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## Punches

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| L               |   O |  AJ_ |  AP_ |  SJ & SP |  APA & SPA |
| R               |  J                                                                                   |                                                                                       |                                                                                       |                                                                                            |  APT       |
| K               |  H                                                                                   | Jektol® Punch                                                                         | Regular Punch                                                                         | Press Fit Center Dowel                                                                     | Positive Pick-up Pilot                                                                        |
|                 |                                                                                                                                                                       | 2                                                                                     | 3                                                                                     | 4-5                                                                                        | 6                                                                                             |
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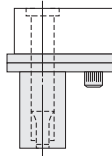
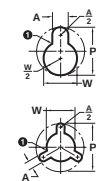
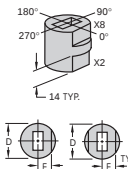
## Punches

|                                                                                      |                                                                                      |                                                                                           |                                                                                             |                                                                                       |                                                                                               |                                                                                      |                                                                                      |                                                                                       |                                                                                         |                                                                                         |                                                                                        |                                                                                        |                                                                                        |
|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  AJ |  AP |  AYX AUX |  AJB & APB |  AWX |  ACX ACB AXX |  AD |  AH |  AN |  AHU |  ADU |  AE |  AF |  AG |
| Extended Range Punches                                                               | Extended Range Punches                                                               | Straight Punches                                                                          | Press Fit Punch Blanks                                                                      | Clospace Punches                                                                      | Clospace Punches                                                                              |                                                                                      |                                                                                      | Tapered Relief                                                                        | EDM Matrix Blanks                                                                       | EDM Matrix Blanks                                                                       |                                                                                        |                                                                                        |                                                                                        |
| 8                                                                                    | 8                                                                                    | 8                                                                                         | 9                                                                                           | 9                                                                                     | 9                                                                                             | 10-11                                                                                | 12                                                                                   | 12                                                                                    | 14                                                                                      | 14                                                                                      | 13                                                                                     | 13                                                                                     | 13                                                                                     |

## Retainers

|                                                                                         |                                                                                          |                                                                                                |                                                                                                 |                                                                                           |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
|  ART |  ARTS |  ARA & ARAS |  ARC & ARCS |  ARP |
| True Location Headed Punch Retainers                                                    | True Location Headed Punch Retainers                                                     | Change Retainers                                                                               | Change Retainers                                                                                | Multi-Location Retainers                                                                  |
| 15                                                                                      | 15                                                                                       | 16                                                                                             | 17                                                                                              | 18-19                                                                                     |

## Miscellaneous

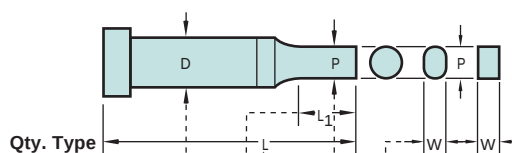
|                                                                                                 |                                                                                                                          |                                                                                                       |                                                                                                       |                                                                                                              |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
|  Jektol Data |  Urethane Strippers & Stripping Units |  Classified Shapes |  Locking Devices |  Eliminate Slug Pulling |
| Jektol Data                                                                                     | Urethane Strippers & Stripping Units                                                                                     | Classified Shapes                                                                                     | Locking Devices                                                                                       | Eliminate Slug Pulling                                                                                       |
| 14                                                                                              | 20-21                                                                                                                    | 22-23                                                                                                 | 24                                                                                                    | 25                                                                                                           |

## Catalog Ordering System

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



### Example:

Line Product Shape

A for Press Fit  
P for Punch (Regular)  
R for Rectangle and Square

Shank Dia.

Point Length L<sub>1</sub>

Overall Length L

|   |     |    |    |    |      |      |     |    |      |            |
|---|-----|----|----|----|------|------|-----|----|------|------------|
| 2 | APR | 13 | 25 | 80 | P8.0 | W6.5 | APR | 13 | 2580 | P8.0, W6.5 |
|---|-----|----|----|----|------|------|-----|----|------|------------|

All Trilateral Designators are a Trademark of Dayton Progress Corporation.

Type Catalog Number

Dimensions as Specified

# Jektol<sup>®</sup> Punches

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

Heads Drawn to HRC 40-55  
Through D25

## ISO 8020 — Ejector Punches

Type  
**AJ\_**

No side hole D32

**AJH**

**AJK**

**AJJ**

**AJX**

**AJL**

**AJO**

**AJR**

① Sharp corners are typical. To assure proper clearance, Dayton will provide standard broken corners if matrix is ordered with punch to eliminate interference with matrix fillet when total clearance is 0.08 or less.

② Check your P&W dimensions to be sure the diagonal G does not exceed the max. shown.

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

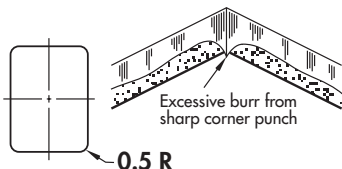
| Shank D | Point Std. | Length Alt. | Type & D | Range       | Type & D | Min. W      | Max. P/G | L  |    |    |    |    |    |    |    |    |     |  |  | Jektol Pin |
|---------|------------|-------------|----------|-------------|----------|-------------|----------|----|----|----|----|----|----|----|----|----|-----|--|--|------------|
|         |            |             | AJX      | P           | AJ_      |             |          | 40 | 50 | 56 | 60 | 63 | 70 | 71 | 80 | 90 | 100 |  |  |            |
| 05      | 13         | 19          | AJX 05   | 1.60- 4.95  | AJ_ 05   | 1.60- 4.95  |          | •  | •  | •  | •  | •  | •  | •  | •  |    |     |  |  | J2M        |
| 06      | 13         | 19          | AJX 06   | 2.40- 5.95  | AJ_ 06   | 2.40- 5.95  |          | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   |  |  | J3M        |
| 08      | 19         | 25          | AJX 08   | 3.20- 7.95  | AJ_ 08   | 3.20- 7.95  |          |    | •  | •  | •  | •  | •  | •  | •  | •  | •   |  |  | J4M        |
| 10      | 19         | 25          | AJX 10   | 4.50- 9.95  | AJ_ 10   | 4.50- 9.95  |          |    | •  | •  | •  | •  | •  | •  | •  | •  | •   |  |  | J6M        |
| 13      | 19         | 25          | AJX 13   | 6.00-12.95  | AJ_ 13   | 6.00-12.95  |          |    | •  | •  | •  | •  | •  | •  | •  | •  | •   |  |  | J6M        |
| 16      | 19         | 25          | AJX 16   | 8.00-15.95  | AJ_ 16   | 7.20-15.95  |          |    | •  | •  | •  | •  | •  | •  | •  | •  | •   |  |  | J9M        |
| 20      | 19         | 25          | AJX 20   | 10.00-19.95 | AJ_ 20   | 8.00-19.95  |          |    | •  | •  | •  | •  | •  | •  | •  | •  | •   |  |  | J9M        |
| 25      | 19         | 25          | AJX 25   | 12.00-24.95 | AJ_ 25   | 9.00-24.95  |          |    | •  | •  | •  | •  | •  | •  | •  | •  | •   |  |  | J9M        |
| 32      | 25         | 30          | AJX 32   | 16.00-31.95 | AJ_ 32   | 10.00-31.95 |          |    |    |    |    | •  | •  | •  | •  | •  | •   |  |  | J12M       |

Alternate point length not available

## A new shape for Longer Life

DAYTON'S new standard shape with a constant corner radius of 0.5R puts the clearance where it's needed to prevent rapid wear and unacceptable burrs commonly generated with sharp corners. This reduces maintenance time and the risk of edge breaking during operation.

The "L" Long Life punch will reduce maintenance costs while increasing production runs by reducing corner wear.



### A DAYTON Difference JEKTOLE



The "Triple Your Production" Punch

Retractable Slug Ejector. See page 14.

Pat. No. 2,917,960 and 3,255,654

## Standard Alterations for AJ and AP Punches

Standard alterations are the ranges beyond those sizes listed above and can be manufactured for a slight additional charge. Some AP\_ products are available as standard below these ranges (see AP\_ chart).

XP, XW

P & W Dimensions  
Smaller than Standard

XBR

Point Length  
Longer than Standard

Specify XBR or XBB and length (see chart)

XBR

XBB

XBR

XBB

L1

Max.

8

13

19

25

30

35

40

8

13

19

25

30

35

40

Jektol

Pin

D

Min. P (Rounds)

Min. W (Shapes)

04

0.8

1.1

1.3

1.9

2.5

-

-

1.3

1.6

1.6

2.4

2.8

-

-

-

-

-

-

-

-

-

J2M

05

1.3

1.3

1.5

2.4

-

-

1.6

1.6

1.6

2.4

-

-

-

-

-

-

-

-

-

J3M

06

2.0

2.0

2.0

2.4

2.5

-

-

2.0

2.0

2.0

2.4

3.0

-

-

-

-

-

-

-

-

-

J4M

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

-

-

-

-

-

-

-

-

J6M

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

6.0

-

-

-

-

-

-

-

J6M

13

-

4.0

4.0

4.0

4.0

4.0

6.0

-

4.0

4.0

4.0

4.0

4.5

6.0

-

-

-

-

-

-

-

J9M

16

-

6.0

6.0

6.0

6.0

6.0

6.0

-

6.0

6.0

6.0

6.0

6.0

6.0

-

-

-

-

-

-

-

J9M

20

-

6.0

6.0

6.0

7.6

7.6

7.6

-

6.0

6.0

6.0

6.0

6.0

6.0

-

-

-

-

-

-

-

J9M

25

-

8.0

8.0

8.0

10.0

10.0

10.0

-

6.0

6.0

6.0

6.0

6.0

6.0

-

-

-

-

-

-

-

J9M

32

-

10.0

10.0

10.0

10.0

10.0

10.0

-

7.2

7.2

7.2

7.2

7.2

7.2

-

-

-

-

-

-

-

J12M

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

Heads Drawn to HRC 40-55  
Through D25

# Regular Punches

ISO 8020 — Non-ejector Punches

Type  
**AP\_**

**APH**

**APK**

**APJ**

**APX**

**APL**

**APO**

**APR**

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

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

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

| Shank D | Point Length L <sub>1</sub> Std. | Point Length L <sub>1</sub> Alt. | Type & D APX | Range P     | Type & D AP_ | Min. W      | Max. P/G | 40 | 50 | 56 | 60 | 63 | 70 | 71 | 80 | 90 | 100 |
|---------|----------------------------------|----------------------------------|--------------|-------------|--------------|-------------|----------|----|----|----|----|----|----|----|----|----|-----|
| 04      | 8                                | 13                               | APX 04       | 1.60– 3.95  | AP_ 04       | 1.60– 3.95  |          | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   |
| 05      | 13                               | 19                               | APX 05       | 1.60– 4.95  | AP_ 05       | 1.60– 4.95  | •        | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   |
| 06      | 13                               | 19                               | APX 06       | 1.60– 5.95  | AP_ 06       | 1.60– 5.95  | •        | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   |
| 08      | 19                               | 25                               | APX 08       | 2.50– 7.95  | AP_ 08       | 2.50– 7.95  |          | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   |
| 10      | 19                               | 25                               | APX 10       | 3.20– 9.95  | AP_ 10       | 3.20– 9.95  |          | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   |
| 13      | 19                               | 25                               | APX 13       | 5.00–12.95  | AP_ 13       | 4.50–12.95  |          | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   |
| 16      | 19                               | 25                               | APX 16       | 8.00–15.95  | AP_ 16       | 6.00–15.95  |          | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   |
| 20      | 19                               | 25                               | APX 20       | 10.00–19.95 | AP_ 20       | 8.00–19.95  |          | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   |
| 25      | 19                               | 25                               | APX 25       | 12.00–24.95 | AP_ 25       | 9.00–24.95  |          | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   |
| 32      | 25                               | 30                               | APX 32       | 16.00–31.95 | AP_ 32       | 10.00–31.95 |          |    |    |    |    | •  | •  | •  | •  | •  | •   |

Alternate point length not available

**XL Overall Length Shortened**  
Note limits under XBR  
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**

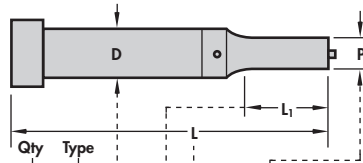
The XLD alteration fixes the punch shank length at 40 measured from the punch head. This eliminates pressing the entire shank through the holder.

**XN DayTride®** a unique wear resistant surface treatment. Available on M2 and PS.

**XNT DAYTiN®** Titanium Nitride coating for extra wear. Available on M2 and PS.

## How to Order

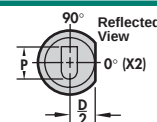
Specify: Quantity  
Type  
Shank Diameter  
Point & Overall Length  
P or P & W Dimensions  
Steel  
Standard Alterations



20 AJX 16 19 80 P8.3, A2  
49 AJR 16 25 80 P8.5, W8.0, A2, X2  
7 APL 16 19 71 P8.2, W7.2, M2, X2

**XNM** An exclusive PVD solid lubricant coating. It provides a combination of lubricity and wear resistance not available from other PVD or CVD techniques. Produces a coefficient of friction lower than other coatings. Available on M2 and PS.

**Key Flats** The standard location for a key flat is Parallel to the P dimension. See page 24 for additional Locking Devices.

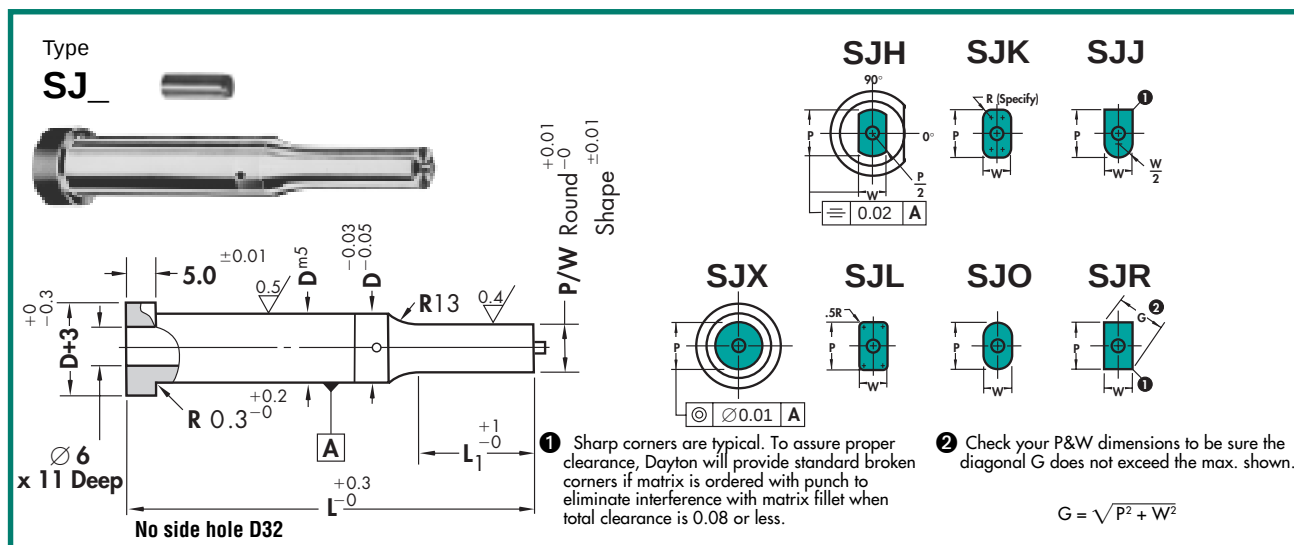


# Press Fit Center Dowel Punches

| Steel  | HRC   |
|--------|-------|
| A2, M2 | 60-63 |

Heads Drawn to HRC 40-55  
Through D25

Jektol®



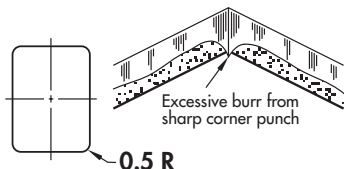
| Shank D | Point Length L <sub>1</sub> Std. | Alt. | Type & D SJX | Range P     | Type & D SJ | Min. W      | Max. P/G | 71 | 80 | L | 90 | 100 | Jektol Pin |
|---------|----------------------------------|------|--------------|-------------|-------------|-------------|----------|----|----|---|----|-----|------------|
| 10      | 19                               | 25   | SJX 10       | 4.50-9.95   | SJ_10       | 4.50-9.95   |          | •  | •  |   | •  | •   | J6M        |
| 13      | 19                               | 25   | SJX 13       | 6.00-12.95  | SJ_13       | 6.00-12.95  |          | •  | •  |   | •  | •   | J6M        |
| 16      | 19                               | 25   | SJX 16       | 8.00-15.95  | SJ_16       | 7.20-15.95  |          | •  | •  |   | •  | •   | J9M        |
| 20      | 19                               | 25   | SJX 20       | 10.00-19.95 | SJ_20       | 8.00-19.95  |          | •  | •  |   | •  | •   | J9M        |
| 25      | 19                               | 25   | SJX 25       | 12.00-24.95 | SJ_25       | 9.00-24.95  |          | •  | •  |   | •  | •   | J9M        |
| 32      | 25                               | 30   | SJX 32       | 16.00-31.95 | SJ_32       | 10.00-31.95 |          | •  | •  |   | •  | •   | J9M        |

Tapped Dowel Ø6 x 25 Included

## A new shape for Longer Life

DAYTON'S new standard shape with a constant corner radius of 0.5R puts the clearance where it's needed to prevent rapid wear and unacceptable burrs commonly generated with sharp corners. This reduces maintenance time and the risk of edge breaking during operation.

The "L" Long Life punch will reduce maintenance costs while increasing production runs by reducing corner wear.



## A DAYTON Difference JEKTOLE

The "Triple Your Production" Punch



Retractable Slug Ejector. See page 14.

Pat. No. 2,917,960 and 3,255,654

## Standard Alterations for SJ and SP Punches

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 |                             |
|-----------------------------------------------|------|---------------------------------------|-----------------------------|
|                                               |      |                                       |                             |
|                                               |      | XBB adds 3 days to delivery           |                             |
| L <sub>1</sub> Max.                           |      | XBR                                   | XBB                         |
|                                               |      | 8 13 19 25 30 35 40                   | 8 13 19 25 30 35 40         |
| D                                             |      | Min. P (Rounds)                       | Min. W (Shapes)             |
| 10                                            | 4.0  | 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 6.0 |
| 13                                            | 4.0  | 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 6.0 |
| 16                                            | 6.0  | 6.0 6.0 6.0 6.0 6.0 6.0 6.0           | 6.0 6.0 6.0 6.0 6.0 6.0 6.0 |
| 20                                            | 6.0  | 6.0 6.0 6.0 7.6 7.6 7.6 7.6           | 6.0 6.0 6.0 6.0 6.0 6.0 6.0 |
| 25                                            | 8.0  | 8.0 8.0 8.0 10.0 10.0 10.0 10.0       | 6.0 6.0 6.0 6.0 6.0 6.0 6.0 |
| 32                                            | 10.0 | 10.0 10.0 10.0 10.0 10.0 10.0 10.0    | 7.2 7.2 7.2 7.2 7.2 7.2 7.2 |

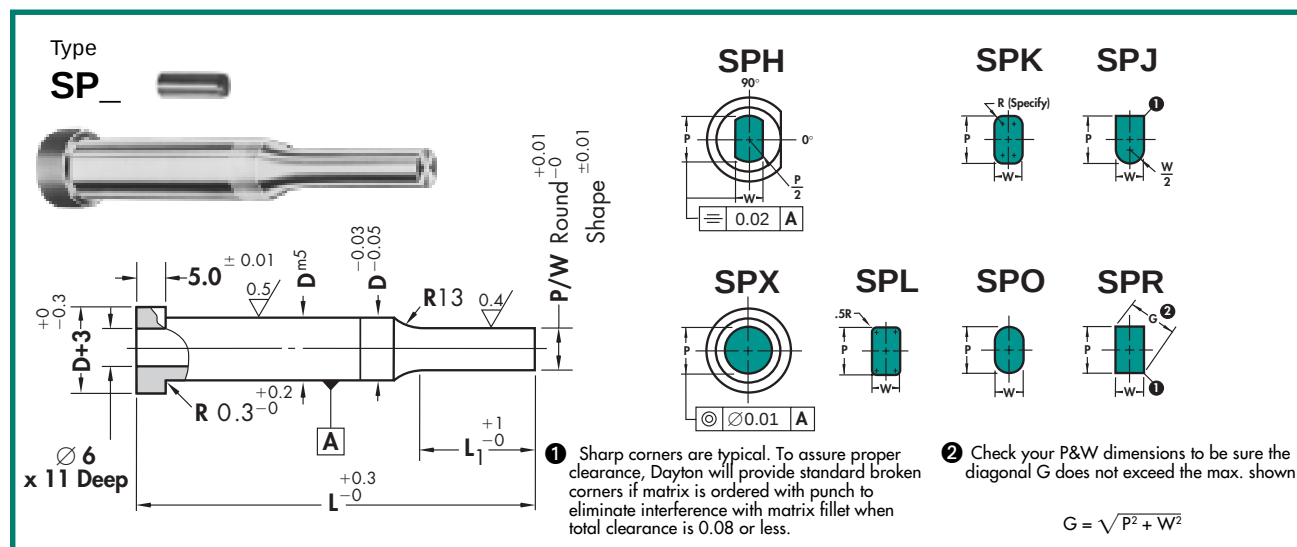
| XD Reduced Shank Diameter |  | Head Diameter does not change with body diameter. |  |
|---------------------------|--|---------------------------------------------------|--|
| Shank Dia.                |  | 10 13 16 20 25 32                                 |  |
| Min. XD                   |  | — 11.5 14.5 18.5 23.5 30.5                        |  |

**XK** No Side Hole  
For air ejection. No cost.  
Components not supplied.

**XJ** Smaller Jektol Components

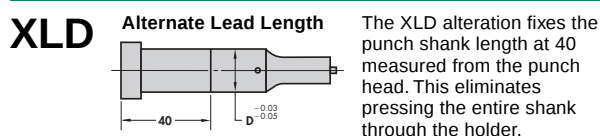
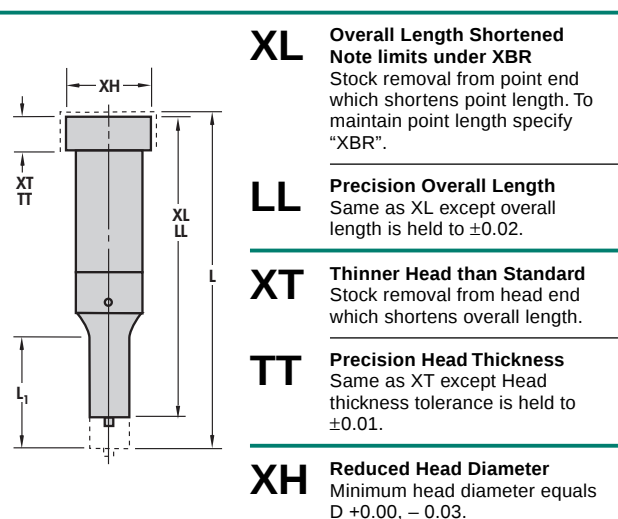
### Heads Drawn to HRC 40-55 Through D25

## Regular



| Shank<br>D | Point Length L <sub>1</sub> |      | Type & D<br>SPX | Range<br>P  | Type & D<br>SP <sub>-</sub> | Min.<br>W   | Max.<br>P/G | L  |    |    |     |
|------------|-----------------------------|------|-----------------|-------------|-----------------------------|-------------|-------------|----|----|----|-----|
|            | Std.                        | Alt. |                 |             |                             |             |             | 71 | 80 | 90 | 100 |
| 10         | 19                          | 25   | SPX 10          | 4.50– 9.95  | SP_ 10                      | 4.50– 9.95  | •           | •  | •  | •  |     |
| 13         | 19                          | 25   | SPX 13          | 6.00–12.95  | SP_ 13                      | 6.00–12.95  | •           | •  | •  | •  |     |
| 16         | 19                          | 25   | SPX 16          | 8.00–15.95  | SP_ 16                      | 7.20–15.95  | •           | •  | •  | •  |     |
| 20         | 19                          | 25   | SPX 20          | 10.00–19.95 | SP_ 20                      | 8.00–19.95  | •           | •  | •  | •  |     |
| 25         | 19                          | 25   | SPX 25          | 12.00–24.95 | SP_ 25                      | 9.00–24.95  | •           | •  | •  | •  |     |
| 32         | 25                          | 30   | SPX 32          | 16.00–31.95 | SP_ 32                      | 10.00–31.95 | •           | •  | •  | •  |     |

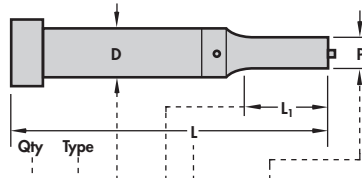
Tapped Dowel Ø6 x 25 Included



**XN** DayTride® a unique wear resistant surface treatment. Available on M2.

**XNT** DAYTiN® Titanium Nitride coating for extra wear.  
Available on M2.

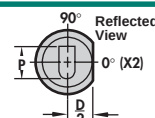
Specify: Quantity  
Type  
Shank Diameter  
Point & Overall Length  
P or P & W Dimensions  
Steel  
Standard Alterations



|    |     |    |      |                    |
|----|-----|----|------|--------------------|
| 20 | SJX | 16 | 1980 | P8.3, M2           |
| 49 | SJR | 16 | 2580 | P8.5, W8.0, A2, X2 |
| 7  | SPL | 16 | 1971 | P8.2, W7.9, M2, X2 |

**XNM** An exclusive PVD solid lubricant coating. It provides a combination of lubricity and wear resistance not available from other PVD or CVD techniques. Produces a coefficient of friction lower than other coatings. Available on M2.

## Key Flats

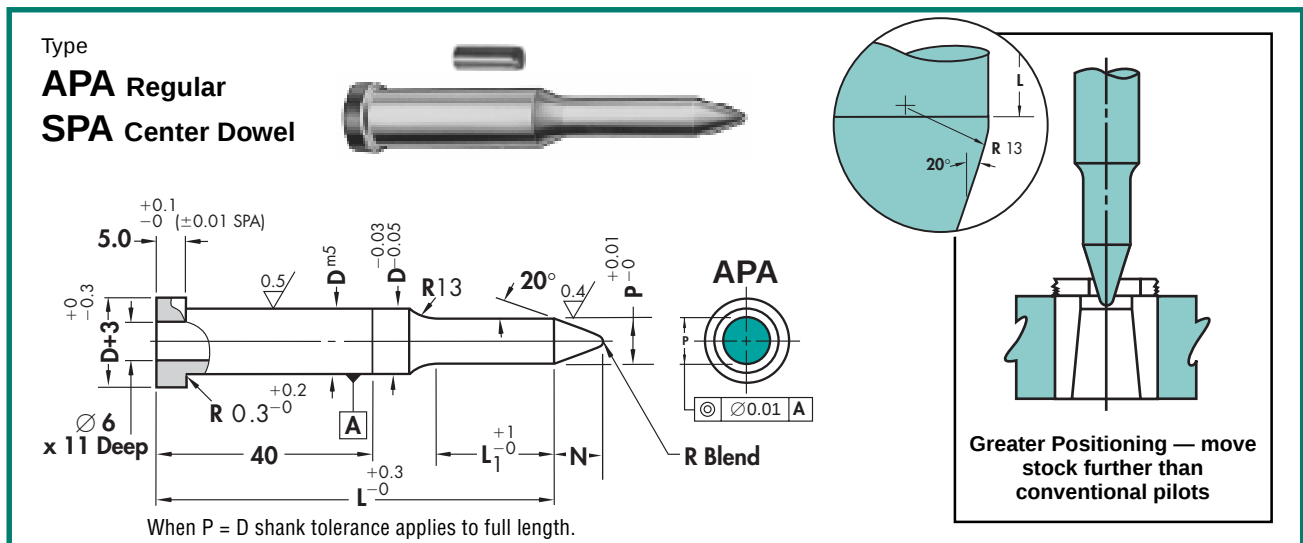


# Press Fit Positive Pick-Up Pilots

| Steel | HRC   |
|-------|-------|
| M2    | 60-63 |

Heads Drawn to HRC 40-55  
Through D25

Order any length from 65 through 142MM.



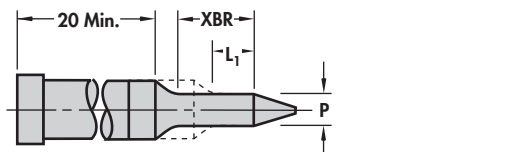
| Shank D | Point Length L <sub>1</sub> Std. | Point Length L <sub>1</sub> Alt. | Type & D APA/SPA | Range P     | Nose Lgth. N | 65 | 72 | 73 | 82 | L 92 | 102 | 112 | 127 | 142 |
|---------|----------------------------------|----------------------------------|------------------|-------------|--------------|----|----|----|----|------|-----|-----|-----|-----|
| 10      | 21                               | 27                               | APA/SPA 10       | 4.85–10.00  | 8            | •  | •  | •  | •  | •    | •   | •   |     |     |
| 13      | 21                               | 27                               | APA/SPA 13       | 6.30–13.00  | 10           | •  | •  | •  | •  | •    | •   | •   | •   |     |
| 16      | 21                               | 27                               | APA/SPA 16       | 9.95–16.00  | 15           |    | •  | •  | •  | •    | •   | •   | •   | •   |
| 20      | 21                               | 27                               | APA/SPA 20       | 13.60–20.00 | 20           |    | •  | •  | •  | •    | •   | •   | •   | •   |
| 25      | 21                               | 27                               | APA/SPA 25       | 17.25–25.00 | 25           |    | •  | •  | •  | •    | •   | •   | •   | •   |
| 32      | 27                               | 32                               | APA/SPA 32       | 20.85–32.00 | 30           |    |    | •  | •  | •    | •   | •   | •   | •   |

Tapped Dowel Ø6 x 25 included for SPA

## Standard Alterations for APA, SPA, APT Pilots

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

### XBR Point Length Longer than Standard

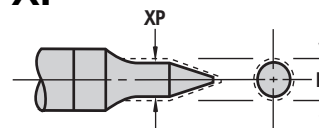


XBB and X3B adds 3 days to delivery

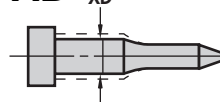
| L <sub>1</sub> Max | APA/SPA   | APT  | 15   | 21   | 27   | 32   | 37   | 42   | 50   | 60   | 70 |
|--------------------|-----------|------|------|------|------|------|------|------|------|------|----|
| D                  | Minimum P |      |      |      |      |      |      |      |      |      |    |
| 04                 | 1.55      | 1.55 | 1.85 | 2.45 | —    | —    | —    | —    | —    | —    | —  |
| 05                 | 1.55      | 1.55 | 1.85 | 2.45 | —    | —    | —    | —    | —    | —    | —  |
| 06                 | 1.55      | 1.55 | 1.95 | 2.45 | 2.95 | —    | —    | —    | —    | —    | —  |
| 08                 | 1.55      | 1.55 | 2.35 | 2.45 | 3.15 | 5.95 | —    | —    | —    | —    | —  |
| 10                 | 1.55      | 1.55 | 2.45 | 3.15 | 3.15 | 5.95 | 5.95 | 5.95 | 7.95 | —    | —  |
| 13                 | 3.15      | 3.15 | 3.15 | 3.15 | 3.95 | 5.95 | 5.95 | 5.95 | 7.95 | 7.95 | —  |
| 16                 | 5.95      | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 7.95 | 7.95 | —  |
| 20                 | 5.95      | 5.95 | 5.95 | 7.55 | 7.55 | 7.55 | 7.55 | 7.55 | 7.95 | 7.95 | —  |
| 25                 | 7.95      | 7.95 | 7.95 | 9.95 | 9.95 | 9.95 | 9.95 | 9.95 | 9.95 | 9.95 | —  |
| 32                 | 9.95      | 9.95 | 9.95 | 9.95 | 9.95 | 9.95 | 9.95 | 9.95 | 9.95 | 9.95 | —  |

Shaded Area for APA/SPA-Only

### XP P Smaller than Standard



### XD m5



**Reduced Shank Diameter**  
Head Diameter does not change with body diameter.

| Shank Dia. | 5   | 6   | 8   | 10   | 13   | 16   | 20   | 25   | 32   |
|------------|-----|-----|-----|------|------|------|------|------|------|
| Min. XD    | 3.5 | 4.5 | 6.5 | 8.5* | 11.5 | 14.5 | 18.5 | 23.5 | 30.5 |

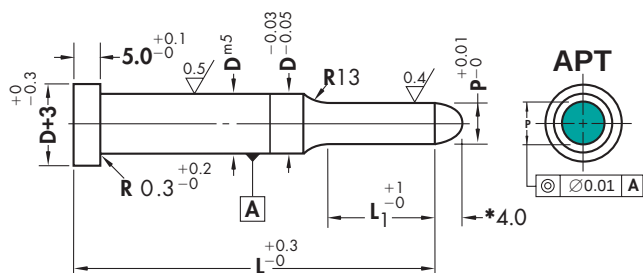
\*Not available on SPA

**XNM** An exclusive PVD solid lubricant coating. It provides a combination of lubricity and wear resistance not available from other PVD or CVD techniques. Produces a coefficient of friction lower than other coatings. Available on M2 and PS.

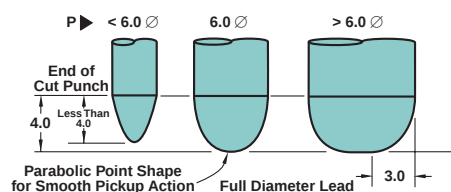
# Press Fit Pilots

## ISO 8020

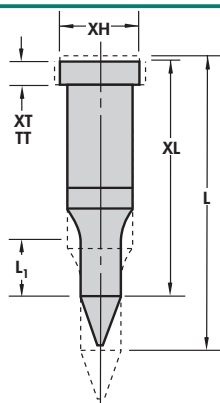
# APT



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



Alternate point length not available



XL

**Note limits under XBR**  
Stock removal from point end  
standard L<sub>1</sub> length maintained  
on APA, SPA only. To maintain  
point length on APT specify  
"XBR". Note Min. Length.

XT

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

TT

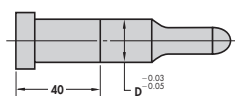
**Precision Head Thickness**  
Same as XT except head thickness tolerance is held to  $\pm 0.01$ .

XH

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

# XLD

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



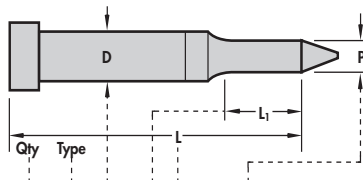
**XN**

**DayTride®** a unique wear resistant surface treatment. Available on M2 and PS

XNT

**DAYTiN®** Titanium  
Nitride coating for  
extra wear.  
Available M2 and PS.

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



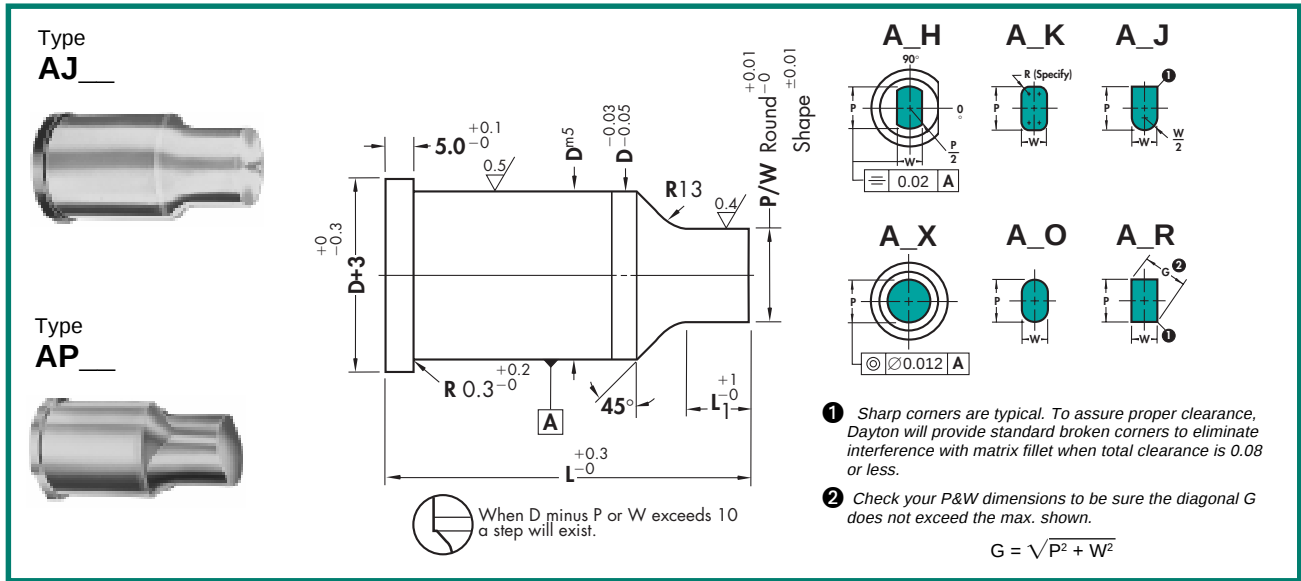
6 APA 13 27 112 P12.90, M2, XL = 105

4 APT 16 21 82 P8.70, M2

# Extended Range Punches

| Steel  | HRC   |
|--------|-------|
| A2, M2 | 60-63 |

Jektole® & Regular For Larger Dia. Holes

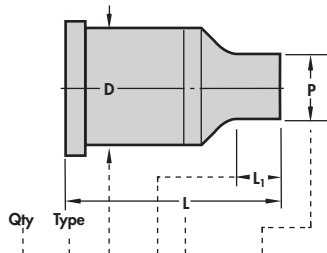


| Type       | Shank<br>D | Point Length L <sub>1</sub> |    | Round      | Shape      |             | L  |    |    |    |    |     |
|------------|------------|-----------------------------|----|------------|------------|-------------|----|----|----|----|----|-----|
|            |            |                             |    | Range<br>P | Min.<br>W  | Max.<br>P/G | 63 | 70 | 71 | 80 | 90 | 100 |
| AJ_<br>AP_ | 40.0       | 25                          | 30 | 20.0-39.95 | 8.0-39.95  |             | •  | •  | •  | •  | •  | •   |
|            | 45.0       | 25                          | 30 | 25.0-44.95 | 9.0-44.95  |             | •  | •  | •  | •  | •  | •   |
|            | 50.0       | 25                          | 30 | 30.0-49.95 | 10.0-49.95 |             | •  | •  | •  | •  | •  | •   |
|            | 56.0       | 25                          | 30 | 35.0-55.95 | 11.0-55.95 |             | •  | •  | •  | •  | •  | •   |
|            | 63.0       | 25                          | 30 | 40.0-62.95 | 12.0-62.95 |             | •  | •  | •  | •  | •  | •   |

Alternate point lengths not available

## How to Order:

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

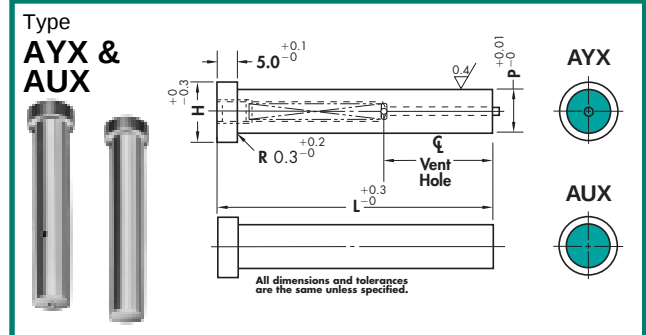


3 APR50- 30 100 P36.5, W15.5, X2

## Straight Punches

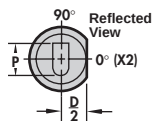
| Steel  | HRC   |
|--------|-------|
| A2, M2 | 60-63 |

All Heads Drawn to HRC 40-55



## Key Flats

The standard location for a key flat is Parallel to the P dimension. See page 24 for additional Locking Devices.



## How To Order:

### Straight Punches, Blanks, Clospace Punches

| Qty | Type | L  | P        | Qty | Type | D  | L      |
|-----|------|----|----------|-----|------|----|--------|
| 18  | AUX  | 63 | P7.0, A2 | 10  | ACX  | 06 | 80, M2 |
| 10  | AWX  | 71 | P2.5, M2 | 5   | APB  | 13 | 71, M2 |
| 25  | AXX  | 80 | P3.5, M2 |     |      |    |        |

| Type | Range<br>P  | H    | Q<br>Vent<br>Hole | L  |    |    |    |    |    |    |    |     |   | Jektole<br>Pin |
|------|-------------|------|-------------------|----|----|----|----|----|----|----|----|-----|---|----------------|
|      |             |      |                   | 50 | 56 | 60 | 63 | 70 | 71 | 80 | 90 | 100 |   |                |
| AYX  | 5.00- 6.00  | 9.0  | 14.0              | •  | •  |    |    |    |    |    |    |     |   | J2M            |
|      | 6.01- 8.00  | 11.0 | 21.3              | •  | •  | •  | •  | •  | •  | •  |    |     |   | J3M            |
|      | 8.01-10.00  | 13.0 | 22.5              | •  | •  | •  | •  | •  | •  | •  | •  | •   |   | J4M            |
|      | 10.01-13.00 | 16.0 | 22.5              | •  | •  |    |    |    |    |    |    |     |   | J6M            |
|      |             |      | 27.9              |    |    | •  | •  | •  | •  | •  | •  | •   |   | J6M            |
|      | 13.01-16.00 | 19.0 | 22.5              | •  | •  |    |    |    |    |    |    |     |   | J9M            |
|      |             |      | 27.9              |    |    | •  | •  | •  | •  | •  | •  | •   |   | J9M            |
| AUX  | 3.00- 4.00  | 7.0  | N/A               | •  | •  | •  | •  | •  | •  | •  | •  | •   | • | N/A            |
|      | 4.01- 5.00  | 8.0  |                   | •  | •  | •  | •  | •  | •  | •  | •  | •   | • |                |
|      | 5.01- 6.00  | 9.0  |                   | •  | •  | •  | •  | •  | •  | •  | •  | •   | • |                |
|      | 6.01- 8.00  | 11.0 |                   | •  | •  | •  | •  | •  | •  | •  | •  | •   | • |                |
|      | 8.01-10.00  | 13.0 |                   | •  | •  | •  | •  | •  | •  | •  | •  | •   | • |                |
|      | 10.01-13.00 | 16.0 |                   | •  | •  | •  | •  | •  | •  | •  | •  | •   | • |                |
|      | 13.01-16.00 | 19.0 |                   | •  | •  | •  | •  | •  | •  | •  | •  | •   | • |                |

| Steel               | HRC   |
|---------------------|-------|
| A2, M2 (all blanks) | 60-63 |
| PS (AJB, APB)       | 63-65 |

Heads Drawn to HRC 40-55  
Through D25

# Press Fit Punch Blanks

ISO 8020

Type

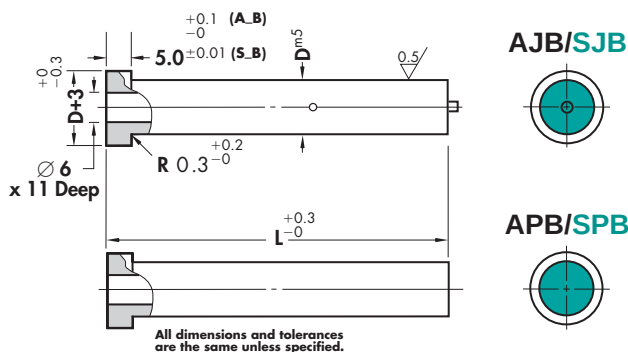
**AJB/SJB** Jektrole

**APB/SPB** Regular

**SJB & SPB** are Center Dowel  
Punch Blanks. L=71, 80, 90, 100 only.



Tapped Dowel Ø6x25 Included



| Shank<br>D | Cat. No.<br>AJB/SJB | APB/SPB    | L  |    |    |    |    |    |     |     |     |     |       | Jektrole<br>Pin |
|------------|---------------------|------------|----|----|----|----|----|----|-----|-----|-----|-----|-------|-----------------|
|            |                     |            | 40 | 50 | 56 | 60 | 63 | 70 | 71  | 80  | 90  | 100 |       |                 |
| 04         | —                   | APB 04     | •  | •  | •  | •  | •  | •  | •   | •   | •   | •   | —     |                 |
| 05         | AJB 05              | APB 05     | •  | •  | •  | •  | •  | •  | •   | •   | •   | •   | J2M   |                 |
| 06         | AJB 06              | APB 06     | •  | •  | •  | •  | •  | •  | •   | •   | •   | •   | J3M   |                 |
| 08         | AJB 08              | APB 08     |    | •  | •  | •  | •  | •  | •   | •   | •   | •   | J4M   |                 |
| 10         | AJB/SJB 10          | APB/SPB 10 |    | •  | •  | •  | •  | •  | • • | • • | • • | • • | J6M   |                 |
| 13         | AJB/SJB 13          | APB/SPB 13 |    | •  | •  | •  | •  | •  | • • | • • | • • | • • | J6M   |                 |
| 16         | AJB/SJB 16          | APB/SPB 16 |    | •  | •  | •  | •  | •  | • • | • • | • • | • • | J9M   |                 |
| 20         | AJB/SJB 20          | APB/SPB 20 |    |    | •  | •  | •  | •  | • • | • • | • • | • • | J9M   |                 |
| 25         | AJB/SJB 25          | APB/SPB 25 |    |    | •  | •  | •  | •  | • • | • • | • • | • • | J9M   |                 |
| 32         | AJB/SJB 32          | APB/SPB 32 |    |    |    |    | •  | •  | • • | • • | • • | • • | J12M* |                 |

Jektrole Side-hole position allows room for alternate point lengths shown on pages 2 & 4.

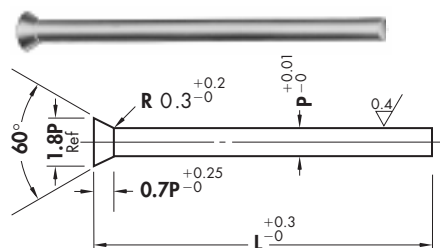
\*J9M for SJB

## Clospace Punches

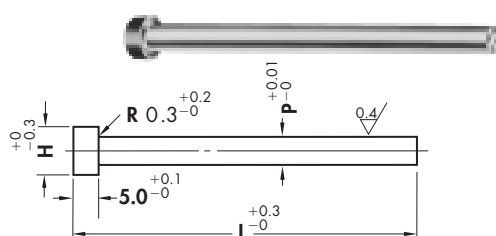
| Steel  | HRC   |
|--------|-------|
| A2, M2 | 60-63 |

Heads Drawn to  
HRC 40-55 (except AWX)

Type  
**AWX**  
(M2 only)

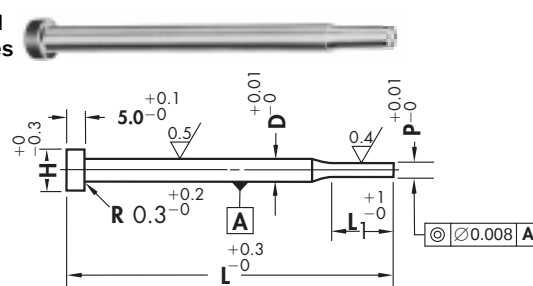


Type  
**AXX**



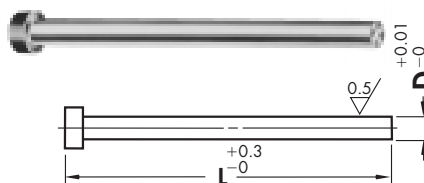
Pointed  
Punches

Type  
**ACX**  
A2, M2



Punch  
Blanks

Type  
**ACB**  
A2, M2



All dimensions and tolerances are the same unless specified.

| Range P   | L  |    |    |    |    |    |    |    |    |    |     | AXX H |
|-----------|----|----|----|----|----|----|----|----|----|----|-----|-------|
|           | 40 | 45 | 50 | 56 | 60 | 63 | 70 | 71 | 80 | 90 | 100 |       |
| 0.80-1.60 | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   | 3     |
| 1.61-2.00 | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   | 4     |
| 2.01-3.00 | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   | 5     |
| 3.01-4.00 | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   | 6     |
| 4.01-5.00 | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   | 7     |
| 5.01-6.00 | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   | 8     |
| 6.01-7.00 | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   | 9     |

| Type       | Body D | Head Dia. H | Point Length L <sub>1</sub> | ACX Range P | L  |    |    |    |    |    |    |    |    |    |     |
|------------|--------|-------------|-----------------------------|-------------|----|----|----|----|----|----|----|----|----|----|-----|
|            |        |             |                             |             | 40 | 45 | 50 | 56 | 60 | 63 | 70 | 71 | 80 | 90 | 100 |
| ACX<br>ACB | 2.0    | 4.0         | 5.0                         | 0.81-2.00   | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   |
|            | 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   | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •   |

## Headless/Headed — ISO 8977 (Round Only)

Type  
**AD**

Headless

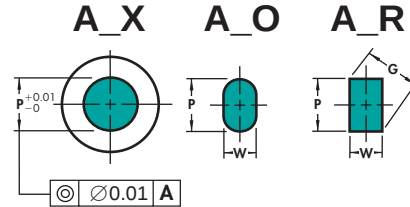
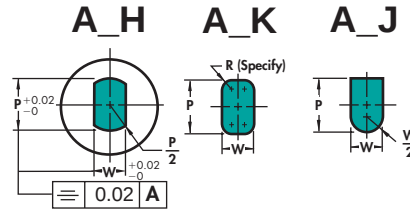
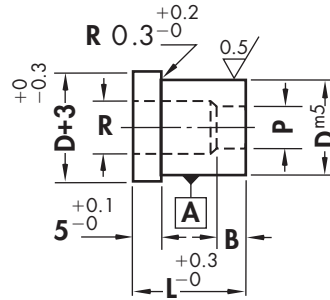
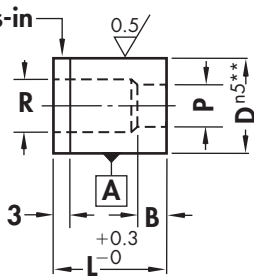


Type  
**AH**

Headed



Press-in  
Lead



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

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

| Body<br>D | Std.<br>S | B<br>Alt.<br>A | Alt.<br>B | Type<br>& D | Round<br>Range<br>P | Type<br>& D | Shape<br>Min.<br>W | Max.<br>P/G | R    | L  |    |    |    |    |    |    |
|-----------|-----------|----------------|-----------|-------------|---------------------|-------------|--------------------|-------------|------|----|----|----|----|----|----|----|
|           |           |                |           |             |                     |             |                    |             |      | 20 | 22 | 25 | 28 | 30 | 32 | 35 |
| 08        | 4         | —              | —         | A_X08       | 1.50- 2.40          | —           | —                  | —           | 3.5  | •  | •  | •  | •  | •  | •  | •  |
|           | 4         | —              | —         | A_X08       | 2.41- 3.00          | —           | —                  | —           | 4.0  | •  | •  | •  | •  | •  | •  | •  |
|           | 4         | 8              | —         | A_X08       | 3.01- 3.20          | —           | —                  | —           | 4.0  | •  | •  | •  | •  | •  | •  | •  |
| 10        | 4         | —              | —         | A_X10       | 1.50- 2.40          | A_10        | —                  | —           | 3.5  | •  | •  | •  | •  | •  | •  | •  |
|           | 4         | —              | —         | A_X10       | 2.41- 3.00          | A_10        | —                  | —           | 4.0  | •  | •  | •  | •  | •  | •  | •  |
|           | 4         | 8              | —         | A_X10       | 3.01- 3.20          | A_10        | 1.20- 3.20         | —           | 4.0  | •  | •  | •  | •  | •  | •  | •  |
|           | 4         | 8              | —         | A_X10       | 3.21- 5.00          | A_10        | 1.20- 5.00         | —           | 6.0  | •  | •  | •  | •  | •  | •  | •  |
| 13        | 5         | —              | —         | A_X13       | 1.50- 2.40          | A_13        | —                  | —           | 3.5  | •  | •  | •  | •  | •  | •  | •  |
|           | 5         | —              | —         | A_X13       | 2.41- 3.00          | A_13        | —                  | —           | 4.0  | •  | •  | •  | •  | •  | •  | •  |
|           | 5         | 8              | —         | A_X13       | 3.01- 3.20          | A_13        | —                  | —           | 4.0  | •  | •  | •  | •  | •  | •  | •  |
|           | 5         | 8              | —         | A_X13       | 3.21- 5.00          | A_13        | 2.00- 5.00         | —           | 6.0  | •  | •  | •  | •  | •  | •  | •  |
|           | 5         | 8              | —         | A_X13       | 5.01- 7.20          | A_13        | 2.00- 7.20         | —           | 8.0  | •  | •  | •  | •  | •  | •  | •  |
| 16        | 5         | 8              | —         | A_X16       | 5.00- 7.20          | A_16        | 2.40- 7.20         | —           | 8.0  | •  | •  | •  | •  | •  | •  | •  |
|           | 5         | 8              | —         | A_X16       | 7.21- 8.80          | A_16        | 2.40- 8.80         | —           | 9.5  | •  | •  | •  | •  | •  | •  | •  |
| 20        | 5         | 12             | 20        | A_X20       | 7.00- 8.80          | A_20        | 3.20- 8.80         | —           | 9.5  | •  | •  | •  | •  | •  | •  | •  |
|           | 5         | 12             | 20        | A_X20       | 8.81-11.00          | A_20        | 3.20-11.00         | —           | 12.0 | •  | •  | •  | •  | •  | •  | •  |
| 22        | 6         | 12             | 20        | A_X22       | 9.00-14.00          | A_22        | 4.00-14.00         | —           | 15.0 | •  | •  | •  | •  | •  | •  | •  |
| 25        | 6         | 12             | 20        | A_X25       | 11.00-14.00         | A_25        | 4.80-14.00         | —           | 15.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 6         | 12             | 20        | A_X25       | 14.01-16.50         | A_25        | 4.80-16.50         | —           | 17.5 | •  | •  | •  | •  | •  | •  | •  |
| 32        | 6         | 12             | 20        | A_X32       | 13.00-16.50         | A_32        | 5.50-16.50         | —           | 17.5 | •  | •  | •  | •  | •  | •  | •  |
|           | 6         | 12             | 20        | A_X32       | 16.51-20.00         | A_32        | 5.50-20.00         | —           | 21.0 | •  | •  | •  | •  | •  | •  | •  |
| 38        | 8         | 12             | 20        | A_X38       | 16.00-20.00         | A_38        | 6.40-20.00         | —           | 21.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | A_X38       | 20.01-26.00         | A_38        | 6.40-26.00         | —           | 27.0 | •  | •  | •  | •  | •  | •  | •  |
| 40        | 8         | 12             | 20        | A_X40       | 16.00-20.00         | A_40        | 6.40-20.00         | —           | 21.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | A_X40       | 20.01-26.00         | A_40        | 6.40-26.00         | —           | 27.0 | •  | •  | •  | •  | •  | •  | •  |

## Standard Alterations for AD, AH Matrixes

Standard Alterations are beyond those sizes listed above and can be manufactured for a slight additional charge.

AD, AH

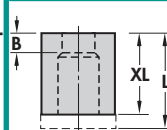
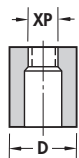
AD only

| D  | Min.<br>P | Min.<br>W | Max.<br>P/G | R    | D   | Min.<br>P | Min.<br>W | Max.<br>P/G | R    |
|----|-----------|-----------|-------------|------|-----|-----------|-----------|-------------|------|
| 10 | 1.5*      | 1.2       | 5.5         | 6.0  | 45  | 16.0      | 6.4       | 35.0        | 36.0 |
| 13 | 1.5*      | 1.2       | 7.5         | 8.0  | 50  | 19.0      | 8.0       | 40.0        | 41.0 |
| 16 | 3.0       | 2.0       | 9.0         | 9.5  | 56  | 22.0      | 9.0       | 45.0        | 46.0 |
| 20 | 5.0       | 2.4       | 11.5        | 12.0 | 63  | 25.0      | 10.0      | 50.0        | 51.0 |
| 22 | 7.0       | 3.2       | 14.5        | 15.0 | 71  | 28.0      | 11.0      | 56.0        | 57.0 |
| 25 | 9.0       | 4.0       | 17.0        | 17.5 | 76  | 31.0      | 12.0      | 60.0        | 61.0 |
| 32 | 11.0      | 4.8       | 20.5        | 21.0 | 85  | 39.0      | 15.0      | 66.0        | 67.0 |
| 38 | 13.0      | 5.5       | 26.5        | 27.0 | 90  | 43.0      | 21.0      | 70.0        | 71.0 |
| 40 | 13.0      | 5.5       | 26.5        | 27.0 | 100 | 45.0      | 25.0      | 78.0        | 79.0 |

\*3.00 min. P at 8mm Land Length

**XP, XW**

P or W Dimensions  
Larger or Smaller  
than Standard

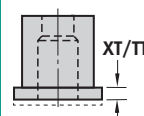


**XL** Overall-Length  
Shortened

On AH<sub>1</sub> material is removed from top. Shortens B length. Minimum overall length = 13.

**LL**

Precision Overall-Length  
Same as XL except overall length is held to ±0.02.



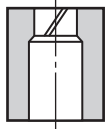
**XT**

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.

| Body<br>D | Std.<br>S | B<br>Alt.<br>A | Alt.<br>B | Type<br>& D | Round<br>Range<br>P | Type<br>& D | Shape<br>Min. Max.<br>W P/G | R    | L  |    |    |    |    |    |    |
|-----------|-----------|----------------|-----------|-------------|---------------------|-------------|-----------------------------|------|----|----|----|----|----|----|----|
|           |           |                |           |             |                     |             |                             |      | 22 | 25 | 28 | 30 | 32 | 35 | 40 |
| 45        | 8         | 12             | 20        | ADX45       | 19.00-26.00         | AD_45       | 8.00-26.00                  | 27.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX45       | 26.01-35.00         | AD_45       | 8.00-35.00                  | 36.0 | •  | •  | •  | •  | •  | •  | •  |
| 50        | 8         | 12             | 20        | ADX50       | 22.00-26.00         | AD_50       | — —                         | 27.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX50       | 26.01-35.00         | AD_50       | 9.00-35.00                  | 36.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX50       | 35.01-40.00         | AD_50       | 9.00-40.00                  | 41.0 | •  | •  | •  | •  | •  | •  | •  |
| 56        | 8         | 12             | 20        | ADX56       | 25.00-35.00         | AD_56       | 10.00-35.00                 | 36.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX56       | 35.01-40.00         | AD_56       | 10.00-40.00                 | 41.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX56       | 40.01-45.00         | AD_56       | 10.00-45.00                 | 46.0 | •  | •  | •  | •  | •  | •  | •  |
| 63        | 8         | 12             | 20        | ADX63       | 28.00-35.00         | AD_63       | — —                         | 36.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX63       | 35.01-40.00         | AD_63       | 11.00-40.00                 | 41.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX63       | 40.01-45.00         | AD_63       | 11.00-45.00                 | 46.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX63       | 45.01-50.00         | AD_63       | 11.00-50.00                 | 51.0 | •  | •  | •  | •  | •  | •  | •  |
| 71        | 8         | 12             | 20        | ADX71       | 31.00-40.00         | AD_71       | 12.00-40.00                 | 41.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX71       | 40.01-45.00         | AD_71       | 12.00-45.00                 | 46.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX71       | 45.01-50.00         | AD_71       | 12.00-50.00                 | 51.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX71       | 50.01-56.00         | AD_71       | 12.00-56.00                 | 57.0 | •  | •  | •  | •  | •  | •  | •  |
| 76        | 8         | 12             | 20        | ADX76       | 39.00-45.00         | AD_76       | 15.00-45.00                 | 46.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX76       | 45.01-50.00         | AD_76       | 15.00-50.00                 | 51.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX76       | 50.01-56.00         | AD_76       | 15.00-56.00                 | 57.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX76       | 56.01-60.00         | AD_76       | 15.00-60.00                 | 61.0 | •  | •  | •  | •  | •  | •  | •  |
| 85        | 8         | 12             | 20        | ADX85       | 43.00-50.00         | AD_85       | 21.00-50.00                 | 51.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX85       | 50.01-56.00         | AD_85       | 21.00-56.00                 | 57.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX85       | 56.01-60.00         | AD_85       | 21.00-60.00                 | 61.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX85       | 60.01-66.00         | AD_85       | 21.00-66.00                 | 67.0 | •  | •  | •  | •  | •  | •  | •  |
| 90        | 8         | 12             | 20        | ADX90       | 45.00-50.00         | AD_90       | 25.00-50.00                 | 51.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX90       | 50.01-56.00         | AD_90       | 25.00-56.00                 | 57.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX90       | 56.01-60.00         | AD_90       | 25.00-60.00                 | 61.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX90       | 60.01-66.00         | AD_90       | 25.00-66.00                 | 67.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX90       | 66.01-70.00         | AD_90       | 25.00-70.00                 | 71.0 | •  | •  | •  | •  | •  | •  | •  |
| 100       | 8         | 12             | 20        | ADX100      | 50.00-56.00         | AD_100      | 33.00-56.00                 | 57.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX100      | 56.01-60.00         | AD_100      | 33.00-60.00                 | 61.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX100      | 60.01-66.00         | AD_100      | 33.00-66.00                 | 67.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX100      | 66.01-70.00         | AD_100      | 33.00-70.00                 | 71.0 | •  | •  | •  | •  | •  | •  | •  |
|           | 8         | 12             | 20        | ADX100      | 70.01-78.00         | AD_100      | 33.00-78.00                 | 79.0 | •  | •  | •  | •  | •  | •  | •  |



## XSC

**Slug Control eliminates slug pulling**  
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 ordering information. Available on all AD and AH matrixes. See page 25 for more information.

### 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

ADX 13 25 P7.0  
Type D L P

#### Your Specs

XSC MMO.3 CS5  
Alt. Code Mat'l Th'kness Clear Per Side (%)

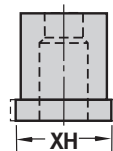
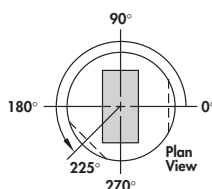
This information will be entered into our computer to generate a program to alter the land of the matrix and end your slug pulling problems forever! Call us or contact your Dayton distributor for more information.

#### Standard Key Flat Location

Standard Key Flat Location is 0°. Alternative locations of 90°, 180°, or 270° can be specified at *no additional cost*.

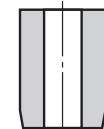
#### Custom Key Flat Location

Custom Key Flat Locations can be specified as degree required counterclockwise from 0°. See page 24 for more details.



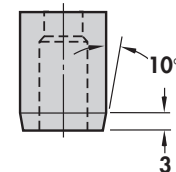
## XH

**Reduced Head Diameter**  
Minimum head diameter equals  $D + 0.00 - 0.03$



## XBL

**Straight Through Land**  
The land length (B) equals the overall length of the matrix. Can be used for bushings, guides and a variety of other applications.



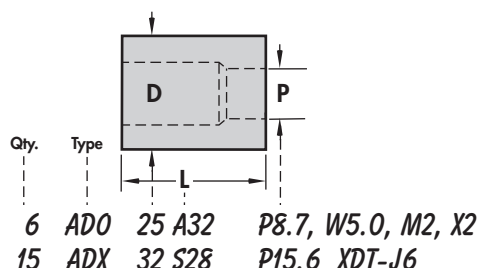
## XAL

**10° Angled Lead on AD\_**  
The angle provides clearance for steps left by CNC machining.

Standard on AN\_-Matrixes

### How to Order:

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

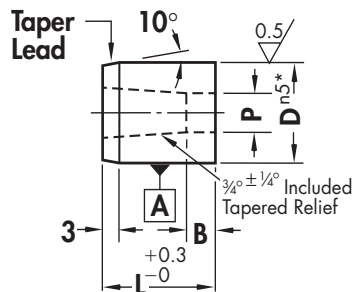


# Tapered Relief Matrixes

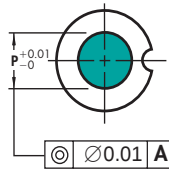
|       |       |
|-------|-------|
| Steel | HRC   |
| A2    | 60-63 |

For automotive CNC build applications

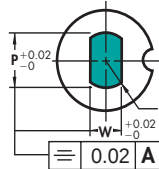
Type  
AN\_



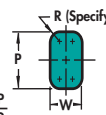
ANX



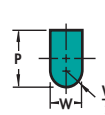
ANH



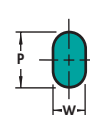
ANK



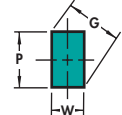
ANJ



ANO



ANR



Shown above with Locking Device X43 for Ø6 Dowel (NAAMS™ standard)

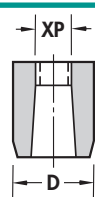
Check your P&W dimensions to be sure the diagonal G does not exceed the max. shown.

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

See page 24 for other Locking Devices (must be specified)

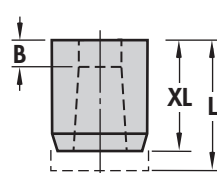
| Body D | Std. S | B Alt. A | Alt. B | Type & D | Round Range P | Type & D | Shape Min. W | Max. P/G | L  |    |    |    |    |    |    |    |    |    |
|--------|--------|----------|--------|----------|---------------|----------|--------------|----------|----|----|----|----|----|----|----|----|----|----|
|        |        |          |        |          |               |          |              |          | 13 | 16 | 20 | 22 | 25 | 28 | 30 | 32 | 35 | 40 |
| 10     | 4      | 5        | 3      | ANX10    | 1.60- 6.80    | AN_10    | 1.30- 6.80   |          | •  | •  | •  | •  | •  | •  | •  | •  | •  |    |
| 13     | 5      | 8        | 3      | ANX13    | 3.00- 8.80    | AN_13    | 1.90- 8.80   |          | •  | •  | •  | •  | •  | •  | •  | •  | •  |    |
| 16     | 5      | 8        | 3      | ANX16    | 7.40-10.80    | AN_16    | 1.90-10.80   |          |    |    | •  | •  | •  | •  | •  | •  | •  |    |
| 20     | 5      | 10       | 3      | ANX20    | 9.50-13.60    | AN_20    | 1.90-13.60   |          |    |    | •  | •  | •  | •  | •  | •  | •  |    |
| 22     | 6      | 10       | 3      | ANX22    | 10.50-15.00   | AN_22    | 1.90-15.00   |          |    |    | •  | •  | •  | •  | •  | •  | •  |    |
| 25     | 6      | 10       | 3      | ANX25    | 12.00-17.00   | AN_25    | 1.90-17.00   |          |    |    | •  | •  | •  | •  | •  | •  | •  |    |
| 32     | 6      | 12       | 3      | ANX32    | 16.00-22.00   | AN_32    | 1.90-22.00   |          |    |    | •  | •  | •  | •  | •  | •  | •  |    |
| 38     | 8      | 12       | 3      | ANX38    | 18.00-27.00   | AN_38    | 1.90-27.00   |          |    |    | •  | •  | •  | •  | •  | •  | •  |    |
| 40     | 8      | 12       | 3      | ANX40    | 18.00-27.00   | AN_40    | 1.90-27.00   |          |    |    | •  | •  | •  | •  | •  | •  | •  |    |
| 45     | 8      | 12       | 3      | ANX45    | 18.00-35.00   | AN_45    | 2.40-35.00   |          |    |    |    | •  | •  | •  | •  | •  | •  |    |
| 50     | 8      | 12       | 3      | ANX50    | 18.00-40.00   | AN_50    | 4.00-40.00   |          |    |    |    | •  | •  | •  | •  | •  | •  |    |
| 56     | 8      | 12       | 3      | ANX56    | 18.00-45.00   | AN_56    | 4.00-45.00   |          |    |    |    | •  | •  | •  | •  | •  | •  |    |
| 63     | 8      | 12       | 3      | ANX63    | 18.00-50.00   | AN_63    | 4.00-50.00   |          |    |    |    | •  | •  | •  | •  | •  | •  |    |
| 71     | 8      | 12       | 3      | ANX71    | 18.00-56.00   | AN_71    | 4.00-56.00   |          |    |    |    | •  | •  | •  | •  | •  | •  |    |
| 76     | 8      | 12       | 3      | ANX76    | 25.00-60.00   | AN_76    | 5.60-60.00   |          |    |    |    | •  | •  | •  | •  | •  | •  |    |
| 85     | 8      | 12       | 3      | ANX85    | 25.00-66.00   | AN_85    | 5.60-66.00   |          |    |    |    | •  | •  | •  | •  | •  | •  |    |
| 90     | 8      | 12       | 3      | ANX90    | 32.00-70.00   | AN_90    | 5.60-70.00   |          |    |    |    | •  | •  | •  | •  | •  | •  |    |
| 100    | 8      | 12       | 3      | ANX100   | 32.00-78.00   | AN_100   | 5.60-78.00   |          |    |    |    | •  | •  | •  | •  | •  | •  |    |

## Standard Alterations for AD, AH and AN Matrixes



**XP, XW**

P or W Dimensions Larger or Smaller than Standard

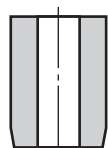


**XL**

**Overall-Length Shortened**  
On AH\_ material is removed from top. Shortens B length. Minimum overall length = 13.

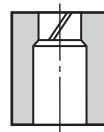
**LL**

**Precision Overall-Length**  
Same as XL except overall length is held to ±0.02.



**XBL**

**Straight Through Land**  
The land length (B) equals the overall length of the matrix. Can be used for bushings, guides and a variety of other applications.



**XSC**

**Slug Control eliminates slug pulling**  
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 ordering information. Available on all AN matrixes. See page 25 for more information.

### 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 |                |                    |
|----------------|----|----|------|------------|----------------|--------------------|
| ADX            | 13 | 25 | P7.0 | XSC        | MM0.3          | CS5                |
| Type           | D  | L  | P    | Alt. Code  | Mat'l Th'kness | 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! Call us or contact your Dayton distributor for more information.

\*AN Matrixes conform to NAAMS™ standard for Tapered Relief Die Buttons. For diameters 32-100 add XDT-j6 to the end of the catalog number to receive NAAMS™ standard j6 tolerance for large diameters.

# Guide Bushings

## For Punch Point Support

### Guide Bushing Alterations

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

See pages 10 & 11 for an explanation of these alterations. Locking Devices are on page 24.

### How to Order:

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

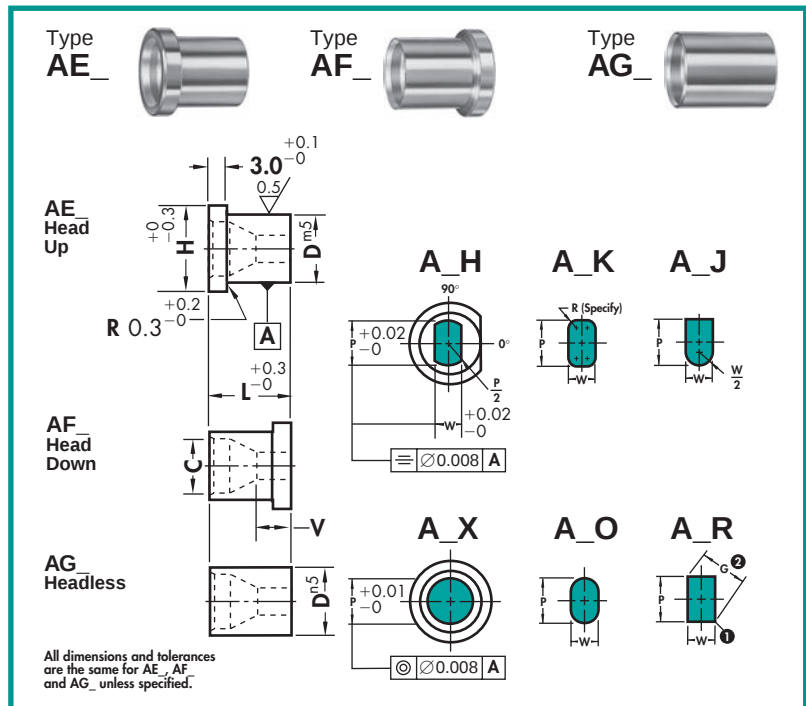
4 AEX 06-13 P2.0, XH 7.0  
2 AFO 10-10 XP7.0, W2.9, A2  
3 AGK 16-16 P6.6, W6.1, R1.0, A2

### Land Length V

| P         | V          |
|-----------|------------|
| 0.80-1.7  | 2P         |
| 1.71-2.4  | P + 1.7    |
| 2.41-10.8 | .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. Max. W P/G |                | 8 | 10 | 13 | 16 |
| AG_ Headless  | 05     | 8  | 1.6- 3.2 | 1.3- 3.2        | 3.6            | 8 |    |    |    |
| AF_ Head Down | 06     | 9  | 1.6- 3.9 | 1.3- 3.9        | 4.6            |   | 10 |    |    |
| AE_ Head Up   | 08     | 11 | 2.4- 5.4 | 1.3- 5.4        | 6.6            |   |    | 13 |    |
|               | 10     | 13 | 3.2- 6.8 | 1.3- 6.8        | 8.2            |   |    |    | 16 |
|               | 13     | 16 | 5.4- 8.8 | 1.9- 8.8        | 11.4           |   |    |    |    |
|               | 16     | 19 | 7.4-10.8 | 1.9-10.8        | Full Taper     |   |    |    |    |

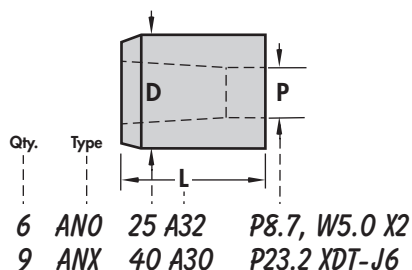
① 0.2 Max. Fillet (Typical)

② 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  
Standard Alterations

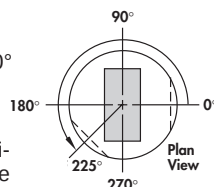


### Standard Key Flat Location

Standard Key Flat Location is 0°. Alternative locations of 90°, 180°, or 270° can be specified at no additional cost.

### Custom Key Flat Location

Custom Key Flat Locations can be specified as degree required counterclockwise from 0°. See page 24 for more details.



# EDM Matrix Blanks

|        |       |
|--------|-------|
| Steel  | HRC   |
| A2, M2 | 60-63 |

## How to Order:

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

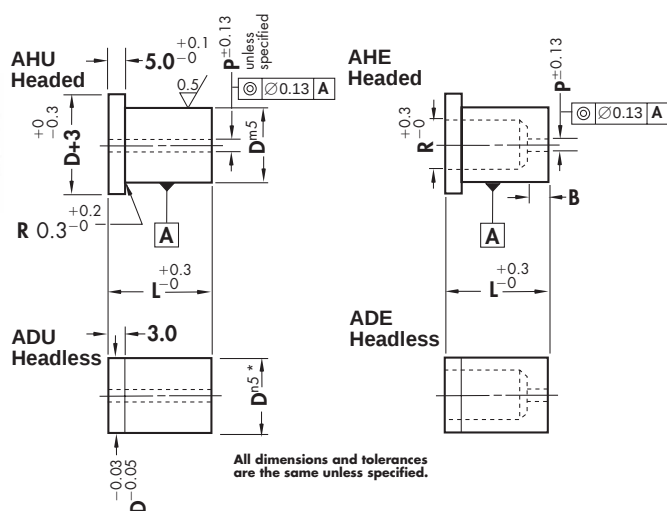
8 AHE 40-A35 M2  
2 ADU 13-30 A2  
4 AHE 32-B25 A2

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 AHU/AHE



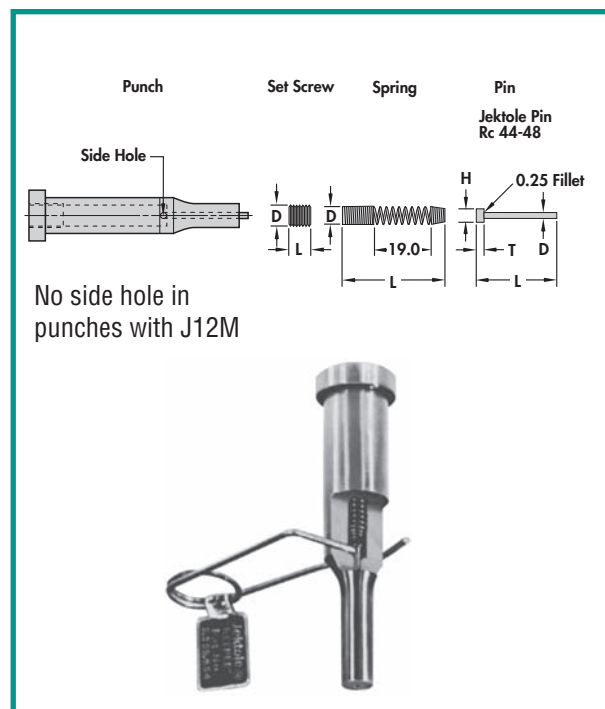
## Type ADU/ADE



| Type       | Body D | P   | AHE/ADE |          |        | AHE ADE R | L  |    |    |    |    |    |    |    |
|------------|--------|-----|---------|----------|--------|-----------|----|----|----|----|----|----|----|----|
|            |        |     | Std. S  | B Alt. A | Alt. B |           | 20 | 22 | 25 | 28 | 30 | 32 | 35 | 40 |
| AD<br>AH   | 8      | 0.8 | —       | —        | —      | —         | •  | •  | •  | •  | •  | •  | •  | •  |
|            | 10     | 0.8 | 4       | 8        | —      | 6.0       | •  | •  | •  | •  | •  | •  | •  | •  |
|            | 13     | 1.6 | 5       | 8        | —      | 8.0       | •  | •  | •  | •  | •  | •  | •  | •  |
|            | 16     | 1.6 | 5       | 8        | —      | 9.5       | •  | •  | •  | •  | •  | •  | •  | •  |
|            | 20     | 1.6 | 5       | 12       | 20     | 12.0      | •  | •  | •  | •  | •  | •  | •  | •  |
|            | 22     | 1.6 | 6       | 12       | 20     | 15.0      | •  | •  | •  | •  | •  | •  | •  | •  |
|            | 25     | 1.6 | 6       | 12       | 20     | 17.5      | •  | •  | •  | •  | •  | •  | •  | •  |
|            | 32     | 1.6 | 6       | 12       | 20     | 21.0      | •  | •  | •  | •  | •  | •  | •  | •  |
|            | 38     | 1.6 | 8       | 12       | 20     | 27.0      | •  | •  | •  | •  | •  | •  | •  | •  |
|            | 40     | 1.6 | 8       | 12       | 20     | 27.0      | •  | •  | •  | •  | •  | •  | •  | •  |
| AD<br>Only | 45     | 3.2 | 8       | 12       | 20     | 36.0      | •  | •  | •  | •  | •  | •  | •  | •  |
|            | 50     | 3.2 | 8       | 12       | 20     | 41.0      | •  | •  | •  | •  | •  | •  | •  | •  |
|            | 56     | 3.2 | 8       | 12       | 20     | 46.0      | •  | •  | •  | •  | •  | •  | •  | •  |
|            | 63     | 3.2 | 8       | 12       | 20     | 51.0      | •  | •  | •  | •  | •  | •  | •  | •  |
|            | 71     | 3.2 | 8       | 12       | 20     | 57.0      | •  | •  | •  | •  | •  | •  | •  | •  |
|            | 76     | 3.2 | 8       | 12       | 20     | 61.0      | •  | •  | •  | •  | •  | •  | •  | •  |
|            | 85     | 3.2 | 8       | 12       | 20     | 67.0      | •  | •  | •  | •  | •  | •  | •  | •  |
|            | 90     | 3.2 | 8       | 12       | 20     | 71.0      | •  | •  | •  | •  | •  | •  | •  | •  |
|            | 100    | 3.2 | 8       | 12       | 20     | 79.0      | •  | •  | •  | •  | •  | •  | •  | •  |

# Jektole® Clearance

## The Key to Increased Productivity



## JEKTOLE® In Production

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

## JEKTOLE® In Maintenance

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

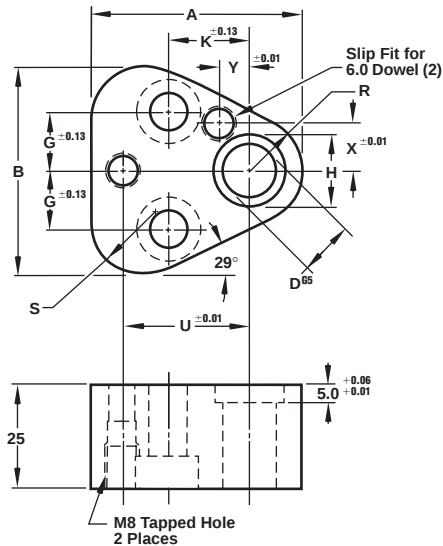
## Universal Jektole Components

| EJECTOR PINS     |   | J2M  | J3M  | J4M  | J6M  | J9M  | J12M |
|------------------|---|------|------|------|------|------|------|
| Overall Length   | L | 28.0 | 35.0 | 49.4 | 49.4 | 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 Diameter | D | 2.1  | 2.4  | 3.3  | 4.3  | 5.0  | 7.0  |
| Free Length      | L | 60.3 | 60.3 | 81.0 | 76.2 | 68.9 | 65.1 |
| SCREWS           |   | J2M  | J3M  | J4M  | J6M  | J9M  | J12M |
| Screw Size       | D | M2.6 | M3   | M4   | M5   | M6   | M8   |
| Screw Length     | L | 5    | 5    | 5    | 5    | 6    | 6    |

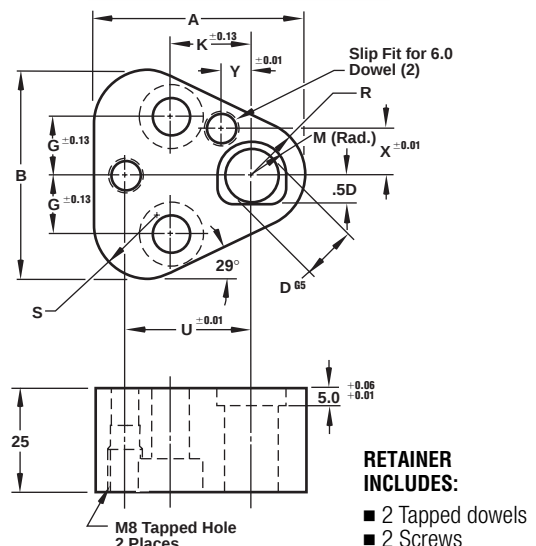
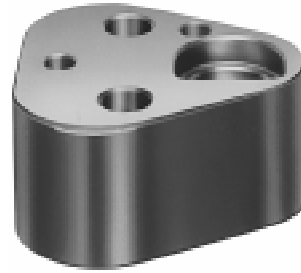
## Jektole Design Limits

| 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  | 38  | 41  | 41  | 41   | 41   |
| Max. Shank Lgth. | S | 87  | 87  | 84  | 84  | 84   | 70   |

Type  
**ART**  
For  
Round  
Punches



Type  
**ARTS**  
For  
Shaped  
Punches



Don't waste time and money building a retainer for just one punch. TRUE LOCATION Retainers offer precise dowel locations allowing CNC machining of the punch and die plates. The dimensional accuracy also permits interchangeability of retainers that before could not have been done without plugging holes and re-machining for dowels.

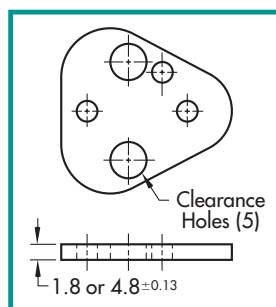
Use Dayton's Center Dowel Punches and Pilots for the best accuracy. With the dowel located directly over the center-line of the

punch, accumulation of tolerances is eliminated. This provides the best possible alignment. In addition, only one dowel is needed for a round punch, a shaped punch requires a second dowel for radial location. An additional dowel hole is provided for use with matrixes.

- Ground top and bottom
- Case-Hardened to approximately Rc 42

| Catalog No. |      |       |      |      | ART  |      |      |  | ARTS |      |      |        |      |     | Screw Size |
|-------------|------|-------|------|------|------|------|------|--|------|------|------|--------|------|-----|------------|
| Type        | Code | D     | A    | B    | H    | G    | K    |  | M    | R    | S    | U      | X    | Y   |            |
| ART/ARTS    | 10   | 10.00 | 44.5 | 43.7 | 14.0 | 11.1 | 19.0 |  | 7.0  | 9.5  | 12.0 | 26.925 | 9.0  | 7.5 | M8         |
| ART/ARTS    | 13   | 13.00 | 50.8 | 50.0 | 17.0 | 14.3 | 19.0 |  | 8.5  | 12.7 | 15.2 | 29.970 | 12.0 | 6.5 | M8         |
| ART/ARTS    | 16   | 16.00 | 54.0 | 53.2 | 20.0 | 15.9 | 19.0 |  | 10.0 | 14.3 | 16.8 | 31.750 | 13.5 | 6.0 | M8         |
| ART/ARTS    | 20   | 20.00 | 60.3 | 59.5 | 24.0 | 17.5 | 19.0 |  | 12.0 | 17.5 | 20.0 | 33.530 | 16.5 | 5.0 | M10        |
| ART/ARTS    | 25   | 25.00 | 69.9 | 69.1 | 29.0 | 19.8 | 23.8 |  | 14.5 | 22.2 | 24.7 | 40.640 | 22.0 | 7.0 | M12        |
| ART/ARTS    | 32   | 32.00 | 69.9 | 69.1 | 36.0 | 19.8 | 23.8 |  | 18.0 | 22.2 | 24.7 | 40.640 | 22.0 | 7.0 | M12        |

## Shim Plates



| D  | 1.8 (Soft) | 4.8 (Rc55) |
|----|------------|------------|
| 10 | URSP 10 18 | URBP 10 48 |
| 13 | URSP 13 18 | URBP 13 48 |
| 16 | URSP 16 18 | URBP 16 48 |
| 20 | URSP 20 18 | URBP 20 48 |
| 25 | URSP 25 18 | URBP 25 48 |
| 32 | URSP 32 18 | URBP 32 48 |

## How To Order:

| Quantity | Catalog No. |
|----------|-------------|
| 10       | ART10       |
| 12       | ARTS25      |
| 10       | URBP 10 48  |

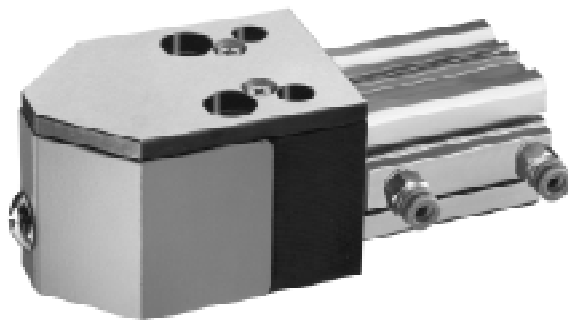
# Change Retainers

## Air Cylinder Type — For Headed Punches

### Engage or disengage punches in seconds

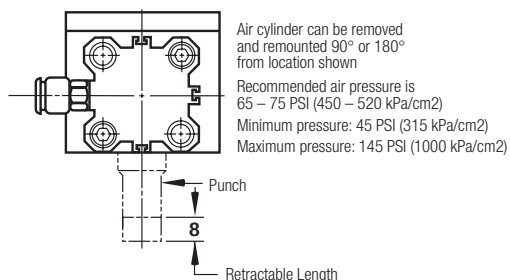
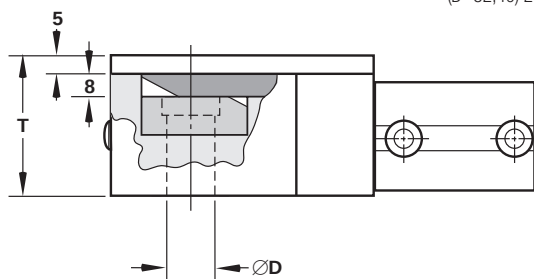
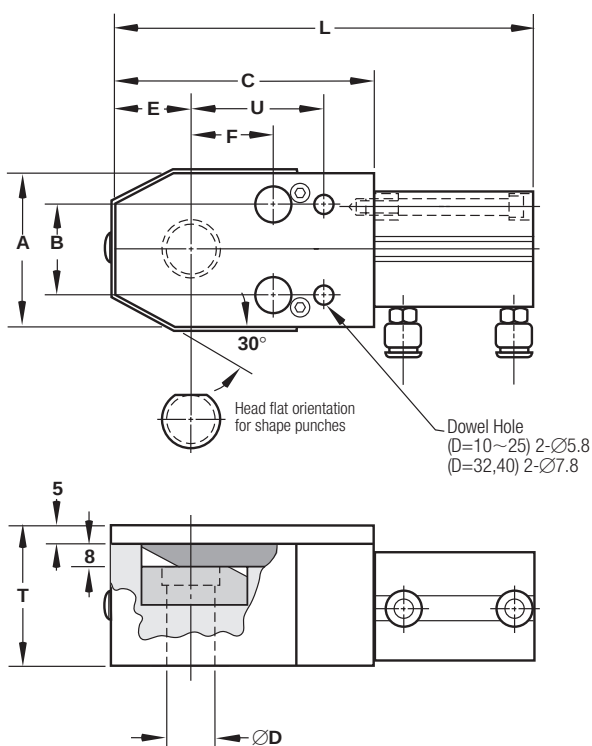
Change retainers are used where different hole patterns are required. Various hole patterns can be accomplished without the need for multiple dies. Different parts, such as right and left hand can be run in one die.

Changing hole patterns takes only minutes, sometimes only seconds. A bar holding the punch in position is released to allow the punch to retract up far enough to avoid contact with the material.

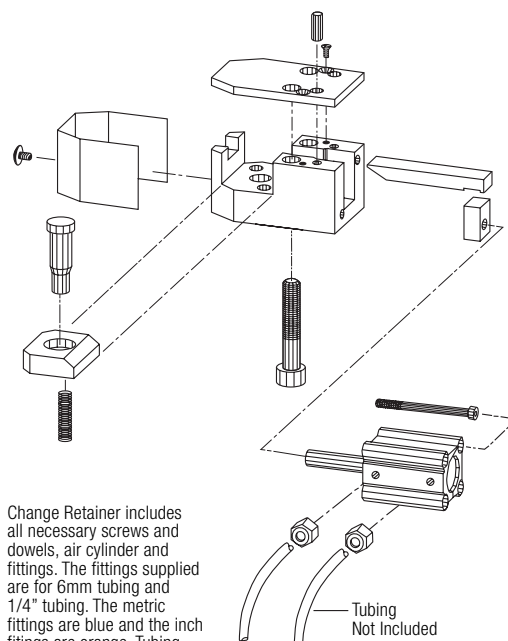


Type  
**ARA**  
For Round  
Punches

Type  
**ARAS**  
For Shape  
Punches



Air cylinder can be removed and remounted 90° or 180° from location shown  
Recommended air pressure is 65 – 75 PSI (450 – 520 kPa/cm2)  
Minimum pressure: 45 PSI (315 kPa/cm2)  
Maximum pressure: 145 PSI (1000 kPa/cm2)



### How To Order:

Quantity  
6

Catalog No.  
**ARA16**

| Catalog Number |       |    |     |    |    |     |    |    |    |    | Screw Size |
|----------------|-------|----|-----|----|----|-----|----|----|----|----|------------|
| Round          | Shape | D  | L   | A  | B  | C   | E  | F  | T  | U  |            |
| ARA            | ARAS  | 10 | 128 | 46 | 30 | 73  | 18 | 25 | 45 | 41 | M8         |
| ARA            | ARAS  | 13 |     | 49 |    |     |    |    |    |    | M10        |
| ARA            | ARAS  | 16 |     |    |    |     |    |    |    |    | M10        |
| ARA            | ARAS  | 20 | 155 | 58 | 38 | 90  | 23 | 29 | 45 | 45 | M10        |
| ARA            | ARAS  | 25 |     |    |    |     |    |    |    |    | M10        |
| ARA            | ARAS  | 32 | 208 | 80 | 56 | 125 | 33 | 38 | 55 | 60 | M12        |
| ARA            | ARAS  | 40 |     |    |    |     |    |    |    |    | M12        |

# Change Retainer

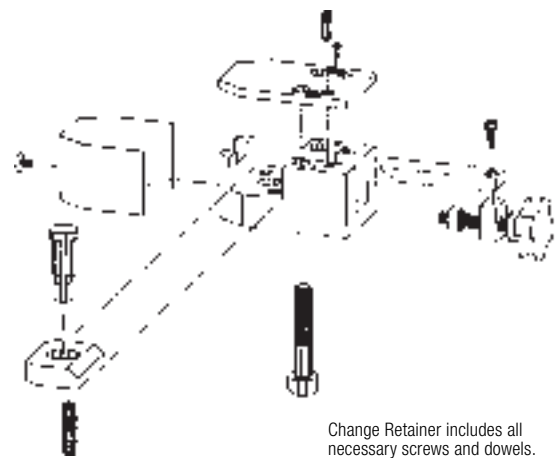
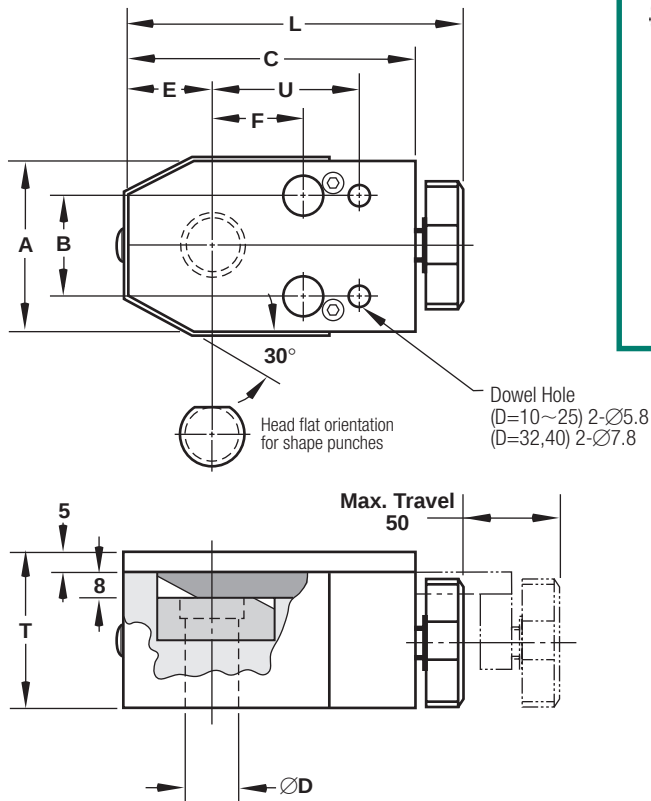
Manual Type — For Headed Punches

Engage or disengage punches in seconds

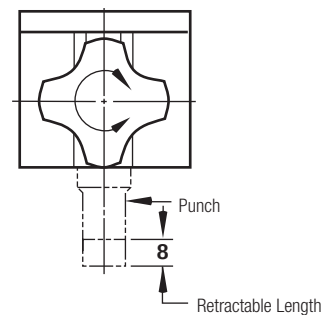


Type  
**ARC**  
For Round  
Punches

Type  
**ARCS**  
For Shape  
Punches



Change Retainer includes all necessary screws and dowels.



| Catalog Number |       |    | L   | A  | B  | C   | E  | F  | T  | U  | Screw Size |
|----------------|-------|----|-----|----|----|-----|----|----|----|----|------------|
| Round          | Shape | D  |     |    |    |     |    |    |    |    |            |
| ARC            | ARCS  | 10 |     | 46 |    |     |    |    |    |    | M8         |
| ARC            | ARCS  | 13 | 99  | 49 | 30 | 73  | 18 | 25 | 45 | 41 | M10        |
| ARC            | ARCS  | 16 |     |    |    |     |    |    |    |    | M10        |
| ARC            | ARCS  | 20 | 115 | 58 | 38 | 90  | 23 | 29 | 45 | 45 | M10        |
| ARC            | ARCS  | 25 |     |    |    |     |    |    |    |    | M10        |
| ARC            | ARCS  | 32 | 150 | 80 | 56 | 125 | 33 | 38 | 55 | 60 | M12        |
| ARC            | ARCS  | 40 |     |    |    |     |    |    |    |    | M12        |

## How To Order:

Quantity  
12

Catalog No.  
ARC20

# Multi-Location Retainers

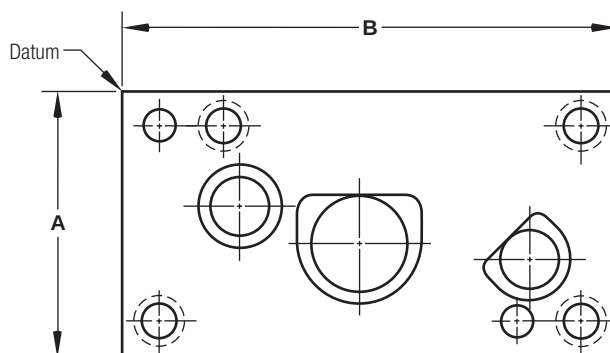
## Multiple Head Type Punch Retainers

Dayton's innovative Multi-Location retainers provide a simple, low-cost solution to building new dies. These retainers reduce the need for special detailing, saving both design and build time.

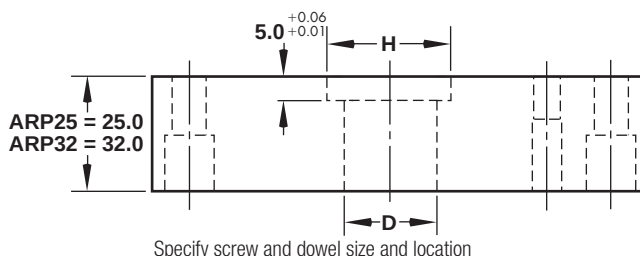
Multi-Location retainers are easy to order. Simply specify type, thickness, width and length. (For more information, see How to Order example on the next page.) Order forms are available on request.

### Type ARP

Available In Two Thicknesses  
For Headed Punches



Note:  
Looking at retainer from punch head side.



Specify screw and dowel size and location

### Punch Hole Sizes

| D    | H    |
|------|------|
| 4.0  | 8.0  |
| 5.0  | 9.0  |
| 6.0  | 10.0 |
| 8.0  | 12.0 |
| 10.0 | 14.0 |
| 13.0 | 17.0 |
| 16.0 | 20.0 |
| 20.0 | 24.0 |
| 25.0 | 29.0 |
| 32.0 | 36.0 |

### Hole Locations From Datum

|                 |       |
|-----------------|-------|
| Dowel Holes     | ±0.01 |
| Screw Holes     | ±0.13 |
| Component Holes | ±0.01 |

Standard hardness on ARP retainers is Rc 26-32. They are available hardened to Rc 47-52 by specifying X11 at the end of the catalog number.

Ex: ARP32 70200 X11

| Catalog No. |     | B    |      |      |      |        |        |        |        |        |        |        |        |
|-------------|-----|------|------|------|------|--------|--------|--------|--------|--------|--------|--------|--------|
| Type        | A   | 60   | 70   | 80   | 90   | 100    | 125    | 150    | 175    | 200    | 225    | 250    | 300    |
| ARP         | 50  | 5060 | 5070 | 5080 | 5090 | 50100  | 50125  | 50150  | 50175  | 50200  | 50225  | 50250  | 50300  |
|             | 60  | 6060 | 6070 | 6080 | 6090 | 60100  | 60125  | 60150  | 60175  | 60200  | 60225  | 60250  | 60300  |
|             | 70  |      | 7070 | 7080 | 7090 | 70100  | 70125  | 70150  | 70175  | 70200  | 70225  | 70250  | 70300  |
|             | 80  |      |      | 8080 | 8090 | 80100  | 80125  | 80150  | 80175  | 80200  | 80225  | 80250  | 80300  |
|             | 100 |      |      |      |      | 100100 | 100125 | 100150 | 100175 | 100200 | 100225 | 100250 | 100300 |
|             | 125 |      |      |      |      |        | 125125 | 125150 | 125175 | 125200 | 125225 | 125250 | 125300 |
|             | 150 |      |      |      |      |        |        | 150150 | 150175 | 150200 | 150225 | 150250 | 150300 |
|             | 200 |      |      |      |      |        |        |        | 200175 | 200200 | 200225 | 200250 | 200300 |

# Locking Devices

## Single Flats for Locating Punch Head

Standard key flat locking device is located at 0°. Specify **X2** as shown on the order form example shown below.

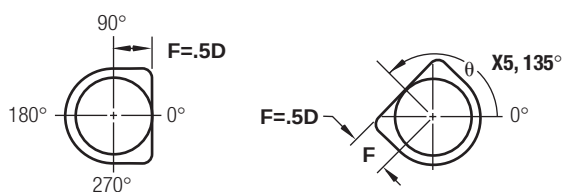
Alternate locations of 90°, 180° or 270° may be specified at no additional cost. Specify **X2** and the angle required.

Example: **X2 90°**

## Custom Location

Custom key flat locking device can be located at any angle. Specify **X5** and the angle required counterclockwise from 0°.

Example: **X5 135°**



Standard Location

Custom Location

## Flat Tolerances

| FLAT   |        |
|--------|--------|
| F      | RADIAL |
| +0.025 | 0.03/  |
| -0     | 25.0   |

# Alterations

## Standard Jackscrew Hole

Jackscrews make it easier to pull retainer off the dowels.

## Special Size

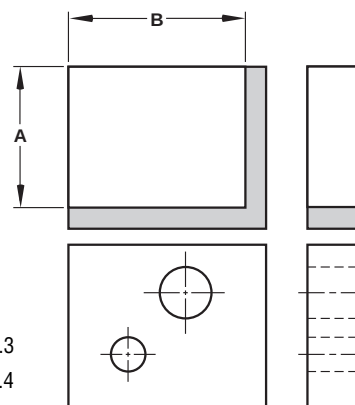
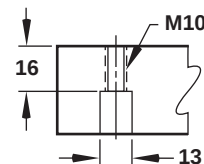
For a custom size, we can remove any amount of material from the side(s) of the retainer. Edges are sawcut ( $\pm 0.8$ ).

## Clearance Holes

Clearance holes or tapped holes can either be detailed or specified on the order as in the How to Order example shown below.

Holes are drilled through the retainer unless otherwise specified.

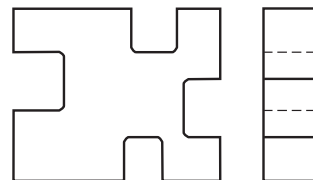
|          |            |
|----------|------------|
| Location | $\pm 0.3$  |
| Diameter | +0.4<br>-0 |



## The following alterations require detail drawings

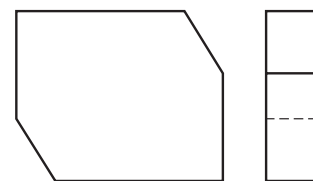
## Notches

Saw cut notches ( $\pm 0.8$ ) can be cut into any retainer side to clear other tooling.



## Angles

Saw cut angles ( $\pm 0.8$ ) can be specified to clear other tooling.



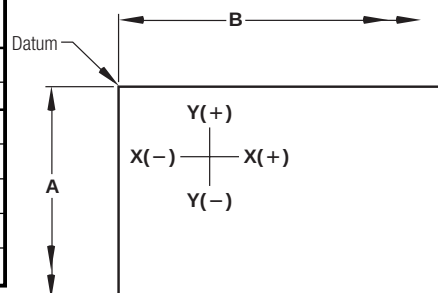
## How To Order:

Furnish the necessary information as indicated below. Order forms for Multi-Location Retainers are available upon request.

| Retainer                 |           | Catalog No. |          | Special Size |                |      |
|--------------------------|-----------|-------------|----------|--------------|----------------|------|
| ARP 32                   |           | 70200       |          | A B          |                |      |
| Multi-Location Retainers |           |             |          |              |                |      |
| Hole No.                 | Component |             | Location |              | Locking Device |      |
|                          | Type      | Size        | X Axis   | Y Axis       | Location       | Type |
| 1                        | DOWEL     | 10.0 S.F.   | 13.0     | -13.0        | —              | —    |
| 2                        | S.H.C.S.  | M10         | 35.0     | -13.0        | —              | —    |
| 3                        | AJR       | 16          | 53.5     | -35.5        | 90°            | X2   |
| 4                        | CLEAR     | Ø33         | 108.0    | -27.0        | —              | —    |
| 5                        | JACKSCR.  | STD.        | 25.0     | -25.0        | —              | —    |

S.F. = Slip Fit

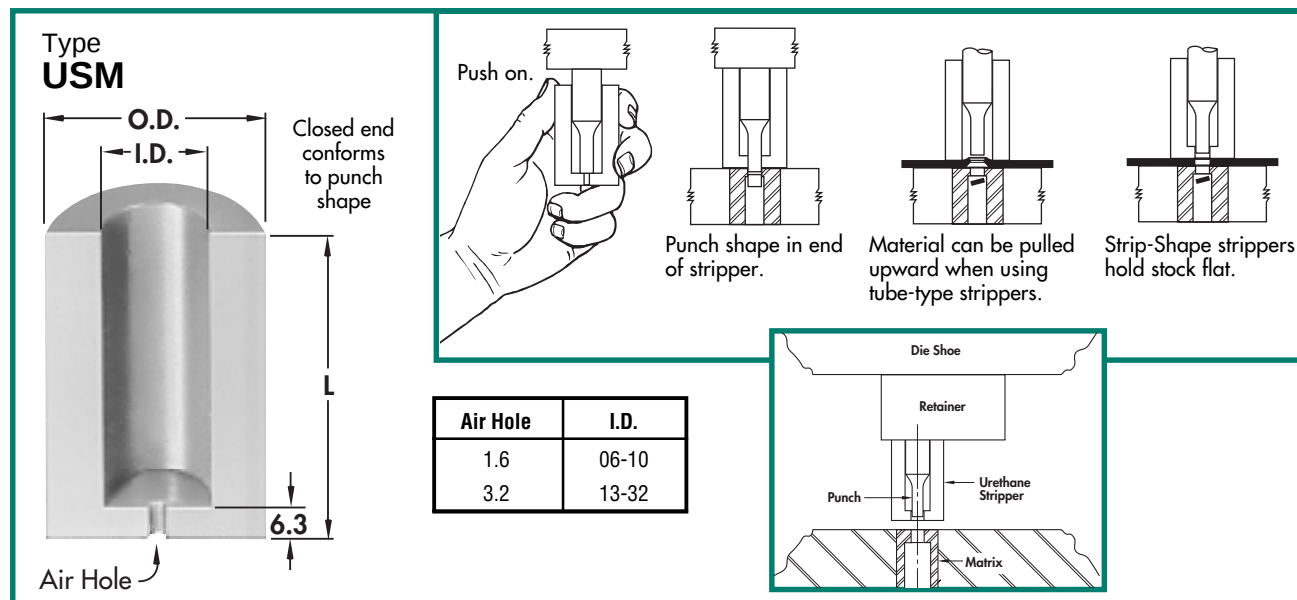
You must specify all dimension from Datum.



# Urethane Strippers

Strip-Shape Urethane Strippers assure positive stripping and they guard against punch failure by dampening punch vibration by gripping the punch point. The closed end design holds thin stock flat during the stripping cycle, reducing the potential of rejected parts.

Made from specially formulated urethane resins, these rugged strippers are guaranteed to meet your need for clean, fast precise stripping action—with all types of punches. Because of Dayton's unique curing agent, Strip-Shape urethane provides greater load bearing capacity than ordinary urethanes. Lot-to-lot pressure ratings are also much more consistent.



| I.D. | O.D. | L  | Catalog Number   | Pressure at Deflection of |      |      |
|------|------|----|------------------|---------------------------|------|------|
|      |      |    |                  | 3.0                       | 6.5  | 9.5  |
| 06   | 19   | 45 | <b>USM-06-45</b> | 1324                      | 2256 | —    |
|      |      | 53 | <b>USM-06-53</b> | 1079                      | 1863 | 2354 |
|      |      | 71 | <b>USM-06-71</b> | 686                       | 1079 | 1765 |
| 08   | 21   | 45 | <b>USM-08-45</b> | 1471                      | 2207 | —    |
|      |      | 53 | <b>USM-08-53</b> | 1324                      | 1961 | 2942 |
|      |      | 71 | <b>USM-08-71</b> | 981                       | 1618 | 2648 |
| 10   | 23   | 45 | <b>USM-10-45</b> | 1716                      | 2795 | —    |
|      |      | 53 | <b>USM-10-53</b> | 1422                      | 2452 | 3187 |
|      |      | 56 | <b>USM-10-56</b> | 1422                      | 2452 | 3187 |
|      |      | 71 | <b>USM-10-71</b> | 1128                      | 2010 | 2697 |
| 13   | 26   | 45 | <b>USM-13-45</b> | 2109                      | 3334 | —    |
|      |      | 53 | <b>USM-13-53</b> | 1471                      | 2354 | 3432 |
|      |      | 56 | <b>USM-13-56</b> | 1471                      | 2354 | 2942 |
|      |      | 71 | <b>USM-13-71</b> | 1275                      | 1961 | 2452 |

| I.D. | O.D. | L  | Catalog Number   | Pressure at Deflection of |       |       |
|------|------|----|------------------|---------------------------|-------|-------|
|      |      |    |                  | 3.0                       | 6.5   | 9.5   |
| 16   | 30   | 45 | <b>USM-16-45</b> | 2354                      | 3825  | —     |
|      |      | 53 | <b>USM-16-53</b> | 2158                      | 3531  | 4511  |
|      |      | 56 | <b>USM-16-56</b> | 2158                      | 3531  | 4511  |
|      |      | 71 | <b>USM-16-71</b> | 1814                      | 2942  | 3825  |
| 20   | 38   | 45 | <b>USM-20-45</b> | 2452                      | 3923  | —     |
|      |      | 53 | <b>USM-20-53</b> | 2158                      | 3629  | 5590  |
|      |      | 71 | <b>USM-20-71</b> | 1618                      | 2942  | 4658  |
| 25   | 50   | 45 | <b>USM-25-45</b> | 9317                      | 14318 | —     |
|      |      | 53 | <b>USM-25-53</b> | 7355                      | 11572 | 15985 |
|      |      | 71 | <b>USM-25-71</b> | 4904                      | 8336  | 13485 |

Urethane Hardness: 95 ± 5 Shore A  
Max. Recommended Deflection: 15% of Overall-Length.  
(Pressure Ratings shown in Newtons)

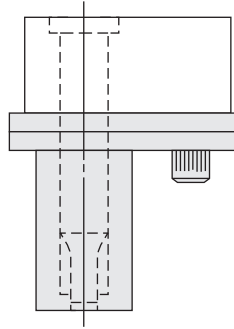
## How To Order:

Qty. Catalog No.  
10 **USM 08 71**

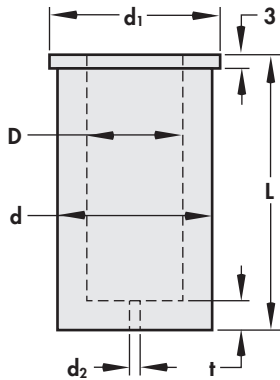
# Urethane Stripping Units

Fits retainers with tapped dowel holes only, such as DAYTON retainers: ART, ARTS, BRT, CRT.

When using DAYTON Ball Lock retainers these strippers fit Light Duty punch lengths 71, 80, 90, 100 and Heavy Duty punch lengths 80, 90, 100, 110. On DAYTON Head Type retainers they fit punch lengths 71, 80, 90, 100.



## Urethane Strippers UHM



| D  | d  | d <sub>1</sub> | t | d <sub>2</sub> |
|----|----|----------------|---|----------------|
| 10 | 18 | 21             | 6 | 1.6            |
| 13 | 23 | 26             | 6 |                |
| 16 | 28 | 31             | 6 |                |
| 20 | 33 | 36             | 7 |                |
| 25 | 40 | 43             | 7 | 3.0            |
| 32 | 50 | 55             | 7 |                |
| 38 | 60 | 65             | 8 |                |
| 40 | 60 | 65             | 8 |                |

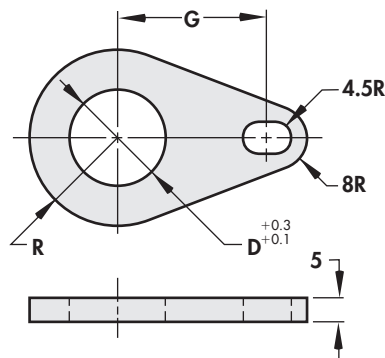
| Catalog Number | D  | L  | Pressure at Deflection of |       |       |
|----------------|----|----|---------------------------|-------|-------|
|                |    |    | 3                         | 6     | 9     |
| UHM10-43       | 10 | 43 | 1060                      | 1820  | —     |
| UHM10-52       |    | 52 | 900                       | 1650  | 2170  |
| UHM10-63       |    | 63 | 720                       | 1450  | 1860  |
| UHM10-72       |    | 72 | 570                       | 1280  | 1610  |
| UHM13-43       | 13 | 43 | 1700                      | 2850  | —     |
| UHM13-52       |    | 52 | 1460                      | 2610  | 3410  |
| UHM13-63       |    | 63 | 1170                      | 2320  | 2910  |
| UHM13-72       |    | 72 | 930                       | 2080  | 2500  |
| UHM16-43       | 16 | 43 | 2310                      | 3900  | —     |
| UHM16-52       |    | 52 | 1990                      | 3560  | 4640  |
| UHM16-63       |    | 63 | 1590                      | 3150  | 3980  |
| UHM16-72       |    | 72 | 1270                      | 2810  | 3440  |
| UHM20-43       | 20 | 43 | 2900                      | 4900  | —     |
| UHM20-52       |    | 52 | 2500                      | 4470  | 5820  |
| UHM20-63       |    | 63 | 2000                      | 3950  | 5000  |
| UHM20-72       |    | 72 | 1590                      | 3420  | 4330  |
| UHM25-43       | 25 | 43 | 4440                      | 7520  | —     |
| UHM25-52       |    | 52 | 3810                      | 6860  | 8780  |
| UHM25-63       |    | 63 | 3050                      | 6050  | 7680  |
| UHM25-72       |    | 72 | 2420                      | 5390  | 6780  |
| UHM32-43       | 32 | 43 | 6840                      | 11390 | —     |
| UHM32-52       |    | 52 | 5880                      | 10450 | 13300 |
| UHM32-63       |    | 63 | 4700                      | 9310  | 11640 |
| UHM32-72       |    | 72 | 3740                      | 8370  | 10280 |
| UHM38-52       | 38 | 52 | 9480                      | 19330 | 29720 |
| UHM38-72       |    | 72 | 5950                      | 11630 | 18160 |
| UHM40-43       | 40 | 43 | 10100                     | 20190 | —     |
| UHM40-52       |    | 52 | 8650                      | 17300 | 25960 |
| UHM40-63       |    | 63 | 6890                      | 13780 | 20670 |

Urethane Hardness: 95 ± 5 Shore A

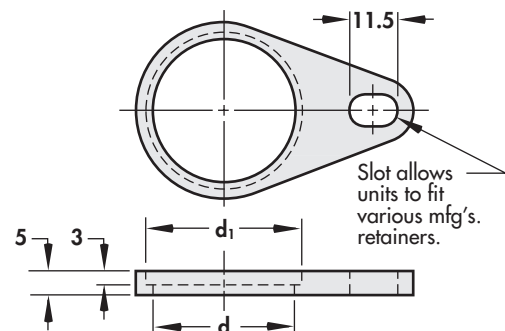
Max. Recommended Deflection: 15% of Overall Length.

(Pressure Ratings shown in Newtons)

## Backing Plates UBP



## Retaining Plates URP



| Catalog No. |            |    |    |                |      |      | UBP, URB Set<br>EDP No. |
|-------------|------------|----|----|----------------|------|------|-------------------------|
| Back Plate  | Ret. Plate | D  | d  | d <sub>1</sub> | R    | G    |                         |
| UBP10       | URP10      | 10 | 19 | 22             | 13.0 | 28.0 | 748579                  |
| UBP13       | URP13      | 13 | 24 | 27             | 15.5 | 31.0 | 748587                  |
| UBP16       | URP16      | 16 | 29 | 32             | 18.0 | 32.9 | 748595                  |
| UBP20       | URP20      | 20 | 34 | 37             | 20.5 | 34.8 | 748609                  |
| UBP25       | URP25      | 25 | 41 | 44             | 24.0 | 39.8 | 748617                  |
| UBP32       | URP32      | 32 | 51 | 56             | 31.0 | 41.3 | 748625                  |
| UBP38       | URP38      | 38 | 61 | 66             | 36.0 | 45.0 | 748633                  |
| UBP40       | URP40      | 40 | 61 | 66             | 36.0 | 45.0 | 748641                  |

## How to Order:

Qty.      Catalog No.  
12      UHM-16-63  
12      748595

Set consists of: Backing Plate, Retaining Plate and M8 x 20 Socket Head Cap Screw.

UBP, URP and UHM conform to **NAAMS™** standard for Urethane Strippers and Backing/Retaining Plate Set.

# Classified Shapes

## Orientation & Locking

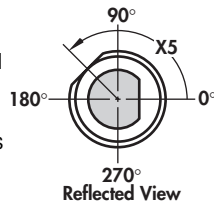
The Locking Device orientation is standard at 0°.

### X2 Standard Location:

Standard location of key flat is at 0°. Alternate locations of 90°, 180° or 270° can be specified at no extra cost.

### X5 Custom Location:

Custom Location of key flat can be specified as X5 and degrees from 0°.



## Views

Views are: reflected view of punch and plan view of matrix.

## Corner Dimensions

Dimensions should be to the theoretical sharp corners for 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.

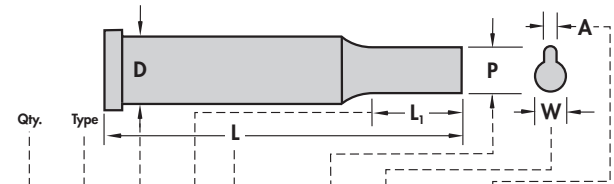
Fillets matched with sharp corners reduces the clearance per side ( $\Delta$ ). If the clearance is 0.04 $\Delta$  or less, DAYTON will break sharp corners when the punches and matrixes are ordered together. This reduces assembly time and the risk of the edge breaking during operation. All back-holes are counterbored.

### Shape centers

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

## How to Order:

Specify: Quantity  
Catalog Number  
Classified Shape  
Code  
Point or Hole Dimensions



10 APC 10 19 90 C13 P9.5, W8.8 A2.8 X43

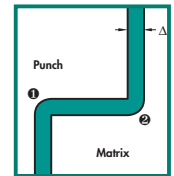
Example: Matrixes

10 ADC 20 30 C13 P9.5 W8.8 A2.8  $\Delta 0.1$  X43

## Clearance

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

DAYTON will assure the proper clearance of matrixes to the punch when ordered in this manner.



### Notes ① and ② — Fillets and Sharp Corners

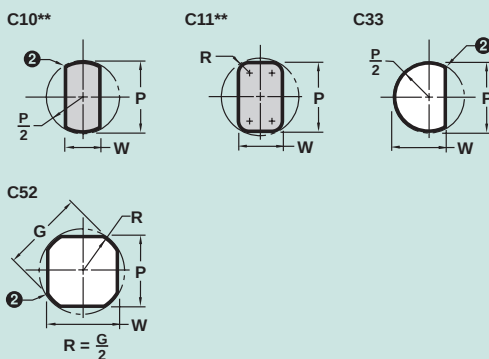
Normal Grinding methods produce:

- ① 0.2 max fillet on the punch...matching corner sharp on the matrix.
- ② 0.2 max fillet on the matrix...matching corner sharp on the punch.

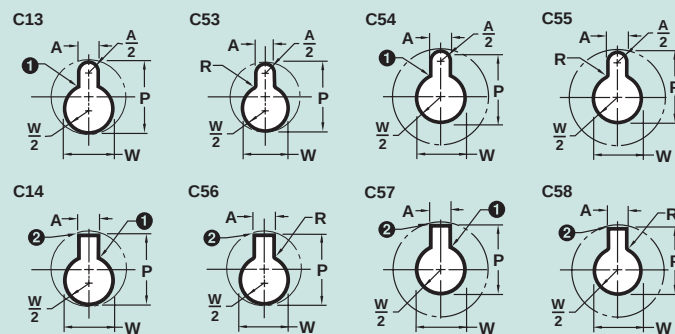
## Simplified Specifications...83 Common Shapes — No Detailing Required

90°

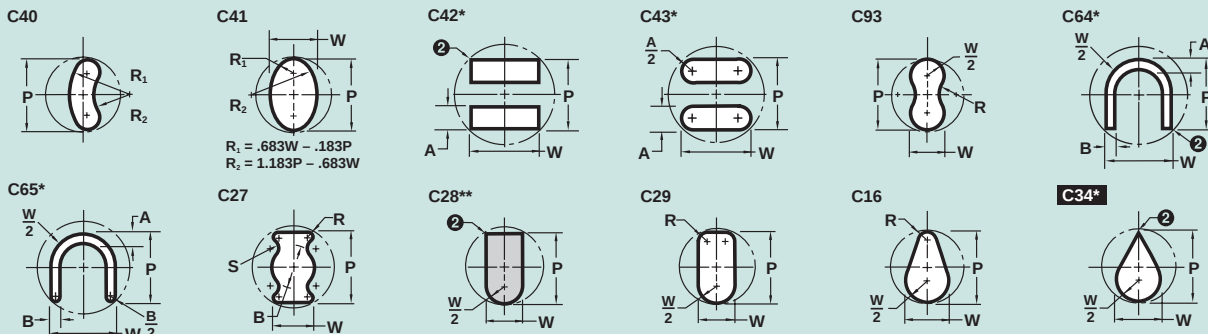
### Flatted Rounds



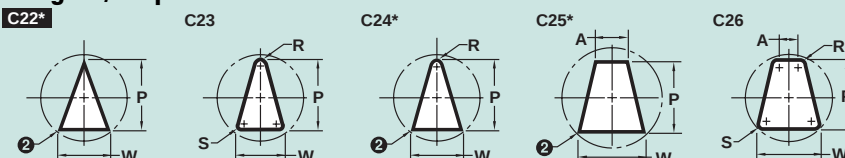
### Mono Lobes



### Miscellaneous



### Triangles/Trapezoids



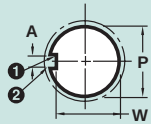
\*\* Now a standard shape.  
See product pages.

270°

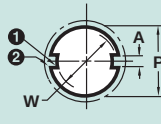
90°

## Keys

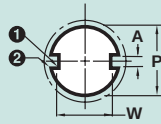
C30



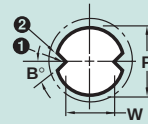
C31



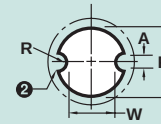
C32



C61

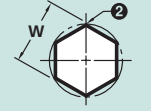


C62

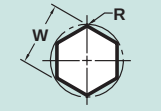


## Polygons

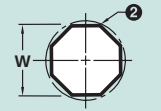
C12



C85

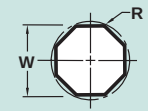


C35



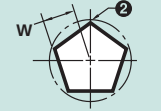
A = Even No. of Sides

C86



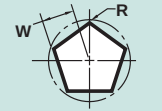
A = Even No. of Sides

C36



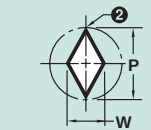
A = Odd No. of Sides

C87

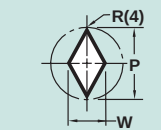


A = Odd No. of Sides

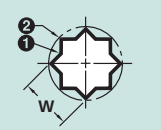
C88



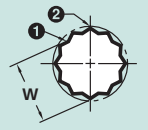
C89



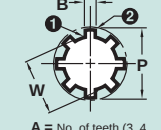
C37



C38

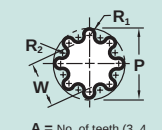


C39



A = No. of teeth (3, 4, 6 or 8 only)

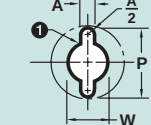
C90\*



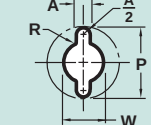
A = No. of teeth (3, 4, 6 or 8 only)

## Multi Lobes

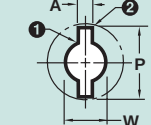
C19



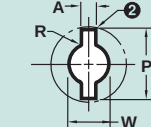
C59



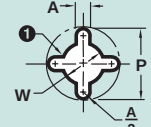
C20



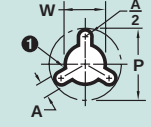
C60



C17

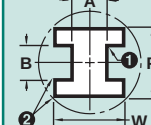


C18

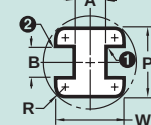


## Duo Tees

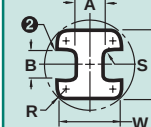
C21\*



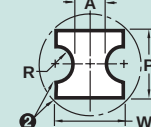
C91\*



C92

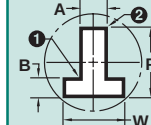


C15\*

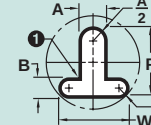


## T's

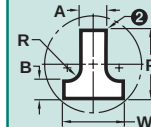
C44\*



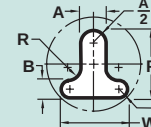
C66\*



C45\*



C67\*

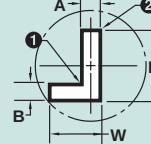


180°

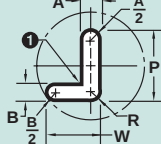
0°

## L's

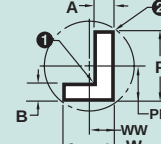
C46\*



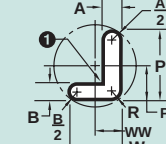
C77\*



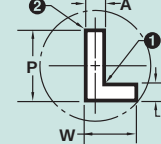
C78\*



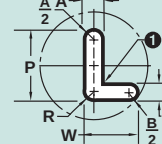
C79\*



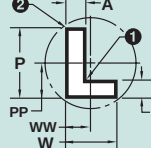
C48\*



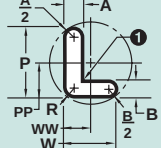
C80\*



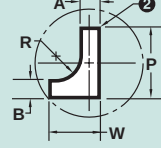
C81\*



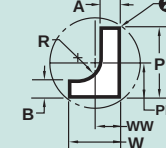
C82\*



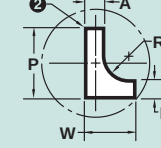
C47\*



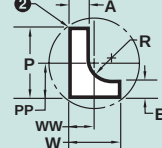
C83\*



C49\*

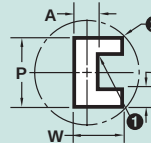


C84\*

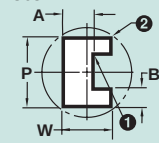


## U's

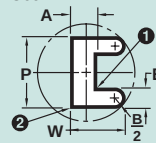
C50\*



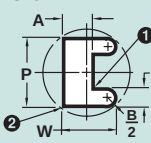
C68\*



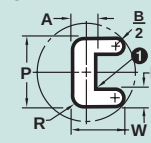
C69\*



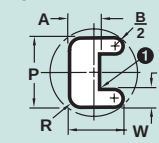
C70\*



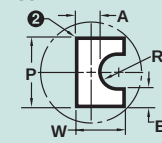
C71\*



C72\*



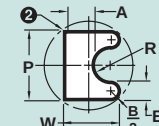
C51\*



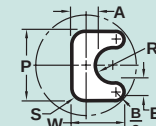
C73\*



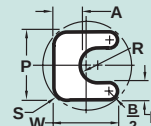
C74\*



C75\*



C76\*



\* Avoid excessive overhang by specifying shaped back-hole on AD\_ and AH\_ or use AN\_ Matrixes.

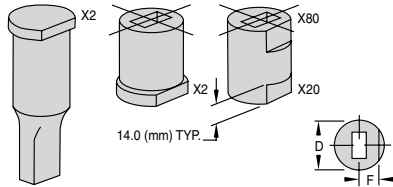
270°

# Locking Devices

## How to Order:

5 ADO 40 30 P16, W6.4, X20  
9 ADR 100 35 P75, W50, X83

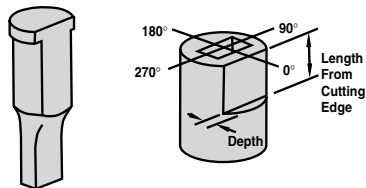
## Single and Double Flats



Headless Matrixes: X20, X80, X50, X90

| Body Ø ▶ | 08   | 10   | 13   | 16   | 20   |
|----------|------|------|------|------|------|
| F        | 3.5  | 4.0  | 5.5  | 7.0  | 8.5  |
| Body Ø ▶ | 22   | 25   | 32   | 38   | 40   |
| F        | 9.5  | 11.0 | 14.0 | 17.0 | 18.0 |
| Body Ø ▶ | 45   | 50   | 56   | 63   | 71   |
| F        | 20.5 | 23.0 | 26.0 | 29.5 | 33.5 |
| Body Ø ▶ | 76   | 85   | 90   | 100  |      |
| F        | 35.5 | 40.0 | 42.5 | 47.5 |      |

## Additional Flats



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

## Standard/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

Definition:

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

## Single Flats: X2, X20, X80

| Locking Devices | Punch | Matrix |
|-----------------|-------|--------|
| X2              | Top   | Bottom |
| X20             | N/A   | Bottom |
| X80             |       | Top    |

Order Example:

X2 - 90°

## Double Flats: X3

| Locking Devices | Punches |
|-----------------|---------|
| X3              | Top     |

Order Example:

X3 - 90°

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

## Single Flats: X5, X50, X90

| Locking Devices | Punch | Location |
|-----------------|-------|----------|
| X5              | Top   | Bottom   |
| X50             | N/A   | Bottom   |
| X90             |       | Top      |

Order Example:

X5 - 135°

## Double Flats: X6

| Locking Devices | Punches |
|-----------------|---------|
| X6              | Top     |

Order Example:

X6 - 135°

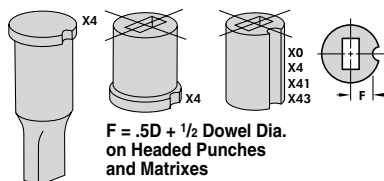
## Additional Flats

| 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 |             |

## 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



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

## Dowel Slots: X0, X4, X41 & X43

| Locking Devices | Dowel Ø |
|-----------------|---------|
| X0              | 3       |
| X4              | 3       |
| X41             | 4       |
| X43             | 6       |

Order Example:

X0 - 180°

## Dowel Slots: X1, X7, X71 & X73

| Locking Devices | Dowel Ø |
|-----------------|---------|
| X1              | 3       |
| X7              | 3       |
| X71             | 4       |
| X73             | 6       |

Order Example:

X71 - 135°

## Dowel Slot F Dimension for Headless Matrixes Only

| Body Ø ▶ | 08  | 10  | 13  | 16-25   | 32-100 |
|----------|-----|-----|-----|---------|--------|
| X0/X1    | .5D | .5D | .5D | .5D     | .5D    |
| X4/X7    | 4.7 | 5.5 | 6.7 | .5D     | .5D    |
| X41/X71  | 5.2 | 6.0 | 7.2 | .5D     | .5D    |
| X43/X73  | 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.

# Dayton Slug Control System

## Guaranteed Solution to Slug Pulling

Dayton Slug Control is a method of reducing the risk of slugs being pulled to the die surface during withdrawal of the punch. The slugs are trapped in the land of the matrixes until they fall freely through the relief. It has no effect on hole size and will not require any changes in your regrind practices. Dayton Slug Control is effective throughout the life of the matrixes.

### Customized To Your Application

Slug Control is based on your application, insuring that you are getting a customized remedy to solve your slug pulling problem. Each matrix is produced based on information you supply. It requires no redesigning of your tooling and no special drawings.

This alteration works in any matrix whether it has a counterbored hole or a tapered hole in the slug relief area. It works in shapes as well as round holes.



Slug Control is designed around a series of interference points on the slug that are produced during penetration into the matrix. An exact amount of "trap" is applied to the slug to prevent it from returning to the die surface. This innovative process uses a series of grooves inside the matrix. The slug expands into the grooves, effectively trapping it. This method of controlling slugs is so dependable, **it's guaranteed!**

Test this Slug Control system in your die and we will offer you this unconditional guarantee: **Use Dayton Slug Control in a stamping die now pulling slugs. If for any reason you are not completely satisfied, we will refund the full cost of the Slug Control alteration.** (We cannot guarantee the retention of slugs when clearance exceeds 10% per side.)

Using the Dayton Slug Control system reduces or eliminates the following:

#### Diemaker treatments such as:

- breaking all cut edges
- bellmouthing matrixes
- dome or shear angles on punch points
- dulling punches
- notching punches
- entering punches deeper
- Punch breakage due to double hits
- Costly vacuum sleeves
- Die maintenance time
- Press downtime, wasted material and lost man hours

The advantage of Dayton's Slug Control system over other methods is that *it is guaranteed.*

### 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 |                    |                        |   |
|----------------|----|----|-------|------------|--------------------|------------------------|---|
| ADX            | 13 | 32 | P 7.0 | XSC        | MM0.3              | CS                     | 5 |
| ANX            | 16 | 25 | P 6.3 | XSC        | MM1.0              | CS                     | 5 |
| Type           | D  | L  | P     | Alt. Code  | Material Thickness | Clearance 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!