DFT® INC.

"Check Valve Doctor™"

In-Line Check Valves

ISO 9001 QMI REGISTERED QUALITY SYSTEM

DFT®

"Check Valve Doctor™"

DFT in-line check valves began over 50 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 DLC®, 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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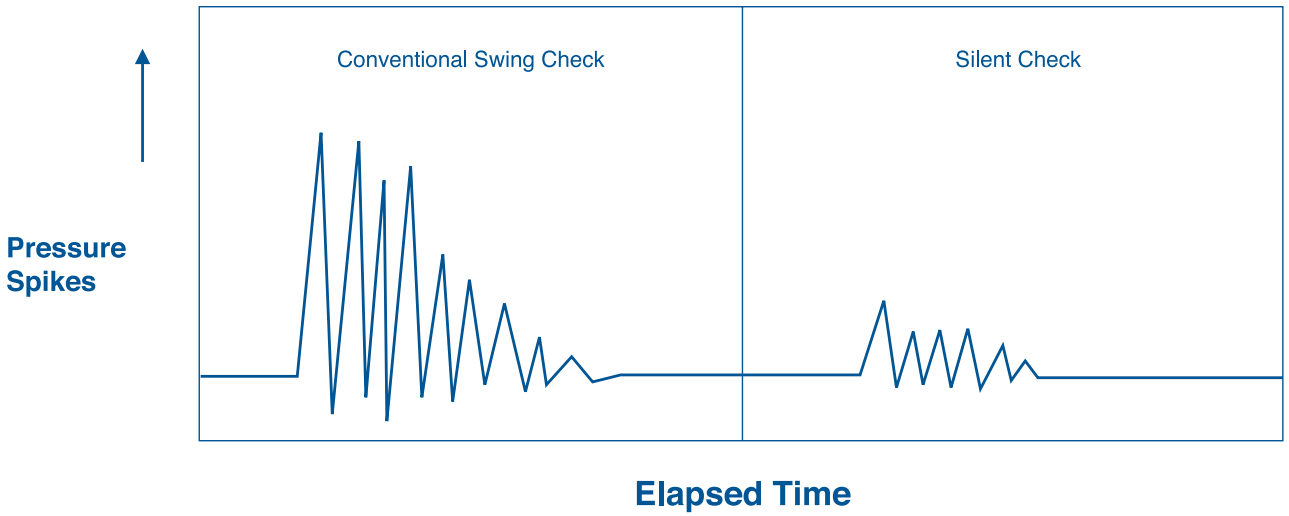
Water Hammer

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)

- **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®, Restrictor Check, SCV or Vacuum Breaker)

- **Custom sizing available.**
  The following DFT check valves can be sized to the appropriate flow conditions: 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.

- **Maintenance and Installation guides.**
  Available for all DFT in-line check valves.

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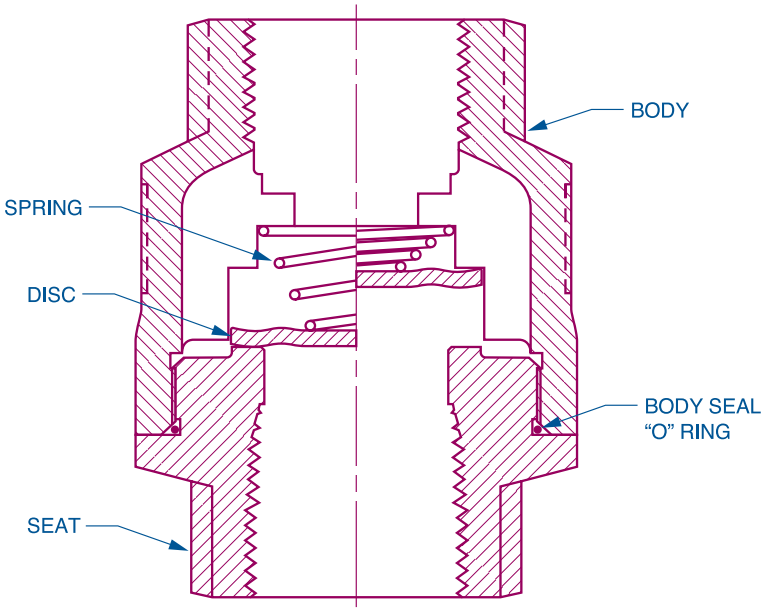
Valve Selection Chart

	Basic-Check®	DLC®	Excalibur®	GLC®	PDC®	Restrictor Check	SCV	Vacuum Breaker	WLC®
PAGE	18	8	12	14	16	22	6	20	10
SIZE	1/4 TO 2-1/2	3/4 TO 3	2 TO 24	1 TO 24	2 TO 12	1/4 TO 2-1/2	1/2 TO 3	1 TO 4	1 TO 10
ENDS									
NPT	X					X	X(1)	X	
SW							X(1)		
FLG		X	X	X	X				
BW			X						
FLG/BW			X						
Victaulic®			X						
Wafer									X
ANSI									
125				X					X
150		X	X	X	X				X
250				X					X
300		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		
3600 CWP							X		
OTHER	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
316SS/316SS	X(5)	X	X	X	X	X(5)	X	X(5)	X
Other Alloys			X	X					X
OPTIONS									
Soft Seat	X		X	X	X	X	X	X	X
X-750 Spring	X	X(6)	X	X	X	X	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.
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: 303SS, BSA: 416SS, BSSH6, BSSH7, BSSV6: 316SS
6. Inconel® X-750 spring is standard.

SCV



Features:

- 1/2" to 3" Line size
- 750 & 3600 CWP
- NPT & SW ends
- 316 Stainless Steel Construction
- Inconel® X-750 spring
- Meets NACE MR-01-75
- Spring-assisted silent closing
- 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
  - Hastelloy C body & seat
  - NPT x socket weld ends

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 316 stainless steel construction insures a long service life.

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SCV

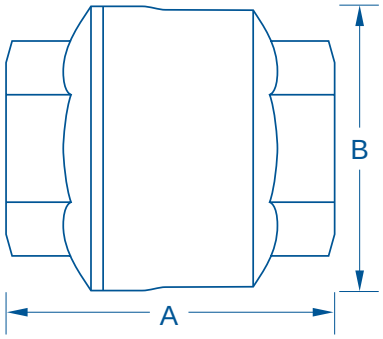
750 CWP/500 WSP

	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
Cracking Pressure (psi)	0.4	0.3	0.3	0.3	0.2	0.2	0.3

3600 CWP

	1/2"	3/4"	1"	2"
A	3.16	3	3.75	6.38
B	1.88	2.33	2.75	4.06
Weight	1.5	3	4.5	12.0
CV	6.0	11	19	65
Cracking Pressure (psi)	0.5	0.4	0.4	0.3

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



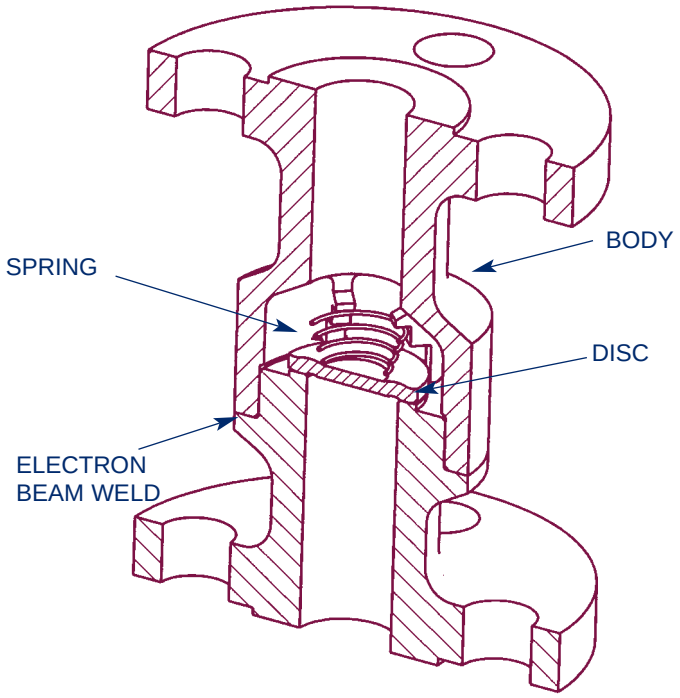
	750 CWP MATERIALS OF CONSTRUCTION	3600 CWP MATERIALS OF CONSTRUCTION
Body	A351 CF8M	A351 CF8M
Seat (1)	A351 CF8M	A351 CF8M
Disc	A240 316	A240 316
Spring	Inconel® X-750	Inconel X-750
"O" ring	Zelon (470°F max.)	Zelon (400°F max.) (2)

Notes:
1. Soft seats are available for bubble-tight shutoff. See below. Body seal and soft seat material are the same unless otherwise requested.
2. Buna-N CO_2 resistant "O" ring is available upon request.
3. Maximum temperature for Buna-N.
4. Maximum temperature for Viton® and Zelon w/**3600**CWP SCV.
5. Maximum temperature for Zelon w/**750**CWP SCV.
6. Buna-N and Viton are not suitable for steam service.
7. Maximum valve temperature rating is limited by the body seal & seat material selected.
8. 750CWP is rated to 470°F.

PRESSURE TEMPERATURE RATING (PSIG)		
Temp. (deg.F)	750 CWP	3600 CWP
-20 to 100°	750	3600
200	630	3095
250 (3)	600	2945
300	570	2795
400 (4)	525	2570
470 (5)	510	

	BODY "O" RING/SOFT SEAT MATERIALS (6) (7)			SPRINGS	
MATERIALS	BUNA-N	VITON	ZELON(8)	316SS	INCONEL® X-750
TEMP. °F	-70 TO 250	-40 TO 400	37 TO 400	-460 TO 450	-460 TO 700

DLC®



Features:

- ANSI **Face-to-Face** dimensions
- Spring-assisted silent closing
- 3/4" to 3" Line size
- ANSI 150 and 300
- 316 Stainless Steel Construction
- Raised Face Flanged ends
- Inconel X-750 spring
- Electron beam welded body
- Meets B16.34 - 1988
- Meets NACE MR-01-75
- 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

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 316 stainless steel construction insures a long service life.

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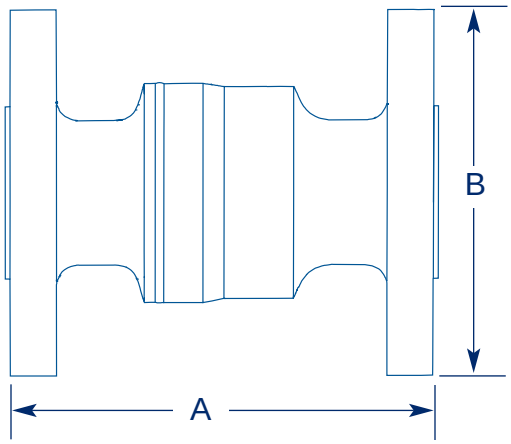
Class 150 RF

	3/4”	1”	1 1/2”	2”	3”
A	4.62	5.00	6.50	8.00	9.50
B	3.88	4.25	5.00	6.00	7.50
Weight	4.5	6.0	11.7	19.1	39.2
CV	13	22	54	93	180
Cracking Pressure (psi)	.3	.3	.2	.2	.3

Class 300 RF

	3/4”	1”	1 1/2”	2”	3”
A	7.00	8.50	9.50	10.50	12.50
B	4.62	4.88	6.12	6.50	8.25
Weight	7.2	9.9	18.5	24.3	50.5
CV	13	22	54	93	180
Cracking Pressure (psi)	.3	.3	.2	.2	.3

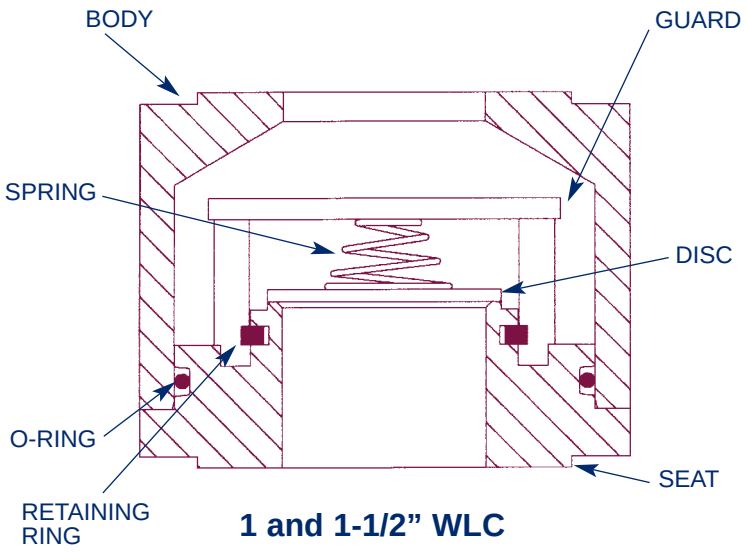
Notes: All dimensions are in inches. Weights are in pounds.



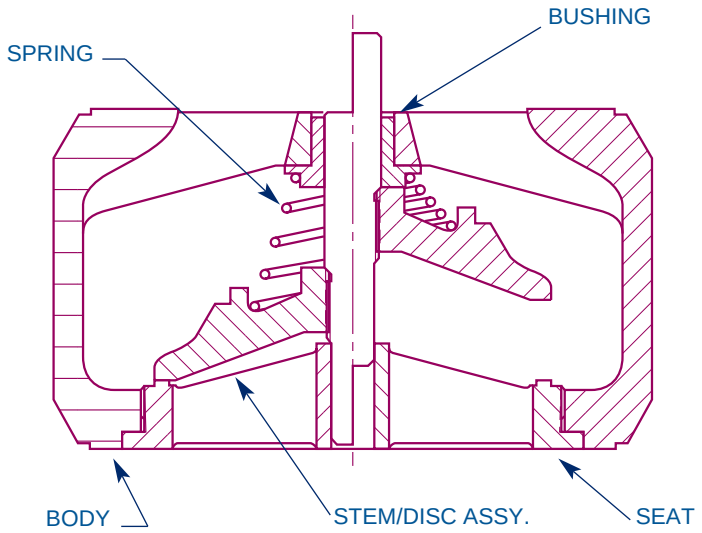
MATERIALS OF CONSTRUCTION	
Body	A351 CF8M
Seat	A351 CF8M
Spring	Inconel® X-750
Disc	316 SS

PRESSURE TEMPERATURE RATING (PSIG)		
Temp. (deg.F)	**Class 150**	**Class 300**
–460 to 100°	275	720
200	235	620
250	225	590
300	215	560
400	195	515
470	175	490
500	170	480
600	140	450
700	110	430

WLC®



1 and 1-1/2" WLC



2" and larger WLC

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
- Lightweight
- Spring-assisted silent closing
- Edge guided (1" & 1-1/2")
- Center guided (2" to 10")
- Dual guided stem (2" to 10")
- Horizontal or vertical installation
- Protected spring
- **ANSI 150 to 2500**
  - 1" to 10" Line Size
  - WCB & 316 SS bodies
  - 316 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
    - Body Materials:
      - Alloy20, Inconel® 625, Titanium
    - Stellited trim (600°F+)
    - Weld Neck Flanges to meet B16.10 Face-to-Face dimensions
- **ANSI 125 & 250**
  - 2" to 10" Line Size
  - Cast Iron body
  - Bronze or 316 SS trim
  - Ends:
    - Wafer FF
  - AWWA seat leakage
  - FM approval:
    - 2" to 10" Cl. 125 w/Bronze trim
  - OPTIONS:
    - Soft seat

Consult page 25 for Pressure/Temperature ratings and page 26 for materials of construction.

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WLC®

Class 150 RF(1)

	1"*	1 1/2"*
A	2	2 1/2
B	2 5/8	3 1/4
Weight	2	4
CV	19	36

Class 300 RF(1)

1"*	1 1/2"*
2	2 1/2
2 7/8	3 3/4
3	6
13	36

Class 150/300 RF

2"*	2 1/2"*	3"*	4"*	5"*	6"*	8"*
2 5/8	2 7/8	3 1/8	4	4 5/8	5 1/2	6 1/2
4 3/8	5 1/8	5 3/4	7 1/8	8 1/2	9 7/8	12 1/8
4	10	12	20	35	41	86
57	95	140	265	360	506	860

150 RF

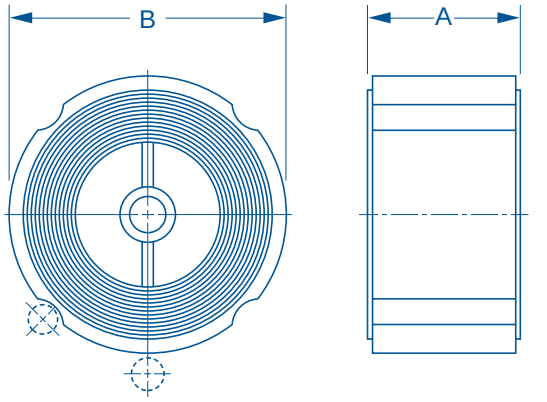
10"*
8 1/4
17 5/8
138
1355

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

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



Dual Pressure Service: Class 125/250 for 2" to 6"
Class 150/300 for 2" 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

1500 RF(2)

10"
9 3/4
17
430
755

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

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

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

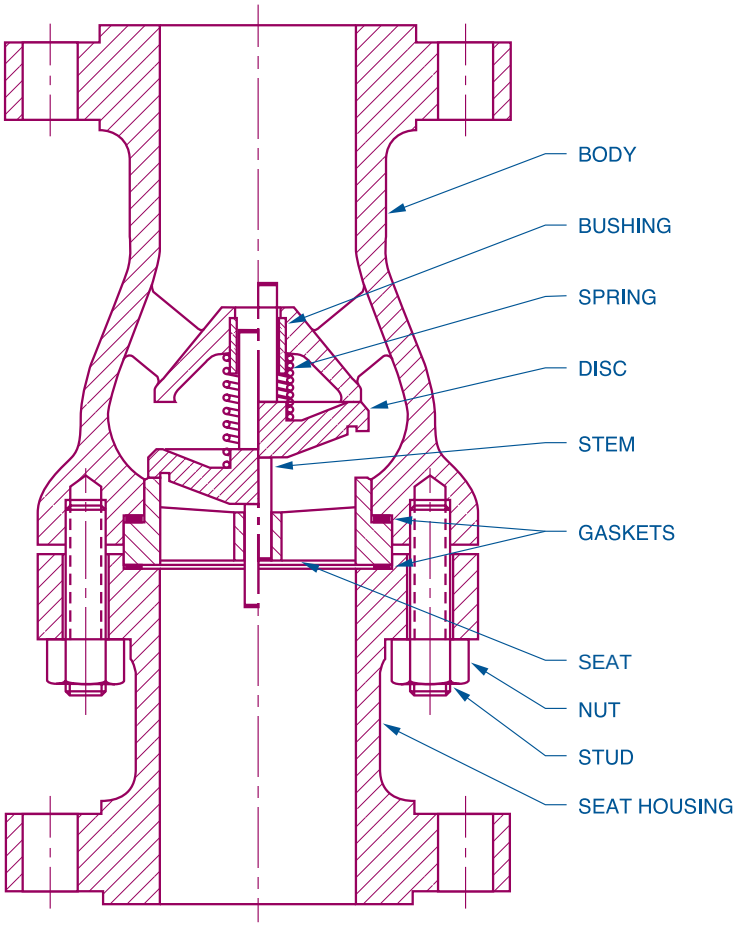
Class 250 Cast Iron FF

	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.

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" C l.1500 RTJ/RF have spiral wound body seals. Contact DFT for other materials.

Excalibur®



Features:

- ANSI **B16.10 Face-to-Face** dimensions
- Spring-assisted silent closing
- 2” to 24” Line size
- ANSI 150 to 1500
- WCB & 316 SS bodies
- 316 SS trim
- Ends:
  - RF Flanged
  - RTJ
- Center guided
- Dual guided stem
- Horizontal or vertical installation
- Tight shut-off
- Two piece body
- Protected spring
- Body gaskets (See Page 26)
- Easy maintenance
- Versatile
- OPTIONS:
  - Soft seat
  - Inconel® X-750 Spring
  - Custom sizing
  - Digester trim
  - Body Materials:
    - Alloy 20
    - Monel
  - Stellited trim (600°F+)
  - Ends(1):
    - Butt weld
    - Flanged x Butt weld
    - Victaulic®

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 page 25 for Pressure/Temperature ratings and page 26 for materials of construction.

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Excalibur®

Class 150 RF*

	2”	2 1/2”	3”	4”	6”	8”	10”	12”	16”	24”
A	8	8 1/2	9 1/2	11 1/2	14	19 1/2	24 1/2	27 1/2	34	51
B	6	7	7 1/2	9	11	13 1/2	16	19	23 1/2	32
Weight	22	30	37	64	114	207	317	457	830	1851
CV	65	105	155	265	685	1050	1650	2400	5200	11300

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

Class 600 RF*

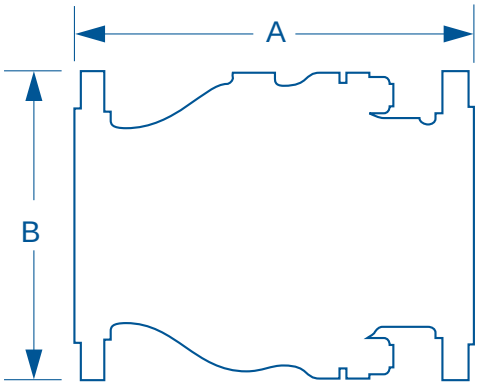
	2”	3”	4”	6”	8”	10”	12”
A	11 1/2	14	17	22	26	31	33
B	6 1/2	8 1/4	10 3/4	14	16 1/2	20	22
Weight	35	69	138	300	481	981	1320
CV	65	155	265	584	985	1650	2400

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

Class 1500 RF*

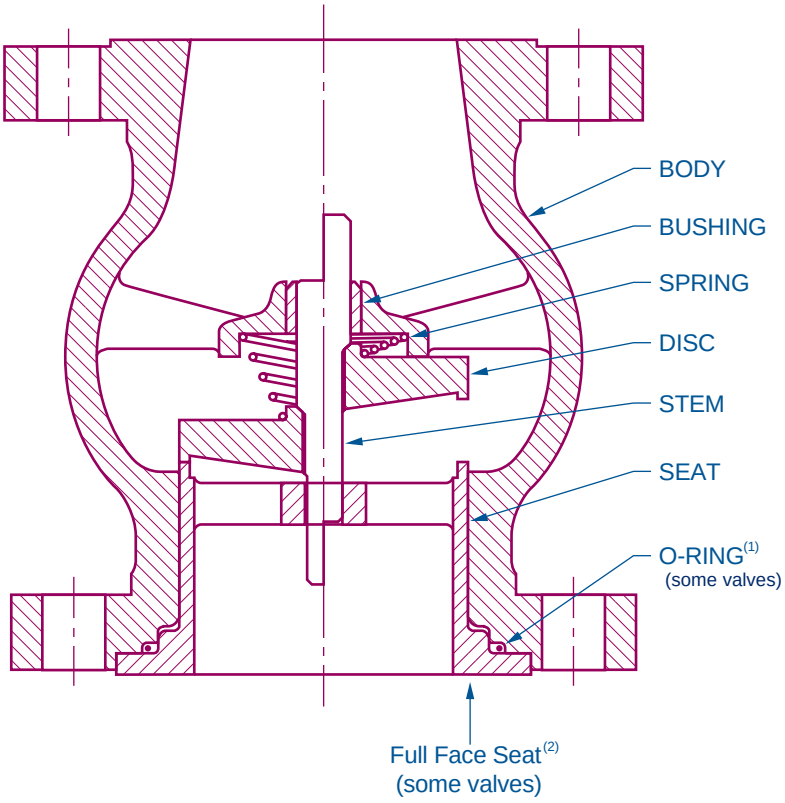
	2”	3”	4”	6”	8”
A	14 1/2	18 1/2	21 1/2	27 3/4	32 3/4
B	8 1/2	10 1/2	12 1/4	15 1/2	19
Weight	81	158	267	780	1270
CV	51	109	187	512	777



*** For other sizes, consult factory.**

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

GLC®



Features:

- **"Short"** Face-to-Face dimensions
- One piece body
- Spring-assisted silent closing
- Center guided
- Dual guided stem
- Horizontal or vertical installation
- Protected spring
- Easy maintenance
- Versatile
- **ANSI 150 To 2500**
  - 1" to 24" Line size
  - WCB & 316 SS Bodies
  - 316 SS trim
  - RF Flanged Ends
  - MSS-SP61 seat leakage
- OPTIONS:
  - Inconel® X-750 Spring
  - Soft seat
  - Custom sizing
  - Body Materials
    - Alloy 20
  - Digester trim
  - Stellited trim (600°F+)
  - RTJ Ends(3)
- **ANSI 125 & 250**
  - 2-1/2" to 24" Line size (Cl.125)
  - 2-1/2" to 8" Line size (Cl.250)
  - Cast Iron Body
  - Bronze or 316 SS trim
  - Ends:
    - FF Flanged
  - AWWA seat leakage
  - OPTIONS:
    - Soft seat

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) Consult Page 15 for valves with Body "O" ring seals.

(2) Consult Page 15 for valves with Full Face seats

(3) Contact DFT for availability

Consult page 25 for Pressure/Temperature ratings and page 26 for materials of construction.

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

Class 150 RF

	1”	1 1/2”	2”*	3”*	4”	5”	6”	8”	10”	12”	14”	16”	18”	20”	24”
A	4 1/2	5 3/4	6 1/4	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 1/2	9	10	11	13 1/2	16	19	21	23 1/2	25	27 1/2	32
Weight	7	13	17	33	55	72	93	172	266	387	456	700	753	1292	1571
CV	17	35	63	148	260	415	620	1030	1630	2370	3500	5100	6400	7700	11100

Class 300 RF

	1”	1 1/2”	2”	2 1/2”	3”	4”	5”	6”	8”	10”	12”*	14”*	16”*	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	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 1/2	36
Weight	9	17	23	41	46	71	89	139	232	335	550	724	898	1357	2420
CV	19	35	63	100	148	267	415	620	933	1704	2370	2781	5100	7700	10510

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

Class 900 RF

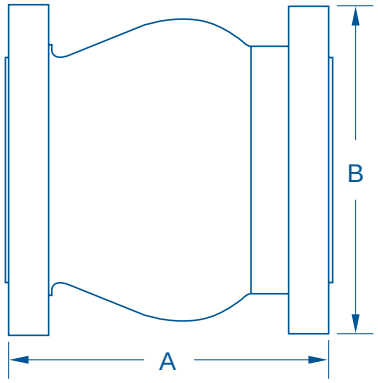
	1 1/2”*	2”*	2 1/2”	3”	6”*	8”*	10”*
A	7 3/8	8 1/4	9	9 1/8	13	15 1/4	17 5/8
B	7	8 1/2	9 5/8	9 1/2	15	18 1/2	21 1/2
Weight	30	56	78	87	264	396	539
CV	26	46	81	114	549	851	1499

Class 1500 RF

	1 1/2”*	2”*	2 1/2”	3”	4”*	6”*	8”*	12”*
A	7 3/8	8 1/4	9	9 7/8	11 3/8	15 1/8	17 1/2	44 1/2
B	7	8 1/2	9 5/8	10 1/2	12 1/4	15 1/2	19	26 1/2
Weight	30	56	78	110	164	405	670	2550
CV	26	46	81	114	192	441	742	1689

Class 2500 RF

2”*	3”*
9 1/4	14
9 1/4	12
77	218
32	77

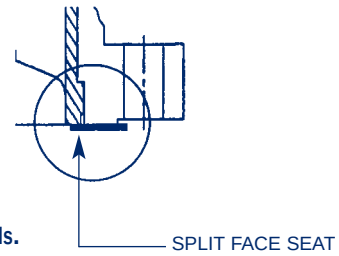


Class 125 Cast Iron FF

	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

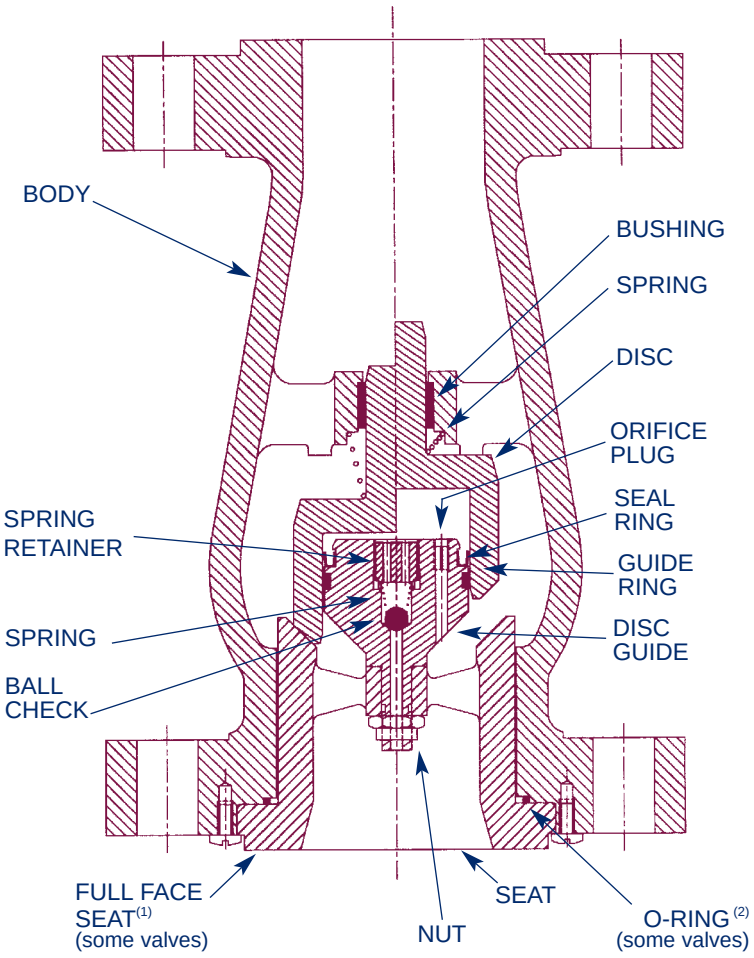


Note: All dimensions are in inches. Weights are in pounds.

***Full Face seat valves with Buna-N (-70 to 250°F) body “O” ring seal. Contact DFT for other materials.**

Valves “without” body “O” ring seals have a “Split” Face design.

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
- ANSI **B16-10 Face-to-Face** dimensions
- One piece body
- Spring-assisted silent closing
- 2” to 12” Line size
- ANSI 150 to 1500
- WCB, 316 SS & LCC body
- 316 SS trim
- 316 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

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.

(1) Consult Page 17 for valves with Full Face Seat.

(2) Consult Page 17 for valves with Body “O” ring seals.

Consult page 25 for Pressure/Temperature ratings and page 26 for materials of construction.

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Class 150 RF

	2”	3”	4”	6”	8”*
A	8	9 1/2	11 1/2	14	19 1/2
B	6	7 1/2	9	11	13 1/2
Weight	20	40	64	94	158
CV	62	148	255	660	1005

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

Class 600 RF

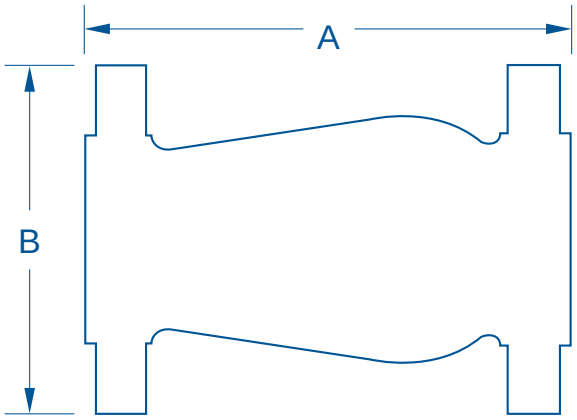
	2”*	3”*	4”*	6”*	8”*
A	11 1/2	14	17	22	26
B	6 1/2	8 1/4	10 3/4	14	16 1/2
Weight	35	58	117	272	450
CV	62	142	255	660	1005

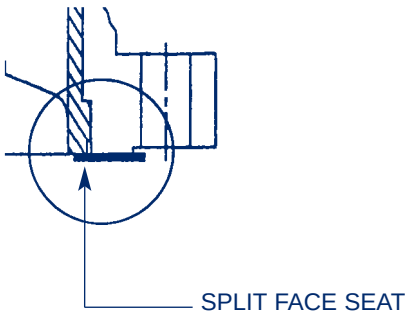
Class 900 RF

	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

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

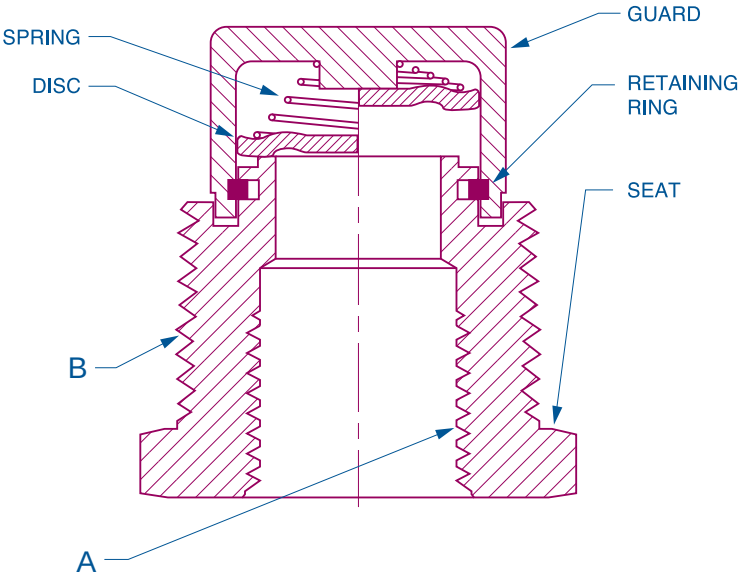




Note:
1. All dimensions are in inches. Weights are in pounds.
2. Maximum operating temperature is 450°F with the 316 SS spring. 500°F with the Inconel® X-750 spring due to nonmetallic components.

***Full Face seat valves with Buna-N (-70 to 250°F) body “O” ring seal. Contact DFT® for other materials. Valves “without” body “O” ring seals have a “Split” Face design.**

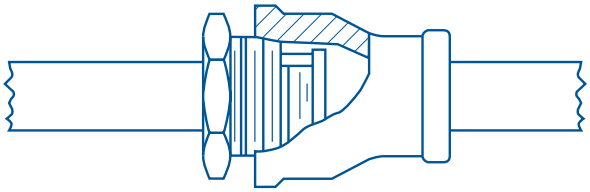
Basic-Check®



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.

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.

MATERIALS OF CONSTRUCTION

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

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

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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)	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 = . 18 PSI (5.0 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 factory.

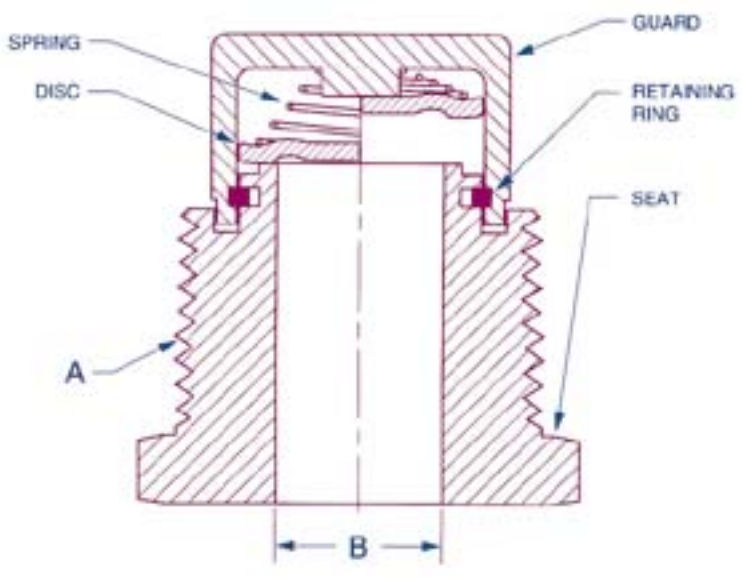
(2) Contingent on service ratings of matching pipe and fittings.

(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					
	SEAL (4)			SPRING	
MATERIALS	BUNA-N	VITON®	ZELON	316 SS	INCONEL® X-750
TEMP. °F	-70 to 250	-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	BSSV	303 SS	316 SS	316 SS(1)	316 SS	316 SS
Breakers	BSSV6	316 SS	316 SS	316 SS	316 SS	316 SS

(1) 1” has a 303 SS guard

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www.dft-valves.com

Vacuum Breaker

TECHNICAL INFORMATION

VACUUM BREAKER Nominal Size (MNPT) A	Unthreaded Inlet Bore B	CV	Friction Loss (Feet of Pipe)	VALVE CRACKING PRESSURE* (PSI)	(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 = . 18 PSI (5.0 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 factory.

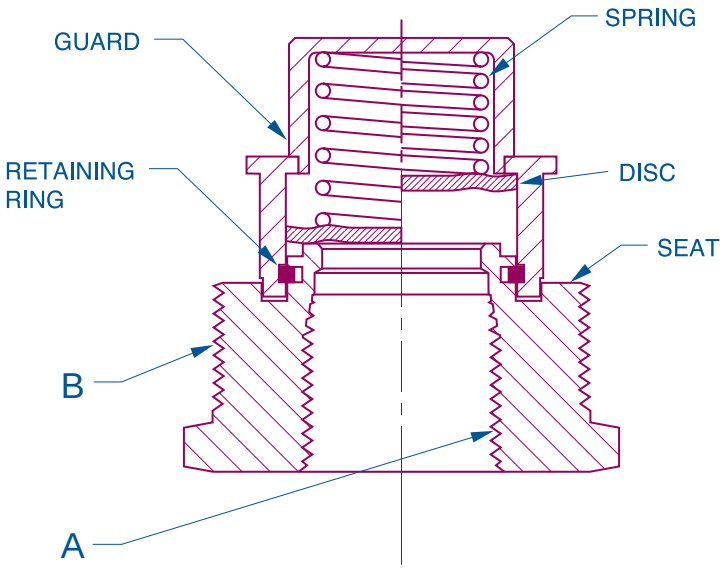
(2) Contingent on service ratings of matching pipe and fittings.

(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					
	SEAL (4)			SPRING	
MATERIALS	BUNA-N	VITON®	ZELON	316 SS	INCONEL® X-750
TEMP. °F	-70 to 250	-40 to 400	37 to 400	-460 TO 450	-460 TO 700

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

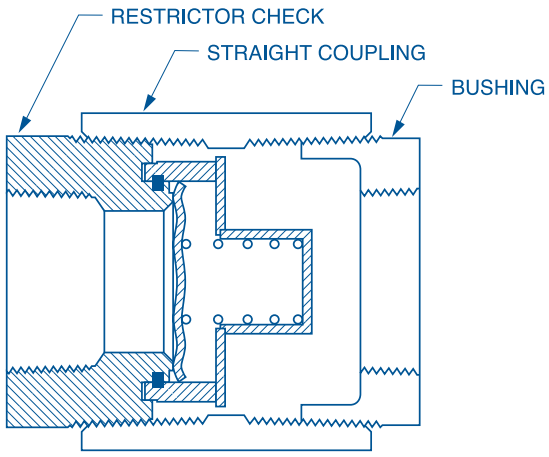
Restrictor Check



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	316 SS	302 SS	316 SS

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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 factory.

(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					
	SEAL (3)			SPRING	
MATERIALS	BUNA-N	VITON®	ZELON	316 SS	INCONEL® X-750
TEMP. °F	-70 to 250	-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

	Basic-Check®	DLC®	Excalibur®	GLC®	PDC®	Restrictor Check	SCV	Vacuum Breaker	WLC®
ANSI									
B1.1					X		X		X
B1.20.1	X					X	X	X	
B16.5		X	X	X	X				X
B16.10		X	X		X				
B16.20			X	X	X				X
B16.25			X				X		
B16.34		X	X	X	X		X(1)		X
MSS									
SP-6			X	X	X				X
SP-25	X	X	X	X	X	X	X	X	X
SP-61		X	X	X(2)	X		X		X(2)
SP-125				X(7)					X(7)
SP-126		X	X	X(6)	X		X		X(6)
ASTM									
A126CLASS B				X					X
A216GR WCB			X	X	X				X
A351GR CF8M		X	X	X	X		X		X
API									
594									X(3)
FM									X(4)
NACE									
MR-01-75		X	X(5)	X(5)	X(5)		X		X(5)

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 A315 GR CF8M	Austenitic Steel Castings
API 594	Wafer & Wafer-Lug Check Valves
FM	Factory Mutual System
NACE MR-01-75	Sulfide stress cracking resistant metallic materials for oilfield equipment

Form #C & S

1. Complies with B16.34 except for markings. 2" 3600 CWP does not meet B16.34.
2. Class 125 and 250 Cast Iron valves are leak tested in accordance with AWWA.
3. ANSI Class 600 RF and 900/1500 RF valves meet face to face dimensional only.
4. WLC with Cast Iron body (A126 CLASS B), and Bronze Trim in ANSI Class 125 only.
5. Meets this requirement when furnished with an Inconel X-750 spring.
6. Except Cast Iron Valves
7. Cast Iron Valves only.

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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	675	1350	2025	3375	5625
250[(2)]	245	665	1330	1995	3325	5545
300	230	655	1315	1970	3280	5470
400[(3)]	200	635	1270	1900	3170	5280
450[(4)]	185	615	1235	1845	3080	5135
470[(5)]	175	610	1220	1825	3045	5075
500	170	600	1200	1795	2995	4990
600	140	550	1095	1640	2735	4560
650	125	535	1075	1610	2685	4475
700[(6)]	110	535	1065	1600	2665	4440
750	95	505	1010	1510	2520	4200
800	80	410	825	1235	2060	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	445	890	1330	2220	3700
700[(6)]	110	430	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	350	700	1050	1750	2915
1050[(7)]	20	345	685	1030	1720	2865
1100[(7)]	20	305	610	915	1525	2545

Notes:

1. Pressure/temperature ratings in accordance with ASME/ANSI B16.34-1996.
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)				
	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: Buna-N soft seat available for bubble tight shutoff. 316 stainless steel trim recommended for temperatures from 180° F to 200° F.

MAXIMUM OPERATING TEMPERATURES OF MATERIALS (8)						
	SEAL (9)			SPRING		
MATERIALS	BUNA-N	VITON®	ZELON	316 SS	INCONEL® X-750	HASTELLOY®C
TEMP. °F	-70 to 250 °F	-40 to 400 °F	37 to 400 °F	-460 to 450 °F	-460 to 700 °F	-460 to 1000 °F

Note: 8. Maximum valve temperature rating is limited by seal and spring materials shown above.
9. Buna-N and Viton are not suitable for steam service.

Standard Materials

EXCALIBUR®, GLC® AND WLC®*

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	A 479 316	A479 316
Bolting (3)	A193-B7 (Stud) & A194-2H (Nut)	
Gasketing (3) Cl.150 & 300	Durlon®8500	Flexible Graphite
Gasketing (3) Cl.600+	316 Spiral wound with Flexible Graphite Filler	

***1" & 1-1/2" WLC; Cl 150 to 1500 - 316 SS trim except 17-7 disk in Cl 900+.**
Some valves contain body seals ("O" ring or gasket). Consult DFT® for material selection.

Notes: 1. Soft seats are available for bubble-tight shutoff. See page 25.
2. Inconel® X-750 spring is available.
3. Excalibur only. Contact DFT for stainless steel or other bolting materials.

PDC®

COMPONENT	CARBON STEEL BODY	STAINLESS STEEL BODY
Body	A216 Grade WCB	A351 CF8M
Disc	A351 CF8M	A351 CF8M
Seat (4)	A351 CF8M	A351 CF8M
Spring (5)	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® (6)	Rulon (6)
Seal ring	Teflon®/Hastelloy® C276(6)	Teflon®/Hastelloy® C276(6)
Spring retainer - ball check	A479 316	A479 316
Guide ring	Teflon (6)	Teflon (6)
Ball check	Teflon (6)	Teflon (6)
Orifice Plug	A479 316	A479 316

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

Notes: 4. Soft seats are available for bubble-tight shutoff. See page 25.
5. Inconel X-750 spring is available.
6. 500 °F maximum.

CAST IRON GLC AND WLC

COMPONENT	CAST IRON BODY/BRONZE TRIM	CAST IRON BODY/316 TRIM (7)
Body	A126 Class B Cast Iron	A126 Class B Cast Iron
Disc/stem assy	B584 836 - Bronze	A351 CF8M
Seat (8)	B584 836 - Bronze	A351 CF8M
Spring	A313 T302	A351 CF8M
Bushing	B584 836 - Bronze	A351 CF8M

Notes: 7. 316 stainless steel trim recommended for temperatures from 180 °F to 200 °F.
8. Buna-N soft seat available for bubble-tight shutoff.

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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

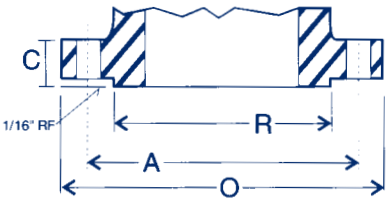
Primary Metals
- Hydraulic Lines
- Steam Lines
- Condensate Lines
- Pump Discharge
- Compressor Discharge
- Water Lines
- Water Treatment
- Evaporators
- Extrusion Equipment
- Chemical Lines
- Presses - Water Inlet & Outlet

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

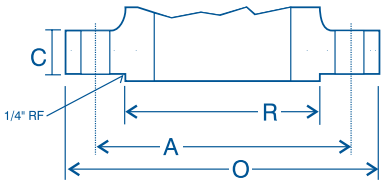
Flange Dimensions

ANSI Class	Nominal Pipe Size	Outside Diameter of Flange O	Outside Diameter of Raised Flange R	Minimum Thickness of Flange C	Diameter of Bolt Circle A	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts
150	3/4	3.88	1.69	0.50	2.75	0.62	4	0.50
	1	4.25	2.00	0.56	3.12	0.62	4	0.50
	1.5	5.00	2.88	0.69	3.88	0.62	4	0.50
	2	6.00	3.62	0.75	4.75	0.75	4	0.62
	3	7.50	5.00	0.94	6.00	0.75	4	0.62
	4	9.00	6.19	0.94	7.50	0.75	8	0.62
	6	11.00	8.50	1.00	9.50	0.88	8	0.75
	8	13.50	10.62	1.12	11.75	0.88	8	0.75
	10	16.00	12.75	1.19	14.25	1.00	12	0.87
	12	19.00	15.00	1.25	17.00	1.00	12	0.87
	14	21.00	16.25	1.38	18.75	1.12	12	1.00
	16	23.50	18.50	1.44	21.25	1.12	16	1.00
	18	25.00	21.00	1.56	22.75	1.25	16	1.12
	20	27.50	23.00	1.69	25.00	1.25	20	1.12
	24	32.00	27.25	1.88	29.50	1.38	20	1.25
300	3/4	4.62	1.69	0.62	3.25	0.75	4	0.62
	1	4.88	2.00	0.69	3.50	0.75	4	0.62
	1.5	6.12	2.88	0.81	4.50	0.88	4	0.75
	2	6.50	3.62	0.88	5.00	0.75	8	0.62
	3	8.25	5.00	1.12	6.62	0.88	8	0.75
	4	10.00	6.19	1.25	7.88	0.88	8	0.75
	6	12.50	8.50	1.44	10.62	0.88	12	0.75
	8	15.00	10.62	1.62	13.00	1.00	12	0.87
	10	17.50	12.75	1.88	15.25	1.12	16	1.00
	12	20.50	15.00	2.00	17.75	1.25	16	1.12
	14	23.00	16.25	2.12	20.25	1.25	20	1.12
	16	25.50	18.50	2.25	22.50	1.38	20	1.25
	18	28.00	21.00	2.38	24.75	1.38	24	1.25
	20	30.50	23.00	2.50	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
RAISED FACE



Class 150 and 300



Class 600 - 1500

Notes:
Class 150 and 300 flanges have a 1/16" raised face which is included in the "C" dimension.

Class 600 to 1500 have a 1/4" raised face. The "C" dimension does not include the 1/4" raised face.

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

All dimensions are in inches.

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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
$^oF = 1.8(^oC) + 32$

$$^oC = \frac{^oF - 32}{1.8}$$

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

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

$$\text{Inches of Water Column} = \text{Pressure (psi)} \times 27.72$$

1" Hg (mercury) = 0.49 psi

VOLUME
1 $ft.^3$ = 1728 $in.^3$
1 $ft.^3$ = 28.32 liters
1 lb./$ft.^3$ = 1728 lb/$ft.^3$
1 lb./ft^3 = 16.02 kg/m^3
1 U.S. gal. = 231 $in.^3$
1 U.S. gal. = 0.8327 Imperial gal.
1 barrell = 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).

RING JOINT GROOVE INFORMATION

	ANSI CLASS					
	600		900		1500	
Size	RTJ Number(1)	Additional Length(2)	RTJ Number(1)	Additional Length(2)	RTJ Number(1)	Additional Length(2)
1	16	0				
1.5	20	0	20	0	20	0
2	23	0.12	24	0.12	24	0.12
3	31	0.12	31	0.12	35	0.12
4	37	0.12	37	0.12	39	0.12
6	45	0.12	45	0.12	46	0.25
8	49	0.12	49	0.12	50	0.38
10	53	0.12	53	0.12		
12	57	0.12				
14	61	0.12				
16	65	0.12				

Notes: (1) The RTJ number can be used for the Excalibur, GLC, PDC and WLC.
(2) The **"ADDITIONAL LENGTH"** dimension only applies to valves that meet ANSI B16.10 face-to-face dimensions such as the Excalibur and PDC. These dimensions can be used with the GLC but **DO NOT** apply to the WLC.

Ordering Info

When ordering or requesting quotations on DFT® check valves, please specify the following information or complete the Valve Data Sheet on opposite page:

Nominal pipe size
Class (ANSI/API)
Model (Basic-Check® Restrictor Check, Vacuum Breaker, DLC®, Excalibur® GLC®, PDC®, WLC®, SCV)
Body material
Trim material
Spring material
Seating (Metal or soft seat - if soft seat specify material)
End connections (Inlet and outlet)
Product to be handled (Air, water, chlorine, crude oil, etc.)
Specific gravity of the product
Special characteristics of the product to be handled
(%, CO_2, Sulfuric Acid H_2S, etc.)
Operating pressure
Operating temperature
Flow rate (GPM for liquids and SCFM for gases)
Orientation (Horizontal, vertical flow up, vertical flow down)
Special requirements (NACE, C of C, CMTR's - body or trim, etc.)
Delivery requirements

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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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.:		
	Cert. of Compliance:	Yes ☐	No ☐
	CMTRs:	Body ☐	Trim ☐
	Physicals Req.:	Yes ☐	No ☐
	NACE Cert.:	Yes ☐	No ☐
	NDE: (Specify)		
	Drawings:	Yes ☐	No ☐
	Packaging:		
	Other:		

NOTES	
DELIVERY: ____ wks.	* Denotes Required

FORM 4-1-2 05/31/2002

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DFT® INC.

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