## **LEVEL SWITCH SELECTION GUIDE**

#### **Model 4000 .71 Custom Level Switch .PQ**:

## Serialization, documentation retained on purchased materials, processes, inspection, etc. Factory replaceable switch bundles. Investment cast components machined in-house. Welding: Thomas Products Ltd. certified welders under requalification system, performed in low hydrogen environment. Process schedules revision controlled. Inspection 100% bubble tight, hydrostatic, fluorescent penetrant. UL recognized. Approved packaging. Switches shock and vibration tested.

**Automated** 

Operational Q.C. systems and manual, MIL | 45208 and MIL STD 45662.

assembly procedures.

## **Model 5100 Liquid Level Indicator**

Inspection using calibrated tools and gages traceable to National Bureau of Standards under Thomas Products, Ltd. recalibration system.

Injection molding in-house, Thomas Products Ltd. can certify that only virgin materials are used and no reprocessing is done nor has color concentrate been added during molding.

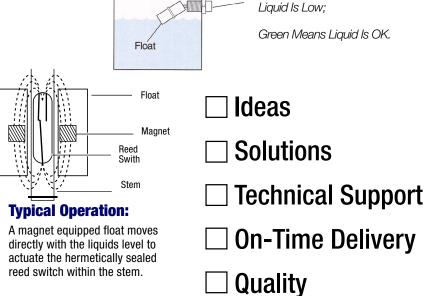
respective models.



#### **Operation:**

The housing has 2 separate chambers. In the front chamber behind a transparent lens is a 2 color roller, half red, half green and it is equipped with a magnet. In the rear chamber is a magnet equipped float free to swing with the action of the liquid's level. The poles of the 2 magnets are opposite creating a permanent interlock. As the liquid level falls, the float and magnet swing to rotate the roller exposing the red side indication low liquid level. Accordingly, as the level rises, the green side indicating a satisfactory liquid level condition appears.

Indicator Turns Red When

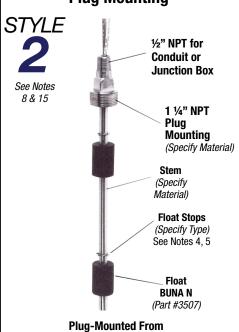


## METAL (1/2" Diameter Stem)

#### 1/2" NPT **Plug Mounting** STYLE Unique assembly procedure eliminates stress by actually suspending the reed switch allowing for thermal expansion See Notes and contraction. 7 & 15 ½" NPT Plug Mounting (Specify Material) Stem (Specify Material) **Float Stops** (Specify Type) See Notes 4.5 Float

Mounted From Inside of Tank

## 1 ¼" NPT Plug Mounting

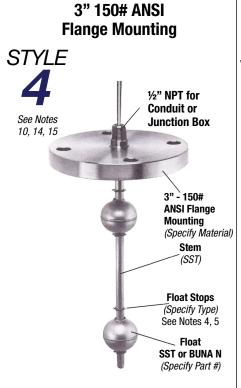




## METAL (1/2" Diameter Stem)

SST or BUNA N

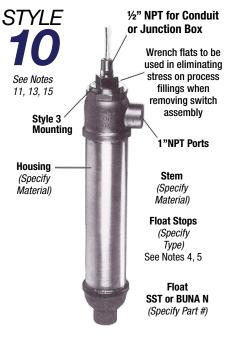
(Specify Part #)



Flange Mounting From Outside of Tank

#### 1" NPT External Tank Mounting

**Outside of Tank** 



#### STYLE 1/2" NPT for **Conduit or Junction Box** See Notes 12, 14, 15 Stem (SST) 3" - 150# ANSI **Flange** Mounting (Specify Material) Float Stops (Specify Type) See Notes 4, 5 Float SST or BUNA N (Specify Part #)

3" 150# ANSI

**Flange Mounting** 



Mounts to Outside of Tank

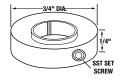
Flange Mounting from Outside of Tank

## **SPECIFICATIONS**

**4000** (Styles 1, 2, 3, 4, 10 and 11)

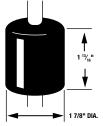
METAL						
Style	1, 2, 3	4	10	11		
<b>Mounting</b> See Note 18	Brass or Stainless Steel	Carbon Steel or SST	Mounting & Housing Bronze or SST	Carbon Steel or SST		
Stem	am		Brass or SST	Stainless Steel		
Float	Customer to Specify Part Number					
Float Stops: Grip Rings See Note 4	Brass units - Beryllium Copper; SST units Ph 15-7 Mo SST	Ph 15-7 Mo SST	Brass units - Beryllium Copper; SST units Ph 15-Mo SST	Ph 15-7 Mo SST		
Float Stops: Collars See Note 5 Drawing 1.0	Collars See Note 5  Brass collars; SST units - 316		Brass units - Brass collars; SST units - 316 SST collars	316 SST Collars		
Stem Length	Р	er Customer	Requirements			
Reed Switches and Wire See Notes 2 & 3	UL Recognized units: SPST Pilot Duty 20 VA 120-240 VAC. Polymeric leads: See Multi-Level Specification Form.					
Reed Switches and Wire See Notes 2 & 3	SPST Pilot Duty 20 VA 120-240 VAC; SPST Pilot Duty 100 VA 120-240 VAC; SPDT Pilot Duty 20 VA 120-240 VAC. Teflon leads: See Multi-Level Specification Form.					
Hysteresis	1/16" Total Envelope  Note 6					

#### Collars: Brass or 316 SST

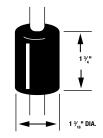


Drawing 1.0

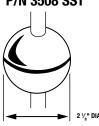
#### P/N 3506 BUNA N



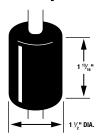
P/N 3507 BUNA N



P/N 3508 SST



PVC Units Only: P/N 3555



## **FLOAT SPECIFICATIONS:**

(Styles 1, 2, 3, 4, 10 and 11)

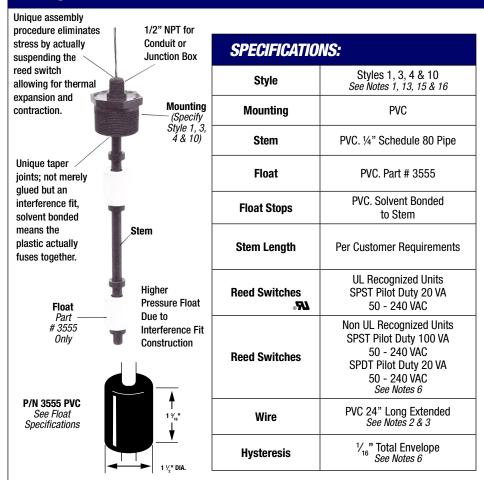
Float Part Number	Temperature Range	Pressure Max.	Specific Gravity
3506 BUNA	-40° to 180°F in water -40° to 230°F in oil	150 PSI	.55 See Note 17
3507 BUNA	-40° to 180°F in water -40° to 230°F in oil	150 PSI	.65 See Note 17
3508 S.S.T.	-40° to 300°F	750 PSI	.65 See Note 17
3555 PVC Note 1	-30°F to +140°F	100 PSI	.85 See Note 17

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#### **Notes:**

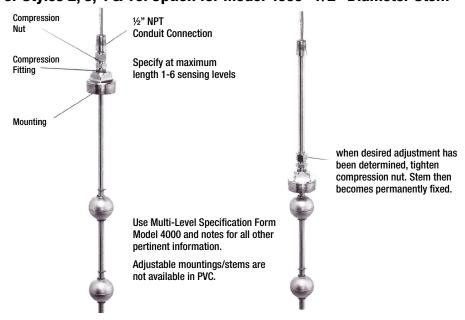
- 1. Part Number 3555 PVC float is used for PVC Model 4000. See specifications
- Also available: leads in different lengths, cable, terminated ends, etc. consult factory.
- Relays are available for handling higher electrical loads than allowed. See accessory section for details.
- 4. Grip rings come standard at no extra charge.
- 5. Optional collars are available from stock. See drawing 1.0.
- Special reed switches are stocked to yield a hysteresis of 1/4". Consult factory.
- Style 1 mounting installs from the inside of the tank into a ½" NPT boss. Specify float part number: 3506, 3507, 3508, or 3555.
- Style 2 mounting installs from the outside of the tank into a 1 1/4" NPT boss. Specify float part number 3507.
- Style 3 mounting installs from the outside of the tank into a 2" NPT boss. Specify float part number: 3506, 3507, 3508, or 3555.
- Style 4 flange mounting installs from the outside of the tank onto a 3" ANSI flange mating surface. Specify float part number 3506, 3507, 3508, or 3555.
- 11. Style 10 external tank mounting installs to the tank exterior. Bottom "run" port can be fabricated at branch position typical to top port. Thomas Products LTD. can machine ports on both bronze and stainless steel housings for silver braze or socket weld end connections. Consult factory. Specify float part number: 3506 or 3508.
- 12. Style 11 mountings install from the outside of the tank onto a 3" ANSI flange mating surface. Note: The bolt patterns angular position must be followed per drawing. See Multi-Level Specification Form 4000. Specify float part number: 3506, 3507 or 3508.
- 13. Style 10 external tank unit is available in all PVC construction. Consult factory.
- 14. Styles 4 & 11 flange mounting types are also available with a 1", 2" or 4" 150# ANSI flanges.
- Multi-level Specification Form 4000 must be used to ensure correct dimensional data.
- 16. All wetted parts PVC.
- Custom interface floats are available. Consult factory.
- Materials of copper-nickel, titanium, hastelloy and aluminum are stocked. Consult factory.

### **PVC**



## ADJUSTABLE STEM

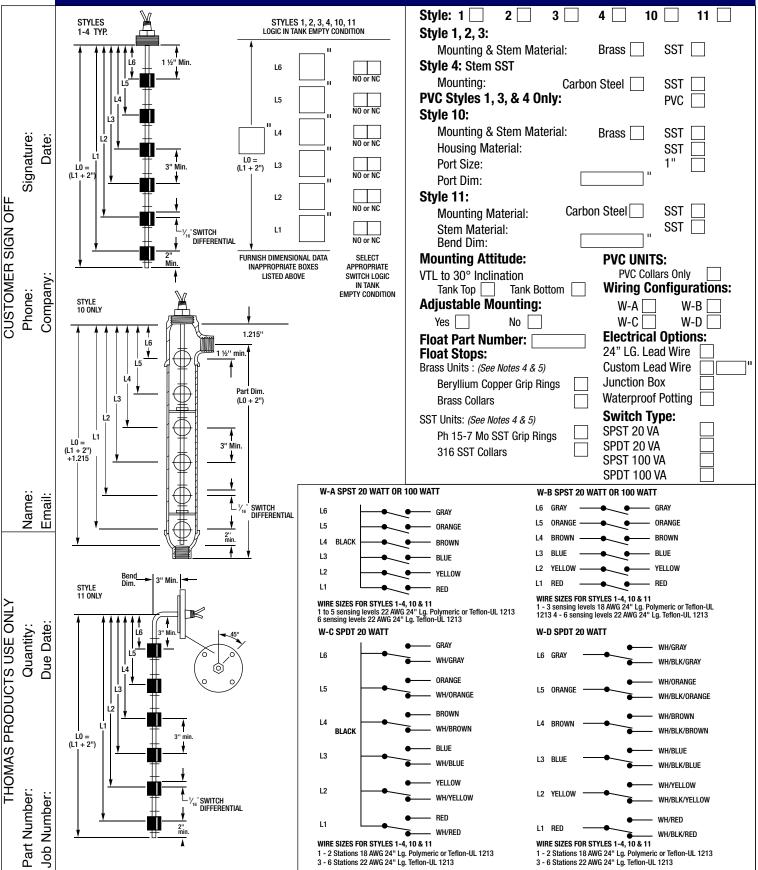
### For Styles 2, 3, 4 & 10. Option for Model 4000 -1/2" Diameter Stem





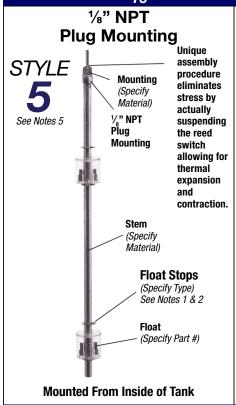
## 4000 CUSTOM LEVEL SWITCH All Model 4000 Custom Level Switches are fabricated in-house. Quick shipment of 2 weeks are standard, but if you need a unit sooner, our Short Order Department can satisfy almost any delivery requirement.

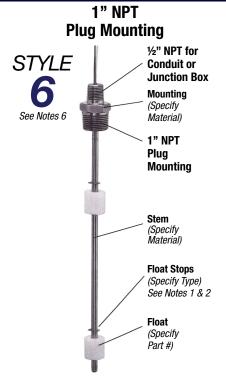
## **MULTI-LEVEL SPECIFICATION FORM 4000**



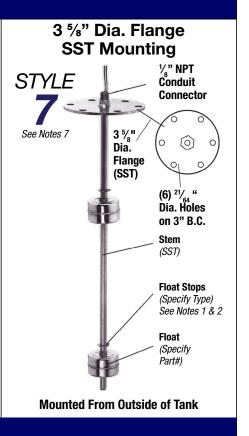


## METAL (5/16" Diameter Stem)



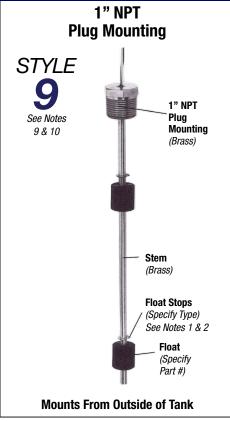


**Mounted From Outside of Tank** 

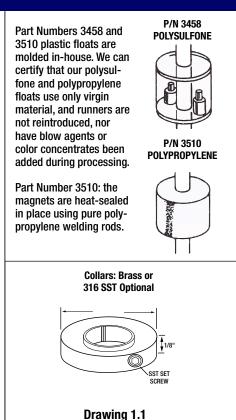


## METAL ( <sup>5</sup>/<sub>16</sub>" Diameter Stem)





10





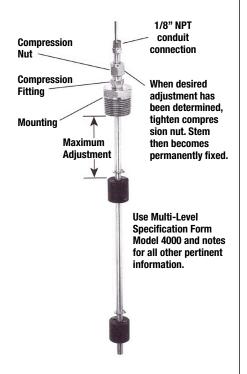
## <sup>5</sup>/<sub>16</sub>" Diameter Stem

## **ADJUSTABLE STEM**

4000 (Styles 5, 6, 7, 8 and 9)

SPECIFICATIONS:						
Style	5 & 6	7	8 & 9			
Mounting	Brass or Stainless Steel	Stainless Steel	Brass See Note 10			
Stem	Brass or Stainless Steel	Stainless Steel	Brass See Note 10			
Float	Customer	to Specify Part Num	ber			
Float Stops Grip Rings See Note 1	Brass units: Beryllium Copper Grip Rings SST Units: Ph 15-7 Mo SST Grip Rings	Ph 15-7 Mo Stainless Steel	Beryllium Copper See Note 10			
Float Stops: Collars See Note 2 Drawing 1.1	Brass Units: Brass Collars SST Units: Stainless Steel Collars	Stainless Steel	Brass See Note 10			
Stem Length	Per Customer Requirements					
Reed Switches and Wire See Notes 3 & 4	UL Recognized units: SPST Pilot duty 20 VA 120-240 VAC Polymeric Leads: See multi-level specification form					
Reed Switches and Wire See Notes 3 & 4	Non UL Recognized units:  SPST Pilot duty 20 VA 120-240 VAC  SPST Pilot duty 100 VA 120-240 VAC  Teflon Leads: See multi-level specification form					
Hysteresis	½," Total Envelope					

#### For Styles 6, 7 & 8. Option for Model 4000 - 5/16" Diameter Stem



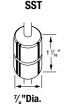
### **FLOAT SPECIFICATIONS:**

1" Dia.

(Styles 5, 6, 7, 8 and 9)

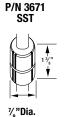
P/N 3476 P/N 3489

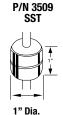
BUNA N	BUNA N		
1,1			

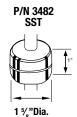


P/N 3660

1 1/2"







P/N 3458 POLY-SULFONE 1" Dia.

P/N 3510 POLY-PROPYLENE 1" Dia.

Float P/N	<b>3476</b> BUNA	<b>3489</b> <i>BUNA</i>	<b>3660</b> SST	<b>3671</b> SST	<b>3509</b> SST	<b>3482</b> SST	<b>3458</b> Polysulfone	<b>3510</b> Polypropylene
Temperature Range	-40° to 180 -40° to 23	°F in water 30°F in oil	-40°F to +300°F				-40° F to	) +225°F
Pressure Max.	150	PSI	500 PSI	500 PSI 750 PSI 400 PSI 150 PSI			75 PSI	100 PSI
Specific Gravity	.55	.51	.7	.88	.77	.57	.65	.81

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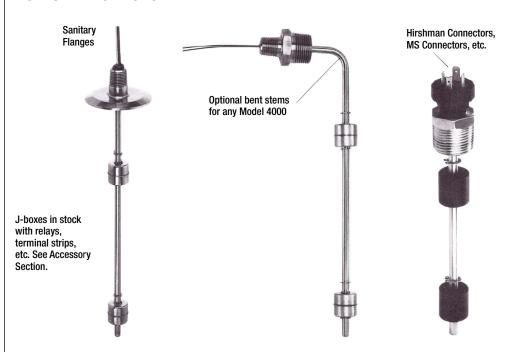
**EASY ORDERING** 1-800-666-9101 www.ThomasProd.com

## INSTALLATIONS/OPTIONS

#### **Notes:**

- 1. Grip rings come standard at no extra charge.
- 2. Optional collars are available from stock. See drawing 1.1.
- Also available, leads in different lengths, cable, terminated ends, etc. Consult factory.
- Relays are available for handling higher electrical loads than allowed. See accessary section for details.
- Style 5 mounting installs from the inside of the tank into a 1/8" NPT boss. Specify float part number: 3476, 3489, 3660, 3671, 3509, 3482,3458, or 3510.
- Style 6 mounting installs from the outside of the tank into a 1 "NPT boss. Specify float part number 3476, 3489, 3660, 3671, 3509, 3458, or 3510.
- 7. Style 7 mounting installs from the outside of the tank onto a mating surface as dimensions. Bore float clearance hole to suit specified float. Specify float part number 3476, 3489, 3660, 3671, 3509, 3482, 3458 or 3510.
- Style 8 mounting installs from the outside of the tank into a 3/4" NPT boss. Specify float part number 3489, 3660 or 3671.
- Style 9 mounting installs from the outside of the tank into a 1" NPT boss. Specify float part number 3476, 3489, 3660, 3671, 3509, 3458 or 3510.
- 10. Styles 8 and 9 are available constructed of 316 stainless steel and may be ordered with grip rings of Ph 15-7 Mo stainless steel or 316 SST collars. Consult factory.
- 11. Custom interface floats are available. Consult factory.
- 12. Multi-level Specification Form 4000 must be used to ensure correct dimen sional data.
- Material of copper-nickel, titanium, hastelloy and aluminum are stocked. Consult factory.

#### SPECIALTY OPTIONS:



Special mountings to your specifications.

Adjustable Stem. Options are available from stock.



All PVC wetted parts. See Model 4000. 1/2" Dia. Stem.



ANSI flange mountings. See Model 4000.



# 4000 CUSTOM LEVEL SWITCH All Model 4000 Custom Level Switches are fabricated in-house. Quick shipment of 2 weeks are standard, but if you need a unit sooner, our Short Order Department can satisfy almost any delivery requirement. Model 4000 Styles 5, 6, 7, 8 & 9 Multi-level Specification Form

		STYLES 5-9 TYP.
CUSTOMER SIGN OFF	Phone: Signature: Company: Date:	L0 = L0   L1   L1   L2   min.   L2   L2   L3   L3   L3   L3   L3   L3
2	_ ∂	
		STYLES 5, 6, 7, 8 & 9 LOGIC IN TANK EMPTY CONDITION
	Name: Email:	L5 — " NO or NC NO or NC NO or NC NO or NC
JSE ONLY	Quantity:	L0 = (L1 + 1")
RODUCTS USE ONL	ng ä	IN APPROPRIATE BOXES APPROPRIATE LISTED ABOVE SWITCH LOGIC IN TANK EMPTY CONDITION

Style: 5 🗌 6 🗌 7 🗍 8	9 🗌
Style 5 & 6 :  Mounting & Stem Material:  BI	rass SST
Style 7: Mounting & Stem Material:	SST 🗌
Style 8 & 9 : Mounting & Stem Material:	rass 🗌
Adjustable Mounting:	Yes No
	Wiring Configurations: W-A W-B
Tank Top	Electrical Options: 24" LG. Lead Wire Custom Lead Wire"
i ivat Stops.	Junction Box  Waterproof Potting
Brass Collars SST Units: (See Notes 1 & 2) Ph 15-7 Mo SST Grip Rings	Switch Type:  SPST 20 VA   SPDT 20 VA   SPST 100 VA   SPDT 100 VA
W-A SPST 20 WATT OR 100 WATT	V-B SPST 20 WATT OR 100 WATT
UNANUL	3 BLUE BLUE
DROWN	2 YELLOW YELLOW
	1 RED RED  VIRE SIZES FOR STYLES 5-9 to 3 sensing levels 22 AWG 24" Lg. Polymeric or Teflon-UL 1213
WIRE SIZES FOR STYLES 5-9 1 to 5 sensing levels 22 AWG 24" Lg. Polymeric or Teflon-UL 1213	

#### **ELECTRICAL** REED SWITCHES ARE SHOWN IN N.O. (DRY TANK) POSITION.

## **Switch Ratings ... Max Resistive Load**

V.A.	VOLTS	AMPS DC	AMPS AC	AMPS AC MAX
. <b>91</b> 1	0-50	.4	.4	
20	120	.15	.16	1.0
	240	.06	.08	
	0-50	1.0	1.5	
100	120	.4	.8	3.0
	240	.2	.4	

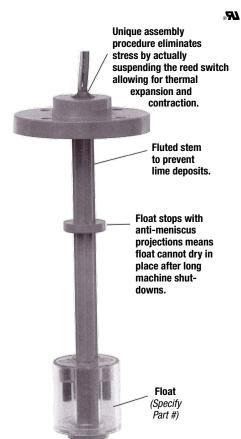
Switch Rating of UL Recognized Units, 20VA: Metal Stem Units: 120-240VAC Pilot Duty

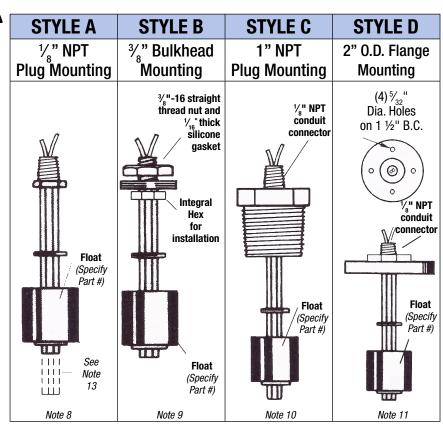
UL File E86797



Part Number: Job Number

## PLASTIC STEM (Polysulfone)





#### **Applications:**

 FDA approved polysulfone for use in food and beverage control.

#### P/N 3476 BUNA N











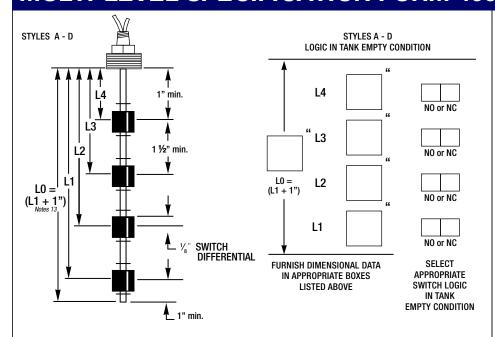
14

Float P/N	<b>3476</b> <i>BUNA</i>	3458 3510 Polysulfone Polypropyle		
Temperature Range	-40° to +180°F in Water -40° to +230°F in Oil	-40°F to +225°F		
Pressure Max.	150 PSI	75 PSI 100 PSI		
Specific Gravity	.55	.65	.81	

5/16" DIAMETER STEMS						
Style	A, B,C, D					
Materials						
Mounting	Polysulfone					
Stem Float Stops See Note 12						
Floats	Customer to specify. See Notes 1 - 5 & 12.					
Stem Length	Per customer requirements.					
Reed Switches and Wires	UL Recognized: SPST Pilot duty 20 VA 50-240 VAC PVC Leads 24" Long. See Multi-level Specification Form. See Notes 6 & 7.					
Temperature	Polysulfone max. temp. range -40° to +225°F					
Hysteresis	eresis 1/8" total envelope					

All Model 4000 Custom Level Switches are fabricated inhouse. Quick shipment of 2 weeks are standard, but if you need a unit sooner, our Short Order Department can satisfy almost any delivery requirement.

## **MULTI-LEVEL SPECIFICATION FORM 4000**



Style: A B	$\mathbf{C}$	D
Float P/N		
Mounting Attitude:		
VTL to 30° Inclination		
Tank Top		
Tank Bottom		
Wiring Configurations:		
W-A W-B		

#### **ELECTRICAL** REED SWITCHES ARE SHOWN IN N.O. (DRY TANK) POSITION.

# W-A SPST 20 VA L4 BLACK L3 BLUE L1 RED W-B SPST 20 VA L2 YELLOW L1 RED WIRE SIZES FOR S' 1 or 2 sensing leve

## L2 YELLOW YELLOW L1 RED RED WIRE SIZES FOR STYLES A - D 1 or 2 sensing levels 22 AWG 24" Lq. PVC

WIRE SIZES FOR STYLES A - D 1 or 4 sensing levels 22 AWG 24" Lg. PVC

#### Switch Ratings ... Max Resistive Load

V.A.	VOLTS	AMPS DC	AMPS AC	AMPS AC MAX
∘91	0-50	.4	.4	
20	120	.15	.16	1.0
	240	.06	.08	

Switch Rating of UL Recognized Units 20VA 50 - 240 VAC Pilot Duty UL File E86797

#### **Notes:**

- Unit's maximum pressure rating is the lowest pressure rated component either mounting and stem pressure rating or float pressure rating.
- Unit's maximum temperature rating is the lowest temperature rated component either polysulfone temperature range or float temperature range.
- Pressure rating of styles A & B mounting and stem are 100 PSI @ 72°F. Also see float pressure rating. See Note 1.
- Pressure rating of style C mounting and stem is 50 PSI @ 72°F. Also see float pressure rating. See Note 1.
- Pressure rating of style D mounting and stem is 10 PSI @ 72°F. Also see float pressure rating. See Note 1.
- Also available: leads in different lengths, cable, and/or terminated ends, etc. Consult factory.
- Relays are available for electrical loads higher than allowed. See Accessories section for details.
- Style A mounting installs from the inside of the tank into a 1/8"NPT boss.
- Style B mounting installs from the inside of the tank through a 3/8" dia.
- 10. Style C mounting installs from the outside of the tank into a 1" NPT hoss
- 11. Style D mounting installs from the outside of the tank onto a mating surface as dimensioned. Bore float clearance hole to suit specified float. Maximum float diameter 1".
- Other floats than shown are available. See Model 4000, metal 5/16" diameter stem, styles 5 - 9 for details.
- 13. Request extra 1" stem length to attach guy wires (customer supplied) for exceptionally long stems or if unit will be subjected to turbulence.
- 14. Custom interface floats are available. Consult factory.
- 15. Multi-level Specification Form 4000 must be used to ensure correct dimensional data.

