



MODEL

X144D

e-FlowMeter with Display



- Plug and Play Metering
- Built-In LCD Touch Screen
- Can be factory assembled on a new valve
- Alleviates the need for an in-line meter and the associated installation costs
- IP68 Submersible
- Stainless Steel Construction
- Independent laboratory tested:
 - Utah State University, Imperial College - London



Installation view of the X144D e-FlowMeter
Note: Consult Factory for Angle Pattern Applications



The Cla-Val Model X144D e-FlowMeter is a vortex shedding insertion flow meter designed to be retrofitted into a Cla-Val Automatic Control Valve to provide accurate flow measurement data without the need to install a separate meter.

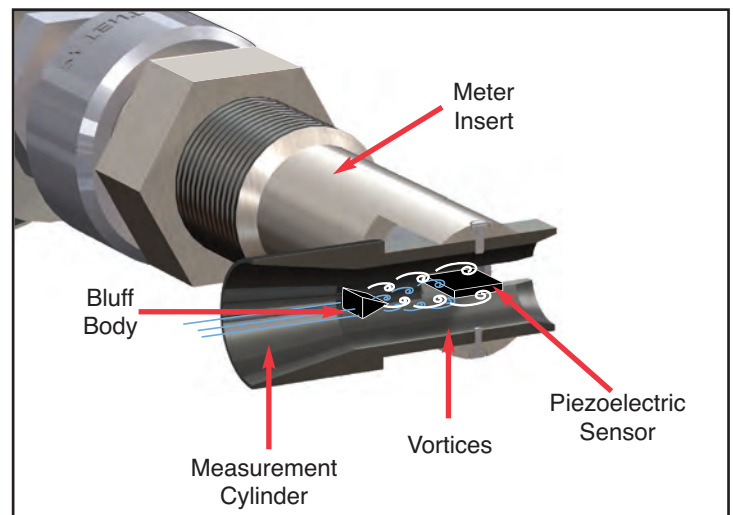
Configured for installation in the inlet tapping of a Cla-Val Automatic Control Valve, the X144D can be used in valves directly downstream of a flow disturbance such as elbows, valves or a reducer. (See page 2 for installation guidelines)

The X144D e-FlowMeter employs an innovative swivel mechanism which allows the meter to be inserted into tappings as small as 1/2-inch. For applications involving installation in close proximity to pump discharge, please consult factory with details.

Frequency Measurement

The X144D e-FlowMeter uses the vortex shedding method to measure flow. The meter is inserted into the inlet tapping of the valve and the measurement cylinder is oriented parallel to the direction of flow. The flow enters the measurement cylinder where it encounters the bluff body, generating vortices, which in turn, deflects off the piezoelectric sensor.

The sensor counts the vortices and communicates the data to the meter's integral circuit board. The flow data signal is converted to 4-20mA, or transistor (NPN) pulse, depending on the desired application.



Installation Guidelines and Typical Applications

Installation Locations

For optimum performance, it is recommended that the valve in which the X144D e-FlowMeter is installed be located as shown below.

Optimum Installations

Install Isolation Valve (any style) a minimum of 5 pipe diameters upstream of the control valve

For installation directly onto the inlet flange of the control valve or where less than 5 pipe diameters upstream is the only option, an Isolation Valve **MUST** be a full ported, wide open Gate or Sluice style valve. In this scenario, Isolation Valve **MUST NOT** be a Butterfly style valve.

Pipe Reducer Upstream

Typical Applications

The X144D e-FlowMeter is ideal for installation in any application where metering is desired.

Combining additional Cla-Val electronic products with the X144D e-FlowMeter provides even more access to valve performance data installed in remote locations.

Data Acquisition and Storage plus Power

Powered by an X143IP or X143MP Power Generator

Output to SCADA, PLC, data logger, etc.

Data Acquisition and Storage using Cla-Val Power Generator

- The X144D e-FlowMeter connects to most commercially available loggers with the choice of 4-20mA or pulse output
- The VC-22D Controller and X145 e-Display are ideal companions to the X144D e-flowMeter, providing access to real-time data
- The VC-22D Controller, e-Display and e-FlowMeter can be powered by the X143 Series Power Generators

Typical Menus

Display Menu

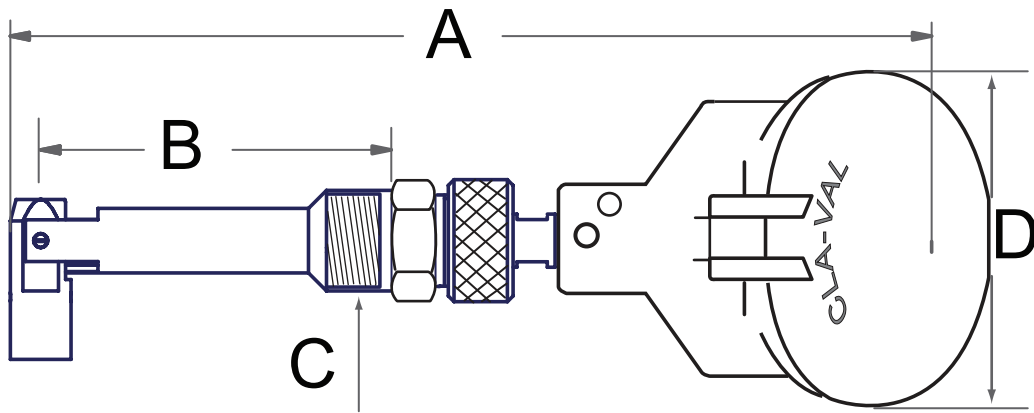
Settings Menu

Installation Notes:

- Consult factory for other installation configurations
- Do not use butterfly valves as isolation valves adjacent to X144D installations

X144D Dimensions

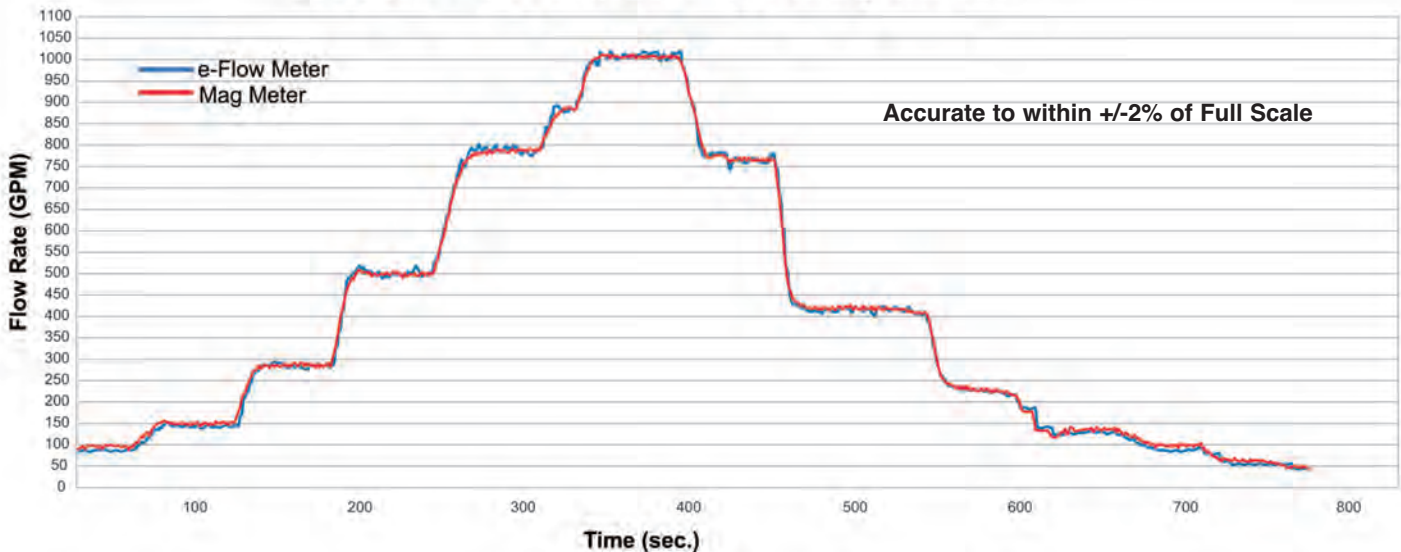
X144D Sizes		1			2		3		4						
Full Port Valve Sizes (inches)		2	2-1/2	3	4	6	8	10	12	14	16	18	20	24	30
Reduced Port Valve Sizes (inches)		4	4	4	6	8	10	12	14	16	18	20	24	CF	CF
Overall Length (in inches)	A	8.85	8.85	8.85	9.45	9.45	13.18	13.18	17.91	17.91	17.91	17.91	17.91	17.91	17.91
Insertion Length (in inches)	B	2.3	2.3	2.3	2.8	2.8	6.8	6.8	11.25	11.25	11.25	11.25	11.25	11.25	11.25
Pipe Thread (NPT)	C	1/2	1/2	1/2	3/4	3/4	1	1	1	1	1	1	1	1	1
Overall Width (in inches)	D	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25



*2" X144D e-FlowMeter may be installed on new valves only. Consult factory for larger applications

Typical Performance

X144D e-FlowMeter vs. Mag Meter



Product Details

Insertion Tool and Locking Ring

- Required for installation
- Tool allows the proper installation and alignment of the bluff body to be parallel to upstream flow

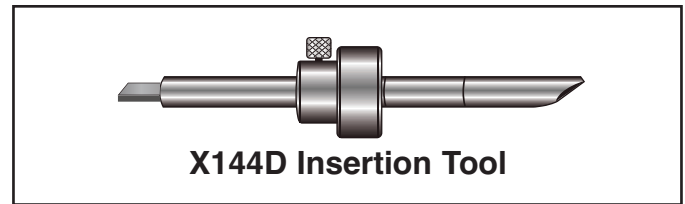
Power Requirement

- 12/24 VDC, 1.0 Watts minimum

X144D e-Flow Meter Sizing

- The X144D threads directly into the inlet tapping of a Cla-Val Control Valve. The size of the e-FlowMeter is dependent on the specific valve size for which it has been calibrated - no additional fittings are required.

See dimension chart on previous page.



Cabling

- The unit is supplied with 20 feet of shielded cable.

Maximum Operating Pressure : 400 PSI

X144D e-FlowMeter Operational Flow Range = from 0.5 ft/s to 20 ft/s

X144D e-FlowMeter Analog Range (4-20mA Scaling): Factory Settings

Port Style	Line Size inches (mm)	**2" (50) (100-49 Body)	2-1/2" (65)	3" (80)	4" (100)	6" (150)	8" (200)	10" (250)	12" (300)	14" (350)	16" (400)	18" (450)	20" (500)	24" (600)	30" (750)
Full Port Valves 4mA = 0 (GPM - l/s)	20mA Range (GPM)	260	375	575	1000	2250	3900	6000	8750	10500	14000	17500	22000	31000	52000
	20mA Range (l/s)	16.4	23.7	36.3	63.1	140	245	380	550	660	880	1100	1390	1950	3280
Full Port Pulse Weight*	Gal/Pulse	5	6.5	9.5	17	38	65	100	150	175	235	290	365	515	865
	l/Pulse	19	25	36	65	145	245	380	565	660	890	1100	1380	1950	3275
Reduced Port Valves 4mA = 0 (GPM- l/s)	20mA Range (GPM)	Not Available			675	1600	2900	4500	5650	7750	9350	Consult Factory			
	20mA Range (l/s)				42.5	100	180	285	355	490	590				
Reduced Port Valves Pulse Weight*	Gal/Pulse				11.5	26	48	75	95	130	155				
	l/Pulse				44	99	180	285	360	495	585				

* Pulse Width = 250ms

**2" X144D e-FlowMeter may be installed on new valves only

Valve Position Transmitter



- Accurately Monitors Valve Position
- Environmentally Sealed to IP-68
- Featured on Electronic Control Valves
- Easy Field Adjustments
- Compact and Rugged Construction

The Cla-Val Model X117D Valve Position Transmitter is an accurate monitor of valve position. Through an industry standard 4-20 mA output, the X117D delivers the accuracy required for computer-guided control valve systems (SCADA).

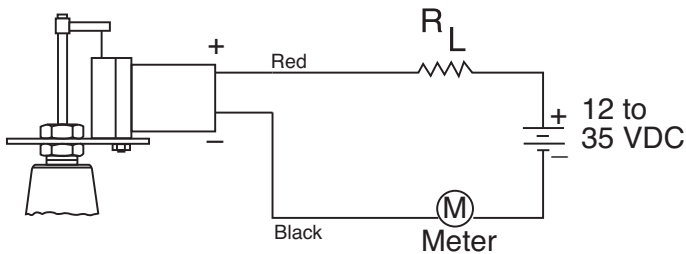
The electronic components are enclosed in a rugged, sealed aluminum and stainless steel housing. The assembly is mounted externally on the cover of a Cla-Val main valve. An extension of the valve stem projects outside of the cover at the center boss and is mechanically linked to the electronic components with an extensible wire rope.

As the valve stem rises and lowers, the X117D provides an output signal in direct proportion to the valves position. An internal spring maintains constant tension on the wire rope for virtually no hysteresis error throughout valve stroke.

Wiring Diagram

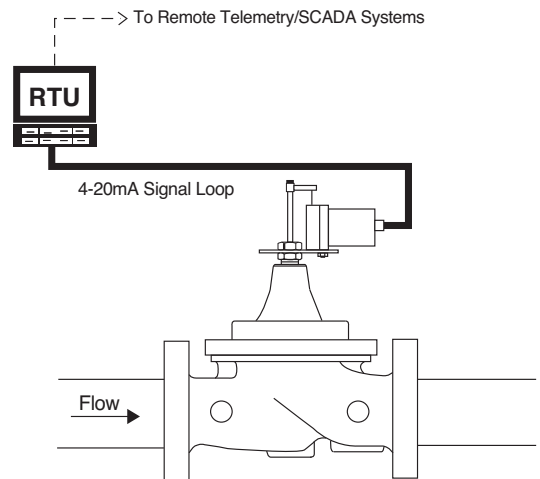
The signal from the position sensing mechanism wire rope is converted to a two-wire 4 to 20 mA current output. The voltage compliance range is 14 to 35 VDC. The required, but not supplied, maximum load resistance can be calculated using the following formula:

$$R_L \text{ Max.} = \frac{V_{\text{supply}} - 12.5}{.020}$$



Typical Installation

The X117D Valve Position Transmitter can be used to transmit valve position to the optional 131VC-3 Electronic Valve Controller.



X143 — SERIES —



Power Generators



retrofitable
X143IP Power
Generator

X143IP Intermediate Turbine Power Generator

- Uses the hydraulic energy of the system to generate power
- Retrofits to an existing Cla-Val Control Valve
- Can be specified on a new valve
- Ideal for isolated locations and confined spaces
- Generates up to 14 watts of power to operate onsite equipment without tying into the grid, including the following:
 - Electronic Control Valves
 - Communications Equipment
 - Data loggers that capture and store information

all you need is flow and differential pressure



retrofitable
X143MP Power
Generator

X143MP Micro Turbine Power Generator

- Uses the hydraulic energy of the system to generate power
- Retrofits to an existing Cla-Val Control Valve
- Can be specified on a new valve
- Ideal for isolated locations and confined spaces
- Generates up to .7 watts of power to operate onsite equipment when there is no available power
- Ideal for applications using:
 - Cell phones and GSM communication devices
 - Data loggers that capture and store information

effective option for low power requirements



onsite power without tying into the grid

for detailed Engineering Data Sheets (E-Sheets), visit www.cla-val.com

Cla-Val e-Display



Model X145

- **Displays: Flow Rate, Total, Pressure, Position and mA**
- **IP-67 Submersible**
- **SCADA compatible**
- **Customizable units**
- **Backlight optional**
- **Integral wall-mount hardware included**

The Cla-Val Model X145 “e-Display” displays rate up to five digits and totals up to eight digits. The e-Display can be programmed to automatically or manually toggle between rate and totalizing functions. Standard features include an optional backlit display with bargraph, on-screen custom engineering units, max/min display and alarm and pulse outputs.

Designed to be wall-mounted, the X145 e-Display is easy to set-up and is ideal for installation with the Cla-Val X144 e-FlowMeter.

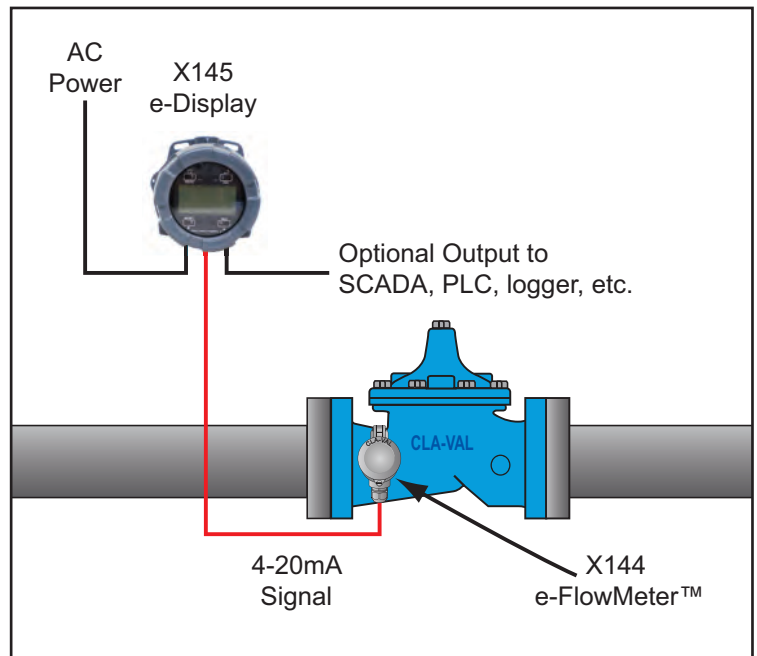
Advanced Features

- **Pulse output available for SCADA, PLC and logging applications**
- **Configurable for low-flow cut-off**
- **Noise filter**
- **Optional password protection**
- **Math functions (Linear, Square Root, Programmable Exponent)**



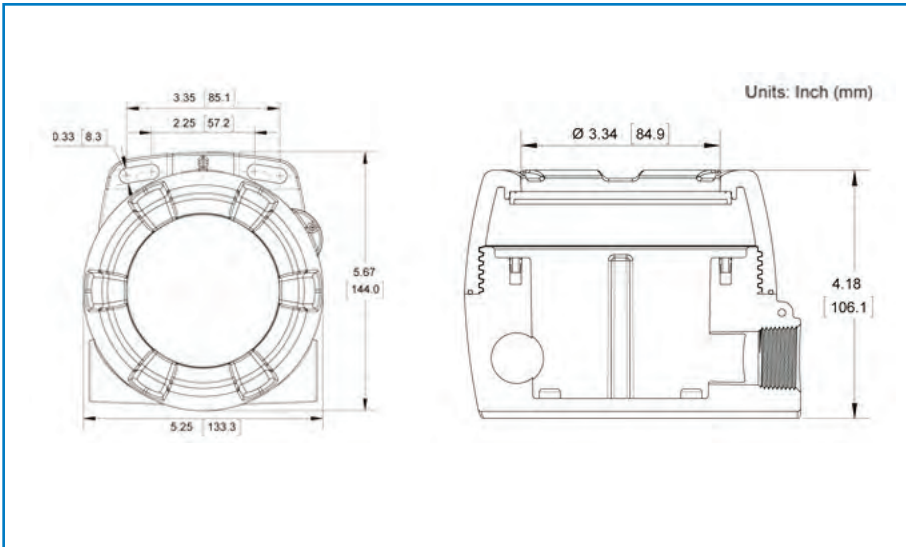
The Cla-Val Model X144 e-FlowMeter™ is a vortex shedding insertion flow meter designed to be retrofitted into a Cla-Val Automatic Control Valve to provide accurate flow measurement data without the need to install a separate meter.

Typical Installation



To learn more about Cla-Val Electronic Products, visit www.cla-val.com

Dimensions



Technical Data

Power Input:	AC: 110 - 240V 50/60Hz DC: 8 -24VDC
Display:	Configurable
Operating Temp. Range:	-15° F to +150° F (-25° C to +65° C)
Protection:	IP67
Configuration:	Factory Configured - Field Adjustable

Complementary Electronic Products

X143MP
Micro Turbine



X143IP Power Generator



X144 Electronic
FlowMeter



VC-22D Electronic
Valve Controller

