MALEMA™

M-701 Series
Shuttle-Type Flow Switches

Operating Instructions
and
Quick Start Guide

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Introduction

The M-701 offers low cost flow monitoring with a variety of switch actuation points and low pressure drop. M-701 is designed for ease of maintenance, as the bonnet and shuttle can be removed, leaving the housing and pipe work connections intact. All wetted parts are polypropylene or stainless steel, making this switch ideal for a wide range of chemical and temperature requirements. The M-701 is suitable for potable water treatment applications including chlorinators, purifiers and heaters. The M-701 is ideal for equipment cooling including welders, lasers, etc.

Installation Instructions

M-701 flow switches are for use with metal or plastic piping systems and connecting piping via the ¾" NPT mating threads. The following guidelines are provided to assist with installation for a leak -free seal, without damage to the unit.

1. Apply pipe thread sealant to male pipe threads.
2. Thread the flow switch into the male pipe thread until hand-tight.
3. Tighten pipe I to 1-½ additional turns.
4. If improper seal results, continuing turning pipe into unit in ¼ turn increments.

Note: **Do Not Exceed One Additional Turn**
Recommended Pipe Sealants: a) Permatex® "No More Leaks" b) Teflon® Thread Tape

Maintenance

Disassembling for cleaning

It is not necessary to remove the unit from piping system.

CAUTION: Make sure the system is turned off and that no residual pressure remains in the piping.

1. The bonnet assembly (see diagram below) is removed by firmly grasping the housing and turning the bonnet 45° counter-clockwise , as indicated on the top of the bonnet . This will unlock the mating tabs on the two parts.
2. The bonnet can now be pulled out of the housing. Be sure to pull holding on the bonnet, as damage can be done if the lead wires are pulled.

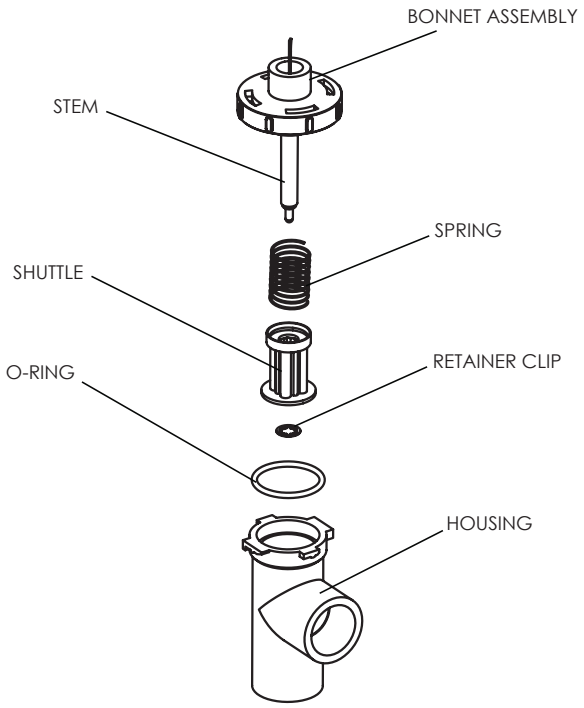
Cleaning

Clean shuttle, Stem, spring, retaining clip and inside of housing by lightly scraping and/or wiping. Check O-ring , bonnet assembly, shuttle, and spring for damage . Consult Factory for replacement parts, if necessary.

To Reassemble Unit

1. Be sure spring is properly set on shuttle cap.
2. Reposition O-ring in Bonnet assembly after applying silicon high vacuum grease.
3. Insert bonnet assembly into housing, allowing tabs on bonnet to clear mating lugs on housing. Be sure bonnet stem end aligns with centring feature in housing.
4. Bonnet assembly can be locked by firmly grasping housing and turning bonnet 45° clockwise, as indicated on top of bonnet. This will engage mating tabs on the two parts.

(See exploded view)



Caution

Product must be maintained and installed in strict accordance with the National Electrical Code and MALEMA Product catalogue and instruction bulletin. Failure to observe this warning could result in serious Injuries or damages.

An appropriate explosion-proof enclosure or intrinsically safe interface device must be used for hazardous area applications involving such things as (but not limited to) ignitable mixtures, Combustible dust and flammable materials.

Pressure and temperature limitations shown on individual catalogue pages and drawings for the specified flow switches must not be exceeded. These pressure and temperature takes into consideration possible system surge pressure/temperatures and their frequencies.

Selection of materials for compatibility with the media is critical to the life and operation of MALEMA flow switches. Take care in the proper selection of materials of construction ; particularly wetted materials

Life expectancy of switch contacts varies with appellations. Contact MALEMA if life cycle testing is required.

Ambient temperature changes do affect switch set points. Since the specific gravity of a liquid can vary with temperature.

Flow switches have been designed to resist shock and vibration; however, shock and vibration should be minimized.

Liquid media containing particulate and/or debris should be filtered to ensure proper operation of MALEMA products. Electrical entries and mounting points may require liquid/vapour sealing if located in an enclosed tank.

Flow switches must not be field repaired.

Physical damage sustained by the product may render it unserviceable.

Specifications

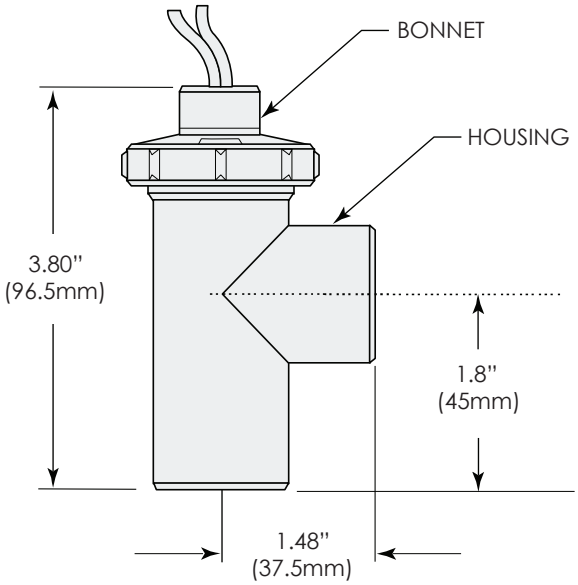
Housing, Bonnet, Shuttle, Shuttle Cap	Polypropylene , Hydrolytically Stable Glass Reinforced
O-ring	Viton
Spring	SS
Retainer Ring	SS
Operating Pressure, Maximum	100 psig @ 70°F
	50 psig @ 180°F
	40 psig @ 210°F
Operating Temperature, Maximum	212°F
Set Point Accuracy	± 20% Maximum
Switch	SPST-N.O or N.C, SPDT 10 W, 0.5DC, 200V
Inlet/Outlet Ports	¾” FNPT
Electric Termination	Pilot : 26” Long 22 AWG Teflon Insulated Wires

Part Numbers	Switch Actuation Set point on Increasing Flow
001	0.25 gpm ± 20%
002	0.50 gpm ± 20%
003	1.00 gpm ± 20%
004	1.50 gpm ± 20%
005	2.00 gpm ± 20%
006	2.50 gpm ± 20%
007	5.00 gpm ± 20%

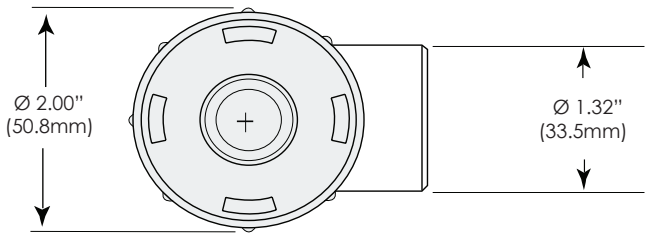
Note: Standard units are designed with springs for positive return of the shuttle at no-flow condition. This allows the flow switch to be mounted in any orientation, but actuation set points will vary from the stated values. Contact the factory for further information.

Dimensional drawings

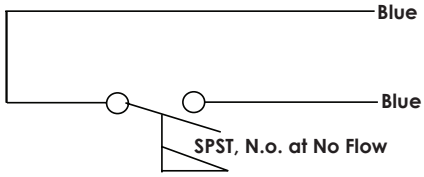
(All dimensions in inches)



Top View



Typical wiring Diagram...



Ordering Information

Standard Part Numbering										
M	**-**	**Model**	**-**	**Material**	**Port**	**Switch**	**-**	**O-ring Material**		**Set Point**
M	-	701	-	Y	6	1	-	2	-	XXX
		701		Y-Polypropylene	3/4" FNPT	1 - SPST N.O. 2- SPST N.C. 3 - SPDT		2-Viton		001 - 0.25 gpm Water Increasing 002 - 0.5 gpm Water Increasing 003 - 1.0 gpm Water Increasing 004 - 1.5 gpm Water Increasing 005 - 2.0 gpm Water Increasing 006 - 2.5 gpm Water Increasing 007 - 5.0 gpm Water Increasing

Note: The flow switch performance will be affected in the vicinity of Magnets, Electromagnets, and Ferrous metals. Hence adequate protection should be provided while installing in close proximity to such interferences or relocate the flow switch away from them appropriately.

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.