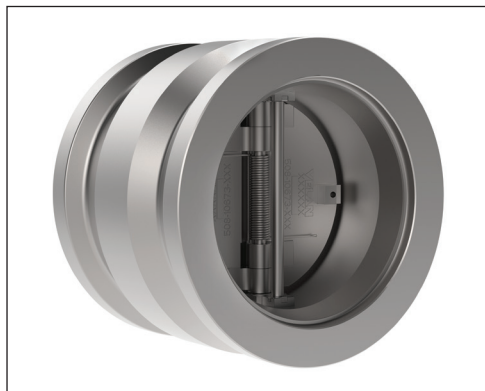


Retainerless design, cast carbon, stainless or alloy steel

NPS 2–24 (DN 50–600), ASME Classes 150–2500, hub end

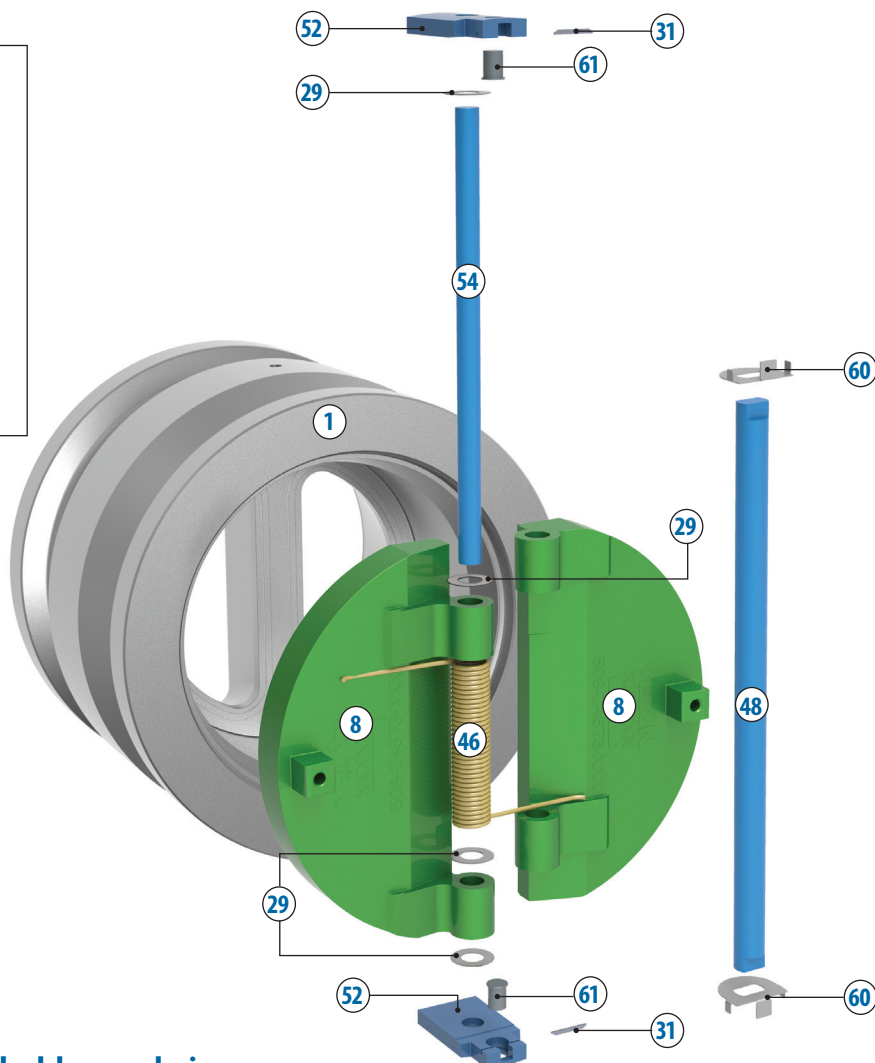


Part	
1	Body
8	Disc ⁽¹⁾
29	Bearing ⁽¹⁾⁽²⁾
31	Lock pin ⁽¹⁾⁽³⁾
46	Spring ⁽¹⁾
48	Stop pin ⁽¹⁾
52	Holder ⁽¹⁾
54	Hinge pin ⁽¹⁾
60	Lock washer ⁽¹⁾
61	Retainer pin ⁽¹⁾

(1) Spare parts available.

(2) Available on design for NPS 14 (DN 350) and up.

(3) Available on design for NPS 6 (DN 150) and up.



Typical materials for body, disc, holder, and pin

Description	Carbon steel		Alloy steel					Stainless steel			Bar stock	
	A216 WCB	A352 LCC	1¼ CR ½ Mo A217 WC6	2¼ CR-1 Mo A217 WC9	5 CR A217 C5	9 CR-1Mo A217 C12	13 CR A217 CA15	316 A351 CF8M	316L A351 CF3M	304 A351 CF8	13 CR A479 410	SS A 479 316
Composition %												
Carbon	0.25 ⁽¹⁾	0.25	0.20	0.18	0.20	0.20	0.15	0.08	0.03	0.08	0.15	0.08
Manganese	1.00	1.20	0.50–0.80	0.40–0.70	0.40–0.70	0.35–0.65	1.00	1.50	1.50	1.50	1.00	2.00
Phosphorus	0.04	0.04	0.04	0.40	0.04	0.04	0.04	0.04	0.04	0.04	0.040	0.045
Sulphur	0.045	0.045	0.045	0.045	0.045	0.045	0.040	0.040	0.040	0.040	0.030	0.030
Silicon	0.60	0.60	0.60	0.60	0.75	1.00	1.50	1.50	1.50	2.00	1.00	1.00
Nickel	0.50	0.50	0.50	0.50	0.50	0.50	1.00	9.00–12.00	9.00–13.00	8.00–11.00	—	10.00–14.00
Chromium	0.50	0.50	1.00–1.50	2.00–2.75	4.00–6.50	8.00–10.00	11.5–14.0	18.00–21.00	17.00–21.00	18.00–21.00	11.50–13.50	16.00–18.00
Molybdenum	0.20	0.20	0.45–0.65	0.90–1.20	0.45–0.65	0.90–1.20	0.50	2.0–3.00	2.0–3.00	0.50	—	2.00–3.00
Copper	0.30	0.30	0.50	—	0.50	0.50	—	—	—	—	—	—
Heat treatment	Anneal	Quench & temper	Temper	Temper	Temper	Temper		Solution anneal			Class 2	Sol. Ann.
Tensile psi min.	70,000	70,000–95,000	70,000–90,000	70,000–90,000	90,000–115,000	90,000–115,000	90,000–115,000	70,000	70,000	70,000	110,000	75,000
Yield psi min.	36,000	40,000	40,000	40,000	60,000	60,000	65,000	30,000	30,000	30,000	85,000	30,000
Elongation % min.	22	22	20	20	18	18	18	30	30	35	15	30
Reduction area % min.	35	35	35	35	35	35	30	—	—	—	45	40
Hardness HB	187 max.	200 max.	207 max.	207 max.	241 max.	241 max.	327–381	—	187 max.	—	269 max.	—

(1) Velan standard: 0.25 or less.

Design specifications

Item	Applicable specification
Design standard	API 594
Pressure-temperature rating	ASME B16.34
Face-to-face dimensions	To manufacturer's standard.
Valve testing	API 598
Materials	ASTM

API standard 594 trim

API 594 Eight Edition, September 2017; Clause 6.4.1, defines "trim" as:

- Body seating surface
- Plate or disc seating surfaces

Design & typical materials of construction

Typical trim demand:	Trim #1	Trim #5	Trim #8	Trim #10	Trim#12
Body seating surface	11-13Cr	CoCr alloy	CoCr alloy	18Cr-8Ni-Mo	CoCr alloy
Disc seating surfaces	11-13Cr	CoCr alloy	11-13Cr	18Cr-8Ni-Mo	18Cr-8Ni-Mo

Carbon steel body component

Figure number	Body	Body seat	Discs	Disc seat	Spring	Wetted parts	Trim #
02D10-3DB	A216 WCB	As body	A351 CF8M	Same as discs	Inconel X-750	316 SS	-
02D13-3DB	A216 WCB	Viton A	A351 CF8M	Same as discs	Inconel X-750	316 SS	-
02D17-3DB	A216 WCB	316 SS	A351 CF8M	Same as discs	Inconel X-750	316 SS	10
02D19-3DB	A216 WCB	CoCr alloy	A351 CF8M	Same as discs	Inconel X-750	316 SS	12
02D89-3DB	A216 WCB	CoCr alloy	A351 CF8M	CoCr alloy	Inconel X-750	316 SS	5
02E18-3EB	A216 WCB	410 SS	A217 CA15	Same as discs	Inconel X-750	410 SS	1
02E19-3EB	A216 WCB	CoCr alloy	A217 CA15	Same as discs	Inconel X-750	410 SS	8

Low-temperature carbon steel body component

Figure number	Body	Body seat	Discs	Disc seat	Spring	Wetted parts	Trim #
31D10-3DB	A352 LCC	Same as body	A351 CF8M	Same as discs	Inconel X-750	316 SS	-
31D19-3DB	A352 LCC	CoCr alloy	A351 CF8M	Same as discs	Inconel X-750	316 SS	12
31D89-3DB	A352 LCC	CoCr alloy	A351 CF8M	CoCr alloy	Inconel X-750	316 SS	5

Stainless steel body component

Figure number	Body	Body seat	Discs	Disc seat	Spring	Wetted parts	Trim #
13D10-3DB	A351 CF8M	Same as body	A351 CF8M	Same as discs	Inconel X-750	316 SS	10
13D13-3DB	A351 CF8M	Viton A	A351 CF8M	Same as discs	Inconel X-750	316 SS	-
13D19-3DB	A351 CF8M	CoCr alloy	A351 CF8M	Same as discs	Inconel X-750	316 SS	12
13D89-3DB	A351 CF8M	CoCr alloy	A351 CF8M	CoCr alloy	Inconel X-750	316 SS	5

(1) Alternative materials are available, please contact Velan.

(2) Wetted parts comprise the following components: holders, hinge pin, stop pin and retainer pins (part numbers 48, 52, 54, and 61).

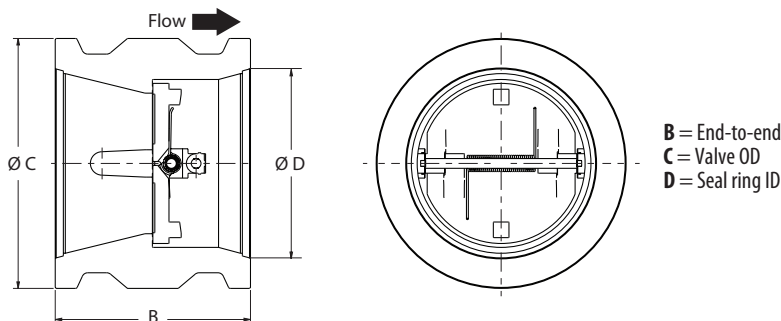
(3) The lock washer and lock pin (part numbers 60 and 31) remain as 316 SS, for standard materials of construction (above).

Note: CoCr alloy as used throughout this catalog refers to cobalt chrome hardfacing alloys as supplied by Kennametal Stellite™ and other approved manufacturers.

Design features

- Body surface with uninterrupted gasket surface .
- The reduced weight of the disc is a major factor in minimizing slamming and water hammer.
- The side hinges on the discs, eliminate the effect of gravity resulting in lower energy costs.
- Design maximizes the flow path area through the valve with a lower pressure drop. The internal retention method does not encroach on the gasket sealing surface
- Retainerless body with no holes through the body wall, so leakage to the outside is impossible, therefore emissions-free.
- Intrinsically fire safe with no drilling through the body wall.
- Quick acting springs provide a fast-acting response to flow reversal, while designed to minimize stress and maximize service life.
- Velan dual plate check valves easily meet and exceed test requirements of API 598 for metal-seated check valves.
- Shock bumper arrangement on the back of each disc reduces the shock force on the hinges; ensuring internal components have an extended cycle life with minimal wear under the most severe service conditions.
- Extended seat life due to the clearance between the disc hinge and hinge pin which eliminates any dragging effect.

Quick sheet: Proquip dual-plate check valve: hub end type PH



Hub end type PH

Size NPS/DN	Seal ring number	Dimensions - in/mm			Weight lbs/kg	Eye bolt hole size
		B	Ø C	Ø D seal ring ID		
2 50	13	4.5 114	3.63 92	1.5 38	9 4	—
2 50	14	4.5 114	3.63 92	1.61 41	9 4	—
2 50	20	4.5 114	3.63 92	2.06 52	9 4	—
3 80	20	4.5 114	5 127	2.06 52	20 9	¼
3 80	25	4.5 114	5 127	2.67 68	20 9	¼
3 80	27	4.5 114	5 127	3.06 78	20 9	¼
4 100	25	5 127	6 152	2.67 68	33 15	¼
4 100	31	5 127	6 152	3.25 83	24 11	¼
4 100	34	5 127	6 152	3.69 94	24 11	¼
4 100	40	5 127	6 152	4.06 103	24 11	¼
6 150	40	6.25 159	9.25 235	4.06 103	88 40	⅜
6 150	46	6.25 159	9.25 235	4.75 121	81 37	⅜
6 150	52	6.25 159	9.25 235	5.31 135	81 37	⅜
6 150	62	6.25 159	9.25 235	6.07 154	77 35	⅜
8 200	52	8.13 207	11.5 292	5.31 135	183 83	⅜
8 200	62	8.13 207	11.5 292	6.07 154	183 83	⅜
8 200	72	8.13 207	11.5 292	7.25 184	158 72	½
8 200	76	8.13 207	11.5 292	7.75 197	158 72	½
8 200	82	8.13 207	11.5 292	8.25 210	158 72	½
10 250	62	9.75 248	13.63 346	6.07 154	345 156	½
10 250	62X	9.75 248	13.63 346	6.07 154	345 156	½
10 250	72	9.75 248	13.63 346	7.25 184	308 140	½
10 250	82X	9.75 248	13.63 346	8.25 210	308 140	½
10 250	84	9.75 248	13.63 346	8.5 216	308 140	½
10 250	94	9.75 248	13.63 346	9.5 241	242 110	½
10 250	97	9.75 248	13.63 346	9.88 251	242 110	½
12 300	82	12.5 318	16 406	8.25 210	590 268	½
12 300	82X	12.5 318	16 406	8.25 210	590 268	½
12 300	102	12.5 318	16 406	10.25 260	502 228	½
12 300	112	12.5 318	16 406	11.25 286	389 176	½
12 300	120	12.5 318	16 406	12 305	389 176	½
14 350	106	14 356	18.5 470	10.75 273	890 404	¾
14 350	120	14 356	18.5 470	12 305	890 404	¾
14 350	130	14 356	18.5 470	13 330	890 404	¾
16 400	120	16.5 419	21 533	12 305	1240 563	¾
16 400	130	16.5 419	21 533	13 330	1240 563	¾
16 400	137	16.5 419	21 533	13.88 352	1240 563	¾
16 400	140	16.5 419	21 533	14 356	1120 508	¾
18 450	152	16.5 419	21 533	15.25 387	1240 563	1
18 450	162	16.5 419	21 533	16.25 413	1120 508	1
18 450	170	16.5 419	21 533	17 432	1120 508	1
20 500	162	18.25 464	26 660	16.25 413	2150 975	1
20 500	180	18.25 464	26 660	18 457	2150 975	1
24 600	180	22.75 578	29.5 749	18 457	3860 1751	1 ¼
24 600	220	22.75 578	29.5 749	22 559	3860 1751	1 ¼

Notes:

Extended body length (face-to-face) can be provided, upon request.

Customer must provide hub drawings with inquiries and orders.

Hubs, seal rings and clamp assemblies are not supplied with hub end type valves.

Weight is approximate.