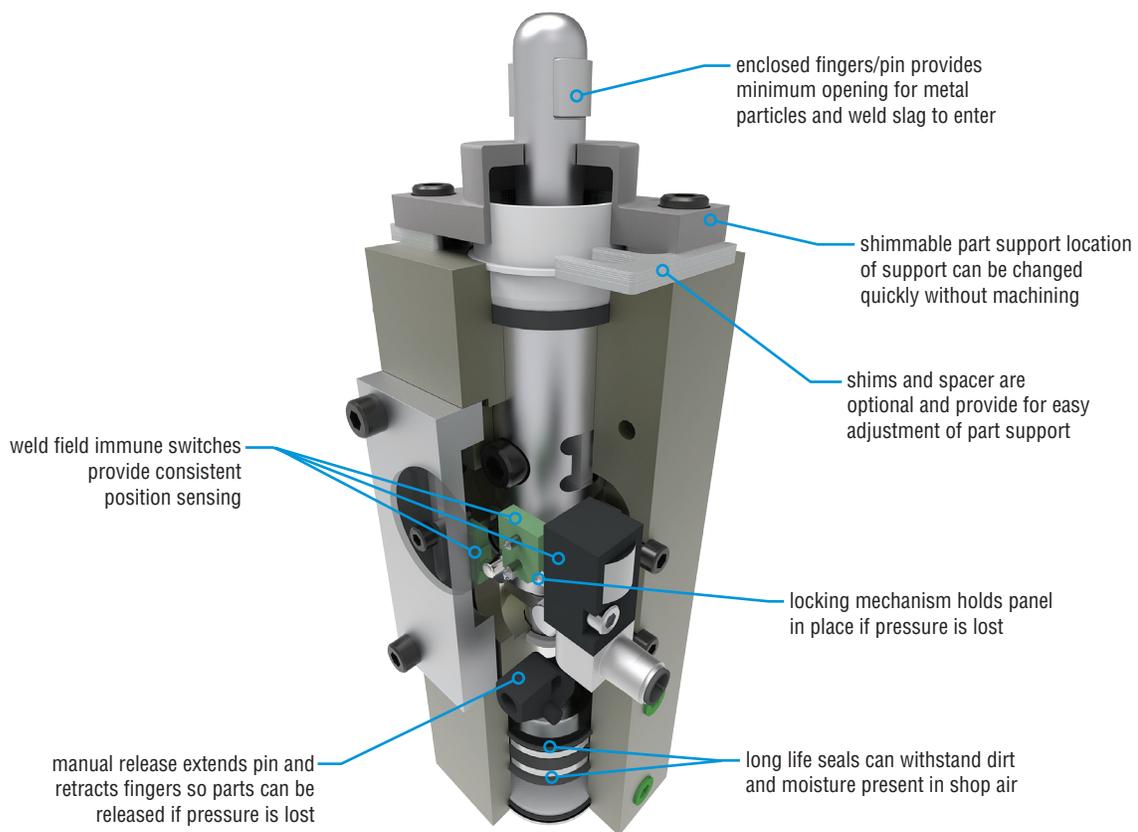


PLC

Major Benefits

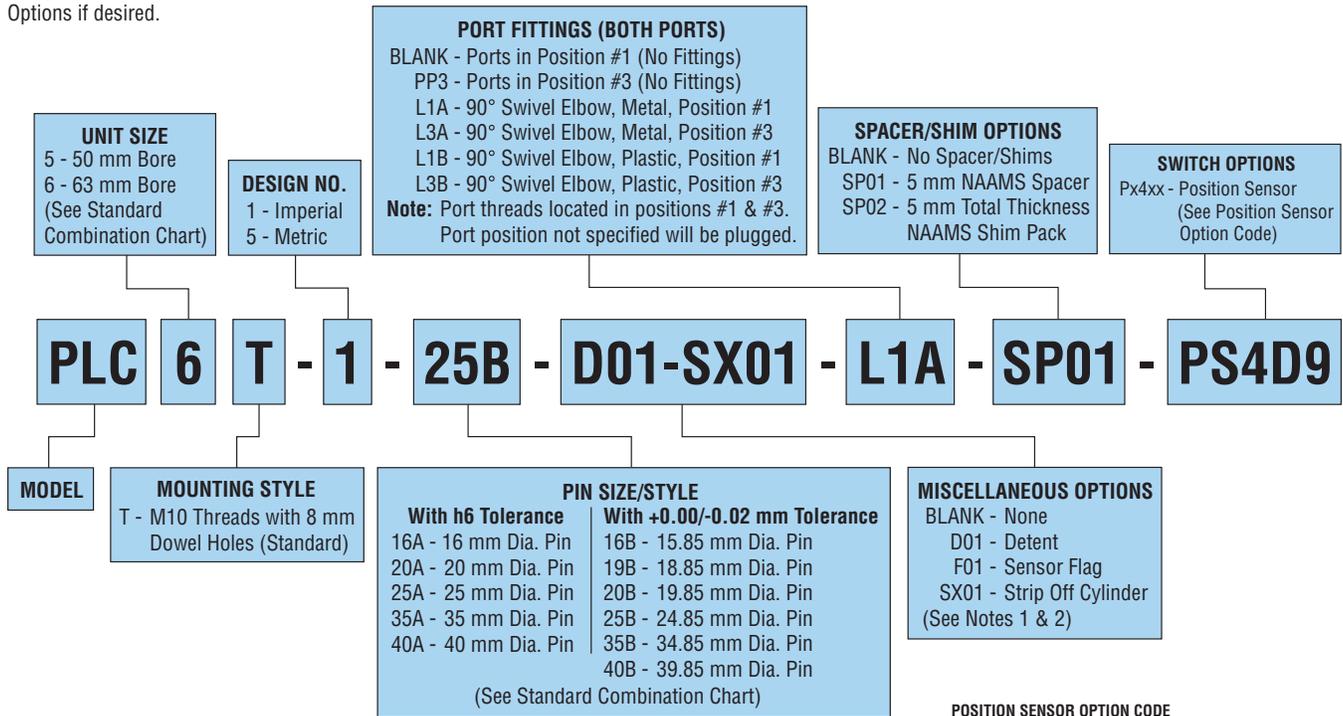
- Completely enclosed design
- Available in two sizes, with up to six pin size choices and two pin styles
- 12.5 mm of clamping stroke allows shimming part support for easy height setup
- Part support height adjusts with NAAMS shims
- NAAMS mounting
- Manual unlock is standard
- Short pin length for blind applications
- Position sensing provides open or closed sensing with industry standard AC or DC weld field immune switch mounted in a protected housing



ORDERING DATA: Series PLC

TO ORDER SPECIFY:

Model, Unit Size, Mounting Style, Design No., Pin Size, and Additional Options if desired.



NOTES:

- Metric units have metric ports, imperial units have imperial ports
- SX01 Option with -Lxx Option will have fittings installed in position #1 on strip off cylinder

STANDARD COMBINATION CHART

UNIT SIZE	PIN SIZE/STYLE										
	16A	20A	25A	35A	40A	16B	19B	20B	25B	35B	40B
PLC5	YES	YES	NO	NO	NO	YES	YES	YES	NO	NO	NO
PLC6	NO	NO	YES	YES	YES	NO	NO	NO	YES	YES	YES

***NOTE:**

Connector position 9 is not available with switch option A.

Options may affect unit length. See dimensional pages and option information details.

CAD & Sizing Assistance

Use PHD's free online Product Sizing and CAD Configurator at phdinc.com/myphd

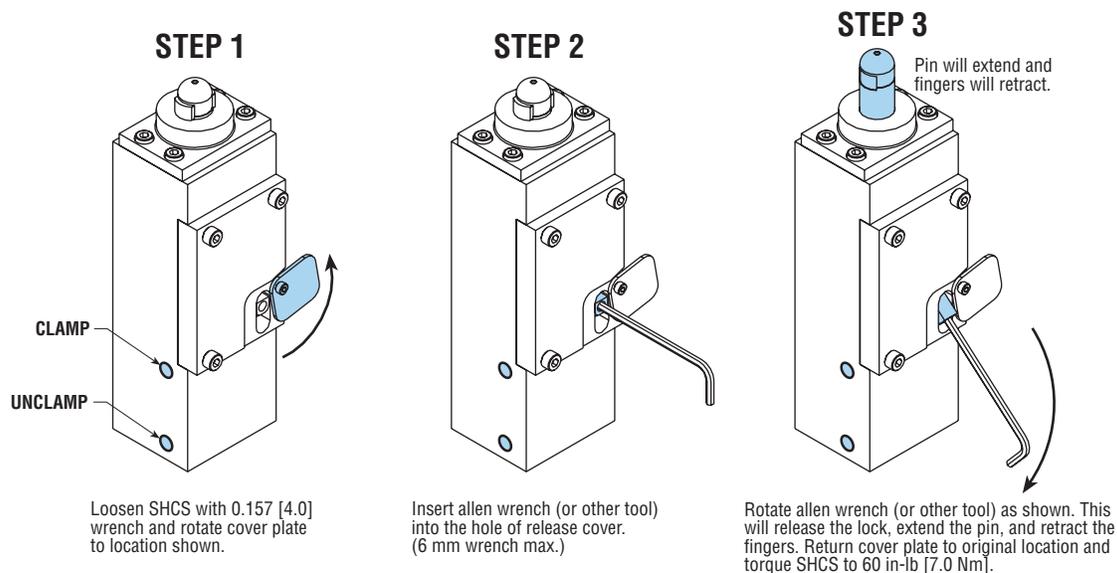
SPECIFICATIONS	SERIES PLC
SEALS	Carboxylated Nitrile seal, lip type
OPERATING TEMPERATURE	0° to +275°F [-17° to +135°C]
LUBRICATION	Factory lubricated for life

MODEL	UNIT WEIGHT		TOTAL CLAMP FORCE 87 psi [6 bar]		CLAMP FORCE FACTOR Cf		CLOSE OR OPEN TIME 87 psi [6 bar]	DISPLACEMENT			
	lb	kg	lb	N	Imperial	Metric		CLOSE		OPEN	
							in ³	cm ³	in ³	cm ³	
PLC5x-x-16	12.5	5.57	223	991	2.56	165	0.2	2.57	42.1	3.06	50.2
PLC5x-x-19	12.7	5.76	223	991	2.56	165	0.2	2.57	42.1	3.06	50.2
PLC5x-x-20	12.7	5.76	223	991	2.56	165	0.2	2.57	42.1	3.06	50.2
PLC6x-x-25	13.0	5.90	379	1684	4.35	280	0.2	4.37	71.6	4.86	79.6
PLC6x-x-35	13.7	6.21	379	1684	4.35	280	0.2	4.37	71.6	4.86	79.6
PLC6x-x-40	14.1	6.40	379	1684	4.35	280	0.2	4.37	71.6	4.86	79.6

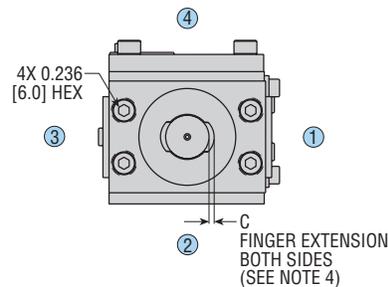
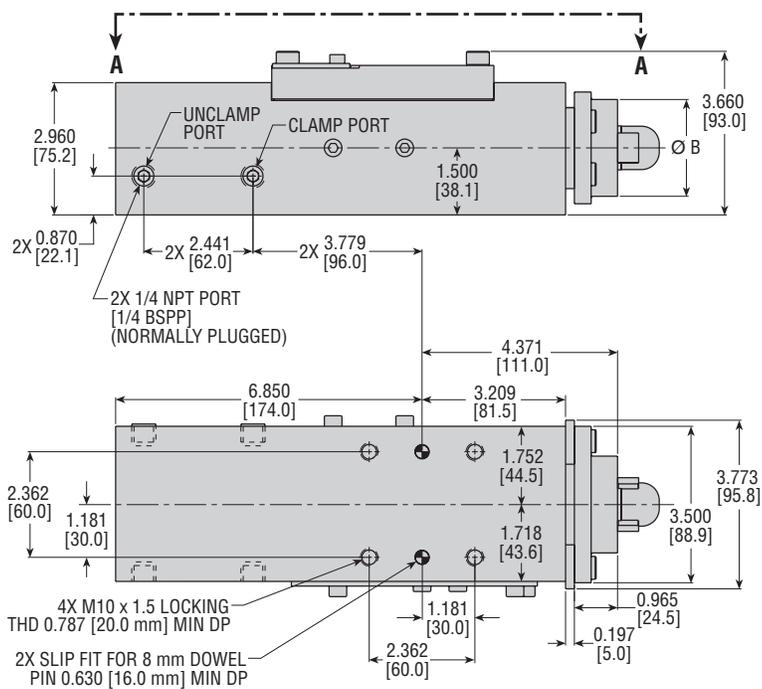
LOCKING MECHANISM & MANUAL OPENING

The PLC Clamp incorporates a wedge/roller locking mechanism that maintains panels in location if air pressure is lost. Through any portion of the pin's travel once motion is stopped, a spring seated roller engages the wedge and resists movement in the unclamp direction. As the roller is being seated, the pin may move slightly (approx. 1 mm in the unclamp direction, but at that point motion will stop and the pin will be locked against further movement in

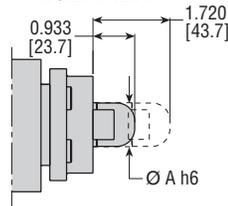
the unclamp direction). The locking mechanism does not maintain clamp force when pressure is lost. During normal operation, air pressure moves the piston, releasing the lock and allowing the pin to extend and unclamp. A manual release lever can also be used to extend the pin and unclamp parts for setup or if pressure is lost (see below).



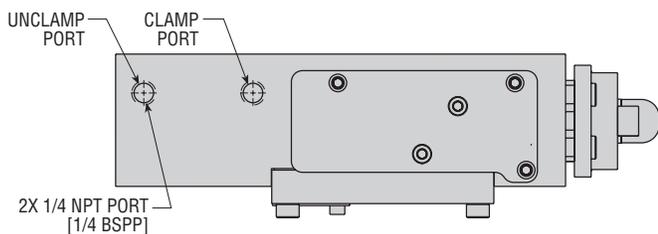
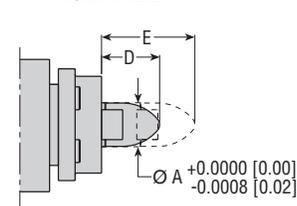
DIMENSIONS: Series PLC



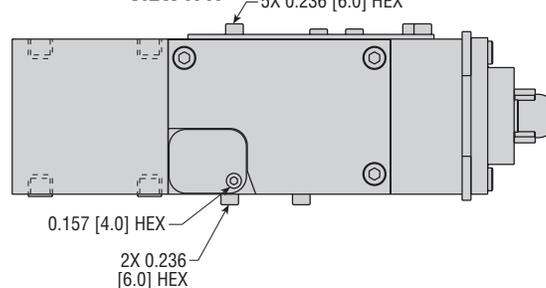
PLCxx-x-xxA



PLCxx-x-xxB



VIEW A-A



NOTES:

- 1) ALL METRIC DIMENSIONS [] ARE GIVEN IN mm 1 mm = 0.03937 in
- 2) NUMBERS IN CIRCLES INDICATE POSITION (POSITION 1 IS DEFAULT PORT SIDE OF CLAMP)
- 3) UNIT SHOWN AND DIMENSIONED WITH -SP01 (5 mm SPACER) OPTION
- 4) PLC5T-x-16x-xx FINGER EXTENDS OUT ON ONE SIDE ONLY (POSITION 3)

LETTER DIM	MODEL NUMBER									
	PLC5T-x-16A		PLC5T-x-20A		PLC6T-x-25A		PLC6T-x-35A		PLC6T-x-40A	
	in	mm	in	mm	in	mm	in	mm	in	mm
A MAX*	0.6299	16.000	0.7874	20.000	0.9843	25.00	1.3780	35.000	1.5748	40.000
A MIN*	0.6295	15.989	0.7869	19.987	0.9837	24.987	1.3773	34.984	1.5742	39.984
B	1.969	50.0	1.969	50.0	2.165	55.0	2.559	65.0	3.150	80.0
C	0.085	2.2	0.085	2.2	0.110	2.8	0.110	2.8	0.110	2.8

LETTER DIM	MODEL NUMBER											
	PLC5T-x-16B		PLC5T-x-19B		PLC6T-x-20B		PLC6T-x-25B		PLC6T-x-35B		PLC6T-x-40B	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
A	0.6240	15.85	0.7421	18.85	0.7815	19.85	0.9783	24.85	1.3720	34.85	1.5689	39.85
B	1.969	50.0	1.969	50.0	1.969	50.0	2.165	55.0	2.559	65.0	3.150	80.0
C	0.085	2.2	0.085	2.2	0.085	2.2	0.110	2.8	0.110	2.8	0.110	2.8
D	0.903	22.9	1.296	32.9	1.296	32.9	1.296	32.9	1.316	33.4	1.316	33.4
E	1.690	42.9	2.083	52.9	2.083	52.9	2.083	52.9	2.103	53.4	2.103	53.4

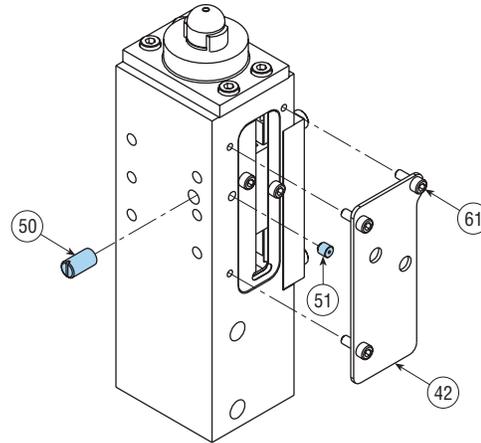
All dimensions are reference only unless specifically tolerated.

D01 DETENT

Provides a ball detent that holds the pin extended when air pressure is lost. The force required to overcome the detent is 25 - 40 lb [11.3 - 18.1 kg]. Internal cylinders cycle easily at less than 25 psi [1.72 bar] with the detent pin installed.

INSTALLATION PROCEDURE (IF ORDERED SEPARATELY)

- 1) Remove Cam Cover Plate (Item 42) by removing Socket Head Cap Screws shown (Item 61).
- 2) With Clamp in full retracted position, thread Ball Detent (Item 50) into clamp body until it bottoms out on driver.
- 3) Back out Ball Detent 1/4 to 1/2 turn.
- 4) Hold Detent in place while tightening Socket Set Screw (Item 51) to specified 85 in-lb [9.6 Nm].
- 5) Cycle clamp to ensure proper installation. If Pin will not retract after being extended, the Ball Detent may be installed too deeply. Remove and reinstall per above.

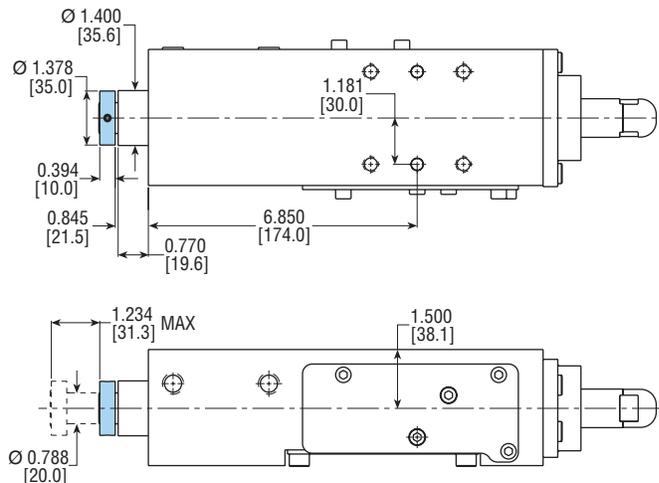


KIT DESCRIPTION	KIT NUMBER
DETENT KIT (IF ORDERED SEPARATELY)	75727-01

KIT INCLUDES: 1 BALL DETENT
1 BRASS TIP SSS (M8 x 8)

F01 SENSOR FLAG

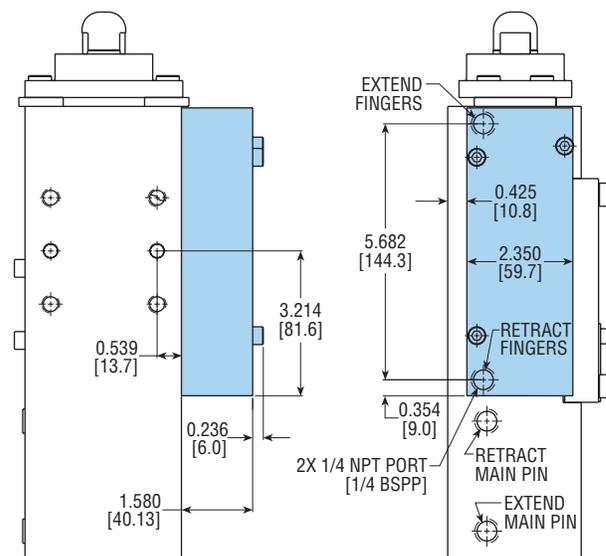
Provides an external flag on a piston rod that extends out of the bottom of the clamp. The position of the flag indicates if the pin is extended or retracted. Flag travel varies with the shimming of the part support and panel thickness. Minimum is 5 mm to maximum 31 mm with the strip off option. This white composite flag can be seen by laser sensing systems. Manually pushing the flag toward the clamp body will overcome the internal locking feature, therefore the unlocking lever/housing is not required and replaced by a simple cover.



SX01 STRIP OFF CYLINDER

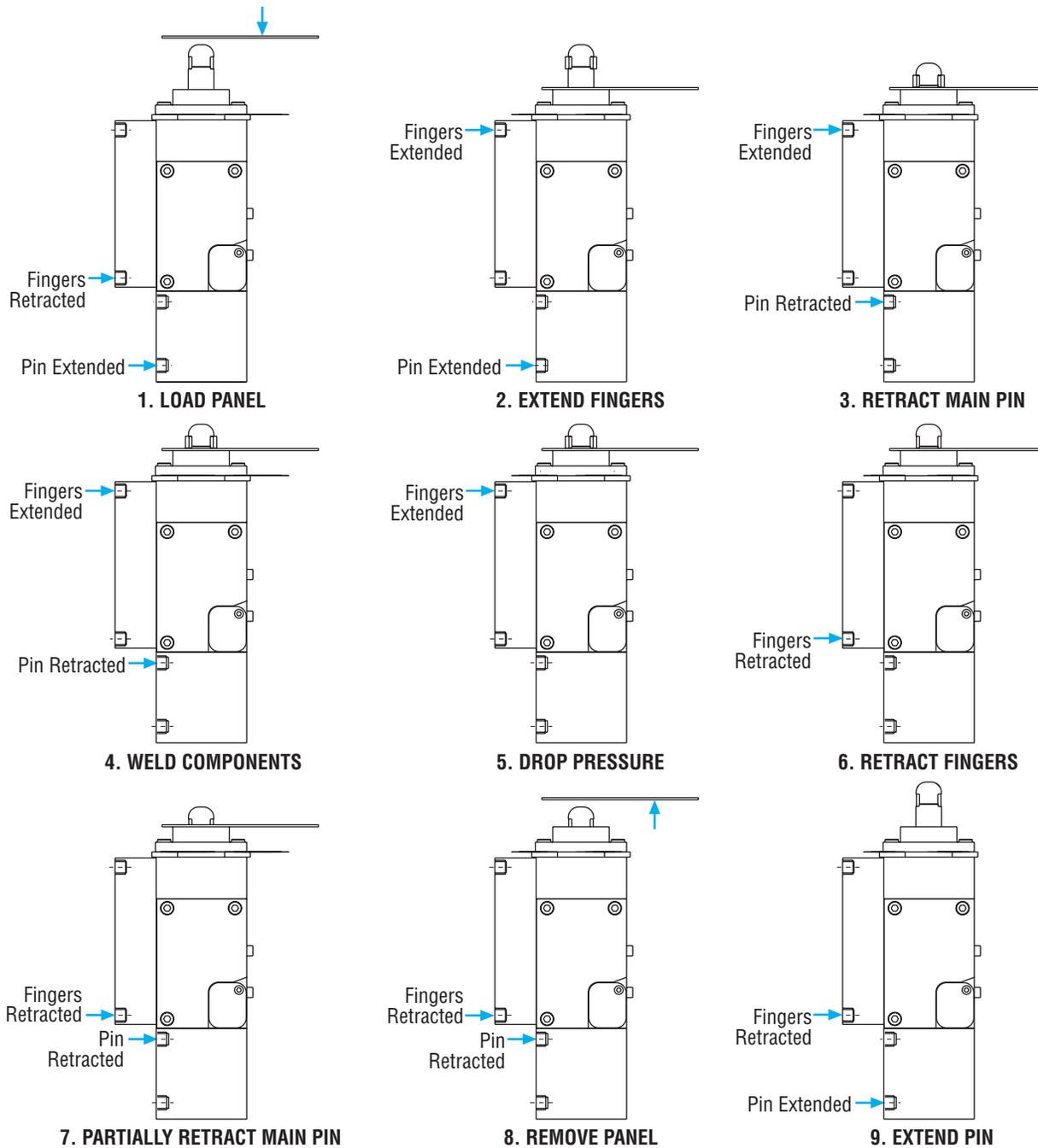
Provides an additional side mounted cylinder that extends or retracts the fingers on demand. The fingers can be extended or retracted without moving the main pin. Two pneumatic valves are required for this option. This allows a strip off function that works as follows:

- 1) With pin extended and fingers retracted, load panels.
- 2) Extend fingers.
- 3) Retract main pin, clamping fingers against panels.
- 4) Weld or rivet parts.
- 5) Drop clamping pressure on the main pin by going to center on a double solenoid detented center valve.
- 6) Retract fingers.
- 7) Apply pressure to retract port of main pin. **Pulling the pin partially down through the panel. Increasing clearance around the pin so the panel can easily be lifted free from the clamp.**
- 8) Remove the panel.
- 9) Extend the pin, with fingers retracted, to get ready for the next cycle.



All dimensions are reference only unless specifically tolerated.

-Sx01 STRIP OFF CYLINDER ACTUATION STEPS



PORT PRESSURIZATION SEQUENCE

STEP	PE	PR	FE	FR
1. Load Panel	High	Off	Off	High
2. Extend Fingers	High	Off	High	Off
3. Retract Main Pin	Off	High	High	Off
4. Weld Components	Off	High	High	Off
5. Drop Pressure	Off	Off	High	Off
6. Retract Fingers	Off	Off	Off	High
7. Partially Retract Main Pin	Off	High	Off	High
8. Remove Panel	Off	High	Off	High
9. Extend Pin	High	Off	Off	High

NOTES:

- 1) PE - Port Extend
PR - Port Retract
FE - 'Fingers Extended' Port
FR - 'Fingers Retracted' Port
- 2) A 3 position open center valve controls the extending and retracting of the main pin.
- 3) A 2 position valve controls the extending and retracting of the fingers.

Lxx

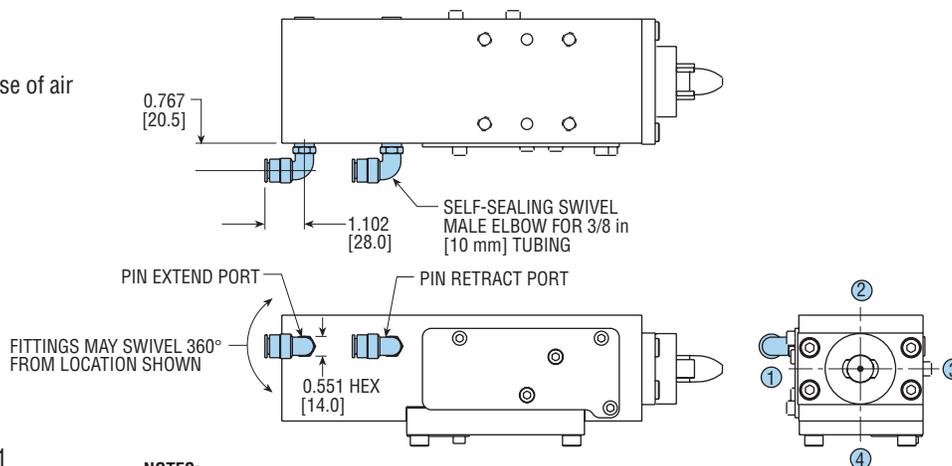
PORT FITTINGS

360° swivel elbow (in both ports) for ease of air line hook-up.

PORT FITTINGS (IF ORDERED SEPARATELY)

OPTION CODE	PART NUMBER	
	Imperial	Metric
LxA	62178-010	62195-010
LxB	71120-002	71121-002

NOTE: L1x is port fittings in position #1
L3x is port fittings in position #3



NOTES:

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- 2) NUMBERS IN CIRCLES INDICATE POSITION (POSITION 1 IS STANDARD PORT POSITION)

SP01

SPACER

SP02

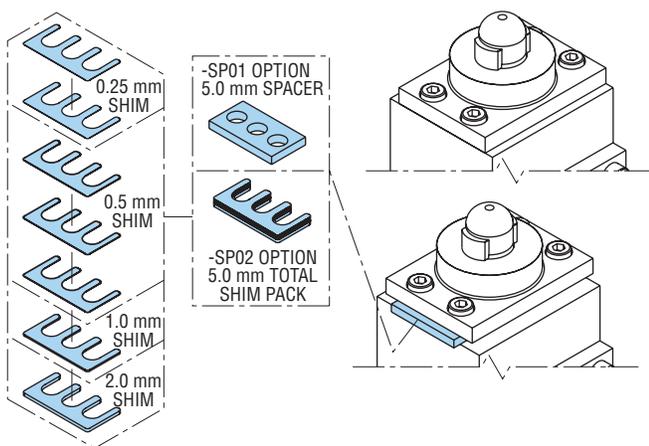
SHIM

The part spacer location can be adjusted by use of a NAAMS grind spacer or shim pack. Using a 6 mm hex wrench, loosen the four M8 SHCS and adjust to the desired height. Maximum clamp stroke is 12.5 mm with no shims or spacers, as these are added, less clamp stroke is available.

Maximum recommended adjustment is 9.5 mm, with standard pin shield and fasteners. SP01 provides two spacers (NAAMS ASP350) assembled under the part support. SP02 provides two shim kits assembled under the part support (NAAMS ASH3).

The PLC incorporates a unique mechanism that extends the fingers as the locating pin is retracted. A cam and drive rod sequences the finger motion to travel of the locating pin. When the pin is fully extended, the fingers are retracted within its diameter. As the locating pin retracts, the fingers extend during the first 12.5 mm of pin travel. The fingers stay fully extended as the pin travels to the full retract position or clamps a panel.

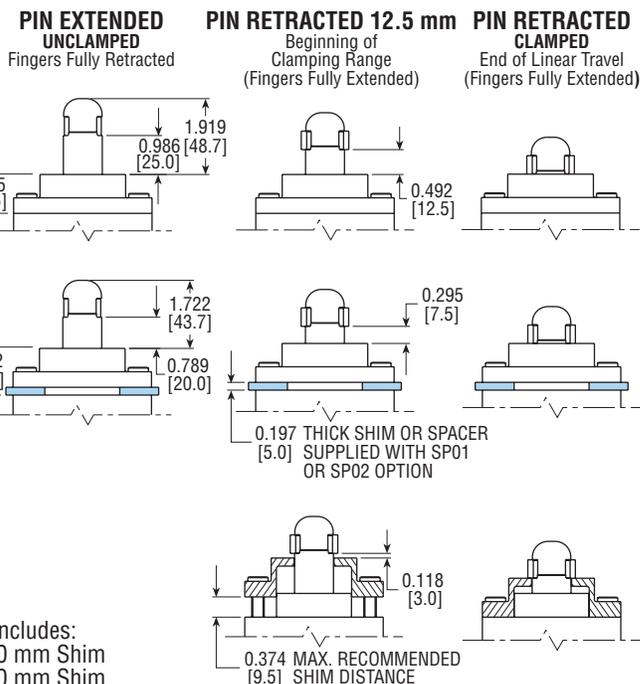
When the locating pin extends, the fingers stay fully extended until the last 12.5 mm of travel, at which time they begin to retract. When the pin reaches full extension, the fingers are fully retracted, allowing panels to be loaded or unloaded.



OPTION	PART/KIT NUMBER
SP01	74750-011
SP02	74749-005

SP01 Kit includes:
1 5.0 mm Spacer

SP02 Kit includes:
1 2.0 mm Shim
1 1.0 mm Shim
3 0.5 mm Shims
2 0.25 mm Shims

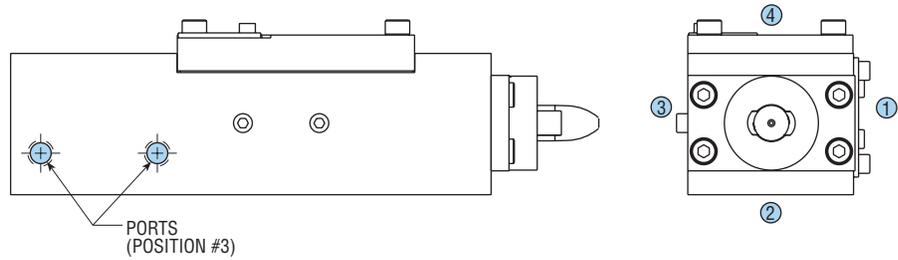


All dimensions are reference only unless specifically tolerated.

PP3

PORT LOCATION

PP3 is accessible ports in position #3 (ports in position #1 will be plugged). If PP3 is not specified, accessible ports will be in position #1 (ports in position #3 will be plugged).



PSxxx

STANDARD POSITION SENSING

PRxxx

REVERSED POSITION SENSING

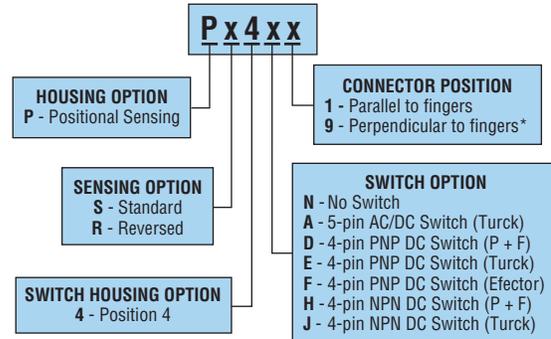
This option provides clamp and unclamp sensing by affixing aluminum housing to the side of the clamp body. Extend switch is fixed, and the retract switch is adjustable throughout the full clamp stroke.

PR positions satellite switch S01 to sense unclamped (yellow LED on switch) and satellite switch S02 to sense clamped (red LED on switch).

PS positions satellite switch S02 to sense unclamped (red LED on switch) and satellite switch S01 to sense clamped (yellow LED on switch).

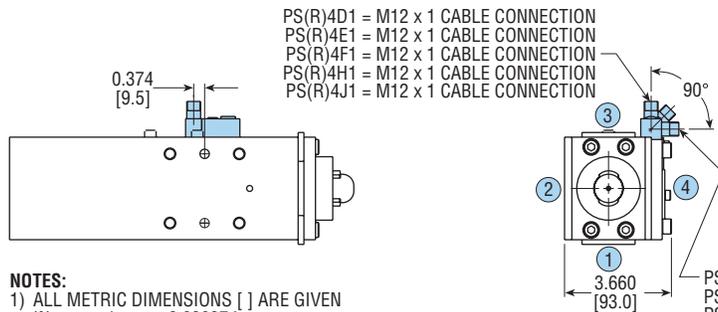
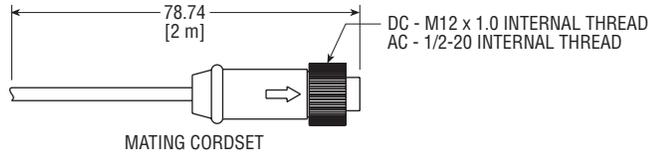
Loosening the M5 screw and sliding it up and down adjusts the retract switch position. Kits are available for switches or an assembled housing and switch.

POSITION SENSOR OPTION CODE



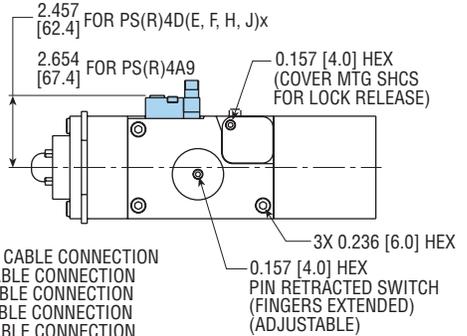
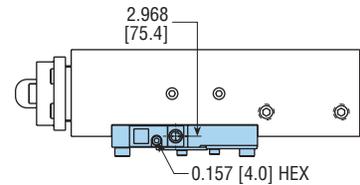
***NOTE:**

Connector position 9 is not available with switch option A.



NOTES:

- 1) ALL METRIC DIMENSIONS [] ARE GIVEN IN mm 1 mm = 0.03937 in
- 2) NUMBERS IN CIRCLES INDICATE POSITION (POSITION 1 IS PORT SIDE OF CLAMP)



- PS(R)4A9 = 1/2-20 UNF CABLE CONNECTION
- PS(R)4D9 = M12 x 1 CABLE CONNECTION
- PS(R)4E9 = M12 x 1 CABLE CONNECTION
- PS(R)4F9 = M12 x 1 CABLE CONNECTION
- PS(R)4H9 = M12 x 1 CABLE CONNECTION
- PS(R)4J9 = M12 x 1 CABLE CONNECTION

MATCHING CORDSETS 2 METERS LONG

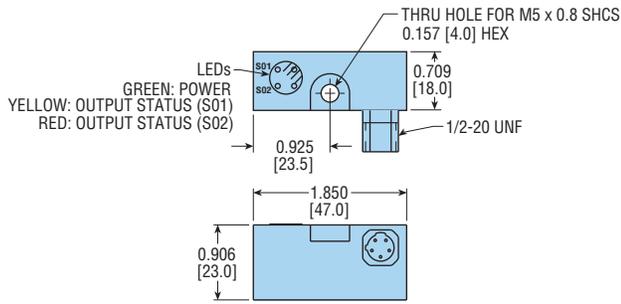
SWITCH OPTION	PHD PART NUMBER	CORDSET PART NUMBER
A	73317-00-02	KB 5T-2
D	65440-001-02	V1-G-YE2M-PVC
E	78039-00-02	RK 4.4T-2
F	65440-001-02	V1-G-YE2M-PVC
H	65440-001-02	V1-G-YE2M-PVC
J	78039-00-02	RK 4.4T-2

SWITCH KITS

SWITCH OPTION	KIT NUMBER	DESCRIPTION
N	74510-01	Switch Housing Kit without Switch
D	74510-02	Switch Housing Kit with 5 pin AC/DC, (Turck) Switch
A	74510-03	Switch Housing Kit with 4 pin DC, PNP (P + F) Switch
E	74510-04	Switch Housing Kit with 4 pin DC, PNP (Turck) Switch
F	74510-05	Switch Housing Kit with 4 pin DC, PNP (Efactor) Switch
H	74510-18	Switch Housing Kit with 4 pin DC, NPN (P + F) Switch
J	74510-19	Switch Housing Kit with 4 pin DC, NPN (Turck) Switch

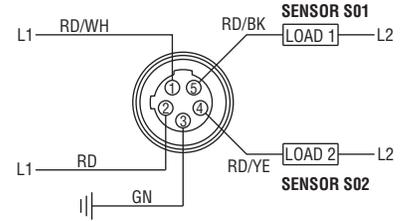
All dimensions are reference only unless specifically tolerated.

SWITCH OPTION A **71483-002-PLC** **Turck Part #: Ni 2-Q6.5-ADZ32-0.16-FSB 5.4X4/S304**

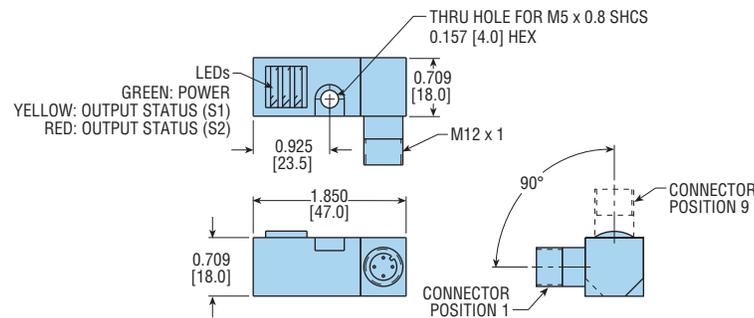


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS4A9	S02	S01	S01 = Pin 5
PR4A9	S01	S02	S02 = Pin 4

4-WIRE AC/DC

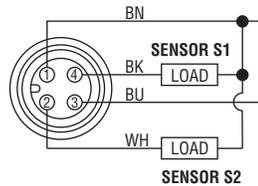


SWITCH OPTION D **71483-001-PLC** **P + F Part #: NBN2-F581-160S6-E8-V1 (PNP)**
SWITCH OPTION H **71483-005-PLC** **P + F Part #: NBN2-F581-160S6-E10-V1 (NPN)**

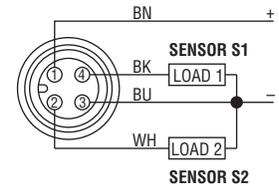


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS4Dx or PS4Hx	S2	S1	S1 = Pin 4
PR4Dx or PR4Hx	S1	S2	S2 = Pin 2

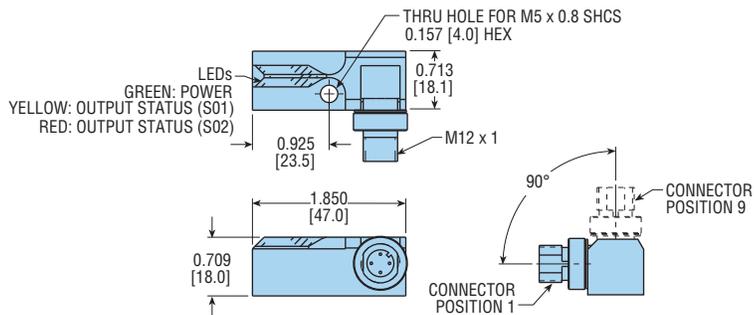
4-WIRE DC (V1 TYPE)
NPN DUAL NORMALLY OPEN



4-WIRE DC (V1 TYPE)
PNP DUAL NORMALLY OPEN

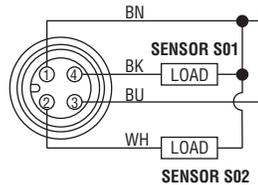


SWITCH OPTION E **71483-003-PLC** **Turck Part #: Ni 2-Q6.5-0.16-BDS-2AP6X3-H1141/S34 (PNP)**
SWITCH OPTION J **71483-006-PLC** **Turck Part #: Ni 2-Q6.5-AN6-0.16-FS 4.4X3/S304 (NPN)**

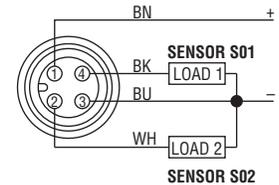


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS4Ex or PS4Jx	S02	S01	S01 = Pin 4
PR4Ex or PR4Jx	S01	S02	S02 = Pin 2

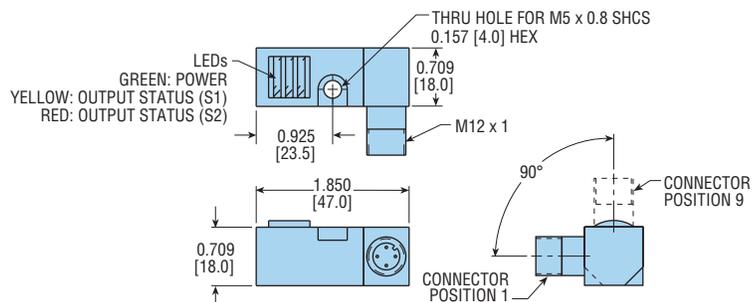
4-WIRE DC
NPN DUAL NORMALLY OPEN



4-WIRE DC
PNP DUAL NORMALLY OPEN

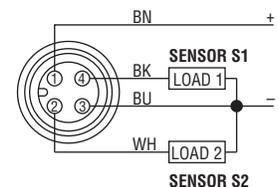


SWITCH OPTION F **71483-004-PLC** **Efector Part #: IN 5375 (PNP)**



OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS4Fx	S2	S1	S1 = Pin 4
PR4Fx	S1	S2	S2 = Pin 2

4-WIRE DC
PNP DUAL NORMALLY OPEN



All dimensions are reference only unless specifically tolerated.