

3000 Series Soft Seat MS3000 Series Metal Seat

High Performance Ball Valves

The **3000 Series** soft seat valve is engineered for high pressure applications and has built-in versatility, offering a variety of seat/seal and body materials and end connections

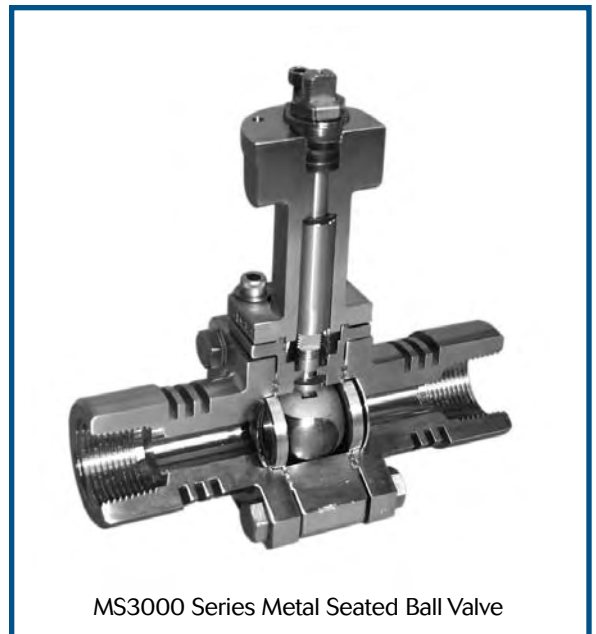
- Sizes 1/4" through 3" full port and 1/4" through 4" standard port
- For applications with pressures to 4000 psi (275 bar); temperatures to 600°F (315°C). Ideal for hydraulic, gas, steam or process piping applications
- API 607, 4th Edition Fire Tested
- Available integral extended ends with "heat sink" construction allow in-place welding without damage to seats and seals
- Anti-static construction
- In addition to carbon and 316 stainless steel, available materials of construction include Alloy 20, Duplex, Hastelloy C, Monel, Titanium, 254SMO, Bonze and other alloys
- PED Category I available; consult factory



3000 Series Soft Seated Valve

The **MS3000 Series** is a heavy duty, metal seated ball valve engineered for high pressure and temperature applications with an extended bonnet standard for pipe insulation and enhanced packing.

- Sizes 1/4" through 2" full port and 3" x 2" (sch. 160 pipe bore)
- For applications with pressures to 990 psi (69 bar); temperatures to 1000°F (538°C). Ideal for condensate, steam or gas service
- Wide variety of end connections
- The metal seats are identical upstream and downstream and can be interchanged during routine maintenance thereby extending the effective life
- Available with ANSI Class VI shutoff



MS3000 Series Metal Seated Ball Valve



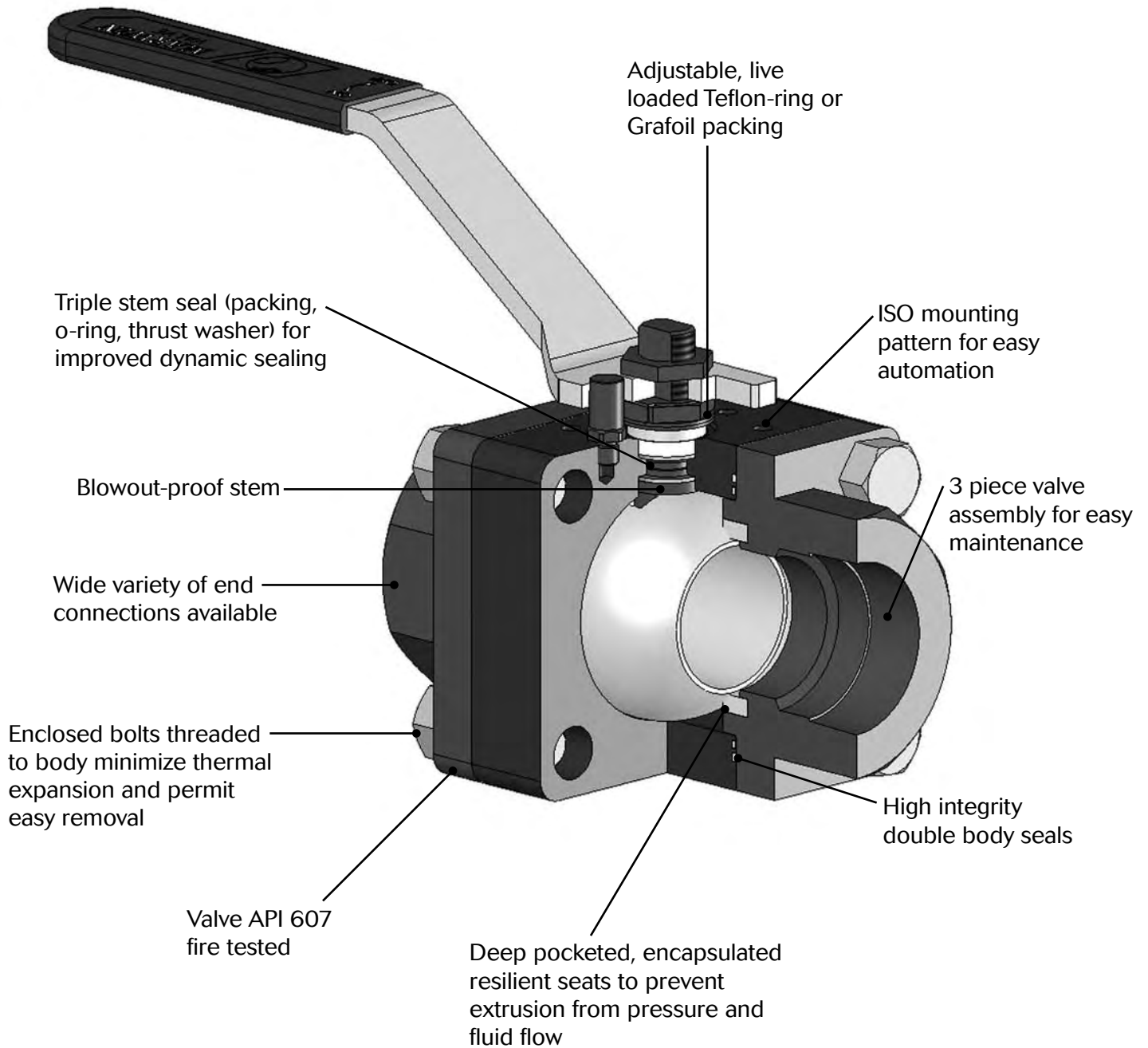
Marwin Valve, a division of Richards Industries

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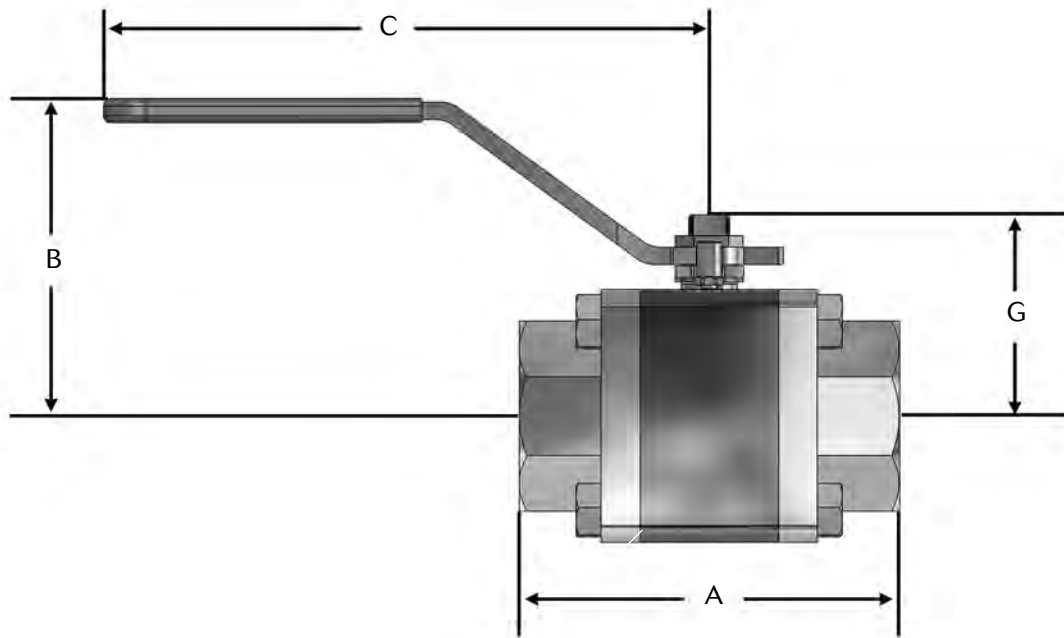
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Marwin Valve 3000 Series Soft Seat – Features



Marwin Valve 3000 Series Soft Seat – Dimensions

FNPT Ends



FNPT Ends (Inches)

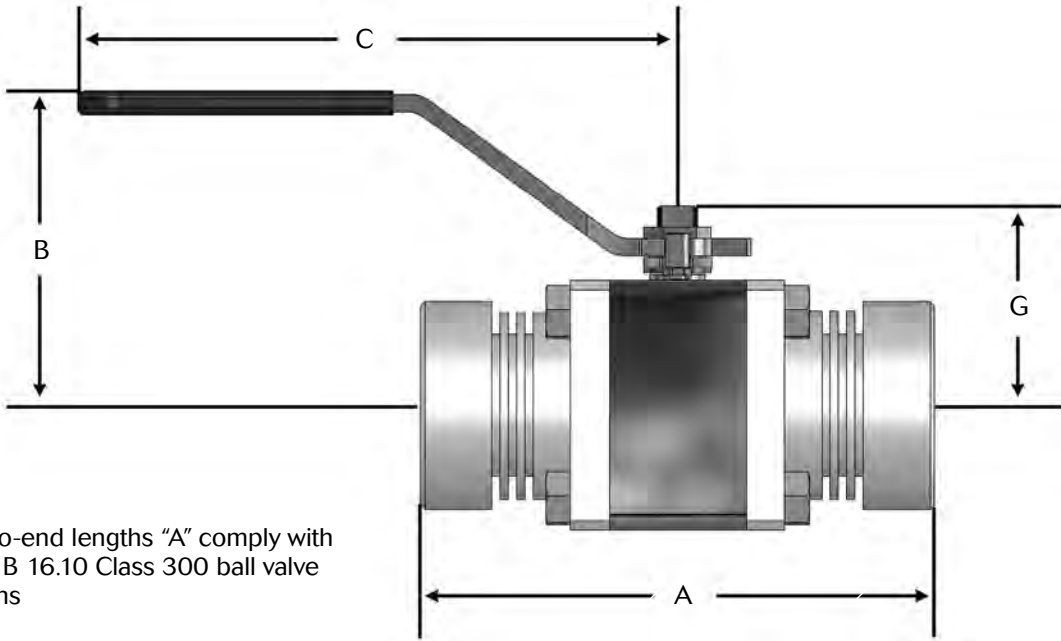
Size		Port	Dimensions				Weight (lbs)
Full	Standard		A	B	C	G	
1/4"	—	0.43	2.95	2.6	6.0	1.4	2.4
3/8"	1/2"	0.43	2.95	2.6	6.0	1.4	2.2
1/2"	3/4"	0.56	3.20	2.8	6.0	1.5	2.8
3/4"	1"	0.74	3.90	3.2	7.6	2.1	5.0
1"	1-1/4"	1.00	4.40	3.6	7.6	2.3	7.0
1-1/4"	1-1/2"	1.25	4.70	4.3	8.9	2.7	9.5
1-1/2"	2"	1.50	5.50	4.5	8.9	2.9	12.8
2"	2-1/2"	1.93	5.60	4.7	11.0	3.3	22.0
2-1/2"	3"	2.44	9.00	5.4	13.8	4.0	29.7
3"	4"	3.00	8.80	5.9	19.7	4.9	38.5

FNPT Ends (Metric)

Size		Port	Dimensions				Weight (kgs)
Full	Standard		A	B	C	G	
DN8	—	11,0	74,9	67	152	36	1,1
DN12	DN15	11,0	74,9	67	152	36	1,0
DN15	DN20	14,1	81,3	70	152	38	1,3
DN20	DN25	18,8	99,1	80	193	52	2,3
DN25	DN32	25,4	111,8	92	193	58	3,2
DN32	DN40	31,8	119,4	108	225	69	4,3
DN40	DN50	38,1	139,7	113	225	75	5,8
DN50	DN65	49,0	142,2	118	279	84	10,0
DN65	DN80	62,1	228,6	136	351	102	13,5
DN80	DN100	76,1	223,5	150	500	125	17,5

Marwin Valve 3000 Series Soft Seat – Dimensions

Extended Butt Weld and Socket Weld Ends



Full Port

Size Full	Dimensions (inches)				Weight (lbs)
	A	B	C	G	
1/4"F	5.50	2.6	6.0	1.4	3.1
3/8"F	5.50	2.6	6.0	1.4	2.9
1/2"F	5.50	2.8	6.0	1.5	3.8
3/4"F	6.00	3.2	7.6	2.1	6.1
1"F	6.50	3.6	7.6	2.3	8.5
1-1/4"F	7.00	4.3	8.9	2.7	11.5
1-1/2"F	7.50	4.5	8.9	2.9	15.2
2"F	8.50	4.7	11.0	3.3	26.5
2-1/2"F	9.50	5.4	13.8	4.0	29.9
3"F	11.12	5.9	19.7	4.9	48.6

Size Full	Dimensions (mm)				Weight (kgs)
	A	B	C	G	
DN8	139,7	67	152	36	1,4
DN12	139,7	67	152	36	1,3
DN15	139,7	70	152	38	1,7
DN20	152,4	80	193	52	2,8
DN25	165,1	92	193	58	3,9
DN32	177,8	108	225	69	5,2
DN40	190,5	113	225	75	6,9
DN50	215,9	118	279	84	12,0
DN65	241,3	136	351	102	13,6
DN80	282,4	150	500	125	22,0

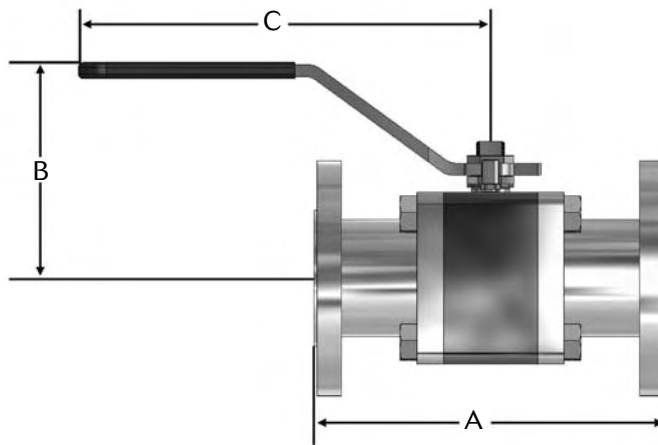
Standard Port

Size Std.	Dimensions (inches)				Weight (lbs)
	A	B	C	G	
1/2"R	5.50	2.6	6.0	1.4	2.8
3/4"R	6.00	2.8	6.0	1.5	3.8
1"R	6.50	3.2	7.6	2.1	6.4
1-1/4"R	7.00	3.6	7.6	2.3	8.9
1-1/2"R	7.50	4.3	8.9	2.7	11.9
2"R	8.50	4.5	8.9	2.9	15.8
2-1/2"R	9.50	4.7	11.0	3.3	28.0
3"R	11.12	5.4	13.8	4.0	30.5
4"R	12.00	6.4	19.7	4.9	52.4

Size Std.	Dimensions (mm)				Weight (kgs)
	A	B	C	G	
DN15	139,7	67	152	36	1,3
DN20	152,4	70	152	38	1,7
DN25	165,1	80	193	52	2,9
DN32	177,8	92	193	58	4,0
DN40	190,5	108	225	69	5,4
DN50	215,9	113	225	75	7,2
DN65	241,3	118	279	84	12,7
DN80	282,4	136	351	102	13,8
DN100	304,8	162	500	125	23,8

Marwin Valve 3000 Series Soft Seat – Dimensions

Full Port, Flanged Ends (ANSI 150, 300, 600, 900)



Face-to-face dimensions "A" comply with ANSI B16.10 ball valve lengths except 2-1/2" and smaller. Class 150 uses Class 300 dimensions.

Full Port

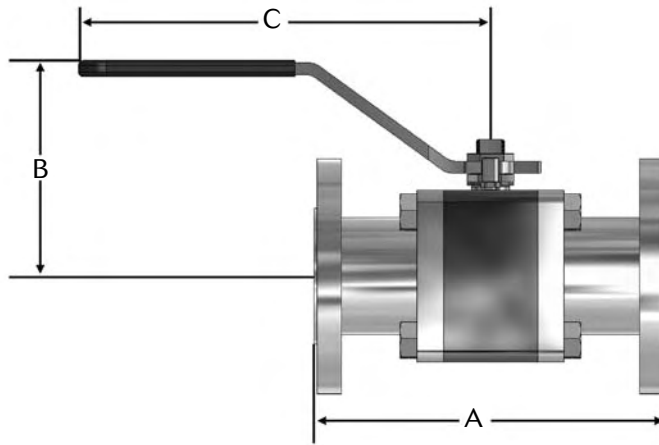
Size Full	Flange	Dimensions (inches)			Weight (lbs)
		A	B	C	
1/2"F	150#	5.50	2.8	6.0	5.1
	300#	5.50	2.8	6.0	6.4
	600#	6.50	2.8	6.0	7.1
	900#	8.50	2.8	6.0	7.8
3/4"F	150#	6.00	3.2	7.6	8.0
	300#	6.00	3.2	7.6	10.7
	600#	7.50	3.2	7.6	12.0
	900#	9.00	3.2	7.6	12.8
1"F	150#	6.50	3.6	7.6	10.9
	300#	6.50	3.6	7.6	14.0
	600#	8.50	3.6	7.6	16.0
	900#	10.00	3.6	7.6	17.1
1-1/4"F	150#	7.00	4.3	8.9	14.6
	300#	7.00	4.3	8.9	18.3
	600#	9.00	4.3	8.9	21.3
	900#	11.00	4.3	8.9	23.0
1-1/2"F	150#	7.50	4.5	8.9	19.1
	300#	7.50	4.5	8.9	25.3
	600#	9.50	4.5	8.9	29.4
	900#	12.00	4.5	8.9	32.4
2"F	150#	8.50	4.7	11.0	32.8
	300#	8.50	4.7	11.0	37.9
	600#	11.50	4.7	11.0	45.2
	900#	14.50	4.7	11.0	49.9
2-1/2"F	150#	9.50	5.4	13.8	40.2
	300#	9.50	5.4	13.8	48.3
	600#	13.00	5.4	13.8	58.1
3"F	150#	8.00	5.9	19.7	43.7
	300#	11.12	5.9	19.7	67.5
	600#	14.00	5.9	19.7	83.4

Size	Flange	Dimensions (mm)			Weight (kgs)
		A	B	C	
DN15	150#	139,7	70	152	2,3
	300#	139,7	70	152	2,9
	600#	165,1	70	152	3,2
	900#	215,9	70	152	3,6
DN20	150#	152,4	80	193	3,6
	300#	152,4	80	193	4,9
	600#	190,5	80	193	5,5
	900#	228,6	80	193	5,8
DN25	150#	165,1	92	193	4,9
	300#	165,1	92	193	6,3
	600#	215,9	92	193	7,3
	900#	254,0	92	193	7,8
DN32	150#	177,8	108	225	6,6
	300#	177,8	108	225	8,3
	600#	228,6	108	225	9,6
	900#	279,4	108	225	10,4
DN40	150#	190,5	113	225	8,7
	300#	190,5	113	225	11,5
	600#	241,3	113	225	13,3
	900#	304,8	113	225	14,7
DN50	150#	215,9	118	279	14,9
	300#	215,9	118	279	17,2
	600#	292,1	118	279	20,5
	900#	268,3	118	279	22,6
DN65	150#	241,3	136	351	18,3
	300#	241,3	136	351	21,9
	600#	330,2	136	351	26,4
DN80	150#	203,2	150	500	19,8
	300#	282,4	150	500	30,6
	600#	355,6	150	500	37,8

Marwin Valve

3000 Series Soft Seat – Dimensions

Standard Port, Flanged Ends (ANSI 150, 300, 600, 900)



Face-to-face dimensions "A" comply with ANSI B16.10 ball valve lengths

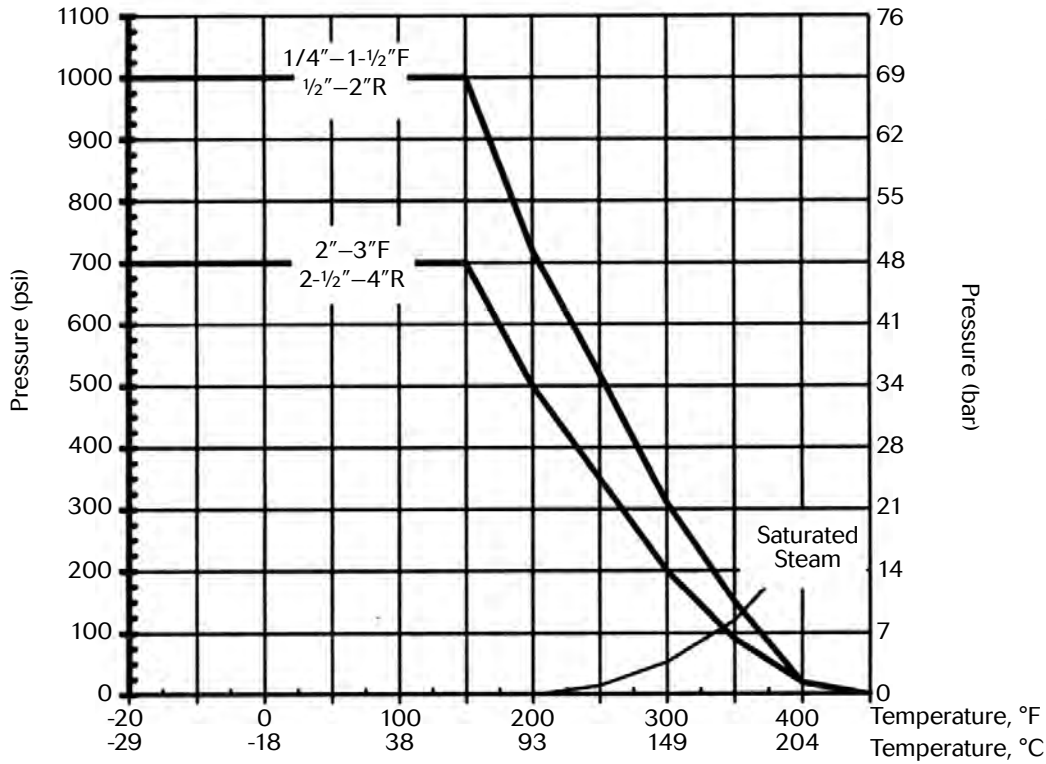
Standard Port

Size Std.	Flange	Dimensions (inches)			Weight (lbs)
		A	B	C	
1/2"R	150#	4.25	2.6	6.0	4.0
	300#	5.50	2.6	6.0	5.7
	600#	6.50	2.6	6.0	6.3
	900#	8.50	2.6	6.0	6.7
3/4"R	150#	4.62	2.8	6.0	5.2
	300#	6.00	2.8	6.0	8.7
	600#	7.50	2.8	6.0	9.5
	900#	9.00	2.8	6.0	10.0
1"R	150#	5.00	3.2	7.6	8.1
	300#	6.50	3.2	7.6	11.9
	600#	8.50	3.2	7.6	13.4
	900#	10.00	3.2	7.6	14.1
1-1/4"R	150#	5.50	3.6	7.6	11.0
	300#	7.00	3.6	7.6	15.8
	600#	9.00	3.6	7.6	18.2
	900#	11.00	3.6	7.6	19.4
1-1/2"R	150#	6.50	4.3	8.9	15.2
	300#	7.50	4.3	8.9	22.3
	600#	9.50	4.3	8.9	25.6
	900#	12.00	4.3	8.9	27.3
2"R	150#	7.00	4.5	8.9	21.2
	300#	8.50	4.5	8.9	27.8
	600#	11.50	4.5	8.9	33.2
	900#	14.50	4.5	8.9	35.6
2-1/2"R	150#	7.50	4.7	11.0	34.6
	300#	9.50	4.7	11.0	45.2
	600#	13.00	4.7	11.0	52.5
3"R	150#	8.00	5.4	13.8	45.0
	300#	11.12	5.4	13.8	57.8
	600#	14.00	5.4	13.8	62.2
4"R	150#	9.00	5.9	19.7	59.9
	300#	12.00	5.9	19.7	85.7
	600#	17.00	5.9	19.7	120.0

Size	Flange	Dimensions (mm)			Weight (kgs)
		A	B	C	
DN15	150#	108	67	152	1,8
	300#	140	67	152	2,6
	600#	165	67	152	2,8
	900#	216	67	152	3,1
DN20	150#	117	70	152	2,4
	300#	152	70	152	3,9
	600#	191	70	152	4,3
	900#	229	70	152	4,5
DN25	150#	127	80	193	3,7
	300#	165	80	193	5,4
	600#	216	80	193	6,1
	900#	254	80	193	6,4
DN32	150#	140	92	193	5,0
	300#	178	92	193	7,2
	600#	229	92	193	8,3
	900#	279	92	193	8,8
DN40	150#	165	108	225	6,9
	300#	191	108	225	10,1
	600#	241	108	225	11,6
	900#	305	108	225	12,4
DN50	150#	178	113	225	9,6
	300#	216	113	225	12,6
	600#	292	113	225	15,1
	900#	368	113	225	16,1
DN65	150#	191	118	279	15,7
	300#	241	118	279	20,5
	600#	330	118	279	23,8
DN80	150#	203	136	351	20,4
	300#	282	136	351	26,2
	600#	356	136	351	28,2
DN100	150#	229	150	500	27,2
	300#	305	150	500	28,9
	600#	432	150	500	54,4

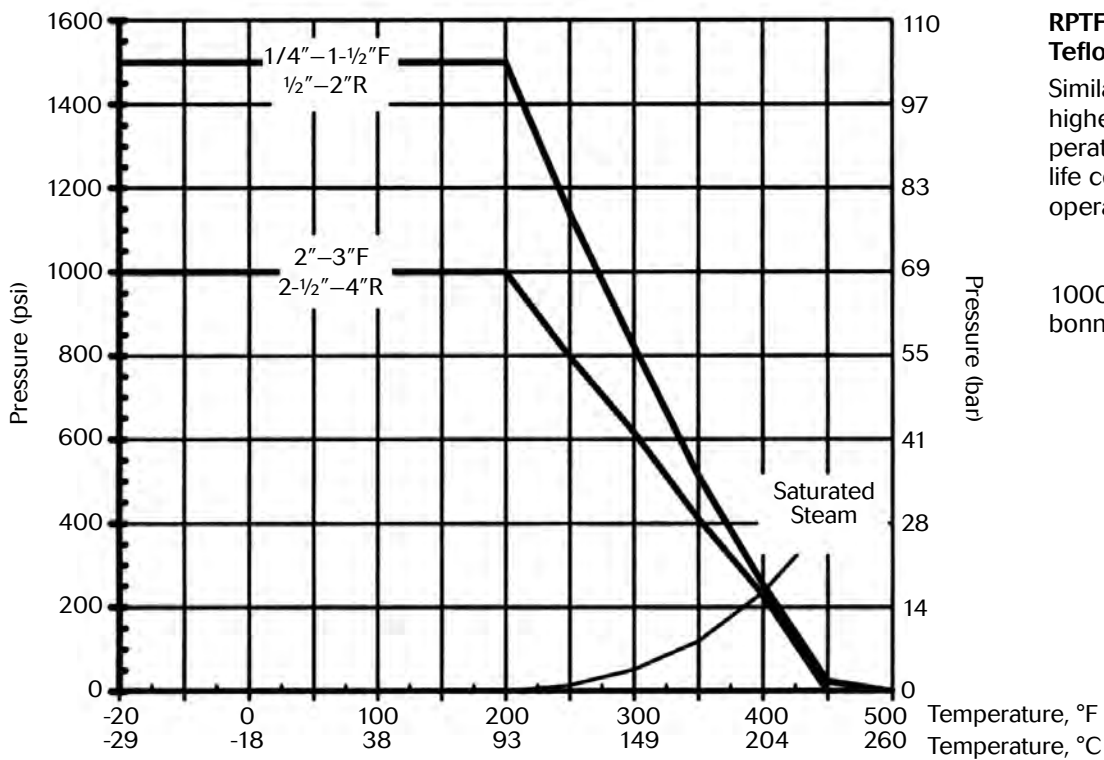
Marwin Valve 3000 Series Soft Seat – Pressure/Temperature Limits

Virgin PTFE Seats



PTFE Virgin Teflon (White)
Good for most chemical applications as well as water, oil and gas use. Requires relatively low operating torque to save on automation costs.

Glass-Filled PTFE Seats

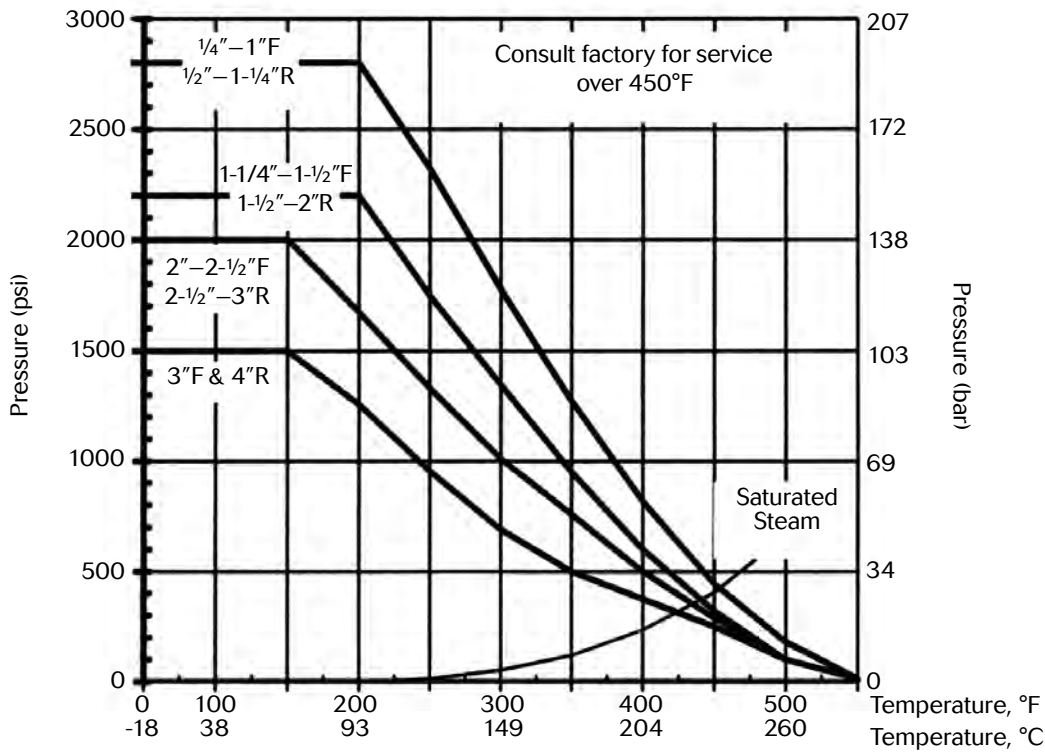


RPTFE Glass Reinforced Teflon (Off-White)
Similar chemical resistance, higher pressures and temperatures, and improved cycle life compared to PTFE. Higher operating torque than PTFE.

1000 PSIG max with bolted bonnet extension

Marwin Valve 3000 Series Soft Seat – Pressure/Temperature Limits

Carbon-Filled PTFE Seats

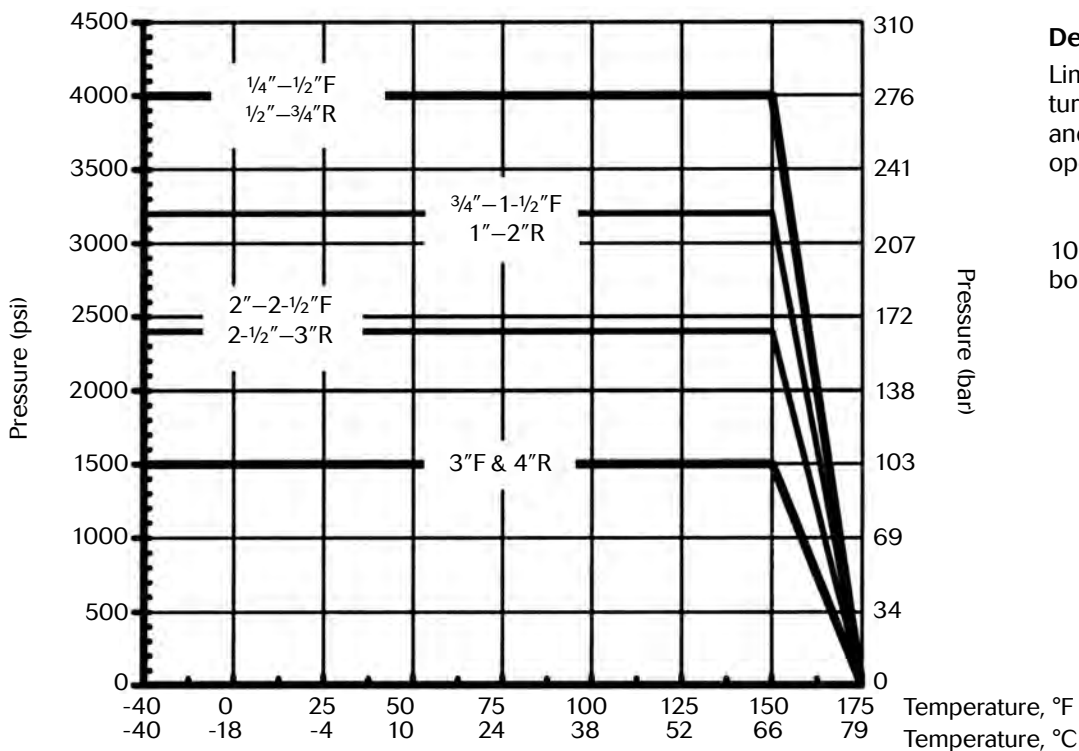


CRPTFE Carbon Reinforced Teflon (Black)

Increased pressure and temperature capability compared to RPTFE. Suitable for steam, hot oil, and high cycle applications. Slightly higher operating torque than RPTFE.

1000 PSI max with bolted bonnet extension

Delrin Seats



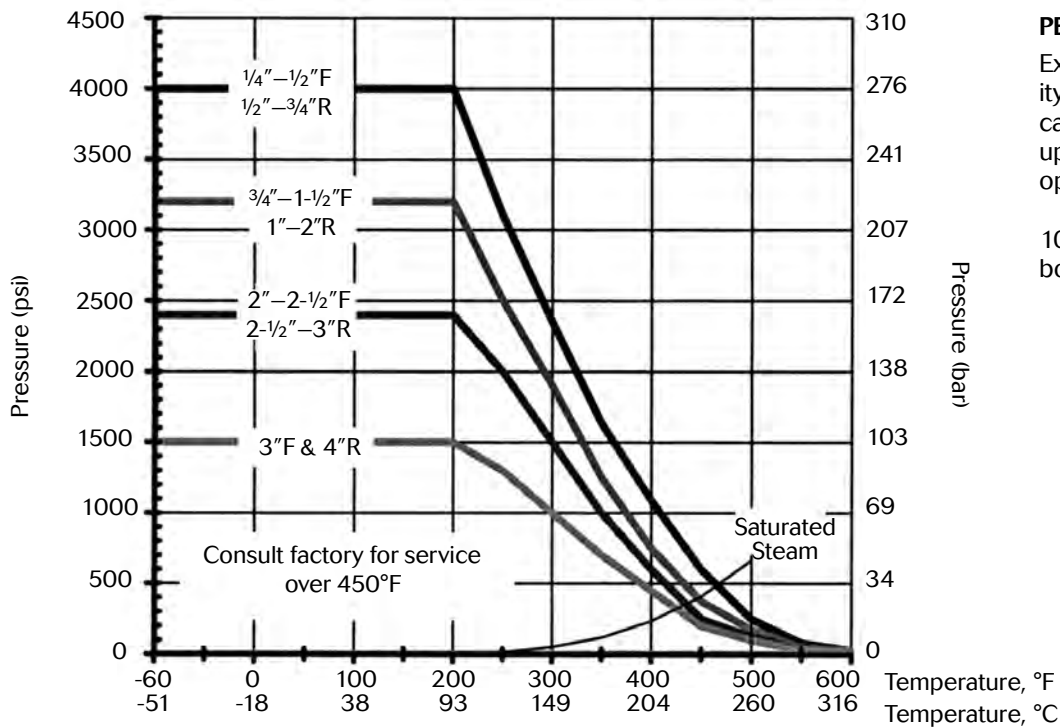
Delrin (Creamy White)

Limited chemical and temperature capability; high pressure and wear capability. Moderate operating torque.

1000 PSIG max with bolted bonnet extension

Marwin Valve 3000 Series Soft Seat – Pressure/Temperature Limits

PEEK Seats

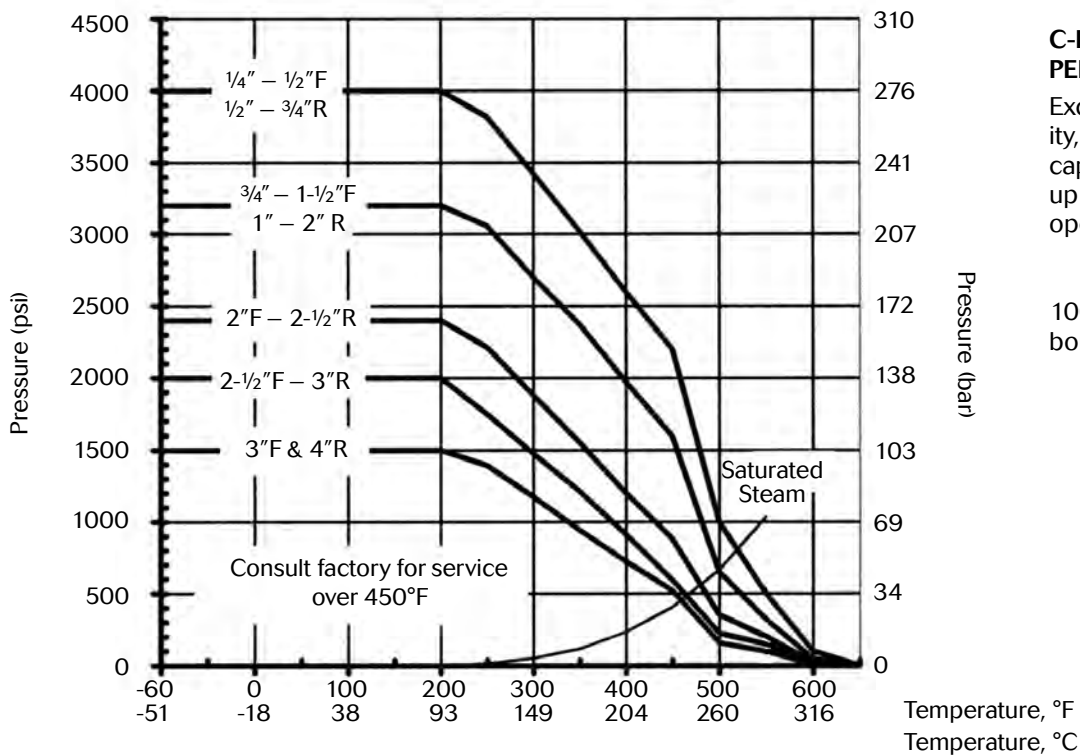


PEEK (Black)

Excellent chemical compatibility, temperature, and pressure capabilities. Good for steam up to 400 psi. Relatively high operating torque.

1000 PSI max with bolted bonnet extension

Carbon-Filled PEEK Seats



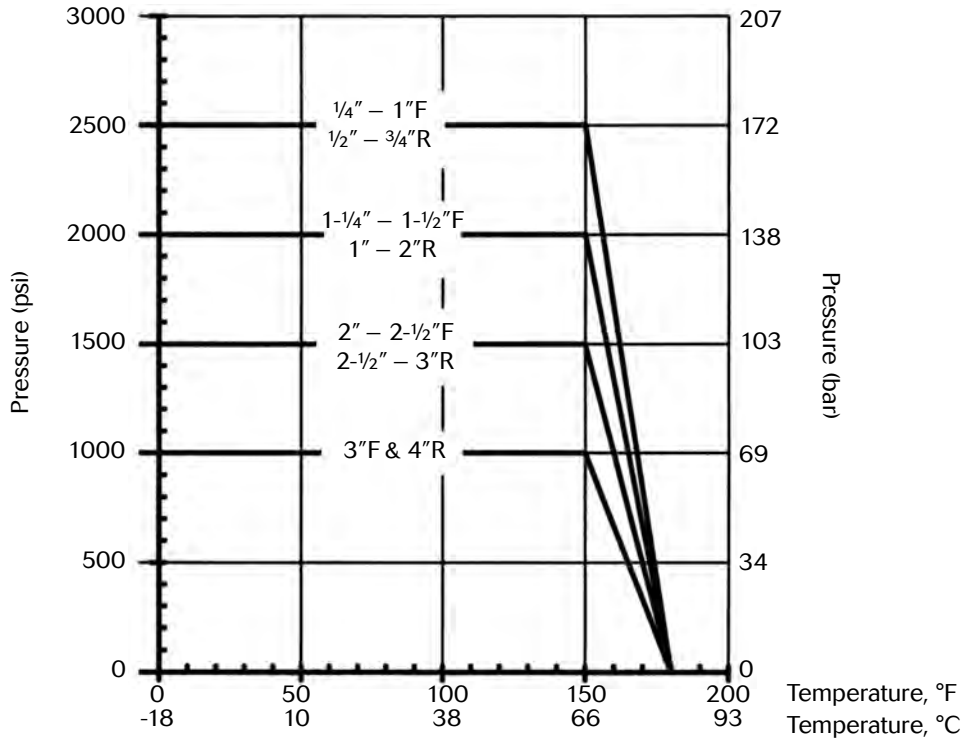
C-PEEK Carbon Reinforced PEEK (black)

Excellent chemical compatibility, temperature, and pressure capabilities. Good for steam up to 450 psi. Relatively high operating torque.

1000 PSIG max with bolted bonnet extension

Marwin Valve 3000 Series Soft Seat – Pressure/Temperature Limits

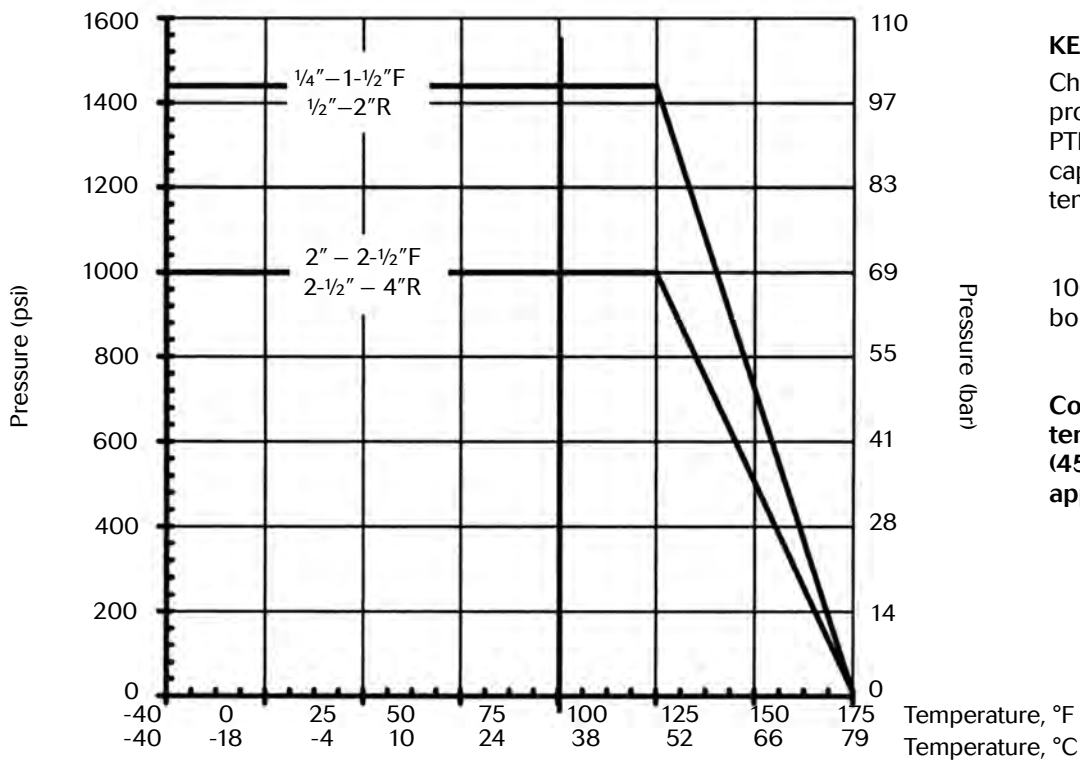
UHMWPE Seats



UHMWPE (Opaque White)
Limited chemical compatibility and temperature capability, but good pressure and wear characteristics, with excellent abrasion resistance. Commonly used for tobacco and nuclear applications.

1000 PSI max with bolted bonnet extension

KEL-F (PCTFE) Seats

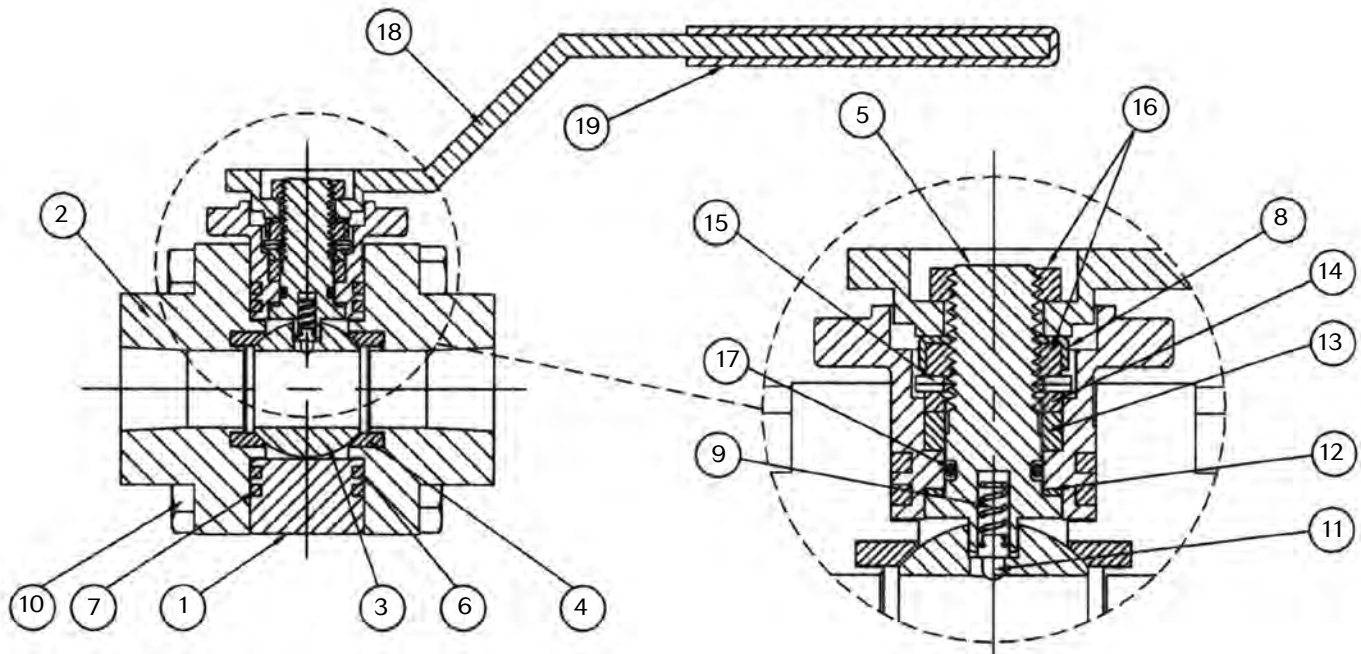


KEL-F (Translucent White)
Chemical and mechanical properties comparable to PTFE, but has additional capabilities for use at low temperatures.

1000 PSIG max with bolted bonnet extension

Consult factory for operating temperatures below -50°F (45°C) and cryogenic applications

Marwin Valve 3000 Series Soft Seat – Material Specifications



ART0764

Item	Part	Quantity	SS	CS
1	Body	1	A351 CF8M	A216 WCB
2	End Cap	2	A351 CF8M	A216 WCB
3	Ball	1	AISI 316 SS	AISI 316 SS
4	Seat	2	CRPTFE	CRPTFE
5	Stem	1	A479 S31600	A479 S31600
6	Body Seal	2	CRPTFE	CRPTFE
7	Secondary Body Seal	2	Non-Asbestos	Non-Asbestos
8	Lock Washer	1	SS	SS
9	Anti-Static Spring	1	AISI 316 SS	AISI 316 SS
10	Bolt or Stud & Nut, Body	8-18	A 193 B8 Cl. 1 Bolt or Stud, A 194 Gr.8 Nut	A 193 B7 Bolt or Stud, A 194 Gr.2H Nut
11	Anti-Static Pin	1	AISI 316 SS	AISI 316 SS
12	Thrust Washer	1	CRPTFE	CRPTFE
13	Packing	1	PTFE	PTFE
14	Gland Bushing	1	AISI 316 SS	AISI 316 SS
15	Belleville Washer	2	17-7PH SS	17-7PH SS
16	Nut, Stem	2	AISI 316 SS	AISI 316 SS
17	O-Ring, Stem	1	Viton	Viton
18	Handle	1	Carbon Steel	Carbon Steel
19	Cover, Handle	1	Vinyl	Vinyl

The 3000 Series body style depends upon material and size --

- Square body with top mounting pad -- 1/4"F - 1"R carbon and stainless steel valves
- Square body with top mounting flat -- 1"F - 2"R carbon and stainless steel valves
- Round body without mounting flat -- 1/4"F - 1"R alloy valves (saddle bracket required for automation)
- Round body with top mounting flat -- 2"F - 4"R carbon and stainless steel and 1"F - 4"R alloy valves

Marwin Valve 3000 Series Soft Seat – Material Specifications

Materials

Ordering Code	Description	Cast	Bar
		Specification	Specification
CS	Carbon Steel	ASTM A216 Gr. WCB	ASTM A105
S6	Stainless Steel 316	ASTM A351 Gr. CF8M	A479 S31600
DU	Duplex SS	—	ASTM A479 Gr. 2205 (S32205)
A2	Alloy 20	—	ASTM B743 Gr. 20Cb-3 (N08020)
MN	Monel	—	ASTM B164 N04400 or N04405
BR	Nickel Aluminum Bronze	—	ASTM B505 C95400, ASTM B150 C62400
HC	Hastelloy C	—	ASTM B574 Gr. C-276 (N10276)
TI	Titanium Gr. 2	—	ASTM B348 Gr. 2
NI	Nickel 200	—	ASTM-B160 N02200
SM	254SMO	—	ASTM A479 S31254

Technical Specifications

Size				Operating Torque						Flow			
NPS		DN		PTFE Virgin Teflon			CRPTFE Carbon Reinforced Teflon			Full Port		Standard Port	
Full	Std.	Full	Std.	P, psi	in-lbs	N.m	P, psi	in-lbs	N.m	Cv	Kv	Cv	Kv
1/4"F	—	DN8	—	1000	72	8,1	2800	72	8,1	8	6,9	—	—
3/8"F	1/2"R	DN12	DN15	1000	72	8,1	2800	72	8,1	8	6,9	8	6,9
1/2"F	3/4"R	DN15	DN20	1000	72	8,1	2800	96	10,8	15	12,9	15	12,9
3/4"F	1"R	DN20	DN25	1000	108	12,2	2500	120	13,6	34	29,2	34	29,2
1"F	1-1/4"R	DN25	DN32	1000	204	23,0	2500	240	27,1	45	38,7	48	41,3
1-1/4"F	1-1/2"R	DN32	DN40	1000	220	24,9	2500	419	27,3	78	67,1	85	73,1
1-1/2"F	2"R	DN40	DN50	1000	240	27,1	2500	779	88,0	135	116	125	108
2"F	2-1/2"R	DN50	DN65	700	432	48,8	2000	1460	165	250	215	275	237
2-1/2"F	3"R	DN65	DN80	700	1348	152	2000	2640	298	445	383	460	396
3"F	4"R	DN80	DN100	700	1460	165	1500	2995	338	680	585	700	602

Note: The normal service factor to be applied to these torques for actuator sizing is 1.2, but may be more or less depending upon operating conditions. Operating torques are also highly dependent upon seat material, and differential pressure across the closed ball. Consult the Marwin Valve Actuator Sizing Program for operating torques for different materials, fluids, and service factors for different operating conditions.

Marwin Valve

3000 Series Soft Seat – Ordering Schematic

Prefix	Series	Size	Body Material	1	2	3	4	5	6	7	8	9	10
	3000F	– 100 –	S6	S	E	S	6	D	L	T	V	H	L

Prefix**	
	No Options
AM	Ammonia Service
CR	Cryogenic (1/2" - 2-1/2"R)
EB	3" Bolted Bonnet Extension
FS	Fire Safe
NA	NACE Service
OX	Oxygen Service
VA	Vacuum Service

Series	
3000F	Full Port
3000R	Standard Port

Size	
025	1/4" (DN8) Full Port only
038	3/8" (DN12) Full Port only
050	1/2" (DN15)
075	3/4" (DN20)
100	1" (DN25)
125	1-1/4" (DN32)
150	1-1/2" (DN40)
200	2" (DN50)
250	2-1/2" (DN65)
300	3" (DN80)
400	4" (DN100) Standard Port only

Body Material	
CS	Carbon Steel WCB
S6	Stainless Steel CF8M
A2	Alloy 20
DU	Duplex
HC	Hastelloy C
MN	Monel
SM	254SMO
TI	Titanium
ZZ	Other Special Alloy

1&2	End Connections
PT	FNPT
SW	FSW
SE	FSW Extended
F1	150# FE
F3	300# FE
F6	600# FE
E4	BWE Extended Sch 40
E8	BWE Extended Sch 80
ZZ	Non-Standard

3 & 4	Trim (Ball/Stem)
S6	316 SS (standard for WCB & CF8M valves)
A2	Alloy 20
DU	Duplex
HC	Hastelloy C
MN	Monel
SM	254SMO
TI	Titanium
ZZ	Other Special Alloy

5 & 6	Seat/Body Seals/Thrust Washer
TF	PTFE / PTFE / Viton
RT	RPTFE / RPTFE / RPTFE
PA	PFA / PFA / PFA
SF	C-RPTFE / C-RPTFE / C-RPTFE
DL	Delrin / Viton / RPTFE
PK	PEEK / Viton / RPTFE
CP	C-PEEK / Graphite / PEEK
KF	KEL-F / PTFE / PTFE
UM	UHMWPE / Viton / UHMWPE
ZZ	Non-Standard

7 & 8	Packing / Stem O-Ring
TV	PTFE / Viton
TE	PTFE / EPDM
GV	Grafoil / Viton
GE	Grafoil / EPDM
UV	UHMWPE / Viton
UE	UHMWPE / EPDM
TK	PTFE / Kalrez
ZZ	Non-standard

9 & 10	Handle & Gear Operator
NN	None
HL	Handle Lever
HD	Handle Lever with Locking Device
GO	Gear Operator
ZZ	Non-Standard

** Ordering Schematic Prefixes

AM Ammonia Service – Carbon and Stainless, no copper bearing materials, upstream vented ball, EPDM stem and body seals, virgin PTFE packing and seats, special cleaning and lube, special stem seal test

EB 3" Bolted bonnet extension (1000 psig maximum rating)

FS Fire Safe (API 607 tested) – B16.34 materials; NPT & SWE ends; Grafoil packing, graphite thrust washer and body seals; PTFE, RPTFE, CRPTFE seats

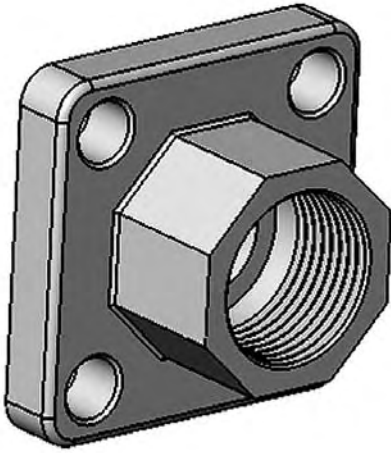
NA NACE MRO 103-2003 exposed bolting

CR Cryogenic – SS, 7.5" to 8.7" welded bonnet extension, upstream vented ball, Kel-F seats, PTFE chevron packing, special cleaning and lube (1000 psi maximum rating)

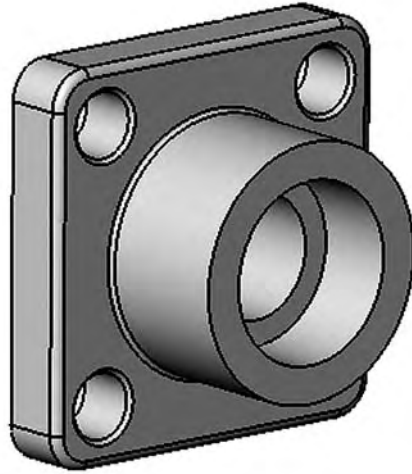
VA Vacuum Service – Special cleaning and lube, Viton stem body, and emergency seals, virgin PTFE packing and seats, special stem seal and seat test

Note: ZZ non-standard options must be described on purchase order or inquiry

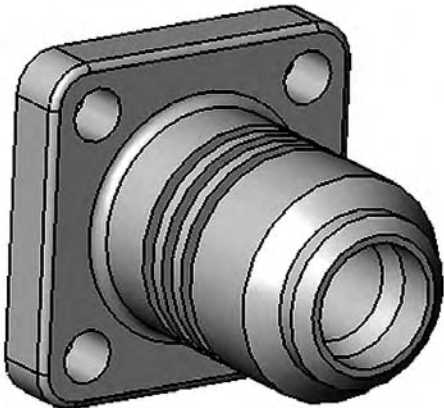
Marwin Valve
3000 Series & MS3000 Series – End Cap Options



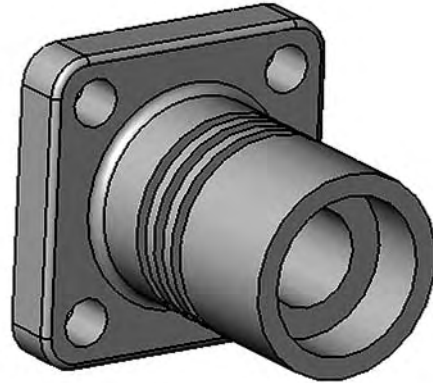
NPT/BSPT



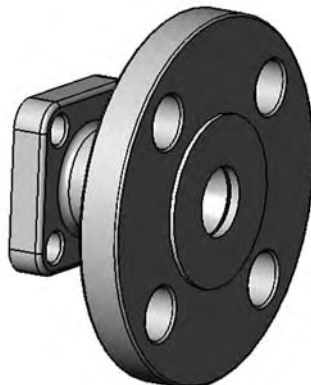
Socket Weld



Extended Butt Weld

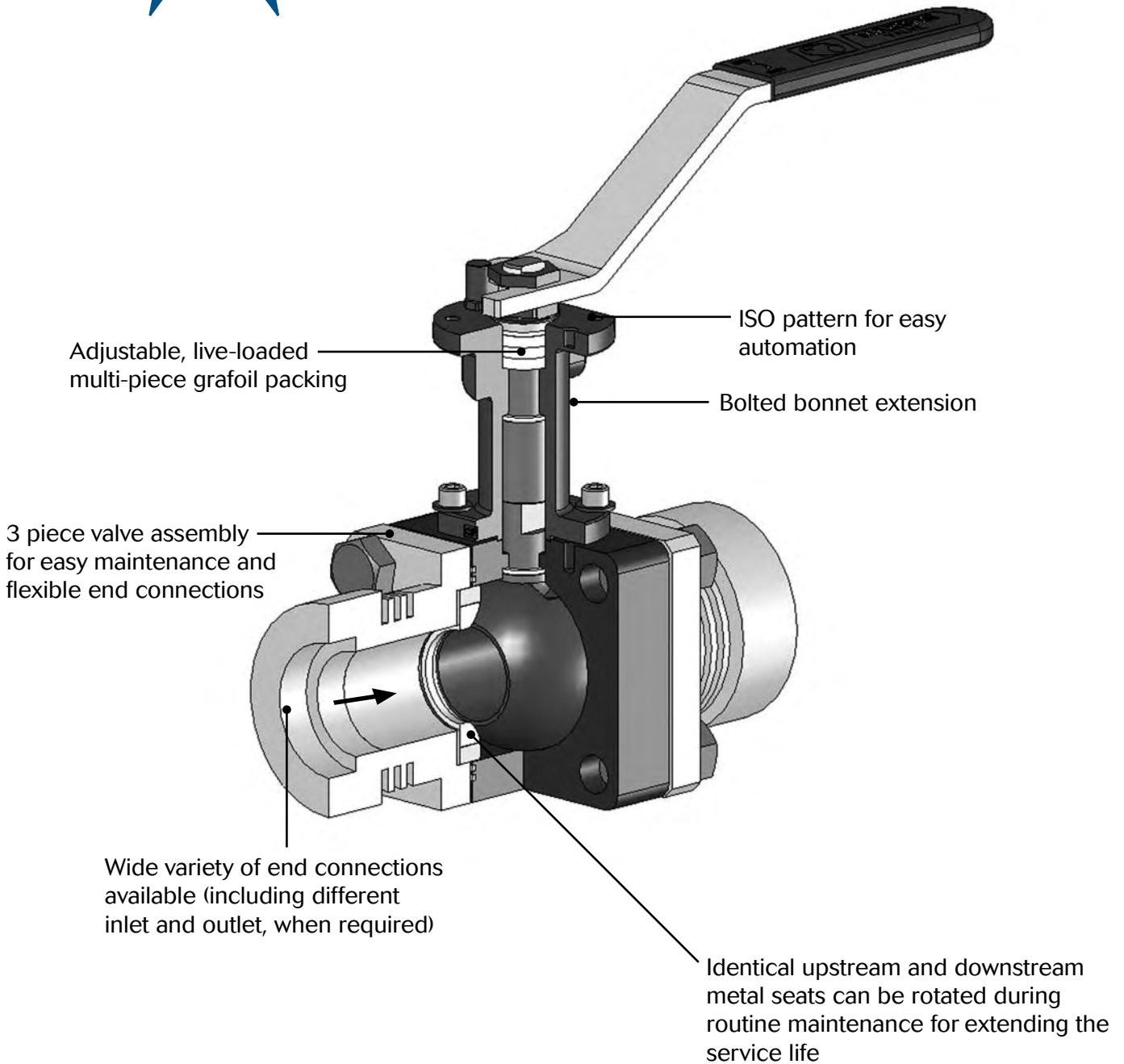


Extended Butt Weld



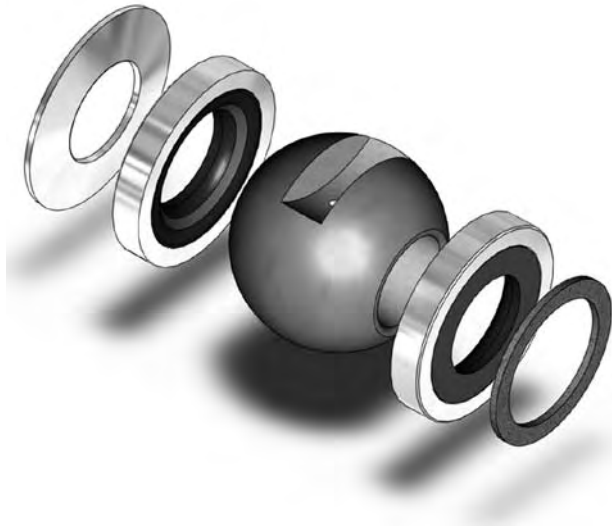
ANSI/DIN Flange

Marwin Valve MS3000 Series Metal Seated – Features



Marwin Valve MS3000 Series – Seat Options

Marwinite Carbon Seats

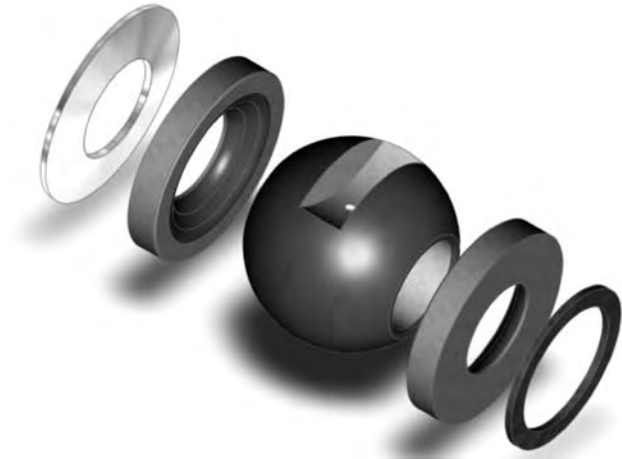


Note: M2 and M6 carbon seats should not be used for erosive or abrasive media, or where thermal or mechanical shock could damage them.

Marwinite (M6) Carbon Seats. Marwinite seats with **ANSI Class VI** shutoff are a *nickel impregnated compressed carbon graphite* seating surface encased in a 316 stainless steel casing. Marwinite may be used in a wide temperature range, but is specifically designed for use at temperatures beyond the capabilities of normal resilient seat materials. Marwinite can be used for temperatures to 800°F for oxidizing services, and to 1000°F for non-oxidizing services. It works well in clean liquids with some lubricating properties, and is suitable for clean, superheated steam. It is practically inert, and is unaffected by most chemical reagents with the exception of highly oxidizing reagents such as high concentrations of nitric acid and oxychlorides.

Marwinite II (M2) Carbon Seats. Marwinite II seats with **ANSI Class V** shutoff are a *compressed carbon graphite* without nickel. Marwinite II is only recommended for oxidizing services between 800°F and 1000°F, since it does not give as tight shutoff as Marwinite (M6).

Marwear Metal Seats



¹High Velocity Oxygen Fuel (HVOF). This advanced coating process produces a dense surface that can be lapped to a mirror finish for tighter shutoff and lower operating torque.

²Surface hardnesses approximate.

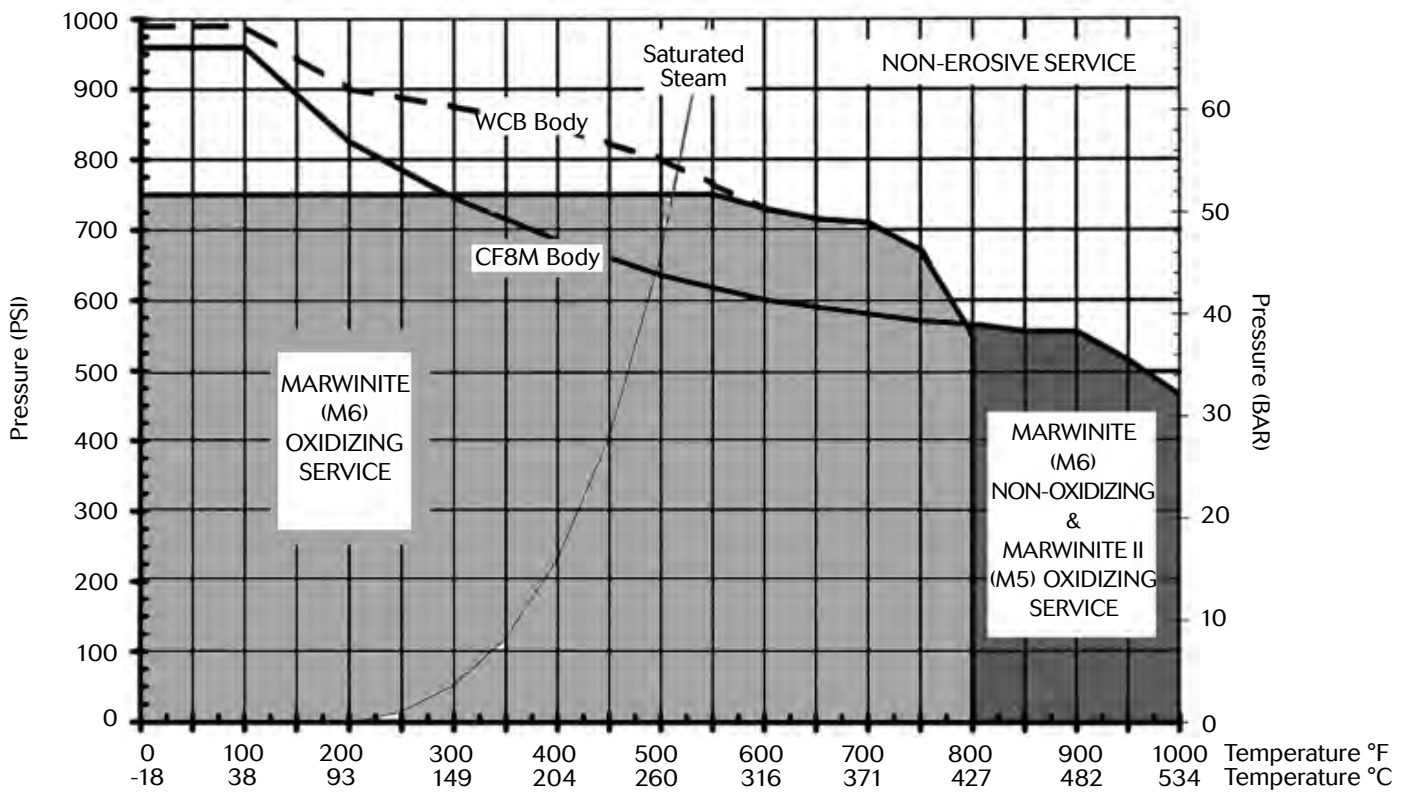
Marwear (W4) Metal Seats. Marwear seats with **ANSI Class IV** shutoff rating are comprised of dual 316 / 316L stainless steel base material. The ball is coated with a *chrome carbide* plasma spray coating (HRC 64). The seats are coated with a *chrome oxide* plasma spray ceramic coating (HRC 71), giving a hardness equivalent to Stellite 6B, but with reduced friction for better operating torque. These seats provide long service life, high temperature capabilities, and tight shutoff.

Marwear (W6) Metal Seats. Marwear seats with **ANSI Class VI** shutoff rating are comprised of dual 316 / 316L stainless steel base material. The ball and seats are coated with a *chrome carbide* plasma spray coating (HRC 64) using an HVOF process¹, giving a surface hardness greater than Stellite 6B, but with reduced friction for better operating torque. These seats provide long service life, high temperature capabilities, and are perfect for steam and condensate applications.

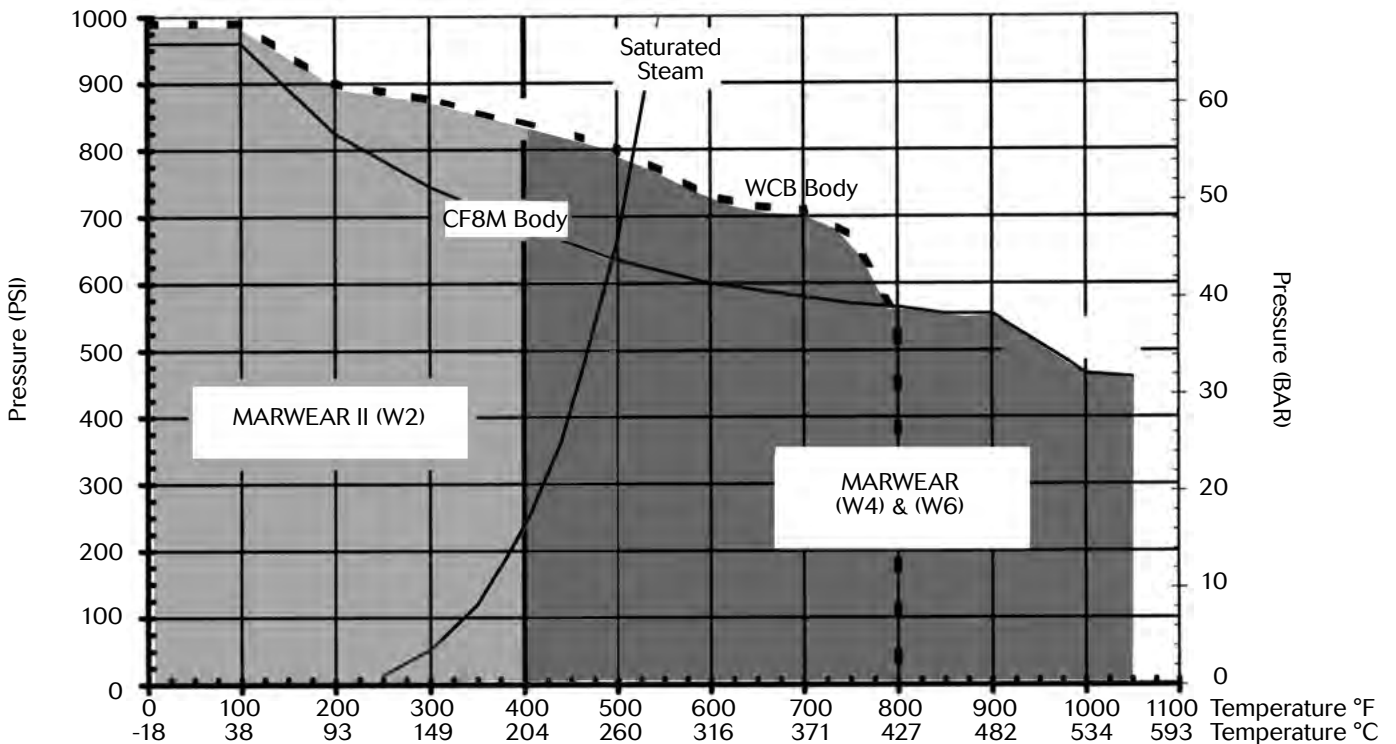
Marwear II (W2) Metal Seats. Enhanced Marwear seats with **ANSI Class VI** shutoff are also comprised of dual 316 / 316L stainless steel base material. Both the ball and seats are coated with *tungsten carbide* plasma spray coating (HRC 70) using an HVOF process¹, giving a surface hardness significantly greater than Stellite 6B. These seats provide extreme wear and abrasion resistance where elevated temperatures are not a factor.

Marwin Valve MS3000 Series Metal Seat – Pressure/Temperature Limits

Metal Seated MS3000 Series – Marwinite (Carbon) Seats

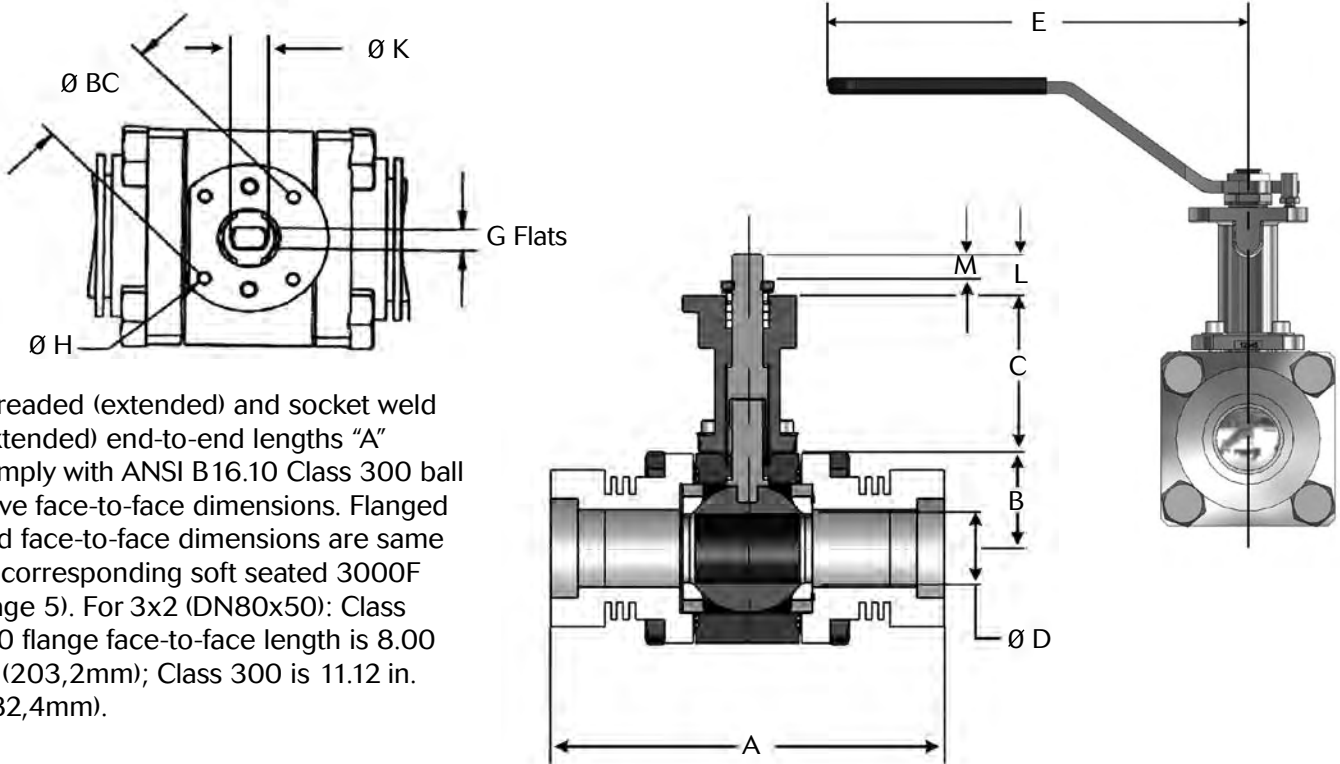


Metal Seated MS3000 Series – Marwear (Metal) Seats



*Note: up to 1440 psi (99 bar) available, please consult factory

Marwin Valve MS3000 Series – Dimensions



Threaded (extended) and socket weld (extended) end-to-end lengths "A" comply with ANSI B16.10 Class 300 ball valve face-to-face dimensions. Flanged end face-to-face dimensions are same as corresponding soft seated 3000F (page 5). For 3x2 (DN80x50): Class 150 flange face-to-face length is 8.00 in. (203,2mm); Class 300 is 11.12 in. (282,4mm).

Dimensions – FNPT Extended, FSW Extended, BWE Extended (inches)

Size	Dimensions											Weight (lbs)
	A	B	C	D	E	H	BC	G Flats	K	L	M	
1/4"	5.50	1.3	3.0	0.44	6.1	10-24	1.42	0.215	0.39	0.56	0.27	3.2
3/8"	5.50	1.3	3.0	0.44	6.1	10-24	1.42	0.215	0.39	0.56	0.27	3.0
1/2"	5.50	1.3	3.0	0.44	6.1	10-24	1.42	0.215	0.39	0.56	0.27	3.6
3/4"	6.00	1.6	3.0	0.61	7.5	10-24	1.65	0.295	0.47	0.78	0.40	5.8
1"	6.50	1.5	3.0	0.83	7.5	10-24	1.65	0.295	0.47	0.87	0.45	8.0
1-1/4"	7.00	1.8	3.0	1.35	8.7	0.25-20	1.97	0.352	0.59	1.10	0.54	10.5
1-1/2"	7.50	1.8	3.0	1.35	8.7	0.25-20	1.97	0.352	0.59	1.10	0.54	14.1
2"	8.50	2.3	3.0	1.69	11.0	0.25-20	1.97	0.352	0.59	1.10	0.54	23.3
3"x2"	11.12	2.3	3.0	1.69	11.0	0.25-20	1.97	0.352	0.59	1.10	0.54	23.3

Dimensions – FNPT Extended, FSW Extended, BWE Extended (mm)

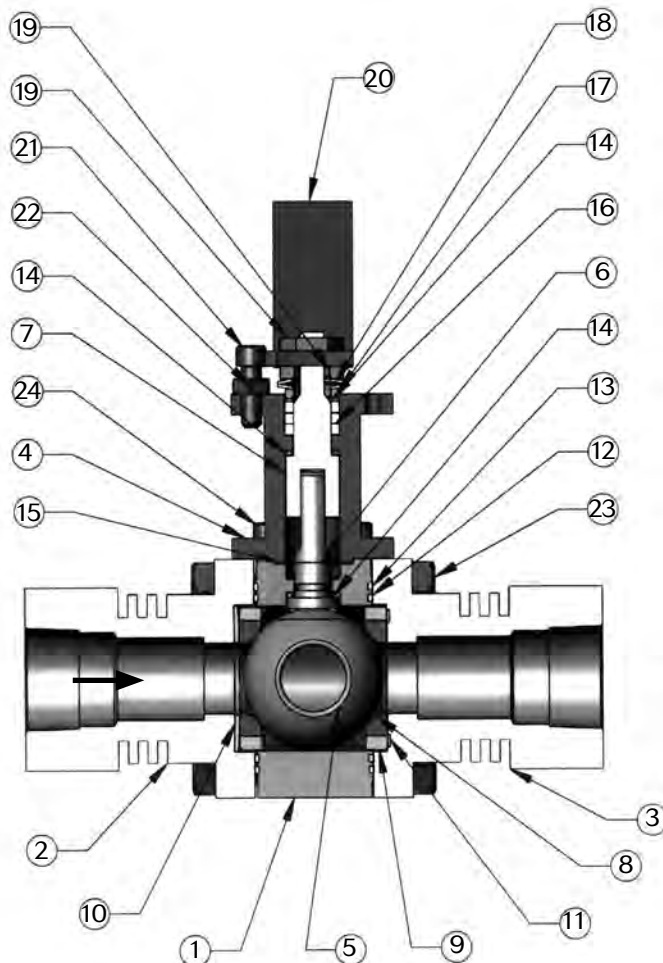
Size	Dimensions											Weight (kgs)
	A	B	C	D	E	H	BC	G Flats	K	L	M	
DN8	139,7	33	76	11,2	154	10-24	36,1	5,46	9,9	14,2	6,9	1,5
DN12	139,7	33	76	11,2	154	10-24	36,1	5,46	9,9	14,2	6,9	1,4
DN15	139,7	33	76	11,2	154	10-24	36,1	5,46	9,9	14,2	6,9	1,6
DN20	152,4	39	76	15,5	191	10-24	41,9	7,49	11,9	19,8	10,2	2,6
DN25	165,1	37	76	21,1	191	0.25-20	41,9	7,49	11,9	22,1	11,4	3,6
DN32	177,8	46	76	34,3	221	0.25-20	50,0	8,94	15,0	27,9	13,7	4,8
DN40	190,5	46	76	34,3	221	0.25-20	50,0	8,94	15,0	27,9	13,7	6,4
DN50	215,9	58	76	42,9	279	0.25-20	50,0	8,94	15,0	27,9	13,7	10,6
DN80x50	282,4	58	76	42,9	279	0.25-20	50,0	8,94	15,0	27,9	13,7	10,6

Marwin Valve MS3000 Series Metal Seat – Specifications

Technical Specifications

Size		Marwear Class IV Metal Seats @ 1440 psi		Marwear Class II & IV Metal Seats @ 1440 psi		Marwinite Carbon Seats @ 750 psi		Flow		Weight	
NPS	DN	in-lbs	N.m	in-lbs	N.m	in-lbs	N.m	Cv	Kv	lbs	kgs
1/4"X	8	202	22,8	134	15,2	128	14,5	8	6,9	3.2	1,5
3/8"X	12	202	22,8	134	15,2	128	14,5	8	6,9	3.0	1,4
1/2"X	15	202	22,8	134	15,2	128	14,5	8	6,9	3.6	1,6
3/4"X	20	418	47,2	358	40,4	330	37,3	25	21,5	5.8	2,6
1"X	25	492	55,6	422	47,7	388	43,8	34	29,2	8.0	3,6
1-1/4"X	32	835	94,3	735	83,0	563	63,6	100	86	14.5	4,8
1-1/2"X	40	835	94,3	735	83,0	563	63,6	105	90,3	14.1	6,4
2"X	50	1505	170	1345	152	940	106	180	155	23.3	10,6
3"x2"X	80x50	1505	170	1345	152	940	106	180	155	26.3	11,9

Material Specifications



Item	Part	Qty	SST	CS
1	Body	1	A351-CF8M	A216 WCB
2	End Cap Upstream	1	A479-316L SS	SA-A 105 CS
3	End Cap Downstream	1	A479-316L SS	SA-A 105 CS
4	Bonnet	1	ASTM A351 CF3M	ASTM A351 CF3M
5	Ball	1	316 SS	316 SS
6	Stem, Valve	1	A479-316 SS	A479-316 SS
7	Stem, Bonnet	1	A479-316 SS	A479-316 SS
8	Seat	2	Carbon	Carbon
9	Support Ring	2	A479-316L SS	A479-316L SS
10	Seat Belleville	1	Inconel	Inconel
11	Seat Gasket	1	Graphite	Graphite
12	Body Seal	2	Graphite	Graphite
13	Secondary Body Seal	2	Graphite	Graphite
14	Thrust Washer	3	Carbon	Carbon
15	Bonnet Gasket	1	Graphite	Graphite
16	Packing	3	Grafoil	Grafoil
17	Packing Gland	1	316 SS	316 SS
18	Packing Belleville	2	SST	SST
19	Packing Nut	2	SST	SST
20	Handle	1	Steel	Steel
21	Stop Screw	1	SST	SST
22	Jam Nut	1	SST	SST
23	Body Bolts	8	A 193-B8	A 193-B8
24	Bonnet Bolts	4	A 193-B8	A 193-B8

Marwin Valve MS3000 Series Metal Seat – Ordering Schematic

3K/MS3K/0508/5K/AB

Series		Size		Body Material		1	2	3	4	5	6	7	8	9	10
MS3000X	–	100	–	S6	/	S	E	S	3	W	4	G	R	H	L

Series	
MS3000X	Metal Seated 3000 Series

3&4	Trim (Ball/Stem)
S3	316 SS (standard for WCB & CF8M valves)
ZZ	Other Special Alloy

Size	
*025	1/4" (DN8)
*038	3/8" (DN12)
050	1/2" (DN15)
075	3/4" (DN20)
100	1" (DN25)
*125	1-1/4" (DN32)
150	1-1/2" (DN40)
200	2" (DN50)
*300	3"x2" (DN80x50)

5&6	Seat
M2	Marwinite II Class V
M6	Marwinite Class VI
W2	Marwear II Class VI
W4	Marwear Class IV
W6	Marwear Class VI
ZZ	Non-Standard

See page 16 for complete description of seating material

*Consult factory

Body Material	
CS	Carbon Steel WCB
S6	Stainless Steel CF8M
ZZ	Other Special Alloy

7&8	Packing/Stem-O-Ring
GR	Graphite
ZZ	Non-Standard

1&2	End Connections
PT	NPT
SE	FSW Extended
F1	150# FE
F3	300# FE
F6	600# FE
F9	900# FE
E4	BWE Extended Sch 40
E8	BWE Extended Sch 80
E6	BWE Extended Sch 160
ZZ	Non-Standard

9&10	Handle & Gear Operator
NN	None
HL	Handle Lever
HD	Handle Lever with Locking Device
GO	Gear Operator
ZZ	Non-Standard

Note: ZZ non-standard options must be described on purchase order or inquiry



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CV3000 Series

Characterized Insert Control Valves

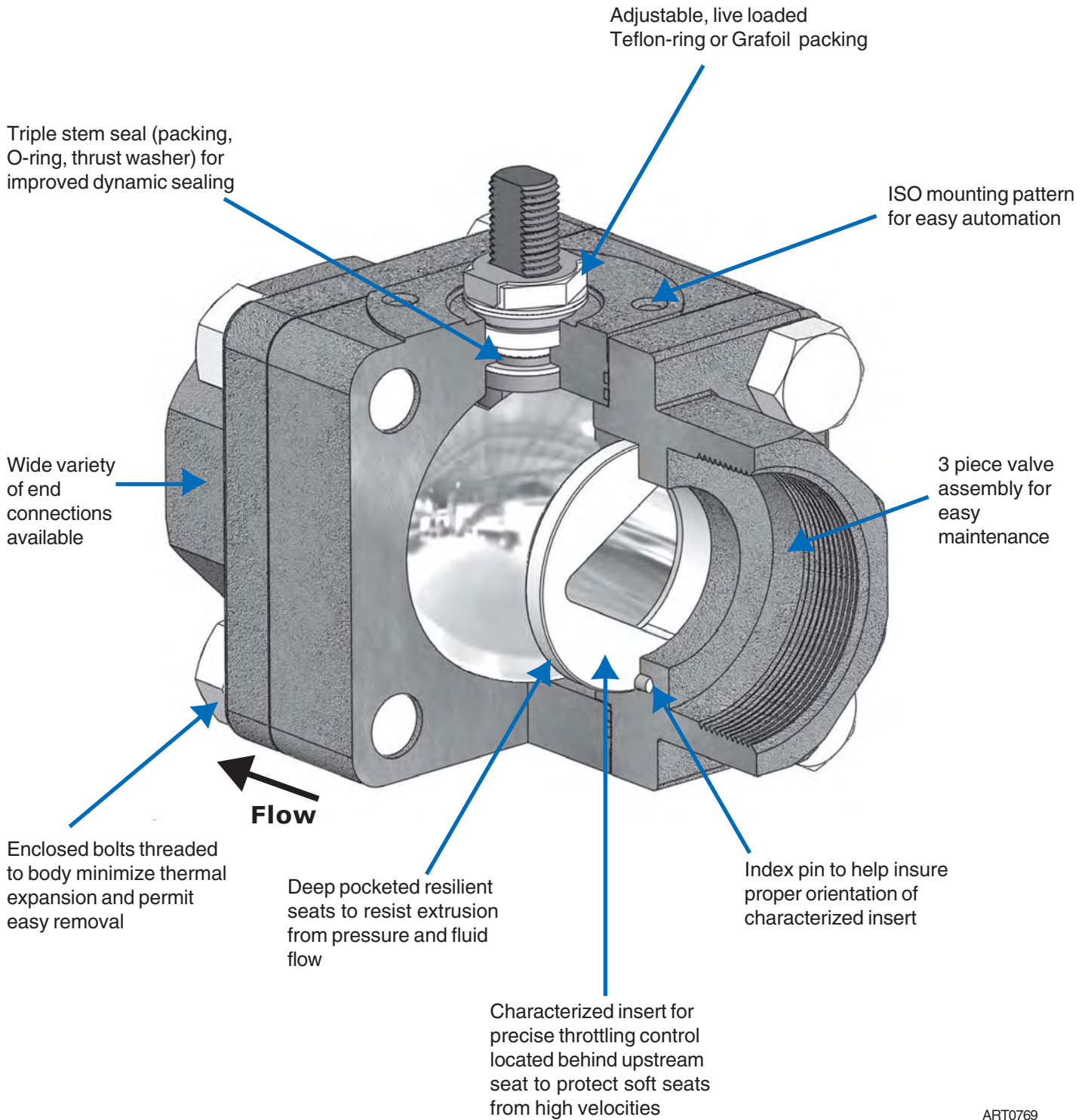
The **CV3000 Series** is a v-type control valve for precise control allowing high pressure drop capability with straight-through flow and bubble-tight shut off.

- State-of-the-art modulating ball valve for control offering high capacity with increased rangeability
- The throttling element of the valve is a v-control metal insert located behind the upstream seat. This protects the soft seats from high velocities and ensures bubble-tight shut off when required
- The soft seats and/or the v-style insert can be changed in the field with no need for lapping ball, seats, or insert
- The valve offers metal encapsulated soft seats to prevent cold-flowing under adverse temperature, pressure, or modulating service conditions
- V-Control insert and metal encapsulated seats provide lower operating torque with less hysteresis
- Available in sizes 1/2" through 4" standard port port and 1/4" through 3" full port design
- Materials of construction for the valve or insert include Hastelloy B, Alloy 20, Hastelloy C, Bronze, Monel, Carbon Steel, Stainless Steel, and other special materials such as Duplex, 254 SMO, and Titanium
- A variety of soft seat materials are available including PTFE, Carbon or Stainless filled PTFE, Delrin® or PEEK



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Marwin Valve CV3000 Series – Features



ART0769

Description

The CV-3000 Series can be fitted with a wide range of v-style inserts for precise throttling control. The inserts are placed in a machined groove in the end cap behind the upstream seat to characterize the flow. The v-style insert is placed on the inlet side of the valve to protect the seat from high velocities, which can occur while controlling flow. The ball sits between two soft seats, ensuring low torque with a bubble-tight shut off. The insert is designed to change flow characteristics of the valve and is offered in different configurations to meet a variety of modulating applications.

The characterized insert control valve gives accurate control through the valve stroke to meet flow conditions. Different insert shapes will affect the flow rate, capacity, and inherent flow curves.

Operation

The Marwin characterized inserts make throttling control valves that are both forgiving and accommodating. If the valve is located in a process with changing conditions, the characterized insert can be changed to meet the CV and/or the required control characteristics. We offer the option of a full flow insert in the CV3000 valve with additional V-control inserts to be installed later to meet changing flow conditions.

Special flow conditions can be met with optional inserts. An example is a low flow slot insert having a solids removal hole. This type insert provides ideal throttling characteristics which allow solids to move when needed through the larger opening. Linear conditions can be modified by changing the width and/or length of the slot.

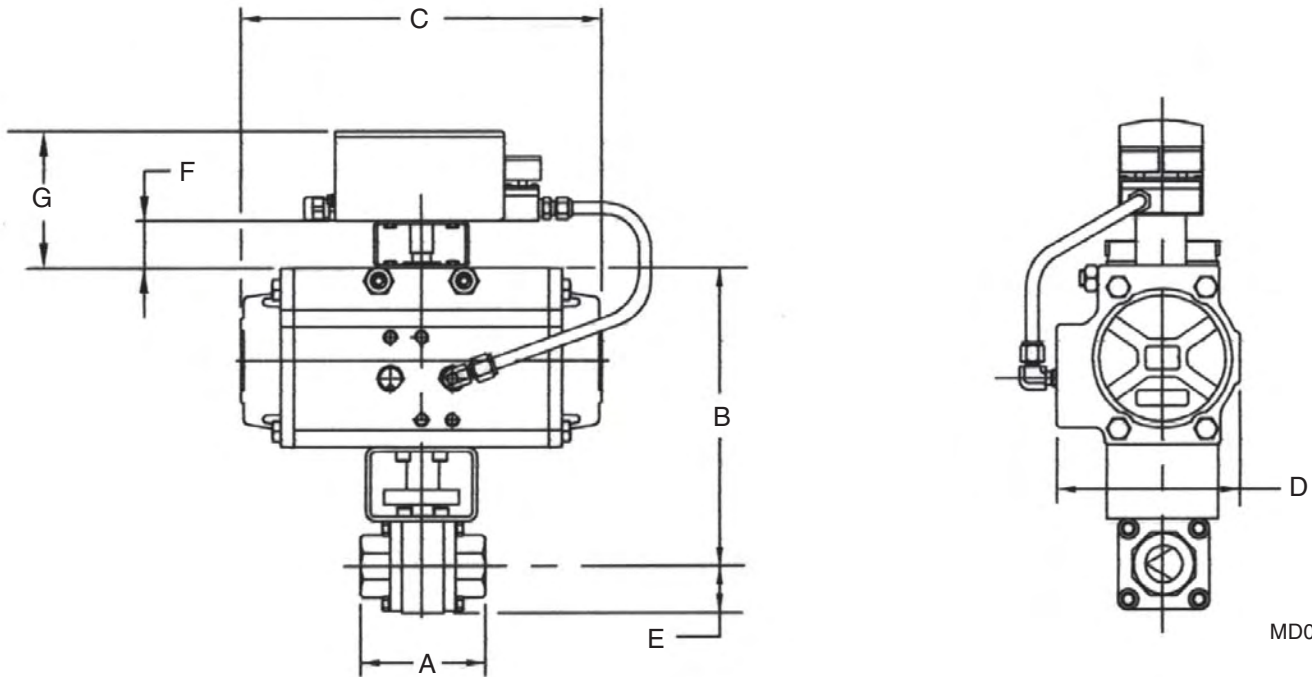


Another example is high flow to low flow by combining larger initial openings with smaller V-shaped final openings. This characterized insert results in smooth stable throttling control, and can be utilized in two stage or dribble control. This provides maximum initial flow and fine control for flow completion.



Marwin Valve CV3000 Series – Dimensions

CV3000 Series Full Port with UT Series Pneumatic Actuator and 2IQ Positioner



MD03157

CV3000 Full Port with UT Actuator (inches)									
Size	Actuator	Dimensions							Weight (lbs)
		A	B	C	D	E	F	G	
1/4", 3/8"	UT-0-DA	2.95	5.98	5.5	2.8	1.00	1.77	5.57	13.5
	UT-1-SR		6.41	6.4	3.2		1.77	5.57	14.7
1/2"	UT-0-DA	3.15	6.05	5.5	2.8	1.05	1.77	5.57	14.5
	UT-1-SR		6.48	6.4	3.2		1.77	5.57	16.2
3/4"	UT-0-DA	3.35	6.29	5.5	2.8	1.30	1.77	5.57	16.4
	UT-2-SR		7.37	8.2	3.7		1.77	5.57	21.3
1"	UT-1-DA	4.35	6.62	6.4	3.2	1.45	1.77	5.57	19.2
	UT-2.5-SR		7.72	9.4	4.2		1.77	5.57	23.7
△1-1/4"	UT-2-DA	4.75	7.50	8.2	3.7	1.68	1.77	5.57	23.7
	UT-3-SR		8.46	10.7	4.8		1.77	5.57	32.5
△1-1/2"	UT-2-DA	5.55	7.65	8.2	3.7	1.83	1.77	5.57	27.7
	UT-3.5-SR		9.40	12.9	5.4		2.16	5.96	44.4
△ 2"	UT-3.5-DA	5.55	9.48	12.9	5.4	2.62	2.16	5.96	48.5
	UT-5-SR		11.70	20.6	7.4		2.16	5.96	84.4
△2-1/2"	UT-5-DA	6.70	11.20	14.4	7.4	2.95	2.16	5.96	77.6
	UT-6-SR		14.11	22.6	8.6		2.16	5.96	139.4
△ 3"	UT-5-DA	9.20	12.84	20.6	7.4	3.69	2.16	5.96	90.6
	UT-6-SR		14.85	22.6	8.6		2.16	5.96	147.6

CV3000 Standard Port with UT Actuator (mm)									
Size	Actuator	Dimensions							Weight (kgs)
		A	B	C	D	E	F	G	
DN8, 12	UT-0-DA	74,9	152	140	71	25,4	45	142	6,1
	UT-1-SR		163	163	81		45	142	6,7
DN15	UT-0-DA	80,0	154	140	71	26,7	45	142	6,6
	UT-1-SR		165	163	81		45	142	7,3
DN20	UT-0-DA	85,1	160	140	71	33,0	45	142	7,4
	UT-2-SR		187	208	94		45	142	9,7
DN25	UT-1-DA	110,5	168	163	81	36,8	45	142	8,7
	UT-2.5-SR		196	239	107		45	142	10,8
△DN32	UT-2-DA	120,7	191	208	94	42,7	45	142	10,8
	UT-3-SR		215	272	122		45	142	14,7
△DN40	UT-2-DA	141,0	194	208	94	46,5	45	142	12,6
	UT-3.5-SR		239	328	137		55	151	20,1
△DN50	UT-3.5-DA	141,0	241	328	137	66,5	55	151	22,0
	UT-5-SR		297	523	137		55	151	38,3
△DN65	UT-5-DA	170,2	285	366	188	74,9	55	151	35,2
	UT-6-SR		358	574	218		55	151	63,2
△DN80	UT-5-DA	233,7	326	523	188	93,7	55	151	41,1
	UT-6-SR		377	574	218		55	151	67,4

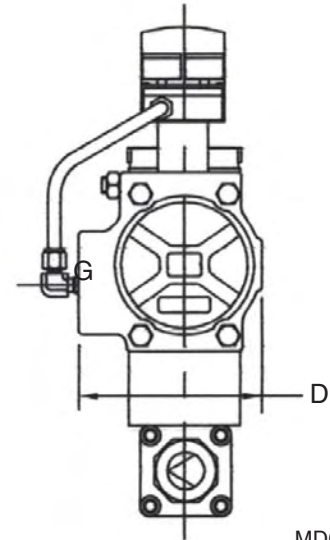
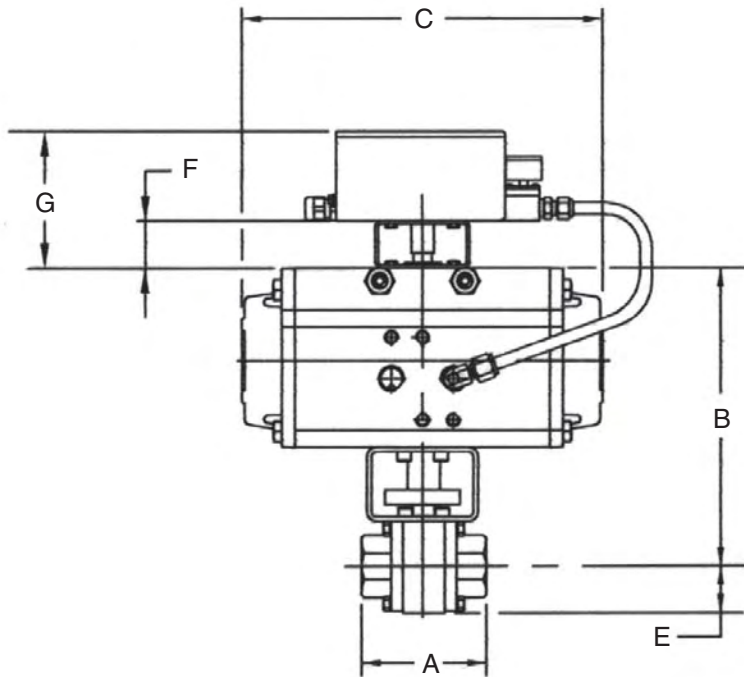
△ Differential pressure across valve = 1000 psi (68,9 bar)

Seat material is RPTFE

Actuators in table sized with standard 1.2 service factor

Marwin Valve CV3000 Series – Dimensions

CV3000 Series Standard Port with UT Series Pneumatic Actuator and 2IQPositioner



MD03156

CV3000 Standard Port with UT Actuator (inches)									
Size	Actuator	Dimensions							Weight (lbs)
		A	B	C	D	E	F	G	
1/2"	UT-0-DA	2.95	5.98	5.5	2.8	1.00	1.77	5.57	13.5
	UT-1-SR		6.41	6.4	3.2		1.77	5.57	
3/4"	UT-0-DA	3.15	6.05	5.5	2.8	1.05	1.77	5.57	14.5
	UT-1-SR		6.48	6.4	3.2		1.77	5.57	
1"	UT-0-DA	3.35	6.29	5.5	2.8	1.30	1.77	5.57	16.4
	UT-2-SR		7.37	8.2	3.7		1.77	5.57	
1-1/4"	UT-1-DA	4.35	6.62	6.4	3.2	1.45	1.77	5.57	19.2
	UT-2.5-SR		7.72	9.4	4.2		1.77	5.57	
△ 1-1/2"	UT-2-DA	4.75	7.50	8.2	3.7	1.68	1.77	5.57	23.7
	UT-3-SR		8.46	10.7	4.8		1.77	5.57	
△ 2"	UT-2-DA	5.55	7.65	8.2	3.7	1.83	1.77	5.57	27.7
	UT-3.5-SR		9.40	12.9	5.4		2.16	5.96	
△ 2-1/2"	UT-3.5-DA	5.55	9.48	12.9	5.4	2.62	2.16	5.96	48.5
	UT-5-SR		11.70	20.6	7.4		2.16	5.96	
△ 3"	UT-5-DA	6.70	11.20	14.4	7.4	2.95	2.16	5.96	77.6
	UT-6-SR		14.11	22.6	8.6		2.16	5.96	
△ 4"	UT-5-DA	9.20	12.84	20.6	7.4	3.69	2.16	5.96	90.6
	UT-6-SR		14.85	22.6	8.6		2.16	5.96	

CV3000 Standard Port with UT Actuator (mm)									
Size	Actuator	Dimensions							Weight (kgs)
		A	B	C	D	E	F	G	
DN15	UT-0-DA	74,9	152	140	71	25,4	45	142	6,1
	UT-1-SR		163	163	81		45	142	
DN20	UT-0-DA	80,0	154	140	71	26,7	45	142	6,6
	UT-1-SR		165	163	81		45	142	
DN25	UT-0-DA	85,1	160	140	71	33,0	45	142	7,4
	UT-2-SR		187	208	94		45	142	
DN32	UT-1-DA	110,5	168	163	81	36,8	45	142	8,7
	UT-2.5-SR		196	239	107		45	142	
DN40	UT-2-DA	120,7	191	208	94	42,7	45	142	10,8
	UT-3-SR		215	272	122		45	142	
△ DN50	UT-2-DA	141,0	194	208	94	46,5	45	142	12,6
	UT-3.5-SR		239	328	137		55	151	
△ DN65	UT-3.5-DA	141,0	241	328	137	66,5	55	151	22,0
	UT-5-SR		297	523	137		55	151	
△ DN80	UT-5-DA	170,2	285	366	188	74,9	55	151	35,2
	UT-6-SR		358	574	218		55	151	
△ DN100	UT-5-DA	233,7	326	523	188	93,7	55	151	41,1
	UT-6-SR		377	574	218		55	151	

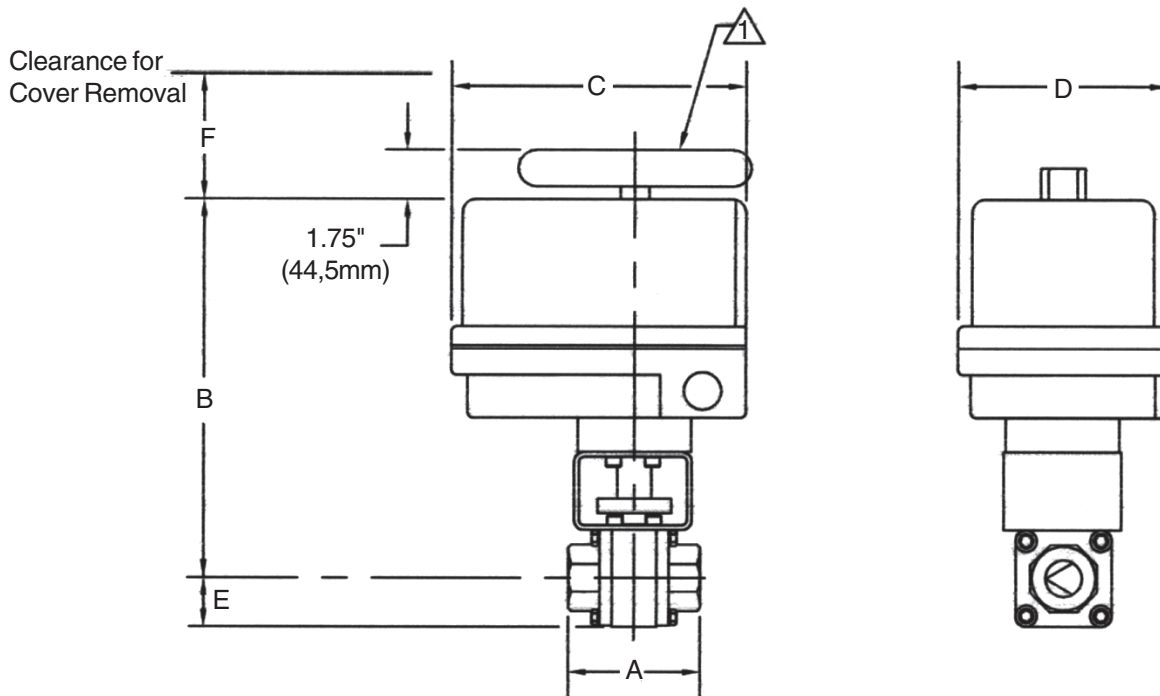
△ Differential pressure across valve = 1000 psi (68,9 bar)

Seat material is RPTFE

Actuators in table sized with standard 1.2 service factor

Marwin Valve CV3000 Series – Dimensions

CV3000 Series Full Port with ER Series Electric Actuator



MD03159

CV3000 Full Port with ER Electric Actuator (inches)								
Size	Actuator	Dimensions						Weight (lbs)
		A	B	C	D	E	F	
1/4", 3/8"	ER-1-2-4	2.95	7.74	5.63	4.00	1.00	2.5	12
1/2"	ER-2-5-4	3.15	8.69	6.88	4.25	1.05	2.5	15
3/4"	ER-2-5-4	3.35	8.93	6.88	4.25	1.30	3.0	17
1"	ER-3-5-4	4.35	8.83	6.88	4.25	1.45	3.0	19
△ 1-1/4"	ER-4-10-4	4.75	10.42	7.00	7.00	1.68	3.0	28
△ 1-1/2"	ER-6-15-4	5.55	10.57	7.00	7.00	1.83	3.0	31
△ 2"	ER-15-30-4	5.55	11.04	7.00	7.00	2.62	4.0	40
△ 2-1/2"	ER-38-14-4	6.70	14.01	10.00	10.00	2.95	6.0	65
△ 3"	ER-38-14-4	9.20	14.75	10.00	10.00	3.69	6.0	74

CV3000 Full Port with ER Electric Actuator (mm)								
Size	Actuator	Dimensions						Weight (kgs)
		A	B	C	D	E	F	
DN8, 12	ER-1-2-4	74,9	197	143	102	25,4	64	5,4
DN15	ER-2-5-4	80,0	221	175	108	26,7	64	6,8
DN20	ER-2-5-4	85,1	227	175	108,	33,0	76	7,7
DN25	ER-3-5-4	110,5	224	175	108	36,8	76	8,6
△ DN32	ER-4-10-4	120,7	265	178	178	42,7	76	12,8
△ DN40	ER-6-15-4	141,0	269	178	178	46,5	76	14,1
△ DN50	ER-15-30-4	141,0	280	178	178	66,5	102	18,1
△ DN65	ER-38-14-4	170,2	356	254	254	74,9	152	29,5
△ DN80	ER-38-14-4	233,7	375	254	254	93,7	152	33,6

△ Manual over-ride handwheel provided only on actuators ER-4-10-4, ER-6-15-4, ER-15-30-4 and ER-38-14-4

△ Differential pressure across valve = 1000 psi (68,9 bar)

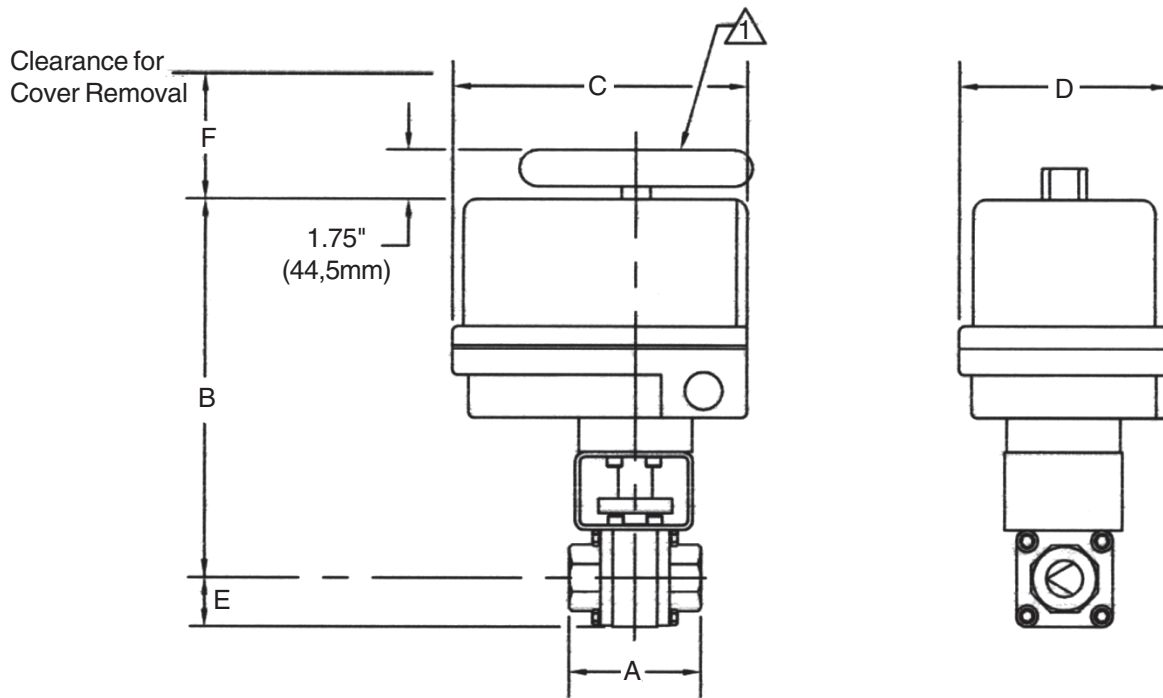
Seat material is RPTFE

Dimensions given for NEMA 4 enclosure

Actuators in table sized with standard 1.2 service factor

Marwin Valve CV3000 Series – Dimensions

CV3000 Series Standard Port with ER Series Electric Actuator



MD03158

CV3000 Standard Port with ER Electric Actuator (inches)								
Size	Actuator	Dimensions						Weight (lbs)
		A	B	C	D	E	F	
1/2"	ER-1-2-4	2.95	7.74	5.63	4.00	1.00	2.5	12
3/4"	ER-2-5-4	3.15	8.69	6.88	4.25	4.05	2.5	15
1"	ER-2-5-4	3.35	8.93	6.88	4.25	1.30	3.0	17
1-1/4"	ER-3-5-4	4.35	8.83	6.88	4.25	1.45	3.0	19
△ 1-1/2"	ER-4-10-4	4.75	10.42	7.00	7.00	1.68	3.0	28
△ 2"	ER-6-15-4	5.55	10.57	7.00	7.00	1.83	3.0	31
△ 2-1/2"	ER-15-30-4	5.55	11.04	7.00	7.00	2.62	4.0	40
△ 3"	ER-38-14-4	6.70	14.01	10.00	10.00	2.95	6.0	65
△ 4"	ER-38-14-4	9.20	14.75	10.00	10.00	3.69	6.0	74

CV3000 Standard Port with ER Electric Actuator (mm)								
Size	Actuator	Dimensions						Weight (kgs)
		A	B	C	D	E	F	
DN15	ER-1-2-4	74,9	197	143	102	25,4	64	5,4
DN20	ER-2-5-4	80,0	221	175	108	26,7	64	6,8
DN25	ER-2-5-4	85,1	227	175	108	33,0	76	7,7
DN32	ER-3-5-4	110,5	224	175	108	36,8	76	8,6
△ DN40	ER-4-10-4	120,7	265	178	178	42,7	76	12,8
△ DN50	ER-6-15-4	141,0	269	178	178	46,5	76	14,1
△ DN65	ER-15-30-4	141,0	280	178	178	66,5	102	18,1
△ DN80	ER-38-14-4	170,2	356	254	254	74,9	152	29,5
△ DN100	ER-38-14-4	233,7	375	254	254	93,7	152	33,6

△ Manual over-ride handwheel provided only on actuators ER-4-10-4, ER-6-15-4, ER-15-30-4 and ER-38-14-4

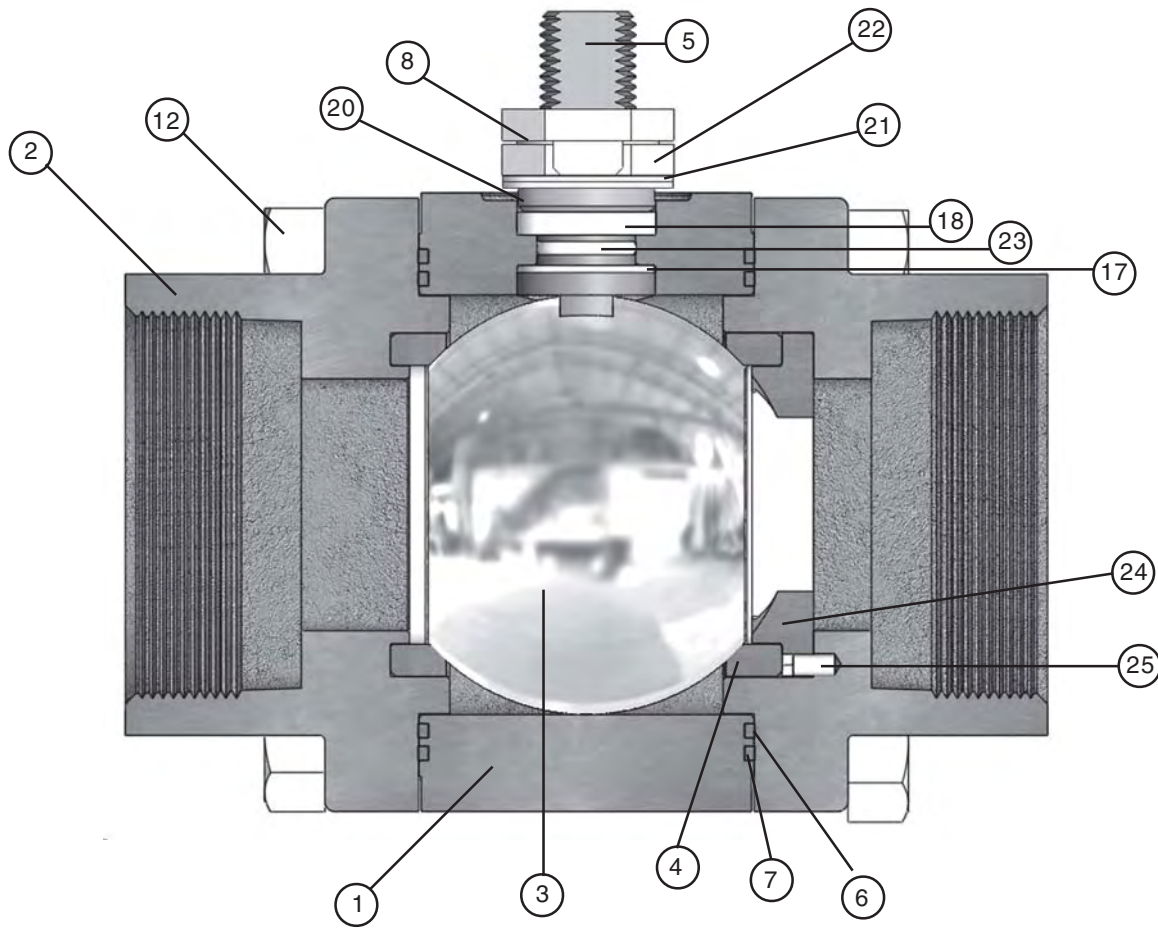
△ Differential pressure across valve = 1000 psi (68,9 bar)

Seat material is RPTFE

Dimensions given for NEMA 4 enclosure

Actuators in table sized with standard 1.2 service factor

Marwin Valve CV3000 Series – Material Specifications



ART0770

Item	Part	Qty	SS	CS
1	Body	1	A351 CF8M	A216 WCB
2	End Cap	2	A351 CF3M	A216 WCB
3	Ball	1	AISI 316 SS	AISI 316 SS
4	Seat	2	CRPTFE	CRPTFE
5	Stem	1	A479 S31600	A479 S31600
6	Body Seal	2	CRPTFE	CRPTFE
7	Secondary Body Seal	2	Non-Asbestos	Non-Asbestos
8	Lock Washer	1	SS	SS
9	Anti-Static Spring (not shown)	1	AISI 316 SS	AISI 316 SS
12	Bolt, Body	8	A193 B8 C11	A193 B7
17	Thrust Washer	1	CRPTFE	CRPTFE
18	Packing	1	PTFE	PTFE
20	Gland Bushing	1	AISI 316 SS	AISI 316 SS
21	Belleville Washer	2	17-7PH SS	17-7PH SS
22	Nut, Stem	2	AISI 316 SS	AISI 316 SS
23	O-Ring, Stem	1	Viton	Viton
24	Characterized Insert	1	A479 S31600	A479 S31600
25	Index Pin	1	A479 S31600	A479 S31600

Marwin Valve CV3000 Series – Technical Information

Tehchnical Information						
CV3000 CV (Max Round Port)			Recommended Actuator Torque (in/lbs) (Based on 2x factor for Control Applications)			
Valve Size		Cv Max				
Full Port	Standard Port	Round Port	PTFE	RPTFE	Delrin®	PEEK
1/4"	—	8	—	—	—	—
3/8"	1/2"	8	144	144	180	528
1/2"	3/4"	15	144	192	228	768
3/4"	1"	34	216	240	408	1488
1"	1-1/4"	45	408	480	408	1728
1-1/4"	1-1/2"	78	456	576	468	2064
1-1/2"	2"	135	480	672	528	2400
2"	2-1/2"	250	864	1224	876	2880
2-1/2"	3"	445	1800	3360	consult factory	consult factory
3"	4"	680	1920	4320	consult factory	consult factory

Refer to 3000 Series bulletin 3000/MS3000 for pressure-temperature ratings and additional dimensional drawings.

Standard Characterized Seat Inserts



Full Round



Slot



30° Angle



60° Angle



90° Angle

Marwin Valve CV3000 Series – Flow Coefficient

CV vs Travel (Full Port Valve)

Percent of Travel (Degree of Rotation)													
Size	Type	Characterized Insert	0% (0°)	10% (9°)	20% (18°)	30% (27°)	40% (36°)	50% (45°)	60% (54°)	70% (63°)	80% (72°)	90% (81°)	100% (90°)
0.25F	1/32	SA	0.00	0.00	0.033	0.074	0.12	0.16	0.20	0.24	0.28	0.32	0.40
	1/16" Slot	S1	0.00	0.00	0.07	0.20	0.33	0.46	0.60	0.73	0.86	0.99	1.10
	30°V	A1	0.00	0.00	0.10	0.20	0.34	0.55	0.83	1.11	1.59	2.08	2.50
	60°V	A2	0.00	0.00	0.12	0.33	0.49	0.84	1.35	1.95	3.10	4.37	5.92
	Round Port	R1	0.00	0.00	0.29	0.46	0.70	1.09	1.76	2.60	2.24	6.40	8.00
0.38F	1/32	SA	0.00	0.00	0.033	0.074	0.12	0.16	0.20	0.24	0.28	0.32	0.40
	1/16" Slot	S1	0.00	0.00	0.07	0.20	0.33	0.46	0.60	0.73	0.86	0.99	1.10
	30°V	A1	0.00	0.00	0.10	0.20	0.34	0.55	0.83	1.11	1.59	2.08	2.50
	60°V	A2	0.00	0.00	0.12	0.33	0.49	0.84	1.35	1.95	3.10	4.37	5.92
	Round Port	R1	0.00	0.00	0.29	0.46	0.70	1.09	1.76	2.60	2.24	6.40	8.00
0.50F	1/16" Slot	S1	0.00	0.00	0.06	0.24	0.40	0.56	0.73	0.90	1.00	1.20	1.30
	1/8" Slot	S3	0.00	0.00	0.14	0.39	0.65	0.90	1.20	1.40	1.70	1.90	2.90
	30°V	A1	0.00	0.00	0.11	0.24	0.41	0.67	1.00	1.40	1.90	2.60	3.00
	60°V	A2	0.00	0.00	0.13	0.36	0.55	1.00	1.50	2.30	3.60	5.00	6.70
	Round Port	R1	0.00	0.00	0.43	0.70	1.10	1.60	2.60	4.00	6.40	9.60	12.00
0.75F	1/16" Slot	S1	0.00	0.00	0.10	0.40	0.67	0.94	1.20	1.50	1.70	1.90	2.10
	3/16" Slot	S4	0.00	0.00	0.22	0.82	1.40	1.90	2.50	3.10	3.50	4.00	4.30
	30°V	A1	0.00	0.00	0.21	0.56	1.00	1.60	2.40	3.40	4.60	6.20	7.30
	60°V	A2	0.00	0.00	0.30	0.78	1.20	2.30	3.60	5.30	8.30	11.60	15.50
	90°V	A4	0.00	0.00	0.48	1.20	2.30	3.50	5.40	7.70	10.80	12.10	19.70
Round Port	R1	0.00	0.00	1.20	1.90	2.80	4.30	7.00	10.50	17.00	26.00	32.00	
1.00F	3/16" Slot	S4	0.00	0.00	0.38	1.40	2.40	3.40	4.40	5.40	6.20	6.90	7.50
	30°V	A1	0.00	0.00	0.39	1.00	1.80	2.90	4.40	6.40	8.60	11.40	13.50
	60°V	A2	0.00	0.00	0.48	1.30	2.00	3.70	5.80	8.50	13.40	18.70	25.00
	90°V	A3	0.00	0.00	0.78	2.00	3.70	5.70	8.80	12.50	17.50	19.70	32.00
	Round Port	R1	0.00	0.00	1.80	3.00	4.40	6.70	10.90	16.40	26.60	40.60	50.00
1.25F	3/16" Slot	S4	0.00	0.00	0.47	1.80	3.00	4.20	5.40	6.80	7.70	8.60	9.40
	30°V	A1	0.00	0.00	0.41	1.20	2.10	3.50	5.20	7.60	10.30	13.70	16.30
	60°V	A2	0.00	0.00	0.57	1.70	3.00	5.60	9.10	13.20	19.80	28.40	37.50
	90°V	A3	0.00	0.00	1.00	2.80	4.50	8.10	13.40	19.70	30.90	47.10	71.70
	Round Port	R1	0.00	0.00	3.00	4.8	7.20	11.00	18.00	27.00	44.00	65.50	82.00
1.50F	1/4" Slot	S5	0.00	0.00	0.75	2.90	4.80	6.80	8.70	10.80	12.30	13.80	15.00
	30°V	A1	0.00	0.00	0.55	1.70	3.40	5.70	8.30	12.10	16.60	22.20	26.50
	60°V	A2	0.00	0.00	0.70	2.60	4.90	9.30	15.50	22.20	32.10	47.20	61.60
	90°V	A3	0.00	0.00	0.88	3.30	6.10	11.70	19.40	27.50	40.10	59.00	77.00
	Round Port	R1	0.00	0.00	4.30	7.00	10.50	16.20	26.40	39.60	64.00	96.00	120.00
2.00F	3/8" Slot	S6	0.00	0.00	1.00	3.80	6.40	9.00	11.60	14.40	16.40	18.40	20.00
	30°V	A1	0.00	0.00	1.00	3.20	6.40	10.60	15.40	22.60	31.00	41.50	49.50
	60°V	A2	0.00	0.00	1.00	3.80	7.10	13.50	22.50	32.20	46.60	68.50	89.40
	90°V	A3	0.00	0.00	1.90	7.10	13.10	25.00	41.60	58.90	85.90	126.40	165.00
	Round Port	R1	0.00	0.00	9.40	15.10	22.80	35.10	57.20	85.80	138.70	208.00	260.00
2.50F	7/16" Slot	S7	0.00	0.00	1.20	4.60	7.80	11.00	14.20	17.60	20.00	22.40	24.40
	30°V	A1	0.00	0.00	0.75	2.70	6.00	10.20	16.90	24.50	33.90	44.80	54.20
	60°V	A2	0.00	0.00	1.00	4.30	10.10	18.60	29.40	46.30	67.20	94.40	124.60
	90°V	A3	0.00	0.00	1.20	8.00	14.00	26.00	44.00	67.00	102.00	151.00	230.00
	Round Port	R1	0.00	0.00	12.60	20.20	31.10	47.40	77.80	115.00	187.00	280.00	350.00
3.00F	1/2" Slot	S8	0.00	0.00	2.50	9.30	15.70	22.10	28.40	35.3	40.20	45.10	49.00
	30°V	A1	0.00	0.00	0.90	3.60	8.50	16.10	26.80	40.20	56.60	72.50	90.00
	60°V	A2	0.00	0.00	1.20	5.70	15.40	28.80	48.60	73.40	107.00	150.70	200.00
	90°V	A3	0.00	0.00	2.00	9.00	23.00	42.00	72.00	110.00	167.00	250.00	380.00
	Round Port	R1	0.00	0.00	26.00	42.10	63.10	97.20	159.00	238.00	385.00	575.00	720.00

CV is defined as flow of liquid in gallons per minute through a valve with a pressure drop of 1 psi across the valve.
Recommended usage is between 25% and 85% travel.

Marwin Valve CV3000 Series – Flow Coefficient

CV vs Travel (Standard Port Valve)

Percent of Travel (Degree of Rotation)													
Size	Type	Characterized Insert	0% (0°)	10% (9°)	20% (18°)	30% (27°)	40% (36°)	50% (45°)	60% (54°)	70% (63°)	80% (72°)	90% (81°)	100% (90°)
0.50R	1/64" Slot	SB	0.00	0.00	0.01	0.03	0.40	0.06	0.08	0.09	0.11	0.12	0.14
	1/32" Slot	SA	0.00	0.00	0.03	0.07	0.12	0.16	0.20	0.24	0.28	0.32	0.36
	1/16" Slot	S1	0.00	0.00	0.07	0.20	0.33	0.46	0.60	0.73	0.86	1.00	1.10
	30°V	A1	0.00	0.00	0.11	0.24	0.36	0.56	0.84	1.10	1.60	2.10	2.60
	60°V	A2	0.00	0.00	0.12	0.33	0.60	0.84	1.40	2.00	3.10	4.40	5.90
	Round Port	R1	0.00	0.00	0.29	0.46	0.70	1.10	1.80	2.60	4.30	6.40	8.00
0.75R	1/16" Slot	S1	0.00	0.00	0.06	0.24	0.40	0.56	0.73	0.90	1.00	1.20	1.30
	1/8" Slot	S3	0.00	0.00	0.14	0.39	0.65	0.90	1.20	1.40	1.70	1.90	2.90
	30°V	A1	0.00	0.00	0.11	0.24	0.41	0.67	1.00	1.40	1.90	2.60	3.00
	60°V	A2	0.00	0.00	0.13	0.36	0.55	1.00	1.50	2.30	3.60	5.00	6.70
	Round Port	R1	0.00	0.00	0.43	0.70	1.10	1.60	2.60	4.00	6.40	9.60	12.00
1.00R	1/16" Slot	S1	0.00	0.00	0.10	0.40	0.67	0.94	1.20	1.50	1.70	1.90	2.10
	3/16" Slot	S4	0.00	0.00	0.22	0.82	1.40	1.90	2.50	3.10	3.50	4.00	4.30
	30°V	A1	0.00	0.00	0.21	0.56	1.00	1.60	2.40	3.40	4.60	6.20	7.30
	60°V	A2	0.00	0.00	0.30	0.78	1.20	2.30	3.60	5.30	8.30	11.60	15.50
	90°V	A3	0.00	0.00	0.48	1.20	2.30	3.50	5.40	7.70	10.80	12.10	19.70
	Round Port	R1	0.00	0.00	1.20	1.90	2.80	4.30	7.00	10.50	17.00	26.00	32.00
1.25R	3/16" Slot	S4	0.00	0.00	0.38	1.40	2.40	3.40	4.40	5.40	6.20	6.90	7.50
	30°V	A1	0.00	0.00	0.39	1.00	1.80	2.90	4.40	6.40	8.60	11.40	13.50
	60°V	A2	0.00	0.00	0.48	1.30	2.00	3.70	5.80	8.50	13.40	18.70	25.00
	90°V	A3	0.00	0.00	0.78	2.00	3.70	5.70	8.80	12.50	17.50	19.70	32.00
	Round Port	R1	0.00	0.00	1.80	3.00	4.40	6.70	10.90	16.40	26.60	40.60	50.00
1.50	3/16" Slot	S4	0.00	0.00	0.47	1.80	3.00	4.20	5.40	6.80	7.70	8.60	9.40
	30°V	A1	0.00	0.00	0.41	1.20	2.10	3.50	5.20	7.60	10.30	13.70	16.30
	60°V	A2	0.00	0.00	0.57	1.70	3.00	5.60	9.10	13.20	19.80	28.40	37.50
	90°V	A3	0.00	0.00	1.00	2.80	4.50	8.10	13.40	19.70	30.90	47.10	71.70
	Round Port	R1	0.00	0.00	3.00	4.8	7.20	11.00	18.00	27.00	44.00	65.50	82.00
2.00R	1/4" Slot	S5	0.00	0.00	0.75	2.90	4.80	6.80	8.70	10.80	12.30	13.80	15.00
	30°V	A1	0.00	0.00	0.55	1.70	3.40	5.70	8.30	12.10	16.60	22.20	26.50
	60°V	A2	0.00	0.00	0.70	2.60	4.90	9.30	15.50	22.20	32.10	47.20	61.60
	90°V	A3	0.00	0.00	0.88	3.30	6.10	11.70	19.40	27.50	40.10	59.00	77.00
	Round Port	R1	0.00	0.00	4.30	7.00	10.50	16.20	26.40	39.60	64.00	96.00	120.00
2.50R	3/8" Slot	S6	0.00	0.00	1.00	3.80	6.40	9.00	11.60	14.40	16.40	18.40	20.00
	30°V	A1	0.00	0.00	1.00	3.20	6.40	10.60	15.40	22.60	31.00	41.50	49.50
	60°V	A2	0.00	0.00	1.00	3.80	7.10	13.50	22.50	32.20	46.60	68.50	89.40
	90°V	A3	0.00	0.00	1.90	7.10	13.10	25.00	41.60	58.90	85.90	126.40	165.00
	Round Port	R1	0.00	0.00	9.40	15.10	22.80	35.10	57.20	85.80	138.70	208.00	260.00
3.00R	7/16" Slot	S7	0.00	0.00	1.20	4.60	7.80	11.00	14.20	17.60	20.00	22.40	24.40
	30°V	A1	0.00	0.00	0.75	2.70	6.00	10.20	16.90	24.50	33.90	44.80	54.20
	60°V	A2	0.00	0.00	1.00	4.30	10.10	18.60	29.40	46.30	67.20	94.40	124.60
	90°V	A3	0.00	0.00	1.20	8.00	14.00	26.00	44.00	67.00	102.00	151.00	230.00
	Round Port	R1	0.00	0.00	12.60	20.20	31.10	47.40	77.80	115.00	187.00	280.00	350.00
4.00R	1/2" Slot	S8	0.00	0.00	2.50	9.30	15.70	22.10	28.40	35.3	40.20	45.10	49.00
	30°V	A1	0.00	0.00	0.90	3.60	8.50	16.10	26.80	40.20	56.60	72.50	90.00
	60°V	A2	0.00	0.00	1.20	5.70	15.40	28.80	48.60	73.40	107.00	150.70	200.00
	90°V	A3	0.00	0.00	2.00	9.00	23.00	42.00	72.00	110.00	167.00	250.00	380.00
	Round Port	R1	0.00	0.00	26.00	42.10	63.10	97.20	159.00	238.00	385.00	575.00	720.00

CV is defined as flow of liquid in gallons per minute through a valve with a pressure drop of 1 psi across the valve. Recommended usage is between 25% and 85% travel.

CV3000 Series Ordering Schematic

Prefix	Series	Size	Body Material	1	2	3	4	5	6	7	8	9	10			
CV	3000F	—	100	—	S6	/	S	E	A	1	D	L	T	V	H	L

Prefix	
CV	Control Valve

Series	
3000F	Full Port
3000R	Standard Port

Size	
025	1/4" (DN8) (Full Port Only)
038	3/8" (DN12) (Full Port Only)
050	1/2" (DN15)
075	3/4" (DN20)
100	1" (DN25)
125	1-1/4" (DN32)
150	1-1/2" (DN40)
200	2" (DN50)
250	2-1/2" (DN65)
300	3" (DN80)
400	4" (DN100) (Standard Port Only)

Body Material	
CS	Carbon Steel WCB
S6	Stainless Steel CF8M
ZZ	**Other Special Alloy

1&2	End Connections
PT	FNPT
SW	FSW
SE	FSW Extended
F1	150# FE
F3	300# FE
F6	600# FE
E4	BWE Extended Sch 40
E8	BWE Extended Sch 80
ZZ	Non-Standard

* Refer to flow coefficient chart. Page 10 and 11 for slot size No. "X"
 ** Refer to 3000 Series bulletin and specify
 *** Specify reverse rotating actuator for automated fail open CV 3000 valves

3&4	Characterized Insert / Open/Trim Material
A1	30 Degree V/316 SS
A2	60 Degree V/ 316 SS
A3	90 Degree V/ 316 SS
R1	Full Round / 316 SS
*SX	Slot / 316 SS
ZZ	**Other Special Alloy

5&6	Seat/Body Seals/Thrust Washer
TF	PTFE / PTFE / PTFE
RT	RPTFE / RPTFE / RPTFE
PA	PFA / PFA / PFA
SF	C-RPTFE / C-RPTFE / C-RPTFE
DL	Delrin / Viton / RPTFE
PK	PEEK / Viton / PEEK
CP	C-PEEK / Graphite / PEEK
UM	UHMWPE / Viton / UHMWPE
ZZ	Non-Standard

7&8	Packing/Stem-O-Ring
TV	PTFE / Viton
TE	PTFE / EPDM
GV	Grafoil / Viton
GE	Grafoil / EPDM
UV	UHMWPE / Viton
UE	UHMWPE / EPDM
ZZ	Non-Standard

9&10	Handle & Gear Operator
NN	None
HL	Handle Lever
HD	Handle Lever with Locking Device
GO	Gear Operator
HT	10 Position Handle 1/4"F ~ 2-1/2"R only
ZZ	***Non-Standard

Note: ZZ non-standard options must be specified on purchase order or inquiry.



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Ball Valves For Steam Service

SP Ratings

	Valve Type	Valve Size		Seat Material	Steam Pressure			
		NPS	DIN		psi	bar		
2-Pc	600F & R	1/4" - 4"F & 1/2" - 2" R	8 - 100F & 15 - 50R	PTFE*	125	8.6		
	9000F & R	1/4" - 3"F & 1/2" - 2" R	8 - 80F & 15 - 50R	RPTFE**	125	8.6		
3 - Piece	4600F & R	1/4" - 2-1/2"F & 1/2" - 3"R	8 - 65F & 15-80R	PTFE*	125	8.6		
	4700F	1/2" - 4"	15 - 100	RPTFE*	200	13.8		
		1/2" - 2"	15 - 50	CRPTFE	275	19.0		
		2-1/2" - 4"	65 - 100	CRPTFE	250	17.2		
		1/2" - 4"	15 - 100	50% SSPTFE	350	24.1		
	8700F	1/2" - 2"	15 - 50	RPTFE**	200	13.8		
				CRPTFE	275	19.0		
				50% SSPTFE	350	24.1		
	KF8900F	1/2" - 4"	8 - 100	PTFE*	30	2.1		
	3000F & R	1/4" - 1-1/2"F & 1/2" - 2"R	8 - 32F & 15 - 50R	PTFE*	125	8.6		
				RPTFE**	200	13.8		
		2" - 3"F & 2-1/2" - 4"R	50 - 80F & 65 - 100R	PTFE*	100	6.9		
				RPTFE**	200	13.8		
		1/4" - 2-1/2"F & 1/2" - 3"R	8 - 65F & 15- 80R	CRPTFE	275	19.0		
					3"F & 4"R	80F & 100R	250	17.2
		1/4" - 2-1/2"F & 1/2" - 3"R	8 - 65F & 15 - 80R	PEEK	350	24.1		
					3"F & 4"R	80F & 100R	300	20.7
	1/4" - 3"F & 1/2" - 4"R	8 - 80F & 15 - 100R	CPEEK	450	31.0			
	MS3000	1/2" - 2"	15 - 50	Marwinit M6‡	500	34.5		
				Marwear W4 & W6	600	41.4		
10000	1/4" - 1"	8 - 25	CRPTFE	275	19.0			
			PEEK	350	24.1			
			CPEEK	450	31.0			
MS10000	1/4" - 2"	8 - 50	Marwear W4 & W6	600	41.4			
Class 150 FE	2000F-F1 2000R-F1	1/2" - 6"F & 2" - 4"R	15 - 150F & 50 - 100R	RPTFE**	150	10.3		
				CRPTFE	200	13.8		
	5000F & R+ 5800F & R++	1/2" - 4"F & 1/2" - 6"R	15 - 100F & 15 - 150R	RPTFE**	200	13.8		
				CRPTFE	200	13.8		
Class 300 FE	2000F-F3	1" - 2"	25 - 50	RPTFE**	225	15.5		
					200	13.8		
				3" - 6"	80 - 150	CRPTFE	275	19.0
							250	17.2
	6000F & R+	1/2" - 4"F & 1/2" - 6"R	15 - 100F & 15 - 150R	RPTFE*	250	17.2		
				CRPTFE	300	20.7		
		6" - 8"F & 8" - 10"R	150 - 200F & 200 - 250R	RPTFE**	200	13.8		
				CRPTFE	250	17.2		
	6800F & R+	1/2" - 4"F & 1/2" - 6"R	15 - 100F & 15 - 150R	RPTFE**	250	17.2		
				RPTFE**	200	13.8		
		6" - 8"F & 8" - 10"R	150 - 200F & 200 - 250R	CRPTFE	250	17.2		
				CRPTFE	250	17.2		

CRPTFE will give longer service life in steam service and is preferred over RPTFE where available.

* PTFE is not recommended for throttling or high cycle isolation service.

** RPTFE is not recommended for throttling service

‡ Superheated steam only with 50°F minimum superheat up to 700°F maximum temperature

+ 1/2" - 1"F and 1/2" - 10"R 5000 and 6000 Series are unibody design and require EPDM body seal O-rings.

++ 5800 and 6800 Series require special EPDM stem and body seal O-rings.



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