DFT® INC.

"Check Valve Doctor™"

ISO 9001:2000

In-Line Check Valves

CE

DFT®

"Check Valve Doctor™"

DFT in-line check valves began over 60 years ago with a customer's need for a small metal-seated check valve that could be installed in any position while providing tight shut-off. The Basic-Check® valve was developed to satisfy that need. Over the following decades, other customers' needs led to the development of the ALC™, DLC®, DSV®, Excalibur®, GLC®, PDC®, SCV® and WLC® styles of in-line silent check valves. Each of these DFT in-line check valves addresses the particular needs of a modern day customer.

DFT's objective is to solve check valve problems and prevent check valve failures. DFT has learned by listening to customers like you that each industry has special needs that can exceed other check valve designs. We specialize in providing in-line check valves that meet customer requirements as opposed to simply meeting line size. In some cases, minor modifications to our valves have solved customer problems by improving performance and extending service life. The "Check Valve Doctor" continues to grow from satisfying these needs and solving problems.

DFT silent check valves are known around the world as the valve to use to prevent or eliminate water hammer problems. Whatever your size, pressure or piping configurations, DFT has a check valve for you.

Thank you for considering DFT for your check valve requirements.

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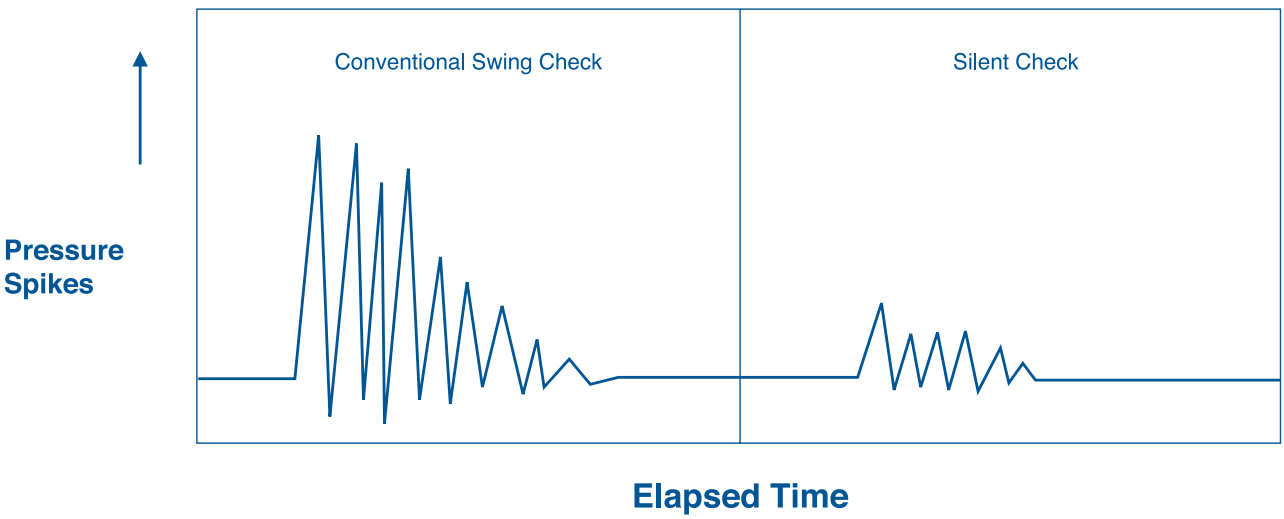
Water Hammer

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, 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. Figure 1 shows typical pressure curves after closure of a check valve.

Figure 1



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 silent check valve.** Silent 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 as shown on the right side of Figure 1.

Features

- **Designed to prevent "Water Hammer".**
  The spring-assisted, in-line 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 causing "Water Hammer" and the resultant noise and damage to piping systems from occurring.
- **Designed to open at 0.5 psi differential pressure and fully open at 1.0 psi differential pressure.**
- **Can be installed in *"ANY"* position.**
  Including vertical with flow up or down. (Special springs may be required)
- **MSS SP 126-2000 Steel In-line 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**
  Contact DFT for products that meet API 6D.
- **API 6FD- Fire Test for Check Valves**
  The ASME Class 150 and 300 GLC meets API 6FD.
- **Meet or exceed MSS SP-61 leakage requirements.**
  Metal-to-metal seating is standard in all DFT in-line check valves. Cast iron valves meet AWWA seat leakage requirements.
- **Available with soft seats for bubble-tight shutoff.**
- **Dual guided stems.**
  The stem is guided upstream and downstream to guard against vibrations and insure proper disc seating. (Does not apply to the Basic-Check®, DLC®, DSV® (½"-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™, Excalibur®, GLC® and WLC®.
- **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 in-line 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. Cast Iron valves are recommended for liquid services only.
- **NACE**
  DFT check valves can meet the "new" NACE standard MR0103-2003 and MR0175/ISO 15156. See page 33.
- **Maintenance and Installation guides.**
  Available for all DFT in-line check valves.

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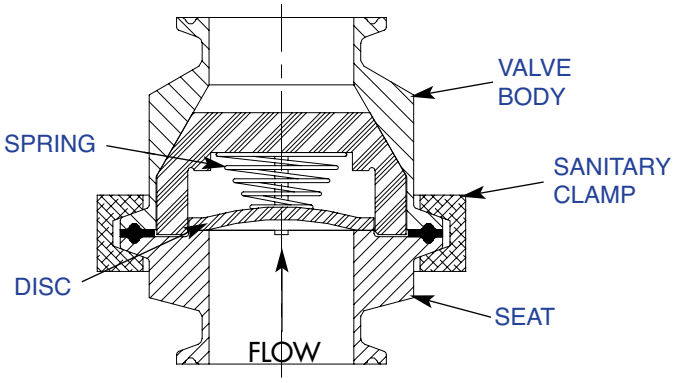
Valve Selection Chart

	ALC™	Basic-Check®	DLC®	DSV®	Excalibur®	GLC®	PDC®	Restrictor Check	SCV®	SCV-R™	Vacuum Breaker	WLC®
PAGE	16	26	12	6	18	20	22	30	8	10	28	14
SIZE	10 TO 24	1/4 TO 2-1/2	1/2 TO 3	1/2 TO 3	2 TO 24	1 TO 24	2 TO 12	1/4 TO 2-1/2	1/2 TO 3	1/2 TO 2	1 TO 4 (OD)	1 TO 10
ENDS												
NPT		X						X	X(1)	X(1)	X	
SW									X(1)	X(1)		
FLG			X		X	X	X					
BW					X							
FLG/BW					X							
Victaulic®					X							
Wafer	X											X
Clamped				X								
ASME												
125						X						X
150	X		X		X	X	X					X
250						X						X
300	X		X		X	X	X					X
600					X	X	X					X
900					X	X	X					X
1500					X	X	X					X
2500						X						X
750 CWP									X	X		
3600 CWP									X			
OTHER		X(2)		X(2)		X(3)		X(2)			X(2)	X(3)
MATERIALS	**BODY /TRIM**											
Cast Iron						X(4)						X(4)
WCB/316 SS	X				X	X	X					X
316 SS/316 SS	X	X(5)	X	X(5)	X	X	X	X(5)	X	X	X(5)	X
Other Alloys	X		X		X	X			X	X		X
OPTIONS												
Soft Seat		X			X	X	X	X	X	X	X	X
X-750 Spring	X	X	X(6)		X	X	X	X	X(6)	X(6)	X	X

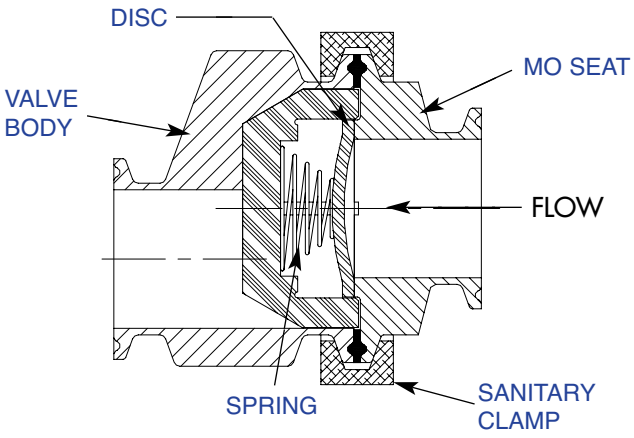
1. NPT x SW available.
2. **CWP RATING BSS, BSA, BSE, BSSV, Restrictor Check:** 450 to 2500 CWP depending on size;
   BSSH6, BSSV6: 450 to 6000 CWP depending on size.
   BSSH7: 800 to 6000 CWP depending on size.
   DSV: ASME/ANSI 108.
3. API 2000 and 5000 ARE AVAILABLE. Contact DFT for sizes.
4. **TRIM 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
6. Inconel® X-750 spring is standard.

DSV®

58–00



Vertical Valve



Horizontal Valve

Features:

- Spring-assisted silent closing
- Horizontal or vertical installation
- Sizes _" thru 3"
- 150 CWP, 108 ANSI Pressure Class
- 316L body and seat
- 316 disc, spring and guide assembly
- 25 Ra Internal Surface Finish
- Edge guided disc: _" thru 2"
- Edge/center guided disc: 2-1/2",3"
- Lapped "metal" seat and disc
- Springs:
  - Low cracking pressures
  - .16 psig to .66 psig
  - Conical design
  - Electropolished finish
- Body Seal: EPDM (standard)
- CIP (Clean in Place)
- Clamped ends
- Seat Leakage per MSS SP-61
- 3A Standard
- OPTIONS:
  - 15 Ra Internal Finish
  - Body Seals
    - Tuf-Flex
    - Viton

The ***DSV*** is an in-line spring-assisted check valve designed to prevent flow reversal in industries with strict cleanliness codes. To accommodate various piping arrangements, the *DSV* 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,* with a 316L stainless steel body and seat, is fastened with a quick release clamp and elastomeric body seal to permit fast and easy access to the internals. The internal surface finish is **25 Ra** while the disc and seat are lapped to provide excellent shutoff.

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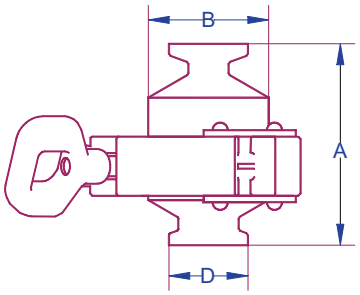
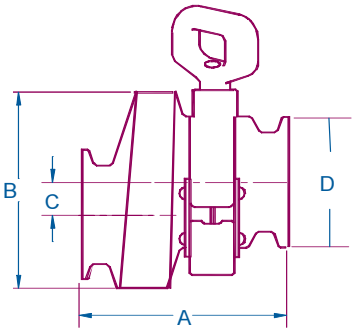
"Vertical" Valve

		1/2”	3/4”	1”	1-1/2”	2”	*2-1/2”	*3”
A		2.50	2.25	2.92	3.29	4.03	5.56	4.38
B (dia.)		.98	.98	2.00	2.50	3.00	4.00	4.00
D (dia.)		.98	.98	1.98	1.98	2.52	3.05	3.58
Weight		1.4	1.3	2.3	2.8	3.9	9.9	6.1
Cv		2.4	7	18	38	53	81	109
CP	Flow Down	.26	.26	.31	.23	.16	.42	.42
	Flow Up	.33	.33	.41	.33	.31	.66	.66



"Horizontal" Valve

	1/2”	3/4”	1”	1-1/2”	2”	*2-1/2”	*3”
A	2.50	2.50	3.48	3.67	4.41	5.56	4.88
B (dia.)	1.50	1.50	3.00	3.12	3.62	4.75	4.75
D (dia.)	.98	.98	1.98	1.98	2.52	3.05	3.58
Weight	1.4	1.4	3.7	4.0	5.8	11.2	9.9
C	.44	.31	.50	.50	.50	.73	.48
Cv	2.4	7	12	36	47	69	90
CP	.29	.29	.36	.28	.23	.54	.54



*** Edge/center guided disc**
All dimensions are in inches. Weights are in pounds.
CP: Cracking Pressure (psig)

MATERIALS OF CONSTRUCTION	
Body	316L SS
Seat	316L SS
Disc	316 SS
Spring	316 SS (electropolished)
Guide Assembly	316 SS
Body Seal	EPDM** (-75°F to +300°F)
Clamp	304 SS
Internal Surface Finish	25 Ra

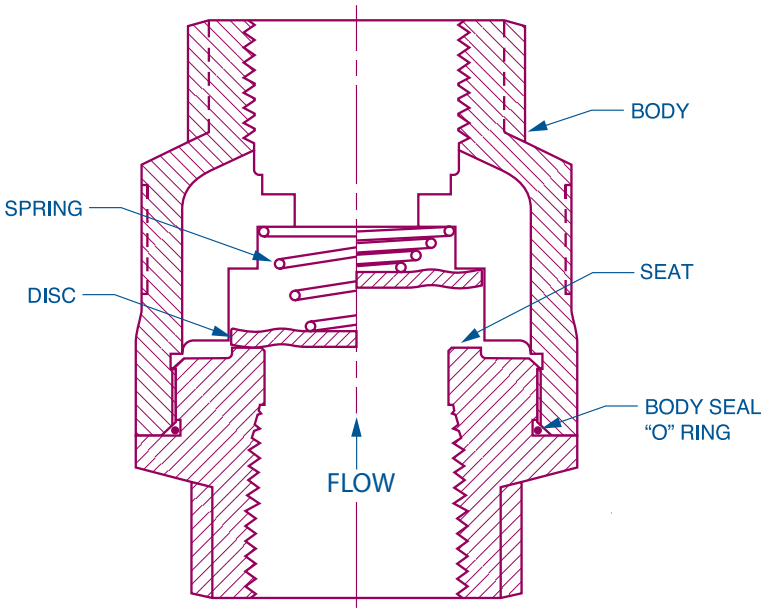
** Other body seal materials available upon request

Pressure Temperature Rating	
Temp. (°F)	PSIG
100	150
200	127
300(1)	118
400(2)	105

(1) Maximum temperature for EPDM

(2) Maximum temperature for Viton & Tuf-Flex

SCV®



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® body "O" ring
- Horizontal or vertical installation
- Body guided disc
- Tight shut-off - lapped disc & seat
- Simplified construction - 5 parts
- Easy maintenance
- Versatile
- OPTIONS:
  - 316 SS Springs
  - Body seal weld
  - Soft seat
  - Alloy 20 body & seat (ASME 300)
  - Hastelloy C body & seat (ASME 300)
  - NPT x socket weld ends
  - SCV-R restrictor check (higher cracking pressure)
  - Butt weld ends
  - NACE (Page 33)
  - API 6D

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

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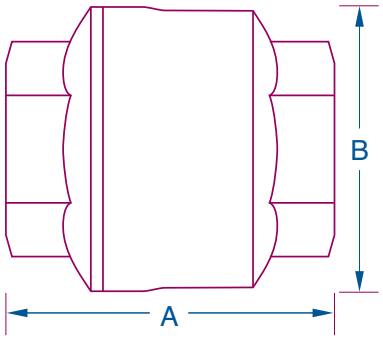
750 CWP/500 WSP

	1/2″	3/4″	1″	1 1/4″	1 1/2″	2″	3″
A	2.68	3	3.32	3.87	4.75	5	6.75
B (dia.)	1.62	2.13	2.54	3.06	3.44	4.4	6.19
Weight	1.1	1.5	1.9	3.9	4.7	7.7	18.8
Cv	7	13	22	39	54	93	180
CP	0.29	0.24	0.36	0.28	0.24	0.42	0.20

3600 CWP

	1/2″	3/4″	1″	2″
A	3.16	3	3.75	6.38
B	1.88	2.33	2.75	4.31
Weight	1.5	3	4.5	14.0
Cv	6.0	11	19	65
CP	0.62	0.26	0.36	0.36



Notes: All dimensions are in inches. Weights are in pounds.
CP: Cracking Pressure (psig)

	750 CWP MATERIALS OF CONSTRUCTION	3600 CWP MATERIALS OF CONSTRUCTION
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	Standard: Zelon (470°F max.)	Zelon (400°F max.) (2)
	Option: Body seal weld (700°F max.)	Body seal weld (700°F max.)

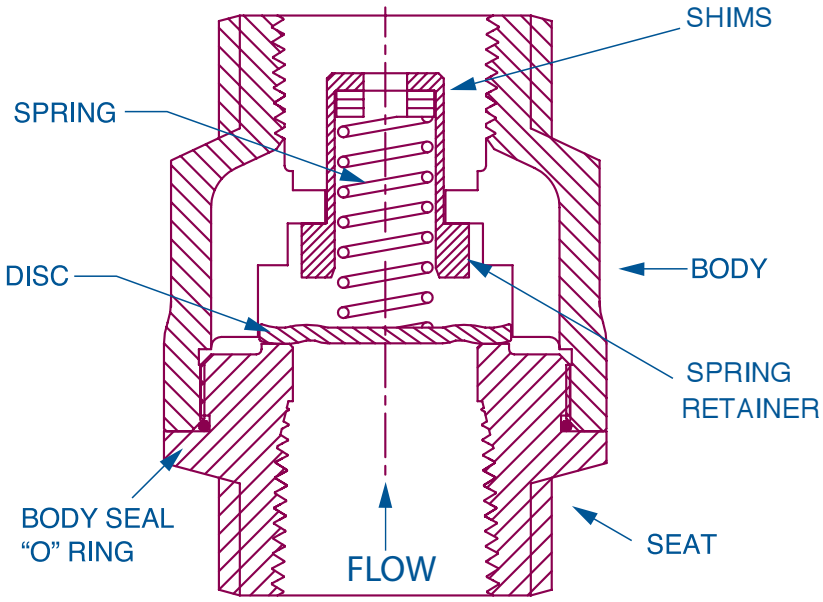
Notes: 1. Soft seats are available for bubble-tight shutoff. See below.
Body seal and soft seat material are the same unless otherwise requested.

PRESSURE TEMPERATURE RATING (PSIG)(3)				
	A351 CF8M		Alloy 20 (CN7M)	Hastelloy C (CW-12MW)
Temp. (°F)	750 CWP	3600 CWP	ASME 300	ASME 300
-20 to 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			

2. Buna-N CO_2 resistant "O" ring is available upon request.
3. ASME B16.34-2004
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.
7. **Buna-N and Viton are not suitable for steam service.**
8. Maximum valve temperature rating is limited by the body seal & seat material selected.
9. 750CWP is rated to 470°F.

	BODY "O" RING/SOFT SEAT MATERIALS (7) (8)				SPRINGS	
MATERIALS	BUNA-N	EPDM	VITON TFE® - VITON	ZELON®(9)	316 SS	INCONEL® X-750
TEMP. °F	-70 to 250	-75 to 300	-40 to 400	37 to 400	-460 to 450	-460 to 700

SCV-R™



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
- Zelon® body "O" ring
- Horizontal or vertical installation
- Body guided disc
- Tight shut-off - lapped disc & seat
- Simplified construction - 5 parts
- Easy maintenance
- Versatile
- OPTIONS:
  - 316 SS Springs
  - Body seal weld
  - Soft seat
  - Alloy 20 body & seat (ASME 300)
  - Hastelloy C body & seat (ASME 300)
  - NPT x socket weld ends
  - Butt weld ends
  - Repair kits
  - Field conversion kits

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

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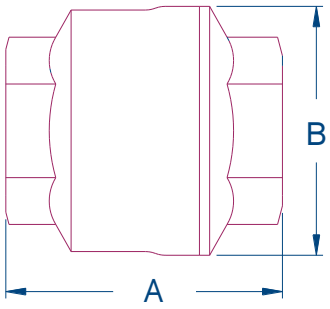
SCV-R™

750 CWP "Restrictor" Check Valve

	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
A	2.68	3	3.32	3.87	4.75	5
B (dia.)	1.62	2.13	2.54	3.06	3.44	4.4
Weight	1.1	1.5	1.9	3.9	4.7	7.7
Cv	6	10	17	32	36	64
CP: Cracking Pressure (psig) (+/- 10%)	1.0 to 25	0.8 to 20	1.2 to 23.5	7.7 to 22.2	1.4 to 40.8	0.9 to 21.4

All dimensions are in inches. Weights are in pounds. **Contact DFT for other cracking pressures.**

Pressure Temperature Rating (PSIG)	
Temp. (deg. F)	**CWP**
-20 to 100º	750
200	645
250 (Buna-N)	610
300 (EPDM)	580
400 (Viton®)	535
470 (Zelon®)	510



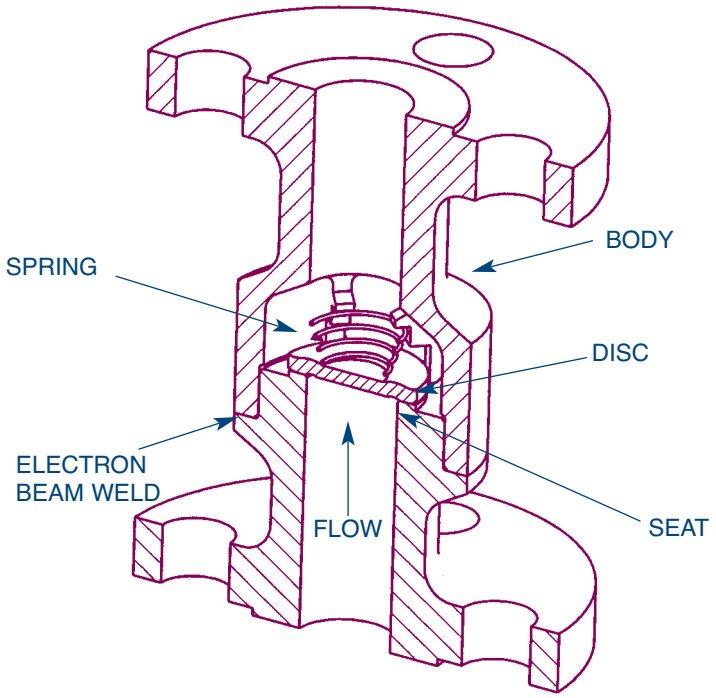
MATERIALS OF CONSTRUCTION

Body	A351 CF8M
Seat (1)	A351 CF8M
Disc	A240 316
Spring	Inconel® X-750
Spring Retainer Assembly	316 SS
"O" Ring	Zelon (470º F max.)

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. **Buna-N and Viton are not suitable for steam service.**
3. Maximum valve temperature rating is limited by the body seal & seat material selected.
4. 750CWP is rated to 470°F.

MATERIALS	BODY "O" RING/SOFT SEAT MATERIALS (2) (3)				SPRINGS	
	BUNA-N	EPDM	VITON TFE® - VITON	ZELON®(4)	316 SS	INCONEL® X-750
TEMP. °F	-70 to 250	-75 to 300	-40 to 400	37 to 470	-460 to 450	-460 to 700

DLC®



Features:

- ANSI B16.10 **Face-to-Face** dimensions
- Spring-assisted silent closing, non-slam
- 1/2″ to 3″ Line size
- ASME 150 and 300
- Stainless Steel Construction
- Raised Face Flanged ends
- Inconel® X-750 spring
- Electron beam welded body
- Meets ASME B16.34 - 2004
- Horizontal or vertical installation
- Body guided disc
- Tight shut-off - lapped disc & seat
- Simplified construction - 3 parts
- Versatile
- OPTIONS:
  - 316 SS Springs
  - Body Materials
    - Alloy 20
    - Hastelloy® C
    - NACE (Page 33)
    - API 6D

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

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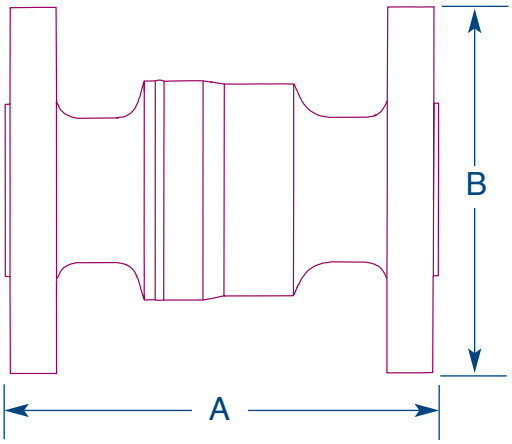
Class 150 RF

	1/2″	3/4″	1″	1 1/2″	2″	3″
A	4.25	4.62	5.00	6.50	8.00	9.50
B	3.50	3.88	4.25	5.00	6.00	7.50
Weight	3.2	4.5	6.0	11.7	19.1	39.2
Cv	7	13	22	54	93	180
CP:Cracking Pressure (psig)	0.29	0.24	0.36	0.24	0.42	0.20



Class 300 RF

	1/2″	3/4″	1″	1 1/2″	2″	3″
A	6.00	7.00	8.50	9.50	10.50	12.50
B	3.75	4.62	4.88	6.12	6.50	8.25
Weight	4.5	7.2	9.9	18.5	24.3	50.5
Cv	7	13	22	54	93	180
CP:Cracking Pressure (psig)	0.29	0.24	0.36	0.24	0.23	0.20

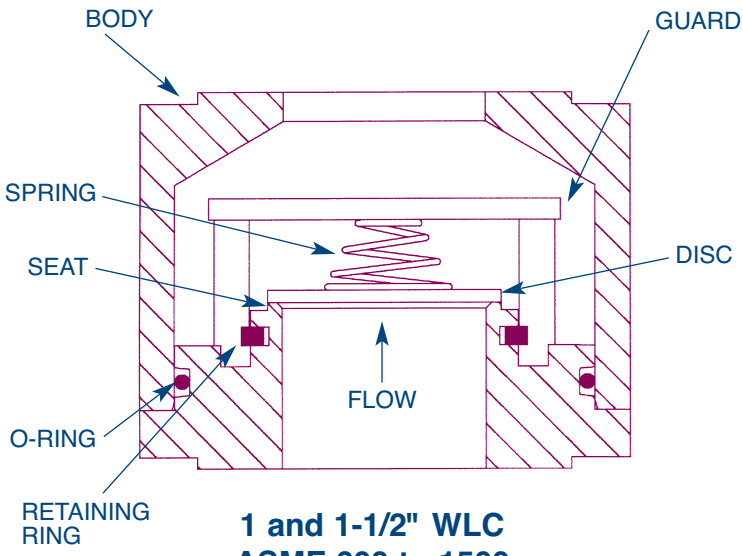
Notes: All dimensions are in inches. Weights are in pounds.

	MATERIALS OF CONSTRUCTION
Body	A351 CF8M
Seat	A351 CF8M
Spring	Inconel® X-750
Disc	316 SS

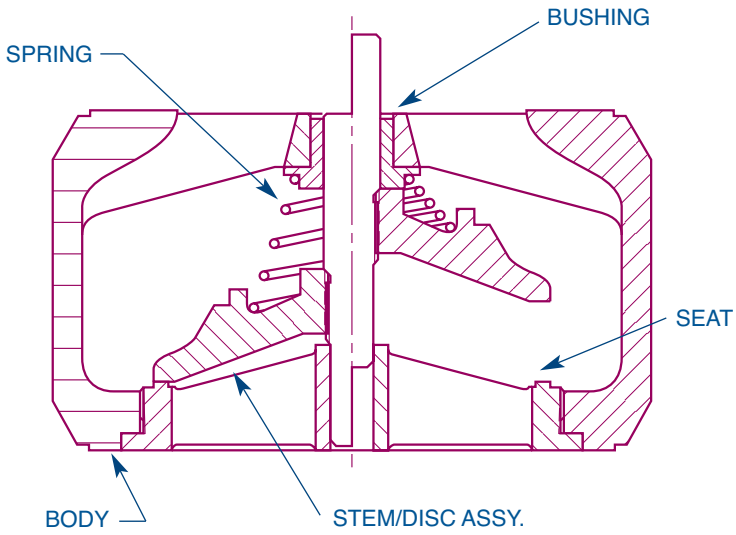
PRESSURE TEMPERATURE RATING (PSIG) (1)							
	A351 CF8M		(CN7M) Alloy 20			Hastelloy C (CW-12MW)	
Temp. (°F)	ASME 150	ASME 300	Temp. (°F)	ASME 150	ASME 300	ASME 150	ASME 300
-460°	275	720	-325°	230	600	230	600
100	275	720	100	230	600	230	600
200	235	620	200	200	520	210	550
300	215	560	300	180	465	200	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

(1) ASME B16.34-2004

WLC®



1 and 1-1/2" WLC
ASME 600 to 1500



2" and larger WLC
ASME 150 to 2500

The DFT® Model WLC Wafer style Silent Check Valve is a lightweight, spring-assisted, center guided, in-line 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
- **NSF 61**
  - ASME 150/300
  - 2″ to 8″
- Lightweight
- Spring-assisted silent closing
- Edge guided (1″ & 1-1/2″-ASME 600 to 2500)
- Center guided/Dual guided stem
  - 1″ to 10″ ASME 150/300
  - 2″ to 10″ ASME 600 to 2500
- Horizontal or vertical installation
- Protected spring
- **ASME 150 to 2500**
  - 1″ to 10″ Line Size
  - WCB & SS bodies
  - SS trim
  - Ends:
    - Wafer RF
    - Wafer RTJ
  - MSS-SP 61 seat leakage
  - API 594 Face-to-Face dimension:
    - Class 600 RF
    - Class 900/1500 RF
- OPTIONS:
  - Inconel® X-750 Spring
  - Soft Seat
  - Custom Sizing- low flow
  - Body Materials:
    - Alloy 20, Hastelloy, Inconel® 625, Titanium
  - Stellited trim (600°F+)
  - Weld Neck Flanges to meet B16.10 Face-to-Face dimensions
  - NACE (page 33)
  - API 6D

Consult pages 34 and 35 for Pressure/Temperature ratings and soft seat materials.

dft@dft-valves.com
610-363-8903
www.dft-valves.com

WLC®

Class 150/300 RF

	1″	1 1/2″	2″*	2 1/2″*	3″*	4″*	5″*	6″*	8″*
A	2	2 1/2	2 5/8	2 7/8	3 1/8	4	4 5/8	5 1/2	6 1/2
B	2 7/8	3 3/4	4 3/8	5 1/8	5 3/4	7 1/8	8 1/2	9 7/8	12 1/8
Weight	2	4	4	10	12	20	35	41	86
Cv	19	36	57	95	140	265	360	506	860
CP	0.36	0.17	0.24	0.37	0.19	0.19	0.29	0.45	0.56

150 RF

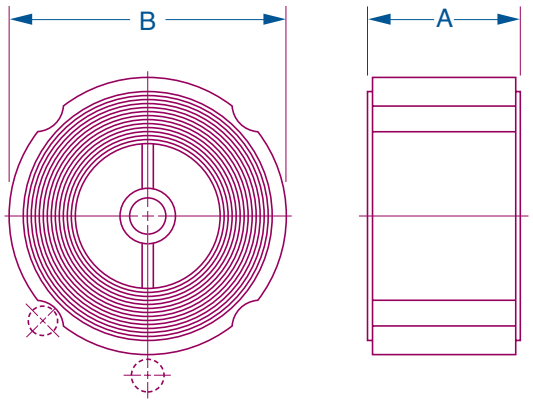
10″*
8 1/4
17 5/8
138
1355
0.45

Class 600 RF(1)

	1″	1 1/2″	2″	3″	4″	6″
A	2 3/8	2 7/8	2 3/8	2 7/8	3 1/8	5 3/8
B	2 7/8	3 3/4	4 1/4	5 3/4	7 1/2	10 3/8
Weight	2 1/2	8	5	11	21	68
Cv	19	23	53	133	234	441
CP	0.36	0.44	0.26	0.26	0.49	0.66

Class 900/1500 RF(1)

	1″	1 1/2″	2″	3″	4″	6″
A	2 3/8	2 7/8	2 3/4	3 1/4	4	6 1/4
B	3 1/8	3 7/8	5 1/2	6 3/4	8 1/8	11 1/4
Weight	4	8	14	21	38	100
Cv	19	23	48	113	211	370
CP	0.44	0.54	0.24	0.19	0.46	0.58



Dual Pressure Service:
Class 150/300 for 1” to 8”, Class 900/1500 for 1” to 6”

Class 1500 RTJ(2)

	1″	1 1/2″	2″*	3″	4″*	6″	10″
A	2 3/8	2 7/8	3 1/8	3 1/4	4 1/8	6 1/4	9 3/4
B	3 1/8	3 7/8	5 1/2	6 3/4	8 1/4	11 1/4	17 1/16
Weight	4	7	14	21	38	100	430
Cv	19	23	48	113	211	370	755
CP	0.44	0.54	0.24	0.19	0.46	0.58	0.61

1500 RF(2)

8″	10″
8 1/8	9 3/4
13 13/16	17
244	430
620	755
0.66	0.61

2500 RTJ(2)

1″	2″*	3″
2 3/8	2 13/16	3 3/8
3 1/8	5 3/4	7 1/2
4.1	17	33
19	35	80
0.44	0.97	0.56

MATERIALS OF CONSTRUCTION

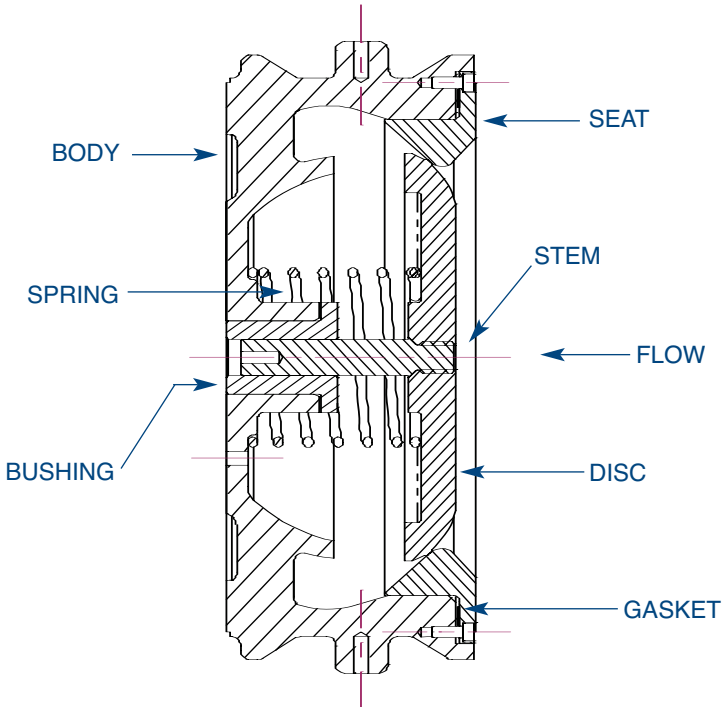
COMPONENT	CARBON STEEL BODY	STAINLESS STEEL BODY
Body	A216 Grade WCB	A351 CF8M
Disc/stem assy	A351 CF8M/A479 316	A351 CF8M/A479 316
Seat(3)	A351 CF8M	A351 CF8M
Spring	A313 316	A313 316
Bushing	A479 316	A479 316

All dimensions are in inches. Weights are in pounds.
CP: Cracking Pressure (psig)

*Does not meet API 594 face-to-face dimension. API 594 face-to-face dimensions start at 2”.

Notes: (1) Size 1” and 1-1/2” have Buna-N (-70 to 250°F) body “O” ring seals. Contact DFT for other materials.
(2) All sizes have Buna-N (-70 to 250°F) body “O” ring seals except 10” Cl. 1500 RTJ/RF have spiral wound body seals. Contact DFT for other materials.
(3) Soft seats are available for bubble-tight shut-off. See page 34.

ALC™



Features:

- **API 594 Face-to-Face dimensions**
- Wafer RF ends
- Spring-assisted silent closing
- Horizontal or vertical installation
- Sizes 10" thru 24"
- ASME Class 150 and 300
- Standard body materials:
  - A216 WCB
  - A351 CF8M
- Stainless steel seat, disc & bushing
- Nitronic 60 stem
- Inconel® X-750 Spring
- 0.5 psi cracking pressure spring
- Seat Leakage per MSS SP-61
- Tapped holes in body for lifting lugs
- Options:
  - Body Materials:
    - Alloy 20
    - Hastelloy®
    - Others upon request
  - 316 SS spring
  - Custom sizing - low flow
  - Stellited trim
  - API 6D
  - NACE (See page 33)

The **ALC** is an in-line, 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 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.

Consult pages 34 and 35 for Pressure/Temperature ratings and soft seat materials.

dft@dft-valves.com
610-363-8903
www.dft-valves.com

Class 150/300

	10”	12”
A	5-3/4	7-1/8
B (dia.)	14-1/8	16-1/2
Weight	115	200
Cv	1690	2525
CP	0.5	0.5

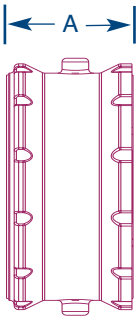
Class 150

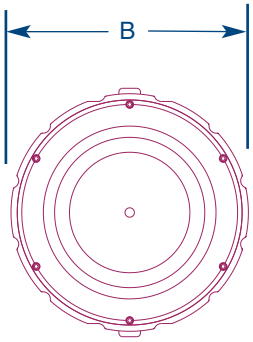
14”	16”	18”	20”	24”
7-1/4	7-1/2		8-5/8	8-3/4
17-5/8	20-5/16		23-3/4	28-5/16
225	315		545	745
3350	4450		4850	5125
0.5	0.5		0.5	0.5

Class 300

	14”	16”	18”	20”	24”
A	8-3/4	9-1/8		11-1/2	12-1/2
B (dia.)	19.00	20-5/16		25-5/8	30-3/8
Weight	320	425		760	1200
Cv	4560	4635		6870	7970
CP	0.5	0.5		0.5	0.5

All dimensions are in inches. Weights are in pounds.
CP: Cracking Pressure (psig)

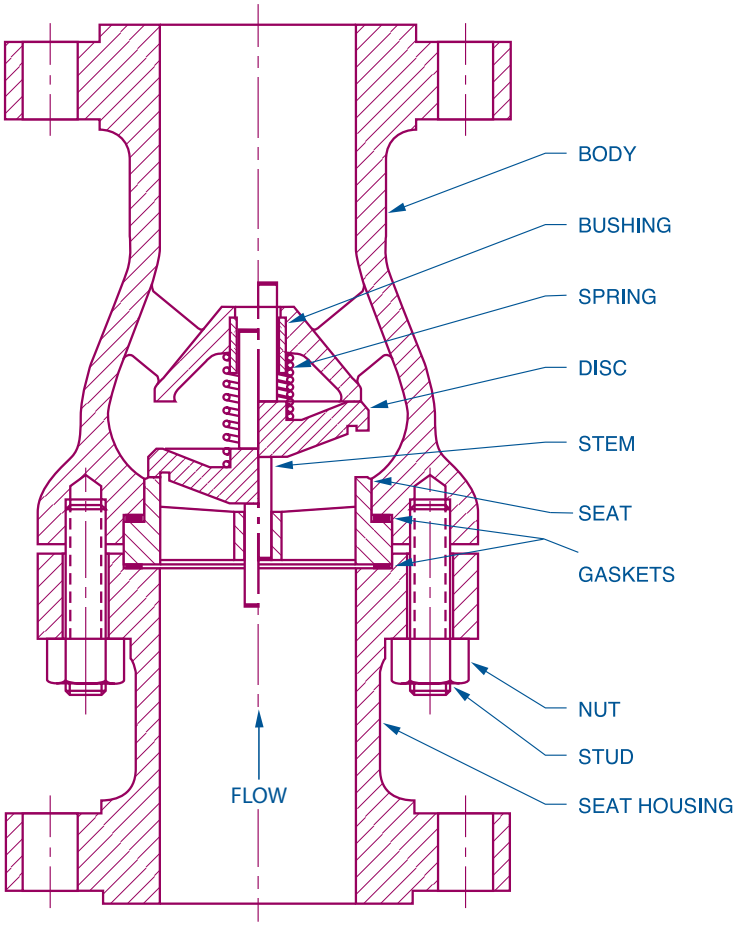




MATERIALS OF CONSTRUCTION		
COMPONENT	CARBON STEEL BODY	STAINLESS STEEL BODY
Body (1)	A216 WCB	A351 CF8M
Disc/stem assy	316 SS/ Nitronic 60	316 SS/ Nitronic 60
Seat	316 SS	316 SS
Spring	Inconel® X-750	Inconel® X-750
Bushing	316 SS	316 SS
Gasketing	CFG (2)	CFG (2)

Notes: 1. Other Body materials available.
2. 316/Graphite material.

Excalibur®



Features:

- ASME **B16.10 Face-to-Face** dimensions
- Spring-assisted silent closing, non-slam
- 2″ to 24″ Line size
- ASME 150 to 1500
- WCB & SS bodies
- SS trim
- Ends:
  - RF Flanged
  - RTJ
- Center guided
- Dual guided stem
- Horizontal or vertical installation
- Tight shut-off
- Two piece body
- Protected spring
- Easy maintenance
- Versatile
- OPTIONS:
  - Soft seat
  - Inconel® X-750 Spring
  - Custom sizing - low flow
  - Severe service trim
  - Body Materials:
    - Alloy 20
    - Hastelloy®
    - Inconel® 600
    - Monel
  - Stellited trim (600°F+)
  - Ends[1]:
    - Butt weld
    - Flanged x Butt weld
    - Victaulic®
  - NACE (See page 33)
  - API 6D

The DFT® Excalibur Silent Check Valve is a spring-assisted, center guided, in-line, 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.

(1) Consult DFT for availability

Consult pages 34 and 35 for Pressure/Temperature ratings and soft seat materials.

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610-363-8903
www.dft-valves.com

Excalibur®

Class 150 RF*

	2″	2 1/2″	3″	4″	6″	8″	10″	12″	14″	16″	24″
A	8	8 1/2	9 1/2	11 1/2	14	19 1/2	24 1/2	27 1/2	31	34	51
B	6	7	7 1/2	9	11	13 1/2	16	19	21	23 1/2	32
Weight	22	30	37	64	114	207	317	457	642	830	1851
Cv	65	105	155	265	685	1050	1650	2400	3600	5200	11300
CP	0.64	0.44	0.26	0.60	0.40	0.58	0.52	0.53	0.28	0.51	0.42

Class 300 RF*

	2″	2 1/2″	3″	4″	6″	8″	10″	12″	14″	20″
A	10 1/2	11 1/2	12 1/2	14	17 1/2	21	24 1/2	28	33	40
B	6 1/2	7 1/2	8 1/4	10	12 1/2	15	17 1/2	20 1/2	23	30 1/2
Weight	29	42	52	92	177	285	456	696	725	2375
Cv	65	105	155	265	685	1050	1650	2400	3600	7850
CP	0.64	0.37	0.26	0.41	0.40	0.60	0.52	0.53	0.28	0.50

Class 600 RF*

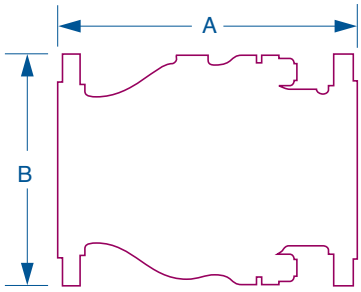
	2″	3″	4″	6″	8″	10″	12″
A	11 1/2	14	17	22	26	31	33
B	6 1/2	8 1/4	10 3/4	14	16 1/2	20	22
Weight	35	69	138	300	481	981	1320
Cv	65	155	265	584	985	1650	2400
CP	0.64	0.26	0.51	0.73	0.67	0.47	0.50

Class 900 RF*

	2″	3″	4″	6″	8″	10″
A	14 1/2	15	18	24	29	33
B	8 1/2	9 1/2	11 1/2	15	18 1/2	21 1/2
Weight	81	155	176	780	1250	1650
Cv	51	138	242	512	777	1449
CP	0.85	0.22	0.58	0.83	0.54	0.58

Class 1500 RF*

	2″	3″	4″	6″	8″
A	14 1/2	18 1/2	21 1/2	27 3/4	32 3/4
B	8 1/2	10 1/2	12 1/4	15 1/2	19
Weight	81	158	267	780	1270
Cv	51	109	187	512	777
CP	0.85	0.28	0.74	0.83	0.83



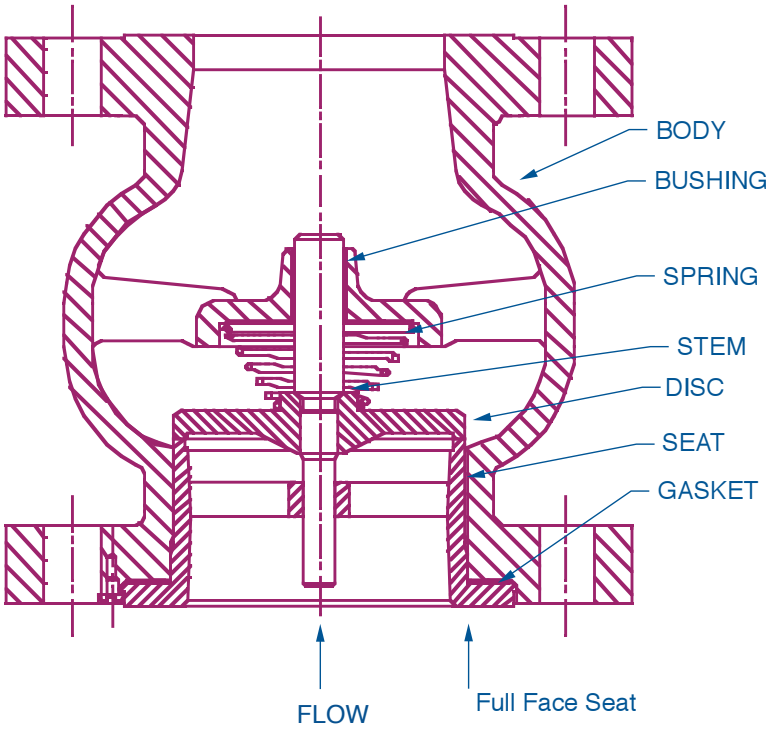
MATERIALS OF CONSTRUCTION

COMPONENT		CARBON STEEL BODY	STAINLESS STEEL BODY
Body		A216 Grade WCB	A351 CF8M
Disc/stem assy		A351 CF8M/A479 316	A351 CF8M/A479 316
Seat (1)		A351 CF8M	A351 CF8M
Spring (2)		A313 316	A313 316
Bushing		A479 316	A479 316
Bolting (3)		A193-B7 (Stud) & A194-2H (Nut)	
Gasketing (3)	Cl. 150 & 300	CFG (4)	
	Cl. 600+	316 Spiral wound with Flexible Graphite Filler	

Notes:
1. Soft seats are available for bubble-tight shutoff. See page 34.
2. Inconel® 750 spring is available.
3. Contact DFT for stainless steel or other bolting materials.
4. 316 graphite material.

*** For other sizes, consult DFT.**
All dimensions are in inches.
Weights are in pounds.
CP: Cracking Pressure (psig)

GLC®



Features:

- **"Short"** Face-to-Face dimensions
- **API 6FD Fire Test**
  - ASME 150 and 300
  - 2" to 24"
- **NSF 61**
  - ASME 150 and 300
  - 1" to 24"
- One piece body
- Spring-assisted silent closing, non-slam
- Center guided
- Dual guided stem
- Horizontal or vertical installation
- Protected spring
- Easy maintenance
- Versatile
- **ASME 150 To 2500**
  - 1" to 24" Line size
  - WCB & SS Bodies
  - 316 SS trim
  - RF Flanged Ends
  - MSS-SP61 seat leakage
- OPTIONS:
  - Inconel® X-750 Spring
  - Soft seat
  - Custom sizing - low flow
  - Body Materials
    - Alloy 20, Hastelloy®, Monel
  - Digester trim
  - Stellited trim (600°F+)
  - RTJ Ends(1)
  - NACE (Page 33)
  - API 6D

The DFT® Model GLC Silent Check Valve is a spring-assisted, center guided, in-line, 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 body or gasket seals. The DFT GLC check valve has the advantage of minimum pressure loss with silent, non-slam operation.

(1) Contact DFT for availability

Consult pages 34 and 35 for Pressure/Temperature ratings and soft seat materials.

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610-363-8903
www.dft-valves.com

GLC®

Class 150 RF

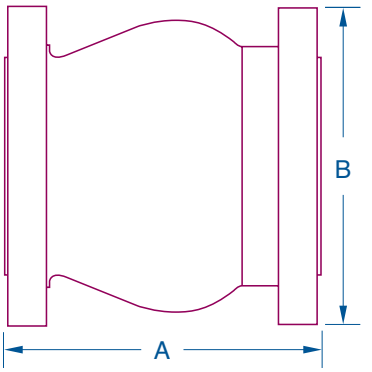
	1″	1 1/2″	2″	2 1/2″	3″	4″	5″	6″	8″	10″	12″	14″	16″	18″	20″	24″
A	4 1/2	5 3/4	6 1/4	7	7 1/2	8 1/2	9 1/2	10	12	14	18	21	22 1/2	24	24	28
B	4 1/4	5	6	7	7 1/2	9	10	11	13 1/2	16	19	21	23 1/2	25	27 1/2	32
Weight	7	13	17	31	33	55	72	93	172	266	387	456	700	753	1292	1571
Cv	17	35	63	100	148	260	415	620	1030	1630	2370	3500	5100	6400	7700	11100
CP	0.85	0.29	0.29	0.18	0.20	0.49	0.28	0.41	0.41	0.55	0.47	0.52	0.51	0.59	0.49	0.44

Class 300 RF

	1″	1 1/2″	2″	2 1/2″	3″	4″	5″	6″	8″	10″	12″	14″	16″	18″	20″	24″
A	4 3/4	6	6 1/2	7 1/4	7 7/8	9 1/8	10 3/8	11	13	15 3/8	19 1/2	23	24	24	24	28
B	4 7/8	6 1/8	6 1/2	7 1/2	8 1/4	10	11	12 1/2	15	17 1/2	20 1/2	23	25 1/2	30 7/8	30 1/2	36
Weight	9	17	23	41	46	71	89	139	232	335	550	724	898	1255	1357	2420
Cv	19	35	63	100	148	267	415	620	933	1704	2370	2781	5100	6400	7700	10510
CP	0.85	0.29	0.29	0.18	0.20	0.48	0.28	0.39	0.45	0.52	0.49	0.43	0.59	0.59	0.55	0.46

Class 600 RF

	1″	1 1/2″	2″ *	3″	4″	6″ *	8″	10″ *	12″ *	16″
A	5 1/4	6 5/8	7 1/4	8 5/8	10 1/8	12 3/8	14 5/8	17 1/8	21 1/4	26
B	4 7/8	6 1/8	6 1/2	8 1/4	10 3/4	14	16 1/2	20	22	27
Weight	11	19	25	57	115	175	332	450	840	1093
Cv	17	35	63	125	237	549	933	1620	2272	5100
CP	0.85	0.29	0.29	0.41	0.54	0.46	0.45	0.35	0.41	0.59



Class 900 RF

	1 1/2″**	2″ **	2 1/2″	3″	4″**	6″**	8″ *	10″*
A	7 3/8	8 1/4	9	9 1/8	10 5/8	13	15 1/4	17 5/8
B	7	8 1/2	9 5/8	9 1/2	11 1/2	15	18 1/2	21 1/2
Weight	30	56	78	87	127	264	396	539
Cv	26	46	81	114	217	549	851	1499
CP	0.64	0.32	0.11	0.26	0.49	0.46	0.50	0.64

Class 1500 RF

	1 1/2″**	2″**	2 1/2″	3″	4″**	6″ *	8″ *	10″ **	12″
A	7 3/8	8 1/4	9	9 7/8	11 3/8	15 1/8	17 1/2	23	44 1/2
B	7	8 1/2	9 5/8	10 1/2	12 1/4	15 1/2	19	23	26 1/2
Weight	30	56	78	110	164	405	670	1281	2550
Cv	26	46	81	114	192	441	742	1231	1689
CP	0.40	0.32	0.11	.052	.067	0.42	0.55	0.53	0.60

Class 2500 RF

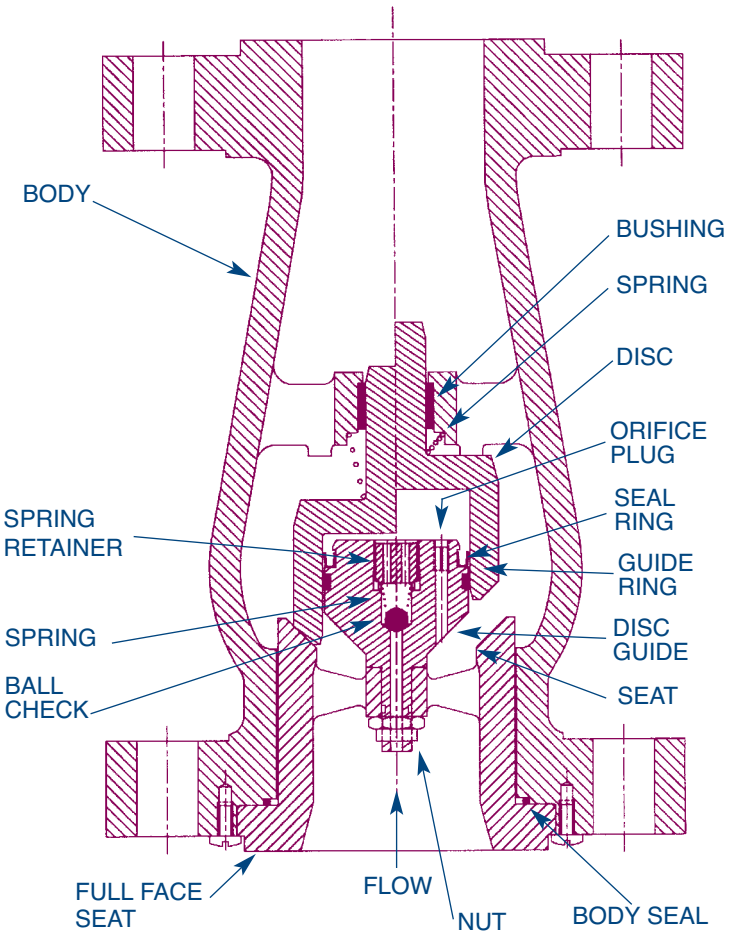
2″	3″*
9 1/4	14
9 1/4	12
77	218
32	77
0.47	0.43

MATERIALS OF CONSTRUCTION

COMPONENT	CARBON STEEL BODY	STAINLESS STEEL BODY
Body	A216 Grade WCB	A351 CF8M
Disc/stem assy	A351 CF8M/A479 316	A351 CF8M/A479 316
Seat(1)	A351 CF8M	A351 CF8M
Spring(2)	A313 316	A313 316
Bushing	A479 316	A479 316
Gasket(3)	CFG	CFG

Notes: 1. Soft seats are available for bubble-tight shutoff. See page 34.
2. Inconel® X-750 spring is available.
3. Corrugated flexible graphite (316 graphite material) unless noted elsewhere.
CP: Cracking Pressure (psig)
All dimensions are in inches. Weights are in pounds.
* Buna-N (-70 to 250°F) body "O" ring seal
** Spiral wound gasket

PDC®



US Patent #4,766,929 #4,693,270

Features:

- **Pulse damped design**
- Modulating "air" or "gas" applications:
  - discharge of reciprocating air/gas compressors
  - self sizing - accommodates varying flows without chattering
- Mediums:
  - air
  - gas
- ASME **B16.10 Face-to-Face** dimensions
- One piece body
- Spring-assisted silent closing
- 2" to 12" Line size
- ASME 150 to 1500
- WCB, SS & LCC body
- SS trim
- SS spring (450°F max)
- Ends:
  - RF Flanged
  - RTJ
- Center guided
- Horizontal or vertical installation
- Tight shut-off
- Protected spring
- Easy maintenance
- Versatile
- OPTIONS:
  - Soft seat
  - Inconel® X-750 Spring (500°F max due to nonmetallic components)
  - Monel trim
  - NACE (Page 33)
  - API 6D

The DFT® Model PDC Silent Check Valve is 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.

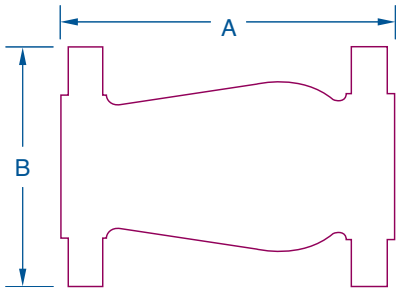
Consult pages 34 and 35 for Pressure/Temperature ratings and soft seat materials.

dft@dft-valves.com
610-363-8903
www.dft-valves.com

PDC®

Class 150 RF

	2″	3″	4″	6″	8″	12″
A	8	9 1/2	11 1/2	14	19 1/2	27 1/2
B	6	7 1/2	9	11	13 1/2	19
Weight	20	40	64	94	158	445
Cv	62	148	255	660	1005	2300
CP	0.41	0.62	0.68	0.51	0.66	0.29



Class 300 RF

	2″	3″	4″	6″	8″	10″	12″
A	10 1/2	12 1/2	14	17 1/2	21	24 1/2	28
B	6 1/2	8 1/4	10	12 1/2	15	17 1/2	20 1/2
Weight	27	50	82	149	293	452	673
Cv	62	148	255	660	1005	1580	2300
CP	0.49	0.62	0.68	0.51	0.66	0.38	0.29

Class 600 RF

	2″	3″	4″	6″	8″
A	11 1/2	14	17	22	26
B	6 1/2	8 1/4	10 3/4	14	16 1/2
Weight	35	58	117	272	450
Cv	62	142	255	660	1005
CP	0.41	0.66	0.31	0.49	0.42

Class 900 RF

	2″	3″	4″	6″
A	14 1/2	15	18	24
B	8 1/2	9 1/2	11 1/2	15
Weight	65	84	144	322
Cv	55	118	224	567
CP	0.35	0.78	0.82	0.63

Class 1500 RF

	2″	3″
A	14 1/2	18 1/2
B	8 1/2	10 1/2
Weight	65	171
Cv	55	118
CP	0.35	0.78

MATERIALS OF CONSTRUCTION

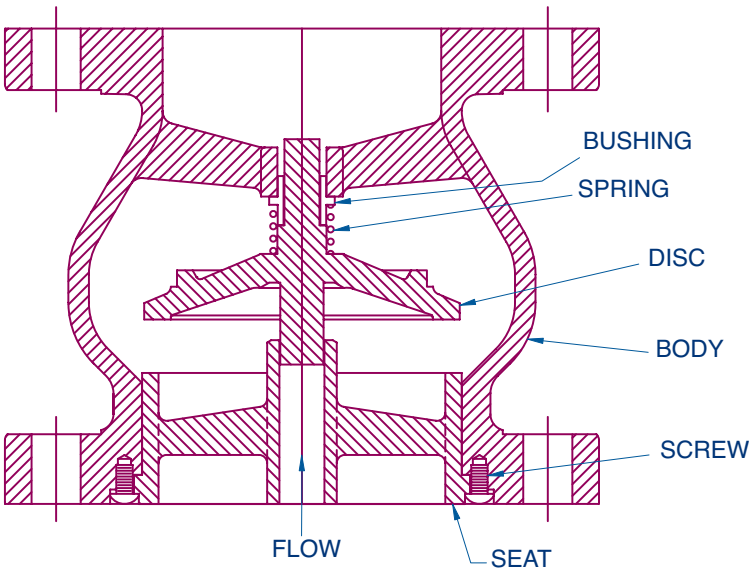
COMPONENT	CARBON STEEL BODY	STAINLESS STEEL BODY
Body	A216 Grade WCB	A351 CF8M
Disc	A351 CF8M	A351 CF8M
Seat (1)	A351 CF8M	A351 CF8M
Spring (2)	A313 316 (450°F max.)	A313 316 (450°F max.)
Spring for ball check	Inconel® X-750	Inconel X-750
Disc guide	A479 316	A479 316
Bushing	Rulon® (3)	Rulon (3)
Seal ring	Teflon®/Hastelloy® C276(3)	Teflon®/Hastelloy® C276 (3)
Spring retainer - ball check	A479 316	A479 316
Guide ring	Teflon (3)	Teflon (3)
Ball check	440C SS	440C SS
Orifice Plug	A479 316	A479 316
Body "O" ring seal (4)	Viton (-40 to 400°F)	Viton (-40 to 400°F)

PDC temperature rating is limited by the body seal material (pg. 17), spring material and nonmetallic components.

Notes:
1. Soft seats are available for bubble-tight shutoff. See page 34.
2. Inconel X-750 spring is available. (500°F maximum)
3. 500°F maximum.
4. Contact DFT for other materials.
5. All dimensions are in inches. Weights are in pounds.

CP: Cracking Pressure (psig)

GLC®-CAST IRON



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 125 & 250**
  - 2-1/2" to 24" Line size (Cl.125)
  - 2-1/2" to 8" Line size (Cl.250)
  - Cast Iron Body(1)
  - Bronze or 316 SS trim
  - Ends:
    - FF Flanged
  - AWWA seat leakage
  - OPTIONS:
    - Buna-N Soft Seat

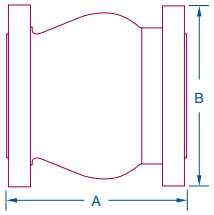
PRESSURE TEMPERATURE RATING FOR CAST IRON (PSIG)				
	Class 125		Class 250	
Temp. (deg. F)	2 to 12"	14" +	2 to 12"	14" +
0 to 150°	200 psig	150 psig	400 psig	300 psig
200° (MAX.)(2)	190 psig	135 psig	370 psig	280 psig

Class 125 Cast Iron FF

	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
A	5 1/2	6	7 1/4	8 1/2	9 3/4	12 1/2	15 1/2	14 1/4	15 3/4	17 5/8	18 3/4	20 5/8	24
B	7	7 1/2	9	10	11	13 1/2	16	19	21	23 1/2	25	27 1/2	32
Weight	24	29	42	52	73	126	205	306	380	501	724	890	1220
Cv	110	155	278	435	625	1115	1770	2500	3400	4400	5600	6900	10000

Class 250 Cast Iron FF

	2 1/2"	3"	4"	5"	6"	8"
A	5 1/2	6	7 1/4	8 1/2	9 3/4	12 1/2
B	7 1/2	8 1/4	10	11	12 1/2	15
Weight	30	36	59	78	103	179
Cv	110	155	278	435	625	1115



CAST IRON GLC

COMPONENT	CAST IRON BODY/BRONZE TRIM	CAST IRON BODY/316 TRIM (2)
Body	A126 Class B Cast Iron	A126 Class B Cast Iron
Disc/stem assy	B584 836 - Bronze	A351 CF8M
Seat (3)	B584 836 - Bronze	A351 CF8M
Spring	A313 T302	A313 T302
Bushing	B584 836 - Bronze	316

Notes: 1. **Not recommended for gas or steam service.**
2. 316 stainless steel trim recommended for temperatures from 180°F to 200°F.
3. Buna-N soft seat available for bubble-tight shutoff.

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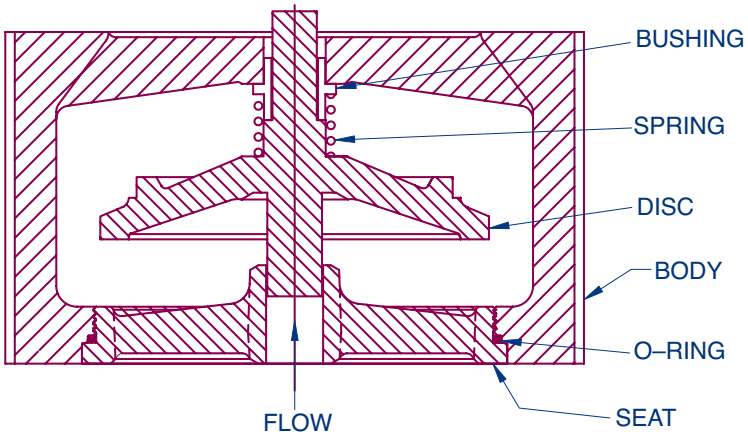
WLC®-CAST IRON



Features:

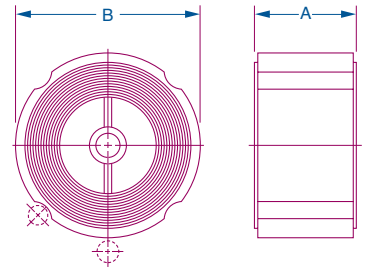
- **Wafer** design
- Lightweight
- Spring-assisted silent closing
- Center guided (2″ to 10″)
- Dual guided stem (2″ to 10″)
- Horizontal or vertical installation
- Protected spring

- **ASME 125 & 250**
  - 2″ to 10″ Line Size
  - Cast Iron body(1)
  - Bronze or 316 SS trim
  - Ends:
    - Wafer FF
  - AWWA seat leakage
- OPTIONS:
  - Buna-N Soft Seat

PRESSURE TEMPERATURE RATING FOR CAST IRON (PSIG)				
	Class 125		Class 250	
Temp. (deg. F)	2 to 12″	14″ +	2 to 12″	14″ +
0 to 150°	200 psig	150 psig	400 psig	300 psig
200° (MAX.)(2)	190 psig	135 psig	370 psig	280 psig

Class 125/250 Cast Iron FF

	2″*	2 1/2″*	3″*	4″*	5″*	6″*
A	2 5/8	2 7/8	3 1/8	4	4 3/4	5 1/2
B	4 1/4	5	5 3/4	7	8 3/8	9 3/4
Weight	6	7	12	18	27	42
Cv	66	88	130	228	350	520



Dual Pressure Service:
Class 125/250 for 2" to 6"

Class 125 Cast Iron FF

	8″*	10″*
A	6 1/2	8 1/4
B	13 3/8	16
Weight	85	129
Cv	900	1450

Class 250 Cast Iron FF

	8″*	10″*
A	6 1/2	8 1/4
B	13 3/8	16
Weight	86	137
Cv	900	1450

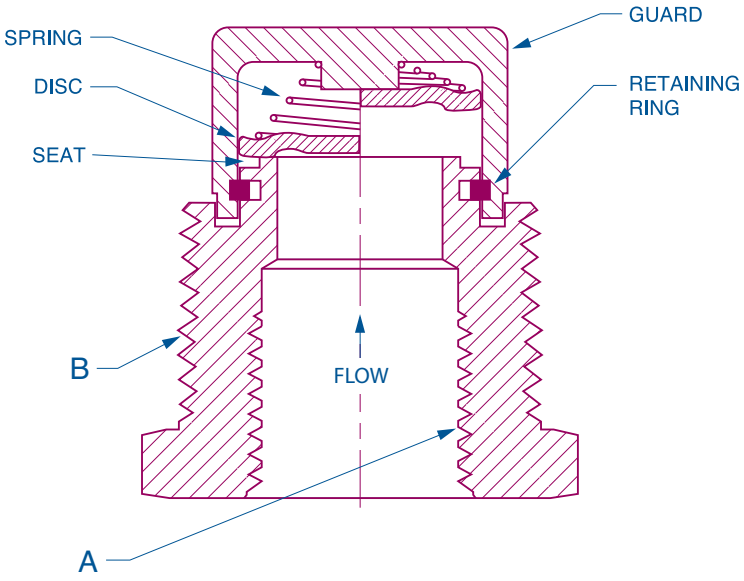
All dimensions are in inches. Weights are in pounds.
*Does not meet API 594 face-to-face dimension.

CAST IRON WLC

COMPONENT	CAST IRON BODY/BRONZE TRIM	CAST IRON BODY/316 TRIM (2)
Body	A126 Class B Cast Iron	A126 Class B Cast Iron
Disc/stem assy	B584 836 - Bronze	A351 CF8M
Seat (3)	B584 836 - Bronze	A351 CF8M
Spring	A313 T302	A313 T302
Bushing	B584 836 - Bronze	316

Notes: 1. **Not recommended for gas or steam service.**
2. 316 stainless steel trim recommended for temperatures from 180°F to 200°F.
3. Buna-N soft seat available for bubble-tight shutoff.

Basic-Check®



The DFT® Basic-Check valve is a versatile all-purpose, spring-assisted, in-line check valve that provides reliable, low maintenance service for a wide range of liquids 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 shut-off of both gas and liquid. If bubble-tight shut-off is required, resilient soft seats are available.

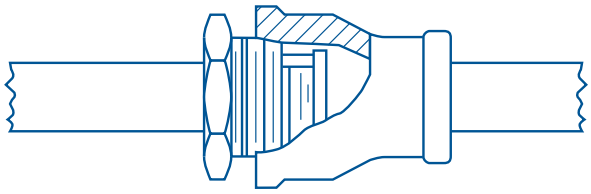
MATERIALS OF CONSTRUCTION

Model		Seat	Disc	Guard	Spring	Retaining Ring
Basic-Checks	BSS	303 SS	316 SS	CF8M(1)	316 SS	316 SS
	BSA	416 SS	316 SS	CF8M	316 SS	316 SS
	BSE	303 SS	316 SS	17-4 SS	Inconel®	316 SS
High Pressure Basic-Checks	BSSH6	316 SS	316 SS	CF8M	316 SS	316 SS
	BSSH7	316 SS	17-7 SS	CF8M	316 SS	316 SS

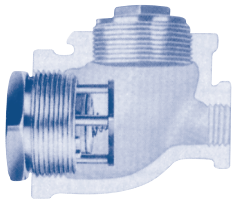
(1) 1/4", 3/8" and 1/2" BSS units have a 303 SS guard

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 shut-off - lapped disc & seat
- Easy Maintenance
- Versatile
- OPTIONS:
  - Inconel® 750 Spring
  - Soft seat



Use with reducing coupling.



Drain elbow is another standard fitting with which DFT Basic-Check Units are used.

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Basic-Check®

TECHNICAL INFORMATION

BASIC CHECK Line Size Inlet (FNPT) A	BASIC CHECK Outside Thread (MNPT) B	Cv	Friction Loss (Feet of Pipe)	VALVE CRACKING PRESSURE* (PSI) (+/- 10%)	VALVE CRACKING PRESSURE* (Inches of Water)	Approx. Net WT. Each (In lbs.)
1/4″	1″	5.8	7	.60 (1)	16.7	.38
3/8″	1″	5.8	7	.60 (1)	16.7	.38
1/2″	1″	5.8	7	.60 (1)	16.7	.38
3/4″	1-1/2″	13.2	6	.45	12.5	.88
1″	2″	23.1	7	.38	10.5	1.25
1-1/4″	2-1/2″	36	12.5	.20	5.5	2.25
1-1/2″	3″	57.4	11	.14	3.9	3.75
2″	4″	90	16	.15	4.3	7.00
2-1/2″	4″	90	16	.15	4.3	7.00

(1) Light spring available: Cracking Pressure = .24 PSI (6.5 inches of water)
*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.

COLD, NON-SHOCK PRESSURE RATING (2)

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

Sat. Steam Pressure (PSIG) Ref. (3)	Tempera-ture (Deg. 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 at right.

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.

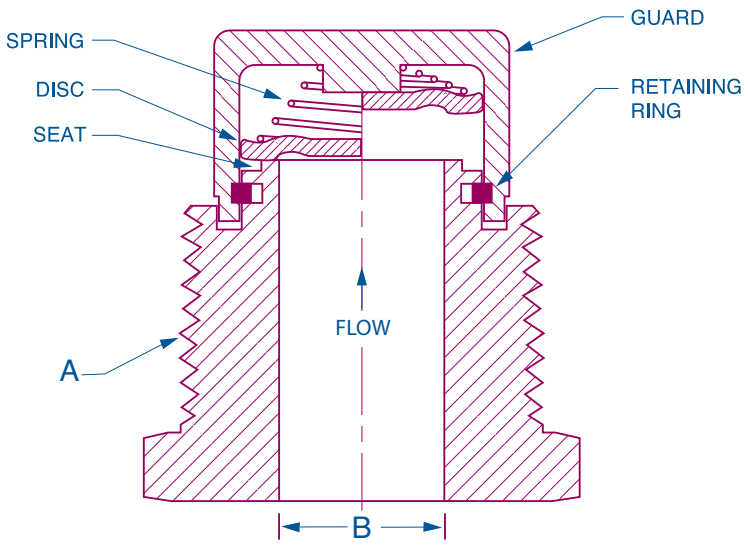
(2) Contingent on service ratings of matching pipe and fittings.

(3) Saturated steam pressure is given for reference only; pressure limit of valve is the adjusted rating at the given temperature.

MAXIMUM OPERATING TEMPERATURES OF MATERIALS						
	SOFT SEAT (4)				SPRING	
MATERIALS	BUNA-N	EPDM	VITON® TFE® - VITON	ZELON®	316 SS	INCONEL® X-750
TEMP. °F	-70 to 250	-75 to 300	-40 to 400	37 to 400	-460 to 450	-460 to 700

(4) Buna-N and Viton are not suitable for steam service.

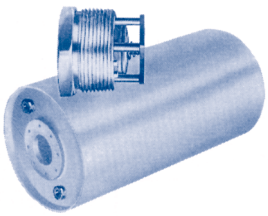
Vacuum Breaker



Features:

- 1″ to 4″ size
- 450 to 6000 CWP
- Threaded O.D. (MNPT)
- Unthreaded inlet bore
- Stainless Steel Construction
- Spring-assisted silent closing
- Horizontal or vertical installation
- Tight shut-off - lapped disc & seat
- Easy maintenance
- Versatile
- OPTIONS:
  - Inconel® 750 Spring
  - -Soft seat

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.



Two DFT Vacuum Breakers used in a "dry can".

MATERIALS OF CONSTRUCTION

Model		Seat	Disc	Guard	Spring	Retaining Ring
Vacuum Breakers	BSSV	303 SS	316 SS	CF8M(1)	316 SS	316 SS
	BSSV6	316 SS	316 SS	CF8M	316 SS	316 SS

(1) 1″ has a 303 SS guard

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Vacuum Breaker

TECHNICAL INFORMATION

VACUUM BREAKER				VALVE CRACKING PRESSURE*		
Nominal Size (MNPT) A	Unthreaded Inlet Bore B	Cv	Friction Loss (Feet of Pipe)	(PSI) (+/- 10%)	(Inches of Water)	Approx. Net WT. Each (In lbs.)
1″	9/16″	5.8	7	.60 (1)	16.7	.38
1-1/2″	7/8″	13.2	6	.45	12.5	.88
2″	1-3/32″	23.1	7	.38	10.5	1.25
2-1/2″	1-1/2″	36	12.5	.20	5.5	2.25
3″	1-23/32″	57.4	11	.14	3.9	3.75
4″	2-7/32″	90	16	.15	4.3	7.00

(1) Light spring available: Cracking Pressure = .24 PSI (6.5 inches of water)
*Cracking pressure for vertical flow will be slightly different: upward flow, slightly higher; downward flow, slightly less.

COLD, NON-SHOCK PRESSURE RATING (2)

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

Sat. Steam Pressure (PSIG) Ref. (3)	Tempera-ture (Deg. 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 at right.

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.

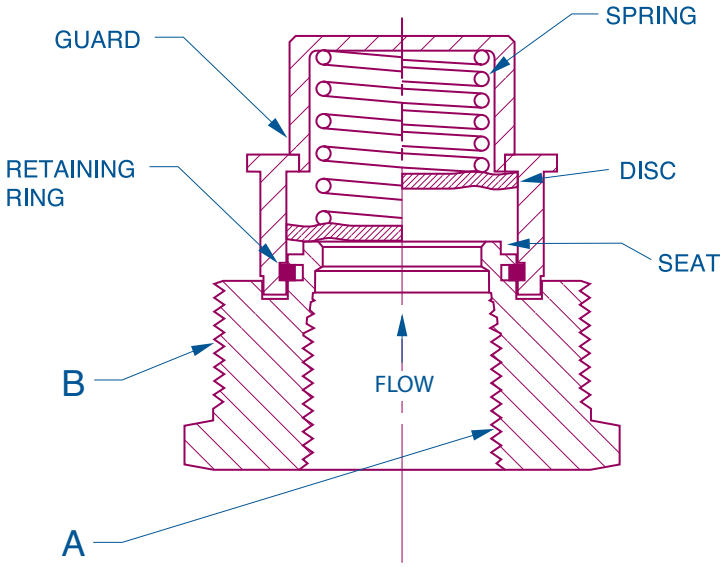
(2) Contingent on service ratings of matching pipe and fittings.

(3) Saturated steam pressure is given for reference only; pressure limit of valve is the adjusted rating at the given temperature.

MAXIMUM OPERATING TEMPERATURES OF MATERIALS						
	SOFT SEAT (4)				SPRING	
MATERIALS	BUNA-N	EPDM	VITON® TFE® - VITON	ZELON®	316 SS	INCONEL® X-750
TEMP. °F	-70 to 250	-75 to 300	-40 to 400	37 to 400	-460 to 450	-460 to 700

(4) Buna-N and Viton are not suitable for steam service.

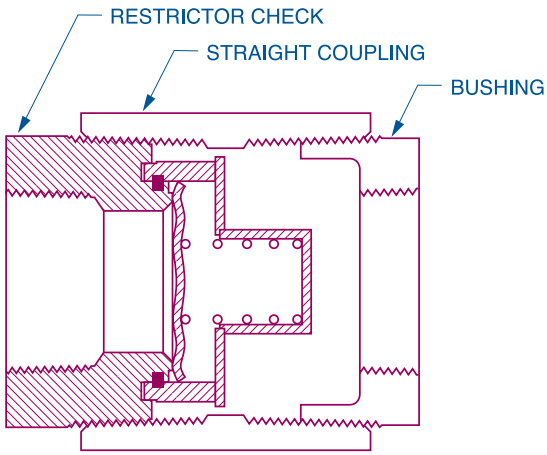
Restrictor Check



Features:

- Higher cracking pressures (2 to 40 psi)
- 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 shut-off - lapped disc & seat
- Easy maintenance
- Versatile
- OPTIONS:
  -Soft seat

The DFT® Restrictor Check Valve (RCV) is a versatile, all-purpose, spring-assisted, in-line 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. 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.



Typical Installation

MATERIALS OF CONSTRUCTION

Model	Seat	Disc	Guard	Spring	Retaining Ring
Restrictor Checks	303 SS	316 SS	CF8M(1)	302 SS	316 SS

(1) 1/4", 3/8" and 1/2" units have a 303 SS guard

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610-363-8903
www.dft-valves.com

Restrictor Check

TECHNICAL INFORMATION

RESTRICTOR CHECK Line Size Inlet (FNPT) A	Outside Thread (MNPT) B	Friction Loss (Feet of Pipe)	VALVE CRACKING PRESSURE (PSI) (+/- 10%)	Approx. Net WT. Each (In lbs.)
1/4″	1″	7	3.3 to 20.4	.38
3/8″	1″	7	3.3 to 20.4	.38
1/2″	1″	7	3.3 to 20.4	.38
3/4″	1-1/2″	6	3.4 to 15.5	.88
1″	2″	7	4.2 to 40.7	1.25
1-1/4″	2-1/2″	12.5	1.8 to 18.8	2.25
1-1/2″	3″	11	2.4 to 19.1	3.75
2″	4″	16	1.7 to 9.4	7.00
2-1/2″	4″	16	1.7 to 9.4	7.00

Not recommended for use on discharge of reciprocating compressors.

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″
Restrictor Check	2500	2000	1500	850	700	450	450

Sat. Steam Pressure (PSIG) Ref. (2)	Tempera-ture (Deg. 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 at right.

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.

(1) Contingent on service ratings of matching pipe and fittings.

(2) Saturated steam pressure is given for reference only; pressure limit of valve is the adjusted rating at the given temperature.

MAXIMUM OPERATING TEMPERATURES OF MATERIALS						
	SOFT SEAT (3)				SPRING	
MATERIALS	BUNA-N	EPDM	VITON® TFE® - VITON	ZELON®	316 SS	INCONEL® X-750
TEMP. °F	-70 to 250	-75 to 300	-40 to 400	37 to 400	-460 to 450	-460 to 700

(3) Buna-N and Viton are not suitable for steam service.

Codes and Standards

	ALC™	Basic-Check®	DLC®	DSV®	Excalibur®	GLC®	PDC®	Restrictor Check	SCV®	SCV-R™	Vacuum Breaker	WLC®
ANSI												
B1.1							X		X	X		X
B1.20.1		X						X	X	X	X	
B16.5	X		X		X	X	X					X
B16.10			X		X		X					
B16.20					X	X	X					X
B16.25					X				X	X		
B16.34	X		X	X	X	X	X		X	X		X
MSS												
SP-6	X				X	X	X					X
SP-25	X	X	X		X	X	X	X	X	X	X	X
SP-61	X		X		X	X(1)	X		X	X		X(1)
SP-125						X(2)						X(2)
SP-126			X		X	X(3)	X		X	X		X(3)
ASTM												
A126CLASS B						X						X
A216GR WCB	X				X	X	X					X
A351GR CF8M	X		X		X	X	X		X	X		X
API 6D	Contact DFT											
6FD						X(4)						
594	X											X(5)
3A				X								
CRN	X	X(6)	X		X	X	X	X(6)	X		X(6)	X
NACE			X(7)		X(7)	X(7)	X(7)		X(7)			X(7)
NSF 61						X(8)						X(9)

ANSI	B1.1	Unified Inch Screw Threads
ANSI	B1.20.1	Pipe Threads, General Purpose
ANSI	16.5	Pipe Flanges & Flanged Fittings.
ANSI	16.10	Face to Face & End to End Dimensions of Valves
ANSI	16.20	Ring-Joint Gaskets & Grooves for Steel Pipe Flanges
ANSI	16.25	Buttwelding Ends
ANSI	16.34	Valves - Flanged, Threaded & Welding Ends
MSS	SP-6	Standard finishes for contact faces of pipe flanges and connecting end flanges of valves & fittings
MSS	SP-25	Standard marking system for valves, fittings, flanges and unions
MSS	SP-61	Pressure testing of steel valves
MSS	SP-125	Grey Iron & Ductile Iron In-Line Check Valves
MSS	SP-126	Steel In-Line Spring-Assisted Center Guided Check Valves
ASTM	A126 CLASS B	Grey Iron Castings
ASTM	A216 GR WCB	Carbon Steel Castings
ASTM	A351 GR CF8M	Austenitic Steel Castings
API	6D	Pipeline Valves; Gate Valves; Plug Valves; Ball Valves; Check Valves
API	6FD	Fire Test for Check Valves
API	594	Wafer & Wafer-Lug Check Valves
CRN		Canadian Registration Number
NACE	MR 0175/ISO 15156	Petroleum and Natural Gas Industries-Materials for use in H_2S Containing Environments in Oil and Gas Production
NACE	MR 0103-2003	Material resistant to sulfide stress cracking in corrosive petroleum refining environments

Form #C & S

(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) ASME 150 & 300, 2" to 24" only.
(5) ANSI Class 600 RF and 900/1500 RF valves meet face to face dimensions.
(6) Contact DFT for acceptable materials.
(7) Contact DFT for NACE.
(8) ASME 150 & 300, 1" to 24"
(9) ASME 150 / 300, 2" to 8"

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www.dft-valves.com

NACE

DFT in-line check valves can meet the "new" **NACE** Standards NACE **MR0175/ISO 15156** and NACE **MR0103-2003**. The ALC™, DLC®, Excalibur®, GLC®, PDC®, SCV® and WLC® 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 MR0103-2003 – *"Material Resistant to Sulfide Stress Cracking in Corrosive Petroleum Refining Environments"* introduced 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.

NACE MR0175/ISO 15156 – *"Petroleum and Natural Gas Industries – Materials for Use in H_2S -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 cracking. In order to select materials of construction it is necessary to know the H_2S 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 (60C). Other stainless materials and alloys are used for temperatures greater than 140°F.

There are 3 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'a) and Other Alloys.

A detailed explanation of the "new" NACE standards can be found at the DFT web site www.dft-valves.com. You can also contact DFT Engineering at 610-363-8903 or 800-206-4013 to discuss material selections for DFT in-line check valves to your NACE requirements.

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

NACE MR0103-2003
Line size
ASME/ANSI Class
Design pressure & temperature
Operating pressure & temperature
Fluid

NACE MR0175/ISO 15156
Line size
ASME/ANSI Class
Design pressure & temperature
Operating pressure & temperature
Fluid
pH
H_2S content
Chloride content

Pressure / Temperature

PRESSURE-TEMPERATURE RATINGS FOR WCB[1] (PSIG)						
TEMP. (deg. F)	CLASS					
	150	300	600	900	1500	2500
–20	285	740	1480	2220	3705	6170
100	285	740	1480	2220	3705	6170
200	260	680	1360	2035	3395	5655
250[2]	245	665	1335	2000	3330	5550
300	230	655	1310	1965	3270	5450
400[3]	200	635	1265	1900	3170	5280
450[4]	185	620	1235	1855	3090	5150
470[5]	175	610	1220	1835	3060	5100
500	170	605	1205	1810	3015	5025
600	140	570	1135	1705	2840	4730
650	125	550	1100	1650	2745	4575
700[6]	110	530	1060	1590	2665	4425
750	95	505	1015	1520	2535	4230
800	80	410	825	1235	2055	3430

PRESSURE-TEMPERATURE RATINGS FOR CF8M[1] (PSIG)						
TEMP. (deg. F)	CLASS					
	150	300	600	900	1500	2500
–462	275	720	1440	2160	3600	6000
100	275	720	1440	2160	3600	6000
200	235	620	1240	1860	3095	5160
250[2]	225	590	1180	1770	2945	4910
300	215	560	1120	1680	2795	4660
400[3]	195	515	1025	1540	2570	4280
450[4]	180	495	990	1485	2480	4130
470[5]	175	490	975	1465	2440	4070
500	170	480	955	1435	2390	3980
600	140	450	900	1355	2255	3760
650	125	440	885	1325	2210	3680
700[6]	110	435	870	1305	2170	3620
750	95	425	855	1280	2135	3560
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

Notes:

1. Pressure/temperature ratings in accordance with ASME/ANSI B16.34-2004.
2. Maximum temperature for Buna-N.
3. Maximum temperature for Viton® & Zelon w/3600CWP SCV.
4. Maximum temperature for 316 SS spring.
5. Maximum temperature for Zelon with 750CWP SCV.
6. Maximum temperature for Inconel® X-750 spring.
7. Butt weld end valves only. Flanged ratings terminate at 1000°F.

PRESSURE TEMPERATURE RATING FOR CAST IRON (PSIG) (8,9)				
	Class 125		Class 250	
Temp. (deg. F)	2 to 12″	14″ +	2 to 12″	14″ +
0 to 150°	200 psig	150 psig	400 psig	300 psig
200° (MAX.)	190 psig	135 psig	370 psig	280 psig

Notes: 8.Buna-N soft seat available for bubble tight shutoff. 316 stainless steel trim recommended for temperatures from 180°F to 200° F.
9. Not recommended for gas or steam service

MAXIMUM OPERATING TEMPERATURES OF MATERIALS (10)							
	BODY "O" RING/SOFT SEAT MATERIALS (11)				SPRING		
MATERIALS	BUNA-N	EPDM	VITON® TFE® - VITON	ZELON®	316 SS	INCONEL® X-750	HASTELLOY®C
TEMP. °F	-70 to 250°F	-75 to 300°F	-40 to 400°F	37 to 400°F	-460 to 450°F	-460 to 700°F	-460 to 1000°F

Notes: 10. Maximum valve temperature rating is limited by seal and spring materials shown above.
11. **Buna-N and Viton are not suitable for steam service.**

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www.dft-valves.com

Pressure / Temperature

CK3MCUN DUPLEX SS						
TEMP (°F)	CLASS					
	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

CN7M (CAST ALLOY 20)						
TEMP (°F)	CLASS					
	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

LCC (LOW CARBON CARBON STEEL)						
TEMP (°F)	CLASS					
	150	300	600	900	1500	2500
-20	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	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
700 (5)	110	555	1110	1665	2775	4630

CW-12 MW CAST HASTELLOY® "C"						
TEMP (°F)	CLASS					
	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

HASTELLOY C-276 AND INCONEL® 625						
TEMP (°F)	CLASS					
	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 (6)	20	205	410	615	1030	1715
1250 (7)	20	165	330	495	825	1370

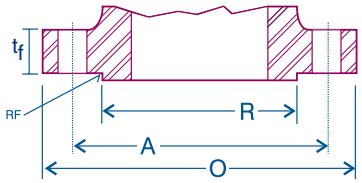
Notes:

1. Pressure/temperature ratings in accordance with ASME/ANSI B16.34-2004.
2. Maximum temperature for Buna-N.
3. Maximum temperature for Viton® & Zelon w/3600CWP 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.

Flange Dimensions

ANSI Class	Nominal Pipe Size	Outside Diameter of Flange O	Outside Diameter of Raised Flange R	Thickness of Flange t_f	Diameter of Bolt Circle A	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
	1.5	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	23.00	1.62	25.00	1.25	20	1.12
	24	32.00	27.25	1.82	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
	1.5	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	1.82	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
	1.5	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	1.5	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	1.5	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

ANSI B16.5-2003 RAISED FACE



Notes:
Class 150 and 300 flanges have a 1/16" raised face which is not included in the "t_f" dimension.

Class 600 to 1500 have a 1/4" raised face which is not included in the "t_f" dimension.

DFT's standard flange finish is 125 - 250 Ra.

All dimensions are in inches.

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Applications

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

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

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

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

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

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

Mining
- Mine Dewatering
- Boiler Feed & Discharge

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

Building Maintenance
- Steam Lines
- Condensate Lines
- Pump Discharge
- Compressor Discharge
- Water Lines

Technical Information

CONVERSIONS

FLOW
1 U.S. gpm = 34.28 BPD
1 U.S. gpm = 0.2273 m^3/hr.
1 U.S. gpm = 3.785 liters/min.
1 U.S. gal = 0.1337 $ft.^3$
1 lb./hr. = 0.4536 kg/hr.
1 metric ton/hr. = 2205 lb./hr.
1 m^3/hr. = 16.68 liters/min.
1 ft^3/s = 448.8 U.S. gpm

TEMPERATURE
°F = 1.8(°C) + 32

$$°C = \frac{°F - 32}{1.8}$$

PRESSURE
1 in. of water = 0.0361 psi
1 in. = 25.4 mm = 2.54 cm
1 ft. = 0.3048 m
2.31 feet of water = 1 psi
1 Bar = 14.51 psia
1 std atm = 14.696 psi
1 std atm = 1.0133 bar

$$\text{Head (Feet)} = \frac{\text{Pressure (psi)} \times 2.31}{\text{Specific Gravity}}$$

Inches of Water Column = Pressure (psi) × 27.72
1″ Hg (mercury) = 0.49 psi

VOLUME
1 $ft.^3$ = 1728 $in.^3$
1 $ft.^3$ = 28.32 liters
1 U.S. gal. = 231 $in.^3$
1 U.S. gal. = 0.8327 Imperial gal.
1 barrel = 42 gallons

AREA
1 m^2 = 10.76 ft^2
1 m^2 = 1550 $in.^2$
1 $in.^3$ = 16.39 cm^3

SCFM of Vacuum Breaker

$$\text{SCFM (Air flow into tank/vessel)} = \frac{\text{GPM (Liquid flow out of tank)}}{7.5}$$

Cv

Cv = the number of U.S. gallons of water at 60°F that will flow through the valve in one minute when the pressure differential across the valve is one pound per square inch (1 psi).

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.

FOR A COMPLETE UNDERSTANDING OF YOUR SOLE AND EXCLUSIVE LEGAL RIGHTS AND REMEDIES, AND THE PROCEDURES TO BE FOLLOWED WITH RESPECT TO ANY CLAIMS, PLEASE REFER TO THE "LIMITATION AND DISCLAIMER OF WARRANTIES AND LIABILITIES," AVAILABLE ON REQUEST FROM DFT. THE EXPRESS WARRANTIES SET FORTH IN THAT DOCUMENT AND THE OBLIGATIONS AND LIABILITIES OF DFT THEREUNDER ARE EXCLUSIVE AND ARE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ALL OTHER OBLIGATIONS AND LIABILITIES OF DFT. IT IS UNDERSTOOD THAT THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION OF THE EXPRESS TERMS IN THE "LIMITATION AND DISCLAIMER OF WARRANTIES AND LIABILITIES." UNDER NO CIRCUMSTANCES SHALL DFT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, ECONOMICAL, DIRECT, INDIRECT, GENERAL OR SPECIAL DAMAGES, EXPENSES OR LOSSES RELATING TO ANY BREACH OF WARRANTIES.

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.

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www.dft-valves.com

VALVE DATA SHEET
NON-SLAM CHECK VALVE
"CHECK VALVE DOCTOR™"

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

GENERAL INFORMATION	Quantity: *	
	Line Size: *	
	Class (ANSI/API):*	
	Model:	
	End Connections: *	
	Material: Body*	
	Trim *	
	Spring	
	Seating	Metal ☐ Soft ☐
	Gaskets/O-ring	
	Bolting	
	Tag No: _____	Brass ___ Stainless ___ Other: _____

FLUID DATA	Fluid State *	Liquid ☐	Gas ☐	Steam ☐
	Fluid: *			
	Specific Gravity: *			
	Design Conditions:	Pressure:	Temp.:	
	Operating Conditions:	Flow*	Pressure *	Temperature*
	Units: (i.e. GPM,PSI,°F, etc.)	_____	_____	° ___
	Normal *			
	Maximum			
	Minimum			

INSTALLATION DATA	Orientation: *	Horizontal ☐ Vert. flow: **Up** ☐ **Down** ☐
	Service Application:	

SPECIAL REQUIREMENTS	Specification Nos.:			
	CE MARK	Yes ☐	No ☐	
	Cert. of Compliance:	Yes ☐	No ☐	
	CMTRs:	Body ☐	Trim ☐	
	Drawings:	Yes ☐	No ☐	
	NACE MR 0175/ISO 15156	Yes ☐	No ☐	% H_2S: ____
	NACE MR 0103-2003	Yes ☐	No ☐	
	NDE: (Specify)			
	Packaging:			
	Other:			

NOTES	
DELIVERY: ____ wks.	* Denotes Required

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