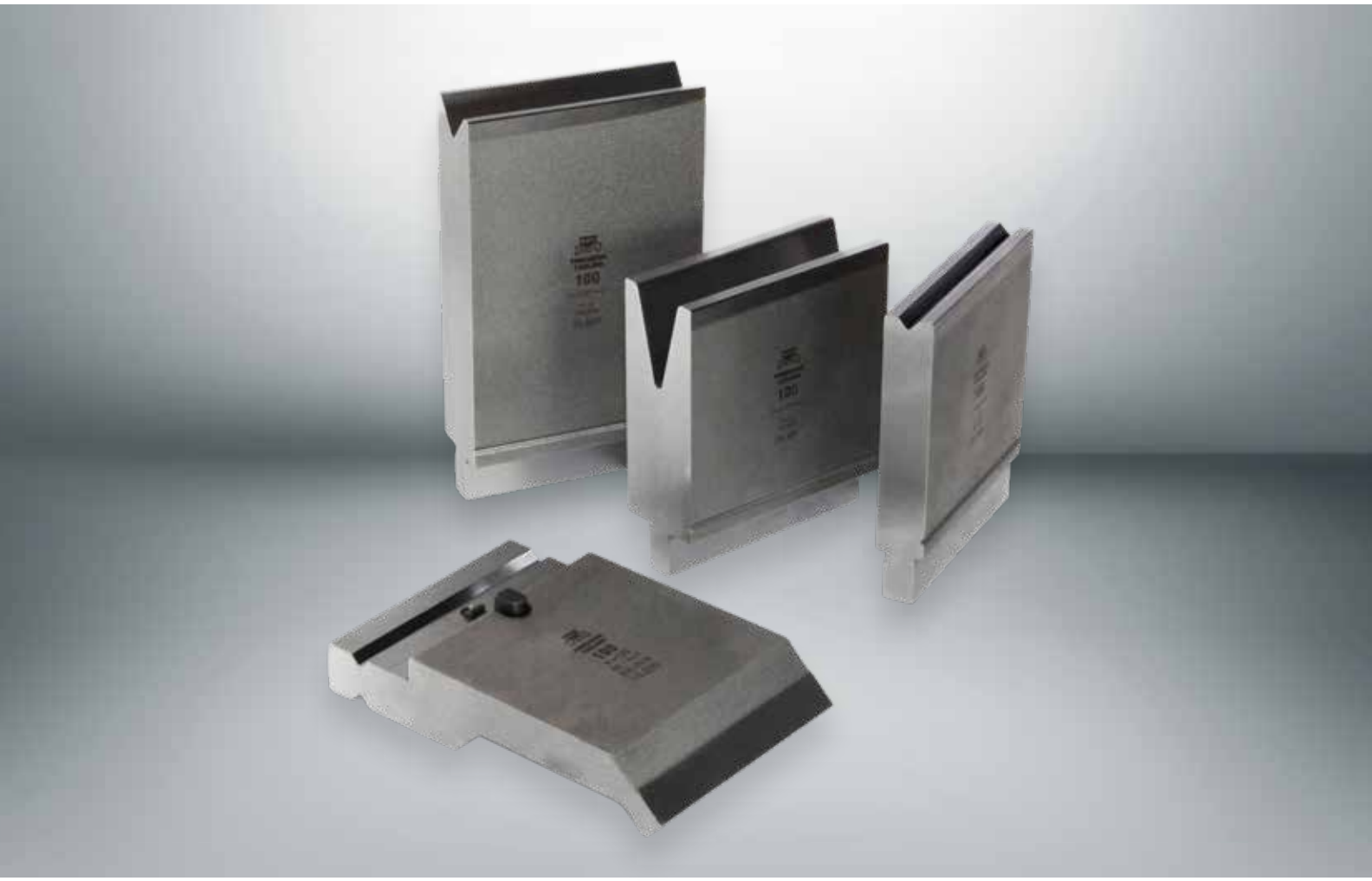
PBT PN

TWS ENGLISH

MATE®
PRECISION TECHNOLOGIES
RESPECT • SUPPORT • INSPIRE



Wila Trumpf Style

PRESS BRAKE TOOLING

Headquartered in Anoka, Minnesota, in a 300,000 sq. ft. (28,000m^2) 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.

TABLE OF CONTENTS AND MATERIAL SPECIFICATIONS

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: **012.345SX**

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:

	S or SX	Standard	X indicates punch with safety button
	F or FX	Segmented	X indicates punch with safety button
	T or TX	300mm	X indicates punch with safety button
	D or DX	200mm	X indicates punch with safety button
	C or CX	100mm	X indicates punch with safety button

A number inside the gray arrow identifies the actual length of the tool in millimeters.
For example: 

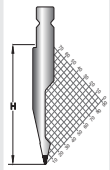
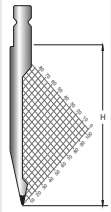
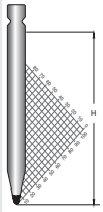
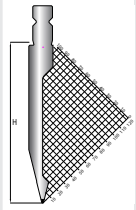
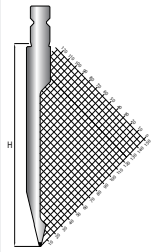
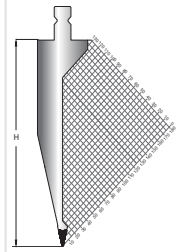
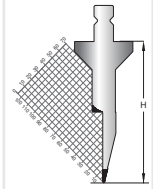
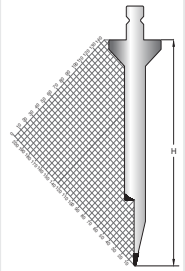
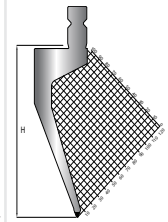
 | 1295 Lund Boulevard, Anoka, Minnesota 55303 USA. Phone: +1.763.421.0230 | mate.com
orders@mate.com

PUNCH PROFILES

Page 6

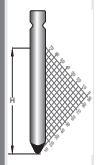
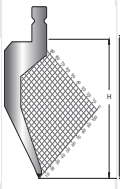
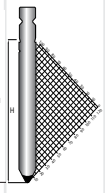
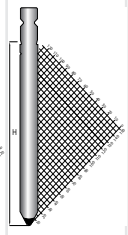
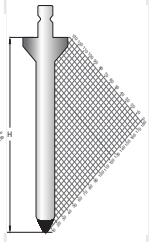
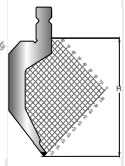
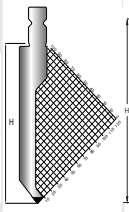
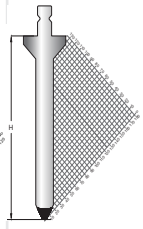
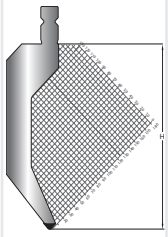
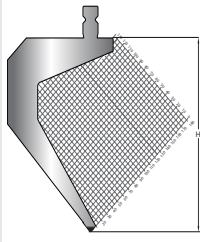
ACUTE PUNCHES - 28°, 45°

ACUTE

015.320	015.620	015.610	019.021	019.031	015.720	015.450	015.750	019.226
								

STRAIGHTS/GOOSENECK PUNCHES - 60°, 80°, 84°

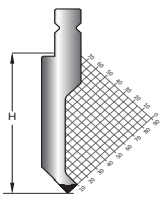
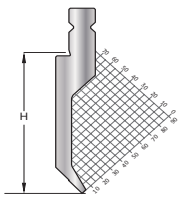
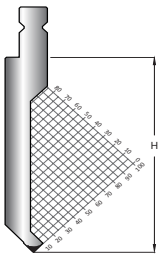
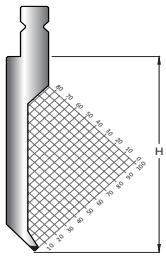
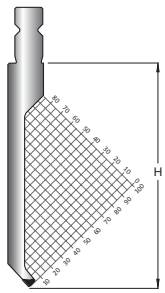
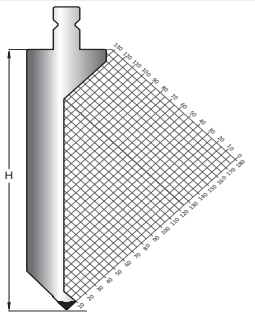
STRAIGHTS/GOOSENECK

015.310	015.680	019.024	019.034	015.730	015.480	019.022	019.032	019.233	015.790
									

Page 7

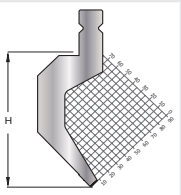
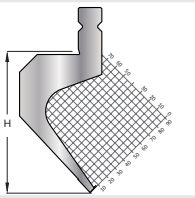
SASH - 86°

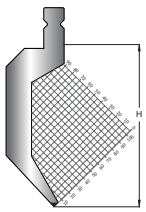
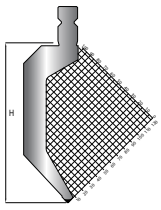
SASH

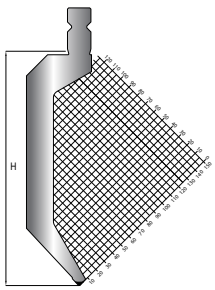
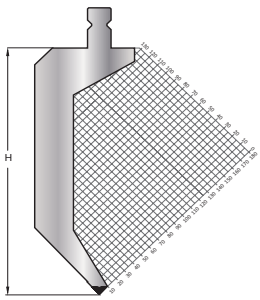
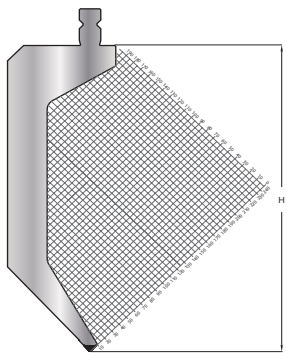
015.330	015.335	015.630	015.635	019.224	015.710
					

GOOSENECK - 86°

GOOSENECK

015.370	015.380
	

015.670	019.023
	

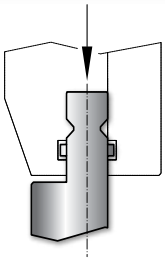
019.033	015.700	15.800
		

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

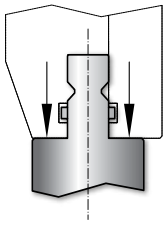
https://www.mate.com/technical-resources/press-brake-tooling/files/

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

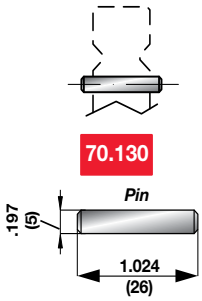
PUNCH OVERVIEW



PRESSURE SURFACE ON THE HEAD



PRESSURE SURFACE ON THE SHOULDERS

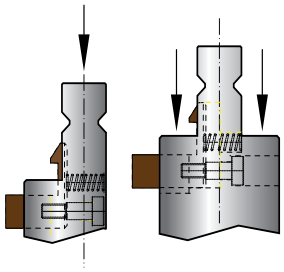


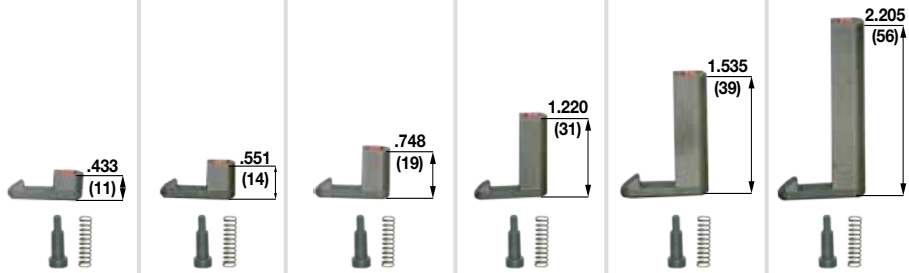
Pins are standard on all punches having a weight greater than 12.5 kg (27.6 lbs)

kg This symbol indicates punches with weight greater than 12.5 kg (27.6 lbs.)

FAST CHANGE BUTTONS

Fast change buttons are standard on all punches having a weight less than 12.5 kg (27.6 lbs).

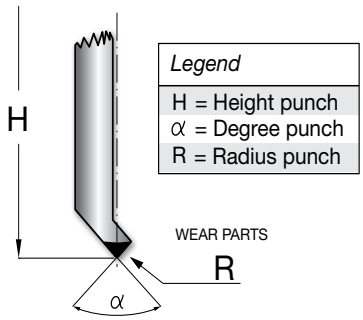




70.714	70.715	70.716	70.717	70.718	70.719
for: 15.010 15.310 15.610 19.024 19.034	for: 15.320 15.620 19.021 19.031	for: 15.330 19.022 15.630 19.032 15.635 15.902 15.904 15.905	for: 15.710 15.720 15.730 15.450 15.750 15.760	for: 15.370 15.670 15.680 19.023 19.033 19.226	for: 15.700 15.800

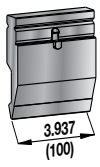
PUNCHES

Punches are available in the following standard lengths:

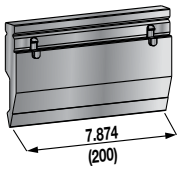


Legend
H = Height punch
α = Degree punch
R = Radius punch

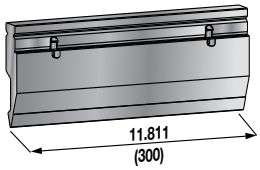
100 mm - (C)



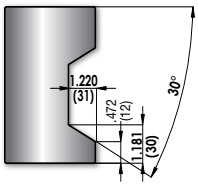
200 mm - (D)



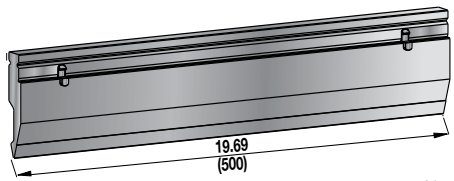
300 mm - (T)



HORNS SCHEME STANDARD SECTIONING

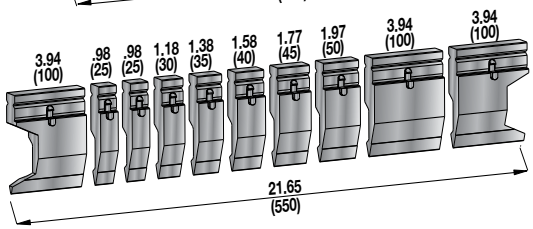


15.310	15.380	15.635	15.720	19.021	19.031
15.320	15.450	15.670	15.730	19.022	19.032
15.330	15.610	15.680	15.750	19.023	19.033
15.335	15.620	15.700	15.790	19.024	19.034
15.370	15.630	15.710	15.800	19.226	19.053



500 mm

STANDARD LENGTH - (S)



550 mm

SECTIONED LENGTH - (F)

PUNCH DETAIL

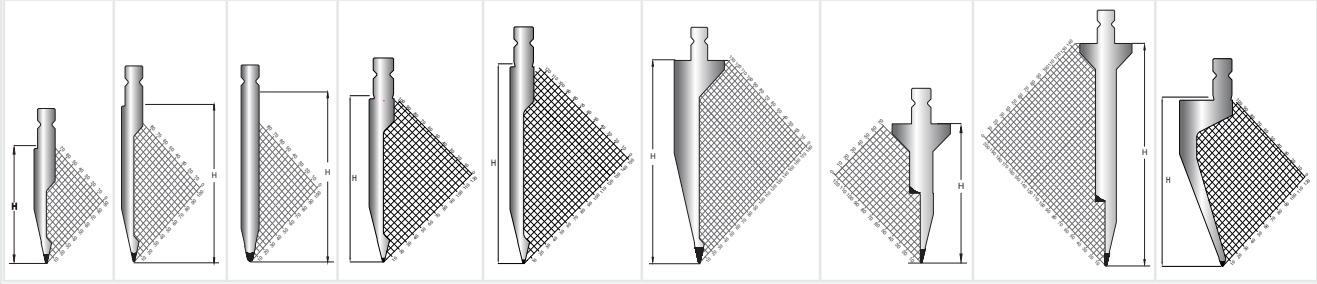
ACUTE PUNCHES - 28°, 45°

ACUTE

Profiles

28°: 015.320, 015.620, 015.610, 019.021, 019.031, 015.720, 015.450, 015.750

45°: 019.226



Description *(see page 5 for punch overview)*

Part Number	Angle	(H) Height (mm)	(H) Height (Inches)	Radius (mm)	Radius (inches) (Inches)	Length / Buttons or Pins					Tons/ ft	Tons/ mt	MT	US$ Price					
						mm(Inches)	mm(Inches)	mm(Inches)	mm(Inches)	mm(Inches)				100(3.937)	200(7.847)	300(11.811)	500(19.685)	515(20.276)	Segment Set
						100(3.937)	200(7.847)	300(11.811)	500(19.685) 515(20.276)	Segment Set				(C)	(D)	(T)	(S)	(S)	(F)
015.320	28°	120.000	4.724	1.000	0.039	button	button	button	button	button	27	80	▶					NA	
015.450	28°	140.000	5.512	1.000	0.039	button	button	button	pin	button	13	40	▶				kg	NA	
015.610	28°	158.000	6.220	3.000	0.118	button	button	button	pin	button	34	100	▶				kg	NA	
015.620	28°	158.000	6.220	1.000	0.039	button	button	button	button	button	27	80	▶					NA	
019.021	28°	163.000	6.417	1.000	0.039	button	button	button	pin	button	24	70	▶				NA		
019.031	28°	200.000	7.874	1.000	0.039	button	button	button	pin	button	20	60	▶				NA		
015.720	28°	220.000	8.661	1.000	0.039	button	button	pin	pin	button	27	80	▶			kg	kg	NA	
015.750	28°	240.000	9.449	1.000	0.039	button	button	pin	pin	button	13	40	▶			kg	kg	NA	
019.226	45°	163.000	6.417	1.000	0.039	button	button	button	pin	button	13	40	▶				kg	NA	

STRAIGHTS/GOOSENECK PUNCHES - 60°, 80°, 84°

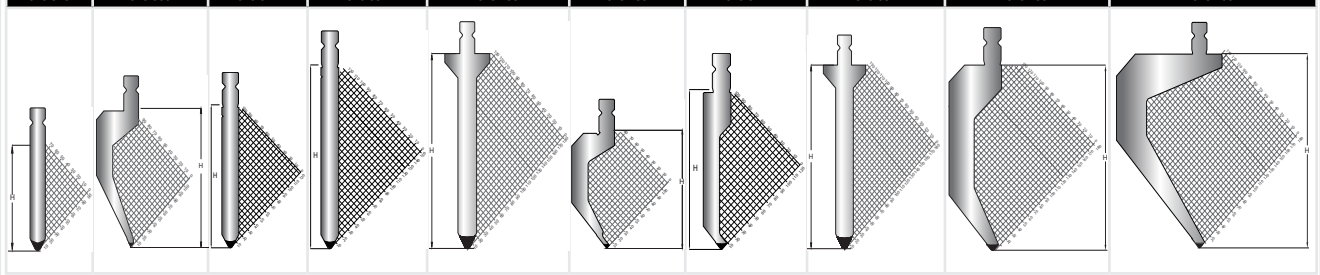
STRAIGHTS/GOOSENECK

Profiles

60°: 015.310, 015.680, 019.024, 019.034, 015.730

80°: 015.480, 019.022, 019.032, 019.233

84°: 015.790



Description *(see page 5 for punch overview)*

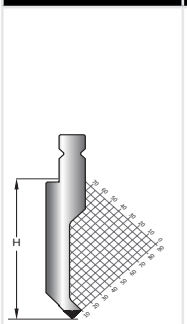
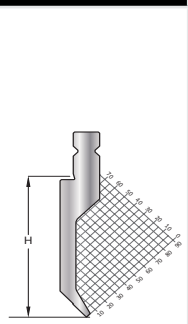
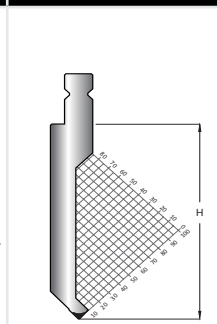
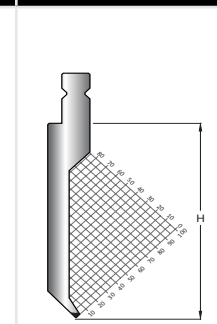
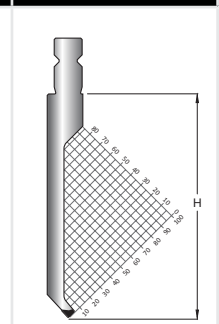
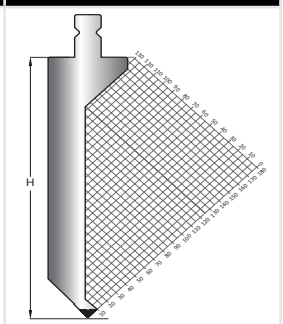
Part Number	Angle	(H) Height (mm)	(H) Height (Inches)	Radius (mm)	Radius (Inches)	Length / Buttons or Pins					Tons/ ft	Tons/ mt	MT	US$ Price					
						mm(Inches)	mm(Inches)	mm(Inches)	mm(Inches)	mm(Inches)				100(3.937)	200(7.847)	300(11.811)	500(19.685)	515(20.276)	Segment Set
						100(3.937)	200(7.847)	300(11.811)	500(19.685) 515(20.276)	Segment Set				(C)	(D)	(T)	(S)	(S)	(F)
015.310	60°	120.000	4.724	4.000	0.157	button	button	button	button	button	44	130	▶					NA	
015.680	60°	158.000	6.220	0.800	0.031	button	button	button	pin	button	13	40	▶				kg	NA	
019.024	60°	163.000	6.417	3.000	0.118	button	button	button	pin	button	54	160	▶				NA	kg	
019.034	60°	200.000	7.874	3.000	0.118	button	button	button	pin	button	54	160	▶				NA	kg	
015.730	60°	220.000	8.661	4.000	0.157	button	button	pin	pin	button	44	130	▶			kg	kg	NA	
015.480	80°	140.000	5.512	0.500	0.020	button	button	button	pin	button	13	40	▶				kg	NA	
019.022	80°	163.000	6.417	1.000	0.039	button	button	button	pin	button	27	80	▶				NA	kg	
019.032	80°	200.000	7.874	1.000	0.039	button	button	button	pin	button	24	70	▶				NA	kg	
019.233	80°	200.000	7.874	3.000	0.118	button	button	button	pin	button	30	90	▶				NA	kg	
015.790	84°	220.000	8.661	1.000	0.039	button	pin	pin	na	pin	20	60	▶		kg	kg	NA	NA	kg

kg Indicates weight is greater than 12.5kg (27.6 lbs). Pins are standard on all punches having a weight greater than 12.5 kg (27.6 lbs). Fast change buttons are standard on all punches having a weight less than 12.5 kg (27.6 lbs).

SASH

SASH - 86°

Profiles

015.330	015.335	015.630	015.635	019.224	015.710
					

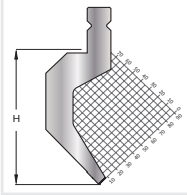
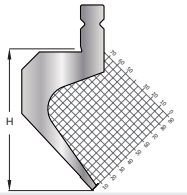
Description *(see page 5 for punch overview)*

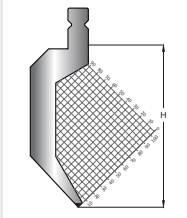
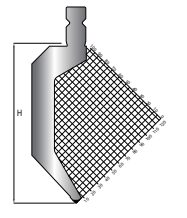
Part Number	Angle	(H) Height (mm)	(H) Height (Inches)	Radius (mm)	Radius (Inches)	Length / Buttons or Pins					Tons/ ft	Tons/ mt	MT	US$ Price					
						mm(Inches)	mm(Inches)	mm(Inches)	mm(Inches)	mm(Inches)				100(3.937)	200(7.847)	300(11.811)	500(19.685)	515(20.276)	Segment Set
						100(3.937)	200(7.847)	300(11.811)	500(19.685) 515(20.276	Segment Set				(C)	(D)	(T)	(S)	(S)	(F)
015.330	86°	120.000	4.724	1.000	0.039	button	button	button	button	button	27	80	▶					NA	
015.335	86°	120.000	4.724	1.000	0.039	button	button	button	button	button	10	30	▶					NA	
015.630	86°	158.000	6.220	0.800	0.031	button	button	button	pin	button	27	80	▶				kg	NA	
015.635	86°	158.000	6.220	0.600	0.024	button	button	button	pin	button	10	30	▶				kg	NA	
019.224	86°	163.000	6.417	0.600	0.024	button	button	button	button	button	15	45	▶				NA		
015.710	86°	220.000	8.661	1.000	0.039	button	button	pin	pin	button	27	80	▶			kg	kg	NA	

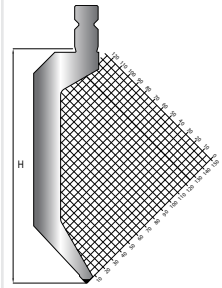
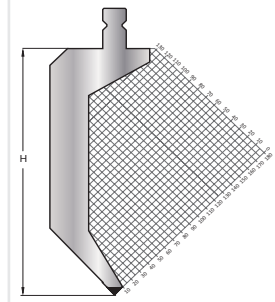
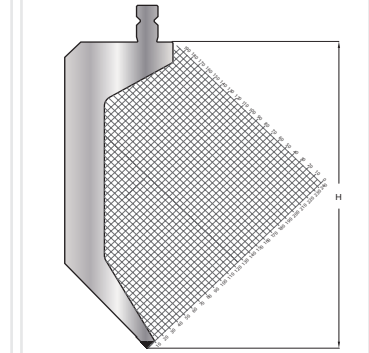
GOOSENECK

GOOSENECK - 86°

Profiles

015.370	015.380
	

015.670	019.023
	

019.033	015.700	15.800
		

Description *(see page 5 for punch overview)*

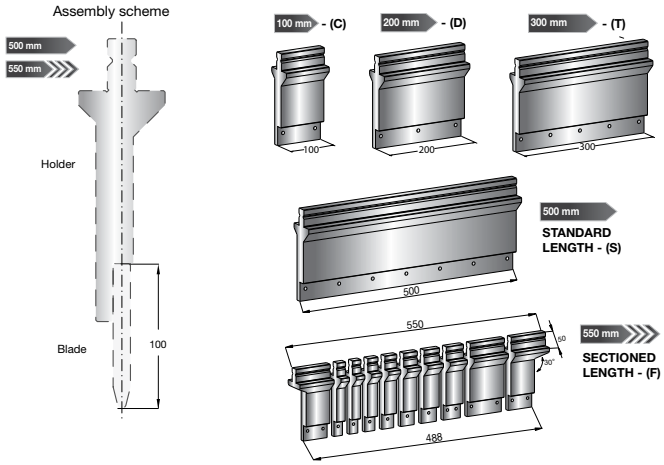
Part Number	Angle	(H) Height (mm)	(H) Height (Inches)	Radius (mm)	Radius (Inches)	Length / Buttons or Pins					Tons/ ft	Tons/ mt	MT	US$ Price					
						mm(Inches)	mm(Inches)	mm(Inches)	mm(Inches)	mm(Inches)				100(3.937)	200(7.847)	300(11.811)	500(19.685)	515(20.276)	Segment Set
						100(3.937)	200(7.847)	300(11.811)	500(19.685) 515(20.276	Segment Set				(C)	(D)	(T)	(S)	(S)	(F)
015.370	86°	120.000	4.724	1.000	0.039	button	button	button	pin	button	27	80	▶		kg	kg	kg		
015.380	86°	120.000	4.724	1.000	0.039	button	button	button	pin	button	8	25	▶						
015.670	86°	158.000	6.220	0.800	0.031	button	button	button	pin	button	13	40	▶				kg		
019.023	86°	163.000	6.417	1.000	0.039	button	button	button	pin	button	22	65	▶				NA	kg	
019.033	86°	200.000	7.874	1.000	0.039	button	button	button	pin	button	17	50	▶				NA	kg	
015.700	86°	220.000	8.661	1.000	0.039	button	pin	pin	pin	button	27	80	▶		kg	kg	kg		
015.800	86°	300.000	11.811	1.000	0.039	button	pin	pin	na	button	27	80	▶		kg	kg	NA		

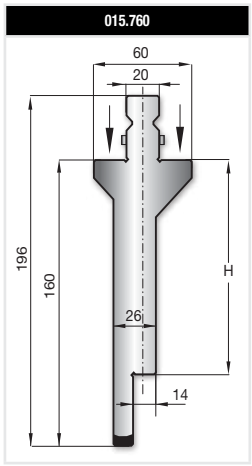
kg Indicates weight is greater than 12.5kg (27.6 lbs). Pins are standard on all punches having a weight greater than 12.5 kg (27.6 lbs). Fast change buttons are standard on all punches having a weight less than 12.5 kg (27.6 lbs).

BLADE HOLDER

BLADE HOLDER

Profiles





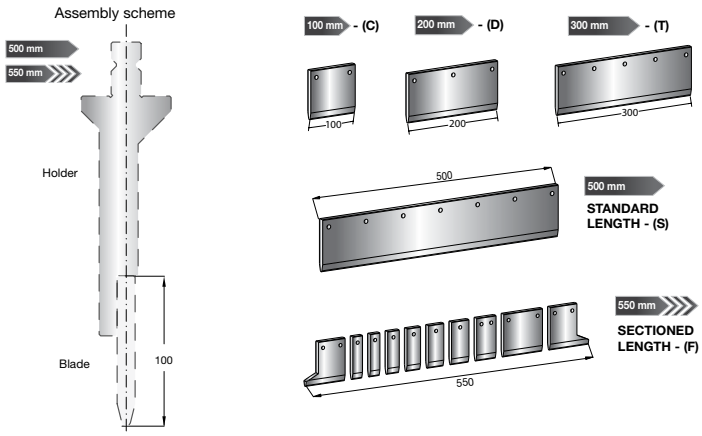
Description

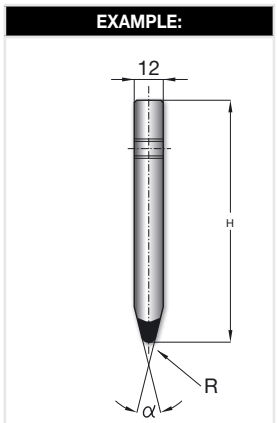
Part Number	Angle	(H) Height (mm)	(H) Height (Inches)	Radius (mm)	Radius (Inches)	Length / Buttons or Pins					Tons/ ft	Tons/ mt	MT	US$ Price				
						mm(Inches)	mm(Inches)	mm(Inches)	mm(Inches)	mm(Inches)				100(3.937)	200(7.847)	300(11.811)	500(19.685)	Segment Set
						100(3.937)	200(7.847)	300(11.811)	500(19.685)	Segment Set				(C)	(D)	(T)	(S)	(F)
015.760	HOLDER	120.000	4.724	HOLDER	HOLDER	button	button	button	pin	button	34	100	▶					

BLADES

BLADES - 28, 84, 86, 90°

Profiles





Description

Part Number	Angle	(H) Height (mm)	(H) Height (Inches)	(R) Radius (mm)	(R) Radius (Inches)	Length / Buttons or Pins					Tons/ ft	Tons/ mt	MT	US$ Price				
						mm(Inches)	mm(Inches)	mm(Inches)	mm(Inches)	mm(Inches)				100(3.937)	200(7.847)	300(11.811)	500(19.685)	Segment Set
						100(3.937)	200(7.847)	300(11.811)	500(19.685)	Segment Set				(C)	(D)	(T)	(S)	(F)
015.761	28°	100.000	3.937	0.500	0.020	Bolt On	Bolt On	Bolt On	Bolt On	Bolt On	34	100	▶					
015.763	28°	100.000	3.937	1.000	0.039	Bolt On	Bolt On	Bolt On	Bolt On	Bolt On	34	100	▶					
015.765	28°	100.000	3.937	2.000	0.079	Bolt On	Bolt On	Bolt On	Bolt On	Bolt On	34	100	▶					
015.766	28°	100.000	3.937	3.000	0.118	Bolt On	Bolt On	Bolt On	Bolt On	Bolt On	34	100	▶					
015.767	28°	100.000	3.937	4.000	0.157	Bolt On	Bolt On	Bolt On	Bolt On	Bolt On	34	100	▶					
015.768	28°	100.000	3.937	5.000	0.197	Bolt On	Bolt On	Bolt On	Bolt On	Bolt On	34	100	▶					
015.769	28°	100.000	3.937	6.000	0.236	Bolt On	Bolt On	Bolt On	Bolt On	Bolt On	34	100	▶					
015.774	84°	100.000	3.937	1.000	0.039	Bolt On	Bolt On	Bolt On	Bolt On	Bolt On	34	100	▶					
015.776	86°	100.000	3.937	1.000	0.039	Bolt On	Bolt On	Bolt On	Bolt On	Bolt On	34	100	▶					
015.782	90°	100.000	3.937	0.500	0.020	Bolt On	Bolt On	Bolt On	Bolt On	Bolt On	34	100	▶					
015.784	90°	100.000	3.937	1.000	0.039	Bolt On	Bolt On	Bolt On	Bolt On	Bolt On	34	100	▶					
015.787	90°	100.000	3.937	1.500	0.059	Bolt On	Bolt On	Bolt On	Bolt On	Bolt On	34	100	▶					
015.788	90°	100.000	3.937	2.000	0.079	Bolt On	Bolt On	Bolt On	Bolt On	Bolt On	34	100	▶					

MODIFIED STANDARD PUNCH RADIUS

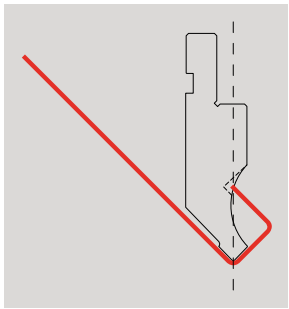
Punch radius geometry can be modified to your request (within physical limits of the specific punch). The best results occur when the change can be accommodated while maintaining the common height parameters of the standard product line.

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.

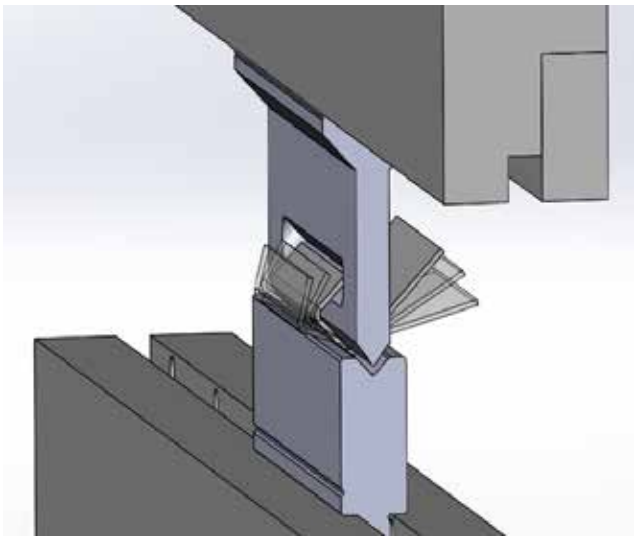
RELIEFS/DEEP RETURN FLANGE

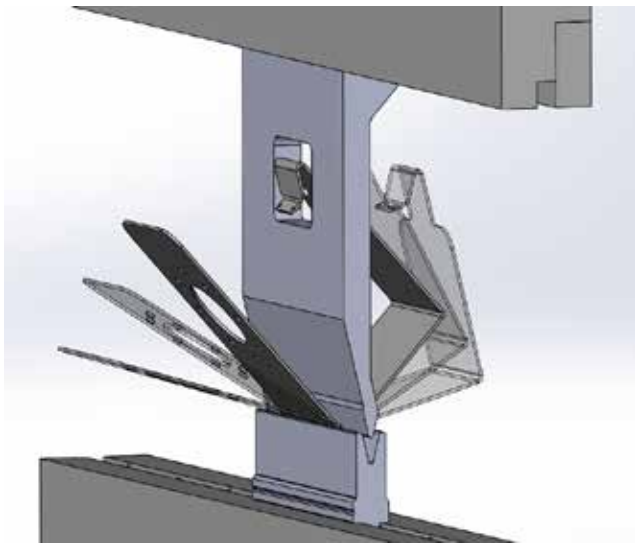
Punches can be specially modified to accommodate long return flanges. A notch or relief can be cut into the punch body in cases where the long return flange would otherwise collide with the punch body. Each application is reviewed before approval.



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.





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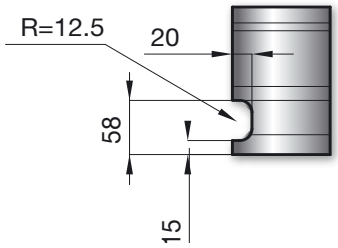
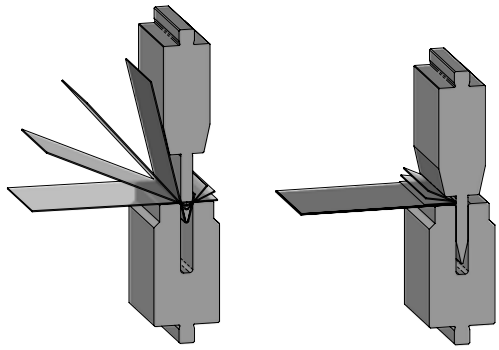
orders@mate.com

HEMMING TOOLS

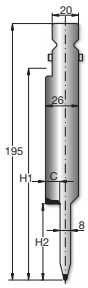
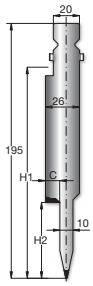
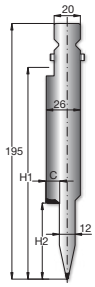
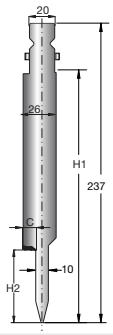
HORNS SCHEME STANDARD SECTIONING





HEMMING PUNCH 24°, 28°

Profiles

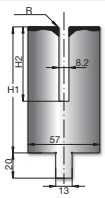
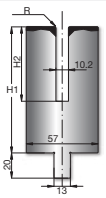
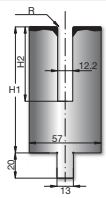
015.902	015.904	015.905	19.053
			

Description

Part Number	Angle	Height (H1)		Height (H2)		Punch Point Radius		Hem Punch C Value		Hem Punch W1 Value		Hem Punch W2 Value		Tons/ ft	Tons/ mt	MT	US$ Price					
		Inches	(mm)	Inches	(mm)	Inches	(mm)	Inches	(mm)	Inches	(mm)	Inches	(mm)				3.937 (100mm) (C)	7.874 (200mm) (D)	11.811 (300mm) (T)	19.685 (500mm) (S)	20.276 (515mm) (S)	21.654 (550mm) (F)
15.902	24°	6.220	(158.0)	2.283	(58.0)	0.024	(0.60)	0.472	(12.0)	1.024	(26.0)	0.315	(8.0)			▶					N/A	
15.904	24°	6.220	(158.0)	2.283	(58.0)	0.024	(0.60)	0.433	(11.0)	1.024	(26.0)	0.394	(10.0)			▶					N/A	
15.905	24°	6.220	(158.0)	2.283	(58.0)	0.024	(0.60)	0.394	(10.0)	1.024	(26.0)	0.472	(12.0)			▶					N/A	
19.053	28°	7.874	(200.0)	2.283	(58.0)	0.039	(1.00)	0.394	(10.0)	1.024	(26.0)	0.394	(10.0)			▶				N/A		
Acute Bend														15	45							
Finishing														27	80							

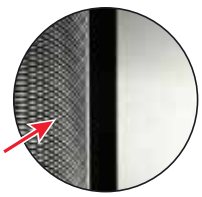
HEMMING DIE

Profiles

25.992	25.994	25.995
		

Close-up view of top of hemming die

Knurled edge to prevent movement



Description

Part Number	Angle	Height (H1)		Height (H2)		V Opening		Shoulder Radius		Body Width		Tons/ ft	Tons/ mt	MT	US$ Price				
		Inches	(mm)	Inches	(mm)	Inches	(mm)	Inches	(mm)	Inches	(mm)				3.937" 100mm (C)	7.874" 200mm (D)	11.811" 300mm (T)	19.685" 500mm (S)	21.654" 550mm (F)
25.992		3.937	(100.0)	2.323	(59.0)	0.323	(8.2)	0.039	(1.0)	2.244	(57.0)			▶					
25.994		3.937	(100.0)	2.323	(59.0)	0.402	(10.2)	0.039	(1.0)	2.244	(57.0)			▶					
25.995		3.937	(100.0)	2.323	(59.0)	0.480	(12.2)	0.039	(1.0)	2.244	(57.0)			▶					
Acute Bend												15	45						
Finishing												27	80						

kg Indicates weight is greater than 12.5kg (27.6 lbs). Pins are standard on all punches having a weight greater than 12.5 kg (27.6 lbs). Fast change buttons are standard on all punches having a weight less than 12.5 kg (27.6 lbs)

SPRING LOADED HEMMING DIES AND ADAPTERS

HEMMING TONNAGE GUIDE

Assumes 60,000psi Tensile Material (Mild Steel)

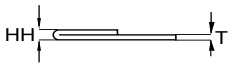
TEAR DROP HEM

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

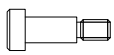
T (mm)	T (inch)	HH (mm)	HH (inch)	tons/meter	tons/ft
0.6	0.024	1.2	0.047	23	8
0.8	0.031	1.6	0.063	32	11
1.0	0.039	2.0	0.079	40	13
1.3	0.049	2.5	0.098	50	17
1.5	0.059	3.0	0.118	63	21
2.0	0.079	4.0	0.157	80	27

For Stainless Steel multiply force by 2 for approximate tonnage

SPARE PARTS

70.100

70.102

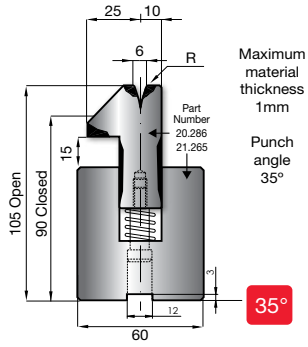


SPRING LOADED HEMMING DIE

Profiles

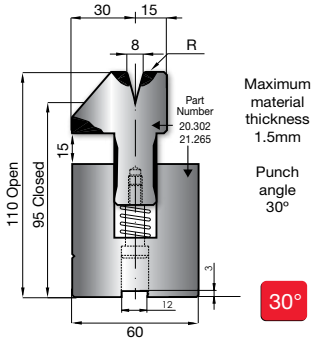
415 mm
835 mm

	α	R	T/mt	Mt
20.264	35°	1.00	60	



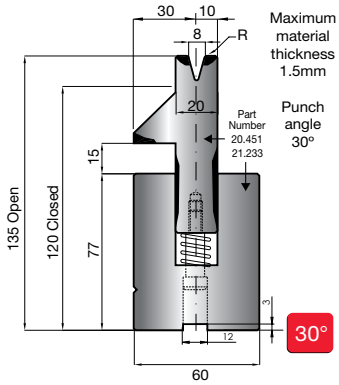
415 mm
835 mm

	α	R	T/mt	Mt
20.303	30°	1.50	80	



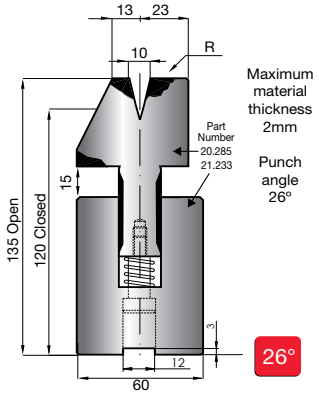
415 mm
835 mm

	α	R	T/mt	Mt
20.450	30°	1.50	60	



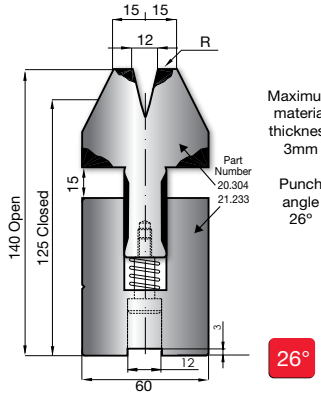
415 mm
835 mm

	α	R	T/mt	Mt
20.231	26°	1.50	100	

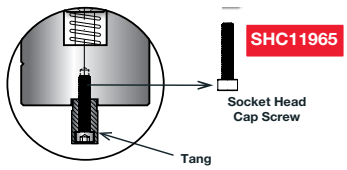


415 mm
835 mm

	α	R	T/mt	Mt
20.305	26°	3.00	100	

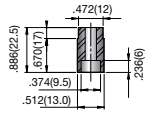


Adapters - Bar Insert Tangs



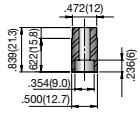
60.100 Wila-Trumpf Style

412 mm
830 mm



60.200 American Precision Style

412 mm
830 mm



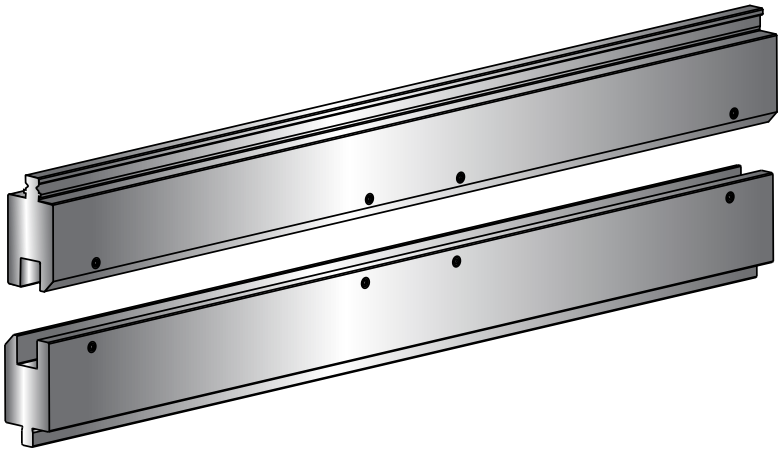
NOTE: PUNCH POINT ANGLE MUST MATCH DIE V OPENING ANGLE.

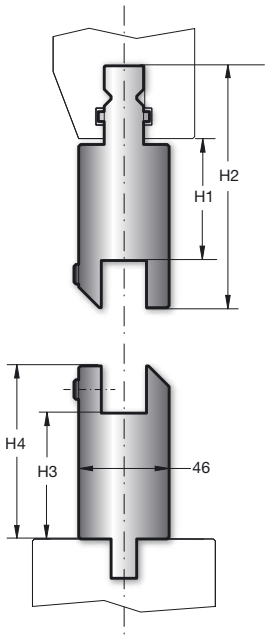
 | 1295 Lund Boulevard, Anoka, Minnesota 55303 USA. Phone: +1.763.421.0230 | mate.com
orders@mate.com

Z-OFFSET TOOL HOLDERS

TOP AND BOTTOM HOLDERS

Profile

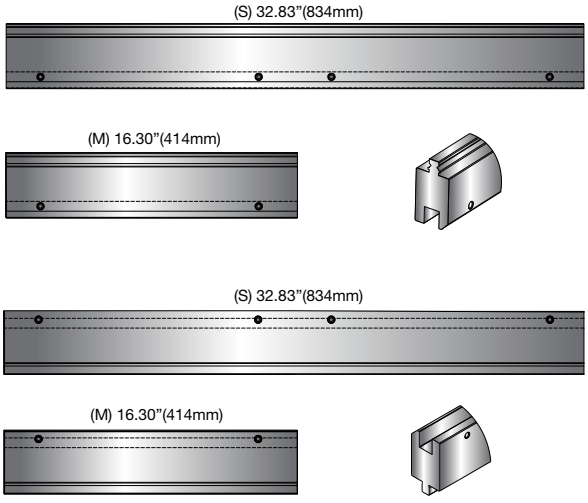




Description

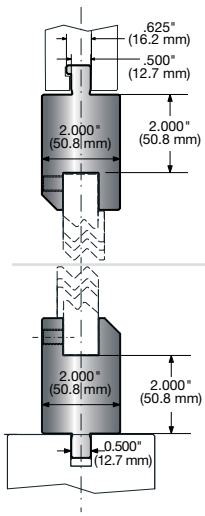
Part Number	H1		H2		H3		H4		Tons/ft	Tons/mt	MT	Price	
	inch	(mm)	inch	(mm)	inch	(mm)	inch	(mm)				16.30"(414mm) (M)	32.83"(834mm) (S)
015.050	2.441	(62.0)	4.842	(123.0)	2.520	(64.0)	3.465	(88.0)	34	100	▶		

LENGTHS

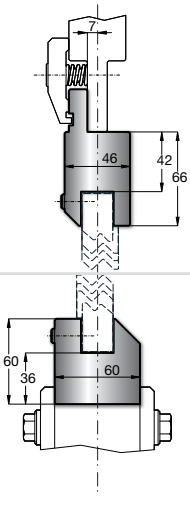


COMPATIBLE HOLDER SYSTEMS

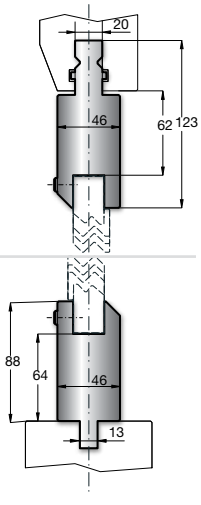
American Precision Style



European Precision Style



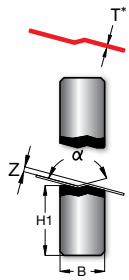
Wila Trumpf Style



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

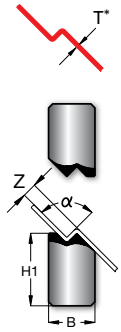
Z-OFFSET TOOL INSERTS

Z-OFFSET

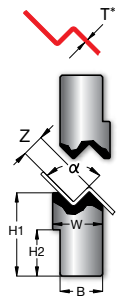


Description																			
Part Number Inches	Part Number Metric	α	Z		Material Thickness (T)		H1		H2		B		W		Tons/ft	Tons/mt	MT	Price	
			inch	(mm)	inch	(mm)	inch	(mm)	inch	(mm)	inch	(mm)	inch	(mm)				16.34"(415mm) (M)	32.87"(835mm) (S)
	040.510	160°	0.039"	(1.00)	0.039"	(1.00)	1.417"	(36.00)			0.906"	(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	▶		

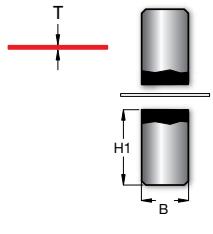
Z-OFFSET 90°



Description																			
Part Number Inches	Part Number Metric	α	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) (M)	32.87"(835mm) (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	α	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) (M)	32.87"(835mm) (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.

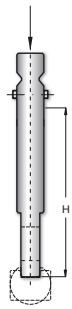
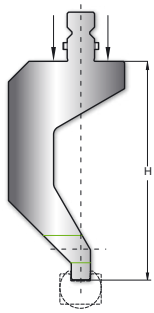
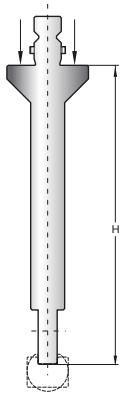
Inserts can be used in Mate American Precision Style, European Precision Style, and Wila Trumpf Style tooling holders.
*Maximum material thickness

RADIUS/FLAT INSERT HOLDERS

RADIUS/FLAT INSERT HOLDERS

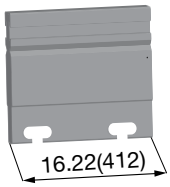
Description

Part Number	H inch	H (mm)	Tons/ ft	Tons/ mt	MT	Price 16.221"(412mm) (M)	Price 32.677"(830mm) (S)
015.010	4.0	(103.0)	27	80	▶		
015.014	6.29	(160.0)	27	80	▶		
015.018	8.66	(220.0)	27	80	▶		

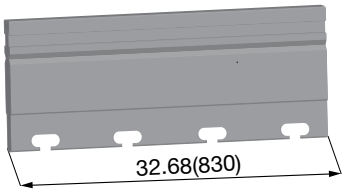
015.010	015.014	015.018
		

RADIUS/FLAT INSERT HOLDERS

HOLDER LENGTH - (M)

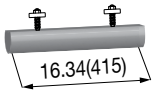


HOLDER LENGTH - (S)

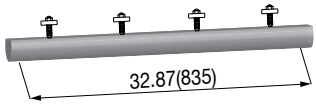


RADIUS/FLAT INSERTS

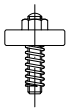
HALF LENGTH - (M)



STANDARD LENGTH - (S)

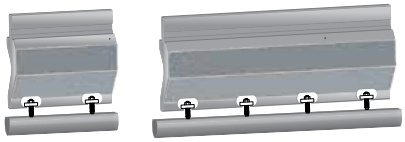


BOLT ASSEMBLY



40.002

ASSEMBLY SCHEME



Radius/flat insert sold with bolt assembly.

DIE SELECTION GUIDE

(Assumes air bending):

1) **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= (2x.375")+(2x.078")=.906" V opening.

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

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

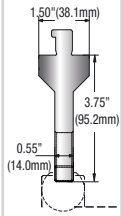
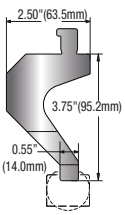
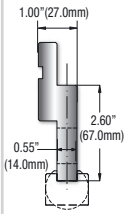
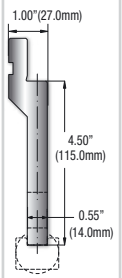
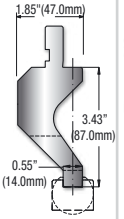
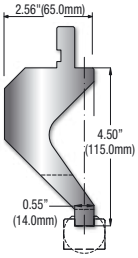
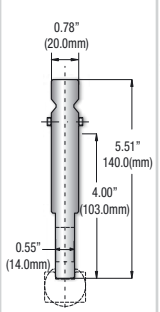
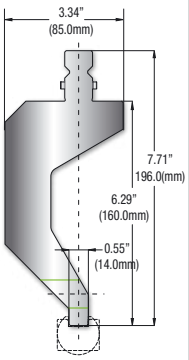
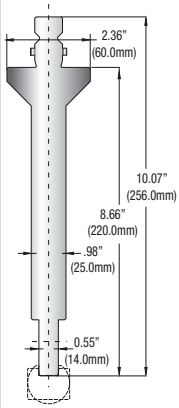
For example, to achieve a 90 degree bend, use a V angle less than 90 degrees such as a 60 degree, 45 degree or even a 30 degree.

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.

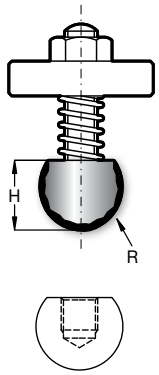
COMPATIBLE HOLDERS

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/FLAT INSERTS

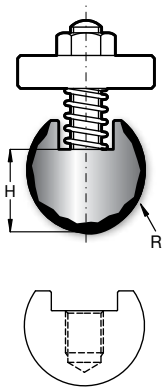
RADIUS INSERTS

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)	▶		



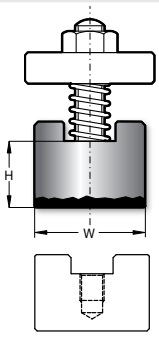
RADIUS INSERTS

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)	▶		



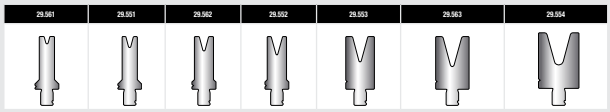
[Dimensions in Inches (mm)].
Images are proportionate but not to scale.

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

DIE PROFILES

Page 18 — 30° DIES

55



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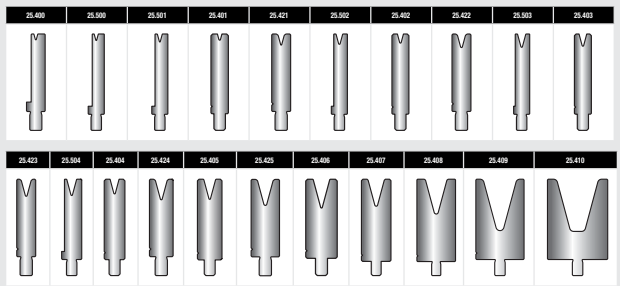
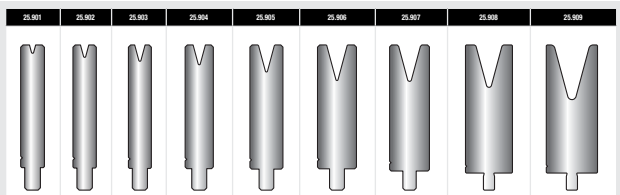
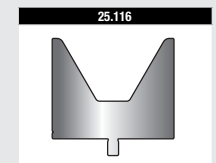


150



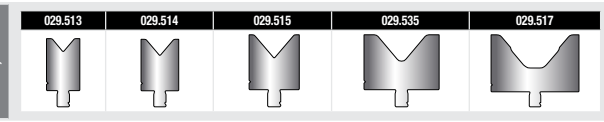
Page 20 — 60° DIES

120

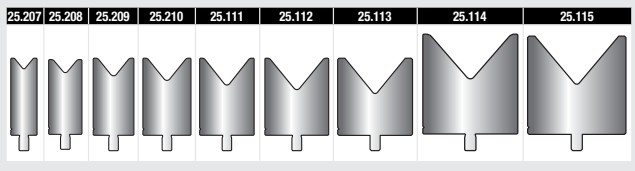


80° DIES

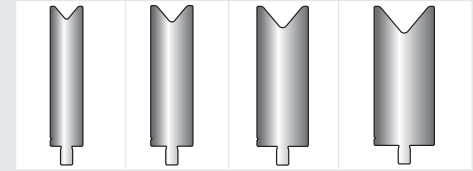
55, 60



100, 120

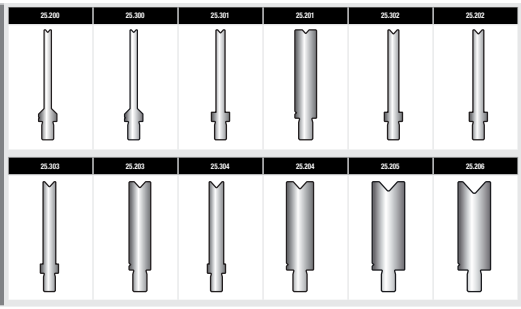


150

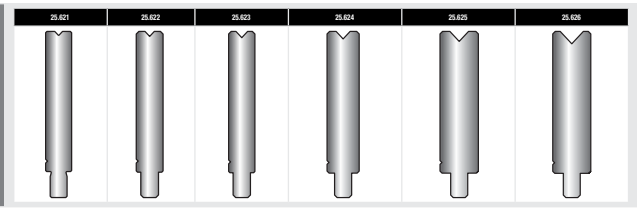


Page 20 — 84° DIES

100

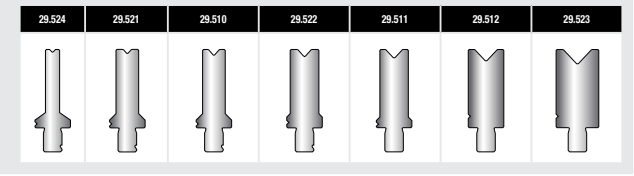


150

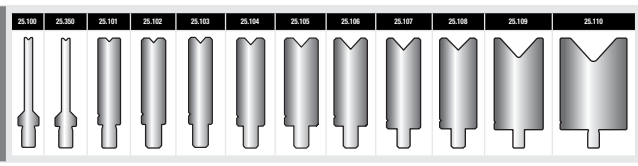


Page 22 — 86° DIES

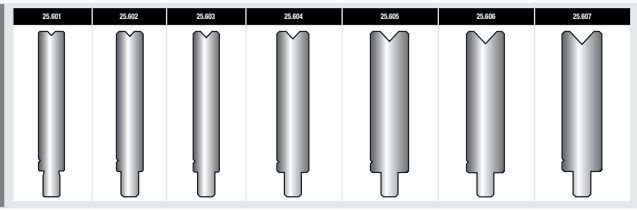
55



100



150



Link to detail DXF and PDF profile files of images on this page.

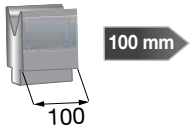
mate.com/aps-files

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

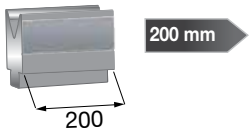
STANDARD DIE LENGTHS

100 mm
200 mm
300 mm
500 mm
550 mm

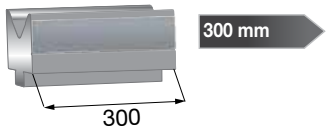
LENGTH - C



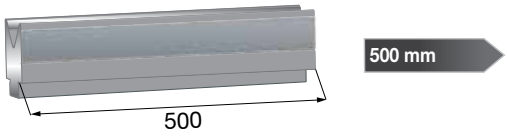
LENGTH - D



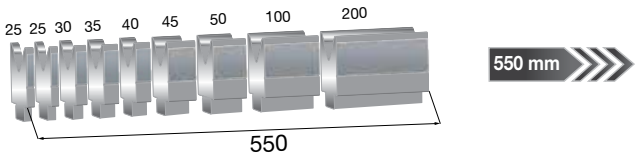
LENGTH - T

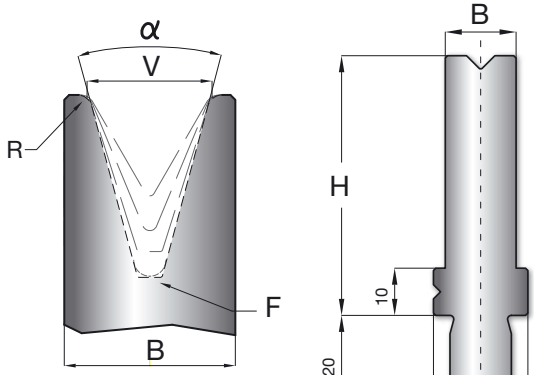


STANDARD LENGTH - S



SECTIONED LENGTH - F





Legend
F = *bottom*
R = *radius*
P = *flat*

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

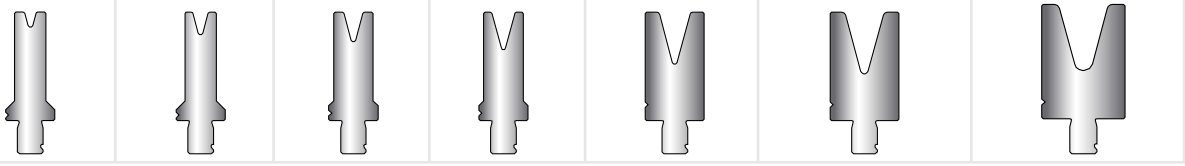
DIE DETAIL

Profiles

30° DIES

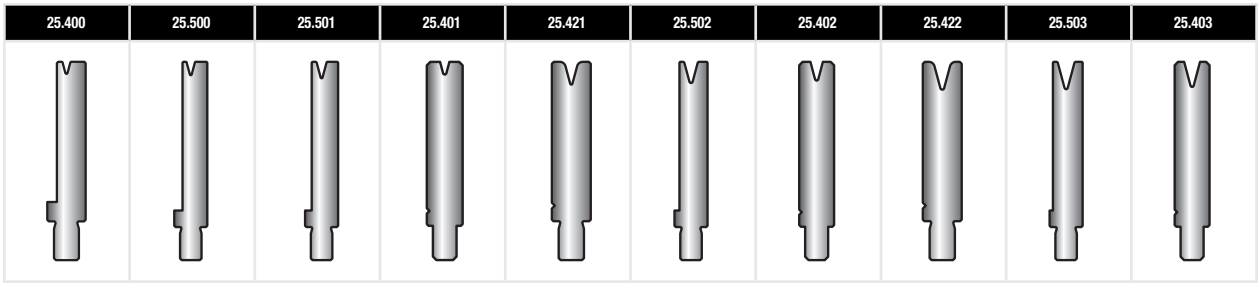
55

29.561	29.551	29.562	29.552	29.553	29.563	29.554

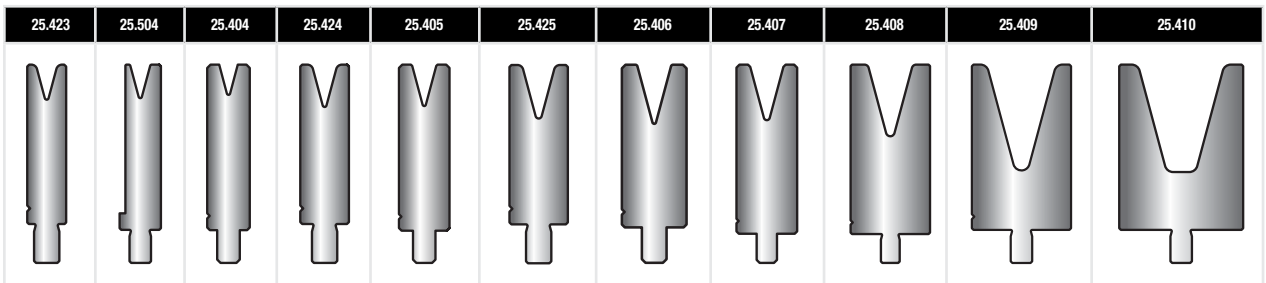


100

25.400	25.500	25.501	25.401	25.421	25.502	25.402	25.422	25.503	25.403

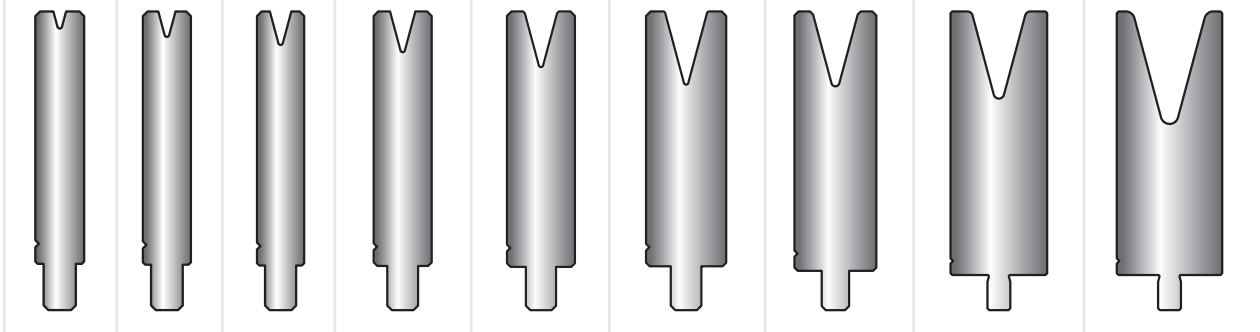


25.423	25.504	25.404	25.424	25.405	25.425	25.406	25.407	25.408	25.409	25.410



150

25.901	25.902	25.903	25.904	25.905	25.906	25.907	25.908	25.909



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

DIE DETAIL

30°

Description *(see page 17 for die overview)*

	Part Number	Angle	(H) Height (mm)	(H) Height (Inches)	V Opening (mm)	V Opening (Inches)	(R)Shoulder Radius (mm)	(R)Shoulder Radius (Inches)	(B) Body Width (mm)	(B) Body Width (Inches)	(T) Base Width (mm)	(T) Base Width (Inches)	(F) Bottom Radius (mm)	(F) Bottom Radius (Inches)	Tons/ ft	Tons/ mt	MT	US$ Price 100 (3.937) (C)	200 (7.847) (D)	300 (11.811) (T)	500 (19.685) (S)	515 (20.276) (S)	Segment Set (F)
55, 60	029.561	30°	55	2.165	6	0.236	1.0	0.039	16	0.630	25	0.984	1.2	0.047	27	80	▶				N/A		
	029.551	30°	55	2.165	8	0.315	1.0	0.039	16	0.630	25	0.984	1.2	0.047	27	80	▶				N/A		
	029.562	30°	55	2.165	10	0.394	1.0	0.039	20	0.787	25	0.984	1.2	0.047	27	80	▶				N/A		
	029.552	30°	55	2.165	12	0.472	1.0	0.039	20	0.787	25	0.984	1.2	0.047	27	80	▶				N/A		
	029.553	30°	55	2.165	16	0.630	1.5	0.059	30	1.181	30	1.181	1.2	0.047	27	80	▶				N/A		
	029.563	30°	55	2.165	20	0.787	2.0	0.079	35	1.378	35	1.378	2.0	0.079	27	80	▶				N/A		
	029.554	30°	55	2.165	24	0.945	2.5	0.098	40	1.575	40	1.575	4.0	0.157	27	80	▶				N/A		
100	025.400	30°	100	3.937	4	0.157	0.6	0.024	15	0.591	20	0.787	0.6	0.024	7	20	▶					N/A	
	025.500	30°	100	3.937	5	0.197	0.6	0.024	15	0.591	20	0.787	0.6	0.024	5	15	▶					N/A	
	025.401	30°	100	3.937	6	0.236	0.6	0.024	20	0.787	20	0.787	0.6	0.024	13	40	▶					N/A	
	025.421	30°	100	3.937	6	0.236	3.0	0.118	20	0.787	20	0.787	0.6	0.024	13	40	▶					N/A	
	025.501	30°	100	3.937	6	0.236	0.6	0.024	16	0.630	20	0.787	0.6	0.024	6	17	▶					N/A	
	025.402	30°	100	3.937	8	0.315	1.0	0.039	20	0.787	20	0.787	1.0	0.039	13	40	▶					N/A	
	025.422	30°	100	3.937	8	0.315	3.0	0.118	20	0.787	20	0.787	1.0	0.039	13	40	▶					N/A	
	025.502	30°	100	3.937	8	0.315	1.0	0.039	17	0.669	20	0.787	1.0	0.039	7	20	▶					N/A	
	025.403	30°	100	3.937	10	0.394	1.0	0.039	20	0.787	20	0.787	1.0	0.039	13	40	▶					N/A	
	025.423	30°	100	3.937	10	0.394	3.0	0.118	20	0.787	20	0.787	1.0	0.039	13	40	▶					N/A	
	025.503	30°	100	3.937	10	0.394	1.0	0.039	18	0.709	20	0.787	1.0	0.039	7	20	▶					N/A	
	025.404	30°	100	3.937	12	0.472	1.0	0.039	25	0.984	25	0.984	1.0	0.039	13	40	▶					N/A	
	025.424	30°	100	3.937	12	0.472	3.0	0.118	25	0.984	25	0.984	1.0	0.039	13	40	▶					N/A	
	025.504	30°	100	3.937	12	0.472	1.0	0.039	22	0.846	25	0.984	1.0	0.039	8	25	▶					N/A	
	025.405	30°	100	3.937	16	0.630	1.6	0.063	30	1.181	30	1.181	1.6	0.063	17	50	▶					N/A	
	025.425	30°	100	3.937	16	0.630	3.0	0.118	30	1.181	30	1.181	1.6	0.063	17	50	▶					N/A	
	025.406	30°	100	3.937	20	0.787	2.0	0.079	35	1.378	35	1.378	2.0	0.079	20	60	▶					N/A	
	025.407	30°	100	3.937	24	0.945	2.5	0.098	40	1.575	40	1.575	2.5	0.098	22	65	▶					N/A	
	025.408	30°	100	3.937	30	1.181	3.0	0.118	55	2.165	55	2.165	3.0	0.118	30	90	▶					N/A	
	025.409	30°	100	3.937	40	1.575	5.0	0.197	60	2.362	60	2.362	5.0	0.197	30	90	▶					N/A	
	025.410	30°	100	3.937	50	1.969	5.0	0.197	75	2.953	75	2.953	17.0	0.669	34	100	▶					N/A	
150	025.901	30°	150	5.906	6	0.236	0.6	0.024	20	0.787	20	0.787	0.6	0.024	10	30	▶					N/A	
	025.902	30°	150	5.906	8	0.315	1.0	0.039	20	0.787	20	0.787	1.0	0.039	13	40	▶					N/A	
	025.903	30°	150	5.906	10	0.394	1.0	0.039	20	0.787	20	0.787	1.0	0.039	13	40	▶					N/A	
	025.904	30°	150	5.906	12	0.472	1.0	0.039	25	0.984	25	0.984	1.0	0.039	13	40	▶					N/A	
	025.905	30°	150	5.906	16	0.630	1.6	0.063	30	1.181	30	1.181	1.6	0.063	17	50	▶					N/A	
	025.906	30°	150	5.906	20	0.787	2.0	0.079	35	1.378	35	1.378	2.0	0.079	20	60	▶					N/A	
	025.907	30°	150	5.906	24	0.945	2.5	0.098	40	1.575	40	1.575	2.5	0.098	22	65	▶					N/A	
	025.908	30°	150	5.906	30	1.181	3.0	0.118	55	2.165	55	2.165	3.0	0.118	30	90	▶					N/A	
	025.909	30°	150	5.906	40	1.575	5.0	0.197	60	2.362	60	2.362	5.0	0.197	30	90	▶					N/A	

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

Die DXF files are available for download. See page 16 for link.

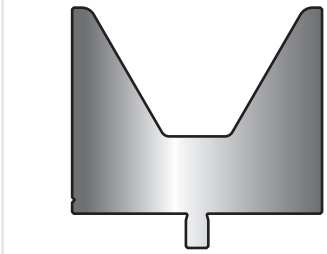
DIE DETAIL

Profiles

60° DIES

120

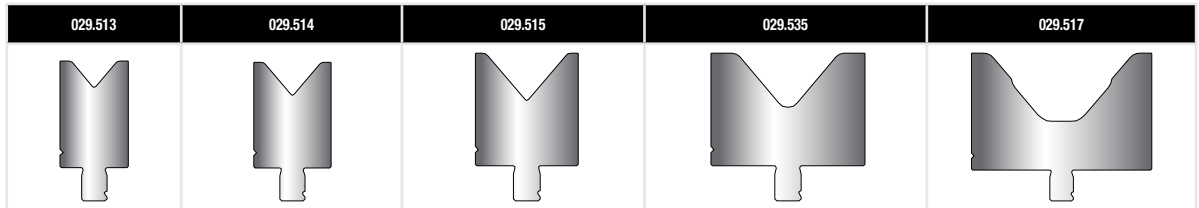
25.116



80° DIES

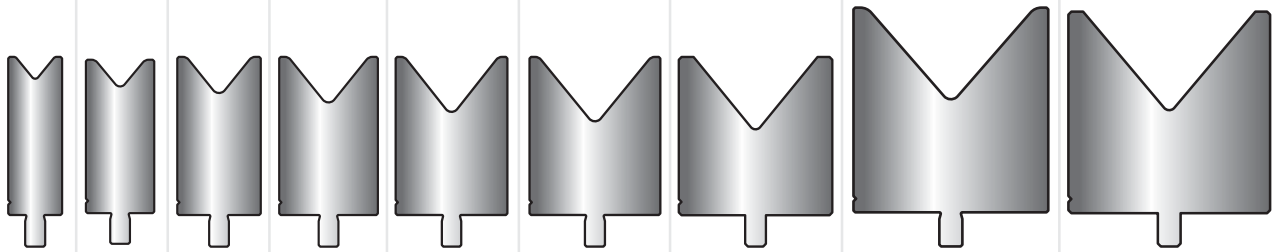
55, 65

029.513	029.514	029.515	029.535	029.517



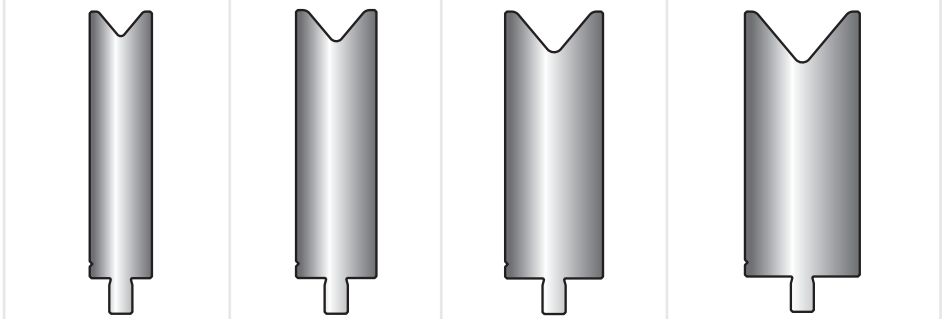
100, 120

25.207	25.208	25.209	25.210	25.111	25.112	25.113	25.114	25.115



150

25.627	25.628	25.629	25.630



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

DIE DETAIL

60º 80º

Description *(see page 17 for die overview)*

	Part Number	Angle	(H) Height (mm)	(H) Height (Inches)	V Opening (mm)	V Opening (Inches)	(R)Shoulder Radius (mm)	(R)Shoulder Radius (Inches)	(B) Body Width (mm)	(B) Body Width (Inches)	(T) Base Width (mm)	(T) Base Width (Inches)	(F) Bottom Radius (mm)	(F) Bottom Radius (Inches)	Tons/ ft	Tons/ mt	MT	US$ Price 100 (3.937) (C)	200 (7.847) (D)	300 (11.811) (T)	500 (19.685) (S)	515 (20.276) (S)	Segment Set (F)
120	025.116	60°	120	4.724	120	4.724	8.0	0.315	145	5.709	145	5.709	38.0	1.496	54	160	▶					N/A	
55, 65	029.513	80°	55	2.165	24	0.945	2.5	0.098	35	1.378	35	1.378	1.2	0.047	42	125	▶				N/A		
	029.514	80°	55	2.165	30	1.181	3.0	0.118	40	1.575	40	1.575	1.2	0.047	42	125	▶				N/A		
	029.515	80°	55	2.165	40	1.575	4.0	0.157	50	1.969	50	1.969	1.2	0.047	42	125	▶				N/A		
	029.535	80°	55	2.165	50	1.969	5.0	0.197	75	2.953	75	2.953	6.0	0.236	50	150	▶				N/A		
	029.517	80°	65	2.559	80	3.150	8.0	0.315	100	3.937	100	3.937	10.0	0.394	50	150	▶				N/A		
100, 120	025.207	80°	100	3.937	24	0.945	2.5	0.098	35	1.378	35	1.378	2.5	0.098	34	100	▶					N/A	
	025.208	80°	100	3.937	30	1.181	5.0	0.197	45	1.772	45	1.772	3.0	0.118	34	100	▶					N/A	
	025.209	80°	100	3.937	40	1.575	5.0	0.197	55	2.165	55	2.165	3.0	0.118	40	120	▶					N/A	
	025.210	80°	100	3.937	50	1.969	5.0	0.197	65	2.559	65	2.559	5.0	0.197	50	150	▶					N/A	
	025.111	80°	100	3.937	60	2.362	5.0	0.197	75	2.953	75	2.953	5.0	0.197	50	150	▶					N/A	
	025.112	80°	100	3.937	70	2.756	5.0	0.197	85	3.346	85	3.346	5.0	0.197	50	150	▶					N/A	
	025.113	80°	100	3.937	80	3.150	5.0	0.197	100	3.937	100	3.937	5.0	0.197	50	150	▶					N/A	
	025.114	80°	120	4.724	90	3.543	8.0	0.315	110	4.331	110	4.331	5.0	0.197	50	150	▶					N/A	
	025.115	80°	120	4.724	100	3.937	8.0	0.315	120	4.724	120	4.724	5.0	0.197	50	150	▶					N/A	
150	025.627	80°	150	5.906	24	0.945	2.5	0.098	35	1.378	35	1.378	2.5	0.098	34	100	▶					N/A	
	025.628	80°	150	5.906	30	1.181	5.0	0.197	45	1.772	45	1.772	3.0	0.118	34	100	▶					N/A	
	025.629	80°	150	5.906	40	1.575	5.0	0.197	55	2.165	55	2.165	3.0	0.118	34	100	▶					N/A	
	025.630	80°	150	5.906	50	1.969	5.0	0.197	65	2.559	65	2.559	5.0	0.197	34	100	▶					N/A	

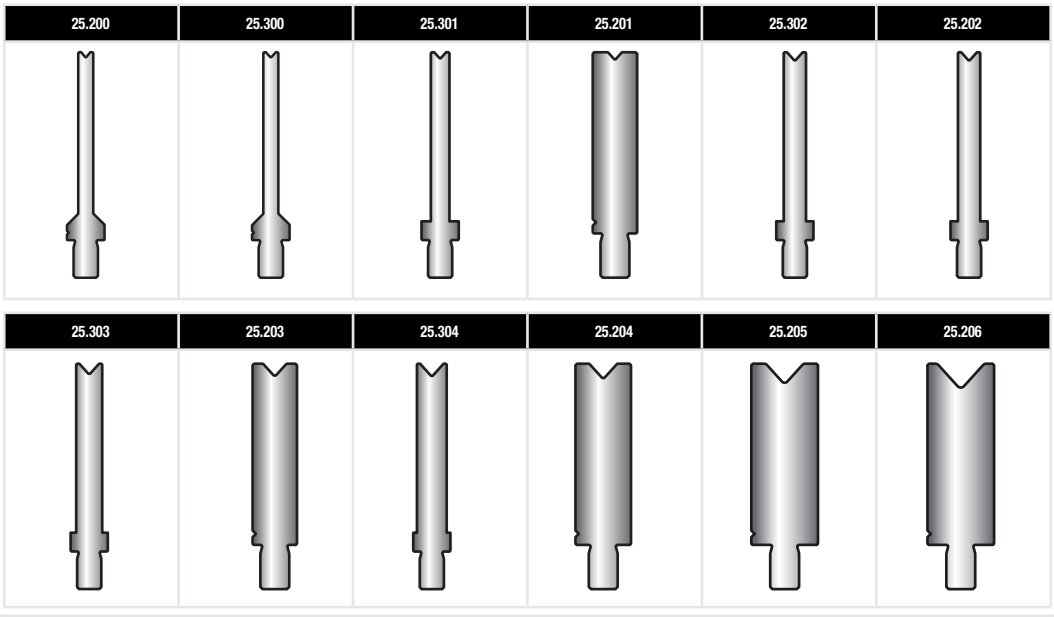
[Dimensions in Inches (mm)]. Images are proportionate but not to scale.

Die DXF files are available for download. See page 16 for link.

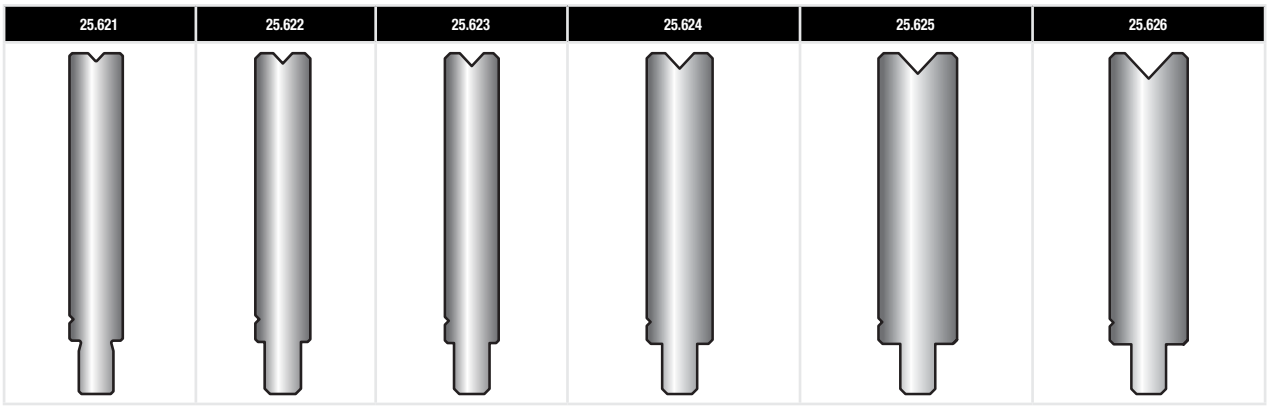
Profiles

84° DIES

100



150



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

DIE DETAIL

Description *(see page 17 for die overview)*

	Part Number	Angle	(H) Height (mm)	(H) Height (Inches)	V Opening (mm)	V Opening (Inches)	(R)Shoulder Radius (mm)	(R)Shoulder Radius (Inches)	(B) Body Width (mm)	(B) Body Width (Inches)	(T) Base Width (mm)	(T) Base Width (Inches)	(F) Bottom Radius (mm)	(F) Bottom Radius (Inches)	Tons/ ft	Tons/ mt	MT	US$ Price 100 (3.937) (C)	200 (7.847) (D)	300 (11.811) (T)	500 (19.685) (S)	515 (20.276) (S)	Segment Set (F)
100	025.200	84°	100	3.937	4	0.157	0.6	0.024	8	0.315	20	0.787	0.6	0.024	8	25	▶					N/A	
	025.300	84°	100	3.937	5	0.197	0.6	0.024	8	0.315	20	0.787	0.6	0.024	8	25	▶					N/A	
	025.201	84°	100	3.937	6	0.236	0.6	0.024	20	0.787	20	0.787	0.6	0.024	34	100	▶					N/A	
	025.301	84°	100	3.937	6	0.236	0.6	0.024	10	0.394	20	0.787	0.6	0.024	8	25	▶					N/A	
	025.202	84°	100	3.937	8	0.315	0.8	0.031	20	0.787	20	0.787	0.8	0.031	34	100	▶					N/A	
	025.302	84°	100	3.937	8	0.315	0.8	0.031	12	0.472	20	0.787	0.8	0.031	12	35	▶					N/A	
	025.203	84°	100	3.937	10	0.394	1.0	0.039	20	0.787	20	0.787	1.0	0.039	34	100	▶					N/A	
	025.303	84°	100	3.937	10	0.394	1.0	0.039	14	0.551	20	0.787	1.0	0.039	13	40	▶					N/A	
	025.204	84°	100	3.937	12	0.472	1.0	0.039	25	0.984	25	0.984	1.0	0.039	34	100	▶					N/A	
	025.304	84°	100	3.937	12	0.472	1.0	0.039	16	0.630	20	0.787	1.0	0.039	13	40	▶					N/A	
	025.205	84°	100	3.937	16	0.630	1.6	0.063	30	1.181	30	1.181	1.6	0.063	34	100	▶					N/A	
	025.206	84°	100	3.937	20	0.787	2.0	0.079	30	1.181	30	1.181	2.0	0.079	34	100	▶					N/A	
150	025.621	84°	150	5.906	6	0.236	0.6	0.024	20	0.787	20	0.787	0.6	0.024	34	100	▶					N/A	
	025.622	84°	150	5.906	8	0.315	0.8	0.031	20	0.787	20	0.787	0.8	0.031	34	100	▶					N/A	
	025.623	84°	150	5.906	10	0.394	1.0	0.039	20	0.787	20	0.787	1.0	0.039	34	100	▶					N/A	
	025.624	84°	150	5.906	12	0.472	1.0	0.039	25	0.984	25	0.984	1.0	0.039	34	100	▶					N/A	
	025.625	84°	150	5.906	16	0.630	1.6	0.063	30	1.181	30	1.181	1.6	0.063	34	100	▶					N/A	
	025.626	84°	150	5.906	20	0.787	2.0	0.079	30	1.181	30	1.181	2.0	0.079	34	100	▶					N/A	

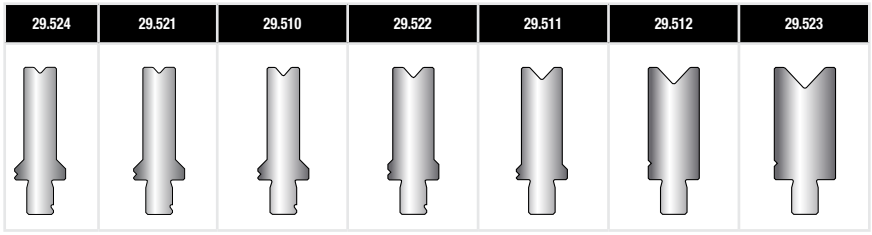
[Dimensions in Inches (mm)]. Images are proportionate but not to scale.

Die DXF files are available for download. See page 16 for link.

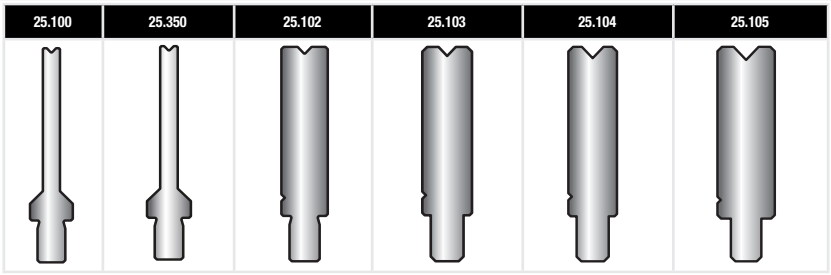
Profiles

86° DIES

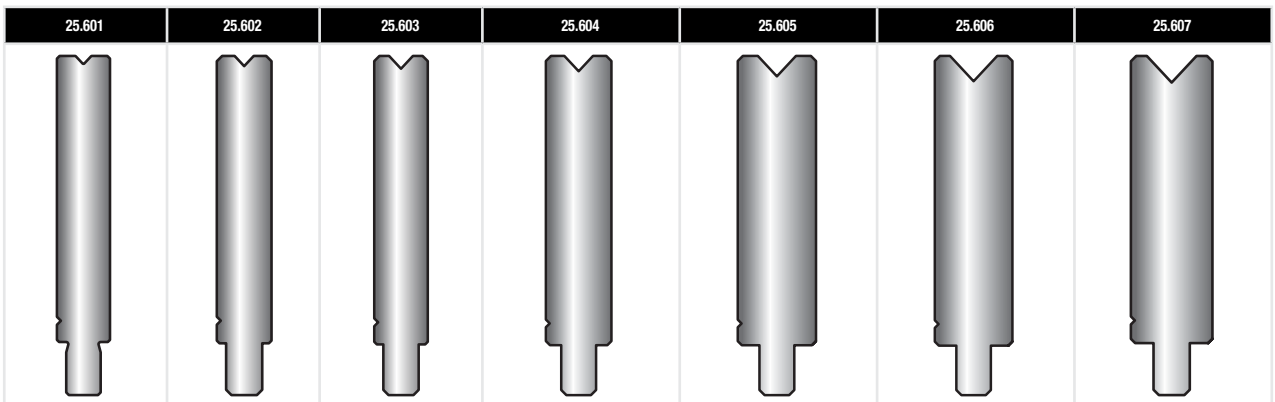
55



100



150



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

Description *(see page 17 for die overview)*

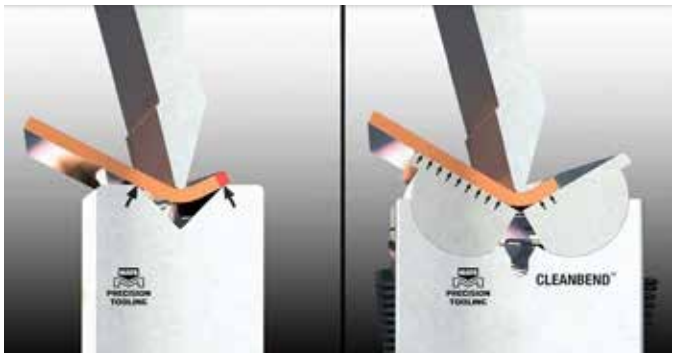
	Part Number	Angle	(H) Height (mm)	(H) Height (Inches)	V Opening (mm)	V Opening (Inches)	(R)Shoulder Radius (mm)	(R)Shoulder Radius (Inches)	(B) Body Width (mm)	(B) Body Width (Inches)	(T) Base Width (mm)	(T) Base Width (Inches)	(F) Bottom Radius (mm)	(F) Bottom Radius (Inches)	Tons/ ft	Tons/ mt	MT	US$ Price 100 (3.937) (C)	200 (7.847) (D)	300 (11.811) (T)	500 (19.685) (S)	515 (20.276) (S)	Segment Set (F)
55	029.524	86°	55	2.165	4	0.157	0.4	0.016	10	0.394	25	0.984	0.6	0.024	10	30	▶				N/A		
	029.521	86°	55	2.165	6	0.236	1.0	0.039	16	0.630	25	0.984	0.8	0.031	34	100	▶				N/A		
	029.510	86°	55	2.165	8	0.315	1.0	0.039	16	0.630	25	0.984	0.8	0.031	34	100	▶				N/A		
	029.522	86°	55	2.165	10	0.394	1.0	0.039	20	0.787	25	0.984	1.0	0.039	34	100	▶				N/A		
	029.511	86°	55	2.165	12	0.472	1.0	0.039	20	0.787	25	0.984	1.2	0.047	34	100	▶				N/A		
	029.512	86°	55	2.165	16	0.630	1.5	0.059	25	0.984	25	0.984	1.2	0.047	34	100	▶				N/A		
	029.523	86°	55	2.165	20	0.787	2.0	0.079	30	1.181	30	1.181	1.2	0.047	34	100	▶				N/A		
100	025.100	86°	100	3.937	4	0.157	0.6	0.024	8	0.315	20	0.787	0.6	0.024	8	25	▶					N/A	
	025.101	86°	100	3.937	6	0.236	0.6	0.024	20	0.787	20	0.787	0.6	0.024	34	100	▶					N/A	
	025.102	86°	100	3.937	8	0.315	0.8	0.031	20	0.787	20	0.787	0.8	0.031	34	100	▶					N/A	
	025.103	86°	100	3.937	10	0.394	1.0	0.039	20	0.787	20	0.787	1.0	0.039	34	100	▶					N/A	
	025.104	86°	100	3.937	12	0.472	1.0	0.039	25	0.984	25	0.984	1.0	0.039	34	100	▶					N/A	
	025.105	86°	100	3.937	16	0.630	1.6	0.063	30	1.181	30	1.181	1.6	0.063	34	100	▶					N/A	
	025.106	86°	100	3.937	20	0.787	2.0	0.079	30	1.181	30	1.181	2.0	0.079	34	100	▶					N/A	
	025.107	86°	100	3.937	24	0.945	2.5	0.098	35	1.378	35	1.378	2.5	0.098	34	100	▶					N/A	
	025.108	86°	100	3.937	30	1.181	3.0	0.118	45	1.772	45	1.772	3.0	0.118	34	100	▶					N/A	
	025.109	86°	100	3.937	40	1.575	3.0	0.118	55	2.165	55	2.165	3.0	0.118	40	120	▶					N/A	
	025.110	86°	100	3.937	50	1.969	3.0	0.118	75	2.953	75	2.953	5.0	0.197	50	150	▶					N/A	
150	025.601	86°	150	5.906	6	0.236	0.6	0.024	20	0.787	20	0.787	0.6	0.024	34	100	▶					N/A	
	025.602	86°	150	5.906	8	0.315	0.8	0.031	20	0.787	20	0.787	0.8	0.031	34	100	▶					N/A	
	025.603	86°	150	5.906	10	0.394	1.0	0.039	20	0.787	20	0.787	1.0	0.039	34	100	▶					N/A	
	025.604	86°	150	5.906	12	0.472	1.0	0.039	25	0.984	25	0.984	1.0	0.039	34	100	▶					N/A	
	025.605	86°	150	5.906	16	0.630	1.6	0.063	30	1.181	30	1.181	1.6	0.063	34	100	▶					N/A	
	025.606	86°	150	5.906	20	0.787	2.0	0.079	30	1.181	30	1.181	2.0	0.079	34	100	▶					N/A	
	025.607	86°	150	5.906	24	0.945	2.5	0.098	35	1.378	35	1.378	2.5	0.098	34	100	▶					N/A	

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

Die DXF files are available for download. See page 16 for link.

WHY USE MATE® CLEANBEND™?

Wide contact surfaces rotate to support the material while bending



Up to 40 degree bend without sheetmarking

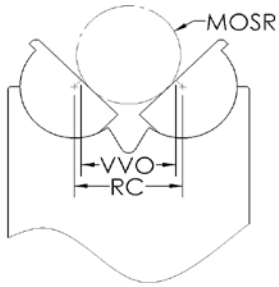
To see the Mate® CleanBend™ technology in action go to:
https://www.youtube.com/watch?v=wANZFc3HTOs

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
TWS	CB 000	029.000*	8.08	3.91	3.43	2.0	140	100	4.60	9.20
TWS	CB 100	029.100*	12.09	5.84	5.23	3.0	120	130	6.74	13.49
TWS	CB 150	029.150*	14.86	7.37	6.30	4.0	120	150	9.19	18.39
TWS	CB 200	029.200*	24.26	12.95	11.13	5.0	120	170	13.89	27.79
TWS	CB 300	029.300*	30.63	16.13	13.82	6.0	115	200	18.85	37.69

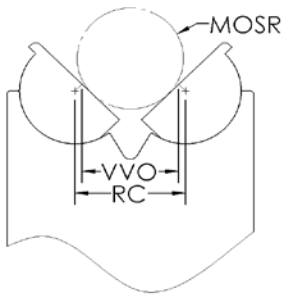
MOSR = Maximum Outside Radius
VVO = Virtual V Opening
RC = Rotation Centers
MT = Material Thickness



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
TWS	CB 000	029.000*	0.318	0.154	0.135	0.079	140	34	0.181	0.362
TWS	CB 100	029.100*	0.476	0.230	0.206	0.118	120	44	0.265	0.531
TWS	CB 150	029.150*	0.585	0.290	0.248	0.157	120	51	0.362	0.724
TWS	CB 200	029.200*	0.955	0.510	0.438	0.197	120	58	0.547	1.094
TWS	CB 300	029.300*	1.206	0.635	0.544	0.236	115	68	0.742	1.484

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

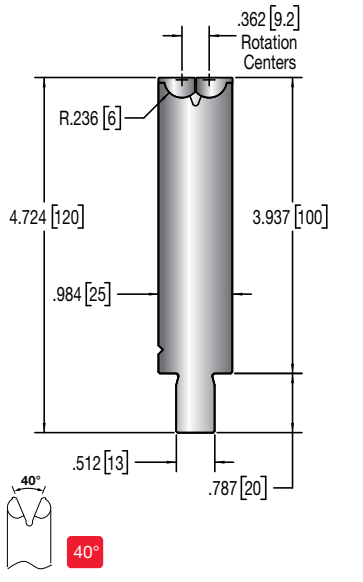


Wila Trumpf Style

CB 000 Wila Trumpf Type

Maximum Material Thickness — 2.0mm

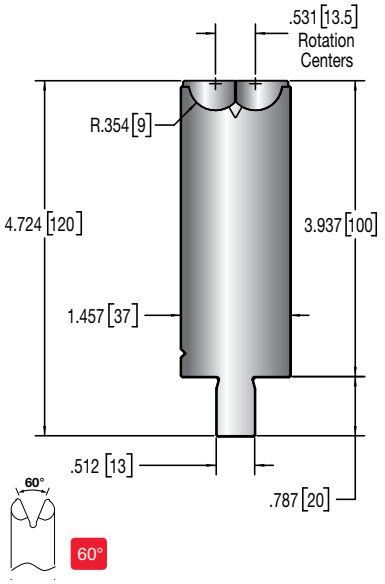
	VVO	H
029.000L	.32(8)	100.00
029.000C	.32(8)	100.00
029.000D	.32(8)	100.00
029.000T	.32(8)	100.00
029.000S	.32(8)	100.00



CB 100 Wila Trumpf

Maximum Material Thickness — 3.0mm

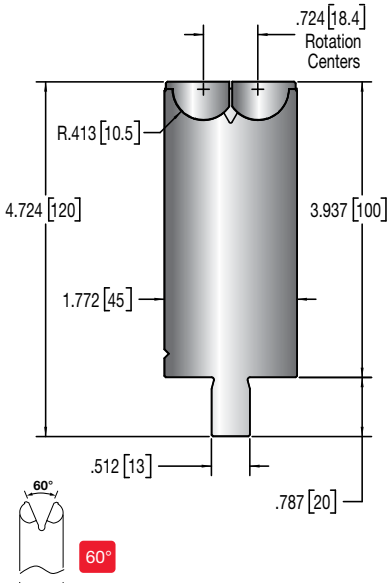
	VVO	H
029.100L	.48(12)	100.00
029.100C	.48(12)	100.00
029.100D	.48(12)	100.00
029.100T	.48(12)	100.00
029.100S	.48(12)	100.00



CB 150 Wila Trumpf Type

Maximum Material Thickness — 4.0mm

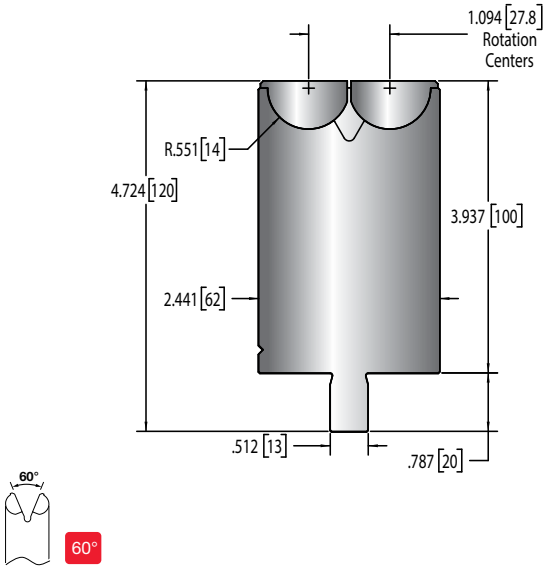
	VVO	H
029.150L	.59(16)	100.00
029.150C	.59(16)	100.00
029.150D	.59(16)	100.00
029.150T	.59(16)	100.00
029.150S	.59(16)	100.00



CB 200 Wila Trumpf Type

Maximum Material Thickness — 5.0mm

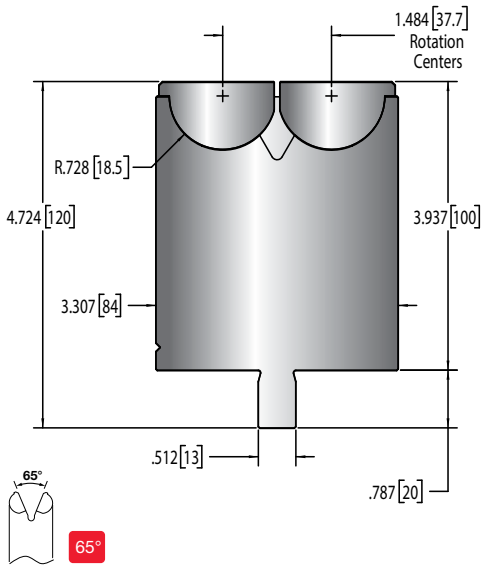
	VVO	H
029.200L	.96(24)	100.00
029.200C	.96(24)	100.00
029.200D	.96(24)	100.00
029.200T	.96(24)	100.00
029.200S	.96(24)	100.00



CB 300 Wila Trumpf Type

Maximum Material Thickness — 6.0mm

	VVO	H
029.300L	1.21(30)	100.00
029.300C	1.21(30)	100.00
029.300D	1.21(30)	100.00
029.300T	1.21(30)	100.00
029.300S	1.21(30)	100.00

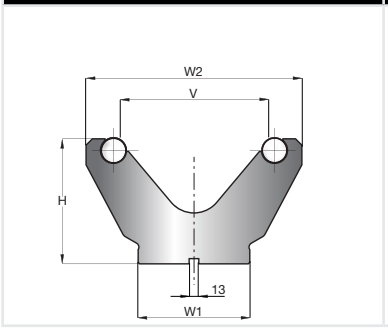
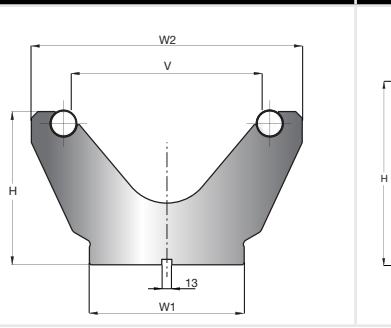
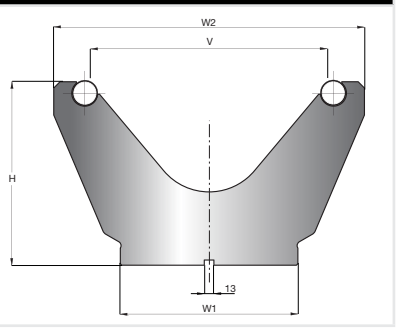


Note: VVO represents the equivalent V opening of a solid V die.

ROLLING SHOULDER DIES AND ADAPTERS

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

Profiles

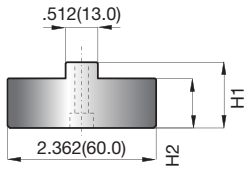
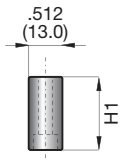
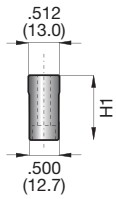
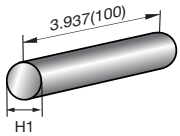
20.720	20.725	20.732
		

Description

Part Number	Angle	Height (H1)		V Opening		Shoulder Radius		Base Width (W1)		Width (W2)		Tons/ ft	Tons/ mt	MT	US$ Price
		Inches	(mm)	Inches	(mm)	Inches	(mm)	Inches	(mm)	Inches	(mm)				3.937" 100mm
20.720	80°	6.693	(170.0)	7.874	(200.0)	1.378	(35.0)	5.906	(150.0)	11.417	(290.0)	67	200	▶	
20.725	80°	7.874	(200.0)	9.843	(250.0)	1.378	(35.0)	7.874	(200.0)	13.780	(350.0)	67	200	▶	
20.732	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

EUROPEAN PRECISION STYLE 20.701	TRUMPF WILA STYLE 20.703	AMERICAN PRECISION STYLE 20.706	REPLACEMENT ROLLER 20.700 *USE WITH 20.720, 20.725, OR 20.732*
			

Description

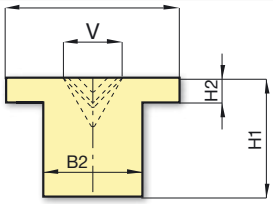
Part Number	Height (H1)		Height (H2)		Shoulder Radius		Base Width (W1)		Base Width (W2)		US$ Price
	Inches	(mm)	Inches	(mm)	Inches	(mm)	Inches	(mm)	Inches	(mm)	3.937" 100mm
20.701	1.043	(26.5)	0.787	(20.0)			0.512	(13.0)			
20.703	1.063	(27.0)					0.512	(13.0)			
20.706	0.906	(22.9)					0.512	(13.0)	0.500	(12.7)	
20.700	1.378	(35.0)			1.378	(35.0)					

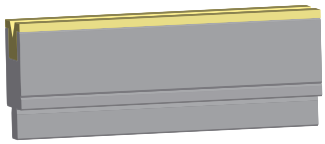
[Dimensions in Inches (mm)]. Images are proportionate but not to scale.

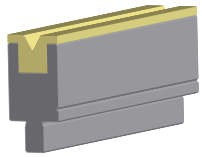
NYLON INSERTS AND HOLDERS

NYLON INSERTS

Profile







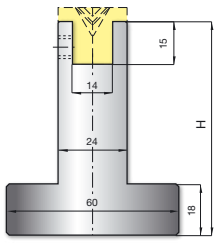
Description

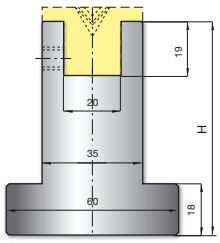
Part Number	Angle	Height (H1)		Height (H2)		V Opening		Base Width (B1)		Base Width (B2)		Tons/ft	Tons/mt	US$ Price	
		Inches	(mm)	Inches	(mm)	Inches	(mm)	Inches	(mm)	Inches	(mm)			16.339(415) (M)	32.874(835) (S)
032.306	30°	0.945	(24.0)	0.197	(5.0)	0.236	(6.0)	1.378	(35.0)	0.787	(20.0)	7	20		
032.308	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		

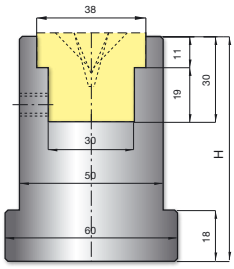
NYLON INSERT HOLDERS

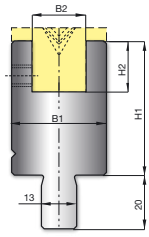
Profile

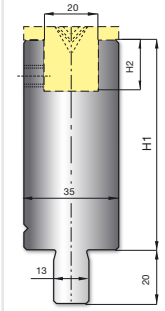
EUROPEAN PRECISION STYLE			WILA TRUMPF STYLE		AMERICAN PRECISION STYLE	
022.001	022.002	022.003	022.004	022.005	045.111	045.112

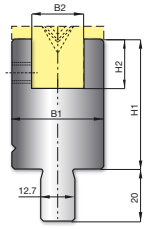


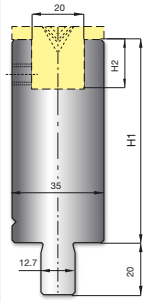








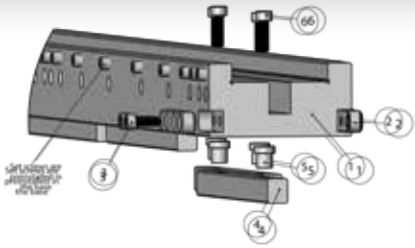




Description

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)		

MODULAR DIE HOLDERS

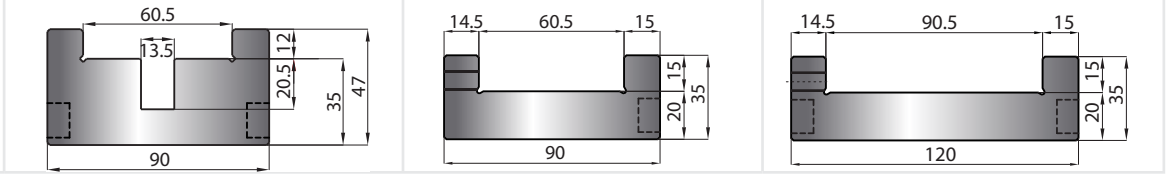


ITEM	DESCRIPTION
1	Base
2	Connector plate
3	Connector bolt
4	Tang
5	Tang bolt spacer
6	Tang bolt

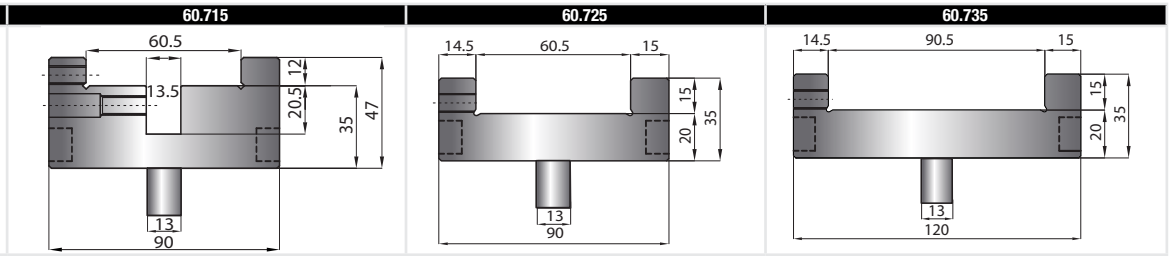
MODULAR DIE HOLDER FOR DIES WITH 60MM BASE, 90MM BASE, 13MM TANG, OR 12.7MM TANG

Profile - All Modular Die Holders include connector plates and bolts

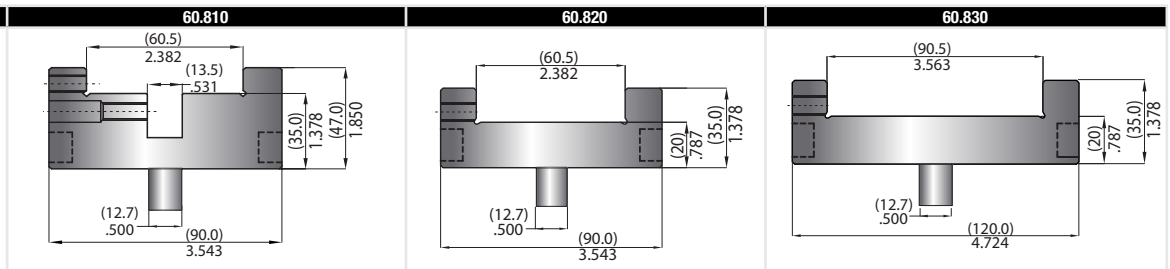
EUROPEAN PRECISION STYLE



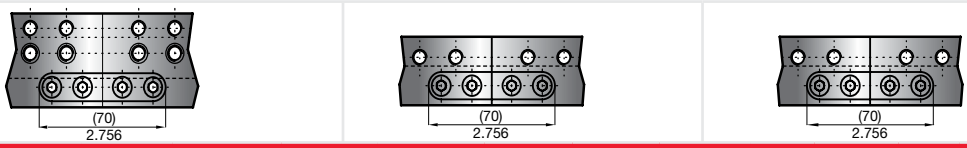
WILA TRUMPF STYLE



AMERICAN PRECISION STYLE



CONNECTOR PLATES



Description

Part Number	Body Width		Base Width		Height		Tons/ ft	Tons/mt	MT	US$ Price Length (M) Inches	(M) (mm)	(S) Inches	(S) (mm)
	Inches	(mm)	Inches	(mm)	Inches	(mm)				20.472	520.0	41.339	1050.0
European Precision Style (EPS)													
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	12.0	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	▶				

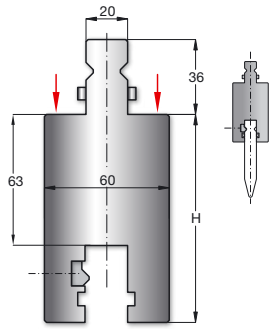
All modular die holders include the connector plates and bolts.

PUNCH AND DIE EXTENSIONS

PUNCH EXTENSIONS

PUNCH EXTENSIONS

Profile

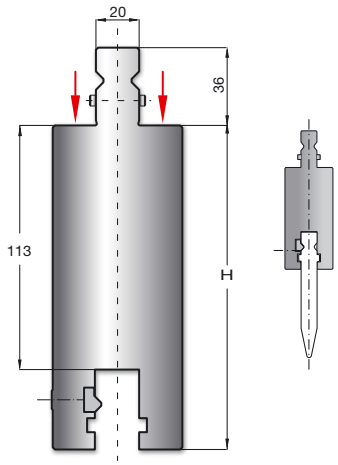


Description

Part Number	(L) Length		(H) Height		Tons/ ft	Tons /mt	MT	US$ Price
	Inches	(mm)	Inches	(mm)				
050.410	5.906	150	3.937	100	34	100	▶	
050.415	1.969	50	3.937	100	34	100	▶	

PUNCH EXTENSIONS

Profile

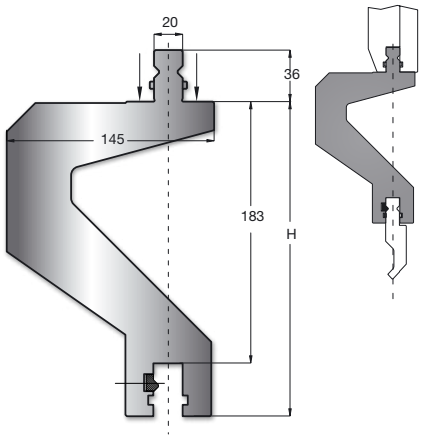


Description

Part Number	(L) Length		(H) Height		Tons/ ft	Tons /mt	MT	US$ Price
	Inches	(mm)	Inches	(mm)				
050.440	5.906	150	5.906	150	34	100	▶	
050.445	1.969	50	5.906	150	34	100	▶	

PUNCH EXTENSIONS

Profile

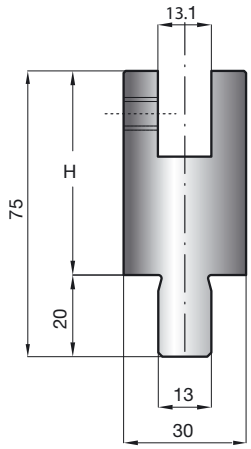


Description

Part Number	(L) Length		(H) Height		Tons/ ft	Tons /mt	MT	US$ Price
	Inches	(mm)	Inches	(mm)				
050.503	7.874	200	8.661	220	30	90	▶	

DIE EXTENSIONS

Profile



Description

Part Number	(L) Length		(H) Height		Tons/ ft	Tons /mt	MT	US$ Price
	Inches	(mm)	Inches	(mm)				
060.960	19.685	500	1.969	50	34	100	▶	

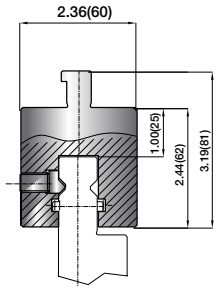
[Dimensions in Inches (mm)]. Images are proportionate but not to scale.

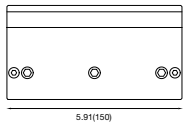
PUNCH ADAPTERS

AMERICAN PRECISION STYLE TO WILA TRUMPF STYLE

Profile

050.960





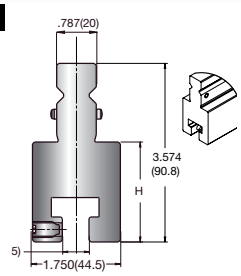
Description

Part Number	Height		Length		Tons/ ft	Tons/ mt	MT	US$ Price
	Inches	(mm)	Inches	(mm)				5.91"(457.2)
050.960	2.441	62.0	5.91	150.0	34	100	▶	

WILA TRUMPF STYLE TO AMERICAN PRECISION STYLE

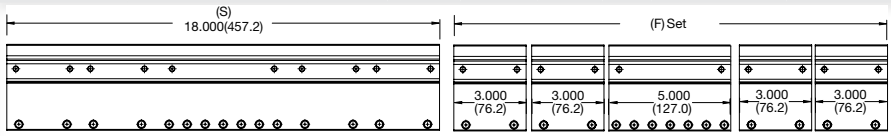
Profile

018.460



Description

Part Number	(H) Height		Width		Tons/ft	Tons/mt	MT	US$ Price	
	Inches	(mm)	Inches	(mm)				(S) 18"(457.2)	(F) Set*
018.460	2.00	50.8	1.750	44.5	34	100	▶		

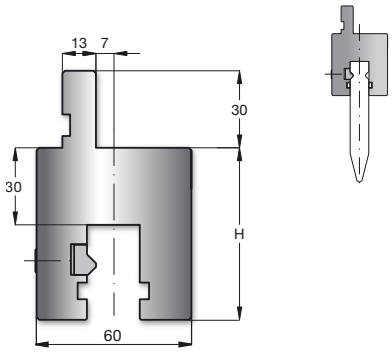


(F) Fraction set includes one each of: 3"; 3"; 3"; 3"; 5". Total Length=17"

EUROPEAN PRECISION STYLE TO WILA TRUMPF STYLE

Profile

050.430



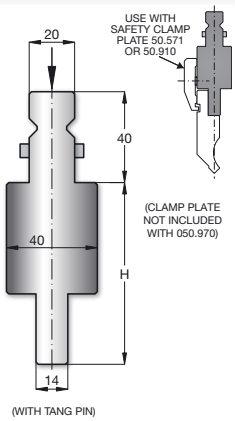
Description

Part Number	(H) Height		Length		Tons /ft	Tons/ mt	MT	US$ Price
	Inches	(mm)	Inches	(mm)				5.91"(457.2)
050.430	2.638	67.0	5.906	150.0	34	100	▶	

WILA TRUMPF STYLE TO EUROPEAN PRECISION STYLE

Profile

050.970



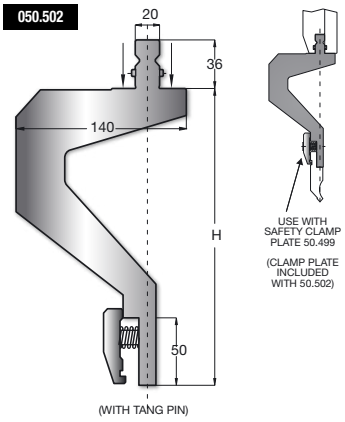
Description

Part Number	(H) Height		Length		Tons/ ft	Tons/ mt	MT	US$ Price
	Inches	(mm)	Inches	(mm)				5.91"(457.2)
050.970	3.150	80.0	5.906	150.0	34	100	▶	

WILA TRUMPF STYLE TO EUROPEAN PRECISION STYLE

Profile

050.502

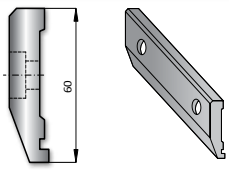


Description

Part Number	(H) Height		Length		Tons/ ft	Tons/ mt	MT	US$ Price
	Inches	(mm)	Inches	(mm)				5.91"(457.2)
050.502	8.661	220.0	7.874	200.0	34	90	▶	

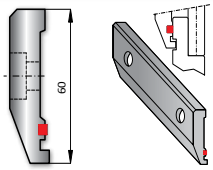
CLAMP PLATES FOR ADAPTERS - L=150mm

050.571



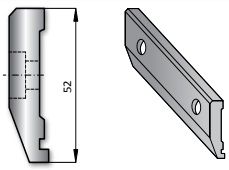
SAFETY CLAMP PLATE

050.910



SAFETY CLAMP PLATE WITH POLYURETHANE
FOR SEGMENTED PUNCHES

050.499



SAFETY CLAMP PLATE

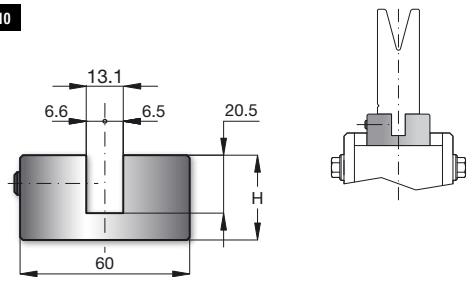
[Dimensions in Inches (mm)]. Images are proportionate but not to scale.

DIE ADAPTERS

EUROPEAN PRECISION STYLE TO WILA TRUMPF STYLE

Profile

060.910



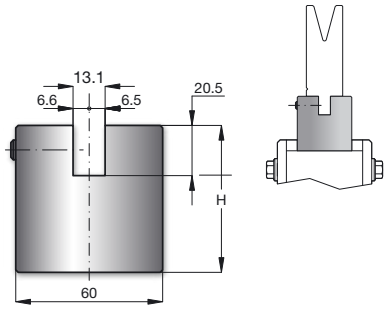
Description

Part Number	Length		(H) Height		Tons/ ft	Tons /mt	MT	US$ Price	
	Inches	(mm)	Inches	(mm)				(M)	(S)
								19.685(500.0)	39.370(1000.0)
060.910	39.370	1000.0	1.181	30	34	100	▶		

EUROPEAN PRECISION STYLE TO WILA TRUMPF STYLE

Profile

060.920



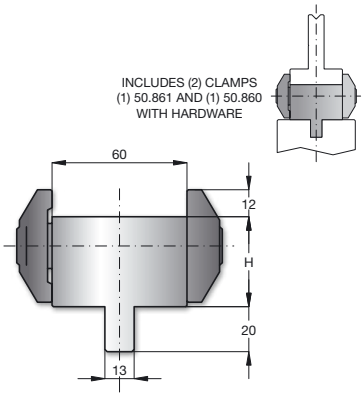
Description

Part Number	Length		(H) Height		Tons/ ft	Tons /mt	MT	US$ Price	
	Inches	(mm)	Inches	(mm)				(M)	(S)
								19.685(500.0)	39.370(1000.0)
060.920	39.370	1000.0	2.362	60.0	34	100	▶		

WILA TRUMPF STYLE TO EUROPEAN PRECISION STYLE

Profile

060.925



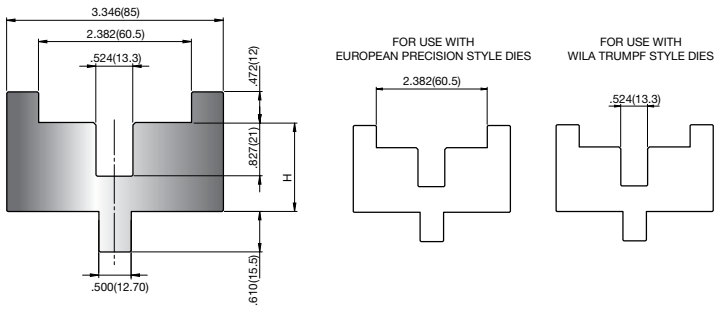
Description

Part Number	(H) Height		Tons/ ft	Tons /mt	MT	US$ Price	
	Inches	(mm)				(M)	(S)
						16.339(415.0)	32.874(835.0)
060.925	1.575	40	34	100	▶		

AMERICAN PRECISION STYLE TO EUROPEAN PRECISION STYLE OR WILA TRUMPF STYLE

Profile

060.980

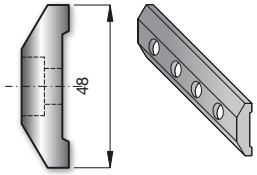


Description

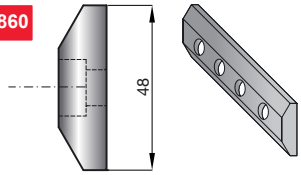
Part Number	(H) Height		Tons/ ft	Tons /mt	MT	US$ Price	
	Inches	(mm)				(M)	(S)
						16.339(415.0)	32.874(835.0)
060.980	1.378	35	34	100	▶		

CLAMP PLATES FOR DIE EXTENSIONS

50.861



50.860



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

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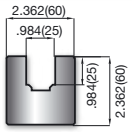
orders@mate.com

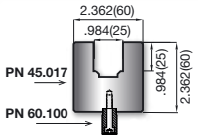
For use with thin and delicate materials. *All holders include 2 end caps and cap screws.*

EUROPEAN PRECISION STYLE URETHANE HOLDERS



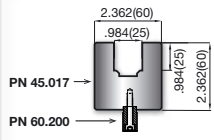
Part Number	Length	US$ Price
20.271	16.338(415mm) 32.87(835mm)	

WILA TRUMPF STYLE URETHANE HOLDERS



Part Number	Length	US$ Price
45.021 SET ASSEMBLY	16.338(415mm) 32.87(835mm)	

AMERICAN STYLE URETHANE HOLDERS



Part Number	Length	US$ Price
45.025 SET ASSEMBLY	16.338(415mm) 32.87(835mm)	

END CAPS

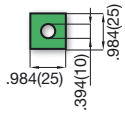
Uses BHC00006 Cap Screw

Part Number	US$ Price
20.902	

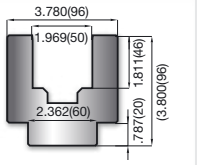
URETHANE

Part Number	Length	US$ Price
45.011	16.338(415mm) 32.87(835mm)	

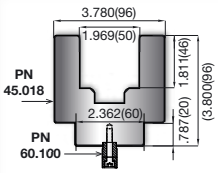
URETHANE WITH HOLE



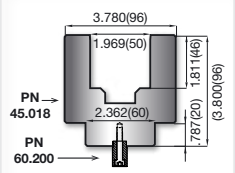
Part Number	Length	US$ Price
45.015	16.338(415mm) 32.87(835mm)	



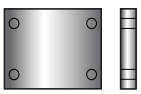
Part Number	Length	US$ Price
20.272	16.338(415mm) 32.87(835mm)	



Part Number	Length	US$ Price
45.022 SET ASSEMBLY	16.338(415mm) 32.87(835mm)	

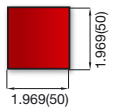


Part Number	Length	US$ Price
45.026 SET ASSEMBLY	16.338(415mm) 32.87(835mm)	

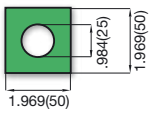


Uses BHC00006 Cap Screw

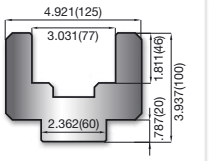
Part Number	US$ Price
20.904	



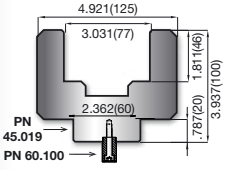
Part Number	Length	US$ Price
45.010	16.338(415mm) 32.87(835mm)	



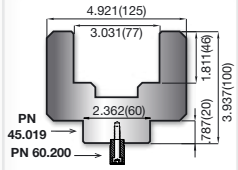
Part Number	Length	US$ Price
45.014	16.338(415mm) 32.87(835mm)	



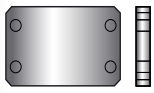
Part Number	Length	US$ Price
20.273	16.338(415mm) 32.87(835mm)	



Part Number	Length	US$ Price
45.023 SET ASSEMBLY	16.338(415mm) 32.87(835mm)	

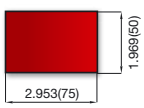


Part Number	Length	US$ Price
45.027 SET ASSEMBLY	16.338(415mm) 32.87(835mm)	

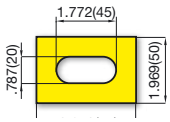


Uses BHC00007 Cap Screw

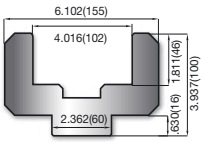
Part Number	US$ Price
20.906	



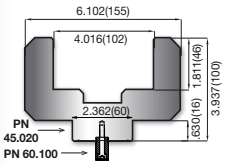
Part Number	Length	US$ Price
45.009	16.338(415mm) 32.87(835mm)	



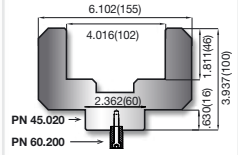
Part Number	Length	US$ Price
45.013	16.338(415mm) 32.87(835mm)	



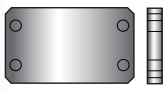
Part Number	Length	US$ Price
20.274	16.338(415mm) 32.87(835mm)	



Part Number	Length	US$ Price
45.024 SET ASSEMBLY	16.338(415mm) 32.87(835mm)	

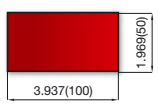


Part Number	Length	US$ Price
45.028 SET ASSEMBLY	16.338(415mm) 32.87(835mm)	

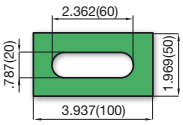


Uses BHC00007 Cap Screw

Part Number	US$ Price
20.908	



Part Number	Length	US$ Price
45.008	16.338(415mm) 32.87(835mm)	

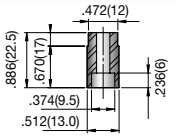


Part Number	Length	US$ Price
45.012	16.338(415mm) 32.87(835mm)	

CAP SCREWS

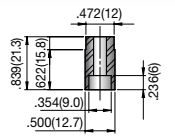
Part Number	US$ Price
BHC00006	
BHC00007	

WILA TRUMPF STYLE BAR INSERT



Part Number	Length	US$ Price
60.100	16.221(412mm) 32.677(830mm)	

AMERICAN STYLE BAR INSERT



Part Number	Length	US$ Price
60.200	16.221(412mm) 32.677(830mm)	

90A	Red	25% deflection	Mild steel
80A	Green	35% deflection	Aluminum
60A	Yellow	40% deflection	CU & Alum

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

POLYURETHANE FILM, HOLDERS, REFERENCE SQUARES

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

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

Part Number	US$ Price
40.800	

MAGNETIC POLYURETHANE FILM HOLDER

• Magnetic Attachment

Part Number	US$ Price
40.850	

SQUARING

• For use with long, narrow bends

REFERENCE SQUARES STANDARD - 90°

Part Number	US$ Price
40.660	

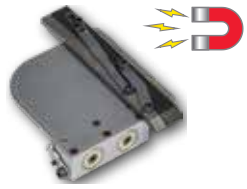
REFERENCE SQUARES ADJUSTABLE - 60° TO 120°

Part Number	US$ Price
40.700	

ANGLES

• For use with angled bends • Magnetic

ANGLE - MAGNETIC SYSTEM 0° TO 90° - LEFT



Part Number	US$ Price
40.740	

ANGLE - MAGNETIC SYSTEM 0° TO 90° - RIGHT

Part Number	US$ Price
40.745	

ANGLE - MAGNETIC SYSTEM 30° TO 90°

Part Number	US$ Price
40.750	

[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
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 full-length dies 33 full-length punches	20 full-length dies 33 full-length punches	33 full-length dies 11 full-length punches	44 full-length dies 22 full-length punches	33 full-length dies 11 full-length punches	11 full-length dies 22 full-length punches	22 full-length dies 22 full-length punches	22 full-length dies 22 full-length punches
DRAWER SPECIFICATIONS								
3" (76mm) Deep Drawer, 200lb (90kg) Capacity	2	2	—	4	1	—	2	—
Maximum Die Height	3.0" (76mm)	3.0" (76mm)	—	2.25"(57mm)	2.25"(57mm)	—	2.25"(57mm)	—
7" (177mm) Deep Drawer, 400lb (181kg) Capacity	3	3	4	2	2	1	—	4
Maximum Die Height	N/A	N/A	5.75" (146mm)	5.75" (146mm)	5.75" (146mm)	5.75" (146mm)	N/A	2.25" (57mm)
Maximum Punch Height	5.187" (132mm)	5.187" (132mm)	6.50" (165mm)	6.50" (165mm)	N/A	N/A	N/A	9.215" (234mm)
10" (254mm) Deep Drawer, 400lb (181kg) Capacity)	—	—	—	—	1	2	2	—
Maximum Punch Height	—	—	—	—	10.0" (254mm)	10.0" (254mm)	10.0" (254mm)	—
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	

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orders@mate.com

AIR BENDING FORCE CHARTS

INCH DIE V OPENING AND INCH MATERIAL THICKNESS

INCH/INCH

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/mm^2)

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				US Tons Per Foot					
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}x575/V0	Where MT=Material Thickness in inches; V0=V Opening in inches (V0 in mm /25.4)
Minimum Flange (MF)	V0x.707	Where V0=V Opening; .707=√2/2
Inside Radius (IR)	V0x.16	Where V0=V Opening

METRIC DIE V OPENING AND METRIC MATERIAL THICKNESS

METRIC/METRIC

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/mm^2 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							Metric Tons Per Meter							
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}x2xR)/(1.4xV0)	Where MT=Material Thickness; R=Sheet Resistance; V0=V Opening
Minimum Flange (MF)	V0x.707	Where V0=V Opening; .707=√2/2
Inside Radius (IR)	V0x.16	Where V0=V Opening

AIR BENDING FORCE CHARTS

METRIC DIE V OPENING AND INCH MATERIAL THICKNESS

METRIC/INCH

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/mm^2)

Material Thickness mm	Gauge	Decimal Inch	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
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					US Tons Per Foot				
2.3	13	0.090			12	9.9	7.4	6.0								
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	

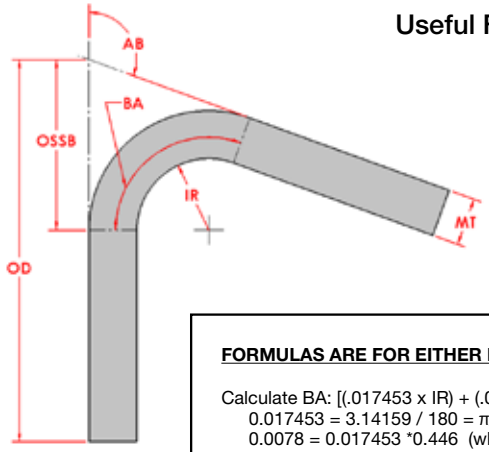
Note: Table assumes mild steel. When bending other materials, use a force adjustment. Aluminum = 50% Mild Steel = 100% Stainless Steel = 150%
All results are to be used as guidelines, not absolute values.

Formulas:

US Tons Per Foot	MT^2x575/VO	Where MT=Material Thickness in inches; VO=V Opening in inches
Minimum Flange (MF)	VOx.707	Where VO=V Opening; .707=√2/2
Inside Radius (IR)	VOx.16	Where VO=V Opening

USEFUL FORMULAS

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 x IR) + (.0078 x MT)] x AB = BA
0.017453 = 3.14159 / 180 = π/180 degrees
0.0078 = 0.017453 *0.446 (where 0.446 represents the k factor)

Calculate OSSB of bends other than 90°:
[Tangent (AB/2)] x (IR + MT) = OSSB
(At 90 degrees IR + MT = OSSB)

Convert BA to BD: (2 x OSSB) – BA = BD

Convert metric tons per meter to US tons per foot:
Metric tons per meter x 0.336 = US tons per foot

Convert US tons per foot to metric tons per meter:
US tons per foot x 2.976 = metric tons per meter

Convert mm to inches: mm x .03937 = inches

Convert inches to mm: inches x 25.4 = mm

Convert kN to metric tons: 1kN=0.102
Covert kN to US tons: 1kN=0.112

Predict IR for air bending:
Aluminum: VO x .14 = IR, Mild steel: VO x .16 = IR, Stainless: VO x .21 = IR

Calculate minimum IR when air bending: .63 x MT = Minimum natural IR

Calculate minimum OD flange limit of a die: VO x .707 = minimum OD flange

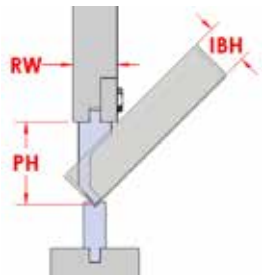
To calculate approximate tonnage for aluminum, use mild steel tonnage times 0.5
To calculate approximate tonnage for stainless steel, use mild steel tonnage times 1.5

CALCULATE IMPERIAL VALUES

Calculate required US tonnage per foot for mild steel:
[575 × (MT^2)] / VO = US tons per foot (Based on 60,000 psi tensile)

CALCULATE METRIC VALUES

Calculate required metric tonnage per meter:
(2 x MT^2 x 43) / (1.4 x VO) (Based on 43kg/mm^2 tensile)



Formulas are for either imperial or metric

DEEP BOX FORMULAS

Acronyms:

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

Calculate Deep box limit of a punch:
[(PH - (RW x .563)] x .707 = maximum IBH

Calculate the minimum punch height for a box:
(IBH / .707) + (RW x .563) = minimum PH

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

INCH TO METRIC / METRIC TO INCH REFERENCE GUIDE

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

MATE PRECISION TOOLING

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)

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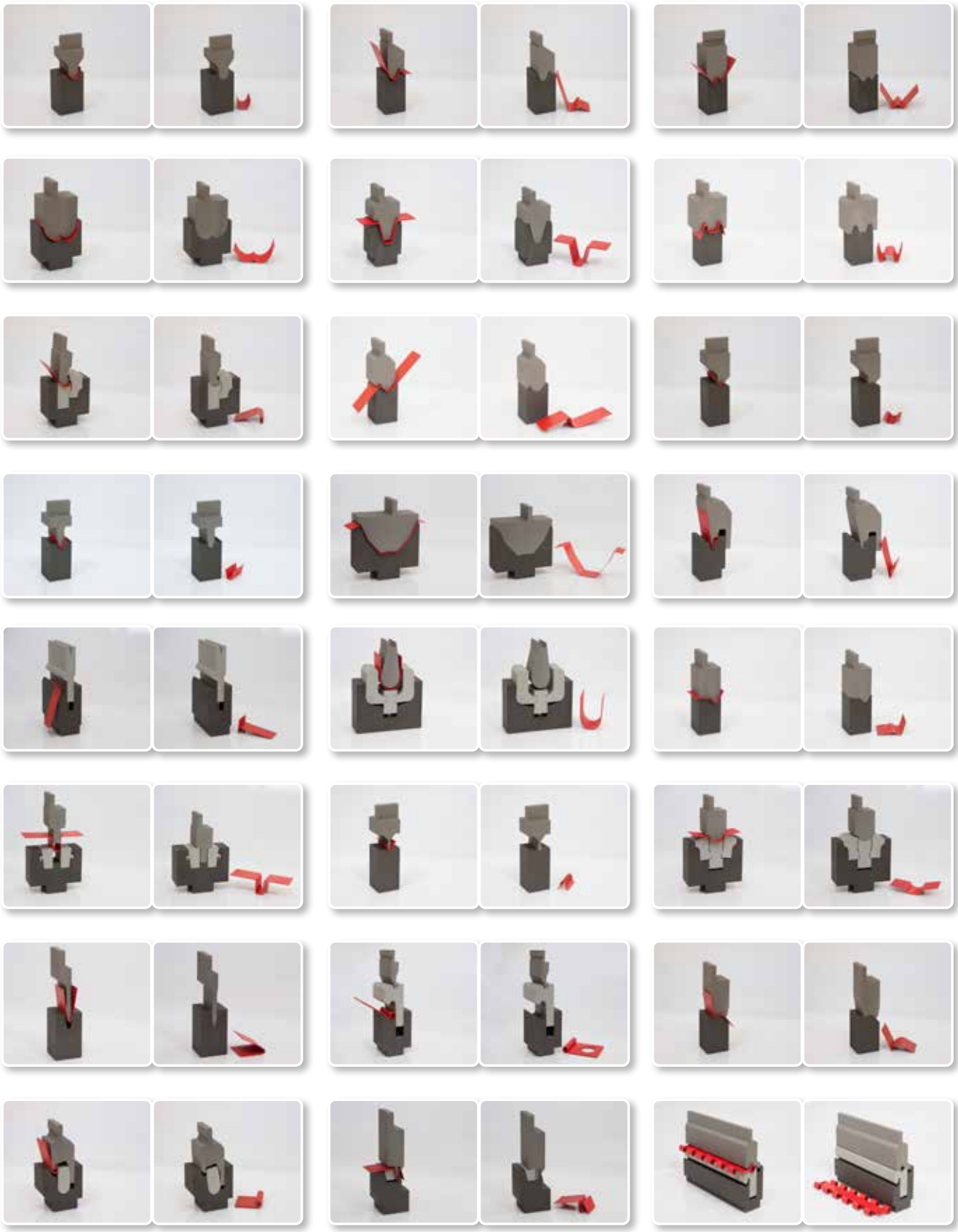
SOLUTION GALLERY



PART NUMBER INDEX

MATE PRECISION TECHNOLOGIES GLOBAL COVERAGE

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LIT01120 Rev G PN 2021