



Non-Surge Check Valves







Description

The non-surge check valve shall function to prevent pump start-up surges and reverse flow by opening slowly after pump start and closing quickly when the pump stops. Valve opening speed shall be adjustable.

The OCV 94-1QC non-surge check valve is a simple on/off valve which effectively minimizes pump start up surges. It opens at an adjustable speed to allow forward flow and closes quickly and tightly to prevent reverse flow.

Features & Benefits

- Opens slowly on pump start
- Closes quickly on pump shut-down
- Visual indicator enables operator to determine valve position at a glance
- Can be maintained without removal from the line



Commercial Airports

Military Bases

Bulk Fuel Storage Tanks

Truck On/Off Loading



Certification & Compliance
NSF-ISO Quality System (9001)
ABS Type Approval
Joint Certification Program
UFGS-33 52 43.14 Guide Specifications
CE (Conformité Européenne) Compliance

Fuel Farms

Hydrant Systems

Mobile Refueling Equipment (Carts/Trucks/Tankers)

Refineries





△OCV Model 94-1QC



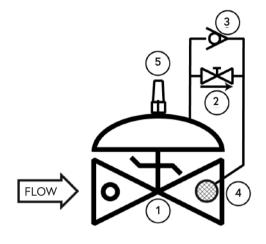
Operation

The OCV 94-1QC operates on the balance between the inlet pressure, acting under the seat of the valve, and the downstream pressure, acting on the diaphragm via the hydraulic lines. When the inlet pressure is the greater of the two forces, the valve opens at the rate set by the opening speed control (2). When the downstream pressure is greater, the valve is forced fully closed through the check valve (3) and the free-flow direction of the opening speed control.

Components

The OCV 94-1QC consists of the following components, arranged as shown on the schematic diagram:

- 1 Model 65 Basic Control Valve
- 2 Model 141-3 Flow Control Valve (opening speed control)
- 3 Model 141-1 Check Valve
- Model 123 Inline Strainer 4
- 5 Model 155 Visual Indicator



Pressure Table

End Connections	onnections Ductile Iron		STEEL LCB	STEEL WCB	Aluminum			
Standard (Maximum Working Pressures at 100°F)								
Screwed	640 psi	640 psi			285 psi			
Grooved	300 psi	300 psi			200 psi			
150# Flanged	250 psi	285 psi			285 psi			
300# Flanged	640 psi	740 psi						
Metric (Maximum Working Pressures at 37.78°C)								
Screwed	44.1 bar	44.1 bar	44.1 bar	44.1 bar	19.7 bar			
Grooved	20.7 bar	20.7 bar	20.7 bar	20.7 bar	13.8 bar			
150# Flanged	17.2 bar	19.0 bar	18.4 bar	19.7 bar	19.7 bar			
300# Flanged 44.1 bar		49.6 bar	48.0 bar	51.0 bar				

Based on ANSI flange ratings.

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Non-Surge Check Valves

Flow Chart

Standard Size Max. Flow (GPM)	1 1⁄4"	1 1⁄2"	2"	2 1⁄2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
7.5 FT/SEC (Military)	40	50	80	120	180	300	680	1200	1850	2650	3200	4150	5250	6550	9400
15 FT/SEC (Max. Recommended)	70	100	160	230	350	600	1350	2350	3700	5250	6350	8300	10500	13100	18800
20 FT/SEC (Max. Continuous)	100	130	210	300	470	800	1800	3150	4950	7000	8450	11100	14000	17400	25100
Metric Size Max. Flow (m³/hr)	DN32	DN40	DN50	DN65	DN80	DN100	DN150	DN200	DN250	DN300	DN350	DN400	DN450	DN500	DN600
2.29 M/SEC (Military)	9	11	18	27	41	68	154	272	420	602	726	942	1192	1487	2134
4.57 M/SEC (Max. Recommended)	16	23	36	52	79	136	306	533	840	1192	1441	1884	2384	2974	4268
6.10 M/SEC (Max. Continuous)	23	30	48	68	107	182	409	715	1124	1589	1918	2520	3178	3950	5698

The OCV 94-1QC is normally sized to match the meter size; however, in no case should the maximum velocity exceed 20 ft/sec (metric: 6.10 meters/sec).

Resetting, maintenance and periodic testing instructions must be followed as described in detail in the applicable OCV IOM (Installation, Operation & Maintenance) Manual.

Typical Materials

Part	Standard Material
Body/Bonnet	Ductile Iron (epoxy coated), Carbon Steel (epoxy coated), Stainless Steel, Aluminum
Seat Ring	Stainless Steel, Bronze
Stem	Stainless Steel, Monel
Spring	Stainless Steel
Diaphragm	Buna-N, Viton (Nylon reinforced)
Seat Disc	Buna-N, Viton
Pilot	Stainless Steel, Bronze
Other Pilot System Components	Stainless Steel, Bronze/Brass
Tubing & Fittings	Stainless Steel, Copper/Brass



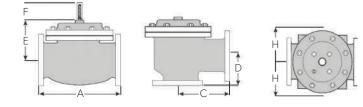
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General Arrangement & Dimensions

Standar	d Sizes												
DIM	END CONN.	1 ¹ / ₄ - 1 ¹ / ₂ "	2"	2 ¹ / ₂ "	3"	4"	6"	8"	10"	12"	14"	16"	24"
A	SCREWED	8 ³ / ₄	9 ⁷ / ₈	10 ¹ / ₂	13								
	GROOVED	8 ³ / ₄	9 ⁷ / ₈	10 ¹ / ₂	13	15 ¹ / ₄	20						
	150# FLGD	8 ¹ / ₂	9 ³ /8	10 ¹ / ₂	12	15	17 ³ /4	25 ³ /8	29 ³ / ₄	34	39	40 ³ / ₈	62
	300# FLGD	8 ³ / ₄	9 ⁷ / ₈	11 ¹ / ₈	12 ³ / ₄	15 5/8	18 5/8	26 ³ /8	31 ¹ / ₈	35 ¹ / ₂	40 1/2	42	63 ³ / ₄
	SCREWED	4 ³ / ₈	4 ³ / ₄	6	6 1/2								
С	GROOVED	4 ³ / ₈ *	4 ³ / ₄	6	6 1/2	7 5/8							
ANGLE	150# FLGD	4 ¹ / ₄	4 ³ / ₄	6	6	7 ¹ / ₂	10	12 11/16	14 7/8	17		20 13/16	
	300# FLGD	4 ³ / ₈	5	6 ³ /8	6 ³ /8	7 ¹³ / ₁₆	10 ¹ / ₂	13 ³ / ₁₆	15 ⁹ / ₁₆	17 ³ / ₄		21 5/8	
	SCREWED	3 ¹ / ₈	3 ⁷ / ₈	4	4 ¹ / ₂								
D	GROOVED	3 1/8 *	3 ⁷ / ₈	4	4 ¹ / ₂	5 ⁵ /8							
ANGLE	150# FLGD	3	3 ⁷ /8	4	4	5 ¹ / ₂	6	8	11 ³ /8	11		15 11/16	
	300# FLGD	3 ¹ / ₈	4 ¹ / ₈	4 ³ / ₈	4 ³ / ₈	5 ¹³ / ₁₆	6 1/2	8 ¹ / ₂	12 ¹ / ₁₆	11 ³ / ₄		16 ¹ / ₂	
E	ALL	6	6	7	6 1/2	8	10	11 ⁷ /8	15 ³ /8	17	18	19	27
F (OPT)	ALL	3 7/8	3 ⁷ /8	3 7/8	3 7/8	3 ⁷ /8	3 7/8	6 ³ /8	6 ³ /8	6 ³ /8	6 ³ /8	6 ³ /8	8
Н	ALL	10	11	11	11	12	13	14	17	18	20	20	28 ¹ / ₂
Metric S	Sizes	DN32-40	DN50	DN65	DN80	DN100	DN150	DN200	DN250	DN300	DN350	DN400	DN600
		DN32-40 222	DN50 251	DN65 267	DN80 330	DN100	DN150	DN200	DN250	DN300	DN350	DN400	DN600
DIM	END CONN.												DN600
	END CONN. SCREWED	222	251	267	330								
DIM	END CONN. SCREWED GROOVED	222 222	251 251	267 267	330 330	 387	 508						
DIM	END CONN. SCREWED GROOVED 150# FLGD	222 222 216	251 251 238	267 267 267	330 330 305	 387 381	 508 451	 645	 756	 863	 991	 1026	 1575
DIM	END CONN. SCREWED GROOVED 150# FLGD 300# FLGD	222 222 216 222	251 251 238 251	267 267 267 283	330 330 305 324	 387 381	 508 451	 645	 756	 863	 991	 1026	 1575
DIM	END CONN. SCREWED GROOVED 150# FLGD 300# FLGD SCREWED	222 222 216 222 111	251 251 238 251 121	267 267 267 283 152	330 330 305 324 165	 387 381 397 	 508 451	 645	 756	 863	 991 1029 	 1026	 1575
DIM A C	END CONN. SCREWED GROOVED 150# FLGD 300# FLGD SCREWED GROOVED	222 222 216 222 111 111*	251 251 238 251 121 121	267 267 283 152 152	330 330 305 324 165 165	 387 381 397 194	 508 451 473 	 645 670 	 756 791 	 863 902 	 991 1029 	 1026 1067 	 1575
DIM A C	END CONN. SCREWED GROOVED 150# FLGD 300# FLGD SCREWED GROOVED 150# FLGD	222 222 216 222 111 111* 108	251 251 238 251 121 121 121	267 267 283 152 152 152	330 330 305 324 165 165 152	 387 381 397 194 191	 508 451 473 254	 645 670 322	 756 791 378	 863 902 432	 991 1029 	 1026 1067 529	 1575
DIM A C	END CONN. SCREWED GROOVED 150# FLGD 300# FLGD GROOVED 150# FLGD 300# FLGD	222 222 216 222 111 111* 108 111	251 251 238 251 121 121 121 121 127	267 267 283 152 152 152 152 162	330 330 305 324 165 165 152 162	 387 381 397 194 191 198	 508 451 473 254 267	 645 670 322 335	 756 791 378 395	 863 902 432 451	 991 1029 	 1026 1067 529 549	 1575 1619
DIM A C ANGLE	END CONN. SCREWED GROOVED 150# FLGD 300# FLGD GROOVED 150# FLGD 300# FLGD SCREWED	222 222 216 222 111 111* 108 111 79	251 251 238 251 121 121 121 121 127 98	267 267 283 152 152 152 152 162 102	330 330 305 324 165 165 152 162 114	 387 381 397 194 191 198 	 508 451 473 254 267 	 645 670 322 335 	 756 791 378 395 	 863 902 432 451 	 991 1029 	 1026 1067 529 549 	 1575 1619
DIM A C ANGLE D	END CONN. SCREWED GROOVED 150# FLGD 300# FLGD GROOVED 150# FLGD 300# FLGD SCREWED GROOVED	222 222 216 222 111 111* 108 111 79 79*	251 251 238 251 121 121 121 127 98 98	267 267 283 152 152 152 152 162 102 102	330 330 305 324 165 165 152 162 114 114	 387 381 397 194 191 198 143	 508 451 473 254 267 	 645 670 322 335 	 756 791 378 395 	 863 902 432 451 	 991 1029 	 1026 1067 529 549 	 1575 1619
DIM A C ANGLE D	END CONN. SCREWED GROOVED 150# FLGD 300# FLGD GROOVED 150# FLGD SCREWED GROOVED 150# FLGD	222 222 216 222 111 111* 108 111 79 79* 76	251 251 238 251 121 121 121 127 98 98 98 98	267 267 283 152 152 152 162 102 102 102	330 330 305 324 165 165 165 162 114 114 102	 387 381 397 194 191 198 143 140	 508 451 473 254 267 152	 645 670 322 335 203	 756 791 378 395 289	 863 902 432 451 279	 991 1029 	 1026 1067 529 549 398	 1575 1619
DIM A C ANGLE D ANGLE	END CONN. SCREWED GROOVED 150# FLGD 300# FLGD SCREWED GROOVED 150# FLGD SCREWED GROOVED 150# FLGD 300# FLGD	222 222 216 222 111 111* 108 111 79 79* 76 79	251 251 238 251 121 121 121 121 127 98 98 98 98 98 105	267 267 283 152 152 152 152 162 102 102 102 102 102	330 330 305 324 165 165 165 162 114 102 111	 387 381 397 194 191 198 143 140 148	 508 451 473 254 267 152 165	 645 670 322 335 203 216	 756 791 378 395 289 306	 863 902 432 451 279 298	 991 1029 	 1026 1067 529 549 398 419	 1575 1619

*Grooved End not available in 1 1/4" (DN32).





△OCV Model 94-1QC



Technical Data

Temperature (Elastomers)							
Buna-N	-40°F to 180°F						
Viton	20°F to 230°F						
Fluorosilicone	-40°F to 150°F						
EPDM	0°F to 230°F						
Sizes							
Screwed Ends	1-1/4" - 3"						
Grooved Ends	1-1/2" - 6" (globe & angle)						
Flanged Ends	1-1/4" - 24" (globe); 1-1/4" - 16" (angle)						
Pressure Rating (ANSI at 100°F)							
250psi for Class 150# ANSI Flanged Ductile Iron							
285psi for Steel/Stainless Steel & Aluminum							
300# ANSI Flanges are available							
Solenoid Voltage							
Enclosure	Explosion Proof NEMA 4X, 6P, 7, 9						
Body	Brass, Stainless Steel						
Voltages 24, 120, 240, 480 VAC; 12, 24 VDC							

Body & Cover Material
Ductile Iron
Carbon Steel
Stainless Steel
Aluminum
Trim Material
Bronze/Brass
Stainless Steel
Copper
Optional Components
Two-Stage Opening
Visual Indicator
Pre-Wired Junction Box
Items to Specify
Fluid Type
Model Number
Size
Body & Trim Material
Solenoid Voltage
Globe or Angle
Special Installation Requirements

Engineering Specifications

The non-surge check valve shall be a single-seated, line pressure operated, diaphragm actuated, pilot controlled valve. The valve shall seal by means of a corrosion-resistant seat and a resilient, rectangular seat disc. These, and other parts, shall be replaceable without removing the valve from the line. The stem of the main valve shall be guided top and bottom by integral bushings. Alignment of the body, bonnet and diaphragm assembly shall be by precision dowel pins. The diaphragm shall not be used as a seating surface, nor shall the pistons be used as an operating means. The pilot system shall be furnished complete and installed on the main valve. It shall include an opening speed control, pilot check valves, and an inline strainer. The non-surge check valve shall be operationally and hydrostatically tested prior to shipment. The main valve body and bonnet shall be ductile iron. All ferrous surfaces shall be coated with 4 mils of epoxy. The main valve seat ring shall be stainless steel. Elastomers (diaphragms, resilient seats and o-rings) shall be Buna-N. The opening speed control, check valves, and control line tubing shall be stainless steel. The non-surge check valve shall be suitable on <voltage> (see Technical Data section). The non-surge check valve shall be suitable for pressures of <X to X> psi (see Pressure Table) at flow rates up to <X> gpm (see Flow Chart). The non-surge check valve shall be an OCV 94-1QC, as manufactured by OCV, Tulsa, OK, USA.

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