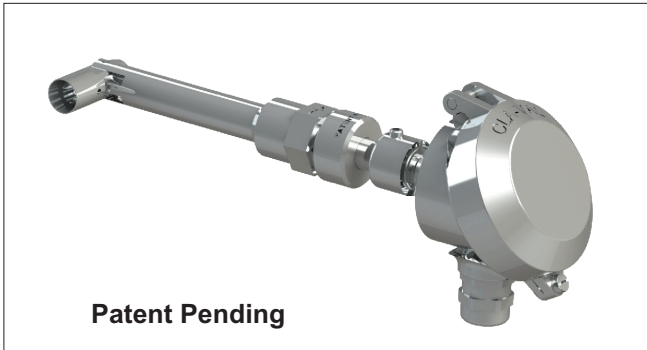


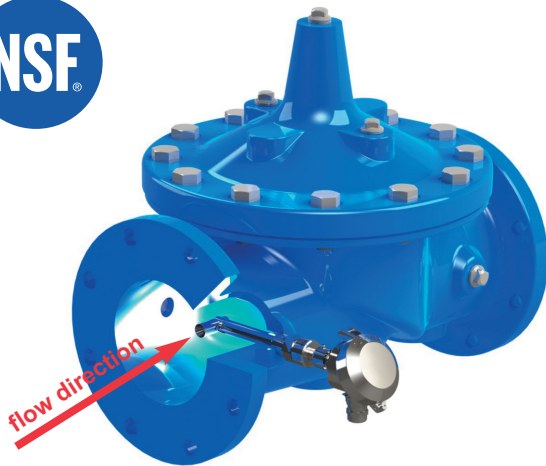


— MODEL — X144

# e-FlowMeter



Patent Pending



Installation view of the X144 e-FlowMeter

**Note: Consult Factory for Angle Pattern Applications**

## Frequency Measurement

The X144 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.

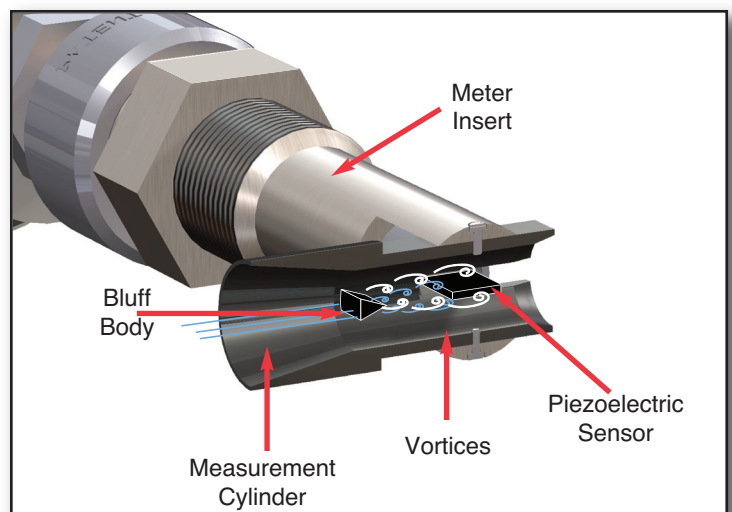
- The e-FlowMeter can be retrofitted to an existing Cla-Val Automatic Control Valve or factory assembled on a new valve
- Alleviates the need for an in-line meter and the associated installation costs
- IP68 Submersible (verified by independent lab testing)
- Provides flow data with accuracy +/- 2% of Full Scale
- Mounts on either inlet body tapping of the Cla-Val Control Valve
- Stainless Steel Construction
- 4-20mA Loop Powered
- Plug-and-Play Metering
- No Moving Parts
- Independent laboratory tested:
  - Utah State University,
  - Imperial College - London



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.

Configured for installation in the inlet tapping of a Cla-Val Automatic Control Valve, the X144 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 X144 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.



# Installation Guidelines and Typical Applications

## Installation Locations

For optimum performance, it is recommended that the valve in which the X144 e-FlowMeter is installed be located as shown below.

### Optimum Installations

Inlet Tapping

(vertical rise) Downstream of an Elbow

Outside Elbow (top view)

> 5 Pipe Diameters Either Inlet Tapping (top view)

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

### Notes:

- Consult factory for other installation configurations
- Do not use butterfly valves as isolation valves adjacent to X144 installations

## Information Transmission

The X144 e-FlowMeter measures and transmits flow information via a 4-20mA signal to SCADA equipment.

### Information Transmission

SCADA (RTU/DSU) using the Cla-Val VC-22D Electronic Valve Controller

4-20mA Signal

## Data Acquisition and Storage using Cla-Val Power Generator

- The X144 e-FlowMeter connects to most commercially available loggers with the choice of 4-20mA or pulse output.
- The X145 e-Display is an ideal companion to the X144 e-flowMeter, providing access to real-time data
- Both the e-Display and the e-FlowMeter can be powered by the Cla-Val X143MP Micro-Turbine Power Generator

To learn more about the X143MP Power Generator, visit [www.cla-val.com/electronic-products](http://www.cla-val.com/electronic-products)

### Data Acquisition and Storage plus Power

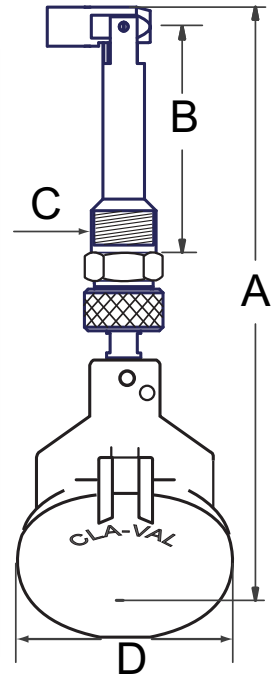
Powered by an X143IP or X143MP Power Generator

X145 e-Display

Optional Output to SCADA, PLC, data logger, etc.

## X144 Dimensions

X144 Sizes		1	2	3	4
Full Port Valve Sizes		2*, 2-1/2, 3	4, 6	8, 10	12, 14, 16, 18, 20, 24, 30**
Reduced Port Valve Sizes		4	6, 8	10, 12	14, 16, 18, 20, 24**
Overall Length (in inches)	A	8.85	9.45	13.18	17.91
Insertion Length (in inches)	B	2.3	2.8	6.8	17.6
Pipe Thread (NPT)	C	1/2"	3/4"	1"	1"
Overall Width (in inches)	D	3.25	3.25	3.25	3.25



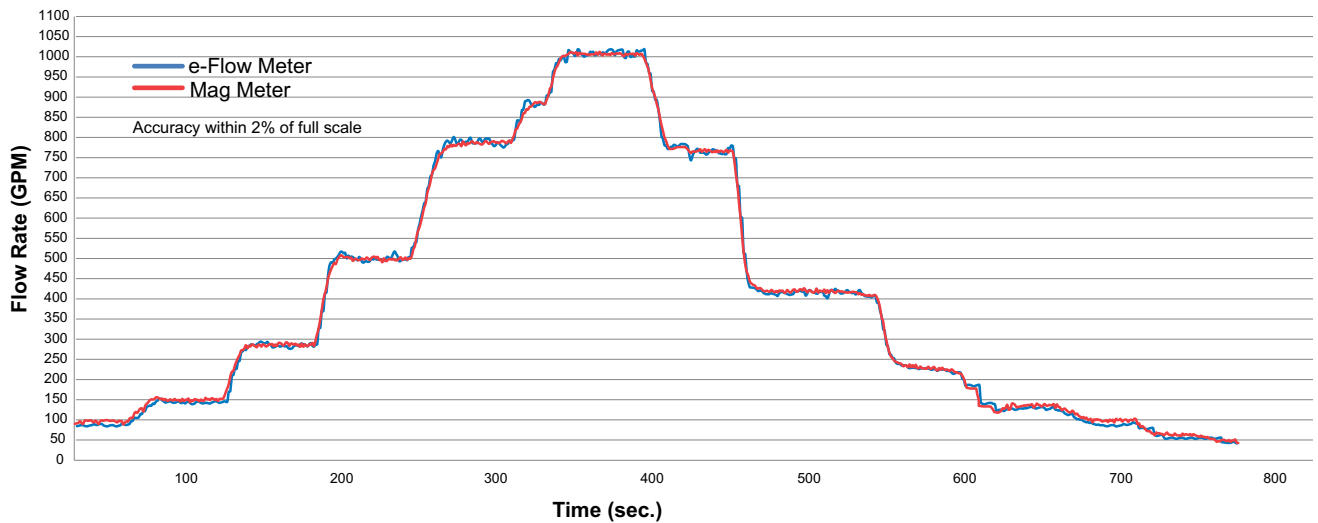
\*2" X144 e-FlowMeter may be installed on new valves only

\*\* Consult factory for larger applications

**X144 e-FlowMeter Operational Flow Range = from 0.3 ft/s to 20 ft/s**

## Typical Performance

### X144 e-FlowMeter vs. Mag Meter



## Options

- Remote Mounted Display - X145 e-Display
- Field Optimization using e-FlowMeter Customer Software
- Pulsed output proportional to flow rate for low power consumption



**X145 e-Display**

## 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, 0.7 Watts minimum.

### X144 e-Flow Meter Sizing

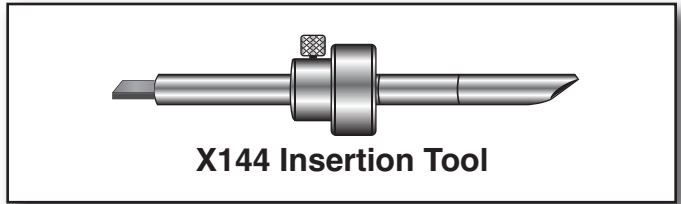
- The X144 threads directly into the inlet tapping of a Cla-Val Control Valve. The size of the e-FlowMeter is dependent on the specific valve size for which it has been calibrated - no additional fittings are required. **See dimension chart on previous page.**

### Cabling

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

### Maximum Operating Pressure : 400 PSI

### X144 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	<b>Consult Factory</b>			
	20mA Range (l/s)	not available				42.5	100	180	285	355	490	590				
Reduced Port Valves Pulse Weight*	Gal/Pulse	not available				11.5	26	48	75	95	130	155				
	l/Pulse	not available				44	99	180	285	360	495	585				

\* **Note:** \* Pulse Width = 250ms

\*\*2" X144 e-FlowMeter may be installed on new valves only



## CLA-VAL

1701 Placentia Ave. Costa Mesa, CA 92627-4475  
Phone: 949-722-4800 • Fax: 949-548-5441

### CLA-VAL CANADA

4687 Christie Drive  
Beamsville, Ontario  
Canada L0R 1B4  
Phone: 905-563-4963  
Fax: 905-563-4040

©COPYRIGHT CLA-VAL 2015 Printed in USA  
Specifications subject to change without notice.

### CLA-VAL EUROPE

Chemin des Mesanges 1  
CH-1032 Romanel/  
Lausanne, Switzerland  
Phone: 41-21-643-15-55  
Fax: 41-21-643-15-50

www.cla-val.com

Represented By: