

The E1S and E1H are general purpose Dia-Seal Piston Switches that combine the accuracy of a diaphragm switch with the long life and high pressure capabilities of a piston switch.

The E1S are stripped (no housing) models, well suited for applications with the following requirements: compact, economical, ranges from 2.5 to 500 psi.

The E1H are housed models, well suited for applications with the following requirements: compact, economical, NEMA 4 housing; screw terminals on limit switch; high/low limit control; ranges from .5 to 500 psi

Features

- Superior resolution
- Long life
- Easy setpoint adjustment
- Ideal for pressure or vacuum applications
- NEMA 1, 3 & 4, IP65
- Stripped and housed versions available

Applications

- Medical equipment
- Pump & compressor monitoring
- Air proving in HVAC systems
- Irrigation systems
- Engine monitoring
- Machine tools
- General industrial applications
- Metal working
- Food & beverage

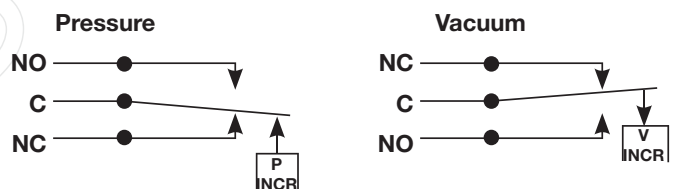


General Specifications*

Accuracy:	± 2% of the adjustable range
Switch: Type:	Single pole double throw (SPDT) snap action; single circuit
Rating:	Class H limit switch: 10 amps @ 125/250 VAC; 3 amps @ 480 VAC; 0.5 amps @ 24 VDC (standard).
Wetted Parts: Process Fitting:	Anodized aluminum (standard)
Seals & Diaphragms:	Buna-N (standard)
Enclosure:	Anodized aluminum (housed models)
Electrical Connection: Stripped Models:	Screw terminals
Housed models:	Screw terminals via 1/2" NPT female conduit connection
Enclosure Ratings: Stripped models:	NEMA 1
Housed models:	NEMA 4 & IP65
Pressure Connection: Stripped models:	1/2" NPT external with 1/8" NPT internal
Housed models:	1/4" NPT female
Approvals: UL:	Stripped models: UL recognized component (UR) Housed models: UL listed. File No. E42816
CSA:	All models and modifications shown are CSA listed under Guide 380-W-1.16, Class 3231, File LR22355
PED (European):	Compliant to PED 97/23/EC

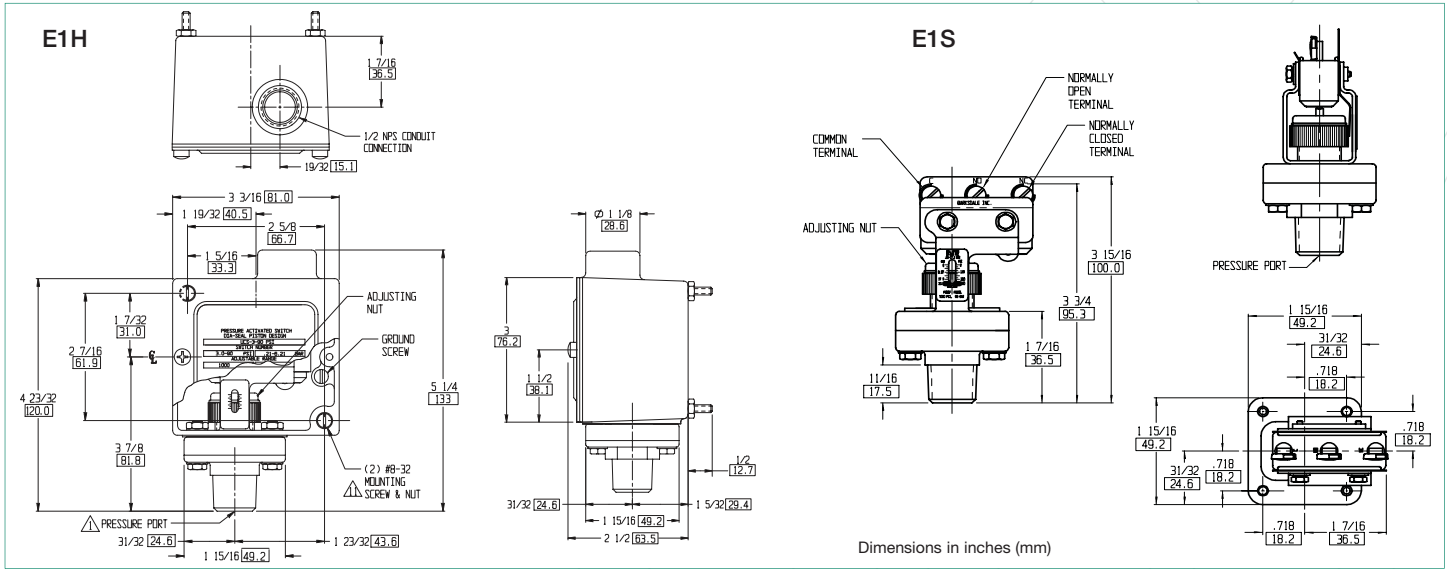
Temperature Range: Operating:	-20° to +165°F (-29 to +74°C)
Adjustment Setpoint: Positive Pressure:	Turn self locking adjustment nut clockwise to increase setpoint; counterclockwise to decrease setpoint.
Vacuum:	Turn self locking adjustment nut counterclockwise to increase setpoint, clockwise to decrease setpoint (towards 30" Hg).
Adjustable Deadband (Optional):	Turn small self locking adjustment nut on limit switch counterclockwise to increase differential. As the differential is increased, the setpoint is also increased. Balance one adjustment against the other to obtain the desired setpoint.
Options:	-Plastic cover (stripped models only) -NEMA 4X enclosure (housed models only) -Cleaned for oxygen service -Manual reset
Shipping Weight: Stripped models:	0.75 lbs. approx.
Housed models:	1.5 lbs. approx.

Wiring Diagram



* See product configurator for additional options.

Technical Drawing



Product Configurator

Example **E1H -H 500 -P6-PLS**

Base Configuration

E1S	Stripped models
E1H	Housed models

Limit Switch¹

-B	10 amps @ 125/250/480 VAC; 2 amps @ 600 VAC; 0.05 amps @ 125 VDC; 0.03 amps @ 250 VDC
-H	10 amps @ 125/250 VAC; 3 amps @ 480 VAC (standard)
-J	10 amps @ 125/250 VAC; 3 amps @ 480 VAC; (comes with an elastomer boot)
-M	10 amps @ 125/250 VAC; 3 amps @ 480 VAC; 0.5 amps @ 125 VDC; 0.25 amps @ 250 VDC
-R ⁷	15 amps @ 125/250/480 VAC; 0.05 amps @ 125 VDC; 0.03 amps @ 250 VDC ADJUSTABLE DEADBAND
-G	10 amps @ 125/250/480 VAC; 2 amps @ 600 VAC; 0.4 amps @ 125 VDC; 0.2 amps @ 250 VDC MANUAL RESET (Available only with housed version)
-GH	1 amp @ 125 VAC; gold contact

Options

-E1	Plastic cover (E1S models only)
-FX	NEMA 4X enclosure (E1H models only)
-RD	Manual reset (must select class G limit switch)
-Z1	Cleaned for oxygen service
-Sxxx	Factory preset (consult factory)

O-Ring Material

Blank	Buna-N
-E	Ethylene propylene (EPR)
-T	Teflon
-V	Viton® diaphragm

Pressure Range

	Adjustable Range				Approx. Deadband ² (Actuation Value) psi (bar)	Proof Pressure psi (bar)	
	Decreasing - psi (bar)		Increasing - psi (bar)				
	Min	Max	Min	Max			
VAC ³	.5" Hg	29" Hg	3.0" Hg	30" Hg	.3 - 2.5" Hg	30 psi	Fixed Deadband
15	.5 (.03)	14.2 (.98)	.6 (.04)	15 (1)	.1 - 1.2 (.01 - .08)	1000 (67)	
90	3 (.2)	82 (5.5)	3.5 (.2)	90 (6)	.5 - 8 (.03 - .5)	1000 (67)	
250	10 (.7)	230 (15)	11 (.7)	250 (17)	1 - 20 (.07 - 1.3)	1000 (67)	
500	25 (1.7)	472 (31)	29 (2)	500 (33)	4 - 28 (.3 - 1.9)	1000 (67)	
VAC ³	1" Hg	30" Hg	Must select class R limit switch. Consult sales drawing for deadband charts			30 psi	Adjustable Deadband
15	1 (.07)	15 (1)				1000 (67)	
90	6 (.4)	90 (6)				1000 (67)	
250	15 (1)	250 (17)				1000 (67)	
500	35 (2.3)	500 (33)				1000 (67)	

Pressure Connection

Blank	E1S version: 1/8" int & 1/2" ext NPT; E1H version: 1/4" NPT female
-P4	1/4" NPT female (available on E1S only - not available on PLS version)
-P6	1/8" int & 1/2" ext NPT (E1H models only)
-F1	Impregnated fitting (not UL or CSA approved)
-F2	Nickel plated fitting
-BR ^{4,6}	Brass fitting: 1/8" int & 1/2" ext NPT (for E1S models or with -P6 option)
-BR ^{4,6}	Brass fitting: 1/4" NPT (for E1H models or with -P4 option)
-P6-PLS ^{5,6}	Polysulfone 40% glass filled; 1/8" - 1/2" NPT (E1H Only). Max adjustable pressure: 250 psi.
-PLS ^{5,6}	Polysulfone 40% glass filled; 1/8" - 1/2" NPT (E1S Only). Max adjustable pressure: 250 psi.

NOTES:

- Consult sales drawing for specific deadband values
- Deadband values indicated when used with the "H" limit switch
- Vacuum models are provided with 1/2" NPT External, 1/8" NPT Internal "Combo" fitting only on E1S models
- Not available on vacuum models

⁵ Plastic fittings have a proof pressure of 400 psi

⁶ Not available in range 500

⁷ To increase differential, turn small, self-locking adjusting nut counter-clockwise

10656 Roselle St. San Diego, CA 92121

Ph: (800)648-7737 - Fx: (858)784-0720

www.reotemp.com

The P1H has a Dia-Seal Piston design which combines the accuracy of a diaphragm switch with the long life and high pressure capabilities of a piston switch.

The P1H is well suited for applications with the following requirements: NEMA 4 enclosure, long life, high cycle, ranges from .5 to 1600 psi

Features

- Superior resolution
- High reliability
- Oil & dust tight
- Extremely versatile
- NEMA 4 & 13
- CSA approved

Applications

- Pump & compressor monitoring
- Air proving in HVAC systems
- Irrigation systems
- Engine monitoring
- Machine tools
- General industrial applications

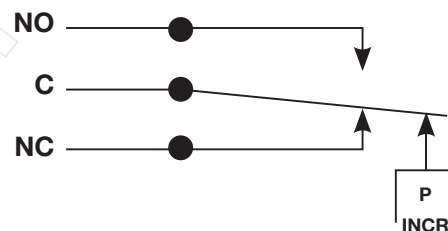


General Specifications*

Electrical Characteristics:	All models incorporate Underwriters Laboratories, Inc. and CSA Listed single pole double throw snap-action switching elements
Accuracy:	± 2% of the adjustable range
Switch:	Single pole double throw (SPDT) snap action; single circuit (see order key for ratings)
Wetted Parts:	
Process Fitting:	Anodized aluminum (standard)
Diaphragm:	Buna-N
Enclosure:	Anodized aluminum
Electrical Connection:	Internal screw terminals via 1/2" NPT conduit connector
Enclosure Ratings:	NEMA 4, 13
Pressure Connection:	1/4" NPT female (standard)
Approvals:	
CSA:	Class 3231 02, File No. LR22355
PED (European):	Compliant to PED 97/23/EC
Temperature Range:	
Operating:	-20° to +165°F (-29° to +74 °C)
Storage:	-40° to +200°F (-40° to +93°C)

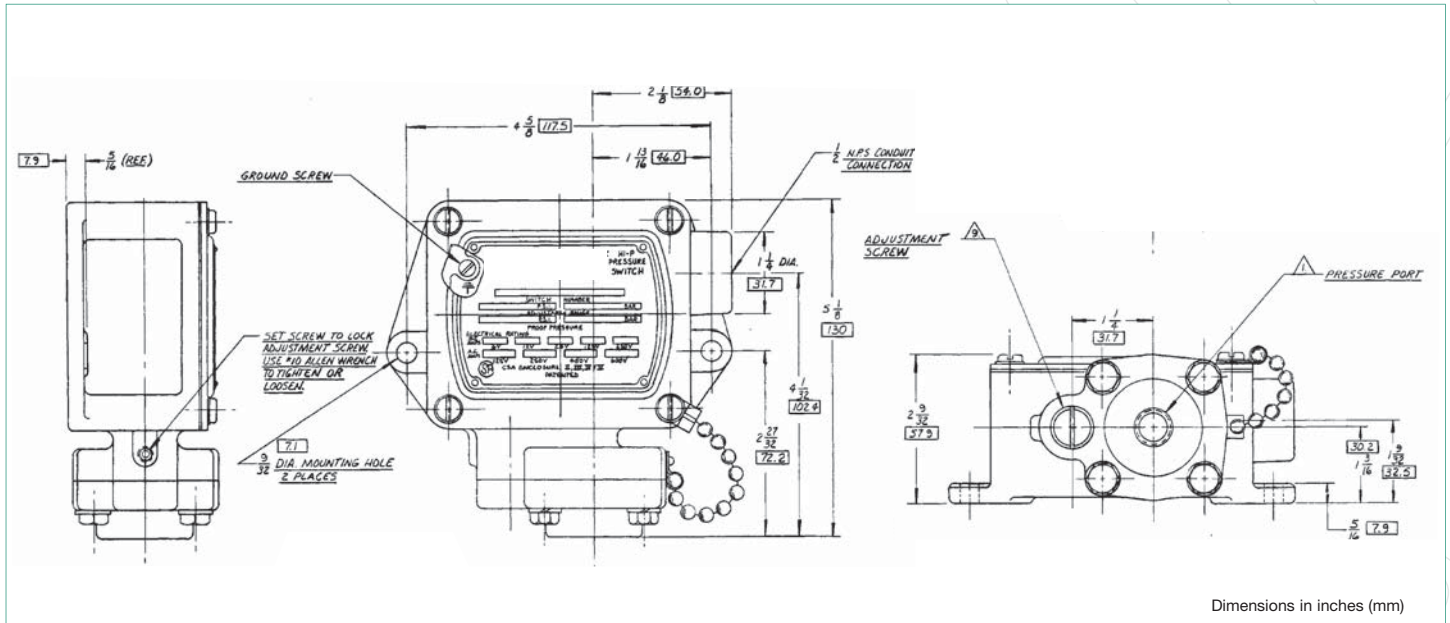
Adjustment Instructions:	Loosen setscrew with a #10 allen wrench. With screwdriver, turn adjustment screw clockwise to increase and counterclockwise to decrease the actuation point. Tighten setscrew after desired setting is reached.
Options:	- NEMA 4X - Hermetically sealed limit switch - Cleaned for oxygen service - Factory preset - CSA approval
Shipping Weight:	3.75 lbs. approximate

Wiring Diagram



* See product configurator for additional options.

Technical Drawing



Product Configurator

Example	P1H	-B	340	SS	-V	-P2
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Prefix

H Hermetically sealed limit switch option
- Class I, Division II (requires HH limit switch)

Enclosure

P1H NEMA 4 & NEMA 13 enclosure

Limit Switch¹

-B	10 amps @ 125/250/480 VAC; 2 amps @ 600 VAC; 0.05 amps @ 125 VDC; 0.03 amps @ 250 VDC (standard for 30, 85, and 340 ranges)
-F	10 amps @ 125/250/480 VAC; 2 amps @ 600 VAC; 0.4 amps @ 125 VDC; 0.2 amps @ 250 VDC
-H	10 amps @ 125/250 VAC; 3 amps @ 480 VAC (standard for 600 range)
-J	10 amps @ 125/250 VAC; 3 amps @ 480 VAC with elastomer boot (standard for 1600 range)
-K	10 amps @ 125/250/480 VAC; 2 amps @ 600 VAC; 0.05 amps @ 125 VDC; 0.03 amps @ 250 VDC (with boot)
-M	10 amps @ 125/250 VAC; 3 amps @ 480 VAC; 0.5 amps @ 125 VDC; 0.25 amps @ 250 VDC
-GH	1 amp @ 125 VAC gold contacts
-HH	Hermetically sealed; 5 amps @ 125/250 VAC

Options

Blank	1/4" NPT (standard)
-P2	1/2" NPT pressure fitting (only available in stainless steel)
-FX	NEMA 4X enclosure
-Z1	Cleaned for oxygen service
-Sxxx	Factory preset (consult factory)

Diaphragm/O-Ring

Blank	Buna-N diaphragm
-T	Teflon diaphragm
-V	Viton® diaphragm

Pressure Fitting

Blank	Anodized aluminum, 1/4" NPT
SS	Stainless steel, 1/4" NPT

Pressure Range

	Adjustable Range				Approx. Deadband ² (Actuation Value)	Proof Pressure
	Decreasing - psi (bar)		Increasing - psi (bar)			
	Min	Max	Min	Max	psi-(bar)	psi (bar)
30	.5 (.03)	28 (1.9)	1.5 (.1)	30 (2)	.4 - 2 (.03 - .13)	2000 (133)
85	3 (.2)	78 (5.2)	4.5 (.3)	85 (5.7)	.8 - 7 (.05 - .5)	2000 (133)
340	6 (.4)	318 (21)	10 (.6)	340 (23)	2 - 22 (.13 - 1.5)	2000 (133)
600	25 (1.7)	583 (39)	27 (1.8)	600 (40)	2 - 17 (.13 - 1.1)	2000 (133)
1600	400 (27)	1520 (101)	480 (32)	1600 (107)	20 - 80 (1.3 - 5.3)	2000 (133)

NOTES:

- Consult sales drawing for specific deadband values
- Deadband values indicated when used with the "standard" limit switch

The P1X has a Dia-Seal Piston design which combines the accuracy of a diaphragm switch with the long life and high pressure capabilities of a piston switch.

The P1X is well suited for applications with the following requirements: explosion proof, long life, high cycle, NEMA 7 & 9 enclosure, ranges from .5 to 1,600 psi.

Features

- Explosion proof housing
- High reliability
- Extremely long life
- UL & CSA listed
- Oil & dust tight

Applications

- Power plants
- Water pumps
- Hydraulic power units
- Pneumatic devices
- General industrial applications
- Oil & gas applications

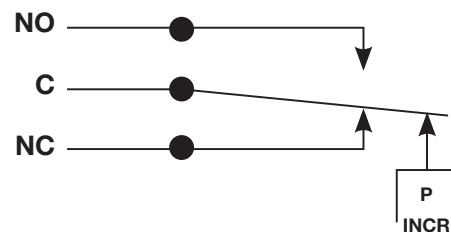


General Specifications*

Electrical Characteristics:	All models incorporate Underwriters Laboratories, Inc. and CSA Listed single pole double throw snap-action switching elements
Accuracy:	± 2% of the adjustable range
Switch:	Single pole double throw (SPDT) snap action; single circuit
Wetted Parts:	
Process Fitting:	Anodized aluminum
Diaphragm:	Buna-N
Enclosure:	Anodized aluminum
Electrical Connection:	Internal screw terminals via 1/2" NPT conduit connector
Enclosure Ratings:	NEMA 7, 9
Pressure Connection:	1/4"-18 NPT female (standard)
Approvals:	
UL:	File No. E37043; approved for hazardous locations, Class I, DIV 2 Groups C&D, Class II Groups E, F, & G; not available on 1600 psi range
CSA:	Class 3238-01, File No. 022354-0-000 (Not approved with hermetically sealed limit switch)
PED (European):	Compliant to PED 97/23/EC

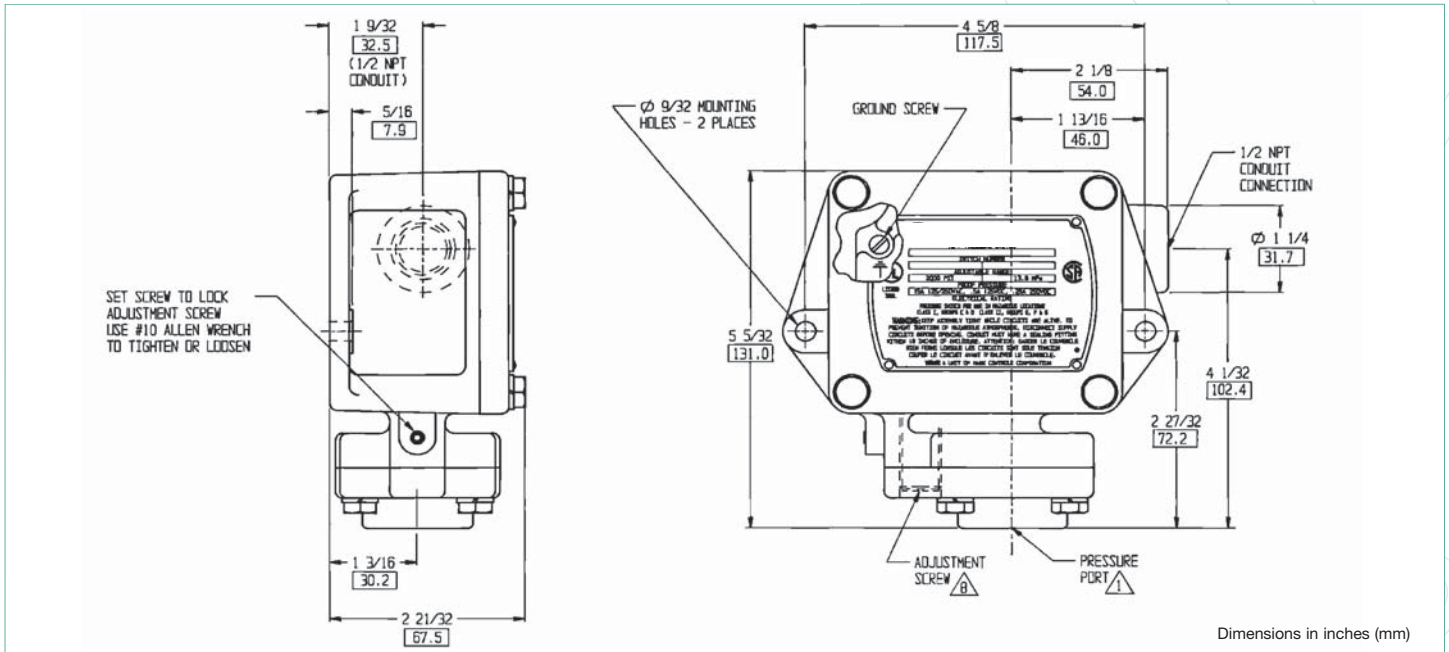
Temperature Range:	
Operating:	-20° to +165 °F (-29° to +74°C)
Storage:	-40° to +200 °F (-40° to +93°C)
Adjustment Instructions:	Loosen setscrew with a #10 allen wrench. With screwdriver, turn adjustment screw clockwise to increase and counterclockwise to decrease the actuation point. Tighten setscrew after desired setting is reached.
Options:	- Viton® diaphragm - Teflon diaphragm - NEMA 4X enclosure - Hermetically sealed limit switch - Factory preset - Cleaned for oxygen service - CSA approval
Shipping Weight:	3.75 lbs. approximate

Wiring Diagram



* See product configurator for additional options.

Technical Drawing



Product Configurator

Example	P1X	-H	85	SS		
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H Hermetically sealed limit switch option
- Class I, Division II (requires HH limit switch)

Enclosure
P1X NEMA 7 & NEMA 9 enclosure

Limit Switch¹

-B	10 amps @ 125/250/480 VAC; 2 amps @ 600 VAC; 0.05 amps @ 125 VDC; 0.03 amps @ 250 VDC (standard for 30, 85, and 340 ranges)
-F	10 amps @ 125/250/480 VAC; 2 amps @ 600 VAC; 0.4 amps @ 125 VDC; 0.2 amps @ 250 VDC
-H	10 amps @ 125/250 VAC; 3 amps @ 480 VAC (standard for 600 range)
-J	10 amps @ 125/250 VAC; 3 amps @ 480 VAC with elastomer boot (standard for 1600 range)
-K	10 amps @ 125/250/480 VAC; 2 amps @ 600 VAC; 0.05 amps @ 125 VDC; 0.03 amps @ 250 VDC
-M	10 amps @ 125/250 VAC; 3 amps @ 480 VAC; 0.5 amps @ 125 VDC; 0.25 amps @ 250 VDC
-GH	1 amp @ 125 VAC gold contacts
-HH	Hermetically sealed; 5 amps @ 125/250 VAC

- Options**
- P2 1/2" NPT pressure fitting (available only with stainless steel models)
 - FX NEMA 4X enclosure
 - Sxxx Factory preset (consult factory)

- Diaphragm/O-Ring**
- Blank Buna-N diaphragm
 - T Teflon
 - V Viton® diaphragm (not available for 1600 Range)

- Pressure Fitting**
- Blank Anodized aluminum, 1/4" NPT female
 - SS Stainless steel, 1/4" NPT female

Pressure Range

	Adjustable Range				Approx. Deadband ² (Actuation Value)	Proof Pressure
	Decreasing - psi (bar)		Increasing - psi (bar)			
	Min	Max	Min	Max		
30	.5 (.03)	28.5 (1.9)	1 (.1)	30 (2)	.1 - 1.5 (.07 - .1)	2000 (133)
85	3 (.2)	81.5 (5.4)	4 (.3)	85 (5.7)	.25 - 3.5 (.02 - .23)	2000 (133)
340	6 (.4)	331.5 (22)	7 (.5)	340 (23)	1 - 8.5 (.07 - .6)	2000 (133)
600	25 (1.7)	581 (39)	27 (1.8)	600 (40)	2 - 19 (.13 - 1.3)	2000 (133)
1600	400 (27)	1520 (101)	480 (32)	1600 (107)	20 - 80 (1.3 - 5.3)	2000 (133)

¹ Consult sales drawing for specific deadband values
² Deadband values indicated when used with the "standard" limit switch

MECHANICAL PRESSURE SWITCHES

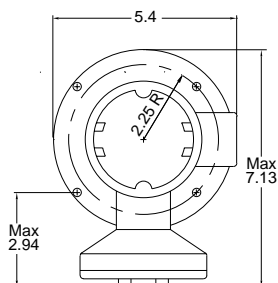
REOTEMP's Mechanical Pressure Switches are suited for a variety of process applications, where electrical devices must be turned on/off in response to changing process pressure.



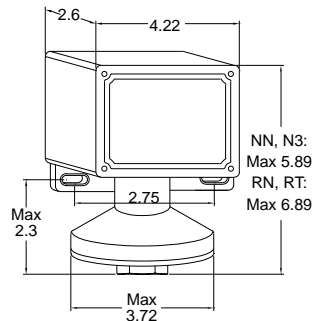
- **Reliable** Piston-Actuated, Force Balanced construction
- **Rugged**, high cycle rate tolerance
- **Precise** resolution of set points
- **Field-Adjustable** set points (No - charge factory calibration)
- **Simple Installation** - no special tools
- **Long Service Life** - no required periodic service - no spare parts required
- UL, CSA **certified** switching elements

Dimensions

Explosion Proof Case



NEMA 4 Case



Dimensions in inches

Standard Specifications

Switching Elements: SPDT, or DPDT

Current Capacity: 15A at 250VAC; 5A at 30VAC

Housing: NEMA 4, 4X, or Explosion Proof
(Class.1, Group C & D; Class.2, Group E,F,G, Division 1, 2)

Electrical Outlet: 3/4" NPTF

Adjustable Setpoints: From full vacuum to 550psi

Wetted Diaphragm: Teflon/Buna, 316 SS/Viton.

Wetted Pressure Ports: 316 SS, Aluminum, Cast Iron

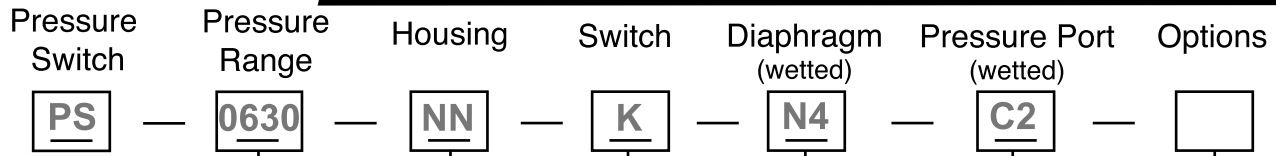
Ovrange: 200 psi to 1,500 psi

Warranty: 3 years

Note: Specifications are for standard switches shown on next page. A wide variety of alternate housings, ranges, switches, wetted parts and options are available on request.

HOW TO ORDER

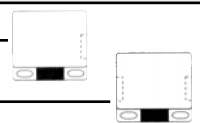
MECHANICAL PRESSURE SWITCHES





Pressure Range				
Overrange	Proof	Pressure Range (Set point must be within range)	Typical Dead Band (at mid point)	
Pressure				
		Code	Range	
200 psi	400 psi	1264	2.5 - 45 INWC	0.8 INWC
		1220	.04 - 2.0 psi	0.1psi
		1250	.75 - 12 psi	0.1psi
750 psi	1000 psi	0440	2 - 25 psi	0.3psi
		0450	3 - 50 psi	0.4psi
1500 psi	2500 psi	0630	12 - 100 psi	0.9psi
		0650	20 - 180 psi	1.4psi
		0530	25 - 240 psi	2.2psi
		0545	45 - 550 psi	3.9psi
Vacuum				
750 psi	1000 psi	5418	-30" Hg	0.5" Hg
Compound				
200 psi	400 psi	5217	-40/0/40 INWC	1.1 INWC
1500 psi	2500 psi	5626	-30 Hg/0/10 psi	1" Hg/.5 psi
		5636	-30 Hg/0/80 psi	1.4" Hg/.7 psi


Housing

Weather tight: NEMA 4, 4X, IP65:

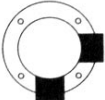
NN = Aluminum, One Outlet (R) 

N3 = Aluminum, two Outlets (L,R) 

RN = Aluminum, with 6-place Terminal Block One outlet (R) 

RT = 316SS, with 6-place Terminal Block One outlet (R) 

Explosion Proof
(Class 1, Group C & D; Class II, Group E, F & G, Division. 1, 2)

L = Cast Iron, One Outlet (R) 
(Housing is weather tight with CG option)

Switch

K = Single (SPDT)
KK = Dual (DPDT) - (KK has 6x dead band multiplier)
 Both Switches: 15 A @ 250 VAC, 5A @ 30 VDC

Options / Accessories

MM= Vacuum protector plate (STD with vacuum + compound range)
CG= Cemented Cover Gasket
YY= Epoxy coating (Exterior)
RR= Stainless Steel tag (TT = H.D. Tag)
SP= Specify set point (set by factory, N/C)
 Example: SP 50A = 50psi ascending
 (If set point not specified, factory will set at mid point.)

316SS Diaphragm Seals

(Max working pressure = 1,500 psi)

Process Connection	Code for 04-,05-,06-,54-,56-ranges	Code for 12-,54-,56-ranges
1/2"NPTF	W52S	W62S
1/4"NPTF	W54S	W64S
ANSI Flange (Specify Size)	W5FS	W6FS

std. fill = silicone
 Other diaphragm seals available - consult factory.

Pressure Port (Wetted)

316SS


C1 = 1/4" NPTF
C2 = 1/2" NPTF

Sanitary Triclamp
 (3-A) Max. 600psi with Std. clamp

C8 = 1 1/2" Triclamp (ranges 05-,06-,56-)
C9 = 2" Triclamp (ranges 04-,05-,06-,54-,56-)
 Other Triclamp sizes available. std. fill = glycerin

Aluminum
 (Available on ranges beginning: 12, 04, 52, 54)
B1 = 1/4" NPTF
B2 = 1/2" NPTF

Cast Iron
 (Available on ranges beginning 06, 05, 56)
F1 = 1/4" NPTF
F2 = 1/2" NPTF



Diaphragm (Wetted)

N4 = Teflon - coated Polyamide w/ Buna O - ring
M4 = 316SS w/ Viton O - ring (required with 56- ranges)