Premium
High-Performance Punches

VERSA plus™

If optimum performance is a MUST, this may be the only punch you'll ever need.

DAYTON®

Global leader in quality metal fabrication and stamping tools

Subsidiary Federal Signal Corporation

www.daytonprogress.com

Versa/plus™ Premium Products

Product Applications

Versa/plus™ Jektole®, Regular, and Straight Punches are a premium line of precision, high-performance products that offer a full range of features and benefits to users in industries where higher-than-normal production runs occur—and where optimum performance is a MUST.

Standard features on all Dayton Versa/plus™ punch products include precision concentricity between the point and the shank, resulting in better punch and die alignment. Versa/plus™ products give you more standard features, increased wear resistance, less sharpening time, longer die runs, less downtime, lower maintenance costs, and exceptional value for your stamping dollar.

Dayton's Versa/plus™ premium product line includes: ***Jektole® Punches (slug ejection punches); Regular Punches; Straight Punches; and Locking Devices.*** Standard sizes and standard alterations are shown in this catalog within individual product sections.

In addition to manufacturing all Versa/plus™ products, Dayton Progress maintains and operates ***full-service, proprietary prep*** (precision manufacturing and surface treatment), ***in-house coating,*** and ***special treatment facilities.***

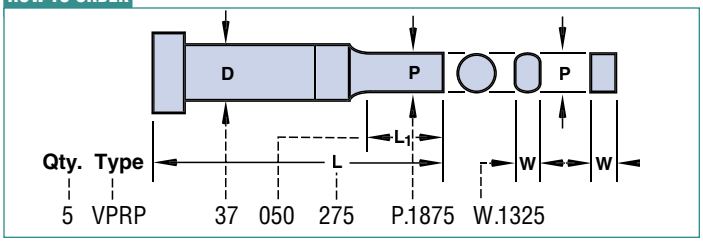
Because our facilities and processes are located on-premise, Dayton Progress can offer *improved pricing and faster delivery* on all premium Versa/plus™ products.

Ordering Information

Each catalog page contains detailed instructions on how to order specific Dayton Versa/plus™ products. Individual drawings show product shape, dimensions, tolerances, and concentricity. When ordering, you are asked to specify quantity, type, shank and length codes (for example), and other applicable data.

In the example below, the type specified is "VPRP." "V" stands for Versatile, "P" stands for punch, "R" stands for rectangle, and "P" stands for Plus. 37 is the press-fit diameter, which is coded by the first two digits of the decimal equivalent (.375). The point length (L_1) is 050, which is ½" or .50". The overall length (L) is 375, which is 3¾" or 3.750". Finally, P.1875 and W.1325 represent the point or hole size dimension.

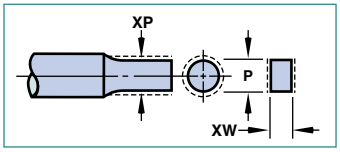
HOW TO ORDER



Standard Alterations

Punches and matrixes are available in sizes other than those listed in the catalog.

When ordering, you are asked to specify different designations for various non-standard dimensions. For example, if the P & W dimensions are smaller than standard, an "X" is placed in front of the P or W dimensions, e.g., "XP" and "XW." If the point length is longer than standard, designate "XBR" for the point length. See the foldout tabs in the individual product sections for these and other special order designations.



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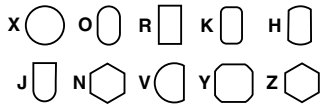
Contents

Punches

Standard Shapes



Miscellaneous/Other

Product Designation

Each page contains detailed instructions on how to order specific Dayton Versa/plusTM products. In addition, use the following chart to define the product as a part number.

Example:

VPRP **Line Product Shape**
- **V** for Versatile
- **P** for Punch (Regular)
- **R** for Rectangle
- **P** for Plus

37 **Press-Fit Dia. D (shank diameter)**
Coded by the first 2 digits of decimal equivalent (.375)

050 **Point Length L_1**
Coded by three-digit decimal equivalent (050 = .50")

375 **Overall Length L**
Coded by three-digit decimal equivalent (375 = 3.75")

Product	Series	Length	Point or Hole Size
VPRP	37 -	050 -	375 P.1875, W.1325
Type	**Catalog Number**		**Dimensions As Specified**

Diameter (D) is shown on the order as a two- or three-digit code. To convert the shank diameter to the appropriate code, use the following chart.

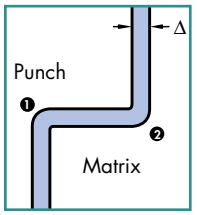
Code	D	Code	D	Code	D
12	.1250	37	.3750	75	.7500
18	.1875	43	.4375	87	.8750
25	.2500	50	.5000	100	1.0000
31	.3125	62	.6250		

Classified Shapes

Classified shapes (83 common shapes, no detailing required) are available on all punches, matrixes, and guide bushings as indicated in this catalog. See pp. 10, 11 for more information and special instructions. Also, see individual product pages and pp. 12, 13 for additional information on orientation and views.

Clearance

Normal grinding methods produce:



❶ .007 max fillet on the punch—matching corner shape on the matrix.

❷ .007 max fillet on the matrix—matching corner shape on the punch.

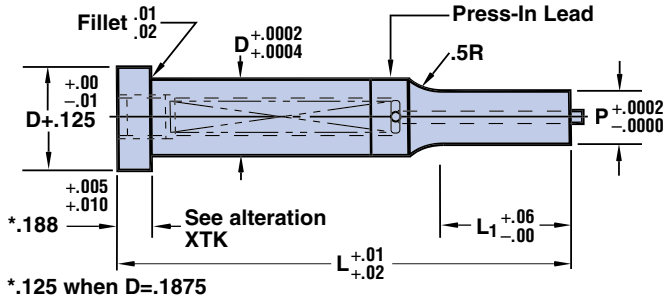
Sharp corners will be broken to minimize wear.

Jektole® Punches

VERSA plus™

Type
VJ_P

Material
All heads are drawn to RC 40-55.
Proprietary high-performance material and treatment
P&W Tolerance $^{+.0002}_{-.0000}$ P to D .0003 Ⓜ



Shank	Code	Point Lgth. L_1	Round		Shape												
D			Min. XP	Range P	Min. XW	Min. W	Max. P/G	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50
.1875	18	.50	.050	.062-.1874	.062	.062 -	.1875	050175	050200	050225	050250	050275	050300	050325	050350	050375	050400	050425	050450
.2500	25		.080	.093-.2499	.080	.093 -	.2500												
.3125	31		.115	.125-.3124	.115	.125 -	.3125												
.3750	37		.158	.187-.3749	.158	.187 -	.3750												
.4375	43		.158	.187-.4374	.158	.187 -	.4375												
.5000	50		.158	.225-.4999	.158	.250 -	.5000												
.6250	62		.235	.310-.6249	.235	.282 -	.6250												
.7500	75		.300	.390-.7499	.235	.312 -	.7500												
.8750	87		.350	.440-.8749	.235	.343 -	.8750												
1.0000	100		.400	.485-.9999	.235	.375 -	1.0000												
.1875	18	.75	.058	.062-.1874	.093	.093 -	.1875		075200	075225	075250	075275	075300	075325	075350	075375	075400	075425	075450
.2500	25		.080	.093-.2499	.093	.093 -	.2500												
.3125	31		.115	.125-.3124	.115	.125 -	.3125												
.3750	37		.158	.187-.3749	.158	.187 -	.3750												
.4375	43		.158	.187-.4374	.158	.187 -	.4375												
.5000	50		.158	.225-.4999	.158	.250 -	.5000												
.6250	62		.235	.310-.6249	.235	.282 -	.6250												
.7500	75		.300	.390-.7499	.235	.312 -	.7500												
.8750	87		.350	.440-.8749	.235	.343 -	.8750												
1.0000	100		.400	.485-.9999	.235	.375 -	1.0000												
.2500	25	1.00	.080	.093-.2499	.093	.093 -	.2500			100225	100250	100275	100300	100325	100350	100375	100400	100425	100450
.3125	31		.115	.125-.3124	.115	.125 -	.3125												
.3750	37		.158	.187-.3749	.158	.187 -	.3750												
.4375	43		.158	.187-.4374	.158	.187 -	.4375												
.5000	50		.158	.225-.4999	.158	.250 -	.5000												
.6250	62		.235	.310-.6249	.235	.282 -	.6250												
.7500	75		.300	.390-.7499	.235	.312 -	.7500												
.8750	87		.350	.440-.8749	.235	.343 -	.8750												
1.0000	100		.400	.485-.9999	.235	.375 -	1.0000												
.3125	31	1.25	.115	.125-.3124	.115	.125 -	.3125				125250	125275	125300	125325	125350	125375	125400	125425	125450
.3750	37		.158	.187-.3749	.158	.187 -	.3750												
.4375	43		.158	.187-.4374	.158	.187 -	.4375												
.5000	50		.158	.225-.4999	.158	.250 -	.5000												
.6250	62		.235	.310-.6249	.235	.282 -	.6250												
.7500	75		.300	.390-.7499	.235	.312 -	.7500												
.8750	87		.350	.440-.8749	.235	.343 -	.8750												
1.0000	100		.400	.485-.9999	.235	.375 -	1.0000												

*See p. 14 for additional information.

Features/Benefits

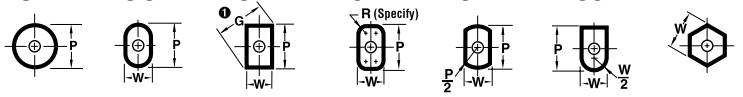
All Versa/plus™ punch products utilize a unique combination of surface treatments to create a longer-lasting, lower maintenance, *premium* product.

Jektole® Versa/plus™ punches permit doubling punch to matrix clearance; produce up to three times (or more) the number of hits between sharpening; and reduce burr heights.

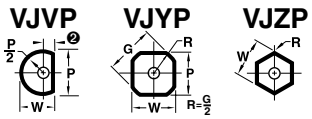
Jektole® Punches

VERSA plus™

VJXP VJOP VJRP VJKP VJHP VJJP VJNP



VJVP VJYP VJZP



❶ Check your P&W dimensions to be certain the diagonal G does not exceed the maximum shown.

❷ Centerline to flat minimum = .025 for J2, .040 for J3, .058 for J4, .079 for J6, .118 for J9

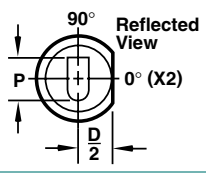
Note: Sharp corners will be broken to minimize wear.

Code	4.75	5.00	5.25	5.50	5.75	6.00	6.25	6.50	*Jektole® Group
18									J2
25									J3
31									J4
37									J6
43									J6
50	050475	050500	050525	050550	050575	050600			J6
62							050625	050650	J9
75									J9
87									J9
100									J9
18									J2
25									J3
31									J4
37									J6
43									J6
50	075475	075500	075525	075550	075575	075600	075625	075650	J6
62									J9
75									J9
87									J9
100									J9
25									J3
31									J4
37									J6
43									J6
50	100475	100500	100525	100550	100575	100600	100625	100650	J6
62									J9
75									J9
87									J9
100									J9
31									J4
37									J6
43									J6
50	125475	125500	125525	125550	125575	125600	125625	125650	J6
62									J9
75									J9
87									J9
100									J9

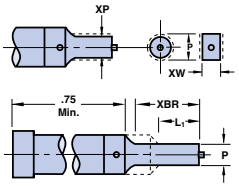
HOW TO ORDER

Specify:	Qty.	Type	D Code	Point Length L_1	Overall Length L	P (or P&W) Dimension
Example:	2	VJXP	37	075	275	P.250

Note: The standard location of a key flat is at 0°. See p.13 for more information on flats and dowel slots.



Standard Alterations



XP, XW P & W Dimensions Smaller than Standard

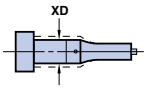
XBR Point Length Longer than Standard

Point Length	.000 .500	.501- .750	.751- 1.000	1.001- 1.250	1.251- 1.500	.000 .500	.501- .750	.751- 1.000	1.001 1.250	1.251- 1.500	*Jektole® Group
Code	Min. P (Rounds)					Min. W (Shapes)					
18	.050	.058				.062	.093				J2
25	.080	.080	.080			.080	.093	.093			J3
31	.115	.115	.115	.115	.115	.115	.115	.115	.115	.115	J4
37	.158	.158	.158	.158	.158	.158	.158	.158	.158	.158	J6
43	.158	.158	.158	.158	.158	.158	.158	.158	.158	.158	J6
50	.158	.158	.158	.158	.158	.158	.158	.158	.158	.158	J6
62	.235	.235	.235	.235	.235	.235	.235	.235	.235	.235	J9
75	.300	.300	.300	.300	.300	.235	.235	.235	.235	.235	J9
87	.350	.350	.350	.350	.350	.235	.235	.235	.235	.235	J9
100	.400	.400	.400	.400	.400	.235	.235	.235	.235	.235	J9

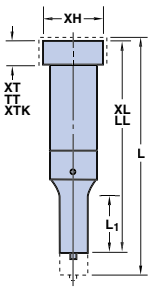
*See p. 14 for additional information.

XD Reduced Shank Diameter

Head diameter does not change with body diameter.



Shank Dia.	18	25	31	37	43	50	62	75	87	100
Min. XD	.172	.218	.282	.344	.376	.438	.562	.688	.813	.938



XL Overall Length Shortened (1.00 min.)
Stock removal from point end. L_1 length is maintained.

LL Precision Overall Length
Same as XL except overall length is held to ±.001.

XT Thinner Head than Standard
Stock removal from head end which shortens overall length.

TT Precision Head Thickness
Same as XT except head thickness tolerance is held to ±.0005.

XH Reduced Head Diameter
Minimum head equals D +.000 – .001.

XTK Kommercial Head Thickness

Shank Dia.D	18	25	31	37	43	50	62	75	87	100
Thickness T	.125	.125	.125	.188	.188	.188	.250	.250	.250	.250

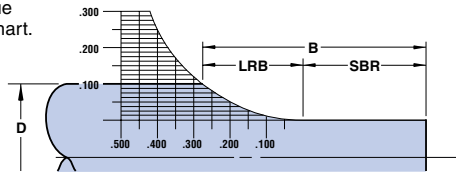
XK No Side Hole
For air ejection. No cost.

XJ Smaller Jektole Components
See p. 14.

SBR Straight Before Radius

To determine Length of Radius Blend (LRB)

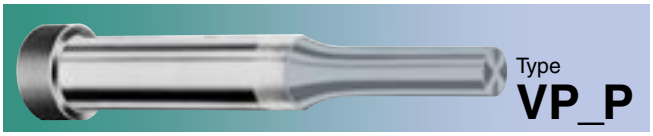
1. Calculate (D-P)/2.
2. Find (D-P)/2 value on left side of chart.
3. Follow line over to intersection point on radius blend line.
4. Read LRB value on bottom of chart.

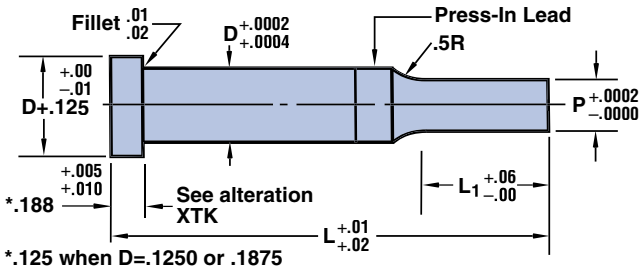


Example:
D=.375
P=.175
(D-P)/2=(.375–.175)/2=.100
Following the .100 line on chart over the radius blend line shows the LRB to be approximately .300.

Regular Punches

VERSAplus™





Material
All heads are drawn to RC 40-55.
Proprietary high-performance material and treatment
P&W Tolerance $^{+.0002}_{-.0000}$ P to D .0003 Ⓜ

Shank D	Code	Point Lgth. L_1	Round Min. XP	Round Range P	Shape Min. XW	Shape Min. W	Shape Max. P/G	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25
.1250	12	.50	.042	.062-.1249	.062	.062 - .1250													
.1875	18		.042	.062-.1874	.062	.062 - .1875													
.2500	25		.062	.062-.2499	.062	.062 - .2500		050150											
.3125	31		.062	.093-.3124	.062	.093 - .3125													
.3750	37		.062	.125-.3749	.080	.125 - .3750													
.4375	43		.093	.187-.4374	.109	.187 - .4375			050175	050200	050225	050250	050275	050300	050325	050350	050375	050400	050425
.5000	50		.125	.225-.4999	.125	.187 - .5000													
.6250	62		.235	.310-.6249	.235	.250 - .6250													
.7500	75		.300	.390-.7499	.235	.312 - .7500													
.8750	87		.350	.440-.8749	.235	.343 - .8750													
1.0000	100		.400	.485-.9999	.235	.375 - 1.0000													
.1250	12	.75	.058	.062-.1249	.062	.062 - .1250													
.1875	18		.058	.062-.1874	.062	.062 - .1875													
.2500	25		.062	.062-.2499	.062	.062 - .2500													
.3125	31		.062	.093-.3124	.093	.093 - .3125													
.3750	37		.062	.125-.3749	.109	.125 - .3750													
.4375	43		.093	.187-.4374	.109	.187 - .4375				075200	075225	075250	075275	075300	075325	075350	075375	075400	075425
.5000	50		.125	.225-.4999	.125	.187 - .5000													
.6250	62		.235	.310-.6249	.235	.250 - .6250													
.7500	75		.300	.390-.7499	.235	.312 - .7500													
.8750	87		.350	.440-.8749	.235	.343 - .8750													
1.0000	100		.400	.485-.9999	.235	.375 - 1.0000													
.1250	12	1.00	.075	.093-.1249	.093	.093 - .1250													
.1875	18		.075	.093-.1874	.093	.093 - .1875													
.2500	25		.080	.093-.2499	.093	.093 - .2500													
.3125	31		.093	.093-.3124	.093	.093 - .3125													
.3750	37		.093	.125-.3749	.125	.125 - .3750													
.4375	43		.093	.187-.4374	.141	.187 - .4375					100225	100250	100275	100300	100325	100350	100375	100400	100425
.5000	50		.125	.225-.4999	.141	.187 - .5000													
.6250	62		.235	.310-.6249	.235	.250 - .6250													
.7500	75		.300	.390-.7499	.235	.312 - .7500													
.8750	87		.350	.440-.8749	.235	.343 - .8750													
1.0000	100		.400	.485-.9999	.235	.375 - 1.0000													
.1875	18	1.25	.093	.125-.1874	.125	.125 - .1875													
.2500	25		.093	.125-.2499	.125	.125 - .2500													
.3125	31		.093	.125-.3124	.125	.125 - .3125													
.3750	37		.125	.125-.3749	.125	.125 - .3750													
.4375	43		.125	.187-.4374	.172	.187 - .4375						125250	125275	125300	125325	125350	125375	125400	125425
.5000	50		.125	.225-.4999	.172	.187 - .5000													
.6250	62		.235	.310-.6249	.235	.250 - .6250													
.7500	75		.300	.390-.7499	.235	.312 - .7500													
.8750	87		.350	.440-.8749	.235	.343 - .8750													
1.0000	100		.400	.485-.9999	.235	.375 - 1.0000													

Features/Benefits

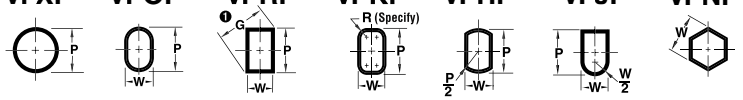
All Versa/plus™ punch products utilize a unique combination of surface treatments to create a longer-lasting, lower maintenance, *premium* product.

Regular Versa/plus™ punches provide three times better alignment than other major brands; offer longer tool life; and can significantly improve finished part quality.

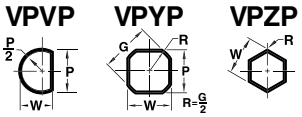
Regular Punches

VERSA plus™

VPXP **VPOP** **VPRP** **VPKP** **VPHP** **VPJP** **VPNP**



VPVP **VPYP** **VPZP**



❶ Check your P&W dimensions to be certain the diagonal G does not exceed the maximum shown.

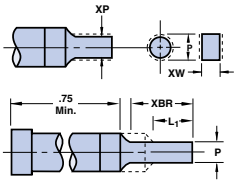
Note: Sharp corners will be broken to minimize wear.

	Code										
		4.50	4.75	5.00	5.25	5.50	5.75	6.00	6.25	6.50	6.75	7.00
	12											
	18											
	25											
	31											
	37											
	43											
	50	050450	050475	050500	050525	050550	050575	050600				
	62											
	75											
	87											
	100											
	12											
	18											
	25											
	31											
	37											
	43											
	50	075450	075475	075500	075525	075550	075575	075600				
	62								075625	075650	075675	075700
	75											
	87											
	100											
	12											
	18											
	25											
	31											
	37											
	43											
	50	100450	100475	100500	100525	100550	100575	100600				
	62								100625	100650	100675	100700
	75											
	87											
	100											
	18											
	25											
	31											
	37											
	43											
	50	125450	125475	125500	125525	125550	125575	125600				
	62								125625	125650	125675	125700
	75											
	87											
	100											

HOW TO ORDER

Specify:	Qty.	Type	D Code	Point Length L_1	Overall Length L	P (or P&W) Dimension
Example:	2	VPXP	37	100	275	P.250

Standard Alterations



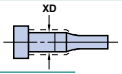
XP, XW P & W Dimensions Smaller than Standard

XBR Point Length Longer than Standard

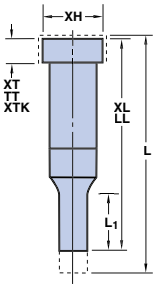
Point Length	.000 .500	.501- .750	.751- 1.000	1.001- 1.250	1.251- 1.500	.000 .500	.501- .750	.751- 1.000	1.001 1.250	1.251- 1.500
Code	Min. P (Rounds)					Min. W (Shapes)				
12	.042	.058	.075			.062	.062	.093		
18	.042	.058	.075	.093		.062	.062	.093	.125	
25	.062	.062	.080	.093		.062	.062	.093	.125	
31	.062	.062	.093	.093	.125	.062	.093	.093	.125	.125
37	.062	.062	.093	.125	.125	.080	.109	.125	.125	.195
43	.093	.093	.093	.125	.125	.109	.109	.141	.172	.195
50	.125	.125	.125	.125	.125	.125	.125	.141	.172	.195
62	.235	.235	.235	.235	.235	.235	.235	.235	.235	.235
75	.300	.300	.300	.300	.300	.235	.235	.235	.235	.235
87	.300	.300	.300	.300	.300	.235	.235	.235	.235	.235
100	.400	.400	.400	.400	.400	.235	.235	.235	.235	.235

XD Reduced Shank Diameter

Head diameter does not change with body diameter.



Shank Dia.	12	18	25	31	37	43	50	62	75	87	100
Min. XD	.063	.126	.188	.251	.313	.376	.438	.562	.688	.813	.938



XL **Overall Length Shortened (1.00 min.)**
Stock removal from point end. L_1 length is maintained.

LL **Precision Overall Length**
Same as XL except overall length is held to ±.001.

XT **Thinner Head than Standard**
Stock removal from head end which shortens overall length.

TT **Precision Head Thickness**
Same as XT except head thickness tolerance is held to ±.0005.

XH **Reduced Head Diameter**
Minimum head diameter equals D +.000 – .001.

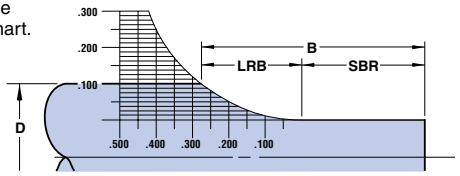
XTK Kommercial Head Thickness

Shank Dia. D	12	18	25	31	37	43	50	62	75	87	100
Thickness T	.125	.125	.125	.125	.188	.188	.188	.250	.250	.250	.250

SBR Straight Before Radius

To determine Length of Radius Blend (LRB)

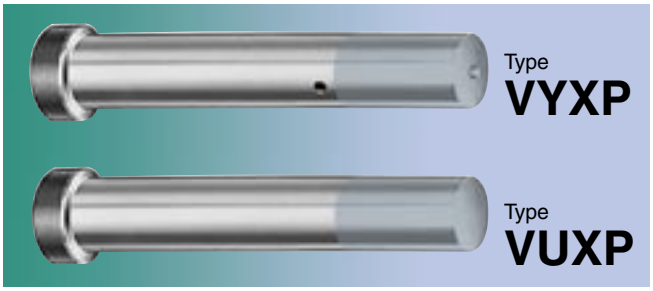
1. Calculate (D-P)/2.
2. Find (D-P)/2 value on left side of chart.
3. Follow line over to intersection point on radius blend line.
4. Read LRB value on bottom of chart.

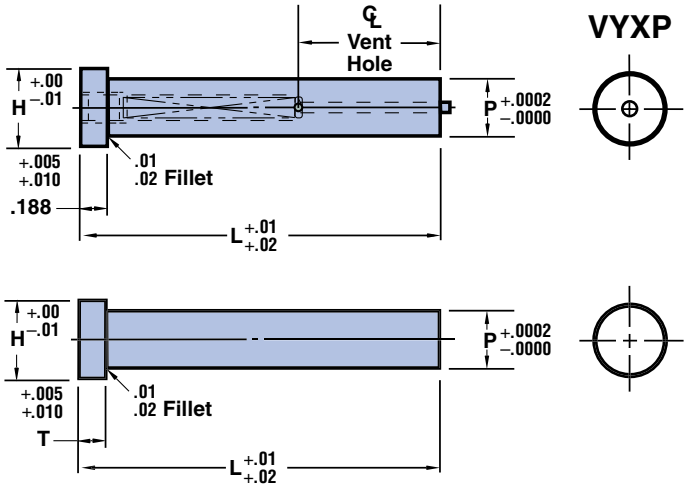


Example:
D=.375
P=.175
(D-P)/2=(.375–.175)/2=.100
Following the .100 line on chart over the radius blend line shows the LRB to be approximately .300.

Straight Punches
Jektole® and Regular

VERSA plus™





Material
All heads are drawn to RC 40-55.
Proprietary high-performance material and treatment
P Tolerance +.0002 −.0000

Range P		Head Dia. H	Head Thk. T	℄ Vent Hole	L 1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00	6.25	6.50	* Jektole® Group
VYXP	.1870-.2500	.375	See DWG.	.55	150	175	200	225	250	275	300															J2
	.2501-.3130	.438		.55 .80	150	175	200	225	250	275	300	325	350	375	400											J3
	.3131-.3750	.500		.60 .85	150	175	200	225	250	275	300	325	350	375	400											J4
	.3751-.4380	.562		.85 1.10	150	175	200	225	250	275	300	325	350	375	400											J6
	.4381-.5000	.625		.85 1.10	150	175	200	225	250	275	300	325	350	375	400											J6
	.5001-.6250	.750		.85 1.10	150	175	200	225	250	275	300	325	350	375	400											J9
VUXP	.0620-.1250	.250	.125	N/A	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600	625	650	N/A
	.1251-.1880	.312	.125																							
	.1881-.2500	.375	.188																							
	.2501-.3130	.438	.188																							
	.3131-.3750	.500	.188																							
	.3751-.4380	.562	.188																							
	.4381-.5000	.625	.188																							
	.5001-.6250	.750	.188																							

*See p. 14 for additional information.

Features/Benefits

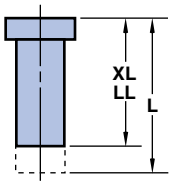
All Versa/plus™ punch products utilize a unique combination of surface treatments to create a longer-lasting, lower maintenance, *premium* product.

Versa/plus™ punch blanks are available in a wide range of sizes; can be designed and formed to accommodate your specific punching needs; and provide longer die runs, less downtime, and reduced maintenance costs.

HOW TO ORDER

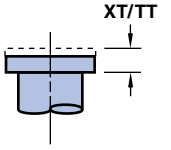
Specify:	Qty.	Type	Overall Length L	P Dimension
Example:	5	VYXP	250	P.324
	2	VUXP	325	P.492

Standard Alterations



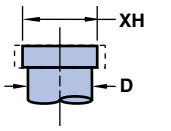
XL **Overall Length Shortened (1.00 min.)**
Stock removal from point end.

LL **Precision Overall Length**
Same as XL except overall length is held to ±.001.



XT **Thinner Head than Standard**
Stock removal from head end which shortens overall length.

TT **Precision Head Thickness**
Same as XT except head thickness tolerance is held to ±.0005.



XH **Reduced Head Diameter**
Minimum head diameter equals D+.000 - .001.

Classified Shapes

VERSA plus™

Classified shapes (83 common shapes, no detailing required) are available on all punches, matrixes, and guide bushings, as indicated in this catalog. The 83 available common shapes are shown on pages 9 through 11.

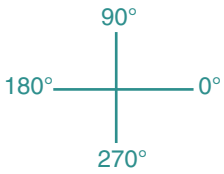
Ordering Information

*Corner Dimensions

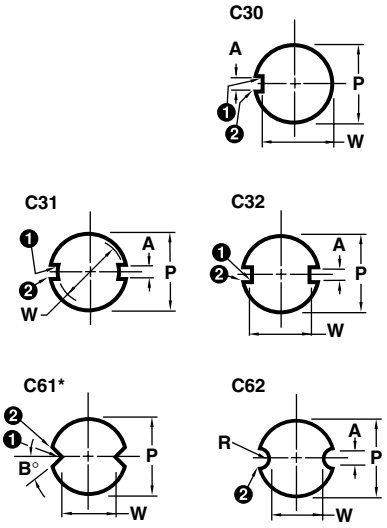
Dimension should be the theoretical sharp corners for shapes C22, C24, C34, C61, and C88. However, some reduction of these dimensions will result from fitting the punch and matrix under conditions where the clearance is .0025 or less per side.

Shape Center

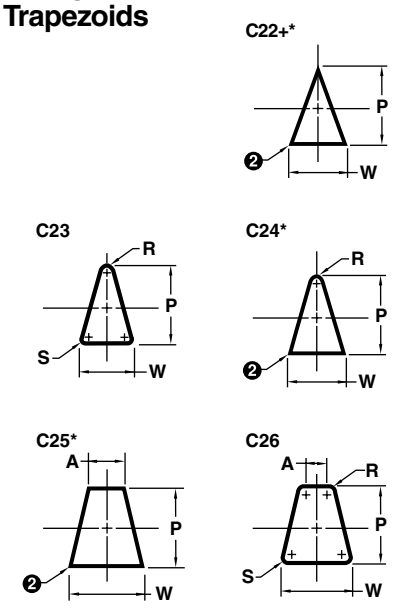
Shapes are centered on the punch shanks as shown. Shapes in guide bushings and matrixes are also center as shown with the exception of shapes C22 and C34. Due to clearance, the P dimension on these shapes will not be centered.



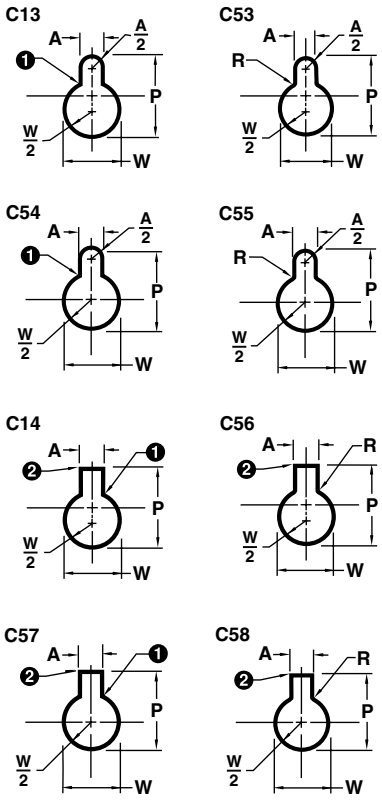
Keys



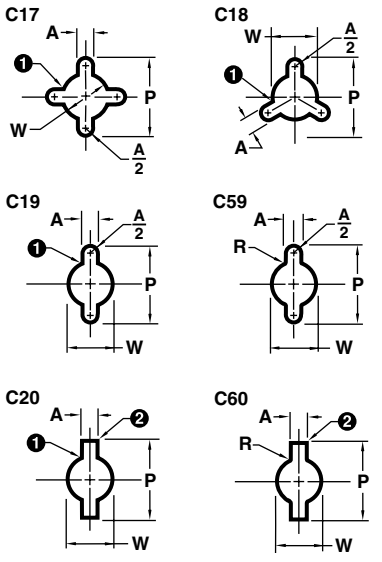
Triangles/ Trapezoids



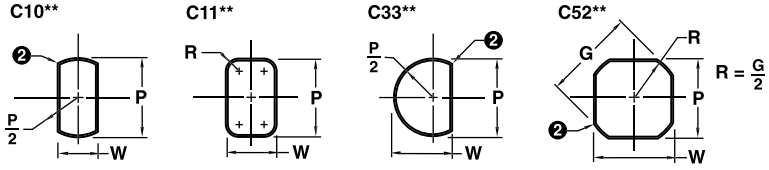
Mono Lobes



Multi Lobes



Flatted Rounds



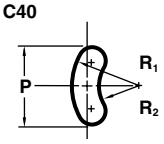
** Now standard. See product pages.

Classified Shapes

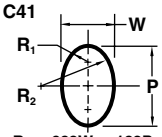
VERSA plus™

Miscellaneous

C40

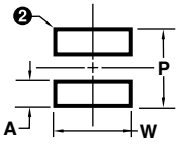


C41

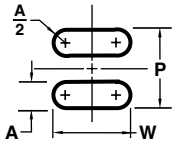


$R_1 = .683W - .183P$
$R_2 = 1.183P - .683W$

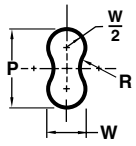
C42*



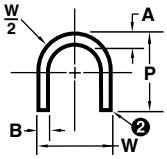
C43



C93



C64



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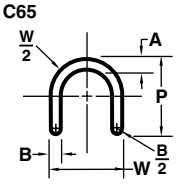
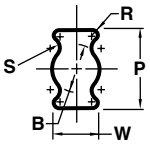
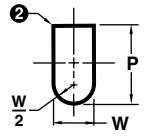


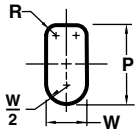
C27



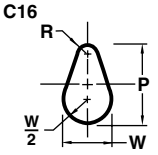
C28**



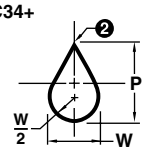
C29



C16

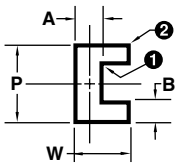


C34+

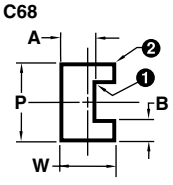


Us

C50



C68



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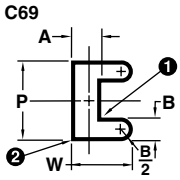

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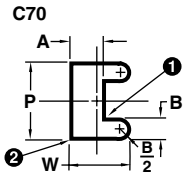

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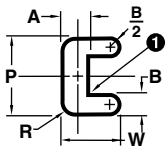

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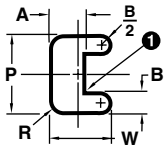

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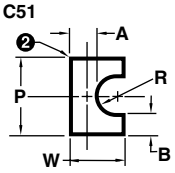

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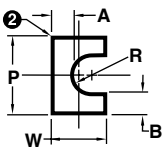

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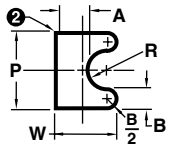
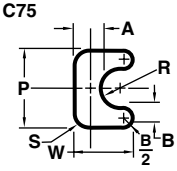


C75



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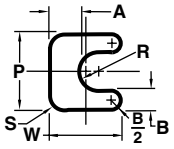
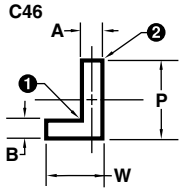


Ls

C46



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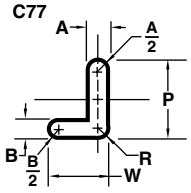

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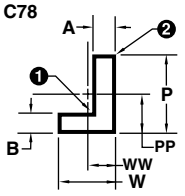

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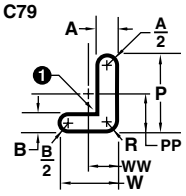

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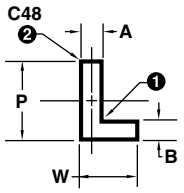
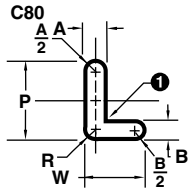


C80



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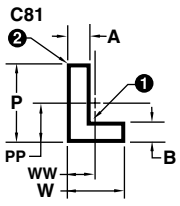

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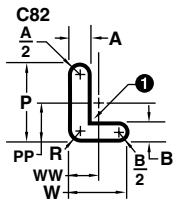

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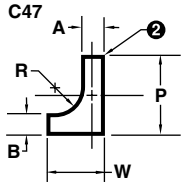

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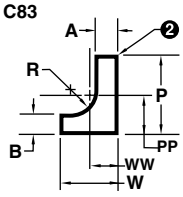

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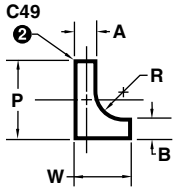

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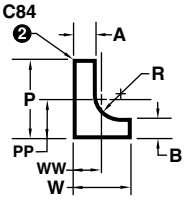

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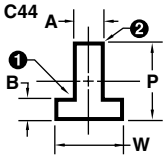
C44



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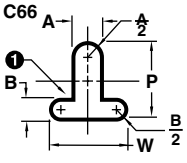

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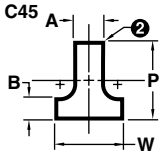

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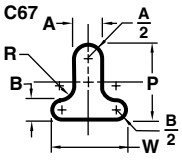
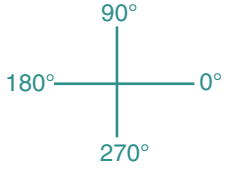
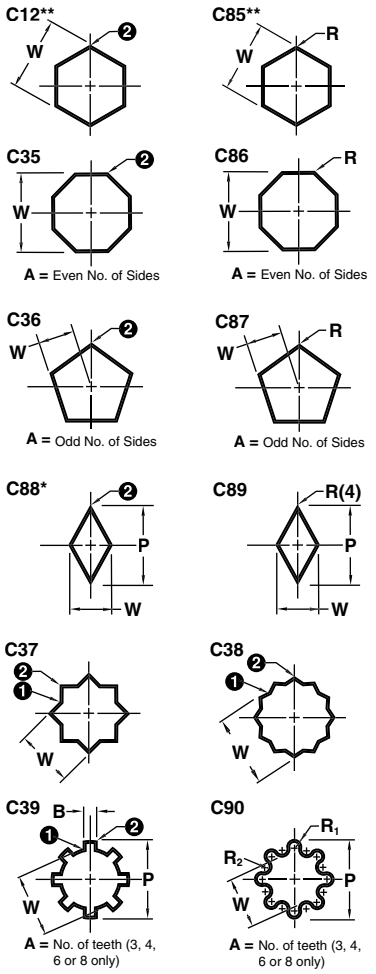




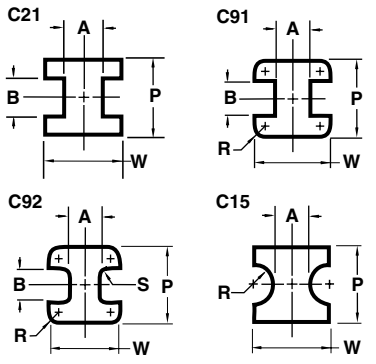
❷ See "Corner Dimensions" note on p. 10.

** Now standard. See product pages.

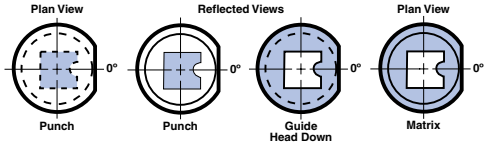
Polygons



Duo Tees

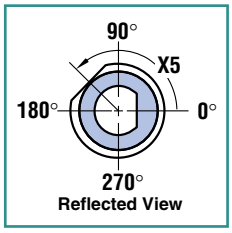


Reflected View—Punches and Guides



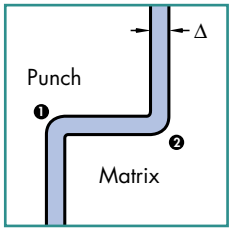
The reflected view is used for punches and guides. It is the view as seen in a mirror held below a punch or guide in its operating position. It is the same as a plan view from the head end, in which the point shapes is shown dotted. A reflected view is shown with solid lines.

Orientation and Locking



The locking device orientation is standard at 0°. For types of locking methods and custom locations, see p. 12.

Clearance



Normal grinding methods produce ❶ .007 max fillet on the punch and ❷ .007 max fillet on the matrix with matching corner shape on the matrix and punch, respectively. When ordering matrixes, please specify punch dimensions and clearance per side (Δ). (If the clearance is .0025 Δ, Dayton will break sharp corners when the punches and matrixes are ordered together.)

Sharp corners will be broken to minimize wear.

In-house coating and treatment

In addition to manufacturing all Versa/plus™ products, Dayton Progress maintains and operates full-service, proprietary prep (precision manufacturing and surface treatment), in-house coating, and special treatmentement facilities, resulting in:

- increase wear resistance
- less sharpening time
- no loss of resistance after sharpening
- longer die runs
- less down time

Applications

Versa/plus™ products are ideally suited for high-demand industries where higher-than-normal punching frequency occurs—and where optimum performance is a MUST.

The Dayton Difference

Since 1946, Dayton Progress has grown to an organization 1100+ people strong. We operate seven manufacturing/engineering facilities occupying a total of over 200,000 square feet (18,000 square meters) in North America, Europe, and the Pacific Rim. Further, we have alliances with selected manufacturers of leading-edge die component products that give us the ability to sell these proprietary products worldwide.

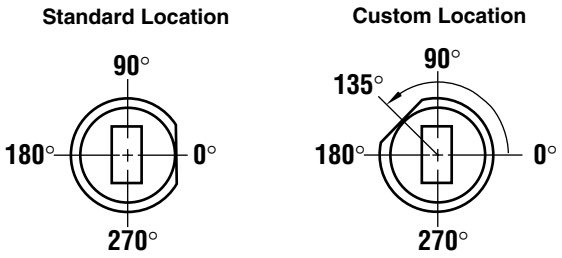
Our real strength, however, lies with our employees and business partners who bring years of experience and a wealth of talent. All of us in the Dayton "family" are dedicated to *creating value for our customers* because we care about quality, reliability, product performance, on-time delivery, technical support, and exceptional customer service.

Locking Devices—Ordering Information

VERSA plus™

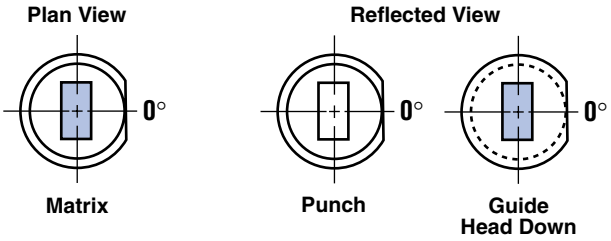
Orientation

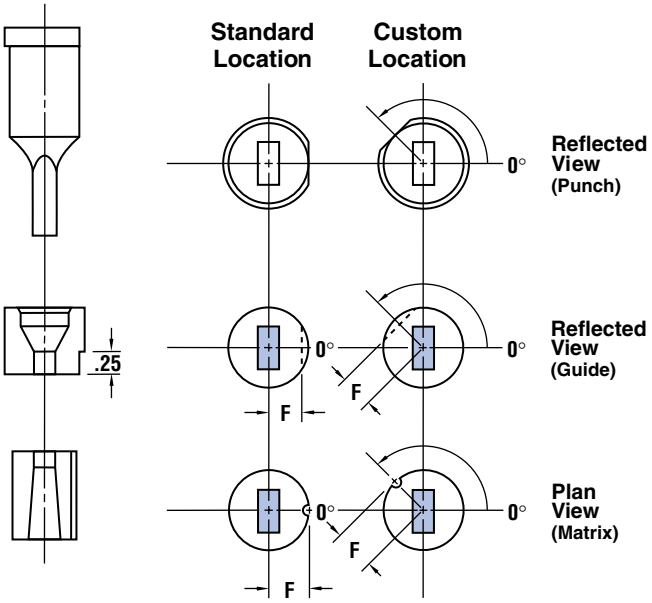
The standard location for all locking devices is 0°, and is always on the long side (P) of the shape. Custom locations are measured counterclockwise from 0°. (See drawing below.)



Views

A Plan View is used for the matrix, and a Reflected View is used for the punch or guide. The Reflected View, a mirror image, simplifies orientation—locking devices are all in the same position.





How To Specify

The most common locking devices—flat, double flat, and dowel—are available. Simply select the type, then add the code to the component description shown on p. 13.

HOW TO ORDER

Specify:	Qty.	Type	D	L_1	L	P (or P&W) Dimension
Example:	1	VJJP	37	075	250	P.321, W.189

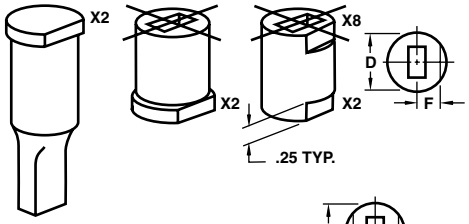
Location Tolerance

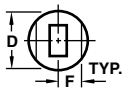
Flat		Dowel	
F	Radial	F	Radial
+ .0002 – .0000	.0005/ inch	+ .0002 – .0000	0°2'

Locking Devices—Flats vs. Dowel Slots

VERSA plus™

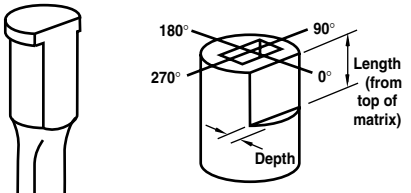
Flats





F Dimension
(.5D on Headed Products)
Headless Matrixes and Guides

Body Dia.	18	25	31	37	43	50
F	.080	.110	.135	.165	.190	.220
Body Dia.	**62**	**75**	**87**	**100**	**125**	**150**
F	.270	.325	.380	.435	.540	.650
Body Dia.	**175**	**200**	**225**	**250**	**275**	
F	.775	.900	1.025	1.150	1.275	

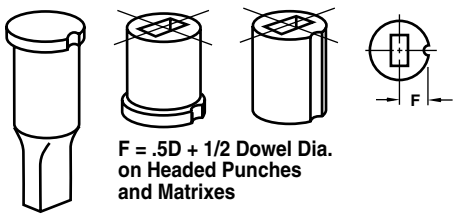


The depth of the flat is taken from the shank, not the head, on punches.

Key Flats vs. Dowel Slots

Maximum hole dimensions in matrixes were designed with key flats in mind. There are instances where, if using a dowel slot, the dowel hole could break into the relief. For this reason, there are two ways to specify the location of the dowel. **X0** (standard/alternate location) and **X1** (custom location) are located .5D from centerline. However, when hole dimensions are approaching the high limit of "P," **X4** (standard/alternate location) or **X7** (custom location) may be specified. This relocates the dowel outward to assure no interference between the dowel and the relief hole. Note: When the matrix diameter is over .5000, the centerline dimension is .5D on all dowels.

Dowel Slots



F = .5D + 1/2 Dowel Dia. on Headed Punches and Matrixes

Standard and Alternate Locations

Definitions:
Standard Location is at 0°.
Alternate Location is 90°, 180°, or 270°.
Alternate Locations are available at no additional charge.

Custom Locations

Definitions:
Custom Location is ***any angle other than:*** 0°, 90°, 180°, or 270°.

Single Flats: X2 & X8

Locking Devices	Punches	Matrixes
X2	Top	Bottom
X8	N/A	Top

Order Example:
X2 — 90°

Single Flats: X5 & X9

Locking Devices	Punches	Matrixes
X5	Top	Bottom
X9	N/A	Top

Order Example:
X5 — 135°

Double Flats: X3

Locking Devices	Punches	Matrixes
X3	Top	Bottom

Order Example:
X3 — 90°

Second Flat is *always parallel* to the first flat.

Double Flats: X6

Locking Devices	Punches	Matrixes
X6	Top	Bottom

Order Example:
X6 — 135°

Additional Flats

Code	Depth	Length
X81	.060	.500
X82	.060	.625
X83	.060	.750
X84	.060	Full Length
X85	.093	.500
X86	.093	.625
X87	.093	.750
X88	.093	Full Length
X89	Specify Dimensions	

Additional Flats

Code	Depth	Length
X91	.060	.500
X92	.060	.625
X93	.060	.750
X94	.060	Full Length
X95	.093	.500
X96	.093	.625
X97	.093	.750
X98	.093	Full Length
X99	Specify Dimensions	

Dowel Slots: X0, X4, & X41

Locking Devices	Dowel Diameter
X0	.1250
X4	.1250
X41	.1875

Order Example:
X0 — 180°

Dowel Slots: X1, X7, & X71

Locking Devices	Dowel Diameter
X1	.1250
X7	.1250
X71	.1875

Order Example:
X71 — 135°

F Dimension

for Headless Matrixes Only

Body Diameter		25	31	37	43	50	62-275
X0	F	.1250	.1562	.1875	.2188	.2500	.5D
X4		.1625	.1875	.2125	.2375	.2625	.5D
X41		.1938	.2188	.2438	.2688	.2938	.5D

F Dimension

for Headless Matrixes Only

Body Diameter		25	31	37	43	50	62-275
X1	F	.1250	.1562	.1875	.2188	.2500	.5D
X7		.1625	.1875	.2125	.2375	.2625	.5D
X71		.1938	.2188	.2438	.2688	.2938	.5D

Jektole® Data

The Engineered Clearance

Perforating punch-to-matrix clearances in metal stamping dies has been universally expressed as a percentage of stock thickness, and for clarity should be articulated as percent per side (Δ=clearance per side).

Standard practice has called for Δ 5%, and is commonly known as "regular clearance." Regular clearance has been applied almost universally to all applications involving the perforation of ferrous materials.

Jektole®, the ***Engineered Clearance***, is approximately twice regular clearance, i.e., Δ 10-12%. This means greater productivity, improved maintenance, and a better return on your tooling investment.

In addition, clearances of up to Δ 50% are not uncommon with some hard materials. Clearance tests have been performed by Dayton Progress to prove that increasing the clearance does not lessen hole quality—a common thought by some designers and engineers. Dayton clearance tests do, in fact, prove that the Jektole® ***Engineered Clearance*** provides many advantages and benefits.

Jektole® In Production

- Requires less press tonnage
- Reduces the pressure required to strip the punch, which, in turn reduces punch wear
- Produces minimal burr
- Doubles—often triples—piece output per grind
- Reduces total punch costs

Jektole® In Maintenance

- Keeper Key holds pin in retracted position (see photo at left)
- Eliminates the need for disassembly before grinding
- Helps maintain proper pin extension
- Reduces downtime for regrinding

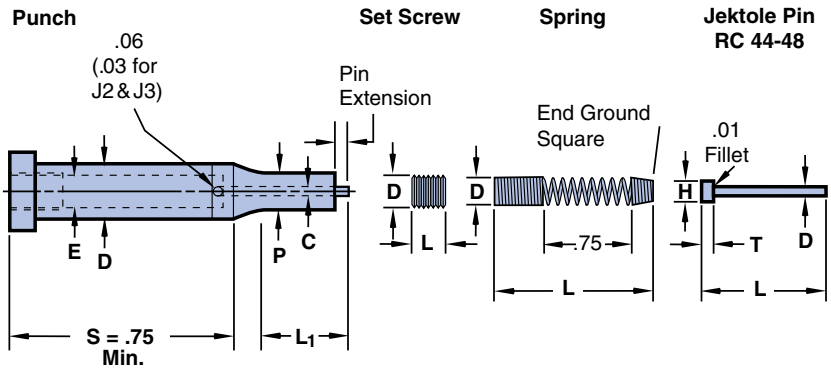
Standard Jektole® Data

DIMENSION		J2	J3	J4	J6	J9
Std. Shank Diameter	D	.1875	.2500	.3125	.3750 .4375 .5000	.6250 .7500 1.000
Point Hole Diameter	C	.020	.032	.046	.063	.094
Shank Hole Diameter	E	.086	.109	.141	.172	.221
Pin Extension		.03	.03	.06	.06	.06
Keeper Key Number		920045			920053	

Jektole® Design Limits

DIMENSION		J2	J3	J4	J6	J9
Min. Shank Dia.	D	.172	.218	.282	.344	.442
Min. Point Dia.	P	.050	.080	.115	.158	.235
Max. Point Lgth.	L_1	1.00	1.25	1.50	1.50	1.50

Jektole® Components



Universal Jektole® Components

EJECTOR PINS		J2	J3	J4	J6	J9
Overall Length	L	1.11	1.38	1.94	1.94	2.22
Pin Diameter	D	.017	.027	.041	.058	.089
Head Diameter	H	.048	.073	.094	.120	.156
Hd. Thickness	T	.031	.047	.062	.062	.094
SPRINGS		**J2**	**J3**	**J4**	**J6**	**J9**
Outside Dia.	D	.081	.104	.136	.167	.216
Free Length	L	2.38	2.38	3.19	3.00	3.03
Pressure (.12" Pre-load)	Lbs.	.5	.75	1	1.5	2
SCREWS		**J2**	**J3**	**J4**	**J6**	**J9**
Screw Size	D	#3-48	#5-50	#8-32	#10-32	1/4-28
Screw Length	L	.19	.19	.19	.19	.25

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