





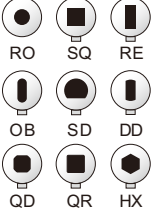

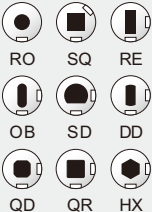


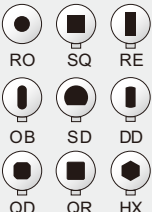
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2024

# **K85 Series** **Catalog**

| Product   |  | Product Overview  |
|---|--|---|
|    | <p>Single Groove(0°)</p>  <p>Double Grooves (0°, 90°)(0°, 135°)</p>  | <ul style="list-style-type: none"> <li>This is our's latest product, which allows for tooling length adjustment without the needs for any fixture tools. Simply grip the tooling guide with one hand, and rotate the adjustment shaft at the punch head assembly with other hand to easily lengthen or shorten the tooling.</li> <li>Round punches has pins, round guides has the slots for the punch pin. Highly quick adjust, save tool change time and improve production efficiency.</li> </ul> |
|    |   | <ul style="list-style-type: none"> <li>Round shape punch with pin.</li> <li>Using HRC 63 High-Speed Steel for exceptional durability in high-stress environments.</li> <li>TiCN coating available upon request for additional protection.</li> </ul>  |
|    |   | <ul style="list-style-type: none"> <li>Round shape guide with pin inside for the round punch with pin.</li> <li>Guides treated with nitriding process to enhance compressive, wear, and corrosion resistance.</li> </ul>  |
|    |  | <ul style="list-style-type: none"> <li>Our's patent, QuickAdjust , allowing at least twice less amount of time to adjust punch length.</li> </ul>   |
|  |    | <ul style="list-style-type: none"> <li>Standard: Slugfree.</li> <li>Options: Slughugger, Vacuum.</li> <li>After grinding, a die shim is required to maintain a consistent height of 30mm.</li> <li>We offer 0.4mm [0.0157"] / 0.8mm [0.0315"]/ 1.2mm [0.0472"] die shims, 10pcs/pack.</li> </ul>  |

Description

1 Punch head assembly

4 Die

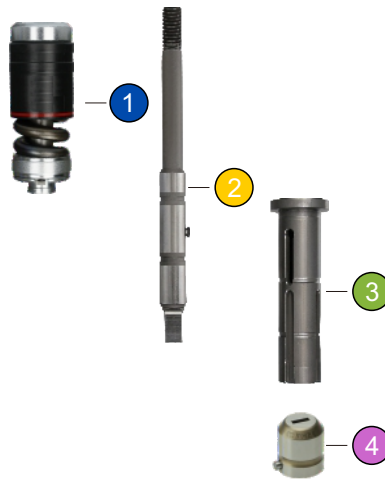
2 Punch

5 Punch assembly

3 Guide

















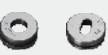




















5

Punch Assembly



- RO: Round.
- RE: Rectangle.
- SQ: Square.
- ▭ OB: Oblong.
- ▭ DD: Double D.
- SD: Single D.
- QR: Quad R.
- ⬠ HX: Hexagon.
- QD: Quad D.

A STATION  
K85 / STANDARD

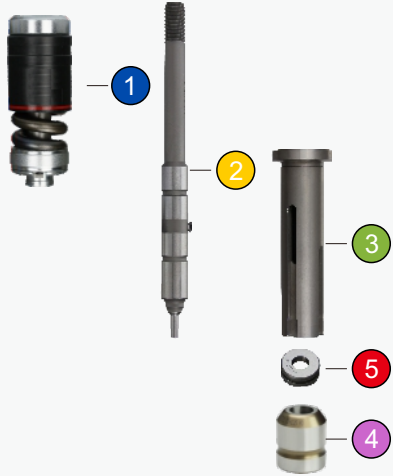
| Product   |   | Product Overview  |
|---|---|---|
| <p>Punch Assembly</p>    |  Single Groove(0°)<br>  Double Grooves (0°, 90°)(0°, 135°)   | <ul style="list-style-type: none"> <li>The universal open guide bushing only requires replacing the stripper plate.</li> </ul>  |
| <p>Standard Punch</p>    |  RO  SQ  RE<br> OB  SD  DD<br> QD  QR  HX                | <ul style="list-style-type: none"> <li>Round shape punch with pin.</li> <li>Using HRC 63 High-Speed Steel for exceptional durability in high-stress environments.</li> <li>TiCN coating available upon request for additional protection.</li> </ul>  |
| <p>Open Guide</p> <br><p>Bottom view of the guide</p> <br><p>Stripper Plate</p>  |  RO  SQ  RE<br> OB  SD  DD<br> QD  QR  HX                | <ul style="list-style-type: none"> <li>Round shape guide with pin inside for the round punch with pin.</li> <li>Guides treated with nitriding process to enhance compressive, wear, and corrosion resistance.</li> </ul>  |
| <p>Punch Head Assembly</p>   |   | <ul style="list-style-type: none"> <li>Our's patent, QuickAdjust , allowing at least twice less amount of time to adjust punch length.</li> </ul>   |
| <p>Die</p>   |  RO  SQ  RE<br> OB  SD  DD<br> QD  QR  HX | <ul style="list-style-type: none"> <li>Standard: Slugfree.</li> <li>Options: Slughugger, Vacuum.</li> <li>After grinding, a die shim is required to maintain a consistent height of 30mm.</li> <li>We offer 0.4mm [0.0157"] / 0.8mm [0.0315"]/ 1.2mm [0.0472"] die shims, 5pcs/pack.</li> </ul> |










A STATION  
K85 / OPEN GUIDE




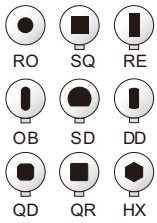


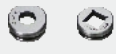
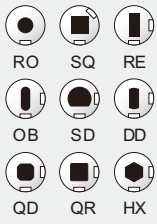


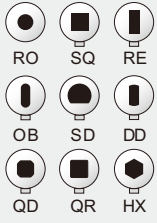
Description

- 1 Punch head assembly
- 2 Punch
- 3 Guide
- 4 Die
- 5 Stripper plate
- 6 Punch assembly

Punch Assembly



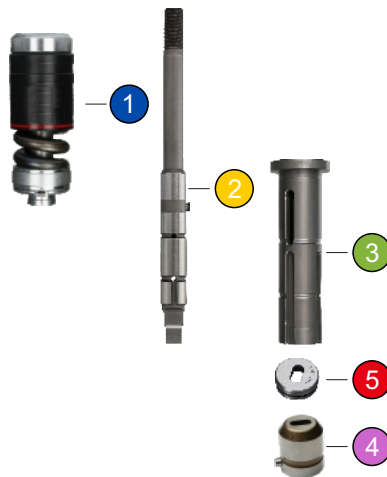
-  RO: Round.
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-  HX: Hexagon.
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| Product   |  | Product Overview  |
|---|--|---|
|    |   | <ul style="list-style-type: none"> <li>• ABS: Air Blow System, oil mist lubrication, anti-scratch, anti-adhesion, longer punch life.</li> <li>• The universal open guide bushing only requires replacing the stripper plate.</li> </ul>   |
| <p>Standard Punch ABS</p>    |   | <ul style="list-style-type: none"> <li>• Round shape punch with pin.</li> <li>• Using HRC 63 High-Speed Steel for exceptional durability in high-stress environments.</li> <li>• TiCN coating available upon request for additional protection.</li> </ul>  |
| <p>Open Guide ABS</p>  <p>Bottom view of the guide</p>  <p>ABS Stripper Plate</p>  |   | <ul style="list-style-type: none"> <li>• Round shape guide with pin inside for the round punch with pin.</li> <li>• Guides treated with nitriding process to enhance compressive, wear, and corrosion resistance.</li> </ul>  |
| <p>Punch Head Assembly</p>   |  | <ul style="list-style-type: none"> <li>• Our's patent, QuickAdjust™, allowing at least twice less amount of time to adjust punch length.</li> </ul>   |
|    |  | <ul style="list-style-type: none"> <li>• Standard: Slugfree.</li> <li>• Options: Slughugger, Vacuum.</li> <li>• After grinding, a die shim is required to maintain a consistent height of 30mm.</li> <li>• Ketec offers 0.4mm [0.0157"] / 0.8mm [0.0315"] / 1.2mm [0.0472"] die shims, 10pcs/pack.</li> </ul> |

Description


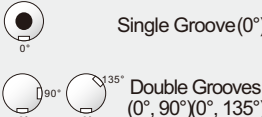

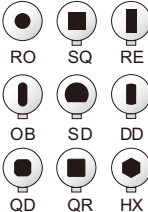

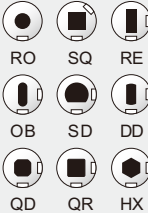

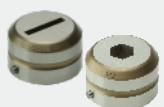
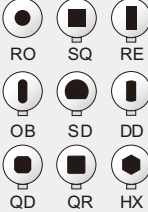
- 1 Punch head assembly
- 2 Punch ABS
- 3 Guide ABS
- 4 Die
- 5 Stripper plate ABS
- 6 Punch assembly

Punch Assembly



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A STATION  
K85 / OPEN GUIDE ABS

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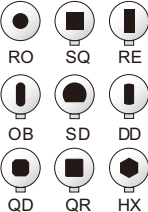
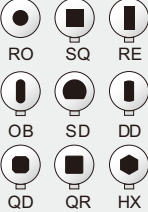
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1                      2                      3                      4

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Description

1 Punch head assembly

2 Punch

3 Guide

4 Punch assembly



1


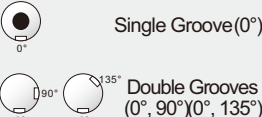

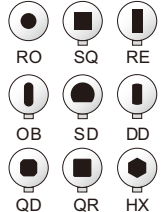

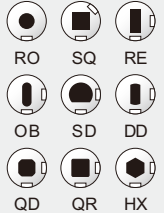

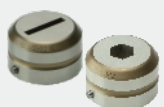
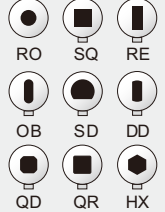
2

3

4

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B STATION  
K85 / OPEN GUIDE

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|    |   | <ul style="list-style-type: none"> <li>Guides treated with nitriding process to enhance compressive, wear, and corrosion resistance.</li> </ul>   |
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Description

- 1 Punch head assembly
- 2 Punch
- 3 Guide
- 4 Punch assembly



1 2 3 4

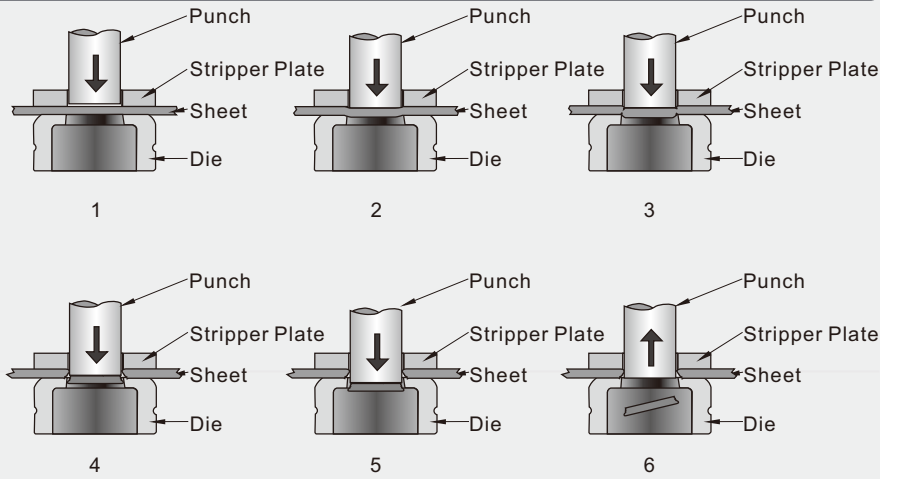
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Tips and Techniques

1. Punching Process

- The stripper plate presses the sheet tightly.
- The punch contacts the sheet, and the sheet begins to deform.
- The punch and die begin to shear the sheet.
- The sheet begins to tear.
- The punch reaches the bottom.
- The punch retracts, and the slug falls freely.



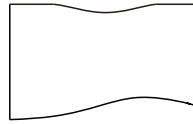
2. Punch Shear Styles



Horizontal Shear



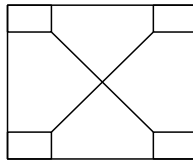
Rooftop Shear



Quad Concave Shear

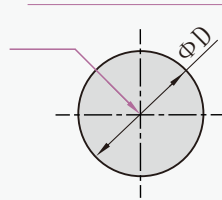


Double Concave Shear

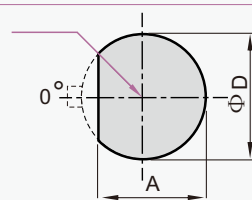


3. Standard Shape Size Diagram

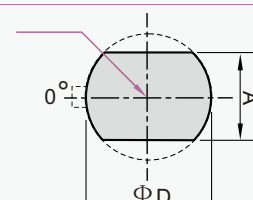
Standard Shape



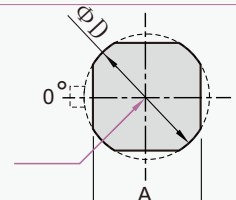
Code: RO  
Size:  $\text{ØD}$   
Tool Center:



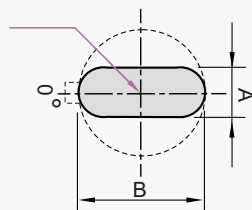
Code: SD  
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Tool Center:



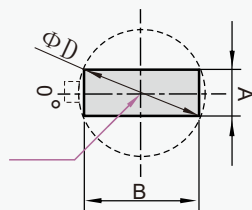
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Tool Center:



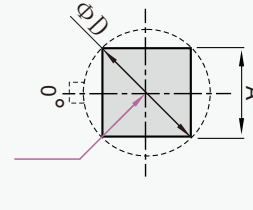
Code: QD  
Size:  $\text{ØD} \times A$   
Tool Center:



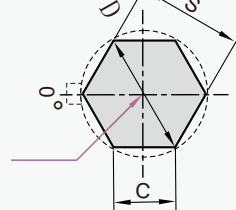
Code: OB  
Size:  $\text{ØA} \times B$   
Tool Center:



Code: RE  
Size:  $A \times B$   
Tool Center:



Code: SQ  
Size:  $A \times A$   
Tool Center:



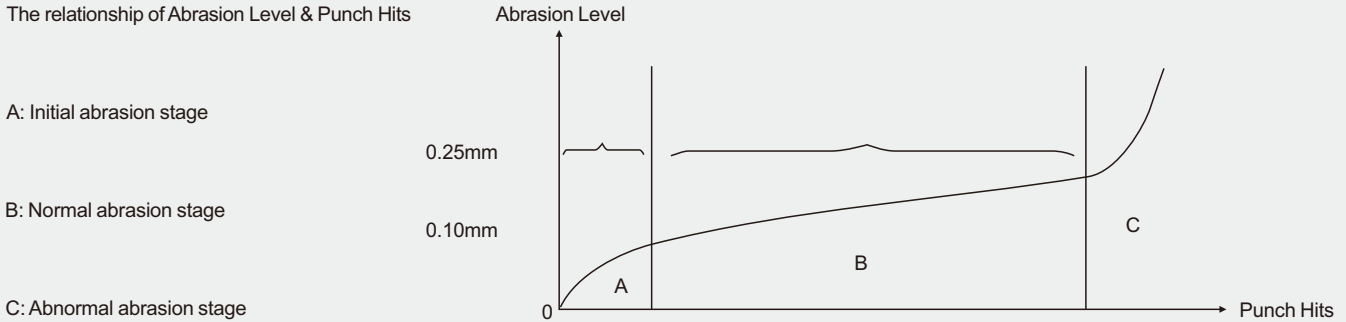
Code: HX  
Size: S  
Tool Center:



Tips and Techniques

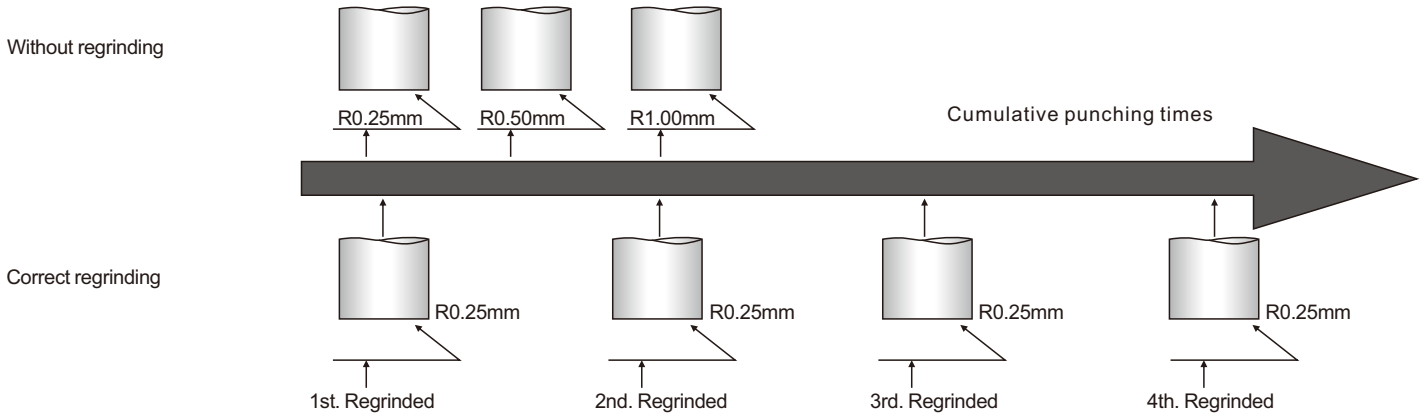
4. Abrasion Level & Punch Hits

The relationship of Abrasion Level & Punch Hits

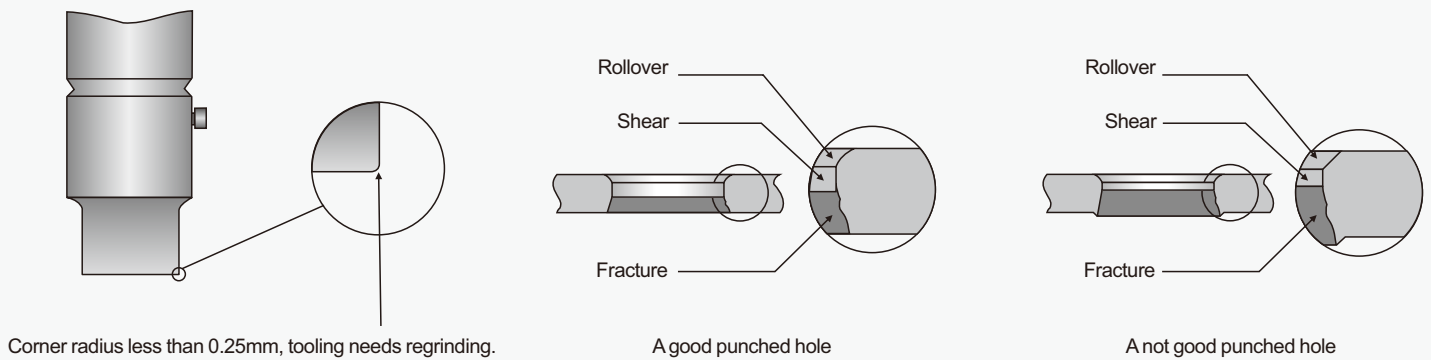


5. Tooling Regrinding Instruction

Following the correct instruction to regrind the punch, the tooling life will be extended to double.



6. Timing for Regrinding



7. Precautions of Regrinding

**Precautions:**

There are various methods for sharpening tooling blades. A specialized blade sharpening machine can be used, or it can be done on a surface grinder. When sharpening tooling blades, the following factors need to be considered:

- Choose an appropriate grinding wheel, it is recommended to use a loose, coarse-grained, soft grinding wheel, such as WA46KV.
- The grinding amount for each pass should not exceed 0.015mm. Excessive grinding can cause surface overheating, resulting in softening of the tooling or the formation of cracks.
- Sufficient cooling must be provided, and the grinding wheel should be kept sharp.
- The punch and lower die should be kept stable and fixed, using specialized fixtures and tooling.
- After sharpening, the edge should be treated with oil to avoid excessive sharpness. Clean thoroughly, demagnetize, apply oil, and adjust the tooling height.

Tips and Techniques

8. Adjustment after Regrinding

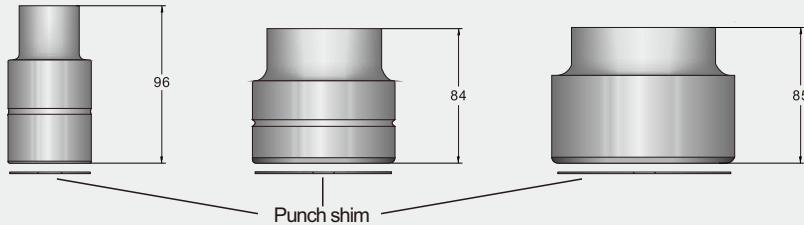
**Punch Adjustment**

The new punch heights for C, D, and E stations are as shown in the diagram.

In older guide assemblies like E85 series, after each sharpening of the punch, it is necessary to add shims to adjust the punch height.

The adjustment method is as follows: the thickness of the shims plus the punch height should equal the values shown in the diagram below.

In newer guide assembly like T85 or T90, punch height adjustment is made using threaded mechanism, eliminating the need for shims.



**Die Adjustment**

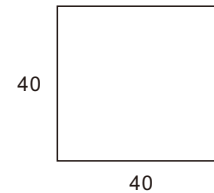


9. Calculation of Punching Force

Punching force (KN) = Shape Perimeter (L) X Thickness (T) X 0.345 X Material Factor X Shear Factor

e.g. SQ40\*40, T=3.0mm, SPCC, Flat shear

Punching force = (40X4)C3.0C0.345X1.2X1.0=198.72 (KN). [19.9 tons]



If the thickness of the sheet metal pate is greater than or equal to 3mm, the punching force needs to be calculated to determine:

1. whether the required punching force exceeds the machine's rated nominal force.
2. whether the required punching force exceeds the pressure-bearing capacity of the punch's weakest part.

The punching force can be reduced by altering the punch edge structure, changing the station, or using heavy duty tooling to avoid damage to the tool or the machine.

10. Recommended Value of Die Clearance

**Sheet material:**

Different materials have varying hardness and ductility, which affects the required clearance. Softer materials generally require smaller clearances, while harder materials need larger clearance.

**Sheet thickness:**

As the thickness of the sheet increases, the required die clearance should also increase to accommodate proper cutting or forming without causing damage to the tooling or material.

**Die clearance:**

The clearance between the punch and die should be appropriately set based on the sheet material and thickness to ensure clean cuts, prevent excessive wear, and avoid issues like burrs or deformation.

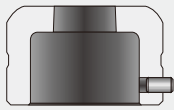
In general, as the sheet thickness increases, the clearance should also increase proportionally to maintain the quality of the process.

| Thickness (T) / Material | 0.8  | 1.0  | 0.8  | 0.8  | 2.5  | 3.0  | 3.2  | 3.5  | 4.0 | 4.5  | 5.0  | 5.5  | 6.0 |
|--------------------------|------|------|------|------|------|------|------|------|-----|------|------|------|-----|
| Aluminum                 | 0.12 | 0.15 | 0.2  | 0.3  | 0.35 | 0.45 | 0.48 | 0.53 | 0.6 | 0.68 | 0.75 | 0.83 | 0.9 |
| SPCC, Mild Steel         | 0.15 | 0.2  | 0.3  | 0.4  | 0.5  | 0.6  | 0.65 | 0.7  | 0.8 | 0.9  | 1    | 1.1  | 1.2 |
| Stainless Steel          | 0.15 | 0.2  | 0.35 | 0.45 | 0.5  | 0.6  | 0.65 | 0.7  | 0.8 |      |      |      |     |

Tips and Techniques

11. Selection of Die Type

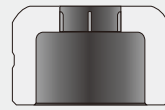
The four different die styles as offered by KETEC are illustrated in below:



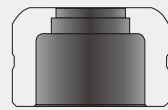
Positive taper



Negative taper



Slughugger



Stairs

**Positive taper**

This is the best style of die for punching holes of less than 0.236" [6mm] diameter in mild steel and stainless steel, or less than 0.472" [12mm] diameter in aluminum. Use of this style of die can result in slug pulling.

**Negative taper**

Although the taper is only 0.0005" [0.01mm], this is enough to help squeeze and hold the slug as its pushed down into the die land, thus helping to prevent slug pulling. Negative taper is not recommended for punching aluminum or plastic because of slug packing.

**Slughugger**

This is the only guaranteed method of stopping slug pulling and is especially recommended for use with modern punch presses due to the high punching speed.

12. Thick Turret Alignment Tools & Adapters



Thick Turret Alignment Tools

Thick Turret Adapters

| Item     | Code     |          |          |          |
|----------|----------|----------|----------|----------|
| Full Set | Q.WD-SA1 | Q.WD-SB1 | Q.WD-SC1 | Q.WD-SD1 |
| Punch    | Q.WD-SA2 | Q.WD-SB2 | Q.WD-SC2 | Q.WD-SD2 |
| Die      | Q.WD-SA3 | Q.WD-SB3 | Q.WD-SC3 | Q.WD-SD3 |
| Handle   | Q.WD-SA4 | Q.WD-SB4 | Q.WD-SC4 | Q.WD-SD4 |

| STATION | PUNCH CODE | DIE CODE |
|---------|------------|----------|
| B to A  | AB.AP      |          |
| C to A  | AC.AP      | AD.AC    |
| C to B  | AC.BP      | AC.BD    |
| D to A  | DB.DP      | AD.DM    |
| D to B  | AD.BP      | AD.BD    |
| D to C  | AD.CP      | AD.CD    |

# Deal Tech

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