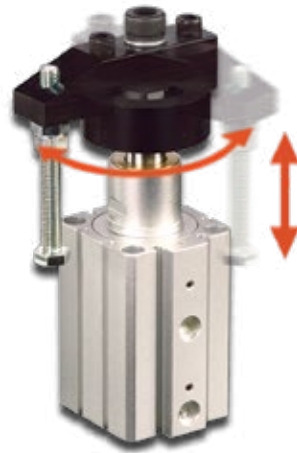




SWING CLAMPS

Major Benefits

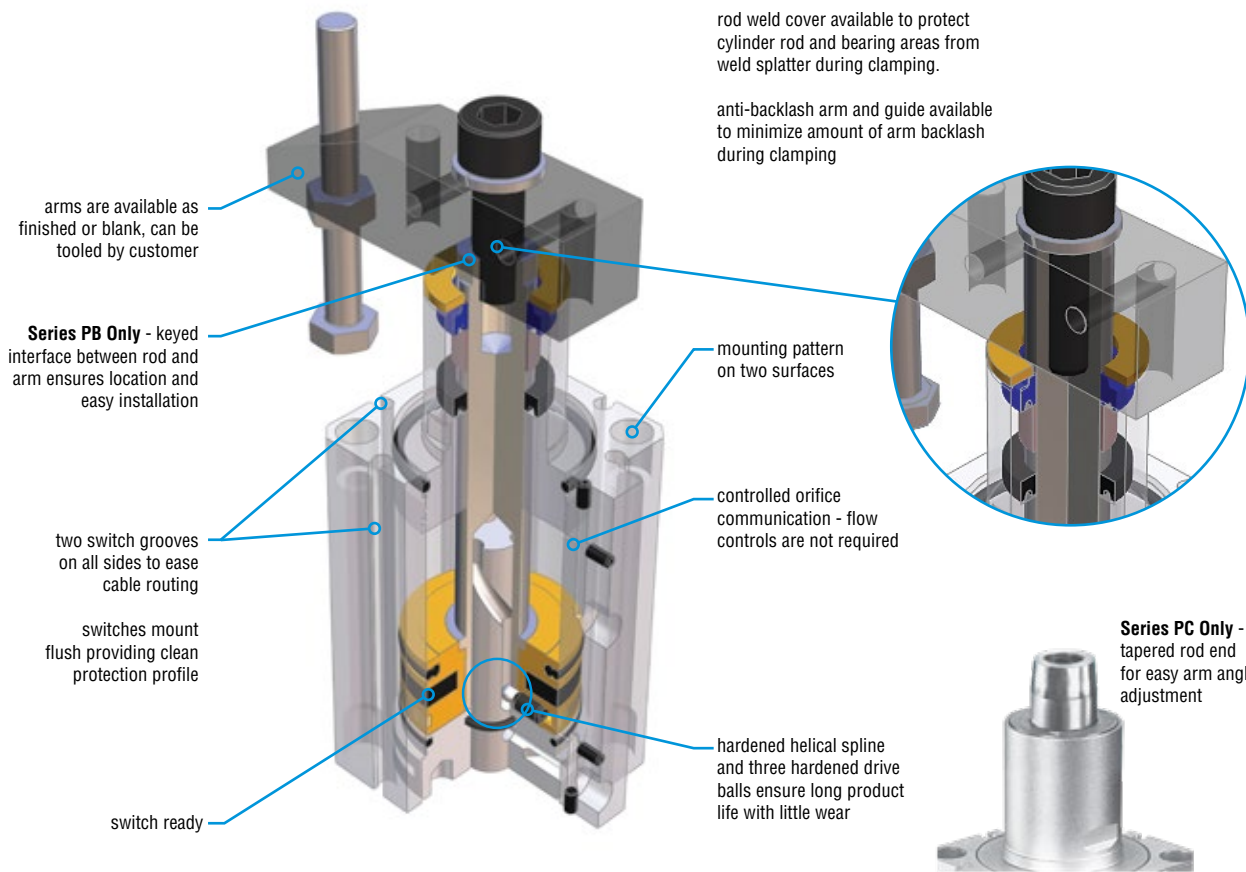
- Simple design, compact size, for low weight, long life, and high clamp force make these clamps ideal for part holding or transfer
- Mounting patterns on three surfaces
- Available in left and right rotations



SERIES PB



SERIES PC



ORDERING DATA: SERIES PB/PC SWING CLAMPS

TO ORDER SPECIFY:

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

MODEL

PB

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 ARM OPTIONS

BLANK - None
ASA - Single Aluminum
ASB - Single Aluminum Blank

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 TIP OPTIONS

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

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

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:

1) Must have arm option ordered with these options. To order separately, use kit numbers on page 18.

TO ORDER SPECIFY:

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

MODEL

PC

UNIT SIZE

5 - 50 mm Bore

DESIGN NO.

1 - Imperial
5 - Metric

CLAMP ARM OPTIONS

BLANK - None
ASA - Single Aluminum
ASB - Single Aluminum Blank

SWITCH 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)

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

STROKE LENGTH

L - Long stroke
(See chart for length)

ARM ROTATION DIRECTION

R - Right
L - Left

CLAMP TIP OPTIONS

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

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

STROKE AVAILABILITY (mm)

CLAMP SERIES	TOTAL STROKE	CLAMP STROKE	ROTARY STROKE
PCL5x	69	50	19

NOTE:

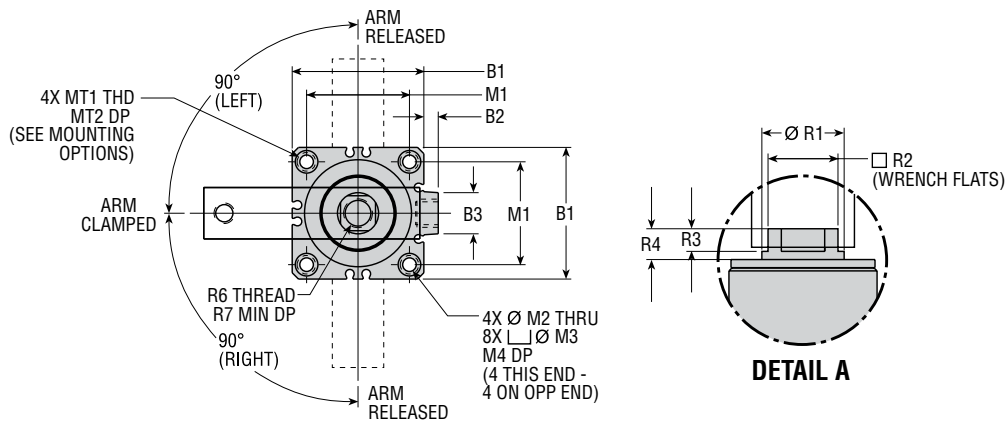
1) Must have arm option ordered with these options. To order separately, use kit numbers on page 18.

ENGINEERING DATA: SERIES PB/PC SWING CLAMPS

SPECIFICATIONS	SERIES PB & PC
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]

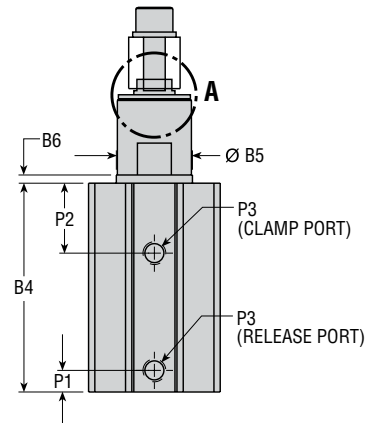
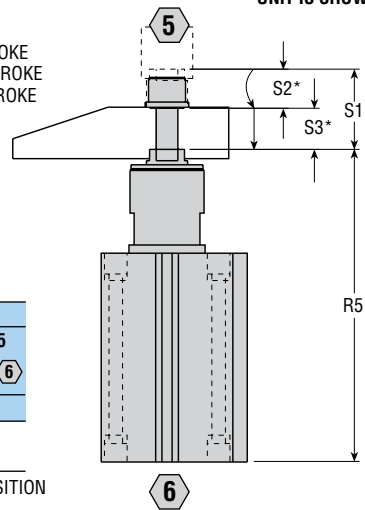
MODEL SIZE	BORE mm	THEORETICAL CLAMPING FORCE SINGLE ARM AT 87 psi (6 bar)		TOTAL STROKE mm	ROTARY STROKE mm	CLAMP STROKE mm	STROKE TOLERANCE mm	ROTARY TOLERANCE including backlash degree	CLAMP WEIGHT	
		lb	N						lb	g
PBS2	25	51	226	19.5	9.5	10	- 1 mm, + 2 mm	± 3	0.72	326
PBL2	25	51	226	29.5	9.5	20	- 1 mm, + 2 mm	± 3	0.82	374
PBS3	32	81	360	25	15	10	- 1 mm, + 2 mm	± 3	1.18	537
PBL3	32	81	360	35	15	20	- 1 mm, + 2 mm	± 3	1.34	608
PBS4	40	143	636	25	15	10	- 1 mm, + 2 mm	± 3	1.50	680
PBL4	40	143	636	35	15	20	- 1 mm, + 2 mm	± 3	1.68	764
PBS5	50	223	992	39	19	20	- 1 mm, + 2 mm	± 3	2.55	1160
PBL5	50	223	992	69	19	50	- 1 mm, + 2 mm	± 3	3.10	1410
PCL5	50	223	992	69	19	50	- 1 mm, + 2 mm	± 3	3.10	1410

DIMENSIONS: SERIES PB SWING CLAMPS



UNIT IS SHOWN WITH ARM OPTION -ASA

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



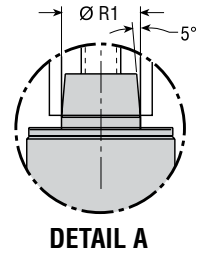
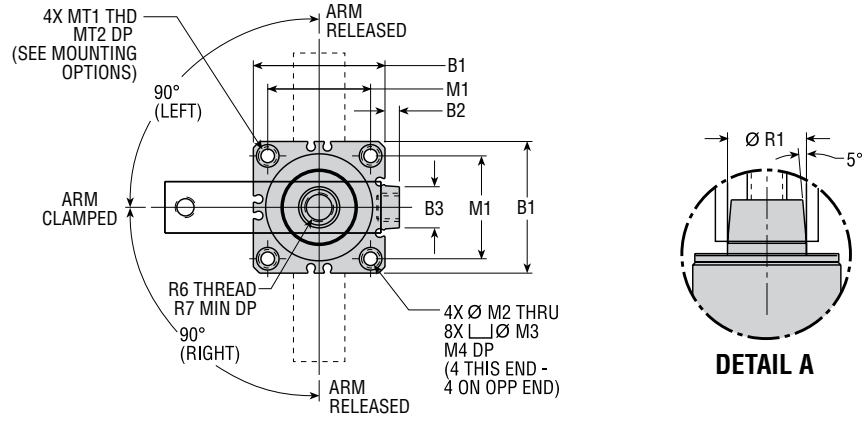
LETTER DIM	MOUNTING OPTIONS					
	MA1	MP1	MB1	MA5	MP5	MB5
	5	6	5 & 6	5	6	5 & 6
MT1	5/16-18			M8 x 1.25		
MT2	1.026	26.1	1.026	26.1		

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	.197	5.0	.197	5.0	.177	4.5	.177	4.5	.197	5.0	.197	5.0	.276	7.0	.276	7.0
B3	.378	9.6	.378	9.6	.650	16.5	.650	16.5	.709	18.0	.709	18.0	.787	20.0	.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	.9055	23.000	.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	.9024	22.920	.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	.118	3.0	.118	3.0	.118	3.0	.118	3.0	.118	3.0	.118	3.0	.138	3.5	.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	.217	5.5	.217	5.5	.217	5.5	.217	5.5	.217	5.5	.217	5.5	.260	6.6	.260	6.6
M3	.354	9.0	.354	9.0	.354	9.0	.354	9.0	.354	9.0	.354	9.0	.433	11.0	.433	11.0
M4	.275	7.0	.275	7.0	.354	9.0	.354	9.0	.472	12.0	.472	12.0	.512	13.0	.512	13.0
P1	.736	18.7	.736	18.7	.787	20.0	.787	20.0	.787	20.0	.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	.472	12.0	.472	12.0	.630	16.0	.630	16.0	.629	16.0	.630	16.0	.787	20.0	.787	20.0
R2 MAX	.3898	9.9	.3898	9.9	.5472	13.9	.5472	13.9	.548	13.9	.5472	13.9	.6654	16.9	.6654	16.9
R2 MIN	.3846	9.77	.3846	9.77	.5421	13.77	.5421	13.77	.5421	13.77	.5421	13.77	.6602	16.77	.6602	16.77
R3	.118	3.0	.118	3.0	.217	5.5	.217	5.5	.217	5.5	.217	5.5	.217	5.5	.217	5.5
R4	.157	4.0	.157	4.0	.256	6.5	.256	6.5	.256	6.5	.256	6.5	.295	7.5	.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	.590	15.0	.590	15.0	.590	15.0	.590	15.0	.590	15.0	.590	15.0	.590	15.0	.590	15.0
S1* MIN	.768	19.5	1.161	29.5	.984	25.0	1.378	35.0	.984	25.0	1.378	35.0	1.535	39.0	2.716	69.0
S2*	.374	9.5	.374	9.5	.591	15.0	.591	15.0	.591	15.0	.591	15.0	.748	19.0	.748	19.0
S3*	.394	10.0	.787	20.0	.394	10.0	.787	20.0	.394	10.0	.787	20.0	.787	20.0	1.968	50.0

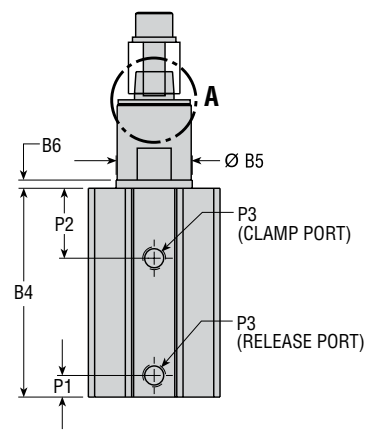
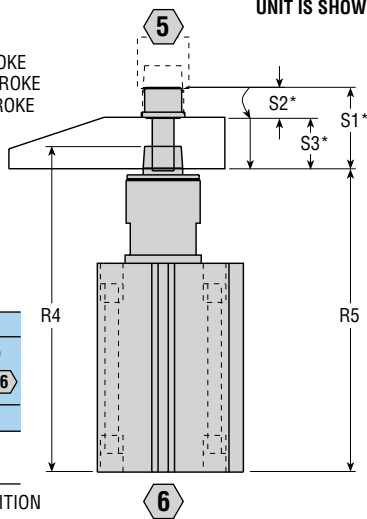
All dimensions are reference only unless specifically tolerated.

DIMENSIONS: SERIES PC SWING CLAMPS



UNIT IS SHOWN WITH ARM OPTION -ASA

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



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

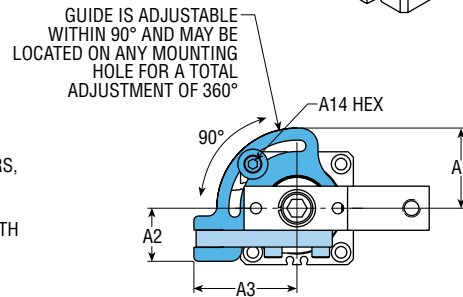
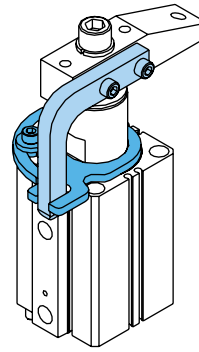
NOTE: NUMBERS ENCLOSED IN HEX INDICATE POSITION

LETTER DIM	MODEL NUMBER	
	PCL5x in	mm
B1	2.520	64.0
B2	.276	7.0
B3	.787	20.0
B4	5.177	131.5
B5 MAX	1.4567	37.000
B5 MIN	1.4543	36.938
B6	.138	3.5
M1	1.968	50.0
M2	.260	6.6
M3	.433	11.0
M4	.512	13.0
P1	1.004	25.5
P2	1.535	39.0
P3	1/4 NPT	1/4 BSPP
R1	.787	20.0
R4	8.571	217.7
R5	8.169	207.5
R6	M12 x 1.75	
R7	.866	22.0
S1* MIN	2.716	69.0
S2*	.748	19.0
S3*	1.968	50.0

OPTIONS: SERIES PB/PC SWING CLAMPS

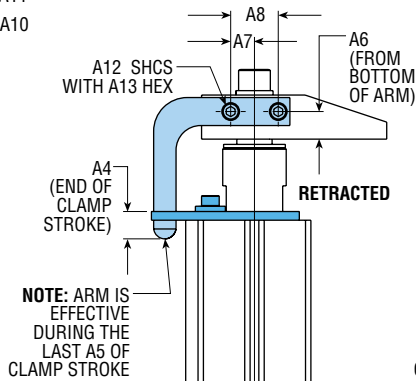
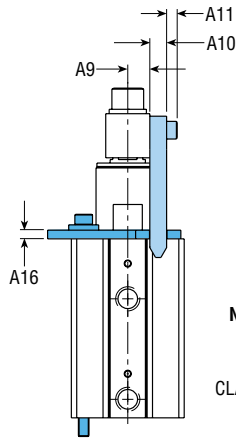
AB1 ANTI-BACKLASH ARM

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 .028 in [0.71 mm] resulting in a maximum total radial play of 0.8° max.

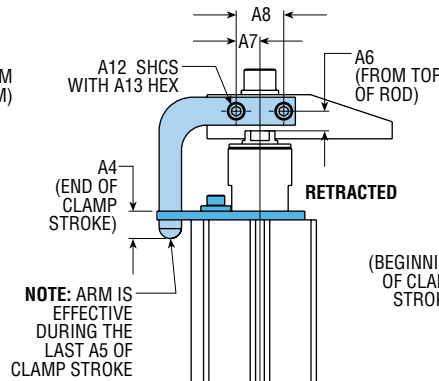


NOTE:

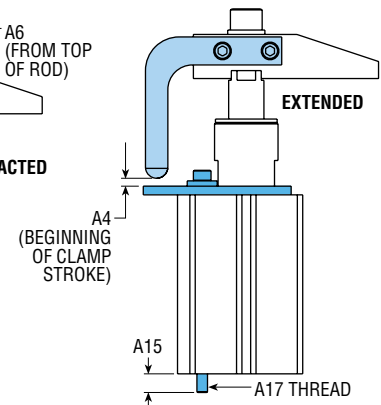
- 1) KIT INCLUDES: ANTI-BACKLASH ARM, GUIDE, ALL FASTENERS, AND ONE LONG MOUNTING BOLT RETAINED WITH A NUT (DISCARD NUT)
- 2) UNLESS OTHERWISE NOTED, ALL DIMENSIONS APPLY TO BOTH SERIES PB & PC CLAMPS



SERIES PC



SERIES PB



LETTER DIM	MODEL NUMBER																	
	PBS2x		PBL2x		PBS3x		PBL3x		PBS4x		PBL4x		PBS5x		PBL5x		PCL5x	
	in	mm	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	1.790	45.5
A2	.790	20.1	.790	20.1	.904	23.0	.904	23.0	1.125	28.6	1.125	28.6	1.185	30.1	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	2.300	58.4
A4 (BEGIN.)	.098	2.5	.177	4.5	.098	2.5	.177	4.5	.098	2.5	.177	4.5	.177	4.5	.177	4.5	.177	4.5
A4 (END)	.295	7.5	.610	15.5	.295	7.5	.610	15.5	.295	7.5	.611	15.5	.610	15.5	1.792	45.5	1.792	45.5
A5	.177	4.5	.490	12.5	.177	4.5	.492	12.5	.177	4.5	.390	9.9	.390	9.9	.390	9.9	.390	9.9
A6	.202	5.1	.202	5.1	.233	5.9	.233	5.9	.358	9.1	.358	9.1	.439	11.2	.439	11.2	.439	11.2
A7	.335	8.5	.335	8.5	.453	11.5	.453	11.5	.492	12.5	.492	12.5	.531	13.5	.531	13.5	.531	13.5
A8	.669	17.0	.669	17.0	.906	23.0	.906	23.0	.984	25.0	.984	25.0	1.062	27.0	1.062	27.0	1.062	27.0
A9	.315	8.0	.315	8.0	.394	10.0	.394	10.0	.433	11.0	.433	11.0	.492	12.5	.492	12.5	.492	12.5
A10	.250	6.4	.250	6.4	.250	6.4	.250	6.4	.375	9.5	.375	9.5	.375	9.5	.375	9.5	.375	9.5
A11	.197	5.0	.197	5.0	.197	5.0	.197	5.0	.236	6.0	.236	6.0	.236	6.0	.236	6.0	.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		M6 x 1.0 x 20 mm LG	
A13	.157	4.0	.157	4.0	.157	4.0	.157	4.0	.197	5.0	.197	5.0	.197	5.0	.197	5.0	.197	5.0
A14	.158	4.0	.158	4.0	.158	4.0	.158	4.0	.158	4.0	.158	4.0	.197	5.0	.197	5.0	.197	5.0
A15	.476	12.1	.476	12.1	.558	14.2	.558	14.2	.516	13.1	.516	13.1	.417	10.6	.417	10.6	.417	10.6
A16	.150	3.8	.150	3.8	.150	3.8	.150	3.8	.194	4.9	.194	4.9	.194	4.9	.194	4.9	.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		M6 x 1.0	
KIT NO.	73356-04		73356-05		73356-06		73356-07		73356-08		73356-01		73356-02		73356-03		73356-03	

All dimensions are reference only unless specifically tolerated.

OPTIONS: SERIES PB/PC SWING CLAMPS

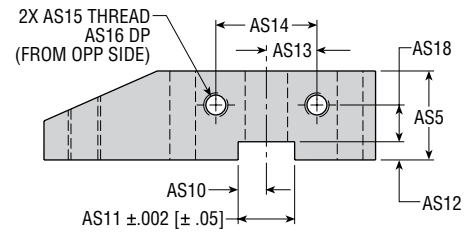
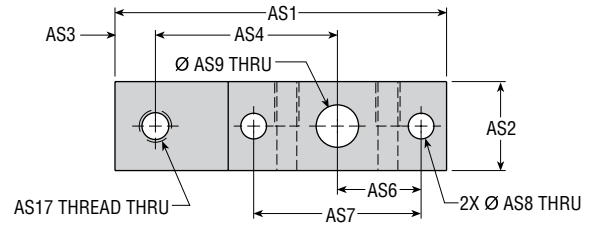
ASA SINGLE ALUMINUM ARM

Single arms are made of aluminum.

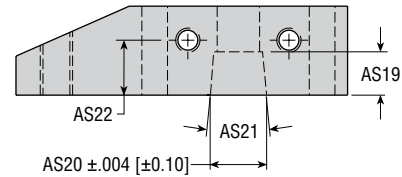
LETTER DIM	MODEL NUMBER									
	PBx2x		PBx3x		PBx4x		PBx5x		PCL5x	
	in	mm	in	mm	in	mm	in	mm	in	mm
AS1	2.500	63.5	3.150	80.0	3.229	82.0	4.134	105.0	4.134	105.0
AS2	.630	16.0	.787	20.0	.866	22.0	.984	25.0	.984	25.0
AS3	.276	7.0	.394	10.0	.394	10.0	.394	10.0	.394	10.0
AS4	1.378	35.0	1.772	45.0	1.772	45.0	2.559	65.0	2.559	65.0
AS5	.550	14.0	.710	18.0	.866	22.0	.984	25.0	.984	25.0
AS6	.630	16.0	.813	20.7	.815	20.7	.915	23.2	.915	23.2
AS7	1.260	32.0	1.625	41.3	1.630	41.4	1.830	46.5	1.830	46.5
AS8	.189	4.8	.224	5.7	.250	6.4	.250	6.4	.266	6.8
AS9	.328	8.3	.413	10.5	.413	10.5	.492	12.5	.492	12.5
AS10	.196	5.0	.274	7.0	.275	7.0	.334	8.5	—	—
AS11	.391	9.9	.549	13.9	.550	14.0	.668	17.0	—	—
AS12	.098	2.5	.177	4.5	.177	4.5	.177	4.5	—	—
AS13	.335	8.5	.453	11.5	.492	12.5	.531	13.5	.531	13.5
AS14	.669	17.0	.906	23.0	.984	25.0	1.062	27.0	1.062	27.0
AS15	M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8	M6 x 1.0	M6 x 1.0	M6 x 1.0	M6 x 1.0	M6 x 1.0	M6 x 1.0
AS16	.433	11.0	.433	11.0	.433	11.0	.433	11.0	.433	11.0
AS17	M6 x 1.0	M8 x 1.25	M8 x 1.25	M8 x 1.25	M10 x 1.5	M10 x 1.5	—	—	—	—
AS18	.202	5.1	.233	5.9	.358	9.1	.439	11.1	—	—
AS19	—	—	—	—	—	—	—	—	.527	13.4
AS20	—	—	—	—	—	—	—	—	.783	19.89
AS21	—	—	—	—	—	—	—	—	10° ±1°	—
AS22	—	—	—	—	—	—	—	—	.616	15.6
KIT NO.	73352-003	73352-004	73352-001	73352-002	80267-05-03-01	—	—	—	—	—

NOTES:

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



SERIES PC ONLY



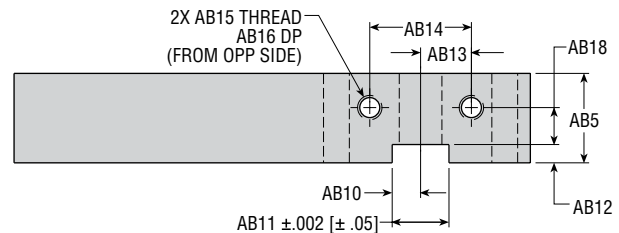
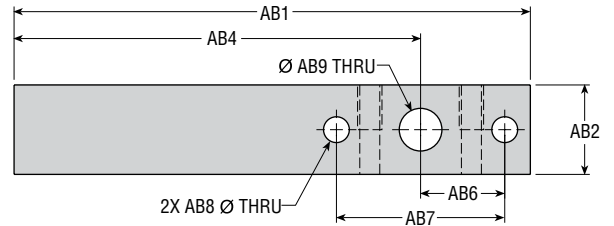
ASB SINGLE ALUMINUM BLANK ARM

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

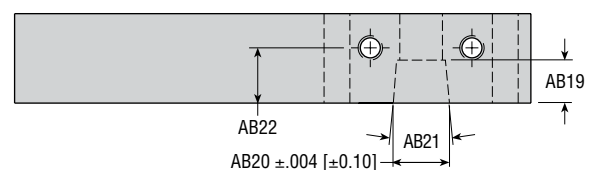
LETTER DIM	MODEL NUMBER									
	PBx2x		PBx3x		PBx4x		PBx5x		PCL5x	
	in	mm	in	mm	in	mm	in	mm	in	mm
AB1	3.642	92.5	4.921	125.0	5.000	127.0	6.693	170.0	6.693	170.0
AB2	.630	16.0	.787	20.0	.866	22.0	.984	25.0	.984	25.0
AB4	2.796	71.0	3.937	100.0	3.937	100.0	5.512	140.0	5.512	140.0
AB5	.550	14.0	.710	18.0	.866	22.0	.984	25.0	.984	25.0
AB6	.630	16.0	.813	20.7	.815	20.7	.915	23.2	.915	23.2
AB7	1.260	32.0	1.625	41.3	1.630	41.4	1.830	46.5	1.830	46.5
AB8	.189	4.8	.224	5.7	.250	6.4	.250	6.4	.266	6.8
AB9	.328	8.3	.413	10.5	.413	10.5	.492	12.5	.492	12.5
AB10	.196	5.0	.274	7.0	.275	7.0	.334	8.5	—	—
AB11	.391	9.9	.549	13.9	.550	14.0	.668	17.0	—	—
AB12	.098	2.5	.177	4.5	.177	4.5	.177	4.5	—	—
AB13	.335	8.5	.453	11.5	.492	12.5	.531	13.5	.531	13.5
AB14	.669	17.0	.906	23.0	.984	25.0	1.062	27.0	1.062	27.0
AB15	M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8	M6 x 1.0	M6 x 1.0	M6 x 1.0	M6 x 1.0	M6 x 1.0	M6 x 1.0
AB16	.433	11.0	.433	11.0	.433	11.0	.433	11.0	.433	11.0
AB18	.202	5.1	.233	5.9	.358	9.1	.439	11.1	—	—
AB19	—	—	—	—	—	—	—	—	.527	13.4
AB20	—	—	—	—	—	—	—	—	.783	19.89
AB21	—	—	—	—	—	—	—	—	10° ±1°	—
AB22	—	—	—	—	—	—	—	—	.616	15.6
KIT NO.	73354-003	73354-004	73354-001	73354-002	80268-05-03-01	—	—	—	—	—

NOTES:

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



SERIES PC ONLY

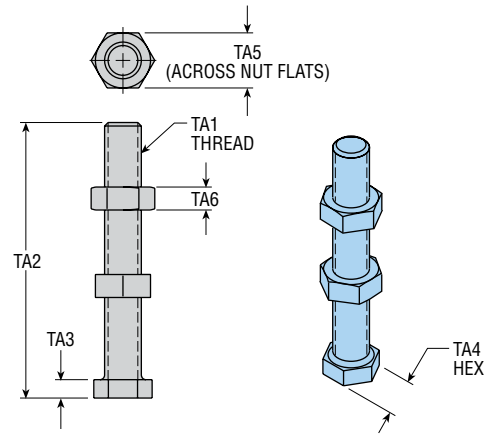


OPTIONS: SERIES PB/PC SWING CLAMPS

TA STEEL SPINDLE

Steel spindles are plated steel with two hex nuts included.

LETTER DIM	MODEL NUMBER							
	PBx2x		PBx3x		PBx4x		PBx5x / PCL5x	
	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	.209	5.3	.209	5.3	.252	6.4
TA4	0.394	10.0	.512	13.0	.512	13.0	.748	19.0
TA5	0.394	10.0	.472	12.0	.472	12.0	.669	17.0
TA6	0.197	5.0	.217	5.5	.217	5.5	.315	8.0
KIT NO.	71200-02		71200-03		71200-03		71200-06	



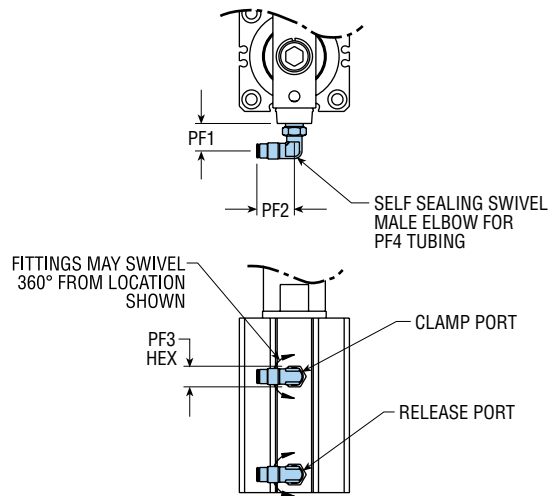
LAA PORT FITTINGS

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

LETTER DIMENSION	MODEL NUMBER			
	PBx3x & PBx4x		PBx5x / PCL5x	
	in	mm	in	mm
PF1 (MIN)	.629	12.0	.767	20.5
PF2	.885	20.0	1.102	28.0
PF3	.472	12.0	.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 tolerated.

OPTIONS: SERIES PB/PC SWING CLAMPS

LOAD CAPACITIES WITH AND WITHOUT SPEED REDUCER FITTINGS

When Series PB or PC 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 page 21 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.

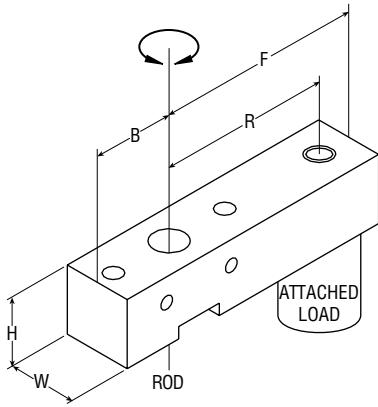
These graphs assume the following:

- The clamp is mounted vertically.
- Loads are attached to ASB Arms or identical customer-supplied aluminum arms.
- The arms are only .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 Inertia (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-sec²)

g = Gravitational Constant (386.4 in/sec²)

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 .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 .3 lb

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

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

$$\text{Arm Jm} = .0002587 \times .4166 + .00103 \times 5.4166$$

Arm Jm = .005687 in-lb-sec²

Attached Load Jm Attached load is .3 lb R = 3.0

$$\text{Load Jm} = \frac{.3}{386.4} \times 3.0^2$$

$$\text{Load Jm} = .0007763 \times 9.0$$

Load Jm = .006987 in-lb-sec²

Weld Cover Jm from Chart A = .00127 in-lb-sec²

TOTAL Jm 0.005687 + 0.006987 + 0.00127 = 0.013944 in-lb-sec²

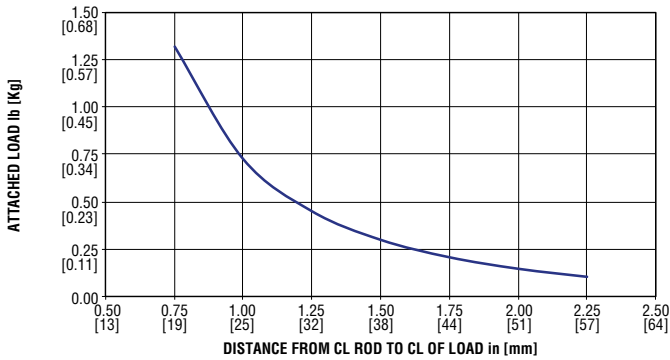
From Chart A, Allowable Jm is .030 in-lb-sec², SR40 fitting is not required. If the Jm had been larger than .030 in-lb-sec², then SR40 fitting would be required.

CHART A - MAXIMUM ALLOWABLE MOMENT OF INERTIA

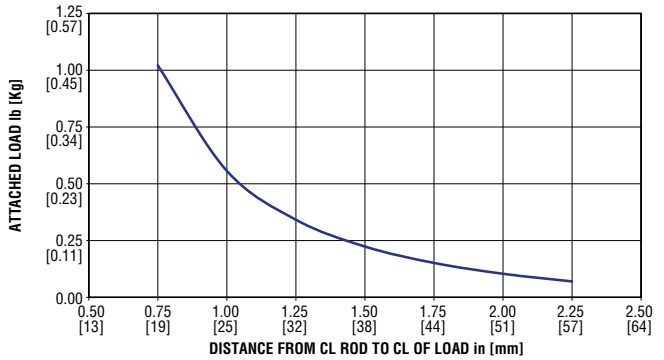
MODEL	MAX. ALLOWABLE Jm in-lb-sec ²		ROTATIONAL MOMENT OF INERTIA in-lb-sec ²			
	STD PORTS	SR FITTINGS	Short Arm	Blank Arm	Anti-backlash	Weld Cover
			ASA	ASB	AB1	WC1
PBS2	.002	—	.00012	.00067	.00023	.00005
PBL2	.002	—	.00012	.00067	.00035	.00009
PBS3	.009	—	.00039	.00295	.00045	.00025
PBL3	.009	—	.00039	.00295	.00059	.00038
PBS4	.009	.02	.00052	.00398	.00118	.00032
PBL4	.009	.02	.00052	.00398	.00147	.00043
PBS5	.03	.06	.00143	.01395	.00237	.00067
PBL5/PCL5	.03	.06	.00143	.01395	.00383	.00126

OPTIONS: SERIES PB/PC SWING CLAMPS

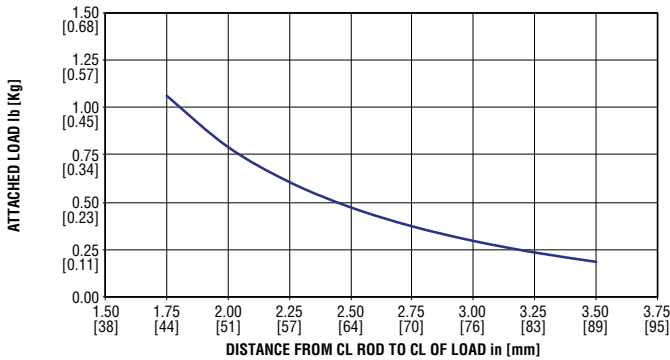
PBx2x-x-ASB



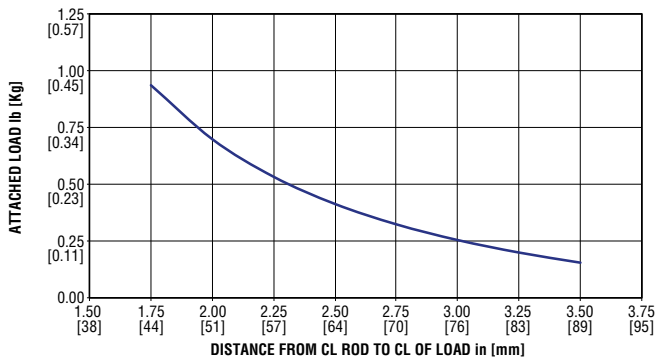
PBx2x-x-ASB-AB1-WC1



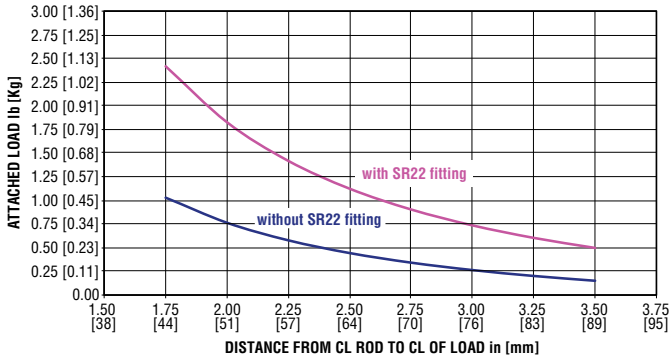
PBx3x-x-ASB



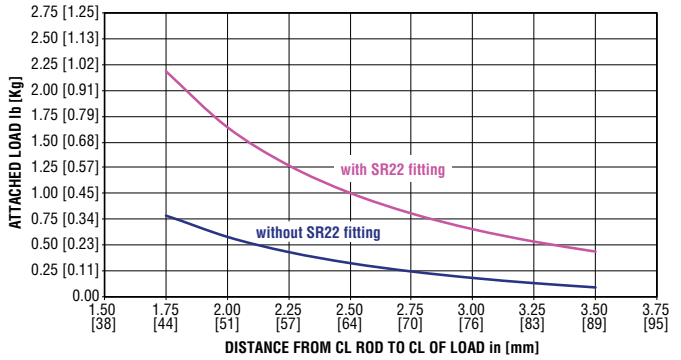
PBx3x-x-ASB-AB1-WC1



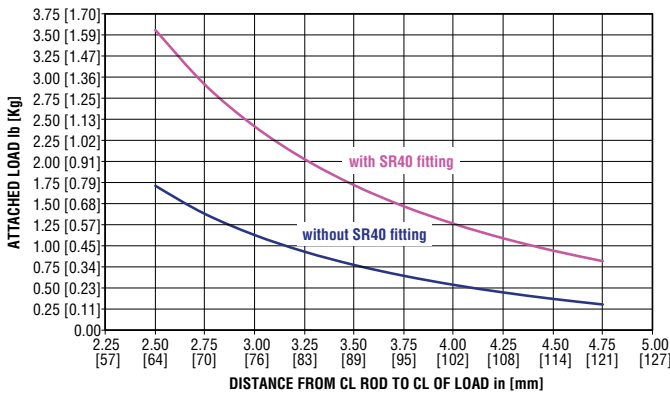
PBx4x-x-ASB



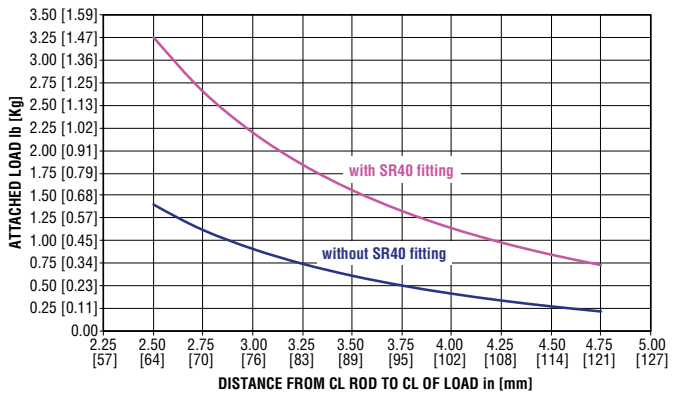
PBx4x-x-ASB-AB1-WC1



PBx5x-x-ASB & PCL5x-x-ASB



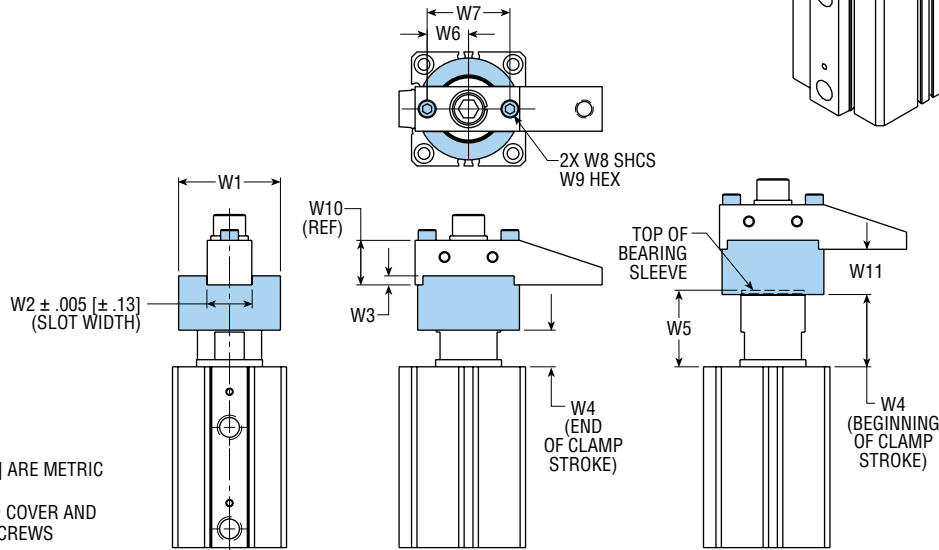
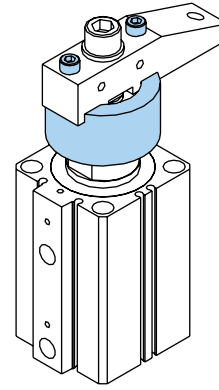
PBx5x-x-ASB-AB1-WC1 & PCL5x-x-ASB-AB1-WC1



OPTIONS: SERIES PB/PC SWING CLAMPS

WC1 ROD WELD COVER

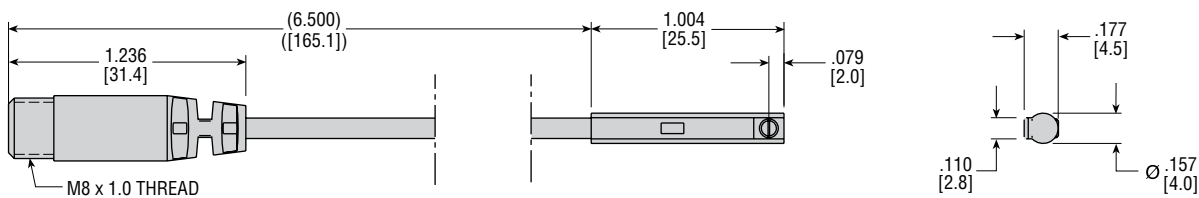
Weld cover is made of plated aluminum and protects the clamp rod from weld splatter during the clamp stroke. Order with -ASA or -ASB option.



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

LETTER DIM	MODEL NUMBER															
	PBS2x		PBL2x		PBS3x		PBL3x		PBS4x		PBL4x		PBS5x		PBL5x/PCL5x	
	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	.646	16.4	.646	16.4	.803	20.4	.803	20.4	.882	22.4	.882	22.4	1.000	25.4	1.000	25.4
W3	.080	2.0	.080	2.0	.120	3.0	.120	3.0	.120	3.0	.150	3.8	.200	5.1	.200	5.1
W4 (BEGIN.)	.610	15.5	1.004	25.5	1.003	25.5	1.398	35.5	.945	24.0	1.412	35.9	1.597	40.6	2.780	70.6
W4 (END)	.217	5.5	.217	5.5	.610	15.5	.610	15.5	.551	14.0	.625	15.9	.811	20.6	.811	20.6
W5	.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	.630	16.0	.630	16.0	.812	20.6	.812	20.6	.815	20.7	.815	20.7	.915	23.2	.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	.118	3.0	.118	3.0	.157	4.0	.157	4.0	.197	5.0	.197	5.0	.197	5.0	.197	5.0
W10	.550	14.0	.550	14.0	.710	18.0	.710	18.0	.866	22.0	.866	22.0	.984	25.0	.984	25.0
W11	.492	12.5	.886	22.5	.532	13.5	.925	23.5	.632	16.1	.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/PC SWING CLAMPS



SW41 1 NPN SWITCH PROVIDED

SW42 2 NPN SWITCHES PROVIDED

SW51 1 PNP SWITCH PROVIDED

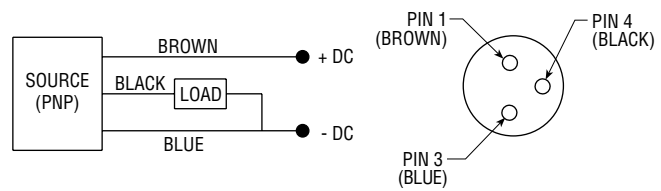
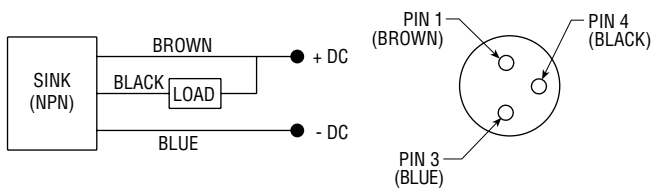
SW52 2 PNP SWITCHES PROVIDED

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

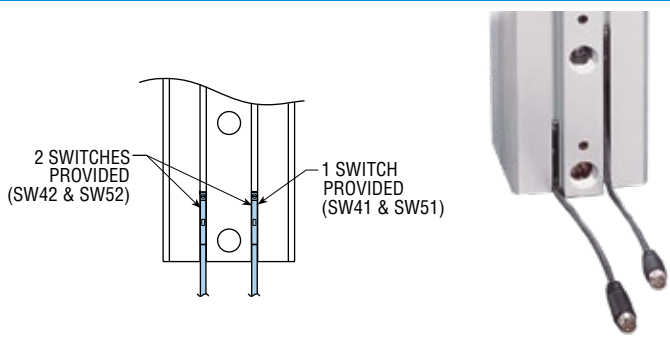
SPECIFICATIONS	73360-01
SWITCHING LOGIC	Solid State Output, Normally Open
SENSOR TYPE	NPN Current Sinking
OPERATING VOLTAGE	5 - 28 VDC
SWITCHING CURRENT	200 mA max
SWITCHING RATING	6 W max
CURRENT CONSUMPTION	20 mA @ 24 V max (Switch Active)
VOLTAGE DROP	0.5 V @ 200 mA max
LEAKAGE CURRENT	0.01 mA max
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

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

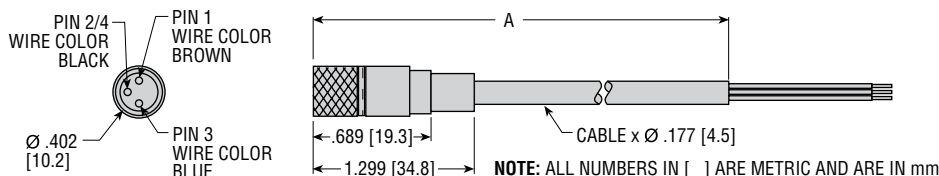
SPECIFICATIONS	73360-02
SWITCHING LOGIC	Solid State Output, Normally Open
SENSOR TYPE	PNP Current Sourcing
OPERATING VOLTAGE	5 - 28 VDC
SWITCHING CURRENT	200 mA max
SWITCHING RATING	6 W max
CURRENT CONSUMPTION	20 mA @ 24 V max (Switch Active)
VOLTAGE DROP	0.5 V @ 200 mA max
LEAKAGE CURRENT	0.01 mA max
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.



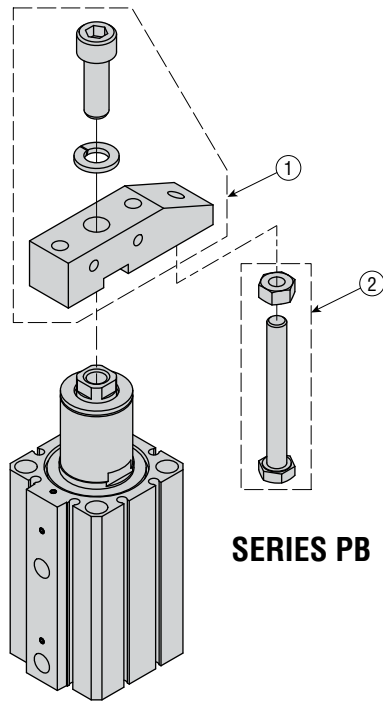
63549-xx CORDSET WITH FEMALE QUICK CONNECT



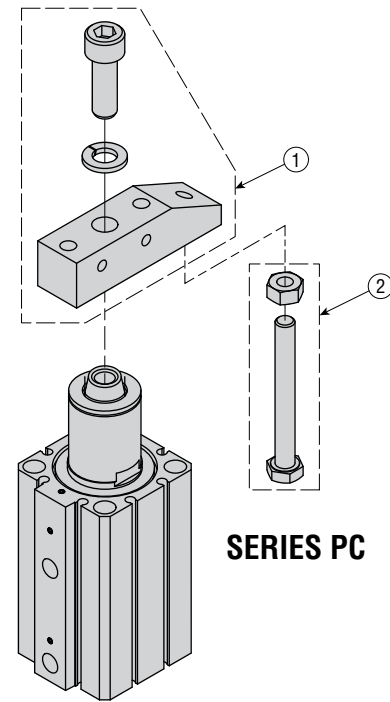
MODEL NO.	LETTER DIM.
	A
63549-02	78.74 [2 m]
63549-05	196.85 [5 m]

All dimensions are reference only unless specifically tolerated.

EXPLODED VIEW & PARTS LIST: SERIES PB/PC SWING CLAMPS



SERIES PB



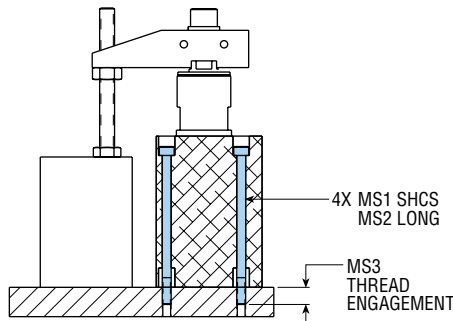
SERIES PC

KEY	DESCRIPTION	MODEL NUMBER									
		PBS2x	PBL2x	PBS3x	PBL3x	PBS4x	PBL4x	PBS5x	PBL5x	PCL5x	
1	Arm Kit	73352-003	73352-003	73352-004	73352-004	73352-001	73352-001	73352-002	73352-002	80267-05-03-01	
	Aluminum Blank	73354-003	73354-003	73354-004	73354-004	73354-001	73354-001	73354-002	73354-002	80268-05-03-01	
2	Spindle Kit	71200-02	71200-02	71200-03	71200-03	71200-03	71200-03	71200-06	71200-06	71200-06	
	Mounting Kit	73362-04	73362-05	73362-06	73362-07	73362-08	73362-01	73362-02	73362-03	73362-03	
	Anti-Backlash Kit	73356-04	73356-05	73356-06	73356-07	73356-08	73356-01	73356-02	73356-03	73356-03	
	Weld Cover Kit	73363-04	73363-05	73363-06	73363-07	73363-08	73363-01	73363-02	73363-03	73363-03	
	Switch Kit	Solid State NPN (Sink)	73360-01	73360-01	73360-01	73360-01	73360-01	73360-01	73360-01	73360-01	
		Solid State PNP (Source)	73360-02	73360-02	73360-02	73360-02	73360-02	73360-02	73360-02	73360-02	

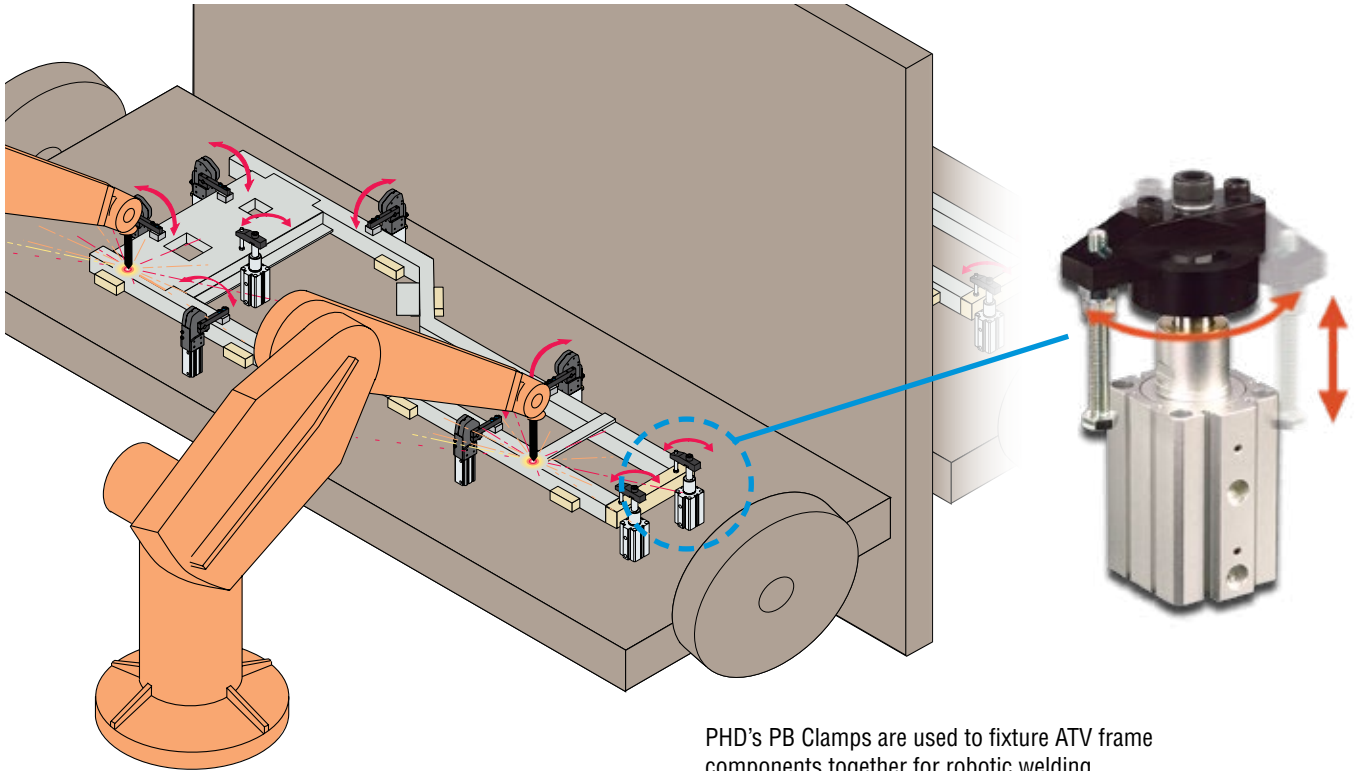
CLAMP MOUNTING KITS

LETTER	MODEL NUMBER																	
	PBS2x		PBL2x		PBS3x		PBL3x		PBS4x		PBL4x		PBS5x		PBL5x		PCL5x	
DIM	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
MS1	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		M6 x 1.0	
MS2	2.953	75.0	3.346	85.0	3.150	80.0	3.543	90.0	3.150	80.0	3.543	90.0	3.937	100.0	5.118	130.0	5.118	130.0
MS3	.354	9.0	.354	9.0	.354	9.0	.472	12.0	.472	12.0	.453	11.5	.453	11.5	.453	11.5	.453	11.5
KIT NO.	73362-04		73362-05		73362-06		73362-07		73362-08		73362-01		73362-02		73362-03		73362-03	

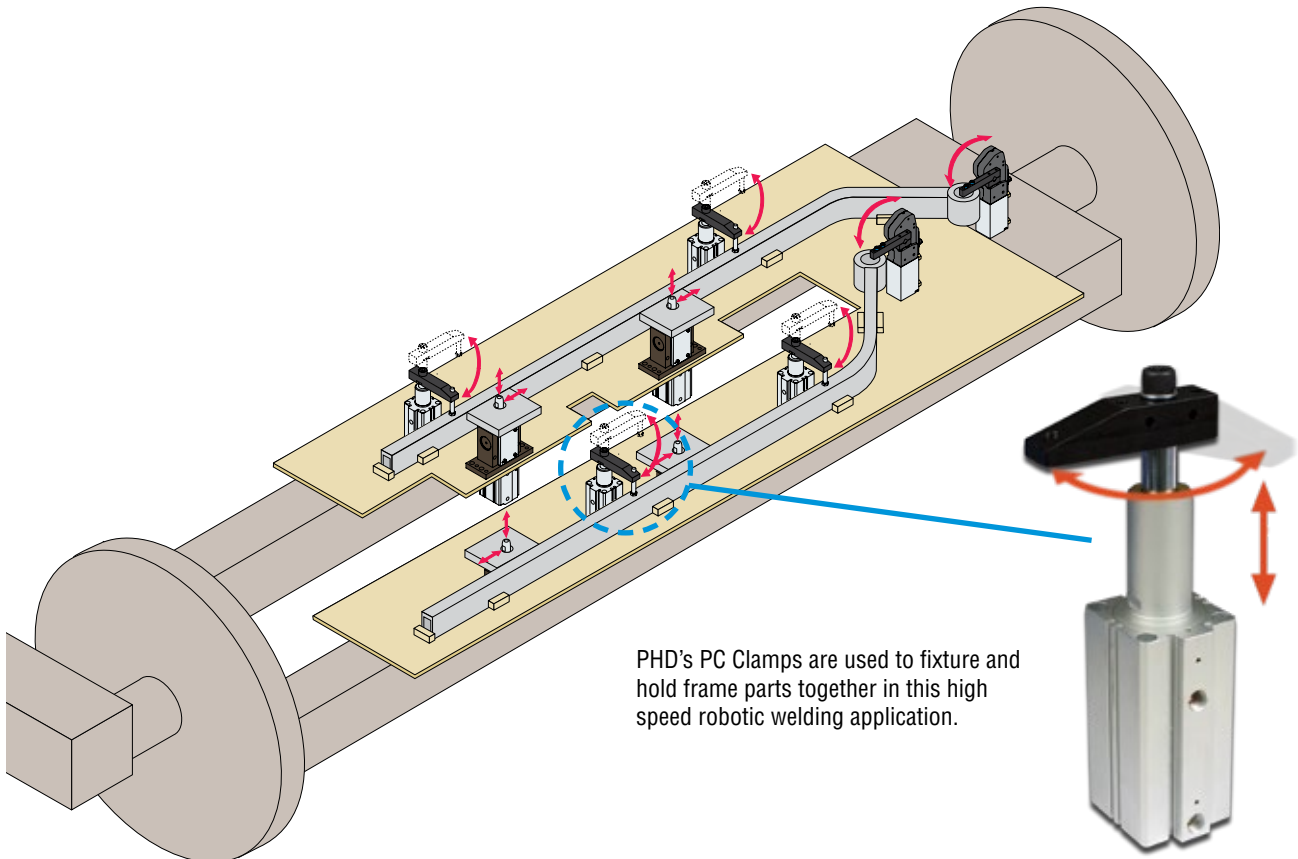
Includes four alloy socket head cap screws for mounting.



APPLICATIONS: SERIES PB/PC SWING CLAMPS



PHD's PB Clamps are used to fixture ATV frame components together for robotic welding.



PHD's PC Clamps are used to fixture and hold frame parts together in this high speed robotic welding application.