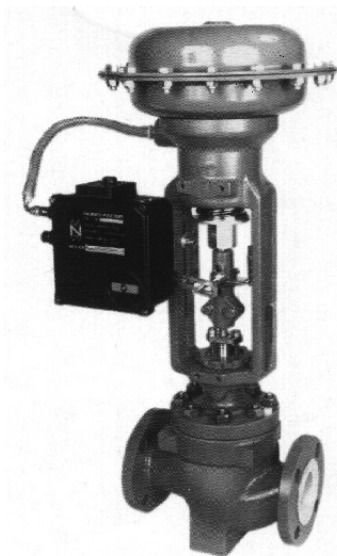


## 1/2" THROUGH 16" SERIES G100 GLOBE AND ANGLE VALVES

The Series G100 is a common-body system of globe and angle valves with an extensive choice of sizes, body ratings, trim styles, and materials to provide the user with maximum control and throttling versatility. Valve selection can be matched precisely with application requirements, ranging from general to severe or hazardous services.



The G110 Series cage-guided trim style is ideal for clean liquids, gases, and steam in moderate to high temperatures and pressures. The G120 single-seated top-guided trim and threaded seat ring is used in erosive, dirty, or viscous fluids as well as gases and steam in cryogenic to moderate temperatures. The G130 Series single-seated top-guided trim and cage-retained "quick change" seat ring is the preferred valve for chemical industry applications in moderate to high temperatures and pressures.

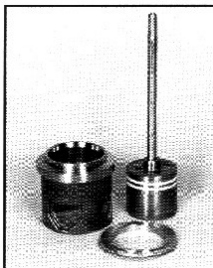
Series G100 globe valves for in-line service and angle valves for difficult service are available with either linear or equal percentage trim characteristics in a choice of ANSI Class 125, 150, 250, 300, or 600 body ratings. Sizes range from DN15-400 / 1/2" through 16". Maximum parts interchangeability with the Series G110, G120, and G130 globe and angle valves results in minimum parts inventories and lower maintenance costs.

### FEATURES

#### G110

##### DN40 – 400 / 1-1/2" – 16"

- Balanced plugs for use with smaller more economical actuators. Unbalanced plugs for simplicity of design, fewer parts, and ease of maintenance.
- Metal seats for a variety of services and ANSI Class IV shutoff; soft seat inserts for corrosive services or ANSI Class VI shutoff when used in conjunction with PTFE cup seal.

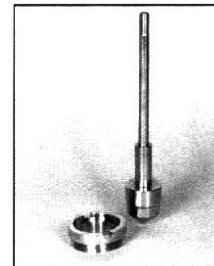


- Standard linear or equal-percentage characterized ported cages; optional linear or equal-percentage Flash Flo® cages and linear Q-Cage™ for difficult applications.
- All cages for a given valve size have constant bore diameters, therefore all seats and plugs are interchangeable regardless of design, requiring fewer part replacements.
- $C_v$  reductions are achieved by reducing the area of the cage openings, not by changing seat diameters or valve travel. Thus eliminating the need for changing actuators.
- Optional Emission-Pak® bonnet assembly incorporates double PTFE V-ring live-loaded packing to meet the U.S. Clean Air Act for emission control. Available on new valves or as a retro-fit kit.

#### G120

##### DN15 – 150 / 1/2" – 6"

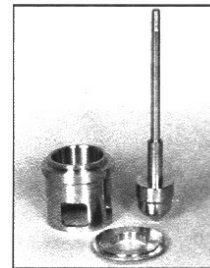
- Choice of 17-4PH or 316 stainless steel trim is standard.
- Heavy post-guided design assures stable, accurate control.
- A wide range of trim sets is available including full size through 7 trim reductions and a line of "spline trim" with  $C_v$ 's from 0.001 to 0.63.
- A rugged 316L stainless steel bellows seal is available for difficult or hazardous chemical applications. Ultra-low temperature extension bonnets are available for  $-196^\circ\text{C}$  /  $-320^\circ\text{F}$  to  $-129^\circ\text{C}$  /  $-200^\circ\text{F}$  service.
- All metal (no elastomeric gaskets) construction makes this design suitable for chemical applications.
- Optional Emission-Pak® bonnet assembly.



#### G130

##### DN15 – 150 / 1/2" – 6"

- Choice of 17-4PH or 316 stainless steel trim is standard.
- A wide range of trim sets is available including full size, 1 reduction (60%) and 2 reduction (40%).
- Economical cast-iron body structure available.
- A rugged 316L stainless-steel bellows seal is available for difficult or hazardous chemical applications.
- Cage-retained "quick change" seat ring simplifies maintenance.
- Optional Emission-Pak® bonnet assembly.



Specifications	G110/G111/G112/G113	G120/G121	G130/G131
Body Style	Globe or angle	Globe or angle	Globe or angle
Body Sizes	Globe—1-1/2" through 16" (40-400mm) Angle—1-1/2" through 8" (40-200mm)	Globe—1/2" through 6" (15-150mm) Angle—1/2" through 2" (15-50mm)	Globe—1/2 " through 6" (15-150mm) Angle—1/2" through 6" (15-150mm)
Body Ratings	ANSI Class 125*, 150, 250*, 300, 600	ANSI Class 150, 300, 600	ANSI Class 125, 150, 250, 300, 600
Body Materials	Cast iron*, Carbon steel, Chrome-Moly steel, Stainless steel, Other castable alloys including Monel®, Hastelloy®C and Alloy 20 available on application	Carbon steel, Chrome-Moly steel, Stainless steel, Other castable alloys including Monel®, Hastelloy®C and Alloy 20 available on application	Cast iron, Carbon steel, Chrome-Moly steel, Stainless steel, Other castable alloys including Monel®, Hastelloy®C and Alloy 20 available on application
End Connections	NPT threaded or socket weld (1-1/2" and 2"); ANSI flanged (1-1/2" through 16"); ANSI butt weld (3" through 16")	NPT threaded or socket weld (1/2" through 2"); ANSI flanged (1/2" through 6"); ANSI butt weld (3" through 6")	NPT threaded or socket weld (1/2" through 2"); ANSI flanged (1/2" through 6"); ANSI butt weld (3" through 6")
Face-to-Face Dimensions	In accordance with ANSI B16.10 and ISA 75.03 for raised face flanged valves		
Bonnets	Plain, Extension or Bellows seal*	Plain, Extension, Ultra-low temperature extension or Bellows seal*	Plain, Extension or Bellows seal*
Bolting	Standard Body/bonnet bolting is alloy steel, -20°F to +1000°F (-29°C - +538°C)		
Gaskets	-200°F to +1000°F (-129°C - +538°C); Flat gaskets —100% Grafoil®, Spiral wound —Stainless steel/Grafoil® filler	-320°F to +1000°F (-196°C - +538°C); Body gasket is corrugated stainless steel	-200°F to +1000°F (-129°C-+538°C); Flat gaskets—100% Grafoil®, Spiral wound—Stainless steel/Grafoil® filler
Packing Box	Packing box studs, nuts, follower, and lantern rings are stainless steel. Packing flange is plated carbon steel. Packing box lube connection is provided upon customer request. Standard packing box lubricator is carbon steel and isolating valve is stainless steel.		
Packing	-200°F to +450°F /-129°C-+232°C;  TFE V-ring; PTFE braided ring; Aramid braided ring, Emission-Pak™ TFE V-ring  -200°F to +1000°F / -129°C-+538°C;  Laminated graphite ring	-320°F to +450°F / -196°C—+232°C;  TFE V-ring; PTFE braided ring; Aramid braided ring , Emission-Pak™ TFE V-ring  -320°F to +1000°F / -196°C—+538°C;  Laminated graphite ring	-320°F to +450°F / -196°C—+232°C;  TFE V-ring; PTFE braided ring; Aramid braided ring Emission-Pak™ TFE V-ring  -320°F to +1000°F /-196°C—+538°C;  Laminated graphite ring
Trim Style	Linear and equal percentage balanced or unbalanced plug, standard ported, Flash Flo® and Q-Cage™ Cage-retained seat ring (1-1/2"—8") Integral seat ring (10"—16") (refer to page 4)	Linear and equal percentage unbalanced contoured, or unbalanced spline type plug and screwed-in seat ring (refer to page 5)	Linear and equal percentage unbalanced, contoured plug with cage-retained seat ring (refer to page 5)
Flow Direction	Ported cage, balanced plug — flow into cage and down through seat ring. Ported cage, unbalanced plug — flow up through seat ring and out of cage. Flash-Flo® cage, balanced plug — (liquid service) flow into cage and down through seat ring. Flash-Flo® cage or Q-Cage™, balanced plug — (gas/steam service) flow up through seat ring and out of cage.	Globe and angle valves flow up through the seat ring with contoured plug and down through the seat ring with spline plug.	Globe and angle valves flow up through the seat ring with contoured plug.
Flow Coefficient	Cv from 12 through 2600 (refer to Tables on page 3)	Cv from 0.001 through 390 (refer to Tables on page 3)	Cv from 0.48 through 390 (refer to Tables on page 3)
Trim Materials	Standard trim for carbon steel, cast iron, and chrome-moly steel valves is 416 stainless steel plug and seat ring with 17-4PH/CP stainless steel cage. Standard trim for stainless steel valves is 316 stainless steel plug, cage and seat ring. For more difficult applications, hard-faced 316 stainless steel plug and seat ring are available. For exceptionally low leakage, a TFE insert seat is also available. (refer to Trim Selection Charts on page 7) Optional alloy trims available on application. (10"—16" seat material is same as cage)	Standard materials are 316 stainless steel with 17-4PH guide bushings or all 17-4PH construction. For more difficult applications, a hard-faced 316 stainless steel plug and seat ring is available. For exceptionally low leakage, a 316 stainless steel plug with TFE insert is also available. (Refer to Trim Selection Charts on Page 7) Optional alloy trims: Monel®, Alloy 20, Hastelloy® — available on application.	
Actuators	Standard bonnet mount will accept spring-diaphragm actuators. For actuator selection, refer to Bulletin 6D/R21, "Actuator Selection Guide".		

\* through 6" only

### Flow Coefficient (C) At Maximum Travel G110/G111 Balanced Style Plug

Cage Style	Flow Characteristic	Size	Size Code	Valve Size – inches (DN)								
				1-1/2 (40)	2 (50)	3 (80)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	16 (400)
Standard Ported	Equal Percentage	Full Size	A	37	60	120	170	362	650	950	1275	2500
		1 Reduction	B	24	38	77	109	258	415	540	725	1375
		2 Reduction	C	14	23	41	64	151	230	400	545	1025
	Linear	Full Size	A	40	65	132	212	461	735	1050	1400	2600
		1 Reduction	B	34	49	97	156	355	455	610	820	1450
		2 Reduction	C	27	38	71	100	195	280	420	565	1100
Flash Flo®	Equal Percentage	Full Size	A	33	53	120	142	298	610	—	—	—
		1 Reduction	B	21	32	72	86	193	420	—	—	—
		2 Reduction	C	13	21	58	66	120	240	—	—	—
	Linear	Full Size	A	35	55	105	168	387	720	1050	1400	2600
		1 Reduction	B	27	36	62	107	220	420	610	820	1450
		2 Reduction	C	16	26	44	77	147	285	420	565	1100
Q-Cage™	Linear	Full Size	A	30	45	90	150	320	550	700	1150	1900
		1 Reduction	B	18	27	54	90	192	330	420	690	690
		2 Reduction	C	12	18	36	60	128	220	280	460	460

### G112/G113 Unbalanced Style Plug

Cage Style	Flow Characteristic	Size	Size Code	Valve Size – DN / inches								
				40 / 1-1/2	50 / 2	80 / 3	100 / 4	150 / 6	200 / 8	250 / 10	300 / 12	400 / 16
Standard Ported	Equal Percentage	Full Size	A	39	61	130	186	401	740	1000	1325	2500
		1 Reduction	B	25	38	81	111	246	455	560	740	1375
		2 Reduction	C	14	23	42	59	138	277	410	530	1025
	Linear	Full Size	A	42	63	140	220	485	770	1100	1450	2600
		1 Reduction	B	35	50	99	157	348	475	630	850	1450
		2 Reduction	C	27	37	70	97	185	277	445	580	1100

### G120/G121/G130/G131

Flow Characteristic	Trim Size	Size Code	Valve Size DN / inches							
			15 / 1/2	20 / 3/4	25 / 1	40 / 1-1/2	50 / 2	80 / 3	100 / 4	150 / 6
Equal Percentage Contoured	Full Size	A	5.4	9.0	13.4	31	50	105	190	390
	1 Reduction	B	3.6	5.4	9.0	13.9	32	49	105	192
	2 Reduction	C	1.8	1.8	5.4	7.0	13.2	35	55	120
Linear Contoured	Full Size	A	4.5	4.5	13.0	32	51	106	217	390
	1 Reduction	B	2.5	2.5	6.9	13.9	32	48	115	198
	2 Reduction	C	1.7	1.7	4.5	5.8	13.5	35	53	120

### G120/G121/G130/G131 Reduced Capacity Trim

Flow Characteristic	Trim Size	Size Code	Valve Size DN / in				
			15 / 1/2	20 / 3/4	25 / 1	40 / 1-1/2	50 / 2
Equal Percentage Contoured	3 Reduction	D	1.4	1.8	3.6	5.4	9.0
	4 Reduction	E	1.0	1.4	1.8	3.6	5.4
	5 Reduction	F	0.67	1.0	1.4	1.8	3.6
	6 Reduction	G	—	0.67	1.0	1.4	1.8
	7 Reduction	H	—	—	0.67	1.0	1.4
Linear Contoured	3 Reduction	D	1.1	1.7	2.5	4.5	6.9
	4 Reduction	E	0.63	1.1	1.7	2.5	4.5
	5 Reduction	F	0.48	0.63	1.1	1.7	2.5
	6 Reduction	G	—	0.48	0.63	1.1	1.7
	7 Reduction	H	—	—	0.48	0.63	1.1

### G120/G121 Spline Trim\*

Equal Percentage			Linear		
Size Code	Spline No.	Cv	Size Code	Spline No.	Cv
M	1	0.63	S	6	0.063
N	2	0.40	T	7	0.040
P	3	0.25	U	8	0.025
Q	4	0.16	V	9	0.016
R	5	0.10	W	0	0.010
	—	—	X	11	0.0063
	—	—	1	12	0.0040
	—	—	2	13	0.0025
	—	—	3	14	0.0016
	—	—	4	15	0.0010

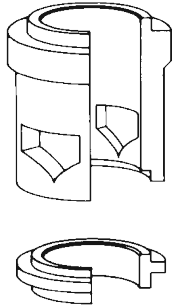
\*Available in 15–25MM / 1/2"–1" Valve Body Only

## G110 Trim Designs

The G110 Series is the only cage trim control valve product line designed with a fully integrated, interchangeable system of parts. This line has all the product variations of comparable lines, without the use of multiple seats, redundant seals or seat ring adapters.

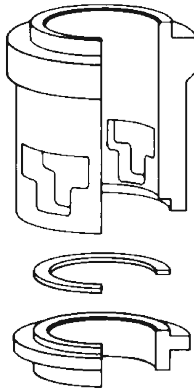
### Metal-Seat Ring and Cage

Standard construction is a dual function cage and seat ring. The cage acts as a massive plug guide and seat retainer, in addition to establishing the flow characteristic. The cage shown has openings which will provide an equal percentage characteristic. A linear characteristic is also available. Standard flow path is "into the cage" when used in conjunction with a balanced plug, or flow "out of the cage" when used with an unbalanced plug. (Standard construction for DN 250, 300, & 400 sizes / 10", 12", & 16" is a cage with integral seat)



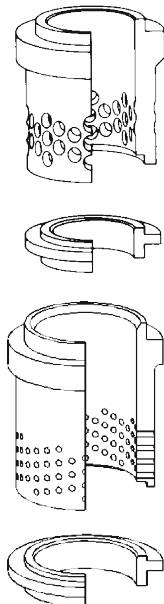
### Soft-Seat and Cage

The soft-seated design is a cage and seat ring with a PTFE insert. This soft-seated design combined with the unbalanced plug or the optional balanced plug used within the temperature and pressure limits of Figure 1 (page 6) will provide ANSI/FCI Class VI leakage. The cage shown has openings which will provide a linear characteristic. Equal percentage is also available. (Available in DN 40–200 / 1-1/2" – 8" valves only.)



### Flash Flo and Q-Cage

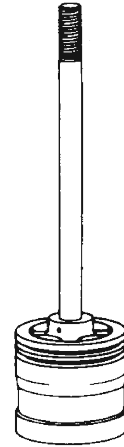
These unique cage designs have series of diametrically opposed holes which break the flow stream into many smaller streams. For liquid applications, the *Flash Flo* trim is used as "flow into the cage." Thus the high velocity streams impinge upon each other, dissipating the energy and keeping the cavitating liquid away from metal valve parts. For gas/steam applications, the *Flash Flo* and *Q-Cage* trim are used as "flow out of the cage." Thus the high velocity streams radiate out of the cage causing a redistribution of the acoustical energy with resultant noise attenuation of up to 10 dbA with the *Flash Flo* style and up to 18 dbA with the *Q-Cage* design. Equal percent and linear characteristics are available for the *Flash Flo* trim. The *Q-Cage* is standard with a linear characteristic trim.



The end result is a streamlined product offering which provides maximum versatility and flexibility, yet requires a minimum of inventory and maintenance time

### Standard Balanced Plug

The standard balanced plug is a piston style which has a primary metal seat and secondary bidirectional piston rings set in ring grooves. The pressure above the plug is equalized with the pressure below the seat ring by large vent holes which pass completely through the plug. In the closed position, the plug seats on the seat ring and the piston rings seal the annulus between the upper plug and cage.\* Standard flow path for balanced plugs and ported cages is flow over the plug.



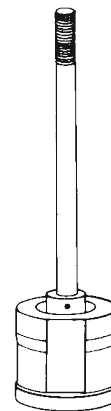
### Optional Balanced Plug

This unique design includes a special unidirectional, spring-loaded, pressure-energized PTFE cup seal. Upstream pressure enters the seat cavity compressing the seal outward, sealing the annulus between the plug and cage walls. This seal, in conjunction with the TFE soft seat ring, ensures ANSI Class VI leakage.



### Unbalanced Plug

When the unbalanced plug (no vent holes) is used, the flow direction must be from under the plug.

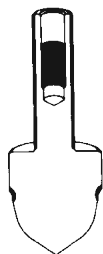


\*Standard plug seals for up to 204°C / 400°F service are PTFE energized by Viton O-ring. Metal seals are used beyond the capability of the PTFE ring, carbon graphite rings are available when ANSI Class II leakage is acceptable.

## G120/G130 Trim Designs

### Unbalanced Plug

The standard plug is an unbalanced design for ANSI Class IV shutoff. The contoured style plug will provide equal percentage or linear characteristic. Flow direction is from under the plug.



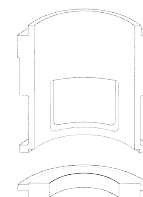
### G120 Threaded Seat

The seat ring is threaded into the body.



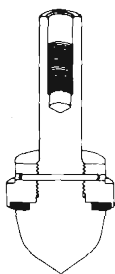
### G130 Cage Retained Seat

Standard "quick change trim" seat is held in place by a retaining cage.



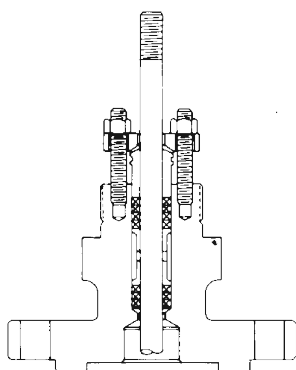
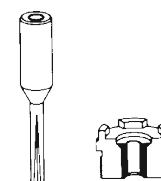
### Soft-Seated Plug

Optional TFE soft-seat insert is captured in the plug head and provides ANSI Class VI shutoff. (Soft-seat insert is captured in the seat ring for valves with  $C_v$  of 5.4 or smaller.)



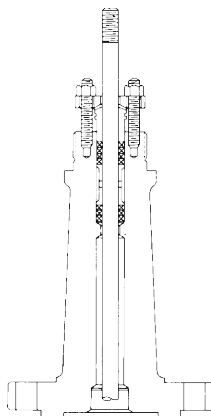
### G120 Series Spline

Spline trim is available for low flow  $C_v$ 's down to 0.001. Flow path is flow over the spline plug. (DN 15–25 / 1/2" – 1" only.)



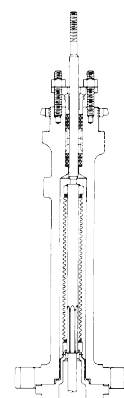
### Plain Bonnet

A plain bonnet is used when the flow media remains between  $-46^{\circ}\text{C}$  to  $+316^{\circ}\text{C}$  /  $-50^{\circ}\text{F}$  to  $600^{\circ}\text{F}$ . Available with standard packing configurations or live-loaded PTFE Emission-Pak® Assembly



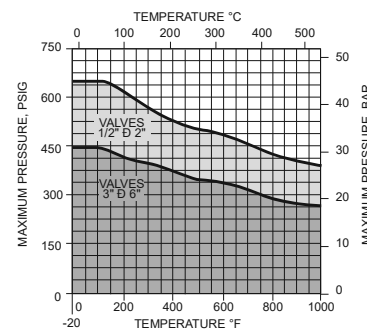
### Extension Bonnet

An extension bonnet is required for low temperature applications between  $-129^{\circ}\text{C}$  to  $-46^{\circ}\text{C}$  /  $-200^{\circ}\text{F}$  to  $-50^{\circ}\text{F}$  and high temperature applications from  $+316^{\circ}\text{C}$  to  $+538^{\circ}\text{C}$  /  $+600^{\circ}\text{F}$  to  $+1000^{\circ}\text{F}$ . Optional ultra-low temperature extension bonnet meeting ISA SP-79 height requirements is available for use at the same temperatures as above. In the G120/G130 Series it can also be used for applications between  $-196^{\circ}\text{C}$  to  $-129^{\circ}\text{C}$  /  $-320^{\circ}\text{F}$  to  $-200^{\circ}\text{F}$ . (not shown)



### Bellows Seal Bonnet

A bellows seal bonnet is used when stem leakage cannot be tolerated because the media is toxic, flammable, explosive, or precious. Refer to the chart above for bellows temperature and pressure limits.



## Shutoff Performance

Plug Style	Seat Ring	Plug Seal	ANSI/FCI 70-2	Percent of Max Cv
<b>G110 Balanced Series</b>	Metal	PTFE / O-Ring	IV	0.01
	Metal	Carbon Graphite	II	0.05
	Metal	Metal	—	0.06† 0.03‡
	PTFE	PTFE cup Seal/Spring	VI	N/A
<b>G112/G120/G130 Unbalanced Series</b>	Metal	N/A	IV	0.01
	Metal	N/A	V*	N/A
	PTFE	N/A	VI	N/A

† 40 and 50 mm / 1-1/2" and 2" Sizes.

‡ 80 mm / 3" and above.

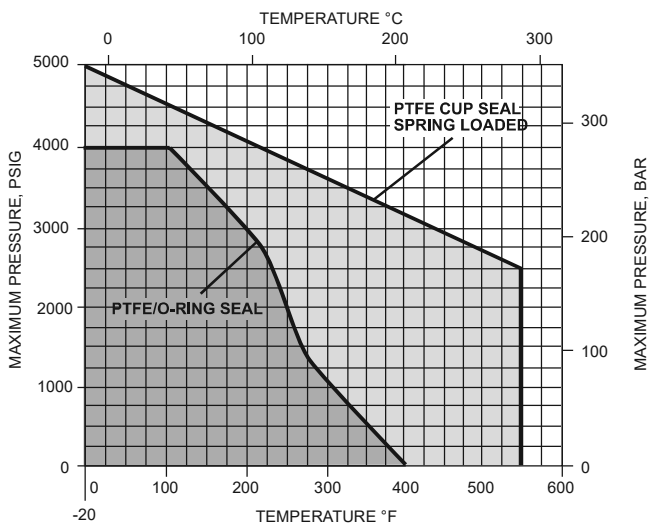
\* Requires seat lapping

ANSI Class V leakage —  $5 \times 10^{-4}$  ml/min of water per inch of orifice diameter per psi differential pressure.

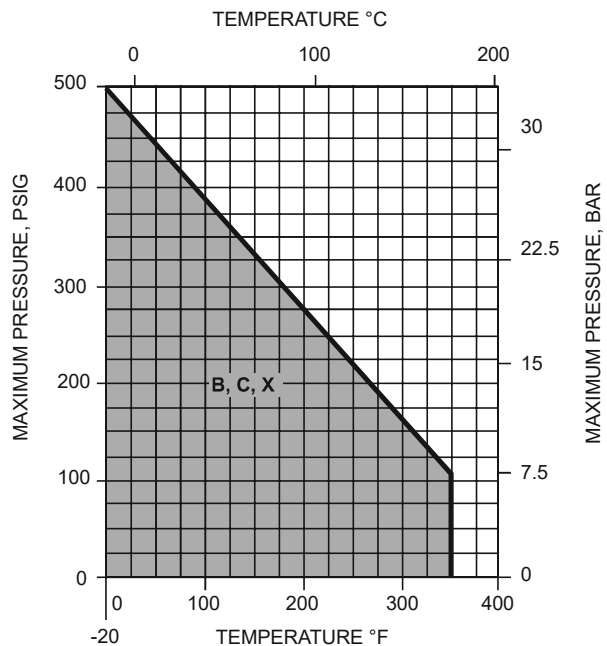
ANSI Class VI leakage — For 1 inch (25 mm) and larger port diameters, leakage is per ANSI Class VI (B16.104) as shown by the following table and using air at the service pressure drop or 50 psi (3.5 bar), whichever is lower.

Nominal Port Diameter		Bubbles per Minute	Milliliters per Minute
mm	in		
40	1-1/2	2	0.30
50	2	3	0.45
80	3	6	0.90
100	4	11	1.70
150	6	27	4.00

**G110 Balanced Plug Seal Rating Chart**



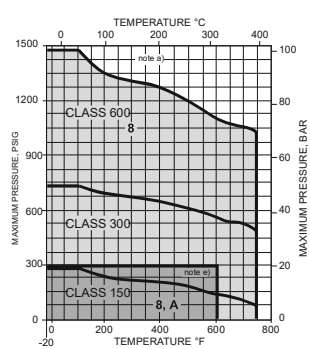
**PTFE Soft Seat Rating Chart**



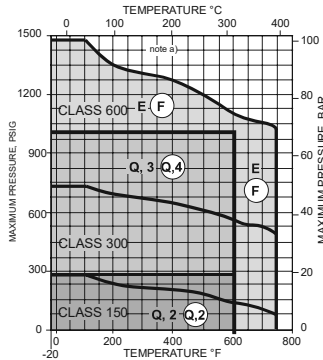
## Material Selection

These charts should be used to select the pressure class and trim material combination. The curves sloping downward to the right are the pressure rating curves for each ANSI pressure class as listed in ANSI B16.34. In each case, the curve designates the maximum pressure and temperature for the class listed directly below the curve. The bold boundaries mark the recommended pressure and temperature limits for trim material combinations listed in the tables below. Codes for G130 valves are shown encapsulated to allow for differentiation. All recommendations are generalized and may be subject to adjustment based upon hydraulic considerations determined during the valve sizing process.

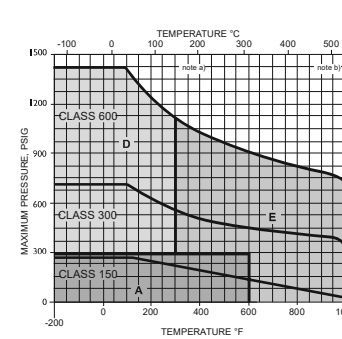
**Trim Chart for Carbon Steel Body (ASTM A216, WCB)**  
**G110**



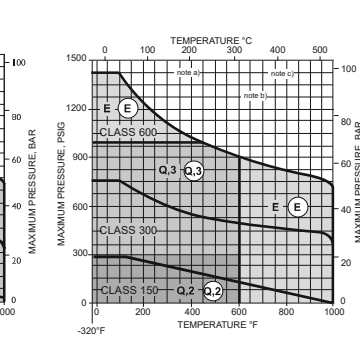
**Trim Chart for Stainless Steel Body (ASTM A351, CF8M)**  
**G120/G130**



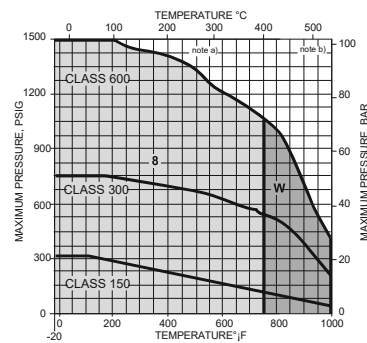
**Trim Chart for Stainless Steel Body (ASTM A351, CF8M)**  
**G110**



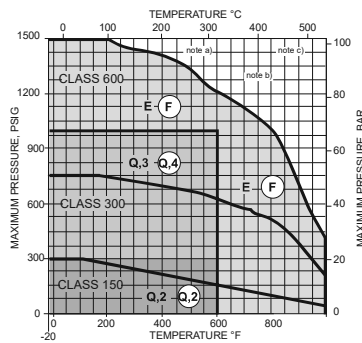
**Trim Chart for Stainless Steel Body (ASTM A351, CF8M)**  
**G120/G130**



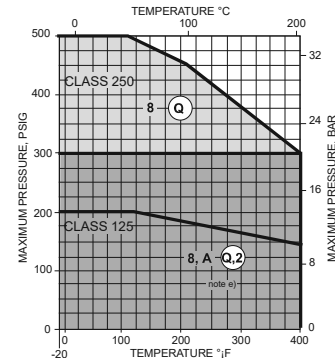
**Trim Chart for Chrome Moly Body (ASTM A217, C5)**  
**G110**



**Trim Chart for Chrome Moly Body (ASTM A217, C5)**  
**G120/G130**



**Trim Chart for Iron Body (ASTM A126, Class B)**  
**G110/G130**



**G110 Standard Trim Materials**

Trim Code	Plug	Seat Ring	Cage	Stem
<b>8</b>	416 SS	416 SS	17-4PH/CP	316 SS
<b>A</b>	316 SS	316 SS	316 SS/CP	316 SS
<b>B</b>	416 SS	416 SS/TFE	17-4PH/CP	316 SS
<b>C</b>	316 SS	316 SS/TFE	316 SS/CP	316 SS
<b>D</b>	316 SS/HFS	316 SS/HFS	316 SS/CP	316 SS
<b>E</b>	316 SS/HFS+G	316 SS/HFS	316 SS/CP	316 SS
<b>W</b>	316 SS/HFS+G	316 SS/HFS	Alloy 6*	316 SS

\*Available in Flash-Flo configuration only.

**G130 Standard Trim Materials**

Trim Code	Plug	Seat Ring	Cage	Guide Bushing	Stem
<b>2</b>	316 SS	316 SS	316 SS	17-4PH	316 SS
<b>Q</b>	17-4PH	17-4PH	17-4PH	17-4PH/AG	17-4PH
<b>3</b>	316 SS/HFS	316 SS/HFS	316 SS	17-4PH	316 SS
<b>4</b>	316 SS/HFS	316 SS/HFS	17-4PH	17-4PH/AG	316 SS
<b>E</b>	316 SS/HFS+P	316 SS/HFS	316 SS	Alloy 12	316 SS
<b>F</b>	316 SS/HFS+P	316 SS/HFS	17-4PH	Alloy 12	316 SS
<b>X</b>	316 SS/TFE	316 SS/	316 SS	316 SS/AG	316 SS

**G120 Standard Trim Materials**

Trim Code	Plug	Seat Ring	Cage	Stem
<b>2</b>	316 SS	316 SS	17-4PH	316 SS
<b>Q</b>	17-4PH	17-4PH	17-4PH/AG	17-4PH
<b>3</b>	316 SS/HFS	316 SS/HFS	17-4PH	316 SS
<b>E</b>	316 SS/HFS & P	316 SS/HFS	Alloy 12	316 SS
<b>S</b>	Alloy 6 Spline	Alloy 12 Insert	None	316 SS
	316 SS Post	316 SS Ring		
<b>X</b>	316 SS/TFE	316 SS	316 SS	316 SS

### NOTES TO TABLE AND TRIM CHARTS

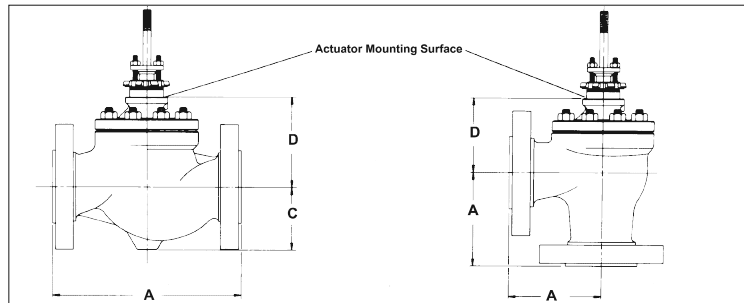
- Above +316°C / +600°F extension bonnet is required.
- Above +399°C / +750°F guide bushing should be tack welded in place and G120 seat ring either tack or seal welded in place.
- For service temperatures above +538°C / +1000°F contact your local representative.
- Unless otherwise specified, the hard-facing is alloy 6.
- CP = Chrome plated.
- AG = Anti Galling
- Where codes 8 and A are listed, code 8 is the standard and code A is optional.
- Neles Controls reserves the right to substitute materials when appropriate based upon service or availability.
- For B, C, and X soft-seat trim selections see graph on page 6.
- No guide bushing in 1/2" – 1" / 15mm – 25mm G130; retaining cage is guide.
- G120 code S is the standard for spline trim. For other materials contact your local representative.

**DIMENSIONS****G110/G112/G120†/G130****Globe Body Dimensional Data — mm / in ANSI Classes 125–600**

Body Size	Travel	A												C	D				Approx. Weight kg / lb*
		Screwed or Socket Weld	Screwed	Flanged						Flanged Ring Type Joint			Butt Weld						
				Class 150-600	Class 125-250	Class 125	Class 150	Class 250	Class 300	Class 600	Class 150	Class 300	Class 600		Class 150- 300	Class 600	Plain Bonnet	Exten- sion Bonnet	
15 / 1/2	25 / 1.00	206 / 8.12	—	—	184 / 7.25	—	191 / 7.50	203 / 8.00	—	202 / 7.94	202 / 7.94	—	—	62 / 2.44	140 / 5.50	244 / 9.62	346 / 13.62	360 / 14.19	25 / 11.3
20 / 3/4	25 / 1.00	210 / 8.25	—	—	184 / 7.25	—	194 / 7.62	206 / 8.12	—	206 / 8.12	206 / 8.12	—	—	62 / 2.44	140 / 5.50	244 / 9.62	346 / 13.62	360 / 14.19	25 / 11.3
25 / 1	25 / 1.00	210 / 8.25	210 / 8.25	184 / 7.25	184 / 7.25	197 / 7.75	210 / 8.25	210 / 8.25	197 / 7.75	210 / 8.25	210 / 8.25	210 / 8.25	210 / 8.25	62 / 2.44	140 / 5.50	244 / 9.62	346 / 13.62	360 / 14.19	25 / 11.3
40 / 1-1/2	28 / 1.12	251 / 9.88	251 / 9.88	222 / 8.75	222 / 8.75	235 / 9.25	235 / 9.25	251 / 9.88	235 / 9.25	248 / 9.75	251 / 9.88	251 / 9.88	251 / 9.88	81 / 3.19	146 / 5.75	282 / 11.12	397 / 15.62	411 / 16.19	30 / 65
50 / 2	28 / 1.12	286 / 11.25	286 / 11.25	254 / 10.00	254 / 10.00	267 / 10.50	267 / 10.50	286 / 11.25	267 / 10.50	282 / 11.12	289 / 11.38	286 / 11.25	286 / 11.25	92 / 3.62	146 / 5.75	292 / 11.50	448 / 17.62	462 / 18.19	32 / 70
80 / 3	38 / 1.50	—	—	298 / 11.75	298 / 11.75	318 / 12.50	318 / 12.50	337 / 13.25	311 / 12.25	333 / 13.12	340 / 13.38	337 / 13.25	337 / 13.25	111 / 4.38	187 / 7.38	333 / 13.12	492 / 19.38	492 / 19.38	66 / 145
100 / 4	38 / 1.50	—	—	353 / 13.88	353 / 13.88	368 / 14.50	368 / 14.50	394 / 15.50	365 / 14.38	384 / 15.12	397 / 15.62	394 / 15.50	394 / 15.50	135 / 5.31	191 / 7.50	394 / 15.50	610 / 24.00	610 / 24.00	104 / 230
150 / 6	57 / 2.25	—	—	451 / 17.75	451 / 17.75	473 / 18.62	473 / 18.62	508 / 20.00	464 / 18.25	489 / 19.25	511 / 20.12	451 / 17.75	508 / 20.00	168 / 6.62	254 / 10.00	406 / 16.00	668 / 26.12	663 / 26.12	213 / 470
200 / 8	89 / 3.50	—	—	—	543 / 21.38	—	568 / 22.38	610 / 24.00	—	—	—	568 / 22.38	610 / 24.00	216 / 8.50	337 / 13.25	457 / 18.00	—	—	549 / 1210
250 / 10	89 / 3.50	—	—	—	679 / 26.75	—	718 / 28.25	762 / 30.00	—	—	—	718 / 28.25	762 / 30.00	264 / 10.38	400 / 15.75	641 / 25.25	—	—	794 / 1750
300 / 12	89 / 3.50	—	—	—	737 / 29.00	—	775 / 30.50	819 / 32.25	—	—	—	775 / 30.50	819 / 32.25	308 / 12.13	419 / 16.50	734 / 28.88	—	—	1129 / 2488
400 / 16	254 / 10.00	—	—	—	—	—	1118 / 46.50	—	—	—	—	1219 / 48.00	—	410 / 16.13	814 / 32.06	—	—	—	1619 / 3570

\* Weights are for ANSI class 600 flanged valves with plain bonnet.

†G120 not available in cast iron body material.

**G111/G113/G21†/G131****Angle Body Dimensional Data — mm / in ANSI Classes 150 -600**

Body Size	Travel	A						D				Approx. Weight kg / lbs*
		Screwed or Socket Weld	Flanged			Butt Weld						
		Class 150-600	Class 150	Class 300	Class 600	Class 150-300	Class 600	Plain Bonnet	Extension Bonnet	U.L.T Extn. Bonnet	Bellows Bonnet	
15 / 1/2	25 / 1.00	103 / 4.06	—	—	—	—	—	121 / 4.75	226 / 8.88	327 / 12.88	341 / 13.44	11.3 / 25
20 / 3/4	25 / 1.00	105 / 4.12	92 / 3.62	97 / 3.81	103 / 4.06	—	—	121 / 4.75	226 / 8.88	327 / 12.88	341 / 13.44	11.3 / 25
25 / 1	25 / 1.00	105 / 4.12	92 / 3.62	99 / 3.88	105 / 4.12	92 / 3.62	92 / 3.62	121 / 4.75	226 / 8.88	327 / 12.88	341 / 13.44	11.3 / 25
40 / 1-1/2	28 / 1.12	125 / 4.94	111 / 4.38	117 / 4.62	125 / 4.94	125 / 4.94	125 / 4.94	130 / 5.12	267 / 10.50	381 / 15.00	399 / 15.69	30 / 65
50 / 2	28 / 1.12	143 / 5.62	127 / 5.00	133 / 5.25	143 / 5.62	143 / 5.62	143 / 5.62	124 / 4.88	270 / 10.62	425 / 16.75	443 / 17.43	32 / 70
80 / 3	38 / 1.50	—	149 / 4.88	159 / 6.25	168 / 6.62	168 / 6.62	168 / 6.62	149 / 5.88	295 / 11.62	454 / 17.88	451 / 17.75	66 / 145
100 / 4	38 / 1.50	—	176 / 6.94	184 / 7.25	197 / 7.75	184 / 7.25	197 / 7.75	159 / 6.25	862 / 14.25	578 / 22.75	578 / 22.75	104 / 230
150 / 6	57 / 2.25	—	226 / 8.88	236 / 9.31	254 / 10.00	236 / 9.31	254 / 10.00	191 / 7.50	343 / 13.50	600 / 23.62	600 / 23.62	213 / 470
200 / 8	89 / 3.50	—	272 / 10.69	284 / 11.19	305 / 12.00	—	—	241 / 9.50	362 / 14.25	—	—	549 / 1210

\* Weights are for ANSI class 600 flanged valves with plain bonnet.

†G121 available in 15mm / 1/2" – 2" sizes only.



## How To Order G100 Series Valves

1	G100 Series Models
<b>G110</b>	Balanced, Globe
<b>G111</b>	Balanced, Angle
<b>G112</b>	Unbalanced, Globe
<b>G113</b>	Unbalanced, Angle
<b>G120</b>	Unbalanced, Globe
<b>G121</b>	Unbalanced, Angle
<b>G130</b>	Unbalanced, Globe
<b>G131</b>	Unbalanced, Angle

2	Body Size mm / in	2	Body Size mm / in
<b>D</b>	15 / 1/2*	<b>N</b>	100 / 4
<b>E</b>	20 / 3/4*	<b>Q</b>	150 / 6
<b>F</b>	25 / 1*	<b>S</b>	200 / 8
<b>H</b>	40 / 1-1/2	<b>T</b>	250 / 10†
<b>J</b>	50 / 2	<b>U</b>	300 / 12†
<b>L</b>	80 / 3	<b>W</b>	400 / 16†

\* Not available G110/G111/G112/G113 Styles

† Available G110/G112 only

3	Body Rating
<b>A</b>	ANSI Class 125
<b>G</b>	ANSI Class 150*
<b>B</b>	ANSI Class 250
<b>H</b>	ANSI Class 300
<b>F</b>	ANSI Class 600*

\* Not available in cast iron

4	Body Materials
<b>A</b>	Cast Iron (ASTM A126, Class B)*
<b>C</b>	Carbon Steel (ASTM A126, WCB)
<b>E</b>	Stainless Steel (ASTM 351,CF8M)
<b>K</b>	Chrome-Moly Steel (ASTM A127, C5)

\* Available in 40mm – 150mm / 1-1/2"–6" G110 and 25mm – 150mm / 1"–6" G130 globe styles only

5	End Connections
<b>2</b>	Flat Face Flange
<b>3</b>	Raised Face Flange**
<b>4</b>	NPT Threaded
<b>5</b>	Ring type joint (RTJ)*
<b>6</b>	Socket Weld*
<b>8</b>	Butt Weld Schedule 40*
<b>9</b>	Butt Weld Schedule 80*

\* Not available in cast iron

\*\* Not available in Class 125 Cast Iron

6	Bonnet Type
<b>2</b>	Plain
<b>3</b>	Ultra-low temperature extensions*
<b>4</b>	Extension*
<b>5</b>	Bellows*

\* Not available in cast iron

7	Trim Characteristics
<b>G110 Series</b>	
<b>C</b>	Linear
<b>E</b>	Equal Percent
<b>F</b>	Flash-Flo, Equal Percent
<b>H</b>	Flash-Flo, Linear
<b>Q</b>	Q-Cage, Linear
<b>G120 Series</b>	
<b>C</b>	Linear Contoured
<b>E</b>	Equal Percentage Contoured
<b>N</b>	Spline
<b>G130 Series</b>	
<b>C</b>	Linear Contoured
<b>E</b>	Equal Percentage Contoured

8	Trim Size
<b>A</b>	Full Size
<b>B</b>	1 Reduction
<b>C</b>	2 Reduction

Refer to Page 3 for additional trims and G120 Series spline trims

9	Trim Size				
Trim Code	Plug	Seat Ring	Cage	Guide Bushing	Stem
<b>G110</b>					
<b>8*</b>	<b>416 SS</b>	<b>416 SS</b>	<b>17-4PH/CP</b>	—	<b>316 SS</b>
<b>A*</b>	<b>316 SS SS/HF</b>	<b>316 SS</b>	<b>316 SS/CP</b>	—	<b>316 SS</b>
<b>B</b>	416 SS	416 SS/TFE	17-4PH/CP	—	316 SS
<b>C</b>	316 SS	316 SS/TFE	316 SS/CP	—	316 SS
<b>D</b>	316 SS/HFS	316 SS/HFS	316 SS/CP	—	316 SS
<b>E</b>	316 SS/HFS+G	316 SS/HFS	316 SS/CP	—	316 SS
<b>W</b>	316 SS/HFS+G	316 SS/HFS	Alloy 6	—	316 SS
<b>G120</b>					
<b>2*</b>	<b>416 SS</b>	<b>316 SS</b>	—	<b>17-4PH</b>	<b>316 SS</b>
<b>Q*</b>	<b>316 SS</b>	<b>17-4PH/CP</b>	—	<b>17-4PH/AG</b>	<b>17-4PH</b>
<b>3</b>	316 SS/HFS	316 SS/HFS	—	17-4PH	316 SS
<b>E</b>	316 SS/HFS&P	316 SS/HFS	—	Alloy 12	316 SS
<b>S</b>	Alloy 6 Spline	Alloy 6 12 Insert	—	None	316 SS
	316 SS Post	316 SS Ring	—		
<b>X</b>	316 SS/TF	316 SS	—	316 SS/AG	316 SS
<b>G130</b>					
<b>2*</b>	316 SS	316 SS	316 SS	17-4PH	316 SS
<b>Q*</b>	17-4PH	17-4PH	17-4PH	17-4PH/AG	17-4PH
<b>3</b>	316 SS/HFS	316 SS/HFS	316 SS	17-4PH	316 SS
<b>4</b>	316 SS/HFS	316 SS/HFS	17-4PH	17-4PH/AG	316 SS
<b>E</b>	316 SS/HFS&P	316 SS/HFS	316 SS	Alloy 12	316 SS
<b>F</b>	316 SS/HFS&P	316 SS/HFS	17-4PH	Alloy 12	316 SS
<b>X</b>	316 SS/TFE	316 SS	316 SS	316 SS/AG	316 SS

\* Denotes standard Trim Materials

10	Packing / Plug Seal Materials		
G110 & G111 Series			
	Packing <sup>(1)</sup>	Plug Seal <sup>(2)</sup>	Temperature Range
A*	PTFE V-Ring/Spacer	PTFE/O-Ring	-129°C to + 204°C / -200° F to +400° F
F	PTFE V-Ring/Spacer	PTFE Cup Seal	-29°C to 232°C / -20° F to +450° F
B	Double PTFE V-Ring/Spacer	PTFE/O-Ring	-29°C to 204°C / -20° F to +400° F
K	Double PTFE V-Ring/Spacer	PTFE Cup Seal	-29°C to 232°C / -20° F to +450° F
P	Laminated Graphite	PTFE/O-Ring	-29°C to 204°C / -20° F to +400° F
Q	Laminated Graphite	PTFE Cup Seal	-29°C to 232°C / -20° F to +550° F
S	Laminated Graphite	Carbon Graphite	-129°C to + 538°C / -200° F to +1000° F
Y	Laminated Graphite	Metal	-129°C to + 399°C / -200° F to +750° F
N	Emission-Pak PTFE V-Ring	PTFE/O-Ring	-129°C to + 204°C / -200° F to +400° F
R	Emission-Pak PTFE V-Ring	PTFE Cup Seal	-129°C to + 232°C / -200° F to +450° F
G112, G113, G120, G121, G130 & G131 Series			
	Packing <sup>(1)</sup> (no plug seal required)		Temperature Range
G*	PTFE V-Ring/Spacer		-196°C to + 232°C / -320° F to +450° F
Y	Double PTFE V-Ring/Spacer		-196°C to + 232°C / -320° F to +450° F
U	PTFE Impregnated PTFE Braid		-196°C to + 232°C / -320° F to +450° F
W	Lubricated Aramid Braid		-196°C to + 232°C / -320° F to +450° F
9	Laminated Graphite		-196°C to + 538°C / -320° F to +1000° F
B	Emission-Pac PTFE V-Ring		-196°C to + 232°C / -320° F to +450° F

\* Denotes standard Packing/Plug Seal materials

(1) Other packing materials available upon request.

(2) Refer to G110 Balanced Plug Seal Rating chart (Pg. 6) for Pressure/Temperature Rating.

11	Variations
—	None
<b>A</b>	Body Drain
<b>B</b>	Bonnet Lube Connection Only
<b>C</b>	Stainless Steel Studs / Nuts (Required for temperatures below -24° C / -20° F)
<b>D</b>	Bonnet lube Connection w/ISO Valve
<b>E</b>	Tack Weld Guide and Seat (G120 Series only)
<b>F</b>	Tack Weld Guide and Seal Weld Seat (G120 Series only)
<b>G</b>	Chlorine Clean
<b>H</b>	Oxygen Clean
<b>J</b>	125 RMS flange face finish
<b>K</b>	17-4PH Stem
<b>L</b>	Tack Weld Guide Bushing Only (G130 Series only)
<b>N</b>	NACE Standard MR-01-75 Compliance

## D/R Series Linear Spring Diaphragm Pneumatic Actuators

Neles Controls linear spring diaphragm pneumatic actuators are rugged units designed for reliable operation of linear control valves. The available combinations of case sizes, strokes, and springs precisely satisfy a wide range of application requirements.

### Features

- Rolling diaphragm provides excellent sensitivity and provides maximum constant effective area which translates into improved linearity.
- Modular construction provides maximum part interchangeability between direct and reverse-acting models and between selected case sizes—field reversibility is easily accomplished.
- High spring rates improve control valve stability.
- Minimal guiding assures low hysteresis in reverse-acting models—zero hysteresis in direct-acting models.
- Stainless steel stems are standard for maximum performance in corrosive environments

### Specifications

**Diaphragm Cases:** Pressed steel

**Stem:** 303 SS

**Diaphragm:** Dacron reinforced nitrile

**Spring Barrel:** Cast iron

Refer to Bulletin 6 D/R 20 for further details.

### NP700a/NE700a Series Pneumatic And Electropneumatic Linear Positioners

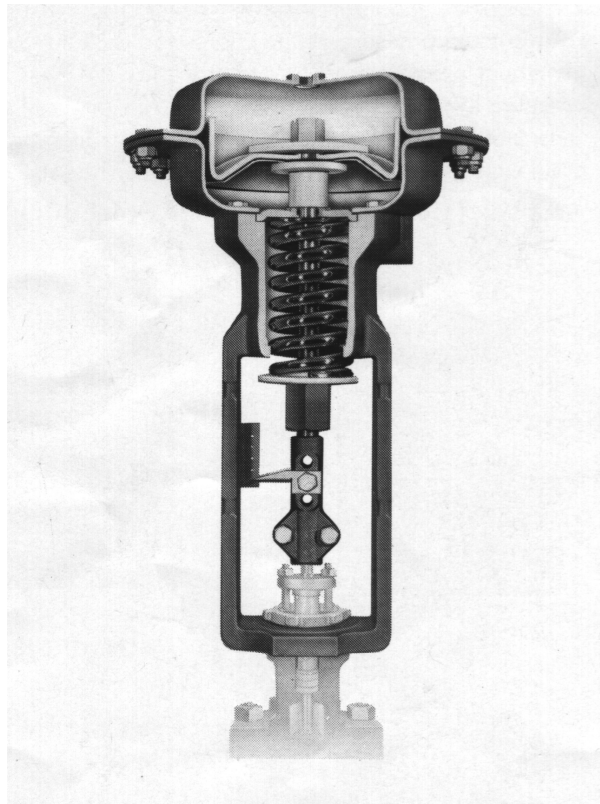
The NP700A and NE700A are proportional positioners for globe valve throttling applications. The NP is a fully pneumatic unit while the NE is an electro-pneumatic unit that provides pneumatic output proportional to a standard milliampere DC Input. Used with D/R Series diaphragm actuators, these units improve repeatability and accuracy while providing increased force to reduce actuator sizes. Refer to Bulletin A130-2 for further information.

Grafoil is a registered trademark of Union Carbide.

Monel is a registered trademark of Inco.

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Viton is a registered trademark of DuPont Co.



**Max. Case Pressure:** 4.5 bar / 65 psi

**Temperature Limits:** -40°C to +82°C / -40°F to +180°F

**Standard Spring Spans:** 0.8 bar and 1.7 bar / 12 psi and 24 psi (other spans and spring preloads available on application).

### Other Accessories

Additional accessories available for mounting with linear control valves include, but are not limited to transducers, limit switches, lock-up valves, solenoid valves and amplifying relays. Please consult the factory for complete details.

## INTERNATIONAL MANUFACTURING and SALES LOCATIONS

UNITED STATES: Shrewsbury, Massachusetts. MEXICO: Chihuahua. BRAZIL: São José dos Campos.

FINLAND: Helsinki. FRANCE: Wittenheim. PEOPLES REPUBLIC OF CHINA: Shanghai.

Our products are available through Neles Controls sales offices in Australia, Austria, Belgium, Canada, Denmark, Germany, Italy, Japan, The Netherlands, Norway, Portugal, Saudi Arabia, Singapore, South Korea, Spain, Sweden, Switzerland, United Arab Emirates, Venezuela, as well as through a world-wide network of representatives.



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