

DESCRIPTION

The Model 9100 process control valve is a 2-way, high capacity globe available in 6 sizes (1/2...2 in.) with a B62 bronze body/bonnet. Comes with a field-reversible actuator and standard live loaded TFE packing.

BODY ASSEMBLY DESCRIPTION

Type	2-way high capacity globe, modulating
Size	1/2", 3/4", 1", 1-1/4", 1-1/2", 2"
Pressure Rating	ANSI CL 150 (300 psi @ 100° F)
Body Material	Bronze ASTM B62
Bonnet Material	Bronze ASTM B62
Body Gasket Material	Copper
Innervalue Assembly	316L stainless steel
Seat Ring	316L stainless steel
Packing	PTFE "V" rings—live loaded
Packing	Optional Grafoil
Packing Spring	302 stainless steel
Packing Follower	PTFE-PFA
Packing Follower	Optional bronze (Grafoil)
Other Hardware	300 stainless steel

DESIGN CRITERIA

- Meets MSS SP-80 and ANSI B16.24
- Heavy duty high-capacity body
- Standard Characteristic: Equal percent
- Standard replaceable seat/innervalue
- Standard ANSI Class IV shutoff
- Standard live-loaded TFE packing
- Heavy duty post-guided innervalue
- Stem welded into innervalue guide
- Precision CNC cut NPT body threads

OPTIONS

- Linear characteristic or Quick open on-off
- Double packing, REK® fugitive emission packing
- Alarm/Purge port with double packing
- Stainless steel bonnet extensions for cryogenic service
- Positioners, Limit switches, Airset, and others
- Carbon steel "Lap-Joint Flange Kit," for conversion to CL150 flanges (meets ASME/ANSI face-to-face length)



ACTUATOR ASSEMBLY DESCRIPTION

Type	Pneumatic multi-spring and diaphragm actuator
Effective Area	35 square inches (225 cm ²)
Stroke	3/4" or 1"
Spring (bench) Loading	Adjustable (some ranges)
Action	ATO or ATC (reversible without additional parts)
Accessory Mounting	IEC534 (Namur)
Rec. Max. Oper. Press.	60 psig @ 70° F (4 bar @ 21° C)
Max. Diaphragm Pressure	90 psig @ 70° F (6 bar @ 21° C)
Upper Ambient Temperature Limit	160° F (71° C) @ 30 psig
Lower Ambient Temperature Limit	-20° F (-29° C) @ 30 psig
Signal Range	Standard (3...15 psig) Others available
Pressure cases and yoke	Steel/epoxy coated
Diaphragm Material	Nitrile/polyester
Spring Material	17...7Ph stainless steel
Stem Seal	ELF Buna O-ring
Stem Guide Bushings	Filled composite bearing material
Hardware Material	300 stainless steel
Travel Indication	Adjustable, nylon safety pointer

SPECIFICATIONS

Innervalue Information
Equal Percent Characteristic

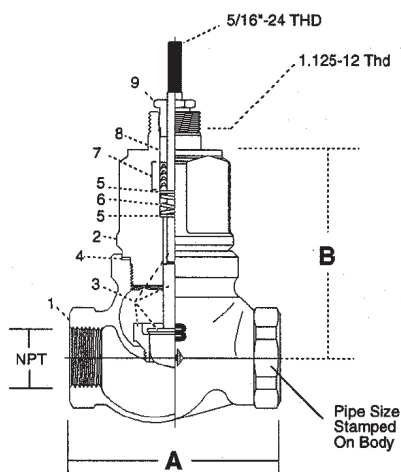
Valve Size	Orifice Dia. (in.)	Orif. area sq. in.	Lift in.	Max. ΔP*	Cv vs Stem Travel **											
					100%	90%	80%	70%	60%	50%	40%	30%	20%	10%	5%	2.5%
3/4"	1.000	0.785	3/4"	300	12.0	10.7	9.32	6.75	4.49	3.01	2.29	1.69	1.10	0.53	0.264	0.132
	0.750	0.442	3/4"	300	8.0	5.3	3.56	2.37	1.58	1.05	0.70	0.47	0.31	0.15	0.076	0.038
3/4", 1/2"	0.750	0.442	3/4"	300	6.0	4.0	2.67	1.78	0.09	0.79	0.53	0.35	0.23	0.11	0.057	0.029
	0.500	0.196	3/4"	300	3.0	2.0	1.34	0.89	0.59	0.40	0.26	0.18	0.11	0.06	0.029	0.014
1"	1.000	0.785	3/4"	300	15.0	12.3	9.36	6.37	4.81	3.66	2.75	2.05	1.35	0.66	0.329	0.165
	0.750	0.442	3/4"	300	10.0	6.7	4.44	2.97	1.98	1.32	0.88	0.59	0.38	0.19	0.096	0.048
	0.750	0.442	3/4"	300	6.0	4.0	2.67	1.78	1.19	0.79	0.53	0.35	0.23	0.11	0.057	0.029
	0.500	0.196	3/4"	300	3.0	2.0	1.33	0.89	0.59	0.40	0.26	0.18	0.11	0.06	0.029	0.014
1-1/4"	1.625	2.074	1"	135	29.0	25.2	21.5	17.7	10.5	6.78	5.02	3.69	2.51	1.29	0.642	0.321
	1.250	1.227	1"	225	20.0	13.3	8.90	5.92	3.95	2.63	1.76	1.17	0.76	0.38	0.189	0.095
	1.250	1.227	1"	225	12.0	8.0	5.34	3.55	3.27	1.58	1.05	0.70	0.46	0.23	0.113	0.057
1-1/2"	1.625	2.074	1"	135	35.0	31.0	26.8	20.7	14.4	10.0	6.74	4.49	2.95	1.54	0.766	0.383
	1.250	1.227	1"	225	24.0	16.0	10.7	7.11	4.74	3.16	2.11	1.40	0.91	0.46	0.226	0.113
	1.250	1.227	1"	225	15.0	10.0	6.67	4.45	2.96	1.98	1.32	0.88	0.57	0.29	0.142	0.071
2"	2.000	3.142	1"	90	54.0	45.4	36.4	28.2	20.3	14.5	10.1	6.98	4.67	2.40	1.181	0.590
	1.750	2.405	1"	115	36.0	24.0	16.0	10.7	7.10	4.74	3.16	2.11	1.38	0.69	0.338	0.169
	1.750	2.405	1"	115	22.0	14.7	9.78	6.51	4.34	2.90	1.93	1.29	0.84	0.42	0.207	0.103

* Maximum Shut-off ΔP for Air-To-Open configuration, with 6 springs (280 pounds spring loading) and 0...23 psi air, may require a positioner to achieve full travel. Constantly high flowing ΔP, such as those listed in the Max. ΔP column can cause deterioration of the guide or innervalue material. Caution is advised when flowing ΔP is above 1/2 of the shut-off pressure listed.

** **NOTE:** Data is for comparison only. Controlling in the 1...5% travel range is not usually recommended due to normal system and valve hysteresis. Precise signaling and positioning of the stem is critical and may require a positioner to achieve acceptable results.

DIMENSIONS

**Valve Body-
Bonnet
Assembly**



Body Pressure vs Temp

Temp. °F	Pressure in psi	Temp °C	Pressure in bar
-20...150	300	-29...66	20.67
200	270	93	18.6
250	240	121	16.54
300	210	149	14.47
350	180	177	12.4
400	—	204	—
406	150	207	10.33

Item Descriptions

NOTE: Detailed assembly drawings, with part numbers, can be obtained from the factory. Item numbers shown may not match prints. Part numbers listed are universal to all model 9100 valve sizes.

Item	Description	Part Number	Material
1	Body	Consult Factory	Bronze, B-62
2	Bonnet	Consult Factory	Bronze, B-62
3	Innervalue set	Consult Factory	316L stainless steel
4	Body gasket	Consult Factory	Copper
5	Washer (2)	430002-0115	316 stainless steel
6	Spring	510031-0158	302 stainless steel
7	Packing set (3 rings)	543242-0001	PTFE (std)
8	Follower	527241-0001	Teflon PFA
9	Packing gland	525950-0001	316 stainless steel

Items 5 through 8 are available as a kit: p.n. 544057-0001

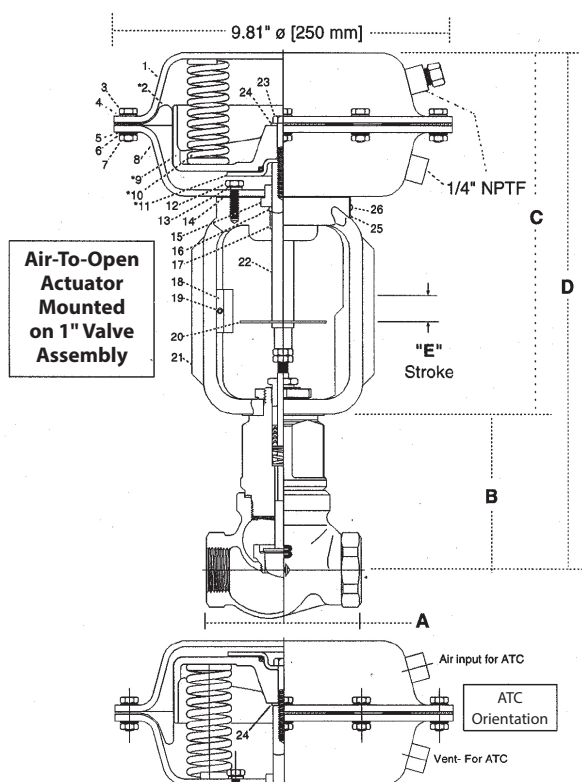
Weights

Valve Size	1/2", 3/4" and 1"	1-1/4" and 1-1/2"	2"
Pounds	29	36	44
Kilograms	13.2	16.3	20

Approx. average weight per size. Depends on options and accessories.

Dimensions

	1/2", 3/4" and 1"	1-1/4" and 1-1/2"	2"
A	4.5" (115 mm)	6.25" (159 mm)	7.0" (179 mm)
B	4.44" (113 mm)	5.22" (133 mm)	5.62" (143 mm)
C	10.5" (267 mm)	10.5" (267 mm)	10.5" (267 mm)
D	14.94" (380 mm)	15.72" (400 mm)	16.12" (410 mm)
E	3/4" Stroke	1" Stroke	1" Stroke



Item	Description (Qty)
1	Upper Housing (1)
2	*Diaphragm (1)
3	Hex Screw (12)
4	Flat Washer, top (12)
5	Flat Washer, bottom (12)
6	Lock Washer (12)
7	Hex Nut (12)
8	Lower Housing (1)
9	*Piston (1)
10	*Springs (3 or 6)
11	*Diaphragm Retainer (1)
12	Hex Screw, Gr 8 (6)
13	Lock Washer (6)
14	Gasket (1)
15	Upper Guide Bushing (1)
16	"O" ring (1)
17	Lower Guide Bushing (1)
18	Travel Scale (1)
19	Set Screw (1)
20	Pointer, Nylon (1)
21	Yoke (1)
22	Stem (1)
23	Hex Screw, Gr 8 (1)
24	Thrust Washer (1)
25	Nameplate (1)
26	Nameplate Screw (2)

NOTE: Detailed assembly drawings, with part numbers, can be obtained from the factory. Item numbers shown may not match prints.

Reversing Actuator Action

The items indicated (*) should be re-oriented as shown to convert to ATC action. Details of this and other assemblies are available from the factory.

MODEL 9100 ORDERING MATRIX

The order number has 18 characters.

[1] [2] [3] [4] [5] [6] [7] [8] [9] [10]
9106 - GC - N - BZ - SV - 1 - A - 54 - P - 36

[1] VALVE SIZE

9101 = 1/2 in.
 9102 = 3/4 in.
 9103 = 1 in.
 9104 = 1-1/4 in.
 9105 = 1-1/2 in.
 9106 = 2 in.

[2] BODY TYPE

GC = Globe case

[3] END CONNECTIONS

N = NPT

[4] BODY ASSEMBLY MATERIAL

BZ = BRONZE / ASTM B62

[5] BONNET AND PACKING TYPE

SV = Standard bonnet/Spring loaded TFE V-rings
 SG = Standard bonnet/Single Grafoil® packing
 DV* = Standard bonnet/Double TFE V-rings
 DG* = Standard bonnet/Double Grafoil packing
 PV* = Standard bonnet with 1/8 in. NPT purge port and double TFE V-rings
 PG* = Standard bonnet with 1/8 in. NPT purge port and double Grafoil packing
 ES* = Extended [4 in. SST] bonnet with spring loaded V-rings
 EL* = Extended [6 in. SST] bonnet with spring loaded V-rings

* **Optional:** Consult factory for price and delivery.

[6] ACTUATOR

1 = size 35, ATO, no positioner
 2 = size 35, ATO, with positioner *
 3 = size 35, ATC, no positioner
 4 = size 35, ATC, with positioner *
 * Side [yoke] mounted
 5 = size 60, ATO, no positioner
 6 = size 60, ATO, with positioner *
 7 = size 60, ATC, no positioner
 8 = size 60, ATC, with positioner *
 9 = Electric actuator
 * Side [yoke] mounted

[7] SIGNAL RANGE

A = 3...5 psig [adj. 3...4 psi]
 B = 6...30 psig [adj. 6...8 psi]
 C = 3...9 psig [positioner required]
 D = 9...15 psig [positioner required]
 E = 6...15 psig [3/4 in. stroke, fixed rate]
 F = 10...15 psig [3/4 in. stroke, fixed rate]
 H = 6...15 psig [1 in. stroke, fixed rate]
 J = 9...15 psig [1 in. stroke, fixed rate]
 K = 4...20 mA [incr. signal opens valve]
 L = 4...20 mA [incr. signal closes valve]
NOTE: K and L are for electric actuators only.
 O = 4.0...14.5 psig [1 in. stroke only]

[8] INNERVALVE SIZE

3/4 in. Valve Size

Code	Cv [%]
12	12.0 [3/4 in. only]
08	8.0 [3/4 in. only]
06	6.0 [1/2 in. or 3/4 in.]
03	3.0 [1/2 in. or 3/4 in.]

1 in. Valve Size

Code	Cv [%]
15	15.0
10	10.0
06	6.0
03	3.0

1-1/4 in. Valve Size

Code	Cv [%]
29	29.0
20	20.0
12	12.0

1-1/2 in. Valve Size

Code	Cv [%]
35	35.0
24	24.0
15	15.0

2 in. Valve Size

Code	Cv [%]
54	54.0
36	36.0
22	22.0

[9] INNERVALVE CHARACTERISTIC

P = Equal percent [%]
 L = Linear [special order]
 Q = Quick open [special order]

[10] INNERVALVE MATERIAL

36 = 316L SST
 3T = 316L & TFE-PFA [special order]
 3S = Stellite 316L SST [special order]

NOTE: For other innervalve sized, characteristics and materials, consult the factory for price and delivery.

ABOUT THE MODEL NUMBER

When ordering by model number (required by the factory), please give a full description of the unit also. This will decrease the possibility of error. The model number will be shown on all acknowledgements, as well as the nameplate attached to the actuator. When inquiring about a valve in service, please give the serial number and the model number from the nameplate. An **X** in any location within the model number denotes a special item.

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