

Sanitary Control Valves

U.S. Type SCV-85 (Includes SC510)

DESCRIPTION

The U.S. SCV-85 Research Control® Valves are compact control valves.

APPLICATIONS

Valves of the SCV-85 type are well suited to automated control systems found in biotechnology, pharmaceutical and food processes.

- Pressure
- Temperature
- Product injection
- Flow control in fermentation reactors
- Control of gas blankets in closed vessels
- Catalyst, defoamer and additive initiation

MATERIALS

Body and Bonnet	316/316L stainless steel barstock	
Innervalue	316/316L stainless steel barstock trims Characteristics: equal percentage, linear or special	
Clamps	304 or 316 stainless steel	
Gaskets	Standard Optional	Viton® (FKM) Silicone, EPDM or Kalrez®
O-Rings	Standard Optional	Viton (FKM) Silicone, EPDM or Kalrez
Actuator Housing	Standard Optional	Epoxy-coated aluminum 316/316L stainless steel

ACTUATOR CHOICES

Standard	Air-to-open, fail close (ATO) Air-to-close, fail open (ATC)
Optional	316 stainless steel actuator
Optional	ATO or ATC with integral top mounted positioner
Optional	ATO or ATC with side mounted positioner
Signal Ranges	3-15#, 3-27#, 6-30# (3-9#, 9-15# with positioner)
Electronic Actuator	Electric actuators up to 200 pounds of thrust



Shown with optional stainless steel actuator

STANDARD FEATURES

- Sizes: 1/2 in. (12.7 mm), 3/4 in. (19 mm), 1 in. (25.4 mm) and 1-1/2 in. (38.1 mm)
- Pressure vs temperature rating:
300 psi @ 75° F (21 bar @ 24° C),
150 psi @ 300° F (10 bar @ 149° C)
- Self-draining design
- Quick disassembly with clamps
- Choice of ends: butt-weld, Tri-Clamp®
- Designed for STEAM-IN-PLACE and CLEAN-IN-PLACE
- Internal finish: 16 Ra

OPTIONS

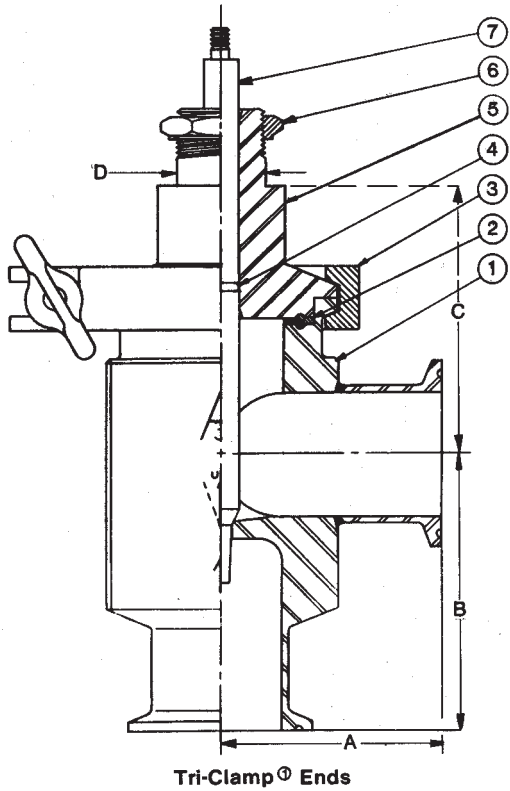
- | | |
|---|--|
| <input type="checkbox"/> Manual Handwheel | <input type="checkbox"/> Certifications |
| <input type="checkbox"/> Filters | <input type="checkbox"/> Electric Actuator |
| <input type="checkbox"/> Positioners | <input type="checkbox"/> Limit Switches |
| <input type="checkbox"/> I/P Transducers | <input type="checkbox"/> Regulators |

Custom bracketing available with each option.

OTHER VALVES

Badger Meter manufactures many models of both standard and specialty control valves, conventional as well as sanitary designs. If your needs for small control valves can be served with a custom designed valve, please contact your area representative for assistance.

DIMENSIONS



Item Description

Item	Description
1	Body
2	Body – bonnet gasket
3	Body – bonnet clamp
4	O-ring
5	Bonnet
6	Yoke locknut
7	Inner valve

Dimensions

Size	A	B	C	D	Stroke
1/2 in. (13 mm)	1.56 in. (40 mm)	1.56 in. (40 mm)	2.75 in. (70 mm)	0.875 in. (22 mm)	0.562 in. (14 mm)
3/4 in. (19 mm)		1.69 in. (43 mm)	2.62 in. (67 mm)		
1 in. (25 mm)	2.75 in. (70 mm)	2.62 in. (67 mm)	3.12 in. (79 mm)		
1-1/2 in. (38 mm)		2.87 in. (73 mm)	2.87 in. (73 mm)		

Valve Numbers

Size	Valve No.
1/2 in. (13 mm)	904
3/4 in. (19 mm)	908
1 in. (25 mm)	912
1-1/2 in. (38 mm)	896

INNERVALVE CHART

Valve Size	Trim Designation	CV	KV	Nom. Rangeability		Orifice Port Diameter	Port Area (in. ²)
		Coefficient		Linear	(=%)		
1-1/2 in.	20	20.00	17.24	40:1	60:1	1.00 in. (25.4 mm)	0.7854
	15	15.00	12.93	40:1	60:1	1.00 in. (25.4 mm)	0.7854
1 in. and 1-1/2 in.	10	10.00	8.62	40:1	60:1	0.75 in. (19.1 mm)	0.4420
	8	8.00	6.90	40:1	60:1	0.75 in. (19.1 mm)	0.4420
3/4 in., 1 in., and 1-1/2 in.	6	6.00	5.17	40:1	60:1	0.75 in. (19.1 mm)	0.4420
	5	5.00	4.31	40:1	60:1	0.50 in. (12.7 mm)	0.1964
1/2 in., 3/4 in., 1 in., and 1-1/2 in.	4	4.00	3.45	40:1	60:1	0.50 in. (12.7 mm)	0.1964
	A	3.00	2.59	40:1	60:1	0.50 in. (12.7 mm)	0.1964
	B	2.00	1.72	40:1	60:1	0.375 in. (9.5 mm)	0.1105
	C	1.25	1.08	40:1	60:1	0.375 in. (9.5 mm)	0.1105
	D	0.80	0.69	40:1	60:1	0.375 in. (9.5 mm)	0.1105
	E	0.50	0.43	40:1	60:1	0.375 in. (9.5 mm)	0.1105
	F	0.32	0.28	30:1	40:1	0.156 in. (4.0 mm)	0.0192
	G	0.20	0.17	30:1	40:1	0.156 in. (4.0 mm)	0.0192
	H	0.13	0.11	30:1	40:1	0.156 in. (4.0 mm)	0.0192
	I	0.08	0.07	30:1	40:1	0.156 in. (4.0 mm)	0.0192
J	0.05	0.04	30:1	40:1	0.156 in. (4.0 mm)	0.0192	

Control. Manage. Optimize.

Research Control is a registered trademark of Badger Meter, Inc. Other trademarks appearing in this document are the property of their respective entities. Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change product or system specifications without notice, except to the extent an outstanding contractual obligation exists. © 2022 Badger Meter, Inc. All rights reserved.

DESCRIPTION

The U.S. SCV-85 Research Control® Valves are compact control valves designed to meet the manufacturing standards established by the 3A Symbol Council.

APPLICATIONS

Valves of the SCV-85 type are well suited to automated control systems found in biotechnology, pharmaceutical and food processes.

- Pressure
- Temperature
- Product injection
- Flow control in fermentation reactors
- Control of gas blankets in closed vessels
- Catalyst, defoamer and additive initiation

MATERIALS

Body and Bonnet	316/316L stainless steel barstock	
Innervalue	316/316L stainless steel barstock trims Characteristics: equal percentage, linear or special	
Clamps	304 or 316 stainless steel	
Gaskets	Standard Optional	Viton® (FKM) Silicone, EPDM or Kalrez®
O-Rings	Standard Optional	Viton (FKM) Silicone, EPDM or Kalrez
Actuator Housing	Standard Optional	Epoxy-coated aluminum 316/316L stainless steel

ACTUATOR CHOICES

Standard	Air-to-open, fail close (ATO) Air-to-close, fail open (ATC)
Optional	316 stainless steel actuator
Optional	ATO or ATC with integral top mounted positioner
Optional	ATO or ATC with side mounted positioner
Signal Ranges	3-15#, 3-27#, 6-30# (3-9#, 9-15# with positioner)
Electronic Actuator	Electric actuators up to 200 pounds of thrust



Shown with optional stainless steel actuator

STANDARD FEATURES

- Sizes: 1/2 in. (12.7 mm), 3/4 in. (19 mm), 1 in. (25.4 mm) and 1-1/2 in. (38.1 mm)
- Pressure vs temperature rating:
300 psi @ 75° F (21 bar @ 24° C),
150 psi @ 300° F (10 bar @ 149° C)
- Manufactured to 3A Symbol standards
- Self-draining design
- Quick disassembly with clamps
- Tri-Clamp® connections®
- Designed for STEAM-IN-PLACE and CLEAN-IN-PLACE
- Internal finish: 16 Ra

OPTIONS

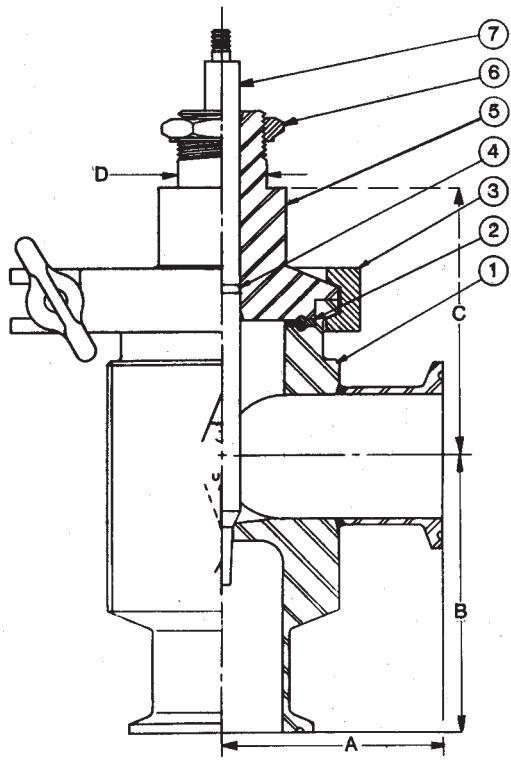
- | | |
|---|--|
| <input type="checkbox"/> Manual Handwheel | <input type="checkbox"/> Certifications |
| <input type="checkbox"/> Filters | <input type="checkbox"/> Electric Actuator |
| <input type="checkbox"/> Positioners | <input type="checkbox"/> Limit Switches |
| <input type="checkbox"/> I/P Transducers | <input type="checkbox"/> Regulators |

Custom bracketing available with each option.

OTHER VALVES

Badger Meter manufactures many models of both standard and specialty control valves, conventional as well as sanitary designs. If your needs for small control valves can be served with a custom designed valve, please contact your area representative for assistance.

DIMENSIONS



Tri-Clamp® Ends

Item Description

Item	Description
1	Body
2	Body – bonnet gasket
3	Body – bonnet clamp
4	O-ring
5	Bonnet
6	Yoke locknut
7	Innervalve

Dimensions

Size	A	B	C	D	Stroke
1/2 in. (13 mm)	1.56 in. (40 mm)	1.56 in. (40 mm)	2.75 in. (70 mm)	0.875 in. (22 mm)	0.562 in. (14 mm)
3/4 in. (19 mm)		1.69 in. (43 mm)	2.62 in. (67 mm)		
1 in. (25 mm)	2.75 in. (70 mm)	2.62 in. (67 mm)	3.12 in. (79 mm)		
1-1/2 in. (38 mm)		2.87 in. (73 mm)	2.87 in. (73 mm)		

Valve Numbers

Size	Valve No.
1/2 in. (13 mm)	903
3/4 in. (19 mm)	907
1 in. (25 mm)	911
1-1/2 in. (38 mm)	895
2 in. (50 mm)	981

INNERVALVE CHART

Valve Size	Trim Designation	CV	KV	Nom. Rangeability		Orifice Port Diameter	Port Area (in. ²)
		Coefficient		Linear	(=%)		
1-1/2 in.	20	20.00	17.24	40:1	60:1	1.00 in. (25.4 mm)	0.7854
	15	15.00	12.93	40:1	60:1	1.00 in. (25.4 mm)	0.7854
1 in. and 1-1/2 in.	10	10.00	8.62	40:1	60:1	0.75 in. (19.1 mm)	0.4420
	8	8.00	6.90	40:1	60:1	0.75 in. (19.1 mm)	0.4420
3/4 in., 1 in., and 1-1/2 in.	6	6.00	5.17	40:1	60:1	0.75 in. (19.1 mm)	0.4420
	5	5.00	4.31	40:1	60:1	0.50 in. (12.7 mm)	0.1964
1/2 in., 3/4 in., 1 in., and 1-1/2 in.	4	4.00	3.45	40:1	60:1	0.50 in. (12.7 mm)	0.1964
	A	3.00	2.59	40:1	60:1	0.50 in. (12.7 mm)	0.1964
	B	2.00	1.72	40:1	60:1	0.375 in. (9.5 mm)	0.1105
	C	1.25	1.08	40:1	60:1	0.375 in. (9.5 mm)	0.1105
	D	0.80	0.69	40:1	60:1	0.375 in. (9.5 mm)	0.1105
	E	0.50	0.43	40:1	60:1	0.375 in. (9.5 mm)	0.1105
	F	0.32	0.28	30:1	40:1	0.156 in. (4.0 mm)	0.0192
	G	0.20	0.17	30:1	40:1	0.156 in. (4.0 mm)	0.0192
	H	0.13	0.11	30:1	40:1	0.156 in. (4.0 mm)	0.0192
	I	0.08	0.07	30:1	40:1	0.156 in. (4.0 mm)	0.0192
J	0.05	0.04	30:1	40:1	0.156 in. (4.0 mm)	0.0192	

Control. Manage. Optimize.

Research Control is a registered trademark of Badger Meter, Inc. Other trademarks appearing in this document are the property of their respective entities. Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change product or system specifications without notice, except to the extent an outstanding contractual obligation exists. © 2022 Badger Meter, Inc. All rights reserved.

DESCRIPTION

The Type NRMA Non-Rotating Manual Actuation design is used in applications where either our low-flow trims, cooling fins or bellows are needed and when applications demand human interaction. The manual actuator can be mounted on all RC series valves, including all "P" Trims and all Bonnets. Exchanging between electrical, pneumatic and manual actuators is therefore possible at any time with simple additions. The actuator is encapsulated and completely maintenance-free—designed for fine control.

APPLICATIONS

When you turn the hand wheel, the valve interior moves in a linear motion. This linear movement, from the hand wheel to the internal coupling, prevents damage to the trim and seat, distinguishing this design from conventional manual control valves.

FEATURES

- Hand drive, linear
- Suitable for Badger Meter® modular construction

MATERIALS

Case	1.4404 (316L)
Yoke	1.4404 (316L)
Hand Wheel	Duroplast

SPECIFICATIONS

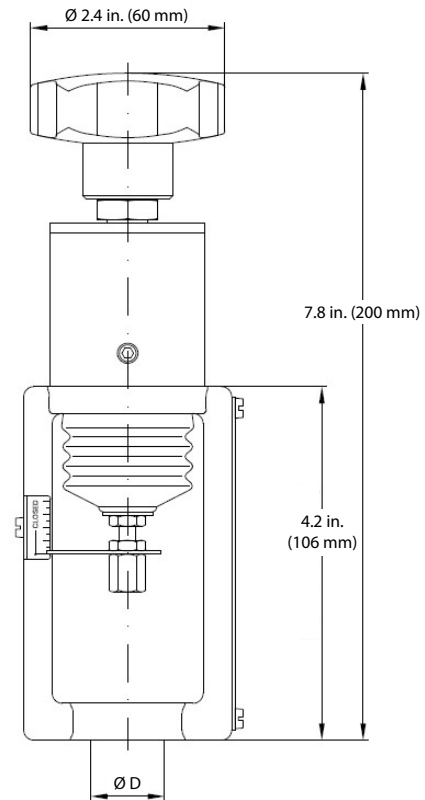
Weight	Approximately 3.3 lb (1.5 kg)
Temperature	-40...176° F (-40...80° C)
Valve Lift	0.04 in. (1 mm) / 360° turn

SIZES FOR RESEARCH CONTROL VALVES

Sizes	Ø Average	Stroke
1/4 in. standard	0.625 in.	11.1 mm
1/2 in., 3/4 in., 1 in. standard	0.875 in.	14.3 mm
1/2 in., 3/4 in., 1 in. heavy duty guiding	0.875 in.	14.3 mm



DIMENSIONS



RCV Valves		Trim Sizes Equal %															
% Lift	% Cv	6.0	5	4.5	4	3.5	A	B	C	D	E	F	G	H	I	J	% Lift
0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
5%	1.0%	0.06	0.05	0.04	0.04	0.03	0.02	0.02	0.01	0.008	0.005	0.003	0.002	0.001	0.001	0.000	5%
10%	1.9%	0.11	0.10	0.09	0.08	0.07	0.05	0.04	0.02	0.015	0.010	0.006	0.004	0.002	0.002	0.001	10%
20%	3.8%	0.23	0.19	0.17	0.15	0.13	0.10	0.08	0.05	0.031	0.019	0.012	0.008	0.005	0.003	0.002	20%
25%	4.8%	0.29	0.24	0.22	0.19	0.17	0.12	0.10	0.06	0.038	0.024	0.015	0.010	0.006	0.004	0.002	25%
30%	5.9%	0.35	0.29	0.26	0.23	0.20	0.15	0.12	0.07	0.047	0.029	0.019	0.012	0.008	0.005	0.003	30%
40%	8.8%	0.53	0.44	0.40	0.35	0.31	0.22	0.18	0.11	0.070	0.044	0.028	0.018	0.011	0.007	0.004	40%
50%	13.2%	0.79	0.66	0.59	0.53	0.46	0.33	0.26	0.16	0.105	0.066	0.042	0.026	0.017	0.011	0.007	50%
60%	19.8%	1.19	0.99	0.89	0.79	0.69	0.49	0.40	0.25	0.158	0.099	0.063	0.040	0.026	0.016	0.010	60%
70%	29.6%	1.78	1.48	1.33	1.19	1.04	0.74	0.59	0.37	0.237	0.148	0.095	0.059	0.039	0.024	0.015	70%
75%	36.3%	2.18	1.81	1.63	1.45	1.27	0.91	0.73	0.45	0.290	0.181	0.116	0.073	0.047	0.029	0.018	75%
80%	44.4%	2.67	2.22	2.00	1.78	1.56	1.11	0.89	0.56	0.356	0.222	0.142	0.089	0.058	0.036	0.022	80%
90%	66.7%	4.00	3.33	3.00	2.67	2.33	1.67	1.33	0.83	0.533	0.333	0.213	0.133	0.087	0.053	0.033	90%
100%	100%	6.00	5.00	4.50	4.00	3.50	2.50	2.00	1.25	0.800	0.500	0.320	0.200	0.130	0.080	0.050	100%
Valve Sizes		1"	1"	1"	1", 3/4"	1", 3/4"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	

Trim Sizes O through P-18 are available only in linear characteristic. See Product Data Sheets for maximum Cvs.

RCV Valves		Trim Sizes Equal %															
% Lift	% Cv	6.0	5	4.5	4	3.5	A	B	C	D	E	F	G	H	I	J	% Lift
0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
5%	1.0%	0.30	0.25	0.23	0.20	0.18	0.13	0.10	0.06	0.040	0.025	0.016	0.010	0.007	0.004	0.003	5%
10%	1.9%	0.60	0.50	0.45	0.40	0.35	0.25	0.20	0.13	0.080	0.050	0.032	0.020	0.013	0.008	0.005	10%
20%	3.8%	1.20	1.00	0.90	0.80	0.70	0.50	0.40	0.25	0.160	0.100	0.064	0.040	0.026	0.016	0.010	20%
25%	4.8%	1.50	1.25	1.13	1.00	0.88	0.63	0.50	0.31	0.200	0.125	0.080	0.050	0.033	0.020	0.013	25%
30%	5.9%	1.80	1.50	1.35	1.20	1.05	0.75	0.60	0.38	0.240	0.150	0.096	0.060	0.039	0.024	0.015	30%
40%	8.8%	2.40	2.00	1.80	1.60	1.40	1.00	0.80	0.50	0.320	0.200	0.128	0.080	0.052	0.032	0.020	40%
50%	13.2%	3.00	2.50	2.25	2.00	1.75	1.25	1.00	0.63	0.400	0.250	0.160	0.100	0.065	0.040	0.025	50%
60%	19.8%	3.60	3.00	2.70	2.40	2.10	1.50	1.20	0.75	0.480	0.300	0.192	0.120	0.078	0.048	0.030	60%
70%	29.6%	4.20	3.50	3.15	2.80	2.45	1.75	1.40	0.88	0.560	0.350	0.224	0.140	0.091	0.056	0.035	70%
75%	36.3%	4.50	3.75	3.38	3.00	2.63	1.88	1.50	0.94	0.600	0.375	0.240	0.150	0.098	0.060	0.038	75%
80%	44.4%	4.80	4.00	3.60	3.20	2.80	2.00	1.60	1.00	0.640	0.400	0.256	0.160	0.104	0.064	0.040	80%
90%	66.7%	5.40	4.50	4.05	3.60	3.15	2.25	1.80	1.13	0.720	0.450	0.288	0.180	0.117	0.072	0.045	90%
100%	100%	6.00	5.00	4.50	4.00	3.50	2.50	2.00	1.25	0.800	0.500	0.320	0.200	0.130	0.080	0.050	100%
Valve Sizes		1"	1"	1"	1", 3/4"	1", 3/4"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	

Numbers are for reference or comparison only.

% Lift	% Maximum Cv	
	Linear	Equal %
0%	0%	0%
5%	5%	1%
10%	10%	2%
20%	20%	4%
25%	25%	5%
30%	30%	6%
40%	40%	9%
50%	50%	13%
60%	60%	20%
70%	70%	30%
75%	75%	36%
80%	80%	44%
90%	90%	67%
100%	100%	100%

% Cv vs. % Lift

