

Small Control Valve

Type 807

DESCRIPTION

For more than 60 years, the Type 807 valve has performed in some of the world's most demanding applications. If your application requires critical control of liquid, gas or steam, your choice of control valves is one of the most important decisions you will make.

When it comes to specifying a control valve, the variables are complicated and exacting. That is why Research Control® Valves are available in a broad range of options—so we can design a truly engineered solution that matches your requirements.

APPLICATION

Processing plants, research facilities and government agencies worldwide rely on Research Control Valves for repeatable performance and durability. Built for applications 1 in. (25.4 mm) and under, our 807 control valve is an integral component in systems ranging from petrochemical to pharmaceutical manufacturing. It is an ideal choice for additive injection or flow and pressure control.

CONSTRUCTION

Body – Bonnet	
Standard	316/316L stainless steel, carbon steel (WCB)
Optional	Monel®, alloy 20, Hastelloy® C or ASTM equivalent, DIN 1.4581/1.4571. Other materials available upon request.
Innervalue	
Standard	316 stainless steel
Optional	Stellite®, Monel, alloy 20, Hastelloy C or B or ASTM equivalent
Packing	
Standard	TFE chevron rings
Optional	Graphite, Reduced Emissions Kalrez® (REK)
Actuator	
Standard	Die cast aluminum
Optional	316L stainless steel on 1/2", 3/4" and 1" models

ACTUATOR CHOICES

Standard	Air to open, fail close Air to close, fail open
Optional	With integral top-mounted positioner
Standard Signals	3-15#, 3-27#, 6-30#
Optional Signals	3-9#, 9-15#, with positioner
Accessories	Filter regulator, gauges, I/P converter, limit switches, handwheel, solenoids



Shown with Type 754 Actuator

STANDARD FEATURES

- 1/4 in. (6.4 mm), 1/2 in. (12.7 mm), 3/4 (19.1 mm) and 1 in. (25.4 mm) models
- Interchangeable trim sets
- Threaded bonnet for quick disassembly
- Trim characteristics: Linear, equal percent, quick open or double taper
- TFE chevron packing
- ANSI Class IV shutoff (size O and larger)

OPTIONAL FEATURES FOR 1/2 IN. (12.7 MM), 3/4 IN. (19.1 MM) AND 1 IN. (25.4 MM) MODELS

- Butt and socket weld ends, BSPP, tube connection and others
- Bonnet extensions for temperature extremes
- Bellows packing solutions
- Angle pattern bodies
- Reduced Emissions Kalrez® (REK), graphite, spring loaded chevron and others
- Exotic alloys for complete valves or trims
- Stellite trims & soft seats (PTFE & Kel-F)
- TiN coating of innervalue stem and seat
- Purge or leak ports

PRESSURE VS TEMPERATURE RATINGS FOR VALVE SUPERSTRUCTURE

The pressure/temperature ratings listed here are based on material cross sections at the joint between the body and bonnet where a gasketed screw type bonnet is used. When the proper torque levels are used, the valve should not experience rupture of the joint or the material. The listed torque levels were used in hydrostatic tests at the factory at 70° F (21.1° C) at maximum body rating and were found to provide acceptable seating. Other factors, such as high or cyclic temperatures, light process gases, or poor gasket surfaces can dictate the ability of a seal to be made. Under such conditions, the only way to be sure of tight sealing is to perform a test under the actual process conditions.

These charts are not intended as an indication of functionality or suitability for control service. Other charts are available to assist in the choosing of valve type, bonnet type, trim type and actuator.

When flanges, fittings or other pressure containing elements are added to the valve, the pressure rating of the total valve assumes the rating of the weakest component.

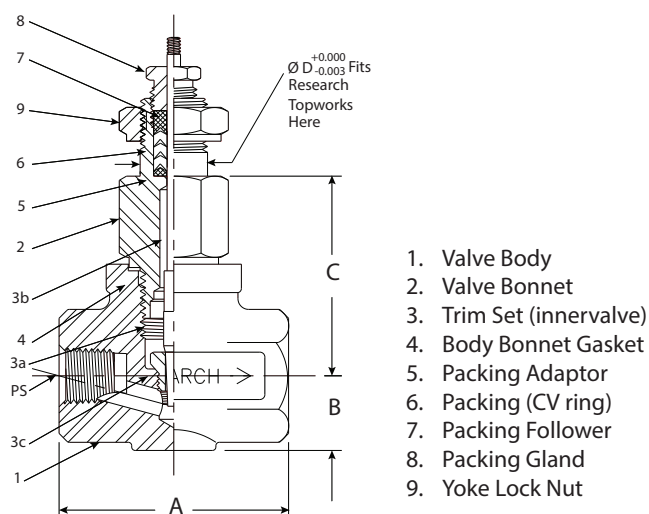
The following charts exclude packing or end fittings:

1/4 in. Research Control Valve						
Temp	316 S/S	Carbon Steel	Hastelloy B or =	Hastelloy C or =	Monel	Alloy 20
100° F (37.8° C)	5000	4000	5000	5000	4000	5000
200° F (93.3° C)	5000	3700	5000	5000	4000	5000
300° F (148.9° C)	4750	3500	5000	5000	3880	4850
400° F (204.4° C)	4190	3200	5000	5000	3770	4700
500° F (260.0° C)	4000	2900	4900	4900	3740	4500
600° F (315.6° C)	3820	2600	4850	4850	3740	4200
700° F (371.1° C)	3640	2300	4800	4800	3640	3900
800° F (426.7° C)	3580	—	4750	4750	3580	3700
900° F (482.2° C)	2840	—	—	4500	2280	3000
1000° F (537.8° C)	1160	—	—	4000	940	1500
1100° F (593.3° C)	Consult factory for higher temperatures.			3500	—	—
1200° F (648.9° C)				3000	—	—
Rec. Torque ft lb (+/- 2 ft-lb)	37	37	39	37	31	35

1/2 in. Research Control Valve						
Temp	316 S/S	Carbon Steel	Hastelloy B or =	Hastelloy C or =	Monel	Alloy 20
100° F (37.8° C)	5000	4000	5000	5000	4000	5000
200° F (93.3° C)	4750	3800	5000	5000	3780	5000
300° F (148.9° C)	4310	3600	5000	5000	3520	4950
400° F (204.4° C)	3860	3300	5000	5000	3420	4850
500° F (260.0° C)	3640	3100	4900	4900	3390	4600
600° F (315.6° C)	3470	2900	4850	4870	3390	4300
700° F (371.1° C)	3310	2700	4800	4610	3310	4200
800° F (426.7° C)	3255	—	4750	4430	2090	4000
900° F (482.2° C)	3190	—	—	4200	2070	3000
1000° F (537.8° C)	1860	—	—	4000	850	1500
1100° F (593.3° C)	Consult factory for higher temperatures.			3400	—	—
1200° F (648.9° C)				3000	—	—
Rec. Torque ft lb (+/- 2 ft lb)	122	122	131	124	102	117

3/4 in. and 1 in. Research Control Valve				
Temp	316 S/S		Carbon Steel	
	3/4 in. (19.1 mm)	1 in. (25.4 mm)	3/4 in. (19.1 mm)	1 in. (25.4 mm)
100° F (37.8° C)	1500	1500	1500	1500
200° F (93.3° C)	1450	1450	1350	1350
300° F (148.9° C)	1325	1325	1325	1325
400° F (204.4° C)	1175	1175	1275	1275
500° F (260.0° C)	1100	1100	1200	1200
600° F (315.6° C)	1050	675	1100	1100
700° F (371.1° C)	840	250	1075	1075
800° F (426.7° C)	575	—	—	—
3/4 in. and 1 in. Torque = 290 ft-lb				

DIMENSIONS



PS	A	B	C	D	Stroke
0.25 in. (6.4 mm)	2.12 in. (53.8 mm)	0.68 in. (17.3 mm)	1.87 in. (47.5 mm)	0.625 in. (115.9 mm)	0.437 in. (11.1 mm)
0.50 in. (12.7 mm)	2.75 in. (69.9 mm)	1.00 in. (25.4 mm)	2.85 in. (72.4 mm)	0.875 in. (22.2 mm)	0.562 in. (14.3 mm)
0.75 in. (19.1 mm)	3.37 in. (85.6 mm)	1.18 in. (30.0 mm)	3.84 in. (97.5 mm)		
1 in. (25.4 mm)	4.00 in. (101.6 mm)	1.50 in. (38.1 mm)	3.95 in. (100.3 mm)		

INNERVALVE CHART

Valve Size	Trim Designation	Max Cv	Orifice Dia.	Orifice Area	Nominal Rangeability Linear	Equal %
1 in. (25.4 mm)	6.0	6.0	0.6250 (15.9 mm)	0.3068 in. ² (197.9 mm ²)	50:1	60:1
	5.0	5.0	0.6250 (15.9 mm)	0.3068 in. ² (197.9 mm ²)	50:1	60:1
	4.5	4.5	0.5000 (12.7 mm)	0.1963 in. ² (126.6 mm ²)	50:1	60:1
3/4 in. (19.1 mm) and 1 in. (25.4 mm)	4.0	4.0	0.5000 (12.7 mm)	0.1963 in. ² (126.6 mm ²)	50:1	60:1
	3.5	3.5	0.5000 (12.7 mm)	0.1963 in. ² (126.6 mm ²)	50:1	60:1
	A	2.5	0.3750 (9.5 mm)	0.1104 in. ² (71.2 mm ²)	40:1	50:1
1/2 in. (12.7 mm), 3/4 in. (19.1 mm) and 1 in. (25.4 mm)	B	2.0	0.3750 (9.5 mm)	0.1104 in. ² (71.2 mm ²)	40:1	50:1
	C	1.25	0.2810 (7.1 mm)	0.0620 in. ² (40.0 mm ²)	40:1	50:1
	D	0.8	0.2500 (6.4 mm)	0.0491 in. ² (31.7 mm ²)	40:1	50:1
	E	0.5	0.2500 (6.4 mm)	0.0491 in. ² (31.7 mm ²)	40:1	50:1
	F	0.32	0.1560 (3.9 mm)	0.0191 in. ² (12.3 mm ²)	30:1	40:1
1/4 in. (6.4 mm), 1/2 in. (12.7 mm), 3/4 in. (19.1 mm) and 1 in. (25.4 mm)	G	0.2	0.1560 (3.9 mm)	0.0191 in. ² (12.3 mm ²)	30:1	40:1
	H	0.13	0.1560 (3.9 mm)	0.0191 in. ² (12.3 mm ²)	30:1	40:1
	I	0.08	0.1560 (3.9 mm)	0.0191 in. ² (12.3 mm ²)	30:1	40:1
	J	0.05	0.1560 (3.9 mm)	0.0191 in. ² (12.3 mm ²)	30:1	40:1
	K	0.03	0.0860 (2.2 mm)	0.0058 in. ² (3.7 mm ²)	25:1	—
	L	0.02	0.0860 (2.2 mm)	0.0058 in. ² (3.7 mm ²)	25:1	—
	M	0.01	0.0860 (2.2 mm)	0.0058 in. ² (3.7 mm ²)	25:1	—
	N	0.006	0.0860 (2.2 mm)	0.0058 in. ² (3.7 mm ²)	25:1	—
	O	0.003	0.0860 (2.2 mm)	0.0058 in. ² (3.7 mm ²)	25:1	—
1/4 in. (6.4 mm) and 1/2 in. (12.7 mm)	P1	0.002	0.0625 (1.6 mm)	0.0031 in. ² (2.0 mm ²)	15:1	—
	P2	0.0013	0.0625 (1.6 mm)	0.0031 in. ² (2.0 mm ²)	15:1	—
	P3	0.001	0.0625 (1.6 mm)	0.0031 in. ² (2.0 mm ²)	15:1	—
	P4	0.0006	0.0625 (1.6 mm)	0.0031 in. ² (2.0 mm ²)	15:1	—
	P5	0.0004	0.0625 (1.6 mm)	0.0031 in. ² (2.0 mm ²)	15:1	—
	P6	0.00027	0.0625 (1.6 mm)	0.0031 in. ² (2.0 mm ²)	15:1	—
	P7	0.00018	0.0625 (1.6 mm)	0.0031 in. ² (2.0 mm ²)	15:1	—
	P8	0.00012	0.0625 (1.6 mm)	0.0031 in. ² (2.0 mm ²)	15:1	—
	P9	0.00008	0.0625 (1.6 mm)	0.0031 in. ² (2.0 mm ²)	15:1	—
1/4 in. (6.4 mm)	P10	0.00005	0.0420 (1.1 mm)	0.0014 in. ² (0.9 mm ²)	15:1	—
	P11	0.000036	0.0420 (1.1 mm)	0.0014 in. ² (0.9 mm ²)	15:1	—
	P12	0.000024	0.0420 (1.1 mm)	0.0014 in. ² (0.9 mm ²)	15:1	—
	P13	0.000016	0.0420 (1.1 mm)	0.0014 in. ² (0.9 mm ²)	15:1	—
	P14	0.00001	0.0420 (1.1 mm)	0.0014 in. ² (0.9 mm ²)	15:1	—
	P15	0.000006	0.0420 (1.1 mm)	0.0014 in. ² (0.9 mm ²)	15:1	—
	P16	0.000004	0.0420 (1.1 mm)	0.0014 in. ² (0.9 mm ²)	15:1	—
	P17	0.0000027	0.0420 (1.1 mm)	0.0014 in. ² (0.9 mm ²)	15:1	—
	P18	0.0000018	0.0420 (1.1 mm)	0.0014 in. ² (0.9 mm ²)	15:1	—

