

ACCESSORIES



GEAR ACTUATORS

Gearing is generally applied to valves to make operation easier. The gearing may be of the spur, bevel or worm type—any of which may be applied to Velan valves.

The gears and gear brackets may be either cast iron or cast steel and may have cast or cut teeth, depending on the loads and the application. Gearing is too often neglected when valve operation is considered, resulting in unsatisfactory operation requiring expensive changes.

	CLASS	OPTIONAL	STANDARD
GATE	150	6–24" (150–600 mm)	30–60" (750–1500 mm)
	300	6–16" (150–400 mm)	18–36" (450–900 mm)
	600	4–12" (100–400 mm)	14–36" (350–900 mm)
	900	3–6" (80–150 mm)	8–10" (200–250 mm)
	1500	3–4" (80–100 mm)	6–10" (150–250 mm)
GLOBE	150	6–12" (150–300 mm)	14–16" (350–400 mm)
	300	6–12" (150–300 mm)	14–16" (350–400 mm)
	600	4–10" (100–250 mm)	—
	900	2–4" (50–100 mm)	—
	1500	2–4" (50–100 mm)	—



ELECTRIC ACTUATORS

Motorized controls may be applied to valves of almost any size for operation in practically any position or location.

All units, whether installed directly on a valve or on a floor stand, can be manually operated in case of power failure. The units are available for either alternating or direct current.

Motor units supplied by Velan are the high torque type with windings impregnated to resist both oil and moisture. They are completely weather-proof, explosion-proof (optional) and dust and steam tight. Various sizes and styles are available for different applications, and systems and can be varied to fit special requirements.



CYLINDER ACTUATORS

The most commonly-used cylinders are actuated by air, but oil and water types are also available if required. In all designs, the valve stem normally serves as a piston rod with disc fastened directly

to them. Tail rods are also supplied as standard equipment to serve as position indicators and for emergency opening. Handwheels and gear heads can be mounted on top of cylinders for operation in an emergency which may arise due to the loss of operating medium in the cylinder.

Forex cylinders can be furnished with mounting pads for one of the commercial cylinders or valve positioners which provide throttling control. High pressure cylinders are also available for specific applications.

VALVE ACTUATOR SIZING

The Forex philosophy for selecting an actuator is to calculate the required thrust and torque to operate the valve at the required service conditions. A reasonable margin of excess actuator capability over that required is always allowed for in the final actuator selection, but grossly oversized actuators are avoided.

Because of the wide variations in system operating conditions, actuator sizing is based on the following:

ACTUATOR TYPE	LINE PRESSURE	DIFFERENTIAL PRESSURE (CLOSED)	POWER SUPPLY
ELECTRIC	Specified by customer	Specified by customer	Voltage, type, phase and frequency specified by customer
PNEUMATIC	Specified by customer	Specified by customer	Air pressure specified by customer
HYDRAULIC	Specified by customer	Specified by customer	Hydraulic pressure specified by customer
HANDWHEEL/GEAR ACTUATED	70% of CWP ⁽¹⁾ unless otherwise advised by customer	70% of CWP ⁽¹⁾ unless otherwise advised by customer	200 lb. rimpull ⁽²⁾ unless otherwise advised by customer

(1) CWP = cold working pressure per ASME B16.34 at 100°F (e.g., Class 150, CWP = 285 psig, 70% of CWP = 200 psig).

(2) Rimpull is defined as the total tangential force acting on the handwheel (e.g., 200 lb. rimpull requires 100 lb force per hand). This rimpull figure is given for closing/opening conditions. For running conditions (travel from open to closed or vice versa), the rimpull is considerably less. For details, contact the company.



Cast Steel Bolted Bonnet Gates

Styles: CB2, CB3, & CB4/2
Class: 600 - Sizes: 2" thru 24"

Pressure Class Range: 150 thru 1500

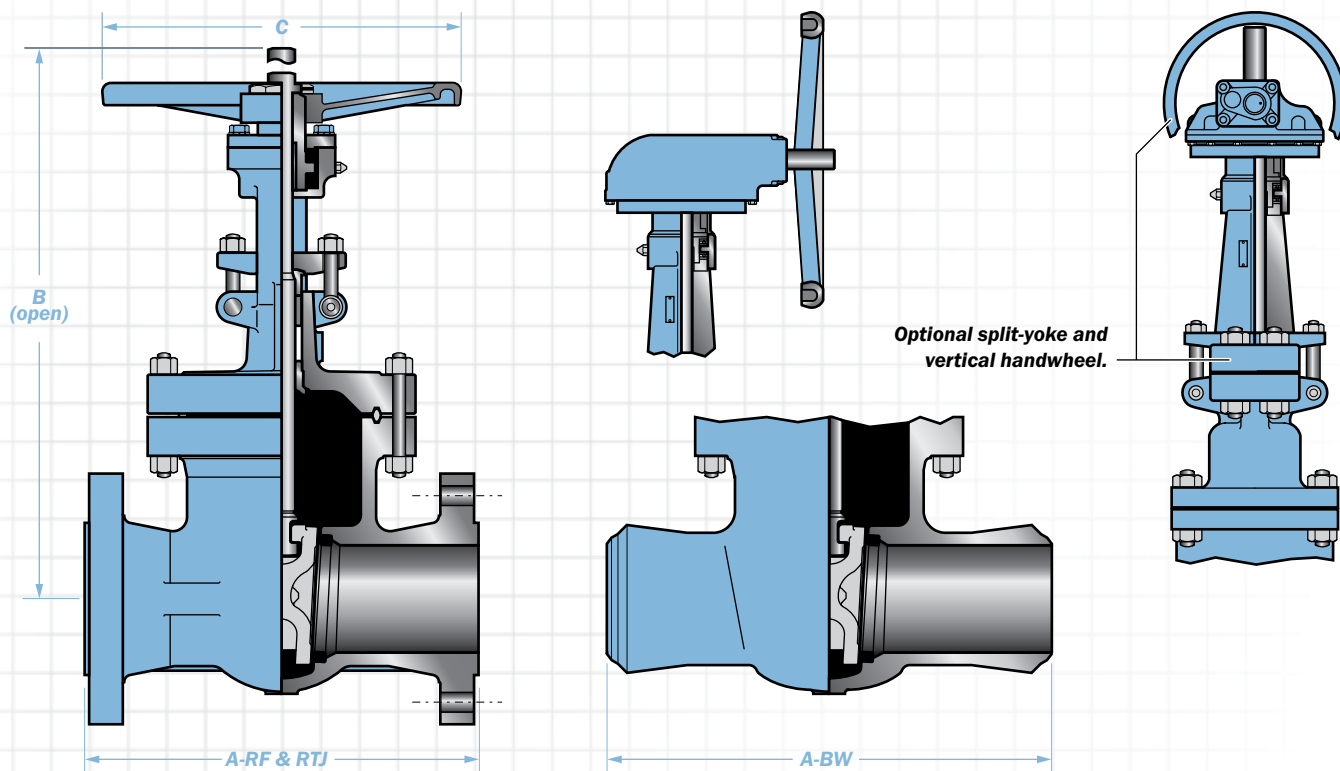
Design and Manufacturing Standards

Valve Design: ASME B16.34/API 600

Flange Dimensions: ASME B16.5, B16.47 (Series A)

Face-to-Face Dimensions: ASME B16.10

Tested in Accordance with: API 598

Recommended Spare Parts*


** = Gear operated is standard; Handwheel available upon request.

Typical Bill of Materials

Component	CB2	CB3	CB4/2	Component	CB2	CB3	CB4/2
Body	ASTM A216-WCB			Gland Flange	ASTM A216-WCB		
Seat Rings	ASTM A105/HF			Gland Bolt Pins	ASTM A36		
Wedge 2" - 3"	ASTM A276-410	ASTM A216-WCB/HF	ASTM A351-CF8M/A276-316	Gland Bolts	ASTM A307-B		
Wedge 4" & larger	ASTM A216-WCB w/13% Chrome	ASTM A216-WCB/HF	ASTM A216-WCB w/316 Hardface	Gland Nuts	ASTM A194-2H		
Stem	ASTM A182-F6a			Nameplate	Stainless Steel 304		
Yoke & Bonnet	ASTM A216-WCB			Nameplate Rivets	Stainless Steel - Commercial		
*Bonnet Gasket	Soft Steel Ring Joint			Grease Fitting	Carbon Steel - Commercial		
Bonnet Nuts	ASTM A194-2H		ASTM A194-2HM	Stem Nut	ASTM A439-D2		
Bonnet Studs	ASTM A193-B7		ASTM A193-B7M	Yoke Bushing	ASTM A536 (65-45-12)		
Back Seat Bushing	ASTM A276-410		ASTM A276-316	Handwheel	ASTM A536 (65-45-12)		
*Packing	Graphite w/Braided Carbon Fiber End Rings			Handwheel Nut	ASTM A536 (65-45-12)		
Gland	ASTM A276-410		ASTM A276-316	Set Screw	ASTM A193-B6		
				Spacer Ring	ASTM A276-410		
				-	-		

Class 600

Size	nps	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
	dn	50	65	80	100	125	150	200	250	300	350	400	450	500	600
A-RF	in	11.5	13.0	14.0	17.0	20.0	22.0	26.0	31.0	33.0	35.0	39.0	43.0	47.0	55.0
	mm	292	330	356	432	508	559	660	787	838	889	991	1092	1194	1397
A-BW	in	11.5	13.0	14.0	17.0	20.0	22.0	26.0	31.0	33.0	35.0	39.0	43.0	47.0	55.0
	mm	292	330	356	432	508	559	660	787	838	889	991	1092	1194	1397
A-RTJ	in	11.62	13.12	14.12	17.12		22.12	26.12	31.12	33.12	35.12	39.12	43.12	47.25	55.38
	mm	295	333	359	435		562	664	791	841	892	994	1095	1200	1406
B	in	18.3	19.9	21.7	26.9	31.6	36.5	44.0	52.8	61.4	64.8	71.7	79.3	104.8	116.9
	mm	465	505	551	683	803	927	1118	1341	1560	1646	1821	2014	2662	2970
C	in	10.0	10.0	12.0	15.0	18.0	20.0	24.0	27.0	30.0	35.0	40.0	43.0	43.0	31.9
	mm	254	254	305	381	457	508	610	686	686	762	889	1092	1092	**810
RFRTJ	lbs	97	132	176	320	520	680	1150	1715	2440	3150	4415	5010	6853	10337
Wt.	kg	44	60	80	145	236	309	523	780	1109	1432	2007	2277	3108	4688
BW	lbs	79	120	152	270	430	580	1020	1430	1950	2695	3800	5010	5640	8595
	kg	36	55	69	123	195	264	464	650	886	1225	1727	2277	2558	3898

Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms. Larger sizes available on request. Dimensions are subject to change without notice.

Cast Steel Bolted Bonnet Gates

Styles: CB2, CB3, & CB4/2

Class: 900 - Sizes: 2" thru 12"

Pressure Class Range: 150 thru 1500

Design and Manufacturing Standards

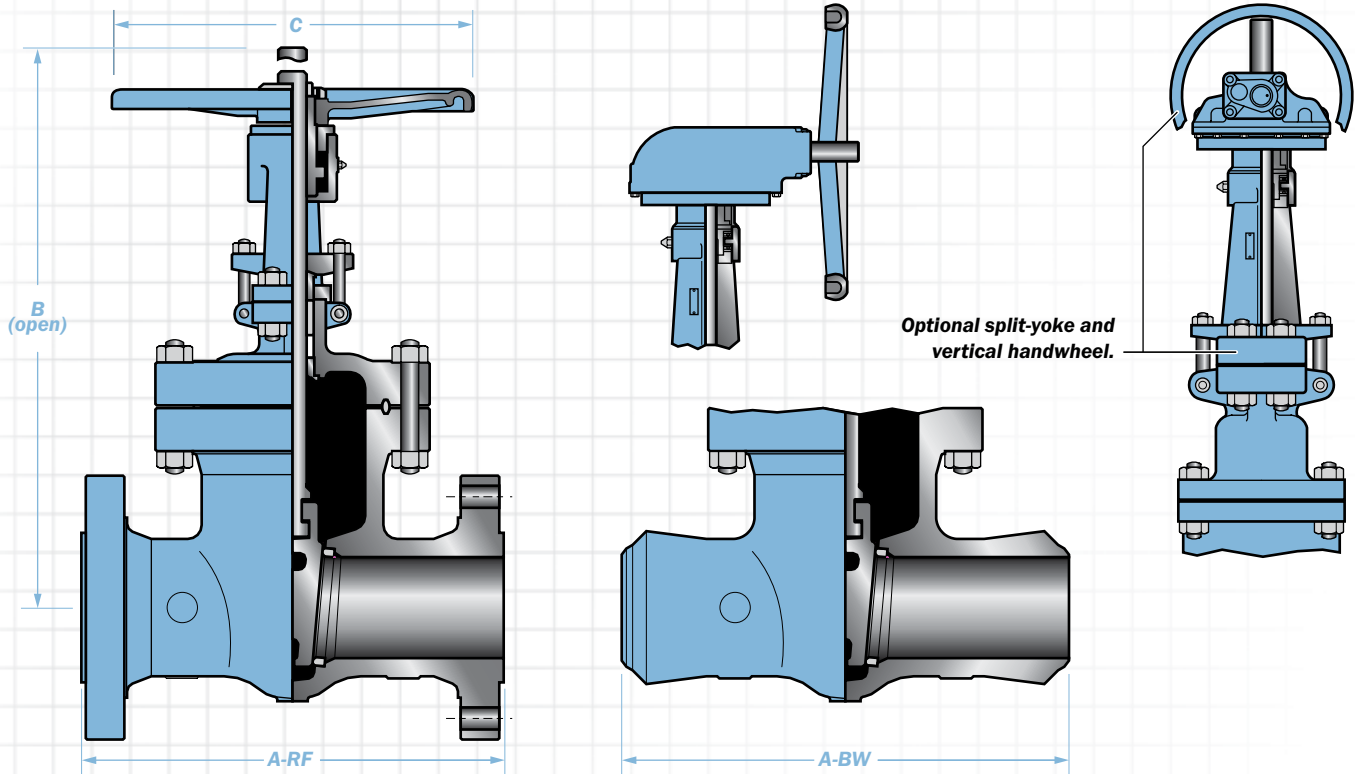
Valve Design: ASME B16.34/API 600

Flange Dimensions: ASME B16.5, B16.47 (Series A)

Face-to-Face Dimensions: ASME B16.10

Tested in Accordance with: API 598

Recommended Spare Parts*



Typical Bill of Materials (See page 5 for available materials.)

Component	CB2	CB3	CB4/2	Component	CB2	CB3	CB4/2
Body	ASTM A216-WCB			Gland Flange	ASTM A216-WCB		
Seat Rings	ASTM A105/HF			Gland Bolt Pins	ASTM A36		
Wedge 2" - 3"	ASTM A276-410	ASTM A216-WCB/HF	ASTM A351-CF8M/A276-316	Gland Bolts	ASTM A307-B		
Wedge 4" & larger	ASTM A216-WCB w/13% Chrome	ASTM A216-WCB/HF	ASTM A216-WCB w/316 Hardface	Gland Nuts	ASTM A194-2H		
Stem	ASTM A182-F6a			Nameplate	Stainless Steel 304		
Yoke & Bonnet	ASTM A216-WCB			Nameplate Rivets	Stainless Steel - Commercial		
*Bonnet Gasket	Soft Steel Ring Joint			Grease Fitting	Carbon Steel - Commercial		
Bonnet Nuts	ASTM A194-2H		ASTM A194-2HM	Stem Nut	ASTM A439-D2		
Bonnet Studs	ASTM A193-B7		ASTM A193-B7M	Yoke Bushing	ASTM A536 (65-45-12)		
Back Seat Bushing	ASTM A276-410		ASTM A276-316	Handwheel	ASTM A536 (65-45-12)		
*Packing	Graphite w/Braided Carbon Fiber End Rings			Handwheel Nut	ASTM A536 (65-45-12)		
Gland	ASTM A276-410		ASTM A276-316	Set Screw	ASTM A193-B6		
				Spacer Ring	ASTM A276-410		
				-	-		

Class 900

Size	nps	2	2.5	3	4	6	8	10	12
	dn	50	65	75	100	150	200	250	300
A-RF	in	14.5	16.5	15.0	18.0	24.0	29.0	33.0	38.0
	mm	368	419	381	457	610	737	838	965
A-BW	in	14.5	16.5	15.0	18.0	24.0	29.0	33.0	38.0
	mm	368	419	381	457	610	737	838	965
A-RTJ	in	14.62	16.62	15.12	18.12	24.12	29.12	33.12	38.12
	mm	371	422	384	460	612	740	841	968
B	in	21.7	26.0	23.7	27.6	38.4	45.5	52.6	59.8
	mm	551	660	602	701	975	1156	1336	1519
C	in	9.8	9.8	13.8	13.8	22.0	25.2	30.0	30.0
	mm	250	250	350	350	560	640	760	760
RF	lbs	135	175	255	453	913	1705	2387	3600
Wt.	kg	61	385	116	206	415	775	1085	1636
BW	lbs	125	155	213	396	807	1465	1724	2790
Wt.	kg	57	70	97	180	367	665	784	1268

Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms. Larger sizes available on request. Dimensions are subject to change without notice.

Cast Steel Bolted Bonnet Gates

Styles: CB2, CB3, & CB4/2

Class: 1500 - Sizes: 2" thru 12"

Pressure Class Range: 150 thru 1500

Design and Manufacturing Standards

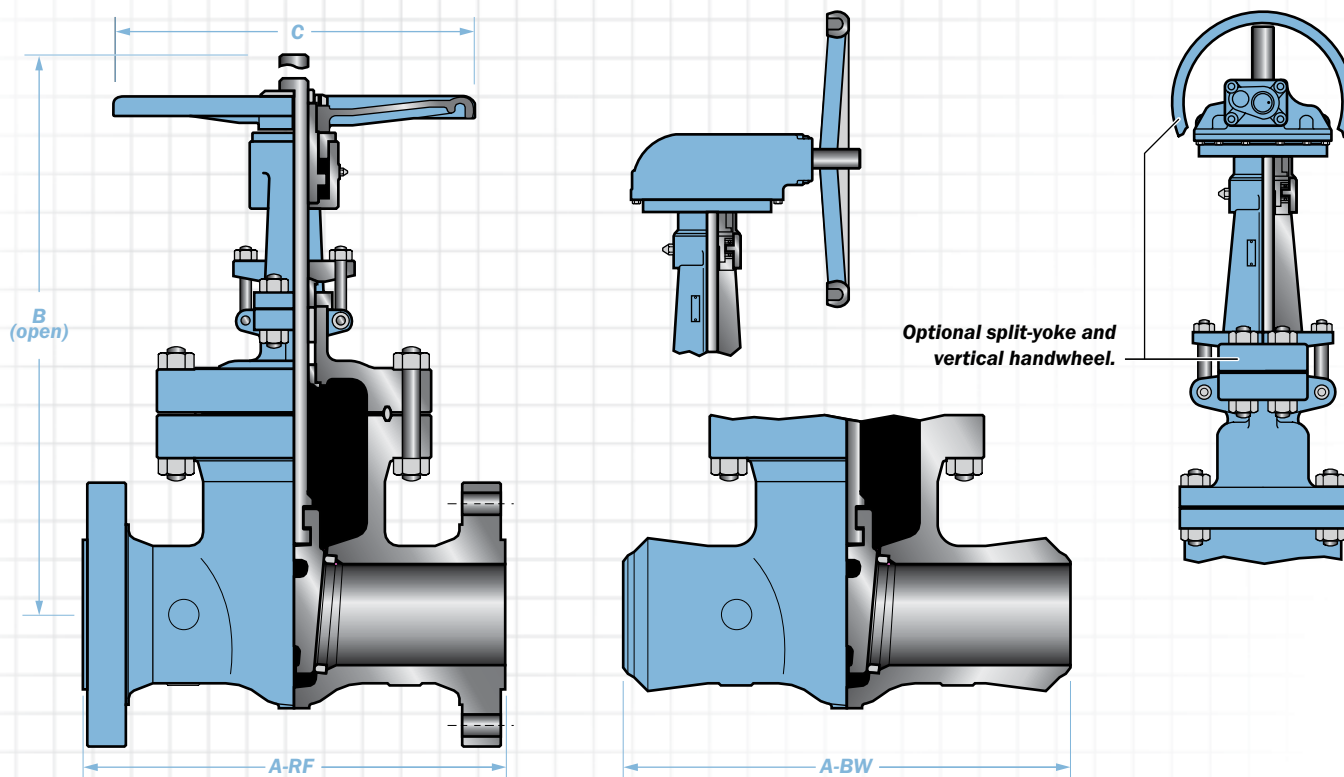
Valve Design: ASME B16.34/API 600

Flange Dimensions: ASME B16.5, B16.47 (Series A)

Face-to-Face Dimensions: ASME B16.10

Tested in Accordance with: API 598

Recommended Spare Parts*



Typical Bill of Materials (See page 5 for available materials.)

Component	CB2	CB3	CB4/2	Component	CB2	CB3	CB4/2
Body	ASTM A216-WCB			Gland Flange	ASTM A216-WCB		
Seat Rings	ASTM A105/HF			Gland Bolt Pins	ASTM A36		
Wedge 2" - 3"	ASTM A276-410	ASTM A216-WCB/HF	ASTM A351-CF8M/A276-316	Gland Bolts	ASTM A307-B		
Wedge 4" & larger	ASTM A216-WCB w/13% Chrome	ASTM A216-WCB/HF	ASTM A216-WCB w/316 Hardface	Gland Nuts	ASTM A194-2H		
Stem	ASTM A182-F6a			Nameplate	Stainless Steel 304		
Yoke & Bonnet	ASTM A216-WCB			Nameplate Rivets	Stainless Steel - Commercial		
*Bonnet Gasket	Soft Steel Ring Joint			Grease Fitting	Carbon Steel - Commercial		
Bonnet Nuts	ASTM A194-2H		ASTM A194-2HM	Stem Nut	ASTM A439-D2		
Bonnet Studs	ASTM A193-B7		ASTM A193-B7M	Yoke Bushing	ASTM A536 (65-45-12)		
Back Seat Bushing	ASTM A276-410		ASTM A276-316	Handwheel	ASTM A536 (65-45-12)		
*Packing	Graphite w/Braided Carbon Fiber End Rings			Handwheel Nut	ASTM A536 (65-45-12)		
Gland	ASTM A276-410		ASTM A276-316	Set Screw	ASTM A193-B6		
				Spacer Ring	ASTM A276-410		
				-	-		

Class 1500

Size	nps	2	2.5	3	4	6	8	10	12
	dn	50	65	75	100	150	200	250	300
A-RF	in	14.5	16.5	18.5	21.5	27.8	32.75	39.0	44.5
	mm	368	419	470	546	706	832	991	1130
A-BW	in	14.5	16.5	18.5	21.5	27.8	32.75	39.0	44.5
	mm	368	419	470	546	706	832	991	1130
A-RTJ	in	14.62	16.62	18.62	21.62	28.0	33.13	39.38	45.12
	mm	371	422	473	549	711	841	1000	1146
B	in	21.7	26.0	28.5	32.6	39.3	48.1	66.5	82.3
	mm	551	660	724	828	998	1223	1688	2090
C	in	11.8	11.8	15.75	19.6	23.6	30.0	30.0	35.0
	mm	300	300	400	500	600	760	760	889
RF	lbs	128	163	209	423	978	1625	4412	8414
Wt.	kg	58	74	95	192	445	739	2001	3816
BW	lbs	106	137	174	352	870	1650	3541	7080
Wt.	kg	48	62	79	160	395	750	1606	3211

Note: Dimensions: Inches/Millimeters - Weights: Pounds/Kilograms. Larger sizes available on request. Dimensions are subject to change without notice.