Truck/Rail Car Loading & Unloading Systems





Solenoid Shut-Off Valve

> Description

The solenoid shut-off valve shall open and close via discrete electrical signals. The valve shall be equipped with a two-way solenoid valve that will allow the valve to open when energized/deenergized. The OCV 115-2 has an extremely wide range of applications - anywhere it is necessary to open and close a valve electrically, including the following:

- Process control
- Petroleum loading terminals
- Storage tank level control

Certification & Compliance NSF-ISO Quality System (9001) ABS Type Approval Technical Standards & Safety Authority American-Made: American Recovery & Reinvestment Pressure Equipment Directive Certified 97/23/EC CE (Conformité Européenne) Compliance



- Electrically operated solenoid allows valve to open or close
- Can be maintained without removal from the line
- Adjustable response speed
- Factory tested and can be pre-set to your requirements



Metering Systems

Loading Terminals

Storage Tanks

Truck/Rail Car Loading & Unloading Systems

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> Operation

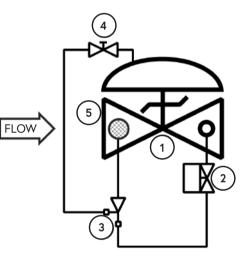
A two-way solenoid, when closed, causes the main valve to close. Opening the solenoid opens the valve. The pilot system is equipped with a needle valve that allows the opening and closing speed of the valve to be adjusted.

The solenoid can be supplied normally closed (energize to open) or normally open (energize to close).



The OCV 115-2 consists of the following components, arranged as shown on the schematic diagram:

- 1 Model 65 Basic Valve
- 2 Model 451 Two-Way Solenoid Pilot
- 3 Model 126 Ejector
- 4 Model 141-2 Needle Valve
- 5 Model 123 Inline Strainer



Pressure Table

End Connections	Ductile Iron	STEEL/SST	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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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 115-2 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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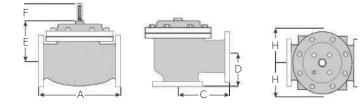
General Arrangement & Dimensions

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
С	SCREWED	4 ³ / ₈	4 ³ / ₄	6	6 ¹ / ₂								
	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	61/2	8 ¹ / ₂	12 ¹ / ₁₆	11 ³ / ₄		16 ¹ / ₂	
Е	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 DIM	END CONN.	DN32-40	DN50	DN65	DN80	DN100	DN150	DN200	DN250	DN300	DN350	DN400	DN60
DIN	SCREWED	222	251	267	330			DINZOO		DINGOU	DINGGO	DIN400	DINOON
	GROOVED	222	251	267	330	387	508						
А	150# FLGD	216	238	267	305	381	451	645	756	863	991	1026	
	300# FLGD	210	250	283	324	397						1020	1575
	SCREWED	111		205	527		473	1 670	/01	902	1020	1067	1575
C ANGLE			1.21	152	165		473	670	791	902	1029	1067	1575 1619
	GROOVED		121	152 152	165 165		473			902		1067	
ANGLE	GROOVED	111*	121	152	165	194							
	150# FLGD	111* 108	121 121	152 152	165 152	 194 191	 254	 322	 378	 432		 529	1619
		111* 108 111	121	152	165	194							1619
ANGLE	150# FLGD 300# FLGD SCREWED	111* 108 111 79	121 121 127 98	152 152 162 102	165 152 162 114	 194 191 198 	 254 267 	 322 335 	 378 395 	 432 451	 	 529 549	1619
	150# FLGD 300# FLGD	111* 108 111	121 121 127	152 152 162	165 152 162	 194 191 198	 254 267	 322 335	 378 395	 432 451		 529 549 	1619
ANGLE	150# FLGD 300# FLGD SCREWED GROOVED	111* 108 111 79 79*	121 121 127 98 98	152 152 162 102 102	165 152 162 114 114	 194 191 198 143	 254 267 	 322 335 203	 378 395 	 432 451 		 529 549 	1619
ANGLE	150# FLGD 300# FLGD SCREWED GROOVED 150# FLGD	111* 108 111 79 79* 76	121 121 127 98 98 98 98	152 152 162 102 102 102	165 152 162 114 114 102	 194 191 198 143 140	 254 267 152	 322 335 	 378 395 289	 432 451 279		 529 549 398	1619
ANGLE D ANGLE	150# FLGD 300# FLGD SCREWED GROOVED 150# FLGD 300# FLGD	111* 108 111 79 79* 76 79	121 121 127 98 98 98 98 105	152 152 162 102 102 102 102 111	165 152 162 114 114 102 111	 194 191 198 143 140 148	 254 267 152 165	 322 335 203 216	 378 395 289 306	 432 451 279 298		 529 549 398 419	1619

*Grooved End not available in 11/4" (DN32).

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Truck/Rail Car Loading & Unloading Systems

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	nged 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 solenoid valve shall be a single-seated, line pressure operated, diaphragm actuated, pilot controlled globe 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 a needle valve, inline strainer and solenoid valve. The solenoid shutoff 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 body and bonnet shall be ductile iron. The main valve seat ring shall be stainless steel. Elastomers (diaphragms, resilient seats and O-rings) shall be Buna-N. The needle valve and control line tubing shall be stainless steel. The solenoid shall have a stainless steel body, explosion-proof enclosure and be suitable for operation on <voltage> (see Technical Data section). The solenoid shut-off 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 solenoid shut-off valve shall be an OCV 115-2, as manufactured by OCV, Tulsa, OK, USA.

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