



TC

PUNZONES y MATRICES

Solutions for Metalworking
WWW.TCPUNZONES.COM



Salvagnini® system

TC PUNZONES Y MATRICES
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Salvagnini® System

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Tornillo
Fijación Punzón
Screw punch fixe



Porta Punzón
Punch Holder



Punzón
Punch



Muelle
Spring



Pisador
Stripper



Max. Ø10mm
Espesores de 0,5 a 3,5mm.
Estaciones de 70kN PP PU P2R
Largo punzón 44,8mm.
Altura matriz 15mm.
Max. afilado punzón 1,5mm.
Max. afilado matriz 1,2mm.

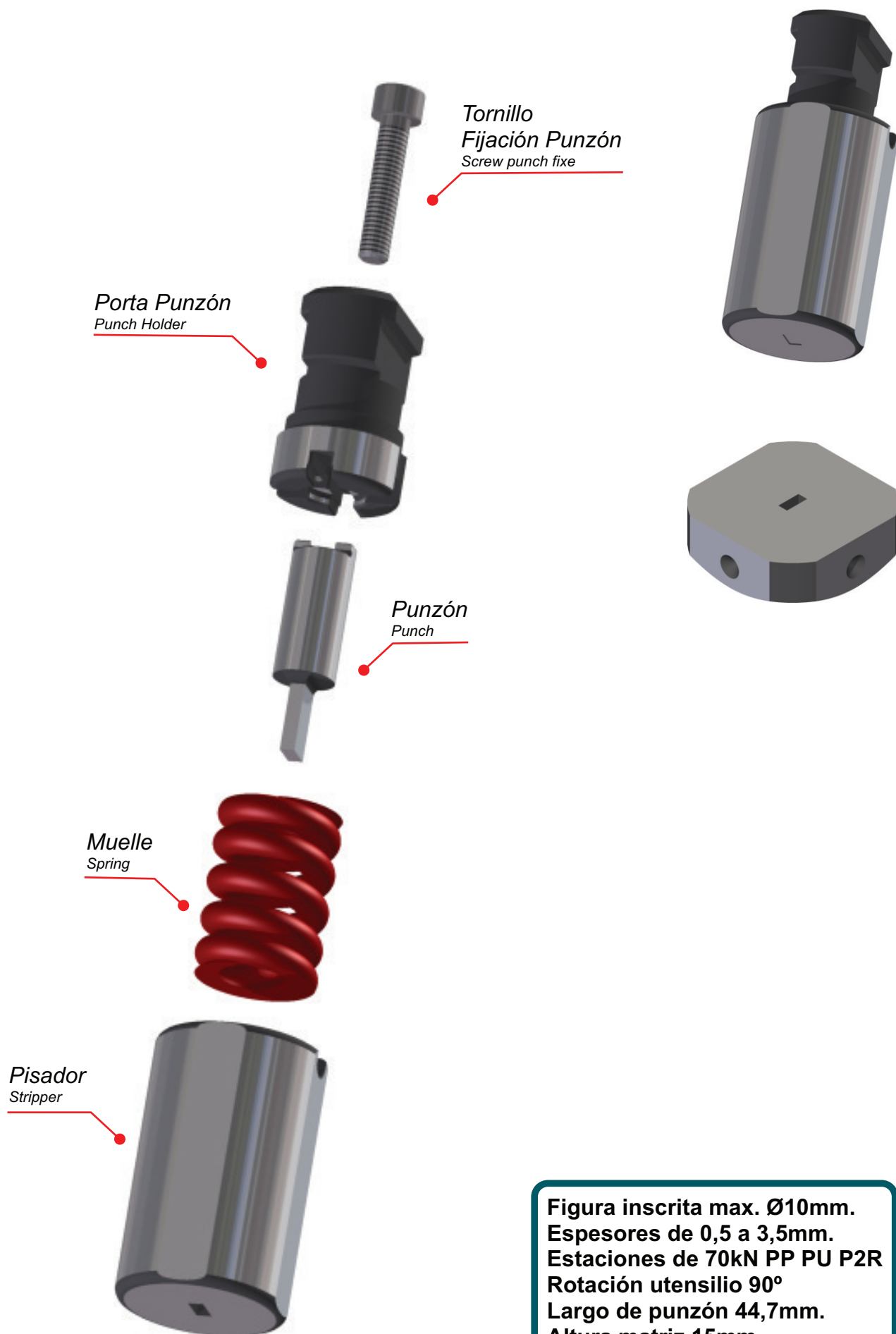


Figura inscrita max. Ø10mm.
Espesores de 0,5 a 3,5mm.
Estaciones de 70kN PP PU P2R
Rotación utensilio 90°
Largo de punzón 44,7mm.
Altura matriz 15mm.
Max. afilado de punzón 1,5mm.
Max. afilado matriz 1,2mm.

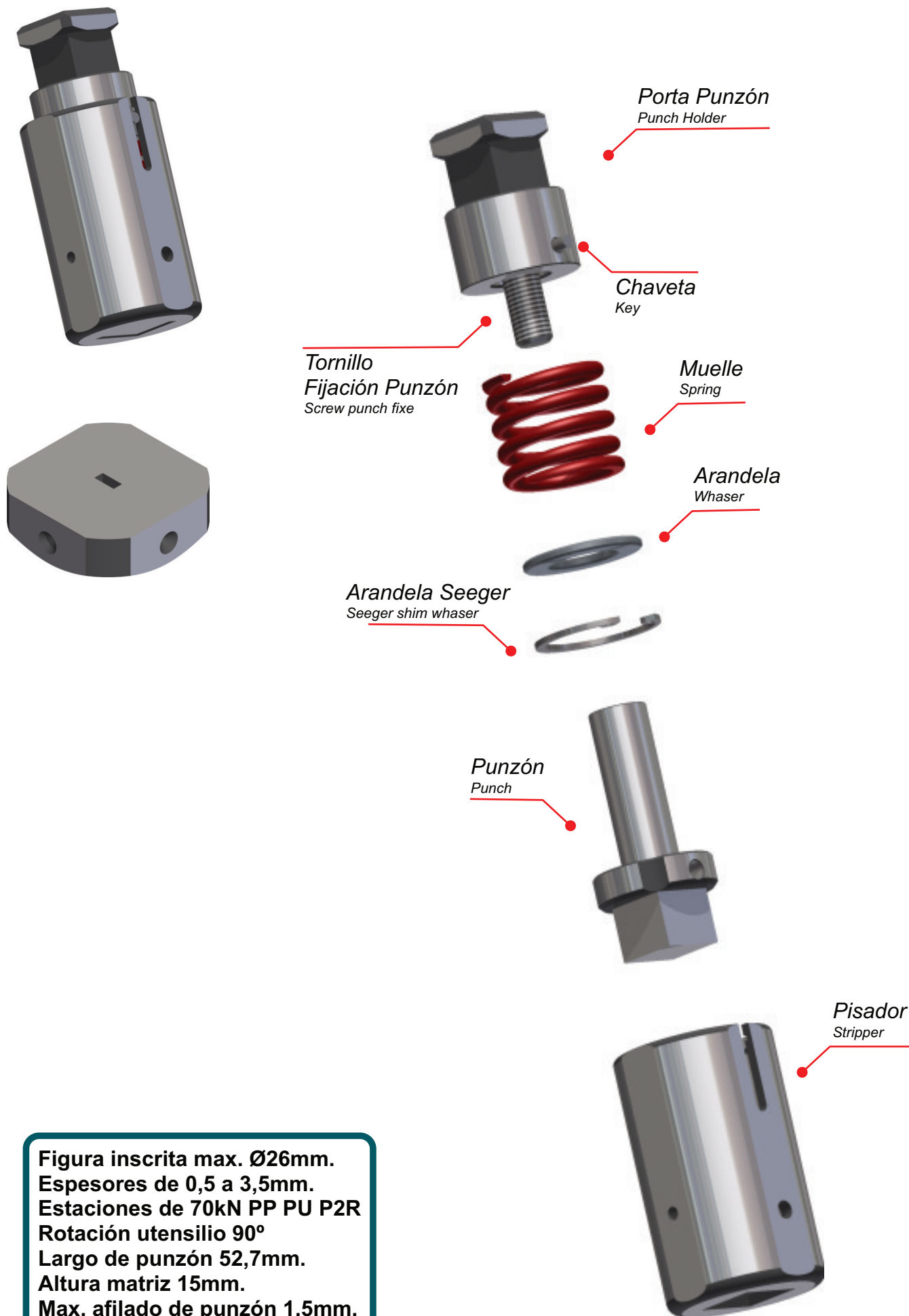


Figura inscrita max. Ø26mm.
 Espesores de 0,5 a 3,5mm.
 Estaciones de 70kN PP PU P2R
 Rotación utensilio 90°
 Largo de punzón 52,7mm.
 Altura matriz 15mm.
 Max. afilado de punzón 1,5mm.
 Max. afilado matriz 1,2mm.

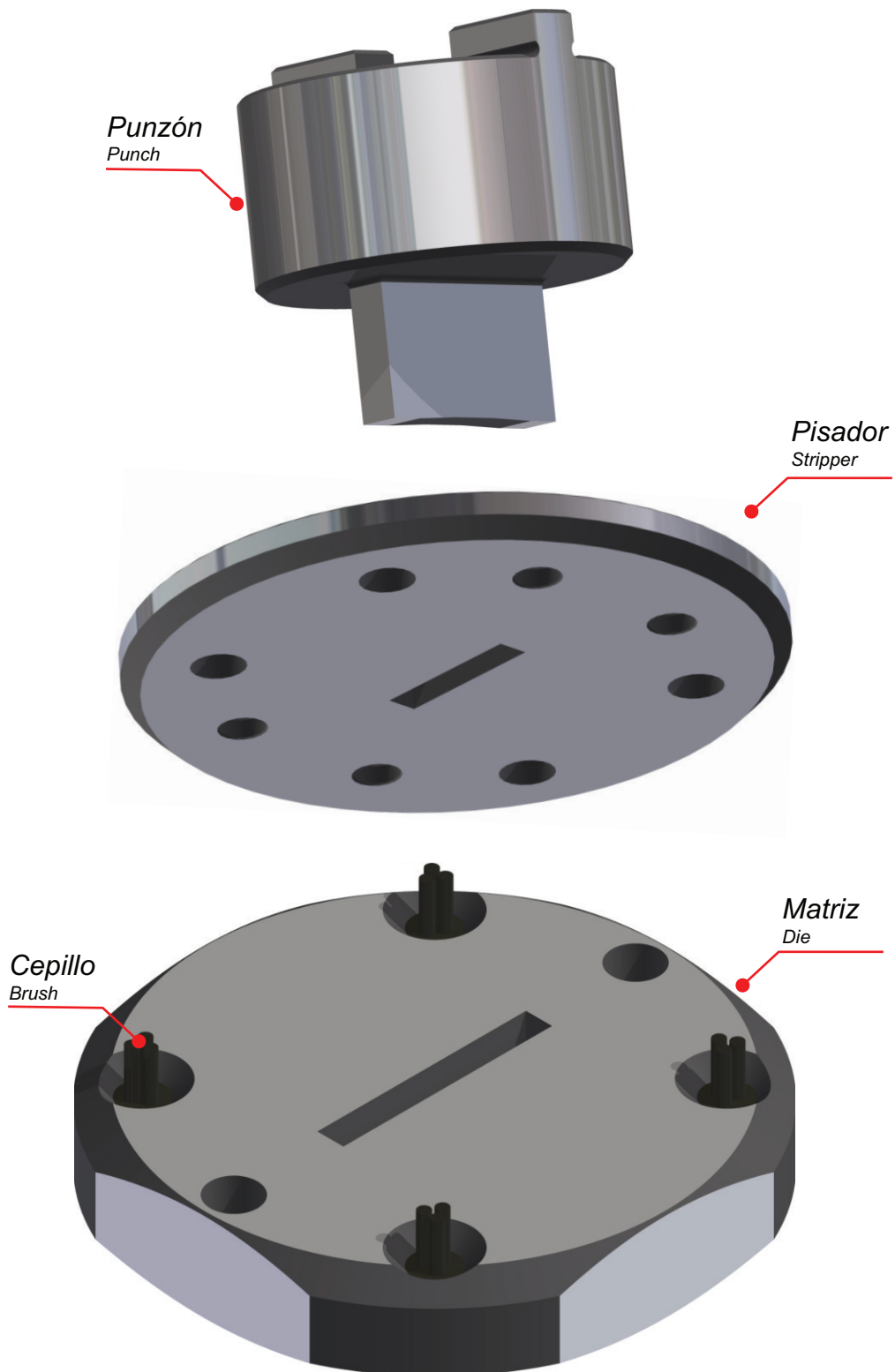
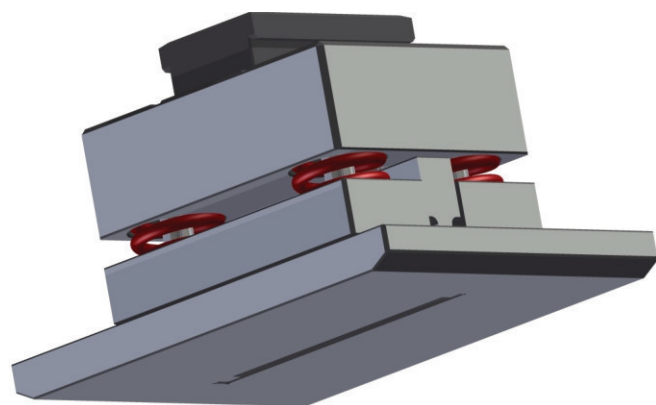


Figura inscrita max. Ø42,4mm.
 Espesores de 0,5 a 3mm.
 Estaciones rotatorias 120kN P2R
 Rotación utensilio continua
 Largo de punzón 43mm.
 Altura matriz 18mm.
 Max. afilado de punzón 1,5mm.
 Max. afilado matriz 1,2mm.



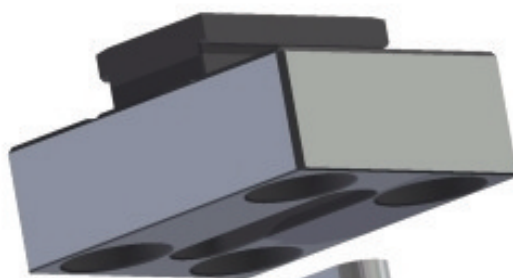
Tornillos Guia
Guide Screw



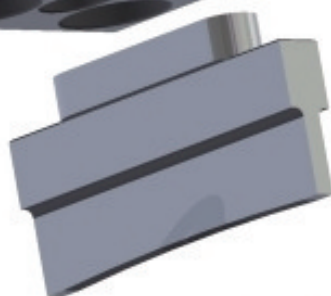
Tornillo Fijación Punzón
Screw Punch Fix



Cabeza de Golpeo
Hit Kit



Punzón
Punch



Muelles
Springs



Pisador activo
Active Stripper

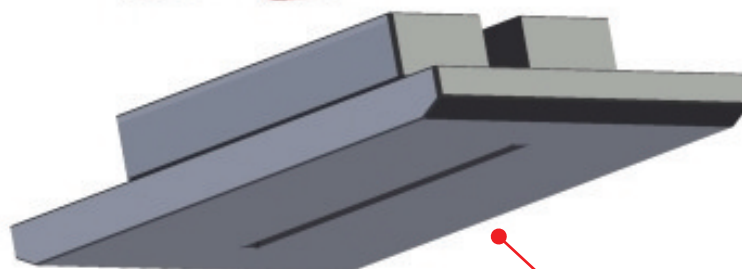


Figura inscrita max. Ø60mm.
Espesores de 0,5 a 3,5mm.
Estaciones de 260kN
Tipo 70 (90x70)
Rotación utensilio 90°
Largo de punzón 43mm.
Max. afilado de punzón 2mm.

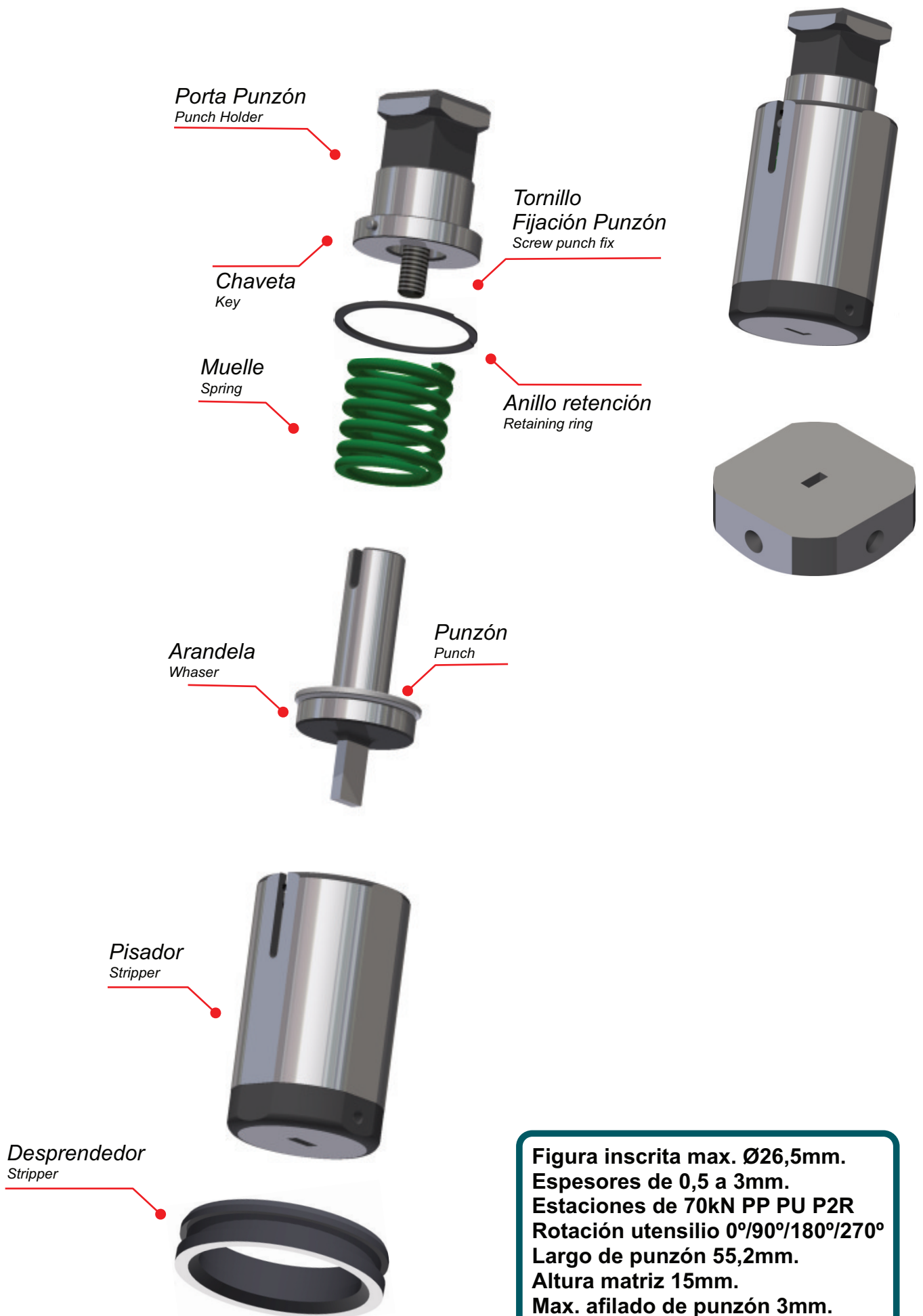
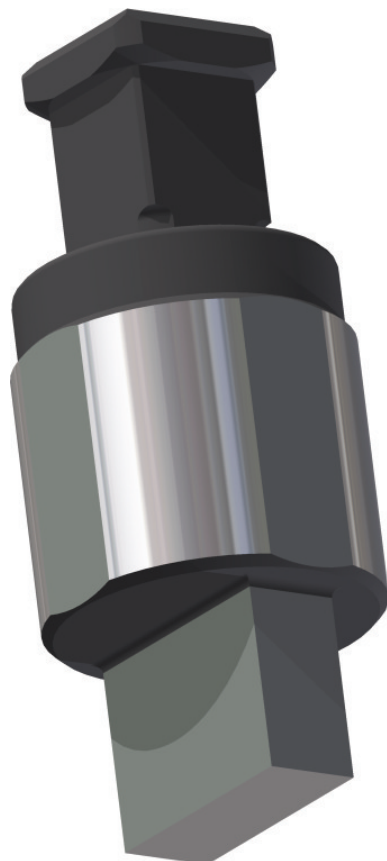


Figura inscrita max. Ø26,5mm.
 Espesores de 0,5 a 3mm.
 Estaciones de 70kN PP PU P2R
 Rotación utensilio 0°/90°/180°/270°
 Largo de punzón 55,2mm.
 Altura matriz 15mm.
 Max. afilado de punzón 3mm.
 Max. afilado matriz 1,2mm.

Punzón
Punch



Desprendedor
Stripper



Matriz
Die

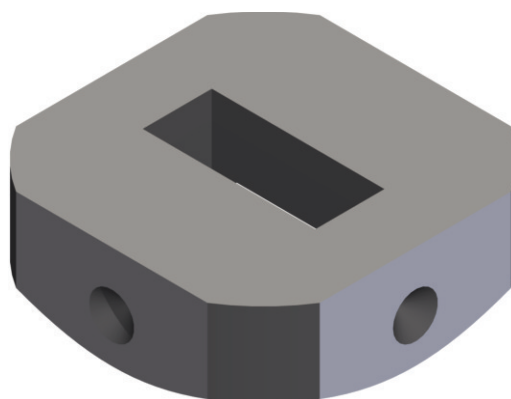


Figura inscrita max. Ø33mm.
Espesores de 0,5 a 3,5mm.
Estaciones de 70kN PP PU P2R
Rotación utensilio 0°/90°/180°/270°
Largo de punzón 81,5mm.
Altura matriz 15mm.
Max. afilado de punzón 4mm.
Max. afilado matriz 1,2mm.

Tornillo
Fijación Punzón
Screw punch fixe



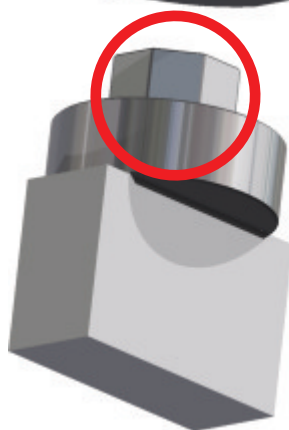
Desprendedor
Stripper



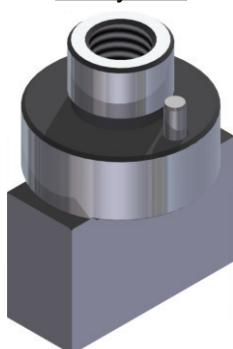
Porta Punzón
Punch Holder



Punzón
Punch



Sistema TC
TC System



Sistema Original
Original System

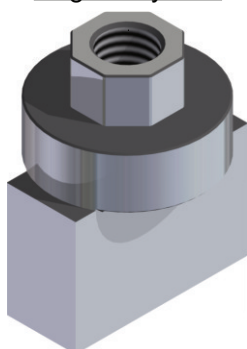


Figura inscrita max. Ø33mm.
Espesores de 0,5 a 3,5mm.
Estaciones de 70kN PP PU P2R
Rotación utensilio 90°
Largo de punzón 36,6mm.
Altura matriz 15 / 47,5mm.
Max. afilado de punzón 4mm.
Max. afilado matriz 1,2mm.

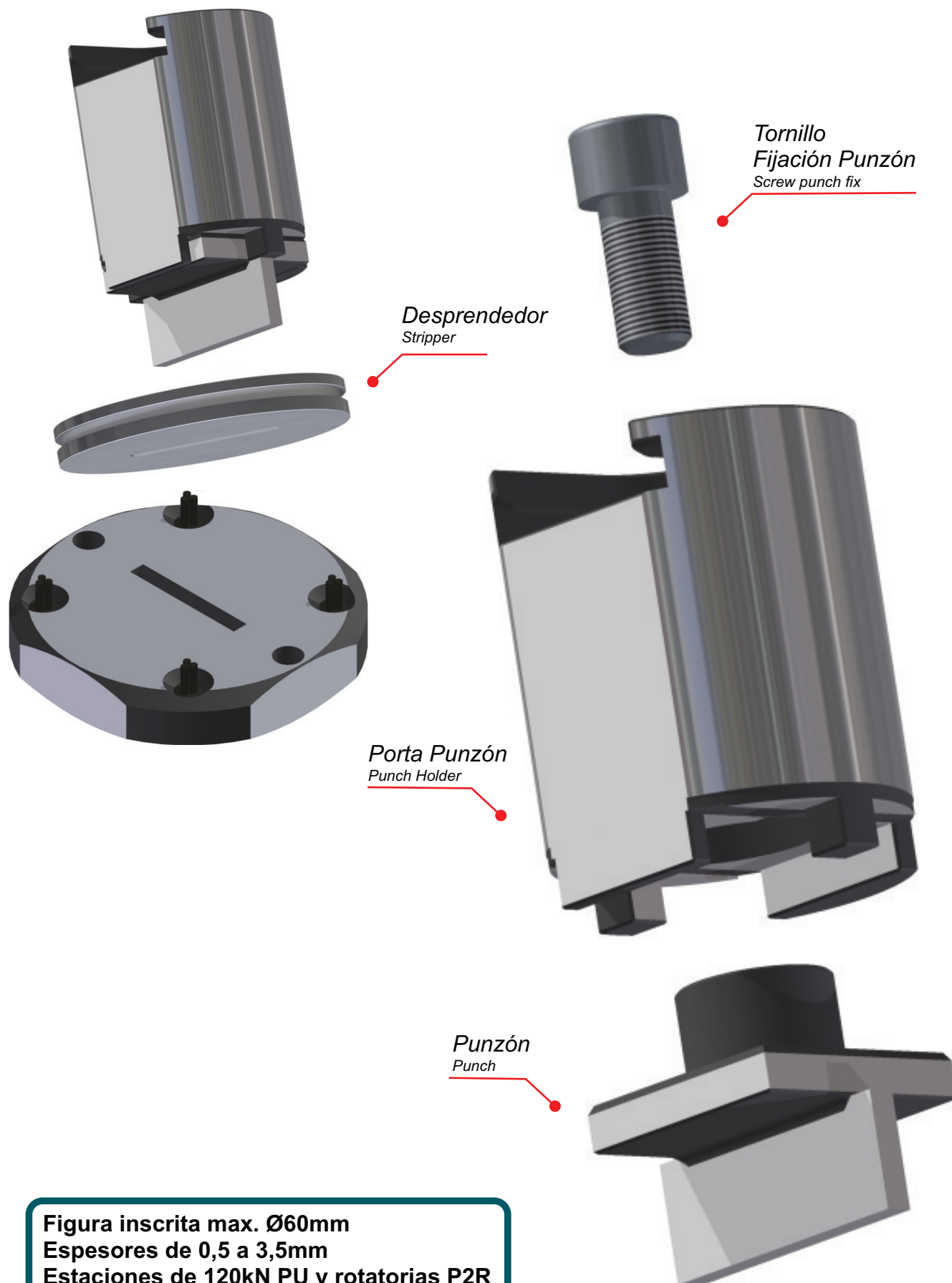
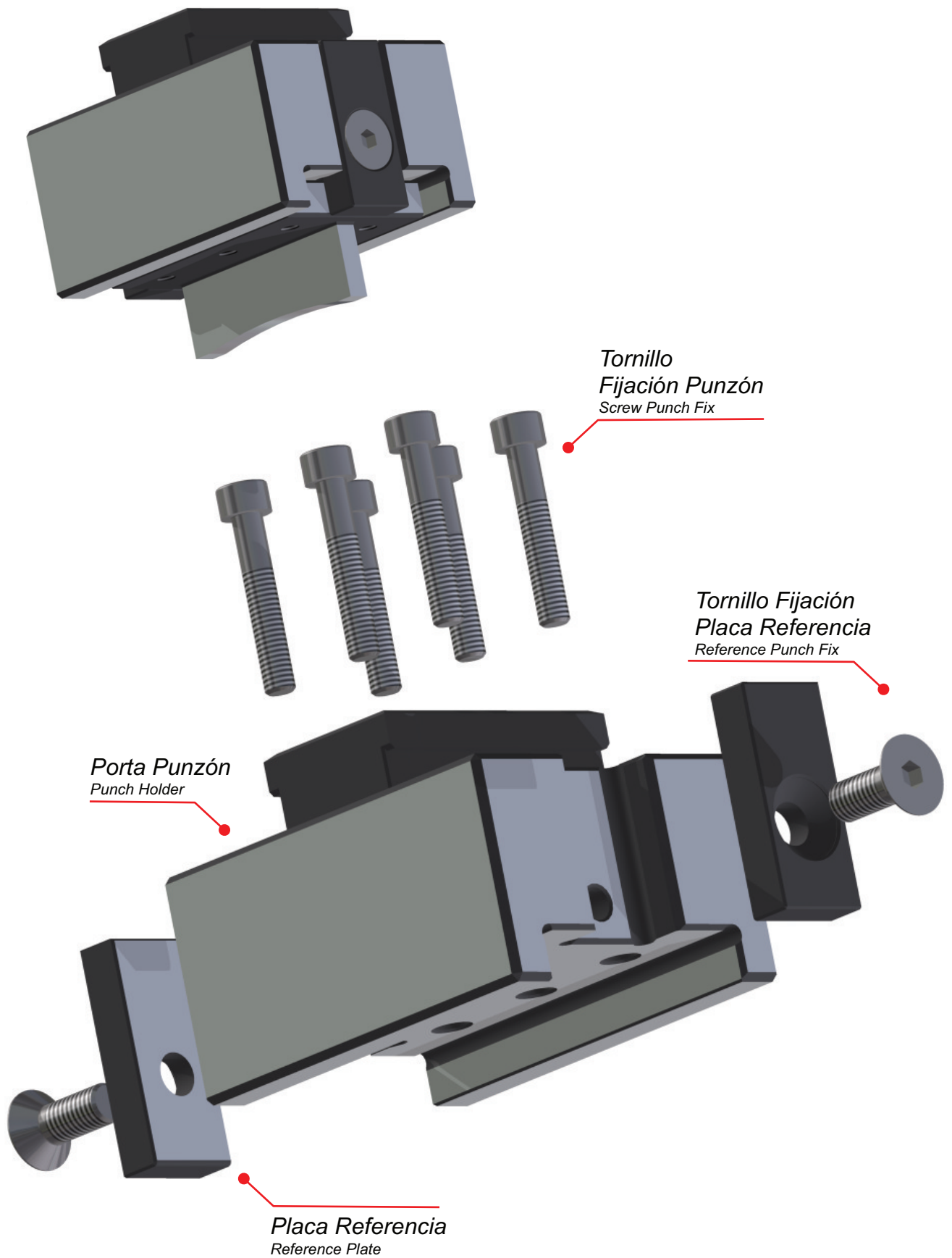


Figura inscrita max. Ø60mm
Espesores de 0,5 a 3,5mm
Estaciones de 120kN PU y rotatorias P2R
Rotación utensilio 90° o continua
Largo de punzón 44mm.
Altura matriz 18mm.
Max. afilado de punzón 4mm.
Max. afilado matriz 1,2mm.

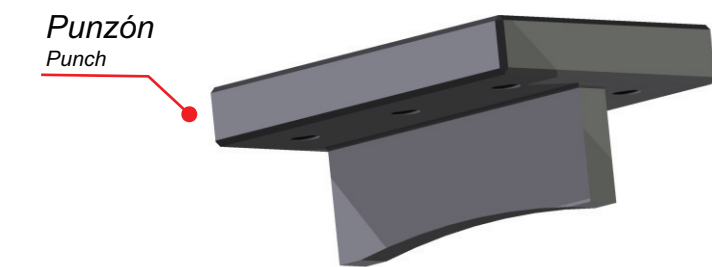
90x70 S8 & S9

SALVAGNINI®

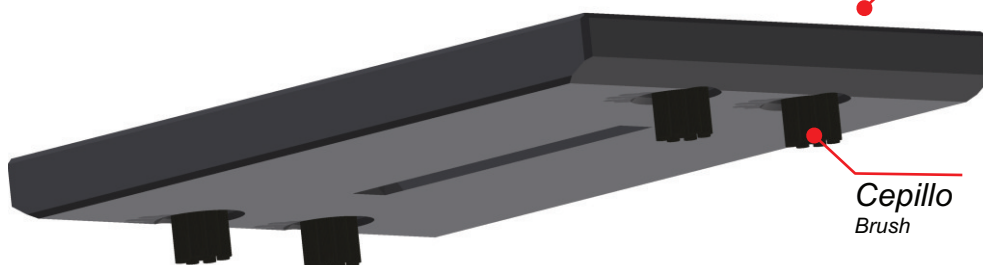


S8 90x70 Tipo 70

Punzón
Punch

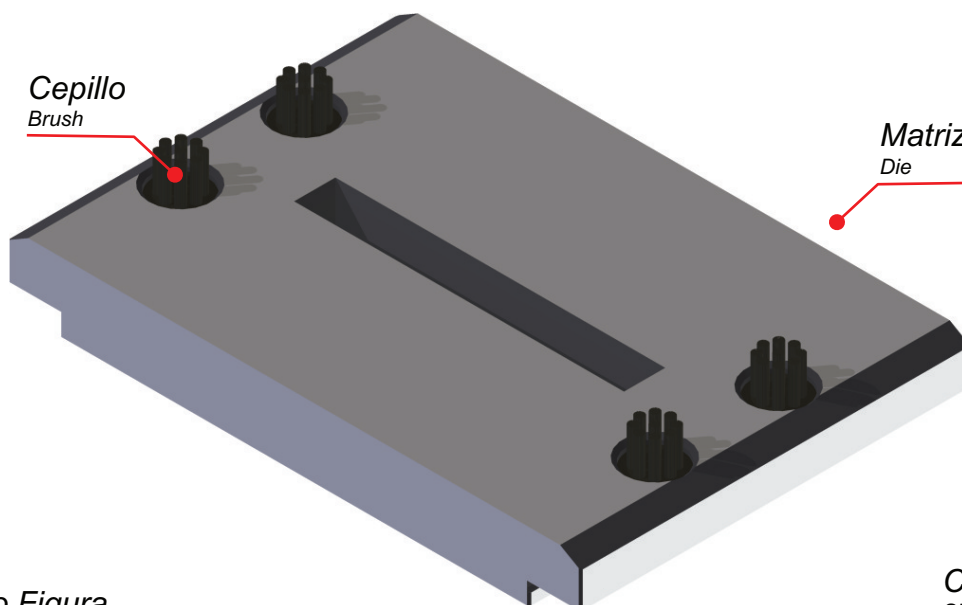


Desprendedor
Stripper



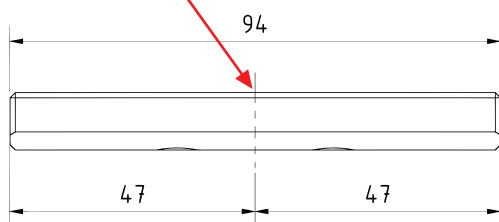
Cepillo
Brush

Cepillo
Brush



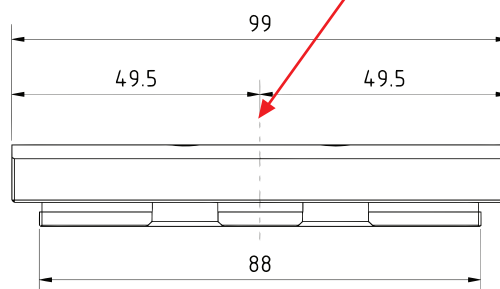
Matriz
Die

Centro Figura
Shape Center



DESPRENDEDOR

Centro Figura
Shape Center



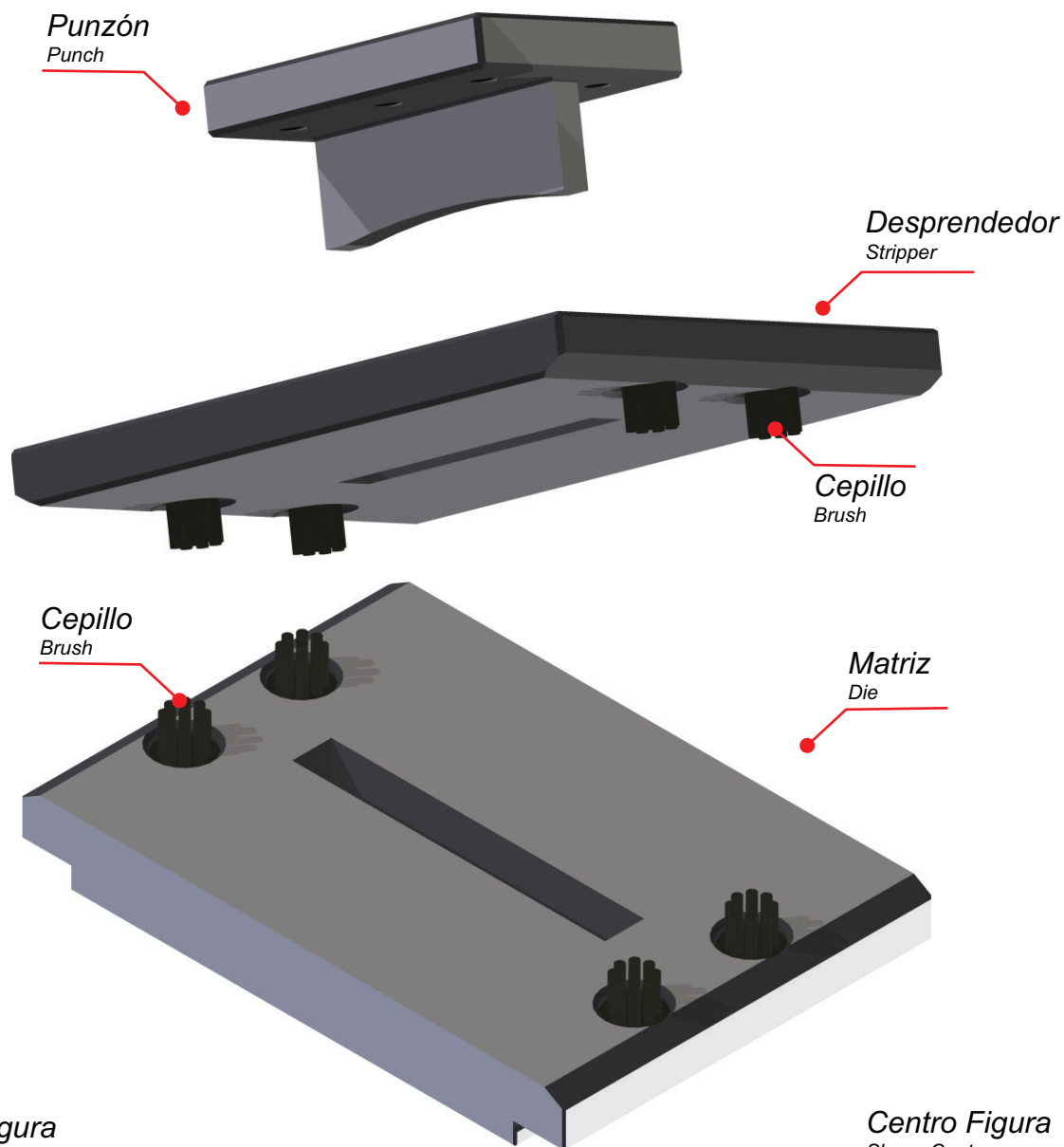
MATRIZ

Figura inscrita max. en un rectángulo de 90x70mm
Espesores de 0,5 a 3,5mm
Estaciones de 260kN tipo 70
Rotación utensilio 180°
Largo de punzón 30mm.
Altura matriz 17 / 47,5mm.
Max. afilado de punzón 4mm.
Max. afilado matriz 1,2mm.

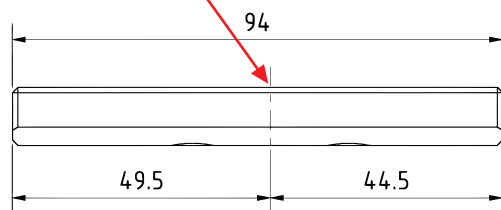
SALVAGNINI®

S9 90x70 Tipo 90

SALVAGNINI®

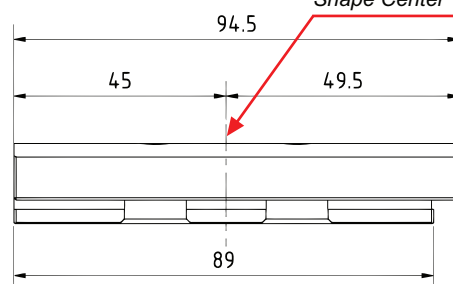


Centro Figura
Shape Center



DESPRENDEDOR

Centro Figura
Shape Center



MATRIZ

Figura inscrita max. en un rectángulo de 90x70mm
Espesores de 0,5 a 3,5mm
Estaciones de 260kN tipo 90
Rotación utensilio NO
Largo de punzón 30mm.
Altura matriz 17 / 47,5mm.
Max. afilado de punzón 4mm.
Max. afilado matriz 1,2mm.

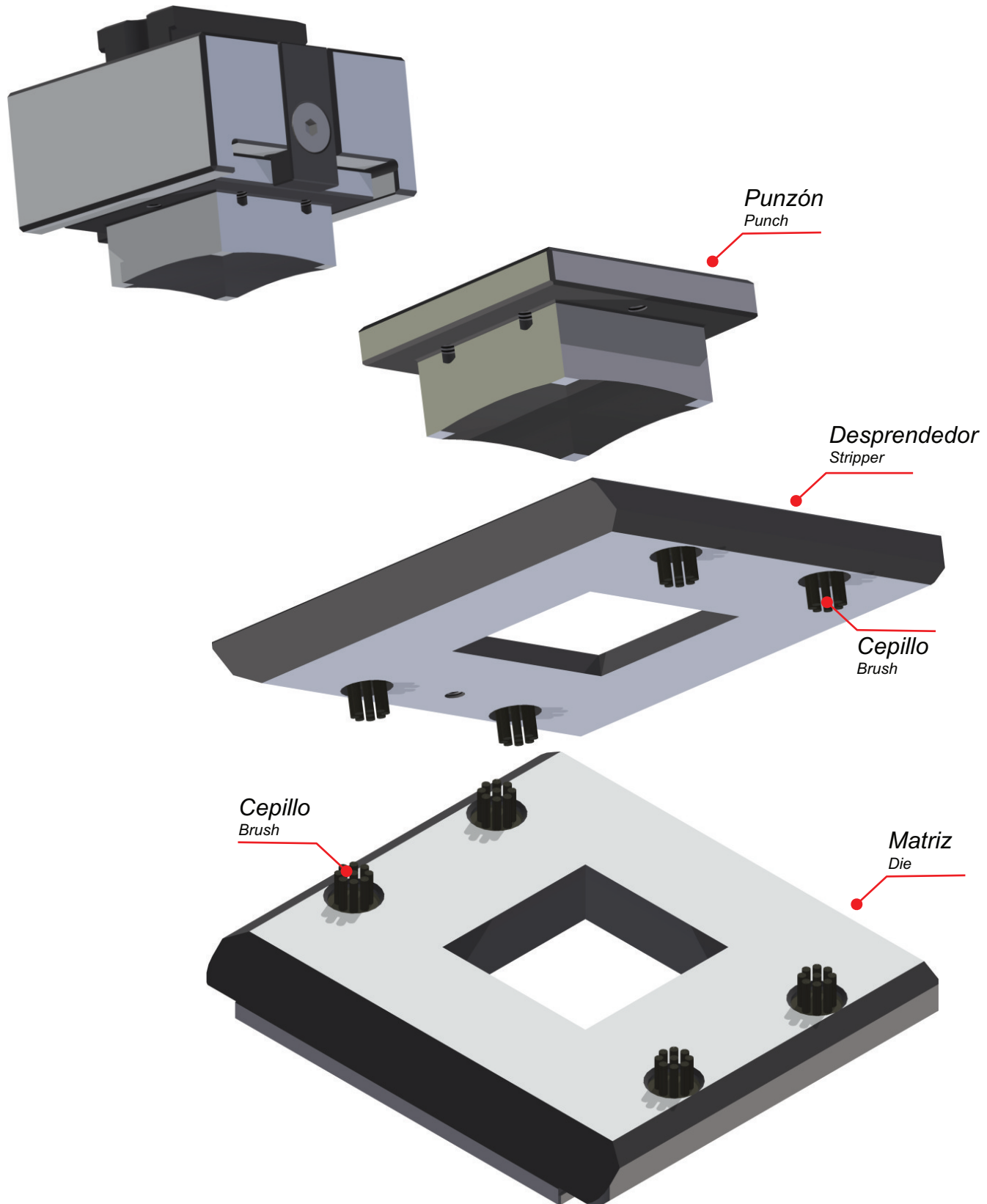
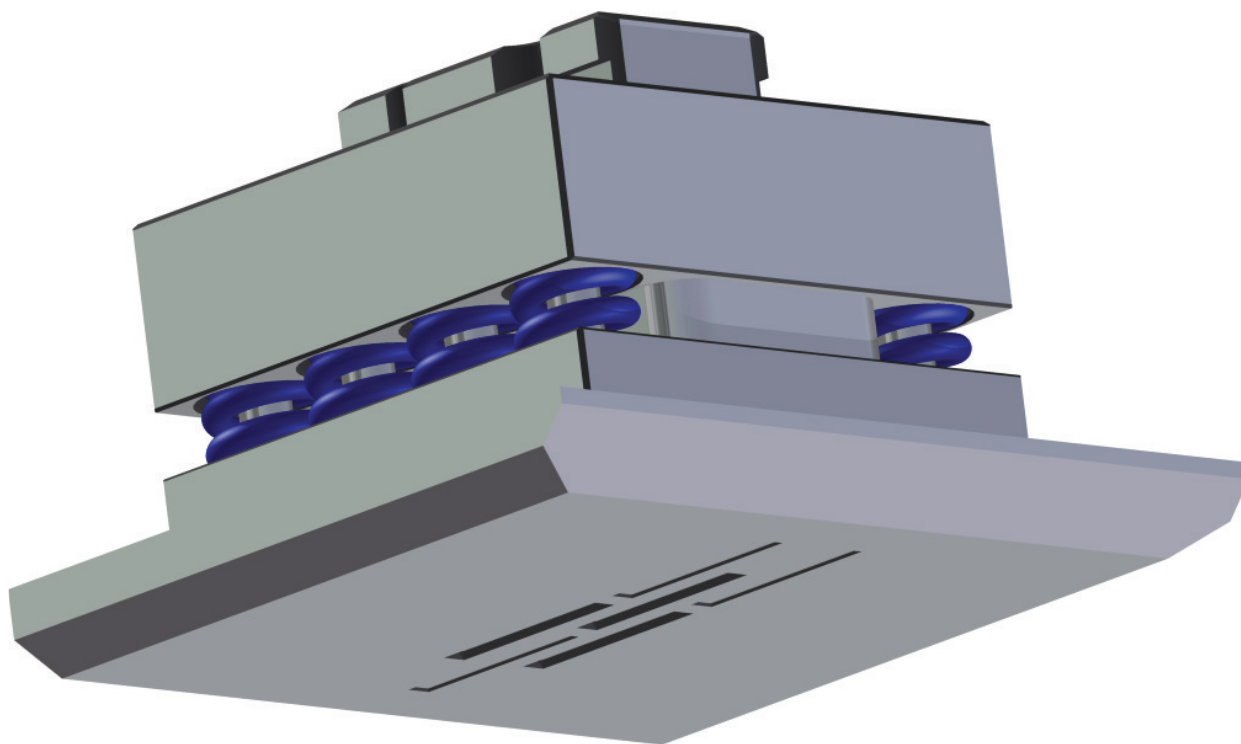


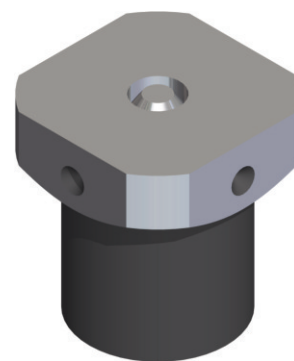
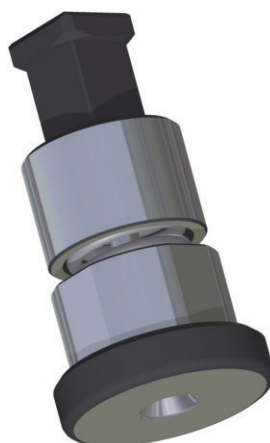
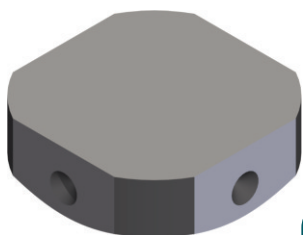
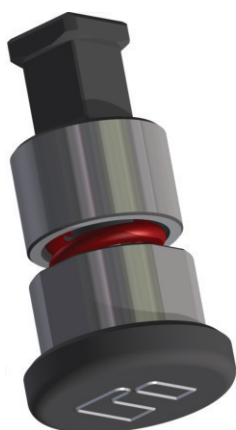
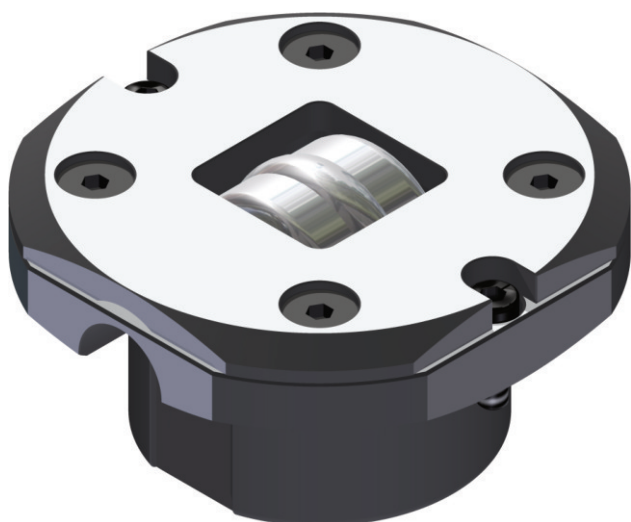
Figura inscrita max. en un rectángulo de 90x70mm
Espesores de 0,5 a 3,5mm
Estaciones de 260kN tipo 90
Rotación utensilio NO
Largo de punzón 30mm.
Altura matriz 17 / 47,5mm.
Max. afilado de punzón 4mm.
Max. afilado matriz 1,2mm.



Todos los múltiples requieren un estudio previo.
All clusters needs previus study.

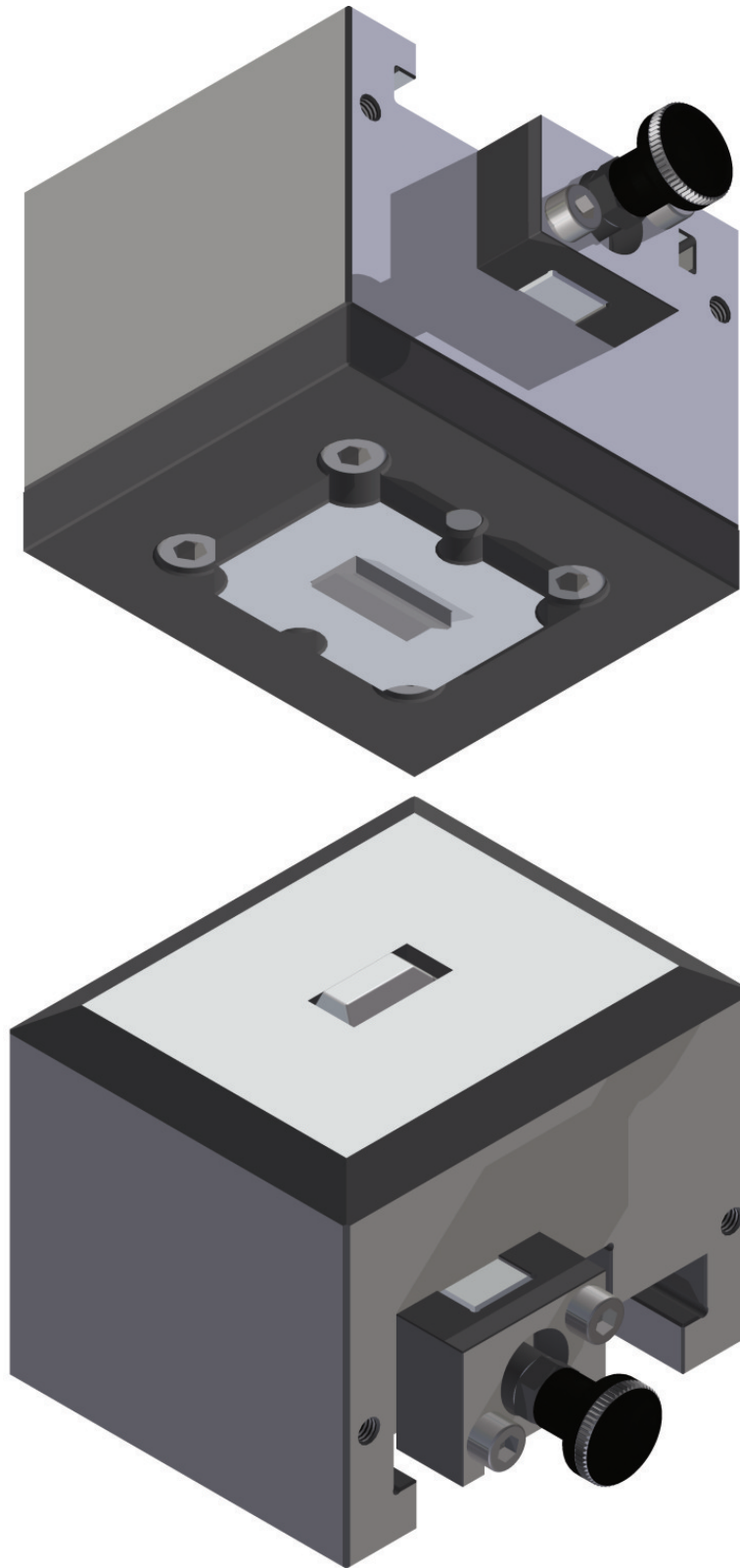


Roller Nervio
Rib Roller
Roller Incisor
Incisor Roller
Roller Reborde
Offset Roller
Roller Escritura
Marking Roller

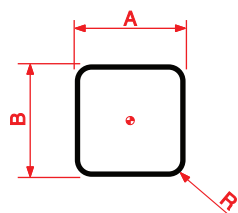


Efecto Inferior
EI

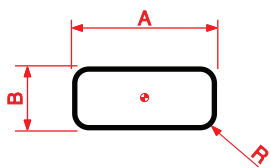
- Todos los embutidores requieren un estudio previo.
- All form tools needs previous study.
- Figuras embutidas estándar ver pág. 21-22.
- Standard forms look at page 21-22.
- La imagen mostrada es un ejemplo de embutidor.
- The image show is an example of form tool.



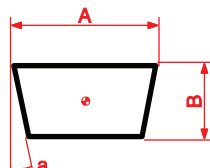
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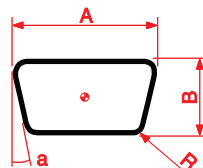
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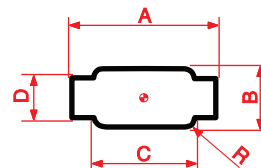
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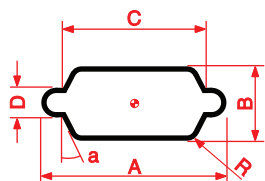
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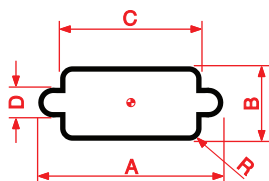
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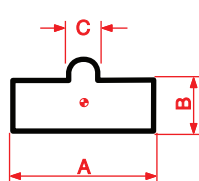
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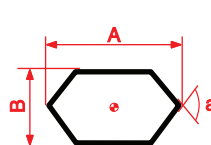
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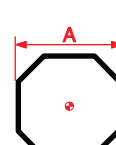
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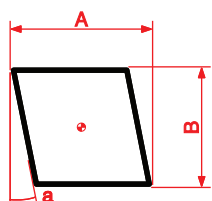
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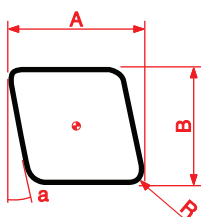
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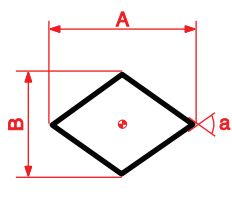
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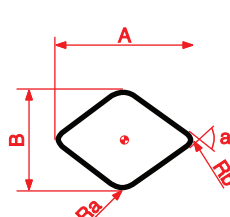
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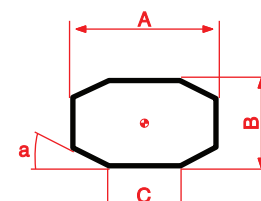
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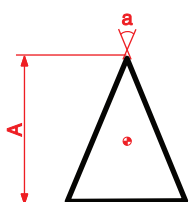
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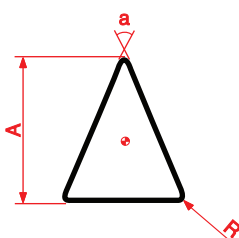
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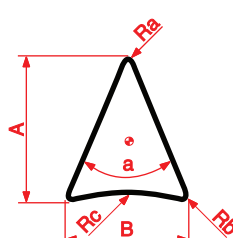
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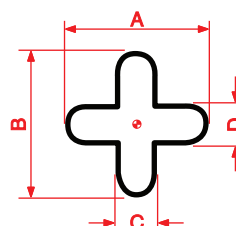
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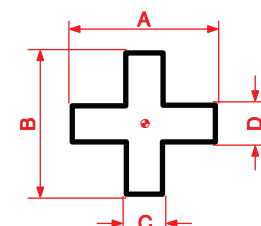
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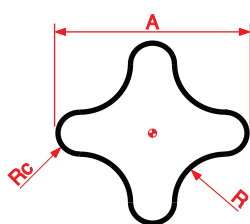
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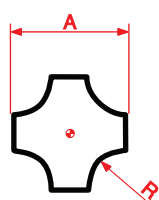
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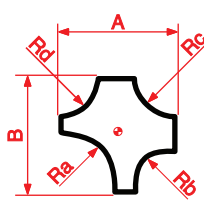
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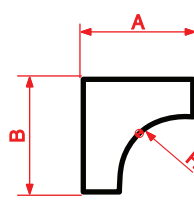
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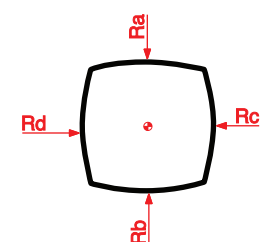
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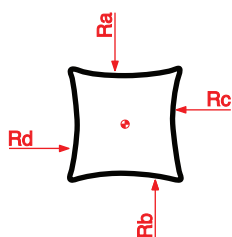
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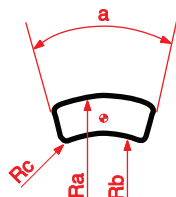
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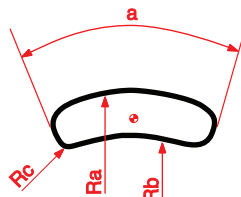
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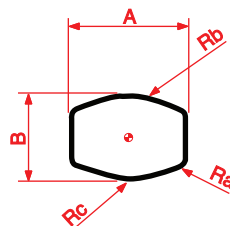
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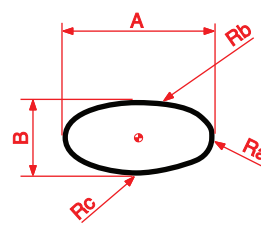
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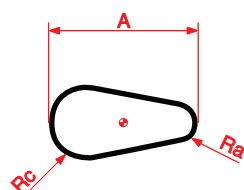
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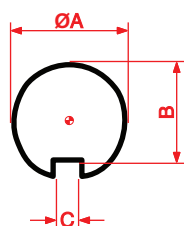
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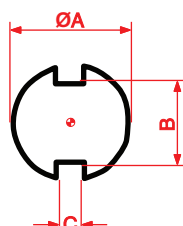
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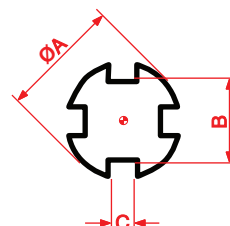
B31



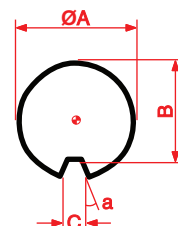
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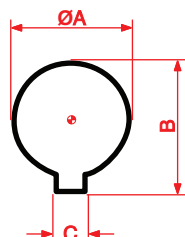
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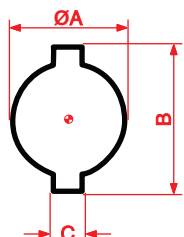
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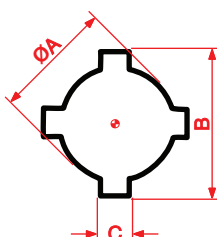
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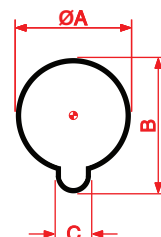
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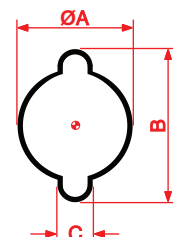
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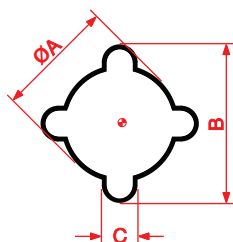
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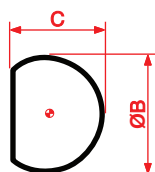
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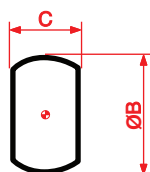
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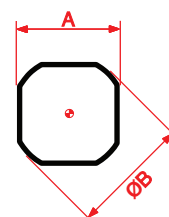
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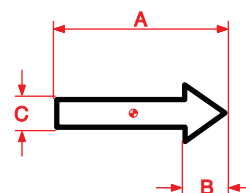
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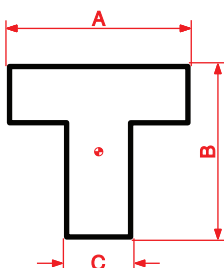
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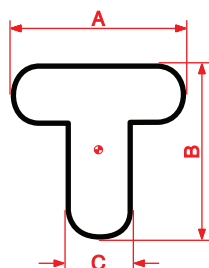
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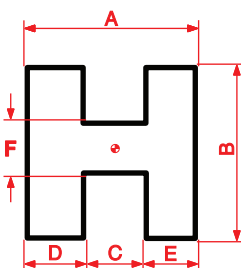
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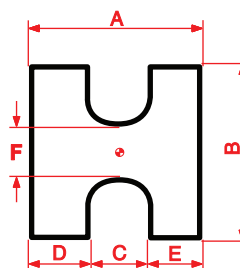
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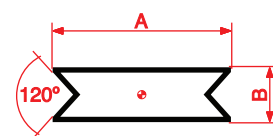
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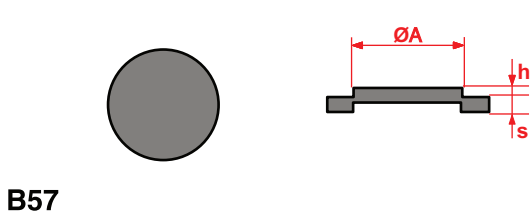
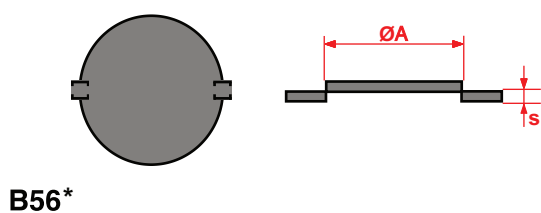
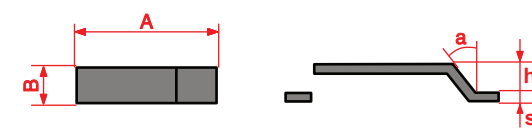
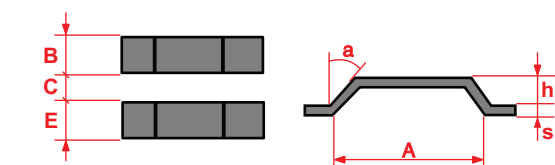
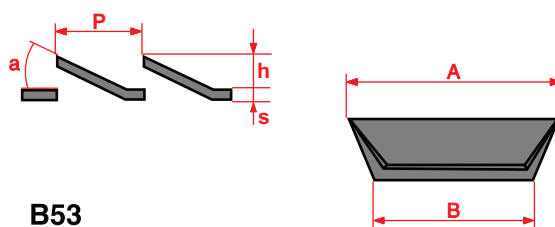
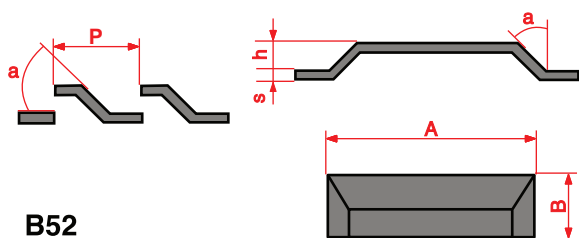
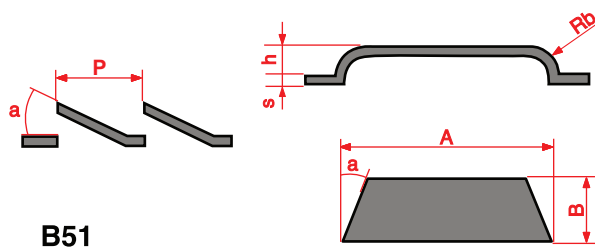
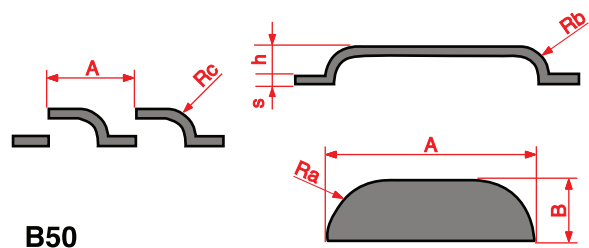
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B49

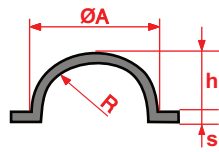
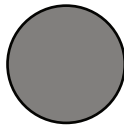


B49-A

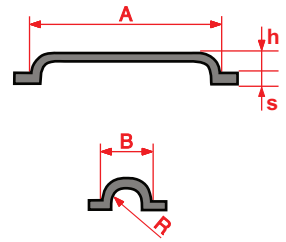


***Simple o Doble**

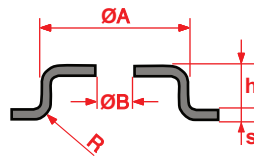
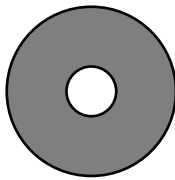
**Single or double*



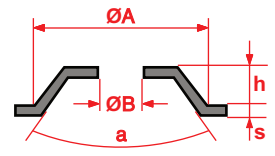
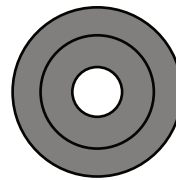
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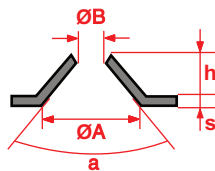
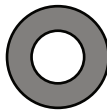
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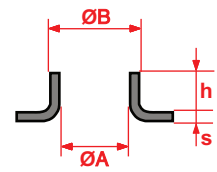
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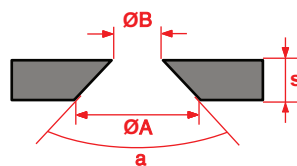
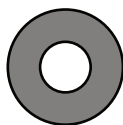
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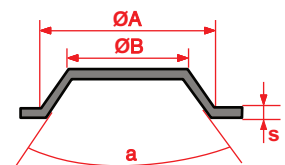
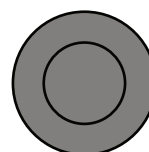
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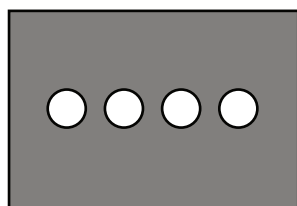
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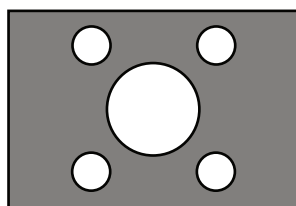
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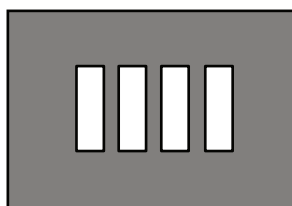
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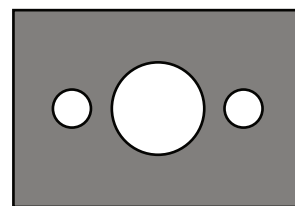
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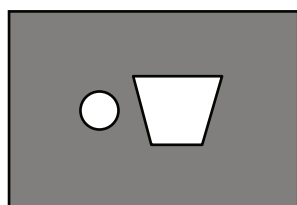
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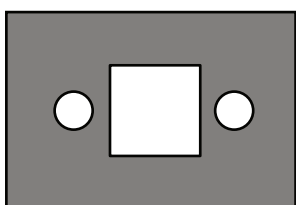
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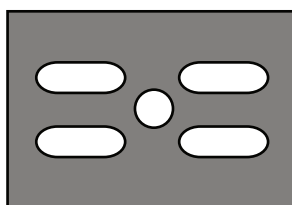
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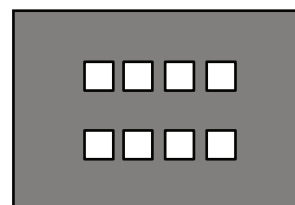
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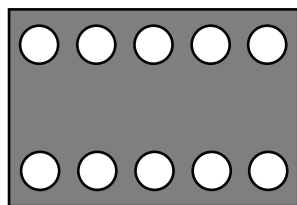
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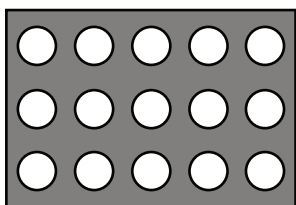
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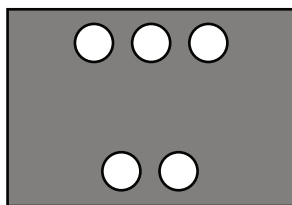
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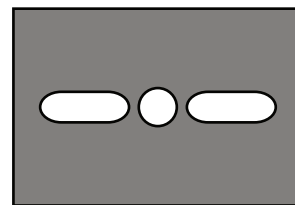
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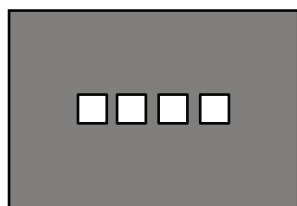
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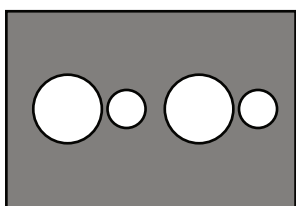
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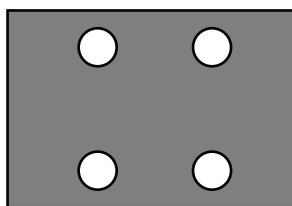
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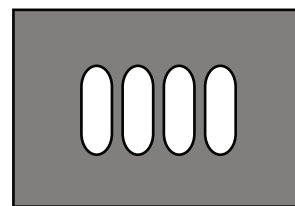
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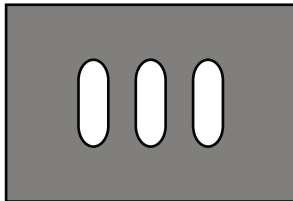
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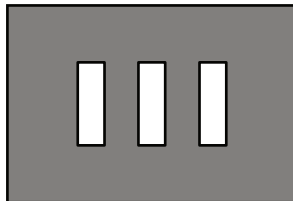
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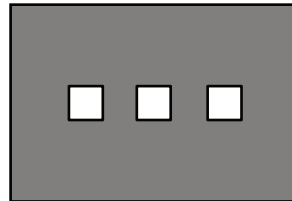
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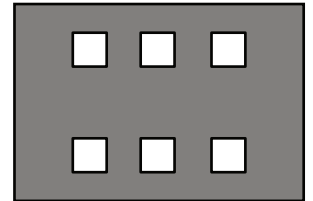
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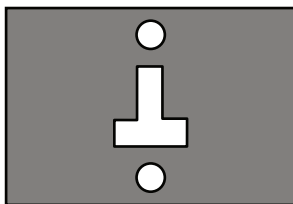
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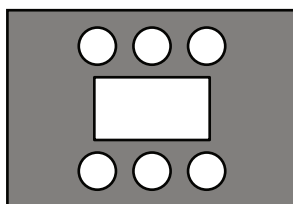
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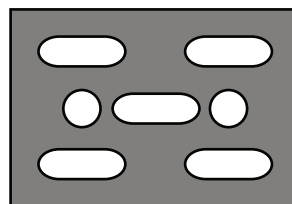
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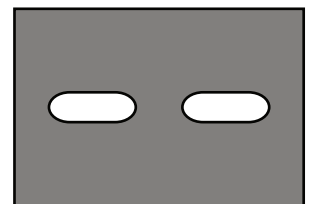
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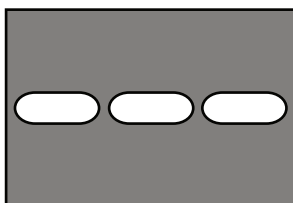
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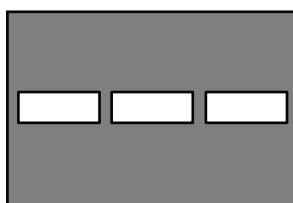
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B123



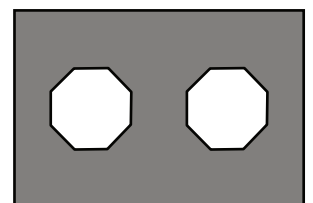
B124



B125



B126



B127

TOLERANCIAS (mm) entre PUNZÓN y MATRIZ CLEARANCE (mm) between PUNCH & DIE

Espesores en mm. Thickness in mm	Hierro / Fe Mild Steel Tolerancia Clearance R	Ac. Inox Stainless Steel Tolerancia Clearance R	Aluminio Aluminium Tolerancia Clearance R	Cobre / Latón Copper / Brass Tolerancia Clearance R
0,5 - 0,6	0,08 - 0,10 0,10	0,10 - 0,12 0,12	0,06 - 0,08 0,08	0,05 - 0,06 0,06
0,8	0,14 - 0,15 0,15	0,15 - 0,20 0,20	0,10 - 0,14 0,10	0,08 - 0,10 0,08
1,0	0,16 - 0,20 0,20	0,18 - 0,24 0,24	0,12 - 0,16 0,14	0,10 - 0,14 0,12
1,2	0,20 - 0,24 0,24	0,25 - 0,30 0,26	0,15 - 0,20 0,16	0,12 - 0,15 0,14
1,5	0,25 - 0,30 0,30	0,27 - 0,35 0,34	0,18 - 0,24 0,22	0,15 - 0,20 0,18
2,0	0,34 - 0,40 0,40	0,36 - 0,45 0,45	0,24 - 0,30 0,26	0,20 - 0,25 0,24
2,5	0,45 - 0,50 0,50	0,46 - 0,55 0,55	0,32 - 0,35 0,35	0,25 - 0,30 0,28
3,0	0,50 - 0,60 0,60	0,60 - 0,70 0,65	0,35 - 0,45 0,40	0,30 - 0,40 0,36
4,0	0,65 - 0,80 0,80	0,70 - 0,95 0,90	0,45 - 0,60 0,55	0,40 - 0,50 0,48
5,0	0,85 - 1,00 1,00	0,90 - 1,15 1,10	0,60 - 0,80 0,70	0,55 - 0,65 0,60
6,0	0,95 - 1,20 1,20	1,10 - 1,40 1,35	0,75 - 0,95 0,85	0,70 - 0,85 0,72

R Recomendable
Recommended

RESISTENCIA AL CORTE TENSILE STRENGTH Kg x mm²

Hierro Fe Mild Steel	Hierro Fe Mild Steel	Acero Inox. Stainless Steel	Aluminio Aluminium	Cobre Copper	Latón Brass
40 (0,1 % C)	50 (0,2 % C)	70	20	32	40

FÓRMULA PARA EL CÁLCULO DE TONELAJE (T) TONNAGE CALCULATION FORMULA (T)

$$\frac{P * n * t * Rc}{1000}$$

P = Perímetro (mm)
Perimeter (mm)

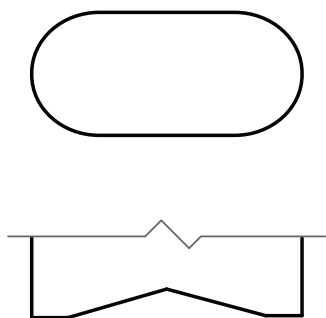
n = Número de punzones
Number of punches

t = Espesor de chapa (mm)
Sheet Thickness (mm)

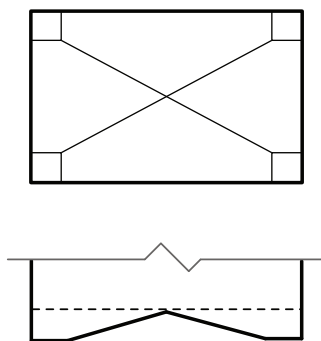
Rc = Resistencia al Corte (Kgxmm²)
Tensile strength (Kgxmm²)

Rectificado de Punzón

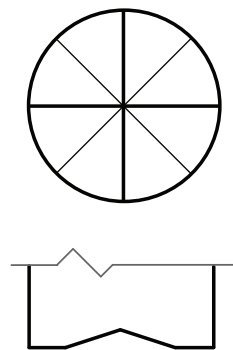
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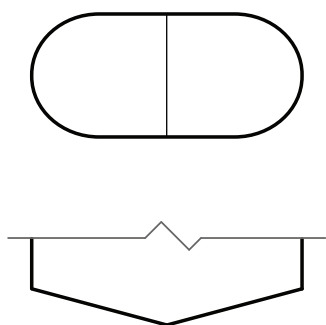
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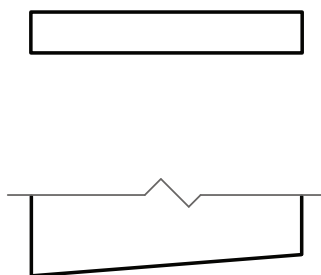
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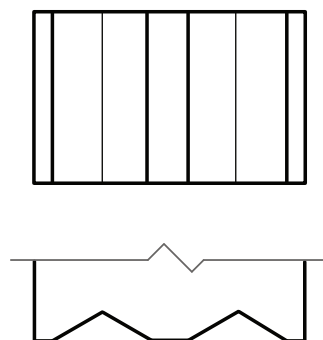
D



E

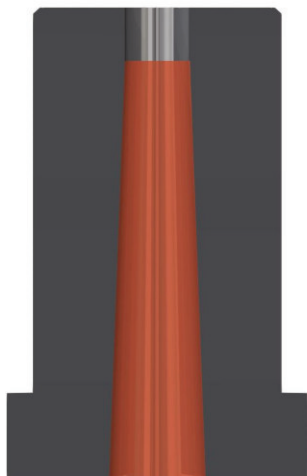


F



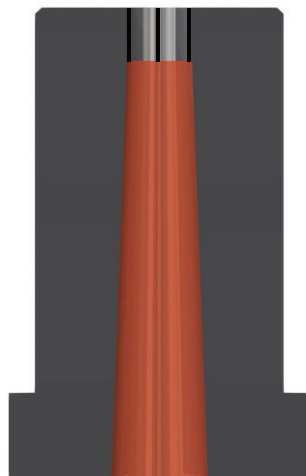
Tipo de Matriz

RR

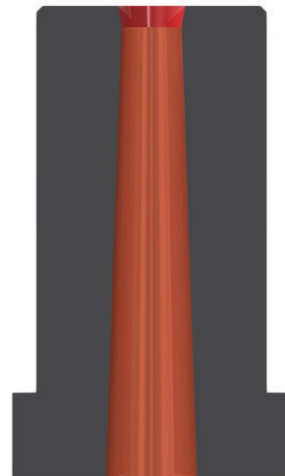


Matriz Estándar

R2C



**Matriz de Retención
por Filamentos**



**Matriz de Retención
por Dos Conos**



DUR-TiN

- COLOR / COLOR: Amarillo oro / Yellow gold
- APLICACIONES / APPLICATIONS: General / General
- PROPIEDADES / PROPERTIES: Reduce el desgaste por abrasión y adhesión.
Reduces wear by abrasion and adhesion.

DUR-ALUM

- COLOR / COLOUR: Gris negro / Black grey
- APLICACIONES / APPLICATIONS: Aluminios, latón y derivados / Aluminium, brass and derivative
- PROPIEDADES / PROPERTIES: Reduce el desgaste por adhesión.
Reduces wear by adhesion.
Bajo coeficiente de fricción.
Low coefficient of friction.
Buenas propiedades de deslizamiento.
Good slip properties.

DUR-INOX

- COLOR / COLOUR: Gris violeta / Purple grey
- APLICACIONES / APPLICATIONS: Fe, galvanizados, Ac. inoxidables / Fe, Fe. galvanized and stainless steel
- PROPIEDADES / PROPERTIES: Relación optimizada entre dureza y tensión residual compresiva.
Optimized ratio between hardness and compressive residual stress.
Desgaste uniforme.
Uniform wear.
Buenas propiedades de deslizamiento.
Good slip properties.

DUR-EXTREM

- COLOR / COLOUR: Gris azulado / Bluish grey
- APLICACIONES / APPLICATIONS: General; recomendado para Ac. Inoxidable.
General; recommended to stainless steel.
- PROPIEDADES / PROPERTIES: Resistencia al desgaste muy elevada y excelente dureza en caliente.
Very high wear resistance and excellent hot hardness.
Muy buena estabilidad al choque térmico.
Very good stability to thermal shock.
Velocidad de corte notablemente más altas.
Higher cutting speed.

DUR-EXTREM PLUS

- COLOR / COLOUR: Cromo / Chrome
- APLICACIONES / APPLICATIONS: General; especialmente indicado para Ac. Inoxidable.
General; especially suitable to stainless steel.
- PROPIEDADES / PROPERTIES: La mayor dureza superficial.
The higher surface hardness.
Menor tendencia al calor.
Less heat tendency.
Mayor protección especialmente en los bordes contra el inicio y propagación de grietas.
Increased protection especially in the edges against the beginning and propagation of cracks.
Puede prolongar la vida útil del punzón hasta un 100%
Can extend punch life up to 100%.

AFILADO DE LOS PUNZONES

Como norma general, no se debería permitir que los punzones llegasen a necesitar un afilado mayor de 0,10 mm. Y sería óptimo rectificar en pasadas suaves (Z) de entre 0,01 y 0,02 mm.

Estos parámetros indicarían un correcto mantenimiento de los punzones.

Para punzones con recubrimientos especiales: DUR-TiN, DUR-ALUM, DUR-INOX, DUR-EXTREM y DUR-EXTREM PLUS emplear los mismos indicadores; y dependiendo de la máquina que se utilice, rectificar con las más altas revoluciones de muela posibles y con avances entre 2.500 y 4.000 mm/min.

Una vez hecho el afilado del punzón, comprobar que la zona perimetral del corte ha quedado completamente limpia y no presenta gripado por adhesión de partículas del material punzonado, en caso de estas, limpiar esa zona con papel de lija fino hasta dejarla pulida.

SHARPENED OF PUNCHES

As general norm, it's not recommended sharpening punches more than 0,10mm. The correct form to sharp is doing it with smooth feeds (z) about 0,01 and 0,02mm. It will be the correct maintenance of the punches.

For punches with special coatings: DUR-TiN, DUR-ALUM, DUR-INOX, DUR-EXTREM and DUR-EXTREM PLUS, use the same indicators; using the highest revolutions of the grinding wheel for shapening, with feed rates between 2.500 and 4.000 mm/min.

Once realised the sharpened of the punch, verify that the peripheral zone of the cut is completely clean and if it's necessary polish the surface with a lightly stone.

Important: to avoid the heating of the pieces during the sharpening, always use a suitable coolant.

AFILADO DE MATRICES

Manteniendo las matrices en corte vivo, alargará la vida de los punzones, pues éstos no tendrán que embutir la chapa antes de ser cortada, se evitarán rebabas, ruido excesivo y se dejará una calidad correcta en el corte.

Sirven los mismos parámetros de muela, avances y pasadas tanto en el punzón como en la matriz; y antes de dar por bueno el afilado de la matriz, comprobar que en la parte interior del perímetro de corte, no han quedado restos de partículas de chapa adheridas, que vayan a friccionar con el puzón al iniciar de nuevo el trabajo.

Evitar el calentamiento de las piezas, usando siempre un refrigerante adecuado o taladrinas.

La energía producida por la fricción de la muela con los aceros, hará que estos hayan quedado ligeramente imantados; desmagnetizar las herramientas antes de iniciar el trabajo.

SHARPENED OF DIES

The correct maintenance of the dies will extend the life of punches, because these will not emboss the sheet before being cut, it will avoid burrs and excessive noise, and it give a correct quality of the cut.

For sharpening dies used the same procedures that with punches, feed rates and griding wheel, verify that the cut zone is completely clean of burrs and if it is necessary polish it to assure the correct work of the punch.

To avoid the heating of the pieces, always use a suitable coolant.

Demagnetize the resharpened tools before to start works.



Servicio y Reparación

El servicio de reparación y ajuste de TC consiste en la comprobación, reparación, ajuste o modificación de cualquier componente fijo, móvil y/o accesorios de todo tipo de grupos de punzonado, matricería e incluso componentes de máquina sin importar marca y modelo.

Comprobación

Revisión de todos los elementos, comprobación de los mismos (medidas, chavetas, tornillo, etc.)

Reparación

Sustitución de cualquier elemento que interfiera en el buen funcionamiento del grupo, tanto por desgaste como por rotura.

Ajuste

Ajustamos los grupos para su correcto funcionamiento modificando alturas, recorridos, etc.

Modificación

Estudiamos la posibilidad de modificaciones y cambios en grupos de punzonado y matricería, realizando elementos nuevos y/o modificando los ya existentes.

Service & Repair

Tc's adjustment and repair consist of checking, repairing, adjusting, or modifying any fixed and mobile component and / or accessories of all types of punch groups, dies and even machine components of all brands.

Verification

Review all elements, checking them (measurements, keys, screws, ...).

Repair

Replacement of any element that interferes with the proper fuction of group for breakage and / or attrition.

Adjustement

We adjust the groups for their correct operation by modifying heights, courses, ...

Modification

We study the possibility of modifications and changes of punch groups and tooling, making new elements and / or modifying existing ones.





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