



Pressure, Flow & Liquid Level Products for Aerospace & Military Uses



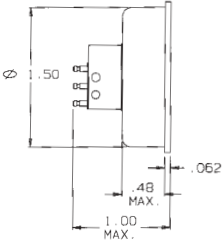
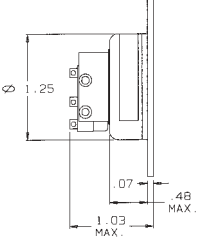
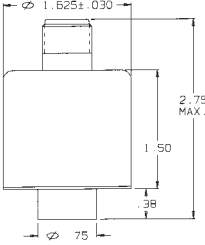
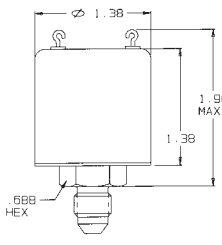
P R E C I S I O N
S E N S O R S

Altitude Switches



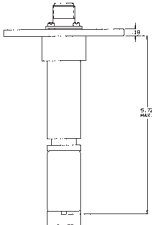
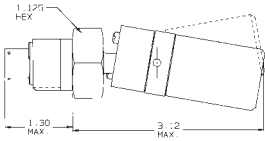
PRECISION SENSORS

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MODEL NUMBER	A45C	A37C	E45C	E37C
Medium	Air or Inert Gas	Air or Inert Gas	Air or Inert Gas	Air or Inert Gas
Type	Factory Set	Factory Set	Factory Set	Factory Set
Available Settings	0.2 to 20 psia	2 to 30 psia	0.2 to 20 psia	2 to 30 psia
Actuation Value	0.15 to 0.8 psia	0.3 to 1.0 psia	0.15 to 0.8 psia	0.3 to 1.0 psia
Repeatability	+/- 0.1 psia +0.5% of setting	+/- 0.2 psia +0.5% of setting	+/- 0.1 psia +0.5% of setting	+/- 0.2 psia +0.5% of setting
Proof Pressure	20 psia	30 psia	20 psia	30 psia
Burst Pressure			75 psia	100 psia
Operating Temp. Range	-65 to 160F	-65 to 160F	-65 to 160F	-65 to 160F
Electrical Rating	Silver Contacts: 5A @ 250VAC, 5A Res./3A Ind. @ 28 VDC Gold Contacts: 1A Res./5A Ind. @ 28 VDC	Silver Contacts: 5A @ 250VAC, 5A Res./3A Ind. @ 28 VDC Gold Contacts: 1A Res./5A Ind. @ 28 VDC	Silver Contacts: 5A @ 250VAC, 5A Res./3A Ind. @ 28 VDC Gold Contacts: 1A Res./5A Ind. @ 28 VDC	Silver Contacts: 5A @ 250VAC, 5A Res./3A Ind. @ 28 VDC Gold Contacts: 1A Res./5A Ind. @ 28 VDC
Construction & Wetted Materials	Ni-Span-C Capsule sensor Aluminum housing Electrical switch	Ni-Span-C Capsule sensor Aluminum housing Electrical switch	Ni-Span-C Capsule sensor Aluminum housing Electrical switch	Ni-Span-C Capsule sensor Aluminum housing Electrical switch
Media Connection	None (Ambient sensor)	None (Ambient sensor)	MS fittings	MS fittings
Electrical Connection	Solder terminals Free leads	Solder terminals Free leads	Solder hooks Mil connectors	Solder hooks Mil connectors
Typical Weight	0.08 lbs	0.063 lbs	0.22 lbs	0.14 lbs
Options	30 psia proof	Proof to 120 psia Dual switches	Momentary contacts	Momentary contacts
Warranty	1.5 Years	1.5 Years	1.5 Years	1.5 Years
Dimensions				

Liquid Level Switches

	
L14F	L16H
Liquid	Liquid
Factory Set	Factory Set
Up to 12"	Consult Factory
Approx 0.1"	Consult Factory
Consult Factory	Consult Factory
130 psig	5000 psig
-65 to 160F	-65 to 160F
Up to 0.5 amp or 10 watts res. @ 28 VDC	Up to 0.5 amp. or 10 watts res. @ 28 VDC
Magnetic reed switch Al, SS, Buna-N or Teflon float	Magnetic reed switch Al, SS or Nylon float
Top or Bottom mount	Side mount Flange, Threaded
Free leads Modular connector	Free leads Modular connector
Length dependent	0.2 lbs
High pressure High Temp.	High pressure
1.5 Years	1.5 Years
	

Multi-Function Products:



- Pressure
- Temperature
- Dual Flow
- Check Valve



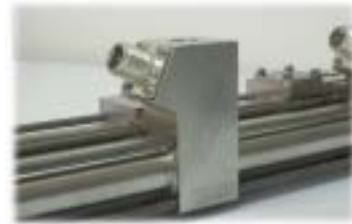
Applications include control and monitor of:

- Cabin Air Thrust
- Antilock Brake Valve
- Thrust Reverse Valve
- Environmental Control
- Boot Strap Hydraulics
- Engine Oil Pressure
- Aircraft Hydraulics
- Fuel Level & Fuel Flow
- Anti-Icing System
- Engine Bleed Air
- Filters
- Airspeed
- Altitude
- Fuel Pressure
- Coolant Flow

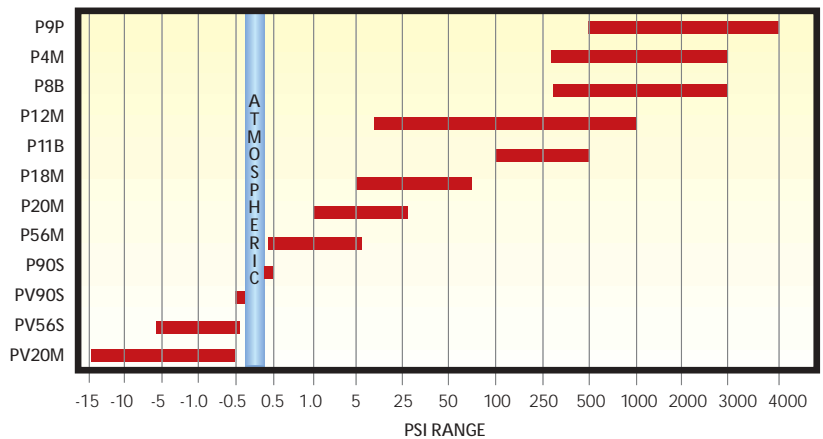
Custom Manifolds:



- Flow Indication
- Flow Regulation
- Temperature Sensing
- Pressure Indication
- Quick Disconnect



Gauge Pressure Selection Chart



Definitions:

- Absolute Pressure Switch:** a switch designed to actuate at points referenced to absolute zero
- Altitude Switch:** an absolute pressure switch with actuation points referenced as a distance of altitude
- Gauge Pressure Switch:** a switch designed to actuate at points referenced to atmospheric pressure
- Differential Pressure Switch:** a switch that detects variations in a fixed difference between two pressures
- Vacuum Switch:** a switch designed to actuate at a pressure below ambient (pressure of the surrounding atmosphere)
- Actuation Value:** the difference in value between the switch point on increasing pressure and decreasing pressure
- Proof Pressure:** the maximum pressure that can be applied without damage or calibration shift

Gauge Pressure Switches







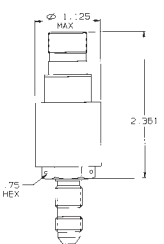
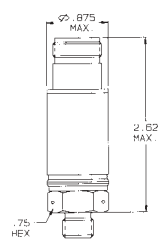
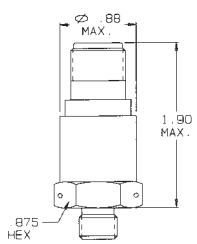
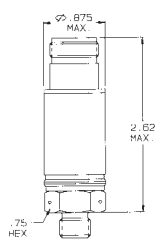
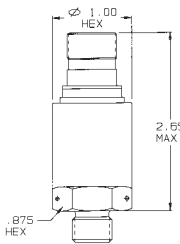
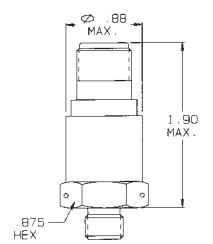
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MODEL NUMBER	PV20M	PV56M	PV90S/P90S	P56M	P20M
Medium	Gas or Liquid	Gas	Gas	Gas or Liquid	Gas or Liquid
Type	Factory Set	Factory Set	Factory Set	Factory Set	Factory Set
Available Settings	0.5 to 14 psiv	0.3 to 6 psiv	0.04 to 0.5 psiv/psig	0.25 to 6.0 psig	1.0 to 30 psig
Actuation Value	0.25 psiv +5% of setting	0.2 psiv +5% of setting	0.01 psiv/psig +2% of setting	0.2 psig +5% of setting	0.3 psig +7% of setting
Repeatability	+/- 0.1 psiv +2% of setting	+/- 0.05 psiv +3% of setting	+/- 0.005 psiv/psig +1% of setting	+/- 0.05 psig +3% of setting	+/- 0.1 psig +2% of setting
Proof Pressure	100 psig	up to 15 psig	2 psiv/psig	200 psig	200 psig
Burst Pressure	500 psig	500 psig	10 psig	500 psig	1000 psig
Operating Temp. Range	-65 to 250F	-65 to 160F	-65 to 160F	-65 to 160F	-65 to 250F
Electrical Rating	Silver Contacts: 5A @ 250VAC, 5A Res./3A Ind. @ 28 VDC Gold Contacts: 1A Res./5A Ind. @ 28 VDC	Silver Contacts: 5A @ 250VAC, 5A Res./3A Ind. @ 28 VDC Gold Contacts: 1A Res./5A Ind. @ 28 VDC	Silver Contacts: 3A @ 250VAC,	Silver Contacts: 5A @ 250VAC, 5A Res./3A Ind. @ 28 VDC Gold Contacts: 1A Res./5A Ind. @ 28 VDC	Silver Contacts: 5A @ 250VAC, 5A Res./3A Ind. @ 28 VDC Gold Contacts: 1A Res./5A Ind. @ 28 VDC
Construction & Wetted Materials	Polyimide Diaphragm, Elastomer seal, Aluminum or SS	Silicone Diaphragm, Elastomer seal, Aluminum	Silicone Diaphragm, Aluminum	Polyimide Diaphragm, Elastomer seal, Aluminum	Polyimide Diaphragm, Elastomer seal, Aluminum or SS
Media Connection	MS fittings Pipe fittings	MS fittings Pipe fittings	MS fittings Barb fittings	MS fittings Pipe fittings	MS fittings Pipe fittings
Electrical Connection	MS connectors Free leads	MS connectors Free leads	Terminal blades	MS connectors Free leads	MS connectors Free leads
Typical Weight	0.20 lbs	0.37 lbs	0.6 lbs	0.37 lbs	0.3 lbs
Options	Environmental seal Hermetic seal High Temp	Hermetic seal High Temp Panel mount	Custom fittings Panel mount	Hermetic seal High Temp Panel mount	Environ. or Herm. seal, dual switch High Temp
Warranty	1.5 Years	1.5 Years	1.5 Years	1.5 Years	1.5 Years
Dimensions					

Gauge Pressure Switches

P18M	P11B	P12M	P8B	P6P	P4M
					
Gas or Liquid	Gas or Liquid	Gas or Liquid	Gas or Liquid	Liquid	Gas or Liquid
Factory Set	Factory Set	Factory Set	Factory Set	Factory Set	Factory Set
5 to 60 psig	100 to 500 psig	15 to 1000 psig	300 to 3000 psig	400 to 5000 psig	300 to 3000 psig
1 psig +9% of setting	10 psig +4% of setting	2 psig +10% of setting	20 psig +5% of setting	100 psig +5% of setting	20 psig +12% of setting
+/- 0.5 psig +2% of setting	+/- 2 psig +2% of setting	+/- 2 psig +2% of setting	+/- 5 psig +2% of setting	+/- 50 psig +1.5% of setting	+/- 50 psig +2% of setting
500 psig	1000 psig	4500 psig	5000 psig	7500	6000 psig
1500 psig	5000 psig	7500 psig	7500 psig	10000 psig	10000 psig
-65 to 250F	-65 to 250F	-65 to 250F	-65 to 250F	-65 to 250F	-65 to 250F
Silver Contacts: 5A @ 250VAC, 5A Res./3A Ind. @ 28 VDC Gold Contacts: 1A Res./5A Ind. @ 28 VDC	Silver Contacts: 5A @ 250VAC, 5A Res./3A Ind. @ 28 VDC Gold Contacts: 1A Res./5A Ind. @ 28 VDC	Silver Contacts: 5A @ 250VAC, 5A Res./3A Ind. @ 28 VDC Gold Contacts: 1A Res./5A Ind. @ 28 VDC	Silver Contacts: 5A @ 250VAC, 5A Res./3A Ind. @ 28 VDC Gold Contacts: 1A Res./5A Ind. @ 28 VDC	Silver Contacts: 5A @ 250VAC, 5A Res./3A Ind. @ 28 VDC Gold Contacts: 1A Res./5A Ind. @ 28 VDC	Silver Contacts: 5A @ 250VAC, 5A Res./3A Ind. @ 28 VDC Gold Contacts: 1A Res./5A Ind. @ 28 VDC
Polyimide Diaphragm, Elastomer seal, Aluminum or SS	316 SS Bellows, 300 series SS	Polyimide Diaphragm, Elastomer seal, Aluminum or SS	316 SS Bellows, 300 series SS	SS piston, Elastomer seal, Aluminum or SS	Polyimide Diaphragm, Elastomer seal, Aluminum or SS
MS fittings Pipe fittings	MS fittings	MS fittings Pipe fittings	MS fittings Custom fittings	MS fittings Custom fittings	MS fittings Custom fittings
MS connectors Free leads	MS connectors	MS connectors Free leads	MS connectors	MS connectors	MS connectors Free leads
0.23 lbs	0.3 lbs	0.18 lbs	0.3 lbs	0.22 lbs	0.2 lbs
Environmental seal Hermetic seal High Temp	Environmental seal Hermetic seal High Temp	Environmental seal Hermetic seal High Temp	Environmental seal Hermetic seal High Temp	Hermetic seal Dual switches High Temp	Environmental seal Hermetic seal High Temp
1.5 Years	1.5 Years	1.5 Years	1.5 Years	1.5 Years	1.5 Years
					

Flow Switches

				
V9F	V10F	V21F	V22F	V121F
Liquid	Liquid	Liquid	Liquid	Liquid
Factory Set	Factory Set	Factory Set	Factory Set	Factory Set
0.2 to 2 gpm	0.2 to 3 gpm	1.0 to 6 gpm	1.0 to 10 gpm	5 to 20 gpm
0.1 gpm +10% of setting	Min. 0.1 gpm or +10% of setting	Min. 0.25 gpm or +10% of setting	Min. 0.15 gpm or +10% of setting	+10% of setting
+/- 0.05 gpm +5% of setting	Min. +/- .05 gpm or +/- 5% of setting	Min. +/- .05 gpm or +/- 5% of setting	Min. +/- .05 gpm or +/- 3% of setting	+/- 0.3 gpm +3% of setting
3000 psig	1000 psig	150 psig	150 psig	150 psig
4500 psig	4500 psig	300 psig	300 psig	300 psig
-40 to 165F	-40 to 165F	-40 to 250F	-40 to 250F	-40 to 250F
Up to 0.5 amp or 10 watts res. @ 28 VDC	Up to 0.5 amp or 10 watts res. @ 28 VDC	Silver Contacts: 5A @ 250VAC, 5A Res./3A Ind. @ 28 VDC Gold Contacts: 1A Res./ .5A Ind. @ 28 VDC	Silver Contacts: 5A @ 250VAC, 5A Res./3A Ind. @ 28 VDC Gold Contacts: 1A Res./ .5A Ind. @ 28 VDC	Silver Contacts: 5A @ 250VAC, 5A Res./3A Ind. @ 28 VDC Gold Contacts: 1A Res./ .5A Ind. @ 28 VDC
Magnetic sensor Aluminum or SS	Magnetic sensor Aluminum or SS Elastomer seal	Vane sensor Aluminum, SS or Brass Elastomer seal	Vane sensor Aluminum, SS or Brass Elastomer seal	Vane sensor Aluminum, SS or Brass Elastomer seal
MS fittings Pipe fittings	MS fittings Pipe fittings	MS fittings Pipe fittings	MS fittings Pipe fittings	MS fittings Pipe fittings
Free leads Modular connector	Free leads Modular connector	Mil connectors Solder hook	Mil connectors Solder hook	Mil connectors Solder hook
0.3 lbs	0.3 lbs	0.47 lbs	0.6 lbs	0.95 lbs
High Temp	High Temp Check valve	High pressure High Temp	High pressure High Temp	High pressure High Temp
1.5 Years	1.5 Years	1.5 Years	1.5 Years	1.5 Years
				

Citation Excel photo courtesy of Cessna Aircraft Company.

F35C and F117 photos courtesy of Lockheed Martin Aeronautics Company.



**UNITED ELECTRIC
CONTROLS**

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