronze
- Standard ends:
  - Flat face flanged
- Optional ends:
  - Butt weld
- Flanged x Butt weld
- Raised face
- Center-guided
- Dual-guided stem
- Horizontal or vertical installation
- Tight shutoff
- Two-piece body
- Protected spring
- Easy maintenance
- Versatile
- Axial flow
- Nozzle style
- Options:
  - Soft seat (for bubble-tight shutoff)
  - Inconel® X-750 Spring
  - Custom sizing low flow
  - Severe service trim
  - Stellite® trim
- Trim Options:
  - Nickel-Aluminum Bronze
  - Monel®
  - Stainless Steel
  - Duplex SS

For more information see Excalibur® page 22-23

Note: NAB valves do not meet API requirements.

All dimensions are in inches. Weights are in pounds. For metric measurements, visit [www.dft-valves.com](http://www.dft-valves.com). CP: Cracking Pressure (psig)

# Codes & Standards

CODES & STANDARDS																
	ALC®	Basic-Check®	BNC®	DLC®	DSV®	Excalibur®	FBC®	GLC & GLC-Cast Iron	PDC®	Restrictor Check	SCV®	SCV-R®	TLW®	Vacuum Breaker	WLC & WLC-Cast Iron	Y-Calibur®
<b>ASME/ANSI</b>																
B1.1	X										X	X	X		X	
B1.20.1		X								X	X	X		X		
B16.5	X			X		X		X	X				X		X	X
B16.10				X		X			X							X
B16.11		X								X	X	X		X		
B16.20						X		X	X						X	
B16.25			X			X					X	X				X
B16.34	X		X	X		X	X	X	X		X	X	X		X	X
<b>MSS</b>																
SP-6	X			X		X	X	X	X				X		X	
SP-25	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SP-61	X		X	X	X	X	X	X (1)	X		X	X	X		X (1)	X
SP-125								X (2)							X (2)	
SP-126				X		X		X (3)	X		X	X			X (3)	X
SP-144																X
<b>ASTM</b>																
A126 CLASS B								X							X	
A216GR WCB	X		X			X		X	X				X		X	X
A351GR CF8M	X		X	X		X		X	X		X	X	X		X	X
A351 CF3M			X		X											
<b>API 6D*</b>																
6FA						X (4)(9)		X (5)(9)	X							
594	X												X		X (6)	
598	X		X		X	X		X(1)					X		X (1)	X
PED	X					X		X (3)	X		X		X		X (3)	
<b>3A 58-02</b>																
CRN	X	X (7)		X		X	X	X	X	X (7)	X		X	X (7)	X	X
NACE	X (8)			X (8)		X (8)		X (8)	X (8)		X (8)	X (8)	X (8)		X (8)	X (8)
ASME B1.1	Unified Inch Screw Threads							ASTM A126	CLASS B Grey Iron Castings							
ASME B1.20.1	Pipe Threads, General Purpose							ASTM A216 GR WCB	Carbon Steel Castings							
ASME 16.5	Pipe Flanges & Flanged Fittings.							ASTM A351 GR CF8M	Austenitic Steel Castings							
ASME 16.10	Face-to-Face & End-to-End Dimensions of Valves							API Q1	Quality Management System specification for manufacturing organizations for the petroleum and natural gas industry.							
ASME 16.11	Forged Fittings, Socket-Welding and Threaded							API 6D	Pipeline and Piping Valves							
ASME 16.20	Ring-Joint Gaskets & Grooves for Steel Pipe Flanges							API 6FA	Standard for Fire Test Valves							
ASME 16.25	Buttwelding Ends							API 594	Wafer & Wafer-Lug Check Valves							
ASME 16.34	Valves - Flanged, Threaded & Welding Ends							API 598	Valve Inspection and Testing							
ISO 9001-2015	Quality Management System requirements to consistently provide products and services that meet customer and applicable statutory and regulatory requirements.							PED	Pressure Equipment Directive #2014/068/EU							
MSS SP-6	Standard finishes for contact faces of pipe flanges and connecting end flanges of valves & fittings							3A	Standard 58-02: Vacuum Breakers and Check Valves							
MSS SP-25	Standard marking system for valves, fittings, flanges and unions							CRN	Canadian Registration Number							
MSS SP-61	Pressure testing of steel valves							NACE MR 0175 / ISO 15156	Petroleum and Natural Gas Industries-Materials for use in H2S Containing Environments in Oil and Gas Production							
MSS SP-125	Grey Iron & Ductile Iron In-Line Check Valves							NACE MR 0103 / ISO 17945	Material resistant to sulfide stress cracking in corrosive petroleum refining environments							
MSS SP-126	Steel In-Line Spring-Assisted Center Guided Check Valves															
MSS SP-144	Pressure Seal Bonnet Valves															

**Notes:** 1. Class 125 and 250 Cast Iron valves are leak tested in accordance with AWWA. 2. Cast Iron Valves only. 3. Except Cast Iron Valves. 4. Contact DFT for API 6FA qualified size/class. 5. ASME Class 150 & 300, 2" to 24" only. 6. ANSI Class 600 RF and 900/1500 RF valves meet face-to-face dimensions. 7. Contact DFT for acceptable materials. 8. Contact DFT for NACE. 9. NAB Valves do not meet API requirements. \* Contact DFT for current codes and standards.

# NACE (AMPP\*)

DFT in-line check valves can meet the “new” (AMPP\*) NACE Standards NACE **MR0175/ISO 15156** and NACE **MR0103/ISO 17945**. The ALC®, DLC®, Excalibur®, GLC®, GPV™, PDC®, SCV®, SCV-R®, WLC®, Y-Calibur® can be constructed of the proper materials depending on the applicable NACE standard.

Prior to April 2003, all NACE applications were handled by NACE Standard MR0175. Compliance allowed 316 (CF8M) body material, 316 stainless steel (CF8M) trim with an Inconel® X-750. In April 2003, the requirements changed with the introduction of NACE MR0103-2003 and the updating of NACE MR0175 to NACE MR0175/ISO 15156.

**NACE MR0103/ISO 17945** – “Material Resistant to Sulfide Stress Cracking in Corrosive Petroleum Refining Environments” in April 2003 applies to “refinery” applications. The material restrictions imposed by this standard relate to potential failures due to sulfide stress cracking (SSC). Typical material selection consists of WCB or 316 (CF8M) body material, 316 stainless steel (CF8M) trim with an Inconel® X-750 spring.

**NACE MR0175/ISO 15156** – “Petroleum and Natural Gas Industries – Materials for Use in H<sub>2</sub>S-Containing Environments in Oil and Gas Production” developed with the European Federation of Corrosion replaced the original MR0175. The new standard primarily pertains to “oil field” applications and is concerned with sulfide stress cracking (SSC), chloride stress corrosion cracking, hydrogen-induced cracking and stepwise cracking, stress oriented hydrogen-induced cracking, soft zone cracking and galvanically-induced hydrogen stress. In order to select materials of construction it is necessary to know the H<sub>2</sub>S and Chloride content, pH, operating temperatures, etc. Because of the information required, the standard makes the end user responsible for the proper selection of materials and their performance. It also limits the use of Austenitic Stainless Steels (i.e. 316 stainless steel, CF8M) and certain High Alloy Austenitic Stainless Steels (i.e. Alloy 20) to operating temperatures less than 140°F (60°C). Other stainless materials and alloys are used for temperatures greater than 140°F.

There are three parts to the standard that must be considered for material selection:

- 1) General Principles for the Selection of Cracking-Resistant Materials
- 2) Cracking-Resistant Carbon and Low Alloy Steels
- 3) Cracking-Resistant Corrosion-Resistant Alloys (CRA's) and Other Alloys.

A detailed explanation of the “new” (AMPP\*) NACE standards can be found at the DFT web site [www.dft-valves.com](http://www.dft-valves.com). You can also contact DFT Engineering at 610-363-8903 or 800-206-4013 to discuss material selections for DFT non-slam check valves to your NACE requirements.

**When contacting DFT for NACE material recommendations, please provide the following information:**

## **NACE MR0103/ ISO 17945**

Line size  
ASME/ANSI Class  
Design pressure & temperature  
Operating pressure & temperature  
Fluid

## **MR0175/ISO 15156**

Line size  
ASME/ANSI Class  
Design pressure & temperature  
Operating pressure & temperature  
Fluid  
pH  
H<sub>2</sub>S content  
Chloride content

\* NACE and SSPC have merged to form AMPP (The Association for Material Protection and Performance).

# Pressure - Temperature Ratings

WCB (1)							CF8M (1)						
TEMP. (°F)	WORKING PRESSURE BY CLASS (PSIG)						TEMP. (°F)	WORKING PRESSURE BY CLASS (PSIG)					
	150	300	600	900	1500	2500		150	300	600	900	1500	2500
-20	285	740	1480	2220	3705	6170	-462	275	720	1440	2160	3600	6000
100	285	740	1480	2220	3705	6170	100	275	720	1440	2160	3600	6000
200	260	680	1360	2035	3395	5655	200	235	620	1240	1860	3095	5160
250 (2)	245	665	1335	2000	3330	5550	250 (2)	225	590	1180	1770	2945	4910
300	230	655	1310	1965	3270	5450	300	215	560	1120	1680	2795	4660
400 (3)	200	635	1265	1900	3170	5280	400 (3)	195	515	1025	1540	2570	4280
450 (4)	185	620	1235	1855	3090	5150	450 (4)	180	495	990	1485	2480	4130
470 (5)	175	610	1220	1835	3060	5100	470 (5)	175	490	975	1465	2440	4070
500	170	605	1205	1810	3015	5025	500	170	480	955	1435	2390	3980
600	140	570	1135	1705	2840	4730	600	140	450	900	1355	2255	3760
650	125	550	1100	1650	2745	4575	650	125	440	885	1325	2210	3680
700 (6)	110	530	1060	1590	2665	4425	700 (6)	110	435	870	1305	2170	3620
750	95	505	1015	1520	2535	4230	750	95	425	855	1280	2135	3560
800	80	410	825	1235	2055	3430	800	80	420	845	1265	2110	3520
							850	65	420	835	1255	2090	3480
							900	50	415	830	1245	2075	3460
							950	35	385	775	1160	1930	3220
							1000	20	365	725	1090	1820	3030
							1050 (7)	20	360	720	1080	1800	3000
							1100 (7)	20	305	610	915	1525	2545

## PRESSURE TEMPERATURE RATING FOR CAST IRON (PSIG) (8, 9)

TEMP. (°F)	CLASS 125		CLASS 250	
	2 1/2" to 12"	14" +	2 1/2" to 12"	14" +
0-150°	200 psig	150 psig	400 psig	300 psig
200° Max (1)	190 psig	135 psig	370 psig	280 psig

## MAXIMUM OPERATING TEMPERATURES OF MATERIALS (10)

MATERIALS	SOFT SEAT				SPRING		
	BUNA-N	EPDM	VITON® & TFE-EN-CAPSULATED VITON®	ZELON® (11)	316 SS	INCONEL® X-750	HASTELLOY® C
TEMP. (°F)	-70 to 250	-75 to 300	-40 to 400	37 to 450	-460 to 450	-460 to 700	-460 to 1000

- Notes:**
1. Pressure/temperature ratings in accordance with ANSI/ASME B16.34-2013.
  2. Maximum temperature for Buna-N.
  3. Maximum temperature for Viton® & Zelon® with 3600 CWP SCV.
  4. Maximum temperature for 316 SS spring.
  5. Maximum temperature for Zelon with 750 CWP SCV.
  6. Maximum temperature for Inconel® X-750 spring.

7. Butt weld end valves only. Flanged ratings terminate at 1000° F.
8. 316 stainless steel trim recommended for temperatures from 180° F to 200° F.
9. Not recommended for gas or steam service
10. Maximum valve temperature rating is limited by seal and spring materials shown above.
11. Zelon is recommended for steam service (as a body seal).

# Pressure - Temperature Ratings

## CK3MCUN (DUPLEX SS) (1)

TEMP. (°F)	WORKING PRESSURE BY CLASS (PSIG)					
	150	300	600	900	1500	2500
-20	290	750	1500	2250	3750	6250
100	290	750	1500	2250	3750	6250
200	260	745	1490	2230	3720	6200
250 (2)	245	705	1410	2115	3525	5880
300	230	665	1335	2000	3335	5560
400 (3)	200	615	1230	1845	3070	5120
450 (4)	185	595	1195	1790	2985	4980
500	170	580	1160	1740	2905	4840
600	140	555	1115	1670	2785	4640
650	125	545	1095	1640	2735	4560
700 (5)	110	540	1085	1625	2710	4520
750	95	530	1065	1595	2660	4430

## CW-12 MW (CAST HASTELLOY® "C") (1)

TEMP. (°F)	WORKING PRESSURE BY CLASS (PSIG)					
	150	300	600	900	1500	2500
-325	230	600	1200	1800	3000	5000
100	230	600	1200	1800	3000	5000
200	210	550	1105	1655	2760	4600
250 (2)	205	535	1070	1605	2680	4470
300	200	520	1040	1560	2605	4340
400 (3)	190	490	980	1470	2450	4080
450 (4)	180	475	950	1430	2380	3970
500	170	465	925	1390	2315	3860
600	140	440	880	1320	2195	3660
650	125	430	860	1290	2150	3580
700 (5)	110	420	835	1255	2090	3480
750	95	410	820	1230	2050	3420
800	80	400	800	1200	2005	3340
850	65	395	785	1180	1970	3280
900	50	385	775	1160	1930	3220
950	35	380	760	1140	1895	3160
1000	20	365	725	1090	1820	3030

## CN7M (CAST ALLOY 20) (1)

TEMP. (°F)	WORKING PRESSURE BY CLASS (PSIG)					
	150	300	600	900	1500	2500
-325	230	600	1200	1800	3000	5000
100	230	600	1200	1800	3000	5000
200	200	520	1035	1555	2590	4320
250 (2)	190	490	980	1475	2460	4100
300	180	465	930	1395	2330	3880
400 (3)	160	420	845	1265	2110	3520
450 (4)	155	405	810	1215	2025	3380
500	150	390	780	1165	1945	3240
600	140	360	720	1080	1800	3000

## HASTELLOY® C-276 AND INCONEL® 625 (1) (8)

TEMP. (°F)	WORKING PRESSURE BY CLASS (PSIG)					
	150	300	600	900	1500	2500
-325	290	750	1500	2250	3750	6250
100	290	750	1500	2250	3750	6250
200	260	750	1500	2250	3750	6250
250 (2)	245	740	1475	2215	3695	6160
300	230	730	1455	2185	3640	6070
400 (3)	200	700	1395	2095	3490	5820
450 (4)	185	680	1360	2045	3405	5680
500	170	665	1330	1995	3325	5540
600	140	605	1210	1815	3025	5040
650	125	590	1175	1765	2940	4905
700 (5)	110	570	1135	1705	2840	4730
750	95	530	1065	1595	2660	4430
800	80	510	1015	1525	2540	4230
850	65	485	975	1460	2435	4060
900	50	450	900	1350	2245	3745
950	35	385	775	1160	1930	3220
1000	20	365	725	1090	1820	3030
1050 (6)	20	360	720	1080	1800	3000
1100 (6)	20	325	645	965	1610	2685
1150 (6)	20	275	550	825	1370	2285
1200 (7)	20	205	410	615	1030	1715
1250 (6)	20	165	330	495	825	1370

## LCC (LOW CARBON CARBON STEEL) (1)

TEMP. (°F)	WORKING PRESSURE BY CLASS (PSIG)					
	150	300	600	900	1500	2500
-50	290	750	1500	2250	3750	6250
100	290	750	1500	2250	3750	6250
200	260	750	1500	2250	3750	6250
250 (2)	245	740	1475	2215	3695	6160
300	230	770	1455	2185	3640	6070
400 (3)	200	705	1405	2110	3520	5865
450 (4)	185	685	1365	2050	3420	5700
500	170	665	1330	1995	3325	5540
600	140	605	1210	1815	3025	5040
650	125	590	1175	1765	2940	4905

## NAB (NICKEL-ALUMINUM BRONZE)

TEMP. (°F)	WORKING PRESSURE BY CLASS (PSIG)	
	150	300
100	275	720
200	215	550
300	185	520
400	155	390
500	115	300

- Notes:**
1. Pressure/temperature ratings in accordance with ANSI/ASME B16.34.
  2. Maximum temperature for Buna-N.
  3. Maximum temperature for Viton® & Zelon® with 3600 CWP SCV.
  4. Maximum temperature for 316 SS spring.
  5. Maximum temperature for Inconel® X-750 spring.
  6. Butt weld end valves only. Flanged ratings terminate at 1000° F.
  7. Maximum temperature for Inconel® 625.
  8. Only bar stock grades in accordance with ASME/ANSI B16.34



# Flange Dimensions

ASME CLASS	NOMINAL PIPE SIZE	OUTSIDE DIAMETER OF FLANGE	OUTSIDE DIAMETER OF RAISED FACE	THICKNESS OF FLANGE $t_f$	DIAMETER OF BOLT CIRCLE	DIAMETER OF BOLT HOLES	NUMBER OF BOLTS	DIAMETER OF BOLTS
150	3/4	3.88	1.69	0.44	2.75	0.62	4	0.50
	1	4.25	2.00	0.50	3.12	0.62	4	0.50
	1 1/2	5.00	2.88	0.62	3.88	0.62	4	0.50
	2	6.00	3.62	0.69	4.75	0.75	4	0.62
	3	7.50	5.00	0.88	6.00	0.75	4	0.62
	4	9.00	6.19	0.88	7.50	0.75	8	0.62
	6	11.00	8.50	0.94	9.50	0.88	8	0.75
	8	13.50	10.62	1.06	11.75	0.88	8	0.75
	10	16.00	12.75	1.12	14.25	1.00	12	0.87
	12	19.00	15.00	1.19	17.00	1.00	12	0.87
	14	21.00	16.25	1.31	18.75	1.12	12	1.00
	16	23.50	18.50	1.38	21.25	1.12	16	1.00
	18	25.00	21.00	1.50	22.75	1.25	16	1.12
	20	27.50	23.99	1.62	25.00	1.25	20	1.12
	24	32.00	27.25	1.81	29.50	1.38	20	1.25
300	3/4	4.62	1.69	0.56	3.25	0.75	4	0.62
	1	4.88	2.00	0.62	3.50	0.75	4	0.62
	1 1/2	6.12	2.88	0.75	4.50	0.88	4	0.75
	2	6.50	3.62	0.81	5.00	0.75	8	0.62
	3	8.25	5.00	1.06	6.62	0.88	8	0.75
	4	10.00	6.19	1.19	7.88	0.88	8	0.75
	6	12.50	8.50	1.38	10.62	0.88	12	0.75
	8	15.00	10.62	1.56	13.00	1.00	12	0.87
	10	17.50	12.75	1.81	15.25	1.12	16	1.00
	12	20.50	15.00	1.94	17.75	1.25	16	1.12
	14	23.00	16.25	2.06	20.25	1.25	20	1.12
	16	25.50	18.50	2.19	22.50	1.38	20	1.25
	18	28.00	21.00	2.31	24.75	1.38	24	1.25
20	30.50	23.00	2.44	27.00	1.38	24	1.25	
600	1	4.88	2.00	0.69	3.50	0.75	4	0.62
	1 1/2	6.12	2.88	0.88	4.50	0.88	4	0.75
	2	6.50	3.62	1.00	5.00	0.75	8	0.62
	3	8.25	5.00	1.25	6.62	0.88	8	0.75
	4	10.75	6.19	1.50	8.50	1.00	8	0.87
	6	14.00	8.50	1.88	11.50	1.12	12	1.00
	8	16.50	10.62	2.19	13.75	1.25	12	1.12
	10	20.00	12.75	2.50	17.00	1.38	16	1.25
	12	22.00	15.00	2.62	19.25	1.38	20	1.25
14	23.75	16.25	2.75	20.75	1.50	20	1.37	
16	27.00	18.50	3.00	23.75	1.62	20	1.50	
900	1 1/2	7.00	2.88	1.25	4.88	1.12	4	1.00
	2	8.50	3.62	1.50	6.50	1.00	8	0.87
	3	9.50	5.00	1.50	7.50	1.00	8	0.87
	4	11.50	6.19	1.75	9.25	1.25	8	1.12
	6	15.00	8.50	2.19	12.50	1.25	12	1.12
	8	18.50	10.62	2.50	15.50	1.50	12	1.37
	10	21.50	12.75	2.75	18.50	1.50	16	1.37
1500	1 1/2	7.00	2.88	1.25	4.88	1.12	4	1.00
	2	8.50	3.62	1.50	6.50	1.00	8	0.87
	3	10.50	5.00	1.88	8.00	1.25	8	1.12
	4	12.25	6.19	2.12	9.50	1.38	8	1.25
	6	15.50	8.50	3.25	12.50	1.50	12	1.37
	8	19.00	10.62	3.62	15.50	1.75	12	1.62

- Notes:**
1. Class 150 and 300 flanges have a 0.06" raised face which is not included in the " $t_f$ " dimension.
  2. Class 600 to 1500 have a 0.25" raised face which is not included in the " $t_f$ " dimension.
  3. DFT's standard raised face flange finish is 125 - 250 Ra.
  4. All dimensions are in inches

ASME B16.5 RAISED FACE

# Warranty

Each DFT® INC. (DFT) product is warranted against defects in material and workmanship for a period of one year after being placed in service, but not exceeding 18 months after shipment, when these products are properly installed, maintained and used within the service and temperature and pressure ranges for which they were designed and manufactured, and provided they have not been subject to accident, negligence, alteration, abuse, misuse or the like. This warranty extends to the first purchaser only. All defective material must be returned to the person from whom you purchased the product, transportation prepaid, free of any liens or encumbrances and if found to be defective will be repaired free of charge or replaced, at the warrantor's or DFT's option.

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It is expressly understood and agreed that unless a statement is specifically identified in this brochure as a warranty, the statements made herein relating to DFT's products are not express warranties, but are merely for informational, illustrative and identification purposes only.

**DFT Inc. specializes in preventing check valve problems and failures  
caused by water hammer and reverse flow.**

**The in-line, spring-assisted check valves are designed to meet customer requirements  
for horizontal and vertical installations in liquids, gas or steam.**

**Whatever your size, pressure or piping configurations,  
DFT has the valve that's right for you.**

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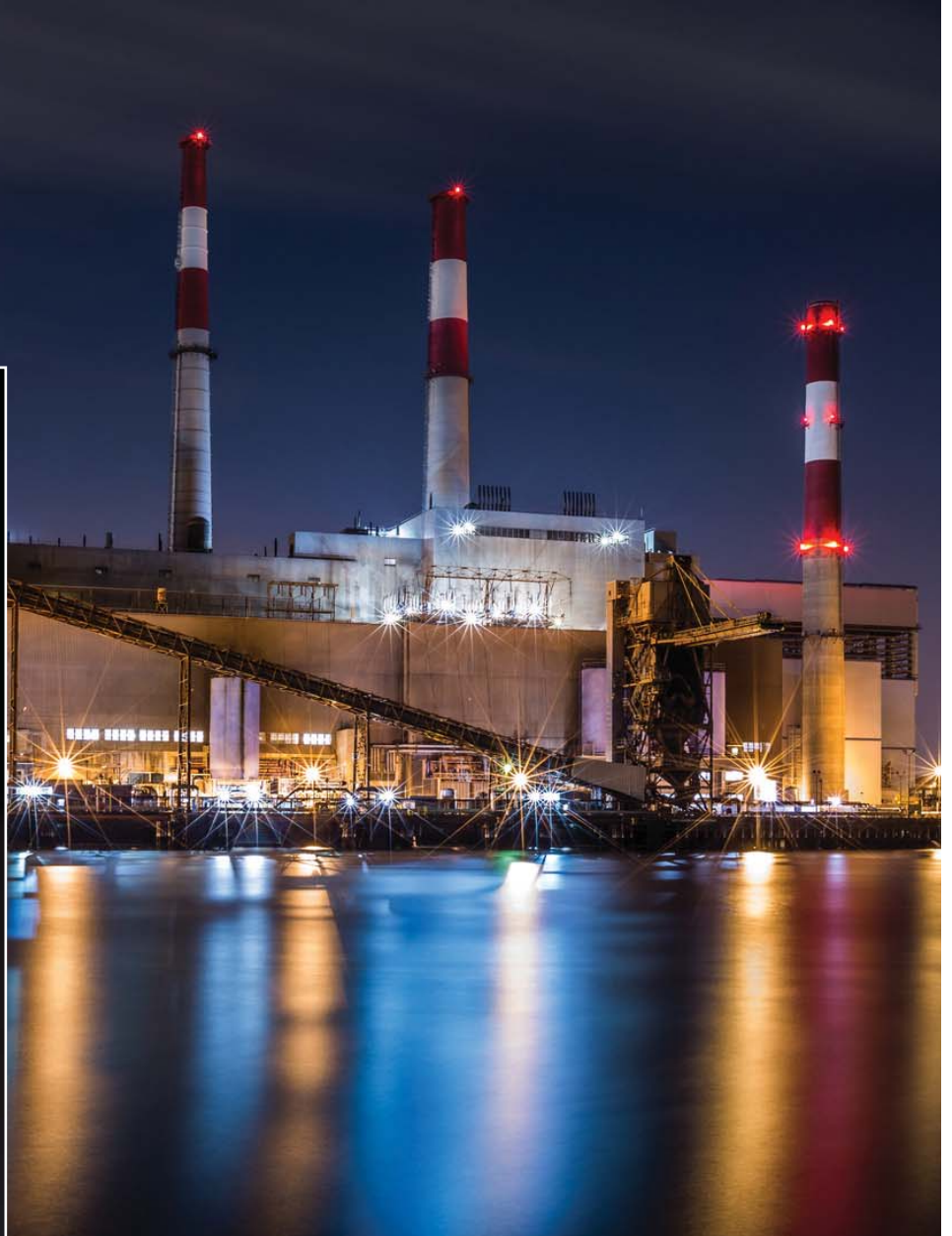
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**INC**

## Control Valves for Severe Service Applications



DFT<sup>®</sup> HI-100<sup>®</sup> Control Valve



# Benefits of DFT® Control Valves

<p><b><u>Compact Size &amp; Straight-thru Design</u></b></p> <ul style="list-style-type: none"> <li>• Easier to install</li> <li>• Design provides smooth flow transitions through valve because fluid does not have multiple right angle turns.</li> <li>• A straight through flow path is less turbulent and it will not clog from solid particles. It also leads to non-turbulent pressure recovery.</li> </ul>	<p><b><u>Low Cost of Spare Parts and Quick Change Trim</u></b></p> <ul style="list-style-type: none"> <li>• The DFT HI-100® is serviceable in-line without special tools. A 1" valve can be serviced in less than 2 hours.</li> </ul>
<p><b><u>Modulating Control</u></b></p> <ul style="list-style-type: none"> <li>• Design offers superior modulating control with 200:1 turndown ratio.</li> </ul>	<p><b><u>Low Actuator Cost</u></b></p> <ul style="list-style-type: none"> <li>• DFT HI-100® is position-seated design. Globe valves are force seated. Therefore, less actuator force is required to operate the valve. This allows the use of smaller, less expensive actuator packages.</li> </ul>
<p><b><u>High Flow Capacity and Larger Cv's</u></b></p> <ul style="list-style-type: none"> <li>• Up to 2 times the flow capacity of equivalent sized globe style control valves.</li> </ul>	<p><b><u>Prevents sediment build-up with Self-purging Design</u></b></p> <ul style="list-style-type: none"> <li>• Due to the venturi flow path and resulting increase in velocity, the body cavities are purged preventing sediment build up within valve body. This occurs due to a vacuuming effect.</li> </ul>
<p><b><u>Low Leakage and Tight Metal-to-Metal Sealing</u></b></p> <ul style="list-style-type: none"> <li>• Per FCI 70-2 Class V</li> </ul>	

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# DFT® HI-100®

## Control Valves for Severe Service Applications

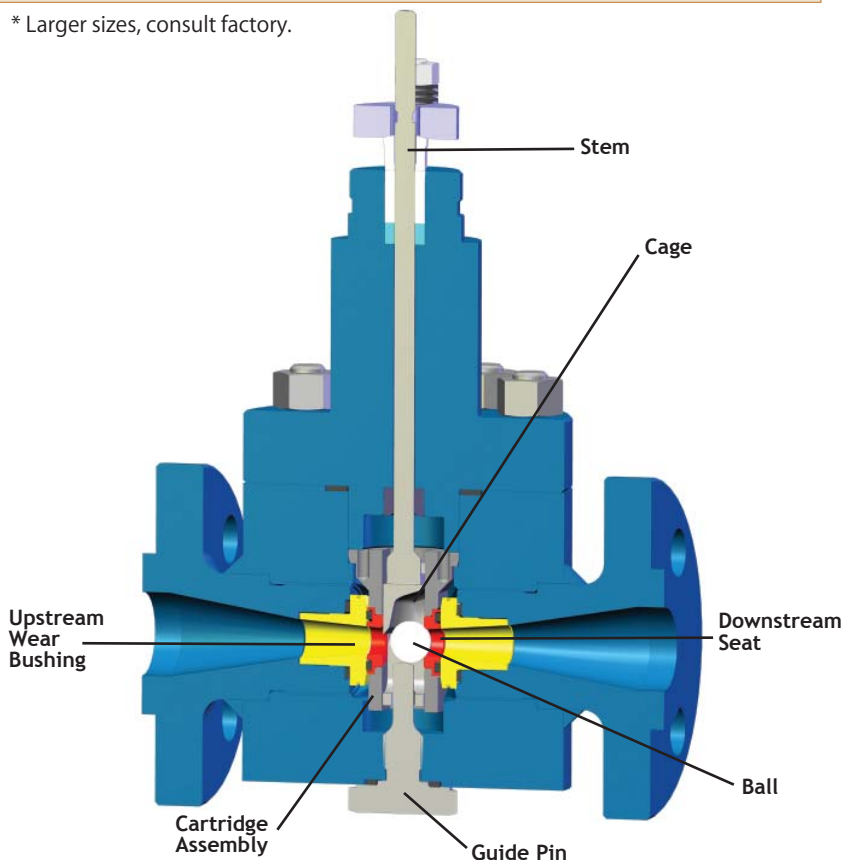
### DFT® Model HI-100® Control Valve Product Line

- Valve Body Sizes: 1" to 12"\*
- Trim Sizes: ¼" to 8"
- Pressure Class: ASME 150 to 4500
- Standard Body Materials:  
Carbon Steel, Stainless Steel and Chrome-moly
- End Connections: Weld End and Flanged
- Stem Seal: Live-loading Packing
- Top Entry to Internal Trim
- Flow Characteristics: Linear

### HI-100® Severe Service Parameters

- Maximum pressure of 16,000 psig
- Pressure differential > 1000 psi (69 bar)
- Temperatures > 800°F (427°C)
- Highly erosive and/or corrosive service
- Service with entrained water droplets such as wet steam and mixed phase applications
- Slurry service

\* Larger sizes, consult factory.



DFT® designs products using the latest CAD, FEA, and CFD design technology software and manufactures in Exton, PA.

### Venturi Straight-thru Design

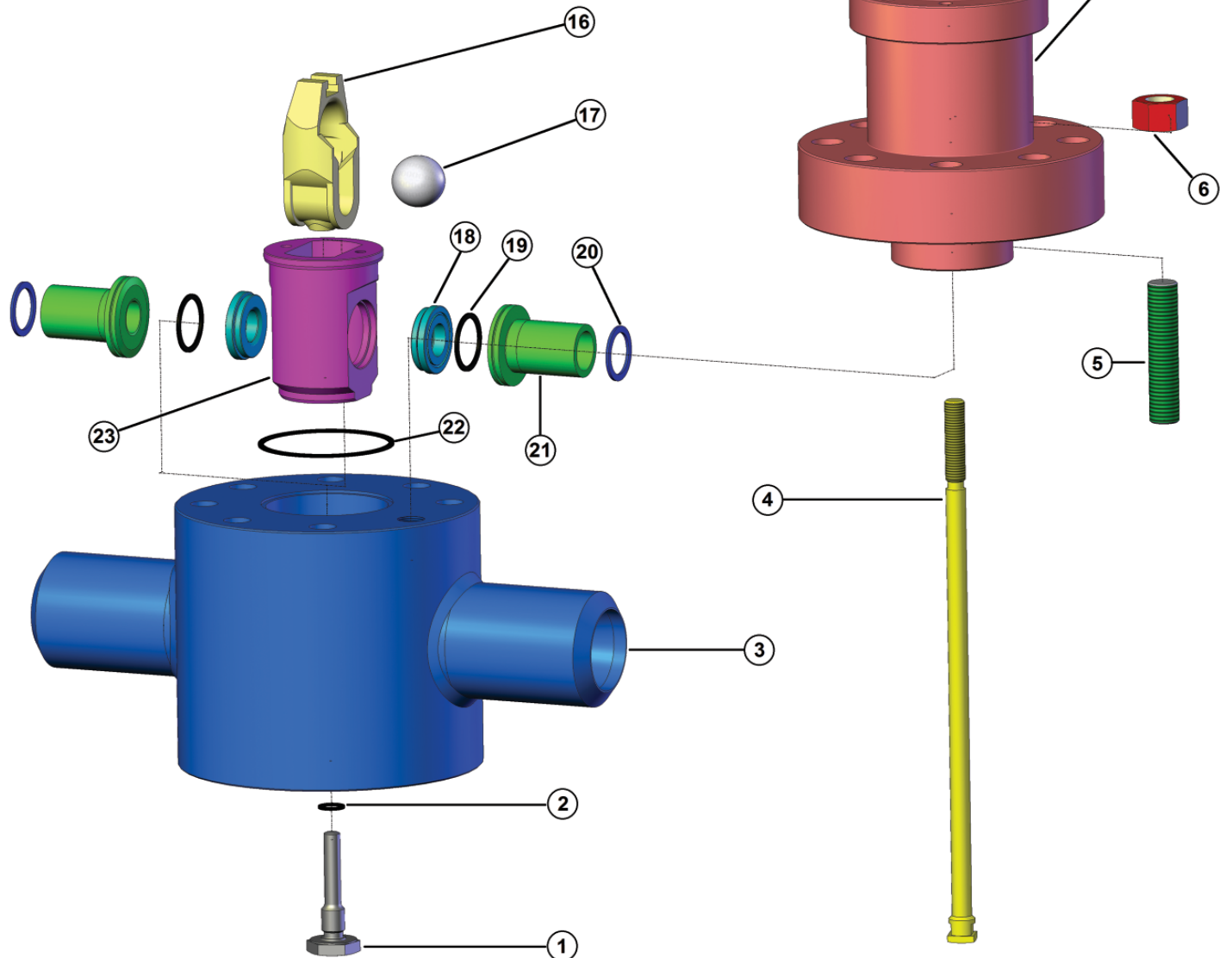
The **HI-100® Control Valve** features an in-line straight-thru venturi flow design. The control element, a spherical ball, is contained by a cage that positions the ball relative to the downstream seat by means of linear stem travel.

There are no close clearances between the moving parts (i.e. cage, ball and seat). These features enable the valve to operate smoothly and efficiently across a wide range of temperatures and/or in fluids carrying suspended particles such as slurries. FCI 70 Class V shutoff is standard.

# Nomenclature

## HI-100® Control Valve

- |                         |                            |
|-------------------------|----------------------------|
| 1. Guide Pin            | 14. Gland                  |
| 2. Guide Pin Gasket     | 15. Packing Set            |
| 3. Body                 | 16. Cage                   |
| 4. Stem                 | 17. Ball                   |
| 5. Bonnet Stud          | 18. Seat                   |
| 6. Bonnet Nut           | 19. Seat Gasket            |
| 7. Bonnet               | 20. Wear Bushing Gasket    |
| 8. Gland Follower Stud  | 21. Wear Bushing           |
| 9. Gland Follower Nut   | 22. Bonnet Gasket          |
| 10. Stem Split Coupling | 23. Seat Retainer Cartidge |
| 11. Position Pointer    |                            |
| 12. Stem Jam Nut        |                            |
| 13. Gland Follower      |                            |



# DFT® HI-100®

## Materials of Construction\* and Application Guide

BODY/BONNET				
Max Recommended Temp**	800° F		1000° F	1200° F
Body / Bonnet <i>(normally matches pipe)</i>	A105		F22 or F11	A479-316
Guide Pin	A193 B7			A193 B8M
Gland/ Follower	303 SS			
TRIM STYLE				
Max Recommended Temp**	350° F	800° F	1000° F	1200° F
Trim Code	(A)	(B)	(C)	(D)
Stem Trim	17-4 PH		A286	
Cage: 1/4" to 2"	Cast Stellite® #6			
Cage: 2-1/2" & Larger	WC6 w/Stellite® #6 Hardfacing			CF8M/Stellite® #6
Cartridge	A351 CF8M			
Ball: 1/4" to 4"	PSZ Ceramic	440C	Stellite®	
Ball: 6" and Larger	Stellite® #6			
Seat: 1/4" to 2"	440C		Stellite® #6	
Seat: 2-1/2" & Larger	440C		316 SS/Stellite®	
Wear Bushing	440C		422 SS	Stellite® #6
Packing***	Graphite		High Temperature Graphite	

APPLICATION	TRIM CODE	APPLICATION	TRIM CODE
Boiler Feed Pump Bypass	A	Auxiliary Steam Control	C
Drum Level Control	B	Attemperator Spray Control	C
Turbine and Boiler Drain	B	Turbine Bypass	C
Feed Water Control	B	Sootblower Control (Hi-Temp)	D

\* Standard materials of construction are shown. NACE, corrosion resistant, and other special trims available upon request. Contact the factory for more information.

\*\* For higher temperature requirements, consult the factory.

\*\*\* Teflon® packing available upon request, max temp (400°F). Low emission packing available upon request.

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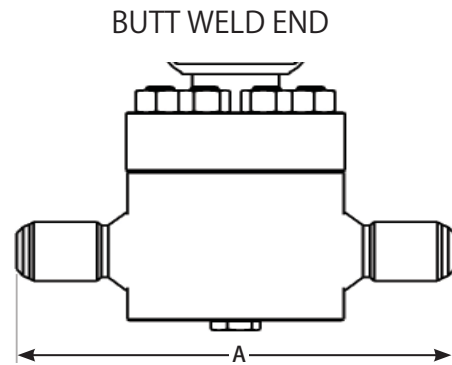
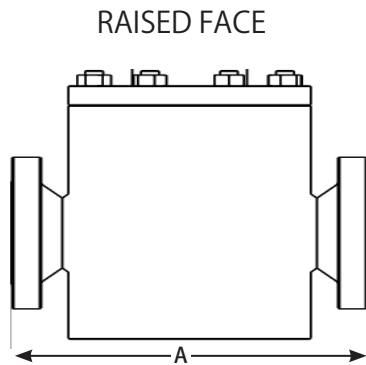
## Accessories

The following accessories are available for the DFT® Control Valves

ACTUATORS	ACTUATOR ACCESSORIES	PACKING	SPECIAL TRIM
Pneumatic Diaphragm	Air Filter Regulator	Graphite	Catalyst
Pneumatic Piston	Air Set	Teflon® (CVH)	Slurry
Electric	Limit Switches	Live Loaded	Temperature > 1200°F
Electro-Hydraulic	Manual Override	Emission Compliant	
Hydraulic	Positioner		
Manual	Solenoid		
	Transducer		

# DFT® HI-100®

## Face to Face Dimensions



Nominal Valve Size		HI-100 Face to Face Dimensions*											
		ASME Class 150		ASME Class 300		ASME Class 600		ASME Class 900		ASME Class 1500		ASME Class 2500	
NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/4	8	4.00	102										
3/8	10	4.00	102										
1/2	15	4.25	108	6.00	152	6.50	165	8.50	216	8.50	216	10.38	264
3/4	20	4.62	117	7.00	178	7.50	190	9.00	229	9.00	229	10.75	273
1	25	5.00	127	8.00	203	8.50	216	10.00	254	10.00	254	12.12	308
1 1/4	32	5.50	140	8.50	216	9.00	229	11.00	279	11.00	279	13.75	349
1 1/2	40	6.50	165	9.00	229	9.50	241	12.00	305	12.00	305	15.12	384
2	50	8.00	203	10.50	267	11.50	292	14.50	368	14.50	368	17.75	451
2 1/2	65	8.50	216	11.50	292	13.00	330	16.50	419	16.50	419	20.00	508
3	80	9.50	241	12.50	318	14.00	356	15.00	381	18.50	470	22.75	578
4	100	11.50	292	14.00	356	17.00	432	18.00	457	21.50	546	26.50	673
6	150	16.00	406	17.50	445	22.00	559	24.00	610	27.75	705	36.00	914
8	200	19.50	495	22.00	559	26.00	660	29.00	737	32.75	832	40.25	1022

\* Dimensions per ASME B16.10. Valves can be supplied to meet end user requirements.  
Class 4500 and higher pressure valves are supplied to meet end user requirements.

HI-100 Maximum Valve Flow Coefficient							
Trim Size	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2
Cv (Kv)	1 (0.9)	2.5 (2.2)	4.5 (3.9)	10 (8.6)	20 (17)	31 (27)	45 (39)

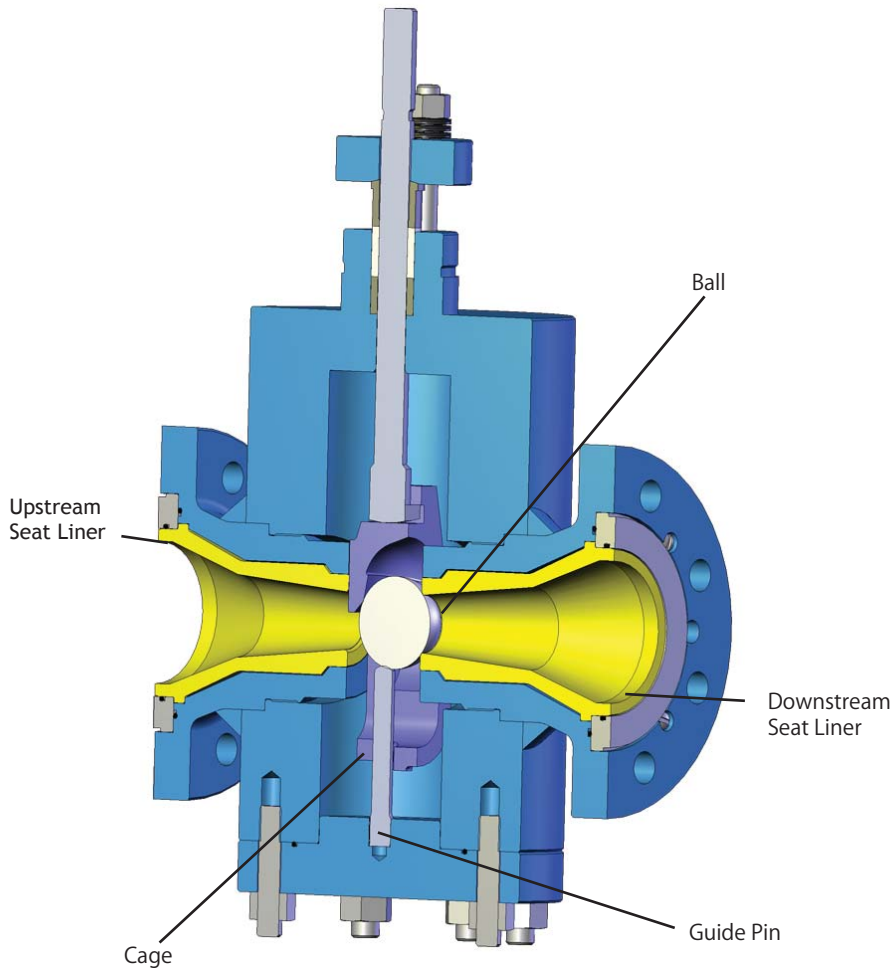
Trim Size	2	2 1/2	3	4	6	8	
Cv (Kv)	80 (69)	125 (108)	180 (155)	320 (275)	720 (621)	1280 (1103)	

DFT® and HI-100® are Registered Trademarks of DFT Inc.

\* Larger sizes consult factory.

# DFT® ULTRA-TROL®

The DFT ULTRA-TROL® Control Valve features hardened sleeves for slurry applications. This style valve is designed for flanged end applications and bench replacement of the seat insert. The internal design is the same in-line venturi flow design used for the HI-100®. The control element, a spherical ball, is contained by a cage which positions it relative to the downstream seat. Stem travel is linear and operating thrusts are low. The result is excellent control in tough environments. The ball, cage and stem can be replaced in-line through the bottom cover.



## FEATURES:

- Straight-thru design
- 1/2" to 6"
- Carbon Steel, Alloy Steel  
Stainless and High Alloys
- ANSI RF, RTJ or DIN Ends
- Linear Characteristic
- Hardened Sleeves
- Temperatures:  
-20° F to 1000° F
- Bench Repair
- Manual, Pneumatic, or  
Electric
- Low Operating Thrust
- Bottom Entry

### Ultra-Trol Maximum Flow Coefficient

Trim Size	1/2	3/4	1	1 1/4	1 1/2	2	2.5	3	4	6
Cv (Kv)	4.5 (3.9)	10 (8.6)	20 (17)	31 (27)	45 (39)	80 (69)	125 (108)	180 (155)	320 (275)	720 (621)



# Bernoulli

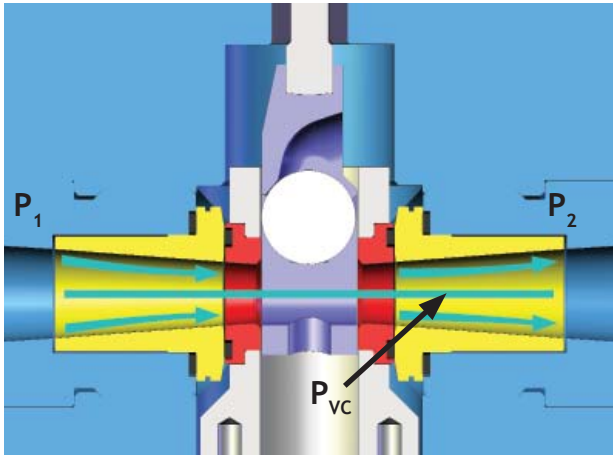
## The Bernoulli Principle

Energy per unit volume at inlet = Energy per unit volume at outlet

$$P_1 + 1/2 \rho v_1^2 + \rho gh_1 = P_2 + 1/2 \rho v_2^2 + \rho gh_2$$

Where:  $P$  = Pressure Energy;  $1/2 \rho v^2$  = Kinetic Energy;  $\rho gh_1$  = Potential Energy

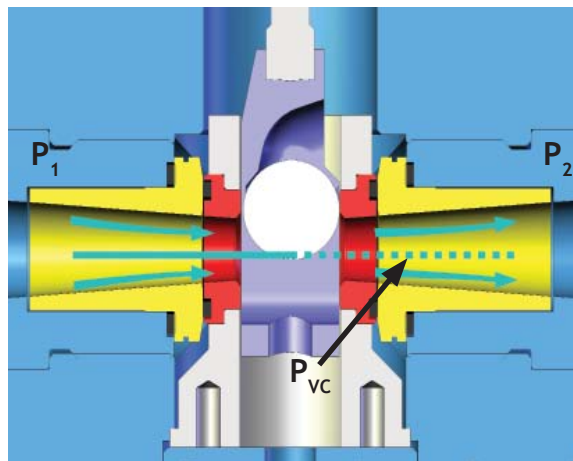
The best example of the Bernoulli Principle is often called the “Bernoulli Effect” which states that fluid pressure decreases as fluid velocity increases.



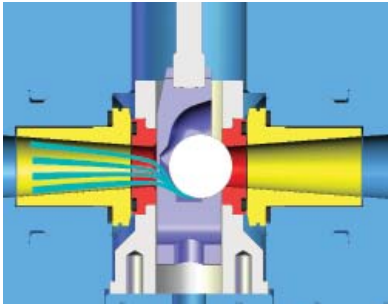
The illustration shows the typical change in pressure as the fluid moves through the valve. At inlet, the pressure is  $P_1$ . Velocity increases through the valve to a maximum as it moves through the valve port. At the valve port, the pressure drops to  $P_{vc}$  (pressure at the vena contracta), which is the lowest pressure in the valve. As the fluid exits the valve, pressure recovers to  $P_2$  which is lower than  $P_1$ .

## Cavitation Control

Using the illustration below, at  $P_1$  the fluid stream is all liquid. Liquid flashes at the valve port when the pressure at the vena contracta ( $P_{vc}$ ) drops below the liquid vapor pressure. As the velocity decreases in the exit nozzle, the pressure increases (or recovers) to  $P_2$  and the vapor bubbles collapse. This is known as the potentially damaging phenomena called cavitation. Unlike tortuous path valves, our control valves manage cavitation. Bubbles form at the lowest pressure (highest velocity) which is at the center of the fluid stream. The subsequent collapse is within the hydraulic barrier, not on metal surfaces. Our nozzle design provides a smooth recovery prior to the fluid exiting the valve.

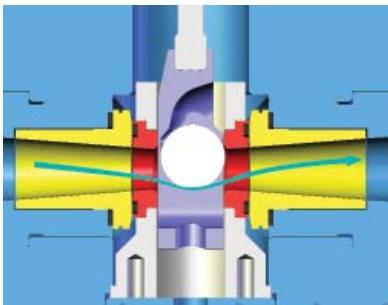


# DFT® Control Valve Operation



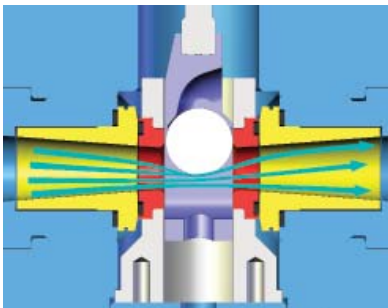
## Closed Position

In the closed position, pressure moves the ball into the conical seating surface and holds it in place. Line contact between the ball and the seat results in high surface loads between the seat and the ball producing tight closure. As pressure increases, the seat load increases improving the seal. During each valve stroke, the ball rotates and repositions itself presenting a new sealing surface to the seat, prolonging the tight shutoff capability. Temperature changes do not affect the tight shutoff since there is freedom of movement between the ball and the seat. The ball cannot become wedged into the seat. The guide pin is used to set the ball position, and during normal operation it has no function.



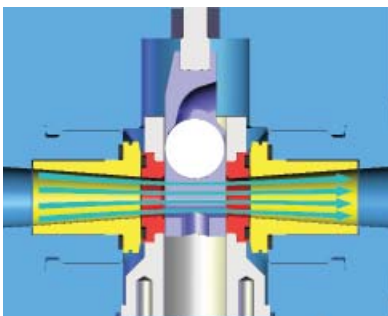
## Close Throttling Position

As the valve opens, it operates in the close throttling position. In this position, the ball is supported by the two forward inclined pads on the cage and the seat surface which oppose the pressure differential force caused by the Bernoulli effect. The ball is supported and stable throughout the valve stroke and does not pinwheel or chatter.



## Intermediate Throttling Position

In the intermediate throttling position, the ball rests on the four cage pads and is opposed by the same differential pressure force. The stable suspension of the ball throughout the valve stroke permits extremely close and repeatable control throughout the entire valve stroke.



## Full Open Position

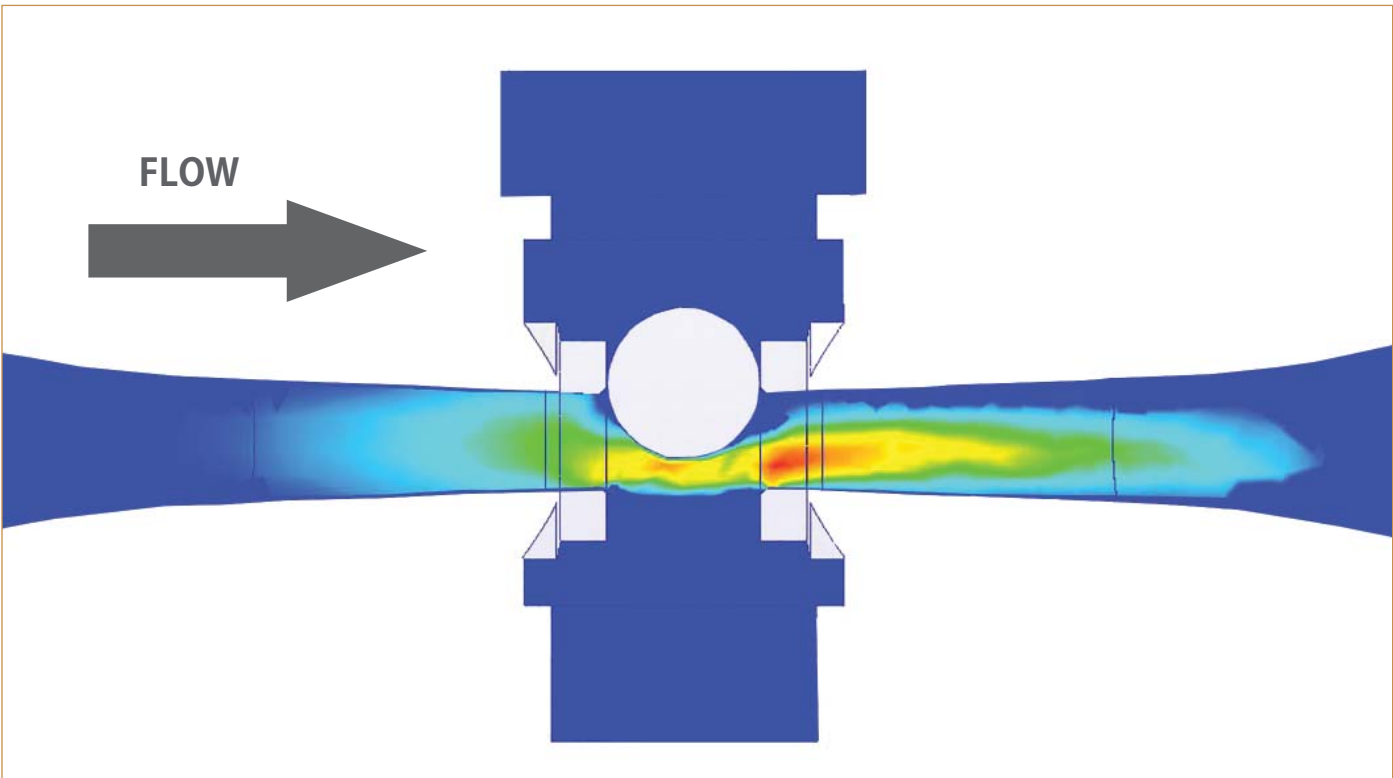
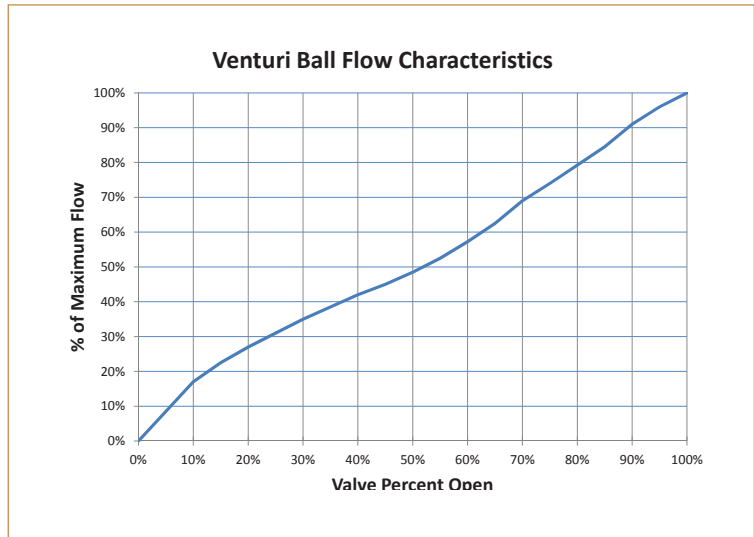
In the full open position a straight-thru flowpath exists and the valve operates with the inherently high flow capacity of a venturi. The ball is firmly held out of the flow stream by four inclined pads on the cage which oppose the pressure differential force. The Bernoulli pressure differential moves the suspended particles towards the center of the fluid stream, preventing them from settling out into the body. This keeps the valve clean and free of material deposits in all positions during the valve stroke.

# Flow Characteristics

## HI-100®/MSV-100®/Ultra-Trol®

### Flow Characteristics

The classic DFT® design has a linear flow characteristic. Linear characteristic provides superb control over a wide range. DFT's venturi-ball design is a unique and robust design that works efficiently with the physics of the fluid flow. Incoming flow enters through the nozzle to the control area. The smoothly converging nozzle lowers turbulence as the flow moves around the curved control path. Note that only rounded surfaces and cones are used for the control function. As the flow exits the valve, the diverging nozzle controls expansion and recovery so that no turbulence is added to the flow stream. This design provides a superior, smooth flow control.



Shown above is a CFD model of the velocity field in a HI-100® Control Valve.

# Applications

## Aerospace

- Air
- Fuel Oil
- Gas
- High Pressure Water with fines
- Methane Vapor

## Chemical

- Abrasive Slurry Control
- Hot Hydrogen Gas
- Pitch Blend Control
- Powerhouse Applications
- Super Critical Water Oxidation

## Government/Military Test

- Air
- Nitrogen Gas
- Steam
- High Pressure Water

## Pulp & Paper

- Powerhouse
- Steam Control

## Power

- Bottom Ash
- Condensate Drain
- Drum Emergency Blowdown
- Drum Level Control
- Feedwater Control
- Feedwater Recirculation
- Fuel Oil Control
- Geothermal Water Injection
- Power Operated Relief
- Soot Blower Control
- Spray Control (Attemperator, Reheat/Superheat)
- Steam PRV
- Thermal Drain
- Turbine Bypass
- Turbine Steam Extraction

## Steel

- Powerhouse

## Refinery/Petrochemical

- Abrasive Slurry Control
- Amine Service
- Butadiene
- DEA
- Desulphurization Sour Water
- H<sub>2</sub>S, NH<sub>3</sub>, Hydrocarbon
- Hydrocarbon Sluicing
- Level Control
- Pitch Blending Control
- Platinum Catalyst Slurry
- Quench Water to Coker
- Sour Water
- Sulfur Recovery Throttling Valve
- Heavy Oil Upgrading

## Pipeline

- Pipeline Control





# Codes & Standards

**ASME B16.5** – Pipe Flanges & Flanged Fittings

**ASME B16.10** – Face to Face & End to End Dimensions of Valves

**ASME B16.34** – Valves – Flanged, Threaded & Welding Ends

**ANSI/FCI 70-2** – Control Valve Seat Leakage – HI-100° & Ultra-Trol® seat test

**ANSI/ISA 75.01** – Flow Equations for Sizing Control Valves

**ANSI/ISA 75.08.01** Face-to-Face Dimensions for Flanged Globe-Style Control Valve Bodies - LSV-100®

**MSS-SP 25** – Standard Marking System for Valves, Fittings, Flanges & Unions

## Sizing DFT® Control Valves

DFT® Control Valves are sized using standard ISA sizing formulae for liquid, gas and steam applications.

Please complete the Application Data Sheet on page 13 so that we can specify the proper valve for your application. Additional information concerning any valve that is being replaced by our valve such as the Cv of that valve and the original data sheet can be used to effectively specify the proper valve as well.







FAX OR SCAN AND EMAIL THIS COMPLETED FORM TO THE FACTORY

**SEVERE SERVICE CONTROL VALVES  
APPLICATION DATA SHEET**

<b>DFT Rep:</b>		<b>DFT Quote #:</b>
-----------------	--	---------------------

Highlighted items are required information

<b>CUSTOMER:</b>	
<b>ADDRESS:</b>	
<b>CONTACT:</b>	
<b>EMAIL:</b>	

<b>CUSTOMER REFERENCE #:</b>	
<b>RESPONSE DUE DATE</b>	
<b>REQUIRED DELIVERY:</b>	
<b>PHONE:</b>	
<b>FAX:</b>	

**General**

1 End User	
2 Application	
3 Tag Number	
4 Inlet Pipe	Size/schedule
5 Outlet Pipe	Size/schedule
6 Pipe Material	

**Process Data**

18 Fluid (water/steam etc)				
	Operating Conditions			
	Min	Normal	Max	Units
19 Inlet Pressure				
20 Outlet Pressure				
21 Flow Rate				
22 Temperature				
	Fluid properties (if known)			
				Units
23 Specific Volume				
24 Specific Gravity				
25 Density				
26 Vapor Pressure				
27 Viscosity				
	Valve Design Conditions			
				Units
28 Pressure				
29 Temperature				
30 Max Differential Press.				
	Process Notes			
31 Service Type				Modulating; On/Off
32 Cycles per day				

	<b>Valve Type</b>	Choose From:
7 Style		Hi-100®, Ultra-Trol®, UniFlo®
8 Material		A105,F22,316, * other
9 End Connections		RF, RTJ, BW, SW, * other
10 Pressure Class		
11 Entry		Top or Bottom
12 Orientation		Horizontal, Vertical, * other
12.1 Flow Direction		Right-Left; Left-Right

	<b>Trim</b>	Choose From:
13 Type		Std, Steam, Feedwater, *other
14 Packing		Teflon®, Graphite, *other
		Live Load, Emission Compliant
15 Seals		Spiral Wound; O-ring; *other

	<b>Actuator</b>	
16 Choose Type		Model Required
16.1 Air		
	Min psig avail.	
16.2 Electric		
	Volts AC/DC	
16.3 Hydraulic		
	psig	
	Capacity (gpm)	
16.4 Manual		
17 Failure Mode		Open/Close/In Place

	<b>Actuator Accessories</b>	
33 Manual Override		Top; Side; * special
34 Positioner		Digital/EP/Type
	Signal	3-15 psig; 4-20 mA
35 Solenoid		Type/Model/Voltage
36 Limitswitch		Quantity/Location
	*Notes	Type/Model/Voltage
37 Air Filter Regulator		
38 Gages		
39 Special		Add to notes

<b>Notes</b>



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Exton, PA 19341-0566

e-mail: dft@dft-valves.com  
internet: www.dft-valves.com

610-363-8903  
800-206-4013  
FAX 610-524-9242

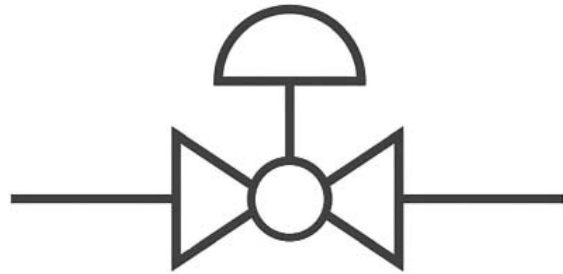
# Specifying Reliable Severe Service Valves

When specifying severe service control valves, it is critical to have the most current operating information available. Even in well-maintained systems, operating parameters can change over time, affecting flow rate, pressure, temperature, and piping configurations.

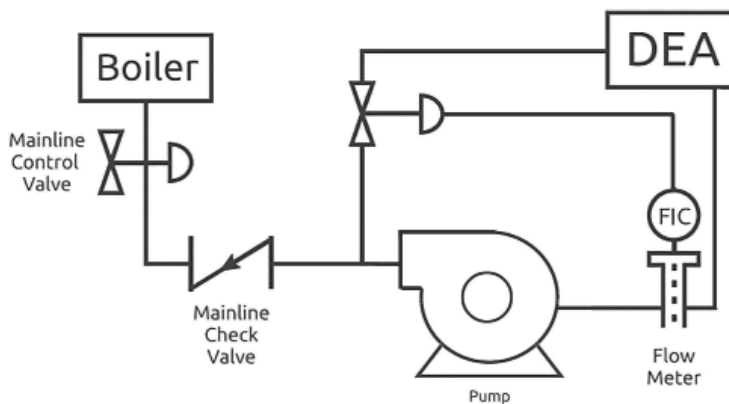
**Other factors to consider include:**

## APPLICATION & OPERATION INFORMATION

- Flow rates
- Inlet and outlet pressures
- Temperature
- Fluid type



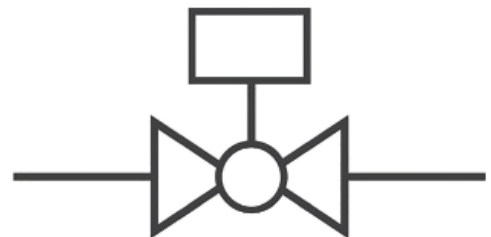
## PIPING DESIGN



- Size and schedule
- Material
- ISO piping layout

## SPECIAL CONSIDERATIONS

- Fluid state (mixed phase, contains erosive or corrosive particles)
- Valve actuation (electric or pneumatic)
- Details concerning feedback system



# Our Unique Venturi-Cage Valve

## • **Straight-thru Design- solves your performance problems**

1. Eliminates Damage: Our unique nozzle design smoothes turbulence which eliminates body, trim and piping damage caused by high velocity fluid impingement in your system.
2. Handles Greater Flow: Since we have no tortuous path through our valve, our valves have a higher Cv than that of the same size valve made by competitors, often saving you money.
3. Precision Modulation & Control: A turndown ratio of up to 200:1 and linear flow characteristic gives you precise control over the entire operating range.

## • **Unique Trim Design – lowers your cost of ownership**

1. In-Line Repair: All styles can be repaired in-line without the need for expensive special tools saving you time and money.
2. Long Life: Our trim design uses wear components at the critical places along the flow path maximizing design life for the application.
3. Low Replacement Costs: Our unique ball, cage and wear bushing design allows you the flexibility to replace only the worn parts, lowering your cost of repair significantly when compared to our competition.

## • **Wide Application Range- can be used in nearly any service**




1. ANSI 150 to 4500: Handles all ANSI applications, pressures up to 16,000psi and temperatures from -20°F to 1900°F.
2. Liquid, Gas, Steam, Slurry: Our non-tortuous path design handles liquids, gases, steam (including mixed phase flow), abrasives and many slurry applications.
3. Materials: Standard body materials are Carbon, Alloy and Stainless Steel. High nickel and exotic alloys are also available – any weldable alloy that is available as a forged material can be used.

## • **Venturi Nozzle Design – reduces turbulence in your piping system**

1. Cavitation Control: Our straight-thru Venturi design minimizes the effects of cavitation.
2. Particulate and Mixed Phase Flow: Our nozzle design moves particles and water droplets to the middle of the flowstream avoiding costly damage.
3. Prevents Erosion: Our nozzle design smoothes the flow and reduces the potential for valve body and pipe erosion.

## • **Class V Shutoff - tighter shutoff than Class IV, found in most other control valves**

1. Reduced leakage will result in improved operational efficiency in thermal system applications.
2. Extends the life of the product.
3. Position seated design - superior sealing across large pressure differentials.

Trim Type	Description	Service	Leakage	Trim characteristic
LSV-100® Top Guided Trim 	Top guided, unbalanced, single seat trim. This style trim is suitable for pressure drops up to 600 psi in a non-cavitating environment. Your most economic choice for standard control applications.	Up to 6” Standard Class 150 Class 300	Class IV	Quick Opening Linear Equal %
MSV-100® Venturi Ball Design 	Our unique venturi ball design provides superior control, long life and low maintenance costs for moderate pressure drop applications. The MSV-100® is designed for flanged applications. Seat replacement is accomplished on the bench.	Up to 4” Moderate Class 600 Class 900 Class 1500	Class V	Linear
Hi-100® Venturi Ball Design 	This unique venturi ball design provides superior control, long life and low maintenance costs for severe pressure drop applications. The Hi-100 is designed for in-line repair using quick change trim.	Up to 12” Severe All Classes	Class V	Linear

## Warranty

Each DFT®Inc. product is warranted against defects in material and workmanship for a period of one year after being placed in service, but not exceeding 18 months after shipment, when these products are properly installed, maintained and used within the service and temperature and pressure ranges for which they were designed and manufactured, and provided they have not been subject to accident, negligence, alteration, abuse, misuse or the like. This warranty extends to the first purchaser only. All defective material must be returned to the person from whom you purchased the product, transportation prepaid, free of any liens or encumbrances and if found to be defective will be repaired free of charge or replaced, at the warrantor's or DFT's option.

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INC.