



European Precision Style and Bevel Tang Style

PRESS BRAKE TOOLING

MATE PRECISION TECHNOLOGIES



Headquartered in Anoka, Minnesota, in a 300,000 sq. ft. (28,000m²) state-of-the-art facility.

SEVEN DECADES OF EXCELLENCE

Founded in 1962, Mate is a world-class manufacturer of superior solutions for the metal cutting and metal forming industries. We manufacture workholding systems, CNC punch press tooling, and offer a complete line of press brake tooling and laser consumables. Mate products and services are available worldwide, fully supported by more than 80 dealers in every industrialized country.

PERSONAL, RESPECTFUL RELATIONSHIPS

Mate does business with people, not companies. Our connection to you is personal. Mate's team of manufacturing and metalworking professionals knows what you go through. We know what it's like to compete for that next job, manage deadlines or even need a rescue. With Mate you have a partner that respects your knowledge and is dedicated to helping you succeed.

YOUR GO-TO SOURCE

Serving our customers is at the core of who we are. In your plant or on the phone, we're up for whatever metalworking challenges you face. Your Mate representatives are experts who know from experience what happens on the shop floor and provide our legendary in-field support. They speak your language, fully capable of helping you improve processes and solve problems. Mate customer service is ready to assist with fast quotes, guiding your order on to our top-notch machinists and shipping pros.

GET INSPIRED!

With our vast knowledge and broad product range we inspire innovative thinking. Our customer's projects can be seen around the world: from unique building façades thought to be impossible to make, to a new way to add strength to thin material. The possibilities are endless, so think big, bold and beyond.

WE'VE GOT YOU COVERED

Dedicated to quality in every aspect of our business, Mate offers an extensive standard product line that can be delivered with same day or next day service. All Mate products are backed with our industry leading 100% customer satisfaction guarantee.



MATE'S MISSION AND PROMISE TO YOU:

Mate's mission is to personally **Respect, Support** and **Inspire** metalworking professionals around the world with high-quality products and services for factory productivity.



European Precision Style and Bevel Tang Style Press Brake Tooling

| | |
|-------------|---|
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|-------------|---|

European Precision Style and Bevel Tang Style Punches

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Catalog Key:

| Material Type | Base Material | Wear Surfaces Induction Hardened | Depth of Induction Hardness | Application | Tonnage limits |
|--|---------------|----------------------------------|-----------------------------|---|---|
| Gray  | C45 | 58-60 HRC | 3-4mm (0.118-0.158) | Most common tool profiles, high force capable | 50 to 100 tons/meter (17 to 34 tons/ft) |
| Red  | C45 | 58-60 HRC | 3-4mm (0.118-0.158) | Tool profiles having thinner or taller cross sections | 35 to 70 tons/meter (12 to 24 tons/ft) |
| Yellow  | 42 CrMo4 | 58-60 HRC | 3-4mm (0.118-0.158) | Tool profiles having thin cross sections | 15 to 60 tons/meter (5 to 20 tons/ft) |

HOW TO READ A MATE® PART NUMBER


Example: **012.345S**

The numerical component identifies the tool profile. A profile is the image of a tool as shown in the catalog. The character component is used to identify the length of the tool.

The character component code is:

| | | |
|---|---|------------------|
|  | M | Half Length |
|  | S | Full Length |
|  | F | Segmented Length |

A number inside the arrow identifies the actual length of the tool in millimeters.

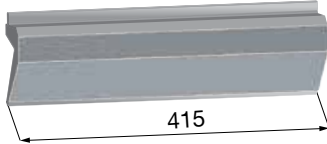
For example: 

PUNCH OVERVIEW

*****All Mate® European Precision Style Punches are also available in Bevel Tang Style*****

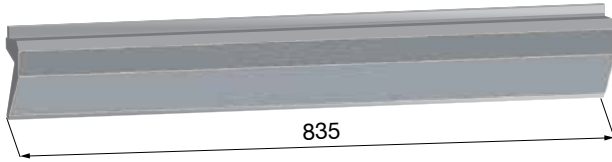
PUNCHES ARE AVAILABLE IN THE FOLLOWING STANDARD LENGTHS:

HALF LENGTH - (M)



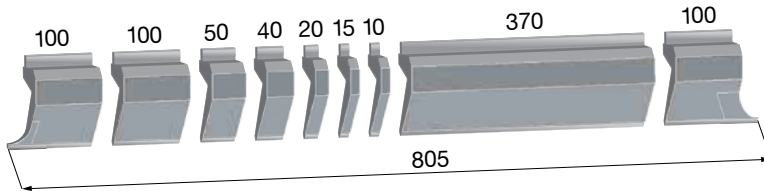
415 mm

STANDARD LENGTH - (S)



835 mm

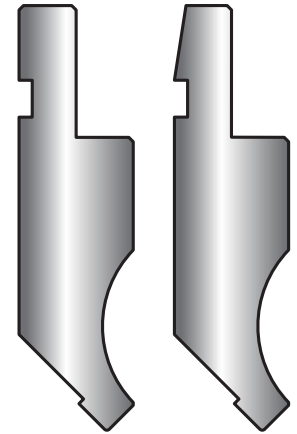
SECTIONED LENGTH - (F)



805 mm

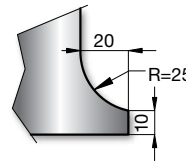
European Precision Style

Bevel Tang Style



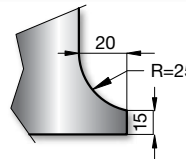
HORNS SCHEME STANDARD SECTIONING (NUMBER INDICATES PUNCH PROFILE)

| | | | | | | |
|--------|--------|--------|--------|--------|--------|--------|
| 10.142 | 10.175 | 10.505 | 11.106 | 11.228 | 11.275 | 11.857 |
| 10.143 | 10.176 | 10.506 | 11.107 | 11.230 | 11.650 | 11.858 |
| 10.152 | 10.261 | 10.510 | 11.108 | 11.231 | 11.660 | 11.861 |
| 10.153 | 10.262 | 10.516 | 11.145 | 11.232 | 11.670 | 11.863 |
| 10.154 | 10.263 | 10.517 | 11.146 | 11.233 | 11.800 | 11.864 |
| 10.155 | 10.264 | 10.520 | 11.147 | 11.240 | 11.835 | 11.865 |
| 10.156 | 10.500 | 10.626 | 11.148 | 11.241 | 11.840 | 11.866 |
| 10.157 | 10.501 | 10.672 | 11.149 | 11.256 | 11.848 | 11.867 |
| 10.170 | 10.502 | 11.100 | 11.151 | 11.257 | 11.849 | 11.868 |
| 10.173 | 10.503 | 11.101 | 11.200 | 11.259 | 11.853 | 11.869 |
| 10.174 | 10.504 | 11.105 | 11.201 | 11.260 | 11.855 | 11.870 |



HORNS SCHEME STANDARD SECTIONING (NUMBER INDICATES PUNCH PROFILE)

| | | | | | | |
|--------|--------|--------|--------|--------|--------|--------|
| 10.136 | 10.514 | 11.104 | 11.514 | 11.600 | 11.780 | 11.880 |
| 10.150 | 10.515 | 11.134 | 11.528 | 11.710 | 11.810 | |
| 10.511 | 11.102 | 11.158 | 11.530 | 11.720 | 11.820 | |
| 10.512 | 11.103 | 11.258 | 11.540 | 11.750 | 11.830 | |

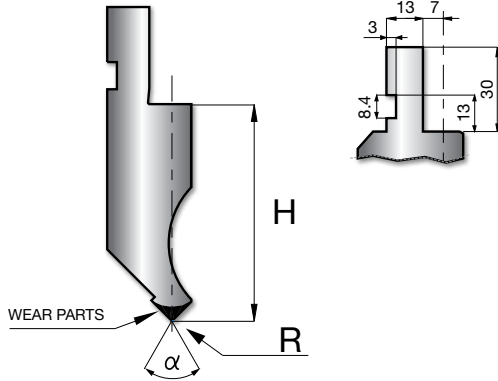


Scan code to link to detail DXF and PDF profile files.



<https://www.mate.com/technical-resources/press-brake-tooling/files/>

SAFETY GROOVE DATA

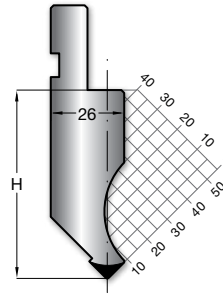


| Legend | |
|----------|----------|
| H | = Height |
| α | = Degree |
| R | = Radius |

- 415 mm
- 835 mm
- 805 mm

α R H T/mt Mt

| | | | | | |
|---------------|-----|------|-------|-----|---|
| 11.100 | 90° | 0.80 | 66.60 | 100 | ▶ |
| 10.152 | 90° | 0.25 | 66.60 | 100 | ▶ |
| 11.101 | 88° | 3.00 | 65.45 | 100 | ▶ |
| 11.145 | 88° | 0.80 | 66.50 | 100 | ▶ |
| 10.153 | 88° | 0.25 | 66.50 | 100 | ▶ |
| 11.201 | 85° | 3.00 | 65.45 | 100 | ▶ |
| 11.200 | 85° | 0.80 | 66.50 | 100 | ▶ |
| 11.853 | 85° | 0.25 | 66.50 | 100 | ▶ |
| 11.275 | 75° | 0.80 | 67.60 | 100 | ▶ |

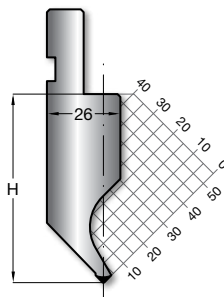


- 90°
- 88°
- 85°
- 75°

- 415 mm
- 835 mm
- 805 mm

α R H T/mt Mt

| | | | | | |
|---------------|-----|------|-------|----|---|
| 10.175 | 90° | 0.60 | 66.75 | 35 | ▶ |
| 10.173 | 90° | 0.25 | 66.70 | 35 | ▶ |
| 10.176 | 88° | 0.60 | 66.74 | 35 | ▶ |
| 10.174 | 88° | 0.25 | 66.70 | 35 | ▶ |
| 10.170 | 85° | 0.60 | 66.74 | 35 | ▶ |
| 11.857 | 85° | 0.25 | 67.00 | 35 | ▶ |

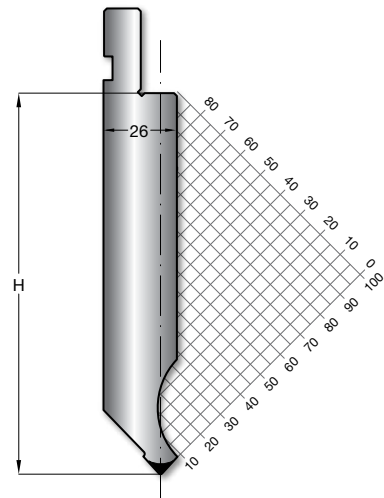


- 90°
- 88°
- 85°

- 415 mm
- 835 mm
- 805 mm

α R H T/mt Mt

| | | | | | |
|---------------|-----|------|--------|-----|---|
| 11.870 | 88° | 0.80 | 135.00 | 100 | ▶ |
| 11.232 | 85° | 0.80 | 135.00 | 100 | ▶ |

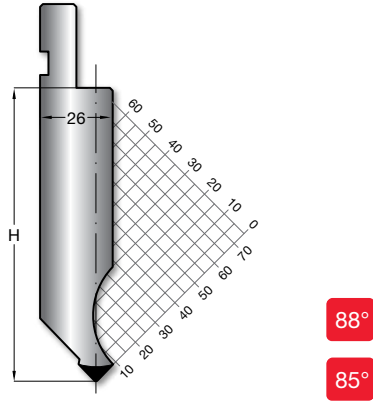


- 88°
- 85°

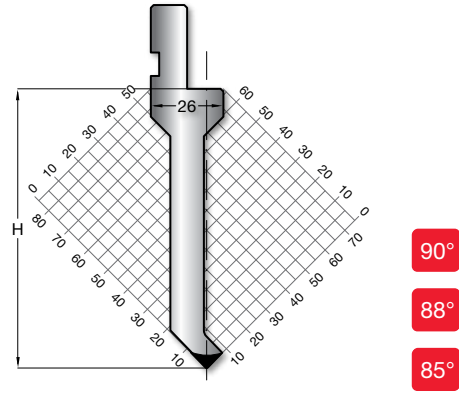
All Mate® European Precision Style Punches are also available in Bevel Tang Style

PUNCHES

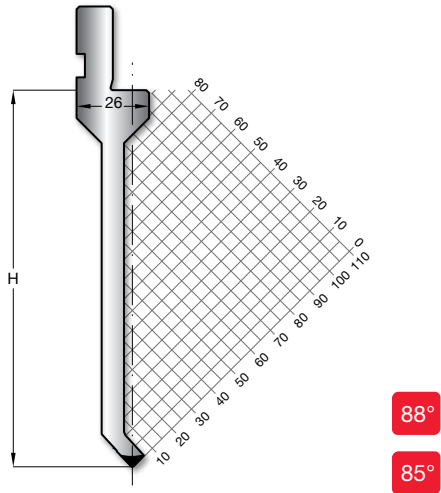
| | α | R | H | T/mt | Mt |
|---------------|----------|------|--------|------|----|
| 415 mm | | | | | |
| 835 mm | | | | | |
| 805 mm | | | | | |
| 11.228 | 88° | 0.80 | 105.00 | 100 | ▶ |
| 11.231 | 85° | 3.00 | 105.00 | 100 | ▶ |
| 11.230 | 85° | 0.80 | 105.00 | 100 | ▶ |



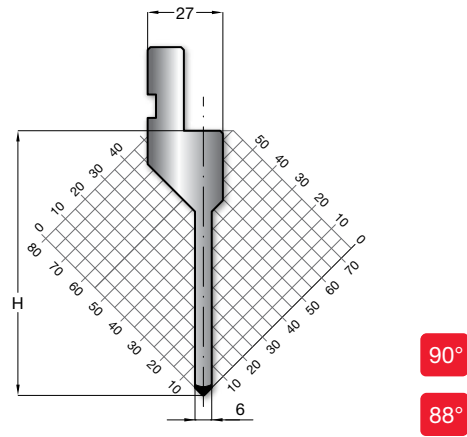
| | α | R | H | T/mt | Mt |
|---------------|----------|------|--------|------|----|
| 415 mm | | | | | |
| 835 mm | | | | | |
| 805 mm | | | | | |
| 10.261 | 90° | 0.60 | 100.00 | 50 | ▶ |
| 10.263 | 90° | 0.25 | 100.00 | 50 | ▶ |
| 10.262 | 88° | 0.60 | 100.00 | 50 | ▶ |
| 10.264 | 88° | 0.25 | 100.00 | 50 | ▶ |
| 10.626 | 85° | 0.25 | 100.00 | 50 | ▶ |
| 11.861 | 85° | 0.60 | 100.00 | 50 | ▶ |



| | α | R | H | T/mt | Mt |
|---------------|----------|------|--------|------|----|
| 415 mm | | | | | |
| 835 mm | | | | | |
| 805 mm | | | | | |
| 11.858 | 88° | 0.60 | 135.00 | 40 | ▶ |
| 11.855 | 85° | 0.60 | 135.00 | 40 | ▶ |



| | α | R | H | T/mt | Mt |
|---------------|----------|------|-------|------|----|
| 415 mm | | | | | |
| 835 mm | | | | | |
| 805 mm | | | | | |
| 11.259 | 90° | 0.60 | 95.00 | 50 | ▶ |
| 11.256 | 90° | 0.25 | 95.00 | 50 | ▶ |
| 11.260 | 88° | 0.60 | 95.00 | 50 | ▶ |
| 11.257 | 88° | 0.25 | 95.00 | 50 | ▶ |



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Scan code to link to detail DXF and PDF profile files.

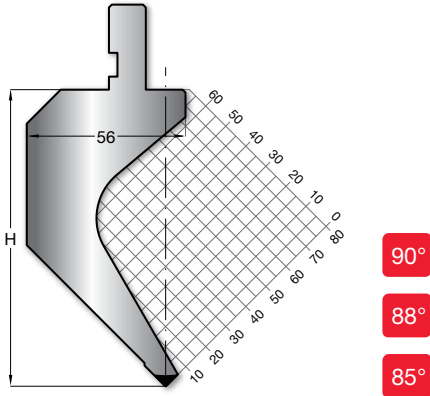


<https://www.mate.com/technical-resources/press-brake-tooling/files/>

415 mm
835 mm
805 mm

α R H T/mt Mt

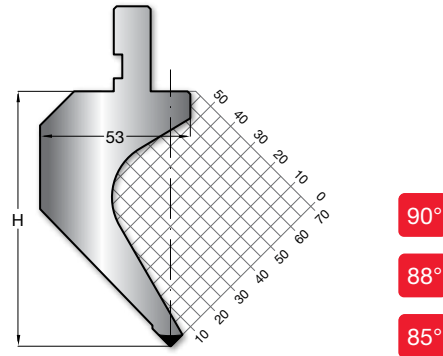
| | | | | | |
|---------------|-----|------|--------|----|---|
| 10.503 | 90° | 0.20 | 104.70 | 50 | ▶ |
| 10.504 | 88° | 0.80 | 104.50 | 50 | ▶ |
| 11.650 | 85° | 0.80 | 104.50 | 50 | ▶ |
| 11.868 | 85° | 0.25 | 104.70 | 50 | ▶ |



415 mm
835 mm
805 mm

α R H T/mt Mt

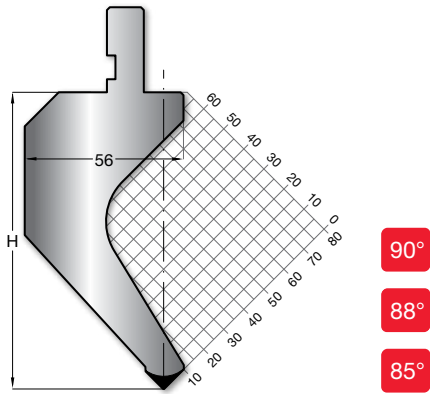
| | | | | | |
|---------------|-----|------|-------|----|---|
| 10.501 | 90° | 0.20 | 90.00 | 50 | ▶ |
| 10.502 | 88° | 0.80 | 89.70 | 50 | ▶ |
| 11.865 | 85° | 0.80 | 89.70 | 50 | ▶ |
| 10.672 | 85° | 0.25 | 90.00 | 50 | ▶ |



415 mm
835 mm
805 mm

α R H T/mt Mt

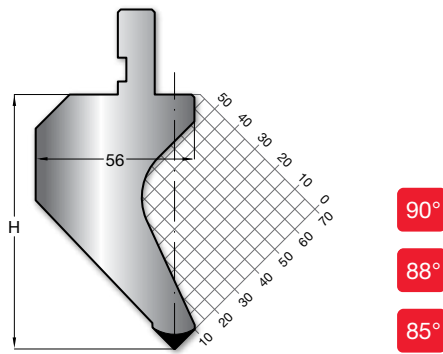
| | | | | | |
|---------------|-----|------|--------|----|---|
| 11.107 | 90° | 0.80 | 104.50 | 50 | ▶ |
| 10.156 | 90° | 0.25 | 104.50 | 50 | ▶ |
| 11.108 | 88° | 3.00 | 103.50 | 50 | ▶ |
| 11.147 | 88° | 0.80 | 104.50 | 50 | ▶ |
| 10.157 | 88° | 0.25 | 104.50 | 50 | ▶ |
| 11.867 | 85° | 0.25 | 104.50 | 50 | ▶ |
| 11.866 | 85° | 3.00 | 103.50 | 50 | ▶ |
| 11.151 | 85° | 0.80 | 104.50 | 50 | ▶ |



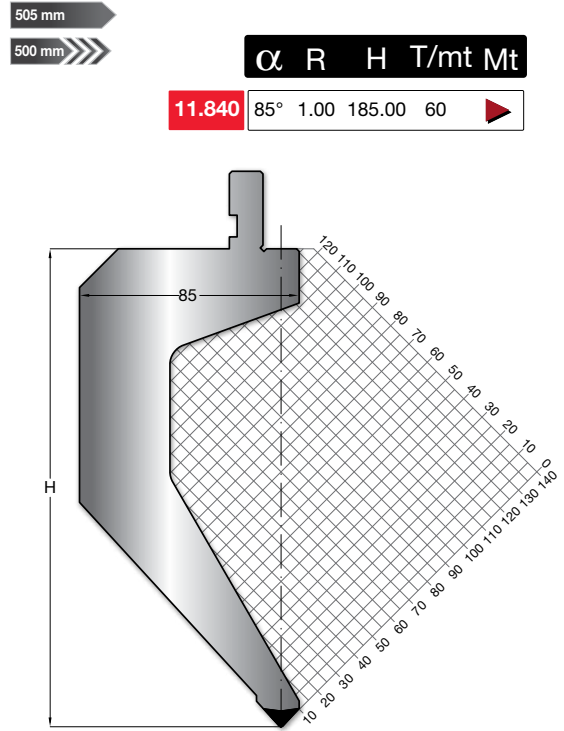
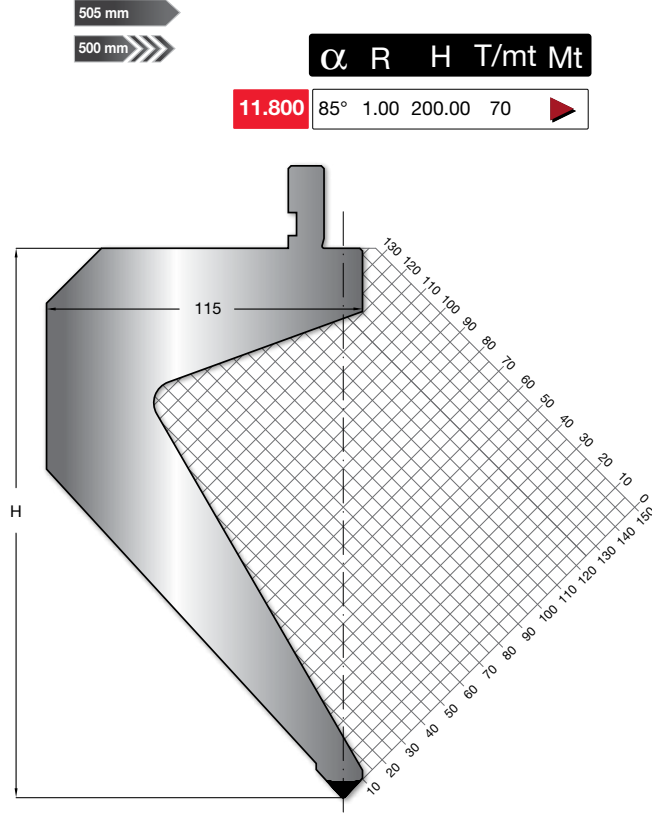
415 mm
835 mm
805 mm

α R H T/mt Mt

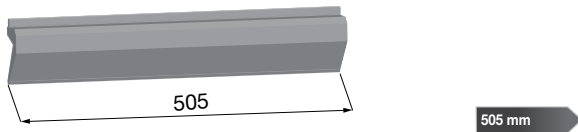
| | | | | | |
|---------------|-----|------|-------|----|---|
| 11.105 | 90° | 0.80 | 89.60 | 60 | ▶ |
| 10.154 | 90° | 0.25 | 89.60 | 60 | ▶ |
| 11.106 | 88° | 3.00 | 88.50 | 60 | ▶ |
| 11.146 | 88° | 0.80 | 89.58 | 60 | ▶ |
| 10.155 | 88° | 0.25 | 89.60 | 60 | ▶ |
| 11.660 | 85° | 0.80 | 89.58 | 60 | ▶ |
| 11.863 | 85° | 3.00 | 88.50 | 60 | ▶ |
| 11.864 | 85° | 0.25 | 89.70 | 60 | ▶ |



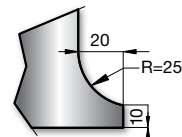
All Mate® European Precision Style Punches are also available in Bevel Tang Style



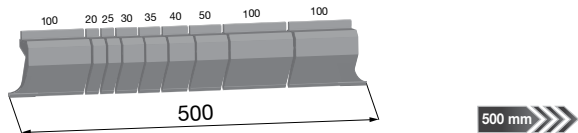
STANDARD LENGTH - (S)



HORNS SCHEME STANDARD SECTIONING



SECTIONED LENGTH - (F)

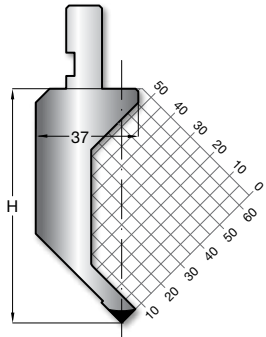


85°

All Mate® European Precision Style Punches are also available in Bevel Tang Style

415 mm
835 mm
805 mm

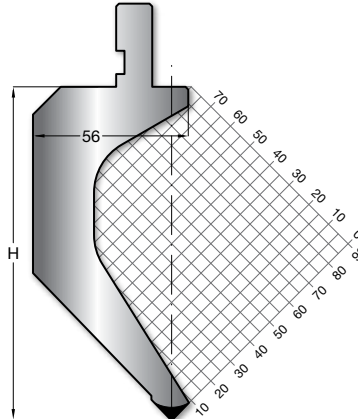
| | α | R | H | T/mt | Mt |
|---------------|----------|------|-------|------|----|
| 10.150 | 90° | 0.60 | 84.13 | 20 | ▶ |
| 10.512 | 88° | 0.60 | 84.13 | 20 | ▶ |



90°
88°

415 mm
835 mm
805 mm

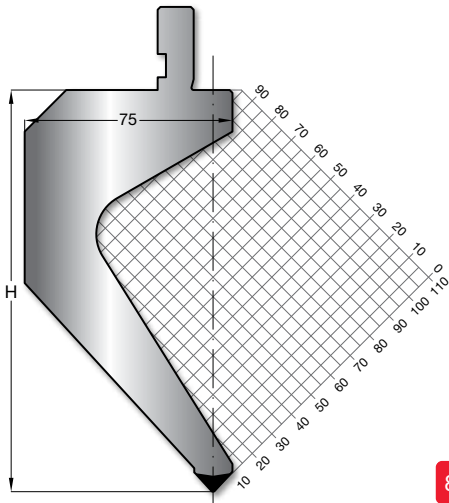
| | α | R | H | T/mt | Mt |
|---------------|----------|------|--------|------|----|
| 10.505 | 88° | 0.80 | 120.00 | 50 | ▶ |
| 11.835 | 85° | 0.80 | 120.00 | 50 | ▶ |



88°
85°

415 mm
835 mm
805 mm

| | α | R | H | T/mt | Mt |
|---------------|----------|------|--------|------|----|
| 11.670 | 85° | 0.80 | 145.00 | 60 | ▶ |



85°

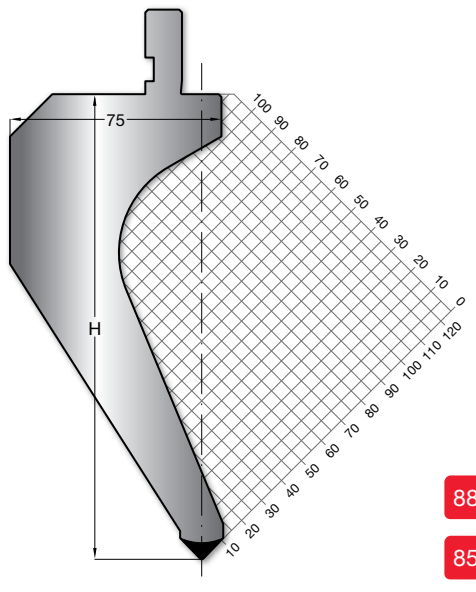
Scan code to link to detail DXF and PDF profile files.



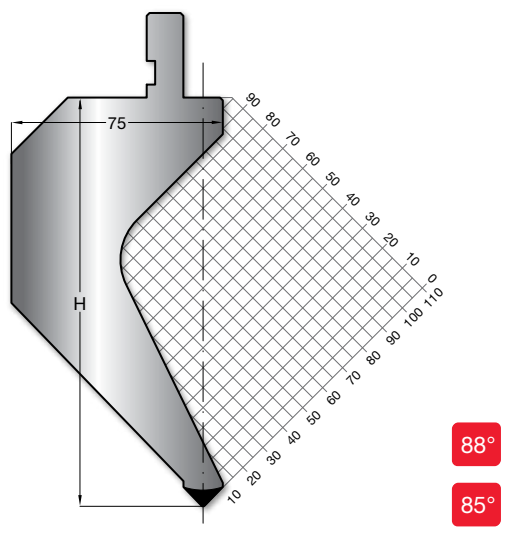
<https://www.mate.com/technical-resources/press-brake-tooling/files/>

All Mate® European Precision Style Punches are also available in Bevel Tang Style

| | α | R | H | T/mt | Mt |
|--------|---------------|-----|------|--------|----|
| 415 mm | | | | | |
| 835 mm | | | | | |
| 805 mm | | | | | |
| | 11.149 | 88° | 0.80 | 165.00 | 60 |
| | 11.849 | 85° | 0.80 | 165.00 | 60 |



| | α | R | H | T/mt | Mt |
|--------|---------------|-----|------|--------|----|
| 415 mm | | | | | |
| 835 mm | | | | | |
| 805 mm | | | | | |
| | 11.148 | 88° | 0.80 | 145.00 | 70 |
| | 11.848 | 85° | 0.80 | 145.00 | 70 |



All Mate® European Precision Style Punches are also available in Bevel Tang Style

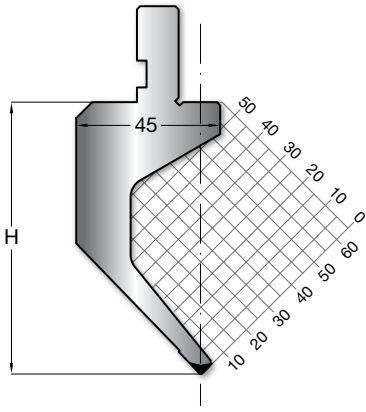
Scan code to link to detail DXF and PDF profile files.

<https://www.mate.com/technical-resources/press-brake-tooling/files/>



415 mm
835 mm
805 mm

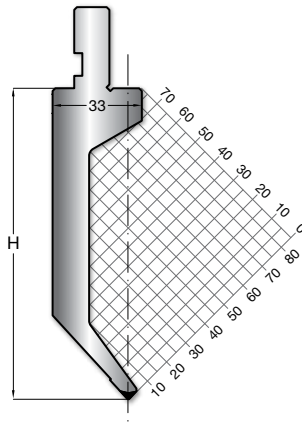
| α | R | H | T/mt | Mt |
|---------------|-----|------|-------|----|
| 11.830 | 88° | 0.60 | 85.00 | 15 |



88°

415 mm
835 mm
805 mm

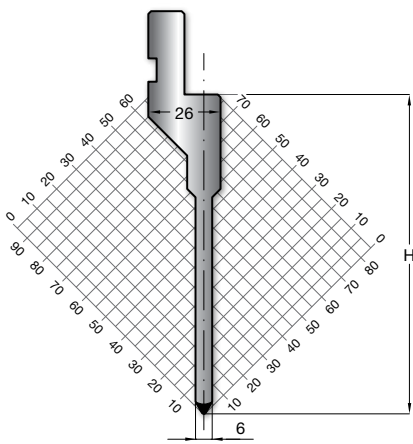
| α | R | H | T/mt | Mt |
|---------------|-----|------|--------|----|
| 11.820 | 85° | 0.60 | 115.00 | 20 |



85°

415 mm
835 mm
805 mm

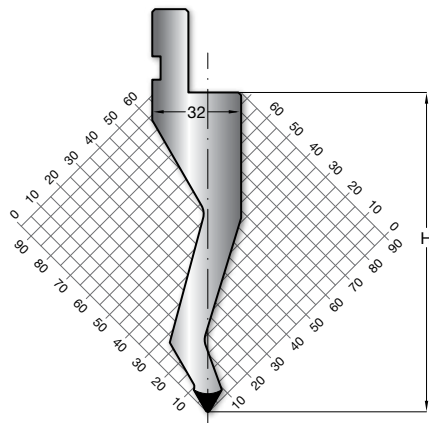
| α | R | H | T/mt | Mt |
|---------------|-----|------|--------|----|
| 10.520 | 60° | 0.80 | 115.00 | 50 |



60°

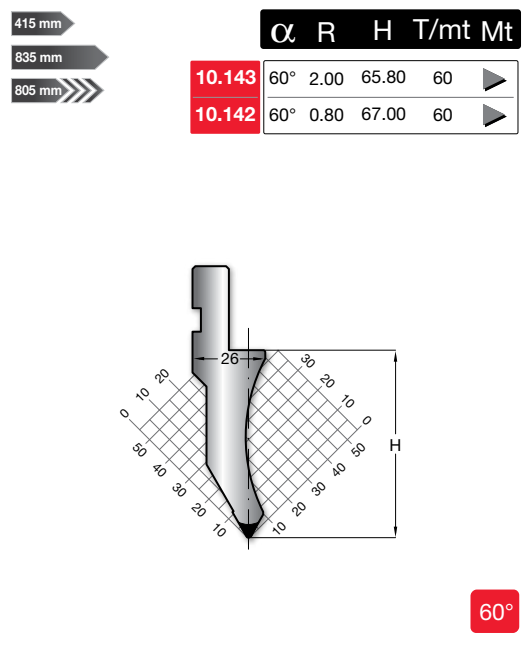
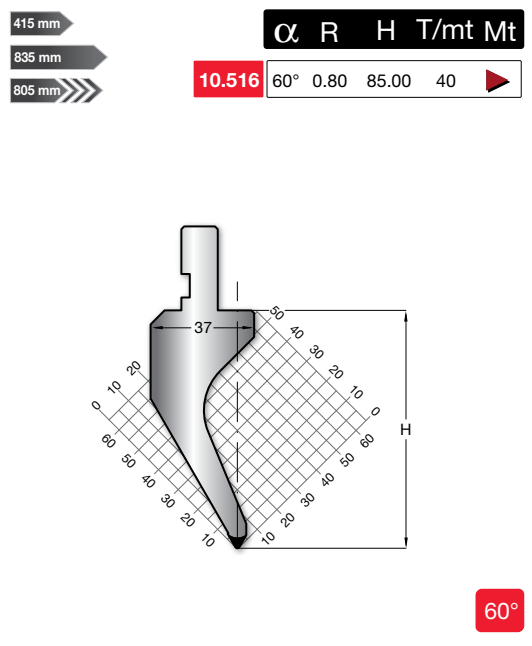
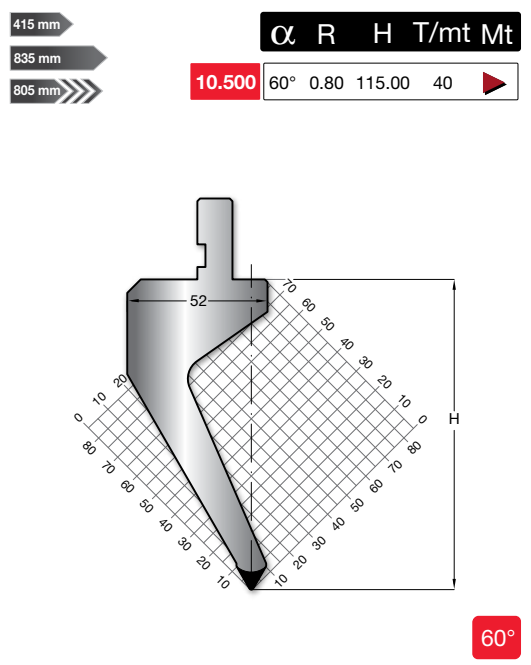
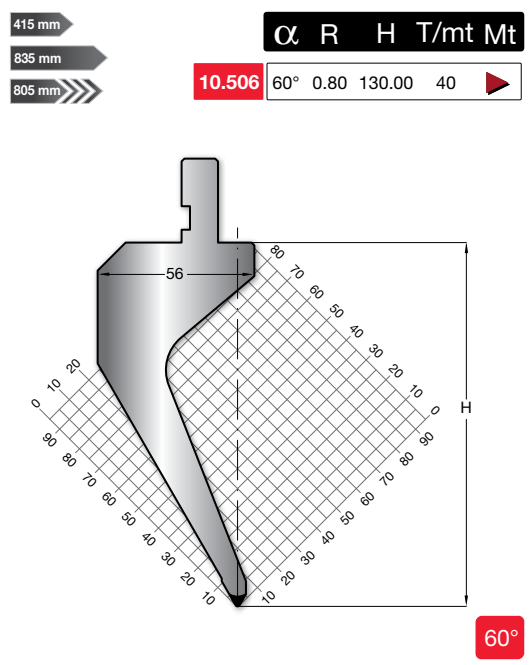
415 mm
835 mm
805 mm

| α | R | H | T/mt | Mt |
|---------------|-----|------|--------|----|
| 10.510 | 60° | 0.80 | 115.00 | 60 |



60°

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All Mate® European Precision Style Punches are also available in Bevel Tang Style

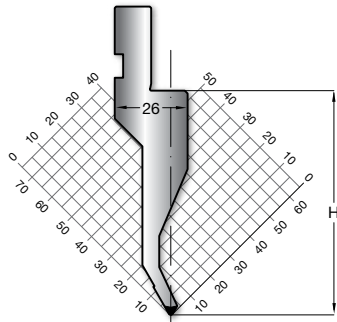
Scan code to link to detail DXF and PDF profile files.

<https://www.mate.com/technical-resources/press-brake-tooling/files/>



415 mm
835 mm
805 mm

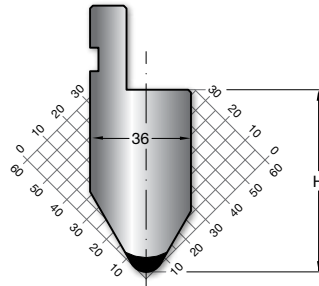
| α | R | H | T/mt | Mt |
|----------|-----|------|-------|----|
| 10.517 | 60° | 0.80 | 80.00 | 25 |



60°

415 mm
835 mm
805 mm

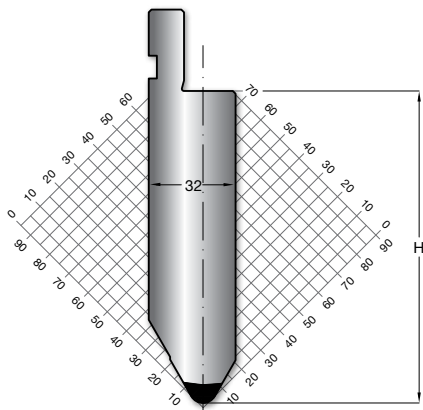
| α | R | H | T/mt | Mt |
|----------|-----|------|-------|-----|
| 10.136 | 60° | 6.00 | 65.00 | 100 |



60°

415 mm
835 mm
805 mm

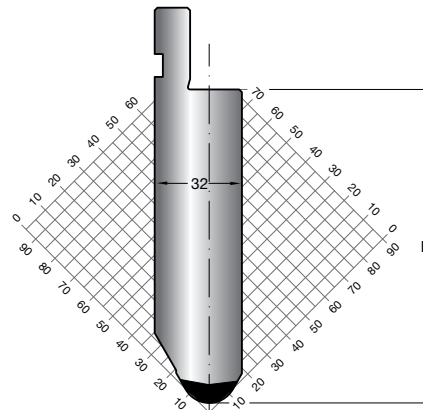
| α | R | H | T/mt | Mt |
|----------|-----|------|--------|-----|
| 11.710 | 60° | 5.00 | 115.00 | 100 |



60°

415 mm
835 mm
805 mm

| α | R | H | T/mt | Mt |
|----------|-----|-------|--------|-----|
| 11.720 | 60° | 10.00 | 115.00 | 100 |



60°

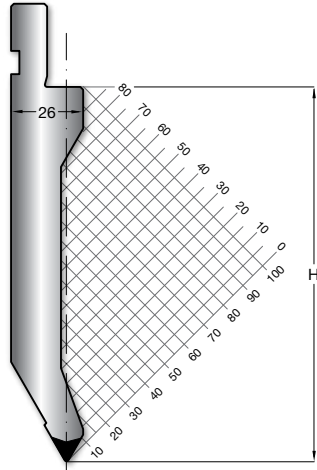
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415 mm

835 mm

805 mm

| | α | R | H | T/mt | Mt |
|---------------|----------|------|--------|------|----|
| 11.750 | 60° | 0.80 | 135.00 | 70 | |



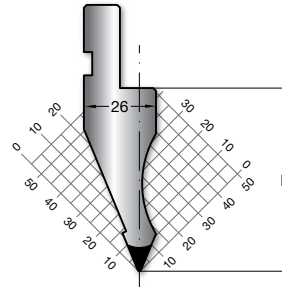
60°

415 mm

835 mm

805 mm

| | α | R | H | T/mt | Mt |
|---------------|----------|------|-------|------|----|
| 11.134 | 45° | 0.60 | 66.30 | 80 | |
| 11.102 | 45° | 1.00 | 65.20 | 80 | |



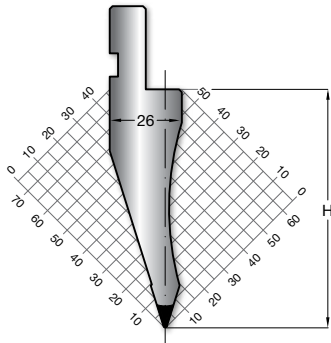
45°

415 mm

835 mm

805 mm

| | α | R | H | T/mt | Mt |
|---------------|----------|------|-------|------|----|
| 11.104 | 35° | 1.50 | 86.00 | 70 | |
| 11.600 | 35° | 0.80 | 90.00 | 70 | |
| 11.103 | 35° | 0.60 | 86.00 | 70 | |



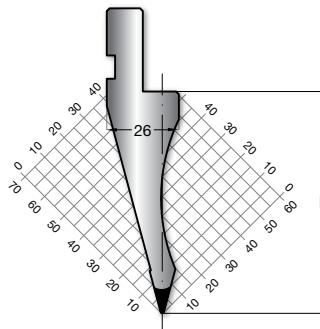
35°

415 mm

835 mm

805 mm

| | α | R | H | T/mt | Mt |
|---------------|----------|------|-------|------|----|
| 10.514 | 30° | 0.60 | 80.00 | 50 | |



30°

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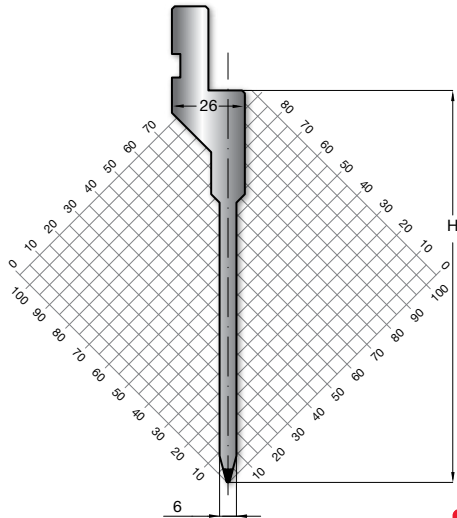


<https://www.mate.com/technical-resources/press-brake-tooling/files/>

415 mm
835 mm
805 mm

α R H T/mt Mt

10.515 30° 0.60 140.00 50

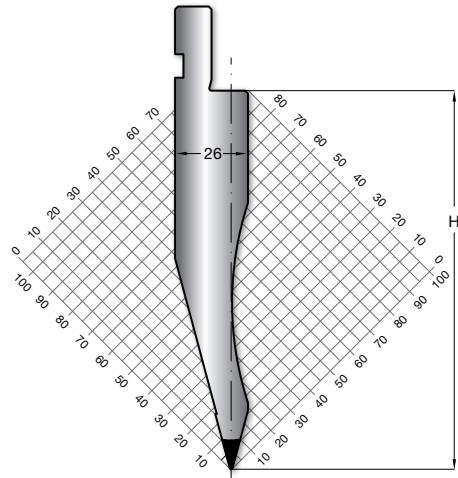


30°

415 mm
835 mm
805 mm

α R H T/mt Mt

11.780 30° 0.50 135.00 80

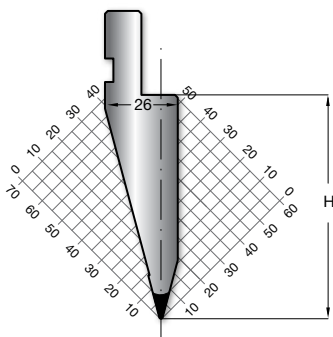


30°

415 mm
835 mm
805 mm

α R H T/mt Mt

11.158 30° 0.60 80.00 100

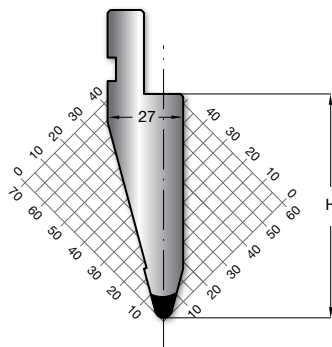


30°

415 mm
835 mm
805 mm

α R H T/mt Mt

10.511 30° 3.00 80.00 100

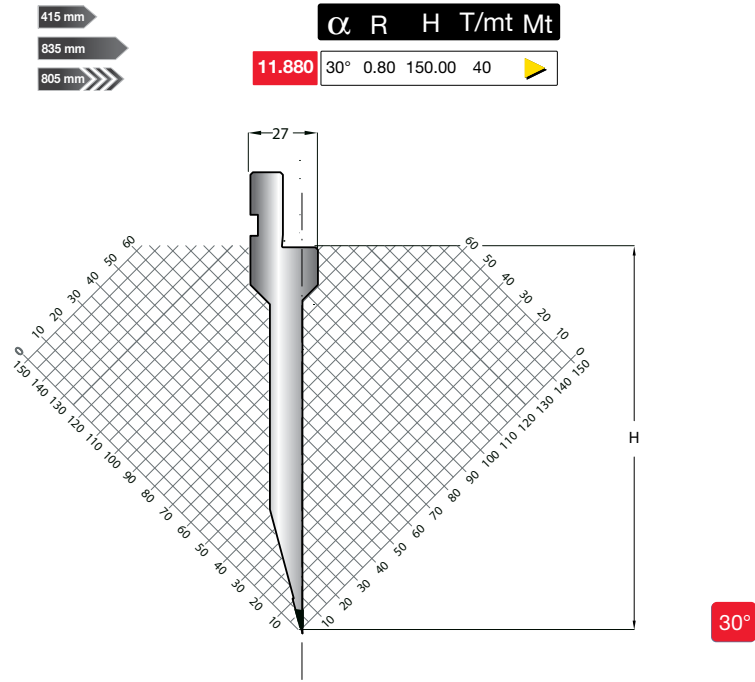
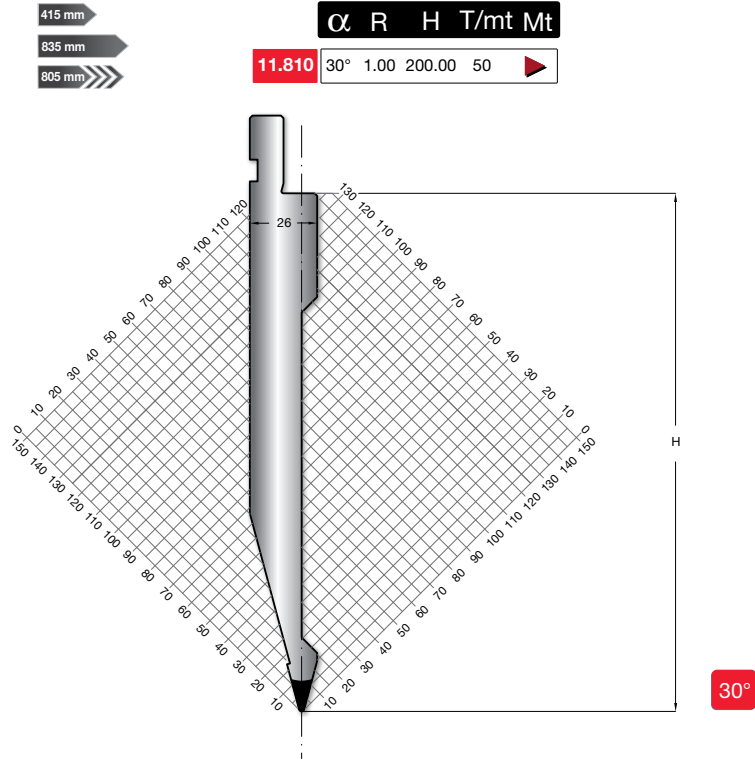


30°

All Mate® European Precision Style Punches are also available in Bevel Tang Style

PUNCHES

PUNCHES



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415 mm
835 mm
805 mm

| α | R | H | T/mt | Mt |
|----------|------|--------|------|----|
| 30° | 0.60 | 104.00 | 100 | |

11.258

30°

415 mm
835 mm
805 mm

| α | R | H | T/mt | Mt |
|----------|------|--------|------|----|
| 30° | 5.00 | 104.00 | 100 | |
| 30° | 3.00 | 104.00 | 100 | |

11.530
11.528

30°

415 mm
835 mm
805 mm

| α | R | H | T/mt | Mt |
|----------|------|--------|------|----|
| 30° | 0.60 | 104.00 | 50 | |

11.514

30°

415 mm
835 mm
805 mm

| α | R | H | T/mt | Mt |
|----------|------|--------|------|----|
| 26° | 0.80 | 117.00 | 100 | |

11.540

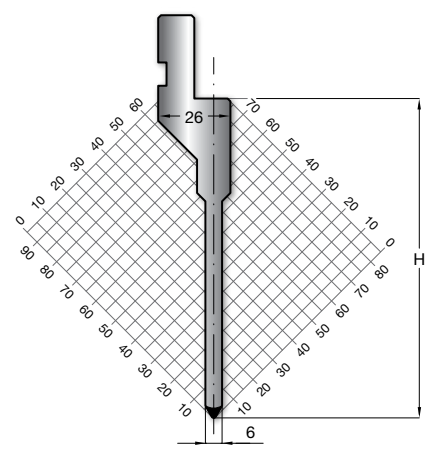
26°

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COMMON HEIGHT PUNCHES

415 mm
835 mm
805 mm

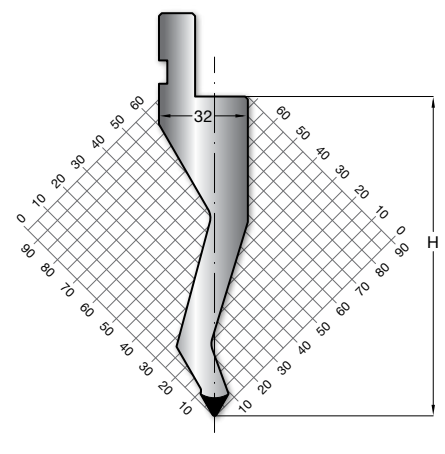
10.520 α R H T/mt Mt
60° 0.80 115.00 50



60°

415 mm
835 mm
805 mm

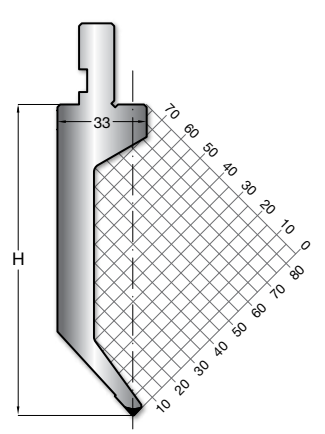
10.510 α R H T/mt Mt
60° 0.80 115.00 60



60°

415 mm
835 mm
805 mm

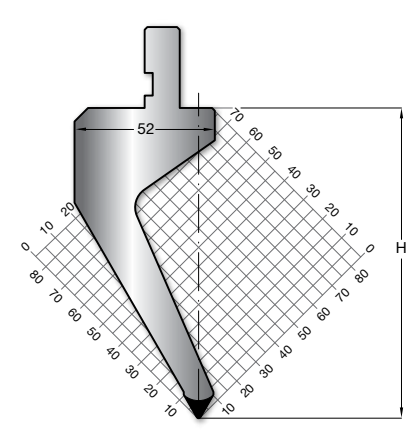
11.820 α R H T/mt Mt
85° 0.60 115.00 20



85°

415 mm
835 mm
805 mm

10.500 α R H T/mt Mt
60° 0.80 115.00 40



60°

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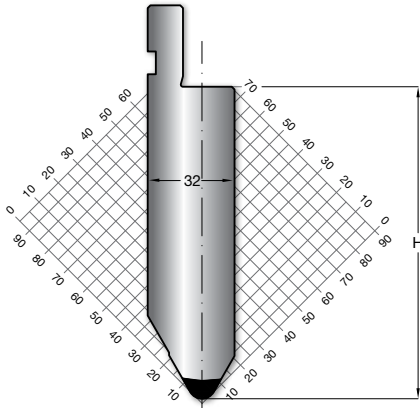
Scan code to link to detail DXF and PDF profile files.

<https://www.mate.com/technical-resources/press-brake-tooling/files/>



415 mm
835 mm
805 mm

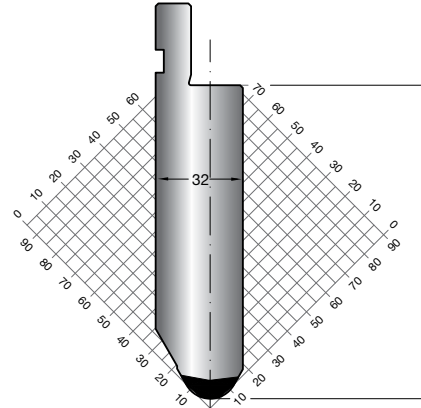
11.710 α R H T/mt Mt
60° 5.00 115.00 100



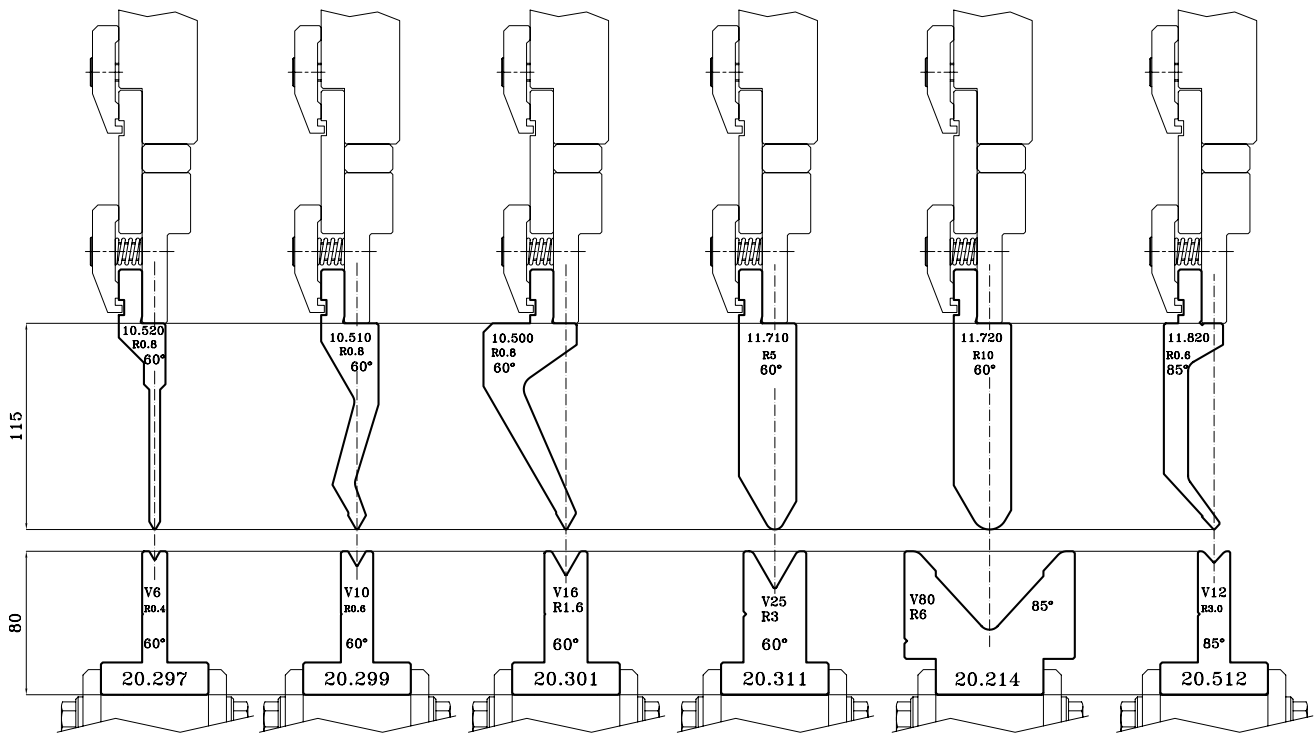
60°

415 mm
835 mm
805 mm

11.720 α R H T/mt Mt
60° 10.00 115.00 100

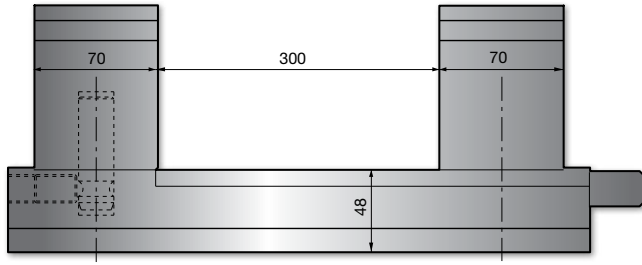


60°

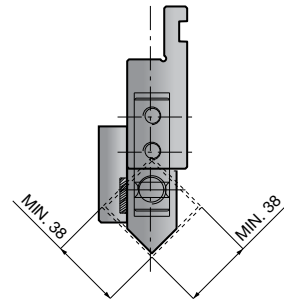
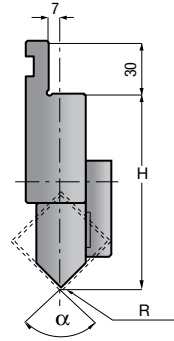


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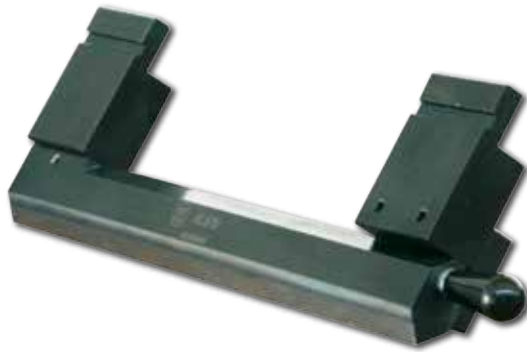
ROTARY PUNCH



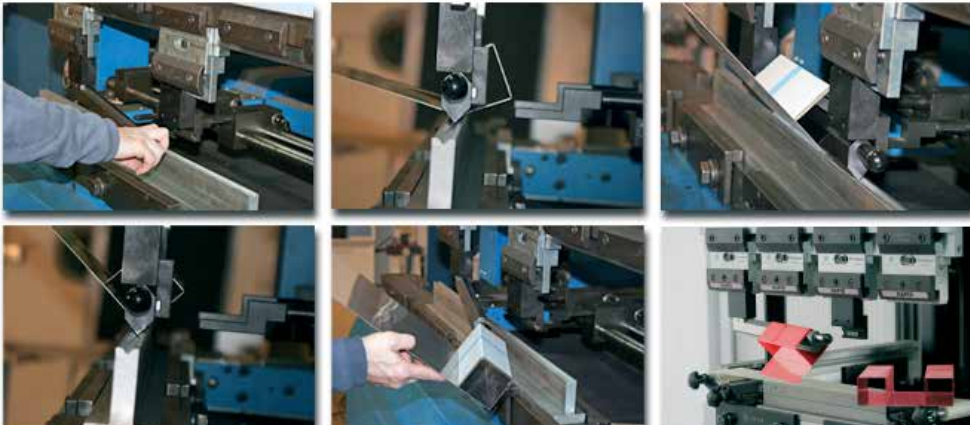
| | α | R | H | T/mt | Mt |
|--------|----------|------|--------|------|----|
| 40.670 | 88° | 0.80 | 110.00 | 15 | ▶ |
| 40.680 | 85° | 0.80 | 110.00 | 15 | ▶ |



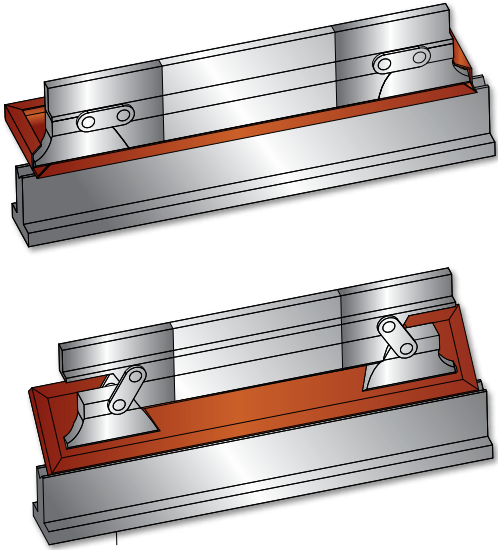
85° 88°



DESCRIPTION



MOVING HORNS



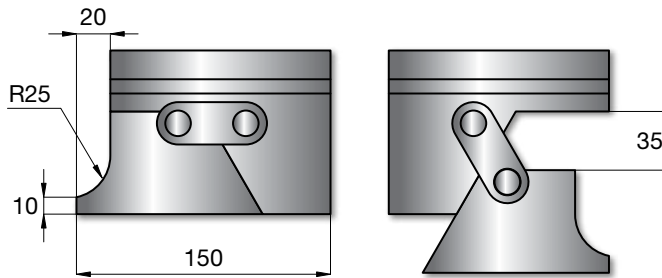
MOVING HORNS CODE

40.110
40.111
40.112
40.113
40.114
40.115
40.116
40.120
40.121
40.122
40.123
40.124

PUNCH CODE

(SEE PAGE 5
FOR MATCHING
PUNCH PROFILES
AND PRICES)

10.152
10.153
11.100
11.145
11.200
11.101
11.201
10.175
10.176
10.170
10.173
10.174



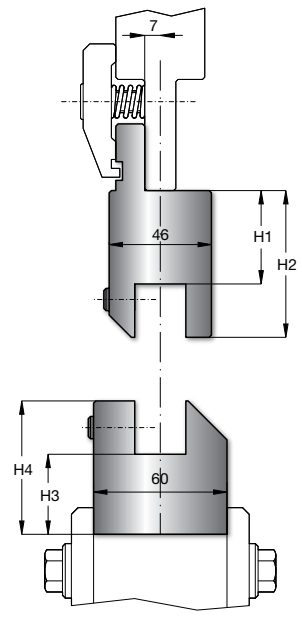
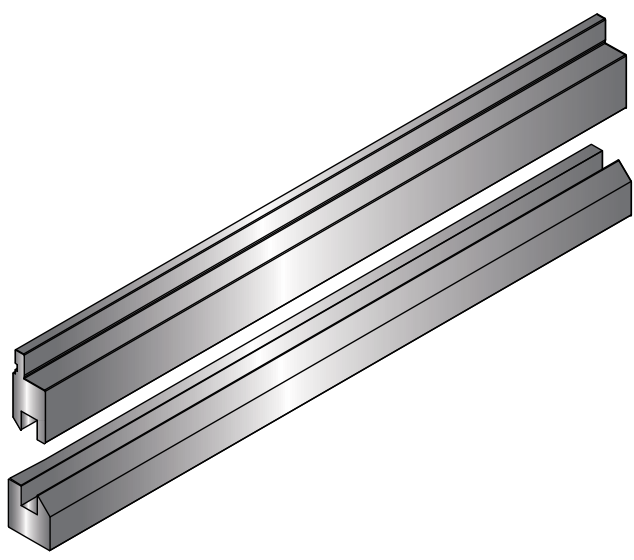
DESCRIPTION



Z-OFFSET TOOL HOLDERS

TOP AND BOTTOM HOLDERS

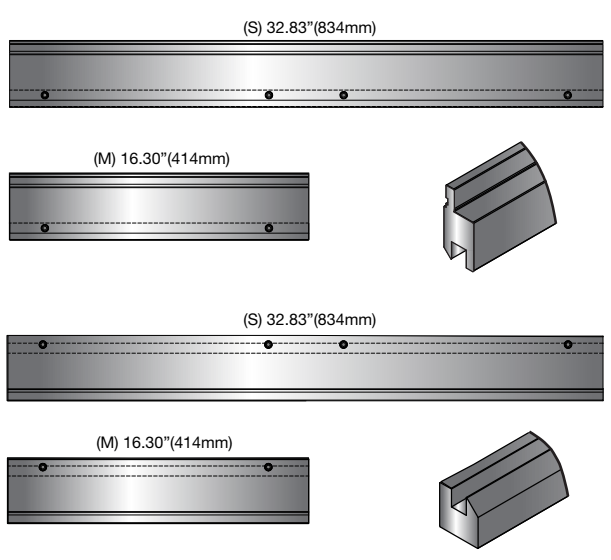
Profile



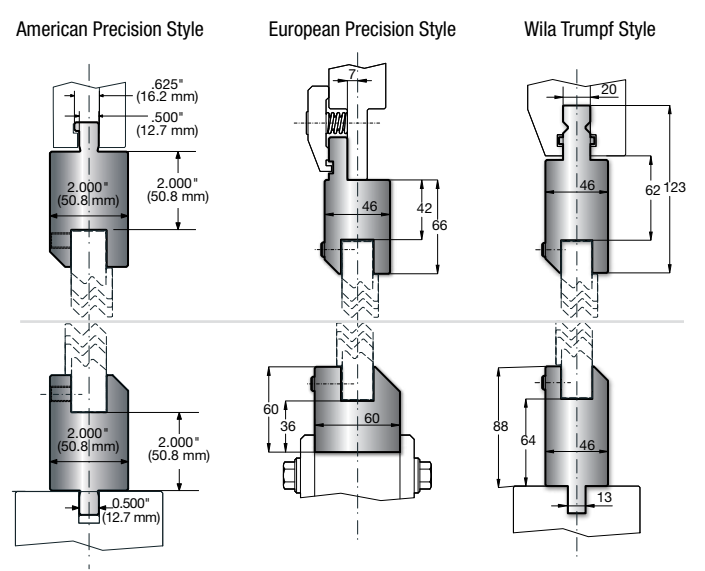
Description

| Part Number | H1 | | H2 | | H3 | | H4 | | Tons/ft | Tons/mt | MT | Price | |
|-------------|-------|--------|-------|--------|-------|--------|-------|--------|---------|---------|----|---------------|---------------|
| | inch | (mm) | inch | (mm) | inch | (mm) | inch | (mm) | | | | 16.30"(414mm) | 32.83"(834mm) |
| | | | | | | | | | | | | (M) | (S) |
| 40.419 | 1.654 | (42.0) | 2.598 | (66.0) | 1.417 | (36.0) | 2.362 | (60.0) | 34 | 100 | ▶ | | |

LENGTHS



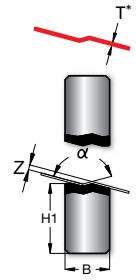
COMPATIBLE HOLDER SYSTEMS



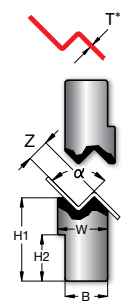
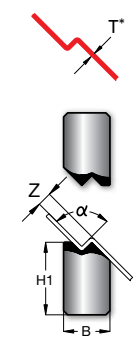
[Dimensions in Inches (mm)].
Images are proportionate but not to scale.



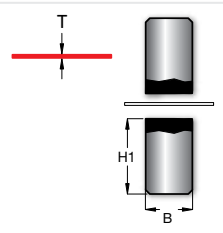
| Z-OFFSET | | | | | | | | | | | | | | | | | | | |
|--------------------|--------------------|----------------|--------|--------|------------------------|--------|--------|---------|------|------|--------|---------|------|------|---------|---------|----|---------------|---------------|
| Description | | | | | | | | | | | | | | | | | | | |
| Part Number Inches | Part Number Metric | C _l | Z | | Material Thickness (T) | | H1 | | H2 | | B | | W | | Tons/ft | Tons/mt | MT | Price | |
| | | | inch | (mm) | inch | (mm) | inch | (mm) | inch | (mm) | inch | (mm) | inch | (mm) | | | | 16.34"(415mm) | 32.87"(835mm) |
| | | | | | | | | | | | | | | | | | | (M) | (S) |
| | 040.510 | 160° | 0.039" | (1.00) | 0.039" | (1.00) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| | 040.515 | 160° | 0.059" | (1.50) | 0.047" | (1.20) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| | 040.520 | 150° | 0.079" | (2.00) | 0.059" | (1.50) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| | 040.525 | 140° | 0.098" | (2.50) | 0.059" | (1.50) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |



| Z-OFFSET 90° | | | | | | | | | | | | | | | | | | | |
|--------------------|--------------------|----------------|--------|---------|------------------------|--------|--------|---------|--------|---------|--------|---------|--------|---------|---------|---------|----|---------------|---------------|
| Description | | | | | | | | | | | | | | | | | | | |
| Part Number Inches | Part Number Metric | C _l | Z | | Material Thickness (T) | | H1 | | H2 | | B | | W | | Tons/ft | Tons/mt | MT | Price | |
| | | | inch | (mm) | inch | (mm) | inch | (mm) | inch | (mm) | inch | (mm) | inch | (mm) | | | | 16.34"(415mm) | 32.87"(835mm) |
| | | | | | | | | | | | | | | | | | | (M) | (S) |
| | 040.511 | 90° | 0.039" | (1.00) | 0.020" | (0.50) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| | 040.516 | 90° | 0.059" | (1.50) | 0.020" | (0.50) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| | 040.521 | 90° | 0.079" | (2.00) | 0.020" | (0.50) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| | 040.526 | 90° | 0.098" | (2.50) | 0.031" | (0.80) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| | 040.530 | 90° | 0.118" | (3.00) | 0.039" | (1.00) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| 028.511 | | 90° | 0.125" | (3.18) | 0.039" | (1.00) | 2.000" | (50.80) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| | 040.535 | 90° | 0.138" | (3.50) | 0.039" | (1.00) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| | 040.540 | 90° | 0.157" | (4.00) | 0.047" | (1.20) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| | 040.545 | 90° | 0.177" | (4.50) | 0.047" | (1.20) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| | 040.550 | 90° | 0.197" | (5.00) | 0.059" | (1.50) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| | 040.555 | 90° | 0.217" | (5.50) | 0.059" | (1.50) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| | 040.560 | 90° | 0.236" | (6.00) | 0.059" | (1.50) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| 028.512 | | 90° | 0.250" | (6.35) | 0.059" | (1.50) | 2.000" | (50.80) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| | 040.565 | 90° | 0.256" | (6.50) | 0.059" | (1.50) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| | 040.570 | 90° | 0.276" | (7.00) | 0.059" | (1.50) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| | 040.575 | 90° | 0.295" | (7.50) | 0.063" | (1.60) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| | 040.580 | 90° | 0.315" | (8.00) | 0.063" | (1.60) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| | 040.590 | 90° | 0.354" | (9.00) | 0.079" | (2.00) | 1.772" | (45.00) | 0.984" | (25.00) | 0.906" | (23.00) | 1.063" | (27.00) | 34 | 100 | ▶ | | |
| 028.513 | | 90° | 0.375" | (9.53) | 0.079" | (2.00) | 2.000" | (50.80) | 0.984" | (25.00) | 0.906" | (23.00) | 1.063" | (27.00) | 34 | 100 | ▶ | | |
| | 040.610 | 90° | 0.394" | (10.00) | 0.079" | (2.00) | 1.772" | (45.00) | 0.984" | (25.00) | 0.906" | (23.00) | 1.063" | (27.00) | 34 | 100 | ▶ | | |
| | 040.611 | 90° | 0.433" | (11.00) | 0.079" | (2.00) | 1.772" | (45.00) | 0.984" | (25.00) | 0.906" | (23.00) | 1.063" | (27.00) | 34 | 100 | ▶ | | |
| | 040.612 | 90° | 0.472" | (12.00) | 0.079" | (2.00) | 1.772" | (45.00) | 0.984" | (25.00) | 0.906" | (23.00) | 1.063" | (27.00) | 34 | 100 | ▶ | | |
| 028.514 | | 90° | 0.500" | (12.70) | 0.098" | (2.50) | 2.000" | (50.80) | 0.984" | (25.00) | 0.906" | (23.00) | 1.260" | (32.00) | 34 | 100 | ▶ | | |
| | 040.613 | 90° | 0.512" | (13.00) | 0.098" | (2.50) | 1.772" | (45.00) | 0.984" | (25.00) | 0.906" | (23.00) | 1.260" | (32.00) | 34 | 100 | ▶ | | |
| | 040.614 | 90° | 0.551" | (14.00) | 0.098" | (2.50) | 1.772" | (45.00) | 0.984" | (25.00) | 0.906" | (23.00) | 1.260" | (32.00) | 34 | 100 | ▶ | | |
| | 040.615 | 90° | 0.591" | (15.00) | 0.118" | (3.00) | 1.772" | (45.00) | 0.984" | (25.00) | 0.906" | (23.00) | 1.260" | (32.00) | 34 | 100 | ▶ | | |
| 028.515 | | 90° | 0.625" | (15.88) | 0.125" | (3.18) | 2.250" | (57.20) | 0.984" | (25.00) | 0.906" | (23.00) | 1.496" | (38.00) | 34 | 100 | ▶ | | |
| 028.516 | | 90° | 0.750" | (19.05) | 0.125" | (3.18) | 2.250" | (57.20) | 0.984" | (25.00) | 0.906" | (23.00) | 1.772" | (45.00) | 34 | 100 | ▶ | | |



| FLAT | | | | | | | | | | | | | | | | | | | |
|--------------------|--------------------|----------------|------|------|-------------------------|--------|--------|---------|------|------|--------|---------|------|------|---------|---------|----|---------------|---------------|
| Description | | | | | | | | | | | | | | | | | | | |
| Part Number Inches | Part Number Metric | C _l | Z | | Max. Material Thickness | | H1 | | H2 | | B | | W | | Tons/ft | Tons/mt | MT | Price | |
| | | | inch | (mm) | inch | (mm) | inch | (mm) | inch | (mm) | inch | (mm) | inch | (mm) | | | | 16.34"(415mm) | 32.87"(835mm) |
| | | | | | | | | | | | | | | | | | | (M) | (S) |
| | 040.500 | FLAT | | | 0.079" | (2.00) | 1.417" | (36.00) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |
| 028.510 | | FLAT | | | 0.079" | (2.00) | 2.000" | (50.80) | | | 0.906" | (23.00) | | | 34 | 100 | ▶ | | |



[Dimensions in Inches (mm)].
Images are proportionate but not to scale.

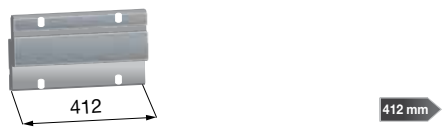
Inserts can be used in Mate American Precision Style, European Precision Style, and Wila Trumpf Style tooling holders.
*Maximum material thickness



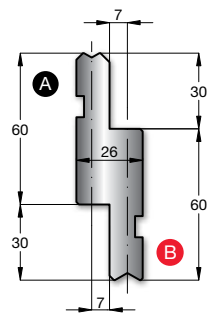
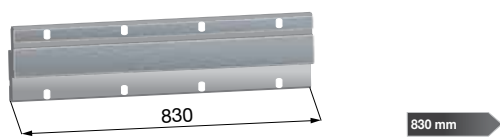
412 mm
830 mm

T/mt Mt
10.180 100

HALF LENGTH - (M)

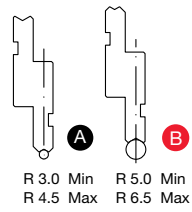
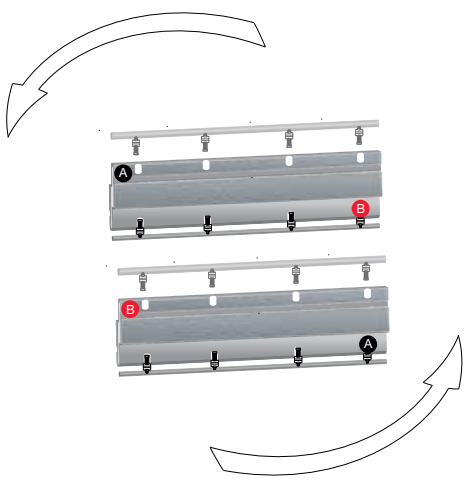


STANDARD LENGTH - (S)



ASSEMBLY SCHEME

The inserts are mounted on A or B side depending on the type of radius. See page 25.



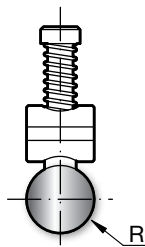
Scan code to link to detail DXF and PDF profile files.

<https://www.mate.com/technical-resources/press-brake-tooling/files/>

INSERTS

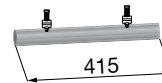
415 mm → 835 mm →

| | R | Side | T/mt | Mt |
|--------|------|------|------|----|
| 10.181 | 3.00 | A | 50 | ▶ |
| 10.182 | 3.50 | A | 50 | ▶ |
| 10.183 | 4.00 | A | 50 | ▶ |
| 10.184 | 4.50 | A | 50 | ▶ |
| 10.185 | 5.00 | B | 50 | ▶ |
| 10.186 | 5.50 | B | 50 | ▶ |
| 10.187 | 6.00 | B | 50 | ▶ |
| 10.188 | 6.50 | B | 50 | ▶ |



Radius insert sold with bolt assembly.

HALF LENGTH - (M)



415 mm →

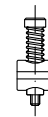
STANDARD LENGTH - (S)



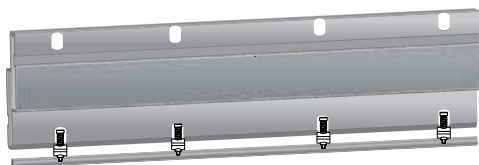
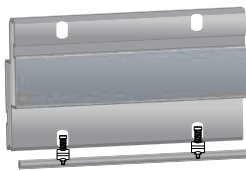
835 mm →

BOLT ASSEMBLY

40.003



ASSEMBLY SCHEME



DIE SELECTION GUIDE

(Assumes air bending):

- Select the V opening:**
Calculate 2 times the punch radius plus 2 times the material thickness.

For example, a punch radius of 10mm and 2mm material = $(2 \times 10) + (2 \times 2) = 24\text{mm}$ V opening. When the exact V opening is not available, use the next nearest larger die.

- Select the V angle:**
It is recommended that the die V angle be smaller than the desired bend angle.

For example, to achieve a 90 degree bend, use a V angle less than 90 degrees such as a 60 degree, 45 degree or even a 30 degree.

If the result should be a 60 degree bend, use a die with a 45 degree or even a 30 degree angle.

If the result should be a 45 degree bend, use a die with a 30 degree angle.

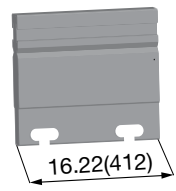
Note that in general the material springback will be slightly greater using a radius punch than a standard punch.

RADIUS/FLAT INSERT HOLDERS

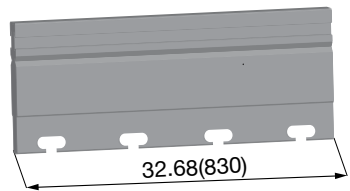
| RADIUS/FLAT INSERT HOLDERS | | | | | | | 010.115 | 010.116 | 010.190 | 010.191 | |
|----------------------------|------|---------|---------|---------|----|----------------|----------------|---------|---------|---------|--|
| Description | | | | | | | | | | | |
| Part Number | H | | Tons/ft | Tons/mt | MT | Price | | | | | |
| | inch | (mm) | | | | 16.221"(412mm) | 32.677"(830mm) | | | | |
| | | | | | | (M) | (S) | | | | |
| 010.115 | 2.64 | (67.0) | 24 | 71 | ▶ | | | | | | |
| 010.116 | 4.53 | (115.0) | 24 | 71 | ▶ | | | | | | |
| 010.190 | 3.43 | (87.0) | 15 | 45 | ▶ | | | | | | |
| 010.191 | 4.53 | (115.0) | 15 | 45 | ▶ | | | | | | |

RADIUS/FLAT INSERT HOLDERS

HOLDER LENGTH - (M)

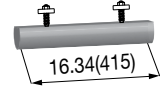


HOLDER LENGTH - (S)

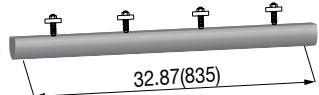


RADIUS/FLAT INSERTS

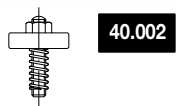
HALF LENGTH - (M)



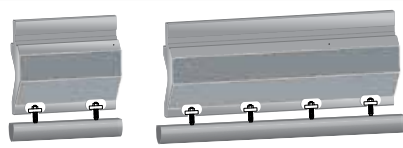
STANDARD LENGTH - (S)



BOLT ASSEMBLY



ASSEMBLY SCHEME



Radius/flat insert sold with bolt assembly.

DIE SELECTION GUIDE

(Assumes air bending):

- Select the V opening:**
Calculate 2 times the punch radius plus 2 times the material thickness.

For example, a punch radius of .375" and .078" material = $(2 \times .375") + (2 \times .078") = .906"$ V opening.

When the exact V opening is not available, use the next nearest larger die.

- Select the V angle:**
It is recommended that the die V angle be smaller than the desired bend angle.

For example, to achieve a 90 degree bend, use a V angle less than 90 degrees such as a 60 degree, 45 degree or even a 30 degree.

If the result should be a 60 degree bend, use a die with a 45 degree or even a 30 degree angle.

If the result should be a 45 degree bend, use a die with a 30 degree angle.

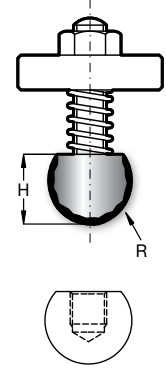
Note that in general the material springback will be slightly greater using a radius punch than a standard punch.

COMPATIBLE HOLDERS

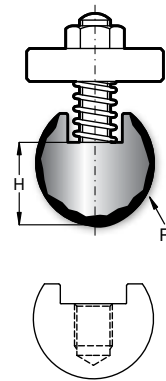
| AMERICAN PRECISION STYLE | | EUROPEAN PRECISION STYLE | | | | WILA TRUMPF STYLE | | |
|--------------------------|--------|--------------------------|--------|--------|--------|-------------------|--------|--------|
| 18.500 | 18.505 | 10.115 | 10.116 | 10.190 | 10.191 | 15.010 | 15.014 | 15.018 |
| | | | | | | | | |



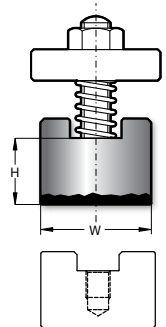
| RADIUS INSERTS | | | | | | | | |
|---------------------|---------------------|--------|---------|--------|---------|----|---------------------|---------------------|
| Description | | | | | | | | |
| Part Number Inch | Part Number (mm) | R | | H | | MT | US\$ Price | |
| | | Inches | (mm) | Inches | (mm) | | 16.34(415mm) (M) | 32.87(835mm) (S) |
| | 011.300 | 0.276 | (7.00) | 0.453 | (11.50) | ▶ | | |
| | 011.301 | 0.295 | (7.50) | 0.453 | (11.50) | ▶ | | |
| | 011.302 | 0.315 | (8.00) | 0.512 | (13.00) | ▶ | | |
| | 011.303 | 0.354 | (9.00) | 0.630 | (16.00) | ▶ | | |
| 018.511 | | 0.375 | (9.53) | 0.625 | (15.88) | ▶ | | |
| | 011.304 | 0.394 | (10.00) | 0.630 | (16.00) | ▶ | | |
| | 011.305 | 0.433 | (11.00) | 0.630 | (16.00) | ▶ | | |
| | 011.306 | 0.453 | (11.50) | 0.748 | (19.00) | ▶ | | |
| | 011.307 | 0.472 | (12.00) | 0.787 | (20.00) | ▶ | | |



| RADIUS INSERTS | | | | | | | | |
|---------------------|---------------------|--------|---------|--------|---------|----|---------------------|---------------------|
| Description | | | | | | | | |
| Part Number Inch | Part Number (mm) | R | | H | | MT | US\$ Price | |
| | | Inches | (mm) | Inches | (mm) | | 16.34(415mm) (M) | 32.87(835mm) (S) |
| | 011.308 | 0.492 | (12.50) | 0.630 | (16.00) | ▶ | | |
| 018.512 | | 0.500 | (12.70) | 0.625 | (15.88) | ▶ | | |
| | 011.309 | 0.512 | (13.00) | 0.669 | (17.00) | ▶ | | |
| | 011.310 | 0.551 | (14.00) | 0.748 | (19.00) | ▶ | | |
| | 011.311 | 0.591 | (15.00) | 0.787 | (20.00) | ▶ | | |
| 018.513 | | 0.625 | (15.88) | 0.875 | (22.23) | ▶ | | |
| | 011.312 | 0.630 | (16.00) | 0.827 | (21.00) | ▶ | | |
| | 011.313 | 0.669 | (17.00) | 0.846 | (21.50) | ▶ | | |
| | 011.314 | 0.689 | (17.50) | 0.866 | (22.00) | ▶ | | |
| | 011.315 | 0.748 | (19.00) | 0.984 | (25.00) | ▶ | | |
| 018.514 | | 0.750 | (19.05) | 1.000 | (25.40) | ▶ | | |
| | 011.316 | 0.787 | (20.00) | 0.945 | (24.00) | ▶ | | |
| 018.515 | | 0.875 | (22.23) | 1.000 | (25.40) | ▶ | | |
| | 011.317 | 0.886 | (22.50) | 0.984 | (25.00) | ▶ | | |
| | 011.318 | 0.984 | (25.00) | 1.142 | (29.00) | ▶ | | |
| 018.516 | | 1.000 | (25.40) | 1.000 | (25.40) | ▶ | | |
| | 011.319 | 1.083 | (27.50) | 1.339 | (34.00) | ▶ | | |
| | 011.320 | 1.181 | (30.00) | 1.339 | (34.00) | ▶ | | |
| | 011.321 | 1.378 | (35.00) | 1.772 | (45.00) | ▶ | | |
| 018.517 | | 1.500 | (38.10) | 1.750 | (44.45) | ▶ | | |
| | 011.322 | 1.575 | (40.00) | 1.772 | (45.00) | ▶ | | |
| | 011.323 | 1.772 | (45.00) | 1.969 | (50.00) | ▶ | | |
| | 011.324 | 1.969 | (50.00) | 2.126 | (54.00) | ▶ | | |



| FLAT INSERTS | | | | | | | | |
|---------------------|---------------------|--------|---------|--------|---------|----|---------------------|---------------------|
| Description | | | | | | | | |
| Part Number Inch | Part Number (mm) | W | | H | | MT | US\$ Price | |
| | | Inches | (mm) | Inches | (mm) | | 16.87(415mm) (M) | 32.87(835mm) (S) |
| | 010.325 | 1.181 | (30.00) | 0.669 | (17.00) | ▶ | | |
| 018.510 | | 1.500 | (38.10) | 0.750 | (19.05) | ▶ | | |



[Dimensions in Inches (mm)].
Images are proportionate but not to scale.

Inserts can be used in Mate American Precision Style, European Precision Style, and Wila Trumpf Style tooling holders.

MODIFIED STANDARD PUNCH RADIUS

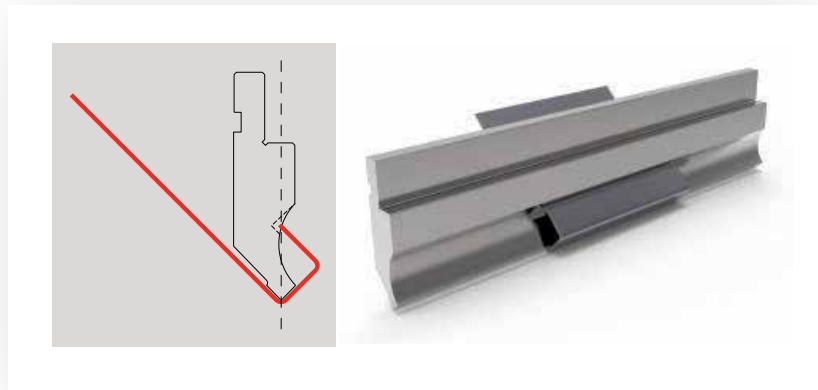
Punch radius geometry can be modified to your request (within physical limits of the specific punch). The best results occur when the change can be accommodated while maintaining the common height parameters of the standard product line.

MODIFIED STANDARD PUNCH ANGLE

Punch angle geometry can be modified to your request (within physical limits of the specific punch). The best results occur when the change can be accommodated while maintaining the common height parameters of the standard product line.

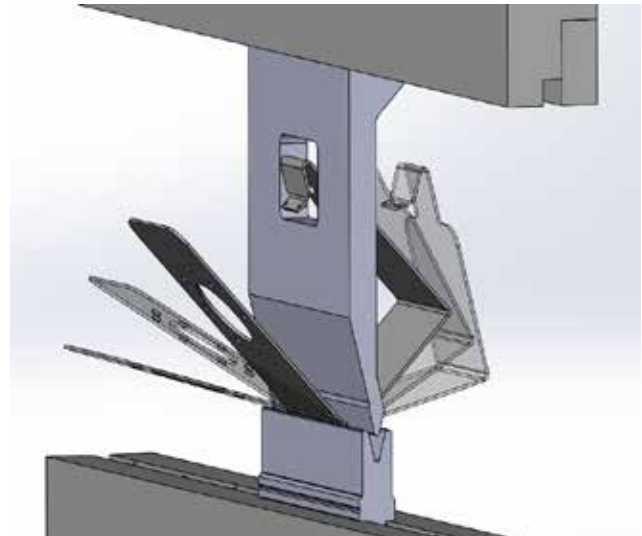
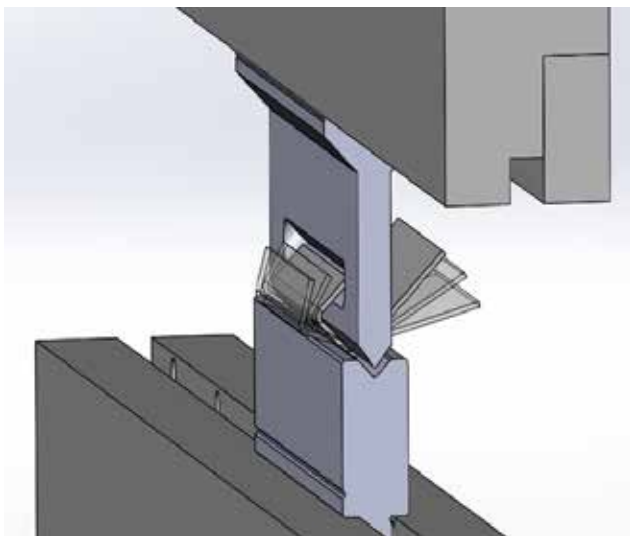
RELIEFS/DEEP RETURN FLANGE

Punches can be specially modified to accommodate long return flanges. A notch or relief can be cut into the punch body in cases where the long return flange would otherwise collide with the punch body. Each application is reviewed before approval.



OPTIONAL WINDOW

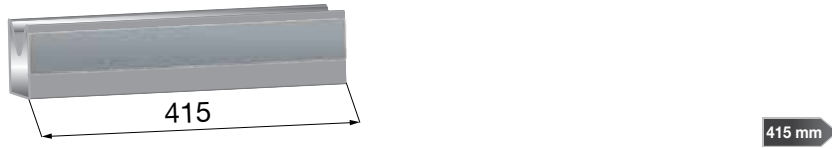
Punches can be specially modified to accommodate long return flanges. A window can be cut into the punch body in cases where the long return flange would otherwise collide with the punch body. Each application is reviewed before approval.



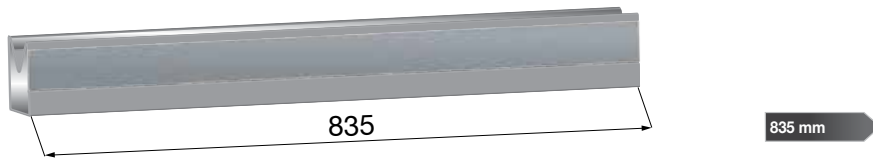
The dies in this catalog are compatible with both European Precision Style and Bevel Tang Style punches.

DIES ARE AVAILABLE IN THE FOLLOWING STANDARD LENGTHS:

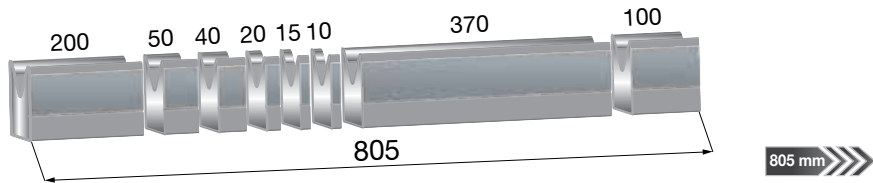
HALF LENGTH - (M)



STANDARD LENGTH - (S)

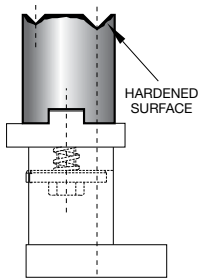


SECTIONED LENGTH - (F)

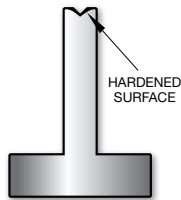


OVERVIEW

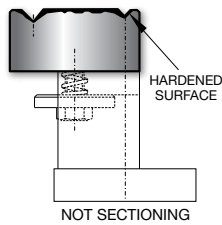
SELF-CENTERING DIES



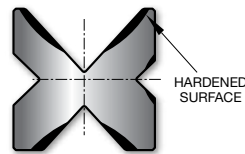
PILLAR DIES



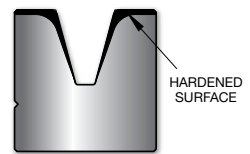
BOLT-ON 2V DIES



MULTI-V DIES



1V DIES



Scan code to link to detail DXF and PDF profile files.

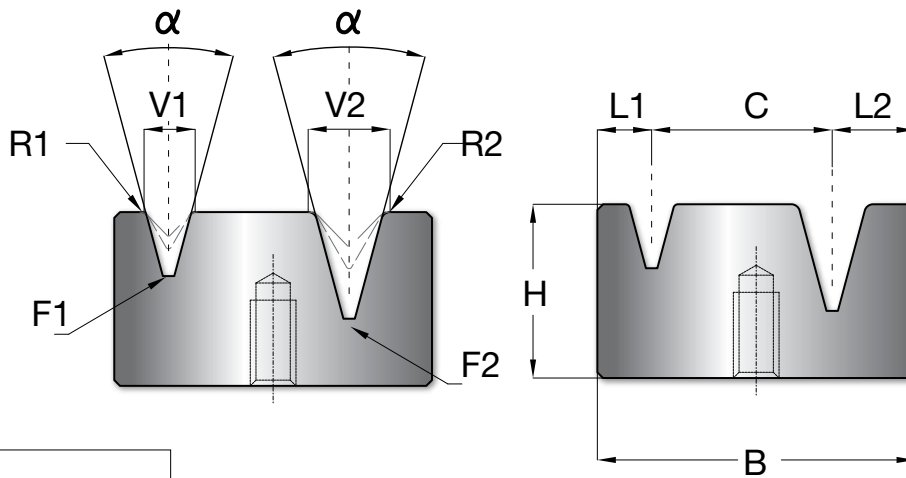


<https://www.mate.com/technical-resources/press-brake-tooling/files/>

2V DIES DATA TABLE

415 mm

835 mm



| | |
|---------------|----------|
| <i>Legend</i> | |
| F | = bottom |
| R | = radius |

415 mm

835 mm

| | α | V1 | V2 | R1 | R2 | F1 | F2 | L1 | L2 | H | B | C | T/m | Mt |
|---------------|----------|----|----|------|-----|-------|-------|-----|------|----|----|------|-----|----|
| 20.295 | 90° | 4 | 7 | 0,3 | 0,5 | R 0,5 | R 0,5 | 4 | 7 | 26 | 55 | 44 | 100 | ▶ |
| 20.202 | 90° | 6 | 10 | 0,4 | 0,6 | R 0,5 | R 0,5 | 6 | 10 | 26 | 55 | 39 | 100 | ▶ |
| 20.203 | 90° | 8 | 12 | 0,5 | 0,8 | R 0,5 | R 0,5 | 8 | 10 | 26 | 55 | 37 | 100 | ▶ |
| 21.202 | 88° | 6 | 10 | 0,8 | 1,2 | R 0,5 | R 0,5 | 6 | 10 | 26 | 55 | 39 | 100 | ▶ |
| 20.338 | 88° | 8 | 12 | 1,0 | 1,5 | R 0,5 | R 0,5 | 8 | 10 | 26 | 55 | 37 | 100 | ▶ |
| 20.204 | 88° | 12 | 20 | 2,75 | 3,0 | R 0,5 | R 0,5 | 10 | 15 | 26 | 55 | 30 | 100 | ▶ |
| 20.296 | 88° | 14 | 18 | 2,75 | 3,0 | R 0,5 | R 0,5 | 11 | 13 | 26 | 55 | 31 | 100 | ▶ |
| 20.205 | 88° | 16 | 25 | 2,75 | 3,0 | R 0,5 | R 0,5 | 12 | 16,5 | 26 | 55 | 26,5 | 100 | ▶ |
| 20.235 | 60° | 6 | 10 | 0,4 | 0,6 | R 0,5 | R 0,5 | 6 | 10 | 26 | 55 | 39 | 60 | ▶ |
| 20.229 | 60° | 8 | 12 | 0,5 | 0,8 | R 0,5 | R 0,5 | 8 | 10 | 26 | 55 | 37 | 60 | ▶ |
| 20.230 | 60° | 12 | 20 | 0,8 | 1,5 | R 0,5 | R 0,5 | 10 | 15 | 26 | 55 | 30 | 60 | ▶ |
| 20.267 | 60° | 16 | 20 | 1,6 | 2,0 | R 0,7 | R 0,7 | 12 | 15 | 26 | 55 | 28 | 60 | ▶ |
| 20.418 | 30° | 8 | 12 | 0,8 | 1,5 | F 2,0 | F 2,0 | 9,5 | 14,5 | 46 | 50 | 26 | 40 | ▶ |

90° 88° 60° 30°

REPLACEMENT BOLT ASSEMBLY

Bolts, springs and clamp washers are included.

40.001



Scan code to link to detail DXF and PDF profile files.

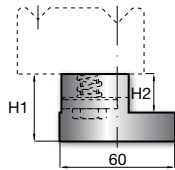
<https://www.mate.com/technical-resources/press-brake-tooling/files/>

| | | | | | |
|--------|--|--------|--|--------|--|
| 20.202 | | 20.230 | | 20.296 | |
| 20.203 | | 20.235 | | 20.338 | |
| 20.204 | | 20.267 | | 20.418 | |
| 20.205 | | 20.295 | | 21.202 | |
| 20.229 | | | | | |

HOLDERS/EXTENSIONS

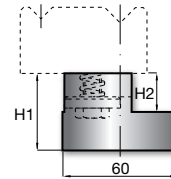
415 mm
835 mm

| | H1 | H2 | T/mt | Mt |
|---------------|-------|-------|------|----|
| 20.200 | 34.00 | 20.00 | 100 | ▶ |



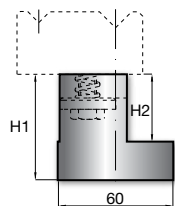
415 mm
835 mm

| | H1 | H2 | T/mt | Mt |
|---------------|-------|-------|------|----|
| 20.316 | 39.00 | 20.00 | 100 | ▶ |



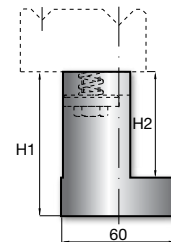
415 mm
835 mm

| | H1 | H2 | T/mt | Mt |
|---------------|-------|-------|------|----|
| 20.201 | 55.00 | 35.00 | 100 | ▶ |

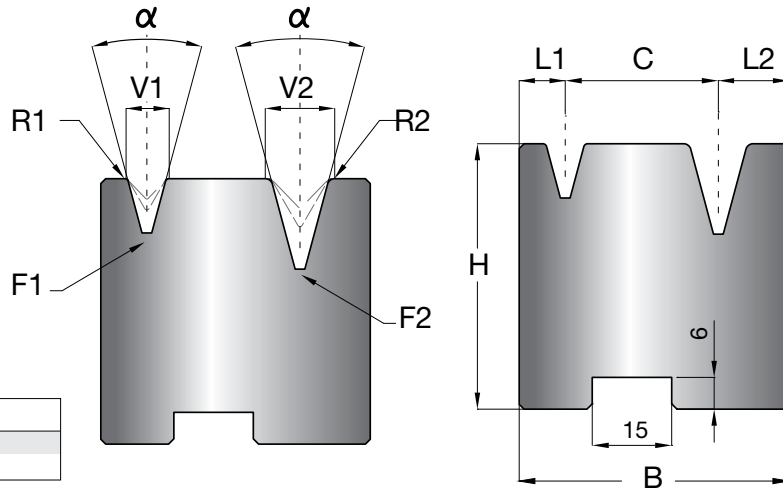


415 mm
835 mm

| | H1 | H2 | T/mt | Mt |
|---------------|-------|-------|------|----|
| 20.306 | 75.00 | 55.00 | 100 | ▶ |



SELF-CENTERING 2V DIES DATA TABLE



| Legend | |
|--------|----------|
| F | = bottom |
| R | = radius |



| | α | V1 | V2 | R1 | R2 | F1 | F2 | L1 | L2 | H | B | C | T/m | Mt |
|--------|----------|----|----|------|------|-------|-------|-----|------|----|------|----|-----|----|
| 20.275 | 90° | 4 | 7 | 0,3 | 0,5 | R 0,5 | R 0,5 | 3,5 | 5 | 46 | 34,5 | 26 | 80 | ▶ |
| 20.276 | 90° | 6 | 10 | 0,4 | 0,6 | R 0,5 | R 0,5 | 4,5 | 6,5 | 46 | 37 | 26 | 80 | ▶ |
| 20.277 | 90° | 8 | 12 | 0,5 | 0,8 | R 0,5 | R 0,5 | 5,5 | 7,5 | 46 | 39 | 26 | 80 | ▶ |
| 21.275 | 88° | 4 | 7 | 0,6 | 1,0 | R 0,5 | R 0,5 | 3,5 | 5 | 46 | 34,5 | 26 | 80 | ▶ |
| 21.276 | 88° | 6 | 10 | 0,8 | 1,2 | R 0,5 | R 0,5 | 4,5 | 6,5 | 46 | 37 | 26 | 80 | ▶ |
| 20.339 | 88° | 8 | 12 | 1,0 | 1,5 | R 0,5 | R 0,5 | 5,5 | 7,5 | 46 | 39 | 26 | 80 | ▶ |
| 20.279 | 88° | 12 | 20 | 0,8 | 1,75 | R 0,5 | R 0,5 | 7,5 | 12 | 46 | 45,5 | 26 | 80 | ▶ |
| 20.278 | 88° | 14 | 18 | 1,25 | 1,5 | R 0,5 | R 0,5 | 8,5 | 10,5 | 46 | 45 | 26 | 80 | ▶ |
| 20.280 | 88° | 16 | 25 | 1,5 | 1,75 | R 0,5 | R 0,5 | 9,5 | 14,5 | 46 | 50 | 26 | 80 | ▶ |
| 20.344 | 85° | 4 | 7 | 0,6 | 1,0 | R 0,5 | R 0,5 | 3,5 | 5 | 46 | 34,5 | 26 | 80 | ▶ |
| 20.345 | 85° | 6 | 10 | 1,0 | 1,5 | R 0,5 | R 0,5 | 4,5 | 6,5 | 46 | 37 | 26 | 80 | ▶ |
| 20.346 | 85° | 8 | 12 | 1,2 | 1,75 | R 0,5 | R 0,5 | 5,5 | 7,5 | 46 | 39 | 26 | 80 | ▶ |
| 20.347 | 85° | 12 | 20 | 1,75 | 2,5 | R 0,5 | R 0,5 | 7,5 | 12 | 46 | 45,5 | 26 | 80 | ▶ |
| 20.349 | 85° | 14 | 18 | 1,50 | 2,0 | R 0,5 | R 0,5 | 8,5 | 10,5 | 46 | 45 | 26 | 80 | ▶ |
| 20.348 | 85° | 16 | 25 | 2,0 | 3,0 | R 0,5 | R 1,0 | 9,5 | 14,5 | 46 | 50 | 26 | 80 | ▶ |
| 20.438 | 30° | 6 | 10 | 0,6 | 1,0 | R 1,0 | F 2,0 | 7 | 12 | 46 | 45 | 26 | 40 | ▶ |
| 20.478 | 30° | 8 | 12 | 0,8 | 1,5 | F 2,0 | F 2,0 | 9,5 | 14,5 | 46 | 50 | 26 | 40 | ▶ |

90° 88° 85° 30°

Scan code to link to detail DXF and PDF profile files.

<https://www.mate.com/technical-resources/press-brake-tooling/files/>

| | | | | | |
|--------|--|--------|--|--------|--|
| 20.275 | | 20.339 | | 20.349 | |
| 20.276 | | 20.344 | | 20.438 | |
| 20.277 | | 20.345 | | 20.478 | |
| 20.278 | | 20.346 | | 21.275 | |
| 20.279 | | 20.347 | | 21.276 | |
| 20.280 | | 20.348 | | | |

RAIL ADAPTER/END STOP

415 mm

835 mm

415 mm

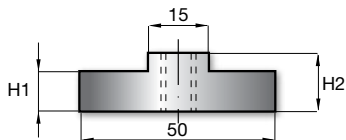
835 mm

End stop width = 15mm

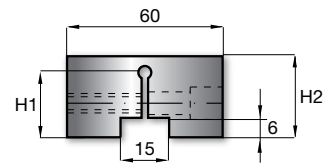
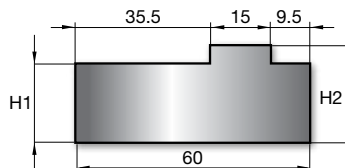
| | H1 | H2 | T/mt | Mt |
|---------------|-------|-------|------|----|
| 20.287 | 10.00 | 15.00 | 100 | ▶ |

| | H1 | H2 | T/mt | Mt |
|---------------|-------|-------|------|----|
| 20.400 | 20.00 | 25.00 | 100 | ▶ |

| | H1 | H2 | T/mt | Mt |
|---------------|-------|-------|------|----|
| 20.336 | 20.00 | 25.00 | 100 | ▶ |



(Bolt assembly sold separately, see part number 40.001)

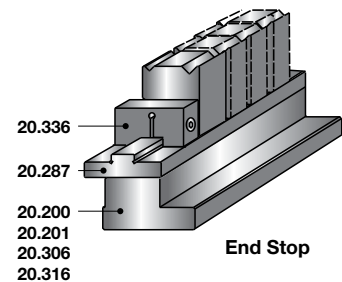
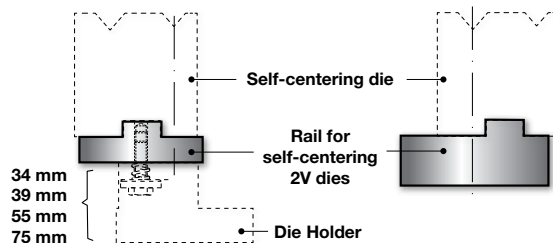


BOLT ASSEMBLY



40.001

ASSEMBLY SCHEME

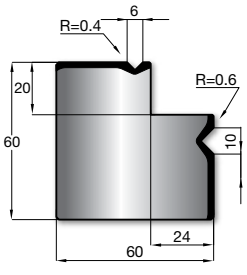


End Stop

415 mm
835 mm
805 mm

α T/mt Mt

20.208 90° 80

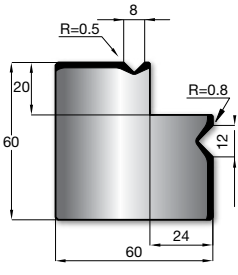


90°

415 mm
835 mm
805 mm

α T/mt Mt

20.237 90° 80

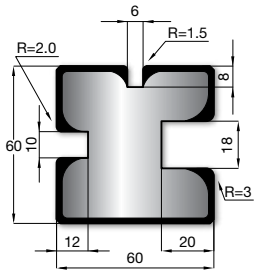


90°

415 mm
835 mm
805 mm

T/mt Mt

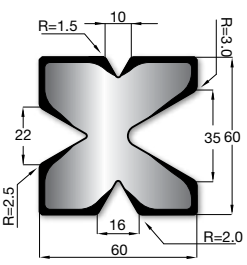
21.209 100



415 mm
835 mm
805 mm

α T/mt Mt

20.350 60° 60

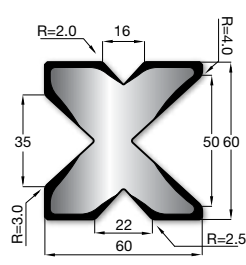


60°

415 mm
835 mm
805 mm

α T/mt Mt

21.207 85° 80

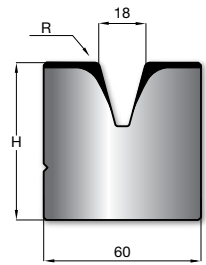


85°

415 mm
835 mm
805 mm

α R H T/mt Mt

20.494 30° 2.00 60.00 100

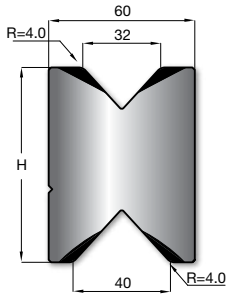


30°

415 mm
835 mm
805 mm

α H T/mt Mt

20.820 85° 80.00 100

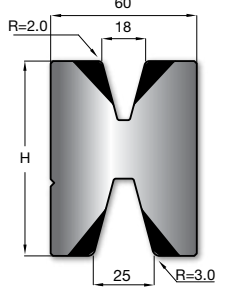


85°

415 mm
835 mm
805 mm

α H T/mt Mt

20.830 30° 80.00 100



30°

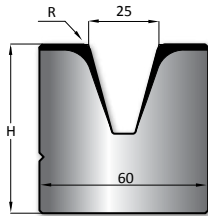
Scan code to link to detail DXF and PDF profile files.

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415 mm
835 mm
805 mm

α R H T/mt Mt

20.325 30° 3.00 60.00 100 ▶

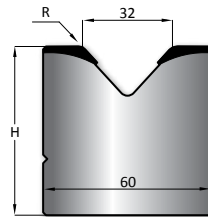


30°

415 mm
835 mm
805 mm

α R H T/mt Mt

20.210 85° 4.00 60.00 100 ▶

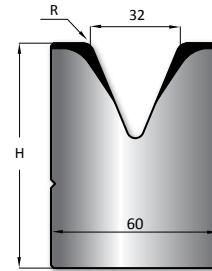


85°

415 mm
835 mm
805 mm

α R H T/mt Mt

20.484 45° 4.00 80.00 100 ▶

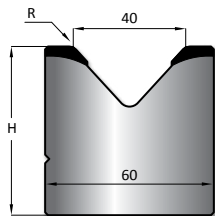


45°

415 mm
835 mm
805 mm

α R H T/mt Mt

20.211 85° 4.00 60.00 100 ▶

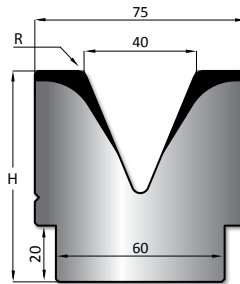


85°

415 mm
835 mm
805 mm

α R H T/mt Mt

20.440 45° 4.00 75.00 100 ▶

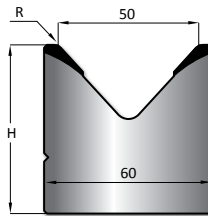


45°

415 mm
835 mm
805 mm

α R H T/mt Mt

20.212 85° 4.00 60.00 100 ▶

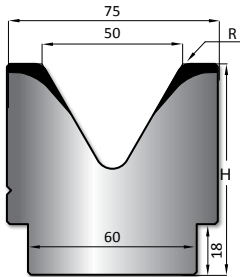


85°

415 mm
835 mm
805 mm

α R H T/mt Mt

20.650 60° 5.00 75.00 100 ▶

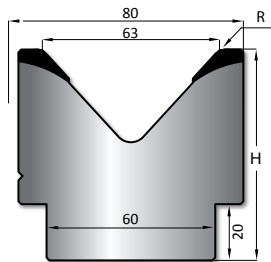


60°

415 mm
835 mm
805 mm

α R H T/mt Mt

20.213 85° 5.00 75.00 100 ▶

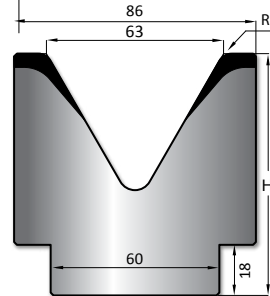


85°

415 mm
835 mm
805 mm

α R H T/mt Mt

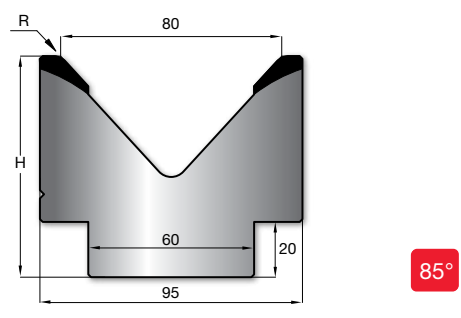
20.370 60° 5.00 86.00 100 ▶



60°

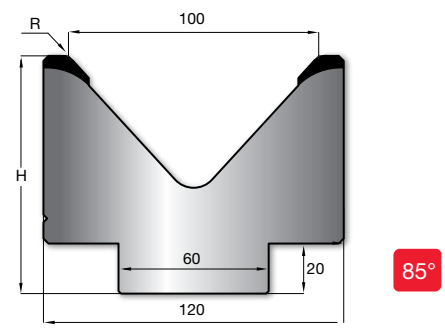
415 mm
835 mm
805 mm

α R H T/mt Mt
20.214 85° 6.00 80.00 150 ▶



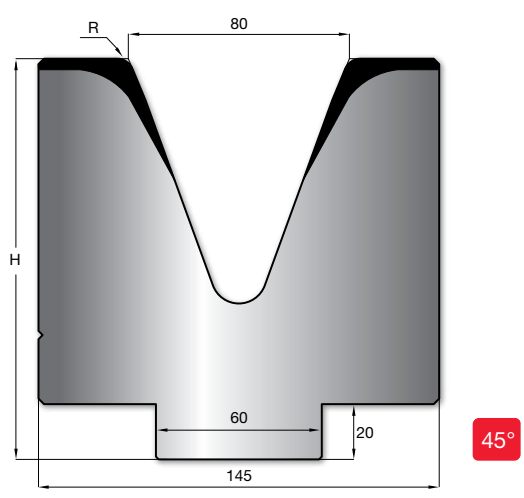
415 mm
835 mm
805 mm

α R H T/mt Mt
20.215 85° 7.00 95.00 150 ▶



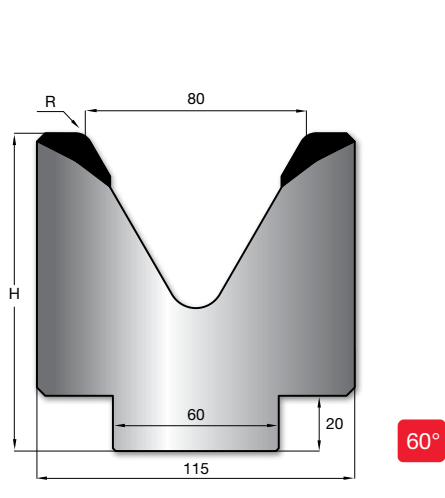
415 mm
835 mm
805 mm

α R H T/mt Mt
20.380 45° 6.00 145.00 150 ▶



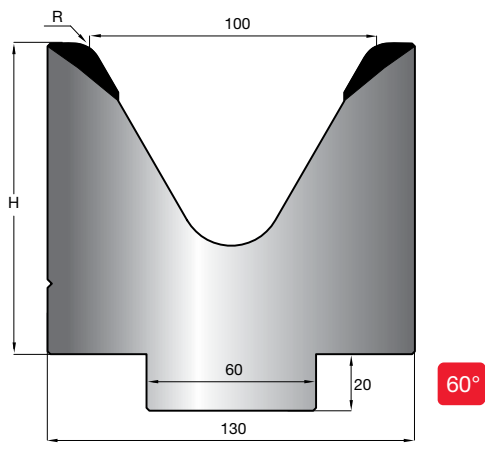
415 mm
835 mm
805 mm

α R H T/mt Mt
20.680 60° 6.00 115.00 150 ▶



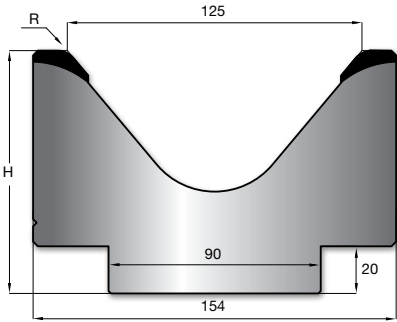
415 mm
835 mm
805 mm

α R H T/mt Mt
20.610 60° 10.00 130.00 150 ▶



415 mm
835 mm
805 mm

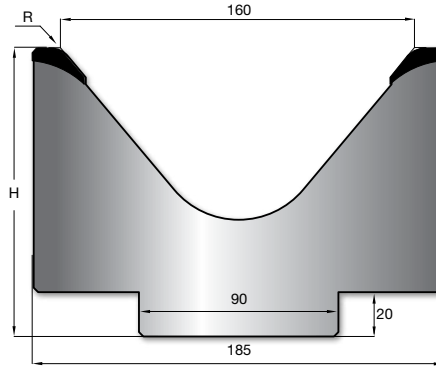
20.216 α R H T/mt Mt
80° 9.00 103.00 150



80°

415 mm
835 mm
805 mm

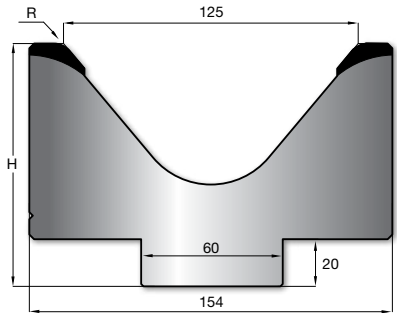
20.217 α R H T/mt Mt
80° 10.00 130.00 150



80°

415 mm
835 mm
805 mm

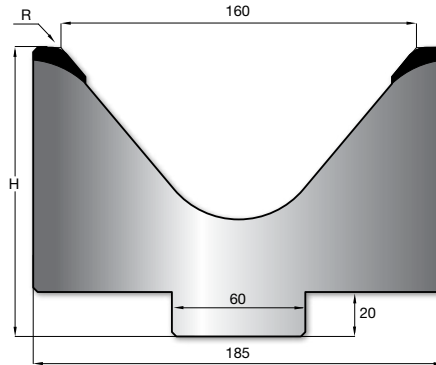
21.125 α R H T/mt Mt
80° 9.00 103.00 150



80°

415 mm
835 mm
805 mm

21.160 α R H T/mt Mt
80° 10.00 130.00 150



80°

Scan code to link to detail DXF and PDF profile files.



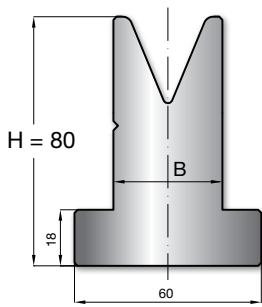
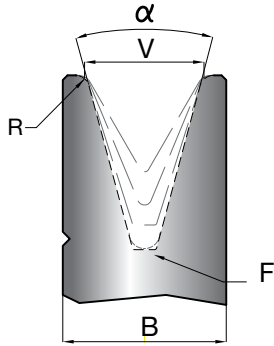
<https://www.mate.com/technical-resources/press-brake-tooling/files/>

H=80

415 mm 835 mm 805 mm
















































PILLAR DIES H80

| Legend | |
|--------|----------|
| F | = bottom |
| R | = radius |



| | α | V | R | B | F | T/m | Mt |
|--------|----------|----|-----|----|-------|-----|----|
| 20.243 | 90° | 6 | 0,4 | 14 | R 0,5 | 100 | ▶ |
| 20.258 | 90° | 8 | 0,5 | 14 | R 0,5 | 100 | ▶ |
| 20.244 | 90° | 10 | 0,6 | 18 | R 0,5 | 100 | ▶ |
| 20.245 | 90° | 12 | 0,8 | 18 | R 0,5 | 100 | ▶ |
| 20.246 | 90° | 16 | 1,0 | 24 | R 0,5 | 100 | ▶ |
| 20.806 | 88° | 6 | 0,8 | 14 | R 0,5 | 100 | ▶ |
| 20.808 | 88° | 8 | 1,0 | 14 | R 0,5 | 100 | ▶ |
| 20.810 | 88° | 10 | 1,2 | 18 | R 0,5 | 100 | ▶ |
| 20.371 | 88° | 12 | 1,5 | 18 | R 0,5 | 100 | ▶ |
| 20.327 | 88° | 16 | 2,0 | 24 | R 0,5 | 100 | ▶ |
| 20.310 | 88° | 20 | 2,0 | 30 | R 1,0 | 100 | ▶ |
| 20.309 | 88° | 25 | 3,0 | 35 | R 1,0 | 100 | ▶ |
| 20.506 | 85° | 6 | 1,5 | 14 | R 0,5 | 100 | ▶ |
| 20.508 | 85° | 8 | 2,0 | 14 | R 0,5 | 100 | ▶ |
| 20.510 | 85° | 10 | 2,5 | 18 | R 0,5 | 100 | ▶ |
| 20.512 | 85° | 12 | 3,0 | 18 | R 0,5 | 100 | ▶ |
| 20.516 | 85° | 16 | 3,5 | 24 | R 0,5 | 100 | ▶ |
| 20.520 | 85° | 20 | 4,0 | 30 | R 1,0 | 100 | ▶ |
| 20.525 | 85° | 25 | 5,0 | 35 | R 1,0 | 100 | ▶ |
| 20.297 | 60° | 6 | 0,4 | 14 | R 0,5 | 60 | ▶ |
| 20.298 | 60° | 8 | 0,5 | 14 | R 0,5 | 60 | ▶ |
| 20.299 | 60° | 10 | 0,6 | 18 | R 0,5 | 60 | ▶ |
| 20.300 | 60° | 12 | 0,8 | 18 | R 0,5 | 60 | ▶ |
| 20.301 | 60° | 16 | 1,6 | 24 | R 0,7 | 60 | ▶ |
| 20.308 | 60° | 20 | 2,0 | 30 | R 1,0 | 60 | ▶ |
| 20.311 | 60° | 25 | 3,0 | 35 | R 1,0 | 60 | ▶ |
| 20.328 | 45° | 6 | 0,6 | 14 | R 0,8 | 50 | ▶ |
| 20.329 | 45° | 8 | 0,8 | 18 | R 0,8 | 50 | ▶ |
| 20.330 | 45° | 10 | 1,0 | 18 | R 0,8 | 50 | ▶ |
| 20.331 | 45° | 12 | 1,5 | 24 | R 0,8 | 50 | ▶ |
| 20.332 | 45° | 16 | 2,0 | 24 | R 1,5 | 50 | ▶ |
| 20.333 | 45° | 20 | 2,5 | 30 | R 1,5 | 50 | ▶ |
| 20.334 | 45° | 25 | 3,0 | 35 | R 1,5 | 50 | ▶ |
| 20.406 | 35° | 6 | 1,5 | 14 | R 1,0 | 40 | ▶ |
| 20.408 | 35° | 8 | 2,0 | 18 | F 2,0 | 40 | ▶ |
| 20.410 | 35° | 10 | 2,5 | 24 | F 2,0 | 55 | ▶ |
| 20.412 | 35° | 12 | 3,0 | 24 | F 2,0 | 45 | ▶ |
| 20.416 | 35° | 16 | 3,5 | 30 | F 2,0 | 50 | ▶ |
| 20.420 | 35° | 20 | 4,0 | 35 | F 5,0 | 60 | ▶ |
| 20.425 | 35° | 25 | 5,0 | 40 | F 5,0 | 60 | ▶ |
| 20.317 | 30° | 6 | 0,6 | 14 | R 1,0 | 35 | ▶ |
| 20.318 | 30° | 8 | 0,8 | 18 | F 2,0 | 35 | ▶ |
| 20.319 | 30° | 10 | 1,0 | 24 | F 2,0 | 50 | ▶ |
| 20.320 | 30° | 12 | 1,5 | 24 | F 2,0 | 40 | ▶ |
| 20.321 | 30° | 16 | 2,0 | 30 | F 5,0 | 45 | ▶ |
| 20.322 | 30° | 20 | 2,5 | 35 | F 5,0 | 50 | ▶ |
| 20.323 | 30° | 25 | 3,0 | 40 | F 5,0 | 50 | ▶ |

90° 88° 85° 60° 45° 35° 30°

| | | | | | |
|--------|---|--------|---|--------|---|
| 20.243 |  | 20.319 |  | 20.410 |  |
| 20.244 |  | 20.320 |  | 20.412 |  |
| 20.245 |  | 20.321 |  | 20.416 |  |
| 20.246 |  | 20.322 |  | 20.420 |  |
| 20.258 |  | 20.323 |  | 20.425 |  |
| 20.297 |  | 20.327 |  | 20.506 |  |
| 20.298 |  | 20.328 |  | 20.508 |  |
| 20.299 |  | 20.329 |  | 20.510 |  |
| 20.300 |  | 20.330 |  | 20.512 |  |
| 20.301 |  | 20.331 |  | 20.516 |  |
| 20.308 |  | 20.332 |  | 20.520 |  |
| 20.309 |  | 20.333 |  | 20.525 |  |
| 20.310 |  | 20.334 |  | 20.806 |  |
| 20.311 |  | 20.371 |  | 20.808 |  |
| 20.317 |  | 20.406 |  | 20.810 |  |
| 20.318 |  | 20.408 |  | | |

Scan code to link to detail DXF and PDF profile files.

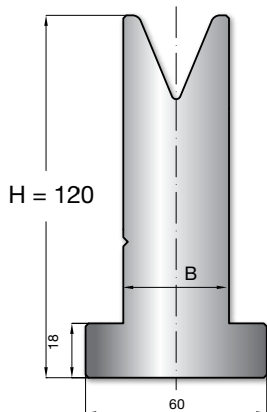
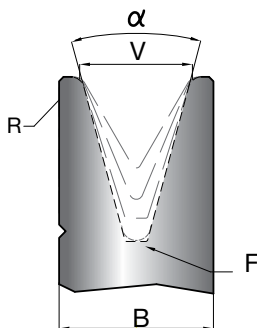


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H=120
















































415 mm 835 mm 805 mm

| | |
|--------|----------|
| Legend | |
| F | = flat |
| R | = radius |



| | α | V | R | B | F | T/m | Mt |
|--------|----------|----|-----|----|-------|-----|----|
| 20.361 | 90° | 6 | 0,4 | 14 | R 0,5 | 100 | ▶ |
| 20.362 | 90° | 8 | 0,5 | 14 | R 0,5 | 100 | ▶ |
| 20.363 | 90° | 10 | 0,6 | 18 | R 0,5 | 100 | ▶ |
| 20.364 | 90° | 12 | 0,8 | 18 | R 0,5 | 100 | ▶ |
| 20.381 | 90° | 16 | 1,0 | 24 | R 0,5 | 100 | ▶ |
| 21.806 | 88° | 6 | 0,8 | 14 | R 0,5 | 100 | ▶ |
| 21.808 | 88° | 8 | 1,0 | 14 | R 0,5 | 100 | ▶ |
| 21.810 | 88° | 10 | 1,2 | 18 | R 0,5 | 100 | ▶ |
| 20.382 | 88° | 12 | 1,5 | 18 | R 0,5 | 100 | ▶ |
| 20.383 | 88° | 16 | 2,0 | 24 | R 0,5 | 100 | ▶ |
| 20.384 | 88° | 20 | 2,0 | 30 | R 1,0 | 100 | ▶ |
| 20.385 | 88° | 25 | 3,0 | 35 | R 1,0 | 100 | ▶ |
| 21.506 | 85° | 6 | 1,5 | 14 | R 0,5 | 100 | ▶ |
| 21.508 | 85° | 8 | 2,0 | 14 | R 0,5 | 100 | ▶ |
| 21.510 | 85° | 10 | 2,5 | 18 | R 0,5 | 100 | ▶ |
| 21.512 | 85° | 12 | 3,0 | 18 | R 0,5 | 100 | ▶ |
| 21.516 | 85° | 16 | 3,5 | 24 | R 0,5 | 100 | ▶ |
| 21.520 | 85° | 20 | 4,0 | 30 | R 1,0 | 100 | ▶ |
| 21.525 | 85° | 25 | 5,0 | 35 | R 1,0 | 100 | ▶ |
| 20.386 | 60° | 6 | 0,4 | 14 | R 0,5 | 60 | ▶ |
| 20.387 | 60° | 8 | 0,5 | 14 | R 0,5 | 60 | ▶ |
| 20.388 | 60° | 10 | 0,6 | 18 | R 0,5 | 60 | ▶ |
| 20.389 | 60° | 12 | 0,8 | 18 | R 0,5 | 60 | ▶ |
| 20.390 | 60° | 16 | 1,6 | 24 | R 0,7 | 60 | ▶ |
| 20.391 | 60° | 20 | 2,0 | 30 | R 1,0 | 60 | ▶ |
| 20.392 | 60° | 25 | 3,0 | 35 | R 1,0 | 60 | ▶ |
| 20.393 | 45° | 6 | 0,6 | 14 | R 0,8 | 50 | ▶ |
| 20.394 | 45° | 8 | 0,8 | 18 | R 0,8 | 50 | ▶ |
| 20.395 | 45° | 10 | 1,0 | 18 | R 0,8 | 50 | ▶ |
| 20.396 | 45° | 12 | 1,5 | 24 | R 0,8 | 50 | ▶ |
| 20.397 | 45° | 16 | 2,0 | 24 | R 1,5 | 50 | ▶ |
| 20.398 | 45° | 20 | 2,5 | 30 | R 1,5 | 50 | ▶ |
| 20.399 | 45° | 25 | 3,0 | 35 | R 1,5 | 50 | ▶ |
| 21.406 | 35° | 6 | 1,5 | 14 | R 1,0 | 40 | ▶ |
| 21.408 | 35° | 8 | 2,0 | 18 | F 2,0 | 40 | ▶ |
| 21.410 | 35° | 10 | 2,5 | 24 | F 2,0 | 55 | ▶ |
| 21.412 | 35° | 12 | 3,0 | 24 | F 2,0 | 45 | ▶ |
| 21.416 | 35° | 16 | 3,5 | 30 | F 2,0 | 50 | ▶ |
| 21.420 | 35° | 20 | 4,0 | 35 | F 5,0 | 60 | ▶ |
| 21.425 | 35° | 25 | 5,0 | 40 | F 5,0 | 60 | ▶ |
| 20.351 | 30° | 6 | 0,6 | 14 | R 1,0 | 35 | ▶ |
| 20.352 | 30° | 8 | 0,8 | 18 | F 2,0 | 35 | ▶ |
| 20.353 | 30° | 10 | 1,0 | 24 | F 2,0 | 50 | ▶ |
| 20.354 | 30° | 12 | 1,5 | 24 | F 2,0 | 40 | ▶ |
| 20.401 | 30° | 16 | 2,0 | 30 | F 5,0 | 45 | ▶ |
| 20.402 | 30° | 20 | 2,5 | 35 | F 5,0 | 50 | ▶ |
| 20.403 | 30° | 25 | 3,0 | 40 | F 5,0 | 50 | ▶ |

90° 88° 85° 60° 45° 35° 30°

| | | | | | |
|--------|---|--------|---|--------|---|
| 20.351 |  | 20.389 |  | 21.410 |  |
| 20.352 |  | 20.390 |  | 21.412 |  |
| 20.353 |  | 20.391 |  | 21.416 |  |
| 20.354 |  | 20.392 |  | 21.420 |  |
| 20.361 |  | 20.393 |  | 21.425 |  |
| 20.362 |  | 20.394 |  | 21.506 |  |
| 20.363 |  | 20.395 |  | 21.508 |  |
| 20.364 |  | 20.396 |  | 21.510 |  |
| 20.381 |  | 20.397 |  | 21.512 |  |
| 20.382 |  | 20.398 |  | 21.516 |  |
| 20.383 |  | 20.399 |  | 21.520 |  |
| 20.384 |  | 20.401 |  | 21.525 |  |
| 20.385 |  | 20.402 |  | 21.806 |  |
| 20.386 |  | 20.403 |  | 21.808 |  |
| 20.387 |  | 21.406 |  | 21.810 |  |
| 20.388 |  | 21.408 |  | | |

Scan code to link to detail DXF and PDF profile files.

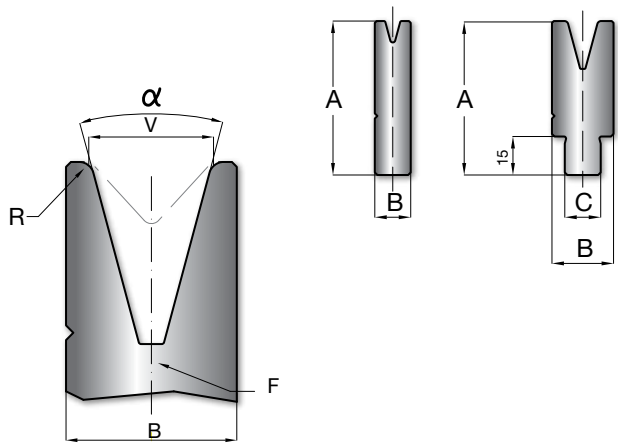


<https://www.mate.com/technical-resources/press-brake-tooling/files/>

DIE INSERTS DATA TABLE

- 415 mm
- 835 mm
- 805 mm

Legend
 F = flat
 R = radius



- 415 mm
- 835 mm
- 805 mm

| | V | α | A | B | C | R | F | T/m | Mt |
|---------------|----|-----|----|----|----|-----|-------|-----|----|
| 22.804 | 4 | 88° | 60 | 14 | / | 0,6 | R 0,5 | 100 | ▶ |
| 22.806 | 6 | 88° | 60 | 14 | / | 0,8 | R 0,5 | 100 | ▶ |
| 22.808 | 8 | 88° | 60 | 14 | / | 1,0 | R 0,5 | 100 | ▶ |
| 22.810 | 10 | 88° | 60 | 18 | 14 | 1,2 | R 0,5 | 100 | ▶ |
| 22.812 | 12 | 88° | 60 | 18 | 14 | 1,5 | R 0,5 | 100 | ▶ |
| 22.816 | 16 | 88° | 60 | 24 | 14 | 2,0 | R 0,5 | 100 | ▶ |
| 22.820 | 20 | 88° | 60 | 30 | 14 | 2,0 | R 1,0 | 100 | ▶ |
| 22.825 | 25 | 88° | 60 | 35 | 14 | 3,0 | R 1,0 | 100 | ▶ |
| 22.306 | 6 | 30° | 60 | 14 | / | 0,6 | R 1,0 | 35 | ▶ |
| 22.308 | 8 | 30° | 60 | 18 | 14 | 0,8 | F 2,0 | 35 | ▶ |
| 22.310 | 10 | 30° | 60 | 24 | 14 | 1,0 | F 2,0 | 50 | ▶ |
| 22.312 | 12 | 30° | 60 | 24 | 14 | 1,5 | F 2,0 | 40 | ▶ |
| 22.316 | 16 | 30° | 60 | 30 | 14 | 2,0 | F 5,0 | 45 | ▶ |
| 22.320 | 20 | 30° | 60 | 35 | 14 | 2,5 | F 5,0 | 50 | ▶ |
| 22.325 | 25 | 30° | 65 | 45 | 14 | 3,0 | F 8,0 | 50 | ▶ |

88° 30°

Scan code to link to detail DXF and PDF profile files.

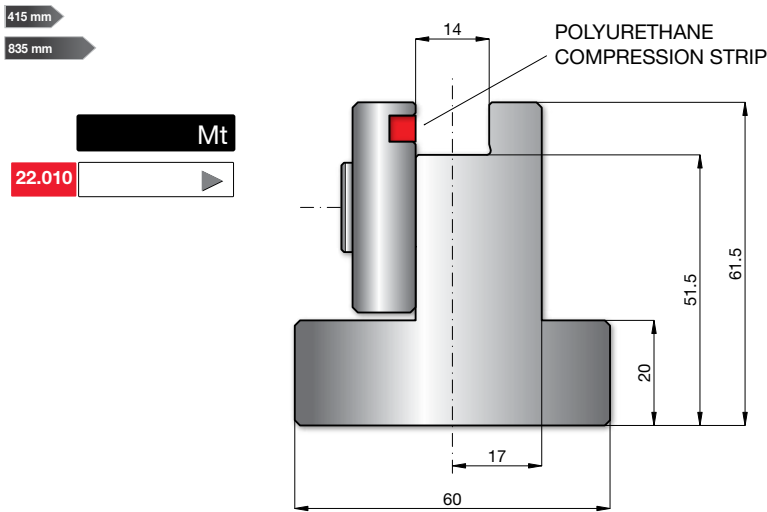
<https://www.mate.com/technical-resources/press-brake-tooling/files/>



DIE INSERTS HOLDER

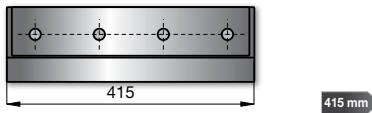
| | | | | | |
|--------|--|--------|--|--------|--|
| 22.306 | | 22.320 | | 22.810 | |
| 22.308 | | 22.325 | | 22.812 | |
| 22.310 | | 22.804 | | 22.816 | |
| 22.312 | | 22.806 | | 22.820 | |
| 22.316 | | 22.808 | | 22.825 | |

DIE INSERTS HOLDER

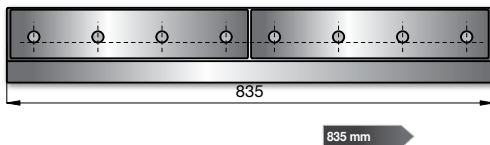


Polyurethane compression strip is especially helpful when clamping segmented die inserts.

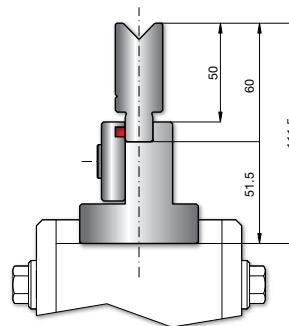
HALF LENGTH (M)



STANDARD LENGTH (S)



ASSEMBLY SCHEME



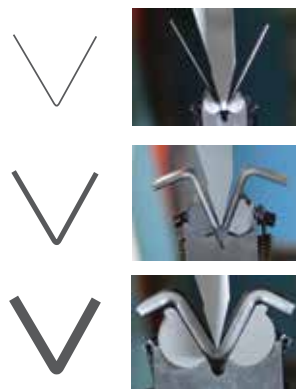
WHY USE MATE® CLEANBEND™?

Mate® CleanBend™ forming technology is designed to enable high quality sheet metal forming using rotating supports. The process mimics a folding operation. The result is a clean bend with minimal to no marking of the sheet metal.

Primary uses and applications:

- Bending a short flange
- Bending a flange to a diagonal sharp
- Bending across pre-existing holes
- Bending across a notch or gap
- Bending sensitive or delicate materials
- Bending highly polished materials
- Bending painted or coated surfaces
- Bending materials with foil or plastic coverings
- Bending tread plate

**Up to 40 degree
bend without
sheetmarking**



Mate® CleanBend™ Forming Technology is available for press brakes using:

- European Precision Style tooling configured with a rail adapter
- European Precision Style tooling configured for insert style dies
- Wila Trumpf Style die holders
- American Precision Style die holders (adaptor required)

Best Practices:

- Use an acute angle punch.
- Use the center of the die to distribute the force as equally as possible across the die. Avoid side loading.
- Use at least 50% of the die to avoid concentrated loads which can damage the tool and the machine.
- Check that the piece part is clean and burr free.
- Follow recommended maintenance practices.

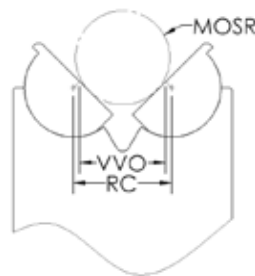
Force factor adjustment:

Because the springs that enable the Mate® CleanBend™ forming technology to function also exert a resisting force while bending, an adjustment to the force calculation should be made. Using a standard air bending chart for calculating tonnage, increase the force value by 0.61 tons per foot (2 tons per meter) to allow for spring resistance.

Helpful CleanBend Information Metric

| Tool Style | Common Name | Part Number | VVO@ 90 | MOSR @ 90 | MOSR @ Max Angle | Max MT @ Max Angle (Mild Steel) | Max Angle of Bend | Max Tonnage Per Meter | Safe Min Bend Line Dim. | Rotation Centers |
|------------|-------------|---------------|---------|-----------|------------------|---------------------------------|-------------------|-----------------------|-------------------------|------------------|
| EPS Rail | CB 200 | 045.033 - 047 | 8.59 | 4.42 | 3.71 | 2.3 | 140 | 100 | 5.00 | 10.00 |
| EPS Rail | CB 300 | 045.052 - 056 | 12.88 | 6.58 | 5.56 | 3.2 | 140 | 130 | 7.50 | 15.00 |
| EPS Rail | CB 600 | 045.057 - 060 | 23.47 | 12.55 | 10.74 | 6.0 | 120 | 200 | 13.50 | 27.00 |
| EPS Insert | CB 200 | 045.083 - 087 | 8.59 | 4.42 | 3.71 | 2.3 | 140 | 100 | 5.00 | 10.00 |
| EPS Insert | CB 300 | 045.092 - 096 | 12.88 | 6.58 | 5.56 | 3.2 | 140 | 130 | 7.50 | 15.00 |
| EPS Insert | CB 450 | 045.113 - 116 | 23.47 | 12.55 | 10.74 | 6.0 | 120 | 200 | 13.50 | 27.00 |

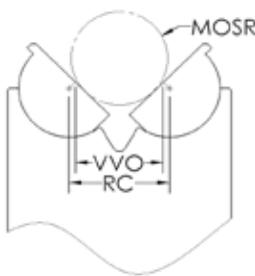
MOSR = Maximum Outside Radius
VVO = Virtual V Opening
RC = Rotation Centers
MT = Material Thickness



Helpful CleanBend Information Inches

| Tool Style | Common Name | Part Number | VVO@ 90 | MOSR @ 90 | MOSR @ Max Angle | Max MT @ Max Angle (Mild Steel) | Max Angle of Bend | Max Tonnage Per Ft | Safe Min Bend Line Dim. | Rotation Centers |
|------------|-------------|---------------|---------|-----------|------------------|---------------------------------|-------------------|--------------------|-------------------------|------------------|
| EPS Rail | CB 200 | 045.033 - 047 | 0.338 | 0.174 | 0.146 | 0.090 | 140 | 34 | 0.197 | 0.394 |
| EPS Rail | CB 300 | 045.052 - 056 | 0.507 | 0.259 | 0.219 | 0.125 | 140 | 44 | 0.295 | 0.591 |
| EPS Rail | CB 600 | 045.057 - 060 | 0.924 | 0.494 | 0.423 | 0.236 | 120 | 68 | 0.531 | 1.062 |
| EPS Insert | CB 200 | 045.083 - 087 | 0.338 | 0.174 | 0.146 | 0.090 | 140 | 34 | 0.197 | 0.394 |
| EPS Insert | CB 300 | 045.092 - 096 | 0.507 | 0.259 | 0.219 | 0.125 | 140 | 44 | 0.295 | 0.591 |
| EPS Insert | CB 450 | 045.113 - 116 | 0.924 | 0.494 | 0.423 | 0.236 | 120 | 68 | 0.531 | 1.062 |

MOSR = Maximum Outside Radius
VVO = Virtual V Opening
RC = Rotation Centers
MT = Material Thickness

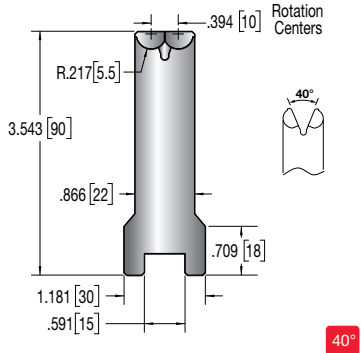


European Precision Style 15mm Rail Type

CB 200 Rail Type VVO H

Maximum Material Thickness — 2.3mm

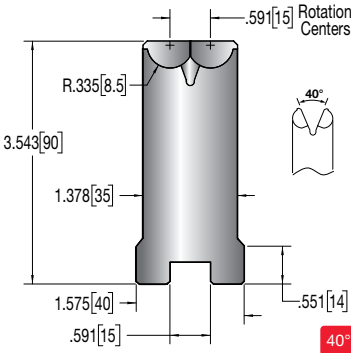
| | | | |
|-----|---------|--------|-------|
| 50 | 045.033 | .34(9) | 90.00 |
| 100 | 045.044 | .34(9) | 90.00 |
| 200 | 045.045 | .34(9) | 90.00 |
| 500 | 045.046 | .34(9) | 90.00 |
| 15 | 045.047 | .34(9) | 90.00 |



CB 300 Rail Type VVO H

Maximum Material Thickness — 3.2mm

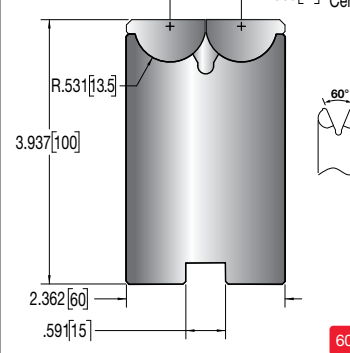
| | | | |
|-----|---------|---------|-------|
| 50 | 045.052 | .50(13) | 90.00 |
| 100 | 045.053 | .50(13) | 90.00 |
| 200 | 045.054 | .50(13) | 90.00 |
| 500 | 045.055 | .50(13) | 90.00 |
| 15 | 045.056 | .50(13) | 90.00 |



CB 600 Rail Type VVO H

Maximum Material Thickness — 6.0mm

| | | | |
|-----|---------|---------|--------|
| 50 | 045.057 | .92(24) | 100.00 |
| 100 | 045.058 | .92(24) | 100.00 |
| 200 | 045.059 | .92(24) | 100.00 |
| 500 | 045.060 | .92(24) | 100.00 |

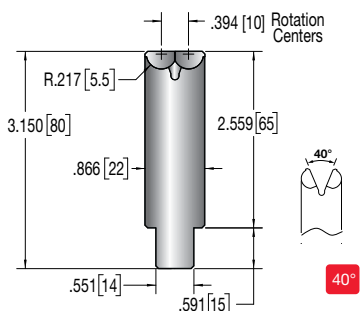


European Precision Style 14mm Insert Type

CB 200 Insert Type VVO H

Maximum Material Thickness — 2.3mm

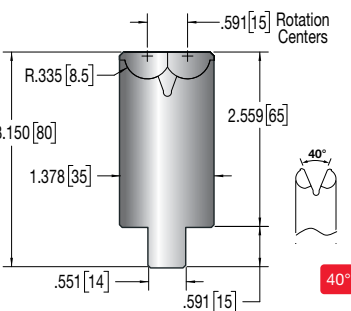
| | | | |
|-----|---------|--------|-------|
| 50 | 045.083 | .34(9) | 65.00 |
| 100 | 045.084 | .34(9) | 65.00 |
| 200 | 045.085 | .34(9) | 65.00 |
| 500 | 045.086 | .34(9) | 65.00 |
| 15 | 045.087 | .34(9) | 65.00 |



CB 300 Insert Type VVO H

Maximum Material Thickness — 3.2mm

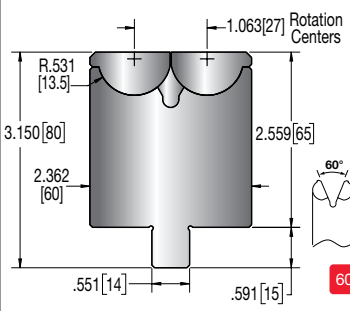
| | | | |
|-----|---------|---------|-------|
| 50 | 045.092 | .50(13) | 65.00 |
| 100 | 045.093 | .50(13) | 65.00 |
| 200 | 045.094 | .50(13) | 65.00 |
| 500 | 045.095 | .50(13) | 65.00 |
| 15 | 045.096 | .50(13) | 65.00 |



CB 450 Insert Type VVO H

Maximum Material Thickness — 6.0mm

| | | | |
|-----|---------|---------|-------|
| 50 | 045.113 | .92(24) | 65.00 |
| 100 | 045.114 | .92(24) | 65.00 |
| 200 | 045.115 | .92(24) | 65.00 |
| 500 | 045.116 | .92(24) | 65.00 |



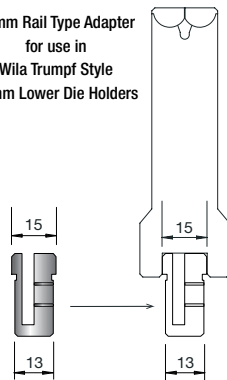
Rail 15mm Adapters

Adapt to Wila Trumpf Style

TWS FITBAR ADAPTER

| | |
|-----|---------|
| 50 | 045.065 |
| 100 | 045.066 |
| 200 | 045.067 |
| 500 | 045.068 |
| 15 | 045.069 |

15mm Rail Type Adapter for use in Wila Trumpf Style 13mm Lower Die Holders

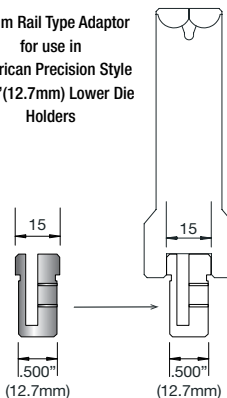


Adapt to American Precision Style

APS FITBAR ADAPTER

| | |
|-----|---------|
| 50 | 045.074 |
| 100 | 045.075 |
| 200 | 045.076 |
| 500 | 045.077 |
| 15 | 045.078 |

15mm Rail Type Adapter for use in American Precision Style .500" (12.7mm) Lower Die Holders

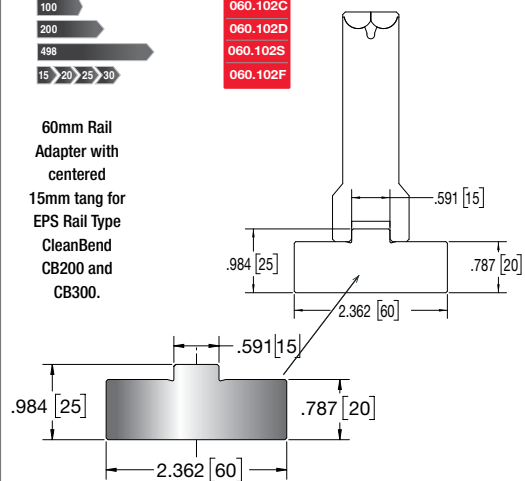


Adapt to European Precision Style

EPS RAIL ADAPTER

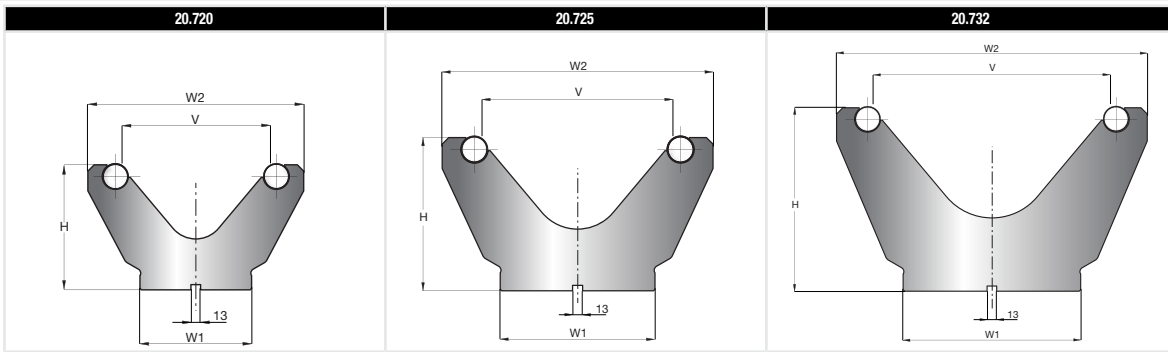
| | |
|-----|----------|
| 50 | 060.102L |
| 100 | 060.102C |
| 200 | 060.102D |
| 498 | 060.102S |
| 15 | 060.102F |

60mm Rail Adapter with centered 15mm tang for EPS Rail Type CleanBend CB200 and CB300.



ROLLING SHOULDER DIES 80° - 3.937"(100mm)

Profiles

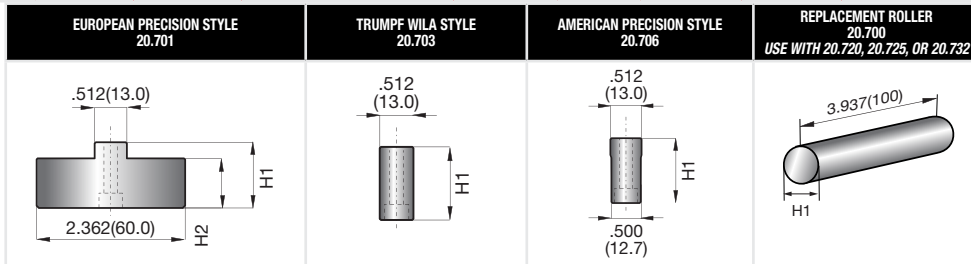


Description

| Part Number | Angle | Height (H1) | | V Opening | | Shoulder Radius | | Base Width (W1) | | Width (W2) | | Tons/ft | Tons/mt | MT | US\$ Price 3.937" 100mm (C) |
|-------------|-------|-------------|---------|-----------|---------|-----------------|--------|-----------------|---------|------------|---------|---------|---------|----|--------------------------------------|
| | | Inches | (mm) | Inches | (mm) | Inches | (mm) | Inches | (mm) | Inches | (mm) | | | | |
| 020.720 | 80° | 6.693 | (170.0) | 7.874 | (200.0) | 1.378 | (35.0) | 5.906 | (150.0) | 11.417 | (290.0) | 67 | 200 | ▶ | |
| 020.725 | 80° | 7.874 | (200.0) | 9.843 | (250.0) | 1.378 | (35.0) | 7.874 | (200.0) | 13.780 | (350.0) | 67 | 200 | ▶ | |
| 020.732 | 80° | 9.843 | (250.0) | 12.598 | (320.0) | 1.378 | (35.0) | 9.449 | (240.0) | 16.535 | (420.0) | 67 | 200 | ▶ | |

ROLLING SHOULDER DIE ADAPTERS - 3.937"(100mm)

Profiles



Description

| Part Number | Height (H1) | | Height (H2) | | Shoulder Radius | | Base Width (W1) | | Base Width (W2) | | US\$ Price |
|-------------|-------------|--------|-------------|--------|-----------------|--------|-----------------|--------|-----------------|--------|------------|
| | Inches | (mm) | Inches | (mm) | Inches | (mm) | Inches | (mm) | Inches | (mm) | |
| 020.701 | 1.043 | (26.5) | 0.787 | (20.0) | | | 0.512 | (13.0) | | | |
| 020.703 | 1.063 | (27.0) | | | | | 0.512 | (13.0) | | | |
| 020.706 | 0.906 | (22.9) | | | | | 0.512 | (13.0) | 0.500 | (12.7) | |
| 020.700 | 1.378 | (35.0) | | | 1.378 | (35.0) | | | | | |



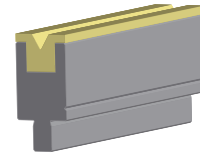
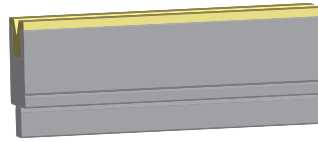
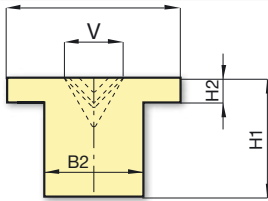
Scan code to link to detail DXF and PDF profile files.

<https://www.mate.com/technical-resources/press-brake-tooling/files/>

[Dimensions in Inches (mm)]. Images are proportionate but not to scale.

NYLON INSERTS

Profile



Description

| Part Number | Angle | Height (H1) | | Height (H2) | | V Opening | | Base Width (B1) | | Base Width (B2) | | Tons/ft | Tons/mt | US\$ Price | |
|-------------|-------|-------------|--------|-------------|-------|-----------|--------|-----------------|--------|-----------------|--------|---------|---------|--------------------|--------------------|
| | | Inches | (mm) | Inches | (mm) | Inches | (mm) | Inches | (mm) | Inches | (mm) | | | 16.339(415) (M) | 32.874(835) (S) |
| 032.306 | 30° | 0.945 | (24.0) | 0.197 | (5.0) | 0.236 | (6.0) | 1.378 | (35.0) | 0.787 | (20.0) | 7 | 20 | | |
| 032.308 | 30° | 0.945 | (24.0) | 0.197 | (5.0) | 0.315 | (8.0) | 1.378 | (35.0) | 0.787 | (20.0) | 7 | 20 | | |
| 032.310 | 30° | 0.945 | (24.0) | 0.197 | (5.0) | 0.394 | (10.0) | 1.378 | (35.0) | 0.787 | (20.0) | 7 | 20 | | |
| 032.406 | 45° | 0.945 | (24.0) | 0.197 | (5.0) | 0.236 | (6.0) | 1.378 | (35.0) | 0.787 | (20.0) | 7 | 20 | | |
| 032.408 | 45° | 0.945 | (24.0) | 0.197 | (5.0) | 0.315 | (8.0) | 1.378 | (35.0) | 0.787 | (20.0) | 7 | 20 | | |
| 032.410 | 45° | 0.945 | (24.0) | 0.197 | (5.0) | 0.394 | (10.0) | 1.378 | (35.0) | 0.787 | (20.0) | 7 | 20 | | |
| 032.412 | 45° | 0.945 | (24.0) | 0.197 | (5.0) | 0.472 | (12.0) | 1.378 | (35.0) | 0.787 | (20.0) | 7 | 20 | | |
| 032.606 | 60° | 0.945 | (24.0) | 0.197 | (5.0) | 0.236 | (6.0) | 1.378 | (35.0) | 0.787 | (20.0) | 7 | 20 | | |
| 032.608 | 60° | 0.945 | (24.0) | 0.197 | (5.0) | 0.315 | (8.0) | 1.378 | (35.0) | 0.787 | (20.0) | 7 | 20 | | |
| 032.610 | 60° | 0.945 | (24.0) | 0.197 | (5.0) | 0.394 | (10.0) | 1.378 | (35.0) | 0.787 | (20.0) | 7 | 20 | | |
| 032.612 | 60° | 0.945 | (24.0) | 0.197 | (5.0) | 0.472 | (12.0) | 1.378 | (35.0) | 0.787 | (20.0) | 7 | 20 | | |
| 032.616 | 60° | 0.945 | (24.0) | 0.197 | (5.0) | 0.630 | (16.0) | 1.378 | (35.0) | 0.787 | (20.0) | 7 | 20 | | |
| 032.806 | 88° | 0.945 | (24.0) | 0.197 | (5.0) | 0.236 | (6.0) | 1.378 | (35.0) | 0.787 | (20.0) | 7 | 20 | | |
| 032.808 | 88° | 0.945 | (24.0) | 0.197 | (5.0) | 0.315 | (8.0) | 1.378 | (35.0) | 0.787 | (20.0) | 7 | 20 | | |
| 032.810 | 88° | 0.945 | (24.0) | 0.197 | (5.0) | 0.394 | (10.0) | 1.378 | (35.0) | 0.787 | (20.0) | 7 | 20 | | |
| 032.812 | 88° | 0.945 | (24.0) | 0.197 | (5.0) | 0.472 | (12.0) | 1.378 | (35.0) | 0.787 | (20.0) | 7 | 20 | | |
| 032.816 | 88° | 0.945 | (24.0) | 0.197 | (5.0) | 0.630 | (16.0) | 1.378 | (35.0) | 0.787 | (20.0) | 7 | 20 | | |

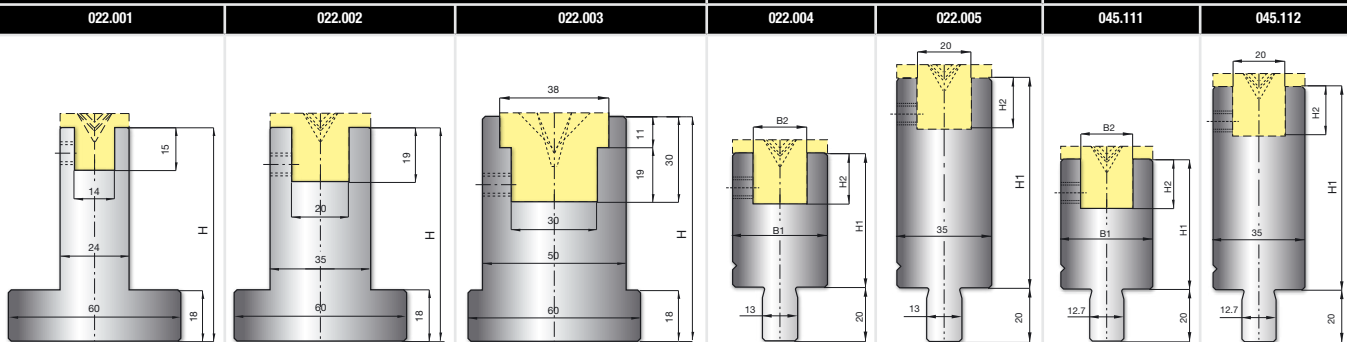
NYLON INSERT HOLDERS

Profile

EUROPEAN PRECISION STYLE

WILA TRUMPF STYLE

AMERICAN PRECISION STYLE



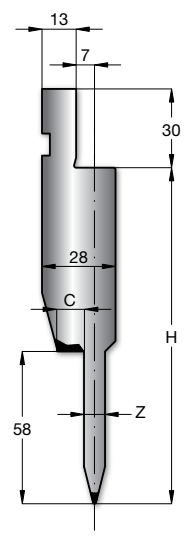
Description

| Part Number | Height (H1) | | Height (H2) | | Base Width (B1) | | Base Width (B2) | | US\$ Price | |
|-------------|-------------|--------|-------------|--------|-----------------|--------|-----------------|--------|--------------------|--------------------|
| | Inches | (mm) | Inches | (mm) | Inches | (mm) | Inches | (mm) | 16.339(415) (M) | 32.874(835) (S) |
| 022.001 | 2.953 | (75.0) | 0.591 | (15.0) | 0.945 | (24.0) | 0.551 | (14.0) | | |
| 022.002 | 2.953 | (75.0) | 0.709 | (18.0) | 1.378 | (35.0) | 0.787 | (20.0) | | |
| 022.003 | 3.110 | (79.0) | 1.181 | (30.0) | 1.969 | (50.0) | 1.181 | (30.0) | | |
| 022.004 | 1.969 | (50.0) | 0.748 | (19.0) | 1.378 | (35.0) | 0.787 | (20.0) | | |
| 022.005 | 3.740 | (95.0) | 0.748 | (19.0) | 1.378 | (35.0) | 0.787 | (20.0) | | |
| 045.111 | 1.969 | (50.0) | 0.748 | (19.0) | 1.378 | (35.0) | 0.787 | (20.0) | | |
| 045.112 | 3.740 | (95.0) | 0.748 | (19.0) | 1.378 | (35.0) | 0.787 | (20.0) | | |

415 mm
835 mm
805 mm

| | α | R | H | Z | C | T/mt | Flattening Force | Mt |
|--------|----------|------|--------|----|----|------|------------------|----|
| 11.550 | 24° | 0.60 | 128.00 | 8 | 10 | 80 | 100 | ▶ |
| 11.554 | 24° | 0.60 | 128.00 | 10 | 11 | 80 | 100 | ▶ |
| 11.560 | 24° | 0.60 | 128.00 | 12 | 10 | 80 | 100 | ▶ |

Z8 = Maximum material thickness 1mm
Z10 = Maximum material thickness 1,5mm
Z12 = Maximum material thickness 2mm



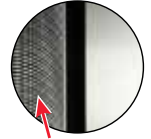
24°

415 mm
835 mm
805 mm

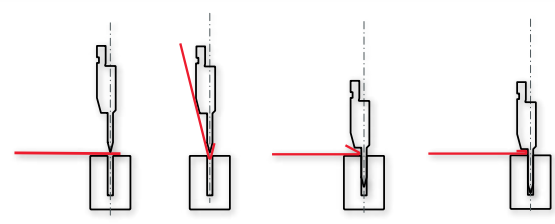
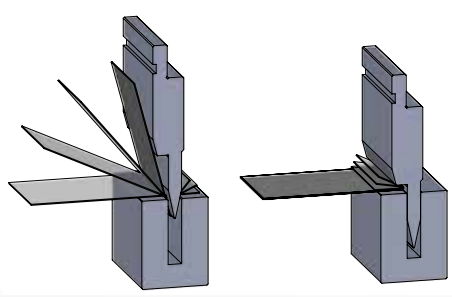
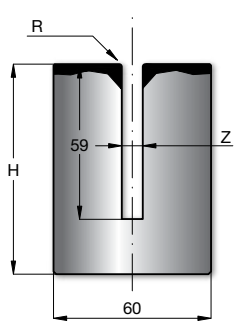
| | R | H | Z | T/mt | Flattening Force | Mt |
|--------|------|-------|------|------|------------------|----|
| 20.550 | 1.00 | 80.00 | 8.2 | 50 | 100 | ▶ |
| 20.554 | 1.00 | 80.00 | 10.2 | 50 | 100 | ▶ |
| 20.560 | 1.00 | 80.00 | 12.2 | 50 | 100 | ▶ |

Z8.2 = Maximum material thickness 1mm
Z10.2 = Maximum material thickness 1,5mm
Z12.2 = Maximum material thickness 2mm

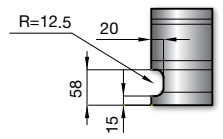
Close-up view of top of hemming die



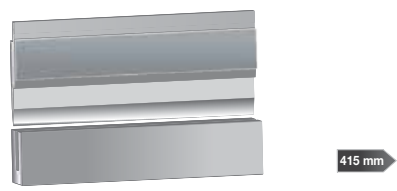
Knurled edge to prevent movement



HORNS SCHEME STANDARD SECTIONING



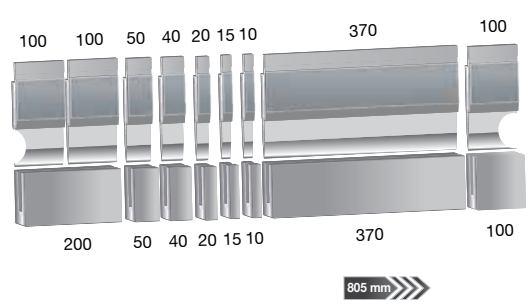
HALF LENGTH - (M)



STANDARD LENGTH - (S)



SECTIONED LENGTH - (F)



Scan code to link to detail DXF and PDF profile files.

<https://www.mate.com/technical-resources/press-brake-tooling/files/>

HEMMING TONNAGE GUIDE

Assumes 60,000psi Tensile Material (Mild Steel)

TEAR DROP HEM



| Material Thickness | Material Thickness | Tear Drop Hem Height | Tear Drop Hem Height | Metric Tons Force Per Meter | US Tons Force Per Ft |
|--------------------|--------------------|----------------------|----------------------|-----------------------------|----------------------|
| T (inch) | T (mm) | HH (inch) | HH (mm) | tons/meter | tons/ft |
| 0.036 | 0.9 | 0.131 | 3.3 | 14 | 5 |
| 0.048 | 1.2 | 0.138 | 3.5 | 19 | 6 |
| 0.060 | 1.5 | 0.181 | 4.6 | 23 | 8 |
| 0.075 | 1.9 | 0.217 | 5.5 | 29 | 10 |
| 0.090 | 2.3 | 0.241 | 6.1 | 46 | 15 |
| 0.105 | 2.7 | 0.289 | 7.3 | 67 | 23 |
| 0.118 | 3.0 | 0.315 | 8.0 | 80 | 27 |

| T (mm) | T (inch) | HH (mm) | HH (inch) | tons/meter | tons/ft |
|--------|----------|---------|-----------|------------|---------|
| 0.6 | 0.024 | 3.0 | 0.118 | 9 | 3 |
| 0.8 | 0.031 | 3.2 | 0.126 | 12 | 4 |
| 1.0 | 0.039 | 3.5 | 0.138 | 15 | 5 |
| 1.3 | 0.049 | 3.8 | 0.150 | 17 | 6 |
| 1.5 | 0.059 | 4.6 | 0.181 | 22 | 7 |
| 2.0 | 0.079 | 5.5 | 0.217 | 30 | 10 |
| 2.5 | 0.098 | 6.5 | 0.256 | 55 | 18 |
| 3.0 | 0.118 | 8.0 | 0.315 | 80 | 27 |

For Stainless Steel multiply force by 2 for approximate tonnage

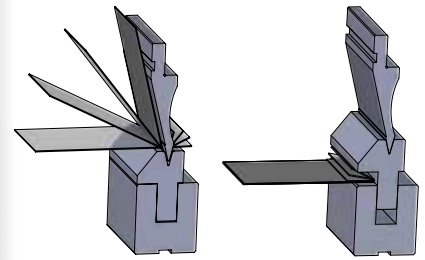
FLAT HEM



| Material Thickness | Material Thickness | Flat Hem Height | Flat Hem Height | Metric Tons Force Per Meter | US Tons Force Per Ft |
|--------------------|--------------------|-----------------|-----------------|-----------------------------|----------------------|
| T (inch) | T (mm) | HH (inch) | HH (mm) | tons/meter | tons/ft |
| 0.036 | 0.9 | 0.072 | 1.8 | 37 | 12 |
| 0.048 | 1.2 | 0.096 | 2.4 | 49 | 16 |
| 0.060 | 1.5 | 0.120 | 3.0 | 61 | 20 |
| 0.075 | 1.9 | 0.150 | 3.8 | 77 | 26 |
| 0.090 | 2.3 | 0.180 | 4.6 | 92 | 31 |

| T (mm) | T (inch) | HH (mm) | HH (inch) | tons/meter | tons/ft |
|--------|----------|---------|-----------|------------|---------|
| 0.6 | 0.024 | 1.2 | 0.047 | 23 | 8 |
| 0.8 | 0.031 | 1.6 | 0.063 | 32 | 11 |
| 1.0 | 0.039 | 2.0 | 0.079 | 40 | 13 |
| 1.3 | 0.049 | 2.5 | 0.098 | 50 | 17 |
| 1.5 | 0.059 | 3.0 | 0.118 | 63 | 21 |
| 2.0 | 0.079 | 4.0 | 0.157 | 80 | 27 |

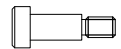
For Stainless Steel multiply force by 2 for approximate tonnage



SPARE PARTS

70.100

70.102



SPRING LOADED HEMMING DIE

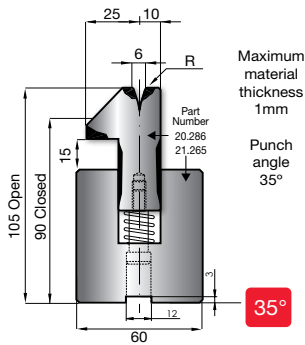
Profiles

415 mm

835 mm

α R T/mt Mt

20.264 35° 1.00 60

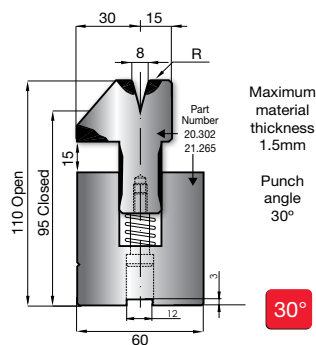


415 mm

835 mm

α R T/mt Mt

20.303 30° 1.50 80

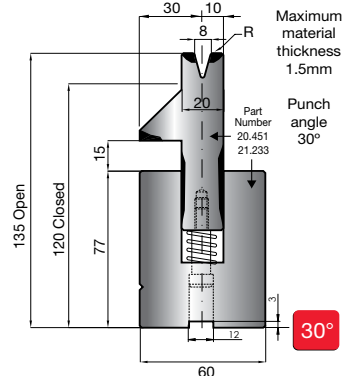


415 mm

835 mm

α R T/mt Mt

20.450 30° 1.50 60

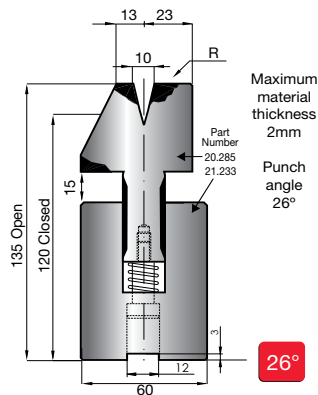


415 mm

835 mm

α R T/mt Mt

20.231 26° 1.50 100

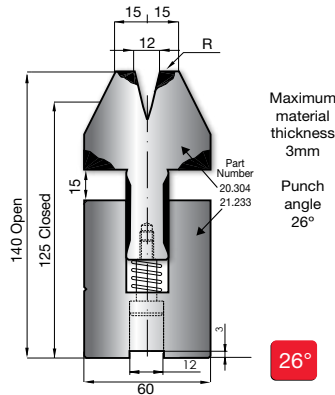


415 mm

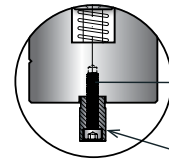
835 mm

α R T/mt Mt

20.305 26° 3.00 100



Adapters - Bar Insert Tangs



SHC11965

Socket Head Cap Screw

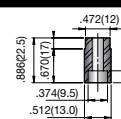
Tang

60.100

Wila-Trumpf Style

412 mm

830 mm

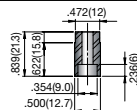


60.200

American Precision Style

412 mm

830 mm



NOTE: PUNCH POINT ANGLE MUST MATCH DIE V OPENING ANGLE.

EXTENSIONS

150 mm

| | L | H | T/mt | Mt |
|---------------|-----|--------|------|----|
| 50.671 | 150 | 100.00 | 100 | ▶ |

USE WITH SAFETY CLAMP PLATE 50.571, 50.910, 50.551, 50.905, 50.900, OR 50.903

Non-Adjustable Extension
CLAMP PLATES NOT INCLUDED

150 mm

| | L | H | T/mt | Mt |
|---------------|-----|-------|------|----|
| 50.959 | 150 | 60.00 | 100 | ▶ |

50.712

Non-Adjustable Extension
CLAMP PLATES NOT INCLUDED

70 mm
150 mm

| | L | H | T/mt | Mt |
|---------------|-----|--------|------|----|
| 50.666 | 150 | 100.00 | 100 | ▶ |
| 50.668 | 150 | 120.00 | 100 | ▶ |
| 50.512 | 150 | 150.00 | 100 | ▶ |
| 50.705 | 70 | 100.00 | 100 | ▶ |
| 50.706 | 70 | 120.00 | 100 | ▶ |
| 50.708 | 70 | 150.00 | 100 | ▶ |

Adjustable Extension
CLAMP PLATES NOT INCLUDED

70 mm
150 mm

| | L | H | T/mt | Mt |
|---------------|-----|--------|------|----|
| 50.667 | 150 | 120.00 | 100 | ▶ |
| 50.669 | 150 | 150.00 | 100 | ▶ |
| 50.707 | 70 | 120.00 | 100 | ▶ |
| 50.710 | 70 | 150.00 | 100 | ▶ |

Adjustable Extension
CLAMP PLATES NOT INCLUDED

CLAMP PLATES FOR ADAPTERS - L=70mm

CLAMP PLATES INCLUDE 2 BOLTS, 2 SPRINGS, 1 CLAMP

70 mm

50.693

SAFETY CLAMP PLATE


| CLAMP QUANTITY GUIDE | |
|----------------------|----------|
| LENGTH | QUANTITY |
| 1000mm | 5 |
| 2100mm | 10 |
| 3100mm | 15 |
| 4100mm | 20 |

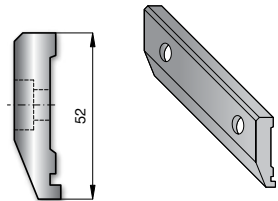
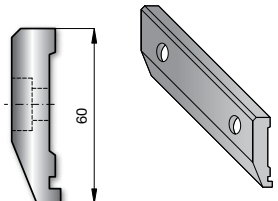
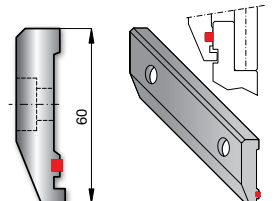
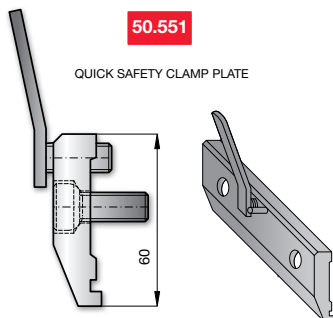
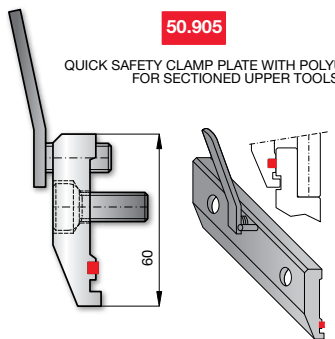
Scan code to link to detail DXF and PDF profile files.

<https://www.mate.com/technical-resources/press-brake-tooling/files/>



CLAMP PLATES FOR ADAPTERS – L=150mm

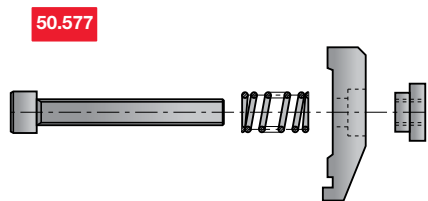
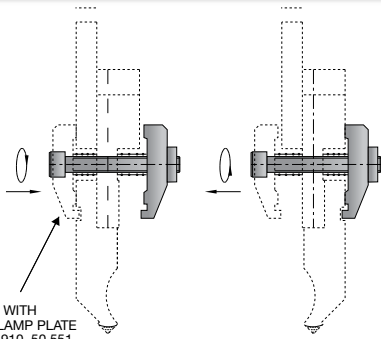
CLAMP PLATES INCLUDE 2 BOLTS, 2 SPRINGS, 1 CLAMP 

| | | |
|--|---|--|
| <p>50.712</p> <p>SAFETY CLAMP PLATE</p>  | <p>50.571</p> <p>SAFETY CLAMP PLATE</p>  | <p>50.910</p> <p>SAFETY CLAMP PLATE WITH POLYURETHANE FOR SECTIONED UPPER TOOLS</p>  |
| <p>50.551</p> <p>QUICK SAFETY CLAMP PLATE</p>  | <p>50.905</p> <p>QUICK SAFETY CLAMP PLATE WITH POLYURETHANE FOR SECTIONED UPPER TOOLS</p>  | |

EQUIPMENT FOR DOUBLE CLAMPING PLATE – L=150mm

INCLUDES 2 BOLTS, 2 SPRINGS, 1 CLAMP, 2 NUTS

50.577

USE WITH SAFETY CLAMP PLATE 50.571, 50.910, 50.551, 50.905, 50.900, OR 50.903

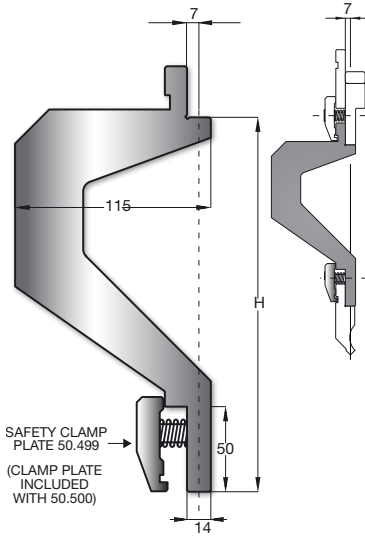
| CLAMP QUANTITY GUIDE | |
|----------------------|----------|
| LENGTH | QUANTITY |
| 1000mm | 5 |
| 2100mm | 10 |
| 3100mm | 15 |
| 4100mm | 20 |

PUNCH ADAPTERS

EUROPEAN PRECISION STYLE EXTENSIONS

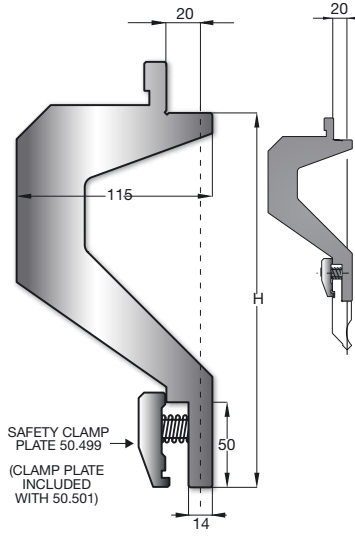
200 mm

| L | H | T/mt | Mt |
|--------|-----|--------|----|
| 50.500 | 200 | 220.00 | 90 |



200 mm

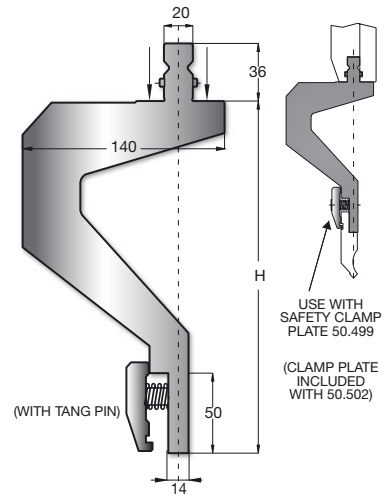
| L | H | T/mt | Mt |
|--------|-----|--------|----|
| 50.501 | 200 | 220.00 | 90 |



WILA TRUMPF STYLE TO EUROPEAN PRECISION STYLE

200 mm

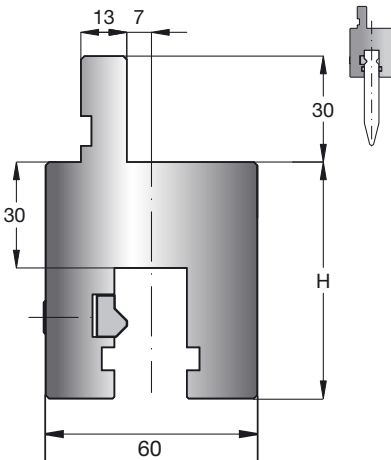
| L | H | T/mt | Mt |
|--------|-----|--------|----|
| 50.502 | 200 | 220.00 | 90 |



EUROPEAN PRECISION STYLE TO WILA TRUMPF STYLE

150 mm

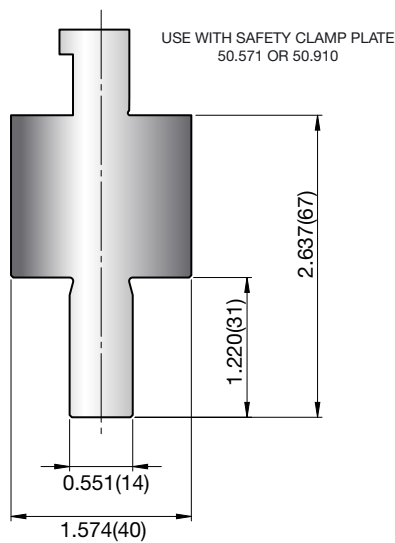
| L | H | T/mt | Mt |
|--------|-----|-------|-----|
| 50.430 | 150 | 67.00 | 100 |



AMERICAN PRECISION STYLE TO EUROPEAN PRECISION STYLE

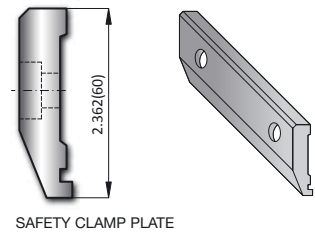
150 mm

| L | H | T/mt | Mt |
|--------|-----|-------|-----|
| 50.950 | 150 | 67.00 | 100 |

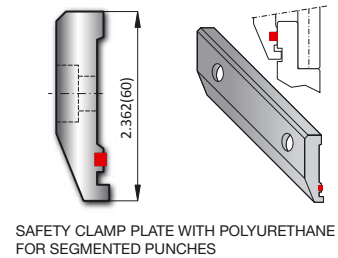


CLAMP PLATES FOR ADAPTERS L=150mm

50.571



50.910



Dimensions are proportionate but not to scale.

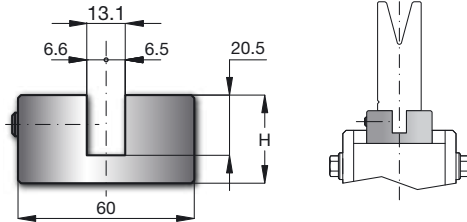
DIE ADAPTERS/EXTENSIONS/COMBINATION

500 mm
1000 mm

EUROPEAN PRECISION STYLE
TO WILA TRUMPF STYLE

H T/mt Mt

60.910 30.00 100 ▶

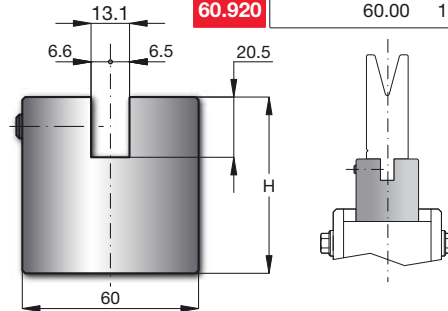


500 mm
1000 mm

EUROPEAN PRECISION STYLE
TO WILA TRUMPF STYLE

H T/mt Mt

60.920 60.00 100 ▶

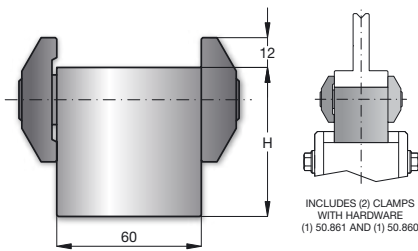


415 mm
835 mm

EUROPEAN PRECISION STYLE
EXTENSION

L H T/mt Mt

60.919 835 55.00 100

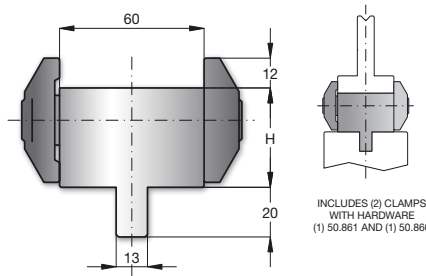


415 mm
835 mm

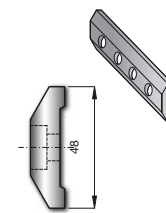
WILA TRUMPF STYLE TO
EUROPEAN PRECISION STYLE

H T/mt Mt

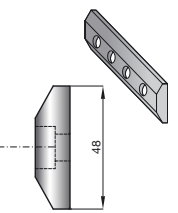
60.925 40.00 100 ▶



412 mm
50.861 CLAMP PLATE FOR
DIE EXTENSION



412 mm
50.860 CLAMP PLATE FOR
DIE EXTENSION

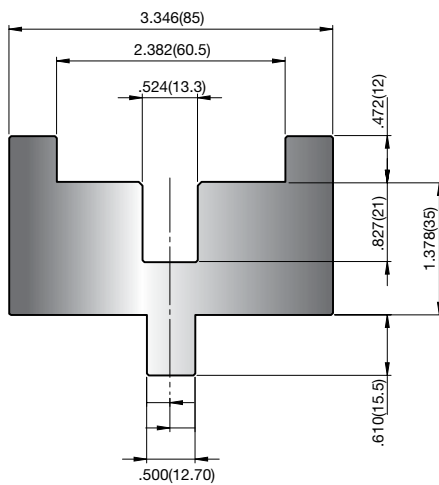


COMBINATION DIE ADAPTER - FOR USE WITH EUROPEAN PRECISION STYLE AND WILA TRUMPF STYLE DIES

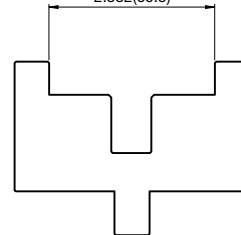
415 mm
835 mm

H T/mt Mt

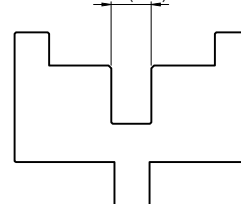
60.980 30 100 ▶



FOR USE WITH EUROPEAN PRECISION STYLE DIES
2.382(60.5)



FOR USE WITH WILA TRUMPF STYLE DIES
.524(13.3)



Scan code to
link to detail
DXF and PDF
profile files.

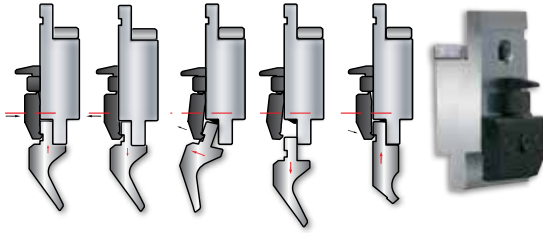


<https://www.mate.com/technical-resources/press-brake-tooling/files/>

SWING™

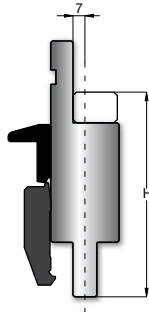
Fast Manual Clamping

OPERATION ILLUSTRATION

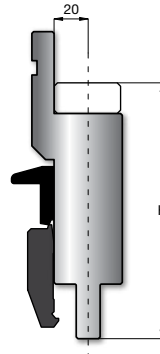


SWING™ FAST MANUAL CLAMPING EUROPEAN PRECISION STYLE

| 150 mm | L | H | T/mt | Mt |
|--------|-----|--------|------|----|
| 50.200 | 150 | 100.00 | 100 | ▶ |
| 50.210 | 150 | 120.00 | 100 | ▶ |
| 50.220 | 150 | 150.00 | 100 | ▶ |

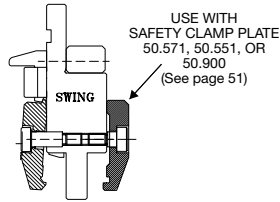
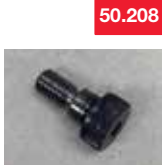


| 150 mm | L | H | T/mt | Mt |
|--------|-----|--------|------|----|
| 50.250 | 150 | 150.00 | 100 | ▶ |

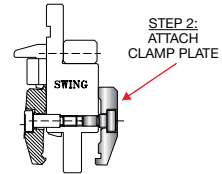
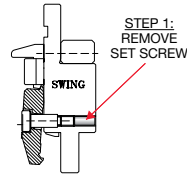


EQUIPMENT FOR DOUBLE CLAMPING PLATE – L=150mm

INCLUDES 2 BOLTS (NO SPRINGS NEEDED)



INSTALLATION INSTRUCTIONS: Before adding the reverse side clamp plate, remove the set screw that secures the front bolt. The set screw is not needed in the reversible configuration.



Scan code to link to detail DXF and PDF profile files.



<https://www.mate.com/technical-resources/press-brake-tooling/files/>

CONTROL EQUIPMENT FOR UPPER AND LOWER PNEUMATIC LINES

Profiles

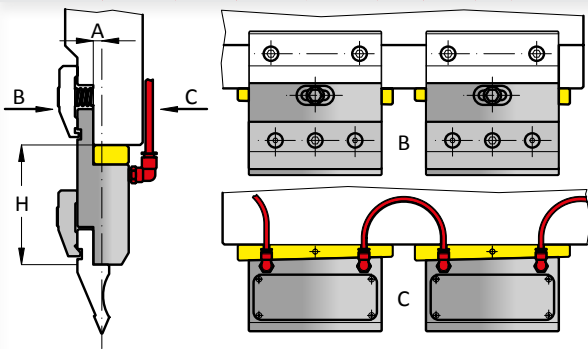


Description

| Part Number | Description | US\$ Price |
|-------------|-------------------------------------|------------|
| 50.650 | PNEUMATIC EQUIPMENT WITH 1 CONTROL | |
| 50.651 | PNEUMATIC EQUIPMENT WITH 2 CONTROLS | |

RAPID - EUROPEAN PRECISION STYLE

Profile

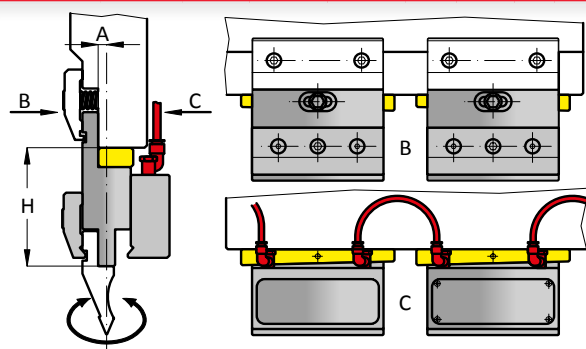


Description

| Part Number | A | | H | | Tons/ft | Tons/mt | MT | Price |
|-------------|--------|------|--------|-------|---------|---------|----|-------|
| | Inches | (mm) | Inches | (mm) | | | | |
| 50.800 | .276 | 7.0 | 3.937 | 100.0 | 34 | 100 | ▶ | |
| 50.805 | .276 | 7.0 | 4.724 | 120.0 | 34 | 100 | ▶ | |
| 50.810 | .276 | 7.0 | 5.906 | 150.0 | 34 | 100 | ▶ | |

RAPID REVERSIBLE - EUROPEAN PRECISION STYLE

Profile

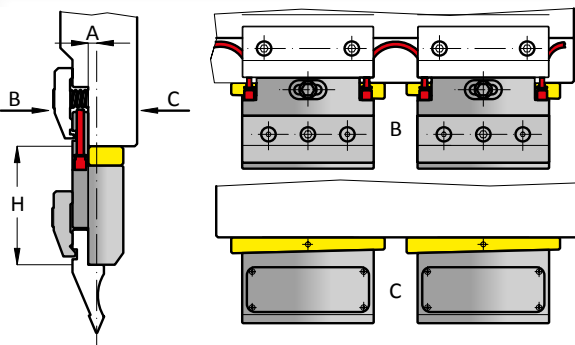


Description

| Part Number | A | | H | | Tons/ft | Tons/mt | MT | Price |
|-------------|--------|------|--------|-------|---------|---------|----|-------|
| | Inches | (mm) | Inches | (mm) | | | | |
| 50.870 | .276 | 7.0 | 3.937 | 100.0 | 34 | 100 | ▶ | |
| 50.875 | .276 | 7.0 | 5.906 | 150.0 | 34 | 100 | ▶ | |
| 50.890 | .787 | 20.0 | 4.724 | 120.0 | 34 | 100 | ▶ | |

RAPID "FP" - EUROPEAN PRECISION STYLE

Profile



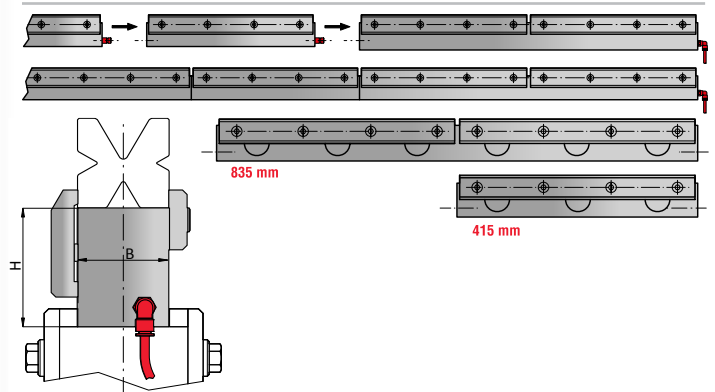
Description

| Part Number | A | | H | | Tons/ft | Tons/mt | MT | Price |
|-------------|--------|------|--------|-------|---------|---------|----|-------|
| | Inches | (mm) | Inches | (mm) | | | | |
| 50.820 | .276 | 7.0 | 3.937 | 100.0 | 34 | 100 | ▶ | |
| 50.830 | .787 | 20.0 | 4.724 | 120.0 | 34 | 100 | ▶ | |
| 50.835 | .787 | 20.0 | 5.906 | 150.0 | 34 | 100 | ▶ | |

MODULAR HOLDER, PNEUMATIC CLAMPING SPRING UNCLAMPING

Profile

ASSEMBLY SCHEME

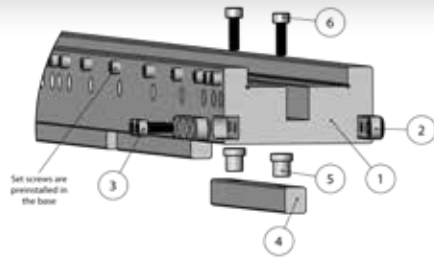


Description

| Part Number | B | | H | | Tons/ft | Tons/mt | MT | US\$ Price | |
|-------------|--------|------|--------|------|---------|---------|----|---------------|---------------|
| | Inches | (mm) | Inches | (mm) | | | | (M) | (S) |
| | | | | | | | | 16.339(415.0) | 32.874(835.0) |
| 60.691 | 2.632 | 60.0 | 3.150 | 80.0 | 30 | 100 | ▶ | | |

*Connecting air lines are standard 6x4mm air hoses.

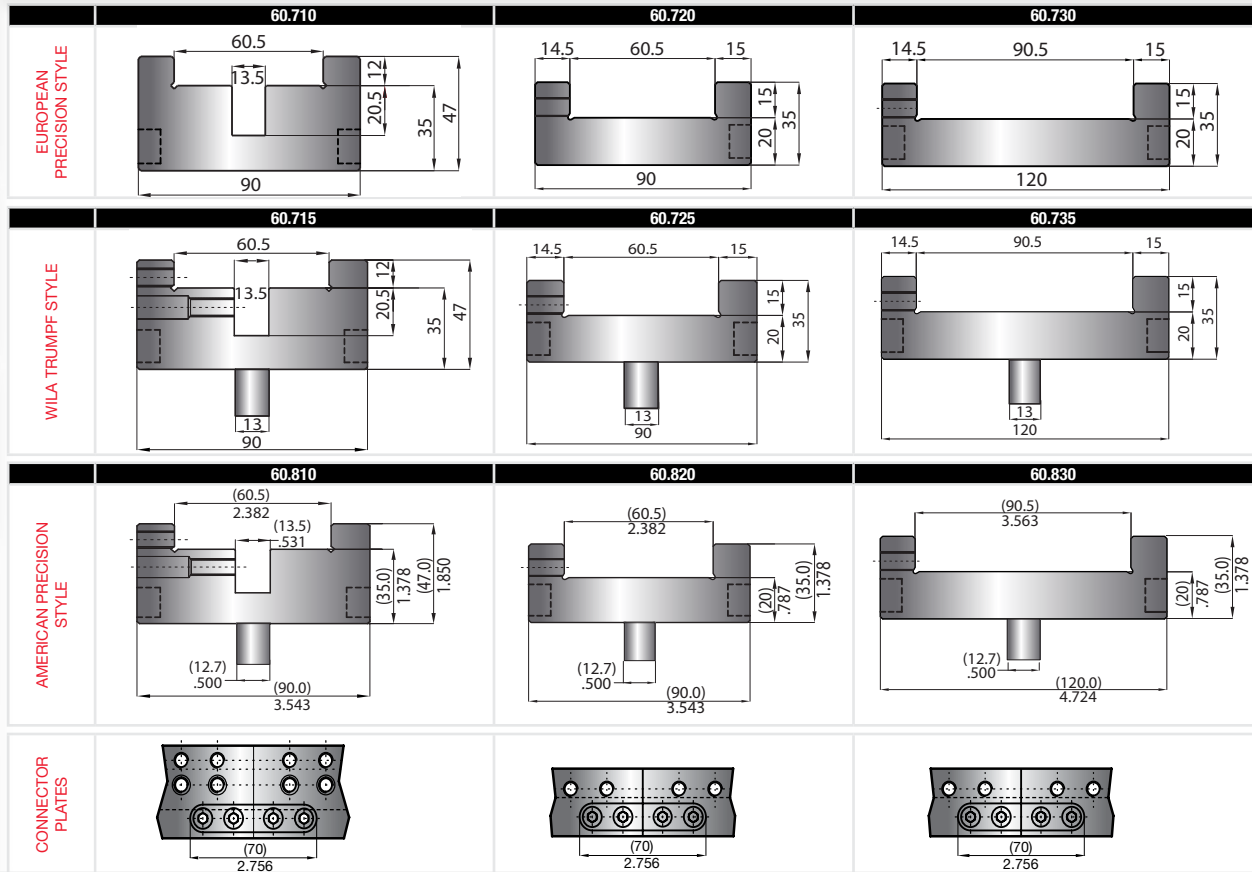
MODULAR DIE HOLDERS



| ITEM | DESCRIPTION |
|------|------------------|
| 1 | Base |
| 2 | Connector plate |
| 3 | Connector bolt |
| 4 | Tang |
| 5 | Tang bolt spacer |
| 6 | Tang bolt |

MODULAR DIE HOLDER FOR DIES WITH 60MM BASE, 90MM BASE, 13MM TANG, OR 12.7MM TANG

Profile - All Modular Die Holders include connector plates and bolts



Description

| Part Number | Body Width | | Base Width | | Height | | Tons/ft | Tons/mt | MT | US\$ Price | | | | |
|---|------------|-------|------------|------|--------|--------|---------|---------|------|------------|--------|-------|--------|--------|
| | Inches | (mm) | Inches | (mm) | Inches | (mm) | | | | Length | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | (M) | (S) | (M) | (S) | |
| | | | | | | Inches | (mm) | Inches | (mm) | | | | | |
| European Precision Style (EPS) | | | | | | | | | | | 20.472 | 520.0 | 41.339 | 1050.0 |
| 60.710 | 3.543 | 90.0 | 2.382 | 60.5 | 1.378 | 35.0 | 34 | 100 | ▶ | | | | | |
| 60.720 | 3.543 | 90.0 | 2.382 | 60.5 | 0.787 | 20.0 | 34 | 100 | ▶ | | | | | |
| 60.730 | 4.724 | 120.0 | 3.563 | 90.5 | 0.787 | 20.0 | 34 | 100 | ▶ | | | | | |
| Wila Trumpf Style (TWS) - includes tang | | | | | | | | | | | | | | |
| 60.715 | 3.543 | 90.0 | 2.382 | 60.5 | 1.378 | 35.0 | 34 | 100 | ▶ | | | | | |
| 60.725 | 3.543 | 90.0 | 2.382 | 60.5 | 0.787 | 20.0 | 34 | 100 | ▶ | | | | | |
| 60.735 | 4.724 | 120.0 | 3.563 | 90.5 | 0.787 | 20.0 | 34 | 100 | ▶ | | | | | |
| American Precision Style (APS) - includes tang | | | | | | | | | | | | | | |
| 60.810 | 3.543 | 90.0 | 2.382 | 60.5 | 1.378 | 35.0 | 34 | 100 | ▶ | | | | | |
| 60.820 | 3.543 | 90.0 | 2.382 | 60.5 | 0.787 | 20.0 | 34 | 100 | ▶ | | | | | |
| 60.830 | 4.724 | 120.0 | 3.563 | 90.5 | 0.787 | 20.0 | 34 | 100 | ▶ | | | | | |

All modular die holders include the connector plates and bolts.



For use with thin and delicate materials. All holders include 2 end caps and cap screws.

| EUROPEAN PRECISION STYLE URETHANE HOLDERS | | | WILA TRUMPF STYLE URETHANE HOLDERS | | | AMERICAN STYLE URETHANE HOLDERS | | | END CAPS | | URETHANE | | | URETHANE WITH HOLE | | |
|---|-------------------------------|------------|------------------------------------|-------------------------------|------------|---------------------------------|-------------------------------|------------|-------------|------------|-------------|-------------------------------|------------|--------------------|-------------------------------|------------|
| | | | | | | | | | | | | | | | | |
| Description | | | Description | | | Description | | | Description | | Description | | | Description | | |
| Part Number | Length | US\$ Price | Part Number | Length | US\$ Price | Part Number | Length | US\$ Price | Part Number | US\$ Price | Part Number | Length | US\$ Price | Part Number | Length | US\$ Price |
| 20.271 | 16.338(415mm) 32.87(835mm) | | 45.021 SET ASSEMBLY | 16.338(415mm) 32.87(835mm) | | 45.025 SET ASSEMBLY | 16.338(415mm) 32.87(835mm) | | 20.902 | | 45.011 | 16.338(415mm) 32.87(835mm) | | 45.015 | 16.338(415mm) 32.87(835mm) | |

| | | | | | | | | | | | | | | | | |
|-------------|-------------------------------|------------|------------------------|-------------------------------|------------|------------------------|-------------------------------|------------|-------------|------------|-------------|-------------------------------|------------|-------------|-------------------------------|------------|
| | | | | | | | | | | | | | | | | |
| Description | | | Description | | | Description | | | Description | | Description | | | Description | | |
| Part Number | Length | US\$ Price | Part Number | Length | US\$ Price | Part Number | Length | US\$ Price | Part Number | US\$ Price | Part Number | Length | US\$ Price | Part Number | Length | US\$ Price |
| 20.272 | 16.338(415mm) 32.87(835mm) | | 45.022 SET ASSEMBLY | 16.338(415mm) 32.87(835mm) | | 45.026 SET ASSEMBLY | 16.338(415mm) 32.87(835mm) | | 20.904 | | 45.010 | 16.338(415mm) 32.87(835mm) | | 45.014 | 16.338(415mm) 32.87(835mm) | |

| | | | | | | | | | | | | | | | | |
|-------------|-------------------------------|------------|------------------------|-------------------------------|------------|------------------------|-------------------------------|------------|-------------|------------|-------------|-------------------------------|------------|-------------|-------------------------------|------------|
| | | | | | | | | | | | | | | | | |
| Description | | | Description | | | Description | | | Description | | Description | | | Description | | |
| Part Number | Length | US\$ Price | Part Number | Length | US\$ Price | Part Number | Length | US\$ Price | Part Number | US\$ Price | Part Number | Length | US\$ Price | Part Number | Length | US\$ Price |
| 20.273 | 16.338(415mm) 32.87(835mm) | | 45.023 SET ASSEMBLY | 16.338(415mm) 32.87(835mm) | | 45.027 SET ASSEMBLY | 16.338(415mm) 32.87(835mm) | | 20.906 | | 45.009 | 16.338(415mm) 32.87(835mm) | | 45.013 | 16.338(415mm) 32.87(835mm) | |

| | | | | | | | | | | | | | | | | |
|-------------|-------------------------------|------------|------------------------|-------------------------------|------------|------------------------|-------------------------------|------------|-------------|------------|-------------|-------------------------------|------------|-------------|-------------------------------|------------|
| | | | | | | | | | | | | | | | | |
| Description | | | Description | | | Description | | | Description | | Description | | | Description | | |
| Part Number | Length | US\$ Price | Part Number | Length | US\$ Price | Part Number | Length | US\$ Price | Part Number | US\$ Price | Part Number | Length | US\$ Price | Part Number | Length | US\$ Price |
| 20.274 | 16.338(415mm) 32.87(835mm) | | 45.024 SET ASSEMBLY | 16.338(415mm) 32.87(835mm) | | 45.028 SET ASSEMBLY | 16.338(415mm) 32.87(835mm) | | 20.908 | | 45.008 | 16.338(415mm) 32.87(835mm) | | 45.012 | 16.338(415mm) 32.87(835mm) | |

| CAP SCREWS | | WILA TRUMPF STYLE BAR INSERT | | AMERICAN STYLE BAR INSERT | | URETHANE COLOR DEFLECTION | | | |
|-------------|------------|------------------------------|--|--------------------------------|------------|---------------------------|--------|----------------|------------|
| | | | | | | 90A | Red | 25% deflection | Mild steel |
| Description | | Description | | Description | | 80A | Green | 35% deflection | Aluminum |
| Part Number | US\$ Price | Part Number | | Length | US\$ Price | 60A | Yellow | 40% deflection | CU & Alum |
| BHC00006 | | 60.100 | | 16.221(412mm) 32.677(830mm) | | | | | |
| BHC00007 | | 60.200 | | 16.221(412mm) 32.677(830mm) | | | | | |

[Dimensions in Inches (mm)]. Images are proportionate but not to scale.



Store Your Press Brake Tooling with These Heavy Duty Cabinets

Increase your efficiency and protect your press brake tooling with Mate press brake tooling cabinets and change-over carts. Made in the USA exclusively for Mate, these press brake tooling cabinets and carts feature robotically MIG-welded 14-, 16- and 18-gauge construction for strength and durability.

Mate tooling cabinets use exclusive 1-ata-Time™ drawer lock system that provides best-in-class safety, preventing cabinet and cart tip-over. The standard integrated retainer top keeps items from falling off the cabinet.



Press Brake Cabinets

| Tooling Style | European | | Amada Fixed Height | | Wila Trumpf Style | | | | American |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|----------|
| | 5 Drawers | 5 Drawers | 4 Drawers | 6 Drawers | 4 Drawers | 3 Drawers | 4 Drawers | 4 Drawers | |
| Drawer Configuration | 5 Drawers | 5 Drawers | 4 Drawers | 6 Drawers | 4 Drawers | 3 Drawers | 4 Drawers | 4 Drawers | |
| Capacity | 2 for dies 3 for punches | 2 for dies 3 for punches | 3 for dies 1 for punches | 4 for dies, 2 for punches | 3 for dies 1 for punches | 1 for dies 2 for punches | 2 for dies 2 for punches | 2 for dies 2 for punches | |
| Max. Number of Tools | 16 length dies | 20 length dies | 33 length dies | 44 length dies | 33 length dies | 11 length dies | 22 length dies | 22 length dies | |
| | 33 length punches | 33 length punches | 11 length punches | 22 length punches | 11 length punches | 22 length punches | 22 length punches | 22 length punches | |
| Max. Tool Length | 34"(863mm) | 34"(863mm) | 24"(610mm) | 24"(610mm) | 24"(610mm) | 24"(610mm) | 24"(610mm) | 24"(610mm) | |

DRAWER SPECIFICATIONS

| | | | | | | | | |
|---|---------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 3"(76mm) Deep Drawer, 200lb (90kg) Capacity | 2 | 2 | — | 4 | 1 | — | 2 | 2 |
| Maximum Die Height | 3.0"(76mm) | 3.0"(76mm) | — | 2.25"(57mm) | 2.25"(57mm) | — | 2.25"(57mm) | 2.25"(57mm) |
| 7"(177mm) Deep Drawer, 400lb (181kg) Capacity | 3 | 3 | 4 | 2 | 2 | 1 | — | — |
| Maximum Die Height | N/A | N/A | 5.75"(146mm) | 5.75"(146mm) | 5.75"(146mm) | 5.75"(146mm) | N/A | N/A |
| Maximum Punch Height | 5.187"(132mm) | 5.187"(132mm) | 6.50"(165mm) | 6.50"(165mm) | N/A | N/A | N/A | N/A |
| 10"(254mm) Deep Drawer, 400lb (181kg) Capacity | — | — | — | — | 1 | 2 | 2 | 2 |
| Maximum Punch Height | — | — | — | — | 10.0"(254mm) | 10.0"(254mm) | 10.0"(254mm) | 9.25"(234mm) |

CABINET DIMENSIONS:

| | | | | | | | | |
|------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Width | 39.0"(990,5mm) | 39.0"(990,5mm) | 39.0"(990,5mm) | 39.0"(990,5mm) | 39.0"(990,5mm) | 39.0"(990,5mm) | 39.0"(990,5mm) | 39.0"(990,5mm) |
| Depth | 27.5"(698,5mm) | 27.5"(698,5mm) | 27.5"(698,5mm) | 27.5"(698,5mm) | 27.5"(698,5mm) | 27.5"(698,5mm) | 27.5"(698,5mm) | 27.5"(698,5mm) |
| Height | 40.25"(1022,0mm) | 40.25"(1022,0mm) | 40.25"(1022,0mm) | 40.25"(1022,0mm) | 40.25"(1022,0mm) | 40.25"(1022,0mm) | 40.25"(1022,0mm) | 40.25"(1022,0mm) |
| Shipping Weight | 500 lbs. (227 kg) | 500 lbs. (227 kg) | 470 lbs. (213 kg) | 550 lbs. (249 kg) | 470 lbs. (213 kg) | 435 lbs. (197 kg) | 455 lbs. (206 kg) | 455 lbs. (206 kg) |

| Style | Part Number | US\$ Price | Part Number | US\$ Price | Part Number | US\$ Price | Part Number | US\$ Price | Part Number | US\$ Price | Part Number | US\$ Price | Part Number | US\$ Price | Part Number | US\$ Price |
|--|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|
| Fork Lift Base | MATE02500 | | MATE02502 | | MATE02504 | | MATE02505 | | MATE02506 | | MATE02507 | | MATE02508 | | MATE02509 | |
| Mobile Base | MATE02501 | | MATE02503 | | | | | | | | | | | | | |
| Accessories (For Cabinets Only) | Part Number | US\$ Price | | | | | | | | | | | | | | |
| Maple Top | MATE02427 | | | | | | | | | | | | | | | |
| Stainless Steel Top | MATE02512 | | | | | | | | | | | | | | | |



Shorten Setups and Protect Tooling with These Heavy Duty Carts

Mate Press Brake Change-Over Carts help shorten setups and increase machine uptime. The carts feature capacity for 54 linear feet of punches and dies. Its patented design helps protect tooling from damage during transport and handling. The carts include a 3-inch deep drawer for necessary instruments and other supplies, 4 heavy duty 6-inch diameter casters (900 pound capacity each), 2 rigid and 2 swivel with brakes, allow for easy movement about the work area.



| Press Brake Change-Over Carts | | | | | | |
|-------------------------------|---------------------------------|------------|---------------------------------|------------|---------------------------------|------------|
| Tooling Style | American Precision Style | | European Precision Style | | Wila Trumpf Style | |
| Cart Capacity | 54 linear feet (1371 linear mm) | | 54 linear feet (1371 linear mm) | | 54 linear feet (1371 linear mm) | |
| Cart Dimensions: | | | | | | |
| Width | 39.0"(990,5mm) | | 39.0"(990,5mm) | | 39.0"(990,5mm) | |
| Depth | 27.0"(685,8mm) | | 27.0"(685,8mm) | | 27.0"(685,8mm) | |
| Height | 38.0"(965mm) | | 38.0"(965mm) | | 38.0"(965mm) | |
| Shipping Weight | 275 lbs. (124,7 kg) | | 275 lbs. (124,7 kg) | | 275 lbs. (124,7 kg) | |
| | Part Number | US\$ Price | Part Number | US\$ Price | Part Number | US\$ Price |
| | MATE02527 | | MATE02510 | | MATE02511 | |

ANTI-SCRATCH POLYURETHANE FILM AND HOLDERS

- Excellent protection against die marks and scratches.
- Economical solution for mar-free bending pre-finished, pre-polished stainless steel, brass, aluminum or pre-painted metal.
- Help protect your dies. Quick setup, universal, saves time and money.

WHITE ANTI-SCRATCH POLYURETHANE FILM

- Standard performance • White • Extruded



| Description | | | | | | | |
|-------------|-----------|--------|-------|---------|--------|---------|------------|
| Part Number | Thickness | | Width | | Length | | US\$ Price |
| | in | mm | in | mm | ft | m | |
| 45.001 | 0.015 | (.381) | 4.000 | (101.6) | 100 | (30.48) | |
| 45.002 | 0.015 | (.381) | 6.000 | (152.4) | 100 | (30.48) | |
| 45.003 | 0.030 | (.762) | 4.000 | (101.6) | 100 | (30.48) | |
| 45.004 | 0.030 | (.762) | 6.000 | (152.4) | 100 | (30.48) | |



STANDARD POLYURETHANE FILM HOLDER - MECHANICAL

- Rail Attachment



| Description | |
|-------------|------------|
| Part Number | US\$ Price |
| 40.800 | |



MAGNETIC POLYURETHANE FILM HOLDER

- Magnetic Attachment



| Description | |
|-------------|------------|
| Part Number | US\$ Price |
| 40.850 | |



SQUARING

- For use with long, narrow bends

REFERENCE SQUARES STANDARD - 90°

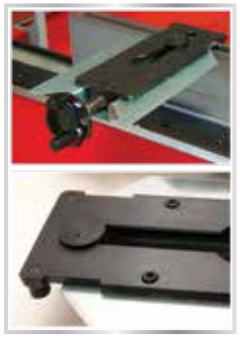


| Description | |
|-------------|------------|
| Part Number | US\$ Price |
| 40.660 | |

REFERENCE SQUARES ADJUSTABLE - 60° TO 120°



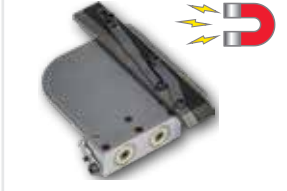
| Description | |
|-------------|------------|
| Part Number | US\$ Price |
| 40.700 | |



ANGLES

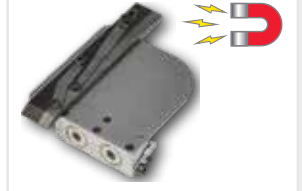
- For use with angled bends • Magnetic

ANGLE - MAGNETIC SYSTEM 0° TO 90° - LEFT



| Description | |
|-------------|------------|
| Part Number | US\$ Price |
| 40.740 | |

ANGLE - MAGNETIC SYSTEM 0° TO 90° - RIGHT



| Description | |
|-------------|------------|
| Part Number | US\$ Price |
| 40.745 | |

ANGLE - MAGNETIC SYSTEM 30° TO 90°



| Description | |
|-------------|------------|
| Part Number | US\$ Price |
| 40.750 | |

[Dimensions in Inches (mm)]. Images are proportionate but not to scale.



CONVERSION CHART

| mm | inch |
|----------|--------|
| 0.01mm | 0.0004 |
| 0.02mm | 0.0008 |
| 0.03mm | 0.0012 |
| 0.04mm | 0.0016 |
| 0.05mm | 0.0020 |
| 0.06mm | 0.0024 |
| 0.07mm | 0.0028 |
| 0.08mm | 0.0031 |
| 0.09mm | 0.0035 |
| 0.10mm | 0.0039 |
| 0.25mm | 0.0098 |
| 0.50mm | 0.0197 |
| 0.75mm | 0.0295 |
| 1.00mm | 0.0394 |
| 1.50mm | 0.0591 |
| 2.00mm | 0.0787 |
| 2.50mm | 0.0984 |
| 3.00mm | 0.1181 |
| 3.50mm | 0.1378 |
| 4.00mm | 0.1575 |
| 4.50mm | 0.1772 |
| 5.00mm | 0.1969 |
| 6.00mm | 0.2362 |
| 7.00mm | 0.2756 |
| 8.00mm | 0.3150 |
| 9.00mm | 0.3543 |
| 10.00mm | 0.3937 |
| 11.00mm | 0.4331 |
| 12.00mm | 0.4724 |
| 13.00mm | 0.5118 |
| 14.00mm | 0.5512 |
| 15.00mm | 0.5906 |
| 16.00mm | 0.6299 |
| 17.00mm | 0.6693 |
| 18.00mm | 0.7087 |
| 19.00mm | 0.7480 |
| 20.00mm | 0.7874 |
| 21.00mm | 0.8268 |
| 22.00mm | 0.8661 |
| 23.00mm | 0.9055 |
| 24.00mm | 0.9449 |
| 25.00mm | 0.9843 |
| 26.00mm | 1.0236 |
| 27.00mm | 1.0630 |
| 28.00mm | 1.1024 |
| 29.00mm | 1.1417 |
| 30.00mm | 1.1811 |
| 31.00mm | 1.2205 |
| 32.00mm | 1.2598 |
| 33.00mm | 1.2992 |
| 34.00mm | 1.3386 |
| 35.00mm | 1.3780 |
| 36.00mm | 1.4173 |
| 37.00mm | 1.4567 |
| 38.00mm | 1.4961 |
| 39.00mm | 1.5354 |
| 40.00mm | 1.5748 |
| 50.00mm | 1.9685 |
| 60.00mm | 2.3622 |
| 65.00mm | 2.5591 |
| 70.00mm | 2.7559 |
| 75.00mm | 2.9528 |
| 80.00mm | 3.1496 |
| 90.00mm | 3.5433 |
| 100.00mm | 3.9370 |

| inch | inch | mm |
|-------|---------|----------|
| | 0.0001 | 0.003mm |
| | 0.0010 | 0.03mm |
| | 0.0020 | 0.05mm |
| | 0.0030 | 0.08mm |
| | 0.0040 | 0.10mm |
| | 0.0050 | 0.13mm |
| 1/128 | 0.0078 | 0.20mm |
| | 0.0100 | 0.25mm |
| | 0.0120 | 0.30mm |
| | 0.0150 | 0.38mm |
| 1/64 | 0.0156 | 0.40mm |
| | 0.0300 | 0.76mm |
| 1/32 | 0.0313 | 0.79mm |
| 3/64 | 0.0469 | 1.19mm |
| | 0.0600 | 1.52mm |
| 1/16 | 0.0625 | 1.59mm |
| 5/64 | 0.0781 | 1.98mm |
| | 0.0900 | 2.29mm |
| 3/32 | 0.0938 | 2.38mm |
| 7/64 | 0.1094 | 2.78mm |
| | 0.1200 | 3.05mm |
| 1/8 | 0.1250 | 3.18mm |
| 9/64 | 0.1406 | 3.57mm |
| 5/32 | 0.1563 | 3.97mm |
| 3/16 | 0.1875 | 4.76mm |
| 7/32 | 0.2188 | 5.56mm |
| 1/4 | 0.2500 | 6.35mm |
| 9/32 | 0.2813 | 7.14mm |
| 5/16 | 0.3125 | 7.94mm |
| 3/8 | 0.3750 | 9.53mm |
| 7/16 | 0.4375 | 11.11mm |
| 1/2 | 0.5000 | 12.70mm |
| 9/16 | 0.5625 | 14.29mm |
| 5/8 | 0.6250 | 15.88mm |
| 3/4 | 0.7500 | 19.05mm |
| 7/8 | 0.8750 | 22.23mm |
| 1 | 1.0000 | 25.40mm |
| 1 1/8 | 1.1250 | 28.58mm |
| 1 1/4 | 1.2500 | 31.75mm |
| 1 1/2 | 1.5000 | 38.10mm |
| 1 3/4 | 1.7500 | 44.45mm |
| 2 | 2.0000 | 50.80mm |
| 2 1/4 | 2.2500 | 57.15mm |
| 2 1/2 | 2.5000 | 63.50mm |
| 2 3/4 | 2.7500 | 69.85mm |
| 3 | 3.0000 | 76.20mm |
| 3 1/2 | 3.5000 | 88.90mm |
| 4 | 4.0000 | 101.60mm |
| 4 1/2 | 4.5000 | 114.30mm |
| 5 | 5.0000 | 127.00mm |
| 5 1/2 | 5.5000 | 139.70mm |
| 6 | 6.0000 | 152.40mm |
| 12 | 12.0000 | 304.80mm |

| inch | mm |
|--------|---------|
| 0.0001 | 0.003mm |
| 0.0010 | 0.025mm |
| 0.0100 | 0.254mm |
| 0.1000 | 2.54mm |
| 1.0000 | 25.40mm |

| mm | inch |
|--------|--------|
| 0.01mm | 0.0004 |
| 0.10mm | 0.0039 |
| 1.00mm | 0.0394 |

| mm | inch | feet |
|--------|-------|------|
| 1000mm | 39.4 | 3.3 |
| 1050mm | 41.3 | 3.4 |
| 1250mm | 49.2 | 4.1 |
| 1500mm | 59.1 | 4.9 |
| 2000mm | 78.7 | 6.6 |
| 2050mm | 80.7 | 6.7 |
| 2500mm | 98.4 | 8.2 |
| 3000mm | 118.1 | 9.8 |
| 3050mm | 120.1 | 10.0 |
| 3500mm | 137.8 | 11.5 |
| 4000mm | 157.5 | 13.1 |
| 4050mm | 159.4 | 13.3 |
| 4500mm | 177.2 | 14.8 |
| 5000mm | 196.9 | 16.4 |

| feet | inch | mm |
|-------|----------|--------|
| 1 ft | 12 inch | 305mm |
| 2 ft | 24 inch | 610mm |
| 3 ft | 36 inch | 914mm |
| 4 ft | 48 inch | 1219mm |
| 5 ft | 60 inch | 1524mm |
| 6 ft | 72 inch | 1829mm |
| 7 ft | 84 inch | 2134mm |
| 8 ft | 96 inch | 2438mm |
| 9 ft | 108 inch | 2743mm |
| 10 ft | 120 inch | 3048mm |
| 11 ft | 132 inch | 3353mm |
| 12 ft | 144 inch | 3658mm |



| metal gauges | gauge size | aluminum & brass | mild steel | stainless steel |
|--------------|------------|------------------|------------|-----------------|
| | 8GA | .129(3.28) | .164(4.17) | .172(4.37) |
| | 9GA | .114(2.90) | .150(3.81) | .156(3.96) |
| | 10GA | .102(2.59) | .135(3.43) | .141(3.58) |
| | 11GA | .091(2.31) | .120(3.05) | .125(3.18) |
| | 12GA | .081(2.06) | .105(2.67) | .109(2.77) |
| | 13GA | .072(1.83) | .090(2.29) | .094(2.39) |
| | 14GA | .064(1.63) | .075(1.91) | .078(1.98) |
| | 16GA | .051(1.30) | .060(1.52) | .063(1.60) |
| | 18GA | .040(1.02) | .048(1.22) | .050(1.27) |
| 20GA | .032(0.81) | .036(0.91) | .038(0.97) | |
| 22GA | .025(0.64) | .030(0.76) | .031(0.79) | |
| 24GA | .020(0.51) | .024(0.61) | .025(0.64) | |
| 26GA | .016(0.41) | .018(0.46) | .019(0.48) | |
| 28GA | .013(0.33) | .015(0.38) | .016(0.41) | |



INCH/INCH

METRIC/METRIC

INCH DIE V OPENING AND INCH MATERIAL THICKNESS

AIR BENDING FORCE CHART

INCH VO AND INCH MATERIAL THICKNESS VALUES (US SHORT TONNAGE VALUES)

Force Values are calculated using mild steel having tensile strength of 60,000 psi forming to a 90° angle (approximately 42 kg/mm²)

| Gauge | Decimal Inch | 0.250 | 0.375 | 0.500 | 0.625 | 0.750 | 0.875 | 1.000 | 1.250 | 1.500 | 2.000 | 2.500 | 3.000 | 4.000 | V Opening (VO) Inch |
|-------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------------------------|
| | | 0.177 | 0.265 | 0.354 | 0.442 | 0.530 | 0.619 | 0.707 | 0.884 | 1.061 | 1.414 | 1.768 | 2.121 | 2.828 | Minimum Flange (MF) inch |
| | | 0.039 | 0.059 | 0.078 | 0.098 | 0.117 | 0.137 | 0.156 | 0.195 | 0.234 | 0.312 | 0.390 | 0.468 | 0.624 | Inside Radius (IR) inch |
| 20 | 0.036 | 3.0 | 2.0 | | | | | | | | | | | | |
| 18 | 0.048 | 5.3 | 3.6 | 2.7 | | | | | | | | | | | |
| 16 | 0.060 | | 5.6 | 4.2 | 3.4 | | | | | | | | | | |
| 14 | 0.075 | | 8.7 | 6.5 | 5.2 | 4.4 | | | | | | | | | |
| 13 | 0.090 | | | 9.4 | 7.5 | 6.3 | 5.4 | | | | | | | | |
| 12 | 0.105 | | | 13 | 10 | 8.5 | 7.3 | 6.4 | | | | | | | |
| 11 | 0.120 | | | | 13 | 11 | 9.5 | 8.3 | 6.7 | | | | | | |
| 10 | 0.135 | | | | | 14 | 12 | 11 | 8.4 | 7.0 | | | | | |
| 9 | 0.150 | | | | | 17 | 15 | 13 | 10 | 8.7 | | | | | |
| 3/16 | 0.188 | | | | | | 23 | 20 | 16 | 14 | 10 | | | | |
| 1/4 | 0.250 | | | | | | 41 | 36 | 29 | 24 | 18 | 14 | | | |
| 5/16 | 0.313 | | | | | | | 56 | 45 | 38 | 28 | 23 | 19 | | |
| 3/8 | 0.375 | | | | | | | | | 54 | 41 | 32 | 27 | 20 | |
| 1/2 | 0.500 | | | | | | | | | | 72 | 58 | 48 | 36 | |
| 5/8 | 0.625 | | | | | | | | | | | 90 | 75 | 56 | |
| 3/4 | 0.750 | | | | | | | | | | | | 108 | 81 | |
| 1 | 1.000 | | | | | | | | | | | | | 144 | |

Note: Table assumes mild steel. When bending other materials, use a force adjustment. Aluminum = 50% Mild Steel = 100% Stainless Steel = 150%
All results are to be used as guidelines, not absolute values.

Formulas:

US Tons Per Foot $MT^2 \times 575 / VO$ Where MT=Material Thickness in inches; VO=V Opening in inches (VO in mm /25.4)
Minimum Flange (MF) $VO \times .707$ Where VO=V Opening; $.707 = \sqrt{2}/2$
Inside Radius (IR) $VO \times .16$ Where VO=V Opening

METRIC DIE V OPENING AND METRIC MATERIAL THICKNESS

AIR BENDING FORCE CHART

METRIC VO AND METRIC MATERIAL THICKNESS VALUES (METRIC TONNAGE VALUES)

Force Values are calculated using mild steel having tensile strength of 42 kg/mm² forming to a 90° angle (approximately 60,000 psi)

| Material | 6 | 8 | 10 | 12 | 16 | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 160 | 200 | 250 | V Opening (VO) mm |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------------------------|
| | 4 | 6 | 7 | 8 | 11 | 14 | 18 | 23 | 28 | 35 | 45 | 57 | 71 | 88 | 113 | 141 | 177 | Minimum Flange (MF) mm |
| | 0.9 | 1.2 | 1.6 | 1.9 | 2.5 | 3.1 | 3.9 | 5.0 | 6.2 | 7.8 | 9.8 | 12.5 | 15.6 | 19.5 | 25.0 | 31.2 | 39.0 | Inside Radius (IR) mm |
| 0.5 | 3 | | | | | | | | | | | | | | | | | |
| 0.6 | 4 | 3 | | | | | | | | | | | | | | | | |
| 0.8 | 6 | 5 | 4 | | | | | | | | | | | | | | | |
| 1.0 | 10 | 8 | 6 | 5 | | | | | | | | | | | | | | |
| 1.2 | 14 | 11 | 9 | 7 | 5 | | | | | | | | | | | | | |
| 1.5 | | 17 | 14 | 11 | 8 | 7 | | | | | | | | | | | | |
| 2.0 | | | 24 | 20 | 15 | 12 | 10 | | | | | | | | | | | |
| 2.5 | | | | 31 | 24 | 19 | 15 | 12 | | | | | | | | | | |
| 3.0 | | | | | 34 | 27 | 22 | 17 | 14 | | | | | | | | | |
| 4.0 | | | | | | 48 | 39 | 30 | 24 | 19 | | | | | | | | |
| 5.0 | | | | | | | 60 | 47 | 38 | 30 | 24 | | | | | | | |
| 6.0 | | | | | | | | 68 | 54 | 43 | 34 | 27 | | | | | | |
| 8.0 | | | | | | | | | 96 | 77 | 61 | 48 | 39 | | | | | |
| 10.0 | | | | | | | | | | 121 | 96 | 75 | 60 | 48 | | | | |
| 12.0 | | | | | | | | | | | 138 | 108 | 87 | 69 | 54 | | | |
| 15.0 | | | | | | | | | | | | 169 | 136 | 108 | 85 | 68 | | |
| 20.0 | | | | | | | | | | | | | 241 | 193 | 151 | 121 | 96 | |

Note: Table assumes mild steel. When bending other materials, use a force adjustment. Aluminum = 50% Mild Steel = 100% Stainless Steel = 150%
All results are to be used as guidelines, not absolute values.

Formulas:

Metric Tons Per Meter $(MT^2 \times 2 \times R) / (1.4 \times VO)$ Where MT=Material Thickness; R=Sheet Resistance; VO=V Opening
Minimum Flange (MF) $VO \times .707$ Where VO=V Opening; $.707 = \sqrt{2}/2$
Inside Radius (IR) $VO \times .16$ Where VO=V Opening



METRIC DIE V OPENING AND INCH MATERIAL THICKNESS

AIR BENDING FORCE CHART

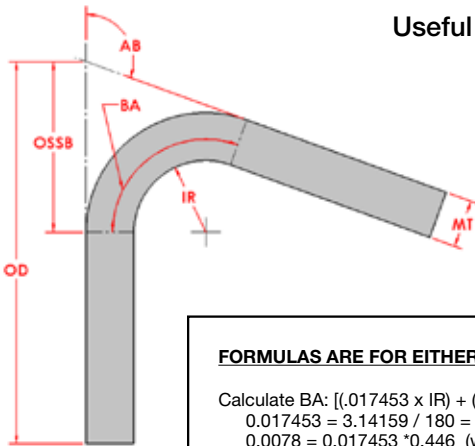
METRIC VO AND INCH MATERIAL THICKNESS VALUES (US SHORT TONNAGE VALUES)

Force Values are calculated using mild steel having tensile strength of 60,000 psi forming to a 90° angle (approximately 42 kg/mm²)

| | | Force Values are calculated using mild steel having tensile strength of 60,000 psi forming to a 90° angle (approximately 42 kg/mm ²) | | | | | | | | | | | | | | | |
|-------------|-----------------------|--|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------------------------|----|--|
| | | 6 | 8 | 10 | 12 | 16 | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 | V Opening (VO) mm | | |
| | | 4 | 6 | 7 | 8 | 11 | 14 | 18 | 23 | 28 | 35 | 45 | 57 | 71 | Minimum Flange (MF) mm | | |
| | | 0.9 | 1.2 | 1.5 | 1.9 | 2.5 | 3.1 | 3.9 | 5.0 | 6.2 | 7.8 | 9.8 | 12.5 | 15.6 | Inside Radius (IR) mm | | |
| | | 0.236 | 0.315 | 0.394 | 0.472 | 0.630 | 0.787 | 0.984 | 1.260 | 1.575 | 1.969 | 2.480 | 3.150 | 3.937 | V Opening (VO) inch | | |
| | | 0.167 | 0.223 | 0.278 | 0.334 | 0.445 | 0.557 | 0.696 | 0.891 | 1.114 | 1.392 | 1.754 | 2.227 | 2.784 | Minimum Flange (MF) inch | | |
| | | 0.037 | 0.049 | 0.061 | 0.074 | 0.098 | 0.123 | 0.154 | 0.197 | 0.246 | 0.307 | 0.387 | 0.491 | 0.614 | Inside Radius (IR) inch | | |
| METRIC/INCH | Material Thickness mm | Gauge | Decimal Inch | | | | | | | | | | | | | | |
| | 0.9 | 20 | 0.036 | 3.2 | 2.4 | | | | | | | | | | | | |
| | 1.2 | 18 | 0.048 | 5.7 | 4.3 | 3.4 | | | | | | | | | | | |
| | 1.5 | 16 | 0.060 | | 6.6 | 5.3 | 4.4 | | | | | | | | | | |
| | 1.9 | 14 | 0.075 | | 10 | 8.3 | 6.9 | 5.2 | | | | | | | | | |
| | 2.3 | 13 | 0.090 | | | 12 | 9.9 | 7.4 | 6.0 | | | | | | US Tons Per Foot | | |
| | 2.7 | 12 | 0.105 | | | 16 | 14 | 10 | 8.1 | 6.5 | | | | | | | |
| | 3.0 | 11 | 0.120 | | | | 18 | 13 | 11 | 8.5 | 6.6 | | | | | | |
| | 3.4 | 10 | 0.135 | | | | | 17 | 13 | 11 | 8.4 | 6.7 | | | | | |
| | 3.8 | 9 | 0.150 | | | | | 21 | 17 | 13 | 10 | 8.3 | | | | | |
| | 4.8 | 3/16 | 0.188 | | | | | | 26 | 21 | 16 | 13 | 10 | | | | |
| | 6.4 | 1/4 | 0.250 | | | | | | | 37 | 29 | 23 | 18 | 15 | | | |
| | 8.0 | 5/16 | 0.313 | | | | | | | | 45 | 36 | 29 | 23 | 18 | | |
| | 9.5 | 3/8 | 0.375 | | | | | | | | | 51 | 41 | 33 | 26 | 21 | |
| | 12.7 | 1/2 | 0.500 | | | | | | | | | | 73 | 58 | 46 | 37 | |
| | 15.9 | 5/8 | 0.625 | | | | | | | | | | | 91 | 71 | 57 | |
| | 19.1 | 3/4 | 0.750 | | | | | | | | | | | | 103 | 82 | |
| 25.4 | 1 | 1.000 | | | | | | | | | | | | | 146 | | |

Note: Table assumes mild steel. When bending other materials, use a force adjustment. Aluminum = 50% Mild Steel = 100% Stainless Steel = 150%
All results are to be used as guidelines, not absolute values.

Formulas:
 US Tons Per Foot $MT^2 \times 575 / VO$ Where MT=Material Thickness in inches; VO=V Opening in inches
 Minimum Flange (MF) $VO \times .707$ Where VO=V Opening; .707= $\sqrt{2}/2$
 Inside Radius (IR) $VO \times 1.6$ Where VO=V Opening



Useful Formulas

Acronyms:

| | |
|-------------|----------------------------|
| IR | = Inside Radius |
| MT | = Material Thickness |
| AB | = Angle of Bend |
| OD | = Outside flange Dimension |
| BA | = Bend Allowance |
| BD | = Bend Deduction |
| OSSB | = Out-Side Set Back |
| VO | = V-Opening |

FORMULAS ARE FOR EITHER IMPERIAL OR METRIC

Calculate BA: $[(.017453 \times IR) + (.0078 \times MT)] \times AB = BA$
 $0.017453 = 3.14159 / 180 = \pi/180$ degrees
 $0.0078 = 0.017453 \times 0.446$ (where 0.446 represents the k factor)

Calculate OSSB of bends other than 90°:
 $[\text{Tangent}(AB/2)] \times (IR + MT) = \text{OSSB}$
 (At 90 degrees $IR + MT = \text{OSSB}$)

Convert BA to BD: $(2 \times \text{OSSB}) - BA = \text{BD}$

Convert metric tons per meter to US tons per foot:
 Metric tons per meter $\times 0.336 =$ US tons per foot

Convert US tons per foot to metric tons per meter:
 US tons per foot $\times 2.976 =$ metric tons per meter

Convert mm to inches: $\text{mm} \times .03937 =$ inches

Convert inches to mm: $\text{inches} \times 25.4 =$ mm

Convert kN to metric tons: $1\text{kN}=0.102$
 Convert kN to US tons: $1\text{kN}=0.112$

Predict IR for air bending:

Aluminum: $\text{VO} \times .14 = \text{IR}$, Mild steel: $\text{VO} \times .16 = \text{IR}$, Stainless: $\text{VO} \times .21 = \text{IR}$

Calculate minimum IR when air bending: $.63 \times \text{MT} =$ Minimum natural IR

Calculate minimum OD flange limit of a die: $\text{VO} \times .707 =$ minimum OD flange

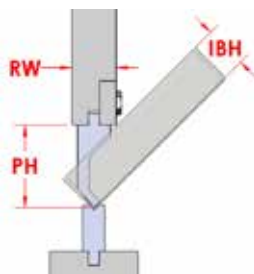
To calculate approximate tonnage for aluminum, use mild steel tonnage times 0.5
 To calculate approximate tonnage for stainless steel, use mild steel tonnage times 1.5

CALCULATE IMPERIAL VALUES

Calculate required US tonnage per foot for mild steel:
 $[575 \times (\text{MT}^3)] / \text{VO} =$ US tons per foot (Based on 60,000 psi tensile)

CALCULATE METRIC VALUES

Calculate required metric tonnage per meter:
 $(2 \times \text{MT}^2 \times 43) / (1.4 \times \text{VO})$ (Based on 43kg/mm² tensile)



Formulas are for either imperial or metric

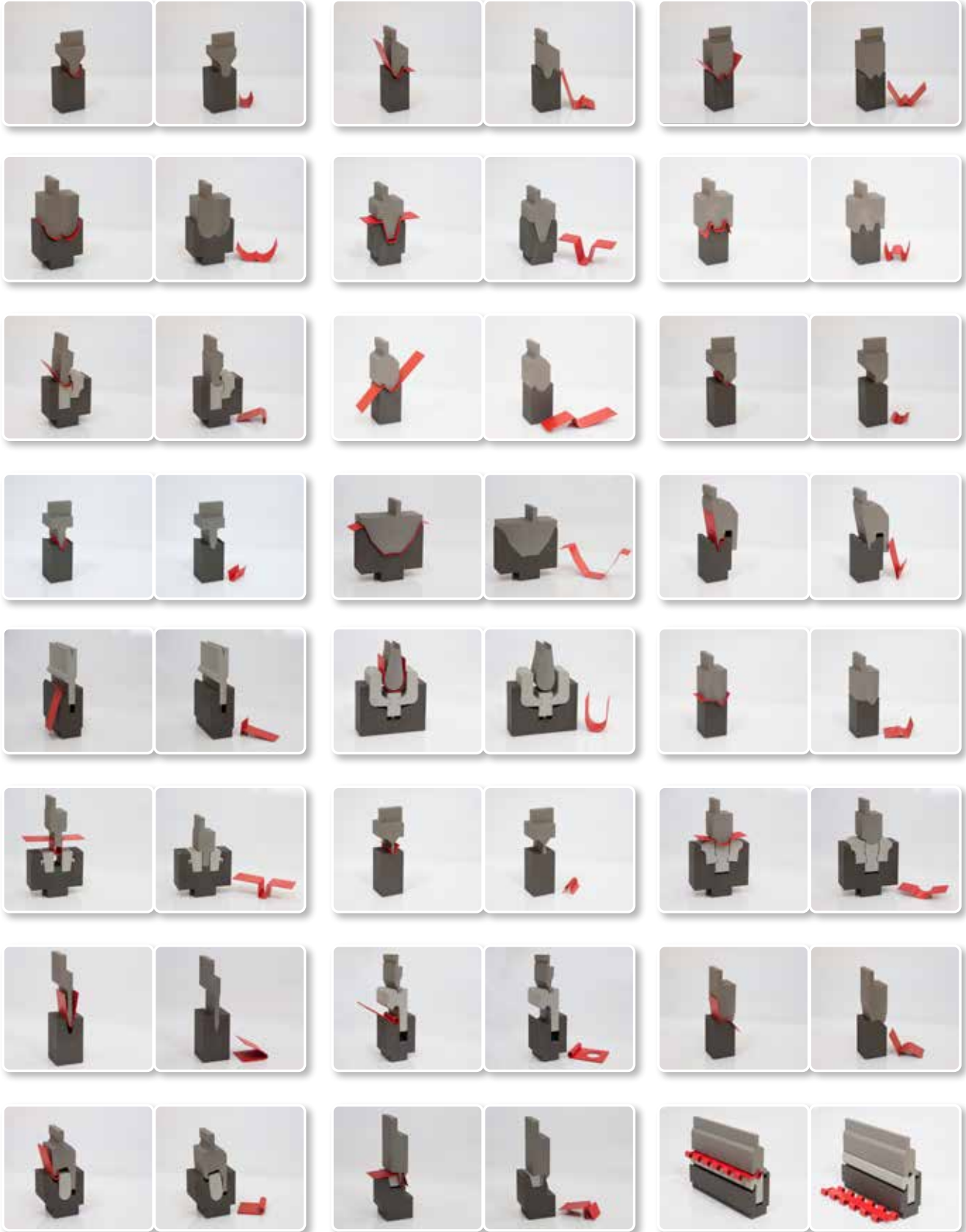
DEEP BOX FORMULAS

Calculate Deep box limit of a punch:
 $[(\text{PH} - (\text{RW} \times .563)) \times .707] =$ maximum IBH

Calculate the minimum punch height for a box:
 $(\text{IBH} / .707) + (\text{RW} \times .563) =$ minimum PH

Acronyms:

| | |
|------------|---------------------|
| PH | = Punch Height |
| IBH | = Inside Box Height |
| RW | = Ram Width |



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