

G & L-Series Multifunction Pressure & Temperature Switches



G-Series



L-Series

FEATURES

- *Single setpoint, fixed deadband*
- *Single setpoint, adjustable deadband*
- *Dual setpoint*

Ashcroft® is a supplier of highly reliable switches and controls for industrial and process applications. We stress total value to the customer. We begin with rock-solid designs, matching the most appropriate technology with the safety and reliability requirements of the applications. Materials of construction are specified to the exacting standards of Ashcroft®, and product is built to last in the toughest applications. Our modern, responsive manufacturing facility in Connecticut is supported by an extensive network of stocking distributors and factory sales offices located in virtually every part of the world. Special application assistance is always only a telephone call away.

Ashcroft® pressure and temperature switches are designed for the tough applications where conventional designs often don't measure up. A rugged 316 SS or epoxy-coated aluminum enclosure gives uncompromising protection.

Materials of construction have been selected for long life. A wide variety of precision switch elements, including hermetically sealed contacts for added reliability and safety are available to meet every application requirement. The actuators we use have been proven in more than 40 years of service in the world's plants and mills. Multiple features such as dual setpoints and adjustable deadbands are offered. Special designs are available for fire safety, limit control and other stringent requirements. Ease of use is stressed to improve reliability of the installation.

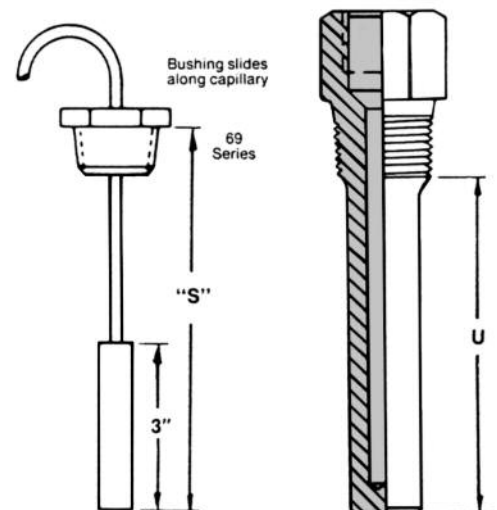
G- and L-Series switches are currently being used successfully in pulp and paper mills, refineries, chemical and petrochemical plants, pharmaceutical plants, dairies, breweries, water and sewage treatment plants, steel mills, and other tough environments. Typical applications are on compressors, pumps, paint spraying equipment, boilers and burners, turbines, reverse osmosis systems, filters and presses.

Thermowells

Thermowells must be used on any application where the stem of the temperature switch may be exposed to pressure, corrosive fluids or high velocity. Additionally, the use of a thermowell permits instrument interchange or calibration check without disturbing or closing down the process.

Ashcroft temperature switches have bulb diameters to match $\frac{3}{8}$ " nominal bore thermowells. The bulbs have a sensitive portion length of $2\frac{1}{4}$ " which can be used with $2\frac{1}{2}$ " "U" dimensioned thermowells or longer. For maximum accuracy, a thermowell "U" dimension should be selected to permit complete immersion of the sensitive portion plus 1" when measuring the temperature of liquids; an extra 3" should be allowed when measuring the temperature of gases.

Thermowell bushings should be used with remote mount temperature switches. We recommend the standard 3" bulb and code 69 Series bushings for use with any thermo-well "U" dimension. A split rubber grommet allows easy installation and "S" dimension adjustment.



G & L-Series Multifunction Pressure & Temperature Switches

Temperature Switches

G- and L-Series temperature switches feature a SAMA Class II vapor pressure thermal system. This system provides quick, accurate response to process temperature changes with negligible ambient temperature effects. This is inherent in the design due to the precise relationship between temperature and

pressure according to the vapor pressure laws. A wide selection of sensing bulb and armored capillary lengths are available. The vapor pressure system design features small bulb sizes, making installation easy and cost-effective.

All models feature ± 1 percent of span set-

point repeatability with very high over-temperature ratings.

These standard designs perform well in applications where shock and vibration could be a problem and should be used with Ashcroft thermowells for bulb protection and ease of installation and maintenance.

TEMPERATURE RANGE SELECTION												
Nominal Range ⁽¹⁾		Max.	Approximate Deadband ⁽²⁾									
			LTA-GTA ⁽³⁾	LTS-GTS ⁽⁴⁾				LTD-GTD ⁽⁴⁾				
		Temp. °F	Switch Element									
°F	°C		J, H	G	J, H	K, F	P	GG	JJ, HH	KK, FF	PP	
-40 to 60	-40 to 16	400	18-90	4.0-10	9.0-18	1.5-3	2-5	4-10	9.0-18	1.5-3	2-5	
0 to 100	-20 to 40	400	30-90	5.0-15	10-30	1.5-5	3-7	5-15	10-30	1.5-4.5	3-7	
75 to 205	20 to 95	400	34-120	6.0-18	10-34	3-5.5	3-8	6-18	10-34	3-5.5	3-8	
150 to 260	65 to 125	400	25-100	3-13	9.0-25	1.5-4	3-7	3-13	9.0-25	1.5-4	3-7	
235 to 375	110 to 190	500	35-130	6-19	10-35	2-5.5	3-8	6-17	10-35	2-5.5	3-8	
350 to 525 ⁽⁵⁾	175 to 275	700	40-165	5-27	15-40	3-7	3.5-11	5-27	15-40	3-7	3.5-11	
500 to 750 ⁽⁵⁾⁽⁶⁾	260 to 400	900	50-200	20-36	36-60	5-10	6-21	20-36	36-60	5-10	6-21	

NOTES:

- Switches may generally be set between 15% and 100% of nominal range on increasing or decreasing temperature. Consult factory for applications where setpoints must be lower.
- All deadbands are given in °F.

3. Deadbands for LTA and GTA are adjustable between the values shown.

4. Deadbands for LTS, GTS, LTD and GTD models are fixed within the range of values shown. Manufacturing and parts variances result in variation from one unit to another.

5. Not available with 2 $\frac{3}{4}$ " stem

6. Available with remote mount thermal system only.

Switches calibrated at 70°F ambient reference.

G & L-Series Multifunction Pressure & Temperature Switches

Pressure & Differential Pressure Switches

G- and L-Series pressure, differential pressure and vacuum switches use two different actuators depending on setpoint requirements. For setpoints between 2 and 3000 psi, the simple, rugged diaphragm- sealed piston actuator is used. This design features high reliability and a choice of actuator seal materials for virtually every application. An optional welded design is also available for setpoints

up to 1000 psi for maximum reliability. This design is available in 316 SS or Monel. Differential pressure models use a unique dual-diaphragm- sealed piston design that features very high static operating pressures and small size.

For setpoints between 4.5 and 150 inches of H₂O, a large diaphragm is used for increased sensitivity in both pressure and differential pressure designs with good choice of

materials of construction.

All standard models feature ± 1 percent of range setpoint repeatability and a minimum of 400 percent of range proof pressures.

These standard designs perform well in applications where shock and vibration could be a problem and may be used with Ashcroft® diaphragm seals in extreme services such as slurries or abrasive process fluids.

PRESSURE/VACUUM SWITCHES												
Nominal Range ⁽¹⁾		Overpressure Ratings		Approximate Deadband (Buna-N Diaphragm) ⁽²⁾								
				LPA-GPA ⁽³⁾	LPS-GPS ⁽⁴⁾				LPD-GPD ⁽⁴⁾			
		Proof psi	Minimum Burst psi	Switch Element								
				J, H	G	J, H	K, F	P	GG	JJ, HH	KK, FF	PP
Vacuum												
30" Hg	-760mm Hg	250	400	6-24	2.5-4	4-6	1-2	1-2.5	3-5.5	4-6.5	1-2	1-2.5
Compound												
30" Hg/15 psi	-760mm Hg/1.0 kg/cm ²	250	400	6-24 3-12	2.5-4 1-2.5	4-6 1-3.5	1-2 0.5-1.5	1-2.5 0.5-2	3-5.5 1.5-3.5	4-6.5 1.5-4	1-2 1-2	1-2.5 1-2
Pressure												
30" H ₂ O	750mm H ₂ O	20	35	4.0-27	1.5-3.5	2.0-4.0	0.5-1.0	0.7-2.0	2.1-4.9	2.8-5.6	0.7-1.4	0.7-2.8
60" H ₂ O	1500mm H ₂ O	20	35	5.0-54	1.5-4	2.5-5.0	0.5-1.4	1.0-2.5	3-5.6	3.5-7.0	0.7-2.0	2-3.5
100" H ₂ O	2500mm H ₂ O	20	35	8.5-90	2.0-5.5	4.0-8.5	1.0-2.0	1.4-3.0	4-7.7	5.6-11.7	1.4-2.8	2-4.2
150" H ₂ O	3750mm H ₂ O	20	35	18-135	5.0-11	10-18	1.5-3.0	2.0-6.0	7.0-16	14-25.1	2.1-4.2	5-9.2
15 psi	1 kg/cm ²	500	1500	2.5-13	1.0-1.5	1.0-2.5	0.5-1.0	0.75-1.5	1.4-2.1	1.4-3.5	.7-1.4	1-1.4
30 psi	2 kg/cm ²	500	1500	3.0-27	1.0-2.8	1.0-3.2	.75-1.5	1-1.8	1.4-5	3-6	1-2.1	1.4-2.5
60 psi	4 kg/cm ²	500	1500	5.0-54	2.0-4.0	2.0-4.5	1.0-2.0	1.0-2.5	3-7	4-8	1.4-2.8	1.4-3.5
100 psi	7 kg/cm ²	1000	3000	10-90	3-6	5.0-10	1.0-2.5	1.4-3.2	7-12	7.0-14	1.4-3.5	3-7
200 psi	14 kg/cm ²	1000	3000	18-180	7-14	10-18	1.0-4.0	5.0-8.0	10-23	14-25	1.4-5.6	7.0-11.2
400 psi	28 kg/cm ²	2400	3000	45-360	16-30	16-45	4.0-8.0	5.0-15	22-42	22-63	5.6-11.2	7.0-21
600 psi	42 kg/cm ²	2400	3000	75-540	16-50	20-75	5.0-15	6.0-25	22-70	28-105	7.0-21	8.0-35
1000 psi	70 kg/cm ²	12,000 ⁽⁷⁾	14,000	160-900	75-130	50-160	7.0-30	10-85	70-180	70-223	10-42	14-119
2000 psi	140 kg/cm ²	12,000	14,000	350-1800	150-200	150-350	20-50	25-110	209-279	209-488	28-70	35-154
3000 psi	210 kg/cm ²	12,000	14,000	400-2600	180-250	180-400	30-70	30-190	251-349	251-558	42-98	42-226

DIFFERENTIAL PRESSURE SWITCHES ⁽⁶⁾												
Nominal Range ⁽¹⁾		Overpressure Ratings		Approximate Deadband (Buna-N Diaphragm) ^(5,2)								
				LPA-GPA ⁽³⁾	LPS-GPS ⁽⁴⁾				LPD-GPD ⁽⁴⁾			
		Static psi	Minimum Proof psi	Switch Element								
				J, H	G	J, H	K, F	P	GG	JJ, HH	KK, FF	PP
Differential Pressure												
30" H ₂ O	750mmH ₂ O	5.4	21.6	4.0-27	1.5-3.5	2.0-4.0	0.5-1.0	0.7-2.0	2.1-4.9	2.8-5.6	0.7-1.4	0.7-2.8
60" H ₂ O	1500mmH ₂ O	5.4	21.6	5.0-54	1.5-4.0	2.5-5.0	0.5-1.4	1.0-2.5	2.5-6	3.5-7.0	0.7-2.0	2-3.5
100" H ₂ O	2500mmH ₂ O	5.4	21.6	8.5-90	4.0-5.5	4.0-8.5	1.0-2.0	1.4-3.0	5.6-7.7	5.6-11.9	1.4-2.8	2-4.2
150" H ₂ O	3750mmH ₂ O	5.4	21.6	18-135	5.0-11	10-18	1.5-3.0	2.0-6.0	7.0-15.4	14-25.2	2.1-4.2	2.8-8.4
30 psid	2 kg/cm ²	500	2000	3.0-27	1.0-2.5	1.0-3.0	1.0-1.5	1.0-1.8	2-5	3-6	1-2.1	1.4-2.4
60 psid	4 kg/cm ²	500	2000	5-54	2-4	2-4.5	1-2	1-2.5	3-7	4-8	1.4-2.8	1.4-3.5
200 psid	14 kg/cm ²	1000	4000	18-180	10-15	10-18	1.0-4.0	5.0-8.0	14-23	14-30	1.4-5.6	7.0-11.2
400 psid	28 kg/cm ²	1000	8000	45-360	16-30	16-45	4.0-8.0	5.0-15	22-42	22-63	5.6-11	7.0-21

NOTES:

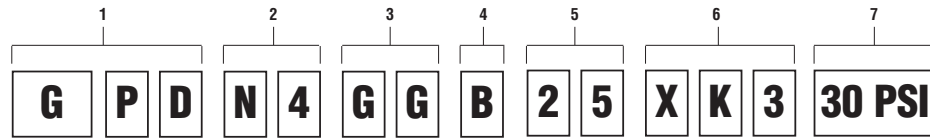
1. Switches may generally be set between 15% and 100% of nominal range on increasing or decreasing pressure. Consult factory for applications where setpoints must be lower.

2. All deadbands are give The nominal range column. Deadbands shown are for switches with Buna N diaphragm. Approximate deadbands for optional diaphragms:
 Viton: Multiply Buna N value by 1.4
 Teflon: Multiply Buna N value by 1.2
 Stainless Steel: Multiply Buna N value by 1.7
 Monel: Multiply Buna N value by 1.7

3. Deadbands for LPA, LDA, GPA, and GDA are adjustable between the values shown for all diaphragm materials.
 4. Deadbands for LPS, LPD, LDS, LDD, and GPS, GPD, GDS, GDD models are fixed within the range of values shown.
 5. Deadbands given are for zero static working pressure.
 6. Psid models cannot be used in vacuum applications.
 7. Proof pressure for stainless steel diaphragms is 4000 psi.

G & L-Series Multifunction Pressure & Temperature Switches

G- and L-SERIES PRESSURE SWITCH AND DIFFERENTIAL PRESSURE SWITCH ORDERING INFORMATION



1 – FUNCTION	
GPS/LPS	Pressure control, single setpoint, fixed deadband.
GPA/LPA	Pressure control, single setpoint, adjustable deadband.
GPD/LPD	Pressure control, two independently adjustable setpoints, fixed deadband.
GDS/LDS	Differential pressure control, single setpoint, fixed deadband.
GDA/LDA	Differential pressure control, single setpoint, adjustable deadband.
GDD/LDD	Differential pressure control, two independently adjustable setpoints, fixed deadband.

2 – ENCLOSURE	
N4	NEMA 4, 4X
	L-Series: Epoxy Coated, Die Cast Aluminum, IP66
	G-Series: 316 SS IP65

3 – SWITCH ELEMENTS FOR GPA/LPA, GDA/LDA CONTROLS			
Code	Description/Maximum Electrical Ratings UL/CSA listed		
H	General purpose	10A, 125/250 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc	
J	Hermetically sealed switch, general purpose	11A, 125/250 Vac 5A, 30 Vdc	

SWITCH ELEMENTS FOR FOR GPD/LPD, GPS/LPS, LDD/GDD & LDS/GDS CONTROLS			
Code	Switch elements UL/CSA listed		
Single	Dual		
K ⁽⁴⁾	KK	Narrow deadband	15A, 125/250 Vac
F ⁽⁴⁾	FF	Sealed environment proof	15A, 125/250 Vac
G ⁽⁵⁾	GG	General purpose	15A, 125/250/480 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
P ⁽³⁾	PP	Hermetically sealed switch, narrow deadband	5A, 125/250 Vac
J	JJ	Hermetically sealed switch, general purpose	11A, 125/250 Vac 5A, 30 Vdc
W	WW	Ammonia service	15A, 125/250 Vac
C	CC	Heavy duty ac	22A, 125/250 Vac
S ⁽¹⁸⁾		Heavy duty dc	10A, 125 Vac or dc 1/2 HP, 125 Vac or dc
Y	YY	High temp. 300°F	15A, 125/250 Vac
U ⁽¹⁷⁾	UU ⁽¹⁷⁾	Manual reset trip on increasing	15A, 125/250 Vac
E ⁽¹⁷⁾	EE ⁽¹⁷⁾	Manual reset trip on decreasing	15A, 125/250 Vac
L	LL	Hermetically sealed switch, gold contacts	5A, 125/250 Vac
M	MM	Low level, gold contacts	1A, 125/250 Vac

4 – ACTUATOR SEAL ⁽¹⁾				
Code & Material	Process Temp. (2) Limits °F	Range		
		Vac °H ₂ O	0-600 psi	1000 psi
B-Buna-N	0 to 150	•	•	•
V-Viton	20 to 300	•	•	•
T-Teflon	0 to 150	•	•	•
S-St.St ⁽¹³⁾	0 to 300		•	•
P-Monel ⁽¹³⁾	0 to 300		•	

7 – NOMINAL RANGE
See page 3

- NOTES:**
- These items are wetted by process fluid.
 - Ambient operating temperature limits -20 to 150°F, all styles. Setpoint shift of ±1% of range per 50°F temperature change is normal. Switches calibrated at 70°F reference.
 - Estimated dc rating, 2.5A, 28 Vdc (not UL listed).
 - Estimated dc rating, 4A, 28 Vdc (not UL listed).
 - Not UL listed at 480 Vac.
 - Standard on G Series °H₂O ranges
 - Supply static pressure for D/P switches.
 - Stainless steel diaphragm only.
 - Not available with Buna-N diaphragm.
 - Available with GPS/LPS and GDS/LDS models.
 - LDS, Buna N and Viton diaphragm only.
 - LPS, stainless steel diaphragm only.
 - All welded available on pressure models only.
 - Order switch and 15-320SX-02T CG seal.
 - Order switch and 20-320SX-02T CG seal.
 - Not available for temperature ranges.
 - Available on L-Series only.
 - Not available with dual setpoints.

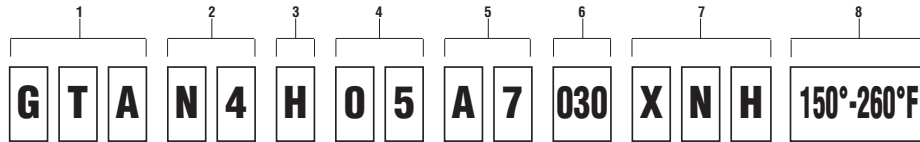
5 – PRESSURE CONNECTION ⁽¹⁾	
Order Code	Description
25	¼ NPT Female Standard on Pressure and D/P
06	¼ NPT Female and ½ NPT Male Combination Pressure Only
07	½ NPT Female

6 – G-, L-SERIES PRESSURE SWITCH OPTIONS							
Code	Description	Available Series		Pressure		Differential Pressure	
		G	L	psi	°H ₂ O	psid	°H ₂ O
XCH	Chained Cover	•	•	•	•	•	•
XFP	Fungus Proof	•	•	•	•	•	•
XFS⁽⁷⁾	Factory-Adjusted Setpoints	•	•	•	•	•	•
XG5⁽¹¹⁾	Gas/Oil UL Limit Control to 150 °H ₂ O LDS only		•			•	
XG6⁽¹³⁾	Gas/Oil UL Limit Control to 600 psi LPS only		•	•			
XG8⁽¹²⁾	Steam Limit Control to 300 psi		•	•			
XG9⁽⁸⁾	Fire Safe Actuator High Operating Pressure for H2O Ranges:		•	•			
XHX	40 PSI Static (Pressure and D/P) 100 PSI Proof (Pressure) 160 PSI Proof (D/P)	•	•		•	•	
XJL	¾" to ½" Reducing Bushing	•	•	•	•	•	•
XK3	Terminal Blocks	•	•	•	•	•	•
XNH	Tagging Stainless Steel	•	•	•	•	•	•
XPK	Pilot Lights	•	•	•	•	•	•
XPM	¾" Sealed Conduit Connection with 16" Lead Wires	•	•	•	•	•	•
XTA⁽⁶⁾	316SS Pressure Connection for °H ₂ O Ranges	•	•		•		•
XUD⁽⁵⁾	316SS Pressure Connection for psid Ranges	•	•			•	
X2C⁽¹⁰⁾	DPDT with Single Setpoint Adjustment	•	•	•	•	•	•
X6B⁽⁹⁾	Cleaned for Oxygen Service	•	•	•		•	
XFM⁽¹⁶⁾	FM Approval	•	•	•	•	•	•
X3A	1½" Sanitary Seal with Glycerin Fill ⁽¹⁴⁾	•	•				
	2" Sanitary Seal with Glycerin Fill ⁽¹⁵⁾	•	•		•		
XHS	High Static Operating Pressure for PSI Range D/P	•	•			•	

Additional options available, consult your Ashcroft® representative.

G & L-Series Multifunction Pressure & Temperature Switches

G- and L-SERIES TEMPERATURE SWITCHES ORDERING INFORMATION



1 – FUNCTION
GTS/LTS - Temperature Control, Single Setpoint, Fixed Deadband
GTA/LTA - Temperature Control, Single Setpoint, Adjustable Deadband
GTD/LTD - Temperature Control, Two Independently Adjustable Setpoints, Fixed Deadband

2 – ENCLOSURE
N4 - NEMA 4, 4X
L-Series: Epoxy Coated, Die Cast Aluminum, IP66
G-Series: 316 SS IP65

3 – SWITCH ELEMENTS FOR GTA/LTA CONTROLS		
Code	Description/Maximum Electrical Ratings UL/CSA listed	
H	General purpose	10A, 125/250 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
J	Hermetically sealed switch, general purpose	11A, 125/250 Vac 5A, 30 Vdc

SWITCH ELEMENTS FOR FOR GTD/LTD & GTS/LTS CONTROLS			
Code		Switch elements UL/CSA listed	
Single	Dual		
K ⁽⁴⁾	KK	Narrow deadband	15A, 125/250 Vac
F ⁽⁴⁾	FF	Sealed environment proof	15A, 125/250 Vac
G ⁽⁵⁾	GG	General purpose	15A, 125/250/480 Vac 1/2A, 125 Vdc 1/4A, 250 Vdc
P ⁽³⁾	PP	Hermetically sealed switch, narrow deadband	5A, 125/250 Vac
J	JJ	Hermetically sealed switch, general purpose	11A, 125/250 Vac 5A, 30 Vdc
W	WW	Ammonia service	15A, 125/250 Vac
C	CC	Heavy duty ac	22A, 125/250 Vac
S ⁽⁶⁾		Heavy duty dc	10A, 125 Vac or dc 1/2 HP, 125 Vac or dc
Y	YY	High temp. 300°F	15A, 125/250 Vac
U ⁽⁷⁾	UU ⁽⁷⁾	Manual reset trip on increasing	15A, 125/250 Vac
E ⁽⁷⁾	EE ⁽⁷⁾	Manual reset trip on decreasing	15A, 125/250 Vac
L	LL	Hermetically sealed switch, gold contacts	5A, 125/250 Vac
M	MM	Low level, gold contacts	1A, 125/250 Vac

4 – LINE LENGTH ⁽⁴⁾		
DIRECT MOUNT		
Order Code	Line Length ft	Style
00	Not Applicable	Rigid
REMOTE MOUNT		
05	5	Capillary with
10	10	Armor
15	15	(Std.)
20	20	
25	25	

5 – THERMAL SYSTEM SELECTION	
LINE MATERIAL	
Direct Mount	
Order Code	Description
	No entry required for direct mount
Remote Mount	
A7	SS Armor (Std.)

6 – BULB LENGTH SELECTION ⁽⁵⁾		
DIRECT MOUNT		
Order Code	"S" Dimension	Minimum Thermowell "U" Dimension
027	23/4"	—
040	4"	2 1/2"
060	6"	4 1/2"
090	9"	7 1/2"
120	12"	10 1/2"
REMOTE MOUNT		
030	3"	2 1/2"

7 – G- & L-SERIES TEMP. SWITCH OPTIONS	
Code	Description
XCH	Chained Cover
XFP	Fungus Proof
XFS	Factory Adjusted Setpoints
XJL	3/4" to 1/2" Reducing Bushing
XK3	Terminal Blocks
XNH	Tagging Stainless Steel
XPK	Pilot Lights, L-Series
XPM	3/4" Sealed Conduit Connection with 16" Lead Wires
X2C ⁽⁶⁾	DPDT with Single Setpoint Adjustment
XBX	69 Series Bushing for Thermowell Systems, 1/2 Male NPT

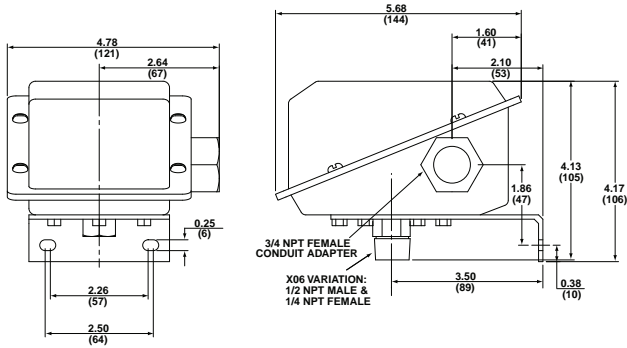
8 – STANDARD TEMPERATURE RANGE
See page 2

NOTES:
1. Estimated dc rating, 2.5A, 28 Vdc (not UL listed)
2. Estimated dc rating, 0.4A, 120 Vdc (not UL listed)
3. Not UL listed at 480 Vac
4. Additional line lengths available, call factory.
5. Additional bulb lengths available, call factory.
6. Available with LTS and GTS models only.
7. Available on L-Series only.
8. Not available with dual setpoints.

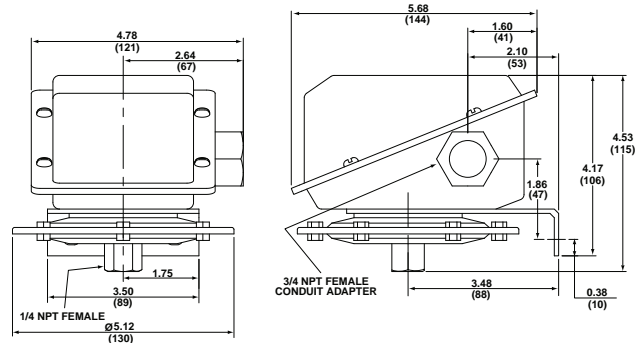
G & L-Series Multifunction Pressure & Temperature Switches

Dimensions – G-Series

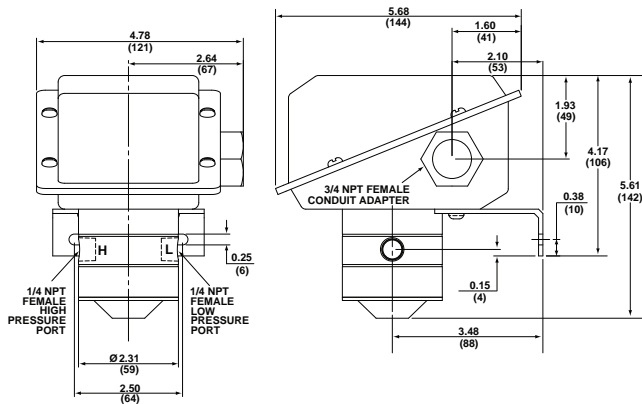
Pressure Switch – psi Ranges



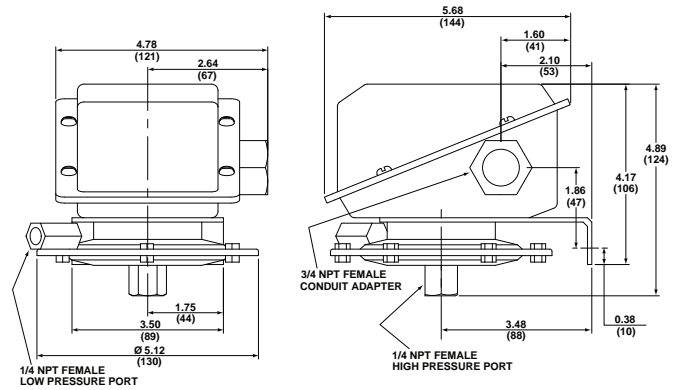
Pressure Switch – Inches Of Water Ranges



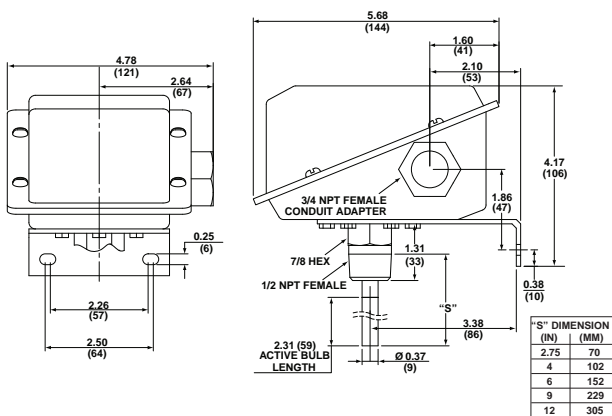
Differential Pressure Switch – psi Differential Ranges



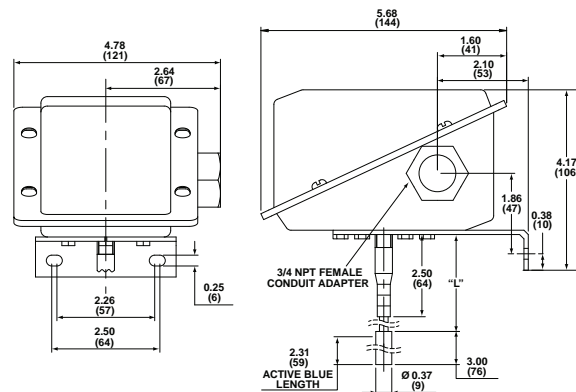
Differential Pressure Switch – Inches Of Water Ranges



Temperature Switch – Direct Mount



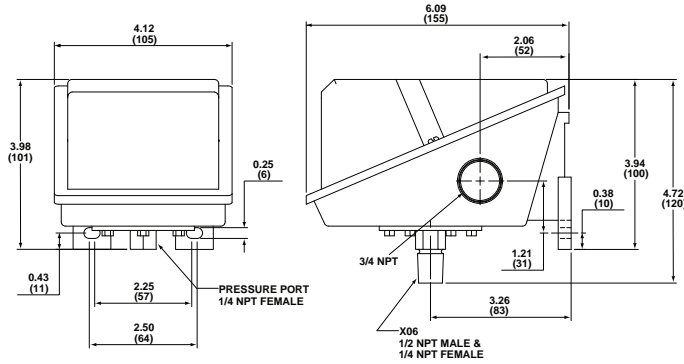
Temperature Switch – Remote Mount



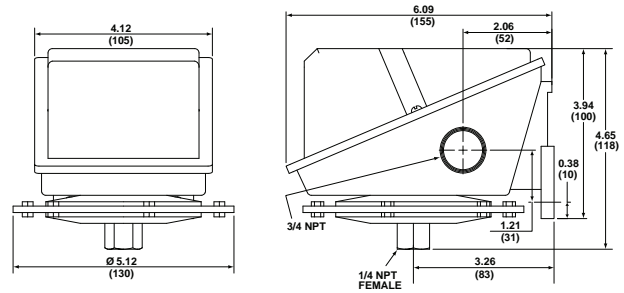
G & L-Series Multifunction Pressure & Temperature Switches

Dimensions – L-Series

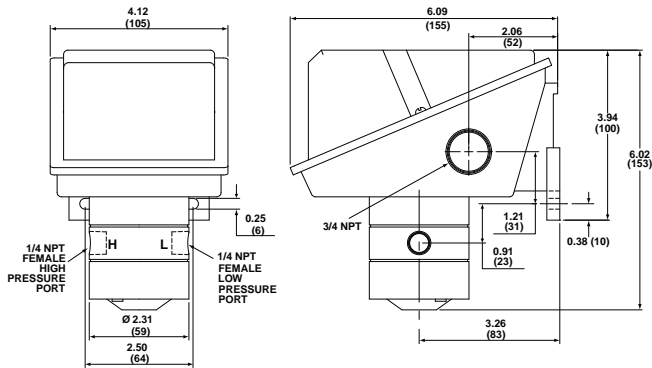
Pressure Switch – psi Ranges



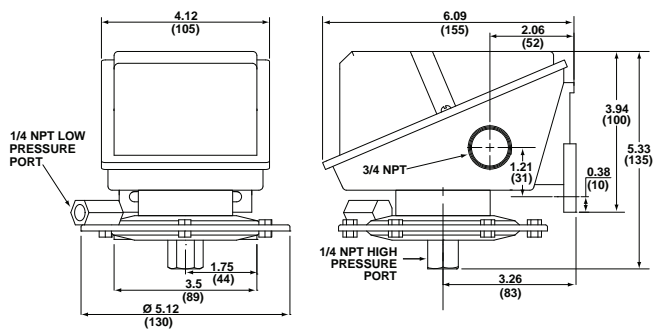
Pressure Switch – Inches Of Water Ranges



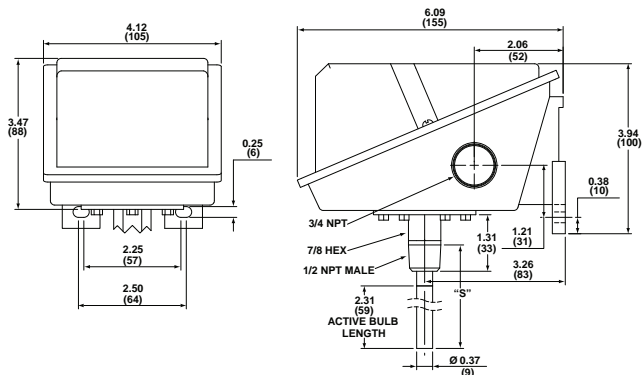
Differential Pressure Switch – psi Differential Ranges



Differential Pressure Switch – Inches Of Water Ranges



Temperature Switch – Direct Mount



Temperature Switch – Remote Mount

