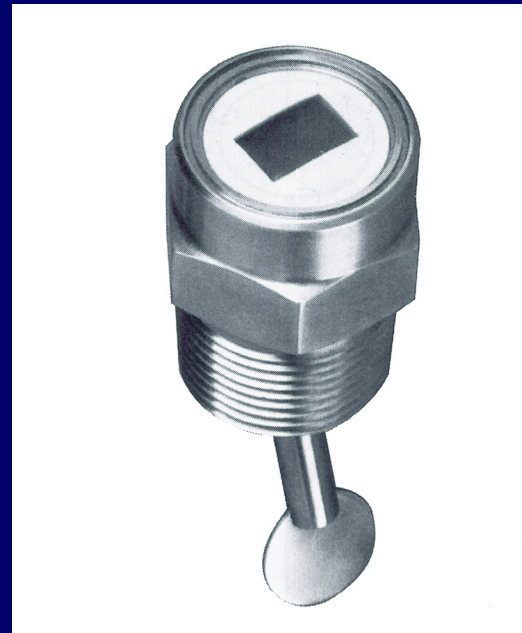
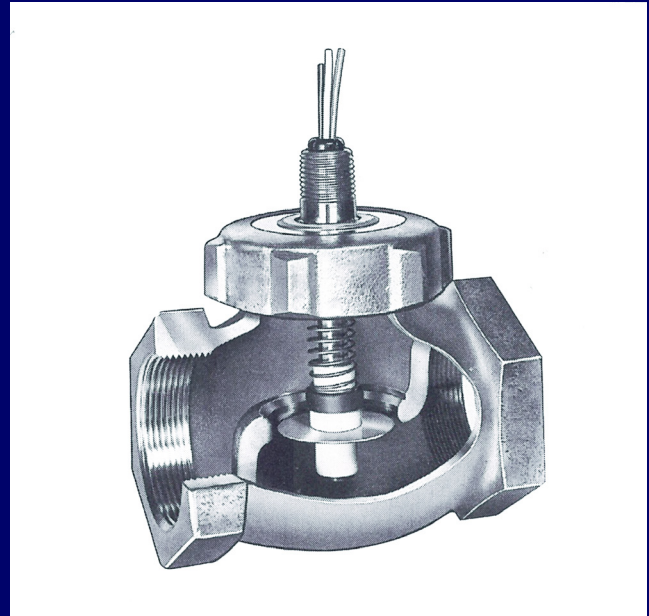
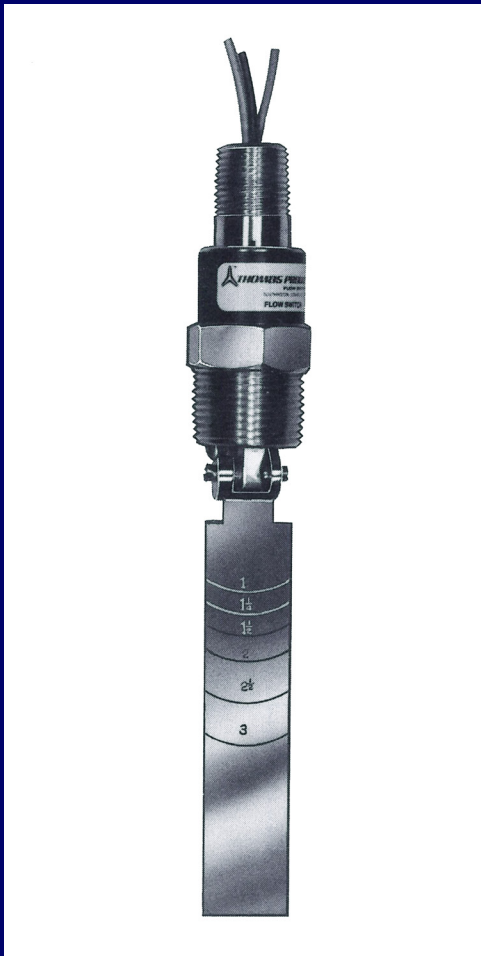
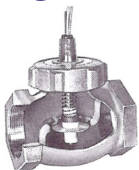
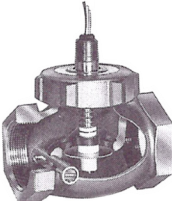
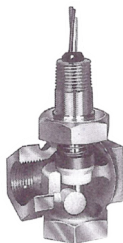
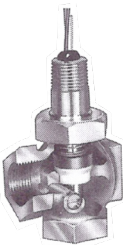






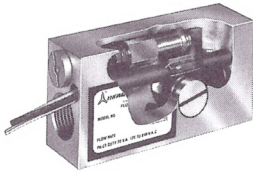


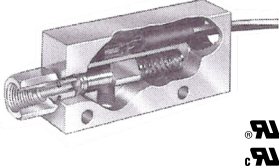
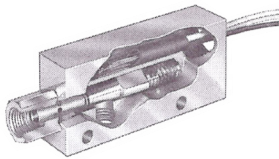
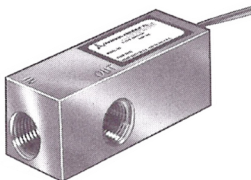
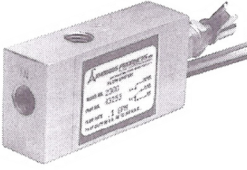
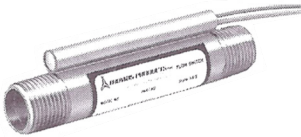
FLOW SWITCH SELECTION GUIDE



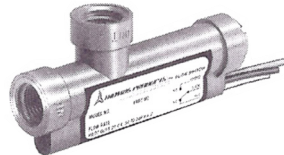
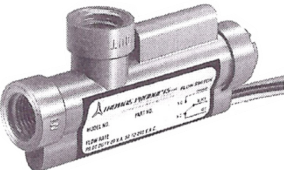



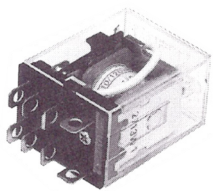
Standard Product Selection Guide

<div>1100</div> <div>1100M-SB</div> <div></div> <div>NAV SEA</div>	Bronze or SST	Brass, SST & Ceramic or SST & Ceramic & Monel	True globe body shape housings eliminate turbulence & reduce ΔP, 25% heavier wall thickness approved tested for shock, vibration, salt spray, accelerated life.	1100 MSB Listed QPL 16032	3/4" - 3" NPT	1100 MSB SPST, 10 Watt Lampload	.5 - 100 GPM	-20°F to +300°F	400 PSI @ 100°F operating 800 PSI @ 100°F proof load	Complement of outlined switches is to show product line breadth. Our in-house manufacturing capabilities can customize any unit to suit.
<div>1200</div> <div></div>	Bronze or SST			1" NPT	.75 - 15 GPM					
<div>1300</div> <div></div>	Bronze			3/4" NPT	.75 - 10 GPM					
<div>1400</div> <div></div>						.75 - 14 GPM				
<div>1800</div> <div></div> <div>Pat. No.5,162,624</div> <div></div>	PVC	PVC & Ceramic	True flow switch operation, removable bonnet assembly, economical.	1" slip, accepts standard adapters	20 VA SPST, 20 VA SPDT	.5 & 1.0 GPM 6.0 GPM Max.	0°F to +140°F	150 PSIG Max.		
<div>2600</div> <div></div> <div>Pat. No.5,162,624</div> <div></div>			Bypass design, low ΔP, economical.	2" slip, accepts standard adapters		.5, 1.0 & 2.0 GPM				

Standard Product Selection Guide

Product Selection Guide		Housing Material	Trim Materials	Advantages	Process Connections	Reed Switch	Set Points	Operating Temperature	Operating Pressure	Notes	
1500		Brass or 316 Stainless Steel	Brass, 316 Stainless Steel or Polysulfone	Field adjustable or factory set from either side, available graduated scale.	1/2" NPT	20 VA SPDT  20 VA SPST 	Liquid: .1 - 20.0 GPM Gas: 1.0 - 250 SCFM	-20°F to +300°F	1000 PSIG Max.	Complement of outlined switches is to show product line breadth. Our in-house manufacturing capabilities can customize any unit to suit.	
1600				Long-lasting pistons with wide lands. Hardened and lapped bore. Replacement parts.	1/4" NPT		Liquid: .1 - 1.5 GPM Gas: .5 - 40.0 SCFM				
1700							Liquid: 2.0 - 300 cc/min Gas: 2.0 to 50 SCFH				
1900			Brass or 316 Stainless Steel	Self-cleaning, 3 ports, serviceable while in line.		20 VA SPST 20 VA SPDT	.1 - 1.5 GPM	Brass unit: -20°F to +250°F; SST unit: -20°F to +300°F			
2300	 <i>Patent Pending</i>					20 VA SPDT		-20°F to +300°F			
2000				Self-cleaning, true 1/2" IPS, silicone potted, shock & vibration resistant.	1/2" NPT	20 VA SPST	.5 - 3.0 GPM	Brass unit: -20°F to +250°F; SST unit: -20°F to +300°F			1500 PSIG Max.

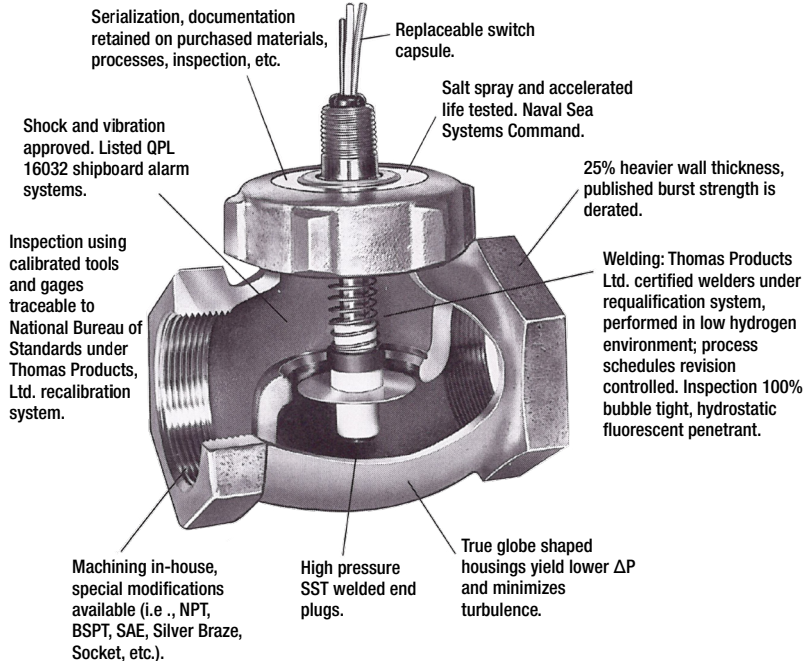
Standard Product Selection Guide

<div>2100</div> <div></div> <div>UL®</div>	Polysulfone	Polysulfone 316 SST	Stronger one-piece housing silicone potted, shock & vibration resistant, reverse taper bore, self-cleaning. All wetted material PSF.	9/16" - 18 UNF 2 B Accepts variety of adapters	15 VA SPST or 20 VA SPDT	.1 - 1.5 GPM Optional 1 cc/min to 300 cc/min	-40°F to +225°F	700 PSI @ 70°F	Complement of outlined switches is to show standard product line breadth. Our in-house manufacturing capabilities can customize any unit to suit.
<div>2200</div> <div></div>		Polysulfone			20 VA SPDT	.1 - .75 GPM			
<div>2400</div> <div></div>	Brass or 316 Stainless Steel	316 Stainless Steel	SPDT reed switch assembly, all metal wetted parts, rugged investment cast components.	1" NPT	20 VA SPDT	4.0 GPM Min.	-30°F to +300°F	850 PSIG Max.	
<div>2500</div> <div></div>	Polysulfone	Polysulfone 316 SST					SPDT reed switch assembly.	150 PSIG Max.	
<div>5200</div> <div></div> <div>Pat. No.5,245,271</div>	Brass or 316 Stainless Steel	316 Stainless Steel	Indicator use in hazardous locations, 2 color flag.	3/4" NPT	N/A	1.5 - 5.0 GPM	-40°F to +225°F	400 PSI @ 70°F	
<div>Accessories</div> <div></div>	Explosion-proof junction boxes.	Relays DPDT general purpose.	Relays OPDT latching pumpcontrols.	Crimp on terminals.	Terminal strips.	TFE tape & TFE paste.	Cable Glands.		

FLOW SWITCH SELECTION GUIDE

Calibration: flow stands are calibrated to the National Bureau of Standards and Thomas Products Ltd. recalibration schedule.

Model 1100



☐ Ideas

☐ Solutions

☐ Technical Support

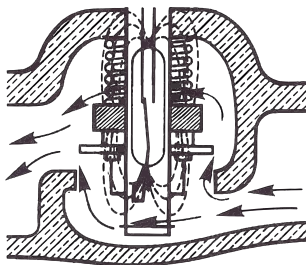
☐ On-Time Delivery

☐ Quality

Operational Q.C. system and manual, MIL I 45208 MIL STD 45662.

Raw materials inventoried in a controlled and segregated department under Thomas Products, Ltd. stock rotation program.

Call-outs presented are typical to their respective models.



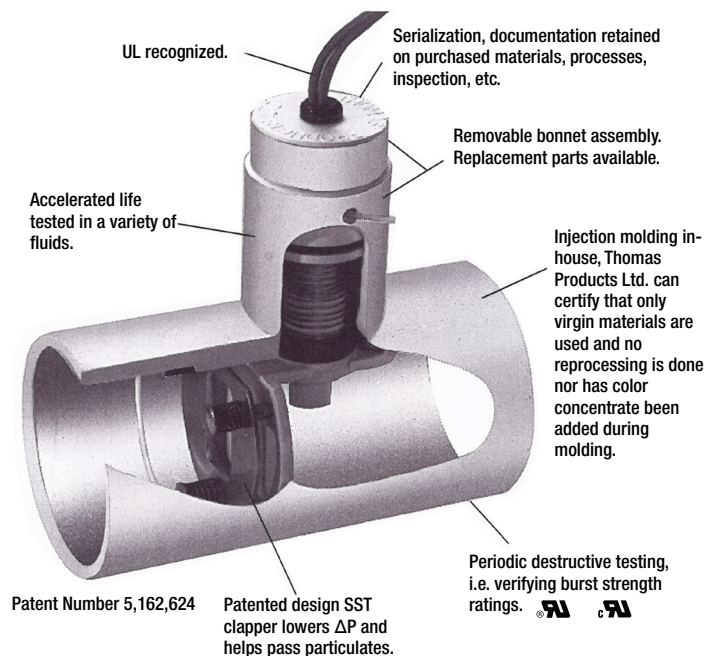
Typical Shuttle Type:

A magnet equipped shuttle is displaced at the proper calibrated flow of either liquid or gas to actuate the hermetically sealed reed switch.

At flow rates under the set point, clearance is provided for the liquid or gas to continue to flow.

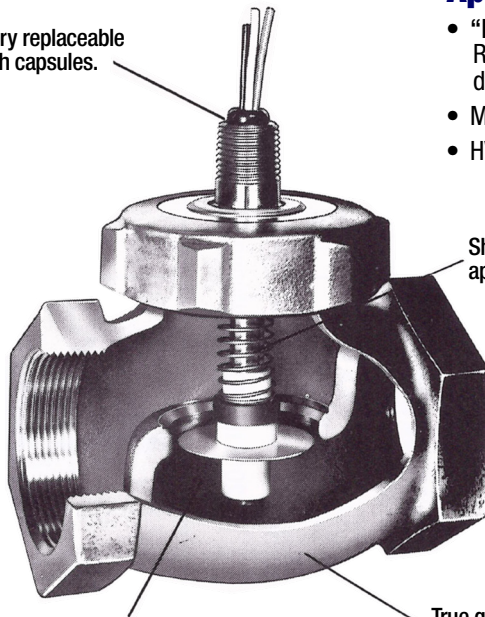
When flow rates exceed the set point the shuttle or piston is displaced even further to reveal a smooth, clear opening for a low pressure drop.

Model 2600



FIXED SET POINTS, 3/4" - 3" NPT, BRONZE & SST

Factory replaceable switch capsules.



Applications:

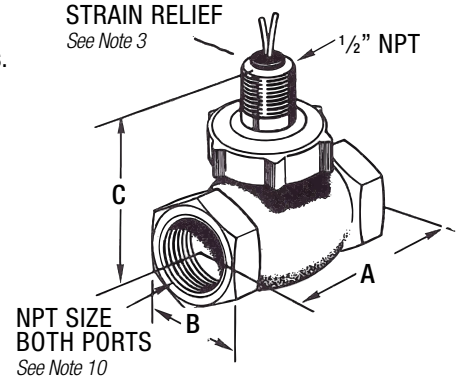
- "INDUSTRIAL STANDARD" Rugged and accurate flow detection for most applications.
- Machine Tool Industry
- HVAC Equipment

Shock and vibration approved.

Welding performed in low hydrogen environment.

True globe-shaped housings yield lower ΔP and minimize turbulence.

Dimensional Data:



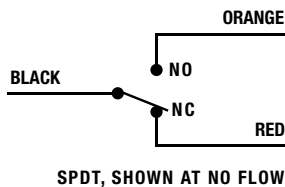
SIZE NPT	A	B HEX	C
3/4"	2 ⁷ / ₈	1 ³ / ₈	2 ³ / ₄
1"	3 ¹ / ₄	1 ²⁵ / ₃₂	3
1 ¹ / ₄ "	4	2 ³ / ₁₆	3 ³ / ₁₆
1 ¹ / ₂ "	4 ¹ / ₂	2 ¹ / ₂	3 ¹ / ₂
2"	5 ³ / ₈	3 ³ / ₃₂	4
2 ¹ / ₂ "	6 ⁵ / ₁₆	3 ⁵ / ₈	4 ¹ / ₂
3"	7 ³ / ₈	4 ³ / ₈	5 ⁵ / ₃₂

Specifications:

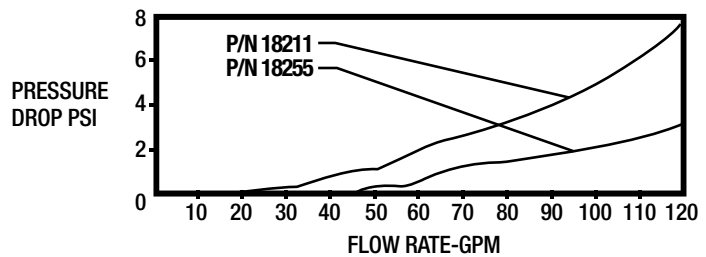
Housing	Shuttle	Spring	"O" Ring	Reed Switch	Wire	Oper. Temp.	Oper. Pres.	Proof Load	Burst Strength	Set Pt. Accur.	Set. Pt. Diff.	Repeat-ability
Bronze or 316 SST	Teflon <i>See Note 7</i>	316 SST	Viton "A"	20 Watt SPDT <i>See Notes 4,5</i>	18 AWG 24" Lg. Polymeric <i>See Note 6</i>	-20°F to +300°F <i>See Note 11</i>	400 PSI @ 100°F	800 PSI @ 100°F	1200 PSI @ 100°F	±10% MAX. <i>See Note 14</i>	±10%	1% Max. Deviation

Electrical:

Reed switch shown in NO FLOW condition.



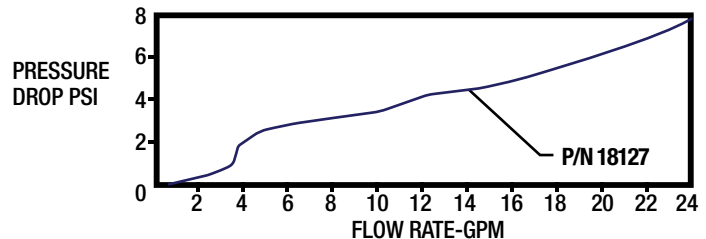
Pressure Drop Δp :



Switch Ratings... Max Resistive Load

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

Switch Rating 20 VA: 120-240 VAC Pilot Duty
UL File E86797



FIXED SET POINTS, 3/4" - 3" NPT, BRONZE & SST

Part No.

SIZE NPT	FLOW SETTING GPM <small>See Note 1, 12</small>	P/N BRONZE	P/N 316 SST
3/4" See Note 13	.5	18100	
	1.0	18101	
	2.0	18102	
	3.0	18103	
	4.0	18104	
	5.0	18105	
	6.0	18106	
	8.0	18107	
1"	.5	18127	18140
	1.0	18128	18141
	2.0	18129	18142
	3.0	18130	18143
	4.0	18131	18144
	5.0	18132	18145
	6.0	18133	18146
	8.0	18134	18147
1 1/4"	1.0	18153	
	2.0	18154	
	4.0	18155	
	6.0	18156	
	8.0	18157	
	10	18158	
	12	18159	
	16	18160	
	20	18161	
1 1/2"	1.5	18183	18197
	3	18184	18198
	5	18185	18199
	7.5	18186	18200
	10	18187	18201

SIZE NPT	FLOW SETTING GPM <small>See Note 1, 12</small>	P/N BRONZE	P/N 316 SST
1 1/2"	15	18188	18202
	20	18189	18203
	30	18190	18204
2"	2	18211	18225
	4	18212	18226
	5	18213	18227
	10	18214	18228
	15	18215	18229
	26	18216	18230
	35	18217	18231
	50	18218	18232
2 1/2"	5	18239	N/A
	10	18240	
	15	18241	
	20	18242	
	25	18243	
	30	18244	
	40	18245	
	50	18246	
	60	18247	
	75	18248	
3"	5	18255	N/A
	15	18256	
	20	18257	
	25	18258	
	30	18259	
	40	18260	
	50	18261	
	60	18262	
	75	18263	
	100	18264	

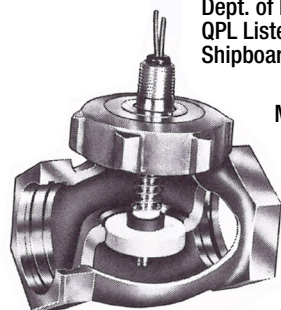
Notes:

Model 1100

- Standard flow calibration is in water @ 70°F. Calibrated on increasing flow.
- Temperature effect on flow settings: water calibration, slight change; oil varies with viscosity.
- Strain reliefs are standard. Optional silicone potting avail. Consult factory.
- Optional 100W SPST reed switches are stocked. Consult factory.
- Relays for higher loads, junction boxes, terminal strips, etc. are available. See accessories section for details (See Page 28)
- Optional cables available. Consult factory.
- Other wetted materials: ceramic ring magnet.
- Optional SST identification tags attached to unit. Consult factory.
- Optional MIS connector. MS3102E1 OS-3P
- Optional port sizes: BSP, SAE, silver braze, socket weld, etc. Consult factory.
- High temperature units available to 400°F. Consult factory.
- Standard flow settings are calibrated in water. Other set points in water or oil are available. Consult factory.
- For pipe sizes smaller than 3/4" , install appropriate size bushings.
- Calibration: Flow stands are calibrated to the National Bureau of Standards and Thomas Products Ltd. recalibration schedule.

Specialty Options:

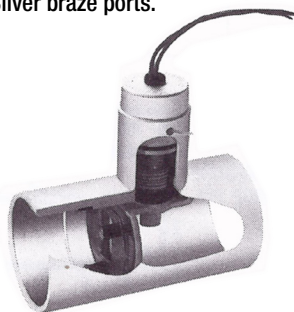
NAV SEA
Dept. of Navy
QPL Listed MIL-S-16032
Shipboard Alarm Systems.



MODEL 1100M-SB
Marine Flow Switch
for sea water
applications.

Monel trim.

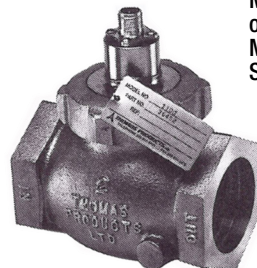
Silver braze ports.



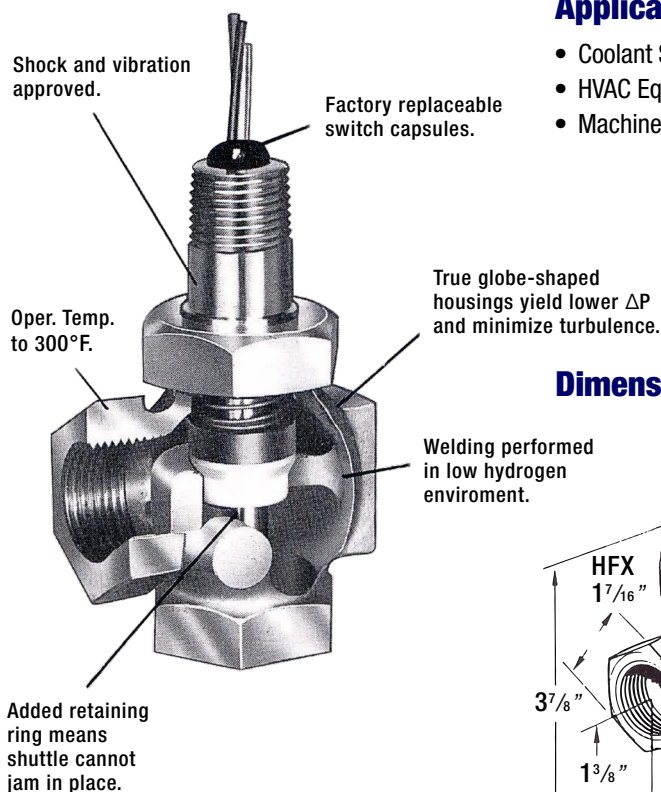
Pat. No. 5,162,624

MODEL 2600
Economical PVC. Straight
through flow path.

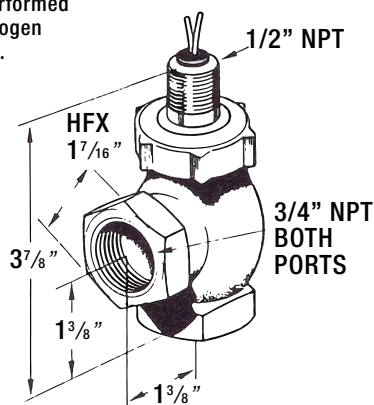
MODEL 1100 with
optional M/S connector.
MS3102E10S-3P and
SST Ident. tag.



MODEL 1800
Economical PVC.
90° flow path.

FIXED SET POINTS, 3/4" NPT, BRONZE**Applications:**

- Coolant Systems
- HVAC Equipment
- Machine Tool Industry

Dimensional Data:**Notes: Model 1300**

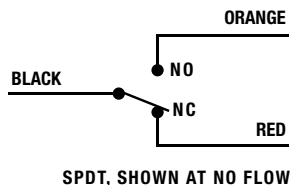
1. Standard flow calibration is in water @ 70°F. Calibrated on increasing flow.
2. Temperature effect on flow settings: water calibration, slight change; oil varies with viscosity.
3. Optional 100W SPST reed switches are stocked. Consult factory.
4. Relays for higher loads, junction boxes, terminal strips, etc. are available. See accessories section for details (See Page 28)
5. Optional cables available. Consult factory.
6. Other wetted materials: ceramic ring magnet.
7. Optional SST identification tags attached to unit. Consult factory.
8. Optional port sizes: BSPT, SAE, silver braze, socket weld, etc. Consult factory.
9. High temperature units available to 400°F. Consult factory.
10. Standard flow settings are calibrated in water. Other set points in water or oil are available. Consult factory.
11. Calibration: Flow stands are calibrated to the National Bureau of Standards and Thomas Products Ltd. recalibration schedule.

Specifications:

Housing	Shuttle	Spring	"O" Ring	Reed Switch	Wire	Oper. Temp.	Oper. Pres.	Proof Load	Brust Strenght	Set Pt. Accur.	Set. Pt. Diff.	Repeat-ability
Bronze	Teflon <i>See Note 6</i>	316 SST	Viton "A"	20 Watt SPDT <i>See Note 3,4</i>	18 AWG 24" Lg Polymeric <i>See Note 5</i>	-20°F to +300°F <i>See Note 9</i>	400 PSI @ 100°F	800 PSI @ 100°F	1200 PSI @ 100°F	±10% MAX. <i>See Note 11</i>	±10%	1% Max. Deviation

Electrical:

Reed switch shown in NO FLOW condition.

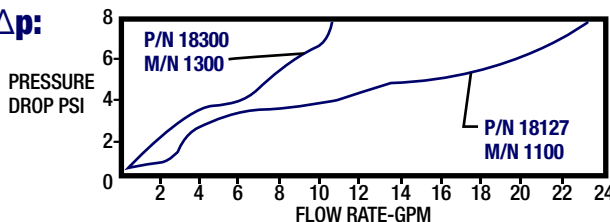
**Part No.**

SIZE NPT	FLOW SETTING GPM <i>See Note 1, 2, 10</i>	P/N
3/4" <i>See Note 8</i>	.75	18300
	1.5	18301
	2	18302
	2.5	18303
	5	18304
	7.5	18305
	10	18306

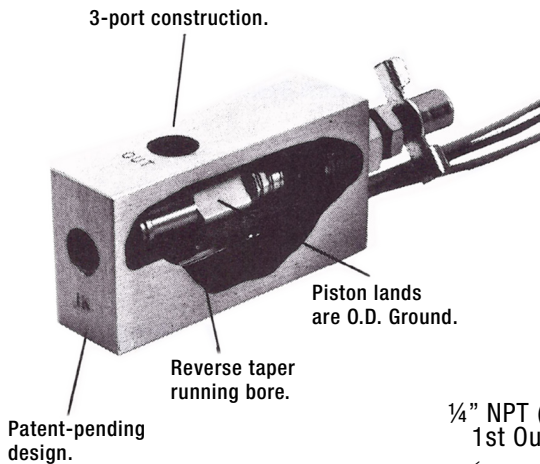
**Switch Ratings...
Max Resistive Load**

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

Switch Rating 20 VA: 120-240 VAC Pilot Duty
UL File E86797

Pressure Drop Δp :

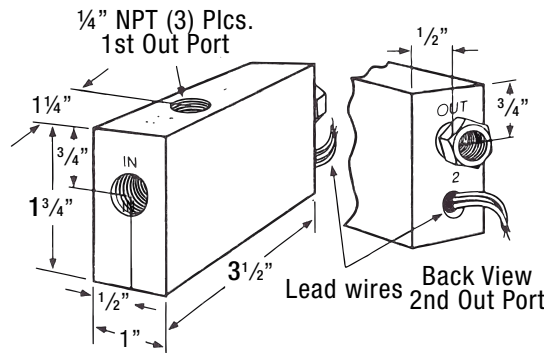
FIXED SET POINTS, 1/4" NPT, BRASS & SST



Applications:

- Designed to help pass 100 micron particulates.
- Serviceable in line.
- Optional petcock to continually bleed out particles.
- High pressure applications.

Dimensional Data:



Notes: Model 2300

1. Standard flow calibration is in water @ 70°F with lead wires up. Calibrated on increasing flow.
2. Temperature effect on flow settings: water calibration, slight change; oil varies with viscosity.
3. Optional 100W SPST reed switches are stocked. Consult factory.
4. Relays for higher loads are available. See accessories section for details (See Page 28)
5. Optional cables available. Consult factory.
6. Other wetted materials: Hysol epoxy.
7. High temperature units available to 400°F. Consult factory.
8. Standard flow settings are calibrated in water. Other set points in water or oil are available. Consult factory.
9. Pistons: Brass for oil, polysulfone for water in either housing; SST in SST housing.
10. Calibration: Flow stands are calibrated to the National Bureau of Standards and Thomas Products Ltd. recalibration schedule.

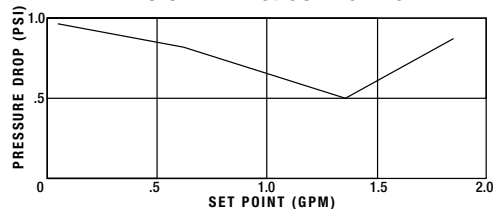
Specifications:

Housing	Piston	Spring	Reed Switch	Wire	Oper. Temp. <i>Select Piston</i>	Oper. Pres.	Proof Load	Burst Strength	Set Pt. Accur.	Set Pt. Diff.
Brass or 316 SST	Polysulfone Brass, or 316 SST <i>See Note 6,9</i>	316 SST	20 Watt SPDT <i>See Note 3,4</i>	18 AWG 24" Lg Polymeric <i>See Note 5</i>	w/Brass or SST Piston <i>See Note 7</i> -20°F to +300°F w/Polysulfone Piston -20°F to +225°F	1000 PSIG*	2500 PSIG*	5000 PSIG*	±10% MAX. <i>See Note 10</i>	±20% MAX.

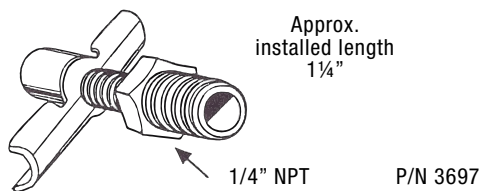
*Without use of optional Petcock

Pressure Drop Δp :

VERTICAL ATTITUDE,
LEAD WIRES UP AND 1st OUT PORT OPEN



OPTIONS: BRASS PETCOCK



Electrical & Switch Ratings:

See Model 1300. Page 8

Part No.

SIZE NPT	FLOW SET GPM	BRASS Housing	PISTON P/N Specify	316 SS Construction
1/4"	.1	43253 - _____		43259
	.25	43254 - _____		43260
	.5	43255 - _____		43261
	.75	43256 - _____		43262
	1.0	43257 - _____		43263
	1.5	43258 - _____		43264

PISTONS FOR BRASS OR 316 SST HOUSINGS:

	BRASS	P/N 3699
	316 SST	P/N 3700
	POLYSULFONE	P/N 3701

See Note 9

1600 & 1700



Please turn to our *Company Profile* and *Level Switch Selection Guide* to learn more of the advantages in specifying *Thomas Products Ltd.* sensors. Page 1-2

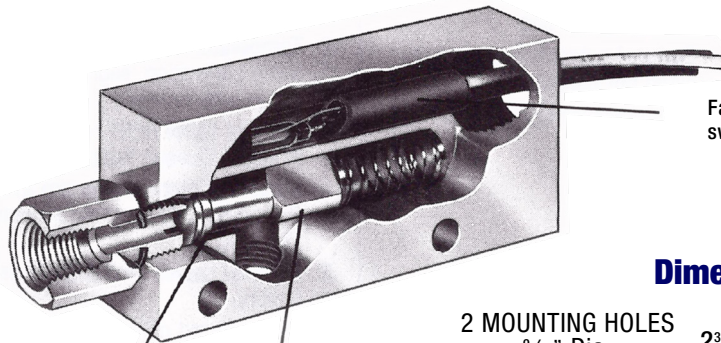
FIXED SET POINTS, 1/4" NPT, BRASS & SST

Model 1600

- Set points in water from .1 GPM to 1.5 GPM.
- Set points in airtrom .06 SCFM to 8 SCFM.

Applications:

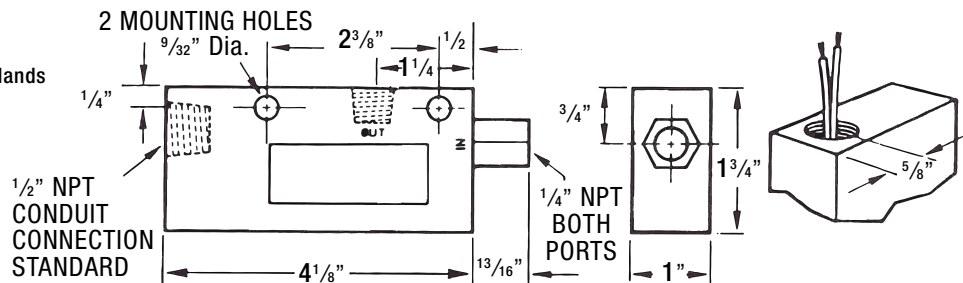
- UL Recognized (Note 4)  
- Machine Tool Industry
- Lubrication Systems
- Lasers



Factory replaceable switch capsules.

Increased piston lands are O.D. ground.
Hardened and lapped running bore.

Dimensional Data: Model 1600 & 1700



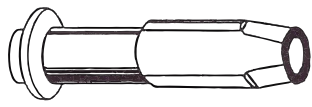
Specifications:

Housing	Piston	Spring	"O" Ring	Reed Switch	Wire	Oper. Temp.	Oper. Pres.	Proof Load	Brust Streng-ht	Set Pt. Accur.	Set Pt. Diff.	Repeatability
Brass or 316 SST	Polysulfone <i>See Note 15</i>	316 SST	Viton "A"	20 Watt SPDT <i>See Notes 4, 5</i>	18 AWG 24" Lg. Polymeric <i>See Notes 6, 7</i>	w/ Brass or SST Piston -20°F to +300°F <i>See Note 8</i>	1000 PSIG	2500 PSIG	5000 PSIG	±10% MAX. <i>See Note 18</i>	1600 15% MAX.	1% Max. Deviation
	Brass <i>See Notes 12, 14, 16</i>					w/ Polysulfone Piston -20°F to +225°F					1700 20% MAX.	
	316 SST <i>See Notes 12, 14, 17</i>											

Part No.

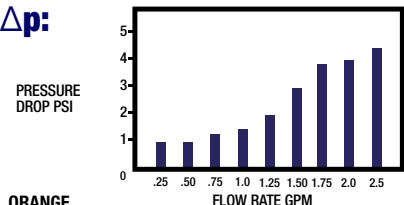
SIZE NPT	FLOW SET GPM <i>See Note 1-3, 9, 10</i>	BRASS Housing	PISTON P/N Specify	316 SST Construction
1/4"	.1	12600 - _____		12609
	.25	12601 - _____		12610
	.5	12602 - _____		12611
	.75	12603 - _____		12612
	1.0	12604 - _____		12613
	1.5	12605 - _____		12614

PISTONS FOR BRASS OR 316 SST HOUSINGS:

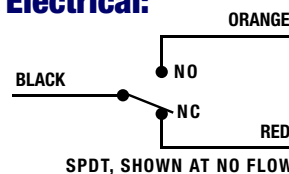
	POLYSULFONE	P/N 4054
	BRASS	P/N 4055
	316 SST	P/N 4056

See Note 12, 14-17

Pressure Drop Δp : Model 1600



Electrical:



Reed switch shown in NO FLOW condition.

Switch Ratings... Max Resistive Load

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

Switch Rating of UL Recognized Unit 20 VA: 120-240 VAC Pilot Duty

1600 & 1700

Please turn to our *Company Profile* and *Level Switch Selection Guide* to learn more of the advantages in specifying *Thomas Products Ltd.* sensors.

FIXED SET POINTS, 1/4" NPT, BRASS & SST

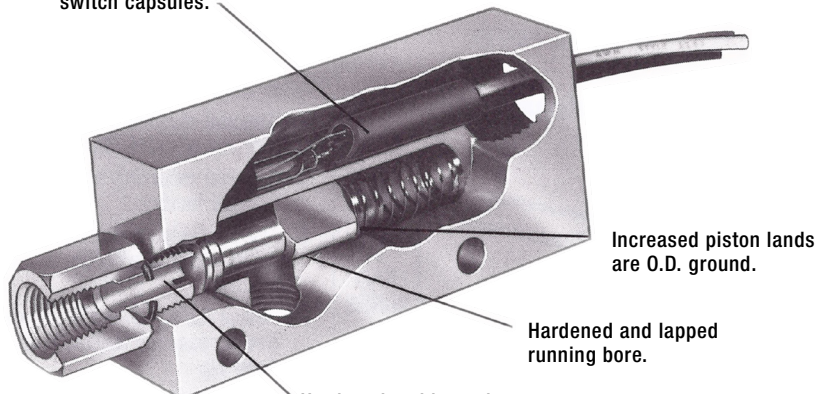
Model 1700:

- Water from 2 cc/min to 300 cc/min.
- Air from 2SCFH to 50SCFH.

Applications:

- U.L. File E86797
- Accurate low flow applications.
- Lubrication Systems

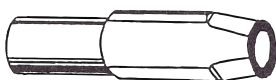
Factory replaceable switch capsules.



Part No.

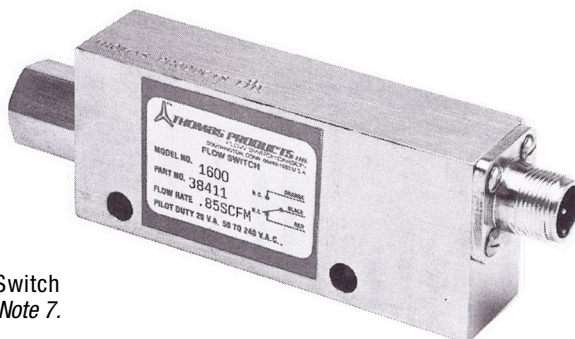
SIZE NPT	FLOW SETTING cc/min See Note 1, 2, 3, 9, 10	EQUIV. GPM APPX.	BRASS Housing	PISTON P/N Specify	316 SST Construction
1/4"	50	.013	12618 - _____		12628
	100	.026	12619 - _____		12629
	150	.040	12620 - _____		12630
	200	.053	12621 - _____		12631
	250	.066	12622 - _____		12632
	300	.079	12623 - _____		12633

PISTONS FOR BRASS OR 316 SST HOUSINGS:

 See Notes 12, 14	POLYSULFONE	P/N 4058
	BRASS	P/N 4059
	316 SST	P/N 4060

Electrical & Switch Ratings: Page 10.

Specialty Options:

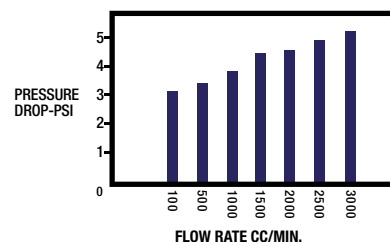


Model 1600 Air Flow Switch with MS connector See Note 7.

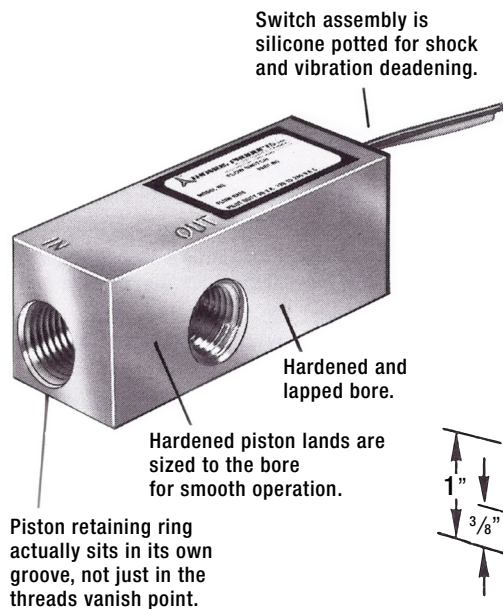
Notes: Model 1600 & 1700

- Standard flow calibration is in water @ 70°F with lead wires up. Calibrated on increasing flow.
- Temperature effect on flow settings: water calibration, slight change; oil varies with viscosity; gas, slight change.
- Set point accuracy will change slightly in other than calibrated position.
- Model 1600 is UL recognized with a SPST reed switch rated pilot duty 20 VA 120-240 VAC, 174°F.
- Relays for higher loads, junction boxes, terminal strips, etc. are available. See accessories section for details (See Page 28)
- Also available: leads in different lengths, cable, terminated ends, etc. Consult factory.
- Optional 3 Pin M/S connector - MS3102E10S-3P. Consult factory.
- High temperature units available to 400°F. Consult factory.
- Standard flow settings are calibrated in water. Other set points in water or oil are available. Consult factory.
- Optional air set points for Model 1600 are available. Consult factory with CFM and line pressure.
- Optional air set points for Model 1700 are available. Consult factory with CFH and line pressure.
- Other wetted materials: Hysol epoxy.
- Model 1700 orifice dia. is 5/16"; inlet fitting supplied by customer must be 3/8" I.D. minimum.
- All SST piston eliminating epoxy is available. Consult factory.
- Polysulfone for water in brass housing.
- Brass for oil in brass housing.
- SST for SST housing.
- Calibration: Flow stands are calibrated to the National Bureau of Standards and Thomas Products Ltd. recalibration schedule.

Pressure Drop Δp : Model 1700



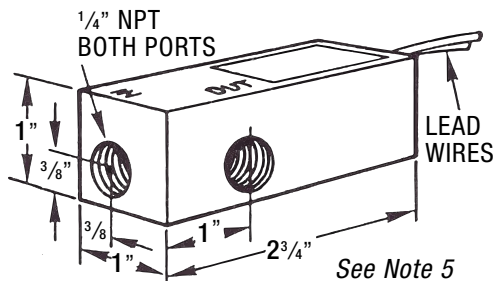
FIXED SET POINTS, 1/4" NPT, BRASS & SST



Applications:

- The "mini" small and accurate in line flow switch detects low or high flow rates.
- Fixed actuations from .1 GPM to 1.5 GPM
- UL File No. E86797

Dimensional Data:



Notes: Model 1900

1. Standard flow calibration is in water @ 70°F with lead wires up. Calibrated on increasing flow.
2. Temperature effect on flow settings: water calibration, slight change; oil varies with viscosity.
3. Set point accuracy will change slightly in other than calibrated position.
4. Optional aluminum housings with SST trim are stocked. Consult factory.
5. Optional mounting holes available. Consult factory.
6. Also available: leads in different lengths, cable, terminated ends, etc. Consult factory.
7. Relays for higher loads are available. See accessories section for details (See Page 28)
8. High temperature units available to 400°F. Consult factory.
9. Standard flow settings are calibrated in water. Other set points in water or oil are available. Consult factory.
10. Other wetted materials: Hysol Epoxy
11. All SST piston for either brass or SST housing, eliminating hysol epoxy. Consult factory.
12. Calibration: Flow stands are calibrated to the National Bureau of Standards and Thomas Products Ltd. recalibration schedule.

Part No.

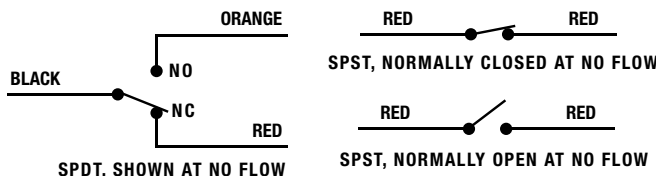
SIZE NPT	FLOW SETTING GPM <small>See Note 1, 2, 3, 9</small>	P/N BRASS N.O. SPST SWITCH	P/N BRASS N.C. SPST SWITCH	P/N BRASS SPDT SWITCH	P/N 316 SST SPDT SWITCH
1/4"	.1	18321	18327	18350	18360
	.25	18322	18328	18351	18361
	.5	18323	18329	18352	18362
	.75	18324	18330	18353	18363
	1	18325	18331	18354	18364
	1.5	18326	18332	18355	18365

Specifications:

Housing	Piston	Spring	Reed Switch	Wire	Oper. Temp. <small>See Note 8</small>	Oper. Pres.	Proof Load	Brust Strength	Set Pt. Accur.	Set. Pt. Diff.	Repet-ability
Brass <small>See Note 10</small>	316 SST		20 Watt 316 SPST or SPDT <small>See Note 7</small>	18 AWG 24" Lg. Polymeric <small>See Note 6</small>	-20°F to +250°F	1000 PSIG	2000 PSIG	4000 PSIG	±10% MAX. <small>See Note 12</small>	±15% MAX.	1% Max. Deviation
316 SST <small>See Notes 10, 11</small>					-20°F to +300°F						

Electrical:

Reed switch shown in NO FLOW condition.



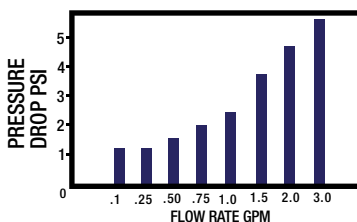
Switch Ratings...

Max Resistive Load

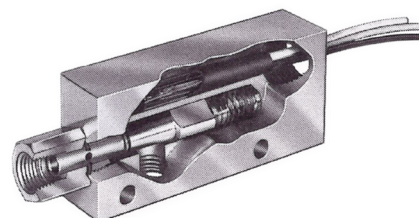
V.A.	VOLTS	AMPS DC	AMPS AC	AMPS AC MAX
20	0-50	.4	.4	1.0
	120	.15	.16	
	240	.06	.08	

Switch Rating 20 VA: 120-240 VAC Pilot Duty

Pressure Drop Δp :

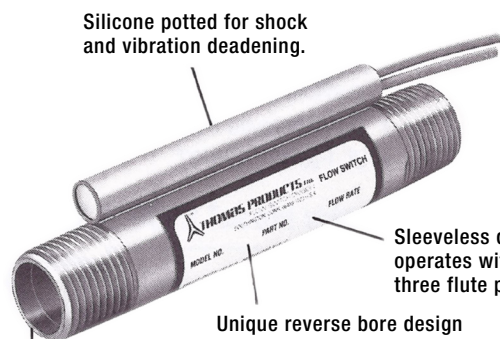


Specialty Options:



See Model 1700 for set points from 2 cc/min. to 300 cc/min.

FIXED SET POINTS, 1/2" NPT, BRASS & SST



Easy disassembly for cleaning or service.

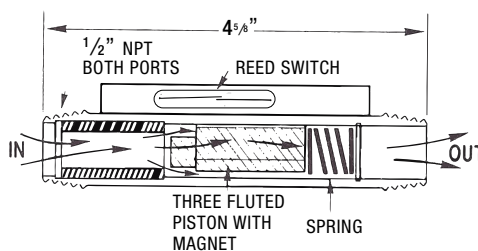
Applications:

- "Thomas Tube" designed for straight in line flow detection.
- Industry Standard Since 1986.
- .5 GPM to 3.0 GPM in brass or stainless steel
- U.L. No. E86797

Notes: Model 2000

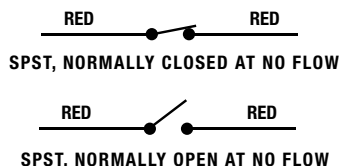
1. Standard flow calibration is in water @ 70°F with lead wires in horizontal position. Calibrated on decreasing flow.
2. Set point accuracy will change slightly in other than calibrated position.
3. Also available: Leads in different lengths, cable, terminated ends, etc. Consult factory.
4. High temperature units available to 400°F. Consult factory.
5. Standard flow settings are calibrated in water. Other set points in water or oil are available. Consult factory.
6. Other wetted materials: Hysol epoxy.
7. All SST piston for either brass or SST housings, eliminate hysol epoxy is available. Consult factory.
8. Relays for higher loads are available. See accessories section for details (Page 28)
9. Calibration: Flow stands are calibrated to the National Bureau of Standards and Thomas Products Ltd. recalibration schedule.

Dimensional Data:



Electrical:

Reed switch shown in NO FLOW condition.



Specifications:

Housing	Piston	Spring	Reed Switch	Wire	Oper. Temp. See Note 4	Oper. Pres.	Set Pt. Accur.	Set Pt. Diff.
Brass See Note 6	316 SST	316 SST	50 Watt SPST See Note 8	18 AWG 24" Lg. Polymeric See Note 3	-20°F to +250°F	1500 PSIG MAX.	±20% MAX. See Note 9	20% MAX.
316 SST See Notes 6, 7					-20°F to +300°F			

Switch Ratings... Max Resistive Load

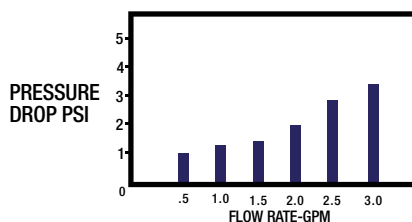
V.A.	VOLTS	AMPS DC	AMPS AC	AMPS AC MAX
50	0-50	1.0	1.0	0.5
	120	.4	.4	
	240	.2	.2	

Switch Rating 50 VA: 120-240 VAC Pilot Duty

Part No.

SIZE NPT	FLOW SETTING GPM See Note 1,2,5	APPX. ΔP AT 10 GPM-PSIG	P/N BRASS N.O. SPST SWITCH	P/N BRASS N.C. SPST SWITCH	P/N 316 SST N.O. SPST SWITCH	P/N 316 SST N.C. SPST SWITCH
1/2"	.50	25	12666	12676	12723	12733
	1.0	25	12667	12677	12724	12734
	1.5	20	12668	12678	12725	12735
	2.0	20	12669	12679	12726	12736
	2.5	15	12670	12680	12727	12737
	3.0	15	12671	12681	12728	12738

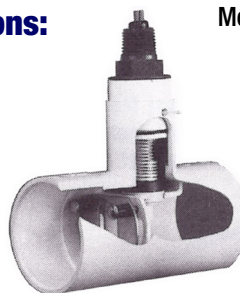
Pressure Drop Δp :



Specialty Options:

Model 2000 Brass Flow Switch with cable.

Model 2600 for units with straight thru flow and pipe sizes to 3" NPT.



2100 & 2200

Please turn to our *Company Profile* and *Level Switch Selection Guide* to learn more of the advantages in specifying *Thomas Products Ltd.* sensors.

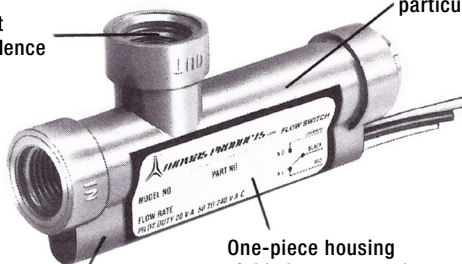
FIXED SET POINTS, 9/16" - 18" UNF-2B, PLASTIC

Model 2100

UL

Because we mold in-house, we can certify that our polysulfone flow switches use only virgin material and runners are not introduced nor have color concentrates been added during processing that can hinder FDA requirements or additive leaching.

Full size out port minimizes turbulence



Unique reverse taper design helps pass particulates.

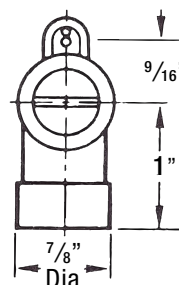
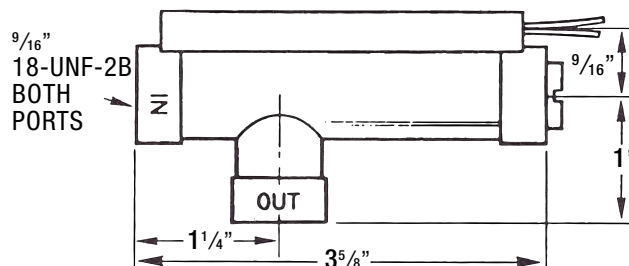
One-piece housing yields burst strength of 1500 ± PSI @ 70°.

Large, full size reed switch silicone potted for shock and vibration deadening.

Applications:

- Plastic configuration throughout.
- Rugged yet economical flow switch for monitoring liquid flow or no flow conditions.
- FDA Approved Polysulfone
- UL File No. E86797

Dimensional Data: Model 2100 & 2200



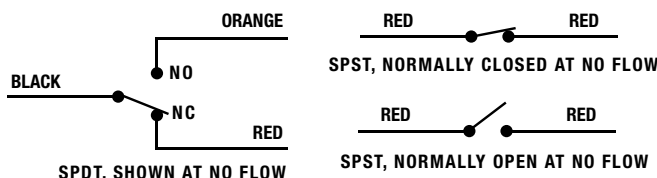
Specifications:

Housing	Piston	Spring	"O" Ring	Reed Switch	Wire	Oper. Temp.	Oper. Pres.	Set Pt. Accur.	Set Pt. Diff.
Polysulfone		316 SST	Viton "A"	20 Watt SPDT 15 Watt SPST See Note 6	18 AWG 24" Lg. Polymeric See Note 5	-20°F to +225°F	250 PSIG @ 70°F Max. See Note 7	15% MAX.	20% MAX.

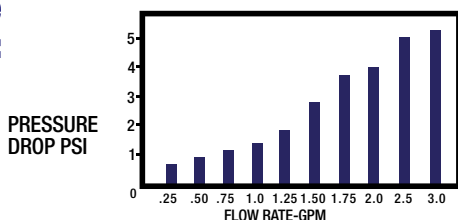
Part No.

SIZE PORT	FLOW SETTING GPM <i>See Note 1,2,8,9</i>	P/N N.O. SPST SWITCH	P/N N.C. SPST SWITCH	P/N SPDT SWITCH
9/16" - 18	.1	12686	12695	12704
	.25	12687	12696	12705
	.5	12688	12697	12706
	.75	12689	12698	12707
	1	12690	12699	12708
	1.5	12691	12700	12709

Electrical: Reed switch shown in NO FLOW condition.



Pressure Drop Δp :



Switch Ratings... Max Resistive Load

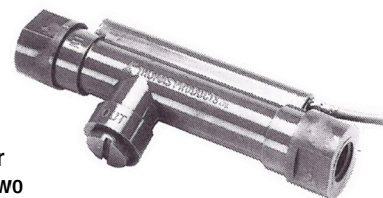
V.A.	VOLTS	AMPS DC	AMPS AC	AMPS AC MAX
20	0-50	.4	.4	1.0
	120	.15	.16	
	240	.06	.08	

Switch Rating 20 VA: 50-240 VAC Pilot Duty

Specialty Options



Model 2100 Ryton R4 with SST low flow orifice assembly, 1 cc/min water set point and cable.



Model 2100 Modified for straight-thru flow and two 1/4" NPT adapters.

2100 & 2200

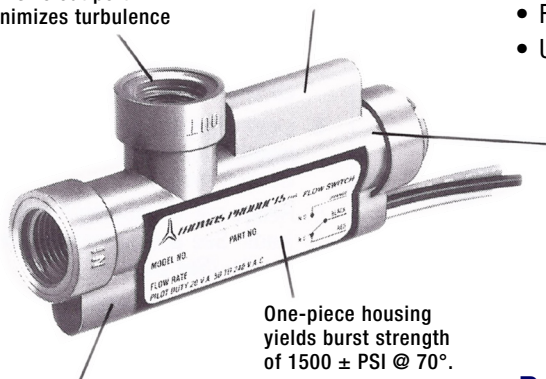
Please turn to our *Company Profile* and *Level Switch Selection Guide* to learn more of the advantages in specifying *Thomas Products Ltd.* sensors.

FIXED SET POINTS, 9/16"- 18" UNF-2B, PLASTIC

Model 2200

Exterior mounted alnico magnet returns the piston eliminating return spring.

Full size out port minimizes turbulence



Large, full size reed switch silicone potted for shock and vibration deadening.

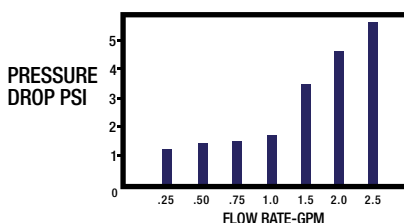
Applications:

- Similar to 2100. Ideally suited where no metal parts can come in contact with the liquid.
- FDA Approved Polysulfone.
- UL File No. E 86797

Notes: Model 2100/2200

1. Standard flow calibration is in water @ 70°F with lead wires up. Calibrated on increasing flow.
2. Model 2100 set point accuracy will change slightly in other than calibrated position.
3. Model 2200 must be installed with lead wires up.
4. Polysulfone is a FDA approved material.
5. Lead wires are available in different lengths, terminated ends, cables, etc. Consult factory.
6. Relays are available for handling higher loads. See accessories section for details. (See Page 28)
7. Actual housing burst strength of 1500 PSI ± @ 70°F.
8. Standard flow settings are calibrated in water as low as 2 cc/min. Other set points in water are available. Consult factory.
9. Calibration: Flow stands are calibrated to the National Bureau of Standards and Thomas Products Ltd. recalibration schedule.

Pressure Drop Δp :

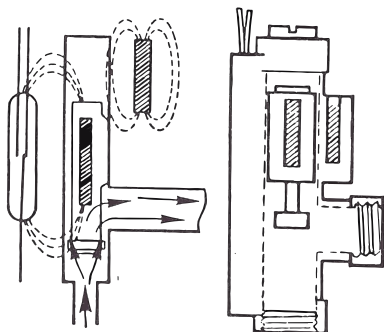


Specifications:

Housing	Piston	Spring	"O" Ring	Reed Switch	Wire	Oper. Temp.	Oper. Pres.	Set Pt. Accur.	Set Pt. Diff.
Polysulfone	Polysulfone	None	Viton "A"	20 Watt SPDT <i>See Note 6</i>	18 AWG 24" Lg. Polymeric <i>See Note 5</i>	-20°F to +225°F	250 PSIG @ 70°F Max. <i>See Note 7</i>	± 20%	25% MAX.

SPRINGLESS DESIGN:

Using a second magnet Model 2200 eliminates the need for a return spring. Model 2200 must be installed with lead wires up.



Part No.

SIZE PORT	FLOW SETTING GPM <i>See Note 1,3,9</i>	P/N SPDT SWITCH
9/16" - 18"	.1	12713
	.25	12714
	.5	12715
	.75	12716

Adapter fittings to convert the 9/16-18 UNF -2B threaded port to 1/8" NPT, 1/4" NPT or 1/2" barbed to accept 1/2" I.D. flexible hose. All fittings are made of polysulfone and are supplied with viton "A" "O" ring seals assembled in place.

ACCESSORY FITTINGS FOR MODEL 2100 and 2200

ADAPTER SIZE	P/N	'O' RING & FITTING DIMENSIONAL DATA
1/8" NPT	12720	9/16" - 18 UNF - 2A TYP. 5/8" Dia.
1/4" NPT	12721	1" Dia.
1/2" BARB ACCEPTS 1/2" I.D. FLEXIBLE HOSE	12722	1 1/2" Dia.

Electrical & Switch Ratings:

See previous page

FIXED SET POINTS, 1/2" - 1" PVC

Plastic components are molded in-house using only 100% virgin material. Runners are not reintroduced to the performance parts.

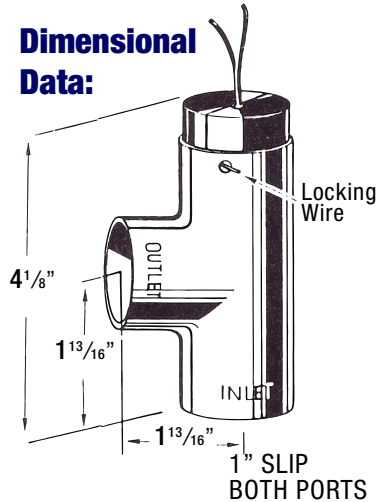
UL

RA

Applications:

- PVC construction
- Removable bonnet assembly
- Return spring for any mounting attitude.

Dimensional Data:



Notes: Model 1800

1. Standard flow calibration is in water @ 70°F with lead wires up. Calibrated on increasing flow.
2. Optional SPDT reed switches are available. Consult factory.
3. Standard flow set points available to 6.0 GPM in water. Consult factory.
4. Lead wires are available in different lengths, terminated ends, cables, etc. Consult factory.
5. Relays are available for handling higher loads. See accessories section for details. (See page 28.)
6. Other wetted material: ceramic ring magnet.
7. When specifying Model 1800 with 1/2" NPT, conduit connector, only plastic junction box and flexible conduit should be used.
8. Model 1800 is available molded in CPVC. Consult factory.
9. Calibration: Flow stands are calibrated to the National Bureau of Standards and Thomas Products Ltd. recalibration schedule.

Specifications:

Housing	Shuttle	Spring	"O" Ring	Reed Switch	Wire	Oper. Temp.	Oper. Pres.	Set Pt. Accur.	Set Pt. Diff.
PVC <i>See Note 8</i>	PVC <i>See Note 8, 6</i>	316 SST	Viton "A"	20 Watt SPST <i>See Note 2, 5</i>	18 AWG 24" Lg. PVC <i>See Note 4</i>	-20°F to +140°F	150 PSIG	±20% <i>See Note 9</i>	20% MAX.

Part No.

STANDARD FLOW SETTING <i>See Notes 1, 9</i>	P/N
.5 GPM	42549
1.0 GPM	42545

Electrical:

Reed switch shown in NO FLOW condition.



Switch Ratings... Max Resistive Load

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

Switch Rating 20 VA: 50-240 VAC Pilot Duty

ACCESSORY ADAPTERS FOR MODEL 1800
Model 1800 may be used as is with 1" slip ports or with any combination of adapters shown.

P/N	DIMENSIONAL DATA
42751	1" SLIP TYP. 1 1/2" OCTAGON TYP. 3/4" SLIP
42752	1/2" SLIP
42753	3/4" NPT
42754	1/2" NPT

Specialty Option:

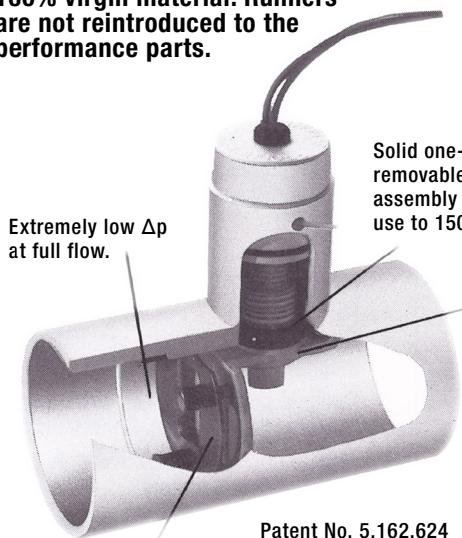
Model 1800 with 1/2" NPT conduit connector. See Note 7.



FIXED SET POINTS, 1/2" - 2" PVC

Plastic components are molded in-house using only certified 100% virgin material. Runners are not reintroduced to the performance parts.

UL



Extremely low Δp at full flow.

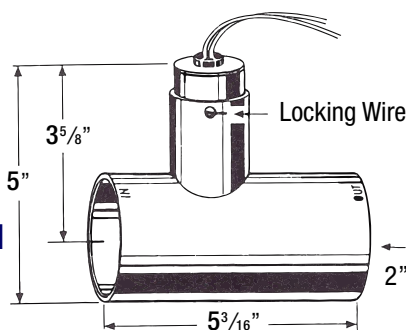
Solid one-piece removable bonnet assembly means safer use to 150 PSIG.

Anti-menscous projections on shuttle prevents shuttle from drying in place after long machine shutdowns.

Patent No. 5,162,624

Patented clapper design bypasses higher flow after the set point is reached to allow for full flow and help pass particulates.

Dimensional Data:



Applications:

- Straight thru flow design.
- PVC Construction.
- Removeable bonnet assembly.
- Return spring for any mounting attitude.
- Very low pressure drop.

Notes:

Model 2600

1. Standard flow calibration is in water @ 70°F with lead wires up. Calibrated on decreasing flow.
2. Temperature effect on flow settings: water calibration, slight change; oil varies with viscosity.
3. Optional SPDT reed switches are available. Consult factory.
4. Lead wires are available in different lengths, terminated ends, cables, etc. Consult factory.
5. Relays are available for handling higher loads. See accessories section for details. (See Page -28)
6. Other wetted materials: ceramic ring magnet.
7. When specifying Model 2600 with 1/2" NPT conduit connector, only plastic junction box and flexible conduit should be used.
8. Calibration: Flow stands are calibrated to the National Bureau of Standards and Thomas Products Ltd. recalibration schedule.

Specifications:

Housing	Shuttle	Spring	"O" Ring	Reed Switch	Wire	Oper. Temp.	Oper. Pres.	Set Pt. Accur.	Set Pt. Diff.
PVC	PVC See Note 6	316 SST	Viton "A"	20 Watt SPST See Note 3,5	18 AWG 24" Lg. PVC See Note 4	-20°F to +140°F	150 PSIG	±20% See Note 8	20% MAX.

Electrical: Reed switch shown in NO FLOW condition.

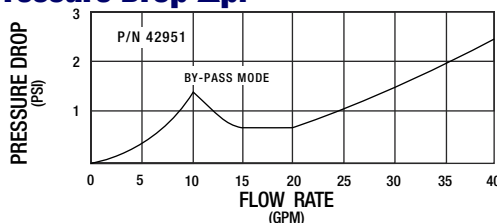


Switch Ratings... Max Resistive Load

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

Switch Rating 20 VA: 50-240 VAC Pilot Duty

Pressure Drop Δp :

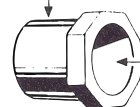


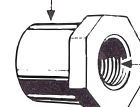
Part No.

STD. FLOW SETTING See Note 1,2,8	.5 GPM	1.0 GPM	2.0 GPM
P/N	42951	42952	42953

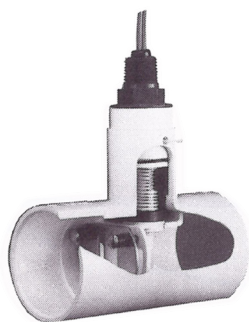
ACCESSORY ADAPTERS:

Model 2600 may be used as is with 2" slip ports or with any combination of adapters shown.

P/N	"A"	DIMENSIONAL DATA
42954	1 1/2"	2" SLIP TYP. 
42955	1 1/4"	
42956	1"	
42957	3/4"	
42958	1/2"	

P/N	"B"	DIMENSIONAL DATA
42959	1 1/2"	2" SLIP TYP. 
42960	1 1/4"	
42961	1"	
42962	3/4"	
42963	1/2"	

Specialty Option:



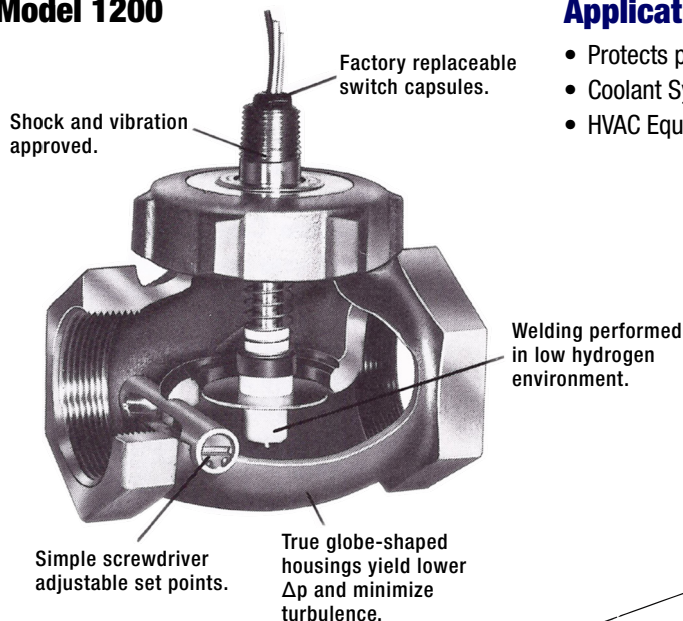
Model 2600 with 1/2" conduit connector. See Note 7.

1200 & 1400

Please turn to our *Company Profile* and *Level Switch Selection Guide* to learn more of the advantages in specifying *Thomas Products Ltd.*® sensors.

ADJUSTABLE SET POINTS, 1" NPT, BRONZE

Model 1200



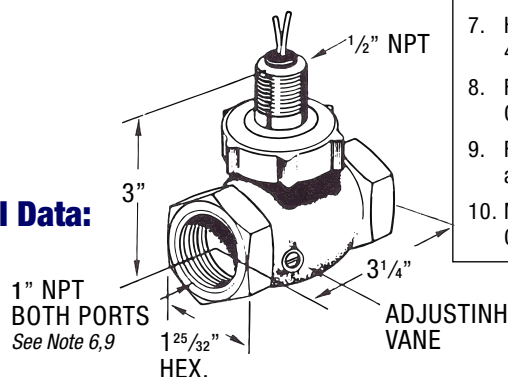
Applications:

- Protects pumps and bearings.
- Coolant Systems.
- HVAC Equipment.

Notes: Model 1200/1400

1. Strain reliefs are standard. Optional silicone potting avail. Consult factory.
2. Optional 100W SPST reed switches are stocked. Consult factory.
3. Relays for higher loads, junction boxes, terminal strips, etc. are available. See accessories section for details (See Page 28)
4. Also available: Leads in different lengths, cables, terminated ends, etc. Consult factory.
5. Other wetted materials: ceramic ring magnet.
6. Optional port sizes: BSP, SAE, silverbraz, socket weld, etc. Consult factory.
7. High temperature units available to 400°F. Consult factory.
8. Factory calibrated set points available. Consult factory.
9. For smaller pipe sizes, install appropriate size bushings.
10. Model 1200 is available in 316 SST. Consult factory.

Dimensional Data:

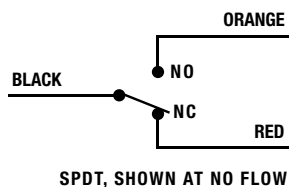


Specifications:

Housing	Shuttle	Spring	"O" Ring	Reed Switch	Wire	Oper. Temp.	Oper. Pres.	Proof Load	Burst Strength	Set Pt. Diff.	Repeat-ability
Bronze See Note 10	Teflon See Note 5	316 SST	Viton "A"	20 Watt SPDT See Note 2,3	18 AWG 24" Lg. Polymeric See Note 4	-20°F to +300°F See Note 7	400 PSI @ 100°F	800 PSI @ 100°F	1200 PSI @ 100°F	±10%	1% Max. Deviation

Electrical:

Reed switch shown in NO FLOW condition.



Part No.

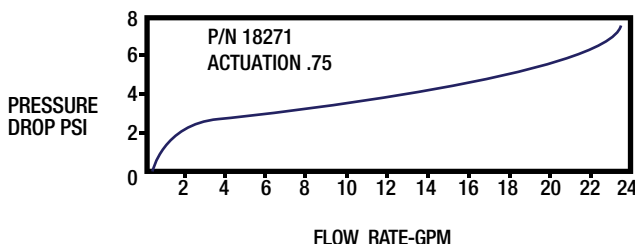
SIZE NPT	FLOW SETTING RANGE GPM See Note 8	P/N
1" See Note 6,9	.75 - 6.0	18271
	2.0 - 8.0	18272
	5.0 - 15.0	18273

Switch Ratings... Max Resistive Load

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

Switch Rating 20 VA: 120-240 VAC Pilot Duty
U.L. File E86797

Pressure Drop Δp :

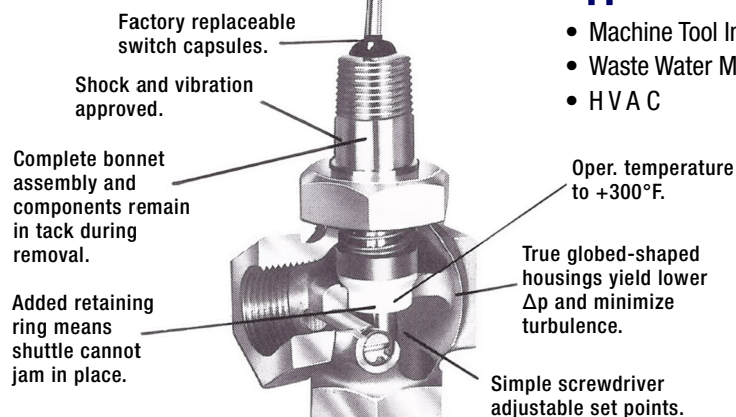


1200 & 1400

Please turn to our *Company Profile* and *Level Switch Selection Guide* to learn more of the advantages in specifying *Thomas Products Ltd.* sensors.

ADJUSTABLE SET POINTS, 3/4" NPT, BRONZE

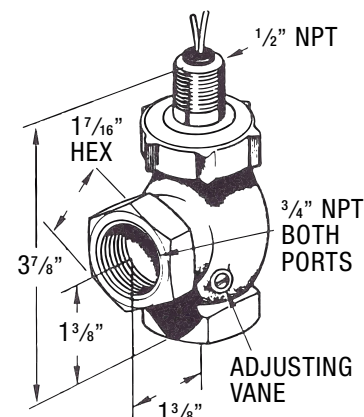
Model 1400



Applications:

- Machine Tool Industry
- Waste Water Monitoring
- H V A C

Dimensional Data:



Specifications:

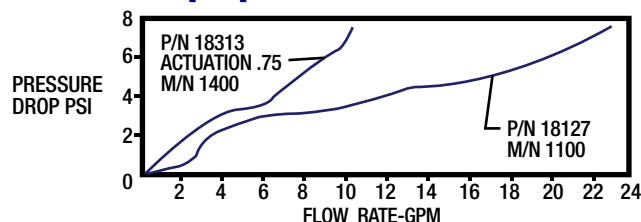
Housing	Shuttle	Spring	"O" Ring	Reed Switch	Wire	Oper. Temp.	Oper. Pres.	Proof Load	Burst Strength	Set Pt. Diff.	Repeat-ability
Bronze	Teflon <i>See Note 5</i>	316 SST	Viton "A"	20 Watt SPDT <i>See Note 2,3</i>	18 AWG 24" Lg. Polymeric <i>See Note 4</i>	-20°F to +300°F <i>See Note 7</i>	400 PSI @ 100°F	800 PSI @ 100°F	1200 PSI @ 100°F	±10%	1% Max. Deviation

Electrical: *See Model 1200*

Part No.

SIZE NPT	FLOW SETTING RANGE GPM <i>See Note 8</i>	P/N
3/4"	.75 - 4.0	18313
	2.0 - 8.0	18314
	7.0 - 14.0	18315

Pressure Drop Δp :



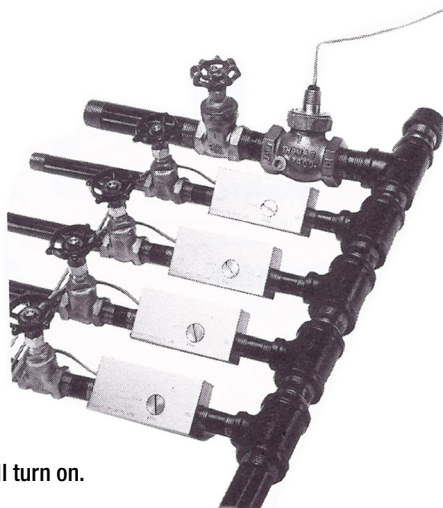
Applications:

COOLANT MANIFOLD ON AN INJECTION MOLDING MACHINE:

Eliminate constant visual inspection of minimum coolant flow by using flow switches. You can be sure sufficient flow is automatically monitored. Flow switches activate audible alarms, lights, etc., warning you of insufficient flow. Operation is simple:

1. Close all flow control valves.
2. Open all flow switch set point adjusting vanes (alarms will turn on).
3. Turn on coolant.
4. Open each flow control valve to correct flow rate (starting at highest flow).
5. Close each flow switch set point adjusting vane until alarms just turn off.

Whenever the flow rates drop under that set point, your alarms will turn on.

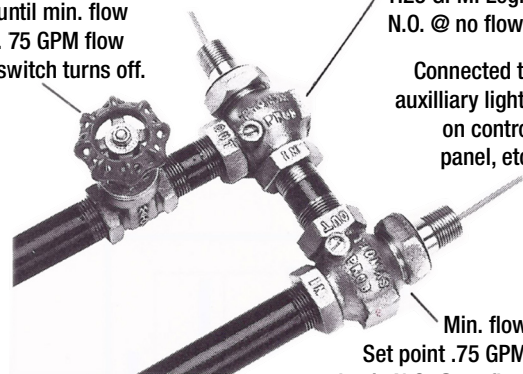


LUBE OIL MONITORING SYSTEM ON A ROLLING MACHINE: 1 GPM is needed in the oil bath to lubricate and cool large bronze bearings.

While lube oil is pumping, open adjusting valve until min. flow .75 GPM flow switch turns off.

Max. flow: Set point 1.25 GPM. Logic N.O. @ no flow.

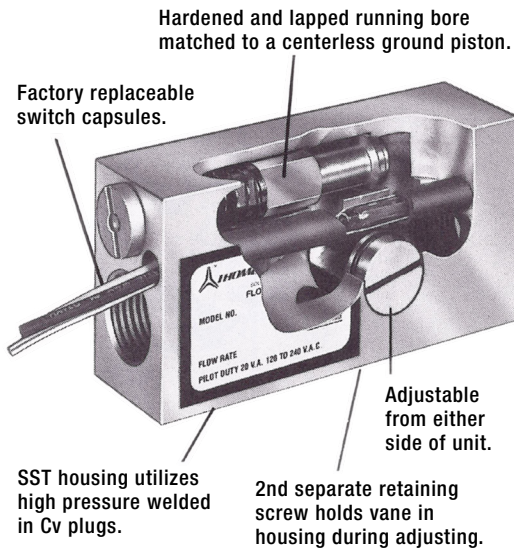
Connected to auxilliary lights on control panel, etc.



Min. flow: Set point .75 GPM. Logic N.C. @ no flow.

Whenever the flow rate rises or drops out of the set point range, your alarm will turn on.

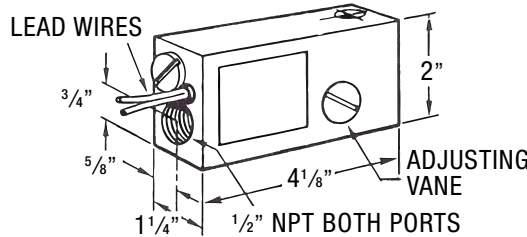
ADJUSTABLE SET POINTS, 1/2" NPT, BRASS/SST



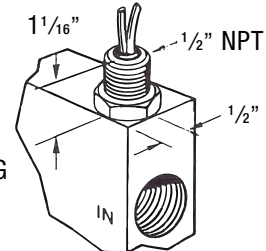
Notes: Model 1500

1. Approximate SCFM depending on line pressure.
2. Optional lower air set point range. Consult factory.
3. Optional lower water set point range .2-10 GPM. Consult factory.
4. Factory calibrated set points available. Consult factory.
5. Other wetted materials: epoxy.
6. Polysulfone for water in brass housing.
7. Brass for oil in brass housing.
8. SST for SST housing.
9. Relays for higher loads, junction boxes, terminal strips, etc. are available. See accessories section for details. Page 28.
10. High temperature units are available to 400°F. Consult factory.
11. Also available: leads in different lengths, cable, terminated ends, etc. Consult factory.

Dimensional Data:



1/2" NPT CONDUIT CONNECTOR

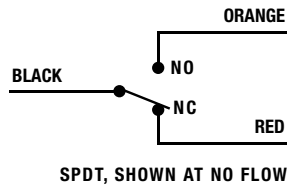


Specifications:

Housing	Piston	Spring	"O" Ring Seal	Reed Switch	Wire	Oper. Temp.	Oper. Pres.	Proof Load	Burst Strength	Set Pt. Diff.	Repeat-ability
Brass or 316 SST	Polysulfone See Note 6	316 SST	Viton "A"	20 Watt SPDT See Note 9	18 AWG 24" Lg. Polymeric See Note 11	Polysulfone Piston -20°F to +225°F	1000 PSIG	2500 PSIG	5000 PSIG	±15% MAX.	1% Max. Deviation
	Brass See Notes 5, 7					Brass or SST Piston -20°F to + 300°F See Note 10					
	316 SST See Notes 5, 8										

Electrical:

Reed switch shown in NO FLOW condition.



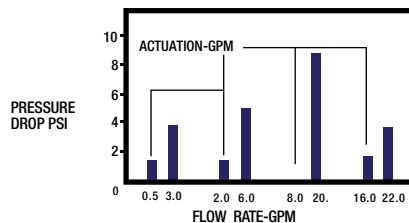
Switch Ratings...

Max Resistive Load

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

Switch Rating 20 VA: 120-240 VAC Pilot Duty

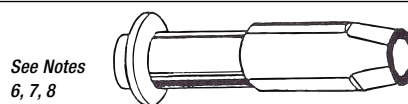
Pressure Drop Δp :



Part No.

SIZE NPT	FLOW SET RANGE		BRASS Housing	PISTON P/N Specify	316 SST Construction
1/2"	.5 to 20 Water GPM See Notes 3, 4	Lead Wires	18540 - _____		18541
		Conduit Conn.	18542 - _____		18543
1/2"	2 to 200 Air SCFM See Notes 1, 2, 4	Lead Wires	18545		18546
		Conduit Conn.	18547		18548

PISTONS FOR LIQUIDS IN BRASS OR SST HOUSINGS:

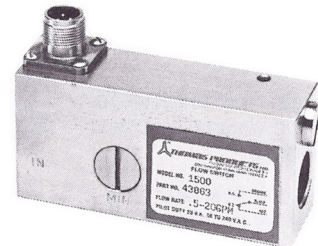


POLYSULFONE	P/N 4054
BRASS	P/N 4055
316 SST	P/N 4056

Specialty Options:

See Model 1200 & 1400 for more helpful application information

Model 1500 with M/S connector MS3102E10S-3P



ADJUSTABLE PADDLE TYPE, BRASS, SST, PLASTIC

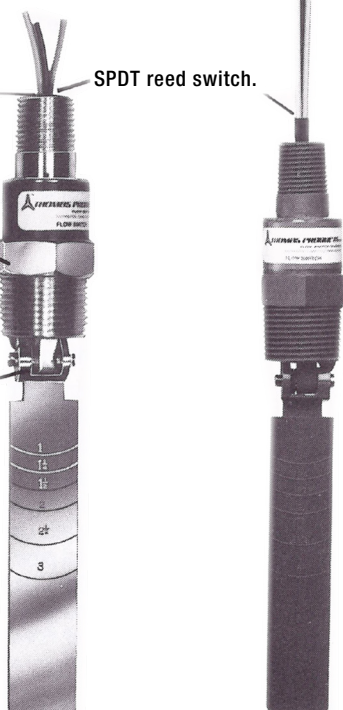
Model 2400

Model 2500

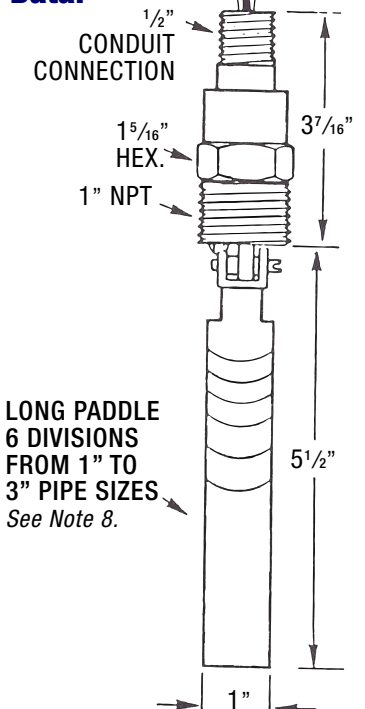
Factory replaceable switch capsules.

All metal design uses no plastic components.

Rugged investment cast components.



Dimensional Data:



LONG PADDLE
6 DIVISIONS
FROM 1" TO
3" PIPE SIZES
See Note 8.

Notes: Model 2400/2500

- Flow tests were performed in water with unit installed into standard reducing tee.
- Set point accuracy depends on paddle cut-off length.
- Unit installs into a 1" reducing tee or weld-a-let etc. for 1" pipe sizes and up.
- Install vertically as shown, lead wires up.
- Higher temperature units available up to 450° F. Consult factory.
- Relays for higher loads, junction boxes, terminal strips, etc. are available. See accessories section for details (See Page 28)
- To adjust flow set point, simply cut paddle for the appropriate set point listed. See also installation/maintenance sheet.
- For pipe sizes larger than 3", actuation of the 5" paddle is a velocity of approximately .5 ft./sec.
- Also available: leads in different lengths, cable, terminated ends, etc. Consult factory.
- Optional 100W SPST reed switches are stocked. Consult factory.

Specifications:

Model	Housing	Paddle	Shuttle	Spring	Reed Switch	Wire	Oper. Temp.	Oper. Pres. Max.	Set Pt. Accur.	Repeat-ability	Pressure Drop
2400	Brass or 316 SST	316 SST	316 SST	316 SST	20 Watt SPDT See Note 6,10	18 AWG 24" Lg. Polymeric See Note 9	-30°F to +300°F See Note 5	850 PSIG	±25% MAX. See Note 2	±5%	3 PSIG MAX.
2500	Polysulfone	Polysulfone	Polysulfone				-20° to +225°F	150 PSIG			

Part No.

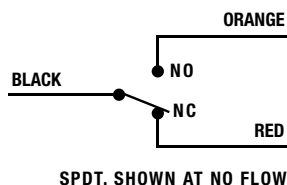
MODEL NO.	P/N BRASS	P/N 316 SST	P/N POLYSULFONE
2400	19650	19651	
2500			19652

Actuation-Deactuation in GPM/Water See Note 1-4, 7, 8

Paddle Cut-Off	PIPE LINE SIZES											
	1"		1 1/4"		1 1/2"		2"		2 1/2"		3"	
	ACT	DA	ACT	DA	ACT	DA	ACT	DA	ACT	DA	ACT	DA
1"	6	4	9	7	13	9						
1 1/4"			7	5	9	7	16	13				
1 1/2"					13	9	23	16	34	30		
2"							17	12	24	20	26	22
2 1/2"									18	15	22	19
3"											17	14

Electrical:

Reed switch shown in NO FLOW condition.



SPDT, SHOWN AT NO FLOW

Switch Ratings... Max Resistive Load

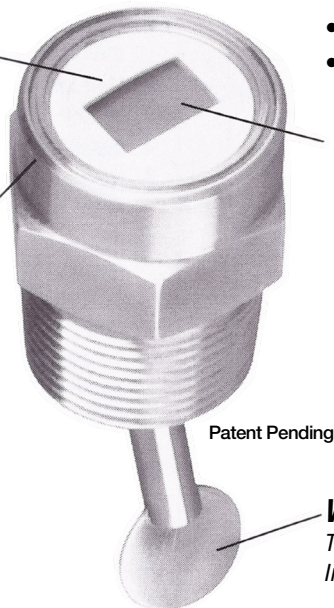
V.A.	VOLTS	AMPS DC	AMPS AC	AMPS AC MAX
20	0-50	.4	.4	1.0
	120	.15	.16	
	240	.06	.08	

Switch Rating 20 VA: 120-240 VAC Pilot Duty

FLOW INDICATOR, BRASS/SST, NON-ELECTRIC

DRY
Indicator
Not In
Contact
With Liquid

Safe Ambient
Pressure Side,
No Sight
Windows To
Leak Or Blow
Out



Applications:

- Replaces unreadable sight windows.
- Use in hazardous locations.
- Non-electrical.

*RED means
no flow,
GREEN means
flow is OK*

WET
Target Stays
In Liquid

Notes: Model 5200

1. Flow rates are for water, these valves will decrease as the viscosity increases.
2. All wetted parts in brass housing are brass and 316 SST or 316 SST housing is all 316 SST.
3. For pipe sizes larger than 1", indication can be seen at water velocity of 3 ft./sec.
4. High temperature modifications available.
5. Pressure drop < 1 PSIG.
6. 5.0 GPM indicators can be installed in any mounting attitude.
7. 1.5 GPM indicators must be installed horizontally in a vertical pipe run with the flow direction up.
8. If you need to know what direction the liquid is flowing either a 43702 or 43704 may be used. Unit must be installed in a horizontal pipe run, indicator housing up at 12:00. Depending on installation, the red and green side will indicate the direction of flow.

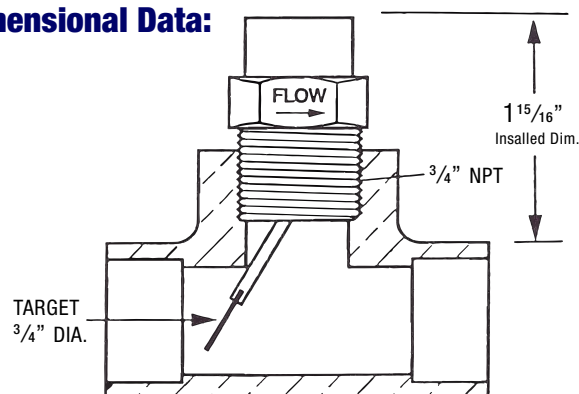
Specifications:

P/N	Indication GPM (Note 1, 3, 5)	Housing (Note 2)	Target Assembly	Operating Temperature	Operating Pressure
43701	5.0 (See Note 6)	Brass	316 SST	-40°F to +225°F (See Note 4)	400 PSI 70°F
43702	1.5 (See Note 7 & 8)				
43703	5.0 (See Note 6)	SST			
43704	1.5 (See Note 7 & 8)				

Operation:

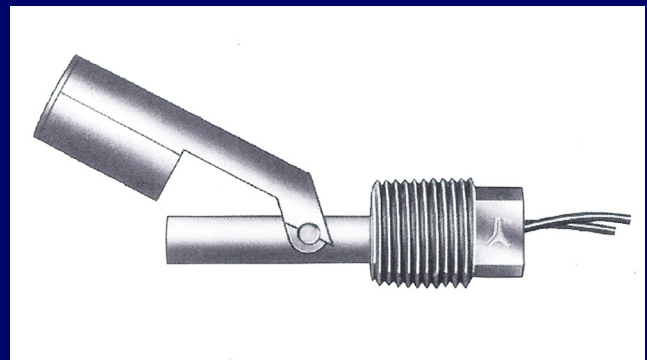
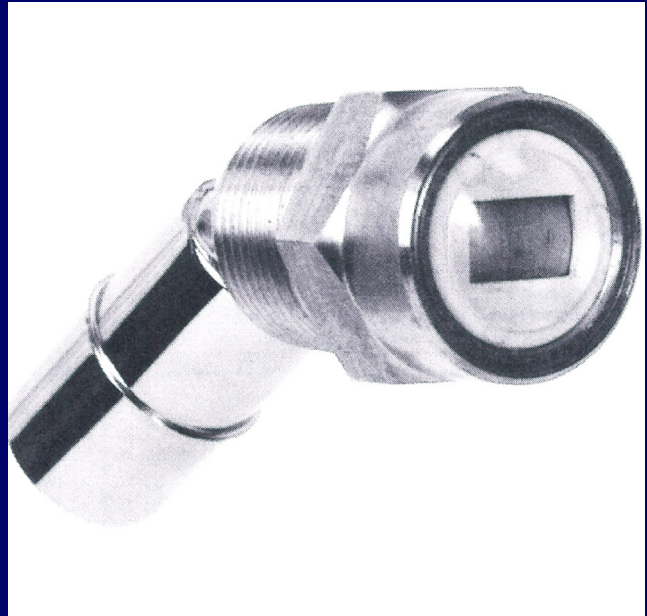
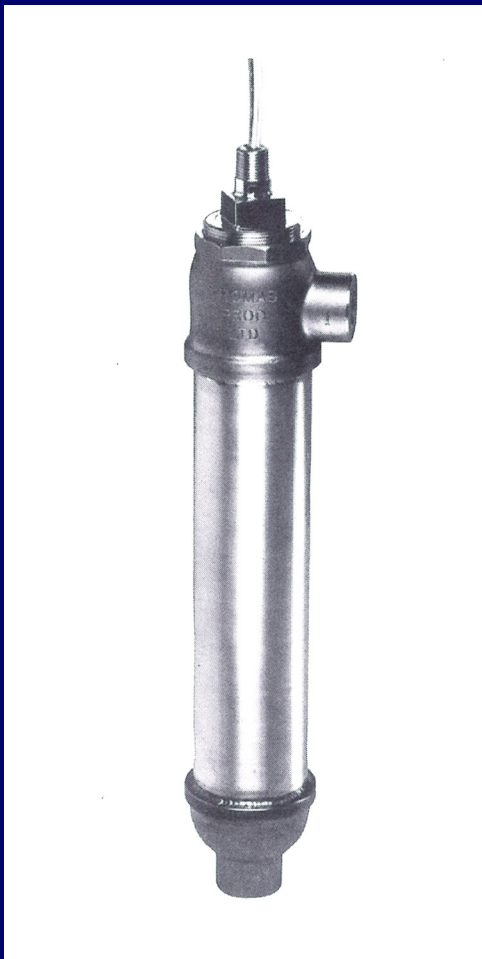
The housing has 2 separate chambers. In the front chamber behind a transparent lens is a 2 color roller, half red, half green and it is equipped with a magnet. In the rear chamber is a magnet equipped target free to swing with the action of the liquid's flow. The poles of the 2 magnets are opposite creating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

Dimensional Data:


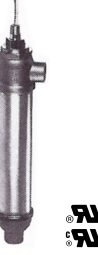






Model 5200 illustrated at no flow condition, red side visible. Unit is installed into a standard PVC 1x1x3/4" SCH 40 reducing tee or a similar method may be used.



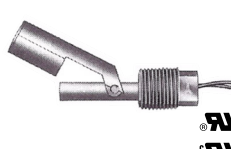

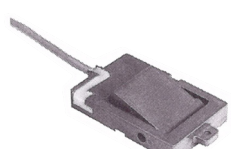
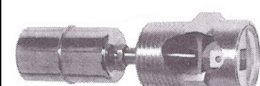
LEVEL SWITCH SELECTION GUIDE



Standard Product Selection Guide

	Steam & Mounting Material	Float Material	Advantages	Mounting Sizes	Stem Diameter	Reed Switch	Switch Points	Operating Temperatures	Operating Pressure	Page	Notes
4000 Style 1-4 	Brass, Bronze, Stainless Steel, or PVC	Polysulfone, BUNA, Stainless Steel, Polypropylene, or PVC	Installs from inside or outside of tanks. Top or bottom, variety of mountings.	1/2", 1-1/4", 2" NPT and 3" 150# ANSI flange.	1/2" Diameter.	20 VA SPST 20-100 VA SPST or 20 VA SPDT	1 to 6	-40°F to +300°F (Depending on style specified.)	750 PSIG (Depending on float specified.)	6 - 9	Complement of outlined switches is to show standard product line breadth. Our in-house manufacturing capabilities can customize any unit to suit.
4000 Style 10 			External tank mounting to side of tank.	Port size 1" NPT.							
4000 Style 11 			Side of tank mounting.	2", 3" or 4" 150# ANSI flange.							
4000 Style 5-9 		Polysulfone, BUNA, Stainless Steel and Polypropylene	Installs from inside or outside of tanks. Top or bottom, variety of mountings.	1/8", 3/4", 1" NPT and 3-5/8" diameter flange.							
4000 ADJ. 			Adjustable stem. Customer can raise entire stem to position.	Any Model 4000 metal construction.							
5000 Style A-D 	Polysulfone	Polysulfone, Polypropylene, BUNA	FDA approved material installs top or bottom, variety of mountings.	1/8", 1" NPT. 3/8" - 16 Bulkhead 2" diameter flange.	5/16" Diameter. Fluted.	20 VA SPST	1 to 4	-40°F to +225°F		14, 15	

Standard Product Selection Guide

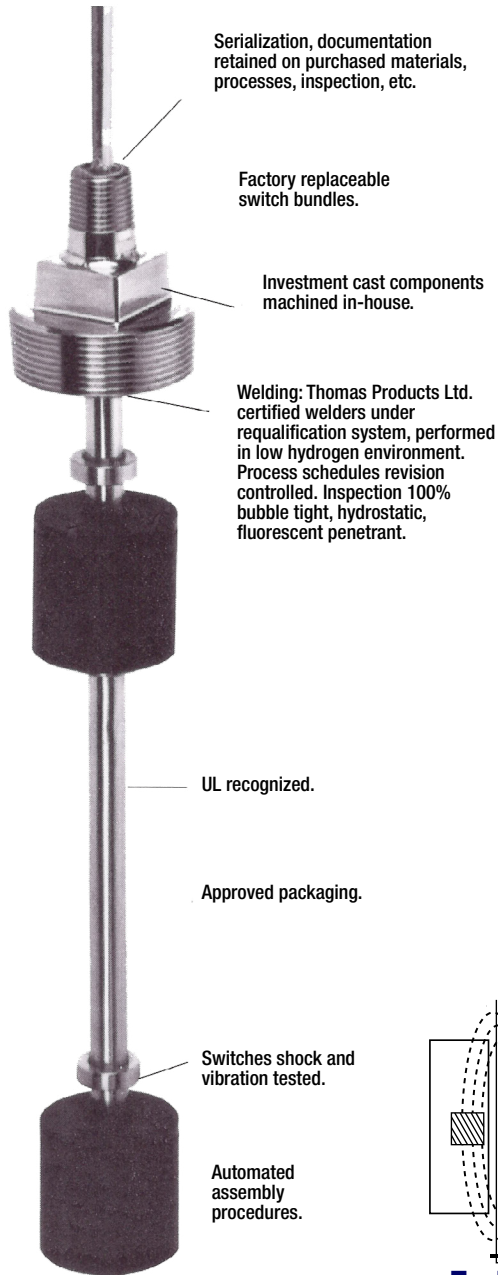
Product Selection Guide		Steam & Housing Material	Float Material	Advantages	Mounting Sizes	Reed Switch	Operating Temperatures	Operating Pressure	Page	Notes
3700 	3900  <small>Pat. No.5,117,693</small>	Brass, Bronze, Stainless Steel	Stainless Steel	External tank mounting to side of tank.	Port size 1" NPT	20 VA SPST	-40°F to +300°F	900 PSI Max.	16	Complement of outlined switches is to show standard product line breadth. Our in-house manufacturing capabilities can customize any unit to suit.
Side tank mounting for use in contaminated and viscous fluids.				1/8"NPT	50 PSI Max.			17		
Side tank mounting, high pressure. Replacement parts available.				1" NPT	20 VA SPDT			Depending on float specified. To 900 PSI Max.	20	
4400 	4900 	Polysulfone Polypropylene	Side tank mounting, economical, FDA approved material, conduit connector.	1/2" N PT, 1/2"-13 or 5/8"-11 Bulkhead & Nut.	20 VA SPST	-40°F to +225°F	Depending on float specified. 150 PSI Max.	18, 19		
Brass or SST							BUNA, Stainless Steel, Polysulfone Polypropylene	Side tank mounting, high pressure, variable length stems.	1/8" NPT or 3/8" - 24 Bulkhead & Nut.	
3800 	5100 Style 3  <small>Pat. No.5,425,271</small>	PVC	Lays at bottom of tank or double wall containment system.	N/A	10 VA SPST	-30°F to 140°F	50 PSI Max.	26		
Brass or Stainless Steel		Stainless Steel	Side tank indicator, use in hazardous location, nonelectrical, 2 color flag, (red & green)	3/4" NPT	N/A	-40°F to +255°F	400 PSI Max.	27		

Standard Product Selection Guide

Product Selection Guide										
	Stem Materials	Float Material	Advantages	Mounting Sizes	Reed Switch	Hazardous Locations	Operating Temperatures	Operating Pressure	Pages	Notes
4200	Polysulfone or Polypropylene		OEM large volume use, fluted stem	1/8" NPT or 3/8" Bulkhead	20 VA SPST, 100 VA SPST, 20 VA SPST		-40°F to +225°F	100 PSI Max.	22	Complement of outlined switches is to show standard product line breadth. Our in-house manufacturing capabilities can customize any unit to suit.
4200, 4200H	4200 BUNA or SST 4200H SST		Compact, hazardous locations	1/8" NPT	4200H Class I Div. 1 Groups C & D Class I Div. 2 Groups A, B, C & D		Depending on float specified. -40°F to +300° F	400 PSI Max.	24	
4500	Brass or SST		Compatible with fuel, oil, etc. Silicone potted. Shock & vibration resistant. Float interfacing		N/A		-40° to +230° F (Depending on media.)	150 PSI Max.	25	
4600										
4700, 4700H	Brass or SST	SST	High press., hazardous locations, silicone potted, shock & vibration resistant	1/4" NPT	20 VA SPST, 100 VA SPST, 20 VA SPST		-40° to +300°F	750 PSI Max.	24	
4800	PVC		Increased float strength, economical		4700H Class I Div. 1 Groups C & D Class I Div. 2 Groups A, B, C & D		-40° to +140°F	100 PSI Max.	23	
Accessories	Junction boxes explosion proof.		Relays DPDT general purpose.	Relays DPDT latching pump controls.	Crimp on terminals.	Terminal strips.	TFE Tape & TFE Paste	Cable Glands	28	

LEVEL SWITCH SELECTION GUIDE

Model 4000 Custom Level Switch



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 assembly procedures.

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

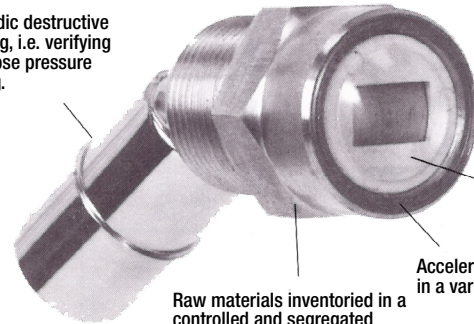


Model 5100 Liquid Level Indicator

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.

Periodic destructive testing, i.e. verifying collapse pressure rating.



DRY
Indicator Not In Contact With Liquid

New technology patent pending design.

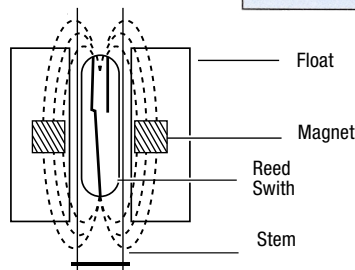
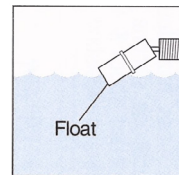
Accelerated life tested in a variety of fluids.

Raw materials inventoried in a controlled and segregated department under Thomas Products, Ltd. stock rotation program.

Call-outs provided are typical to their 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.



Typical Operation:

A magnet equipped float moves directly with the liquids level to actuate the hermetically sealed reed switch within the stem.

- ☐ Ideas
- ☐ Solutions
- ☐ Technical Support
- ☐ On-Time Delivery
- ☐ Quality



4000 CUSTOM LEVEL SWITCH

METAL ($\frac{1}{2}$ " Diameter Stem)

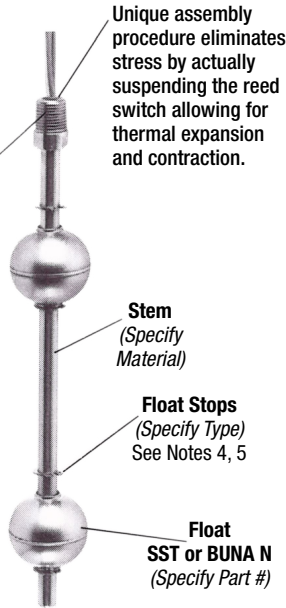
Please turn to our *Company Profile* and *Level Switch Selection Guide* to learn more of the advantages in specifying *Thomas Products Ltd.*® sensors.

$\frac{1}{2}$ " NPT Plug Mounting

STYLE 1

See Notes 7 & 15

$\frac{1}{2}$ " NPT Plug Mounting
(Specify Material)



Mounted From Inside of Tank

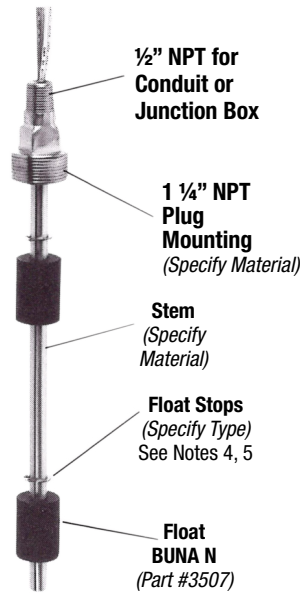
1 $\frac{1}{4}$ " NPT Plug Mounting

STYLE 2

See Notes 8 & 15

$\frac{1}{2}$ " NPT for Conduit or Junction Box

1 $\frac{1}{4}$ " NPT Plug Mounting
(Specify Material)



Plug-Mounted From Outside of Tank

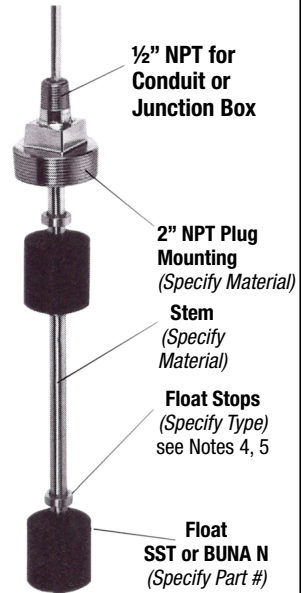
2" NPT Plug Mounting

STYLE 3

See Notes 9 & 15

$\frac{1}{2}$ " NPT for Conduit or Junction Box

2" NPT Plug Mounting
(Specify Material)



Plug-Mounted From Outside of Tank

METAL ($\frac{1}{2}$ " Diameter Stem)

3" 150# ANSI Flange Mounting

STYLE 4

See Notes 10, 14, 15

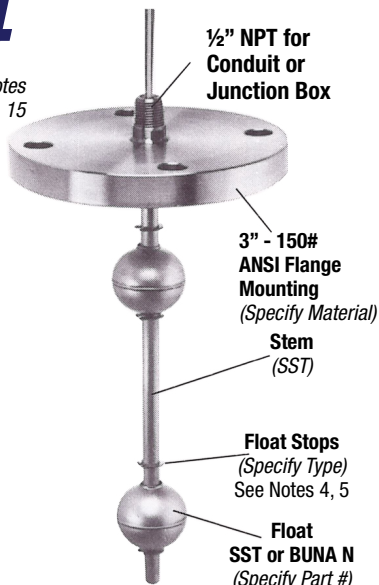
$\frac{1}{2}$ " NPT for Conduit or Junction Box

3" - 150# ANSI Flange Mounting
(Specify Material)

Stem (SST)

Float Stops
(Specify Type)
See Notes 4, 5

Float
SST or BUNA N
(Specify Part #)



Flange Mounting From Outside of Tank

1" NPT External Tank Mounting

STYLE 10

See Notes 11, 13, 15

$\frac{1}{2}$ " NPT for Conduit or Junction Box

Wrench flats to be used in eliminating stress on process fillings when removing switch assembly

1" NPT Ports

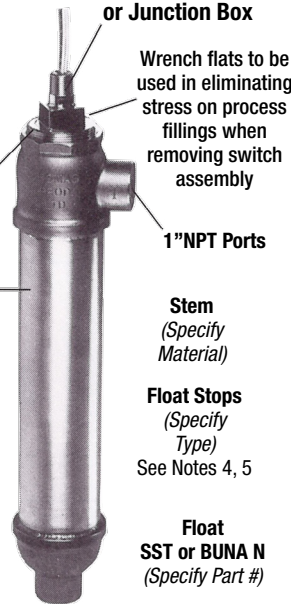
Stem
(Specify Material)

Float Stops
(Specify Type)
See Notes 4, 5

Float
SST or BUNA N
(Specify Part #)

Style 3 Mounting

Housing
(Specify Material)



Mounts to Outside of Tank

3" 150# ANSI Flange Mounting

STYLE 11

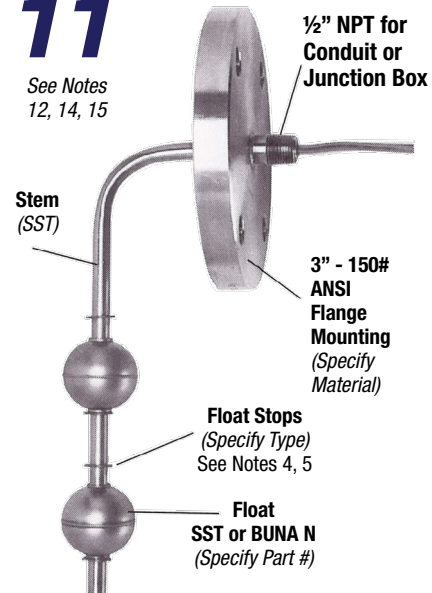
See Notes 12, 14, 15

$\frac{1}{2}$ " NPT for Conduit or Junction Box

3" - 150# ANSI Flange Mounting
(Specify Material)

Float Stops
(Specify Type)
See Notes 4, 5

Float
SST or BUNA N
(Specify Part #)




Flange Mounting from Outside of Tank

4000 CUSTOM LEVEL SWITCH

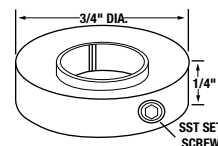
SPECIFICATIONS

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

METAL

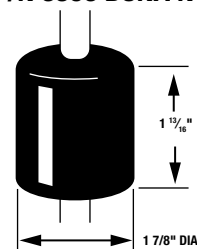
Style	1, 2, 3	4	10	11
Mounting <i>See Note 18</i>	Brass or Stainless Steel	Carbon Steel or SST	Mounting & Housing Bronze or SST	Carbon Steel or SST
Stem	Brass or Stainless Steel	Stainless Steel	Brass or SST	Stainless Steel
Float	Customer to Specify Part Number			
Float Stops: Grip Rings <i>See Note 4</i>	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 <i>See Note 5 Drawing 1.0</i>	Brass units - Brass collars; SST units - 316 SST collars	316 SST Collars	Brass units - Brass collars; SST units - 316 SST collars	316 SST Collars
Stem Length	Per Customer Requirements			
Reed Switches and Wire  <i>See Notes 2 & 3</i>	UL Recognized units: SPST Pilot Duty 20 VA 120-240 VAC. Polymeric leads: See Multi-Level Specification Form.			
Reed Switches and Wire <i>See Notes 2 & 3</i>	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 <i>Note 6</i>			

Collars:
Brass or 316 SST

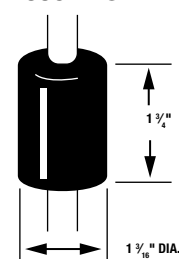


Drawing 1.0

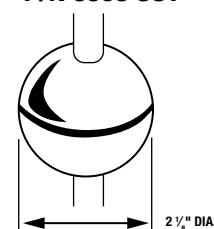
P/N 3506 BUNA N



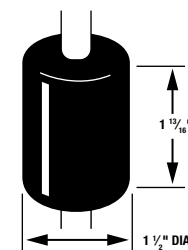
P/N 3507 BUNA N



P/N 3508 SST



PVC Units Only: P/N 3555



FLOAT SPECIFICATIONS: (Styles 1, 2, 3, 4, 10 and 11)

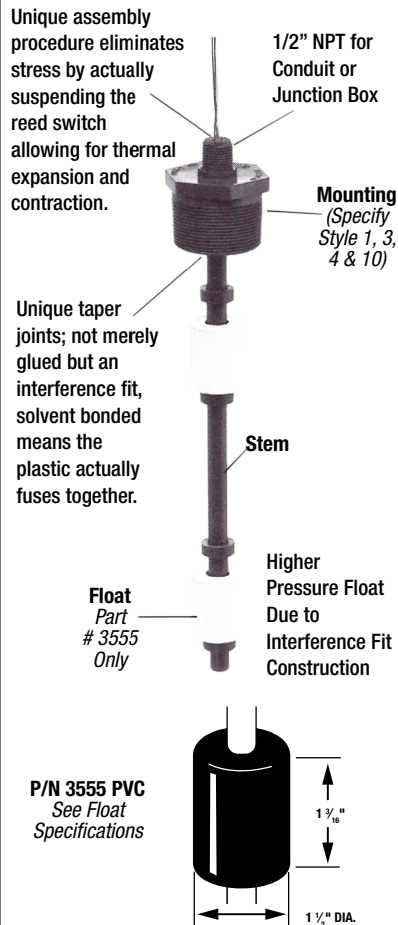
Float Part Number	Temperature Range	Pressure Max.	Specific Gravity
3506 BUNA	-40° to 180°F in water -40° to 230°F in oil	150 PSI	.55 <i>See Note 17</i>
3507 BUNA	-40° to 180°F in water -40° to 230°F in oil	150 PSI	.65 <i>See Note 17</i>
3508 S.S.T.	-40° to 300°F	750 PSI	.65 <i>See Note 17</i>
3555 PVC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

4000 CUSTOM LEVEL SWITCH


Notes:

1. Part Number 3555 PVC float is used for PVC Model 4000. See specifications
2. Also available: leads in different lengths, cable, terminated ends, etc. consult factory.
3. 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.
6. Special reed switches are stocked to yield a hysteresis of 1/4". Consult factory.
7. Style 1 mounting installs from the inside of the tank into a 1/2" NPT boss. Specify float part number: 3506, 3507, 3508, or 3555.
8. Style 2 mounting installs from the outside of the tank into a 1 1/4" NPT boss. Specify float part number 3507.
9. Style 3 mounting installs from the outside of the tank into a 2" NPT boss. Specify float part number: 3506, 3507, 3508, or 3555.
10. 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.
15. Multi-level Specification Form 4000 must be used to ensure correct dimensional data.
16. All wetted parts PVC.
17. Custom interface floats are available. Consult factory.
18. Materials of copper-nickel, titanium, hastelloy and aluminum are stocked. Consult factory.

PVC

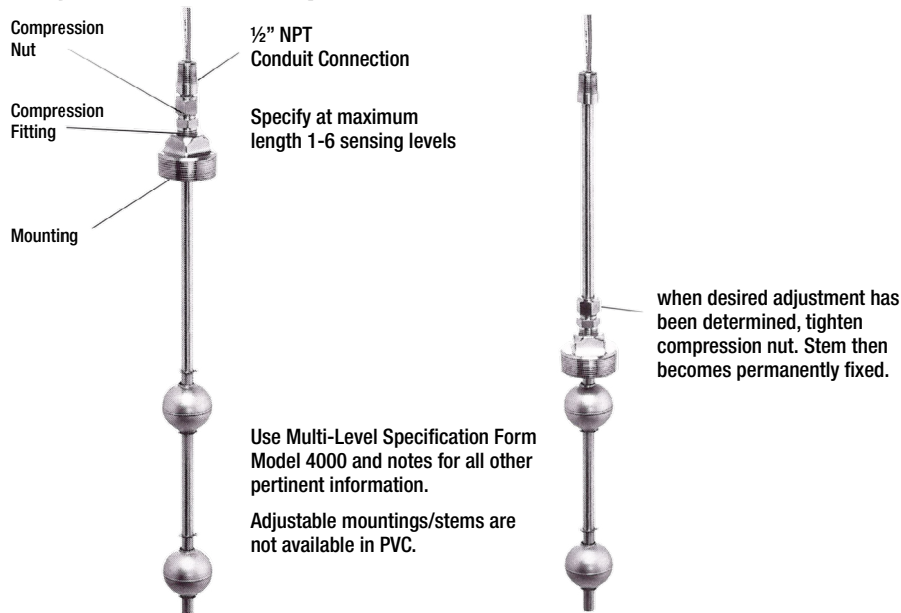


SPECIFICATIONS:

Style	Styles 1, 3, 4 & 10 See Notes 1, 13, 15 & 16
Mounting	PVC
Stem	PVC. 1/4" Schedule 80 Pipe
Float	PVC. Part # 3555
Float Stops	PVC. Solvent Bonded to Stem
Stem Length	Per Customer Requirements
Reed Switches 	UL Recognized Units SPST Pilot Duty 20 VA 50 - 240 VAC
Reed Switches	Non UL Recognized Units SPST Pilot Duty 100 VA 50 - 240 VAC SPDT Pilot Duty 20 VA 50 - 240 VAC See Notes 6
Wire	PVC 24" Long Extended See Notes 2 & 3
Hysteresis	1/16" Total Envelope See Notes 6

ADJUSTABLE STEM

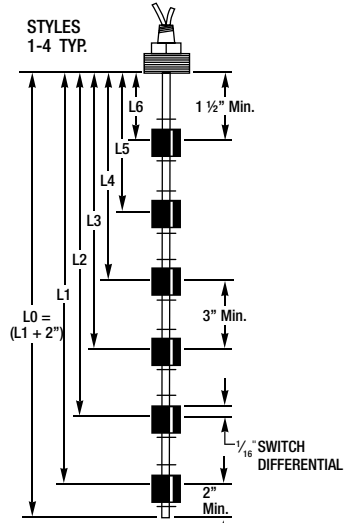
For Styles 2, 3, 4 & 10. Option for Model 4000 - 1/2" Diameter Stem



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

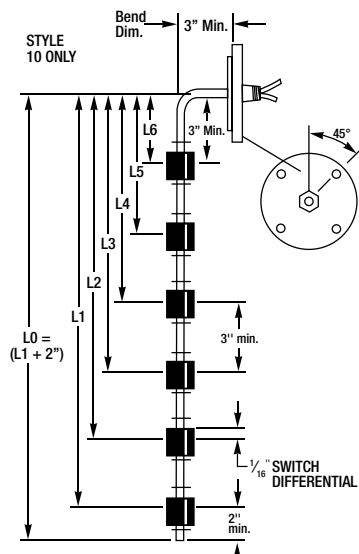
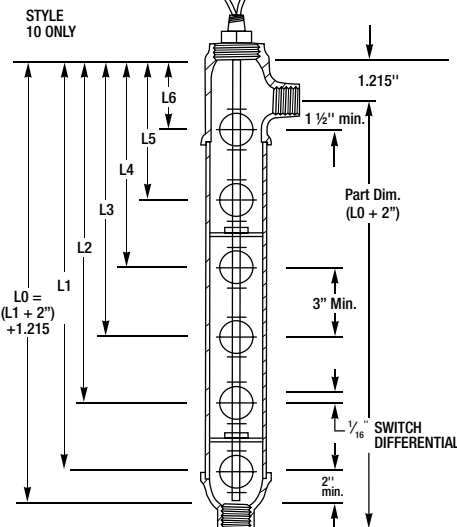


STYLES 1, 2, 3, 4, 10, 11
LOGIC IN TANK EMPTY CONDITION

L6	<input type="checkbox"/>	"	<input type="checkbox"/>	<input type="checkbox"/>	NO or NC
L5	<input type="checkbox"/>	"	<input type="checkbox"/>	<input type="checkbox"/>	NO or NC
L4	<input type="checkbox"/>	"	<input type="checkbox"/>	<input type="checkbox"/>	NO or NC
L3	<input type="checkbox"/>	"	<input type="checkbox"/>	<input type="checkbox"/>	NO or NC
L2	<input type="checkbox"/>	"	<input type="checkbox"/>	<input type="checkbox"/>	NO or NC
L1	<input type="checkbox"/>	"	<input type="checkbox"/>	<input type="checkbox"/>	NO or NC

FURNISH DIMENSIONAL DATA
IN APPROPRIATE BOXES
LISTED ABOVE

SELECT
APPROPRIATE
SWITCH LOGIC
IN TANK
EMPTY CONDITION



Style: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 10 ☐ 11 ☐

Style 1, 2, 3:

Mounting & Stem Material: Brass ☐ SST ☐

Style 4: Stem SST

Mounting: Carbon Steel ☐ SST ☐

PVC Styles 1, 3, & 4 Only:

PVC ☐

Style 10:

Mounting & Stem Material: Brass ☐ SST ☐

Housing Material: SST ☐

Port Size: 1" ☐

Port Dim:

Style 11:

Mounting Material: Carbon Steel ☐ SST ☐

Stem Material: SST ☐

Bend Dim:

Mounting Attitude:

VTL to 30° Inclination

Tank Top ☐ Tank Bottom ☐

Adjustable Mounting:

Yes ☐ No ☐

PVC UNITS:

PVC Collars Only ☐

Wiring Configurations:

W-A ☐ W-B ☐

W-C ☐ W-D ☐

Float Part Number:

Float Stops:

Brass Units: (See Notes 4 & 5)

Beryllium Copper Grip Rings ☐

Brass Collars ☐

SST Units: (See Notes 4 & 5)

Ph 15-7 Mo SST Grip Rings ☐

316 SST Collars ☐

Electrical Connection:

24" LG. Lead Wire ☐

Junction Box ☐

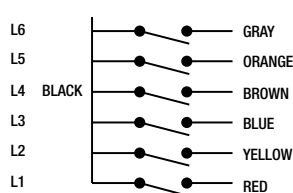
Switch Type:

SPST 20 VA ☐

SPDT 20 VA ☐

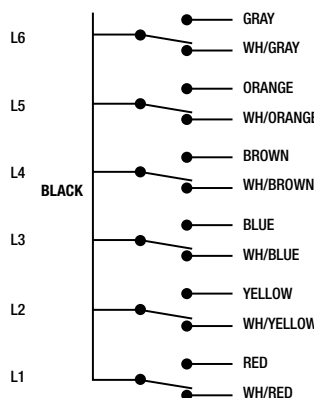
SPST 100 VA ☐

W-A SPST 20 WATT OR 100 WATT



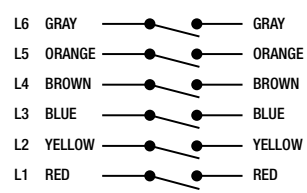
WIRE SIZES FOR STYLES 1-4, 10 & 11
1 - 5 sensing levels 22 AWG 24" Lg. Polymeric or Teflon-UL 1213
6 sensing levels 22 AWG 24" Lg. Teflon-UL 1213

W-C SPST 20 WATT



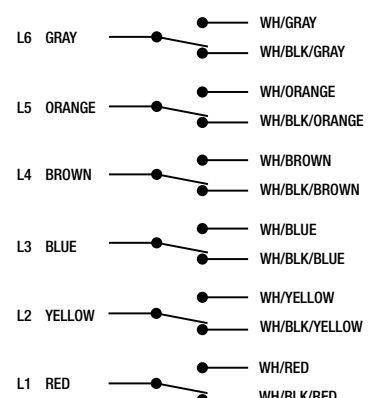
WIRE SIZES FOR STYLES 1-4, 10 & 11
1 - 2 Stations 18 AWG 24" Lg. Polymeric or Teflon-UL 1213
3 - 6 Stations 22 AWG 24" Lg. Teflon-UL 1213

W-B SPST 20 WATT OR 100 WATT



WIRE SIZES FOR STYLES 1-4, 10 & 11
1 - 3 sensing levels 18 AWG 24" Lg. Polymeric or Teflon-UL 1213
4 - 6 sensing levels 22 AWG 24" Lg. Teflon-UL 1213

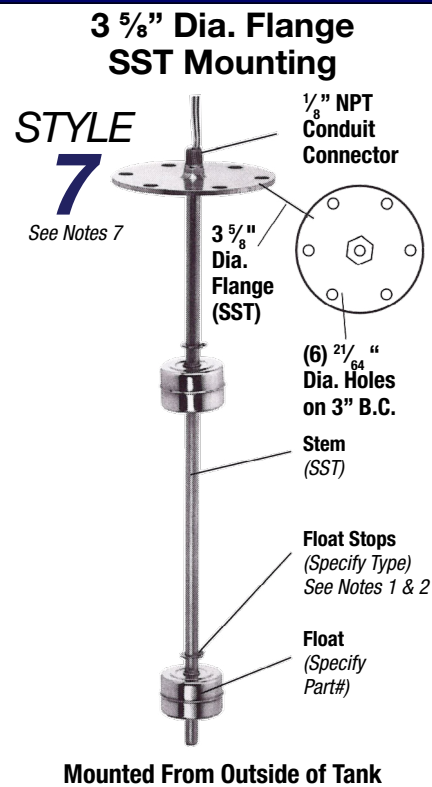
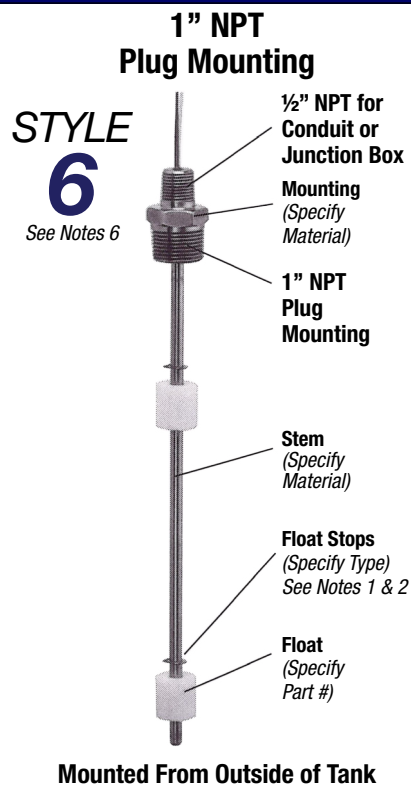
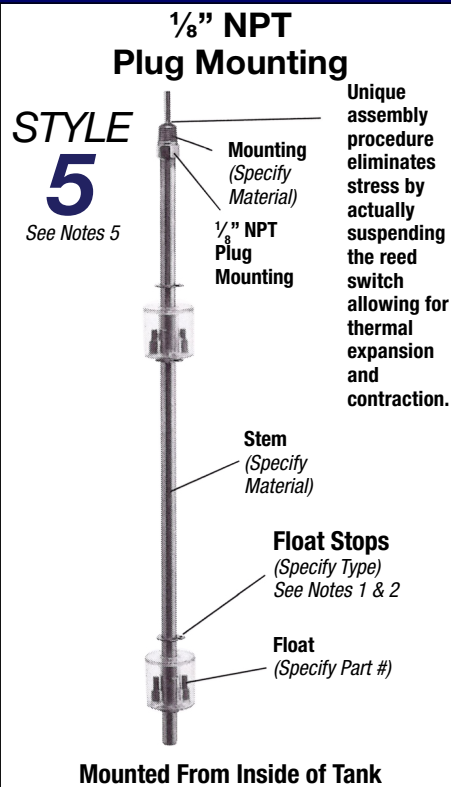
W-D SPST 20 WATT



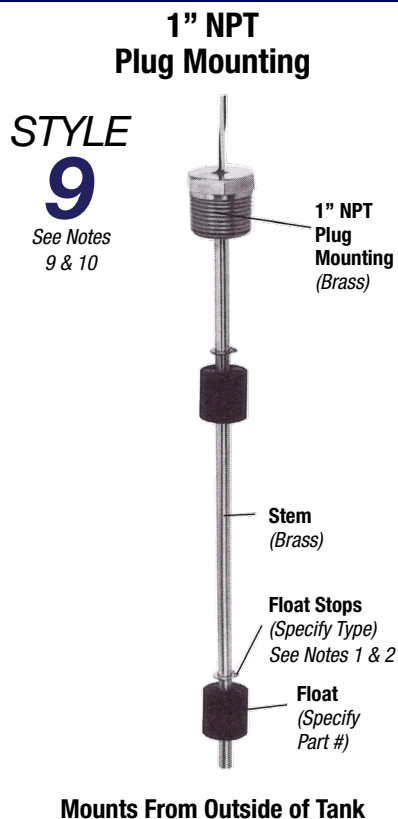
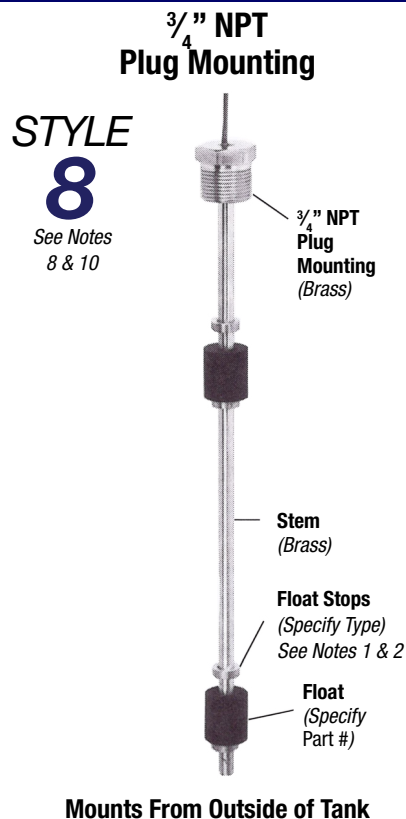
WIRE SIZES FOR STYLES 1-4, 10 & 11
1 - 2 Stations 18 AWG 24" Lg. Polymeric or Teflon-UL 1213
3 - 6 Stations 22 AWG 24" Lg. Teflon-UL 1213

4000 CUSTOM LEVEL SWITCH

METAL ($\frac{5}{16}$ " Diameter Stem)

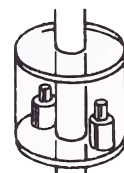


METAL ($\frac{5}{16}$ " Diameter Stem)



Part Numbers 3458 and 3510 plastic floats are molded in-house. We can certify that our polysulfone and polypropylene floats use only virgin material, and runners are not reintroduced, nor have blow agents or color concentrates been added during processing.

P/N 3458
POLYSULFONE

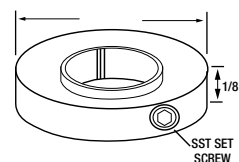


P/N 3510
POLYPROPYLENE



Part Number 3510: the magnets are heat-sealed in place using pure polypropylene welding rods.

Collars: Brass or
316 SST Optional



Drawing 1.1

4000 CUSTOM LEVEL SWITCH

5/16" Diameter Stem

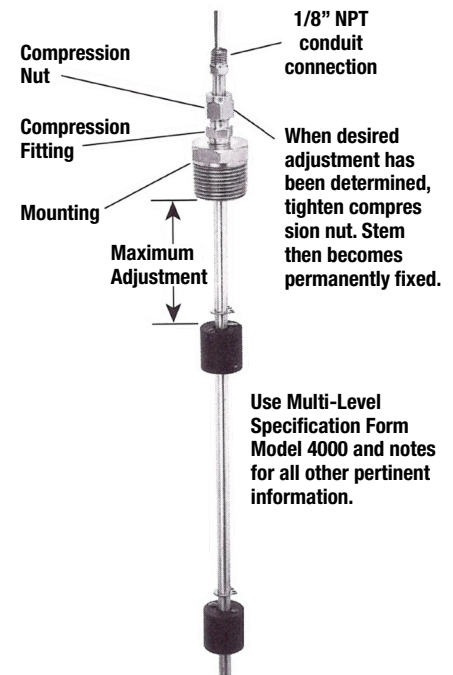
ADJUSTABLE STEM

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

SPECIFICATIONS:

Style	5 & 6	7	8 & 9
Mounting	Brass or Stainless Steel	Stainless Steel	Brass <i>See Note 10</i>
Stem	Brass or Stainless Steel	Stainless Steel	Brass <i>See Note 10</i>
Float	Customer to Specify Part Number		
Float Stops Grip Rings <i>See Note 1</i>	Brass units: Beryllium Copper Grip Rings SST Units: Ph 15-7 Mo SST Grip Rings	Ph 15-7 Mo Stainless Steel	Beryllium Copper <i>See Note 10</i>
Float Stops: Collars <i>See Note 2</i> <i>Drawing 1.1</i>	Brass Units: Brass Collars SST Units: Stainless Steel Collars	Stainless Steel	Brass <i>See Note 10</i>
Stem Length	Per Customer Requirements		
Reed Switches and Wire <i>See Notes 3 & 4</i>	UL Recognized units: SPST Pilot duty 20 VA 120-240 VAC Polymeric Leads: See multi-level specification form		
Reed Switches and Wire <i>See Notes 3 & 4</i>	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	1/16" Total Envelope		

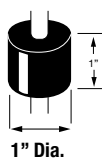
For Styles 6, 7 & 8. Option for Model 4000 - 5/16" Diameter Stem



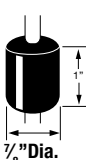
FLOAT SPECIFICATIONS: (Styles 5, 6, 7, 8 and 9)

1 1/2"

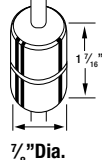
P/N 3476
BUNA N



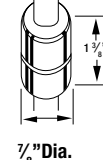
P/N 3489
BUNA N



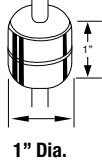
P/N 3660
SST



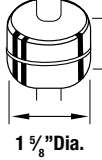
P/N 3671
SST



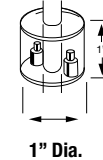
P/N 3509
SST



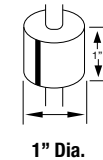
P/N 3482
SST



P/N 3458
POLY-SULFONE



P/N 3510
POLY-PROPYLENE



Float P/N	3476 BUNA	3489 BUNA	3660 SST	3671 SST	3509 SST	3482 SST	3458 Polysulfone	3510 Polypropylene
Temperature Range	-40° to 180°F in water -40° to 230°F in oil		-40°F to +300°F				-40° F to +225°F	
Pressure Max.	150 PSI		500 PSI	750 PSI	400 PSI	150 PSI	75 PSI	100 PSI
Specific Gravity	.55	.51	.7	.88	.77	.57	.65	.81

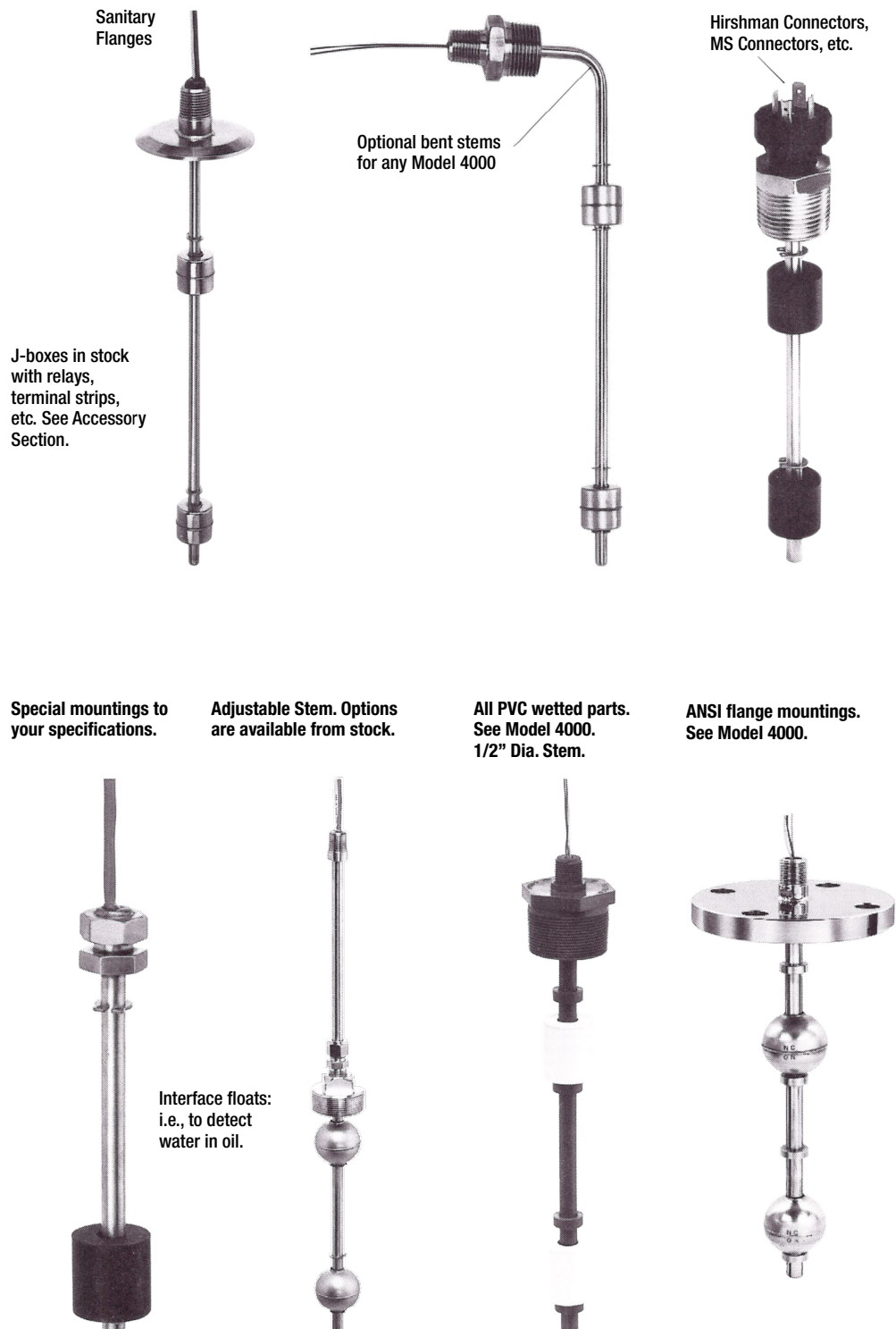
4000 CUSTOM LEVEL SWITCH

INSTALLATIONS/OPTIONS

Notes:

1. Grip rings come standard at no extra charge.
2. Optional collars are available from stock. See drawing 1.1.
3. Also available, leads in different lengths, cable, terminated ends, etc. Consult factory.
4. Relays are available for handling higher electrical loads than allowed. See accessory section for details.
5. 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.
6. 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.
8. Style 8 mounting installs from the outside of the tank into a 3/4" NPT boss. Specify float part number 3489, 3660 or 3671.
9. 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 dimensional data.
13. Material of copper-nickel, titanium, hastelloy and aluminum are stocked. Consult factory.

SPECIALTY OPTIONS:

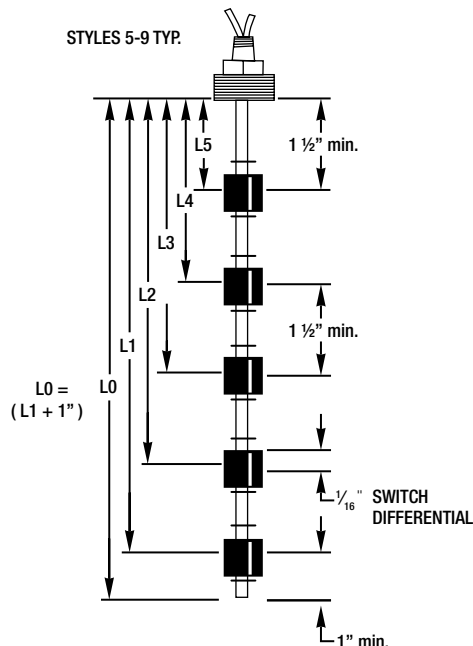


4000 CUSTOM LEVEL SWITCH

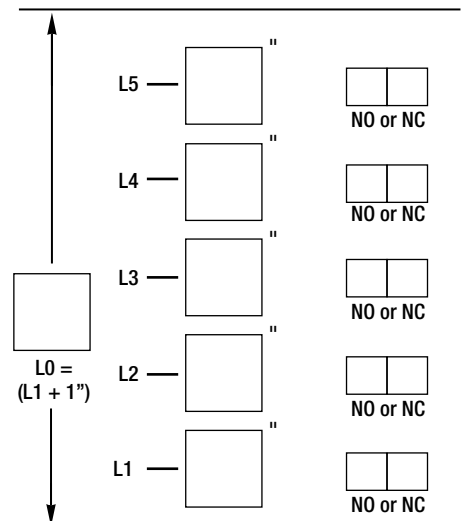
All Model 4000 Custom Level Switches are fabricated in-house. Quick shipment of 2 weeks are standard, but if you need a unit sooner, our Short Order Department can satisfy almost any delivery requirement.

Model 4000 Styles 5, 6, 7, 8 & 9 Multi-level Specification Form

STYLES 5-9 TYP.



STYLES 5, 6, 7, 8 & 9
LOGIC IN TANK EMPTY CONDITION



FURNISH DIMENSIONAL DATA
IN APPROPRIATE BOXES
LISTED ABOVE

SELECT
APPROPRIATE
SWITCH LOGIC
IN TANK
EMPTY CONDITION

Style: 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐

Style 5 & 6 :

Mounting & Stem Material: Brass ☐ SST ☐

Style 7:

Mounting & Stem Material: SST ☐

Style 8 & 9 :

Mounting & Stem Material: Brass ☐

Adjustable Mounting:

Yes ☐ No ☐

Float P/N

Mounting Attitude:

VTL to 30° Inclination

Tank Top ☐

Tank Bottom ☐

Float Stops:

Brass Units: (See Notes 1 & 2)

Beryllium Copper Grip Rings ☐

Brass Collars ☐

SST Units: (See Notes 1 & 2)

Ph 15-7 Mo SST Grip Rings ☐

316 SST Collars ☐

Wiring Configurations:

W-A ☐ W-B ☐

Electrical Connection:

24" LG. Lead Wire ☐

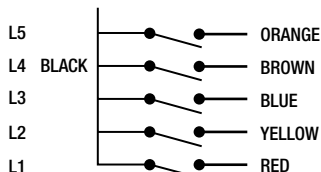
Junction Box ☐

Switch Type:

SPST 20 VA ☐

SPST 100 VA ☐

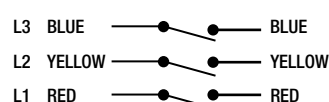
W-A SPST 20 WATT OR 100 WATT



WIRE SIZES FOR STYLES 5-9

1 to 5 sensing levels 22 AWG 24" Lg. Polymeric or Teflon-UL 1213

W-B SPST 20 WATT OR 100 WATT



WIRE SIZES FOR STYLES 5-9

1 to 3 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

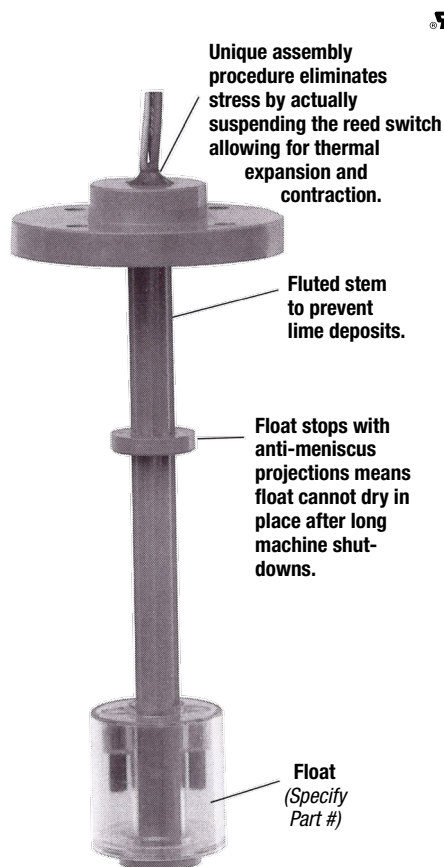
V.A.	VOLTS	AMPS DC	AMPS AC	AMPS AC MAX
20	0-50	.4	.4	1.0
	120	.15	.16	
	240	.06	.08	
100	0-50	1.0	1.5	3.0
	120	.4	.8	
	240	.2	.4	

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

UL File E86797

5000 CUSTOM LEVEL SWITCHES

PLASTIC STEM (Polysulfone)

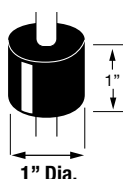


STYLE A	STYLE B	STYLE C	STYLE D
1/8" NPT Plug Mounting	3/8" Bulkhead Mounting	1" NPT Plug Mounting	2" O.D. Flange Mounting
<p>Float (Specify Part #)</p> <p>See Note 13</p> <p>Note 8</p>	<p>3/8" -16 straight thread nut and 1/16" thick silicone gasket</p> <p>Integral Hex for installation</p> <p>Float (Specify Part #)</p> <p>Note 9</p>	<p>1/8" NPT conduit connector</p> <p>Float (Specify Part #)</p> <p>Note 10</p>	<p>(4) 5/32" Dia. Holes on 1 1/2" B.C.</p> <p>1/8" NPT conduit connector</p> <p>Float (Specify Part #)</p> <p>Note 11</p>

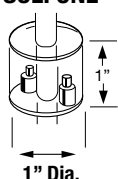
Applications:

- FDA approved polysulfone for use in food and beverage control.

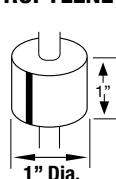
P/N 3476
BUNA N



P/N 3458
POLY-SULFONE



P/N 3510
POLY-PROPYLENE



Float P/N	3476 BUNA	3458 Polysulfone	3510 Polypropylene
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

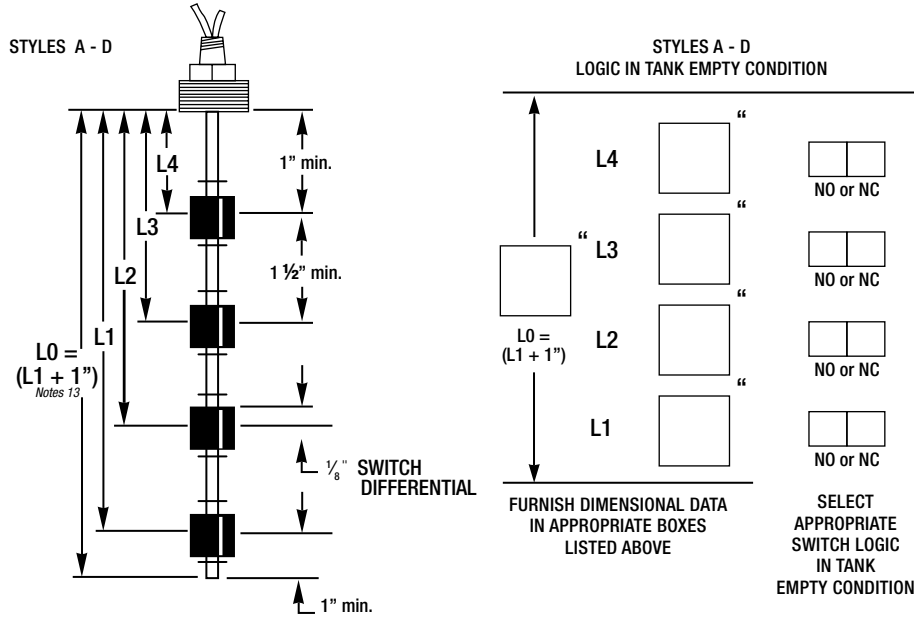
5/16" DIAMETER STEMS

Style	A, B, C, D
Materials	Polysulfone
Mounting	
Stem Float Stops <i>See Note 12</i>	
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	1/8" total envelope

5000 CUSTOM LEVEL SWITCHES

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



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. hole.
- Style C mounting installs from the outside of the tank into a 1" NPT boss.
- 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.
- Request extra 1" stem length to attach guy wires (customer supplied) for exceptionally long stems or if unit will be subjected to turbulence.
- Custom interface floats are available. Consult factory.
- Multi-level Specification Form 4000 must be used to ensure correct dimensional data.

Style: A ☐ B ☐ C ☐ D ☐

Float P/N

Mounting Attitude:

VTL to 30° Inclination

Tank Top ☐

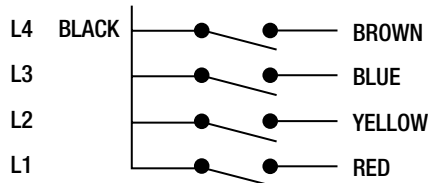
Tank Bottom ☐

Wiring Configurations:

W-A ☐ W-B ☐

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

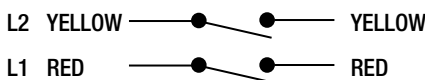
W-A SPST 20 VA



WIRE SIZES FOR STYLES A - D

1 or 4 sensing levels 22 AWG 24" Lg. PVC

W-B SPST 20 VA



WIRE SIZES FOR STYLES A - D

1 or 2 sensing levels 22 AWG 24" Lg. PVC

Switch Ratings ... Max Resistive Load

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

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

3700 BOTTLE SWITCH

METAL

Integral $\frac{1}{2}$ " conduit connector prevents moisture puddling.

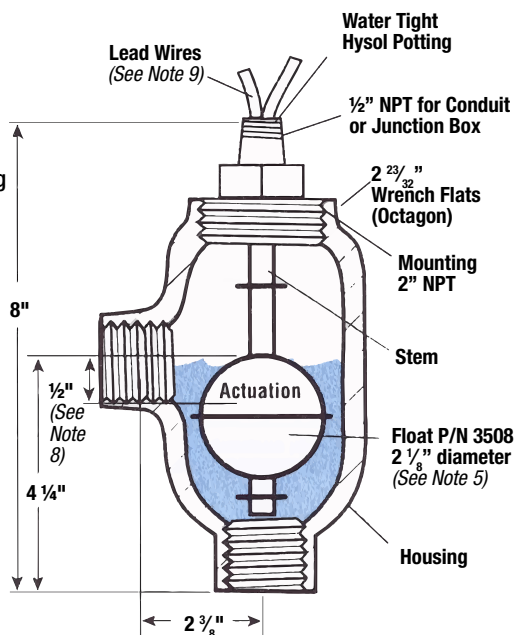
Unique assembly procedure eliminates stress by actually suspending the reed switch allowing for thermal expansion and contraction.

Wrench flats to be used in eliminating stress on process fillings when removing switch assembly.

1" NPT Ports for both bronze and stainless steel units. See Note 6.

Housing approximately 25% heavier wall thickness

DIMENSIONAL DATA:



Notes:

1. Brass stems use beryllium copper grip rings, 316 stainless stems use Ph 15-7 Mo grip rings, optional 316 stainless steel collars available, consult factory.
2. Optional high wattage SPST and SPDT reed switches are stocked. Consult factory.
3. Install unit vertical as shown; lead wires up.
4. Actual bronze housing burst pressure, 2500 psi \pm 70°F; SST housing higher.
5. Float specific gravity .65
6. Optional silver braze ports to MIL-F-1183 and socket weld ports available. Consult factory.
7. Weight 5.5 \pm lbs.
8. Approximate actuation in water. Specific gravity 1.0.
9. Optional cable available. Consult factory.
10. Higher temperature units available up to 450°F. Consult factory.
11. Relays for higher loads, junction boxes, terminal strips, etc. are available. See accessories section for details.
12. Unit is supplied in N.O Tank Dry condition. Logic is reversed by inverting float.

Specifications:

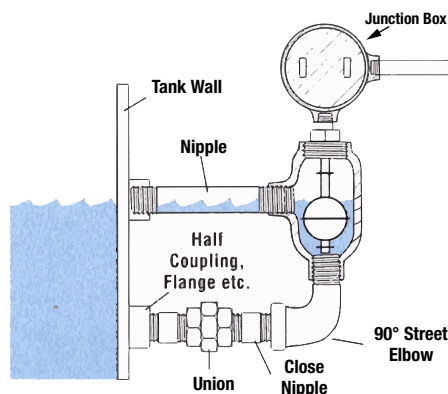
DIMENSIONS ARE FOR BOTH BRONZE & STAINLESS STEEL UNITS.

Part Number	Housing Material	Ports NPT	Mouning	Stem	Float	Switch	Lead Wires	Operating Temperture	Operating Temperture
43402	Bronze C836	1"	Bronze C836	Brass See Note 1	316 Stainless Steel See Note 5	20 VA SPST See Note 2, 11, & 12	18 AWG Polymeric 24" Long See Note 9	-40°F to +300°F See Note 10	750 PSI MAX. (Float) See Note 4
43404	316 Stainless Steel	1"	316 Stainless Steel	316 Stainless Steel See Note 1					

Applications:

- External of tank mount.
- Use this model when the tank's internal area is inaccessible.

TYPICAL THREADED PIPE AND FITTING INSTALLATION



If more than one switch point is needed, see Model 4000 Style 10, for custom length housings and switch points, to your requirements.

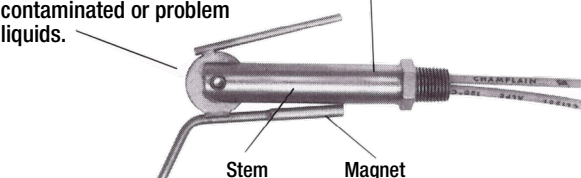


Model 4000
Style 10

METAL

Patented operation means: mechanism, including magnet, remains out of contaminated or problem liquids.

Silicone potted for shock and vibration deadening.



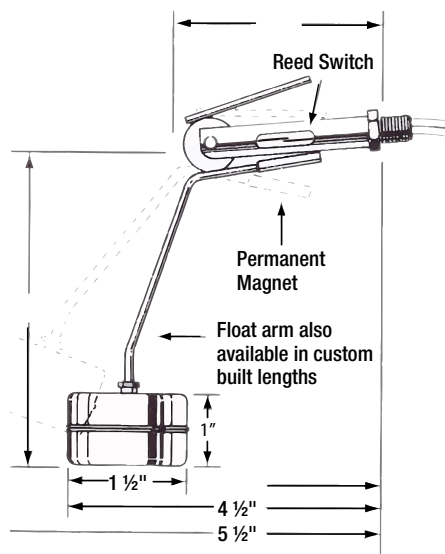
Applications:

- Ideal for dirty or contaminated liquids.
- Viscous fluids.
- Only the float is in contact with the liquid.
- All metal design.
- Choice of N.O. or N.C. switch logic.

Notes:

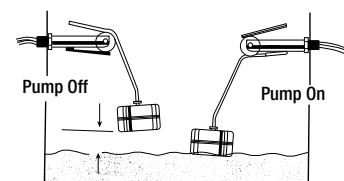
1. Other mounting styles available. Consult factory.
2. Float Sp. Gr. .5.
3. Consult factory for operating temperatures to 450°F.
4. Switch logic in tank dry condition per drawing 1.0.
5. Optional 100W SPST reed switches are stocked. Consult factory.
6. Relays are available for handling higher loads than allowed. See Accessories section for details.

FLOAT: No magnet in float. Ferrous alloys are not attracted to float which could jam other types of level switches.



Drawing 1.0

The unique design permits only the float to come in contact with the liquid, thereby eliminating the possibility of jamming caused by the metallic chips collecting on the magnet.



Grinding fluid contaminated with metallic chips and lube oil.

Specifications:

P/N N.O. See Note 4	P/N N.C. See Note 4	Mount-ing	Stem	Float	Switch	Lead Wires	Oper. Temp.	Oper. Pressure
43031	43033	1/8" NPT See Note 1	Brass	SST See Note 2	20VA SPST See Note 5 & 6	18 AWG Poly-meric	-40°F to +300°F See Note 3	50 PSIG
43032	43034		SST					

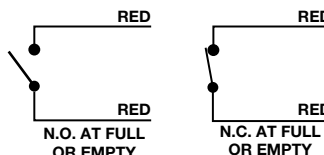
Electrical

Switch Ratings ... Max Resistive Loads

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

Switch Rating 20VA: 120-240VAC Pilot Duty

WIRING DIAGRAM FOR STANDARD SPST SWITCHES



Viscous epoxy.

One level switch maintains the proper level of a viscous epoxy used in automatic coating machines.

By simply bending the float arm, tank top mounting may be used in lieu of side of tank installation.



4400 SIDE MOUNTED

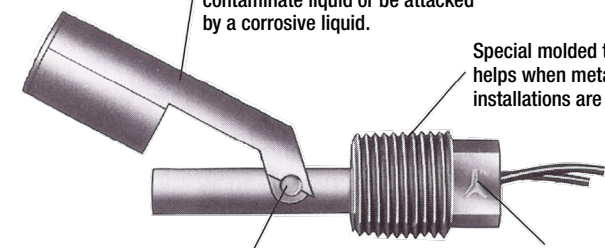
PLASTIC

1/2" NPT



Strong Alnico bar magnet hermetically sealed inside means no other wetted material to contaminate liquid or be attacked by a corrosive liquid.

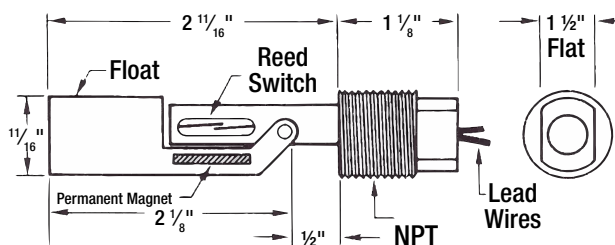
Special molded thread helps when metal to plastic installations are used.



Round pivot pins add bearing surface for smooth operation and due to design clearances, squeeze out the liquid from either side during operation to help eliminate build-up.

Unique assembly procedure eliminates stress by actually suspending the reed switch allowing for thermal expansion and contraction.

DIMENSIONAL DATA



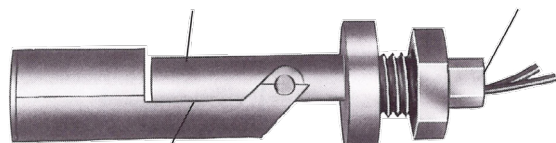
Specifications:

P/N	Mounting	Stem	Float See Note 7	Switch	Lead Wires	Operating Temp.	Operating Pressure
24237	1/2" NPT	Poly-sulfone	Poly-sulfone	20VA SPST See Note 2 & 3	20 AWG PVC 24" LONG See Note 1	-40°F to +225°F	150 PSIG Max.
24250		Poly-propylene	Poly-propylene				100 PSIG Max.

1/2" -13 or 5/8" -11 Bulkhead

High wattage reed switch de-rated and matched to the strong Alnico bar magnet makes a superior match.

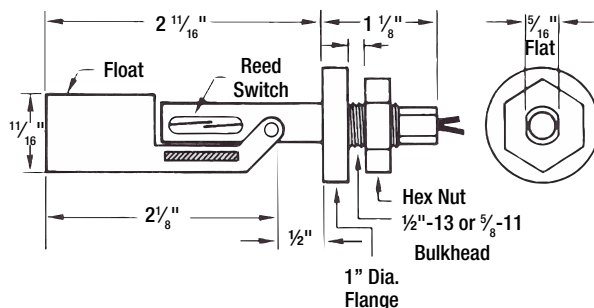
Unique assembly procedure eliminates stress by actually suspending the reed switch allowing for thermal expansion and contraction.



Anti-meniscus projection means float cannot dry in place after long machine shut-downs.

Plastic components are molded, in-house, using only certified 100% virgin material. Runners are not reintroduced to the performance parts.

DIMENSIONAL DATA



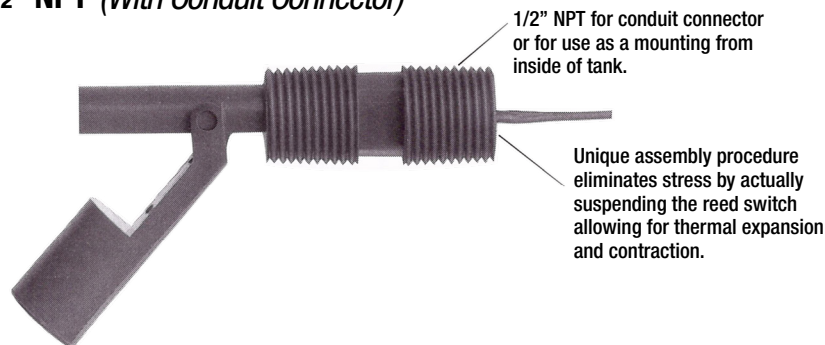
Specifications:

P/N	Mounting	Stem	Float See Note 7	Switch	Lead Wires	Operating Temp.	Operating Pressure
24238	1/2" - 13 Bulkhead with Nut See Note 4	Poly-sulfone	Poly-sulfone	20VA SPST See Note 2 & 3	20 AWG PVC 24" LONG See Note 1	-40°F to +225°F	150 PSIG Max.
42605		Poly-propylene	Poly-propylene				100 PSIG Max.
42603	5/8" - 11 Bulkhead with Nut See Note 5	Poly-sulfone	Poly-sulfone				150 PSIG Max.
42606		Poly-propylene	Poly-propylene				100 PSIG Max.

Because Thomas Products Ltd. molds in-house, we can certify that during the molding process color concentrates have not been added that hinder FDA requirements of additive leaching.

4400 SIDE MOUNTED PLASTIC

1/2" NPT (With Conduit Connector)



Specifications:

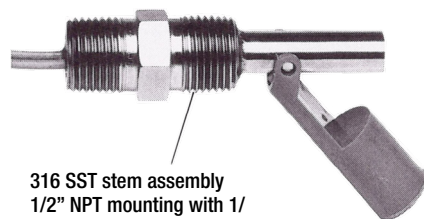
P/N	Mounting	Stem	Float <i>See Note 7</i>	Switch	Lead Wires	Operating Temp.	Operating Pressure
42681	1/2" NPT	Poly-sulfone	Poly-sulfone	20VA SPST <i>See Notes 2 & 3</i>	22 AWG PVC 24" Long <i>See Note 1</i>	-40°F to +225°F	150 PSIG Max.
42682		Poly-propylene	Poly-propylene				100 PSIG Max.

Notes:

1. Lead wires are available in different lengths, terminated ends or cable. Consult factory.
2. 100 VA SPST non-UL reed switches are stocked. Consult factory.
3. Relays are available for handling higher loads than allowed. See Accessories section for details.
4. Optional silicone gasket P/N 3474 1/16" thick x 1" O.D. x 1/2" I.D. 40 durometer. (Other materials are available - consult factory.)
5. Optional silicone gasket P/N 3500 1/16" thick x 1" O.D. x 5/8" I.D. 40 durometer. (Other materials are available - consult factory.)
6. All Model 4400 level switches depicted are available with cable. All specifications are the same except for operating temperature of -40°F to +176°F. Determine the length of cable required and contact factory sales department for pricing. UL recognized Model No. 4400L.
7. Float specific gravity .7

- Variations of standard unit can be easily done in our tool room to provide you with samples before production starts.

SPECIALTY OPTIONS:



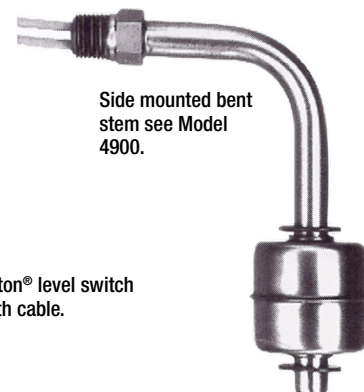
316 SST stem assembly
1/2" NPT mounting with 1/2" conduit connector for J-box, polysulfone float.



Quick disconnect connectors.




Ryton® level switch with cable.



Side mounted bent stem see Model 4900.

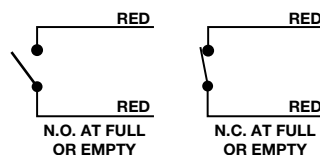
Electrical

Switch Ratings ... Max Resistive Loads

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

Switch Rating of UL Recognized Units, 50-240VAC Pilot Duty.

WIRING DIAGRAM FOR STANDARD SPST SWITCHES

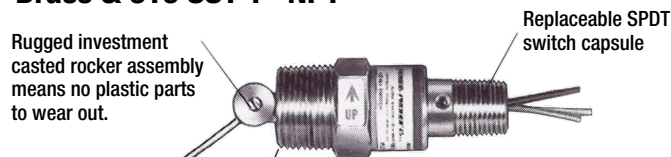


4100 SIDE MOUNTED

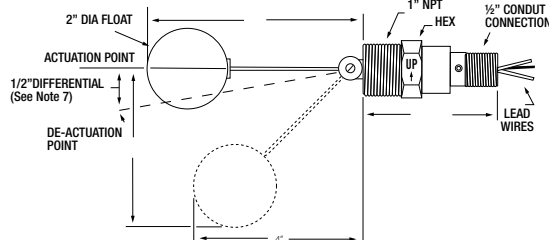
METAL

Brass & 316 SST 1" NPT

Rugged investment casted rocker assembly means no plastic parts to wear out.



DIMENSIONAL DATA:



Strong Alnico bar magnet in a stainless steel shuttle, and entire unit can be constructed so every wetted part is stainless steel.

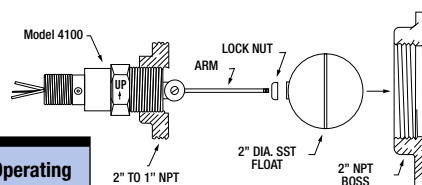
Notes:

1. Float S.G. . 8
2. Float S.G. . 75
3. Lead wires are available in different lengths, terminated ends or cable. Consult factory.
4. Relays are available for handling higher loads than allowed. See
5. Accessories section for details. SST units can be made with all wetted parts being SST.
6. 100 VA SPST non-UL reed switches are stocked. Consult factory.
7. 1" differential units are available. Consult factory.

Specifications:

P/N	Mounting	Stem	Float	Switch	Lead Wires	Operating Temp.	Operating Pressure
24221	1" NPT. See Dwg. 1.0	Brass	316 SST	20VA SPDT See Note 6	18 AWG Polymeric 24" Long See Notes 3, 4	-30°F to +300°F	900 PSIG Max.
24222		316 SST See Note 5	2" Spherical See Note 1				
24227	1" NPT. See Dwg. 2.0	Brass	316 SST	20VA SPDT See Note 6	18 AWG Polymeric 24" Long See Notes 3, 4	-30°F to +300°F	1000 PSIG Max.
24228		316 SST See Note 5	1" Cylindrical See Note 2				

Drawing 1.0

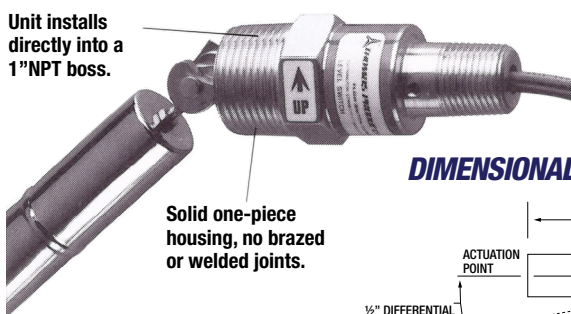


Drawing 1.1

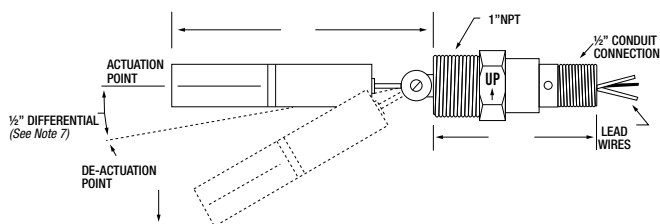
Custom made arms are available to help keep the contaminated liquid out of the mechanism.

Brass & 316 SST 1" NPT

Unit installs directly into a 1" NPT boss.



DIMENSIONAL DATA:



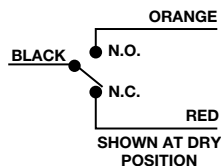
Drawing 2.0

Electrical

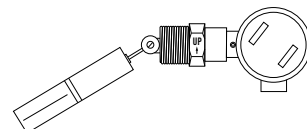
Switch Ratings ... Max Resistive Loads

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

20VA - 120-240 VAC Pilot Duty



Optional junction boxes shown in the Accessories section mount directly onto the 1/2" conduit connection for relays or terminal strips, etc.

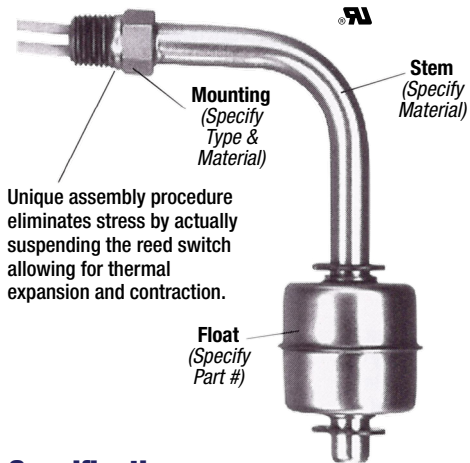


See Model 3900 for use in contaminated liquids where only the float gets wet.



4900 SIDE MOUNTED

METAL STEM

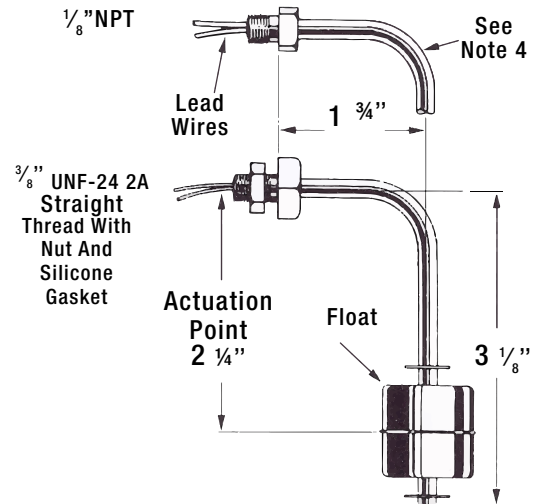


Notes:

1. Teflon® coated stems and floats are available. Consult factory.
2. Lead wires are available in different lengths, terminated ends or cable. Consult factory.
3. Relays are available for handling higher loads than allowed. See Accessories section for details.
4. Custom bend locations are available per your specification. Consult factory.
5. High temperature units are available up to 450°F. Consult factory.
6. 100 VA SPST non-UL reed switches are stocked. Consult factory.
7. Brass units use beryllium copper grip rings. SST units use 15-7 Mo SST grip rings.
8. Optional collars are available from stock. See drawing 1.1. Consult factory.
9. Silicone gasket 1" O.D. x 3/8" I.D. x 1/16" thick 40 durometer.
10. 1/8" NPT mounting installs from inside the tank into a 1/8" NPT boss.
11. 3/8"-24 UNF 2A mounting installs from the inside of the tank into a 13/32" dia. hole.
12. Interface floats are available. Consult factory.

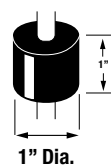
Specifications:

P/N	Mounting	Stem	Float	Switch	Lead Wires
42867	1/8" NPT See Note 10	Brass	BUNA P/N 3476	20VA SPST See Note 3, 6	22 AWG 24" Long Polymeric See Notes 2
42868		SST	SST P/N 3509		
42869		Brass	SST P/N 3482		
42870		SST	SST P/N 3476		
42875		Brass	SST P/N 3509		
42876		SST	SST P/N 3482		
42882	3/8" - 24 UNF 2A Bulkhead With Nut And Silicone Gasket See Notes 9, 11	Brass	SST P/N 3476		
42883		SST	SST P/N 3509		
42884		Brass	SST P/N 3482		
42885		SST	SST P/N 3476		
42886		Brass	SST P/N 3509		
42887		SST	SST P/N 3482		

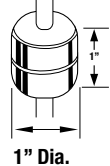


Float Specifications:

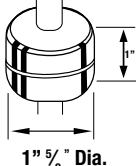
P/N 3476
BUNA N



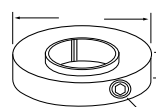
P/N 3509
SST



P/N 3482
SST



Collars: Brass or
316 SST Optional



Drawing 1.1

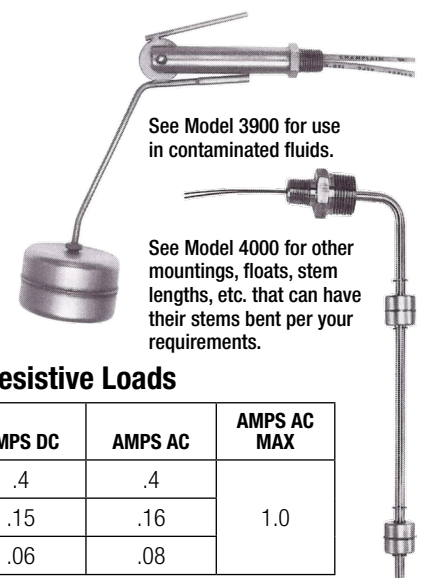
Float P/N See Note 12	3476 BUNA	3509 SST	3482 SST
Temperature Range See Note 5	-40° to 180°F in Water -40° to 230°F in oil	-40°F to +300°F	
Pressure Max.	150 PSI	400 PSI	150 PSI
Specific Gravity	.55	.77	.57

Electrical

Switch Ratings ... Max Resistive Loads

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

20VA - 120-240 VAC Pilot Duty



4200 SINGLE LEVEL

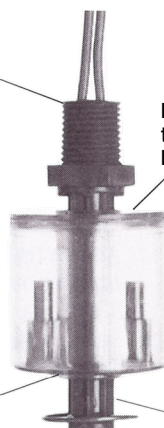
PLASTIC STEM

Plastic 1/8" NPT

Unique assembly procedure eliminates stress by actually suspending the reed switch allowing for thermal expansion and contraction.

Beverage control food contact.
Made of FDA approved material.

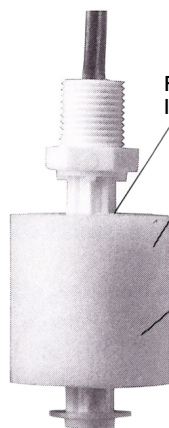
Anti-meniscus projections mean float cannot dry in place after lengthy machine shut downs.



P/N 24251

Internal lettering to help prevent bacterial growth.

Fluted stem to prevent lime deposits.



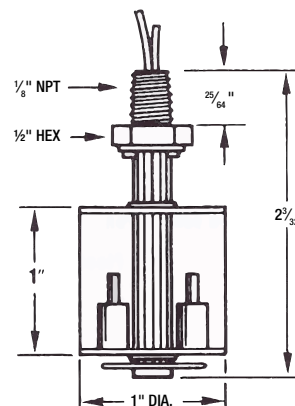
P/N 42654

Fluted stem to prevent lime deposits.

Magnets are heat-sealed in place using pure polypropylene welding rods, not epoxy.

Molded in-house. We can certify that our polypropylene floats use only virgin material, runners are not reintroduced, nor have blow agents or color concentrates been added during processing.

DIMENSIONAL DATA:



All Model 4200 level switches depicted are available with cable. All specifications are the same except for operating temperatures of -40°F to +176°F. Determine length of cable required and contact factory sales department for pricing. See Note 7.

When extending a level switch deep into a tank, configuration shown can mount, confine and protect the lead wires.

Specifications:

P/N	Mounting	Stem	Float	Switch	Lead Wires	Operating Temp.	Operating Pressure
24251	1/8" NPT.	Poly-sulfone	Poly-sulfone See Note 3	20VA SPST Note 2	22 AWG PVC 24" Long See Note 1	-40°F to +225°F	75 PSIG Max.
42654		Poly-propylene	Poly-propylene See Note 4				100 PSIG Max.

Plastic 3/8" -16 Bulkhead

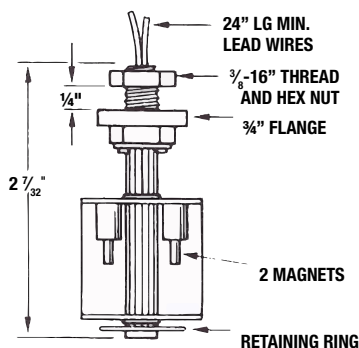
Unique assembly procedure eliminates stress by actually suspending the reed switch allowing for thermal expansion and contraction.

Magnets hermetically sealed from the inside of the float means no polling is exposed to the media.



P/N 24252

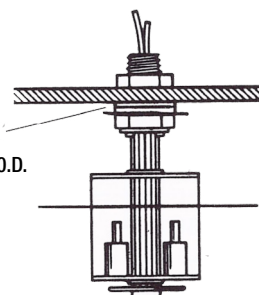
DIMENSIONAL DATA:



Optional silicone gasket P/N 3488. 1/16" thick 3/4" O.D. 40 durometer.

Specifications:

P/N	Mounting	Stem	Float	Switch	Lead Wires	Operating Temp.	Operating Pressure
24252	3/8" - 16 Bulkhead With Nut * Gasket P/N 3488 See Dwg 1.0	Poly-sulfone	Poly-sulfone See Note 3	20VA SPST See Note 2	22 AWG PVC 24" Long See Note 1	-40°F to +225°F	75 PSIG Max.

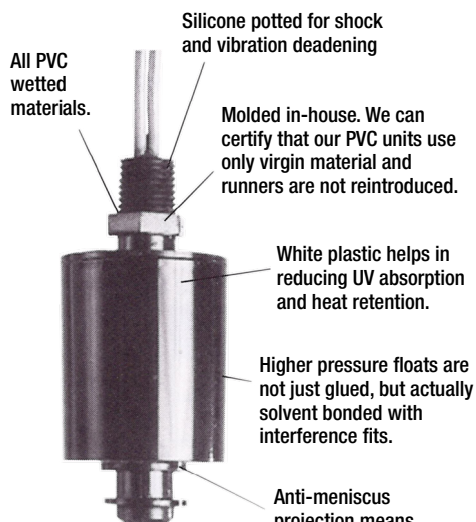


Drawing 1.0

4800 SINGLE LEVEL

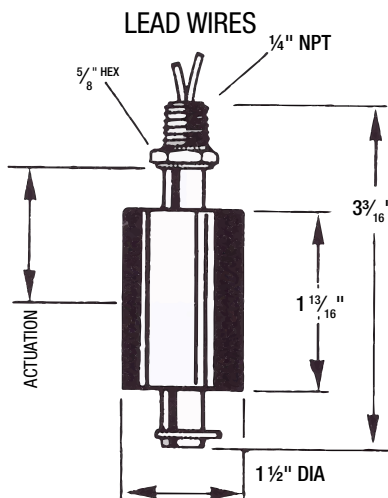
PLASTIC STEM

1/4" NPT



NOTE: Photo shown in black for clarity.

DIMENSIONAL DATA:



Notes:

1. Lead wires are available in different lengths, terminated ends or cable. Consult factory.
2. 100 VA SPST reed switches is available non UL. Consult factory.
3. Float specific gravity 65
4. Float specific gravity 81
5. Float specific gravity 85
6. Custom interface floats are available. Consult factory.
7. PVC cable UL 2464 AWG #22 300V 80°C. Customer to specify length. Consult factory for pricing. UL recognized Model No. 4200L.
8. 100 VA SPST and 20 VA SPDT reed switches are available. Consult factory.
9. Relays are available for handling higher loads than allowed. See Accessories section for details.

Specifications:

P/N	Mounting	Stem	Float	Switch	Lead Wires	Operating Temp.	Operating Pressure
41401	1/4" NPT	PVC	PVC See Note 5	20VA SPST See Note 2	18 AWG PVC 24" Long See Note 1	-30°F to +140°F	100 PSIG Max.

When a plastic unit with a long stem or more than one switch point is needed, see Model 4000 PVC or Model 5000 Polysulfone.

Specialty Option:



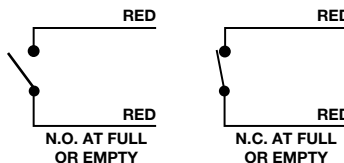
Electrical

Switch Ratings ... Max Resistive Loads

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

Switch Rating of UL recognized units 20VA- 50-240 VAC Pilot Duty

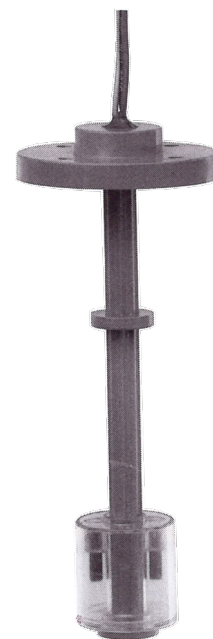
WIRING DIAGRAM FOR STANDARD SPST SWITCHES



Switch logic is changed by removing retaining ring and inverting float.




Model 4000
PVC

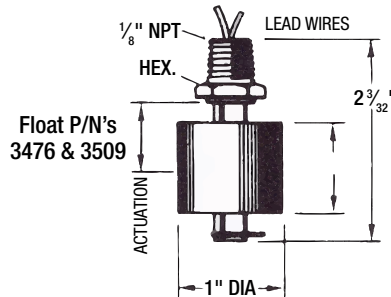
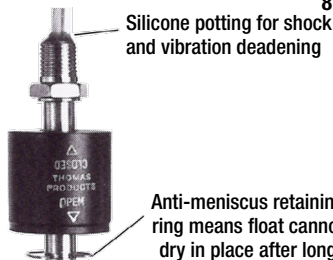


Model 5000
Polysulfone

4200 SINGLE LEVEL

METAL STEM

Brass, 316 SST and BUNA N 1/8" NPT  **DIMENSIONAL DATA:**



Specifications:

P/N	Mounting	Stem	Float	Switch	Lead Wires	Operating Temp.	Operating Pressure
41001	1/8" NPT. See Note 6	Brass	P/N 3476 BUNA See Notes 3 & 11	20VA SPST	22 AWG Polymeric 24" Long See Notes 1 & 2	-40°F to +180°F in Water	150 PSIG Max.
41002			P/N 3476 BUNA See Notes 3 & 11			-40°F to +230°F in Oils	
41003		316 SST See Note 8	P/N 3509 316 SST See Notes 5, 9, 11			-40°F to +300°F See Note 10	400 PSIG Max.
41008			P/N 3482 316 SST See Notes 9, 11, 14				150 PSIG Max.

4200H

HAZARDOUS LOCATIONS

Models 4200H and 4700H have been tested and approved by Underwriters Laboratories for use in hazardous locations for:

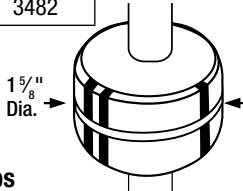
Class I Div. 1 Groups C & D. Unit must be installed in accordance with article 501-4 (A) N.E.C. 1993.

Class I Div. 2 Groups A, B, C & D. Unit to be mounted in a suitable enclosure and wiring to be installed in accordance with article 501-4 (B) N.E.C. 1993.

Class I Div. 1 Groups C & D.
Class I Div. 2 Groups A, B, C & D.

P/N	Stem	Float P/N
43529	316 SST	3509
43531		3482

P/N 3482
See Note 14



See Notes 15 & 16

Class I Div. 2 Groups A, B, C & D.

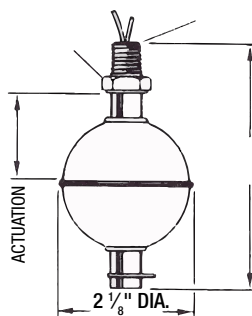
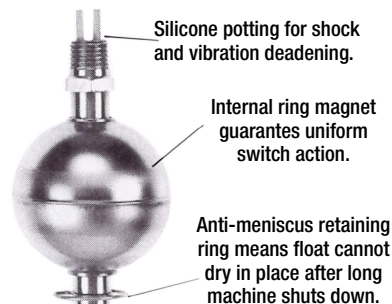
P/N	Stem	Float P/N
43533	Brass	3509
43534		3482

4700 SINGLE LEVEL

METAL STEM

316 SST 1/4" NPT

DIMENSIONAL DATA:



Specifications:

P/N	Mounting	Stem	Float	Switch SPST See Note 13	Lead Wires	Operating Temp.	Operating Pressure
41301	1/4" NPT See Note 6	316 SST See Note 8	P/N 3508 316 SST See Notes 4, 9, 11	20 VA	18 AWG Polymeric 24" Long See Notes 1 & 2	-40°F to +300°F See Note 10	750 PSIG Max.
41302			P/N 3508 316 SST See Notes 4, 9, 11	100 VA			
41321		Brass		20 VA			

4700H

HAZARDOUS LOCATIONS

Class I Div. 1 Groups C & D.
Class I Div. 2 Groups A, B, C & D.

P/N	Stem	Float P/N
43651	316 SST	3508

Class I Div. 2 Groups A, B, C & D.

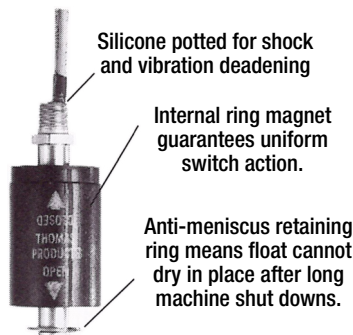
P/N	Stem	Float P/N
43653	Brass	3508

See Note 17

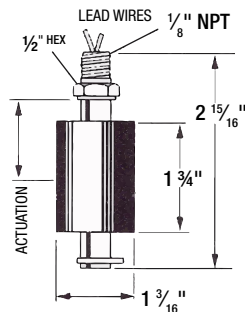
4500 SINGLE LEVEL

METAL STEM

Brass, 316 SST and BUNA N 1/8" NPT



DIMENSIONAL DATA:



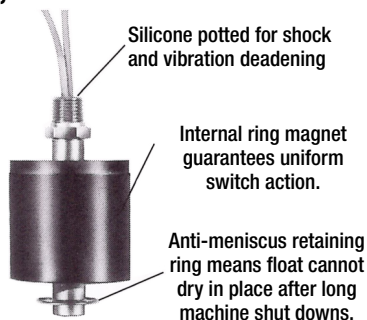
Specifications:

P/N	Mounting	Stem	Float	Switch SPST See Note 13	Lead Wires	Operating Temp.	Operating Pressure
41101	1/8" NPT See Note 6	Brass	BUNA N See Notes 5' & 18	20VA	18 AWG Polymeric 24" Long See Notes 1 & 2	-40°F to +180°F in Water	150 PSIG Max.
41102		Brass		100VA			
41103		316 SST See Note 8		20VA		-40°F to +230°F in Oils	
41104		316 SST See Note 8		100VA			

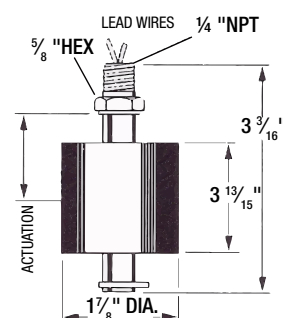
4600 SINGLE LEVEL

METAL STEM

Brass, 316 SST and BUNA N 1/4" NPT



DIMENSIONAL DATA:



Specifications:

P/N	Mounting	Stem	Float	Switch SPST See Note 13	Lead Wires	Operating Temp.	Operating Pressure
41201	1/4" NPT. See Note 6	Brass	BUNA N See Notes 3 & 11	20VA	18 AWG Polymeric 24" Long See Notes 1 & 2	-40° to +180°F in Water	150 PSIG Max.
41202		Brass		100VA			
41203		316 SST See Note 8		20VA		-40° to +230°F in Oils	
41204		316 SST See Note 8		100VA			

Notes:

- Lead wires are available in different lengths, terminated ends or cable. Consult factory. See Note 12.
- Relays are available for handling higher loads than allowed. See Accessories section for details.
- Float specific gravity 55
- Float specific gravity 65
- Float specific gravity 7
- Float specific gravity 80
- Other standard mountings are available, i.e. 1/4" and 1/2" NPT, bulkhead, etc. Consult factory.
- SPDT switches are available. Consult factory.
- Teflon coated stems are available. Consult factory.
- Teflon factory coated floats are available. Consult factory.
- High temperature units up to 450°F are available. Consult factory.
- Custom interface floats are available. Consult factory.
- Optional PVC cable UL 2464 AWG #22 300V 80°C Underwriters Laboratories recognized. Consult factory.
- SPDT reed switches are available. Consult factory.
- Float specific gravity.... .57
- All dimensions and specifications are typical to Model 4200 P/N 41003 except lead length of 36" max.
- All dimensions and specifications are typical to Model 4200 P/N 41003 except lead length of 36" max and float P/N 3482. See drawing.
- All dimensions and specifications are typical to Model 4700 P/N 41301 except lead length of 36" max.
- Optional float available for S.G. of .65 specify switch logic for top mounting N.O. or N.C. tank dry condition.

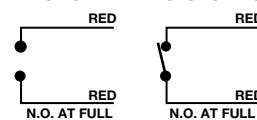
Electrical

Switch Ratings ... Max Resistive Loads

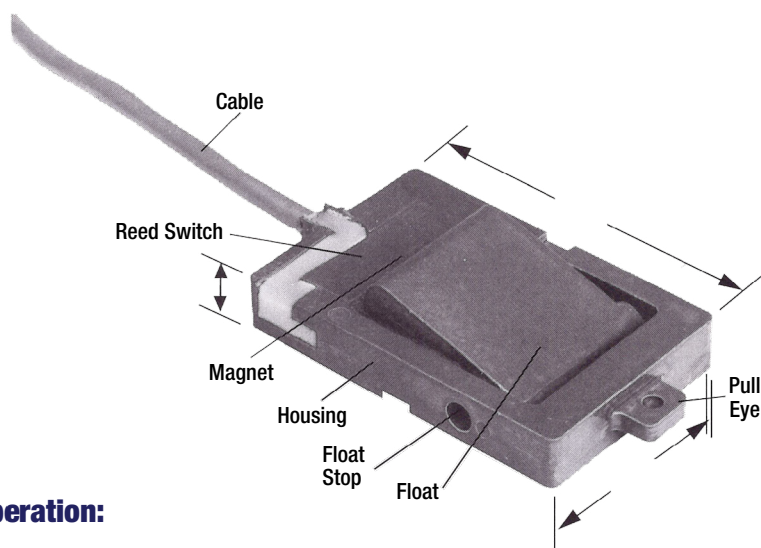
V.A.	VOLTS	AMPS DC	AMPS AC	AMPS AC MAX
20	0-50	.4	.4	1.0
	120	.15	.16	
	240	.06	.08	
100	0-50	1.0	1.5	3.0
	120	.4	.8	
	140	.2	.4	

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

WIRING DIAGRAM FOR STANDARD SPST SWITCHES



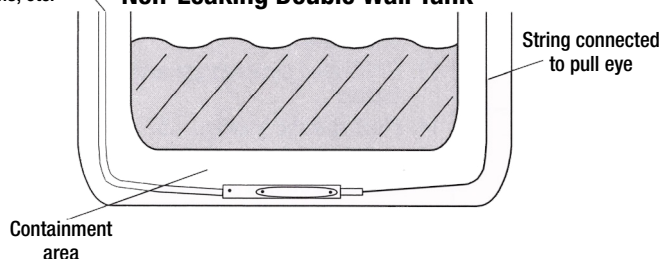
Switch logic is changed by removing retaining ring and inverting float.



Operation:

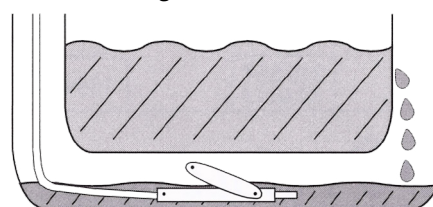
Cable to controls,
Light, audible
alarms, etc.

Non-Leaking Double Wall Tank



N.C. Dry Condition:
the magnet in the float
holds the reed switch closed,
completing the circuit.

Leaking Double Wall Tank



Reed switch opens on
increasing liquid level.

The float rises in direct response to
the rising liquid, opening the circuit.

Electrical

Switch Ratings ... Max Resistive Loads

V.A.	VOLTS	AMPS DC	AMPS AC	AMPS AC MAX
10	0-50	.15	.2	.5
	120	.06	.08	
	240	.03	.04	

Switch Rating - Pilot Duty 50 - 240 VAC

Specifications:

P/N	Mounting	Float	Reed Switch	Cable	Temperature	Pressure	Mounting Attitude
43426	PVC	PVC See Note 1, 2	10 VA SPST	22 AWG UL 2464 25' Lg.	-40°F to 140°F Max	50 PSI @ 72° F Max.	Horizontal

SPST TYPICAL WIRING DIAGRAM



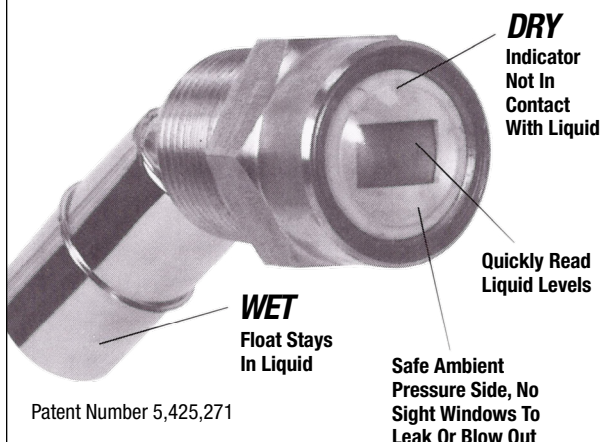
Notes:

1. Specific gravity. 7 minimum.
2. Operates in 5/8" envelope. Actuates in approximately 1/4" of water level.
3. Wetted parts: stainless steel, PVC, hysol epoxy, and cunife magnet.
4. Use in flammable environments. Should only be used with an intrinsically safe barrier to make the sensor safe not posing a hazard.
5. Model 3800 switch logic is the same N.C. (normally closed) tank dry condition in either side unit is installed.
6. Switch logic N.C. (normally closed) tank dry. Switch opens on increasing level.

- Double wall tanks.
- Containment piping.
- Ideal for leak detection systems.
- Operates down to -40°F.
- Positive signals.
- Very economical.
- Not affected by translucent films.
- Can be immersed continuously in any media compatible with wetted parts .
- No special controls necessary.
- No excitation voltage necessary.
- No false indications.

METAL

- **Replaces Unreadable Sight Windows**
- **Non-Electrical**
- **Use in Hazardous Locations**



Patent Number 5,425,271

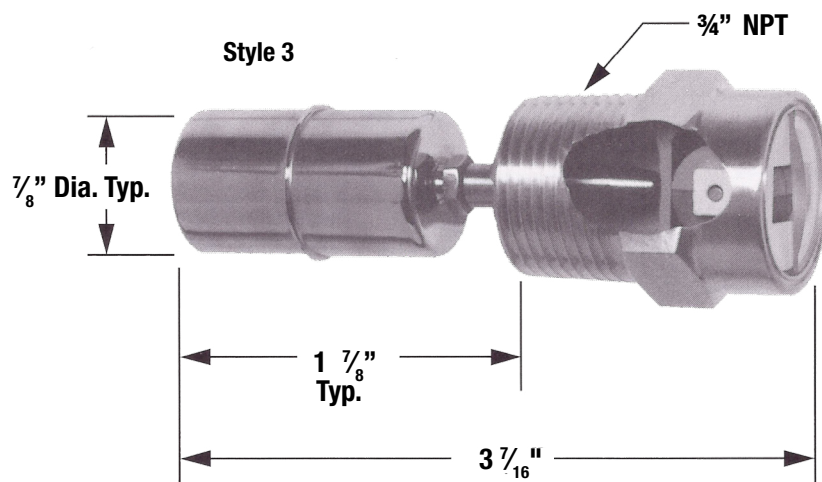
Operation:

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 indicating low liquid level. Accordingly, as the level rises, the green side indicating a satisfactory liquid level condition appears.

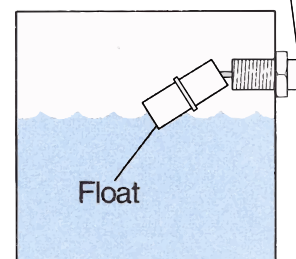
Notes:

1. High temperature modifications available. Consult factory.
2. High pressure floats available. Consult factory.
3. All other wetted parts stainless steel.
4. Mounting attitude horizontal.
5. Specific gravity. 4 min.
6. Both styles 1 and 2 install through a $1\frac{9}{32}$ " dia hole.

DIMENSIONAL DATA:



Indicator Turns Red When Liquid Is Low;
Green Means Liquid Is OK.



Specifications:

P/N Number	Housing Material <i>See Note 5</i>	Size	Float	Operating Temperature	Operating Pressure
43676	Brass	$\frac{3}{4}$ " NPT Style 3	316 SST <i>See Note 5</i>	-40°F to +225°F <i>See Note 1</i>	400 PSI @72°F <i>See Note 2</i>
43677	316 SST				

5101 LIQUID LEVEL INDICATOR

Patent number 5,661,238

METAL

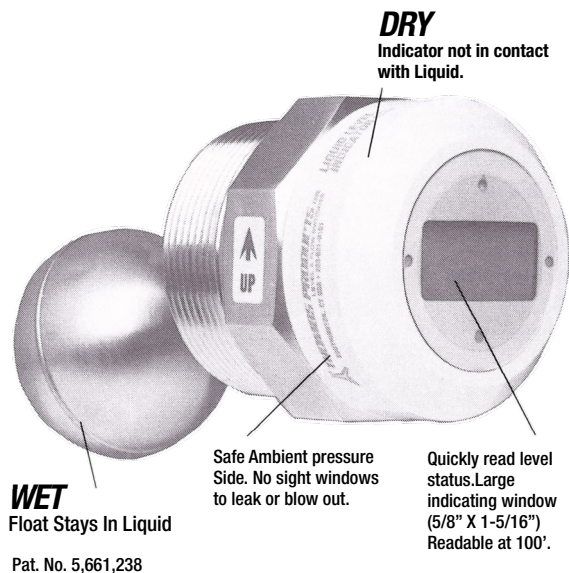
- **Replaces Unreadable Sight Windows**
- **Non-Electrical**
- **Use in Hazardous Locations**

Operation:

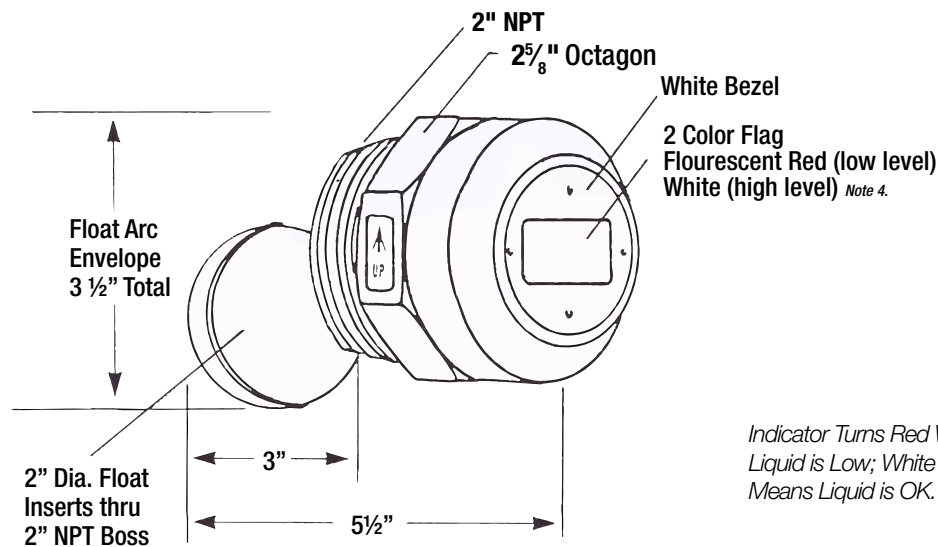
The housing has 2 separate chambers. In the front chamber, behind a transparent lens, is a 2-color flag (half red, half white) equipped with a magnet. In the rear chamber is a magnet equipped float, free to swing with the action of the liquid's level. The poles of the two (2) magnets are opposite creating a bi-stable interlocking condition. As the liquid level falls, the float and magnet swing down opening the magnetic coupling. This causes the flag to drop, exposing the red side and indicating a low liquid level. Accordingly, as the level rises, the magnet's proximity is shortened causing a magnetic attraction to snap up the flag exposing the white side and indicating a satisfactory liquid level condition.

Notes:

1. All other wetted materials 316 stainless steel
2. Specific gravity .5 min.
3. Mounting attitude horizontal
4. Other flag colors or lettering available. Consult factory.



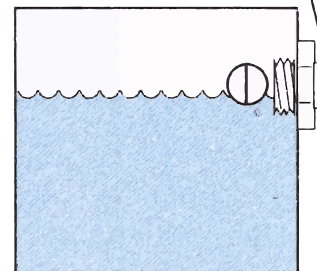
DIMENSIONAL DATA:



Indicator Turns Red When Liquid is Low; White Means Liquid is OK.

Specifications:

Part Number	Housing Material <i>See Note 1</i>	Size	Float	Operating Temperature	Operating Pressure
45127	Brass	2" NPT	316 SST	-40°F to +225°F	900 PSI @72°F
45128	316 SST		<i>See Note 2</i>		

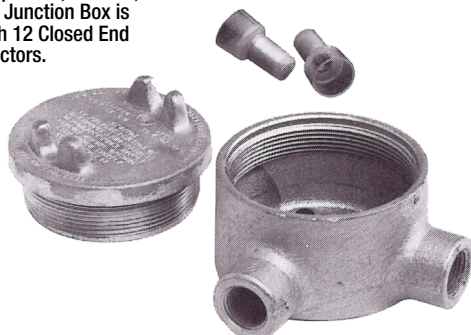


ACCESSORIES

P/N 42755

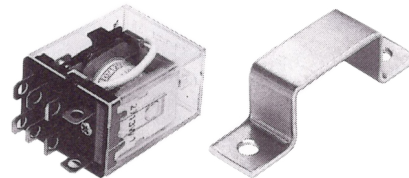
Junction Box

Explosion Proof for Hazardous Areas, Wet Locations, Class I, Group C.D., Class II, Group E.F.G., Class III, and Nema 4. Junction Box is Supplied with 12 Closed End Crimp Connectors.



P/N 42761

Junction box (P/N 42755) with general purpose relay (P/N 42756) and clamp



P/N 42762

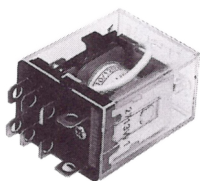
Junction box (P/N 42755) with 6 position terminal strip



P/N 42756

General purpose relay only

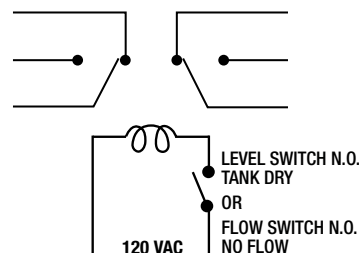
12A DPDT and 8 Fully Insulated Push-On Crimp Terminals



Relay Specifications:

Contact Configuration	DPDT
Coil Voltage	120 VAC 50/60 Hz
Contact Ratings	12A 240 VAC 1/2 HP 120 VAC 10A 24 VDC

RELAY WIRING DIAGRAM SHOWN DE-ENERGIZED



Magnetic Latching Relays 2 Form C Contacts

Use to turn on and off pumps or other equipment and to maintain high and low levels or flows.

	Junction Box (P/N 42755) with latching relay and clamp	Voltage	Latching Relay Only
AC Voltage 50/60 Hz	42764	12 VAC	42770
	42765	24 VAC	42771
	42766	120 VAC	42772
DC Voltage	42767	6 VAC	42773
	42768	12 VAC	42774
	42769	24 VAC	42775

Contact Ratings	Internal Circuit
CSA 7.5 A 240 VAC	
RES 10 A 30 VDC	
General 7.5 A 120 VAC	
Use 5 A 240 VAC	
7.5 A 30 VDC	
1/6 HP 120 VAC	
1/3 HP 240 VAC	

CONVERSION FACTORS

Multiply...	By...	To Obtain...	Multiply...	By...	To Obtain...	Formulas:
Centimeters	0.3937	Inches	Gallons, Imp.	1.20095	U.S. Gals.	$E = \frac{I R}{\sqrt{P R}}$
Cms/Second	1.969	Ft./Min.	Gallons, U.S.	0.83267	Imp. Gals.	
	0.03281	Ft./Sec.	Gallons Water	8.3453	Lbs. Water	
Cubic Cms.	3.531 X 10 ⁻⁵	Cu. Ft.	Gallons/Min.	2.228 X 10 ⁻³	Cu. Ft./Sec.	
	6.102 X 10 ⁻²	Cu. In.		0.06308	Liters/Sec.	$I = \frac{P}{E} \sqrt{\frac{P}{R}}$
	2.642 X 10 ⁻⁴	Gals.	Gal./Min.	8.0208	Cu. Ft./Hr.	
	10 ⁻³	Liters		60	Gal./Hr.	
	2.113 X 10 ⁻³	Pints (Liq.)		.1337	Cu. Ft./Min.	
CC/Hr.	1.057 X 10 ⁻³	Quarts (Liq.)		8.021	Cu. Ft./Hr.	$P = \frac{E^2}{R} I^2$
	.0167	CC/Min.	Gallons Water Min.	3.785	LPM	
	.0000005	Cu. Ft./Min.	Grams	227.118	LPH	
	.00003	Cu. Ft./Hr.		3785.412	CC/Min.	
	.000017	LPM		227,125	CC/Hr.	$R = \frac{E^2}{P} I^2$
	.001	LPH		6.0086	Tons Water/24 Hrs.	
	.000004	Gal./Min.		980.7	Dynes	
	.00026	Gal./Hr.		15.43	Grains	
CC/Min.	60	CC/Hr.		10 ³	Milligrams	$R = \frac{E^2}{P} I^2$
	.000035	Cu. Ft./Min.		0.03527	Oz.	
	.0021	Cu. Ft./Hr.		0.03215	Oz. (Troy)	
	.001	LPM		2.205 X 10 ⁻³	Lbs.	
	.06	LPH	Grams/Cm.	5.600 X 10 ⁻³	Lbs./In.	$R = \frac{E^2}{P} I^2$
	.00026	Gal./Min.	Grams/Cu. Cm.	62.43	Lbs./Cu. Ft.	
	.0159	Gal./Hr.		0.03613	Lbs./Cu. In.	
Cubic Feet	2.832 X 10 ⁴	Cubic Cms.	Gal./Hr.	.0167	Gal./Min.	
	1728	Cu. Inches		.002	Cu. Ft./Min.	$R = \frac{E^2}{P} I^2$
	59.84	Pints (Liq.)		.1337	Cu. Ft./Hr.	
	29.92	Quarts (Liq.)		.063	LPM	
Cu. Ft./Min.	60	Cu. Ft./Hr.		3.785	LPH	
	28.316	LPM		63.069	CC/Min.	$R = \frac{E^2}{P} I^2$
	1699	LPH		3785	CC/Hr.	
	28317	CC/Min.	Grams/Liter	58.417	Grains/Gal.	
	1,699,011	CC/Hr.		8.345	Lbs./1000 Gals.	
	7.481	Gal./Min.		0.062427	Lbs./Cu. Ft.	$R = \frac{E^2}{P} I^2$
	448.831	Gal./Hr.	Kiloliters	10 ³	Liters	
Cubic Ft./Min.	62.43	Lbs. Water/Min.	Lbs. of Water	0.01602	Cu. Ft.	
Cubic Inches	16.39	CC		27.68	Cu. In.	
	5.787 x 10 ⁻⁴	Cu. Ft.		0.1198	Gals.	$R = \frac{E^2}{P} I^2$
	4.329 X 10 ⁻³	Gals.	Lbs. of Water/Min.	2.679 X 10 ⁻⁴	Cu. Ft./Sec.	
	1.639 X 10 ⁻²	Liters	Liters	61.02	Cu. Ins.	
	0.03463	Pints (Liq.)		10 ⁻²	Cu. Meters	
	0.01732	Quarts (Liq.)		1.057	Quarts (Liq.)	$R = \frac{E^2}{P} I^2$
Cu. Ft./Hr.	.0166	Cu. Ft./Min.	Liters/Min.	4.403 X 10 ⁻³	Gals./Sec.	
	.4719	LPM	LPM	60	LPH	
	28.316	LPH		.035	Cu. Ft./Min.	
	471.947	CC/Min.		2.1189	Cu. Ft./Hr.	$R = \frac{E^2}{P} I^2$
	28317	CC/Hr.		1000	CC/Min.	
	.1247	Gal./Min.		60,001	CC/Hr.	
	7.481	Gal./Hr.		.264	Gal./Min.	
Cubic Meters	10 ⁴	CC		15.851	Gal./Hr.	$R = \frac{E^2}{P} I^2$
Feet	30.48	Cms.	LPH	.0166	LPM	
	12	Inches		.00059	Cu. Ft./Min.	
	0.3048	Meters		0.35	Cu. Ft./Hr.	
	1/3	Yards		16.667	CC/Min.	$R = \frac{E^2}{P} I^2$
Ft. of Water	0.02950	Atms.		1000	CC/Hr.	
	0.8826	Ins. Mercury		.004	Gal./Min.	
	0.03048	Kgs./Sq. Cm.		.264	Gal./Hr.	
	62.43	Lbs./Sq. Ft.	Meters/Sec.	196.8	Ft./Min.	$R = \frac{E^2}{P} I^2$
	0.4335	Lbs./Sq. In.		3.281	Ft./Sec.	
Feet/Min.	0.5080	Cms./Sec.	Millimeters	0.1	Cms.	
	0.01667	Ft./Sec.		0.03937	Ins.	
	0.01829	Kms./Hr.		1.805	Cu. In.	$R = \frac{E^2}{P} I^2$
	0.3048	Ms./Min.	Ozs. (Fluid)	0.02957	Liters	
	0.01136	Miles/Hr.		.0690	BAR	
Gallons	3785	Ccs.	PSI	68.95	M BAR	
	231	Cu. Inches		6895	Pa	$R = \frac{E^2}{P} I^2$
	3.785 X 10 ⁻³	Cu. Meters		6.895	KPA	
	8	Pints (Liq.)				
	4	Quarts (Liq.)				

GLOSSARY

A [*Elec.*]: Amp. See "Ampere".

AC [*Elec.*]: (alternating current) Electrical current that reverses direction periodically.

AC Field [*Elec.*]: The space around a magnet or magnetic circuit which is under the influence of magnetic forces.

Actuation [*Elec.*]: To turn on.

Adjustable Set Point: Actuation point that can be field adjusted, usually within a given range.

Alnico Magnet: Aluminum, nickel, and copper alloy magnet.

Ampere [*Elec.*]: (amp) Unit of electrical current.

Arcing [*Elec.*]: An electric current through air or across the surface of an insulator associated with high voltage and usually occurs when a contact is opened, de-energizing an inductive load. Arcing of a contact will limit its life.

Beryllium Copper [*Met.*]: (BeCu) An alloy of copper and beryllium and not more than 3% beryllium.

Bonnet Assembly: The working mechanism in a shuttle type flow switch that contains the magnet and reed switch assembly.

Bulkhead Fitting: Straight thread with nut mounted through an unthreaded hole. Can be used with an O-ring or gasket.

BUNA: A brand of synthetic rubber made by polymerizing or copolymerizing butadiene with another material. Typical use carburtor floats.

Burst Strength [*Mech.*]: A measure of the ability of a material to withstand a given pressure without rupture.

Cable [*Elec.*]: A group of individually insulated conductors in twisted or parallel configuration under common sheath.

Cable Gland: Strain relief with integral waterproof seal.

Calibration: The act of determining by measuring with a standard; i.e., Thomas Products Limited's flow stands are calibrated to the National Bureau of Standards.

Calibration Position: The position of the flow switch at the time of setting the actuation point.

Capacitive Load [*Electromag.*]: The load in which the capacitive reactance exceeds the inductive reactance; the load draws a leading current.

CCM: Cubic centimeter per minute.

Celsius Conversion: See "Conversion Factors".

CFM: Cubic foot per minute

Chemical Compatibility: A harmonious effect between a chemical and the materials with which it comes in contact.

Collars: Tubular float stops equipped with set screws used to limit float travel.

Condensation [*Chem.*]: Transformation of a gas to a liquid.

Conduit Connector: Threaded portion of unit specifically designed for the connection of a flexible conduit or junction boxes, etc.

Crazing [*Eng.*]: Network of fine cracks on or under the surface of a material; i.e., the crazing of certain plastics can be caused by chemical incompatibility.

Crimp on Connectors or Terminals: Male or female electrical components that can be affixed to lead wired by pinching.

Cunife Magnet: Copper, nickel, and iron alloy magnet.

DC [*Elec.*]: (direct current) Electric current which flows in one direction only, as opposed to alternating current.

Deactuation: To turn off.

Dead Band: The range between make and break.

Decreasing Set Point [*Fl. Mech.*]: Actuation set as the flow decreases.

Differential [*Cont. Sys.*]: The difference between make and break operation in a control system.

Displacer: Flow detection device that relies on gravity to return the working mechanism to the inactive position.

DPDT [*Elec.*]: (double-pole, double-throw) Six-terminal switch or relay contact arrangement that simultaneously connects one pair of terminals to either of two other pairs of terminals.

Electrical Conversion Formula: See "Conversion Factors".

Electrical Current Shock: Excessive electrical load; esp. to a reed switch.

Envelope: The total amount of movement including its mean dimension and tolerance.

Explosion Proof: Apparatus enclosed in a case that is capable of both withstanding an explosion of a specified gas or vapor that may occur within it, and preventing the ignition of a specified gas or vapor surrounding the enclosure by sparks, flashes, or explosion of the gas or vapor within, and that operates at such an external temperature that a surrounding flammable atmosphere will not be ignited thereby

Fahrenheit Conversion: See "Conversion Factors".

Fixed Set Point: Factory set non-field-adjustable actuation point.

Flow Indicator: Nonelectrical device that indicates a predetermined amount of flow or the lack thereof.

Flow Switch [*Fl. Mech.*]: Electromechanical device that will make or break an electrical circuit at a given flow rate.

Fluted Stem: The tubing housing the reed switch that the float rides on, having specially shaped grooves along its axis to allow particulates to collect in them. Designed to help eliminate float jamming due to lime deposits.

GLOSSARY

GPM: (gallons per minute) Units of measuring liquid flow.

Grip Rings: Float stops used to limit float travel. Circular split metal rings whose fixation to the stem relies on its own tensile strength alone.

Hermetically Sealed [Eng.]: Air tight seal; i.e. reed switches are hermetically sealed within a glass enclosure to isolate the contacts from the surrounding elements.

Hertz [Phys.]: Unit of frequency cycle per second.

Hirshman Connector: Brand name of quick disconnect electrical interface.

Housing [Eng.]: The body.

Hysteresis [Phys.]: See "Differential".

Increasing Set Point [Fl. Mech.]: Actuation set as the flow increases.

Inductive Load [Elec.]: Alternating load current lags behind the alternating voltage of the load, i.e. coils, transformers, etc.

Interface Float: A float whose specific gravity (s.g.) is adjusted to be buoyant in a higher s.g. liquid, as water 1.0, but will sink in a lower s.g. liquid, as oil.

Intrinsically Safe Barrier: A device which limits the power (energy) which can be delivered from a safe area into a hazardous area.

IPS: Inner pipe size.

J-box: (junction box) Electrical enclosure.

Lamp Load: A load that is of an incandescent lamp; any device which consumes power that is connected to another device or circuit that supplies the power.

Level Indicator: Non-electrical float device that shows liquid level at point of installation.

Level Switch: Electromechanical level detection device that will make or break an electrical connection by the float's rise or fall.

LO: (length overall) Used for stem length on Model 4000/4900/5000 custom level switches, etc.

Locking Wire: Wire or plastic filament used to lock bonnet assembly in place.

Magnetic Field [Electromag.]: Natural and artificial elementary fields or forces found in the vicinity of magnetic bodies or current-carrying medium.

Mating MS Connector: Female connector that interfaces with male pin connector.

Max. Flow Rate: Maximum flow through the flow switch.

Max. PSI: (maximum pounds per square inch) Maximum pressure recommended.

Max. Temp: Maximum temperature recommended.

Mechanical Shock [Mech.]: (impact shock) Forceful collision between two bodies sufficient enough to cause change.

Micron: Unit of measure used in filtration. One micron = millionth meter = .00003937 inches.

Micron Filter: Filter used to help maintain a predetermined amount of purity. Micron denotes minimum size of particulates filtered.

Mounting Attitude: The position in which a unit is mounted or installed; i.e., tank top, tank bottom or side mounted.

M-SB: (monel trim with silver brazed process connections) Available on our marine flow switch.

MS Connector: A male pin electrical connector.

N.C. [Elec.]: Normally closed. Electrical contact in closed condition whose system is inactive.

NEMA: National Electrical Manufacturers Association.

NEMA Rated: Rating or type given by NEMA which denotes a device will meet requirements for a given location or application; i.e., NEMA 4-watertight and dusttight indoor and outdoor, etc.

90° Angle Flow: When in and out ports are at right angles to one another.

N.O. [Elec.]: Normally open. Electrical contact in open condition whose system is inactive.

NPT: National pipe thread (tapered thread) usually designated by nominal pipe size and number of threads per inch.

Ohm [Elec.]: Unit of measurement for resistance and impedance. See "Conversion Factors".

Operating Pressure [Eng.]: The maximum working pressure allowed at that device.

Operating Temperature [Eng.]: The maximum working temperature allowed at that device.

Orifice: A device used to regulate flow through it to accurately achieve a specific set point.

Petcock: A small valve used to drain off excessive waste material; i.e., bleed systems, trapped air.

Ph 15-7 Mo: Basic 300 series stainless steel; 15% chromium, 7% nickel, and 2.5% molybdenum.

Pilot Duty: The rating assigned to a relay or switch that controls the coil of another relay or switch.

Piston: A cylindrically-shaped member housing a magnet which rides in a bore that is displaced by the dynamic force in a flow switch. The displacement will cause either actuation or deactuation, depending on the proximity of the reed switch assembly.

P/N: Part number.

GLOSSARY

Polypropylene: A light weight plastic generally known for its high chemical resistance.

Polysulfone: A high performance thermoplastic known for its high tensile strength, temperature resistance and wide chemical compatibility.

Pressure Drop [*Fl. Mech.*]: The difference in pressure between two points in a flow system.

Proof Load [*Eng.*]: A predetermined test load, greater than the service load.

PSI: (pounds per square inch) Unit of measuring pressure.

PSIG: (pounds per square inch gauge) Unit of measuring pressure above "O" gauge. "O" gauge is equal to 14.7 PS I on the absolute scale.

PVC [*Or. Chem.*]: (polyvinyl chloride) Polymer of vinyl chloride; insoluble in most organic solvents.

Reed Switch [*Electromag.J.*]: A dry switch that has contacts mounted on ferromagnetic reeds hermetically sealed in a glass tube designed for actuation by an external magnetic field.

Repeatability: The percentage measurement derived from accuracy on a control, returning back to its original setting.

Reset Point: See "Reset Point Differential".

Reset Point Differential [*Fl. Mech.*]: The difference between the set point and reset point.

Resistive Load [*Elec.*]: A load whose total reactance is zero, so that the alternating current is in a phase with the terminal voltage.

SCFH [*Fl. Mech.*]: Standard cubic feet per hour of gas flow at specified standard conditions of temperature and pressure.

SCFM [*Fl. Mech.*]: Standard cubic feet per minute of gas flow at a specified standard conditions of temperature and pressure.

Set Point [*Cont. Sys.*]: The actuation or deactuation point at a predetermined flow rate at which the contacts will make or break.

Set Point Accuracy [*Eng.*]: A permissible deviation from a specified value, given in a percent.

Set Point Differential: See "Differential".

Shuttle: Same as piston, except the shuttle housing the magnet rides on a stem instead of in a bore.

Silver Brazed Ports: Process connections with a grooved ring for insertion of a silver brazing alloy.

Slip Ports: Smooth non-threaded process connections allowing for its mating part to be glued in place; i.e., PVC fittings.

Socket Weld Ports: Smooth non-threaded process connections. Bored to accept pipe fittings, etc., and made of material suitable for welding.

Solid State [*Eng.*]: Pertaining to a circuit, device, or system that depends on some combination of electrical, magnetic and optical phenomena within a solid that is usually a crystalline.

Specific Gravity [*Eng.*]: (s.g.) The ratio of the density of a material to the density of some standard material, usually water at a specified temperature.

SST: (stainless steel) Corrosion-resistant alloy.

SSU [*Fl. Mech.*]: (second, saybolt universal) Unit of measuring viscosity; the time in seconds for 60 milliliters of fluid to flow through a capillary tube in a saybolt universal viscosimeter at a given temperature.

SPDT [*Elec.*]: (single-pole, double-throw) A three-terminal switch for relay contact arrangement that connects one terminal to either of two other terminals. Allows for achievement of N.O. or N.C. condition.

SPST [*Elec.*]: (single-pole, single-throw) A two-terminal switch or relay contact arrangement that opens or closes a circuit.

Straight Thread: Uniform screw threads in which its pitch diameter is parallel.

Straight Through Flow: The flow path of a liquid or gas from the in port to the out port is in line to each other.

Stress Crack [*Mech.*]: (metal or plastic) An external or internal crack in a solid body.

Turbulence [*Fl. Mech.*]: (turbulence flow) Motion of fluids in which local velocities and dynamic pressures fluctuate irregularly.

V [*Elec.*]: (volt) The practical unit of electric pressure (voltage). The symbol for voltage is E or V. See "Conversion Factors".

VA [*Elec.*]: (volt amp. or volt- ampere) An electric measurement unit, equal to the product of one volt times one ampere, equivalent to one watt for direct current and a unit of apparent power for alternating current.

VAC [*Elec.*]: Volts alternating current.

VDC [*Elec.*]: Volts direct current.

Viscosity [*Fl. Mech.*]: Internal resistance of a fluid whose impedance against flow rises as its viscosity rises. Can be measured in: 1.) poise (P); 2.) stokes (S); 3.) centipoise (cP); 4.) centistokes (cS); 5.) second saybolt universals (SSU), among others.

Viton: A fluorocarbon elastomer widely used in the making of O-rings. Recognized for its chemical compatibility and higher temperature use for a variety of applications.

Voids: Open passages through which liquid or gas can flow.

W [*Phys.*]: (watts) The unit of power in the meter-kilogram-second system of units, equal to 1 joule per second and equal to the power in a circuit in which a current of one ampere flows across a potential difference of one volt.

Watertight: Sufficiently sealed to prevent water from seeping through.

