

**Type 807/752**

**Standard 1/4", 1/2", 3/4" and 1"  
RESEARCH CONTROL® Valves**

# Technical Brief

## DESCRIPTION

The Type 807/752 standard globe control valve is available in 1/4", 1/2", 3/4" or 1" sizes. Its compact design and light weight make it especially suited to modulating control of medium to low flow rates at system pressures up to 5000 psig. See page 2 for pressure versus temperature ratings for each size. Many variations of this design are available to serve requirements not covered in this bulletin.

## APPLICATIONS

The Type 807/752 valve is widely used in industrial applications, research, and process pilot plants on liquids, gases or steam to control fractional flows in 1/4", 1/2", 3/4" and 1" pipe. Its compact size makes it an ideal choice for additive injection, sampling, or low flow hydraulic systems. It is recommended for use wherever precise control is an important factor or where physical constraints limit valve weight or size.

## MATERIALS OF 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 on 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, REK

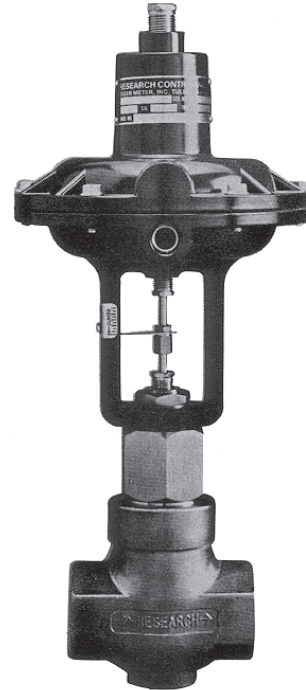
### Actuator:

- 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

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Monel® is a registered trademark of Inco Alloys International, Inc.  
RESEARCH CONTROL® is a registered trademark of Badger Meter, Inc.  
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**Shown with Type 754 Actuator**

## STANDARD FEATURES

- Wide range of interchangeable trim sets
- Threaded bonnet for quick disassembly
- Choice of linear or equal percent on "J" trim and larger
- TFE chevron packing
- ANSI Class IV shutoff (size "O" and larger)

## OPTIONAL FEATURES (on 1/2", 3/4", and 1" models)

- Flange sizes up to 1-1/2", socket weld, butt-weld nipples
- Cooling fin bonnet for higher temperatures
- Bellows stem seal
- Angle pattern body
- Graphite or Kalrez® packing
- Extended bonnet for cryogenic applications
- Barstock bodies in exotic materials

**1/4" Research Control Valve**  
 Pressure vs. Temperature Rating for Valve Superstructure  
 Excluding Packing or End Fittings  
 See Note 1 below

Temp	316 S/S	Carbon Steel	Hast B or =	Hast. C or =	Monel	Alloy 20
100°F	5000	4000	5000	5000	4000	5000
200°F	5000	3700	5000	5000	4000	5000
300°F	4750	3500	5000	5000	3880	4850
400°F	4190	3200	5000	5000	3770	4700
500°F	4000	2900	4900	4900	3740	4500
600°F	3820	2600	4850	4850	3740	4200
700°F	3640	2300	4800	4800	3640	3900
800°F	3580		4750	4750	3580	3700
900°F	2840			4500	2280	3000
1000°F	1160			4000	940	1500
1100°F	Consult factory for higher temperatures			3500		
1200°F	Consult factory for higher temperatures			3000		
Rec. Torque ft/lb (+/- 2ft/lb)	37	37	39	37	31	35

**1/2" Research Control Valve**  
 Pressure vs. Temperature Rating for Valve Superstructure  
 Excluding Packing or End Fittings.  
 See Note 1 below

Temp	316 S/S	Carbon Steel	Hast B or =	Hast. C or =	Monel	Alloy 20
100°F	5000	4000	5000	5000	4000	5000
200°F	4750	3800	5000	5000	3780	5000
300°F	4310	3600	5000	5000	3520	4950
400°F	3860	3300	5000	5000	3420	4850
500°F	3640	3100	4900	4900	3390	4600
600°F	3470	2900	4870	4870	3390	4300
700°F	3310	2700	4610	4610	3310	4200
800°F	3255		4430	4430	2090	4000
900°F	3190			4200	2070	3000
1000°F	1860			4000	850	1500
1100°F	Consult factory for higher temperatures			3400		
1200°F	Consult factory for higher temperatures			3000		
Rec. Torque ft/lb (+/- 2ft/lb)	122	122	131	124	102	117

**3/4" and 1" Research Control Valve**  
 Pressure vs. Temperature Rating for Valve Superstructure  
 Excluding Packing or End Fittings  
 See Note 1 below

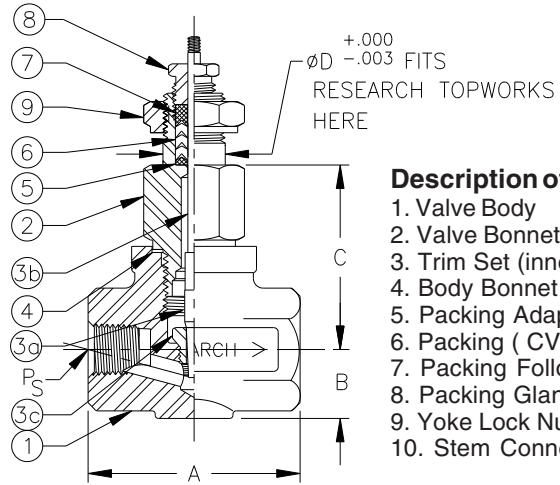
Temp	316 S/S		Carbon Steel	
	3/4"	1"	3/4"	1"
100°F	1500	1500	1500	1500
200°F	1450	1450	1350	1350
300°F	1325	1325	1325	1325
400°F	1175	1175	1275	1275
500°F	1100	1100	1200	1200
600°F	1050	675	1100	1100
700°F	840	250	1075	1075
800°F	575			

3/4" and 1" Rec. Torque = 290 ft/lbs.

**Note 1.** The pressure/temperature ratings listed above are based on material cross sections at the joint between the body and bonnet where a gasketed screwed type bonnet is utilized. When the proper torque levels are used, the valve should not experience rupture of the joint or the material. The above listed torque levels were used in hydrostatic tests at the factory at 70 degrees F. 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 assured of tight sealing is to perform a test under the actual process conditions.

Please note that the above chart is 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.



- Description of Items**
1. Valve Body
  2. Valve Bonnet
  3. Trim Set (innervalue)
  4. Body Bonnet Gasket
  5. Packing Adaptor
  6. Packing ( CV ring)
  7. Packing Follower
  8. Packing Gland
  9. Yoke Lock Nut
  10. Stem Connector

**DIMENSIONS (Inches)**

PS	A	B	C	D	STROKE
1/4 inch	2.12	0.68	1.87	0.625	0.437
1/2 inch	2.75	1.00	2.85	0.875	0.562
3/4 inch	3.37	1.18	3.84	0.875	0.562
1 inch	4.00	1.50	3.95	0.875	0.562

**INNERVALUE CHART**

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

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.



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