

# Masoneilan® 80000 Series Three-Way Control Valves

Specification Data

CH7000

2/01

Combining  
and Diverting  
Service

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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.

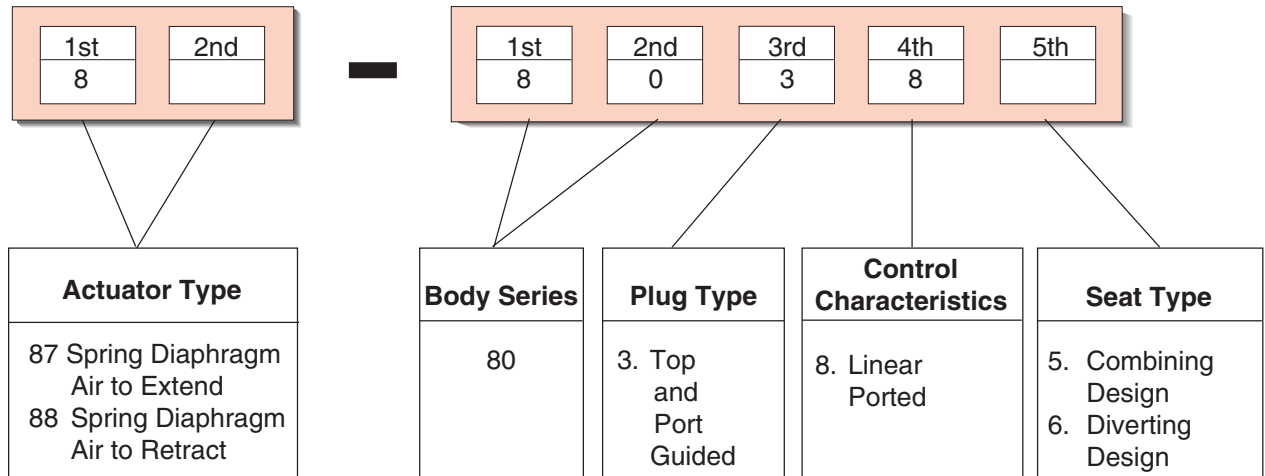
### Plug Design

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"/> <input checked="" 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 type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>

## General Data

- Body**

type: 3-way  
 flow direction: flow to open (both ports)  
 C<sub>v</sub> 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

## 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	1.500	38.1	21
2	50	2.000	50.8	36
3	80	2.625	67.7	75
4	100	3.500	88.9	124
6	150	5.250	133.4	270
8	200	7.000	177.8	480
10	250	8.750	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)

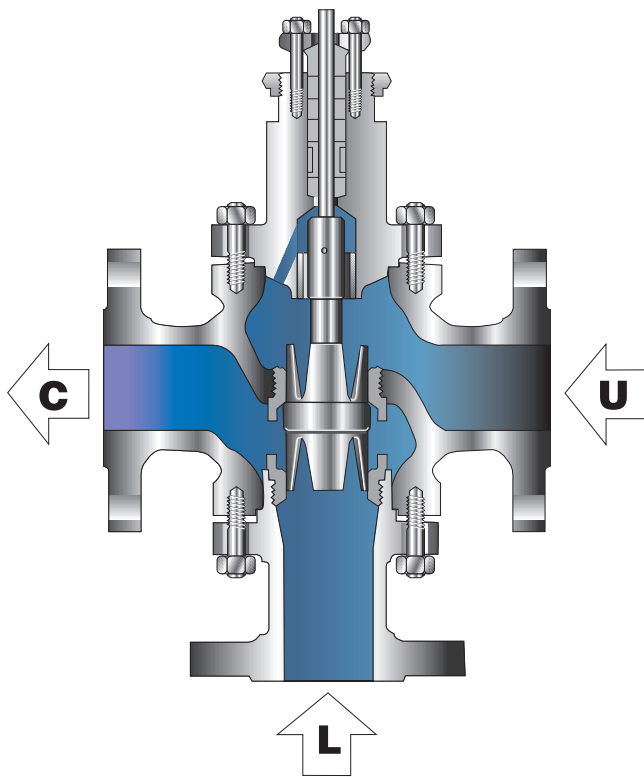
Seat Leakage: ANSI/FCI 70.2 and  
IEC 534-4, Class II\*\*  
Air to Extend or Air to Retract

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	11-19	30	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	11-23	35	2.4	502	35
2	50	1	25.4	2	50.8	36	10	11-19	30	2.1	268	18
							16	11-19	30	2.1	478	33
3	80	1.5	38.1	2.625	66.7	75	10	11-23	35	2.4	144	10
							16	11-23	35	2.4	266	18
							23	11-23	35	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	11-23	35	2.4	141	10
							23	11-23	35	2.4	221	15
6	150	2	50.8	5.25	133.4	270	16	11-23	35	2.4	54	3.7
							23	11-23	35	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	11-23	35	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	11-23	35	2.4	27	1.9

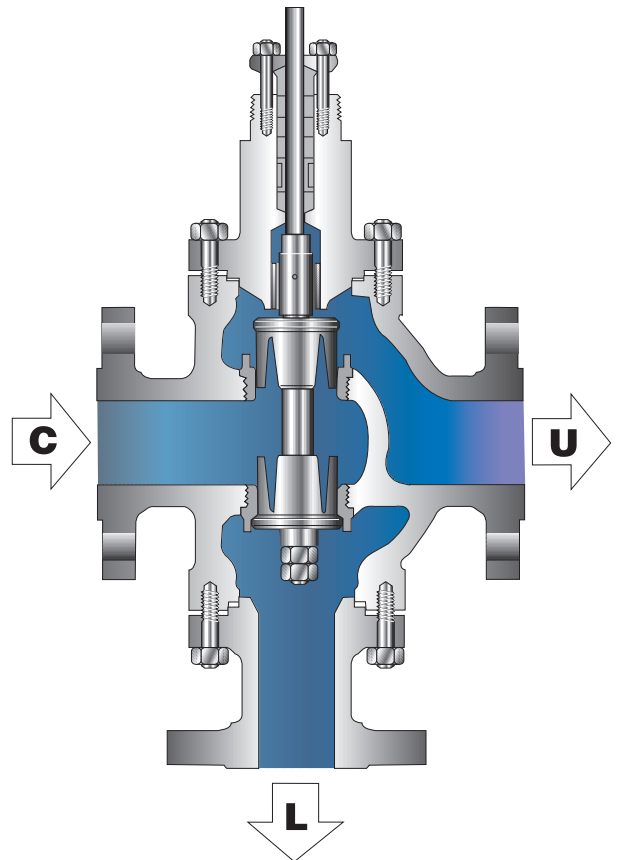
\* 1" (25mm) size not available in 80386 version - Diverting Design

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

# C<sub>v</sub> 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**

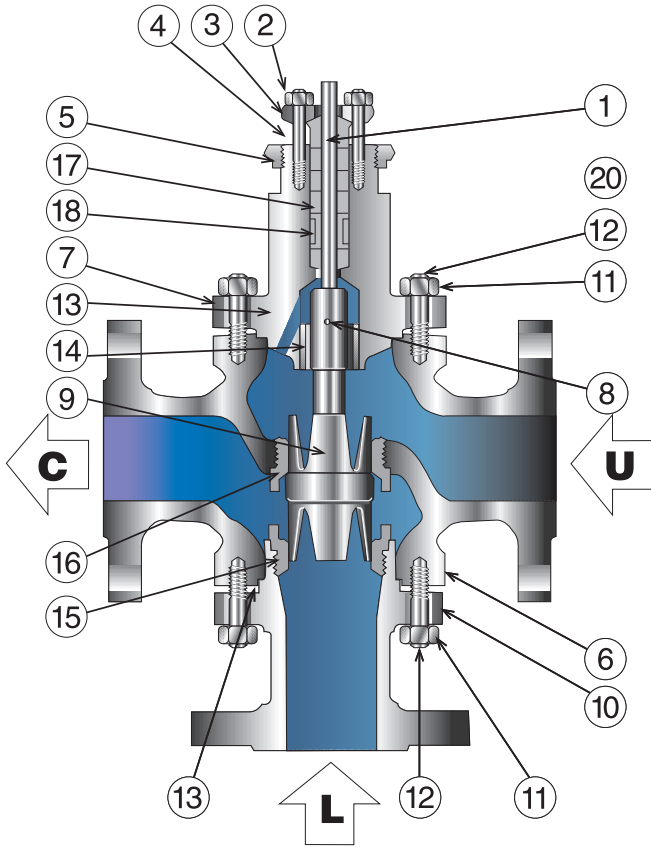
0% - Plug in Up Position

100% - Plug in Down Position

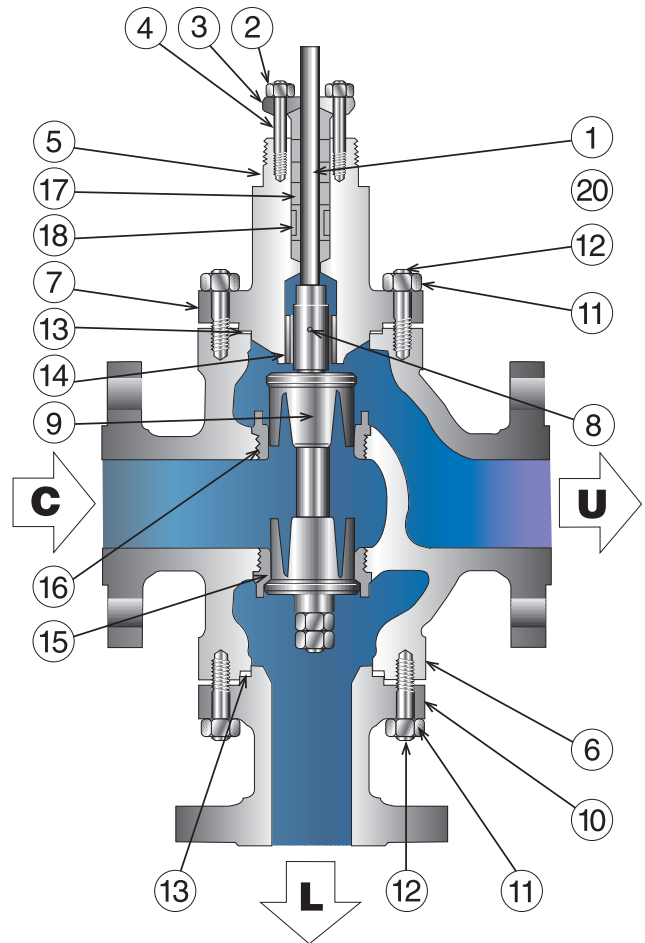
Valve Size*		Percent of Plug Travel																					
		Plug Up 0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		Plug Down 100%	
inches	mm																						
1	25	0	9	0.9	8.1	1.8	7.2	2.7	6.3	3.6	5.4	4.5	4.5	5.4	3.6	6.3	2.7	7.2	1.8	8.1	0.9	9	0
1.5	40	0	21	2.1	18.9	4.2	16.8	6.3	14.7	8.4	12.6	10.5	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

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



80385 Combining

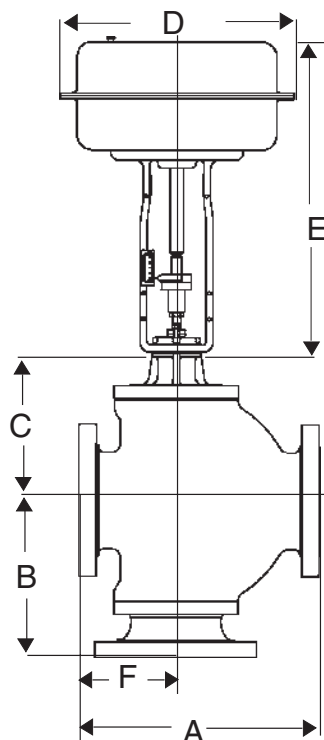


80386 Diverting

## 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 <sup>1</sup>	150# RF	300# RF	600# RF <sup>2</sup>	Threaded <sup>1</sup>	150# RF	300# RF	600# RF <sup>2</sup>	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 <sup>1</sup>	150# RF	300# RF	600# RF <sup>2</sup>	Threaded <sup>1</sup>	150# RF	300# RF	600# RF <sup>2</sup>	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			
	Threaded <sup>1</sup>	150# RF	300# RF	600# RF <sup>2</sup>	Threaded <sup>1</sup>	150# RF	300# RF	600# RF <sup>2</sup>	Std. Bonnet	Threaded <sup>1</sup>	150# RF	300# RF	600# RF <sup>2</sup>
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	-	11.75	12.50	13.25	-	9.38	9.38	9.88	9.25	-	5.50	5.50	5.50
4	-	13.88	14.50	15.50	-	10.62	10.62	11.12	9.38	-	6.56	6.88	7.38
6	-	17.75	18.62	20.00	-	13.00	13.00	14.00	12.62	-	7.63	8.06	8.75
8	-	21.38	22.38	24.00	-	15.38	15.38	16.38	14.75	-	8.56	9.06	9.88
10	-	24.62	26.00	27.75	-	18.00	18.00	19.31	16.38	-	9.94	10.63	11.58

Metric Units (mm)

Valve Size	A				B				C	F			
	Threaded <sup>1</sup>	150# RF	300# RF	600# RF <sup>2</sup>	Threaded <sup>1</sup>	150# RF	300# RF	600# RF <sup>2</sup>	Std. Bonnet	Threaded <sup>1</sup>	150# RF	300# RF	600# RF <sup>2</sup>
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	-	298	318	337	-	238	238	251	235	-	140	140	140
100	-	353	368	394	-	270	270	282	238	-	167	175	187
150	-	451	473	508	-	330	330	356	321	-	194	205	222
200	-	543	568	610	-	391	391	416	375	-	217	230	251
250	-	625	660	705	-	457	457	490	416	-	252	270	294

**Notes:**

1. For Socket Weld End Connections Sizes 1.5" and 2" (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.

## 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*		150# or 300# RF Flanged		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

## Accessories

Side Mounted Handwheels  
For 87/88 Actuators  
(See Specification Data CR8788)

4700 P Series Pneumatic Positioner  
Instrument signals     0.2-1 and 0.4-2 bar  
                                  3-15 and 6-30 psig  
(See Specification Data CS2007)

4700 E Series Electropneumatic Positioners  
(See Specification Data CS2007)  
8012 and 8013 Series  
Electropneumatic Positioners  
Input range     4-20 mA  
                          Split range

7000 Electropneumatic (I/P) Transducer  
Input range     4-20 mA  
                          Split range  
Output           0.2-1 bar, adjustable  
                          0.4-2 bar, adjustable  
                          3-15 psi, adjustable  
                          6-30 psi, adjustable  
(See TS-Model 7000)

Smart Valve Interface (SVI®)  
Smart Positioner and Smart Valve  
Process Controller  
Input range     4-20 mA  
                          Split range  
HART Communication  
(See Manual EW2000)

ValVue Software  
Calibration, Configuration, Diagnostic, and  
Operator Interface Tool  
(See Manual EW1000)

2700 Controllers  
(See Specification Data CW6000)

77-4 or 77-40 Airset  
(See Specification Data CY7700)  
80-4 or 80-40 Airset  
(See Specification Data CY7800)  
77-6 or 77-60 Lockup Valve  
2" Gauge 0-2 bar

496 Rotary Electric Switches  
(See Specification Data CS7000 E)  
496-1 (1-Switch SPDT)  
496-2 (2-Switches SPDT)  
496-3 (Potentiometer Position Transmitter)  
496-6 (1-Switch DPDT)  
496-7 (2-Switches DPDT)  
496-8 Opto-Electronic Position Transmitter  
(See Specification Data CS7050 E)

Other Limit Switches

Solenoid Valves

### 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 additional Accessories and Options,  
consult Masoneilan.**

# Sales Offices and Distribution Centers

## AUSTRIA

Dresser Valves Europe  
Hans Kudlich-Strasse 35  
A2100 Korneuburg (b. Wien), Austria  
Phone: 43-2262-63689  
Fax: 43-2263-68915

## BELGIUM

Dresser Valves Europe  
281-283 Chaussee de Bruxelles  
281-283 Brusselsesteenweg  
1190 Brussels, Belgium  
Phone: 32-2-344-0970  
Fax: 32-2-344-1123

## BRAZIL

Dresser Industria E Comercio Ltda  
Divisao Masoneilan  
Rua Senador Vergueiro, 433  
09521-320 Sao Caetano Do Sul  
Sao Paulo, Brazil  
Phone: 55-11-453-5511  
Fax: 55-11-453-5565

## CANADA

Alberta  
Valve Division  
Dresser Canada, Inc.  
333 - 5th Avenue S.W.  
Calgary, Alberta T2P 3B6  
Canada  
Phone: 403-290-0001  
Fax: 403-290-1526

Ontario  
Valve Division  
Dresser Canada, Inc.  
5010 North Service Road  
Burlington, Ontario L7L 5R5  
Canada  
Phone: 905-335-3529  
Fax: 905-336-7628

## CHINA

Dresser Valve Division  
Suite 2403, Capital Mansion  
6 Xinyuannan Road  
Chao Yang District  
Beijing 100040  
China  
Phone: 86-10-6466-1164  
Fax: 86-10-6466-0195

## FRANCE

Dresser Produits Industriels  
Division Masoneilan  
4 Place de Saverne  
92400 Courbevoie  
France  
Mailing Address:  
92971 Paris La Defense Cedex  
France  
Phone: 33-1-49-04-90-00  
Fax: 33-1-49-04-90-10

## GERMANY

Dresser Valves Europe  
Klein-Kollenburg-Strasse 78-80  
47877 Willich, Germany  
Mailing Address:  
P.O. Box 1208  
47860 Willich, Germany  
Phone: 49-2156-9189-0  
Fax: 49-2156-41058

## INDIA

Dresser Valve India Pvt. Ltd.  
305-306 "Midas" - Sahar Plaza  
Mathurdas Vasranji Road  
J.B. Nagar - Andheri East  
Mumbai, India 400 059  
Phone: 91-22-835-4790  
Fax: 91-22-835-4791

## ITALY

Dresser Italia S.p.A.  
Masoneilan Operation  
Via Cassano, 77  
80020 Casavatore (Naples), Italy  
Phone: 39-81-7892-111  
Fax: 39-81-7892-208

## JAPAN

Niigata Masoneilan Company, Ltd.  
20th Floor, Marive East Tower  
WBG 2-6 Nakase, Mihama-Ku  
Chiba-shi, Chiba 261-7120, Japan  
Phone: 81-43-297-9222  
Fax: 81-43-299-1115

## KOREA

Dresser Korea, Inc.  
#2107 Kuk Dong Building  
60-1, 3-Ka, Choongmu-ro  
Chung-Ku, Soeul - 100705  
Korea  
Phone: 82-2-274-0792  
Fax: 82-2-274-0794

## KUWAIT

Dresser Valve Division  
P.O. Box 242  
Safat 13003, Kuwait  
Courier:  
Flat No. 36, Floor 8  
Gaswa Complex, Mahboula  
Kuwait  
Phone: 965-9061157

## MEXICO

Dresser Valve de Mexico, S.A. de C.V.  
Henry Ford No. 114, Esq. Fulton  
Fraccionamiento Industrial San Nicolas  
54030 Tlalnepantla Estado de Mexico  
Phone: 52-5-310-9863  
Fax: 52-5-310-5584

## THE NETHERLANDS

Dresser Valves Europe  
Steenhouwerstraat 11  
3194 AG Hoogvliet  
The Netherlands  
Mailing Address:  
P.O. Box 640  
NL - 3190 AN Hoogvliet RT  
The Netherlands  
Phone: 31-10-438-4122  
Fax: 31-10-438-4443

## SINGAPORE

Dresser Singapore Pte Ltd  
Valve Division  
16, Tuas Avenue 8  
Singapore 639231  
Phone: 65-861-6100  
Fax: 65-861-7172

## SOUTH AFRICA

Dresser Ltd, South Africa Branch  
Valve Division  
P.O. Box 2234, 16 Edendale Road  
Eastleigh, Edenvale 1610  
Republic of South Africa  
Phone: 27-11-452-1550  
Fax: 27-11-452-6542

## SPAIN

Masoneilan, S.A.  
Zona Franca  
Sector M., Calle Y  
08040 Barcelona, Spain  
Phone: 34-93-223-4175  
Fax: 34-93-223-4754

## SWITZERLAND

Dresser Europe sa  
Frauentalweg 76  
CH-8045 Zurich, Switzerland  
Mailing Address:  
P.O. Box 3568  
CH-8021 Zurich, Switzerland  
Phone: 41-1-450 28 91  
Fax: 41-1-450 28 95

## UNITED ARAB EMIRATES

Dresser Valve Division  
Post Box 61302  
Jebel Ali Free Zone  
United Arab Emirates  
Courier:  
Units Nos. JAO1 + JAO2  
Roundabout 8  
Jebel Ali Free Zone  
United Arab Emirates  
Phone: 971-4-838-752  
Fax: 971-4-838-038

## UNITED KINGDOM

Valve Division  
Dresser U.K. Limited  
Trevithick Works  
Gillibrands Estate, Skelmersdale  
Lancashire WN8 9TU, England  
United Kingdom  
Phone: 44-1695-52600  
Fax: 44-1695-52662

Valve Division  
U.K. Southern Sales Office  
Unit 5, Brook Business Centre  
Cowley Mill Road, Uxbridge  
Middlesex UB8 2FX, England  
United Kingdom  
Phone: 44-1895-454900  
Fax: 44-1895-454919

## UNITED STATES

Northern Region  
Valve Division  
Dresser Equipment Group, Inc.  
85 Bodwell Street  
Avon, MA 02322-1190  
Phone: 508-586-4600  
Fax: 508-427-8971

Southern Region  
Valve Division  
Dresser Equipment Group, Inc.  
11100 West Airport Blvd.  
Stafford, TX 77477-3014  
Phone: 281-568-2211  
Toll Free: 800-847-1099  
Fax: 281-568-1414