Automated Workholding Solutions

CLAMPS

PHD Clamps provide superior part holding and transferring for your assembly and welding environments.

SERIES:

PA

PB

PEC

PLK

PLKD

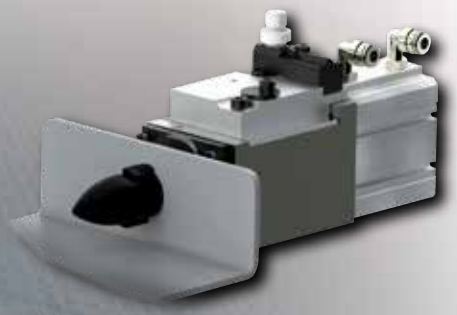
PLC

PSP

PNC

PFC

PHL



Also see GRM Clamps Catalog for details on 2 jaw, pneumatic clamps ideal for sheet metal stamping and transfer

ISO 9001 REGISTERED
Quality Management System Certified

AWHS01

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SOLUTIONS FOR INDUSTRIAL AUTOMATION

www.phdinc.com

clamps

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Ideal for a wide variety of automated part holding and transfer applications	Major Benefits....4 Ordering Data....5 Engineering Data....6 Dimensions....7 Options....8 - 10
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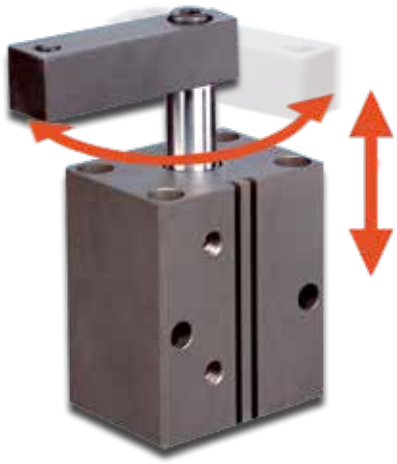
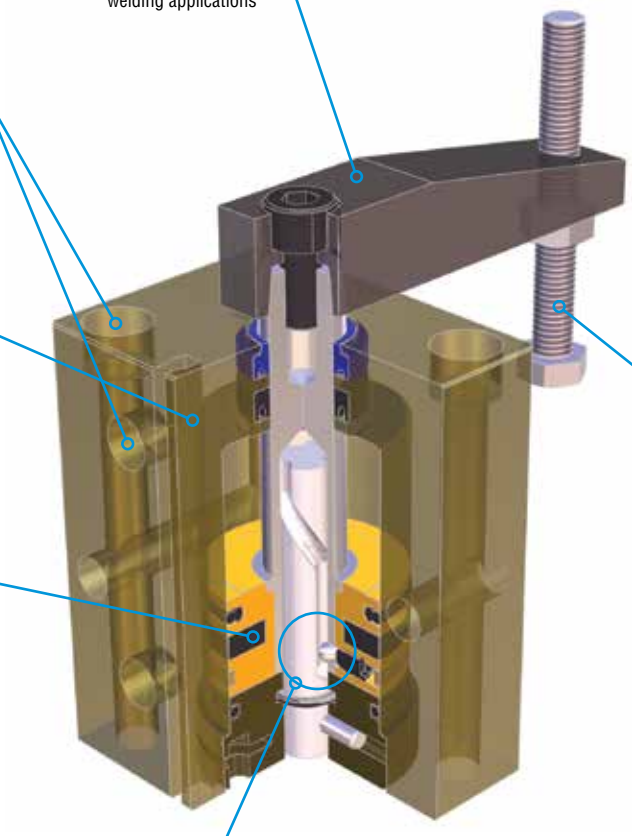
PA

SWING CLAMPS



Major Benefits

- Simple design, compact size, for low weight, long life, and high clamp force make these clamps ideal for part holding or transfer
- Available in five sizes
- Mounting patterns on three surfaces
- Available in left and right rotations



ORDERING DATA: SERIES PA SWING CLAMPS

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

TO ORDER SPECIFY:
Model, Body Style, Unit Size, Arm Rotation Direction, Design No., and Additional Options if desired.

MODEL

UNIT SIZE
2 - 25 mm Bore
3 - 32 mm Bore
4 - 40 mm Bore
5 - 50 mm Bore
6 - 63 mm Bore

DESIGN NO.
1 - Imperial
5 - Metric

ARM OPTIONS
BLANK - None
AS - Single Steel
ASC - Single Copper

SWITCH OPTIONS
BLANK - None
SW1 - 2 Reed Switches provided
SW2 - 2 Hall Effect Switches (PNP) provided
SW3 - 2 Hall Effect Switches (NPN) provided
SW4 - 2 Magnetoresistive Switches (PNP) w/Quick Connect provided
SW5 - 2 Magnetoresistive Switches (NPN) w/Quick Connect provided

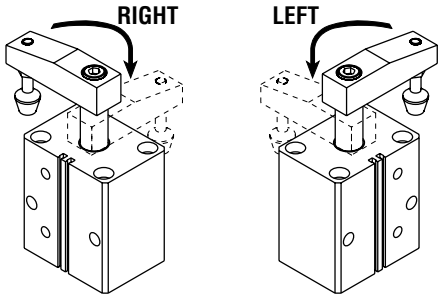
PA S 2 R - 1 - AS - TA - SW1 - LBB

BODY STYLE
S - Standard (Block)

ARM ROTATION DIRECTION*
R - Right
L - Left

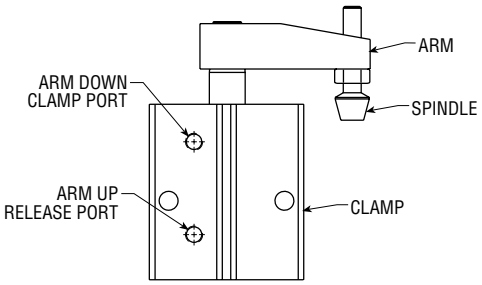
SPINDLE OPTIONS
BLANK - None
TA - Steel
TN - Neoprene Tipped

PORT FITTINGS (BOTH PORTS)
BLANK - None
LBB - 90° Swivel Fitting (See Note 1)



*__NOTE:__ Rotation is the direction the arm rotates when clamping and looking down at rod end.

NOTE:
1) 90° Swivel fittings not available on size 2 units.



CAD Configurator Assistance

Use PHD's free online application at **www.phdinc.com/cad**

ENGINEERING DATA: SERIES PA SWING CLAMPS

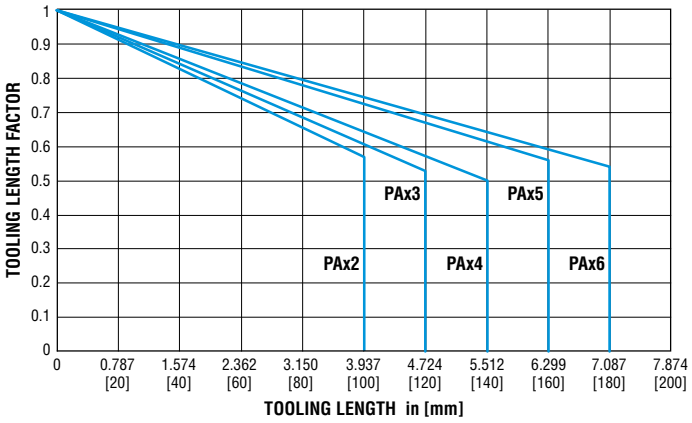
SPECIFICATIONS	SERIES PA
WORKING PRESSURE	40 psi min. - 100 psi max. [2.9 bar min. - 7 bar max.]
BODY	Hardcoated Aluminum
PISTON ROD	Chrome Plated Steel
SEALS	Urethane Wiper and Rod Seal
	Nitrile Pistons and Static Seals
LUBRICATION	Permanent for Non-Lube Air
TEMPERATURE LIMITS	-20° to 180°F [-30° to 82°C]

MODEL SIZE	BORE	CLAMP FORCE FACTOR Cf		TOTAL STROKE	ROTARY STROKE	CLAMP STROKE	STROKE TOLERANCE	ROTARY CLEARANCE (including backlash)	CLAMP WEIGHT	
	mm	Imperial	Metric	mm	mm	mm	mm	deg	lb	g
PAx2	25	0.38	24.5	26.5	10	16.5	- 0, + 2	± 3	0.88	400
PAx3	32	0.69	44.5	30	14	16			1.45	600
PAx4	40	1.21	77.9	30	13	17			1.94	880
PAx5	50	1.90	122.4	29.5	14.5	15			3.48	1580
PAx6	63	3.22	207.6	30	13	17			4.84	2200

CLAMP FORCE CALCULATION EQUATIONS:

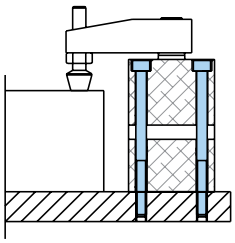
IMPERIAL:
Clamp Force [lb] = (Pressure [psi] x Cf) x Tooling Length Factor

METRIC:
Clamp Force [N] = (Pressure [bar] x Cf) x Tooling Length Factor

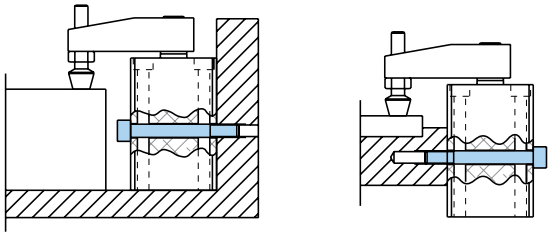


CLAMP MOUNTING KITS

End mounting kit includes four alloy socket head cap screws for end mounting.



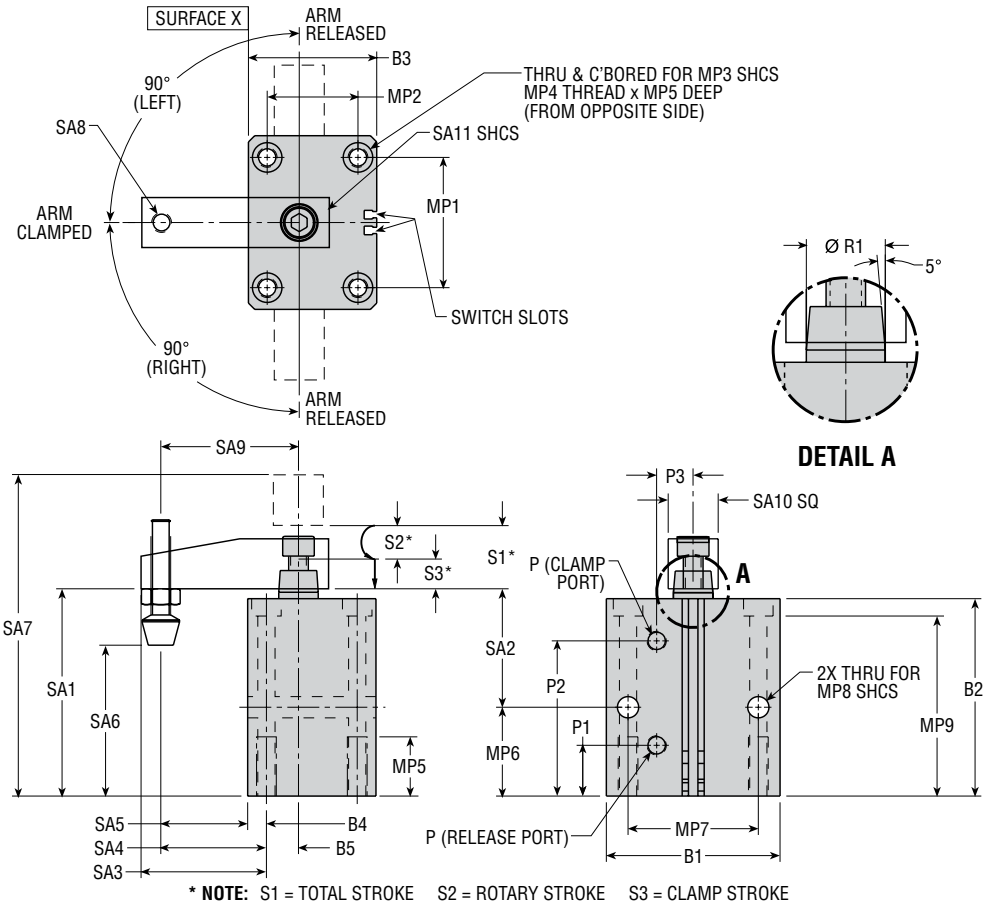
Side mounting kit includes two alloy socket head cap screws for side mounting.



DESCRIPTION	KIT NUMBER				
	PAS2x	PAS3x	PAS4x	PAS5x	PAS6x
END MOUNTING KIT - INCLUDES 4 SCREWS	71110-02 M6 x 90 mm LG SHCS	71110-03 M6 x 100 mm LG SHCS	71110-04 M8 x 100 mm LG SHCS	71110-05 M8 x 110 mm LG SHCS	71110-06 M10 x 110 mm LG SHCS
SIDE MOUNTING KIT - INCLUDES 2 SCREWS	71111-02 M8 x 50 mm LG SHCS	71111-03 M8 x 60 mm LG SHCS	71111-04 M8 x 70 mm LG SHCS	71111-05 M10 x 90 mm LG SHCS	71111-06 M10 x 100 mm LG SHCS

All dimensions are reference only unless specifically toleranced.

DIMENSIONS: SERIES PA SWING CLAMPS



*** NOTE:** S1 = TOTAL STROKE S2 = ROTARY STROKE S3 = CLAMP STROKE

LETTER DIM	MODEL NUMBER									
	PAS2x		PAS3x		PAS4x		PAS5x		PAS6x	
	in	mm	in	mm	in	mm	in	mm	in	mm
B1	2.165	55.0	2.362	60.0	2.756	70.0	3.346	85.0	3.937	100.0
B2	3.071	78.0	3.543	90.0	3.543	90.0	3.937	100.0	3.937	100.0
B3	1.378	35,0	1.772	45.0	2.165	55.0	2.559	65.0	3.150	80.0
B4	0.295	7.5	0.295	7.5	0.354	9.0	0.374	9.5	0.394	10.0
B5	0.295	7.5	0.492	12.5	0.610	15.5	0.846	21.5	1.083	27.5
MP1	1.575	40.0	1.772	45.0	2.047	52.0	2.598	66.0	3.150	30.0
MP2	0.787	20.0	1.181	30.0	1.457	37.0	1.511	46.0	2.362	60.0
MP3	M6		M6		M8		M8		M10	
MP4	M8 x 1.25		M8 x 1.25		M10 x 1.5		M10 x 1.5		M12 x 1.75	
MP5	0.787	20.0	0.787	20.0	0.984	25.0	1.181	30.0	1.181	30.0
MP6	1.260	32.0	1.693	43.0	1.575	40.0	1.772	45.0	1.417	36.0
MP7	1.575	40.0	1.772	45.0	2.047	52.0	2.598	66.0	3.150	80.0
MP8	M8		M8		M8		M10		M10	
MP9	2.795	71.0	3.268	83.0	3.189	81.0	3.583	91.0	3.504	89.0
P	10-32	M5	1/8 NPT	1/8 BSPP	1/8 NPT	1/8 BSPP	1/8 NPT	1/8 BSPP	1/8 NPT	1/8 BSPP
P1	0.669	17.0	0.827	21.0	0.787	20.0	0.984	25.0	1.102	28.0
P2	2.421	61.5	2.854	72.5	2.854	72.5	3.091	78.5	3.150	80.0
P3	0.374	9.5	0.492	12.5	0.551	14.0	0.669	17.0	0.787	20.0
R1	0.551	14.0	0.630	16.0	0.630	16.0	0.787	20.0	0.787	20.0
S1*	1.043	26.5	1.181	30.0	1.181	30.0	1.161	29.5	1.181	30.0
S2*	0.394	10.0	0.551	14.0	0.512	13.0	0.571	14.5	0.512	13.0
S3*	0.650	16.5	0.630	16.0	0.669	17.0	0.591	15.0	0.669	17.0
SA1	3.209	81.5	3.780	96.0	3.740	95.0	4.193	106.5	4.193	106.5
SA2	1.969	50.0	0.551	14.0	0.512	13.0	0.571	14.5	0.512	13.0
SA3	1.969	50.0	2.283	58.0	2.520	64.0	2.756	70.0	2.913	74.0
SA4	1.673	42.5	1.870	47.5	2.146	54.5	1.929	49.0	2.067	52.5
SA5	1.378	35.0	1.575	40.0	1.791	45.5	1.929	49.0	2.067	52.5
SA6	2.24-2.56	57.0-65.0	2.36-2.87	60.0-73.0	2.36-2.87	60.0-73.0	2.17-2.95	55.0-75.0	2.17-2.95	55.0-75.0
SA7	4.882	124.0	5.709	145.0	5.670	144.0	6.339	161.0	6.358	161.5
SA8	M6 x 1.0 thru		M8 x 1.25 thru		M8 x 1.25 thru		M12 x 1.75 thru		M12 x 1.75 thru	
SA9	1.969	50.0	2.362	60.0	2.756	70.0	3.150	80.0	3.543	90.0
SA10	0.630	16.0	0.748	19.0	0.748	19.0	0.984	25.0	0.984	25.0
SA11	M8		M8		M8		M10		M10	

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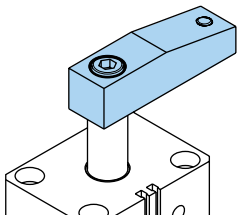
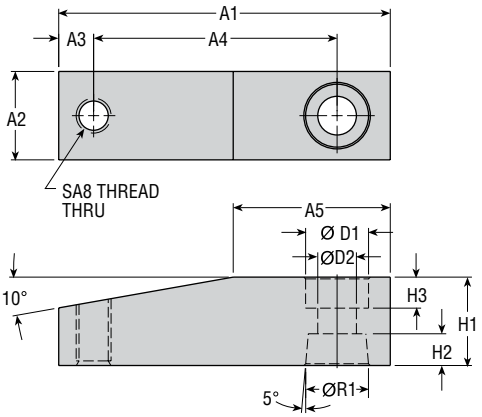
OPTIONS: SERIES PA SWING CLAMPS

AS SINGLE ARM - STEEL

ASC SINGLE ARM - COPPER

Single arms are made of steel or copper, one alloy socket head cap screw included.





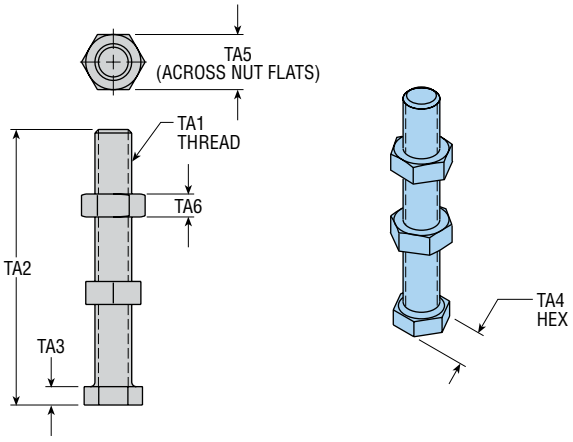
LETTER DIM	MODEL NUMBER									
	PAx2x		PAx3x		PAx4x		PAx5x		PAx6x	
	in	mm	in	mm	in	mm	in	mm	in	mm
A1	2.598	66.0	3.150	80.0	3.543	90.0	4.134	105.0	4.528	115.0
A2	0.630	16.0	0.748	19.0	0.748	19.0	0.984	25.0	0.984	25.0
A3	0.236	6.0	0.354	9.0	0.354	9.0	0.394	10.0	0.394	10.0
A4	1.969	50.0	2.362	60.0	2.756	70.0	3.150	80.0	3.543	90.0
A5	0.787	20.0	0.984	25.0	1.378	35.0	1.378	35.0	1.772	45.0
D1	0.551	14.0	0.551	14.0	0.551	14.0	0.669	17.0	0.669	17.0
D2	0.335	8.5	0.335	8.5	0.335	8.5	0.413	10.5	0.413	10.5
H1	0.630	16.0	0.748	19.0	0.748	19.0	0.984	25.0	0.984	25.0
H2	0.236	6.0	0.354	9.0	0.354	9.0	0.472	12.0	0.472	12.0
H3	0.236	6.0	0.276	7.0	0.276	7.0	0.354	9.0	0.354	9.0
R1	0.551	14.0	0.630	16.0	0.630	16.0	0.787	20.0	0.787	20.0
SA8	M6 x 1.0		M8 x 1.25		M8 x 1.25		M12 x 1.75		M12 x 1.75	
KIT NO. STEEL	AS-PAS2-1		AS-PAS3-1		AS-PAS4-1		AS-PAS5-1		AS-PAS6-1	
COPPER	ASC-PAS2-1		ASC-PAS3-1		ASC-PAS4-1		ASC-PAS5-1		ASC-PAS6-1	

WEIGHT	MODEL NUMBER									
	PAx2x		PAx3x		PAx4x		PAx5x		PAx6x	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
STEEL	0.20	0.090	0.34	0.153	0.43	0.193	0.85	0.387	0.91	0.414
COPPER	0.22	0.100	0.37	0.170	0.47	0.215	0.95	0.430	1.01	0.460

TA STEEL SPINDLE

Steel spindles are plated steel with two hex nuts included.

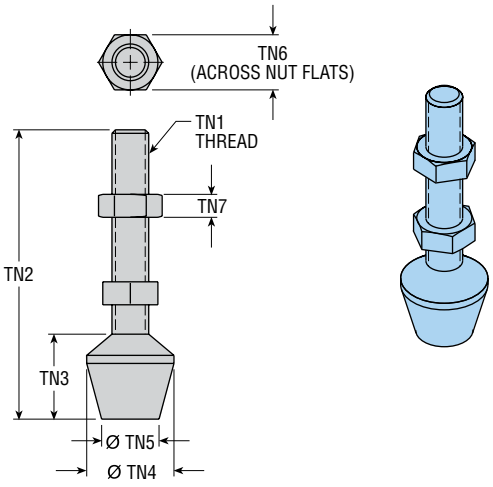
LETTER DIM	MODEL NUMBER					
	PAx2x		PAx3x & PAx4x		PAx5x & PAx6x	
	in	mm	in	mm	in	mm
TA1	M6 x 1.0		M8 x 1.25		M12 x 1.75	
TA2	2.362	60.0	2.953	75.0	3.937	100.0
TA3	0.157	4.0	0.236	6.0	0.315	8.0
TA4	0.433	11.0	0.591	15.0	0.866	22.0
TA5	0.394	10.0	0.472	12.0	0.748	19.0
TA6	0.197	5.0	0.217	5.5	0.394	10.0
KIT NO.	71200-02		71200-03		71200-05	



TN NEOPRENE TIPPED SPINDLE

Neoprene tipped spindles are plated threaded steel with 65 Durometer Neoprene molded onto the end. Two hex nuts are included.

LETTER DIM	MODEL NUMBER					
	PAx2x		PAx3x & PAx4x		PAx5x & PAx6x	
	in	mm	in	mm	in	mm
TN1	M6 x 1.0		M8 x 1.25		M12 x 1.75	
TN2	2.008	51.0	2.480	63.0	3.937	100.0
TN3	0.551	14.0	0.728	18.5	1.339	34.0
TN4	0.630	16.0	0.748	19.0	1.260	32.0
TN5	0.394	10.0	0.492	12.5	0.866	22.0
TN6	0.394	10.0	0.512	13.0	0.748	19.0
TN7	0.197	5.0	0.256	6.5	0.394	10.0
KIT NO.	71100-02		71100-03		71100-05	



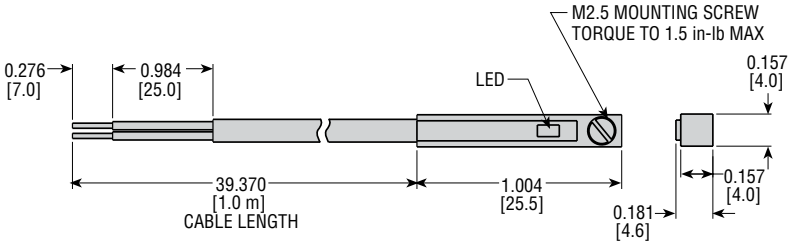
All dimensions are reference only unless specifically toleranced.

OPTIONS: SERIES PA SWING CLAMPS

SW1 REED SWITCHES PROVIDED

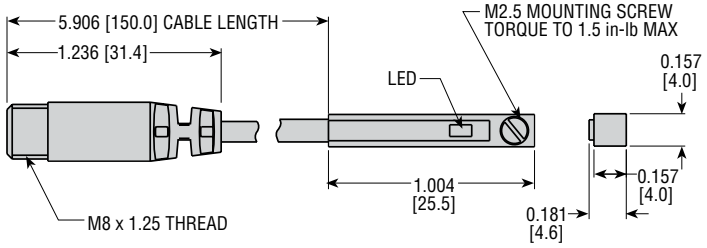
SW2 HALL EFFECT SWITCHES (PNP) PROVIDED

SW3 HALL EFFECT SWITCHES (NPN) PROVIDED



SW4 MAGNETORESISTIVE SWITCHES (PNP) PROVIDED WITH QUICK CONNECT

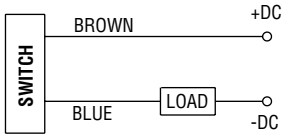
SW5 MAGNETORESISTIVE SWITCHES (NPN) PROVIDED WITH QUICK CONNECT



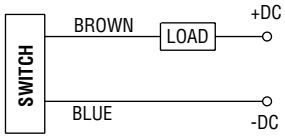
SPECIFICATIONS	SW1 71115-01-01	SW2 71125-01-01	SW3 71125-02-01	SW4 71125-04-01	SW5 71125-03-1
ACTUATED BY	Moving Magnet	Moving Magnet	Moving Magnet	Moving Magnet	Moving Magnet
POWER CAPACITY	6 Watt Max.	6 Watt Max.	6 Watt Max.	1.5 Watt	1.5 Watt
OUTPUT STATE	Normally Open	Normally Open	Normally Open	Normally Open	Normally Open
OPERATING PRINCIPLE	Magnetic Reed	Magnetic Hall Effect	Magnetic Hall Effect	Magnetoresistive	Magnetoresistive
OUTPUT TYPE	SPST Contact Closure	Solid State PNP	Solid State NPN	PNP Current Sourcing	NPN Current Sinking
OPERATING VOLTAGE	5 - 120 VAC/VDC	5 - 28 VDC	5 - 28 VDC	5 - 30 VDC	5 - 30 VDC
CURRENT RATING (RES.)	50 mA Max.	200 mA Max.	200 mA Max.	50 mA Max.	50 mA Max.
BURDEN CURRENT	—	20 mA Max. @ 24 VDC (Switch Active)	20 mA Max. @ 24 VDC (Switch Active)	15 mA Max. @ 24 VDC Max.	12 mA Max. @ 24 VDC Max.
VOLTAGE DROP	2.5 V Max.	0.5 V @ 200 mA Max.	0.5 V @ 200 mA Max.	1.5 V @ 25 mA Max.	0.5 V @ 25 mA Max.
CIRCUIT PROTECTION	None	Power Source Reverse, Surge Suppression	Power Source Reverse, Surge Suppression	Reverse Polarity, Surge Suppression	Reverse Polarity, Surge Suppression
LED COLOR	Red	Green	Red	Green	Red
OPERATING TEMPERATURE	-10° to +70° C	-10° to +70° C	-10° to +70° C	-10° to +70° C	-10° to +70° C
ENVIRONMENTAL	IP67	IP67	IP67	IP67	IP67
CABLE TYPE	PVC	PVC	PVC	PVC	PVC

71115-xx-xx

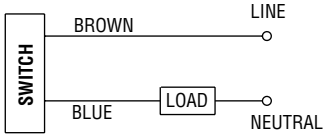
DC PNP (SOURCING)



DC NPN (SINKING)



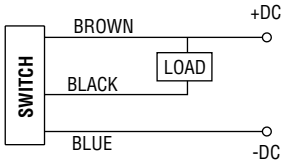
AC



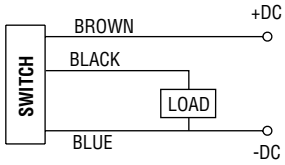
OPTION	KIT NO.	DESCRIPTION
SW1	71115-01-01	PNP (Sink) or PNP (Source), 5 - 10 VAC/VDC, 1 meter cable
SW2	71125-01-01	PNP (Source), 5 - 28 VDC, 1 meter cable
SW3	71125-02-01	NPN (Sink), 5 - 28 VDC, 1 meter cable
SW4	71125-04-01	PNP (Source), Magnetoresistive Switch with Quick Connect
SW5	71125-03-01	NPN (Sink), Magnetoresistive Switch with Quick Connect

71125-xx-xx

DC NPN (SINKING)



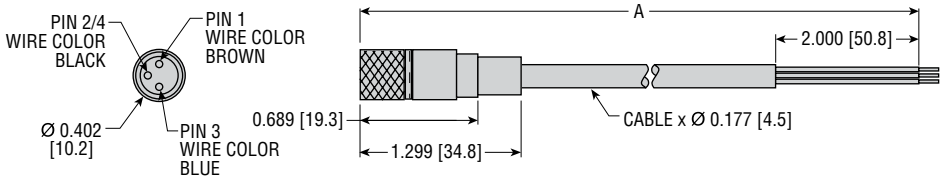
DC PNP (SOURCING)



63549-xx CORDSET WITH FEMALE QUICK CONNECT

Provides a cordset with female quick connect and additional cable.

MODEL NO.	LETTER DIM A
63549-02	78.74 [2 m]
63549-05	196.85 [5 m]



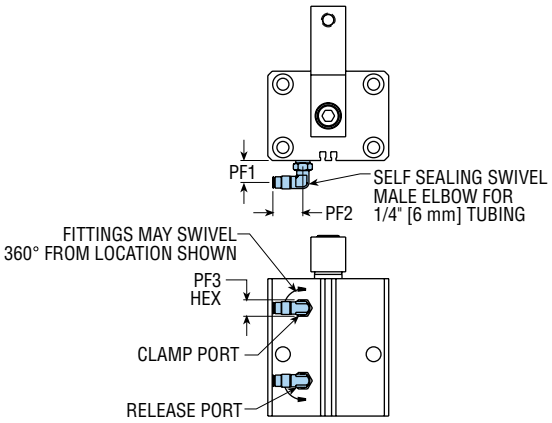
NUMBERS IN [ ] ARE IN mm. IMPERIAL EQUIVALENTS ARE PROVIDED FOR CONVENIENCE.

All dimensions are reference only unless specifically toleranced.

LBB PORT FITTINGS

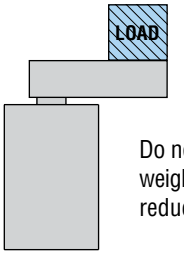
Port fitting is not available on size 2.

LETTER DIM	PORT FITTING OPTION	
	in	mm
PF1 (MIN)	0.629	12.0
PF1 (MAX)	0.748	16.0
PF2	0.885	20.0
PF3	0.472	12.0

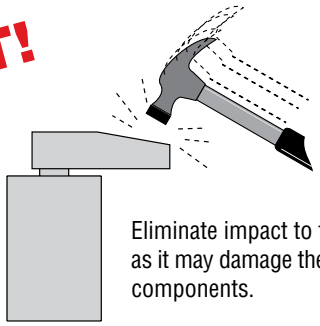


APPLICATION CONCERNS

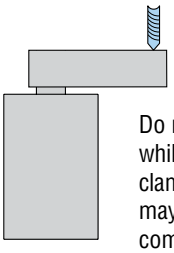
DON'T!



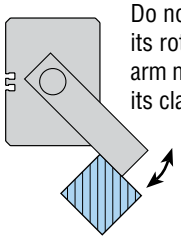
Do not attach heavy arms or weights to the clamp without reducing rotation speed.



Eliminate impact to the arm as it may damage the internal components.

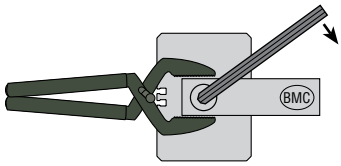


Do not machine the arm while it is still attached to the clamp. The forces generated may damage the internal components.



Do not stop clamp arm during its rotary stroke (dim. S2). The arm may only be stopped during its clamp stroke (dim. S3).

DO!

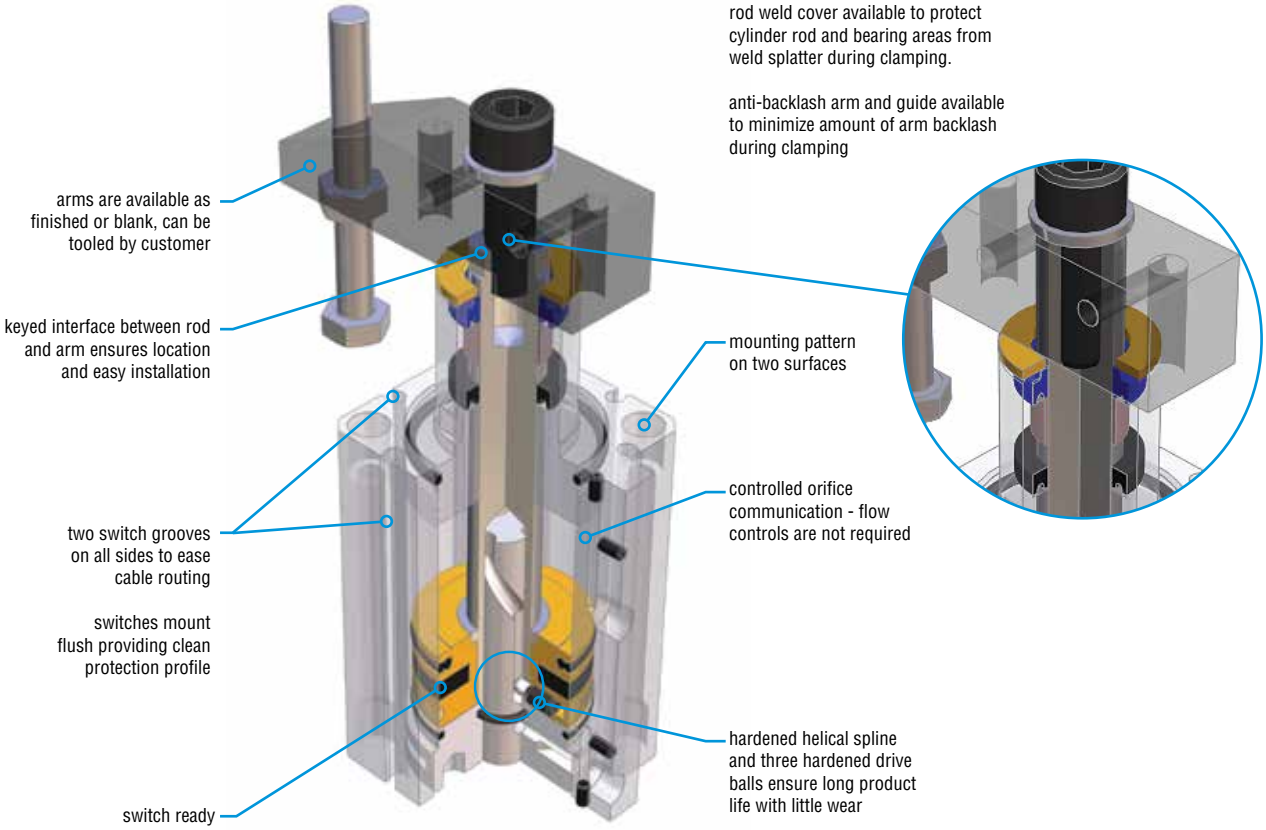


Hold the arm (not the clamp body) when loosening or tightening the arm mounting screw.

SWING CLAMPS

Major Benefits

- Simple design, compact size, for low weight, long life, and high clamp force make these clamps ideal for part holding or transfer
- Mounting patterns on three surfaces
- Available in left and right rotations



ORDERING DATA: SERIES PB SWING CLAMPS

TO ORDER SPECIFY:
Model, Stroke Length, Unit Size, Arm Rotation Direction, Design No., and Additional Options if desired.

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

MODEL

UNIT SIZE
2 - 25 mm Bore
3 - 32 mm Bore
4 - 40 mm Bore
5 - 50 mm Bore

DESIGN NO.
1 - Imperial
5 - Metric

CLAMP TIP OPTIONS
BLANK - None
TA - Std. Adjustable (See note 1)

MISCELLANEOUS OPTIONS
BLANK - None
SW41 - 1 NPN switch provided
SW42 - 2 NPN switches provided
SW51 - 1 PNP switch provided
SW52 - 2 PNP switches provided

ANTI-BACKLASH OPTIONS
BLANK - None
AB1 - Anti-backlash arm (See note 1)

PB L 5 R - 1 - ASA - TA - SW51 - LAA - AB1 - WC1 - MB1

STROKE LENGTH
L - Long stroke
S - Short stroke
(See chart for length)

ARM ROTATION DIRECTION
R - Right
L - Left

CLAMP ARM OPTIONS
BLANK - None
ASA - Single Aluminum
ASB - Single Aluminum Blank

PORT FITTINGS (BOTH PORTS)
BLANK - None
LAA - 90° Swivel Fitting, Metal

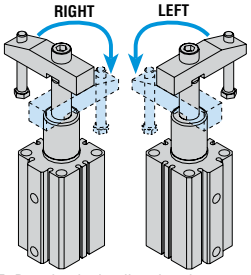
WELD COVER OPTIONS
BLANK - None
WC1 - Rod weld cover (See note 1)

MOUNTING OPTIONS
BLANK - None
MA1 - 5/16-18 Threaded Mtg Holes in Position 5
MP1 - 5/16-18 Threaded Mtg Holes in Position 6
MB1 - 5/16-18 Threaded Mtg Holes in Position 5 & 6
MA5 - M8 Threaded Mtg Holes in Position 5
MP5 - M8 Threaded Mtg Holes in Position 6
MB5 - M8 Threaded Mtg Holes in Position 5 & 6

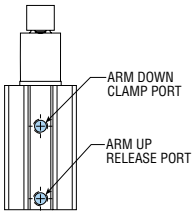
NOTE:
1) Must have arm option ordered with these options. To order separately, use kit numbers on page 15.

STROKE AVAILABILITY (mm)

CLAMP SERIES	TOTAL STROKE	CLAMP STROKE	ROTARY STROKE
PBS2x	19.5	10	9.5
PBL2x	29.5	20	9.5
PBS3x	25	10	15
PBL3x	35	20	15
PBS4x	25	10	15
PBL4x	35	20	15
PBS5x	39	20	19
PBL5x	69	50	19



NOTE: Rotation is the direction the arm rotates when clamping and looking down at rod end.



NOTE: Metric units have metric ports. Imperial units have imperial ports.

ENGINEERING DATA: SERIES PB SWING CLAMPS

SPECIFICATIONS	SERIES PB
PISTON SEALS	Long life Nitrile
ROD SEALS	Urethane lip type
OPERATING TEMPERATURE	-20° to +180°F [-30° to +82°C]
LUBRICATION	Factory lubricated for life
MINIMUM CYCLE PRESSURE	30 psi [2 bar]

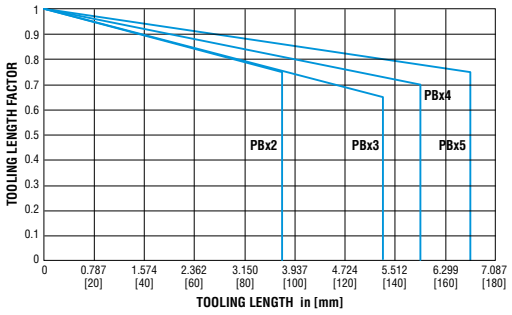
CAD Configurator Assistance
Use PHD's free online application at **www.phdinc.com/cad**

MODEL SIZE	BORE	CLAMP FORCE FACTOR Cf		TOTAL STROKE	ROTARY STROKE	CLAMP STROKE	STROKE TOLERANCE	ROTARY CLEARANCE (including backlash)	CLAMP WEIGHT	
	mm	Imperial	Metric	mm	mm	mm	mm	deg	lb	g
PBS2	25	0.59	38.1	19.5	9.5	10	- 1, + 2	± 3	0.72	326
PBL2	25	0.59	38.1	29.5	9.5	20			0.82	374
PBS3	32	0.93	60.0	25	15	10			1.18	537
PBL3	32	0.93	60.0	35	15	20			1.34	608
PBS4	40	1.64	105.8	25	15	10			1.50	680
PBL4	40	1.64	105.8	35	15	20			1.68	764
PBS5	50	2.56	165.2	39	19	20			2.55	1160
PBL5	50	2.56	165.2	69	19	50			3.10	1410

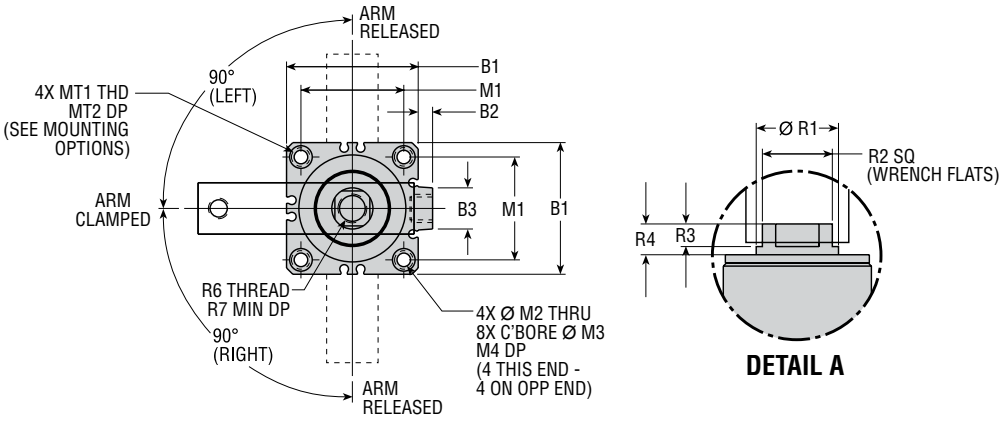
CLAMP FORCE CALCULATION EQUATIONS:

IMPERIAL:
Clamp Force [lb] = (Pressure [psi] x Cf) x Tooling Length Factor

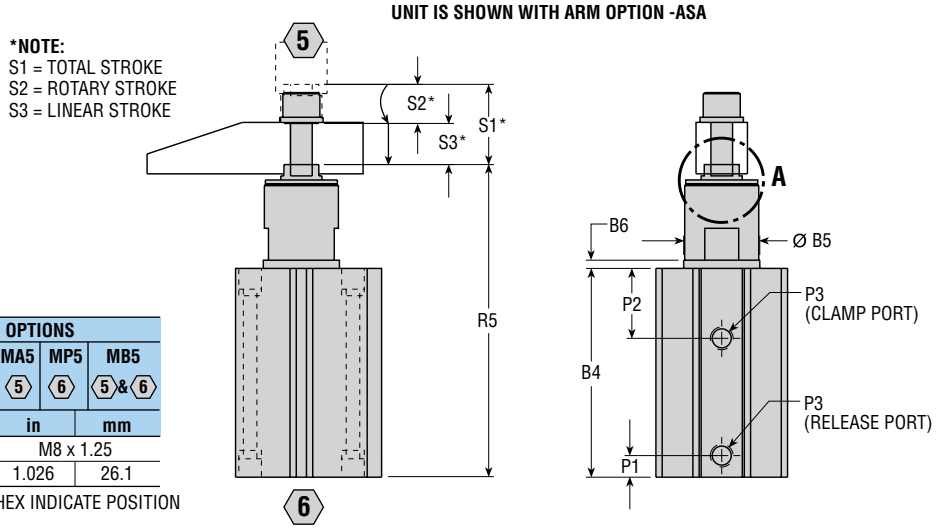
METRIC:
Clamp Force [N] = (Pressure [bar] x Cf) x Tooling Length Factor



DIMENSIONS: SERIES PB SWING CLAMPS



UNIT IS SHOWN WITH ARM OPTION -ASA



LETTER DIM	MOUNTING OPTIONS					
	MA1 (5)	MP1 (6)	MB1 (5&6)	MA5 (5)	MP5 (6)	MB5 (5&6)
	in		mm	in		mm
MT1	5/16-18			M8 x 1.25		
MT2	1.026		26.1	1.026		26.1

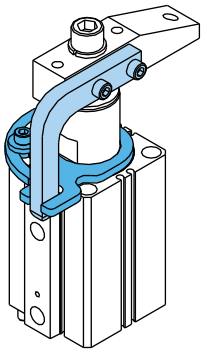
NOTE: NUMBERS ENCLOSED IN HEX INDICATE POSITION

LETTER DIM	MODEL NUMBER															
	PBS2x		PBL2x		PBS3x		PBL3x		PBS4x		PBL4x		PBS5x		PBL5x	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
B1	1.575	40.0	1.575	40.0	1.772	45.0	1.772	45.0	2.047	52.0	2.047	52.0	2.520	64.0	2.520	64.0
B2	0.197	5.0	0.197	5.0	0.177	4.5	0.177	4.5	0.197	5.0	0.197	5.0	0.276	7.0	0.276	7.0
B3	0.378	9.6	0.378	9.6	0.650	16.5	0.650	16.5	0.709	18.0	0.709	18.0	0.787	20.0	0.787	20.0
B4	2.874	73.0	3.268	83.0	3.15	80.0	3.543	90.0	3.15	80.0	3.543	90.0	3.996	101.5	5.177	131.5
B5 MAX	0.9055	23.000	0.9055	23.000	1.1811	30.000	1.1811	30.000	1.1811	30.000	1.1811	30.000	1.4567	37.000	1.4567	37.000
B5 MIN	0.9024	22.920	0.9024	22.920	1.1780	29.920	1.1780	29.920	1.1780	29.920	1.1780	29.920	1.4535	36.920	1.4535	36.920
B6	0.118	3.0	0.118	3.0	0.118	3.0	0.118	3.0	0.118	3.0	0.118	3.0	0.138	3.5	0.138	3.5
M1	1.102	28.0	1.102	28.0	1.339	34.0	1.339	34.0	1.575	40.0	1.575	40.0	1.968	50.0	1.968	50.0
M2	0.217	5.5	0.217	5.5	0.217	5.5	0.217	5.5	0.217	5.5	0.217	5.5	0.260	6.6	0.260	6.6
M3	0.354	9.0	0.354	9.0	0.354	9.0	0.354	9.0	0.354	9.0	0.354	9.0	0.433	11.0	0.433	11.0
M4	0.275	7.0	0.275	7.0	0.354	9.0	0.354	9.0	0.472	12.0	0.472	12.0	0.512	13.0	0.512	13.0
P1	0.736	18.7	0.736	18.7	0.787	20.0	0.787	20.0	0.787	20.0	0.787	20.0	1.004	25.5	1.004	25.5
P2	1.063	27.0	1.063	27.0	1.358	34.5	1.358	34.5	1.358	34.5	1.358	34.5	1.535	39.0	1.535	39.0
P3	10-32 UNF	M5	10-32 UNF	M5	1/8 NPT	1/8 BSPP	1/8 NPT	1/8 BSPP	1/8 NPT	1/8 BSPP	1/8 NPT	1/8 BSPP	1/4 NPT	1/4 BSPP	1/4 NPT	1/4 BSPP
R1	0.472	12.0	0.472	12.0	0.630	16.0	0.630	16.0	0.629	16.0	0.630	16.0	0.787	20.0	0.787	20.0
R2 MAX	0.3898	9.9	0.3898	9.9	0.5472	13.9	0.5472	13.9	0.548	13.9	0.5472	13.9	0.6654	16.9	0.6654	16.9
R2 MIN	0.3846	9.77	0.3846	9.77	0.5421	13.77	0.5421	13.77	0.5421	13.77	0.5421	13.77	0.6602	16.77	0.6602	16.77
R3	0.118	3.0	0.118	3.0	0.217	5.5	0.217	5.5	0.217	5.5	0.217	5.5	0.217	5.5	0.217	5.5
R4	0.157	4.0	0.157	4.0	0.256	6.5	0.256	6.5	0.256	6.5	0.256	6.5	0.295	7.5	0.295	7.5
R5	3.681	93.5	4.469	113.5	4.469	113.5	5.256	133.5	4.508	114.5	5.295	134.5	5.984	152.0	8.346	212.0
R6	M8 x 1.25		M8 x 1.25		M10 x 1.5		M10 x 1.5		M10 x 1.5		M10 x 1.5		M12 x 1.75		M12 x 1.75	
R7	0.590	15.0	0.590	15.0	0.590	15.0	0.590	15.0	0.590	15.0	0.590	15.0	0.590	15.0	0.590	15.0
S1* MIN	0.768	19.5	1.161	29.5	0.984	25.0	1.378	35.0	0.984	25.0	1.378	35.0	1.535	39.0	2.716	69.0
S2*	0.374	9.5	0.374	9.5	0.591	15.0	0.591	15.0	0.591	15.0	0.591	15.0	0.748	19.0	0.748	19.0
S3*	0.394	10.0	0.787	20.0	0.394	10.0	0.787	20.0	0.394	10.0	0.787	20.0	0.787	20.0	1.968	50.0

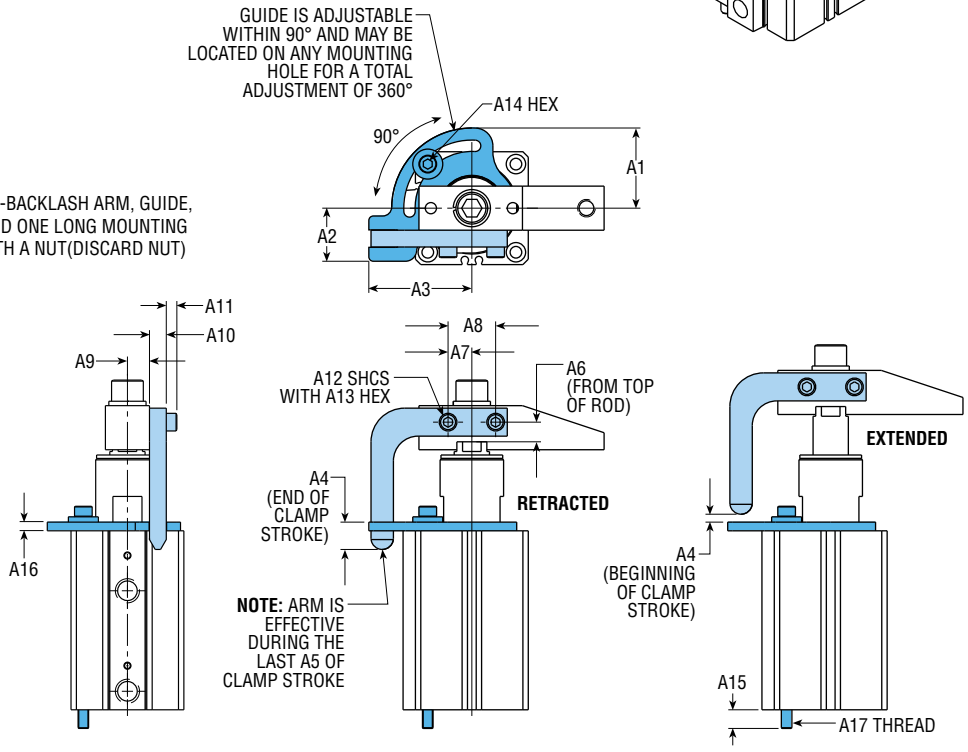
PB

AB1 ANTI-BACKLASH ARM

Anti-backlash arm and guide are made from hardened steel and can be used to minimize the amount of arm backlash when clamping. Maximum clearance between arm and guide is 0.028 in [0.71 mm] resulting in a maximum total radial play of 0.8° max.



NOTE:
1) KIT INCLUDES: ANTI-BACKLASH ARM, GUIDE, ALL FASTENERS, AND ONE LONG MOUNTING BOLT RETAINED WITH A NUT(DISCARD NUT)

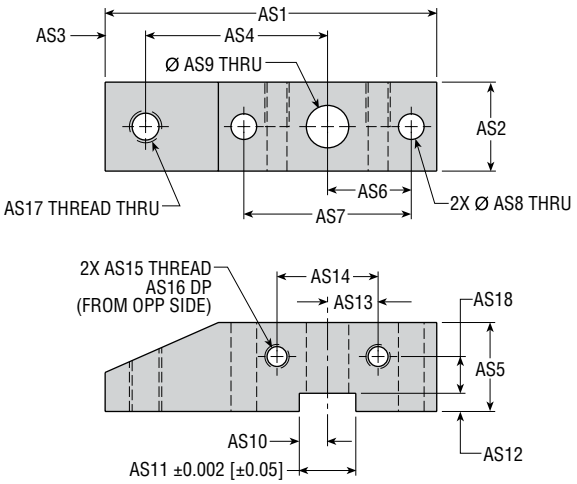


LETTER DIM	MODEL NUMBER															
	PBS2x		PBL2x		PBS3x		PBL3x		PBS4x		PBL4x		PBS5x		PBL5x	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
A1	1.119	28.4	1.119	28.4	1.304	33.1	1.304	33.1	1.491	37.9	1.491	37.9	1.790	45.5	1.790	45.5
A2	0.790	20.1	0.790	20.1	0.904	23.0	0.904	23.0	1.125	28.6	1.125	28.6	1.185	30.1	1.185	30.1
A3	1.600	40.6	1.600	40.6	1.800	45.7	1.800	45.7	1.950	49.5	1.950	49.5	2.300	58.4	2.300	58.4
A4 (BEGIN.)	0.098	2.5	0.177	4.5	0.098	2.5	0.177	4.5	0.098	2.5	0.177	4.5	0.177	4.5	0.177	4.5
A4 (END)	0.295	7.5	0.610	15.5	0.295	7.5	0.610	15.5	0.295	7.5	0.611	15.5	0.610	15.5	1.792	45.5
A5	0.177	4.5	0.490	12.5	0.177	4.5	0.492	12.5	0.177	4.5	0.390	9.9	0.390	9.9	0.390	9.9
A6	0.202	5.1	0.202	5.1	0.233	5.9	0.233	5.9	0.358	9.1	0.358	9.1	0.439	11.2	0.439	11.2
A7	0.335	8.5	0.335	8.5	0.453	11.5	0.453	11.5	0.492	12.5	0.492	12.5	0.531	13.5	0.531	13.5
A8	0.669	17.0	0.669	17.0	0.906	23.0	0.906	23.0	0.984	25.0	0.984	25.0	1.062	27.0	1.062	27.0
A9	0.315	8.0	0.315	8.0	0.394	10.0	0.394	10.0	0.433	11.0	0.433	11.0	0.492	12.5	0.492	12.5
A10	0.250	6.4	0.250	6.4	0.250	6.4	0.250	6.4	0.375	9.5	0.375	9.5	0.375	9.5	0.375	9.5
A11	0.197	5.0	0.197	5.0	0.197	5.0	0.197	5.0	0.236	6.0	0.236	6.0	0.236	6.0	0.236	6.0
A12	M5 x 0.8 x 16 mm LG		M5 x 0.8 x 16 mm LG		M5 x 0.8 x 16 mm LG		M5 x 0.8 x 16 mm LG		M6 x 1.0 x 20 mm LG		M6 x 1.0 x 20 mm LG		M6 x 1.0 x 20 mm LG		M6 x 1.0 x 20 mm LG	
A13	0.157	4.0	0.157	4.0	0.157	4.0	0.157	4.0	0.197	5.0	0.197	5.0	0.197	5.0	0.197	5.0
A14	0.158	4.0	0.158	4.0	0.158	4.0	0.158	4.0	0.158	4.0	0.158	4.0	0.197	5.0	0.197	5.0
A15	0.476	12.1	0.476	12.1	0.558	14.2	0.558	14.2	0.516	13.1	0.516	13.1	0.417	10.6	0.417	10.6
A16	0.150	3.8	0.150	3.8	0.150	3.8	0.150	3.8	0.194	4.9	0.194	4.9	0.194	4.9	0.194	4.9
A17	M5 x 0.8		M5 x 0.8		M5 x 0.8		M5 x 0.8		M5 x 0.8		M5 x 0.8		M6 x 1.0		M6 x 1.0	
KIT NO.	73356-04		73356-05		73356-06		73356-07		73356-08		73356-01		73356-02		73356-03	

ASA SINGLE ALUMINUM ARM

Single arms are made of aluminum.

LETTER DIM	MODEL NUMBER							
	PBx2x		PBx3x		PBx4x		PBx5x	
	in	mm	in	mm	in	mm	in	mm
AS1	2.500	63.5	3.150	80.0	3.229	82.0	4.134	105.0
AS2	0.630	16.0	0.787	20.0	0.866	22.0	0.984	25.0
AS3	0.276	7.0	0.394	10.0	0.394	10.0	0.394	10.0
AS4	1.378	35.0	1.772	45.0	1.772	45.0	2.559	65.0
AS5	0.550	14.0	0.710	18.0	0.866	22.0	0.984	25.0
AS6	0.630	16.0	0.813	20.7	0.815	20.7	0.915	23.2
AS7	1.260	32.0	1.625	41.3	1.630	41.4	1.830	46.5
AS8	0.189	4.8	0.224	5.7	0.250	6.4	0.250	6.4
AS9	0.328	8.3	0.413	10.5	0.413	10.5	0.492	12.5
AS10	0.196	5.0	0.274	7.0	0.275	7.0	0.334	8.5
AS11	0.391	9.9	0.549	13.9	0.550	14.0	0.668	17.0
AS12	0.098	2.5	0.177	4.5	0.177	4.5	0.177	4.5
AS13	0.335	8.5	0.453	11.5	0.492	12.5	0.531	13.5
AS14	0.669	17.0	0.906	23.0	0.984	25.0	1.062	27.0
AS15	M5 x 0.8		M5 x 0.8		M6 x 1.0		M6 x 1.0	
AS16	0.433	11.0	0.433	11.0	0.433	11.0	0.433	11.0
AS17	M6 x 1.0		M8 x 1.25		M8 x 1.25		M10 x 1.5	
AS18	0.202	5.1	0.233	5.9	0.358	9.1	0.439	11.1
KIT NO.	73352-003		73352-004		73352-001		73352-002	

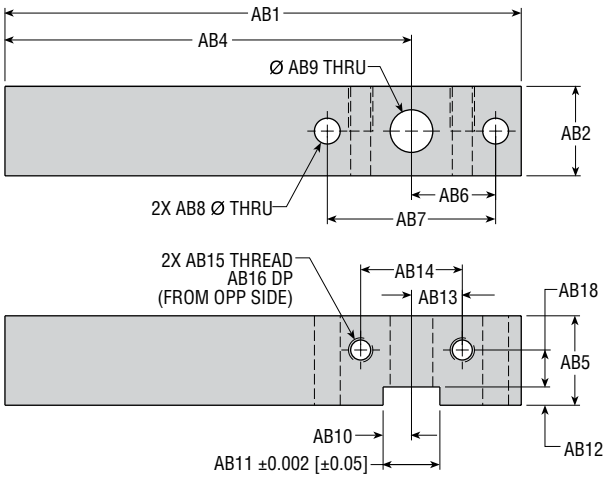


NOTES:
1) ALL NUMBERS IN [ ] ARE METRIC AND ARE IN mm
2) KIT INCLUDES ARM, SCREW, AND LOCK WASHER

ASB SINGLE ALUMINUM BLANK ARM

Single blank arms are made of aluminum and allow for creation of an arm up to twice as long as the standard aluminum arm.

LETTER DIM	MODEL NUMBER							
	PBx2x		PBx3x		PBx4x		PBx5x	
	in	mm	in	mm	in	mm	in	mm
AB1	3.642	92.5	4.921	125.0	5.000	127.0	6.693	170.0
AB2	0.630	16.0	0.787	20.0	0.866	22.0	0.984	25.0
AB4	2.796	71.0	3.937	100.0	3.937	100.0	5.512	140.0
AB5	0.550	14.0	0.710	18.0	0.866	22.0	0.984	25.0
AB6	0.630	16.0	0.813	20.7	0.815	20.7	0.915	23.2
AB7	1.260	32.0	1.625	41.3	1.630	41.4	1.830	46.5
AB8	0.189	4.8	0.224	5.7	0.250	6.4	0.250	6.4
AB9	0.328	8.3	0.413	10.5	0.413	10.5	0.492	12.5
AB10	0.196	5.0	0.274	7.0	0.275	7.0	0.334	8.5
AB11	0.391	9.9	0.549	13.9	0.550	14.0	0.668	17.0
AB12	0.098	2.5	0.177	4.5	0.177	4.5	0.177	4.5
AB13	0.335	8.5	0.453	11.5	0.492	12.5	0.531	13.5
AB14	0.669	17.0	0.906	23.0	0.984	25.0	1.062	27.0
AB15	M5 x 0.8		M5 x 0.8		M6 x 1.0		M6 x 1.0	
AB16	0.433	11.0	0.433	11.0	0.433	11.0	0.433	11.0
AB18	0.202	5.1	0.233	5.9	0.358	9.1	0.439	11.1
KIT NO.	73354-003		73354-004		73354-001		73354-002	

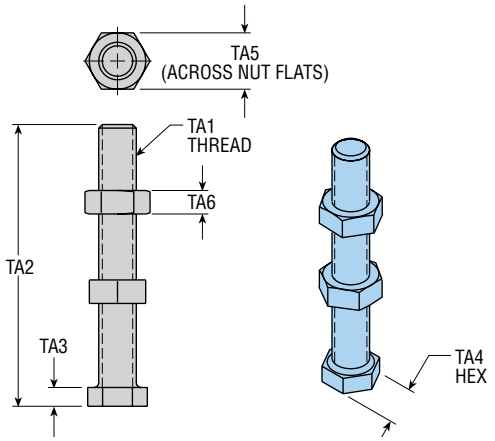


NOTES:
1) ALL NUMBERS IN [ ] ARE METRIC AND ARE IN mm
2) KIT INCLUDES ARM, MOUNTING SCREW, AND LOCK WASHER

TA STEEL SPINDLE

Steel spindles are plated steel with two hex nuts included.

LETTER DIM	MODEL NUMBER							
	PBx2x		PBx3x		PBx4x		PBx5x	
	in	mm	in	mm	in	mm	in	mm
TA1	M6 x 1.0		M8 x 1.25		M8 x 1.25		M10 x 1.5	
TA2	2.362	60.0	2.953	75.0	2.953	75.0	3.937	100.0
TA3	0.157	4.0	0.209	5.3	0.209	5.3	0.252	6.4
TA4	0.394	10.0	0.512	13.0	0.512	13.0	0.748	19.0
TA5	0.394	10.0	0.472	12.0	0.472	12.0	0.669	17.0
TA6	0.197	5.0	0.217	5.5	0.217	5.5	0.315	8.0
KIT NO.	71200-02		71200-03		71200-03		71200-06	

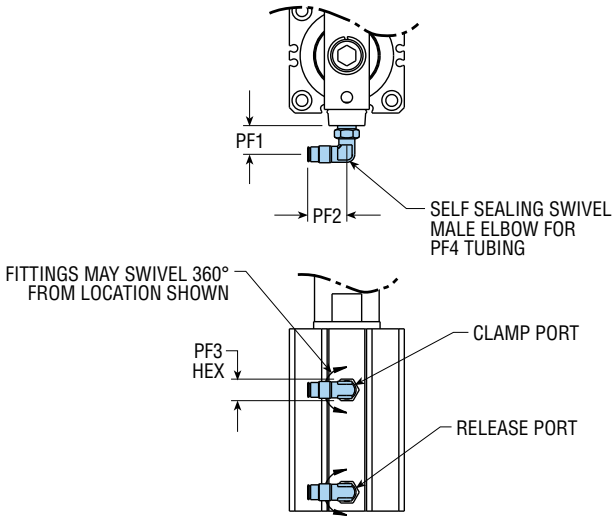


LAA PORT FITTINGS

90° swivel fitting for case of air line hook up.

LETTER DIM	MODEL NUMBER			
	PBx3x & PBx4x		PBx5x	
	in	mm	in	mm
PF1 (MIN)	0.629	12.0	0.767	20.5
PF2	0.885	20.0	1.102	28.0
PF3	0.472	12.0	0.551	14.0
PF4	1/4	6.0	3/8	10.0
PART NO.	62178-003	62195-005	62178-010	62195-010

NOTES:
1) FITTINGS ARE ORDERED SEPARATELY
2) FITTINGS NOT AVAILABLE FOR PBx2x



All dimensions are reference only unless specifically toleranced.

phd SOLUTIONS FOR INDUSTRIAL AUTOMATION

LOAD CAPACITIES WITH AND WITHOUT SPEED REDUCER FITTINGS

When Series PB Clamps are used with standard ASA or ASB Arms, AB1 Anti-backlash, WC1 Weld Covers and TA Spindles, speed controls are NOT required.

If longer arms or heavier loads are attached, clamps need to be protected from the higher Rotational Moment of Inertia (Jm) by slowing down their speed. PHD recommends nonadjustable speed reducing fittings for these applications. They contain orifices sized to reduce speed and allow higher moments of inertia.

The graphs on the next page show maximum loads allowed based on the distance from the piston rod centerline to the load centerline. Graphs in the left column show maximum attached load with ASB Arm. Graphs in the right column show maximum attached load with ASB Arm, Anti-backlash (AB1), and Weld Cover (WC1) options.

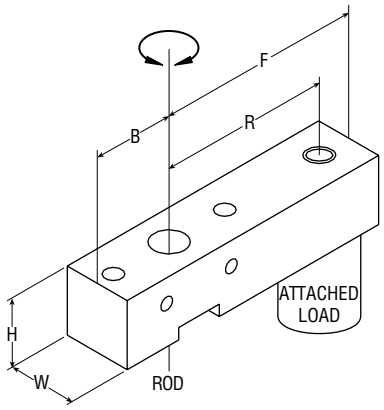
These graphs assume the following:

- The clamp is mounted vertically.
- Loads are attached to ASB Arms or identical customer-supplied aluminum arms.
- The arms are only 0.5 inch longer than the distance to the centerline of the load.

For customer supplied arms and attached loads, use the equations on this page to calculate the Rotational Moment of Inertial (Jm).

Stay below the maximum allowable (Jm) and apply speed reducing fittings as required.

Jm for PHD supplied options are shown in Chart A.



Jm = Rotational Mass Moment of Inertia (in-lb-sec^2)
g = Gravitational Constant (386.4 in/sec)
weight = lb
R = distance from CL of rod to CL of weight (inches)

Arm Calculation for Jm

$$Jm = \frac{\text{Weight B}}{g} \times \frac{4\,(B)^2 + w^2}{12} + \frac{\text{Weight F}}{g} \times \frac{4\,(F)^2 + w^2}{12}$$

Attached load Jm Calculation

$$Jm = \frac{\text{Weight}}{g} \times R^2$$

EXAMPLE: PBL5L-1- WC1 with special arm and attached load
Arm material is aluminum, density is 0.1 lb per cubic inch
W is 1.0 inch
H is 1.0 inch
F is 4.0 inch
B is 1.0 inch
R is 3.0 inch
Attached load is 0.3 lb

Arm Jm Weight of F is 4 x 1 x 1 x 0.1 = 0.4 lb
Weight of B is 1 x 1 x 1 x 0.1 = 0.1 lb

$$\text{Arm Jm} = \frac{0.1}{386.4} \times \frac{4\,(1)^2 + 1^2}{12} + \frac{0.4}{386.4} \times \frac{4\,(4)^2 + 1^2}{12}$$

Arm Jm = 0.0002587 x 0.4166 + 0.00103 x 5.4166

Arm Jm = 0.005687 in-lb-sec^2

Attached Load Jm Attached load is 0.3 lb R = 3.0

$$\text{Load Jm} = \frac{0.3}{386.4} \times 3.0^2$$

Load Jm = 0.0007763 x 9.0

Load Jm = 0.006987 in-lb-sec^2

Weld Cover Jm from Chart A = 0.00127 in-lb-sec^2

TOTAL Jm 0.005687 + 0.006987 + 0.00127 = **0.013944 in-lb-sec^2**

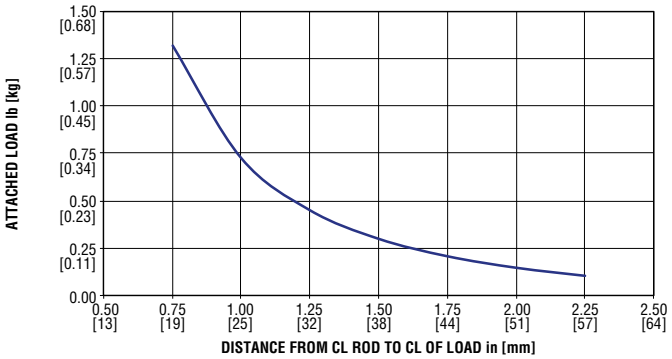
From Chart A, Allowable Jm is 0.030 in-lb-sec^2, SR40 fitting is not required. If the Jm had been larger than 0.030 in-lb-sec^2, then SR40 fitting would be required.

CHART A - MAXIMUM ALLOWABLE MOMENT OF INERTIA

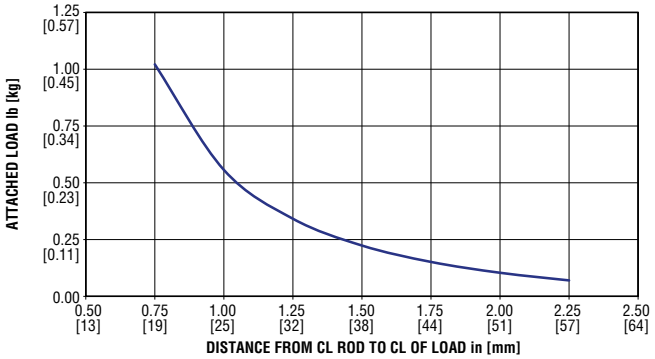
MODEL	MAX. ALLOWABLE Jm in-lb-sec^2		ROTATIONAL MOMENT OF INERTIA in-lb-sec^2			
			Short Arm	Blank Arm	Anti-backlash	Weld Cover
	STD PORTS	SR FITTINGS	ASA	ASB	AB1	WC1
PBS2	0.002	—	0.00012	0.00067	0.00023	0.00005
PBL2	0.002	—	0.00012	0.00067	0.00035	0.00009
PBS3	0.009	—	0.00039	0.00295	0.00045	0.00025
PBL3	0.009	—	0.00039	0.00295	0.00059	0.00038
PBS4	0.009	0.02	0.00052	0.00398	0.00118	0.00032
PBL4	0.009	0.02	0.00052	0.00398	0.00147	0.00043
PBS5	0.03	0.06	0.00143	0.01395	0.00237	0.00067
PBL5	0.03	0.06	0.00143	0.01395	0.00383	0.00126

OPTIONS: SERIES PB SWING CLAMPS

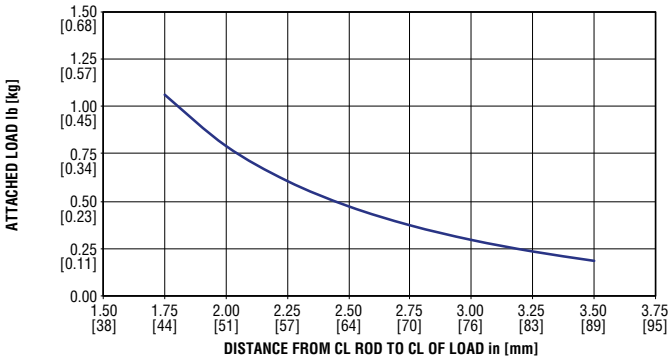
PBx2x-x-ASB



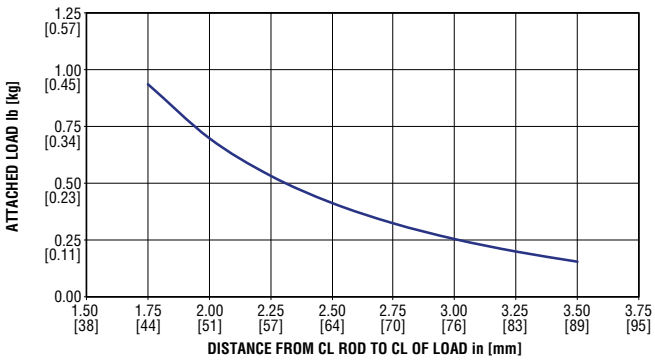
PBx2x-x-ASB-AB1-WC1



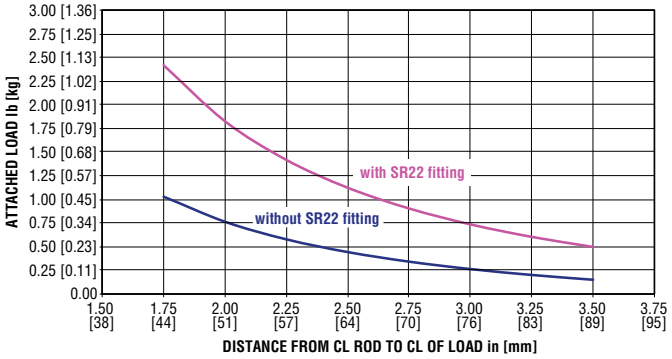
PBx3x-x-ASB



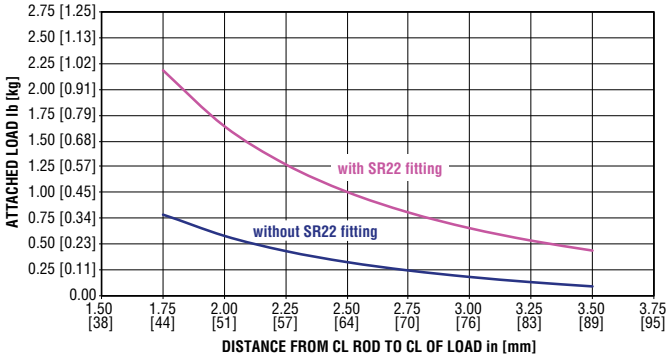
PBx3x-x-ASB-AB1-WC1



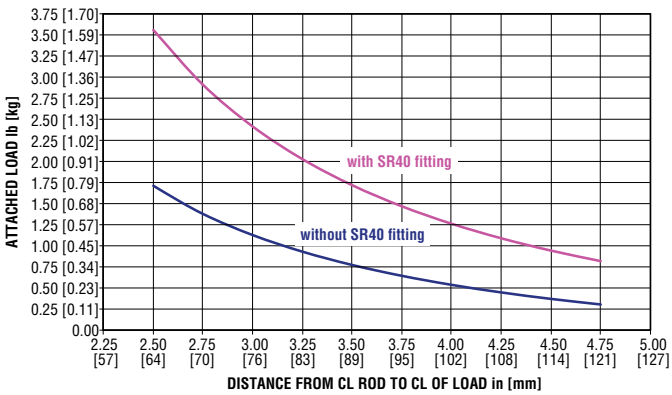
PBx4x-x-ASB



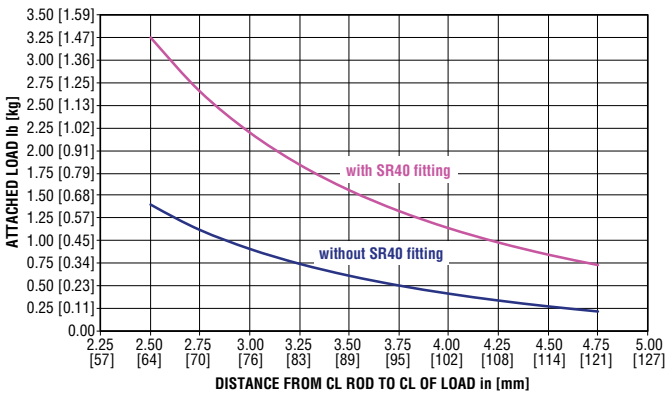
PBx4x-x-ASB-AB1-WC1



PBx5x-x-ASB

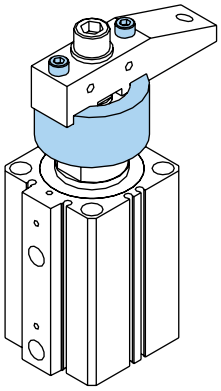


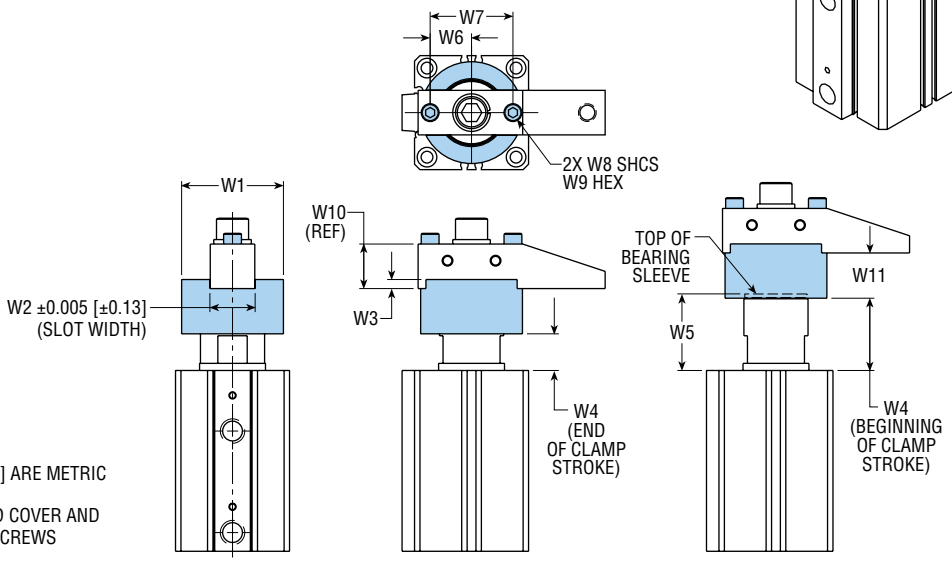
PBx5x-x-ASB-AB1-WC1



WC1 ROD WELD COVER

Weld cover is made of plated aluminum and protects the clamp rod from weld splatter during the clamp stroke. Order with -ASA or -ASB option.

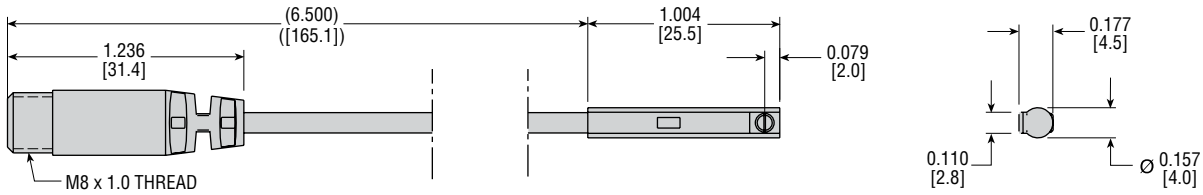




NOTES:
1) ALL NUMBERS IN [ ] ARE METRIC AND ARE IN mm
2) KIT INCLUDES: WELD COVER AND COVER MOUNTING SCREWS

LETTER	MODEL NUMBER															
	PBS2x		PBL2x		PBS3x		PBL3x		PBS4x		PBL4x		PBS5x		PBL5x	
DIM	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
W1	1.500	38.1	1.500	38.1	2.000	50.8	2.000	50.8	2.000	50.8	2.000	50.8	2.250	57.2	2.250	57.2
W2	0.646	16.4	0.646	16.4	0.803	20.4	0.803	20.4	0.882	22.4	0.882	22.4	1.000	25.4	1.000	25.4
W3	0.080	2.0	0.080	2.0	0.120	3.0	0.120	3.0	0.120	3.0	0.150	3.8	0.200	5.1	0.200	5.1
W4 (BEGIN.)	0.610	15.5	1.004	25.5	1.003	25.5	1.398	35.5	0.945	24.0	1.412	35.9	1.597	40.6	2.780	70.6
W4 (END)	0.217	5.5	0.217	5.5	0.610	15.5	0.610	15.5	0.551	14.0	0.625	15.9	0.811	20.6	0.811	20.6
W5	0.650	16.5	1.043	26.5	1.063	27.0	1.457	37.0	1.102	28.0	1.496	38.0	1.693	43.0	2.874	73.0
W6	0.630	16.0	0.630	16.0	0.812	20.6	0.812	20.6	0.815	20.7	0.815	20.7	0.915	23.2	0.915	23.2
W7	1.260	32.0	1.260	32.0	1.625	41.3	1.625	41.3	1.630	41.4	1.630	41.4	1.830	46.5	1.830	46.5
W8	M4 x 0.7 x 20 mm LG		M4 x 0.7 x 25 mm LG		M5 x 0.8 x 30 mm LG		M5 x 0.8 x 30 mm LG		M6 x 1.0 x 35 mm LG		M6 x 1.0 x 35 mm LG		M6 x 1.0 x 35 mm LG		M6 x 1.0 x 35 mm LG	
W9	0.118	3.0	0.118	3.0	0.157	4.0	0.157	4.0	0.197	5.0	0.197	5.0	0.197	5.0	0.197	5.0
W10	0.550	14.0	0.550	14.0	0.710	18.0	0.710	18.0	0.866	22.0	0.866	22.0	0.984	25.0	0.984	25.0
W11	0.492	12.5	0.886	22.5	0.532	13.5	0.925	23.5	0.632	16.1	0.950	24.1	1.000	25.4	2.180	55.4
KIT NO.	73363-04		73363-05		73363-06		73363-07		73363-08		73363-01		73363-02		73363-03	

OPTIONS: SERIES PB SWING CLAMPS

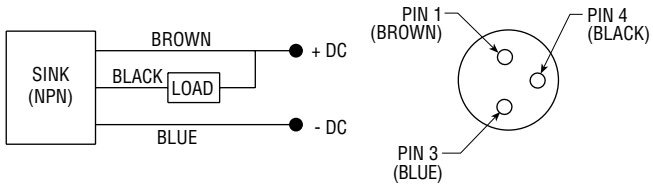


SW41 1 NPN SWITCH PROVIDED

SW42 2 NPN SWITCHES PROVIDED

PART NO.	DESCRIPTION
73360-01	Solid State NPN (Sink) 5 - 28 VDC, 165 mm Cable with Quick Disconnect

SPECIFICATIONS	73360-01
SWITCHING LOGIC	Solid State Output, Normally Open
SENSOR TYPE	NPN Current Sinking
OPERATING VOLTAGE	5 - 28 VDC
SWITCHING CURRENT	200 mA max
SWITCHING RATING	6 W max
CURRENT CONSUMPTION	20 mA @ 24V max (Switch Active)
VOLTAGE DROP	0.5V @ 200 mA max
LEAKAGE CURRENT	0.01 mA max
INDICATOR	Red LED
CABLE	Ø 2.8, 3C, PVC
SENSITIVITY	40 Gauss
TEMPERATURE RANGE	-10° to 70°C
SHOCK	50G
VIBRATION	9G
ENCLOSURE CLASSIFICATION	IP67 (NEMA 6)
PROTECTION CIRCUIT	Power Source Reverse Polarity, Surge Suppression

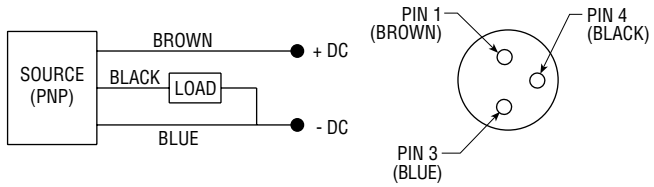


SW51 1 PNP SWITCH PROVIDED

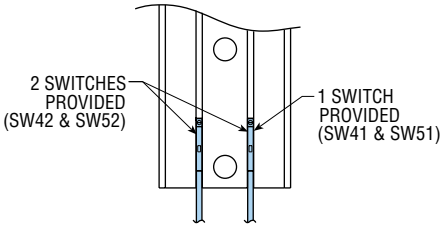
SW52 2 PNP SWITCHES PROVIDED

PART NO.	DESCRIPTION
73360-02	Solid State PNP (Source) 5 - 28 VDC, 165 mm Cable with Quick Disconnect

SPECIFICATIONS	73360-02
SWITCHING LOGIC	Solid State Output, Normally Open
SENSOR TYPE	PNP Current Sourcing
OPERATING VOLTAGE	5 - 28 VDC
SWITCHING CURRENT	200 mA max
SWITCHING RATING	6 W max
CURRENT CONSUMPTION	20 mA @ 24V max (Switch Active)
VOLTAGE DROP	0.5V @ 200 mA max
LEAKAGE CURRENT	0.01 mA max
INDICATOR	Green LED
CABLE	Ø 2.8, 3C, PVC
SENSITIVITY	40 Gauss
TEMPERATURE RANGE	-10° to 70°C
SHOCK	50G
VIBRATION	9G
ENCLOSURE CLASSIFICATION	IP67 (NEMA 6)
PROTECTION CIRCUIT	Power Source Reverse Polarity, Surge Suppression



Switches are provided on port side.

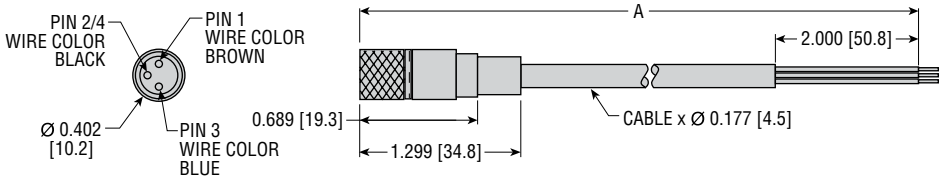


63549-xx CORDSET WITH FEMALE QUICK CONNECT

Provides a cordset with female quick connect and additional cable.

NUMBERS IN [ ] ARE IN mm. IMPERIAL EQUIVALENTS ARE PROVIDED FOR CONVENIENCE.

MODEL NO.	LETTER DIM A
63549-02	78.74 [2 m]
63549-05	196.85 [5 m]



All dimensions are reference only unless specifically toleranced.

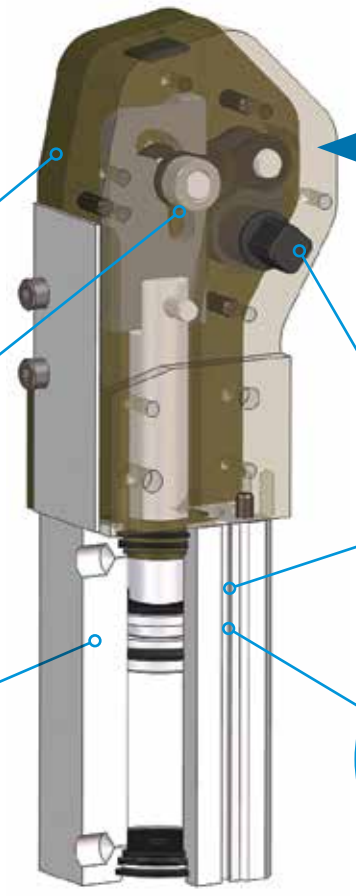
PNEUMATIC POWER CLAMPS

Major Benefits

- Manual release of clamp is achieved by using common tools without removing plugs while providing contamination resistance.
- Self-locking internal threads throughout eliminate need for thread locking adhesives or additional locking components.
- Flange mounting option provides a unique alternative to typical clamp mounting configurations.
- All units are positional switch ready.

PEC34

PEC33



Our cam/roller drive system is superior over typical toggle styles *(see page 24)*

enclosed design prevents particles and weld slag from entering

cam design locks clamp in closed position for last 6° of rotation, ensuring part retention if air pressure is lost and makes initial setups easier

cam design provides widest range of high clamping force in its class

each clamp size is available in two bore sizes, providing various configurations and options to fit a wide range of clamping solutions

multiple output shaft options available for mounting arms on either or both sides providing clamping flexibility depending on application requirements

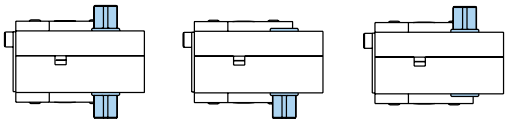
cylinder mounted switches provide low cost solution for position sensing of non-welding applications

weld field immune switch option provides consistent position sensing

ORDERING DATA: SERIES PEC PNEUMATIC POWER CLAMPS

TO ORDER SPECIFY:
Model, Clamp Size, Bore Size, Output Shaft, Design No., Arm Rotation, and additional options if desired.

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



PECxxD PECxxR PECxxL

CLAMP SIZE
2, 3, 4
See Clamp Compatibility chart.

OUTPUT SHAFT
D - Double
L - Left
R - Right

ARM ROTATION (degrees)
96° - U-Style Arm See Note 4.
105° - Standard

ARM OPTIONS
BLANK - None

PORT LOCATION
BLANK is Standard Position 1
P2 - Position 2
P3 - Position 3
P4 - Position 4
P2 & P4 available on PEC22, PEC33, PEC44 units only.

MOUNTING OPTIONS
BLANK - Standard
M001 - Flange mounting cylinder body Available on PEC34 only.
M002 - Flange mounting plate Available on PEC23 & PEC45 only.

CYLINDER SWITCH OPTION
BLANK - None (See Note 1)
SW00 - Magnet for Switches Installed
SW41 - 1 NPN Switch Installed
SW42 - 2 NPN Switches Installed
SW51 - 1 PNP Switch Installed
SW52 - 2 PNP Switches Installed
Available on PEC22, PEC3x, PEC44 only.
See Note 1.

PEC 34 D - 2 - 105 - A L 0 01 - P3 - LAA - M001 - PS1D1 - SW42 -

MODEL

BORE SIZE
2 - 25 mm
3 - 32 mm
4 - 40 mm
5 - 50 mm
See Clamp Compatibility chart.

DESIGN NO.
2 - Imperial
6 - Metric

SHAPE/LOCATION
D - Straight, Both Sides
L - Straight, Left
R - Straight, Right
U - U-Style, Centered

ORIENTATION
0 - 0° Clamp
9 - 90° Clamp

MOUNTING STYLE
00 - Blank
01 - Standard Mounting

PORT FITTINGS (BOTH PORTS)
BLANK - None
LAA - 90° Swivel Elbow, Metal
LBB - 90° Swivel Elbow, Plastic

POSITION SENSOR OPTIONS
Blank - No sensor
Px1xx - Position sensor (see Position Sensor Option Code)
See Note 2.

SEAL OPTION
BLANK - Standard
V4 - Harsh Environment
See Note 1.

CLAMP COMPATIBILITY

MODEL	CLAMP SIZE	BORE mm	CLAMP TORQUE in-lb	CLAMP TORQUE Nm
PEC22	2	25	125	14
PEC23	2	32	205	23
PEC33	3	32	250	28
PEC34	3	40	400	45
PEC44	4	40	570	64
PEC45	4	50	900	102

OPTION COMPATIBILITY

MODEL	OPTION -P2	-P4	-M001	-M002	-SWxx
PEC22	YES	YES	NO	NO	YES
PEC23	NO	NO	NO	YES	NO
PEC33	YES	YES	NO	NO	YES
PEC34	NO	NO	YES	NO	YES
PEC44	YES	YES	NO	NO	YES
PEC45	NO	NO	NO	YES	NO

Options not listed are available on all units.

NOTES:
1) Magnet will be installed if cylinder switches are ordered. Units with -V4 option are not available with magnet in cylinder (SWxx option).
2) All units come standard with PSxxx/PRxxx switch target.
3) Model PECxxD must be ordered for AUxxx arm options.
4) All U-arms come standard with 96° rotation. Contact PHD for units that require 105° rotation and U-arm combinations.

POSITION SENSOR OPTION CODE

P x 1 x x

SENSING OPTION
S - Standard
R - Reversed

CONNECTOR POSITION
1 - Parallel to output shaft
9 - Perpendicular to output shaft

SWITCH HOUSING OPTION
1 - Position 1

SWITCH OPTION
N - No Switch
A - 5-pin AC/DC Switch (Turck)
D - 4-pin PNP DC Switch (P + F)
E - 4-pin PNP DC Switch (Turck)
F - 4-pin PNP DC Switch (Efector)
H - 4-pin NPN DC Switch (P + F)
J - 4-pin NPN DC Switch (Turck)

CAD Configurator Assistance

Use PHD's free online application at **www.phdinc.com/cad**

SPECIFICATIONS	SERIES PEC
PISTON SEALS	Carboxilated Nitrile, compression type
WORKING PRESSURE	40 psi min. - 100 psi max.
OPERATING PRESSURE	-20° to +180°F [-28° to +82°C]
LUBRICATION	Factory lubricated for life

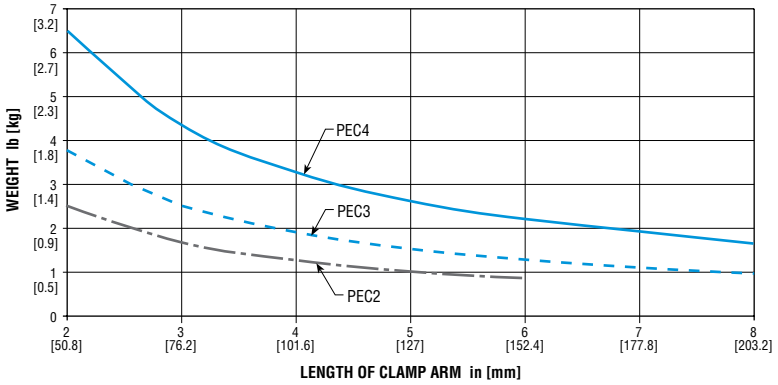
MODEL SIZE	BORE	CLAMP TORQUE 87 psi [6 bar]		MAX. HOLDING TORQUE		CLOSE OR OPEN TIME	DISPLACEMENT				WEIGHT		TYPICAL BACKLASH	MIN. VALVE RATING
							CLOSE		OPEN					
	mm	in-lb	Nm	in-lb	Nm	sec	in^3	cm^3	in^3	cm^3	lb	kg		Cv
PEC22	25	125	14	663	75	0.6	1.53	25.1	1.18	19.3	2.0	0.91	1°± 0.5°	0.04
PEC23	32	205	23	663	75	0.6	2.51	41.1	2.16	35.4	2.1	0.95	1°± 0.5°	0.06
PEC33	32	250	28	1593	180	0.6	3.22	52.8	2.41	39.5	3.2	1.45	1°± 0.5°	0.08
PEC34	40	400	45	1593	180	0.6	5.03	82.4	4.22	69.2	3.5	1.59	1°± 0.5°	0.13
PEC44	40	570	64	3363	380	0.6	6.32	103.6	5.31	87.0	4.9	2.22	1°± 0.5°	0.16
PEC45	50	900	102	3363	380	0.6	9.87	161.7	8.86	145.2	5.4	2.45	1°± 0.5°	0.25

Clamp force is clamp torque divided by the distance from clamp pivot.

Holding torque is the maximum external torque that can be applied against the arm without destroying the clamp once the clamp has entered the locking/high force region.

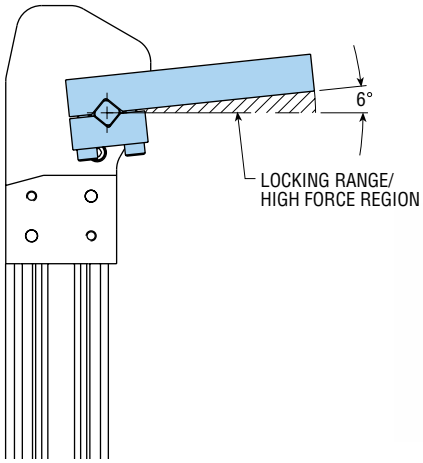
Maximum tooling weight is the recommended maximum additional weight at a given distance from the pivot that will provide reliability after millions of cycles.

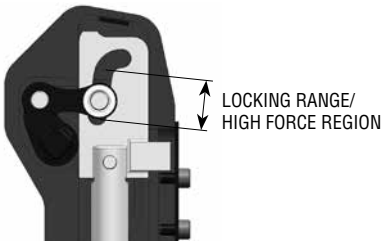
MAXIMUM TOOLING WEIGHT



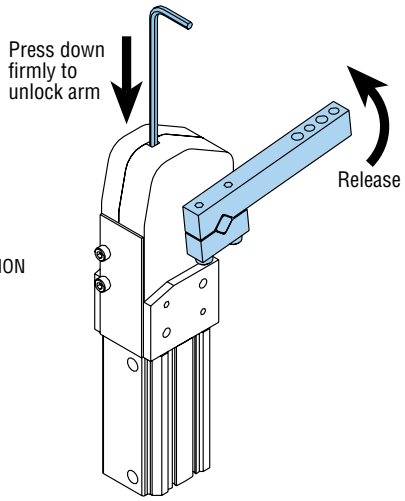
LOCKING MECHANISM

The Series PEC Clamp incorporates a cam/roller locking mechanism that prevents the arm from opening if air pressure is lost. The lock works in a range of 6 degrees from the fully closed position.





To manually unlock the clamp, first remove air pressure, then insert a small screwdriver or hex wrench (approximately 4 mm) through the slit in the lock release cover. Press down firmly and move the cam approximately one inch to get it out of the locking area. The lock release cover is made of a durable urethane material that will reclose and form a dust cover once the screwdriver or hex wrench is removed.



CAM DESIGN

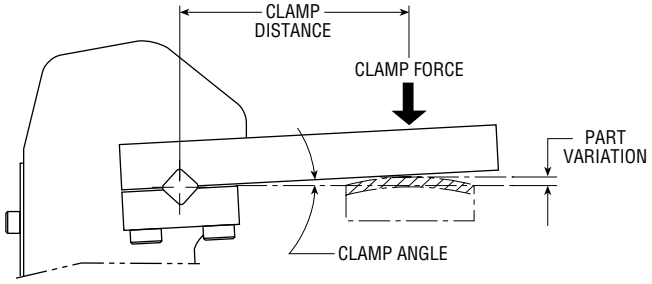
PHD's cam design maintains clamp force and locking range without the need for adjustable features. Toggle clamps require adjustable features or shims to maintain clamp force and locking feature.

CAM VS. TOGGLE COMPARISON

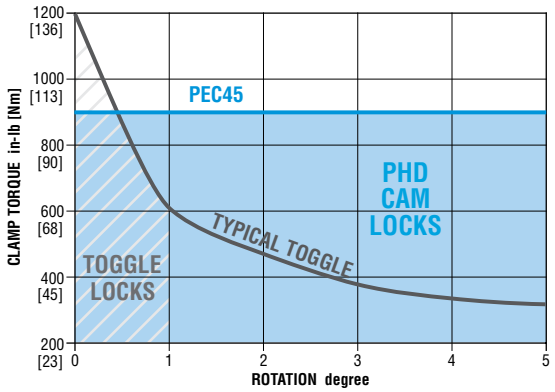
Example: PHD Cam vs. Toggle
Toggle clamp with 1200 in-lb [136 Nm] torque vs. PHD clamp with 900 in-lb [102 Nm] torque
Typical part variation = 0.04 in [1 mm]
Clamp force required = 250 lb [1112 N]
Unit must stay locked during clamping
Distance from clamp pivot to hold down location = 3 in [76 mm]
Force = Torque/Distance

CLAMP ANGLE	PHD CAM			TYPICAL TOGGLE			PART VARIATION
	% OF FORCE	JAW IS LOCKED	CLAMP FORCE lb [N]	% OF FORCE	JAW IS LOCKED	CLAMP FORCE lb [N]	
0˚	100%	Yes	300 [1334]	100%	Yes	400 [1779]	0
0.1˚	100%	Yes	300 [1334]	70%	Yes	280 [1245]	0.005
0.6˚	100%	Yes	300 [1334]	55%	Maybe	220 [979]	0.031
1˚	100%	Yes	300 [1334]	50%	No	200 [890]	0.052
2˚	100%	Yes	300 [1334]	40%	No	160 [712]	0.105
4˚	100%	Yes	300 [1334]	30%	No	120 [534]	0.210
6˚	70%	Yes	210 [934]	25%	No	100 [445]	0.314

Shaded areas indicate values do not meet requirements for toggle designs.



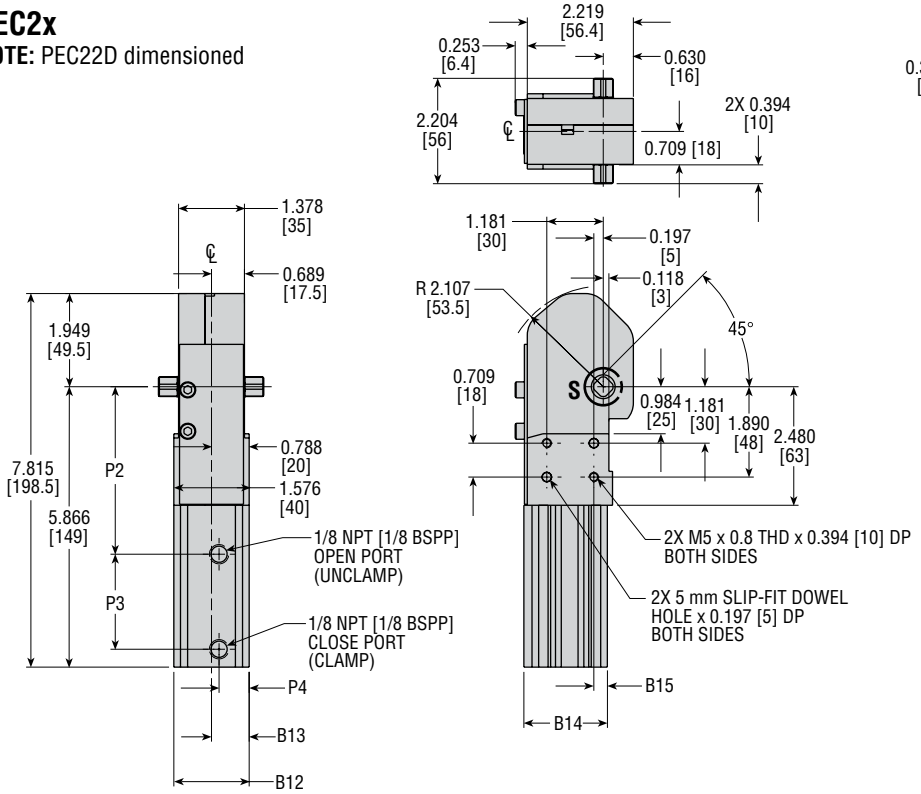
PEC45 VS. TOGGLE COMPARISON

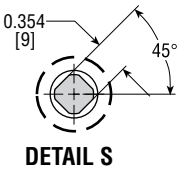


DIMENSIONS: SERIES PEC PNEUMATIC POWER CLAMPS

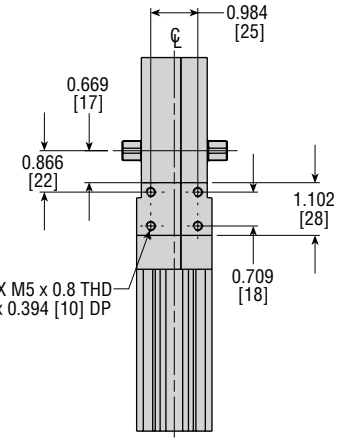
PEC2x

NOTE: PEC22D dimensioned





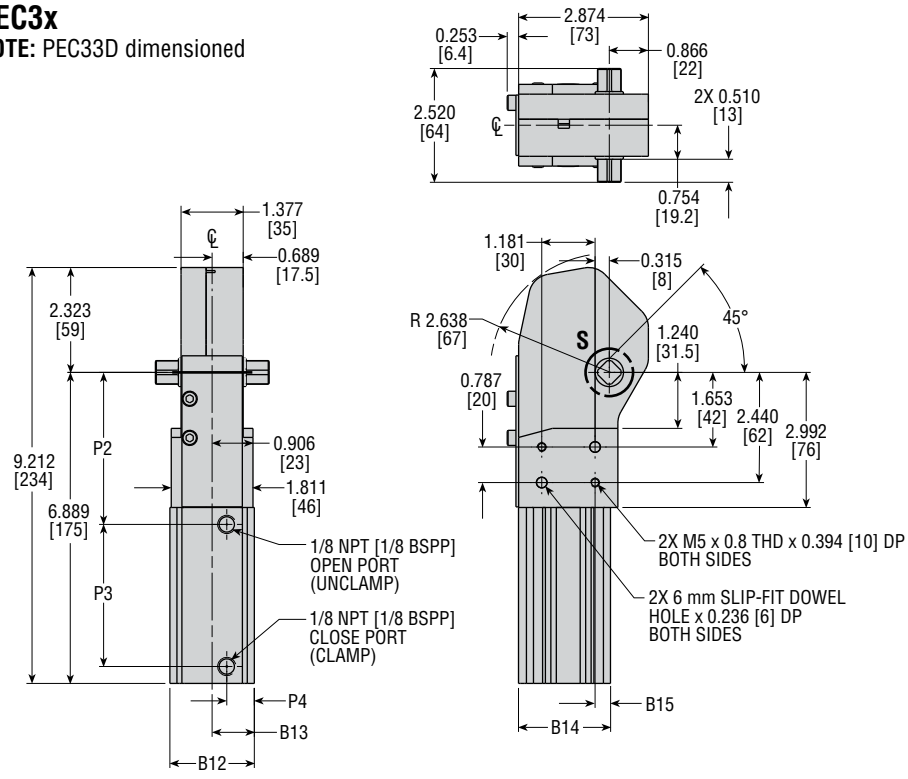
DETAIL S

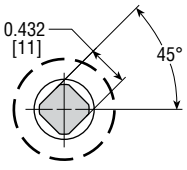


LETTER DIM	MODEL NUMBER			
	PEC22		PEC23	
	in	mm	in	mm
B12	1.576	40.0	1.634	41.5
B13	0.788	20.0	0.817	20.8
B14	1.855	47.1	1.851	47.0
B15	0.391	9.9	0.420	10.7
P2	3.504	89.0	2.992	76.0
P3	1.988	50.5	2.413	61.3
P4	0.630	16.0	0.304	7.7

PEC3x

NOTE: PEC33D dimensioned





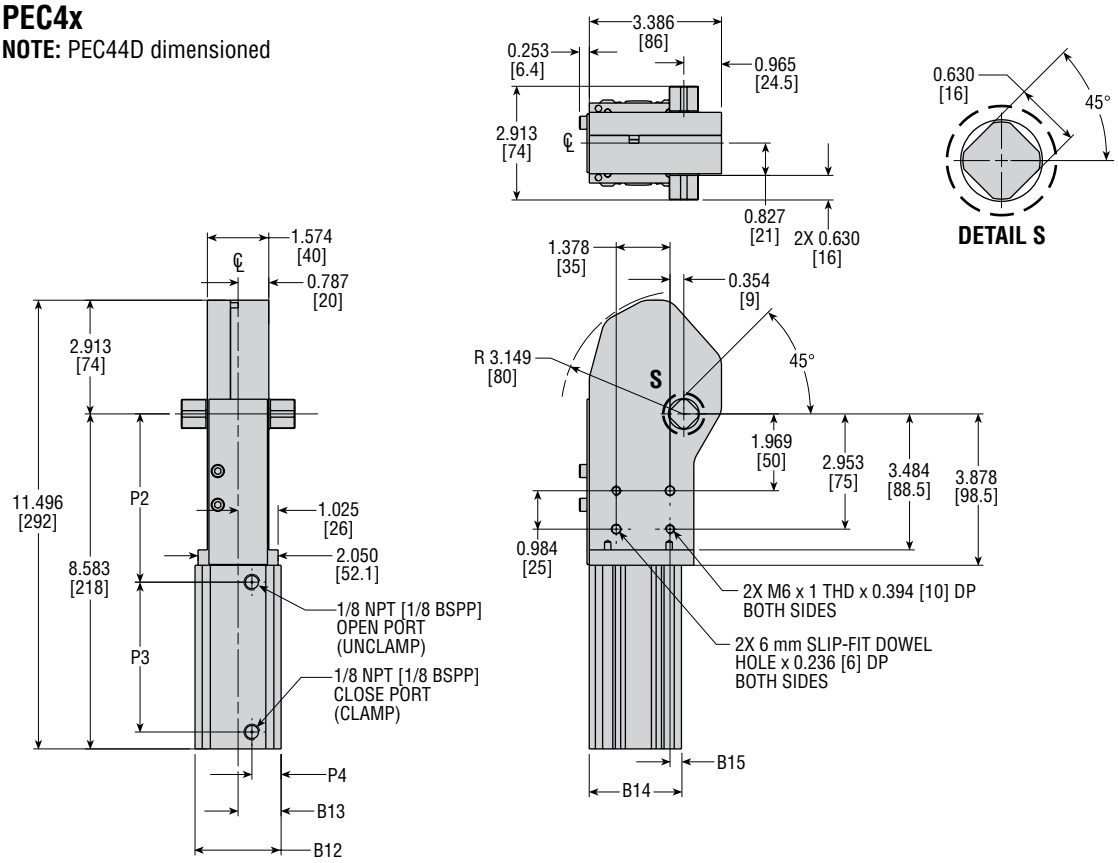
DETAIL S

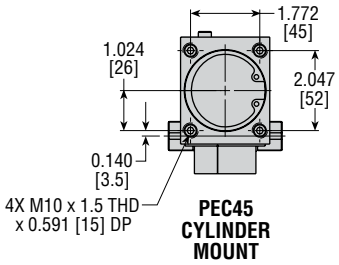
LETTER DIM	MODEL NUMBER			
	PEC33		PEC34	
	in	mm	in	mm
B12	1.870	47.5	1.890	48.0
B13	0.935	23.7	0.945	24.0
B14	2.201	55.9	2.362	60.0
B15	0.505	12.8	0.587	14.9
P2	3.367	85.5	3.425	87.0
P3	3.147	79.9	3.031	77.0
P4	0.610	15.5	0.512	13.0

DIMENSIONS: SERIES PEC PNEUMATIC POWER CLAMPS

PEC4x

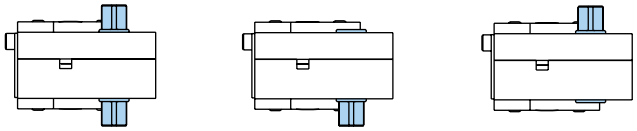
NOTE: PEC44D dimensioned





LETTER DIM	MODEL NUMBER			
	PEC44		PEC45	
	in	mm	in	mm
B12	2.205	56.0	2.283	58.0
B13	1.102	28.0	1.142	29.0
B14	2.680	68.1	2.788	70.8
B15	0.610	15.5	0.610	15.5
P2	4.311	109.5	4.390	111.5
P3	3.839	97.5	3.662	93.0
P4	0.748	19.0	0.709	18.0

OUTPUT SHAFT CONFIGURATIONS



PECxxD PECxxR PECxxL

All dimensions are reference only unless specifically toleranced.

Axxxx ARM OPTION

This option provides a clamping arm at multiple locations and orientations in both standard and blank mounting configurations. Consult PHD for alternative arm designs.

ARM OPTION CODE

A R 0 01

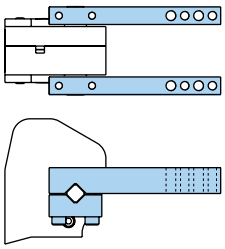
SHAPE/LOCATION
D - Straight, Both Sides
L - Straight, Left
R - Straight, Right
U - U-Style, Centered

MOUNTING STYLE
00 - Blank
01 - Standard Mounting

ORIENTATION
0 - 0° Clamp
9 - 90° Clamp

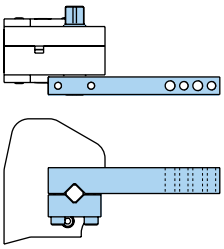
ARM OPTIONS - SHAPE/LOCATION

Double



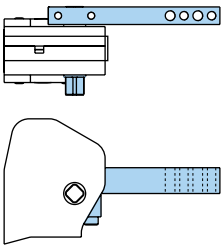
AD001

Right



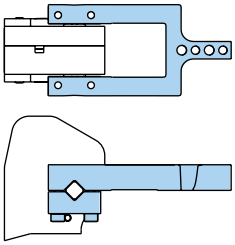
AR001

Left



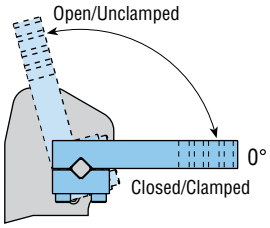
AL001

Centered

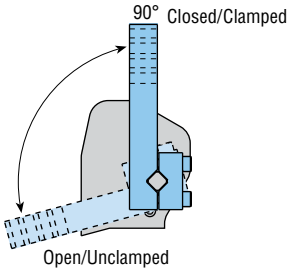


AU001

ARM OPTIONS - ORIENTATION



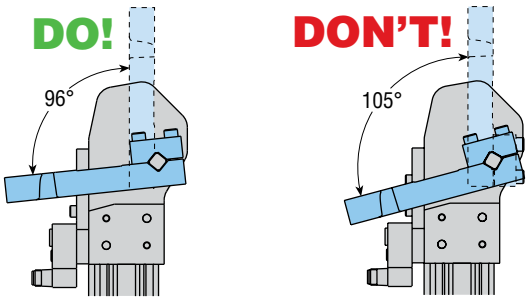
Ax0xx - 0°



Ax9xx - 90°

CAUTION:

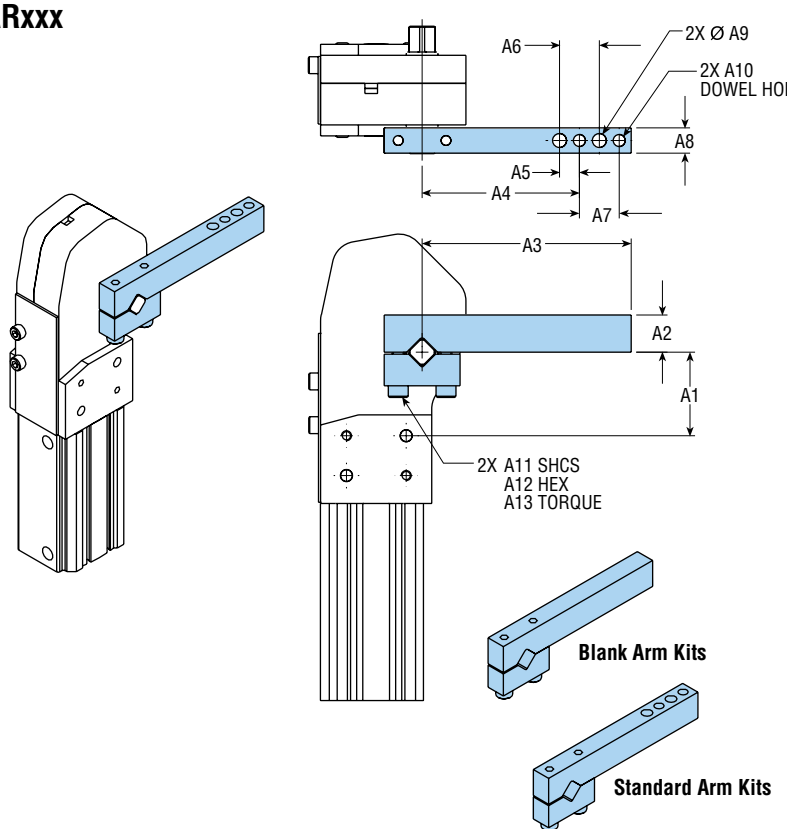
Clamps with U-Style arms in the 90° clamp position (AU9xx) and positional sensors require units to have no more than 96° rotation to prevent damage to unit.



AUxxx

OPTIONS: SERIES PEC PNEUMATIC POWER CLAMPS

ARxxx



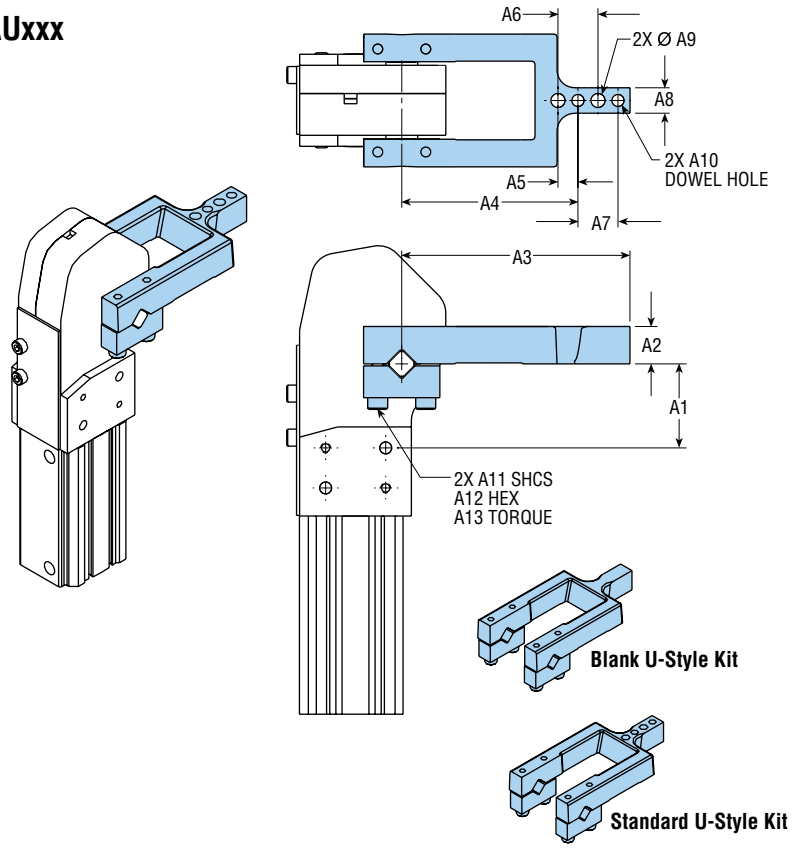
LETTER DIM	MODEL NUMBER					
	PEC2x		PEC3x		PEC4x	
	in	mm	in	mm	in	mm
A1	1.181	30.0	1.653	42.0	1.969	50.0
A2	0.591	15.0	0.735	18.7	0.866	22.0
A3	3.661	93.0	4.134	105.0	4.213	107.0
A4	2.559	65.0	3.110	79.0	3.150	80.0
A5	0.394	10.0	0.394	10.0	0.394	10.0
A6	0.787	20.0	0.787	20.0	0.787	20.0
A7	0.787	20.0	0.787	20.0	0.787	20.0
A8	0.375	9.5	0.500	12.7	0.625	15.9
A9	0.256	6.5	0.276	7.0	0.276	7.0
A10	4 mm SLIP FIT		6 mm SLIP FIT		6 mm SLIP FIT	
A11	M5 SHCS		M6 SHCS		M8 SHCS	
A12	M4 HEX		M5 HEX		M6 HEX	
A13	75 in-lb	8.5 Nm	125 in-lb	14 Nm	250 in-lb	28 Nm

NOTE:
DIMENSIONS A4 THROUGH A10 NOT AVAILABLE WITH Axx00 OPTION

MODEL	ARM KITS	
	ARM, STRAIGHT BLANK (-Axx00)	ARM, STRAIGHT STD (-Axx01)
PEC2x	80569-00	80569-01
PEC3x	78585-00	78585-01
PEC4x	80570-00	80570-01

KITS INCLUDE ARM, ARM CLAMP AND SCREWS

AUxxx



Must be ordered as: **PECxxD-x-96**

LETTER DIM	MODEL NUMBER					
	PEC2x		PEC3x		PEC4x	
	in	mm	in	mm	in	mm
A1	1.181	30.0	1.653	42.0	1.969	50.0
A2	0.591	15.0	0.735	18.7	0.866	22.0
A3	4.096	104.0	4.448	114.0	5.276	134.0
A4	3.071	78.0	3.110	79.0	4.174	106.0
A5	0.394	10.0	0.394	10.0	0.394	10.0
A6	0.787	20.0	0.787	20.0	0.787	20.0
A7	0.787	20.0	0.787	20.0	0.787	20.0
A8	0.472	12.0	0.500	12.7	0.625	15.9
A9	0.256	6.5	0.276	7.0	0.276	7.0
A10	4 mm SLIP FIT		6 mm SLIP FIT		6 mm SLIP FIT	
A11	M5 SHCS		M6 SHCS		M8 SHCS	
A12	M4 HEX		M5 HEX		M6 HEX	
A13	75 in-lb	8.5 Nm	125 in-lb	14 Nm	250 in-lb	28 Nm

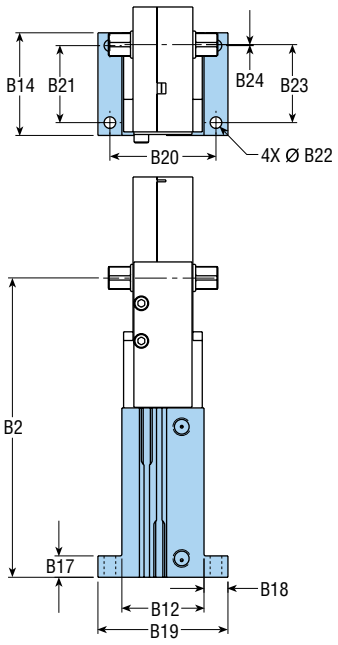
NOTE:
DIMENSIONS A4 THROUGH A10 NOT AVAILABLE WITH Axx00 OPTION

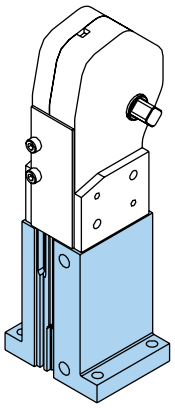
MODEL	KITS		
	ARM, U-STYLE BLANK (-AUx00)	ARM, U-STYLE STD (-AUx01)	96° ROTATION
PEC2x	80569-02	80569-03	78600-01
PEC3x	78585-02	78585-03	78600-02
PEC4x	80570-02	80570-03	78600-03

ARM KITS INCLUDE ARM, ARM CLAMP AND SCREWS.
ROTATION KITS ADD PARTS TO PISTON AND REQUIRES SOME DISASSEMBLY.

M001 FLANGE MOUNTING CYLINDER BODY

This option provides an integrated flange mount to the bottom of the clamp to simplify mounting. This option is only available on PEC34 units. Consult PHD for alternative mounting options.



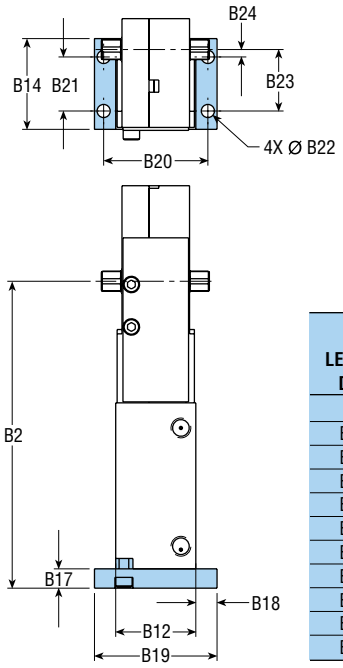


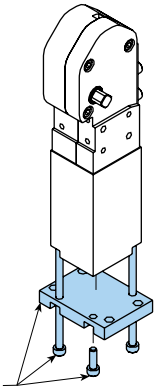
PEC34

LETTER DIM	MODEL NUMBER PEC34 in	mm
B2	6.889	175
B12	1.890	48
B14	2.362	60
B17	0.492	12
B18	0.551	14
B19	2.992	76
B20	2.441	62
B21	1.772	45
B22	0.268	6.8
B23	1.795	45.6
B24	0.023	0.6

M002 FLANGE MOUNTING PLATE

This option provides a bolt-on mount to the bottom of the clamp to simplify mounting. This option is only available on PEC23 and PEC45 units. Consult PHD for alternative mounting options.

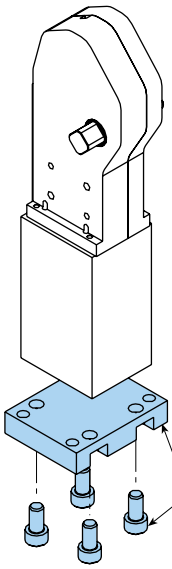




KIT 80578-01 INCLUDES MOUNTING PLATE AND MOUNTING SCREWS - 2 SCREWS FROM EXISTING CYLINDER WILL BE REPLACED BY LONGER SCREWS

TORQUE TO 70 in-lb [8 Nm]

PEC23



KIT 80578-02 INCLUDES MOUNTING PLATE AND MOUNTING SCREWS

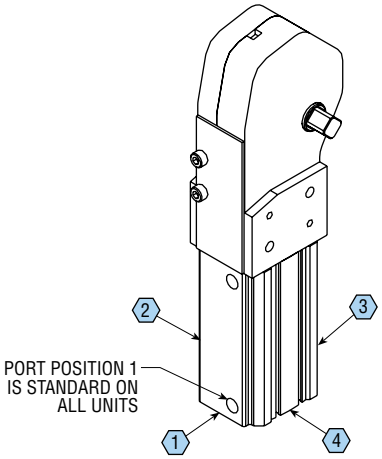
TORQUE TO 500 in-lb [56 Nm]

PEC45

LETTER DIM	MODEL NUMBER PEC23 in	PEC23 mm	PEC45 in	PEC45 mm
B2	6.260	159	9.292	236
B12	1.634	42	2.283	58
B14	1.851	47	2.750	70
B17	0.394	10	0.709	18
B18	0.433	11	0.609	15
B19	2.500	64	3.500	89
B20	2.126	54	2.953	75
B21	1.102	28	1.890	48
B22	0.268	6.8	0.346	8.8
B23	1.254	31.9	2.108	53.5
B24	0.151	3.8	0.218	5.5

Px PORT LOCATION

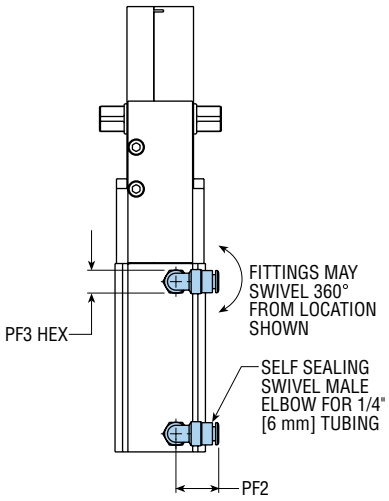
This option specifies alternate port locations for the cylinder providing flexibility and customer convenience.

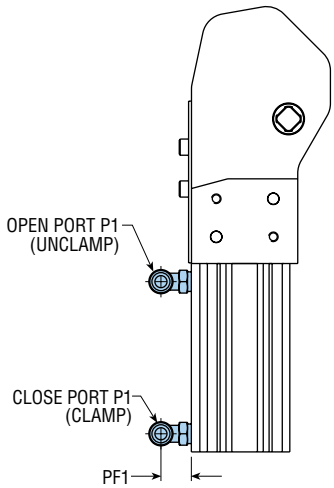


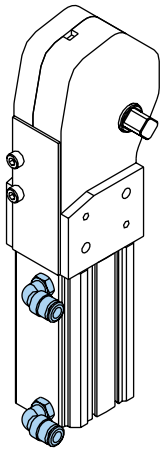
NOTES:
1) NUMBERS ENCLOSED IN HEX INDICATE PORT POSITION
2) POSITIONS 2 AND 4 ARE ONLY AVAILABLE ON PEC22, PEC33, AND PEC44 UNITS

Lxx PORT FITTINGS

LAA (metal) or LBB (plastic) option provides 90° swivel fittings for ease of air line hook up.







LETTER DIM	MODEL NUMBER PECxx	
	in	mm
P1	1/8 NPT	1/8 BSPP
PF1	0.629	16.0
PF2	0.885	22.5
PF3	0.472	12.0

OPTION CODE	PART NUMBER	
	Imperial	Metric
LAA	62178-003	62195-005
LBB	71120-001	71121-001

V4 SEAL OPTION

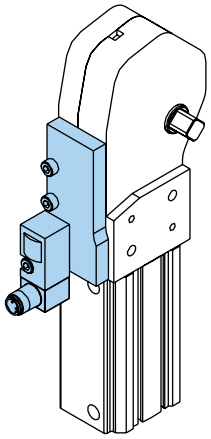
This option provides polyurethane piston seals for longer life in harsh environment applications. This option does not allow the use of magnets in the cylinder and therefore is not compatible with SWxx switch options.

All dimensions are reference only unless specifically toleranced.

PSxxx STANDARD POSITION SENSING

PRxxx POSITION SENSING

This option provides arm open and arm closed sensing by affixing an aluminum housing to the back of the clamp body. The adjustable switches sense the position of a target on the cam as the clamp opens and closes. PS positions satellite switch S02/S2 to sense open and S01/S1 to sense close. PR positions the satellite switch S01/S1 to sense open and S02/S2 to sense close. See tables and diagrams for satellite switch to quick disconnect pin number relationships.



POSITION SENSOR OPTION CODE

P x 1 x x

SENSING OPTION
S - Standard
R - Reversed

CONNECTOR POSITION
1 - Parallel to output shaft
9 - Perpendicular to output shaft

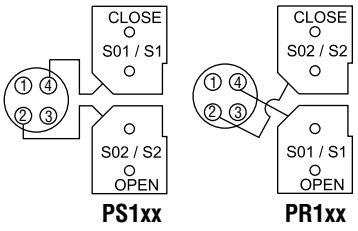
SWITCH HOUSING OPTION
1 - Position 1

SWITCH OPTION
N - No Switch
A - 5-pin AC/DC Switch (Turck)
D - 4-pin PNP DC Switch (P + F)
E - 4-pin PNP DC Switch (Turck)
F - 4-pin PNP DC Switch (Efector)
H - 4-pin NPN DC Switch (P + F)
J - 4-pin NPN DC Switch (Turck)

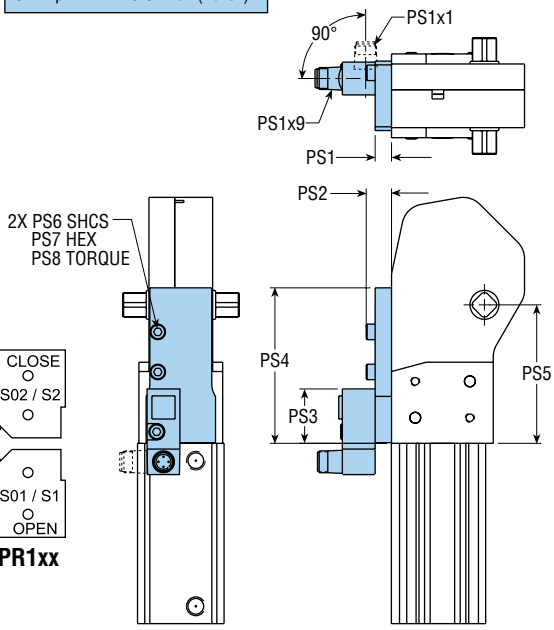
POSITIONAL SENSOR MOUNTING

MODEL	KIT NO.
PEC2x	80575
PEC3x	80575
PEC4x	80576

Includes switch housing and mounting hardware



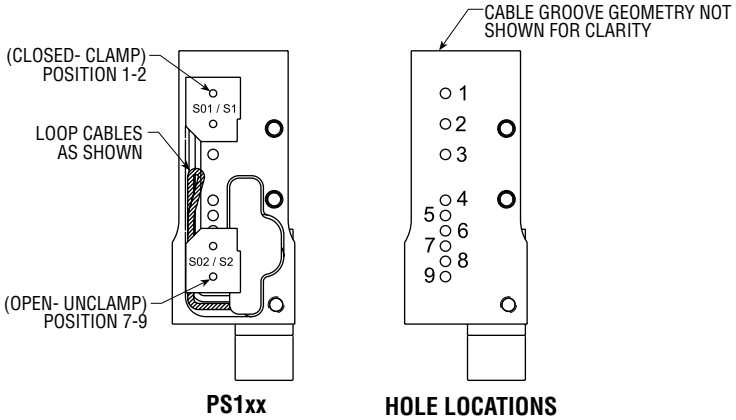
PS1xx **PR1xx**



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

LETTER DIM	MODEL NUMBER					
	PEC2x		PEC3x		PEC4x	
	in	mm	in	mm	in	mm
PS1	0.354	9.0	0.354	9.0	0.354	9.0
PS2	0.547	13.9	0.547	13.9	0.547	13.9
PS3	1.181	30.0	1.175	29.8	1.181	30.0
PS4	3.366	85.5	3.360	85.3	4.254	108.0
PS5	2.480	63.0	2.992	76.0	3.878	98.5
PS6	M5 SHCS		M5 SHCS		M5 SHCS	
PS7	M4 HEX		M4 HEX		M4 HEX	
PS8	70 in-lb	7.9 Nm	70 in-lb	7.9 Nm	70 in-lb	7.9 Nm



PS1xx **HOLE LOCATIONS**

CLOSED SENSOR

CLAMP CLOSED	SWITCH SENSOR		SWITCH LOCATION
	PS1xx	PR1xx	
0° - 3°	S01*	S02*	HOLE 1-2*
2° - 6°	S01	S02	HOLE 2-3

OPEN SENSOR

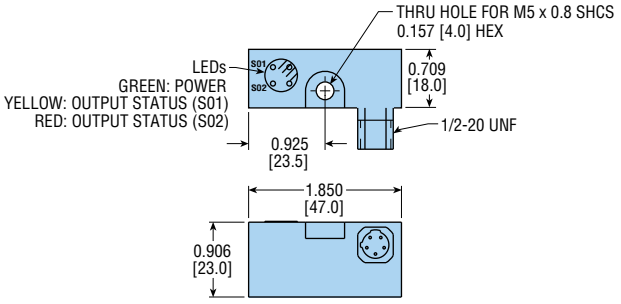
CLAMP CLOSED	SWITCH SENSOR		SWITCH LOCATION
	PS1xx	PR1xx	
45° - 59°	S02	S01	HOLE 4-6
60° - 74°	S02	S01	HOLE 5-7
75° - 89°	S02	S01	HOLE 6-8
90° - 105°	S02*	S01*	HOLE 7-9*

*Default positions

All dimensions are reference only unless specifically toleranced.

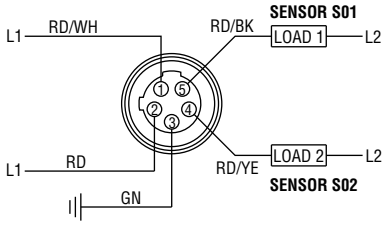
OPTIONS: SERIES PEC PNEUMATIC POWER CLAMPS

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

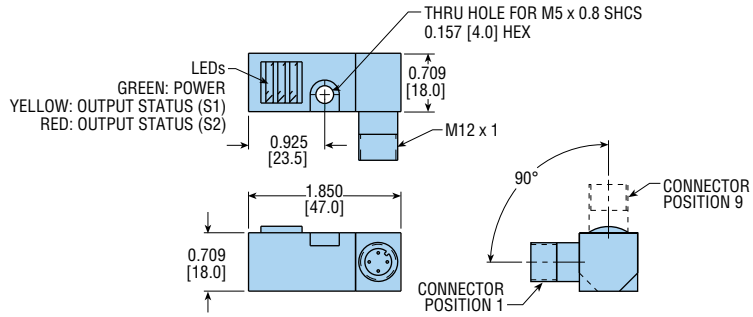


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS1A1	S02	S01	S01 = Pin 5
PR1A1	S01	S02	S02 = Pin 4

4-WIRE AC/DC

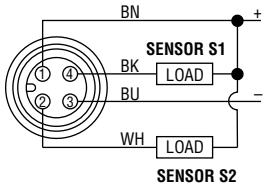


SWITCH OPTION D 71483-001-PEC P + F Part #: NBN2-F581-160S6-E8-V1 (PNP)
SWITCH OPTION H 71483-005-PEC P + F Part #: NBN2-F581-160S6-E10-V1 (NPN)

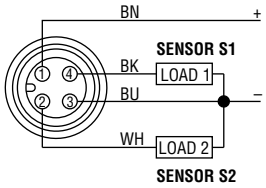


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS1Dx or PS1Hx	S2	S1	S1 = Pin 4
PR1Dx or PR1Hx	S1	S2	S2 = Pin 2

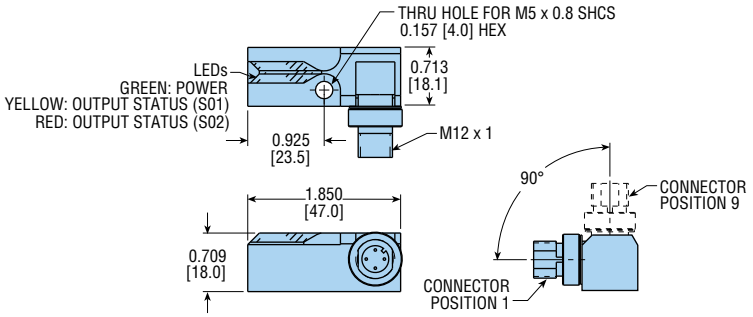
4-WIRE DC (V1 TYPE)
NPN DUAL NORMALLY OPEN



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

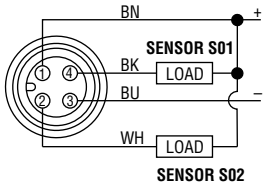


SWITCH OPTION E 71483-003-PEC Turck Part #: Ni 2-Q6.5-0.16-BDS-2AP6X3-H1141/S34 (PNP)
SWITCH OPTION J 71483-006-PEC Turck Part #: Ni 2-Q6.5-AN6-0.16-FS 4.4X3/S304 (NPN)

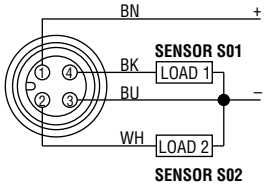


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS1Ex or PS1Jx	S02	S01	S01 = Pin 4
PR1Ex or PR1Jx	S01	S02	S02 = Pin 2

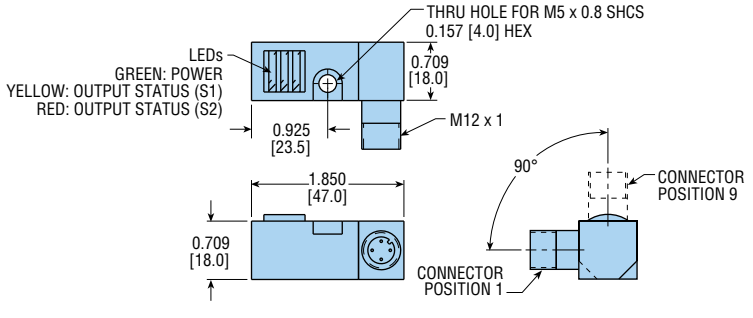
4-WIRE DC
NPN DUAL NORMALLY OPEN



4-WIRE DC
PNP DUAL NORMALLY OPEN

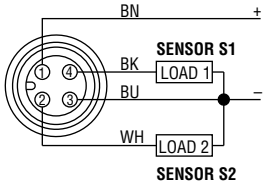


SWITCH OPTION F 71483-004-PEC Efector Part #: IN 5375 (PNP)



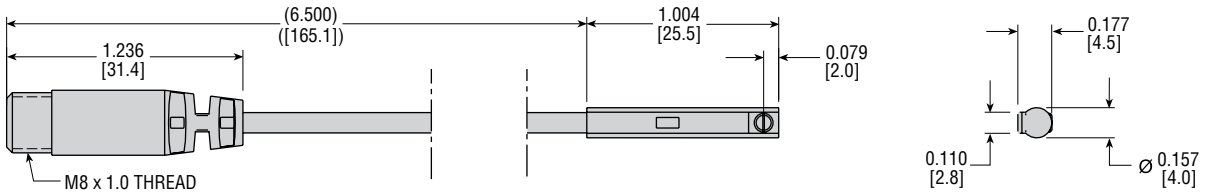
OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS1Fx	S2	S1	S1 = Pin 4
PR1Fx	S1	S2	S2 = Pin 2

4-WIRE DC
PNP DUAL NORMALLY OPEN



All dimensions are reference only unless specifically toleranced.

phd SOLUTIONS FOR INDUSTRIAL AUTOMATION

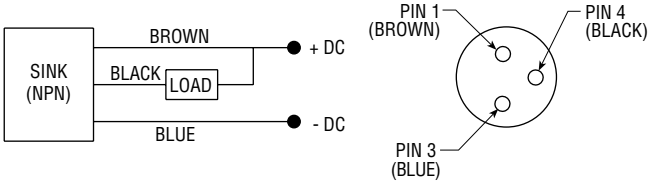


SW41 1 NPN SWITCH INSTALLED

SW42 2 NPN SWITCHES INSTALLED

PART NO.	DESCRIPTION
73360-01	Solid State NPN (Sink) 5 - 28 VDC, 165 mm Cable with Quick Disconnect

SPECIFICATIONS	73360-01
SWITCHING LOGIC	Solid State Output, Normally Open
SENSOR TYPE	NPN Current Sinking
OPERATING VOLTAGE	5 - 28 VDC
SWITCHING CURRENT	200 mA max
SWITCHING RATING	6 W max
CURRENT CONSUMPTION	20 mA @ 24V max (Switch Active)
VOLTAGE DROP	0.5V @ 200 mA max
LEAKAGE CURRENT	0.01 mA max
INDICATOR	Red LED
CABLE	Ø 2.8, 3C, PVC
SENSITIVITY	40 Gauss
TEMPERATURE RANGE	-10° to 70°C
SHOCK	50G
VIBRATION	9G
ENCLOSURE CLASSIFICATION	IP67 (NEMA 6)
PROTECTION CIRCUIT	Power Source Reverse Polarity, Surge Suppression

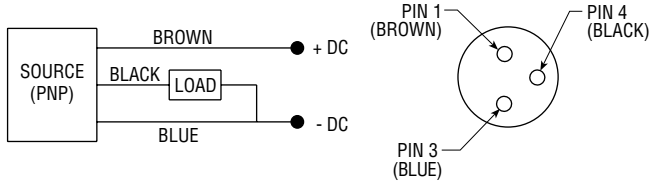


SW51 1 PNP SWITCH INSTALLED

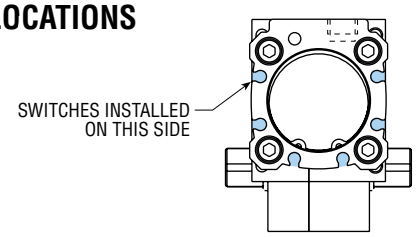
SW52 2 PNP SWITCHES INSTALLED

PART NO.	DESCRIPTION
73360-02	Solid State PNP (Source) 5 - 28 VDC, 165 mm Cable with Quick Disconnect

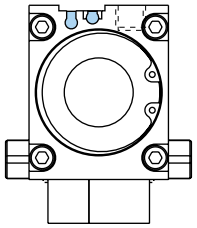
SPECIFICATIONS	73360-02
SWITCHING LOGIC	Solid State Output, Normally Open
SENSOR TYPE	PNP Current Sourcing
OPERATING VOLTAGE	5 - 28 VDC
SWITCHING CURRENT	200 mA max
SWITCHING RATING	6 W max
CURRENT CONSUMPTION	20 mA @ 24V max (Switch Active)
VOLTAGE DROP	0.5V @ 200 mA max
LEAKAGE CURRENT	0.01 mA max
INDICATOR	Green LED
CABLE	Ø 2.8, 3C, PVC
SENSITIVITY	40 Gauss
TEMPERATURE RANGE	-10° to 70°C
SHOCK	50G
VIBRATION	9G
ENCLOSURE CLASSIFICATION	IP67 (NEMA 6)
PROTECTION CIRCUIT	Power Source Reverse Polarity, Surge Suppression



SWITCH SLOT LOCATIONS



PEC22, PEC33, PEC44



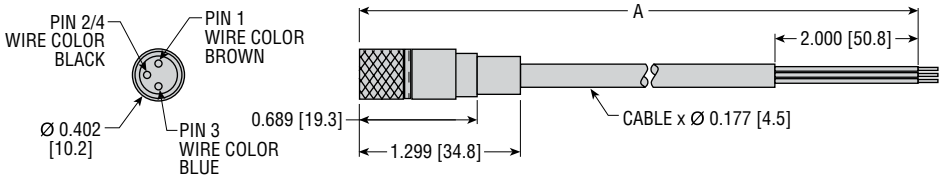
PEC34

63549-xx CORDSET WITH FEMALE QUICK CONNECT

Provides a cordset with female quick connect and additional cable.

NUMBERS IN [ ] ARE IN mm. IMPERIAL EQUIVALENTS ARE PROVIDED FOR CONVENIENCE.

MODEL NO.	LETTER DIM A
63549-02	78.74 [2 m]
63549-05	196.85 [5 m]



MODULAR PIN LOCATING CLAMPS

Major Benefits

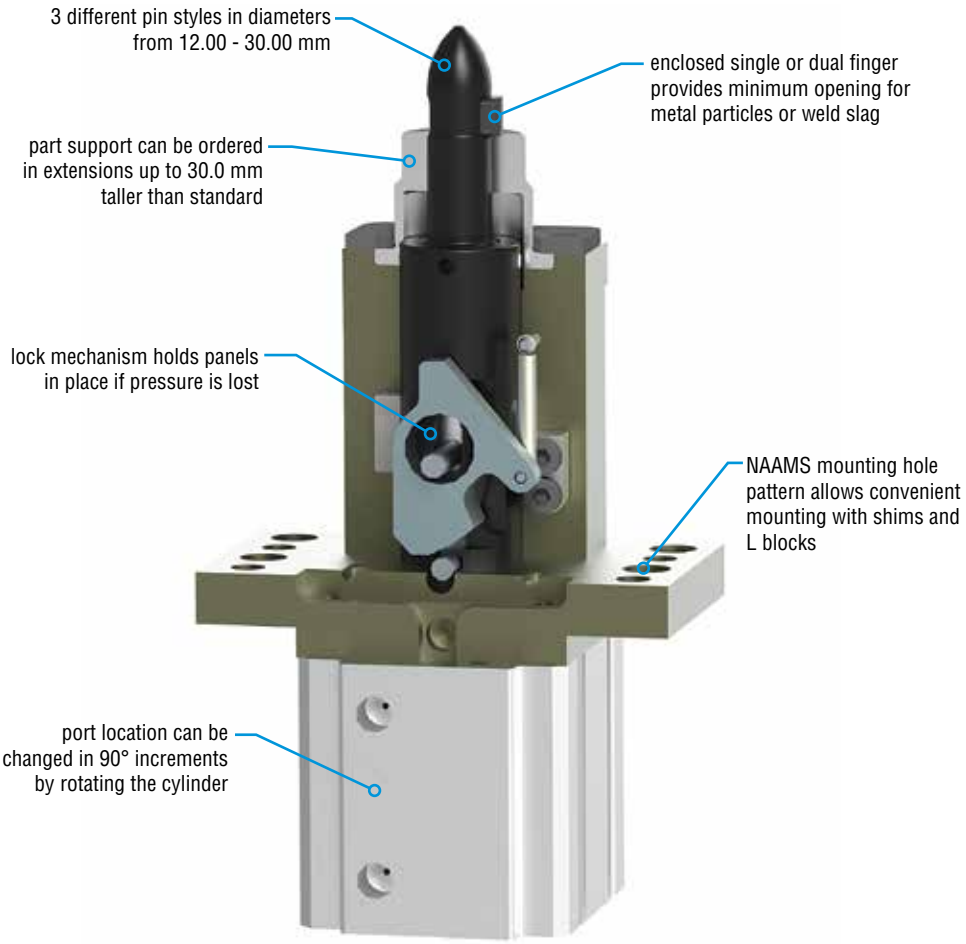
- Completely enclosed fingers
- Available in pin diameters from 12.00 to 30.00 mm
- 5 or 10 mm clamping stroke
- Short, medium, and long pin top shapes
- Finger direction easily changed in the field
- Interchangeable pin sizes, styles, and heights
- Position sensing provides open and closed sensing with industry standard AC and DC weld field immune switch mounted in a protected housing
- Self-locking internal threads throughout eliminate need for thread locking adhesives or additional locking components

PIN STYLES

"B" (short)

"C" (medium)

"N" (long)



TO ORDER, SPECIFY:
Model, Unit Size and Stroke, Design No., Pin Size and Style and additional Options if desired.

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

UNIT SIZE / CLAMP STROKE
505 - 50 mm Bore, 5 mm Stroke
510 - 50 mm Bore, 10 mm Stroke

FINGER(S) DIRECTION
FD4S - Position 4 single finger (standard)
FD1S - Position 1 single finger
FD2S - Position 2 single finger
FD3S - Position 3 single finger
FD1D - Position 1/3 dual finger (see Note 4)
FD2D - Position 2/4 dual finger (see Note 4)

PORT FITTINGS (BOTH PORTS)
Blank - No fittings
LAA - 90° Swivel elbow, Metal
LBB - 90° Swivel elbow, Plastic

CYLINDER SWITCH OPTION
Blank - No Magnet (see Note 2)
SW00 - Magnet for switches installed
SW41 - 1 NPN Switch installed
SW42 - 2 NPN Switches installed
SW51 - 1 PNP Switch installed
SW52 - 2 PNP Switches installed

DESIGN NO.
2 - Imperial
6 - Metric
See Note 3

PIN STYLE
B - Short length pin
C - Medium length pin
N - Long length pin

PORT POSITION
PP1 - Position 1 (standard)
PP2 - Position 2
PP3 - Position 3
PP4 - Position 4

MISCELLANEOUS OPTIONS
(specify all that apply)
Blank - None
R01 - Sensor Flag
R02 - Double Rod

MODEL

PLK 510 - 2 - 1872 C 1 - E000 - FD4S - PP1 - LAA - PS1D1 - R01 - SW00 - B01 - MT20

PIN DIAMETER
Pin diameters available from 12.00 to 30.00 in 0.01 increments.
Examples: For 18.72 mm nominal pin, specify 1872
For 25.50 mm nominal pin, specify 2550
+0.00 / -0.02 mm Pin Tolerance

PART SUPPORT EXTENSION
E000 - Standard extension
Part support extension is available up to 30 mm taller than standard in 0.5 mm increments
Example: For 30.0 mm extension, specify E300
For 25.5 mm extension, specify E255

POSITION SENSOR OPTIONS
Blank - No sensor
Px1xx- Position sensor (see Position Sensor Option Code)

ADJUSTABLE LOCK SETTING
See Note 1

OPTIONAL MOUNTING PATTERNS
Blank - Standard flange body
B01 - 45 x 30 pattern 4X M10 threads + 2X 8 mm dowel
B02 - 30 x 60 pattern 4X M10 threads + 2X 8 mm dowel
B03 - 40 x 40 pattern 4X M10 threads + 2X 8 mm dowel
B04 - 40 x 40 pattern 2X M10 threads + 2X 8 mm dowel
B05 - 30 x 30 pattern 2X M10 threads + 2X 10 mm dowel
B06 - 45 x 30 pattern 2X M12 threads + 2X 10 mm dowel

NOTES:
1) To have the lock preset for sheet metal thickness, order MT and (the thickness). Lock may be preset at factory for material thickness in 0.1 mm [0.004 in] increments. MT11 would be for 1.1 mm material, MT20 would be for 2.0 mm material. Lock range is from 0 to 4.0 mm [0 to 0.157 in]. Unless otherwise specified, factory lock default setting is MT20.
2) Magnet will be installed if cylinder switches are ordered.
3) Metric units have metric ports, imperial units have imperial ports.
4) Dual fingers are available in 15-30 mm pin diameters only.

POSITION SENSOR OPTION CODE

P x 1 x x

HOUSING OPTION
P - Positional Sensing

CONNECTOR POSITION
1 - Parallel to main pin
9 - Perpendicular to main pin*

SENSING OPTION
S - Standard
R - Reversed

SWITCH OPTION
N - No Switch
A - 5-pin AC/DC Switch (Turck)
D - 4-pin PNP DC Switch (P + F)
E - 4-pin PNP DC Switch (Turck)
F - 4-pin PNP DC Switch (Efector)
H - 4-pin NPN DC Switch (P + F)
J - 4-pin NPN DC Switch (Turck)

SWITCH HOUSING OPTION
1 - Position 1

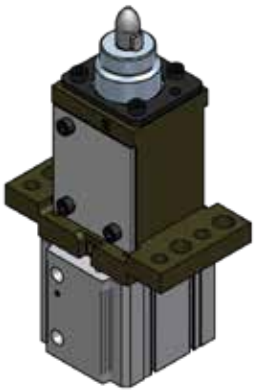
***NOTE:**
Connector position 9 is not available with switch option A.

CAD Configurator Assistance
Use PHD's free online application at **www.phdinc.com/cad**

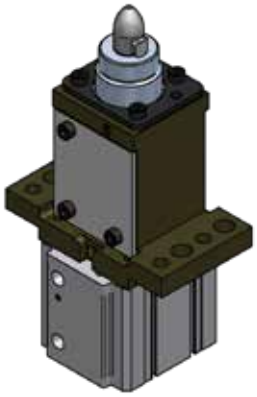
SPECIFICATIONS	SERIES PLK
SEALS	Polyurethane
OPERATING TEMPERATURE	-20° to +180°F [-28° to +82°C]
LUBRICATION	Factory lubricated for life

MODEL	UNIT WEIGHT		CLAMP FORCE 87 psi [6 bar]		CLAMP FORCE FACTOR Cf		CLOSE OR OPEN TIME 87 psi [6 bar]	DISPLACEMENT			
								CLOSE		OPEN	
	lb	kg	lb	N	Imperial	Metric	sec	in^3	cm^3	in^3	cm^3
PLK5xx-x-1250C1-E000-FD4S-PP1	4.2	1.91	223	991	2.56	165	0.5	2.47	40.5	2.95	48.3
PLK5xx-x-1250N1-E300-FD4S-PP1	4.5	2.05									
PLK5xx-x-1550C1-E000-FD4S-PP1	4.2	1.92									
PLK5xx-x-1550N1-E300-FD4S-PP1	4.6	2.09									
PLK5xx-x-1850C1-E000-FD4S-PP1	4.3	1.96									
PLK5xx-x-1850N1-E300-FD4S-PP1	4.8	2.18									
PLK5xx-x-2550C1-E000-FD4S-PP1	4.8	2.18									
PLK5xx-x-2550N1-E300-FD4S-PP1	5.5	2.51									
PLK5xx-x-2950C1-E000-FD4S-PP1	4.9	2.21									
PLK5xx-x-2950N1-E300-FD4S-PP1	5.7	2.58									

NOTE: All Series PLK model descriptions are based on the "C" or "N" style pin shape. All "B" style pin shapes will weigh the same or slightly less than the "C" style based on the same model description.



PLK510-2-1250C1-E000-FD4S-PP1



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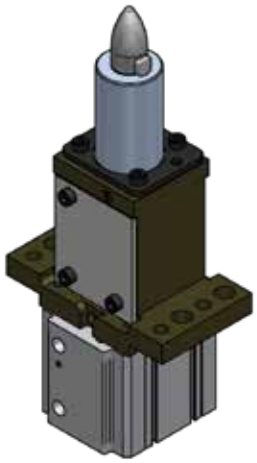
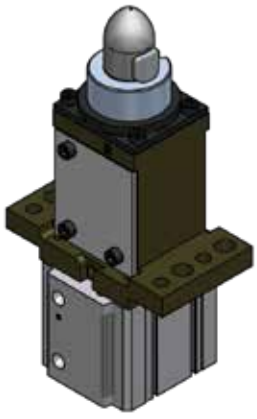
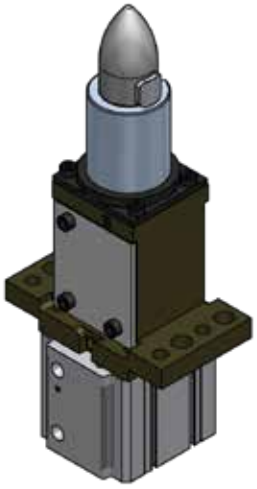


PLK510-2-1850N1-E300-FD4S-PP1

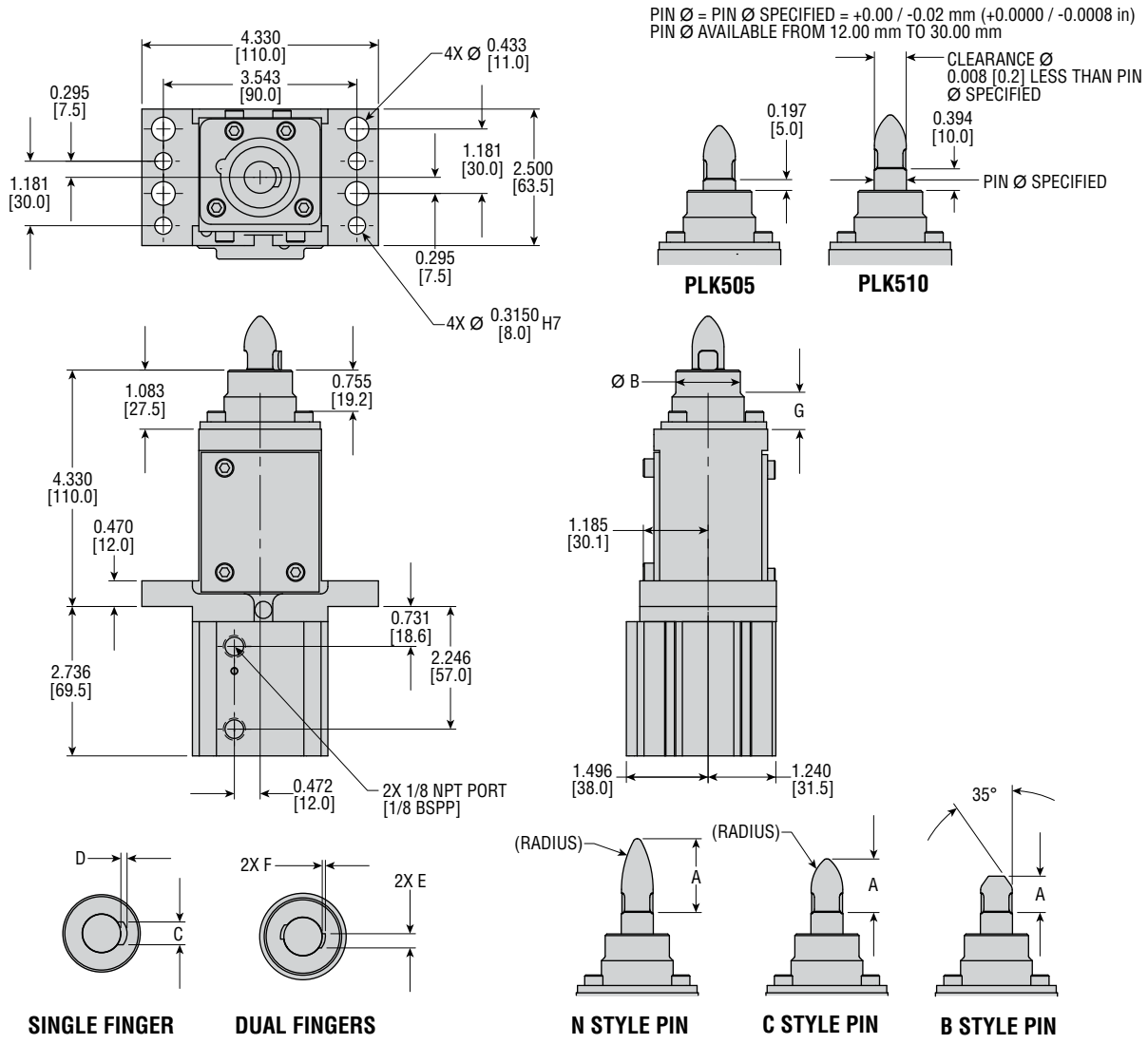


PLK510-2-2550C1-E000-FD4S-PP1



PLK510-2-2950N1-E300-FD4S-PP1

DIMENSIONS: SERIES PLK MODULAR PIN LOCATING CLAMPS



LETTER DIM	MODEL NUMBER									
	PLK5xx-x-1200 thru PLK5xx-x-1249		PLK5xx-x-1250 thru PLK5xx-x-1269		PLK5xx-x-1270 thru PLK5xx-x-1499		PLK5xx-x-1500 thru PLK5xx-x-1699		PLK5xx-x-1700 thru PLK5xx-x-1799	
	in	mm	in	mm	in	mm	in	mm	in	mm
A - N STYLE	1.143	29.0	1.143	29.0	1.143	29.0	1.358	34.5	1.358	34.5
A - C STYLE	0.867	22.0	0.867	22.0	0.867	22.0	0.985	25.0	0.985	25.0
A - B STYLE	0.590	15.0	0.590	15.0	0.590	15.0	0.669	17.0	0.669	17.0
B	1.104	28.0	1.104	28.0	1.104	28.0	1.181	30.0	1.181	30.0
C	0.263	6.7	0.263	6.7	0.263	6.7	0.348	8.8	0.348	8.8
D	0.056	1.4	0.056	1.4	0.068	1.7	0.095	2.4	0.108	2.7
E	—	—	—	—	—	—	0.217	5.5	0.217	5.5
F	—	—	—	—	—	—	0.041	1.0	0.064	1.6
G (E000)	0.714	18.1	0.714	18.1	0.714	18.1	0.714	18.1	0.714	18.1

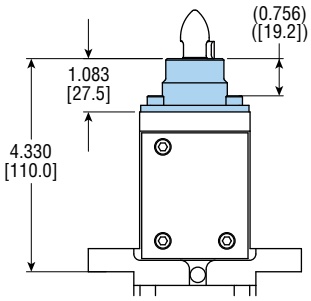
LETTER DIM	MODEL NUMBER							
	PLK5xx-x-1800 thru PLK5xx-x-1999		PLK5xx-x-2000 thru PLK5xx-x-2199		PLK5xx-x-2200 thru PLK5xx-x-2499		PLK5xx-x-2500 thru PLK5xx-x-3000	
	in	mm	in	mm	in	mm	in	mm
A - N STYLE	1.379	35.0	1.379	35.0	1.733	44.0	2.028	51.5
A - C STYLE	1.083	27.5	1.083	27.5	1.221	31.0	1.427	36.2
A - B STYLE	0.669	17.0	0.669	17.0	0.728	18.5	0.886	22.5
B	1.338	34.0	1.338	34.0	1.417	36.0	1.654	42.0
C	0.348	8.8	0.348	8.8	0.474	12.0	0.599	15.2
D	0.108	2.75	0.108	2.75	0.108	2.75	0.108	2.75
E	0.217	5.5	0.217	5.5	0.312	7.9	0.376	9.6
F	0.074	1.9	0.094	2.4	0.104	2.6	0.108	2.7
G (E000)	—	—	—	—	—	—	—	—

All dimensions are reference only unless specifically toleranced.

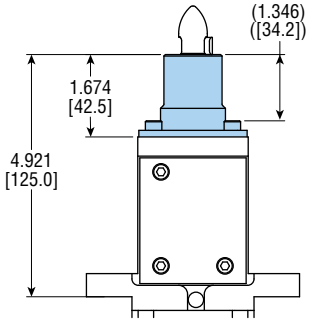
Exxx PART SUPPORT EXTENSION

The Exxx option allows for an optional part support extension. The Exxx can be ordered in 0.5 mm increments from 0.5 to 30.0 mm taller. The Exxx option is available with all bodies or pin styles.

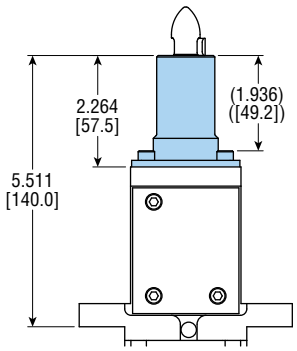
E000 is standard 27.5 mm.
E005 is 0.5 mm taller than standard or 28.00 mm.
E150 is 15.0 mm taller than standard or 42.50 mm.
E300 is 30.0 mm taller than standard or 57.50 mm.
For part support extensions greater than 30.0 mm (E300), consult PHD.



E000



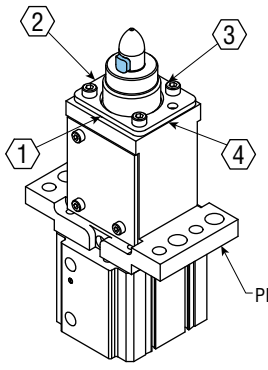
E150



E300

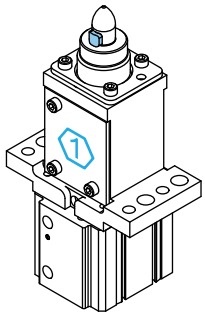
FDxx FINGER DIRECTION

The FDxx option provides alternate finger directions for flexibility and customer convenience.

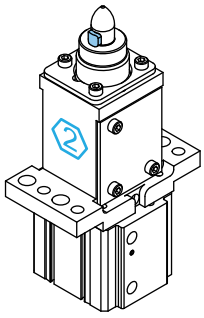


NOTE:
NUMBER IN HEX INDICATES POSITION IN RELATION TO PIN HOUSING

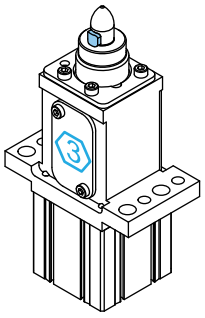
SINGLE FINGERS:



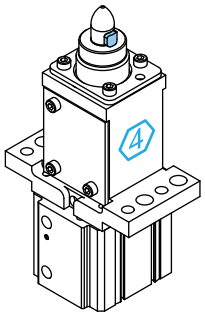
FD1S



FD2S

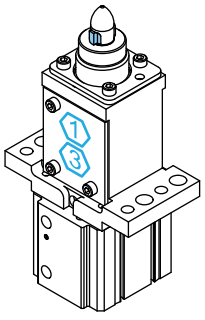


FD3S

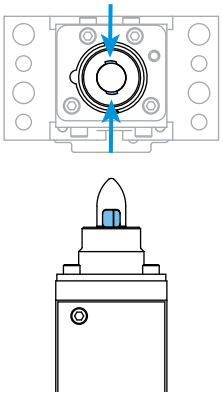


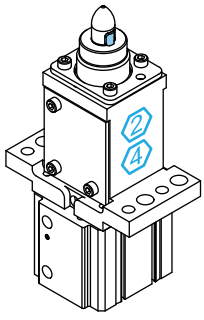
FD4S

DUAL FINGERS:

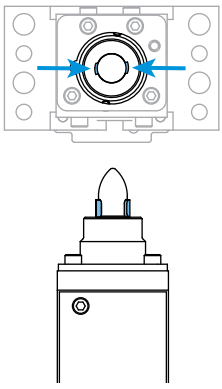


FD1D





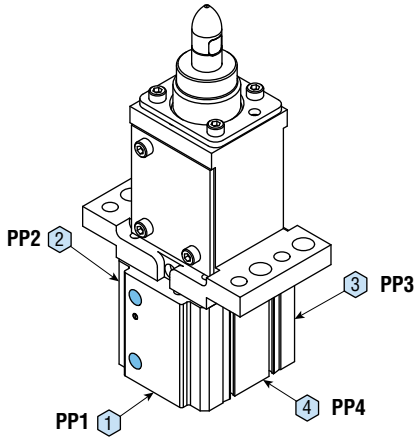
FD2D



All dimensions are reference only unless specifically toleranced.

PPx PORT LOCATION

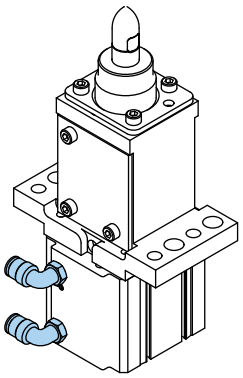
The PPx option provides alternate port locations for the cylinder providing flexibility and customer convenience. The cylinder can be rotated in the field by removing the cylinder mounting screws and rotating to the desired location in 90° increments.

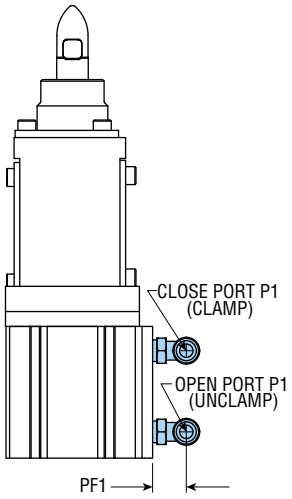


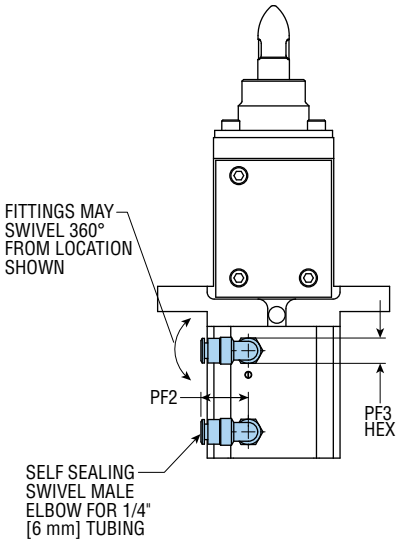
NOTE: NUMBER IN HEX INDICATES PORT POSITION IN RELATION TO PIN HOUSING

Lxx PORT FITTINGS

The LAA (metal) or LBB (plastic) accessory provides 90° swivel fittings for ease of air line hook up.







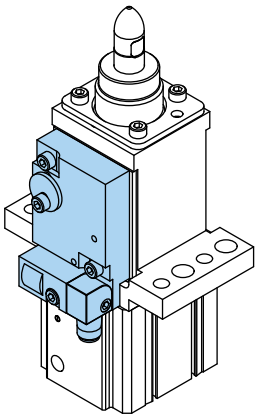
LETTER DIM	MODEL NUMBER PLK5xx	
	in	mm
P1	1/8 NPT	1/8 BSPP
PF1	0.629	16.0
PF2	0.885	22.5
PF3	0.472	12.0

OPTION CODE	PART NUMBER	
	Imperial	Metric
LAA	62178-003	62195-005
LBB	71120-001	71121-001

PS1xx STANDARD POSITION SENSING

PR1xx REVERSED POSITION SENSING

This option provides clamp and unclamp sensing by affixing an aluminum housing to the side of the clamp body. The unclamp switch is fixed needing no adjustment. The clamp switch is adjustable throughout the entire clamp stroke. Loosening the M5 screw and sliding it up or down adjusts the clamp switch position. PS positions the S02 switch to sense unclamped and the S01 switch to sense clamped. PR positions the S01 switch to sense unclamped and the S02 switch to sense clamped. See diagrams for satellite switch to quick disconnect pin number relationships on page 42.



POSITION SENSOR OPTION CODE

P x 1 x x

HOUSING OPTION
P - Positional Sensing

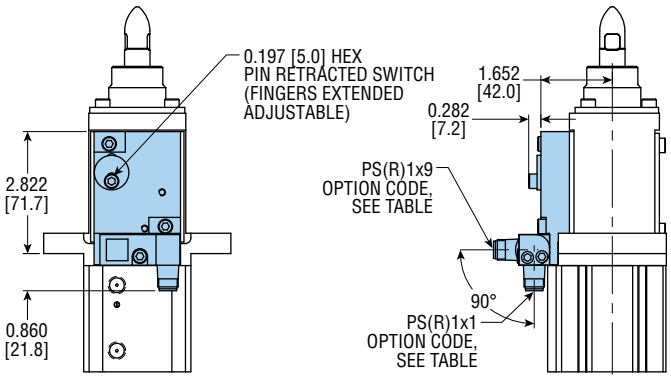
SENSING OPTION
S - Standard
R - Reversed

SWITCH HOUSING OPTION
1 - Position 1

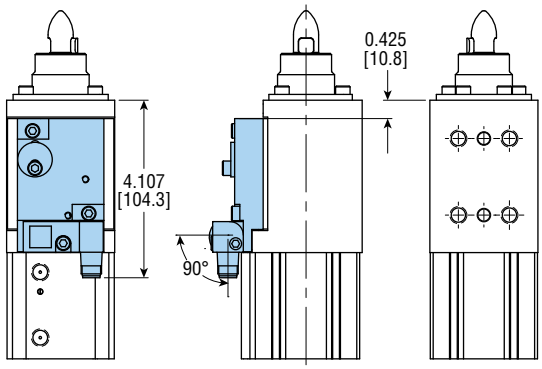
CONNECTOR POSITION
1 - Parallel to main pin
9 - Perpendicular to main pin*

SWITCH OPTION
N - No Switch
A - 5-pin AC/DC Switch (Turck)
D - 4-pin PNP DC Switch (P + F)
E - 4-pin PNP DC Switch (Turck)
F - 4-pin PNP DC Switch (Efector)
H - 4-pin NPN DC Switch (P + F)
J - 4-pin NPN DC Switch (Turck)

***NOTE:**
Connector position 9 is not available with switch option A.



FLANGE STYLE BODY



THREADED BODY STYLE

OPTION CODE	CABLE CONNECTION
PS(R)1A1	1/2-20 UNF
PS(R)1D1(9)	M12 x 1
PS(R)1E1(9)	M12 x 1
PS(R)1F1(9)	M12 x 1
PS(R)1H1(9)	M12 x 1
PS(R)1J1(9)	M12 x 1

SWITCH NUMBERS IF ORDERED SEPARATELY

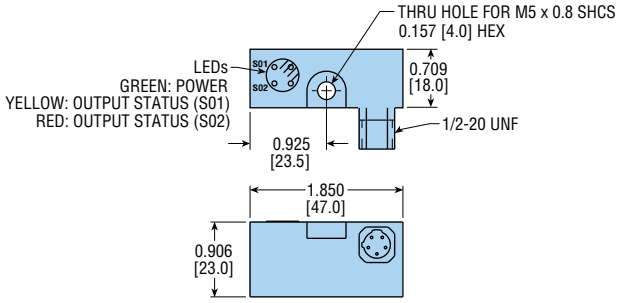
PLK HOUSING BODY STYLE	SWITCH HOUSING KIT NUMBER	SWITCH NUMBER	SWITCH OPTION	DESCRIPTION
FLANGE STYLE HOUSING PS1xx SWITCH	79092-00	No Switch	N	Switch; No Switch
	79092-01	71483-001-PLK	D	Switch; 4 Pin DC, PNP, P & F
	79092-02	71483-002-PLK	A	Switch; 5 Pin AC/DC, Turck
	79092-03	71483-003-PLK	E	Switch; 4 Pin DC, PNP, Turck
	79092-04	71483-004-PLK	F	Switch; 4 Pin DC, PNP, Efector
	79092-05	71483-005-PLK	H	Switch; 4 Pin DC, NPN, P & F
	79092-06	71483-006-PLK	J	Switch; 4 Pin DC, NPN, Turck
FLANGE STYLE HOUSING PR1xx SWITCH	79093-00	No Switch	N	Switch; No Switch
	79093-01	71483-001-PLK	D	Switch; 4 Pin DC, PNP, P & F
	79093-02	71483-002-PLK	A	Switch; 5 Pin AC/DC, Turck
	79093-03	71483-003-PLK	E	Switch; 4 Pin DC, PNP, Turck
	79093-04	71483-004-PLK	F	Switch; 4 Pin DC, PNP, Efector
	79093-05	71483-005-PLK	H	Switch; 4 Pin DC, NPN, P & F
	79093-06	71483-006-PLK	J	Switch; 4 Pin DC, NPN, Turck
THREADED BXX STYLE HOUSING PS1xx SWITCH	79094-00	No Switch	N	Switch; No Switch
	79094-01	71483-001-PLK	D	Switch; 4 Pin DC, PNP, P & F
	79094-02	71483-002-PLK	A	Switch; 5 Pin AC/DC, Turck
	79094-03	71483-003-PLK	E	Switch; 4 Pin DC, PNP, Turck
	79094-04	71483-004-PLK	F	Switch; 4 Pin DC, PNP, Efector
	79094-05	71483-005-PLK	H	Switch; 4 Pin DC, NPN, P & F
	79094-06	71483-006-PLK	J	Switch; 4 Pin DC, NPN, Turck
THREADED BXX STYLE HOUSING PR1xx SWITCH	79095-00	No Switch	N	Switch; No Switch
	79095-01	71483-001-PLK	D	Switch; 4 Pin DC, PNP, P & F
	79095-02	71483-002-PLK	A	Switch; 5 Pin AC/DC, Turck
	79095-03	71483-003-PLK	E	Switch; 4 Pin DC, PNP, Turck
	79095-04	71483-004-PLK	F	Switch; 4 Pin DC, PNP, Efector
	79095-05	71483-005-PLK	H	Switch; 4 Pin DC, NPN, P & F
	79095-06	71483-006-PLK	J	Switch; 4 Pin DC, NPN, Turck

Kit includes: Switch housing, plate, switch specified with parts pre-assembled. Mounting fasteners included.

MATCHING CORDSETS 2 METERS LONG

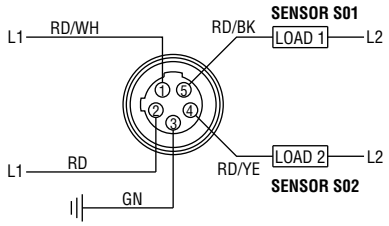
SWITCH OPTION	PHD PART NUMBER	CORDSET PART NUMBER
A	73317-00-02	KB 5T-2
D	65440-001-02	V1-G-YE2M-PVC
E	78039-00-02	RK 4.4T-2
F	65440-001-02	V1-G-YE2M-PVC
H	65440-001-02	V1-G-YE2M-PVC
J	78039-00-02	RK 4.4T-2

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

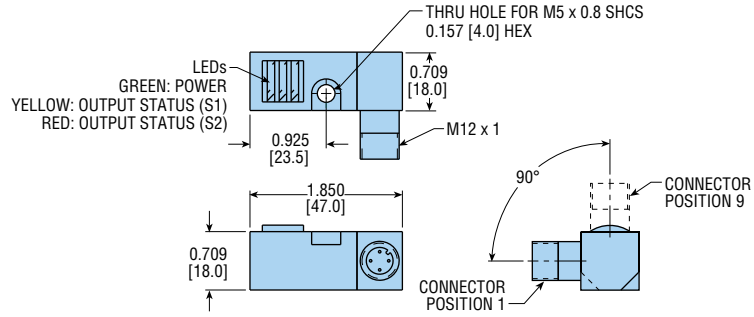


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS1A1	S02	S01	S01 = Pin 5
PR1A1	S01	S02	S02 = Pin 4

4-WIRE AC/DC

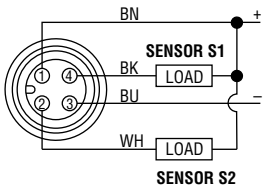


SWITCH OPTION D 71483-001-PLK P + F Part #: NBN2-F581-160S6-E8-V1 (PNP)
SWITCH OPTION H 71483-005-PLK P + F Part #: NBN2-F581-160S6-E10-V1 (NPN)

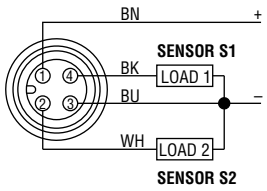


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS1Dx or PS1Hx	S2	S1	S1 = Pin 4
PR1Dx or PR1Hx	S1	S2	S2 = Pin 2

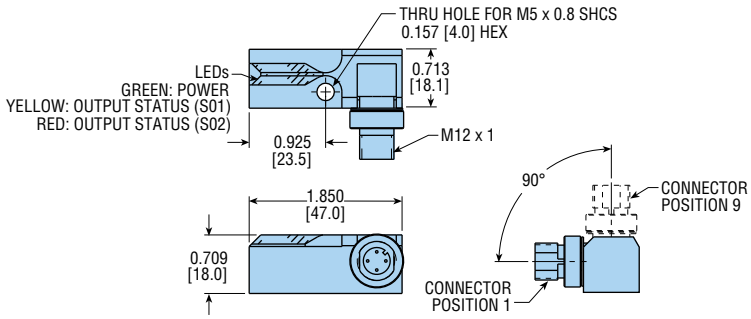
4-WIRE DC (V1 TYPE)
NPN DUAL NORMALLY OPEN



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

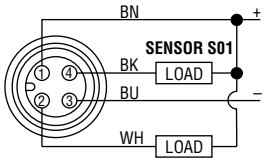


SWITCH OPTION E 71483-003-PLK Turck Part #: Ni 2-Q6.5-0.16-BDS-2AP6X3-H1141/S34 (PNP)
SWITCH OPTION J 71483-006-PLK Turck Part #: Ni 2-Q6.5-AN6-0.16-FS 4.4X3/S304 (NPN)

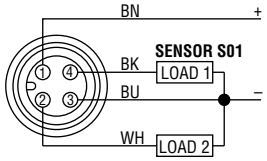


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS1Ex or PS1Jx	S02	S01	S01 = Pin 4
PR1Ex or PR1Jx	S01	S02	S02 = Pin 2

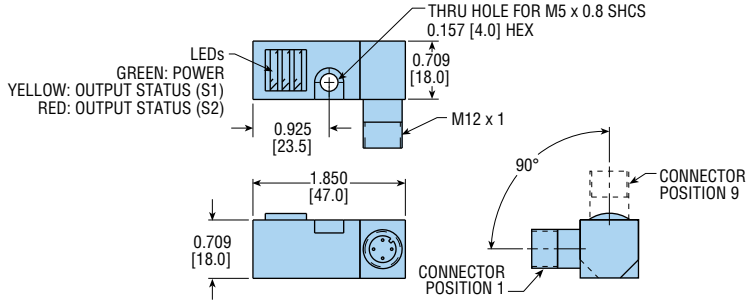
4-WIRE DC
NPN DUAL NORMALLY OPEN



4-WIRE DC
PNP DUAL NORMALLY OPEN

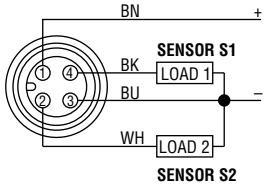


SWITCH OPTION F 71483-004-PLK Efector Part #: IN 5375 (PNP)



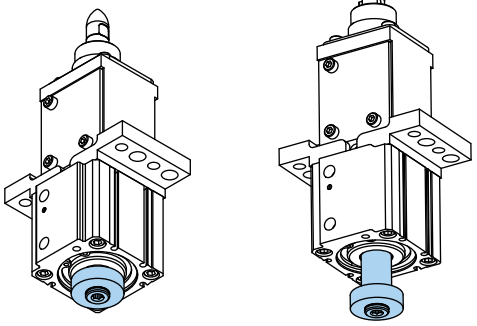
OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS1Fx	S2	S1	S1 = Pin 4
PR1Fx	S1	S2	S2 = Pin 2

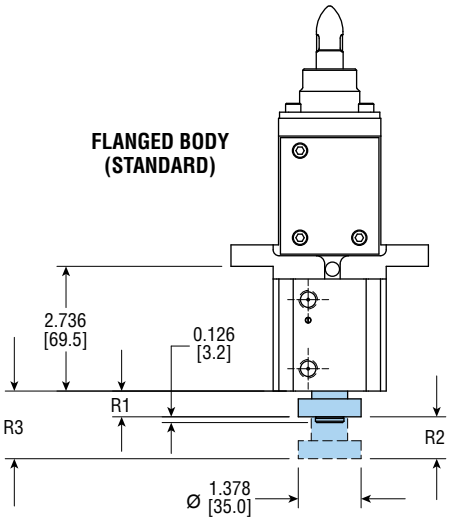
4-WIRE DC
PNP DUAL NORMALLY OPEN



R01 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 panel thickness. 1 mm min. to 10 mm max. The white composite flag can be seen by optical sensing systems. Manually pushing the flag toward the clamp body will overcome the internal locking feature.

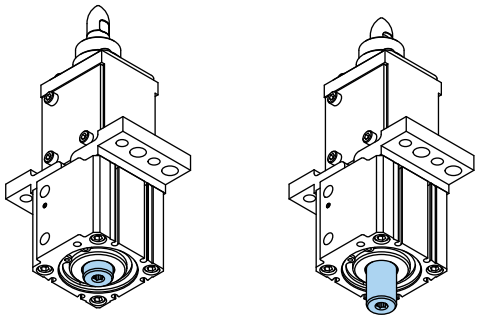


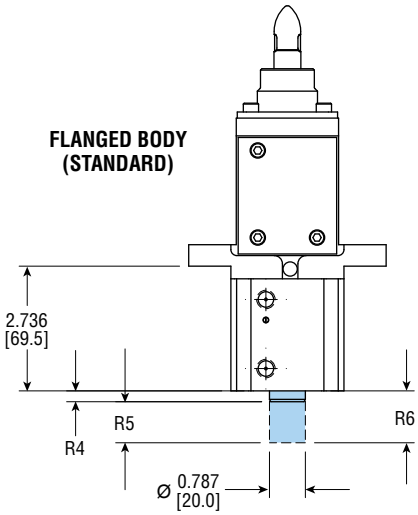


LETTER DIM	MODEL NUMBER			
	PLK505		PLK510	
	in	mm	in	mm
R1	0.762	19.4	0.565	14.4
R2	0.661	16.8	0.858	21.8
R3	1.423	36.1	1.423	36.1

R02 DOUBLE ROD

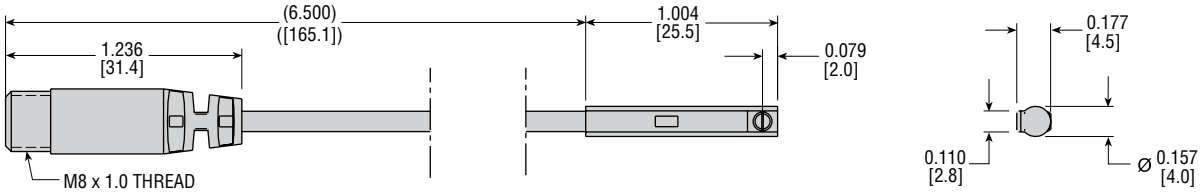
Provides manual unlocking ability from below the clamp. Manually pushing the external rod that extends out the bottom will overcome the internal lock.





LETTER DIM	MODEL NUMBER			
	PLK505		PLK510	
	in	mm	in	mm
R4	0.435	11.0	0.238	6.0
R5	0.661	16.8	0.858	21.8
R6	1.096	27.8	1.096	27.8

OPTIONS: SERIES PLK MODULAR PIN LOCATING CLAMPS

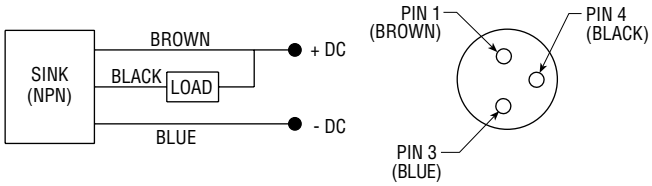


SW41 1 NPN SWITCH INSTALLED

SW42 2 NPN SWITCHES INSTALLED

PART NO.	DESCRIPTION
73360-01	Solid State NPN (Sink) 5 - 28 VDC, 165 mm Cable with Quick Disconnect

SPECIFICATIONS	73360-01
SWITCHING LOGIC	Solid State Output, Normally Open
SENSOR TYPE	NPN Current Sinking
OPERATING VOLTAGE	5 - 28 VDC
SWITCHING CURRENT	200 mA max
SWITCHING RATING	6 W max
CURRENT CONSUMPTION	20 mA @ 24V max (Switch Active)
VOLTAGE DROP	0.5V @ 200 mA max
LEAKAGE CURRENT	0.01 mA max
INDICATOR	Red LED
CABLE	Ø 2.8, 3C, PVC
SENSITIVITY	40 Gauss
TEMPERATURE RANGE	-10° to 70°C
SHOCK	50G
VIBRATION	9G
ENCLOSURE CLASSIFICATION	IP67 (NEMA 6)
PROTECTION CIRCUIT	Power Source Reverse Polarity, Surge Suppression

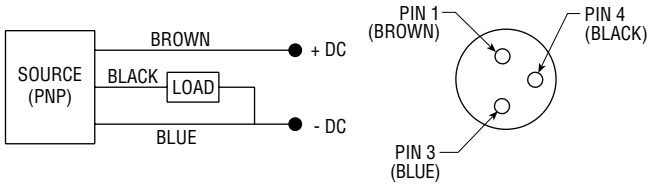


SW51 1 PNP SWITCH INSTALLED

SW52 2 PNP SWITCHES INSTALLED

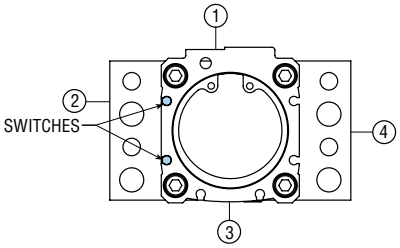
PART NO.	DESCRIPTION
73360-02	Solid State PNP (Source) 5 - 28 VDC, 165 mm Cable with Quick Disconnect

SPECIFICATIONS	73360-02
SWITCHING LOGIC	Solid State Output, Normally Open
SENSOR TYPE	PNP Current Sourcing
OPERATING VOLTAGE	5 - 28 VDC
SWITCHING CURRENT	200 mA max
SWITCHING RATING	6 W max
CURRENT CONSUMPTION	20 mA @ 24V max (Switch Active)
VOLTAGE DROP	0.5V @ 200 mA max
LEAKAGE CURRENT	0.01 mA max
INDICATOR	Green LED
CABLE	Ø 2.8, 3C, PVC
SENSITIVITY	40 Gauss
TEMPERATURE RANGE	-10° to 70°C
SHOCK	50G
VIBRATION	9G
ENCLOSURE CLASSIFICATION	IP67 (NEMA 6)
PROTECTION CIRCUIT	Power Source Reverse Polarity, Surge Suppression

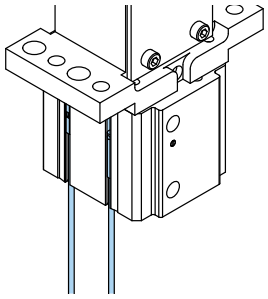


SWITCH SLOT LOCATIONS

When switches are ordered on a unit, they will be installed on side 2.



PLK5xx

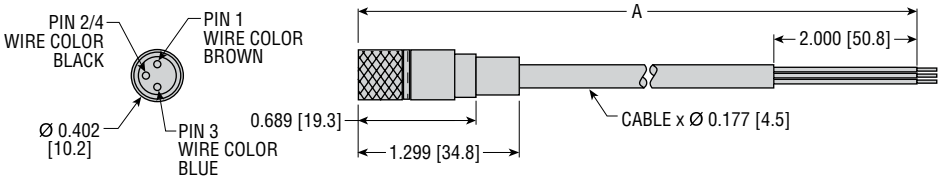


63549-xx CORDSET WITH FEMALE QUICK CONNECT

Provides a cordset with female quick connect and additional cable.

NUMBERS IN [ ] ARE IN mm. IMPERIAL EQUIVALENTS ARE PROVIDED FOR CONVENIENCE.

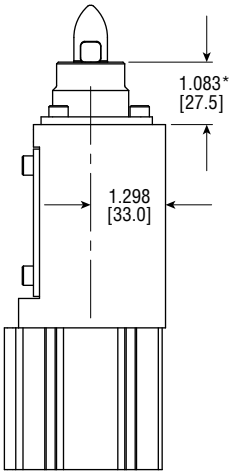
MODEL NO.	LETTER DIM A
63549-02	78.74 [2 m]
63549-05	196.85 [5 m]

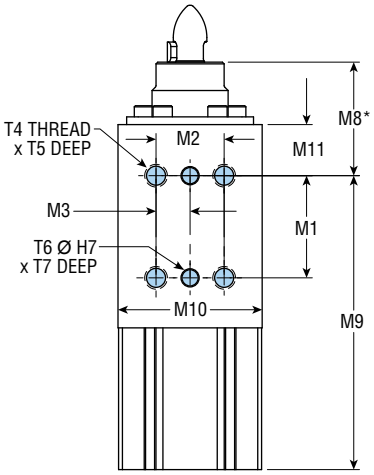


All dimensions are reference only unless specifically toleranced.

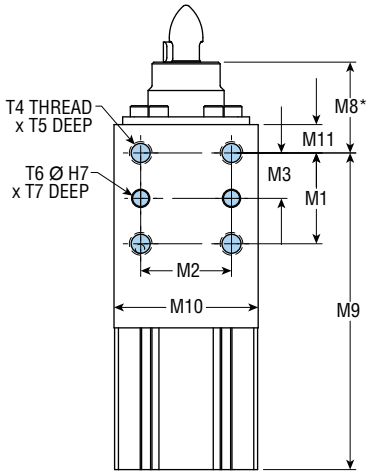
Bxx BODY MOUNTING OPTIONS

This option provides for six standard body mounting patterns to suit mounting requirements.

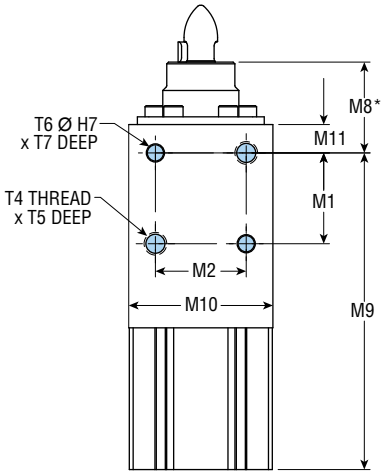




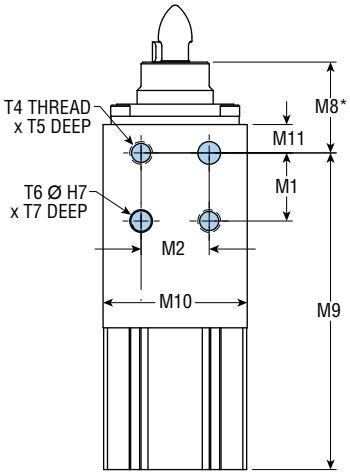
B01 & B02



B03



B04



B05 & B06

LETTER DIM	MODEL NUMBER											
	B01		B02		B03		B04		B05		B06	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
M1	1.772	45.0	2.362	60.0	1.575	40.0	1.575	40.0	1.181	30.0	1.772	45.0
M2	1.181	30.0	1.181	30.0	1.575	40.0	1.575	40.0	1.181	30.0	1.181	30.0
M3	0.591	15.0	0.591	15.0	0.787	20.0	—	—	—	—	—	—
T4	M10 x 1.5		M10 x 1.5		M10 x 1.5		M10 x 1.5		M10 x 1.5		M12 x 1.75	
T5	0.669	17.0	0.669	17.0	0.591	15.0	0.591	15.0	0.669	17.0	0.512	13.0
T6	0.315	8.0	0.315	8.0	0.315	8.0	0.315	8.0	0.394	10.0	0.394	10.0
T7	0.350	8.9	0.350	8.9	0.512	13.0	0.512	13.0	0.433	11.0	0.433	11.0
M8	1.969	50.0	1.772	45.0	1.575	40.0	1.575	40.0	1.575	40.0	1.575	40.0
M9	5.098	129.5	5.295	134.5	5.492	139.5	5.492	139.5	5.492	139.5	5.492	139.5
M10	2.500	63.5	2.500	63.5	2.500	63.5	2.500	63.5	2.500	63.5	2.500	63.5
M11	0.886	22.5	0.689	17.5	0.492	12.5	0.492	12.5	0.492	12.5	0.492	12.5

* **NOTE:** ALL M8 DIMENSIONS ARE FOR E000 PART SUPPORT STANDARD HEIGHT

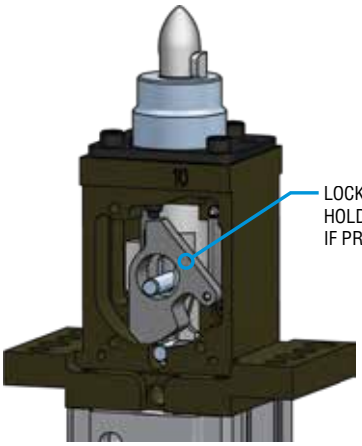
MTxx MATERIAL THICKNESS ADJUSTMENT

Provides the clamp with the adjustable lock already set for the maximum material thickness for the application. Specify the thickest material.

Example: 1.6 mm material = MT16

Specify MT16 and the clamp will arrive preset to lock at that material thickness. The sequenced design prevents the finger from retracting until the pin is fully extended. The part can move the amount of clearance between the lock bracket and adjustment screw, but the extended finger keeps the part trapped securely on the pin.

Unless otherwise specified, the factory lock default setting is MT20 = 2.0 mm material.



LOCK SETTING PROCEDURE

Adjustment procedures for PLK lock with material specified:

1) Start in the unclamped position, with the pin up, and the finger(s) retracted into the pin.
2) Install the part support (item 5) with the adjustment slot over the adjustment screw (item 8). Install the flange plate over the part support aligning the adjustment screw and two holes as shown. Hand tighten two times (item 7). (See Figures 1 and 2.)
3) Install the shims to match the panel thickness requested. Close the clamp on the shims with air pressure (87 psi [6 bar]).
4) Make sure the lock bracket (item 14) rotates counterclockwise into position under the adjustment screw (see Figure 3). Turn the adjustment screw clockwise until it contacts the top of the lock bracket (see Figure 4).
5) After touching, back the adjustment screw off one full turn to assure clearance so the lock bracket is free to rotate clockwise when the clamp opens (see Figure 5).
6) Unclamp the unit, remove the shim and two fasteners (item 7).
7) Rotate the flange plate (item 6) on the part support and align the four mounting holes as shown. (Figure 6)
8) Add the four screws (item 7) and tighten to 44 in-lbs [5 Nm].

-MT20 = 2 mm material thickness
-MT40 = 4.0 mm (max)
Lock may be preset in 0.1 mm increments

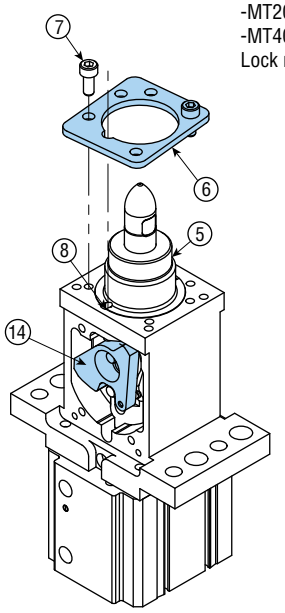


FIGURE 1

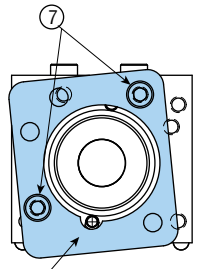


FIGURE 2

NOTE ADJUSTMENT SCREW
ALIGNED WITH PART SUPPORT
SLOT AND FLANGE SLOT

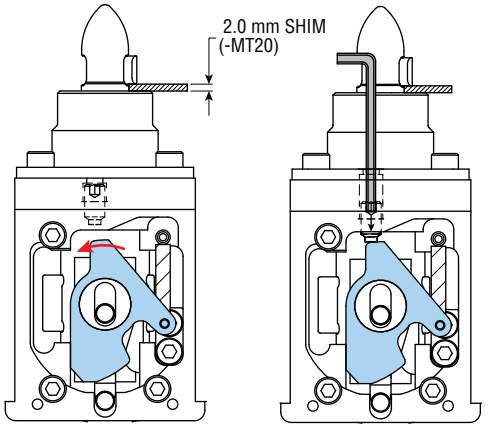


FIGURE 3

FIGURE 4

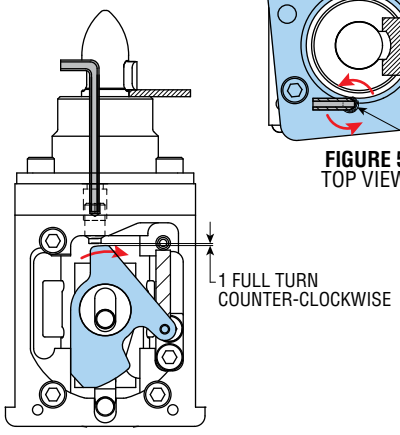


FIGURE 5

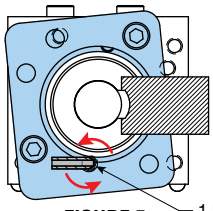


FIGURE 5
TOP VIEW

1 FULL TURN
COUNTER-CLOCKWISE

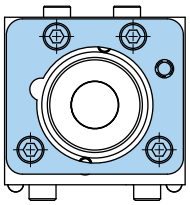
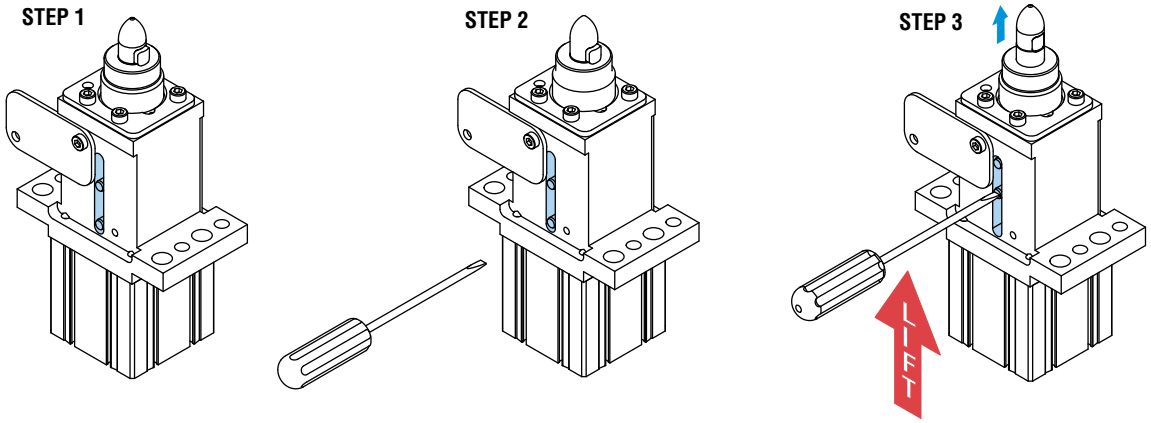


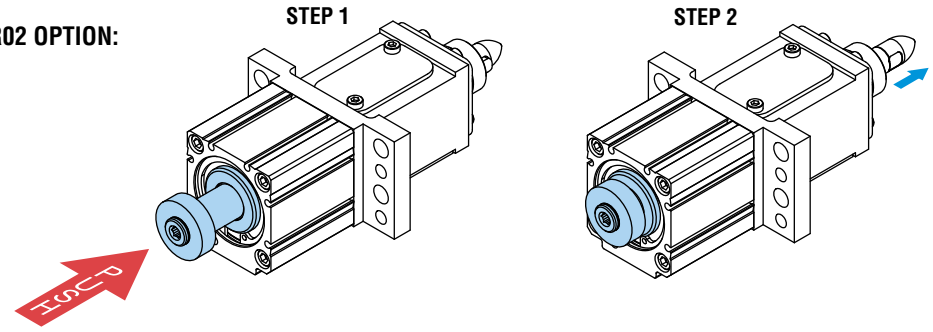
FIGURE 6

LOCKING MECHANISM & MANUAL OPENING

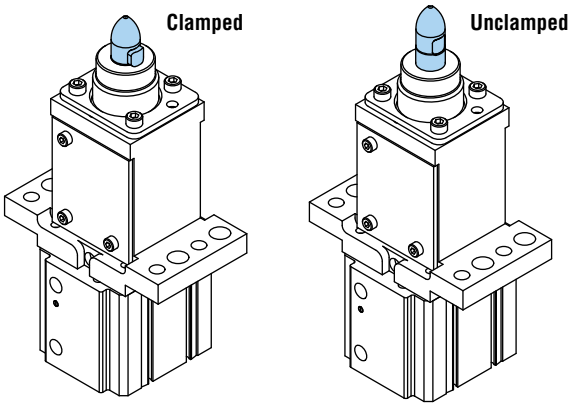
The Series PLK incorporates a locking mechanism that keeps the pin retracted and the finger extended so panels are trapped in position on the pin. The locking mechanism does not maintain clamp force when pressure is lost. During normal operation, air pressure moves the piston, releasing the lock, allowing the pin to extend, the finger to retract, and unclamp the part. To manually unlock the clamp, first remove air pressure, then loosen the screw and rotate the cover out of the way. Insert a small screwdriver under the dowel pin and lift it up. This will release the lock, extend the pin, and retract the finger. (See diagram.) The R01 or R02 option can also manually unlock the clamp. First, remove air pressure then push the rod into the cylinder, moving the piston. This will release the lock, extend the pin, and retract the finger. (See diagram.)

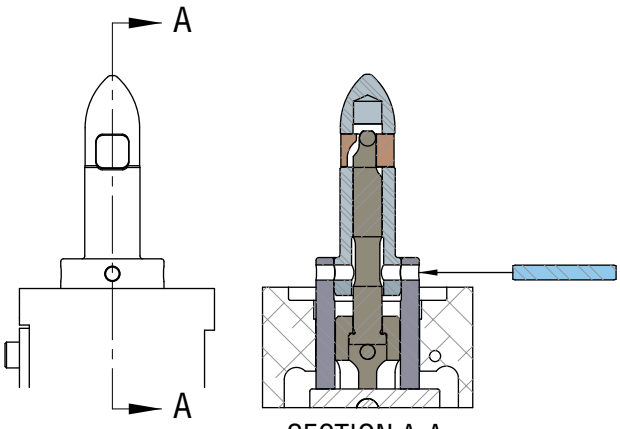


WITH R01 OR R02 OPTION:



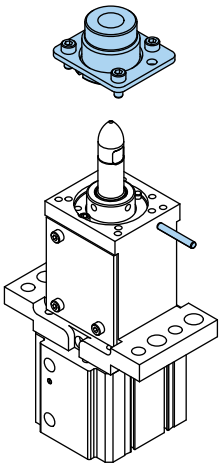
HOW TO CHANGE FINGER DIRECTION





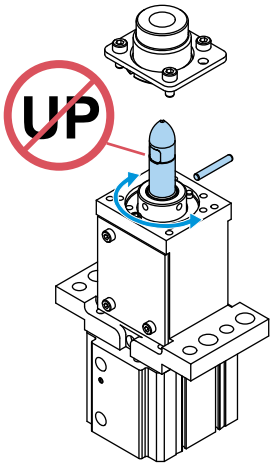
SECTION A-A

Dowel pin installs through hole in pin base, pin top, and slot in drive rod.



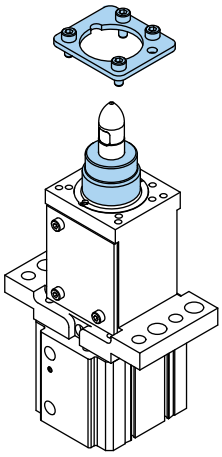
(Position 4 shown)

1) With the pin in the unclamped position, remove flange and part support. Carefully slide dowel pin out of pin assembly.



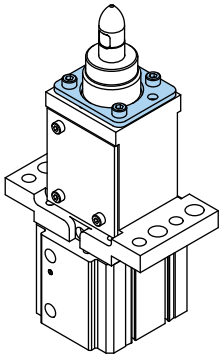
(Position 1 shown)

2) Carefully rotate pin top to desired position (90° increments). **Do not lift up on pin top.** Slide dowel pin back into pin. Dowel pin must be parallel to finger pocket.



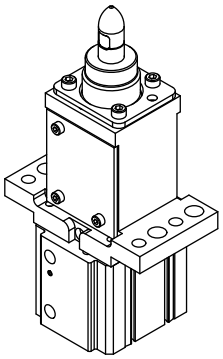
(Position 1 shown)

3) Assemble part support into counterbore in top of body. Align slot in support flange with dowel in body counterbore.



(Position 1 shown)

4) Install flange and tighten screws.



Position 1 is complete with finger direction change.

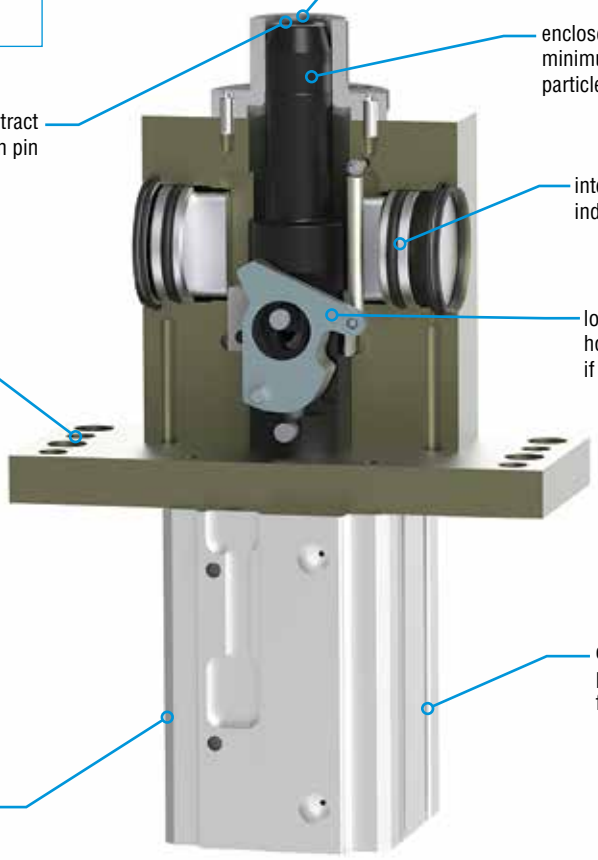
DISAPPEARING PIN LOCATING CLAMPS

Major Benefits

- Completely enclosed finger/pin
- Available in pin diameters from 12.5 to 24.5 mm
- 5 or 10 mm clamping stroke
- NAAMS mounting
- Short pin length for blind applications
- Position sensing provides up to four position sensing with industry standard AC or DC weld field immune switch mounted in a protected housing. See options Px1xx and Dx1xx for details.
- New dual switch position sensing provides control feedback for all four clamp conditions (pin full extend, finger in/out, clamped, and pin full retract)
- Self-locking internal threads throughout eliminate need for thread locking adhesives or additional locking components

PLKD's locating pin retracts fully into part support, allowing greater ease of panel removal

PLKD's weld field immune switch options provide consistent position sensing



ORDERING DATA: SERIES PLKD DISAPPEARING PIN LOCATING CLAMPS

TO ORDER, SPECIFY:
Model, Unit Size and Stroke, Design No., Pin Size,
Material Thickness, and Additional Options if desired.

PIN SIZE/STYLE
1250B - 12.50 mm dia. Pin with -0.05 mm Tolerance
1550B - 15.50 mm dia. Pin with -0.05 mm Tolerance
1850B - 18.50 mm dia. Pin with -0.05 mm Tolerance
2450B - 24.50 mm dia. Pin with -0.05 mm Tolerance

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

PORT POSITION
BLANK - (PP1) Standard Position 1
PP2 - Position 2
PP3 - Position 3
PP4 - Position 4
Ports in Position 1 required for PS/PRxxx and DS/DRxxx.

SWITCH OPTIONS
BLANK - No Sensor
Px1xx - Position Sensor
Dx1xx - Dual Position Sensor
See Note 4
See Position Sensor Option Code.

MISCELLANEOUS OPTIONS
BLANK - None
R01 - Sensor Flag
FR2 - Manual Finger Retract

MODEL
PLKD - Disappearing Pin Clamp

DESIGN NO.
1 - Imperial
5 - Metric

PLKD	505	-	1	-	1850B	-	MT07	-		-		-	LAA	-	PS1D9	-	R01	-	SW00

UNIT SIZE / CLAMP STROKE
505 - 50 mm Bore
5 mm Stroke
510 - 50 mm Bore
10 mm Stroke

MATERIAL THICKNESS LOCK ADJUSTMENT (See Note 1)
MT07 - 0.7 mm [0.027 in]
MT10 - 1.0 mm [0.039 in]
MT40 - 4.0 mm [0.157 in]

FINGER DIRECTION
BLANK - Standard Single Finger Position (FD4)
FD2 - Single Finger Position 2
Consult PHD for other finger directions.

PORT FITTINGS (BOTH PORTS)
BLANK - No Fittings
LAA - 90° Swivel Elbow, Metal
LBB - 90° Swivel Elbow, Plastic

CYLINDER SWITCH OPTION
BLANK - No Magnet (see Note 2)
SW00 - Magnet for Switches Installed
SW41 - 1 NPN Switch Installed
SW42 - 2 NPN Switches Installed
SW51 - 1 PNP Switch Installed
SW52 - 2 PNP Switches Installed

NOTES:
1) To have the lock preset for sheet metal thickness, order MT and (the thickness).
   Lock may be preset at factory for material thickness in 0.1 mm [0.004 in] increments.
   MT11 would be for 1.1 mm material, MT20 would be for 2.0 mm material.
   Lock range is from 0 to 4.0 mm [0 to 0.157 in].
   Unless otherwise specified, factory lock default setting is MT20.
   NEW adjustment procedure. See pages 52 and 60.
2) Magnet will be installed if cylinder switches are ordered.
3) Metric units have metric ports, imperial units have imperial ports.
4) Dxxxx switch option is not recommended with PLKD505 and a panel thickness range of MT31 through MT40.

POSITION SENSOR OPTION CODE

P	x	1	x	x

HOUSING OPTION
P - Positional Sensing
D - Dual Positional Sensing

CONNECTOR POSITION
1 - Parallel to fingers
9 - Perpendicular to fingers*

SENSING OPTION
S - Standard
R - Reversed

SWITCH OPTION
N - No Switch
A - 5-pin AC/DC Switch (Turck)
D - 4-pin PNP DC Switch (P + F)
E - 4-pin PNP DC Switch (Turck)
F - 4-pin PNP DC Switch (Efector)
H - 4-pin NPN DC Switch (P + F)
J - 4-pin NPN DC Switch (Turck)

SWITCH HOUSING OPTION
1 - Position 1

***NOTE:**
Connector position 9 is not available with switch option A.

CAD Configurator Assistance

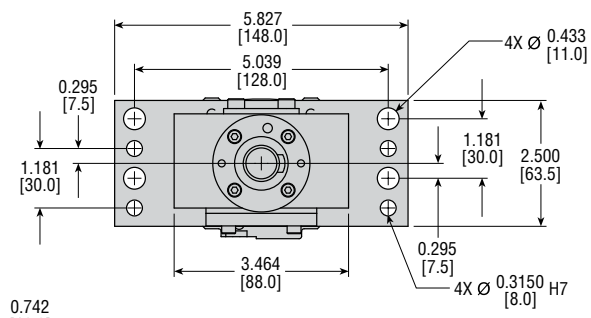
Use PHD's free online application at
www.phdinc.com/cad

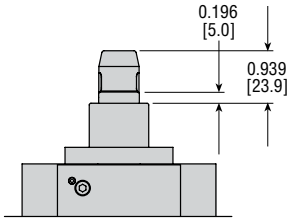
ENGINEERING DATA: SERIES PLKD DISAPPEARING PIN LOCATING CLAMPS

SPECIFICATIONS	SERIES PLKD
SEALS	Polyurethane
OPERATING TEMPERATURE	-20° to +180°F [-28° to +82°C]
LUBRICATION	Factory lubricated for life

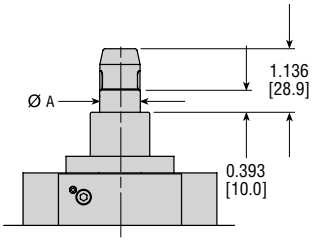
MODEL	UNIT WEIGHT		CLAMP FORCE 87 psi [6 bar]		CLAMP FORCE FACTOR Cf		MAIN PIN UNCLAMP OR CLAMP TIME 87 psi [6 bar]	FINGER RETRACT OR EXTEND TIME 87 psi [6 bar]	MAIN PIN POWER CYLINDER DISPLACEMENT				FINGER POWER CYLINDER DISPLACEMENT			
									CLAMP		UNCLAMP		EXTEND		RETRACT	
	lb	kg	lb	N	Imperial	Metric	sec	sec	in³	cm³	in³	cm³	in³	cm³	in³	cm³
PLKD505-x-1250B	5.5	2.49	223	991	2.56	165	0.5	0.3	3.85	63.0	4.60	75.4	0.26	4.3	0.26	4.3
PLKD505-x-1550B	5.5	2.49	223	991	2.56	165	0.5	0.3	3.85	63.0	4.60	75.4	0.26	4.3	0.26	4.3
PLKD505-x-1850B	5.7	2.56	223	991	2.56	165	0.5	0.3	3.85	63.0	4.60	75.4	0.26	4.3	0.26	4.3
PLKD505-x-2450B	6.0	2.72	223	991	2.56	165	0.5	0.3	3.85	63.0	4.60	75.4	0.26	4.3	0.26	4.3
PLKD510-x-1250B	5.5	2.49	223	991	2.56	165	0.5	0.3	4.30	70.5	5.20	85.3	0.26	4.3	0.26	4.3
PLKD510-x-1550B	5.5	2.49	223	991	2.56	165	0.5	0.3	4.30	70.5	5.20	85.3	0.26	4.3	0.26	4.3
PLKD510-x-1850B	5.7	2.56	223	991	2.56	165	0.5	0.3	4.30	70.5	5.20	85.3	0.26	4.3	0.26	4.3
PLKD510-x-2450B	6.0	2.72	223	991	2.56	165	0.5	0.3	4.30	70.5	5.20	85.3	0.26	4.3	0.26	4.3

DIMENSIONS: SERIES PLKD DISAPPEARING PIN LOCATING CLAMPS

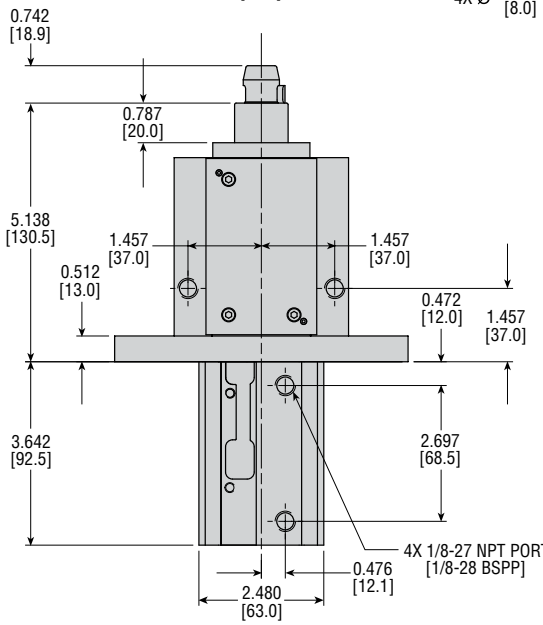


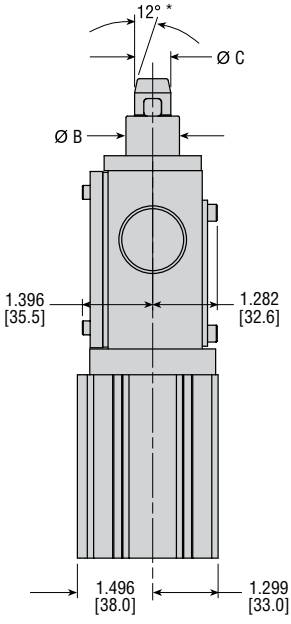


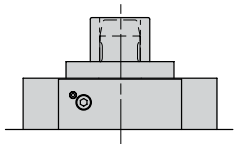
PLKD505 EXTENDED



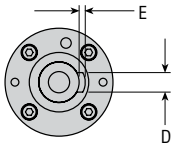
PLKD510 EXTENDED







PIN FULLY RETRACTED



NOTE: *8° for PLKD5xx-x-1250B

LETTER DIM	MODEL NUMBER							
	PLKD5xx-x-1250B		PLKD5xx-x-1550B		PLKD5xx-x-1850B		PLKD5xx-x-2450B	
	in	mm	in	mm	in	mm	in	mm
A MAX	0.4921	12.50	0.6102	15.50	0.7283	18.50	0.9646	24.50
A MIN	0.4902	12.45	0.6083	15.45	0.7264	18.45	0.9626	24.45
B	0.984	25.00	0.984	25.00	1.063	27.00	1.378	35.00
C	0.4829	12.27	0.6010	15.27	0.7191	18.27	0.9553	24.26
D	0.239	6.07	0.349	8.86	0.349	8.86	0.349	8.86
E	0.075	1.91	0.108	2.75	0.108	2.75	0.108	2.75

All dimensions are reference only unless specifically toleranced.

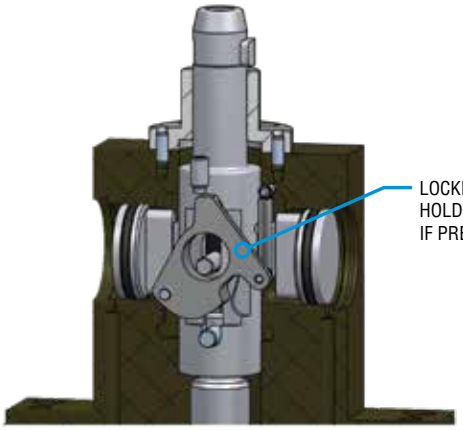
MTxx MATERIAL THICKNESS ADJUSTMENT

Provides the clamp with the adjustable lock already set for the maximum material thickness for the application. Specify the thickest material.

Example: 1.6 mm material = MT16

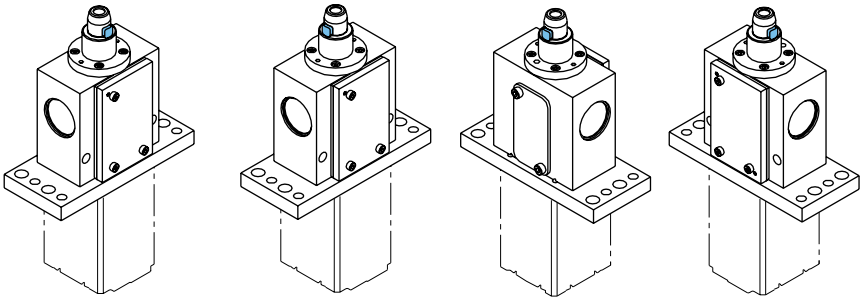
Specify MT16 and the clamp will arrive preset to lock at that material thickness. The part can move the amount of clearance between the lock bracket and adjustment screw, but the extended finger keeps the part trapped securely on the pin.

Unless otherwise specified, the factory lock default setting is MT20 = 2.0 mm material.



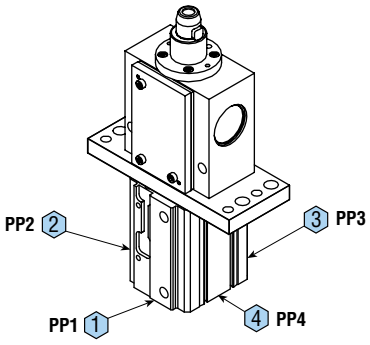
FDx FINGER DIRECTION

Provides alternate finger directions for flexibility and customer convenience. For FD1 and FD3, consult factory for delivery.



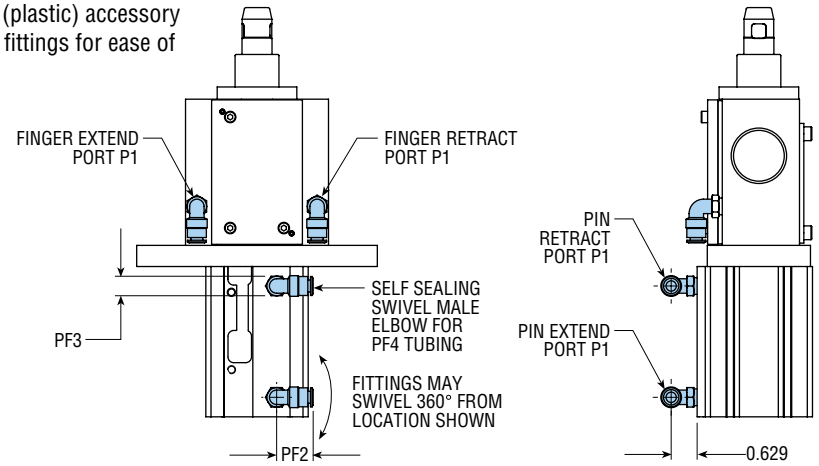
PPx PORT LOCATION

Provides alternate port locations for the cylinder providing flexibility and customer convenience. If PS/DS or PR/DR switches are ordered, ports must be on side 1.



Lxx PORT FITTINGS

LAA (metal) or LBB (plastic) accessory provides 90° swivel fittings for ease of air line hook up.



LETTER DIM	MODEL NUMBER PLKD5xx	
	in	mm
P1	1/8 NPT	1/8 BSPP
PF1	0.629	16.0
PF2	0.885	22.5
PF3 -LAA	0.472	12.0
-LBB	0.473	12.1
PF4 -LAA	1/4	6.0
-LBB	1/5	6.0

OPTION CODE	PART NUMBER	
	Imperial	Metric
LAA	62178-003	62195-005
LBB	71120-001	71121-001

All dimensions are reference only unless specifically toleranced.

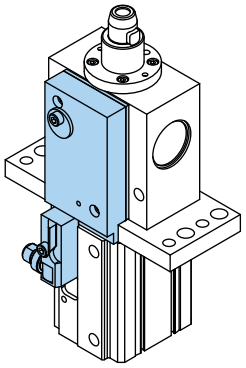
PS1xx STANDARD POSITION SENSING

PR1xx REVERSED POSITION SENSING

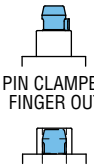
This option provides sensing by affixing an aluminum housing to the side of the clamp body.

Full retract is fixed, needing no adjustment. The clamp switch is adjustable throughout the entire clamp stroke. Loosening the M5 screw and sliding it up or down adjusts the clamp switch position.

See diagrams for satellite switch to quick disconnect pin number on page 56.



2-SENSING CONDITIONS



POSITION SENSOR OPTION CODE

P x 1 x x

HOUSING OPTION
P - Positional Sensing

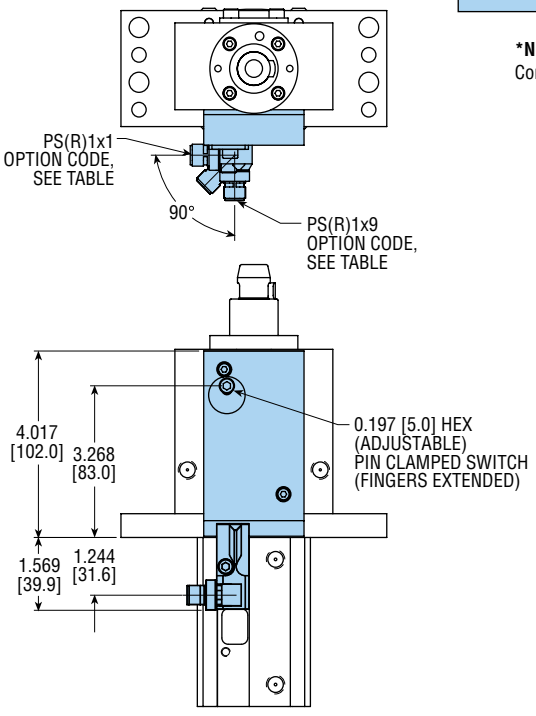
CONNECTOR POSITION
1 - Parallel to fingers
9 - Perpendicular to fingers*

SENSING OPTION
S - Standard
R - Reversed

SWITCH OPTION
N - No Switch
A - 5-pin AC/DC Switch (Turck)
D - 4-pin PNP DC Switch (P + F)
E - 4-pin PNP DC Switch (Turck)
F - 4-pin PNP DC Switch (Efector)
H - 4-pin NPN DC Switch (P + F)
J - 4-pin NPN DC Switch (Turck)

SWITCH HOUSING OPTION
1 - Position 1

***NOTE:**
Connector position 9 is not available with switch option A.



OPTION CODE	CABLE CONNECTION
PS(R)1A1	1/2-20 UNF
PS(R)1D1(9)	M12 x 1
PS(R)1E1(9)	M12 x 1
PS(R)1F1(9)	M12 x 1
PS(R)1H1(9)	M12 x 1
PS(R)1J1(9)	M12 x 1

SWITCH NUMBERS IF ORDERED SEPARATELY

SWITCH OPTION	SWITCH TYPE	PHD SWITCH NUMBER	VENDOR	VENDOR PART NUMBER
A	5-pin AC/DC	71483-002-PLKD	Turck	Ni 2-Q6.5-ADZ32-0.16-FSB 5.4X4/S304
D	4-pin DC - PNP	71483-001-PLKD	P & F	NBN2-F581-160S6-E8-V1
E	4-pin DC - PNP	71483-003-PLKD	Turck	Ni 2-Q6.5-0.16-BDS-2AP6X3-H1141/S34
F	4-pin DC - PNP	71483-004-PLKD	Efector	IN 5375
H	4-pin DC - NPN	71483-005-PLKD	Turck	NBN2-F581-160S6-E10-V1
J	4-pin DC - NPN	71483-006-PLKD	Turck	Ni 2-Q6.5-AN6-0.16-FS 4.4X3/S304

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 HOUSING KIT

SERIES	KIT NUMBER
PLKD	79947-05

Kit includes: housing, plate, all pins and screws required for installation. Switches sold separately.

DS1xx DUAL STANDARD POSITION SENSING

DR1xx DUAL REVERSED POSITION SENSING

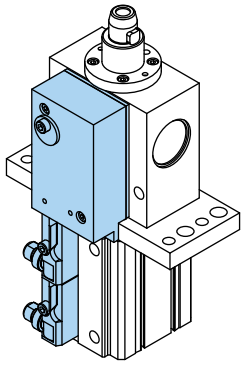
This option provides dual sensing by affixing two switches to the side of the clamp body.

Pin up/finger in, pin up/finger out, and full retract is fixed, needing no adjustment. The clamp switch is adjustable throughout the entire clamp stroke. Loosening the M5 screw and sliding it up or down adjusts the clamp switch position.

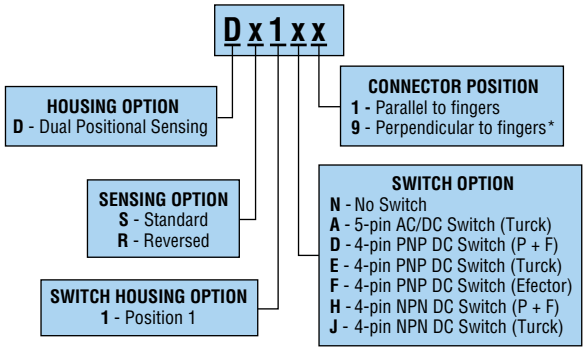
See the following pages for switch sensing conditions/logic.

Consult PHD for wiring configurations not listed.

Dual switch sensing is not compatible with PLKD505 and -MT31 through -MT40.

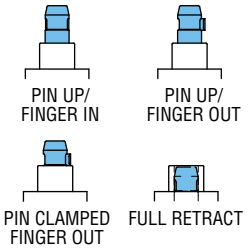


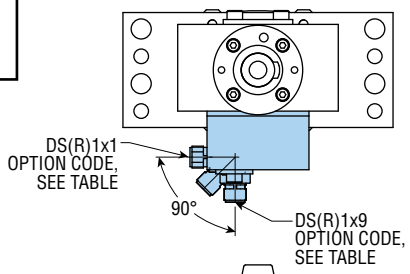
DUAL POSITION SENSOR OPTION CODE



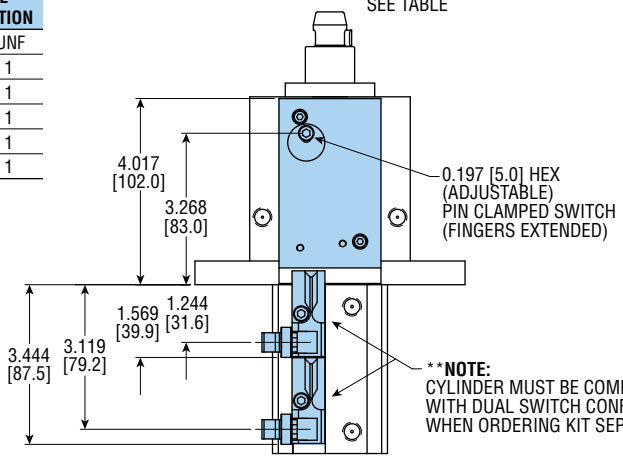
***NOTE:**
Connector position 9 is not available with switch option A.

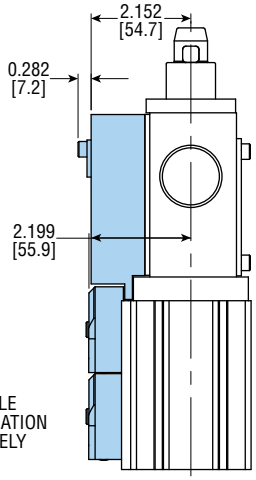
4-SENSING CONDITIONS





OPTION CODE	CABLE CONNECTION
DS(R)1A1	1/2-20 UNF
DS(R)1D1(9)	M12 x 1
DS(R)1E1(9)	M12 x 1
DS(R)1F1(9)	M12 x 1
DS(R)1H1(9)	M12 x 1
DS(R)1J1(9)	M12 x 1





SWITCH NUMBERS IF ORDERED SEPARATELY*

SWITCH OPTION	SWITCH TYPE	PHD SWITCH NUMBER	VENDOR	VENDOR PART NUMBER
A	5-pin AC/DC	71483-002-PLKD	Turck	Ni 2-Q6.5-ADZ32-0.16-FSB 5.4X4/S304
D	4 -pin DC - PNP	71483-001-PLKD	P & F	NBN2-F581-160S6-E8-V1
E	4-pin DC - PNP	71483-003-PLKD	Turck	Ni 2-Q6.5-0.16-BDS-2AP6X3-H1141/S34
F	4-pin DC - PNP	71483-004-PLKD	Efector	IN 5375
H	4-pin DC - NPN	71483-005-PLKD	Turck	NBN2-F581-160S6-E10-V1
J	4-pin DC - NPN	71483-006-PLKD	Turck	Ni 2-Q6.5-AN6-0.16-FS 4.4X3/S304

*Two switches required for Dx1xx option.

MATCHING CORDSETS 2 METERS LONG

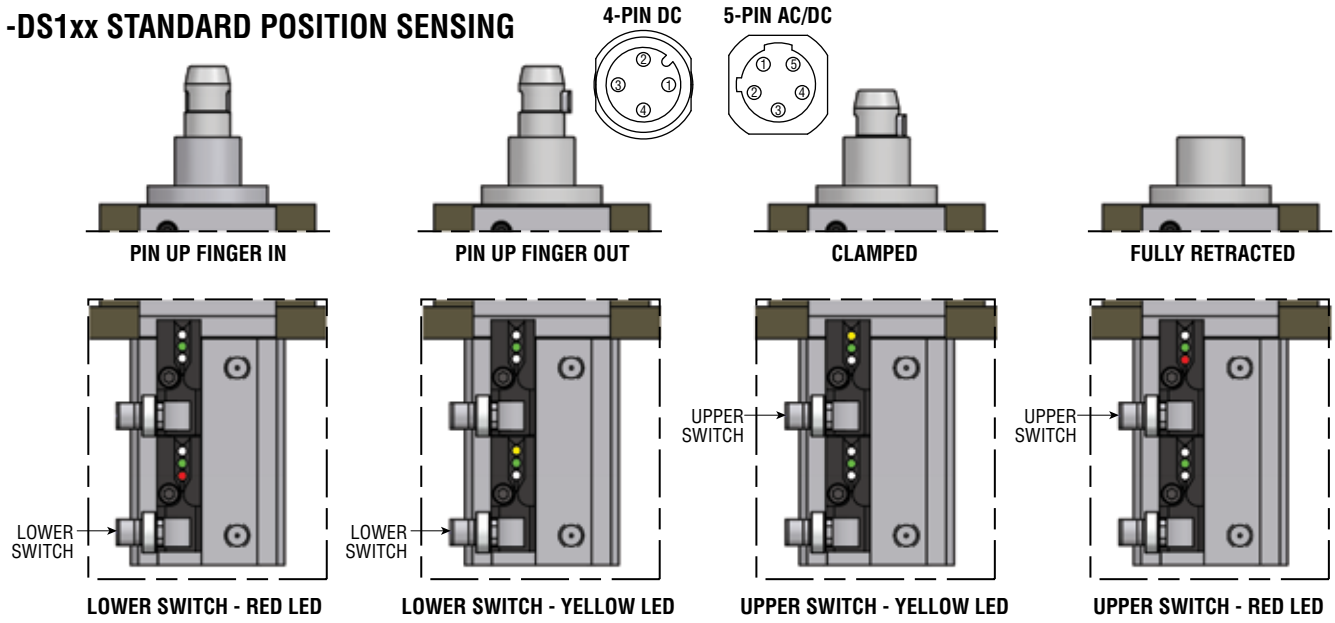
SWITCH OPTION	PHD PART NUMBER	CORDSET PART NUMBER
A	73317-00-02	KB 5T-2
D	65440-001-02	V1-G-YE2M-PVC
E	78039-00-02	RK 4.4T-2
F	65440-001-02	V1-G-YE2M-PVC
H	65440-001-02	V1-G-YE2M-PVC
J	78039-00-02	RK 4.4T-2

SWITCH HOUSING KIT

SERIES	KIT NUMBER
PLKD	79947-14

Kit includes: housing, bracket, all pins and screws required for installation. Switches sold separately (two required).
**See cylinder note.

-DS1xx STANDARD POSITION SENSING

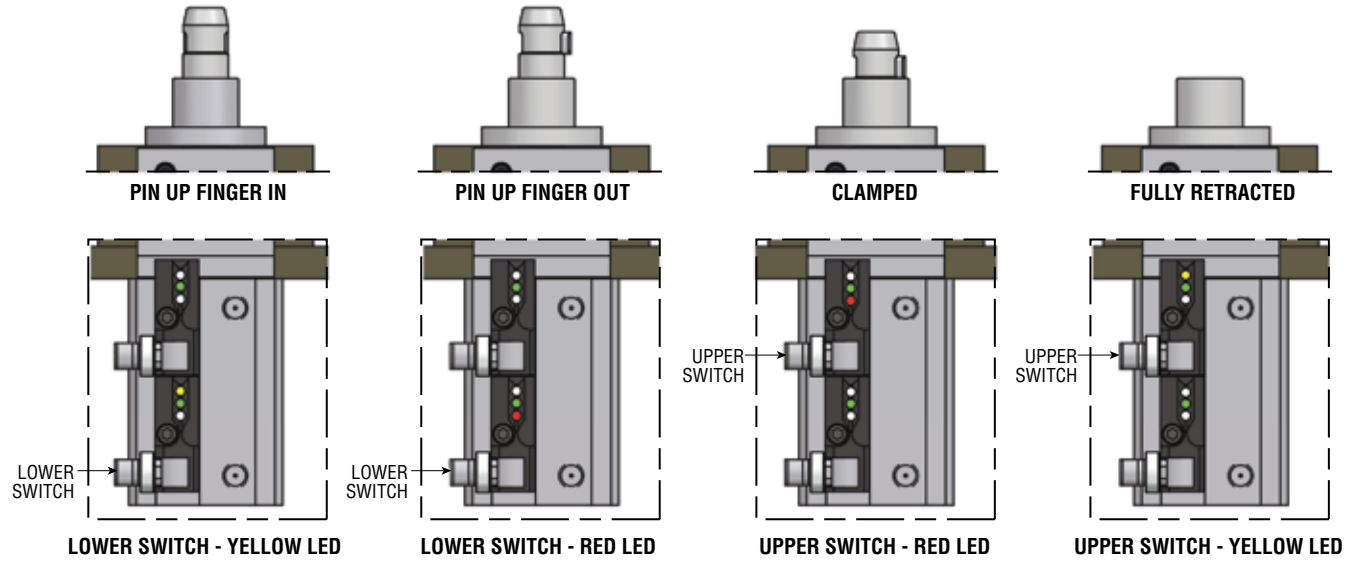


LED	LED COLOR INDICATOR
YELLOW	OUTPUT = S01
GREEN	POWER
RED	OUTPUT = S02

DS1xx LOGIC CHART

SWITCH STYLE	OPTION CODE	PIN UP FINGER IN	PIN UP FINGER OUT	CLAMPED	FULLY RETRACTED
4-wire AC/DC	-DS1A1	Lower S02/Pin 4	Lower S01/Pin 5	Upper S01/Pin 5	Upper S02/Pin 4
4-wire DC (PNP)	-DS1Dx	Lower S2/Pin 2	Lower S1/Pin 4	Upper S1/Pin 4	Upper S2/Pin 2
4-wire DC (NPN)	-DS1Hx	Lower S2/Pin 2	Lower S1/Pin 4	Upper S1/Pin 4	Upper S2/Pin 2
4-wire DC (PNP)	-DS1Ex	Lower S02/Pin 2	Lower S01/Pin 4	Upper S01/Pin 4	Upper S02/Pin 2
4-wire DC (NPN)	-DS1Jx	Lower S02/Pin 2	Lower S01/Pin 4	Upper S01/Pin 4	Upper S02/Pin 2
4-wire DC (PNP)	-DS1Fx	Lower S2/Pin 2	Lower S1/Pin 4	Upper S1/Pin 4	Upper S2/Pin 2
		Upper Switch	Upper Switch	Upper Switch	Upper Switch
		Lower Switch	Lower Switch	Lower Switch	Lower Switch

-DR1xx REVERSED POSITION SENSING



LED	LED COLOR INDICATOR
YELLOW	OUTPUT = S01
GREEN	POWER
RED	OUTPUT = S02

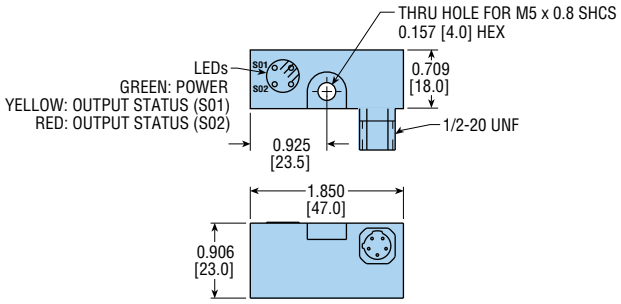
DR1xx LOGIC CHART

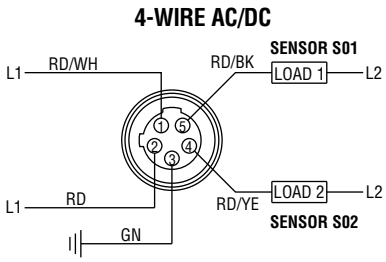
SWITCH STYLE	OPTION CODE	PIN UP FINGER IN	PIN UP FINGER OUT	CLAMPED	FULLY RETRACTED
4-wire AC/DC	-DR1A1	Lower S01/Pin 5	Lower S02/Pin 4	Upper S02/Pin 4	Upper S01/Pin 5
4-wire DC (PNP)	-DR1Dx	Lower S1/Pin 4	Lower S2/Pin 2	Upper S2/Pin 2	Upper S1/Pin 4
4-wire DC (NPN)	-DR1Hx	Lower S1/Pin 4	Lower S2/Pin 2	Upper S2/Pin 2	Upper S1/Pin 4
4-wire DC (PNP)	-DR1Ex	Lower S01/Pin 4	Lower S02/Pin 2	Upper S02/Pin 2	Upper S01/Pin 4
4-wire DC (NPN)	-DR1Jx	Lower S01/Pin 4	Lower S02/Pin 2	Upper S02/Pin 2	Upper S01/Pin 4
4-wire DC (PNP)	-DR1Fx	Lower S1/Pin 4	Lower S2/Pin 2	Upper S2/Pin 2	Upper S1/Pin 4
		Upper Switch	Upper Switch	Upper Switch	Upper Switch
		Lower Switch	Lower Switch	Lower Switch	Lower Switch

POSITION SENSING SWITCH OPTIONS DIMENSIONS: PLKD

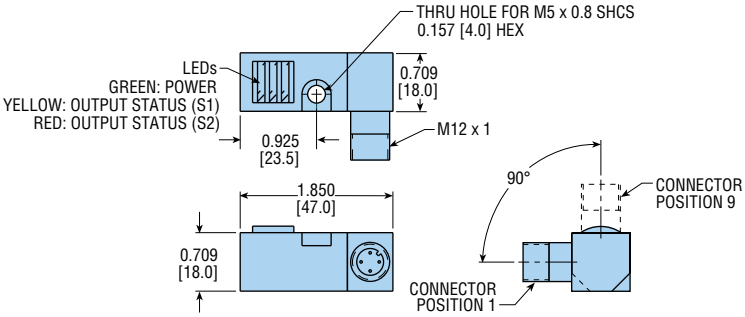
Refer to single and dual positional switch sensing charts on the following page.
For Dx1xx option: Two switches required if ordered separately.

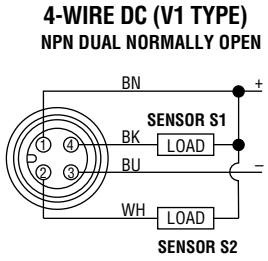
SWITCH OPTION A 71483-002-PLKD Turck Part #: Ni 2-Q6.5-ADZ32-0.16-FSB 5.4X4/S304

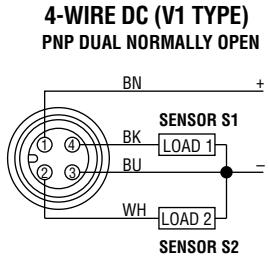




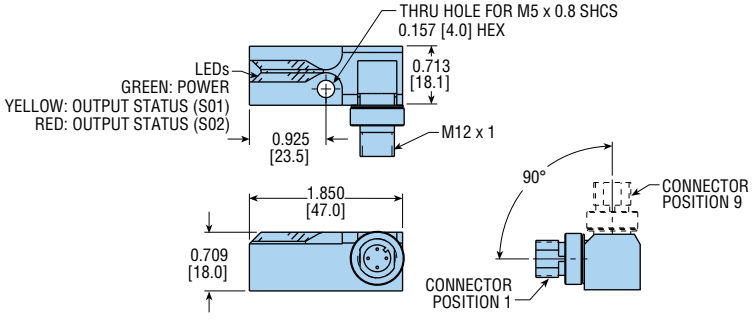
SWITCH OPTION D 71483-001-PLKD P + F Part #: NBN2-F581-160S6-E8-V1 (PNP)
SWITCH OPTION H 71483-005-PLKD P + F Part #: NBN2-F581-160S6-E10-V1 (NPN)

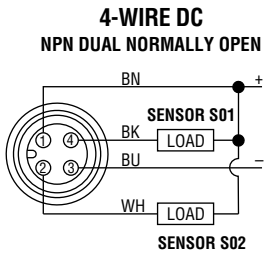


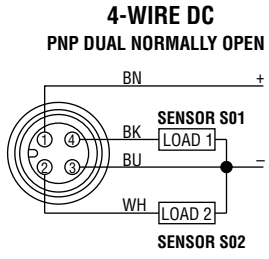




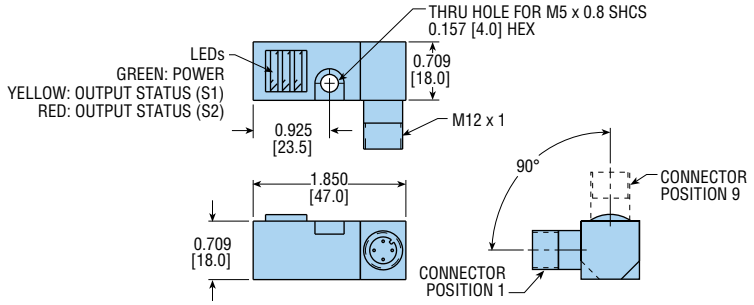
SWITCH OPTION E 71483-003-PLKD Turck Part #: Ni 2-Q6.5-0.16-BDS-2AP6X3-H1141/S34 (PNP)
SWITCH OPTION J 71483-006-PLKD Turck Part #: Ni 2-Q6.5-AN6-0.16-FS 4.4X3/S304 (NPN)

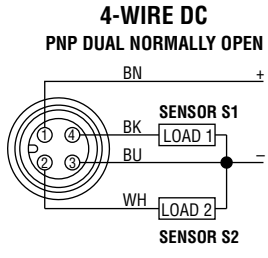






SWITCH OPTION F 71483-004-PLKD Efector Part #: IN 5375 (PNP)





All dimensions are reference only unless specifically toleranced.

POSITION SENSING SWITCH OPTIONS CHARTS: PLKD

Refer to position switch sensing option dimensions on the previous page.
For Dx1xx option: Two switches required if ordered separately.

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

	OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
		FULL RETRACT	CLAMPED	
SINGLE SWITCH	PS1A1	S02	S01	S01 = Pin 5
	PR1A1	S01	S02	S02 = Pin 4

	OPTION CODE	SATELLITE				QUICK DISCONNECT PIN NUMBER
		FULL RETRACT	CLAMPED	PIN UP/FINGER IN	PIN UP/FINGER OUT	
DUAL SWITCH	DS1A1 (Upper)	S02	S01	—	—	S01 = Pin 5 S02 = Pin 4
	DS1A1 (Lower)	—	—	S02	S01	
	DR1A1 (Upper)	S01	S02	—	—	
	DR1A1 (Lower)	—	—	S01	S02	

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

	OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
		FULL RETRACT	CLAMPED	
SINGLE SWITCH	PS1Dx or PS1Hx	S2	S1	S1 = Pin 4
	PR1Dx or PR1Hx	S1	S2	S2 = Pin 2

	OPTION CODE	SATELLITE				QUICK DISCONNECT PIN NUMBER
		FULL RETRACT	CLAMPED	PIN UP/FINGER IN	PIN UP/FINGER OUT	
DUAL SWITCH	DS1Dx or DS1Hx (Upper)	S2	S1	—	—	S1 = Pin 4 S2 = Pin 2
	DS1Dx or DS1Hx (Lower)	—	—	S2	S1	
	DR1Dx or DR1Hx (Upper)	S1	S2	—	—	
	DR1Dx or DR1Hx (Lower)	—	—	S1	S2	

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

	OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
		FULL RETRACT	CLAMPED	
SINGLE SWITCH	PS1Ex or PS1Jx	S02	S01	S01 = Pin 4
	PR1Ex or PR1Jx	S01	S02	S02 = Pin 2

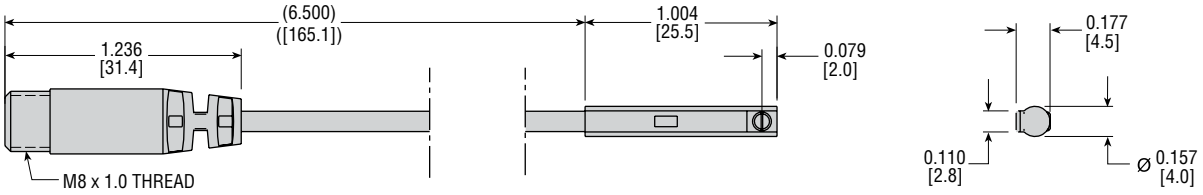
	OPTION CODE	SATELLITE				QUICK DISCONNECT PIN NUMBER
		FULL RETRACT	CLAMPED	PIN UP/FINGER IN	PIN UP/FINGER OUT	
DUAL SWITCH	DS1Ex or DS1Jx (Upper)	S02	S01	—	—	S01 = Pin 4 S02 = Pin 2
	DS1Ex or DS1Jx (Lower)	—	—	S02	S01	
	DR1Ex or DR1Jx (Upper)	S01	S02	—	—	
	DR1Ex or DR1Jx (Lower)	—	—	S01	S02	

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

	OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
		FULL RETRACT	CLAMPED	
SINGLE SWITCH	PS1Fx	S2	S1	S1 = Pin 4
	PR1Fx	S1	S2	S2 = Pin 2

	OPTION CODE	SATELLITE				QUICK DISCONNECT PIN NUMBER
		FULL RETRACT	CLAMPED	PIN UP/FINGER IN	PIN UP/FINGER OUT	
DUAL SWITCH	DS1Fx (Upper)	S2	S1	—	—	S1 = Pin 4 S2 = Pin 2
	DS1Fx (Lower)	—	—	S2	S1	
	DR1Fx (Upper)	S1	S2	—	—	
	DR1Fx (Lower)	—	—	S1	S2	

OPTIONS: SERIES PLKD DISAPPEARING PIN LOCATING CLAMPS

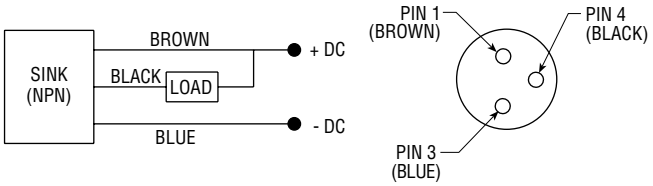


SW41 1 NPN SWITCH INSTALLED

SW42 2 NPN SWITCHES INSTALLED

PART NO.	DESCRIPTION
73360-01	Solid State NPN (Sink) 5 - 28 VDC, 165 mm Cable with Quick Disconnect

SPECIFICATIONS	73360-01
SWITCHING LOGIC	Solid State Output, Normally Open
SENSOR TYPE	NPN Current Sinking
OPERATING VOLTAGE	5 - 28 VDC
SWITCHING CURRENT	200 mA max
SWITCHING RATING	6 W max
CURRENT CONSUMPTION	20 mA @ 24V max (Switch Active)
VOLTAGE DROP	0.5V @ 200 mA max
LEAKAGE CURRENT	0.01 mA max
INDICATOR	Red LED
CABLE	Ø 2.8, 3C, PVC
SENSITIVITY	40 Gauss
TEMPERATURE RANGE	-10° to 70°C
SHOCK	50G
VIBRATION	9G
ENCLOSURE CLASSIFICATION	IP67 (NEMA 6)
PROTECTION CIRCUIT	Power Source Reverse Polarity, Surge Suppression

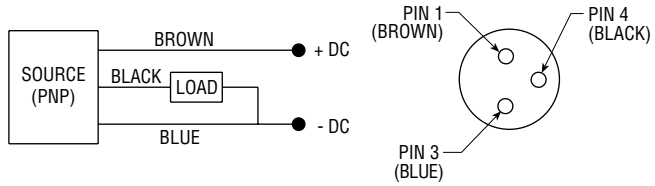


SW51 1 PNP SWITCH INSTALLED

SW52 2 PNP SWITCHES INSTALLED

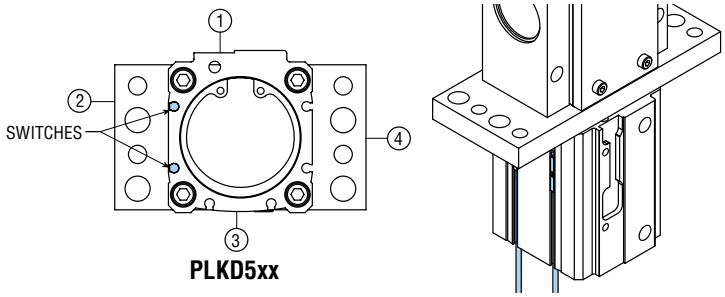
PART NO.	DESCRIPTION
73360-02	Solid State PNP (Source) 5 - 28 VDC, 165 mm Cable with Quick Disconnect

SPECIFICATIONS	73360-02
SWITCHING LOGIC	Solid State Output, Normally Open
SENSOR TYPE	PNP Current Sourcing
OPERATING VOLTAGE	5 - 28 VDC
SWITCHING CURRENT	200 mA max
SWITCHING RATING	6 W max
CURRENT CONSUMPTION	20 mA @ 24V max (Switch Active)
VOLTAGE DROP	0.5V @ 200 mA max
LEAKAGE CURRENT	0.01 mA max
INDICATOR	Green LED
CABLE	Ø 2.8, 3C, PVC
SENSITIVITY	40 Gauss
TEMPERATURE RANGE	-10° to 70°C
SHOCK	50G
VIBRATION	9G
ENCLOSURE CLASSIFICATION	IP67 (NEMA 6)
PROTECTION CIRCUIT	Power Source Reverse Polarity, Surge Suppression



SWITCH SLOT LOCATIONS

When switches are ordered, they will be installed on side 2.



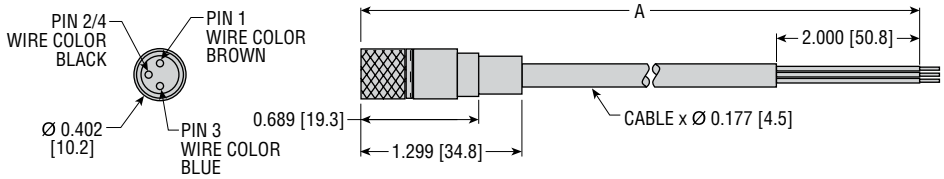
PLKD5xx

63549-xx CORDSET WITH FEMALE QUICK CONNECT

Provides a cordset with female quick connect and additional cable.

NUMBERS IN [ ] ARE IN mm. IMPERIAL EQUIVALENTS ARE PROVIDED FOR CONVENIENCE.

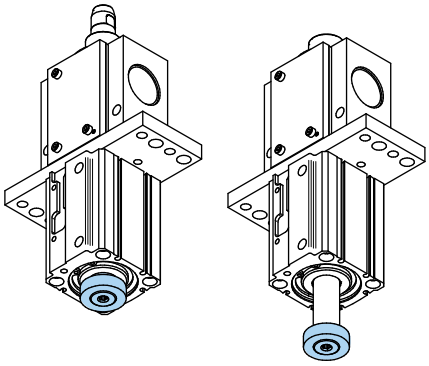
MODEL NO.	LETTER DIM A
63549-02	78.74 [2 m]
63549-05	196.85 [5 m]

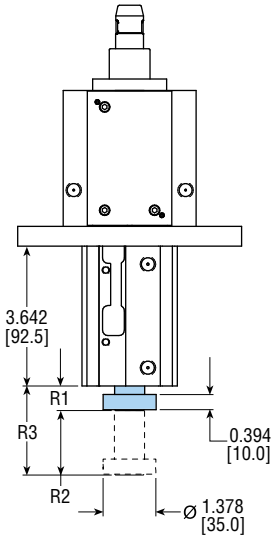


All dimensions are reference only unless specifically toleranced.

R01 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 panel thickness, 1 mm min. to 10 mm max. The white composite flag can be seen by optical sensing systems. Manually pushing the flag toward the clamp body will overcome the internal locking feature. When used with FR2 option on Series PLKD, pulling down manually will retract the pin below the top of the part support.





LETTER DIM	MODEL NUMBER			
	PLKD505		PLKD510	
	in	mm	in	mm
R1	0.622	15.8	0.622	15.8
R2	1.506	38.3	1.703	43.3
R3	2.128	54.1	2.325	59.1

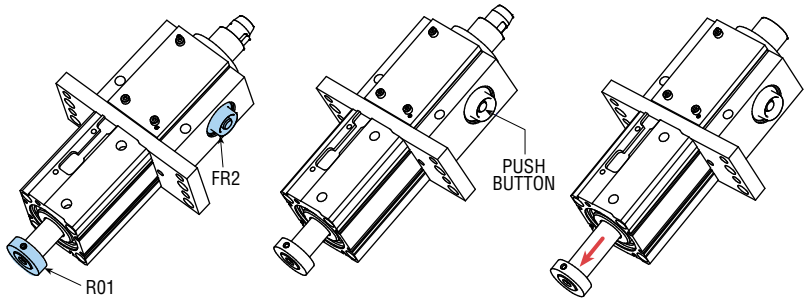
FR2 MANUAL FINGER RETRACT

Provides the ability to remove panels from the clamp by manually retracting the finger into the pin. Remove air pressure from the clamp ports and push the button in. As you do this, the finger will retract into the main pin and the part can be removed by pulling it up off the pin.

If used in conjunction with the R01 option and after the finger is retracted, pulling on the R01 flag will retract the pin below the top of the part support. This allows the part to be removed in any direction.

WITH FR2 OPTION:
Step 1: Push finger button in order to retract finger into pin
Step 2: Pull panel off top of pin

WITH FR2 AND R01 OPTION:
Step 1: Push finger button in order to retract finger into pin
Step 2: Pull flag out to retract pin below part support
Step 3: Remove panel in any direction



LOCK ADJUSTMENT PROCEDURE: SERIES PLKD CLAMPS

Adjustment procedures for PLKD lock with material specified:

1) Start in the unclamped position, with the pin up, and the finger(s) retracted into the pin.
2) Install the part support (item 1) with the adjustment hole over the adjustment screw (item 12). Only install two fasteners (item 11) and hand tighten. (See Figures 1 and 2.)
3) Install the shims under the finger(s) to match the panel thickness required. (See Figure 3.) Actuate the PLKD to clamp on the shims with air pressure (87 psi [6 bar]). The lock bracket assembly (item 7) will rotate counter-clockwise into position under the adjustment screw.
4) Turn the adjustment screw clockwise until it contacts the top of the lock bracket (see Figure 4).
5) After touching, back the adjustment screw off one full turn counter-clockwise to assure clearance so the lock bracket is free to rotate clockwise when the clamp opens (see Figure 5).
6) Unclamp the unit, remove the shim and two fasteners (item 11).
7) Rotate the part support (item 1) 180° so the adjustment screw is hidden as shown (Figure 6).
8) Add the four screws (item 11) back on and tighten to 44 in-lbs [5 Nm].

⚠ **CAUTION:** The PLKD unit requires the cover plate (item 22) with the cover plate assembly (item 20) to be **completely** mounted to the unit with the screws (3X item 14). The locking bracket assembly (item 7) will not properly sequence without these correctly assembled. Figures 3 through 5 are for reference to describe how to set the lock.

-MT20 = 2 mm material thickness
-MT30 = 3 mm material thickness
-MT40 = 4.0 mm (max)
Lock may be preset in 0.1 mm increments

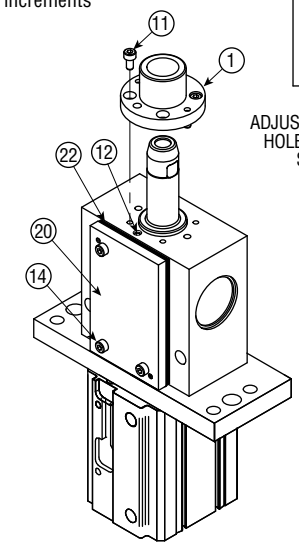


FIGURE 1

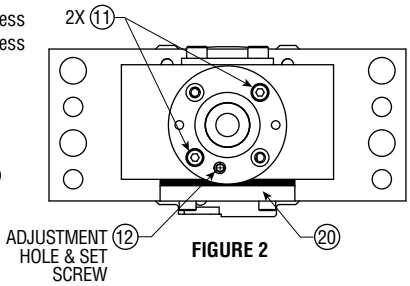


FIGURE 2

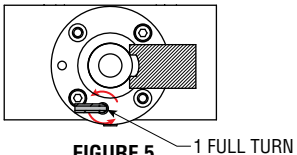


FIGURE 5
TOP VIEW

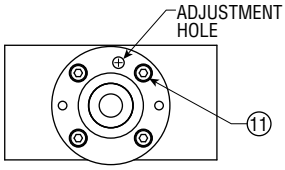


FIGURE 6
TOP VIEW

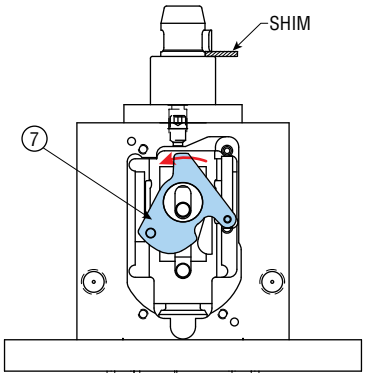


FIGURE 3

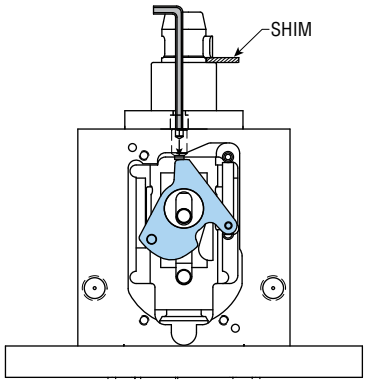


FIGURE 4

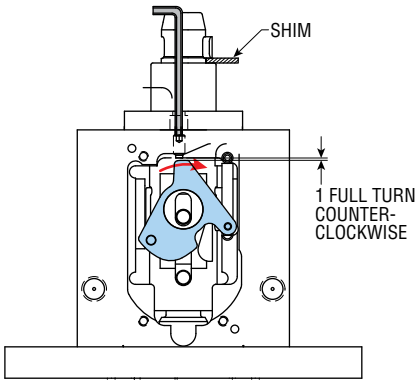
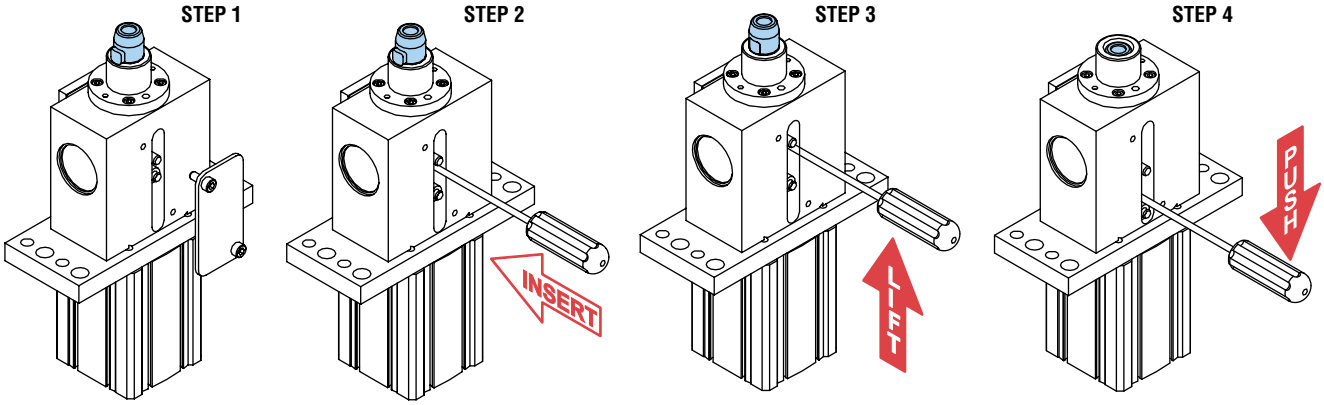


FIGURE 5

PLKD LOCK MECHANISM:



Step 1: Remove cover and screws
Step 2: Insert screwdriver between pins
Step 3: Lift upper pin with screwdriver to retract finger
Step 4: Push lower pin down to retract pin below top of part support

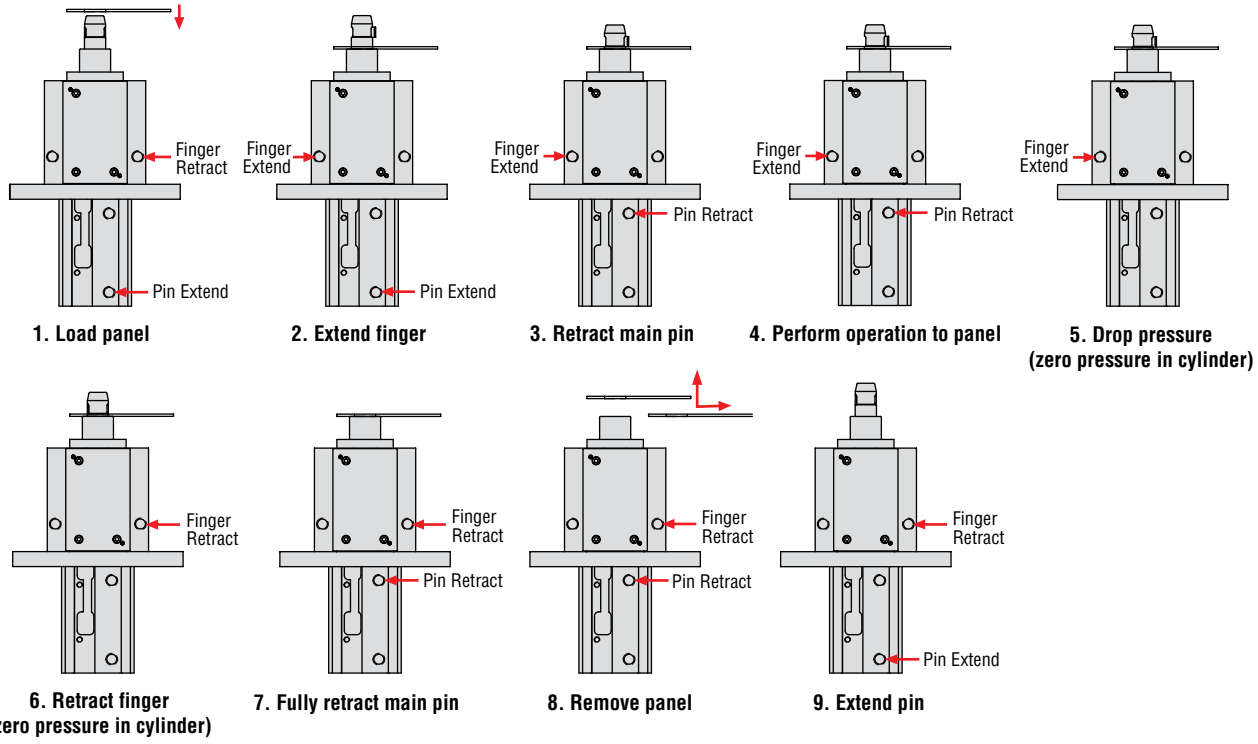
SERIES PLKD CLAMP ACTUATION STEPS

Series PLKD's locating pin can fully retract below the part support, allowing for easier panel removal.

A 3 position open center valve is required to control the extending and retracting of the main pin. A 2 position valve controls the extending and retracting of the finger.

PORT PRESSURIZATION SEQUENCE

STEP	PIN EXTEND PORT	PIN RETRACT PORT	FINGER EXTENDED PORT	FINGER RETRACTED PORT
1. Load Panel	High	Off	Off	High
2. Extend Finger	High	Off	High	Off
3. Retract Main Pin	Off	High	High	Off
4. Perform Operation to Panel	Off	High	High	Off
5. Drop Pressure	Off	Off	High	Off
6. Retract Finger	Off	Off	Off	High
7. Fully Retract Main Pin	Off	High	Off	High
8. Remove Panel	Off	High	Off	High
9. Extend Pin	High	Off	Off	High



1. Load panel | **2. Extend finger** | **3. Retract main pin** | **4. Perform operation to panel** | **5. Drop pressure (zero pressure in cylinder)**

6. Retract finger (zero pressure in cylinder) | **7. Fully retract main pin** | **8. Remove panel** | **9. Extend pin**

See pages 56 and 57 for position sensing and dual position sensing options.

DISPLACEMENT FOR PLKD

Pin Cylinder:

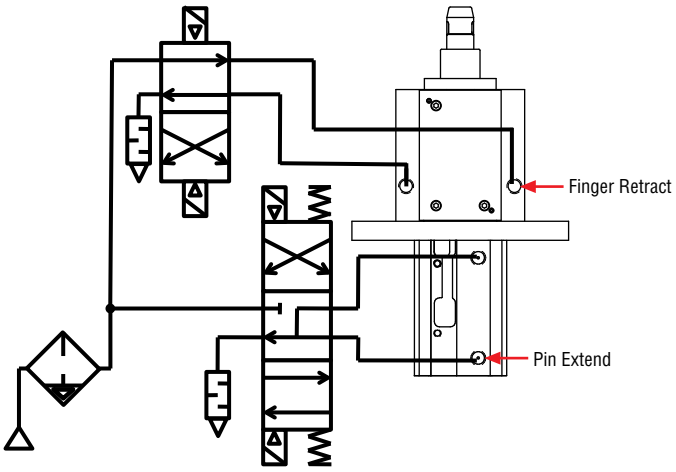
PLKD505 Clamp 3.85 in^3 [63.0 cm^3]
Unclamp 4.6 in^3 [75.4 cm^3]

PLKD510 Clamp 4.30 in^3 [70.5 cm^3]
Unclamp 5.2 in^3 [85.3 cm^3]

Finger Cylinder:

PLKDxxx Clamp 0.26 in^3 [4.3 cm^3]
Unclamp 0.26 in^3 [4.3 cm^3]

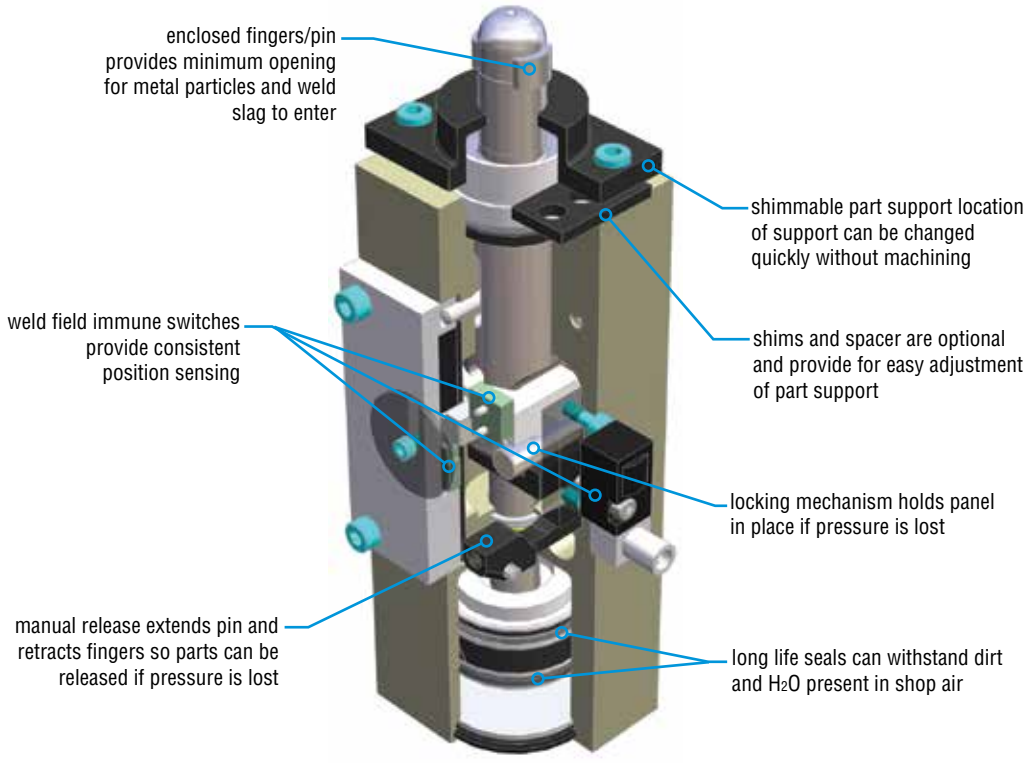
SUGGESTED SETUP FOR PLKD UNIT



ROBUST PNEUMATIC PIN CLAMP

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



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

TO ORDER SPECIFY:
Model, Unit Size, Mounting Style, Design No., Pin Size, and Additional Options if desired.

UNIT SIZE
5 - 50 mm Bore
6 - 63 mm Bore
(See Standard Combination Chart)

DESIGN NO.
1 - Imperial
5 - Metric

PORT FITTINGS (BOTH PORTS)
BLANK - Ports in Position #1 (No Fittings)
PP3 - Ports in Position #3 (No Fittings)
L1A - 90° Swivel Elbow, Metal, Position #1
L3A - 90° Swivel Elbow, Metal, Position #3
L1B - 90° Swivel Elbow, Plastic, Position #1
L3B - 90° Swivel Elbow, Plastic, Position #3
Note: Port threads located in positions #1 & #3. Port position not specified will be plugged.

SPACER/SHIM OPTIONS
BLANK - No Spacer/Shims
SP01 - 5 mm NAAMS Spacer
SP02 - 5 mm Total Thickness NAAMS Shim Pack

SWITCH OPTIONS
Px4xx - Position Sensor (See Position Sensor Option Code)

PLC 6 T - 1 - 25B - D01-SX01 - L1A - SP01 - PS4D9

MODEL

MOUNTING STYLE
T - M10 Threads with 8 mm Dowel Holes (Standard)

PIN SIZE/STYLE

With h6 Tolerance	With +0.00/-0.02 mm Tolerance
16A - 16 mm Dia. Pin	16B - 15.85 mm Dia. Pin
20A - 20 mm Dia. Pin	19B - 18.85 mm Dia. Pin
25A - 25 mm Dia. Pin	20B - 19.85 mm Dia. Pin
35A - 35 mm Dia. Pin	25B - 24.85 mm Dia. Pin
40A - 40 mm Dia. Pin	35B - 34.85 mm Dia. Pin
	40B - 39.85 mm Dia. Pin

(See Standard Combination Chart)

MISCELLANEOUS OPTIONS
BLANK - None
D01 - Detent
F01 - Sensor Flag
SX01 - Strip Off Cylinder
(See Notes 1 & 2)

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

POSITION SENSOR OPTION CODE

P x 4 x x

HOUSING OPTION
P - Positional Sensing

CONNECTOR POSITION
1 - Parallel to fingers
9 - Perpendicular to fingers*

SENSING OPTION
S - Standard
R - Reversed

SWITCH OPTION
N - No Switch
A - 5-pin AC/DC Switch (Turck)
D - 4-pin PNP DC Switch (P + F)
E - 4-pin PNP DC Switch (Turck)
F - 4-pin PNP DC Switch (Efector)
H - 4-pin NPN DC Switch (P + F)
J - 4-pin NPN DC Switch (Turck)

SWITCH HOUSING OPTION
4 - Position 4

***NOTE:**
Connector position 9 is not available with switch option A.

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

CAD Configurator Assistance

Use PHD's free online application at **www.phdinc.com/cad**

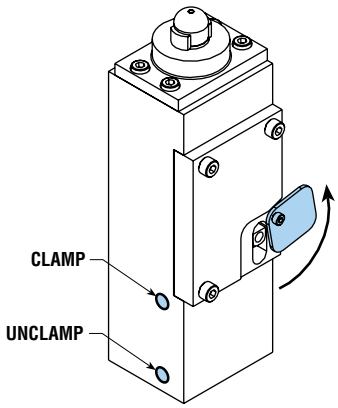
SPECIFICATIONS	SERIES PLC
SEALS	Carboxilated Nitrile seal, lip type
OPERATING TEMPERATURE	0° to +275°F [-17° to +135°C]
LUBRICATION	Factory lubricated for life

MODEL	UNIT WEIGHT		TOTAL CLAMP FORCE 87 psi [6 bar]		CLAMP FORCE FACTOR Cf		CLOSE OR OPEN TIME 87 psi [6 bar]	DISPLACEMENT			
								CLOSE		OPEN	
	lb	kg	lb	N	Imperial	Metric	sec	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

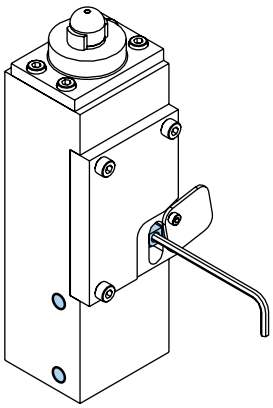
The PLC Clamp incorporates a wedge/roller locking mechanism that maintains panels in location if air pressure is lost. Through any portion of the pin's travel once motion is stopped, a spring seated roller engages the wedge and resists movement in the unclamp direction. As the roller is being seated, 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).

STEP 1



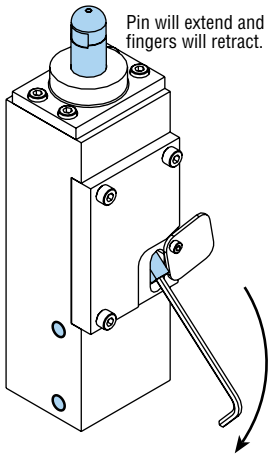
Loosen SHCS with 0.157 [4.0] wrench and rotate cover plate to location shown.

STEP 2

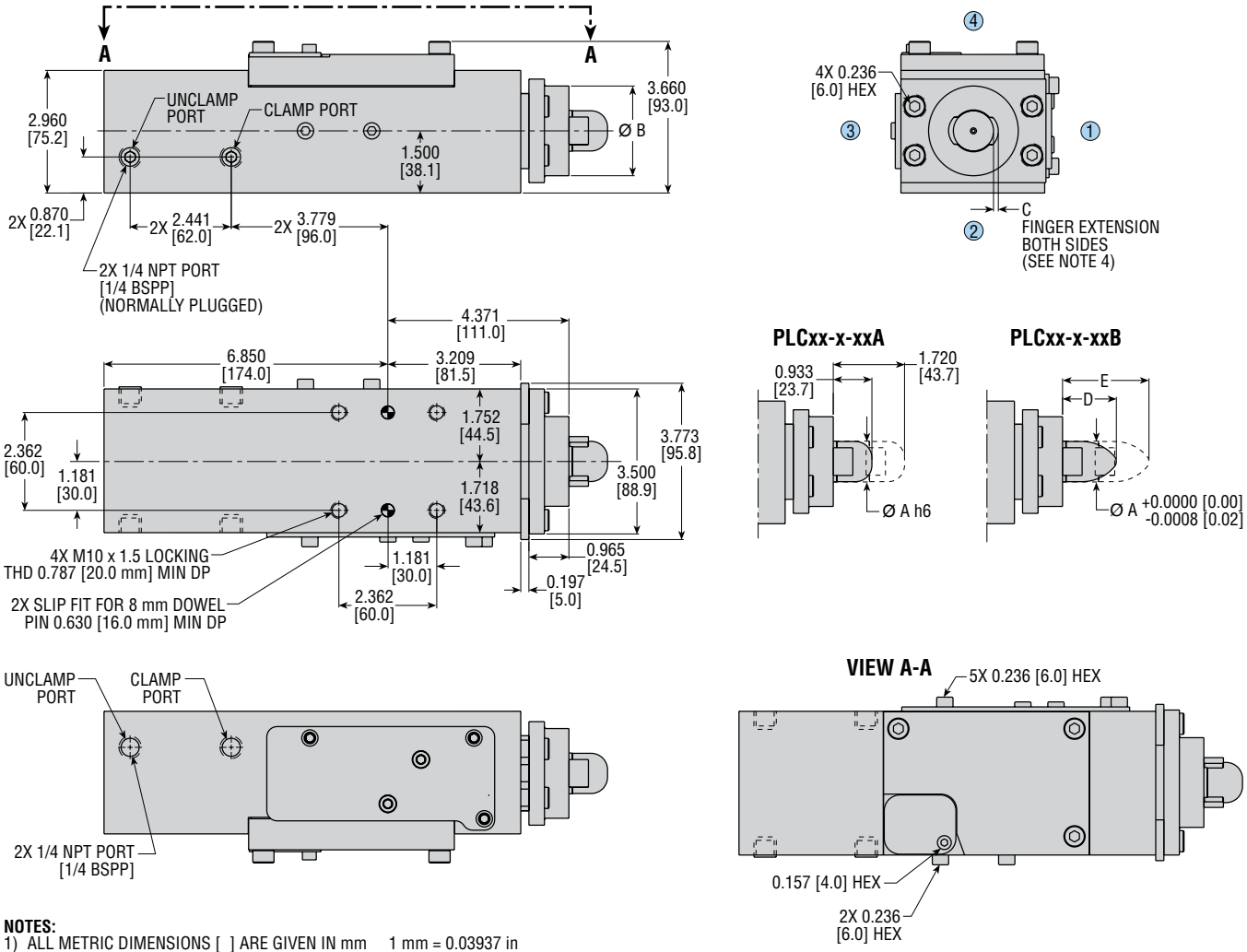


Insert allen wrench (or other tool) into the hole of release cover. (6 mm wrench max.)

STEP 3



Rotate allen wrench (or other tool) as shown. This will release the lock, extend the pin, and retract the fingers. Return cover plate to original location and torque SHCS to 60 in-lb [7.0 Nm].



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

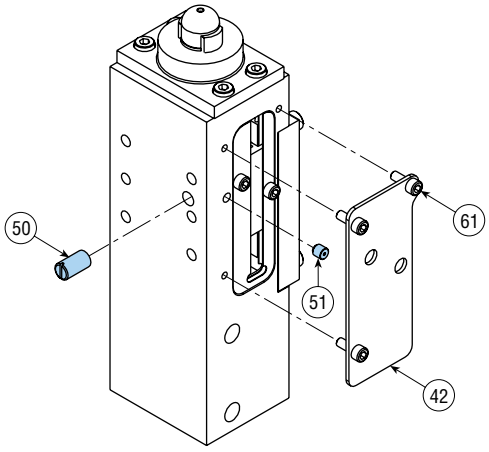
LETTER DIM	MODEL NUMBER											
	PLC5T-x-16B		PLC5T-x-19B		PLC6T-x-20B		PLC6T-x-25B		PLC6T-x-35B		PLC6T-x-40B	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
A	0.6240	15.85	0.7421	18.85	0.7815	19.85	0.9783	24.85	1.3720	34.85	1.5689	39.85
B	1.969	50.0	1.969	50.0	1.969	50.0	2.165	55.0	2.559	65.0	3.150	80.0
C	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

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.

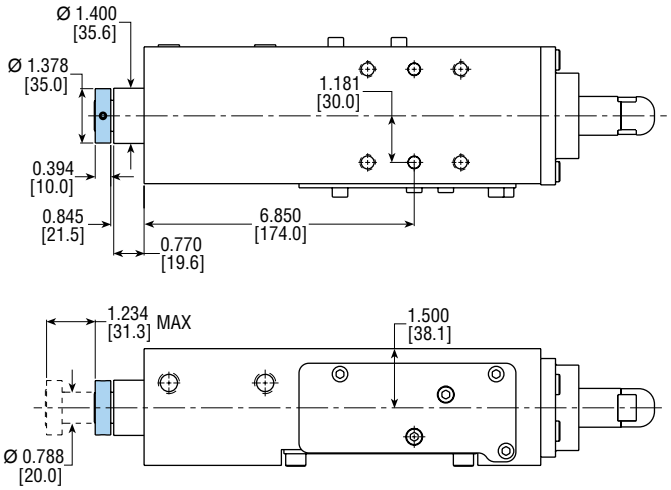


KIT DESCRIPTION	KIT NUMBER
DETENT KIT (IF ORDERED SEPARATELY)	75727-01

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

F01 SENSOR FLAG

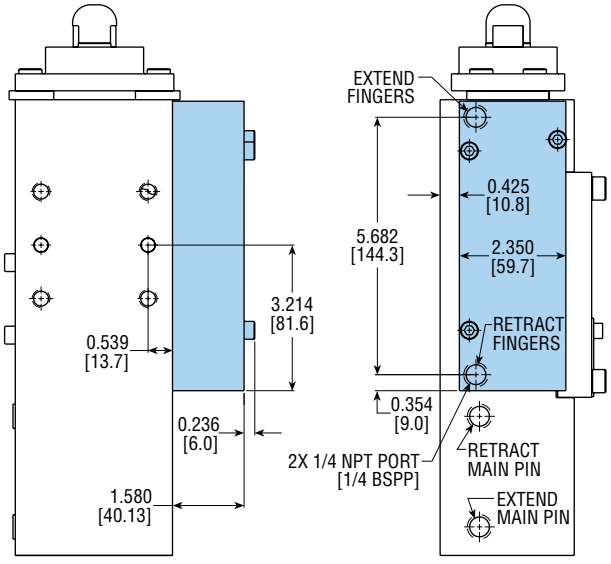
Provides an external flag on a piston rod that extends out of the bottom of the clamp. The position of the flag indicates if the pin is extended or retracted. Flag travel varies with the shimming of the part support and panel thickness. Minimum is 5 mm to maximum 31 mm with the strip off option. This 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 toleranced.

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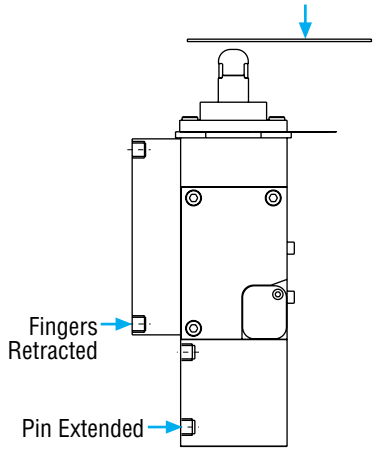
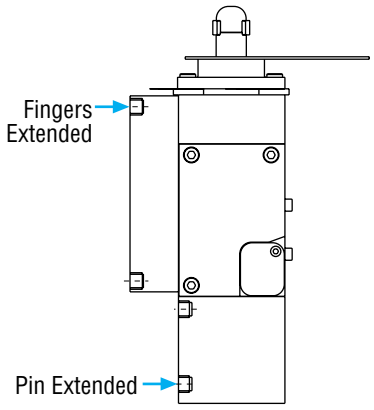
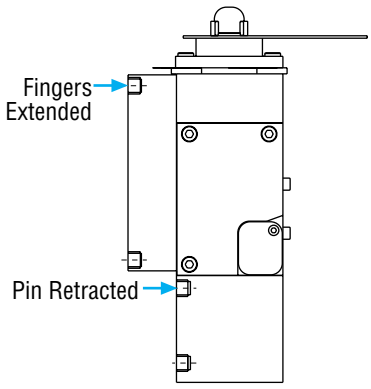
-Sx01 STRIP OFF CYLINDER ACTUATION STEPS



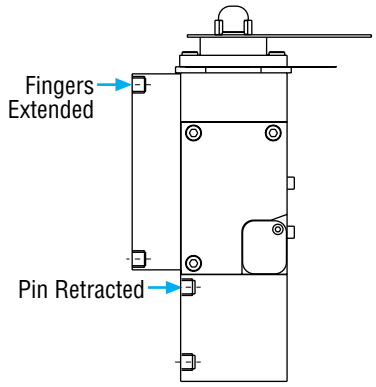
1. LOAD PANEL



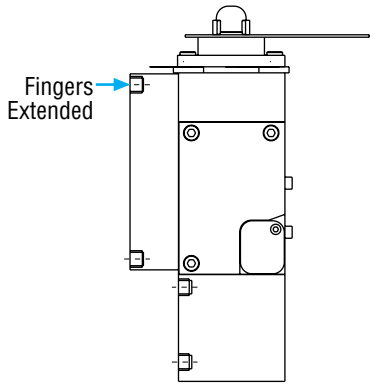
2. EXTEND FINGERS



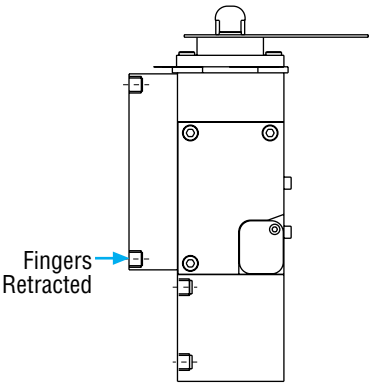
3. RETRACT MAIN PIN



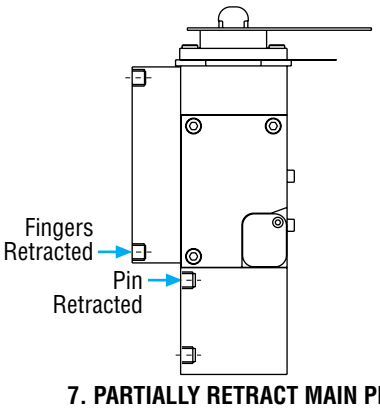
4. WELD COMPONENTS



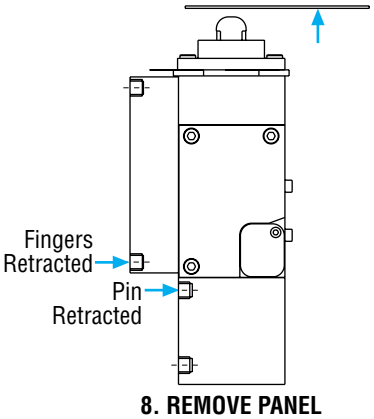
5. DROP PRESSURE



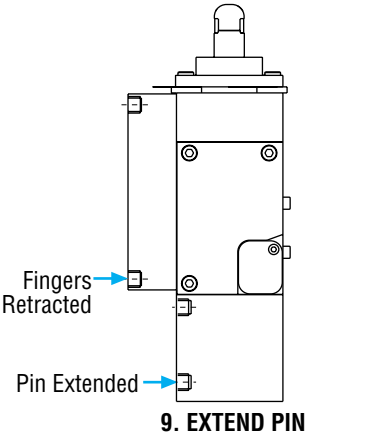
6. RETRACT FINGERS



7. PARTIALLY RETRACT MAIN PIN



8. REMOVE PANEL



9. EXTEND PIN

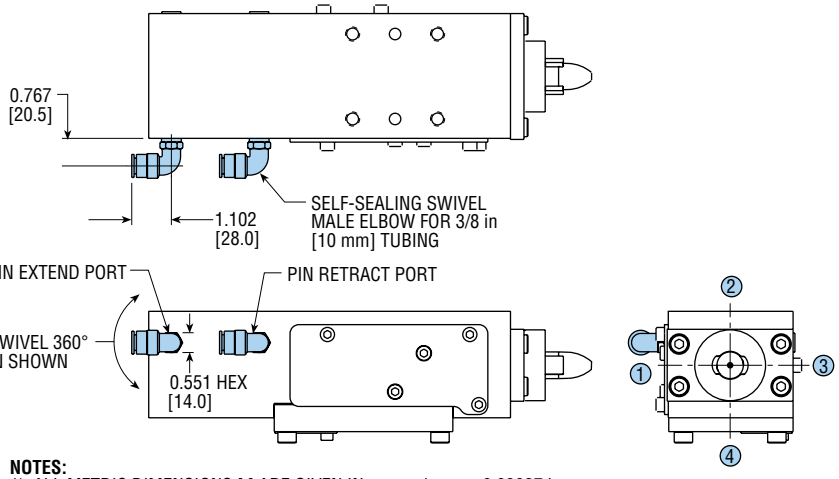
PORT PRESSURIZATION SEQUENCE

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:
1) ALL METRIC DIMENSIONS [ ] ARE GIVEN IN mm 1 mm = 0.03937 in
2) NUMBERS IN CIRCLES INDICATE POSITION (POSITION 1 IS STANDARD PORT POSITION)

SP01 SPACER

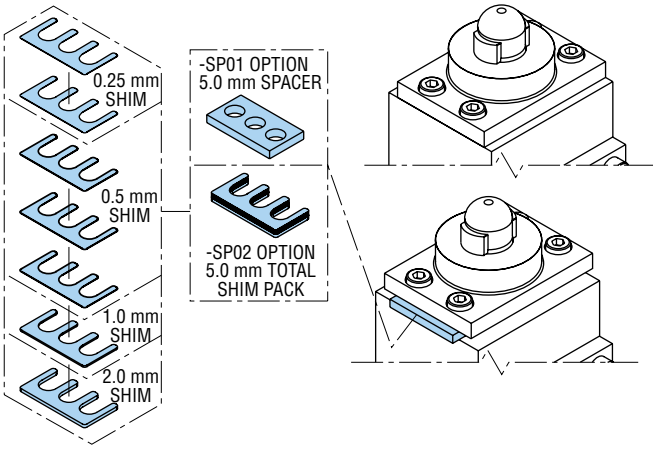
SP02 SHIM

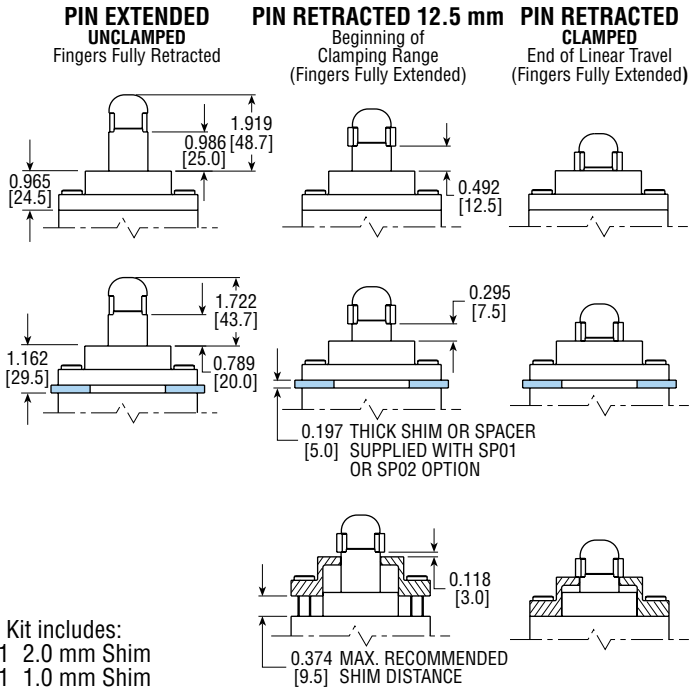
The part spacer location can be adjusted by use of a NAAMS grind spacer or shim pack. Using a 6 mm hex wrench, loosen the four M8 SHCS and adjust to the desired height. Maximum clamp stroke is 12.5 mm with no shims or spacers, as these are added, less clamp stroke is available.

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.





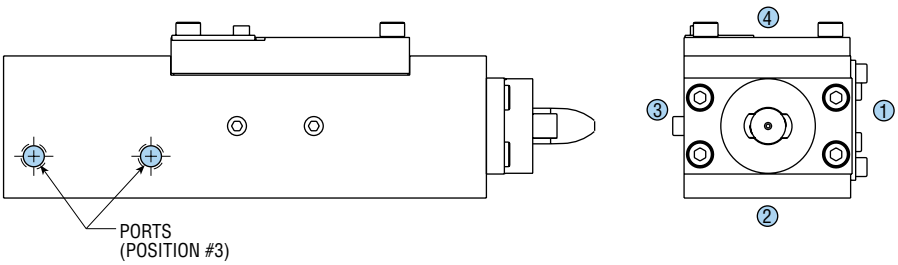
OPTION	PART/KIT NUMBER
SP01	74750-011
SP02	74749-005

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

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

P x 4 x x

HOUSING OPTION
P - Positional Sensing

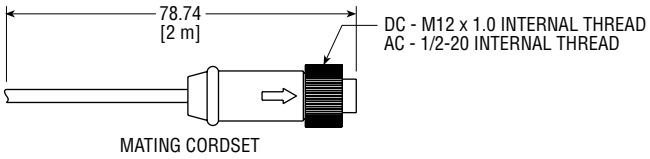
CONNECTOR POSITION
1 - Parallel to fingers
9 - Perpendicular to fingers*

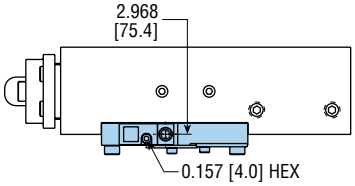
SENSING OPTION
S - Standard
R - Reversed

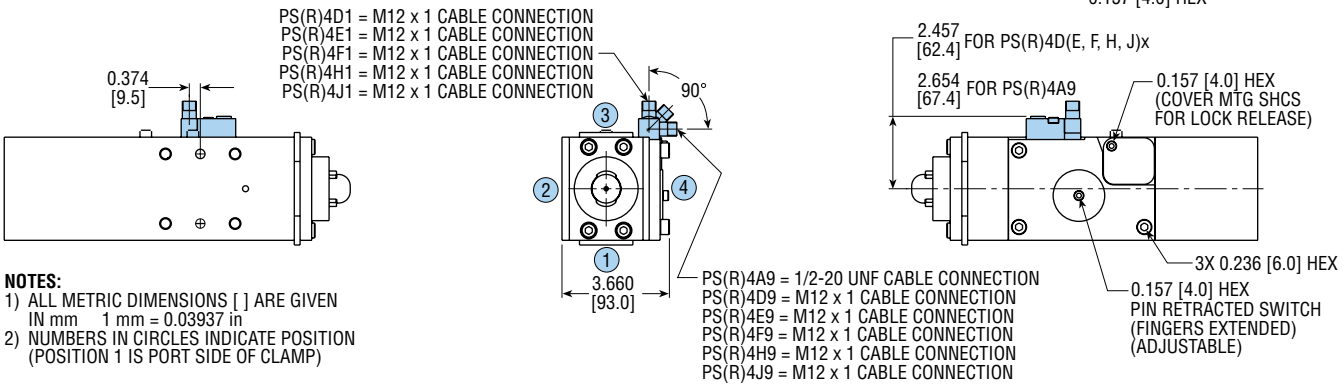
SWITCH OPTION
N - No Switch
A - 5-pin AC/DC Switch (Turck)
D - 4-pin PNP DC Switch (P + F)
E - 4-pin PNP DC Switch (Turck)
F - 4-pin PNP DC Switch (Efector)
H - 4-pin NPN DC Switch (P + F)
J - 4-pin NPN DC Switch (Turck)

SWITCH HOUSING OPTION
4 - Position 4

***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)

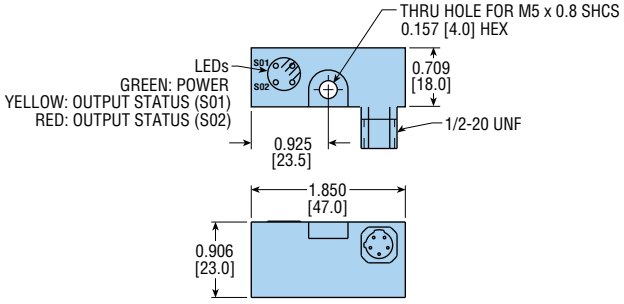
MATCHING CORDSETS 2 METERS LONG

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

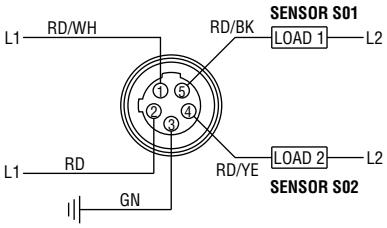
SWITCH OPTION	KIT NUMBER	DESCRIPTION
N	74510-01	Switch Housing Kit without Switch
D	74510-02	Switch Housing Kit with 5 pin AC/DC, (Turck) Switch
A	74510-03	Switch Housing Kit with 4 pin DC, PNP (P + F) Switch
E	74510-04	Switch Housing Kit with 4 pin DC, PNP (Turck) Switch
F	74510-05	Switch Housing Kit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

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

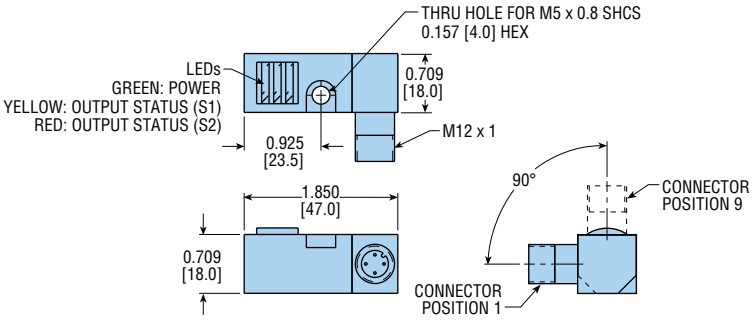


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS4A1	S02	S01	S01 = Pin 5
PR4A1	S01	S02	S02 = Pin 4

4-WIRE AC/DC

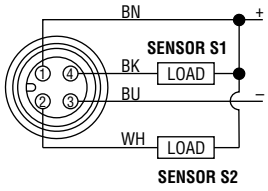


SWITCH OPTION D 71483-001-PLC P + F Part #: NBN2-F581-160S6-E8-V1 (PNP)
SWITCH OPTION H 71483-005-PLC P + F Part #: NBN2-F581-160S6-E10-V1 (NPN)

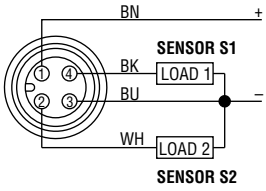


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS4Dx or PS4Hx	S2	S1	S1 = Pin 4
PR4Dx or PR4Hx	S1	S2	S2 = Pin 2

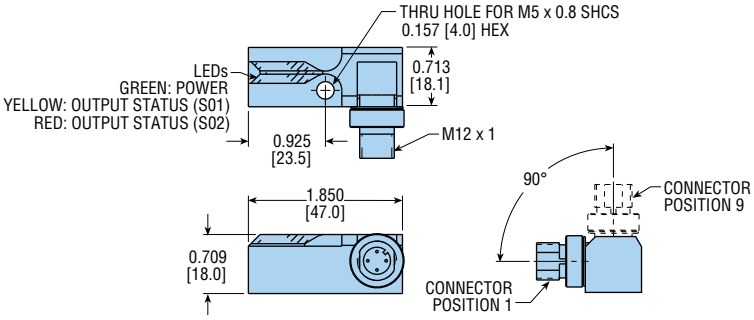
4-WIRE DC (V1 TYPE)
NPN DUAL NORMALLY OPEN



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

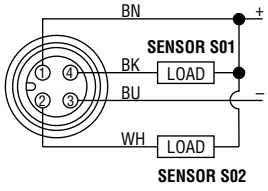


SWITCH OPTION E 71483-003-PLC Turck Part #: Ni 2-Q6.5-0.16-BDS-2AP6X3-H1141/S34 (PNP)
SWITCH OPTION J 71483-006-PLC Turck Part #: Ni 2-Q6.5-AN6-0.16-FS 4.4X3/S304 (NPN)

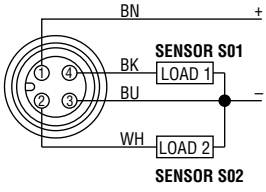


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS4Ex or PS4Jx	S02	S01	S01 = Pin 4
PR4Ex or PR4Jx	S01	S02	S02 = Pin 2

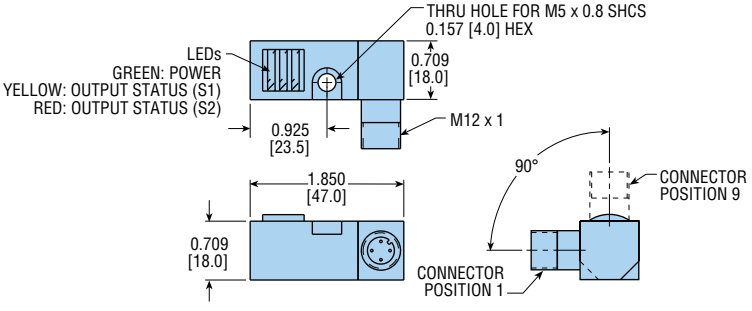
4-WIRE DC
NPN DUAL NORMALLY OPEN



4-WIRE DC
PNP DUAL NORMALLY OPEN

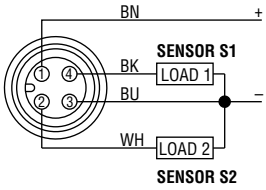


SWITCH OPTION F 71483-004-PLC Efector Part #: IN 5375 (PNP)



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 toleranced.

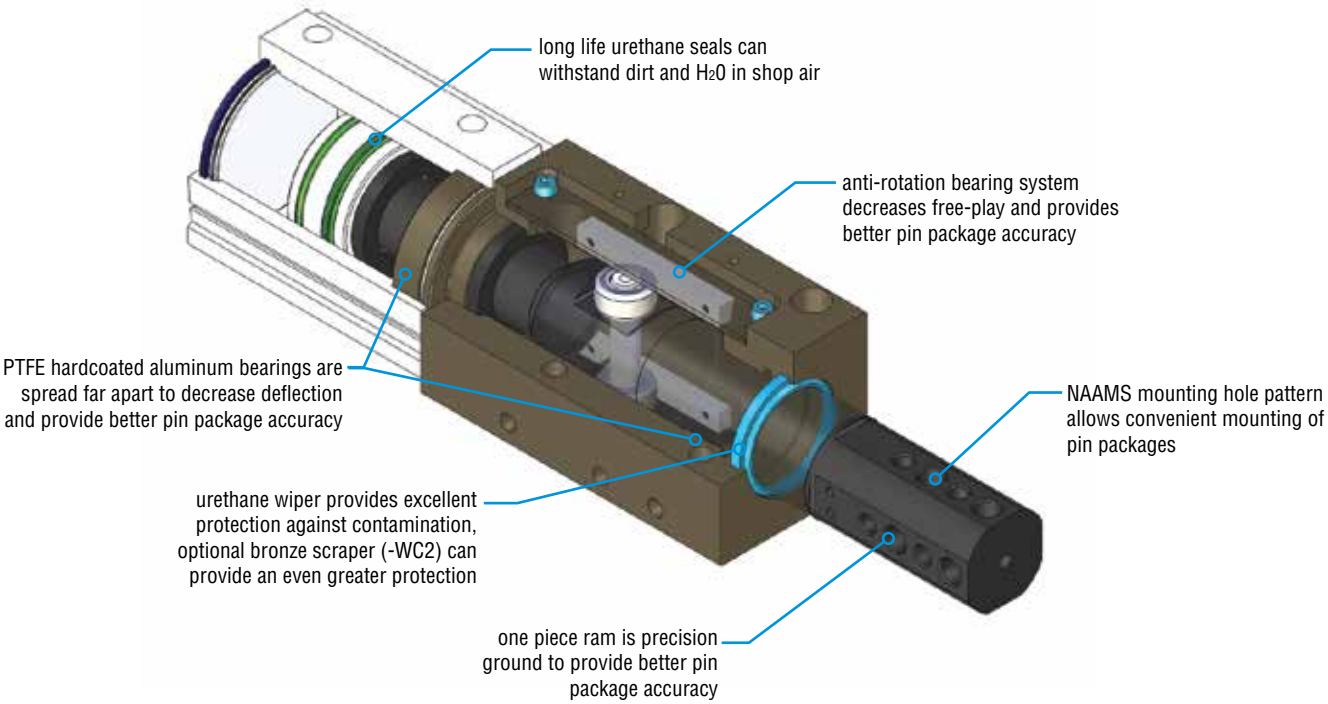
phd SOLUTIONS FOR INDUSTRIAL AUTOMATION

PSP

SHOT PIN

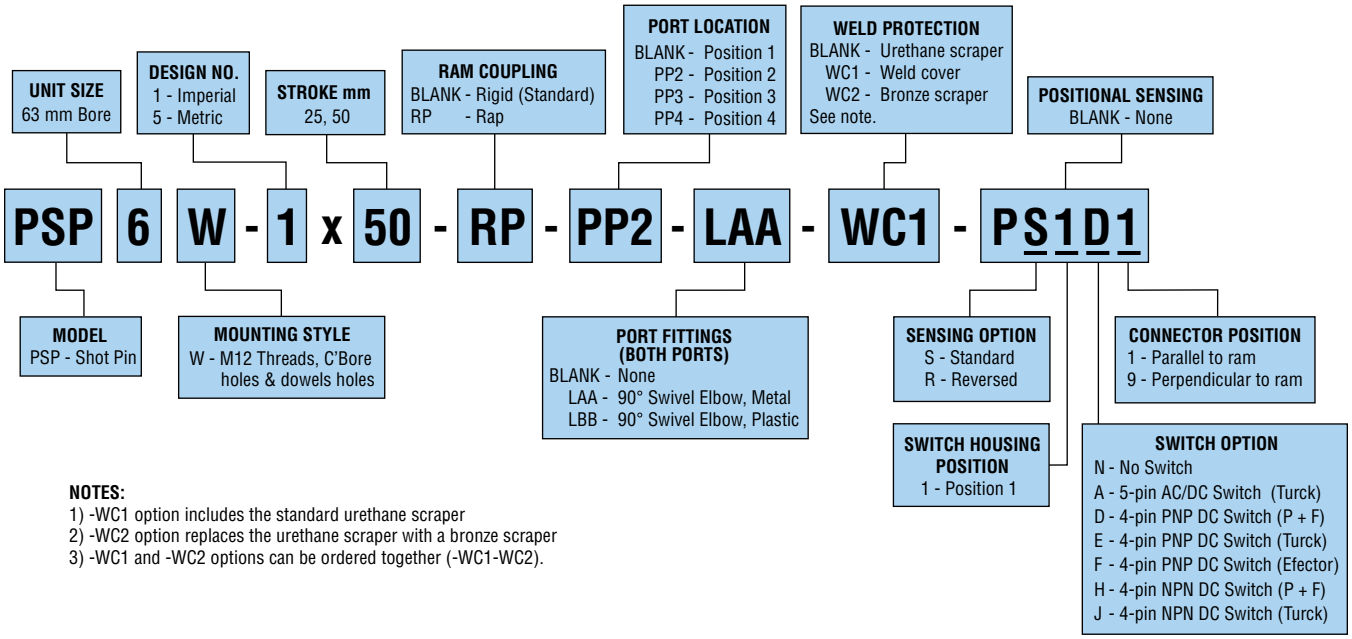
Major Benefits

- Smaller, more compact design
- After millions of cycles, adjustable bearing system can be used to make worn-in units “like-new” providing better accuracy over a much longer period of time
- Internal porting and shock absorption eliminates the need to adjust air cushions or flow controls and still provide quick cycle rates
- Self-locking internal threads throughout eliminate need for thread locking adhesives or additional locking components



TO ORDER SPECIFY:
Model, Unit Size, Mounting Style, Design No., Stroke, and additional options if desired.

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



NOTES:
1) -WC1 option includes the standard urethane scraper
2) -WC2 option replaces the urethane scraper with a bronze scraper
3) -WC1 and -WC2 options can be ordered together (-WC1-WC2).

PSP

CAD Configurator Assistance

Use PHD's free online application at **www.phdinc.com/cad**

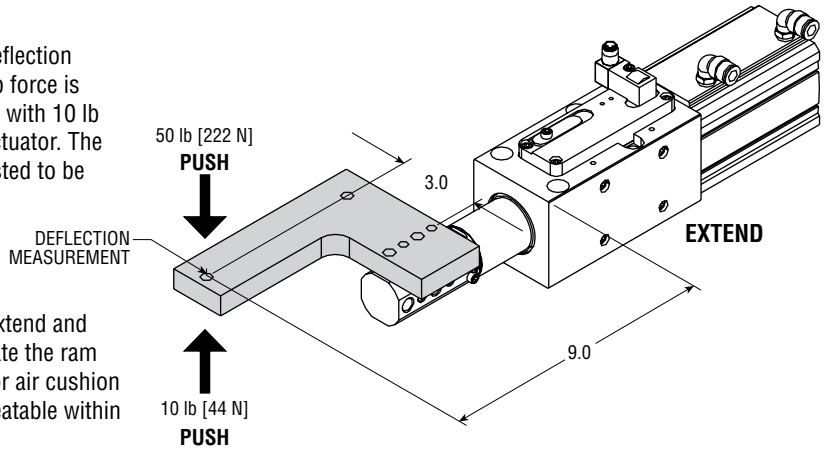
ENGINEERING DATA: SERIES PSP SHOT PINS

SPECIFICATIONS	SERIES PSP
SEALS	Polyurethane
WORKING PRESSURE	40 psi min. - 100 psi max.
OPERATING TEMPERATURE	-20° to +180°F [-28° to +82°C]
LUBRICATION	Factory lubricated for life

MODEL SIZE	STROKE	BORE	UNIT WEIGHT		THEORETICAL CYLINDER FORCE 87 psi [6 bar]				EXTEND AND RETRACT TIME	DISPLACEMENT				MIN. VALVE RATING
					EXTEND		RETRACT			EXTEND		RETRACT		
	mm	mm	lb	kg	lb	N	lb	N	sec	in³	cm³	in³	cm³	Cv
PSP6	25	63	14	6.4	387	1721	287	1277	0.15	9.6	157	5.9	97	0.5
	50	63	14	6.4	387	1721	287	1277	0.20	11.4	187	7.7	126	1.0

DEFLECTION

The Series PSP shot pin cylinder is adjusted so that deflection is less than 0.008" [0.20 mm] at the load point. A 50 lb force is pushed down on the ram as shown and then pulled up with 10 lb to determine the total deflection and free play of the actuator. The change in deflection after 3 million cycles has been tested to be less than 0.003" [0.08 mm] at the load point.

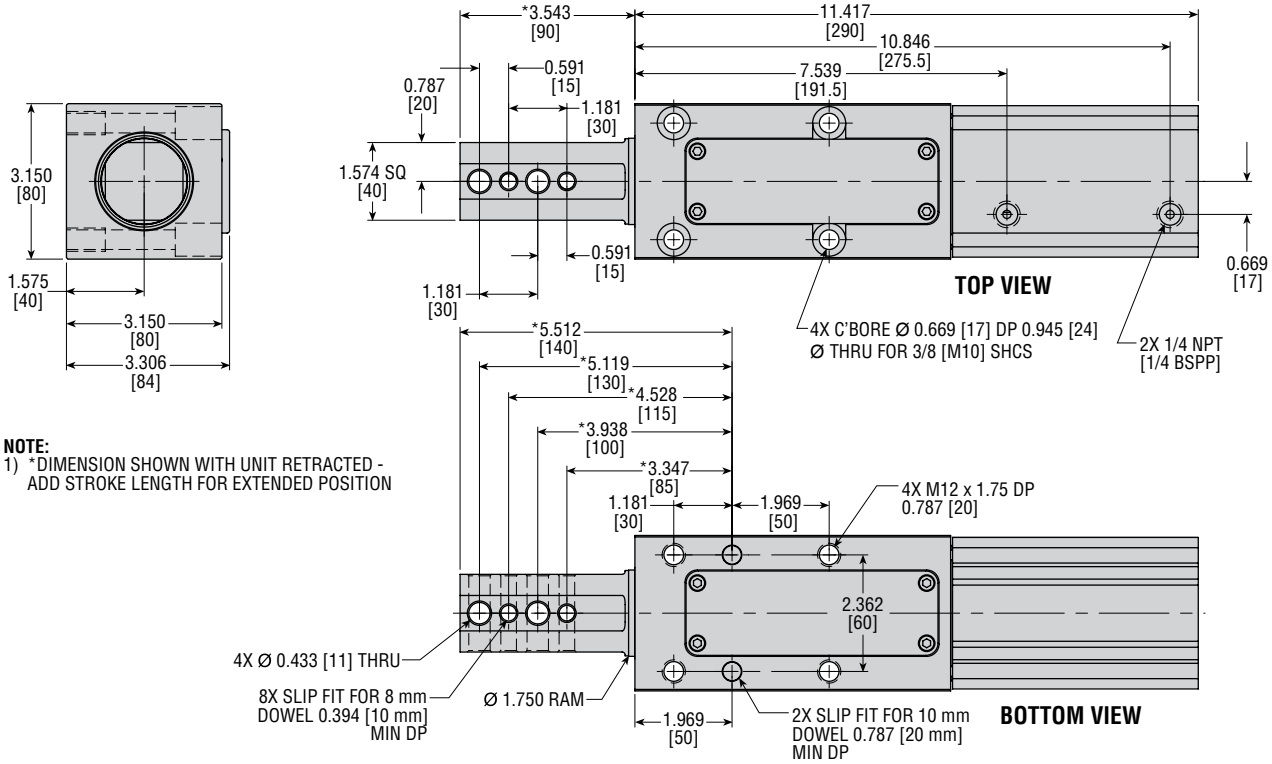


REPEATABILITY

The Series PSP shot pin cylinder has shock pads on extend and retract of the actuator. These shock pads help decelerate the ram and eliminate the need for external flow controls and/or air cushion adjustments. Testing has shown that the stroke is repeatable within 0.005" [0.13 mm] after 3 million cycles.

PSP

DIMENSIONS: SERIES PSP SHOT PINS



NOTE:
1) *DIMENSION SHOWN WITH UNIT RETRACTED - ADD STROKE LENGTH FOR EXTENDED POSITION

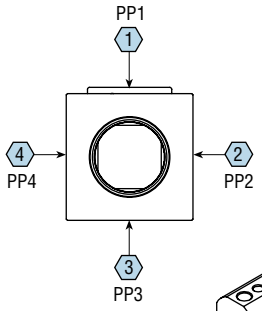
All dimensions are reference only unless specifically toleranced.

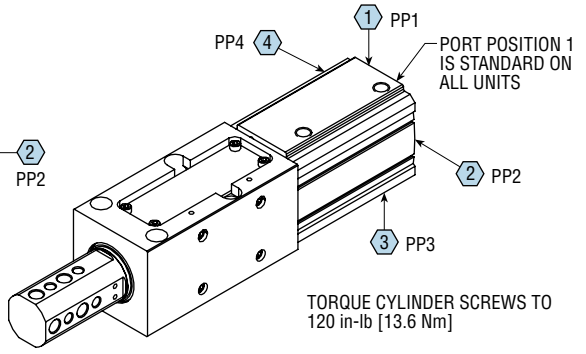
RP RAP COUPLING

Allows the piston to move before moving the ram. The impact helps free tooling from a bound condition. This option does not reduce the stroke of the unit.

PPx PORT LOCATION

This option specifies alternate port location for the cylinder providing flexibility and customer convenience. The port position can be changed by removing the cylinder bolts and rotating the cylinder body.

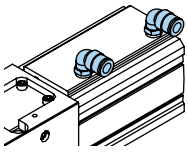




NOTE: NUMBERS ENCLOSED IN HEX INDICATE PORT POSITION

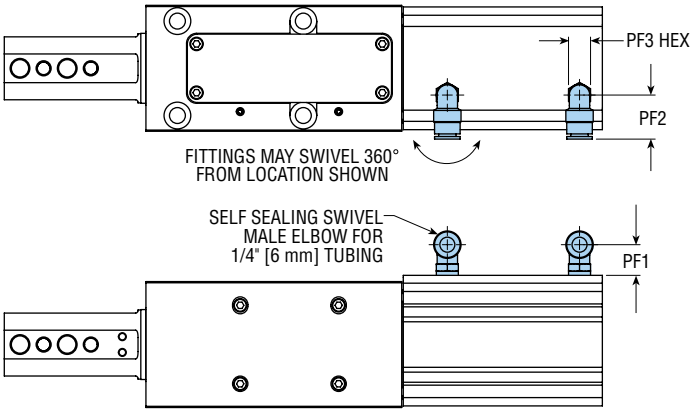
Lxx PORT FITTINGS

LAA (metal) or LBB (plastic) accessory provides 90° swivel fittings for ease of air line hook up.



OPTION CODE	PART NUMBER	
	Imperial	Metric
LAA	62178-010	62195-010
LBB	71120-002	71121-002

LETTER DIM	MODEL NUMBER PSP6	
	in	mm
PORT	1/4 NPT	1/4 BSPP
PF1 (MIN)	0.767	20.5
PF2	1.102	28.0
PF3	0.551	14.0

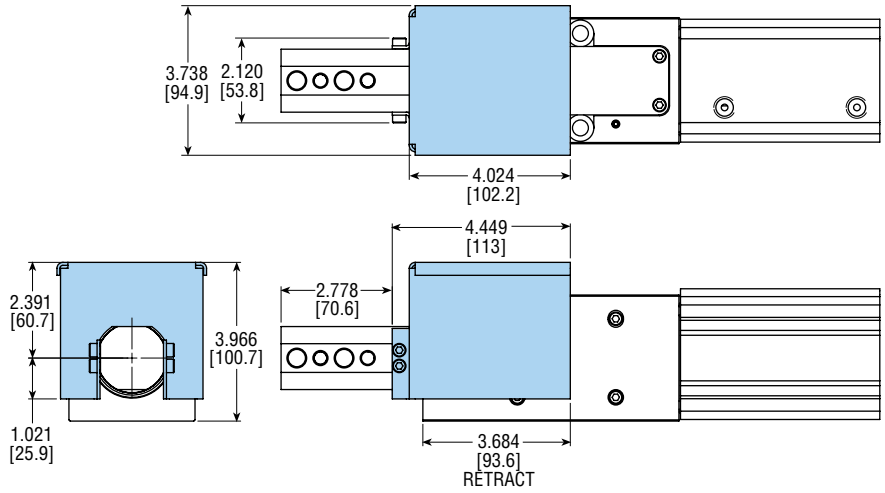


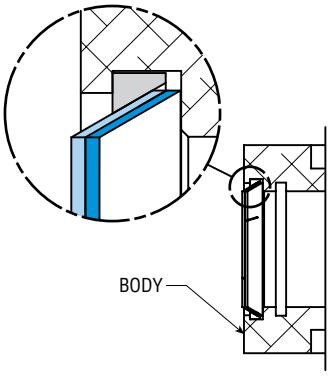
WC1 WELD COVER

WC1 provides an additional weld cover that surrounds the ram and helps prevent weld slag from damaging the wiper and bushing area.

WC2 BRONZE SCRAPER

WC2 provides a metallic bronze scraper to help remove excess contamination better than the standard urethane wiper. This option can be used when there is not enough room for a weld cover.

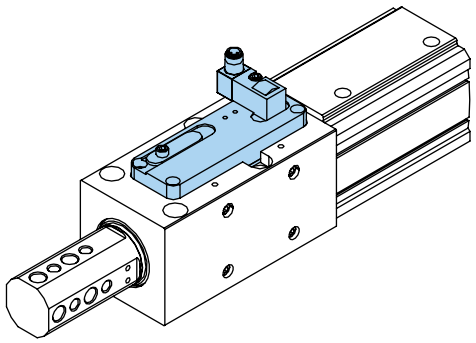




PSxxx STANDARD POSITION SENSING

PRxxx REVERSED POSITION SENSING

This option provides extend and retract sensing by affixing an aluminum housing to the top of the ram body. The retract switch is fixed needing no adjustment. The extend switch is adjustable at the end of stroke to sense either the leading or trailing edge of the target and has about 3/8" of adjustment. Loosening the M5 screw and sliding it up or down adjusts the extend switch position. PS positions the S01/S1 switch to sense the extend position and S02/S2 switch to send the retract position. PR positions the S01/S1 switch to sense the retract position and S02/S2 to sense the extend position.



POSITION SENSOR OPTION CODE

P x 1 x x

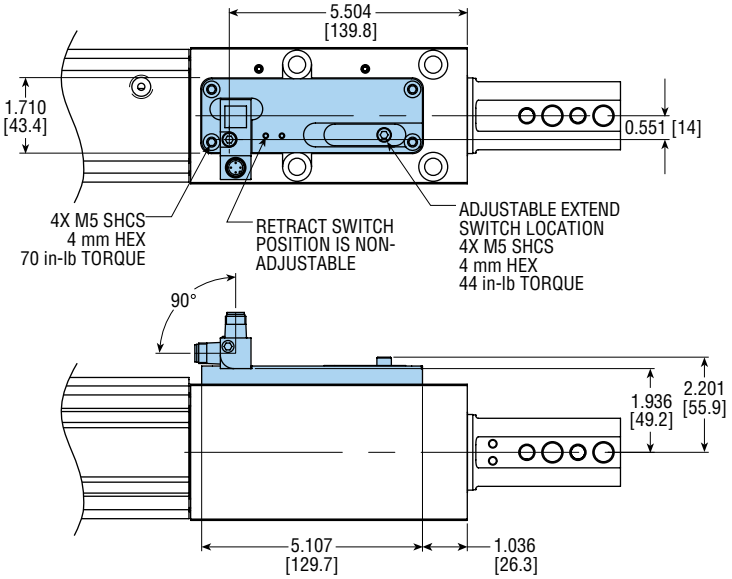
SENSING OPTION
S - Standard
R - Reversed

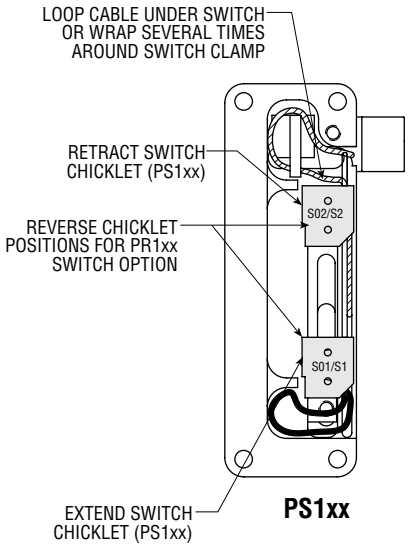
CONNECTOR POSITION
1 - Parallel to output shaft
9 - Perpendicular to output shaft*

SWITCH HOUSING OPTION
1 - Position 1

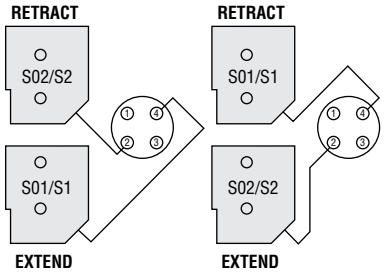
SWITCH OPTION
N - No Switch
A - 5-pin AC/DC Switch (Turck)
D - 4-pin PNP DC Switch (P + F)
E - 4-pin PNP DC Switch (Turck)
F - 4-pin PNP DC Switch (Efector)
H - 4-pin NPN DC Switch (P + F)
J - 4-pin NPN DC Switch (Turck)

***NOTE:**
Connector position 9 is not available with switch option A.





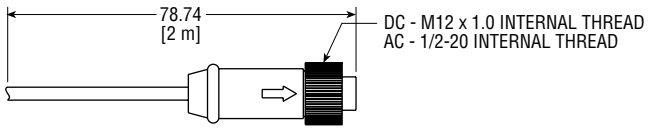
PS1xx



PS1xx **PR1xx**

MATCHING CORDSETS 2 METERS LONG

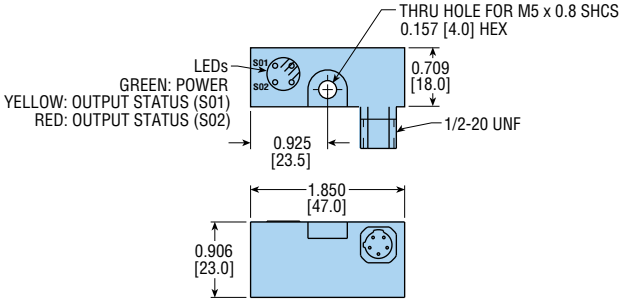
SWITCH OPTION	PHD PART NUMBER	CORDSET PART NUMBER
A	73317-00-02	KB 5T-2
D	65440-001-02	V1-G-YE2M-PVC
E	78039-00-02	RK 4.4T-2
F	65440-001-02	V1-G-YE2M-PVC
H	65440-001-02	V1-G-YE2M-PVC
J	78039-00-02	RK 4.4T-2



MATING CORDSET

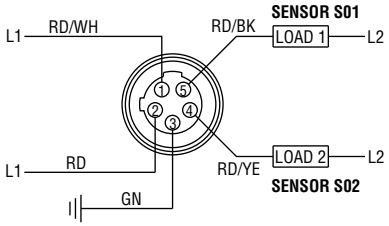
SWITCH OPTIONS: SERIES PSP SHOT PINS

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

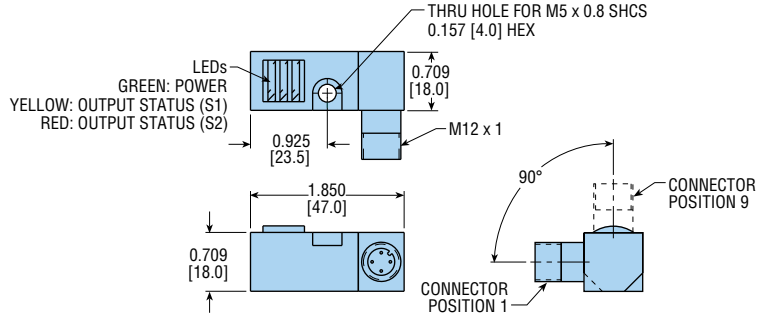


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS1A1	S02	S01	S01 = Pin 5
PR1A1	S01	S02	S02 = Pin 4

4-WIRE AC/DC

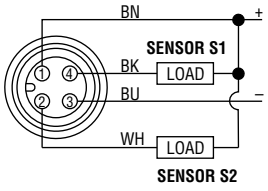


SWITCH OPTION D 71483-001-PSP P + F Part #: NBN2-F581-160S6-E8-V1 (PNP)
SWITCH OPTION H 71483-005-PSP P + F Part #: NBN2-F581-160S6-E10-V1 (NPN)

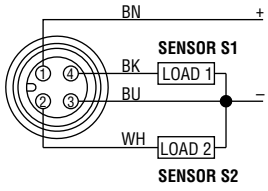


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS1Dx or PS1Hx	S2	S1	S1 = Pin 4
PR1Dx or PR1Hx	S1	S2	S2 = Pin 2

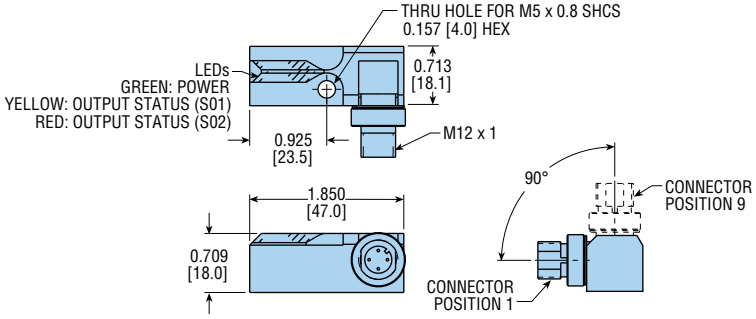
4-WIRE DC (V1 TYPE)
NPN DUAL NORMALLY OPEN



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

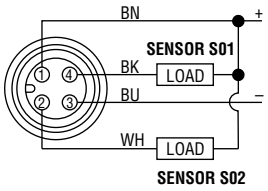


SWITCH OPTION E 71483-003-PSP Turck Part #: Ni 2-Q6.5-0.16-BDS-2AP6X3-H1141/S34 (PNP)
SWITCH OPTION J 71483-006-PSP Turck Part #: Ni 2-Q6.5-AN6-0.16-FS 4.4X3/S304 (NPN)

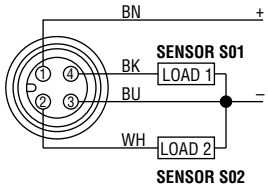


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS1Ex or PS1Jx	S02	S01	S01 = Pin 4
PR1Ex or PR1Jx	S01	S02	S02 = Pin 2

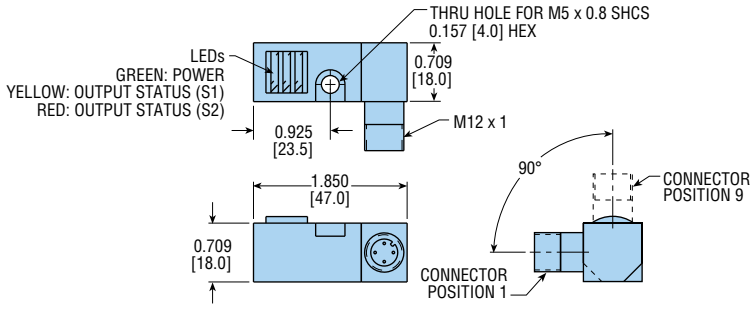
4-WIRE DC
NPN DUAL NORMALLY OPEN



4-WIRE DC
PNP DUAL NORMALLY OPEN

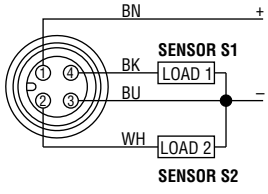


SWITCH OPTION F 71483-004-PSP Efector Part #: IN 5375 (PNP)

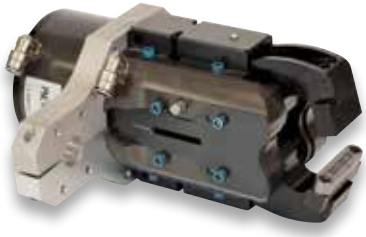


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PS1Fx	S2	S1	S1 = Pin 4
PR1Fx	S1	S2	S2 = Pin 2

4-WIRE DC
PNP DUAL NORMALLY OPEN

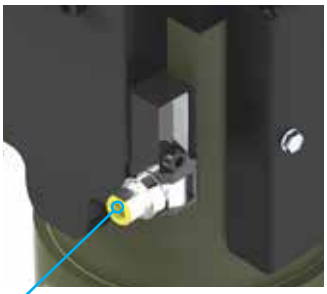


IDENTIFICATION STAMPING CLAMP



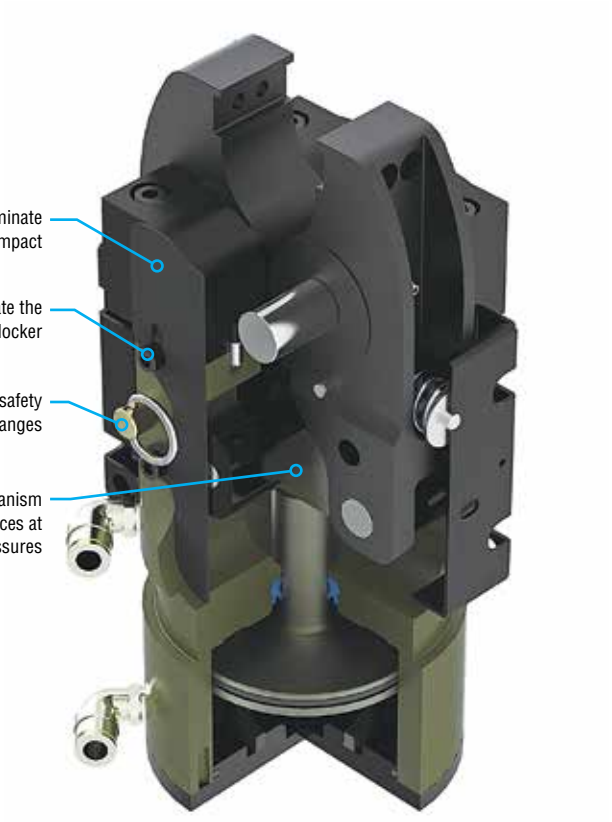
Major Benefits

- Provides cost-effective solution for identification stamping, staking, crimping, and forming.
- High clamp force produces characters in draw quality steel at only 70 psi [4.8 bar]
- Eliminates downtime associated with changing or replacing characters
- Three sizes available to fit your application requirements
- Quiet operation



optional switches allow for open and close sensing

welding slag shield option protects internal mechanisms from flying sparks and debris



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

TO ORDER SPECIFY:
Model, Unit Size, Mounting, Design No., Jaw Option, Jaw Opening, and Options.

MODEL

UNIT SIZE (with Total Clamp Force)
- 44 - ≤ 9000 lb [40 kN]
- 55 - ≤ 15000 lb [66.7 kN]
- 55 (w/B01) - ≤ 25400 lb [113 kN]
- 66 - ≤ 48330 lb [215 kN]

JAW OPTIONS - JAW A

JAW STYLE OPTION	JAW OPENING
S - Standard Jaw (to accept Tip Kits) A - Jaw to accept automatic numbering head (PNC66 only)	16 - 16° Opening

JAW OPTIONS - JAW B

JAW STYLE OPTION	JAW OPENING
S - Standard Jaw (to accept Tip Kits) A - Jaw to accept automatic numbering head (PNC66 only)	16 - 16° Opening

QUICK CHANGE TOOLING JAW (Jaw Option S only)
- BLANK - None
- JA01 - Quick change slot on jaw A
- JB01 - Quick change slot on jaw B

PNC 55 P - 1 - S16 - S16 - B01 - LAA - G01 - Jx01 - Pxxxx

MOUNTING
- N - No Mounting
- P - Rear Mounting Plate
- R - 1 inch [25.4 mm] Non-Spherical Mounting Bracket (PNC44/55 only)
- V - 1-1/4 inch [31.8 mm] Non-Spherical Mounting Bracket (PNC44/55 only)
- M - Side Mounting Plate

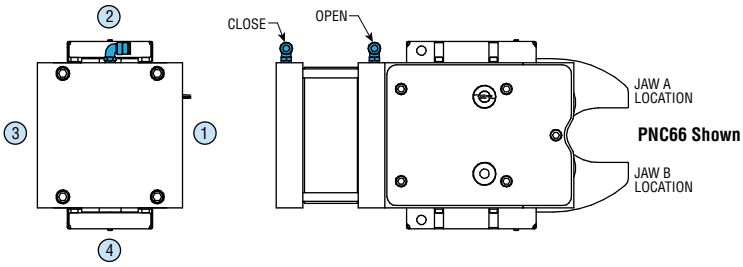
DESIGN NO.
- 1 - Imperial
- 5 - Metric (See note 1)

BODY OPTIONS
- B01 - Tandem Cylinder (PNC55 only)

PORT FITTINGS (BOTH PORTS)
- BLANK - None
- LAA - 90° Swivel Fitting

PROTECTIVE COVER
- BLANK - None
- G01 - Welding Slag Shields (PNC55/66 only)

NOTE:
1) Metric units have metric ports.



PNC66 Shown

POSITION SENSOR OPTION CODE

Pxxxx

HOUSING OPTION
- **P** - Positional Sensing

AMPLIFIER POSITION
- **2** - Position 2
- **4** - Position 4

SENSING OPTION
- **S** - Standard
- **R** - Reversed

SWITCH OPTION
- **N** - No Switch
- **A** - 5-pin AC/DC Switch (Turck)
- **D** - 4-pin PNP DC Switch (P + F)
- **E** - 4-pin PNP DC Switch (Turck)
- **F** - 4-pin PNP DC Switch (Efector)
- **H** - 4-pin NPN DC Switch (P + F)
- **J** - 4-pin NPN DC Switch (Turck)

SWITCH HOUSING OPTION
- **1** - Position 1
- **3** - Position 3

CAD & Sizing Assistance

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

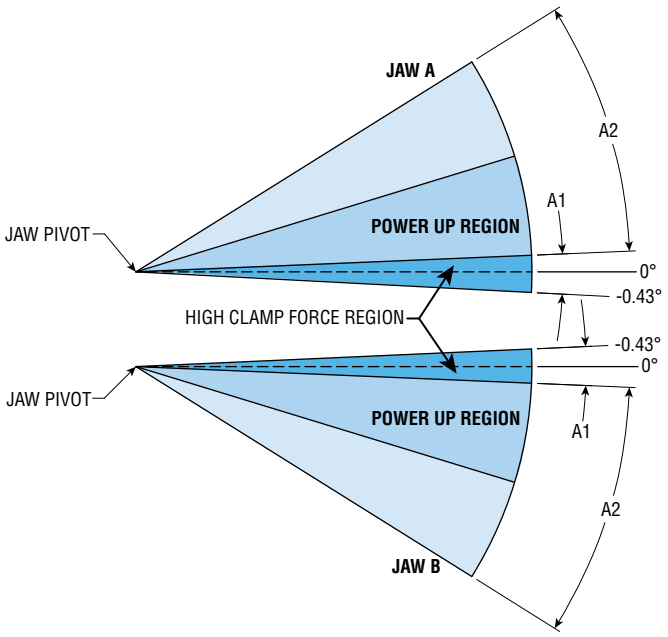
SPECIFICATIONS	PNC44/55	PNC66
WORKING PRESSURE	30 psi min - 100 psi max* [2 bar min - 7 bar max]	30 psi min - 87 psi max [2 bar min - 6 bar max]
BODY	Hardcoat Aluminum	
JAWS	Steel	
SEALS	Bidirectional Piston Seal Lip Type Rod Seal with Integral Rod Wiper	Lip Seal & Wear Ring on Piston Lip Type Rod Seal Rod Wiper
LUBRICATION	Permanent for Non-Lube Air	
OPERATING TEMPERATURE	-20° to 180°F [-30° to 82°C]	

*90 psi max [6.2 bar max] for B01 option

MODEL	UNIT WEIGHT		TOTAL CLAMP FORCE AT 87 psi [6 bar]		CLOSE OR OPEN TIME 87 psi [6 bar]	DISPLACEMENT				HIGH FORCE REGION			JAW OPENING REGION		
						OPEN		CLOSE		ANGULAR DISPLACEMENT (A1)	CLAMP FORCE FACTOR (Cf)		ANGULAR DISPLACEMENT (A2)	CLAMP FORCE FACTOR (Cf)	
	lb	kg	lb	kN	sec	in³	cm³	in³	cm³		Imperial	Metric		Imperial	Metric
PNC44	19.0	8.62	9000	40.0	0.4	19.60	321	20.87	342	1.2°	103.4	6667	14.8°	5.0	322
PNC55	22.2	10.1	15000	66.7	0.4	19.60	321	20.87	342		172.4	11117		5.0	322
PNC55-B01	27.6	12.5	25400	113.0	0.6	19.60	321	41.74	684		292.0	18833		9.0	580
PNC66N-x-S16-S16	112	50.8	48330	215.0	1.5	86.10	1411	89.55	1468	0.7°	555.52	35833	15.3°	12.80	824
PNC66N-x-A16-S16	116	52.6													

MOUNTING CODE	MOUNTING BRACKET DESCRIPTION	WEIGHT			
		PNC44/55		PNC66	
		lb	kg	lb	kg
M	Side Mounting Plate	3.0	1.4	14.4	6.53
P	Rear Mounting Plate	3.4	1.5	2.0	0.91
R	1" [25.4] Non-Spherical Mounting Bracket	2.1	1.0	—	—
V	1-1/4" [31.8] Non-Spherical Mounting Bracket	2.1	1.0	—	—

CALCULATING TOTAL CLAMP FORCE



TCF = Cf x P
TCF = Total Clamp Force, lb [N]
Cf = Clamp Force Factor
P = Working Pressure, psi [bar]

Example:
Your air line pressure: 72 psi [5 bar]

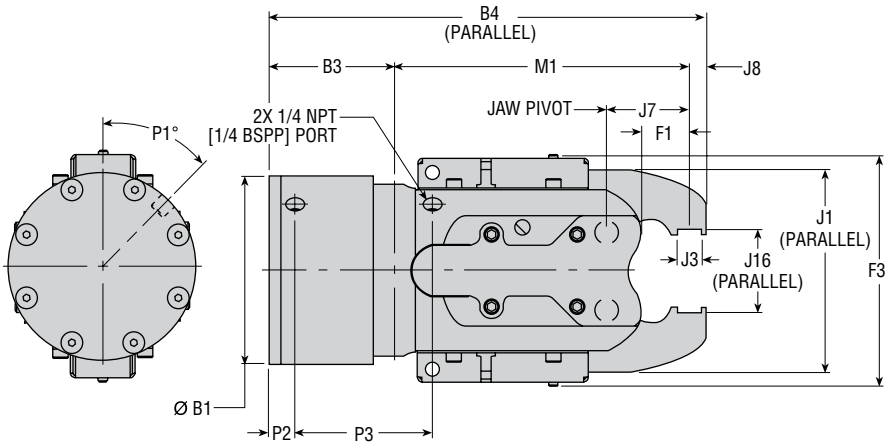
PNC55, High Force Region
TCF = 172.4 x 72 = 12,413 lb [11117 x 5 = 55,585 N]

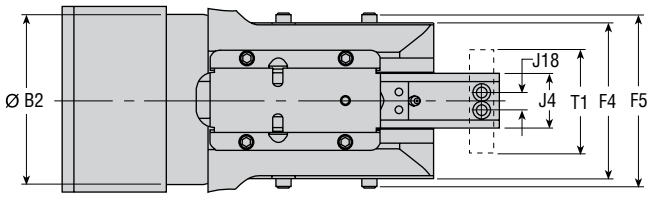
PNC66, High Force Region
TCF = 555.52 x 72 = 39,997 lb [35833 x 5 = 179,165 N]

NOTES:

1) The Series PNC Number Cruncher® is designed for external clamping only. **Do not use the PNC for internal clamping.** Consult PHD for special applications.
2) Angular measurements are in degrees.
3) To achieve maximum clamp force, custom tooling must close on the part in the high force region of jaw travel. Refer to the diagram and table for effective stamping range.

DIMENSIONS: SERIES PNC44/55 IDENTIFICATION STAMPING CLAMPS

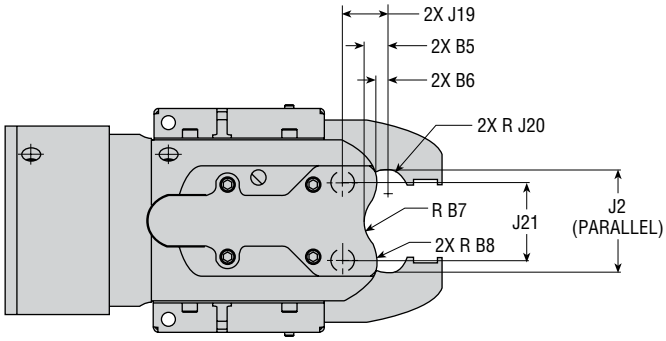




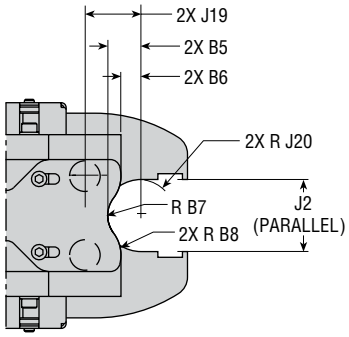
LETTER DIM	MODEL NUMBER			
	PNC44		PNC55	
	in	mm	in	mm
B1	4.902	124.5	4.902	124.5
B2	4.500	114.3	4.500	114.3
B3	3.300	83.8	3.300	83.8
B4 (PARALLEL)	11.540	293.1	11.540	293.1
B5	0.590	15.0	1.078	27.4
B6	0.247	6.3	0.735	18.7
B7	0.750	19.1	0.750	19.1
B8	0.932	23.7	0.932	23.7
F1	1.269	32.2	1.269	32.2
F3	5.990	152.1	5.990	152.1
F4	4.085	103.8	4.085	103.8
F5	4.557	115.7	4.557	115.7
J1 (PARALLEL)	5.284	134.2	5.284	134.2
J2 (PARALLEL)	2.698	68.5	1.862	47.3
J3*	0.635	16.1	0.635	16.1
J4	1.440	36.6	1.440	36.6
J7	2.201	55.9	2.201	55.9
J8	0.448	11.4	0.448	11.4
J16 (PARALLEL)	2.162	54.9	2.162	54.9
J18	0.472	12.0	0.472	12.0
J19	1.179	29.9	1.667	42.3
J20	0.580	14.7	1.000	25.4
J21	2.036	51.7	2.036	51.7
P1	45°	45°	45°	45°
P2	0.682	17.3	0.682	17.3
P3	3.602	91.5	3.602	91.5
M1	7.792	197.9	7.792	197.9
T1	2.760	70.1	2.760	70.1

* TOLERANCE FOR J3 = ± 0.003 [0.076]

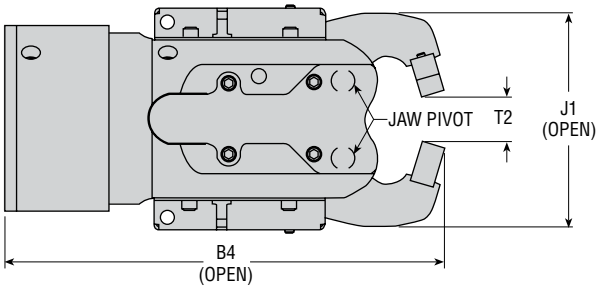
NOTE:
1) FOR MOUNTING BRACKET INFORMATION SEE PAGES 82 TO 84.



PNC44 UNITS ONLY



PNC55 UNITS ONLY



LETTER DIM	MODEL NUMBER			
	PNC44		PNC55	
	in	mm	in	mm
J1 (OPEN)	5.614	142.6	5.614	142.6
T2	1.149	29.2	1.149	29.2
B4 (OPEN)	11.590	294.4	11.590	294.4

CAD & Sizing Assistance

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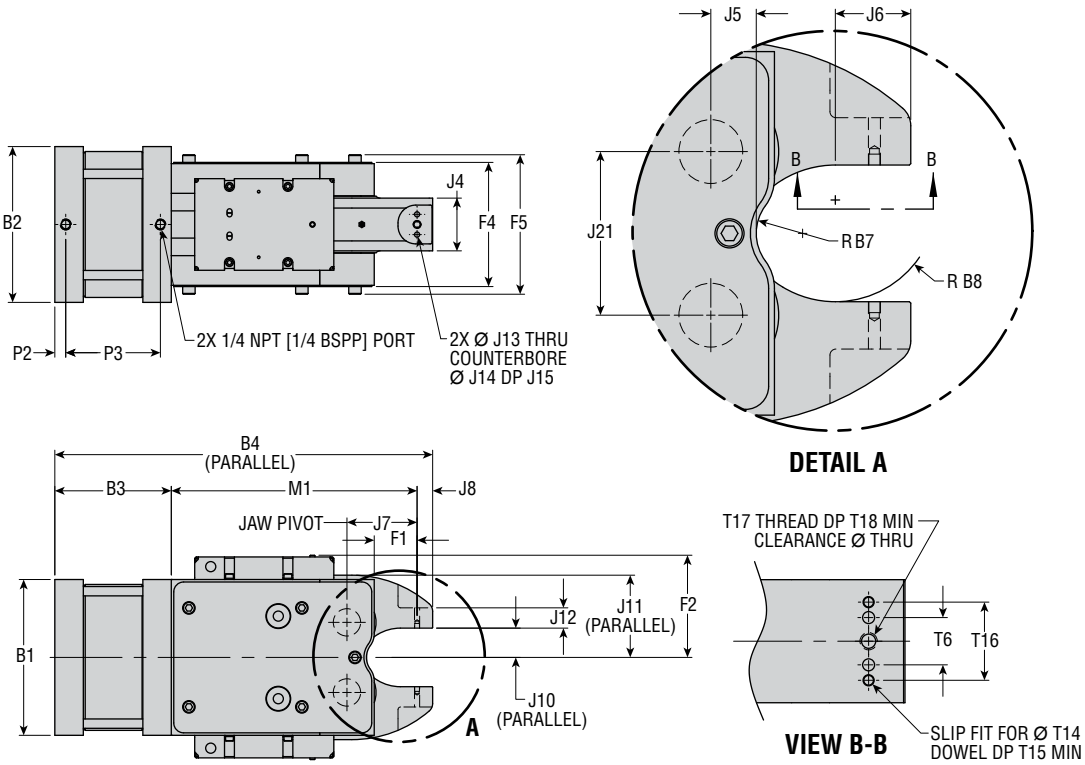
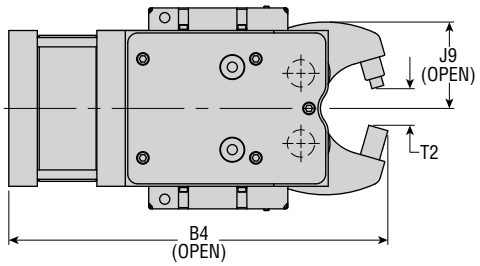
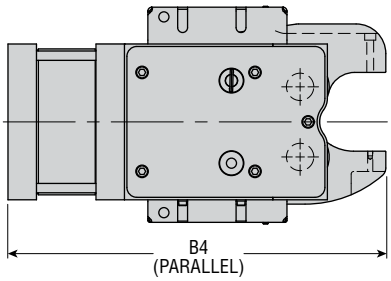




PNC66-x-S16-S16



PNC66-x-A16-S16

LETTER DIM	MODEL NUMBER PNC66 "S" STYLE JAW in	"S" STYLE JAW mm	"A" STYLE JAW in	"A" STYLE JAW mm
B1	7.874	200.0	7.874	200.0
B2	7.874	200.0	7.874	200.0
B3	5.886	149.5	5.886	149.5
B4 (PARALLEL)	19.094	485.0	19.094	485.0
B4 (OPEN)	19.155	486.5	—	—
B7	1.004	25.5	1.004	25.5
B8	2.203	56.0	1.356	34.4
F1	2.165	55.0	2.165	55.0
F2	5.164	131.2	5.842	148.4
F4	6.276	159.4	6.276	159.4
F5	7.063	179.4	7.063	179.4
J4	2.665	67.7	2.665	67.7
J5	0.984	25.0	0.984	25.0
J6	1.634	41.5	1.575	40.0
J7	3.543	90.0	3.543	90.0
J8	0.787	20.0	0.787	20.0
J9 (OPEN)	4.364	110.9	5.665	143.9
J10 (PARALLEL)	1.480	37.6	2.500	63.5
J11 (PARALLEL)	4.155	105.5	4.950	125.7
J12	1.025	26.0	1.632	41.4
J13	0.260	6.6	0.346	8.8
J14	—	—	0.561	14.2
J15	—	—	0.340	8.6
J21	3.543	90.0	3.543	90.0
M1	12.421	315.5	12.421	315.5
P2	0.551	14.0	0.551	14.0
P3	4.783	121.5	4.783	121.5
T2	1.847	46.9	—	—
T6	1.024	26.0	1.024	26.0
T14	0.236	6.0	0.236	6.0
T15	0.236	6.0	0.236	6.0
T16	1.693	43.0	1.811	46.0
T17	3/8-16 UNC		—	
T18	0.643	16.3	—	—

CAD & Sizing Assistance

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

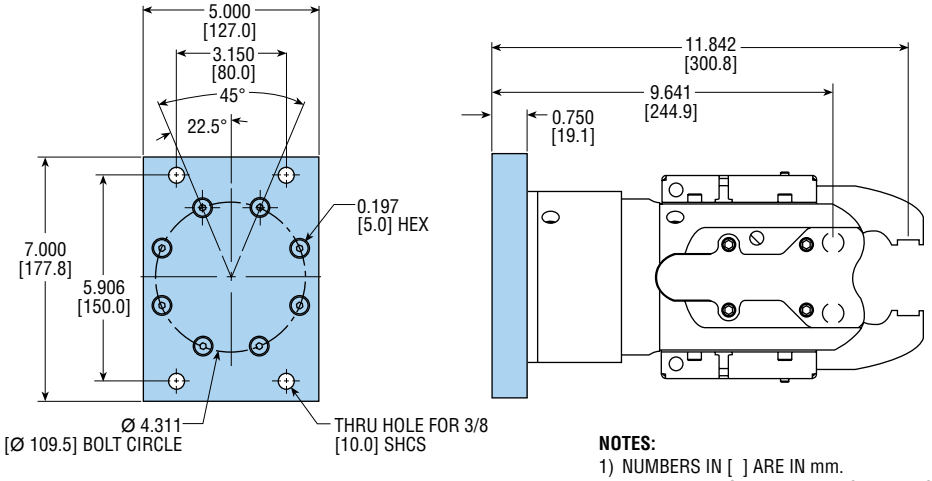
NOTE:
1) FOR MOUNTING BRACKET INFORMATION SEE PAGES 82 TO 84.

All dimensions are reference only unless specifically toleranced.

REAR MOUNTING BRACKET

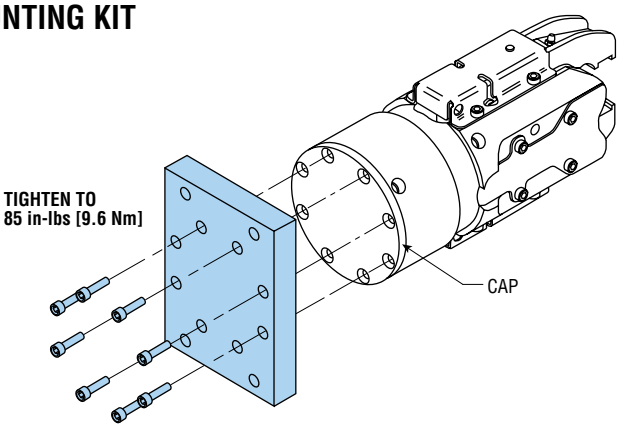
PNC44 P

PNC55 P



NOTES:
1) NUMBERS IN [ ] ARE IN mm.
2) PLATE MAY ROTATE IN 45° INCREMENTS ABOUT UNIT CENTERLINE.

REAR MOUNTING KIT

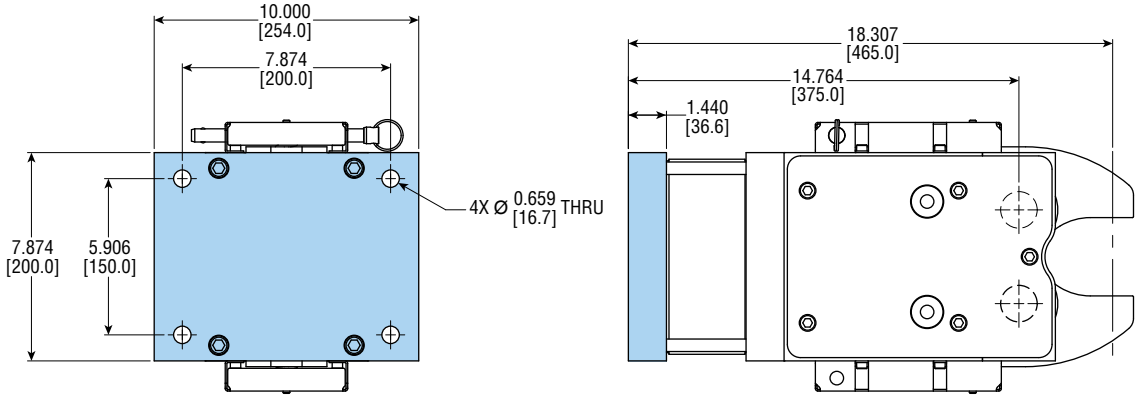


TO ORDER KIT SEPARATELY:

DESCRIPTION	KIT NUMBER
	PNC44/55P
REAR MOUNTING PLATE KIT	63099-02

NOTE: REMOVAL OF 8 CAP SFHCS IS REQUIRED BEFORE REAR MOUNTING PLATE ASSEMBLY.

PNC66 P



NOTE:
1) NUMBERS IN [ ] ARE IN mm.

MOUNTING BRACKET DIMENSIONS: SERIES PNC CLAMPS

SIDE MOUNTING BRACKET

PNC44 M

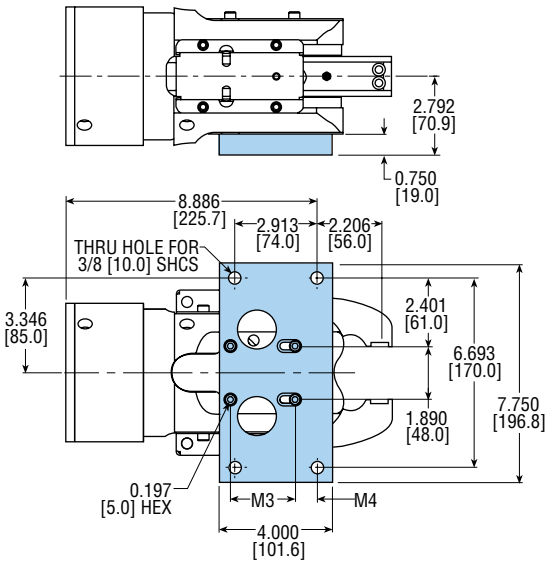
PNC55 M

When a position sensor option is ordered with PNC44/55M option, the switch housing position takes precedence over the mount position.

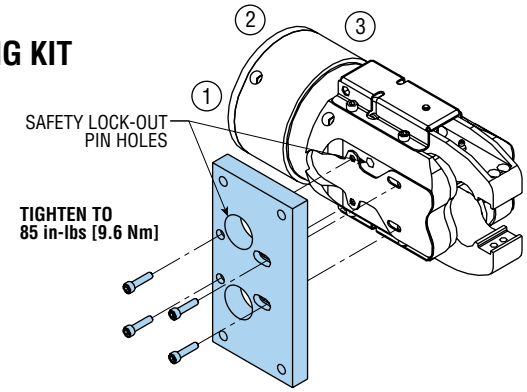
Examples:
PNC55M-1-S16-S16-LAA = Mount in Position 1
PNC55M-1-S16-S16-LAA-PS1D2 = Mount in Position 3

LETTER DIM	MODEL NUMBER			
	PNC44		PNC55	
	in	mm	in	mm
M3	2.283	58.0	1.890	48.0
M4	0.783	19.9	1.176	29.9

NOTE: NUMBERS IN [ ] ARE IN mm.



SIDE MOUNTING KIT



TO ORDER KIT SEPARATELY:

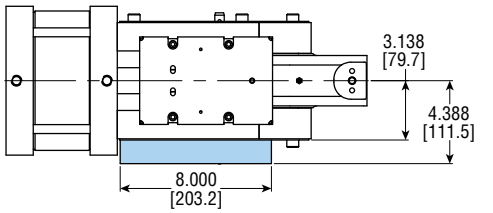
DESCRIPTION	KIT NUMBER
	PNC44/55M
SIDE MOUNTING PLATE KIT	63099-03

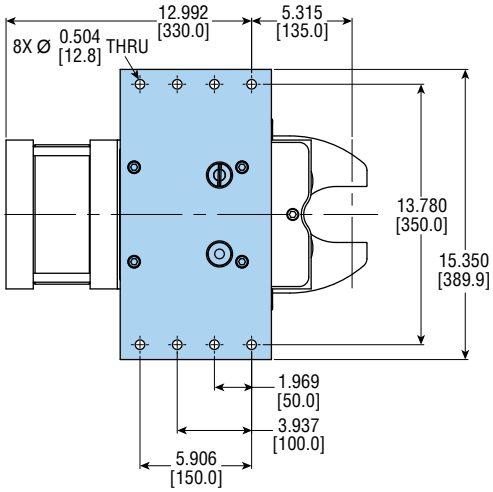
NOTE: REMOVAL OF 4 IMPACT SHCS IS REQUIRED BEFORE SIDE MOUNTING PLATE ASSEMBLY.

PNC66 M

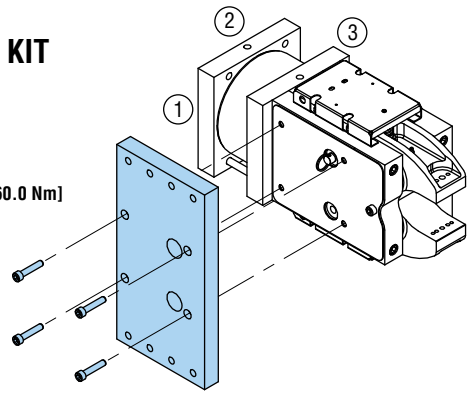
When a position sensor option is ordered with PNC66M option, the switch housing position takes precedence over the mount position.

Examples:
PNC66M-1-S16-S16-LAA = Mount in Position 1
PNC66M-1-S16-S16-LAA-PS1D2 = Mount in Position 3





SIDE MOUNTING KIT



TO ORDER KIT SEPARATELY:

DESCRIPTION	KIT NUMBER
	PNC66M
SIDE MOUNTING PLATE KIT	89022

NOTE: REMOVAL OF 4 IMPACT SHCS IS REQUIRED BEFORE SIDE MOUNTING PLATE ASSEMBLY.

MOUNTING BRACKET DIMENSIONS: SERIES PNC44/55 CLAMPS

NON-SPHERICAL MOUNTING BRACKET

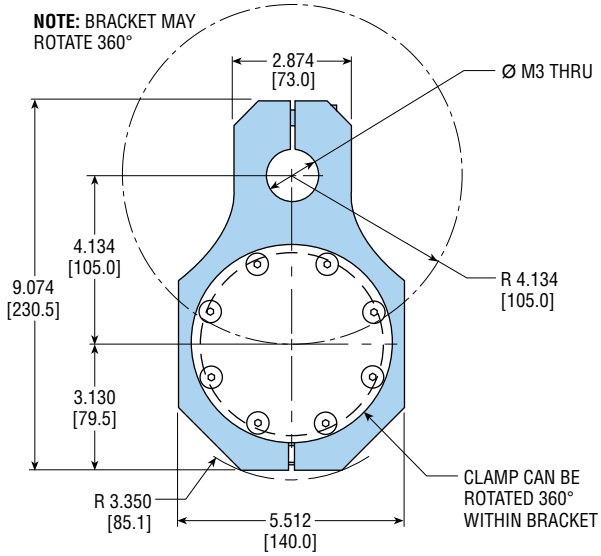
PNC44 R
PNC55 R

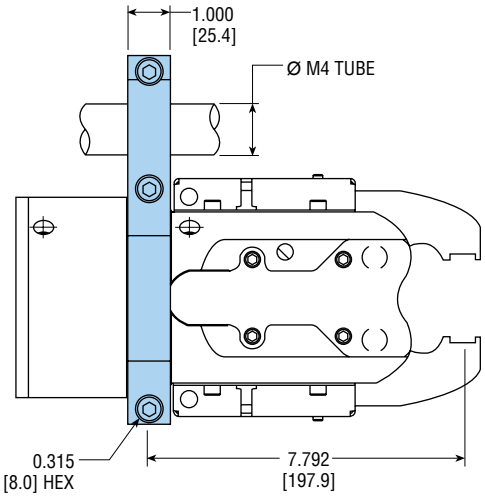
PNC44 V
PNC55 V

LETTER DIM	MODEL NUMBER			
	PNC44/55R		PNC44/55V	
	in	mm	in	mm
M3*	1.005	25.5	1.255	31.9
M4	1.000	25.4	1.250	31.8

*TOLERANCE FOR M3 = ± 0.002 [0.051]

NOTES:
1) NUMBERS IN [ ] ARE IN mm.
2) BRACKET MAY ROTATE 360° ABOUT M4 TUBE.



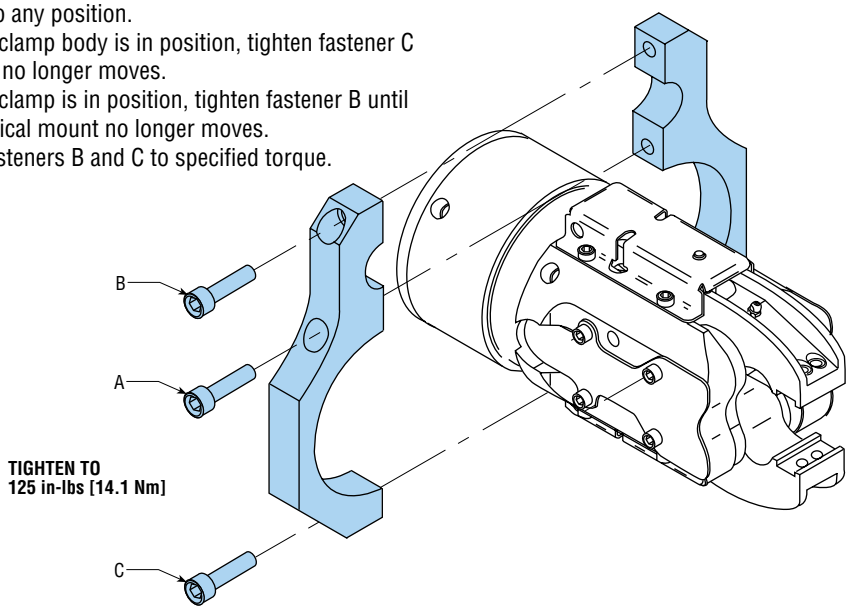


NON-SPHERICAL MOUNTING KIT

Installation Procedure:
1) Insert body between non-spherical bracket halves.
2) Insert fasteners
   A) Tighten fastener A to specified torque. This will allow for free adjustment of the clamp body and non-spherical mount into any position.
   B) When the clamp body is in position, tighten fastener C until body no longer moves.
   C) When the clamp is in position, tighten fastener B until non-spherical mount no longer moves.
   D) Tighten fasteners B and C to specified torque.

TO ORDER KIT SEPARATELY:

DESCRIPTION	KIT NUMBER	
	PNC44/55R	PNC44/55V
NON-SPHERICAL MOUNTING KIT	63099-01	63099-04



B01 TANDEM CYLINDER (PNC55 only)

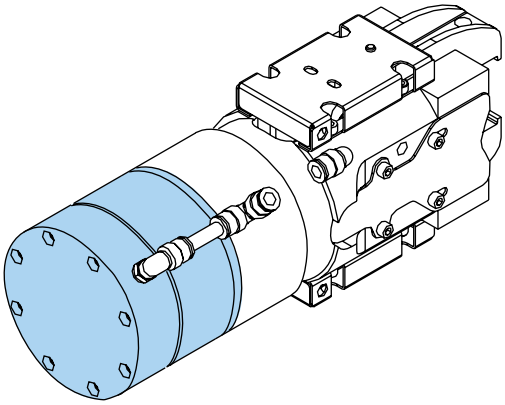
This option provides up to a 70% increase in clamp force by adding a second cylinder (tandem) on a standard PNC55 clamp. The cylinder mounts directly to the back of a PNC55 clamp body. Overall length is increased by 3.59 in [91.2 mm]. Weight is increased by 5.4 lb [2.45 kg].

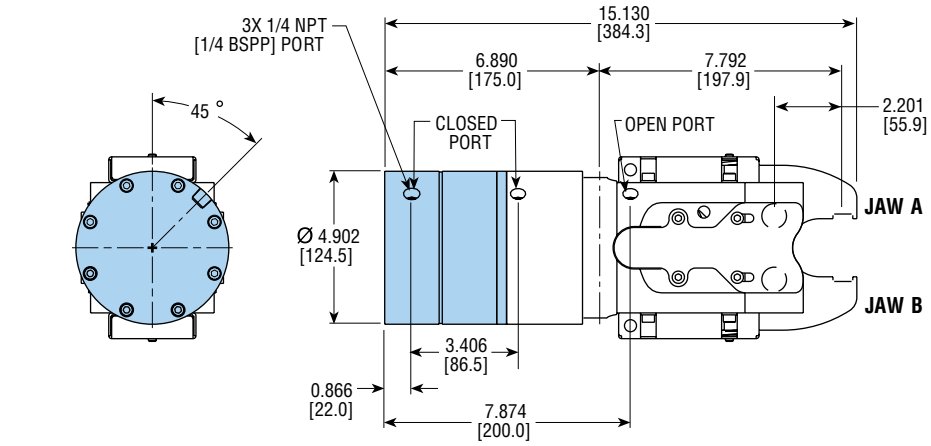
This option is compatible with P, R, V, and M mounts. Length adder affects P mounting option. See page 82 for P mounting option dimensions. This option will accommodate standard characters, retainers, and anvils.

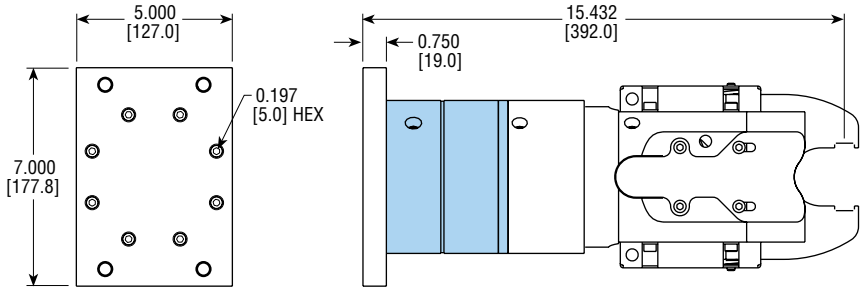
The -LAA option provides the plumbing shown on the following page. If the -LAA option is not ordered, the customer should plumb the clamp in a similar fashion as depicted on the following page.

Fittings are ordered separately.

NOTE: 90 psi [6.2 bar] max. working pressure







P MOUNTING OPTION

NOTE:
1) NUMBERS IN [ ] ARE IN mm.

SPECIFICATIONS

CLAMP SIZE	WEIGHT ADDER		LENGTH ADDER		TOTAL CLAMP FORCE AT 87 psi [6 bar]		DISPLACEMENT			
							OPEN		CLOSE	
	lb	kg	in	mm	lb	kN	in^3	cm^3	in^3	cm^3
55	5.4	2.45	3.59	91.2	25400	113	19.60	321	41.74	684

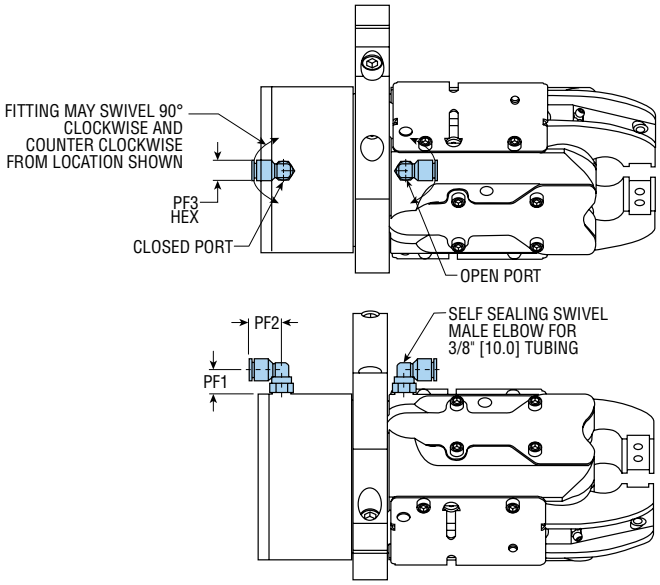
REPLACEMENT KIT NUMBERS IF ORDERED SEPARATELY

CLAMP SIZE & MODEL	CYLINDER ASSEMBLY NO.	
	Imperial	Metric
55x	72204-03	72204-04
55P	72204-05	72204-06

CLAMP SIZE & MODEL	MOUNTING KIT NO.
55P	72204-07

LAA OPTION (FITTINGS IN BOTH PORTS)

PNC44/55

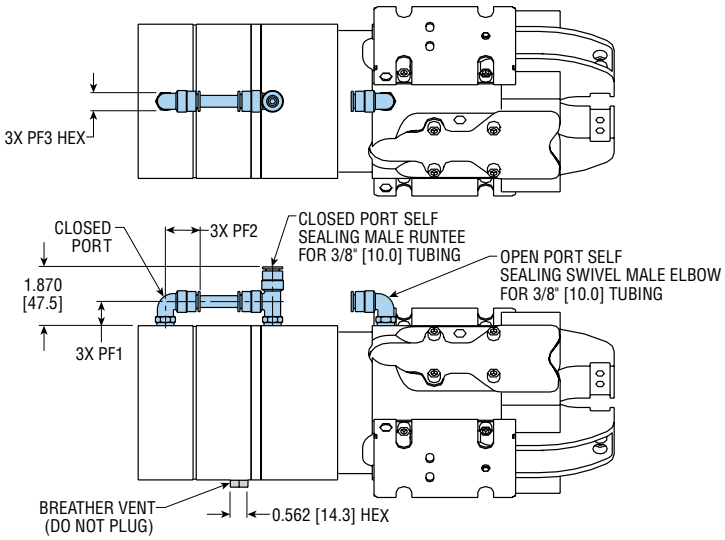


PNC55-B01

REPLACEMENT KIT NUMBERS IF ORDERED SEPARATELY

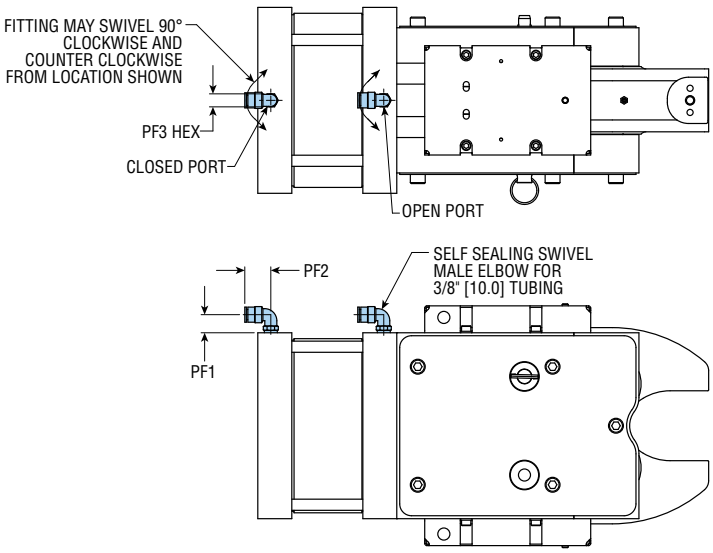
CLAMP SIZE	KIT NUMBER	
	Imperial	Metric
55	72204-11	72204-12

Kit includes: 2 swivel male elbows, 1 male runtee, 1 tube, and 1 breather vent



LETTER DIM	MODEL NUMBER PNCxx	
	in	mm
PF1	0.767	18.5
PF2	1.102	28.5
PF3	0.551	14.0

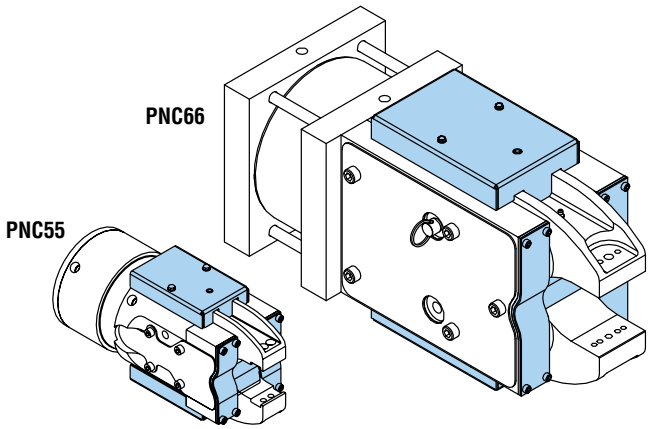
PNC66



NOTE:
1) NUMBERS IN [ ] ARE IN mm.

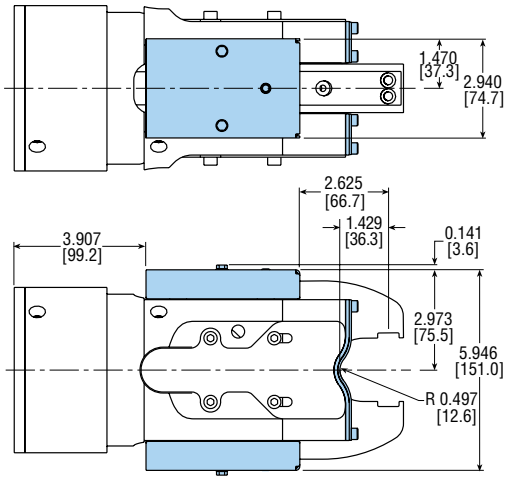
G01 WELDING SLAG SHIELDS (PNC55 and PNC66 only)

This option provides shields that protect the PNC55 and PNC66 mechanism from flying sparks and weld slag. Metal shields are assembled over the spring covers, blocking all spring cover openings. Additionally, a urethane shield is mounted on the bushing blocks covering the opening between the jaws.

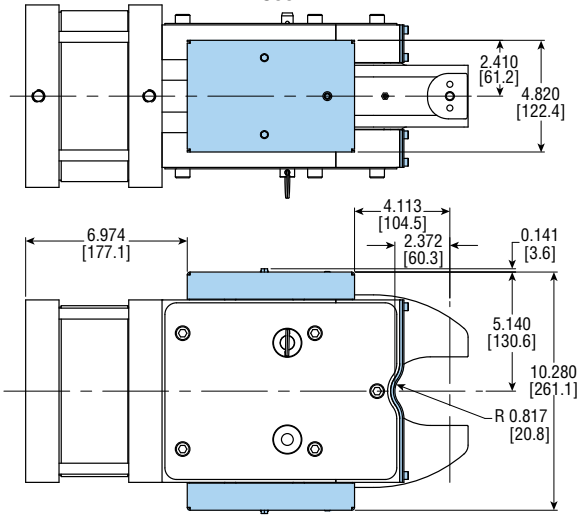


NOTE: NUMBERS IN [ ] ARE IN mm.

PNC55



PNC66



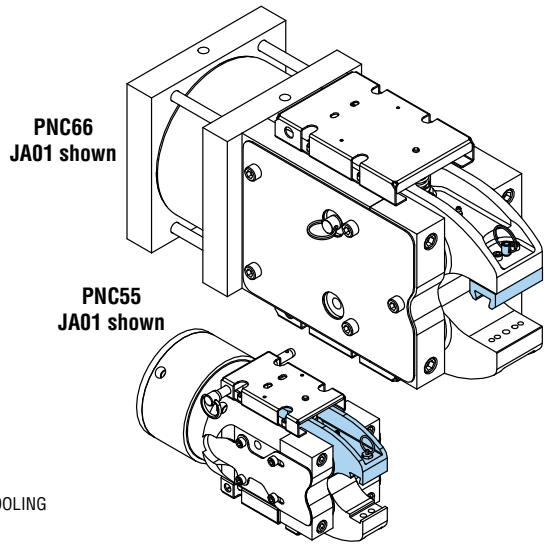
Jx01 QUICK CHANGE TOOLING JAW (A on Jaw A, B on Jaw B)

This option provides quick change character tooling. A dovetail slot in the jaw accepts matching dovetail backing plates. A hand retractable plunger holds the character tooling in place. No fasteners or wrenches are required to mount character tooling to the jaw, thus minimizing downtime for part number/date/shift code change out.

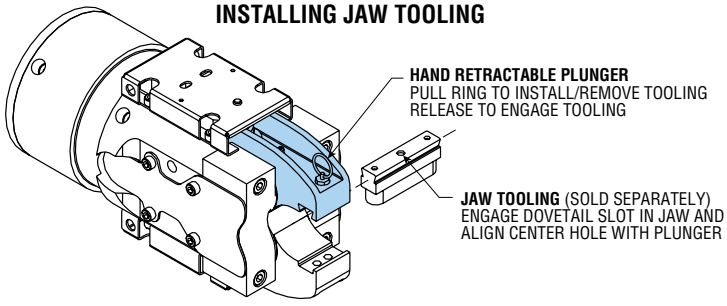
This option is not available for anvil tooling.

See page 92 for character part numbers.

Available on standard jaw configurations only.



INSTALLING JAW TOOLING



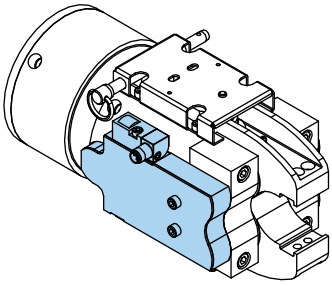
REPLACEMENT HAND RETRACTABLE PLUNGER KIT NUMBER IF ORDERED SEPARATELY

CLAMP SIZE	KIT NUMBER
44 or 55	78038-21
66	89028

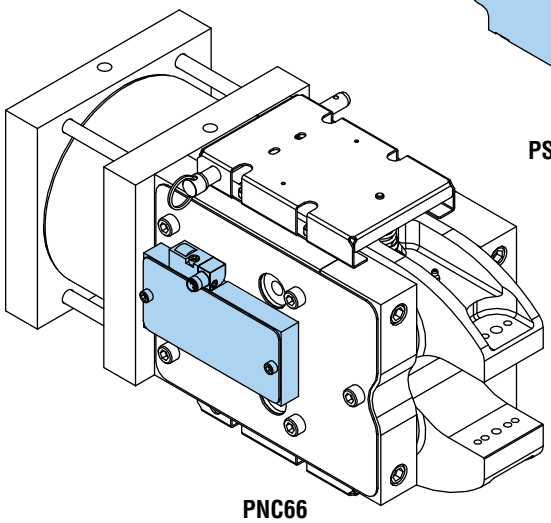
PS(R)xxx POSITIONAL SENSING DETECTION

This option provides jaw open and jaw closed sensing by affixing an aluminum housing to the side of the clamp body. The included switches sense the position of a target on the drive pin as the clamp opens and closes (open range = 14° to full open, close range = 3° to full close).

PS positions satellite switch S02 to sense open and S01 to sense close. PR positions satellite switch S01 to sense open and S02 to sense close. See tables on switch option page for satellite switch to quick disconnect pin number relationships.



PNC55
PS1D2 shown



PNC66
PS1D2 shown

POSITION SENSOR OPTION CODE

P x x x x

HOUSING OPTION
P - Positional Sensing

AMPLIFIER POSITION
2 - Position 2
4 - Position 4

SENSING OPTION
S - Standard
R - Reversed

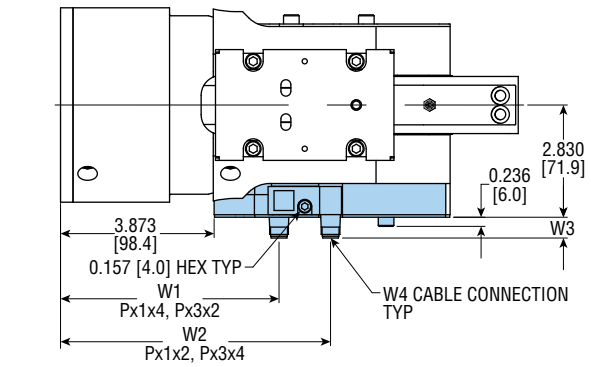
SWITCH OPTION
N - No Switch
A - 5-pin AC/DC Switch (Turck)
D - 4-pin PNP DC Switch (P + F)
E - 4-pin PNP DC Switch (Turck)
F - 4-pin PNP DC Switch (Efector)
H - 4-pin NPN DC Switch (P + F)
J - 4-pin NPN DC Switch (Turck)

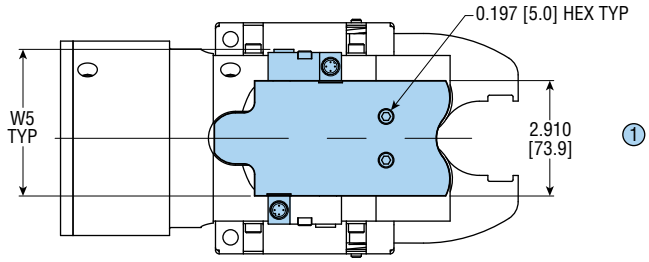
SWITCH HOUSING OPTION
1 - Position 1
3 - Position 3

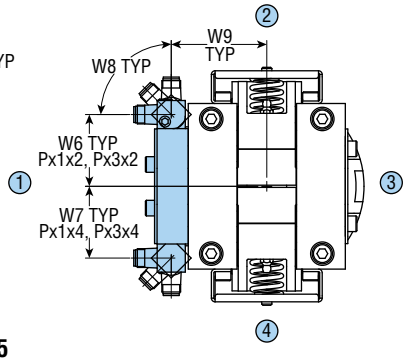
Refer to the following pages for switch option dimensions and specifications.

PS(R)xxx POSITIONAL SENSING DETECTION

(continued)

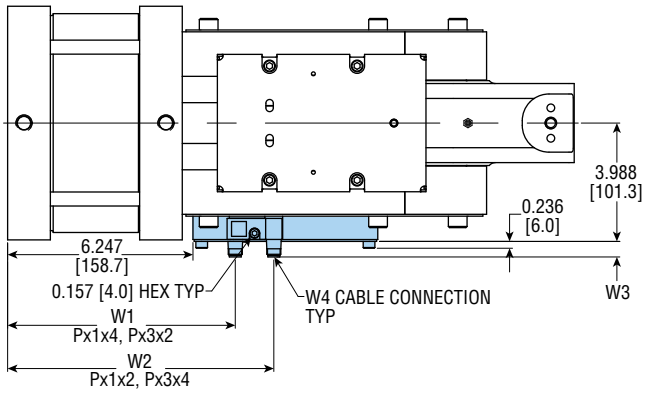


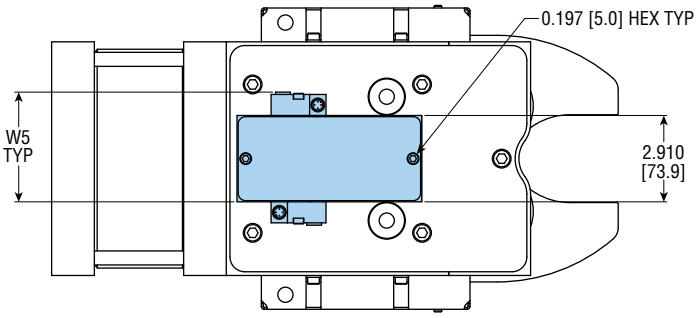


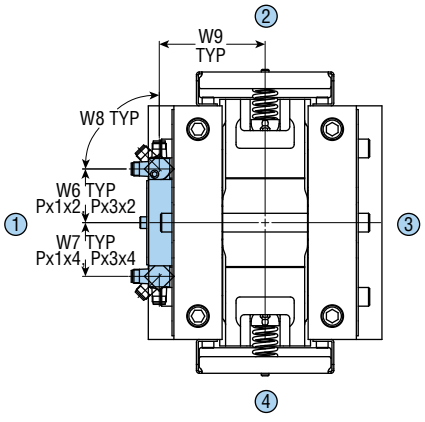


LETTER DIM	MODEL NUMBER PNC44/55			
	SWITCH OPTION A		SWITCH OPTION D, E, F, H, J	
	in	mm	in	mm
W1	5.548	140.9	5.509	139.9
W2	6.769	171.9	6.808	172.9
W3	0.434	11.0	0.524	13.3
W4	1/2-20 UNF		M12 x 1	
W5	3.826	97.2	3.697	93.9
W6	2.086	53.0	1.809	46.0
W7	2.086	53.0	1.809	46.0
W8	—	—	90°	
W9	—	—	2.409	61.2

PNC44/55





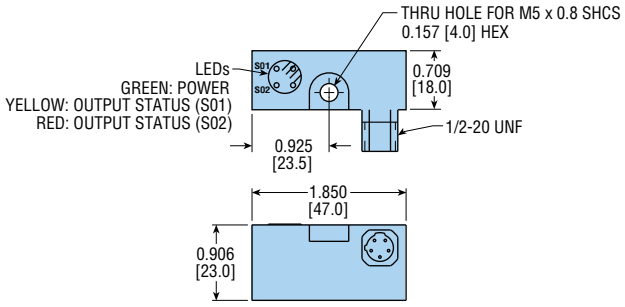


LETTER DIM	MODEL NUMBER PNC66			
	SWITCH OPTION A		SWITCH OPTION D, E, F, H, J	
	in	mm	in	mm
W1	7.711	195.9	7.672	194.9
W2	8.932	226.9	8.971	227.9
W3	0.434	11.0	0.524	13.3
W4	1/2-20 UNF		M12 x 1	
W5	3.826	97.2	3.697	93.9
W6	2.086	53.0	1.809	46.0
W7	2.086	53.0	1.809	46.0
W8	—	—	90°	
W9	—	—	3.568	90.6

PNC66

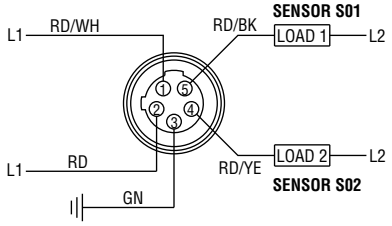
SWITCH MOUNTING OPTIONS: SERIES PNC CLAMPS

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

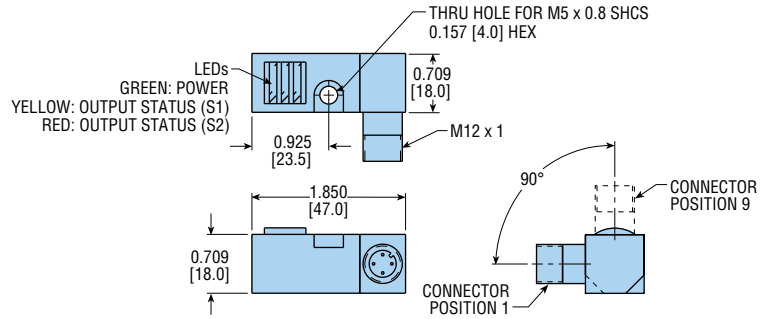


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PSxA1	S02	S01	S01 = Pin 5
PRxA1	S01	S02	S02 = Pin 4

4-WIRE AC/DC

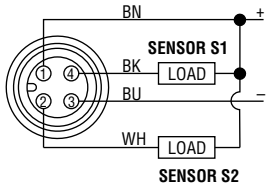


SWITCH OPTION D 71483-001-PNC P + F Part #: NBN2-F581-160S6-E8-V1 (PNP)
SWITCH OPTION H 71483-005-PNC P + F Part #: NBN2-F581-160S6-E10-V1 (NPN)

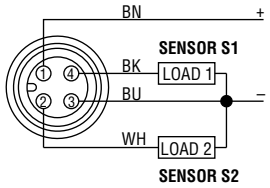


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PSxDx or PSxHx	S2	S1	S1 = Pin 4
PRxDx or PRxHx	S1	S2	S2 = Pin 2

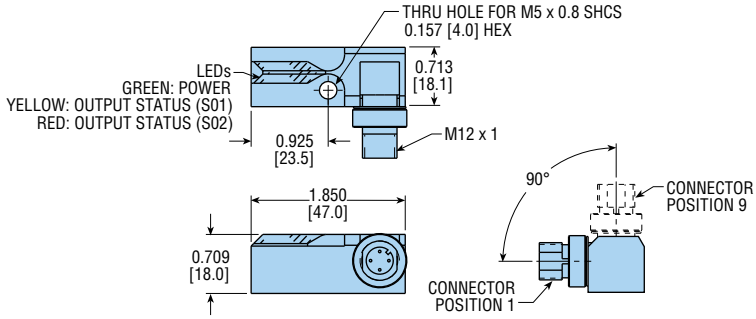
4-WIRE DC (V1 TYPE)
NPN DUAL NORMALLY OPEN



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

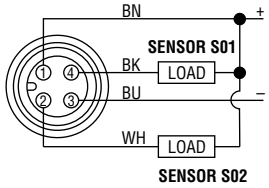


SWITCH OPTION E 71483-003-PNC Turck Part #: Ni 2-Q6.5-0.16-BDS-2AP6X3-H1141/S34 (PNP)
SWITCH OPTION J 71483-006-PNC Turck Part #: Ni 2-Q6.5-AN6-0.16-FS 4.4X3/S304 (NPN)

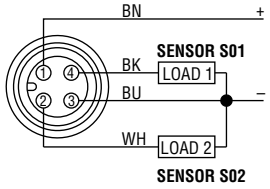


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PSxEx or PSxJx	S02	S01	S01 = Pin 4
PRxEx or PRxJx	S01	S02	S02 = Pin 2

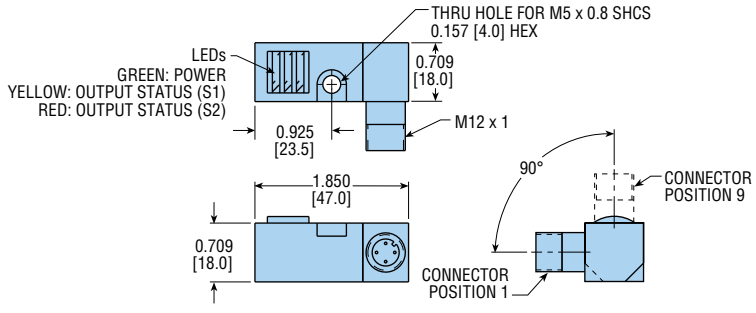
4-WIRE DC
NPN DUAL NORMALLY OPEN



4-WIRE DC
PNP DUAL NORMALLY OPEN

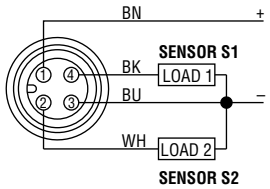


SWITCH OPTION F 71483-004-PNC Efector Part #: IN 5375 (PNP)



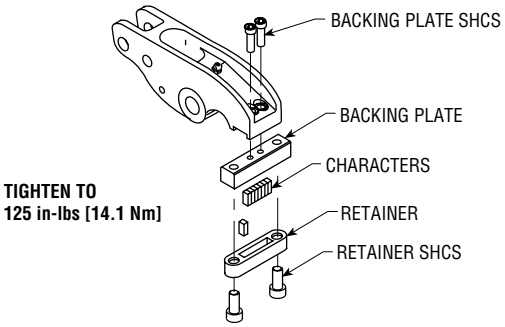
OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PSxFx	S2	S1	S1 = Pin 4
PRxFx	S1	S2	S2 = Pin 2

4-WIRE DC
PNP DUAL NORMALLY OPEN

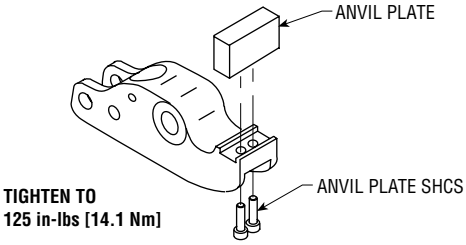


NUMBERS IN [ ] ARE IN mm.

CHARACTER MOUNTING - JAW A



ANVIL MOUNTING - JAW B



TO ORDER SPECIFY:

Based on your character **HEIGHT** and **MATERIAL THICKNESS** to be stamped, order the correct anvil, backer, and retainer kit required.
If you need all the components, order the anvil-backer-retainer kit. (Ex: **63140-01** for 1/8" tall char.) (Ex: **65340-01** for 3/16" tall char.)
If you have a retainer, order the anvil and backer kit. (Ex: **63130-01** for 1/8" tall char.) (Ex: **65330-01** for 3/16" tall char.)
Characters are ordered individually. (Ex: **63100-N6** for 1/8" tall char. number 6) (Ex: **65300-N6** for 3/16" tall char. number 6)

Retainers must be filled completely with characters to work properly.
Depending on the number to be stamped, order the characters and enough blanks or hyphens to fill the retainer.

Ex: With 1/8" tall character (63100 series) stamp the number 1999.
Matching retainer 63110-09 holds 9 characters.
Order: 1 of 63100-N1, 3 of 63100-N9, and 5 of 63100-BL.

Ex: With 3/16" tall character (65300 series) stamp the number 1999.
Matching retainer 65310-08 holds 8 characters.
Order: 1 of 65300-N1, 3 of 65300-N9, and 4 of 65300-BL.

CHART LEGEND
- Will not function in this range
- Ideal stamping range (high clamp force region)

PNC44x-x-S16-S16 TIP COMBINATION

DESCRIPTION	COLOR	PANEL THICKNESS in [mm]																				
		0.000 [0]	0.010 [0.25]	0.020 [0.50]	0.030 [0.75]	0.039 [1.00]	0.049 [1.25]	0.059 [1.50]	0.069 [1.75]	0.079 [2.00]	0.089 [2.25]	0.098 [2.50]	0.108 [2.75]	0.118 [3.00]	0.128 [3.25]	0.138 [3.50]	0.148 [3.75]	0.157 [4.00]	0.167 [4.25]	0.177 [4.50]	0.187 [4.75]	0.197 [5.00]
GREEN ANVIL	GREEN		■	■	■	■	■															
BLACK ANVIL	BLACK						■	■	■	■	■	■										
SILVER ANVIL	SILVER											■	■	■	■	■	■					
GOLD ANVIL	GOLD																■	■	■	■	■	

PNC55x-x-S16-S16 TIP COMBINATION

DESCRIPTION	COLOR	PANEL THICKNESS in [mm]																				
		0.000 [0]	0.010 [0.25]	0.020 [0.50]	0.030 [0.75]	0.039 [1.00]	0.049 [1.25]	0.059 [1.50]	0.069 [1.75]	0.079 [2.00]	0.089 [2.25]	0.098 [2.50]	0.108 [2.75]	0.118 [3.00]	0.128 [3.25]	0.138 [3.50]	0.148 [3.75]	0.157 [4.00]	0.167 [4.25]	0.177 [4.50]	0.187 [4.75]	0.197 [5.00]
GREEN ANVIL	GREEN																					
BLACK ANVIL	BLACK		■	■	■	■	■	■														
SILVER ANVIL	SILVER							■	■	■	■	■	■	■								
GOLD ANVIL	GOLD													■	■	■	■	■	■			

PNC55x-x-S16-S16-B01 TIP COMBINATION

DESCRIPTION	COLOR	PANEL THICKNESS in [mm]																				
		0.000 [0]	0.010 [0.25]	0.020 [0.50]	0.030 [0.75]	0.039 [1.00]	0.049 [1.25]	0.059 [1.50]	0.069 [1.75]	0.079 [2.00]	0.089 [2.25]	0.098 [2.50]	0.108 [2.75]	0.118 [3.00]	0.128 [3.25]	0.138 [3.50]	0.148 [3.75]	0.157 [4.00]	0.167 [4.25]	0.177 [4.50]	0.187 [4.75]	0.197 [5.00]
GREEN ANVIL	GREEN		■	■	■	■																
BLACK ANVIL	BLACK					■	■	■	■	■	■											
SILVER ANVIL	SILVER										■	■	■	■	■	■						
GOLD ANVIL	GOLD															■	■	■	■	■	■	

PNC66x-x-S16-S16 TIP COMBINATION

DESCRIPTION	COLOR	PANEL THICKNESS in [mm]																				
		0.000 [0]	0.010 [0.25]	0.020 [0.50]	0.030 [0.75]	0.039 [1.00]	0.049 [1.25]	0.059 [1.50]	0.069 [1.75]	0.079 [2.00]	0.089 [2.25]	0.098 [2.50]	0.108 [2.75]	0.118 [3.00]	0.128 [3.25]	0.138 [3.50]	0.148 [3.75]	0.157 [4.00]	0.167 [4.25]	0.177 [4.50]	0.187 [4.75]	0.197 [5.00]
GREEN ANVIL	GREEN		■	■	■	■																
BLACK ANVIL	BLACK					■	■	■	■	■												
SILVER ANVIL	SILVER									■	■	■	■	■								
GOLD ANVIL	GOLD													■	■	■	■	■				

KITS FOR 1/8" TALL CHARACTERS

PNC SIZE	PANEL THICKNESS	ANVIL COLOR	KIT NUMBER ANVIL	KIT NUMBER RETAINER	STANDARD TOOLING MOUNTING			QUICK CHANGE (Jx01) TOOLING MOUNTING		
					KIT NUMBER BACKER	KIT NUMBER ANVIL & BACKER	KIT NUMBER ANVIL, BACKER & RETAINER	KIT NUMBER BACKER	KIT NUMBER ANVIL & BACKER	KIT NUMBER ANVIL, BACKER & RETAINER
PNC44	0.25 - 1.25 mm	GREEN	65500-00	63110-09	63120-09	63130-00	63140-00	78038-03	78038-04	78038-08
	1.25 - 2.50 mm	BLACK	65500-01			63130-01	63140-01		78038-05	78038-09
	2.50 - 3.75 mm	SILVER	65500-02			63130-02	63140-02		78038-06	78038-10
	3.75 - 4.75 mm	GOLD	65500-03			63130-03	63140-03		78038-07	78038-11
PNC55	0.25 - 1.50 mm	BLACK	65500-01			63130-01	63140-01		78038-05	78038-09
	1.50 - 3.00 mm	SILVER	65500-02			63130-02	63140-02		78038-06	78038-10
	3.00 - 4.25 mm	GOLD	65500-03			63130-03	63140-03		78038-07	78038-11
PNC55-B01	0.25 - 1.00 mm	GREEN	65500-00			63130-00	63140-00		78038-04	78038-08
	1.00 - 2.25 mm	BLACK	65500-01			63130-01	63140-01		78038-05	78038-09
	2.25 - 3.50 mm	SILVER	65500-02			63130-02	63140-02		78038-06	78038-10
	3.50 - 4.75 mm	GOLD	65500-03			63130-03	63140-03		78038-07	78038-11
PNC66	0.25 - 1.00 mm	GREEN	89021-01		88717	88719-01	88721-01	88718	88720-01	88722-01
	1.00 - 2.00 mm	BLACK	89021-02			88719-02	88721-02		88720-02	88722-02
	2.00 - 3.00 mm	SILVER	89021-03			88719-03	88721-03		88720-03	88722-03
	3.00 - 4.00 mm	GOLD	89021-04			88719-04	88721-04		88720-04	88722-04

ALL KITS INCLUDE FASTENERS REQUIRED FOR INSTALLATION

1/8" TALL CHARACTERS

PART DESCRIPTION	PART NUMBER	PART DESCRIPTION	PART NUMBER	PART DESCRIPTION	PART NUMBER	PART DESCRIPTION	PART NUMBER
NUMBER 0	63100-N0	LETTER A	63100-LA	LETTER K	63100-LK	LETTER U	63100-LU
NUMBER 1	63100-N1	LETTER B	63100-LB	LETTER L	63100-LL	LETTER V	63100-LV
NUMBER 2	63100-N2	LETTER C	63100-LC	LETTER M	63100-LM	LETTER W	63100-LW
NUMBER 3	63100-N3	LETTER D	63100-LD	LETTER N	63100-LN	LETTER X	63100-LX
NUMBER 4	63100-N4	LETTER E	63100-LE	LETTER O	63100-LO	LETTER Y	63100-LY
NUMBER 5	63100-N5	LETTER F	63100-LF	LETTER P	63100-LP	LETTER Z	63100-LZ
NUMBER 6	63100-N6	LETTER G	63100-LG	LETTER Q	63100-LQ		
NUMBER 7	63100-N7	LETTER H	63100-LH	LETTER R	63100-LR	BLANK	63100-BL
NUMBER 8	63100-N8	LETTER I	63100-LI	LETTER S	63100-LS		
NUMBER 9	63100-N9	LETTER J	63100-LJ	LETTER T	63100-LT	HYPHEN	63100-HY

9 CHARACTERS ARE REQUIRED WHEN USING PHD RETAINER NUMBER 63110-09

KITS FOR 3/16" TALL CHARACTERS

PNC SIZE	PANEL THICKNESS	ANVIL COLOR	KIT NUMBER ANVIL	KIT NUMBER RETAINER	STANDARD TOOLING MOUNTING			QUICK CHANGE (Jx01) TOOLING MOUNTING		
					KIT NUMBER BACKER	KIT NUMBER ANVIL & BACKER	KIT NUMBER ANVIL, BACKER & RETAINER	KIT NUMBER BACKER	KIT NUMBER ANVIL & BACKER	KIT NUMBER ANVIL, BACKER & RETAINER
PNC44	0.25 - 1.25 mm	GREEN	65500-00	65310-08	65320-08	65330-00	65340-00	78038-12	78038-13	78038-17
	1.25 - 2.50 mm	BLACK	65500-01			65330-01	65340-01		78038-14	78038-18
	2.50 - 3.75 mm	SILVER	65500-02			65330-02	65340-02		78038-15	78038-19
	3.75 - 4.75 mm	GOLD	65500-03			65330-03	65340-03		78038-16	78038-20
PNC55	0.25 - 1.50 mm	BLACK	65500-01			65330-01	65340-01		78038-14	78038-18
	1.50 - 3.00 mm	SILVER	65500-02			65330-02	65340-02		78038-15	78038-19
	3.00 - 4.25 mm	GOLD	65500-03			65330-03	65340-03		78038-16	78038-20
PNC55-B01	0.25 - 1.00 mm	GREEN	65500-00			65330-00	65340-00		78038-13	78038-17
	1.00 - 2.25 mm	BLACK	65500-01			65330-01	65340-01		78038-14	78038-18
	2.25 - 3.50 mm	SILVER	65500-02			65330-02	65340-02		78038-15	78038-19
	3.50 - 4.75 mm	GOLD	65500-03			65330-03	65340-03		78038-16	78038-20
PNC66	0.25 - 1.00 mm	GREEN	89021-01		88723	88725-01	88727-01	88724	88726-01	88728-01
	1.00 - 2.00 mm	BLACK	89021-02			88725-02	88727-02		88726-02	88728-02
	2.00 - 3.00 mm	SILVER	89021-03			88725-03	88727-03		88726-03	88728-03
	3.00 - 4.00 mm	GOLD	89021-04			88725-04	88727-04		88726-04	88728-04

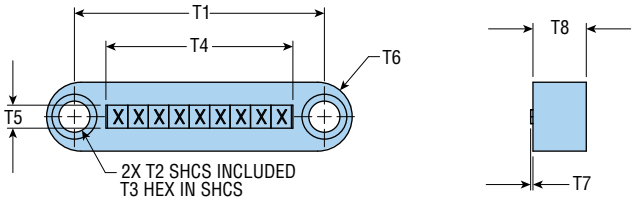
ALL KITS INCLUDE FASTENERS REQUIRED FOR INSTALLATION

3/16" TALL CHARACTERS

PART DESCRIPTION	PART NUMBER	PART DESCRIPTION	PART NUMBER	PART DESCRIPTION	PART NUMBER	PART DESCRIPTION	PART NUMBER
NUMBER 0	65300-N0	LETTER A	65300-LA	LETTER K	65300-LK	LETTER U	65300-LU
NUMBER 1	65300-N1	LETTER B	65300-LB	LETTER L	65300-LL	LETTER V	65300-LV
NUMBER 2	65300-N2	LETTER C	65300-LC	LETTER M	65300-LM	LETTER W	65300-LW
NUMBER 3	65300-N3	LETTER D	65300-LD	LETTER N	65300-LN	LETTER X	65300-LX
NUMBER 4	65300-N4	LETTER E	65300-LE	LETTER O	65300-LO	LETTER Y	65300-LY
NUMBER 5	65300-N5	LETTER F	65300-LF	LETTER P	65300-LP	LETTER Z	65300-LZ
NUMBER 6	65300-N6	LETTER G	65300-LG	LETTER Q	65300-LQ		
NUMBER 7	65300-N7	LETTER H	65300-LH	LETTER R	65300-LR	BLANK	65300-BL
NUMBER 8	65300-N8	LETTER I	65300-LI	LETTER S	65300-LS		
NUMBER 9	65300-N9	LETTER J	65300-LJ	LETTER T	65300-LT	HYPHEN	65300-HY

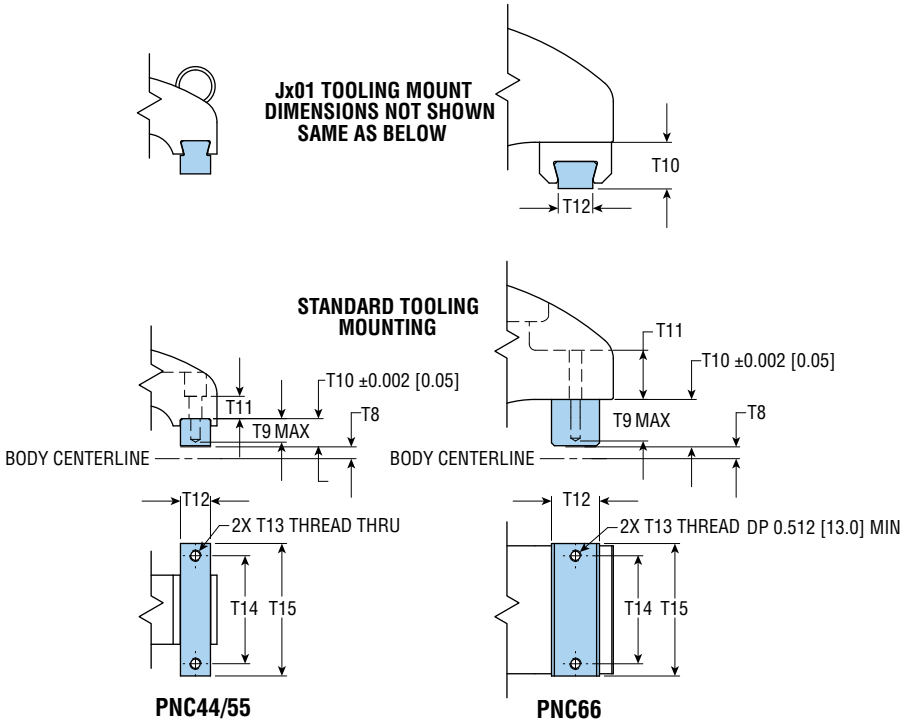
8 CHARACTERS ARE REQUIRED WHEN USING PHD RETAINER NUMBER 65310-08

JAW A - RETAINER



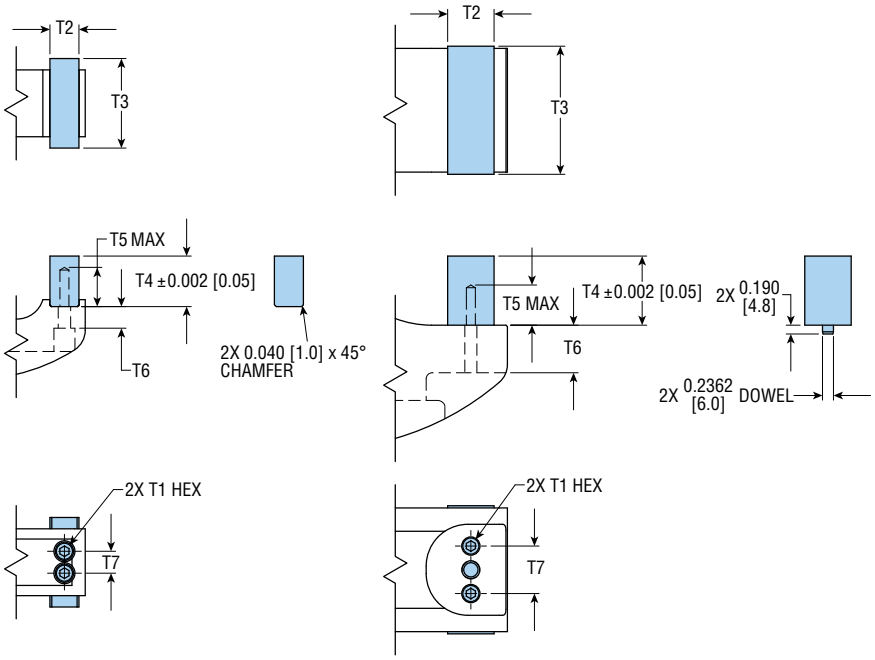
RETAINER KIT NO.	LETTER DIMENSION															
	T1		T2		T3		T4		T5		T6		T7		T8	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
63110-09	2.250	57.2	M6 x 1.0		0.197	5.0	1.683	42.7	0.220	5.6	0.310	7.9	0.021	0.5	0.480	12.2
65310-08	2.000	50.8	M8 x 1.25		0.236	6.0	1.310	33.3	0.250	6.4	0.310	7.9	0.032	0.8	0.469	11.9

JAW A - BACKER



CLAMP SIZE	BACKER MOUNT	BACKER KIT NO.	LETTER DIMENSION														
			T8		T9		T10		T11		T12		T13	T14		T15	
			in	mm	in	mm	in	mm	in	mm	in	mm	mm	in	mm	in	mm
PNC44/55	STANDARD	63120-09	0.517	13.1	0.490	12.4	0.564	14.3	0.465	11.8	0.625	15.9	M6 x 1.0	2.250	57.2	2.760	70.1
	STANDARD	65320-08	0.517	13.1	0.490	12.4	0.564	14.3	0.465	11.8	0.625	15.9	M8 x 1.25	2.000	50.8	2.630	66.8
	Jx01	78038-03	0.517	13.1	—	—	—	—	—	—	0.625	15.9	M6 x 1.0	2.250	57.2	2.760	70.1
	Jx01	78038-12	0.517	13.1	—	—	—	—	—	—	0.625	15.9	M8 x 1.25	2.000	50.8	2.630	66.8
PNC66	STANDARD	88717	0.516	13.1	0.807	20.5	0.964	24.49	1.025	26.0	1.000	25.4	M6 x 1.0	2.250	57.2	2.760	70.1
	STANDARD	88723	0.516	13.1	0.807	20.5	0.964	24.49	1.025	26.0	1.000	25.4	M8 x 1.25	2.000	50.8	2.760	70.1
	Jx01	88718	0.516	13.1	—	—	0.964	24.5	—	—	0.720	18.3	M6 x 1.0	2.250	57.2	2.760	70.1
	Jx01	88724	0.516	13.1	—	—	0.964	24.5	—	—	0.720	18.3	M8 x 1.25	2.000	50.8	2.760	70.1

JAW A - ANVIL



PNC44/55 **PNC66**

CLAMP SIZE	ANVIL COLOR	ANVIL KIT NO.	LETTER DIMENSION													
			T1		T2		T3		T4		T5		T6		T7	
			in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
PNC44/55	GREEN	65500-00	0.197	5.0	0.625	15.9	1.929	49.0	1.138	28.91	0.850	21.6	0.465	11.8	0.472	12.0
	BLACK	65500-01							1.089	27.66						
	SILVER	65500-02							1.040	26.42						
	GOLD	65500-03							0.990	25.15						
PNC66	GREEN	89021-01	0.197	5.0	1.000	25.4	2.760	70.1	1.552	39.42	0.807	20.5	1.025	26.0	1.024	26.0
	BLACK	89021-02							1.513	38.43						
	SILVER	89021-03							1.473	37.41						
	GOLD	89021-04							1.434	36.42						

All dimensions are reference only unless specifically toleranced.

REPLACEMENT KIT NUMBERS IF ORDERED SEPARATELY

CLAMP SIZE	ACCESSORY	KIT NUMBER	DESCRIPTION
PNC44/55	PS(R)xN0	71251-04	Switch Housing Kit without Switch
	PS(R)xAx	71251-08	Switch Housing Kit with 5 pin AC/DC, (Turck) Switch
	PS(R)xDx	71251-03	Switch Housing Kit with 4 pin DC, PNP (P + F) Switch
	PS(R)xEx	71251-06	Switch Housing Kit with 4 pin DC, PNP (Turck) Switch
	PS(R)xFx	71251-10	Switch Housing Kit with 4 pin DC, PNP (Efector) Switch
	PS(R)xHx	71251-12	Switch Housing Kit with 4 pin DC, NPN (P + F) Switch
	PS(R)xJx	71251-13	Switch Housing Kit with 4 pin DC, NPN (Turck) Switch
PNC66	PS(R)xN0	89025-01	Switch Housing Kit without Switch
	PS(R)xAx	89025-02	Switch Housing Kit with 5 pin AC/DC, (Turck) Switch
	PS(R)xDx	89025-03	Switch Housing Kit with 4 pin DC, PNP (P + F) Switch
	PS(R)xEx	89025-04	Switch Housing Kit with 4 pin DC, PNP (Turck) Switch
	PS(R)xFx	89025-05	Switch Housing Kit with 4 pin DC, PNP (Efector) Switch
	PS(R)xHx	89025-06	Switch Housing Kit with 4 pin DC, NPN (P + F) Switch
	PS(R)xJx	89025-07	Switch Housing Kit with 4 pin DC, NPN (Turck) Switch

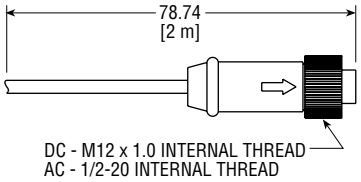
Kit includes: Housing and all pins and screws required for installation.

REPLACEMENT SWITCH KIT NUMBERS IF ORDERED SEPARATELY

SWITCH OPTION	SWITCH TYPE	PHD SWITCH KIT NUMBER	SWITCH PART NUMBER
A	5-PIN AC/DC - N.O.	71483-002-PNC	Ni 2-Q6.5-ADZ32-0.16-FSB 5.4X4/S304
D	4-PIN DC - N.O. - PNP	71483-001-PNC	NBN2-F581-160S6-E8-V1
E	4-PIN DC - N.O. - PNP	71483-003-PNC	Ni 2-Q6.5-0.16-BDS-2AP6X3-H1141/S34
F	4-PIN DC - N.O. - PNP	71483-004-PNC	IN 5375
H	4-PIN DC - N.O. - NPN	71483-005-PNC	NBN2-F581-160S6-E10-V1
J	4-PIN DC - N.O. - NPN	71483-006-PNC	Ni 2-Q6.5-AN6-0.16-FS 4.4X3/S304

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



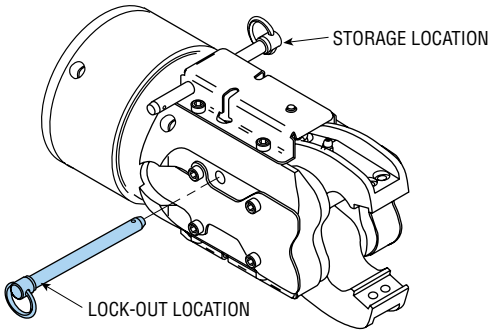
MATING CORDSET

SAFETY LOCK-OUT

The safety lock-out pin is a safety device that stops jaw motion during maintenance on the clamp.

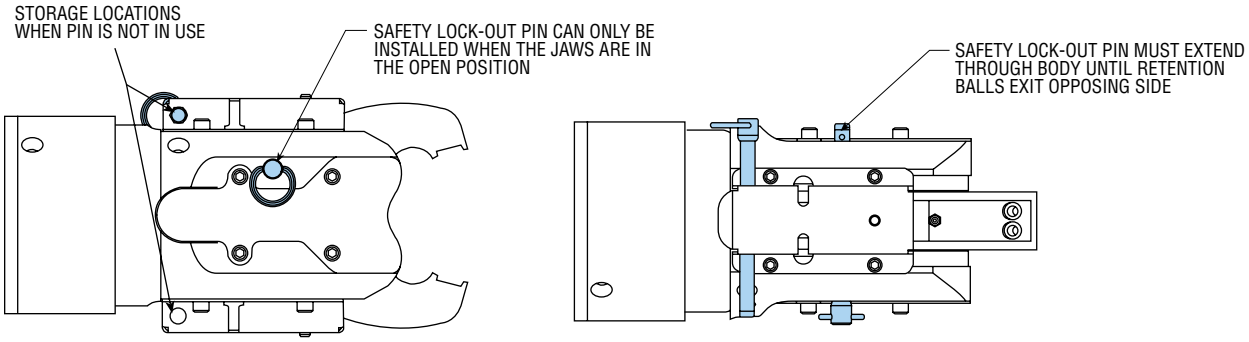
Remove the safety lock-out pin from the storage location. Re-install the safety lock-out pin in the lock-out location in the body before attempting to work on or near the stamping portion of this clamp.

No attempt should be made to service the clamp and/or remove the retainer, backing plate, or anvil before the safety lock-out pin is installed in the lock-out location.



DESCRIPTION	REPLACEMENT PART NO.	
	PNC44/55	PNC66
SAFETY LOCK-OUT PIN	63087	88699

NOTE: ONE SAFETY LOCK-OUT PIN SUPPLIED WITH UNIT



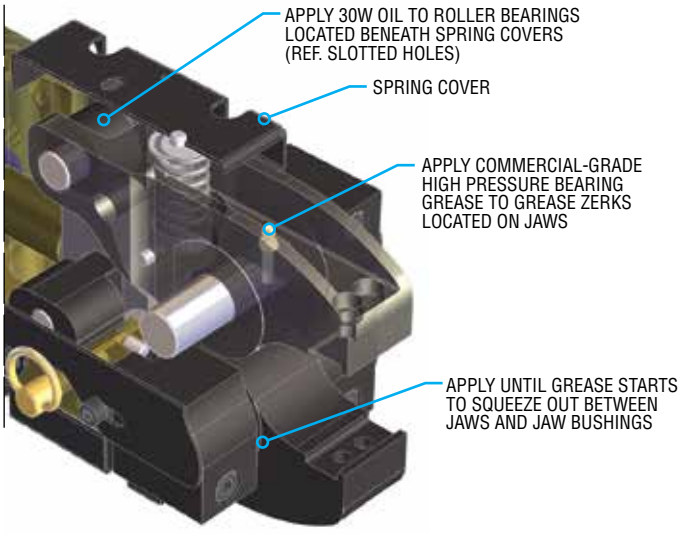
MAINTENANCE SCHEDULE

Lubrication guidelines for the Series PNC Clamp are based on continuous operation at the following cycle speeds:
PNC44 and PNC55 at 30 cycles/minute
PNC66 at 15 cycles/minute

Variations in cycle speeds from those listed herein may require more or less frequent maintenance schedules.

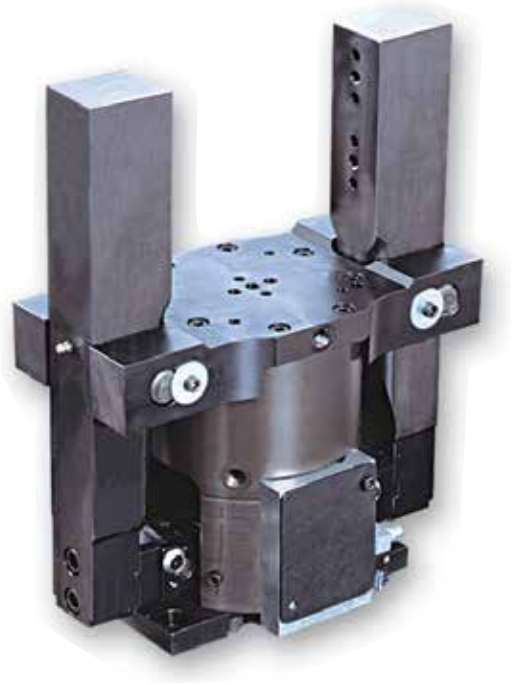
Apply commercial-grade high-pressure bearing grease to the grease zerks located on the jaws. Apply until the grease starts to squeeze out between the jaw and jaw bushing. Grease should be applied to the jaws every 200,000-300,000 cycles.

Apply 30W oil to the roller bearings located beneath the spring covers. Insert the nozzle of the oil can into each spring cover slot. Apply enough oil to saturate the bearings. This allows oil to wick into the mating surfaces of the bearings and jaws, and also onto the roller bearing pins. Oil should be applied to the roller bearings every 200,000-300,000 cycles.



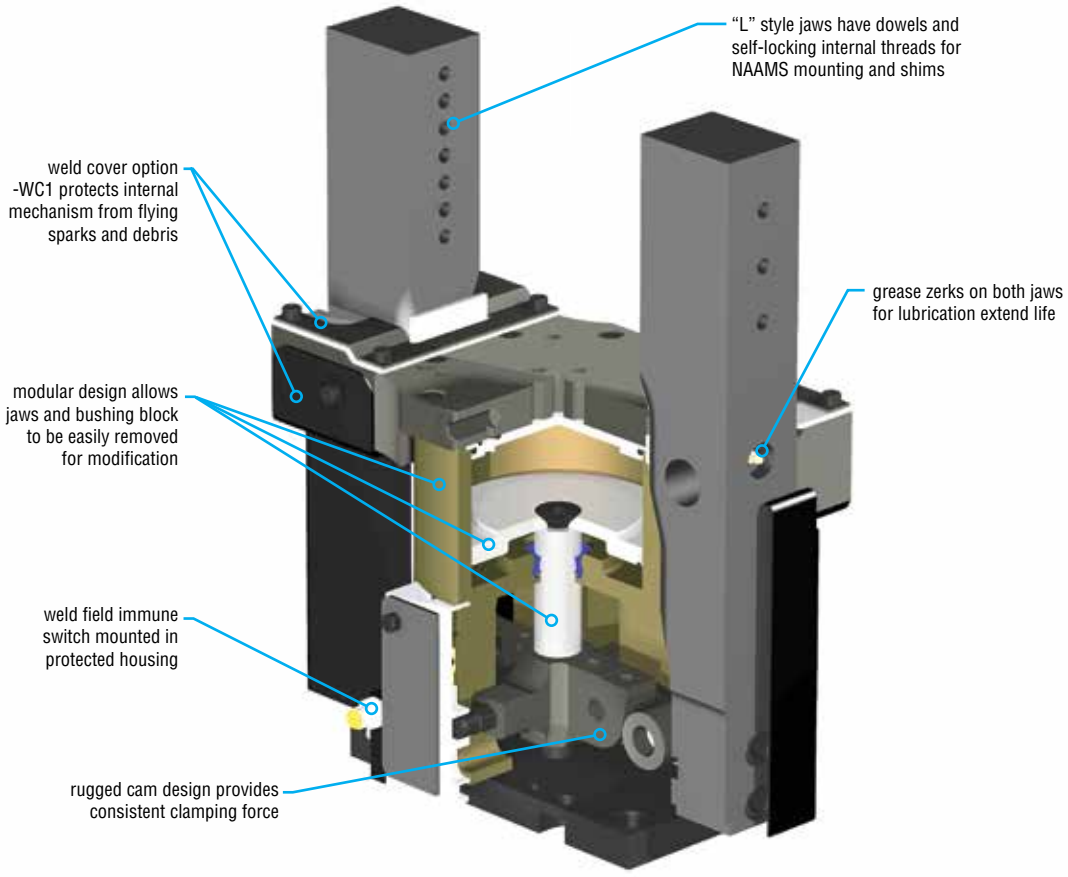
PFC

HEAVY DUTY FRAME CLAMP



Major Benefits

- Rugged cam design provides consistent clamping force throughout a wide power window.
- Constant high clamp force available throughout a wide power window. The PFC4TL is 11250 lb [50040 N] at 3.940 in [100 mm] above tooling surface. The PFC4TW is 7200 lb [32027 N] at 2.187 in [55.6 mm] above tooling surface.
- Wide jaw throat accommodates large parts with simple tooling.
- Tooling surface has dowels and threads to North American Automotive Metric Standards (NAAMS) NC blocks.

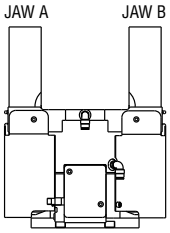


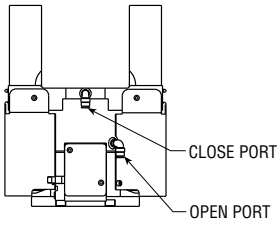
CAD Configurator Assistance

Use PHD's free online application at **www.phdinc.com/cad**

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

TO ORDER SPECIFY:
Size, Mounting, Jaw Style Option, Design No., Jaw Opening (A & B), Fitting Option, Sensing Option, Weld Cover Option if desired.





UNIT SIZE
4 - Medium Duty

JAW STYLE OPTION
L - Long Jaw Style
W - Wide Jaw Style

JAW OPENING - JAW A
16 - 16° Opening

PORT FITTINGS
BLANK - No Fitting
LAA - 90° Swivel Elbow, Metal

WELD COVER OPTION
WC1 - Weld Cover (Both Jaws)

PFC 4 T L - 1 - 16 - 16 - LAA - PS3D9 - WC1 - B001

MOUNTING
REAR | T - Rear Mounting Plate

DESIGN NO.
1 - Imperial
5 - Metric

JAW OPENING - JAW B
16 - 16° Opening

BUSHING BLOCK OPTION
B001 - Customer mounting pattern with M10 threads and 10 mm dowel pin holes

NOTES:
1) Metric units have metric ports and mounting.
2) -A switch only available as A1 (example PS3A1)

POSITION SENSOR OPTION CODE

P x x x x

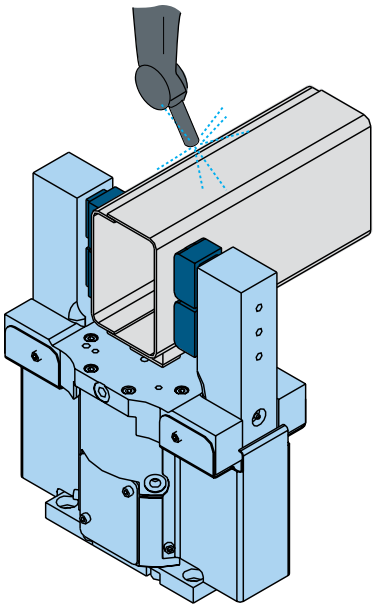
HOUSING OPTION
P - Positional Sensing

CONNECTOR POSITION
1 - Parallel to jaws
9 - Perpendicular to jaws

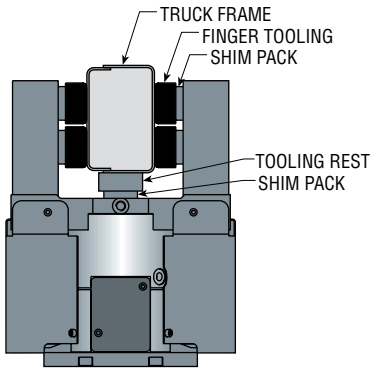
SENSING OPTION
S - Standard
R - Reversed

SWITCH OPTION
N - No Switch
A - 5-pin AC/DC Switch (Turck)
D - 4-pin PNP DC Switch (P + F)
E - 4-pin PNP DC Switch (Turck)
F - 4-pin PNP DC Switch (Efector)
H - 4-pin NPN DC Switch (P + F)
J - 4-pin NPN DC Switch (Turck)

SWITCH HOUSING OPTION
1 - Position 1 (Port Side)
3 - Position 3



PFC4TL-1-16-16 SHOWN



APPLICATION EXAMPLE

This application depicts clamping two channels of a truck frame and welding along the seams. Wide spacing between the jaws allows for clamping larger parts than the competition allows.

The Series PFC Frame Clamps provide a large power window and clamp force of 11250 lb [50040 N] at 3.94 in [100 mm] above tooling surface.

NAAMS standard mounting patterns on "L" style jaws and tooling surface provide fast setup with easy tooling and fixturing.

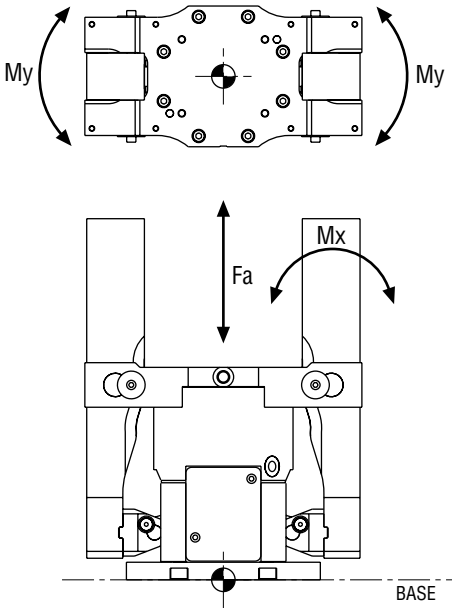
SPECIFICATIONS	SERIES PFC
WORKING PRESSURE	30 psi min. - 100 psi max. [2 bar min. - 7 bar max.]
BODY	Hardcoat Aluminum
JAWS	Steel
SEALS	Bidirectional Piston Seal, Lip Type Rod Seal
LUBRICATION	Permanent for Non-Lube Air
TEMPERATURE LIMITS	-20° to 180°F [-30° to 82°C]

OPTION	WEIGHT	
	lb	kg
LAA	0.2	0.09
PSxxx	0.9	0.4
WC1	3.0	1.4
B001	—	—

MODEL	UNIT WEIGHT		TOTAL CLAMP FORCE at 87 psi [6 bar]		CLOSE OR OPEN TIME 87 psi [6 bar]	DISPLACEMENT				CLAMP FORCE FACTOR (Cf)	
						CLOSE		OPEN			
	lb	kg	lb	N	second	in^3	cm^3	in^3	cm^3	Imperial	Metric
PFC4TL-1-16-16	74.6	33.8	11250	50040	0.11	44.72	724.3	43.1	706.3	606.1	992400
PFC4TW-1-16-16	72.4	33.0	7200	32027	0.12	44.72	724.3	43.1	706.3	181.0	296516

MOMENTS TEST

Take care to limit moment loads on the Series PFC. External loads and moments due to jaw clamp forces should be considered.

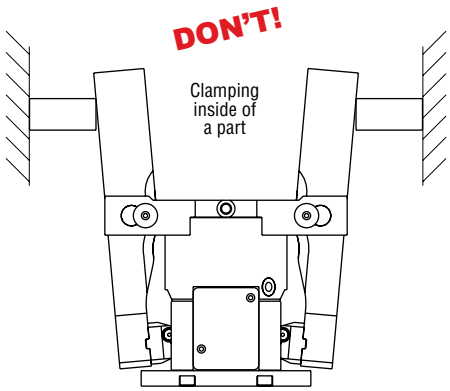


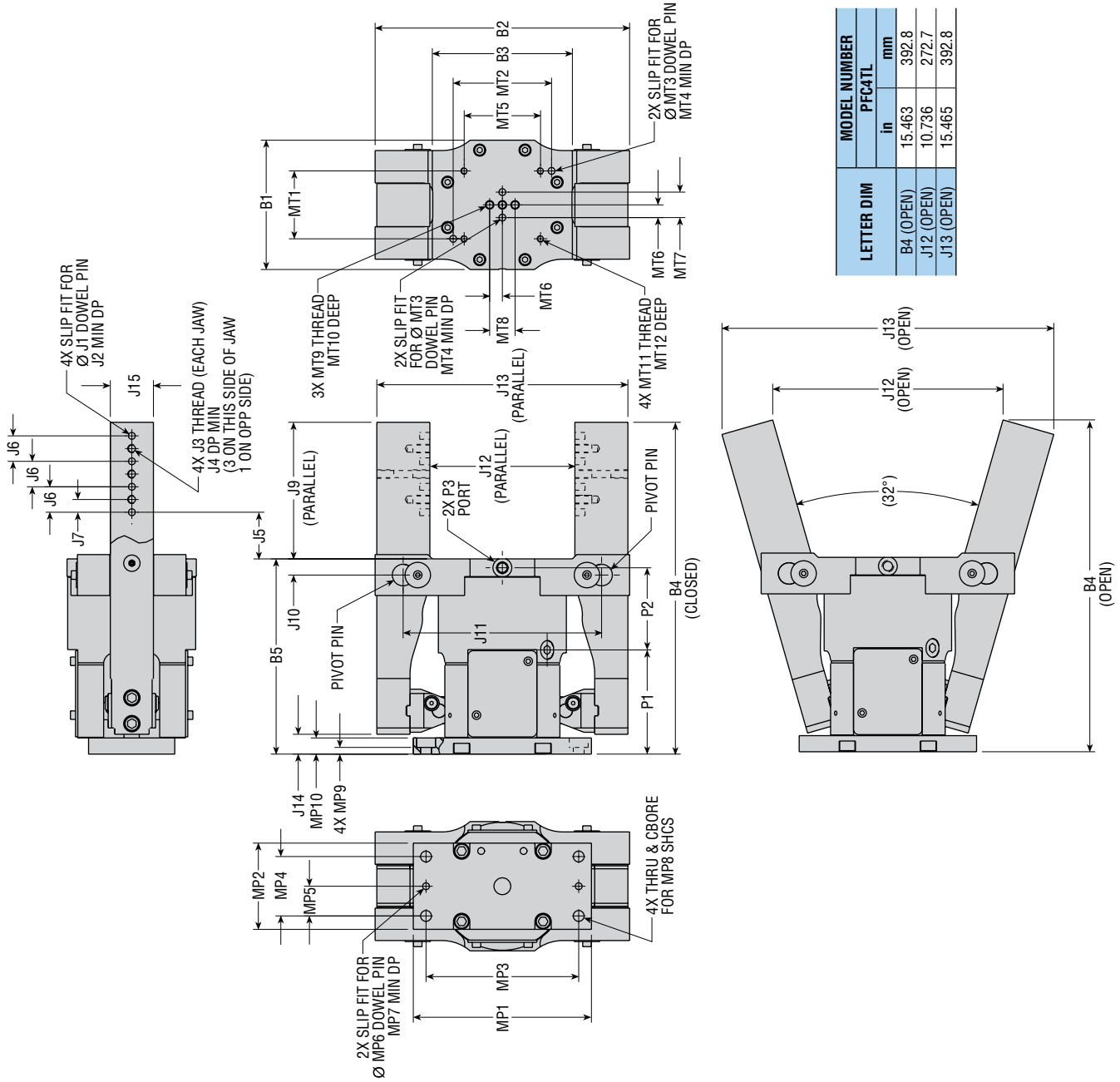
MODEL	Fa		Mx		My		Mz	
	lb	N	in-lb	Nm	in-lb	Nm	in-lb	Nm
PFC	1000	4448	20000	2261	10000	1130	10000	1130

Fa: Total for both jaws
Mx: Total for both jaws moments from base mounting surface
My: Total for both jaws moments from base mounting surface
Mz: Total for both jaws moments from base mounting surface

APPLICATION CONCERNS

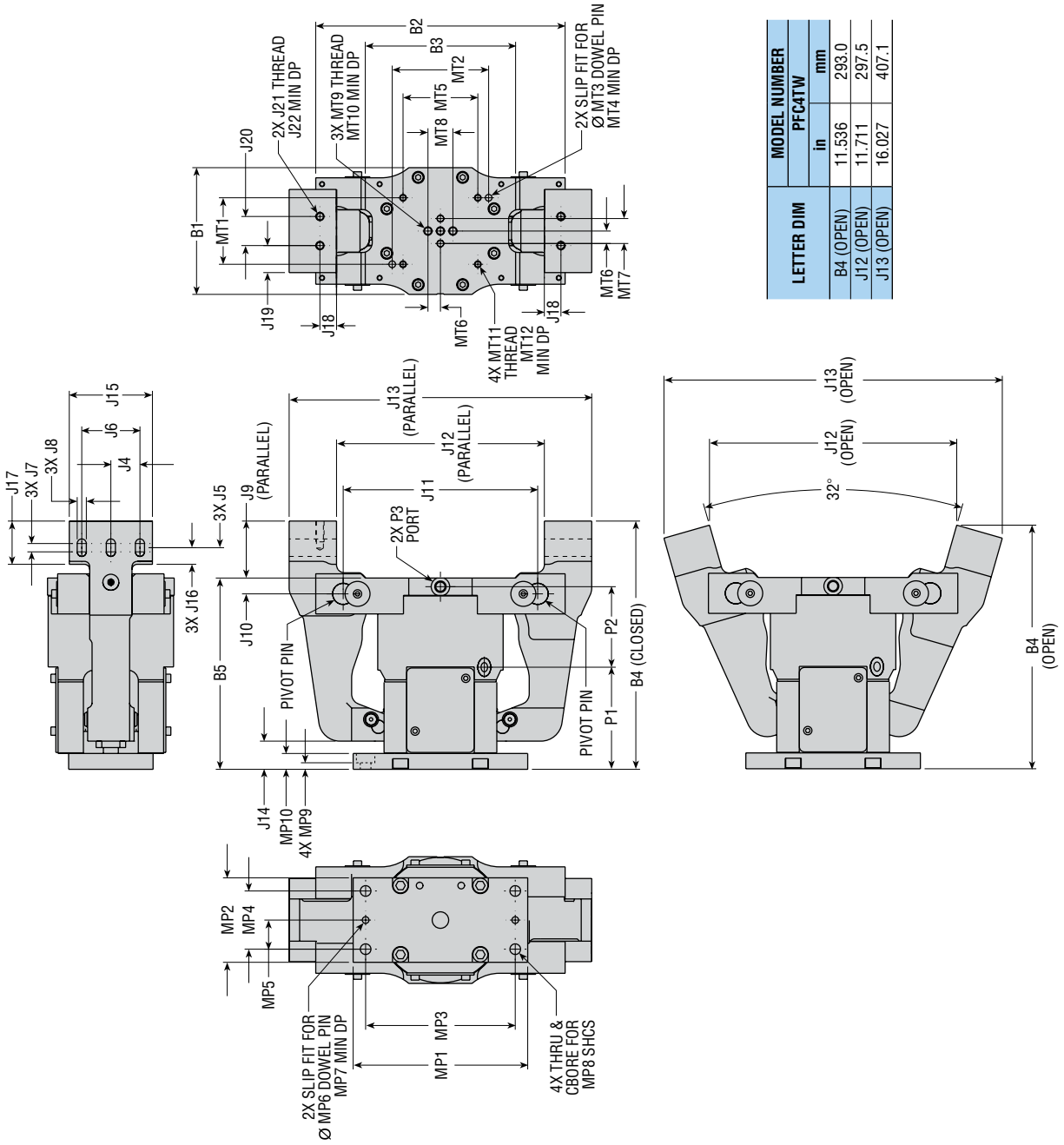
The Series PFC has a robust mechanism designed to clamp the outside of a part. However, it should not be used to clamp the inside of a part, nor be limited externally from opening. The opening of one or both jaws should not be limited with external stops or tooling. Consult factory on internal applications.





LETTER DIM	MODEL NUMBER PFC4TL in	mm
B4 (OPEN)	15.463	392.8
J12 (OPEN)	10.736	272.7
J13 (OPEN)	15.465	392.8

LETTER DIM	MODEL NUMBER PFC4TL in	mm
B1	6.000	152.4
B2	11.811	300.0
B3	7.120	180.8
B4 (CLOSED)	15.396	391.1
B5	9.058	230.1
J1	0.315	8.0
J2	0.472	12.0
J3	M10 x 1.5	
J4	0.787	20.0
J5	2.165	55.0
J6	1.181	30.0
J7	0.591	15.0
J8	1.181	30.0
J9	6.338	161.0
J10	0.750	19.1
J11	9.212	234.0
J12 (CLOSED)	6.732	171.0
J13 (CLOSED)	11.652	296.0
J14	0.920	23.4
J15	2.000	50.8
P1	4.835	122.8
P2	3.813	96.9
P3	1/4 NPT	1/4 BSPP
MP1	8.268	210.0
MP2	4.000	101.6
MP3	7.087	180.0
MP4	2.756	70.0
MP5	1.378	35.0
MP6	0.315	8.0
MP7	0.472	12.0
MP8	7/16	M12
MP9	0.315	8.0
MP10	0.750	19.1
MT1	3.150	80.0
MT2	4.567	116.0
MT3	0.315	8.0
MT4	0.472	12.0
MT5	3.543	90.0
MT6	0.591	15.0
MT7	1.181	30.0
MT8	1.181	30.0
MT9	M10 x 1.5	
MT10	0. 669	17.0
MT11	M8 x 1.25	
MT12	0. 669	17.0



LETTER DIM	MODEL NUMBER PFC4TW in	mm
B4 (OPEN)	11.536	293.0
J12 (OPEN)	11.711	297.5
J13 (OPEN)	16.027	407.1

LETTER DIM	MODEL NUMBER PFC4TW in	mm
B1	6.000	152.4
B2	11.811	300.0
B3	7.120	180.8
B4 (CLOSED)	11.755	298.6
B5	9.058	230.1
J4	1.378	35.0
J5	1.437	36.5
J6	2.756	70.0
J7	0.394	10.0
J8	0.433	11.0
J9	2.697	68.5
J10	0.750	19.1
J11	9.212	234.0
J12 (CLOSED)	9.843	250.0
J13 (CLOSED)	14.331	364.0
J14	1.335	33.9
J15	3.937	100.0
J16	0.787	20.0
J17	2.047	52.0
J18	0.787	20.0
J19	1.280	32.5
J20	1.378	35.0
J21	M10 x 1.5	
J22	0.984	25.0
P1	4.835	122.8
P2	3.813	96.9
P3	1/4 NPT	1/4 BSPP
MP1	8.268	210.0
MP2	4.000	101.6
MP3	7.087	180.0
MP4	2.756	70.0
MP5	1.378	35.0
MP6	0.315	8.0
MP7	0.472	12.0
MP8	7/16	M12
MP9	0.315	8.0
MP10	0.750	19.1
MT1	3.150	80.0
MT2	4.567	116.0
MT3	0.315	8.0
MT4	0.472	12.0
MT5	3.543	90.0
MT6	0.591	15.0
MT7	1.181	30.0
MT8	1.181	30.0
MT9	M10 x 1.5	
MT10	0. 669	17.0
MT11	M8 x 1.25	
MT12	0. 669	17.0

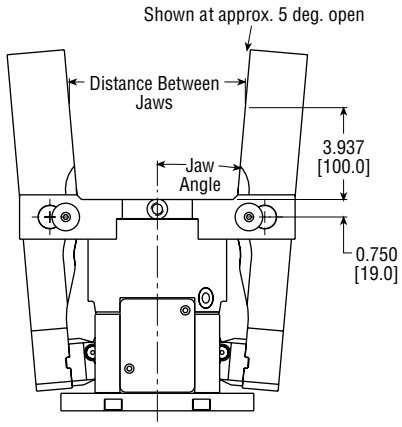
EFFECTIVE CLAMPING RANGE

Total clamp force can be determined by multiplying air pressure by the clamp force multiplier (C_f), then dividing by the distance from clamping location to jaw pivot.

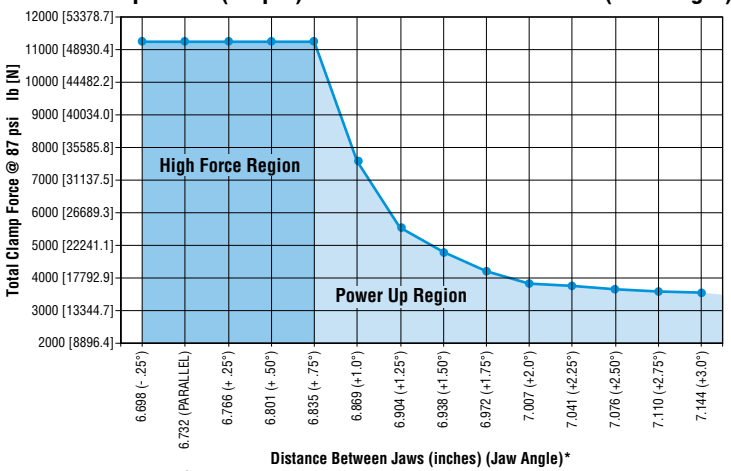
To achieve maximum clamp force, custom tooling or spacers must be used to close the jaws in the high force region. Refer to charts for high force region.

"L" LONG JAW STYLE

PFC4TL
High force region C_f (Imperial) = 606.1
High force region C_f (Metric) = 992400



Total Clamp Force (87 psi) vs Distance Between Jaws (Jaw Angle)



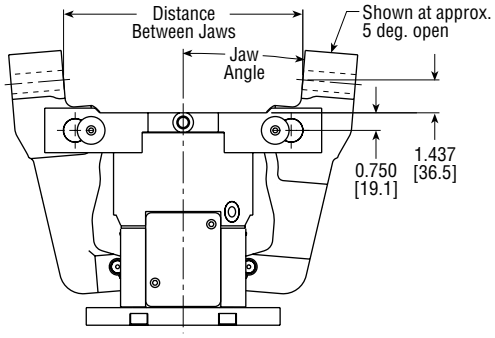
Distance Between Jaws (inches) (Jaw Angle)*
(* - Distance measured 3.937 [100.0 mm] above mounting face of clamp
Jaw Angle measured in degrees per jaw)

Imperial Example:
Your air line pressure: 87 psi
Clamp force multiplier: 606.1
(Within high force region)
Distance from clamping location to pivot: 4.687 in
(87 x 606.1)/4.687 = 11250 lb

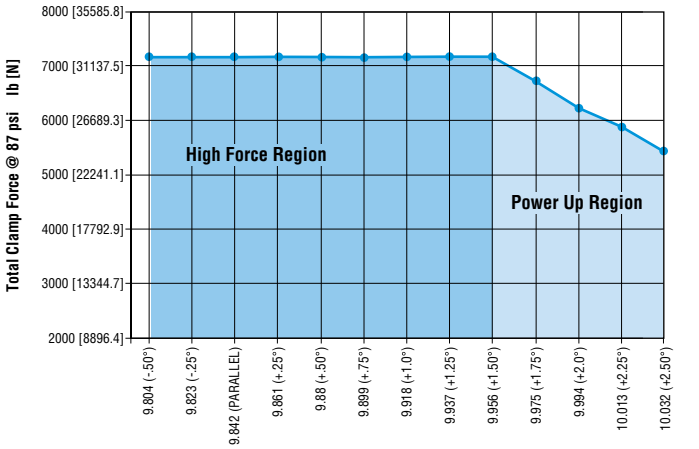
Metric Example:
Your air line pressure: 6 bar
Clamp force multiplier: 992400
(within high force region)
Distance from clamping location to pivot: 119 mm
(6 x 992400)/119 = 50042 N

"W" WIDE JAW STYLE

PFC4TW
High force region C_f (Imperial) = 181.0
High force region C_f (Metric) = 296516



Total Clamp Force (87 psi) vs Distance Between Jaws (Jaw Angle)



Distance Between Jaws (inches) (Jaw Angle)*
(* - Distance measured at customer mounting holes - approx. 1.437 [36.5 mm]
Jaw Angle measured in degrees per jaw)

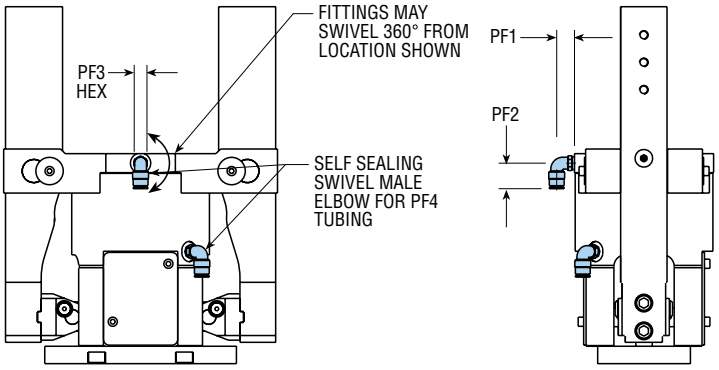
All dimensions are reference only unless specifically toleranced.

LAA PORT FITTINGS

90° swivel elbow (in both ports) for ease of air line hook-up.

LETTER DIM	MODEL NUMBER PFC4xx	
	in	mm
PF1 (MIN)	0.767	20.5
PF2	1.102	28.0
PF3	0.551	14.0
PF4	3/8	10.0
PART NO.	62178-010	62195-010

NOTE: FITTINGS ARE ORDERED SEPARATELY

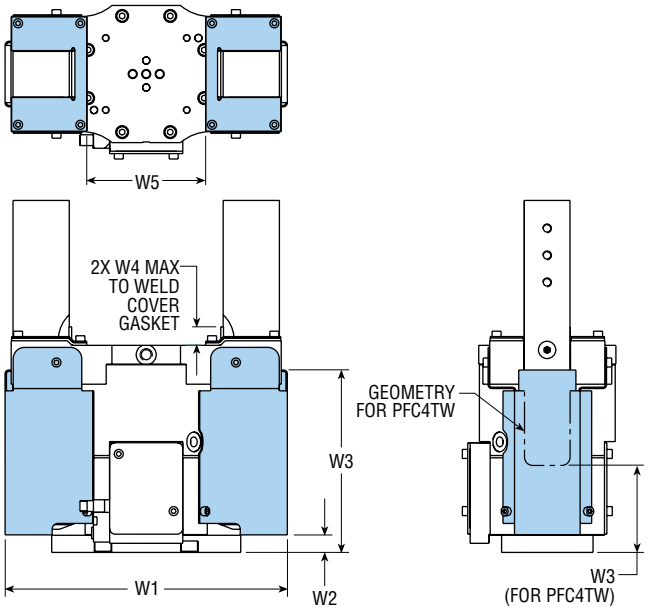


WC1 WELD COVER

This option provides plated steel covers around the jaws above and below the mounting surface to enclose the clamp mechanism, protecting it from weld splatter.

LETTER DIM	MODEL NUMBER PFC4TL		MODEL NUMBER PFC4TW	
	in	mm	in	mm
W1	12.346	313.6	12.346	313.6
W2	0.768	19.5	0.768	19.5
W3	7.978	202.6	3.668	93.2
W4 MAX	0.906	23.0	0.906	23.0
W5	5.120	130.0	5.120	130.0
KIT NUMBER	73121-01		73121-02	

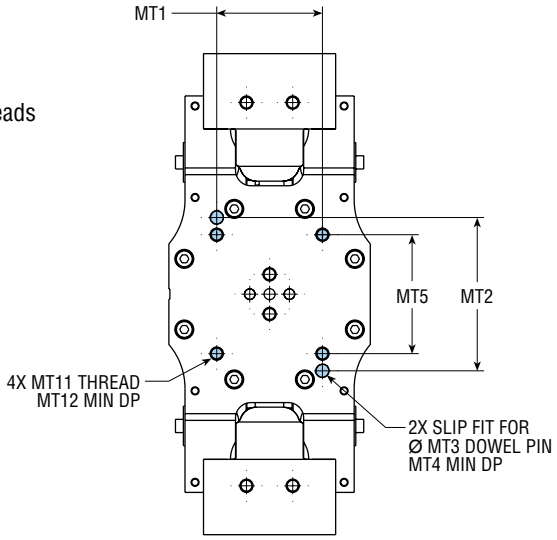
KIT INCLUDES: 2 WELD COVERS
2 WELD COVER PLATES
2 WELD COVER GASKETS
MOUNTING SCREWS



B001 BUSHING BLOCK

This option provides a customer mounting pattern with M10 threads and 10 mm dowel pin holes.

LETTER DIM	MODEL NUMBER PFCxxx	
	in	mm
MT1	3.150	80.0
MT2	4.567	116.0
MT3	0.394	10.0
MT4	0.591	15.0
MT5	3.543	90.0
MT11	M10 x 1.5	
MT12	0.669	17.0



PSxxx STANDARD POSITION SENSING

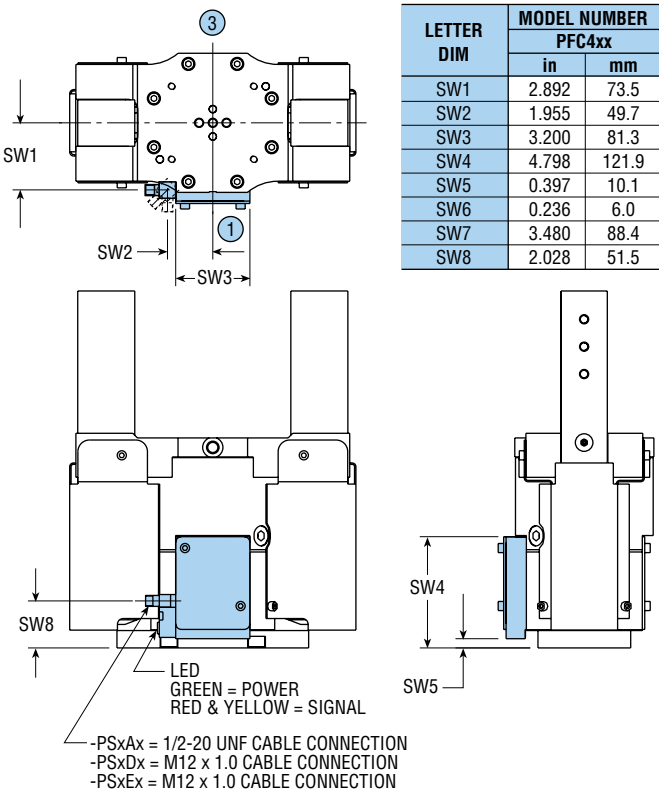
PRxxx REVERSED POSITION SENSING

This option provides jaw open and jaw closed sensing by affixing an aluminum housing to the side of the clamp body. The adjustable switches sense the position of a target on the drive pin as the clamp opens and closes.

PR positions satellite switch S01 to sense open and S02 to sense close. PS positions satellite switch S02 to sense open and S01 to sense close. See charts below or switch information for satellite switch to quick connect pin to relationships.

For use with the following PHD or customer supplied switches or equivalent:

Ni 2-Q6.5-ADZ32-0.16-FSB 5.4X4/S304 (Turck)
NBN2-F581-160S6-E8-V1 (P + F)
Ni 2-Q6.5-0.16-BDS-2AP6X3-H1141/S34 (Turck)
IN 5375 (Efector)
NBN2-F581-160S6-E10-V1 (P + F)
Ni 2-Q6.5-AN6-0.16-FS 4.4X3/S304 (Turck)



LETTER DIM	MODEL NUMBER PFC4xx	
	in	mm
SW1	2.892	73.5
SW2	1.955	49.7
SW3	3.200	81.3
SW4	4.798	121.9
SW5	0.397	10.1
SW6	0.236	6.0
SW7	3.480	88.4
SW8	2.028	51.5

NOTE:
1) POSITIONAL SENSOR MAY BE LOCATED IN POSITION 1 OR POSITION 3
2) CIRCLED NUMBERS INDICATE POSITION. POSITION 1 IS PORT SIDE

POSITION SENSOR OPTION CODE

P x x x x

- **HOUSING OPTION**
  P - Positional Sensing
- **CONNECTOR POSITION**
  1 - Parallel to jaws
  9 - Perpendicular to jaws
- **SENSING OPTION**
  S - Standard
  R - Reversed
- **SWITCH OPTION**
  N - No Switch
  A - 5-pin AC/DC Switch (Turck)
  D - 4-pin PNP DC Switch (P + F)
  E - 4-pin PNP DC Switch (Turck)
  F - 4-pin PNP DC Switch (Efector)
  H - 4-pin NPN DC Switch (P + F)
  J - 4-pin NPN DC Switch (Turck)
- **SWITCH HOUSING OPTION**
  1 - Position 1 (Port Side)
  3 - Position 3

REPLACEMENT KIT NUMBERS IF ORDERED SEPARATELY

ACCESSORY	KIT DESCRIPTION	KIT NUMBER
PS(R)xNx	Housing without switch kit	73120-01
PS(R)xA1	Housing with 5-pin AC/DC switch kit	73120-02
PS(R)xDx	Housing with 4-pin DC switch kit	73120-03
PS(R)xEx	Housing with 4-pin DC switch kit	73120-04
PS(R)xFx	Housing with 4-pin DC switch kit	73120-05
PS(R)xHx	Housing with 4-pin DC switch kit	73120-06
PS(R)xJx	Housing with 4-pin DC switch kit	73120-07

Kit includes: Switch housing, target, target driver, dowel pins, mounting screws, and switch (when specified)

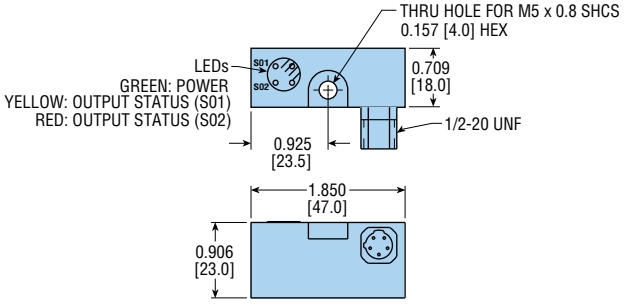
REPLACEMENT SWITCH NUMBERS IF ORDERED SEPARATELY

SWITCH OPTION	SWITCH TYPE	PHD SWITCH NUMBER	VENDOR	VENDOR PART NUMBER
A	5-pin AC/DC	71483-002-PFC	Turck	Ni 2-Q6.5-ADZ32-0.16-FSB 5.4X4/S304
D	4-pin DC - PNP	71483-001-PFC	P & F	NBN2-F581-160S6-E8-V1
E	4-pin DC - PNP	71483-003-PFC	Turck	Ni 2-Q6.5-0.16-BDS-2AP6X3-H1141/S34
F	4-pin DC - PNP	71483-004-PFC	Efector	IN 5375
H	4-pin DC - NPN	71483-005-PFC	Turck	NBN2-F581-160S6-E10-V1
J	4-pin DC - NPN	71483-006-PFC	Turck	Ni 2-Q6.5-AN6-0.16-FS 4.4X3/S304

MATCHING CORDSETS 2 METERS LONG

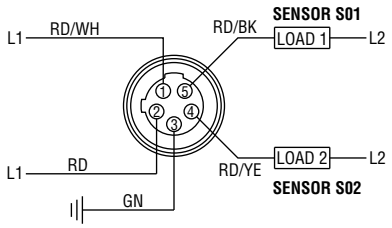
SWITCH OPTION	PHD PART NUMBER	CORDSET PART NUMBER
A	73317-00-02	KB 5T-2
D	65440-001-02	V1-G-YE2M-PVC
E	78039-00-02	RK 4.4T-2
F	65440-001-02	V1-G-YE2M-PVC
H	65440-001-02	V1-G-YE2M-PVC
J	78039-00-02	RK 4.4T-2

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

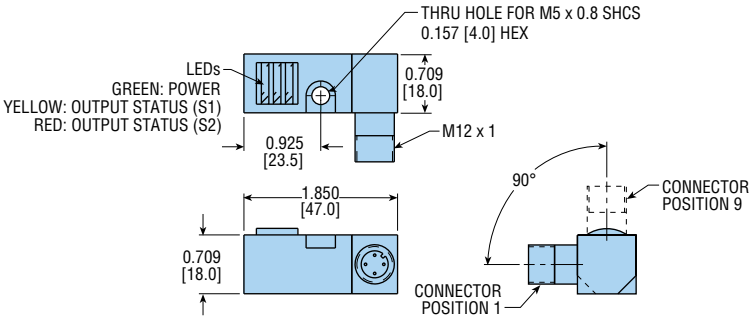


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PSxA1	S02	S01	S01 = Pin 5
PRxA1	S01	S02	S02 = Pin 4

4-WIRE AC/DC

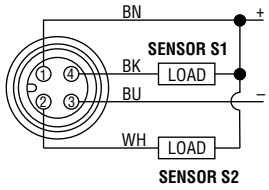


SWITCH OPTION D 71483-001-PFC P + F Part #: NBN2-F581-160S6-E8-V1 (PNP)
SWITCH OPTION H 71483-005-PFC P + F Part #: NBN2-F581-160S6-E10-V1 (NPN)

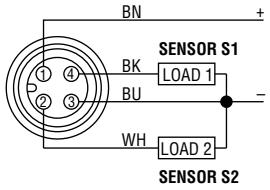


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PSxDx or PSxHx	S2	S1	S1 = Pin 4
PRxDx or PRxHx	S1	S2	S2 = Pin 2

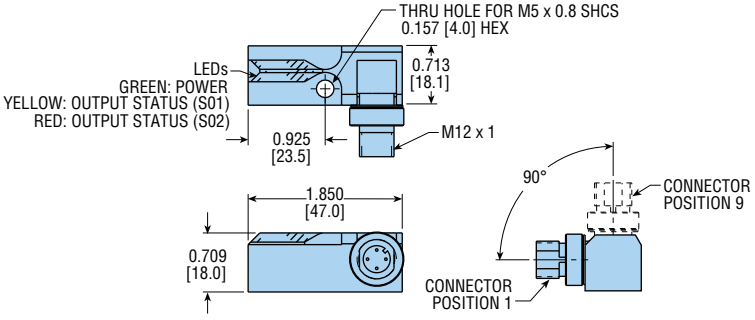
4-WIRE DC (V1 TYPE)
NPN DUAL NORMALLY OPEN



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

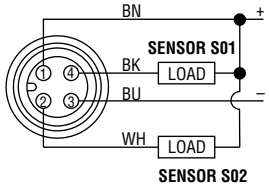


SWITCH OPTION E 71483-003-PFC Turck Part #: Ni 2-Q6.5-0.16-BDS-2AP6X3-H1141/S34 (PNP)
SWITCH OPTION J 71483-006-PFC Turck Part #: Ni 2-Q6.5-AN6-0.16-FS 4.4X3/S304 (NPN)

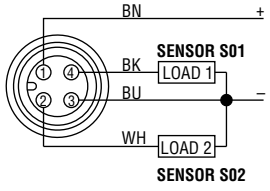


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PSxEx or PSxJx	S02	S01	S01 = Pin 4
PRxEx or PRxJx	S01	S02	S02 = Pin 2

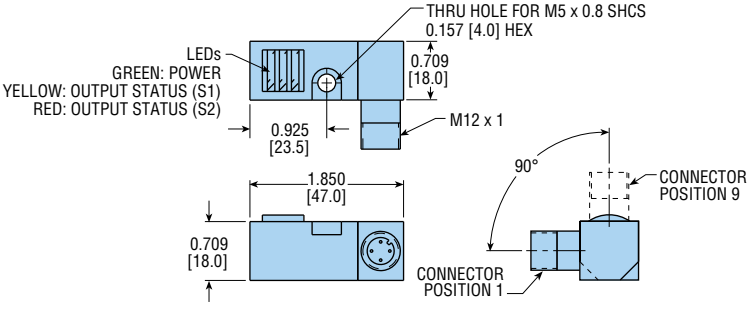
4-WIRE DC
NPN DUAL NORMALLY OPEN



4-WIRE DC
PNP DUAL NORMALLY OPEN

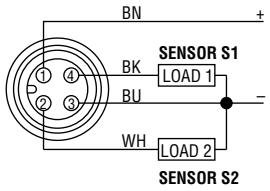


SWITCH OPTION F 71483-004-PFC Efector Part #: IN 5375 (PNP)



OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PSxFx	S2	S1	S1 = Pin 4
PRxFx	S1	S2	S2 = Pin 2

4-WIRE DC
PNP DUAL NORMALLY OPEN



PFC

All dimensions are reference only unless specifically toleranced.

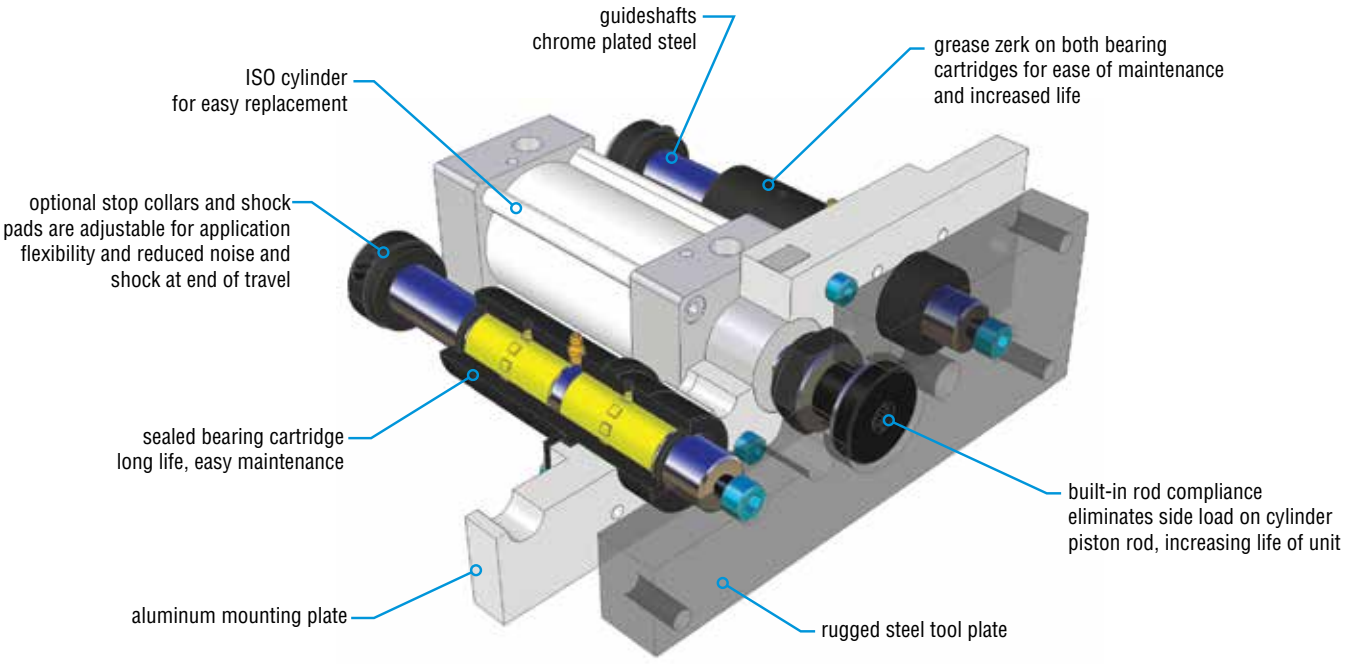
PHL

HEAVY LIFTER FOR AUTOMATED, HIGH LOAD PART LIFTING APPLICATIONS

Major Benefits

- Simple design, compact size, long life, and the ability to handle high off-center loads
- Available as drop-in replacement for General Motors Global Die Standards, (GMGDS) 90.35.05-B, 90.35.55-xxxx(x), 90.35.60-xxxx(x), and 90.35.65-xxxx(x)
- Available in three bore sizes with many stroke lengths to fit your application requirements
- Built-in rod compliance eliminates side load on cylinder piston rod thus increasing life
- Fully field repairable in just 10 minutes, using metric hex wrenches
- Composite bearings with internal lubrication for long life
- Replaceable bearings eliminate costly lifter replacement

proximity switches are available for sensing end of travel



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

TO ORDER SPECIFY:
Model, Unit Size, Design No., Stroke, and Additional Options if desired.

UNIT SIZE
4 - 40 mm Bore
6 - 63 mm Bore
8 - 80 mm Bore

STROKE mm
50, 75, 80, 100, 125, 150, 160, 175, 200, 225, 250, 275, 300
(See Note 2)

SWITCH OPTIONS
BLANK - None
SW71 - 1 Reed switch installed
SW72 - 2 Reed switches installed
SW73 - 1 Hall Effect switch (PNP) installed
SW74 - 2 Hall Effect switches (PNP) installed
SW75 - 1 Hall Effect switch (NPN) installed
SW76 - 2 Hall Effect switches (NPN) installed

MOUNTING PLATE OPTIONS
PHL4 & PHL8
M004 - General Motors Global Die Standard, (GMGDS)
PHL4 = 90.35.55-XXXX(X)
PHL8 = 90.35.65-XXXX(X)
(See Note 3)
PHL6
BLANK - Standard (M001)
M002 - (Former) General Motors Global Die Standard, (GMGDS) 90.35.05-B [M1542B]
M004 - General Motors Global Die Standard, (GMGDS) 90.35.60-XXXX(X)
See GM Specification Number Chart below.

PHL	6	-	5	x	100	-	PF02	-	SW72	-		-	M004	-	SC01	-	T002

MODEL
PHL - Heavy Lifter

DESIGN NO.
5 - Metric

PORT FITTING OPTIONS
BLANK - None
PF02 - For 3/8" tube
PF04 - For 10 mm tube

CYLINDER OPTIONS
BLANK - None
H1 - Lifter supplied without cylinder
H4 - Cylinder replacement only

STOP COLLAR OPTIONS
BLANK - None
SC01 - Stop Collars and Shock Pads on Extend

TOOL PLATE OPTIONS
BLANK - Standard (T001) GM Global Die Standard (GMGDS) 90.35.05-(A, B)
T002 - GM Global Die Standard (GMGDS)
PHL4 = 90.35.55
PHL6 = 90.35.60
PHL8 = 90.35.65
(T001 Tool Plate option available on PHL6 only) (See Note 3)

NOTES:
1) All units are standard with magnetic pistons.
2) 80 mm and 160 mm strokes are not availableon PHL8 units.
3) -M004-T002 options are mandatory for PHL4 & PHL8 units.

OPTION COMPATIBILITY CHART

LIFTER DESCRIPTION	OPTION							
	PF01	PF02	SW7x	H1	H2	SC01	T001	T002
PHL4-5-M004	YES	YES	YES	YES	YES	YES	NO	YES
PHL6-5-M001 (STD)	YES	YES	YES	YES	YES	YES	YES	NO
PHL6-5-M002	YES	YES	YES	YES	YES	YES	YES	NO
PHL6-5-M003	YES	YES	YES	YES	YES	YES	YES	NO
PHL6-5-M004	YES	YES	YES	YES	YES	YES	NO	YES
PHL8-5-M004	YES	YES	YES	YES	YES	YES	NO	YES

GM SPECIFICATION NUMBER CHART

PHD LIFTER DESCRIPTION	GMGDS CODE		
	PHL4-5-xxx	PHL6-5-xxx	PHL8-5-xxx
PHLx-x-050-M004-T002	90.35.55-4050	90.35.60-6350	90.35.65-8050
PHLx-x-075-M004-T002	90.35.55-4075	90.35.60-6375	90.35.65-8075
PHLx-x-100-M004-T002	90.35.55-40100	90.35.60-63100	90.35.65-80100
PHLx-x-125-M004-T002	90.35.55-40125	90.35.60-63125	90.35.65-80125
PHLx-x-150-M004-T002	90.35.55-40150	90.35.60-63150	90.35.65-80150
PHLx-x-175-M004-T002	90.35.55-40175	90.35.60-63175	90.35.65-80175
PHLx-x-200-M004-T002	90.35.55-40200	90.35.60-63200	90.35.65-80200
PHLx-x-225-M004-T002	90.35.55-40225	90.35.60-63225	90.35.65-80225
PHLx-x-250-M004-T002	90.35.55-40250	90.35.60-63250	90.35.65-80250
PHLx-x-275-M004-T002	90.35.55-40275	90.35.60-63275	90.35.65-80275
PHLx-x-300-M004-T002	90.35.55-40300	90.35.60-63300	90.35.65-80300

-xxx = STROKE IN mm

CAD Configurator Assistance

Use PHD's free online application at **www.phdinc.com/cad**

SPECIFICATIONS	SERIES PHL
OPERATING PRESSURE	20 psi min to 130 psi [1.4 bar min to 9.0 bar max]
OPERATING TEMPERATURE	23° to +158°F [-5° to +70°C]
LUBRICATION*	Factory lubricated for life

*Periodic lubrication of bearing cartridges, piston rod, and thrust washers decreases wear and extends life.

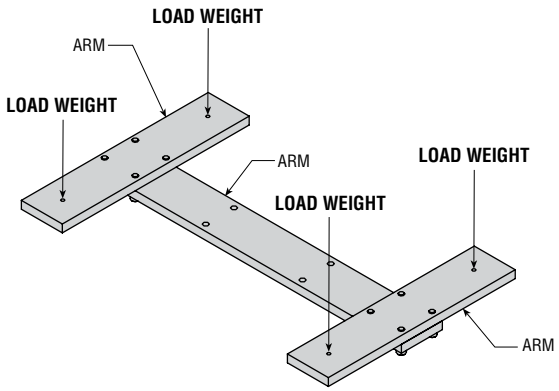
MODEL	STROKE (mm)		TYPICAL CYCLE TIME (sec) EXTEND/RETRACT			UNIT WEIGHT lb [kg] MOUNTING/TOOL PLATE STYLE									
						PHL4		PHL6						PHL8	
	LENGTH	TOLERANCE	PHL4	PHL6	PHL8	M004-T002		M001-T001		M002-T001		M004-T002		M004-T002	
PHL	50	+3.8/-0	0.09	0.14	0.21	23.40	[10.6]	25.5	[11.6]	26.0	[11.8]	29.3	[13.3]	35.20	[16.0]
	75		0.11	0.18	0.27	24.00	[10.9]	26.3	[11.9]	26.8	[12.2]	30.0	[13.6]	36.20	[16.4]
	80*		0.11	0.19	—	24.10	[10.9]	26.3	[11.9]	26.8	[12.2]	30.1	[13.7]	—	—
	100		0.13	0.23	0.34	24.60	[11.2]	27.0	[12.2]	27.5	[12.5]	30.7	[13.9]	37.20	[16.9]
	125		0.15	0.27	0.41	25.20	[11.4]	27.7	[12.6]	28.2	[12.8]	31.5	[14.3]	38.30	[17.4]
	150		0.17	0.31	0.48	25.80	[11.7]	28.3	[12.8]	28.8	[13.1]	32.2	[14.6]	39.30	[17.8]
	160*		0.18	0.33	—	26.00	[11.8]	28.7	[13.0]	29.2	[13.2]	32.5	[14.7]	—	—
	175		0.19	0.36	0.55	26.40	[12.0]	29.0	[13.1]	29.5	[13.4]	32.9	[14.9]	40.30	[18.3]
	200		0.21	0.40	0.61	27.10	[12.3]	29.6	[13.4]	30.1	[13.7]	33.7	[15.3]	41.40	[18.8]
	225		0.23	0.44	0.68	27.70	[12.6]	30.3	[13.7]	30.8	[13.9]	34.4	[15.6]	42.40	[19.2]
	250		0.25	0.49	0.75	28.30	[12.8]	30.9	[14.0]	31.4	[14.2]	35.1	[15.9]	43.40	[19.7]
	275		0.27	0.53	0.82	28.90	[13.1]	31.6	[14.3]	32.1	[14.5]	35.9	[16.3]	44.50	[20.2]
	300		0.29	0.58	0.89	29.50	[13.4]	32.2	[14.6]	32.2	[14.8]	36.6	[16.6]	45.50	[20.6]

NOTES: 1) *These stroke lengths are not available as a standard for PHL8 units.
2) Cycle times are bases on 3/8" air lines, valve of cv 5.1, and visually acceptable cushions.

MODEL	BORE		EFFECTIVE PISTON AREA in² [mm²]	
	in	mm	EXTEND	RETRACT
PHL4	1.575	40	1.95 [1275]	1.64 [1056]
PHL6	2.480	63	4.83 [3117]	4.34 [2803]
PHL8	3.150	80	7.79 [5027]	7.03 [4536]

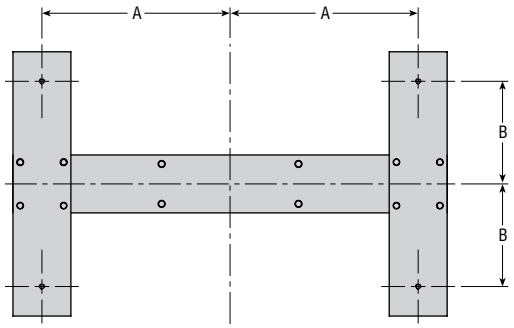
MODEL	RECOMMENDED MAX LOAD	
	lb	kg
PHL4	88.2	40.0
PHL6	132.3	60.0
PHL8	176.4	80.0

Use of flow controls recommended at higher loads to reduce shock and vibration



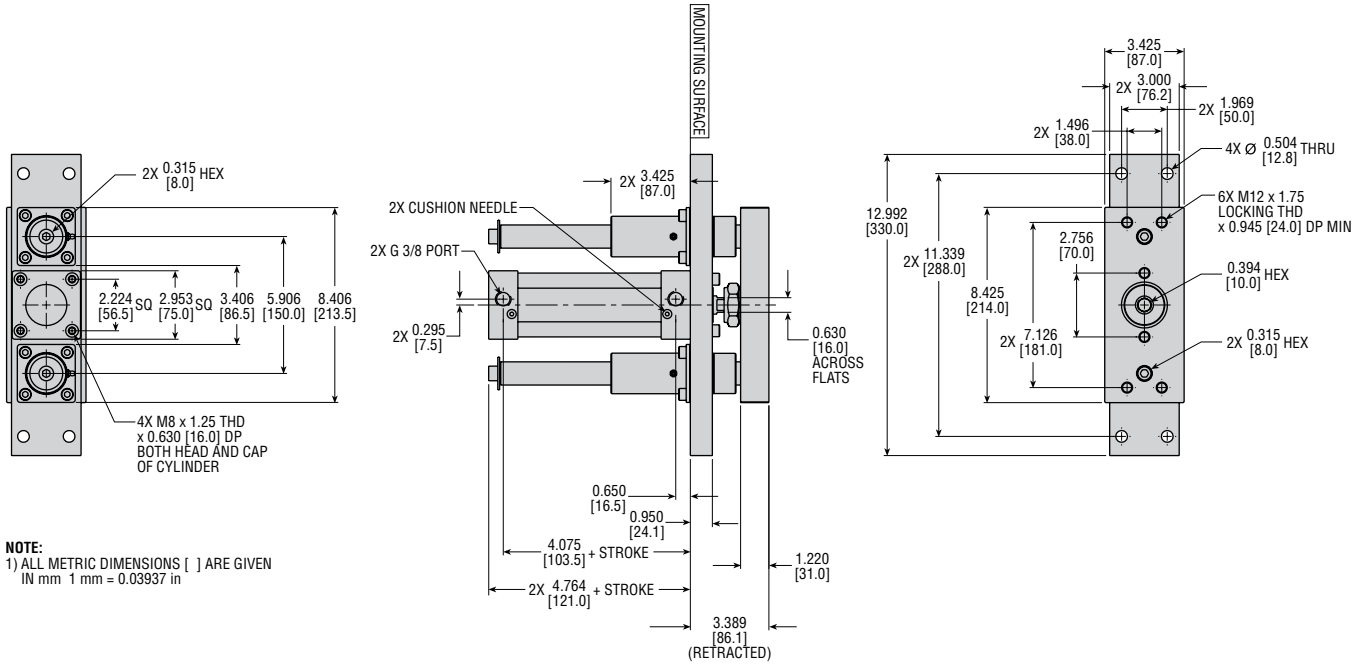
MODEL	OVERHANG DISTANCE				TESTED LOAD WEIGHT AT A-B*	
	A		B			
	in	mm	in	mm	lb	kg
PHL4	12.21	310.0	5.91	150.0	9.8	4.4
PHL6	12.99	330.0	7.09	180.0	18.8	8.5
PHL8	13.78	350.0	7.87	200.0	29.0	13.2

*Tested with load weight at each corner for a balanced load



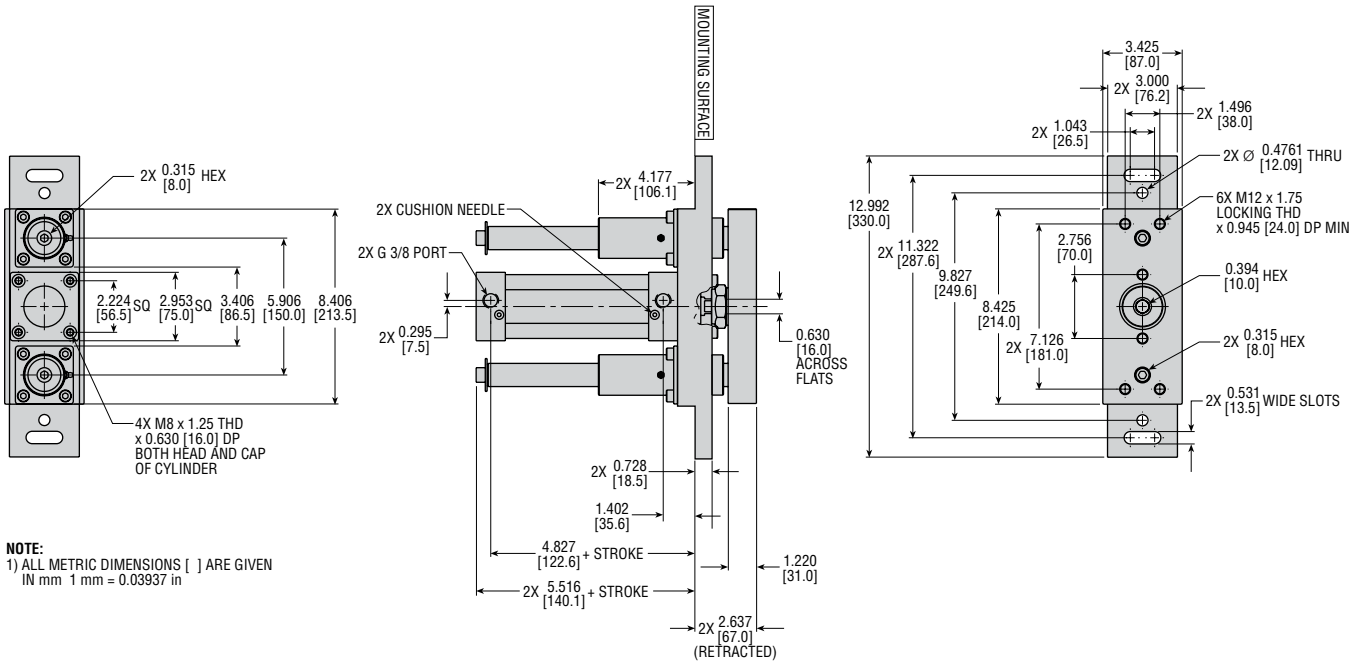
PHL

M001-T001 MOUNTING STYLE



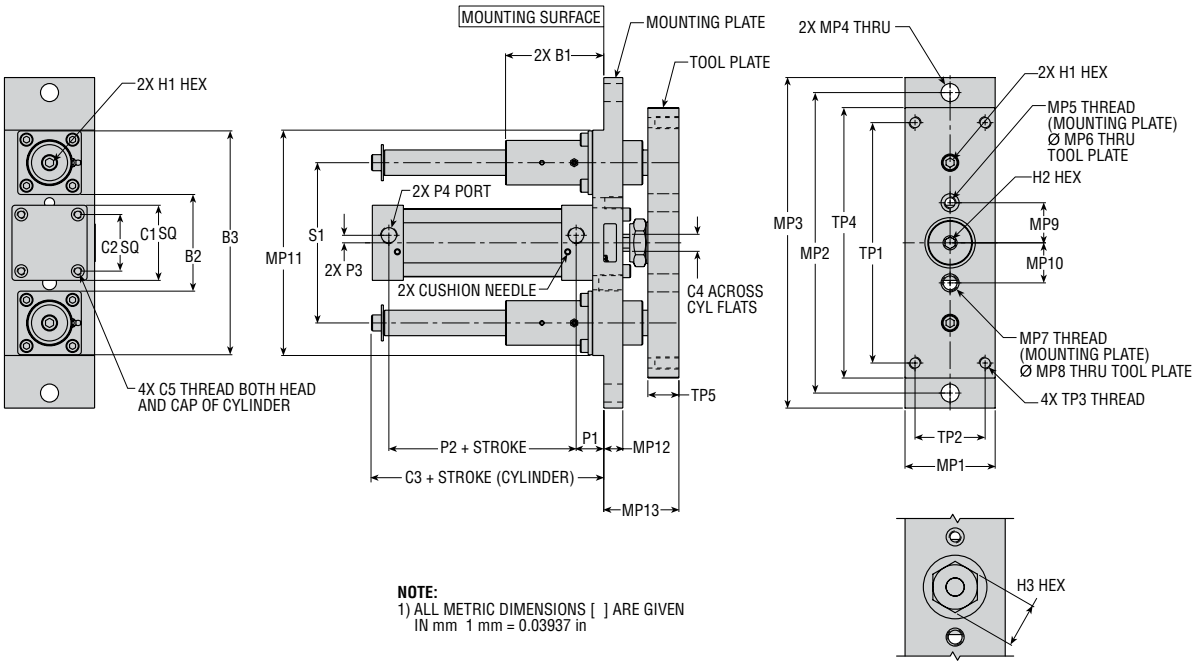
NOTE:
1) ALL METRIC DIMENSIONS [ ] ARE GIVEN IN mm 1 mm = 0.03937 in

M002-T001 MOUNTING STYLE



NOTE:
1) ALL METRIC DIMENSIONS [ ] ARE GIVEN IN mm 1 mm = 0.03937 in

DIMENSIONS: SERIES PHL HEAVY LIFTER - M004-T002 MOUNTING STYLE



NOTE:
1) ALL METRIC DIMENSIONS [ ] ARE GIVEN IN mm 1 mm = 0.03937 in

PHL8

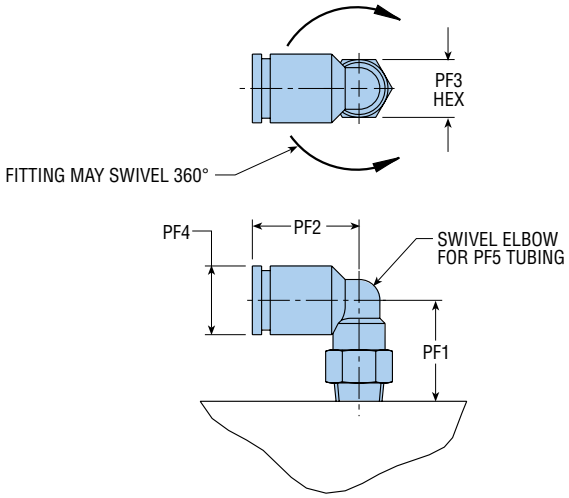
LETTER	MODEL NUMBER					
	PHL4		PHL6		PHL8	
DIM	in	mm	in	mm	in	mm
B1	3.861	98.1	3.861	98.1	3.896	99.0
B2	3.012	76.5	3.799	96.5	4.587	116.5
B3	8.012	203.5	8.799	223.5	9.587	243.5
C1	2.087	53.0	2.953	75.0	3.740	95.0
C2	1.496	38.0	2.224	56.5	2.835	72.0
C3	4.570	116.1	5.160	131.1	5.511	140.0
C4	0.512	13.0	0.669	17.0	0.866	22.0
C5	M6 x 1 x 0.630 [16.0] DP		M8 x 1.25 x 0.630 [16.0] DP		M10 x 1.5 x 0.787 [20.0] DP	
H1	8 mm		8 mm		8 mm	
H2	10 mm		10 mm		—	—
H3	1.250	31.8	1.625	41.3	1.750	44.5
MP1	2.953	75.0	3.543	90.0	3.937	100.0
MP2	11.024	280.0	11.811	300.0	12.598	320.0
MP3	12.205	310.0	12.992	330.0	13.780	350.0
MP4	0.709	18.0	0.709	18.0	0.709	18.0
MP5	M12 THREAD x 0.709 [18.0] DP MIN					
MP6	0.709	18.0	0.709	18.0	0.709	18.0
MP7	M16 THREAD x 0.945 [24.0] DP MIN					
MP8	0.709	18.0	0.709	18.0	0.709	18.0
MP9	1.260	32.0	1.575	40.0	1.969	50.0
MP10	1.260	32.0	1.575	40.0	1.969	50.0
MP11	8.070	205.0	8.858	225.0	9.842	250.0
MP12	0.748	19.0	0.748	19.0	0.827	21.0
MP13	2.953	75.0	2.953	75.0	3.268	83.0
P1	1.066	27.1	1.086	27.6	1.122	28.5
P2	2.874	73.0	3.425	87.0	3.740	95.0
P3	0.236	6.0	0.295	7.5	0.433	11.0
P4	G 1/4		G 3/8		G 3/8	
S1	5.512	140.0	6.299	160.0	7.087	180.0
TP1	8.661	220.0	9.449	240.0	10.236	260.0
TP2	1.772	45.0	2.756	70.0	2.756	70.0
TP3	M12 THREAD x 0.945 [24.0] DP MIN					
TP4	9.843	250.0	10.630	270.0	11.417	290.0
TP5	1.220	31.0	1.220	31.0	1.220	31.0

All dimensions are reference only unless specifically toleranced.

PF02 PORT FITTING - SWIVEL ELBOWS FOR 3/8" TUBE

PF04 PORT FITTING - SWIVEL ELBOWS FOR 10 mm TUBE

Both fittings insert into the G 3/8 ports in the cylinder. Both fittings swivel 360 degrees.



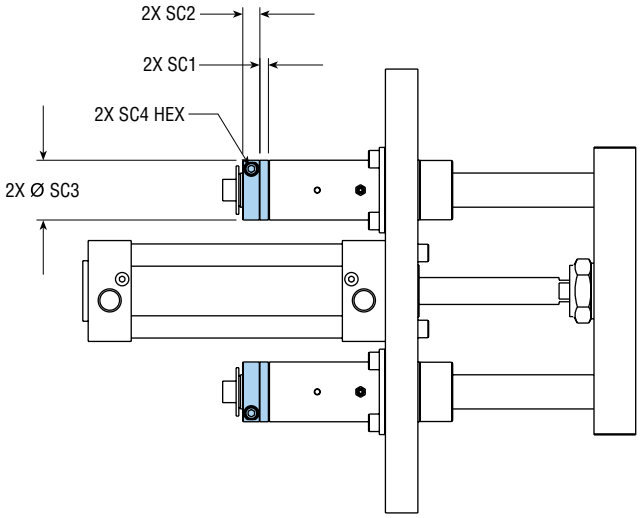
LETTER DIM	PF02				PF04			
	PHL4		PHL6 & PHL8		PHL4		PHL6 & PHL8	
	in	mm	in	mm	in	mm	in	mm
PF1	0.768	19.5	0.768	19.5	0.748	18.5	0.748	19.0
PF2	1.024	26.0	1.024	26.0	1.024	26.0	1.024	26.0
PF3	0.551	14.0	0.748	19.0	0.551	14.0	0.748	19.0
PF4	0.650	16.5	0.650	16.5	0.650	16.5	0.650	16.5
PF5	3/8	—	3/8	—	—	10	—	10

TO ORDER FITTING SEPARATELY:

OPTION	FITTING PART NUMBER	
	PHL4	PHL6 & PHL8
PF02	62178-010	62178-014
PF04	62195-010	62195-011

SC01 STOP COLLARS AND SHOCK PADS ON EXTENSION

Two travel adjustment stop collars with polyurethane shock pads are used for adjustment of lifter extension. The travel adjustment stop collars allow precise adjustment while the shock pads eliminate metal-to-metal contact, thereby reducing noise.



LETTER DIM	PHL4		PHL6		PHL8	
	in	mm	in	mm	in	mm
SC1	0.250	6.4	0.250	6.4	0.250	6.4
SC2	0.500	12.7	0.500	12.7	0.749	19.0
SC3	1.750	44.5	1.750	44.5	2.345	59.6
SC4	3/16		3/16		6 mm	

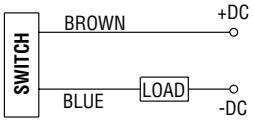
SW71 ONE REED SWITCH INSTALLED

SW72 TWO REED SWITCHES INSTALLED

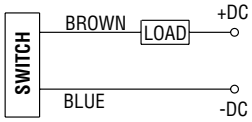
KIT NO.	DESCRIPTION
73198-01	NPN (Sink) or PNP (Source), 5 - 240 V AC/DC, Quick Disconnect

SPECIFICATIONS	73166-01
ACTUATED BY	Moving Magnet
POWER CAPACITY	10 W Max.
OUTPUT STATE	Normally Open
OPERATING PRINCIPLE	Magnetic Reed
OUTPUT TYPE	SPST Contact Closure
OPERATING VOLTAGE	5 - 240 V AC/DC
CURRENT RATING (RES.)	100 mA max
BURDEN CURRENT	—
VOLTAGE DROP	2.5V max
CIRCUIT PROTECTION	None
LED COLOR	Green
OPERATING TEMPERATURE	-10° to 70°C
ENVIRONMENTAL	IP67
CABLE TYPE	PVC

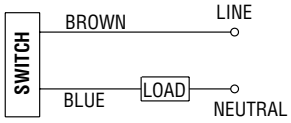
DC PNP (SOURCING)



DC NPN (SINKING)



AC



SW73 ONE HALL EFFECT SWITCH (PNP) INSTALLED

SW74 TWO HALL EFFECT SWITCHES (PNP) INSTALLED

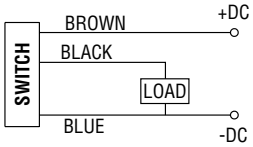
SW75 ONE HALL EFFECT SWITCH (NPN) INSTALLED

SW76 TWO HALL EFFECT SWITCHES (NPN) INSTALLED

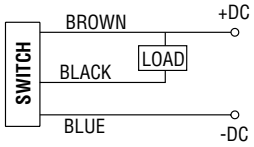
KIT NO.	DESCRIPTION
73198-02	Solid State PNP (Source) 5 - 30 VDC, Quick Disconnect
73198-03	Solid State NPN (Sink) 5 - 30 VDC, Quick Disconnect

SPECIFICATIONS	73168-02	73168-03
ACTUATED BY	Moving Magnet	
POWER CAPACITY	6 W Max.	
OUTPUT STATE	Normally Open	
OPERATING PRINCIPLE	Magnetic Hall Effect	
OUTPUT TYPE	Solid State PNP	Solid State NPN
OPERATING VOLTAGE	5 - 30 VDC	
CURRENT RATING (RES.)	200 mA max	
BURDEN CURRENT	13 mA max @ 24 VDC	20 mA max @ 24 VDC
VOLTAGE DROP	0.5V max	
CIRCUIT PROTECTION	Power Source Reverse, Surge Suppression	
LED COLOR	Red	Green
OPERATING TEMPERATURE	-10° to 70°C	
ENVIRONMENTAL	IP67	
CABLE TYPE	PVC	

DC PNP (SOURCING)

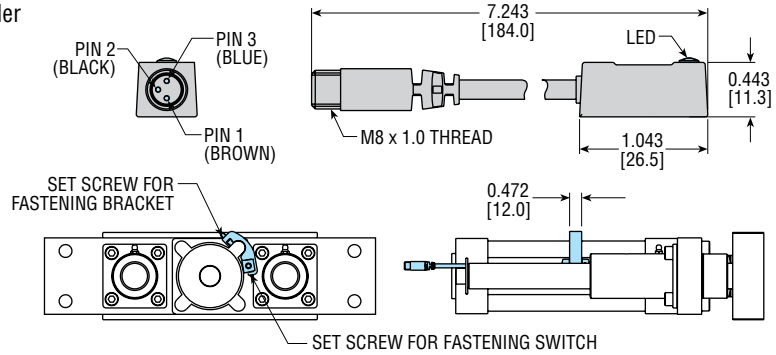


DC NPN (SINKING)



Switches and switch brackets are installed on the cylinder as shown below. Replacement switches and switch brackets can be ordered. A switch bracket kit contains one switch bracket. A switch kit contains one switch.

DESCRIPTION		KIT NO.
REED SWITCH		73198-01
HALL EFFECT SWITCH (PNP)		73198-02
HALL EFFECT SWITCH (NPN)		73198-03
SWITCH BRACKET	PHL4	73167
	PHL6	73167-01
	PHL8	73167-02



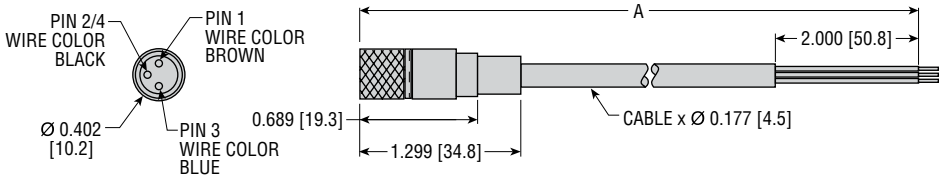
NOTE: ONLY ONE SWITCH AND BRACKET ASSEMBLY SHOWN ON LIFTER FOR CLARITY PURPOSES.

63549-xx CORDSET WITH FEMALE QUICK CONNECT

Provides a cordset with female quick connect and additional cable.

NUMBERS IN [ ] ARE IN mm. IMPERIAL EQUIVALENTS ARE PROVIDED FOR CONVENIENCE.

MODEL NO.	LETTER DIM A
63549-02	78.74 [2 m]
63549-05	196.85 [5 m]



All dimensions are reference only unless specifically toleranced.

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