

# 41005 Series

## Control Valves

Complete Line of Heavy Duty, Balanced, Cage Guided, Globe Valves with Lo-dB<sup>®</sup> and Anti-Cavitation Capabilities



## Table of Contents

Features .....	2
Numbering System .....	3
General Data .....	4
Ratings/Connections .....	4
Seal Type versus Temperature Range/Seat Leakage .....	5
Flow Direction .....	5
$C_v$ and $F_L$ versus Travel .....	6
Body S/A Construction .....	11
Materials of Construction .....	12
Seal Ring Construction .....	16
Trim Types .....	17
Dimensions .....	18
Weights .....	25
Accessories and Options.....	27
Sales Offices and Distribution Centers.....	Back Cover

## Features

### High Performance Design

Masoneilan's 41005 Series heavy-duty globe control valves are engineered to handle the most demanding process conditions and exceeds the capabilities of comparable designs. The balanced cage-guided construction of the 41005 Series provides some key advantages versus typical unbalanced and/or contoured plug type designs:

- Higher Flow Capacities
- Higher Pressure Drop Capabilities
- Reduced Actuator Size and Thrust Requirements
- Improved Stability with Larger Guide Areas
- Increased Low Noise and Anti-Cavitation Trim Options

### Wide Application Range

Masoneilan's 41005 Series control valves provide high flow capacities combined with low pressure recoveries as reflected by the high  $F_L$  factors. This product line also provides efficient and dependable performance over a wide range of pressures and temperatures typical in critical service applications.

### Maximum Reliability

Specification and selection of the best solution for any application is simplified with the standard design options and materials available in the 41005 Series. Standard product construction and material combinations are based on over 40 years of successful field experience in various process industries.

### Various Seal Options

The 41005 Series is available with a variety of seal designs and materials to meet a wide combination of temperature and shut-off requirements.

### Versatile Trim Solutions

Various noise attenuation, anti-cavitation, and tight shut-off solutions are available within the standard 41005 product envelope. This includes the following trim options:

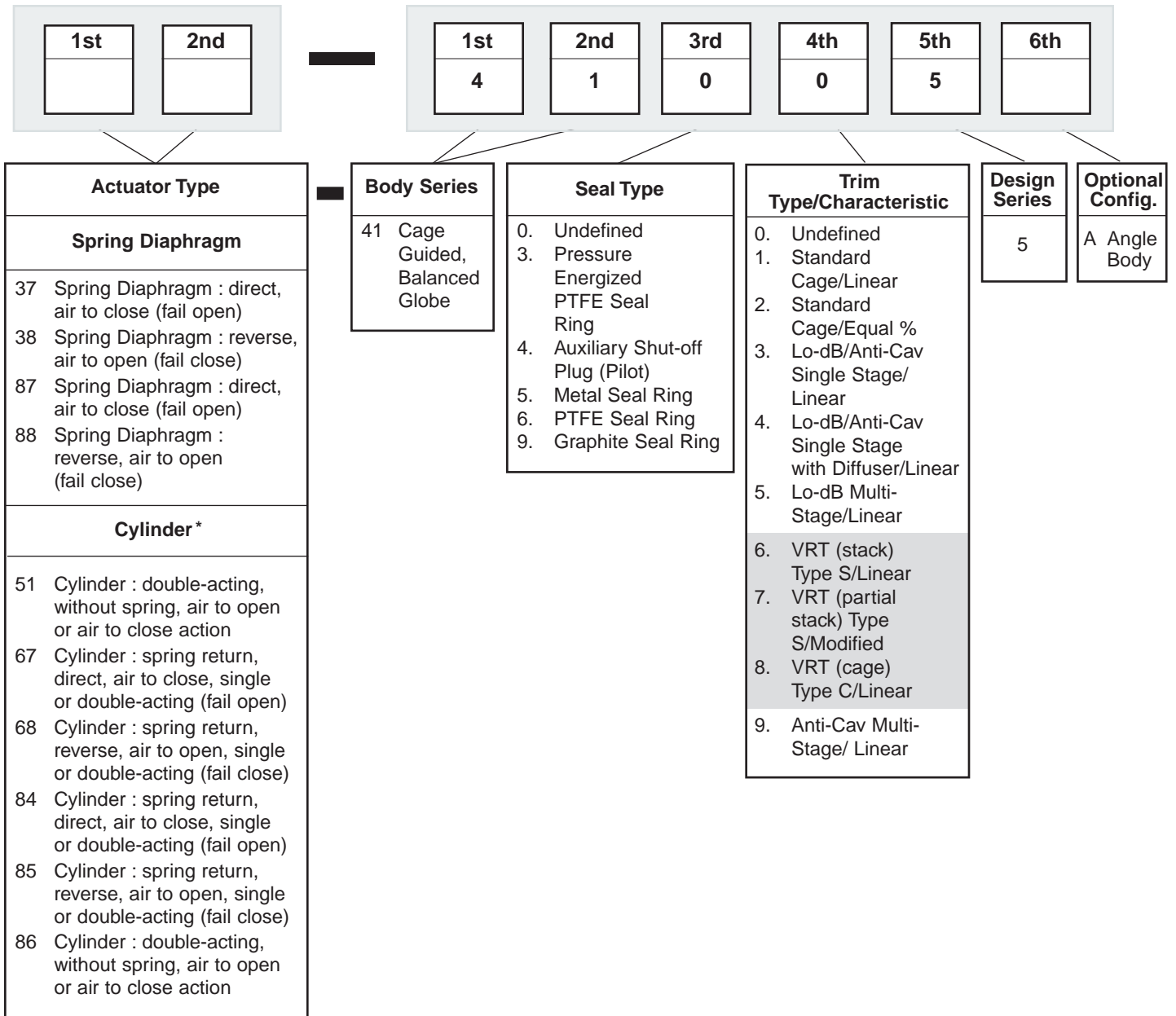
- **Single Stage Trim** – Provides excellent low noise performance on either gas or steam applications. Also provides an effective anti-cavitation solution for liquid services.
- **Multi-Stage Trim** – Provides highly effective low noise and anti-cavitation solutions for high-pressure ratio applications.
- **Pilot Balanced Trim** – Provides unmatched tight shut-off performance for high temperature applications.
- **Internal Diffuser** – Provides additional low noise and anti-cavitation benefits in flow-to-close (FTC) applications.
- **Engineered Solutions** – Special trim designs can also be provided for applications not covered by the standard trim noted above.

### NACE Compliance

The 41005 Series is available for sour service applications. Standard materials and processes are in accordance with the requirements of NACE specification MR0103. Applications requiring compliance to MR0175-2003 or ISO15156 must be reviewed by Masoneilan.

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

# Numbering System



\* Consult factory for selection of appropriate cylinder actuator type.

Engineered trim options are also available for high temperature and high pressure drop applications. Please consult factory for details.

## General Data

### Standard Valve (41305, 41405, 41505, 41605 and 41905)

- **Body**
  - type: high-capacity globe or angle
  - flow direction: see Flow Direction Table
  - C<sub>v</sub> ratio: 100:1 standard capacity trim  
50:1 Lo-dB and reduced capacity trim
- **Bonnet**
  - type: stud bolted extension
- **Trim**
  - cage: cylindrical ported or Lo-dB
  - plug: pressure balanced cage guided with various seal ring options;  
pressure balanced cage guided, with spring loaded internal auxiliary tight shut-off plug
- **Standard Flow Characteristics**
  - standard trim: linear, equal percentage
  - Lo-dB trim: linear
  - Lo-dB trim with diffuser: linear
  - anti-cavitation trim: linear

### Lo-dB® Multi-Stage Valve (41355, 41555, 41655, 41955)

- **Flow Direction:** see Flow Direction Table
- **Fluid:** gas or steam
- C<sub>v</sub> ratio: 50:1

(cont.)

### Lo-dB® Multi-Stage Valve (41355, 41555, 41655, 41955)

- **Trim**
  - cage: multi-stage
  - plug: pressure balanced cage guided with various seal ring options
- **Standard Flow Characteristic**
  - standard trim: linear

### Anti-Cavitation Multi-Stage Valve (41395, 41495, 41595, 41995)

- **Flow Direction:** see Flow Direction Table
- **Fluid:** liquid
- C<sub>v</sub> ratio: 50:1
- **Trim**
  - cage: multi-stage
  - plug: pressure balanced cage guided with various seal ring options
- **Standard Flow Characteristic**
  - standard trim: linear

### Actuator

- type: spring diaphragm  
spring-return cylinder  
double-acting cylinder
- handwheel: optional

### Pressure Drop

Refer to PH3000 for 41005 Series Pressure Drop Tables

## Ratings/Connections

○ Threaded      • Socket Weld      ■ Butt Weld      □ RF & RTJ

Valve Size		ANSI Class 150 to 1500 and equivalent PN	ANSI Class 2500 and equivalent PN
inch	mm		
2	50	■ • □ ○	■ • □
3 to 8	80 to 200	■ □	■ □
10 to 16	250 to 400	■ □	
3x2	80x50	■ □	■ □
4x2	100x50	■ □	■ □
4x3	100x80	■ □	
6x3	150x80	■ □	
6x4	150x100	■ □	
8x4	200x100	■ □	
8x6	200x150	■ □	
10x6	250x150	■ □	
10x8	250x200	■ □	
12x8	300x200	■ □	
16x12	400x300	■ □	
14,18,20,24	350,450,500,600		

Notes: 1. Angle Body Version is available in valve sizes 2" - 6" with ANSI ratings from Class 150 to Class 1500 and standard raised face end connections.

2. Ex. 3x2 size = valve with 3" body x standard 2" trim.

3. Consult Masoneilan for AFNOR and DIN connections.

■ = ANSI Class 2500 Ratings and 14", 18", 20" and 24" sizes are available. Please consult factory for details.

## Seal Type versus Temperature Range/Seat Leakage

Valve Model	Seal Type	Valve Size		Temperature Range <sup>(1)</sup>		Seat Leakage per IEC 534-4 and ANSI / FCI 70.2 Class
		inches	mm	Minimum	Maximum	
41305	Pressure Energized PTFE Seal Ring	2 - 16	50 - 400	-148°F (-100°C)	+450°F (+232°C)	IV (standard) V (optional)
41405	Auxiliary Pilot Plug with Metal Seal Ring	2 - 4	50 - 100	-320°F (-196°C)	+850°F (+454°C) <sup>(2)</sup>	IV (standard) V (optional)
		6 - 16	150 - 400	-320°F (-196°C)	+1050°F (+566°C)	
41505	Metal Seal Ring	2 - 4	50 - 100	-320°F (-196°C)	+850°F (+454°C) <sup>(2)</sup>	II
		6 - 16	150 - 400	-320°F (-196°C)	+1050°F (+566°C)	III
41605	PTFE Seal Ring	2 - 16	50 - 400	-20°F (-29°C)	+300°F (+149°C)	IV
41905	Graphite Seal Ring	2 - 4	50 - 100	-320°F (-196°C)	+850°F (+454°C)	III
		6 - 16	150 - 400	-320°F (-196°C)	+850°F (+454°C)	IV

Notes: 1. See Materials of Construction Tables for other temperature limitations  
2. Maximum temperature limit for the 2" (50mm) size is +1050°F (+566°C).

## Flow Direction

Model Number	41305	41405 <sup>(1)</sup>	41505	41605	41905
Seal Type	Pressure Energized PTFE Seal Ring	Auxiliary Pilot Plug with Metal Seal Ring	Metal Seal Ring	PTFE Seal Ring	Graphite Seal Ring
Standard Trim 41015/41025	41315/41325 FTO or FTC <sup>(2)</sup>	41415/41425 FTC	41515/41525 FTO or FTC	41615/41625 FTO or FTC	41915/41925 FTO or FTC
Lo-dB Single Stage 41035	41335 FTO	41435 FTC	41535 FTO	41635 FTO	41935 FTO
Anti-Cavitation Single Stage 41035	41335 FTC	41435 FTC	41535 FTC	41635 FTC	41935 FTC
Lo-dB & Anti-Cavitation Single Stage with Internal Diffuser <sup>(3)</sup> 41045	41345 FTC	41445 FTC	41545 FTC	41645 FTC	41945 FTC
Lo-dB Multi-Stage 41055	41355 FTO	N/A	41555 FTO	41655 FTO	41955 FTO
Anti-Cavitation Multi-Stage 41095	41395 FTC	41495 FTC	41595 FTC	41695 FTC	41995 FTC

Notes: 1. Flow direction for Pilot Plug Seal configuration is always FTC.  
2. Seal ring must be installed in correct orientation relative to high pressure direction.  
3. Flow direction with Internal Diffuser is always FTC.

# C<sub>v</sub> and F<sub>L</sub> versus Travel

## Standard Trim

Models 41315, 41415, 41515, 41615 and 41915

Flow Characteristic : **LINEAR**

Percent of Travel							10	20	30	40	50	60	70	80	90	100	
F <sub>L</sub>							0.94	0.94	0.93	0.93	0.92	0.92	0.91	0.91	0.90	0.90	0.90
Valve Size		ANSI Class and equivalent PN	Orifice Diameter		Travel		Rated C <sub>v</sub>										
inches	mm		inches	mm	inches	mm											
2	50	900 - 1500	1.84	46.7	0.8	20.3	1.4	2.7	4.2	6	8	10	12.5	14	15.5	16	
							2	4.9	8.3	13	19	25	30	35	38	40	
2	50	150 - 600	2.50	63.5	1.5	38.1	2.7	5.1	7.9	11	15	19	23	26	29	30	
3x2 4x2	80x50 100x50	150-1500					4	9	15	24	35	47	57	65	71	75	
3	80	150 - 1500	3.50	88.9	2.0	50.8	5	10	16	22	30	38	46	52	58	60	
							4x3 6x3	100x80 150x80	8	19	31	50	73	96	118	135	147
4	100	150 - 1500	4.38	111.3	2.0	50.8	9	16	25	35	48	60	72	83	91	95	
							6x4 8x4	150x100 200x100	12	29	48	77	113	149	182	209	228
6	150	150 - 1500	5.12	130.0	0.8 <sup>(1)</sup>	20.3 <sup>(1)</sup>	7	15	28	41	58	74	94	117	144	165	
					8x6 10x6	200x150 250x150	2.0	50.8	20	52	92	148	204	260	308	348	376
8	200	150 - 1500	6.50	165.1	1.5	38.1	17	37	71	104	145	187	237	295	361	415	
					10x8 12x8	250x200 300x200	2.5	63.5	32	83	147	237	326	416	493	557	602
10	250	150 - 1500	8.00	203.2	1.5	38.1	20	46	87	128	179	230	291	362	444	510	
					3.0	76.2	50	130	230	370	510	650	770	870	940	1000	
12	300	150 - 1500	9.75	247.7	2.0	50.8	31	69	131	193	270	347	439	547	670	770	
					16x12	400x300	3.75	95.25	70	182	322	518	714	910	1078	1218	1316
16	400	150 - 1500	13.00	330.2	2.5	63.5	51	128	211	320	448	576	730	922	1114	1280	
					4.0	101.6	104	268	464	744	1024	1304	1544	1720	1880	2000	
					5.0	127	130	335	580	930	1280	1630	1930	2150	2350	2500	

Notes: 1. Travel of 1.5 inches (38.1mm) for 41405.

2. Ex. 3x2 size = valve with 3" body with standard 2" trim.

## C<sub>v</sub> and F<sub>L</sub> versus Travel

**Standard Trim**  
**Models 41325, 41425, 41525, 41625 and 41925**

Flow Characteristic : **EQUAL PERCENTAGE**

Percent of Travel							10	20	30	40	50	60	70	80	90	100
F <sub>L</sub>							0.94	0.94	0.94	0.94	0.94	0.94	0.93	0.92	0.92	0.90
Valve Size		ANSI Class and Equivalent PN	Orifice Diameter		Travel		Rated C <sub>v</sub>									
inches	mm		inches	mm	inches	mm										
2	50	900 - 1500	1.84	46.7	0.8	20.3	0.2	0.4	0.8	1.3	2.1	3.8	6.7	10.0	12.4	14
							0.5	1.1	2	3.2	5.2	9.5	16.7	25.0	31.1	<b>35</b>
2	50	150 - 600	2.50	63.5	1.5	38.1	0.3	0.8	1.5	2.3	3.8	7.1	12.4	18.5	23.1	26
3x2	80x50	150 - 1500					0.8	2.0	3.7	5.9	9.6	17.7	30.9	46.3	57.8	<b>65</b>
4x2	100x50						0.7	1.7	3.2	5	8.3	15.2	26.6	39.9	49.8	56
3	80	150 - 1500	3.50	88.9	2.0	50.8	1.8	4	8	13	21	38	67	100	124	<b>140</b>
4x3	100x80						1	3	5	8	13	24	43	64	80	90
6x3	150x80						3	7	13	20	33	61	107	160	200	<b>225</b>
4	100	150 - 1500	4.38	111.3	2.0	50.8	4	8	15	24	35	54	80	108	130	144
6x4	150x100						9	21	39	60	87	135	200	269	326	<b>360</b>
8x4	200x100						6	14	25	39	56	86	128	172	208	230
6	150	150 - 1500	5.12	130.0	2.0	50.8	14	34	62	97	140	215	320	430	521	<b>575</b>
8x6	200x150						9	21	39	60	87	135	200	269	326	360
10x6	250x150						6	14	25	39	56	86	128	172	208	230
8	200	150 - 1500	6.50	165.1	2.5	63.5	14	34	62	97	140	215	320	430	521	<b>575</b>
10x8	250x200						9	21	39	60	87	135	200	269	326	360
12x8	300x200						23	53	97	151	219	337	500	672	815	<b>900</b>
10	250	150 - 1500	8.00	203.2	3.0	76.2	13	30	54	84	122	187	278	374	453	500
12	300						32	75	136	212	306	471	700	941	1142	<b>1260</b>
16x12	400x300						22	53	97	151	219	337	500	672	815	900
16	400	150 - 1500	13.00	330.2	5.0	127	56	133	243	378	547	842	1251	1681	2038	<b>2250</b>

Note: 1. Ex. 3x2 size = valve with 3" body with standard 2" trim.

# C<sub>V</sub> and F<sub>L</sub> versus Travel

Single Stage Lo-dB®/Anti-Cavitation  
 Models: 41335, 41435, 41535, 41635, 41935, 41X45 (with internal diffuser)

Flow Characteristic : **LINEAR**

Percent of Travel							10	20	30	40	50	60	70	80	90	100		
F <sub>L</sub>							0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Valve Size		ANSI Class and Equivalent PN	Orifice Diameter		Travel		Rated C <sub>V</sub>											
inches	mm		inches	mm	inches	mm	1	2	3	4	5	6	7	8	9	10		
2	50	900 - 1500	1.84	46.7	0.8	20.3	1	2	3	4	5	6	7	8	9	10		
							1.3	2.6	3.9	5.2	6.5	7.8	9.1	10.4	11.7	13		
							1.7	3.4	5.1	6.8	8.5	10.2	11.9	13.6	15.3	17		
							2.3	4.6	6.9	9.2	11.5	13.8	16.1	18.4	20.7	23		
							3	6	9	12	15	18	21	24	27	<b>30</b>		
2	50	150 - 600	2.50	63.5	1.5	38.1	2.5	5	7.5	10	12.5	15	17.5	20	22.5	25		
							3	6	10	13	16	19	22	26	29	32		
		3x2 4x2					80x50 100x50	150 - 1500	4	9	13	17	22	26	30	34	39	43
									6	12	17	23	29	35	41	46	52	58
									7	14	22	29	36	43	50	58	65	<b>72</b>
3	80	150 - 1500	3.50	88.9	2.0	50.8	4	8	12	16	20	24	28	32	36	40		
							5	11	16	22	27	32	38	43	49	54		
							7	14	22	29	36	43	50	58	65	72		
							10	19	29	38	48	57	67	76	86	95		
							13	25	38	50	63	75	88	100	113	<b>125</b>		
4	100	150 - 1500	4.38	111.3	2.0	50.8	7	13	20	26	33	39	46	52	59	65		
							9	17	26	34	43	51	60	68	77	85		
							11	22	33	44	55	66	77	88	99	110		
							15	30	45	60	75	90	105	120	135	150		
							20	39	59	78	98	117	137	156	176	<b>195</b>		
6	150	150 - 1500	5.12	130.0	2.5	63.5	10	20	30	40	50	60	70	80	90	100		
							13	26	39	52	65	78	91	104	117	130		
							18	35	53	70	88	105	123	140	158	175		
							23	46	69	92	115	138	161	184	207	230		
							30	60	90	120	150	180	210	240	270	<b>300</b>		
8	200	150 - 1500	6.50	165.1	2.5	63.5	17	33	50	66	83	99	116	132	149	165		
							22	44	66	88	110	132	154	176	198	220		
							29	58	87	116	145	174	203	232	261	290		
							38	76	114	152	190	228	266	304	342	380		
					3.0	76.2	50	100	150	200	250	300	350	400	450	<b>500</b>		
10	250	150 - 1500	8.00	203.2	2.5	63.5	23	45	68	90	113	135	158	180	203	225		
							29	58	87	116	145	174	203	232	261	290		
							39	78	117	156	195	234	273	312	351	390		
							52	104	156	208	260	312	364	416	468	520		
					3.5	88.9	65	130	195	260	325	390	455	520	585	<b>650</b>		
12	300	150 - 1500	9.75	247.7	2.5	63.5	48	96	144	192	240	288	336	384	432	480		
							63	126	189	252	315	378	441	504	567	630		
							84	168	252	336	420	504	588	672	756	840		
16	400	150 - 1500	13.00	330.2	4.0	101.6	110	220	330	440	550	660	770	880	990	<b>1100</b>		
							136	272	408	544	680	816	952	1088	1224	1360		
							180	360	540	720	900	1080	1260	1440	1620	<b>1800</b>		

Notes: 1. Ex. 3x2 size = valve with 3" body with standard 2" trim.

2. Internal diffuser design only available for valve sizes 6" to 16" (150 to 400mm) and with capacities shaded above.



## C<sub>v</sub> and F<sub>L</sub> versus Travel

**Multi-Stage Lo-dB®**  
**Models 41355, 41555, 41655 and 41955**

Flow Characteristic : **LINEAR**

Percent of Travel							10	20	30	40	50	60	70	80	90	100	
F <sub>L</sub>							0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Valve Size		ANSI Class and Equivalent PN	Orifice Diameter		Travel		Rated C <sub>v</sub>										
inches	mm		inches	mm	inches	mm											
2	50	900 - 1500	1.84	46.7	0.8	20.3	1.2	2.4	3.6	4.8	6.0	7.2	8.4	9.6	10.8	12	
							1.9	3.8	5.7	7.6	9.5	11.4	13.3	15.2	17.1	19	
							2.4	4.8	7.2	9.6	12.0	14.4	16.8	19.2	21.6	24	
2	50	150 - 600	2.50	63.5	1.5	38.1	3	6	9	12	15	18	21	24	27	30	
3x2	80x50	150 - 1500					4	9	13	17	22	26	30	34	39	43	
4x2	100x50						5	11	16	21	27	32	37	42	48	53	
3	80	150 - 1500	3.50	88.9	2.0	50.8	5	10	15	20	25	30	35	40	45	50	
4x3	100x80						8	15	23	30	38	45	53	60	68	75	
6x3	150x80						10	19	29	38	48	57	67	76	86	95	
4	100	150 - 1500	4.38	111.3	2.0	50.8	7	14	22	29	36	43	50	58	65	72	
6x4	150x100						11	21	32	42	53	63	74	84	95	105	
8x4	200x100						13	26	39	52	65	78	91	104	117	130	
6	150	150 - 1500	5.12	130.0	2.5	63.5	10	19	29	38	48	58	67	77	86	96	
8x6	200x150						15	30	45	60	75	90	105	120	135	150	
10x6	250x150						19	38	57	76	95	114	133	152	171	190	
8	200	150 - 1500	6.50	165.1	2.5	63.5	16	31	47	62	78	93	109	124	140	155	
10x8	250x200						25	50	75	100	125	150	175	200	225	250	
12x8	300x200				3.0	76.2	30	60	90	120	150	180	210	240	270	300	
10	250	150 - 1500	8.00	203.2	2.5	63.5	23	46	69	92	115	138	161	184	207	230	
							35	70	105	140	175	210	245	280	315	350	
							42	84	126	168	210	252	294	336	378	420	
12	300	150 - 1500	9.75	247.7	2.5	63.5	38	75	113	150	188	225	263	300	338	375	
							60	120	180	240	300	360	420	480	540	600	
							73	145	218	290	363	435	508	580	653	725	
16	400	150 - 1500	13.00	330.2	2.5	63.5	50	100	150	200	250	300	350	400	450	500	
							80	160	240	320	400	480	560	640	720	800	
							111	221	332	442	553	663	774	884	995	1105	

Note: 1. Ex. 3x2 size = valve with 3" body with standard 2" trim.

## C<sub>v</sub> and F<sub>L</sub> versus Travel

**Multi-Stage Anti-Cavitation**  
**Models 41395, 41495, 41595, 41695 and 41995**

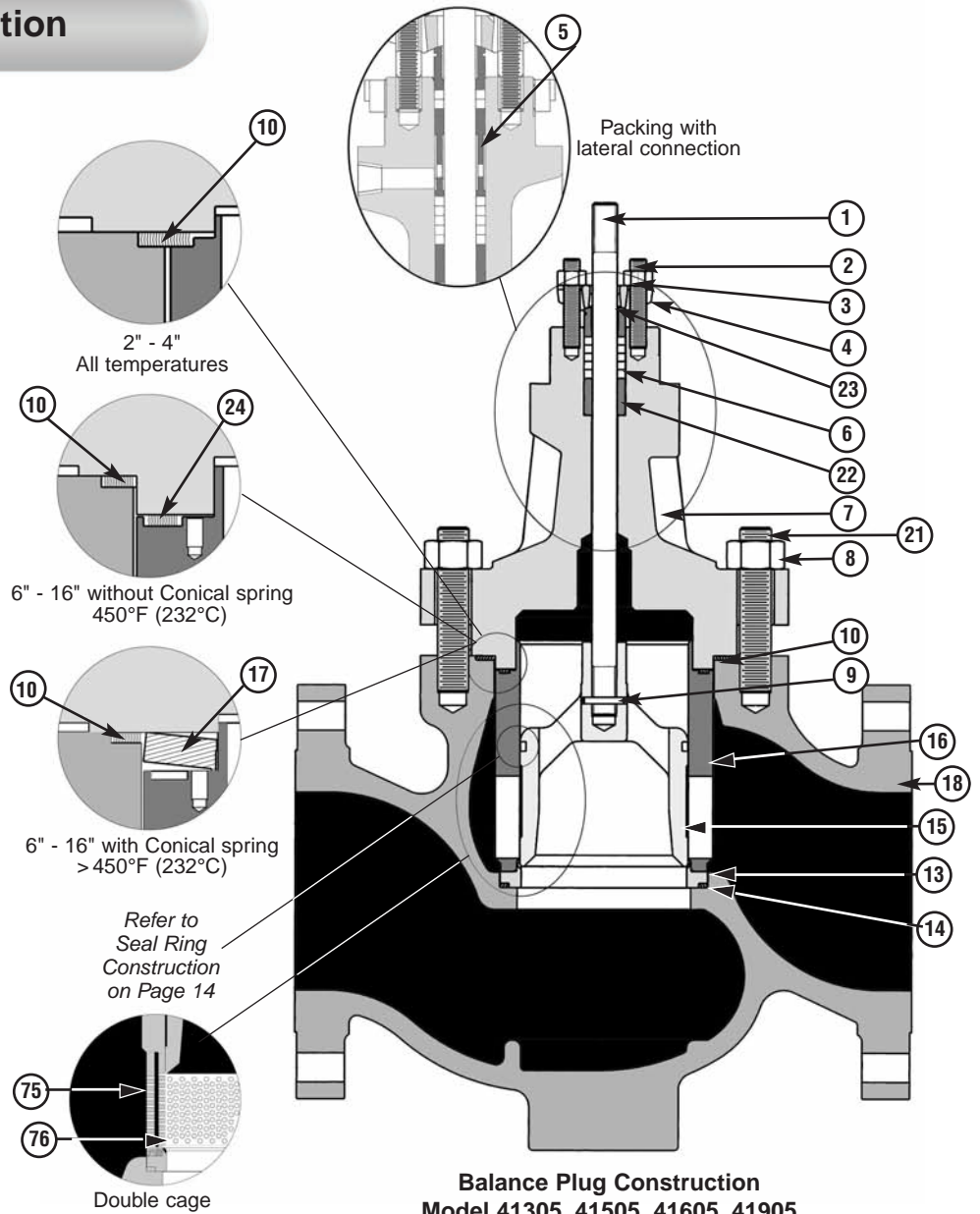
Flow Characteristic : **LINEAR**

Percent of Travel							10	20	30	40	50	60	70	80	90	100		
F <sub>L</sub>							0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Valve Size <sup>(1)</sup>		ANSI Class and Equivalent PN	Orifice Diameter		Travel		Rated C <sub>v</sub>											
inches	mm		inches	mm	inches	mm												
2	50	900 - 1500	1.521	38.6	0.8	20.3	0.9	1.8	2.7	3.6	4.5	5.4	6.3	7.2	8.1	9		
							1.3	2.6	3.9	5.2	6.5	7.8	9.1	10.4	11.7	13		
							1.5	3	4.5	6	7.5	9	10.5	12	13.5	15		
2 3x2 4x2	50 80x50 100x50	150 - 600	2.151	54.6	1.5	38.1	2.3	4.6	6.9	9.2	11.5	13.8	16.1	18.4	20.7	23		
							3.5	7	10.5	14	17.5	21	24.5	28	31.5	35		
							4.4	8.8	13.2	17.6	22	26.4	30.8	35.2	39.6	44		
3 4x3 6x3	80 100x80 150x80	150 - 1500	3.15	80.0	1.5	38.1	4	8	12	16	20	24	28	32	36	40		
							6.5	13	19.5	26	32.5	39	45.5	52	58.5	65		
							8	16	24	32	40	48	56	64	72	80		
4x3 6x3	100x80 150x80	150 - 1500	3.15	80.0	2.0	50.8	9.3	18.6	27.9	37.2	46.5	55.8	65.1	74.4	83.7	93		
4 6x4 8x4	100 150x100 200x100	150 - 1500	4.023	102.2	2.0	50.8	6.5	13	19.5	26	32.5	39	45.5	52	58.5	65		
							10.5	21	31.5	42	52.5	63	73.5	84	94.5	105		
							12.5	25	37.5	50	62.5	75	87.5	100	112.5	125		
6 8x6 10x6	150 200x150 250x150	150 - 1500	4.777	121.3	2.5	63.5	10	20	30	40	50	60	70	80	90	100		
							16	32	48	64	80	96	112	128	144	160		
							19.5	39	58.5	78	97.5	117	136.5	156	175.5	195		
8 10x8 12x8	200 250x200 300x200	150 - 1500	6.146	156.1	2.5	63.5	17	34	51	68	85	102	119	136	153	170		
							2.5	63.5	26	52	78	104	130	156	182	208	234	260
							3.0	76.2	32	64	96	128	160	192	224	256	288	320
10	250	150 - 1500	7.633	193.9	2.5	63.5	23	46	69	92	115	138	161	184	207	230		
							3.5	88.9	38	76	114	152	190	228	266	304	342	380
							3.5	88.9	45	90	135	180	225	270	315	360	405	450
12 16x12	300 400x300	150 - 1500	9.373	238.1	2.5	63.5	40	80	120	160	200	240	280	320	360	400		
							4.0	101.6	64	128	192	256	320	384	448	512	576	640
							5.0	127.0	80	160	240	320	400	480	560	640	720	800
16	400	150 - 1500	12.774	324.5	2.5	63.5	60	120	180	240	300	360	420	480	540	600		
							4.0	101.6	95	190	285	380	475	570	665	760	855	950
							6.0	152.4	131	262	393	524	655	786	917	1048	1179	1310

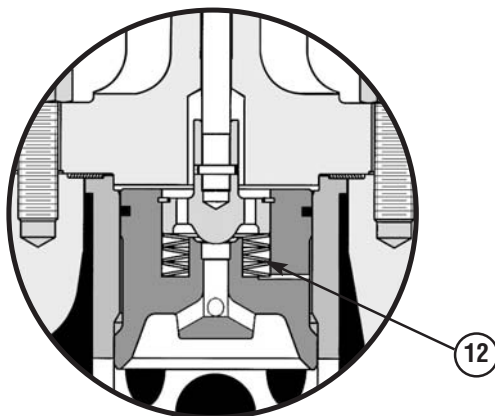
Note: 1. Valve size example: 3x2 size = valve with 3" body with standard 2" trim.

# Body S/A Construction

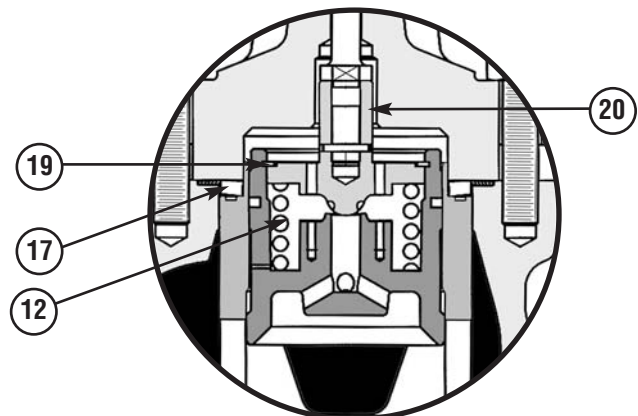
Ref.	Part Name
1	Valve Plug Stem
2	Packing Flange Stud
3	Packing Flange Nut
4	Packing Flange
5	Packing Spacer
●	6 Packing
7	Bonnet
8	Valve Body Nut
9	Plug Stem Pin
●	10 Body Gasket
※	12 Pilot Spring(s)
13	Seat Ring
●	14 Seat Ring Gasket
15	Valve Plug (or Piston)
16	Cage
+	17 Conical Spring
18	Valve Body
※	19 Retaining Ring
※	20 Auxiliary Pilot Plug
21	Valve Body Stud
22	Guide Bushing
23	Packing Follower
●	24 Cage Gasket
⊗●	31 Tec Seal
○●	35 Ni-resist® Seal Ring
★●	40 PTFE Seal Ring
★●	41 Nordel® Backup Ring
□●	45 Graphite Seal Ring
●	46 Ni-resist® Backup Ring
75	Double cage
76	Pin
※	For 41405 Series Valves Only
+	For 6" to 16" Valves Sizes Only above 450°F (232°C)
★	For 41605 Series Valves Only
●	Recommended Spare Parts
□	For 41905 Series Valves Only
○	For 41405 / 41505 Series Valves Only
⊗	For 41305 Series Valves Only



**Balance Plug Construction**  
**Model 41305, 41505, 41605, 41905**  
**Sizes 2" to 16"**



**Pilot Balanced Construction Model 41405**  
**Applications up to 850°F (454°C)**  
**Sizes 2" to 4" shown**



**Pilot Balanced Construction Model 41405**  
**Applications above 450°F (232°C) to 1050°F (566°C)**  
**Sizes 6" to 16" shown**

# Materials of Construction

## Standard Carbon Steel Version

Ref. No	Temperature Range	-20°F (-29°C)	450°F (232°C)	650°F (343°C)	800°F (427°C)
		Standard Materials			
1	Plug Stem	17-4 PH St. St. ASTM A564 GR 630			See Optional Materials
2	Packing Flange Stud	304 St. St. ASTM A193 GR B8			
3	Packing Flange Nut	304 St. St. ASTM A194 GR 8			
4	Packing Flange	Carbon Steel ASTM A105 Zinc Plated			
5	Packing Spacer	303 St. St. ASTM A582 TY 303			
6	Packing	Kevlar PTFE (Crane 285K) (ANSI Class 150-900) PTFE/Carbon and Graphite Wiper Rings (ANSI Class 1500 and 2500)			See Optional Materials
7	Valve Bonnet	Carbon Steel ASTM A216 Grade WCC			
8	Valve Body Nut	Carbon Steel ASTM A194 GR 2H			
9	Plug Stem Pin	316 St. St. ASTM A479 TY 316			
10	Valve Body Gasket	316L St. St. w/Flexible Graphite Filler (Spiral Wound)			
12	Pilot Spring(s) (41405 Only)	2" to 4"	Inconel X-750 AMS 5598 (Stacked Washers)		
		6" to 16"	Inconel X-750 ASTM B637 GR 688		
13	Seat Ring	410 St. St. ASTM A479 TY 410 Hardened			See Optional Materials
14	Seat Ring Gasket	316L St. St. w/Flexible Graphite Filler (Spiral Wound)			
15	Valve Plug	17-4 PH St. St. ASTM A747 GR CB7CU-1 Condition H1075			See Optional Materials
16	Cage	Martensitic St. St. ASTM A487 GR CA6NM CL A Hard Chrome Plated			
17	Conical Spring (6" to 16") (See Note 1)	See Optional Materials	17-4 PH ASTM A564 GR 630 Condition H1075	Inconel X-718 ASTM B637 + Shot Peening	
18	Valve Body	Carbon Steel ASTM A216 Grade WCC			
19	Retaining Ring (41405 Only)	Inconel X-750 AMS 5598			
20	Auxiliary Pilot Plug (41405 Only)	2" to 4"	410 St. St. ASTM A479 TY 410 Hardened		
		6" to 16"	Martensitic St. St. ASTM A487 GR CA6NM CL A with Chrome Plated Guide and Hardfaced Seat		
21	Valve Body Stud	Alloy Steel ASTM A193 GR B7			
22	Guide Bushing	440C St. St. ASTM A276 TY 440C			
23	Packing Follower	303 St. St. ASTM A582 TY 303			
—	Internal Diffuser (6" to 16") (See Note 2)	316 St. St. ASTM A479 TY 316 with Hardfaced Seat			
24	Cage Gasket (6" to 16") (See Note 3)	316L St. St. w/Flexible Graphite Filler (Spiral Wound)			See Optional Materials
31	Seal Ring	See Page 16			
35					
40					
41					
45					
46					

- Notes: 1. Conical spring only required for valve sizes 6" to 16" for applications > 450°F (232°C).  
 2. Internal Diffuser includes an internal 316SS Seat Ring with hardfaced seat. This part replaces the Seat Ring (Ref. No. 13) when this option is selected. See graphic on page 16.  
 3. Cage gasket only required for valve sizes 6" to 16" for applications > 450°F (232°C).

Review use of optional materials and configurations for temperature ranges indicated. Standard materials listed may still be applicable depending on specific service conditions. Consult Masoneilan for appropriate material combinations.

# Materials of Construction

## Standard Stainless Steel Version<sup>(1)</sup>

Ref. No	Temperature Range	-320°F (-196°C)	-50°F (-46°C)	450°F (232°C)	650°F (343°C)	1050°F (566°C)
Description		Standard Materials				
1	Plug Stem	See Optional Materials		316 St. St. ASTM A479 TY 316		See Optional Materials
7	Valve Bonnet <sup>(2)</sup>	316 St. St. ASTM A351 GR CF8M				
18	Valve Body	316 St. St. ASTM A479 TY 316 with Hardfaced Seat				
13	Seat Ring	316 St. St. ASTM A479 TY 316 with Hardfaced Seat				
15	Valve Plug	316 St. St. ASTM A479 TY 316 with Hardfaced Seat				
16	Cage	316 St. St. ASTM A479 TY 316 Chrome-Plated				See Optional Materials
17	Conical Spring (6" to 16") (See Note 3)	See Optional Materials			Inconel X-718 ASTM B637 + Shot Peening	
20	Auxiliary Pilot Plug (41405 Only)	316 St. St. ASTM A479 TY 316 with Chrome Plated Guide and Hardfaced Seat				
22	Guide Bushing	316 St. St. ASTM A479 TY 316 with Hardfacing				
		Stellite 6 UNS 30006 (HRC 22 Max.)				

- Notes: 1. Materials for other components are *same* as listed for Standard Carbon Steel Version.  
 2. Extension bonnet required for temperatures below -100°F (-73°C).  
 3. Conical spring only required for valve sizes 6" to 16" for applications > 450°F (232°C).  
 4. See trim materials for Standard Carbon Steel Version for Martenistic Trim Option.

## Optional Configurations and Materials

Ref. No	Temperature Range	-320°F (-196°C)	-100°F (-73°C)	-50°F (-46°C)	-20°F (-46°C)	650°F (343°C)	800°F (427°C)	1050°F (566°C)	
Description		Optional Materials							
1	Plug Stem	A286 Super Alloy ASTM A638 GR 660 Inconel X-750 ASTM B637 GR 688							
6	Packing	Kevlar PTFE (Crane 285K)							
		LE <sup>®</sup> Packing <sup>(1)</sup>							
		Flexible Graphite							
7	Valve Bonnet	Chrome-Moly Steel ASTM A217 Grade WC6 or Grade WC9							
18	Valve Body	Carbon Steel ASTM A 352 Grade LCC							
13	Seat Ring	2" to 4"	316 St. St. ASTM A479 TY 316 with Hardfaced Seat						
		6" to 16"	Martensitic St. St. ASTM A487 GR CA6NM CL A with Hardfaced Seat						
15	Valve Plug	Martensitic St. St. ASTM A487 GR CA6NM CL A Nitrided							
16	Cage	Martensitic St. St. ASTM A487 GR CA6NM CL A Nitrided							
		316 St. St. ASTM A479 TY 316 Nitrided							
20	Auxiliary Pilot Plug (2" to 4") (41405 Only)	Martensitic St. St. ASTM A487 GR CA6NM CL B with Chrome Plated Guide and Hardfaced Seat							

- Notes: 1. LE Packing for low emissions applications is limited to the maximum operating pressure and temperature range shown in Figure 1.  
 2. Consult Masoneilan for material combinations for temperatures below -20°F (-29°C) or above 800°F (427°C).

Review use of optional materials and configurations for temperature ranges indicated. Standard materials listed may still be applicable depending on specific service conditions. Consult Masoneilan for appropriate material combinations.

# Materials of Construction

## Optional Bolting Materials

Ref. No	Temperature Range	-320°F (-196°C) to -150°F (-101°C)	-150°F (-101°C) to -20°F (-29°C)	850°F (454°C) to 950°F (510°C)	950°F (510°C) to 1050°F (566°C)
		Optional Materials			
8	Valve Body Nut <sup>(1)</sup>	316 SS ASTM A194 Grade 8M	Alloy Steel ASTM A194 Grade 4	Alloy Steel ASTM A194 Grade 4	304 SS ASTM A194 Grade 8
21	Valve Body Stud <sup>(1)</sup>	316 SS ASTM A193 Grade B8M Class 2	Alloy Steel ASTM A320 Grade L7	Alloy Steel ASTM A193 Grade B16	Super Alloy ASTM A453 Grade 660

Note: 1. Use following materials for 2" and 3" sizes ANSI Class 300/600 at temperatures below -20°F (-29°C).  
 Studs - 304 SS ASTM A193 Grade B8 Class 2 • Nuts - 304 SS ASTM A194 Grade 8.

**Pressure and Temperature Rating of LE Packing**

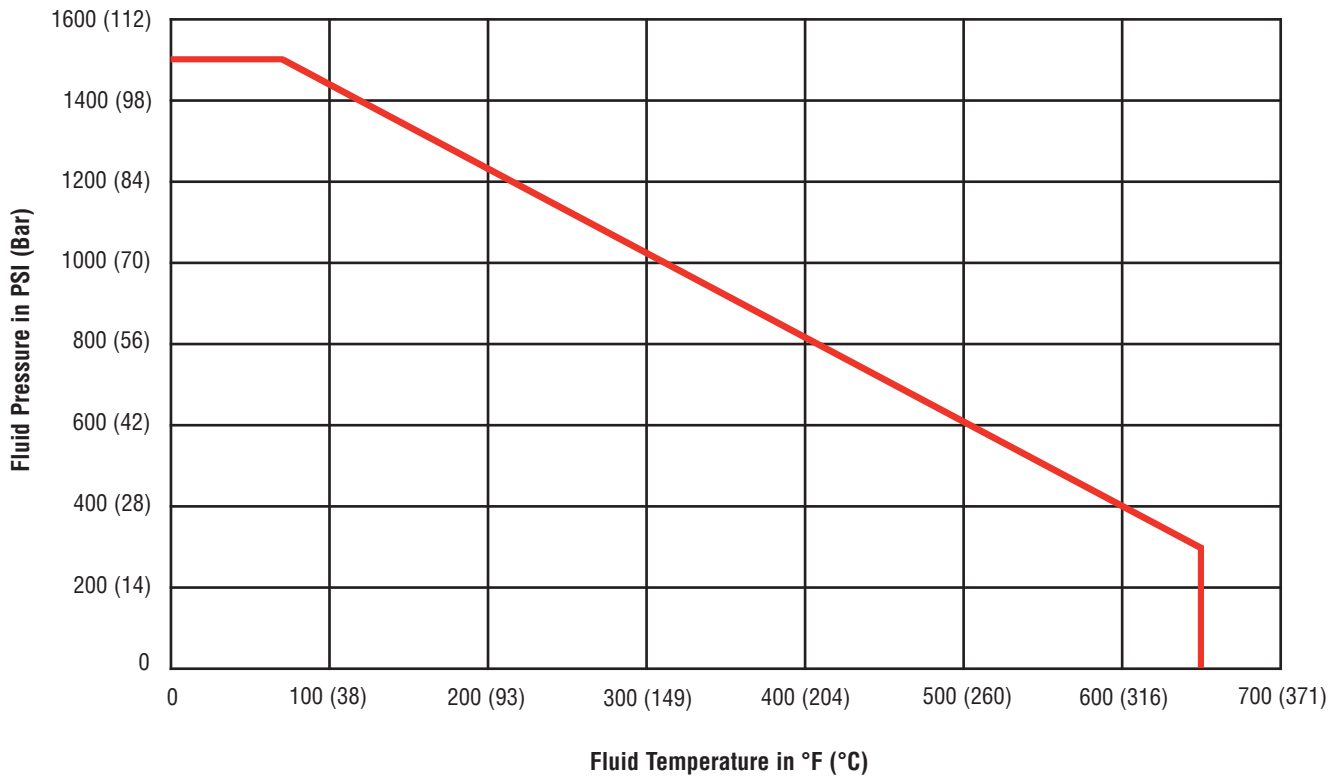


Figure 1

# Materials of Construction

## NACE<sup>(1)</sup> Configuration and Material Options Valve Sizes: 2" to 16" • Body Ratings: ANSI Class 150 to 1500

Ref. No	Temperature Range		-20°F (-29°C)	650°F (343°C)
	Description		Standard and Optional Materials	
1	Plug Stem	316 St. St. ASTM A479 TY 316 (HRC 22 Max.)		
		Inconel X-750 ASTM B637 GR 688 (HRC 35 Max.)		
		Super Alloy ASTM A638 GR 660 (HRC 35 Max.)		
2	Packing Flange Stud	304 St. St. ASTM A193 GR B8 <sup>(2)</sup>		
		304 St. St. ASTM A193 Gr B8 <sup>(3)</sup> (HRC 22 Max.)		
3	Packing Flange Nut	304 St. St. ASTM A194 GR 8 <sup>(2)</sup>		
		304 St. St. ASTM A194 GR 8A <sup>(3)</sup> (HRC 22 Max.)		
4	Packing Flange	Corrosion Protected Carbon Steel (HRC 22 Max.)		
5	Packing Spacer	304 St. St. ASTM A479 TY 304		
6	Packing	Kevlar PTFE (Crane 285K)		
7	Valve Bonnet	Carbon Steel ASTM A216 Grade WCC (HRC 22 Max.)		
		Carbon Steel ASTM A105 (HRC 22 Max.)		
		316 St. St. ASTM A351 Gr CF8M (HRC 22 Max.)		
8	Valve Body Nut	Alloy Steel ASTM A194 GR 2H <sup>(2)</sup>		
		Alloy Steel ASTM A194 Gr 2HM <sup>(3)</sup>		
9	Plug Stem Pin	316 St. St. ASTM A479 TY 316 (HRC 22 Max.)		
10	Valve Body Gasket	316L St. St. w/Flexible Graphite Filler (Spiral Wound)		
12	Pilot Spring(s) (41405 Only)	2" to 4"	Inconel X-750 AMS 5598 (HRC 50 Max.)	
		6" to 16"	Inconel X-750 ASTM B637 GR 688 (HRC 50 Max.)	
13	Seat Ring	316 St. St. ASTM A479 TY 316 (HRC 22 Max.)		
		316 St. St. ASTM A479 TY 316 with Hardfaced Seat (HRC 22 Max.)		
14	Seat Ring Gasket	316L St. St. w/Flexible Graphite Filler (Spiral Wound)		
15	Valve Plug	316 St. St. ASTM A479 TY 316 with Hardfaced Seat (HRC 22 Max.)		
		Martensitic St. St. ASTM A487 GR CA6NM CL B (HRC 22 Max.)		
16	Cage	316 St. St. ASTM A479 TY 316 Hard Chrome Plated (HRC 22 Max.)		
		Martensitic St. St. ASTM A487 GR CA6NM CL B Hard Chrome Plated (HRC 23 Max.)		
17	Conical Spring (6" to 16")	Inconel X-718 ASTM B637 + Shot Peening		
18	Valve Body	Carbon Steel ASTM A216 Grade WCC (HRC 22 Max.)		
		316 St. St. ASTM A351 Gr CF8M (HRC 22 Max.)		
19	Retaining Ring (41405 Only)	Inconel X-750 AMS 5598 (HRC 50 Max.)		
20	Auxiliary Pilot Plug (41405 Only)	316 St. St. ASTM A479 TY 316 with Hardfaced Seat (HRC 22 Max.)		
		Martensitic St. St. ASTM A487 GR CA6NM CL B Chrome Plated Guide and Hardfaced Seat (HRC 23 Max.)		
21	Valve Body Stud	Alloy Steel ASTM A193 GR B7 <sup>(2)</sup>		
		Alloy Steel ASTM A193 Gr B7M <sup>(3)</sup>		
22	Guide Bushing	Stellite 6 UNS 30006 (HRC 22 Max.)		
		316 St. St. ASTM A479 TY 316 with Hardfacing (HRC 22 Max.)		
23	Packing Follower	316 St. St. ASTM A479 TY 316 (HRC 22 Max.)		
—	Internal Diffuser (6" to 16") (Not Shown)	316 St. St. ASTM A479 TY 316 with Hardfaced Seat (HRC 22 Max.)		
24	Cage Gasket (6" to 16") <sup>(4)</sup>	316L St. St. w/Flexible Graphite Filler (Spiral Wound)		
31	Seal Ring <sup>(5)</sup>	See Page 16		
35				
40				
41				
45				
46	Drive Nut (Not Shown)	Carbon Steel SAE 1117 <sup>(2)</sup>		
—		Carbon Steel ASTM A105 or SAE 1010-1025 <sup>(3)</sup>		

- Notes: 1. Standard materials and processes are in accordance with the requirements of NACE specification MR0103. Applications requiring compliance to MR0175-2003 or ISO15156 must be reviewed by Masonellan.  
2. Materials designated for these parts conform to NACE Class III bolting requirements. (Non-Exposed)  
3. Materials designated for these parts conform to NACE Class I or Class II bolting requirements. (Exposed)  
4. Cage gasket only required for valve sizes 6" to 16" for applications 450°F (232°C).  
5. Seal ring materials for Model 41605 (PTFE Seal Ring) will be replaced with Glass-Reinforced PTFE External Seal Ring (Ref. No. 40) and Viton Internal Seal Ring (Ref. No. 41).  
6. Maximum temperature for Models 41305 and 41605 limited to 450°F (232°C).

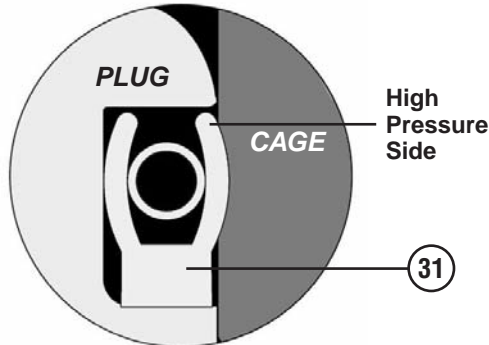
## Seal Ring Construction

### Model 41305

Seal Type: Pressure Energized Polymeric

Leakage: Class IV Standard  
(Class V Optional)

Temperature: -148°F (-100°C) to +450°F (+232°C)

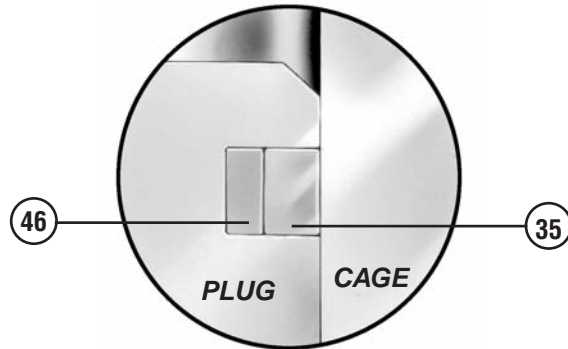


Seal Shown in FTO Orientation

### Models 41405 and 41505

Seal Type: Metal

Leakage: From Class II to Class V (with pilot)  
Temperature: -320°F (-196°C) to +1050°F (+566°C)

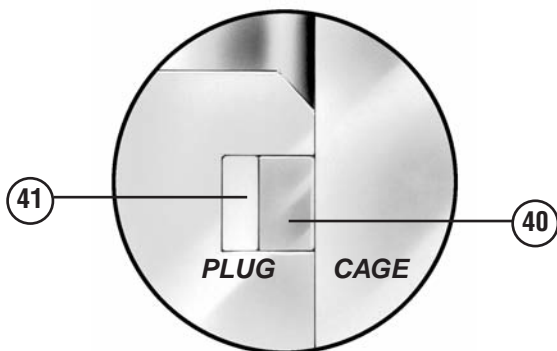


### Model 41605

Seal Type: TFE and Resilient Inner

Leakage: Class IV Standard

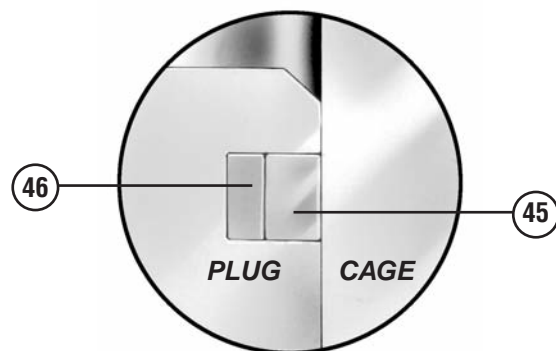
Temperature: -20°F (-29°C) to +300°F (+149°C)



### Model 41905

Seal Type: Graphite and Metal Inner

Leakage: Class III and Class IV Standard  
Temperature: -320°F (-196°C) to +850°F (+454°C)



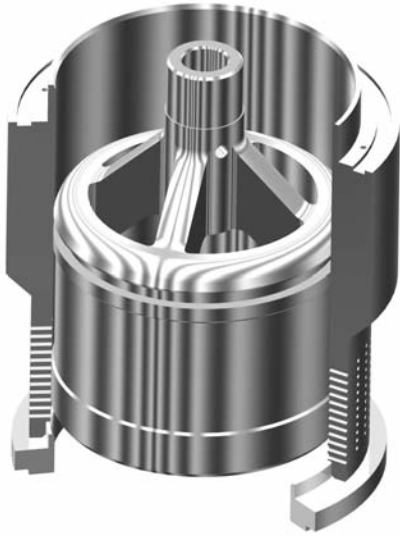
## Seal Ring Construction

Temperature Range		-320°F (-196°C)	-148°F (-100°C)	-20°F (-29°C)	+300°F (+149°C)	+450°F (+232°C)	+650°F (+343°C)	+850°F (+454°C)	+1050°F (+566°C)	
Ref. No.	Description	Materials								
31	Seal Ring	PTFE + 25% Graphite and ELGILOY Spring								
35	External Seal Ring	Ni-Resist ASTM A439 Type D3						Nitrided CA6NM		
40	External Seal Ring	Bronze PTFE								
		Glass Reinforced PTFE <sup>(1)</sup>								
41	Internal Seal Ring	Nordel								
		Viton <sup>(1)(2)</sup>								
45	External Seal Ring	Graphite								
46	Internal Seal Ring	Ni-Resist ASTM A439 Type D3								

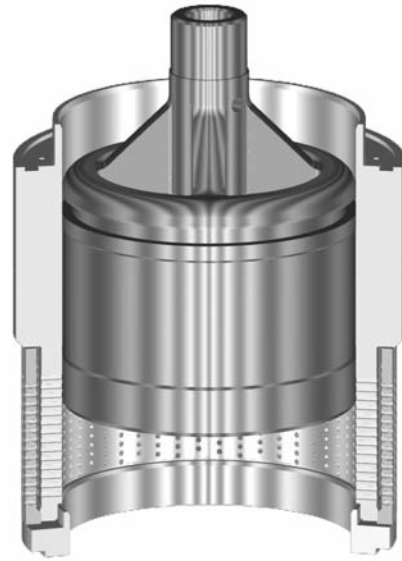
Note: 1. Optional materials for NACE Service. Viton not recommended for water or steam service.  
2. Viton is recommended for oil and hydrocarbon service.



## Trim Types



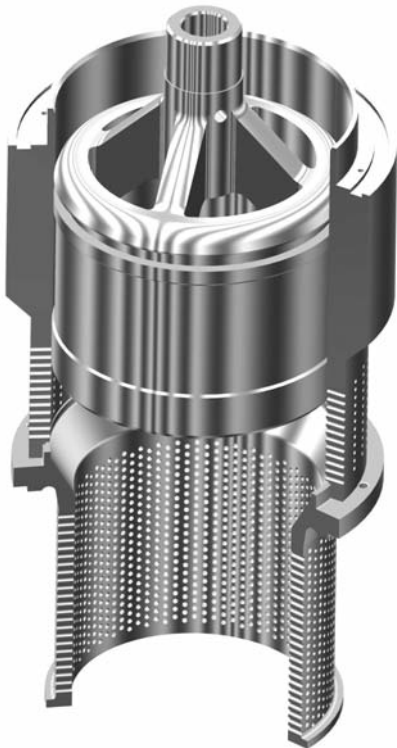
**Models 41335 - 41535 - 41635 - 41935**  
**Single Stage**  
**Low Noise Trim FTO**  
**Anti-Cavitation Trim FTC**



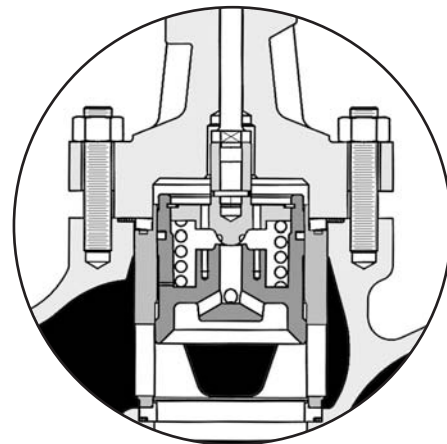
**Models 41355 - 41555 - 41655 - 41955**  
**Multi-Stage**  
**Low Noise Trim FTO**



**Models 41395 - 41495 - 41595 - 41995**  
**Multi-Stage**  
**Anti-Cavitation Trim FTC**

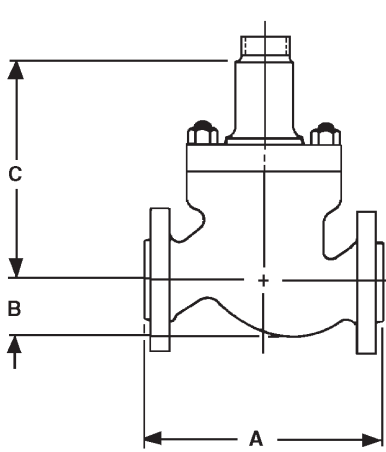


**Model 41045**  
**Single Stage with Internal Diffuser**  
**(Sizes 6" - 16")**

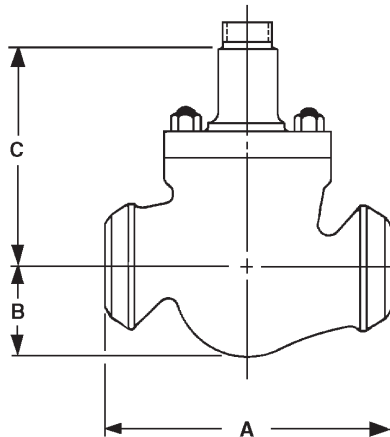


**Model 41405**  
**Pilot Balanced Construction FTC**

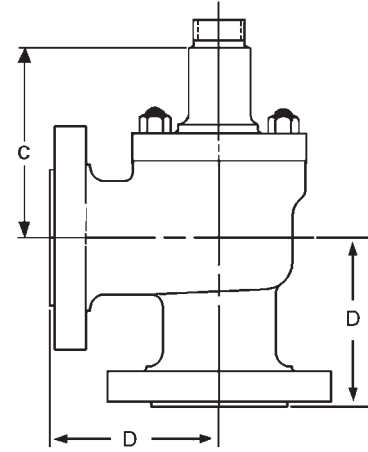
## Dimensions (inches)



**Flanged**



**Butt, Socket Weld  
or Screwed Ends**



**Angle**

### Body S/A (inches)

Pressure Class		A										
		ANSI Class 150 and equivalent PN		ANSI Class 300 and equivalent PN			ANSI Class 600 and equivalent PN			ANSI Class 900 and equivalent PN		
Valve Size		RF	RTJ	BW & SW	RF	RTJ	BW & SW	RF	RTJ	BW & SW	RF	RTJ
inches	mm											
2	50	10.00	10.50	11.26	10.50	11.12	11.26	11.24	11.38	14.76	14.74	14.88
3	80	11.75	12.25	13.27	12.50	13.12	13.27	13.25	13.37	18.11	17.38	17.48
3x2	80x50	"	"	"	"	"	"	"	"	(1)	(1)	(1)
4	100	13.86	14.33	15.51	14.50	15.12	15.51	15.50	15.62	20.87	20.12	20.24
4x2	100x50	"	"	"	"	"	"	"	"	(1)	(1)	(1)
4x3	100x80	"	"	"	"	"	"	"	"	20.87	20.12	20.24
6	150	17.75	18.27	20.00	18.64	19.25	20.00	20.00	20.12	30.24	28.12	28.24
6x3	150x80	"	"	"	"	"	"	"	"	"	"	"
6x4	150x100	"	"	"	"	"	"	"	"	"	"	"
8	200	21.38	21.87	24.02	22.38	22.99	24.02	24.00	24.13	32.76	36.00	36.12
8x4	200x100	"	"	"	"	"	"	"	"	"	"	"
8x6	200x150	"	"	"	"	"	"	"	"	"	"	"
10	250	26.50	27.00	29.61	27.88	28.50	29.61	29.62	29.72	39.02	43.00	43.12
10x6	250x150	"	"	"	"	"	"	"	"	"	"	"
10x8	250x200	"	"	"	"	"	"	"	"	"	"	"
12	300	29.02	29.53	32.24	30.51	31.14	32.24	32.25	32.36	44.49	44.49	44.61
12x8	300x200	"	"	"	"	"	"	"	"	"	"	"
16	400	40.00	40.51	43.62	41.61	42.25	43.62	43.62	43.74	55.98	54.72	55.08
16x12	400x300	"	"	"	"	"	(1)	"	"	(1)	(1)	(1)

Notes: 1. Consult Masoneilan  
2. Ex. 3x2 size = valve with 3" body x standard 2" trim.

## Dimensions (inches)

### Body S/A (inches)

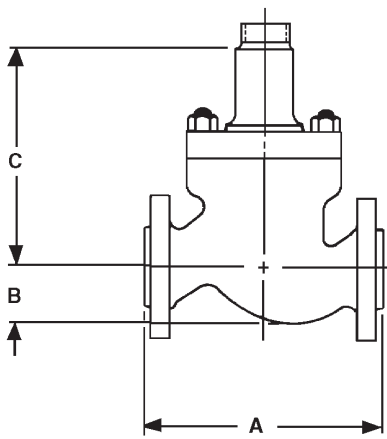
Pressure Class		A			B max	C max
		ANSI Class 1500 and equivalent PN				
Valve Size		BW & SW	RF	RTJ	All Classes	All Classes
inches	mm					
2	50	14.76	14.74	14.88	3.70	9.84
3	80	18.11	18.13	18.23	5.63	11.81
3x2	80x50	(1)	(1)	(1)	4.57	9.88
4	100	20.87	20.88	21.00	6.26	12.99
4x2	100x50	(1)	(1)	(1)	6.06	10.28
4x3	100x80	20.87	20.88	21.00	6.26	12.68
6	150	30.24	30.24	30.47	8.54	15.35
6x3	150x80	"	"	"	7.48	12.68
6x4	150x100	"	"	"	7.48	13.46
8	200	32.76	38.25	38.62	8.07	20.51
8x4	200x100	"	"	"	8.74	14.41
8x6	200x150	"	"	"	8.74	17.05
10	250	39.02	46.00	46.38	9.61	22.44
10x6	250x150	"	"	"	9.13	18.46
10x8	250x200	"	"	"	9.13	18.46
12	300	44.49	47.95	48.58	14.17	24.65
12x8	300x200	(1)	(1)	(1)	9.84	20.51
16	400	55.98	59.37	60.24	19.09	31.69
16x12	400x300	(1)	(1)	(1)	17.72	25.59

Notes: 1. Consult Masonneilan  
2. Ex. 3x2 size = valve with 3" body x standard 2" trim.

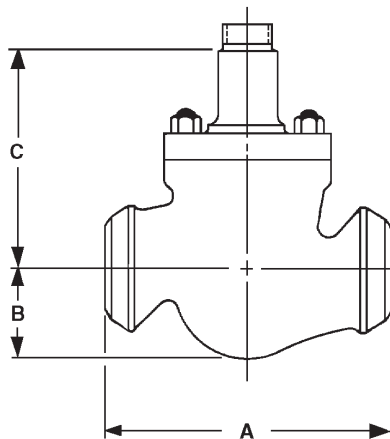
### Angle Body S/A (inches)

Pressure Class		D									
		ANSI Class 150 and equivalent PN		ANSI Class 300 and equivalent PN		ANSI Class 600 and equivalent PN		ANSI Class 900 and equivalent PN		ANSI Class 1500 and equivalent PN	
Valve Size		RF	RTJ	RF	RTJ	RF	RTJ	RF	RTJ	RF	RTJ
inches	mm										
2	50	5.15	5.38	5.27	5.58	5.78	5.84	7.27	7.35	7.27	7.35
3	80	5.92	6.17	6.29	6.61	7.04	7.12	8.89	8.97	9.28	9.36
4	100	7.71	7.94	8.04	8.34	8.53	8.61	10.38	10.46	10.78	10.86
6	150	8.34	8.59	8.77	9.09	11.02	11.07	12.04	12.10	13.89	14.01

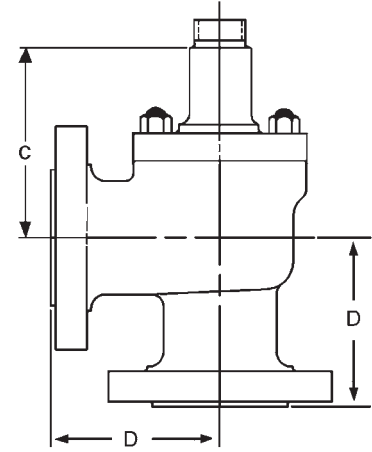
## Dimensions (mm)



**Flanged**



**Butt, Socket Weld  
or Screwed Ends**



**Angle**

### Body S/A (mm)

Pressure Class		A										
		ANSI Class 150 and equivalent PN		ANSI Class 300 and equivalent PN			ANSI Class 600 and equivalent PN			ANSI Class 900 and equivalent PN		
Valve Size		RF	RTJ	BW & SW	RF	RTJ	BW & SW	RF	RTJ	BW & SW	RF	RTJ
inches	mm											
2	50	254	267	286	267	282	286	285	289	375	374	378
3	80	298	311	337	318	333	337	337	340	460	441	444
3x2	80x50	"	"	"	"	"	"	"	"	(1)	(1)	(1)
4	100	352	364	394	368	384	394	394	397	530	511	514
4x2	100x50	"	"	"	"	"	"	"	"	(1)	(1)	(1)
4x3	100x80	"	"	"	"	"	"	"	"	530	511	514
6	150	451	464	508	473	489	508	508	511	768	714	717
6x3	150x80	"	"	"	"	"	"	"	"	"	"	"
6x4	150x100	"	"	"	"	"	"	"	"	"	"	"
8	200	543	555	610	568	584	610	610	613	832	914	917
8x4	200x100	"	"	"	"	"	"	"	"	"	"	"
8x6	200x150	"	"	"	"	"	"	"	"	"	"	"
10	250	673	686	752	708	724	752	752	755	991	1092	1095
10x6	250x150	"	"	"	"	"	"	"	"	"	"	"
10x8	250x200	"	"	"	"	"	"	"	"	"	"	"
12	300	737	750	819	775	791	812	819	822	1130	1130	1133
12x8	300x200	"	"	"	"	"	"	"	"	"	"	"
16	400	1016	1029	1108	1057	1073	1108	1108	1111	1422	1390	1399
16x12	400x300	"	"	"	"	"	(1)	"	"	(1)	(1)	(1)

Notes: 1. Consult Masoneilan

2. Ex. 80x50 size = valve with 80mm body x standard 50mm trim.

## Dimensions (mm)

### Body S/A (mm)

Pressure Class		A			B max	C max
		ANSI Class 1500 and equivalent PN				
Valve Size		BW & SW	RF	RTJ	All Classes	All Classes
inches	mm					
2	50	375	374	378	94	250
3	80	460	461	463	143	300
3x2	80x50	(1)	(1)	(1)	116	251
4	100	530	530	533	159	330
4x2	100x50	(1)	(1)	(1)	154	261
4x3	100x80	530	530	533	159	322
6	150	768	768	774	217	390
6x3	150x80	"	"	"	190	322
6x4	150x100	"	"	"	190	342
8	200	832	972	981	205	521
8x4	200x100	"	"	"	222	366
8x6	200x150	"	"	"	222	433
10	250	991	1168	1178	244	570
10x6	250x150	"	"	"	232	469
10x8	250x200	"	"	"	232	469
12	300	1130	1218	1234	360	626
12x8	300x200	(1)	(1)	(1)	250	521
16	400	1422	1508	1530	485	805
16x12	400x300	(1)	(1)	(1)	450	650

Notes: 1. Consult Masoneilan

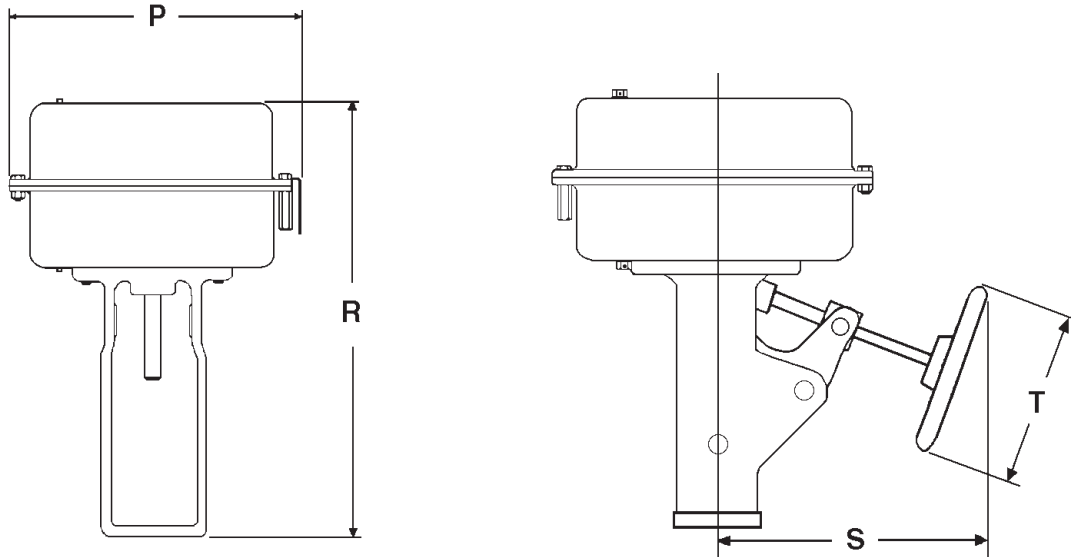
2. Ex. 80x50 size = valve with 80mm body x standard 50mm trim.

### Angle Body S/A (mm)

Pressure Class		D									
		ANSI Class 150 and equivalent PN		ANSI Class 300 and equivalent PN		ANSI Class 600 and equivalent PN		ANSI Class 900 and equivalent PN		ANSI Class 1500 and equivalent PN	
Valve Size		RF	RTJ	RF	RTJ	RF	RTJ	RF	RTJ	RF	RTJ
inches	mm										
2	50	131	137	134	142	147	148	185	187	185	187
3	80	150	157	160	168	179	181	226	228	236	238
4	100	196	202	204	212	217	219	264	266	274	276
6	150	212	218	223	231	280	281	306	307	353	356

## Actuator Dimensions

### Model 87/88 Multi-Spring Diaphragm Actuator



Shown with optional handwheel

#### Model 87/88 Actuator (inches)

Actuator Size	P	R	S	T
6	11.50	15.54	10.00	9.00
10	14.50	19.58	10.90	12.00
16	18.75	28.22	14.00	18.00
23	21.63	30.71	16.00	18.00

Actuator removal clearance = 6 inches

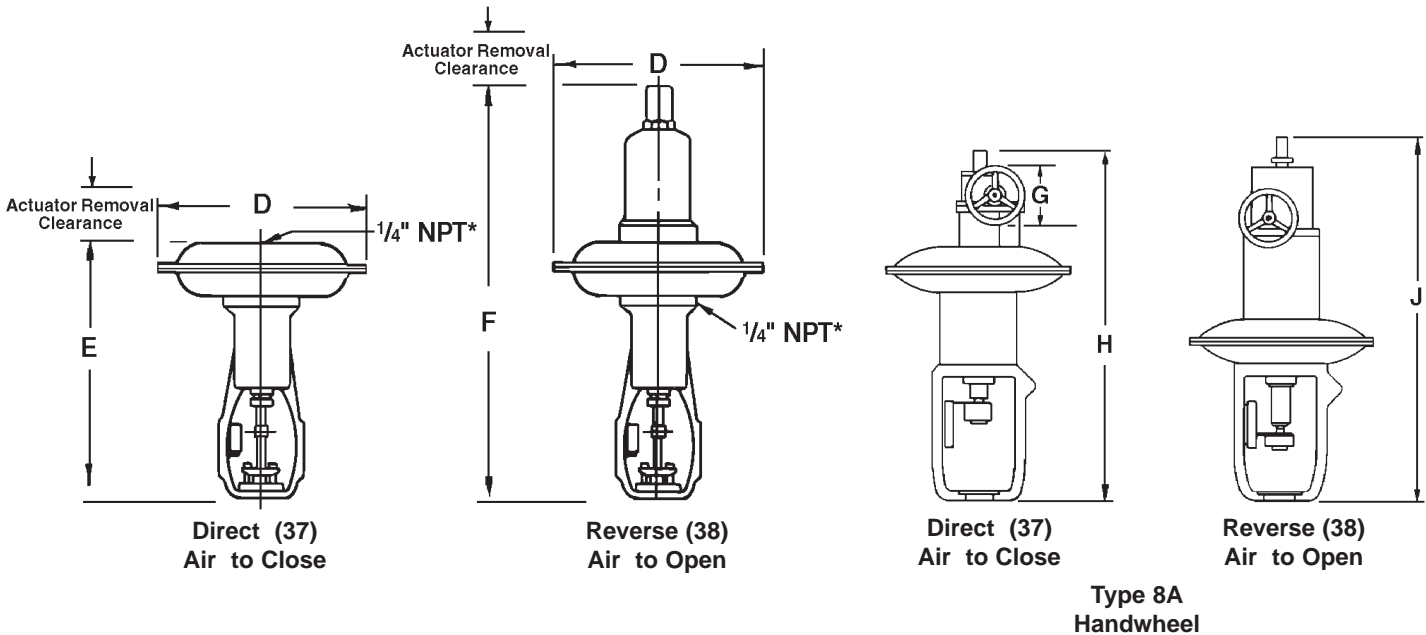
#### Model 87/88 Actuator (mm)

Actuator Size	P	R	S	T
6	292	395	254	229
10	368	497	277	305
16	476	717	356	457
23	549	780	406	457

Actuator removal clearance = 150 mm

# Actuator Dimensions

## Model 37/38 Spring Diaphragm Actuator



Model 37/38 Actuator (inches)

Size	Actuator				Side-Mounted Handwheel			
	Actuator Removal Clearance	D	E Dir.	F Rev.	Type	G	H Dir.	J Rev.
18	5.6	20.75	33.4	53 max	8A	8	56 max	66 max
24	5.0	27.5	34.7	59 max	8A	12		

\* 1/2" NPT for No. 24 Actuator

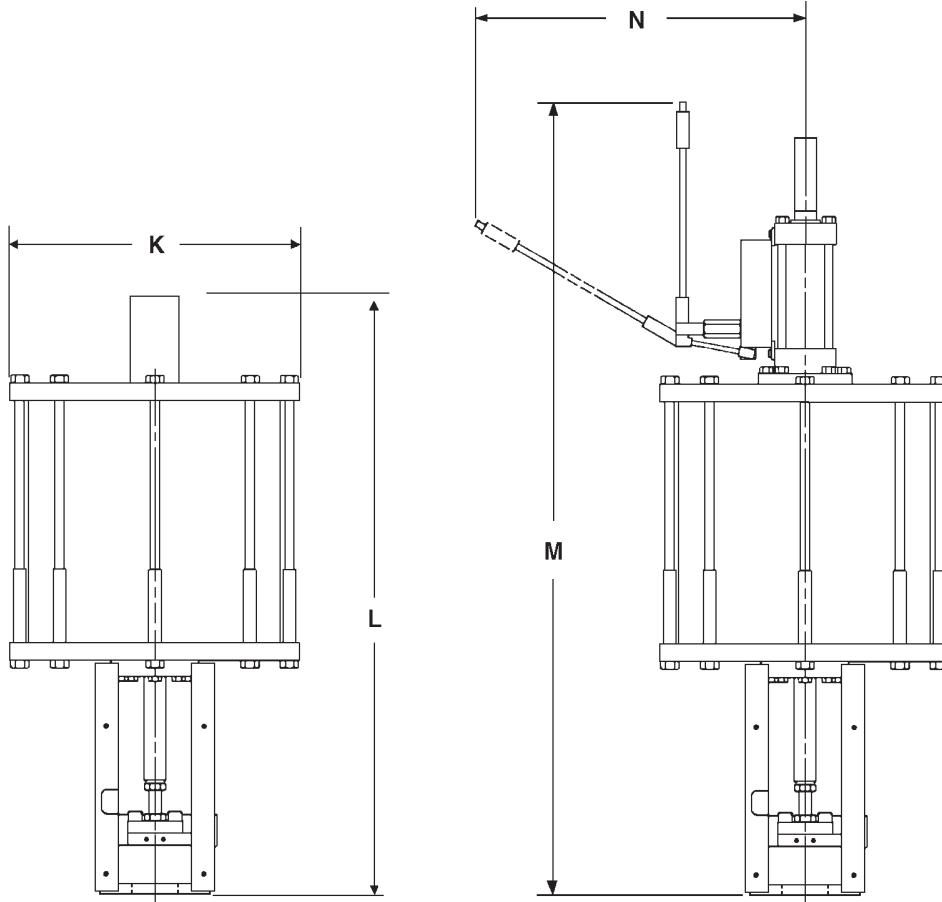
Model 37/38 Actuator (mm)

Size	Actuator				Side-Mounted Handwheel			
	Actuator Removal Clearance	D	E Dir.	F Rev.	Type	G	H Dir.	J Rev.
18	142	527	849	1353 max	8A	203	1425 max	1667 max
24	127	699	881	1505 max	8A	305		

\* 1/2" NPT for No. 24 Actuator

# Actuator Dimensions

## Model 84/85/86 Cylinder Actuator



### Model 84/85/86 Actuator (inches)

Actuator Size	K	L	M	N
154	14.80	47.80	62.10	26.70
314	23.90	49.80	64.50	27.00

Actuator removal clearance = 6 inches

Actuator removal clearance with handjack = 7.2 inches

### Model 84/85/86 Actuator (mm)

Actuator Size	K	L	M	N
154	376	1214	1577	678
314	607	1265	1638	686

Actuator removal clearance = 150 mm

Actuator removal clearance with handjack = 180 mm



## Weights

### Body S/A Weights (lbs)

Valve Size		Flanged Connection				Threaded / Welded Connection		
		ANSI Class 150, 300 and equivalent PN	ANSI Class 600 and equivalent PN	ANSI Class 900 and equivalent PN	ANSI Class 1500 and equivalent PN	ANSI Class 600 and equivalent PN	ANSI Class 900 and equivalent PN	ANSI Class 1500 and equivalent PN
inches	mm							
2	50	88	88	110	110	88	88	88
3	80	176	198	265	287	154	221	221
4	100	221	265	463	485	198	375	397
6	150	419	507	882	1036	397	750	816
8	200	772	926	1389	1698	772	1147	1323
10	250	1257	1367	2227	2646	1125	1852	2007
12	300	1632	2117	2933	4278	1808	2448	3330
16	400	3462	3837	-	-	3330	-	-

### Body S/A Weights (kg)

Valve Size		Flanged Connection				Threaded / Welded Connection		
		ANSI Class 150, 300 and equivalent PN	ANSI Class 600 and equivalent PN	ANSI Class 900 and equivalent PN	ANSI Class 1500 and equivalent PN	ANSI Class 600 and equivalent PN	ANSI Class 900 and equivalent PN	ANSI Class 1500 and equivalent PN
inches	mm							
2	50	40	40	50	50	40	40	40
3	80	80	90	120	130	70	100	100
4	100	100	120	210	220	90	170	180
6	150	190	230	400	470	180	340	370
8	200	350	420	630	770	350	520	600
10	250	570	620	1010	1200	510	840	910
12	300	740	960	1330	1940	820	1110	1510
16	400	1570	1740	-	-	1510	-	-

### Model 87/88 Spring Diaphragm Actuator (lbs)

Size	Standard	With Handwheel
6	45	60
10	85	105
16	210	245
23	265	340

### Model 87/88 Spring Diaphragm Actuator (kg)

Size	Standard	With Handwheel
6	20	27
10	38	48
16	95	111
23	120	154

## Weights

**Model 37/38 Spring Diaphragm Actuator (lbs)**

Size	Standard		With Handwheel	
	Direct	Reverse	Direct	Reverse
18	190	450 max	234	494
24	375	540 max	419	584

**Model 37/38 Spring Diaphragm Actuator (kg)**

Size	Standard		With Handwheel	
	Direct	Reverse	Direct	Reverse
18	86	204 max	106	224
24	170	245 max	190	265

**Model 84/85/86 Cylinder Actuator (lbs)**

Actuator Size	Base Weight	Small Spring	Large Spring	Medium Spring	Handjack
154	266	60	82	–	100
314	709	60	142	84	100

**Model 84/85/86 Cylinder Actuator (kg)**

Actuator Size	Base Weight	Small Spring	Large Spring	Medium Spring	Handjack
154	120	27	37	–	45
314	321	27	64	38	45

## Options

### 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
Soft Seat (IEC 534-4 and ANSI Class VI)
Non-Destructive Examination
Oxygen Cleaning
Electric Actuators

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

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## About Dresser, Inc.

Dresser, Inc. is a leader in providing highly engineered infrastructure products for the global energy industry. The company has leading positions in a broad portfolio of products including valves, actuators, meters, switches, regulators, piping products, natural gas-fueled engines, retail fuel dispensers and associated retail point of sale systems and air and gas handling equipment.

Leading brand names within the Dresser portfolio include Dresser Wayne® retail fueling systems, Waukesha® natural gas-fired engines, Masoneilan® control valves, Mooney® regulators, Consolidated® pressure relief valves, and Roots® blowers and rotary gas meters. It has manufacturing and customer service facilities located strategically worldwide and a sales presence in more than 100 countries. The company's website can be accessed at [www.dresser.com](http://www.dresser.com).

## About Dresser Masoneilan

Headquartered in Houston, Dresser Masoneilan is a leading brand in the Dresser, Inc. portfolio. With a history of innovation and technological leadership that goes back more than 125 years, Dresser Masoneilan delivers flexible, best-fit process control valve solutions with interoperable instrumentation and smart technologies for a wide range of applications and industries. An "open architecture" technology platform offers more product application and operational flexibility. With strategically located manufacturing operations and a worldwide network of service and support facilities, Dresser Masoneilan delivers comprehensive process control solutions and services to a global market.

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