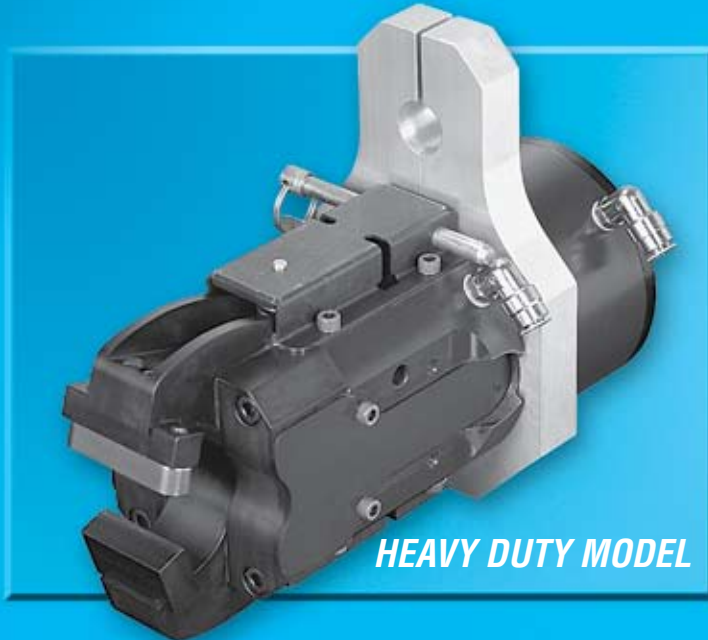


PNC

SERIES PNC

NUMBER CRUNCHER®

Automated Stamping for Part Identification



HEAVY DUTY MODEL



NUMBER® CRUNCHER



**ISO-9001
CERTIFIED**
Quality Management
System Certified



Tandem
Cylinder



Switch
Mounting
Options



Welding
Slag Shields




PATENTS #6,125,684 #6,324,886 B1 #6,499,331 B2

PNC05[©]



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SOLUTIONS FOR INDUSTRIAL AUTOMATION

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www.phdinc.com • phdinfo@phdinc.com

ORDERING DATA: SERIES PNC CLAMPS

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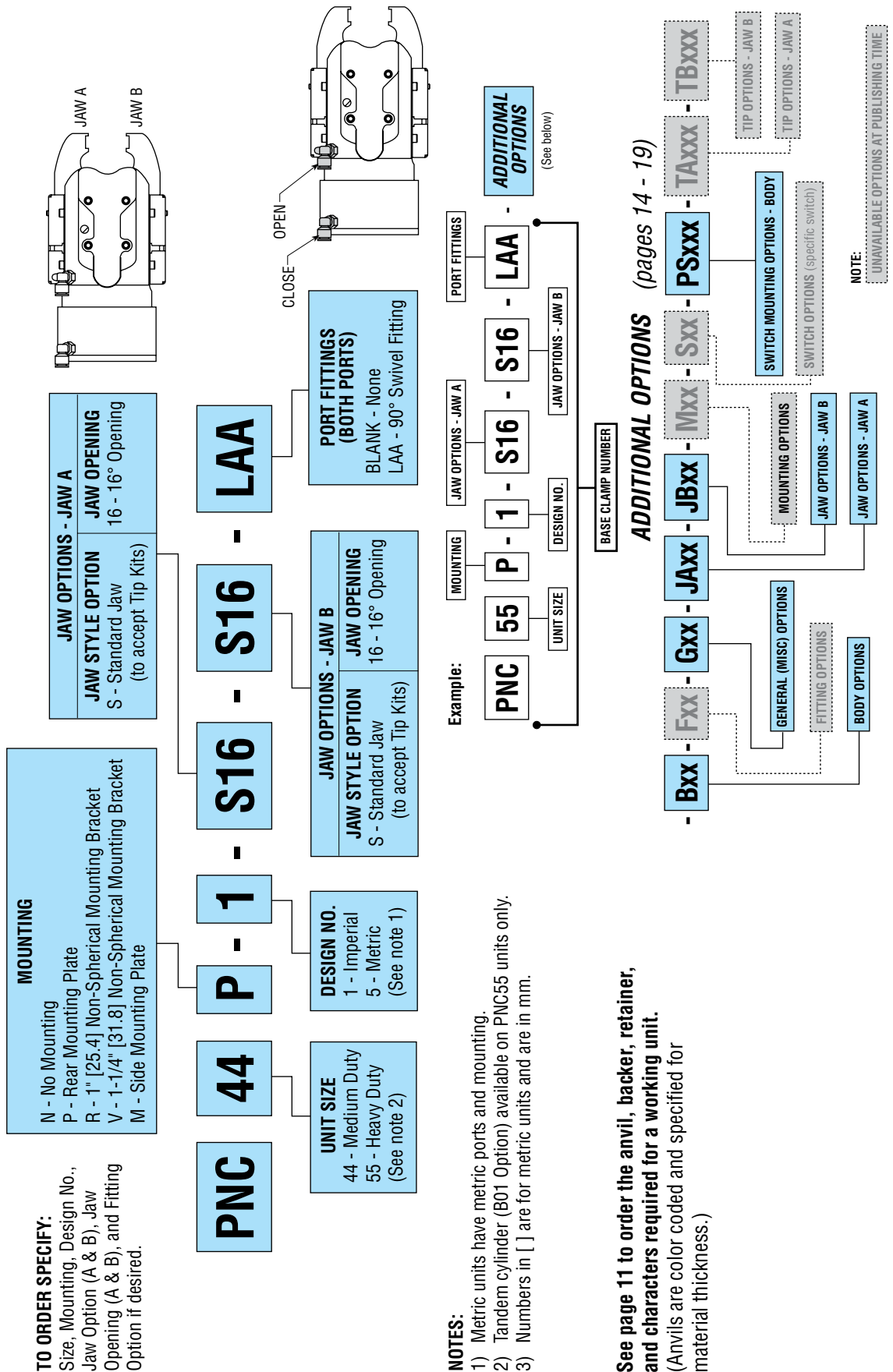
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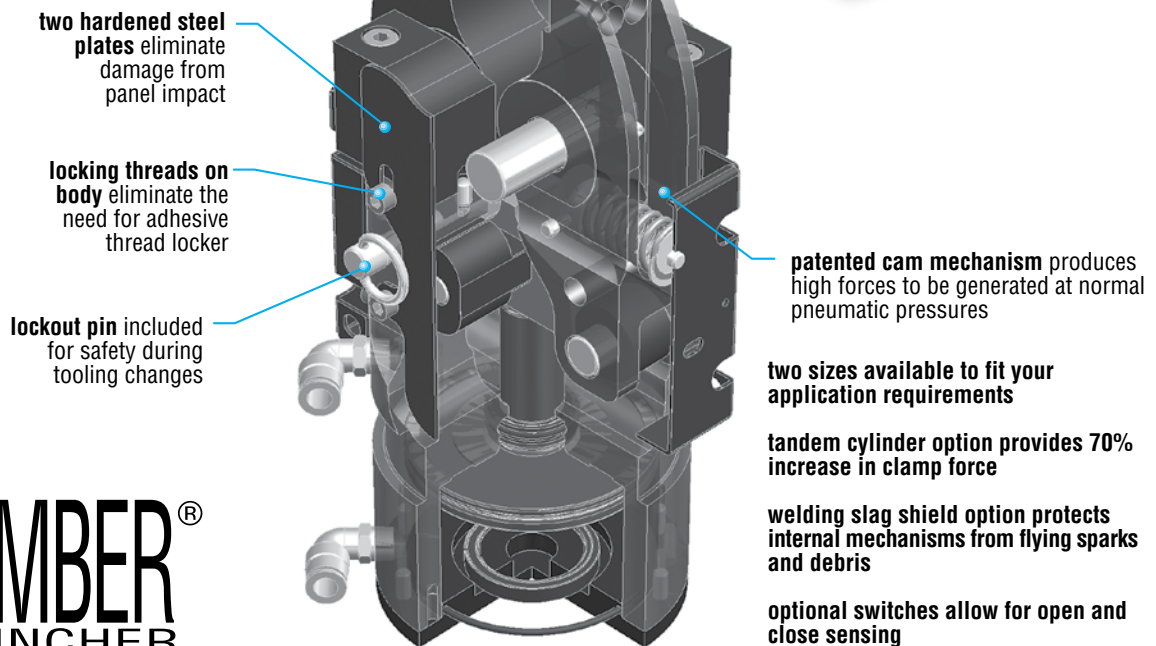
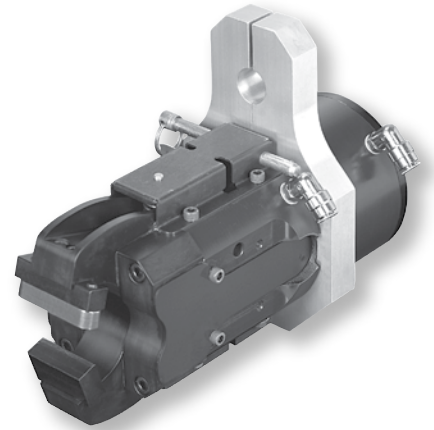


- NOTES:**
- 1) Metric units have metric ports and mounting.
 - 2) Tandem cylinder (B01 Option) available on PNC55 units only.
 - 3) Numbers in [] are for metric units and are in mm.

See page 11 to order the anvil, backer, retainer, and characters required for a working unit. (Anvils are color coded and specified for material thickness.)



AUTOMATED STAMPING FOR PART IDENTIFICATION



NUMBER® CRUNCHER

Major Benefits

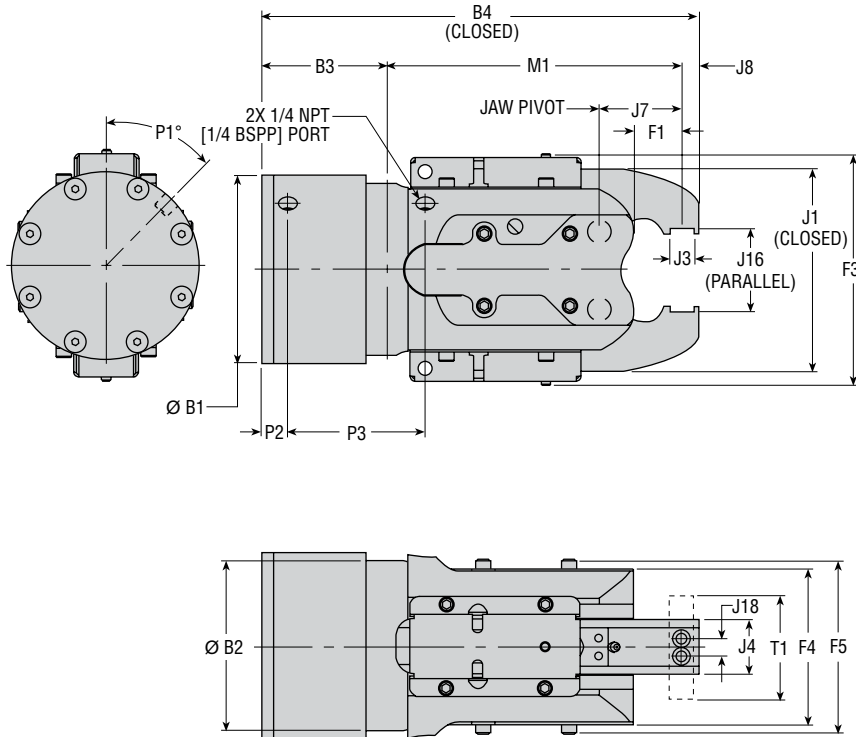
- Provides cost effective solution for stamping identification characters into parts or metal
- High clamp force produces characters in draw quality steel at 70 psi [4.8 bar]
- Operates quietly in less than .24 seconds
- Eliminates downtime associated with changing or replacing characters
- 24 hour delivery

Industry Uses

- Metal stamping
- Assembly machine builders
- Automotive Tier II & Tier III
- Aerospace



DIMENSIONS: SERIES PNC CLAMPS

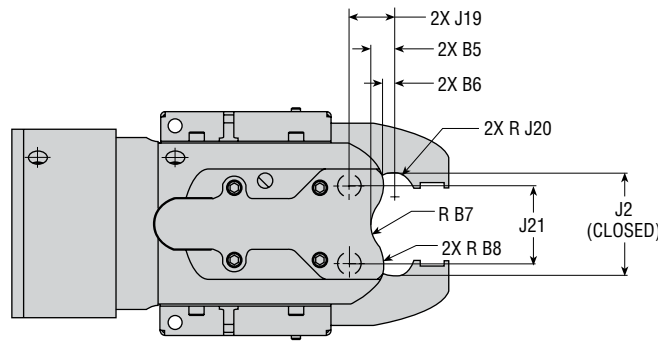


LETTER DIM	MODEL NUMBER			
	PNC44		PNC55	
	in	mm	in	mm
B1	4.902	124.5	4.902	124.5
B2	4.500	114.3	4.500	114.3
B3	3.300	83.8	3.300	83.8
B4 (CLOSED)	11.540	293.1	11.540	293.1
B5	.589	15.0	.865	22.0
B6	.247	6.3	.521	13.2
B7	.750	19.1	.750	19.1
B8	.932	23.7	.990	25.1
F1	1.273	32.3	1.273	32.3
F3	6.000	152.4	6.000	152.4
F4	4.085	103.8	4.085	103.8
F5	4.557	115.7	4.557	115.7
J1 (CLOSED)	5.284	134.2	5.284	134.2
J2 (CLOSED)	2.696	68.5	1.862	47.3
J3*	.635	16.1	.635	16.1
J4	1.440	36.6	1.440	36.6
J7	2.205	56.0	2.205	56.0
J8	.444	11.3	.444	11.3
J16 (PARALLEL)	2.161	54.9	2.161	54.9
J18	.472	12.0	.472	12.0
J19	1.179	29.9	1.453	36.9
J20	.580	14.7	1.000	25.4
J21	2.036	51.7	2.036	51.7
P1	45°	45°	45°	45°
P2	.682	17.3	.682	17.3
P3	3.602	91.5	3.602	91.5
M1	7.795	198.0	7.795	198.0
T1	2.760	70.1	2.760	70.1

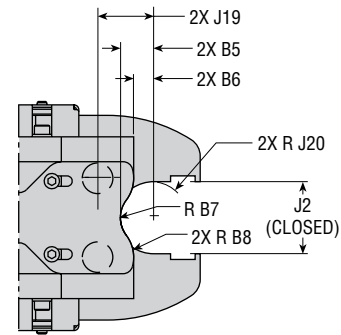
* TOLERANCE FOR J3 = ± .003 [± .076]

NOTES:

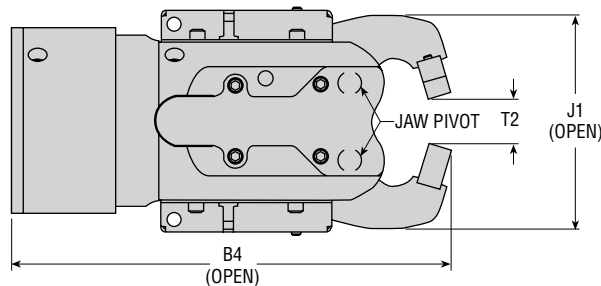
- 1) FOR MOUNTING BRACKET INFORMATION SEE PAGES 8 & 9.
- 2) NUMBERS IN [] ARE FOR METRIC UNITS AND ARE IN mm.



PNC44 UNITS ONLY

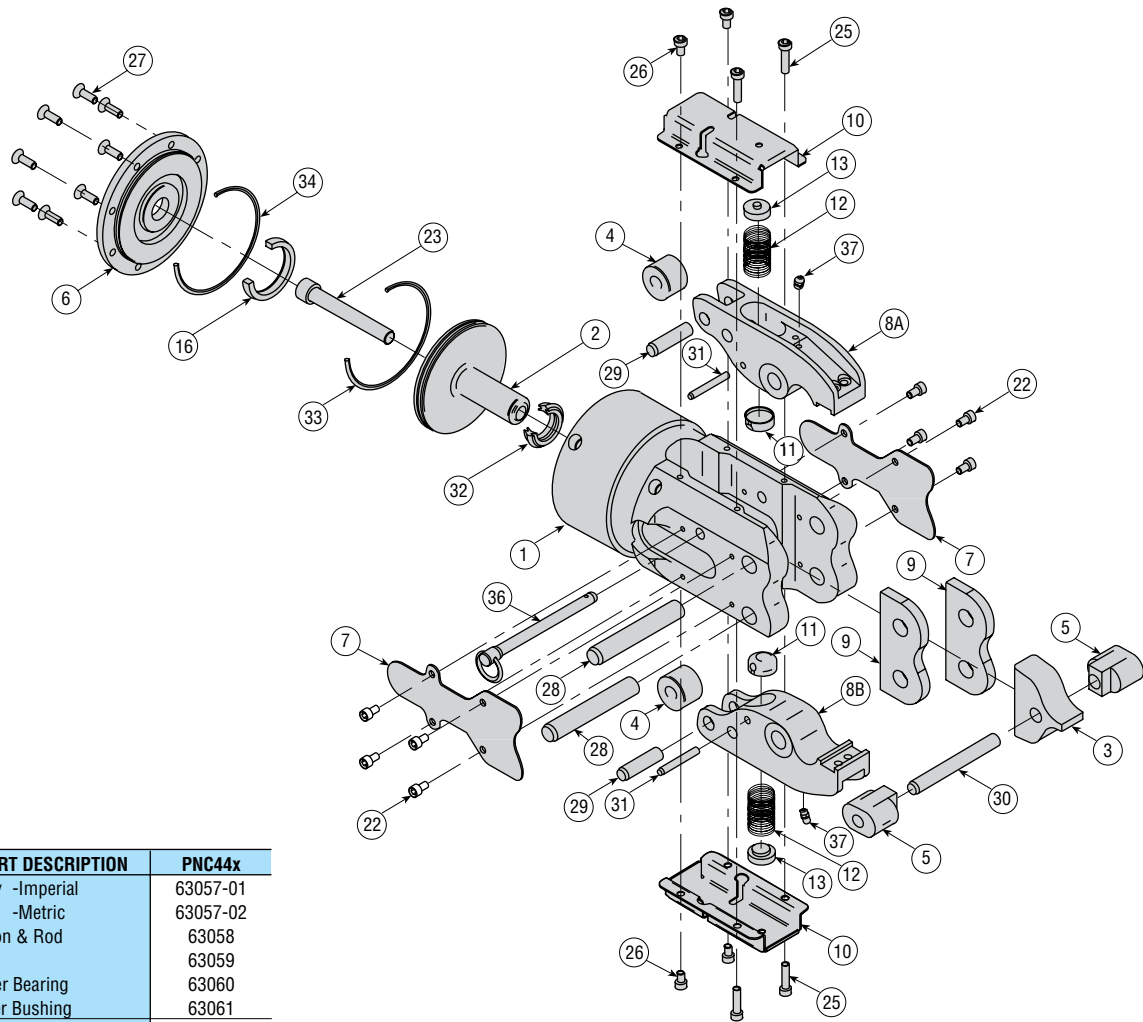


PNC55 UNITS ONLY



LETTER DIM	MODEL NUMBER			
	PNC44		PNC55	
	in	mm	in	mm
J1 (OPEN)	5.615	142.6	5.615	142.6
T2	1.157	29.4	1.157	29.4
B4 (OPEN)	11.590	294.4	11.590	294.4

PARTS BREAKDOWN: SERIES PNC44 CLAMPS

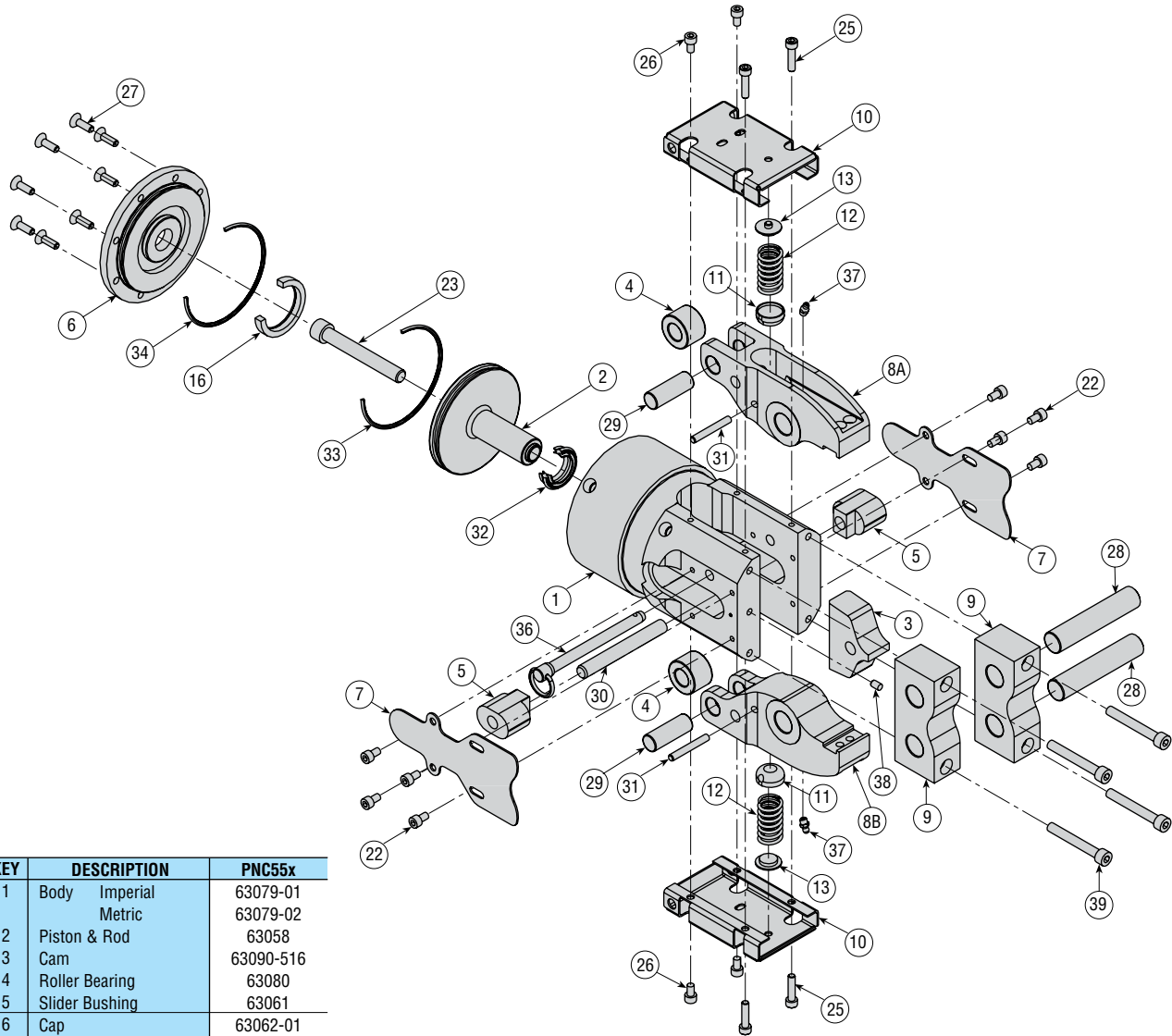


KEY	PART DESCRIPTION	PNC44x
1	Body -Imperial -Metric	63057-01 63057-02
2	Piston & Rod	63058
3	Cam	63059
4	Roller Bearing	63060
5	Slider Bushing	63061
6	Cap	63062-01
7	Impact Plate	63093
8A	Jaw (A)	63064-01
8B	Jaw (B)	63064-01
9	Pivot Pin Link	63071-02
10	Spring Cover	63072
11	Spring Retainer Cup	63066
12	Spring	15520
13	Spring Step	63073
16	Shock Pad	62648
22	Impact Plate SHCS	59104-114
23	Piston & Rod SHCS	59104-205
25	Spring Cover SHCS	59104-120
26	Spring Cover SHCS	59104-114
27	Cap SFHCS	59104-600
28	Pivot Pin	17831-056
29	Roller Bearing Pin	17831-057
30	Cam Pin	17831-058
31	Spring Retainer Cup Pin	17831-059
32	Rod Seal	62827-009-1
33	Piston Seal	3642-051-1
34	Cap Seal	3642-051-1
36	Safety Lock-out Pin	63087
37	Grease Zerk	63086

KITS

KIT DESCRIPTION	PNC44x
Seal Kit	63098-01
Fastener Kit	63097-01
Non-Spherical Mounting Bracket Kit PNC44R	Imperial 63099-01
Rear Mounting Plate Kit PNC44P	Imperial 63099-02
Side Mounting Plate Kit PNC44M	Imperial 63099-03
Oversize Non-Spherical Mounting Bracket Kit PNC44V	Imperial 63099-04

PARTS BREAKDOWN: SERIES PNC55 CLAMPS



KEY	DESCRIPTION	PNC55x
1	Body Imperial	63079-01
	Metric	63079-02
2	Piston & Rod	63058
3	Cam	63090-516
4	Roller Bearing	63080
5	Slider Bushing	63061
6	Cap	63062-01
7	Impact Plate	63093
8A	Jaw (A)	63094-01
8B	Jaw (B)	63094-01
9	Bushing Block	63091
10	Spring Cover	63082
11	Spring Retainer Cup	63066
12	Spring	15520
13	Spring Step	63081
16	Shock Pad	62648
22	Impact Plate SHCS	59104-114
23	Piston & Rod SHCS	59104-205
25	Spring Cover SHCS	59104-120
26	Spring Cover SHCS	59104-114
27	Cap SFHCS	59104-600
28	Pivot Pin	63101
29	Roller Bearing Pin	63102
30	Cam Pin	17831-058
31	Spring Retainer Cup Pin	17831-059
32	Rod Seal	62827-009-1
33	Piston Seal	3642-051-1
34	Cap Seal	3642-051-1
36	Safety Lock-out Pin	63087
37	Grease Zerk	63086
38	Bushing Block Pin	17831-162
39	Bushing Block SHCS	59104-144

KITS

KIT DESCRIPTION	PNC55x
Seal Kit	63098-01
Fastener Kit	63097-02
Non-Spherical Mounting Bracket Kit PNC55R	Imperial 63099-01
Rear Mounting Plate Kit PNC55P	Imperial 63099-02
Side Mounting Plate Kit PNC55M	Imperial 63099-03
Oversize Non-Spherical Mounting Bracket Kit PNC55V	Imperial 63099-04

ENGINEERING DATA: SERIES PNC CLAMPS

SPECIFICATIONS	SERIES PNC CLAMPS
WORKING PRESSURE	70 psi min. - 100 psi max.* [5 bar min. - 7 bar max.]
BODY	Hardcoat Aluminum
JAWS	Steel
SEALS	Bidirectional Piston Seal Lip Type Rod Seal with Integral Rod Wiper
LUBRICATION	Permanent for Non-Lube Air
TEMPERATURE LIMITS	-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				CLAMP FORCE FACTOR (C _f)	
	lb	kg	lb	kN	sec.	OPEN		CLOSE		imperial	metric
						in ³	cm ³	in ³	cm ³		
PNC44x-x-S16-S16	19.0	8.65	9000	40	0.12	19.60	321	20.87	342	103.5	6672
PNC55x-x-S16-S16	22.2	10.09	15000	66	0.12	19.60	321	20.87	342	170.0	10959

MOUNTING CODE	MOUNTING BRACKET DESCRIPTION	WEIGHT	
		lb	kg
P	Rear Mounting Plate	3.4	1.55
R	1" [25.4] Non-Spherical Mtg Bracket	2.1	0.95
V	1-1/4" [31.8] Non-Spherical Mtg Bracket	2.1	0.95
M	Side Mounting Plate	3.0	1.35

TIP KIT	TIP KIT DESCRIPTION*	WEIGHT	
		lb	kg
63140-00	Green Anvil, Backer, Retainer, 6 SHCS, & 9 Characters	0.90	0.41
63140-01	Black Anvil, Backer, Retainer, 6 SHCS, & 9 Characters	0.88	0.40
63140-02	Silver Anvil, Backer, Retainer, 6 SHCS, & 9 Characters	0.86	0.39
63140-03	Gold Anvil, Backer, Retainer, 6 SHCS, & 9 Characters	0.84	0.38
65340-00	Green Anvil, Backer, Retainer, 6 SHCS, & 8 Characters	0.86	0.39
65340-01	Black Anvil, Backer, Retainer, 6 SHCS, & 8 Characters	0.84	0.38
65340-02	Silver Anvil, Backer, Retainer, 6 SHCS, & 8 Characters	0.82	0.37
65340-03	Gold Anvil, Backer, Retainer, 6 SHCS, & 8 Characters	0.80	0.36

*Characters ordered separately

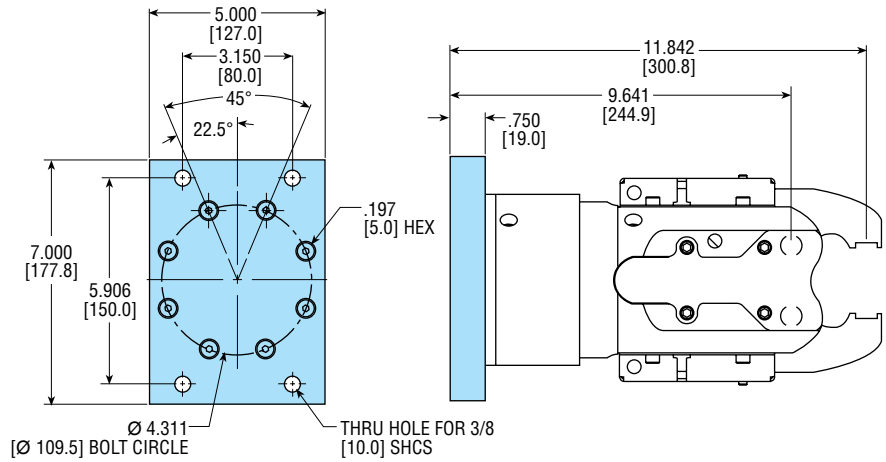
MOUNTING BRACKET DIMENSIONS: SERIES PNC CLAMPS

REAR MOUNTING BRACKET

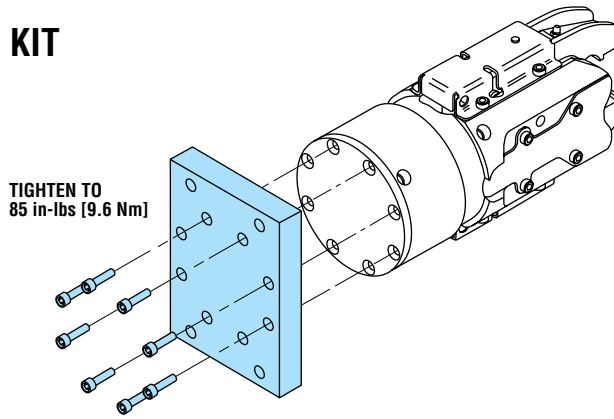
PNCxx **P**

NOTES:

- 1) NUMBERS IN [] ARE FOR METRIC UNITS AND ARE IN mm.
- 2) PLATE MAY ROTATE IN 45° INCREMENTS ABOUT UNIT CENTERLINE.



REAR MOUNTING KIT



TO ORDER KIT SEPARATELY:

DESCRIPTION	KIT NUMBER
	PNCxxP
REAR MOUNTING PLATE KIT	63099-02

NOTE:

REMOVAL OF 8 CAP SFHCS IS REQUIRED BEFORE REAR MOUNTING PLATE CAN BE ASSEMBLED.

SIDE MOUNTING BRACKET

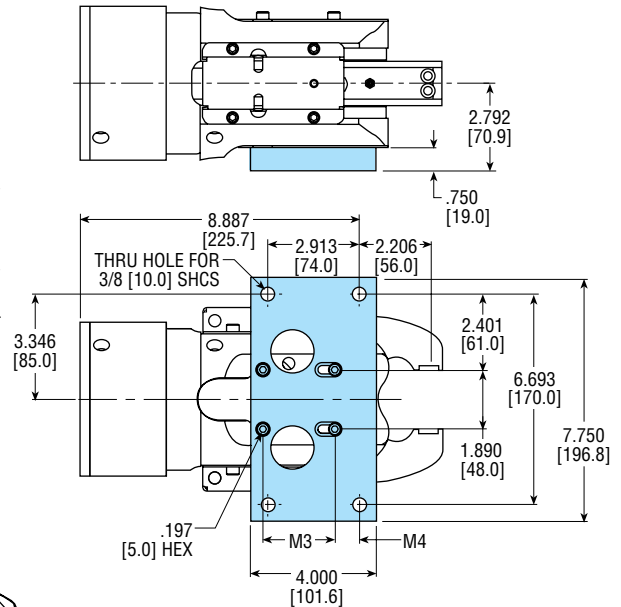
PNCxx **M**

When PS(R) option is ordered with PNCxxM option, the switch housing position takes precedence over the mount position.

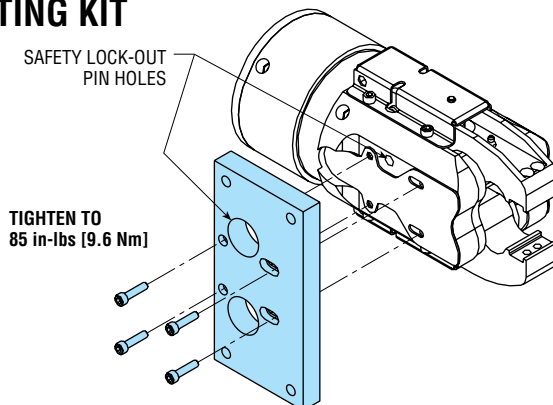
Example: PNC55M-1-S16-S16-LAA-PS1D2
= The mount will be in position 3.

LETTER DIM	MODEL NUMBER			
	PNC44		PNC55	
M3	2.283	58.0	1.890	48.0
M4	.784	19.9	1.176	29.8

NOTE: NUMBERS IN [] ARE FOR METRIC UNITS AND ARE IN mm.



SIDE MOUNTING KIT



TO ORDER KIT SEPARATELY:

DESCRIPTION	KIT NUMBER
	PNCxxM
SIDE MOUNTING PLATE KIT	63099-03

NOTE:

REMOVAL OF 4 IMPACT PLATE SHCS IS REQUIRED BEFORE SIDE MOUNTING PLATE CAN BE ASSEMBLED.

MOUNTING BRACKET DIMENSIONS: SERIES PNC CLAMPS

NON-SPHERICAL MOUNTING BRACKET

PNCxx **R**

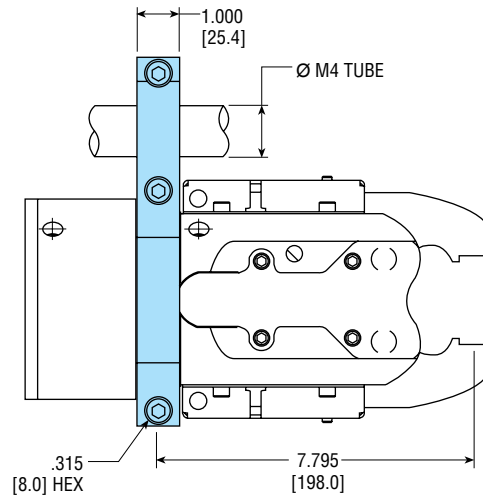
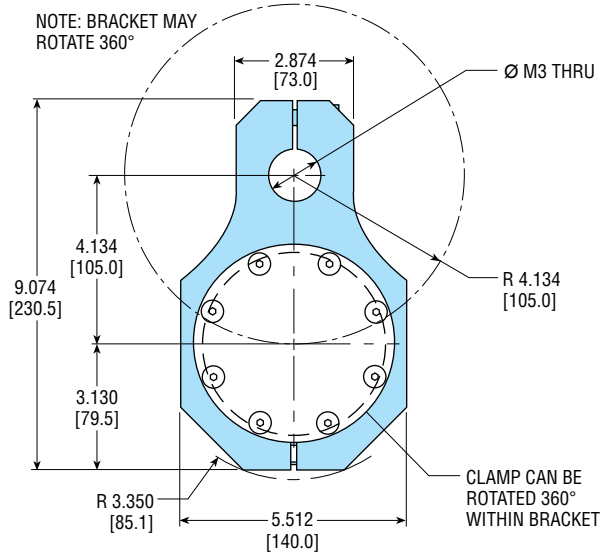
PNCxx **V**

LETTER DIM	MODEL NUMBER			
	PNCxxR		PNCxxV	
	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 = ±.002 [.051]

NOTES:

- 1) NUMBERS IN [] ARE FOR METRIC UNITS AND ARE IN mm.
- 2) BRACKET MAY ROTATE 360° ABOUT M4 TUBE.



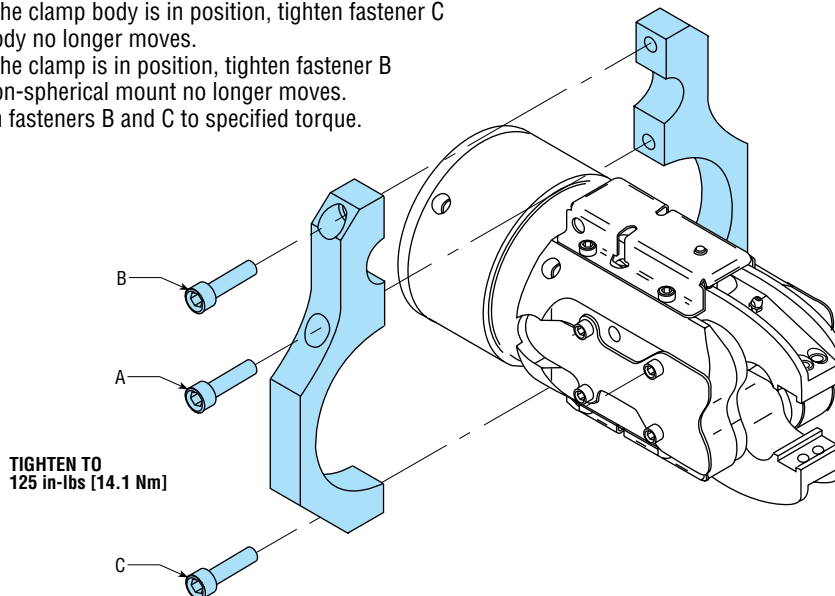
NON-SPHERICAL MOUNTING KIT

Installation Procedure:

- 1) Insert body between non-spherical bracket halves.
- 2) Insert fasteners
 - A) Tighten fastener A to specified torque. This will allow the clamp body and non-spherical mount free for adjustment 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:

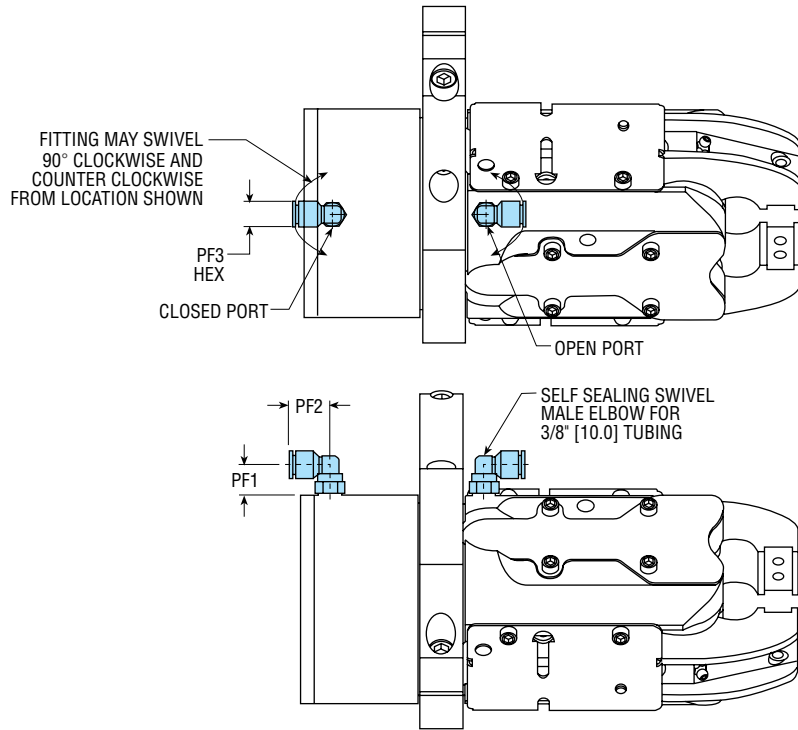
KIT DESCRIPTION	KIT NUMBER	
	PNCxxR	PNCxxV
NON-SPHERICAL MOUNTING KIT	63099-01	63099-04



All dimensions are reference only unless specifically tolerated.

PORT FITTING DIMENSIONS: SERIES PNC CLAMPS

- LAA OPTION (FITTINGS IN BOTH PORTS)

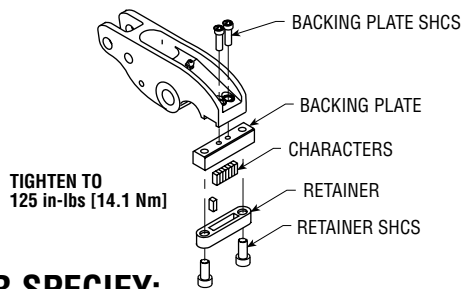


LETTER DIM	MODEL NUMBER PNCxx	
	in	mm
PF1	.767	20.5
PF2	1.102	28.0
PF3	.551	14.0

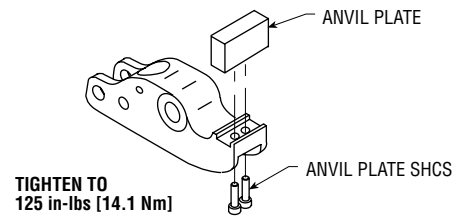
NOTE:
TO ORDER FITTINGS SEPARATELY,
PART NO. 62178-010 -IMPERIAL
PART NO. 62195-010 -METRIC

ANVILS, BACKERS, RETAINERS, & CHARACTERS

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, & 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-bracket kit. (Ex: **63130-01** for 1/8" tall char.) (Ex: **65330-01** for 3/16" tall char.)

Characters are ordered individually. (Ex: **63100-N6** = 1/8" tall char. number 6) (Ex: **65330-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.

KITS FOR 1/8" TALL CHARACTERS

PANEL THICKNESS			PART COLOR	KIT NUMBER ANVIL	KIT NUMBER BACKER	KIT NUMBER RETAINER	KIT NUMBER (ANVIL & BACKER)	KIT NUMBER (ANVIL, BACKER & RETAINER)
PNC44	PNC55	-B01 OPTION						
.25 - 1.25 mm	—	.25 - 1.00 mm	GREEN	65500-00	63120-09	63110-09	63130-00	63140-00
1.25 - 2.50 mm	.25 - 1.50 mm	1.00 - 2.25 mm	BLACK	65500-01			63130-01	63140-01
2.50 - 3.75 mm	1.50 - 3.00 mm	2.25 - 3.50 mm	SILVER	65500-02			63130-02	63140-02
3.75 - 4.75 mm	3.00 - 4.25 mm	3.50 - 4.75 mm	GOLD	65500-03			63130-03	63140-03

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

PANEL THICKNESS			PART COLOR	KIT NUMBER ANVIL	KIT NUMBER BACKER	KIT NUMBER RETAINER	KIT NUMBER (ANVIL & BACKER)	KIT NUMBER (ANVIL, BACKER & RETAINER)
PNC44	PNC55	-B01 OPTION						
.25 - 1.25 mm	—	.25 - 1.00 mm	GREEN	65500-00	65320-08	65310-08	65330-00	65340-00
1.25 - 2.50 mm	.25 - 1.50 mm	1.00 - 2.25 mm	BLACK	65500-01			65330-01	65340-01
2.50 - 3.75 mm	1.50 - 3.00 mm	2.25 - 3.50 mm	SILVER	65500-02			65330-02	65340-02
3.75 - 4.75 mm	3.00 - 4.25 mm	3.50 - 4.75 mm	GOLD	65500-03			65330-03	65340-03

ALL KITS INCLUDE FASTENERS REQUIRED FOR INSTALLATION

3/16" TALL CHARACTERS

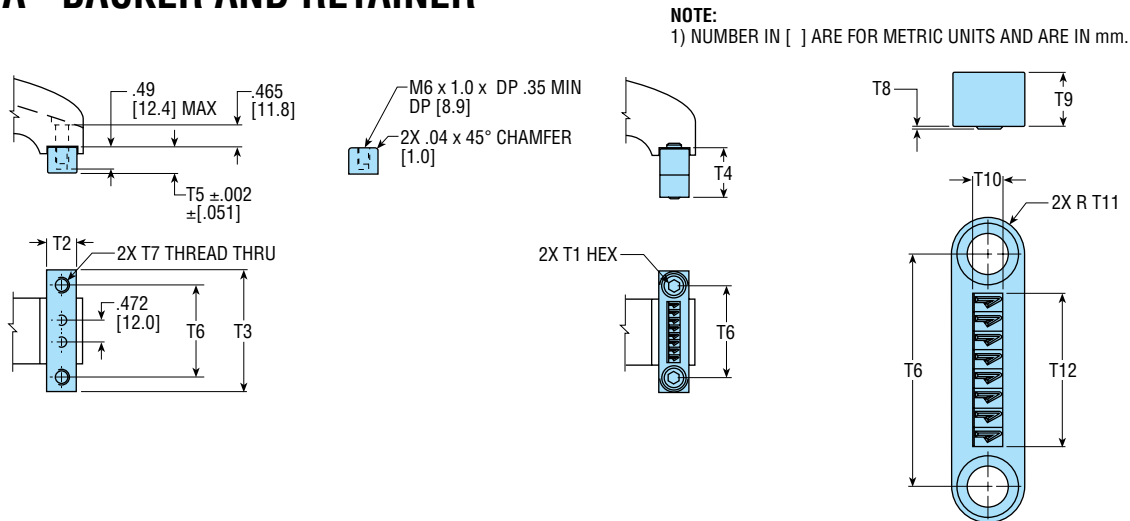
PART DESCRIPTION	PART NUMBER	PART DESCRIPTION	PART NUMBER	PART DESCRIPTION	PART NUMBER	PART DESCRIPTION	PART NUMBER
NUMBER 0	65300-N0	LETTER A	65300-LA	LETTER K	65300-LK	LETTER U	65300-LU
NUMBER 1	65300-N1	LETTER B	65300-LB	LETTER L	65300-LL	LETTER V	65300-LV
NUMBER 2	65300-N2	LETTER C	65300-LC	LETTER 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

All dimensions are reference only unless specifically tolerated.

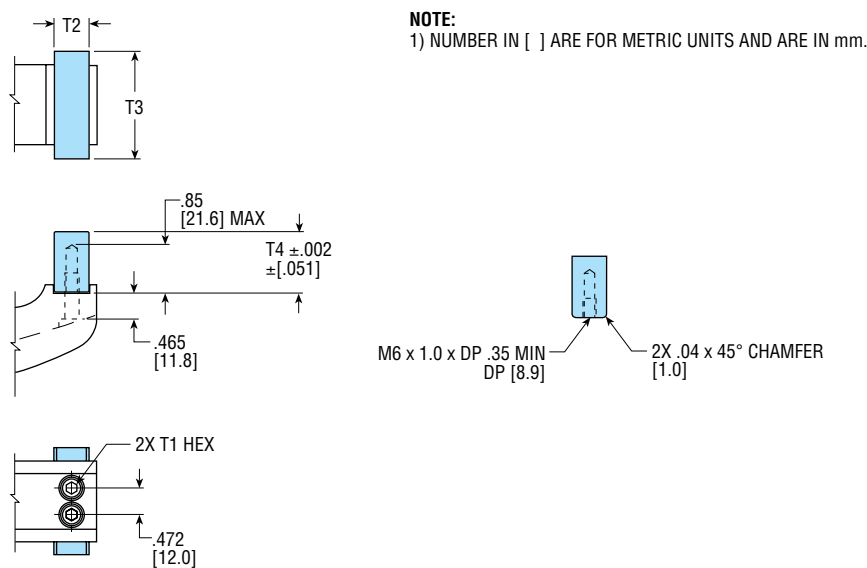
TIP DIMENSIONS: SERIES PNC CLAMPS

JAW A - BACKER AND RETAINER



		LETTER DIMENSION																							
BACKER KIT NO.	RETAINER KIT NO.	T1		T2		T3		T4		T5		T6		T7		T8		T9		T10		T11		T12	
		in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
63120-09	63110-09	.197	5.0	.625	15.9	2.760	70.1	1.044	26.5	.564	14.3	2.250	57.2	M6 X 1.0	.021	0.5	.480	12.2	.220	5.6	.310	7.9	1.683	42.7	
65320-08	65310-08	.236	6.0	.625	15.9	2.630	66.8	1.033	26.2	.564	14.3	2.000	50.8	M8 X 1.25	.032	0.8	.469	11.9	.250	6.4	.310	7.9	1.310	33.3	

JAW B - ANVIL



PANEL THICKNESS			PART COLOR	ANVIL KIT NO.	LETTER DIMENSION							
PNC44	PNC55	-B01 OPTION			T1	T2		T3		T4		
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	
.25 - 1.25 mm	—	.25 - 1.00 mm	GREEN	65500-00	.197	5.0	.625	15.9	1.929	49.0	1.138	28.9
1.25 - 2.50 mm	.25 - 1.50 mm	1.00 - 2.25 mm	BLACK	65500-01	.197	5.0	.625	15.9	1.929	49.0	1.089	27.7
2.50 - 3.75 mm	1.50 - 3.00 mm	2.25 - 3.50 mm	SILVER	65500-02	.197	5.0	.625	15.9	1.929	49.0	1.040	26.4
3.75 - 4.75 mm	3.00 - 4.25 mm	3.50 - 4.75 mm	GOLD	65500-03	.197	5.0	.625	15.9	1.929	49.0	.990	25.1

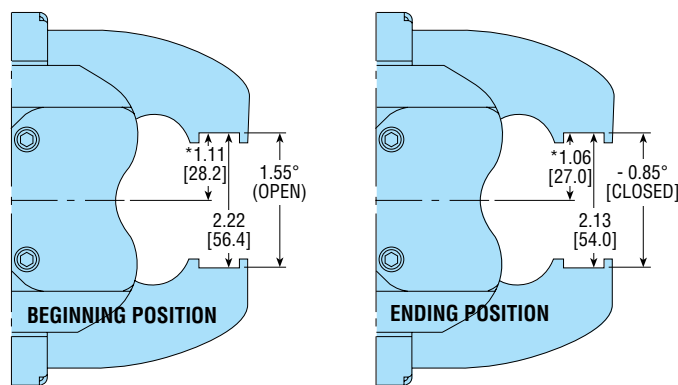
EFFECTIVE STAMPING RANGE: SERIES PNC CLAMPS

EFFECTIVE STAMPING RANGE

The effective stamping range is defined as the range where the clamp develops the greatest amount of clamp force (Cf). The effective stamping range occurs between the beginning and ending jaw positions as shown below.

NOTES:

- 1) NUMBERS IN [] ARE FOR METRIC UNITS AND ARE IN mm.
- 2) ANGULAR DIMENSIONS ARE MEASURED IN DEGREES.
- 3) *DIMENSION MEASURED FROM CENTERLINE OF UNIT TO CENTERLINE OF TIP SLOT.



TOTAL CLAMP FORCE (Cf)

Total clamp force can be determined by multiplying air pressure by the clamp force multiplier (Cf).

Example:

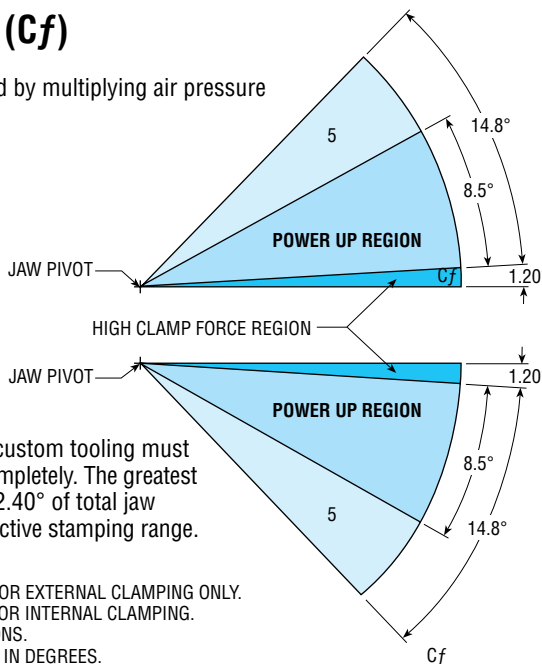
Your air line pressure: 72 psi
Clamp force multiplier: 5
(outside effective stamping range)
72 x 5 = 360 lb

Clamp force multiplier: 103.5
(within high force region)
72 x 103.5 = 7452 lb

To achieve maximum clamp force, custom tooling must not restrict the jaws from closing completely. The greatest clamp force occurs during the last 2.40° of total jaw rotation. Refer to the picture for effective stamping range.

NOTES:

- 1) THE NUMBER CRUNCHER IS DESIGNED FOR EXTERNAL CLAMPING ONLY. DO NOT USE THE NUMBER CRUNCHER FOR INTERNAL CLAMPING. CONSULT PHD FOR SPECIAL APPLICATIONS.
- 2) ANGULAR DIMENSIONS ARE MEASURED IN DEGREES.



AIR PRESSURE		PNC44 TOTAL CLAMP FORCE			
psi	bar	(Cf) = 103.5 [6672]		(Cf) = 5 [322]	
psi	bar	lb	N	lb	N
30	2.06	3105	13811	150	667
40	2.76	4140	18415	200	890
50	3.45	5175	23018	250	1112
60	4.14	6210	27622	300	1334
70	4.83	7245	32226	350	1557
80	5.52	8280	36829	400	1779
90	6.21	9315	41433	450	2002
100	6.89	10350	46037	500	2224

AIR PRESSURE		PNC55 TOTAL CLAMP FORCE			
psi	bar	(Cf) = 170.0 [10959]		(Cf) = 5 [322]	
psi	bar	lb	N	lb	N
30	2.06	5100	22685	150	667
40	2.76	6800	30246	200	890
50	3.45	8500	37808	250	1112
60	4.14	10200	45370	300	1334
70	4.83	11900	52931	350	1557
80	5.52	13600	60493	400	1779
90	6.21	15300	68054	450	2002
100	6.89	17000	75616	500	2224

(For chart below)

Will not function in this range

Ideal stamping range

PNC44x-x-S16-S16-LAA TIP COMBINATION

DESCRIPTION	COLOR	PRESSURE psi bar	PANEL THICKNESS in [mm]																										
			.000 [0]	.010 [.25]	.019 [.5]	.029 [.75]	.039 [1]	.049 [1.25]	.059 [1.5]	.069 [1.75]	.078 [2]	.089 [2.25]	.098 [2.5]	.108 [2.75]	.118 [3]	.128 [3.25]	.137 [3.50]	.148 [3.75]	.157 [4]	.167 [4.25]	.177 [4.5]	.187 [4.75]	.196 [5]	.207 [5.25]	.217 [5.5]	.226 [5.75]	.236 [6]		
GREEN ANVIL	GREEN	60 4.1																											
		87 6																											
		100 6.9																											
BLACK ANVIL	BLACK	60 4.1																											
		87 6																											
		100 6.9																											
SILVER ANVIL	SILVER	60 4.1																											
		87 6																											
		100 6.9																											
GOLD ANVIL	GOLD	60 4.1																											
		87 6																											
		100 6.9																											

PNC55x-x-S16-S16-LAA TIP COMBINATION

DESCRIPTION	COLOR	PRESSURE psi bar	PANEL THICKNESS in [mm]																											
			.000 [0]	.010 [.25]	.019 [.5]	.029 [.75]	.039 [1]	.049 [1.25]	.059 [1.5]	.069 [1.75]	.078 [2]	.089 [2.25]	.098 [2.5]	.108 [2.75]	.118 [3]	.128 [3.25]	.137 [3.50]	.148 [3.75]	.157 [4]	.167 [4.25]	.177 [4.5]	.187 [4.75]	.196 [5]	.207 [5.25]	.217 [5.5]	.226 [5.75]	.236 [6]			
GREEN ANVIL	GREEN	60 4.1																												
		87 6																												
		100 6.9																												
BLACK ANVIL	BLACK	60 4.1																												
		87 6																												
		100 6.9																												
SILVER ANVIL	SILVER	60 4.1																												
		87 6																												
		100 6.9																												
GOLD ANVIL	GOLD	60 4.1																												
		87 6																												
		100 6.9																												

All dimensions are reference only unless specifically tolerated.

BODY OPTIONS: PNC ACCESSORIES

B01 TANDEM CYLINDER

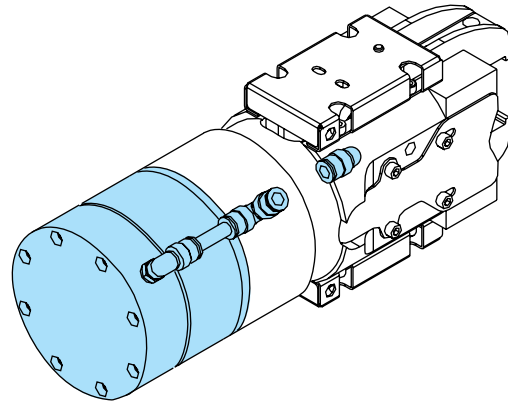
This option provides up to a 70% increase in clamp force by adding a second cylinder (tandem) on a standard PNC55 clamp. The cylinder mounts directly to the back of a PNC55 clamp body. Overall length is increased by 3.59 in [91.2 mm]. Weight is increased by 5.4 lb [2.45 kg].

This option is compatible with P, R, V, and M mounts. Length adder affects P mounting option. See page 8 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.

Not available on PNC44 clamps.

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



AVAILABLE ON	DESIGN NO.	ACCESSORY	PRICE ADDER
PNC55	1 [5]	B01	\$282.70

Price adder is for the tandem cylinder only. Fittings are ordered separately.

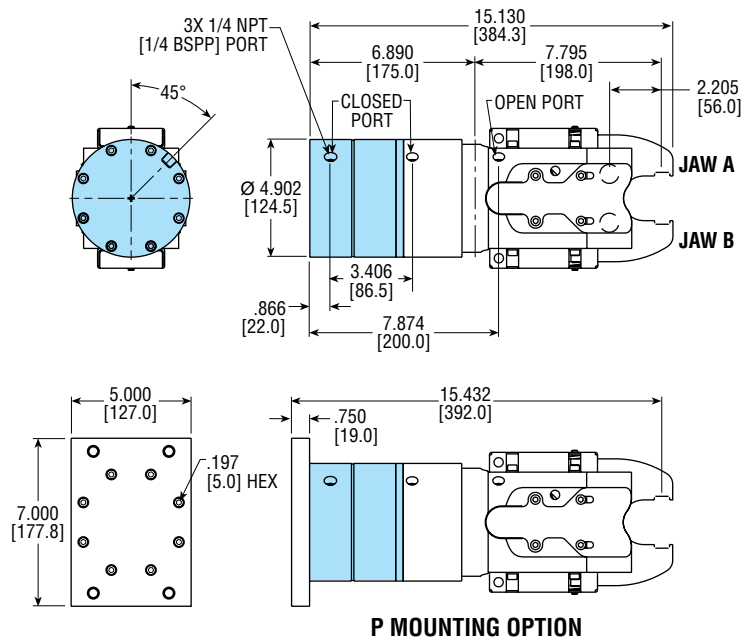
Example Ordering Data:

PNC 55 N-1-S16-S16-LAA -B01

SHADED CODES are required for this option.

All unshaded model codes are example only.

For compatibility with other units, consult PHD.



NOTES:

- 1) ALL DIMENSIONS ARE REFERENCE UNLESS SPECIFICALLY TOLERANCED.
- 2) ALL DIMENSIONS [] ARE GIVEN IN MILLIMETERS
1mm = .03937 in

SPECIFICATIONS

CLAMP SIZE	WEIGHT ADDER		LENGTH ADDER		TOTAL CLAMP FORCE AT 87 psi [6 bar]		DISPLACEMENT			
	lb	Kg	in	mm	lb	N	in ³	cm ³	in ³	cm ³
55	5.4	2.45	3.59	91.2	25404	113002	19.60	321	41.74	684

REPLACEMENT KIT NUMBERS AND PRICES IF ORDERED SEPARATELY

CLAMP SIZE & MODEL	CYLINDER ASSEMBLY NO.		LIST PRICE
	IMPERIAL	METRIC	
55x	72204-03	72204-04	\$282.70
55P	72204-05	72204-06	\$282.70

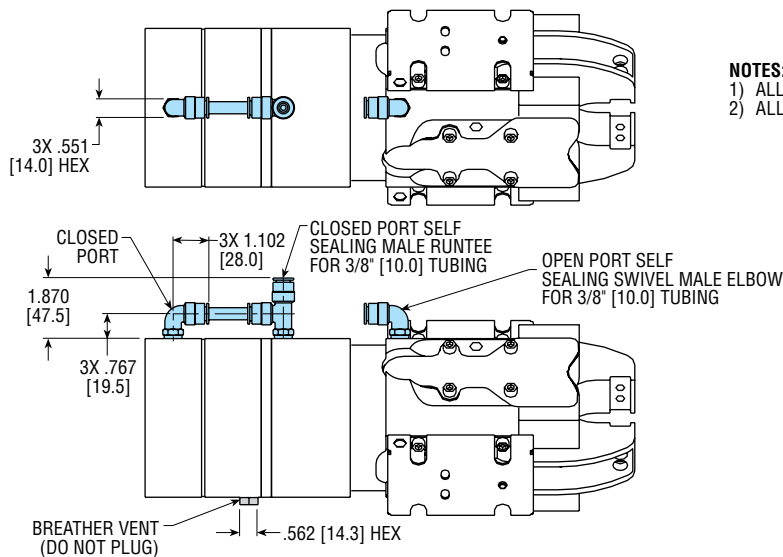
Price adder is for the cylinder only. Fittings are ordered separately.

CLAMP SIZE & MODEL	MOUNTING KIT NO.		LIST PRICE
55P	72204-07		\$91.20

(continued on next page)

BODY OPTIONS: PNC ACCESSORIES

-LAA OPTION - Port Fittings with B01 Option



NOTES:
 1) ALL DIMENSIONS ARE REFERENCE UNLESS SPECIFICALLY TOLERANCED.
 2) ALL DIMENSIONS [] ARE GIVEN IN MILLIMETERS 1mm = .03937 in

REPLACEMENT KIT NUMBERS AND PRICE IF ORDERED SEPARATELY

CLAMP SIZE	KIT NUMBER			LIST PRICE
	IMPERIAL	METRIC		
55	72204-11	72204-12		\$24.55

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

EFFECTIVE STAMPING RANGE

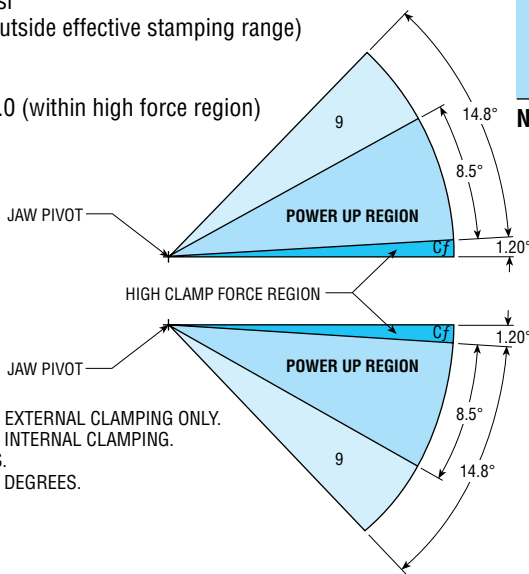
TOTAL CLAMP FORCE (Cf)

Total clamp force can be determined by multiplying air pressure by the clamp force multiplier (Cf).

Example: Your air line pressure: 72 psi
 Clamp force multiplier: 9 (outside effective stamping range)
 $72 \times 9 = 648 \text{ lb}$

Clamp force multiplier: 292.0 (within high force region)
 $72 \times 292.0 = 21024 \text{ lb}$

To achieve maximum clamp force, custom tooling must not restrict the jaws from closing completely. The greatest clamp force occurs during the last 2.40° of total jaw rotation. Refer to the picture for effective stamping range.



NOTES:
 1) THE NUMBER CRUNCHER IS DESIGNED FOR EXTERNAL CLAMPING ONLY. DO NOT USE THE NUMBER CRUNCHER FOR INTERNAL CLAMPING. CONSULT PHD FOR SPECIAL APPLICATIONS.
 2) ANGULAR DIMENSIONS ARE MEASURED IN DEGREES.

AIR PRESSURE		B01 TOTAL CLAMP FORCE			
		(Cf) = 292.0 [18824]		(Cf) = 9 [580]	
psi	bar	lb	N	lb	N
30	2.06	8760	38966	270	1201
40	2.76	11680	51955	360	1601
50	3.45	14600	64944	450	2001
60	4.14	17520	77932	540	2402
70	4.83	20440	90921	630	2802
80	5.52	23360	103910	720	3202
90	6.21	26280	116899	810	3603

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

(For chart below)

PNC55x-x-S16-S16-LAA-B01 TIP COMBINATION

DESCRIPTION	COLOR	PRESSURE psi bar	PANEL THICKNESS in [mm]																									
			.000 [0]	.010 [.25]	.019 [.5]	.029 [.75]	.039 [1]	.049 [1.25]	.059 [1.5]	.069 [1.75]	.078 [2]	.089 [2.25]	.098 [2.5]	.108 [2.75]	.118 [3]	.128 [3.25]	.137 [3.50]	.148 [3.75]	.157 [4]	.167 [4.25]	.177 [4.5]	.187 [4.75]	.196 [5]	.207 [5.25]	.217 [5.5]	.226 [5.75]	.236 [6]	
GREEN ANVIL	GREEN	60 4.1																										
		87 6																										
BLACK ANVIL	BLACK	60 4.1																										
		87 6																										
SILVER ANVIL	SILVER	60 4.1																										
		87 6																										
GOLD ANVIL	GOLD	60 4.1																										
		87 6																										

GENERAL OPTIONS: PNC ACCESSORIES

G01

WELDING SLAG SHIELDS

This option provides shields that protect the PNC55 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.

Not available on PNC44 clamps.

AVAILABLE ON	DESIGN NO.	ACCESSORY	PRICE ADDER
PNC55	1 [5]	G01	\$166.90

Price adder is for gasket and shields mounted on clamp.

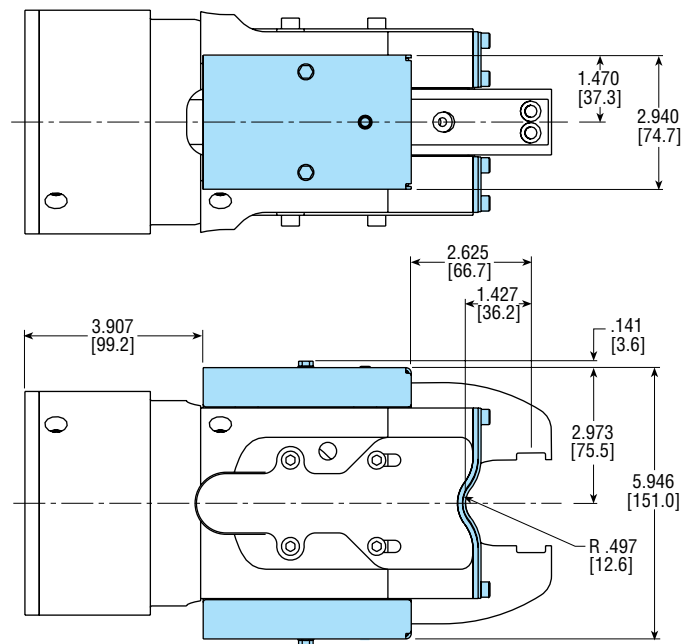
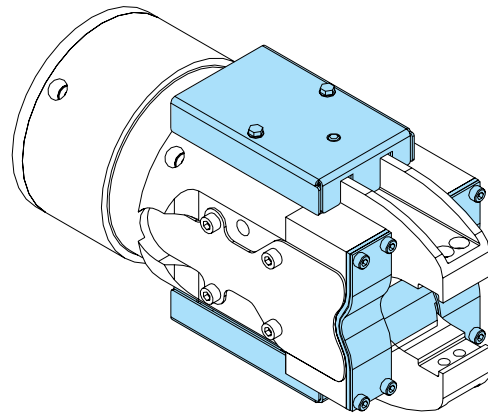
Example Ordering Data:

PNC 55 N -1-S16-S16-LAA -G01

SHADED CODES are required for this option.

All unshaded model codes are example only.

For compatibility with other units, consult PHD.



NOTES:

- 1) ALL DIMENSIONS ARE REFERENCE UNLESS SPECIFICALLY TOLERANCED.
- 2) ALL METRIC DIMENSIONS [] ARE GIVEN IN MILLIMETERS 1 mm = .03937 in

JAW OPTIONS: PNC ACCESSORIES

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.**

AVAILABLE ON	DESIGN NO.	PRICE ADDER
PNC44	1 [5]	\$185.75
PNC55	1 [5]	\$293.55

Price adder is for one jaw and one hand-retractable plunger mounted to the clamp.

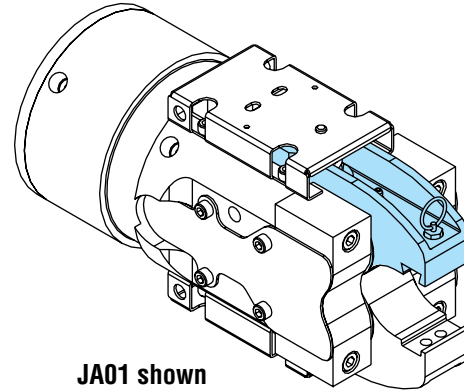
Example Ordering Data:

PNC55N -1-S16-S16-LAA -JA01

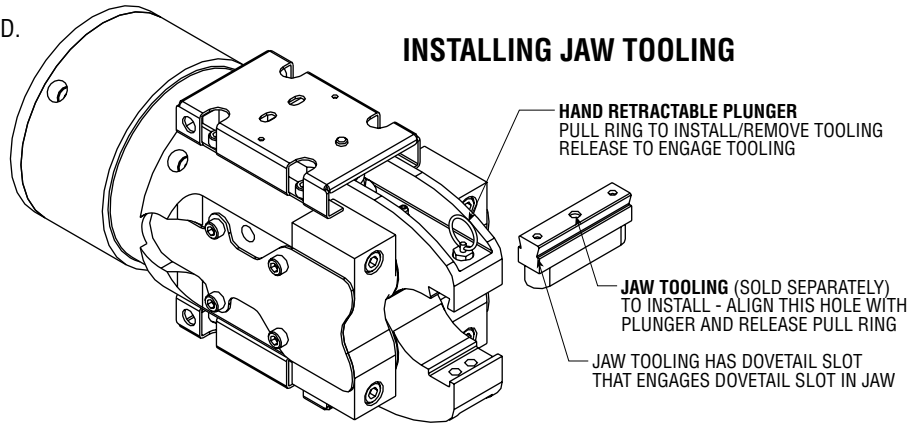
SHADED CODES are required for this option.

All unshaded model codes are example only.

For compatibility with other units, consult PHD.



JA01 shown



INSTALLING JAW TOOLING

HAND RETRACTABLE PLUNGER
PULL RING TO INSTALL/REMOVE TOOLING
RELEASE TO ENGAGE TOOLING

JAW TOOLING (SOLD SEPARATELY)
TO INSTALL - ALIGN THIS HOLE WITH
PLUNGER AND RELEASE PULL RING

JAW TOOLING HAS DOVETAIL SLOT
THAT ENGAGES DOVETAIL SLOT IN JAW

KIT NUMBERS FOR 1/8" TALL CHARACTERS

PANEL THICKNESS			PART COLOR	KIT NUMBER ANVIL	KIT NUMBER BACKER	KIT NUMBER RETAINER	KIT NUMBER (ANVIL & BACKER)	KIT NUMBER (ANVIL, BACKER & RETAINER)
PNC44	PNC55	-B01 OPTION						
.25 - 1.25 mm	—	.25 - 1.00 mm	GREEN	65500-00	78038-03	63110-09	78038-04	78038-08
1.25 - 2.50 mm	.25 - 1.50 mm	1.00 - 2.25 mm	BLACK	65500-01			78038-05	78038-09
2.50 - 3.75 mm	1.50 - 3.00 mm	2.25 - 3.50 mm	SILVER	65500-02			78038-06	78038-10
3.75 - 4.75 mm	3.00 - 4.25 mm	3.50 - 4.75 mm	GOLD	65500-03			78038-07	78038-11

ALL KITS INCLUDE FASTENERS REQUIRED FOR INSTALLATION - HAND RETRACTABLE PLUNGER SOLD SEPARATELY

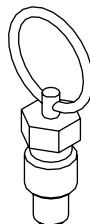
KIT NUMBERS FOR 3/16" TALL CHARACTERS

PANEL THICKNESS			PART COLOR	KIT NUMBER ANVIL	KIT NUMBER BACKER	KIT NUMBER RETAINER	KIT NUMBER (ANVIL & BACKER)	KIT NUMBER (ANVIL, BACKER & RETAINER)
PNC44	PNC55	-B01 OPTION						
.25 - 1.25 mm	—	.25 - 1.00 mm	GREEN	65500-00	78038-12	65310-08	78038-13	78038-17
1.25 - 2.50 mm	.25 - 1.50 mm	1.00 - 2.25 mm	BLACK	65500-01			78038-14	78038-18
2.50 - 3.75 mm	1.50 - 3.00 mm	2.25 - 3.50 mm	SILVER	65500-02			78038-15	78038-19
3.75 - 4.75 mm	3.00 - 4.25 mm	3.50 - 4.75 mm	GOLD	65500-03			78038-16	78038-20

ALL KITS INCLUDE FASTENERS REQUIRED FOR INSTALLATION - HAND RETRACTABLE PLUNGER SOLD SEPARATELY

REPLACEMENT HAND RETRACTABLE PLUNGER KIT NO. AND PRICE IF ORDERED SEPARATELY

CLAMP SIZE	KIT NUMBER	LIST PRICE
44 or 55	78038-21	\$36.60



NOTES:

- 1) SEE PAGE 11 FOR CHARACTER PART NUMBERS
- 2) ANVILS AND RETAINERS ARE STANDARD (SEE PAGES 11 AND 12 FOR MOUNTING AND DIMENSIONS)

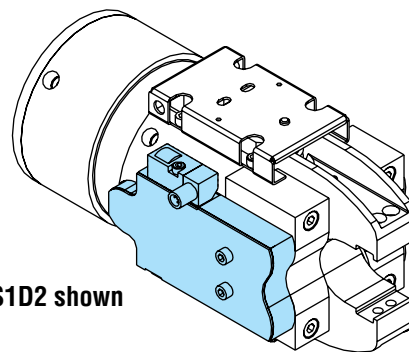
SWITCH MOUNTING OPTIONS: PNC ACCESSORIES

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 adjustable 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.



PS1D2 shown

AVAILABLE ON	DESIGN NO.	ACCESSORY	HOUSING POSITION	AMPLIFIER POSITION	PRICE ADDER
PNC44 or PNC55	1 [5]	PS(R)1N0	1	—	\$180.00
		PS(R)3N0	3	—	\$180.00
		PS(R)1A2, PS(R)1H2	1	2	\$398.80
		PS(R)1A4, PS(R)1H4	1	4	\$398.80
		PS(R)3A2, PS(R)3H2	3	2	\$398.80
		PS(R)3A4, PS(R)3H4	3	4	\$398.80
		PS(R)1D2, PS(R)1E2, PS(R)1F2, PS(R)1J2	1	2	\$292.35
		PS(R)1D4, PS(R)1E4, PS(R)1F4, PS(R)1J4	1	4	\$292.35
		PS(R)3D2, PS(R)3E2, PS(R)3F2, PS(R)3J2	3	2	\$292.35
		PS(R)3D4, PS(R)3E4, PS(R)3F4, PS(R)3J4	3	4	\$292.35

Price adder is for one switch cover with or without switch mounted to the clamp.

PS(R)1D2, PS(R)1D4, PS(R)3D2, and PS(R)3D4 replace Switch Mounting Options SB01, SB02, SB03, and SB04 respectively.

Example Ordering Data:

PNC55N-1-S16-S16-LAA

-P R 1 D 2

AMPLIFIER POSITION

2 - Position 2
4 - Position 4

SWITCH HOUSING POSITION

1 - Position 1
3 - Position 3

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)

SHADED CODES

are required

for this option. All unshaded model codes are example only.

Switch Option-Refer to next page for specifications.

SENSING OPTION

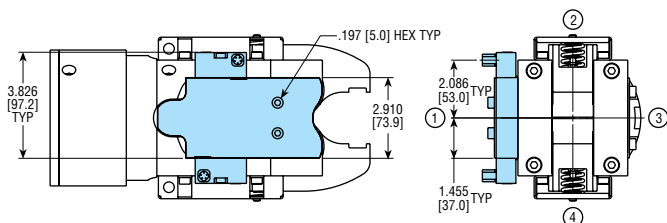
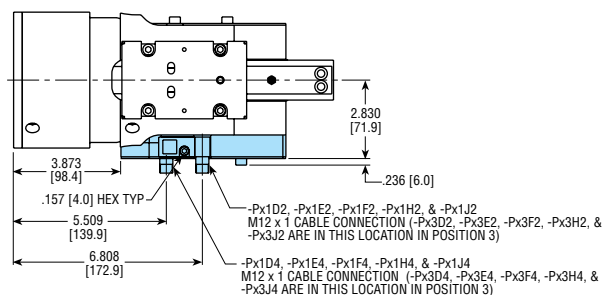
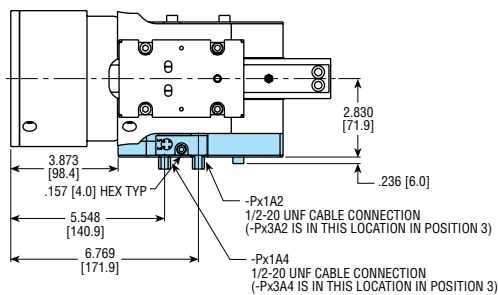
S - Standard
R - Reversed

HOUSING OPTION

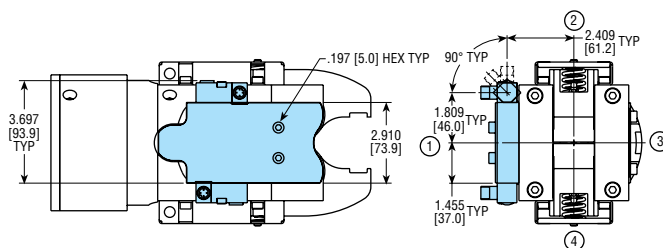
P - Positional Sensing

NOTES:

- 1) ALL DIMENSIONS ARE REFERENCE UNLESS SPECIFICALLY TOLERANCED
- 2) ALL METRIC DIMENSIONS [] ARE GIVEN IN MILLIMETERS 1 mm = .03937 in
- 3) NUMBERS IN CIRCLES INDICATE POSITION (POSITION 1 IS PORT SIDE OF CLAMP)



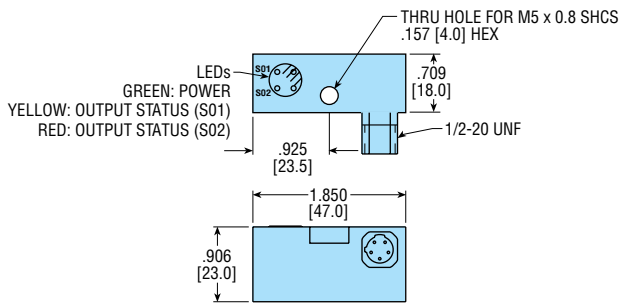
PS(R)xAx OPTION



PS(R)xDx, PS(R)xEx, PS(R)xFx, PS(R)xHx, PS(R)xJx OPTIONS

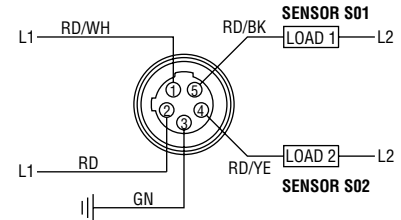
SWITCH MOUNTING OPTIONS: PNC ACCESSORIES

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

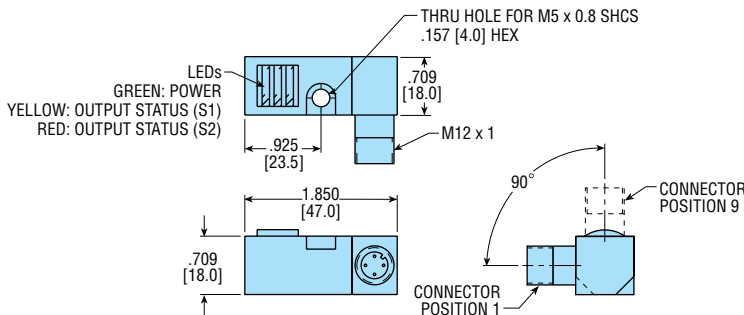


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PSxAx	S02	S01	S01 = PIN 5 S02 = PIN 4
PRxAx	S01	S02	

4-WIRE AC/DC

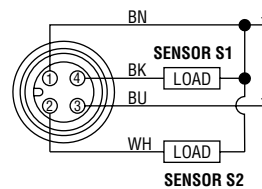


SWITCH OPTION D **71483-001-PNC** P + F Part #: NBN2-F581-160S6-E8-V1 (PNP)
SWITCH OPTION H **71483-005-PNC** P + F Part #: NBN2-F581-160S6-E10-V1 (NPN)

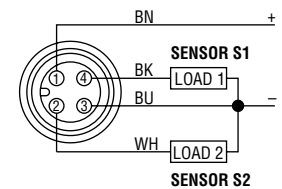


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PSxDx	S2	S1	S1 = PIN 4 S2 = PIN 2
PRxDx	S1	S2	

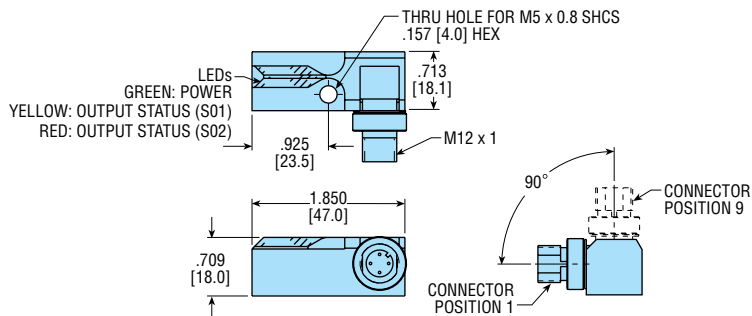
4-WIRE DC (V1 TYPE) NPN DUAL NORMALLY OPEN



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

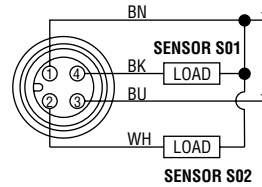


SWITCH OPTION E **71483-003-PNC** Turck Part #: Ni 2-Q6.5-0.16-BDS-2AP6X3-H1141/S34 (PNP)
SWITCH OPTION J **71483-006-PNC** Turck Part #: Ni-2-Q6.5-AN6-0.16-FS 4.4X3/S304 (NPN)

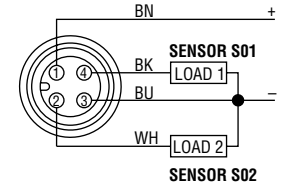


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PSxEx	S02	S01	S01 = PIN 4 S02 = PIN 2
PRxEx	S01	S02	

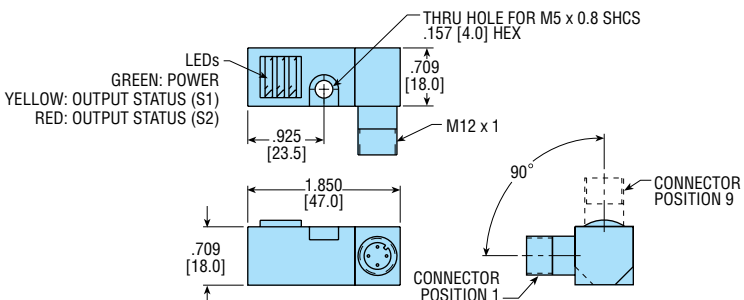
4-WIRE DC NPN DUAL NORMALLY OPEN



4-WIRE DC PNP DUAL NORMALLY OPEN

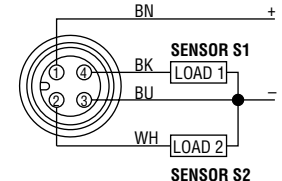


SWITCH OPTION F **71483-004-PNC** Efector Part #: IN 5375 (PNP)



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

4-WIRE DC PNP DUAL NORMALLY OPEN



See next page for replacement kits.

REPLACEMENT KITS & MAINTENANCE: SERIES PNC

REPLACEMENT KIT NUMBERS AND PRICES IF ORDERED SEPARATELY

CLAMP SIZE	ACCESSORY	KIT NUMBER	DESCRIPTION	LIST PRICE
PNC44 or PNC55	PS(R)xN0	71251-04	Switch Housing Kit w/o Switch	\$180.00
	PS(R)xAx	71251-08	Switch Housing Kit w/ 5 pin AC/DC, (Turck) Switch	\$398.80
	PS(R)xDx	71251-03	Switch Housing Kit w/ 4 pin DC, PNP (P + F) Switch	\$292.35
	PS(R)xEx	71251-06	Switch Housing Kit w/ 4 pin DC, PNP (Turck) Switch	\$292.35
	PS(R)xFx	71251-10	Switch Housing Kit w/ 4 pin DC, PNP (Efactor) Switch	\$292.35
	PS(R)xHx	71251-12	Switch Housing Kit w/ 4 pin DC, NPN (P + F) Switch	\$398.80
	PS(R)xJx	71251-13	Switch Housing Kit w/ 4 pin DC, NPN (Turck) Switch	\$292.35

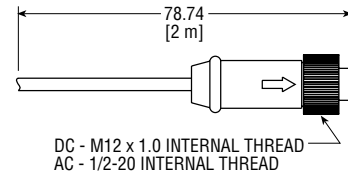
Kit includes: Housing and all pins and screws required for installation.

REPLACEMENT SWITCH KIT NUMBERS AND PRICES IF ORDERED SEPARATELY

SWITCH OPTION	SWITCH TYPE	PHD SWITCH KIT NUMBER	PHD LIST PRICE	SWITCH PART NUMBER
A	5-PIN AC/DC - N.O.	71483-002-PNC	\$199.10	Ni 2-Q6.5-ADZ32-0.16-FSB 5.4X4/S304
D	4-PIN DC - N.O. - PNP	71483-001-PNC	\$115.00	NBN2-F581-160S6-E8-V1
E	4-PIN DC - N.O. - PNP	71483-003-PNC	\$115.00	Ni 2-Q6.5-0.16-BDS-2AP6X3-H1141/S34
F	4-PIN DC - N.O. - PNP	71483-004-PNC	\$115.00	IN 5375
H	4-PIN DC - N.O. - NPN	71483-005-PNC	\$199.10	NBN2-F581-160S6-E10-V1
J	4-PIN DC - N.O. - NPN	71483-006-PNC	\$115.00	Ni 2-Q6.5-AN6-0.16-FS 4.4X3/S304

MATCHING CORDSETS 2 METERS LONG

SWITCH OPTION	PHD PART NUMBER	PHD LIST PRICE	CORDSET PART NUMBER
A	73317-00-02	\$31.50	KB 5T-2
D	65440-001-02	\$14.20	V1-G-YE2M-PVC
E	78039-00-02	\$27.50	RK 4.4T-2
F	65440-001-02	\$14.20	V1-G-YE2M-PVC
H	65440-001-02	\$14.20	V1-G-YE2M-PVC
J	78039-00-02	\$27.50	RK 4.4T-2

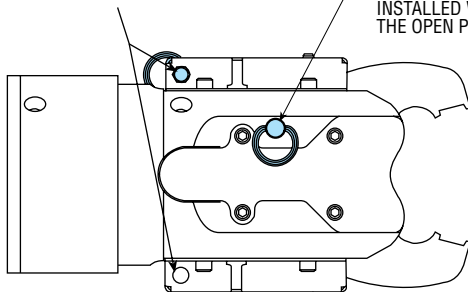


MATING CORDSET

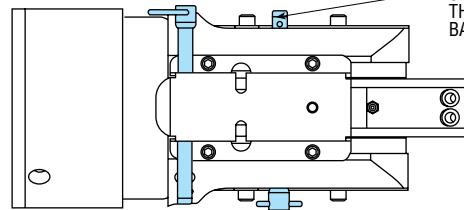
SAFETY LOCKOUT

The safety lock-out pin is a safety device that stops the motion of the jaws 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.

STORAGE LOCATIONS WHEN PIN IS NOT IN USE



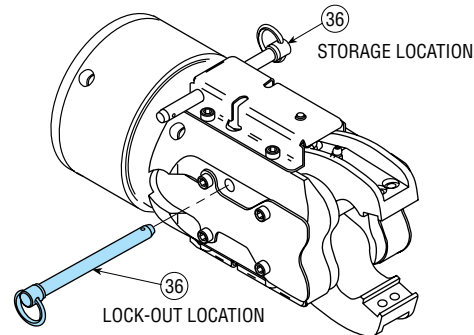
SAFETY LOCK-OUT PIN CAN ONLY BE INSTALLED WHEN THE JAWS ARE IN THE OPEN POSITION



SAFETY LOCK-OUT PIN MUST EXTEND THROUGH BODY UNTIL RETENTION BALLS EXIT OPPOSING SIDE

KEY	DESCRIPTION	REPLACEMENT PART NO.
36	SAFETY LOCK-OUT PIN	63087

NOTE: ONE SAFETY LOCK-OUT PIN SUPPLIED WITH UNIT



MAINTENANCE SCHEDULE

Lubrication guidelines for the Series PNC Clamp are based on the following cycle speeds: 1 cycle/second, 30 cycles/minute, 1,800 cycles/hour, 43,200 cycles/day, and 302,400 cycles/week (continuous operation). 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.

