

# Catalog



**NOLO** 

 $\square$ 

2022



#### WHY SUCE?



The use of double grinding wheel plants allows for a very low roughness coefficient.



The machine tooling dept. includes automatic lines of turning with load bars and milling machines.



10,000 items available in stock divided into 20 different categories



Thanks to our project department, with 3D CAD stations, we are able to design both standard and special tools.



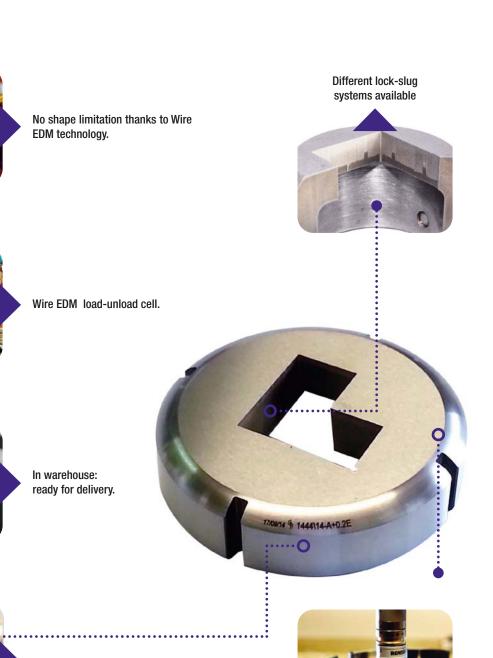
No shape limitation thanks to EDM technology.



The use of the best steel available on the market by SUCE tools ensures a high standard quality and a long tool life.









SUCE special ID number.



Tool testing: fault free.



Manufacturing execution system.

#### **DIE CLEARANCE**

Die clearance is the total space between the die and the punch.

A correct clearance between the punch and the die ensures normal wear of the tool and punching without defects such as: burrs caused by excessive clearance and premature wearing of the tool and increased punching force in the case of clearance being too small.

		MATERIAL		
Thickness mm	Mild steel 16-20%	Stainless steel 18-24%	Aluminum 12-16%	Copper 10-14%
0.5 – 0.6	0.08-0.1	0.1- 0.12	0.06 - 0.08	0.05 – 0.06
0.8	0.14 – 0.16	0.15 – 0.2	0.1 – 0.14	0.08 – 0.1
1	0.16 – 0.2	0.18 – 0.24	0.12 - 0.16	0.1 - 0.14
1.2	0.2 – 0.24	0.24 – 0.3	0.15 – 0.2	0.12 – 0.15
1.5	0.25 – 0.3	0.27 – 0.35	0.18 – 0.24	0.15 – 0.2
2	0.34 – 0.4	0.36 – 0.45	0.24 – 0.3	0.2 – 0.25
2.5	0.45 – 0.5	0.45 – 0.55	0.32 – 0.35	0.25 – 0.3
3	0.5 – 0.6	0.6 – 0.7	0.35 -0.45	0.3 – 0.4
4	0.65 – 0.8	0.7 – 0.95	0.45 – 0.6	0.4 - 0.55
5	0.85 – 1	0.9 – 1.15	0.6 - 0.8	0.55 – 0.65
6	0.95 – 1.2	1.1 – 1.4	0.75 – 0.95	0.7 – 0.85



System E :3 cuts with different angles ensures the locking of the slug.



Lock slug **AS** best option when thickness > 3 mm.

In case of blanking mild steel and stainless steel, clearance is 15% of material thickness.

In case of blanking aluminum and copper clearance is 10% of material thickness.

#### **DIES LOCK SLUG**

SUCE lock slug dies eliminate slug pulling. Slug pulling occurs when the slug returns to the top of the sheet during the stripping portion of the punching cycle. Because of this the slug comes between the punch and the top of the sheet on the next cycle, causing damage to the part and the tooling. How to avoid this problem?

The SUCE NO-SLUG has been designed with a reduction point of the shape below the surface so the slug cannot return once it passes through this point.





lock slug AS best opt. th>3 mm



lock slug A thick turret A



straight and

conic

blank die



Once the slug is separated from the punch, it is free to

This solution isn't suggested with slug exhaust system

machines ; AS lock slug design with protrusions is best

solution with thickness more than 3 mm, minimum cl

SUCE Lock slug E and A system is a standard for all

Suce dies, AS is on request, reduced land is a standard

for thick turret dies rt80x5 rt80x6 rt110x5 rt110x6.

fall through the die. Slug pulling is eliminated.

for AS system is 0.15 mm.

reduced	land
slitting	die

c

con	ic
trumpf	style



#### **TOOLS SHARPENING**

Before starting, make sure that punch and die cutting edge are in perfect condition. Accurate maintenance of the tools guarantees a normal wearing and the result of punching will be without residual burr and defects. Regular sharpening of the 0.1 mm punch and 0.2 mm die guarantees a constant life time of tooling.

It is preferable that grinding operation is made with tangential grinding machine with adequate cooling in order to avoid tool tempering; after grinding it is necessary to demagnetize the tools with an appropriate demagnetizer. If a urethane ejectors is applied, restore the initial hole depth in such a way that the ejector can be compressed.

#### **PUNCHING FORCE**

Before starting ensure that punching force doesn't exceed the capacity of punching machine. In order to calculate the punching force in kg, use the following formula:

#### Perimeter of the shape (mm) x thickness (mm) x 4/5 x shear strength \*

\* mild steel 40 - 50 kg/mm<sup>2</sup> stainless steel 60 - 70 kg/mm<sup>2</sup> aluminium 20 - 25 kg/mm<sup>2</sup>

A sharpening other than the flat one reduces both punching stress and punching noise. Therefore to ascertain the true punching force, multiply the pressure calculated using the above formula by the **sharpening factor**:

Sharpening height	Thickness (mm)							
mm	1 - 1.5	2	3	4	5	6		
1	0.75	0.9	1	1	1	1		
1.5*	0.5	0.6	0.7	0.95	1	1		
3**	0.5	0.5	0.5	0.6	0.7	0.75		

\* standard shear height thick turret style \*\* standard shear height Trumpf style



Cod 3P

Best option when shape is long, but susceptible to breakage



Roof top Cod V

Best option when punching force is high, punching surface 75%



Inverted roof top Cod VR

Best option for nibbling but inverted stresses could cause breakage



Whisper Cod W

Recommended only for blanking (turret machine)



Four ways Cod 4P



dB



#### COATING

#### **PROBUS**

The TiCN coating (Titanium Carbonitride) comes from an evolutionary study of the precursor TiN (Titanium Nitride), inheriting the already appreciated qualities and also some of its features. Indeed, thanks to the introduction of the C (Carbon) within the layer, it was possible to obtain a structure that provides a hardness greater than about 50% compared to that of TiN. In consequence to this, the TiCN coating ensures a higher wear resistance while retaining excellent toughness which makes it ideal when applied to tools for interrupted cutting. A further improvement of the TiCN was achieved by developing a "multilayer" (multi-layer) structure composed of several hundreds of layers that give better control of structural stress within the coating.



STRUCTURE	Micro Hardness (HV 0.05)	Friction coefficient (100 cr6)	Thickness (micron)	Deposition temperature (°C)	Max temperature (max°C)	Colour
Multilayer	3.500	0.5	2 - 4	350 - 480	350	Blu/Grey

#### GEMINUS

The double coating is obtained by overlaying the traditional Probus with Movic self-lubricating coating. The Probus coating comes from an evolutionary study of the precursor TiN, inheriting the already appreciated qualities and improving some of its features. In fact, thanks to the introduction of the Carbon (C) within the layer, it was possible to obtain a structure that has a hardness greater than 50% compared to that of TiN.

In consequence to this, the Probus coating ensures a higher wear resistance.

A further improvement of the Probus was achieved by developing a "multilayer" (multi-layer) composed of several hundreds of different layers that give better control of structural stress within the coating. MOVIC is a self-lubricating and anti-adhesive coating based on MoS2 (Molybdenum), which is produced by PVD sputtering Magnetron technology. MOVIC has been developed in the aerospace to find alternatives to traditional oils (eg oil, grease) when their use is not permitted and it has shown excellent tribological features that made it very interesting for a variety of new applications.

STRUCTURE	Micro Hardne: (HV 0.0	SS	Friction coefficie (100 cre	nt	Thickness (micron)	5	Deposi tempera (°C)	ture	tempe	ax erature x°C)	C	olour
Single layer	-		<0.1		1		<150	)		-	(	GREY
BASIC COMPOSITION	Coating Structure		ohardness IV 0.05)	frict	efficient of tion against 100 cr6)		µm ickness nicrons)	Temp	osition erature °C)	Ma Temper of us (max	ature se	Colour
Titanium carbonitride	Multilayer		3.500		0,5		1-3	350	- 480	350	)	Pink

#### **LEVATUS**

DLC is an innovative carbon-based coating with wide spectrum of application which allows you to deal with problems related to abrasion, to chemical attack and sliding.

The low deposition temperature , the hardness and the low coefficient of friction make it of extreme interest. It is applied on finished parts while maintaining the state of the surface finishing.

The DLC is deposited by the PA-CVD (Plasma Assisted – Chemical Vapour Deposition) technology which allows to maintain low temperature of depositing and at the same time ensures an excellent adhesion.

BASIC COMPOSITION		Microhardness (HV 0.05)	Coefficient of friction against 100 Cr 6	μm thickness (microns)	Deposition Temperature (°C)	Max Temperature of use (max ° C)	Colour
a-C:H sp2-sp3	PA-CVD	1.500 - 3.000	0,05 - 0,1	0,5 - 3	250	350	Black

		ALUMINUM	MILD STEEL	GALVANIZED STEEL	STAINLESS STEEL
Probus	X	X	X	XX	XXX
GEMINUS	XX	XX	X	XXX	XX
LEVATUS	XXX	XXX	X	X	X

NEEDLESS	RECOMMENDED	HIGHLY RECOMMENDED
X	XX	XXX



#### **BEST TOOLS CAN ONLY BE FORMED OUT OF THE BEST STEEL**

Tool users has been demanding higher and higher standards of their tools to prolong service life and reduce costs; the tool material itself, in addition to the tool design, is a success factor which is often under-appreciated. It can significantly influence the tool life and therefore the cost effectiveness of your production.

For each of the demands of blanking and cutting, Bohler has an optimal solution in its product range. The range contains everything from standard materials to high-performance powder metallurgical steels.



#### HSS - S600

M2 is the "standard" and most widely used industrial HSS. It has small and evenly distributed carbides giving high wear resistance, Tungsten-alloyed molybdenum high-speed steel with high hardness excellent cutting properties, outstanding compressive strength and good toughness.

#### S600 Chemical composition

CARBONIUM	CHROMIUM	MOLYBDENUM	VANADIUM	TUNGSTEN
0.90 %	4,10 %	5.0 %	1,80 %	3.50 %

#### **STEELFORMA**

Il FormaSteel One è prodotto con metodi tradizionali di ultima generazione per un ottimo FormaSteel One is a tool steel that presents as characteristics an excellent combination of wear resistance, chipping resistance and toughness. It is the ideal solution in all those applications that require greater resistance to wear and / or greater toughness than 1.2379 (Aisi D2) and compared to steel quick.

The combination of wear resistance, compressive strength and toughness means that Steel One has a wide variety of uses in applications such as molds for cold deformation, cutting blades and rollers.

#### **Steelforma Chemical composition**

CARBONIUM	CHROMIUM	MOLYBDENUM	VANADIUM	TUNGSTEN
1.1 %	8.0 %	1.6 %	2.4 %	1.2 %

#### D2 – K110

K110 is a high-carbon, high-chromium tool steel alloyed with molybdenum and vanadium characterized by: High abrasive wear resistance, High compressive strength, Good through-hardening properties, High stability in hardening and good resistance to tempering-back.

D2 steel is an air hardening, high-carbon, high-chromium tool steel. It has high wear and abrasion resistant properties. It is heat treatable and will offer a hardness in the range 59-62 HRC

#### **D2 K110 Chemical composition**

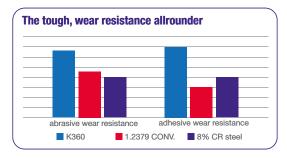
CARBONIUM	CHROMIUM	MOLYBDENUM	SILICIUM	VANADIUM	MANGANESE
1.55 %	11.30 %	0.75 %	0.30%	0,75 %	0.30 %

#### ISODUR

#### A tough, "LONG DISTANCE RUNNER" with an optimum chemical composition

ESR electro slug remelting: a tried and tested remelting technology developed by Bohler gives the material the homogeneity it needs. A prerequisite for the best performance. ESR Manufacture improved service life due:

- Least possible inclusion content
- Lower micro and macro segregation
- Good homogeneity and higher degree of purity
- A homogeneous structure throughout the entire cross-section and bar length •
- Producing larger bar dimensions at a constant carbide distribution
- Uniform correction of dimensions
- · A broad range of application due to a high degree of toughness



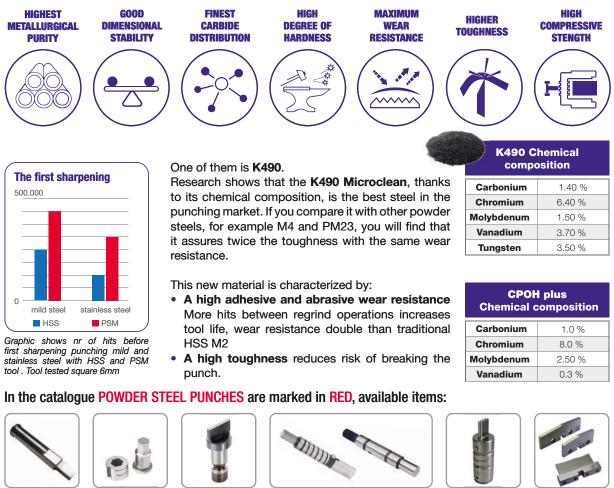
#### The new K360 isodur is a further development of the 8% chromium steels and has been developed to meet the needs of customers now more than ever.

High toughness and, a remarkably high compressive strength, together with good resistance make this steel a real problem solver.

This steel is particularly outstanding when adhesive and abrasive wear resistance are necessary; it allows a considerable increase in performance, your productivity will increase and your costs per part will be reduced.

### **POWDER STEEL METALLURGY**

Today Suce provides, in addition to the traditional HSS punches, of new variety of the turret style made in powder steel metallurgical.



Trumpf	
Gr0 D6 D10.5	

Trumpf Multitool 5 - 10

Trumpf Gr1

Thick turret Mate ultra style

Thick turret B station Smart staz.A Smart. Mate Wilson

Wilson

Trumpf blade Thick turret Slitting blade

cools, Trumpf	style and Thick
HIGHER TOUGHNESS	HIGH Compressive Stength
	$\frown$

K360 Chemical

composition

1.25 %

8.75 %

2.70 %

1.18 %

Carbonium

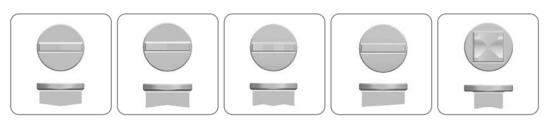
Chromium

Molybdenum

Vanadium



# Shear option



TYPE OF SHEAR	Roof top	Inverted roof top	Double valley	Whisper	Four ways
WHEN	Best option when punching force is high, minimum feed 75% of tool lenght	Recommended for nibbling at maximum tonnage but inverted stress could cause breakage	Recommended when punch is longer than 80mm But inverted stress could cause breakage	Best option classic trumpf style to reduce noise and tonnage, max 5°	Recommended for punching and nibbling Ø and square at maximum tonnage
CODE	Cod V	Cod VR	Cod 3P	Cod W	Cod 4P
ADD ON	€	€	€	€	€

# Add on

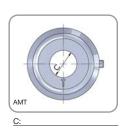


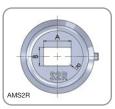
	Die lock slug	Extra Key slot	Back taper punch Jump station*	Reduced milled land
ADD ON	€	€		€
WHEN	Best option to prevent the come out of the slug	C-D-E thick turret dies keys 0-90 standard shape 0-135 square	Recommended for punching thick material, more than 4mm. *Thick turret punches example: square10 in C station	To facilitate the fall of the slug; recommended when long side is more than 20 times short side, ex re22x1



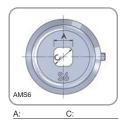
	Die clearance <0.1	Punch width	Die size <1.5
ADD ON			

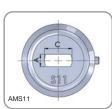
## **ROUND AND STANDARD**





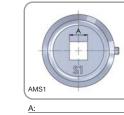


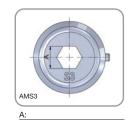


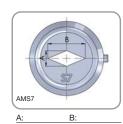


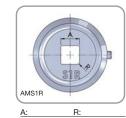
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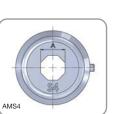
# **SPECIAL 1**



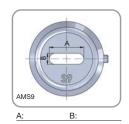


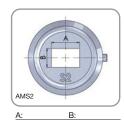


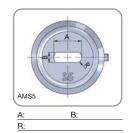


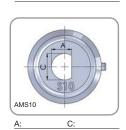




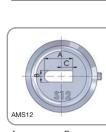




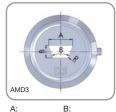


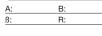


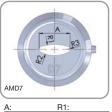


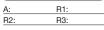


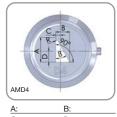
A: C: B:

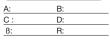


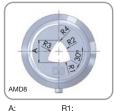




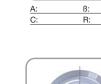




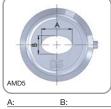


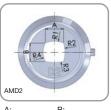


A:	R1:	
R2:	R3:	
R4:		

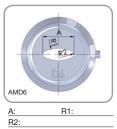


AMD1



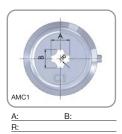


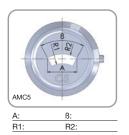
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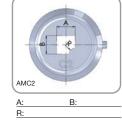


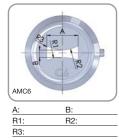
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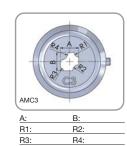


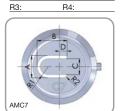


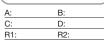


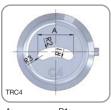




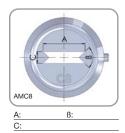








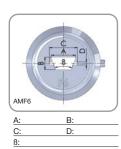
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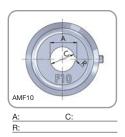


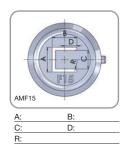
R<3 price is SPECIAL 2

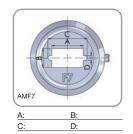
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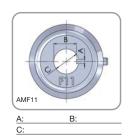
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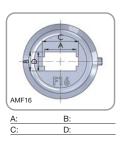


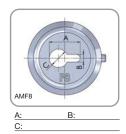


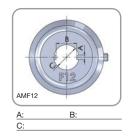


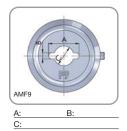


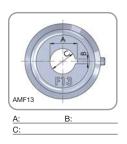












TECNOLOGY

S 15

PUNCH 7.5 Punzone ridotto D7.5

PUNCH CHUCK D7.5 Portapunzone D7.5 PUNCH Punzone





GUIDE Guida

DIE Matrice





ITEM	PUNCH 7.5 Punzone D7.5 ridotto	€	PUNCH CHUCK D7.5 Portapunzone D7.5	€	PUNCH Punzone	€	GUIDE Guida	€	DIE Matrice	€
ROUND Diametro	TEA575PST006T		D7.5 TEA175PPT0T		TEA1PUT006T		TEA1GUT0T		TEA1MAT001T	
SHAPE STD Sagoma std					TEA1PUT006S		TEA1GUT0S		TEA1MAT001S	
SPECIAL 0					TEA1PUT006C		TEA1GUT0D		TEA1MAT001D	
SPECIAL 1					TEA1PUT006D		TEA1GUT0D		TEA1MAT001D	
SPECIAL 2					TEA1PUT006F		TEA1GUT0D		TEA1MAT001D	

### FITTING S15 Accessori S15



TCNT-TECNOINDEX

TECNUMERIK PUNCH HOLDER

TECNUMERIK PUNCH ADAPTOR



TCNT-TECNOINDEX DIE HOLDER



TCNT-TECNOINDEX TECNUMERIK SPRING PACK



TECNUMERIK DIE HOLDER



MODEL		ITEM	€	ITEM	€		
TCNT-TECNOINDEX		<i>i riduzione 71.0.1.100.0000</i> A1PRS15X		DIE HOLDER Contenitore matrice 71.1.1.500.000 TEA1PMATS15X			
TECNUMERIK		riduzione 91.0.1.100.0000 1PRS15K		DIE HOLDER Contenitore matrice 91.1.1.500.000 TEA1PMATS15K			
MODEL ITEM					€		
		SPRING PACK	Estrattore of	completo 91.2.1.400.0000 TEA1ESS15			
		SPRING	Molla G37X4	42 - 91.2.1.430.0000 TEA1MSS15			
TCNT - TECNOINDEX -	TECNUMERIK	SPRING PLATE Portamolla 91.2.1.410.0000 TEA1PMS15					
		SPRING DISK Disco premimolla 91.2.1.420.0000 TEA1DPMS15					
		PUCH HOLDER Contenitore punzone predisposto 91.1.1.200.400 TEA1PPS15P					



S 40



ITEM	PUNCH Punzone	€	PUNCH WITH SHARPENING Punzone scaricato	€	PUNCH Punzone	€	PUNCH WITH SHARPENING Punzone scaricato	€	GUIDE Guida	€	DIE Matrice	€
ROUND Diametro	TEB1PUT006T		TEB1PUTL06T		TEB2PUT006T		TEB2PUTL06T		026 TEB1GUT0T For sharp punch 026 TEB1GUTLT 040 TEB2GUT0T For sharp punch 040 TEB2GUTLT		TEB1MAT001T	
SHAPE STD Sagoma std	TEB1PUT006S		TEB1PUTL06S		TEB2PUT006S		TEB2PUTL06S		026 TEB1GUT0S For sharp punch 026 TEB1GUTLS 040 TEB2GUT0S For sharp punch 040 TEB2GUTLS		TEB1MAT001S	
SPECIAL 0	TEB1PUT006C		TEB1PUTL06C		TEB2PUT006C		TEB2PUTL06C		Ø26 TEB1GUT0D - For sharp punch			
SPECIAL 1	TEB1PUT006D		TEB1PUTL06D		TEB2PUT006D		TEB2PUTL06D		Ø26 TEB1GUTLD 940 TEB2GUT0D	JTLD	TEB1MAT001D	
SPECIAL 2	TEB1PUT006F		TEB1PUTL06F		TEB2PUT006F		TEB2PUTL06F		For sharp punch Ø40 TEB2GUTLD			

#### FITTING S 40 Accessori S40

PUNCH HOLDER
Contenitore punzone

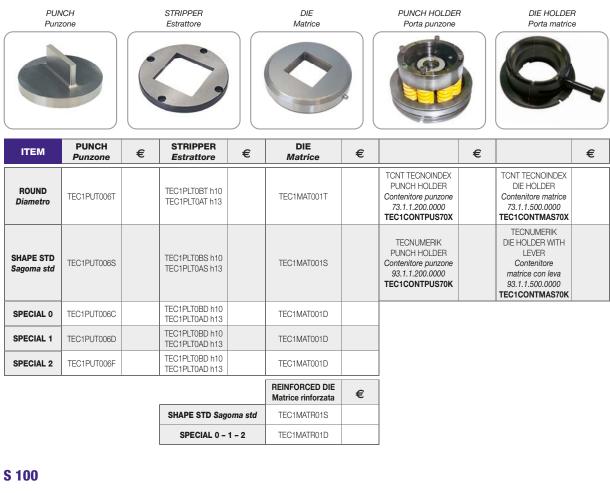


DIE HOLDER Contenitore matrice STRIPPER UNIT Gruppo estrattore





#### S 70





ITEM	PUNCH Punzone	€	STRIPPER Estrattore	€	DIE Matrice	€		€		€
ROUND Diametro	TED1PUT006T		TED1PLT0BT h10 TED1PLT0AT h13		TED1MAT001T		TCNT TECNOINDEX PUNCH HOLDER Contenitore punzone 74.1.1.200.0000 TED1CONTPUS70X		TCNT TECNOINDEX DIE HOLDER Contenitore matrice 74.1.1.500.0000 TED1CONTMAS70X	
SHAPE STD Sagoma std	TED1PUT006S		TED1PLT0BS h10 TED1PLT0AS h13		TED1MAT001S		TECNUMERIK PUNCH HOLDER Contenitore punzone 94.1.1.200.0000 TED1CONTPUS70K		TECNUMERIK DIE HOLDER WITH LEVER Contenitore matrice con leva 94.1.1.500.0000 TED1CONTMAS70K	
SPECIAL 0	TED1PUT006C		TED1PLT0BD h10 TED1PLT0AD h13		TED1MAT001D					
SPECIAL 1	TED1PUT006D		TED1PLT0BD h10 TED1PLT0AD h13		TED1MAT001D					
SPECIAL 2	TED1PUT006F		TED1PLT0BD h10 TED1PLT0AD h13		TED1MAT001D					
					REINFORCED DIE Matrice rinforzata	€				
			SHAPE STD Sage	oma std	TED1MATR01S		]			
			SPECIAL 0 -	1 - 2	TED1MATR01D					
							-			





MODEL		ART.	€
ALL Tutti	NIBBLING PUNCH D10 Punzone roditore DIAM.10	TEA10PUTR06T	
ALL Tutti	NIBBLING PUNCH D10 WITH COATING Punzone roditore DIAM 10 rivestito	TEA10PUTR06TH	
ALL Tutti	NIBBLING PUNCH D10 GEMINUS Punzone roditore DIAM.10 rivestito Geminus	TEA10PUTR06TC	
TCNT-TECNOINDEX	DISC Disco premi molla 75.1.1.720.1000	TEA10DPMX	
TECNUMERIK	DISC Disco premi molla 95.1.1720.1000	TEA10DPMK	
ALL Tutti	SPRING Molla a spirale G51X65 95.1.1.730.1000	TEA10MS	
ALL Tutti	NIBBLING GUIDE RD10 Guida punzone roditore GPR10	TEA10GU	
ALL Tutti	DIE Matrice per roditore	TEA1MAT001T	

# SLITTING TOOL 90x5 Utensile da taglio 90x5



MODEL	DESCR.	ART.	€
TCNT-TECNOINDEX	HOLDER PUNCH 90x5 Gruppo porta punzone 90x5 PP 90x5 TCNT-TIX	TED1CONTPU90X5X	
TECNUMERIK	HOLDER PUNCH 90x5 Gruppo porta punzone 90x5 PP90X5TK	TED1CONTPU90X5K	
ALL Tutti	SLITTING PUNCH SHARP BLADE Lama punzone 90x5 scaricata	TED1PULT006S	
	SLITTING PUNCH SHARP BLADE COATING Lama punzone 90x5 scaricata RIVESTITA	TED1PULT006SRIV	
ALL Tutti	STRIPPER 90x5 TED1ES90X5 TED1ES90X5		
ALL Tutti	KIT n.°4 SPRING DISK 32x38 Set N.4 molle spirale 32x38 MG32X38	TED1KITMS90X5	
ALL Tutti	DIE HOLDER 90x5 Portamatrice 90x5 PMTCNT-TIX	TED1CONTMA90X5	
ALL Tutti	SLITTING DIE 90x5 Matrice ellittica 90x5	TED1MATE01S	

STATION	PUNCH D7.5	PUNCH S15	PUNCH S26/40	PUNCH S70	PUNCH S100
Coating PROBUS	€	€	€	€	€
Coating GEMINUS	€	€	€	€	€
Coating LEVATUS	€	€	€	€	€



# SUCE TOOLING s.r.l

Via dei Mille, 21 20098 San Giuliano Milanese, Milano - ITALY Ph: +39(0)2-9840484 - (0)2-98242228 Email: info@sucetool.com www.sucetooling.com

