

Neles™ gage-guided globe valves Series GB

Neles series GB cage-guided globe valves providing superior control performance and high reliability in wide range of applications. Standard units are equipped with Neles diaphragm or piston actuators and valve controllers for precise flow control, extended operation life and performance monitoring online.

Construction

- Compact and lightweight construction
- Large range of trims with different Cv and characteristics per body size to fit many process conditions
- Both metal and soft seats are available depending on the application
- Optional bellows seal for toxic or other applications where no stem seal leakage is allowed
- Wide material selection for different applications
- Many end connection styles available for different applications
- Extension bonnet design for wide temperature range

Accurate control

- Stable control with good rangeability
- ND9000 or NDX digital valve controller for auto-calibration and accurate control
- Accurate and sensitive diaphragm and piston actuators

Wide range of applications

- Suitable for gas, liquid and steam
- Wide temperature ranges from -196... +593 °C / (-320 ... +1099 °F) with different bonnet constructions
- Large variation of trim designs from standard cage to Tendril 1 or Tendril 2 for low noise and anti-cavitation applications
- Various seat and seal ring options for wide range of applications

Design application flexibility

- Wide range of applicable noise control components, silencers, baffle plates
- Inherently characterized trims offered in equal percentage, linear
- Large range of Cvs per body size allowing for wide applicable in process conditions
- High integrity cage guiding system and clamped cage for heavy duty guiding on severe service applications
- Low emission packings available



Safety and quality

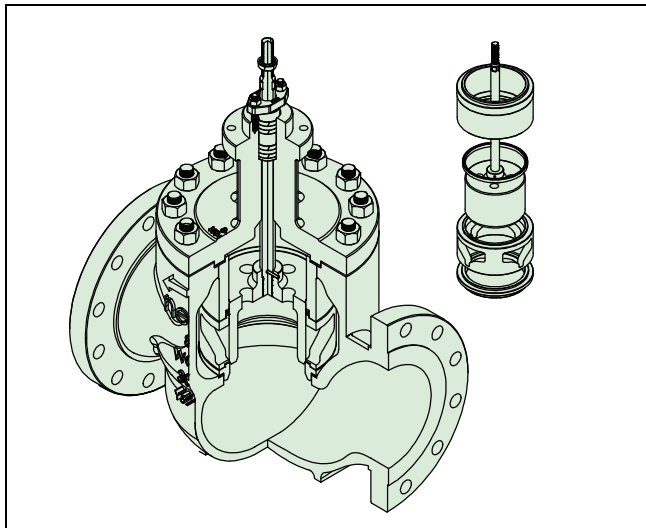
- Rugged one piece body to minimize the leak paths and makes the valve less prone to pipe stress
- Strictly tested to ensure specified performance with quality assurance systems in accordance to ISO 9001
- Certified ISO 15848 fugitive emissions
- Certified CE/PED & ATEX, TSG & EAC (GOST-R)
- Certified SIL(Safety Integrity Level) in accordance to IEC61508

Easy maintenance

- Quick change trim and top entry construction for easy in-line maintenance
- Self guiding components for easy valve assembly
- Flow characteristics can be easily changed with interchangeable trim components
- ND digital valve controller with online diagnostics enables performance follow up and predictive maintenance
- Efficient asset management with any FDT frame application

Different trim designs

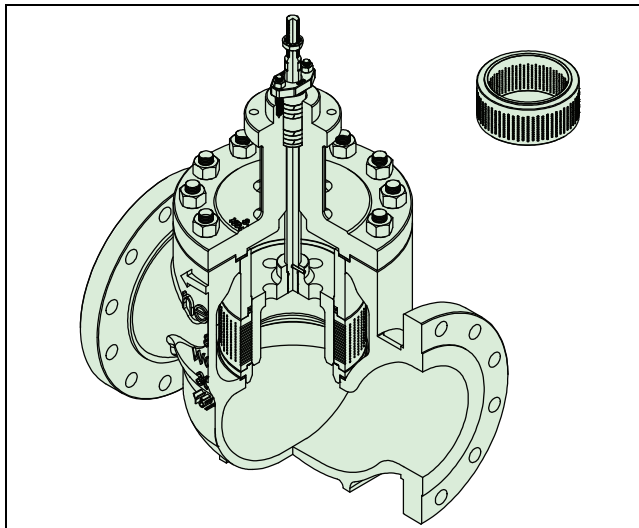
Conventional trim



Pressure energized seal ring, standard cage trim

Standard cage trim is equipped with a specially designed window-shape cage and a balanced plug. The window area defines the flow path through the valve and the flow characteristic of the valve (linear, equal percentage etc.). The trim has balancing holes that are located on the top of the plug. This trim is suited for both high and low pressure drop application and is used in the majority of control applications.

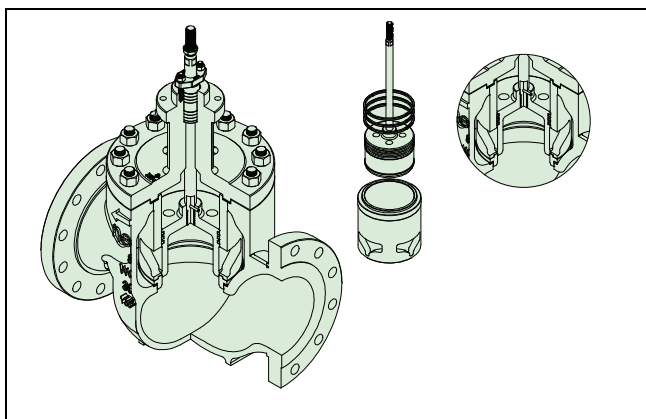
Tendril™ (Multi-hole) trim



Tendril (Multi-hole) trim

Tendril is a multi-hole trim where the flow is divided through multiple holes in which pressure progressively reduces while passing through the trim. This gives excellent resistance to cavitation and reduces noise in high pressure drop applications. Tendril trim is available as Tendril 1 or Tendril 2 design depending on pressure drop and potential for cavitation.

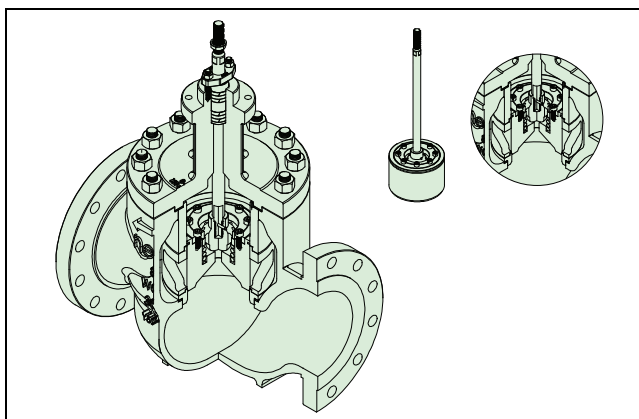
High temperature trim



Multiple graphite seal rings, one-piece cage trim

Multiple graphite seal ring construction is ideal solution for high temperature applications requiring FCI 70-2 Class III or IV tightness. It can be used in various high temperature applications, including high pressure service. The trim is compatible with both standard cage and Tendril trims

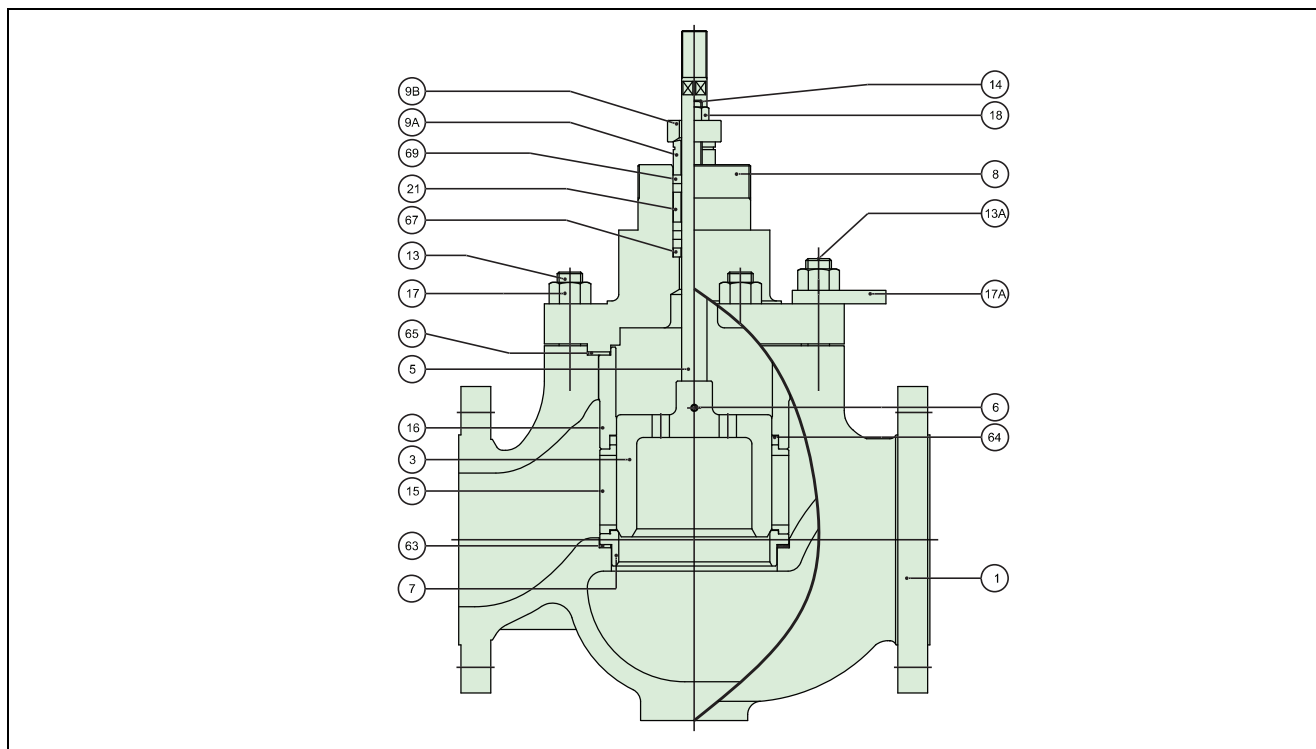
Pilot balanced trim



Pilot balanced trim

Pilot balanced trim construction is designed to be used in high temperature applications as the design is fully made of metal and it has only metal-to-metal sealing surfaces. The trim is suitable with both standard cage and Tendril trim. This design has excellent seat tightness up to FCI 70-2 Class V.

Components & materials



Body material: Carbon steel or alloy steel

Part no.	Description	Material
1	BODY	A216 WCB / ALLOY STEEL AVAILABLE
2	PLUG SET	410 SS / 630 SS + HCr
3*	PLUG	410 STAINLESS STEEL
5*	STEM	630 STAINLESS STEEL + HCr
6*	PLUG PIN	316 STAINLESS STEEL
7	SEAT RING	410 STAINLESS STEEL
8	BONNET	A216 WCB / ALLOY STAINLESS STEEL
9A	GLAND	304 STAINLESS STEEL
9B	GLAND FLANGE	A351 CF8
13 / 13A	STUD	A193 Gr.B7M
14	STUD	A193 Gr.B8M
15	CAGE	630 STAINLESS STEEL + HCr
16	CAGE GUIDE	630 STAINLESS STEEL + HCr
17	HEXAGON NUT	A194 Gr.2HM
17A	LIFTING PLATE	JIS G3101-SS400
18	HEXAGON NUT	A194 Gr.8M
21	LANTERN RING	304 STAINLESS STEEL
63	SEAT GASKET	S/W GASKET, 316L SS + GRAPHITE
64	SEAL RING	PTFE + GRAPHITE
65	BODY GASKET	S/W GASKET, 316L SS + GRAPHITE
67	PACKING SPACER	304 STAINLESS STEEL
69	PACKING RING	PTFE + CARBON FIBER or GRAPHITE

Note.

1. Plug/Seat hard facing (Cobalt based alloy) & Soft seat are available
2. Materials description
316 SS : ASTM A276 gr. 316 or JIS 316 stainless steel
410 SS : ASTM A276 gr. 410 or JIS 410 stainless steel
17-4PH : ASTM A564 630 (H1100) or JIS 630 (H1100) St. Steel
3. Above standard materials to be applicable depending on specific service conditions. Other optional materials to consult Valmet.
4. Optional materials to meet to requirements of NACE MR 01-75 are available
5. The materials are subject to change as equivalent depending on detail design
6. The part no. 3*, 5*, 6* are delivered as a set with part no. 2

Body material: Stainless steel

Material	Spare parts
A351 CF8M	
CF8M + HCr/ 316 SS + HCr	Cat 3
316 STAINLESS STEEL + HCr	Cat 3
316 STAINLESS STEEL + HCr	Cat 3
316 STAINLESS STEEL	Cat 3
316 STAINLESS STEEL	Cat 3
A351 CF8M	
304 STAINLESS STEEL	
A351 CF8	
A193 Gr. B8M	
A193 Gr. B8M	
316 STAINLESS STEEL + HCr	Cat 3
316 STAINLESS STEEL + HCr	Cat 3
A194 Gr. 8M	
304 STAINLESS STEEL	
A194 Gr. 8M	
304 STAINLESS STEEL	
S/W GASKET, 316L SS + GRAPHITE	Cat 1
PTFE + GRAPHITE	Cat 1
S/W GASKET, 316L SS + GRAPHITE	Cat 1
304 STAINLESS STEEL	
PTFE + CARBON FIBER or GRAPHITE	Cat 1

Note.

1. Plug/Seat hard facing (Cobalt based alloy) & Soft seat are available
2. Materials description
316 SS : ASTM A276 gr. 316 or JIS 316 stainless steel
3. Above standard materials to be applicable depending on specific service conditions, other optional materials to consult Neles.
4. Cryogenic application : ASTM A320 B7M & 8M for studs (13) and nuts (17)
5. Optional materials to meet to requirements of NACE MR 01-75 are available
6. The materials are subject to change as equivalent depending on detail design
7. The part no. 3*, 5*, 6* are delivered as a set with part no. 2

GB, Applications guide

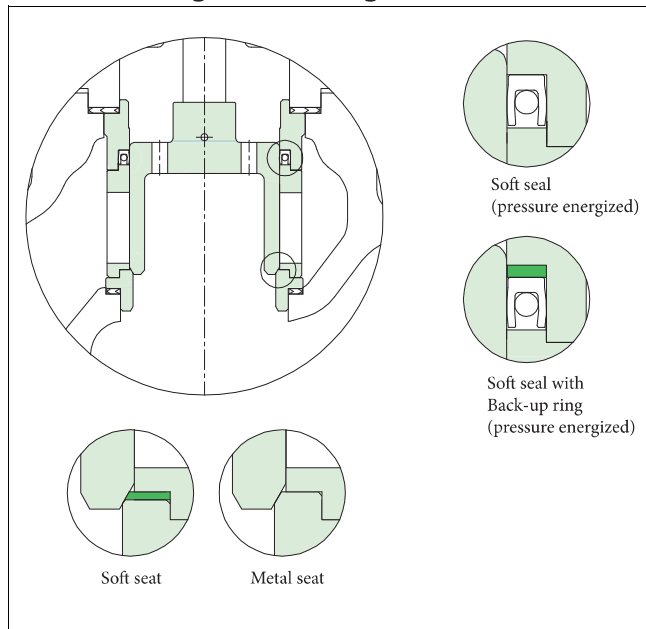
Temperature range

PTFE + Graphite pressure energized seal with metal seat:	-56...+260 °C
PTFE + Graphite + Carbon pressure energized seal with metal seat:	-56...+320 °C
PTFE pressure energized seal with metal seat:	-196...+232 °C
Multiple graphite seals with metal seat:	-56...+540 °C
Pilot balanced trim with metal seat:	-56...+593 °C

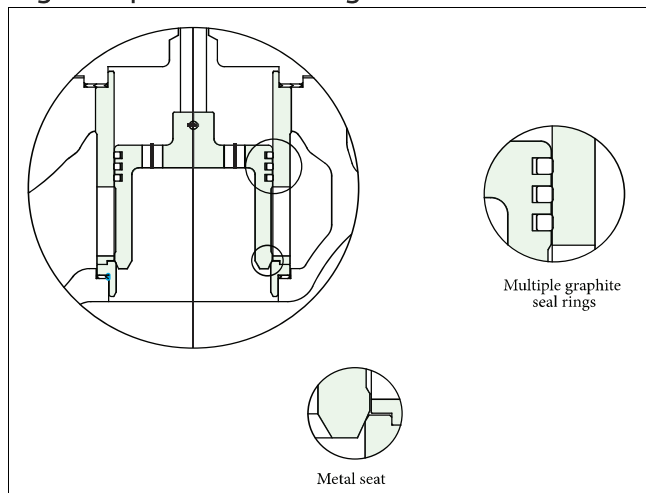
Shut off classification

ANSI FCI 70-2 Class IV and V available with metal and soft seat.

Pressure energized seal ring construction



High temperature seal ring construction



Temperature range with different body and stud/nut materials

Body, bonnet material	Stud molt, nut application	Temp. range (°C)	Sign
Carbon steel (WCB, A105)	ASTM A193-B7M STUD / ASTM A194-2HM NUT	-29...+425	G
Stainless steel (CF3, CF8, CF3M, CF8M)	ASTM A193-B8M / ASTM A194 -8M NUT	-196...+425	D
Cr.Mo. Steel (WC6, F11, WC9, F22, C12A, F91)	ASTM A193-B16 STUD ASTM A194-4 NUT	-29...+593	H

Trim materials

GB, Trim				Temp. range (°C)	Sign
Plug	Stem	Seat	Cage		
410 SS	630 SS + HCr	410 SS	630 SS + HCr	-29...+425	P1XBCS1R1X
316 SS	316 SS + HCr	316 SS	316 SS + HCr	-196...+425	T6XTCS1R6X
316 SS + Cobalt based	316 SS + HCr	316 SS + Cobalt based	316 SS + HCr	-196...+425	T6ATCS1R6A
420 J2	XM-19 / Inconel 718	420 J2	420 J2	-10...+540	*
316 SS	316 SS + HCr	316 SS + PTFE	316 SS + HCr	-49...+232	*
Inconel 718	XM-19 / Inconel 718	F91	F91	-29...+593	*
Inconel 625, 718, 750				-196...+593	*

*Please contact Valmet

Gasket applications

Body, bonnet material	Gasket material	Temp. range (°C)	Sign
Carbon steel WCB, A105	S/W (Spiral wound) 316L SS + Graphite	-29...+425	S
Stainless steel CF8, CF8M, CF3, CF3M	S/W (Spiral wound) 316L SS + Graphite	-56...+593	S
	S/W (Spiral wound) 316L SS + PTFE	-196...+232	L
Cr.Mo. Steel WC6, WC9, F22, C12A, F91	S/W (Spiral wound) 316L SS + Hi Graphite	-29...+593	H

Packing applications

Packing material	Temp (°C)	Pressure class	Sign
PTFE + Carbon Fiber (Braided TEF + Graphite)	-196...+260	Up to CL900	G
PTFE V-Ring	-49...+232	Up to CL600	T
Graphite (with Mold + Braided)	-196...+400	Up to CL2500	F*
Hi-Graphite (with Mold + Braided)	-54...+593	Up to CL2500	H

*Graphite packing with low emission, live loaded construction can be applicable up to +450 °C

Flow directions

Series	General plug & high temp balanced plug			Pilot balanced plug	
	Cage				
	General	Tendril (Gas)	Tendril (Liquid)	General	Tendril
GB	FTC*	FTO	FTC	FTC	FTC

* FTO can be used
 FTO: Flow to open
 FTC: Flow to close

Cv Ratio 50 : 1

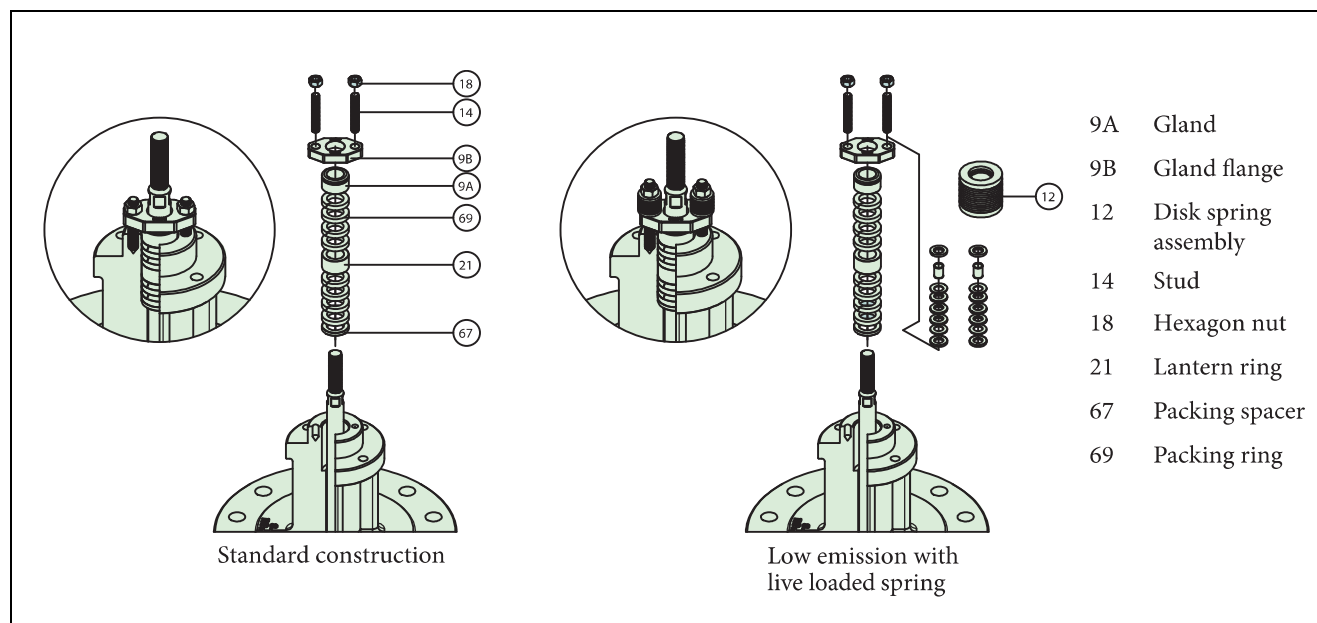
Flow Characteristics Equal percentage, linear

GB, Ratings & end connections

Valve size DN / Inch	GB, ASME ratings									
	Class 150 ... 600				Class 900 ... 1500				Class 2500	
	RF	RTJ	SW	BW	RF	RTJ	SW	BW	RF	RTJ
50 / 2	O	O	O	O	O	O	O	O	O	O
80 / 3	O	O		O	O	O		O	O	O
100 / 4	O	O		O	O	O		O	O	O
150 / 6	O	O		O	O	O		O	O	O
200 / 8	O	O		O	O	O		O	O	O
250 / 10	O	O		O	O	O		O		
300 / 12	O	O		O	O	O		O		
350 / 14	O	O		O	O	O		O		
400 / 16	O	O		O	O	O		O		

*Note 1. RF: Raised face flange, RTJ: Ring joint, SW: Socket weld, BW: Butt weld.
 Bigger sizes are available, please contact Valmet.

Packing constructions



Rated Cv and trim table (Globe single seat, balanced type, series GB)

Sign	Trim type	Sign	Trim character-istic	Sign	Rated Cv																				
					Description	Body size and stroke																			
						2"	Str.	3"	Str.	4"	Str.	6"	Str.	8"	Str.	10"	Str.	12"	Str.	14"	Str.	16"	Str.		
A	General plug	L	Linear	FC	General / Full capacity	74	(40)	142	(50)	230	(50)	380	(60)	600	(70)	950	(80)	1270	(120)	1740	(140)	2215	(160)		
A	High temp. balanced plug			1A	General / 1-Step reduction	48	(40)	98	(50)	160	(50)	275	(60)	455	(70)	700	(80)	970	(120)	1300	(140)	1530	(160)		
P	Pilot balanced plug			2A	General / 2-Step reduction	26	(40)	56	(50)	86	(50)	150	(60)	254	(70)	398	(80)	550	(120)	776	(140)	940	(160)		
				3A	General / 3-Step reduction	16	(40)	34	(50)	52	(50)	90	(60)	152	(70)	238	(80)	340	(120)	464	(140)	568	(160)		
				FT	Tendril 1 / Full capacity	52	(40)	102	(50)	160	(50)	290	(60)	460	(70)	630	(80)	980	(120)	1300	(140)	1580	(160)		
				1T	Tendril 1 / 1-Step reduction	40	(40)	75	(50)	120	(50)	220	(60)	340	(70)	460	(80)	735	(120)	985	(140)	1145	(160)		
				2T	Tendril 1 / 2-Step reduction	27	(40)	40	(50)	70	(50)	130	(60)	195	(70)	255	(80)	405	(120)	565	(140)	670	(160)		
				3T	Tendril 1 / 3-Step reduction	10	(40)	21	(50)	46	(50)	75	(60)	105	(70)	140	(80)	240	(120)	310	(140)	415	(160)		
				FM	Tendril 2 / Full capacity	50	(40)	100	(50)	155	(50)	280	(60)	425	(70)	590	(80)	920	(120)	1240	(140)	1530	(160)		
				1M	Tendril 2 / 1-Step reduction	35	(40)	74	(50)	115	(50)	215	(60)	330	(70)	450	(80)	720	(120)	970	(140)	1130	(160)		
				2M	Tendril 2 / 2-Step reduction	23	(40)	33	(50)	65	(50)	120	(60)	190	(70)	240	(80)	380	(120)	550	(140)	640	(160)		
				3M	Tendril 2 / 3-Step reduction	8	(40)	18	(50)	38	(50)	67	(60)	100	(70)	130	(80)	220	(120)	290	(140)	390	(160)		
				E	Equal %	FC	General / Full capacity	71	(40)	138	(50)	210	(50)	340	(60)	560	(70)	830	(80)	1240	(120)	1650	(140)	2090	(160)
				1A		General / 1-Step reduction	50	(40)	110	(50)	160	(50)	270	(60)	450	(70)	655	(80)	960	(120)	1275	(140)	1680	(160)	
				2A		General / 2-Step reduction	24	(40)	50	(50)	82	(50)	136	(60)	236	(70)	374	(80)	524	(120)	746	(140)	854	(160)	
				3A		General / 3-Step reduction	14	(40)	32	(50)	50	(50)	82	(60)	142	(70)	224	(80)	314	(120)	446	(140)	512	(160)	
				FT		Tendril 1 / Full capacity	50	(40)	82	(50)	135	(50)	235	(60)	370	(70)	500	(80)	840	(120)	1110	(140)	1400	(160)	
				1T		Tendril 1 / 1-Step reduction	35	(40)	58	(50)	95	(50)	170	(60)	265	(70)	370	(80)	600	(120)	785	(140)	1020	(160)	
		2T	Tendril 1 / 2-Step reduction	20		(40)	35	(50)	58	(50)	100	(60)	170	(70)	225	(80)	355	(120)	480	(140)	600	(160)			
		3T	Tendril 1 / 3-Step reduction	10		(40)	20	(50)	32	(50)	58	(60)	105	(70)	125	(80)	205	(120)	290	(140)	350	(160)			
		FM	Tendril 2 / Full capacity	47		(40)	74	(50)	130	(50)	230	(60)	330	(70)	470	(80)	770	(120)	1050	(140)	1320	(160)			
		1M	Tendril 2 / 1-Step reduction	33		(40)	56	(50)	92	(50)	165	(60)	245	(70)	330	(80)	570	(120)	720	(140)	960	(160)			
		2M	Tendril 2 / 2-Step reduction	19		(40)	33	(50)	52	(50)	95	(60)	145	(70)	190	(80)	330	(120)	430	(140)	550	(160)			
		3M	Tendril 2 / 3-Step reduction	8		(40)	16	(50)	25	(50)	52	(60)	80	(70)	110	(80)	190	(120)	270	(140)	295	(160)			
Y	Special	Y	Special	YY		Special	Please contact sales office for more information																		

GB Series Cv vs travel Standard trim (Cage)

ASME Class: 150# - 1500#

Size: 2" - 16"

Flow characteristic: linear

Valve travel [%]							10	20	30	40	50	60	70	80	90	100
FL							0.890	0.888	0.885	0.883	0.880	0.878	0.875	0.872	0.870	0.840
Valve size		Orifice diameter		Travel			Rated Cv									
Inch	mm	Sign	Inch	mm	Inch											
2	50	FC	2.5	64.5	1.6	40	4.9	13.9	22.2	30.3	39.5	48.6	57.3	64.7	69.5	74
		1A					3.5	7.6	12.5	17.3	22.4	27.6	33.1	38.5	43.6	48
		2A					2.6	5.2	7.7	10.3	12.9	15.4	18.0	20.6	23.2	26
		3A					1.6	3.2	4.8	6.3	7.9	9.5	11.1	12.7	14.3	16
3	80	FC	3.5	89.0	2.0	50	8.0	22.0	39.0	59.0	75.0	90.0	105.0	119.0	130.0	142
		1A					6.2	16.6	26.9	36.9	46.6	56.8	67.4	78.0	87.8	98
		2A					4.5	11.1	16.6	22.2	27.7	33.3	38.8	44.4	49.9	56
		3A					3.4	6.7	10.1	13.5	16.8	20.2	23.6	26.9	30.3	34
4	100	FC	4.4	111.5	2.0	50	19.3	41.5	74.4	105.3	133.4	164.5	187.6	206.4	219.3	230
		1A					8.0	25.4	43.1	60.4	77.2	93.8	110.7	127.6	143.9	160
		2A					6.0	17.0	25.5	34.1	42.6	51.1	59.6	68.1	76.6	86
		3A					5.2	10.3	15.4	20.6	25.7	30.9	36.0	41.2	46.3	52
6	150	FC	5.3	133.6	2.4	60	23.0	62.0	123.5	181.0	229.1	269.3	315.2	349.9	370.1	380
		1A					12.0	40.9	71.4	101.4	130.6	158.9	186.7	214.7	242.2	275
		2A					9.5	29.7	44.6	59.4	74.3	89.1	104.0	118.8	133.7	150
		3A					8.0	17.8	26.7	35.6	44.6	53.5	62.4	71.3	80.2	90
8	200	FC	6.9	175.5	2.8	70	28.2	94.2	185.6	288.0	377.1	449.1	514.1	571.9	590.0	600
		1A					14.5	52.5	108.0	172.0	232.0	299.0	365.0	417.0	430.0	455
		2A					10.0	45.0	75.4	100.6	125.7	150.9	176.0	201.2	226.3	254
		3A					9.0	30.1	45.1	60.2	75.2	90.3	105.3	120.4	135.4	152
10	250	FC	8.4	214.2	3.1	80	45.9	189.3	329.3	461.8	583.3	689.9	778.5	847.7	897.9	950
		1A					25.0	103.6	183.3	260.7	337.5	414.1	489.4	562.3	631.5	700
		2A					17.0	78.8	118.2	157.6	197.0	236.4	275.8	315.2	354.6	398
		3A					12.0	46.7	70.1	93.5	116.8	140.2	163.6	186.9	210.3	238
12	300	FC	10.4	264.8	4.7	120	93.2	250.0	463.3	660.0	840.0	990.0	1115.0	1205.0	1250.0	1270
		1A					66.7	167.8	276.8	382.9	485.5	586.9	692.1	796.9	893.0	970
		2A					25.0	108.9	163.4	218.0	272.3	326.7	381.2	435.6	490.1	550
		3A					17.0	67.3	101.0	134.6	168.3	202.0	235.6	269.3	302.9	340
14	350	FC	12.4	315.5	5.5	140	127.4	407.5	673.4	915.6	1128.5	1316.5	1474.2	1593.1	1671.4	1740
		1A					91.3	233.3	393.0	548.1	696.8	838.0	976.4	1105.4	1221.2	1300
		2A					52.0	153.7	230.5	307.3	384.1	460.9	537.8	614.6	691.4	776
		3A					27.0	91.9	137.8	183.7	229.7	275.6	321.6	367.5	413.4	464
16	400	FC	14.1	357.7	6.3	160	189.0	497.0	891.8	1248.0	1535.4	1791.5	1950.0	2063.0	2161.6	2215
		1A					101.3	276.5	448.1	615.0	779.1	941.9	1101.6	1255.7	1398.9	1530
		2A					71.0	186.1	279.2	372.2	465.3	558.4	651.4	744.5	837.5	940
		3A					47.0	112.5	168.7	224.9	281.2	337.4	393.6	449.9	506.1	568

NOTE

C_v: Valve flow coefficient

F_L: Liquid pressure recovery factor

F_C: Full capacity

2A: 2-Step reduction

1A: 1-Step reduction

3A: 3-Step reduction

GB Series Cv vs travel Standard trim (Cage)

ASME Class: 150# - 1500#

Size: 2"-16"

Flow characteristic: EQ-%

Valve travel [%]							10	20	30	40	50	60	70	80	90	100
FL							0.890	0.890	0.890	0.889	0.887	0.885	0.880	0.876	0.871	0.842
Valve size		Orifice diameter			Travel		Rated Cv									
Inch	mm	Sign	Inch	mm	Inch	mm										
2	50	FC	2.5	64.5	1.6	40	2.00	4.00	6.00	9.00	14.00	21.00	33.00	50.00	66.00	71
		1A					1.07	3.28	5.45	7.57	9.75	12.79	17.86	26.28	39.68	50
		2A					0.59	1.19	1.60	2.48	4.57	8.16	12.88	17.74	21.59	24
		3A					0.34	0.70	0.94	1.45	2.67	4.76	7.51	10.35	12.59	14
3	80	FC	3.5	89.0	2.0	50	4.00	8.50	14.50	22.00	33.50	51.00	75.00	108.00	128.00	138
		1A					2.50	3.72	6.61	11.10	18.35	29.43	45.56	67.65	91.99	110
		2A					1.22	2.48	3.34	5.17	9.52	17.00	26.82	36.97	44.98	50
		3A					0.78	1.59	2.14	3.31	6.09	10.88	17.17	23.66	28.79	32
4	100	FC	4.4	111.5	2.0	50	5.60	12.90	23.40	36.90	59.60	86.50	128.20	163.90	188.60	210
		1A					2.75	6.68	11.68	17.92	28.59	46.21	71.85	105.81	141.21	160
		2A					2.00	4.07	5.48	8.48	15.61	27.88	43.99	60.62	73.76	82
		3A					1.22	2.48	3.34	5.17	9.52	17.00	26.82	36.97	44.98	50
6	150	FC	5.3	133.6	2.4	60	6.50	15.00	27.70	47.10	77.10	123.80	198.50	265.20	316.00	340
		1A					3.40	11.12	22.00	32.25	50.35	81.67	126.81	187.40	246.30	270
		2A					3.32	6.76	9.08	14.06	25.89	46.24	72.95	100.54	122.34	136
		3A					2.00	4.07	5.48	8.48	15.61	27.88	43.99	60.62	73.76	82
8	200	FC	6.9	175.5	2.8	70	6.50	23.00	45.00	83.00	138.00	220.00	325.00	445.00	510.00	560
		1A					5.60	19.00	39.00	58.00	94.00	148.00	222.00	310.00	405.00	450
		2A					4.00	11.72	15.76	24.39	44.92	80.23	126.59	174.47	212.29	236
		3A					3.00	7.05	9.48	14.68	27.03	48.27	76.17	104.98	127.73	142
10	250	FC	8.4	214.2	3.1	80	8.10	33.20	65.70	124.40	216.80	350.10	493.20	619.90	747.60	830
		1A					6.52	26.50	47.14	76.22	126.33	219.81	343.21	460.04	566.24	655
		2A					6.13	18.58	24.97	38.66	71.19	127.15	200.62	276.49	336.42	374
		3A					5.47	11.13	14.96	23.15	42.64	76.15	120.16	165.60	201.50	224
12	300	FC	10.4	264.8	4.7	120	22.40	64.30	111.10	179.80	303.10	546.80	795.00	996.00	1155.00	1240
		1A					15.54	44.65	73.67	110.47	174.20	277.57	441.34	650.51	837.52	960
		2A					12.79	26.03	34.99	54.16	99.74	178.14	281.08	387.39	471.35	524
		3A					7.67	15.60	20.97	32.45	59.77	106.75	168.43	232.14	282.45	314
14	350	FC	12.4	315.5	5.5	140	24.70	82.30	158.30	266.70	427.00	693.90	1015.80	1277.20	1514.70	1650
		1A					18.94	60.21	103.15	164.81	260.61	405.54	630.90	903.93	1141.45	1275
		2A					16.21	37.06	49.81	77.10	142.00	253.61	400.17	551.51	671.05	746
		3A					10.89	22.16	29.78	46.10	84.89	151.62	239.24	329.72	401.19	446
16	400	FC	14.1	357.7	6.3	160	35.10	100.40	167.00	268.40	471.00	849.30	1265.10	1603.90	1911.60	2090
		1A					26.32	73.03	119.55	175.70	286.98	477.71	773.09	1125.40	1432.44	1680
		2A					20.85	42.42	57.03	88.27	162.55	290.33	458.10	631.35	768.20	854
		3A					12.50	25.43	34.19	52.92	97.46	174.06	274.65	378.52	460.56	512

NOTE

C_v: Valve flow coefficient

F_L: Liquid pressure recovery factor

F_C: Full capacity

2A: 2-Step reduction

1A: 1-Step reduction

3A: 3-Step reduction.

GB Series CV vs travel Standard trim (Tendril 1)

ASME Class: 150# - 1500#

Size: 2"-16"

Flow characteristic: linear

Valve travel [%]							10	20	30	40	50	60	70	80	90	100
FL							0.912	0.915	0.917	0.920	0.923	0.926	0.929	0.930	0.925	0.920
Valve size		Orifice diameter			Travel		Rated Cv									
Inch	mm	Sign	Inch	mm	Inch	mm										
2	50	FT	2.5	64.5	1.6	40	3.0	11.8	19.7	26.6	33.2	39.0	43.8	47.7	50.8	52
		1T					1.9	7.7	13.0	17.7	22.4	26.8	31.0	34.8	38.3	40
		2T					1.2	4.8	8.1	11.2	14.3	17.2	20.1	22.8	25.4	27
		3T					0.4	1.7	2.9	4.0	5.2	6.3	7.4	8.5	9.6	10
3	80	FT	3.5	89.0	2.0	50	7.5	23.0	36.9	49.9	61.9	73.2	82.9	91.2	98.0	102
		1T					4.7	14.6	23.7	32.4	40.6	48.8	56.4	63.6	70.4	75
		2T					2.4	7.6	12.4	17.1	21.7	26.2	30.5	34.8	38.9	40
		3T					1.2	3.9	6.4	8.9	11.3	13.8	16.1	18.4	20.7	21
4	100	FT	4.4	111.5	2.0	50	8.5	32.6	55.1	75.9	95.6	113.8	130.5	144.6	156.2	160
		1T					5.3	20.4	34.8	48.3	61.5	74.1	86.7	98.5	109.6	120
		2T					2.9	11.3	19.5	27.3	34.9	42.4	49.9	57.1	64.2	70
		3T					1.9	7.6	13.2	18.5	23.8	28.9	34.2	39.2	44.1	46
6	150	FT	5.3	133.6	2.4	60	13.8	54.4	95.1	134.3	170.9	204.3	234.1	259.9	281.9	290
		1T					9.0	35.2	61.8	88.2	114.1	139.2	163.1	185.7	206.9	220
		2T					4.9	18.9	33.1	47.3	61.6	75.9	90.1	104.1	117.9	130
		3T					2.9	10.8	18.8	26.9	35.0	43.2	51.4	59.5	67.7	75
8	200	FT	6.9	175.5	2.8	70	19.7	87.1	152.3	213.7	271.5	323.2	368.8	409.4	444.2	460
		1T					12.7	56.0	98.8	140.5	181.6	220.5	257.3	292.4	324.9	340
		2T					6.4	28.0	49.5	70.8	92.4	113.6	134.4	155.2	175.5	195
		3T					3.6	15.6	27.5	39.3	51.4	63.3	75.1	87.1	99.0	105
10	250	FT	8.4	214.2	3.1	80	39.7	122.6	206.9	287.7	361.2	430.8	493.5	548.0	597.7	630
		1T					25.7	78.3	132.7	186.4	237.5	288.4	337.1	382.2	426.0	460
		2T					14.2	41.5	69.9	98.4	126.0	154.4	182.4	209.4	236.8	255
		3T					8.4	23.2	38.6	54.1	69.1	84.6	100.2	115.3	130.8	140
12	300	FT	10.4	264.8	4.7	120	76.8	216.1	351.6	478.6	594.1	696.7	786.2	863.1	928.4	980
		1T					48.9	136.8	224.6	310.8	394.0	473.3	548.1	617.8	682.3	735
		2T					25.2	68.8	112.8	156.8	200.8	244.4	287.5	330.0	371.7	405
		3T					15.4	40.7	66.1	91.7	117.4	143.1	168.8	194.5	220.0	240
14	350	FT	12.4	315.5	5.5	140	89.2	275.6	460.6	634.1	789.1	929.1	1050.3	1151.4	1237.4	1300
		1T					56.5	174.0	293.5	410.7	521.9	629.9	731.6	824.7	912.3	985
		2T					29.7	90.1	152.1	214.2	274.8	336.1	396.5	454.9	513.1	565
		3T					16.4	48.4	81.3	114.3	146.8	179.9	212.9	245.3	278.2	310
16	400	FT	14.1	357.7	6.3	160	121.6	332.6	546.9	756.9	949.0	1121.7	1274.6	1402.5	1508.5	1580
		1T					73.6	198.0	326.6	458.4	586.9	712.2	834.3	948.3	1055.2	1145
		2T					41.5	108.3	177.2	248.6	319.8	391.4	464.1	535.3	605.7	670
		3T					26.9	68.0	110.1	153.6	197.1	241.1	286.2	330.8	375.6	415

NOTE

C_v: Valve flow coefficient

F_L: Liquid pressure recovery factor

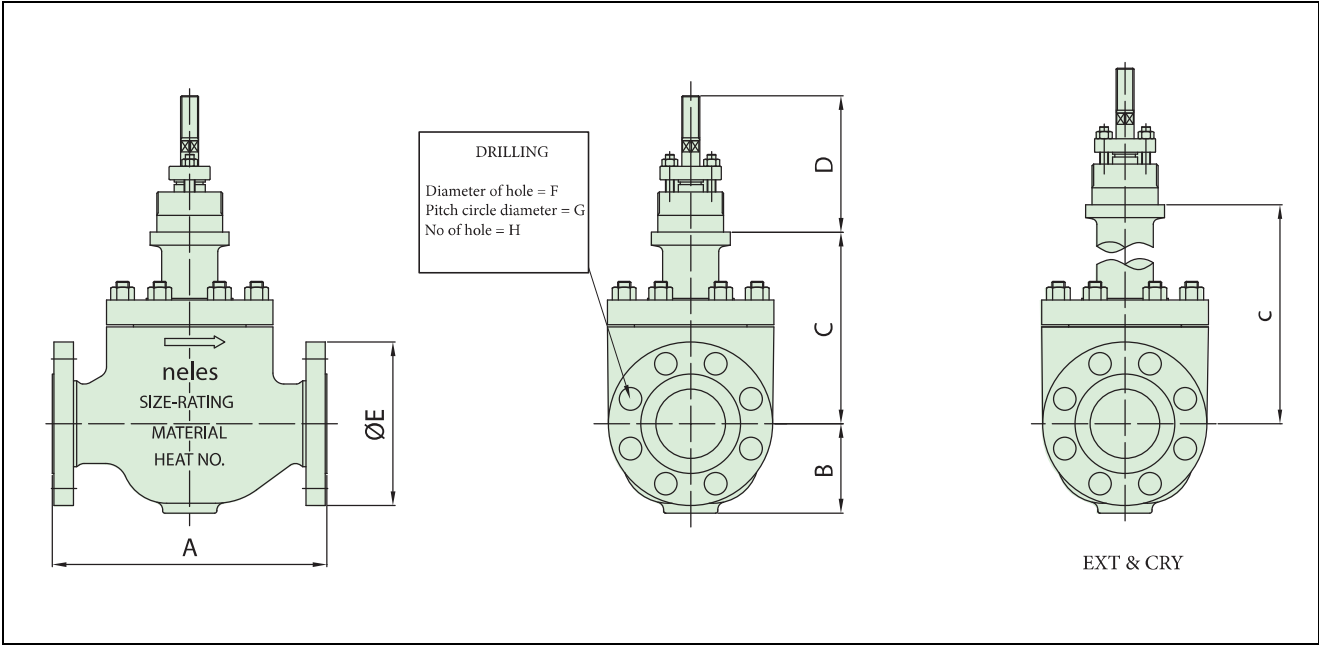
F_C: Full capacity

2A: 2-Step reduction

1A: 1-Step reduction

3A: 3-Step reduction.

GB, Valve dimensions and weights



150 #/ 300 #/ 600 #

Dimension (mm) Size (mm)	A			B			C			D	E			F			G			H			Weight (kg) (Approximate)		
	150#	300#	600#	150#	300#	600#	STD	EXT	CRY		150#	300#	600#	150#	300#	600#	150#	300#	600#	150#	300#	600#	150#	300#	600#
50	254	267	286	83	83	83	178	333	458	110	150	165	165	19.1	19.1	19.1	120.7	127	127	4	8	8	30	32	40
80	298	318	337	109	109	109	120	222	395	115	190	210	210	19.1	22.2	22.2	152.4	168.3	168.3	4	8	8	65	67	72
100	352	368	394	135	135	135	248	402	552	140	230	255	275	19.1	22.2	25.4	190.5	200	215.9	8	8	8	100	103	112
150	451	473	508	170	170	178	340	467	642	150	280	320	355	22.2	22.2	28.6	241.3	269.9	292.1	8	12	12	185	195	240
200	543	568	610	230	230	230	451	557	732	150	345	380	420	22.2	25.4	31.8	298.5	330.2	349.2	8	12	12	363	385	443
250	673	708	752	275	275	275	488	670	870	150	405	445	510	25.4	28.6	34.9	362	387.4	431.8	12	16	16	552	595	681
300	737	775	819	350	350	350	543	716	916	140	485	520	560	25.4	31.8	34.9	431.8	450.8	489	12	16	20	905	955	1020
350	889	927	972	385	385	385	616	846	1046	210	535	585	605	28.6	31.8	38.1	476.3	514.4	527	12	20	20	1170	1230	1311
400	1016	1057	1108	440	440	440	692	909	1109	220	595	650	685	28.6	34.9	41.3	539.8	571.5	603.2	16	20	20	1380	1460	1587

Dimension (inch) Size (inch)	A			B			C			D	E			F			G			H			Weight (lbs) (Approximate)		
	150#	300#	600#	150#	300#	600#	STD	EXT	CRY		150#	300#	600#	150#	300#	600#	150#	300#	600#	150#	300#	600#	150#	300#	600#
2"	10	10.5	11.3	3.3	3.3	3.3	7	13.1	18	4.3	5.9	6.5	6.5	0.75	0.75	0.75	4.8	5	5	4	8	8	66	71	88
3"	11.7	12.5	13.3	4.3	4.3	4.7	8.7	15.6	21.5	4.5	7.5	8.3	8.3	0.75	0.87	0.87	6	6.6	6.6	4	8	8	143	148	159
4"	13.9	14.5	15.5	5.3	5.3	5.3	9.8	15.8	21.7	5.5	9.1	10	10.8	0.75	0.87	1	7.5	7.9	8.5	8	8	8	220	227	247
6"	17.8	18.6	20	6.7	6.7	7	13.4	18.4	25.8	5.9	11	12.6	14	0.87	0.87	1.13	9.5	10.6	11.5	8	12	12	408	430	529
8"	21.4	22.4	24	9.1	9.1	9	17.8	21.9	28.8	5.9	13.6	15	16.5	0.87	1	1.25	11.8	13	13.8	8	12	12	800	849	977
10"	26.5	27.9	29.6	10.8	10.8	10.8	19.2	26.4	34.3	5.9	15.9	17.5	20.1	1	1.13	1.37	14.3	15.3	17	12	16	16	1217	1312	1501
12"	29	30.5	32.2	13.8	13.8	13.8	21.4	28.2	36.1	5.9	19.1	20.5	22.1	1	1.25	1.37	17	17.8	19.3	12	16	20	1995	2105	2249
14"	35	36.5	38.2	15.2	15.2	15.2	24.3	33.3	41.2	8.3	21.1	23	23.8	1.13	1.25	1.5	18.8	20.3	20.8	12	20	20	2579	2712	2890
16"	40	41.6	43.6	17.3	17.3	17.3	27.2	35.8	43.7	8.7	23.4	25.6	27	1.13	1.37	1.63	21.3	22.5	23.8	16	20	20	3042	3219	3499

900 #/ 1500#

Dimension (mm)	A		B		C		D	E		F		G		H		Weight (kg) (Approximate)	
	900#	1500#	900#	1500#	STD	EXT	COMMON	900#	1500#	900#	1500#	900#	1500#	900#	1500#	900#	1500#
050	375	375	113	113	240	380	110	215	215	25.4	25.4	165.1	165.1	8	8	67	67
080	441	460	142	142	322	430	115	240	265	25.4	31.7	190.5	203.2	8	8	150	163
100	511	530	182	182	376	475	140	290	310	31.8	34.9	235	241.3	8	8	244	255
150	714	768	210	240	420	500	150	380	395	31.8	39	317.5	317.5	12	12	530	540
200	914	972	290	290	550	600	150	470	485	38.1	45	393.7	393.7	12	12	698	821
250	991	1067	310	350	600	700	150	545	585	38.1	51	469.9	482.6	16	12	955	1137
300	1130	1219	385	385	680	800	140	610	675	38.1	54	533.4	571.5	20	16	1180	1240
350	1257	1257	385	385	770	920	210	640	750	41.3	61	558.8	635	20	16	1387	1477
400	1422	1422	450	450	850	1050	220	705	825	44.5	67	616	704.8	20	16	1601	1721

Dimension (inch)	A		B		C		D	E		F		G		H		Weight (lbs) (Approximate)	
	900#	1500#	900#	1500#	STD	EXT	COMMON	900#	1500#	900#	1500#	900#	1500#	900#	1500#	900#	1500#
2"	14.8	14.8	4.5	4.5	9.5	15	4.3	8.5	8.5	1	1	6.5	6.5	8	8	148	148
3"	17.4	18.1	5.6	5.6	12.7	16.9	4.5	9.5	10.4	1	1.25	7.5	8	8	8	331	359
4"	20.1	20.9	7.2	7.2	14.8	18.7	5.5	11.4	12.2	1.25	1.37	9.3	9.5	8	8	538	562
6"	28.1	30.2	8.3	9.5	16.5	19.7	5.9	15	15.6	1.25	1.54	12.5	12.5	12	12	1168	1190
8"	36	38.3	11.4	11.4	21.7	23.6	5.9	18.5	19.1	1.5	1.77	15.5	15.5	12	12	1539	1810
10"	39	42	12.2	13.8	23.6	27.6	5.9	21.5	23	1.5	2.01	18.5	19	16	12	2105	2507
12"	44.5	48	15.2	15.2	26.8	31.5	5.9	24	26.6	1.5	2.13	21	22.5	20	16	2601	2734
14"	49.5	49.5	15.2	15.2	30.3	36.2	8.3	25.2	29.5	1.63	2.4	22	25	20	16	3058	3256
16"	56	56	17.7	17.7	33.5	41.3	8.3	27.8	32.5	1.75	2.64	24.3	27.8	20	16	3530	3794

*Bigger sizes and higher ratings are available, please contact sales office for more information

How to order

Globe balanced, cage guided type, series GB

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.
GB	03	C	W	A	J2	B	P1	X	BC	S1	R1	X	S	G	T	S	G	X	A	E	FC

Valve constructions

1.	Valve series
GB	Globe balanced, cage guided type

2.	Body size					
02	2"	/	DN 50	03	3"	/ DN 80
04	4"	/	DN 100	06	6"	/ DN 150
08	8"	/	DN 200	10	10"	/ DN 250
12	12"	/	DN 300	14	14"	/ DN 350
16	16"	/	DN 400	18	18"	/ DN 450
20	20"	/	DN 500	24	24"	/ DN 600
YY	Special					

3.	Pressure rating		
C	ASME class 150	D	ASME class 300
F	ASME class 600	G	ASME class 900
H	ASME class 1500	I	ASME Class 2500
J	EN PN 10	K	EN PN 16
L	EN PN 25	M	EN PN 40
N	EN PN 63	P	EN PN 100
B	EN PN 160	E	EN PN 250
Y	EN PN 320	R	JIS 10K
T	JIS 20K		

4.	End connection
W	Flanged RF, ASME B16.5
C	Flanged RF, EN 1092-1
V	Socket welding, ASME B16.11
Q	Butt welding, ASME B16.25
Z	Ring joint flange, ASME B16.5
Y	Special

5.	Bonnet construction	
	Bonnet type	Actuator connection
A	General	Applicable for VD_25/29/37
B	General	Applicable for VD_48/55
C	General	Applicable for VC_30, VB_32
D	General	Applicable for VC/VB_40/50/60/70
E	Extension	Applicable for VD_25/29/37
F	Extension	Applicable for VD_48/55
G	Extension	Applicable for VC_30, VB_32
H	Extension	Applicable for VC/VB_40/50/60/70
P	Cryogenic	Applicable for VD_25/29/37
Q	Cryogenic	Applicable for VD_48/55
R	Cryogenic	Applicable for VC_30, VB_32
S	Cryogenic	Applicable for VC/VB_40/50/60/70
J	Bellows seal	Applicable for VD_25/29/37
K	Bellows seal	Applicable for VD_48/55
L	Bellows seal	Applicable for VC_30, VB_32
M	Bellows seal	Applicable for VC/VB_40/50/60/70
Y	Bellows seal	Special

6.	Body material		
J2	A216 gr. WCB	S6	A351 gr. CF8M
J4	A217 gr. WC6	CG	A217 gr. WC9
S1	A351 gr. CF3M	YY	Special

- Bonnet material is equivalent to body material.
- * ASME valve face to face length according to ISA 75.08. EN valve face to face length according to ISA 75.08.
- * The body, bonnet, trim materials are subject to change as equivalent depending on detail design.
- * See 'Neles Globe Type code Instruction' for further options and explanations.

7.	Model code
B	Model B

Trim constructions

8.	Plug material	
	Material	Description
P1	CA15	General for carbon steel valve
T6	CF8M	General for stainless steel valve
P2	CA 40	General for high temp. Cr-Mo valve
S1	CF3M	
YY	Special	

9.	Plug application
X	Not applicable
A	Cobalt based alloy
Y	Special

10.	Stem material	
	Material	Description
BC	630 SS + HCr	General for carbon steel valve
TC	316 SS + HCr	General for stainless steel valve
FC	316L SS + HCr	
VX	XM-19	Special materials

11.	Seat type
S1	Single metal seat
T1	Single soft seat
YY	Special

12.	Seat / cage material		
	Seat	Cage	Cage guide
R1	CA15	CB7Cu-1 + HCr	CB7Cu-1 + HCr
R6	CF8M	CF8M + HCr	CF8M + HCr
P2	CA40	CA40	CA40
R3	CF3M	CF3M + HCr	CF3M + HCr
YY	Special	Special	Special

- CA15 / AISI 410 is general for carbon steel valve.
- CF8M / AISI 316 is general for stainless steel valve.

13.	Seat application
X	Not applicable
A	Cobalt based alloy
P	Insert PTFE
Q	Insert PTFE + Cobalt based alloy
Y	Special

Others

14.	Packing / bellows type
S	General packing
E	Low emission, live loaded
C	Bellows Seal (316L SS, Formed)
Y	Special

15.	Packing material
G	PTFE + Carbon fiber
F	Graphite
C	PTFE + Carbon fiber (ATEX)
T	PTFE V-Ring
C	PTFE + Carbon fiber (ATEX)
H	Hi-Graphite
Y	Special

16.	Seal ring material
G	PTFE + Graphite
H	PTFE + Graphite + Carbon
M	Graphite
T	PTFE
Y	Special

17.	Gasket material
S	S/W gasket type, 316L SS + Graphite
L	S/W gasket type, 316L SS + PTFE
H	S/W gasket type, 316L SS + Hi-Graphite
Y	Special

18.	Stud / nut material
G	A193 gr. B7M / A194 gr. 2HM
D	A193 gr. B8M / A194 gr. 8M
K	A320 gr. B8M cl. 2 / A194 gr. 8M
H	A193 gr. B16 / A194 gr. 7
E	A453 gr. 660 / A453 gr. 660
Y	Special

19.	Options
X	Not applicable
E	Anti-erosion
L	Lub. & Isol. valve
W	Water seal
Y	Special

* ASME valve face to face length according to ISA 75.08. EN valve face to face length according to ISA 75.08.

* The body, bonnet, trim materials are subject to change as equivalent depending on detail design.

* See 'Neles Globe Type code Instruction' for further options and explanations.

* Round bar material such as AISI 410SS (for A743 gr. CA 15), AISI 316SS (for A351 gr. CF8M), SUS420J2 (for A743 gr. CA40) and AISI 630SS (for A747 gr. CB7Cu-1) can be used depending on manufacturing process.

Trim type & rated Cv

20.		21.		22.	Rated Cv																				
Sign	Trim type	Sign	Trim characteristic	Sign	Description	Body size and stroke																			
						2"	Str.	3"	Str.	4"	Str.	6"	Str.	8"	Str.	10"	Str.	12"	Str.	14"	Str.	16"	Str.		
A	General plug High temp. balanced plug Pilot balanced plug	L	Linear	FC	General / Full capacity	74	(40)	142	(50)	230	(50)	380	(60)	600	(70)	950	(80)	1270	(120)	1740	(140)	2215	(160)		
A				1A	General / 1-Step reduction	48	(40)	98	(50)	160	(50)	275	(60)	455	(70)	700	(80)	970	(120)	1300	(140)	1530	(160)		
P				2A	General / 2-Step reduction	26	(40)	56	(50)	86	(50)	150	(60)	254	(70)	398	(80)	550	(120)	776	(140)	940	(160)		
				3A	General / 3-Step reduction	16	(40)	34	(50)	52	(50)	90	(60)	152	(70)	238	(80)	340	(120)	464	(140)	568	(160)		
				FT	Tendril 1 / Full capacity	52	(40)	102	(50)	160	(50)	290	(60)	460	(70)	630	(80)	980	(120)	1300	(140)	1580	(160)		
				1T	Tendril 1 / 1-Step reduction	40	(40)	75	(50)	120	(50)	220	(60)	340	(70)	460	(80)	735	(120)	985	(140)	1145	(160)		
				2T	Tendril 1 / 2-Step reduction	27	(40)	40	(50)	70	(50)	130	(60)	195	(70)	255	(80)	405	(120)	565	(140)	670	(160)		
				3T	Tendril 1 / 3-Step reduction	10	(40)	21	(50)	46	(50)	75	(60)	105	(70)	140	(80)	240	(120)	310	(140)	415	(160)		
				FM	Tendril 2 / Full capacity	50	(40)	100	(50)	155	(50)	280	(60)	425	(70)	590	(80)	920	(120)	1240	(140)	1530	(160)		
				1M	Tendril 2 / 1-Step reduction	35	(40)	74	(50)	115	(50)	215	(60)	330	(70)	450	(80)	720	(120)	970	(140)	1130	(160)		
				2M	Tendril 2 / 2-Step reduction	23	(40)	33	(50)	65	(50)	120	(60)	190	(70)	240	(80)	380	(120)	550	(140)	640	(160)		
				3M	Tendril 2 / 3-Step reduction	8	(40)	18	(50)	38	(50)	67	(60)	100	(70)	130	(80)	220	(120)	290	(140)	390	(160)		
				E	Equal%	FC	General / Full capacity	71	(40)	138	(50)	210	(50)	340	(60)	560	(70)	830	(80)	1240	(120)	1650	(140)	2090	(160)
						1A	General / 1-Step reduction	50	(40)	110	(50)	160	(50)	270	(60)	450	(70)	655	(80)	960	(120)	1275	(140)	1680	(160)
						2A	General / 2-Step reduction	24	(40)	50	(50)	82	(50)	136	(60)	236	(70)	374	(80)	524	(120)	746	(140)	854	(160)
						3A	General / 3-Step reduction	14	(40)	32	(50)	50	(50)	82	(60)	142	(70)	224	(80)	314	(120)	446	(140)	512	(160)
						FT	Tendril 1 / Full capacity	50	(40)	82	(50)	135	(50)	235	(60)	370	(70)	500	(80)	840	(120)	1110	(140)	1400	(160)
						1T	Tendril 1 / 1-Step reduction	35	(40)	58	(50)	95	(50)	170	(60)	265	(70)	370	(80)	600	(120)	785	(140)	1020	(160)
						2T	Tendril 1 / 2-Step reduction	20	(40)	35	(50)	58	(50)	100	(60)	170	(70)	225	(80)	355	(120)	480	(140)	600	(160)
3T	Tendril 1 / 3-Step reduction	10	(40)			20	(50)	32	(50)	58	(60)	105	(70)	125	(80)	205	(120)	290	(140)	350	(160)				
FM	Tendril 2 / Full capacity	47	(40)			74	(50)	130	(50)	230	(60)	330	(70)	470	(80)	770	(120)	1050	(140)	1320	(160)				
1M	Tendril 2 / 1-Step reduction	33	(40)			56	(50)	92	(50)	165	(60)	245	(70)	330	(80)	570	(120)	720	(140)	960	(160)				
2M	Tendril 2 / 2-Step reduction	19	(40)			33	(50)	52	(50)	95	(60)	145	(70)	190	(80)	330	(120)	430	(140)	550	(160)				
3M	Tendril 2 / 3-Step reduction	8	(40)			16	(50)	25	(50)	52	(60)	80	(70)	110	(80)	190	(120)	270	(140)	295	(160)				
Y	Special	Y	Special			YY	Special	Please contact Valmet for more information																	

- Rated Cv is different depending on trim characteristic.
- Str. : valve stroke length(mm). It should be matched with actuator stroke length.

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