



M-200X

Explosion proof adjustable flow switch with right angle Flow



Operating Instructions and Quick Start Guide

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Introduction

The M-200X Series flow switches are engineered and field tested for sensing increasing and decreasing flow rates of gases or liquids. Pressure variation effects are minimal. This series features such versatility, economy, and accuracy that they can be used in virtually any application requiring fool-proof inexpensive flow detection.

Operation

The operating principle is based on a free floating magnetic piston which responds only to the motion of fluids within the line, not to static or system pressures. In the presence of fluid flow, controlled movement of the piston actuates an external hermetically sealed reed switch thus producing the required signal. This signal can be used to actuate audible or visual alarms as well as relays, or other control. Piston travel is short which insures low hysteresis. Pressure drop across flow switch varies from 0.035 to 2 psi (at maximum flow rates for air and liquid). Universal mounted units are outfitted with a spring which resets the piston. The spring is held in place using a perforated disc.

Storage and Handling

Storage conditions

Store the product under packed condition in an anti-static bag. The storage place shall be free from moisture, mechanical shock and vibration. The ambient temperature shall be between 0°C and 60°C and the humidity between 5% and 80% R.H. without condensation.

Unpacking and Product Inspection

On delivery, check the product for damage. Confirm that the model code on the label matches the specification in the purchase order.

Installation Instructions

The standard switch has to be mounted vertically in the position shown above for normally open conditions and inverted position for normally closed conditions. When inverted, the switch set point will change by $\pm 5\%$; please use the product in the orientation it was calibrated (as indicated by reading the label). Universal units can be mounted horizontally or vertically. Please advise mounting orientation while ordering, so that the factory can calibrated in the required orientation as calibration does change slightly when changing orientation. Adequate filtration and sealing procedures should be used when mounting in flow lines. For detailed directions, please refer to our "Installation and Maintenance" sheet.

Operating Environment

Choose a location with an ambient temperature of 10 - 35°C and relative humidity value <80% RH without exposure to direct sunlight. Avoid environments with high electromagnetic noise or vibration. Make sure that the module is protected from corrosive liquid or water splashes. For best performance avoid corrosive environments since they may degrade the performance of the electronics after a period of time. Easy access for maintenance and inspection is always recommended.

Construction

The M-200X Series comprises a Body, piston, and Retaining rings. Selecting a flow switch begins with selecting the body; this series is available in 316 Stainless Steel. The M-200X series contains one moving part (i.e. the piston) and two retaining rings that are in the fluid path. Construction of the piston is important from a design perspective. We manufacture three types of pistons (it is critical to select the correct piston for your application): 316 Stainless Steel, PTFE encapsulated, and Special All-Metal Piston.

1. The standard piston is a 316 Stainless Steel piston with epoxy to hold the magnet in place. This piston is recommended for non-aggressive fluids and inert gases. Stainless Steel retaining rings are typically used with this piston type.
2. The second piston that is available is a PTFE Encapsulated one. The piston is a magnet that has PTFE molded around it and then machined to the appropriate configuration. These pistons are primarily used in PTFE flow switches and also in other flow switch bodies (typically 316SS and Acrylic bodies) where customer prefer a piston that does not have epoxy in the fluid path; as well as a piston that is impervious to aggressive fluids and gases. This piston is highly recommended for medical applications. Hysteresis on these pistons does tend to be slightly higher (10 to 15%) than metal piston due to frictional effects, weight, and surface adhesion considerations. Prior to selecting this piston, fluid temperatures, and fluid compatibility with PTFE must be taken into account because certain aggressive chemicals at specific temperatures tend to swell PTFE causing the piston to change shape resulting in failure of the product. Stainless or PTFE retaining rings can be used with this piston.
3. The third piston that is available is a Special All-Metal piston with no epoxy (only available in 316SS). This piston is fabricated in a proprietary process with only one weld seam (leak tested) which presents an all 316SS surface to the fluid path. This piston is recommended for those applications where the piston could experience a lot of cycling wear. This piston has been tested to 250,000 cycles at 125 psi. Stainless Steel retaining rings are recommended for this piston type for low pressure applications and an orifice disc (See Universal Mounting Diagram) is recommended for high pressure (125 psi) applications.

Certifications

CE Compliance

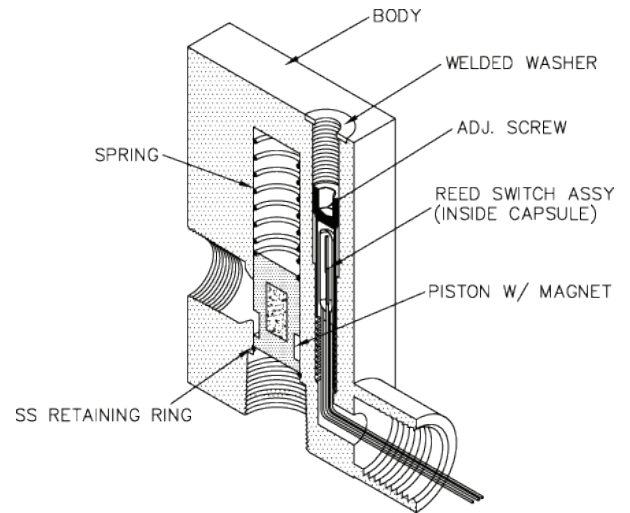
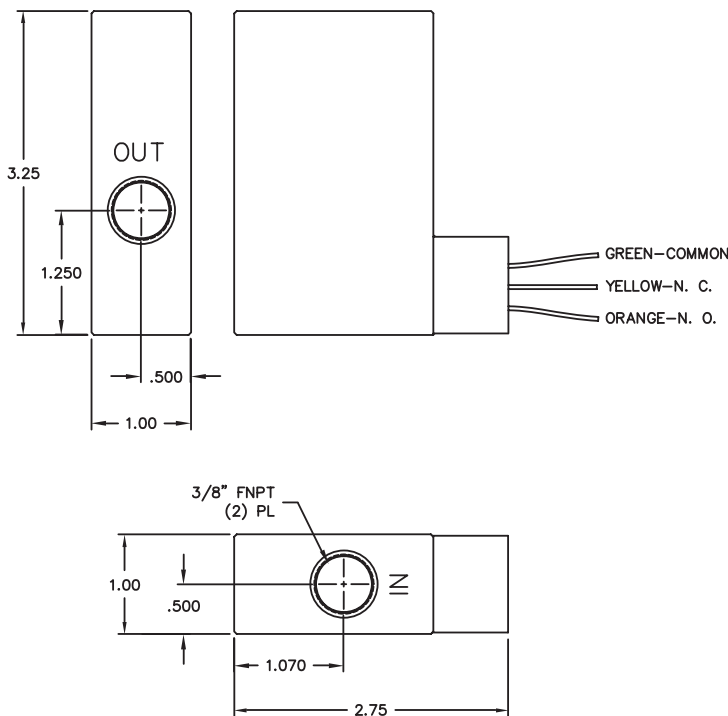
Malema flow switches meets CE compliance under LVD 2014/35/EU. RoHS and REACH can be obtained from Malema on request.]

UL Recognised

- 1) UL and Canadian UL Recognized for use in Class I (Groups A, B, C) and Class II (Groups E,F,G), all divisions, hazardous locations. Details can be found on <http://www.malema.com/certifications>
- 2) Certified for ATEX and IECEX directives. Details can be found on <http://www.malema.com/certifications>
- 3) Certified for CE compliance under ATEX 2014/34/EU directive. Details can be found on <http://www.malema.com/certifications>

Dimensional drawings

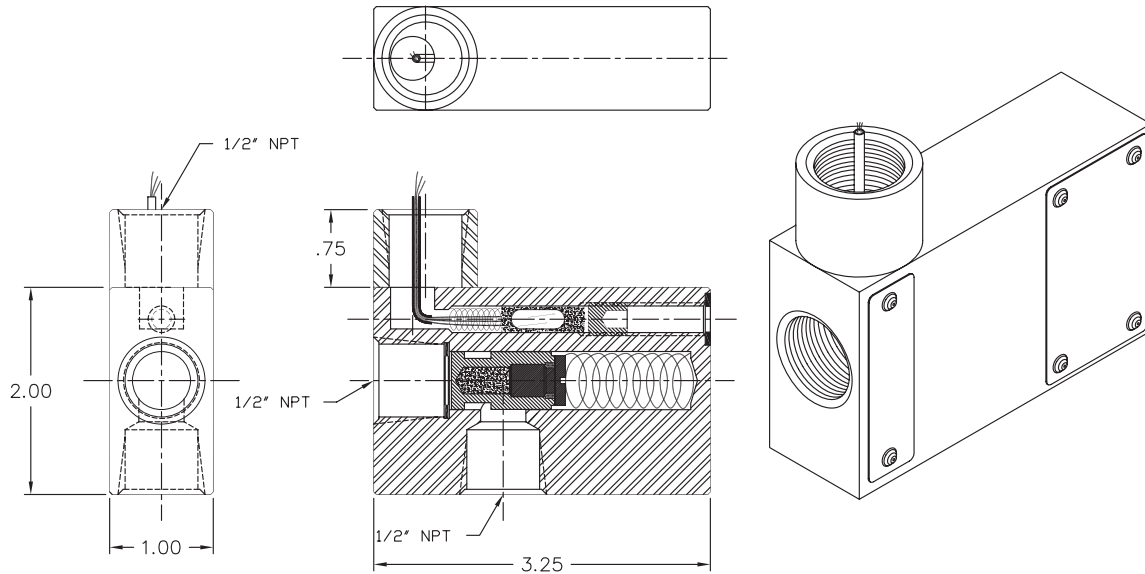
Illustrated is the M-200X model with 3/8" ports



Body	A	B
Brass	1.00	0.500

Port size	A	B	C	D	E	F	G
3/8"	3.25	1.250	1.00	0.500	1.070	2.75	3.50
1/2"	3.25	1.250	1.00	0.500	1.070	2.75	3.50
SAE8	3.37	1.370	1.25	0.625	1.240	2.25	2.97
3/4"	3.50	1.250	1.25	0.625	1.320	2.30	3.05

Cut Dimensional Drawings
Illustrated is the M-200X model with 1/2" ports.



Adjustable Flow Setting Information

The flow setting is adjustable. This is achieved by means of the setscrew. By turning the set-screw clockwise, the flow setting would be decreased, and by turning it counter clockwise, the flow setting increases.

Warranty

Malema Sensors warrants to the buyer that its products are free from defects in materials and workmanship at the time of shipment and during the WARRANTY PERIOD. Malema Sensors obligation under this warranty is limited to the replacement of the product(s) by same product(s) manufactured by Malema Sensors or repair of the product(s) at the Malema Sensors facility. Malema Sensors products are sold with the understanding that the buyer has determined the applicability of the product(s) to its intended use. It is the responsibility of the buyer to verify acceptability of performance to the actual conditions of use. Performance may vary depending upon these actual conditions.

Warranty Period

This warranty is in effect for twelve (12) months from the date of shipment from Malema Sensors place of business.

Warranty Claim

If Malema Sensors products are found to be defective in materials or workmanship within twelve (12) months of the date of shipment, they will be repaired or replaced with same product at the discretion of Malema Sensors at its place of business at no charge to the buyer.

Service and Repair

To return the products, please obtain an RMA number for the product by contacting Malema Sensors (Corporate Office), Boca Raton at (800) 637-6418 or (561)995-0595.

All returns of equipment must go to the following address:

Malema Sensors,
1060 S Rogers Circle
Boca Raton, FL 33487, USA

NOTE: Specifications are subject to change without notice.

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