Quality
Punches
Punches heavy duty
Pick-up Pilots
Pilots
Guide Bushings
Retainers

PRESS FIT

DAYTON®

Global leader in
providing fabrication
and stamping solutions

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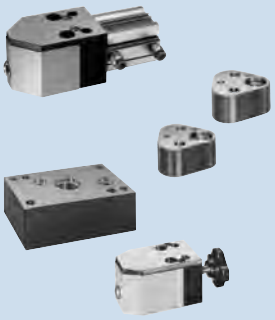
PUNCHES

PICK-UP PILOTS

PILOTS

GUIDE BUSHINGS

PUNCHES, PUNCHES HEAVY DUTY, PUNCH BLANKS, CLOSE SPACE PUNCHES

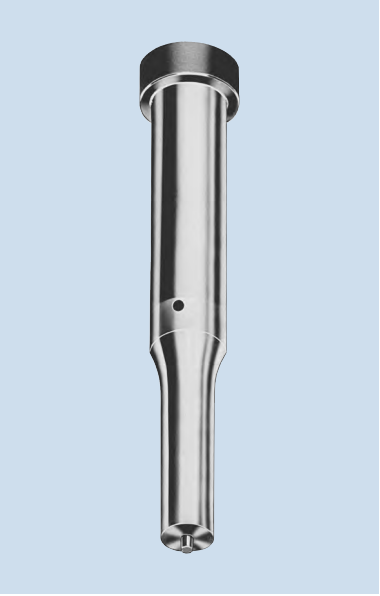


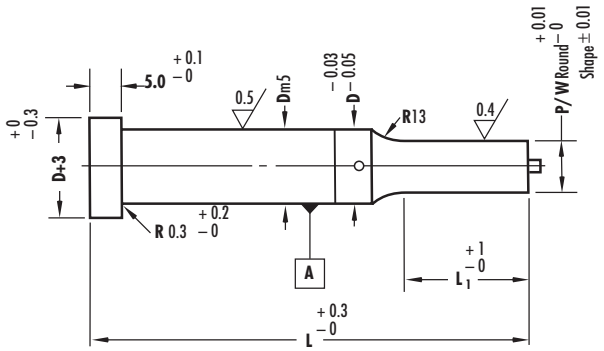
RETAINERS, RETAINERS HEAVY DUTY

MISCELLANEOUS

JEKTOLE® HEADED PUNCHES TYPE AJ_

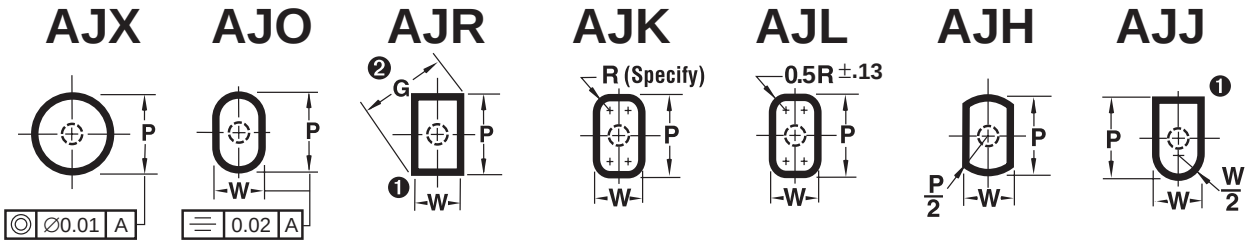
Material	HRC
A2 (HWS)	60-63
M2 (HSS)	60-63
PS (PS4)	63-65
Head	40-55





ISO 8020 Jektole®

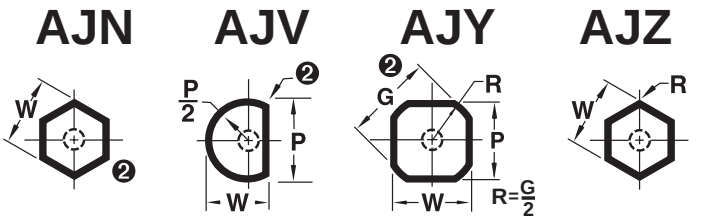
Steel: A2 (Standard), M2 and PS – please specify when ordering



❶ 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.

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

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



Shank	Point Length L_1		Type & D	Range	Type & D	Min.	Max.	L										Jektole®
D	Std.	Alt.	AJX	P	AJ_	W	P/G	40	50	56	60	63	70	71	80	90	100	Pin
05	13	19	AJX05	1.60- 4.95	AJ_05	1.60- 4.95		•	•	•	•	•	•	•	•			J2M
06	13	19	AJX06	2.40- 5.95	AJ_06	2.40- 5.95		•	•	•	•	•	•	•	•	•	•	J3M
08	19	25	AJX08	3.20- 7.95	AJ_08	3.20- 7.95			•	•	•	•	•	•	•	•	•	J4M
10	19	25	AJX10	4.50- 9.95	AJ_10	4.50- 9.95			•	•	•	•	•	•	•	•	•	J6M
13	19	25	AJX13	6.00-12.95	AJ_13	6.00-12.95			•	•	•	•	•	•	•	•	•	J6M
16	19	25	AJX16	8.00-15.95	AJ_16	8.00-15.95			•	•	•	•	•	•	•	•	•	J9M
20	19	25	AJX20	10.00-19.95	AJ_20	10.00-19.95			•	•	•	•	•	•	•	•	•	J9M
25	19	25	AJX25	12.00-24.95	AJ_25	12.00-24.95		•	•	•	•	•	•	•	•	•	•	J9M
32	25	30	AJX32	16.00-31.95	AJ_32	16.00-31.95						•	•	•	•	•	•	J12M
40	25	30	AJX40	20.00-39.95	AJ_40	8.00-39.95						•	•	•	•	•	•	J12M
45	25	30	AJX45	25.00-44.95	AJ_45	9.00-44.95						•	•	•	•	•	•	J12M
50	25	30	AJX50	30.00-49.95	AJ_50	10.00-49.95						•	•	•	•	•	•	J12M
56	25	30	AJX56	35.00-55.95	AJ_56	11.00-55.95						•	•	•	•	•	•	J12M
63	25	30	AJX63	40.00-62.95	AJ_62	12.00-62.95						•	•	•	•	•	•	J12M

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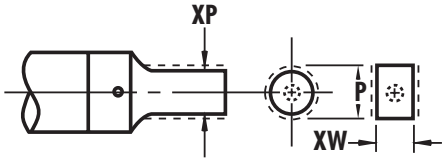
Standard Alterations for **AJ** Punches

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

	XBR						XBB	XBR						XBB
L_1 Max.	8	13	19	25	30	35	40	8	13	19	25	30	35	40
D	Minimum P (Rounds)							Minimum W (Shapes)						
04	0.8	1.1	1.3	1.9	2.5	–	–	1.3	1.6	1.6	2.4	2.8	–	–
05	1.3	1.3	1.5	2.4	–	–	–	1.6	1.6	1.6	2.4	–	–	–
06	2.0	2.0	2.0	2.4	2.5	–	–	2.0	2.0	2.0	2.4	3.0	–	–
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	–
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
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
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
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
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
32	–	10.0	10.0	10.0	10.0	10.0	10.0	–	7.2	6.0	7.2	7.2	7.2	7.2

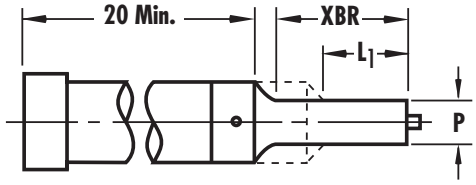
XP, XW

P & W dimensions smaller than standard



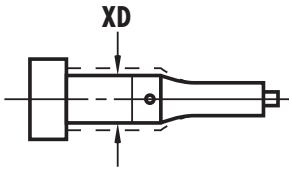
XBR

Pointh Length longer than standard
Specify **XBR** or **XBB** and length (see chart)



XD

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



Shank Dia.	4.0	5.0	6.0	8.0	10.0	13.0	16.0	20.0	25.0	32.0	40.0	45.0	50.0	63.0
Min. XD	2.5	4.4	4.5	6.8	8.8	11.5	14.5	18.5	23.5	30.5	38.5	43.5	48.5	61.5

XK

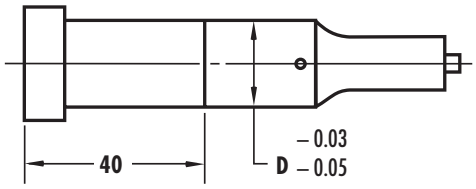
No Side Hole
for air ejection. No cost. Components not supplied.

XJ

Smaller Jektole® Components
See Page 6.1.1.

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 trough the holder.



XN

DayTride®
a unique wear resistant surface treatment. For M2 and PS only.

XNT

DAYTIN®
Titanium Nitride coating for extra wear.
For M2 and PS only.

XNM

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

XCN

TiCN® PVD coating provides ultra hardness (harder than carbide) and superior abrasive wear resistance.
For M2 and PS only.

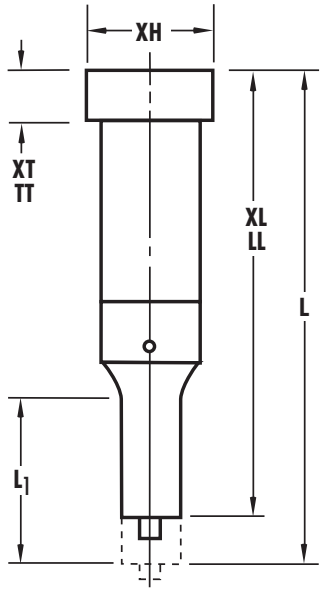
XL **Overall Length shortened (25 min.)**
Stock removal from point end which shortens point length. To maintain point length specify **„XBR“**.

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

XT **Head thinner than standard**
Stock removal from head end which shortens overall length.

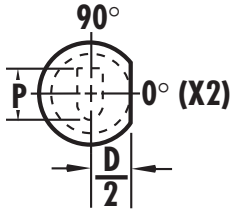
TT **Precision Head Thickness**
Same as XT except Head thickness tolerance is held to ± 0.01.

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

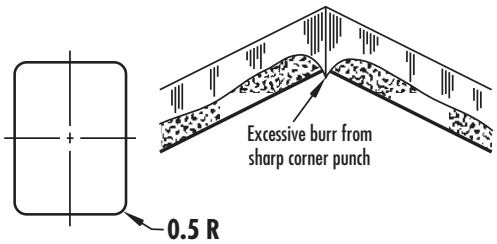


KEY FLATS

The standard location for a key flat is parallel to the P dimension.
For additional information see page 6.4.1.

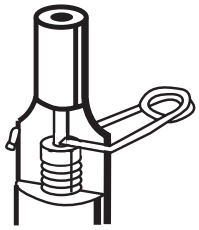


A new shape for Longer Life
DAYTON'S new standard shape with a constant corner radius of 0.5R puts the clearance where it's needed to prevent rapid wear and unacceptable burrs commonly generated with sharp corners. This reduces maintenance time and the risk of edge breaking during operation. The "L" Long Life punch will reduce maintenance costs while increasing production runs by reducing corner wear.



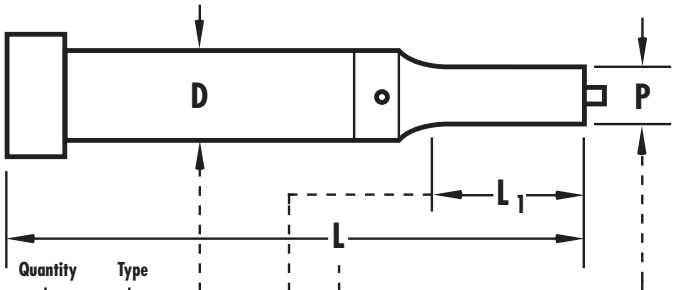
A DAYTON Difference JEKTOLE®
The "Triple Your Production" Punch Retractable Slug Ejector.

Pat. No. 2.917.960 and 3.255.654



How to order:

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



Quantity	Type			
20	AJX	16	1980 A2	P8.3
49	AJR	16	2580 A2	P8.5 W8.0 X2
7	AJL	16	1971 A2	P8.2 W7.2 X2

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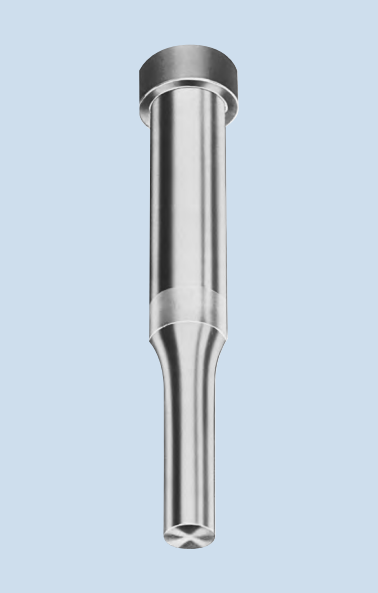
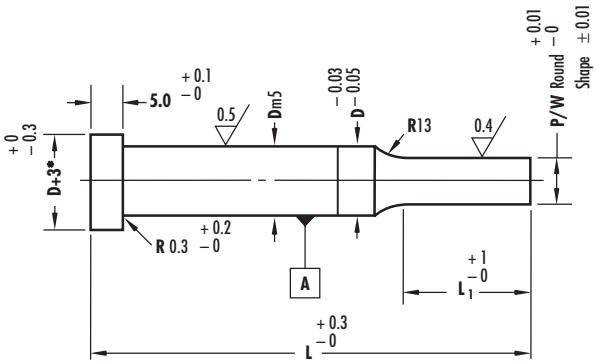
NOTES

REGULAR HEADED PUNCHES TYPE AP_

Material	HRC
A2 (HWS)	60-63
M2 (HSS)	60-63
PS (PS4)	63-65
Head	40-55



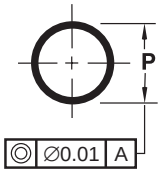


*D<5: D+2
D≥5: D+3

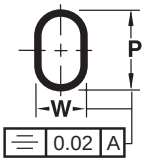
ISO 8020 Regular

Steel: A2, M2 and PS – please specify when ordering

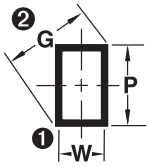
APX



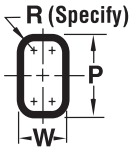
APO



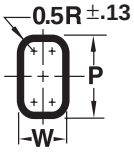
APR



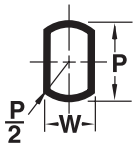
APK



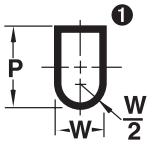
APL



APH



APJ

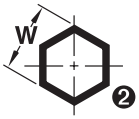


❶ Sharp corners are typical. To assure proper clearance, Dayton will provide standard broken corners if matrix is ordered with punch to eliminate interference with matrix fillet when total clearance is 0.08 or less.

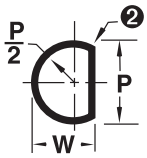
❷ Check your P&W dimensions to be sure the diagonal G does not exceed the max. shown.

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

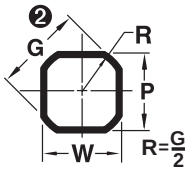
APN



APV



APY



APZ

Shank	Point Length L_1		Type & D	Range	Type & D	Min.	Max.	L									
D	Std.	Alt.	APX	P	AP_	W	P/G	40	50	56	60	63	70	71	80	90	100
04	8	13	APX04	1.60- 3.95	AP_04	1.60- 3.95		•	•	•	•	•	•	•	•		
05	13	19	APX05	1.60- 4.95	AP_05	1.60- 4.95		•	•	•	•	•	•	•	•		
06	13	19	APX06	1.60- 5.95	AP_06	1.60- 5.95		•	•	•	•	•	•	•	•	•	•
08	19	25	APX08	2.50- 7.95	AP_08	2.50- 7.95			•	•	•	•	•	•	•	•	•
10	19	25	APX10	3.20- 9.95	AP_10	3.20- 9.95			•	•	•	•	•	•	•	•	•
13	19	25	APX13	5.00-12.95	AP_13	4.50-12.95			•	•	•	•	•	•	•	•	•
16	19	25	APX16	8.00-15.95	AP_16	6.00-15.95			•	•	•	•	•	•	•	•	•
20	19	25	APX20	10.00-19.95	AP_20	8.00-19.95			•	•	•	•	•	•	•	•	•
25	19	25	APX25	12.00-24.95	AP_25	9.00-24.95			•	•	•	•	•	•	•	•	•
32	35	30	APX32	16.00-31.95	AP_32	10.00-31.95						•	•	•	•	•	•
40	25	30	APX40	20.00-39.95	AP_40	8.00-39.95						•	•	•	•	•	•
45	25	30	APX45	25.00-44.95	AP_45	9.00-44.95						•	•	•	•	•	•
50	25	30	APX50	30.00-49.95	AP_50	10.00-49.95						•	•	•	•	•	•
56	25	30	APX56	35.00-55.95	AP_56	11.00-55.95						•	•	•	•	•	•
63	25	30	APX63	40.00-62.95	AP_63	12.00-62.95						•	•	•	•	•	•

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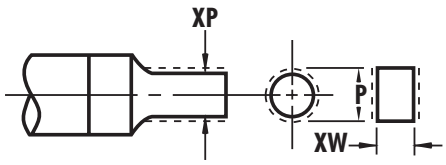
Standard Alterations for **AP** Punches

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

	XBR						XBB	XBR						XBB
L_1 Max.	8	13	19	25	30	35	40	8	13	19	25	30	35	40
D	Minimum P (Rounds)							Minimum W (Shapes)						
04	0.8	1.1	1.3	1.9	2.5	–	–	1.3	1.6	1.6	2.4	2.8	–	–
05	1.3	1.3	1.5	2.4	–	–	–	1.6	1.6	1.6	2.4	–	–	–
06	2.0	2.0	2.0	2.4	2.5	–	–	2.0	2.0	2.0	2.4	3.0	–	–
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	–
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
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
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
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
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
32	–	10.0	10.0	10.0	10.0	10.0	10.0	–	7.2	6.0	7.2	7.2	7.2	7.2

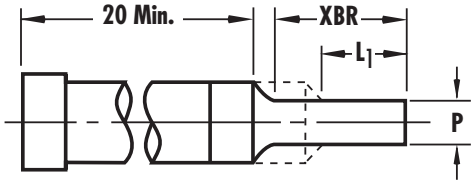
XP, XW

P & W dimensions smaller than standard



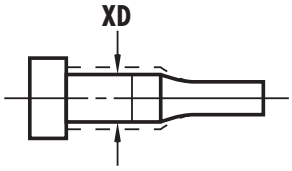
XBR

Pointh Length longer than standard
Specify **XBR** or **XBB** and length (see chart)



XD

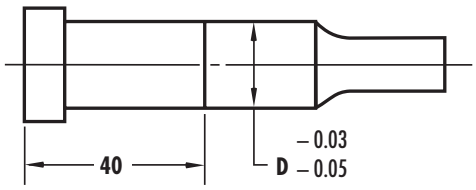
Reduced Shank Diameter
Head Diameter does not change with body diameter.



Shank Dia.	4.0	5.0	6.0	8.0	10.0	13.0	16.0	20.0	25.0	32.0	40.0	45.0	50.0	63.0
Min. XD	2.5	4.4	4.5	6.8	8.8	11.5	14.5	18.5	23.5	30.5	38.5	43.5	48.5	61.5

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 trough the holder.



XN

DayTride®
a unique wear resistant surface treatment. For M2 and PS only.

XNT

DAYTIN®
Titanium Nitride coating for extra wear.
For M2 and PS only.

XNM

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

XCN

TiCN® PVD coating provides ultra hardness (harder than carbide) and superior abrasive wear resistance. For M2 and PS only.

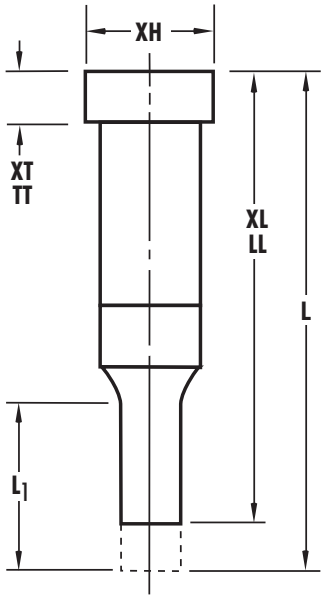
XL **Overall Length shortened (25 min.)**
Stock removal from point end which shortens point length. To maintain point length specify **„XBR“**.

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

XT **Head thinner than standard**
Stock removal from head end which shortens overall length.

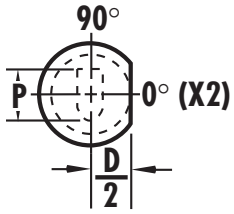
TT **Precision Head Thickness**
Same as XT except Head thickness tolerance is held to ± 0.01.

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

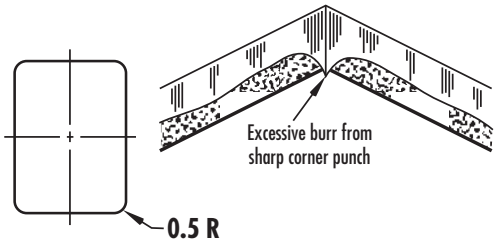


KEY FLATS

The standard location for a key flat is parallel to the P dimension.
For additional information see page 6.4.1.

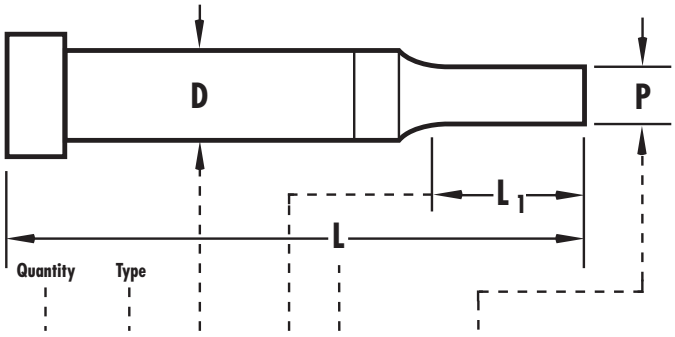


A new shape for Longer Life
DAYTON'S new standard shape with a constant corner radius of 0.5R puts the clearance where it's needed to prevent rapid wear and unacceptable burrs commonly generated with sharp corners. This reduces maintenance time and the risk of edge breaking during operation. The "L" Long Life punch will reduce maintenance costs while increasing production runs by reducing corner wear.



How to order:

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



Quantity	Type	D	L	P
20	APX	16	1980 A2	P8.3
49	APR	16	2580 A2	P8.5 W8.0 X2
7	APL	16	1971 A2	P8.2 W7.2 X2

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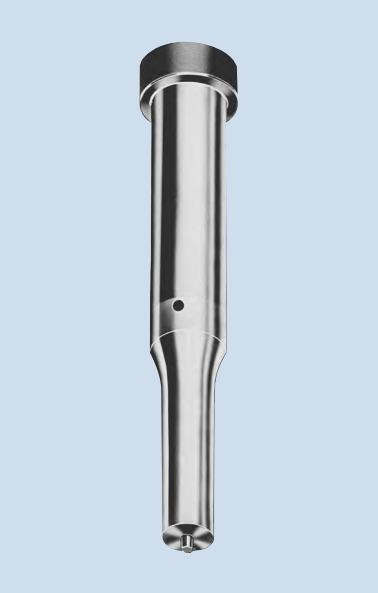
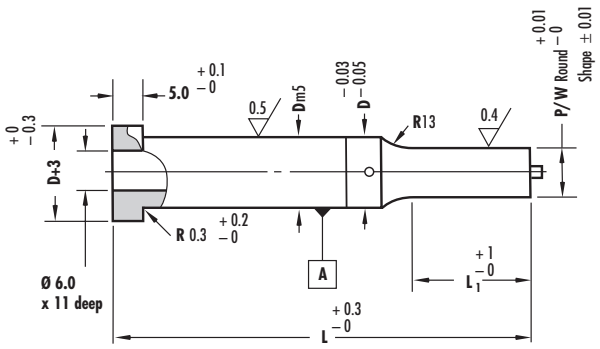
NOTES

JEKTOLE® CENTER DOWEL HEADED PUNCHES TYPE SJ_

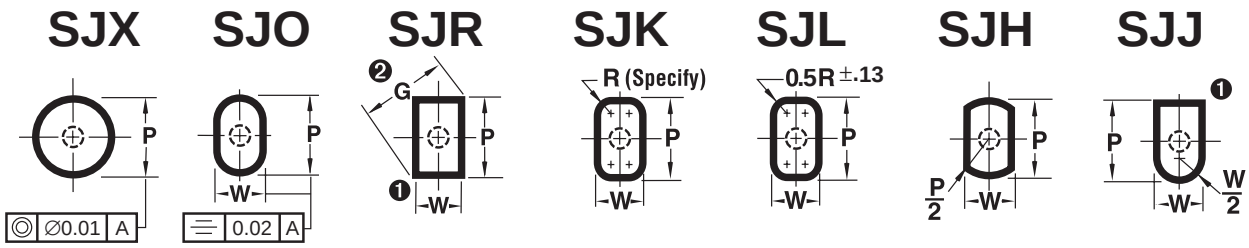
Material	HRC
A2 (HWS)	60-63
M2 (HSS)	60-63
Head	40-55





ISO 8020 Jektole®

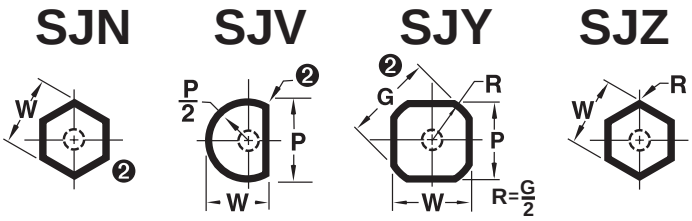
Steel: A2 and M2 – please specify when ordering



❶ 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.

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

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



Shank	Point Length L_1		Type & D	Range	Type & D	Min.	Max.	L				Jektole®
D	Std.	Alt.	SJX	P	SJ_	W	P/G	71	80	90	100	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		•	•	•	•	J12M

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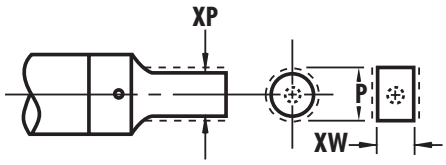
Standard Alterations for **SJ** Center Dowel Punches

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

	XBR						XBB	XBR						XBB	
L_1 Max.	8	13	19	25	30	35	40	8	13	19	25	30	35	40	Jektole®
D	Minimum P (Rounds)							Minimum W (Shapes)							Pin
10	4.0	4.0	4.0	4.0	4.0	4.0	6.0	1.3	1.6	1.6	2.4	2.8	–	–	J6M
13	–	4.0	4.0	4.0	4.0	4.0	6.0	1.6	1.6	1.6	2.4	–	–	–	J6M
16	–	6.0	6.0	6.0	6.0	6.0	6.0	2.0	2.0	2.0	2.4	3.0	–	–	J9M
20	–	6.0	6.0	6.0	7.6	7.6	7.6	3.0	3.0	3.0	3.0	4.0	4.0	–	J9M
25	–	8.0	8.0	8.0	10.0	10.0	10.0	4.0	4.0	4.0	4.0	4.0	4.5	6.0	J9M
32	–	10.0	10.0	10.0	10.0	10.0	10.0	–	4.0	4.0	4.0	4.0	4.5	6.0	J9M

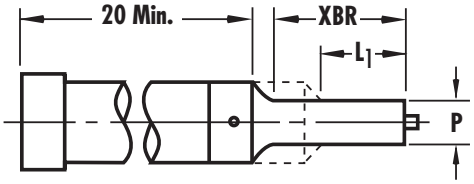
XP, XW

P & W dimensions smaller than standard



XBR

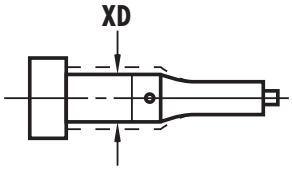
Pointh Length longer than standard
Specify **XBR** or **XBB** and length (see chart)



XD

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

Shank Dia.	10.0	13.0	16.0	20.0	25.0	32.0	40.0	45.0	50.0	63.0
Min. XD	–	11.5	14.5	18.5	23.5	30.5	38.5	43.5	48.5	61.5



XK

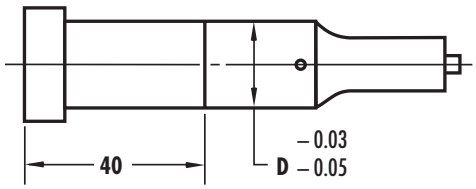
No Side Hole
for air ejection. No cost. Components not supplied.

XJ

Smaller Jektole® Components
See page 6.1.1.

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 trough the holder.



XN

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DAYTIN®
Titanium Nitride coating for extra wear.
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Available on M2.

XCN

TiCN® PVD coating provides ultra hardness (harder than carbide) and superior abrasive wear resistance.
For M2 only.

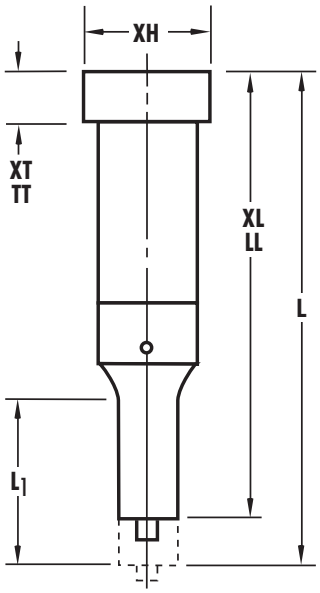
XL **Overall Length shortened (25 min.)**
Stock removal from point end which shortens point length. To maintain point length specify **„XBR“**.

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

XT **Head thinner than standard**
Stock removal from head end which shortens overall length.

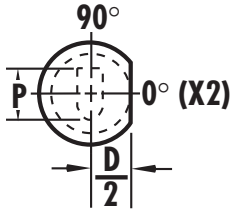
TT **Precision Head Thickness**
Same as XT except Head thickness tolerance is held to ± 0.01.

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

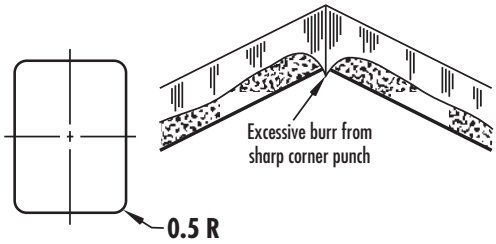


KEY FLATS

The standard location for a key flat is parallel to the P dimension.
For additional information see page 6.4.1.

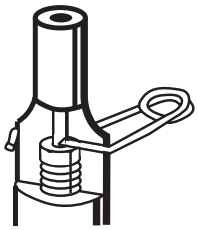


A new shape for Longer Life
DAYTON'S new standard shape with a constant corner radius of 0.5R puts the clearance where it's needed to prevent rapid wear and unacceptable burrs commonly generated with sharp corners. This reduces maintenance time and the risk of edge breaking during operation. The "L" Long Life punch will reduce maintenance costs while increasing production runs by reducing corner wear.



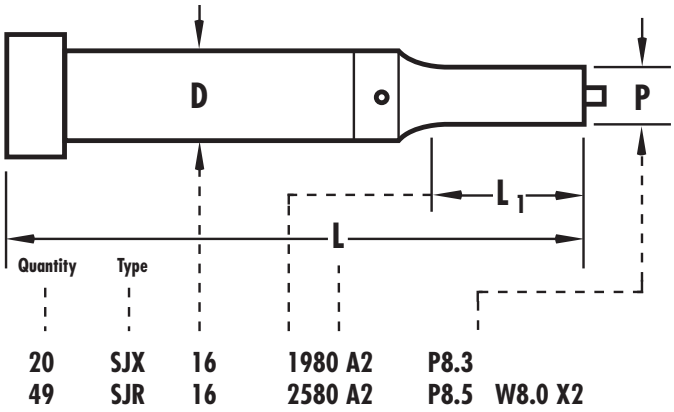
A DAYTON Difference JEKTOLE®
The "Triple Your Production" Punch
Retractable Slug Ejector.

Pat. No. 2.917.960 and 3.255.654



How to order:

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



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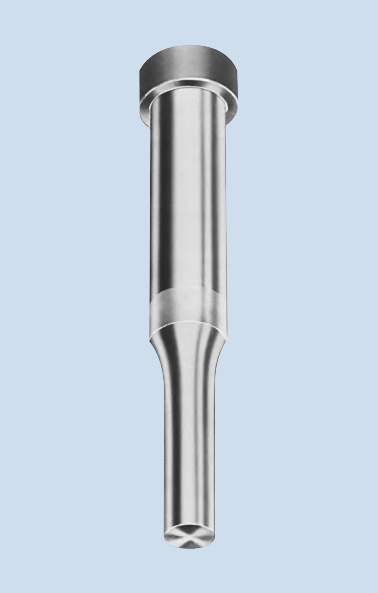
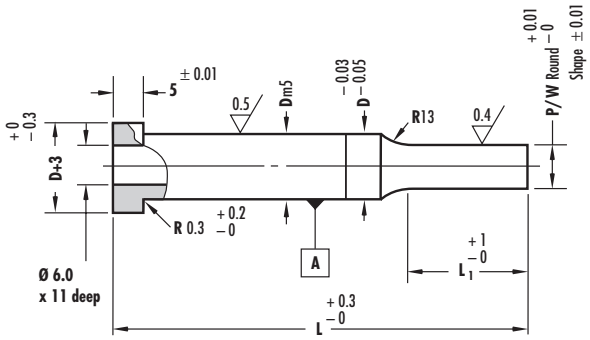
NOTES

REGULAR CENTER DOWEL HEADED PUNCHES TYPE SP_

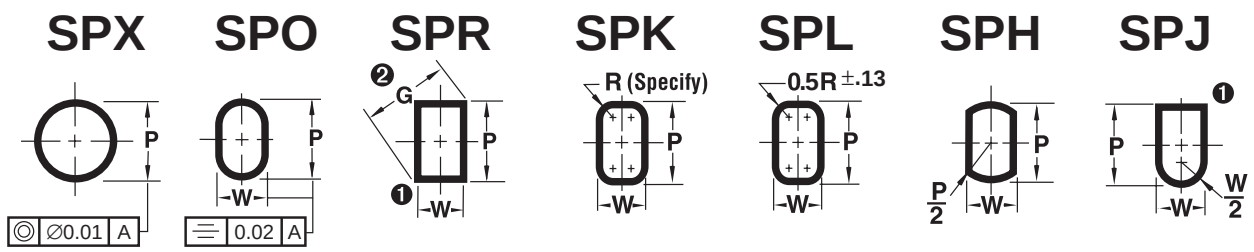
Material	HRC
A2 (HWS)	60-63
M2 (HSS)	60-63
Head	40-55





ISO 8020 Regular

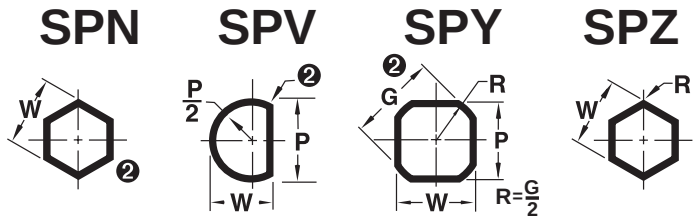
Steel: **A2 and M2 – please specify when ordering**



❶ 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.

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

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



Shank	Point Length L_1		Type & D	Range	Type & D	Min.	Max.	L			
D	Std.	Alt.	SPX	P	SP_	W	P/G	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 Ø 6 x 25 Included

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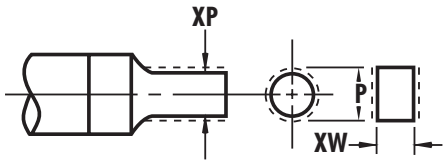
Standard Alterations for **SP** Center Dowel Punches

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

	XBR						XBB	XBR						XBB
L_1 Max.	8	13	19	25	30	35	40	8	13	19	25	30	35	40
D	Minimum P (Rounds)							Minimum W (Shapes)						
10	4.0	4.0	4.0	4.0	4.0	4.0	6.0	1.3	1.6	1.6	2.4	2.8	–	–
13	–	4.0	4.0	4.0	4.0	4.0	6.0	1.6	1.6	1.6	2.4	–	–	–
16	–	6.0	6.0	6.0	6.0	6.0	6.0	2.0	2.0	2.0	2.4	3.0	–	–
20	–	6.0	6.0	6.0	7.6	7.6	7.6	3.0	3.0	3.0	3.0	4.0	4.0	–
25	–	8.0	8.0	8.0	10.0	10.0	10.0	4.0	4.0	4.0	4.0	4.0	4.5	6.0
32	–	10.0	10.0	10.0	10.0	10.0	10.0	–	4.0	4.0	4.0	4.0	4.5	6.0

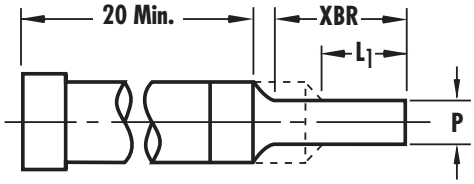
XP, XW

P & W dimensions smaller than standard



XBR

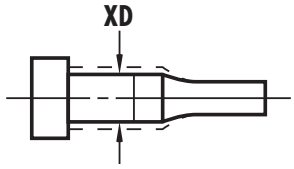
Pointh Length longer than standard
Specify **XBR** or **XBB** and length (see chart)



XD

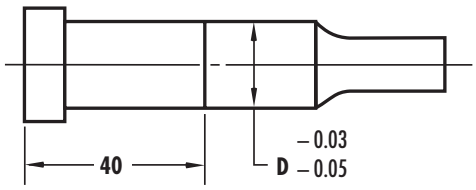
Reduced Shank Diameter
Head Diameter does not change with body diameter.

Shank Dia.	10.0	13.0	16.0	20.0	25.0	32.0	40.0	45.0	50.0	63.0
Min. XD	–	11.5	14.5	18.5	23.5	30.5	38.5	43.5	48.5	61.5



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 trough the holder.



XN

DayTride®
a unique wear resistant surface treatment. For M2 only.

XNT

DAYTIN®
Titanium Nitride coating for extra wear. For M2 only.

XNM

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

XCN

TiCN® PVD coating provides ultra hardness (harder than carbide) and superior abrasive wear resistance. For M2 only.

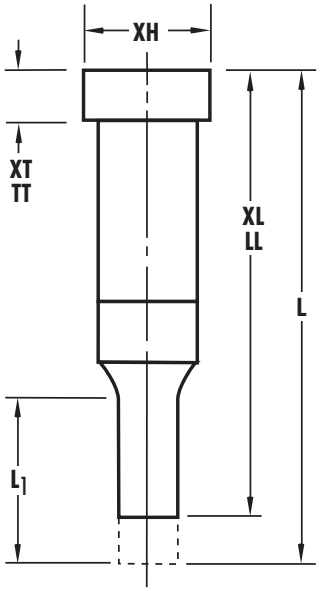
XL **Overall Length shortened (25 min.)**
Stock removal from point end which shortens point length. To maintain point length specify **„XBR“**.

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

XT **Head thinner than standard**
Stock removal from head end which shortens overall length.

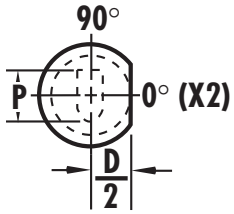
TT **Precision Head Thickness**
Same as XT except Head thickness tolerance is held to ± 0.01.

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

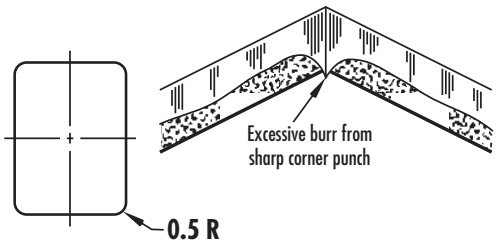


KEY FLATS

The standard location for a key flat is parallel to the P dimension.
For additional information see page 6.4.1.

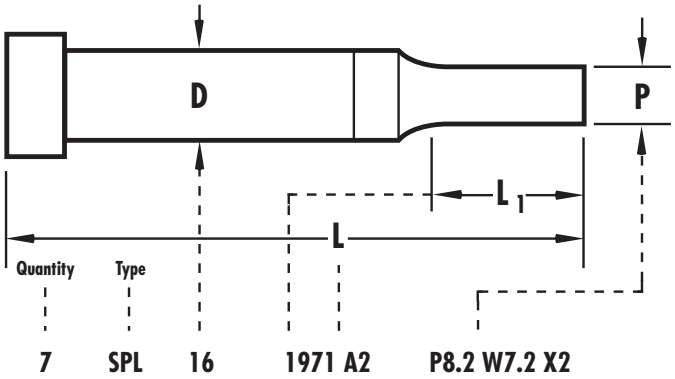


A new shape for Longer Life
DAYTON'S new standard shape with a constant corner radius of 0.5R puts the clearance where it's needed to prevent rapid wear and unacceptable burrs commonly generated with sharp corners. This reduces maintenance time and the risk of edge breaking during operation. The "L" Long Life punch will reduce maintenance costs while increasing production runs by reducing corner wear.



How to order:

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



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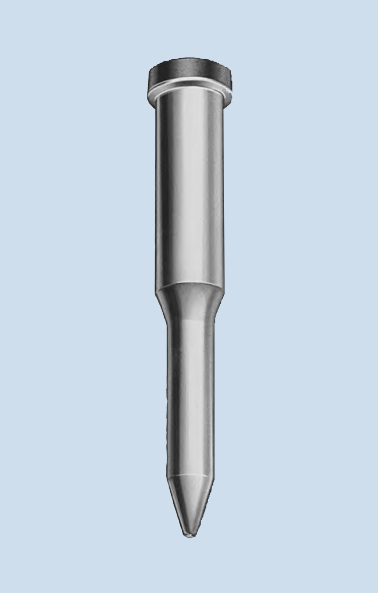
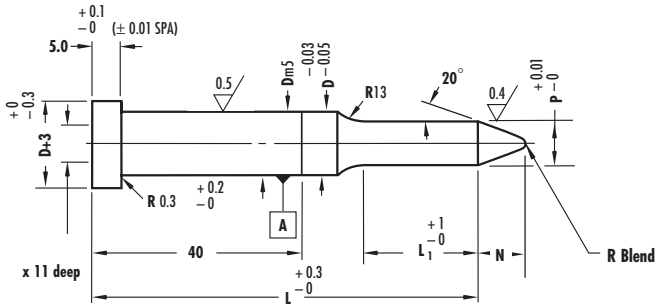
NOTES

REGULAR POSITIVE PICK-UP HEADED PILOTS TYPE APA

Material	HRC
M2 (HSS)	60-63
Head	40-55

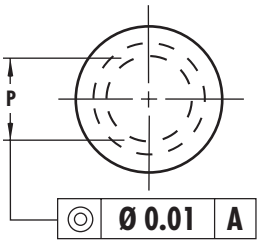


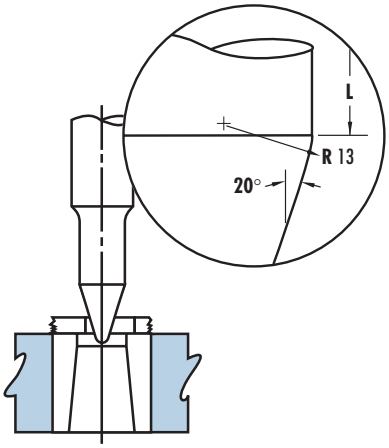


Withour center dowel, Regular

Steel: **M2 – please specify when ordering**

APA





Greater Positioning – move stock further than conventional pilots

Shank D	Point Length L_1 Std.	Point Length L_1 Alt.	Type & D APA	Range P	Nose Length N	L 65	L 72	L 73	L 82	L 92	L 102	L 112	L 127	L 142
10	21	27	APA 10	4.85 - 10.00	8	•	•	•	•	•	•	•		
13	21	27	APA 13	6.30 - 13.00	10	•	•	•	•	•	•	•	•	
16	21	27	APA 16	9.95 - 16.00	15		•	•	•	•	•	•	•	•
20	21	27	APA 20	13.60 - 20.00	20		•	•	•	•	•	•	•	•
25	21	27	APA 25	17.25 - 25.00	25		•	•	•	•	•	•	•	•
32	27	32	APA 32	20.85 - 32.00	30			•	•	•	•	•	•	•

When P = D Shank tolerance applies to full length

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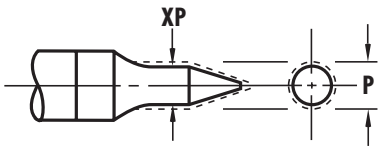
Standard Alterations for **APA** Positive Pick-Up Pilots

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

	XBR					XBB	X3B		
L_1 Max. ▶ APA	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
16	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	7.95
20	5.95	5.95	5.95	7.55	7.55	7.55	7.55	7.55	7.95
25	7.95	7.95	7.95	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

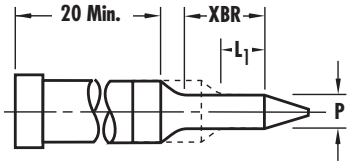
XP

P Smaller than Standard



XBR

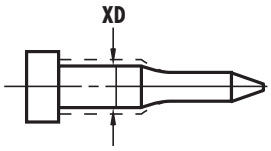
Pointh Length longer than standard



XD

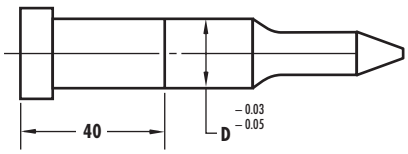
Reduced Shank Diameter
Head Diameter does not change with body diameter.

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



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 trough the holder.



XNT

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Titanium Nitride coating for extra wear. For M2 only.

XN

DayTride®
a unique wear resistant surface treatment.
For M2 only.

XNM

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

XCN

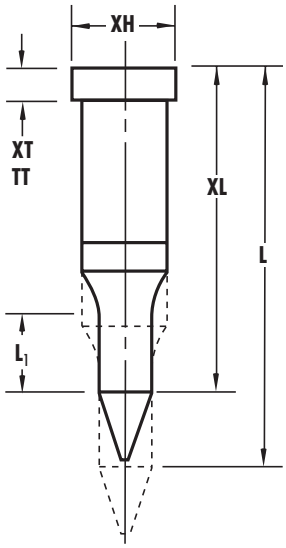
TiCN® PVD coating provides ultra hardness (harder than carbide) and superior abrasive wear resistance.
For M2 only.

XL **Overall Length shortened (25 min.)**
Stock removal from point end standard L_1 length maintained on APA only.

TT **Precision Head Thickness**
Same as XT except head thickness tolerance is held to ± 0.01.

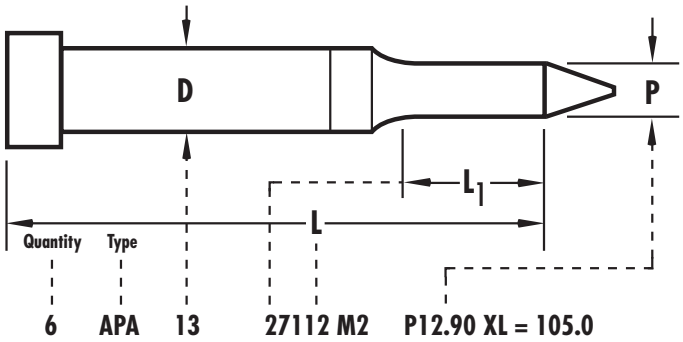
XT **Head thinner than standard**
Stock removal from head end which shortens overall length.

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



How to order:

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



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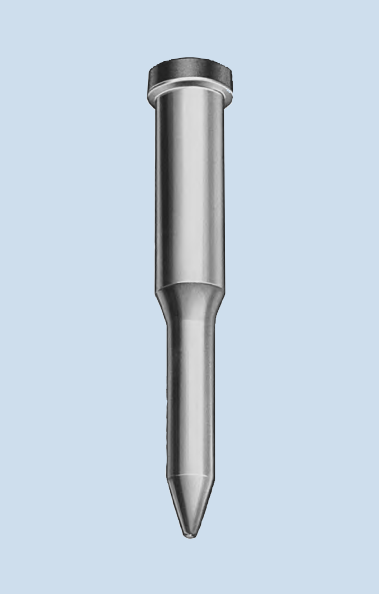
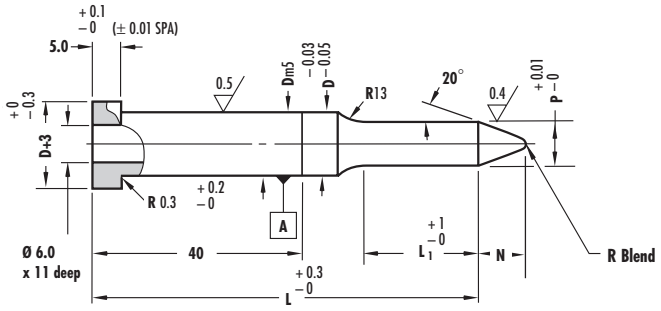
NOTES

CENTER DOWEL POSITIVE PICK-UP HEADED PILOTS TYPE SPA

Material	HRC
M2 (HSS)	60-63
Head	40-55

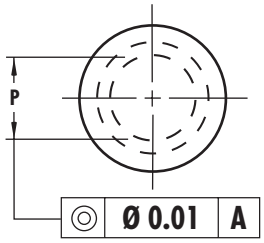


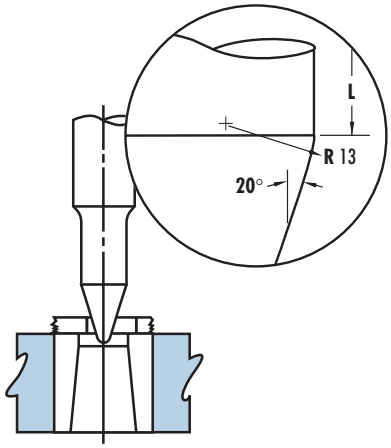


With center dowel

Steel: **M2 – please specify when ordering**

SPA





Greater Positioning – move stock further than conventional pilots

Shank	Point Length L_1		Type & D	Range	Nose Length	L								
D	Std.	Alt.	SPA	P	N	65	72	73	82	92	102	112	127	142
10	21	27	SPA 10	4.85 - 10.00	8	•	•	•	•	•	•	•		
13	21	27	SPA 13	6.30 - 13.00	10	•	•	•	•	•	•	•	•	
16	21	27	SPA 16	9.95 - 16.00	15		•	•	•	•	•	•	•	•
20	21	27	SPA 20	13.60 - 20.00	20		•	•	•	•	•	•	•	•
25	21	27	SPA 25	17.25 - 25.00	25		•	•	•	•	•	•	•	•
32	27	32	SPA 32	20.85 - 32.00	30			•	•	•	•	•	•	•

When P = D Shank tolerance applies to full length

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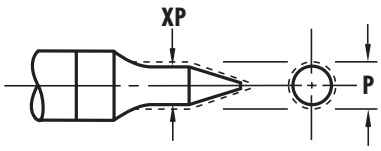
Standard Alterations for **SPA** Positive Pick-Up Pilots

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

	XBR					XBB	X3B		
L_1 Max. ▶ SPA	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
16	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	7.95
20	5.95	5.95	5.95	7.55	7.55	7.55	7.55	7.55	7.95
25	7.95	7.95	7.95	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

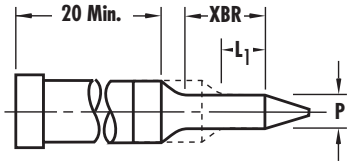
XP

P Smaller than Standard



XBR

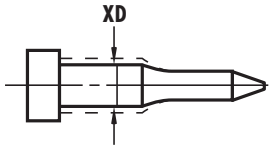
Pointh Length longer than standard



XD

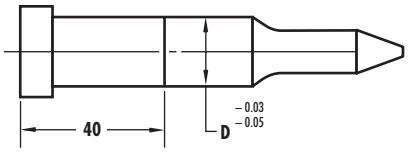
Reduced Shank Diameter
Head Diameter does not change with body diameter.

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



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 trough the holder.



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XL **Overall Length shortened (25 min.)**
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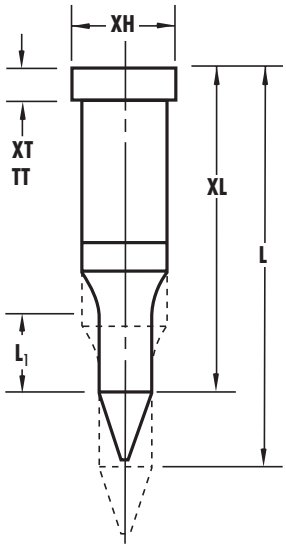
Same as XT except head thickness tolerance is held to ± 0.01.

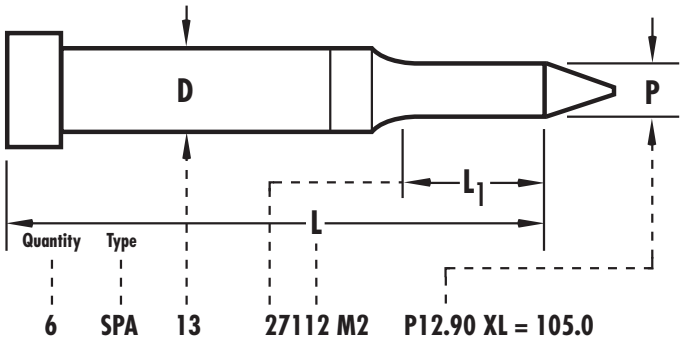
XT **Head thinner than standard**
Stock removal from head end which shortens overall length.

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



How to order:

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



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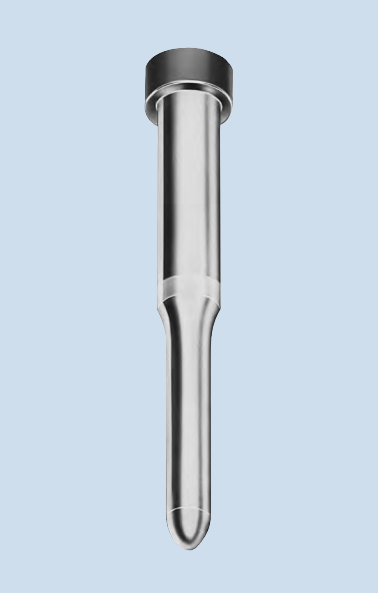
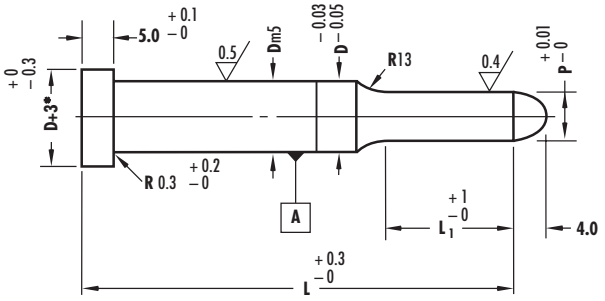
NOTES

HEADED PILOTS TYPE APT

Material	HRC
A2 (HWS)	60-63
M2 (HSS)	60-63
PS (PS4)	63-65
Head	40-55



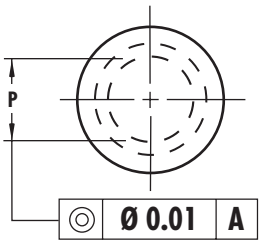


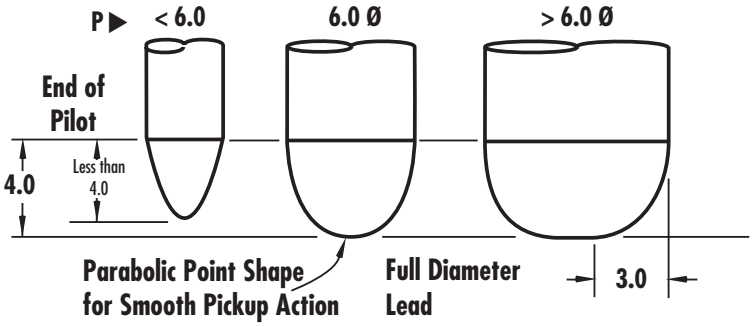
*D<5: D+2
D≥5: D+3

ISO 8020

Steel: A2 (Standard), M2 and PS – please specify when ordering

APT





Shank D	Point Length L_1 Std.	Point Length L_1 Alt.	Type & D APT	Range P	L 42	52	58	62	65	72	73	82	92	102
04	21	27	APT 04	1.55 - 4.00	•	•	•	•	•	•	•	•		
05	21	27	APT 05	1.55 - 5.00	•	•	•	•	•	•	•	•		
06	21	27	APT 06	1.55 - 6.00	•	•	•	•	•	•	•	•	•	•
08	21	27	APT 08	2.45 - 8.00		•	•	•	•	•	•	•	•	•
10	21	27	APT 10	3.15 - 10.00		•	•	•	•	•	•	•	•	•
13	27	32	APT 13	4.95 - 13.00		•	•	•	•	•	•	•	•	•
16	27	32	APT 16	7.95 - 16.00		•	•	•	•	•	•	•	•	•
20	27	32	APT 20	9.95 - 20.00			•	•	•	•	•	•	•	•
25	27	32	APT 25	11.95 - 25.00			•	•	•	•	•	•	•	•
32	27	32	APT 32	15.95 - 32.00						•	•	•	•	•

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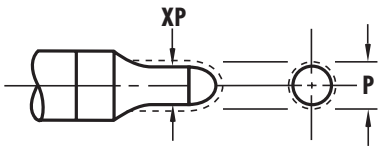
Standard Alterations for **APT** Pilots

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

	XBR					XBB
L_1 Max. ▶ APT	15	21	27	32	37	42
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
13	3.15	3.15	3.15	3.15	3.95	5.95
16	5.95	5.95	5.95	5.95	5.95	5.95
20	5.95	5.95	5.95	7.55	7.55	7.55
25	7.95	7.95	7.95	9.95	9.95	9.95
32	9.95	9.95	9.95	9.95	9.95	9.95

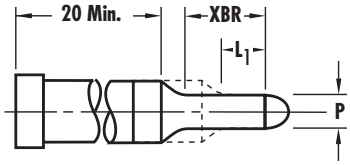
XP

P Smaller than Standard



XBR

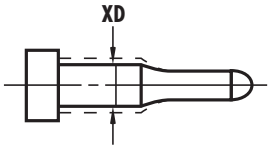
Pointh Length longer than standard



XD

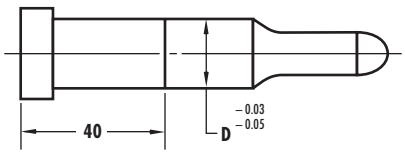
Reduced Shank Diameter
Head Diameter does not change with body diameter.

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



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 trough the holder.



XNT

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For M2 and PS only.

XNM

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

XCN

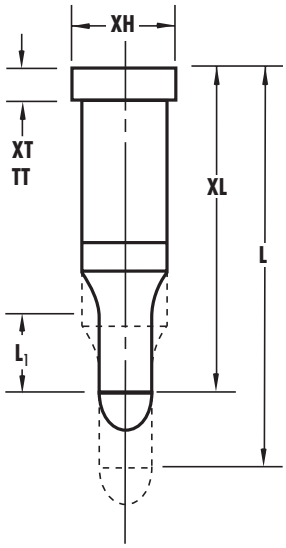
TiCN® PVD coating provides ultra hardness (harder than carbide) and superior abrasive wear resistance.
For M2 and PS only.

XL **Overall Length shortened (25 min.)**
Stock removal from point end standard L_1 length maintained on APA and SPA only.

XT **Head thinner than standard**
Stock removal from head end which shortens overall length.

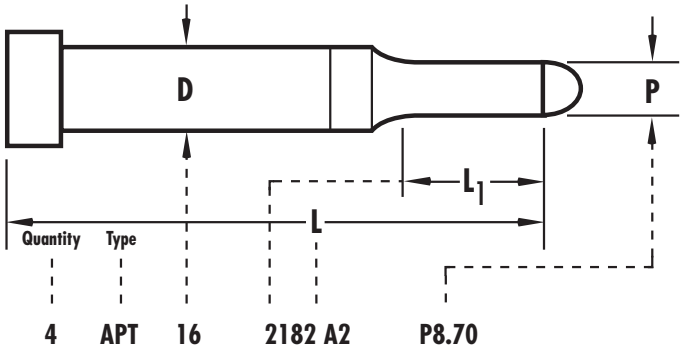
TT **Precision Head Thickness**
Same as XT except head thickness tolerance is held to ± 0.01.

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



How to order:

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



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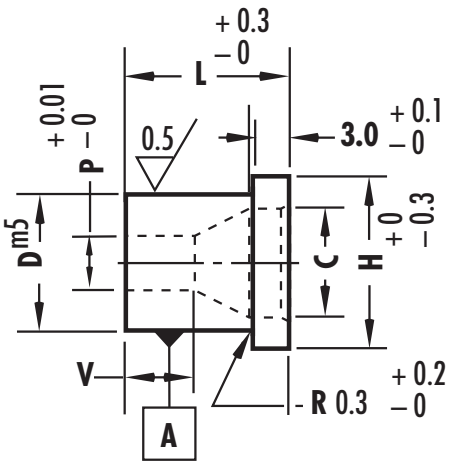
NOTES

HEADED GUIDE BUSHINGS TYPE AE_

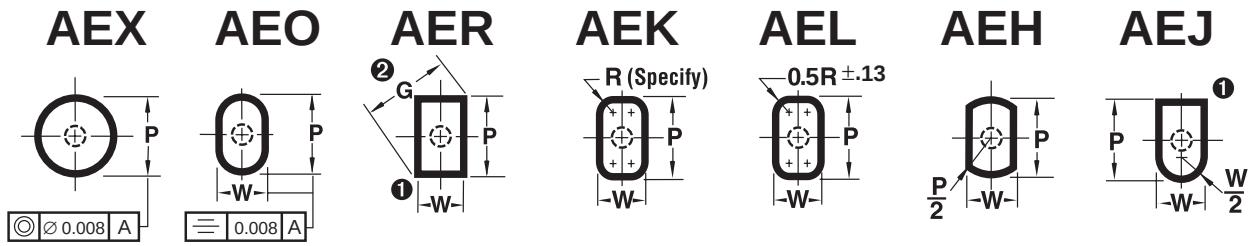
Material	HRC
A2 (HWS)	60-63
Head	40-55



P	V
0.800-1.700	2P
1.701-2.400	P + 1.7
2.401-3.200	0.82P + 2.1

Head up

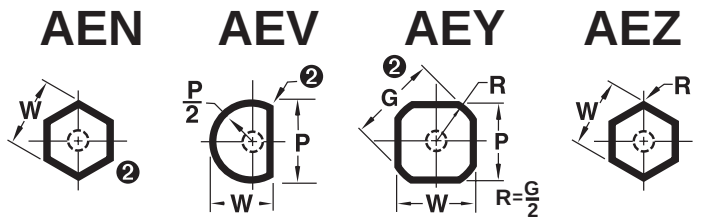
Steel: A2 – please specify when ordering



❶ 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.

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

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



Type	Body D	H	Round Range P	Shape Min. W	Shape Max. P/G	C' Bore Dia. C	L 8.0	L 10.0	L 13.0	L 16.0
AE_	5.0	8.0	1.60-3.20	1.30-3.20		3.6	•	•	•	
AE_	6.0	9.0	1.60-3.90	1.30-3.90		4.6		•	•	•
AE_	8.0	11.0	2.40-5.40	1.30-5.40		6.6		•	•	•
AE_	10.0	13.0	3.20-6.80	1.30-6.80		8.2		•	•	•
AE_	13.0	16.0	5.40-8.80	1.90-8.80		11.4			•	•
AE_	16.0	19.0	7.40-10.80	1.90-10.80		Full Taper				•

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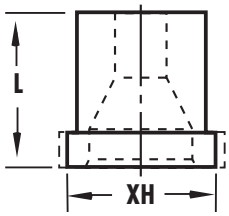
Standard Alteration for **AE_** Guide Bushings

XH

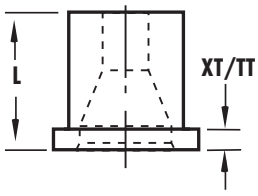
Reduced Head Diameter Minimum head diameter equals D + 0.00, – 0.03.



XT, TT

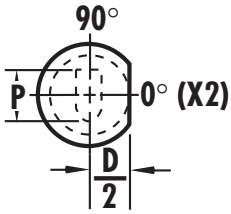
Thinner Head than standard Stock removal from head end which shortens overall length.

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



KEY FLATS

The standard location for a key flat is parallel to the P dimension.
For additional information see page 2.1.1 in the Die Buttons catalogue.

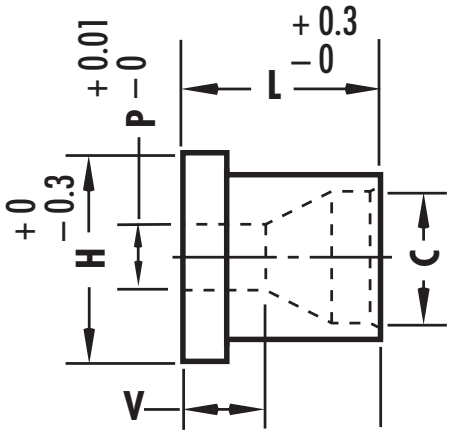


How to Order:

Specify:	Quantity	**4**
	Type	**AEX**
	Shank & Length Codes	**06 13**
	P or P&W Dimensions	**P2.0**
	Standard Alterations	**XH 7.0**

HEADED GUIDE BUSHINGS TYPE AF_

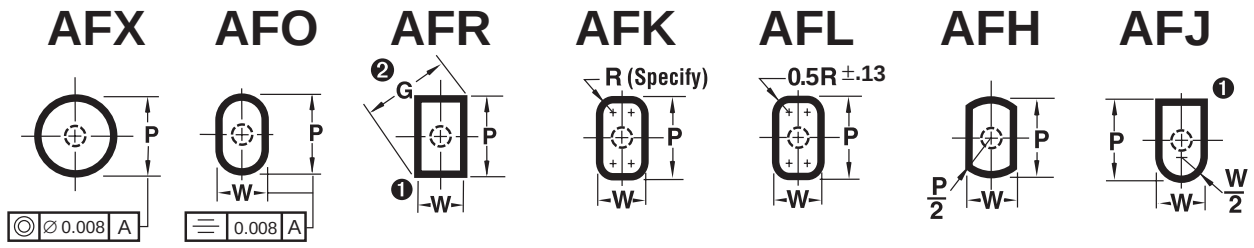
Material	HRC
A2 (HWS)	60-63
Head	40-55



P	V
0.800-1.700	2P
1.701-2.400	P + 1.7
2.401-3.200	0.82P + 2.1

Head down

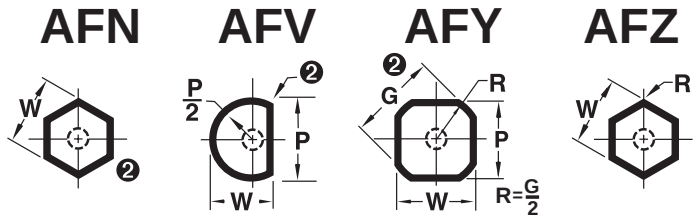
Steel: **A2 – please specify when ordering**



❶ 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.

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

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



Type	Body D	H	Round Range P	Shape Min. W	Shape Max. P/G	C' Bore Dia C	L 8.0	L 10.0	L 13.0	L 16.0
AF_	5.0	8.0	1.60-3.20	1.30-3.20		3.6	•	•	•	
AF_	6.0	9.0	1.60-3.90	1.30-3.90		4.6		•	•	•
AF_	8.0	11.0	2.40-5.40	1.30-5.40		6.6		•	•	•
AF_	10.0	13.0	3.20-6.80	1.30-6.80		8.2		•	•	•
AF_	13.0	16.0	5.40-8.80	1.90-8.80		11.4			•	•
AF_	16.0	19.0	7.40-10.80	1.90-10.80		Full Taper				•

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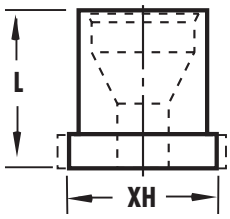
Standard Alteration for **AF_** Guide Bushings

XH

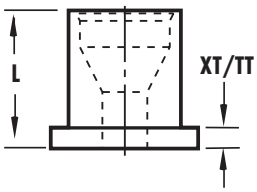
Reduced Head Diameter Minimum head diameter equals D + 0.00, – 0.03.



XT, TT

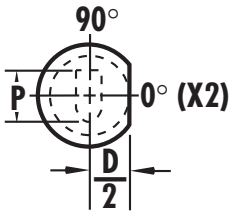
Thinner Head than standard Stock removal from head end which shortens overall length.

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



KEY FLATS

The standard location for a key flat is parallel to the P dimension.
For additional information see page 2.1.1 in the Die Buttons catalogue.

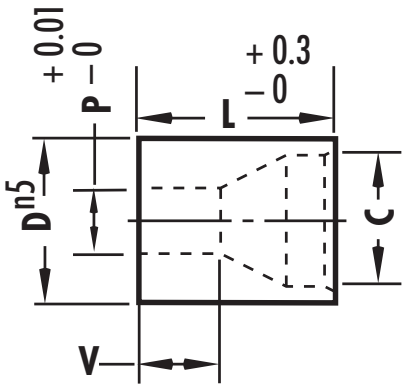


How to Order:

Specify:	Quantity	**2**
	Type	**AFO**
	Shank & Length Codes	**10 10**
	P or P&W Dimensions	**P 3.5 W 2.9**
	Standard Alterations	**XP 7.0**

HEADLESS GUIDE BUSHINGS TYPE AG_

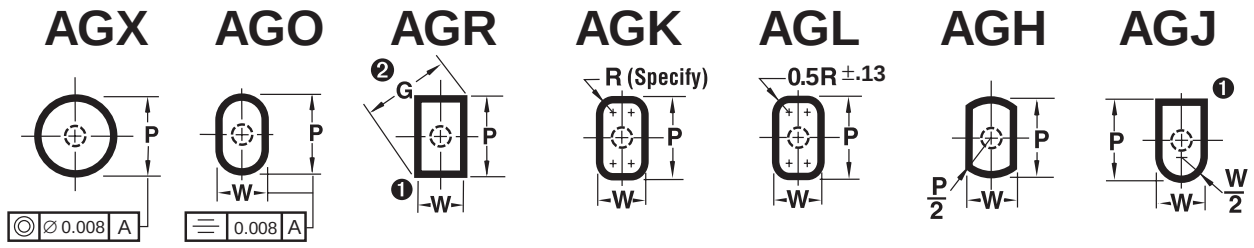
Material	HRC
A2 (HWS)	60-63
Head	40-55



P	V
0.800-1.700	2P
1.701-2.400	P + 1.7
2.401-3.200	0.82P + 2.1

Headless

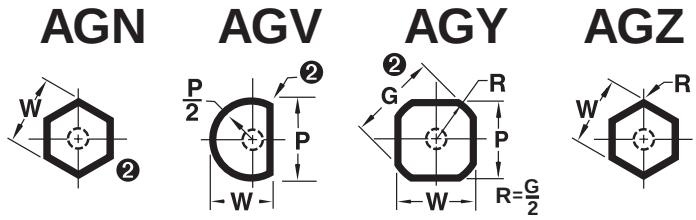
Steel: **A2 – please specify when ordering**



❶ 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.

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

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



Type	Body D	Round Range P	Shape Min. W	Shape Max. P/G	C' Bore Dia. C	L 8.0	L 10.0	L 13.0	L 16.0
AG_	5.0	1.60-3.20	1.30	3.20	3.6	•	•	•	
AG_	6.0	1.60-3.90	1.30	3.90	4.6	•	•	•	•
AG_	8.0	2.40-5.40	1.30	5.40	6.6	•	•	•	•
AG_	10.0	3.20-6.80	1.30	6.80	8.2		•	•	•
AG_	13.0	5.40-8.80	1.90	8.80	11.4			•	•
AG_	16.0	7.40-10.80	1.90	10.80	Full Taper				•

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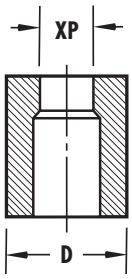
Standard Alteration for **AG_** Guide Bushings

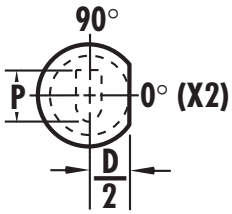
XP

P & W Dimensions Smaller than standard



KEY FLATS

The standard location for a key flat is parallel to the P dimension.
For additional information see page 2.1.1 in the Die Buttons catalogue.

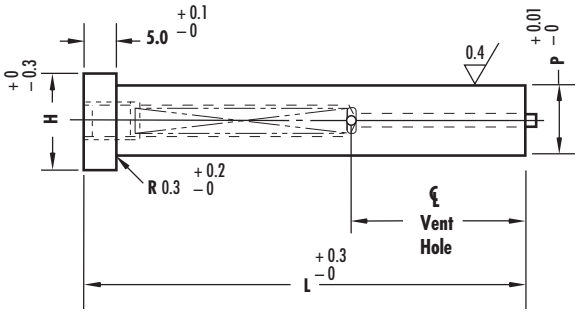


How to Order:

Specify:	Quantity	**4**
	Type	**AGK**
	Shank & Length Codes	**16 16**
	P or P&W Dimensions	**P6.6 W6.1**
	Standard Alterations	**R1.0**

JEKTOLE® STRAIGHT HEADED PUNCHES TYPE AYX

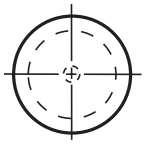
Material	HRC
A2 (HWS)	60-63
M2 (HSS)	60-63
Head	40-55



Jektole® Shank Diameter 0.01 stepped.

Steel: A2 (Standard) and M2 – please specify when ordering

AYX



Type	Range P	H	℄ Vent Hole	L 50	56	60	63	70	71	80	90	Jektole® Pin
AYX	5.00-6.00	9.0	14.0	•	•							J2M
AYX	6.01-8.00	11.0	21.3	•	•	•	•	•	•	•		J3M
AYX	8.01-10.00	13.0	22.5	•	•	•	•	•	•	•	•	J4M
AYX	10.01-13.00	16.0	22.5	•	•							J6M
AYX	10.01-13.00	16.0	27.9			•	•	•	•	•	•	J6M
AYX	13.01-16.00	19.0	22.5	•	•							J9M
AYX	13.01-16.00	19.0	27.9			•	•	•	•	•	•	J9M

How to order:

Specify:		
	Quantity	**18**
	Type	**AYX**
	L	**63**
	P	**P7.0**
	Steel	**A2**

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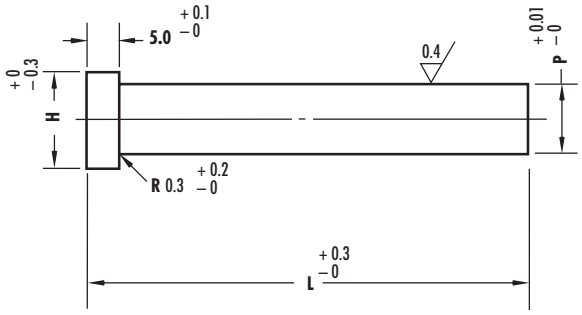
REGULAR STRAIGHT HEADED PUNCHES TYPE AUX

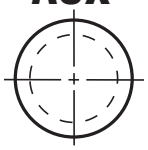
Material	HRC
A2 (HWS)	60-63
M2 (HSS)	60-63
Head	40-55



Without Jektole® Shank Diameter 0.01 stepped.

Steel: **A2 (Standard) and M2 – please specify when ordering**

AUX



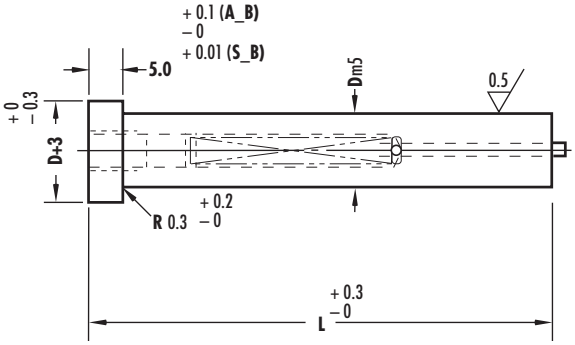
Type	Range P	H	L 50	56	60	63	70	71	80	90	100
AUX	3.00-4.00	7.0	•	•	•	•	•	•	•	•	•
AUX	4.01-5.00	8.0	•	•	•	•	•	•	•	•	•
AUX	5.01-6.00	9.0	•	•	•	•	•	•	•	•	•
AUX	6.01-8.00	11.0	•	•	•	•	•	•	•	•	•
AUX	8.01-10.00	13.0	•	•	•	•	•	•	•	•	•
AUX	10.01-13.00	16.0	•	•	•	•	•	•	•	•	•
AUX	13.01-16.00	19.0	•	•	•	•	•	•	•	•	•

How to order:

Specify:		
	Quantity	**18**
	Type	**AUX**
	L	**63**
	P	**P7.0**
	Steel	**A2**

JEKTOLE® PUNCH BLANKS TYPE AJB

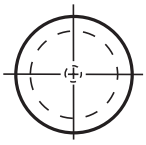
Material	HRC
A2 (HWS)	60-63
M2 (HSS)	60-63
PS (PS4)	63-65
Head	40-55



ISO 8020, Jektole®

Steel: A2 (Standard), M2 and PS – please specify when ordering

AJB



Shank D	Cat. No. AJB	L 40	50	56	60	63	70	71	80	90	100	Jektole® Pin
04	–	•	•	•	•	•	•	•	•			–
05	AJB 05	•	•	•	•	•	•	•	•			J2M
06	AJB 06	•	•	•	•	•	•	•	•	•	•	J3M
08	AJB 08		•	•	•	•	•	•	•	•	•	J4M
10	AJB 10		•	•	•	•	•	•	•	•	•	J6M
13	AJB 13		•	•	•	•	•	•	•	•	•	J6M
16	AJB 16		•	•	•	•	•	•	•	•	•	J9M
20	AJB 20			•	•	•	•	•	•	•	•	J9M
25	AJB 25			•	•	•	•	•	•	•	•	J9M
32	AJB 32					•	•	•	•	•	•	J12M

How to order:

Specify:		
	Quantity	**10**
	Type	**AJB**
	L	**80**
	D	**13**
	Steel	**M2**

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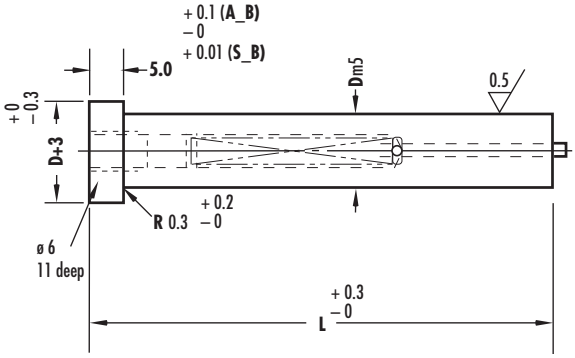
JEKTOLE® CENTER DOWEL HEADED PUNCH BLANKS TYPE SJB

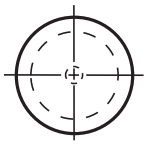
Material	HRC
A2 (HWS)	60-63
M2 (HSS)	60-63
PS (PS4)	63-65
Head	40-55



ISO 8020, Jektole®, with Center Dowel

Steel: **A2 (Standard), M2 and PS – please specify when ordering**

SJB



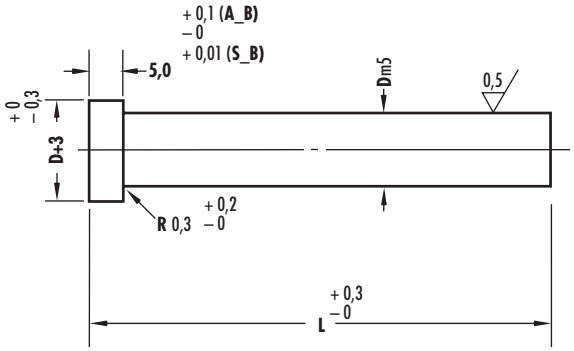
Shank D	Cat. No. SJB	L 71	L 80	L 90	L 100	Jektole® Pin
10	SJB 10	•	•	•	•	J6M
13	SJB 13	•	•	•	•	J6M
16	SJB 16	•	•	•	•	J9M
20	SJB 20	•	•	•	•	J9M
25	SJB 25	•	•	•	•	J9M
32	SJB 32	•	•	•	•	J9M

How to order:

Specify:		
	Quantity	**10**
	Type	**SJB**
	L	**80**
	D	**13**
	Steel	**PS**

REGULAR HEADED PUNCH BLANKS TYPE APB

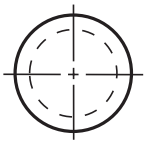
Material	HRC
A2 (HWS)	60-63
M2 (HSS)	60-63
PS (PS4)	63-65
Head	40-55



ISO 8020, Regular

Steel: A2 (Standard), M2 and PS – please specify when ordering

APB



Shank D	Cat. No. APB	L 40	50	56	60	63	70	71	80	90	100
04	APB 04	•	•	•	•	•	•	•	•		
05	APB 05	•	•	•	•	•	•	•	•		
06	APB 06	•	•	•	•	•	•	•	•	•	•
08	APB 08		•	•	•	•	•	•	•	•	•
10	APB 10		•	•	•	•	•	•	•	•	•
13	APB 13		•	•	•	•	•	•	•	•	•
16	APB 16		•	•	•	•	•	•	•	•	•
20	APB 20			•	•	•	•	•	•	•	•
25	APB 25			•	•	•	•	•	•	•	•
32	APB 32					•	•	•	•	•	•

How to order:

Specify:		
	Quantity	**10**
	Type	**APB**
	L	**80**
	D	**13**
	Steel	**A2**

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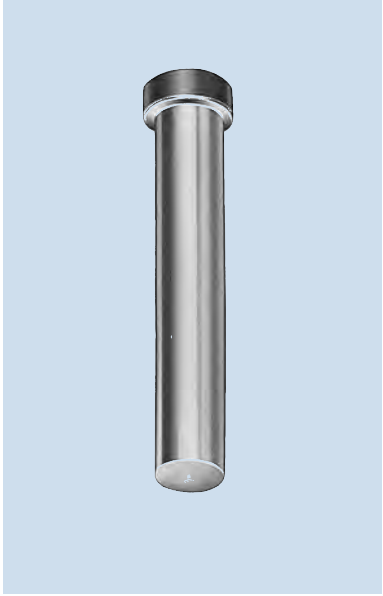
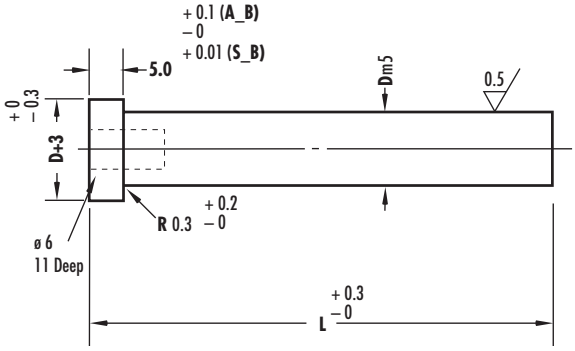
REGULAR CENTER DOWEL HEADED PUNCH BLANKS TYPE SPB

Material	HRC
A2 (HWS)	60-63
M2 (HSS)	60-63
PS (PS4)	63-65
Head	40-55





ISO 8020, Regular, with Center Dowel

Steel: **A2 (Standard), M2 and PS – please specify when ordering**

SPB

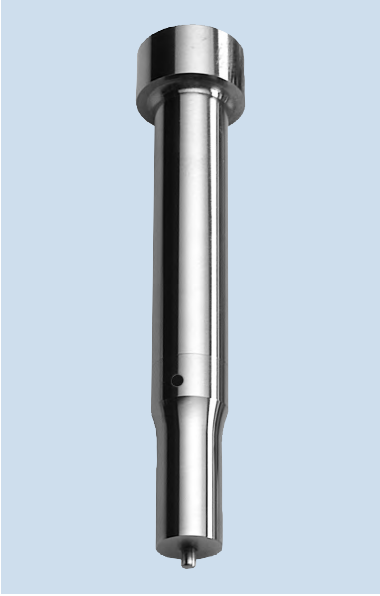
Shank D	Cat. No. SPB	L 71	80	90	100
10	SPB 10	•	•	•	•
13	SPB 13	•	•	•	•
16	SPB 16	•	•	•	•
20	SPB 20	•	•	•	•
25	SPB 25	•	•	•	•
32	SPB 32	•	•	•	•

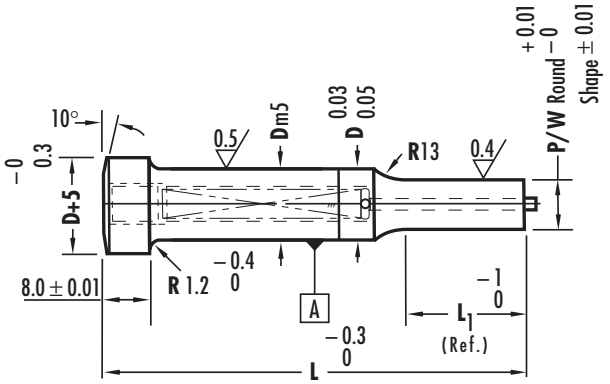
How to order:

Specify:		
	Quantity	**10**
	Type	**SPB**
	L	**80**
	D	**13**
	Steel	**M2**

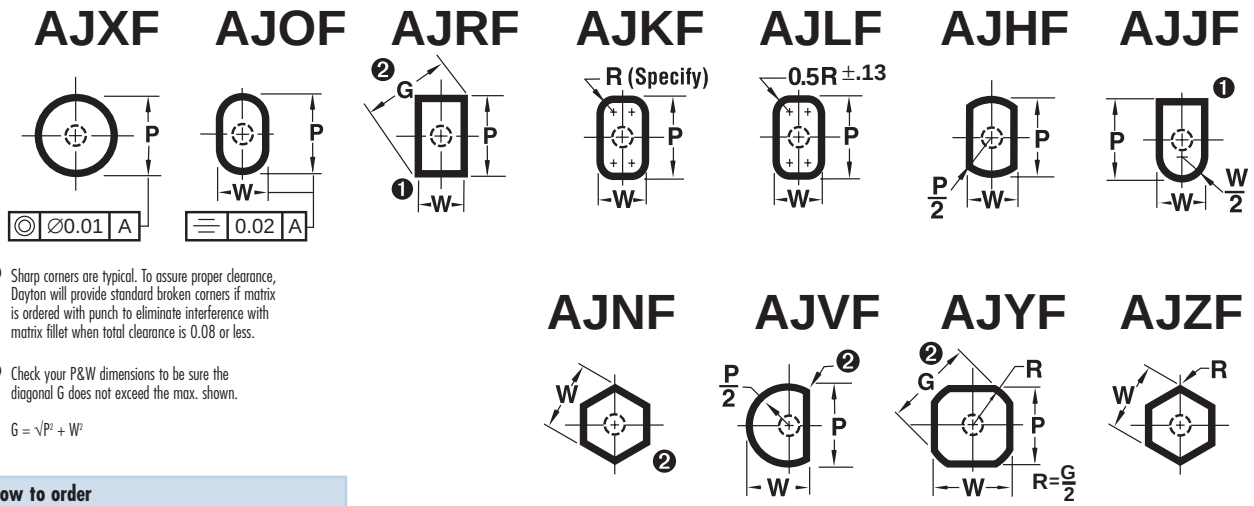
TUFF PUNCH™ HEAVY DUTY HEADED PUNCH TYPE AJ_F JEKTOLE®

Material	HRC
PS (PS4)	63-65
Head	40-55





Material
Steel: PS



❶ 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.

❷ 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

Qty.	Typee	D Code	L	P (or P&W) Dimension
6	AJXF	16	1980	P8.3
12	AJRF	16	2580	P8.5. W8.0
10	AJLF	16	1990	P8.2. W7.2

How to order: AJXF 16 1980 PS P8.3

Surface Treatments See page 4.6.5.
Standard Alterations See page 4.6.3 for additional ordering instructions.

Shank D	Point Length L_1 Std.	Point Length L_1 Alt.	Type & D AJXF	Range P	Type & D AJ_F	Min. W	Max. P/G	L 50	L 60	L 70	L 80	L 90	L 100	Jektole® Group
08	13	19	AJXF 08	4.00 - 7.99	AJ_F 08	4.00- 8.00		•	•	•	•	•	•	J4M
10	13	19	AJXF 10	5.00 - 9.99	AJ_F 10	5.00-10.00		•	•	•	•	•	•	J6M
13	13	19	AJXF 13	6.00 - 12.99	AJ_F 13	6.00-13.00		•	•	•	•	•	•	J6M
16	19	25	AJXF 16	10.00 - 15.99	AJ_F 16	6.00-16.00		•	•	•	•	•	•	J9M
20	19	25	AJXF 20	13.00 - 19.99	AJ_F 20	6.00-20.00		•	•	•	•	•	•	J9M
25	19	25	AJXF 25	18.00 - 24.99	AJ_F 25	6.00-25.00		•	•	•	•	•	•	J9M

When L=50. L_1 is 8.0
Alternate point length not available

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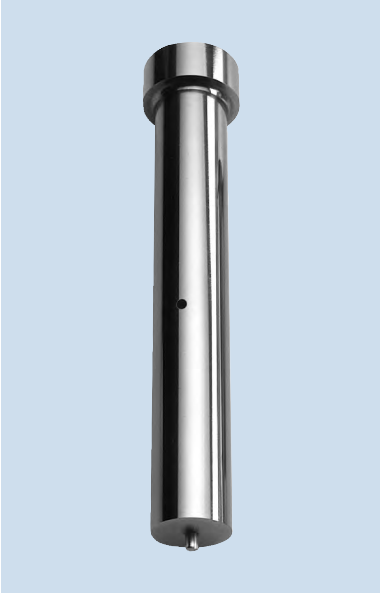
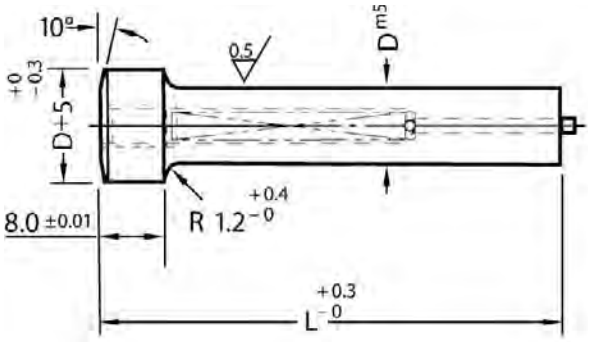
TUFF PUNCH™ HEAVY DUTY STRAIGHT HEADED PUNCH TYPE AJBF JEKTOLE®

Material	HRC
PS (PS4)	63-65
Head	40-55





Jektole® side hole position allows alternate point lengths shown on AJ_F above.

Material
Steel: **PS**

AJBF

How to order

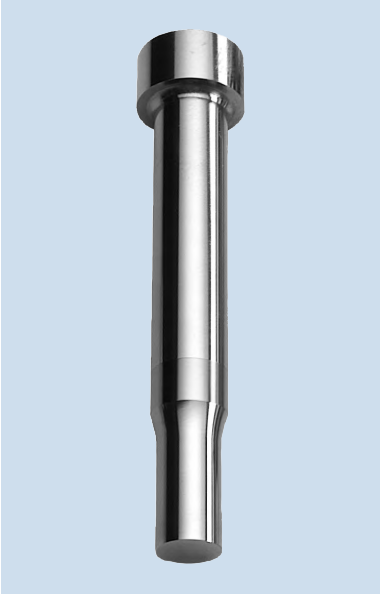
9	AJBF	20	80
Qty.	Typee	D Code	L

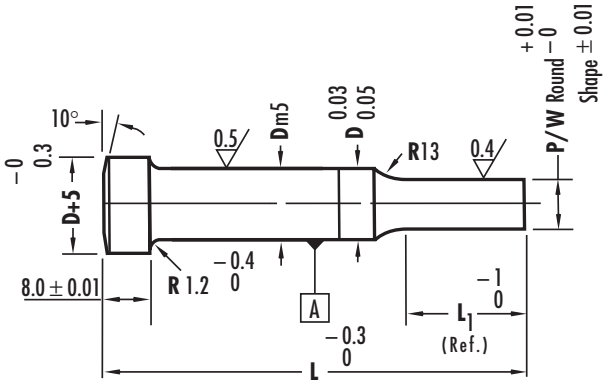
Standard Alterations
See page 4.6.3 for additional ordering instructions.

Shank D	Catalog Number	L 50	60	70	80	90	100	Jektole® Group
08	AJBF 08	•	•	•	•	•	•	J4M
10	AJBF 10	•	•	•	•	•	•	J6M
13	AJBF 13	•	•	•	•	•	•	J6M
16	AJBF 16	•	•	•	•	•	•	J9M
20	AJBF 20		•	•	•	•	•	J9M
25	AJBF 25		•	•	•	•	•	J9M

TUFF PUNCH™ REGULAR HEAVY DUTY HEADED PUNCH TYPE AP_F

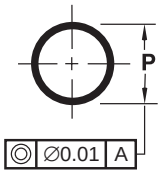
Material	HRC
PS (PS4)	63-65
Head	40-55



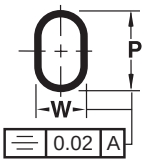


Material
Steel: PS

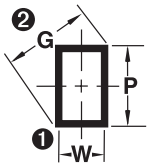
APXF



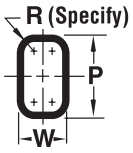
APOF



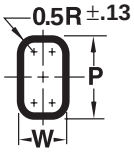
APRF



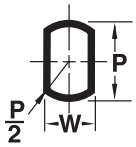
APKF



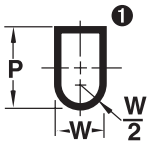
APLF



APHF



APJF

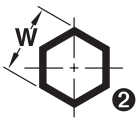


❶ Sharp corners are typical. To assure proper clearance, Dayton will provide standard broken corners if matrix is ordered with punch to eliminate interference with matrix fillet when total clearance is 0.08 or less.

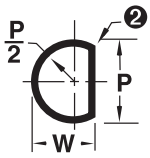
❷ Check your P&W dimensions to be sure the diagonal G does not exceed the max. shown.

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

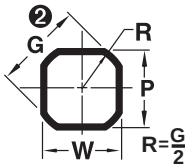
APNF



APVF



APYF



APZF

How to order

Qty.	Typee	D Code	L	P (or P&W) Dimension
6	APXF	16	1980	P8.3
12	APRF	16	2580	P8.5. W8.0
10	APLF	16	1970	P8.2. W7.2

How to order: AJXF 16 1980 PS P8.3

Surface Treatments See page 4.6.5.
Standard Alterations See page 4.6.3 for additional ordering instructions.

Shank D	Point Length L_1 Std.	Point Length L_1 Alt.	Type & D APXF	Range P	Type & D AJ_F	Min. W	Max. P/G	L 50	L 60	L 70	L 80	L 90	L 100
08	13	19	APXF 08	3.00 - 7.99	AP_F 08	3.00- 8.00		•	•	•	•	•	•
10	13	19	APXF 10	3.00 - 9.99	AP_F 10	3.00-10.00		•	•	•	•	•	•
13	13	19	APXF 13	6.00 - 12.99	AP_F 13	3.00-13.00		•	•	•	•	•	•
16	19	25	APXF 16	10.00 - 15.99	AP_F 16	4.00-16.00		•	•	•	•	•	•
20	19	25	APXF 20	13.00 - 19.99	AP_F 20	5.00-20.00		•	•	•	•	•	•
25	19	25	APXF 25	18.00 - 24.99	AP_F 25	6.00-25.00		•	•	•	•	•	•

When L=50. L_1 is 8.0
Alternate point length not available

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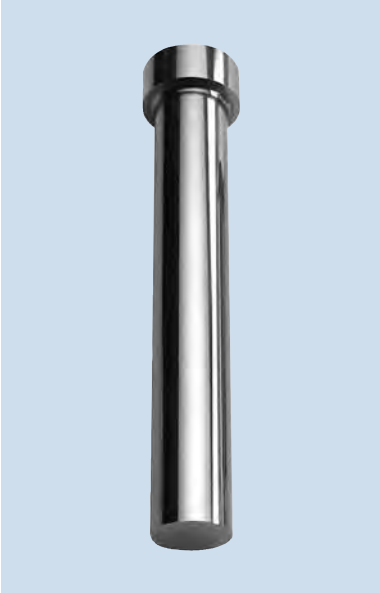
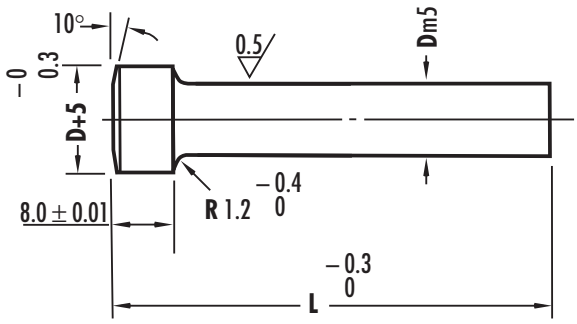
TUFF PUNCH™ REGULAR HEAVY DUTY STRAIGHT HEADED PUNCH TYPE APBF

Material	HRC
PS (PS4)	63-65
Head	40-55





Material
Steel: PS

APBF

Shank D	Catalog Number	L 50	60	70	80	90	100
08	APBF 08	•	•	•	•	•	•
10	APBF 10	•	•	•	•	•	•
13	APBF 13	•	•	•	•	•	•
16	APBF 16	•	•	•	•	•	•
20	APBF 20		•	•	•	•	•
25	APBF 25		•	•	•	•	•

How to order: APBF 20 80

Standard Alterations
See page 4.6.3 for additional ordering instructions.

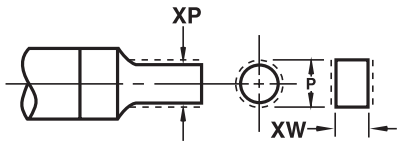
Standard Alterations for Jektole®, Regular and Punch Blanks Heavy Duty

L_1 Max.		8	13	19	25	30	35	40	Jektole®
D Code	Typee	Minimum P (Rounds)							Group
08	AJXF	3.0	3.0	3.0	4.0	5.0	–	–	J4M
	APXF	1.5	1.5	1.5	2.0	2.0	2.0	4.0	
10	AJXF	4.0	4.0	4.0	4.0	5.0	5.0	–	J6M
	APXF	1.5	1.5	1.5	2.0	2.0	2.0	4.0	
13	AJXF	4.0	4.0	4.0	4.0	5.0	5.0	–	J6M
	APXF	3.0	3.0	3.0	3.0	3.0	3.0	4.0	
16	AJXF	6.0	6.0	6.0	6.0	6.0	6.0	–	J9M
	APXF	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
20	AJXF	6.0	6.0	6.0	6.0	6.0	6.0	–	J9M
	APXF	6.0	6.0	6.0	6.0	6.5	6.5	6.5	
25	AJXF	8.0	8.0	8.0	8.0	8.0	8.0	–	J9M
	APXF	8.0	8.0	8.0	8.0	9.0	9.0	9.0	

L_1 Max.		8	13	19	25	30	35	40	Jektole®
D Code	Typee	Minimum W (Shapes)							Group
08	AJ_F	3.0	3.0	3.0	4.0	4.0	–	–	J4M
	AP_F	1.5	1.5	3.0	3.0	4.0	5.0	–	
10	AJ_F	4.0	4.0	4.0	4.0	4.0	5.0	–	J6M
	AP_F	1.25	1.5	3.0	3.0	4.0	5.0	–	
13	AJ_F	4.0	4.0	4.0	4.0	4.0	5.0	–	J6M
	AP_F	1.5	1.5	3.0	3.0	4.0	5.0	–	
16	AJ_F	6.0	6.0	6.0	6.0	6.0	6.0	–	J9M
	AP_F	2.0	2.0	3.0	3.5	5.0	6.0	–	
20	AJ_F	6.0	6.0	6.0	6.0	6.0	6.0	–	J9M
	AP_F	2.5	2.5	3.0	3.5	5.0	6.0	–	
25	AJ_F	6.0	6.0	6.0	6.0	6.0	6.0	–	J9M
	AP_F	3.0	3.0	3.0	3.5	5.0	6.0	–	

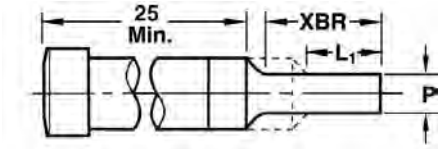
XP, XW

P & W Dimensions
Smaller than Standard



XBR

(Straight before Radius)
It is recommend that point length be kept as short as possible for optimum strength.



XL

Overall Length shortened (25 min.)
Stock removal from point end which shortens L_1 length.

LL

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

XS

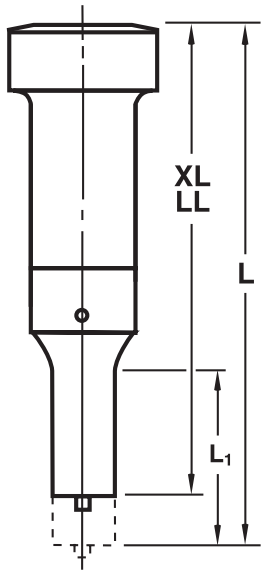
Shear angles
See information at right.

XK

No side hole
For air ejection. No cost.

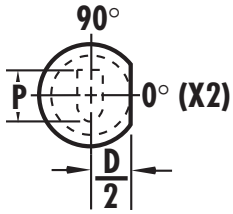
XJ

Smaller Jektole® Components



KEY FLATS

The standard location for a key flat is parallel to the P dimension.
For additional information see page 6.4.1.



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Standard Alteration Shear Angles XS Heavy Duty

Various shear angle configurations are available for all Dayton cutting punches for all standard shapes.. Shear angles are also available for classified shapes as special orders.

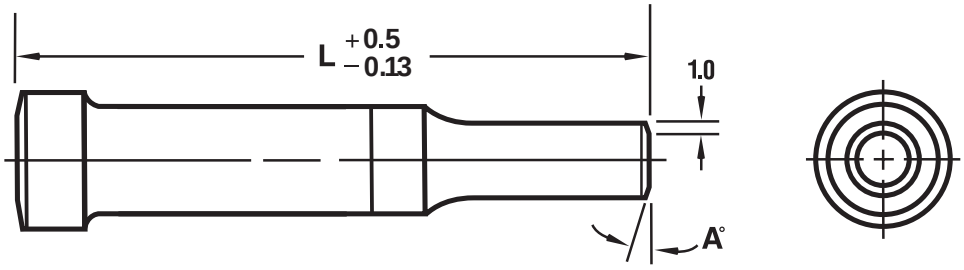
Shear angles are available in any angle. Specify angle in whole degrees. If half degree is necessary. specify as a decimal. e.g.. 8.5°. (Tolerance on all angles is ±15 minutes.) Use the chart below to determine the product designation. then simply add the alteration code shown next to the drawings. along with the angle desired.

Example: APXF 16-90-80 P8.3 XS20 A5°.

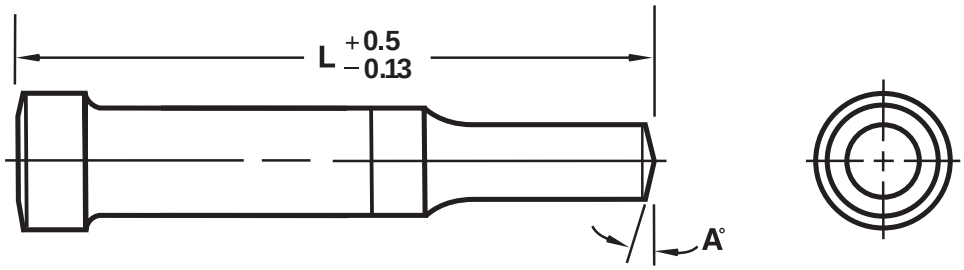
For round punches only

Views are reflected view

XS20
Chamfer

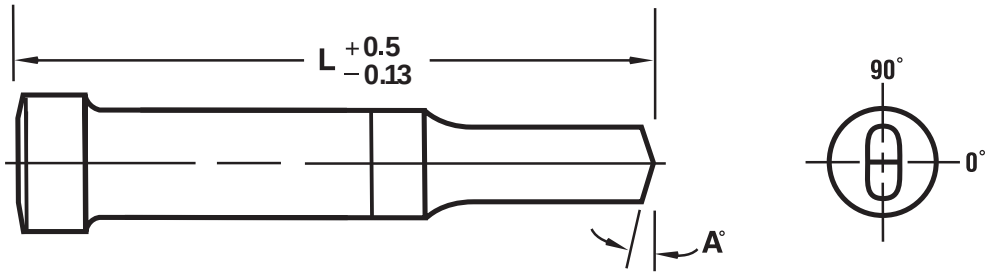


XS21
Conical

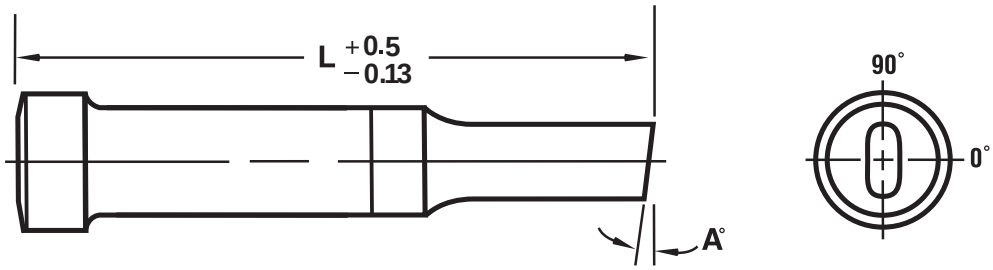


For round and shape punches

XS22
Double Shear



XS23
Single Shear



PRODUCT APPLICATION

Dayton® Progress Press Fit Heavy Duty Punches and Punch Blanks are commercial quality products manufactured with thicker, larger, and 10° angled diameter heads, and are designed to reduce punch load and significantly lower failure rates when using heavy gauge and high tensile material. Press Fit Heavy Duty products are well-suited for high-demand industries where frequency and heavier-than-normal impact punching activity occurs and where optimum performance is required.
Dayton´s® Press Fit Heavy Duty product line includes: Dayton® Jektole® Punches; Regular Punches; and Punch Blanks. Both standard sizes and standard alterations are shown in this catalog.

UNIQUE HEAD DESIGN

All Dayton® PressFit Heavy Duty products are designed with a 10° angled head with a diameter equal to the shank diameter. This design allows the perforating forces to travel up from the shank and completely through the head. This eliminates the lateral shock waves that would otherwise put stress on the outer edge of the head, resulting in frequent failures – especially in heavy-duty applications.
In addition, Dayton® Press Fit Heavy Duty products are available in common shear angle configurations to reduce punch load and minimize the risk of slug pulling. Shear angle configurations include: chamfer; conical; double shear; and single shear. For more information, see "Standard Alterations" on p. 4.6.3.

CRYOGENIC TREATMENT STANDARD

DayKool™ (XCR) – a cryogenic steel conditioning process used primarily with hard, thick materials toimprove strength, toughness, and dimensional stability – is standard on all Dayton Press Fit Heavy Duty products. The DayKool™ process utilizes a liquid nitrogen vapor to cool the steel to -184° C, which creates metallurgical changes in the structure that disperse carbides throughout the metal. The result: increased wear resistance (finely dispersed carbides provide more evenly distributed wear); less sharpening time; no loss of resistance after sharpening; longer die runs; and less downtime.

SURFACE TREATMENTS

XNT **DAYTIN®**
Titanium Nitride coating for extra wear. For PS only.

XN **DayTride®**
a unique wear resistant surface treatment.
For PS only.

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

XCN **TiCN®** PVD coating provides ultra hardness (harder than carbide) and superior abrasive wear resistance.
For PS only.

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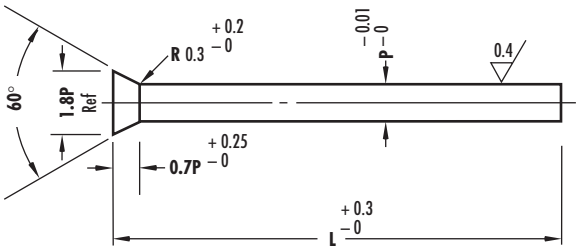
NOTES

CLOSE SPACE PUNCHES TYPE AWX

Material	HRC
M2 (HSS)	60-63
Head	40-55



Only M2

Steel: **M2 – please specify when ordering**

Range P	L 40	45	50	56	60	63	70	71	80	90	100
0.80-1.60	•	•	•	•	•	•	•	•	•	•	•
1.61-2.00	•	•	•	•	•	•	•	•	•	•	•
2.01-3.00	•	•	•	•	•	•	•	•	•	•	•
3.01-4.00	•	•	•	•	•	•	•	•	•	•	•
4.01-5.00	•	•	•	•	•	•	•	•	•	•	•
5.01-6.00	•	•	•	•	•	•	•	•	•	•	•
6.01-7.00	•	•	•	•	•	•	•	•	•	•	•

How to order:

Specify:		
	Quantity	**10**
	Type	**AWX**
	L	**71**
	P	**P2.5**
	Steel	**M2**

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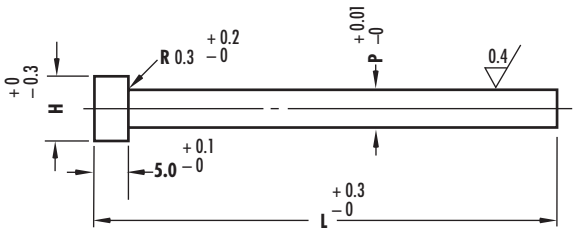
CLOSE SPACE PUNCHES TYPE AXX

Material	HRC
A2 (HWS)	60-63
M2 (HSS)	60-63
Head	40-55



Steel: **A2 and M2 – please specify when ordering**

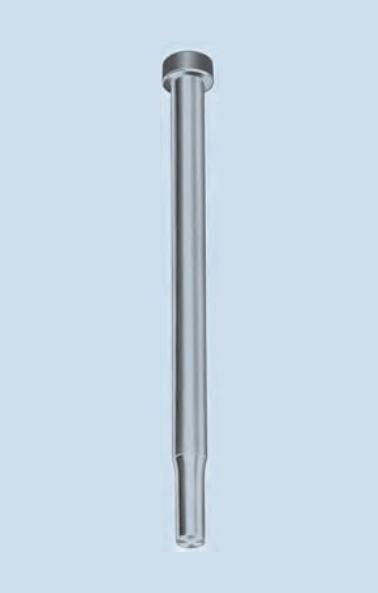
Range	L											AXX
P	40	45	50	56	60	63	70	71	80	90	100	H
0.80-1.60	•	•	•	•	•	•	•	•	•	•	•	3
1.61-2.00	•	•	•	•	•	•	•	•	•	•	•	4
2.01-3.00	•	•	•	•	•	•	•	•	•	•	•	5
3.01-4.00	•	•	•	•	•	•	•	•	•	•	•	6
4.01-5.00	•	•	•	•	•	•	•	•	•	•	•	7
5.01-6.00	•	•	•	•	•	•	•	•	•	•	•	8
6.01-7.00	•	•	•	•	•	•	•	•	•	•	•	9

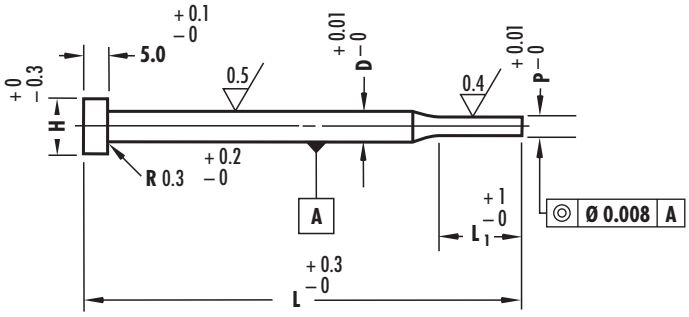
How to order:

Specify:	Quantity	**25**
	Type	**AXX**
	L	**80**
	P	**P3.5**
	Steel	**M2**

CLOSE SPACE PUNCHES TYPE ACX

Material	HRC
A2 (HWS)	60-63
M2 (HSS)	60-63
Head	40-55





Pointed Punches. Only A2 or M2.

Steel: **A2 and M2 – please specify when ordering**

Type	Body Ø D	Head Dia. H	Point Length L1	ACX Range P	L 40	45	50	56	60	63	70	71	80	90	100
ACX	2.0	4.0	5.0	0.81-2.00	•	•	•	•	•	•	•	•	•	•	•
ACX	3.0	5.0	7.0	2.01-3.00	•	•	•	•	•	•	•	•	•	•	•
ACX	4.0	6.0	8.0	2.01-3.00	•	•	•	•	•	•	•	•	•	•	•
ACX	5.0	7.0	8.0	4.01-5.00	•	•	•	•	•	•	•	•	•	•	•
ACX	6.0	8.0	8.0	5.01-6.00	•	•	•	•	•	•	•	•	•	•	•
ACX	7.0	9.0	8.0	6.01-7.00	•	•	•	•	•	•	•	•	•	•	•

How to order:

Specify:		
	Quantity	**25**
	Type	**ACX**
	D	**5.0**
	L	**70**
	P	**P3.5**
	Steel	**M2**

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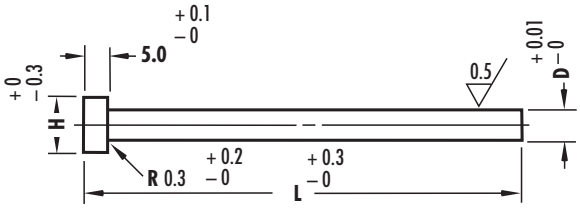
CLOSE SPACE PUNCHES TYPE ACB

Material	HRC
A2 (HWS)	60-63
M2 (HSS)	60-63
Head	40-55



Punch Blanks. Only A2 or M2.

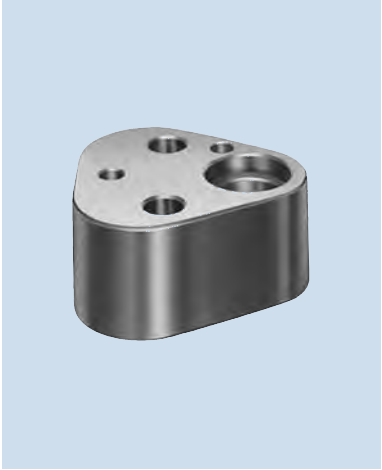
Steel: **A2 and M2 – please specify when ordering**

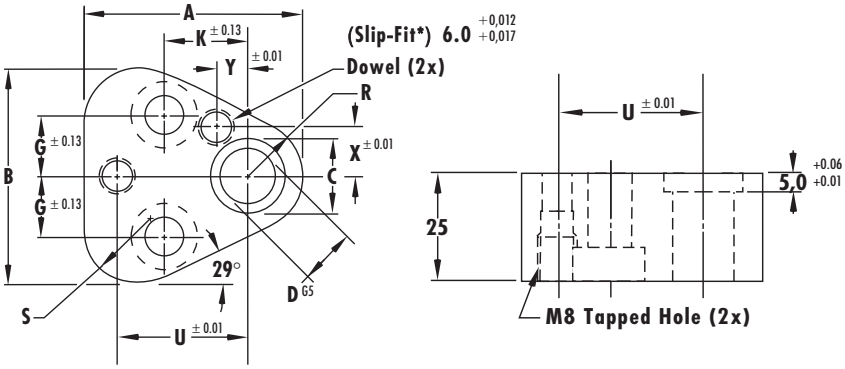
Type	Body Ø D	Head Dia. H	Point Length L1	L										
				40	45	50	56	60	63	70	71	80	90	100
ACB	2.0	4.0	5.0	•	•	•	•	•	•	•	•	•	•	•
ACB	3.0	5.0	7.0	•	•	•	•	•	•	•	•	•	•	•
ACB	4.0	6.0	8.0	•	•	•	•	•	•	•	•	•	•	•
ACB	5.0	7.0	8.0	•	•	•	•	•	•	•	•	•	•	•
ACB	6.0	8.0	8.0	•	•	•	•	•	•	•	•	•	•	•
ACB	7.0	9.0	8.0	•	•	•	•	•	•	•	•	•	•	•

How to order:

Specify:		
	Quantity	**20**
	Type	**ACB**
	L	**56**
	D	**3.0**
	Steel	**M2**

HEADED PUNCH RETAINERSS TRUE LOCATION TYPE ART





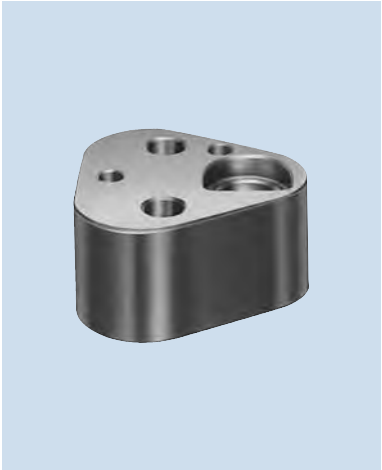
ISO 8020 round

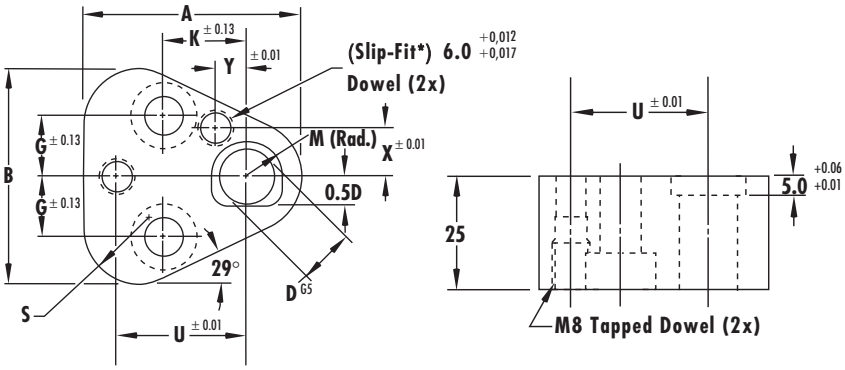
Retainer includes: 2 Threaded dowels, 2 Screws

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

*Note: For precision tolerance (±0.01)specify XY at end of catalog number. Example ART13 XY

HEADED PUNCH RETAINERSS TRUE LOCATION TYPE ARTS





ISO 8020 form

Retainer includes: 2 Threaded dowels, 2 Screws

Katalog Type	Code	D	A	B	G	K	M	R	S	U	X	Y	Screw Size
ARTS	10	10.00	44.5	43.7	11.1	19.0	7.0	9.5	12.0	26.925	9.0	7.5	M8
ARTS	13	13.00	50.8	50.0	14.3	19.0	8.5	12.7	15.2	29.970	12.0	6.5	M8
ARTS	16	16.00	54.0	53.2	15.9	19.0	10.0	14.3	16.8	31.750	13.5	6.0	M8
ARTS	20	20.00	60.3	59.5	17.5	19.0	12.0	17.5	20.0	33.530	16.5	5.0	M10
ARTS	25	25.00	69.9	69.1	19.8	23.8	14.5	22.2	24.7	40.640	22.0	7.0	M12
ARTS	32	32.00	69.9	69.1	19.8	23.8	18.0	22.2	24.7	40.640	22.0	7.0	M12

*Note: For precision tolerance (±0.01)specify XY at end of catalog number. Example ARTS13 XY

*Cylindrical pin bores with slip fit offer the advantage that the cylindrical pins can remain in the tool holder plate, while the punch holder plate can be fitted and removed by hand without affecting the accuracy of the positioning.

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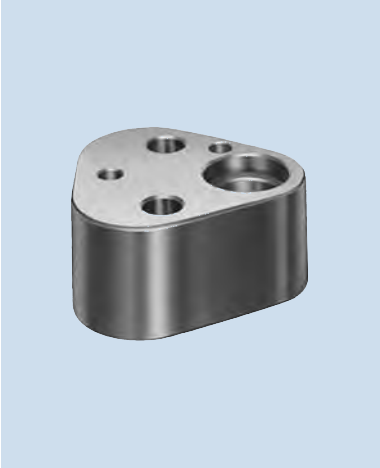
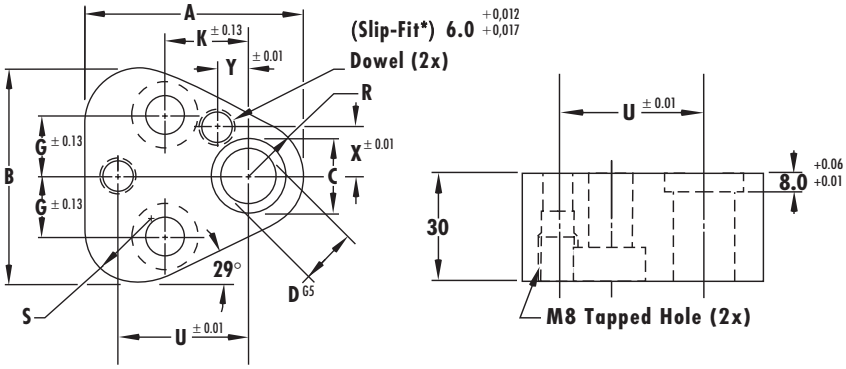
HEADED PUNCH RETAINERSS TRUE LOCATION TYPE ARTF





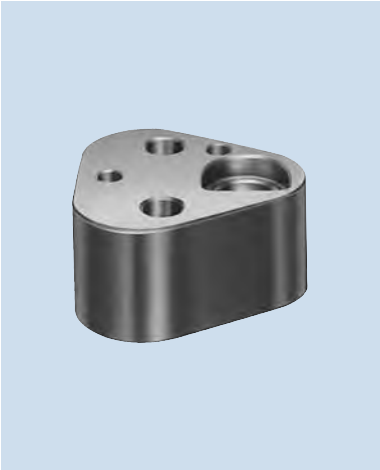
Round

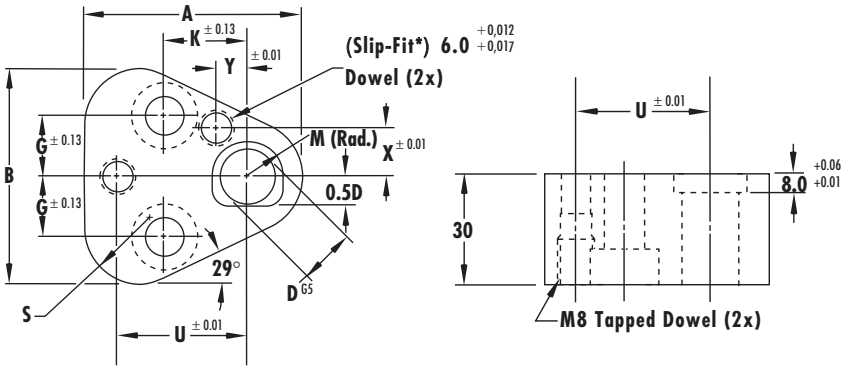
Retainer includes: 2 Threaded dowels, 2 Screws

Catalog No. Type	Code	D	A	B	C	G	K	R	S	U	X	Y	Screw Size
ARTF	10	10,00	44,5	43,7	15,5	11,1	19,0	9,5	12,0	26,925	9,0	7,5	M8
ARTF	13	13,00	50,8	50,0	18,5	14,3	19,0	12,7	15,2	29,970	12,0	6,5	M8
ARTF	16	16,00	54,0	53,2	21,5	15,9	19,0	14,3	16,8	31,750	13,5	6,0	M8
ARTF	20	20,00	60,3	59,5	25,5	17,5	19,0	17,5	20,0	33,530	16,5	5,0	M10
ARTF	25	25,00	69,9	69,1	30,5	19,8	23,8	22,2	24,7	40,640	22,0	7,0	M12

*Note: For precision tolerance (±0.01)specify XY at end of catalog number. Example ARTF13 XY

HEADED PUNCH RETAINERSS TRUE LOCATION TYPE ARTFS





Form

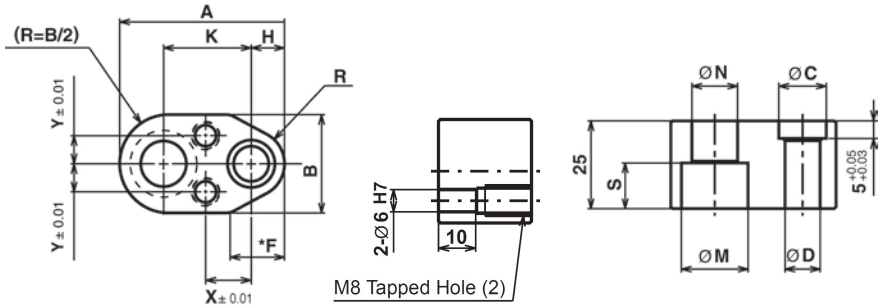
Retainer includes: 2 Threaded dowels, 2 Screws

Katalog Type	Code	D	A	B	G	K	M	R	S	U	X	Y	Screw Size
ARTFS	10	10,00	44,5	43,7	11,1	19,0	7,75	9,5	12,0	26,925	9,0	7,5	M8
ARTFS	13	13,00	50,8	50,0	14,3	19,0	9,25	12,7	15,2	29,970	12,0	6,5	M8
ARTFS	16	16,00	54,0	53,2	15,9	19,0	10,75	14,3	16,8	31,750	13,5	6,0	M8
ARTFS	20	20,00	60,3	59,5	17,5	19,0	12,75	17,5	20,0	33,530	16,5	5,0	M10
ARTFS	25	25,00	69,9	69,1	19,8	23,8	15,25	22,2	24,7	40,640	22,0	7,0	M12

*Note: For precision tolerance (±0.01)specify XY at end of catalog number. Example ARTFS13 XY

*Cylindrical pin bores with slip fit offer the advantage that the cylindrical pins can remain in the tool holder plate, while the punch holder plate can be fitted and removed by hand without affecting the accuracy of the positioning.

HEADED PUNCH RETAINERS TYPE ORT (25 mm)



For Round Punches

Retainer sets include:

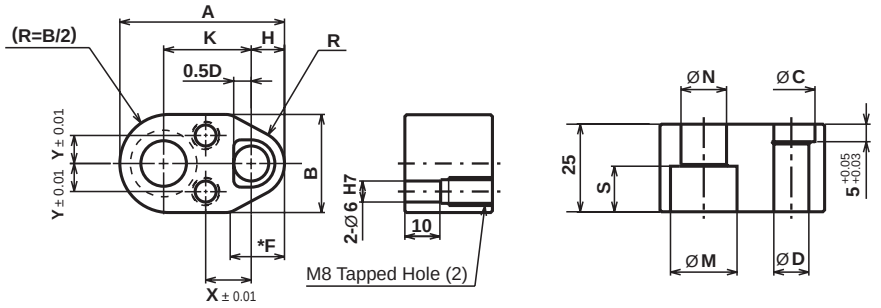
Threaded Dowels	6x20	2pcs
Cap Screws	M12x40 or M16x45	1pcs

How to order:

Specify:	Quantity	6
	Catalog No.	ORT10

Catalog No. Type	Code	D	A	B	H	F	K	C	M	N	S	R	X	Y	Screw Size
ORT	10	10.014/10.005	47	28	9.5	15.5	25.0	13.5	19.0	13.0	13.0	9.5	13.0	8.0	M12x40
ORT	13	13.017/13.006	50	28	12.5	12.5	25.0	16.5	19.0	13.0	13.0	12.5	13.0	8.0	
ORT	16	16.017/16.006	52	32	14.0	14.0	25.0	19.5	19.0	13.0	13.0	14.0	13.0	8.0	
ORT	20	20.020/20.007	55	35	17.5	–	25.0	23.5	19.0	13.0	13.0	17.5	14.0	11.0	
ORT	25	25.020/20.007	73	44	22.0	–	35.0	28.5	25.0	17.0	10.0	22.0	20.0	15.0	M16x45
ORT	32	32.025/32.009	73	50	22.0	22.0	35.0	35.5	25.0	17.0	10.0	22.0	20.0	15.0	

HEADED PUNCH RETAINERS TYPE ORTS (25 mm)



For Shaped Punches with Center Location Locking Devices

Retainer sets include:

Threaded Dowels	6x20	2pcs
Cap Screws	M12x40 or M16x45	1pcs

How to order:

Specify:	Quantity	6
	Catalog No.	ORTS25

Catalog No. Type	Code	D	A	B	H	F	K	C	M	N	S	R	X	Y	Screw Size
ORTS	10	10.014/10.005	47	28	9.5	15.5	25.0	13.5	19.0	13.0	13.0	9.5	13.0	8.0	M12x40
ORTS	13	13.017/13.006	50	28	12.5	12.5	25.0	16.5	19.0	13.0	13.0	12.5	13.0	8.0	
ORTS	16	16.017/16.006	52	32	14.0	14.0	25.0	19.5	19.0	13.0	13.0	14.0	13.0	8.0	
ORTS	20	20.020/20.007	55	35	17.5	–	25.0	23.5	19.0	13.0	13.0	17.5	14.0	11.0	
ORTS	25	25.020/20.007	73	44	22.0	–	35.0	28.5	25.0	17.0	10.0	22.0	20.0	15.0	M16x45
ORTS	32	32.025/32.009	73	50	22.0	22.0	35.0	35.5	25.0	17.0	10.0	22.0	20.0	15.0	

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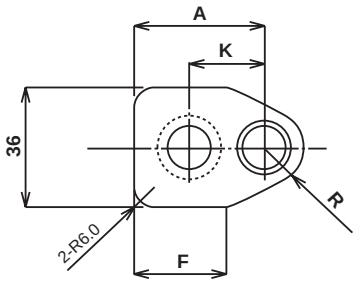
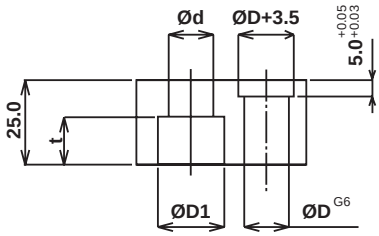
HEADED PUNCH RETAINERS TYPE ERTX (25 mm)

For Round Punches

Retainer sets include:
Cap Screws M12x40 or M16x40 1pcs





Catalog No. Type	Code	D	K	A	F	R	D1	d	t	Screw Size
ERTX	**10**	10.014/10.005	22	38	27	11.5	19	13	13	M12x40
ERTX	**13**	13.017/13.006	22	38	27	11.5	19	13	13	
ERTX	**16**	16.017/16.006	26	45	34	14.0	25	17	17	M16x40

How to order:

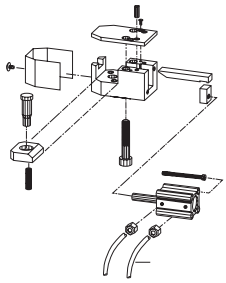
Specify: Quantity **6**

Catalog No. **ERTX13**

Engage or disengage punches in seconds

Change retainers are used where different hole patterns are requiered. 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.

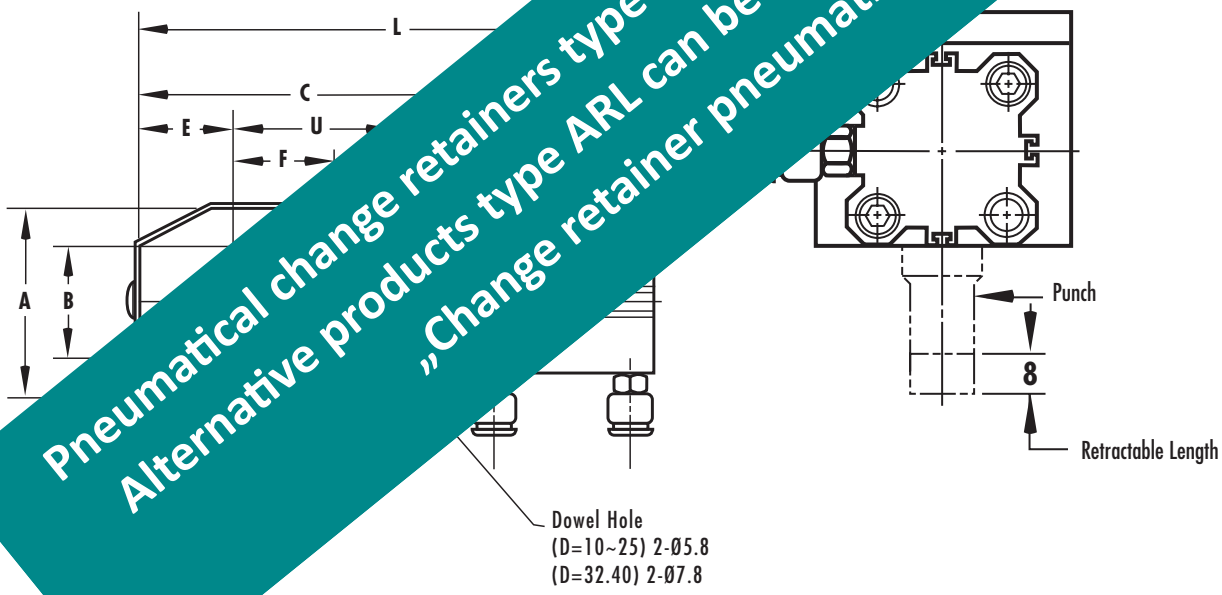
Changing hole patterns takes only minutes, sometimes only seconds. A bar holding the punch in position is released to allow the punch to retract up far enough to avoid contact with the material.

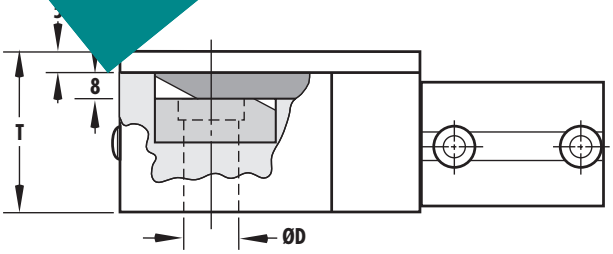


Change Retainer includes all necessary screw[illegible] [illegible]gs.
Ø6 tubing for air supplay is not include[illegible]

With pneumatic contro[illegible]

Pneumatical change retainers type ARA are no longer available.
Alternative products type ARL can be found in the catalogue
„Change retainer pneumatical“.





Air cylinder can be removed and remounted 90° or 180° from location shown.

Recommended air pressure is
65 – 75 PSI (450–520 kPa/cm2)
Min. pressure: 45 PSI (315 kP/cm2)
Max. pressure: 145 PSI (1000 kP/cm2)

Catalog No. Round	D	L	A	B	C	E	F	H	T	Screw Size
ARA	10		46							M8
ARA	13	128	49	30	73	18	25	45	41	M10
ARA	16									M10
ARA	20	155	58	38	90	23	29	45	45	M10
ARA	25	155	58	38	90	23	29	45	45	M10
ARA	32	208	80	56	125	33	38	55	60	M12
ARA	40	208	80	56	125	33	38	55	60	M12

How to order:

Specify: Quantity **6**

Catalog No. **ARA16**

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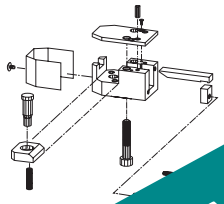
CHANGE RETAINERS TYPE ARAS

Engage or disengage punches in seconds

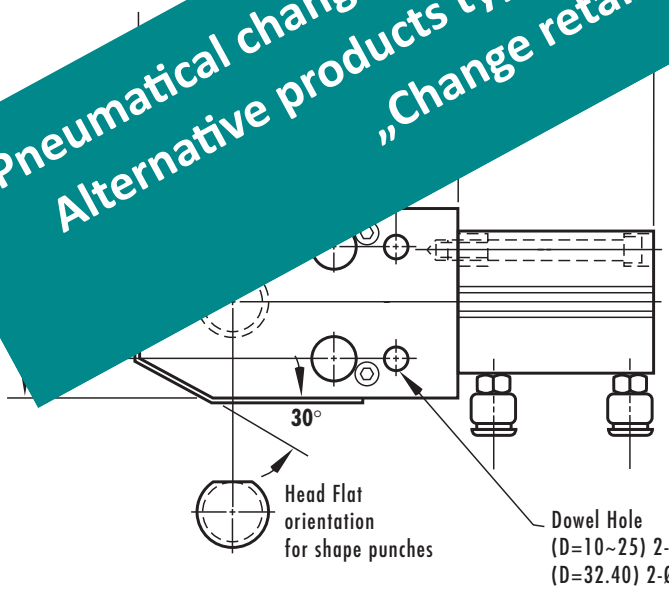
Change retainers are used where different hole patterns are requiered. Various hole patterns can be accomplished without the need for multiple dies. Different parts, such as right and left hand can be run in one die.

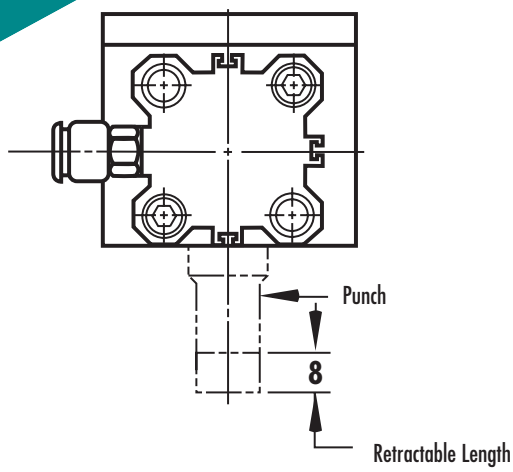
Changing hole patterns takes only minutes, sometimes only seconds. A bar holding the punch in p
the punch to retract up far enough to avoid contact with the material.

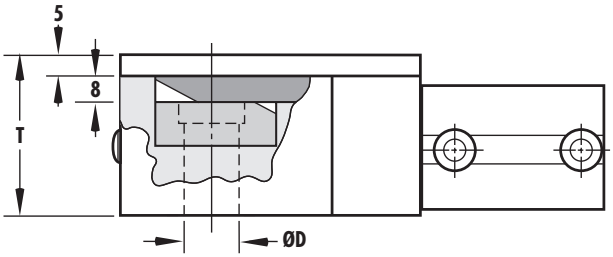


Change Retainer includes all
Ø6 tubing for air su

Pneumatical change retainers type ARAS are no longer available.
Alternative products type ARLS can be found in the catalogue
„Change retainer pneumatical".







Air cylinder can be removed and remounted 90° or 180° from location shown.

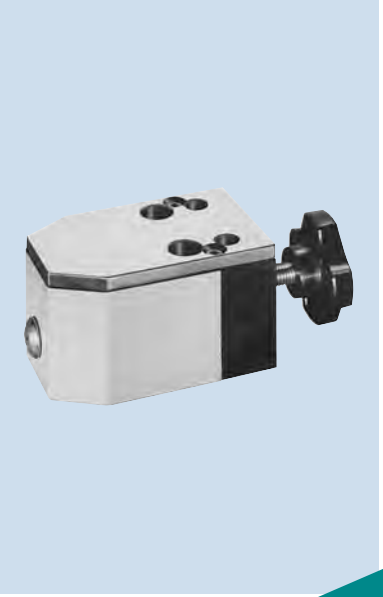
Recommended air pressure is
65 – 75 PSI (450–520 kPa/cm2)
Min. pressure: 45 PSI (315 kP/cm2)
Max. pressure: 145 PSI (1000 kP/cm2)

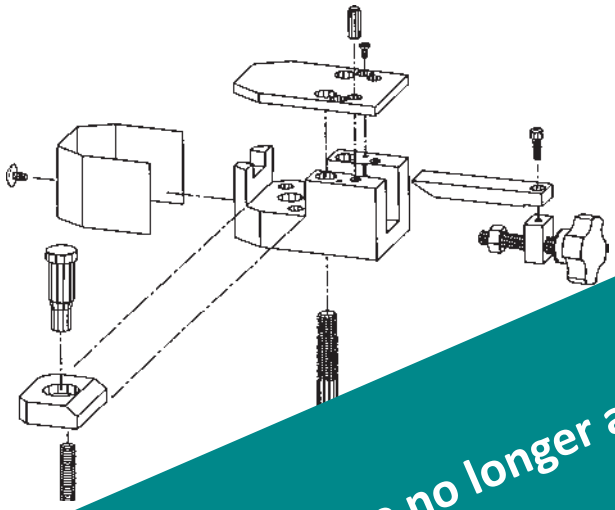
Catalog No. Round	D	L	A	B	C	E	F	H	T	Screw Size
ARAS	10		46							M8
ARAS	13	128	49	30	73	18	25	45	41	M10
ARAS	16									M10
ARAS	20	155	58	38	90	23	29	45	45	M10
ARAS	25	155	58	38	90	23	29	45	45	M10
ARAS	32	208	80	56	125	33	38	55	60	M12
ARAS	40	208	80	56	125	33	38	55	60	M12

How to order:

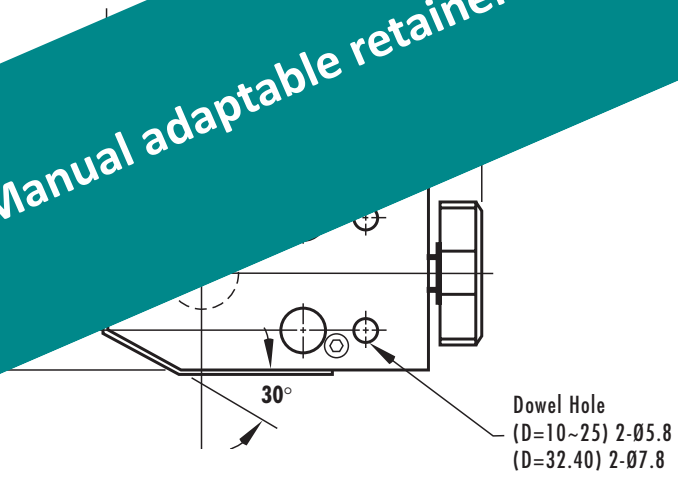
Specify:	Quantity	**6**
	Catalog No.	**ARAS16**

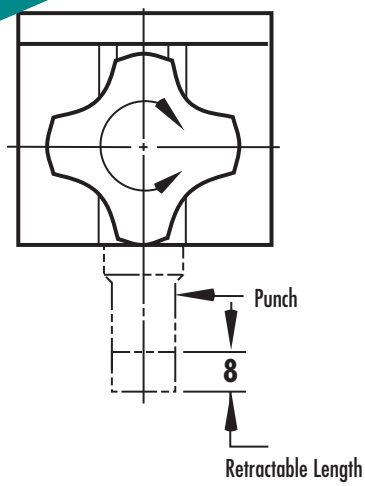
CHANGE RETAINERS TYPE ARC

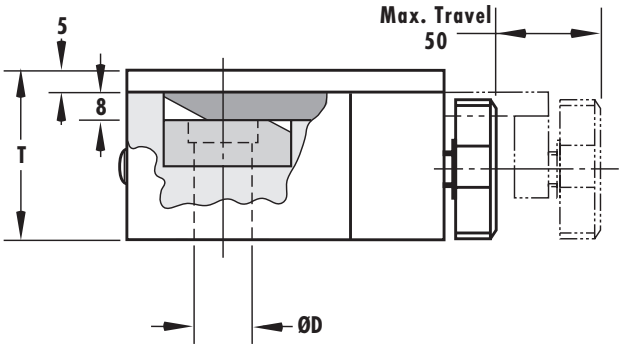




Manual adaptable retainers type ARC are no longer available.







Catalog No. Round	D	L	A	B	C	E	F	H	T	Screw Size
ARC	10		46							M8
ARC	13	99	49	30	73	18	25	45	41	M10
ARC	16									M10
ARC	20	115	58	38	90	23	29	45	45	M10
ARC	25	115	58	38	90	23	29	45	45	M10
ARC	32	150	80	56	125	33	38	55	60	M12
ARC	40	150	80	56	125	33	38	55	60	M12

How to order:

Specify: Quantity **12**

Catalog No. **ARC 20**

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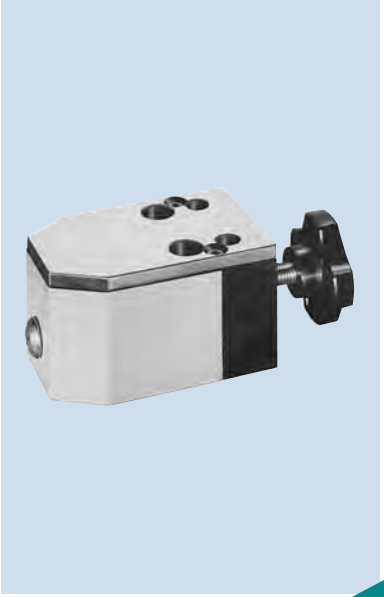
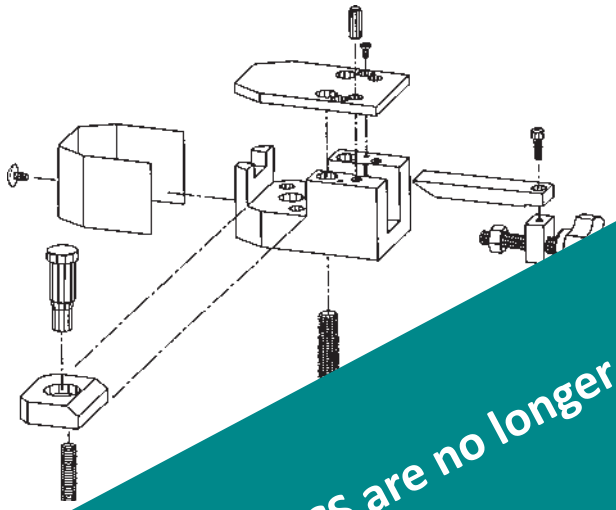
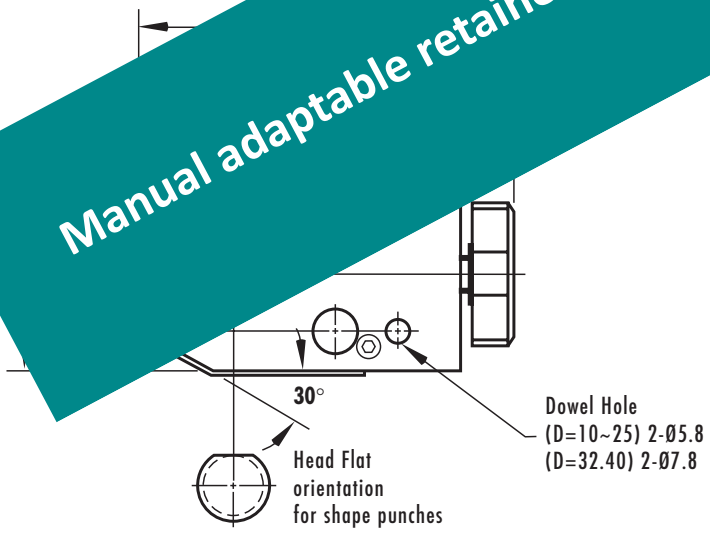
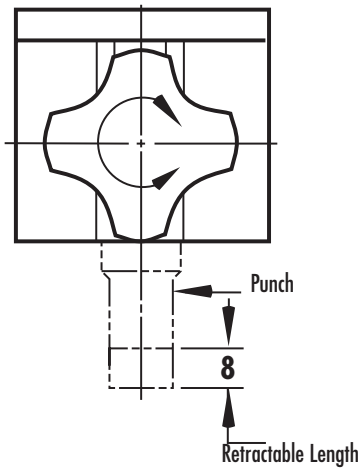
CHANGE RETAINERS TYPE ARCS

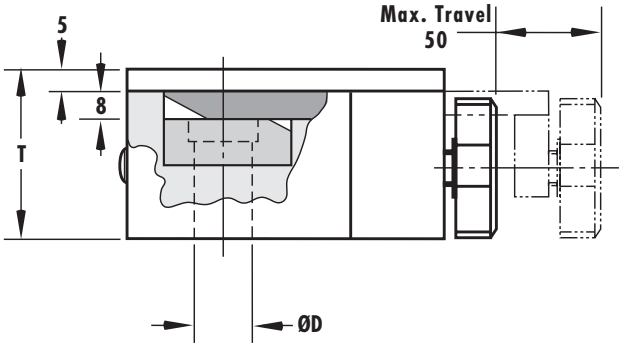




Manual adaptable retainers type ARCS are no longer available.







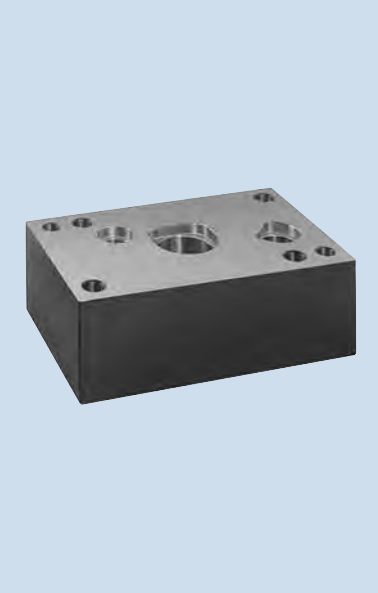
Catalog No. Form	D	L	A	B	C	E	F	H	T	Screw Size
ARCS	10		46							M8
ARCS	13	99	49	30	73	18	25	45	41	M10
ARCS	16									M10
ARCS	20	115	58	38	90	23	29	45	45	M10
ARCS	25	115	58	38	90	23	29	45	45	M10
ARCS	32	150	80	56	125	33	38	55	60	M12
ARCS	40	150	80	56	125	33	38	55	60	M12

How to order:

Specify: Quantity **12**

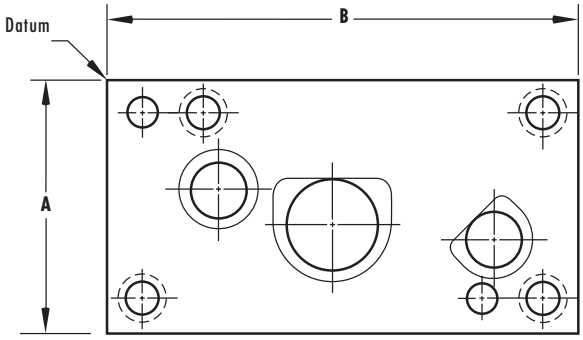
Catalog No. **ARCS 20**

MULTI-LOCATION™ RETAINERS TYPE ARP

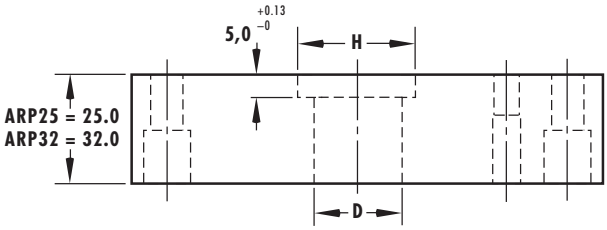


Dayton's Multi-Location™ Retainers provide a simple, cost-effective solution when multiple holes are required in a small area. They eliminate the need for special details, cutting both design and build time.

For Headed Punches ISO 8020



Note:
Looking at retainer from punch head side.



Specify screw and dowel size and location

Punch Hole Sizes

D	4.0	5.0	6.0	8.0	10.0	13.0	16.0	20.0	25.0	32.0
H	8.0	9.0	10.0	12.0	14.0	17.0	20.0	24.0	29.0	36.0
Ø Dowel	**3**	**4**	**5**	**6**	**8**	**10**	**12**	**13**	**16**	
Tapped Hole	**M5**	**M6**	**M8**	**M8**	**M10**	**M12**	**M16**	**M16**	**M20**	

Hole Locations from Datum

Dowel Holes	±0.01
Screw Holes	±0.13
Component Holes	±0.01

		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

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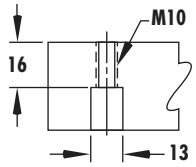
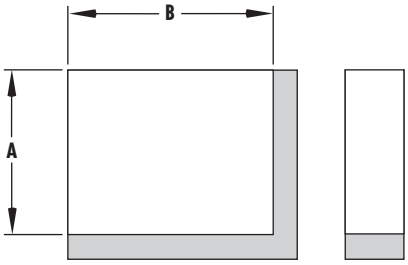
Alterations for **ARP** Multi-Location™ Retainers

Standard Jackscrew Hole Jackscrews make it easier to pull retainer off the dowels.



Special Size

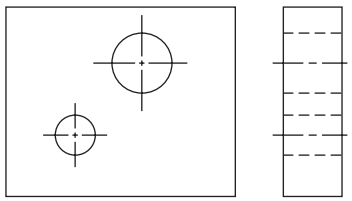
For a custom size, we can remove any amount of material from the side(s) of the retainer. Edges are sawcut ±0.8.



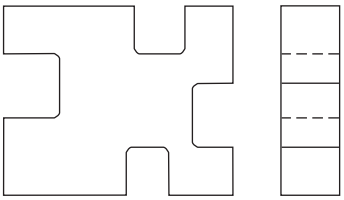
Clearance Holes

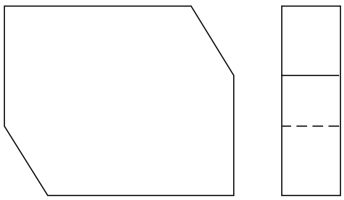
Holes are drilled through the retainer unless otherwise specified.

Customer wish
Location ±0.3
Diameter ±0.4
–0



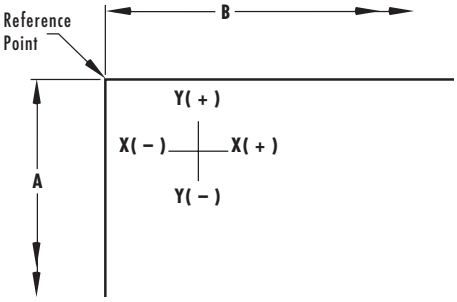
Notches and Angles Drawings needed. Tolerance ±0.8 mm.





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	Component		Location		Locking Device	
No.	Type	Sizes	X Axis	Y Axis	Location	Type
1	Dowel	10.0 Slip Fit	13.0	-13.0	–	–
2	S.H.C.S.	M 10	35.0	-13.0	–	–
3	AJR	16	53.5	-35.5	90°	X2
4	Clear	Ø33	108.0	-27.0	–	–
5	Jackscrew	STD.	25.0	-25.0	–	–

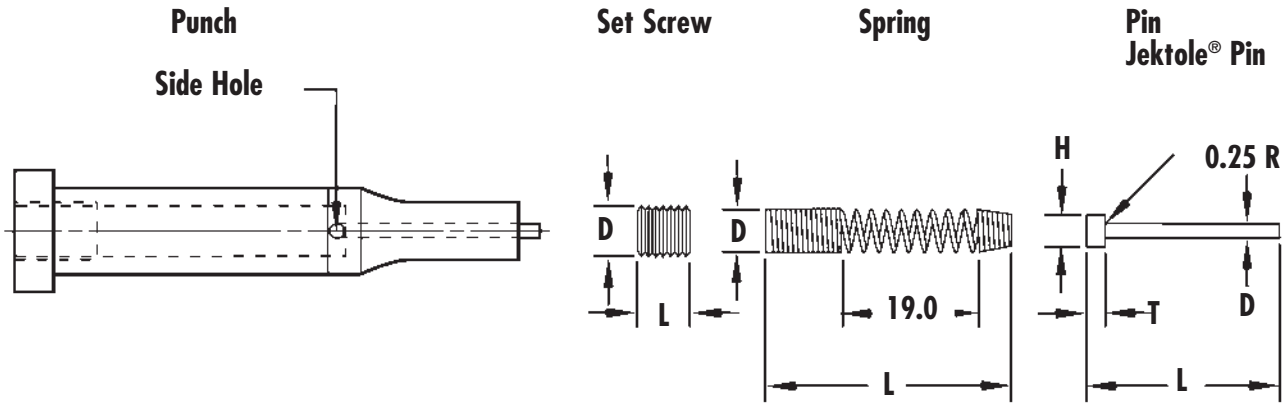
You must specify all dimension from datum.

Jektole® in Production

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

Jektole® in Maintenance

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



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 Lentgh	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	L	5.0	5.0	5.0	5.0	6.0	6.0

Jektole® Design Limits

Dimensions		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 Length		32	38	41	41	41	41
Max. Shank Length	S	87	87	84	84	84	70

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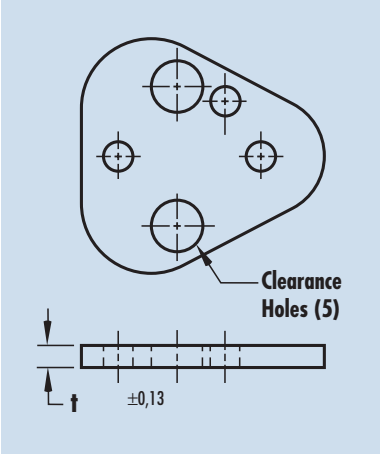
SHIM PLATES/BACKING PLATES

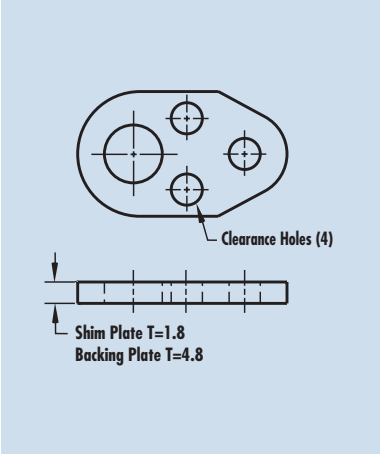


Retainer	D	Shim Plate t=1.8 (soft)	Backing Plate t=4.8 (HRC55)
ARTF/ARTFS	10	URSP 1018	URBP 1048
ARTF/ARTFS	13	URSP 1318	URBP 1348
ARTF/ARTFS	16	URSP 1618	URBP 1648
ARTF/ARTFS	20	URSP 2018	URBP 2048
ARTF/ARTFS	25	URSP 2518	URBP 2548

Retainer	D	Shim Plate t=1.8 (soft)	Backing Plate t=4.8 (HRC55)
ART/ARTS	10	URSP 1018	URBP 1048
ART/ARTS	13	URSP 1318	URBP 1348
ART/ARTS	16	URSP 1618	URBP 1648
ART/ARTS	20	URSP 2018	URBP 2048
ART/ARTS	25	URSP 2518	URBP 2548
ART/ARTS	32	URSP 3218	URBP 3248

How to order:

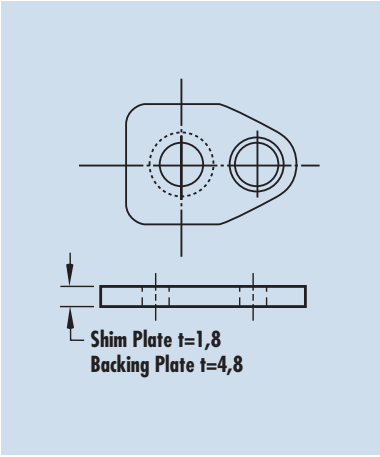
Specify:			
Quantity	10	10	10
Catalog No.	ART10	URSP1018	URBP1048



Retainer	D	Shim Plate t=1.8 (soft)	Backing Plate t=4.8 (HRC55)
ORT/ORTS	10	ORSP 1018	ORBP 1048
ORT/ORTS	13	ORSP 1318	ORBP 1348
ORT/ORTS	16	ORSP 1618	ORBP 1648
ORT/ORTS	20	ORSP 2018	ORBP 2048
ORT/ORTS	25	ORSP 2518	ORBP 2548
ORT/ORTS	32	ORSP 3218	ORBP 3248

How to order:

Specify:		
Quantity	6	6
Catalog No.	ORSP1018	ORBP1048



Retainer	D	Shim Plate t=1.8 (soft)	Backing Plate t=4.8 (HRC55)
ERTX	10	ERSP 1018	ERBP 1048
ERTX	13	ERSP 1318	ERBP 1348
ERTX	16	ERSP 1618	ERBP 1648

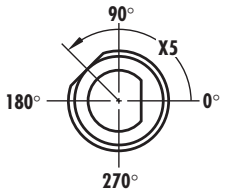
How to order:

Specify:		
Quantity	6	6
Catalog No.	ERSP1618	ERBP1648

CLASSIFIED SHAPES

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

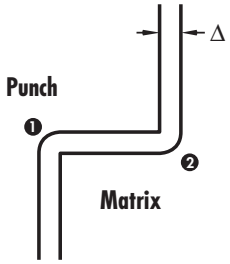
Orientation and Locking
The Locking Device orientation is standard at 0°.



Reflected View

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

Notes ❶ and ❷ – Fillets and Sharp Corners
Normal grinding methods produce:
❶ 0.2 max fillet on the punch matching corner sharp on the matrix.
❷ 0.2 max fillet on the matrix matching corner sharp on the punch.

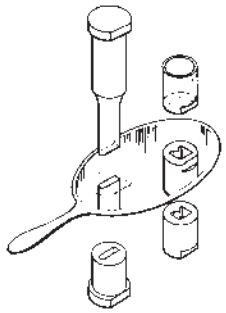


Shape Center
Shapes are centered on punch shanks as shown.
Shapes in guide bushings and matrixes are also centered as shown with the exception of shapes C22 and C34. Due to clearance, the P dimension on these shapes will not be centered.

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

Reflected View – Punches and Guides
The Reflected View is used for Punches and Guides. It is the view as seen in a mirror held below a punch or guide in its operating position. It is the same as a Plan View from the head end, in which the point shape is shown dotted except a Reflected View is shown with solid lines. The Reflected View simplifies design and eliminates confusion. Shapes on the part print, strip layout, punch, matrix and guide are the same basic view. Orientation for locking devices is the same position on all components.

Note: Must identify as REFLECTED VIEW on punch drawing.



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NOTES

CLASSIFIED SHAPES

Orientation & Locking

X2 Standard Locations
The standard location of key flats is at 0°. Alternate locations of 90°, 180° or 270° can be specified at no extra cost (against glockwise). Additional information on page 6.4.1.

X5 Alternate Locations
Custom locations of key flats can be specified as X5 and degree from 0°. The specification of the degree number is against glockwise.

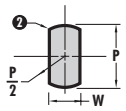
Simplified Specifications
83 Common Shapes – No Detailing Required

90°

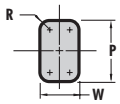
180° 0°

Flatted Rounds

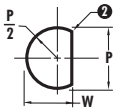
C10**



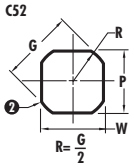
C11**



C33

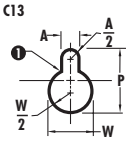


C52

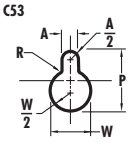


Mono Lobes

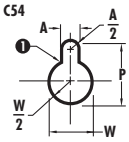
C13



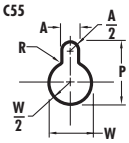
C53



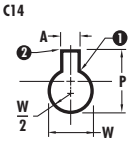
C54



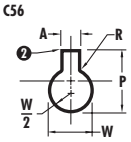
C55



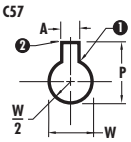
C14



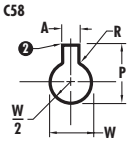
C56



C57

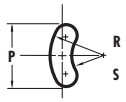


C58

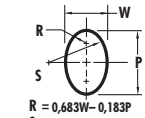


Miscellaneous

C40

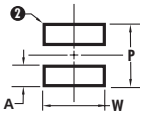


C41

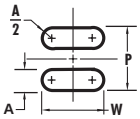


R = 0,683W– 0,183P
S = 1,183P– 0,683W

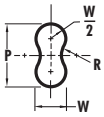
C42*



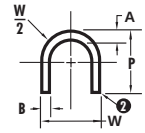
C43*



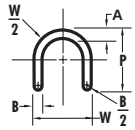
C93



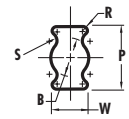
C64*



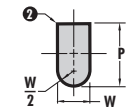
C65*



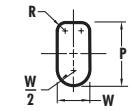
C27



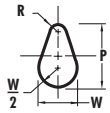
C28**



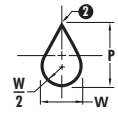
C29



C16

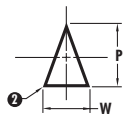


C34*

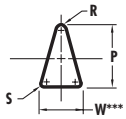


Triangles/Trapezoids

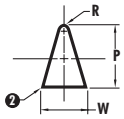
C22*



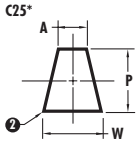
C23



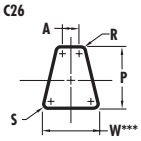
C24*



C25*



C26

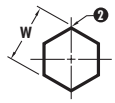


** Now a standard shape.

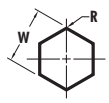
*** Tangential

Polygons

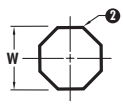
C12



C85

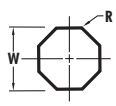


C35



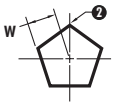
A= Even No. of Sides

C86



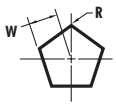
A= Even No. of Sides

C36



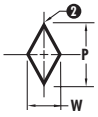
A= Odd No. of Sides

C87

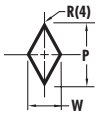


A= Odd No. of Sides

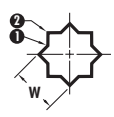
C88



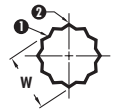
C89



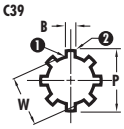
C37



C38

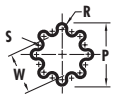


C39



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

C90*



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

270°

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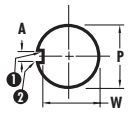
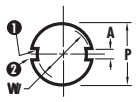
90°

Keys

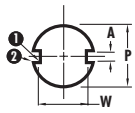
C30



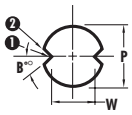
C31



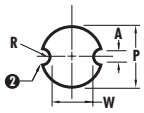
C32



C61

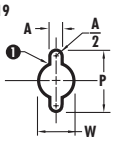


C62

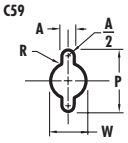


Multi Lobes

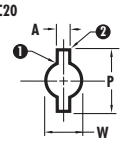
C19



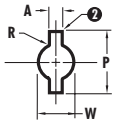
C59



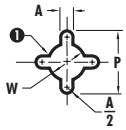
C20



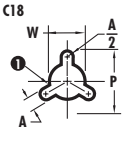
C60



C17

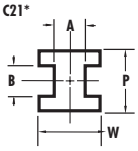


C18

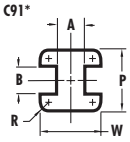


Duo Tees

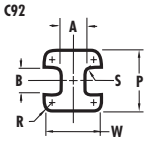
C21*



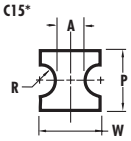
C91*



C92

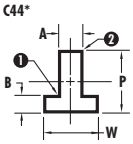


C15*

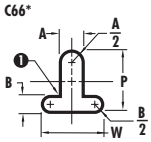


T's

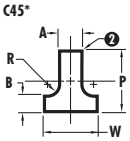
C44*



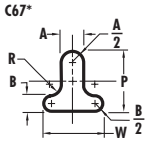
C66*



C45*



C67*

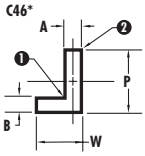


L's

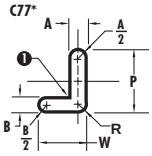
180°

0°

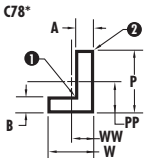
C46*



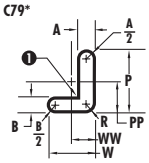
C77*



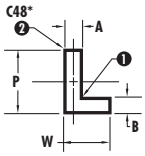
C78*



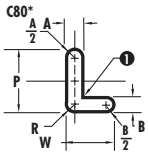
C79*



C48*



C80*



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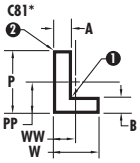
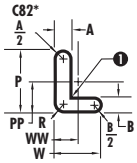


C82*



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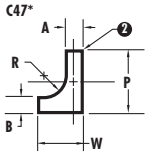

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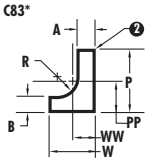
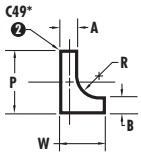
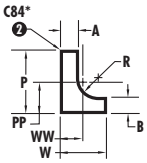


C49*

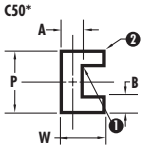


C84*

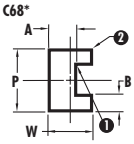


U's

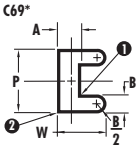
C50*



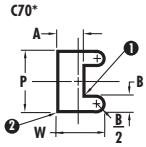
C68*



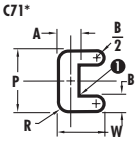
C69*



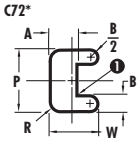
C70*



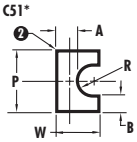
C71*



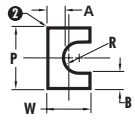
C72*



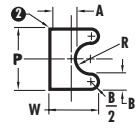
C51*



C73*



C74*



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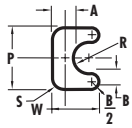
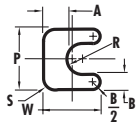


C76*



* Avoid excessive overhang by specifying shaped back hole on AD_ and CD_ or use AN_ Matrixes.

270°

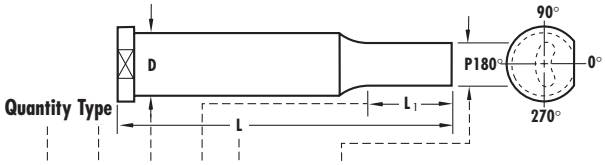
❶ Sharp corners are typical. To assure proper clearance, Dayton will provide standard broken corners if matrix is ordered with punch to eliminate interference with matrix fillet when total clearance is 0.08 or less.

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

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

How to order:

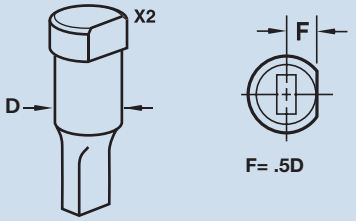
Specify:
- Quantity
- Type
- Shank Diameter
- Point & Overall Length
- Steel
- Standard Alterations
- P or P&W Dimensions

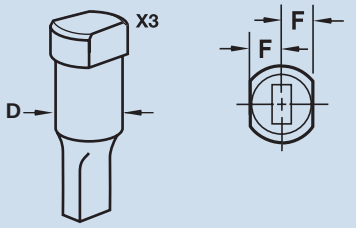


10 APC 20 1990 M2 C40 P16 R35 S28 X2

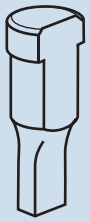
Definitions:
Standard Location is at 0°.
Alternate Location is 90°, 180° or 270°.
Alternate Locations are available at no additional charge.

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

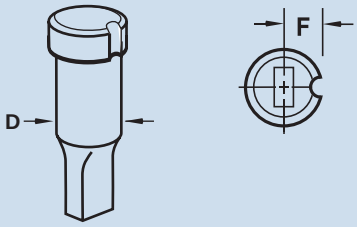




F= 0.5 D



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



F= 0.5 D + ½ Dowel Dia.

Flächen

	Single Flats X2	Single Flats X5
Locking Devices:	X2	X5
Punch	Top	Top
How to order:	**X2 – 90°**	**X5 – 135°**

	Double Flats X3	Double Flats X6
Locking Devices:	X3	X6
Punch	Top	Top
How to order:	**X3 – 90°**	**X6 – 135°**

Second Flat is always parallel to the first flat.

Additional Flats

Code	Depth	Length	Code	Depth	Length
X81	1.5	13	X91	1.5	13
X82	1.5	16	X92	1.5	16
X83	1.5	20	X93	1.5	20
X84	1.5	Full Length	X94	1.5	Full Length
X85	2.5	13	X95	2.5	13
X86	2.5	16	X96	2.5	16
X87	2.5	20	X97	2.5	20
X88	2.5	Full Length	X98	2.5	Full Length
X89	Specifiy Dimensions		X99	Specifiy Dimensions	

Dowel Slots

	Dowel Slots X0, X4, X41, X43				Dowel Slots X1, X7, X71, X73			
Locking Devices:	X0	X4	X41	X43	X0	X4	X41	X43
Dowel Dia.	3.0	3.0	4.0	6.0	3.0	3.0	4.0	6.0
How to order:	**X0 – 180°**				**X71 – 135°**			

Dowel Slot F Dimension

Body Ø		08	10	13	16-25	32-71
X0/X1	F	0.5D	0.5D	0.5D	0.5D	0.5D
X4/X7	F	4.7	5.5	6.7	0.5D	0.5D
X41/X71	F	5.2	6.0	7.2	0.5D	0.5D
X43/X73	F	6.2	7.0	8.2	0.5D+1.0	0.5D

How to order:

5 ADO 40 30 P16.00 W6.40 X2
9 ADR 100 35 P75.00 W50.00 X83

Key Flats vs. Dowel Slots
Maximum hole dimensionin 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 PROGRESS LTD · G 1 Holly Farm Business Park · Honiley · Kenilworth · Warwickshire CV8 1NP UK
Telephone: +44 (0) 1926-484192 · Fax: +44 (0) 1926-484172 · http://www.daytonprogress.com · email: info@daytonprogress.co.uk

NOTES

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