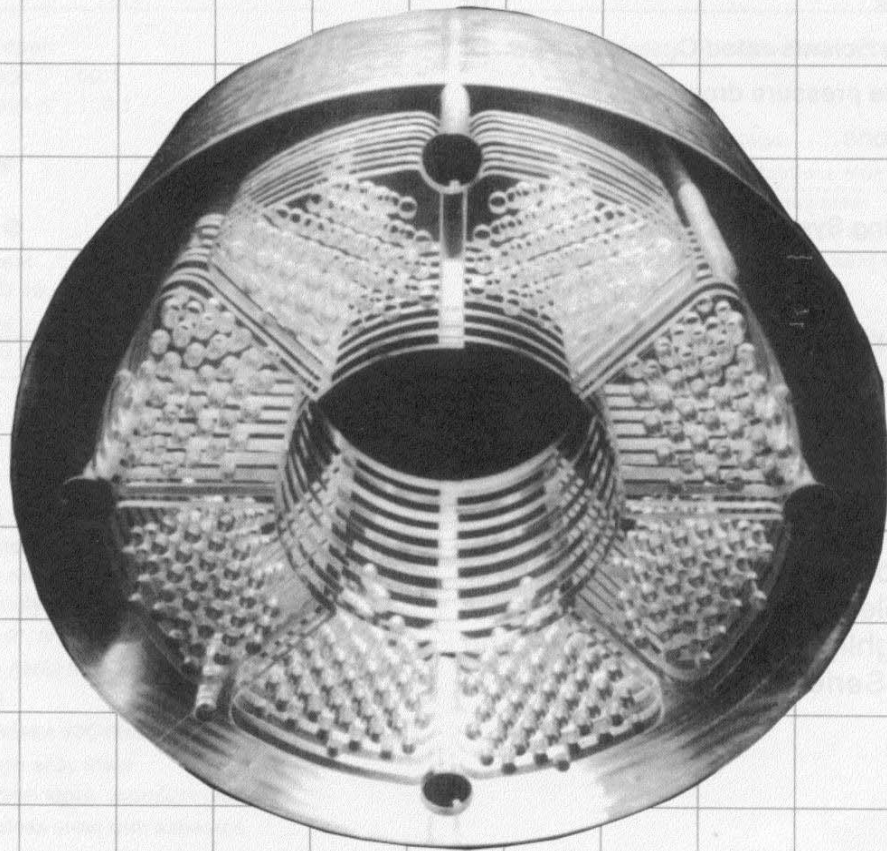


High Pressure Anti-Cavitation Valves featuring Variable Resistance Trim



Masoneilan

DRESSER

Table of contents and foreword

79000 Series Valves

Specifications	3
Materials.....	4
Flow coefficients-rated C_v	6
Allowable pressure drops	6
Numbering system	7
Dimensions and weights	8
41017 and 41037 Series Valves	
Specifications	9
Materials.....	10
Flow coefficients-rated C_v	12
Allowable pressure drops	13
Dimensions.....	14
Weights.....	15
Numbering System.....	15

Foreword

These specifications have been assembled to provide technical information required for specifying valves featuring Variable Resistance Trim. A companion Bulletin (No. 386E) is available to explain design concepts and highlight the many 41000 and 79000 Series features.

79000 Series specifications

VRT - The 79000 Series Valves

Valve Size (in)	ANSI Class			
	600	900	1500	2500
1	•	•	•	•
1 1/2	•	•	•	•
2	•	•	•	•
3	•	•	•	•
4	•	•	•	•
6	•	•	•	•

general data

flow direction : flow-to-open

Cv ratio : 1" through 2" ; 50:1

3" through 6" ; 100:1

maximum fluid

temperature : + 450° F

minimum fluid

temperature : - 20° F ❶

seat leakage : metal seat

ANSI B 16. 104, Class V

soft seat

ANSI B 16. 104, Class VI

trim

type : multi-plate, Variable Resistance

Trim

flow

characteristic : modified percentage

materials : plug; type 440 C stainless steel

stem; 17-4 PH stainless steel

multi-plate stack; type 410 stainless steel

seat ring; stainless steel, hard faced with

optional Teflon insert

body

type : forged angle

materials : carbon steel

stainless steel

chrome molybdenum

sizes : 1", 1 1/2", 2", 3", 4", 6"

connections : mates to ANSI flanges

butt weld

ratings : ANSI Classes 600 through 2500

bolting material : studs; high alloy steel

nuts; carbon steel, cadmium plated

gaskets : 304 stainless steel with asbestos

filler

seals : carbon - graphite filled Teflon –

spring energized

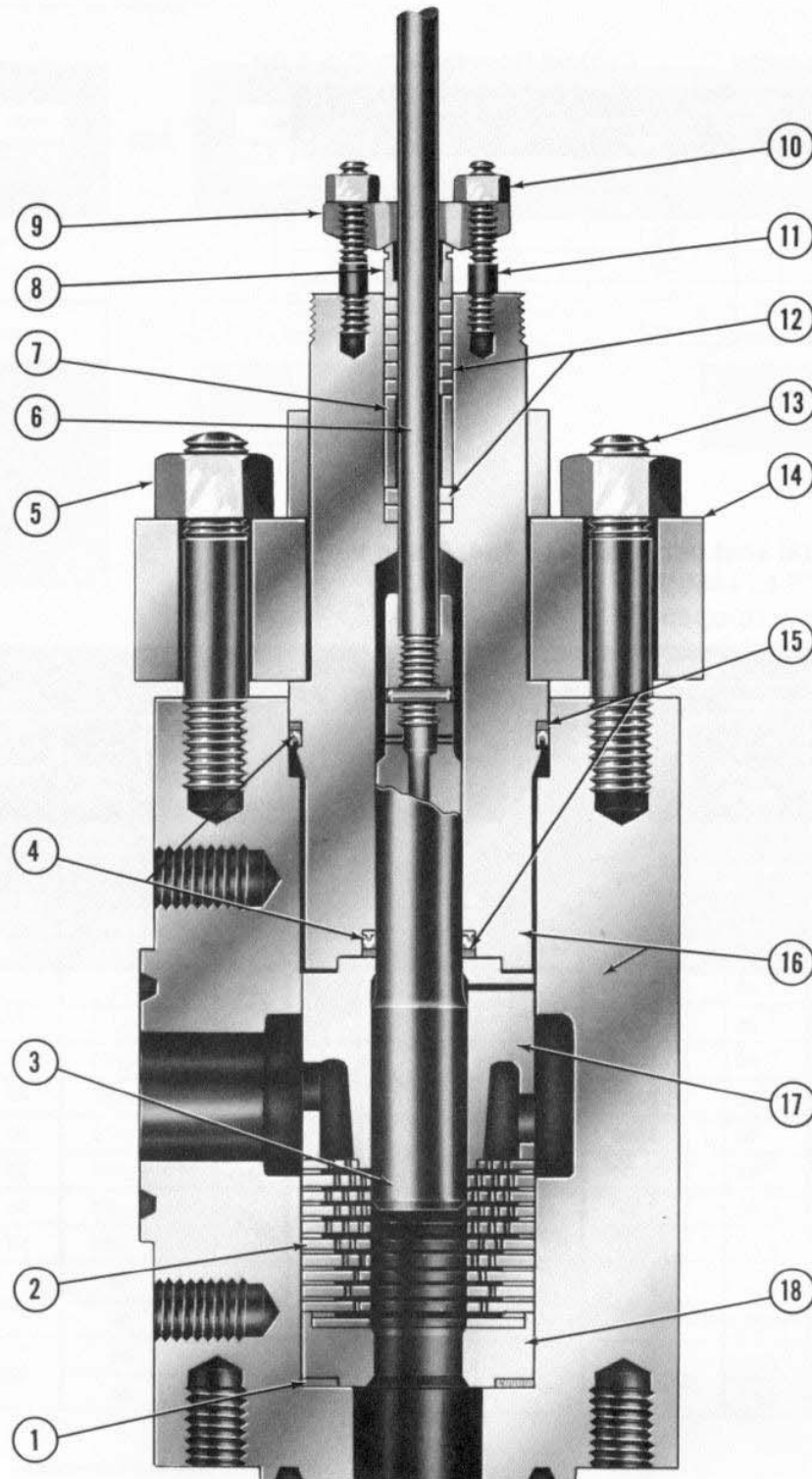
packing : Teflon jacketed asbestos

guide : 440C stainless steel

❶ Consult Masoneilan for lower temperature service.

79000 Series materials

Part No.	Temperature	
	-20° F	450° F
	Part Name	Standard Materials
1	Gaskets	304 stainless steel with asbestos filler
2	VRT Plate Assembly	ASTM A176 Ty 410
3	Plug	ASTM A276 Ty 440-C, hardened
4	Seals	Carbon-graphite filled Teflon – spring energized
5	Nuts	ASTM A194 GR 2-H, cadmium plated
6	Stem	ASTM A564 GR 630 Condition H1075
7	Packing Spacer	ASTM A582 Ty 303
8	Packing Follower	ASTM A582 Ty 303
9	Packing Flange	ASTM A108 GR B1213
10	Packing Flange Nuts	ASTM A194 GR8
11	Packing Flange Studs	ASTM A193 GR B7
12	Packing	Teflon jacketed asbestos
13	Studs	ASTM A193 GR B7
14	Bonnet Flange (2" to 6")	ASTM A515 GR 70
15	Backup Rings	Teflon (virgin)
16	Body and Bonnet	ASTM A105 – 73 (carbon steel)
		ASTM A 182 GRF-5 (5% chrome, 0.5% moly)
		ASTM A 182 GRF316 (stainless steel)
17	Cage	1" to 2"; ASTM A582 Ty 416
		3" to 6"; ASTM A487 GR CA6NM
18	Seat Ring	Stainless steel, hard faced – optional with Teflon insert



79000 Series flow coefficients (rated C_v) and allowable pressure drops

Flow coefficients; rated C_v Critical flow factor; $C_f = 1.00$

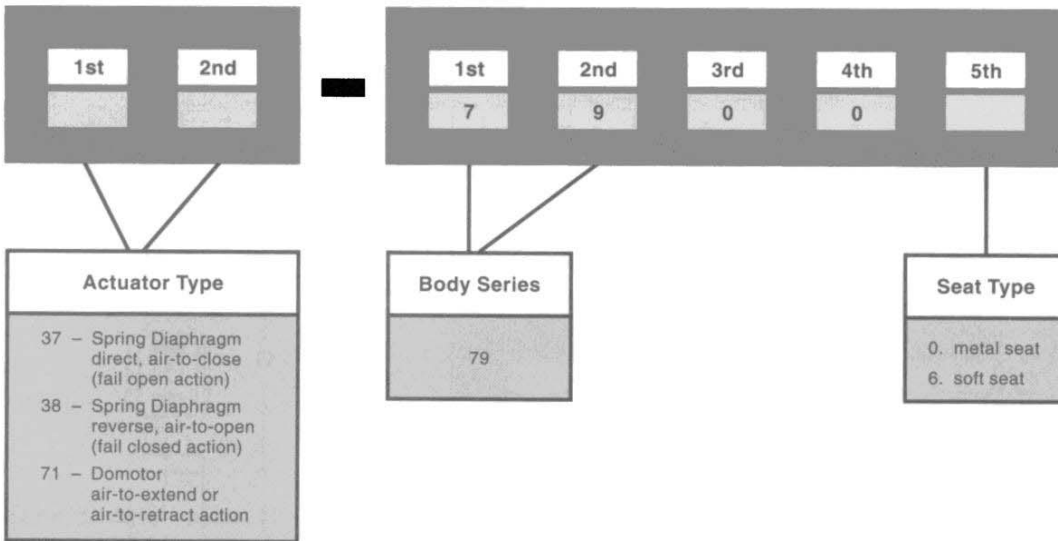
Valve Size (in)	Stroke (in)	Full Area		Reduced Area	
		C_v	C_v Ratio	C_v	C_v Ratio
1	1.25	2.0	50:1	1.0	50:1
1 1/2	1.50	4.5	50:1	2.3	50:1
2	2.00	14.0	50:1	7.5	80:1
3	2.25	35.0	100:1	17.5	100:1
4	2.50	50.0	100:1	27.0	100:1
6	3.00	105.0	100:1	52.0	100:1

Seat leakage : metal seat per ANSI B16.104, Class V
 Temperature : -20°F to +450°F
 Flow direction : flow-to-open

Valve Size (in)	Spring Diaphragm Actuator								Domotor					
	Air-To-Close				Air-To-Open				Hand-wheel					
	Act. Size	Spring Range (psig)	Supply (psig)	Allow. Press. Drop (psi) ①	Act. Size	Spring Range (psig)	Allow. Press. Drop (psi) ①	Act. Size		Supply (psig)	Preload (psig)	Allow. Press. Drop (psi) ①	Hand-wheel	
1	15	3-13	40	6000	15	13-27	5100	6A3	B	70	60	6000	B	
			30	4000										
1 1/2	15	3-12	55	6000	18 (20")	20-26	6000	6A3	C	75	65	6000	C	
			35	2600										
2	18	3-11	40	6000	18 (20")	18-30	6000	6A3	C	65	55	6000	C	
			25	2400										
3	18	3-14	60	5000	18 (20")	15-29	2000	6A3	D	70	60	6000	D	
			40	2300						50	40	3500		
4	18	3-15	60	4500	18 (20")	15-30	2000	6A3	D	70	60	6000	D	
			40	2000						45	35	3000		
6	18 (16")	3-13	60	3000	18 (20")	13-30	800	8-A	D	95	85	6000	D	
			40	1250						60	50	3000		

① Inlet pressure must not exceed the ANSI body rating.

79000 Series numbering system and allowable pressure drops

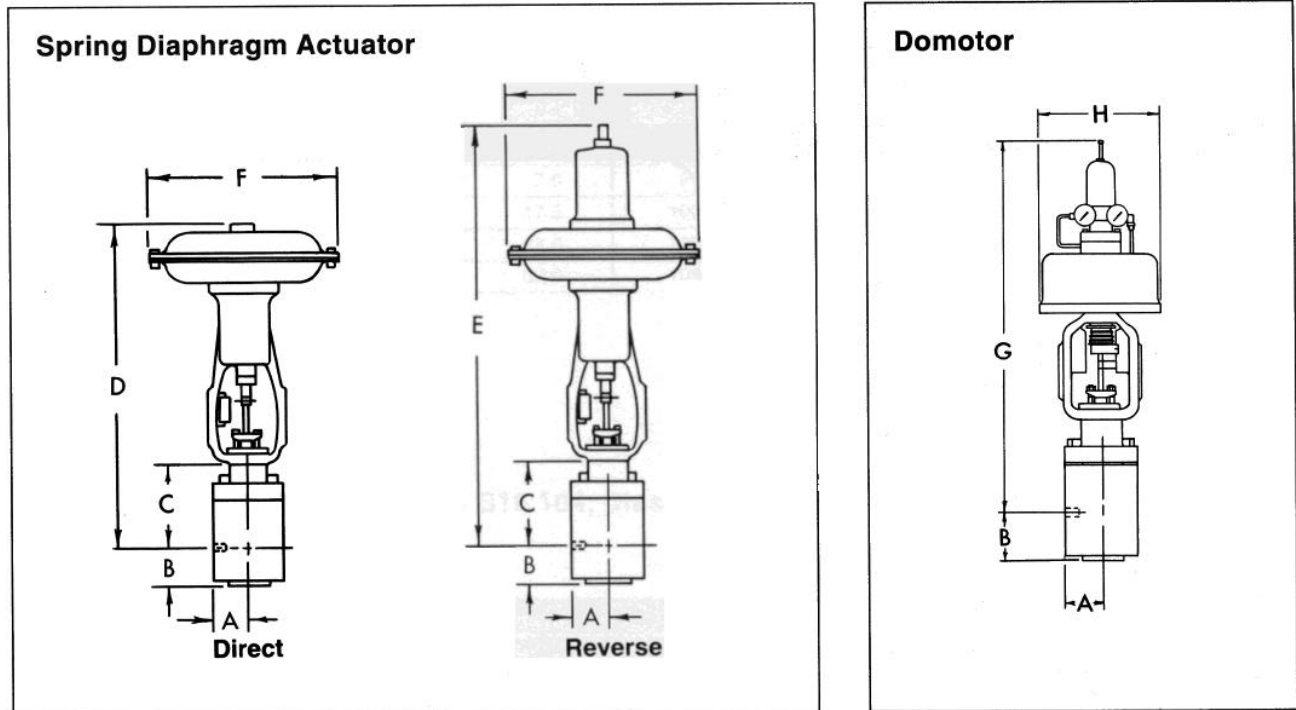


Seat leakage : soft seat per ANSI B16.104, Class VI
Temperature : -20°F to +450°F
Flow direction : flow-to-open

Valve Size (in)	Spring Diaphragm Actuators								Domotor				
	Air-To-Close				Air-To-Open				Hand-wheel				
	Act. Size	Spring Range (psig)	Supply (psig)	Allow. Press. Drop (psi) ①	Act. Size	Spring Range (psig)	Allow. Press. Drop (psi) ①	Act. Size		Supply (psig)	Preload (psig)	Allow. Press. Drop (psi)	Hand-wheel
1	15	3-13	40	6000	15	13-27	4000	6A3	B	75	65	6000	B
1 1/2	15	3-12	60	6000	18 (20")	20-26	5900	6A3	C	80	70	6000	C
			35	2250									
2	18	3-11	40	6000	18 (20")	18-30	5700	6A3	C	65	55	6000	C
			25	2400									
3	18 (16")	3-11	60	5000	18 (20")	15-29	1600	6A3	D	70	60	6000	D
			40	2300						45	35	3000	
4	18 (16")	3-11	60	4500	18 (20")	15-30	1500	6A3	D	75	65	6000	D
			40	2300						50	40	3000	
6	18 (16")	3-13	60	2500	18 (20")	13-30	500	8-A	D	100	90	5400	D
			40	1000						70	60	3000	

① Inlet pressure must not exceed the ANSI body rating.

79000 Series dimensions and weights



Dimensions (in.)

Dimensions for butt weld construction on request

Valve Size (in)	ANSI Class	A	B	C	Spring Diaphragm Actuators					Domotor				
					Size	Air-To-Close		Air-To-Open		F	Series	G	H	Shipping Wt. (lbs) ①
						D	Shipping Wt. (lbs) ①	E	Shipping Wt. (lbs) ①					
1	600-2500	2.8	4.6	7.2	15	32.6	210	42.5	235	17.5	B	26.9	9.3	105
1 1/2	600-2500	3.3	4.6	8.7	15	34.1	300	-	-	17.5	C	34.0	12.5	225
					18 (20")	-	-	44.0	575	20.8				
2	600-2500	4.4	6.0	10.9	18	37.7	490	-	-	20.8	C	36.2	12.5	355
					18 (20")	-	-	62.9	700					
3	600-2500	6.1	7.9	11.8	18	38.6	825	-	-	20.8	D	51.3	18.0	815
					18 (16")	45.0	840	-	-					
					18 (20")	-	-	63.8	1035					
4	600-2500	7.1	8.9	13.4	18	40.2	1155	-	-	20.8	D	52.9	18.0	1145
					18 (16")	46.6	1170	-	-					
					18 (20")	-	-	65.4	1365					
6	600-2500	9.0	12.0	18.9	18 (16")	52.1	2560	-	-	20.8	D	58.9	18.0	2535
					18 (20")	-	-	70.9	2755					

① Approximate weight including valve.

14017 and 41037 Series specifications

41017 Series Valves

Valve Size (in)	ANSI Class				
	300	600	900	1500	2500
8	•	•	•	•	•
10	•	•	•	•	
12	•	•	•		

41037 Series Valves

Valve Size (in)	ANSI Class				
	300	600	900	1500	2500
6	•	•	•	•	•
8	•	•	•	•	•
10	•	•	•	•	
16	•	•	•		

general data

flow direction : flow-to-open

Cv ratio : 41017

8"; 80:1

10", 12"; 100:1

41037

100:1

maximum fluid

temperature : + 450° F

minimum fluid

temperature : - 20° F ❶

seat leakage : ANSI B16. 104, Class V

10"; ANSI Class 300 through 1500

16"; ANSI Class 300 through 900

bolting material : studs; high alloy steel

nuts; carbon steel, cadmium

plated

gaskets : 304 stainless steel with asbestos

filler

seals : carbon-graphite filled Teflon –

spring energized

packing : Crane 285

guide bushing : Type 440C stainless steel

body

type : cast, high capacity globe

materials : carbon steel

stainless steel

chrome molybdenum

sizes : 6", 8", 10", 12", 16"

connections : flanged

butt weld

ratings : 41017

8"; ANSI Class 300 through 2500

10"; ANSI Class 300 through 1500

12"; ANSI Class 300 through 900

41037

6" and 8"; ANSI Class 300

through 2500

trim

type : multi-plate, Variable Resistance

Trim

flow

characteristic : 41017; linear

41037; modified percentage

materials : plug

41017; 440C stainless steel

41037; (6") 440C stainless steel

(8"-16") 17-4 PH stainless steel

stem; 17-4 PH stainless steel

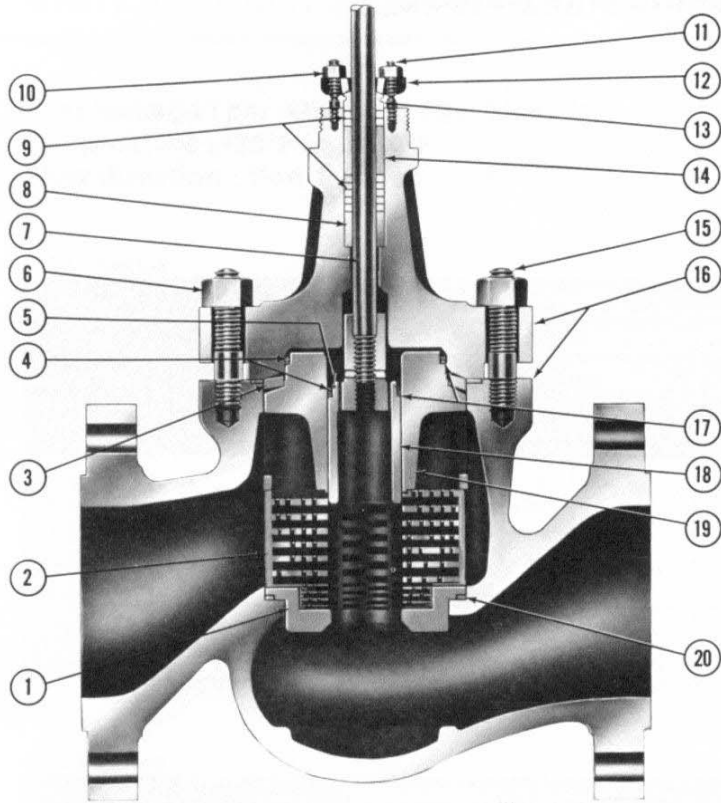
multi-plate stack; type 410 stainless steel

seat ring; stainless steel, hard faced

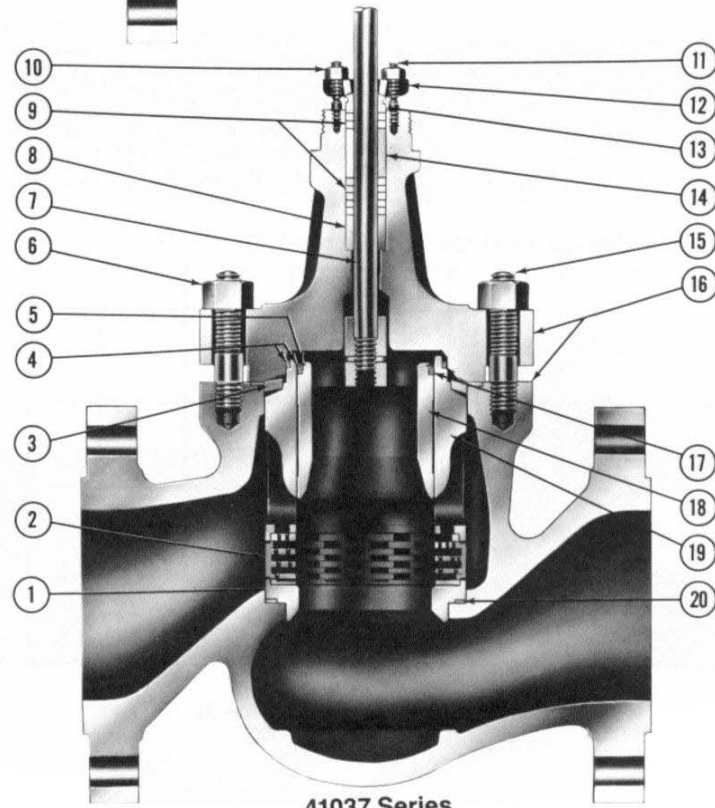
❶ Consult Masoneilan for lower temperature services.

41017 and 41037 Series valve materials

Part No.	Temperature	
	-20° F	450° F
	Part Name	Standard Materials
1	Seat Ring	316 stainless steel-hard faced
2	VRT Disc Assembly	ASTM A176 Ty 410
3	Flat Spring	ASTM A564 GR 630
4	Seals	Carbon-graphite filled Teflon – spring energized
5	Retaining Ring	ASTM A313
6	Nuts	ASTM A194 GR 2H
7	Stem	ASTM A564 GR 630 Condition H1075
8	Guide Bushing	ASTM A276 Ty 440
9	Packing	Crane 285
10	Packing Flange Nuts	ASTM A194 GR8
11	Packing Flange Stud	ASTM A193 GR B8
12	Packing Flange	ASTM A108 GR B1213
13	Packing Follower	ASTM A582 Ty 303
14	Packing Spacer	ASTM A582 Ty 303
15	Studs	ASTM A193 GR B7
16	Body and Bonnet	ASTM A216 GR WCB (carbon steel) ASTM A217-C5 (chrome-molybdenum steel) ASTM A351 GR CF8M (stainless steel)
17	Back-up Ring	Teflon (virgin)
18	Plug	ASTM A276 Ty 440-C ASTM ACI-CB-7CU Cond. 1075 (for 41037 Series 8" through 16")
19	Cage	ASTM A 487 GR CA6NM
20	Gaskets	Spiral wound Ty 304 stainless steel with asbestos filler



41017 Series



41037 Series

41017 and 41037 Series flow coefficients (rated C_v)

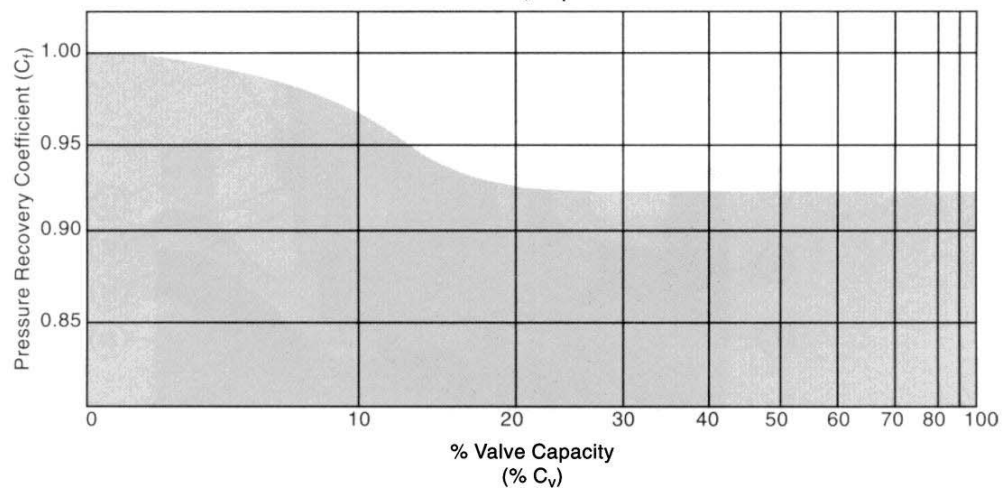
41017 Series flow coefficients; rated C_v
Critical flow factor; $C_f = 1.0$

Valve Size (in)	Stroke (in)	C_v	C_v Ratio
8	4	130	80:1
10		210	100:1
12		305	100:1

41037 Series flow coefficients; rated C_v

Valve Size (in)	Stroke (in)	C_v	C_v Ratio
6	3	235	100:1
8	4	460	
10	4	700	
16	6	1800	

41037 Series critical flow factor; C_f



41017 and 41037 Series allowable pressure drops

Seat leakage : per ANSI B16.104, Class V
Temperature : -20°F to +450°F
Flow direction : flow-to-open

41017 Series

Valve Size (in)	Spring Diaphragm Actuators								Domotors				
	Air-To-Close				Air-To-Open				Hand-wheel				
	Act. Size	Spring Range (psig)	Supply (psig)	Allow. Press. Drop (psi) ①	Act. Size	Spring Range (psig)	Allow. Press. Drop (psi) ①	Act. Size		Supply (psig)	Preload (psig)	Allow. Press. Drop (psi) ①	Hand-wheel
8	18-L (16")	6-30	60	3750	18 (20")	9-33	2600	8-A	D	45	35	6000	D
10	18-L (16")	6-30	55	3100	18 (20")	9-33	1800 3100 ②	8-A	D	35	25	3750	D
12	18-L (16")	6-30	55	2250	18 (20")	9-33	2250 ②	8-A	D	30	20	2250	D

41037 Series

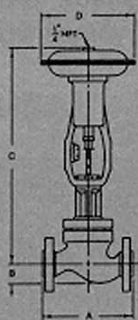
Valve Size (in)	Spring Diaphragm Actuators								Domotors				
	Air-To-Close				Air-To-Open				Hand-wheel				
	Act. Size	Spring Range (psig)	Supply (psig)	Allow. Press. Drop (psi) ①	Act. Size	Spring Range (psig)	Allow. Press. Drop (psi) ①	Act. Size		Supply (psig)	Preload (psig)	Allow. Press. Drop (psi) ①	Hand-wheel
6	18-L (16")	8-30	55	4100	18 (20")	13-30	3700	8-A	D	50	40	6000	D
8	18-L (16")	6-30	60	3750	18 (20")	9-33	2500 ②	8-A	D	50	40	6000	D
10	18-L (16")	6-30	60	3750	18 (20")	9-33	2200 ②	8-A	D	35	25	3750	D
16	-	-	-	-	-	-	-	-	D	40	30	2250	D

① Inlet pressure must not exceed the ANSI body rating.

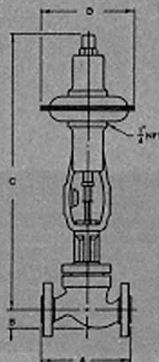
② ANSI B16.104, Class IV Leakage Only.

41017 and 41037 Series dimensions

Spring Diaphragm Actuator

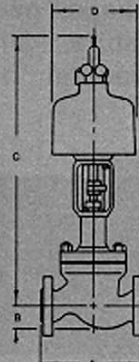


Direct



Reverse

Domotor



All dimensions in inches

Valve Size	A								B				
	Flanged				Butt-weld				Flanged or Butt-weld				
	ANSI Class				ANSI Class				ANSI Class				
	300	600	900	1500	600	900	1500	2500	300	600	900	1500	2500
6	18.64	20.00	28.12	30.24	20.00	30.24	30.24	30.00	6.20	6.20	6.50	6.50	9.88
8	22.36	24.00	36.00	38.24	24.00	38.24	38.24	37.50	7.60	7.60	8.10	8.10	10.00
10	27.88	29.62	①	①	29.62	46.00	46.00	-	9.20	9.20	9.00	10.00	-
12	30.50	32.24	①	-	32.24	48.00	-	-	13.10	13.10	13.20	-	-
16	41.62	-	①	-	-	54.50	-	-	17.50	-	18.00	-	-

Valve Size	ANSI Class	C			D	
		# 18 Spring Diaphragm Actuator		Domotor	# 18 Spring Diaphragm Actuator	Domotor
		Direct	Reverse			
6	300, 600	48.7	67.5	56.2		
	900, 1500	48.7	67.5			
	2500	52.3	71.1			
8	300, 600	52.8	71.6	60.3		
	900, 1500	52.9	71.7			
	2500	55.3	74.1			
10	300, 600	55.4	74.2	62.9	20.7	18.0
	900, 1500	55.7	74.5			
12	300, 600	57.5	76.3	65.0		
	900	57.1	75.9			
16	300	60.5	79.3	68		
	600	①	①			
	900	60.5	79.3			

① Consult Masonellan.

41017 and 41037 Series weights and numbering system

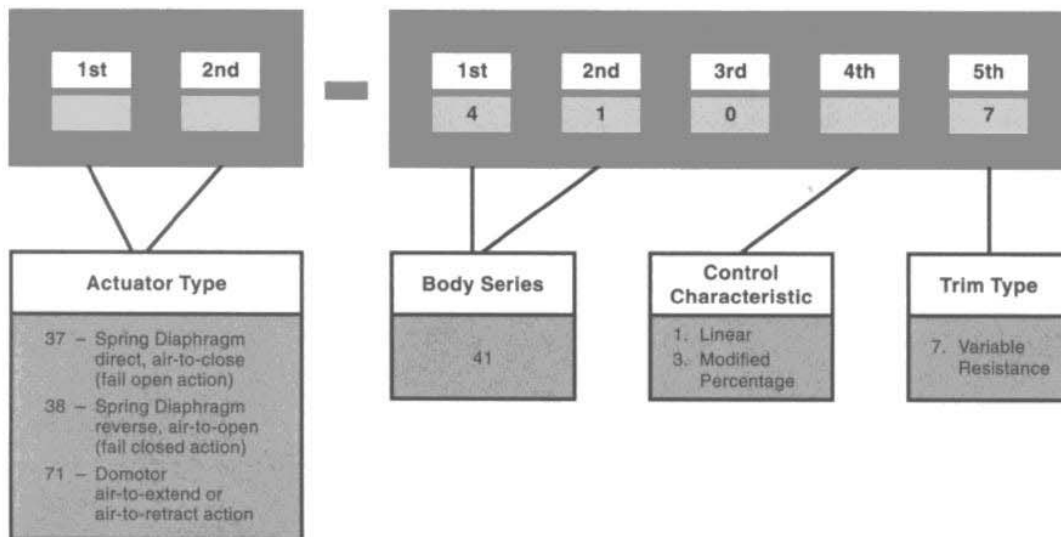
Body sub-assembly weight (lbs.)

Valve Size	ANSI Class									
	Flanged					Butt-weld				
	300	600	900	1500	2500	600	900	1500	2500	
6	540	573	1159	1181	①	516	869	869	1243	
8	921	967	1525	1800	①	779	1545	1545	2066	
10	1388	1492	①	①	–	1206	1571	2145	–	
12	2160	2238	①	–	–	2103	2674	–	–	
16	3206	–	①	–	–	–	5172	–	–	

① Consult Masonellan.

Actuator weight (lbs.)

Size	Action	
	Direct	Reverse
18	180	250
18L	190	370
C	60	
D	360	





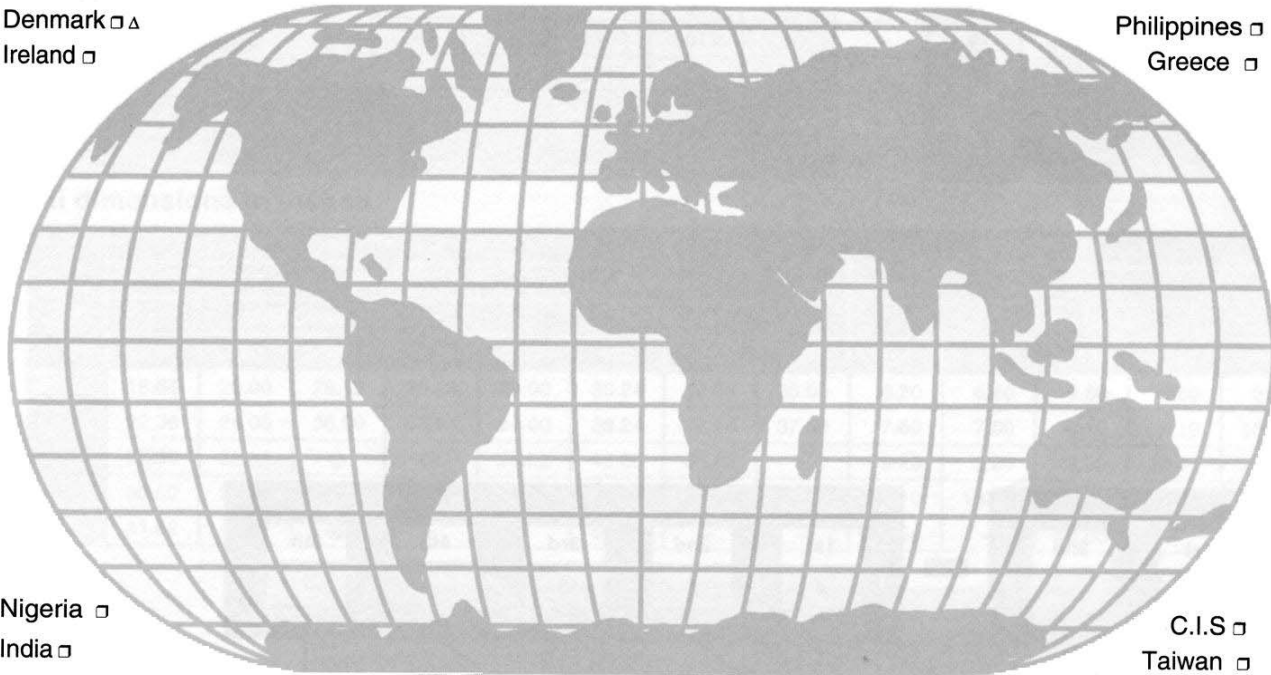
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