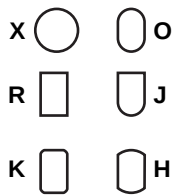
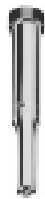


Punches

Standard Shapes



DJ__
Jektole®



Round/
Shape

2/3

DP__
Regular



Round/
Shape

4/5

DPT
Pilots



Regular

6/7

DPA



Positive
Pick-Up

8/9

DJ__ DP__
Extended
Range



Round/
Shape

13

Punches

CloSPACE

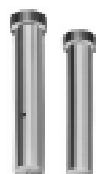


60°

Square

12

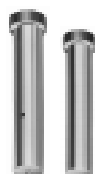
DYX DUX
Straight



Jektole
Regular

10

DJB DPB
Blanks



Jektole
Regular

11

Matrixes

Solid



DN__

Round/
Shape

14/15

EDM Blanks



DR__



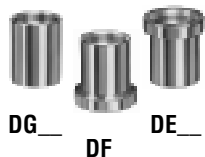
ADU

AHU

16

Bushings

Guide Bushings



DG__

DF__

DE__

17

Quill Bushings



DQX

17

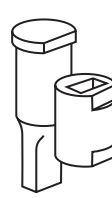
Data

Classified Shapes



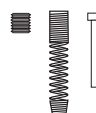
18/19

Locking Devices



20/21

Jektole Components



16

Catalog Ordering System

Significant Catalog System

Example:

DPR Type

D = for Versatile
P = for Punch (Regular)
R = for Rectangle

13 Shank Dia.

25 Point Length L₁

63 Overall Length L

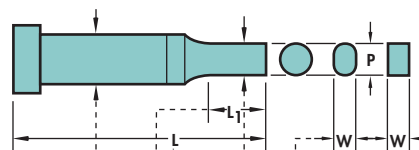
Easy to Specify

The Catalog Designation completely defines the product, including shape, dimensions, tolerances, and concentricity.

How to Order

Specify Qty, Type, Catalog Number, and P or P & W Dimensions

Qty. Type



DPR™ 13- 2563 P8.0, W6.5 2 DPO 13 2563 P8.0 W6.5

Type Catalog Number Dimensions As Specified

All Triliteral Designations are a Trademark of Dayton Progress Corporation.

Jektole® Punches

Regular Punches

Regular Pilots

Positive Pick-Up Pilots

Straight Punches Punch Blanks

CloSPACE Punches Extended Range Punches

Solid Matrixes

Guide Bushings Quill Bushings Jektole Data

Classified Shapes

Locking Devices

Precision Ejector Punches

All Heads Drawn to HRC 40-55



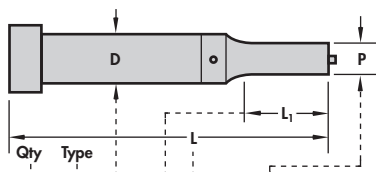
③ Sharp corners are typical. To assure proper clearance, Dayton will provide standard broken corners to eliminate interference with matrix fillet when total clearance is 0.08 or less.

Σ Check your P&W dimensions to be sure the diagonal G does not exceed the max shown.

$$G = \sqrt{P^2 + W^2}$$

How to Order:

Specify: Quantity
Type
Shank Diameter
Point & Overall Length
P or P & W Dimensions
Steel
Standard Alterations



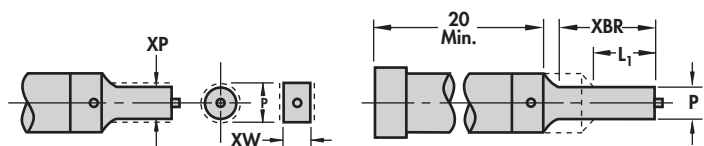
2 DJX08- 1360 P7.25, A2
5 DJX13- 2580 P11.52, M2, XL = 77.5
1 DJR16- 2571 P12.00, W8.00, PS, X2
2 DJK16- 1990 P11.50, W10.50, R1.25, A2, X2

Standard Alterations

Standard alterations are the ranges beyond those sizes listed in the catalog which can be manufactured for a slight additional charge.

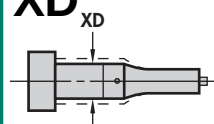
XP, XW P & W Dimensions
Smaller than
Standard

XBR Point Length
Longer than Standard



L ₁ Max.	8	13	19	25	30	35	40	8	13	19	25	30	35	Jektrole Pin
Type	D	P Min. (Rounds)						W Min. (Shapes)						
DJ_05	1.3	1.3	1.5	2.4	-	-	-	1.6	1.6	1.6	2.4	-	-	J2M
DJ_06	2.0	2.0	2.0	2.4	2.5	-	-	2.0	2.0	2.0	2.4	3.0	-	J3M
DJ_08	3.0	3.0	3.0	3.0	3.0	3.2	-	3.0	3.0	3.0	3.0	4.0	4.0	J4M
DJ_10	4.0	4.0	4.0	4.0	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.5	J6M
DJ_13	-	4.0	4.0	4.0	4.0	4.0	6.0	-	4.0	4.0	4.0	4.0	4.5	J6M
DJ_16	-	6.0	6.0	6.0	6.0	6.0	6.0	-	6.0	6.0	6.0	6.0	6.0	J9M
DJ_20	-	6.0	6.0	6.0	6.0	7.6	7.6	-	6.0	6.0	6.0	6.0	6.0	J9M
DJ_25	-	8.0	8.0	8.0	10.0	10.0	10.0	-	6.0	6.0	6.0	6.0	6.0	J9M
DJ_32	-	10.0	10.0	10.0	10.0	10.0	10.0	-	7.2	7.2	7.2	7.2	7.2	J12M

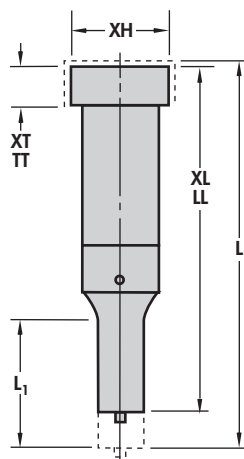
XD



Reduced Shank Diameter

Head Diameter does not change with body diameter.

Shank Dia.	5.0	6.0	8.0	10.0	13.0	16.0	20.0	25.0	32.0
Min. XD	4.4	5.0	6.8	8.8	11.5	14.5	18.5	23.5	30.5



XL

Overall Length Shortened (25 min.)

Stock removal from point end which shortens point length. To maintain point length specify "XBR".

LL

Precision Overall Length

Same as XL except overall length is held to ± 0.02

XT

Thinner Head than Standard

Stock removal from head end which shortens overall length.

TT

Precision Head Thickness

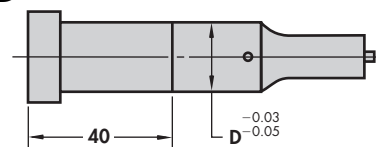
Same as XT except head thickness tolerance is held to ± 0.01 .

XH

Reduced Head Diameter

Minimum head diameter equals $D + 0.00, -0.03$

XLD Alternate Lead Length



The XLD alteration fixes the punch shank length at 40 measured from the punch head. This eliminates pressing the entire shank through the holder.

XN DayTride® a unique wear resistant surface treatment for M2 & PS only.

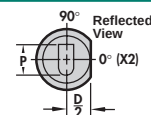
XNT DAYTiN® Titanium Nitride coating for extra wear. For M2 & PS only.

XK No Side Hole For air ejection. No cost.

XJ Smaller Jektrole Components See page 13.

Key Flats

The standard location for a key flat is Parallel to the P dimension. See pages 20 & 21 for more information.



L				Jektrole Pin
71.0	80.0	90.0	100.0	
0871	0880	0890	08100	J2M J3M
1371	1380	1390	13100	J2M J3M J4M J6M J6M J9M J9M J9M J12M
1971	1980	1990	19100	J2M J3M J4M J6M J6M J9M J9M J9M J12M
2571	2580	2590	25100	J3M J4M J6M J6M J9M J9M J9M J12M

A DAYTON
Difference
JEKTOLE



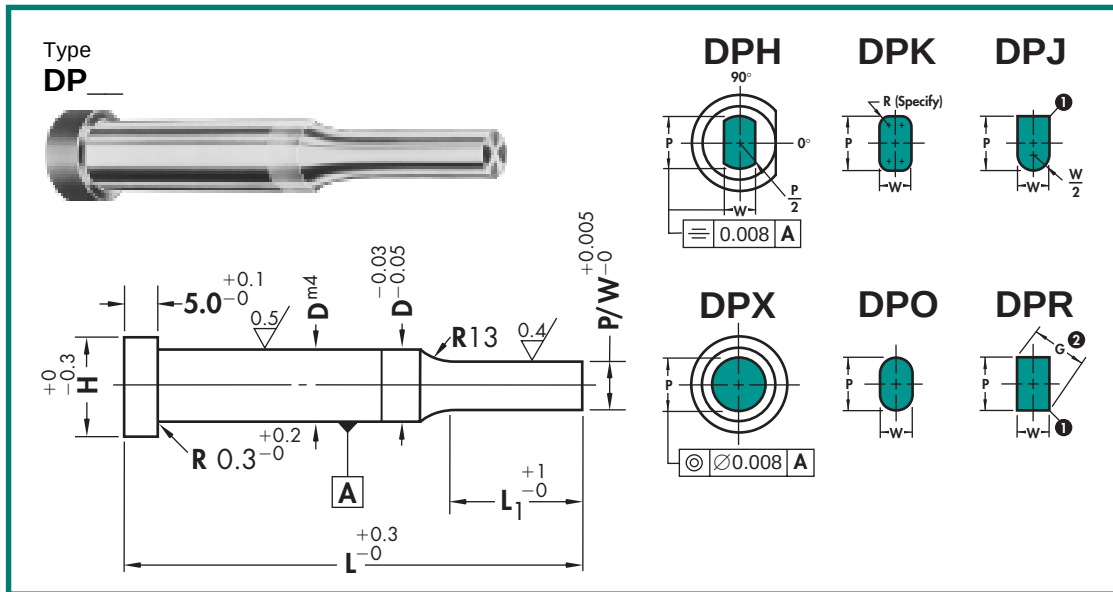
The "Triple Your Production" Punch
Retractable Slug Ejector. See page 16.
Pat. No. 2,917,960 and 3,255,654

Regular Punches

Precision Non-ejector Punches

Steel:	HRC
A2, M2	60-63
PS	63-65

All Heads Drawn to HRC 40-55



D	H	Point Length L ₁	Type & D	Round	Type & D	Shape		L						
			DPX	Range P	DP_	Min. W	Max. P/G	32.0	40.0	45.0	50.0	56.0	60.0	63.0
04	07	8.0	DPX 04	1.00- 3.99	DP_ 04	1.60- 4.00								
05	08		DPX 05	1.20- 4.99	DP_ 05	1.60- 5.00								
06	09		DPX 06	1.60- 5.99	DP_ 06	1.60- 6.00								
08	11		DPX 08	2.00- 7.99	DP_ 08	2.00- 8.00		0832	0840	0845	0850	0856	0860	0863
10	13		DPX 10	2.50- 9.99	DP_ 10	3.20-10.00								
04	07	13.0	DPX 04	1.60- 3.99	DP_ 04	1.60- 4.00								
05	08		DPX 05	1.60- 4.99	DP_ 05	1.60- 5.00								
06	09		DPX 06	1.60- 5.99	DP_ 06	1.60- 6.00								
08	11		DPX 08	2.50- 7.99	DP_ 08	2.50- 8.00								
10	13		DPX 10	3.20- 9.99	DP_ 10	3.20-10.00				1345	1350	1356	1360	1363
13	16		DPX 13	5.00-12.99	DP_ 13	4.50-13.00								
16	19		DPX 16	8.00-15.99	DP_ 16	6.00-16.00								
20	23		DPX 20	10.00-19.99	DP_ 20	8.00-20.00								
25	28		DPX 25	12.00-24.99	DP_ 25	9.00-25.00								
32	35		DPX 32	16.00-31.99	DP_ 32	10.00-32.00								
04	07	19.0	DPX 04	1.60- 3.99	DP_ 04	1.60- 4.00								
05	08		DPX 05	1.60- 4.99	DP_ 05	1.60- 5.00								
06	09		DPX 06	1.60- 5.99	DP_ 06	1.60- 6.00								
08	11		DPX 08	2.50- 7.99	DP_ 08	2.50- 8.00								
10	13		DPX 10	3.20- 9.99	DP_ 10	3.20-10.00				1945	1950	1956	1960	1963
13	16		DPX 13	5.00-12.99	DP_ 13	4.50-13.00								
16	19		DPX 16	8.00-15.99	DP_ 16	6.00-16.00								
20	23		DPX 20	10.00-19.99	DP_ 20	8.00-20.00								
25	28		DPX 25	12.00-24.99	DP_ 25	9.00-25.00								
32	35		DPX 32	16.00-31.99	DP_ 32	10.00-32.00								
04	07	25.0	DPX 04	2.50- 3.99	DP_ 04	2.50- 4.00								
05	08		DPX 05	2.50- 4.99	DP_ 05	2.50- 5.00								
06	09		DPX 06	2.50- 5.99	DP_ 06	2.50- 6.00								
08	11		DPX 08	2.50- 7.99	DP_ 08	2.50- 8.00								
10	13		DPX 10	3.20- 9.99	DP_ 10	3.20-10.00								
13	16		DPX 13	5.00-12.99	DP_ 13	4.50-13.00								
16	19		DPX 16	8.00-15.99	DP_ 16	6.00-16.00								
20	23		DPX 20	10.00-19.99	DP_ 20	8.00-20.00								
25	28		DPX 25	12.00-24.99	DP_ 25	9.00-25.00								
32	35		DPX 32	16.00-31.99	DP_ 32	10.00-32.00								

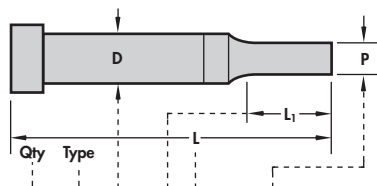
∂ Sharp corners are typical. To assure proper clearance, Dayton will provide standard broken corners to eliminate interference with matrix fillet when total clearance is 0.08 or less.

Σ Check your P&W dimensions to be sure the diagonal G does not exceed the max shown.

$$G = \sqrt{P^2 + W^2}$$

How to Order:

Specify: Quantity
Type
Shank Diameter
Point & Overall Length
P or P & W Dimensions
Steel
Standard Alterations



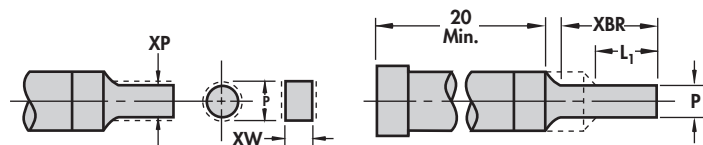
2 DPX10- 0863 P5.00, A2, TT = 5.00
6 DPJ16- 1990 P13.00, W7.00, M2, XBR = 21.0
1 DP032- 25100 P30.00, W16.00, PS, X3 = 90°
2 DPK20- 1956 P15.95, W11.95, R0.95, A2, X2

L					
	70.0	71.0	80.0	90.0	100.0
	0870	0871	0880	0890	08100
	1370	1371	1380	1390	13100
	1970	1971	1980	1990	19100
	2570	2571	2580	2590	25100

Standard Alterations

Standard alterations are the ranges beyond those sizes listed in the catalog which can be manufactured for a slight additional charge.

XP, XW P & W Dimensions Smaller than Standard
XBR Point Length Longer than Standard

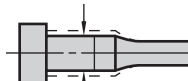


L ₁ Max.	8	13	19	25	30	35	40	8	13	19	25	30	35
Type D	P Min. (Rounds)							W Min. (Shapes)					
DP_04	.8	1.1	1.3	1.9	2.5	—	—	1.3	1.6	1.6	2.4	2.8	—
DP_05	1.0	1.3	1.3	1.9	2.5	—	—	1.3	1.6	1.6	2.4	3.0	—
DP_06	1.3	1.6	1.6	2.0	2.5	—	—	1.3	1.6	1.6	2.4	3.0	—
DP_08	1.6	1.6	1.6	2.4	2.5	3.2	—	1.6	2.4	2.4	2.4	3.2	4.0
DP_10	1.6	1.6	1.6	2.5	3.2	3.2	6.0	2.0	2.4	2.8	3.2	3.2	4.0
DP_13	—	3.2	3.2	3.2	3.2	4.0	6.0	—	3.2	3.2	3.2	3.6	4.5
DP_16	—	6.0	6.0	6.0	6.0	6.0	6.0	—	6.0	6.0	6.0	6.0	6.0
DP_20	—	6.0	6.0	6.0	7.6	7.6	7.6	—	6.0	6.0	6.0	6.0	6.0
DP_25	—	8.0	8.0	8.0	10.0	10.0	10.0	—	6.0	6.0	6.0	6.0	6.0
DP_32	—	10.0	10.0	10.0	10.0	10.0	10.0	—	6.0	6.0	6.0	6.0	6.0

XD

Reduced Shank Diameter

Head Diameter does not change with body diameter.

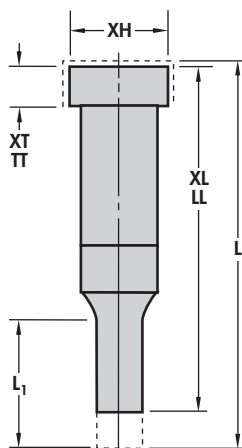


Shank Dia.	4.0	5.0	6.0	8.0	10.0	13.0	16.0	20.0	25.0	32.0
XD Min.	2.5	3.5	4.5	6.5	8.5	11.5	14.5	18.5	23.5	30.5

XL

Overall Length Shortened (25 min.)

Stock removal from point end which shortens point length. To maintain point length specify "XBR".



LL

Precision Overall Length

Same as XL except overall length is held to ± 0.02

XT

Thinner Head than Standard

Stock removal from head end which shortens overall length.

TT

Precision Head Thickness

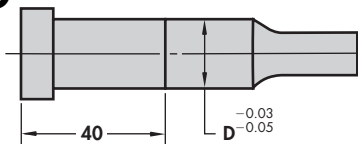
Same as XT except head thickness tolerance is held to ± 0.01 .

XH

Reduced Head Diameter

Minimum head diameter equals $D + 0.00, -0.03$

XLD Alternate Lead Length



The XLD alteration fixes the punch shank length at 40 measured from the punch head. This eliminates pressing the entire shank through the holder.

XN

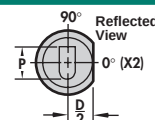
DayTride® a unique wear resistant surface treatment for M2 & PS only

XNT

DAYTiN® Titanium Nitride coating for extra wear. For M2 & PS only.

Key Flats

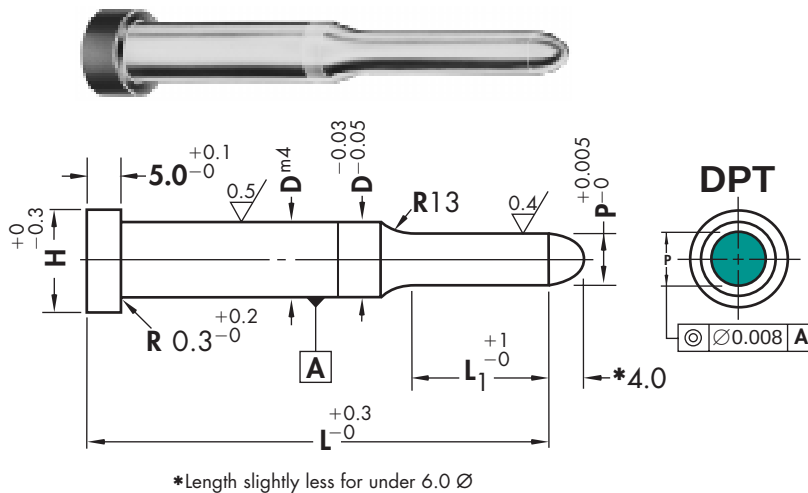
The standard location for a key flat is Parallel to the P dimension. See pages 20 & 21 for more information.



Steel:	HRC
A2, M2	60-63
PS	63-65

All Heads Drawn to HRC 40-55

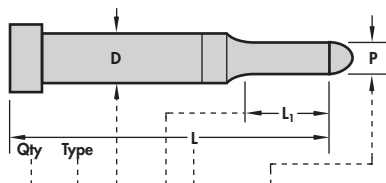
Type
DPT



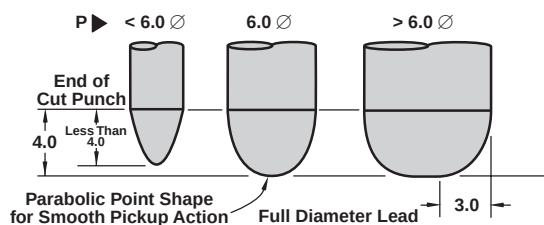
D	H	Point Length L ₁	Type & D	Round	L										
			DPT	Range P	42.0	47.0	52.0	58.0	62.0	65.0	72.0	73.0	82.0	92.0	102.0
04	07	10.0	DPT 04	1.55- 4.00	1042	1047	1052	1058	1062	1065	1072	1073	1082	1092	10102
05	08		DPT 05	1.55- 5.00											
06	09		DPT 06	1.55- 6.00											
08	11		DPT 08	1.95- 8.00											
10	13		DPT 10	2.35-10.00											
04	07	15.0	DPT 04	1.55- 4.00		1547	1552	1558	1562	1565	1572	1573	1582	1592	15102
05	08		DPT 05	1.55- 5.00											
06	09		DPT 06	1.55- 6.00											
08	11		DPT 08	2.35- 8.00											
10	13		DPT 10	3.15-10.00											
13	16		DPT 13	4.95-13.00											
16	19		DPT 16	7.95-16.00											
20	23		DPT 20	9.95-20.00											
25	28		DPT 25	11.95-25.00											
32	35	DPT 32	15.95-32.00												
04	07	21.0	DPT 04	1.55- 4.00		2147	2152	2158	2162	2165	2172	2173	2182	2192	21102
05	08		DPT 05	1.55- 5.00											
06	09		DPT 06	1.55- 6.00											
08	11		DPT 08	2.35- 8.00											
10	13		DPT 10	3.15-10.00											
13	16		DPT 13	4.95-13.00											
16	19		DPT 16	7.95-16.00											
20	23		DPT 20	9.95-20.00											
25	28		DPT 25	11.95-25.00											
32	35	DPT 32	15.95-32.00												
04	07	27.0	DPT 04	2.45- 4.00				2758	2762	2765	2772	2773	2782	2792	27102
05	08		DPT 05	2.45- 5.00											
06	09		DPT 06	2.45- 6.00											
08	11		DPT 08	2.45- 8.00											
10	13		DPT 10	3.15-10.00											
13	16		DPT 13	4.95-13.00											
16	19		DPT 16	7.95-16.00											
20	23		DPT 20	9.95-20.00											
25	28		DPT 25	11.95-25.00											
32	35	DPT 32	15.95-32.00												

How to Order:

Specify: Quantity
Type
Point Length
Shank Diameter
Point & Overall Length
P Dimensions
Steel
Standard Alterations



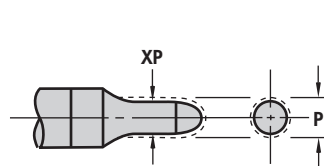
2 DPT10- 1562 P2.90, A2
5 DPT16- 27102 P10.35, M2, XBR = 32.0



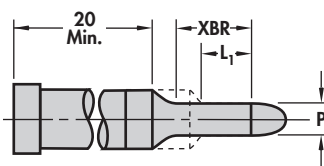
Standard Alterations

Standard alterations are the ranges beyond those sizes listed in the catalog which can be manufactured for a slight additional charge.

XP, XW P & W Dimensions Smaller than Standard



XBR Point Length Longer than Standard

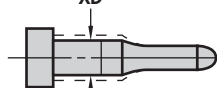


L ₁ Max.		10	15	21	27	32	37	42
Type	D	P. Min. (Rounds)						
DPT 04	1.55	1.55	1.55	1.85	2.45	—	—	—
DPT 05	1.55	1.55	1.55	1.85	2.45	—	—	—
DPT 06	1.55	1.55	1.55	1.95	2.45	—	—	—
DPT 08	1.55	1.55	1.55	2.35	2.45	3.15	—	—
DPT 10	1.55	1.55	1.55	2.45	3.15	3.15	5.95	—
DPT 13	—	3.15	3.15	3.15	3.15	3.95	5.95	—
DPT 16	—	5.95	5.95	5.95	5.95	5.95	5.95	—
DPT 20	—	5.95	5.95	5.95	7.55	7.55	7.55	—
DPT 25	—	7.95	7.95	7.95	9.95	9.95	9.95	—
DPT 32	—	9.95	9.95	9.95	9.95	9.95	9.95	—

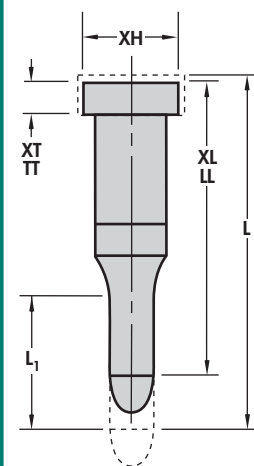
XD

Reduced Shank Diameter

Head Diameter does not change with body diameter.



Shank Dia.	4.0	5.0	6.0	8.0	10.0	13.0	16.0	20.0	25.0	32.0
Min. XD	2.5	3.5	4.5	6.5	8.5	11.5	14.5	18.5	23.5	30.5



XL

Overall Length Shortened (25 min.)

Stock removal from point end which shortens point length. To maintain point length specify "XBR".

XT

Thinner Head than Standard

Stock removal from head end which shortens overall length.

TT

Precision Head Thickness

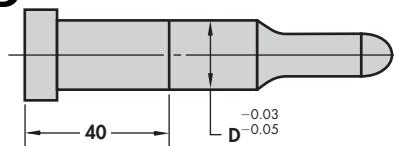
Same as XT except head thickness tolerance is held to ± 0.01 .

XH

Reduced Head Diameter

Minimum head diameter equals $D + 0.00, -0.03$

XLD Alternate Lead Length



The XLD alteration fixes the punch shank length at 40 measured from the punch head. This eliminates pressing the entire shank through the holder.

XN

DayTride® a unique wear resistant surface treatment for M2 & PS only.

XNT

DAYTiN® Titanium Nitride coating for extra wear. For M2 & PS only.

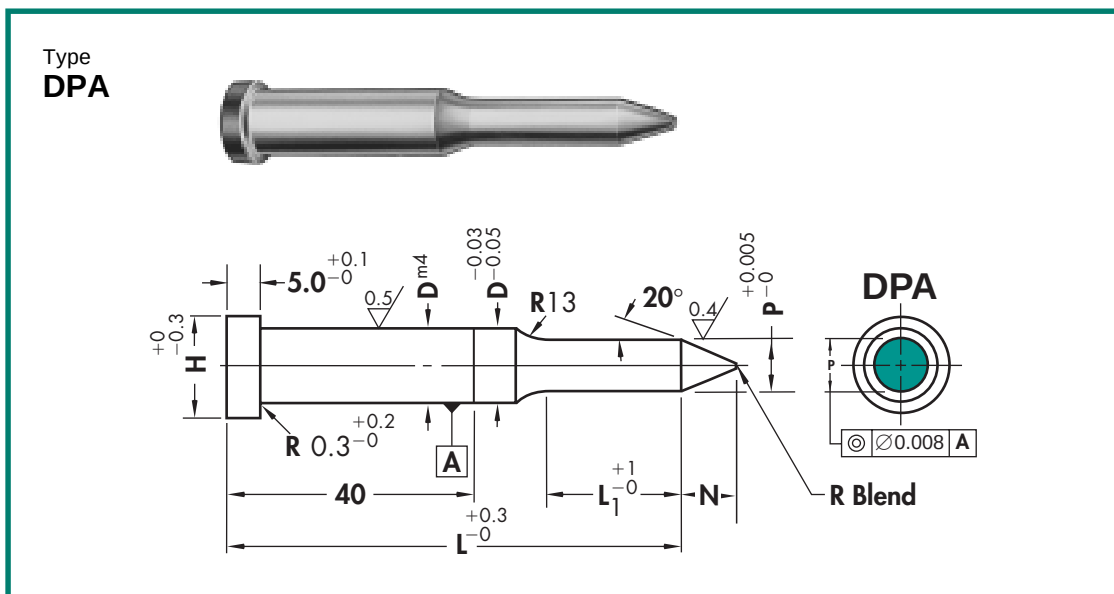
Positive Pick-Up Pilots

Steel:	HRC
M2	60-63

All Heads Drawn to HRC 40-55

Precision Pilots For Greater Stock Movement

***Order any length from
62 through 142mm.***

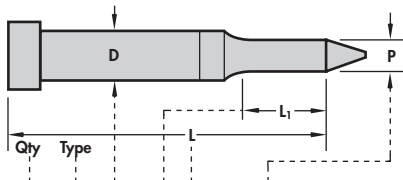


D	H	Point Length L ₁	Type & D	Round	Nose Length N	L									
			DPA	Range P		62.0	65.0	72.0	73.0	82.0	92.0	102.0	112.0	127.0	142.0
10	13	21.0	DPA 10	4.85-10.00	8.0	2162	2165	2172	2173	2182	2192	21102	21112	21127	21142
13	16		DPA 13	6.30-13.00	10.0										
16	19		DPA 16	9.95-16.00	15.0										
20	23		DPA 20	13.60-20.00	20.0										
25	28		DPA 25	17.25-25.00	25.0										
32	35		DPA 32	20.85-32.00	30.0										
10	13	27.0	DPA 10	4.85-10.00	8.0	2762	2765	2772	2773	2782	2792	27102	27112	27127	27142
13	16		DPA 13	6.30-13.00	10.0										
16	19		DPA 16	9.95-16.00	15.0										
20	23		DPA 20	13.60-20.00	20.0										
25	28		DPA 25	17.25-25.00	25.0										
32	35		DPA 32	20.85-32.00	30.0										
32	35	32.0	DPA 32	20.85-32.00	30.0			3272	3273	3282	3292	32102	32112	32127	32142

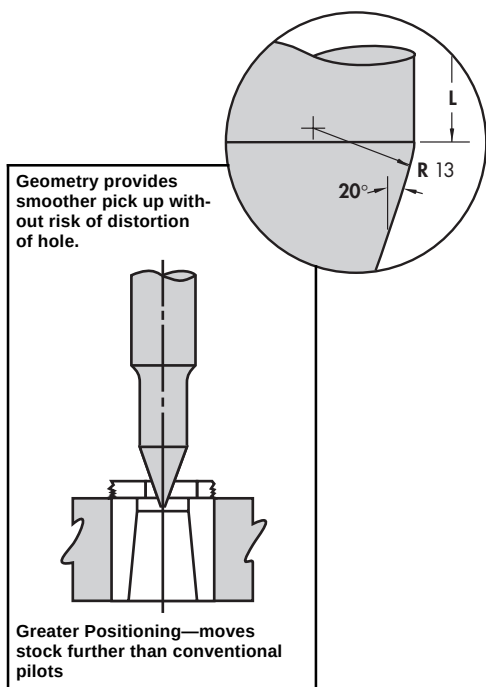
When $P = D$ shank tolerance applies to full length.

How to Order:

Specify: Quantity
Type
Point Length
Shank & Length Codes
P Dimensions
Steel
Standard Alterations



6 DPA 13- 27112 P12.90, XL = 105.0

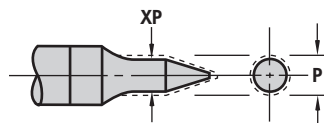


Standard Alterations

Standard alterations are the ranges beyond those sizes listed in the catalog which can be manufactured for a slight additional charge.

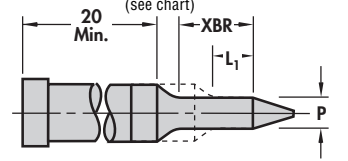
XP, XW

P & W Dimensions
Smaller than
Standard



XBR

Point Length
Longer than Standard
Specify XBR or XBB and length
(see chart)



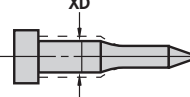
L ₁ Max.	10	15	21	27	32	37	42	50	60	70
Type Code	Min. P (Rounds)									
DPA 10	2.10	2.10	2.10	2.10	3.15	3.15	5.95	5.95	5.95	7.95
DPA 13	—	3.15	3.15	3.15	3.15	3.95	5.95	5.95	5.95	7.95
DPA 16	—	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	7.95
DPA 20	—	5.95	5.95	5.95	7.55	7.55	7.55	7.55	7.55	7.95
DPA 25	—	7.95	7.95	7.95	9.95	9.95	9.95	9.95	9.95	9.95
DPA 32	—	9.95	9.95	9.95	9.95	9.95	9.95	9.95	9.95	9.95

XBB & X3B add 3 days to delivery

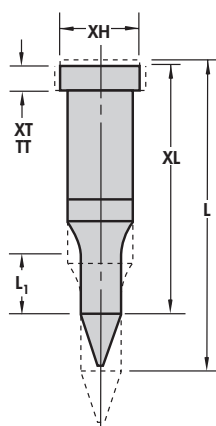
XD

Reduced Shank Diameter

Head Diameter does not change with body diameter.



Shank Dia.	10.0	13.0	16.0	20.0	25.0	32.0
Min. XD	8.5	11.5	14.5	18.5	23.5	30.5



XL

Overall Length Shortened (25mm mi.)

Stock removal from point end
standard L₁ length maintained.

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
±0.01.

XH

Reduced Head Diameter

Minimum head diameter equals
D +0.00, -0.03.

XN

DayTride® a unique
wear resistant surface
treatment.

XNT

DAYTiN® Titanium Nitride
coating for extra wear.

Straight Punches

Jektol® & Regular

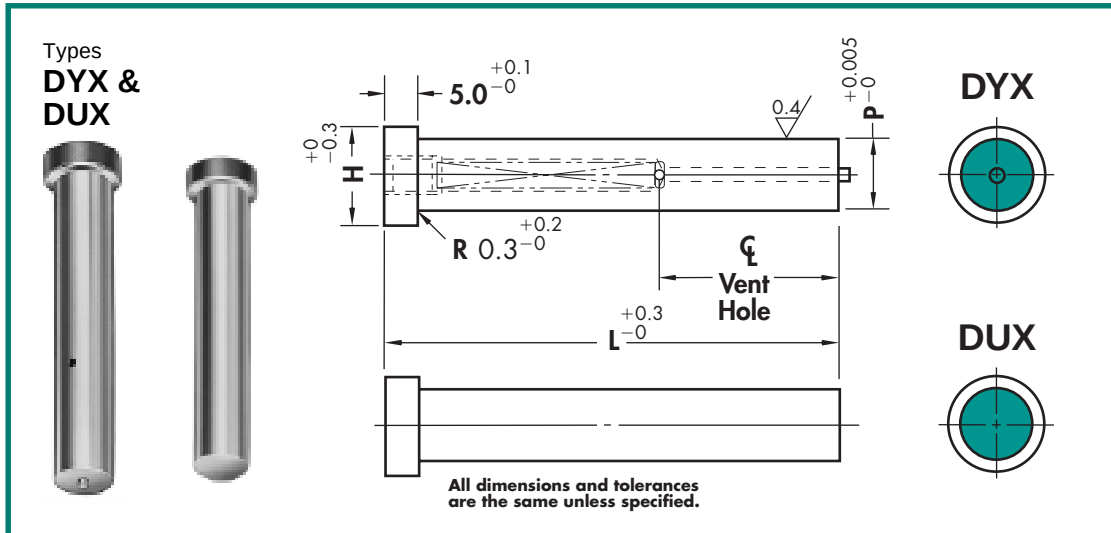
How to Order:

Specify: Quantity
Type
Length Codes
P Dimension
Steel
Standard Alterations

2 DYX 56 P6.005, A2
5 DUX 70 P9.50, M2

Steel:	HRC
A2, M2	60-63

All Heads Drawn to HRC 40-55



Type	Range P	H	Ø Vent Hole	L												Jektole Pin
				32.0	40.0	45.0	50.0	56.0	60.0	63.0	70.0	71.0	80.0	90.0	100.0	
DYX	5.000- 6.000	9.0	14.0	32	40	45	50	56								J2M
	6.001- 8.000	11.0	14.0	32	40	45										J3M
			21.3				50	56	60	63	70	71	80		J3M	
	8.001-10.000	13.0	15.2	32	40	45									J4M	
			22.5				50	56	60	63	70	71	80	90	J4M	
	10.001-13.000	16.0	22.5		40	45	50	56								J6M
27.9								60	63	70	71	80	90	J6M		
13.001-16.000	19.0	22.5		40	45	50	56								J9M	
		27.9						60	63	70	71	80	90	J9M		
DUX	3.000- 4.000	7.0	N/A	32	40	45	50	56	60	63	70	71	80	90	100	N/A
	4.001- 5.000	8.0														
	5.001- 6.000	9.0														
	6.001- 8.000	11.0														
	8.001-10.000	13.0														
	10.001-13.000	16.0														
	13.001-16.000	19.0														

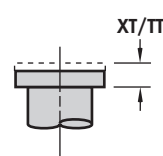
Standard alterations

Standard alterations are the ranges beyond those sizes listed in the catalog which can be manufactured for a slight additional charge.

	XL	Overall Length Shortened (25 min.) Stock removal from point end which shortens point length.
	LL	Precision Overall Length Same as XL except overall length is held to ± 0.02 .

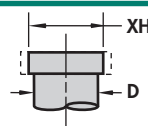
XN DayTride® a unique wear resistant surface treatment for M2.

XNT DAYTiN® Titanium Nitride coating for wear. For M2 only.



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 ± 0.01 .



XH Reduced Head Diameter
Minimum head diameter equals $D + 0.00, -0.03$.

Alterations apply to Straight Punches & Blanks.

Punch Blanks

Jektol® & Regular

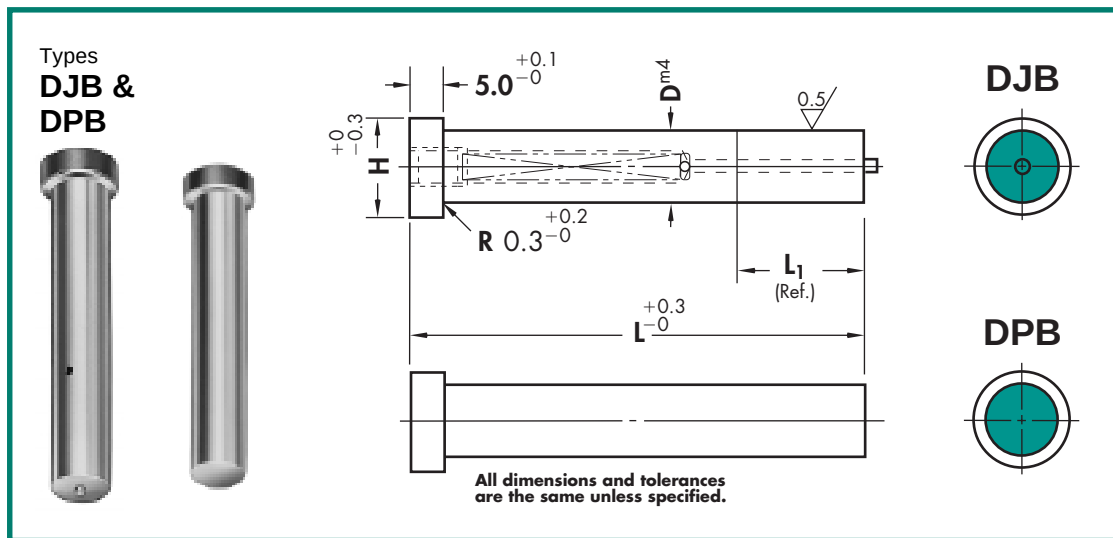
How to Order:

Specify: Quantity
Type
Shank & Length Codes
Steel

4 DJB 10-2571 M2
3 DPB 06-63 PS

Steel:	HRC
A2, M2	60-63
PS	63-65

All Heads Drawn to HRC 40-55



D	H	Point Length L ₁ (Ref.)	Type & D	L												Jektol Pin
			D_B	32.0	40.0	45.0	50.0	56.0	60.0	63.0	70.0	71.0	80.0	90.0	100.0	
05	8.0	13.0	DJB 05													J2M
06	9.0		DJB 06		0840											J3M
08	11.0		DJB 08													J4M
10	13.0		DJB 10													J6M
13	16.0		DJB 13			1345	1350	1356	1360	1363	1370	1371	1380	1390	13100	J6M
16	19.0		DJB 16													J9M
20	23.0		DJB 20													J9M
25	28.0		DJB 25													J9M
32	35.0		DJB 32													J12M
05	8.0	25.0	DJB 05					1956	1960	1963	1970	1971	1980			J2M
06	9.0		DJB 06													J3M
08	11.0		DJB 08													J4M
10	13.0		DJB 10			1945	1950	2556	2560	2563	2570	2571	2580	2590	25100	J6M
13	16.0		DJB 13													J6M
16	19.0		DJB 16													J9M
20	23.0		DJB 20													J9M
25	28.0		DJB 25													J9M
32	35.0		DJB 32						1960							J12M
04	7.0	As Req'd	DPB 04													N/A
05	8.0		DPB 05													
06	9.0		DPB 06													
08	11.0		DPB 08													
10	13.0		DPB 10													
13	16.0		DPB 13	32	40	45	50	56	60	63	70	71	80	90	100	
16	19.0		DPB 16													
20	23.0		DPB 20													
25	28.0		DPB 25													
32	35.0		DPB 32													

Max. SBR 8 and 19 are indicated by Italics.

CloSPACE Punches

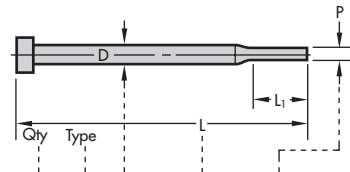
For Precision,
Close Space Holes

Steel:	HRC
A2, M2	60-63

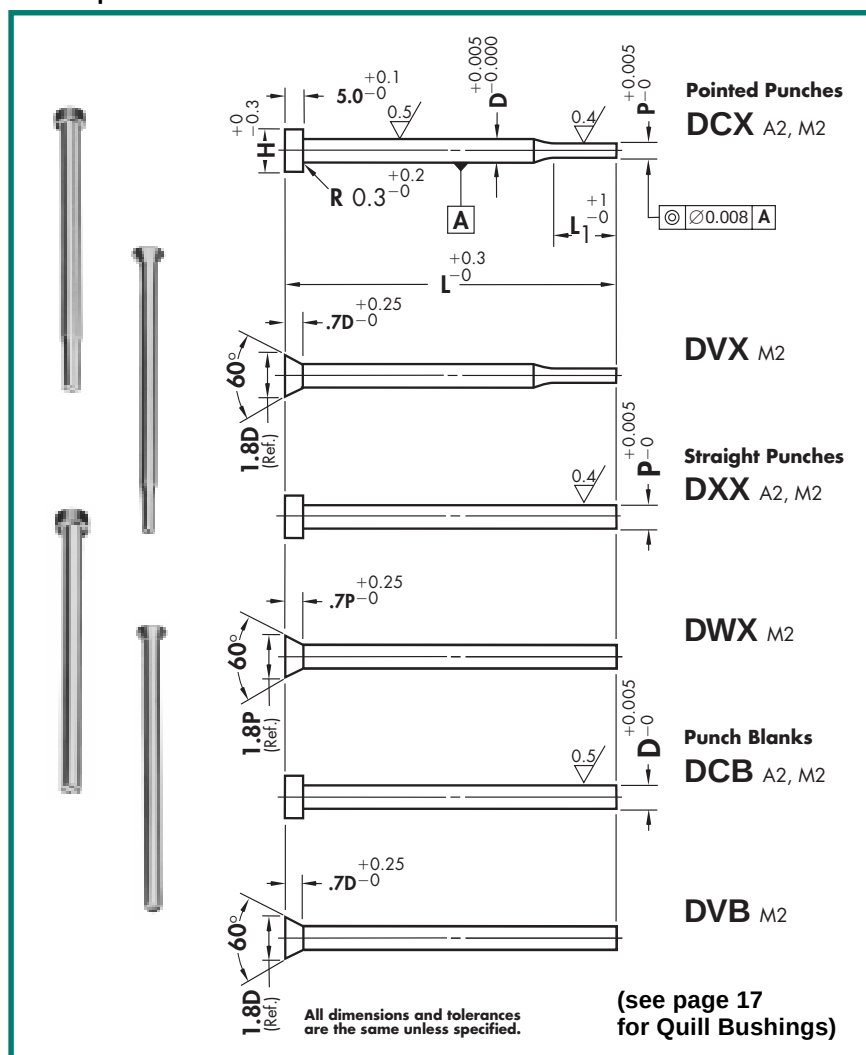
DCX, DXX, DCB Heads
Drawn to HRC 40-55

How to Order:

Specify: Quantity
Type
Point Length
Shank & Length Codes
P Dimension
Steel
Standard Alterations



5	DCX04-	071	P3.49, A2
8	DWX	80	P5.00, M2
5	DCB06-	70	M2



CloSPACE Punch Alterations

See page 5 for an explanation of these alterations.

Product	DCB	DXX	DVB	DWX	DCX	DVX
XBR					•	•
XD					•	
XH	•				•	
XL	•		•		•	•
LL	•		•		•	•
XP					•	•
XT	•				•	
TT	•				•	
XN*	•	•	•		•	•
XNT*	•	•	•		•	•

*Available on M2 only.

Type	Body D	Head Dia. H	Point Length L ₁	Range P	L								
					40.0	45.0	50.0	56.0	60.0	63.0	70.0	71.0	80.0
DCX DVX Regular Punches	2.0	4.0	5.0	0.81-2.00	40	45	50	56	60	63	70	71	80
	3.0	5.0	7.0	2.01-3.00									
	4.0	6.0	8.0	3.01-4.00									
	5.0	7.0	8.0	4.01-5.00									
	6.0	8.0	8.0	5.01-6.00									
	7.0	9.0	8.0	6.01-7.00									
DXX DWX Straight Punches	N/A	3.0	N/A	0.81-1.60	40	45	50	56	60	63	70	71	80
		4.0		1.61-2.00									
		5.0		2.01-3.00									
		6.0		3.01-4.00									
		7.0		4.01-5.00									
		8.0		5.01-6.00									
9.0	6.01-7.00												
DCB DVB Punch Blanks	2.0	4.0	N/A	N/A	40	45	50	56	60	63	70	71	80
	3.0	5.0											
	4.0	6.0											
	5.0	7.0											
	6.0	8.0											
	7.0	9.0											

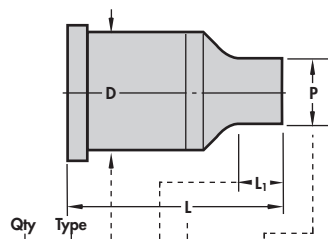
Extended Range Punches

Jektol® & Regular
For Larger Dia. Holes

How to Order:

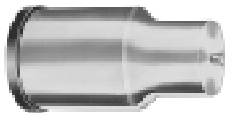
Specify: Quantity
Type
Shank Diameter
Point & Overall Length
P or P & W Dimensions
Steel

Steel:	HRC
A2	60-63

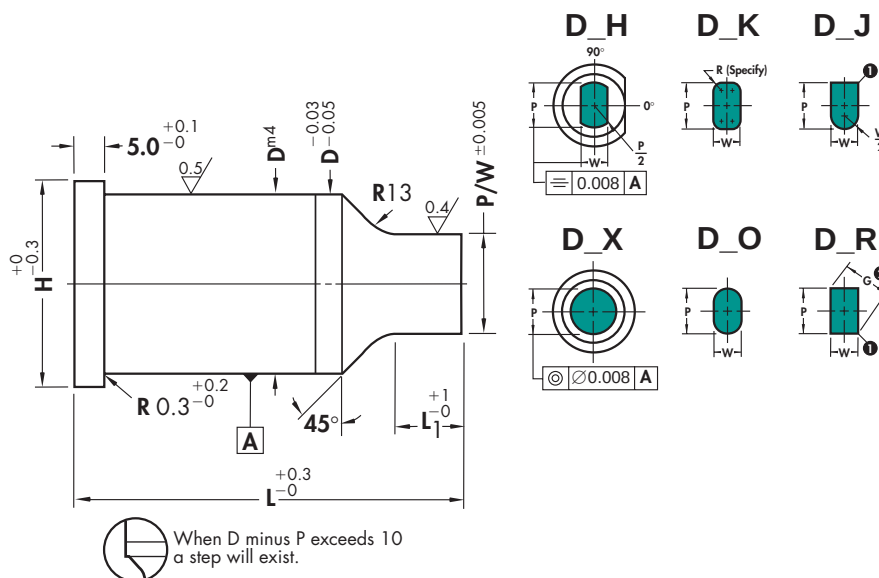


2 DJX40- 2580 P38.5
5 DPR50-30100 P38.0, W24.5, X3
4 DJK63- 1971 P55.75, W15.75, R1.75, X2

Type
DJ



Type
DP



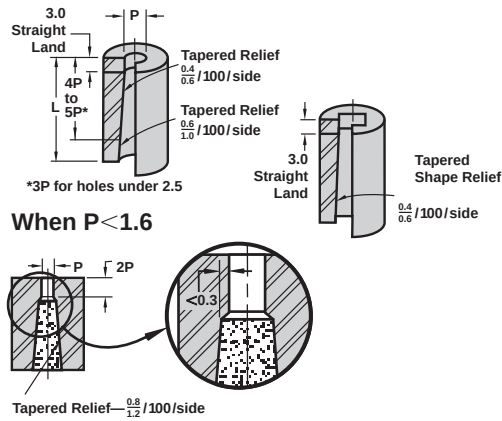
Type	Shank D	H	Point Length L ₁	Round	Shape		L						
				Range P	Min. W	Max. P/G	60.0	63.0	70.0	71.0	80.0	90.0	100.0
DJ DP	40.0	43.0	19.0	20.00-40.00	8.00-40.00		1960	1963	1970	1971	1980	1990	19100
	45.0	48.0		25.00-45.00	9.00-45.00								
	50.0	53.0		30.00-50.00	10.00-50.00								
	56.0	59.0		35.00-56.00	11.00-56.00								
	63.0	66.0		40.00-63.00	12.00-63.00								
	40.0	43.0	25.0	20.00-40.00	8.00-40.00			2563	2570	2571	2580	2590	25100
	45.0	48.0		25.00-45.00	9.00-45.00								
	50.0	53.0		30.00-50.00	10.00-50.00								
	56.0	59.0		35.00-56.00	11.00-56.00								
	63.0	66.0		40.00-63.00	12.00-63.00								
	40.0	43.0	30.0	20.00-40.00	8.00-40.00				3070	3071	3080	3090	30100
	45.0	48.0		25.00-45.00	9.00-45.00								
	50.0	53.0		30.00-50.00	10.00-50.00								
	56.0	59.0		35.00-56.00	11.00-56.00								
	63.0	66.0		40.00-63.00	12.00-63.00								

∂ Sharp corners are typical. To assure proper clearance, Dayton will provide standard broken corners to eliminate interference with matrix fillet when total clearance is 0.08 or less.

Σ Check your P & W dimensions to be sure the diagonal G does not exceed the max shown.

$$G = \sqrt{P^2 + W^2}$$

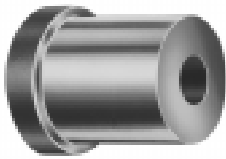
Matrix Construction



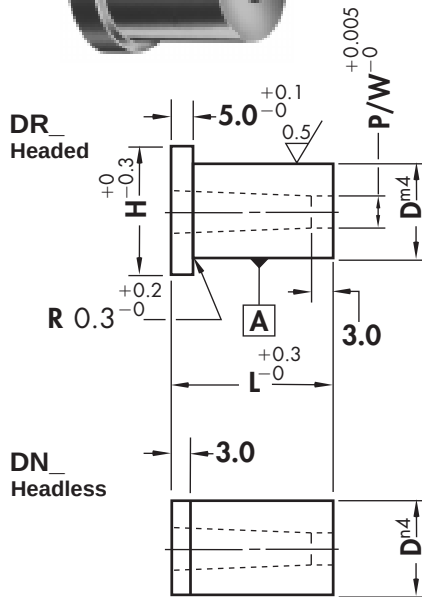
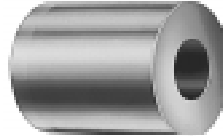
Steel:	HRC
A2, M2	60-63
PS	63-65

When $P < 1.6$

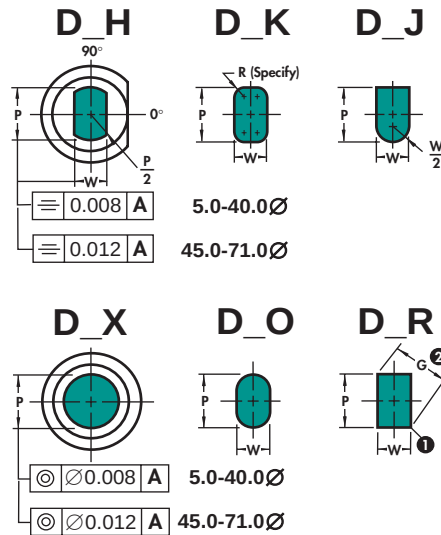
Type
DR_



Type
DN_



All dimensions and tolerances are the same unless specified.



Type	Body D	H	Round	Shape	L									
			Range P	Min. Max. W P/G	13.0	16.0	20.0	22.0	25.0	28.0	30.0	32.0	35.0	40.0
DN_ DR_	5.0	8.0	1.60- 3.20	1.30- 3.20										
	6.0	9.0	1.60- 3.90	1.30- 3.90										
	8.0	11.0	2.40- 5.40	1.30- 5.40	13	16	20	22	25	28	30	32	35	
	10.0	13.0	3.20- 6.80	1.30- 6.80										
	13.0	16.0	5.40- 8.80	1.90- 8.80										
	16.0	19.0	7.40-10.80	1.90-10.80										
	20.0	23.0	9.50-13.60	1.90-13.60										
	25.0	28.0	12.00-17.00	1.90-17.00			20	22	25	28	30	32	35	
	32.0	35.0	16.00-22.00	1.90-22.00										
	38.0	41.0	18.00-27.00	1.90-27.00										
DN_ Only	40.0	43.0	18.00-27.00	1.90-27.00										
	45.0		18.00-35.00	4.80-35.00										
	50.0		18.00-40.00	4.80-40.00										
	56.0		18.00-45.00	4.80-45.00				22	25	28	30	32	35	40
	63.0		18.00-50.00	4.80-50.00										
	71.0		18.00-56.00	4.80-56.00										

45.0 through 71.0 D available
A2 and M2 only.

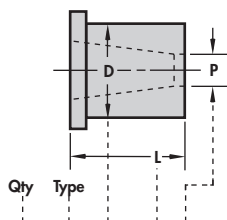
0.2 Max. Fillet (Typical)

Σ Check your P & W dimensions to be sure the diagonal G does not exceed the max. shown.

$$G = \sqrt{P^2 + W^2}$$

How to Order:

Specify: Quantity
Type
Body Dia. & Length Codes
P or P&W Dimensions
Steel
Standard Alterations

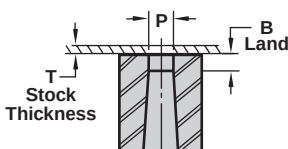


2 DNX50- 25 P37.92, M2, XD = 49.99
5 DNX13- 35 P8.00, W2.15, A2, XB = 2.00
2 DRK20- 32 P12.02, W6.02, R0.52, A2

Shortened Matrix Land

To minimize slug jamming in the matrix, the land length should be shortened for stock thicknesses less than 0.80. The shorter land lengths are available at no extra charge but must be specified.

Stock Thickness T	Recommended Land Length XB
0.10-0.30	0.8
0.30-0.50	1.6
0.50-0.80	2.4
0.80-up	3.0



Example: T=0.40

DNX 05-25, P2.6000, M2, XB1.6

Dayton Slug Control is Easy to Order

Dayton Slug Control is as easy as specifying a catalog number. Add the information that is unique to your application to the matrix catalog number. See the example below:

You must specify **XSC** for alteration, **material thickness** and **clearance per side** as a percent.

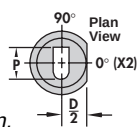
Catalog Number			Your Specs		
DNX	16-25	P6.3	XSC	MM1.0	CS5
Type	D L	P	Alt. Code	Mat'l Th'kness (inches)	Clear Per Side (%)

This information will be entered into our computer to generate a program to alter the land of the matrix and end your slug pulling problems forever!

See inside front of catalog for more information.

Key Flats

The standard location for a key flat is Parallel to the P dimension.
See pages 20 & 21 for more information.



Standard Alterations

Standard alterations are the ranges beyond those sizes listed in the catalog which can be manufactured for a slight additional charge.

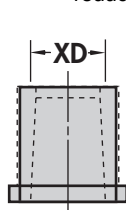
XP, XW P & W Dimensions Larger than Standard

Body Code	Max P/G
5.0	3.20
6.0	4.00
8.0	6.20
10.0	7.70
13.0	10.40
16.0	12.80
20.0	16.00
25.0	20.00
32.0	25.60
40.0	32.00

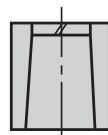
XB Land Length Shorter or Longer than Standard

Hole Range	Max XB
0.800- 1.600	3.2
1.601- 2.400	5.0
2.401- 4.000	6.0
4.001- 6.000	8.0
6.001- 8.000	9.5
8.001-10.000	11.0
10.001-over	13.0

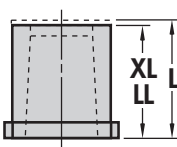
XD Reduced Body Dia. Head Diameter does not change with body reduction



Body Code	Min XD	Max P/G
5.0	3.500	.72D
6.0	5.000	.75D
8.0	6.500	.77D
10.0	8.500	.80D
13.0	11.500	.80D
16.0	14.500	.80D
20.0	18.500	.80D
25.0	23.000	.80D
32.0	30.000	.80D
38.0	36.000	.80D
40.0	38.000	.80D



XSC Slug Control eliminates slug pulling. (See order example at left.)

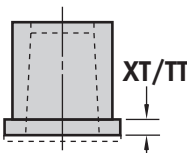


XL Overall Length Shortened

Minimum overall length:
Headless = 6
Headed = 6 + T

LL Precision Overall Length

Same as XL except overall length is held to ± 0.02 .

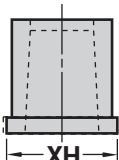


XT Thinner Head than Standard

Stock removal from Head end which shortens overall length.

TT Precision Head Thickness

Same as XT except head thickness is held to ± 0.01 .



XH Reduced Head Diameter

Minimum head diameter equals $D + 0.00 - 0.03$.

XN DayTride® a unique wear resistant surface treatment for M2 & PS only.

XNT DAYTiN® Titanium Nitride coating for extra wear. For M2 & PS only.

EDM Matrix Blanks

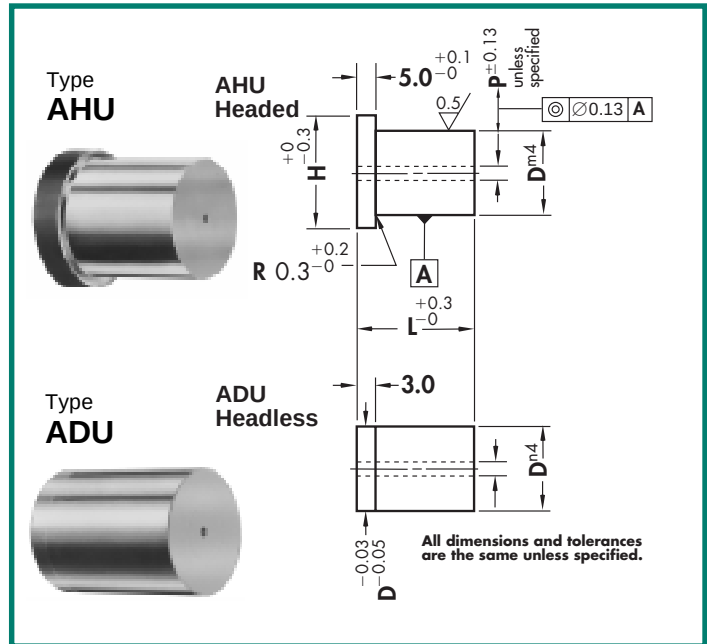
Steel:	HRC
A2, M2	60-63

How to Order:

Specify: Quantity
Type
Body Dia. & Length Codes
P Dimensions

8 AHU 45-40
2 ADU 13-30 XP2.0

For the fastest delivery use the hole (P) dimensions given in the chart. If a larger hole is desired simply specify "XP" and give the dimension.



Type	Body D	H	P	L									
				13.0	16.0	20.0	22.0	25.0	28.0	30.0	32.0	35.0	40.0
ADU AHU	5.0	8.0	0.8										
	6.0	9.0	0.8										
	8.0	11.0	0.8	13	16	20	22	25	28				
	10.0	13.0	0.8							30	32	35	
	13.0	16.0	1.6										
	16.0	19.0	1.6										
	20.0	23.0	1.6										
	25.0	28.0	1.6			20	22	25	28	30	32	35	
	32.0	35.0	1.6										
	38.0	41.0	1.6										
ADU Only	40.0	43.0	1.6										
	45.0		3.2				22	25	28	30	32	35	40
	50.0		3.2										
	56.0		3.2										
	63.0		3.2										
	71.0		3.2										

Jektrole® Data

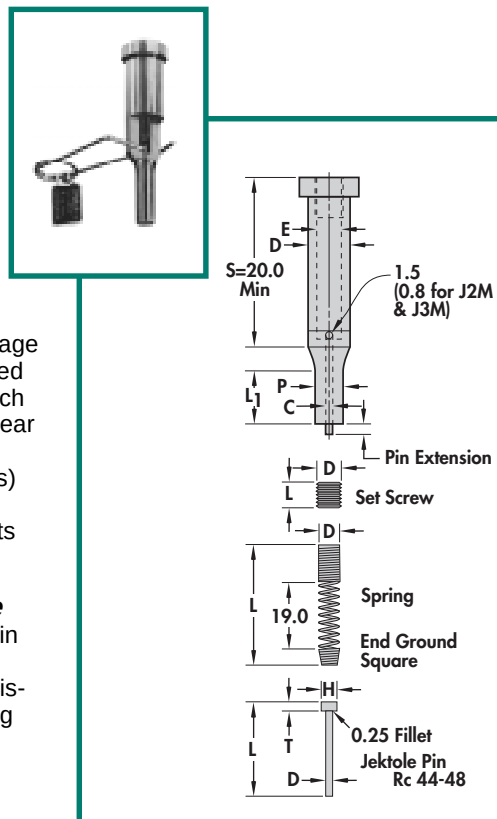
The Key to
Increased Productivity

Jektrole In Production

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

Jektrole In Maintenance

- Keeper Key — holds pin in retracted position
- Eliminates the need for disassembly before grinding
- Maintains proper pin extension
- Reduces downtime for re-grinding



Standard Jektrole Data

DIMENSION	J2M	J3M	J4M	J6M	J9M	J12M
Std. Shank Dia. D	5.0	6.0	8.0	10.0	16.0	32.0
Point Hole Dia. C	0.5	0.8	1.2	1.6	2.4	3.2
Shank Hole Dia. E	2.2	2.5	3.4	4.4	5.2	7.0
Pin Extension	0.8	0.8	1.6	1.6	1.6	1.6

Jektrole Design Limits

DIMENSION	J2M	J3M	J4M	J6M	J9M	J12M
Min. Shank Dia. D	4.4	5.0	6.8	8.8	10.4	14.0
Min. Point Dia. P	1.3	2.0	3.0	4.0	6.0	7.2
Max. Point Lgth.	32.0	38.0	41.0	41.0	41.0	41.0
Max. Shank Lgth. S	87.0	87.0	84.0	84.0	84.0	70.3

Universal Jektrole Components

EJECTOR PINS		J2M	J3M	J4M	J6M	J9M	J12M
Overall Length	L	28.0	35.0	49.0	49.0	56.5	56.5
Pin Diameter	D	0.43	0.68	1.04	1.47	2.26	3.05
Head Diameter	H	1.2	1.8	2.4	3.0	4.0	4.8
Head Thickness	T	0.8	1.2	1.6	1.6	2.4	2.4
SPRINGS		J2M	J3M	J4M	J6M	J9M	J12M
Outside Dia.	D	2.05	2.40	3.25	4.25	5.00	6.90
Free Length	L	60.3	60.3	81.0	76.2	68.9	65.1
Pressure (Pre-Load)	New- tons	2.2	3.3	4.5	6.7	9.0	11.3
SCREWS		J2M	J3M	J4M	J6M	J9M	J12M
Screw Size	D	M2.6	M3	M4	M5	M6	M8
Screw Length	L	5.0	5.0	5.0	5.0	6.0	6.0

Guide Bushings

For Punch Point Support

Guide Bushing Alterations

Product	Round	Shape
XH	•	•
XP	•	•
XT	•	•
TT	•	•

See page 15 for an explanation of these alterations.

How to Order:

Specify: Quantity
Type
Body & Length Codes
P or P & W Dimensions
Steel
Standard Alterations

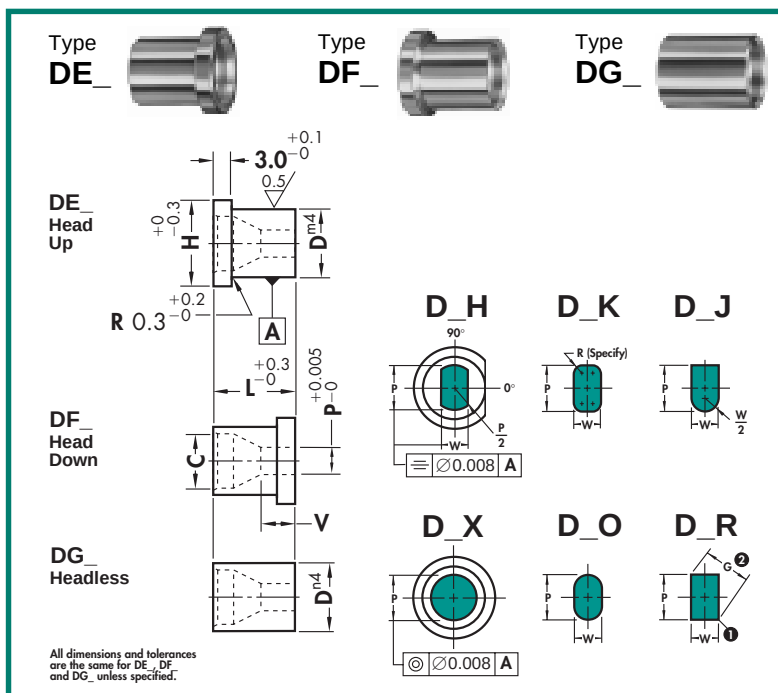
4 DEX06-13 P2.00, XH = 7.00
2 DF010-10 XP7.00, W2.90, A2
3 DGK16-16 P6.60, W6.10, R1.00, A2

Land Length V

P	V
0.800-1.700	2P
1.701-2.400	P + 1.7
2.401-10.800	.82P + 2.1

Steel:	HRC
A2	60-63

Applies to all products on this page



Type	Body D	H	Round	Shape	C' Bore Dia. C	L			
			Range P	Min. W Max. P/G		8.0	10.0	13.0	16.0
DG Headless	5.0	8.0	1.60- 3.20	1.30- 3.20	3.6	8			
DF Head Down	6.0	9.0	1.60- 3.90	1.30- 3.90	4.6		10	13	
DE Head Up	8.0	11.0	2.40- 5.40	1.30- 5.40	6.6				16
	10.0	13.0	3.20- 6.80	1.30- 6.80	8.2				
	13.0	16.0	5.40- 8.80	1.90- 8.80	11.4				
	16.0	19.0	7.40-10.80	1.90-10.80	Cone complet				

∅ 0.2 Max. Fillet (Typical)

Σ Check your P & W dimensions to be sure the diagonal G does not exceed the max. shown.

$$G = \sqrt{P^2 + W^2}$$

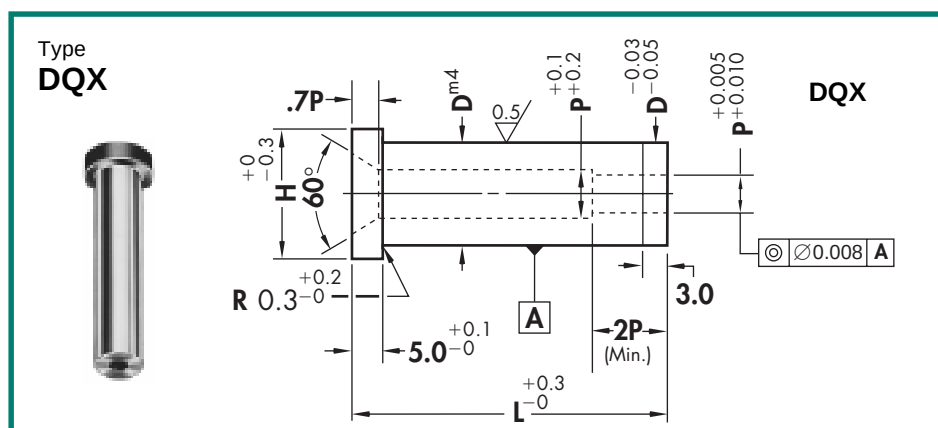
Quill Bushings

For Clospace Punches (see page 12)

How to Order:

Specify: Quantity
Type
Body Dia. &
Length Codes
Steel

3 DQX 10-32



Quill Bushing Alterations

XD	Reduced Shank Diameter
XH	Reduced Head Diameter
XL	Overall Length Shortened
XP	P Dimension Larger than Standard

Limitations

Body Code	XP		XD	
	Min. P	Max. P	Min. XD	Max. P
5.0	1.70	2.50	3.500	1.700
6.0	1.70	3.00	5.000	2.500
8.0	1.70	4.00	6.500	3.200
10.0	1.70	5.00	8.500	4.000
13.0	1.70	6.50	11.500	6.000

Body D	H	Punch Hole P	L		
			20.0	25.0	32.0
5.0	8.0	2.000			
6.0	9.0	3.000			
8.0	11.0	4.000	20	25	32
10.0	13.0	5.000			
13.0	16.0	6.000			

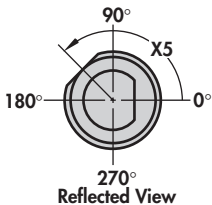
Classified Shapes

- Simplified Specification
- 83 Common Shapes
- No Detailing Required

Views

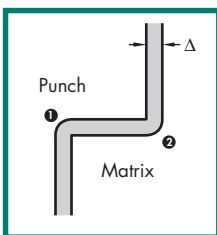
Views are...Reflected View of Punch and Guide, Plan View of Matrix...see opposite column.

Orientation and Locking



The Locking Device orientation is standard at 0°. For types of locking methods and custom locations see pages 20 and 21.

Clearance



Notes ∂ and Σ —
Fillets and Sharp Corners
Normal grinding methods produce:
 ∂ 0.2 max fillet on the punch...matching corner sharp on the matrix.
 Σ 0.2 max fillet on the matrix...matching corner sharp on the punch.

Fillets matched with sharp corners reduces the clearance per side (Δ). If the clearance is 0.04 Δ or less, Dayton will break sharp corners when the punches and/or guides and matrixes are ordered together. This reduces assembly time and the risk of edge breaking during operation.

Shape Center

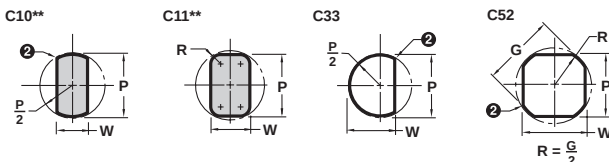
Shapes are centered on punch shanks as shown.

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

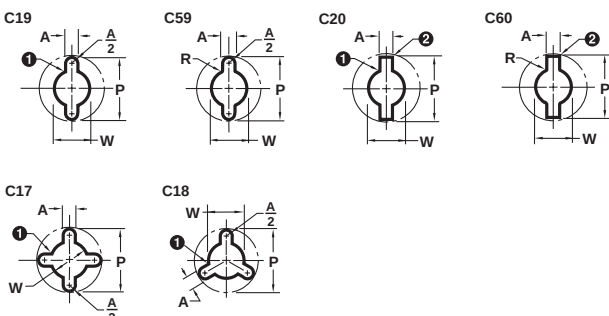
Corner Dimensions

Dimensions should be to the theoretical sharp corners for shapes C22, C24, C25, C34, C61 and C88. Some reduction of these dimensions will result from fitting the punch and matrix under conditions where clearance is 0.04 or less per side.

Flatted Rounds



Multi-lobes

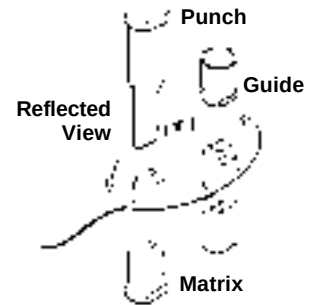


Reflected View — Punches and Guides

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 shape is shown dotted except a Reflected View is shown with solid lines.

The Reflected View simplifies design...eliminates confusion. Shapes on the part print, strip layout, punch, matrix and guide are the same basic view. Orientation for locking devices is the same position on all components.

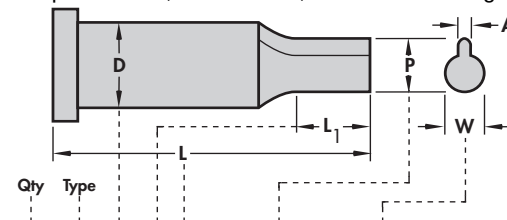


Note: Must identify as REFLECTED VIEW on punch drawing.

How to Order:

Punches

Specify: Quantity, Type (change Shape Code to C), Shape Number, Dimensions, Steel and Locking Device.



2 DPC13-1950 C 13 P 8.00, W 4.00, A 1.99, M2, X2

Matrixes and Guides

To assure proper relationship with punches, it is necessary to specify punch dimensions and clearance per side (Δ) when ordering matrixes and guides.

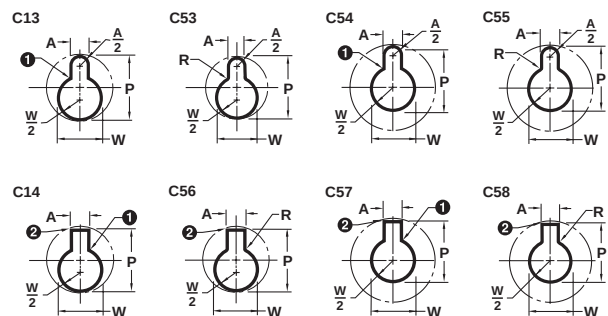
Example:

Matrix: 2 DRC 13 - 25 C13 P8.00, W4.00, A2.00, M2, X2, $\Delta 0.05$
Guide: 2 DFC 13 - 16 C13 P8.00, W4.00, A2.00, X2, $\Delta 0.013$

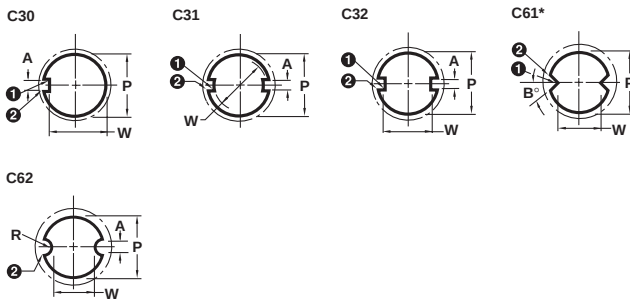
Dayton will assure the proper clearance of matrixes and guides to the punch when ordered in this manner.

****Now a standard shape. See product pages.**

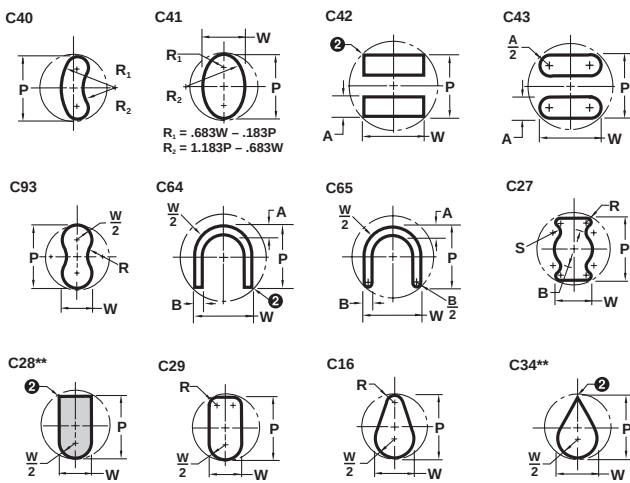
Mono-lobes



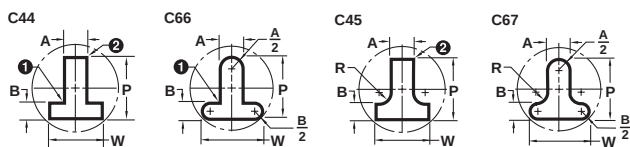
Keys



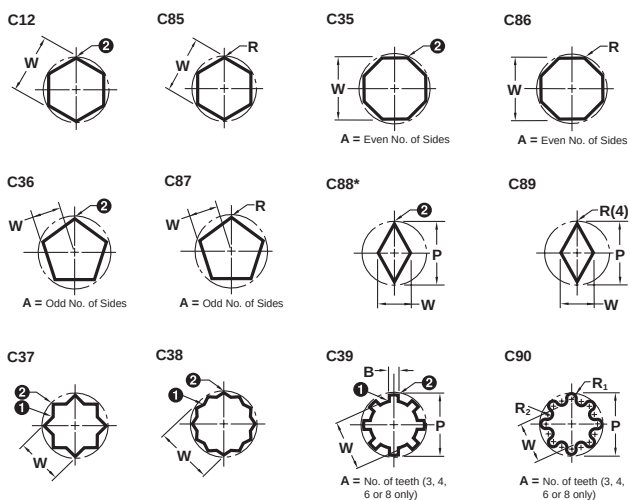
Miscellaneous



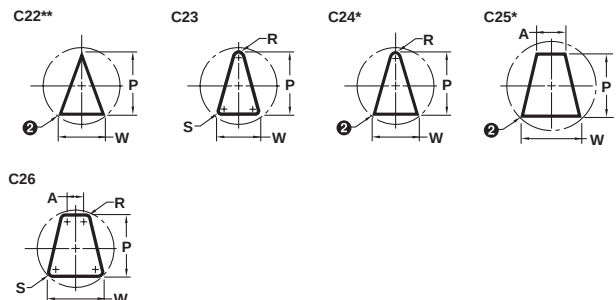
T's



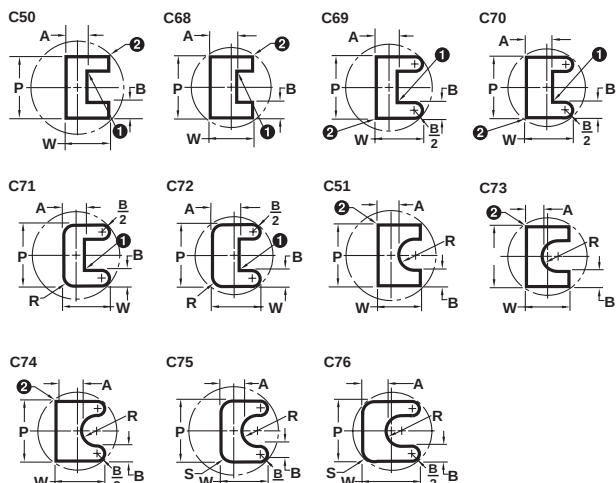
Polygons



Triangles/Trapezoids

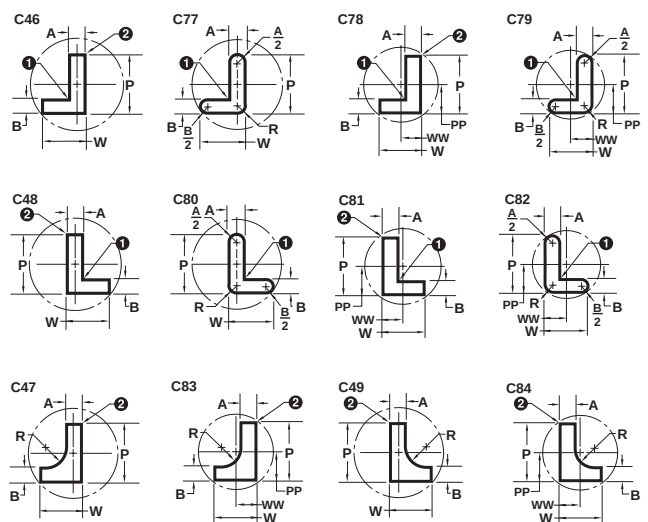


U's

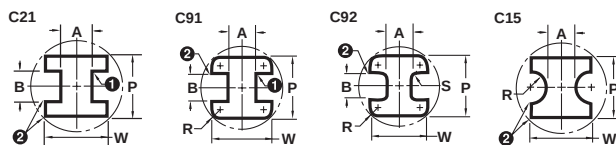


L's

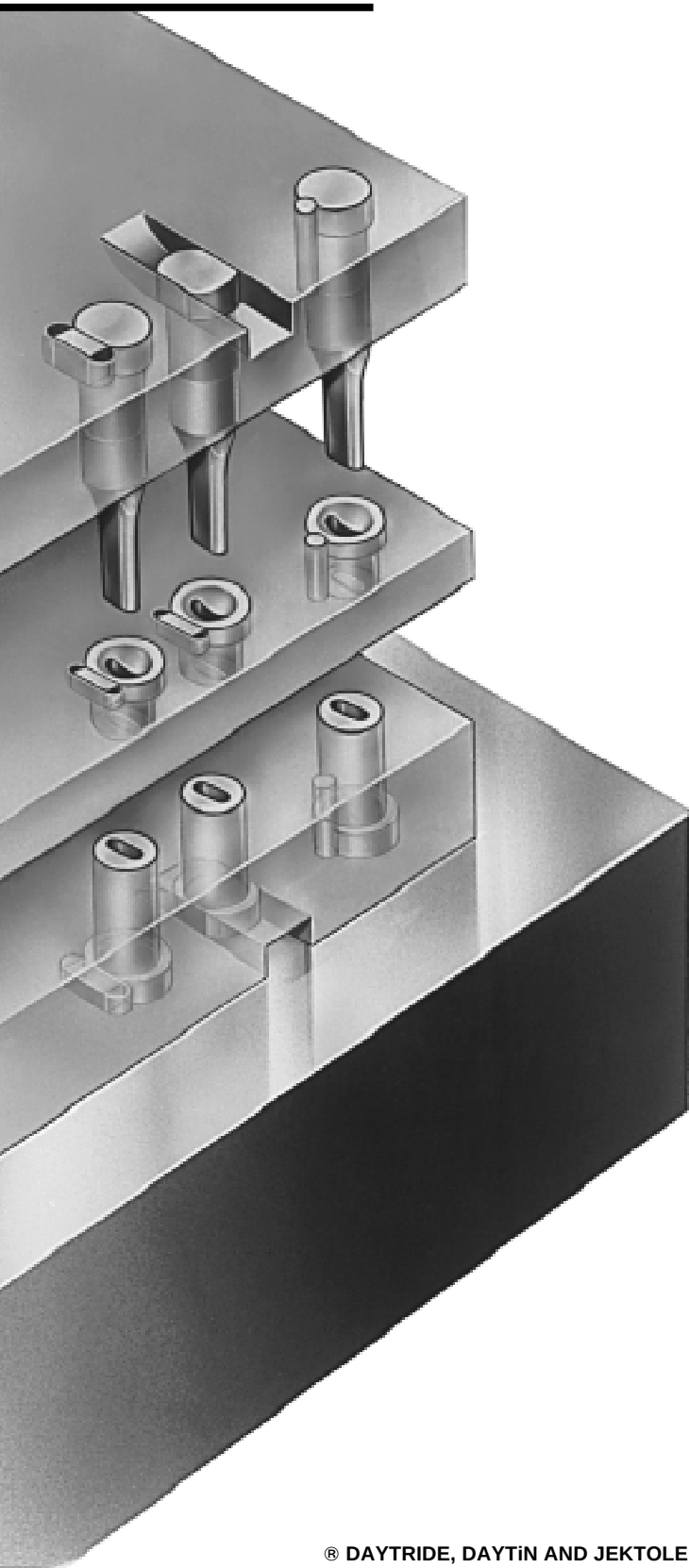
When "WW" or "PP" is not specified shape will be furnished P&W central.



Duo Tees



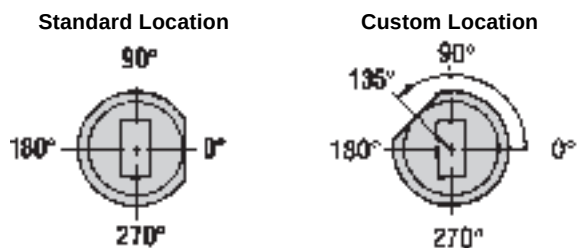
Locking Devices



® DAYTRIDE, DAYTIN AND JEKTOLE
are registered trademarks of Dayton
Progress Corporation.
ALL TRILITERAL DESIGNATORS
are trademarks of Dayton
Progress Corporation.

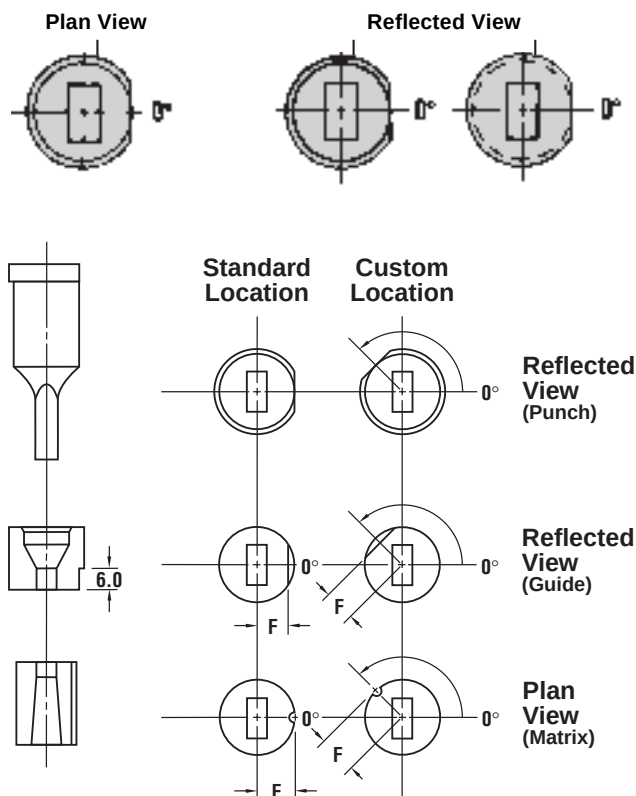
Orientation

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°.



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 (see Ordering Information Section on page 18), simplifies orientation...all locking devices are in the same position.



How to Specify

The most common locking devices, flat, double flat and dowel are available. Select the type then add the code to the component descriptions shown to the right.

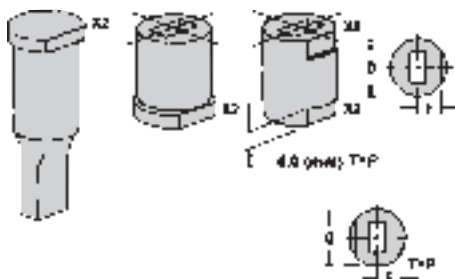
How to Order

1 DJJ 13-2563 P 8.0, W 6.5, M2, X2
3 DR0 10-25 P 5.150, W 2.650 A2, X2

Location Tolerance

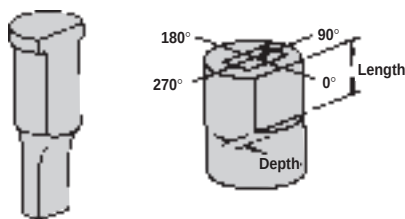
Flat		Dowel	
F	Radial	F	Radial
+0.005 -0.000	0.01/20	+0.005 -0.000	0°2'

Flats



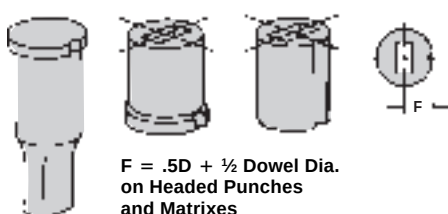
**F Dimension (0.5D on Headed Products)
Headless Matrixes and Guides**

Body Ø ▶	05	06	08	10	13	16
F	2.2	2.6	3.5	4.3	5.6	6.9
Body Ø ▶	20	22	25	32	38	40
F	8.7	9.5	10.8	13.8	16.5	17.4
Body Ø ▶	45	50	56	63	71	
F	19.5	21.7	24.2	27.3	30.7	



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

Dowel Slots



**F = .5D + ½ Dowel Dia.
on Headed Punches
and Matrixes**

Standard/ Alternate Locations

Definitions:

Standard Location is at 0°.

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

Single Flats: X2 & X8

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

Order Example:

X2 - 90°

Double Flats: X3

Locking Devices	Punches	Matrixes
X3	Top	Bottom

Order Example:

X3 - 90°

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

Additional Flats

Code	Depth	Length
X81	1.5	13
X82	1.5	16
X83	1.5	20
X84	1.5	Full Length
X85	2.5	13
X86	2.5	16
X87	2.5	20
X88	2.5	Full Length
X89	Specify Dimensions	

Dowel Slots:

X0, X4, X41 & X43

Locking Devices	Dowel Ø
X0	3.0
X4	3.0
X41	4.0
X43	6.0

Order Example:

X0 - 180°

Custom Locations

Definition:

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

Single Flats: X5 & X9

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

Order Example:

X5 - 135°

Double Flats: X6

Locking Devices	Punches	Matrixes
X6	Top	Bottom

Order Example:

X6 - 135°

Additional Flats

Code	Depth	Length
X91	1.5	13
X92	1.5	16
X93	1.5	20
X94	1.5	Full Length
X95	2.5	13
X96	2.5	16
X97	2.5	20
X98	2.5	Full Length
X99	Specify Dimensions	

Dowel Slots:

X1, X7, X71 & X73

Locking Devices	Dowel Ø
X1	3.0
X7	3.0
X71	4.0
X73	6.0

Order Example:

X71 - 135°

F Dimension for Headless Matrixes Only

Body Ø ▶	05	06	08	10	13	16-25	32-71
X0/X1	.5D	.5D	.5D	.5D	.5D	.5D	.5D
X4/X7	3.5	3.9	4.7	5.5	6.7	.5D	.5D
X41/X71	4.0	4.4	5.2	6.0	7.2	.5D	.5D
X43/X73	5.0	5.4	6.2	7.0	8.2	.5D+1.0	.5D

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 relief. Note, when the matrix diameter is 16-71 the centerline dimension is .5D on all dowels.

To determine if you will have an interference problem see Matrix Construction on page 14.