



AMERICAN PUNCH COMPANY



**Precision Tooling for Stamping,
Roll Forming and Metalforming**

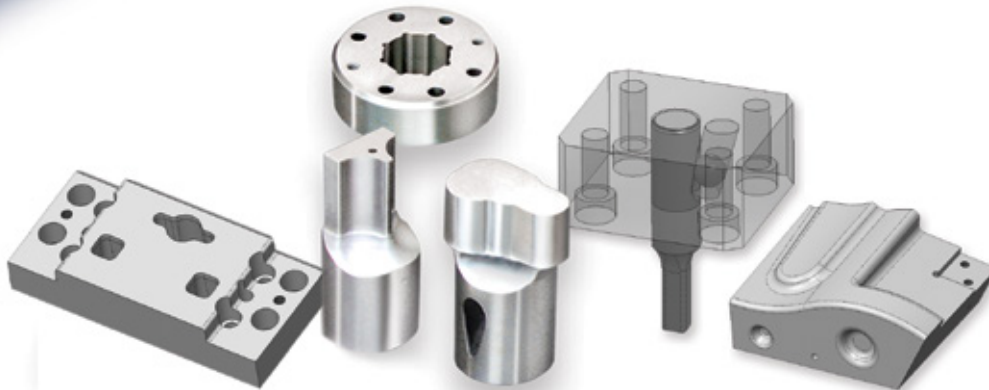
**Custom Die Components, Ball Lock and Headed Punches,
Die Buttons and Retainers**

www.AmericanPunchCo.com • info@AmericanPunchCo.com

800.243.1492



Precision Tooling for Stamping, Roll Forming and Metalforming



**Don't let the precision die components
be the piece in your manufacturing puzzle that
prevents you from keeping your lines up and running.**

Count on American Punch Company for precision tooling that is engineered and manufactured with great care and attention to detail. Our state-of-the-art manufacturing facility utilizes the latest in wire EDM, CNC machining centers and CNC JIG grinding that ensures accuracy and repeatability for standard precision tooling and made-to-order components.



Quality is manufactured into every tool.

American Punch is dedicated to delivering the highest quality tooling available. Our precision manufacturing process begins with the finest tool steels produced today. Because we're ISO certified, rigorous quality control procedures assure that our tools stand up to the tough demands of all your applications.

Precision die components made to order, when you need them.

We specialize in custom or made-to-order precision die components. From our plant in Cleveland, Ohio, tooling can be made to your specifications, or we can assist in the design of your products.

Contact us today for all your precision tooling for stamping, roll forming and metalforming.

- Automation Details
- Ball Lock Buttons
- Ball Lock Retainers
- Blade Punches
- Cut-off Dies
- Die Components
- Die Inserts
- Die Sections
- Headed and Headless Die Buttons
- Headed Punch Retainers
- Headed and Ball Lock Punches
- Piercing Punches
- Robotics Details
- Roll Form Details
- Stamping Details





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Be sure to ask about our exclusive, wear-resistant coating that increases surface hardness to improve tooling wear and greatly reduces adhesive surface buildup (galling).

PUNCH ARMOR is a multi-layer coating developed from many years of research and surpasses other Physical Vapor Deposition (PVD) products such as Titanium Nitride (TiN) and Chromium Nitride (CrN). For applications that still require a TiN coating, we offer our PUNCH ARMOR GOLD, an improved formulation of Titanium Nitride. Gold in color, it is more durable and has outperformed other TiN coatings in similar applications.

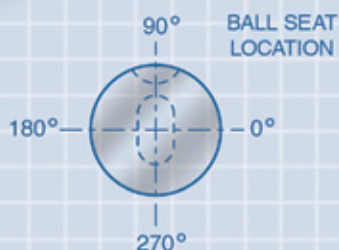
PUNCH ARMOR and PUNCH ARMOR GOLD both have base material requirements and provide the best opportunity to significantly extend tool life, available only from American Punch. Visit our website for more information.

NOTE: ALL VIEWS ARE DRAWN IN DIE POSITION

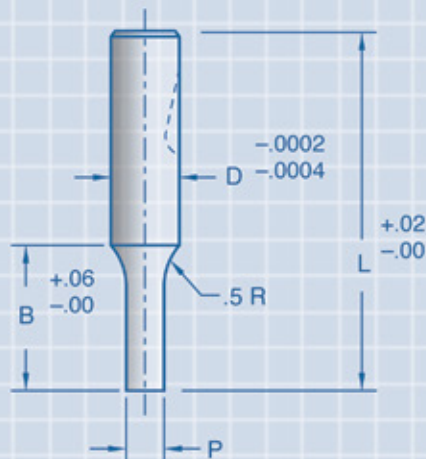




Light Duty Ball-Lock Punch



View shown in die position.
Ball seat at 90° is standard.
For alternate ball seat locations, angle from 0° must be specified.



ROUND P $\begin{matrix} +.0005 \\ -.0000 \end{matrix}$ Ⓢ .0005 P to D
SHAPE P,W $\pm .0005$ Ⓢ .001 P to D

See page 27-29 for classified shapes and standard alterations.

PLB_C **PLB_O** **PLB_R** **PLB_S** **PLB_H**

SHANK DIA. "D"	CATALOG NUMBER	STD. POINT "B"	MIN. "P"	MIN. "W"	MAX. "P/G"	LENGTH RANGE .25 INCREMENT
.250	PLB25_	.50	.078	.078	.250	2.00 - 4.00
.375	PLB37_	.62	.125	.125	.375	2.00 - 5.00
.500	PLB50_	.75	.187	.187	.500	2.00 - 5.00
.625	PLB62_	.88	.312	.250	.625	2.25 - 5.00
.750	PLB75_	.94	.437	.312	.750	2.25 - 5.00
.875	PLB87_	.94	.625	.375	.875	2.25 - 5.00
1.000	PLB100_	.94	.750	.437	1.000	2.25 - 5.00

ALTERNATE "B" LENGTH

- A = STANDARD
- B = .750 PLB25-PLB100 (MIN. L = 2.25)
- C = 1.00 PLB37-PLB100 (MIN. L = 2.25)
- D = 1.25 PLB50-PLB100 (MIN. L = 2.50)

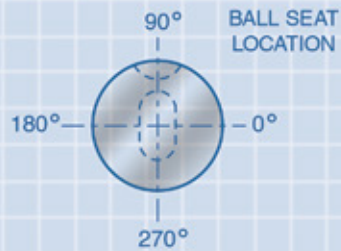
ORDERING EXAMPLE

QTY	CAT #	L	B	P/W	STEEL	B/S
20	PLB75C	2.50	A	P=.375	M2	180

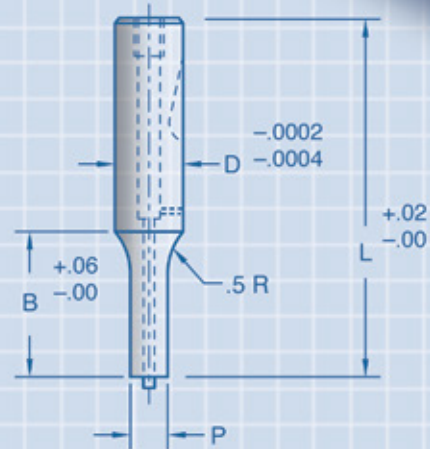
PLB_B for blank punch STEEL - M2 R/C 60-63
PLB_Z for classified shape



Light Duty Ball-Lock Ejector Punch



View shown in die position.
Ball seat at 90° is standard.
For alternate ball seat
locations, angle from 0°
must be specified.



See page 27-29 for classified shapes
and standard alterations.

ROUND P $\begin{matrix} +.0005 \\ -.0000 \end{matrix}$ $\text{Ⓢ} .0005$ P to D
SHAPE P,W $\pm .0005$ $\text{Ⓢ} .001$ P to D



ELB_C

ELB_O

ELB_R

ELB_S

ELB_H

SHANK DIA. "D"	CATALOG NUMBER	STD. POINT "B"	MIN. "P"	MIN. "W"	MAX. "P/G"	LENGTH RANGE .25 INCREMENT	EJ SIZE
.250	ELB25_	.50	.078	.078	.250	2.00 - 3.50	EJ3
.375	ELB37_	.62	.125	.125	.375	2.00 - 4.00	EJ4
.500	ELB50_	.75	.187	.187	.500	2.00 - 4.00	EJ6
.625	ELB62_	.88	.312	.250	.625	2.00 - 4.00	EJ6
.750	ELB75_	.94	.437	.312	.750	2.25 - 4.00	EJ9
.875	ELB87_	.94	.625	.375	.875	2.25 - 4.00	EJ9
1.000	ELB100_	.94	.750	.437	1.000	2.25 - 4.00	EJ9

ALTERNATE "B" LENGTH

- A = STANDARD
- B = .750 ELB25-ELB100 (MIN. L = 2.25)
- C = 1.00 ELB37-ELB100 (MIN. L = 2.25)
- D = 1.25 ELB50-ELB100 (MIN. L = 2.50)

ORDERING EXAMPLE

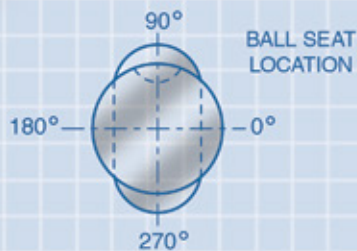
QTY	CAT #	L	B	P/W	STEEL	B/S
20	ELB75C	2.50	A	P=.375	M2	180

ELB_B for blank punch STEEL - M2 R/C 60-63
ELB_Z for classified shape

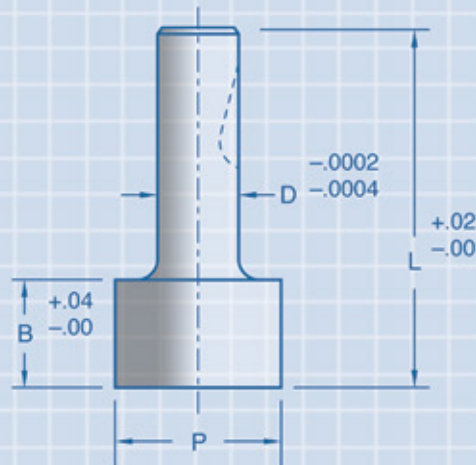
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Inverted Light Duty Ball-Lock Punch



View shown in die position.
Ball seat at 90° is standard.
For alternate ball seat locations, angle from 0° must be specified.



ROUND P $\begin{matrix} +.0005 \\ -.0000 \end{matrix}$ $\text{Ⓞ} \begin{matrix} .0005 \\ P \text{ to } D \end{matrix}$
 SHAPE P,W $\pm .0005$ $\text{Ⓞ} \begin{matrix} .001 \\ P \text{ to } D \end{matrix}$

See page 27-29 for classified shapes and standard alterations.

ILB_C	ILB_O	ILB_R	ILB_S	ILB_H

SHANK DIA. "D"	CATALOG NUMBER	STD. POINT "B"	MIN. "P"	MAX. P/G	MIN. "W"	LENGTH RANGE .25 INCREMENT
.375	ILB37_	.62	.376	.750	.125	2.50 - 3.50
.500	ILB50_	.75	.501	1.250	.188	2.50 - 4.50
.625	ILB62_	.88	.626	1.250	.250	2.50 - 4.50
.750	ILB75_	.94	.751	1.750	.312	2.50 - 4.50
.875	ILB87_	.94	.876	1.750	.375	2.50 - 4.50
1.000	ILB100_	.94	1.001	2.000	.437	2.50 - 4.50
1.250	ILB125_	1.25	1.251	2.500	.500	3.00 - 4.50

ORDERING EXAMPLE

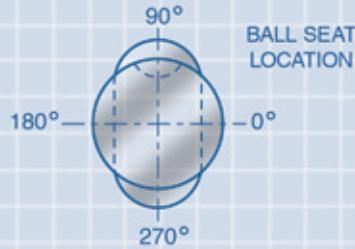
QTY	CAT #	L	P/W	STEEL
20	ILB75C	2.50	P=.875	M2

ILB_B for blank punch
ILB_Z for classified shape

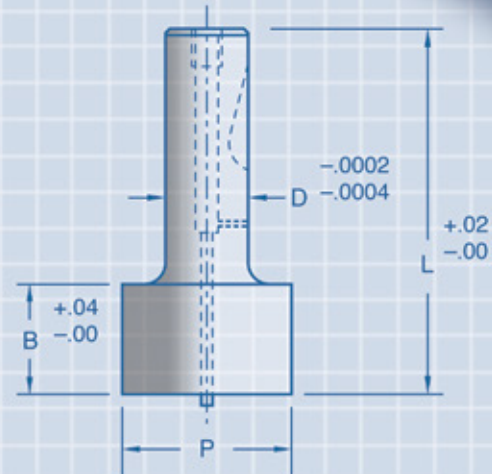
STEEL - M2 R/C 60-63



Inverted Light Duty Ball-Lock Ejector Punch



View shown in die position.
Ball seat at 90° is standard.
For alternate ball seat locations, angle from 0° must be specified.



See page 27-29 for classified shapes and standard alterations.

ROUND P $+ .0005$ $- .0000$ P to D .0005

SHAPE P, W $\pm .0005$ P to D .001



ILE_C



ILE_O



ILE_R



ILE_S



ILE_H

SHANK DIA. "D"	CATALOG NUMBER	STD. POINT "B"	MIN. "P"	MAX. P/G	MIN. "W"	LENGTH RANGE .25 INCREMENT	EJ SIZE
.375	ILE37_	.62	.376	.750	.125	2.50 - 3.50	EJ4
.500	ILE50_	.75	.501	1.250	.188	2.50 - 4.50	EJ6
.625	ILE62_	.88	.626	1.250	.250	2.50 - 4.50	EJ6
.750	ILE75_	.94	.751	1.750	.312	2.50 - 4.50	EJ9
.875	ILE87_	.94	.876	1.750	.375	2.50 - 4.50	EJ9
1.000	ILE100_	.94	1.001	2.000	.437	2.50 - 4.50	EJ9
1.250	ILE125_	1.25	1.251	2.500	.500	3.00 - 4.50	EJ9

ORDERING EXAMPLE

QTY CAT # L P/W STEEL
20 ILE75C 2.50 P=.875 M2

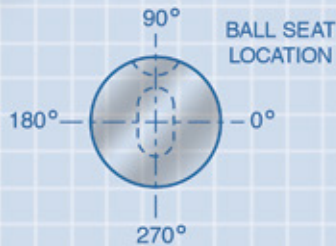
ILB_B for blank punch
ILB_Z for classified shape

STEEL - M2 R/C 60-63

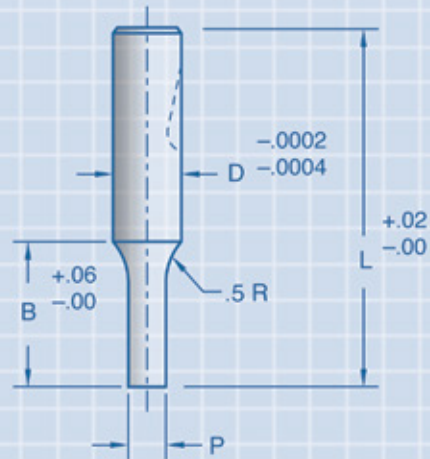
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Heavy Duty Ball-Lock Punch


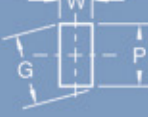



View shown in die position.
Ball seat at 90° is standard.
For alternate ball seat
locations, angle from 0°
must be specified.



ROUND P $\begin{matrix} +.0005 \\ -.0000 \end{matrix}$  .0005 | P to D
SHAPE P,W $\pm .0005$  .001 | P to D

See page 27-29 for classified shapes
and standard alterations.

				
PHB_C	PHB_O	PHB_R	PHB_S	PHB_H

SHANK DIA. "D"	CATALOG NUMBER	STD. POINT "B"	MIN. "P"	MIN. "W"	MAX. "P/G"	LENGTH RANGE .25 INCREMENT
.375	PHB37_	.62	.125	.125	.375	2.50 - 6.00
.500	PHB50_	.81	.187	.187	.500	2.50 - 7.00
.625	PHB62_	.94	.250	.250	.625	2.50 - 7.00
.750	PHB75_	1.06	.437	.312	.750	2.50 - 7.00
.875	PHB87_	1.19	.625	.375	.875	2.75 - 7.00
1.000	PHB100_	1.25	.750	.437	1.000	3.00 - 7.00
1.250	PHB125_	1.44	1.000	.500	1.250	3.00 - 7.00

ALTERNATE "B" LENGTH

- A = STANDARD
- B = .750 PHB37-PHB125 (MIN. L = 2.50)
- C = 1.00 PHB37-PHB125 (MIN. L = 2.50)
- D = 1.25 PHB50-PHB125 (MIN. L = 2.75)

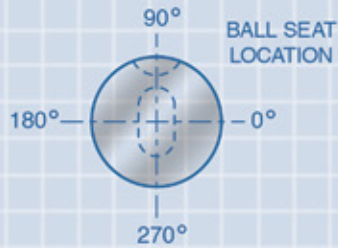
ORDERING EXAMPLE

QTY CAT # L B P/W STEEL B/S
20 PHB75C 2.50 A P=.375 M2 180

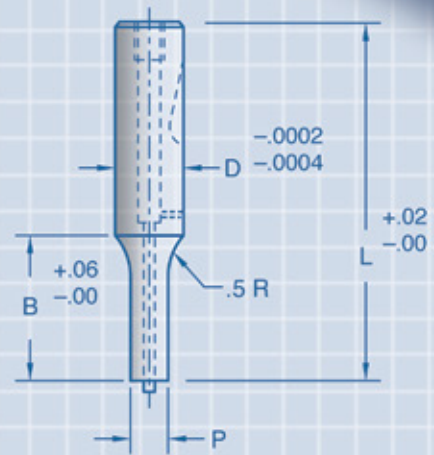
PHB_B for blank punch
PHB_Z for classified shape STEEL - M2 R/C 60-63



Heavy Duty Ball-Lock Ejector Punch



View shown in die position.
Ball seat at 90° is standard.
For alternate ball seat locations, angle from 0° must be specified.



See page 27-29 for classified shapes and standard alterations.

ROUND P $\begin{matrix} +.0005 \\ -.0000 \end{matrix}$ $\text{Ⓢ} .0005$ P to D

SHAPE P,W $\pm .0005$ $\text{Ⓢ} .001$ P to D



EHB_C



EHB_O



EHB_R



EHB_S



EHB_H

SHANK DIA. "D"	CATALOG NUMBER	STD. POINT "B"	MIN. "P"	MIN. "W"	MAX. "P/G"	LENGTH RANGE .25 INCREMENT	EJ SIZE
.375	EHB37_	.62	.125	.125	.375	2.50 - 5.00	EJ4
.500	EHB50_	.81	.187	.187	.500	2.50 - 5.00	EJ6
.625	EHB62_	.94	.312	.250	.625	2.50 - 5.00	EJ6
.750	EHB75_	1.06	.437	.312	.750	2.50 - 5.00	EJ9
.875	EHB87_	1.19	.625	.375	.875	2.75 - 5.00	EJ9
1.000	EHB100_	1.25	.750	.437	1.000	3.00 - 5.00	EJ9
1.250	EHB125_	1.44	1.000	.500	1.250	3.00 - 5.00	EJ9

ALTERNATE "B" LENGTH

- A = STANDARD
- B = .750 EHB25-EHB125 (MIN. L = 2.50)
- C = 1.00 EHB37-EHB125 (MIN. L = 2.50)
- D = 1.25 EHB50-EHB125 (MIN. L = 3.00)

ORDERING EXAMPLE

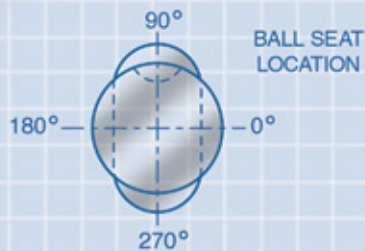
QTY CAT# L B P/W STEEL B/S
20 EHB75C 2.50 A P=.375 M2 180

EHB_B for blank punch
EHB_Z for classified shape STEEL - M2 R/C 60-63

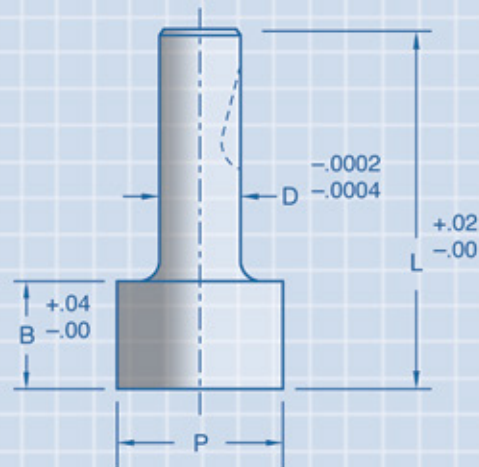




Inverted Heavy Duty Ball-Lock Punch



View shown in die position.
Ball seat at 90° is standard.
For alternate ball seat locations, angle from 0° must be specified.



See page 27-29 for classified shapes and standard alterations.

ROUND P $\begin{matrix} +.0005 \\ -.0000 \end{matrix}$ $\text{Ⓞ} \begin{matrix} .0005 \\ P \text{ to } D \end{matrix}$
SHAPE P,W $\pm .0005$ $\text{Ⓞ} \begin{matrix} .001 \\ P \text{ to } D \end{matrix}$

IHB_C	IHB_O	IHB_R	IHB_S	IHB_H

SHANK DIA. "D"	CATALOG NUMBER	STD. POINT "B"	MIN. "P"	MAX. P/G	MIN. "W"	LENGTH RANGE .25 INCREMENT
.375	IHB37_	.62	.376	.75	.125	2.50 - 3.50
.500	IHB50_	.75	.501	1.250	.188	2.50 - 4.50
.625	IHB62_	.88	.626	1.250	.250	2.50 - 4.50
.750	IHB75_	.94	.751	1.750	.312	2.50 - 4.50
.875	IHB87_	.94	.876	1.750	.375	2.50 - 4.50
1.000	IHB100_	.94	1.001	2.000	.437	2.50 - 4.50
1.250	IHB125_	1.25	1.251	2.500	.500	3.00 - 4.50

ORDERING EXAMPLE

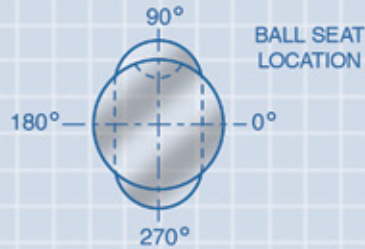
QTY	CAT #	L	P/W	STEEL
20	IHB75C	2.50	P=.875	M2

ILB_B for blank punch
ILB_Z for classified shape

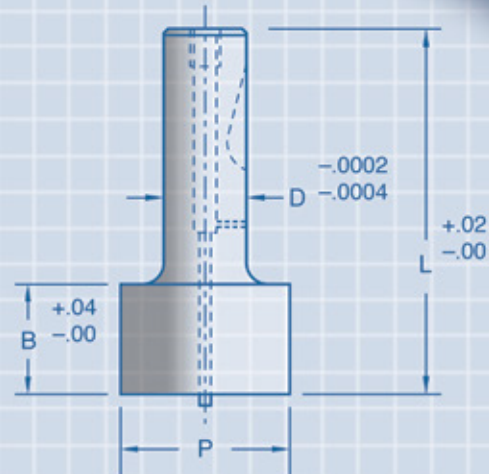
STEEL - M2 R/C 60-63



Inverted Heavy Duty Ball-Lock Ejector Punch



View shown in die position.
Ball seat at 90° is standard.
For alternate ball seat locations, angle from 0° must be specified.



See page 27-29 for classified shapes and standard alterations.

ROUND P $\begin{matrix} +.0005 \\ -.0000 \end{matrix}$ Ⓢ .0005 P to D

SHAPE P,W $\pm .0005$ Ⓢ .001 P to D



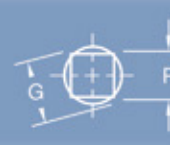
IHE_C



IHE_O



IHE_R



IHE_S



IHE_H

SHANK DIA. "D"	CATALOG NUMBER	STD. POINT "B"	MIN. "P"	MAX. P/G	MIN. "W"	LENGTH RANGE .25 INCREMENT	EJ SIZE
.375	IHE37_	.62	.376	.75	.125	2.50 - 3.50	EJ4
.500	IHE50_	.75	.501	1.250	.188	2.50 - 4.50	EJ6
.625	IHE62_	.88	.626	1.250	.250	2.50 - 4.50	EJ6
.750	IHE75_	.94	.751	1.750	.312	2.50 - 4.50	EJ9
.875	IHE87_	.94	.876	1.750	.375	2.50 - 4.50	EJ9
1.000	IHE100_	.94	1.001	2.000	.437	2.50 - 4.50	EJ9
1.250	IHE125_	1.25	1.251	2.500	.500	3.00 - 4.50	EJ9

ORDERING EXAMPLE

QTY CAT # L P/W STEEL
20 IHE75C 2.50 P=.875 M2

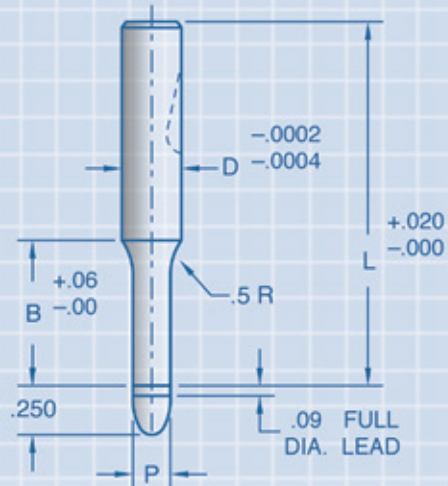
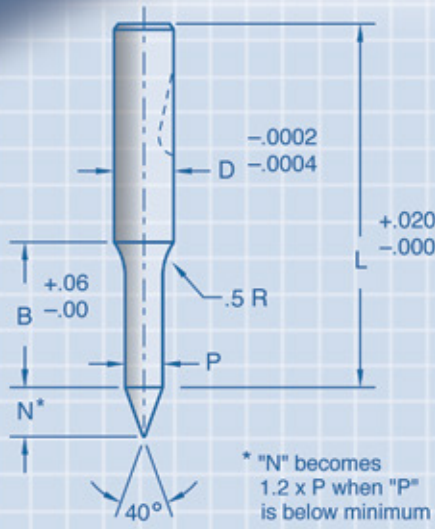
ILB_B for blank punch
ILB_Z for classified shape

STEEL - M2 R/C 60-63

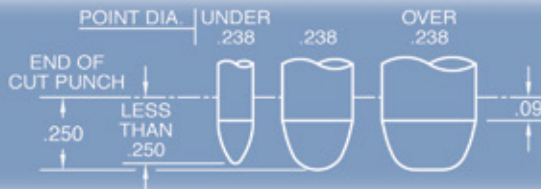
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Light Duty Ball-Lock Pilot Punch



ROUND P $+0.0005$
 -0.0000 $\text{◎} .0005$ P to D



CLB_A

CLB_P

SHANK DIA. "D"	CATALOG NUMBER	STD. POINT "B"	"N"	MIN. "P" DIM. FOR "N" LEAD	MIN. "P"	MAX. "P"	"L" LENGTH RANGE .25 INCREMENT
.250	CLB25_	.50	.25	.175	.078	.250	2.00 - 4.00
.375	CLB37_	.62	.37	.260	.125	.375	2.00 - 5.00
.500	CLB50_	.75	.50	.360	.187	.500	2.00 - 5.00
.625	CLB62_	.88	.62	.445	.312	.625	2.00 - 5.00
.750	CLB75_	.94	.75	.540	.437	.750	2.25 - 5.00
.875	CLB87_	.94	.87	.625	.625	.875	2.25 - 5.00
1.000	CLB100_	.94	1.00	.720	.750	1.000	2.25 - 5.00

ALTERNATE "B" LENGTH

- A = STANDARD
- B = .750 CLB25-CLB100 (MIN. L = 2.25)
- C = 1.00 CLB37-CLB100 (MIN. L = 2.25)
- D = 1.25 CLB50-CLB100 (MIN. L = 2.50)

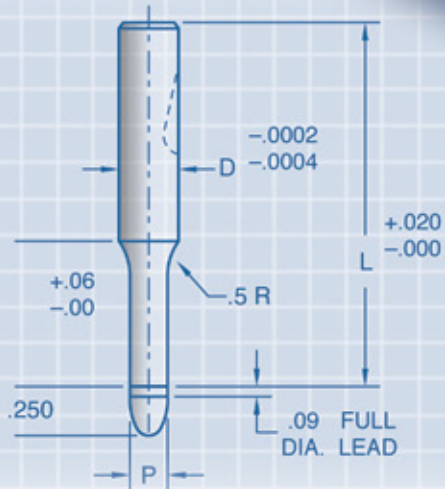
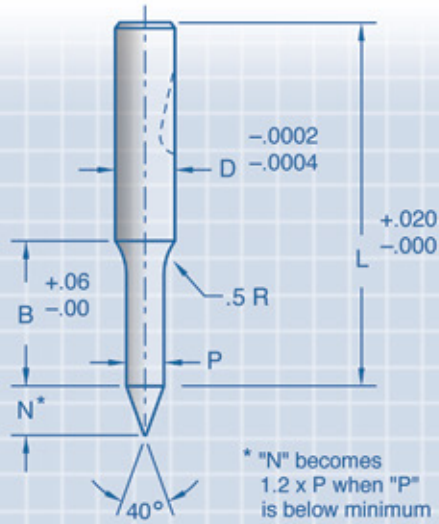
ORDERING EXAMPLE

QTY CAT # L B P/W STEEL
20 CLB75C 2.50 A P=.375 M2

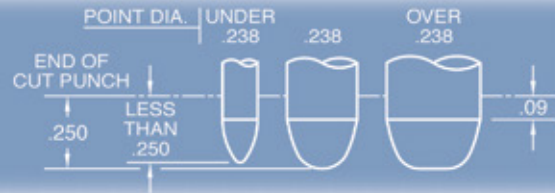
STEEL - M2 R/C 60-63

AMERICAN PUNCH
COMPANY

Heavy Duty Ball-Lock Pilot Punch



ROUND P $\begin{matrix} +.0005 \\ -.0000 \end{matrix}$ $\text{◎} .0005$ P to D



CHB_A

CHB_P

SHANK DIA. "D"	CATALOG NUMBER	STD. POINT "B"	"N"	MIN. "P" DIM. FOR "N" LEAD	MIN. "P"	MAX. "P"	"L" LENGTH RANGE .25 INCREMENT
.375	CHB37_	.62	.37	.260	.125	.375	2.50 - 5.50
.500	CHB50_	.81	.50	.360	.187	.500	2.50 - 6.00
.625	CHB62_	.94	.62	.445	.312	.625	2.50 - 6.00
.750	CHB75_	1.06	.75	.540	.437	.750	2.50 - 6.00
.875	CHB87_	1.19	.87	.625	.625	.875	2.75 - 6.00
1.000	CHB100_	1.25	1.00	.720	.750	1.000	3.00 - 6.00
1.250	CHB125_	1.44	1.25	.900	1.000	1.250	3.00 - 6.00

ALTERNATE "B" LENGTH

- A = STANDARD
- B = .750 CHB37-CHB125 (MIN. L = 2.50)
- C = 1.00 CHB37-CHB125 (MIN. L = 2.50)
- D = 1.25 CHB50-CHB125 (MIN. L = 2.75)

ORDERING EXAMPLE

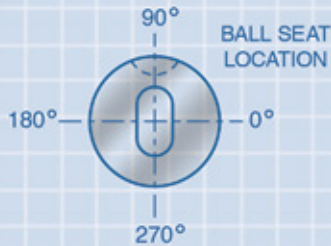
QTY CAT # L B P/W STEEL
20 CHB75C 2.50 A P=.375 M2

STEEL - M2 R/C 60-63

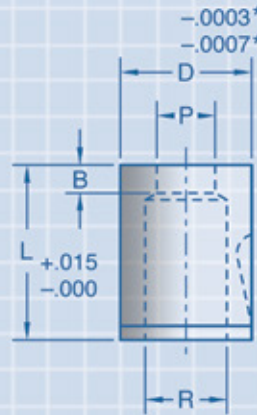
AMERICAN PUNCH
COMPANY



Ball-Lock Button



View shown in die position.
Ball seat at 90° is standard.
For alternate ball seat locations, angle from 0° must be specified.



*On 1.250 DIA and larger,
-.0006
-.0010

Specify TA for Taper Relief

ROUND P	+ .0005 - .0000	.0005 P to D
SHAPE P, W	+ .001 - .000	.001 P to D

See page 27-29 for classified shapes and standard alterations.

BLB_C	BLB_O	BLB_R	BLB_S	BLB_H

BODY DIA. "D"	CATALOG NUMBER	MIN. "B"	MIN. "P"	MIN. "W"	MAX. "P/G"	MAX. "R"	LENGTH "L"
.500	BLB50_	.190	.065	.050	.220	.250	1.187
.625	BLB62_	.190	.126	.060	.282	.312	1.187
.750	BLB75_	.250	.140	.093	.390	.420	1.187
.875	BLB87_	.312	.190	.125	.515	.545	1.187
1.000	BLB100_	.312	.340	.156	.656	.687	1.187
*1.250	BLB125_	.312	.470	.187	.780	.810	1.187
*1.500	BLB150_	.375	.629	.250	.970	1.00	1.187
*1.750	BLB175_	.375	.800	.460	1.06	1.09	1.187

ORDERING EXAMPLE

QTY CAT # P/W STEEL
20 BLB75C P=.375 M2

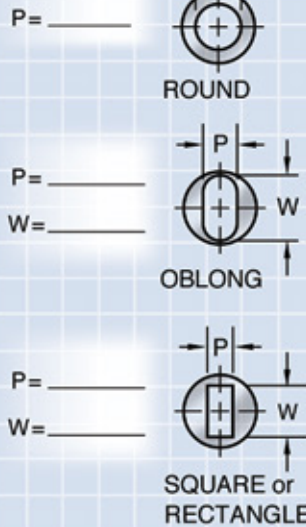
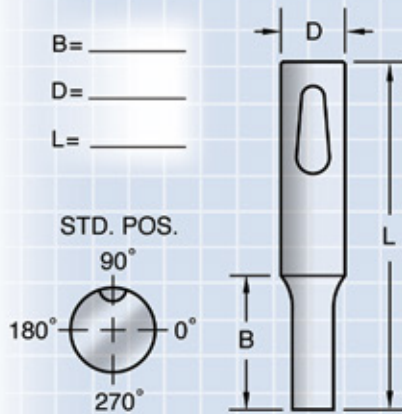
BLB_Z for classified shape STEEL – M2 R/C 60-63





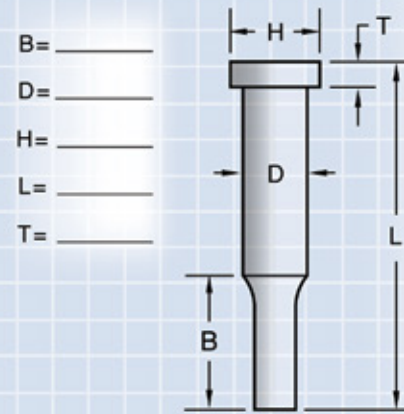
BALL LOCK

- Light Duty
- Heavy Duty
- Ejector



SHOULDER PUNCH

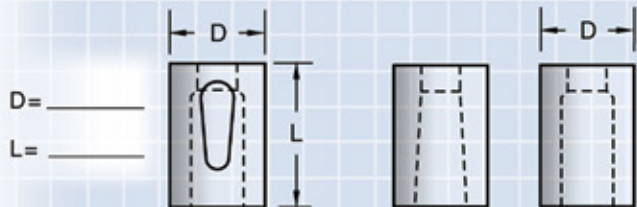
- Ejector
- Standard
- Diamond



PRESS FIT BUTTON

- Standard
- Diamond

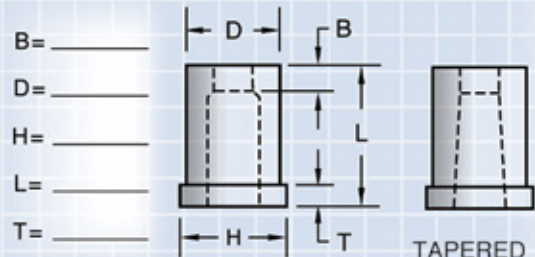
BALL LOCK



TAPERED SLUG HOLE

SHOULDER BUTTON

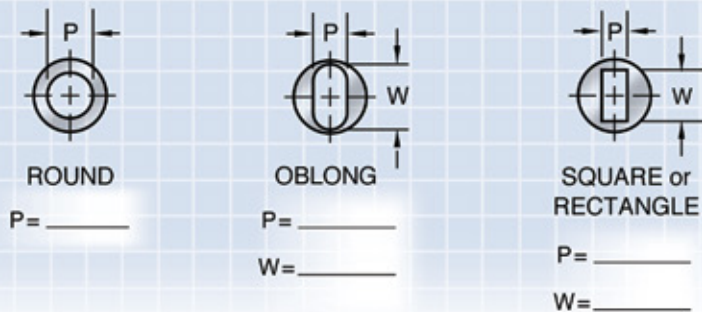
- Standard
- Diamond



TAPERED SLUG HOLE

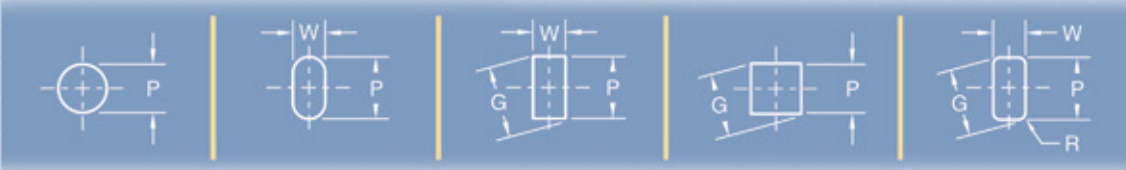
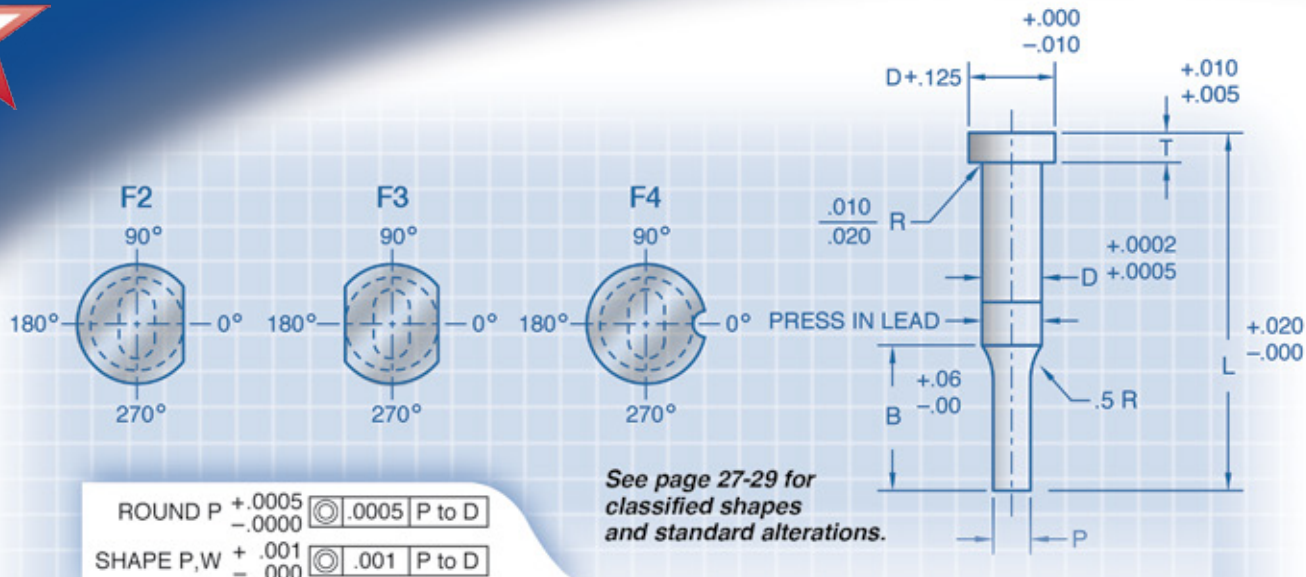
OPTIONS

See page 27 for classified shapes.
See page 28 for locking device information.





Standard Shoulder Punch



PSS_C PSS_O PSS_R PSS_S PSS_H

SHANK DIA. "D"	CATALOG NUMBER	STD. POINT "B"	MIN. "P"	MIN. "W"	MAX. "P/G"	HEAD "T"	HEAD DIA. "H"	LENGTH RANGE .25 INCREMENT
.1875	PSS18_	.44	.062	.062	.1875	.125	.312	1.50 - 3.50
.250	PSS25_	.50	.078	.078	.250	.125	.375	1.50 - 3.50
.3125	PSS31_	.56	.093	.093	.3125	.125	.437	1.50 - 4.00
.375	PSS37_	.62	.125	.125	.375	.188	.500	1.50 - 5.00
.4375	PSS43_	.75	.187	.187	.4375	.188	.563	1.75 - 6.00
.500	PSS50_	.81	.250	.187	.500	.188	.625	2.00 - 6.00
.625	PSS62_	.94	.375	.250	.625	.250	.750	2.00 - 6.00
.750	PSS75_	1.06	.500	.312	.750	.250	.875	2.25 - 6.00
.875	PSS87_	1.12	.562	.312	.875	.250	1.00	2.25 - 6.00
1.000	PSS100_	1.25	.687	.375	1.000	.250	1.125	2.50 - 6.00
1.250	PSS125_	1.50	.937	.500	1.250	.250	1.375	2.50 - 6.00

ALTERNATE "B" LENGTH

A = STANDARD
 B = .75 PSS25-PSS100 (MIN. L = 1.75)
 C = 1.00 PSS25-PSS100 (MIN. L = 1.75)
 D = 1.25 PSS37-PSS100 (MIN. L = 2.00)

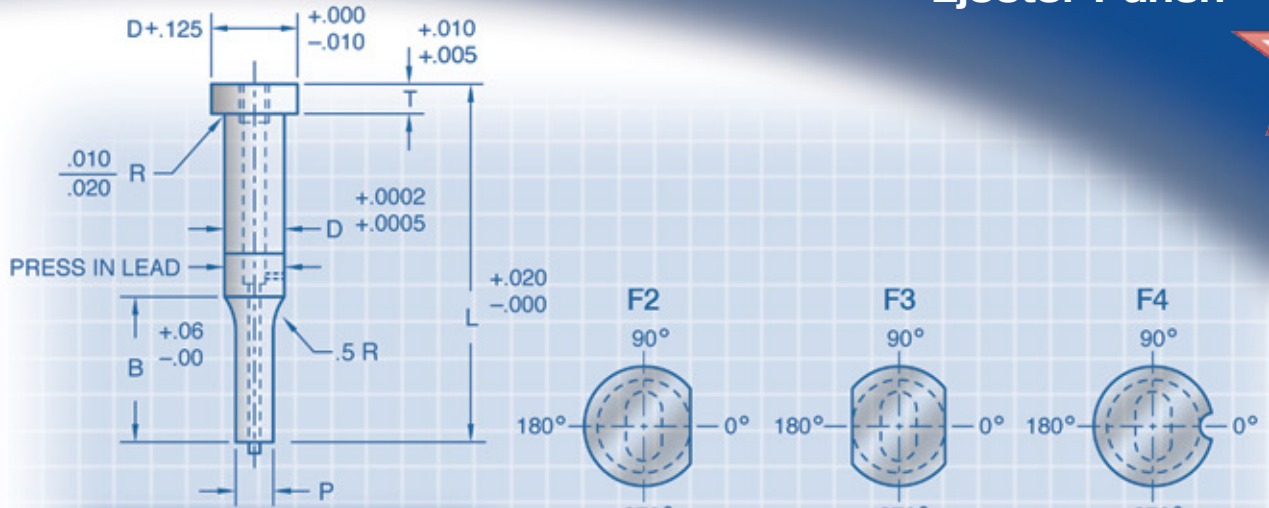
ORDERING EXAMPLE

QTY	CAT #	L	B	P	STEEL
20	PSS75C	2.50	A	P=.375	M2

PSS_B for blank punch STEEL - M2 R/C 60-63
 PSS_Z for classified shape HEAD - R/C 40-55



Standard Shoulder Ejector Punch



ROUND P $\begin{matrix} +.0005 \\ -.0000 \end{matrix}$ $\begin{matrix} \text{P to D} \\ \text{P to D} \end{matrix}$
 SHAPE P,W $\begin{matrix} +.001 \\ -.000 \end{matrix}$ $\begin{matrix} \text{P to D} \\ \text{P to D} \end{matrix}$

See page 27-29 for classified shapes and standard alterations.



SHANK DIA. "D"	CATALOG NUMBER	STD. POINT "B"	MIN. "P"	MIN. "W"	MAX. "P/G"	HEAD "T"	HEAD DIA. "H"	LENGTH RANGE .25 INCREMENT	EJ SIZE
.1875	ESS18_	.44	.062	.062	.1875	.125	.312	1.50 - 3.00	EJ2
.250	ESS25_	.50	.078	.078	.250	.125	.375	1.50 - 3.50	EJ3
.3125	ESS31_	.56	.125	.125	.3125	.125	.437	1.50 - 4.00	EJ4
.375	ESS37_	.62	.187	.187	.375	.188	.500	1.75 - 5.00	EJ6
.4375	ESS43_	.75	.187	.187	.4375	.188	.563	1.75 - 5.00	EJ6
.500	ESS50_	.81	.250	.187	.500	.188	.625	2.00 - 5.00	EJ6
.625	ESS62_	.94	.375	.250	.625	.250	.750	2.00 - 5.00	EJ9
.750	ESS75_	1.06	.500	.312	.750	.250	.875	2.25 - 5.00	EJ9
.875	ESS87_	1.12	.562	.312	.875	.250	1.00	2.25 - 5.00	EJ9
1.000	ESS100_	1.25	.687	.375	1.000	.250	1.125	2.50 - 5.00	EJ9
1.250	ESS125_	1.50	.937	.500	1.250	.250	1.375	2.50 - 5.00	EJ9

ALTERNATE "B" LENGTH
 A = STANDARD
 B = .75 ESS25-ESS100 (MIN. L = 1.75)
 C = 1.00 ESS25-ESS100 (MIN. L = 1.75)
 D = 1.25 ESS37-ESS100 (MIN. L = 2.00)

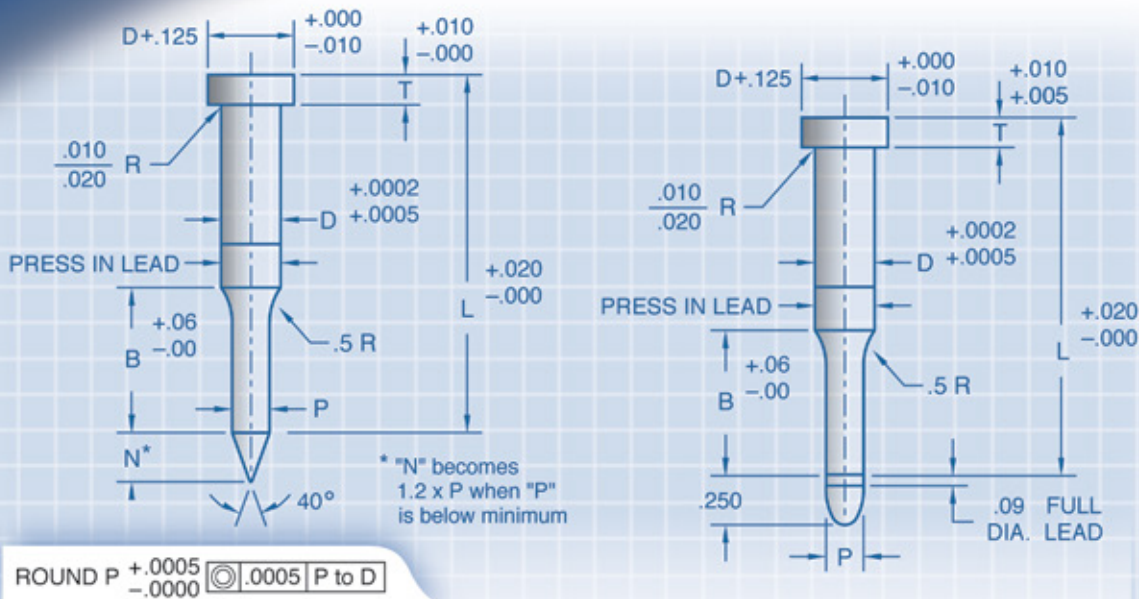
ORDERING EXAMPLE
 QTY CAT # L B P STEEL
 20 ESS75C 2.50 A P=.375 M2

ESS_B for blank punch STEEL - M2 R/C 60-63
 ESS_Z for classified shape HEAD - R/C 40-55

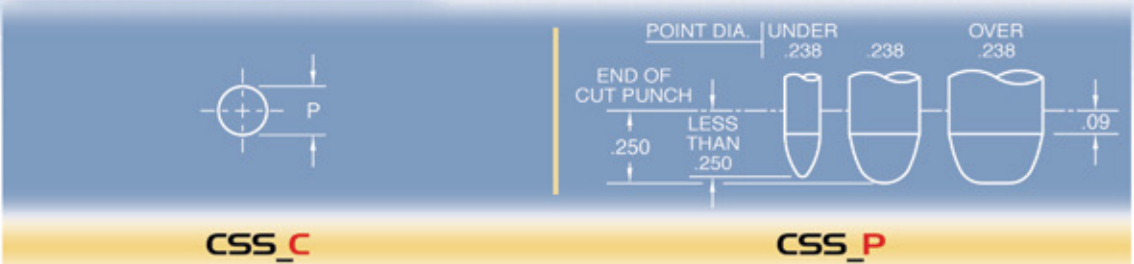




Standard Shoulder Pilot Punch



ROUND P $\begin{matrix} +.0005 \\ -.0000 \end{matrix}$ P to D



SHANK DIA. "D"	CATALOG NUMBER	STD. POINT "B"	"N"	MIN. "P" DIM. FOR "N" LEAD	MIN. "P"	MAX. "P"	HEAD "T"	LENGTH RANGE .25 INCREMENT
.1875	CSS18_	.44	.19	.125	.060	.1875	.125	1.50 - 3.50
.250	CSS25_	.50	.25	.175	.080	.250	.125	1.50 - 4.00
.3125	CSS31_	.56	.31	.220	.093	.3125	.125	1.50 - 4.50
.375	CSS37_	.62	.37	.260	.125	.375	.188	1.75 - 6.00
.4375	CSS43_	.75	.44	.305	.187	.4375	.188	1.75 - 6.00
.500	CSS50_	.81	.50	.360	.250	.500	.188	2.00 - 6.00
.625	CSS62_	.94	.62	.445	.375	.625	.250	2.00 - 6.00
.750	CSS75_	1.06	.75	.540	.500	.750	.250	2.25 - 6.00
.875	CSS87_	1.12	.87	.625	.562	.875	.250	2.50 - 6.00
1.000	CSS100_	1.25	1.00	.720	.687	1.000	.250	2.50 - 6.00
1.250	CSS125_	1.50	1.25	.900	.937	1.250	.250	3.00 - 6.00

ALTERNATE "B" LENGTH

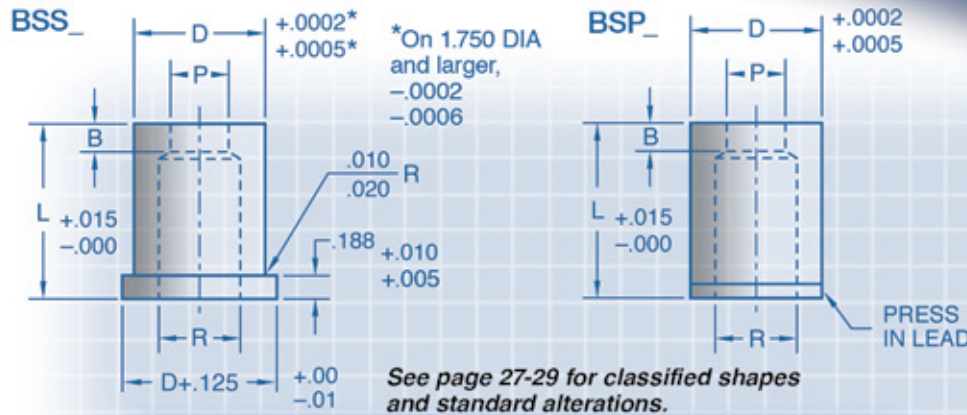
A = STANDARD
 B = .75 CSS25-CSS100 (MIN. L = 1.75)
 C = 1.00 CSS25-CSS100 (MIN. L = 1.75)
 D = 1.25 CSS37-CSS100 (MIN. L = 2.00)

ORDERING EXAMPLE

QTY	CAT #	L	B	P	STEEL
20	CSS75	2.50	A	P=.375	M2

STEEL - M2 R/C 60-63
 HEAD - R/C 40-55

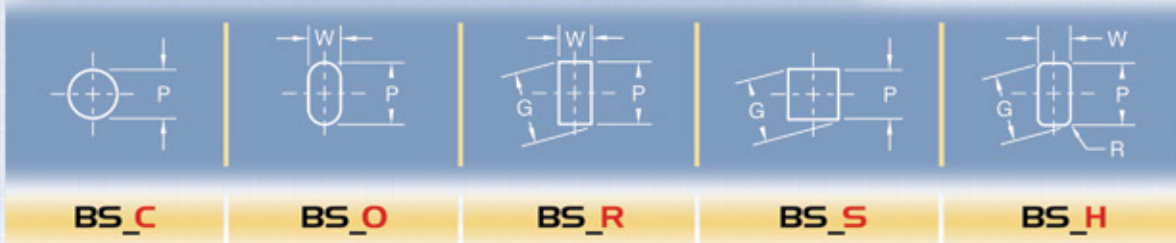
Standard Button



Taper relief available for standard buttons at additional cost. Add "TA" to end of description if taper relief is required.

See page 28 for key flat location.

ROUND P $+0.0005$
 -0.0000 $\text{◎} .0005$ P to D SHAPE P,W $+0.001$
 -0.000 $\text{◎} .001$ P to D



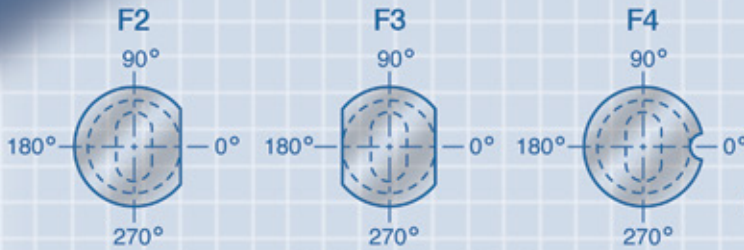
BODY DIA. "D"	CATALOG NUMBER BSS_ BSP_	MIN. "B"	RANGE "P"	MIN. "W"	MAX. P/G													
						.750	.875	.937	1.00	1.12	1.25	1.50						
.250	25	.16	.060-.125	.060	.125	75	87	93	100	112	125	150						
.3125	31	.16	.060-.156	.060	.150	75	87	93	100	112	125	150						
.375	37	.16	.063-.195	.060	.195	75	87	93	100	112	125	150						
.4375	43	.16	.135-.250	.090	.250	75	87	93	100	112	125	150						
.500	50	.16	.135-.290	.090	.300	75	87	93	100	112	125	150						
.625	63	.19	.135-.350	.090	.370	75	87	93	100	112	125	150						
.750	75	.19	.135-.435	.110	.435	75	87	93	100	112	125	150						
.875	87	.19	.250-.550	.125	.550	75	87	93	100	112	125	150						
1.000	100	.25	.350-.675	.156	.675	75	87	93	100	112	125	150						
1.250	125	.31	.500-.810	.175	.810	75	87	93	100	112	125	150						
1.500	150	.31	.615-1.06	.250	1.06	75	87	93	100	112	125	150						
*1.750	BSP175	.31	.750-1.40	.250	1.40				100	112	125	150						
*2.000	BSP200	.31	.875-1.60	.280	1.65				100	112	125	150						
*2.250	BSP225	.31	1.00-1.80	.310	1.80				100	112	125	150						
*2.500	BSP250	.31	1.12-2.00	.375	2.05				100	112	125	150						
*2.750	BSP275	.31	1.25-2.25	.430	2.25				100	112	125	150						
*3.000	BSP300	.31	1.375-2.50	.500	2.50				100	112	125	150						

STEEL - M2 R/C 60-63

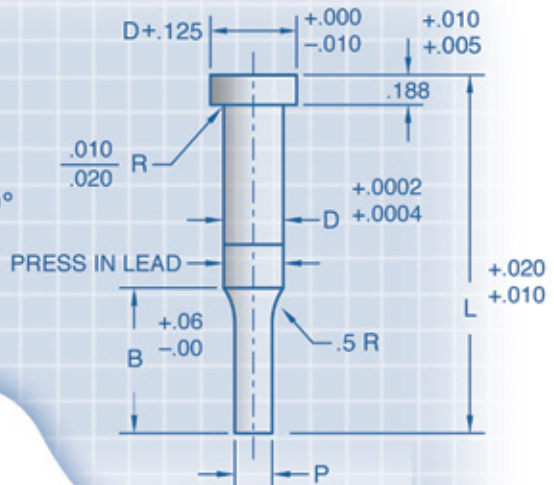
ORDERING EXAMPLE
QTY CAT # L P STEEL
20 BSP100C 112 P=.450 M2



Diamond Punch



See page 27-29 for classified shapes and standard alterations.



Standard DIAMOND Tolerance

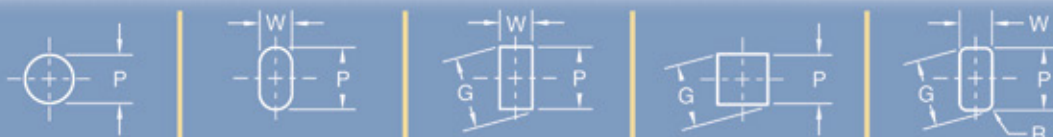
ROUND P $\begin{matrix} +.0005 \\ -.0000 \end{matrix}$ $\text{\textcircled{.0005}}$ P to D

SHAPE P,W $\pm .0005$ $\text{\textcircled{.001}}$ P to D

Exact Point Tolerance Specify -- TT

P,W TOLERANCE $\begin{matrix} +.0002 \\ -.0000 \end{matrix}$

$\text{\textcircled{.0003}}$ P to D



PDS_C

PDS_O

PDS_R

PDS_S

PDS_H

SHANK DIA. "D"	CATALOG NUMBER	HEAD DIM. "T"	STD. POINT "B"	MIN. "P"	MIN. "W"	MAX. "P/G"	LENGTH RANGE .25 INCREMENT
.1875	PDS18_	.125	.43	.062	.062	.1875	1.50 - 3.50
.250	PDS25_	.188	.50	.080	.080	.2500	1.50 - 4.00
.3125	PDS31_	.188	.56	.093	.093	.3125	1.50 - 4.50
.375	PDS37_	.188	.62	.125	.125	.375	1.75 - 7.00
.4375	PDS43_	.188	.75	.187	.187	.4375	1.75 - 7.00
.500	PDS50_	.188	.81	.250	.187	.500	2.00 - 7.00
.625	PDS62_	.188	.94	.375	.250	.625	2.00 - 7.00
.750	PDS75_	.188	1.00	.500	.312	.750	2.25 - 7.00
.875	PDS87_	.188	1.12	.562	.312	.875	2.50 - 7.00
1.000	PDS100_	.188	1.25	.687	.375	1.000	2.50 - 7.00
1.250	PDS125_	.188	1.50	.937	.500	1.250	3.00 - 7.00

ALTERNATE "B" LENGTH

- A = STANDARD
- B = .75 PDS25-PDS100 (MIN. L = 1.75)
- C = 1.00 PDS25-PDS100 (MIN. L = 1.75)
- D = 1.25 PDS37-PDS100 (MIN. L = 2.00)
- E = 1.50 PDS37-PDS100 (MIN. L = 2.50)

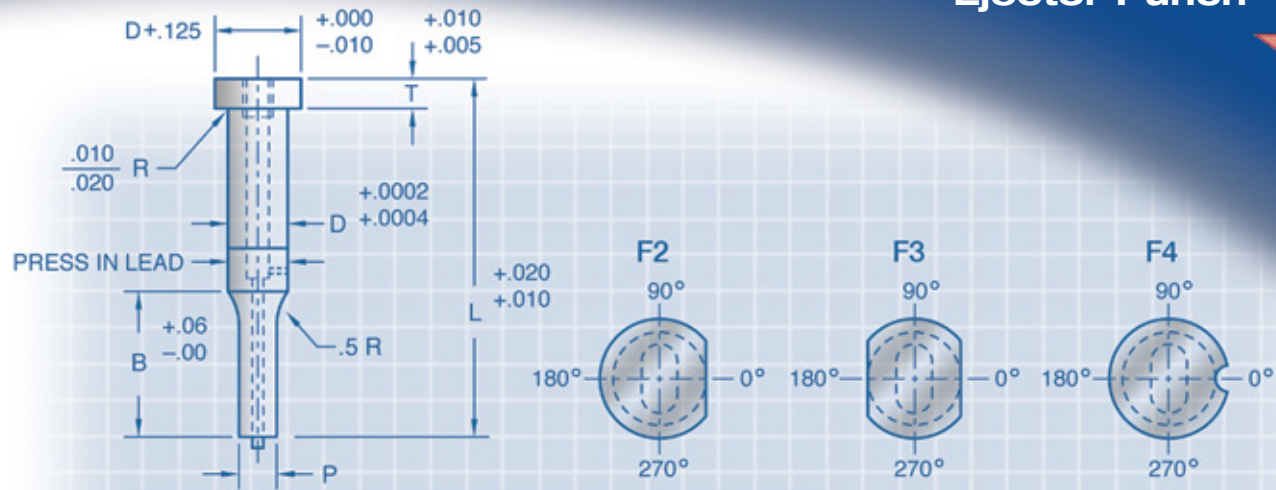
ORDERING EXAMPLE

QTY CAT# L B P STEEL
20 PDS75C 2.50 A P=.375 M2

PDS_B for blank punch STEEL - M2 R/C 60-63
PDS_Z for classified shape HEAD - R/C 40-55



Diamond Ejector Punch



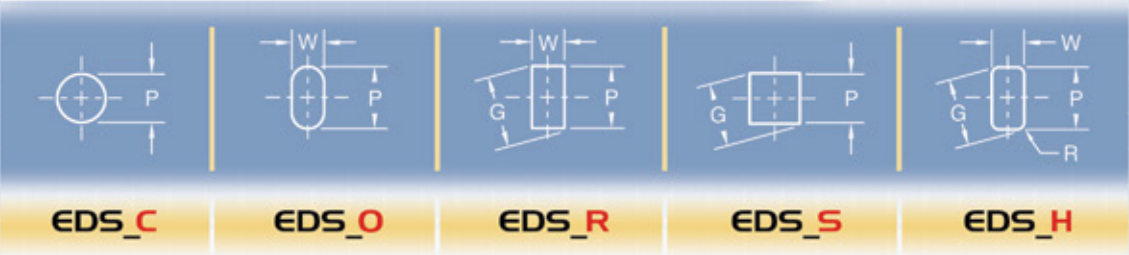
Standard DIAMOND Tolerance

ROUND P $\begin{matrix} +.0005 \\ -.0000 \end{matrix}$ $\text{⊖} \begin{matrix} .0005 \\ .0005 \end{matrix}$ P to D
 SHAPE P,W $\pm .0005$ $\text{⊖} \begin{matrix} .001 \\ .001 \end{matrix}$ P to D

Exact Point Tolerance Specify -- TT

P,W TOLERANCE $\begin{matrix} +.0002 \\ -.0000 \end{matrix}$ $\text{⊖} \begin{matrix} .0003 \\ .0003 \end{matrix}$ P to D

See page 27-29 for classified shapes and standard alterations.



SHANK DIA. "D"	CATALOG NUMBER	HEAD DIM. "T"	STD. POINT "B"	MIN. "P"	MIN. "W"	MAX. "P/G"	LENGTH RANGE .25 INCREMENT	EJ SIZE
.1875	EDS18_	.125	.43	.062	.062	.1875	1.50 - 3.50	EJ2
.250	EDS25_	.188	.50	.080	.080	.2500	1.50 - 4.00	EJ3
.3125	EDS31_	.188	.56	.093	.093	.3125	1.50 - 4.00	EJ4
.375	EDS37_	.188	.62	.125	.125	.375	1.75 - 5.00	EJ6
.4375	EDS43_	.188	.75	.187	.187	.4375	1.75 - 5.00	EJ6
.500	EDS50_	.188	.81	.250	.187	.500	2.00 - 5.00	EJ6
.625	EDS62_	.188	.94	.375	.250	.625	2.00 - 5.00	EJ9
.750	EDS75_	.188	1.00	.500	.312	.750	2.25 - 5.00	EJ9
.875	EDS87_	.188	1.12	.562	.312	.875	2.50 - 5.00	EJ9
1.000	EDS100_	.188	1.25	.687	.375	1.000	2.50 - 5.00	EJ9
1.250	EDS125_	.188	1.50	.937	.500	1.250	3.00 - 5.00	EJ9

ALTERNATE "B" LENGTH

- A = STANDARD
- B = .75 EDS25-EDS100 (MIN. L = 1.75)
- C = 1.00 EDS25-EDS100 (MIN. L = 1.75)
- D = 1.25 EDS37-EDS100 (MIN. L = 2.00)
- E = 1.50 EDS37-EDS100 (MIN. L = 2.50)

ORDERING EXAMPLE

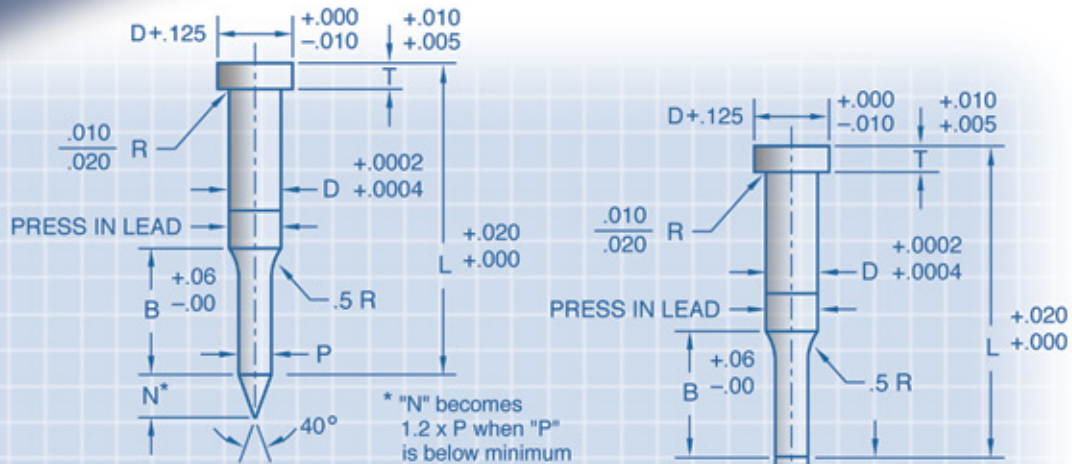
QTY CAT # L B P STEEL
 20 EDS75C 2.50 A P=.375 M2

EDS_B for blank punch STEEL - M2 R/C 60-63
 EDS_Z for classified shape HEAD - R/C 40-55

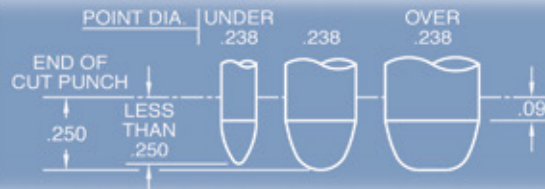




Diamond Shoulder Pilot Punch



Standard DIAMOND Tolerance		Exact Point Tolerance Specify -- TT	
ROUND P	+0.0005 -0.0000	◎ .0005	P to D
SHAPE P,W	±.0005	◎ .0003	P to D
P,W TOLERANCE	+0.0002 -0.0000		



CDS_A

CDS_P

SHANK DIA. "D"	CATALOG NUMBER	HEAD DIM. "T"	STD. POINT "B"	"N"	MIN. "P" DIM. FOR "N" LEAD	MIN. "P"	MAX. "P"	LENGTH RANGE .25 INCREMENT
.1875	CDS18_	.125	.44	.19	.125	.060	.1875	1.50 - 3.50
.250	CDS25_	.188	.50	.25	.175	.080	.250	1.50 - 4.00
.3125	CDS31_	.188	.56	.31	.220	.093	.3125	1.50 - 4.50
.375	CDS37_	.188	.62	.37	.260	.125	.375	1.75 - 6.00
.4375	CDS43_	.188	.75	.44	.305	.187	.4375	1.75 - 6.00
.500	CDS50_	.188	.81	.50	.360	.250	.500	2.00 - 6.00
.625	CDS62_	.188	.94	.62	.445	.375	.625	2.00 - 6.00
.750	CDS75_	.188	1.06	.75	.540	.500	.750	2.25 - 6.00
.875	CDS87_	.188	1.12	.87	.625	.562	.875	2.25 - 6.00
1.000	CDS100_	.188	1.25	1.00	.720	.687	1.000	2.50 - 6.00
1.250	CDS125_	.188	1.50	1.25	.900	.937	1.250	3.00 - 6.00

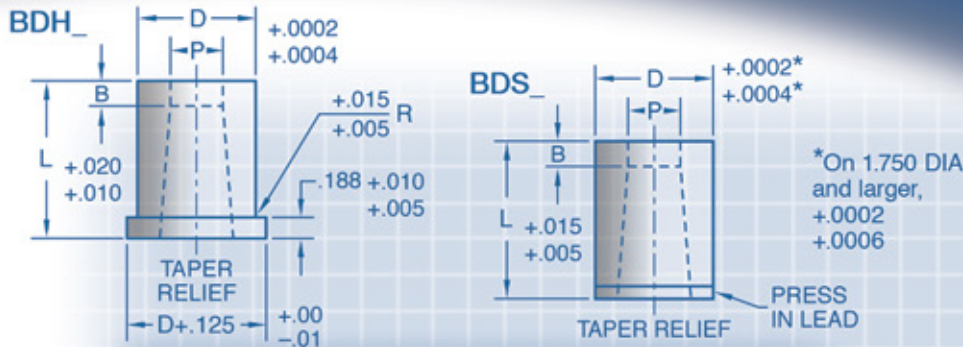
ALTERNATE "B" LENGTH

- A = STANDARD
- B = .75 CDS25-CDS100 (MIN. L = 1.75)
- C = 1.00 CDS25-CDS100 (MIN. L = 1.75)
- D = 1.25 CDS37-CDS100 (MIN. L = 2.00)
- E = 1.50 CDS37-CDS100 (MIN. L = 2.50)

ORDERING EXAMPLE

QTY	CAT #	L	B	P	STEEL
20	CDS75	2.50	A	P=.375	M2

STEEL - M2 R/C 60-63
HEAD - R/C 40-55



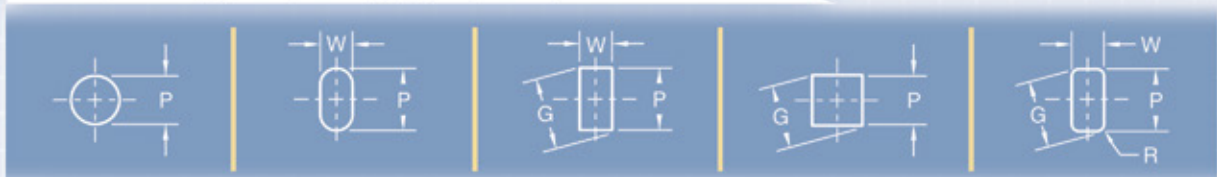
Standard DIAMOND Tolerance

ROUND P $\begin{matrix} +.0005 \\ -.0000 \end{matrix}$ $\text{\textcircled{.0005}}$ P to D
 SHAPE P,W $\pm .0005$ $\text{\textcircled{.001}}$ P to D

Exact Point Tolerance Specify -- TT

P,W TOLERANCE $\begin{matrix} +.0002 \\ -.0000 \end{matrix}$ $\text{\textcircled{.0003}}$ P to D

See page 27-29 for classified shapes and standard alterations.



BD_C BD_O BD_R BD_S BD_H

BODY DIA. "D"	CATALOG NUMBER BDH_ BDS_	LAND "B"	MIN. "P"	MIN. "W"	MAX. P/G							
						.750	.875	.937	1.00	1.125	1.25	1.50
.2500	25	.156	.064	.064	.125	75	87	.937	100	112	125	150
.3125	31	.156	.064	.064	.156	75	87	.937	100	112	125	150
.375	37	.156	.075	.064	.195	75	87	.937	100	112	125	150
.4375	43	.156	.130	.093	.250	75	87	.937	100	112	125	150
.500	50	.156	.150	.093	.285	75	87	.937	100	112	125	150
.625	62	.187	.180	.093	.345	75	87	.937	100	112	125	150
.750	75	.187	.200	.115	.435	75	87	.937	100	112	125	150
.875	87	.187	.300	.125	.545	75	87	.937	100	112	125	150
1.000	100	.250	.400	.156	.655	75	87	.937	100	112	125	150
1.250	125	.312	.500	.187	.803	75	87	.937	100	112	125	150
1.500	150	.312	.600	.250	1.052	75	87	.937	100	112	125	150
*1.750	BDS175	.312	.750	.250	1.400				100	112	125	150
*2.000	BDS200	.312	.875	.281	1.650				100	112	125	150
*2.250	BDS225	.312	1.000	.312	1.80				100	112	125	150
*2.500	BDS250	.312	1.125	.375	2.050				100	112	125	150
*2.750	BDS275	.312	1.250	.438	2.250				100	112	125	150
*3.000	BDS300	.312	1.375	.500	2.500				100	112	125	150

ORDERING EXAMPLE

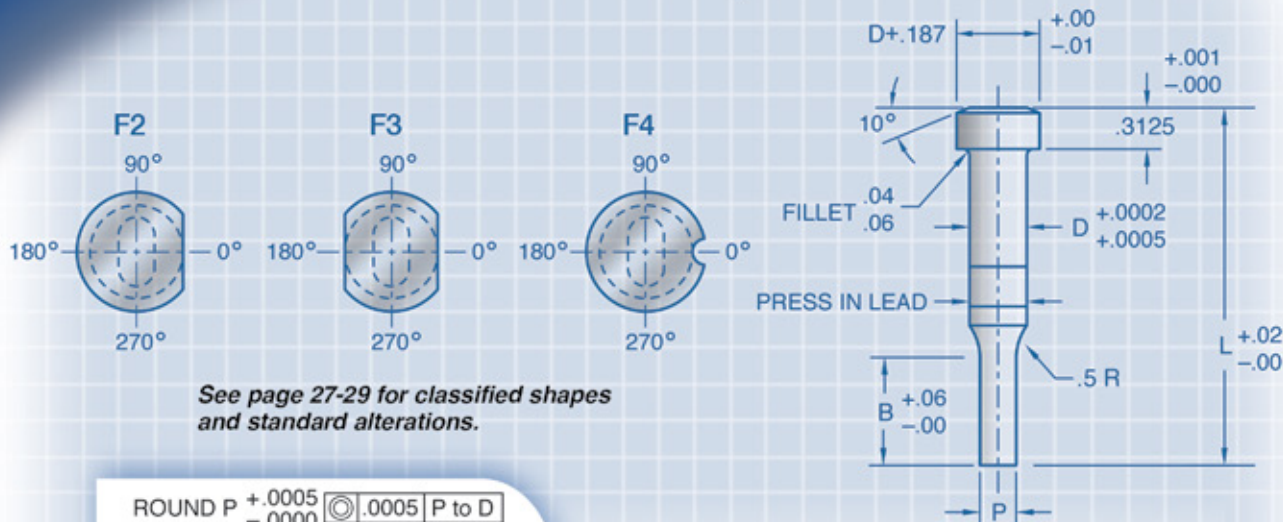
QTY CAT # L P STEEL
 20 BDH100C 112 P=.450 M2

STEEL - M2 R/C 60-63

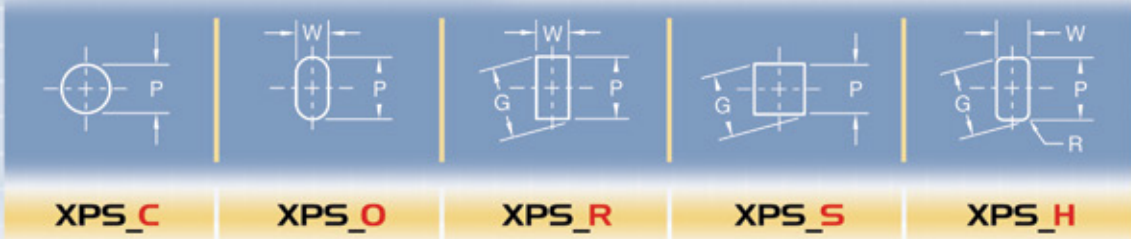




MAX FORCE Heavy Duty Shoulder Punch



ROUND P $\begin{matrix} +.0005 \\ -.0000 \end{matrix}$ $\text{\textcircled{C}}$.0005 P to D
 SHAPE P,W $\pm .0005$ $\text{\textcircled{C}}$.001 P to D



SHANK DIA. "D"	CATALOG NUMBER	STRAIGHT BEFORE RADIUS "B"	MIN. "P"	MIN. "W"	MAX. "P/G"	LENGTH RANGE .25 INCREMENT
.375	XPS37_	.500	.158	.158	.375	2.50 - 5.00
.4375	XPS43_	.500	.187	.187	.4375	2.50 - 5.00
.500	XPS50_	.500	.250	.187	.500	2.50 - 5.00
.625	XPS62_	.500	.375	.250	.625	2.50 - 5.00
.750	XPS75_	.500	.500	.312	.750	2.50 - 5.00
.875	XPS87_	.500	.562	.312	.875	2.50 - 5.00
1.000	XPS100_	.500	.625	.375	1.000	2.50 - 5.00

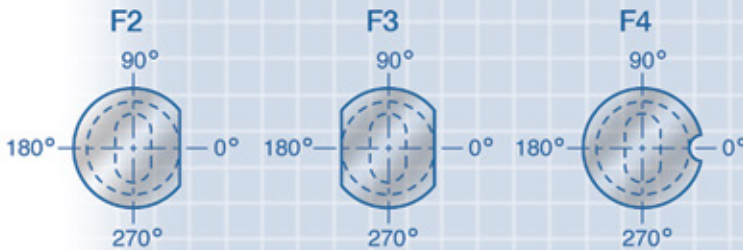
ALTERNATE "B" LENGTH
 B = .75
 C = 1.00

ORDERING EXAMPLE
 QTY CAT # L B P STEEL
 20 XPS75C 2.50 A P=.375 PS4

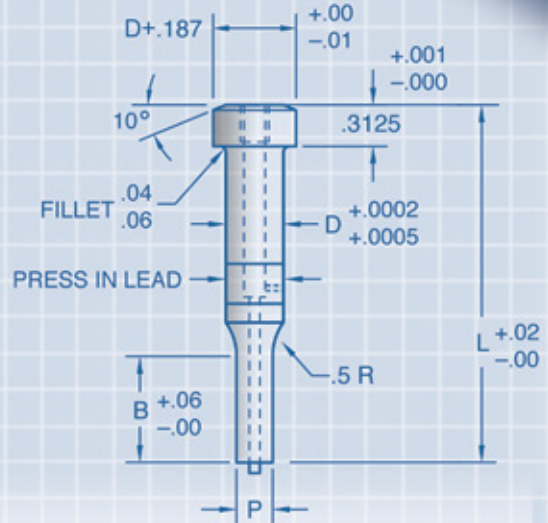
STEEL - CPM M4 R/C 60-62
 HEAD - R/C 40-55



MAX FORCE Heavy Duty Shoulder Ejector Punch



See page 27-29 for classified shapes and standard alterations.



ROUND P $\begin{matrix} +.0005 \\ -.0000 \end{matrix}$ $\text{\textcircled{C}}$.0005 P to D

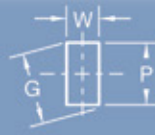
SHAPE P,W $\pm .0005$ $\text{\textcircled{C}}$.001 P to D



XPE_C



XPE_O



XPE_R



XPE_S



XPE_H

SHANK DIA. "D"	CATALOG NUMBER	STRAIGHT BEFORE RADIUS "B"	MIN. "P"	MIN. "W"	MAX. "P/G"	LENGTH RANGE .25 INCREMENT	EJ SIZE
.375	XPE37_	.500	.158	.158	.375	2.50 - 5.00	EJ6
.4375	XPE43_	.500	.187	.187	.4375	2.50 - 5.00	EJ6
.500	XPE50_	.500	.250	.187	.500	2.50 - 5.00	EJ6
.625	XPE62_	.500	.375	.250	.625	2.50 - 5.00	EJ9
.750	XPE75_	.500	.500	.312	.750	2.50 - 5.00	EJ9
.875	XPE87_	.500	.562	.312	.875	2.50 - 5.00	EJ9
1.000	XPE100_	.500	.625	.375	1.000	2.50 - 5.00	EJ9

ALTERNATE "B" LENGTH

B = .75
C = 1.00

ORDERING EXAMPLE

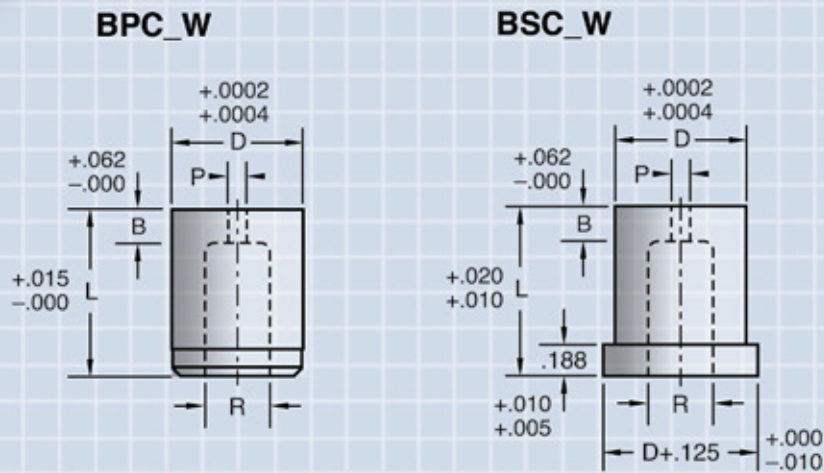
QTY CAT # L B P STEEL
20 XPE75C 2.50 A P=.375 PS4

STEEL - CPM M4 R/C 60-62
HEAD - R/C 40-55





Wire EDM Button Blank Press Fit with Counter Bore Relief



BODY DIA. "D"	CATALOG NUMBER	DIE LAND "B"	RLF DIA. "R"	DRILL SIZE "P"	OVERALL LENGTH "L"						
					.750	.875	.937	1.000	1.125	1.250	1.500
.3125	B_C31W	.156	.188	.046	X	X	X	X	X	X	X
.3750	B_C37W	.156	.234	.046	X	X	X	X	X	X	X
.4375	B_C43W	.156	.280	.046	X	X	X	X	X	X	X
.5000	B_C50W	.156	.312	.046	X	X	X	X	X	X	X
.6250	B_C62W	.188	.375	.078	X	X	X	X	X	X	X
.7500	B_C75W	.188	.470	.093	X	X	X	X	X	X	X
.8750	B_C87W	.188	.570	.109	X	X	X	X	X	X	X
1.0000	B_C100W	.250	.690	.125	X	X	X	X	X	X	X
1.2500	B_C125W	.312	.840	.156	X	X	X	X	X	X	X
1.5000	B_C150W	.312	1.09	.218	X	X	X	X	X	X	X

STEEL - M2 R/C 60-63

ORDERING EXAMPLE

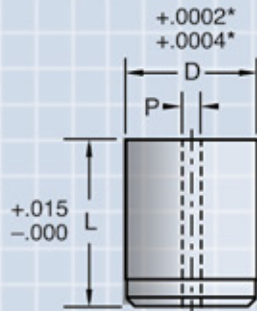
QTY	CAT #	L	P	STEEL
20	BPC50W	112	P=.046	M2



Wire EDM Button Blank Press Fit with Straight Thru Hole

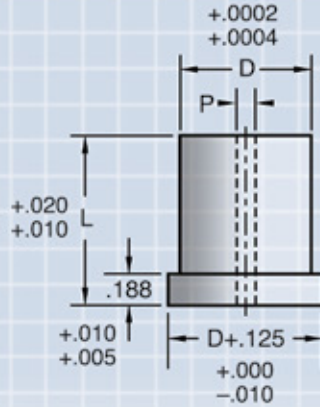


BPS_W



*On 1.750 DIA
and larger,
+.0002
+.0006

BSS_W



BODY DIA. "D"	CATALOG NUMBER	DRILL SIZE "P"	OVERALL LENGTH "L"						
			.750	.875	.937	1.000	1.125	1.250	1.500
.2500	B_S25W	.046	X	.X	X	X	X	X	X
.3125	B_S31W	.046	X	X	X	X	X	X	X
.3750	B_S37W	.046	X	X	X	X	X	X	X
.4375	B_S43W	.062	X	X	X	X	X	X	X
.5000	B_S50W	.062	X	X	X	X	X	X	X
.6250	B_S62W	.062	X	X	X	X	X	X	X
.7500	B_S75W	.093	X	X	X	X	X	X	X
.8750	B_S87W	.093	X	X	X	X	X	X	X
1.0000	B_S100W	.093	X	X	X	X	X	X	X
1.2500	B_S125W	.093	X	X	X	X	X	X	X
1.5000	B_S150W	.093	X	X	X	X	X	X	X
*1.7500	B_S175W	.093				X	X	X	X
*2.0000	BPS200W	.093				X	X	X	X
*2.2500	BPS225W	.093				X	X	X	X
*2.5000	BPS250W	.093				X	X	X	X
*2.7500	BPS275W	.093				X	X	X	X
*3.0000	BPS300W	.093				X	X	X	X

STEEL - M2 R/C 60-63

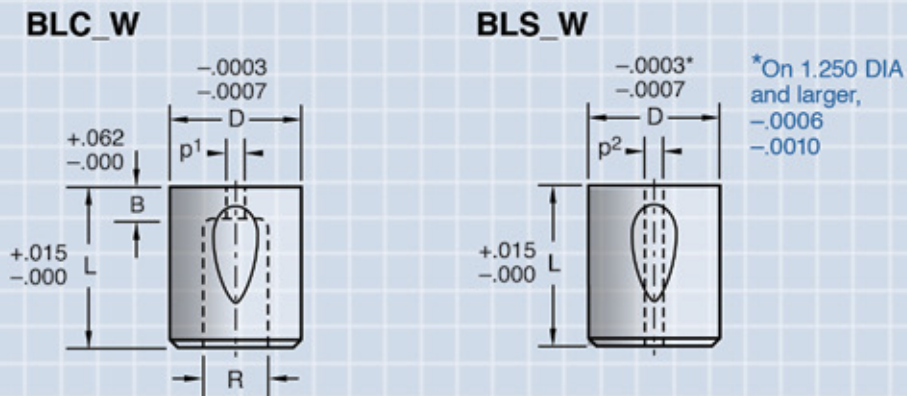
ORDERING EXAMPLE

QTY	CAT #	L	P	STEEL
20	BPS25W	112	P=.046	M2





Wire EDM Ball Lock Buttons with Counter Bore and Straight Thru Hole



BODY DIA. "D"	CATALOG NUMBER	DIE LAND "B"	RLF DIA. "R"	DRILL SIZE "p1"	DRILL SIZE "p2"	OVERALL LENGTH "L"
						1.187
.500	BL_50W	.188	.250	.046	.062	X
.625	BL_62W	.188	.312	.046	.062	X
.750	BL_75W	.250	.420	.046	.093	X
.875	BL_87W	.312	.545	.109	.093	X
1.000	BL_100W	.312	.689	.125	.093	X
1.250*	BL_125W	.312	.840	.171	.093	X
1.500*	BL_150W	.375	1.00	.218	.093	X
1.750*	BL_175W	.375	1.09	.437	.093	X

STEEL - M2 R/C 60-63

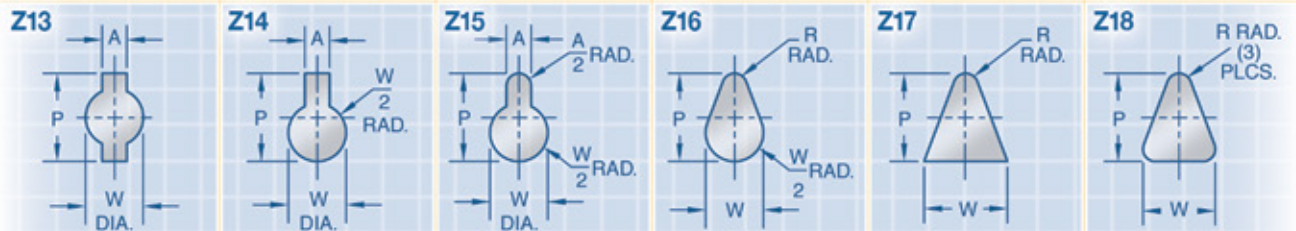
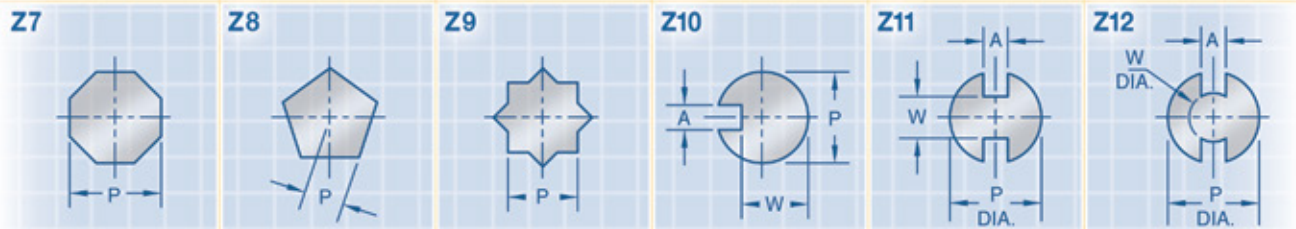
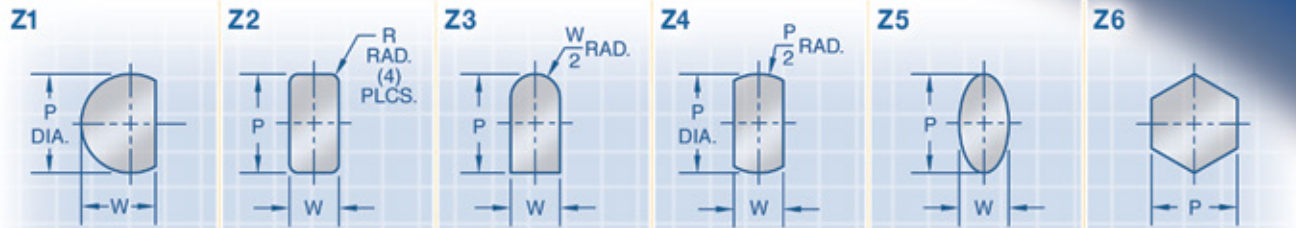
ORDERING EXAMPLE

QTY	CAT #	L	P	STEEL
20	BLC50W	112	P=.046	M2

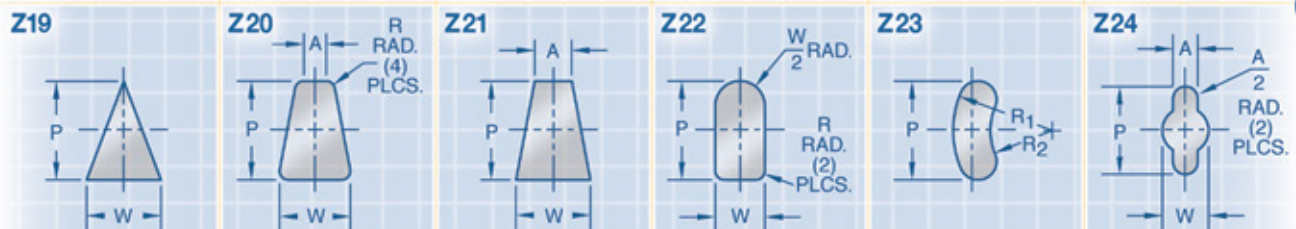




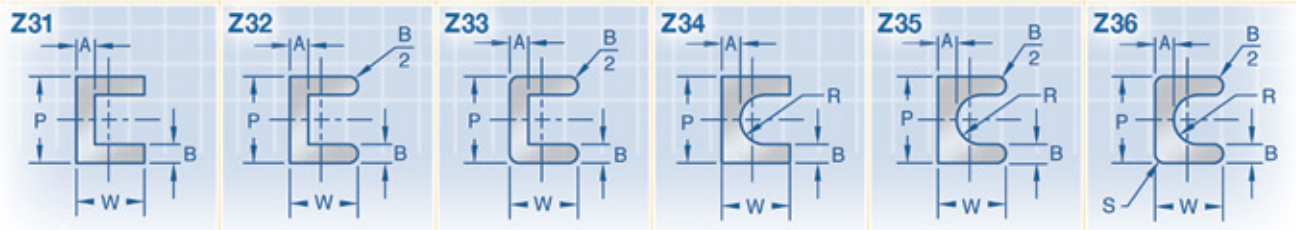
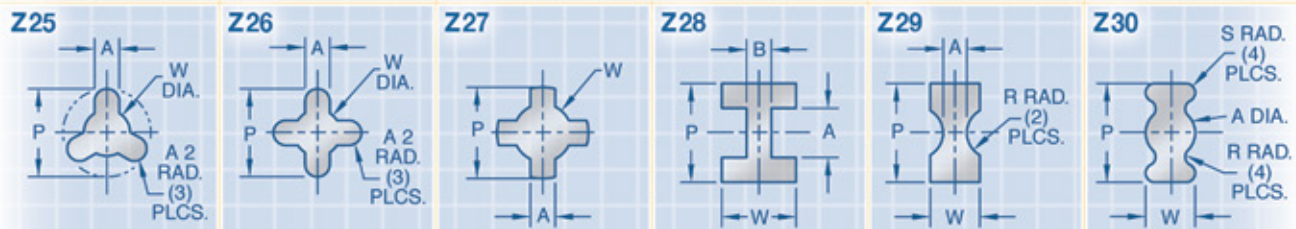
90°



180°



0°

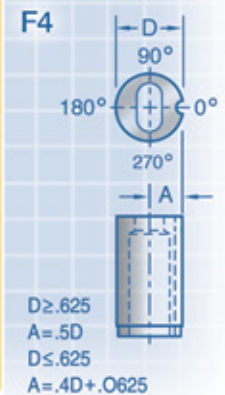
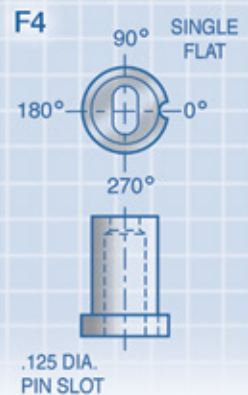
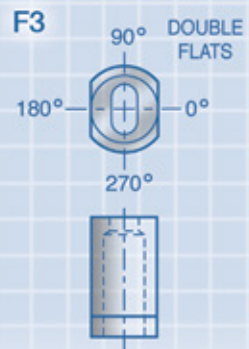
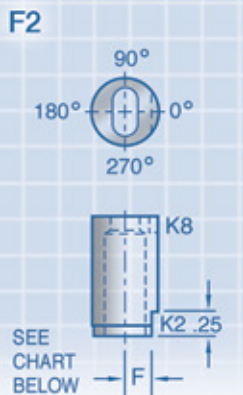
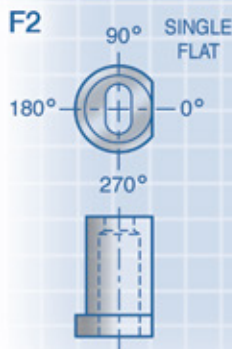
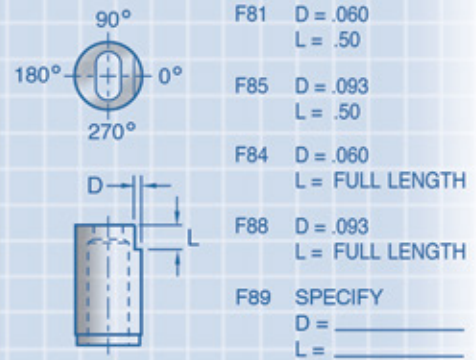
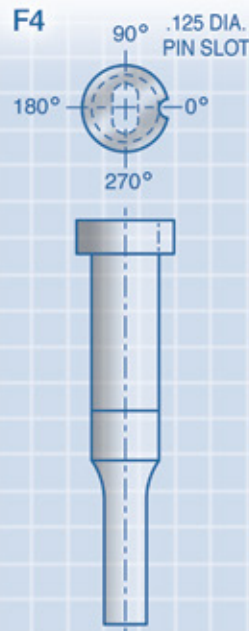
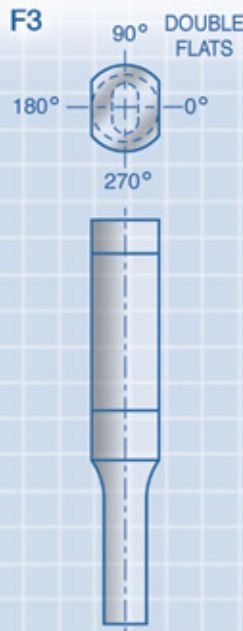
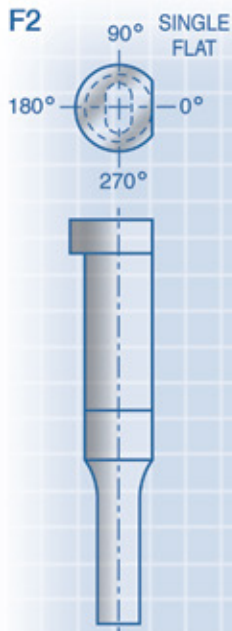
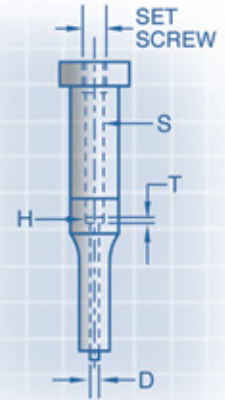


270°



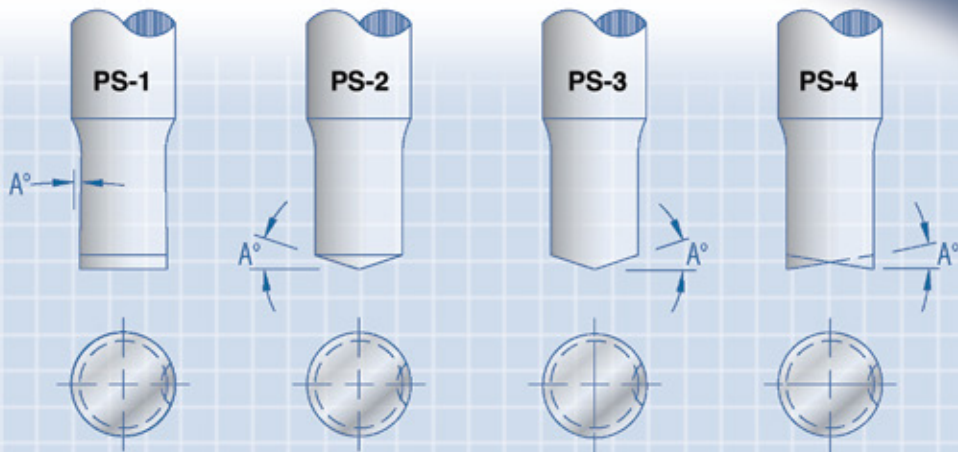
Ejector Punch & Locking Device Information

EJECTOR NO.	PIN DIA. "D"	PIN HEAD DIA. "H"	PIN HEAD THICKNESS "T"	SPRING DIA. "S"	SET SCREW SIZE	BALL LOCK PUNCH SHANK	SHOULDER PUNCH SHANK
EJ3	.027	.078	3/64	.100	5-40		1/4
EJ4	.041	.094	1/16	.132	8-32	3/8	5/16
EJ6	.058	.125	1/16	.163	10-32	1/2	3/8 - 1/2
EJ9	.089	.156	3/32	.215	1/4-28	5/8 - 1-1/4	5/8 - 1

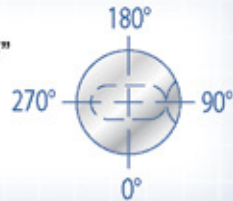


SHANK DIA.	.250	.3125	.375	.4375	.500	.625	.750	.875	1.000	1.250	1.500
"F"	.110	.135	.165	.190	.220	.270	.325	.380	.435	.540	.650

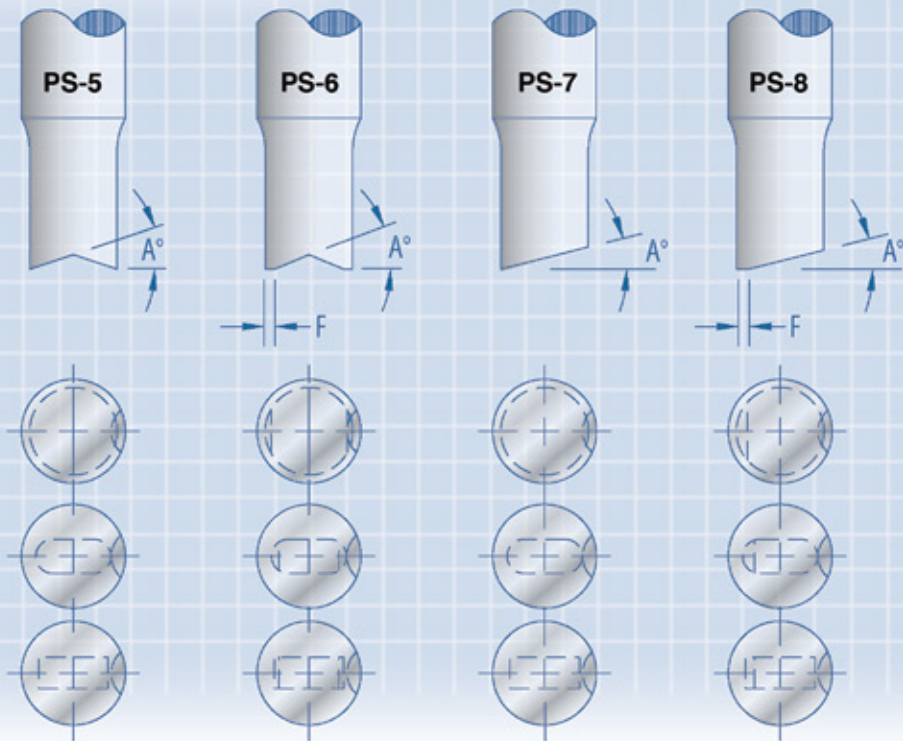
AMERICAN PUNCH COMPANY



Shear angles and dimensions "A" and "F" must be specified.



Shear orientation shown in die position.



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