VTP-2000 three-piece high performance ball valves

Quick sheet

Three-piece, carbon and stainless steel

Regular port: NPS ¾–2 (DN 20–50), full port: NPS ½–2 (DN 15–50)
1500–2000 WOG, threaded or socket weld

3-piece design for simple, in-line maintenance

Design features

- Modified PTFE seats (standard) reduce cold flow, have 50% lower void content and less deformation under load. MPTFE provides a smoother surface, has excellent non-stick properties and improved flexibility.
- PEEK thrust washer prevents galling and protects against deformation for superior strength
- Dual-certified to API 641 and ISO 15848-1, 100 ppm low fugitive emissions.
- Blow-out proof stem with live-loaded three-way stem seal
- Totally encapsulated bolting
- ISO 5211 mounting pad simplifies actuation with standardized linkages
- Stainless steel handle with locking device (standard)
- 3-piece design for simple, in-line maintenance
- Weldable in-line without disassembly, see maintenance manual for instructions
- Bi-directional
- Superior performance for long, reliable service life at an economical cost
- Different end connections available including combination ends
- CE marking on NPS 1½ (DN 40) and larger
- Oval locking handle option

Applications

Velan's VTP-2000 3-piece ball valve is a high performance general use ball valve, ideal for a wide variety of services.

Standard materials

Part	Carbon steel		Stainless steel	
Body	WCB	LCC	CF8M	CD3MN
Body end cap	WCB	LCC	CF8M	CD3MN
Stem	SS 316			S31803
Ball	CF8M			S31803
Thrust washer	PEEK			
Seat	Modified PTFE			
Packing rings	Die-formed flexible graphite/PTFE			
Hex socket head cap screw	B7M	L7M	Gr. B8M Cl.1	S32550
Body seal	Die-formed flexible graphite or PTFE			
Locking device	SS 304			
Handle	SS 304			
Belleville washer	SS 304			
Spacer	SS 304			
Hex head cap screw	SS 304			
Washer	SS 304			
Packing nut	SS 304			
Packing washer	SS 316			

Standards

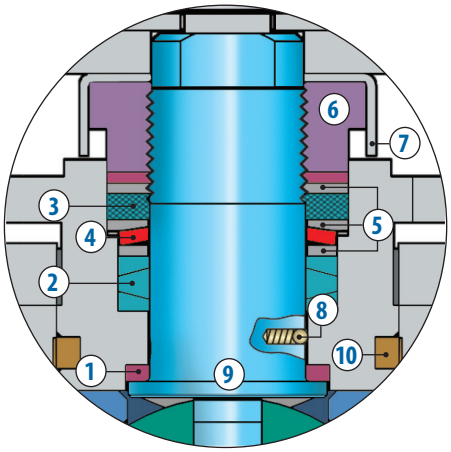
- API 608
- API 607 Rev. 5/ISO 10497 certified fire test
- Full compliance to ASME B16.34
- ISO 5211 mounting
- NACE[1] MRO103, MRO175/ISO-15156

(1) NACE is based on material selection. To ensure these valves meet NACE specifications, this requirement must be confirmed prior to placing the purchase order.

Live-loaded adjustable 3-way stem seal

Dual qualified to API 641 and ISO-15848-1 fugitive emission requirements

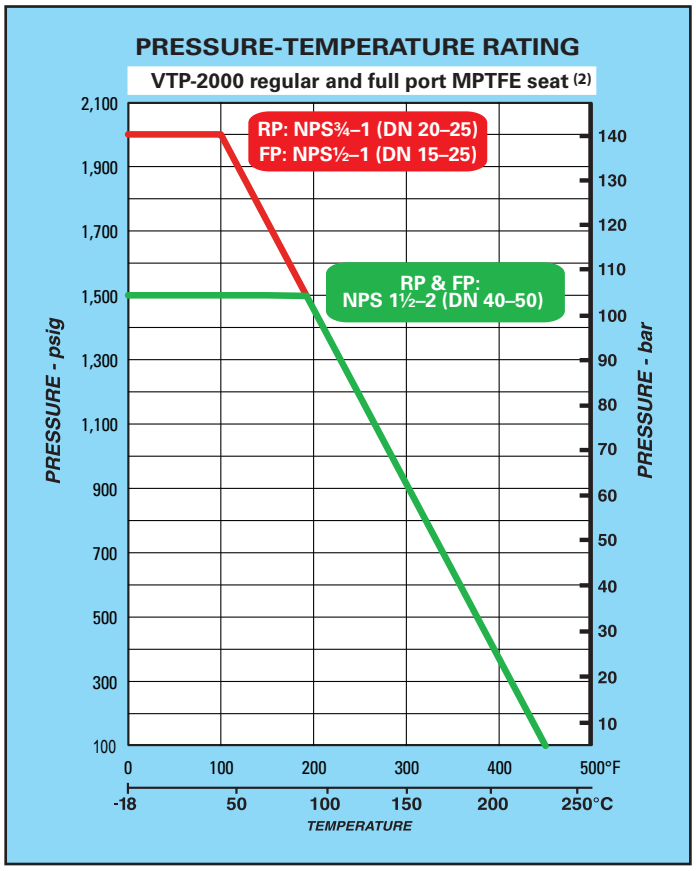
To achieve the required stem packing capability and performance within the limited space in these smaller valves, an impressive and unique 3-way sealing system has been developed.



1. **SEAL 1**: Pressurized PEEK thrust washer/stem seal prevents galling.
2. **SEAL 2**: PTFE packed valves are dual qualified to API 641 and ISO-15848-1. Packing rings made in cup and cone type PTFE.
3. **SEAL 3**: Fire safe packing ring made in die-formed flexible graphite.
4. Live-loaded spring washer creates a self-adjusting packing seal.
5. Three packing washers provide anti-extrusion of the PTFE and graphite packing for enhanced seal performance.
6. Adjustible packing nut.
7. Packing nut locking mechanism.
8. Anti-static design: Ball-to-stem spring device eliminates static electrical build up between stem, ball, and body.
9. Floating stem eliminates thrust washer wear and stem shoulder assures blowout-proof safety.

Body seal

10. Graphite body seal for fire safe performance certified to API 607 Rev. 5 /ISO 10497 (1)



Pressure-temperature rating table (2)

Size NPS / DN		psig °F / bar °C										
Regular port	Full port	(3)	50 10	100 38	150 65	192.5 89	200 93	250 121	300 149	350 176	400 204	450 232
¾ – 1 20–25	½ – 1 15–25	2000 138	2000 138	2000 138	1729 119	1498 103	1457 100	1186 82	914 63	643 44	371 26	100 7
1½ – 2 40–50		1500 103	1500 103	1500 103	1500 103	1498 103	1457 100	1186 82	914 63	643 44	371 26	100 7

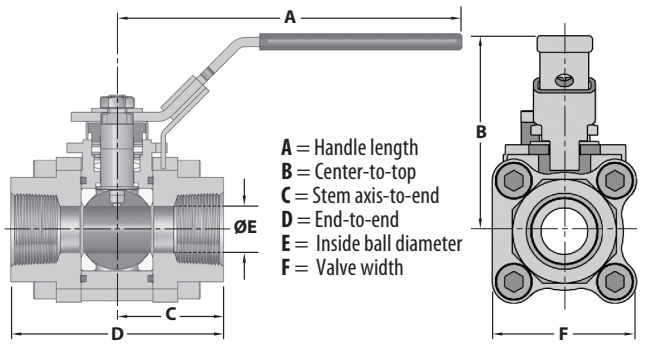
(2) Pressure-temperature shown is for WCB, LCC, or CF8M body material. For rating of other materials please contact Velan.

(3) The minimum temperature for WCB material is -20°F (-29°C), for LCC is -50°F (-46°C) and for CF8M is -70°F (-57°C).

During the valve selection, please take note that the valve can be used at the minimum cold temperatures indicated above, except for severe service applications where the media going through the valve is below -20°F (-29°C), and the ambient temperature is much warmer and humid. In such extreme applications ice will build up around the valve, especially around the packing area making the valve inoperable.

(1) PTFE body seal is also available for non-fire safe applications.

Dimensions, weights, and C_Vs

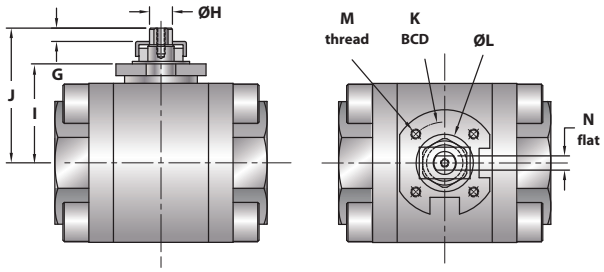


Size NPS DN	Regular port A	B	C	D	ØE	F	Weight lb/kg	C_V/Kv
¾ 20	5.18 132	3.01 76	1.49 38	2.97 75	0.62 15.7	2.17 55	2.7 1.2	15 13
1 25	5.97 152	3.56 90	1.84 47	3.68 93	0.81 20.6	2.4 61	4.2 1.9	42 36
1½ 40	7.94 202	4.62 117	2.26 57	4.52 115	1.25 31.8	3.43 87	9.9 4.5	125 106
2 50	7.94 202	4.85 123	2.55 65	5.1 130	1.5 38.1	3.82 97	12.9 5.9	125 106

Size NPS DN	Full port A	B	C	D	ØE	F	Weight lb/kg	C_V/Kv
½ 15	5.18 132	2.85 72	1.32 34	2.64 67	0.5 12.7	2 51	2.2 1	9 8
¾ 20	5.97 152	3.56 90	1.84 47	3.68 93	0.81 20.6	2.4 61	4.3 2	50 43
1 25	5.97 152	3.88 99	2.08 53	4.16 106	1 25.4	3.03 77	6.9 3.1	100 85
1½ 40	7.94 202	4.85 123	2.47 63	4.94 125	1.5 38.1	3.82 97	13.5 6.1	250 213
2 50	11.9 302	5.31 135	2.93 74	5.86 149	2 50.8	6.24 158	25.2 11.4	430 366

Automation

Dimensions, weights, and C_Vs



Size NPS DN	Regular port ISO mtg. flg.	G	ØH	I	J	K BCD	ØL	M thread	N flat
¾ 20	F03	0.22 5.6	0.394 10	1.28 32.5	1.83 46.5	1.417 36	0.983 25	M5	0.276 7
1 25	F04	0.42 10.7	0.551 14	1.50 38.1	2.35 59.7	1.654 42	1.18 30	M5	0.433 11
1½ 40	F05	0.42 10.7	0.551 14	2.16 54.9	3.06 77.7	1.969 50	1.377 35	M6	0.433 11
2 50	F05	0.42 10.7	0.551 14	2.38 60.5	3.28 83.3	1.969 50	1.377 35	M6	0.433 11

Size NPS DN	Full port ISO mtg. flg.	G	ØH	I	J	K BCD	ØL	M thread	N flat
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¾ 20	F04	0.42 10.7	0.551 14	1.50 38.1	2.35 59.7	1.654 42	1.18 30	M5	0.433 11.0
1 25	F04	0.42 10.7	0.551 14	1.82 46.2	2.67 67.8	1.654 42	1.18 30	M5	0.433 11.0
1½ 40	F05	0.42 10.7	0.551 14	2.38 60.5	3.28 83.3	1.969 50	1.377 35	M6	0.433 11.0
2 50	F07	0.67 17	0.866 22	3.18 80.8	4.48 113.8	2.756 70	2.164 55	M8	0.669 17.0

Note: Dimensions shown in inches and mm.
K_V is the metric equivalent of C_V. $K_V = C_V \times 0.864$

Standard actuation compliant to API 608

API 608 standard compliant configurations for **VTP-2000 three-piece ball valves** shown below are available with the following actuation and handle options (position "J" in the figure number). Other options are available in non-API 608 configurations.

Port	WOG	Size NPS	Size DN	Lever handle (W)	Slide[1]/ Oval handle (H)
Full	2000	½	15	• Lever handle	○ Oval handle
		¾	20	• Lever handle	○ Oval handle
		1	25	• Lever handle	○ Oval handle
		1 ½	40	• Lever handle	○ Oval handle
		2	50		• Slide handle [1]
Regular	2000	¾	20	• Lever handle	○ Oval handle
		1	25	• Lever handle	○ Oval handle
		1 ½	40	• Lever handle	○ Oval handle
		2	50	• Lever handle	○ Oval handle

• Stocking replenishment program ○ Available with factory lead times

(1) All slide handles convert to a T-handle by removing the screw holding the pipe while using the second hole to attach the pipe to the pipe holder.

How to order Velan VTP-2000 three-piece ball valves

Type of connection	Size of connection			Model number/ Class		Port	Type	Body			Trim		Seat	Standard compliance		Actuation
A	B			C		D	E	F			G		H	I		J
S	0	5	—	T		1	8	0	2	—	S	S	E	6	—	W

Example: NPS 1 (DN 25) threaded, VPT-2000, full port three-peice bolted valve in carbon steel body with stainless steel trim, and MPTFE seats, graphite packing, and NACE, exposed body bolting with lever handle.

A TYPE OF CONNECTION

B	Butt-weld	**W**	Socket weld
C	Combination (socket weld/threaded)	**Z**	Welded studs socket weld ends
S	Thread NPT		

B SIZE OF CONNECTION

Sizes shown in NPS (DN)

03 ½ (15) **04** ¾ (20) **05** 1 (25) **07** 1½ (40) **08** 2 (50)

C MODEL NUMBER / CLASS[1]

T VTP-2000

D PORT

0 Regular port **1** Full port

E TYPE

8 Three-piece valve (bolted)

F BODY MATERIAL

02 WCB **13** CF8M **31** LCC **32** CD3MN

Consult Velan for other materials.

G TRIM MATERIAL (ball/stem)

Code	Ball	Stem
SS	316	316

H SEAT MATERIAL

E MPTFE

I STANDARD COMPLIANCE

Standard configurations for three-piece (VTP-2000) ball valves are available in the following configuration options:	VTP-2000 6	VTP-2000 7
API 608[2]	✔	✔
API 641/ISO 15848-1, dual qualified 100 ppm Low-E[3]	✔	✔
API 607, Fire safe[4]		✔
NACE, exposed body bolting[5]	✔[6]	✔

For all other resilient-seated ball valves, please use the following options[7]

A	PTFE/graphite packing, not fire safe, no special requirements
C	Chlorine
G	Oxygen, with and without extended bonnet
Z	PTFE/graphite packing, fire-tested to API 607, no special requirements

J ACTUATION[2]

A	Air or hydraulic actuator	**G**	Gear actuator	**M**	Motor actuator
B	Bare stem	**H**	Oval or slide handle[8]	**W**	Lever

(1) Actual valve pressure temperature ratings depend on choice of materials, consult catalogue/data sheet for details.

(2) Not all actuation options are available in an API 608 compliant configuration (Refer to pages 3-4 for Standard actuation compliant to API 608). In the event the customer prefers a non-compliant actuation option, they should select A or Z (position "I" in figure number).

(3) Refer to fugitive emissions product update document (PU-API641) for qualified size/class range.

(4) Fire-tested to API 607 Rev 5 or later. Fire safe applicable to B16.34 ferritic and austenitic materials. E.g. position "F" body materials: 02, 13, and 31. Consult Velan for other materials.

(5) Velan valves for NACE service (as indicated by figure number and/or description) comply with the metallurgical requirements of the current NACE MR0103/ISO 17495 and NACE MR0175/ISO 15156 standards. This compliance is applicable to internal components in contact with the process fluid, as well as body (body/bonnet and body/body-end) bolting.

NOTE: Material selection is dependent on the actual environment and it is therefore the equipment end user's responsibility to ensure that the selected materials are suitable for the intended service. In this respect, we also refer to NACE MR0103/ISO 17495 for definitions of exposed bolting (bolting that is exposed directly to the sour environment or otherwise denied direct atmospheric exposure) and non-exposed bolting (bolting that is not exposed directly to the sour environment and is directly exposed to the atmosphere at all times). Please contact Velan for any questions regarding the application of our products for NACE service.

(6) CAUTION: Not fire-safe. Typically suitable for chemical applications with non-flammable fluids only where controlled material metallurgy of pressure retaining components and wetted parts in accordance with NACE MR0103/ISO 17495 or NACE MR0175/ISO 15156 standards is preferred.

(7) Consult Velan for ordering instructions.

(8) All slide handles convert to a T-handle by removing the screw holding the pipe while using the second hole to attach the pipe to the pipe holder.