VELAN

Please note this a condensed catalog. For a complete version, please contact Velan directly.

MEMORYSEAL™ Ball Valves

Low Fugitive Emissions

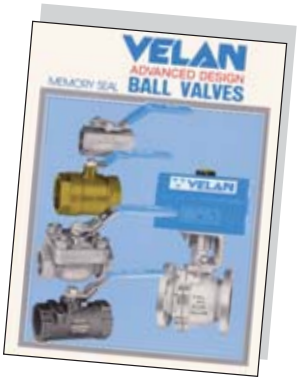
• 600–2000 WOG • ASME CLASSES 150–600 • SIZES ¼–24" (8–600 mm)

VELAN COMPANY PROFILE

Velan is one of the world's leading manufacturers of industrial steel valves, supplying gate, globe, check, ball, butterfly and knife gate valves for critical applications in the chemical, petrochemical, oil and gas, fossil and nuclear power, cogeneration, pulp and paper and cryogenic industries.

Founded in 1950, Velan earned a reputation for excellence as a major supplier of forged valves for nuclear power plants and the U.S. Navy. Velan Inc., pioneered many designs which became industry standards, including bellows seal valves, all stainless steel knife gate valves and forged valves up to 24".

Velan valves are manufactured in 13 specialized manufacturing plants, including six in Canada & U.S.A., four in Europe and three in Asia. We have a total of 1,400 employees, 75% of whom are located in our North American operations.

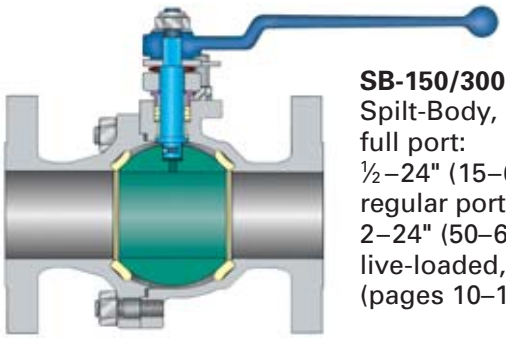


The introduction of Velan's ***Memoryseal™*** Ball Valve took place over 40 years ago. The current design, a second-generation **in-tension *Memoryseal™*** seat design, was introduced to the marketplace in 1984 and is still a market leader in innovation. Since then, Velan has developed a unique parallel seat Top-Entry design and an international Unibody design that are unmatched. Today, Velan offers a complete range of resilient seated ball valves and continues to innovate in this very competitive market.

CONTENTS

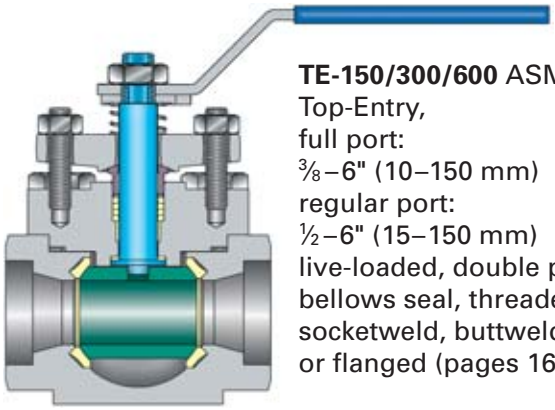
Please note this a condensed catalog. For a complete version, please contact Velan directly.

HIGH PERFORMANCE MEMORYSEAL™ BALL VALVES



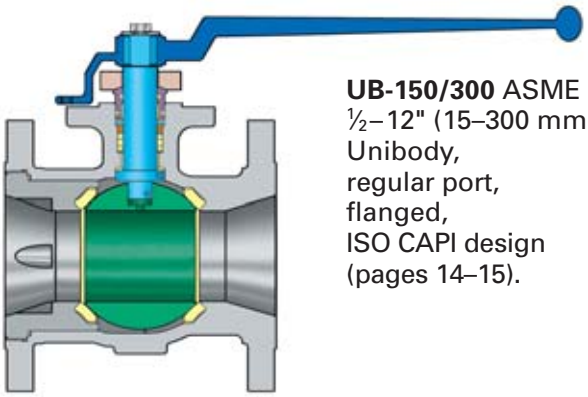
SB-150/300/600 ASME
Spilt-Body,
full port:
½–24" (15–600 mm),
regular port:
2–24" (50–600 mm),
live-loaded, flanged
(pages 10–13).

RATING	psi	°F	bar	°C
ASME Class 150	285 100	100 450	20 7	38 232
ASME Class 300	740 100	100 450	51 7	38 232
ASME Class 600	1480 100	100 450	102 7	38 232
Steam 150[1]	150	366	10	186
Steam 250[1]	250	406	17	208



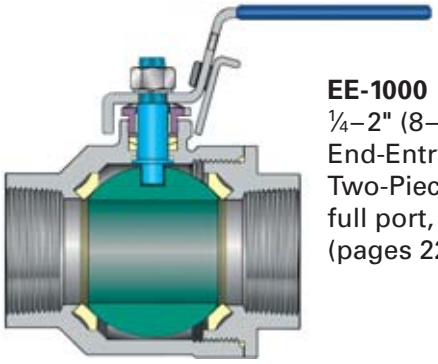
TE-150/300/600 ASME
Top-Entry,
full port:
⅜–6" (10–150 mm)
regular port:
½–6" (15–150 mm)
live-loaded, double packed,
bellows seal, threaded,
socketweld, buttweld
or flanged (pages 16-21).

RATING	psi	°F	bar	°C
1480 WOG	1480[2] 100	100 450	102 7	38 232
Steam 250[1]	250	406	17	208
Steam 450[1]	450	456	31	235



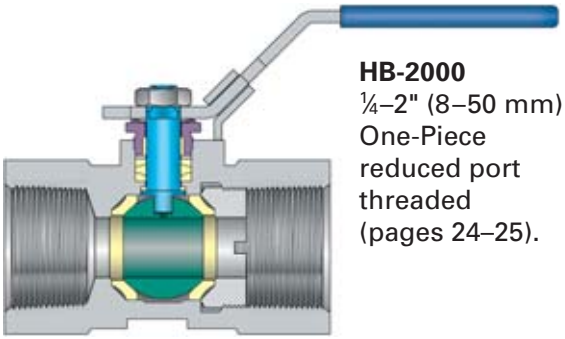
UB-150/300 ASME
½–12" (15–300 mm)
Unibody,
regular port,
flanged,
ISO CAPI design
(pages 14–15).

RATING	psi	°F	bar	°C
ASME Class 150	285 100	100 450	20 7	38 232
ASME Class 300	740 100	100 450	51 7	38 232
Steam 150[1]	150	366	10	186



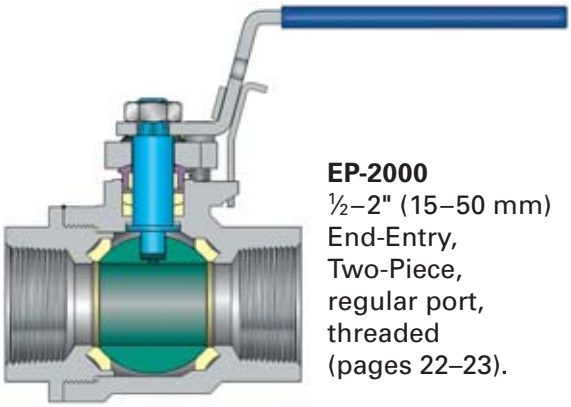
EE-1000
¼–2" (8–50 mm)
End-Entry,
Two-Piece,
full port, threaded
(pages 22–23).

RATING	psi	°F	bar	°C
1000/1500 WOG	1500[2] 100	100 450	103 7	38 232
Steam 150[1]	150	366	10	186



HB-2000
¼–2" (8–50 mm)
One-Piece
reduced port
threaded
(pages 24–25).

RATING	psi	°F	bar	°C
2000 WOG	2000 100	100 450	138 7	38 232



EP-2000
½–2" (15–50 mm)
End-Entry,
Two-Piece,
regular port,
threaded
(pages 22–23).

RATING	psi	°F	bar	°C
1500/2000 WOG	2000[2] 100	100 450	138 7	38 232
Steam 150[1]	150	366	10	186

NOTE: *Pressure–temperature ratings shown are for valves with RPTFE seats unless otherwise indicated.*

Please note this a condensed catalog. For a complete version, please contact Velan directly.

A COMPREHENSIVE BALL VALVE LINE TO HANDLE A WIDE VARIETY OF LIQUIDS AND GASES AT LOW, MEDIUM AND HIGH PRESSURES

Installation of 6" SB-150 with extension handle at a Texas refinery.

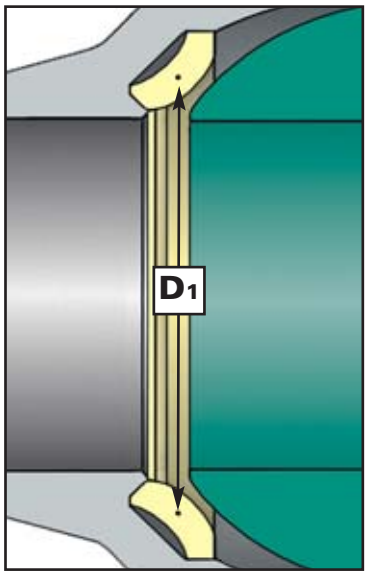
Velan *Memoryseal™* Ball Valves can be equipped with electric, pneumatic, hydraulic or gear actuators.

For Securaseal Metal-Seated Ball Valves, see special catalog VEL-MS.

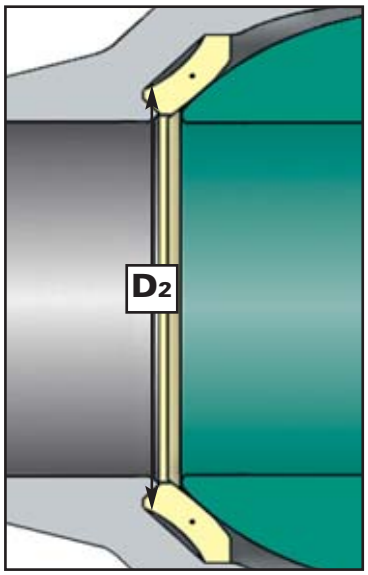
MANUFACTURING PROGRAM										
SIZE in mm	TYPE	DESIGN	RATING[2] psi	END CONNECTION	PORT	MATERIAL				PAGE
						CS	316	MO	ALLOY 20	
½–24 15–600	SB-150	Spilt-Body	ASME Class 150	FLG	Full	✔	✔	✔	✔	10–13
½–24 15–600	SB-300	Spilt-Body	ASME Class 300	FLG	Full	✔	✔	✔	✔	10–13
2–12 50–300	SB-600	Spilt-Body	ASME Class 600	FLG	Full	✔	✔			10–13
2–24 50–600	SB-150	Spilt-Body	ASME Class 150	FLG	Regular	✔	✔	✔	✔	10–13
2–24 50–600	SB-300	Spilt-Body	ASME Class 300	FLG	Regular	✔	✔	✔	✔	10–13
2–12 50–300	SB-600	Spilt-Body	ASME Class 600	FLG	Regular	✔	✔			10–13
½–12 15–300	UB-150	Unibody	ASME Class 150	FLG	Regular	✔	✔	✔	✔	14–15
½–12 15–300	UB-300	Unibody	ASME Class 300	FLG	Regular	✔	✔	✔	✔	14–15
⅜–6 10–100	TE-150/300/600	Top-Entry	ASME Class 150/300/600	NPT, SW BW, FLG	Full	✔	✔	✔	✔	16–21
½–4 15–100	TE-150/300/600	Top-Entry	ASME Class 150/300/600	NPT, SW BW, FLG	Regular	✔	✔	✔	✔	16–21
¼–2 8–50	EE-1000	End-Entry Two-Piece	1000/1500	NPT	Full		✔			22–23
½–2 15–50	EP-2000	End-Entry Two-Piece	1500/2000	NPT	Regular	✔	✔			22–23
¼–2 8–50	HB-2000	Bar Stock One-Piece	2000	NPT	Reduced	✔	✔		✔	24–25

Please note this a condensed catalog. For a complete version, please contact Velan directly.

VELAN MEMORYSEAL™ BALL VALVE TECHNOLOGY



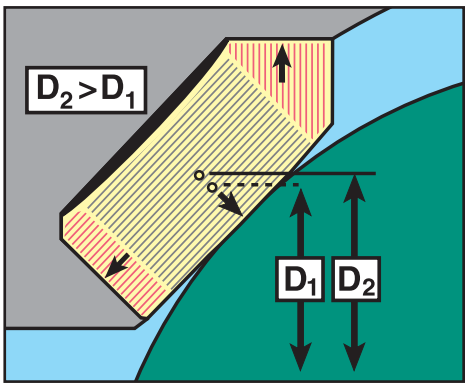
BEFORE ASSEMBLY



AFTER ASSEMBLY

Velan concave-convex flexible, "in-tension" seats with induced sealing memory

U. S. PATENT 3,384,341



AREA IN COMPRESSION

AREA IN-TENSION

SEALING MEMORY

The Velan sealing memory is induced into the seats during the assembly process. When the ball is inserted into the valve body during assembly, it partially flattens the seat, creating a **tensile stress** in the center of the seat.

As a result, the seat core increases in diameter from D_1 to D_2 and like a stretched elastic band pushes against the ball. This ensures reliable sealing even at vacuum or low pressures.

SEAT STRENGTH

A seat in-tension is stronger than a seat in compression because the tensile strength of PTFE in-tension is 3600 psi (25 MPa) versus only 1800 psi (12.5 MPa) for PTFE in compression. Greater strength means less fatigue, superior sealing ability and longer cycle life.

The ***Memoryseal™*** seat is the only successful seat design **in-tension rather than compression** and will outlast other **extreme seat designs**.

LOWER TORQUES

Velan "in-tension" seats produce more uniform torque because the seat deflects into the cavity behind it to accommodate slight differences in machining tolerances or the normal expansion of PTFE as temperature increases. PTFE expands approximately seven times as much as metal.

CAVITY PRESSURE RELIEF

***Memoryseal™* seats** are designed to relieve overpressure in the ball/body cavity. This capability is influenced by many variables including: fluid characteristics, variations in pressure, seat materials, seat compression, temperature and thermal cycles.

Positive release of cavity overpressure to the upstream side is assured in bypassing the upstream seat through a drilled hole in the ball. This option is preferred in certain services such as liquid chlorine.

Pressure relief when the valve is in the open position is always through the vent in the top of the ball adjacent to the stem connection.

For further information on Cavity Relief contact Velan.

SUMMARY OF MEMORYSEAL™ BENEFITS

"IN-TENSION" SEATS

- ***Greater strength***
- ***Less fatigue***
- ***Positive bi-directional shutoff***
- ***Compensate for temperature fluctuations***
- ***Uniform torque***
- ***Eliminate cold flow effects***
- ***High cycle life***

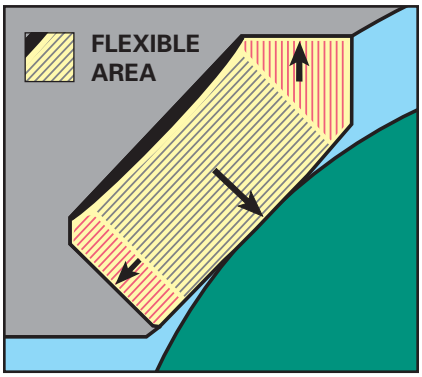
LARGER FLEXIBLE AREA

- ***Superior sealing***

Please note this a condensed catalog. For a complete version, please contact Velan directly.

COMPETING DESIGNS

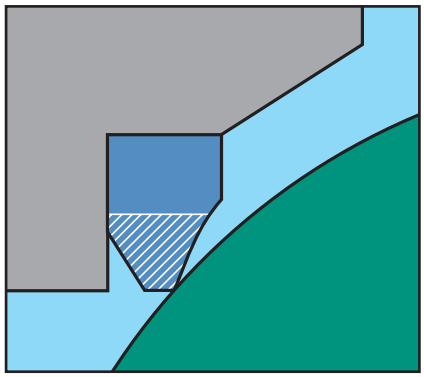
VELAN IN-TENSION FLEXIBLE SEAT



- ☑ **Larger seat with smaller seating contact**
- ☑ **Larger flexible area; added flexibility**
- ☑ **Seat in-tension, stronger; 3600 psi tensile strength**
- ☑ **Greater flexible strength = tightness on low pressure service**
- ☑ **Greater flexibility = lower torque**
- ☑ **Greater flexibility = better shock resistance to high DP**
- ☑ **Greater flexibility = compensation for pressure and temperature fluctuation**
- ☑ **Greater flexibility = longevity**

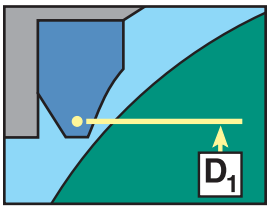
The competing seat design illustrations shown on this page are general in nature and are not intended to show the exact design or performance of any specific manufacturer.

COMPETITIVE FLEXIBLE SEAT



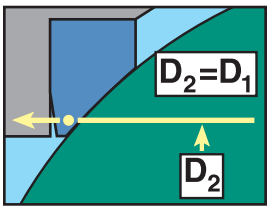
- ☒ Smaller, weaker seat
- ☒ Minimal flexible area, susceptible to fatigue
- ☒ Seat in compression; only 1800 psi tensile strength
- ☒ Can leak in low pressure service due to fatigue
- ☒ Minimal flexibility; conservative torque
- ☒ Minimal flexibility; weak shock resistance to high DP
- ☒ Moderate compensation for pressure and temperature fluctuation
- ☒ Moderate flexibility = premature wear

BEFORE ASSEMBLY



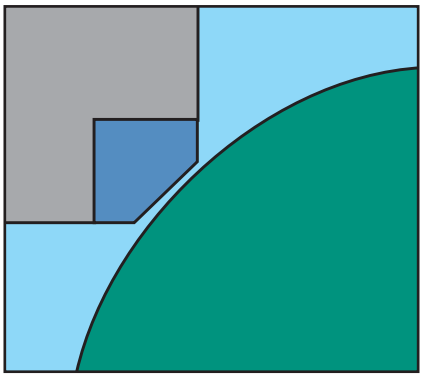
AFTER ASSEMBLY

After assembly the seat diameter D_1, does not increase.



*Seat contact is in **compression not tension.***

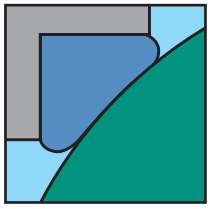
NON FLEXIBLE JAM SEAT



- ☒ Much smaller seat
- ☒ No flexibility; high compression: susceptible to cold flow
- ☒ Seat in compression; only 1800 psi tensile strength
- ☒ Can leak under low pressure service after short cycle life
- ☒ No flexibility; high compression; susceptible to high torque and severe torque variation
- ☒ No flexibility; no shock resistance to high DP
- ☒ No compensation for pressure and temperature fluctuation
- ☒ No flexibility = short cycle life

BEFORE ASSEMBLY

AFTER ASSEMBLY

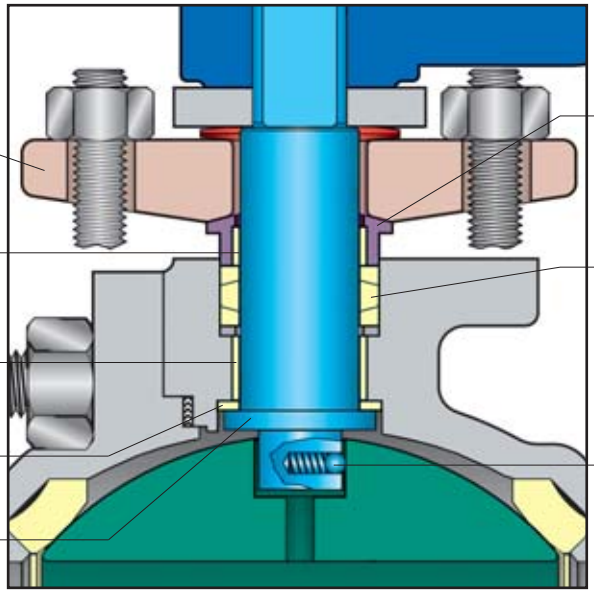


GREATER FLEXIBLE STRENGTH = GREATER PERFORMANCE MEMORYSEAL™ SEATS

Please note this a condensed catalog. For a complete version, please contact Velan directly.

VELAN E-20
ZERO LEAKAGE PACKING CHAMBER DESIGN

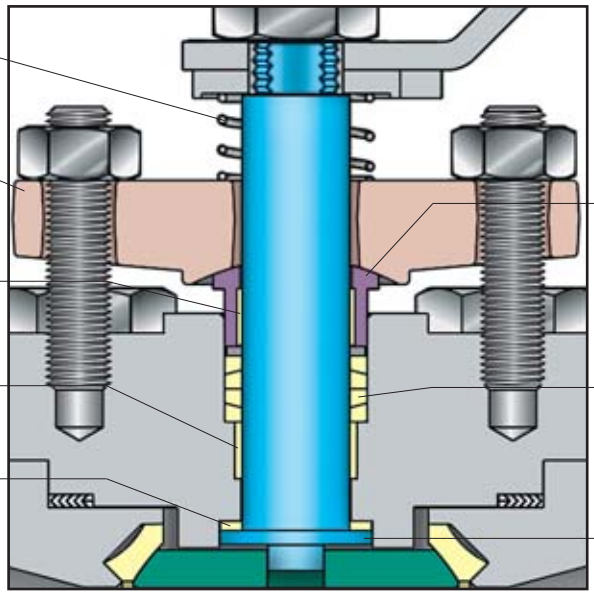
SB-150/300/600



THE E-20 PACKING CHAMBER OUTPERFORMS COMPETITIVE DESIGNS

- **E-20 unique packing chamber design** maintains low emissions control for long lasting high cycle life.
- **Self-aligning packing flange** is independent of gland for equal compression of packing rings.
- **Upper and lower stem bushing** prevent side load on packing rings. Eliminates premature wear therefore enhancing packing life.
- **Floating stem** eliminates thrust washer wear.
- **Stem shoulder** assures **blowout-proof safety**.
- **Cup and cone packing rings** for directional compression for a tighter seal and longer life.
- **Anti-static design**
  Ball-spring device eliminates static electrical buildup between stem, ball and body 2–24" (50–600 mm). A separate external coil spring device that grounds stem to body is included on the full size range.

TE-150/300/600



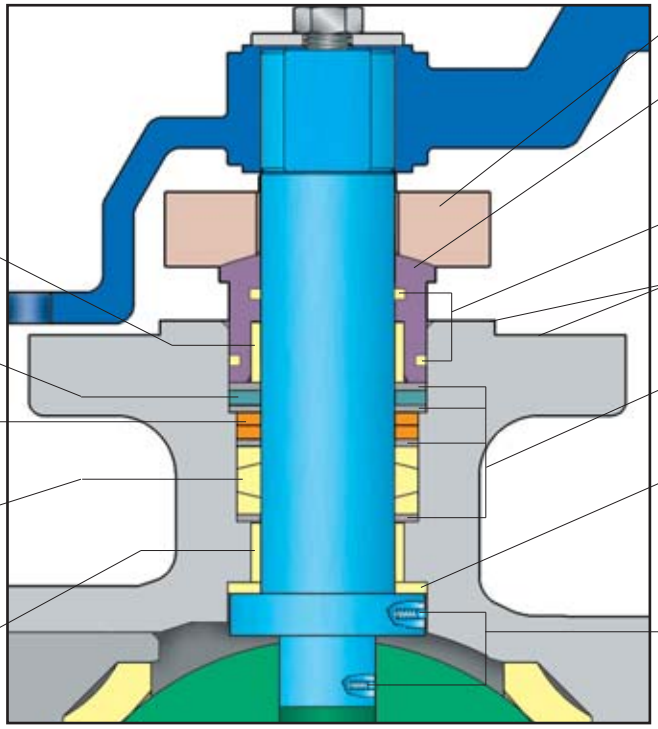
Please note this a condensed catalog. For a complete version, please contact Velan directly.

VELAN E-20
ZERO LEAKAGE PACKING CHAMBER DESIGN

A UNIQUE HIGH INTEGRITY STEM SEAL WITH ISO ACTUATOR MOUNTING

UB-150/300
2-12"(50–300 mm)

4-WAY SEAL



• E-20 low emission stem seal
A **unique 4-way seal** assures low emissions control for long lasting high cycle life and is TA-Luft certified(1). The first seal is on the stem shoulder. Next, the main cup and cone PTFE seal, precompressed to 3000 psi (21 MPa) is self-adjusting under live-loading with two spring washers. A third seal, fire safe graphite packing, is independently loaded and remains unaffected by the burnout of the main packing during fire. Finally, two O-ring seals provide additional seal performance. The main stem seal does not require adjustment or attention. A flanged 2-piece gland design provides additional reliability.

• Fully guided stem Lower and upper guides prevent side load on packing rings. Eliminates premature wear therefore enhancing packing life.

• Anti-static design
Ball-spring devices eliminate static electrical buildup between stem, ball and body.

• Blowout-proof stem
The internally assembled and back-seated stem provides blowout-proof safety.

• Fire tested The valves are designed, tested and certified to meet the requirements of API 6FA, API 607 Rev. 4 and BS 6755 part 2.

UB-150/300
½–1½"(15–40 mm)

3-WAY SEAL

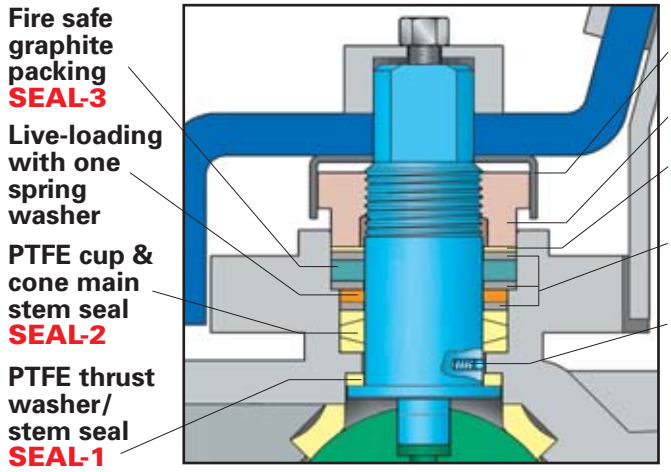
In order to achieve the required stem packing capability and performance within the limited space in these smaller valves, an impressive and **unique 3-way sealing system** has been developed which provides:

a) Live-loaded cup & cone PTFE seal.

b) Primary PTFE seal.

c) Independently loaded fire safe graphite packing.

(1) TA-Luft tested to below 1 ppm.



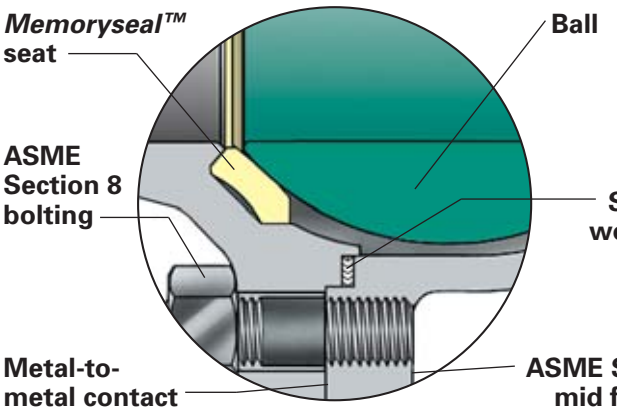
NOTE: locking mechanism may differ from design shown.

Please note this a condensed catalog. For a complete version, please contact Velan directly.

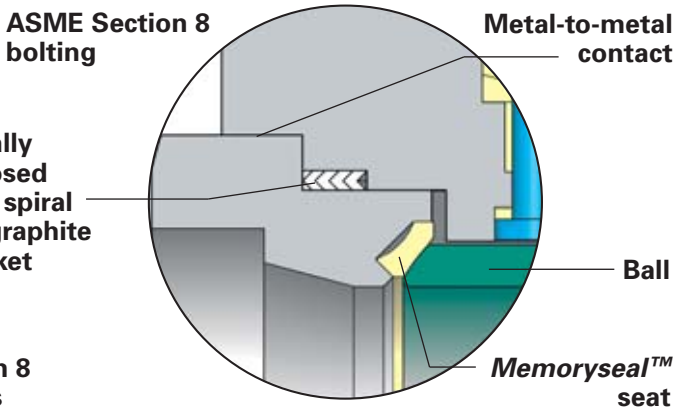
SUPERIOR BODY SEAL DESIGNS

All body seal designs incorporate a secondary metal-to-metal contact area in addition to the primary gasket designs. Sealing designs for our Split-Body and Top-Entry utilize a totally enclosed spiral wound SS 316 graphite gasket for the tightest seal in the valve industry. The Unibody, End-Entry and One-Piece valves utilize solid PTFE seals with metal-to-metal back-up contact.

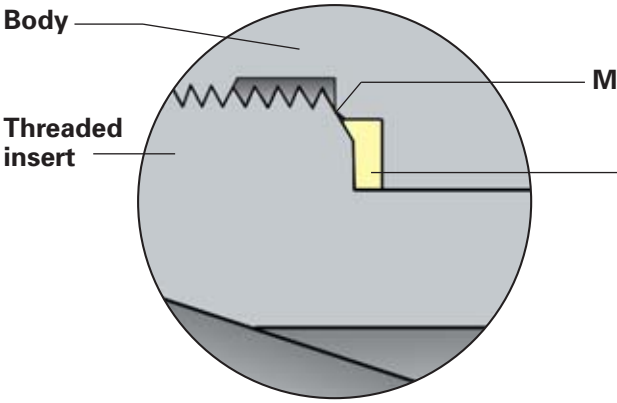
SPLIT-BODY SB-150/300/600



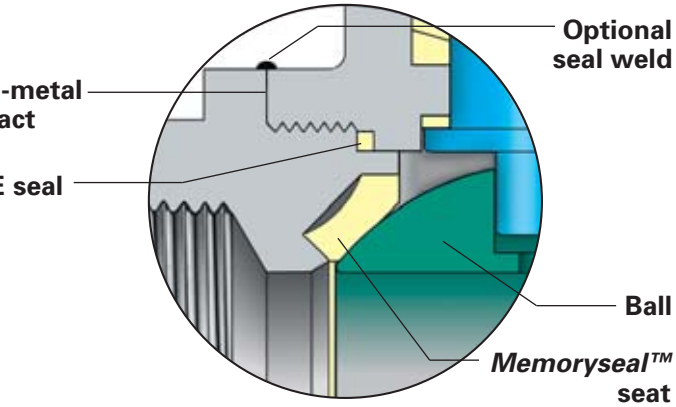
TOP-ENTRY TE-150/300/600



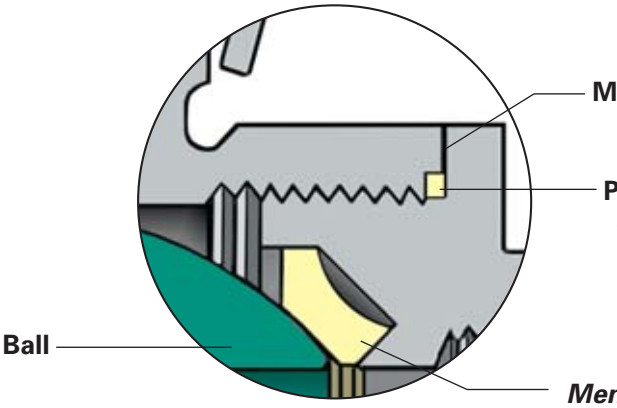
UNIBODY UB-150/300



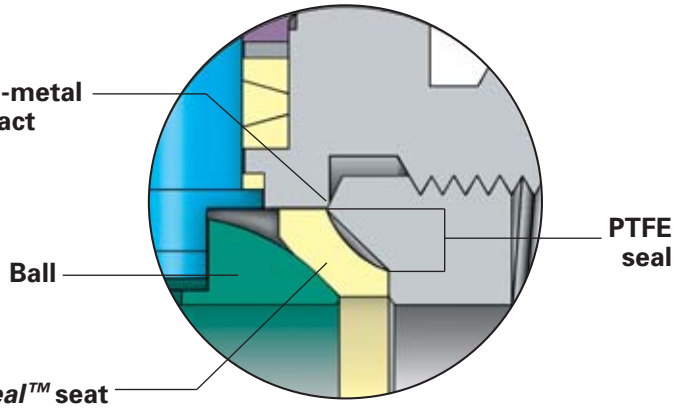
END-ENTRY EP-2000



END-ENTRY EE-1000



ONE-PIECE HB-2000

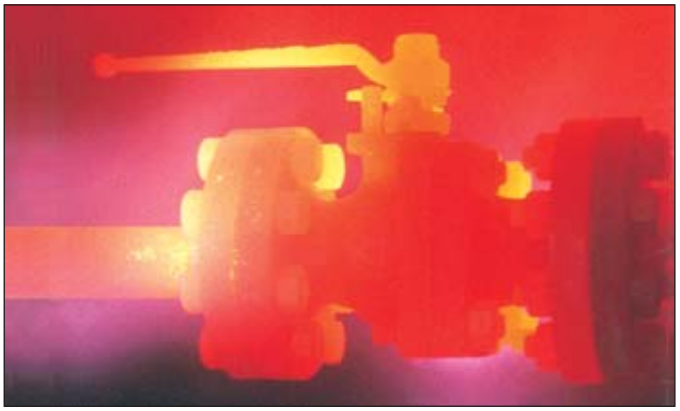


Please note this a condensed catalog. For a complete version, please contact Velan directly.

TESTING

FIRE TESTS

All ***Memoryseal™*** Ball Valves have successfully passed Revision 4 of API 607[(1)] using graphite packing. Valves with PTFE packing have successfully passed BS6755 and API 6FA. Certificates available upon request.



(1) PTFE based seat materials

MANUFACTURING TESTS

All ***Memoryseal™*** Ball Valves are tested in accordance with API 598 and are bubble tight.

EMISSIONS TESTING

LOW FUGITIVE EMISSIONS

Based on extensive laboratory tests and field experience, Velan guarantees the customer that standard Velan ball valves will provide low emission service, on gaskets, and stem seals, under normal operating conditions, provided that gland and body-bonnet bolting is torqued to minimum values shown in the current Velan maintenance manuals.

Maximum emissions on new valves:
20 ppm – PTFE packing rings and 100 ppm graphite packing rings.

TA-LUFT QUALIFICATION

The certificate issued by RWTUV after testing Velan ***Memoryseal™*** Ball Valves states "We herewith certify the equivalence of shaft sealing for Velan ball valves with a fully guided shaft and live-loaded flanged packing gland to stem sealing with bellows seal and additional safety packing".

This is based upon the requirements described in TA-Luft, Section 3.1.8.4.


RWTUV

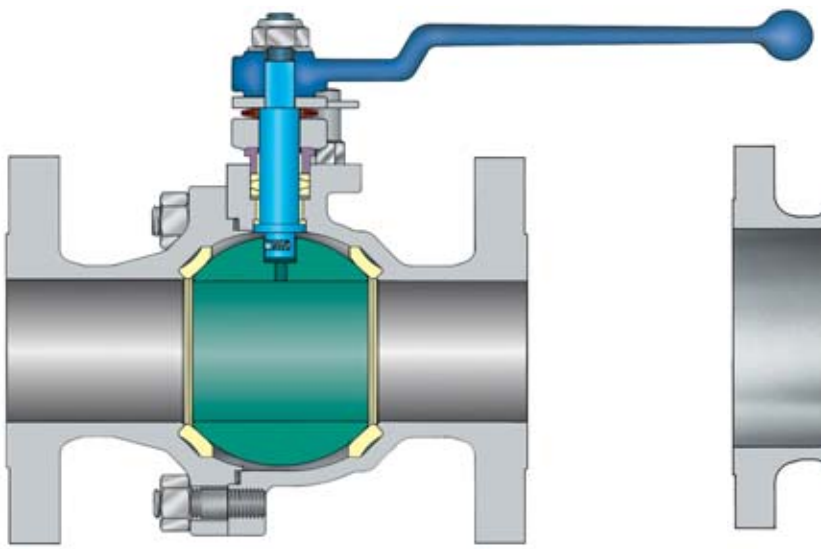
CERTIFICATE

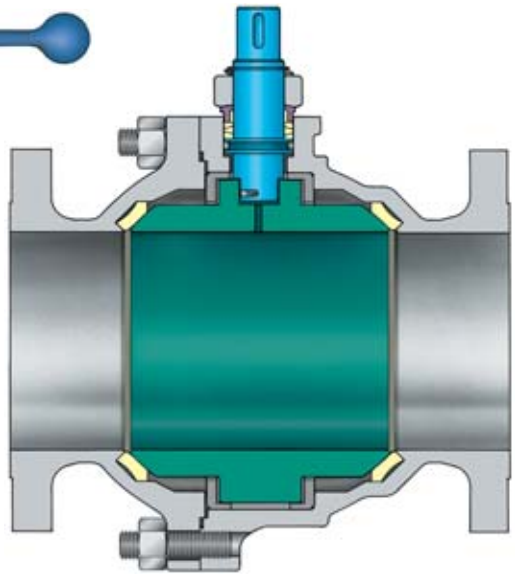
Please note this a condensed catalog. For a complete version, please contact Velan directly.

SB-150/300/600 SPLIT-BODY FULL & REGULAR PORT FLANGED BALL VALVES

½–24" (15–600 mm)

LOW FUGITIVE EMISSIONS WITH FLANGED GLAND





FLOATING BALL	150	300	600
Full Port	½–8" (15–200 mm)	½–6" (15–150 mm)(1)	2–3" (50–80 mm)
Regular Port	2–10" (50–250 mm)	2–8" (50–200 mm)	2–4" (50–100 mm)

TRUNNION BALL	150	300	600
Full Port	10–24" (250–600 mm)	8–24" (50–600 mm)(1)	4–12" (100–300 mm)(2)
Regular Port	12–24" (300–600 mm)	10–24" (250–600 mm)	6–12" (150–300 mm)(3)

(1) Floating ball optional for 8" (200 mm) valve. (2) Trunnion optional on 2–3" (50–80 mm) full port valve.
(3) Trunnion optional on 3–4" (80–100 mm) regular port valve.

DESIGN FEATURES:

- Exclusive ***Memoryseal™*** seats compensate automatically for wear and fluctuations of pressure and temperature.
- Multiple solid cup and cone type PTFE stem seal or graphite packing.
- Two-piece self-aligning packing flange and gland.
- PTFE TA-Luft certified live-loaded packing available.
- Stem guides reduce side thrust.
- Long cycle life.
- Low, uniform torques.
- Blowout-proof stem.
- Live-loaded thrust washer prevents galling and provides secondary stem seal.
- Fully enclosed spiral wound graphite filled stainless body gasket.
- Meets ASME B16.5, B16.10 and B16.34, API 608(4), 598, 607(5), 6FA and BS 6755 Part 2.
- ASME Section 8 mid flanges and bolting eliminates weak center section.
- UL approved, SB-150/300 2–12"(50–300 mm).
- AGA & CGA approved, SB-150 Full Port 2–8"(50–200 mm).
- Face-to-face dimensions meet ASME B16.10 long pattern for full port and short pattern for regular port (optional).
- Locking devices standard on lever operated valves.
- Trunnion-mounted ball on larger valves allows the ball to float in case of fire and shut off on the secondary metal seat.
- Cavity fillers available for ½–12" (15–300 mm).
- Gear actuators(6) standard: SB-150/300 8–24" (200–600 mm) full port and 10–24" (250–600 mm) regular port, SB-600 6–12" (150–300 mm) full port and 8–12" (200–300 mm) regular port.

APPLICATIONS:

These rugged, versatile, high performance ball valves meet all requirements for oil and gas pipeline service and, when required, can meet **NACE** specifications.

The valves can handle a vast variety of fluids, slurries, semi-solids and almost any corrosive service in chemical, oil, petrochemical, gas, pulp, paper processing and other industries.

Standard valves with RPTFE seats can handle **steam** service to 150 psig (10.3 bar). Valves with carbon graphite filled PTFE seats are suitable for steam up to 250 psig (17.2 bar).

- **Fire tested** in accordance with API 607(5), BS 6755 and API 6FA. See page 9 for details.

NOTE: *(4) For latest revision compliance contact the factory.*
(5) API 607 Rev. 4 is optional, requires graphite packing.
(6) May be recommended on 6" (150 mm) SB-150/300 full port or 8" (200 mm) SB-150/300 regular port depending on service conditions.

Please note this a condensed catalog. For a complete version, please contact Velan directly.

SB-150 with air actuator.

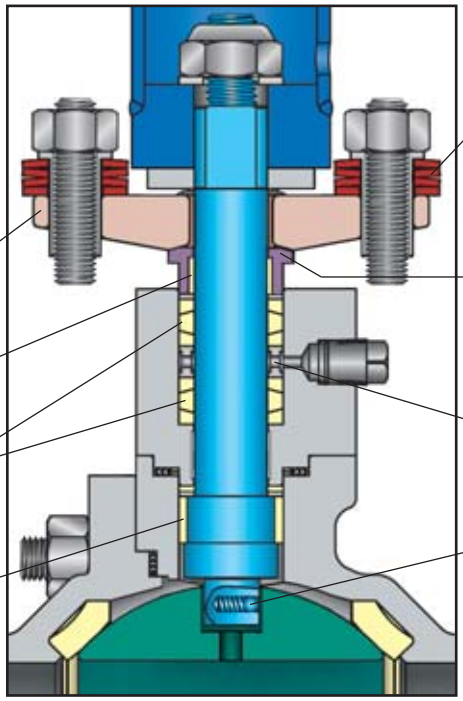
Manual gear actuated ball valve.

Please note this a condensed catalog. For a complete version, please contact Velan directly.

ALTERNATIVE PACKING CHAMBER DESIGN

DESIGN FEATURES:

- Velan's double packed arrangement uses the E-20 packing style, double stacked live-loaded packing flange and lantern ring for emissions measuring or collection.



Adjustable self-aligning packing flange

Upper stem guide prevents side thrust

Two sets of PTFE cup & cone packing rings

Lower stem guide prevents side thrust

Belleville washers provide live-loading for extended maintenance free cycle life

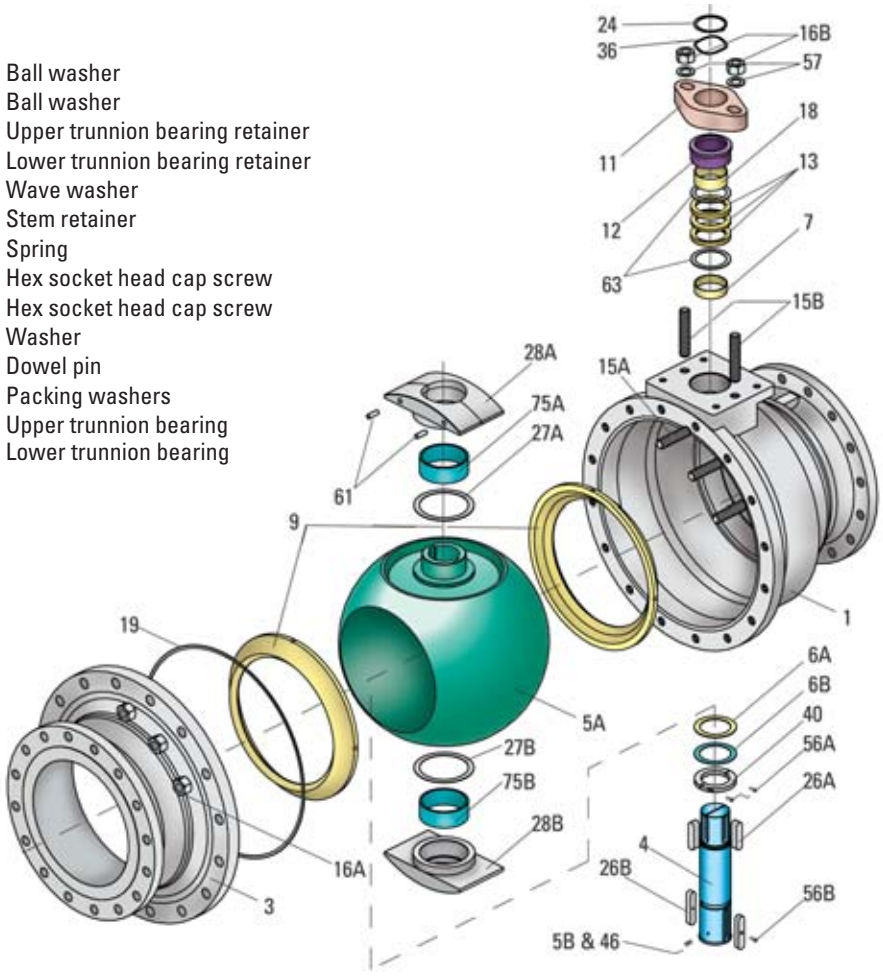
Specially machined gland provides self-alignment to packing flange

Lantern ring with plugged port

Ball-to-stem static grounding standard

SPLIT-BODY EXPLODED VIEW

ITEM	DESCRIPTION
1	Body
3	Body end
4	Stem
5A	Ball
5B	Grounding ball
6A	Thrust washer (PTFE)
6B	Thrust washer (metal)
7	Stem bushing
9	Seat
11	Packing flange
12	Gland bushing
13	Packing rings
15A	Body stud
15B	Packing flange stud
16A	Body end nut
16B	Packing flange stud nut
18	Gland bushing sleeve
19	Body seal
24	Retaining ring
26A	Key
26B	Key
27A	Ball washer
27B	Ball washer
28A	Upper trunnion bearing retainer
28B	Lower trunnion bearing retainer
36	Wave washer
40	Stem retainer
46	Spring
56A	Hex socket head cap screw
56B	Hex socket head cap screw
57	Washer
61	Dowel pin
63	Packing washers
75A	Upper trunnion bearing
75B	Lower trunnion bearing



EXPLODED VIEW DESIGN IS FOR:

16 - 24" (400–600 mm)
150 / 300 FULL PORT

20 - 24" (500–600 mm)
150 / 300 REGULAR PORT

Please note this a condensed catalog. For a complete version, please contact Velan directly.

SPLIT-BODY DIMENSIONS & WEIGHTS

SIZE in mm	SB-150 FULL PORT					
	A	B	C	D	E	F
½ 15	4.25 108	3.49 89	5.31 135	1.62 41	0.50 13	3.50 89
¾ 20	4.63 118	4.09 104	5.56 141	1.75 445	0.75 19	3.88 99
1 25	5.00 127	4.21 107	5.56 141	2.05 52	1.00 25	4.25 108
1½ 40	6.50 165	4.85 123	7.81 198	2.55 65	1.50 38	5.00 127
2 50	7.00 178	5.44 138	10.38 264	2.89 73	2.0 51	6.00 152
2½ 65	7.50 191	6.97 177	11.9 302	3.25 83	2.5 64	7.00 178
3 80	8.00 203	7.38 188	11.9 302	3.77 96	3.0 76	7.50 191
4 100	9.00 229	10.33 262	20.0 508	4.52 115	4.0 102	9.00 229
6 150	15.50 394	12.56 319	26.0 660	6.24 159	6.0 152	11.00 279
8 200	18.00 457	13.06 332	— —	8.13 206	8.0 203	13.50 343
10 250	21.00 533	18.84 479	— —	10.50 267	10.00 254	16.00 406
12 300	24.00 610	22.59 574	— —	12.00 305	12.00 305	19.00 483
14 350	27.00 686	24.22 615	— —	13.50 343	13.25 337	21.00 533
16 400	30.00 762	24.13 613	— —	15.00 381	15.25 387	23.50 597
18 450	34.00 864	27.28 693	— —	17.00 432	17.25 438	25.00 635
20 500	36.00 914	29.69 754	— —	18.00 457	19.25 489	27.50 699
24 600	42.00 1067	35.06 891	— —	21.00 533	23.25 591	32.00 813

SB-300 FULL PORT					
A	B	C	D	E	F
5.50 140	3.49 89	5.31 135	2.06 52	0.50 13	3.75 95
6.00 152	4.09 104	5.56 141	2.55 65	0.75 19	4.63 118
6.50 165	4.21 107	5.56 141	2.61 66	1.00 25	4.88 124
7.50 191	4.85 123	7.81 198	2.92 74	1.50 38	6.13 156
8.50 216	5.44 138	10.38 264	3.83 97	2.00 51	6.50 165
9.50 241	6.97 177	11.9 302	4.00 102	2.50 64	7.50 191
11.12 283	7.38 188	11.9 302	5.30 135	3.00 76	8.25 210
12.00 305	10.33 262	20.00 508	5.99 152	4.00 102	10.00 254
15.87 403	12.56 319	26.00 660	6.65 169	6.00 152	12.50 318
19.75 502	13.06 332	— —	8.78 223	8.00 203	15.00 381
22.37 568	18.84 479	— —	11.19 284	10.00 254	17.50 445
25.50 648	22.59 574	— —	12.75 324	12.00 305	20.50 521
30.00 762	24.22 615	— —	15.00 381	13.25 337	23.00 584
33.00 838	24.13 613	— —	16.50 419	15.25 387	25.50 648
36.00 914	27.28 693	— —	18.00 457	17.00 432	28.00 711
39.00 991	29.69 754	— —	19.50 495	19.00 483	30.50 775
45.00 1143	35.06 891	— —	22.50 572	23.00 584	36.00 914

SB-600 FULL PORT					
A	B	C	D	E	F
— —	— —	— —	— —	— —	— —
— —	— —	— —	— —	— —	— —
— —	— —	— —	— —	— —	—
— —	— —	— —	— —	— —	— —
11.50 292	7.44 189	11.90 302	5.00 127	2.00 51	6.50 165
— —	— —	— —	— —	— —	— —
14.00 356	11.12 282	26.00 660	6.19 157	3.00 76	8.25 210
17.00 432	13.71 348	26.00 660	7.00 178	4.00 102	10.75 273
22.00 559	17.19 437	— —	9.25 235	6.00 152	14.00 356
26.00 660	19.26 489	— —	11.00 279	8.00 203	16.50 419
31.00 787	21.16 537	— —	14.50 368	10.00 254	20.00 508
33.00 838	22.41 569	— —	15.25 387	12.00 305	22.00 559

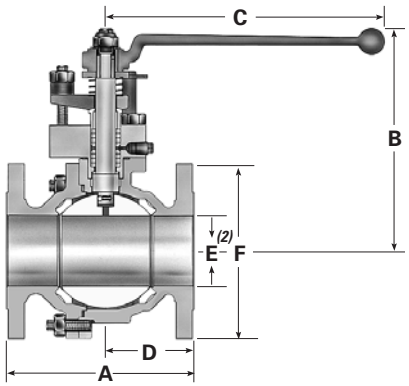
SIZE in mm	SB-150 REGULAR PORT					
	A	B	C	D	E	F
2 50	7.00 178	4.56 116	10.38 264	3.00 76	1.50 38	6.00 152
3 80	8.00 203	5.44 138	10.38 264	4.00 102	2.00 51	7.50 191
4 100	9.00 229	7.38 188	11.90 302	4.36 111	3.00 76	9.00 229
6 150	10.50 267	10.33 262	20.00 508	4.74 120	4.00 102	11.00 279
8 200	11.50 292	12.56 319	26.0 660	5.71 145	6.00 152	13.50 343
10 250	13.00 330	13.06 332	— —	6.37 162	8.00 203	16.00 406
12 300	14.00 356	18.84 479	— —	7.00 178	10.00 254	19.00 483
14 350	15.00 381	18.84 479	— —	7.50 191	10.00 254	21.00 533
16 400	16.00 406	22.59 574	— —	8.00 203	12.00 305	23.50 597
18 450	34.00 864	24.22 615	— —	17.00 432	14.00 356	25.00 635
20 500	36.00 914	24.13 613	— —	18.00 457	15.25 387	27.50 699
24 600	42.00 1067	27.28 693	— —	21.00 533	17.25 438	32.00 813

SB-300 REGULAR PORT					
A	B	C	D	E	F
8.50 216	4.56 116	10.38 264	3.88 98	1.50 38	6.50 165
11.13 283	5.44 138	10.38 264	5.56 141	2.00 51	8.25 210
12.00 305	7.38 188	11.90 302	5.99 152	3.00 76	10.00 254
15.88 403	10.33 262	20.00 508	7.94 202	4.00 102	12.50 318
16.50 419	12.56 319	26.00 660	8.25 210	6.00 152	15.00 381
18.00 457	13.06 339	— —	9.00 229	8.00 203	17.50 445
19.75 502	18.84 479	— —	9.13 232	10.00 254	20.50 521
22.50 572	18.84 479	— —	11.25 286	10.00 254	23.00 584
24.00 610	22.59 574	— —	12.00 305	12.00 305	25.50 648
26.00 660	24.22 615	— —	13.00 330	14.00 356	28.00 711
28.00 711	24.13 613	— —	14.00 356	15.25 387	30.50 778
32.00 813	27.28 693	— —	16.00 406	17.25 438	36.00 914

SB-600 REGULAR PORT					
A	B	C	D	E	F
11.50 292	5.35 136	10.38 264	4.74 121	1.60 41	6.50 165
14.00 356	7.47 189	11.90 302	7.00 178	2.00 51	8.25 210
17.00 432	11.12 282	26.00 660	8.50 216	3.00 76	10.75 273
22.00 559	13.71 348	26.00 660	11.00 279	4.00 102	14.00 356
26.00 660	17.19 437	— —	13.00 330	6.00 152	16.50 419
31.00 787	19.26 489	— —	12.50 318	8.00 203	20.00 508
33.00 838	21.16 537	— —	14.50 368	10.00 254	22.00 559

SIZE in mm	SB-150 LIVE-LOADED DOUBLE PACKED FULL PORT(1)					
	A	B	C	D	E	F
2 50	7.00 178	7.90 201	10.38 264	2.89 73	2.00 51	6.00 152
3 80	8.00 203	10.32 262	11.90 302	3.77 96	3.00 76	7.50 191
4 100	9.00 229	13.94 354	20.00 508	4.52 115	4.00 102	9.00 229
6 150	15.50 394	16.84 428	26.00 660	6.24 159	6.00 152	11.00 279

SB-300 LIVE-LOADED DOUBLE PACKED FULL PORT(1)					
A	B	C	D	E	F
8.50 216	7.90 201	10.38 264	3.83 97	2.00 51	6.50 165
11.12 283	10.32 262	11.90 302	5.30 135	3.00 76	8.25 210
12.00 305	13.94 354	20.00 508	5.99 152	4.00 102	10.00 254
15.87 403	16.84 428	26.00 660	6.65 169	6.00 152	12.50 318



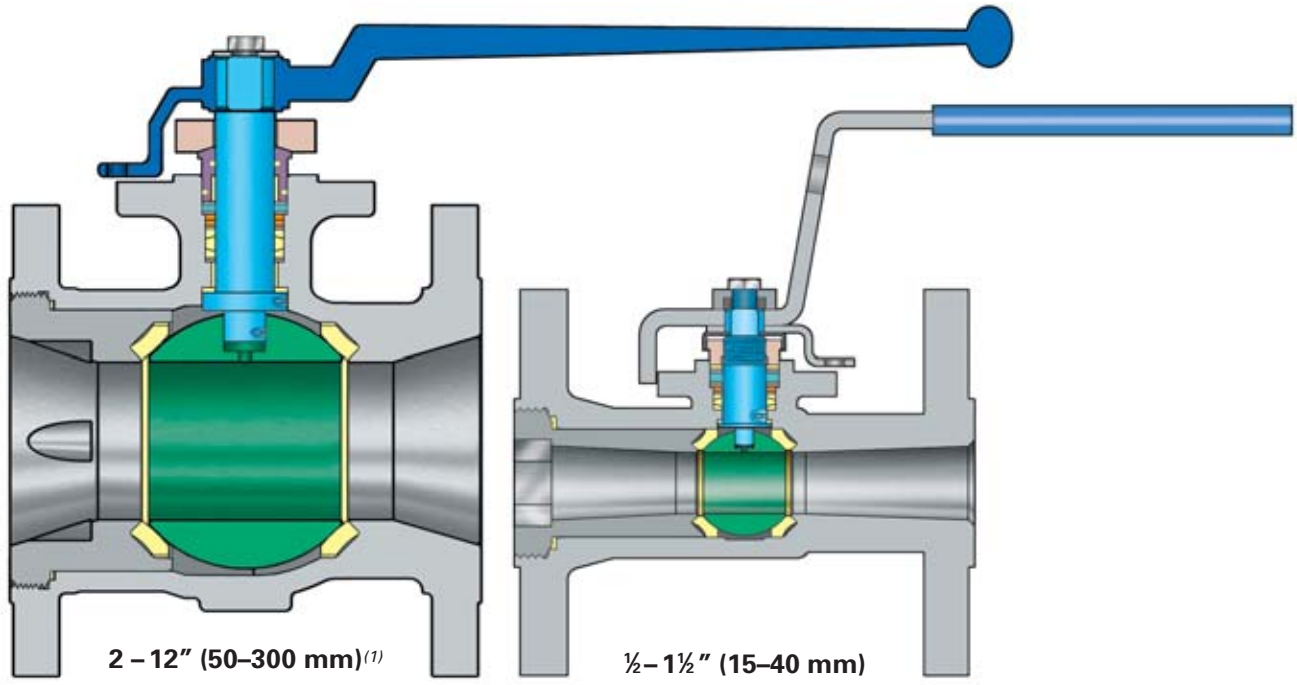
(1) For regular port and other sizes and pressure classes, contact the factory.

(2) Seat diameter.

Please note this a condensed catalog. For a complete version, please contact Velan directly.

UB-150/300 UNIBODY REGULAR PORT FLANGED BALL VALVES

½–12" (15–300 mm)
½" (15 mm) UB-150/300 is full port
LOW FUGITIVE EMISSIONS



UNIQUE IN EVERY ASPECT

DESIGN FEATURES:

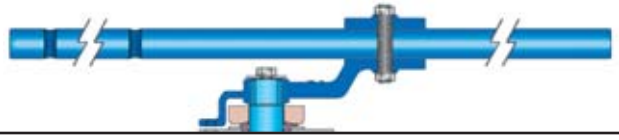
- Exclusive ***Memoryseal™*** seats compensate automatically for wear and fluctuations of pressure and temperature.
- Unique 4-Way and 3-Way packing arrangements for superior stem sealing (refer to page 7 for details).
- **TA-Luft** certified.
- Multiple solid cup and cone type PTFE stem seal **and** graphite packing.
- Stem guides prevent side thrust.
- Long cycle life
- Low, uniform torques.
- Blowout-proof stem.
- Fully enclosed PTFE body seal.
- Metal-to-metal contact between insert and body act as secondary seal and prevents overcompression of the seats.
- Pipe flange gasket acts as third precautionary seal as threads from the insert are within the raised face flange.
- Meets worldwide specifications. Design ASME B16.34, BS 5351, API 608 (2), fire tested to API 607 Rev. 4, BS 6755 and API 6FA. ISO/CAPI for all parameters of standardized valve automation.
- Locking device standard for valves with lever handle.
- Highest standards of quality.
  Over its 50 years of production activities Velan has earned a worldwide reputation for quality in design, manufacturing and valve performance.

APPLICATIONS:

These rugged, versatile, high performance ball valves meet requirements for oil and gas pipeline service and can meet **NACE** specifications when required.

The valves can handle a vast variety of fluids, slurries, semi-solids and almost any corrosive service in chemical, petrochemical, oil, gas, pulp and paper, processing and other industries.

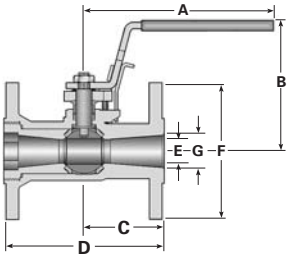
Adjustable handle standard 4–8" (100-200 mm)



NOTE: *(1) Handle may differ on valves 4–8" (100–200 mm) Gear actuators are included on valves 10–12" (250–300 mm).*
(2) For latest revision compliance contact the factory.

Please note this a condensed catalog. For a complete version, please contact Velan directly.

UB-150/300 UNIBODY



DIMENSIONS, WEIGHTS, Cv & ISO FLANGES

SIZE in mm	UB-150							
	A	B	C	D	E	F	G	Cv(2)
½ 15	5.90 150	3.45 88	2.12 54	4.25 108	0.50 13	3.50 89	0.50 13	9
¾ 20	5.90 150	3.79 96	2.31 59	4.62 117	0.62 16	3.88 99	0.75 19	15
1 25	7.80 198	3.91 99	2.50 64	5.00 127	0.75 19	4.25 108	1.00 25	42
1½ 40	7.81 198	4.89 124	3.25 83	6.50 165	1.19 30	5.00 127	1.50 38	125
2 50	9.00 229	4.79 122	3.72 95	7.00 178	1.50 38	6.00 152	2.00 51	165
3 80	11.90 302	5.96 151	4.00 102	8.00 203	2.39 61	7.50 191	3.00 76	350
4 100	(1)	9.01 229	4.50 114	9.00 229	3.01 77	9.00 229	4.00 102	540
6 150	(1)	11.71 298	5.25 133	10.50 267	4.38 111	11.00 279	6.00 152	1000
8 200	(1)	14.16 360	5.75 146	11.50 292	5.68 144	13.50 343	8.00 203	1500
10 250	(2)	13.64 347	146.1 165	13.00 330	7.36 187	16.00 406	10.00 254	2850
12 300	(2)	15.04 382	7.00 178	14.00 356	8.98 228	19.00 483	12.00 305	4800

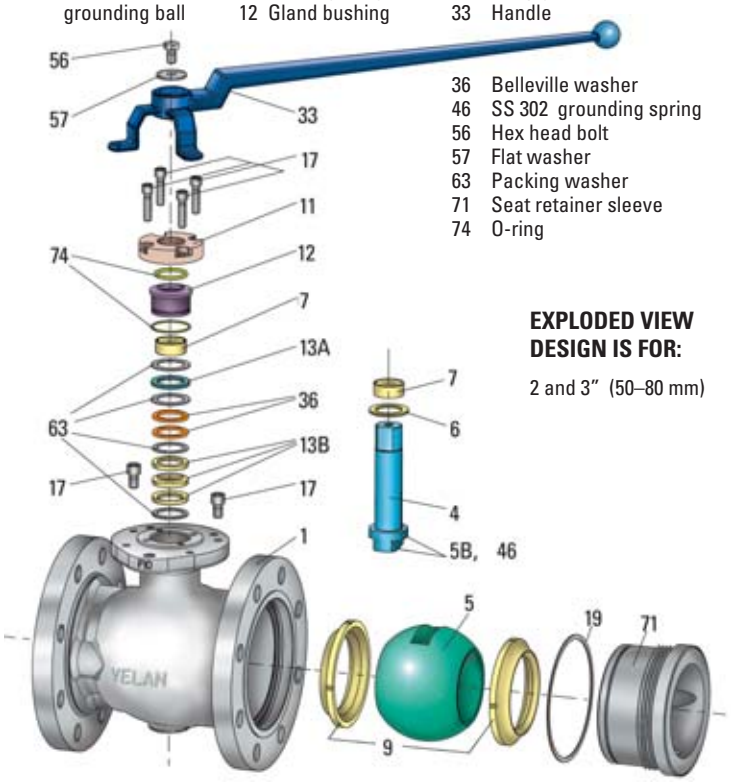
SIZE in mm	UB-300							
	A	B	C	D	E	F	G	Cv(2)
½ 15	5.90 150	3.45 88	3.38 86	5.50 140	0.50 13	3.75 95	0.50 13	9
¾ 20	5.90 150	3.79 96	3.69 94	6.00 152	0.62 16	4.62 117	0.75 19	15
1 25	7.80 198	3.91 99	4.00 102	6.50 165	0.75 19	4.88 124	1.00 25	42
1½ 40	7.80 198	4.89 124	4.25 108	7.50 191	1.25 32	6.12 155	1.50 38	125
2 50	9.00 229	4.59 117	4.62 117	8.50 216	1.50 38	6.50 165	2.00 51	165
3 80	11.90 302	5.96 151	6.63 168	11.12 282	2.39 61	8.25 210	3.00 76	350
4 100	(3)	9.01 229	6.00 152	12.00 305	3.01 77	10.00 254	4.00 102	540
6 150	(3)	11.71 298	8.63 219	15.88 403	4.38 111	12.50 318	6.00 152	1000
8 200	(3)	14.20 360	8.25 210	16.50 419	5.68 144	15.00 381	8.00 203	1770
10 250	(4)	13.64 347	9.00 229	18.00 457	7.36 187	17.50 445	10.00 254	2850
12 300	(4)	15.04 382	9.88 251	19.75 502	8.98 228	20.50 521	12.00 305	4800

(2) Kv = Cv x 0.85. (1) Adjustable handle. Contact factory for dimensional data. (2) UB 300 10 & 12" (250 & 300 mm) are gear actuated.

UB-150/300 EXPLODED VIEW

ITEM DESCRIPTION

1 Body
4 Stem
5 Ball
5B SS 316 grounding ball
6 Thrust washer
7 Stem bushing
9 Seat
11 Packing flange
12 Gland bushing
13A Packing ring (graphite)
13B Packing ring (PTFE)
17 Socket head cap screw
19 Body gasket
33 Handle
36 Belleville washer
46 SS 302 grounding spring
56 Hex head bolt
57 Flat washer
63 Packing washer
71 Seat retainer sleeve
74 O-ring



EXPLODED VIEW DESIGN IS FOR:

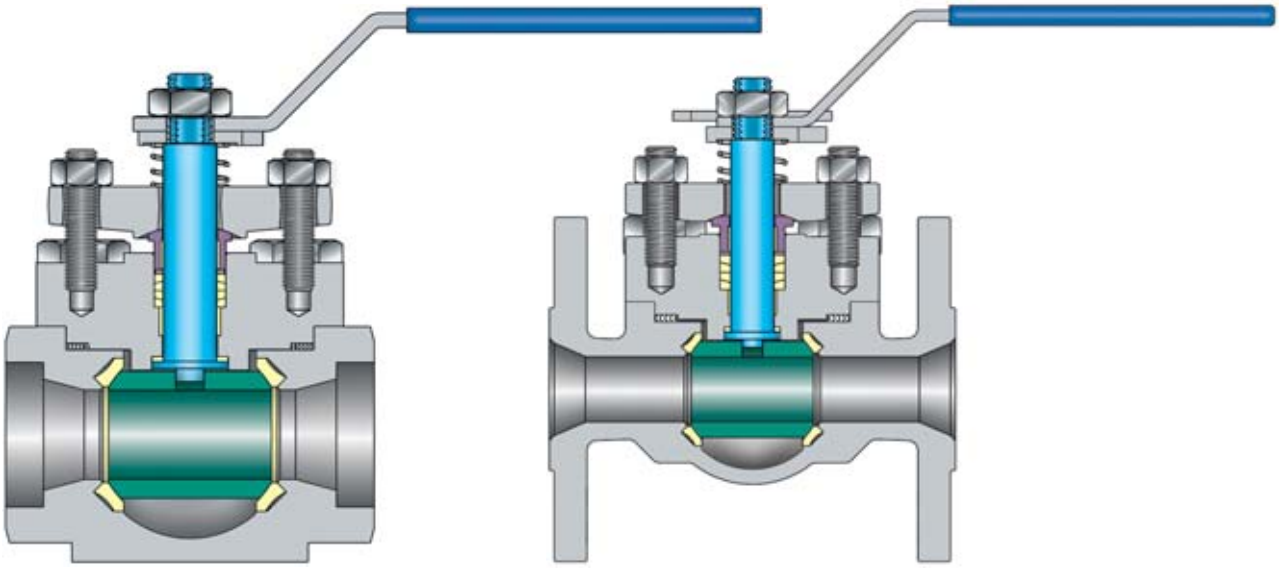
2 and 3" (50–80 mm)

Please note this a condensed catalog. For a complete version, please contact Velan directly.

TE-150/300/600 TOP-ENTRY REGULAR OR FULL PORT BALL VALVES

REGULAR PORT ½–6" (15–150 mm) FULL PORT ⅜–6" (10–150 mm), THREADED, SOCKETWELD, BUTTWELD OR FLANGED, CLASSES 150, 300, 600

LOW FUGITIVE EMISSIONS



Buttweld 1/2–6" (15–150 mm) **Socketweld & Threaded 3/8–4" (10–100 mm)** **Flanged 1/2–6" (15–150 mm)**

DESIGN FEATURES:

- Exclusive ***Memoryseal™*** seats compensate automatically for wear and fluctuations of pressure and temperature.
- Multiple solid cup and cone type PTFE stem seal or graphite packing.
- Two-piece self-aligning packing flange and gland.
- Stem guides in cover and gland bushing eliminate side thrust.
- Longer cycle life.
- Lower, uniform torque.
- Blowout-proof stem.
- Live-loaded thrust washer prevents galling and provides a secondary stem seal.
- Meets ASME B16.5, B16.10 and B16.34, API 608(1), 598, 607, 6FA and BS 6755 Part 2.
- Fully-enclosed spiral wound graphite filled stainless body gasket.
- Permits in-line access for seat replacement.
- ASME Section 8 cover/body flange connection and bolting provide high sealing integrity of body gasket.
- Body-cover joint not affected by pipe stresses.
- Wall thickness complies with ASME B16.34.
- Can be welded into line without disassembly in accordance with Velan installation instructions.
- Stainless steel trim on all valves including handle.
- Oval handles with locking device, as well as extensions available.
- Ball-to-stem only (2"(50 mm) full port and larger) and stem-to-body static grounding.
- Locking devices standard.
- Tapping for mounting actuators standard.
- AGA and CGA approved, regular port, threaded and socketweld ends (optional) ½–2" (15–50 mm).
- Valves can meet **NACE** specifications for sour gas service when required.
- Optional topworks (page 20):
  1. Live-loaded single or double packing.
  2. TA-Luft certified when supplied with PTFE live-loading packing.
  3. Bellows seal design.
- **Fire tested** in accordance with API 607, API 6FA and BS 6755. See page 9 for details.

APPLICATIONS:

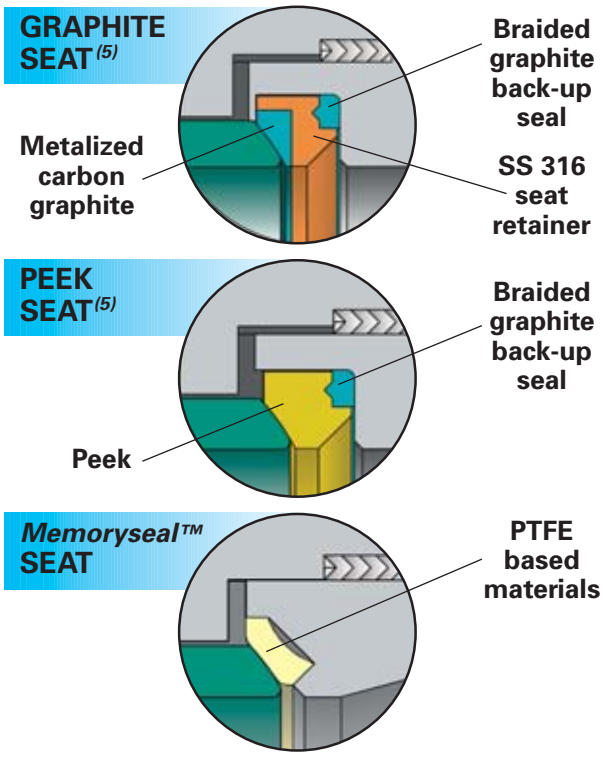
A superior quality, rugged, and universal purpose valve for all fluids, slurries, semi-solids and corrosive services in endless industrial, chemical and original equipment applications.

- Dimensions on page 21.

NOTE: *(1) For latest revision compliance contact the factory.*

Please note this a condensed catalog. For a complete version, please contact Velan directly.

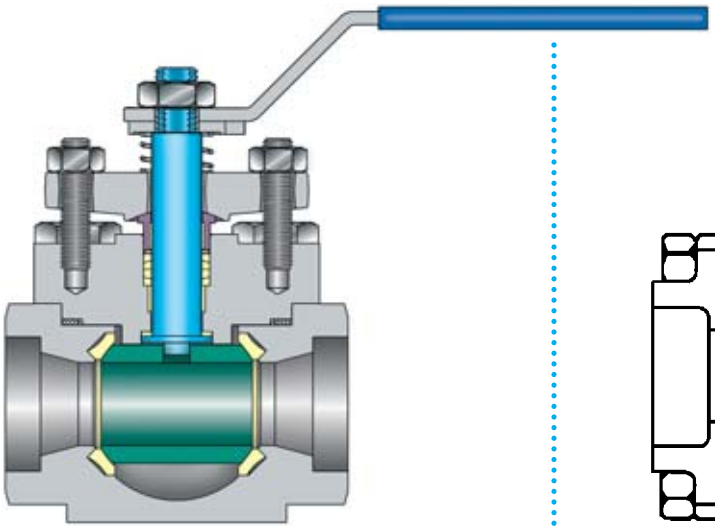
SEAT DESIGNS



Please note this a condensed catalog. For a complete version, please contact Velan directly.

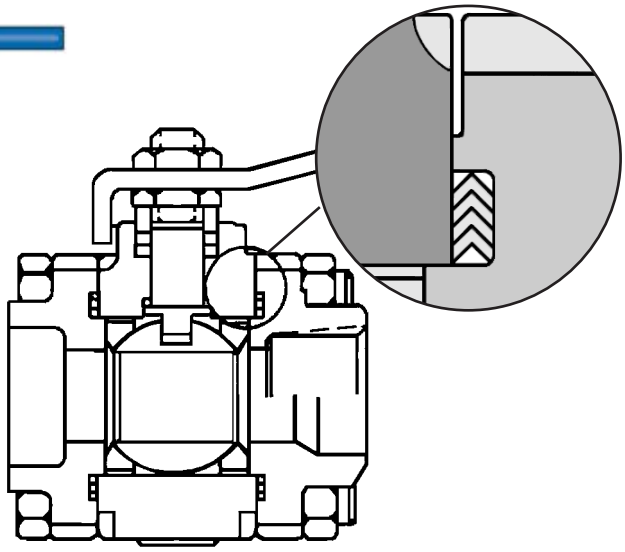
VELAN TOP-ENTRY BALL VALVES
SUPERIOR TO THREE-PIECE BALL VALVES

VELAN FIRE SAFE TOP-ENTRY



1. Two leakage paths (gasket and packing).
2. Fully guided stem.
3. In lab tests 0 ppm emissions to 100,000 cycles, 500,000 with live-loading.
4. Easy to weld the one-piece body into the line without disassembly. The integrity of the valve is not affected.
5. All parts can be easily serviced or replaced in-line.

THREE-PIECE FIRE SAFE VALVES



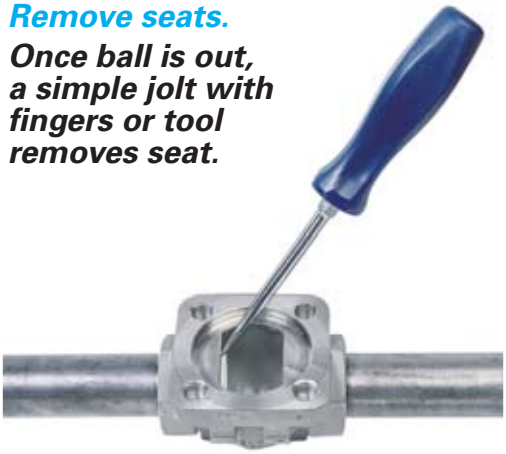
1. Three leakage paths (2 gaskets & packing).
2. Stem can wobble, cause leakage.
3. Greater emissions, lower cycle life.
4. Welding can affect the integrity of the valve due to tendency to separate the three-bolted body parts during the welding.
5. Valve can not be serviced in-line, because of the fire safe design with spiral wound gaskets which requires internal guiding of the two end pieces. The guiding prevents the centerpiece to swing out.

IN-LINE SERVICE

STEP 1
Remove cover assembly.

STEP 2
Remove ball.
Turn ball 90° and remove.

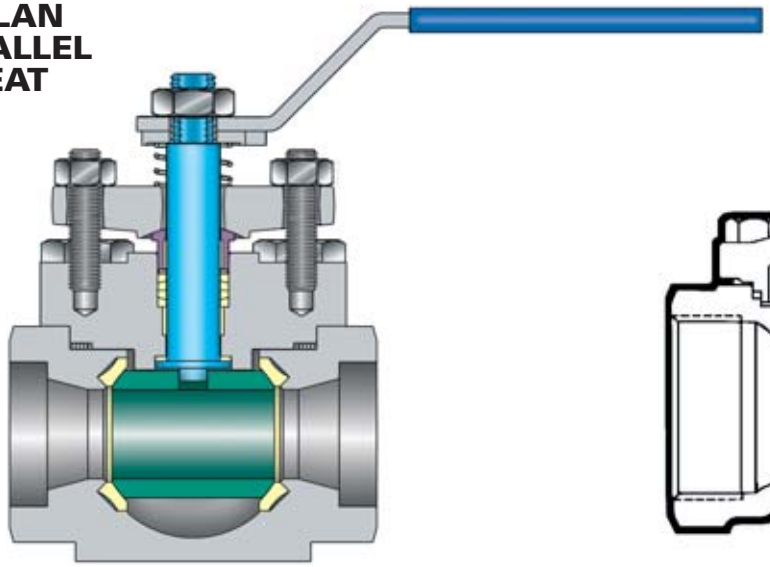
STEP 3
Remove seats.
Once ball is out, a simple jolt with fingers or tool removes seat.



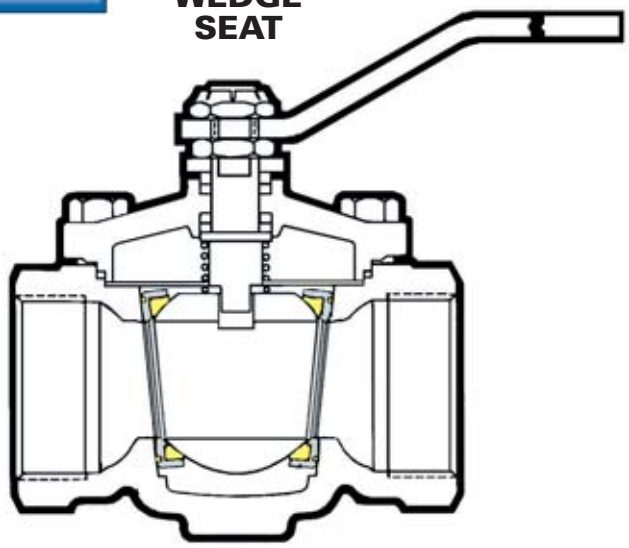
Please note this a condensed catalog. For a complete version, please contact Velan directly.

VELAN PARALLEL SEAT TOP-ENTRY VERSUS WEDGE SEAT DESIGN

VELAN PARALLEL SEAT



WEDGE SEAT



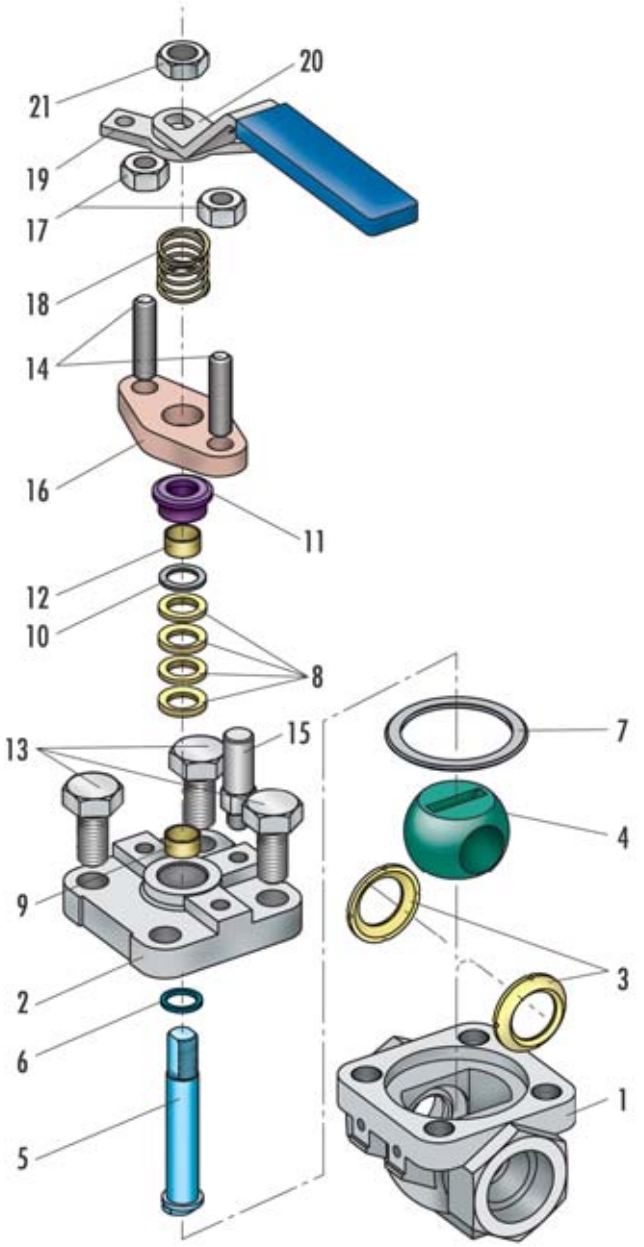
	FEATURES	VELAN PARALLEL SEAT	WEDGE SEAT
1	***Memoryseal™* parallel** seats	yes	no
2	E-20 packing style	yes	no
3	20 PPM maximum emission guarantee	yes	no
4	Two-piece self-aligning packing flange and gland	yes	no
5	Fully guided stem independent of packing rings	yes	no
6	Cup and cone packing	yes	no
7	Locking device standard	yes	no
8	Design to ASME B16.34	yes	yes
9	Straight through bore	yes	not in full port design
10	Optional two stud packing flange, live-loading	yes	no
11	Fire safe to BS 6755 Standard	yes	optional
12	Fire safe to API 607 Rev. 4	optional	optional
13	Socketweld, threaded or flanged ends	yes	yes
14	Serviceable in-line	yes	yes

The competing seat design illustrations shown on this page are general in nature and are not intended to show the exact design or performance of any specific manufacturer.

Please note this a condensed catalog. For a complete version, please contact Velan directly.

TE-150/300/600 EXPLODED VIEW

ITEM	DESCRIPTION		
1	Body	11	Gland bushing
2	Bonnet	12	Gland bushing sleeve
3	Seat	13	Bonnet screw
4	Ball	14	Gland stud
5	Stem	15	Handle stop pin
6	Thrust washer	16	Packing flange
7	Body seal	17	Gland nut
8	Packing ring	18	Coil spring
9	Stem bushing	19	Handle stop plate
10	Packing washer	20	Handle
		21	Handle nut

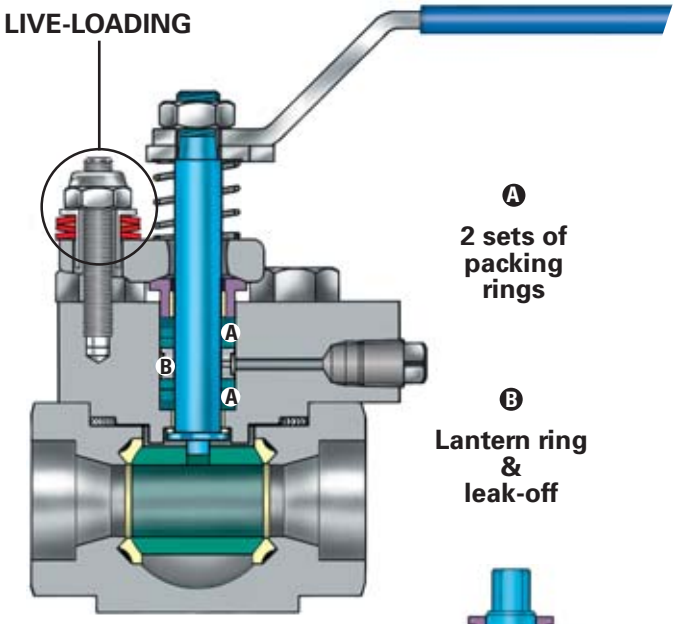


ALTERNATIVE PACKING CHAMBER DESIGN

FOR 0 PPM FUGITIVE EMISSIONS

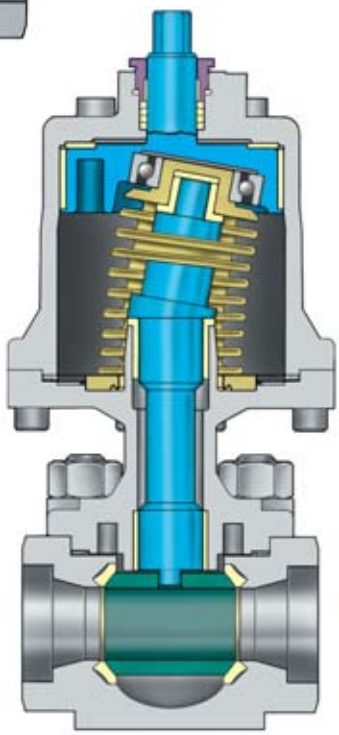
DOUBLE PACKED

- **Double packing with leak-off.**
  Two sets of packing rings are precompressed to 2,000 psi (14 MPa) in PTFE or 4,000 psi (28 MPa) in graphite. A lantern ring and leak-off allow removal of leakage, if any, from bottom packing set.
- **Tested to 500,000 cycles with "0" ppm emissions.**
- **Live-loaded.**



BELLOWS SEAL

- **Hermetically sealed Bellows** in Hastelloy C.
- **Secondary PTFE or graphite packing seal.**
- **A unique bellows seal design tested to 100,000 cycles** with stainless steel driver unit allows installation of standard, pneumatic or electric actuator.



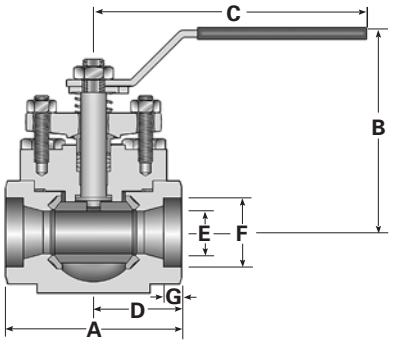
Please note this a condensed catalog. For a complete version, please contact Velan directly.

TOP-ENTRY DIMENSIONS & WEIGHTS

TE- 600 TOP-ENTRY

SIZE	THREADED, SOCKETWELD REGULAR PORT						
in / mm	A	B	C	D	E	F	G
½ / 15	2.62 / 67	3.47 / 88	4.62 / 117	1.31 / 33	0.44 / 11	0.86 / 22	0.38 / 10
¾ / 20	3.25 / 83	3.60 / 91	4.62 / 117	1.63 / 41	0.56 / 14	1.07 / 27	0.50 / 13
1 / 25	3.75 / 95	4.82 / 122	6.44 / 164	1.88 / 48	0.81 / 21	1.33 / 34	0.50 / 13
1½ / 40	4.88 / 124	5.66 / 144	7.55 / 192	2.44 / 62	1.19 / 30	1.92 / 49	0.50 / 13
2 / 50	6.00 / 152	5.92 / 150	7.55 / 192	3.00 / 76	1.50 / 38	2.41 / 61	0.63 / 16
3 / 80	7.25 / 184	6.45 / 164	11.91 / 302	3.63 / 92	2.00 / 51	3.54 / 90	0.63 / 16

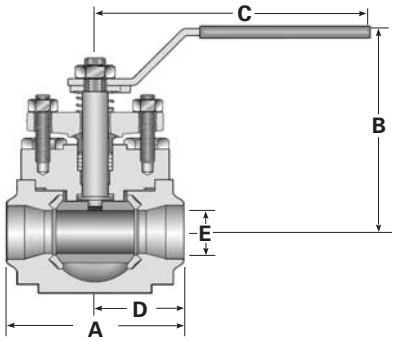
SIZE	THREADED, SOCKETWELD FULL PORT						
in / mm	A	B	C	D	E	F	G
⅜ / 10	2.63 / 67	3.47 / 88	4.62 / 117	1.31 / 33	0.44 / 11	0.69 / 18	0.38 / 10
½ / 15	3.25 / 83	3.60 / 91	4.62 / 117	1.63 / 41	0.56 / 14	0.86 / 22	0.38 / 10
¾ / 20	3.75 / 95	4.82 / 122	6.44 / 164	1.88 / 48	0.81 / 21	1.07 / 27	0.50 / 13
1 / 25	4.88 / 124	5.66 / 144	7.31 / 186	2.44 / 62	1.19 / 30	1.33 / 34	0.50 / 13
1½ / 40	6.00 / 152	5.92 / 150	7.31 / 186	3.00 / 76	1.50 / 38	1.92 / 49	0.50 / 13
2 / 50	7.25 / 184	6.45 / 164	11.91 / 302	3.63 / 92	2.00 / 51	2.41 / 61	0.63 / 16
3 / 80	11.12 / 283	9.13 / 232	19.88 / 505	5.56 / 141	3.00 / 76	3.54 / 90	0.63 / 16



TE- 600 TOP-ENTRY

SIZE	BUTTWELD REGULAR PORT				
in / mm	A	B	C	D	E
½ / 15	2.62 / 67	3.47 / 88	4.62 / 117	1.31 / 33	0.44 / 11
¾ / 20	3.25 / 83	3.60 / 91	4.62 / 117	1.62 / 41	0.56 / 14
1 / 25	3.75 / 95	4.82 / 122	6.44 / 164	1.88 / 48	0.81 / 21
1½ / 40	4.88 / 124	5.66 / 144	7.55 / 192	2.44 / 62	1.19 / 30
2 / 50	6.00 / 152	5.92 / 150	7.55 / 192	3.00 / 76	1.50 / 38
3 (1) / 80	11.12 / 282	6.45 / 164	11.91 / 302	5.56 / 141	2.00 / 51
4 (1) / 100	12.00 / 305	9.13 / 232	19.88 / 505	6.00 / 152	3.00 / 76

SIZE	BUTTWELD FULL PORT				
in / mm	A	B	C	D	E
½ / 15	3.25 / 88	3.60 / 91	4.62 / 117	1.63 / 41	0.56 / 14
¾ / 20	3.75 / 95	4.82 / 122	6.44 / 164	1.88 / 48	0.81 / 21
1 / 25	4.88 / 124	5.66 / 144	7.31 / 186	2.44 / 62	1.19 / 30
1½ / 40	6.00 / 152	5.92 / 150	7.31 / 186	3.00 / 76	1.50 / 38
2 (1) / 50	8.50 / 216	6.45 / 164	11.91 / 302	4.25 / 108	2.00 / 51
3 (1) / 80	11.12 / 282	9.13 / 232	19.88 / 505	5.63 / 143	3.00 / 76



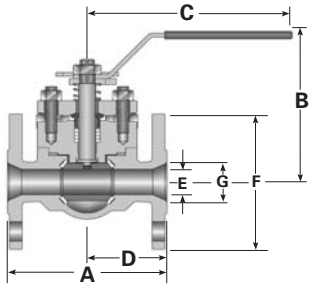
(1) Dimensions are for class 150/300. For other pressure classes contact the factory.

TE-150/300/600 TOP-ENTRY

SIZE	CLASS 150/300 FLANGED REGULAR PORT									
in / mm	A		B	C	D		E	F	G	
	150	300	150/300	150/300	150	300	150/300	150/300	150	300
½ / 15	4.25 / 108	5.50 / 140	3.47 / 88	4.62 / 117	2.12 / 54	2.75 / 70	0.44 / 11	0.50 / 13	3.50 / 89	3.75 / 95
¾ / 20	4.62 / 117	6.00 / 152	3.60 / 91	4.62 / 117	2.31 / 59	3.00 / 76	0.56 / 14	0.75 / 19	3.88 / 99	4.62 / 117
1 / 25	5.00 / 127	6.50 / 165	4.82 / 122	6.44 / 164	2.50 / 64	3.25 / 83	0.81 / 21	1.00 / 25	4.25 / 108	4.88 / 124
1½ / 40	6.50 / 165	7.50 / 191	5.66 / 144	7.55 / 192	3.25 / 83	3.75 / 95	1.19 / 30	1.50 / 38	5.00 / 127	6.12 / 155
2 / 50	7.00 / 178	8.50 / 216	5.92 / 150	7.55 / 192	3.50 / 89	4.25 / 108	1.50 / 38	2.00 / 51	6.00 / 152	6.50 / 165
3 / 80	8.00 / 203	11.12 / 282	6.45 / 164	11.91 / 303	4.00 / 102	5.56 / 141	2.00 / 51	3.00 / 76	7.50 / 191	8.25 / 210
4 / 100	9.00 / 229	12.00 / 305	9.13 / 232	19.88 / 505	4.50 / 114	6.00 / 152	3.00 / 76	4.00 / 102	9.00 / 229	10.00 / 254
6 / 150	15.50 / 394	15.88 / 403	11.95 / 304	25.88 / 657	7.75 / 197	7.94 / 202	4.00 / 102	6.00 / 152	11.00 / 279	12.50 / 318

SIZE	CLASS 150/300 FLANGED FULL PORT								
in / mm	A		B	C	D		E	G	
	150	300	150/300	150/300	150	300	150/300	150	300
3 (2) / 80	–	11.12 / 282	9.13 / 232	19.88 / 505	–	5.56 / 141	3.00 / 76	–	8.25 / 210
4 / 100	17.00 / 432	18.00 / 457	11.95 / 304	25.88 / 657	8.50 / 216	9.00 / 229	4.00 / 102	9.00 / 229	10.00 / 254
6 / 150	21.50 / 546	22.00 / 559	13.75 / 349	–	10.75 / 273	11.00 / 279	6.00 / 152	11.00 / 279	12.50 / 318

SIZE	CLASS 600 FLANGED FULL PORT					
in / mm	A	B	C	D	E	G
½ / 15	6.50 / 165	3.60 / 91	4.62 / 117	3.25 / 83	0.50 / 13	3.75 / 95
¾ / 20	7.50 / 191	4.82 / 122	6.44 / 164	3.75 / 95	0.75 / 19	4.62 / 117
1 / 25	8.50 / 216	5.66 / 144	7.55 / 192	4.25 / 108	1.00 / 25	4.88 / 124
1½ / 40	9.50 / 241	5.92 / 150	7.55 / 192	4.75 / 121	1.50 / 38	6.12 / 155
2 (3) / 50	11.50 / 292	6.45 / 164	11.91 / 303	5.75 / 146	2.00 / 51	6.50 / 165

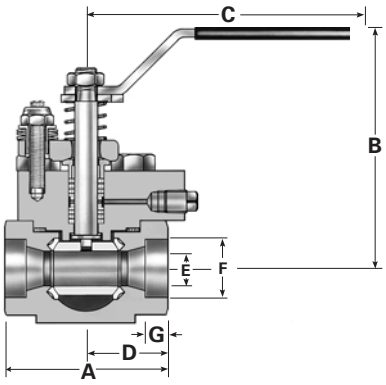


(2) Body is with welded on flanges and threaded holes.
(3) Intermediate class 470 (for CF8M body material).

TE-600 TOP-ENTRY LIVE-LOADED WITH DOUBLE PACKING AND LEAK-OFF

SIZE	THREADED, SOCKETWELD REGULAR PORT						
in / mm	A	B	C	D	E	F	G
½ / 15	2.62 / 67	4.31 / 110	4.62 / 117	1.31 / 33	0.44 / 11	0.86 / 22	0.38 / 10
¾ / 20	3.25 / 83	4.44 / 113	4.62 / 117	1.63 / 41	0.56 / 14	1.07 / 27	0.50 / 13
1 / 25	3.75 / 95	5.60 / 142	6.44 / 164	1.88 / 48	0.81 / 21	1.33 / 34	0.50 / 13
1½ / 40	4.88 / 124	6.40 / 163	7.55 / 192	2.44 / 62	1.19 / 30	1.92 / 49	0.50 / 13
2 / 50	6.00 / 152	6.59 / 167	7.55 / 192	3.00 / 76	1.50 / 38	2.41 / 61	0.63 / 16
3 / 80	7.25 / 184	7.83 / 199	11.91 / 303	3.62 / 92	2.00 / 51	3.54 / 90	0.63 / 16
4 / 100	12.00 / 305	10.70 / 272	19.88 / 505	6.00 / 152	3.00 / 76	4.55 / 115	0.75 / 19

SIZE	THREADED, SOCKETWELD FULL PORT						
in / mm	A	B	C	D	E	F	G
⅜ / 10	2.62 / 67	4.31 / 110	4.62 / 117	1.31 / 33	0.44 / 11	0.69 / 18	0.38 / 10
½ / 15	3.25 / 83	4.44 / 113	4.62 / 117	1.63 / 41	0.56 / 14	0.86 / 22	0.38 / 10
¾ / 20	3.75 / 95	5.60 / 142	6.44 / 164	1.88 / 48	0.81 / 21	1.07 / 27	0.50 / 13
1 / 25	4.88 / 124	6.40 / 163	7.55 / 192	2.44 / 62	1.19 / 30	1.33 / 34	0.50 / 13
1½ / 40	6.00 / 152	6.59 / 167	7.55 / 192	3.00 / 76	1.50 / 38	1.92 / 49	0.50 / 13
2 / 50	7.25 / 184	7.83 / 199	11.91 / 303	3.62 / 92	2.00 / 51	2.41 / 61	0.63 / 16
3 / 80	11.12 / 282	10.70 / 272	19.88 / 505	5.56 / 141	3.00 / 76	3.54 / 90	0.63 / 16



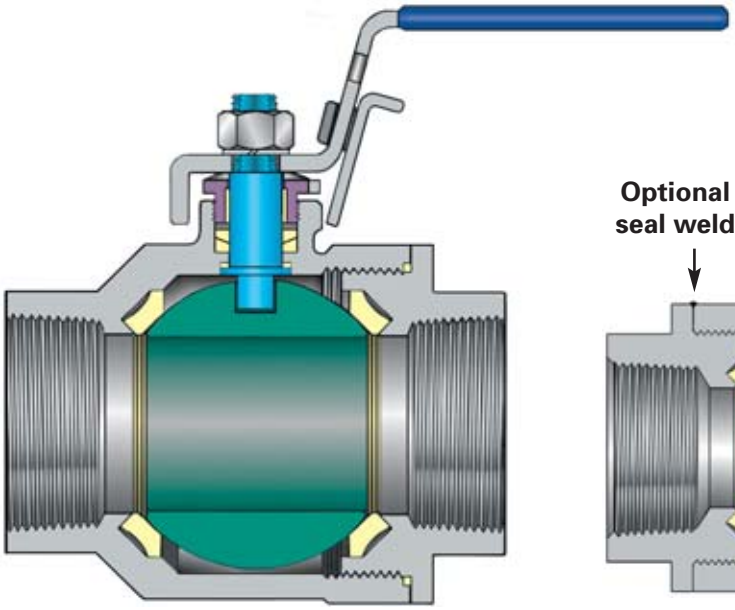
Please note this a condensed catalog. For a complete version, please contact Velan directly.

END-ENTRY BALL VALVES

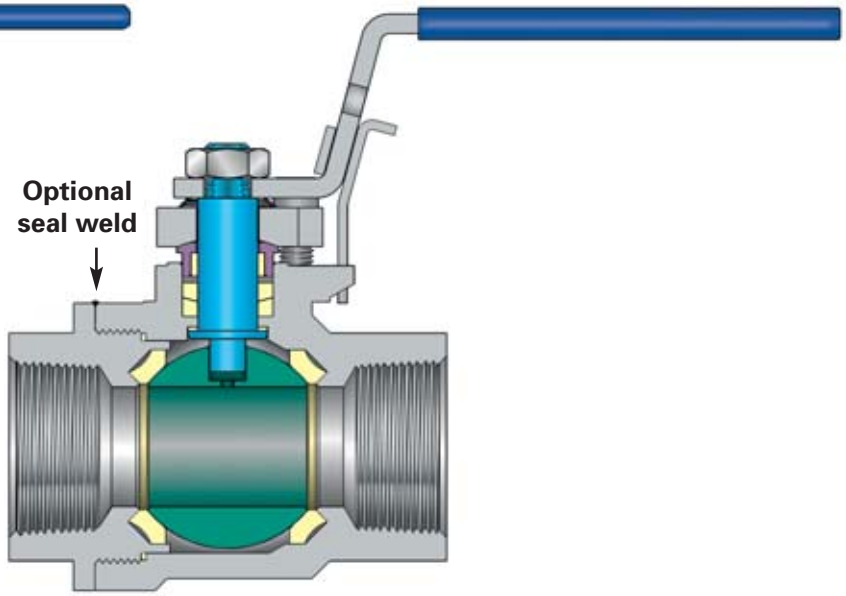
EE-1000 CF8M, FULL PORT, RPTFE OR PTFE SEATS, ¼–2" (8–50 mm)

EP-2000 REGULAR PORT, WCB AND CF8M, RPTFE SEATS, ½–2" (15–50 mm)

LOW FUGITIVE EMISSIONS WITH FLANGED GLAND – EP-2000



EE-1000



EP-2000

DESIGN FEATURES:

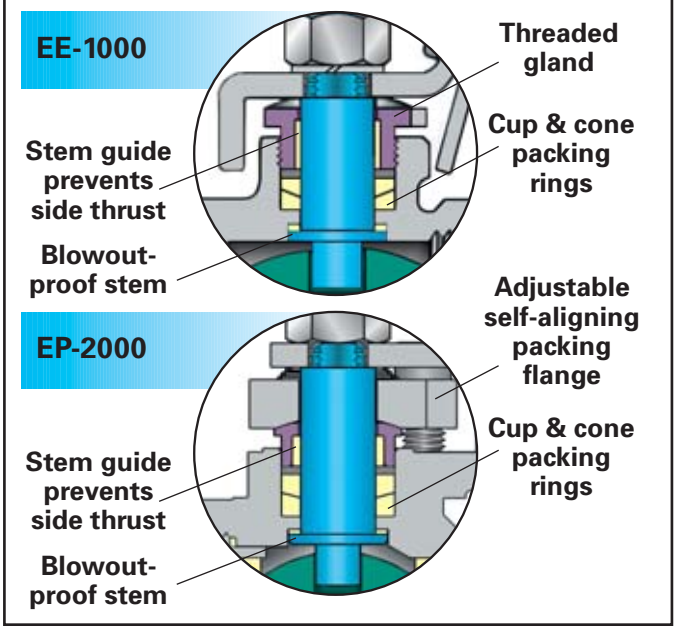
- Exclusive ***Memoryseal™*** seats compensate automatically for wear and fluctuations in pressure and temperature.
- Multiple solid cup and cone type PTFE stem seal or graphite packing.
- Adjustable packing flange – EP-2000.
- Adjustable threaded gland – EE-1000.
- Stem guides reduce side thrust.
- Long cycle life.
- Low, uniform torques.
- Blowout-proof stem.
- Live-loaded thrust washer prevents galling and provides a secondary stem seal.
- Fully enclosed body seal plus metal-to-metal seal for body and body end. Body seal protects threads from medium on EP-2000.
- Rugged two-piece design with wall thickness to B16.34 (EP-2000).
- Stainless handle with safety clip. Oval handwheel also available.
- Provision for seal welding on EP-2000.
- **Fire tested** in accordance with API 607, BS 6755 and API 6FA. See page 9 for details.

APPLICATIONS:

The EE-1000 is a full port all stainless steel valve for corrosive service.

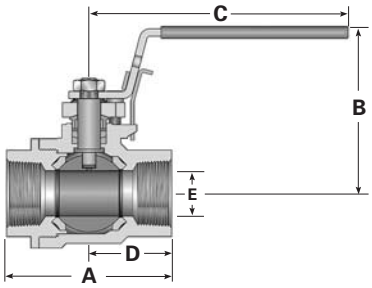
The EP-2000 is a regular port WCB or CF8M heavy duty valve for oilfields, chemical and general use.

STEM SEAL DESIGNS



Please note this a condensed catalog. For a complete version, please contact Velan directly.

EE-1000 & EP-2000 END-ENTRY



DIMENSIONS & WEIGHTS

SIZE in mm	EP-2000 REGULAR PORT				
	A	B	C	D	E
½ 15	2.50 64	3.33 85	5.47 139	1.26 32	0.50 13
¾ 20	2.93 74	3.38 86	5.47 139	1.49 38	0.63 16
1 25	3.46 88	4.07 103	5.92 150	1.69 43	0.81 21
1¼ 32	4.20 107	4.26 108	5.92 150	2.12 54	1.01 26
1½ 40	4.55 116	4.87 124	7.82 199	2.28 58	1.25 32
2 50	5.14 131	5.06 129	7.82 199	2.57 65	1.50 38

SIZE in mm	EE-1000 FULL PORT				
	A	B	C	D	E
¼ 8	2.06 52	2.25 57	4.81 122	1.03 26	0.36 9
⅜ 10	2.06 52	2.25 57	4.81 122	1.03 26	0.36 9
½ 15	2.50 64	2.60 66	5.00 127	1.27 32	0.50 13
¾ 20	3.11 79	2.97 75	5.19 132	1.56 40	0.81 21
1 25	3.74 95	3.16 80	6.57 167	1.87 48	1.02 26
1¼ 32	4.24 108	4.16 106	7.85 199	2.12 54	1.25 32
1½ 40	4.75 121	4.34 110	7.85 199	2.37 60	1.50 38
2 50	5.74 146	4.76 121	8.19 208	2.87 73	2.00 51

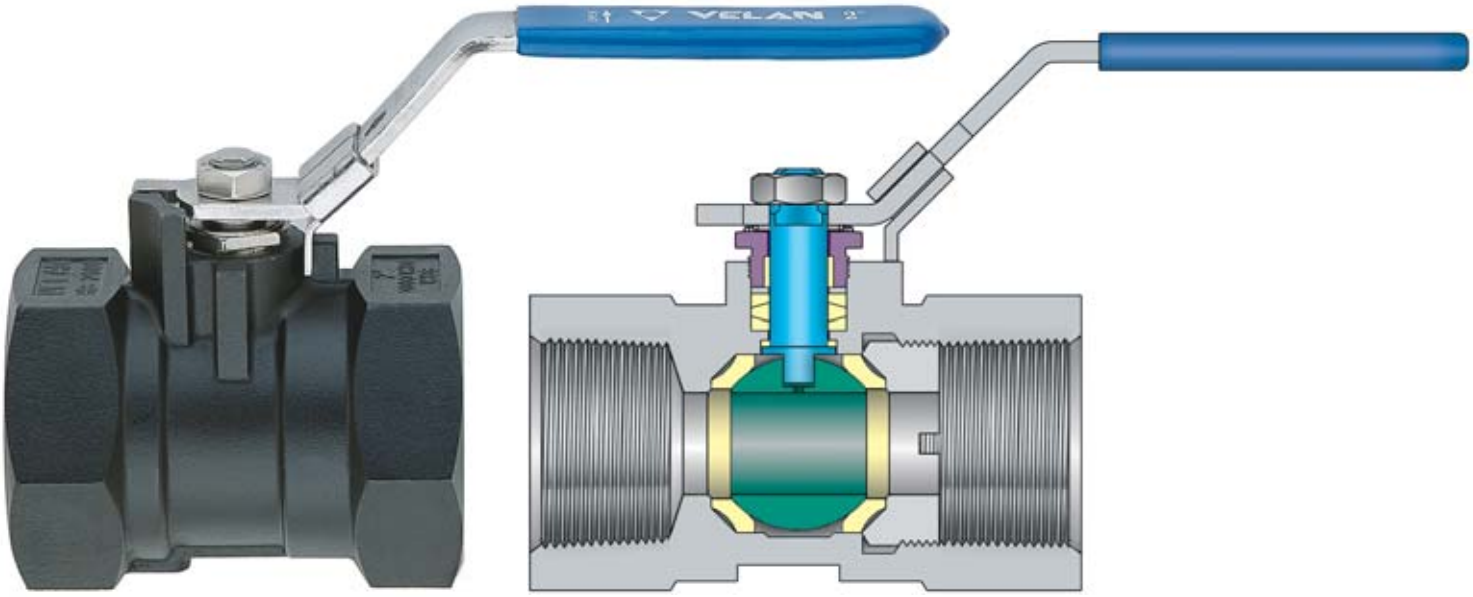
1" EE-1000

1½" EP-2000 with optional seal weld

Please note this a condensed catalog. For a complete version, please contact Velan directly.

HB-2000 ONE-PIECE (REDUCED PORT) BALL VALVES

¼–2" (8–50 mm) THREADED ENDS, RPTFE SEATS



DESIGN FEATURES:

- Exclusive ***Memoryseal™*** seats compensate automatically for wear and fluctuations in pressure and temperature.
- Multiple solid cup and cone type PTFE stem seal or graphite packing.
- Adjustable self locking threaded gland ½ – 2"(15–50 mm).
- Stem guide in gland bushing prevents side thrust.
- Long cycle life.
- Low, uniform torques.
- Blowout-proof stem.
- Thrust washer prevents galling, reduces torque and provides secondary stem seal.
- One-Piece heavy wall body for high structural strength to ASME B16.34.
- Full size packing chamber.
- Protective metal washer for packing rings.
- Stainless steel handle with safety clip. Oval handwheel also available.

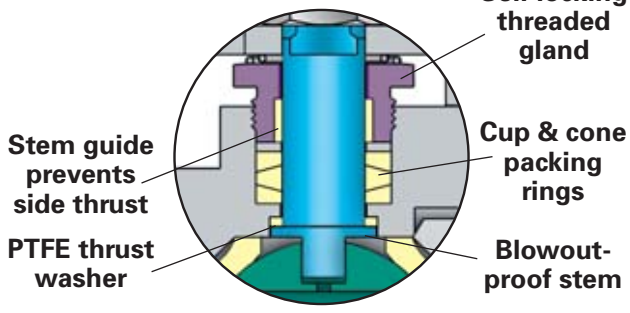
APPLICATIONS:

A rugged low-cost ball valve for many industrial, commercial and original equipment applications.

For water, oil, gas and saturated steam up to 150 psig (10.3 bar).

- **Fire tested** in accordance with API 607, BS 6755 and API 6FA. See page 9 for details.

STEM SEAL DESIGNS



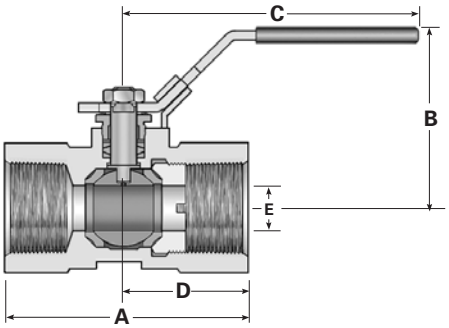
Please note this a condensed catalog. For a complete version, please contact Velan directly.

HB-2000 ONE-PIECE

HB-2000 PRESSURE–TEMPERATURE RATING

MEDIUM	SERVICE CONDITIONS
WOG	2000 psig @ 100°F (138 bar @ 38°C)
	100 psig @ 450°F (7 bar @ 232°C)

HB-2000 with oval handle.



DIMENSIONS & WEIGHTS

SIZE in mm	HB-2000 A	B	C	D	E
¼ 8	1.58 40	1.24 32	2.67 68	0.83 21	0.23 6
⅜ 10	1.75 44	1.33 34	3.24 82	0.90 23	0.33 8
½ 15	2.43 62	1.98 50	3.83 97	1.30 33	0.36 9
¾ 20	2.75 70	2.28 58	4.00 101	1.43 36	0.50 13
1 25	3.38 86	2.53 64	4.03 102	1.73 44	0.63 16
1¼ 32	3.69 94	3.29 84	6.12 155	1.94 49	0.75 19
1½ 40	4.00 102	3.39 86	6.12 155	2.09 53	0.99 25
2 50	4.50 114	4.13 105	7.06 179	2.27 58	1.21 30

Please note this a condensed catalog. For a complete version, please contact Velan directly.

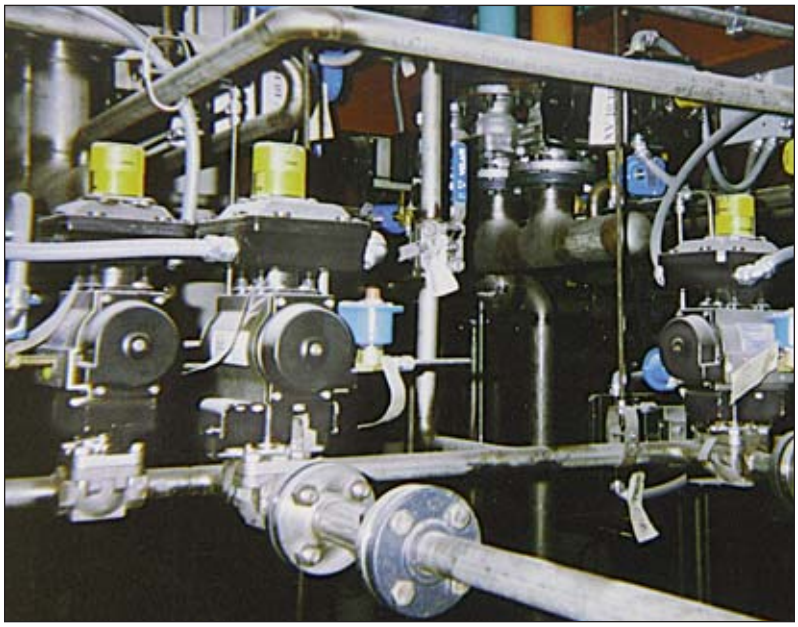
VELAN BALL VALVES IN-SERVICE

Velan valves have a long history of proving themselves in many of the industrial world's toughest applications. Velan offers one of the most comprehensive lines of industrial valves available from any manufacturer.

A commitment to ongoing design innovations and the latest in manufacturing technology allow Velan to offer a wide range of engineered solutions at an exceptional value. There is no substitute for experience and proven performance.

Please note this a condensed catalog. For a complete version, please contact Velan directly.

VELAN BALL VALVES IN-SERVICE



Photos on page 26: *Split-Body ball valves installed in a chemical plant in Ohio.*

Photos on this page

Top right: *Top-Entry ball valve installation.*

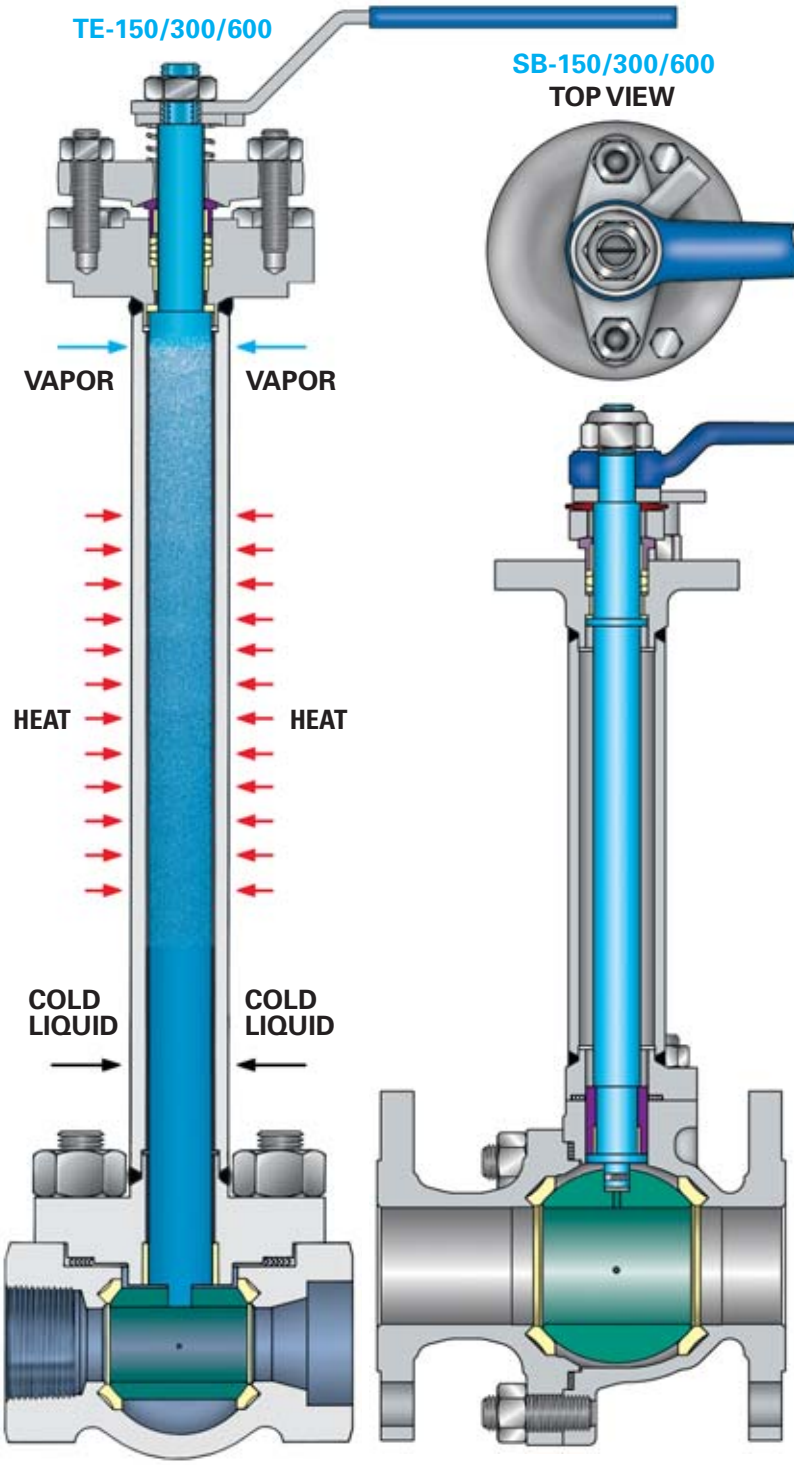
Top left: *Split-Body ball valves installed in a waste water treatment plant in Canada.*

Bottom left: *20" (500 mm) Split-Body bypass ball valve installed in James Bay.*

Bottom right: *Automated Split-Body ball valve on Hydrocarbon Service at a Petro Canada Refinery in Montreal. The valve has been cycling every hour 24/7.*

Please note this a condensed catalog. For a complete version, please contact Velan directly.

VELAN SPECIAL SERVICES



CRYOGENIC SERVICE

Valves to be used in cryogenic service have extended stems located in a sufficiently long tube to provide an insulating gas column above the cold fluid to prevent shrinkage of the stem packing.

NOTE: Cryogenic service valves are to be equipped with special seat designs.

The extension also allows for packing adjustments and maintenance when valves are installed in cold box service.

A ⅛" (3 mm) vent hole is provided in balls for cryogenic ball valves. Standard material for cryogenic service is austenitic stainless steel for all parts and bolting, offering excellent impact strength, minimizing heat loss and protecting against corrosion.

Extensions are usually specified by customers. Velan standard lengths for extensions are 12" (300 mm) for ½–2" (15–50 mm) valves and 14–18" (350–450 mm) for 2½–12" (65–300 mm) valves.

When welded, Inconel electrodes are used for all austenitic stainless steel valves.

TESTING:

Valves can be qualification tested at cryogenic temperatures with nitrogen or helium gas.

SPECIAL CLEANING:

All cryogenic valves are thoroughly degreased, cleaned, and pipe ends sealed to prevent contamination.

LIVE-LOADED BODY BOLTING (OPTIONAL):

For applications where rapid temperature fluctuations *(example: LNG loading platform)* can cause joint leakage, body-bonnet bolting is live-loaded with Belleville spring washers.

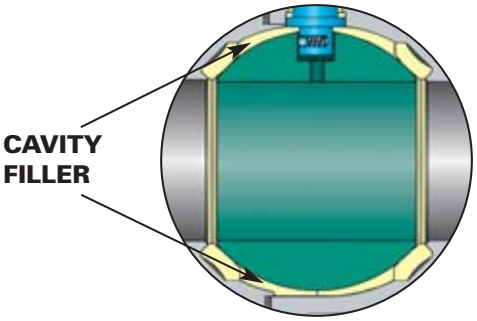
CRYOGENIC GASES

TYPE	BOILING POINT °C	BOILING POINT °F	LIQUID DENSITY (lb/ft³)	TYPE	BOILING POINT °C	BOILING POINT °F	LIQUID DENSITY (lb/ft³)
Natural Gas, LNG	-168	-270	26.0	Air	-194.40	-318	57.87
Methane, CH_4	-161.5	-258	26.2	Nitrogen, N_2	-195.80	-320	50.45
Oxygen, O_2	-182.9	-296	71.2	Hydrogen, H_2	-252.70	-423	4.43
Argon, Ar	-185.9	-303	87.4	Helium, He	-268.90	-452	7.82
Carbon Dioxide, CO_2	-78.5	-109	50.6	Absolute zero	-273.16	-460	–

Please note this a condensed catalog. For a complete version, please contact Velan directly.

VELAN SPECIAL SERVICES

CAVITY FILLERS



PTFE cavity fillers are used to fill the void in the valve cavity between the body, ball and seats in SB-150 and SB-300 ball valves 2–8" (50–200 mm) regular port, ½–6" (15–150 mm) full port).

Cavity fillers can also be supplied in our UB-150/300 design in sizes ½–8"(15–200 mm).

These PTFE sleeves reduce the chances of residue particles contaminating multiple use lines. They are also used in slurry services and processes which could solidify if left in a closed valve body.

Cavity fillers are an option identified by using the letter "F" in the last position of the figure number (see page 41).
Example: F10-01413–SSTF

SOUR GAS SERVICE

All Velan ***Memoryseal™*** valves can meet the material requirements of NACE when required.

For material selection and figure number designation please contact the factory.

BUTADIENE SERVICE

TFM 1600 is recommended for seat material.

The molecular structure of this enhanced PTFE, which prevents a "popcorning" effect normally associated with standard PTFE material in this service, and Velan's flexible ***Memoryseal™*** seat design, which compensates for wear and high torque, are ideally suited for butadiene service.

The figure number designation for TFM 1600 seat material is: "E"
Example: F10-01413–SSEA

NUCLEAR SERVICE

Velan holds ASME N Certificate of authorization to manufacture nuclear valves and components in Classes I, II and III in its U.S. and Canadian plants. Strict quality control in all facets of procurement of material and production assures conformance to all ASME requirements for nuclear service.

For further information on valve selection please contact the factory.

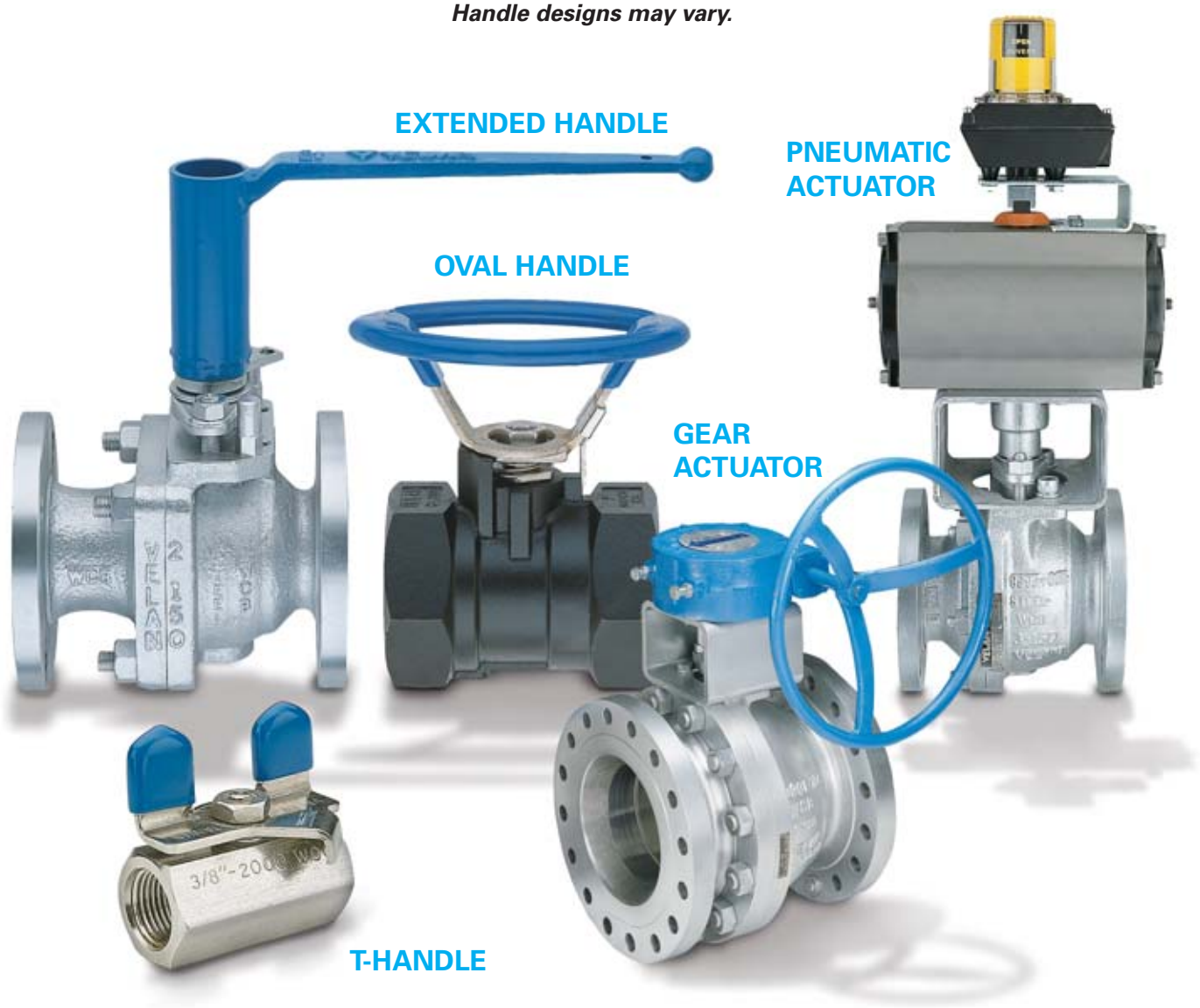
HYDROGEN PEROXIDE SERVICE

Valves are supplied in SS 316 to resist attack by hydrogen peroxide. Special passivation is available, if requested. All balls must be drilled to relieve trapped hydrogen peroxide which may build up pressure in the valve cavity. Valves must be internally cleaned and degreased similar to oxygen or chlorine service.

Please note this a condensed catalog. For a complete version, please contact Velan directly.

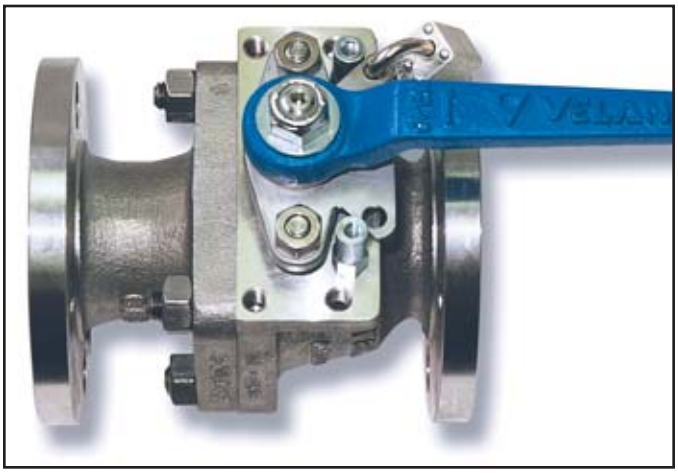
SPECIAL HANDLES & ACTUATORS

Handle designs may vary.



LOCKING DEVICES

Standard on 2–8" (50–200 mm) SB-150/300/600



Standard on ½–1½" (15–40 mm) SB-150/300

Please note this a condensed catalog. For a complete version, please contact Velan directly.

AUTOMATED VALVES

Velan ball valves are available in a variety of automation packages that include pneumatic, electric and hydraulic. Automation is done by either Velan at its own facilities located around the world or by authorized automation centers. In either case automation is done in accordance with strict guidelines of quality assurance, engineering standards and performance.

Velan automated ball valves have been supplied to the following:

- OIL REFINING
- PETROCHEMICAL
- POWER
- PULP & PAPER
- CHEMICAL
- PHARMACEUTICALS
- OIL & GAS

Part of a shipment for 260 Velan automated ball valves being shipped to a large chemical company.

Velan split-body automated ball valves (sizes ½–4" (15–100 mm) installed in a major chemical plant, in Ohio).

The flexibility of Velan's automation program allows for the best actuation package and accessories to meet the customers needs, regardless of the mix between performance and commercial requirements.

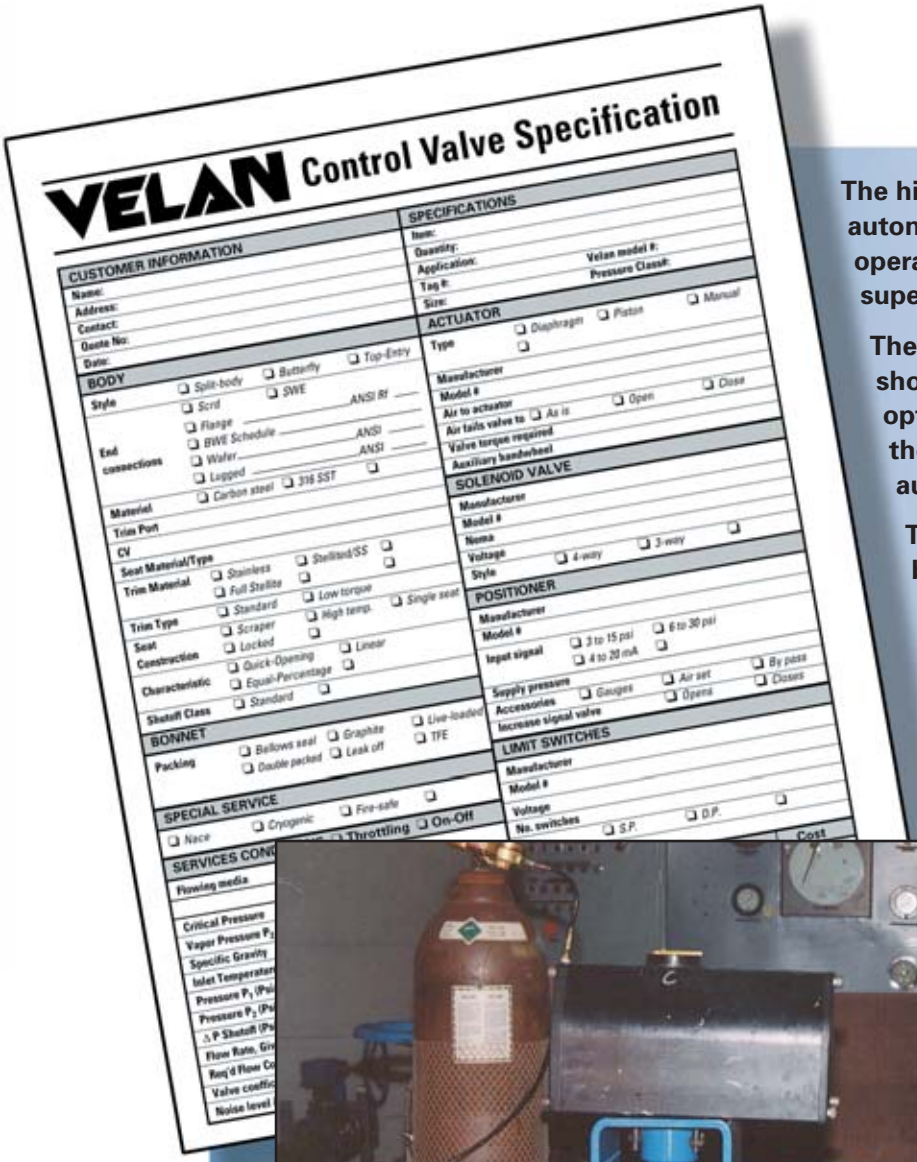
Velan maintains *"Specification for Valve Automation"* and *"Quarter Turn Actuation Standards"* documents. Only those automation centers that adhere to these standards and are approved by Velan audits earn the status of *"Authorized Velan Automation Center"*.

This program assures our customers that Velan ball valves are automated without compromise in performance while still maintaining the flexibility in choice of actuators and accessories, regardless of whether the actuation is done at Velan or at an Authorized Automation Center.

All automated ball valves from Velan or Authorized Automation Centers carry a discrete serial number complete with data sheet on permanent file. This permanent record contains the source of supply and data on all components such as actuator, solenoid valves, limit switches and positioners. Also, all the test data such as operational test, seat leak test, etc. are recorded as well.

Please note this a condensed catalog. For a complete version, please contact Velan directly.

E-20 PACKING DESIGN
FOR HIGH CYCLE LIFE, AUTOMATION & CONTROL


VELAN Control Valve Specification

CUSTOMER INFORMATION
Name:
Address:
Contact:
Quote No:
Date:

SPECIFICATIONS
Item:
Quantity:
Application:
Tag #:
Size:
Velan model #:
Pressure Class#:

BODY
Style ❑ Split-body ❑ Butterfly ❑ Top-Entry ❑ Scred ❑ SWE ❑ Flange ANSI RF
End connections ❑ BWE Schedule ANSI ❑ Wafer ANSI ❑ Lugged ❑
Material ❑ Carbon steel ❑ 316 SST ❑
Trim Port
CV
Seat Material/Type
Trim Material ❑ Stainless ❑ Stellited/SS ❑ ❑ Full Stellite ❑
Trim Type ❑ Standard ❑ Low torque ❑ High temp. ❑ Single seat
Seat ❑ Scraper ❑
Construction ❑ Locked ❑
Characteristic ❑ Quick-Opening ❑ Linear ❑ Equal-Percentage ❑
Shutoff Class ❑ Standard ❑

BONNET
Packing ❑ Bellows seal ❑ Graphite ❑ Live-loaded ❑ Double packed ❑ Leak off ❑ TFE

SPECIAL SERVICE
❑ Nace ❑ Cryogenic ❑ Fire-safe ❑ Throttling ❑ On-Off

SERVICES CONDITIONS
Flowing media
Critical Pressure
Vapor Pressure P_v
Specific Gravity
Inlet Temperature
Pressure P_1 (Psi)
Pressure P_2 (Psi)
ΔP Shutoff (Psi)
Flow Rate, Gpm
Req'd Flow Coefficient
Valve configuration
Noise level

ACTUATOR
Type ❑ Diaphragm ❑ Piston ❑ Manual ❑
Manufacturer
Model #
Air to actuator ❑ As is ❑ Open ❑ Close
Air fails valve to
Valve torque required
Auxiliary handwheel

SOLENOID VALVE
Manufacturer
Model #
Nema
Voltage ❑ 4-way ❑ 3-way ❑
Style

POSITIONER
Manufacturer
Model #
Input signal ❑ 3 to 15 psi ❑ 6 to 30 psi ❑ 4 to 20 mA ❑
Supply pressure
Accessories ❑ Gauges ❑ Air set ❑ By pass
Increase signal valve ❑ Opens ❑ Closes

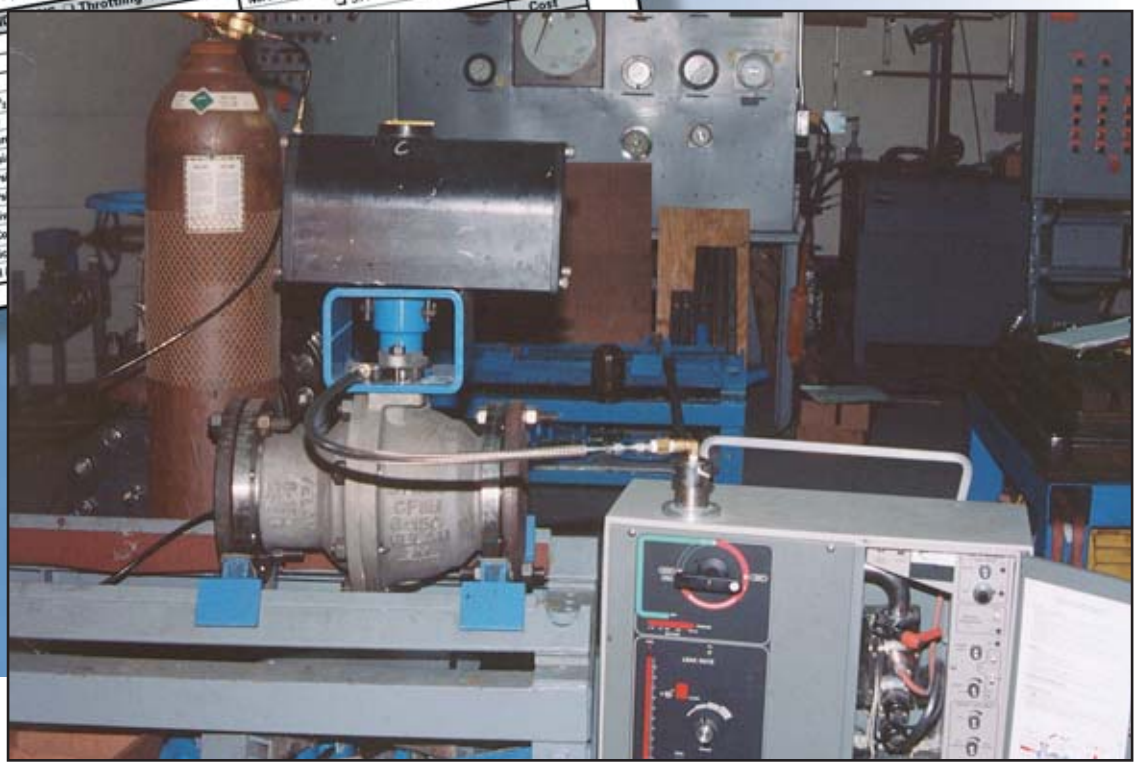
LIMIT SWITCHES
Manufacturer
Model #
Voltage
No. switches ❑ S.P. ❑ D.P. ❑

Cost

The higher cycle rates resulting from the automation of ball valves for either remote operations or throttling control requires superior stem packing designs.

The Velan E-20 stem packing designs shown on page 6 and 7 as well as the optional designs shown throughout the catalog are intended for automated valve service.

The integrity of these designs has been verified by our own laboratory testing, operating experience and in qualification tests by inspection agencies. This assures trouble free service in automated and throttling control and the best in stem packing integrity.



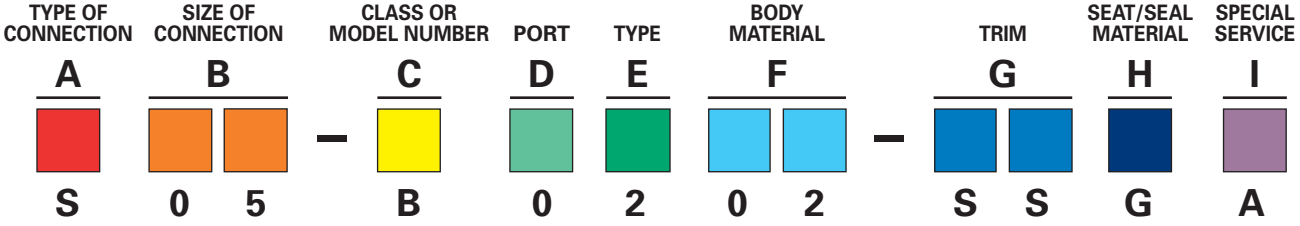
TA-LUFT qualification test on a 6" (150 mm) SB-150 ball valve.

Please note this a condensed catalog. For a complete version, please contact Velan directly.

HOW TO ORDER MEMORYSEAL™ BALL VALVES

GENERAL INFORMATION ON HOW TO ORDER:

• The figure numbers shown on this brochure are designed to cover essential features on Velan valves.
• Please use figure numbers to ensure prompt and accurate processing of your order.
• A detailed description must accompany any special orders.



Example: *1" (25 mm) threaded, HB-2000, standard port valve in carbon steel with stainless steel trim and glass-filled Teflon seat for standard service.*

A TYPE OF CONNECTION

B - Buttweld
C - Combination (socketweld/threaded)
D - DIN flanged
E - Welded stubs butt weld
F - Flanged B16.5 (B16.47 series A)
G - Small tongue and groove
K - Compact Flanges
P - Flanged B16.47 series B (API 605)
R - Flanged ring joint
S - Threaded
T - Studded drilled & tapped
U - Undrilled flanges
W - Socketweld
Z - Welded stubs socketweld

B SIZE OF CONNECTION

Customers have the choice of specifying valve size as part of the valve figure number (**B**) using the numbers below, or indicating valve size separately.

EXAMPLES:
S**05**-B0202-SSGA (valve size is part of figure number)
1" (25 mm) S-B0202-SSGA (valve size is shown separately)

01 - ¼" (8 mm)	**07** - 1½" (40 mm)	**14** - 6" (150 mm)	**21** - 18" (450 mm)
02 - ⅜" (10 mm)	**08** - 2" (50 mm)	**15** - 8" (200 mm)	**22** - 20" (500 mm)
03 - ½" (15 mm)	**09** - 2½" (65 mm)	**16** - 10" (250 mm)	**23** - 22" (550 mm)
04 - ¾" (20 mm)	**10** - 3" (80 mm)	**18** - 12" (300 mm)	**24** - 24" (600 mm)
05 - 1" (25 mm)	**12** - 4" (100 mm)	**19** - 14" (350 mm)	
06 - 1¼" (32 mm)	**13** - 5" (125 mm)	**20** - 16" (400 mm)	

C MODEL NUMBER / CLASS

For threaded or socketweld use model number:

B - HB-2000 **C** - EE-1000 **G** - TE-600 **P** - EP-2000

For all flanged and for buttweld 2½" and larger[1]:

0 - 150 **1** - 300 **2** - 600

D PORT

0 - Regular or reduced port
1 - Full port
2 - Special
5 - Full port, short pattern

E TYPE

1 - End-Entry (Two-Piece)
2 - Bar Stock (One-Piece)
3 - One-Piece/Unibody
4 - Split-Body
6 - Top-Entry
T - Top-Entry Non-Memoryseal seat[3]

F BODY MATERIAL

02 - A105, WCB	**15** - F347, CF8C	**27** - LF3/LC3	**39** - LC2
03 - F1, WC1	**18** - F321	**28** - F317, CG8M	**40** - Titanium Gr. 3
04 - F5, C5	**19** - Monel M35	**29** - F317L, CG3M	**41** - Titanium Gr. 7
05 - F11, WC6	**20** - Inconel[2]	**31** - LCC	**42** - Titanium Gr. 12
06 - F22, WC9	**21** - Hastelloy C	**32** - F51	**43** - F53
09 - F9, C12	**22** - Titanium Gr. 5	**34** - F91, C12A	**44** - Ferralium 255
11 - F304, CF8	**23** - Alloy 20	**35** - F44, 254 5MO	**45** - F55
12 - F304L, CF3	**24** - LF1	**36** - F321H	**46** - GS-C25N
13 - F316, CF8M	**25** - LCB	**37** - Incoloy 825	**47** - F347H
14 - F316L, CF3M	**26** - LF2	**38** - LC1	

G TRIM

CODE	BALL	STEM	CODE	BALL	STEM
AL	Aluminum	Aluminum	**NN**	316 Ni plated	Nitronic 50
AY	Alloy 20	Alloy 20	**NP**	316 Ni plated	316
BR	Brass CR plated	Brass	**SB**	304	304
CA	CA6NM	CA6NM	**SN**	316 Cr plated	Nitronic 50
CB	C5	C5	**SP**	316 Cr plated	316
CC	CS-CR plated	CS plated	**SS**	316	316
CN	CS-Ni plated	316	**SV**	317	317
CP	CS-CR plated	316	**TI**	Titanium Gr. 3	Titanium Gr. 3
CR	13% Chr.	630	**TN**	Stellite	Nitronic 50
CT	C12	C12	**TP**	Stellite	316
HC	Hastelloy C	Hastelloy C	**TR**	Stellite	630
IN	Inconel	Inconel	**TT**	Stellite	Stellite
MO	Monel	Monel			

H SEAT/SEAL MATERIAL

B - Bronze-filled PTFE
C - Graphite reinforced PTFE
D - Carbon filled nylon
E - TFM 1600
F - FEP
G - Glass reinforced PTFE
K - PFA
L - Delrin
P - Peek 30% glass[3]
Q - Metalized carbon graphite M110[3]
R - Metalized carbon graphite M444[3]
S - PPS
T - PTFE
U - UHMWPE
W - Devlon
Z - Tefzel

I SPECIAL SERVICE

A - Standard
B - Block & bleed
C - Chlorine
E - TE-600
F - Cavity filler
G - Oxygen
H - Cryogenic
I - NACE sour gas
J - Vacuum
K - Digester capping
M - Mining
N - Nuclear
Q - API 6D
R - Coker
T - Bonnet, double packing
U - Lethal
V - Bellows seal[4]
W - Seal joint
Z - Fire-tested to API 607 rev. 4

(1) Actual valve pressure temperature ratings depend on choice of materials.
(2) Must specify grade.
(3) For P, Q, and R seats use Type T. Ex: WXX-G1**T**13-SPRE
(4) For Top-Entry ball valves standard materials of bellows is Hastelloy C. If any other kind of bellows is required the material must be clearly specified on the order.

Please note this a condensed catalog. For a complete version, please contact Velan directly.