



T O O L I N G F O R P U N C H P R E S S E S



MULTIMATRIX

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MATRIX

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COMPANY PROFILE

A dynamic team

Matrix' products, the result of our highly qualified technicians' competence which constantly deal with problems connected to production cycles as well as specific customer's requirements.

The customer, a unique partner

Each customer deserves special care, that's why Matrix doesn't simply offer a product but also a specialized consulting service and technical support, in order to reach the high competitive level required by the market.

Punches and dies born to last

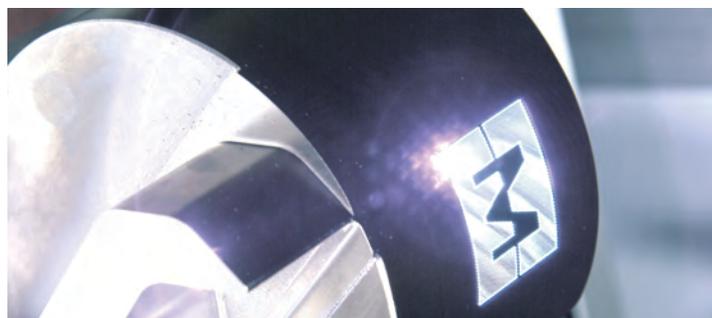
The high reliability and life lasting which characterize Matrix' products, are the result of experience, devotion, constant research and use of superior quality raw materials.

Innovative technologies for high performances

Matrix invests on the best technologies: from designing software to the most modern planning techniques, from cutting edge machineries to sophisticated control systems.

Energies oriented to the maximum accuracy

The constant investments in machineries for our production is a must in order to keep the elevate standard level required by processing.



OUR PRODUCTS

Punches

Manufactured in accordance with the most modern techniques and machineries, produced with a unique type of steel (M2), hardened with the first quality heat treatments.



Strippers or sliding guides

Manufactured with steels either resistant to wearing or heavy stress, produced with proper tolerances to guarantee endurance to punches and punching machine turret. All guides are hardened and whenever possible, supplied with proper lubricating grooves.



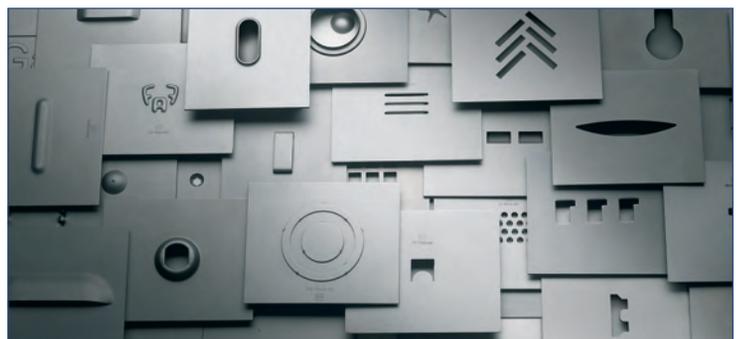
Dies

Full automatic production and control cycles guarantee to our dies a maximum level standard quality. Manufactured with high performing steels (D2) and hardened with equal value treatments for the best structural tension and endurance, we pay great attention to the dies geometry.



Special tools

The constant demand of special tools specific for particular processing, requires alternative and innovative solutions and reduced delivery times. Each special tool is coded for its reproduction and controlled on all production phases, from designing to testing.



MULTIMATRIX: ROTATION SYSTEMS

TYPE OF MULTIMATRIX

Matrix manufactures two types of multitool which differentiate by the head characteristics. We can supply either tools with rotating head on series R or fixed head on series F.

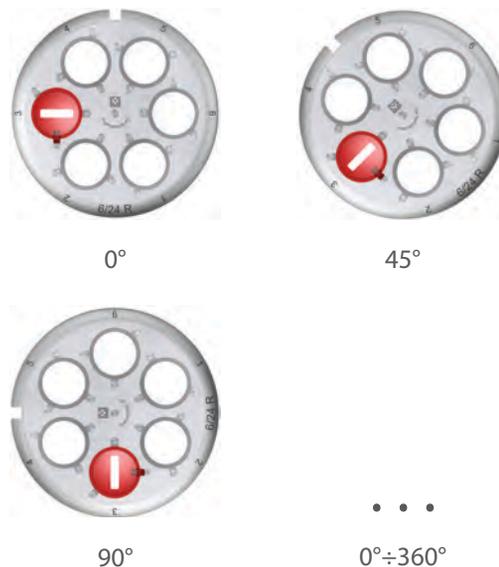
The above mentioned differentiation basically indicates the way of active tool selection between the ones available on the multitool.

TOOL ROTATION (INDEXING)

Rotation of single tool is possible with both types of multitool and gets performed by the multitool rotation itself.

This can be performed by the index station, only on machines provided with these characteristics.

The advantage is considerable since you can use one single tool by rotating it through 360° without using several punches.



MULTIMATRIX WITH FIXED HEAD

TOOL SELECTION

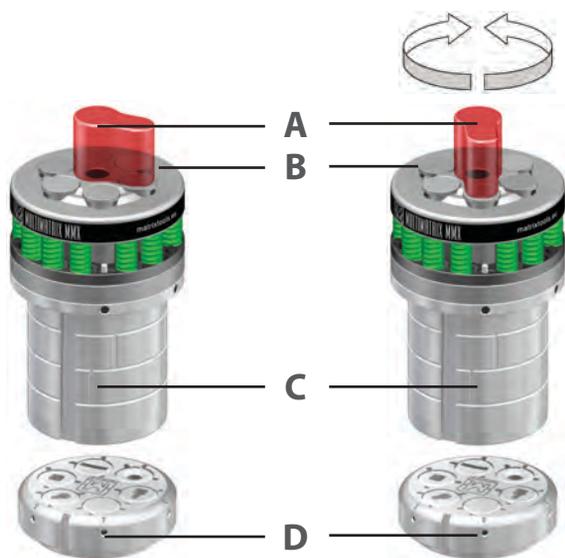
In order to use a MultiMATRIX with fixed head it's necessary that punching machine is equipped with ram (A) conformed in order to hit one tool at a time besides the center of head (B) of the MultiMATRIX.

The ram selects the required tool by rotation.

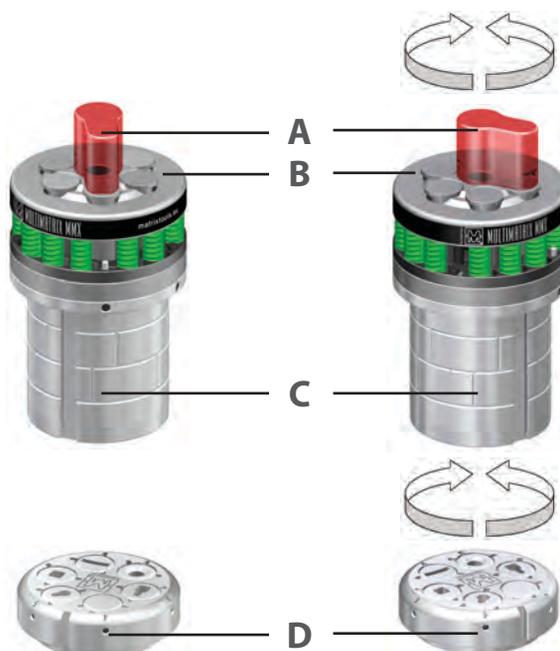
TOOL ROTATION (INDEXING)

Indexing tool is also possible when it is used a punching machine with index station.

In order to avoid any modification of the active tool selection on multitool with fixed head, the rotation of ram (A) must be equivalent to the multitool overall rotation (parts B, C and D).



Tool selection



Tool indexing

MULTIMATRIX WITH ROTATING HEAD

TOOL SELECTION

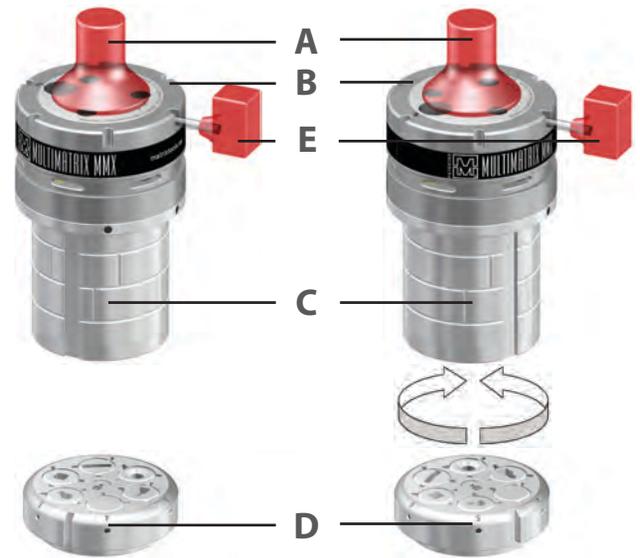
On multitool with rotating head the ram (A) can be a normal piston with only vertical movement and without a particular shape.

In this case, the required tool selection is entrusted to some other devices placed inside the head (B).

Selection occurs by the multitool head (B) rotation, compared to its body (C) and this movement can be performed by a gear, pulley system or cam.



Tool selection with pulley or belt

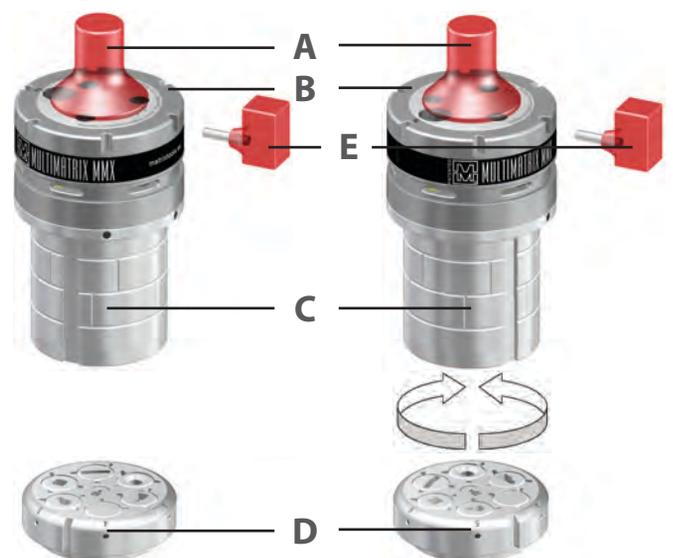


Tool selection with rotating station

TOOL ROTATION (INDEXING)

Tool indexing is also possible when we use a punching machine with index station.

On a multitool with rotating head, its overall rotation (parts B, C and D) is sufficient to complete the operation since the selection of active tool doesn't get modified.



Tool indexing

Alternatively, on machines with index station, we can take advantage of this last characteristic.

In this case we can fit a simple system to keep the multitool head (B) fixed (for example by fitting a pneumatic little piston (E) on proper grooves placed on the upper part) while the lower parts (C) and (D) turn thanks to the station movement itself.

To manufacture a punching machine with this second system is more inexpensive since just by rotating the station, either the tool selection or its indexing get carried out.

In order to adapt to specific client's needs, all MultiMATRIX with rotating head can be supplied with customized head upper part (B).

PROGRAMMING AND USE SUGGESTIONS

The choice how to punch, to nibble, to feed and to round off is free during programming.

Nevertheless, a logical and accurate choice will avoid problems and reduce the working time. The operators' experience will be a great help, but at the beginning we suggest to ask for information and help to the machine manufacturer.

Some good rules:

- I. Do not ever leave any metal scraps on the punching machine working surface (nibbling or round off residuals); they could lay on the cutting area and causing a double thickness.
- II. The easiest way to nibble is with round punches, but being limitative, square or rectangular punches are often used; in this case flat cut is recommended, while if the punch has a special sharpening feeding is compulsory (see Figure A). For nibbling, do not use round punches with special sharpening.

However a correct nibbling is programmed with step equal to 75% of the punch measure (for example: square 10, step 7,5; rectangular 4x20, step 15). In this way, the punch will always work balanced.

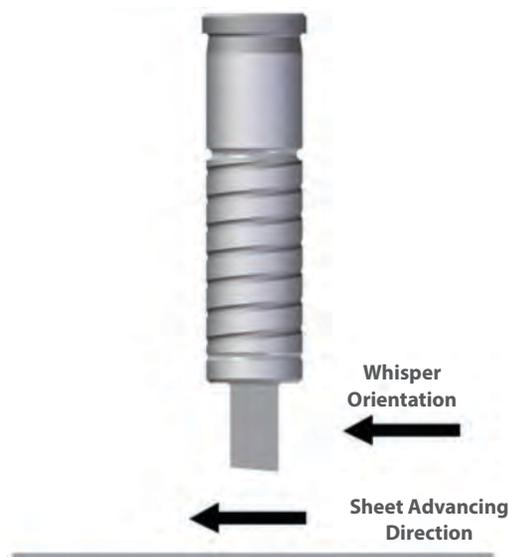


FIGURE A

- III. Another problem which might occur when nibbling, is actually connected to the programming; in fact when setting up a nibbling length, by feeding according to point II, the last sheared part might be lower than 75% of tool dimension (see Figure B).

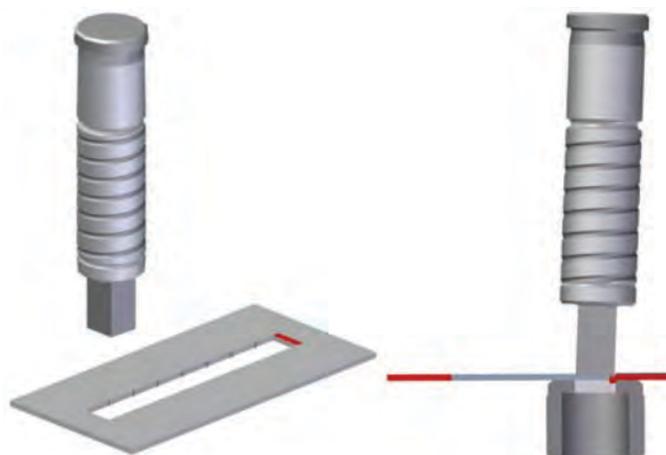


FIGURE B

On such situation, due to side load, the tool tends to lean over the sheet, causing the following:

- a) collision of the punch opposite cutting part with the die, in case the clearance is proper for thin thicknesses;
- b) clearance increase on the shearing area which will cause sheet deformation, excessive burrs and tool wearing.

The same problem occurs when we want to shear a sheet edge, like shown on Figure C.

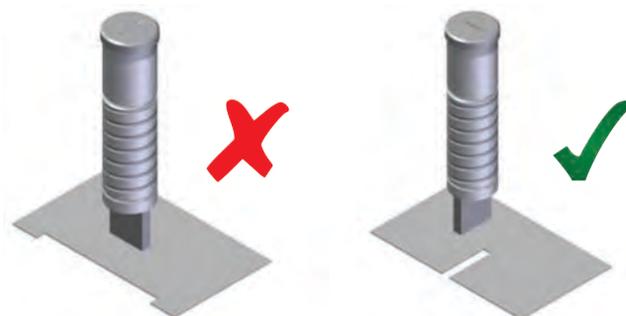


FIGURE C

PROGRAMMING AND USE SUGGESTIONS

To avoid the above mentioned problem it is recommended to reverse the last two strokes of the nibbling sequence (see Figure D).

In this second case the punch will perform a shearing with the 100% of the cutting area as second-last stroke (end-nibbling); afterwards it will be positioned exactly above the centre of the material section which has to be eliminated.

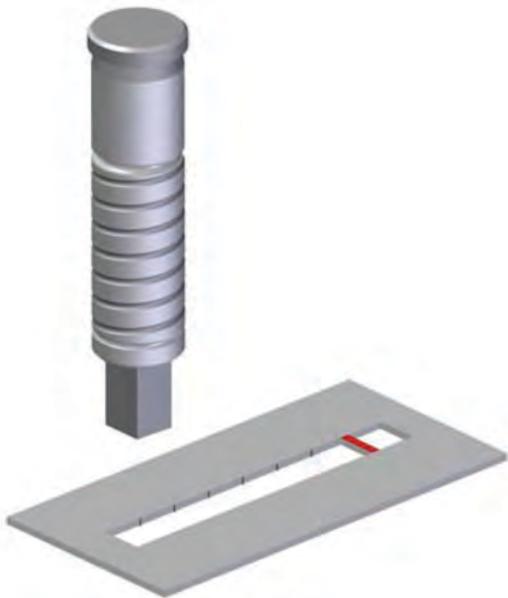


FIGURE D

IV. If the processing requires to perform cluster holes, that means processes which might deform the sheet, it is recommended to make at first a pre-pierce with dimensions equal to 40% of the final hole, while the final hole itself will be performed later on.

This expedient considerably reduces the efforts necessary to obtain the desired result, minimizing the sheet deformations.

V. In order to have a correct punch extraction, when the material thickness increases, please reduce the punching machine speed. This because the metal sheet dragging axle could move before to complete the extraction and shutting the machine in alarm.

Anyhow, keep in mind that shearing and nibbling processes performed by using a multitool, need some tricks required by the machine/multitool structure and according to the forces generated during working phases.

A multitool advantage is to have several tools inside the same guide assembly, selected by rotating the machine ram; but there's also a disadvantage since the force applied to the active punch, acts lengthwise the axle which does not coincide to the multitool one, so this causes a multitool inclination and consequently a minimum punch inclination too.

This situation amplifies once thickness and diameter increase, that is when the force (see arrow 1, Figure E) is enough to cause machine structure bending (see arrow 2, Figure E) worsening therefore the problem.

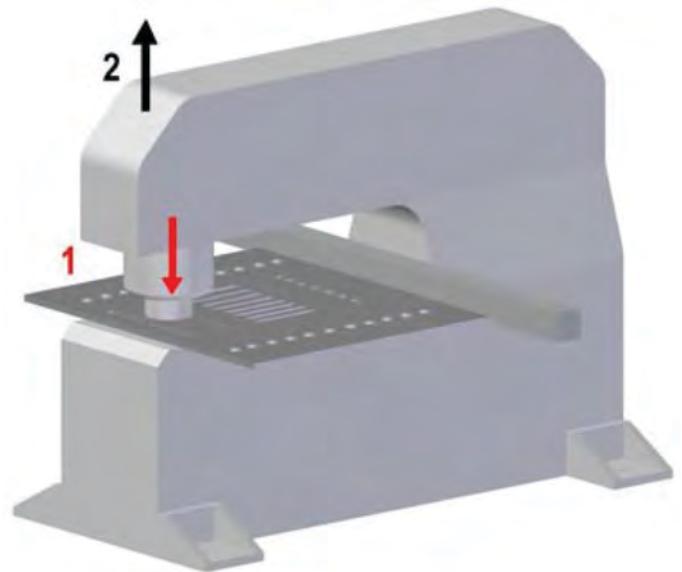


FIGURE E

PROGRAMMING AND USE SUGGESTIONS

LUBRICATION: a must

It is the first rule to apply; being punching a shearing and extrusion processing, the shearing area lubrication is a must to obtain a good result. Lubrication is very important on punching machines and particularly on punching stamps.

When a punch shears the sheet, small quantities of material lays on the punch surface.

A lubricant with proper characteristics creates a barrier between punch and material, reducing significantly either friction or stratification of material on the punch surface, improving therefore the punch life.

If for some reasons lubrication is a problem, Titanium coating on punches could help.

Daily multitool lubrication is obligatory.

The inobservance of this rule will cause an excessive Multitool wearing.

Matrix offers lubricants adapt to different working requirements as well as volatile oils whenever oil residual must be avoided.

CONCLUSIONS

Being the Multitool a precision device, we recommend its use only to trained personnel.

After several hits or however once a year for 8 hours shifts per day, the Multitool needs ordinary maintenance carried out by the manufacturer or qualified personnel.

Periodic replacement of extraction springs sets inside the multitool, might be necessary in case of high thicknesses.

Before proceeding with any action on the multitool, in case of doubts please contact the manufacturer.



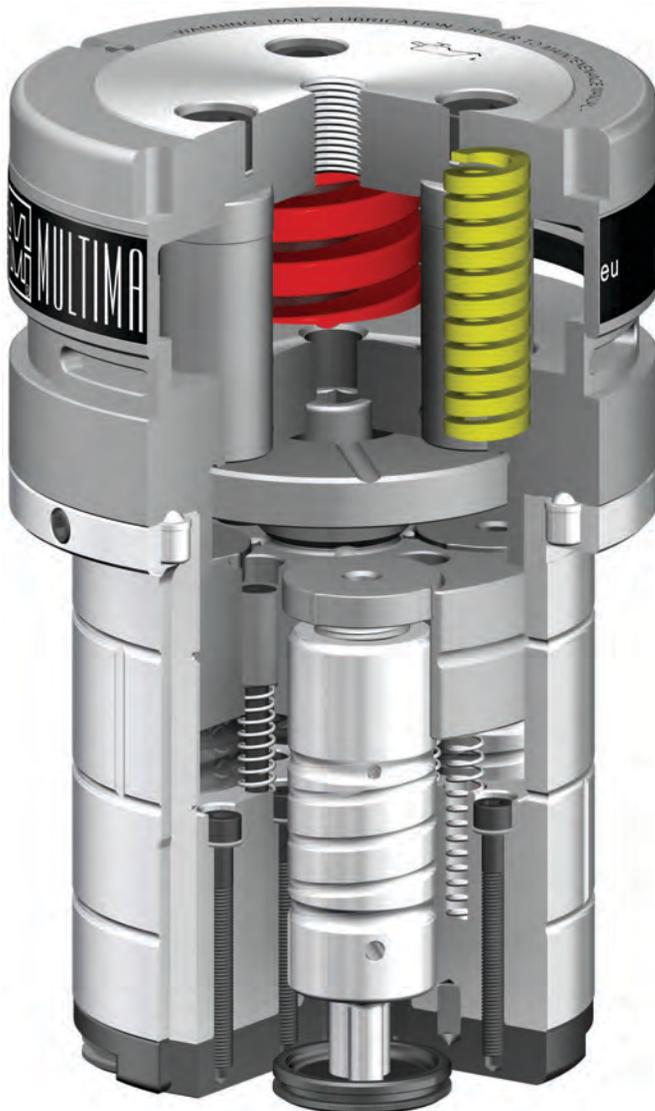


MULTIMATRIX: ROTATING SERIES AND TOOLS



Tools codes indicated in our catalogues refer to the corresponding shape and can vary accordingly.

MultiMATRIX 4B R MMX



FAZAAH00
complete
upper tool



FAEVEF00
complete die holder

PATENTED

- 4 punch stations with maximum diagonal mm 31,7

- The tools are standard lubricated Thick Turret B Station

- The spring on axis with the selected punch guarantees a high inflexibility that can be compared with the one in the mono tool

- It is specifically designed to prevent signs on the sheet metal

- Maximum thickness on standard working:
 - mm 6 on mild steel
 - mm 4 on stainless steel
 Warning: These thicknesses could limit both kind and speed of processing

- Quick stripper unlocking

- Total lubrication: inner and external, manual or automatic

- It can be inserted in a normal Thick Turret D Station

- It can be used in punch machine with rotating station (index)

- Customizable upper part according to specific requirements, for several machine models

MULTIMATRIX ROTATING SERIES

THICK TURRET B Station - Lubricated - MAX Ø \varnothing = mm 31,7

Dimensions (mm)

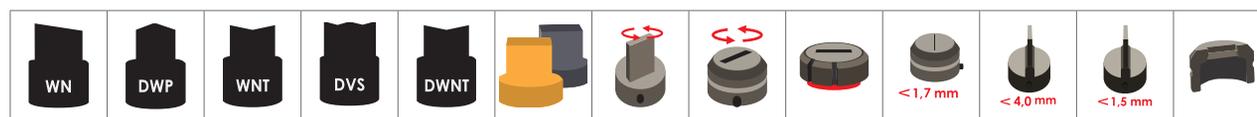
Punch: H = 100,5 Ø = 31,75

Stripper: H = 6,9 Ø = 38,05

Die: H = 30,4 Ø = 47,62



OPTIONS AND NOTES



MultiMATRIX 6/24 R MMX



FALPAH00
complete
upper tool



FAAKEF00
complete die holder

PATENTED

- 6 punch stations with maximum diagonal mm 24

- The spring on axis with the selected punch guarantees a high inflexibility that can be compared with the one in the mono tool

- It is specifically designed to prevent signs on the sheet metal

- Maximum tonnage on standard working:
- 15 Tons
Warning: This tonnage could limit both kind and speed of processing

- Quick stripper unlocking

- Total lubrication: inner and external, manual or automatic

- It can be inserted in a normal Thick Turret D Station

- It can be used in punch machine with rotating station (index)

- Customizable upper part according to specific requirements, for several machine models

- Quick strippers and punches change, without multitool opening

- Octagonal strippers for quick punch orientation with 45° steps

- Dies holder with 3 positioning references for each station

- Several models with different tool orientation are available

MULTIMATRIX ROTATING SERIES

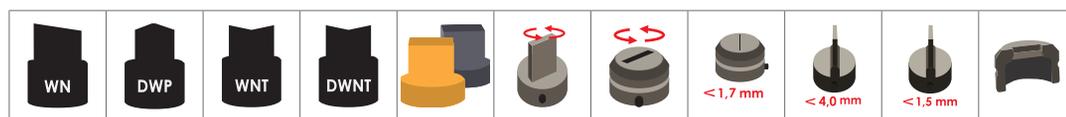
MultiMATRIX Series 6/24 and 6/24 AR-N - MAX Ø ∅ = mm 24

Dimensions (mm)

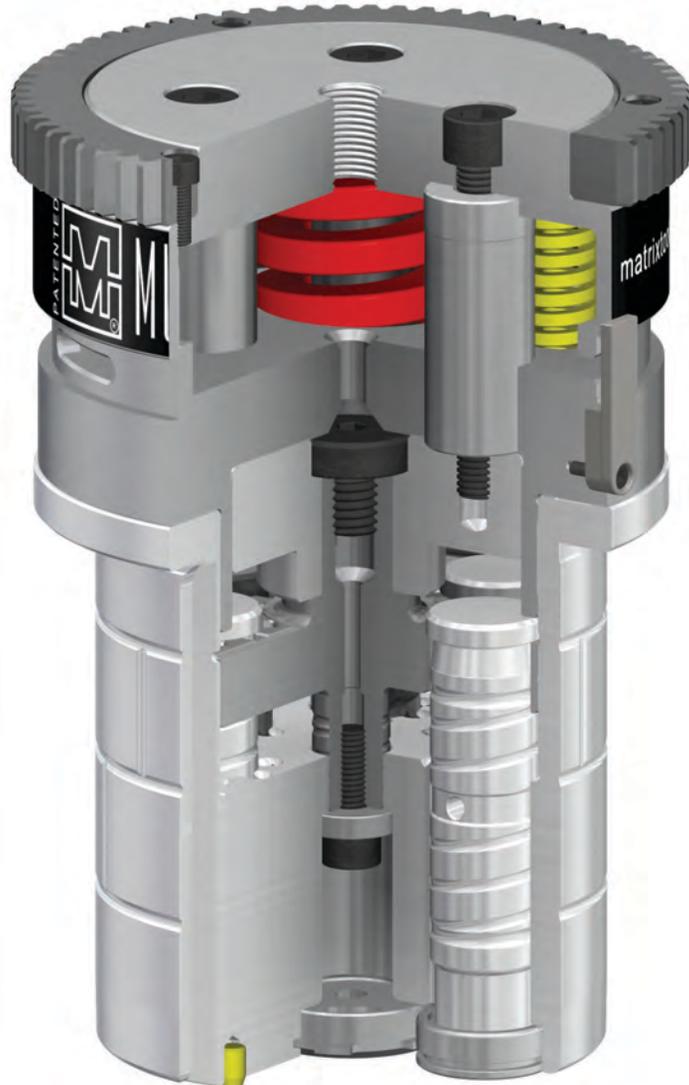
Punch: H = 113,5 Ø = 24 (6/24)
 Punch: H = 95 Ø = 24 (6/24 AR)
 Stripper: H = 15 Ø = 30
 Die: H = 31 Ø = 24



OPTIONS AND NOTES



MultiMATRIX 6/24-6 E-MMX



F845AH00
complete
upper tool



FB64EF00
complete die holder

PATENTED

- 6 punch stations with maximum diagonal mm 24

- The spring on axis with the selected punch guarantees a high inflexibility that can be compared with the one in the mono tool

- Maximum tonnage on standard working:
- 15 Tons
Warning: This tonnage could limit both kind and speed of processing

- Quick stripper unlocking

- Total lubrication: inner and external, manual or automatic

- It can be inserted in a normal Thick Turret D Station

- It can be used in punch machine with rotating station (index)

- Dies holder with 3 positioning references for each station

- It is perfectly compatible with *Euromac*[®] punching machines



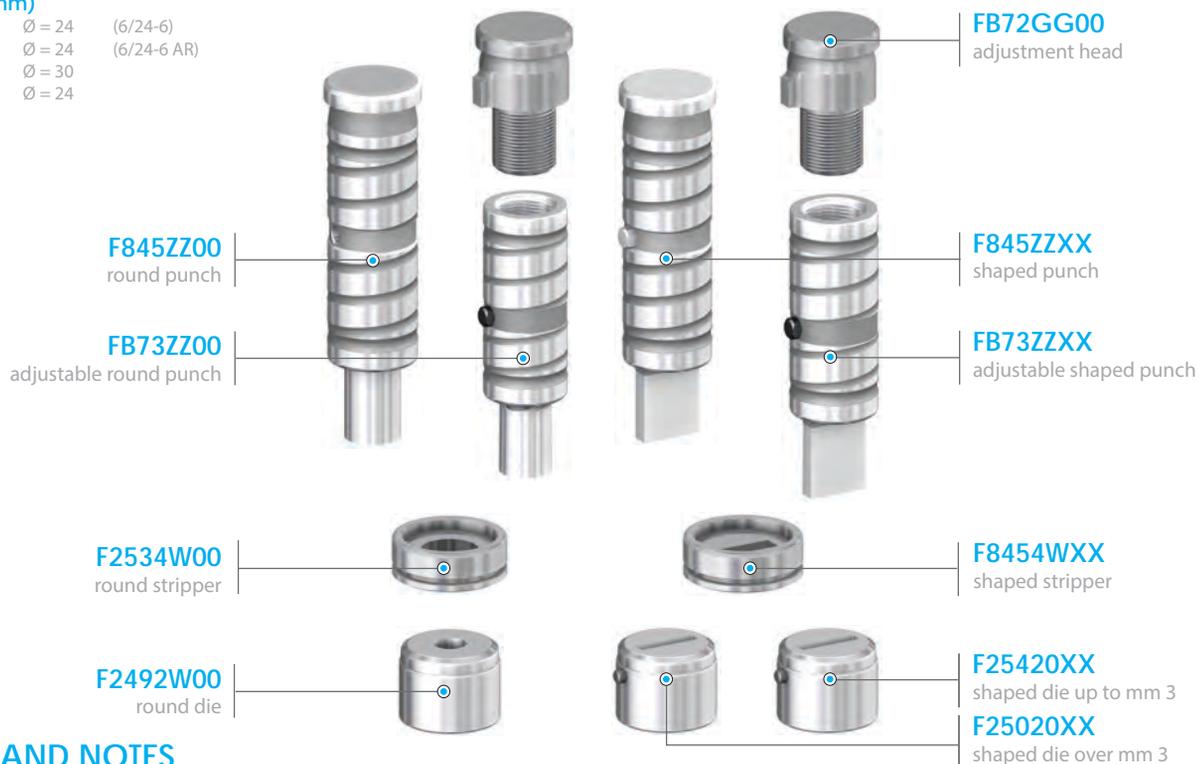
FB648000
interchangeable pin
for die holder

MULTIMATRIX ROTATING SERIES

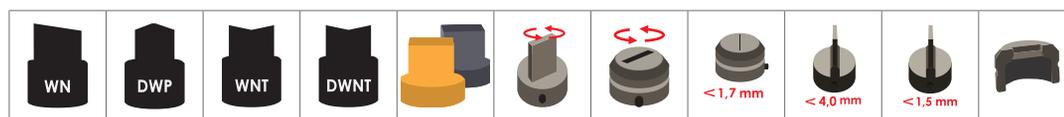
MultiMT Series 6/24-6 and 6/24-6 O-AR - MAX Ø ∅ = mm 24

Dimensions (mm)

Punch:	H = 100	Ø = 24	(6/24-6)
Punch:	H = 80,5	Ø = 24	(6/24-6 AR)
Stripper:	H = 10,5	Ø = 30	
Die:	H = 31	Ø = 24	



OPTIONS AND NOTES



MultiMATRIX 10/18 R MMX



FALNAH00
complete
upper tool



FAAJEF00
complete die holder

PATENTED

- 10 punch stations with maximum diagonal mm 18

- The spring on axis with the selected punch guarantees a high inflexibility that can be compared with the one in the mono tool

- It is specifically designed to prevent signs on the sheet metal

- Maximum tonnage on standard working:
- 12 Tons
Warning: This tonnage could limit both kind and speed of processing

- Quick stripper unlocking

- Total lubrication: inner and external, manual or automatic

- It can be inserted in a normal Thick Turret D Station

- It can be used in punch machine with rotating station (index)

- Customizable upper part according to specific requirements, for several machine models

- Quick strippers and punches change, without multitool opening

- Octagonal strippers for quick punch orientation with 45° steps

- Dies holder with 2 positioning references for each station

- Several models with different tool orientation are available

MULTIMATRIX ROTATING SERIES

MultiMATRIX Series 10/18 and 10/18 AR-N - MAX Ø ∅ = mm 18

Dimensions (mm)

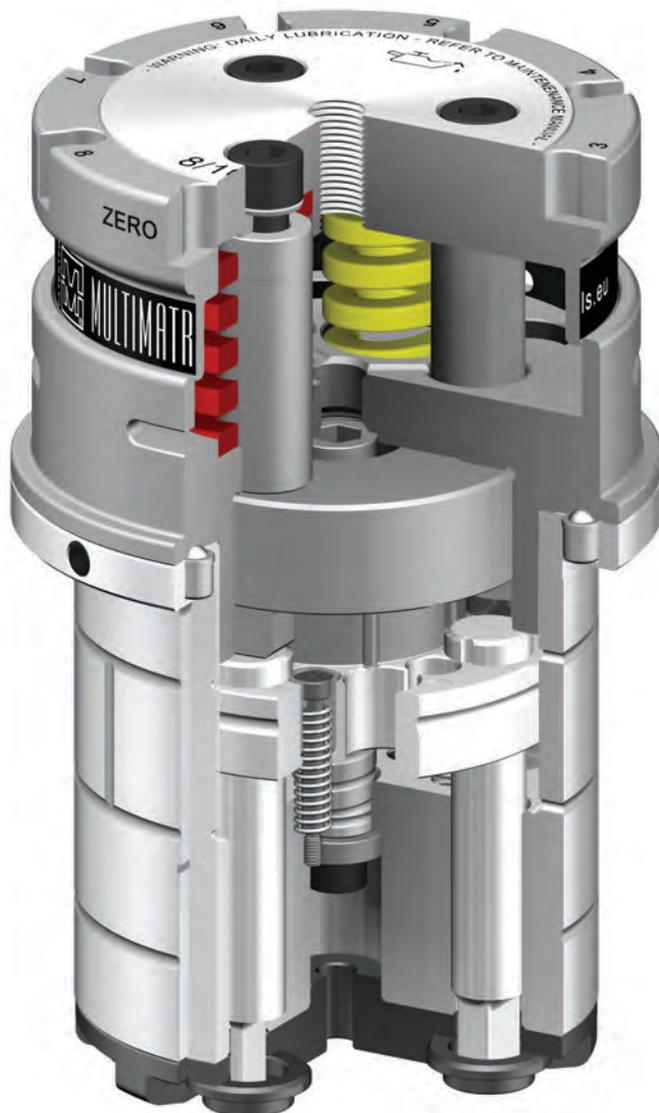
Punch: H = 113,5 Ø = 18
 Stripper: H = 12 Ø = 23
 Die: H = 20 Ø = 25



OPTIONS AND NOTES



MultiMATRIX 8/16 R MMX



FAFLA00
complete
upper tool



FAFLE00
complete die holder

PATENTED

- 8 punch stations with maximum diagonal mm 16
- The spring on axis with the selected punch guarantees a high inflexibility that can be compared with the one in the mono tool
- It is specifically designed to prevent signs on the sheet metal
- Maximum tonnage on standard working:
- 10 Tons
Warning: This tonnage could limit both kind and speed of processing
- Quick stripper unlocking
- Total lubrication: inner and external, manual or automatic
- It can be inserted in a normal Thick Turret D Station
- It can be used in punch machine with rotating station (index)
- Customizable upper part according to specific requirements, for several machine models
- It is perfectly compatible with *Prima Power* punching machines

MULTIMATRIX ROTATING SERIES

MultiW Series 8/16 N

- MAX Ø \varnothing = mm 16,0

Dimensions (mm)

Punch: H = 100,5 Ø = 16
 Stripper: H = 7,6 Ø = 26,86 (max)
 Die: H = 17,6 Ø = 25,4



OPTIONS AND NOTES



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MM MULTIMATRIX MMX
PATENTED



MULTIMATRIX: FIXED SERIES AND TOOLS

Tools codes indicated in our catalogues refer to the corresponding shape and can vary accordingly.

MultiMATRIX 4B F MMX



FAZBAH00
complete
upper tool



F615EF00
complete die holder

PATENTED

- 4 punch stations with maximum diagonal mm 31,7

- The tools are standard lubricated Thick Turret B Station

- It is specifically designed to prevent signs on the sheet metal

- Maximum thickness on standard working:
 - mm 6 on mild steel
 - mm 4 on stainless steel
 Warning: These thicknesses could limit both kind and speed of processing

- Quick stripper unlocking

- Total lubrication: inner and external, manual or automatic

- It can be inserted in a normal Thick Turret D Station

MULTIMATRIX FIXED SERIES

THICK TURRET B Station - Lubricated - MAX Ø \varnothing = mm 31,7

Dimensions (mm)

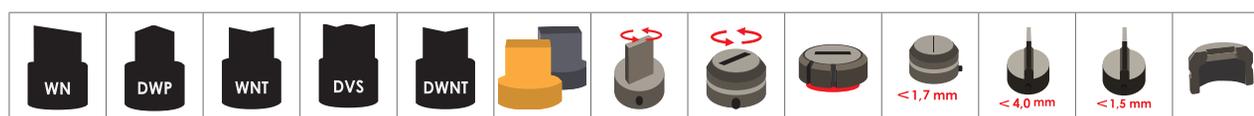
Punch: H = 100,5 Ø = 31,75

Stripper: H = 6,9 Ø = 38,05

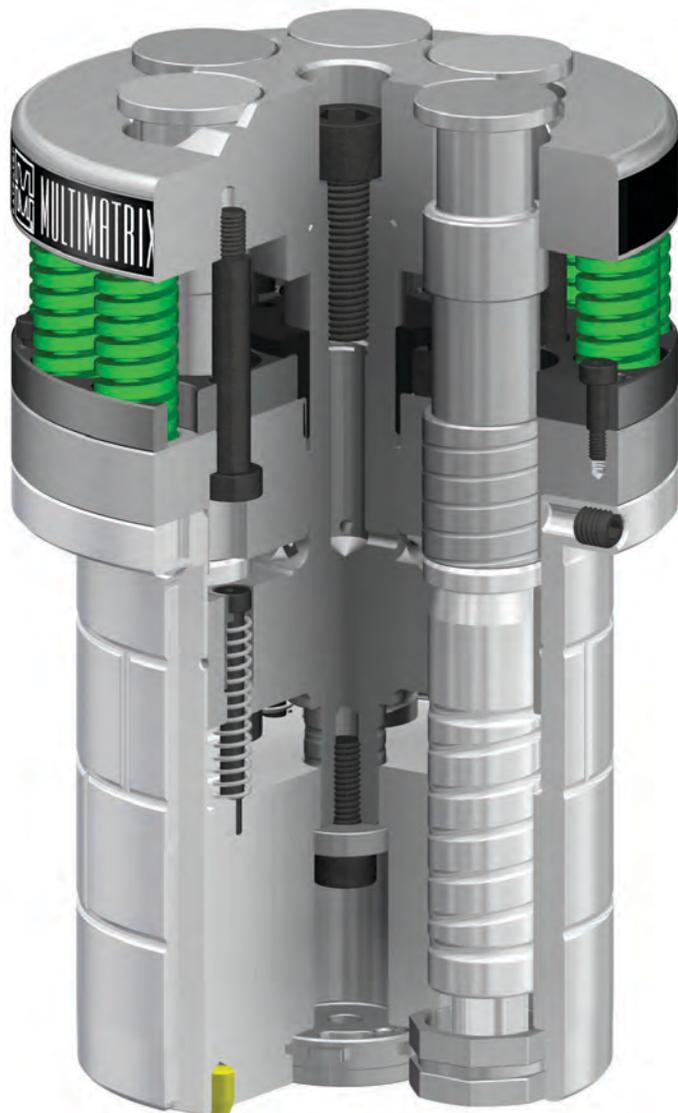
Die: H = 30,4 Ø = 47,62



OPTIONS AND NOTES



MultiMATRIX 6/24 F MMX



FALMAH00
complete
upper tool



FAAIEF00
complete die holder

PATENTED

- 6 punch stations with maximum diagonal mm 24
- It is specifically designed to prevent signs on the sheet metal
- Maximum tonnage on standard working:
- 15 Tons
Warning: This tonnage could limit both kind and speed of processing
- Quick strippers and ram unlocking
- Total lubrication: inner and external, manual or automatic
- It can be inserted in a normal Thick Turret D Station
- For punching machines with fixed station and rotating ram
- Quick strippers and punches change, without multitool opening
- Octagonal strippers for quick punch orientation with 45° steps
- Dies holder with 3 positioning references for each station
- External springs for easy replacement when maintaining

MULTIMATRIX FIXED SERIES

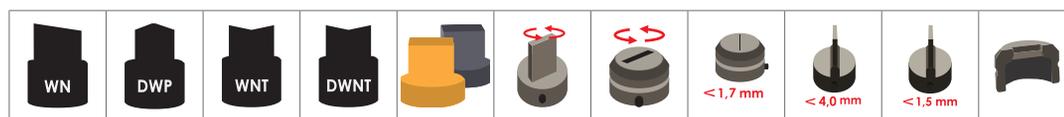
MultiMATRIX Series 6/24 and 6/24 AR-N - MAX Ø ∅ = mm 24

Dimensions (mm)

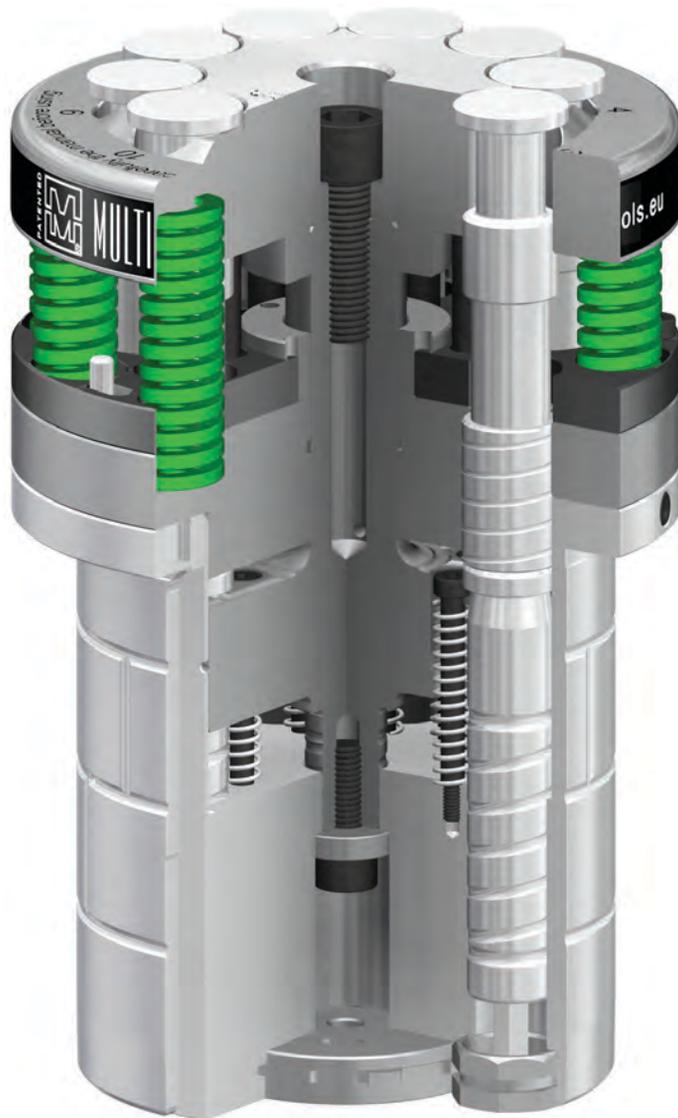
Punch: H = 113,5 Ø = 24 (6/24)
 Punch: H = 95 Ø = 24 (6/24 AR)
 Stripper: H = 15 Ø = 30
 Die: H = 31 Ø = 24



OPTIONS AND NOTES



MultiMATRIX 10/18 F MMX



FALLAH00
complete
upper tool



FA95EF00
complete die holder

PATENTED

- 10 punch stations with maximum diagonal mm 18

- It is specifically designed to prevent signs on the sheet metal

- Maximum tonnage on standard working:
- 12 Tons
Warning: This tonnage could limit both kind and speed of processing

- Quick strippers and ram unlocking

- Total lubrication: inner and external, manual or automatic

- It can be inserted in a normal Thick Turret D Station

- For punching machines with fixed station and rotating ram

- Quick strippers and punches change, without multitool opening

- Octagonal strippers for quick punch orientation with 45° steps

- Dies holder with 3 positioning references for each station

- External springs for easy replacement when maintaining

MULTIMATRIX FIXED SERIES

MultiMATRIX Series 10/18 and 10/18 AR-N - MAX Ø ∅ = mm 18

Dimensions (mm)

Punch: H = 113,5 Ø = 18
 Stripper: H = 12 Ø = 23
 Die: H = 20 Ø = 25



OPTIONS AND NOTES





MULTIMATRIX: MULTITOOLS WITH PUNCH HOLDERS



Tools codes indicated in our catalogues refer to the corresponding shape and can vary accordingly.

MultiMATRIX 2A-2B



F613AH00
complete
upper tool



F613VO00
complete die holder

- Holder for 2 Thick Turret A Stations (maximum tools diagonal mm 12,7) and 2 Thick Turret B Stations (maximum tools diagonal mm 31,7)
- For working thicknesses and technical characteristics refer to specifications of punch holders
- Die holder with 3 positioning references for each station
- It can be inserted in a normal Thick Turret D Station
- For punching machines with fixed station and rotating ram

MULTIMATRIX FIXED SERIES

MultiMATRIX 6A



F612AH00
complete
upper tool



F612EF00
complete die holder

- Holder for 6 Thick Turret A Stations (maximum tools diagonal mm 12,7)
- For working thicknesses and technical characteristics refer to the specifications of punch holders
- Die holder with 3 positioning references for each station
- It can be inserted in a normal Thick Turret D Station
- For punching machines with fixed station and rotating ram



TOOLS FOR MULTITOOLS

Tools codes indicated in our catalogues refer to the corresponding shape and can vary accordingly.

MultiMT Series 24 - MAX Ø ∅ = mm 24

Suitable Multitools
Mate Precision Tooling
MT6, MT8, MTE6, MTE10
Wilson Tool
MT6-24, MT8-24

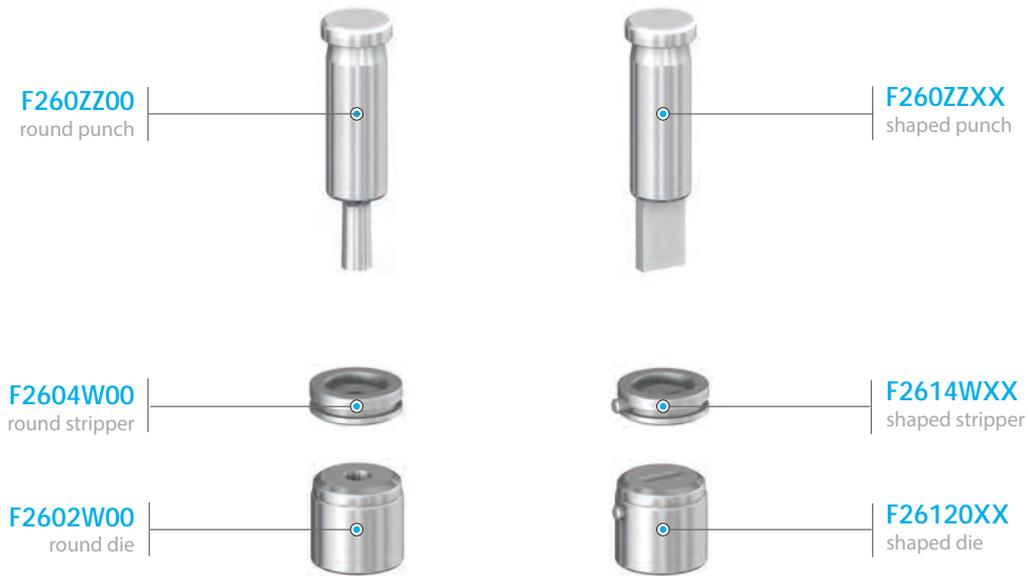


OPTIONS AND NOTES

Dimensions (mm) Punch: H = 70,5 Ø = 24 Stripper: H = 10,5 Ø = 30 Die: H = 24 Ø = 31										
							< 1,7 mm	< 4,0 mm	< 1,5 mm	

MultiMT Series 16 - MAX Ø ∅ = mm 16

Suitable Multitools
Mate Precision Tooling
MT10
Wilson Tool
MT6-16, MT10-16



OPTIONS AND NOTES

Dimensions (mm) Punch: H = 70,5 Ø = 16 Stripper: H = 8 Ø = 25 Die: H = 24 Ø = 25									
						< 1,7 mm	< 4,0 mm	< 1,5 mm	

MultiMT Series 8 - MAX Ø ∇ = mm 8

Suitable Multitools
 Mate Precision Tooling
 MT20, MT24, MTE10
 Wilson Tool
 MT12-8, MT20-8, MT24-8

F257ZZ00
round punch



F257ZZXX
shaped punch



F2574W00
round stripper



F2584WXX
shaped stripper



F2572W00
round die



F25820XX
shaped die

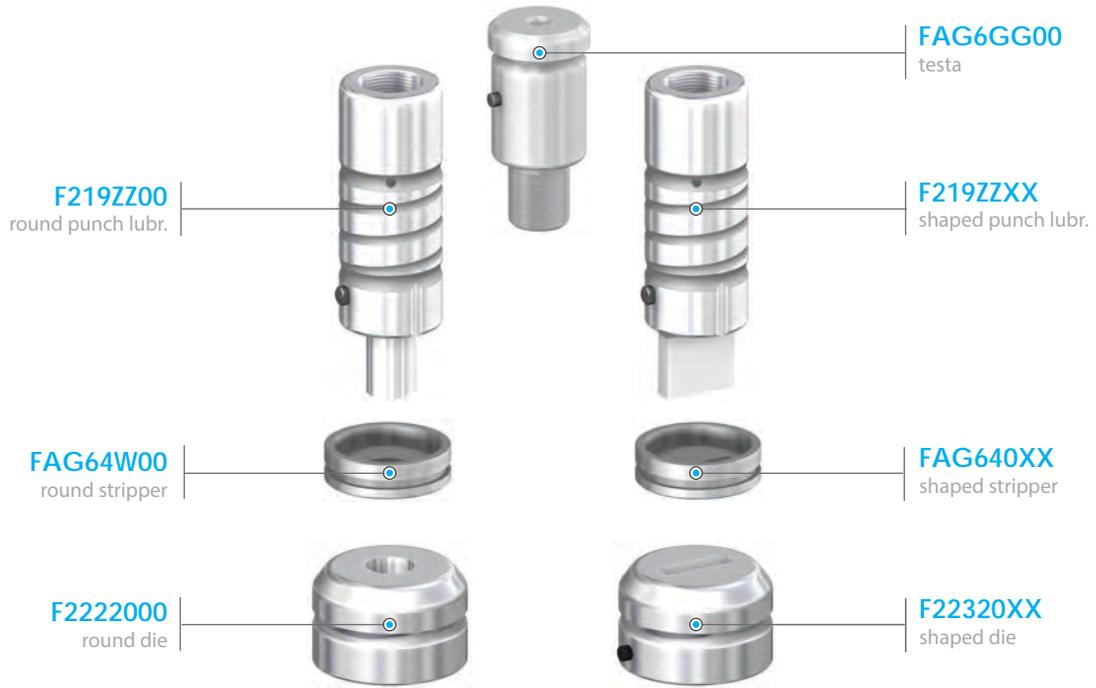


OPTIONS AND NOTES

Dimensions (mm)	WN	DWP							
Punch: H = 70,5 Ø = 8									
Stripper: H = 6 Ø = 16									
Die: H = 17 Ø = 16						< 1,7 mm	< 4,0 mm	< 1,5 mm	



MultiMT Series XB - MAX Ø ∅ = mm 31,7

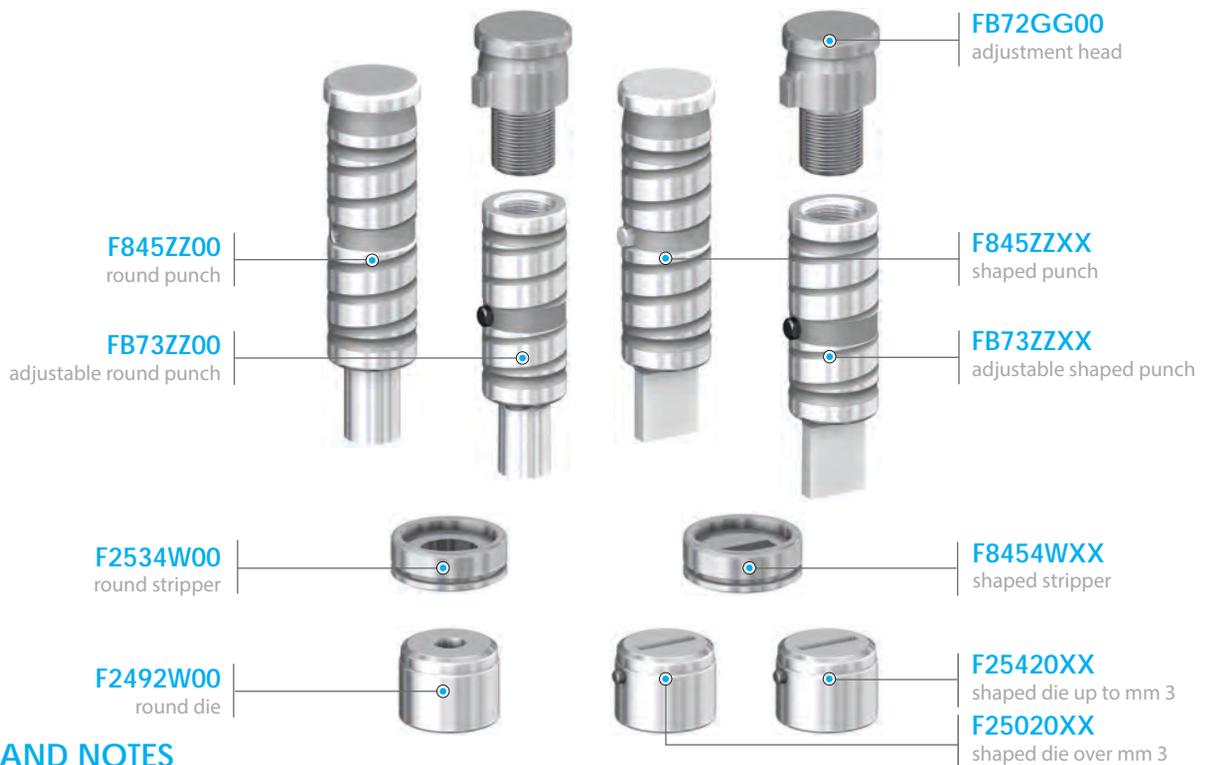


Suitable Multitools
Mate Precision Tooling
XMTTE4

OPTIONS AND NOTES

Dimensions (mm) Punch: H = 100,5 Ø = 31,75 Stripper: H = 11 Ø = 38,11 Die: H = 30,4 Ø = 47,62												

MultiMT Series 6/24-6 and 6/24-6 O-AR - MAX Ø ∅ = mm 24

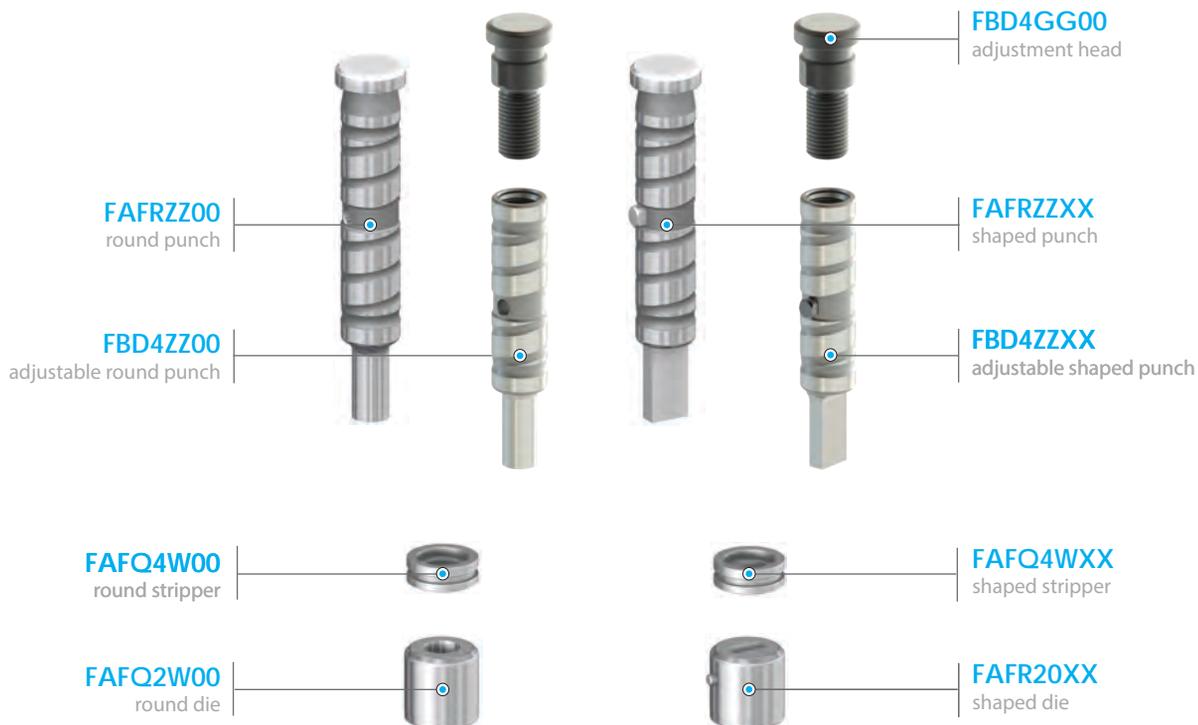


Suitable Multitools
Matrix
6/24-6 ERHP, 6/24-6 E-MMX
Mate Precision Tooling
XMTTE10

OPTIONS AND NOTES

Dimensions (mm) Punch: H = 100 Ø = 24 (6/24-6) Punch: H = 80,5 Ø = 24 (6/24-6 AR) Stripper: H = 10,5 Ø = 30 Die: H = 24 Ø = 31												

MultiMT Series X12,7 and X12,7 O-AR - MAX Ø \varnothing = mm 12,7



Suitable Multitools
Mate Precision Tooling
XMTE10

OPTIONS AND NOTES

Dimensions (mm)									
Punch: H = 100 Ø = 16									
Stripper: H = 7 Ø = 19,1									
Die: H = 20 Ø = 20									
						< 1,7 mm	< 4,0 mm	< 1,5 mm	



THICK TURRET B Station Lubricated - MAX Ø ∅ = mm 31,7

Suitable Multitools
Matrix
4B RHP, 4B F MMX, 4B R MMX
Mate Precision Tooling
MTE4, Ultra IMT3, Ultra MT3

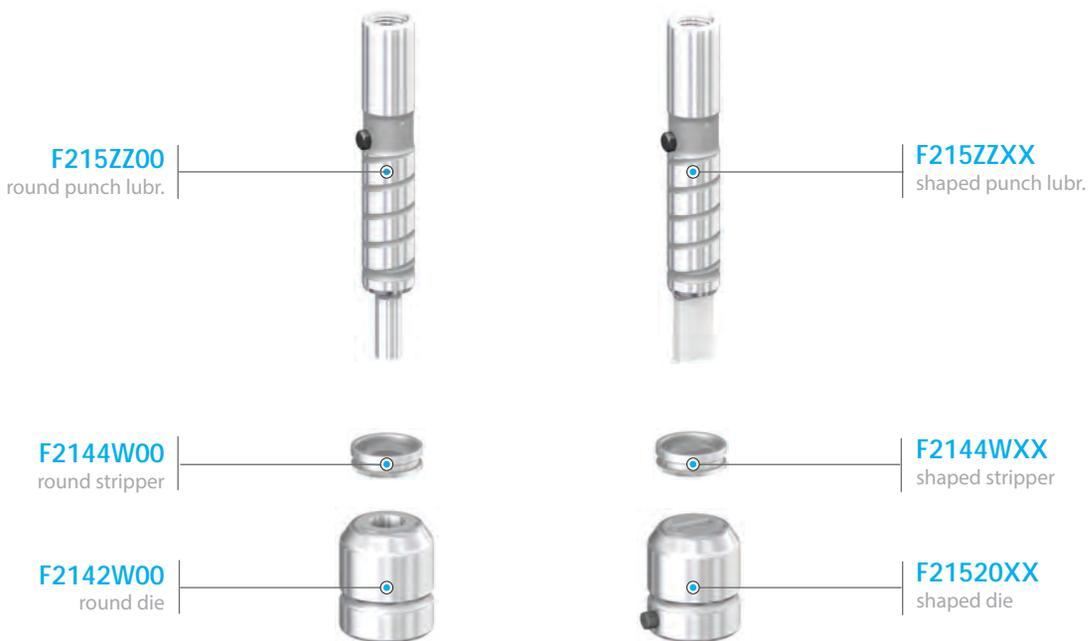


OPTIONS AND NOTES

Dimensions (mm) Punch: H = 100,5 Ø = 31,75 Stripper: H = 6,9 Ø = 38,05 Die: H = 30,4 Ø = 47,62													

THICK TURRET A Station Lubricated - MAX Ø ∅ = mm 12,7

Suitable Multitools
Mate Precision Tooling
Ultra IMT8, Ultra MT8



OPTIONS AND NOTES

Dimensions (mm) Punch: H = 108 Ø = 16 Stripper: H = 6,9 Ø = 19,05 Die: H = 30,4 Ø = 25,4										

THICK TURRET B Station W90L - MAX Ø \varnothing = mm 31,7

Suitable Multitools
Wilson Tool
MTX3RI

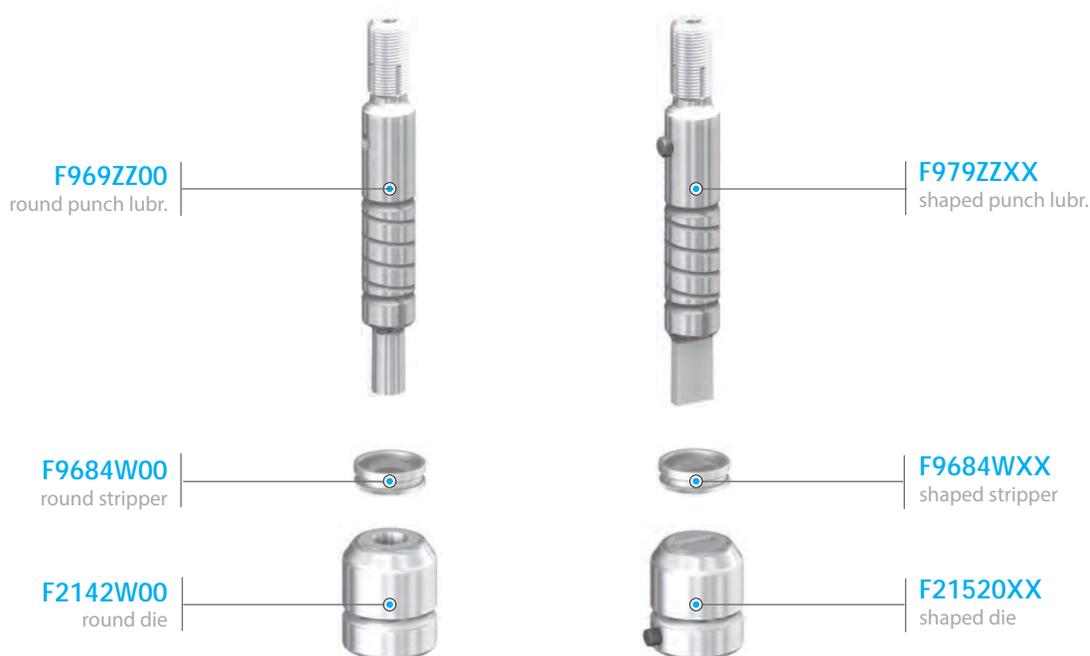


OPTIONS AND NOTES

Dimensions (mm) Punch: H = 100,5 Ø = 31,75 Stripper: H = 6,9 Ø = 38,05 Die: H = 30,4 Ø = 47,62												
									< 1,7 mm	< 4,0 mm	< 1,5 mm	

THICK TURRET A Station W90L - MAX Ø \varnothing = mm 12,7

Suitable Multitools
Wilson Tool
MTX8RI



OPTIONS AND NOTES

Dimensions (mm) Punch: H = 117,9 Ø = 15,87 Stripper: H = 6,9 Ø = 19,05 Die: H = 30,4 Ø = 25,4									
						< 1,7 mm	< 4,0 mm	< 1,5 mm	

MultiW Series 3B - MAX Ø ∅ = mm 31,7

Suitable Multitools
Wilson Tool
MT3Ri



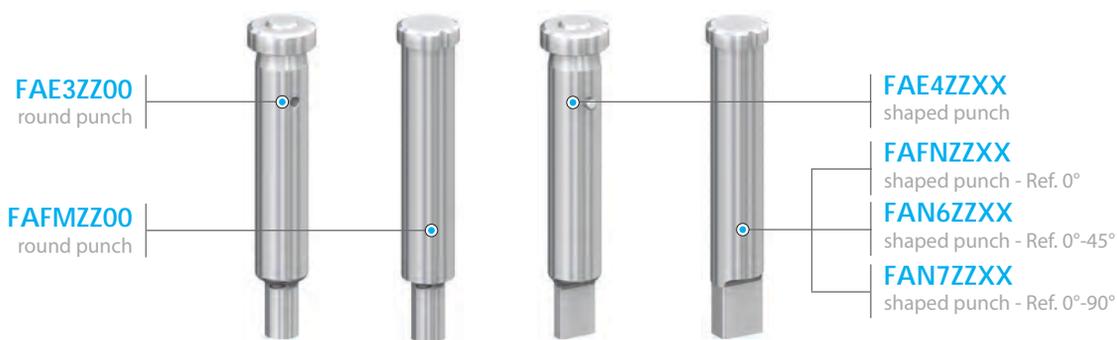
OPTIONS AND NOTES

Dimensions (mm) Punch: H = 100,5 Ø = 31,75 Stripper: H = 6,35 Ø = 39,9 (max) Die: H = 15,1 Ø = 47,62												
									< 1,7 mm	< 4,0 mm	< 1,5 mm	



MultiW Series 8/16 and 8/16 N - MAX Ø ∅ = mm 16

Suitable Multitools (8/16)
Wilson Tool
8 Stations MT for Nisshinbo (Old Design)



Suitable Multitools (8/16 N)
Matrix
8/16 R MMX
Wilson Tool
8 Stations MT for Nisshinbo (New Design),
MT8i, MT8Ri

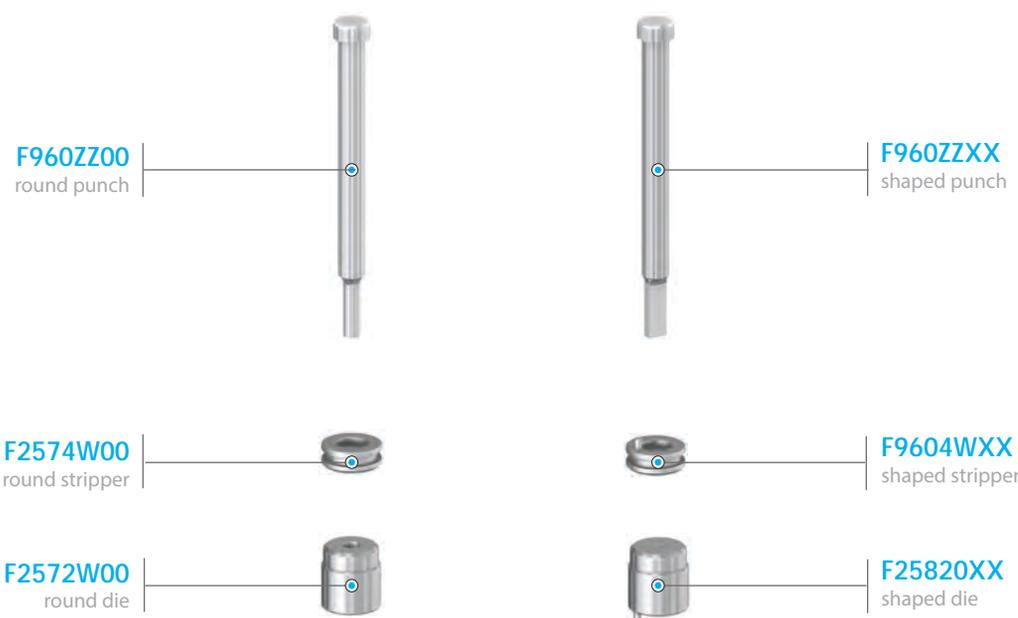


OPTIONS AND NOTES

Dimensions (mm)	WN	DWP							
Punch: H = 100 Ø = 16 (8/16)									
Punch: H = 100,5 Ø = 16 (8/16 N)									
Stripper: H = 7,6 Ø = 26,86 (max)									
Die: H = 17,6 Ø = 25,4									

MultiW Series 20/8 N - MAX Ø ∅ = mm 8

Suitable Multitools
Wilson Tool
MT20i



OPTIONS AND NOTES

Dimensions (mm)	WN	DWP							
Punch: H = 100,5 Ø = 8									
Stripper: H = 6 Ø = 16									
Die: H = 17 Ø = 16									

OPTIONS

SURFACE COATINGS (PVD)

In order to improve working characteristics, the surface of all punches can be coated; this treatment gives the tool surface a considerably greater hardness and self-lubrication. MATRIX uses two types of coatings, Type A (Titanium Nitrite) and type B (Titanium-Aluminum Nitrite).

The Type A coating is yellow-gold in color, and provides the punch with a surface

hardness which is up to four times higher and an optimal self-lubrication capability with a friction coefficient equal to 0,44. It is recommended for very demanding working processes, without lubrication or with soft materials which are difficult to be pulled, such as copper or aluminum alloys.

Type B coating is grey in color and is an evolution of the previous type which gives a

greater hardness and a better compactness on the tool surface for a longer tool life; this coating withstands higher temperature, slightly lower than 900°. Because of these characteristics, it is recommended in cases of high speed punching machines (500÷1000 strokes per minute) and it's also excellent for STAINLESS STEEL processing.

ANTI SLUG

Scrap pulling during the punching process might cause different problems, such as machine downtime or tool damage or indeed damage to the worked piece.

For this reasons and in order to avoid the problem, our dies are designed with this in mind.

According to clients' needs, Matrix always recommends the most suitable solution when choosing the correct die.

SHEAR SHARPENING

The term Whisper sharpening of punches means the various possible punch geometries, made only on demand. Sharpening benefits are:

- Noise Reduction
- Reduction of vibration and counterstrokes of all machine components
- Slug pulling reduction

- Tonnage reduction
- Easy pulling

Tools with special sharpening require a deeper penetration on the die, giving a greater loading to the punch holders springs.

The most commonly used sharpenings are the following:

- **DVS** for shearing tools and high thicknesses
- **DWP** for balanced loadings and high thicknesses
- **DWNT** for low thicknesses - nibbling processes with big shapes
- **WNT** for low thicknesses - nibbling processes with small shapes
- **WN** for high thicknesses - punching machine very fast and rigid



MAXIMUM DIAGONAL FOR THICK TURRET TOOL TYPE SERIES

A STATION	B STATION	C STATION	D STATION	E STATION	F STATION
12.7 mm	31.7 mm	50.8 mm	88.9 mm	114.3 mm	153.5 mm

GENERAL TONNAGE CALCULATION FORMULA

$$F(\text{kN}) = \frac{P \times S \times K \times R}{1000}$$

P = shape perimeter
S = material thickness in mm
K = material shear strenght
R = reduction factor for standard sharpening

Material	K material*
Aluminium (soft)	150 N/mm ²
Aluminium (hard)	250 N/mm ²
Copper and brass	250 N/mm ²
Mild steel	350 N/mm ²
Stainless steel	600 N/mm ²

Example: $\frac{40 \text{ (square perimeter of 10 mm edge)} \times 2 \text{ (material thickness)} \times 600 \text{ (K Stainless Steel)} \times 0,4 \text{ (R for DWP)}}{1000} = 19,2 \text{ kN}$

*The table shows average coefficients for standard sheet metal. For a specific tonnage calculation it is necessary to know the exact characteristics of the material.

TONNAGE REDUCTION THROUGH DWP SHARPENING

Find here below an illustrative table concerning tonnage reduction, considering DWP shear with standard depth.

Material thickness in mm	1	1,5	2	2,5	3	4	5	6
Reduction factor (R)	0,4	0,5	0,6	0,65	0,75	0,80	0,85	0,90

DIE CLEARANCE EXPRESSED IN PERCENTAGE OF THE MATERIAL THICKNESS

Material	Thickness Range	Minimum or Blanking**	Standard	Maximum
Aluminium Copper Brass 100÷280 N/mm ²	Up to mm 1,4	8%	14%	16%
	From to mm 1,5 mm 3,0	10%	18%	20%
	Over mm 3,1	12%	20%	24%
Mild steel 281÷580 N/mm ²	Up to mm 2,4	15%	18%	20%
	From to mm 2,5 mm 4,4	18%	22%	25%
	Over mm 4,5	20%	25%	30%
Stainless steel Over 581 N/mm ²	Up to mm 1,4	15%	20%	22%
	From to mm 1,5 mm 2,4	18%	22%	25%
	Over mm 2,5	20%	25%	28%

When choosing the clearance to be applied, it is also important to refer to the effective cutting resistance and not just to the type of material.

**Blanking: when the scrap in the requested part.

MULTIMATRIX MAINTENANCE

Every precision mechanism requires a proper maintenance to keep its own characteristics and when the equipment is very important for the production line, to do without it, often turns into an economic loss.

To avoid even brief machine stops it is important to consider a preventive maintenance of key equipments. For these reasons Matrix offers a rapid maintenance service for its MultiMATRIX range.

The standard package includes:

- Complete disassembling and verification of every single element
- Replacement of all compressing springs
- Replacement of all collar screws
- Replacement of the main small metal parts
- Replacement of rubber pins
- Assembling and testing

To minimize the machine stop, the whole process will be carried out within 48 hours from receipt of the Multitool.

You can also join an annual programmed maintenance service and decide together with our commercial department the most convenient date to carry it out.

For further information please contact our sales department at: sales@matrixtools.eu

GRINDING: THE IMPORTANCE OF TOOLING MAINTENANCE

Professional grinding and maintenance grant better performances and long lasting tools.

All this can be done by the machine operators using our grinding machines and accessories, for easy and quick operations. Matrix can satisfy all these needs thanks to our machines range, accessories and instructions. Specific documentation available upon request.

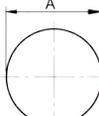
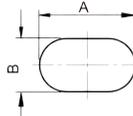
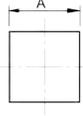
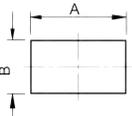
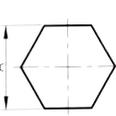
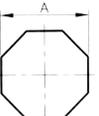
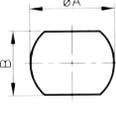
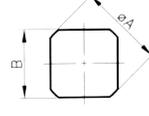
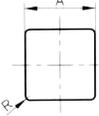
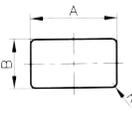
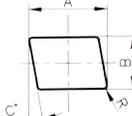
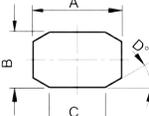
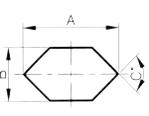
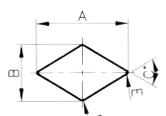
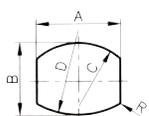
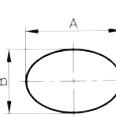
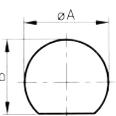
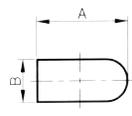
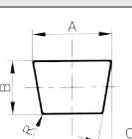
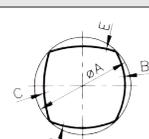
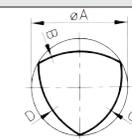
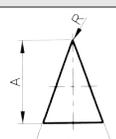
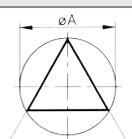
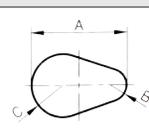
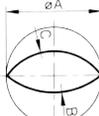
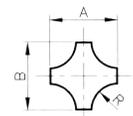
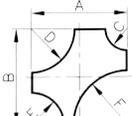
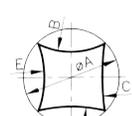
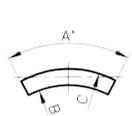
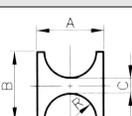
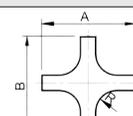
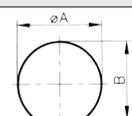
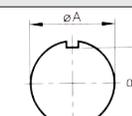
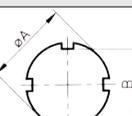
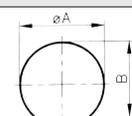
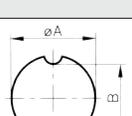
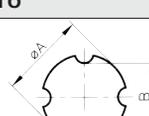
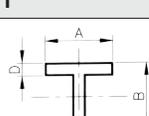
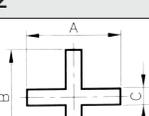
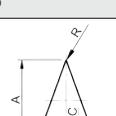
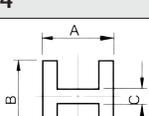
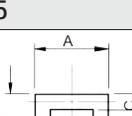
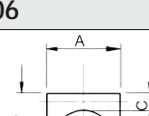
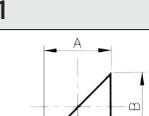
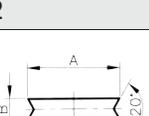
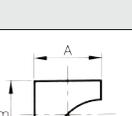
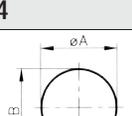
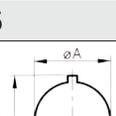
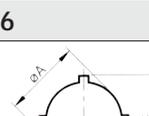
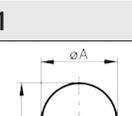
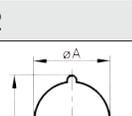
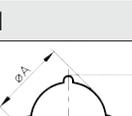
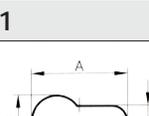
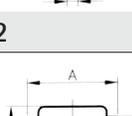
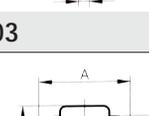
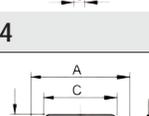
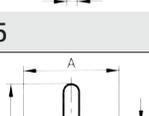
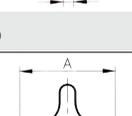
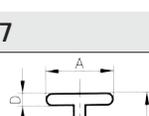
The MGM-150A is the innovative Automatic Sharpening Machine that MATRIX offers for all the punching-tool grinding needs.

Here below listed the remarkable features that make the MGM-150A unique and functional:

- Innovative and easy to use
- Automatic set of the zero-tool
- Fully automatic grinding cycle (with optional manual mode)
- A specifically designed electronic system automatically adjusts the sharpening parameters (patent pending)
- Sharp milling with high standard CBN and controlled lubrication
- Electronic flow detection of the coolant with automatic cycle stop to guarantee the best sharpening
- Coolant filter system, easily accessible for cleaning and maintenance. The contaminated liquid flows on magnetic pad, three decanting tanks and a final filter before going back in circle free of impurities
- Self-centering four jaws spindle for sharpening of the most common tools (Trumpf, Turret, Multitool, Salvagnini, etc.) , no need of adapters
- Tilting table for Whisper WN or Double Whisper DWP sharpening
- First and unique system for the automatic whisper angle (0-15 °) setting (patent pending)
- Mitsubishi LCD control panel with touch interface for a quick and intuitive managing of all the necessary operations
- Made in Matrix, Made in Italy



MATRIX SHAPE CODING

					
A0A	A0B	A0C	A0D	A01	A02
					
A03	A04	A05	A06	B01	B02
					
B03	B04	B05	B06	C01	C02
					
C03	C04	C05	C06	C07	C08
					
C09	C10	C11	C12	C13	C14
					
C15	C16	D01	D02	D03	D04
					
D05	D06	E01	E02	E03	E04
					
E05	E06	F01	F02	G01	H01
					
H02	H03	H04	H05	H06	H07
					
H08	H09	H10	H11	H12	H13

OPTION LEGEND

	DWP Sharpening for balanced loadings and high thicknesses (pag. 46)		Shaped dies with 3 references references: 0° , -90° e -225°
	WN Sharpening for high thicknesses - very rigid and fast punching machines (pag. 46)		Punches with small dim. shapes ≥1,5 mm ≥ 1,5 mm < 4,0 mm
	DVS Sharpening for shearing tools and high thicknesses (pag. 46)		Punches with small dim. shapes <1,5 mm < 1,5 mm
	DWNT Sharpening for thin thicknesses - nibbling processes with big shapes (pag. 46)		Dies with small dim. shapes < 1,7 mm including clearance
	WNT Sharpening for thin thicknesses - nibbling processes with small shapes (pag. 46)		Strengthened shaped die for high thicknesses
	Surface coatings (PVD) In order to improve working characteristics, the surface of all punches can be coated. 5 extra working days required (pag. 46)		Standard external references
	Punches with rotated shapes		Anti slug available on dies with clearance equal to mm 0,13 and over (pag. 46)
	Punch guides with rotated shapes		Air Blow® Japanese tools style
	Dies with rotated shapes		90 Series® American tools style

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GUIDE TO PRODUCT CODES

MATRIX CODING

CODE BREAKDOWN									
F		219		WW		XX		.YYY	
TYPE OF ARTICLE		TOOLS FAMILY		TOOLS AND OPTIONS		SHAPE		DIMENSIONS	
Code	Description	Code	Description	Code	Description	Code	Description	Code	Description
F	finished	219	punch B station	00	punch	00	round	000	ø 3 mm
A	purchase	223	die B station	20	die	01	obround	001	ø 3,5 mm
S	blank untempered	236	thick turret D	40	stripper	02	square	002	ø 4 mm
		FB11	Jetform C stat.	60	round punch guide	03	rectangle	003	ø 4,5 mm
T	blank tempered	250	MultiMatrix	63	die adaptor	A1	A01 special	004	ø 5 mm
		AJ4	Jetform B stat.	68	punch adaptor	B1	B01 special	005	ø 5,5 mm
		F254	Multimt	AF	punch guide	C1	C01 special	006	ø 6 mm
		AAW	Jetform D stat.	EF	die holder	CA	C10 special	007	ø 6,5 mm
		ALP	6/24 R MMX	B0	punch coat. "A"	D1	D01 special	008	ø 7 mm
		311	Trumpf®	L0	DWP punch	E1	E01 special	018	ø 12 mm
		[...]	[...]	[...]	[...]	[...]	[...]	[...]	[...]

MULTITOOL-TOOLS LINK TABLE

MATRIX - MultiMATRIX 4B		
Tooling:	<i>Thick Turret - B Station Standard</i>	<i>See Thick Turret catalog</i>
MATRIX - MultiMATRIX 4B RHP		
Tooling:	<i>Thick Turret - B Station Lubricated</i>	Page: 11, 23, 38
MATRIX - MultiMATRIX 4B F MMX		
Tooling:	<i>Thick Turret - B Station Lubricated</i>	Page: 11, 23, 38
MATRIX - MultiMATRIX 4B R MMX		
Tooling:	<i>Thick Turret - B Station Lubricated</i>	Page: 11, 23, 38
MATRIX - MultiMATRIX 2A-2B		
Tooling:	<i>Thick Turret - A Station</i>	<i>See Thick Turret catalog</i>
	<i>Thick Turret - B Station</i>	<i>See Thick Turret catalog</i>
MATRIX - MultiMATRIX 6A		
Tooling:	<i>Thick Turret - A Station</i>	<i>See Thick Turret catalog</i>
MATRIX - MultiMATRIX 6/24		
Tooling:	<i>MultiMATRIX Series 6/24</i>	Page: 13, 25
	<i>MultiMATRIX Series 6/24 AR-N</i>	Page: 13, 25
MATRIX - MultiMATRIX 6/24 F MMX		
Tooling:	<i>MultiMATRIX Series 6/24</i>	Page: 13, 25
	<i>MultiMATRIX Series 6/24 AR-N</i>	Page: 13, 25
MATRIX - MultiMATRIX 6/24 FR MMX		
Tooling:	<i>MultiMATRIX Series 6/24</i>	Page: 13, 25
	<i>MultiMATRIX Series 6/24 AR-N</i>	Page: 13, 25
MATRIX - MultiMATRIX 6/24 N		
Tooling:	<i>MultiMATRIX Series 6/24</i>	Page: 13, 25
	<i>MultiMATRIX Series 6/24 AR-N</i>	Page: 13, 25
MATRIX - MultiMATRIX 6/24 NR		
Tooling:	<i>MultiMATRIX Series 6/24</i>	Page: 13, 25
	<i>MultiMATRIX Series 6/24 AR-N</i>	Page: 13, 25
MATRIX - MultiMATRIX 6/24 R		
Tooling:	<i>MultiMATRIX Series 6/24</i>	Page: 13, 25
	<i>MultiMATRIX Series 6/24 AR-N</i>	Page: 13, 25
MATRIX - MultiMATRIX 6/24 R MMX		
Tooling:	<i>MultiMATRIX Series 6/24</i>	Page: 13, 25
	<i>MultiMATRIX Series 6/24 AR-N</i>	Page: 13, 25
MATRIX - MultiMATRIX 6/24 RF MMX		
Tooling:	<i>MultiMATRIX Series 6/24</i>	Page: 13, 25
	<i>MultiMATRIX Series 6/24 AR-N</i>	Page: 13, 25
MATRIX - MultiMATRIX 6/24 RHP		
Tooling:	<i>MultiMATRIX Series 6/24</i>	Page: 13, 25
	<i>MultiMATRIX Series 6/24 AR-N</i>	Page: 13, 25
MATRIX - MultiMATRIX 6/24 RHP-N		
Tooling:	<i>MultiMATRIX Series 6/24</i>	Page: 13, 25
	<i>MultiMATRIX Series 6/24 AR-N</i>	Page: 13, 25
MATRIX - MultiMATRIX 6/24 RN		
Tooling:	<i>MultiMATRIX Series 6/24</i>	Page: 13, 25
	<i>MultiMATRIX Series 6/24 AR-N</i>	Page: 13, 25

MATRIX - MultiMATRIX 6/24-6 E-MMX		
Tooling:	MultiMT Series 6/24-6	Page: 15, 36
	MultiMT Series 6/24-6 O-AR	Page: 15, 36
MATRIX - MultiMATRIX 10/24-C R		
Tooling:	MultiMATRIX Series 6/24	Page: 13, 25
	MultiMATRIX Series 6/24 AR-N	Page: 13, 25
	Thick Turret - C Station	See Thick Turret catalog
MATRIX - MultiMATRIX 10/18 F MMX		
Tooling:	MultiMATRIX Series 10/18 and 10/18 AR-N	Page: 17, 27
MATRIX - MultiMATRIX 10/18 FR MMX		
Tooling:	MultiMATRIX Series 10/18 and 10/18 AR-N	Page: 17, 27
MATRIX - MultiMATRIX 10/18 N		
Tooling:	MultiMATRIX Series 10/18 and 10/18 AR-N	Page: 17, 27
MATRIX - MultiMATRIX 10/18 NR		
Tooling:	MultiMATRIX Series 10/18 and 10/18 AR-N	Page: 17, 27
MATRIX - MultiMATRIX 10/18 R		
Tooling:	MultiMATRIX Series 10/18 and 10/18 AR-N	Page: 17, 27
MATRIX - MultiMATRIX 10/18 R MMX		
Tooling:	MultiMATRIX Series 10/18 and 10/18 AR-N	Page: 17, 27
MATRIX - MultiMATRIX 10/18 RF MMX		
Tooling:	MultiMATRIX Series 10/18 and 10/18 AR-N	Page: 17, 27
MATRIX - MultiMATRIX 10/18 RHP		
Tooling:	MultiMATRIX Series 10/18 and 10/18 AR-N	Page: 17, 27
MATRIX - MultiMATRIX 10/18 RHP-N		
Tooling:	MultiMATRIX Series 10/18 and 10/18 AR-N	Page: 17, 27
MATRIX - MultiMATRIX 10/18 RN		
Tooling:	MultiMATRIX Series 10/18 and 10/18 AR-N	Page: 17, 27
MATRIX - MultiMATRIX 8/16 R MMX		
Tooling:	MultiW Series 8/16 N	Page: 19, 41
MATE PRECISION TOOLING - MT6		
Tooling:	MultiMT Series 24	Page: 34
MATE PRECISION TOOLING - MT8		
Tooling:	MultiMT Series 24	Page: 34
MATE PRECISION TOOLING - MT10		
Tooling:	MultiMT Series 16	Page: 34
MATE PRECISION TOOLING - MT20		
Tooling:	MultiMT Series 8	Page: 35
MATE PRECISION TOOLING - MT24		
Tooling:	MultiMT Series 8	Page: 35
MATE PRECISION TOOLING - MTE4		
Tooling:	TThick Turret - B Station Lubricated	Page: 11, 23, 38
MATE PRECISION TOOLING - MTE6		
Tooling:	MultiMT Series 24	Page: 34
MATE PRECISION TOOLING - MTE10		
Tooling:	MultiMT Series 24	Page: 34
	MultiMT Series 8	Page: 35
MATE PRECISION TOOLING - ULTRA IMT3		
Tooling:	Thick Turret - B Station Lubricated	Page: 11, 23, 38
MATE PRECISION TOOLING - ULTRA IMT8		
Tooling:	Thick Turret - A Station Lubricated	Page: 38

MATE PRECISION TOOLING - ULTRA MT3		
Tooling:	<i>Thick Turret - B Station Lubricated</i>	Page: 11, 23, 38
MATE PRECISION TOOLING - ULTRA MT8		
Tooling:	<i>Thick Turret - A Station Lubricated</i>	Page: 38
MATE PRECISION TOOLING - XMTE4		
Tooling:	<i>MultiMT Series XB</i>	Page: 36
MATE PRECISION TOOLING - XMTE6 (Long)		
Tooling:	<i>MultiMT Series 6/24-6</i>	Page: 15, 36
	<i>MultiMT Series 6/24-6 AR</i>	Page: 15, 36
MATE PRECISION TOOLING - XMTE10		
Tooling:	<i>MultiMT Series 6/24-6</i>	Page: 15, 36
	<i>MultiMT Series 6/24-6 O-AR</i>	Page: 15, 36
	<i>MultiMT Series X12,7</i>	Page: 37
	<i>MultiMT Series X12,7 O-AR</i>	Page: 37
WILSON TOOL - MT3Ri		
Tooling:	<i>MultiW Series 3B</i>	Page: 40
WILSON TOOL - MTX3Ri		
Tooling:	<i>Thick Turret - B Station W90L</i>	Page: 39
WILSON TOOL - MT6-16		
Tooling:	<i>MultiMT Series 16</i>	Page: 34
WILSON TOOL - MT6-24		
Tooling:	<i>MultiMT Series 24</i>	Page: 34
WILSON TOOL - MT8i		
Tooling:	<i>MultiW Series 8/16 N</i>	Page: 41
WILSON TOOL - MT8Ri		
Tooling:	<i>MultiW Series 8/16 N</i>	Page: 41
WILSON TOOL - MTX8Ri		
Tooling:	<i>Thick Turret - A Station W90L</i>	Page: 39
WILSON TOOL - MT8-24		
Tooling:	<i>MultiMT Series 24</i>	Page: 34
WILSON TOOL - MT10-16		
Tooling:	<i>MultiMT Series 16</i>	Page: 34
WILSON TOOL - MT12-8		
Tooling:	<i>MultiMT Series 8</i>	Page: 35
WILSON TOOL - MT20i		
Tooling:	<i>MultiW Series 20/8 N</i>	Page: 41
WILSON TOOL - MT20-8		
Tooling:	<i>MultiMT Series 8</i>	Page: 35
WILSON TOOL - MT24-8		
Tooling:	<i>MultiMT Series 8</i>	Page: 35
WILSON TOOL - 8 Stations Multi-Tool for Nisshinbo Punch Presses		
Tooling:	<i>MultiW Series 8/16 (Old Design)</i>	Page: 41
	<i>MultiW Series 8/16 N (New Design)</i>	Page: 41

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Vertrauen Sie auf über 70 Jahre Erfahrung!

Die Firma HESSE+CO wurde 1947 als Hersteller von Blechbearbeitungsmaschinen gegründet. Seit 1980 sind wir auf den Handel mit neuen sowie gebrauchten Blechbearbeitungs- und Werkzeugmaschinen spezialisiert. Wir haben ständig etwa 300 Maschinen in unserer 2.000 m² großen Ausstellungshalle, die nur 20 Minuten vom internationalen Flughafen Wien entfernt ist.

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