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.

The Cla-Val 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

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

- Inlet Tapping (vertical rise)
- Downstream of an Elbow
- Outside Elbow (top view)
- Either Inlet Tapping (top view)
- > 5 Pipe Diameters
- Install Isolation Valve (any style) a minimum of 5 pipe diameters upstream of the control valve
- Pipe Reducer Upstream

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

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 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

Data Acquisition and Storage plus Power

- Powered by an X143IP or X143MP Power Generator
- Output to SCADA, PLC, data logger, etc.

Typical Menus

- **Display Menu**
  - Display
  - INITS
  - DECIMAL
  - TRACK
  - EXIT

- **Settings Menu**
  - Settings
  - OVERVIEW
  - HELP
  - MANU
  - USE
  - EXIT

- **Time/Date**
  - Time/Date set
  - Time/Date format
  - Exit

- **Relay**
  - Relay output
  - Relay options
  - Exit
X144D Dimensions

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<td><strong>X144D Sizes</strong></td>
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*2" X144D e-FlowMeter may be installed on new valves only. Consult factory for larger applications

**Typical Performance**

X144D e-FlowMeter vs. Mag Meter

Accurate to within +/-2% of Full Scale
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 30 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)** | 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        | 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      | 20mA Range (GPM)      | 675         | 1600        | 2900    | 4500     | 5650    | 7750    | 9320    | Consult Factory |
|                                  | 20mA Range (l/s)      | 42.5        | 100         | 180     | 285      | 355     | 490     | 590     | Consult Factory |
| Reduced Port Valves Pulse Weight*| Gal/Pulse             | 11.5        | 26          | 48      | 75       | 95      | 130     | 155     | Consult Factory |
|                                  | l/Pulse               | 44          | 99          | 180     | 285      | 360     | 495     | 585     | Consult Factory |

* Pulse Width = 250ms

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