CHOOSE THE RIGHT STYLE

SEVEN POINT SELECTION GUIDELINES

1. **Material Thickness.** Do not exceed the rated material thickness for each cam unit without consulting our engineering department.
2. **Part Shape.** Use the Pos-Z-Cams where positive stripping is required. Use Inboard Spring cam units on flat parts with room for urethane stripper displacement. Use Outboard Spring cam units on tubes and cured surfaces for positive die spring stripping. Use Gas Spring cam units where higher stripping force is required.
3. **Punch Stroke.** Select amount needed. Use full stroke for maximum leverage and stripping force.
4. **Punching Force.** Punching Force, tons = LC x t x TS ÷ 2000
5. **Stripping Force.** The force required to strip a punch is difficult to determine since it is influenced by the type of metal pierced, punch size, punch/die clearance, punch sharpness, and other factors.

   Stripping Force, lbs. = LC x t x M x 2000

   Where: LC = Length of cut (hole circumference, hole perimeter, notch length, etc.)
   t = Material thickness
   TS = Material tensile strength, psi
   M = Material multiplier, tsi, steel and stainless steel – 1.5, aluminum – 2.25
6. **Point Size.** Diagonals must fit maximum point size. For Inboard Spring models maximum point size is less than punch body diameter due to the ground shoulder supporting the washer and stripper.
7. **Point Shape.** The Pos-Z-Cam punch points can be either round or shaped with the standard ball lock punch. The spring return cams with shaped points require keyed (k) cam units to keep the punch from rotating in the bore.

Dowels to be transferred to mounting surface at assembly.
Milfab Cam Units generate the rated punching and stripping forces at the end of the stroke. Always use the full stroke entering the die 1/16 in.

HOW TO ORDER

PREFIXES
(Spring Return Model)

(n)	Number of punches
M	Metric punch, dowels, and screws
T	Top mount
G	Gas spring
E	Extended range, oversized point
B	Self-lubricating bushing
K	Keyed cam unit and punch
O	Outboard spring
S	Short punch stroke
L	Long punch stroke
P	Positive Return

SUFFIXES
(Positive & Spring Return Models)

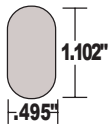
A	A2 punch
AE	A2 ejector punch
M	M2 punch
ME	M2 ejector punch

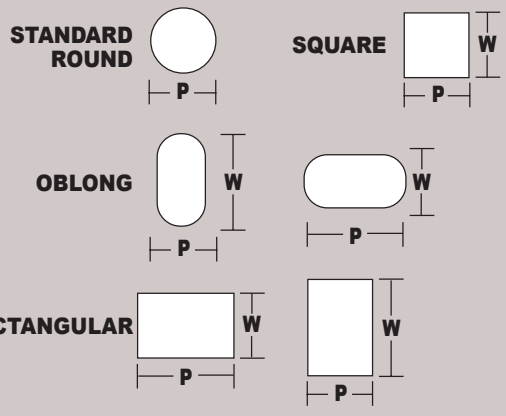
PUNCH BODY DIAMETER
(Positive & Spring Return Models)

250	1/4 in., 6 mm
375	3/8 in., 10 mm
500	1/2 in., 13 mm
625	5/8 in., 16 mm
75	3/4 in., 20 mm
87	7/8 in. (no metric equivalent)
100	1 in., 25 mm
125	1-1/4 in. (no metric equivalent)
137	1-3/8 in. (no metric equivalent)
150	1-1/2 in. (no metric equivalent)

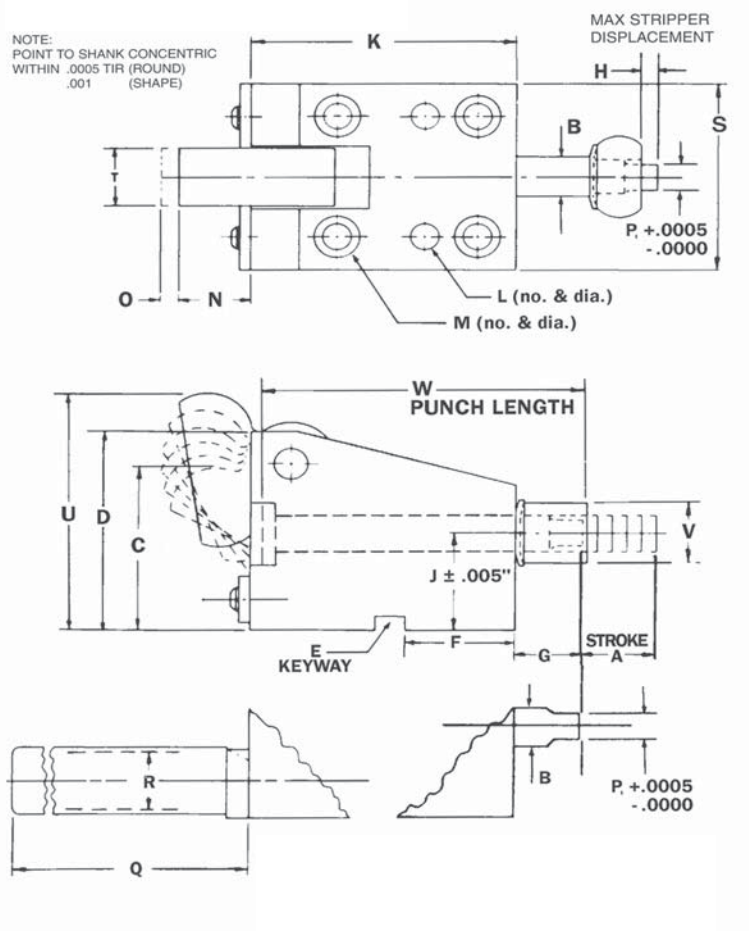
To order, specify quantity, cam unit model number, and P' dimension for round holes, or P' and W' dimensions and the shape.

Example: KOS125AE, P=.495", W=1.102", oblong. This is a keyed, outboard spring model, short stroke cam unit with a 1.250" A2 ejector punch ground to a .495" x 1.102" oblong point.





INBOARD SPRING



OUTBOARD SPRING & GAS SPRING

INBOARD AND OUTBOARD SPRING SPECIFICATIONS AND DIMENSIONS

Model No.	S250	L250	S375	L375	S500	L500	S625	L625	S75	L75	S87	L87	S100	L100	S125	L125	S137	L137	S150	L150
Max. material thickness[1]	1/16								1/8						1/4					
tons[2]	1.5		3		5		8		15						25					
Stripping force[5]																				
-Inboard lbs.	370		440		460		570		690		710		1020		1050		1090		1120	
-Outboard lbs.	140		300				540		830						1650					
-Gas Spring lbs.	Not available								1420						4930					
Punch stroke with standard trigger																				
A Stroke	3/8	3/4	1/2	7/8	5/8	1	3/4	1-1/8	1-1/4	2	1-1/4	2	1-1/4	2	1-1/2	2-1/2	1-1/2	2-1/2	1-1/2	2-1/2
Punch stroke with offset trigger						C.N.O.U. Dimension Change with offset trigger														
A Inboard	3/8	21/32	1/2	47/64	5/8	25/32	3/4	1-1/16	1-7/64	1-1/16	1-7/64	1-1/16	1-7/64	1-1/16	1-1/2	2-1/2	1-1/2	2-1/2	1-1/2	2-1/2
A Outboard	11/32		1/2	31/64	5/8	21/32	11/16		3/4						1-1/2	2-1/64	1-1/2	2-1/64	1-1/2	2-1/64
B Shank dia. (mm)	.250 (6 mm)		.375 (10 mm)		.500 (13 mm)		.625 (16 mm)		.750 (20 mm)		.875		1.000 (25 mm)		1.250		1.375		1.500	
Max. point dia.																				
-Inboard[3,4]	.187		.312		.437		.562		.687		.812		.937		1.125		1.250		1.375	
-Outboard[4] (mm)	.250 (6 mm)		.375 (10 mm)		.500 (13 mm)		.625 (16 mm)		.750 (20 mm)		.875		1.000 (25 mm)		1.250		1.375		1.500	
C Shut ht.	1-11/16	1-5/16	2-3/32	1-3/4	2-5/32	1-27/32	2-1/2	2-7/32	3-3/64	2-33/64	3-3/64	2-33/64	3-3/64	2-33/64	5-5/32	4-1/4	5-5/32	4-1/4	5-5/32	4-1/4
D	1-3/4		2-1/4		2-1/2		3		3-3/4						5-1/2					
E Keyway	3/16 x 3/32		1/4 x 1/8		5/16 x 5/32		3/8 x 3/16		1/2 x 1/4											
F	1/2	1	11/16	1-3/16	13/16	1-1/4	1	1-7/8							2-1/8	2-1/2	2-1/8	2-1/2	2-1/8	2-1/2
G	7/8								1-1/8						1-5/8					
H	1/4								3/8											
J Inboard	.812		1.125		1.187		1.500		1.812						2.625					
J Outboard	.812		1.125		1.187		1.500		1.812		1.750		1.687		2.625					
J Gas Spring	Not Available								1.812						2.625					
K	1-3/4	2-3/4	2-1/4	3-1/4	2-1/2	3-1/2	3	4	4-1/2	6-1/2	4-1/2	6-1/2	4-1/2	6-1/2	6	8-1/2	6	8-1/2	6	8-1/2
L (No.) & dia. (mm)	(2) 1/4 (6 mm)		(2) 5/16 (8 mm)				(2) 3/8 (10 mm)		(2) 1/2 (16 mm)											
M (No.) & dia. (mm)	(2) 1/4	(4) 1/4	(2) 5/16	(4) 5/16	(2) 5/16	(4) 5/16	(2) 3/8	(4) 3/8	(4) 1/2	(6) 1/2	(4) 1/2	(6) 1/2	(4) 1/2	(6) 1/2	(4) 1/2	(6) 1/2	(4) 1/2	(6) 1/2	(4) 1/2	(6) 1/2
	(6 mm)		(8 mm)				(10 mm)		(14 mm)											
N	13/32		35/64				57/64		1-9/64						1-27/32					
O	17/64		1/4				13/64		11/32						7/16					
Q	2-7/8	4-1/8	3-7/8	5-3/8	4-3/8	5-7/8	4-7/8	6-3/8	9-3/8	6-3/8	9-3/8	6-3/8	9-3/8		7-1/2	11-1/2	7-1/2	11-1/2	7-1/2	11-1/2
R	5/8		3/4				1		1-1/4						1-1/2					
S	1-3/4		2-1/4		2-1/2		3		3-1/2						4					
T	5/8		3/4		7/8		1		1-1/8						1-5/8					
U	2-5/32		2-21/32		2-55/64		3-13/32		4-29/64						6-11/16					
V	.687		.812		.875		1.000		1.125		1.375		1.625		1.875		2.125		2.375	
W	2-1/2	3-1/2	3	4	3-1/4	4-1/4	3-3/4	4-3/4	5-1/2	7-1/2	5-1/2	7-1/2	5-1/2	7-1/2		10	7-1/2	10	7-1/2	10
Model No.	S250	L250	S375	L375	S500	L500	S625	L625	S75	L75	S87	L87	S100	L100	S125	L125	S137	L137	S150	L150

1. Based on punching mild steel.
2. Rated tonnage at the end of the stroke.
3. Maximum inboard point diameter is less than punch shank diameter due to step required for washer and urethane stripper.
4. The diagonal of shaped punch points must be less than the maximum point diameter.
5. Stripping forces are calculated at the end of stroke.

Dimensions are in inches, except as noted. Specifications subject to change without notice. Manufactured in U.S.A.