

Masoneilan® 80000 Series Three-Way Control Valves

Specification Data

CH7000

10/01

Combining
and Diverting
Service

DRESSER

Flow Control

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Foreword

The 80000 Series provides a line of three-way control valves designed for either combining or diverting applications. Standard features include:

High Capacity with Low Recovery

Flow capacity is at top levels for contemporary three-way valves and is attained with very little pressure recovery as indicated by its high critical flow factors.

High Performance Materials

Materials of construction have been selected for high performance and long life.

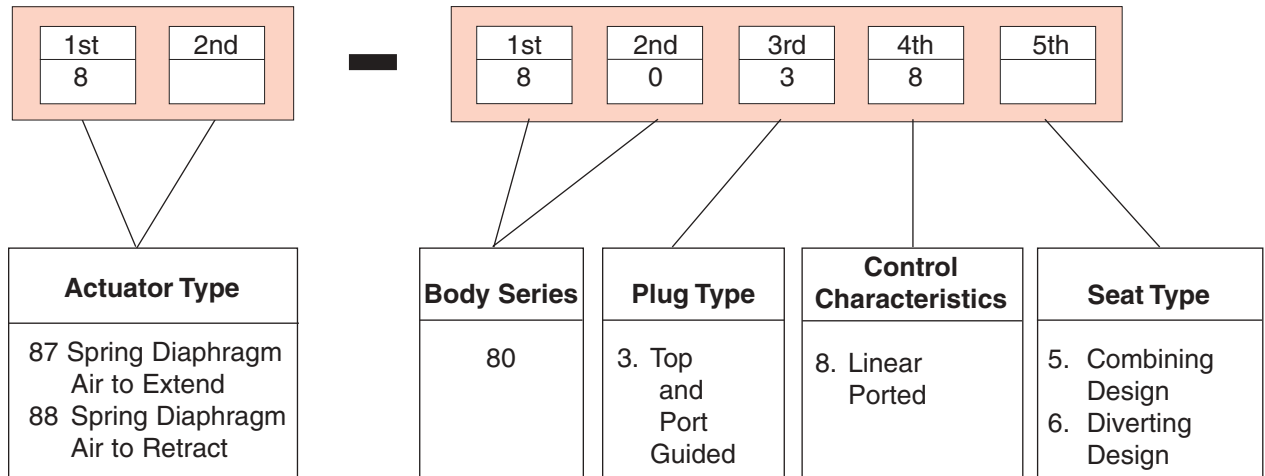
Plug Design

Valves are designed to be installed with flow tending to open both ports. The important advantage of this flow direction is inherent plug stability.

The following pages provide the necessary technical information required to specify an 80000 Series control valve. For additional information, contact your local Masoneilan Representative.

Trade names noted throughout are for reference only. Masoneilan reserves the right to supply trade named material or equivalent.

Numbering System



Ratings/Connections

Flanged
 Butt Weld**
 RT Joint
 Threaded
 Socket Weld**

Valve Sizes*		ANSI Class		
inches	mm	150	300	600
1, 1.5, 2	25, 40, 50	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
3 through 10	80 through 250	<input type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>

** Welded connections are not recommended as trim maintenance will require cutting valve out of the line.

General Data

- Body**

type: 3-way
 flow direction: flow to open (both ports)
 C_v ratio: 50:1

- Bonnet**

type: bolted
 packing box: bolted

- Trim**

type: 385 - combining
 386 - diverting

- Flow Characteristics**

linear
 full capacity only

- Actuator**

type: spring diaphragm
 direct, air to extend
 reverse, air to retract

* 1" (25mm) size not available in 80386 version - Diverting Design
Utilize combining design and consult factory for details.

Temperature Range/Seat Leakage

Valve Size*		Body Ratings	Temperature Range		Maximum Seat Leakage. ANSI/FCI 70.2 Class and IEC 534-4**
inches	mm		Min.	Max.	
1 through 10	25 through 250	ANSI 150 - 600 (PN 10 - 100)	-20°F (-29°C)	+850°F (+454°C)	II, III, or IV

Flow Coefficient C_v , $F_L = 0.9$

Body Ratings: ANSI Class 150 to 600 - (PN 10 to 100)

Valve Size*		Orifice Diameter		C_v
inches	mm	inches	mm	
1	25	1.063	27.0	9
1.5	40	1.5	38.1	21
2	50	2	50.8	36
3	80	2.625	67.7	75
4	100	3.5	88.9	124
6	150	5.25	133.4	270
8	200	7	177.8	480
10	250	8.75	222.3	750

Allowable Pressure Drops

Temperature: -20°F to +850°F (-29°C to +454°C)
Body Ratings: ANSI Class 150 through 600 (PN 10 to 100)

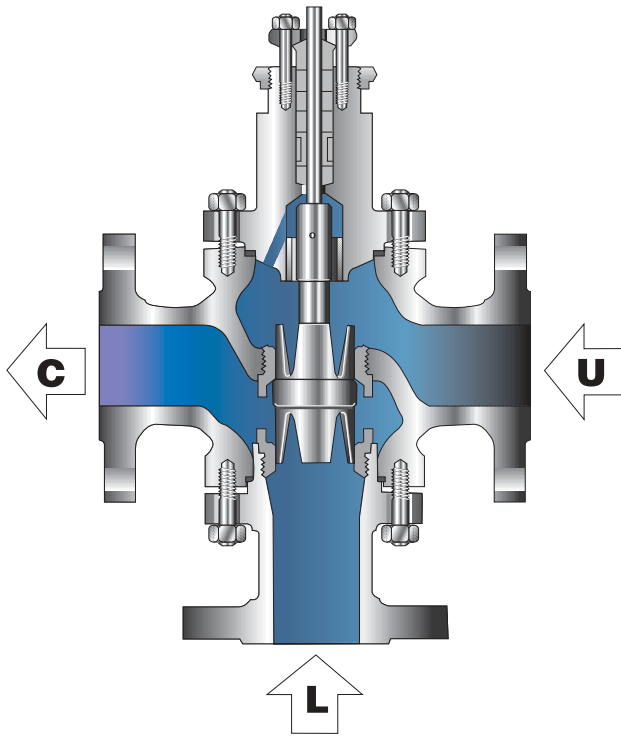
Seat Leakage: ANSI/FCI 70.2 and
IEC 534-4, Class II**
Air to Extend or Air to Retract

Valve Size*		Travel		Orifice Diameter		C_v	Actuator Size	Bench Range (psig)	Supply Pressure		Allowable Pressure Drop	
in.	mm	in.	mm	in.	mm				psig	bar g	psi	bar
1	25	0.5	12.7	1.063	27.0	9	6	11 - 19	30	2.1	551	38
									10	2.1	1047	72
1.5	40	0.75	19.1	1.5	38.1	21	6	11 - 23	35	2.4	253	17
									10	2.4	502	35
2	50	1	25.4	2	50.8	36	10	11 - 19	30	2.1	268	18
									16	2.1	478	33
3	80	1.5	38.1	2.625	66.7	75	10	11 - 23	35	2.4	144	10
									16	2.4	266	18
									23	2.4	409	28
4	100	1.5	38.1	3.5	88.9	124	10	11 - 23	35	2.4	73	5.0
									16	2.4	141	10
									23	2.4	221	15
6	150	2	50.8	5.25	133.4	270	16	11 - 23	35	2.4	54	3.7
									23	2.4	90	6.2
8	200	2.5	63.5	7	177.8	480	16	11 - 23	35	2.4	26	1.8
									23	2.4	46	3.2
10	250	2.5	63.5	8.75	222.3	750	16	11 - 23	35	2.4	14	1.0
									23	2.4	27	1.9

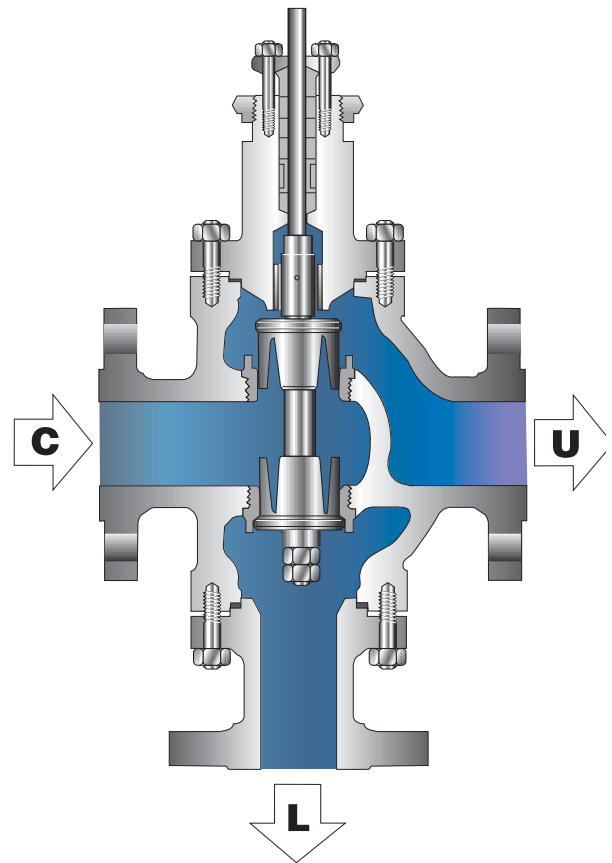
* 1" (25mm) size not available in 80386 version - Diverting Design. Utilize combining design and consult factory for details.

** Class II Shutoff is the standard shutoff rating. Tighter shutoff classes of III and IV can be achieved depending on process conditions. Please consult with Masoneilan Applications Departments for services requiring Class III and IV Shutoff.

C_v vs Travel



80385 Combining



80386 Diverting

C = Common L = Lower U = Upper

Body Ratings: ANSI Class 150 through 600 (PN 10 to 100)

Sizes: *1" through 10" (25mm through 250mm)

Flow Direction: flow to open (both ports)

Flow Characteristic: linear

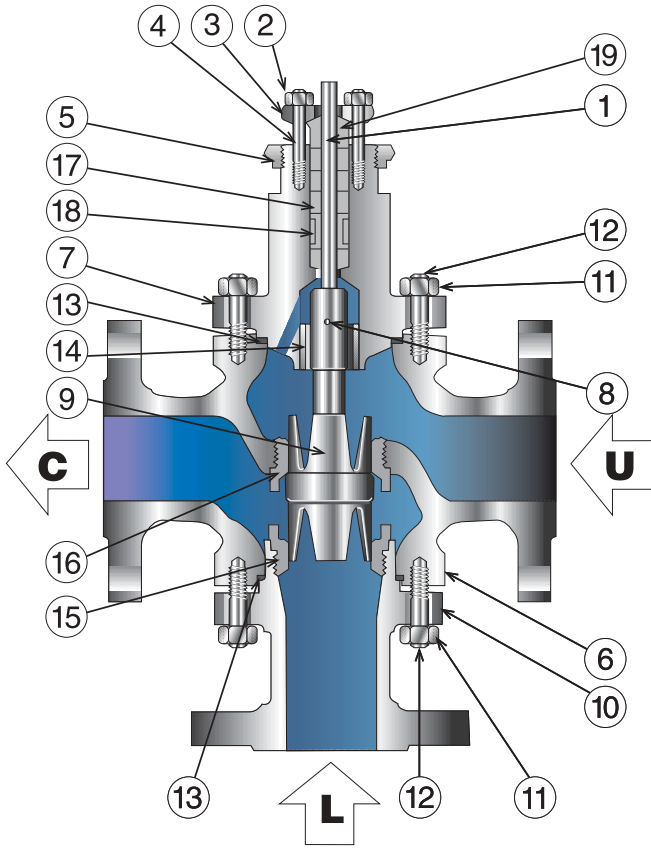
0% - Plug in Up Position
100% - Plug in Down Position

Valve Size*		Percent of Plug Travel																					
		Plug Up 0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		Plug Down 100%	
inches	mm																						
1	25	0	9	0.9	8.1	1.8	7.2	2.7	6.3	3.6	5.4	4.5	4.5	5.4	3.6	6.3	2.7	7.2	1.8	8.1	0.9	9	0
1.5	40	0	21	2.1	18.9	4.2	16.8	6.3	14.7	8.4	12.6	10.5	10.5	12.6	8.4	14.7	6.3	16.8	4.2	18.9	2.1	21	0
2	50	0	36	3.6	32.4	7.2	28.8	10.8	25.2	14.4	21.6	18.0	18.0	21.6	14.4	25.2	10.8	28.8	7.2	32.4	3.6	36	0
3	80	0	75	7.5	67.5	15	60	22.5	52.5	30	45	37.5	37.5	45	30	52.5	22.5	60	15	67.5	7.5	75	0
4	100	0	124	12.4	111.6	24.8	99.2	37.2	86.8	49.6	74.4	62	62	74.4	49.6	86.8	37.2	99.2	24.8	111.6	12.4	124	0
6	150	0	270	27	243	54	216	81	189	108	162	135	135	162	108	189	81	216	54	243	27	270	0
8	200	0	480	48	432	96	384	144	336	192	288	240	240	288	192	336	144	384	96	432	48	480	0
10	250	0	750	75	675	150	600	225	525	300	450	375	375	450	300	525	225	600	150	675	75	750	0

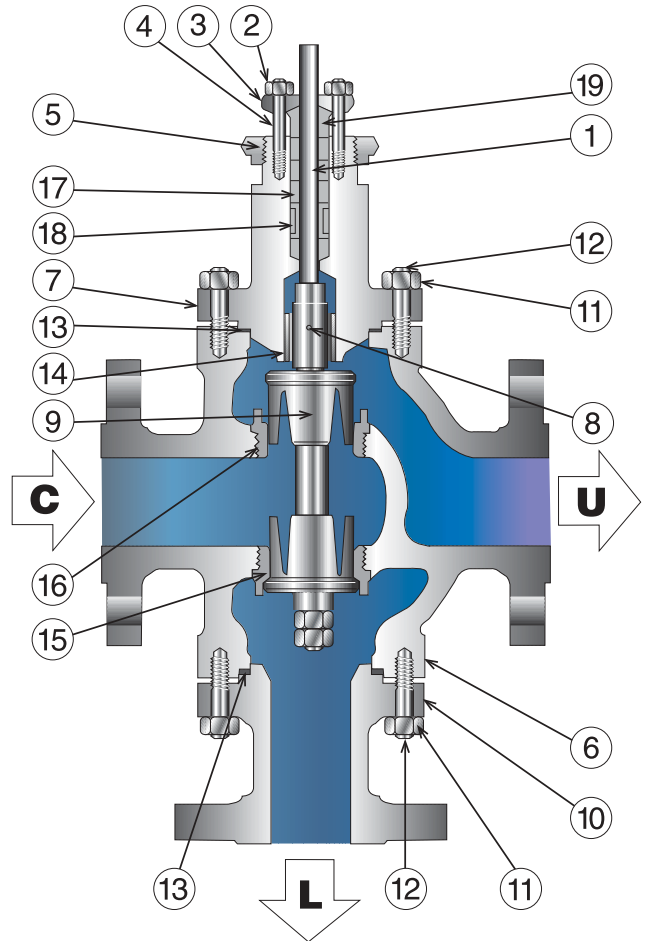
* 1" (25mm) size not available in 80386 version - Diverting Design.
Utilize combining design and consult factory for details.

80385 U to C L to C
80386 C to U C to L

Materials



80385 Combining

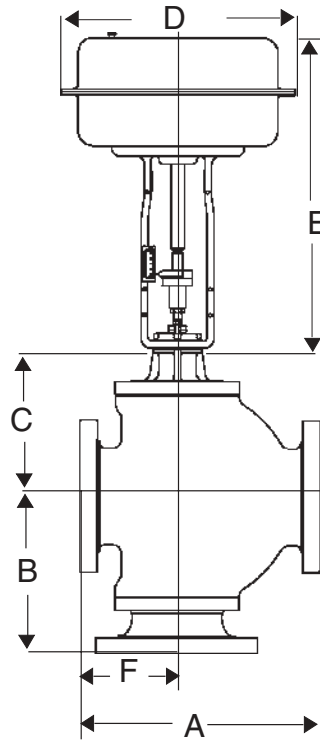


80386 Diverting

Materials

Ref. No.	Temperatures	-20°F (-29°C)	+450°F (+232°C)	+800°F (+427°C)	+850°F (+454°C)
	Description	Standard Materials			
1	Valve Plug Stem	316 Stainless Steel ASTM A479 TY 316			
2	Packing Flange Nut	304 Stainless Steel ASTM A194 Gr 8			
3	Packing Flange	303 Stainless Steel ASTM 582 TY 303			
4	Packing Flange Stud	304 Stainless Steel ASTM A193 Gr B8			
5	Drive Nut	Carbon Steel SAE 1117			
6	Body	Carbon Steel ASTM A216 Gr WCB			
		316 Stainless Steel ASTM A351 Gr CF8M			
7	Bonnet	Carbon Steel ASTM A216 Gr WCB			
		316 Stainless Steel ASTM A351 Gr CF8M			
8	Plug Pin	316 Stainless Steel ASTM A479 TY 316			
9	Valve Plug	316 Stainless Steel ASTM A479 TY 316 or ASTM A351 Gr CF8M			
10	Bottom Flange	Carbon Steel ASTM A216 Gr WCB			
		316 Stainless Steel ASTM A351 Gr CF8M			
11	Valve Body Stud Nuts	Alloy Steel ASTM A194 Gr 2H			
12	Valve Body Studs	Alloy Steel ASTM A193 Gr B7			
13	Valve Body Gasket	304 Stainless Steel w/Grafoil			
14	Guide Bushing	440C Stainless Steel ASTM A276 TY 440C			
15	Lower Seat Ring	316 Stainless Steel ASTM A479 TY 316			
16	Upper Seat Ring				
17	Packing	Crane 285K			
		Grafoil			
18	Packing Spacer	303 Stainless Steel ASTM A582 TY 303			
19	Packing Follower	303 Stainless Steel ASTM A582 TY 303			

Dimensions



80385 Series Dimensions
US Customary Units (inches)

Valve Size	A				B				C	F
	Threaded ¹	150# RF	300# RF	600# RF ²	Threaded ¹	150# RF	300# RF	600# RF ²	Std. Bonnet	
1	6.00	7.25	7.75	8.25	5.56	5.50	5.50	5.50	5.12	See Note 3
1.5	8.00	8.75	9.25	9.88	6.25	6.25	6.25	6.25	5.25	
2	9.25	10.00	10.50	11.25	6.62	6.62	6.62	6.62	6.25	
3	-	11.75	12.50	13.25	-	8.00	8.00	8.62	8.00	
4	-	13.88	14.50	15.50	-	9.00	9.00	10.12	8.38	
6	-	17.75	18.62	20.00	-	11.38	11.38	12.38	11.00	
8	-	21.38	22.38	24.00	-	13.25	13.25	14.25	12.62	
10	-	24.62	26.00	27.75	-	15.38	15.38	16.38	13.12	

Metric Units (mm)

Valve Size	A				B				C	F
	Threaded ¹	150# RF	300# RF	600# RF ²	Threaded ¹	150# RF	300# RF	600# RF ²	Std. Bonnet	
25	152	184	197	210	141	140	140	140	130	See Note 3
40	203	222	235	251	159	159	159	159	133	
50	235	254	267	286	168	168	168	168	159	
80	-	298	318	337	-	203	203	219	203	
100	-	353	368	394	-	229	229	257	213	
150	-	451	473	508	-	289	289	314	279	
200	-	543	568	610	-	337	337	362	321	
250	-	625	660	705	-	391	391	416	333	

Notes:

1. For Socket Weld End Connections Sizes 1", 1.5" and 2" (25, 40 and 50 mm) use Dimensions Shown for Threaded Ends.
2. For Butt Weld End Connections Sizes 3" to 10" (80 to 250 mm) use Dimensions Shown for 600# RF Ends.
3. For Design 80385, the F Dimension is equal to one-half the A Dimension.

80386 Series Dimensions

US Customary Units (inches)

Valve Size	A				B				C	F			
	BW/SW/THD ⁽¹⁾	ANSI CL 150 RF	ANSI CL 300 RF	ANSI CL 600 RF ²	BW/SW/THD ⁽¹⁾	ANSI CL 150 RF	ANSI CL 300 RF	ANSI CL 600 RF ²	Std. Bonnet	BW/SW/THD ⁽¹⁾	ANSI CL 150 RF	ANSI CL 300 RF	ANSI CL 600 RF ²
1.5	8.00	8.75	9.25	9.88	7.00	7.00	7.00	7.00	6.12	3.69	4.06	4.31	4.63
2	9.25	10.00	10.50	11.25	7.75	7.75	7.75	7.75	7.25	4.13	4.63	4.88	5.25
3	13.25	11.75	12.50	13.25	9.88	9.38	9.38	9.88	9.25	5.50	5.50	5.50	5.50
4	15.50	13.88	14.50	15.50	11.12	10.62	10.62	11.12	9.38	7.38	6.56	6.88	7.38
6	20.00	17.75	18.62	20.00	14.00	13.00	13.00	14.00	12.62	8.75	7.63	8.06	8.75
8	24.00	21.38	22.38	24.00	16.38	15.38	15.38	16.38	14.75	9.88	8.56	9.06	9.88
10	27.75	24.62	26.00	27.75	19.31	18.00	18.00	19.31	16.38	11.58	9.94	10.63	11.58

Metric Units (mm)

Valve Size	A				B				C	F			
	BW/SW/THD ⁽¹⁾	ANSI CL 150 RF	ANSI CL 300 RF	ANSI CL 600 RF ²	BW/SW/THD ⁽¹⁾	ANSI CL 150 RF	ANSI CL 300 RF	ANSI CL 600 RF ²	Std. Bonnet	BW/SW/THD ⁽¹⁾	ANSI CL 150 RF	ANSI CL 300 RF	ANSI CL 600 RF ²
40	203	222	235	251	178	178	178	178	155	94	103	109	118
50	235	254	267	286	197	197	197	197	184	105	118	124	133
80	337	298	318	337	251	238	238	251	235	140	140	140	140
100	394	353	368	394	282	270	270	282	238	187	167	175	187
150	508	451	473	508	356	330	330	356	321	222	194	205	222
200	610	543	568	610	416	391	391	416	375	251	217	230	251
250	705	625	660	705	490	457	457	490	416	294	252	270	294

Notes:

1. Socket Weld and Threaded End Connections available in sizes 1.5" and 2" (40 and 50 mm).
2. Butt Weld End Connections available in sizes 3" through 10" (80 to 250 mm).

87/88 Actuator Dimensions

Actuator Size	D		E	
	inches	mm	inches	mm
6	11.50	292	15.54	395
10	14.50	368	19.58	497
16	18.75	476	28.22	717
23	21.63	549	30.71	780

Weights

80385 and 80386 Valve Body Sub-Assembly

Valve Sizes*		ANSI 150 or 300 RF Flanged		ANSI 600 RF Flanged	
inches	mm	lbs	kg	lbs	kg
1	25	45	20	70	32
1.5	40	90	41	100	45
2	50	125	57	140	63
3	80	220	100	235	106
4	100	300	136	330	149
6	150	525	238	615	279
8	200	775	351	935	424
10	250	1720	779	2090	947

* 1" (25mm) size not available in 80386 version - Diverting Design

87/88 Actuator Sub-Assembly

Actuator Size	Standard		With Handwheel	
	lbs	kg	lbs	kg
6	45	20	60	27
10	85	39	105	48
16	210	95	245	111
23	265	120	320	145

Options

Extension Bonnets
Environmental Capabilities (LE Packing)
Lubricator & Isolation Valve
Other Flange Facings
Limit Stops
Body Drain Plug
Reducer and Nipple Connections
NACE Compliance
Custom Trim Materials
U.O.P. Trim Materials
Other Materials
Non-Destructive Examination
Oxygen Cleaning
Electric Actuators

For Accessories, consult Masoneilan.

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