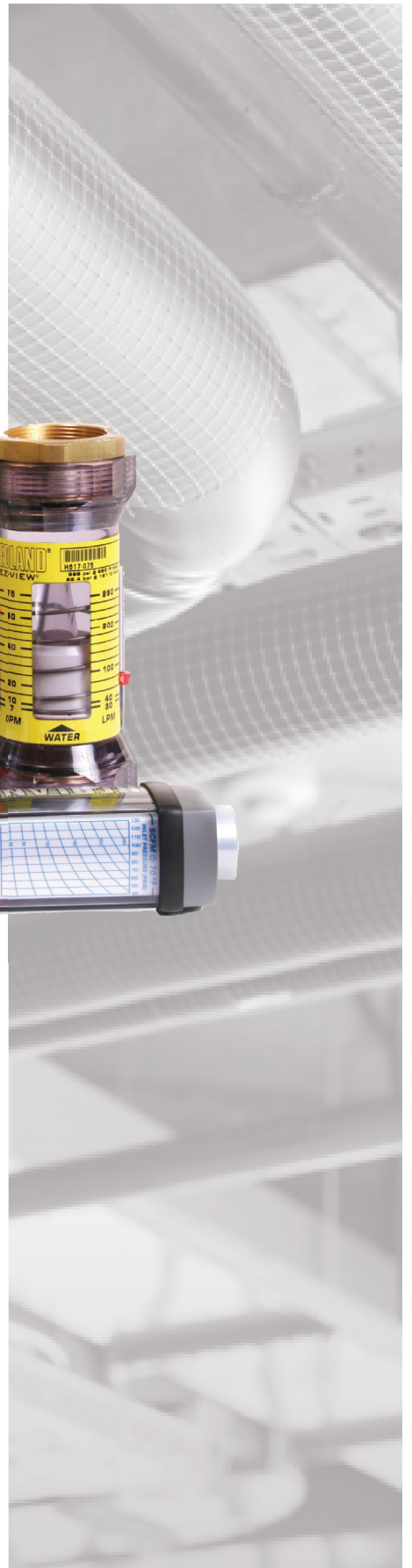


# Variable Area Flow Meters and Flow Switches



**Easy-to-Use and  
Reliable Flow Measurement.**



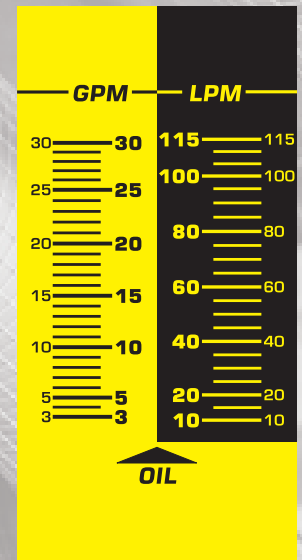
**Badger Meter**

# Variable Area Flow Meters and Flow Switches

The Hedland product line features over 18,000 inline, variable area flow meters to measure oil, phosphate esters, water, water-based fluids, pressurized air and other compressed gases. Meters designed for liquids are compatible with viscosities ranging from 40...500 SUS (4.2...108 cSt).

From 1/4...3 inches (6...76 mm), Hedland flow meters and flow switches provide quick visual indication on an easy-to-read linear scale. Hedland MR Transmitters deliver flow rate on a digital display and/or analog output. With models available for standard and high temperature applications, Hedland products are perfectly suited for the most demanding applications in fluid power, oil and gas, automotive, semiconductor, mining and discrete manufacturing. Additionally, the products are available in aluminum, brass, stainless steel, polysulfone or Radel® bodies to deliver cost-effective solutions for applications based on fluid compatibility, temperature and pressure.

Hedland products work well for both new and retrofit applications as they do not require flow straighteners, have no special piping requirements and may be installed in an orientation. In addition, Hedland instrumentation is available with a variety of end fitting options including, SAE threads, NPTF threads, BSPP threads (BSPT for 3 in.), PVC socket and swivel fittings, code 61/62 flanges and more.

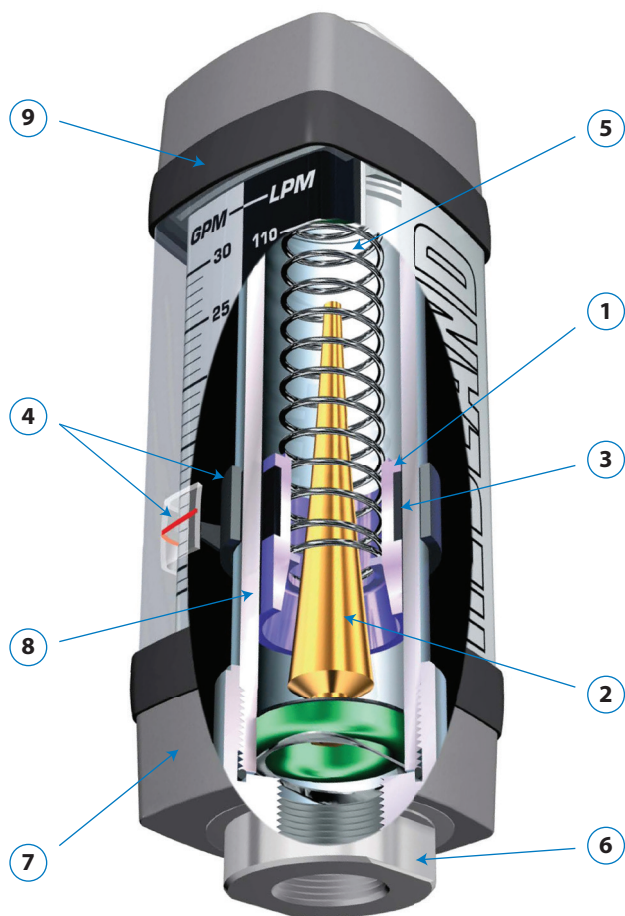


**Easy-to-Read Scale**

(Custom scales available upon request)

# Operating Principle

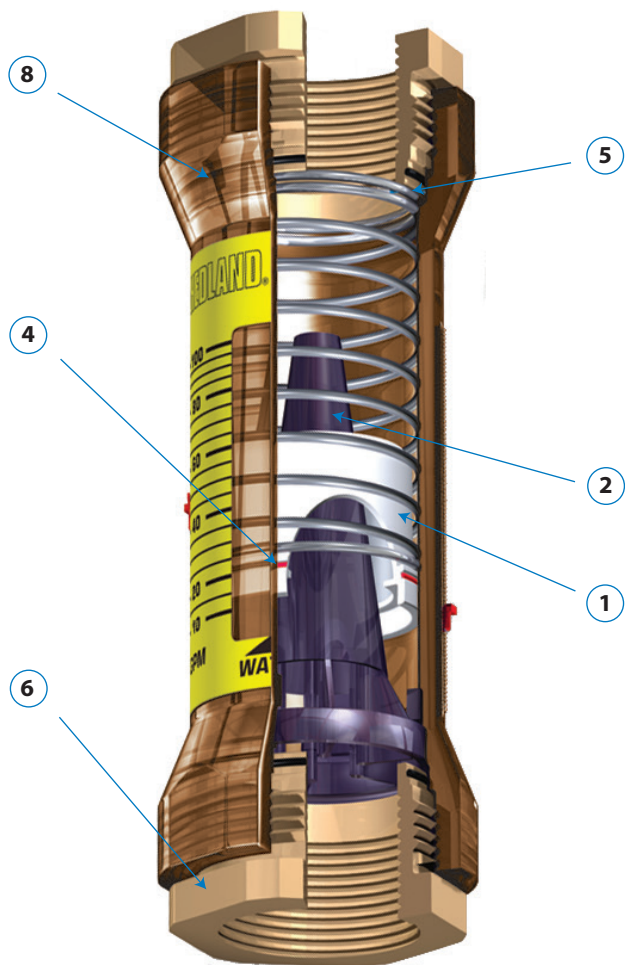
Standard



The flow meter is a variable area instrument. A sharp-edged orifice, located within the piston assembly, forms an annular opening with the contoured metering cone. The piston assembly carries a cylindrical PPS/ceramic magnet that is magnetically coupled to an external indicating magnet which moves precisely in direct response to movement of the piston. A calibrated spring opposes flow in the forward direction.

The Hedland variable area flow meters are the most readable products in their class. Brightly colored indicators move over the graduated, linear flow scale which contains bold, easy to read numeral and gauge marks. The enhanced resolution virtually eliminates parallax problems associated with competitive, direct reading flow meters.

EZ-View®



Hedland Meter Components

1	Piston Assembly
2	Metering Cone
3	Internal Magnet (standard unit)
4	Flow Indicator
5	Spring
6	End Fitting
7	End Cap (standard unit)
8	Body
9	Guard Seal/Bumper (standard unit)

# Product Overview

## Standard Products

Accuracy:  $\pm 2\%$  of full scale,  $\pm 7\%$  of full scale for 1/4 inch meters

Body Materials: Aluminum, brass and stainless steel

Connections: SAE, NPT and BSP

### Flow Meters

#### Standard

- 1/4...3 inches
- Temperatures to 240° F (116° C)
- Pressures to 6000 psi (414 bar)

#### High Temperature

- 1/4...1-1/2 inches
- Temperature up to 400° F (204° C)  
500° F (260° C) intermittently
- Pressures up to 6000 psi (414 bar)



### Flow-Alert

#### Flow Meter with Flow Switch(es)

- 1/4...1-1/2 inches
- One or two switches per meter
- Temperatures to 240° F (116° C)
- Pressures to 6000 psi (414 bar)



### MR Transmitters

#### Flow Meter with Digital Display and Analog Outputs

- 1/4...1-1/2 inches
- Provides flow rate or totalizer
- Temperatures to 240° F (116° C)
- Pressures to 6000 psi (414 bar)
- 4...20 mA, 0...10V DC and  
0...5V DC outputs



### Test Kits

#### Flow Meter with Load Valve and Pressure Gage

- 1/2...1-1/2 inches
- Temperature up to 240° F (116° C)
- Pressure up to 6000 psi (414 bar)



Standard or high  
temperature models  
available.



# Product Overview

## EZ-View® Products

Accuracy:  $\pm 5\%$  of full scale for units

Body Materials: Polysulfone (Standard or Radel®)

Connections: NPT, BSP, Socket Weld and Sweat

### Flow Meters

#### Standard

- 1/2...3 inches
- Temperatures to 250° F (121° C)
- Pressures to 325 psi (22.4 bar)



### Flow-Alert

#### Flow Meter with Flow Switch

- 1/2...2 inches
- Latching or proximity
- One or two switches per meter
- Temperatures to 250° F (121° C)
- Pressures to 325 psi (22.4 bar)



### Test Kits

#### Flow Meter with Load Valve and Pressure Gauge

- 1 inch
- Includes pressure loading valve and pressure gauge
- Temperatures up to 150° F (65° C)
- Pressures up to 325 psi (22.4 bar)



Multiple end fitting options available.

# Applications

Hedland variable area flow meters, also referred to as rotameters, provide volumetric flow rate without the use of additional electronics. Different from rotameters, the design allows the Hedland meter to be installed in any orientation. Expansion options are available to provide a digital local display with analog output, flow switch capabilities, test kits and more. With a variety of end fittings, sizes and fluid compatibilities, Hedland flow meters are equipped to seamlessly integrate into a wide array of applications.

## **Petroleum Meters**

- Hydraulic Power Units
- Mobile Construction Equipment
- Gear Boxes
- Hydraulic Tools & Components
- Mineral Oils

## **Water-Based Meters**

- Coolant Flow Monitoring
- Welding Machines
- Plastic Injection Molding
- Die Cast Machines

## **Water & Other Liquid Meters**

- Water Flow Monitoring
- Chiller Systems
- Control Flushing
- Concrete Making
- Snow Making Equipment

## **Air & Compressed Gas Meters**

- Pneumatic Tools
- Compressor Efficiency Monitoring
- Gas/Air Flow Monitoring

## **Phosphate Ester Meters**

- Steel Mills
- Turbines
- Compressors
- Skydrol® Fluids
- Fryquel® Fluids

## **Caustic & Corrosive Meters**

- Deionized Water
- Whitening Liquids
- API Oils
- Caustic/ Corrosive Air/ Gas



# About Badger Meter



Badger Meter Flow Instrumentation understands that companies cannot manage what they do not measure—and leverages more than a century of flow measurement expertise and a technology-rich portfolio to optimize customer applications worldwide.

An industry leader in both mechanical and electronic flow metering technologies, Badger Meter offers one of the broadest flow control and measurement portfolios in the industry—a portfolio that includes eight of the ten major flow meter technologies. Simply put, Badger Meter Flow Instrumentation provides technology to measure and control whatever moves through a pipe or pipeline—including water, air, steam, oil, other liquids and gases.

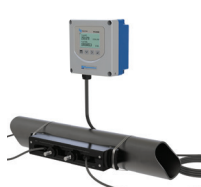
## Variety of Flow Instrumentation Solutions



ModMAG®  
Electromagnetic  
Flow Meters



Industrial Oval Gear  
Flow Meters



Dynasonics® Ultrasonic  
Flow Meters



Coriolis Mass  
Flow Meters



Research Control®  
Valves & Positioners



Flo-tech Hydraulic  
Fluid Testing



Recordall® Disc  
Flow Meters



Preso® Differential  
Pressure Flow Meters



Impeller Flow Meters



Cox & Blancett®  
Turbine Flow Meters



Vortex  
Flow Meters

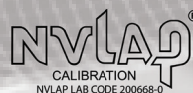


Flexible Network  
Connectivity Options

## Flow Dynamics® Calibration Services



- Calibration for most meter types
- OEM production calibrations
- NIST-traceable primary standards



Note: NVLAP accreditation applies only to the Badger Meter Flow Dynamics calibration lab, located in Racine, WI.





**Control. Manage. Optimize.**

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