



A selection of engineered multi-level switches

Madison Company offers a complete line of Standard and Configured (slightly modified Standard designs) models. These products continue to meet the needs of applications in many markets, at competitive prices. In addition, Madison Company offers the capability to design specific liquid level switches for OEM applications that require unique considerations in materials, configurations and system interfacing.

Engineered designs incorporate over 50 years of experience in liquid level switch applications in a variety of environments and installation configurations. High reliability of the magnetic reed switch technology assures repeatability at an economical price. Our design experience and flexible manufacturing techniques also offer customers many value-added design and assembly options to reduce their product cost.

Features

- Multi-point
- Customer-designed
- Magnetic reed switch technology
- High reliability
- Wide selection of available materials
- Three basic sizes: full, miniature and subminiature
- Direct interface to controllers available

Material Selection Guide

The first consideration is the type of liquid, temperature and pressure to which the switch will be subjected. Madison manufactures liquid level switches in various styles, in a variety of materials, to cover a broad range of conditions. Following are some basic recommendations for selecting the proper liquid level switch material for your application.



See Approvals pages in Reference Section

LL

Material	Application
316 Stainless Steel	For high-temperature (to 300°C), high-pressure (to 300 PSIG) and corrosive conditions. Commonly used in food processing, medical, heating and cooling equipment.
Polypropylene Polysulfone	For acidic conditions, such as found in electroplating and metal cleaning. Another choice for lower-temperature (to 105°C) food processing applications (Madison Company uses only polypropylene that is FDA-approved for food contact). Also a good choice for general-purpose applications in commercial or consumer appliances and equipment. Available in white and other colors.
Brass & Buna-N PBT & Buna-N	The selection for petroleum-based liquids, such as lubricating oils, gasoline and diesel fuels. Widely used in storage tanks of vehicles, generators, transmissions and hydraulic systems. Other uses are in lubrication, recovery, refining and fuel processing equipment. <i>Please note: PBT is not suitable for use in temperatures above 130°C.</i>
Kynar PTFE	Chemical- and solvent-resistant properties make this material a problem solver for many applications. Its high-purity nature is ideal for food handling and sensitive laboratory or test equipment.
CPVC	Good for water, acids, bases and oil products. <i>Not suitable for use in temperatures above 90°C.</i>

Once a suitable material has been selected, the type of switch and configuration are the next considerations. Madison Company stocks a full line of standard products that can meet the requirements of many applications. For specific designs, Madison can custom build, to order, switches with an infinite number of variations and options. Please utilize our multi-level specification sheet which, when completed, will allow our engineering department to better meet your needs.

All specifications are subject to change without notice.



Sensor solutions for today and the future™



Madison Company www.madisonco.com

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Multi-Point Switches

MODEL	DWG NO.	FLOAT MATL	STEM MATL	MAX TEMP (CELSIUS)	MAX PSIG	FLOAT SG	NOMINAL VA	LEAD WIRES	** APPROVALS
M5602-XXXX	7	316SS	316SS	200°	200	0.55	60	22 ga. Teflon 24"	A,B,C,D,E,I
M5605	7	316SS	316SS	200°	200	0.55	60	22 ga. Teflon 24"	C
M4602-XXXX	8	Buna-N	316SS	105°	150	0.45	60	22 ga. Teflon 24"	A,B,C
M8602-XXXX	8	PP†	316SS	105°	100	0.75	60	22 ga. Teflon 24"	A,B,C,D
M5002-XXXX	9	316SS	316SS	200°	300	0.70	30	22 ga. Teflon 24"	A,B,C,D,I
M4402-XXXX	10	Buna-N	316SS	105°	150	0.45	30	22 ga. Teflon 24"	A,B,C
M8002-XXXX	10	PP†	316SS	105°	100	0.80	30	22 ga. Teflon 24"	A,B,C,D

† Also available in Polysulfone (consult factory). PP=Polypropylene

** Refer to Approvals pages in Reference Section. Individual product explosion-proof (E) approvals vary. Consult factory for current product listings.

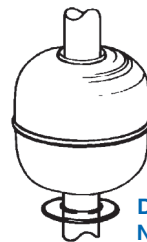
Most Common Mountings and Options*

MODEL	MALE THREAD	MOUNTINGS – NPT			SPST 100 W OPTION	SPDT 25 W OPTION
		PIPE PLUG	FLANGE	BULKHEAD		
M5602-XXXX	3/8", 1/2"	2"	SPECIFY SIZE	1/2-13, 3/4-10	YES	YES
M5605	1/2"	—	—	—	NO	NO
M4602-XXXX	3/8", 1/2"	2", 1-1/2"	SPECIFY SIZE	1/2-13, 3/4-10	YES	YES
M8602-XXXX	3/8", 1/2"	2", 1-1/2"	SPECIFY SIZE	1/2-13, 3/4-10	YES	YES
M5002-XXXX	1/8", 1/4", 3/8", 1/2"	2", 1-1/2", 1-1/4"	SPECIFY SIZE	3/8, 3/4-10	NO	NO
M4402-XXXX	1/8", 1/4", 3/8", 1/2"	2", 1-1/2", 1-1/4"	SPECIFY SIZE	3/8, 3/4-10	NO	NO
M8002-XXXX	1/8", 1/4", 3/8", 1/2"	2", 1-1/2", 1-1/4"	SPECIFY SIZE	3/8, 3/4-10	NO	NO

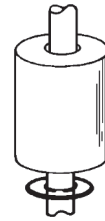
* An expanded list of U.S. fittings and European BSPP and BSPT fittings is available in our e-catalog at www.madisonco.com.



Multi-point switches are available in many materials and configurations and can contain as many float actuation points as the application and switch design may allow (normally up to five). These rugged units can be mounted within any vessel, utilizing the mounting options shown above, or customized to the specific application. The actuation points are defined by the customer and can be engineered to address offset locations within the vessel, allowing for the bypass of obstructions or saddle type tanks. For turbulent conditions, slosh shields, as well as electronic interface components and accessories, can be provided. Temperature sensors can also be incorporated into these models.



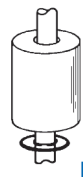
2.13" dia. max.
(54.1)



1.50" dia. max.
(38.1)



1.13" dia. max.
(28.7)



1" dia. max.
(25.4)

Multi-Point Switch Kit

This kit provides the user with the opportunity to optimize their own multi-point switch and fabricate it in the field from the kit components. The kit is furnished with two floats and a 2" pipe plug. Maximum stem length is 36" (914.4mm). Please contact factory for additional components. See Multi-Point Switch Kits page for full specifications.

Multi-Point Switches

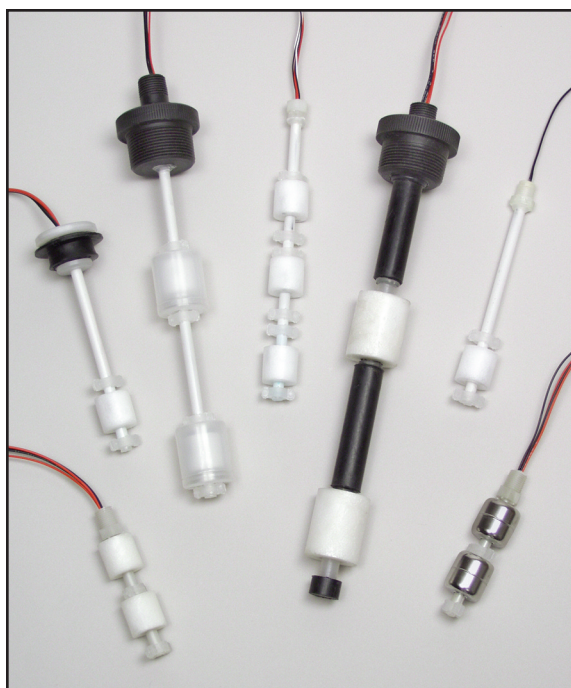
MODEL	DWG NO.	FLOAT MATL	STEM MATL	MAX TEMP (CELSIUS)	MAX PSIG	FLOAT SG	NOMINAL VA	LEAD WIRES	** APPROVALS
M8802-XXXX	37	PP†	PP†	105°	100	0.75	60	22 ga. Teflon 24"	A,B,C,I
M8080-XXXX	38	PP†	PP†	105°	25	0.80	30	22 ga. Teflon 24"	A,B,C,D,I
M8085	38	PP†	PP†	105°	100	0.80	30	22 ga. Teflon 24"	C
M6602-XXXX	37	PP	CPVC	90°	100	0.75	60	22 ga. Teflon 24"	A,B,C

† Also available in Polysulfone (consult factory). PP=Polypropylene ** Refer to Approvals pages in Reference Section

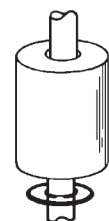
Most Common Mountings and Options*

MODEL	MALE THREAD	MOUNTINGS – NPT			SPST 100 W OPTION	SPDT 25 W OPTION
		PIPE PLUG	FLANGE	BULKHEAD		
M8802-XXXX	1/2"	2", 1-1/2"	SPECIFY SIZE	1/2-13	YES	YES
M8080-XXXX	1/8", 1/4", 1/2"	2", 1-1/2", 1-1/4"	SPECIFY SIZE	1/2-13	NO	NO
M8085	1/4"	–	–	–	NO	NO
M6602-XXXX	1/2", 3/4", 1"	1-1/2", 2", 2-1/2"	2", 3"	–	YES	YES

* An expanded list of U.S. fittings and European BSPP and BSPT fittings is available in our e-catalog at www.madisonco.com.



Multi-point switches are available in configurations containing up to six different levels, providing maximum flexibility for each user. These rugged units can be mounted within any vessel, utilizing either male pipe threads, pipe plugs, flanges or bulkhead fittings. The length of each switch, as well as the location of each of the floats, may be established by the designer. For difficult installations, stems can be bent to bypass obstructions within the vessel. Slosh shields are also available for turbulent conditions. Temperature sensors can be incorporated into these models.



1.50" dia. max.
(38.1)

DWG
No. 37



1" dia. max.
(24.4)

DWG
No. 38

Multi-Point Switch Kit

This kit provides the user with the opportunity to optimize their own multi-point switch and fabricate it in the field from the kit components. The kit is furnished with two floats and a 2" pipe plug. Maximum stem length is 36" (914.4mm). Please contact factory for additional components. See Multi-Point Switch Kits page for full specifications.

Multi-Point Switches

MODEL	DWG NO.	FLOAT MATL	STEM MATL	MAX TEMP (CELSIUS)	MAX PSIG	FLOAT SG	NOMINAL VA	LEAD WIRES	** APPROVALS
M4302-XXXX	25	Buna-N	Brass	105°	150	0.45	60	22 ga. Teflon 24"	A,B,C,I
M4502-XXXX	27	Buna-N	Brass	105°	150	0.45	30	22 ga. Teflon 24"	A,B,C,I
M5042-XXXX	26	316SS	Brass	200°	300	0.70	30	22 ga. Teflon 24"	A,B,C
M5402-XXXX	24	316SS	Brass	200°	200	0.55	60	22 ga. Teflon 24"	A,B,C
M8042-XXXX	27	PP	Brass	105°	100	0.80	30	22 ga. Teflon 24"	A,B,C
M8402-XXXX	25	PP	Brass	105°	100	0.75	60	22 ga. Teflon 24"	A,B,C

PP=Polypropylene ** Refer to Approvals pages in Reference Section

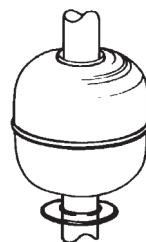
Most Common Mountings and Options*

MODEL	MALE THREAD	MOUNTINGS – NPT			SPST 100 W OPTION	SPDT 25 W OPTION
		PIPE PLUG	FLANGE	BULKHEAD		
M4302-XXXX	1/2"	2", 1-1/2"	SPECIFY SIZE	1/2-13	YES	YES
M4502-XXXX	1/8", 1/4", 1/2"	2", 1-1/2", 1-1/4"	SPECIFY SIZE	3/8	NO	NO
M5042-XXXX	1/8", 1/4", 1/2"	2", 1-1/2", 1-1/4"	SPECIFY SIZE	3/8	NO	NO
M5402-XXXX	1/2"	2"	SPECIFY SIZE	1/2-13	YES	YES
M8042-XXXX	1/8", 1/4", 1/2"	2", 1-1/2", 1-1/4"	SPECIFY SIZE	3/8	NO	NO
M8402-XXXX	1/2"	2", 1-1/2"	SPECIFY SIZE	1/2-13	YES	YES

* An expanded list of U.S. fittings and European BSPP and BSPT fittings is available in our e-catalog at www.madisonco.com.



Multi-point switches are available in configurations containing up to six different levels, providing maximum flexibility for each user. These rugged units can be mounted within any vessel, utilizing either male pipe threads, pipe plugs, flanges or bulkhead fittings. The length of each switch, as well as the location of each of the floats, may be established by the designer. For difficult installations, stems can be bent to bypass obstructions within the vessel. Sloss shields are also available for turbulent conditions. Temperature sensors can be incorporated into these models.



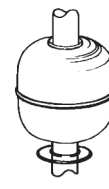
2.13" dia. max.
(54.1)

DWG
No. 24



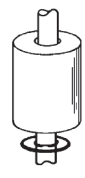
1.50" dia. max.
(38.1)

DWG
No. 25



1.13" dia. max.
(28.7)

DWG
No. 26



1" dia. max.
(24.4)

DWG
No. 27

Multi-Point Switch Kit

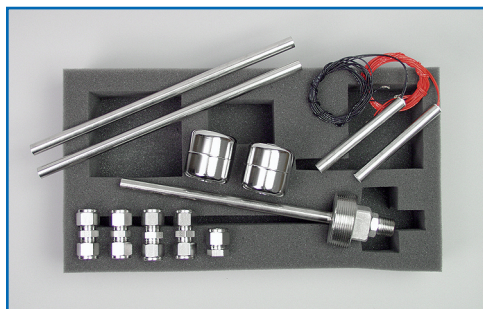
This kit provides the user with the opportunity to optimize their own multi-point switch and fabricate it in the field from the kit components. The kit is furnished with two floats and a 2" pipe plug. Maximum stem length is 36" (914.4mm). Please contact factory for additional components. See Multi-Point Switch Kits page for full specifications.

These easy-to-use, Do-It-Yourself Kits provide the user with the opportunity to optimize their own multi-point switches and fabricate them in the field from the kit components. The standard ML-XXXX kits are furnished with two floats and a 2" pipe plug. Maximum stem length is 36" (914.4mm). Users who require a 3rd or 4th level can purchase adder kits as follows:

- ML-XXXX-LVL3 to add a 3rd level to the ML-XXXX kit
 ML-XXXX-LVL4 to add a 4th level to the ML-XXXX-LVL3 kit
 ML-XXXX-LVL3&4 to add a 3rd and 4th level to the ML-XXXX kit

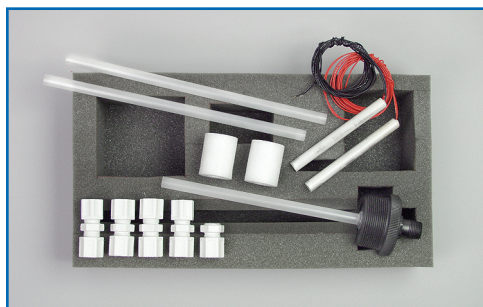
Kits are also available with Bent Stem (ML-XXXX-BENT). Bend angle is 90°.

Stainless Steel



MODEL	FLOAT MATL	STEM MATL	MAX TEMP (CELSIUS)	MAX PSIG	FLOAT SG	NOMINAL VA
ML-5555	316SS	316SS	200°	200	0.55	60
ML-5555-LVL3*	316SS	316SS	200°	200	0.55	60
ML-5555-LVL4**	316SS	316SS	200°	200	0.55	60
ML-5555-LVL3&4*	316SS	316SS	200°	200	0.55	60
ML-5555-BENT	316SS	316SS (90° Bend)	200°	200	0.55	60

Plastic



PP=Polypropylene

MODEL	FLOAT MATL	STEM MATL	MAX TEMP (CELSIUS)	MAX PSIG	FLOAT SG	NOMINAL VA
ML-8888	PP	PP	105°	100	0.75	60
ML-8888-LVL3*	PP	PP	105°	100	0.75	60
ML-8888-LVL4**	PP	PP	105°	100	0.75	60
ML-8888-LVL3&4*	PP	PP	105°	100	0.75	60
ML-8888-BENT	PP	PP (90° Bend)	105°	100	0.75	60

Brass



MODEL	FLOAT MATL	STEM MATL	MAX TEMP (CELSIUS)	MAX PSIG	FLOAT SG	NOMINAL VA
ML-4444	Buna-N	Brass	105°	150	0.45	60
ML-4444-LVL3*	Buna-N	Brass	105°	150	0.45	60
ML-4444-LVL4**	Buna-N	Brass	105°	150	0.45	60
ML-4444-LVL3&4*	Buna-N	Brass	105°	150	0.45	60
ML-4444-BENT	Buna-N	Brass (90° Bend)	105°	150	0.45	60

* Must be ordered in conjunction with ML-XXXX

** Must be ordered in conjunction with ML-XXXX-LVL3

All kits are UL and CE approved.

For full assembly guidelines and a sample configuration, please visit www.madisonco.com.

Full-Size Multi-Level Liquid Level Switches

Specification Sheet

INSTRUCTIONS

Complete Process Conditions (Table 1). Select float design, stem material and watt rating (Table 2). Select mounting configuration (Table 3). Provide required dimensions and switch operation (Table 4). Mail or fax with purchase order to Madison Company.

All measurements in parentheses are in millimeters.

TABLE 1 PROCESS CONDITIONS

MAX. TEMP. _____ MIN. TEMP. _____

MAX. PRESSURE _____ SPECIFIC GRAVITY _____

FLUID _____

SPECIAL COND. _____

QUANTITY _____ WIRE LENGTH _____
24" (609.6mm) standard

TEMPERATURE SENSOR OPTION:

THERMOCOUPLE: ☐ TYPE J ☐ TYPE K ☐ TYPE T
☐ THIN-FILM RTD ☐ BIMETAL

TEMPERATURE RANGE _____

OTHER CONSIDERATIONS _____

TABLE 3 MOUNTING CONFIGURATIONS

MALE THREAD
☐ 1/8" NPT
☐ 1/4" NPT
☐ 3/8" NPT
☐ 1/2" NPT
☐ 3/4" NPT

MALE PIPE PLUG
☐ 2"
☐ 1-1/2"
☐ 1-1/4"

FLANGE
☐ SPECIFY SIZE: _____
BULKHEAD FITTING
☐ BULKHEAD

TABLE 4 LENGTH & OPERATING POINT

Additional levels are available. Please consult factory.

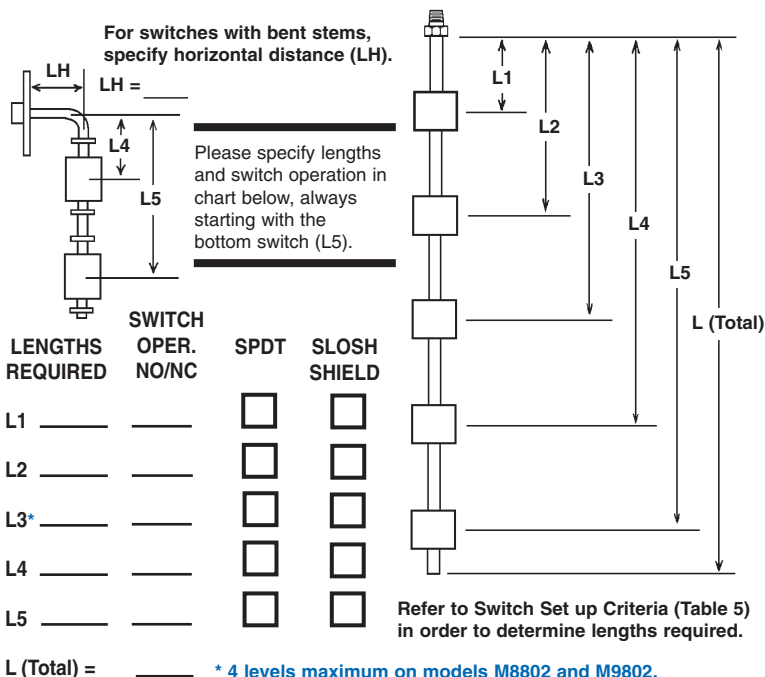


TABLE 2

FLOAT DESIGN	AVAILABLE STEM MATERIALS	MODEL NO.
Full-Size Floats		
SPST 60 WATTS SPST 100 WATTS	SPDT 25 WATTS *Rated for hazardous locations.	
 STAINLESS STEEL	☐ STAINLESS STEEL ☐ BRASS	*M5602 M5402
 POLYPROPYLENE	☐ POLYPROPYLENE ☐ STAINLESS STEEL ☐ BRASS	M8802 M8602 M8402
 BUNA-N	☐ STAINLESS STEEL ☐ BRASS	M4602 M4302
 KYNAR	☐ KYNAR	M9802

TABLE 5 SWITCH SET UP CRITERIA

For M5602, M5402, M8602, M8402, M4602, M4302
 L (Total) = L5 + 1-1/2" (38.1mm) Min.
 Distance from mounting fitting to first switch = 1-1/4" (31.7mm) Min.
 Minimum distance between floats: 2-1/2" (63.5mm)
 Minimum LH = 2-1/2" (63.5mm)

For M8802, M9802
 L (Total) = L5 + 2" (50.8mm) Min.
 Distance from mounting fitting to first switch = 1-3/4" (44.4mm) Min.
 Minimum distance between floats: 3" (76.2mm)

Typical Current & Voltage Ratings

Watts	Voltage	Current Amps
100	220 AC	0.4
	110 AC	1.0
	120 DC	0.4
	24 DC	1.0
60	220 AC	0.4
	110 AC	0.5
	120 DC	0.2
	24 DC	0.5
25	220 AC	—
	110 AC	0.28
	120 DC	—
	24 DC	0.28

Above ratings are for resistive loads only.
 For inductive loads, maximum life will be achieved if appropriate arc suppression is used.

Model Max. Temp. Max. PSIG

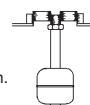
M5602*	200°C	200
M5402	200°C	200
M4302	105°C	150
M4602	105°C	150
M8802*	105°C	100
M8602	105°C	100
M8402	105°C	100
M9802	105°C	15

* NSF approved for use in food equipment.

Installation

NC Operation:
 SS Floats: Witness mark (round circle) down.
 Plastic Floats: Magnets up.

NO Operation:
 SS Floats: Witness mark (round circle) up.
 Plastic Floats: Magnets down.



Miniature Multi-Level Liquid Level Switches

Specification Sheet

INSTRUCTIONS

Complete Process Conditions (Table 1). Select float design, stem material and watt rating (Table 2). Select mounting configuration (Table 3). Provide required dimensions and switch operation (Table 4). Mail or fax with purchase order to Madison Company.

All measurements in parentheses are in millimeters.

TABLE 1 PROCESS CONDITIONS

MAX. TEMP. _____ MIN. TEMP. _____

MAX. PRESSURE _____ SPECIFIC GRAVITY _____

FLUID _____

SPECIAL COND. _____

QUANTITY _____ WIRE LENGTH _____
24" (609.6mm) standard

TEMPERATURE SENSOR OPTION:

THERMOCOUPLE: ☐ TYPE J ☐ TYPE K ☐ TYPE T
☐ THIN-FILM RTD ☐ BIMETAL

TEMPERATURE RANGE _____

OTHER CONSIDERATIONS _____

TABLE 3 MOUNTING CONFIGURATIONS

MALE THREAD
☐ 1/8" NPT
☐ 1/4" NPT
☐ 3/8" NPT
☐ 1/2" NPT
☐ 3/4" NPT

MALE PIPE PLUG
☐ 2"
☐ 1-1/2"
☐ 1-1/4"

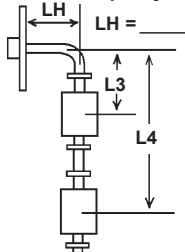
FLANGE
☐ SPECIFY SIZE: _____

BULKHEAD FITTING
☐ BULKHEAD

TABLE 4 LENGTH & OPERATING POINT

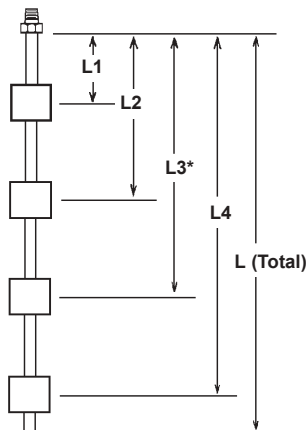
Additional levels are available. Please consult factory.

For switches with bent stems, specify horizontal distance (LH).



Please specify lengths and switch operation in chart below, always starting with the bottom switch (L4).

LENGTHS REQUIRED	SWITCH OPER. NO/NC	SLOSH SHIELD
L1 _____	_____	☐
L2 _____	_____	☐
L3* _____	_____	☐
L4 _____	_____	☐
L (Total) = _____		



Refer to Switch Set up Criteria (Table 5) in order to determine lengths required.

* 3 levels maximum on models M8080 and M9090.

TABLE 2

FLOAT DESIGN	AVAILABLE STEM MATERIALS	MODEL NO.
Miniature-Size Floats SPST 30 WATTS		
 1.19" (30.2) 1.13" (28.7) STAINLESS STEEL	☐ STAINLESS STEEL ☐ BRASS	M5002 M5042
 1" (25.4) 1" (25.4) POLYPROPYLENE	☐ POLYPROPYLENE ☐ STAINLESS STEEL ☐ BRASS	M8080 M8002 M8042
 1" (25.4) 1" (25.4) BUNA-N	☐ STAINLESS STEEL ☐ BRASS	M4402 M4502
 1" (25.4) 1" (25.4) KYNAR	☐ KYNAR	M9090

TABLE 5 SWITCH SET UP CRITERIA

For M5002, M5042, M8080, M8002, M8042, M4402, M4502, M9090
L (Total) = L4 + 1" (25.4mm) Min.
Distance from mounting fitting to first switch = 5/8" (15.8mm) Min.
Minimum distance between floats: 1-1/2" (38.1mm)
Minimum LH = 1-1/2" (38.1mm)

Typical Current & Voltage Ratings

Watts	Voltage	Current Amps	Model	Max. Temp.	Max. PSIG
30	220 AC	0.14	M5002*	200°C	300
	110 AC	0.28	M5042	200°C	300
	120 DC	0.07	M4502	105°C	150
	24 DC	0.28	M4402	105°C	150
			M8002*	105°C	100
			M8042	105°C	100
			M8080*	105°C	25
			M9090	105°C	15

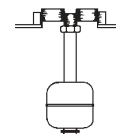
Above ratings are for resistive loads only.
For inductive loads, maximum life will be achieved if appropriate arc suppression is used.

* NSF approved for use in food equipment.

Installation

NC Operation:
SS Floats: Witness mark (round circle) down.
Plastic Floats: Magnets up.

NO Operation:
SS Floats: Witness mark (round circle) up.
Plastic Floats: Magnets down.



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SINCE/DEPUIS 1953

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