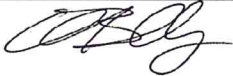
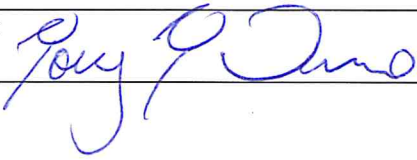


CONTRACTOR SUBMITTAL FORM

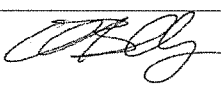
Project Name: Navajo Gallup Water Supply Project Reach 26.3	<input checked="" type="checkbox"/> M (Materials)	Submittal No. M037A
SMA Project No: 6921307	<input type="checkbox"/> T (Testing)	
Date: 10-14-2019	<input type="checkbox"/> A (Administrative)	
Contractor: Navajo Engineering and Construction Authority	No. of Copies: 1	

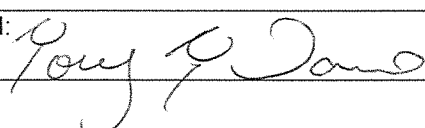
Supplier: Core & Main	Manufacturer: Cla-Val
Specification No.: 22 11 05 – 2.4B1	Drawing No.: DT-24
Bid Item No(s): 42	
Submittal Checklist No(s): M50	
Product Description: Electronic Control Valve and valve controller – Revised Submittal	
Are there any deviations from the Contract Documents? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes Explain:	
Contractor's certification that product meets requirements of Contract Documents: <input checked="" type="checkbox"/> Certified <input type="checkbox"/> Certified with variations as noted on shop drawings and/or attached sheets.	
Signed:  Quentin Benally, NECA	Date: 10-14-2019

Engineer's Comments: <input checked="" type="checkbox"/> No Exception Taken <input type="checkbox"/> Approved as Corrected <input type="checkbox"/> Exceptions as Noted <input type="checkbox"/> Submittal Rejected <input type="checkbox"/> Revise and Resubmit to Engineer <input type="checkbox"/> Contractor to Submit Specified Information	Review is limited to check for compliance with design concept. No changes from provisions of Contract Documents are intended and Contractor remains responsible for compliance with revisions therein. The Contractor is solely responsible for quantities; correctness of dimensions; verification of physical interrelation of elements of the work as required by the drawings and specifications and by field determination; fabrication procedures, construction methods, techniques and sequences. This review does not relieve the Contractor from these responsibilities. Non-conformities and errors detected have been noted but such markings, or lack thereof, shall not relieve the Contractor from compliance with all requirements of the contract drawings and specifications.
Signed: 	Date: 10/22/19

CONTRACTOR SUBMITTAL FORM

Project Name: Navajo Gallup Water Supply Project Reach 26.3	<input checked="" type="checkbox"/> M (Materials)	Submittal No. M037
SMA Project No: 6921307	<input type="checkbox"/> T (Testing)	
Date: 08-13-2019	<input type="checkbox"/> A (Administrative)	
Contractor: Navajo Engineering and Construction Authority	No. of Copies: 1	

Supplier: Core & Main	Manufacturer: Cla-Val
Specification No.: 22 11 05 – 2.4B1	Drawing No.: DT-24
Bid Item No(s): 42	
Submittal Checklist No(s): M50	
Product Description: Electronic Control Valve and valve controller	
Are there any deviations from the Contract Documents? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes Explain:	
Contractor's certification that product meets requirements of Contract Documents: <input checked="" type="checkbox"/> Certified <input type="checkbox"/> Certified with variations as noted on shop drawings and/or attached sheets.	
Signed:  Quentin Benally, NECA	Date: 08-13-2019

Engineer's Comments: <input type="checkbox"/> No Exception Taken <input type="checkbox"/> Approved as Corrected <input type="checkbox"/> Exceptions as Noted <input type="checkbox"/> Submittal Rejected <input checked="" type="checkbox"/> Revise and Resubmit to Engineer <input type="checkbox"/> Contractor to Submit Specified Information - Anti Cavitation trim not required. There was mistake on drawings, use model number from spec. - Please check solenoids. Some AC stuff checked & some DC. Please review specs. - Pressure gauges shall be 160 & 60psi per spec	Review is limited to check for compliance with design concept. No changes from provisions of Contract Documents are intended and Contractor remains responsible for compliance with revisions therein. The Contractor is solely responsible for quantities; correctness of dimensions; verification of physical interrelation of elements of the work as required by the drawings and specifications and by field determination; fabrication procedures, construction methods, techniques and sequences. This review does not relieve the Contractor from these responsibilities. Non-conformities and errors detected have been noted but such markings, or lack thereof, shall not relieve the Contractor from compliance with all requirements of the contract drawings and specifications.
Signed: 	Date: 8/21/19



October 8, 2019

Core & Main
6135 Second Street, NE
Albuquerque, NM 87107

Attention: Cindy Mathews

Reference: Navajo Gallup Reach 26.3 Revised Submittal 20191008 for Approval

Dear Ms. Mathews:

Thank you for sending me the engineer's review comments for DT-24. I have attached revised submittals and hope to have addressed the following concerns:

SMA Project No. 6921307, Submittal No. M037:

1. Cavitation trim has been removed. Please see pages 6-9.
2. The customer input to the VC-22D will be 120VAC, however the solenoids themselves will be 24vdc from the panel. Please see page 15 and 24. I apologize for the confusion.
3. Pressure gauges will be 160 & 60psi as specified. Please see correction on page 14.

Best Regards,

Kira Witwer
Mechanical Engineer/Inside Sales



676 Moss Street, Unit A
Golden, CO 80401
Phone: 303-579-9658
Fax: 303-567-2861

Navajo Gallup Reaches 26.3
Reach 26.3 to Torreon, NM

Electronic Control Valve

Qty

Product Description

1	6" Cla-Val 131A-57 F H B Y 2P C S KC X105LCW Electronic Interface Control Valve, Equipped to Close on Power Failure. Full Port, Angle Pattern, Epoxy Coated, Ductile Iron Powertrol Main Valve with Class 150 Flanged Ends, BunaN Elastomers, SST Stem and Fasteners, and Position Indicator with Closed Limit Switch. All 316 Stainless Steel Pilot System consisting of: Isolation Ball Valves, Wye Strainer with Manual Blowdown, 24VDC Solenoid Control Valves, Solenoid Bypass Valves, Opening/Closing Speed Controls, Remote Source of Supply and Atmospheric Drain, (0-160psi) Upstream and (0-60psi) Downstream Pressure Gauges with Bleed, PTFE Lined SST Braided Hose with SST Ends and Fittings. VC-22D Controller, NEMA 4X Fiberglass/Polyester Enclosure, 120VAC/60hz Incoming Power, 24vdc/40W Power Supply
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CLA-VAL CO.

NEWPORT BEACH, CALIFORNIA

CATALOG NO.

131-57/631-57

DRAWING NO.

29211

REV.

B

TYPE OF VALVE AND MAIN FEATURES

ELECTRONIC INTERFACE CONTROL VALVE
EQUIPPED TO CLOSE ON POWER FAILURE
(POWERtrol TYPE)

DESIGN

DRAWN

EK

11-17-97

CHK'D

CH

11-18-97

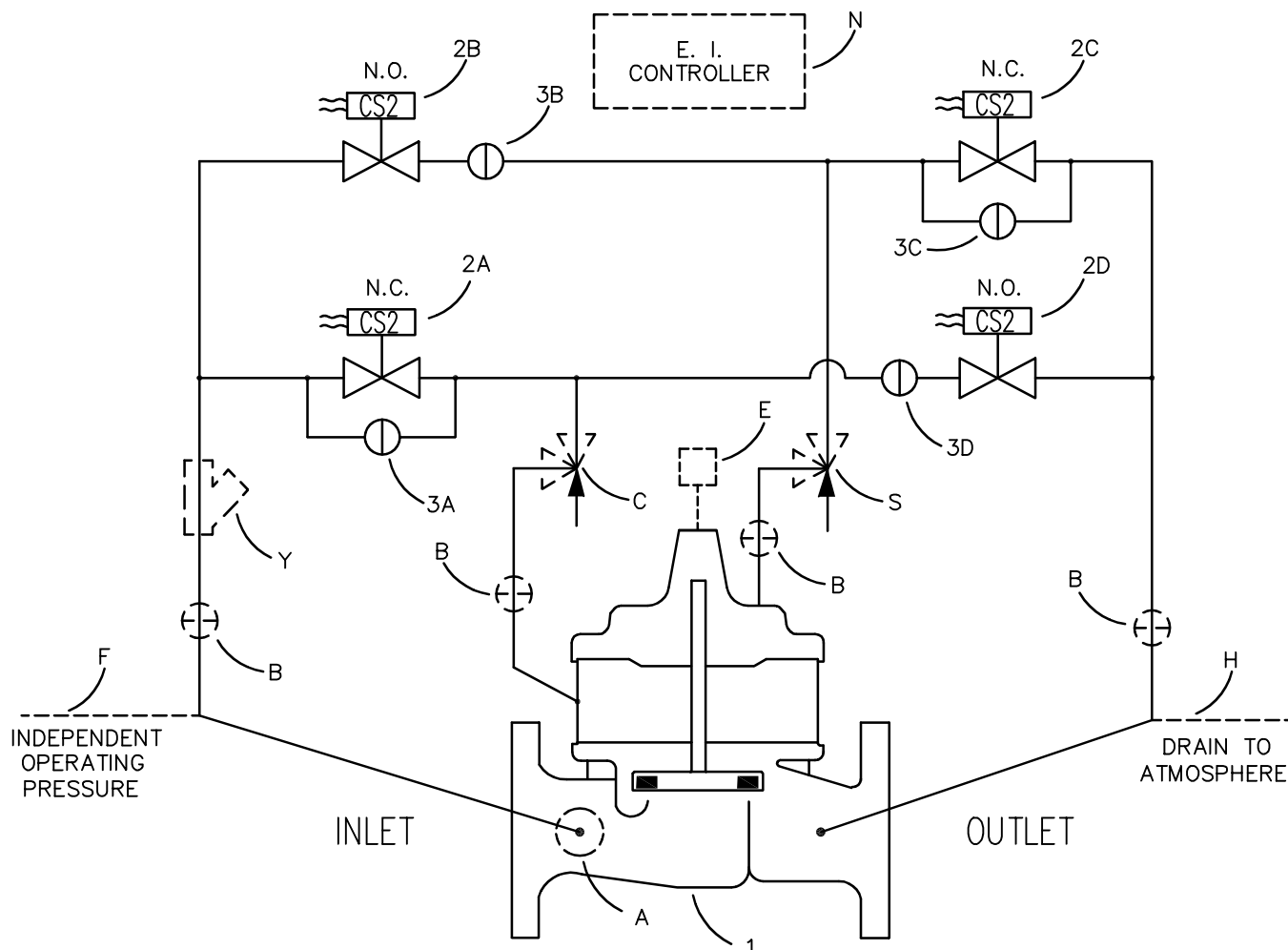
APV'D

BF

11-18-97

----- NOT FURNISHED BY CLA-VAL CO.

----- OPTIONAL FEATURES



ITEM NO.	BASIC COMPONENTS	QTY
1	100-02 POWERtrol (131-57) MAIN VALVE	1
	100-21 POWERtrol (631-57) MAIN VALVE	
2	CS2 SOLENOID CONTROL	4
3	CK2 COCK (SOLENOID BYPASS)	4

OPTIONAL FEATURE SUFFIX			ADDED TO CATALOG NUMBER		
A	X46A FLOW CLEAN STRAINER	1	N	ELECTRONIC CONTROLLER (SINGLE)	1
B	CK2 COCK (ISOLATION VALVE)	4	S	CV FLOW CONTROL (OPENING)	1
C	CV FLOW CONTROL (CLOSING)	1	Y	X43 "Y" STRAINER	1
E	X117D POSITION TRANSMITTER	1			
F	INDEPENDENT OPERATING PRESSURE				
H	ATMOSPHERIC DRAIN				

CAD REVISION RECORD - DO NOT REVISE MANUALLY

DESCRIPTION	BY	DATE
RELEASED FOR PRODUCTION (NED 42805)	EK	11-17-97
OPTIONAL ITEM E WAS 117C POSITION TRANSMITTER (ECO 21193)	AK	2-23-09

"THIS DRAWING IS THE PROPERTY OF CLA-VAL CO. AND SAME AND COPIES MADE THEREOF, IF ANY, SHALL BE RETURNED TO IT UPON DEMAND. DELIVERY AND DISCLOSURE HEREOF ARE SOLELY UPON CONDITION THAT THE SAME SHALL NOT BE USED, COPIED OR REPRODUCED, NOR SHALL THE SUBJECT HEREOF BE DISCLOSED IN ANY MANNER TO ANYONE FOR ANY PURPOSE, EXCEPT AS HEREIN AUTHORIZED, WITHOUT PRIOR WRITTEN APPROVAL OF CLA-VAL CO. THIS DRAWING IS SUBMITTED CONFIDENTIALLY AND MAY NOT BE USED IN THE MANUFACTURE OF ANY MATERIAL OR PRODUCT OTHER THAN SUCH MATERIALS AND PRODUCTS FURNISHED TO CLA-VAL CO. WHETHER OR NOT THE EQUIPMENT OR INFORMATION SHOWN HEREON IS PATENTED OR OTHERWISE PROTECTED, FULL TITLE AND COPYRIGHTS, IF ANY, IN AND TO THIS DRAWING AND/OR INFORMATION DELIVERED OR SUBMITTED ARE FULLY RESERVED CLA-VAL CO."

**CLA-VAL CO.**

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(POWERtrol TYPE)

DESIGN

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EK

11-17-97

CHK'D

CH

11-18-97

APV'D

BF

11-18-97

OPERATING DATA

I. ELECTRONIC INTERFACE FEATURE:

SOLENOID CONTROLS (2A), (2B), (2C) & (2D) ARE DIRECT ACTING, 2-WAY SOLENOID CONTROLS THAT CHANGE POSITION WHEN THE COILS ARE ENERGIZED OR DE-ENERGIZED BY THE ELECTRONIC INTERFACE CONTROLLER (N). FOLLOWING PARAGRAPHS DESCRIBE THE OPENING AND CLOSING CYCLES OF MAIN VALVE (1).

OPENING:

WHEN ELECTRONIC INTERFACE CONTROLLER (N) ENERGIZES SOLENOID CONTROLS (2A), (2B), (2C), & (2D), THE N.C. SOLENOID CONTROLS (2A) & (2C) OPEN AND THE N.O. SOLENOID CONTROLS (2B) & (2D) CLOSE. THIS APPLIES PRESSURE TO THE POWERUNIT CHAMBER OF THE MAIN VALVE (1) AND RELIEVES MAIN VALVE (1) COVER PRESSURE TO THE OUTLET, ALLOWING MAIN VALVE (1) TO OPEN.

CLOSING:

WHEN THE ELECTRONIC INTERFACE CONTROLLER (N) DE-ENERGIZES SOLENOID CONTROLS (2A), (2B), (2C) & (2D), THE N.C. SOLENOID CONTROLS (2A) & (2C) CLOSE AND THE N.O. SOLENOID CONTROLS (2B) & (2D) OPEN. THIS APPLIES PRESSURE TO THE MAIN VALVE (1) COVER CHAMBER AND RELIEVES PRESSURE FROM THE POWERUNIT CHAMBER OF THE MAIN VALVE (1), CLOSING THE MAIN VALVE.

LOCKED:

WHEN THE ELECTRONIC INTERFACE CONTROLLER (N) ENERGIZES N.O. SOLENOID CONTROLS (2B) & (2D), AND DE-ENERGIZES N.C. SOLENOID CONTROLS (2A) & (2C), ALL SOLENOID CONTROLS ARE CLOSED AND THE MAIN VALVE (1) IS LOCKED IN AN INTERMEDIATE POSITION.

II. MANUAL BYPASS FEATURE:

OPENING:

MANUALLY OPEN CK2 COCKS (3A) & (3C) AND CLOSE CK2 COCKS (3B) & (3D). THIS BYPASSES SOLENOID CONTROLS (2A) & (2C), OPENING THE MAIN VALVE (1).

LOCKED:

MANUALLY CLOSE CK2 COCKS (3A), (3B), (3C) & (3D). THIS LOCKS IN MAIN VALVE (1) IN AN INTERMEDIATE POSITION.

CLOSING:

MANUALLY OPEN CK2 COCKS (3B) & (3D) AND CLOSE CK2 COCKS (3A) & (3C). THIS APPLIES PRESSURE TO THE MAIN VALVE COVER AND RELIEVES PRESSURE FROM THE POWERUNIT CHAMBER, CLOSING THE MAIN VALVE (1).

CAD REVISION RECORD - DO NOT REVISE MANUALLY

DATE

BY

DESCRIPTION

SEE SHEET 1.

LTR

**CLA-VAL CO.**

NEWPORT BEACH, CALIFORNIA

CATALOG NO.

131-57/631-57

DRAWING NO.

29211

REV.

B

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EQUIPPED TO CLOSE ON POWER FAILURE
(POWERtrol TYPE)

DESIGN

DRAWN

EK

11-17-97

CHK'D

CH

11-18-97

APVD

BF

11-18-97

OPERATING DATA-CONTINUED

III. OPTIONAL FEATURE OPERATING DATA:

SUFFIX A (FLOW CLEAN STRAINER)

~~A SELF-CLEANING STRAINER IS INSTALLED IN THE MAIN VALVE INLET BODY BOSS WHICH PROTECTS THE PILOT SYSTEM FROM FOREIGN PARTICLES.~~

SUFFIX B (ISOLATION VALVES)

CK2 COCKS (B) ARE USED TO ISOLATE THE PILOT SYSTEM FROM MAIN LINE PRESSURE. THESE VALVES MUST BE OPEN DURING NORMAL OPERATION.

SUFFIX C (CLOSING SPEED CONTROL)

FLOW CONTROL (C) CONTROLS THE CLOSING SPEED OF THE MAIN VALVE. TURN THE ADJUSTING STEM CLOCKWISE TO MAKE THE MAIN VALVE CLOSE SLOWER.

SUFFIX E (POSITION TRANSMITTER)

POSITION TRANSMITTER (E) TRANSMITS A POSITIONAL SIGNAL FROM THE MAIN VALVE TO THE ELECTRONIC INTERFACE CONTROLLER.

SUFFIX F (INDEPENDENT OPERATING PRESSURE)

PILOT SUPPLY PRESSURE IS OBTAINED FROM AN INDEPENDENT SOURCE. (PILOT SUPPLY PRESSURE IS OBTAINED FROM THE MAIN VALVE INLET IF SUFFIX (F) IS NOT SPECIFIED.) NOTE: INDEPENDENT OPERATING PRESSURE MUST BE EQUAL TO OR GREATER THAN PRESSURE AT THE MAIN VALVE INLET AT ALL TIMES.

SUFFIX H (ATMOSPHERIC DRAIN)

PILOT SYSTEM DRAIN LINE IS DISCHARGED TO ATMOSPHERE. [PILOT SYSTEM DRAIN LINE IS CONNECTED TO THE MAIN VALVE OUTLET BOSS IF SUFFIX (H) IS NOT SPECIFIED.]

SUFFIX N (ELECTRONIC INTERFACE CONTROLLER)

ELECTRONIC INTERFACE CONTROLLER (N) ENERGIZES OR DE-ENERGIZES THE SOLENOID CONTROLS, OPENING, CLOSING OR LOCKING THE MAIN VALVE (1) IN THE DESIRE POSITION.

SUFFIX S (OPENING SPEED CONTROL)

FLOW CONTROL (S) CONTROLS THE OPENING SPEED OF THE MAIN VALVE. TURN THE ADJUSTING STEM CLOCKWISE TO MAKE THE MAIN VALVE OPEN SLOWER.

SUFFIX Y (Y-STRAINER)

A Y-PATTERN STRAINER IS INSTALLED IN THE PILOT SUPPLY LINE TO PROTECT THE PILOT SYSTEM FROM FOREIGN PARTICLES. THE STRAINER SCREEN MUST BE CLEANED PERIODICALLY.

CAD REVISION RECORD - DO NOT REVISE MANUALLY

DATE

BY

DESCRIPTION

LTR

SEE SHEET 1.

**CLA-VAL CO.**

NEWPORT BEACH, CALIFORNIA

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131-57/631-57

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(POWERtrol TYPE)

DESIGN

DRAWN

EK

11-17-97

CHK'D

CH

11-18-97

APV'D

BF

11-18-97

OPERATING DATA-CONTINUED

IV. CHECK LIST FOR PROPER OPERATION:

- () SYSTEM VALVES OPEN UPSTREAM AND DOWNSTREAM.
- () AIR REMOVED FROM THE MAIN VALVE COVER AND PILOT SYSTEM AT ALL HIGH POINTS.
- () CK2 COCKS (B) OPEN (OPTIONAL FEATURE).
- () PERIODIC CLEANING OF STRAINER (Y) IS RECOMMENDED (OPTIONAL FEATURE).
- () CK2 COCKS (3A) AND (3C) CLOSED DURING NORMAL OPERATION.
- () CK2 COCKS (3B) AND (3D) OPEN DURING NORMAL OPERATION.
- () CV FLOW CONTROLS (C) AND (S) OPEN AT LEAST 4 TURNS (OPTIONAL FEATURE).
- () CORRECT VOLTAGE TO SOLENOID CONTROLS (2A), (2B), (2C), (2D).
- () INDEPENDENT OPERATING PRESSURE CONNECTION PROPERLY CONNECTED (OPTIONAL FEATURE).

CAD REVISION RECORD - DO NOT REVISE MANUALLY

DATE

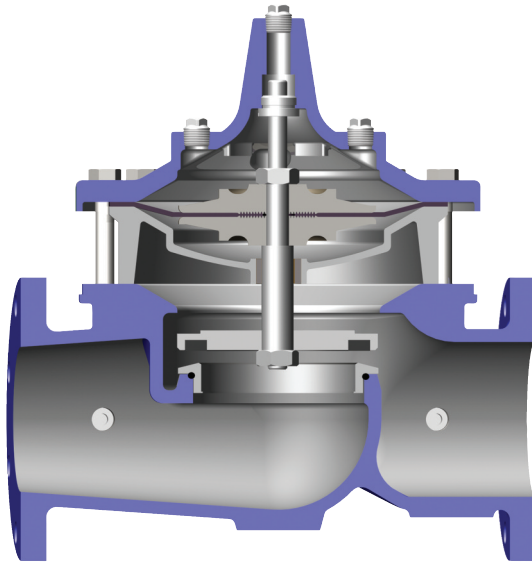
BY

DESCRIPTION

SEE SHEET 1.

LTR

Powertrol Valve



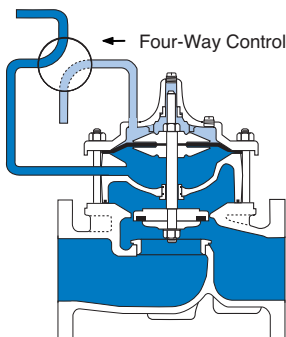
- Drip-Tight, Positive Seating
- Service Without Removal From Line
- Threaded or Flanged Ends
- Globe or Angle Pattern
- Every Valve Factory Tested

The Cla-Val Model 100-02 is a hydraulically operated, diaphragm actuated, globe, or angle pattern valve. It consists of four major components: body, intermediate chamber, diaphragm assembly, and cover. The diaphragm assembly is the only moving part.

The diaphragm assembly which is guided top and center by a precision machined stem, utilizes a non-wicking diaphragm of nylon fabric bonded with synthetic rubber. The diaphragm forms a seal between the cover chamber and intermediate chamber. A synthetic rubber disc retained on three and one half sides forms a drip-tight seal with the renewable seat when pressure is applied above the diaphragm. As pressure above the diaphragm is relieved and pressure is applied below the diaphragm, the valve opens wide for full flow. The rate of closing or opening can be controlled by modulating flow into or out of the diaphragm chambers.

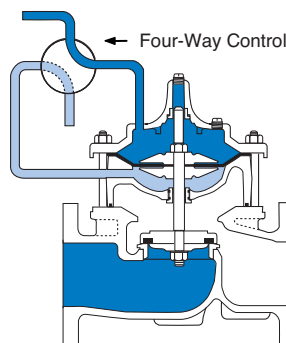
The Model 100-02 is recommended where independent operating pressure is desired. Available in various materials and in a full range of sizes, with either threaded or flanged ends, its applications are many and varied.

Principle of Operation



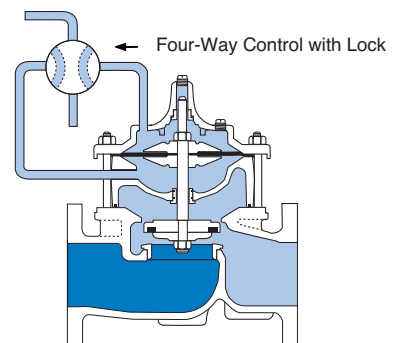
Full Open Operation

When operating pressure below the diaphragm is applied and operating pressure is relieved from the cover chamber and, the valve is held open, allowing full flow.



Tight Closing Operation

When pressure below the diaphragm is relieved and operating pressure is applied to the cover chamber, the valve closes drip-tight.



Modulating Action

The valve holds any intermediate position when operating pressure is equal above and below the diaphragm. A Cla-Val four-way pilot control with "lock" position can maintain this balance by stopping flow in the pilot control system.

Specifications

Model 100-02

Available Sizes

Pattern	Threaded	Flanged	Grooved End
Globe	3/8" - 3"	1 1/2" - 24"	1 1/2"-2" - 2 1/2"- 3"- 4"- 6"- 8"
Angle	1 1/2" - 3"	2" - 16"	2" - 3" - 4"

Operating Temp. Range

Fluids
-40° to 180° F

Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class			
		Flanged		Threaded	
Grade	Material	ANSI Standards*	150 Class	300† Class	End‡ Details
ASTM A536	Ductile Iron	B16.42	250	400	400
ASTM A216-WCB	Cast Steel	B16.5	285	400	400
UNS 87850	Bronze	B16.24	225	400	400

Note: * ANSI standards are for flange dimensions only.
 Flanged valves are available faced but not drilled.
 ‡ End Details machined to ANSI B2.1 specifications.
 † Consult factory when Maximum Operating Pressure Differential (MOPD) is greater than 400 PSID

"Valves for higher pressure are available; consult factory for details"

Materials

Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes	1¼" - 24"	1¼" - 16"	1¼" - 16"
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze
Trim: Disc Guide, Seat & Cover Bearing	Bronze is Standard Stainless Steel is Optional		
Disc	Buna-N® Rubber		
Diaphragm	Nylon Reinforced Buna-N® Rubber		
Stem, Nut & Spring	Stainless Steel		
For material options not listed, consult factory. Cla-Val manufactures valves in more than 50 different alloys.			

Options

Epoxy Coating - suffix KC

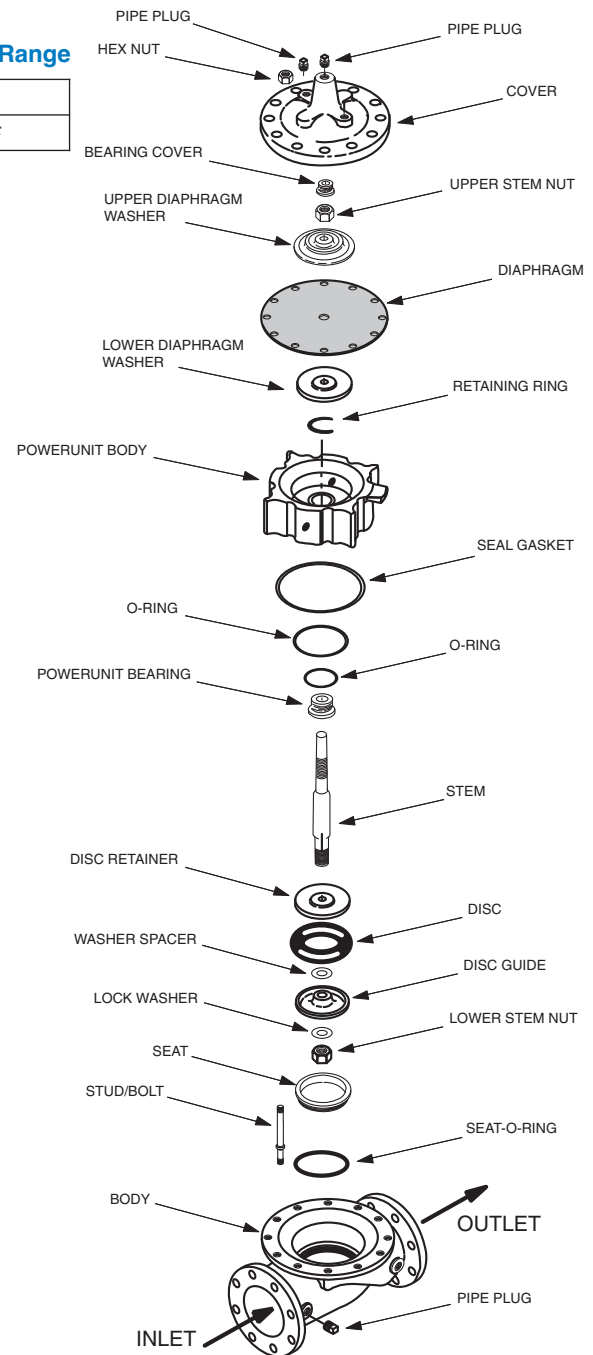
The NSF/ANSI 61 fusion bonded epoxy coating option is for use with cast iron, ductile iron or steel valves. This coating is resistant to various water conditions, certain acids, chemicals, solvents and alkalies. epoxy coatings are applied in accordance with AWWA coating specifications C116-03. Do not use with temperatures above 175° F

Viton® Rubber Parts - suffix KB

Optional diaphragm, disc and o-ring fabricated with Viton® synthetic rubber. Viton® is well suited for use with mineral acids, salt solutions, chlorinated hydrocarbons, and petroleum oils; and is primarily used in high temperature applications up to 250° F. Do not use with epoxy coating above 175°F.

Heavy Spring - suffix KH

The heavy spring option is used in applications where there is low differential pressure across the valve, and the additional spring force is needed to help the valve close. The option is best suited for valves used in on-off (non-modulating) service.



For assistance in selecting appropriate valve options or valves manufactured with special design requirements, please contact our Regional Sales Office or Factory.

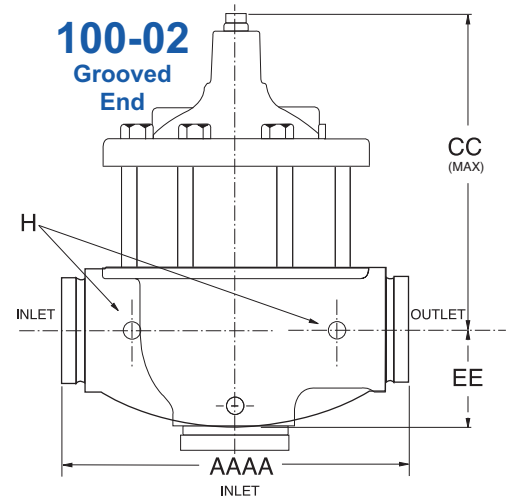
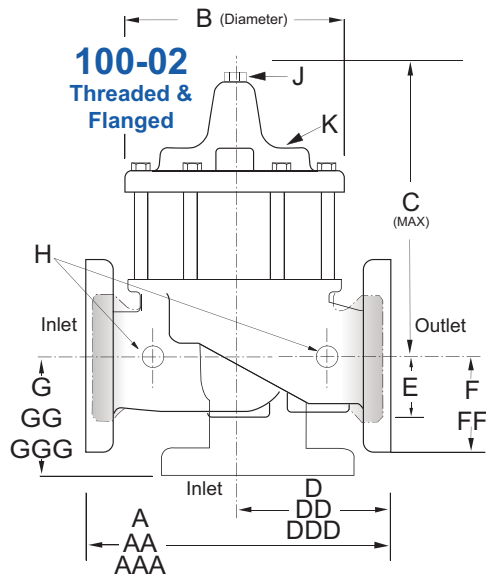
Model 100-02

*Estimated
$$\Delta \mathbf{P} = \text{Pressure Drop in (psi) or (bar)}$$

This chart displays the pressure drop (in psi) versus flow rate (in gpm of water) for various valve sizes. The y-axis is logarithmic, ranging from 1 to 100 psi. The x-axis is also logarithmic, ranging from 3 to 50,000 gpm. The chart includes two sets of lines: black lines for Angle Valve Sizes and blue lines for Globe Valve Sizes. The valve sizes are labeled on the lines, ranging from 3/8" to 30". A note indicates that the blue lines for 3/8", 1/2", 3/4", and 1" are for non-guided stems.

Valve Size (Inches)	Flow Rate (gpm) at 100 psi Pressure Drop
3/8" (Non Guided Stem)	~40
1/2" (Non Guided Stem)	~60
3/4" (Non Guided Stem)	~80
1" (Non Guided Stem)	~100
1 1/2"	~300
2"	~500
2 1/2"	~800
3"	~1200
4"	~2000
6"	~5000
8"	~8000
10"	~12000
12"	~18000
14"	~25000
16"	~35000
20"	~50000
24"	~70000
30"	~100000

Dimensions



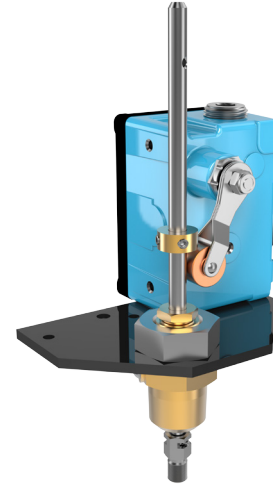
Valve Size (Inches)	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	30
A Threaded	2.75	3.50	3.50	5.12	7.25	7.25	9.38	11.00	12.50	—	—	—	—	—	—	—	—	—	—	—
AA 150 ANSI	—	—	—	—	—	8.50	9.38	11.00	12.00	15.00	20.00	25.38	29.75	34.00	39.00	41.38	46.00	52.00	61.50	63.00
AAA 300 ANSI	—	—	—	—	—	9.00	10.00	11.62	13.25	15.62	21.00	26.38	31.12	35.50	40.50	43.50	47.64	53.62	63.24	64.50
AAAA Grooved End	—	—	—	—	—	8.50	9.00	11.00	12.50	15.00	20.00	25.38	—	—	—	—	—	—	—	—
B Diameter	2.50	3.12	3.12	4.38	5.62	5.62	6.62	8.00	9.12	11.50	15.75	20.00	23.62	28.00	32.75	35.50	41.50	45.00	53.16	56.00
C Maximum	2.33	5.88	5.88	6.25	7.62	7.62	8.56	10.31	11.19	14.25	18.44	21.81	23.38	29.31	32.12	35.00	49.43	53.09	56.50	68.70
CC Maximum Grooved End	—	—	—	—	—	6.87	7.81	9.63	10.25	13.50	17.18	20.43	—	—	—	—	—	—	—	—
D Threaded	—	—	—	—	3.25	3.25	4.75	5.50	6.25	—	—	—	—	—	—	—	—	—	—	—
DD 150 ANSI	—	—	—	—	—	4.00	4.75	5.50	6.00	7.50	10.00	12.69	14.88	17.00	19.50	20.81	—	—	—	—
DDD 300 ANSI	—	—	—	—	—	4.25	5.00	5.88	6.38	7.88	10.50	13.25	15.56	17.75	20.25	21.62	—	—	—	—
DDDD Grooved End	—	—	—	—	—	—	4.75	—	6.00	7.50	—	—	—	—	—	—	—	—	—	—
E	1.25	0.88	0.88	1.63	1.12	1.12	1.50	1.69	2.06	3.19	4.31	5.31	9.25	10.75	12.62	15.50	12.95	15.00	17.75	21.31
EE Grooved End	—	—	—	—	—	2.00	2.50	2.88	3.12	4.25	6.00	7.56	—	—	—	—	—	—	—	—
F 150 ANSI	—	—	—	—	—	2.50	3.00	3.50	3.75	4.50	5.50	6.75	8.00	9.50	10.50	11.75	15.00	16.50	22.06	22.50
FF 300 ANSI	—	—	—	—	—	3.06	3.25	3.75	4.13	5.00	6.25	7.50	8.75	10.25	11.50	12.75	15.00	16.50	22.90	24.00
G Threaded	—	—	—	—	1.88	1.88	3.25	4.00	4.50	—	—	—	—	—	—	—	—	—	—	—
GG 150 ANSI	—	—	—	—	—	4.00	3.25	4.00	4.00	5.00	6.00	8.00	8.62	13.75	14.88	15.69	—	—	—	—
GGG 300 ANSI	—	—	—	—	—	4.25	3.50	4.31	4.38	5.31	6.50	8.50	9.31	14.50	15.62	16.50	—	—	—	—
GGGG Grooved End	—	—	—	—	—	—	3.25	—	4.25	5.00	—	—	—	—	—	—	—	—	—	—
H NPT Body Tapping	—	0.125	0.125	0.25	0.375	0.375	0.375	0.50	0.50	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00
J NPT Cover Center Plug	0.125	0.125	0.125	0.25	0.25	0.25	0.50	0.50	0.50	0.75	0.75	1.00	1.00	1.25	1.50	2.00	1.50	1.50	1.50	2.00
K NPT Cover Tapping	—	0.125	0.125	0.25	0.375	0.375	0.375	0.50	0.50	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00
Valve Stem Int. Thread UNF	—	—	—	—	10-32	10-32	10-32	10-32	1/4-28	1/4-28	3/8-24	3/8-24	3/8-24	3/8-24	3/8-24	1/2-20	3/4-16	3/4-16	3/4-16	3/4-16
Stem Travel	—	—	—	—	0.40	0.40	0.60	0.70	0.80	1.10	1.70	2.30	2.80	3.40	4.00	4.50	5.10	5.63	6.75	7.50
Approx. Ship Weight (lbs)	8	8	8	13	22	22	40	65	95	190	320	650	940	1675	2460	3100	4300	5400	8150	10300

Note: The top two flange holes on valve size 36 are threaded to 1 1/2"-6 UNC.

Cla-Val Control Valves operate with maximum efficiency when mounted in horizontal piping with the main valve cover UP, however, other positions are acceptable. Due to component size and weight of 8 inch and larger valves, installation with cover UP is advisable. We recommend isolation valves be installed on inlet and outlet for maintenance. Adequate space above and around the valve for service personnel should be considered essential. A regular maintenance program should be established based on the specific application data. However, we recommend a thorough inspection be done at least once a year. Consult factory for specific recommendations.

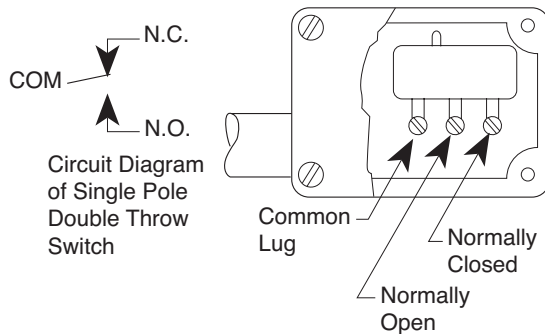
► PRODUCT FEATURES

Cla-Val Model X105L Limit Switch Assembly is a rugged, dependable and positive acting switch assembly actuated by the opening or closing of a Cla-Val control valve on which it is mounted. The single pole, double throw micro switch can be connected either to open or to close an electrical circuit when actuated. By loosening the allen screw on the actuating collar and raising or lowering the collar on the stem, the X105L is easily adjusted to signal that the valve has fully reached the desired position (open or closed).

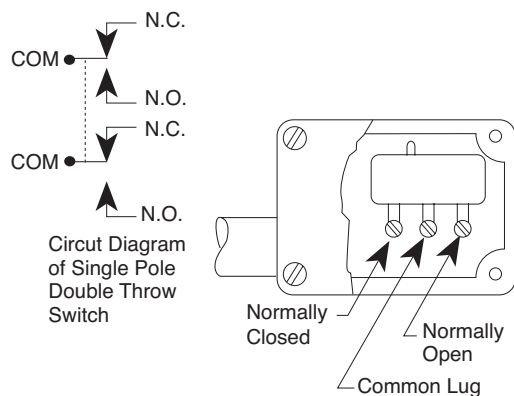


► INSTALLATION

Single Pole Double Throw Switch



Double Pole Double Throw Switch



Switches shown in unactivated position.

► SPECIFICATIONS

Standard Materials*: Aluminum switch housing
Steel bracket and brass adapter
Stainless steel stem

Electrical: 1/2" Conduit connection

Switch Type: SPDT UL, File No. E12252,
CSA Certified, File No. LR57325
Weather proof
NEMA 1,3,4, and13

Switch Rating: UL/CSA rating: L96
15 amp. 125, 250, or 480 volts AC
1/2 amp. 125 volts DC
1/4 amp. 250 volts DC

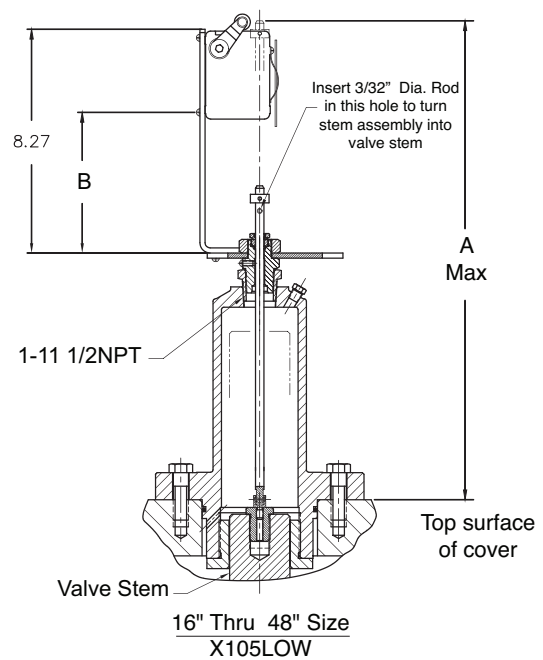
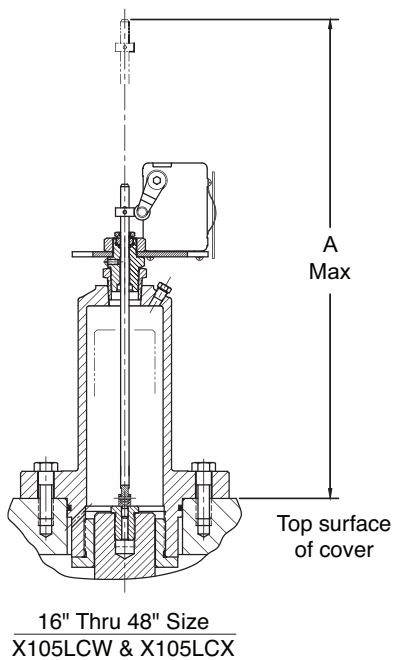
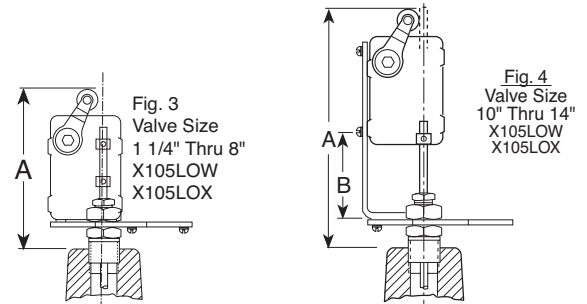
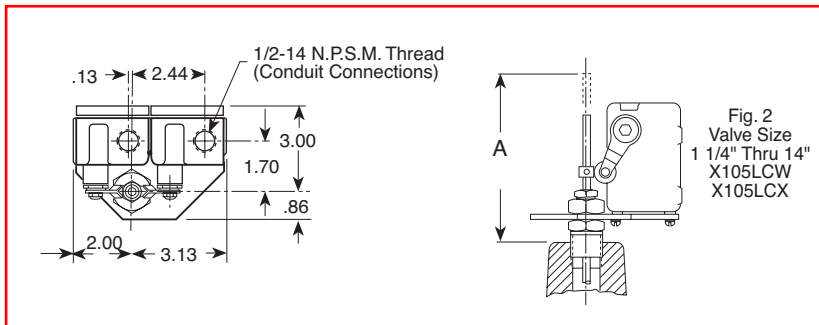
Switch Options: DPDT switches available on request
UL/CSA Rating: L59, 10 amps

Explosion proof micro switches are
NEMA 1,7, and 9
UL Listed, File No. E14274 and CSA
Certified, File No. LR57324: Class I,
Group C and D and Class II, Group
E, F and G.

CATALOG NO.	ACTUATION POSITION	SWITCH ENCLOSURE
X105LCW	Valve Closed	Weather Proof
X105LCX	Valve Closed	Explosion Proof
X105LOW	Valve Open	Weather Proof
X105LOX	Valve Open	Explosion Proof

*Optional Materials Available

► DIMENSIONS



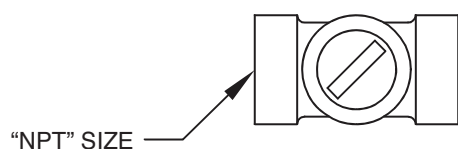
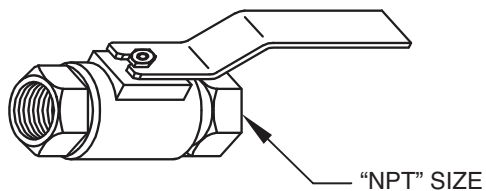
Basic Valve 100-01	1 1/4	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48
Dimension "A"	10.19	10.19	7.16	7.16	7.43	7.00	6.69	6.91	9.88	9.59	9.16	10.78	10.78	18.23	19.10	35.07	36.07	36.07	36.07
Dimension "B"							1.69	1.69	2.44	2.94	2.94	2.94	2.94	4.32	5.19	8.40	8.40	8.40	8.40
Basic Valve 100-20					3	4	6	8	10	12	14	16	18	20	24	30	36	42	48
Dimension "A"					7.16	7.34	7.00	6.69	6.91	9.88	9.59	9.59	10.78	10.78	10.78	11.30	35.07	36.07	36.07
Dimension "B"								1.69	1.69	2.44	2.94	2.94	2.94	2.94	2.94	5.19	8.40	8.40	8.40

► PRODUCT FEATURES

Model CK2 is a ball valve used for isolating components within the pilot system.



► NPT SIZE



"NPT" SIZE								
1/8"	1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"

► SPECIFICATIONS

PART	MATERIAL
Body:	316 Stainless Steel
Handle and Nut:	304 Stainless Steel
Maximum working pressure:	400 psi
Temperature range:	33°F to 180°F



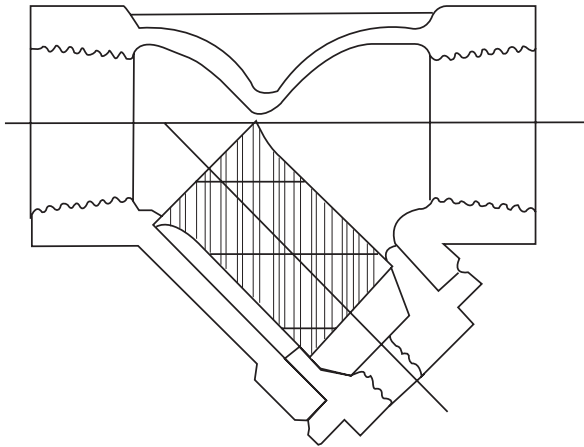
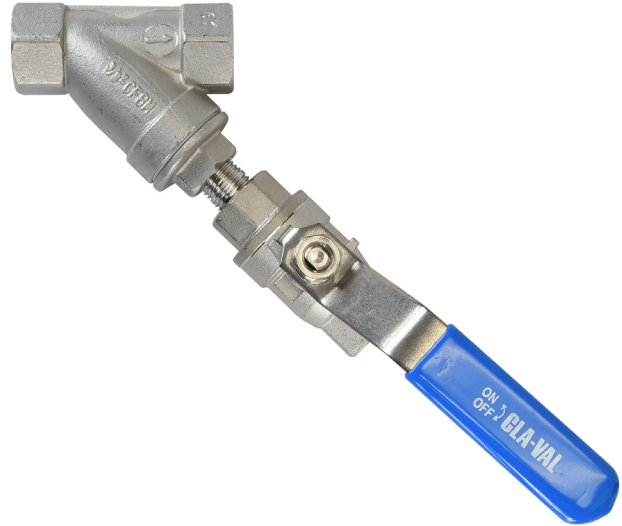
Model **X43A**

'Y' Strainer with Blowdown Ball Valve

► PRODUCT FEATURES

- Stainless Steel Body
- Blow-off Standard
- Stainless Steel Mesh Screen

Model X43A 'Y' Strainers are in-line strainers intended to be installed for protection of pilot systems. These strainers are constructed of corrosion resistant materials. All sizes have blow-off standard.



► SPECIFICATIONS

PART	MATERIAL
Body:	316 Stainless Steel
Screen:	304 Stainless Steel
Gasket:	Non-Asbestos Fiber
Ends:	Threaded ANSI/ASME B1.20 1
Maximum working pressure:	800 psi
Temperature range:	33°F to 180°F
Screen:	Standard screen size is 40 mesh perforated stainless steel
Standard:	Blowdown Ball Valve



Model **X141BA**

Gauge/Air Bleed Option

► **PRODUCT FEATURES**

Cla-Val Model X141BA Pressure Gauge/Air Bleed Assembly option consists of glycerin-filled pressure gauge, bleeder, and isolation valve. Cla-Val gauges are waterproof, shock resistant, and fully enclosed with a stainless steel case and bronze wetted parts. Ambient temperature ratings are -4 Degrees F to +140 Degrees F (-20 Degrees C to +60 Degrees C). Bleeder and isolation valve are stainless steel construction with 400 psi max working pressure.

All gauges have dual scale (PSI/BAR).

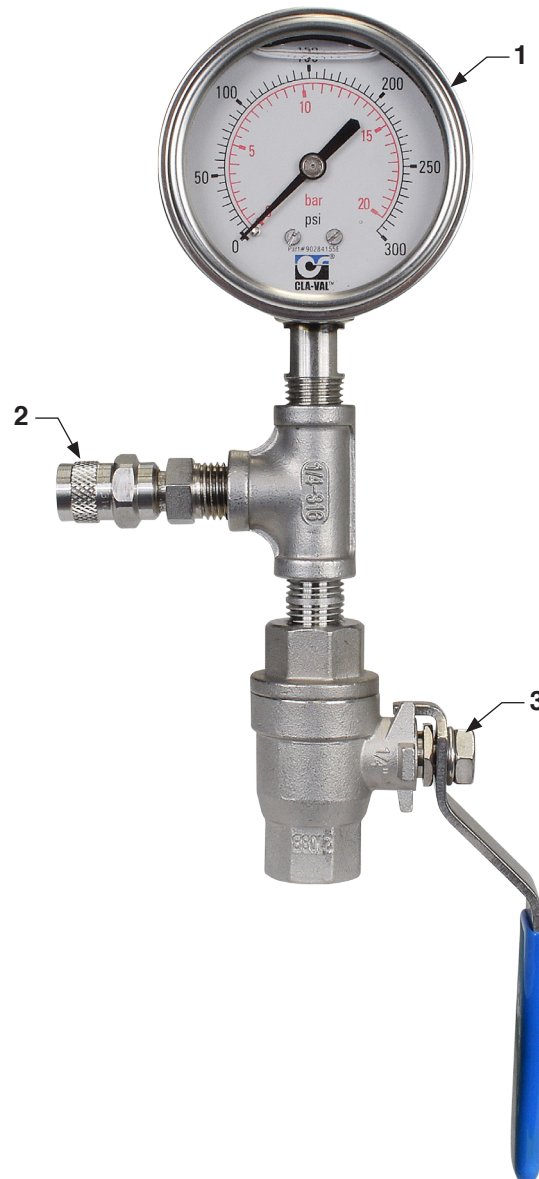
1. Gauge Assembly (2 1/2" Diameter Dial)

Available Pressure Range

- 0 - 60 psi
- 0 - 100 psi
- 0 - 160 psi
- 0 - 200 psi
- 0 - 300 psi
- 0 - 400 psi

2. Bleeder Valve

3. Isolation Valve





— MODEL — **CS2X**

ASCO 2-Way Solenoid Valve

Brass or Stainless Steel Bodies 1/8" to 3/8" NPT



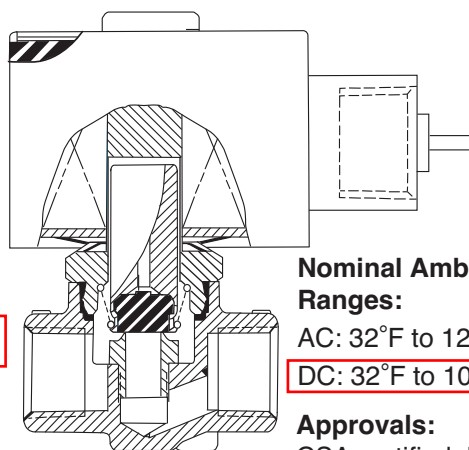
CS2X

- Reliable, Proven Design with High Flows.
- Small Poppet Valves for Tight Shutoff.
- Wide Range of Elastomers for Specialty Service.
- Mountable in Any Position.
- Brass Body Construction for General Atmospheres; Stainless Steel for Corrosive Atmospheres.

ASCO Bulletin 8262 is a small 2-way solenoid operated valve with all two pipe connections located in the body. The bodies are of brass or stainless steel construction. Standard valves have General Purpose, Nema Type 1 Solenoid Enclosures. Valves that are equipped with a solenoid enclosure which is designed to meet Nema Type 4-Water tight, Nema Type 7 (C or D) Hazardous Locations - Class I, Group C or D, and Nema Type 9 (E, F or G) Hazardous Locations - Class II, Group E, F or G are available, Form Numbers N-V5848 and N-V5927.

Construction

Valve Parts in Contact with Fluids		
Body	Brass	303/304 Stainless Steel
Seals and Disc	NBR or Cast UR	
Core Tube	305 Stainless Steel	
Core and Plug Nut	430F Stainless Steel	
Springs	302 Stainless Steel	
Shading Coil	Copper	Silver
Stem	PA (Normally Open)	
Note:	All 1/8" NPT Normally Open valves contain CA. All 1/4" NPT Normally Open valves contain PA	



Nominal Ambient Temperature Ranges:

AC: 32°F to 125°F (0°C to 52°C)

DC: 32°F to 104°F (0°C to 40°C)

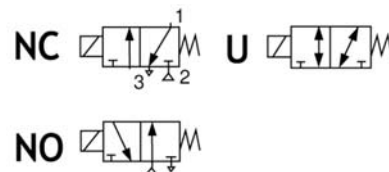
Approvals:

CSA certified. UL listed, as indicated. Normally Closed Valves FM approved. Meets applicable CE directives.

Solenoid Enclosures

Standard: Watertight, Types 1, 2, 3, 3S, 4, 4X.

Optional: Explosion proof and Watertight, Types 3, 3S, 4, 4X, 6, 6P, 7, and 9.

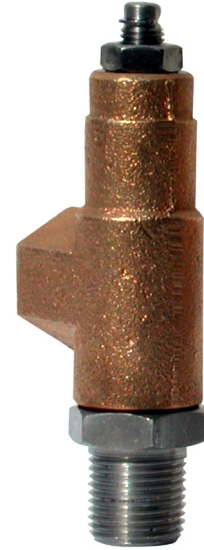


Electrical

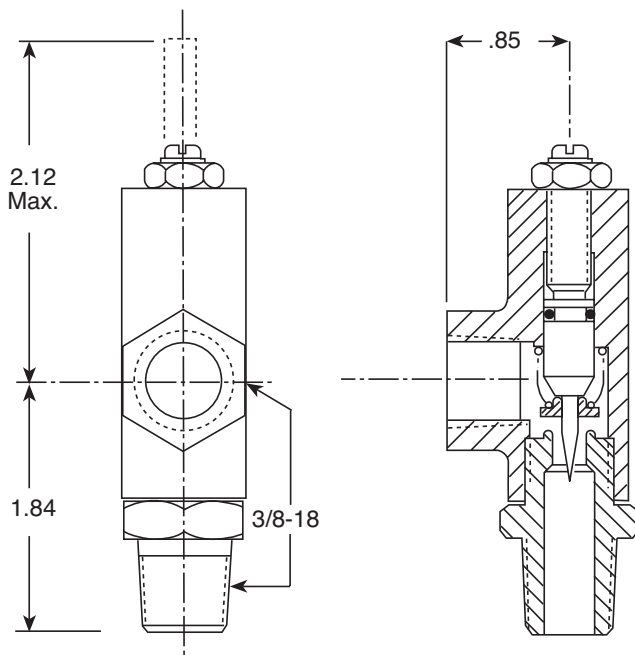
Standard Coil and Class of Insulation	Watt Rating and Power Consumption				Spare Coil Part No.			
	DC Watts	AC			General Purpose		Explosion Proof	
		Watts	VA Holding	VA Inrush	AC	DC	AC	DC
F	10.6	6.1	16	30	238210	238210	238214	238314
F	11.6	10.1	25	50	238610	238710	238614	238714
F	22.6	17.1	40	70	238610	238710	238614	238714
Standard Voltages: 24, 120, 240, 480 volts AC, 60 Hz (or 110, 220, volts AC, 50 Hz). 6, 12, 24, 120, 240 volts DC. Must be specified when ordering. Other voltages are available when required.								

► PRODUCT FEATURES

Cla-Val CV Control is an adjustable restriction which acts as a needle valve when flow is in the direction of the stem. When flow is in the reverse direction, the port area opens fully to allow unrestricted flow. When installed in the control system of a Cla-Val automatic valve, it can be arranged to function as either an opening or closing speed control.



► DIMENSIONS



► SPECIFICATIONS

Sizes: 3/8" NPT

Temperature Range: 250°F Max.

Standard Materials*: **Stainless Steel**

Housing:

Trim: Stainless Steel 303

Pressure Rating: 400 psi Max.

**Optional Materials Available*

919 PTFE STAINLESS STEEL BRAIDED HOSE



When high temperature performance and excellent chemical compatibility are demanded, Parker 919 PTFE Hose accepts the challenge. This medium pressure hose can withstand temperatures up to 450°F (232°C). A smooth bore natural PTFE core tube and stainless steel braided wire reinforcement tackle corrosive chemicals and abrasive environments.

FEATURES AND BENEFITS

- Low friction minimizes pressure drops and deposits
- Environmentally safe
- Resists moisture
- Maximum working pressures up to 3,000 psi
- Meets or exceeds SAE 100R14A -919; SAE 100R14B -919B (Static Dissipative PTFE); FDA CFR 177.1550 (Natural Tube)

Applications:

- Oil burner fronts (boiler)
- Fuel, lube, and oil skids
- Water injection, inlet fogging skids, and water wash
- Fuel control valves
- Compressed air discharge and coolant lines
- Gas analyzer systems
- High pressure steam lines
- Instrument test equipment

PERFORMANCE CHARACTERISTICS

HOSE COVER MATERIAL	304 Stainless Steel Braid, Extruded Silicone, or Polyurethane
CORE TYPE	Natural PTFE or Static Dissipative PTFE
APPLICATION	Fluid Handling, Chemical Transfer, Manufacturing / Industrial, Medical/Pharmaceutical, Packaging, Instrumentation, Transportation
HOSE I.D. (INCH)	3/16, 1/4, 5/16, 13/32, 1/2, 5/8, 7/8, 1-1/8
HOSE I.D. (MM)	5, 6, 8, 10, 13, 16, 19, 22, 29
INDUSTRY STANDARDS	SAE 100R14A, FDA CFR 177.1550 (natural), SAE 100R14B
MAXIMUM WORKING PRESSURE (PSI)	625 - 3,000
MAXIMUM WORKING TEMPERATURE (C)	135 - 232
MAXIMUM WORKING TEMPERATURE (F)	275 - 450
MEDIA	Various
MINIMUM WORKING TEMPERATURE (C)	-40 to -73
MINIMUM WORKING TEMPERATURE (F)	-40 to -100
VACUUM RATING (INCH OF HG)	10 - 28
HOSE I.D. (SIZE)	-4, -5, -6, -8, -10, -12, -16, -20
HOSE O.D. (INCH)	0.32 - 1.28
HOSE O.D. (MM)	8 - 33
MAXIMUM WORKING PRESSURE (BAR)	43 - 207
MINIMUM BEND RADIUS (INCH)	1-1/2 - 7-1/2
MINIMUM BEND RADIUS (MM)	38 - 406
STYLE	Natural, Static-Dissipative
VACUUM RATING (MM OF HG)	25 - 711
WEIGHT (KG/M)	0.09 - 0.58
WEIGHT (LBS/FT)	0.06 - 0.39
DASH NUMBER	-3 to -20
MAXIMUM WORKING PRESSURE (MPA)	4.3 to 20.7 (dependent on size)
COMPATIBLE FITTINGS	90, 91, or 91N
HOSE TYPE	PTFE Hose or Smoothbore
COLOR	Silver, Red or Black



130LTSS1/4X3/8

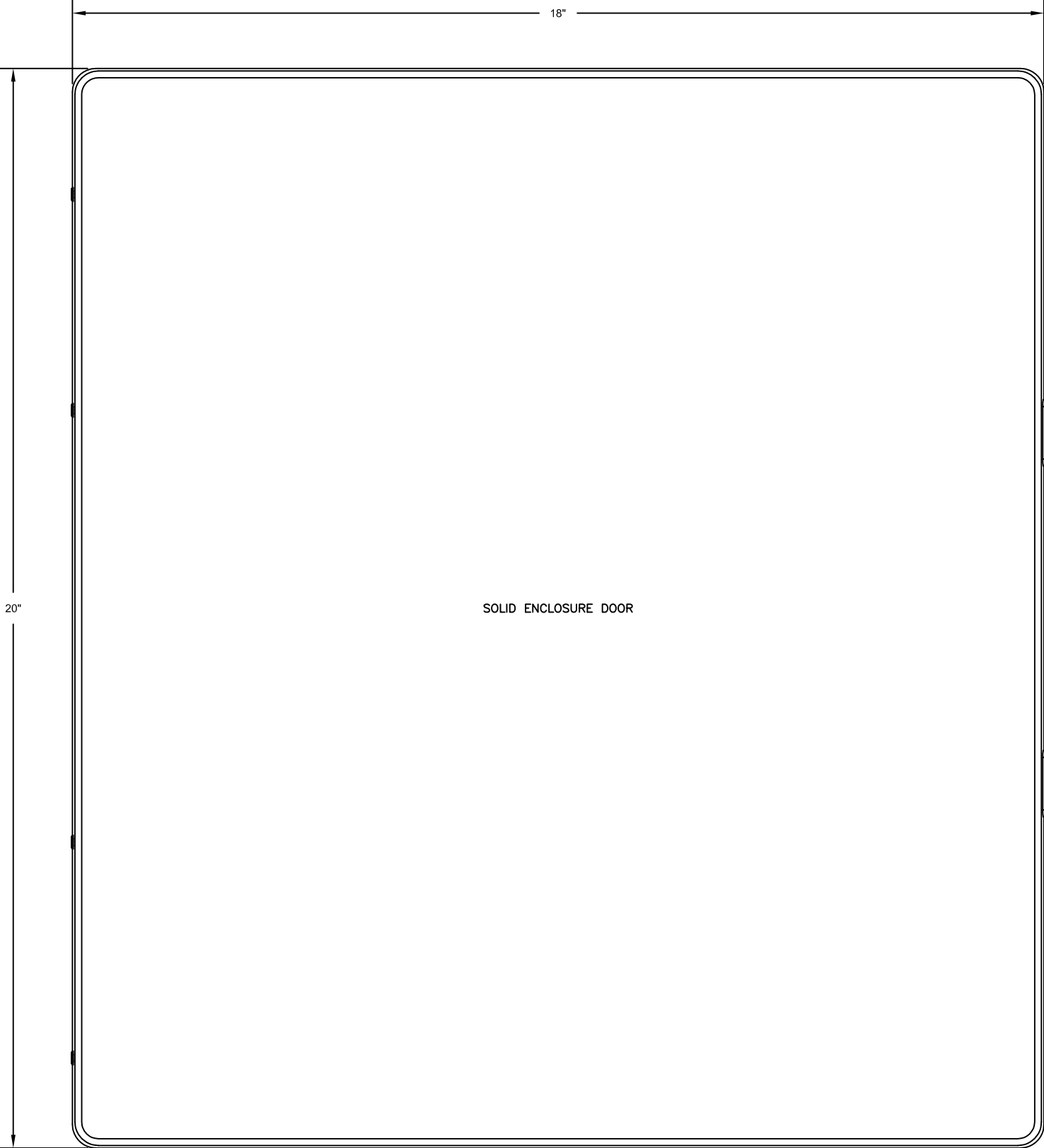
SKU#: 130LTSS1/4X3/8

Hose Connector

St. St. 316 Pipe Fitting, Hose Connector 1/4" x Tube Stub 1/4"



BODY MATERIAL	Stainless Steel 316
FITTING TYPE	Adapter
CONNECTION TYPE	Tube Stub
CONNECTION SIZE	3/8"
CROSS REFERENCE	SS-4-HC-A-601
TUBE SIZE	1/4", 3/8"




20"

18"

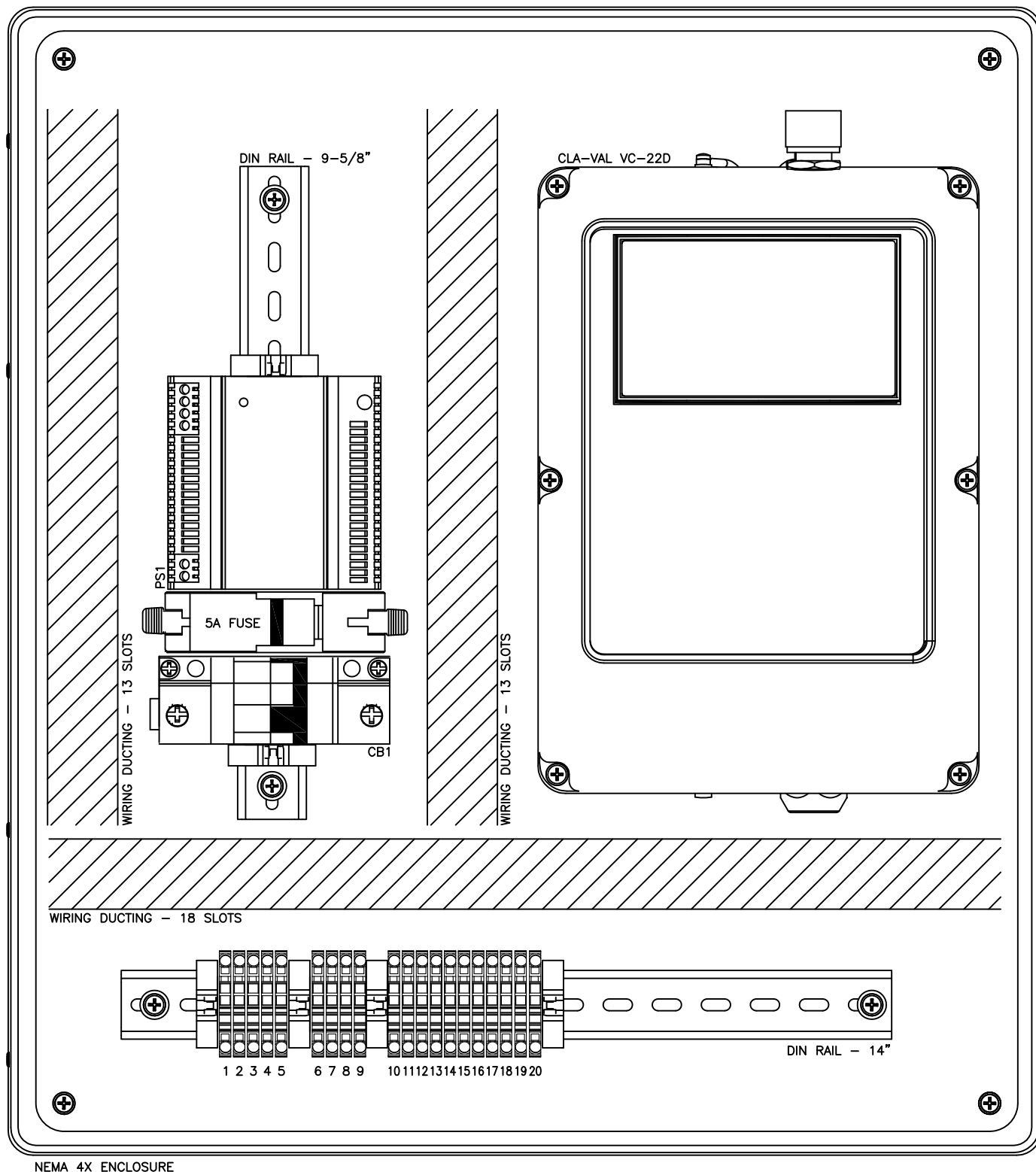
SOLID ENCLOSURE DOOR

NEMA 4X ENCLOSURE FIBERGLASS POLYESTER



CLA-VAL CO. NEWPORT BEACH, CALIFORNIA

DRAWN BY DR	DATE 3-28-16	TITLE VC-22D W/ ENCLOSURE USED WITH DC SOLENOIDS LAYOUT & WIRING DIAGRAM	
APPROVED BY MS	DATE 3-28-16		
		SIZE A	DWG NO. 210812
<small>THIS DRAWING IS THE PROPERTY OF CLA-VAL COMPANY. ALL OR PART OF THIS DOCUMENT CONTAINS INFORMATION PROPRIETARY TO CLA-VAL. RECIPIENT AGREES NOT TO DISCLOSE OR REPRODUCE ALL OR PART OF THIS DRAWING OR USE OR ITS CONTENTS IN ANY DETRIMENTAL TO OWNERS INTEREST.</small>		SCALE N/A	REV -
		AUTOCAD DWG	SHEET 1 OF 5



NOTES:

- PRODUCT COMES WITH 24VDC/40W POWER SUPPLY.
WHEN ADDING ADDITIONAL SENSORS, SOLENOIDS & ETC
PROPER POWER CALCULATIONS SHALL FIRST BE MADE.



CLA-VAL CO.

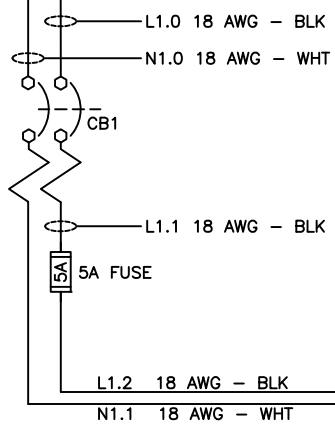
NEWPORT BEACH, CALIFORNIA

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APPROVED BY MS DATE 3-28-16
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TITLE VC-22D W/ ENCLOSURE USED WITH DC SOLENOIDS LAYOUT & WIRING DIAGRAM
SIZE A DWG NO. 210812
AUTOCAD DWG SCALE N/A SHEET 2 OF 5

FROM CUSTOMER
120VAC/60HZ

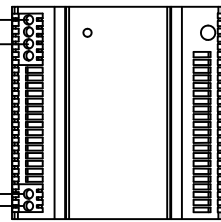
1 5 4 (HOT)



+24VDC 18 AWG - RED

0VDC 18 AWG - BLU

FROM
LINE
032

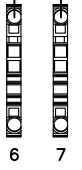


POWER SUPPLY
24VDC/40WATTS

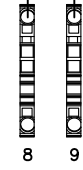
E 18 AWG - GRN



VALVE CLOSING SOLENOID



7



9

VALVE OPENING SOLENOID

S01+ 18 AWG - RED

FROM
LINE
027

S01- 18 AWG - BLU

FROM
LINE
027

S02+ 18 AWG - RED

FROM
LINE
027

S02- 18 AWG - BLU

FROM
LINE
027

SEE LAYOUT DWG
FOR TERMINAL BLK
LOCATIONS.



CLA-VAL CO.

NEWPORT BEACH, CALIFORNIA

DRAWN BY DR DATE 3-28-16
APPROVED BY MS DATE 3-28-16

TITLE VC-22D W/ ENCLOSURE
USED WITH DC SOLENOIDS
LAYOUT & WIRING DIAGRAM

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SIZE A DWG NO. 210812
AUTOCAD DWG SCALE N/A SHEET 3 OF 5

021

022

023

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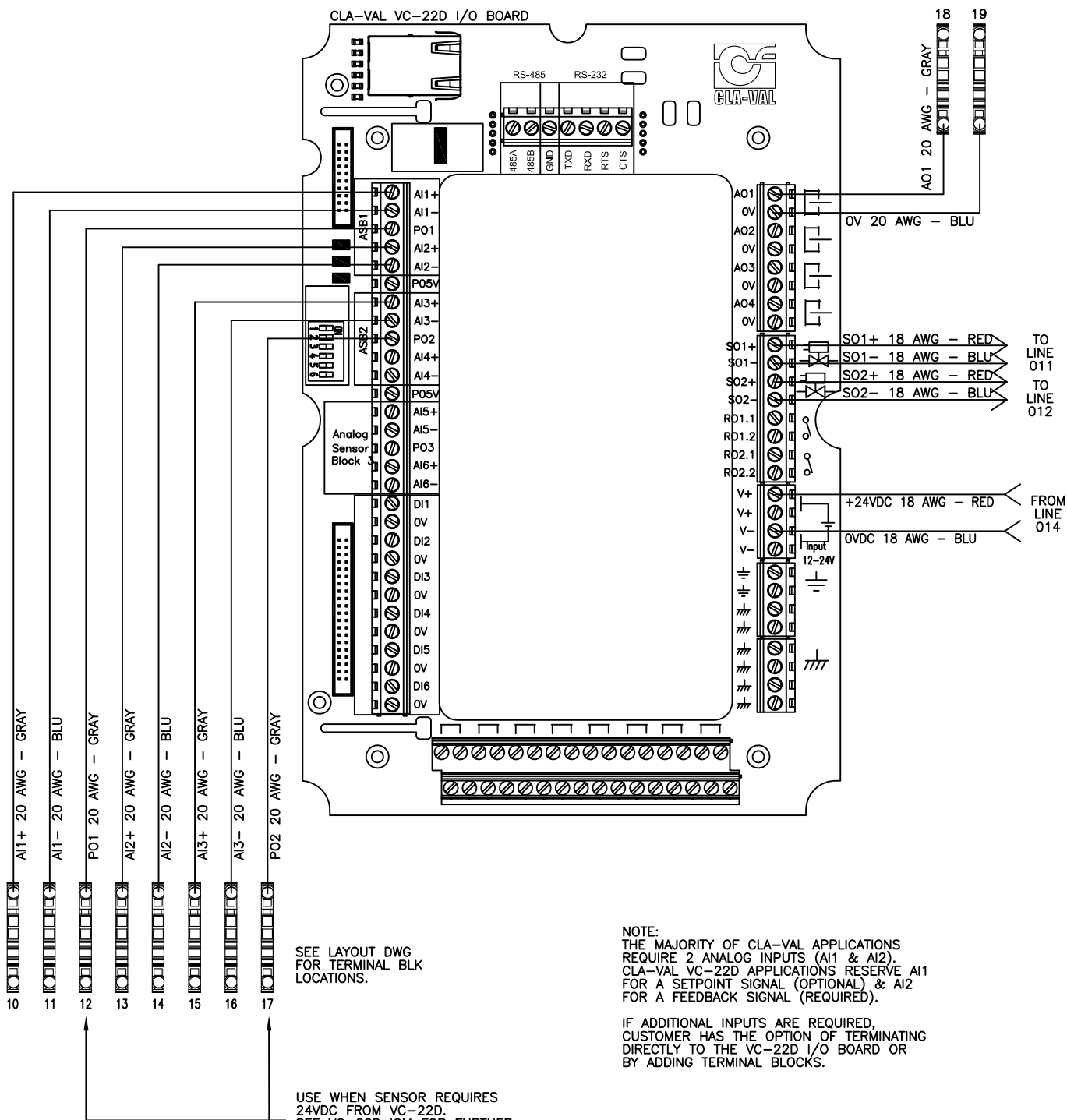
036

037

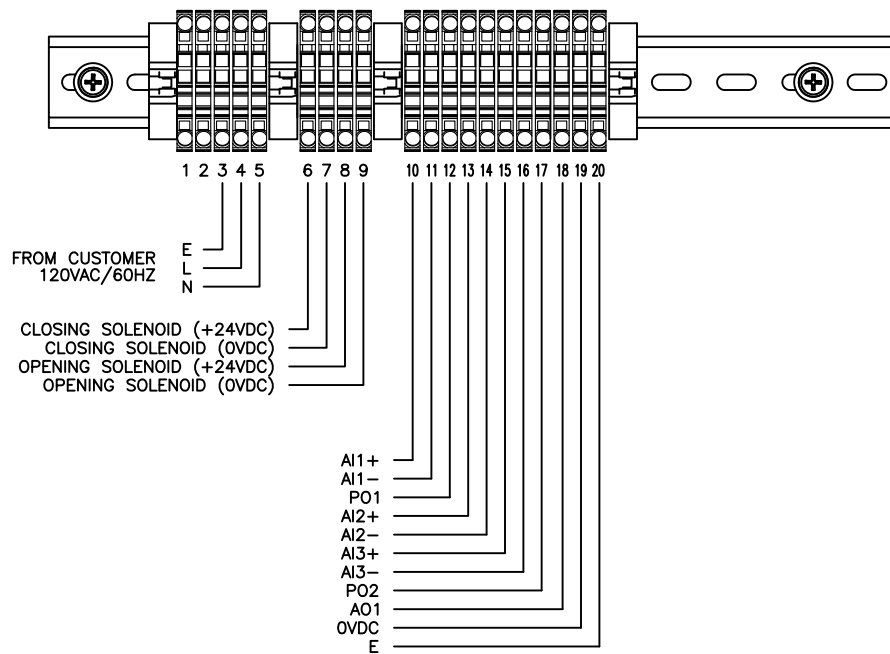
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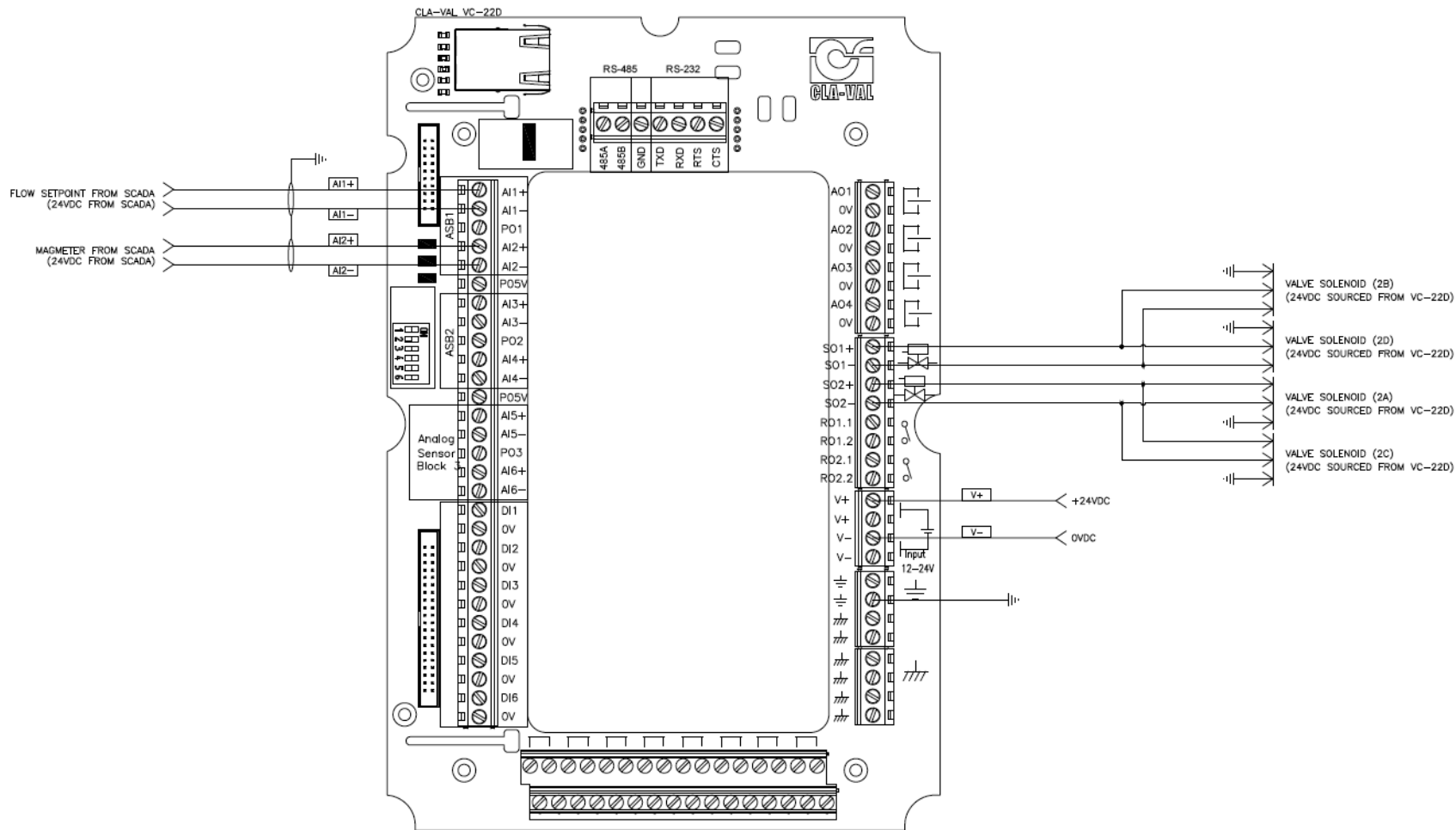


		NEWPORT BEACH, CALIFORNIA	
DRAWN BY	DR	DATE	3-28-16
APPROVED BY	MS	DATE	3-28-16
		TITLE	
		VC-22D W/ ENCLOSURE USED WITH DC SOLENOIDS LAYOUT & WIRING DIAGRAM	
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		A	210812
		SCALE	N/A
		SHEET	4 OF 5




CUSTOMER CONNECTIONS

 CLA-VAL CO.		NEWPORT BEACH, CALIFORNIA	
DRAWN BY DR	DATE 3-28-16	TITLE VC-22D W/ ENCLOSURE USED WITH DC SOLENOIDS LAYOUT & WIRING DIAGRAM	
APPROVED BY MS	DATE 3-28-16		
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		SCALE N/A	SHEET 5 OF 5



DIP SWITCH CONFIGURATION



 CLA-VAL CO. NEWPORT BEACH, CALIFORNIA	
DRAWN BY: DR APPROVED BY: DATE:	DATE: 10-1-19 TITLE: VC-22D WITH DC SOLENOIDS 131-57 WIRING DIAGRAM
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SCALE: N/A	SHEET: 1 OF 1



MODEL

VC-22D

IP-68 Electronic Valve Controller



Model VC-22D
IP-68 Valve
Controller

Product Description

The Cla-Val VC-22D is designed to provide state of the art valve control for a variety of fluid control parameters. Intuitive programming screens allow easy and fast programming for standard and customized applications such as flow, pressure, level, or position. Complete capabilities allow either stand-alone operation or easy integration into SCADA systems with standard wired signals or Modbus (TCP or RTU) communications.

For ease of use, the controller is pre-loaded with a wide variety of typical valve applications (ValvApps™). Additional custom ValvApps™ can be created by Cla-Val to meet any operational requirement. For example 2 or 3 modulating control functions can be combined into one custom ValveApp.

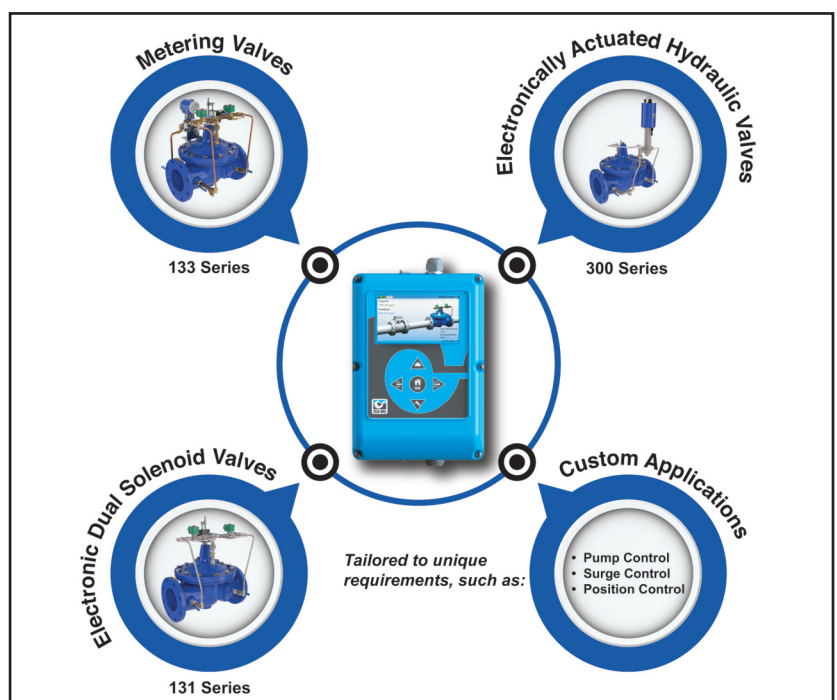
Pre-Loaded Typical ValvApps™ include:

- Flow Control with Mag Meter or e-Flowmeter Feedback
- Pressure Control with Upstream or Downstream Feedback
- Position Control with Position Feedback
- Modulating Level Control with Level and Position or Flow Feedback
- Metering Valve with Position and DP or P1-P2 Feedback
- Ratio Control with 2 Flowmeter feedbacks
- Altitude On/Off Level Control with Delayed Opening and Level Feedback
- Pressure Management with CRD-34 Electronic Pilots and Flow Feedback

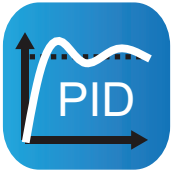
- Provides remote or local setpoint control for valves in a variety of fluid applications
- Highly accurate and stable valve control
- Controller is supplied with pre-loaded ValvApps™ for most common valve functions
- Custom ValvApps™ can be created for Multi-Function Control
- Simple Control Curves graphical programming
- High resolution color screen graphics with color-coded indicators
- Communications via standard 4-20 mA retransmission and relays or by Modbus RTU/TCP
- Internal logging : programmable and download to USB
- Less than 3 Watts power: solar or hydro powered remote valve control
- Simple and intuitive programming and set-up
- IP-68 Submersible (verified by independent lab)



Controller Applications

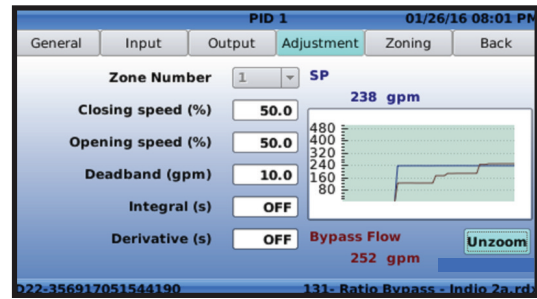


VC-22D Valve Functions



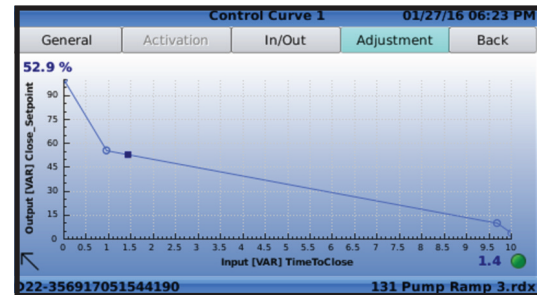
PID Control

Used in maintaining a control valve at setpoint, multiple PID loops can be programmed with each of them offering local or remote setpoints. A real-time chart view helps to visualize valve response and fine tune valve response. Programmable setpoint ramping prevents hydraulic shocks.



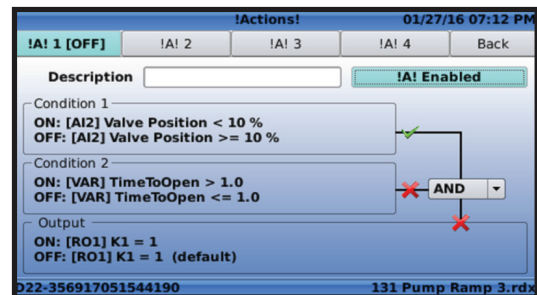
Control Curves

Offers an easy way to create a relationship between two system variables. Using graphical functions, the user draws the control curve relationship linking pressure, flow, level, and/or time directly on the screen. Up to four control curves allowing independent pump control valve opening and closing or tailored modulating level control.



Actions

Used to take "action" (or alarms) when programmable conditions (1 or 2) are met by forcing an output relay, solenoid, or 4-20 mA output. The closing relay can be used to send an alarm to SCADA. Up to four actions can be programmed including deadband.



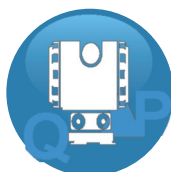
Retransmission

Used to retransmit any input signal, variable, or calculation to a SCADA system. Up to four input signals such as pressure, flow, or level can be redirected through the 4-20 mA outputs.



Totalizer

Keeps track of total volume as a function of time. Customizable units & reset functionality allow for simplified set-up and configuration. Can be used for volume (or batch) control applications limiting water volume taken from supplier per day or into tank trucks.



DP Metering

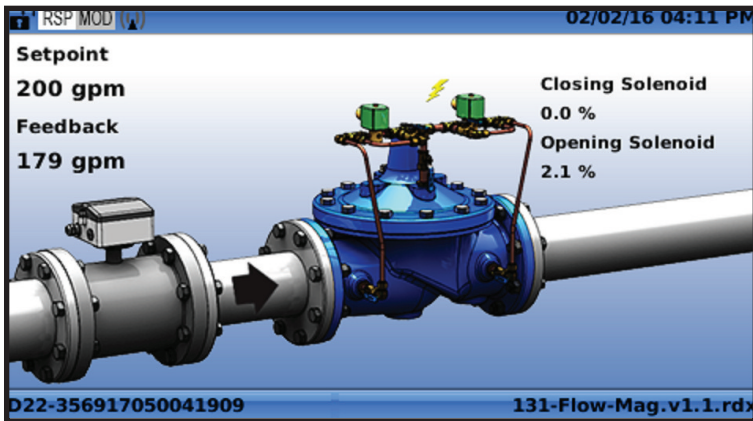
A built-in function to calculate flowrate based on valve position and DP. The returned flow value can be displayed and controlled without a separate flow meter. A metering ValvApp with this feature is included in the standard internal library. All standard Cla-Val valve sizes curves are included.



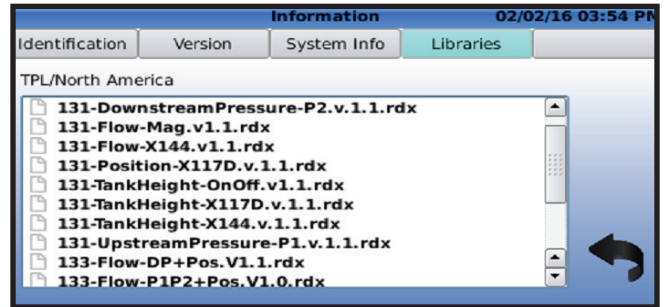
Data Logging and Log File

All input and output values are logged according to a programmable schedule. Default logging is every 5 minutes but can be as low as 1 minute or at customized intervals. 4 GB SD card memory allows greater than 80,000,000 values storage. Data is stored in MS-Excel (CSV) readable format. Transfer is by USB.

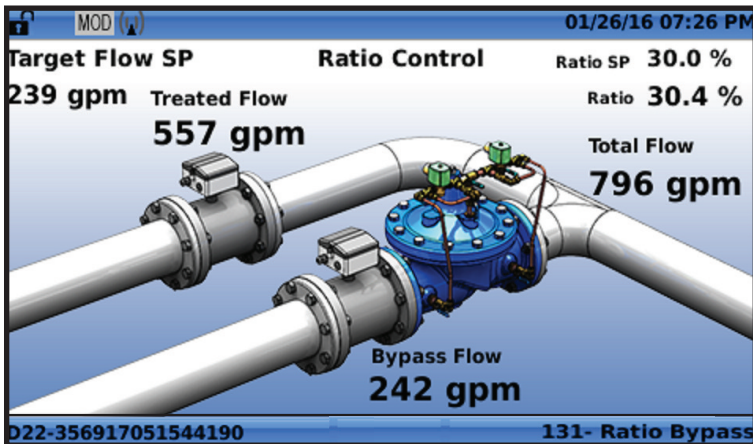
Standard & Custom ValveApps™



Standard ValveApps™

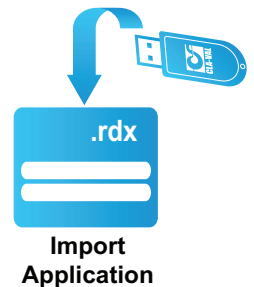


At startup the user can select from an internal library of Standard ValveApps designed for the most common control applications such as flow, pressure, level, position, or pressure management. Pre-configured graphics displays actual valve installation and minimizes startup time.



Custom ValveApps™

Special requirements can easily be handled by importing Custom ValveApps from the USB port. Program files may be either pre-programmed into the controller or sent by email and downloaded into the controller. All within minutes. Typical non-standard applications include ratio (blending), multiple functions, multiple inputs, custom graphics, differential pressure, temperature, salinity, electrical conductivity, parallel valves, etc.



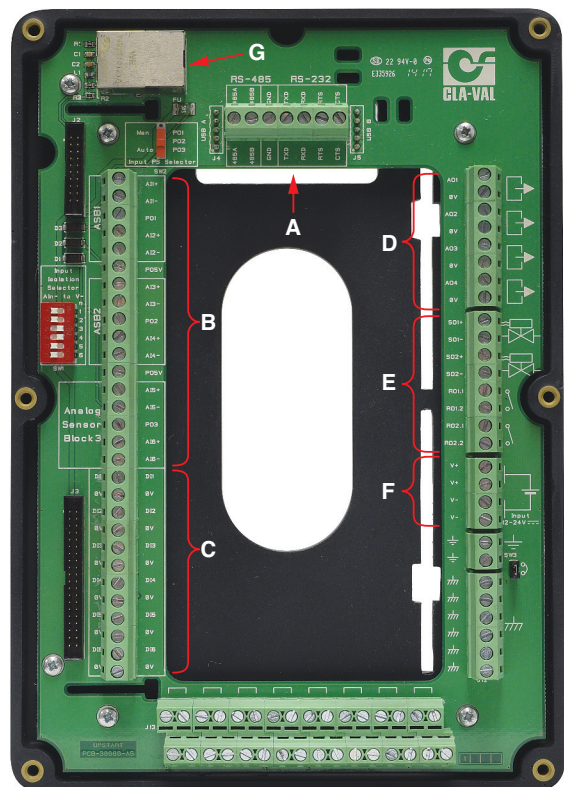
Inputs, Outputs & Communications

Features

- A) RS-232/485
- B) Six 4-20 mA Analog Inputs
- C) Six Digital inputs
- D) Four 4-20 mA Analog Outputs
- E) Two Solenoid + Two Relay Outputs
- F) 12 - 24 VDC Power
- G) Ethernet Connection (External)



Typical installation with mounting bracket



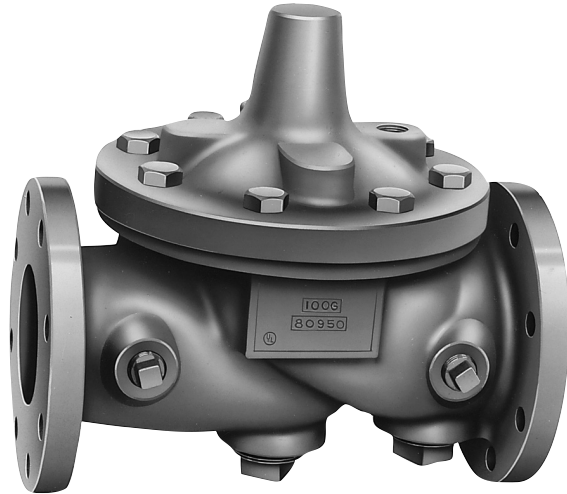
VC-22D Valve Controller Product Specifications

Inputs	Power Requirements
6x Analog 4-20 mA	12 24 VDC Input
6x Digital (dry contact max 5 VDC @ 0.1A - 100 Hz max)	Consumption: 1.5 W standby, 3 W in use
Reverse polarity and short circuit protection	Max 32 VDC over voltage protection
Optocoupler isolation @ CMR 1000 V - 2 wires insulated	Reverse polarity and short circuit protection
Outputs	Communications
4x 4-20 mA Analog	Modbus TCP / Ethernet
2x Solenoid solid state relay 24 VDC @ 0.5 A - binary or proportional	Modbus RTU / RS-485
2x Mechanical relay 24 VDC - 240 VAC @ 1 A max.	USB
Reverse polarity & short circuit protection	VNC
Control Parameters	GPRS modem quad band (consult factory)
Proportional band 0-100% / independent opening and closing	Enclosure & Display
Deadband 0 - full scale	8.75" (223 mm) H x 6" (153 mm) W x 3.5" (89 mm) D
Cycle time 0 - 60 sec	Weight 3 lbs (1.4 kg)
Integral and Derivative available	PC / ABS plastic UV resistant
Output limits - % of Cycle Time / Independent opening and closing	IP-68 Connections - cable glands, USB, Ethernet
Multi-zone tuning - up to 4 zones	5 mechanical pushbuttons
4x PID loops	Silicon sealed polycarbonate screen
4x Actions or Alarms - 1 or 2 triggering conditions	4.3" color display 480 x 272 - 24 bit
4x Control Curves (graphically programmed)	Password 5-digit
Setpoint ramping	Mounting bracket - anodized aluminum
Input signal filter 0-100%	IP-68, 2 meters 1 month
Flow Totalizer (usable for volume control)	Temperature range 14 to 158 F (-10 to 70 C)
Logging & Data Storage	PCB coating - 90% RH, non condensing
Configurable logging intervals	Optional Power Converter / Supply
Real-time back-up on 4 GB SD card	IP-68; Used to operate AC solenoids
Memory protection 10 year lithium battery	Panel Mount; Used to operate AC solenoids
CSV file format MS-Excel compatible	
File transfer to USB memory	

CLA-VAL WARRANTY

3 Year Warranty on Cla-Val Quality Products

This is a Limited Warranty



Automatic valves and controls as manufactured by Cla-Val are warranted for three years from date of shipment against manufacturing defects in material and workmanship that develop in the service for which they are designed, provided the products are installed and used in accordance with all applicable instructions and limitations issued by Cla-Val. Electronic components manufactured by Cla-Val are warranted for one year from the date of shipment.

We will repair or replace defective material, free of charge which is returned to our factory, transportation charges prepaid, provided that after inspection the material is found to have been defective at time of shipment. The warranty is expressly conditioned on the purchaser's giving Cla-Val immediate written notice upon discovery of the defect.

Components used by Cla-Val, but manufactured by others, are warranted only to the extent of that manufacturer's guarantee.

This warranty shall not apply if the product has been altered or repaired by others, and Cla-Val shall make no allowance or credit for such repairs or alterations unless authorized in writing by Cla-Val.

Disclaimer of Warranties & Limitation of Liability

The foregoing warranty is exclusive and in lieu of all other warranties and representations whether expressed, implied, oral or written, including but not limited to, any implied warranties or merchantability or fitness for a particular purpose. All such other warranties and representations are hereby cancelled.

Cla-Val shall not be liable for any incidental or consequential loss, damage or expense arising directly or indirectly from the use of the product. Cla-Val shall not be liable for any damages or charges for labor or expense in making repairs or adjustments to the product. Cla-Val shall not be liable for any damages or charges sustained in the adaptation or use of its engineering data and services.

No representative of Cla-Val may change any of the foregoing or assume any additional liability or responsibility in connection with the product.

The liability of Cla-Val is limited to material replacements F.O.B. Newport Beach, California.

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