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FAB & MACHINE INC.

Division of  BICO STEEL



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FAB & MACHINE INC.

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DIE SET

CATALOG

Table of Contents

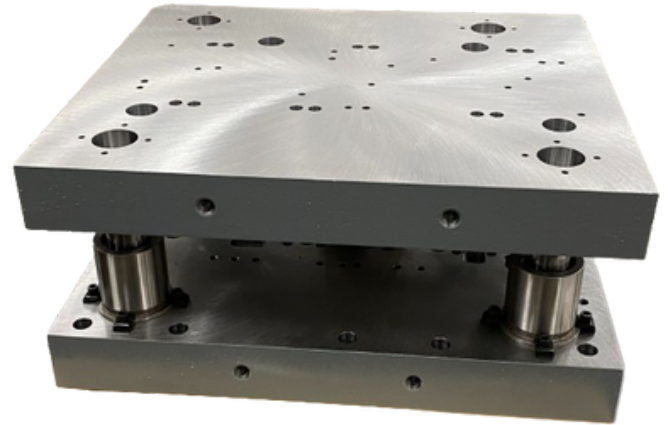
D-STYLE DIE SETS

PLAIN BEARING

Four Post Plain Bearing (IF37D-PB).....	2
Back Post Plain Bearing (IF33D-PB).....	3
Center Post Plain Bearing (IF34D-PB).....	4
Diagonal Post Plain Bearing (IF35D-PB).....	5

BALL BEARING

Four Post Ball Bearing (IF37D-BB)	6
Back Post Ball Bearing (IF33D-BB)	7
Center Post Ball Bearing (IF34D-BB)	8
Diagonal Post Ball Bearing (IF35D-BB)	9



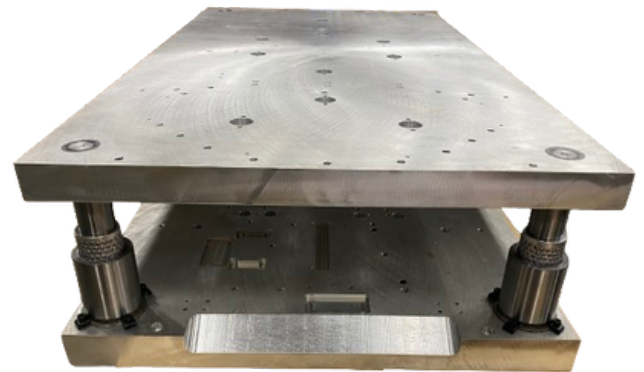
L-STYLE DIE SETS

PLAIN BEARING

Four Post Plain Bearing (IF37L-PB).....	10
Back Post Plain Bearing (IF33L-PB).....	11
Center Post Plain Bearing (IF34L-PB).....	12
Diagonal Post Plain Bearing (IF35L-PB).....	13

BALL BEARING

Four Post Ball Bearing (IF37L-BB).....	14
Back Post Ball Bearing (IF33L-BB).....	15
Center Post Ball Bearing (IF34L-BB).....	16
Diagonal Post Ball Bearing (IF35L-BB).....	17



INFORMATION PAGES

Lift Holes.....	18
Grinding/Face Milling Information.....	19
Torch Cutting & Clamp Arrangements.....	20
Material Data & Offered Material.....	21
Glossary.....	22

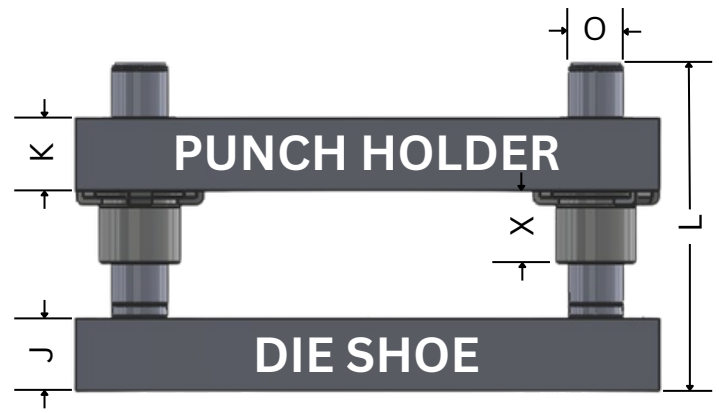
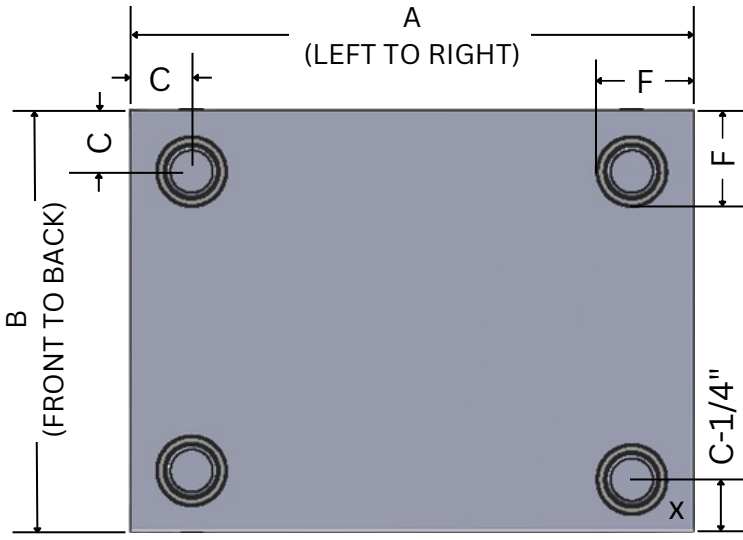


Lamina[®] LEMPCO[®]

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(DaytonLamina.com)**

D-STYLE FOUR POST PLAIN BEARING DIE SET

The IF37D-PB die set provides maximum resistance to side thrust & misalignment. The right front pin is offset 1/4" from the front to ensure accurate assembly of plates. Dandy plain bearing components recommended for this bore layout and will be the standard unless otherwise specified.



Pin Diameter	0.625	0.75	0.875	1	1.25	1.5	1.75	2	2.5	3
Dimension C	1.3125	1.375	1.4375	1.5	1.625	1.75	1.875	2	2.5	2.75
Dimension F	1.625	1.75	1.875	2	2.25	2.5	2.75	3	3.75	4.25

When sending in a quote for an IF37D-PB Die Set, please include the following:

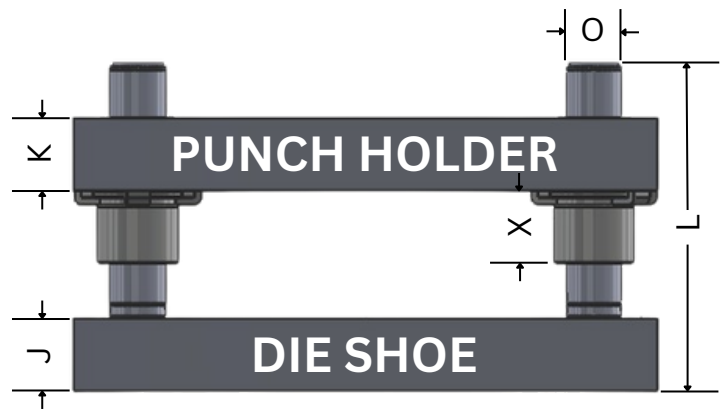
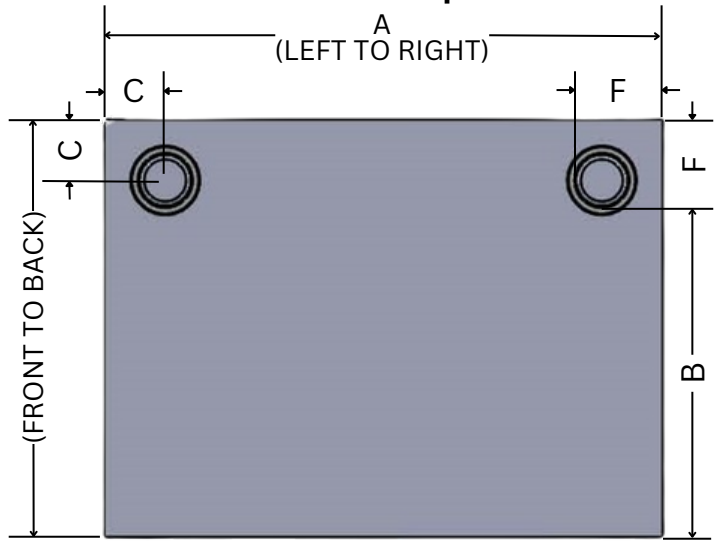
- 1. Style IF37D-PB**
- 2. Quantity**
- 3. Material**
A36/HRS material is standard unless otherwise specified
- 4. Die Shoe Requirements**
Thickness (J), Left to Right (A), Front to Back (B)
- 5. Punch Holder Requirements**
Thickness (K), Left to Right (A), Front to Back (B)
- 6. Pin Requirements**
Diameter (O), Length (L), Press Fit or Demountable (Press Fit pin is standard)
- 7. Bushing Requirements**
Type, Material, Length (X)
(Steel Standard Shoulder Demountable Bushing will be used unless otherwise specified)
- 8. Shank (if required)**
Type (threaded or welded), Diameter
(Shank will be centered in work area)
- 9. Clamp arrangement**
Left to Right feed is standard (page 20)
- 10. Lift Holes (if required)**
See page 18 for standard lift hole options

Notes:

- For IF37D-PB Die Sets, the F dimension is the distance from the inside edge of the pin to the edge of the die set.
- Burnouts & holes can be torch cut to your specified needs. Please send CAD (2D: .dxf or .dwg; 3D: .xt, .stp, or .SLDPRT) with your quote request if requiring burnouts.
- ANSI standards will be used for grinding die sets, unless otherwise specified (see page 19).
- Stress relieving available upon request.

D-STYLE BACK POST PLAIN BEARING DIE SET

The IF33D-PB die set has the guide pins located at the back of the die set. The stock flow from side to side in front of the components allows for a maximum work area when feeding left to right. Dandy plain bearing components recommended for this bore layout and will be the standard unless otherwise specified.



Pin Diameter	0.625	0.75	0.875	1	1.25	1.5	1.75	2	2.5	3
Dimension C	1.3125	1.375	1.4375	1.5	1.625	1.75	1.875	2	2.5	2.75
Dimension F	1.625	1.75	1.875	2	2.25	2.5	2.75	3	3.75	4.25

When sending in a quote for an IF33D-PB Die Set, please include the following:

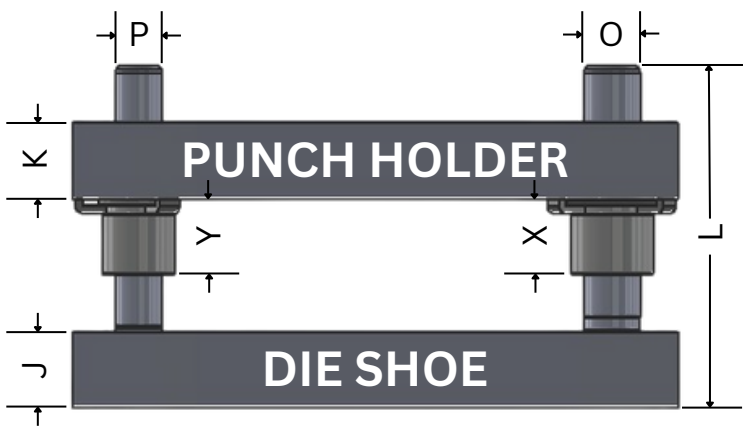
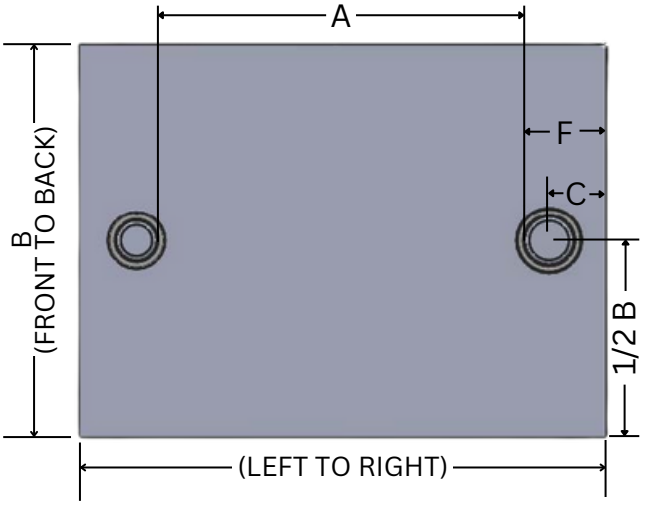
- 1. Style IF33D-PB**
- 2. Quantity**
- 3. Material**
A36/HRS material is standard unless otherwise specified
- 4. Die Shoe Requirements**
Thickness (J), Left to Right (A), Front to Back or B (working dimension)
- 5. Punch Holder Requirements**
Thickness (K), Left to Right (A), Front to Back or B (working dimension)
- 6. Pin Requirements**
Diameter (O), Length (L), Press Fit or Demountable (Press Fit pin is standard)
- 7. Bushing Requirements**
Type, Material, Length (X)
(Steel Standard Shoulder Demountable Bushing will be used unless otherwise specified)
- 8. Shank (if required)**
Type (threaded or welded), Diameter
(Shank will be centered in work area [B Dim])
- 9. Clamp arrangement**
Left to Right feed is standard (page 20)
- 10. Lift Holes (if required)**
See page 18 for standard lift hole options

Notes:

- For IF33D-PB Die Sets, the F dimension is the distance from the inside edge of the pin to the edge of the die set.
- Burnouts & holes can be torch cut to your specified needs. Please send CAD (2D: .dxf or .dwg; 3D: .xt, .stp, or .SLDPRT) with your quote request if requiring burnouts.
- ANSI standards will be used for grinding die sets, unless otherwise specified (see page 19).
- Stress relieving available upon request.

D-STYLE CENTER POST PLAIN BEARING DIE SET

The IF34D-PB die set has guide pins located on the centerline of the Front to Back (B) dimension. To avoid reversing plates while assembling, two different diameter guide pins are used (O- larger diameter pin & P- smaller diameter pin). Front to back feed is standard due to the work area being centered between the components. Danly plain bearing components recommended for this bore layout and will be the standard unless otherwise specified.



"O" Pin Diameter	0.625	0.75	0.875	1	1.25	1.5	1.75	2	2.5	3
C Dimension	1.3125	1.375	1.4375	1.5	1.625	1.75	1.875	2	2.5	2.75
F Dimension	1.625	1.75	1.875	2	2.25	2.5	2.75	3	3.75	4.25

When sending in a quote for an IF34D-PB Die Set, please include the following:

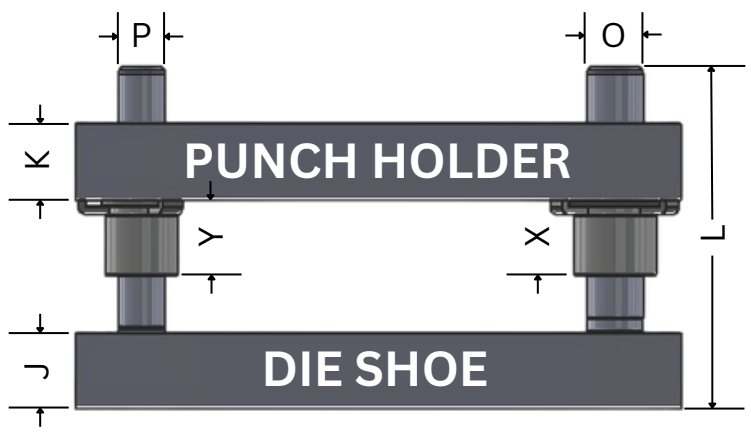
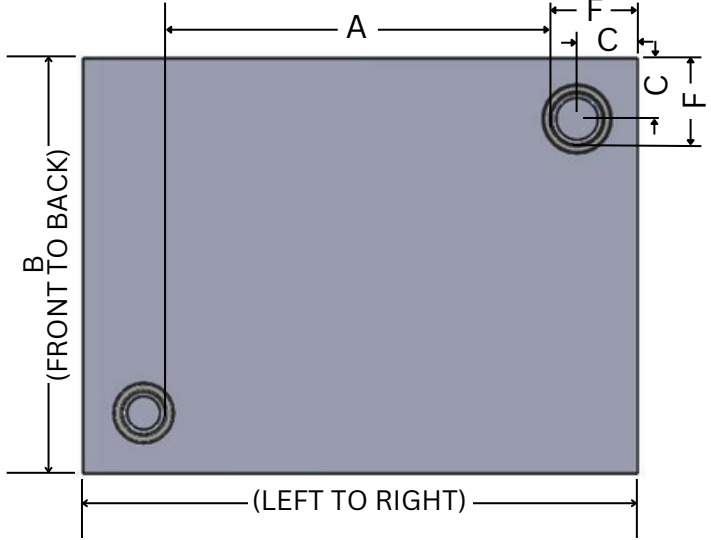
- 1. Style IF34D-PB**
- 2. Quantity**
- 3. Material**
A36/HRS material is standard unless otherwise specified
- 4. Die Shoe Requirements**
Thickness (J), Left to Right or A (working area), Front to Back (B)
- 5. Punch Holder Requirements**
Thickness (K), Left to Right or A (working area), Front to Back (B)
- 6. Pin Requirements**
Diameters (O & P), Length (L), Press Fit or Demountable (Press Fit pin is standard)
- 7. Bushing Requirements**
Type, Material, Length (X)
(Steel Standard Shoulder Demountable Bushing will be used unless otherwise specified)
- 8. Shank (if required)**
Type (threaded or welded), Diameter
(Shank will be centered in work area)
- 9. Clamp arrangement**
Front to Back feed is standard (page 20)
- 10. Lift Holes (if required)**
See page 18 for standard lift hole options

Notes:

- For IF34D-PB Die Sets, the F dimension is the distance from the inside edge of the larger diameter pin (O) to the edge of the die set.
- Burnouts & holes can be torch cut to your specified needs. Please send CAD (2D: .dxf or .dwg; 3D: .xt, .stp, or .SLDPRT) with your quote request if requiring burnouts.
- ANSI standards will be used for grinding die sets, unless otherwise specified. (see page 19)
- Stress relieving available upon request.

D-STYLE DIAGONAL POST PLAIN BEARING DIE SET

The IF35D-PB die set has guide pins located in diagonally opposite corners. To avoid reversing plates while assembling, two different diameter guide pins are used (O- larger diameter pin & P- smaller diameter pin). Danly plain bearing components recommended for this bore layout and will be the standard unless otherwise specified.



"O" Pin Diameter	0.625	0.75	0.875	1	1.25	1.5	1.75	2	2.5	3
C Dimension	1.3125	1.375	1.4375	1.5	1.625	1.75	1.875	2	2.5	2.75
F Dimension	1.625	1.75	1.875	2	2.25	2.5	2.75	3	3.75	4.25

When sending in a quote for an IF35D-PB Die Set, please include the following:

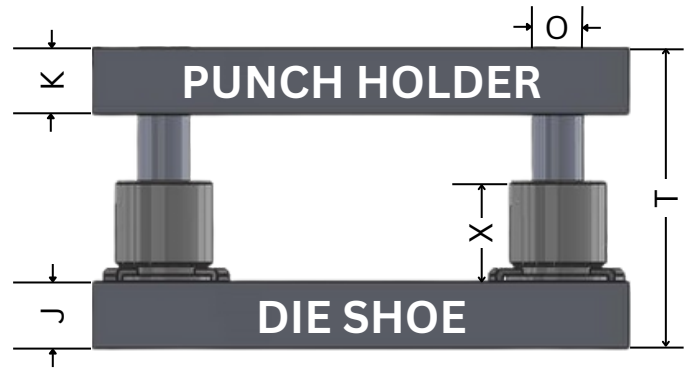
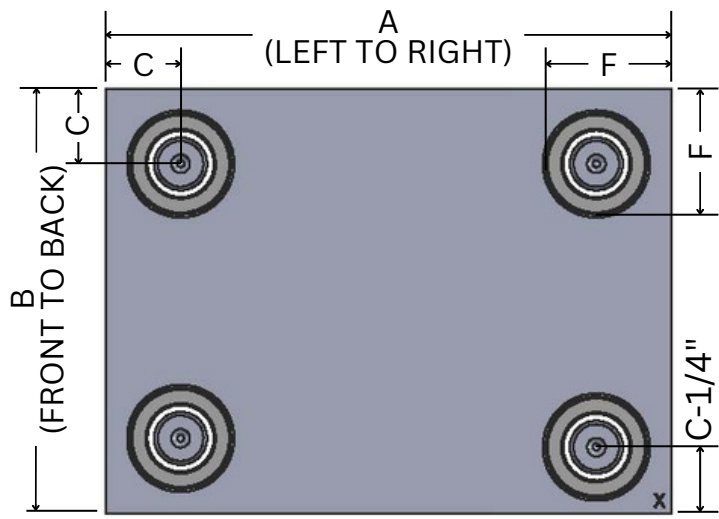
- 1. Style IF35D-PB**
- 2. Quantity**
- 3. Material**
A36/HRS material is standard unless otherwise specified
- 4. Die Shoe Requirements**
Thickness (J), Left to Right or A (working area), Front to Back (B)
- 5. Punch Holder Requirements**
Thickness (K), Left to Right or A (working area), Front to Back (B)
- 6. Pin Requirements**
Diameters (O & P), Length (L), Press Fit or Demountable (Press Fit pin is standard)
- 7. Bushing Requirements**
Type, Material, Length (X & Y)
(Steel Standard Shoulder Demountable Bushing will be used unless otherwise specified)
- 8. Shank (if required)**
Type (threaded or welded), diameter
(Shank will be centered in work area)
- 9. Clamp arrangement**
Left to Right feed is standard (page 20)
- 10. Lift Holes (if required)**
See page 18 for standard lift hole options

Notes:

- For IF35D-PB Die Sets, the F dimension is the distance from the inside edge of the larger diameter pin (O) to the edge of the die set.
- Burnouts & holes can be torch cut to your specified needs. Please send CAD (2D: .dxf or .dwg; 3D: .xt, .stp, or .SLDPRT) with your quote request if requiring burnouts.
- ANSI standards will be used for grinding die sets, unless otherwise specified. (see page 19)
- Stress relieving available upon request.

D-STYLE FOUR POST BALL BEARING DIE SET

The IF37D-BB die set provides maximum resistance to side thrust & misalignment. The right front pin is offset 1/4" from the front to ensure accurate assembly of plates. Danly ball bearing components recommended for this bore layout and will be standard unless otherwise specified.



Pin Diameter	1	1.25	1.5	1.75	2	2.5	3
C Dimension	1.75	1.875	2.125	2.25	2.5	2.875	3.25
F Dimension (Sleeve Bushing)	2.6875	2.9375	3.375	3.625	4.125	4.75	5.375
F Dimension (Demountable Bushing)	2.875	3.0625	3.5625	3.8125	4.3125	5	5.625

When sending in a quote for an IF37D-BB Die Set, please include the following:

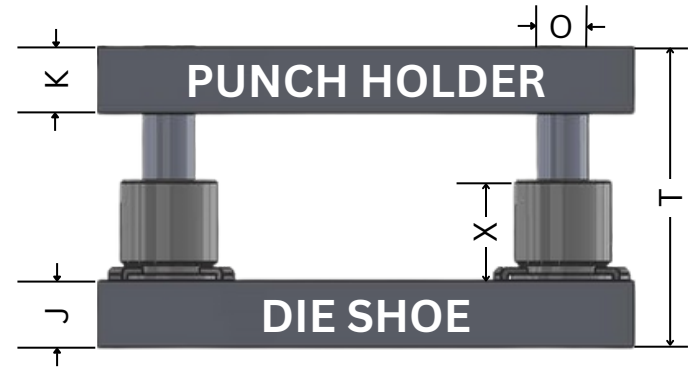
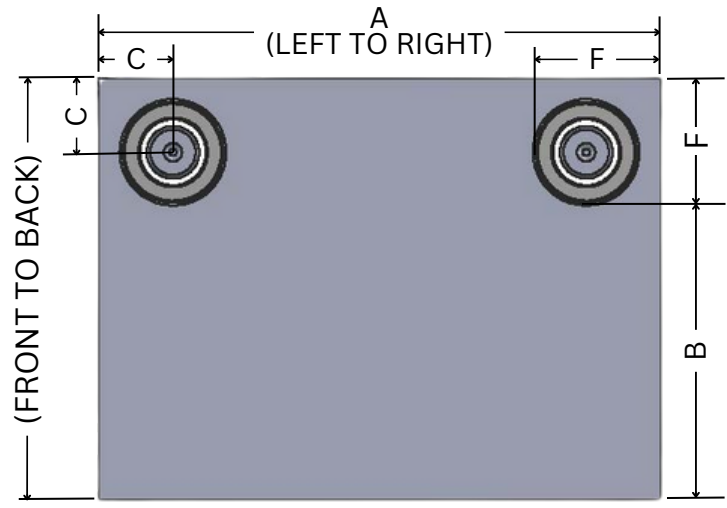
- 1. Style IF37D-BB**
- 2. Quantity**
- 3. Material**
A36/HRS material is standard unless otherwise specified
- 4. Die Shoe Requirements**
Thickness (J), Left to Right (A), Front to Back (B)
- 5. Punch Holder Requirements**
Thickness (K), Left to Right (A), Front to Back (B)
- 6. Pin Requirements**
Diameter (O), Press Fit or Demountable
- 7. Bushing Requirements**
Press Fit or Demountable
- 8. Overall Shut Height (T)**
- 9. Shank (if required)**
Type (threaded or welded), Diameter (Shank will be centered in work area)
- 10. Clamp arrangement**
Left to Right feed is standard (page 20)
- 11. Lift Holes (if required)**
See page 18 for standard lift hole options

Notes:

- For IF37D-BB Die Sets, the F dimension is the distance from the inside edge of the bushing to the edge of the die set.
- Burnouts & holes can be torch cut to your specified needs. Please send CAD (2D: .dxf or .dwg; 3D: .xt, .stp, or .SLDPRT) with your quote request if requiring burnouts.
- ANSI standards will be used for grinding die sets, unless otherwise specified. (see page 19)
- Stress relieving available upon request.

D-STYLE BACK POST BALL BEARING DIE SET

The IF33D-BB Die Set has the bushings located at the back of the die set. The stock flow from side to side in front of the components allows for a maximum work area when feeding left to right. Dandy ball bearing components recommended for this bore layout and will be standard unless otherwise specified.



Pin Diameter	1	1.25	1.5	1.75	2	2.5	3
C Dimension	1.75	1.875	2.125	2.25	2.5	2.875	3.25
F Dimension (Sleeve Bushing)	2.6875	2.9375	3.375	3.625	4.125	4.75	5.375
F Dimension (Demountable Bushing)	2.875	3.0625	3.5625	3.8125	4.3125	5	5.625

When sending in a quote for an IF33D-BB Die Set, please include the following:

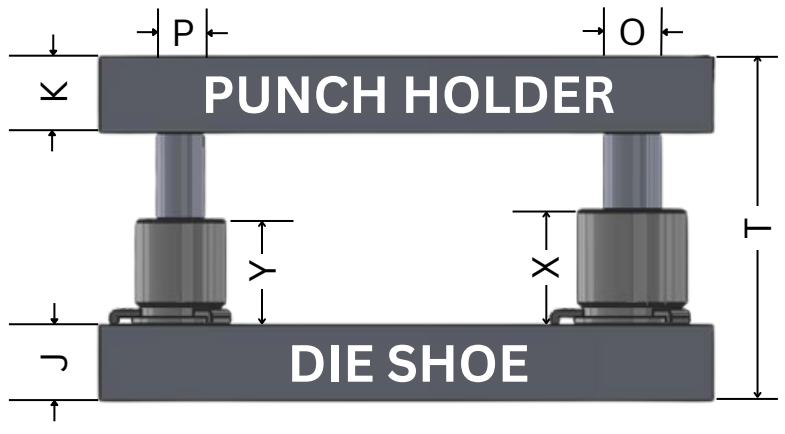
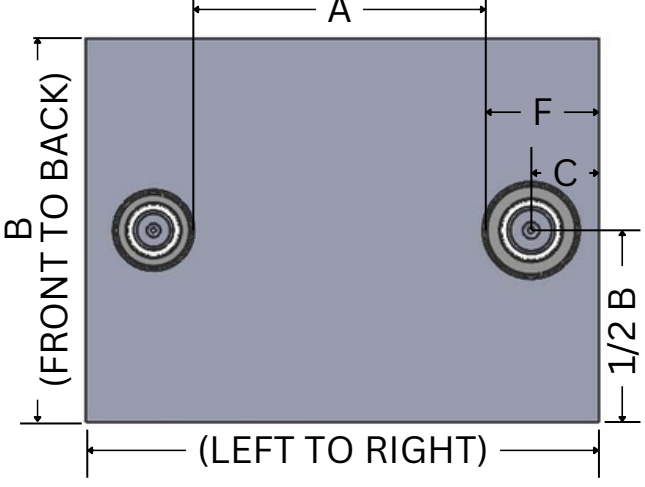
- 1. Style IF33D-BB**
- 2. Quantity**
- 3. Material**
A36/HRS material is standard unless otherwise specified
- 4. Die Shoe Requirements**
Thickness (J), Left to Right (A), Front to Back or B (working area)
- 5. Punch Holder Requirements**
Thickness (K), Left to Right (A), Front to Back or B (working area)
- 6. Pin Requirements**
Diameter (O), Press Fit or Demountable
- 7. Bushing Requirements**
Press Fit or Demountable
- 8. Overall Shut Height (T)**
- 9. Shank (if required)**
Type (threaded or welded), Diameter (Shank will be centered in work area [B])
- 10. Clamp arrangement**
Left to Right feed is standard (page 20)
- 11. Lift Holes (if required)**
See page 18 for standard lift hole options

Notes:

- For IF33D-BB Die Sets, the F dimension is the distance from the inside edge of the bushing to the edge of the die set.
- Burnouts & holes can be torch cut to your specified needs. Please send CAD (2D: .dxf or .dwg; 3D: .xt, .stp, or .SLDPRT) with your quote request if requiring burnouts.
- ANSI standards will be used for grinding die sets, unless otherwise specified. (see page 19)
- Stress relieving available upon request.

D-STYLE CENTER POST BALL BEARING DIE SET

The IF34D-BB die set has bushings located on the centerline of the Front to Back (B) dimension. To avoid reversing plates while assembling, two different diameter guide pins are used (O- larger diameter pin & P- smaller diameter pin). Front to back feed is standard due to the work area being centered between the components. Danly ball bearing components recommended for this bore layout and will be specified unless otherwise specified.



"O" Pin Diameter	1	1.25	1.5	1.75	2	2.5	3
C Dimension	1.75	1.875	2.125	2.25	2.5	2.875	3.25
F Dimension (Sleeve Bushing)	2.6875	2.9375	3.375	3.625	4.125	4.75	5.375
F Dimension (Demountable Bushing)	2.875	3.0625	3.5625	3.8125	4.3125	5	5.625

When sending in a quote for an IF34D-BB Die Set, please include the following:

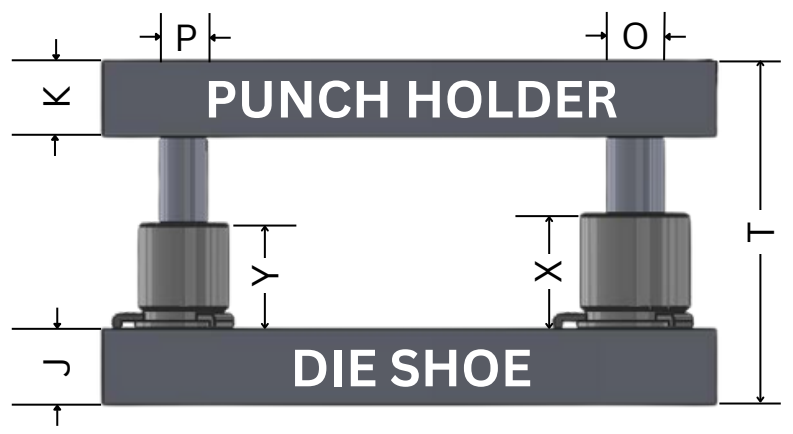
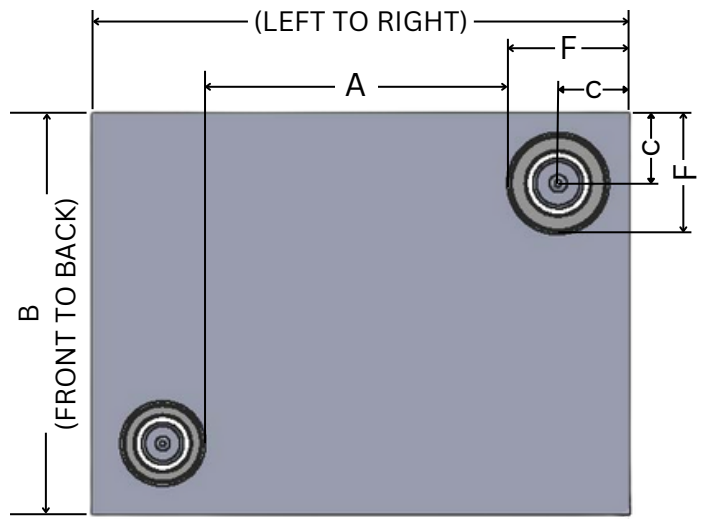
- 1. Style IF34D-BB**
- 2. Quantity**
- 3. Material**
A36/HRS material is standard unless otherwise specified
- 4. Die Shoe Requirements**
Thickness (J), Left to Right or A (working area), Front to Back (B)
- 5. Punch Holder Requirements**
Thickness (K), Left to Right or A (working area), Front to Back (B)
- 6. Pin Requirements**
Diameters (O & P), Press Fit or Demountable
- 7. Bushing Requirements**
Press Fit or Demountable
- 8. Overall Shut Height (T)**
- 9. Shank (if required)**
Type (threaded or welded), Diameter (Shank will be centered in work area)
- 10. Clamp arrangement**
Left to Right feed is standard (page 20)
- 11. Lift Holes (if required)**
See page 18 for standard lift hole options

Notes:

- For IF34D-BB Die Sets, the F dimension is the distance from the inside edge of the larger diameter bushing to the edge of the die set.
- Burnouts & holes can be torch cut to your specified needs. Please send CAD (2D: .dxf or .dwg; 3D: .xt, .stp, or .SLDPRT) with your quote request if requiring burnouts.
- ANSI standards will be used for grinding die sets, unless otherwise specified. (see page 19)
- Stress relieving available upon request.

D-STYLE DIAGONAL POST BALL BEARING DIE SET

The IF35D-BB die set has bushings located in diagonally opposite corners. . To avoid reversing plates while assembling, two different diameter guide pins are used (O- larger diameter pin & P- smaller diameter pin). Danly ball bearing components recommended for this bore layout and will be standard unless otherwise specified.



"O" Pin Diameter	1	1.25	1.5	1.75	2	2.5	3
C Dimension	1.75	1.875	2.125	2.25	2.5	2.875	3.25
F Dimension (Sleeve Bushing)	2.6875	2.9375	3.375	3.625	4.125	4.75	5.375
F Dimension (Demountable Bushing)	2.875	3.0625	3.5625	3.8125	4.3125	5	5.625

When sending in a quote for an IF35D-BB Die Set, please include the following:

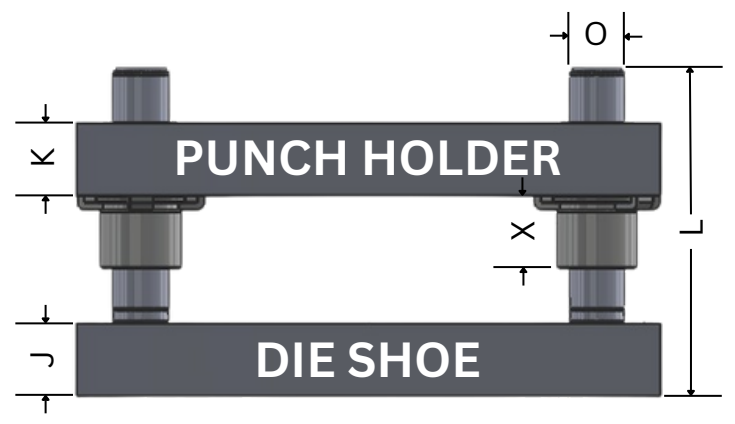
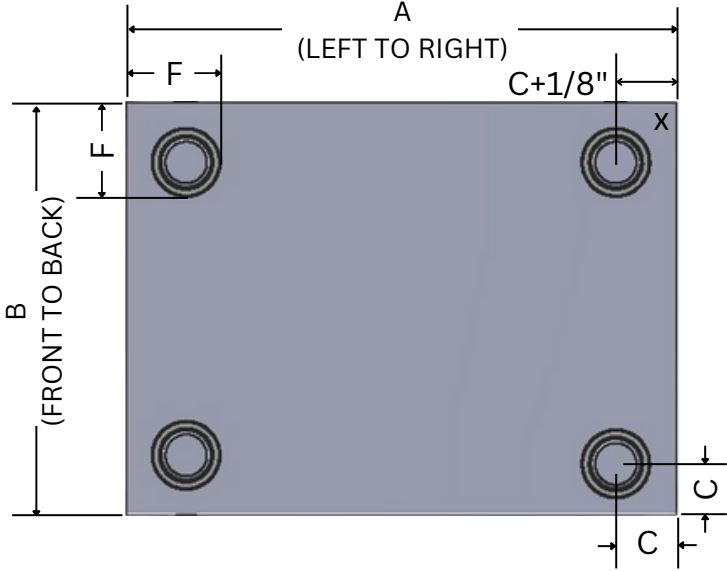
- 1. Style IF35D-BB**
- 2. Quantity**
- 3. Material**
A36/HRS material is standard unless otherwise specified
- 4. Die Shoe Requirements**
Thickness (J), Left to Right or A (working area), Front to Back (B)
- 5. Punch Holder Requirements**
Thickness (K), Left to Right or A (working area), Front to Back (B)
- 6. Pin Requirements**
Diameters (O & P), Press Fit or Demountable
- 7. Bushing Requirements**
Press Fit or Demountable
- 8. Overall Shut Height (T)**
- 9. Shank (if required)**
Type (threaded or welded), Diameter (Shank will be centered in work area)
- 10. Clamp arrangement**
Left to Right feed is standard (page 20)
- 11. Lift Holes (if required)**
See page 18 for standard lift hole options

Notes:

- For IF35D-BB Die Sets, the F dimension is the distance from the inside edge of the larger diameter bushing (O) to the edge of the die set.
- Burnouts & holes can be torch cut to your specified needs. Please send CAD (2D: .dxf or .dwg; 3D: .xt, .stp, or .SLDPRT) with your quote request if requiring burnouts.
- ANSI standards will be used for grinding die sets, unless otherwise specified. (see page 19)
- Stress relieving available upon request.

L-STYLE FOUR POST PLAIN BEARING DIE SET

The IF37L-PB Die Set provides maximum resistance to side thrust & misalignment. The back right pin is offset 1/8" to the left to ensure accurate assembly of plates. Lamina plain bearing components recommended for this bore layout and will be standard unless otherwise specified.



Pin Diameter	.75	1	1.25	1.5	1.75	2	2.5	3
C Dimension	1.375	1.5	1.625	1.75	1.875	2	2.5	2.75
F Dimension	1.75	2	2.25	2.5	2.75	3	3.75	4.25

When sending in a quote for an IF37L-PB Die Set, please include the following:

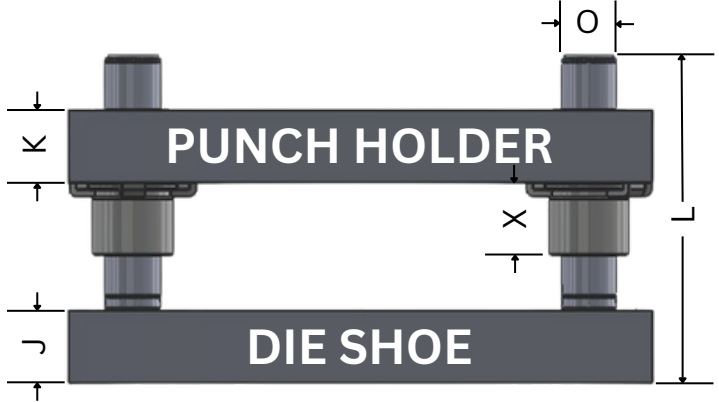
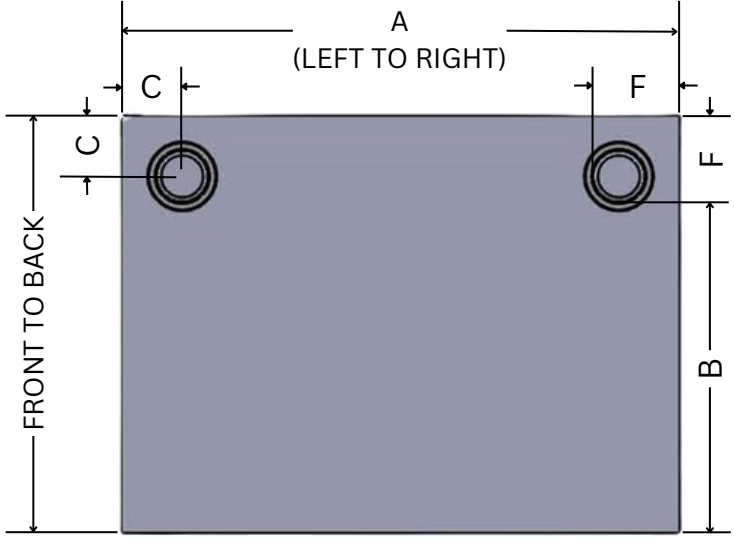
- 1. Style IF37L-PB**
- 2. Quantity**
- 3. Material**
A36/HRS material is standard unless otherwise specified
- 4. Die Shoe Requirements**
Thickness (J), Left to Right (A), Front to Back (B)
- 5. Punch Holder Requirements**
Thickness (K), Left to Right (A), Front to Back (B)
- 6. Pin Requirements**
Diameter (O), Length (L), Press Fit or Demountable (Press Fit pin is standard)
- 7. Bushing Requirements**
Type, Material, Length (X)
(Steel Standard Shoulder Demountable Bushing will be used unless otherwise specified)
- 8. Shank (if required)**
Type (threaded or welded), Diameter
(Shank will be centered in work area)
- 9. Clamp arrangement**
Left to Right feed is standard (page 20)
- 10. Lift Holes (if required)**
See page 18 for standard lift hole options

Notes:

- For IF37L-PB Die Sets, the F dimension is the distance from the inside edge of the pin to the edge of the die set.
- Burnouts & holes can be torch cut to your specified needs. Please send CAD (2D: .dxf or .dwg; 3D: .xt, .stp, or .SLDPRT) with your quote request if requiring burnouts.
- ANSI standards will be used for grinding die sets, unless otherwise specified. (see page 19)
- Stress relieving available upon request.

L-STYLE BACK POST PLAIN BEARING DIE SET

The IF33L-PB Back Post Die Set has the guide pins located at the back of the die set. The stock flow from side to side in front of the components allows for a maximum work area when feeding left to right. Lamina plain bearing components recommended for this bore layout and will be standard unless otherwise specified.



Pin Diameter	.75	1	1.25	1.5	1.75	2	2.5	3
C Dimension	1.375	1.5	1.625	1.75	1.875	2	2.5	2.75
F Dimension	1.75	2	2.25	2.5	2.75	3	3.75	4.25

When sending in a quote for an IF33L-PB Die Set, please include the following:

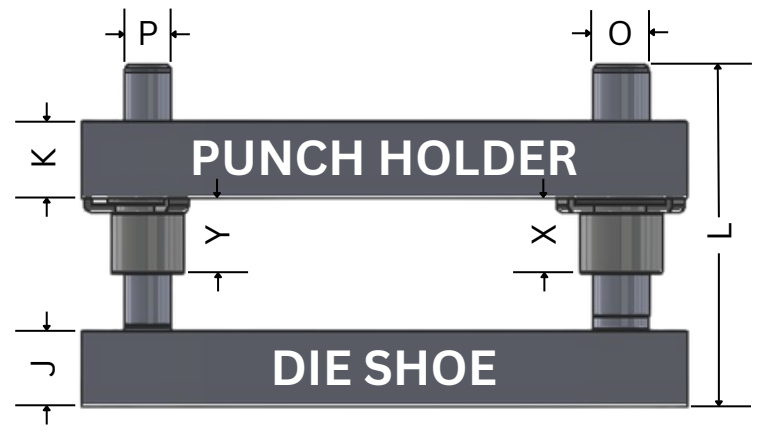
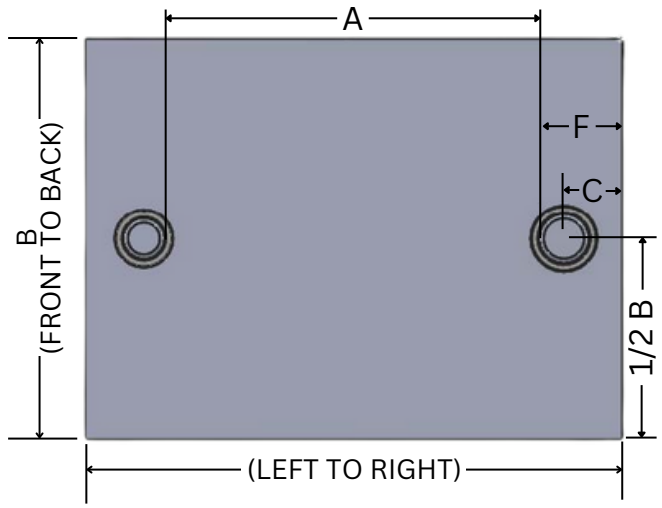
- 1. Style IF33L-PB**
- 2. Quantity**
- 3. Material**
A36/HRS material is standard unless otherwise specified
- 4. Die Shoe Requirements**
Thickness (J), Left to Right (A), Front to Back or B (working area)
- 5. Punch Holder Requirements**
Thickness (K), Left to Right (A), Front to Back or B (working area)
- 6. Pin Requirements**
Diameter (O), Length (L), Press Fit or Demountable (Press Fit pin is standard)
- 7. Bushing Requirements**
Type, Material, Length (X)
(Steel Standard Shoulder Demountable Bushing will be used unless otherwise specified)
- 8. Shank (if required)**
Type (threaded or welded), Diameter
(Shank will be centered in work area [B Dim])
- 9. Clamp arrangement**
Left to Right feed is standard (page 20)
- 10. Lift Holes (if required)**
See page 18 for standard lift hole options

Notes:

- For IF33L-PB Die Sets, the F dimension is the distance from the inside edge of the pin to the edge of the die set.
- Burnouts & holes can be torch cut to your specified needs. Please send CAD (2D: .dxf or .dwg; 3D: .xt, .stp, or .SLDPRT) with your quote request if requiring burnouts.
- ANSI standards will be used for grinding die sets, unless otherwise specified. (see page 19)
- Stress relieving available upon request.

L-STYLE CENTER POST PLAIN BEARING DIE SET

The IF34L-PB die set has guide pins located on the centerline of the Front to Back (B) dimension. To avoid reversing plates while assembling, two different diameter guide pins are used (O- larger diameter pin & P- smaller diameter pin). Front to back feed is standard due to the work area being centered between the components. Lamina plain bearing components recommended for this bore layout and will be standard unless otherwise specified.



"O" Pin Diameter	.75	1	1.25	1.5	1.75	2	2.5	3
C Dimension	1.375	1.5	1.625	1.75	1.875	2	2.5	2.75
F Dimension	1.75	2	2.25	2.5	2.75	3	3.75	4.25

When sending in a quote for an IF34L-PB Die Set, please include the following:

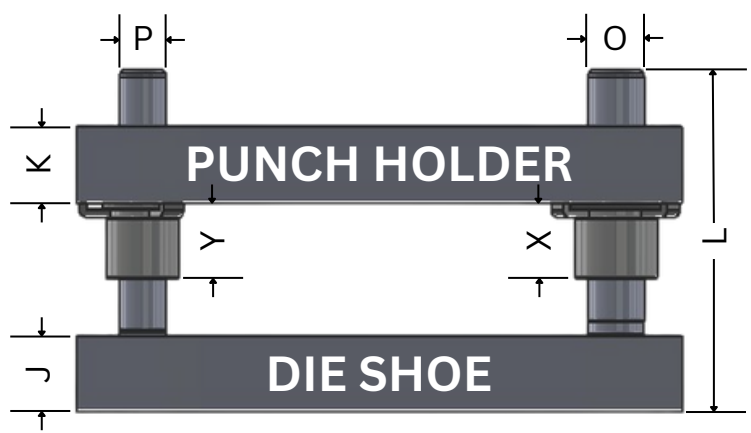
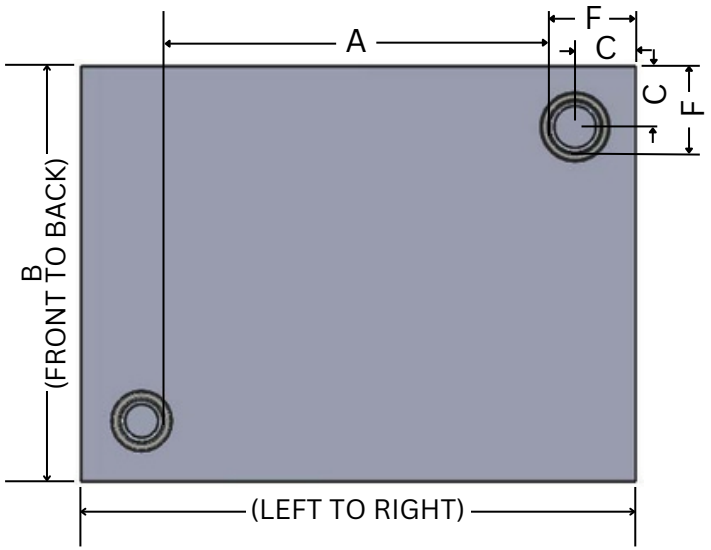
- 1. Style IF34L-PB**
- 2. Quantity**
- 3. Die Shoe Requirements**
Thickness (J), Left to Right or A (working area), Front to Back (B)
- 4. Punch Holder Requirements**
Thickness (K), Left to Right or A (working area), Front to Back (B)
- 5. Pin Requirements**
Diameters (O & P), Length (L), Press Fit or Demountable (Press Fit pin is standard)
- 6. Bushing Requirements**
Type, Material, Length (X & Y)
(Steel Standard Shoulder Demountable Bushing will be used unless otherwise specified)
- 7. Shank (if required)**
Type (threaded or welded), Diameter
(Shank will be centered in work area)
- 8. Clamp arrangement**
Front to Back feed is standard (page 20)
- 9. Lift Holes (if required)**
See page 18 for standard lift hole options

Notes:

- For IF34L-PB Die Sets, the F dimension is the distance from the inside edge of the larger diameter pin (O) to the edge of the die set.
- Burnouts & holes can be torch cut to your specified needs. Please send CAD (2D: .dxf or .dwg; 3D: .xt, .stp, or .SLDPRT) with your quote request if requiring burnouts.
- ANSI standards will be used for grinding die sets, unless otherwise specified. (see page 19)
- Stress relieving available upon request.

L-STYLE DIAGONAL POST PLAIN BEARING DIE SET

The IF34L-PB die set has guide pins located in diagonally opposite corners. To avoid reversing plates while assembling, two different diameter guide pins are used (O- larger diameter pin & P- smaller diameter pin). Lamina plain bearing components recommended for this bore layout and will be standard unless otherwise specified.



"O" Pin Diameter	.75	1	1.25	1.5	1.75	2	2.5	3
C Dimension	1.375	1.5	1.625	1.75	1.875	2	2.5	2.75
F Dimension	1.75	2	2.25	2.5	2.75	3	3.75	4.25

When sending in a quote for an IF35L-PB Die Set, please include the following:

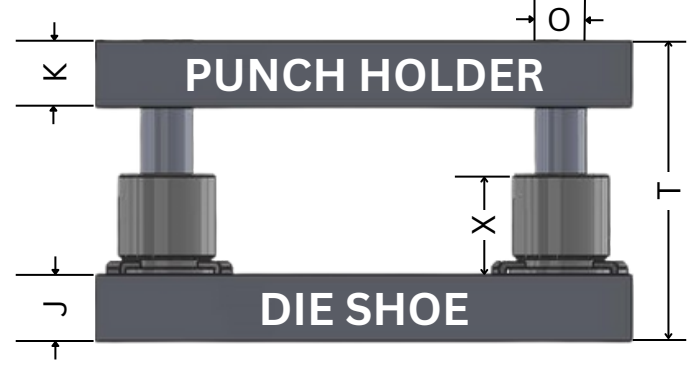
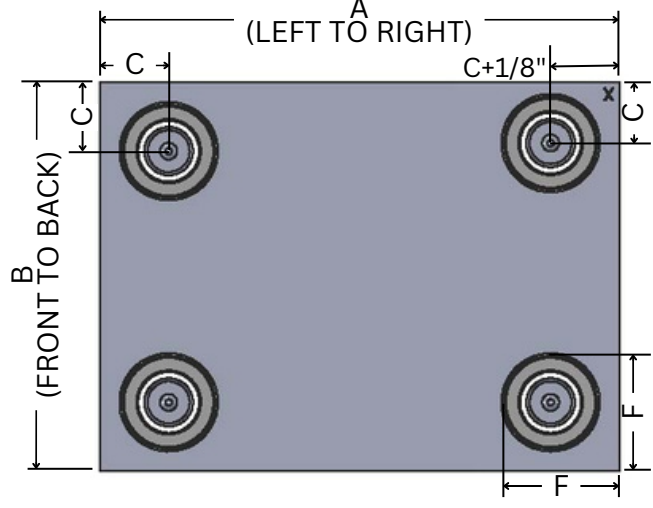
- 1. Style IF35L-PB**
- 2. Quantity**
- 3. Material**
A36/HRS material is standard unless otherwise specified
- 4. Die Shoe Requirements**
Thickness (J), Left to Right or A (working area), Front to Back (B)
- 5. Punch Holder Requirements**
Thickness (K), Left to Right or A (working area), Front to Back (B)
- 6. Pin Requirements**
Diameters (O & P), Length (L), Press Fit or Demountable (Press Fit pin is standard)
- 7. Bushing Requirements**
Type, Material, Length (X & Y)
(Steel Standard Shoulder Demountable Bushing will be used unless otherwise specified)
- 8. Shank (if required)**
Type (threaded or welded), Diameter
(Shank will be centered in work area)
- 8. Clamp arrangement**
Left to Right feed is standard (page 20)
- 9. Lift Holes (if required)**
See page 18 for standard lift hole options

Notes:

- For IF35L-PB Die Sets, the F dimension is the distance from the inside edge of the larger diameter pin (O) to the edge of the die set.
- Burnouts & holes can be torch cut to your specified needs. Please send CAD (2D: .dxf or .dwg; 3D: .xt, .stp, or .SLDPRT) with your quote request if requiring burnouts.
- ANSI standards will be used for grinding die sets, unless otherwise specified. (page 19)
- Stress relieving available upon request.

L-STYLE FOUR POST BALL BEARING DIE SET

The IF37L-BB Die Set provides maximum resistance to side thrust & misalignment. The back right pin is offset 1/8" to the left to ensure accurate assembly of plates. Lamina plain bearing components recommended for this bore layout. Lamina, Lempco, or Superior type A ball bearing components recommended for this bore layout. Lamina components will be standard unless otherwise specified.



Pin Diameter	.75	1	1.25	1.5	1.75	2	2.5	3
C Dimension	1.375	1.5	1.75	2	2.125	2.375	2.625	2.875
F Dimension (Sleeve Bushing)	2.068	2.358	2.803	3.218	3.498	3.955	4.465	4.965
F Dimension (Demountable Bushing)	N/A	2.5	2.937	3.343	3.625	4.156	4.656	5.156

When sending in a quote for an IF37L-BB Die Set, please include the following:

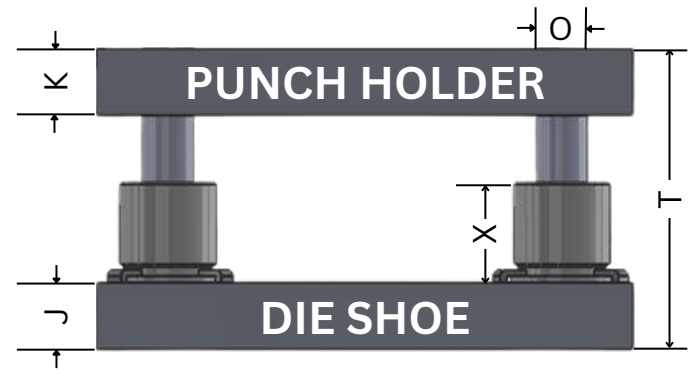
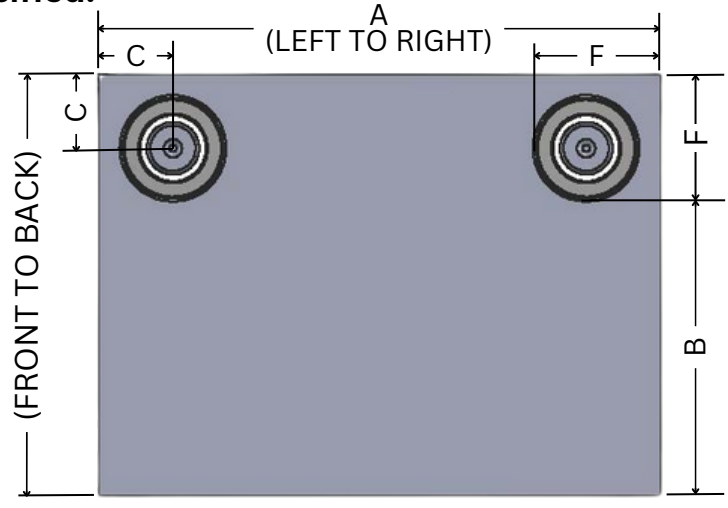
1. Style IF37L-BB
2. Quantity
3. Material
A36/HRS material is standard unless otherwise specified
4. Die Shoe Requirements
Thickness (J), Left to Right (A), Front to Back (B)
5. Punch Holder Requirements
Thickness (K), Left to Right (A), Front to Back (B)
6. Pin Requirements
Diameter (O), Press Fit or Demountable
7. Bushing Requirements
Press Fit or Demountable
8. Overall Shut Height (T)
9. Shank (if required)
Type (threaded or welded), Diameter (Shank will be centered in work area)
10. Clamp arrangement
Left to Right feed is standard (page 20)
11. Lift Holes (if required)
See page 18 for standard lift hole options

Notes:

- For IF37L-BB Die Sets, the F dimension is the distance from the inside edge of the bushing to the edge of the die set.
- Burnouts & holes can be torch cut to your specified needs. Please send CAD (2D: .dxf or .dwg; 3D: .xt, .stp, or .SLDPRT) with your quote request if requiring burnouts.
- ANSI standards will be used for grinding die sets, unless otherwise specified. (see page 19)
- Stress relieving available upon request.

L-STYLE BACK POST BALL BEARING DIE SET

The IF33L-BB Back Post Die Set has the bushings located at the back of the die set. The stock flow from side to side in front of the components allows for a maximum work area when feeding left to right. Lamina, Lemppo, or Superior type A ball bearing components recommended for this bore layout. Lamina components will be standard unless otherwise specified.



Pin Diameter	.75	1	1.25	1.5	1.75	2	2.5	3
C Dimension	1.375	1.5	1.75	2	2.125	2.375	2.625	2.875
F Dimension (Sleeve Bushing)	2.068	2.358	2.803	3.218	3.498	3.955	4.465	4.965
F Dimension (Demountable Bushing)	N/A	2.5	2.937	3.343	3.625	4.156	4.656	5.156

When sending in a quote for an IF33L-BB Die Set, please include the following:

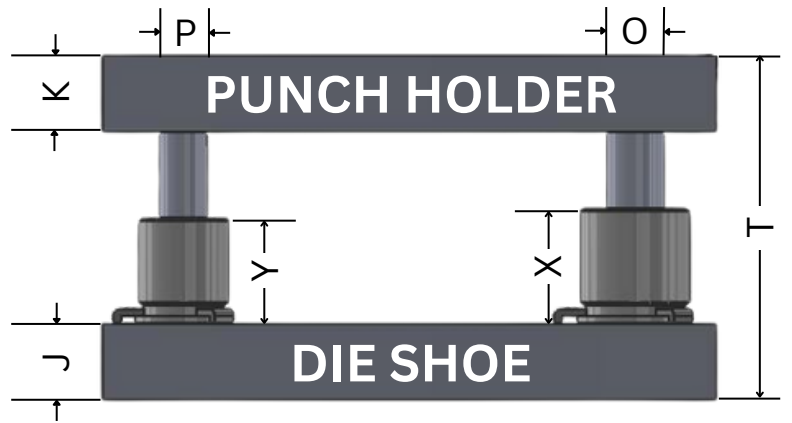
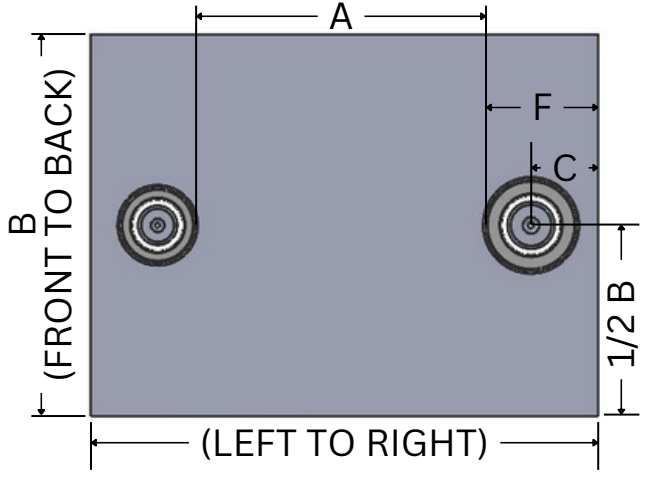
- 1. Style IF33L-BB**
- 2. Quantity**
- 3. Material**
A36/HRS material is standard unless otherwise specified
- 4. Die Shoe Requirements**
Thickness (J), Left to Right (A), Front to Back or B (working area)
- 5. Punch Holder Requirements**
Thickness (K), Left to Right (A), Front to Back or B (working area)
- 6. Pin Requirements**
Diameter (O), Press Fit or Demountable
- 7. Bushing Requirements**
Press Fit or Demountable
- 8. Overall Shut Height (T)**
- 9. Shank (if required)**
Type (threaded or welded), Diameter (Shank will be centered in work area [B])
- 10. Clamp arrangement**
Left to Right feed is standard (page 20)
- 11. Lift Holes (if required)**
See page 18 for standard lift hole options

Notes:

- For IF33L-BB Die Sets, the F dimension is the distance from the inside edge of the bushing to the edge of the die set.
- Burnouts & holes can be torch cut to your specified needs. Please send CAD (2D: .dxf or .dwg; 3D: .xt, .stp, or .SLDPRT) with your quote request if requiring burnouts.
- ANSI standards will be used for grinding die sets, unless otherwise specified. (see page 19)
- Stress relieving available upon request.

L-STYLE CENTER POST BALL BEARING DIE SET

The IF34L-BB die set has bushings located on the centerline of the Front to Back (B) dimension. To avoid reversing plates while assembling, two different diameter guide pins are used (O- larger diameter pin & P- smaller diameter pin). Front to back feed is standard due to the work area being centered between the components. Lamina, Lemppo, or Superior type A ball bearing components recommended for this bore layout. Lamina components will be standard unless otherwise specified.



"O" Pin Diameter	.75	1	1.25	1.5	1.75	2	2.5	3
C Dimension	1.375	1.5	1.75	2	2.125	2.375	2.625	2.875
F Dimension (Sleeve Bushing)	2.068	2.358	2.803	3.218	3.498	3.955	4.465	4.965
F Dimension (Demountable Bushing)	N/A	2.5	2.937	3.343	3.625	4.156	4.656	5.156

When sending in a quote for an IF34L-BB Die Set, please include the following:

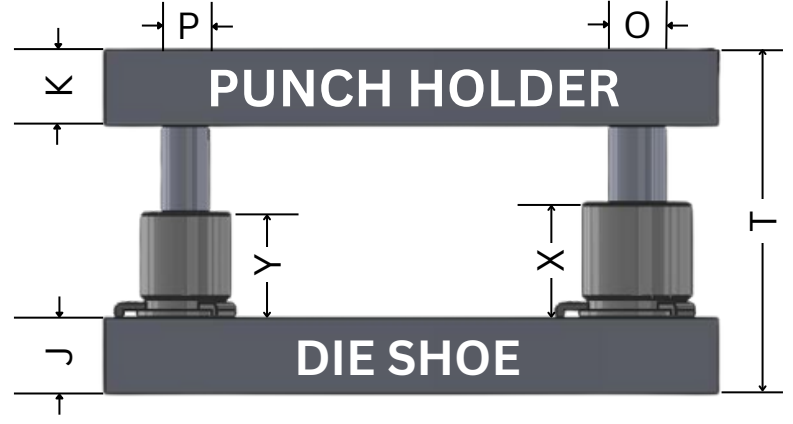
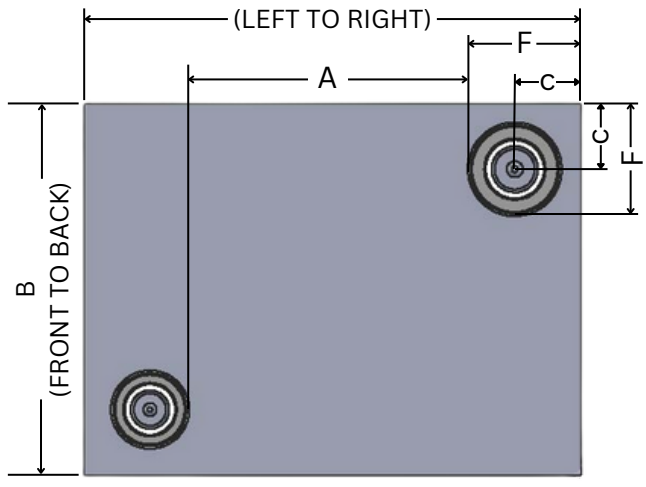
1. Style IF34L-BB
2. Quantity
3. Material
A36/HRS material is standard unless otherwise specified
4. Die Shoe Requirements
Thickness (J), Left to Right or A (working area), Front to Back (B)
5. Punch Holder Requirements
Thickness (K), Left to Right or A (working area), Front to Back (B)
6. Pin Requirements
Diameter (O), Press Fit or Demountable
7. Bushing Requirements
Press Fit or Demountable
8. Overall Shut Height (T)
9. Shank (if required)
Type (threaded or welded), Diameter (Shank will be centered in work area [B])
10. Clamp arrangement
Left to Right feed is standard (page 20)
11. Lift Holes (if required)
See page 18 for standard lift hole options

Notes:

- For IF34L-BB Die Sets, the F dimension is the distance from the inside edge of the larger diameter bushing (O) to the edge of the die set.
- Burnouts & holes can be torch cut to your specified needs. Please send CAD (2D: .dxf or .dwg; 3D: .xt, .stp, or .SLDPRT) with your quote request if requiring burnouts.
- ANSI standards will be used for grinding die sets, unless otherwise specified. (see page 19)
- Stress relieving available upon request.

L-STYLE DIAGONAL POST BALL BEARING DIE SET

The IF35L-BB die set has bushings located in diagonally opposite corners. . To avoid reversing plates while assembling, two different diameter guide pins are used (O- larger diameter pin & P- smaller diameter pin). Lamina, Lempcu, or Superior type A ball bearing components recommended for this bore layout. Lamina components will be standard unless otherwise specified.



Pin Diameter	.75	1	1.25	1.5	1.75	2	2.5	3
C Dimension	1.375	1.5	1.75	2	2.125	2.375	2.625	2.875
F Dimension (Sleeve Bushing)	2.068	2.358	2.803	3.218	3.498	3.955	4.465	4.965
F Dimension (Demountable Bushing)	N/A	2.5	2.937	3.343	3.625	4.156	4.656	5.156

When sending in a quote for an IF35L-BB Die Set, please include the following:

- 1. Style IF35L-BB**
- 2. Quantity**
- 3. Material**
A36/HRS material is standard unless otherwise specified
- 4. Die Shoe Requirements**
Thickness (J), Left to Right or A (working area), Front to Back (B)
- 5. Punch Holder Requirements**
Thickness (K), Left to Right or A (working area), Front to Back (B)
- 6. Pin Requirements**
Diameter (O), Press Fit or Demountable
- 7. Bushing Requirements**
Press Fit or Demountable
- 8. Overall Shut Height (T)**
- 9. Shank (if required)**
Type (threaded or welded), Diameter (Shank will be centered in work area [B])
- 10. Clamp arrangement**
Left to Right feed is standard (page 20)
- 11. Lift Holes (if required)**
See page 18 for standard lift hole options

Notes:

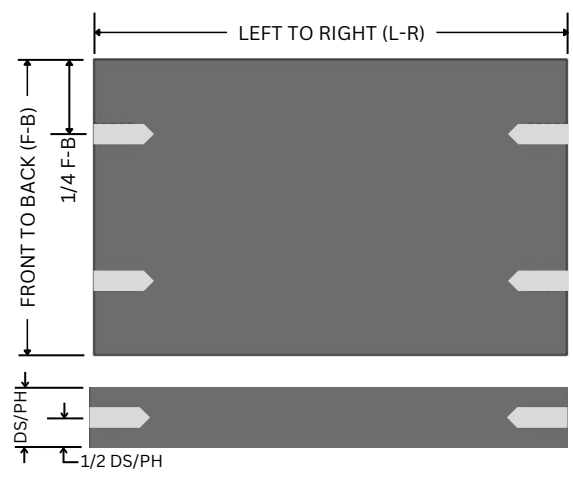
- For IF35L-BB Die Sets, the F dimension is the distance from the inside edge of the larger diameter bushing (O) to the edge of the die set.
- Burnouts & holes can be torch cut to your specified needs. Please send CAD (2D: .dxf or .dwg; 3D: .xt, .stp, or .SLDPRT) with your quote request if requiring burnouts.
- ANSI standards will be used for grinding die sets, unless otherwise specified. (see page 19)
- Stress relieving available upon request.

LIFT HOLES

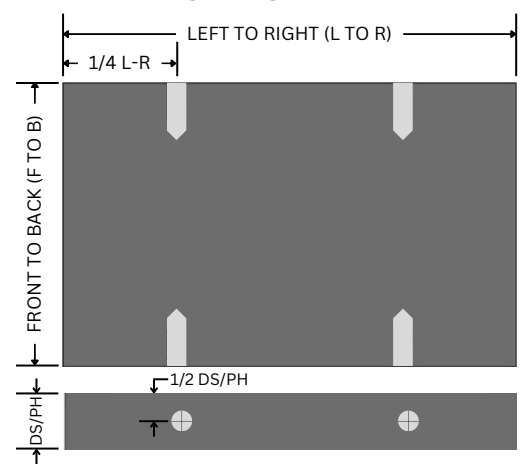
LIFT HOLE OPTIONS

Lift Holes are used to assist with safe and easy handling. Drilled and tapped Lift Holes can be added to the punch holder and die shoe. Five standard options are available. Custom Lift Hole locations can be accommodated as well. When requesting Lift Holes, desired diameter must be specified. Lift hole locations will be held to a +/- .125 tolerance from edges and centered within the plate thickness.

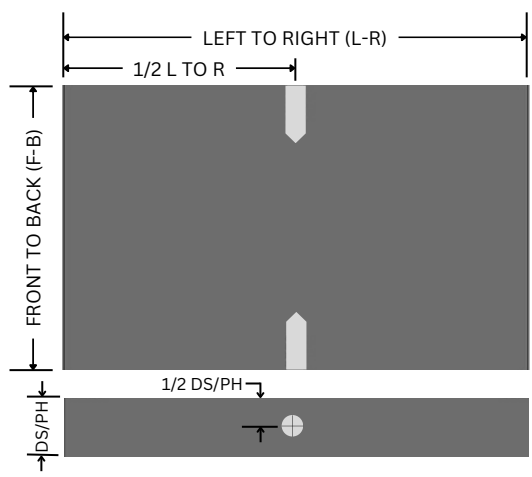
OPTION 1



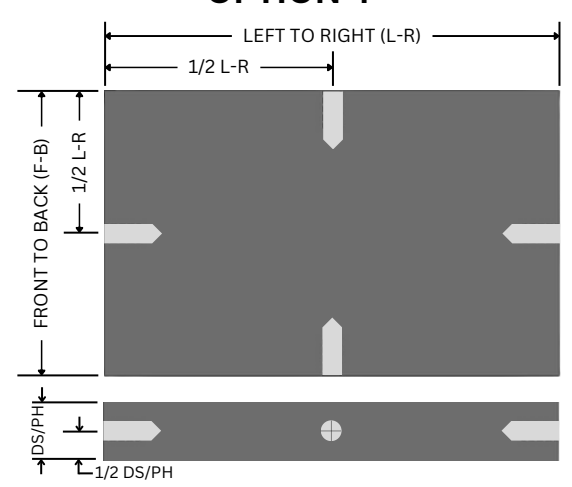
OPTION 2



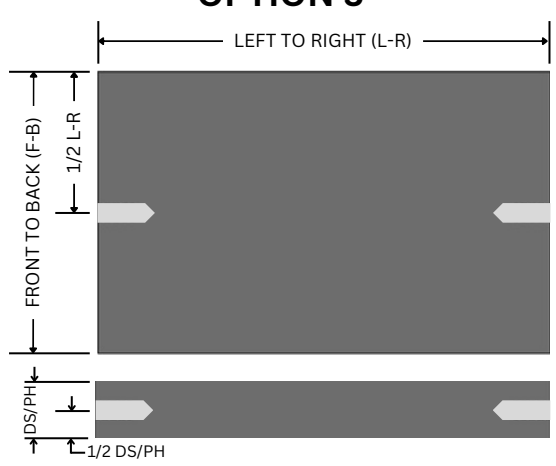
OPTION 3



OPTION 4



OPTION 5



STANDARD LIFT HOLE SIZES	
INCH	METRIC
1/2-13	M12 x 1.75
5/8-11	M14 x 2.0
3/4-10	M16 x 2.0
1-8	M20 x 2.5
1 1/4-7	M24 x 3.0
1 1/2-6	M30 x 3.5
	M36 x 4.0

Grinding/Face Milling Information

CLEANUP GRIND TOLERANCES

THICKNESS:	OVER:	UNDER:
2" and under	+0.062	-0.120
2- 1/4" to 3"	+0.062	-0.180
3-1/4" and over	+0.062	-0.250

FLAT & PARALLEL

Flatness (per 12"):	.0015
Parallelsim (per 12"):	.0015

Calculating flatness/parallelism: Divide diagonal of die set by 12" then multiply by values indicated above.

Example:

Step 1: 60" diagonal ÷ 12" = 5

Step 2: 5 x .0015 = .0075" TIR

Torch Cutting & Clamp Arrangements

TORCH CUTTING CAPABILITIES

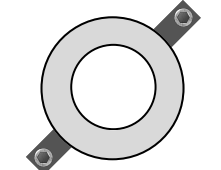
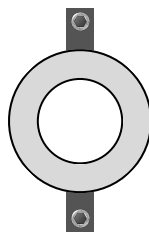
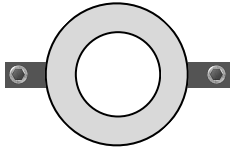
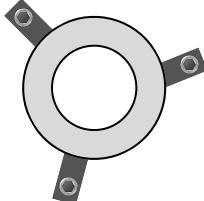
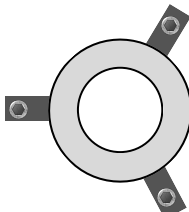
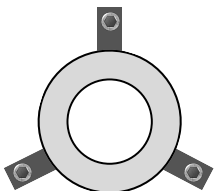
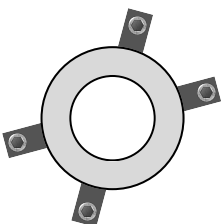
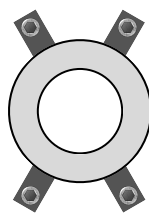
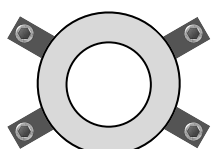
Standard flame cutting tolerance = +/- 1/8

This tolerance applies to all ranges of plate thickness on all plate dimensions (width x length)

Piercing Capabilities

Plate Thickness	Minimum Burnout Area		Minimum B/O Width	Minimum Distance Between B/O & Feature	Clearance Per Side (kerf)
	Width x Length (w/ 1/4" Pre-Drill)	Diameter			
1" - 1 3/4"	0.41 x 0.65	0.66	0.16	0.2	0.08
2" - 2 3/4"	0.43 x 0.66	0.71	0.18	0.25	0.09
3" - 3 3/4"	0.47 x 0.97	0.79	0.22	0.3	0.11
4" - 4 3/4"	0.49 x 1.30	0.84	0.24	0.35	0.12
5" - 5 3/4"	N/A	N/A	0.26	0.4	0.13
6"	N/A	N/A	0.28	0.45	0.14

CLAMP ARRANGEMENTS

ROUND DIE	FRONT TO BACK FEED	LEFT TO RIGHT FEED
		
		
		

Send quote requests to rfq@ifabm.com

Material Data & Offered Material

MATERIAL PROPERTY DATA

PROPERTIES	ASTM A36	1020 HR STEEL	4140 ANNEALED	6061T651 ALUMINUM	7075T651 ALUMINUM	ALUMOLD 500 ALUMINUM
TENSILE STRENGTH (KSI)	58-80	60	95	46	83	80-80
YEILD STRENGTH (KSI)	36	50	60	40	73	73-78
DENSITY (LBS/IN)	0.282	0.284	0.282	0.098	0.101	0.102
ELASTICITY (MSI)	29.0	27.0	30.0	10.0	10.3	10.5
BRINNEL (ENGLISH)	126	111	197	90-95	140-150	180-185
COEFFICIENT OF EXAPANSION ($\mu\text{in/in-}^\circ\text{F}$ @ 68°F)	6.5	6.0	6.2	13.1	13.1	13.2

OFFERED MATERIAL

Integrity Fab & Machine offers die sets in a variety of materials, including A36/HRS, 4140, & several grades of aluminum. Depending on your application, Integrity Fab & Machine has the correct material for you! Whether you are looking for a die set kit or a fully machined die set for quick assembly, we can supply you with what you need. Please contact a customer representative for the material that best suits your requirements at rfq@ifabm.com or call (989) 481-3200. NOTE: A36/HRS material is standard and will be used if not otherwise specified.

Glossary

Ball Bearing Cages: The cages are used together with ball bearing pins and bushings.

Burnout: An torch-cut opening of any shape in the interior of the plate. See “Torch Cutting Capabilities” on page 20 for minimum burnout sizes

Bushings: The bushing works in conjunction with the pin to keep the punch holder and die shoe aligned.

Clean Up Grind (Mill): Plate thickness is ground to the ANSI standard (see chart on page 19). Tolerance varies depending on thickness.

Demountable: Pins and bushings held in place using toe clamps and screws

Die Shoe (J): The lower plate of a die set permanently attached to a bolster plate that supports the die retainer and die button. Also known as the lower die holder.

Die Set Kit: A die set without pin and bushing holes bored into the die shoe and punch holder. Note: It is recommended that the pin diameter is less or equal to the plate thickness.

Finished Edges: An edge of a plate that is machined. A torch-cut edge is standard unless otherwise specified.

Guide Pins: A steel rod positioned in the lower die shoe (plain bearing die set) or upper punch holder (ball bearing die set) that fits into a bushing in the upper punch holder (plain bearing die set) or lower die shoe (ball bearing die set) to guide the punch during operation, allowing precise alignment.

Lift Hole: Drilled and tapped holes on the edges of the die shoe and punch holder to assist with safe and easy handling.

Outside Shut Height (T): The outside height of the die from top of punch holder to bottom of die shoe when die is in the closed position.

Press Fit: Pins and bushings pressed into the die plates with the use of a hydraulic/arbor press. No clamps or screwed required.

Punch Holder (K): A plate that secures the punch retainer. Also known as the upper die shoe.

Shank: A finished round blank ordered by diameter that is threaded or welded on the top of the punch holder which is then used to locate the die set within the press machine

Slug Ramp: An angled surface machined on the edge of the plate

Stress Relieving: The process of heating plates to a temperature below the critical range to relieve the stresses resulting from cold working, shearing or gas cutting.

INTEGRITY

FAB & MACHINE INC.

Division of  BICO STEEL

CORE VALUES

- **Integrity & Accountability** – Doing the right thing, honestly, when no one is looking, and owning our actions every time.
- **Customer Focus** – We put our customers' needs first.
- **Continuous Improvement** – We are committed to learning and growing as individuals and as a team.
- **Teamwork** – We will collaborate to achieve our common goals
- **Drive/Get Results** – We deliver excellence for our peers, partners and customers.

INTEGRITY
FAB & MACHINE INC.

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