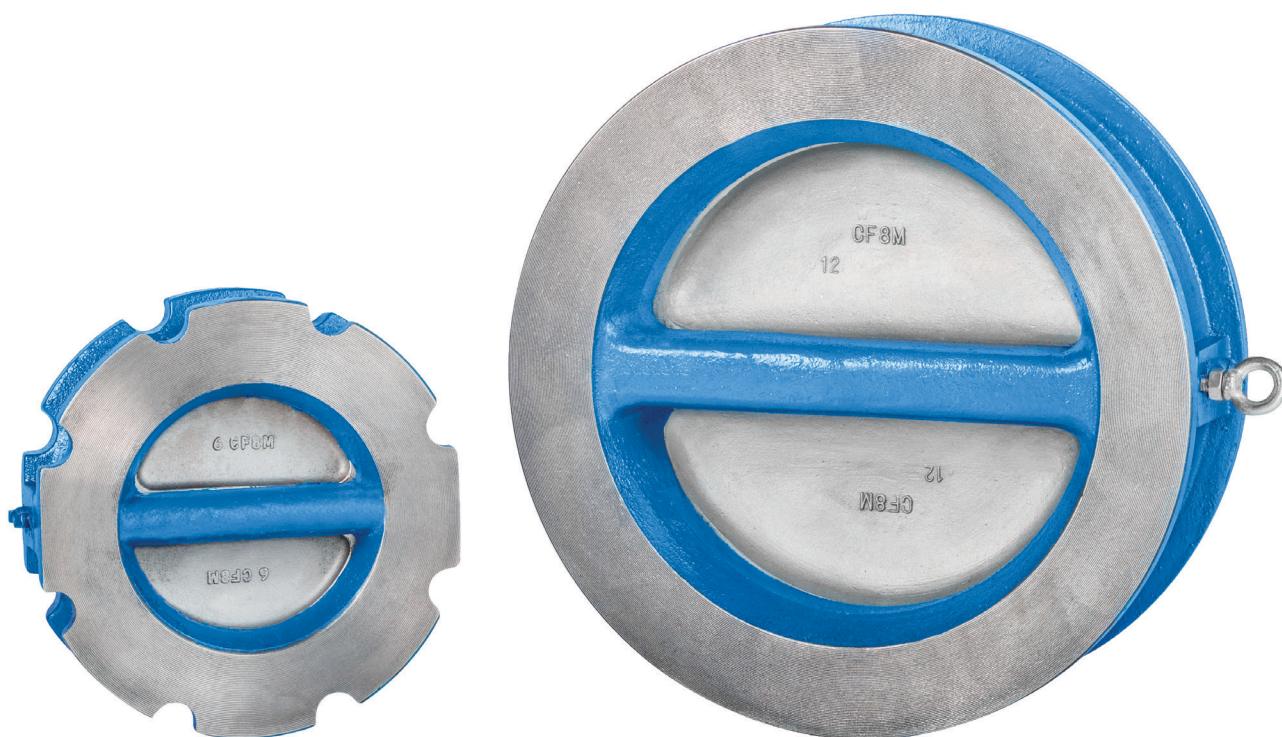


APCO CDD-9000T DOUBLE DOOR CHECK VALVE



Design and Construction

APCO Double Door Check Valves by DeZURIK are designed to automatically prevent back-flow in systems where it is desirable to permit flow in one direction and prevent flow in the opposite direction. Double door check valves are recommended for clean liquids and gasses and have an excellent performance reputation in refineries, petrochemical, gas liquefaction, other process industries and HVAC applications because of their cost-efficient design and non-slam properties.

Double door check valves are spring loaded for fast, non-slam shut-off against the elastomer or metal body seat. When the pump starts and the downstream flow creates the required pressure drop in the forward direction, the double doors

will automatically open. When the pump stops and the flow ceases, the torsion of the spring will automatically close the double doors prior to flow reversal. This creates a positive shut-off against flow reversal and minimizes system surges and water hammer.

APCO CDD Double Door Check Valves are available in sizes 2-36" (50-900mm). Body materials include Ductile Iron, Carbon Steel and 316 Stainless Steel. Wafer body valve sizes 2-6" (50-150mm) are dual rated to ASME B16.5 Class 150/300. Valve sizes 8" (200mm) and larger are rated to ASME Class 150.



Cost Efficient Design

The low weight and short laying length of the CDD Double Door Check Valve saves initial cost, requires less space, and is easier to install when compared to full-body, swing-type check valves. Although this valve is light in weight, it is capable of heavy duty, continuous operation. APCO carbon steel and stainless steel CDD Double Door Check Valves meet ASME B16.10/API 594 face-to-face dimensions and ASME B16.5 Flange Dimensions.

Minimal Head Loss

The contoured body of the CDD Double Door Check Valve provides a short and straight flow path that generates very little turbulence. Additionally, the spring-loaded discs are designed with very low cracking pressure which reduces the amount of energy required to open the valve.

Quick Close to Reduce Water Hammer

Shut-off is achieved via the fully automatic, spring-assisted discs that close near zero flow velocity. The lightweight, split disc design creates a positive shutoff prior to flow reversal and helps minimize valve slam and surge.

Ductile Iron, Carbon Steel or 316 Stainless Steel Construction

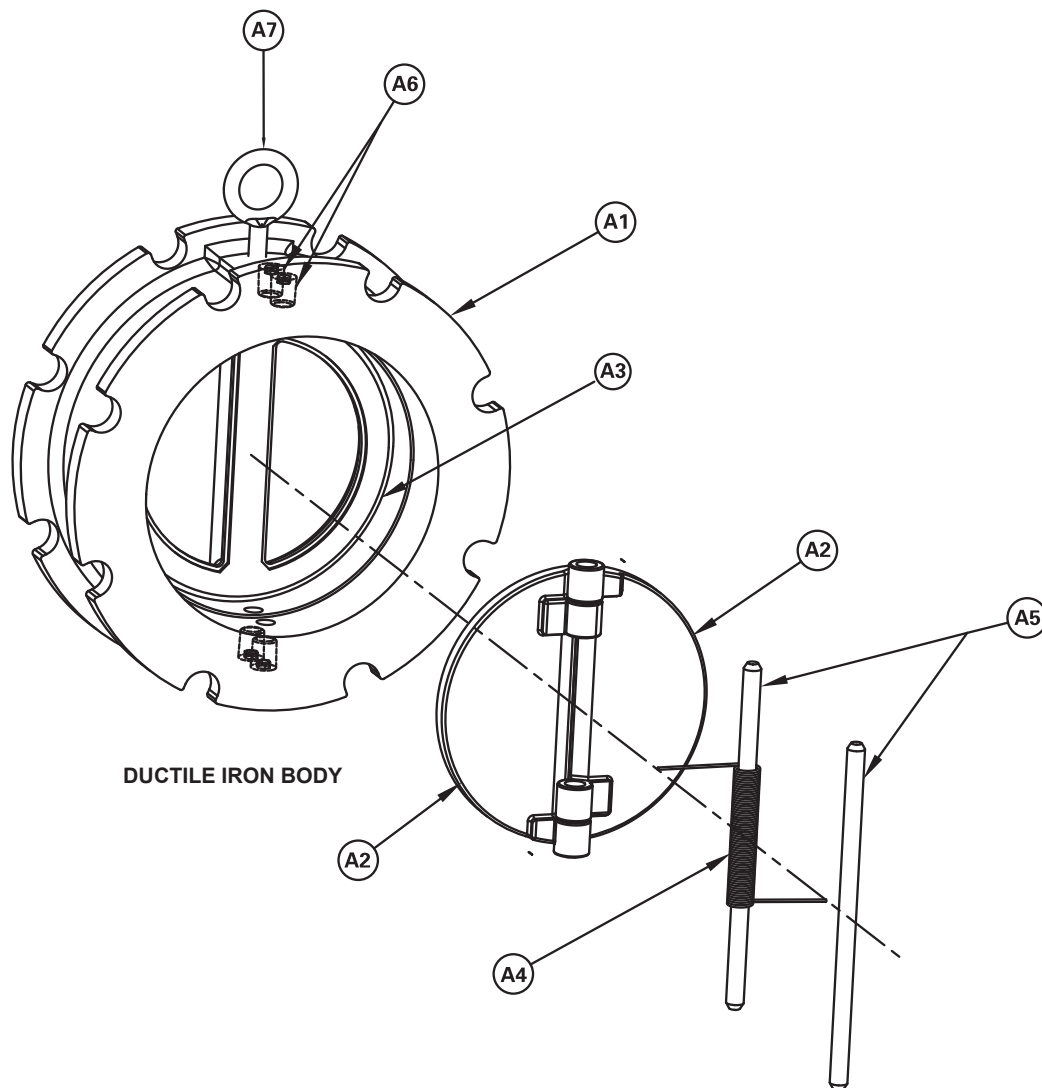
The ductile iron body maintains the anti-corrosive properties of cast iron while achieving yield strength comparable to carbon steel. Ductile iron also offers higher pressure/temperature ratings than cast iron. The CDD Double Door Check Valve is also available in Carbon Steel and Stainless Steel for corrosion resistance or higher pressure services.

Resilient or Metal Seats

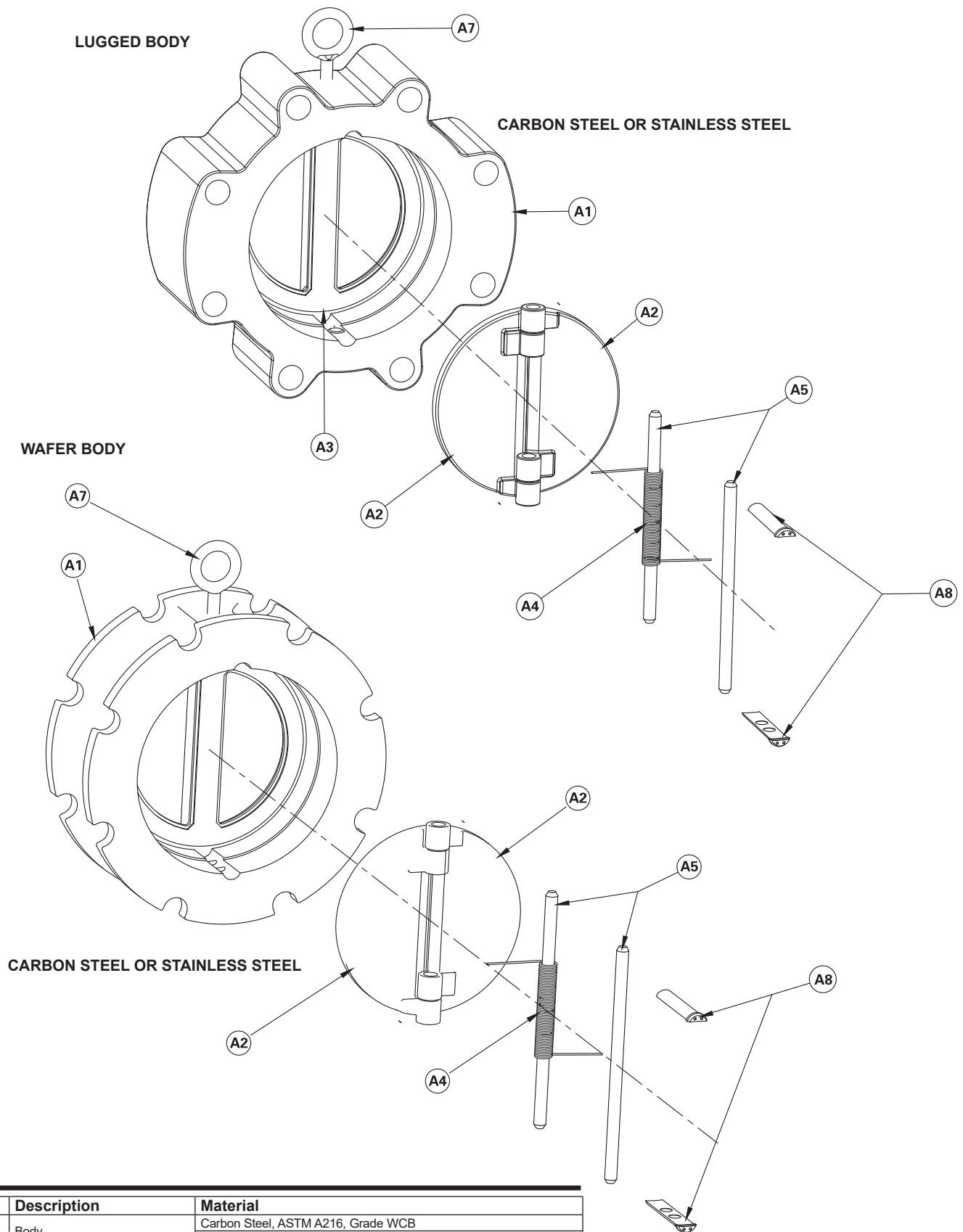
Resilient seats in Terpolymer of Ethylene Propylene & A Diene (EPDM), Acrylonitrile-Butadiene (NBR) or Fluoro Rubber (FKM) ensure a bubble tight seal that meets or exceeds API 598 test requirements. Lapped metal seats meet or exceed API 598 test requirements. Temperature ratings for resilient seat materials are:

- EPDM -20° to 300° F (-28° to 184° C)
- NBR -20° to 250° F (-28° to 121° C)
- FKM -40° to 400° F (-40° to 204° C)

Materials of Construction



Item	Description	Material
A1	Body	Ductile Iron, ASTM A536
A2	Door	Aluminum Bronze, ASTM B148, Alloy 952 316 Stainless Steel, ASTM A351, CF8M
A3	Seat	EPDM - Terpolymer of Ethylene, Propylene and a Diene NBR - Acrylonitrile-Butadiene FKM - Fluoro Rubber
A4	Spring	316 Stainless Steel
A5	Hinge Pin / Stop Pin	316 Stainless Steel
A6	Pin Retainer (NPT Plug)	Carbon Steel
A7	Lifting Eye Bolt (10" & larger)	Carbon Steel



Item	Description	Material
A1	Body	Carbon Steel, ASTM A216, Grade WCB
A2	Door	316 Stainless Steel, ASTM A351, Grade CF8M
A3	Seat	FKM - Fluoro Rubber NBR - Acrylonitrile-Butadiene Metal - CS Body with CS Seat Material Only & Stainless Steel Overlay
A4	Spring	316 Stainless Steel
A5	Hinge Pin / Stop Pin	316 Stainless Steel
A7	Lifting Eye Bolt (8" & larger)	Carbon Steel
A8	Cap	Carbon Steel, ASTM A105 316 Stainless Steel, ASTM A351, Grade CF8M

Valve Selection

Shutoff Capabilities

Seat-Type	Shutoff
Resilient	Bubble Tight Seal that Meets or Exceeds API 598 Test Requirements
Metal	Meets or exceeds API 598 Test Requirements

Pressure Ratings

Sizes 2-6" (50-150mm) wafer bodies are dual pressure rated for both ASME B16.42/B16.5 Class 150 and 300.

Valve Size	Pressure Rating
2-6" Class 300 Ductile Iron	640 psi (4412 kPa) CWP*
2-36" Class 150 Ductile Iron	250 psi (1723 kPa) CWP*
2-6" Class 300 Carbon Steel	740 psi (5100 kPa) CWP*
2-36" Class 150 Carbon Steel	285 psi (1960 kPa) CWP*
2-6" Class 300 Stainless Steel	720 psi (4965 kPa) CWP*
2-36" Class 150 Stainless Steel	275 psi (1900 kPa) CWP*

* Cold Working Pressure

Temperature Ratings

Seat Material	Temperature Rating
EPDM - Terpolymer of Ethylene, Propylene and a Diene	-20 to 300° F (-28 to 184° C)
NBR - Acrylonitrile-Butadiene	-20 to 250° F (-28 to 121° C)
FKM - Fluoro Rubber	-40 to 400° F (-40 to 204° C)

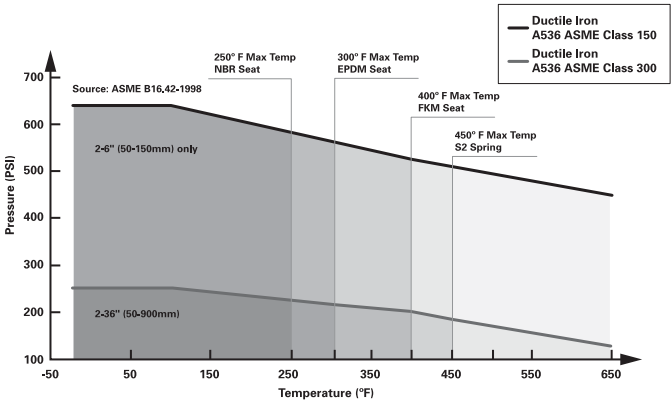
Applicable Standards

APCO (CDD) Double Door Check Valves are designed and/or tested to meet the following standards:	
ASME/API 594	Valve Design Manufacture & Valve Face to Face Dimensions, Carbon Steel or Stainless Steel Only
ASME B16.5	Flange Dimensions & Pressure Ratings
ASME B16.34	Valves - Flanged, Threaded, and Welding End
ASME B16.42	Ductile Iron Pipe Flanges and Flanged Fittings
API 598	Valve Inspection and Pressure Test

Velocity Range

2-36" 50-900mm	Velocity not to exceed 10 ft/sec or go below 5 ft/sec
-------------------	---

Ductile Iron



Flow Parameters Weights

Valve Size	Cv* Kv* 100% Open
2" 50mm	62 54
2.5" 65mm	110 95
3" 80mm	175 151
4" 100mm	350 303
6" 150mm	850 735
8" 200mm	1500 1298
10" 250mm	2400 2076
12" 300mm	3700 3201
14" 350mm	5400 4671
16" 400mm	8250 7136
18" 450mm	10400 8996
20" 500mm	14200 12283
24" 600mm	23000 19895
30" 750mm	37000 32000
36" 900mm	55000 47600

Valve Size	Ductile Iron	Carbon Steel / Stainless Steel (Lugged)
2" 50mm	4 2	8 4
2.5" 65mm	5 3	12 5
3" 80mm	7 4	16 8
4" 100mm	14 7	28 13
6" 150mm	27 13	50 23
8" 200mm	43 20	95 44
10" 250mm	70 32	150 69
12" 300mm	108 50	242 110
14" 350mm	175 80	Contact DeZURIK
16" 400mm	200 91	
18" 450mm	258 118	
20" 500mm	345 157	
24" 600mm	460 209	
30" 750mm	1000 457	
36" 900mm	1900 865	

*Cv = Flow in GPM of water at 1 psi pressure drop.

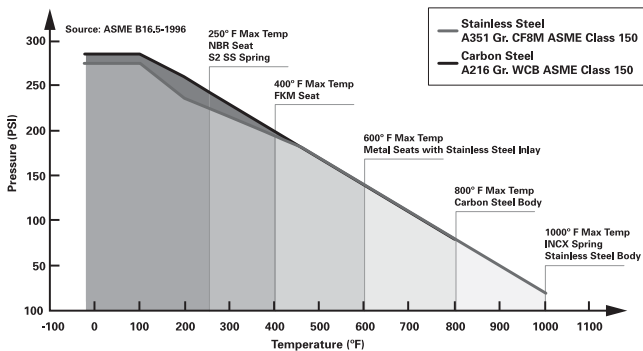
*Kv = Flow in m3/hr. of water at 100 kPa pressure drop.

Pounds
Kilograms

Pressure - Temperature Ratings

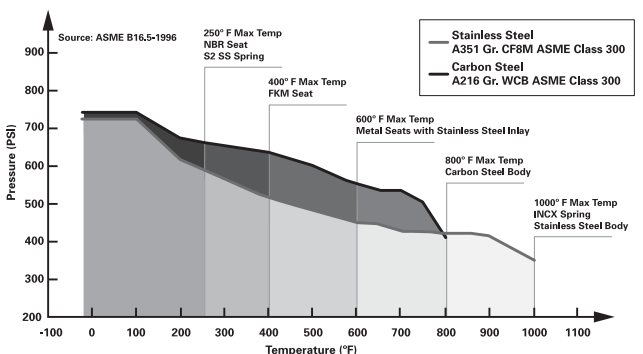
Carbon Steel & Stainless Steel

ASME Class 150, 8" (200mm) and larger wafer bodies, all lugged bodies



Carbon Steel & Stainless Steel

ASME Class 300, 2-6" (50-150mm) wafer bodies



Ordering

To order, simply complete the valve order code from information shown.

Valve Style

Give valve style code as follows:

CDD = Double Door Check Valve

Valve Size

Give valve size code as follows:

2	=	2"	50mm	14	=	14"	350mm
2.5	=	2.5"	65mm	16	=	16"	400mm
3	=	3"	80mm	18	=	18"	450mm
4	=	4"	100mm	20	=	20"	500mm
6	=	6"	150mm	24	=	24"	600mm
8	=	8"	200mm	30	=	30"	750mm
10	=	10"	250mm	36	=	36"	900mm
12	=	12"	300mm				

Body Style

Give body style code as follows:

9000T = Double Door Check

End Connection

Give end connection code as follows:

Ductile Iron Body

W1W2 = Wafer ASME 150/300 (2-6" Only)
W1 = Wafer ASME 150 (8-36" Only)

Carbon Steel and Stainless Steel Bodies

W1W2 = Wafer ASME 150/300 (2-6" Only)
W1 = Wafer ASME 150
L1 = Lugged ASME 150

Body Material

Give body material code as follows:

DI = Ductile Iron
CS = Carbon Steel (S2 Door Material Only)
S2 = 316 Stainless Steel (S2 Door Material Only)

Door Material

Give door material code as follows:

Ductile Iron Body

ALB = Aluminum Bronze
S2 = 316 Stainless Steel

Carbon Steel and Stainless Steel Bodies

S2 = 316 Stainless Steel

Seat Material

Give seat material code as follows:

EPDM = Terpolymer of Ethylene, Propylene and a Diene,
-20° to 300° F (-28° to 184° C)
NBR = Acrylonitrile-Butadiene
(Not available with 316 Stainless Steel bodies)
-20° to 250° F (-28° to 121° C)
FKM = Fluoro Rubber (S2 door material only)
-40° to 400° F (-40° to 204° C)
M = Metal (CS Body with CS Seat Material Only)
Has a Stainless Steel Overlay

Spring Material

Give spring material code as follows:

Ductile Iron Body

S2 = 316 Stainless Steel

Carbon Steel and Stainless Steel Bodies

INCX = Nickel Chromium Alloy

Hinge & Stop Pin Material

Give hinge & pin stop material code as follows:

S2 = 316 Stainless Steel

Options

Give options code as follows:

---- = Coatings, See Coating Section 100.01-10
ABS = Air Blower Service, Low Torsion Spring
Available with FKM Seat Only (Body Style 9000T)
DTR = DeZURIK Standard Certified Production Hydrostatic Shell &
Seat Test Report

Ordering Example:

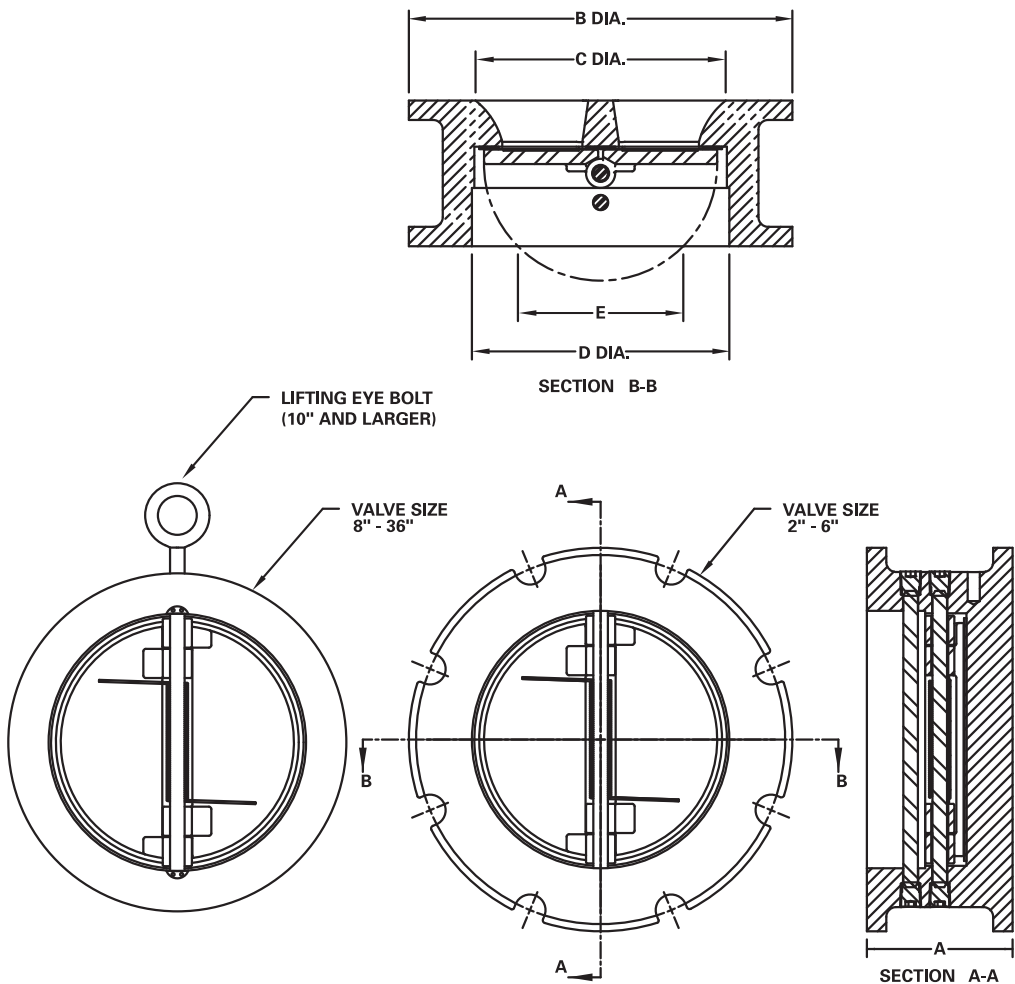
CDD,10,9000T,W1,DI,S2-NBR-S2-S2,DTR*

Dimensions

Ductile Iron Body

Valve Size	A	B Diameter	C Diameter	D Diameter	E Diameter
2"	2.12	4.37	2.00	2.62	0.00
50mm	54	111	51	67	0
2.5"	2.12	5.12	2.50	3.12	1.26
65mm	54	130	64	79	32
3"	2.25	5.75	3.00	3.87	2.36
80mm	57	146	76	98	60
4"	2.50	7.12	4.00	4.75	3.43
100mm	64	181	102	121	87
6"	3.00	9.87	6.00	7.00	5.32
150mm	76	251	152	178	135
8"	3.75	11.00	8.00	9.00	7.48
200mm	95	279	203	229	190
10"	4.25	13.37	10.00	11.00	9.45
250mm	108	340	254	279	240
12"	5.62	16.12	12.00	13.25	11.26
300mm	143	409	305	337	286
14"	7.25	17.75	14.00	14.25	11.26
350mm	184	451	356	362	286
16"	7.50	20.25	16.00	16.25	13.70
400mm	191	514	406	413	348
18"	8.00	21.62	18.00	18.12	15.63
450mm	203	549	457	460	397
20"	8.37	23.87	20.00	20.12	17.64
500mm	213	606	508	511	448
24"	8.75	28.25	24.00	24.00	21.97
600mm	222	718	610	610	558
30"	12.00	34.75	30.00	30.75	28.72
750mm	305	883	762	781	730
36"	14.50	41.25	36.00	34.00	25.50
900mm	368	1048	914	865	648

Inch
Millimeter



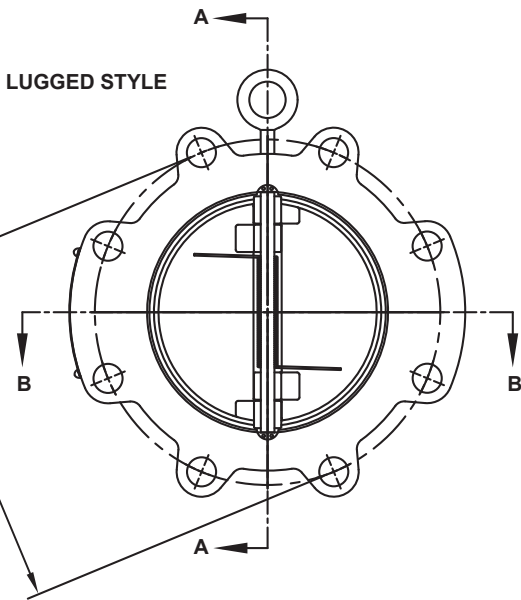
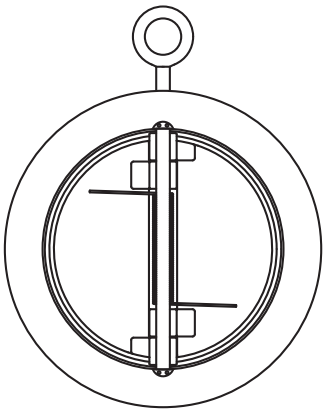
Dimensions

Carbon Steel or Stainless Steel Body

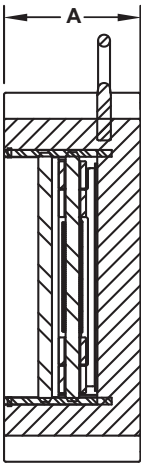
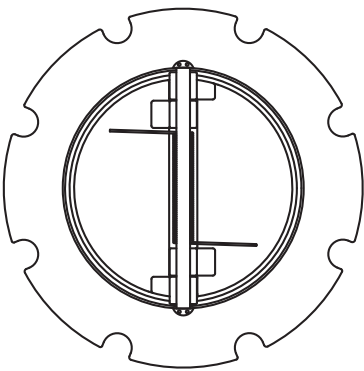
Valve Size	A	B Diameter	C Diameter	D Diameter	E Diameter	F Diameter
2"	2.38	2.00	2.16	4.33	4.75	0.75
50mm	60	51	55	110	121	19
2.5"	2.62	2.50	2.67	5.04	5.50	1.69
65mm	67	64	68	128	140	43
3"	2.88	3.00	3.23	5.79	6.00	2.36
80mm	73	76	82	147	152	60
4"	2.88	4.00	4.25	7.05	7.50	3.54
100mm	73	102	108	179	191	90
6"	3.87	5.98	6.38	9.81	9.50	5.31
150mm	99	152	162	249	241	135
8"	5.00	8.00	8.66	10.91	11.75	7.13
200mm	127	203	220	277	298	181
10"	5.75	10.00	10.63	13.27	14.25	8.82
250mm	146	254	270	337	362	224
12"	7.12	12.00	12.60	16.02	17.00	10.47
300mm	181	305	320	407	432	266
14"	7.25	13.26	13.78	17.64	18.75	11.81
350mm	184	337	350	448	476	300
16"	7.50	15.24	15.75	20.15	21.25	14.29
400mm	191	387	400	512	540	363
18"	8.00	17.24	17.24	21.54	22.75	15.87
450mm	203	438	438	547	578	403
20"	8.62	19.50	19.50	23.78	25.00	18.03
500mm	219	495	495	604	635	458
24"	8.75	23.42	23.42	28.15	29.50	22.28
600mm	222	595	595	715	749	566
30"	12.00	28.94	28.94	34.75	36.00	27.09
750mm	305	735	735	883	914	688
36"	14.50	34.44	34.44	41.25	42.75	31.69
900mm	368	875	875	1048	1086	805

Inch
Millimeter

WAFER STYLE
8" - 36"



WAFER STYLE
2" - 6"



Sales and Service

For information about our worldwide locations, approvals, certifications and local representative:

Web Site: DeZURIK.com **E-Mail:** info@DeZURIK.com



250 Riverside Ave. N. Sartell, Minnesota 56377 • Phone: 320-259-2000 • Fax: 320-259-2227

DeZURIK, Inc. reserves the right to incorporate our latest design and material changes without notice or obligation. Design features, materials of construction and dimensional data, as described in this bulletin, are provided for your information only and should not be relied upon unless confirmed in writing by DeZURIK, Inc. Certified drawings are available upon request.