

**NC PUNCH PRESS**

# **HIGH PERFORMANCE TOOLING**

High Quality & Technology For **The Future**

# **CONIC**

Since 1976

## **TRUMPF TYPE TOOLING**



***JAPAN QUALITY***



# CONIC COMPANY GUIDANCE

## ABOUT US

Conic has been produced quality punch tools since 1976 in Okayama Japan.

Our tools are used worldwide in the sheetmetal market and that quality is really satisfied from various production customers. Our policy is that we make a high quality tools in timely, in reasonable price to helping customers manufacture sheet metal parts in high productivity and reliability.

We have done a lot of development of new products such as Super Dry Punch(SDP), Conic Long life Punch(GLP), Conic Hard Punch(CHP) for last long tools.

We recently introduced PROTECH series tool to the market and market reflect strong praise.

Conic would like to be your punch press tool partner.

We look forward to serving you.

## QUALITY



Okayama factory :

ISO 9001:2015 provide superior Quality Management System in 1998 Conic Corp, received ISO9001 authorization, and it has been recognized as a very reliable company, both on the international front and Japan.

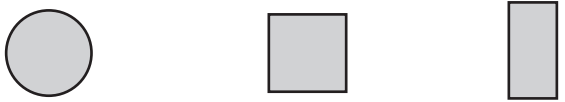





## COMPANY HISTORY

- 1976 Established.
- 1979 Tokyo Sales Office opened.
- 1985 Okayama Factory opened.
- 1990 "International Sheet Metal Symposium" held by the company.
- 1992 Tool information and order receiving office was opened.
- 1993 Osaka Branch opened in Higashi-Osaka city.
- 1993 Head Office moved into Okayama Factory.
- 1998 Okayama factory was registered under required operation of international quality management system "ISO-9001".
- 1999 "Super Dry Punch" newly developed and launched.
- 2000 Internet order and quote receiving system was opened.
- 2002 "Conic Hard Punch" newly developed and launched.
- 2009 PROTECH series tooling newly developed and launched.
- 2012 Thailand Factory opened.
- 2013 "Conic Long life Punch" newly developed and launched.
- 2018 The Representative office in Vietnam opened.

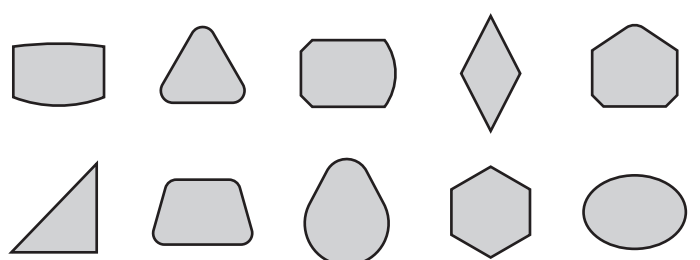
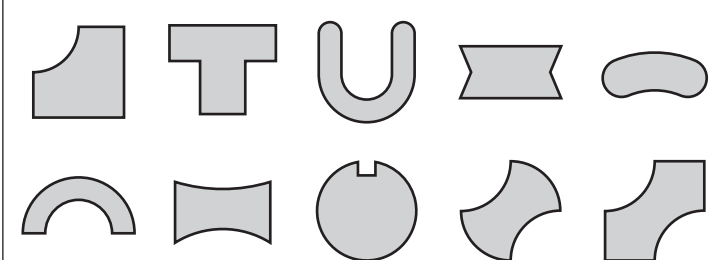
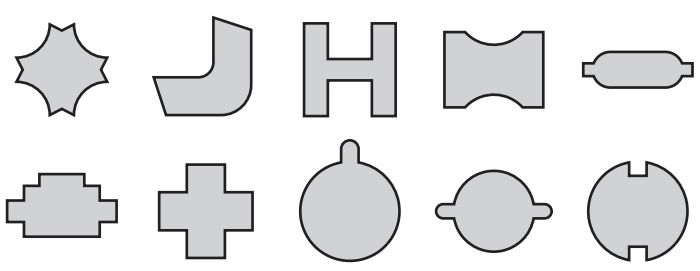


# SPECIFICATION OF CONIC TOOLING



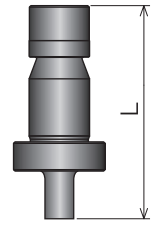
## ■Various Shapes

STANDARD SHAPES	WITH RADIUS CORNERS	CORNER ROUNDING
<p>                     ■ ROUND (RO)    ■ SQUARE (SQ)    ■ RECTANGLE (RE)                        ■ OBROUND (OB)    ■ SINGLE D (SD)    ■ DOUBLE D (DD)   </p>	<p>                     ■ SQUARE WITH RADIUS CORNERS                        ■ RECTANGLE WITH RADIUS CORNERS   </p>	<p>                     ■ CN-42                        ■ CN-41   </p>

Note : Square and Rectangle punch corner has small radius (R0.2) for prevent crack of punch tip.  
If it is not necessary, please inform us.

SPECIAL SHAPES (CLASS-1)	SPECIAL SHAPES (CLASS-2)
	
SPECIAL SHAPES (CLASS-3)	SPECIAL SHAPES (CLASS-4)
	<p style="text-align: center;">More complicated figure</p> <p>When make order, please inform to us the center position of the tool. CONIC is possible to produce other than this form list, please contact us.</p>

## ■Shear Angle Type For Punch

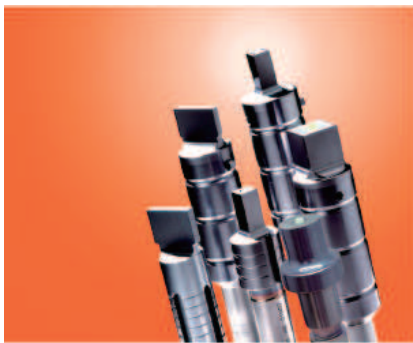
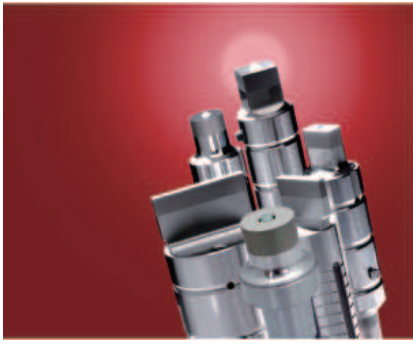
<p>● FLAT (Standard)</p> 	<p>● WHISPER</p>  ※Additional charge	 <p>                     ※When ordering punches, please inform us of the flat punch length.                      ※We can produce not only flat punch. Please contact us for the detail.                 </p>
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## Prevent Slug Pulling

<p>PUNCH</p>	<p><b>Slug Ejector</b></p> <p>Slug ejector push down the slug. It will be installed to over <math>\phi 4</math> for round and over 6 mm width shape tool as our standard. Please contact us, when punch thick material sheet or hard material with small punch diameter.</p>	
	<p><b>Slug Catcher Die</b></p> <p>Standard shapes and special shapes have this function as standard. (Except : Blank type, less than 2mm width die for blank will be parts, punch with heel, die clearance is less than 0.1mm)</p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>① Material is cut off at [A] part.</p> </div> <div style="text-align: center;"> <p>② The slug is compressed in the process of punching at [B] part.</p> </div> <div style="text-align: center;"> <p>③ Drags the slug through the relief.</p> </div> <div style="text-align: center;"> <p>④ [B] part is narrower than [C] part so the slug cannot come up.</p> </div> </div>
<p>DIE</p>	<p><b>Depositron Process</b></p> <p>Put electrical super hard spot onto inside of die hole Except clearance 0.1mm Standard on die diameter <math>\phi 2 \sim \phi 4.5</math></p>	
	<p><b>Straight with taper Die</b></p> <p>Use this specification standard on Blank tool, less than 2mm width die for blank will be parts, punch with heel die clearance is less than 0.1mm</p>	

# SPECIFICATION OF CONIC TOOLING

## ■ Conic Original Coating

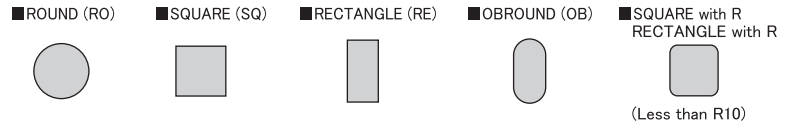


Perfect tool for stainless steel !

## Super Dry Punch (SDP)

This is our best tool. Incredible durability and defeated the common sense that "Stainless is hard to process".

This tool is suitable for night time unattended operation and dry ( no oil lubrication on the sheet metal) condition punching. Super Dry Punch (SDP) is available with only the following shapes.



Perfect tool for thick material!

## Heavy Duty Punch (HDP)

High performance for all purpose, especially for thick material. Coating with excellent heat resistance.

The coating is difficult to peel of even with heat generated continuously. Special shapes are also available for this treatment.

Most efficient in long life and cost !

## Conic Long life Punch (CLP)

High performance for all purpose, especially for mild steel, ga lvanized steel with high corrosion resistance !

Special shapes are also available for this treatment.

Ultra cost performance tool for reasonable price !

## Conic Hard Punch (CHP)

Reasonable price and suitable for all purpose.

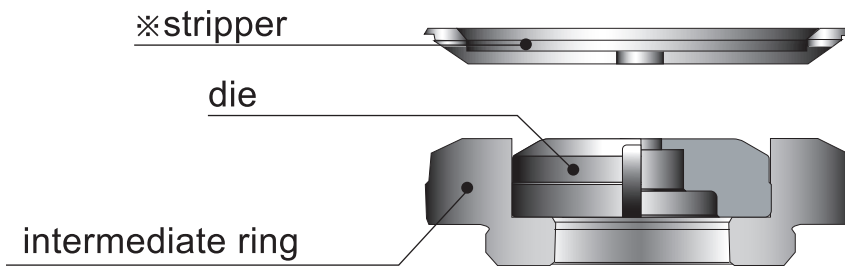
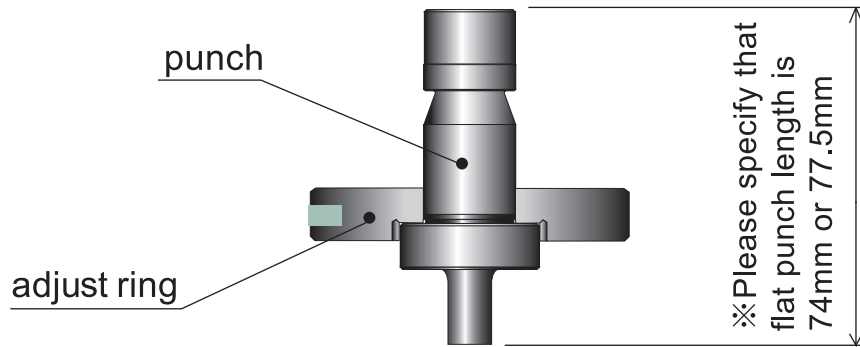
CHP shows high performance reducing adhesion and galling which is more likely to be caused by processing Aluminum and Coated steel sheet.

Total Performance	Punch type	Aptitude			
		Stainless steel (SUS)	Mild steel (SPCC)	Aluminum	Galvanized
High Performance  Cost Performance	Super Dry Punch (SDP)	★★★★★★	★★★★★★	★★★	★★★
	Heavy Duty Punch (HDP)	★★★★★	★★★★★★	★★★★★★	★★★★★★
	Conic Long life Punch (CLP)	★★★★	★★★★★★	★★★★★★	★★★★★★
	Conic Hard Punch (CHP)	★★★	★★★★	★★★★★	★★★★
	HSS	★★	★★★	★★★	★★★
	D2	★	★	★★	★



# TRUMPF TYPE 1

1

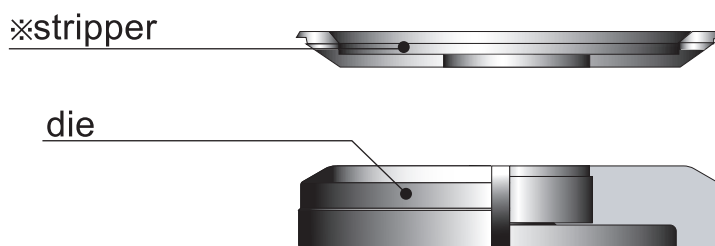
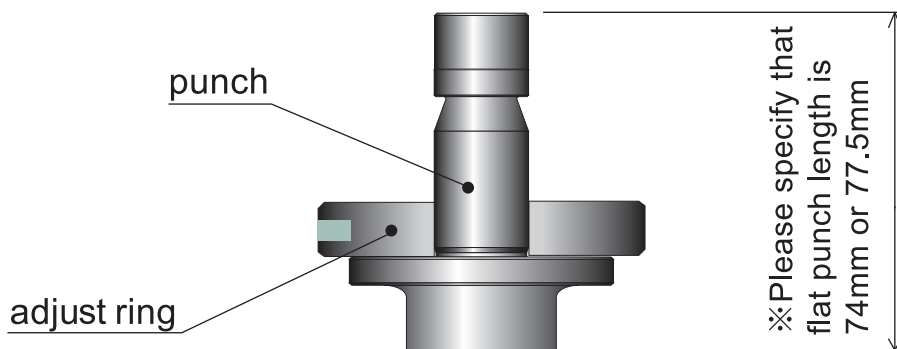


	Shape	Dimension(mm)	
Punch (HSS)	ROUND	cutting edge diameter	$\Phi 1$ or more - $\Phi 2$ or less
		cutting edge diameter	more than $\Phi 2$ - $\Phi 30$ or less
	SQUARE	one side length	$\Phi 1$ or more - $\Phi 20$ or less
	RECTANGLE OBROUND SD WD	diagonal dimension	$\Phi 1$ or more - $\Phi 30$ or less
Die (D2)	ROUND	cutting edge diameter	$\Phi 1$ or more - $\Phi 32$ or less
	SQUARE	one side length	$\Phi 1$ or more - $\Phi 22$ or less
	RECTANGLE OBROUND SD WD	diagonal dimension	$\Phi 1.8$ or more - $\Phi 32$ or less
※Stripper	ROUND	based on the punch	
	SQUARE		
	RECTANGLE OBROUND SD WD		

※Extra small taper is applied to standard strippers in order to prevent marks.  
If you do not need the extra small taper, please order flat stripper.

# TRUMPF TYPE 2

2



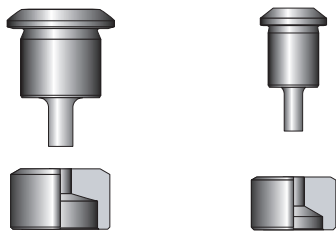
	Shape	Dimension(mm)	
Punch (HSS)	ROUND	cutting edge diameter	more than $\Phi 30$ - $\Phi 76.2$ or less
	SQUARE	one side length	$\Phi 1$ or more - $\Phi 50.8$ or less
	RECTANGLE OBROUND SD WD	diagonal dimension	$\Phi 1$ or more - $\Phi 72$ or less
Die (D2)	ROUND	cutting edge diameter	$\Phi 1$ or more than $\Phi 32$ - $\Phi 77$ or less
	SQUARE	one side length	$\Phi 1$ or more than $\Phi 22$ - $\Phi 52$ or less
	RECTANGLE OBROUND SD WD	diagonal dimension	$\Phi 1.8$ or more than $\Phi 32$ - $\Phi 72$ or less
※Stripper	ROUND	based on the punch	
	SQUARE		
	RECTANGLE OBROUND SD WD		

※Extra small taper is applied to standard strippers in order to prevent marks.  
If you do not need the extra small taper, please order flat stripper.

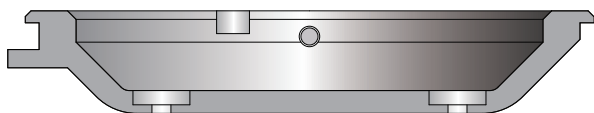
# TRUMPF MULTI TOOL, ACCESSORIES

**5st**

**10st**

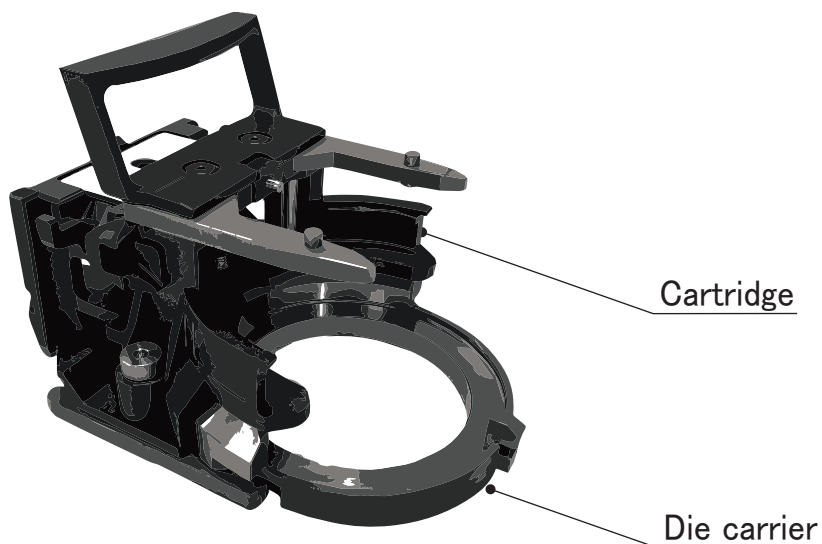


	Type	Shape	Dimension(mm)	
Punch (HSS)	5st	ROUND	cutting edge diameter	$\Phi 1$ or more - $\Phi 2$ or less more than $\Phi 2$ - $\Phi 16$ or less
		SQUARE	one side length	1 width or more - 2 width or less more than 2 width
		RECTANGLE OBROUND SD WD	diagonal dimension	1 width or more - 2 width or less more than 2 width
	10st	ROUND	cutting edge diameter	$\Phi 1$ or more - $\Phi 2$ or less more than $\Phi 2$ - $\Phi 16$ or less
		SQUARE	one side length	1 width or more - 2 width or less more than 2 width
		RECTANGLE OBROUND SD WD	diagonal dimension	1 width or more - 2 width or less more than 2 width
Die (D2)	5st	ROUND	cutting edge diameter	$\Phi 1.15$ or more - $\Phi 16.6$ or less
		SQUARE	one side length	1 width or more
		RECTANGLE OBROUND SD WD	diagonal dimension	1 width or more
	10st	ROUND	cutting edge diameter	$\Phi 1.1$ or more - $\Phi 11.1$ or less
		SQUARE	one side length	1 width or more
		RECTANGLE OBROUND SD WD	diagonal dimension	1 width or more



	Type		Shape
Stripper	5st	Open-Type	-
		Fit-Type	ROUND
			SQUARE RECTANGLE OBROUND SD WD
	10st	Open-Type	-
		Fit-Type	ROUND
			SQUARE RECTANGLE OBROUND SD WD

## ACCESSORIES

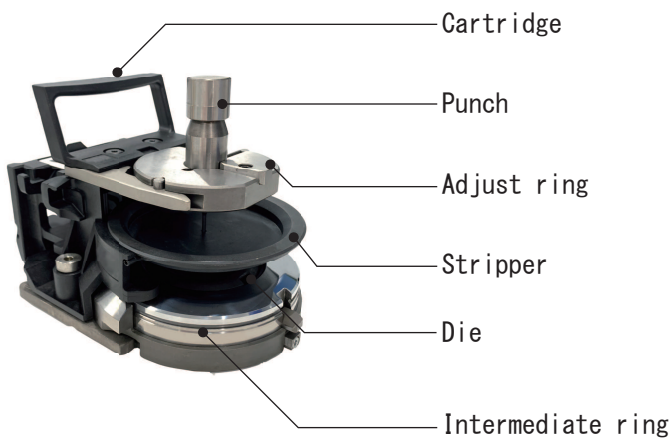


	Type	Detail
	Accessories	Set
Parts		



# INSTRUCTION MANUAL

## PARTS NAME



## CHECK POINTS

- Please follow the machine instruction manual before use punching tools.
- Please check there are no cracks or seizes. If you find such abnormal conditions, do not use the tools.
- Machine, Cartridge should be kept clean. (ex: Slugs in die holders can cause a serious damage on the tools)
- Cutting edge of the tooling must be sharpened when it is dull.

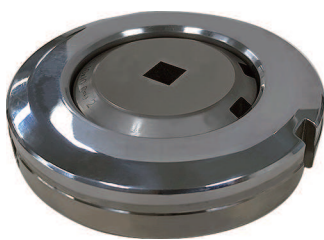
## PUNCH

Insert Adjust ring to the punch.



## DIE

Type 1: Insert the Die to Intermediate ring.



## CARTRIDGE

Insert Punch and Die and Stripper to cartridge.



Widest variety special forming tools in advanced technology.

## **Conic Special tools**

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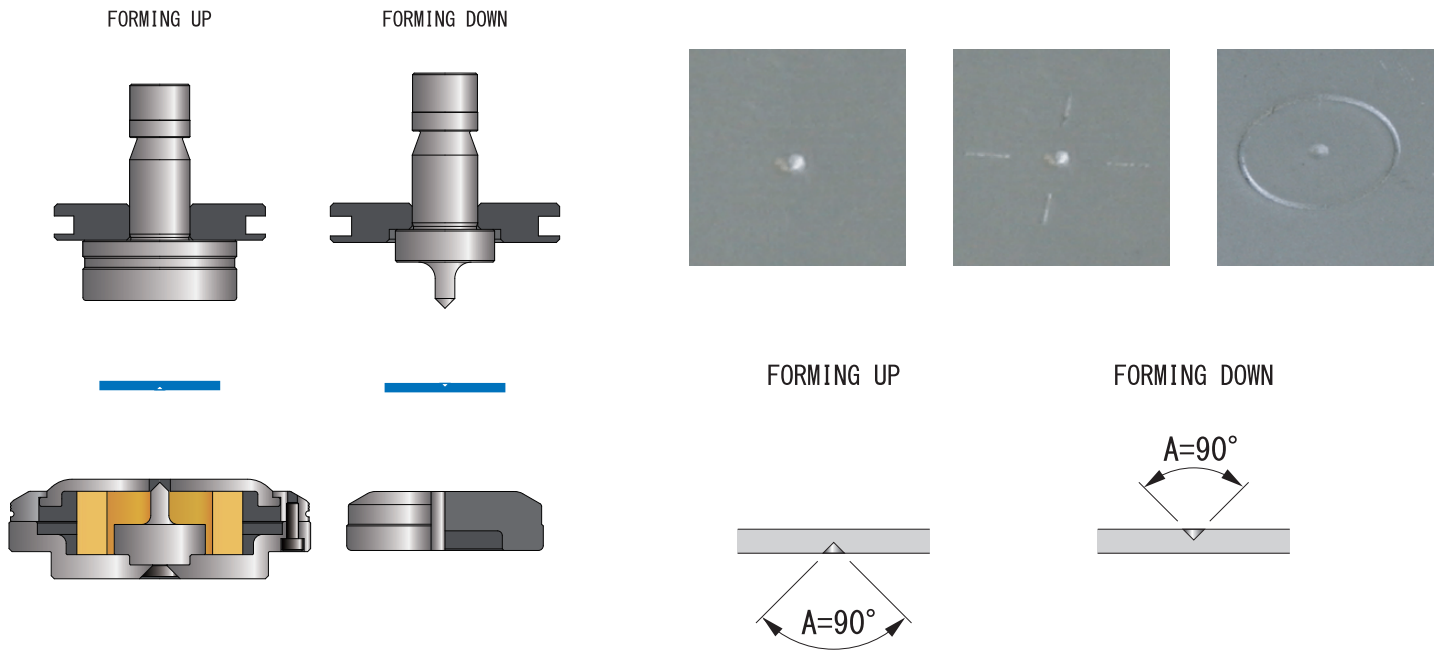
Conic offers the best performance special tools to the customer.

Conic engineers always try to find the best solution of productive tools to the customer which uses the most advanced tooling technologies.



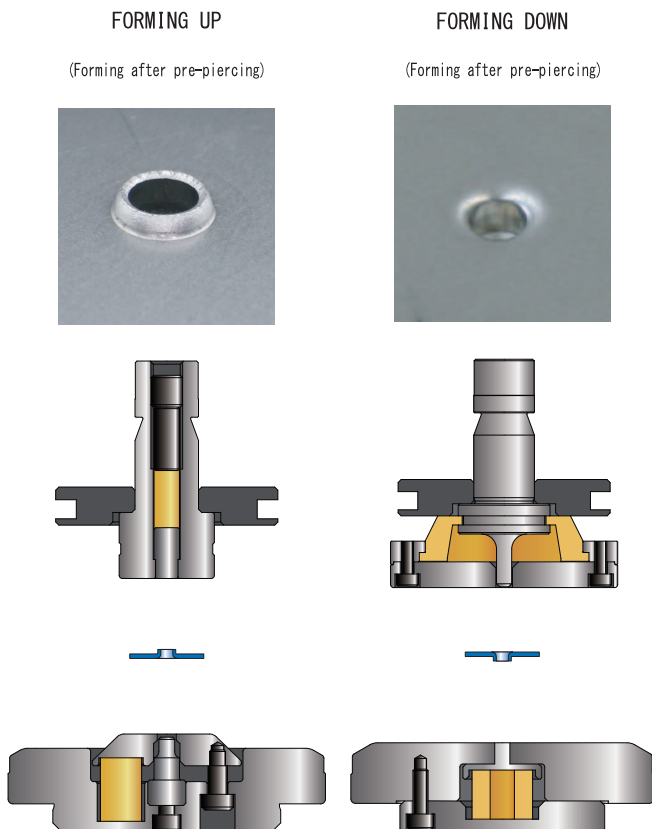
# CONIC FORMING TOOLS

## CENTER POINT

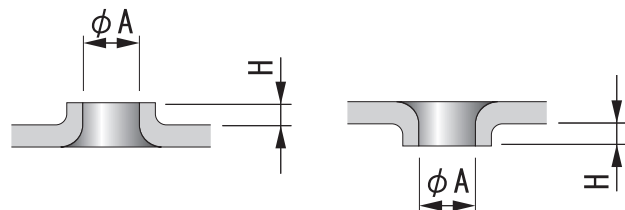


Forming process of making conical recess (center point).  
Used for locator, landmark and so on.

## BURRING FOR THREAD FORM



Screw size	Diameter (A)	Pre-hole
M2.5	$\phi 2.1$	$\phi 1.2$
M3	$\phi 2.6$	$\phi 1.5$
M4	$\phi 3.4$	$\phi 2.0$
M5	$\phi 4.3$	$\phi 2.4$
M6	$\phi 5.1$	$\phi 2.8$



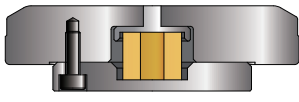
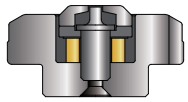
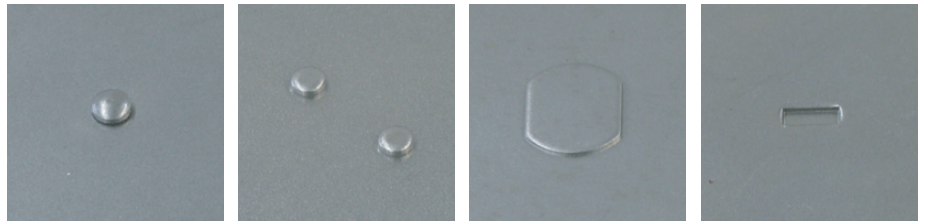
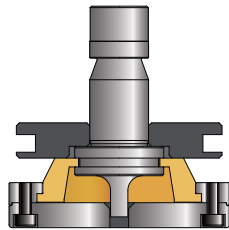
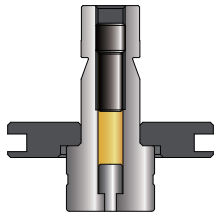
Forming process for making tubes of threading for screw.  
Threading for screws and increased bearing area for tubes.

# CONIC FORMING TOOLS

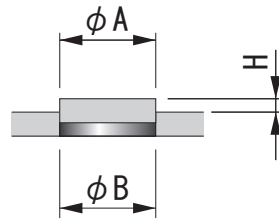
## HALF SHEAR

FORMING UP

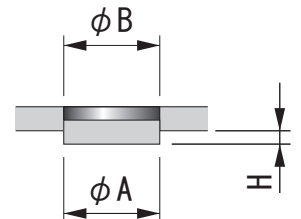
FORMING DOWN



FORMING UP



FORMING DOWN

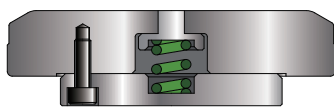
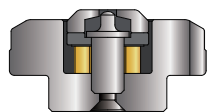
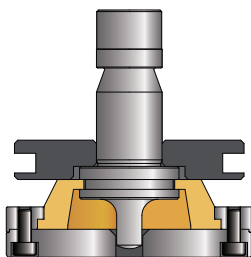
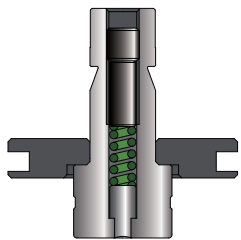


Forming process of pierce half of material thickness. Used for locator or stopper.

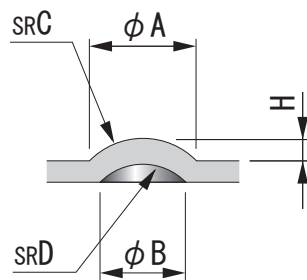
## EMBOSS (DIMPLE)

FORMING UP

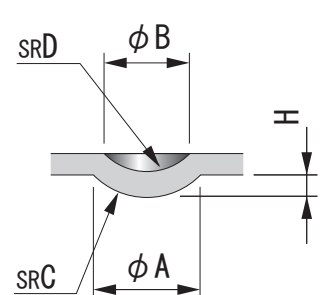
FORMING DOWN



FORMING UP

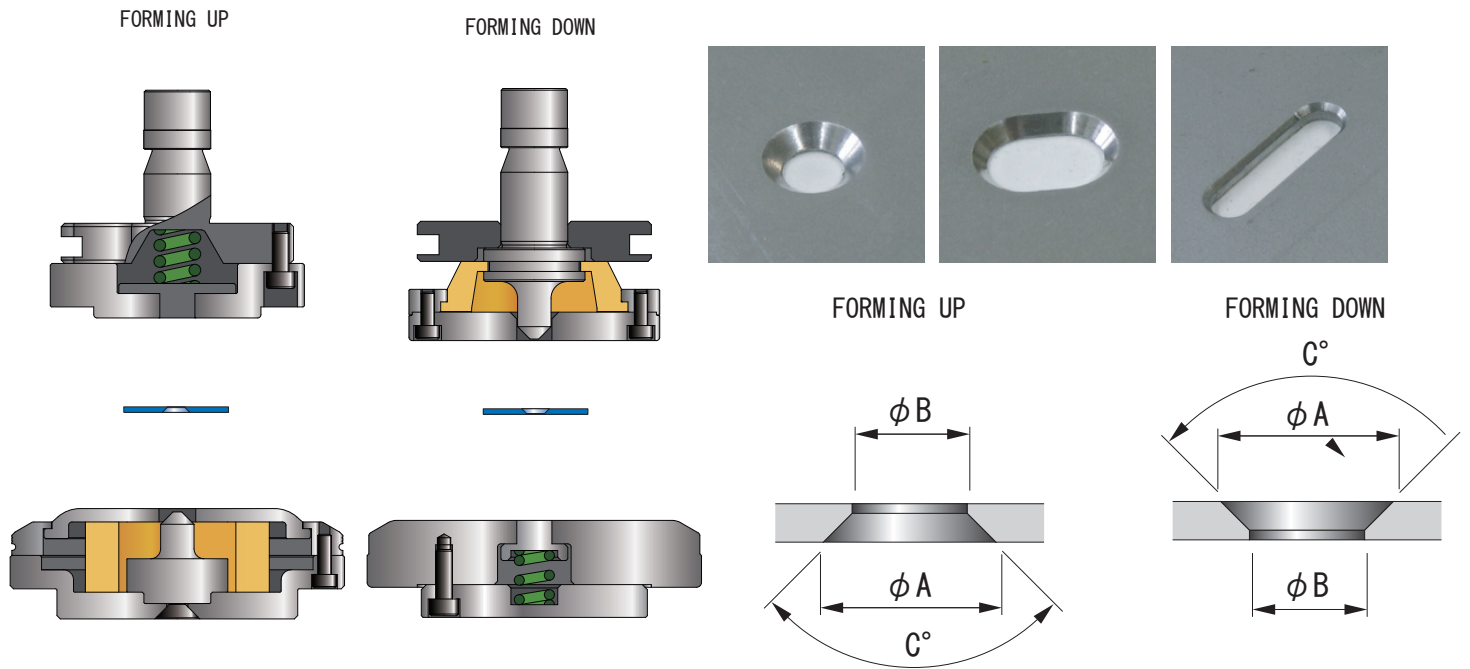


FORMING DOWN



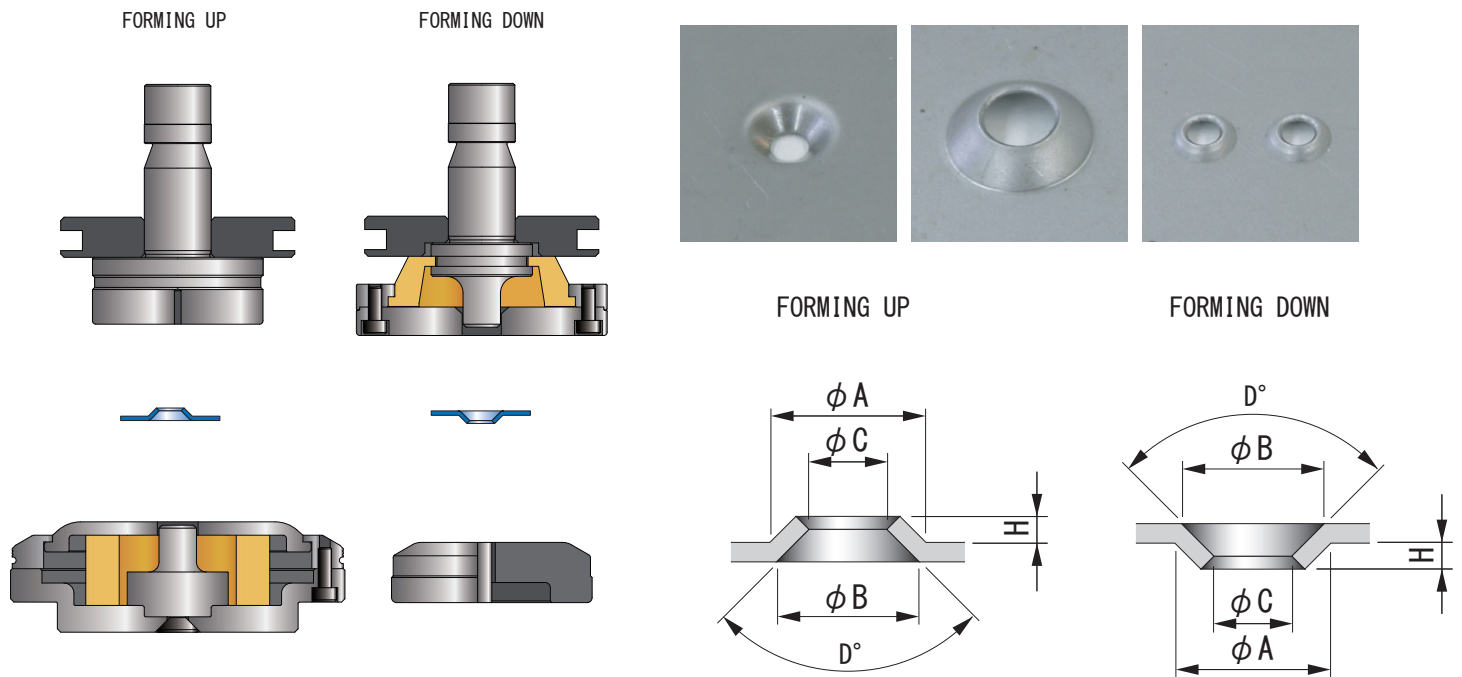
Forming process of embossing material like dimple. Used for locator or decorative pattern of the material.

**COUNTERSINK FOR COUNTERSUNK SCREW (CHAMFERING)**



Forming process of making a chamfer to material.  
 Used for sink a countersunk screw head, make chamfer to a corner after punching, guide of tapping.

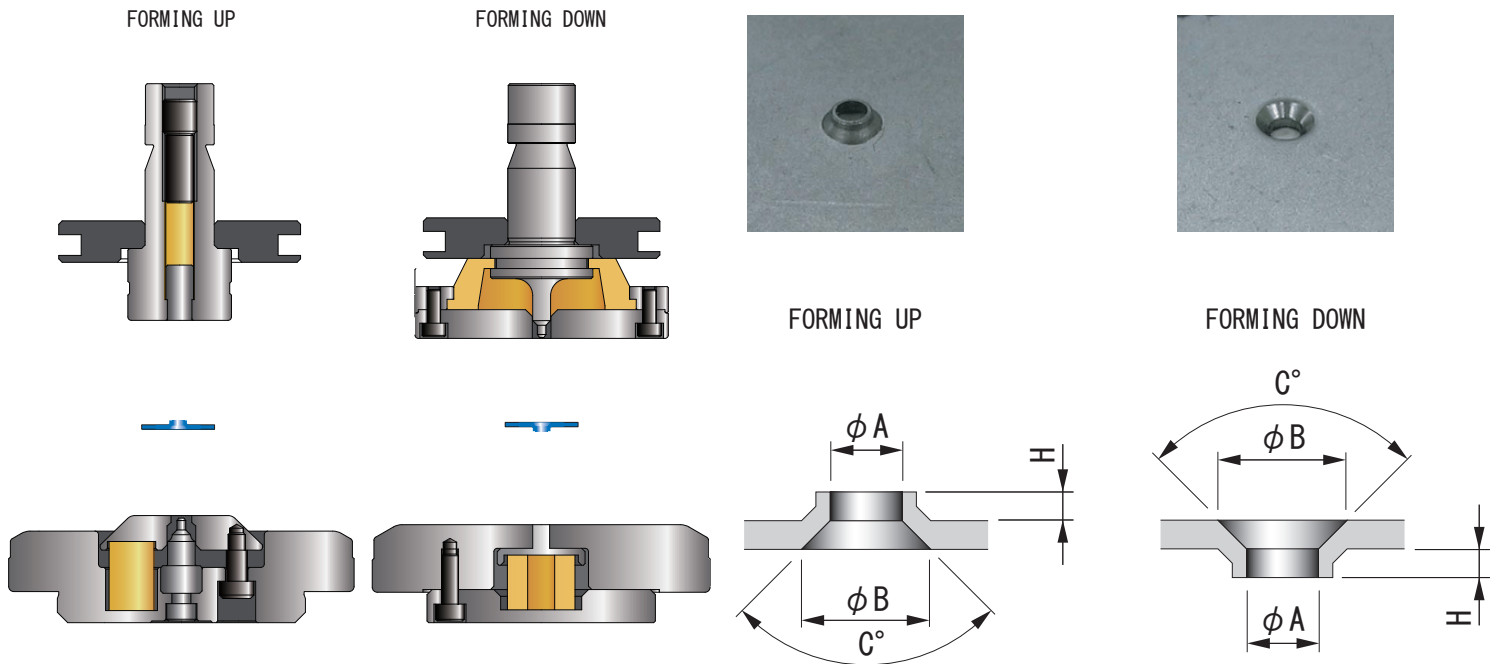
**COUNTERSINK**



Forming process of embossing work, such as dish-shaped.  
 Used for sink a countersunk screw head, or used for nonslip.

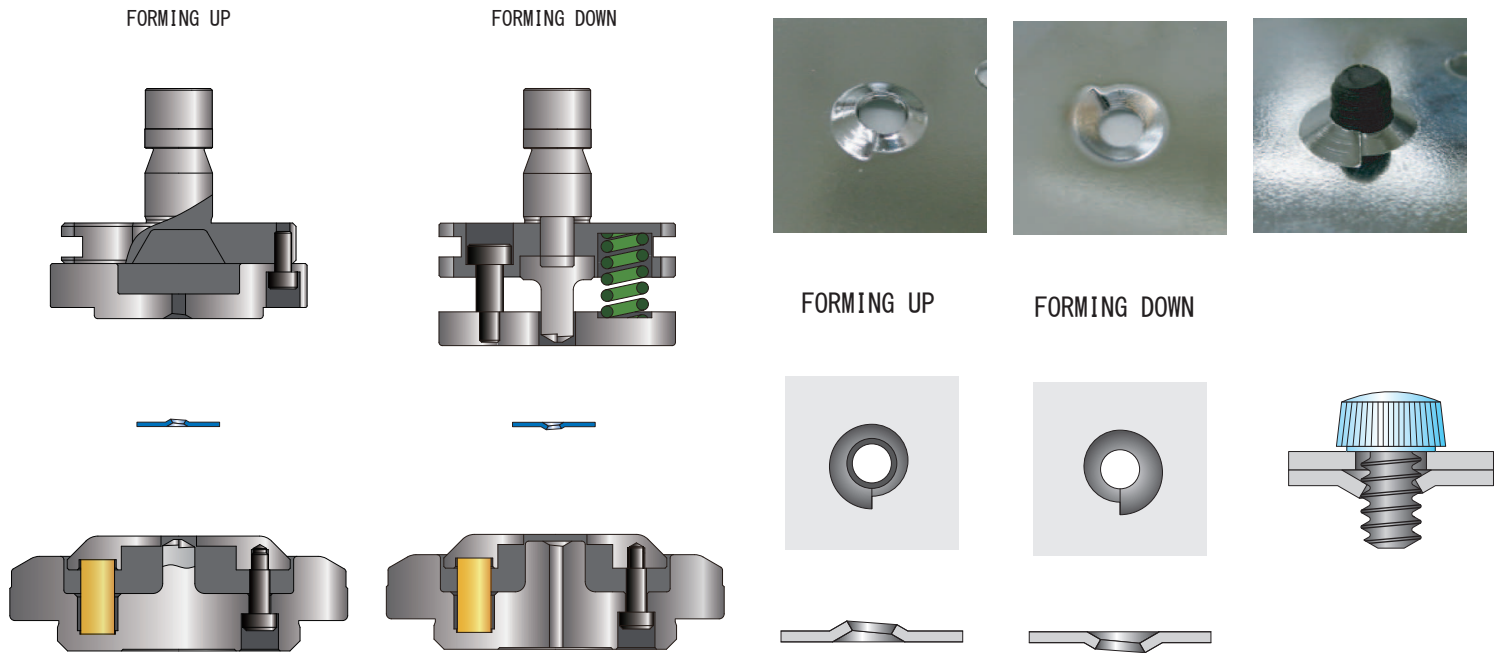


**COUNTERSINK BARRING**



Forming process for making tube of threading for screw, and at the same time make a chamfer in the entrance part.  
 Used for threading for screw. Used to guide at the time of tapping.

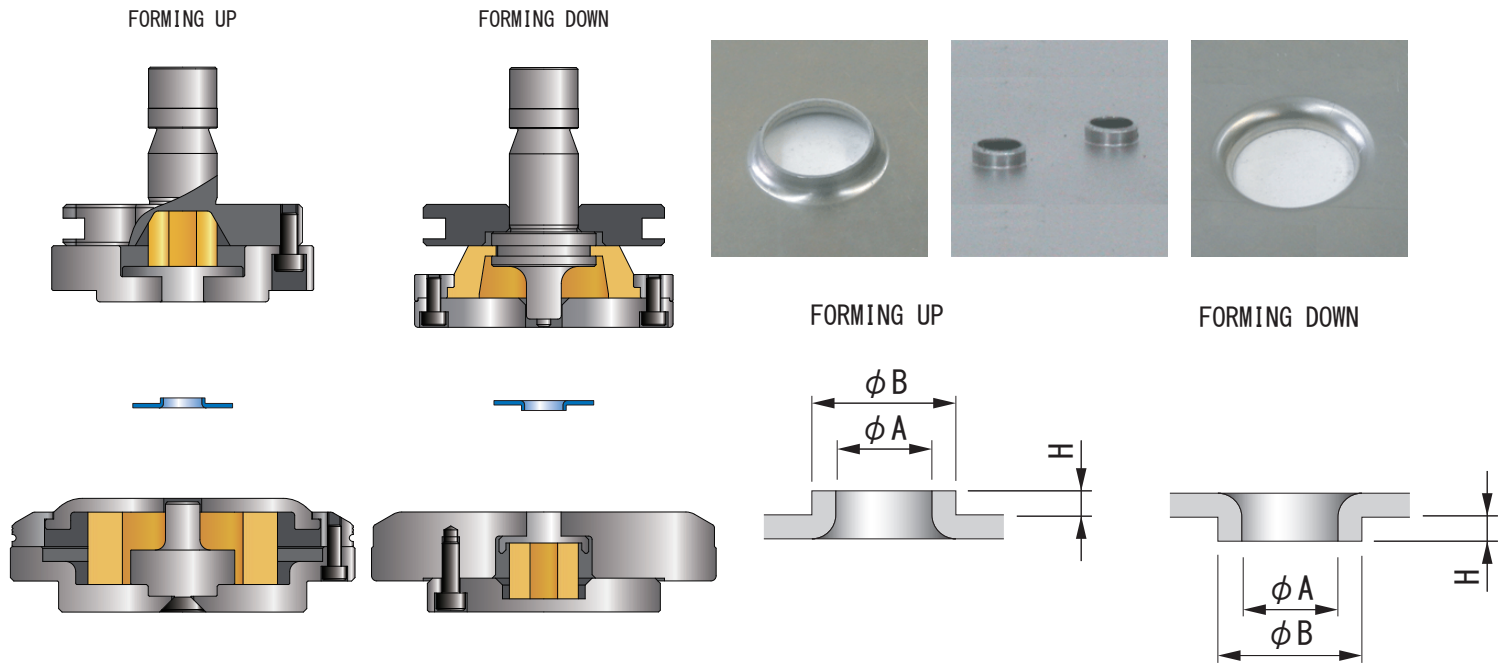
**ONE PITCH THREAD FORM**



Forming process of making the one pitch thread form.  
 Used to screw in place that does not require a heavy strength.

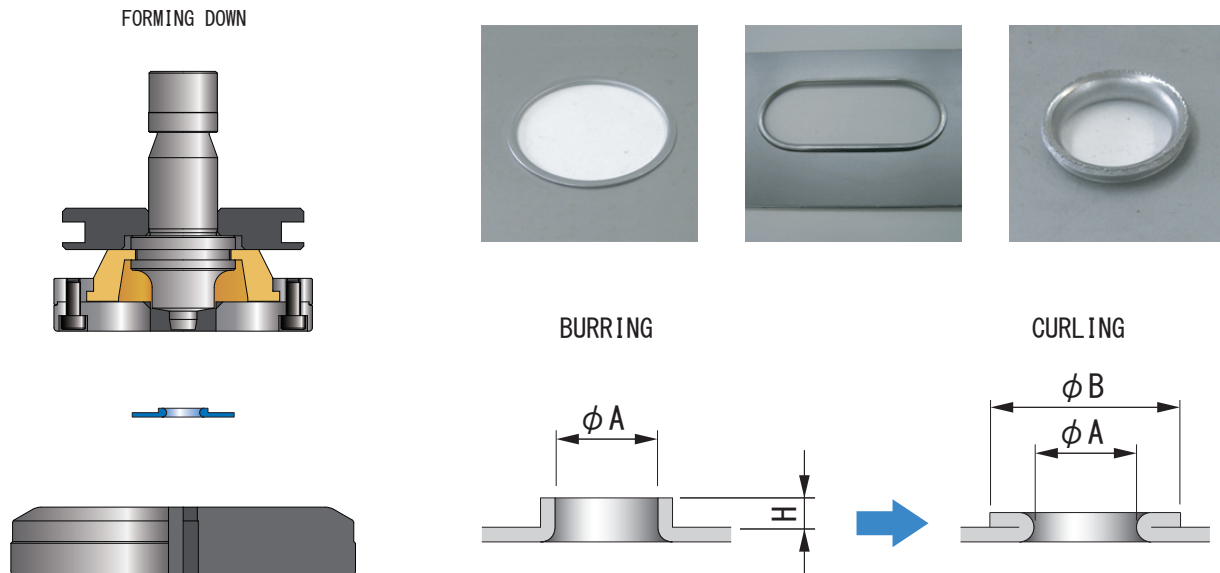


**COUNTERSINK BARRING**



Forming process for making tubes.  
 Used to guide or protect the code and pipe.

**CURLING**

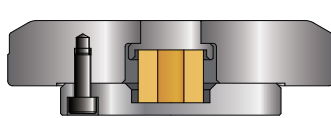
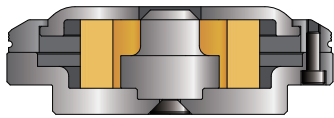
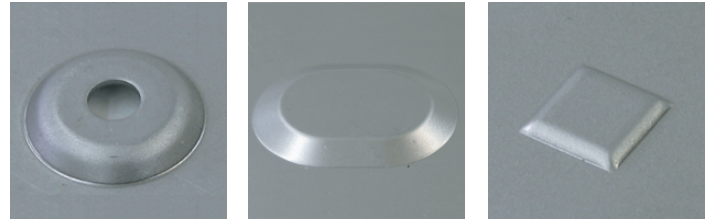
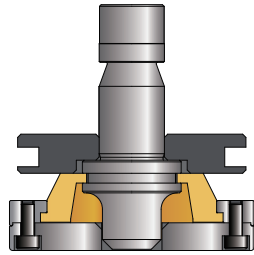
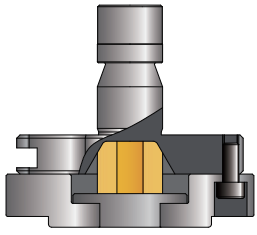


Forming process to bend the material after forming of burring.  
 Used to guide or protect the code and pipe.  
 The order of processing is Pre-hole  $\Rightarrow$  Burring  $\Rightarrow$  Curling.

**EMBOSS**

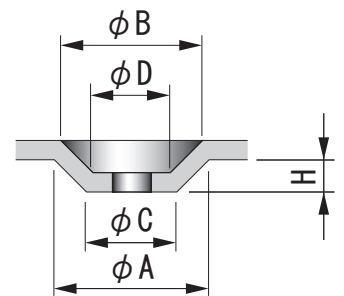
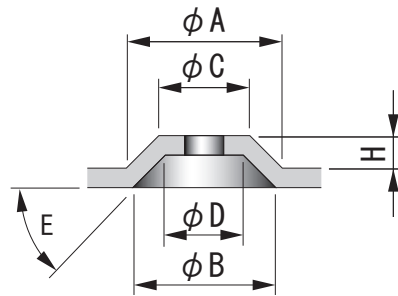
FORMING UP

FORMING DOWN



FORMING UP

FORMING DOWN

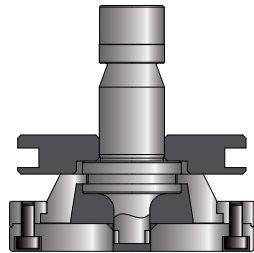
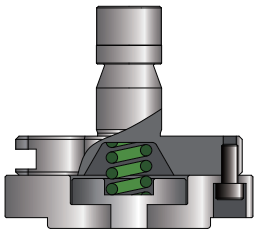


Forming process to produce raised or sunken shape.  
 Used for sinking a head of bolts or nuts.  
 Used for the seat of the product.

**KNOCKOUT**

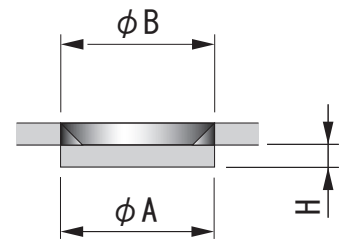
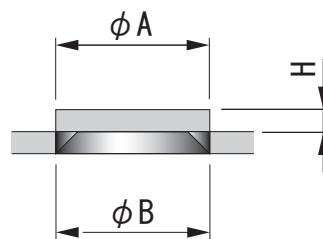
FORMING UP

FORMING DOWN



FORMING UP

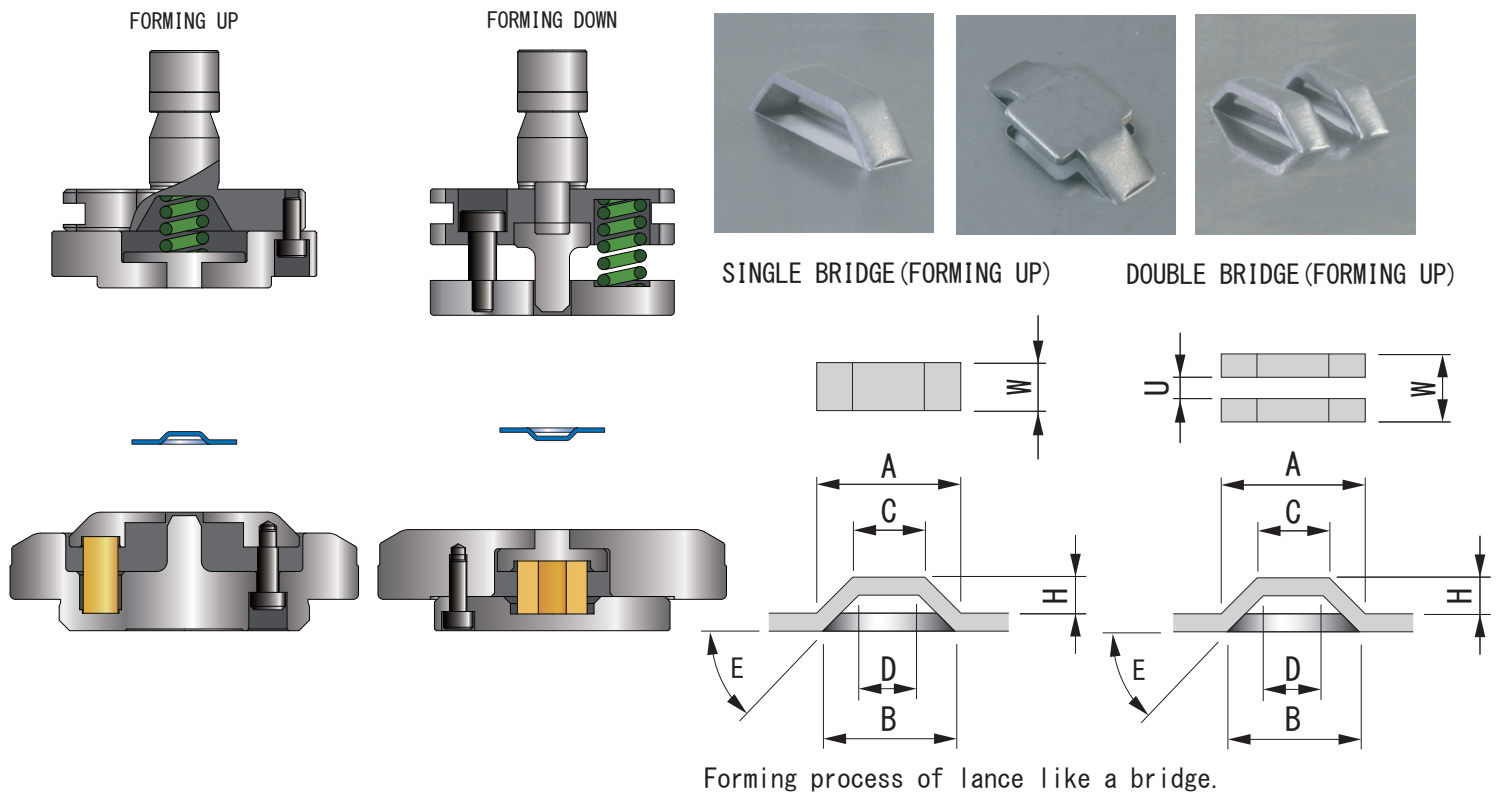
FORMING DOWN



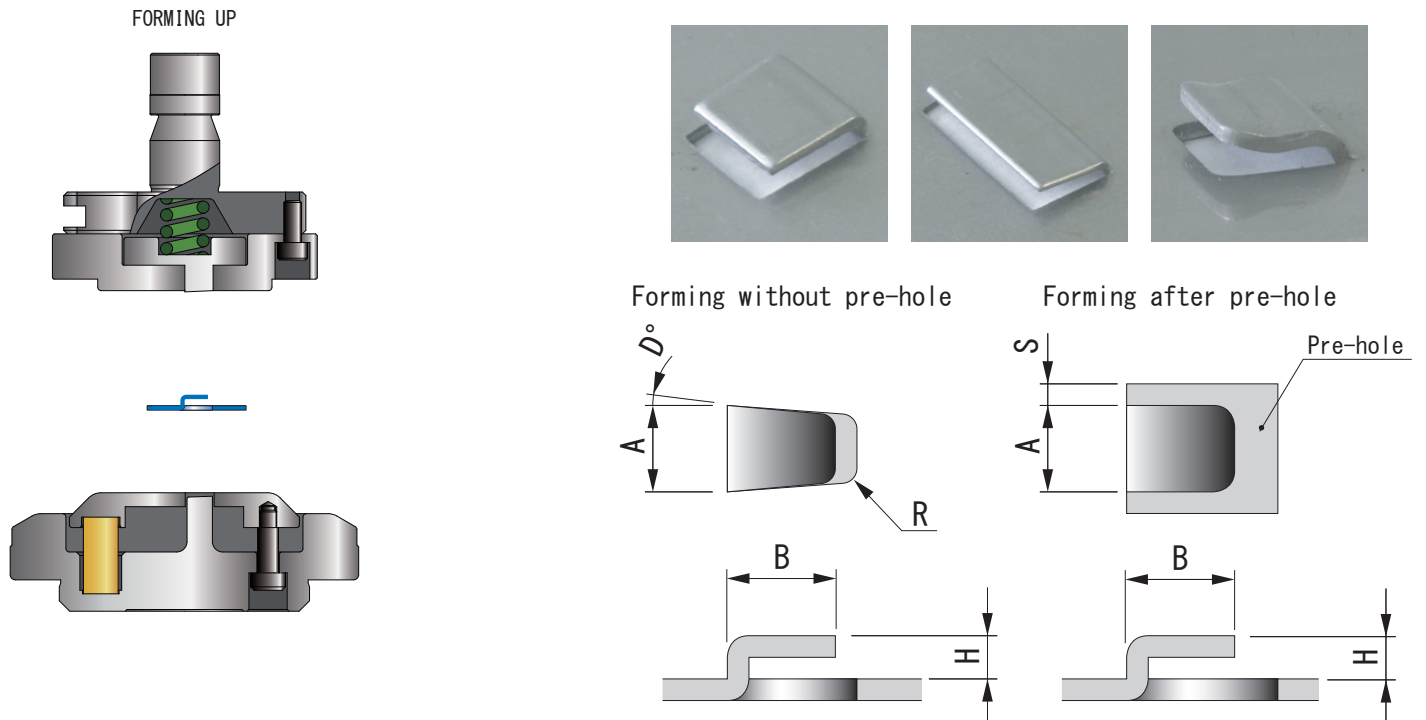
Forming process of piercing a hole and keep the slug on the sheet metal by tabs.

When using a hole, remove the slug using a screwdriver.

## BRIDGE , DOUBLE BRIDGE

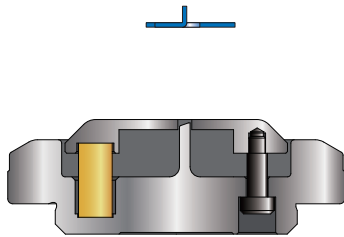
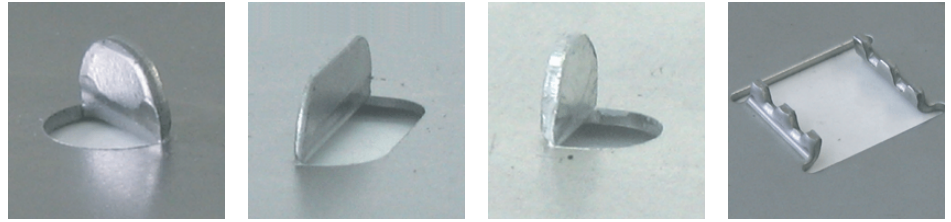
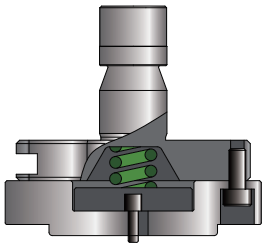


## LANCE (Z-BENDING)

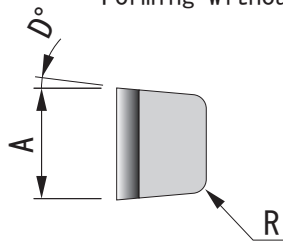


## LANCE (L-BENDING)

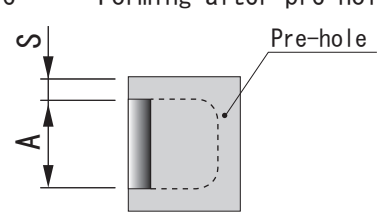
FORMING UP



Forming without pre-hole



Forming after pre-hole

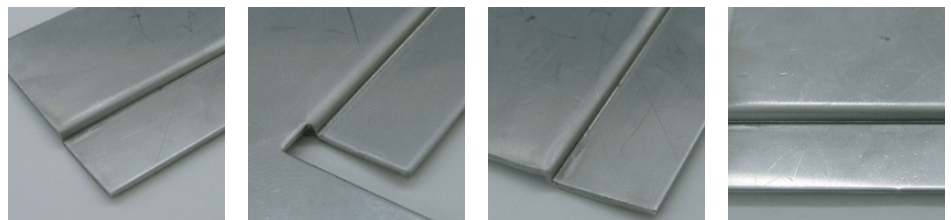
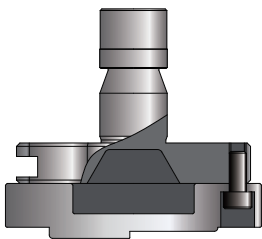


Forming process of lance like L figure.

Used for hook, locator and stopper.

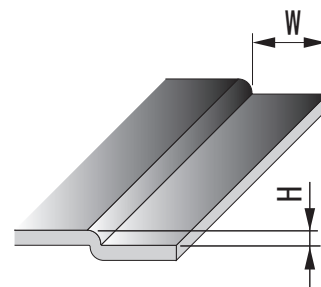
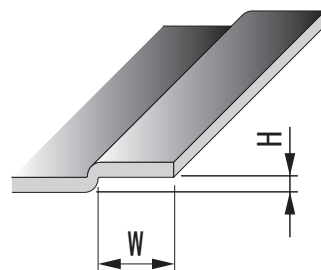
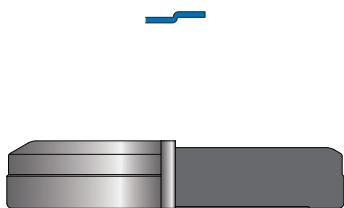
## BENDING (OFFSET TOOL)

FORMING UP



FORMING UP

FORMING DOWN

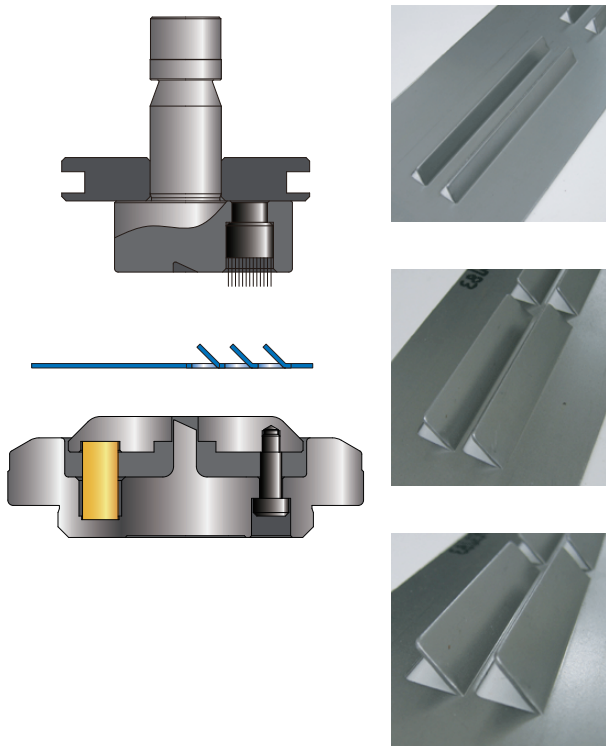


Forming process of bending that can hit continuously along the sheet.

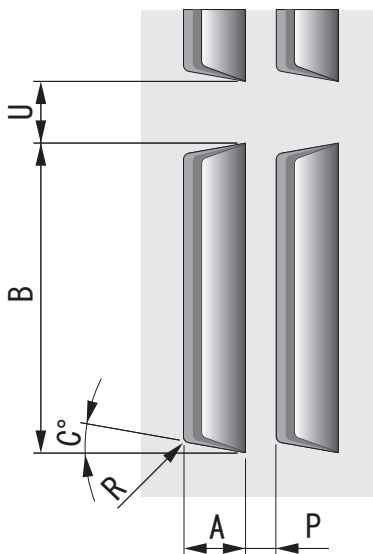
Used for the overlaying the sheet.

## LANCE FOR AIR FLOW

FORMING UP

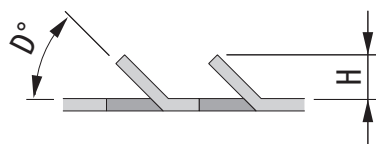


FORMING UP



Forming process of lance to create an opening.

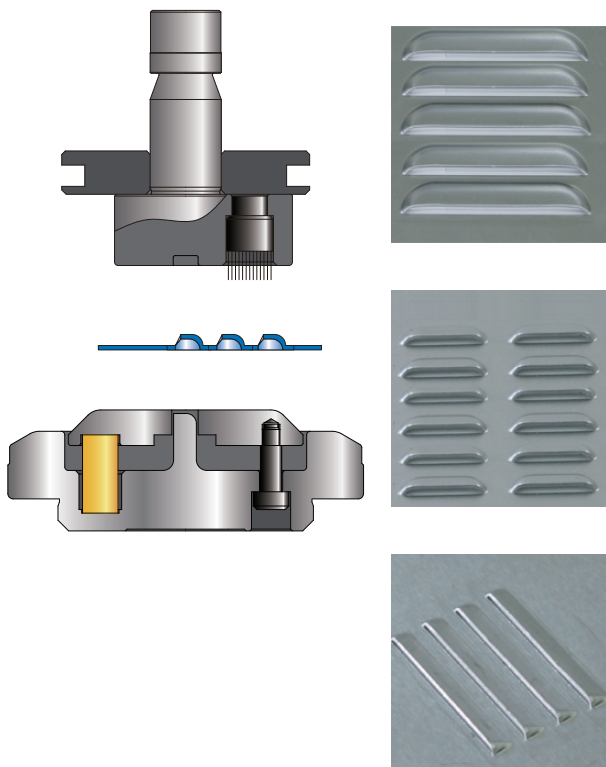
Used to provide air flow or ventilation.



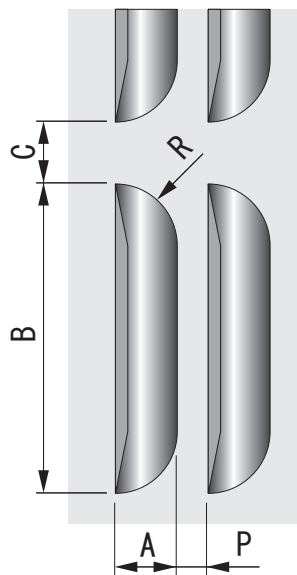
← ② ← ① Order of punching

## LOUVER FOR AIR FLOW

FORMING UP

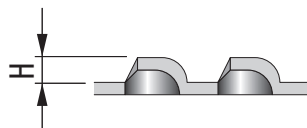


FORMING UP



Forming process of louver to create an opening.

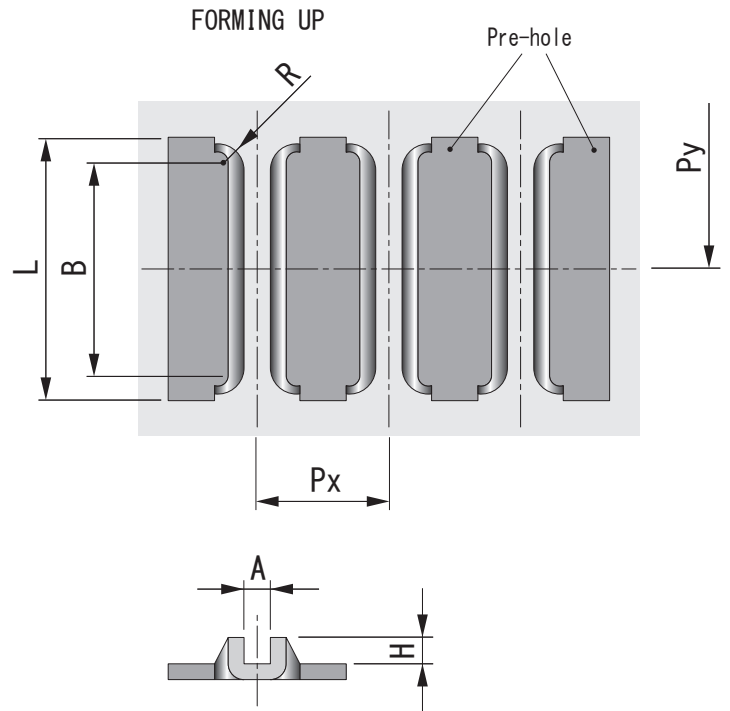
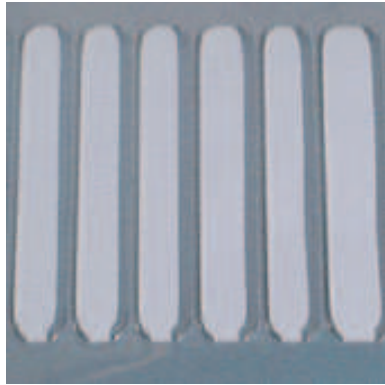
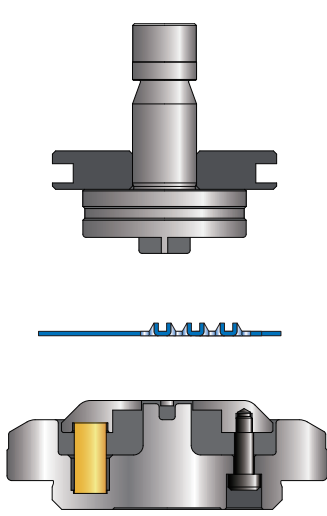
Used to provide air flow or ventilation.



Order of punching ① → ② →

## CARD GUIDE

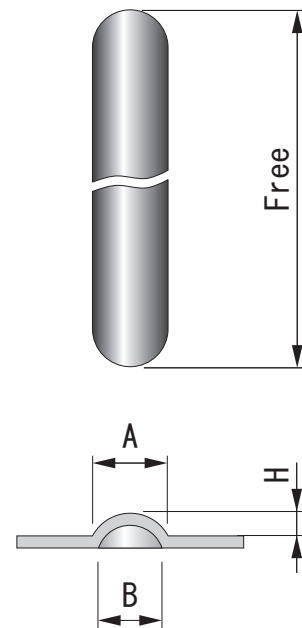
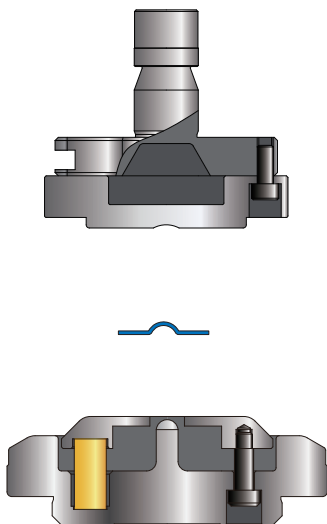
FORMING UP



Forming process to form U-groove for a printed circuit board.

## BEADING

FORMING UP



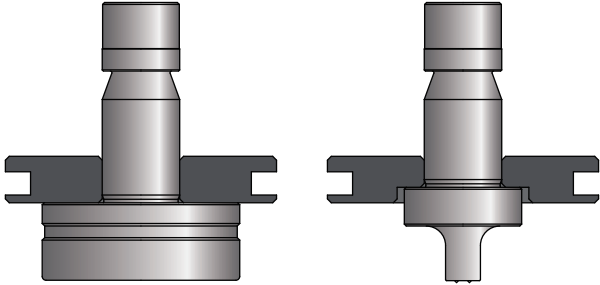
Forming process of embossing that can hit continuously along the sheet. Used for strengthening, nonslip or decoration.



## MARKING (STAMPING)

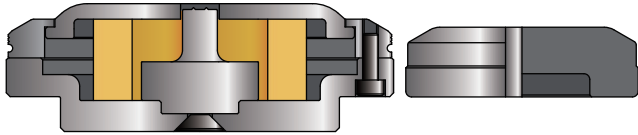
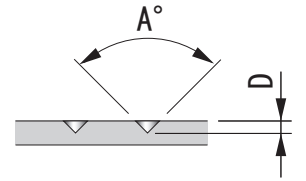
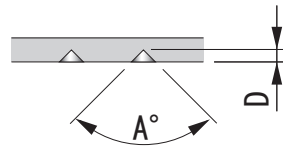
FORMING UP

FORMING DOWN



FORMING UP

FORMING DOWN

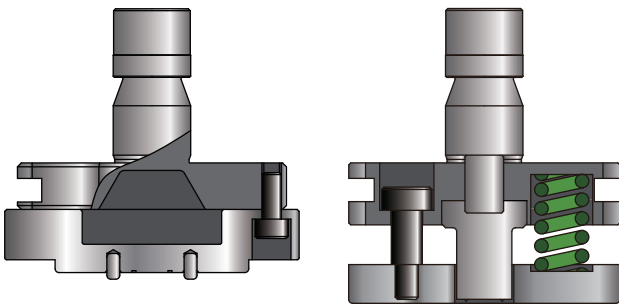


Forming process of stamping the character or logo etc.

## MARKING (EMBOSS)

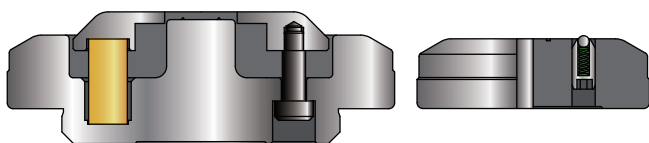
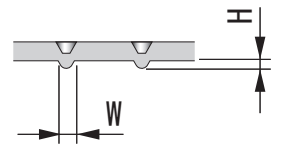
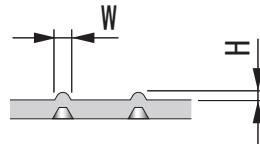
FORMING UP

FORMING DOWN



FORMING UP

FORMING DOWN

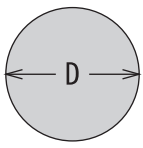
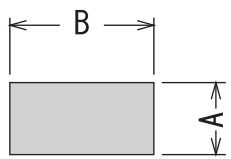


Forming process of embossing the character or logo etc.

## CALCULATE PUNCHING FORCE (TONNAGE)

Tonnage capacity is different depending on machines.  
Use the calculation formula below to prevent from over tonnage.

$$\text{Tonnage (ton)} = \frac{\text{Circumference (mm)} \times \text{Material thickness (mm)} \times \text{Shear resistance (kg/mm}^2\text{)}}{1000}$$

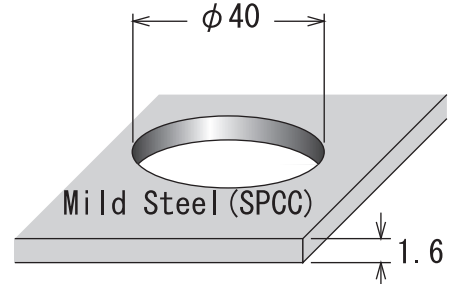
Circumference	
Round	Shaped
Diameter x 3.14	(Length dimension + Width dimension) x 2
	
Circumference = D x 3.14	Circumference = (A + B) x 2

Shear resistance by material	
Material	Shear resistance (kg/mm <sup>2</sup> )
Mild Steel	26~35
SS400	33~42
Stainless Steel	52~56
Aluminum	7~16
Copper	18~30
Brass	22~40

### <Calculation example>

The tonnage when piercing Φ40 to Mild Steel T=1.6mm.

$$\frac{40 \times 3.14 \times 1.6 \times 35}{1000} = 7 \text{ (ton)}$$



## DIE CLEARANCE

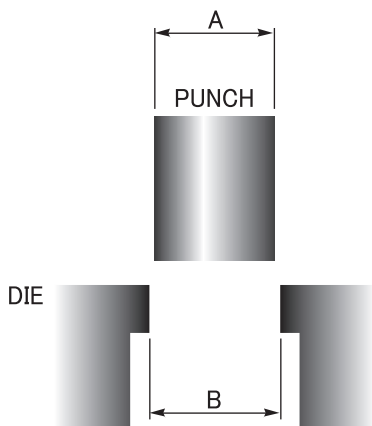
### ■ DIE CLERANCE IS ...

Die clearance is difference between punch diameter and die diameter.

$$\text{Die clearance} = B - A$$

### ■ RECOMMENDED DIE CLERANCE

$$\text{Die clearance} = \text{Material thickness} \times \text{Clearance Ratio}$$

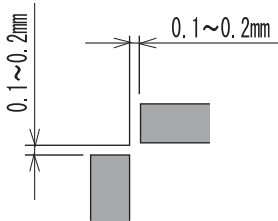


Material	Clearance Ratio	Material thickness							
		0.5	0.8	1.0	1.2	1.5	2.0	2.3	3.2
Mild steel	0.15	0.07	0.1	0.15	0.2	0.25	0.3	0.4	0.5
Stainless steel	0.2	0.1	0.15	0.2	0.25	0.3	0.4	0.5	0.6
Aluminum	0.1	0.07	0.1	0.1	0.15	0.15	0.2	0.25	0.35
Copper	0.1	0.07	0.1	0.1	0.15	0.15	0.2	0.25	0.35

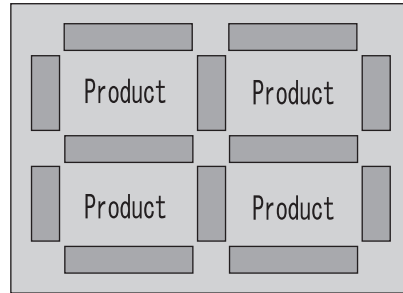
※Minimum Clearance is 0.07 for TRUMPF Punching machine.

## JOINT METHOD

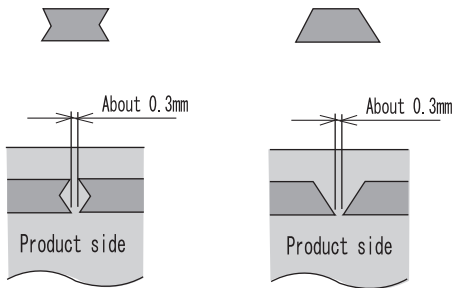
### CORNER JOINT



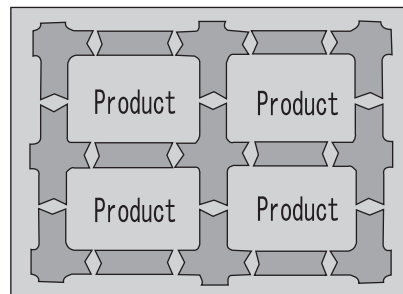
Joint of corner part



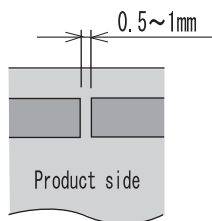
### MICRO JOINT



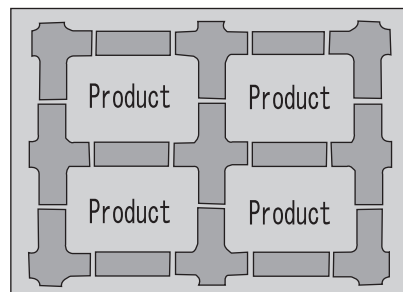
Joint of straight part



### WIRE JOINT



Joint of straight part



## CORNER ROUNDING

Standard Corner rounding tool	Corner rounding tool with tangent line	Corner rounding tool with joint

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TEL: +81 868 38 6154 FAX: +81 868 38 6331  
E-mail: tools@conic.co.jp  
<http://www.conic.co.jp/>

**CONIC PRECISION Co., Ltd.**

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55/22 Moo 4, Buengkumphroy, Lumlukka,  
Phatumthani 12150 Thailand  
TEL: +66 2 159 9870-1 FAX: +66 2 159 9872  
E-mail: conic\_thai@conic.co.jp  
<http://www.conic.co.jp/thai/>

**The Representative office in Vietnam**

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4F VIN OFFICE Building No. 362/19 Ung Van Khiem Street,  
Ward 25, Binh Thanh District, Ho Chi Minh City, Vietnam  
TEL: +84 28 7300 0250  
E-mail: conic\_vn@conic.co.jp

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