MATRIX

multitools and tooling

MULTIMATRIX

INDEX

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

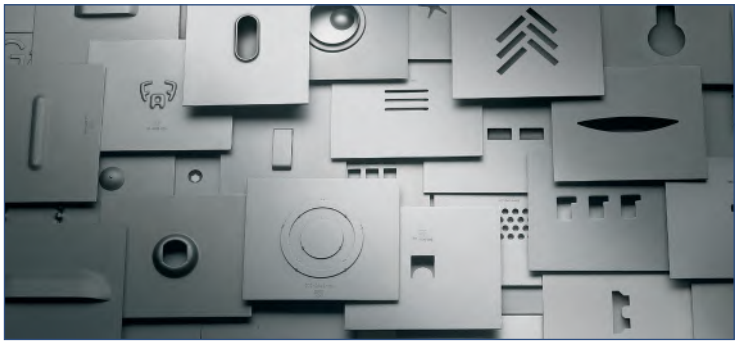
Manufactured with steels either resistant to wearing or heavy stress, produced with proper tolerances to guarantee endurance to punches and punching machine turret.
All guides are hardened and whenever possible, supplied with proper lubricating grooves.

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.

0°

45°

90°

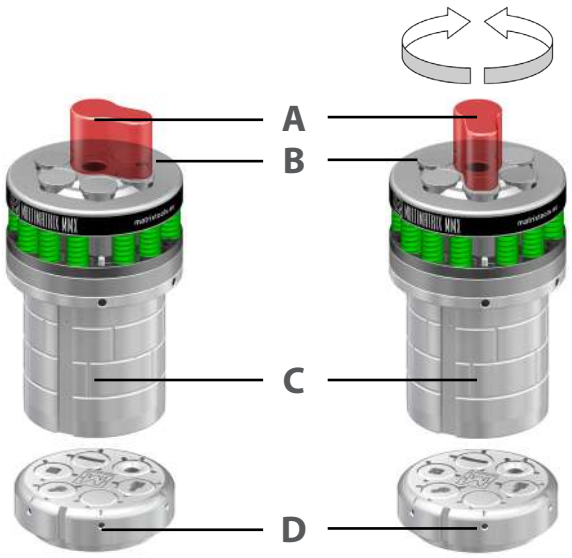
• • •

0°÷360°

MULTIMATRIX WITH FIXED HEAD

TOOL SELECTION

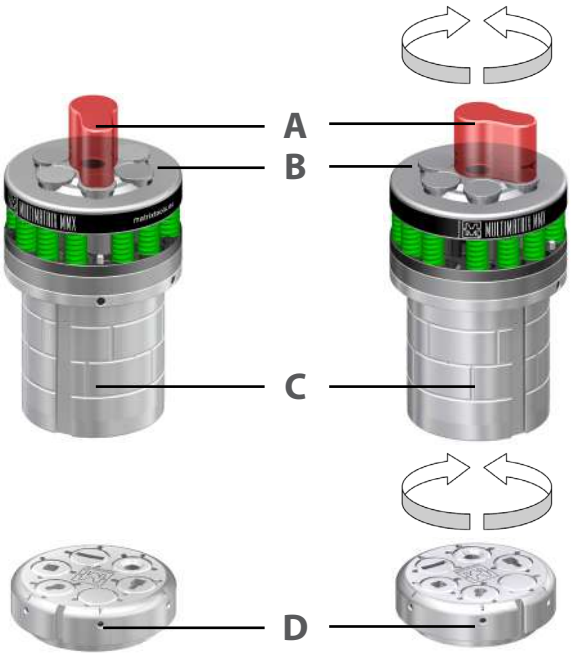
In order to use a MultiMATRIX with fixed head it's necessary that punching machine is equipped with ram (A) conformed in order to hit one tool at a time besides the center of head (B) of the MultiMATRIX.
The ram selects the required tool by rotation.



Tool selection

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 indexing

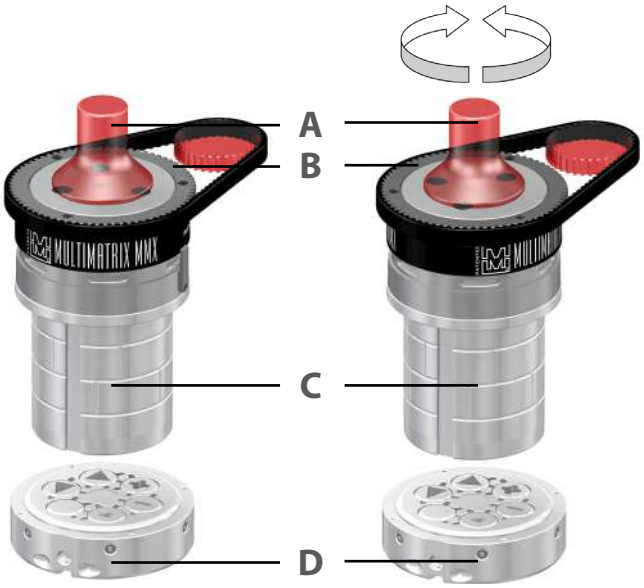
MULTIMATRIX WITH ROTATING HEAD

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.



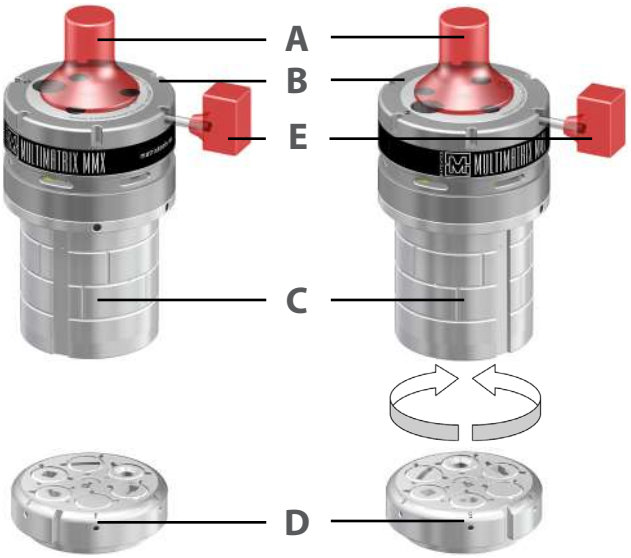
Tool selection with pulley or belt

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).

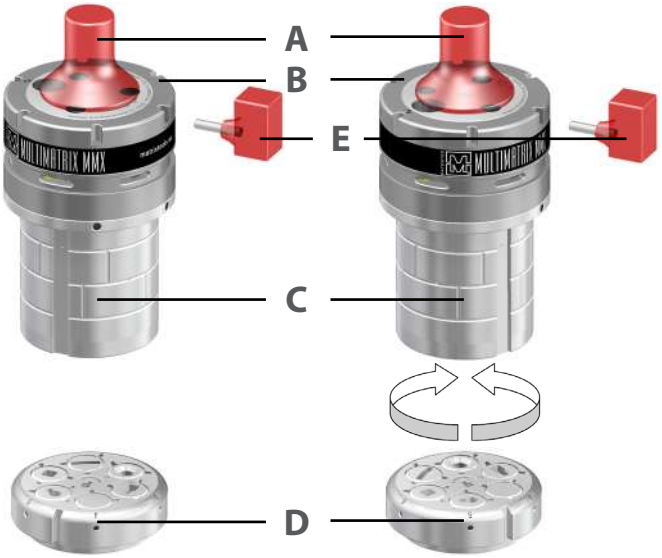


Tool selection with rotating station

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

PROGRAMMING AND USE SUGGESTIONS

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

Neverthless, 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 infomation 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.

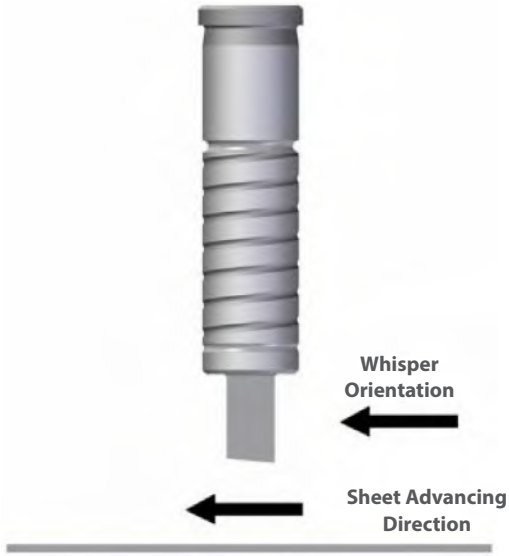


FIGURE A

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

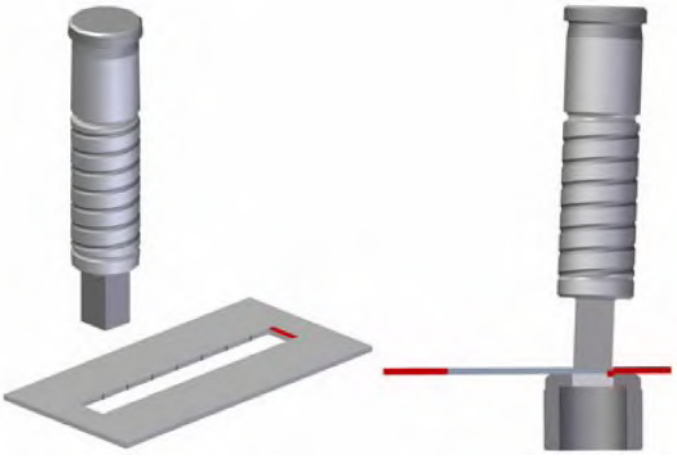


FIGURE B

On such situation, due to side load, the tool tendes 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.

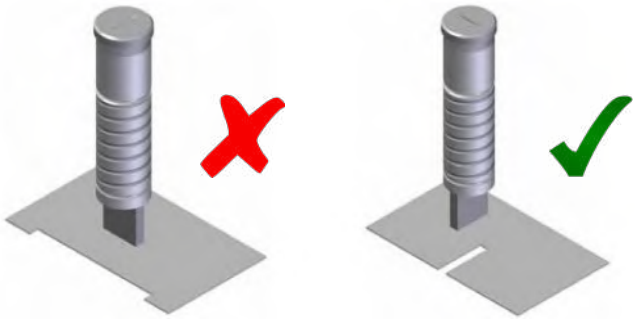


FIGURE C

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.

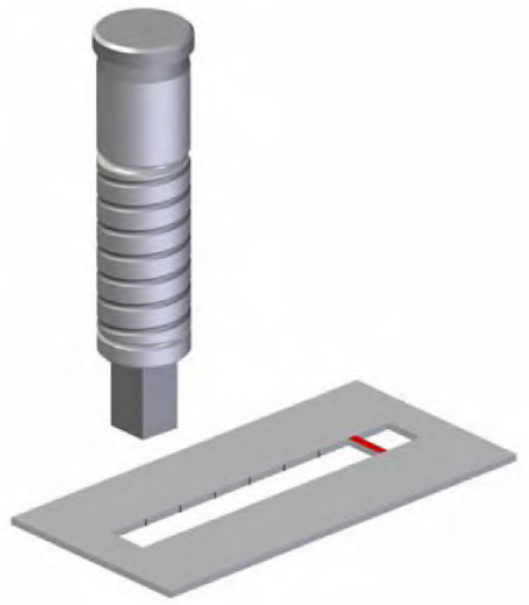


FIGURE D

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 diamter 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.

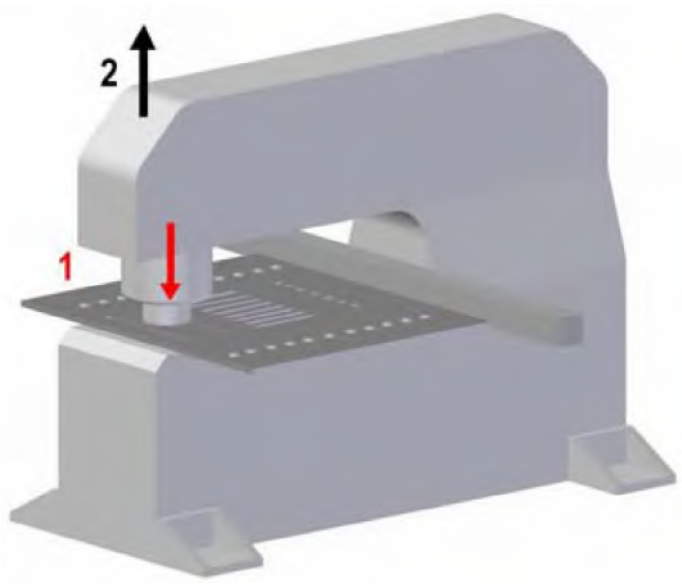


FIGURE E

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.

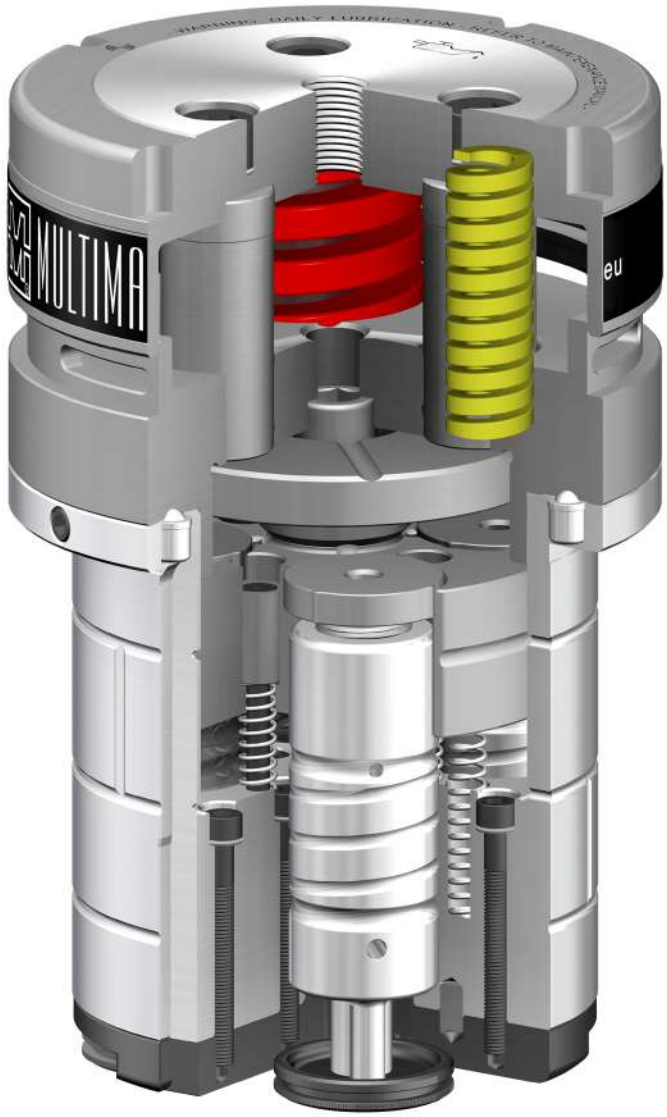
Before proceeding with any action on the multitool, in case of doubts please contact the manufacturer.

MATRIX

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

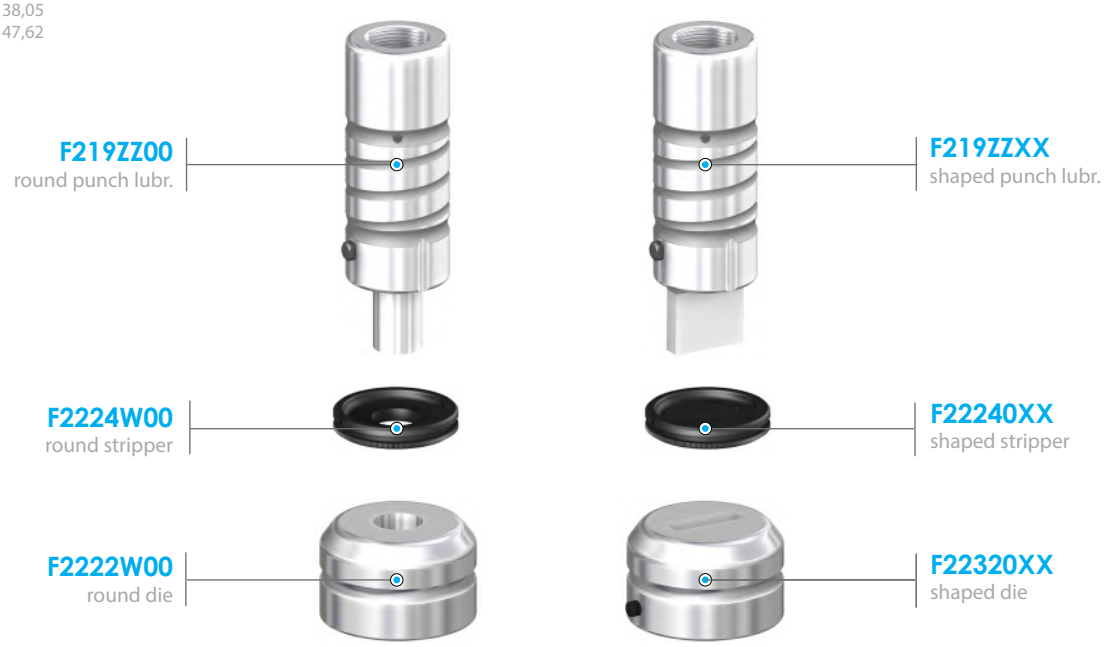
  Warning: These thicknesses could limit both kind and speed of processing
- Quick stripper unlocking
- Total lubrication: inner and external, manual or automatic
- It can be inserted in a normal Thick Turret D Station
- It can be used in punch machine with rotating station (index)
- Customizable upper part according to specific requirements, for several machine models

MULTIMATRIX ROTATING SERIES

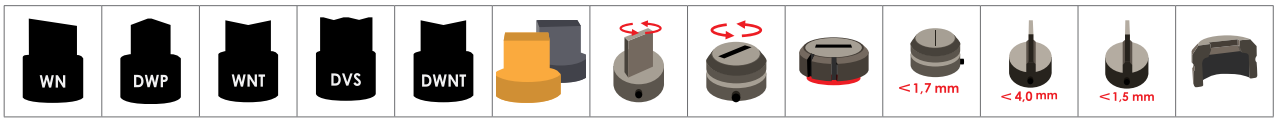
THICK TURRET B Station - Lubricated - MAX Ø ⍁ = mm 31,7

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

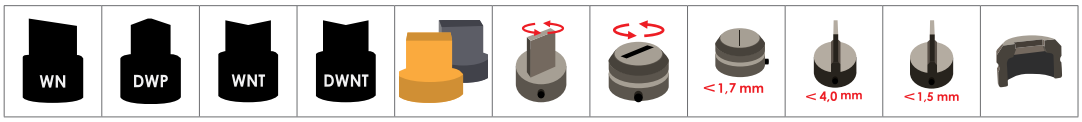
MULTIMATRIX ROTATING SERIES

MultiMATRIX Series 6/24 and Series 6/24 AR - 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

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

FB64EF00
complete die holder

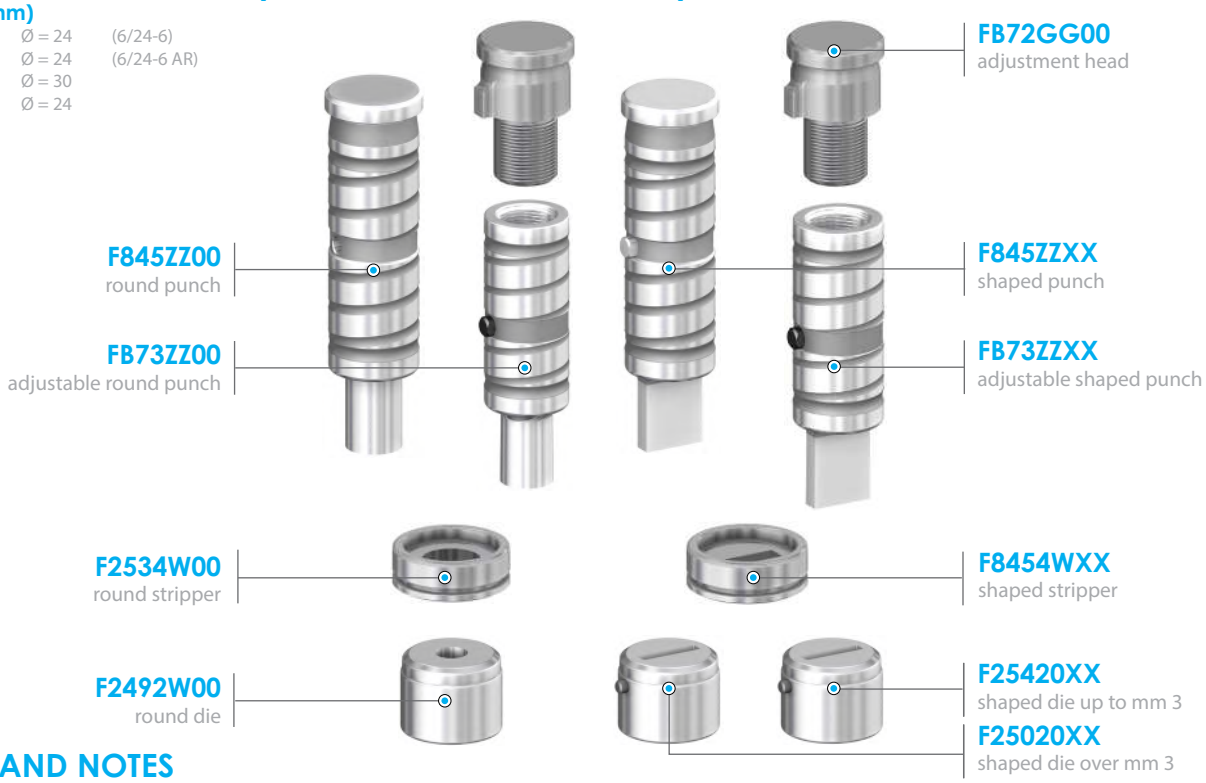
FB648000
interchangeable pinch
for die holder

MULTIMATRIX ROTATING SERIES

MultiMT Series 6/24-6 and Series 6/24-6 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



FB72GG00
adjustment head

F845ZZ00
round punch

F845ZZXX
shaped punch

FB73ZZ00
adjustable round punch

FB73ZZXX
adjustable shaped punch

F2534W00
round stripper

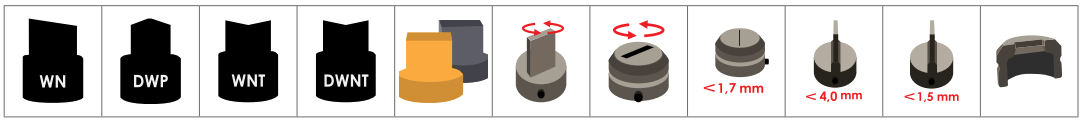
F8454WXX
shaped stripper

F2492W00
round die

F25420XX
shaped die up to mm 3

F25020XX
shaped die over mm 3

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

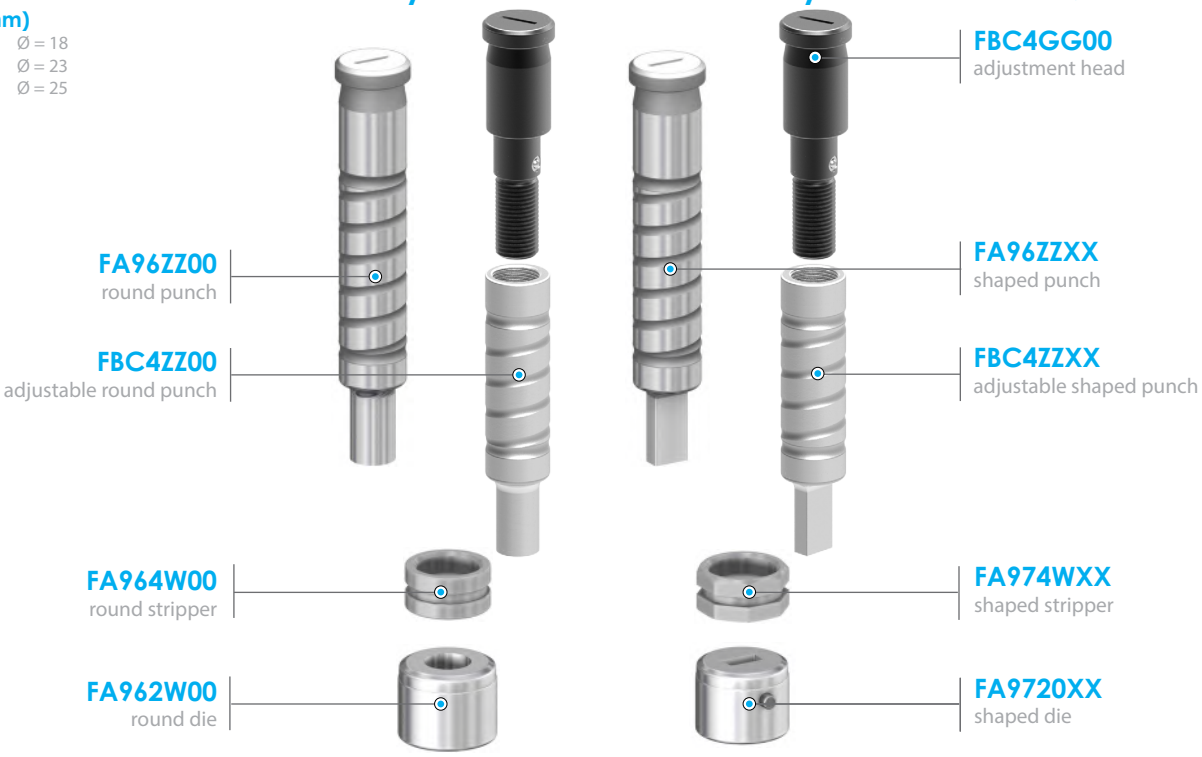
  Warning: This tonnage could limit both kind and speed of processing
- Quick stripper unlocking
- Total lubrication: inner and external, manual or automatic
- It can be inserted in a normal Thick Turret D Station
- It can be used in punch machine with rotating station (index)
- Customizable upper part 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

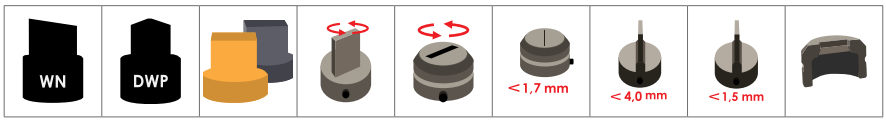
MultiMATRIX Series 10/18 and Series 10/18 AR - MAX Ø ⍁ = mm 18

Dimensions (mm)

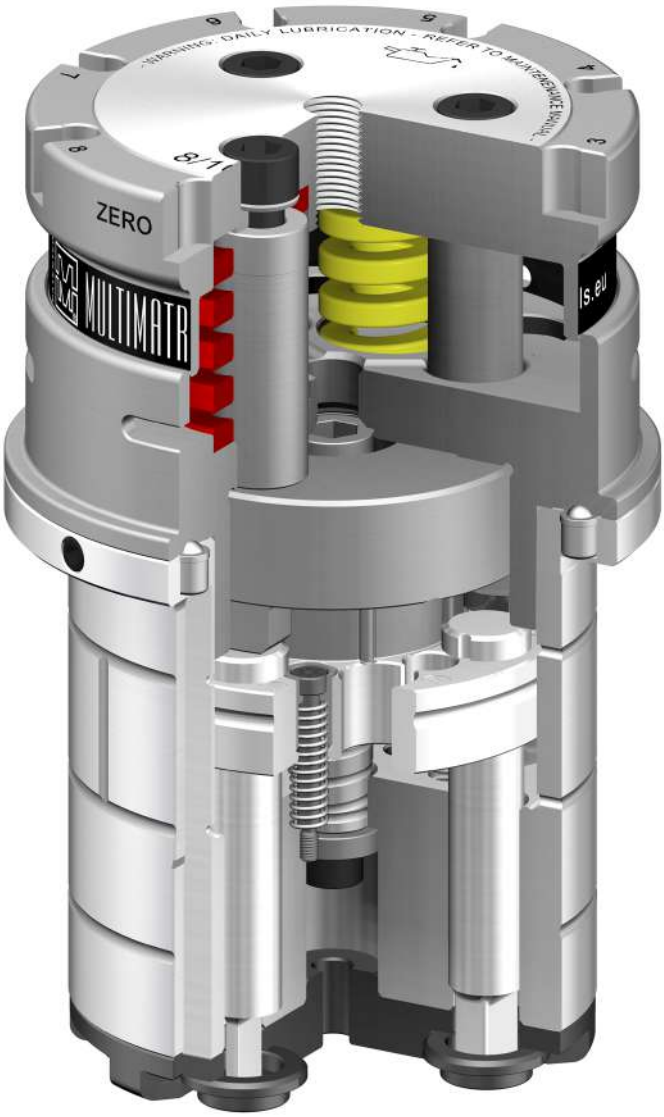
Punch: H = 113,5 Ø = 18
Stripper: H = 12 Ø = 23
Die: H = 20 Ø = 25



OPTIONS AND NOTES



MultiMATRIX 8/16 R MMX



FAFLAH00
complete
upper tool

FAFLEF00
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

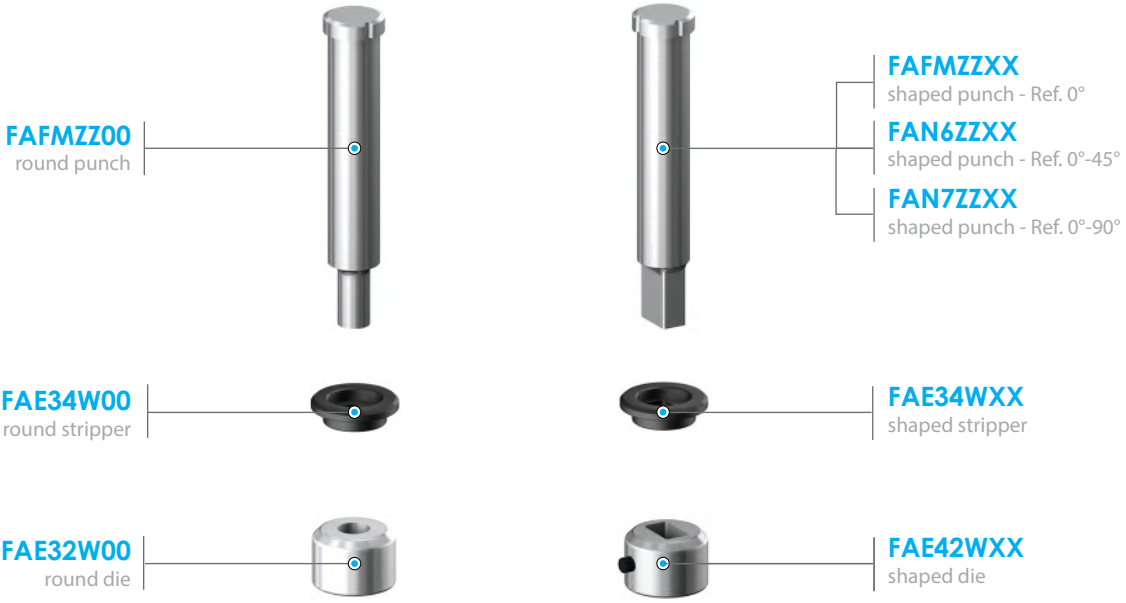
MULTIMATRIX ROTATING SERIES

MultiW Series 8/16 N

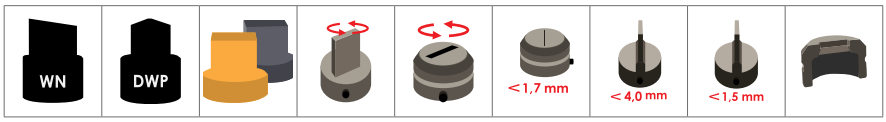
- MAX Ø ▱ = mm 16,0

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



NOTES

MATRIX

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*

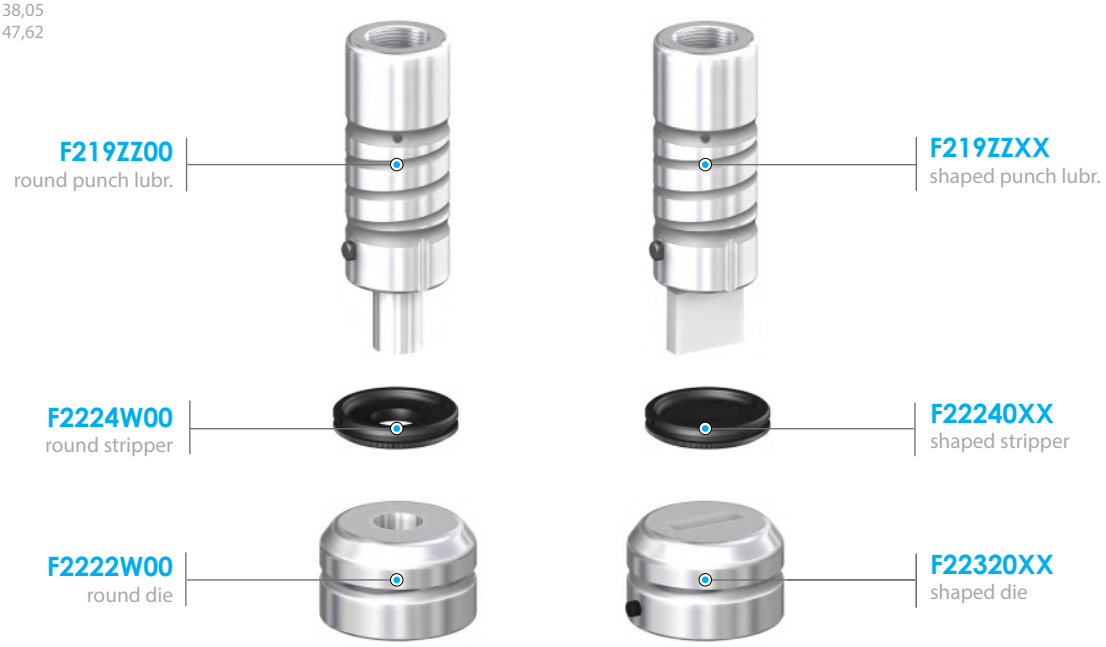
  Warning: These thicknesses could limit both kind and speed of processing
- Quick stipper unlocking
- Total lubrication: inner and external, manual or automatic
- It can be inserted in a normal Thick Turret D Station

MULTIMATRIX FIXED SERIES

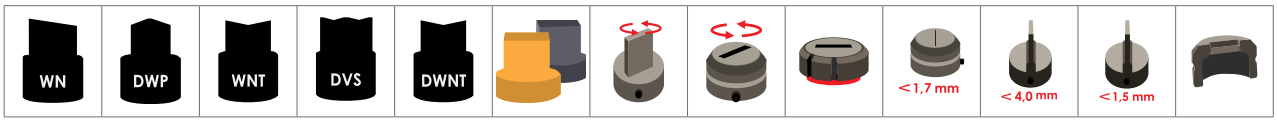
THICK TURRET B Station - Lubricated - MAX Ø ⍁ = mm 31,7

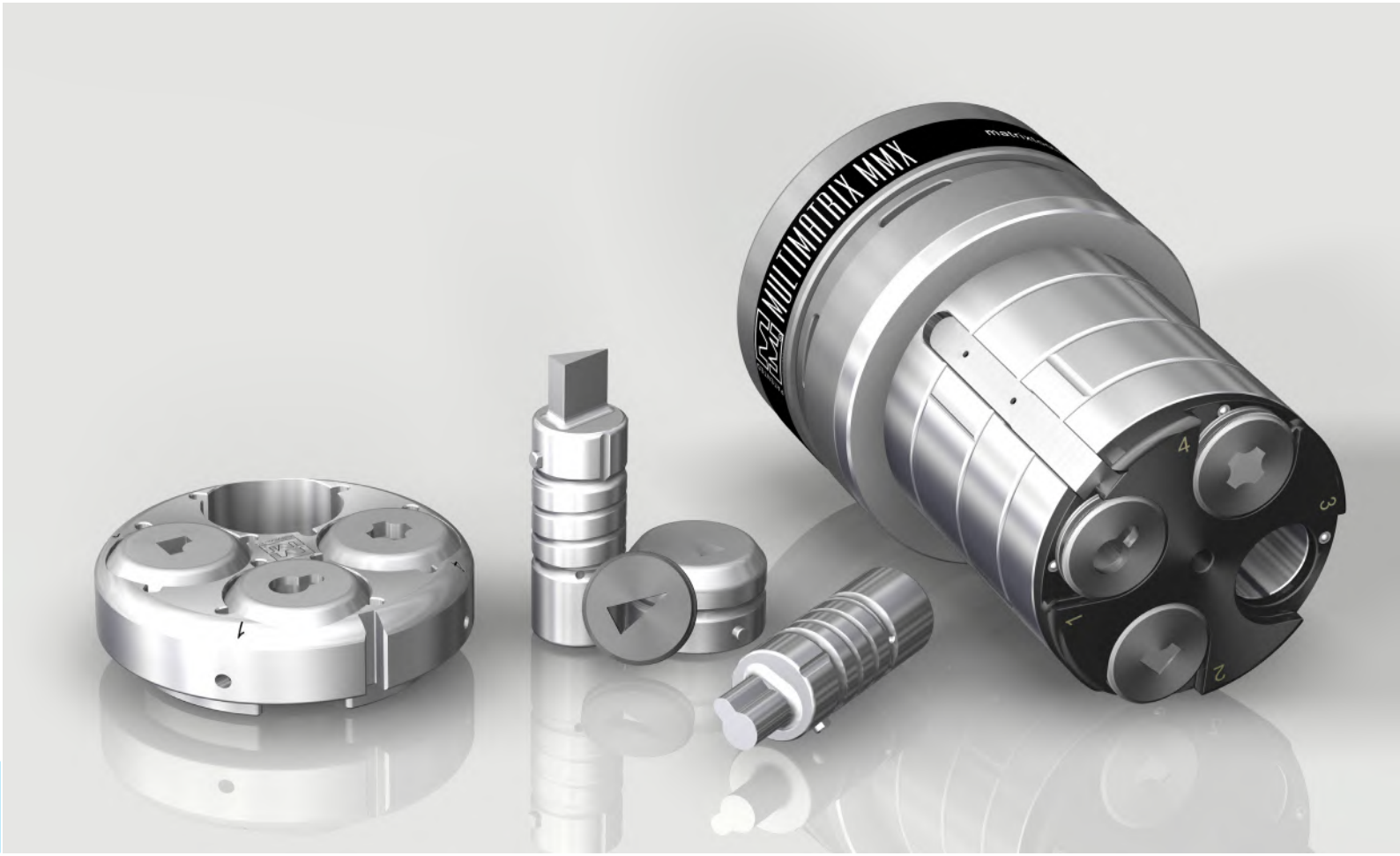
Dimensions (mm)

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

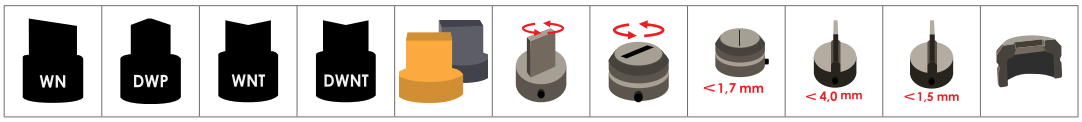
MULTIMATRIX FIXED SERIES

MultiMATRIX Series 6/24 and Series 6/24 AR - 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

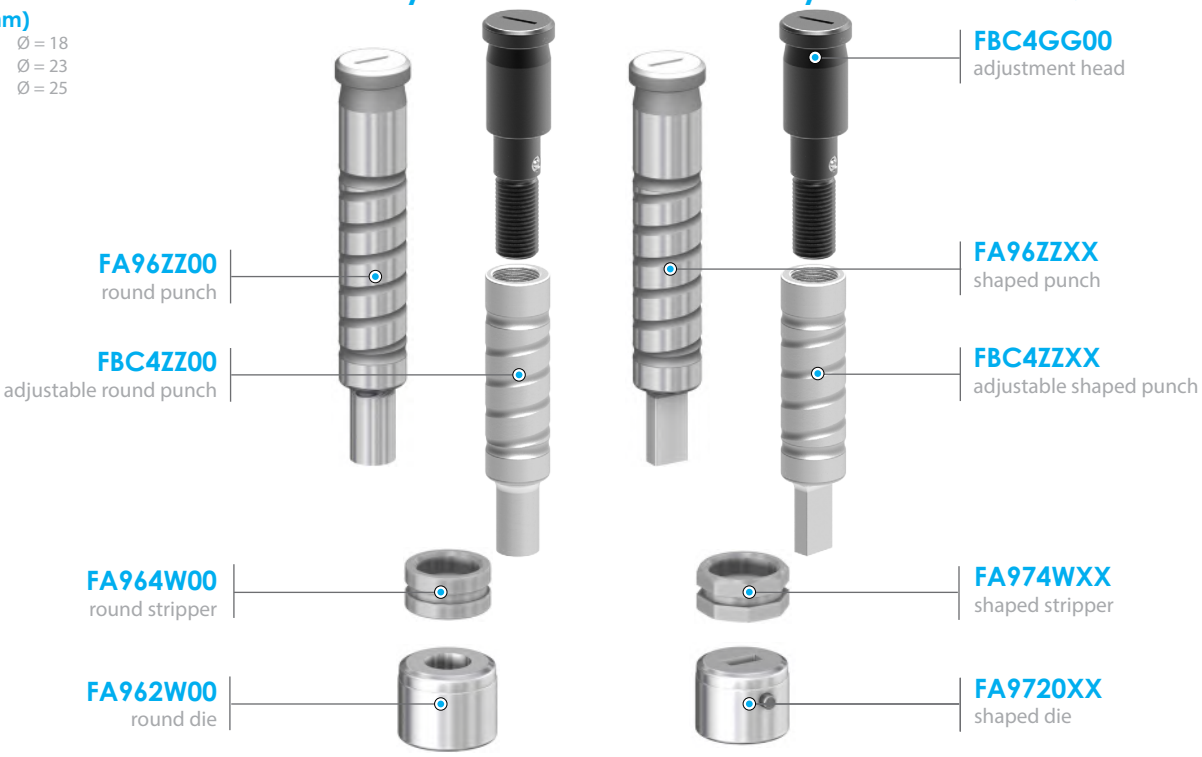
  Warning: This tonnage could limit both kind and speed of processing
- Quick strippers and ram unlocking
- Total lubrication: inner and external, manual or automatic
- It can be inserted in a normal Thick Turret D Station
- For punching machines with fixed station and rotating ram
- Quick strippers and 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

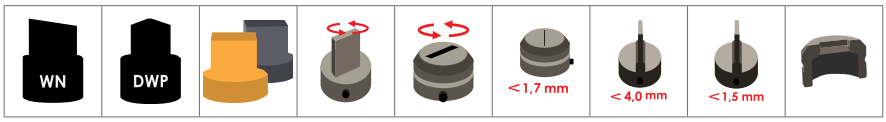
MultiMATRIX Series 10/18 and Series 10/18 AR - MAX Ø ⍁ = mm 18

Dimensions (mm)

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



OPTIONS AND NOTES



NOTES

MATRIX

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

MULTIMATRIX FIXED SERIES

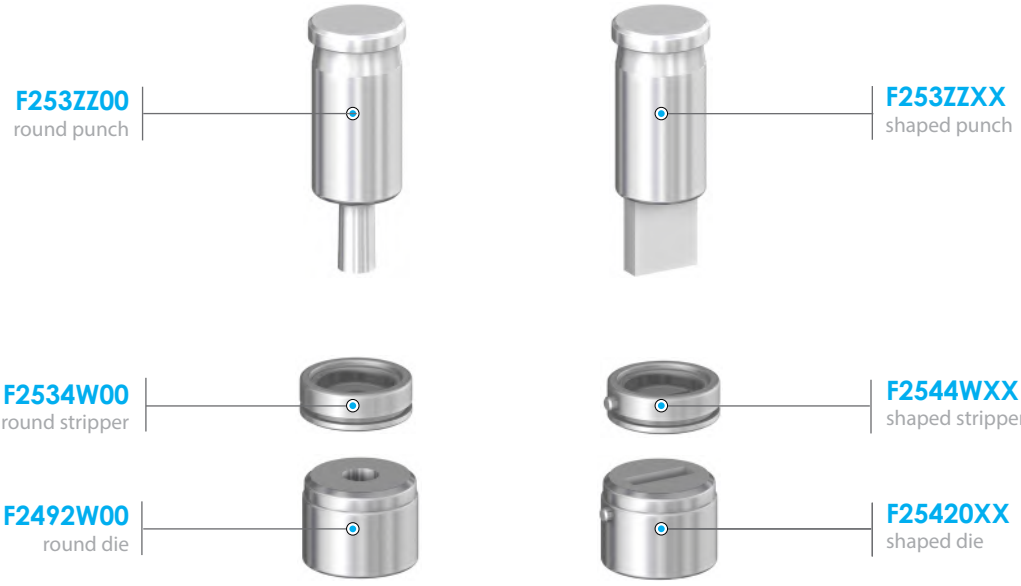
NOTES

MATRIX®

TOOLS FOR MULTITOOLS

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

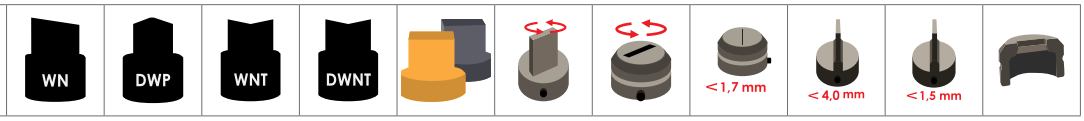
MultiMT Series 24 - MAX Ø ⍁ = mm 24



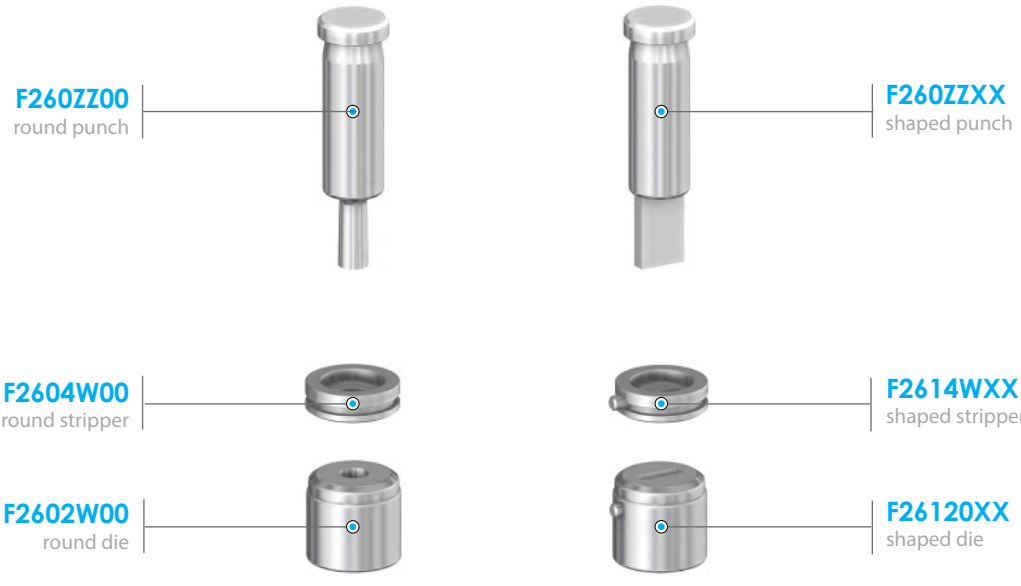
Suitable Multitools
Mate Precision Tooling
MT6, MT8, MTE6, MTE10
Wilson Tool
MT6-24, MT8-24

OPTIONS AND NOTES

Dimensions (mm)
Punch: H = 70,5 Ø = 24
Stripper: H = 10,5 Ø = 30
Die: H = 24 Ø = 31



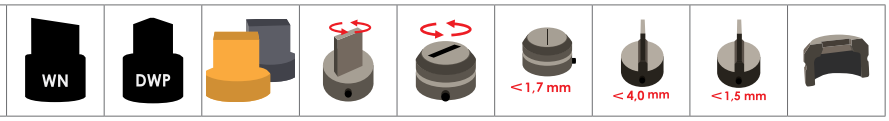
MultiMT Series 16 - MAX Ø ⍁ = mm 16



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

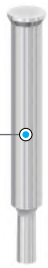
OPTIONS AND NOTES

Dimensions (mm)
Punch: H = 70,5 Ø = 16
Stripper: H = 8 Ø = 25
Die: H = 24 Ø = 25



MultiMT Series 8 - MAX Ø ⍁ = mm 8

F257ZZ00
round punch



F257ZZXX
shaped punch

F2574W00
round stripper

F2584WXX
shaped stripper

F2572W00
round die

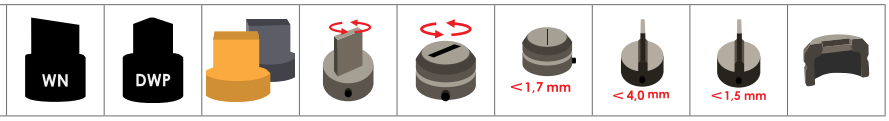
F25820XX
shaped die

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

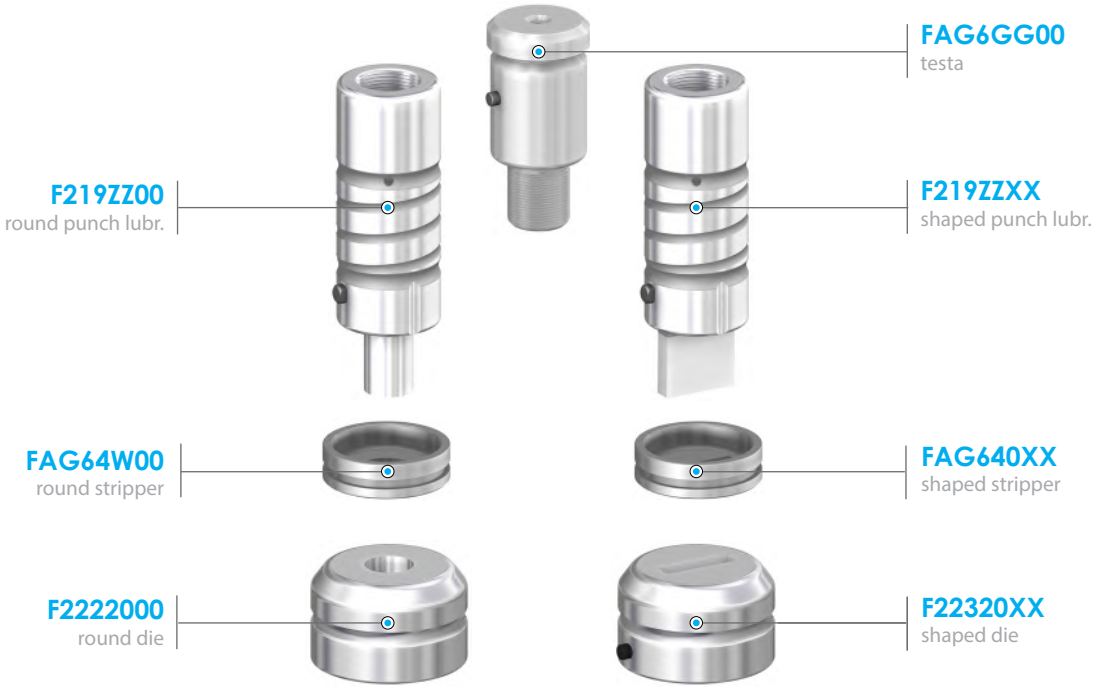
OPTIONS AND NOTES

Dimensions (mm)

Punch:	H = 70,5	Ø = 8
Stripper:	H = 6	Ø = 16
Die:	H = 17	Ø = 16



MultiMT Series XB - MAX Ø ⍁ = mm 31,7

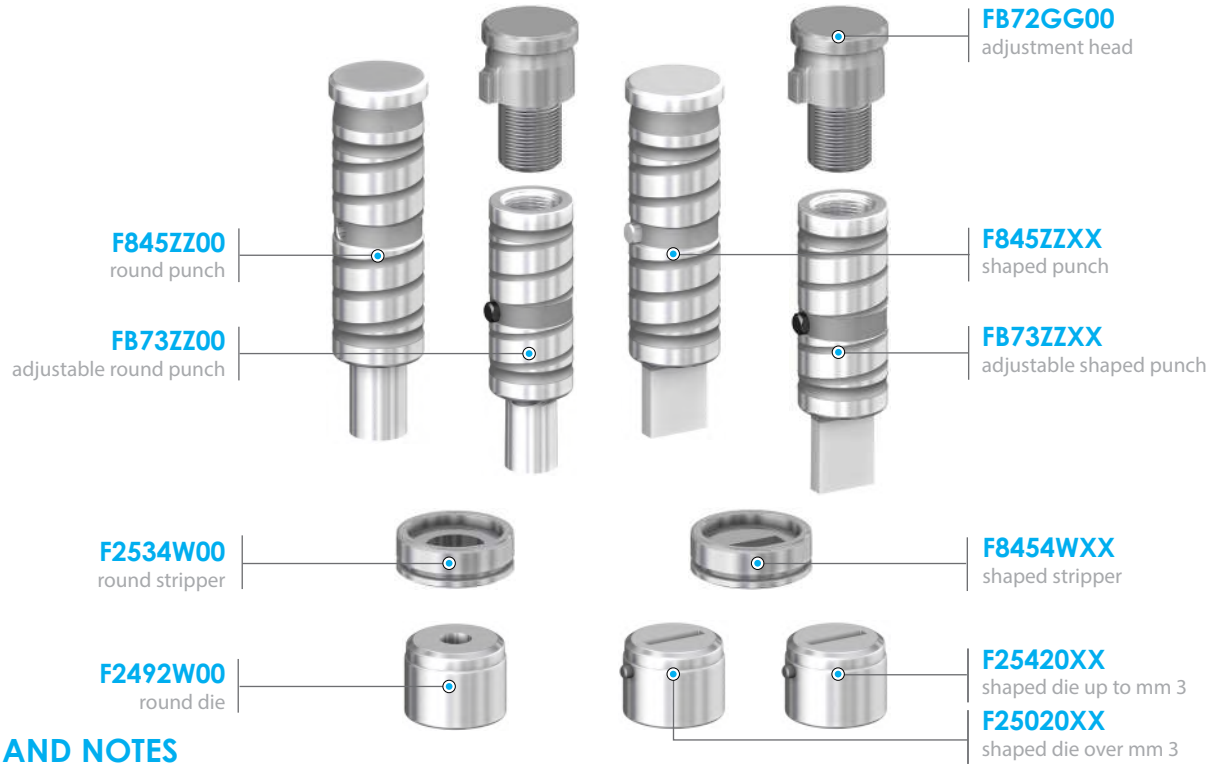


Suitable Multitools
Mate Precision Tooling
XMTE4

OPTIONS AND NOTES

Dimensions (mm)			WN	DWP	WNT	DVS	DWNT				<1,7 mm	<4,0 mm	<1,5 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 Serie 6/24-6 AR - MAX Ø ⍁ = mm 24

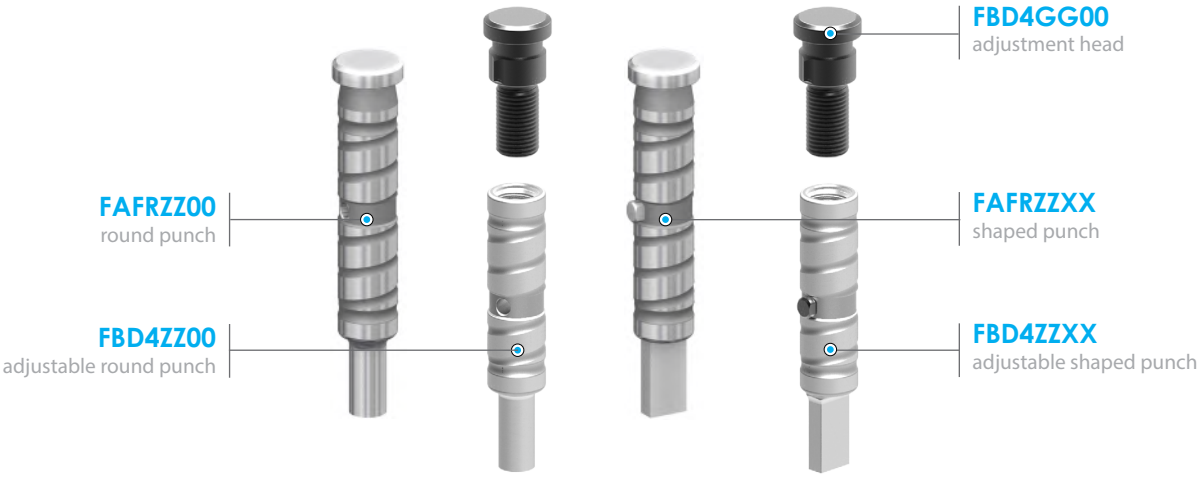


Suitable Multitools
Matrix
6/24-6 ERHP, 6/24-6 E-MMX
Mate Precision Tooling
XMTE10

OPTIONS AND NOTES

Dimensions (mm)			WN	DWP	WNT	DWNT					<1,7 mm	<4,0 mm	<1,5 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 Series X12,7 AR - MAX Ø ⊠ = mm 12,7



FBD4GG00
adjustment head

FAFRZZ00
round punch

FAFRZZXX
shaped punch

FBD4ZZ00
adjustable round punch

FBD4ZZXX
adjustable shaped punch

Suitable Multitools
Mate Precision Tooling
XMTE10

FAFQ4W00
round stripper

FAFQ4WXX
shaped stripper

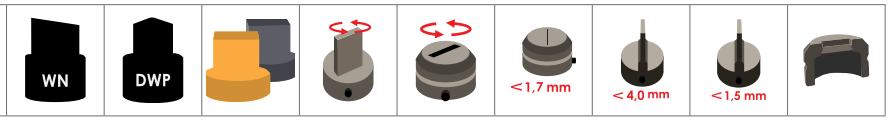
FAFQ2W00
round die

FAFR20XX
shaped die

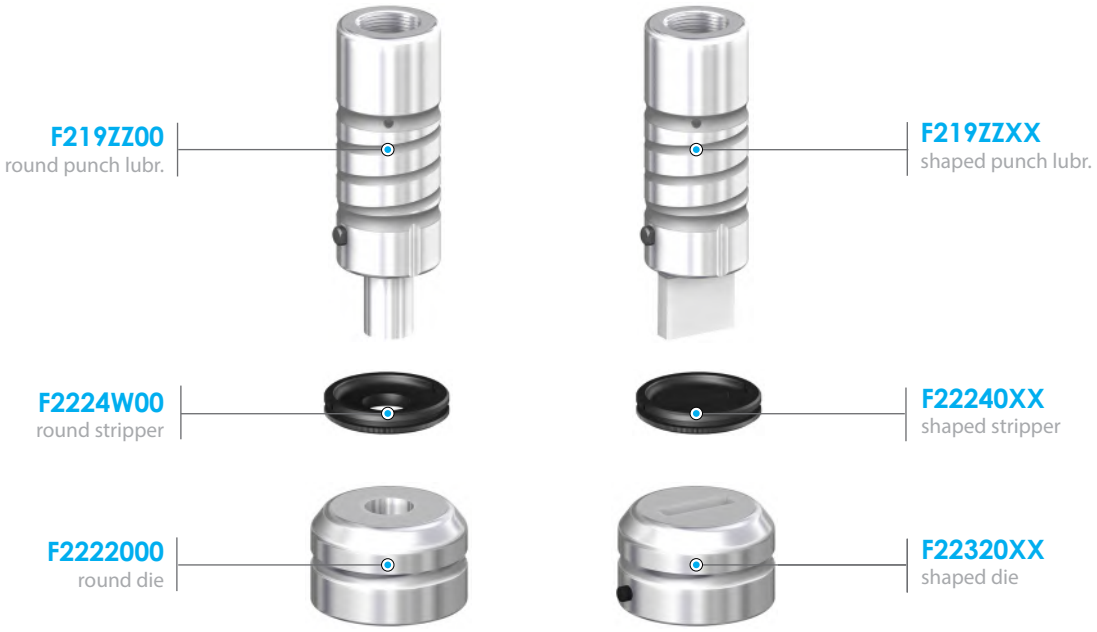
OPTIONS AND NOTES

Dimensions (mm)

Punch:	H = 100	Ø = 16
Stripper:	H = 7	Ø = 19,1
Die:	H = 20	Ø = 20



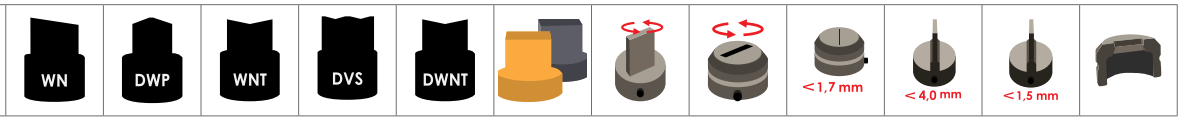
THICK TURRET B Station Lubricated - MAX Ø ⍁ = mm 31,7



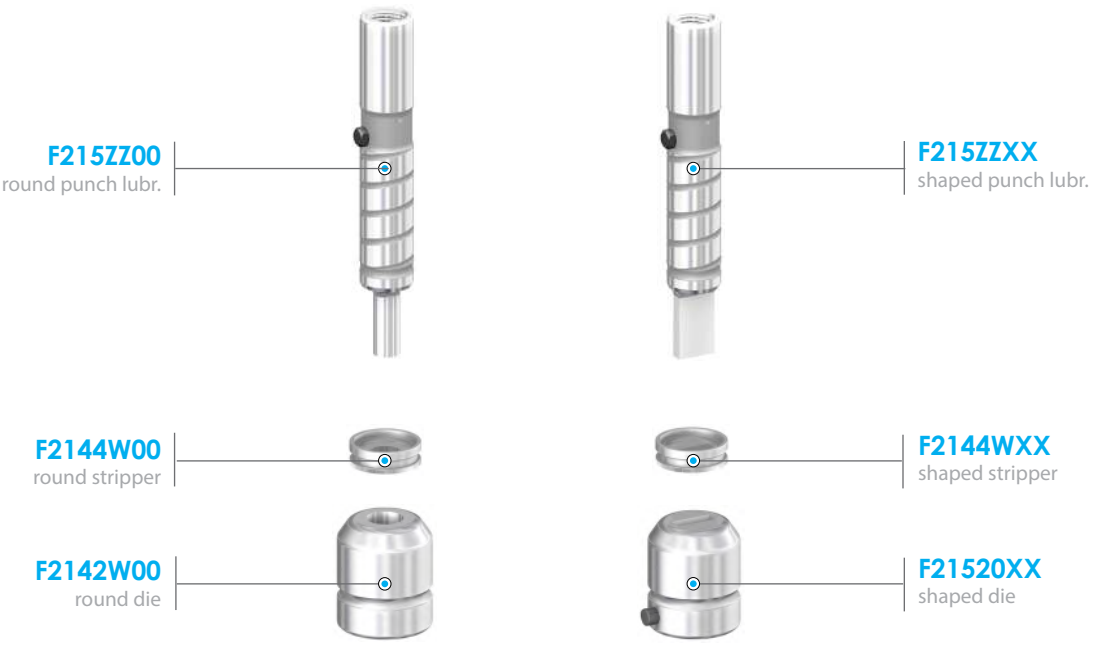
Suitable Multitools
Matrix
4B RHP, 4B F MMX, 4B R MMX
Mate Precision Tooling
MTE4, Ultra IMT3, Ultra MT3

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



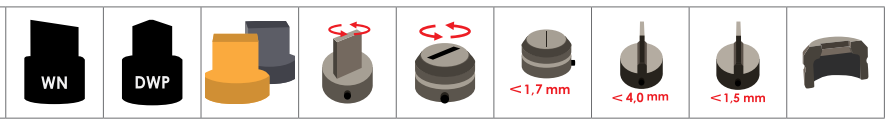
THICK TURRET A Station Lubricated - MAX Ø ⍁ = mm 12,7



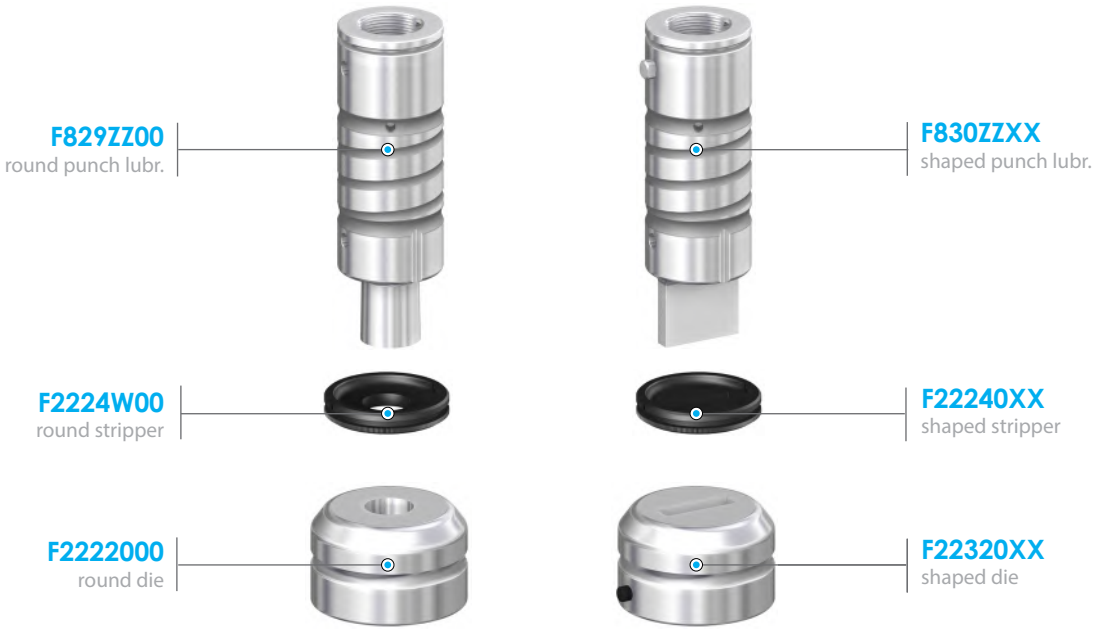
Suitable Multitools
Mate Precision Tooling
Ultra IMT8, Ultra MT8

OPTIONS AND NOTES

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



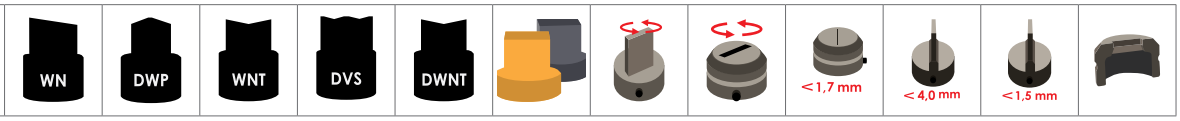
THICK TURRET B Station W90L - MAX Ø ⍁ = mm 31,7



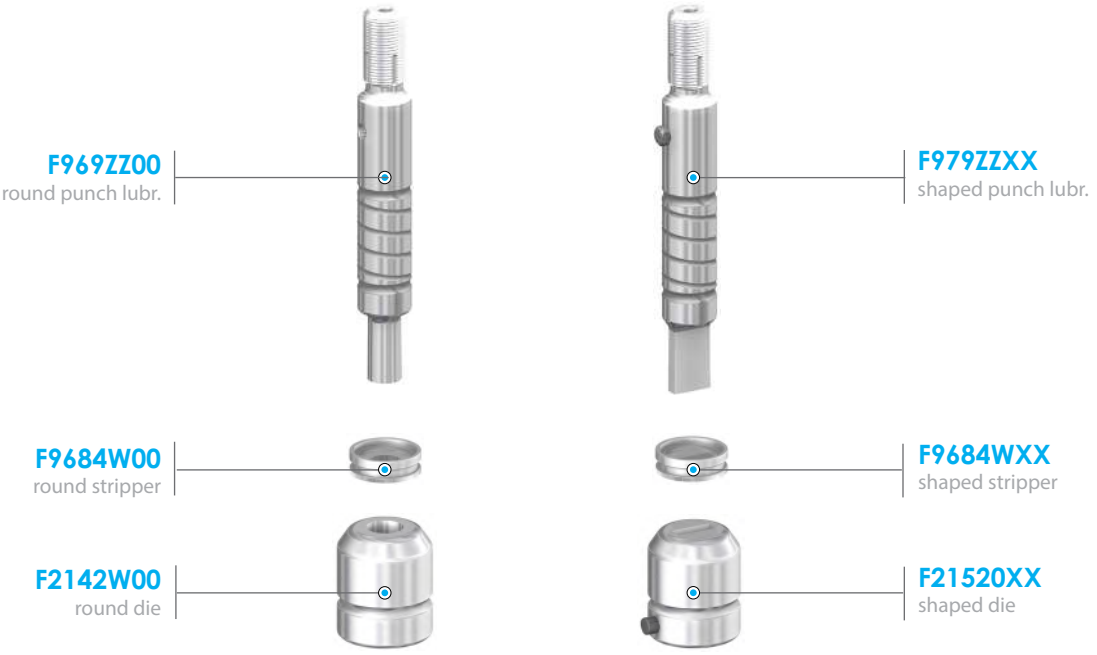
Suitable Multitools
Wilson Tool
MTX3Ri

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



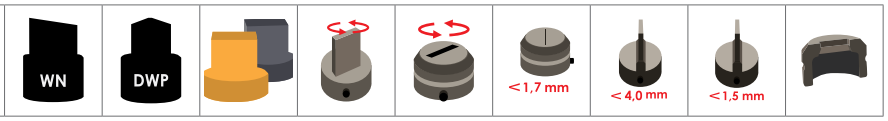
THICK TURRET A Station W90L - MAX Ø ⍁ = mm 12,7



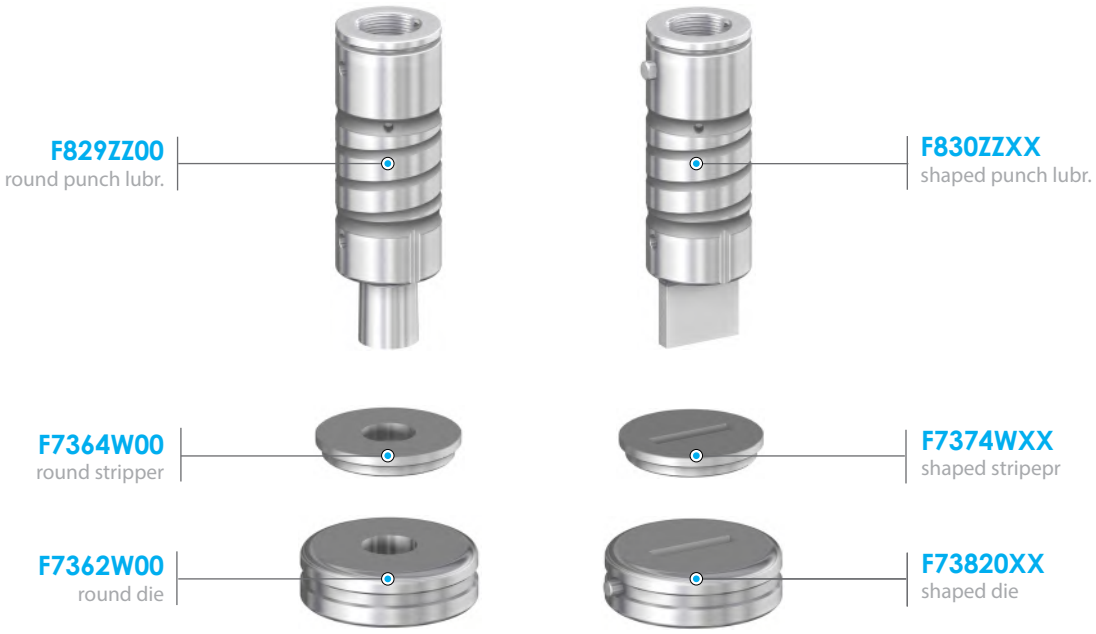
Suitable Multitools
Wilson Tool
MTX8Ri

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



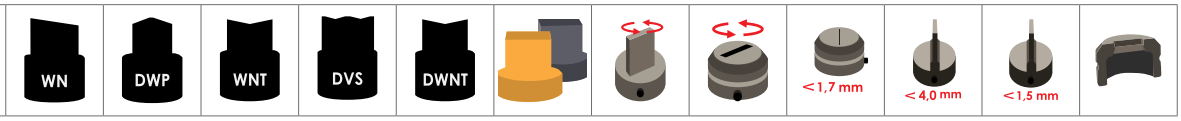
MultiW Series 3B - MAX Ø ⌀ = mm 31,7



Suitable Multitools
Wilson Tool
MT3Ri

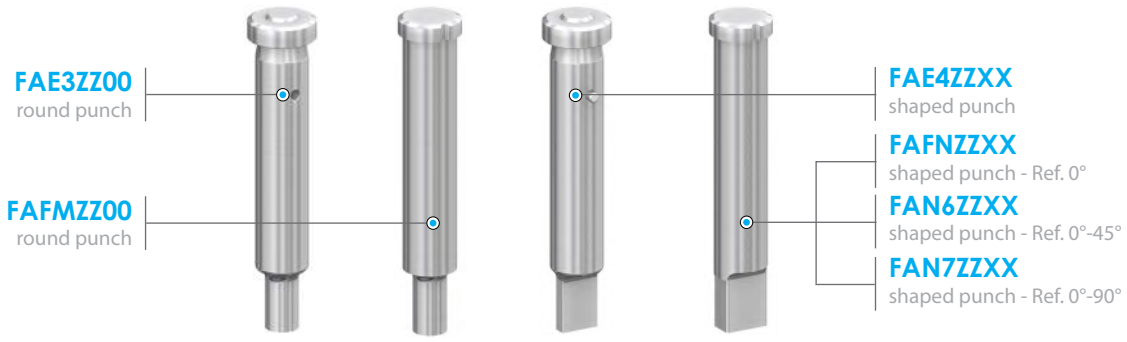
OPTIONS AND NOTES

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



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)



FAE3ZZ00
round punch

FAFMZZ00
round punch

FAE4ZZXX
shaped punch

FAFNZZXX
shaped punch - Ref. 0°

FAN6ZZXX
shaped punch - Ref. 0°-45°

FAN7ZZXX
shaped punch - Ref. 0°-90°

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

FAE34W00
round stripper

FAE32000
round die

FAE440XX
shaped stripper

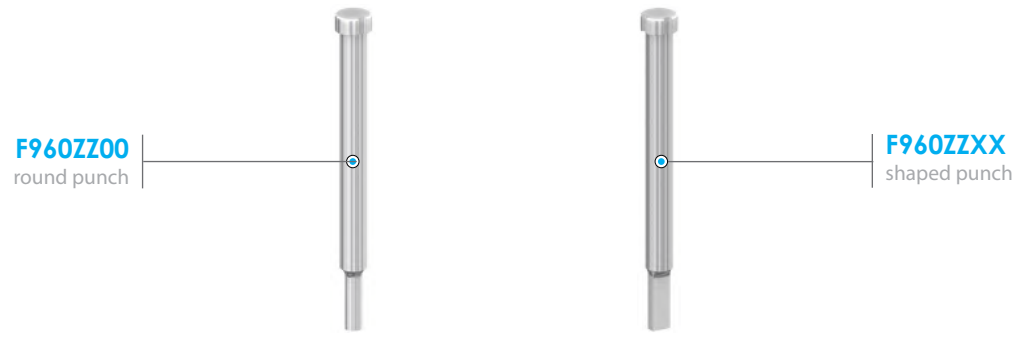
FAE420XX
shaped die

OPTIONS AND NOTES

Dimensions (mm)												
Punch:	H = 100	Ø = 16	(8/16)	WN	DWP				< 1,7 mm	< 4,0 mm	< 1,5 mm	
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



F960ZZ00
round punch

F960ZZXX
shaped punch

F2574W00
round stripper

F2572W00
round die

F9604WXX
shaped stripper

F25820XX
shaped die

OPTIONS AND NOTES

Dimensions (mm)											
Punch:	H = 100,5	Ø = 8	WN	DWP				< 1,7 mm	< 4,0 mm	< 1,5 mm	
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 to 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).
Type A coating yellow-gold coloured, provides to the punch a higher surface hardness up to four times the initial one and an optimal self-lubrication capability with a friction coefficient equal to 0,44. It's recommended for exacting working processes, without lubrication or with dough materials difficult to be pulled, such as copper or aluminum alloys.
Type B coating grey-blue coloured, is an evolution of the previous one which, besides imparting a higher hardness on tool surface, is more solid and its endurance increases; this coating resists to higher temperature, little lower than 900°.
Thanks to these characteristics, it's recommended in case of high speed punching machines (500:1000 strokes per minute) and it's also excellent for STAINLESS STEEL processing.

ANTI SLUG

Slug pulling could get several kind of problems, from the simple downtime to the tools damaging.

In major cases, slug pulling occurs when a scrap gets in between punch and sheet metal so that next punching cycle is performed on a double thickness with imaginable consequences.

For this reason and in order to avoid the problem, our dies, to be used according to specific process, are accordingly designed.

SHEAR SHARPENING

For punch shear sharpening we mean various geometry of their faces which grants several benefits such as:

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

On the other hand, tools with special shear provides punch holders springs a harder functioning.

Shear types most commonly offered are:

- DVS for shearing tools and high thicknesses
- DWP for balanced loadings and high thicknesses
- DWNT for thin thicknesses - nibbling processes with big shapes
- WNT for thin thicknesses - nibbling processes with small shapes
- WN for thin thicknesses - nibbling processes with small shapes

PUNCH GRINDING EFFECTS ON TONNAGE

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
Tonnage reduction in %	60	50	40	35	25	20	15	10

TONNAGE GENERAL FORMULA

$$\frac{P \times S \times K}{28,3}$$

P = shape perimeter
S = material thickness
K = material coefficient

Material	K material
Aluminum	0.6
Copper	0.6
Brass	0.6
Mild steel	1
Stainless steel	1.5

Example:

$$\frac{\mathbf{40}\ \text{(square perimeter of mm 10 edge)} \times \mathbf{2}\ \text{(material thickness in mm)} \times \mathbf{1,5}\ \text{(K stainless steel)}}{\mathbf{28,3}} = \mathbf{4,24}\ \text{(tonnage)}$$

DIES TOLERANCE IN PERCENTAGE TO THICKNESS

Material	Thickness Range	Minimum or Blanking*	Standard	Maximum
Aluminum Copper Brass 20÷25% Kg/mm²	Up to mm 2	8%	10%	12%
	From mm 2 to mm 4	10%	12%	15%
	Over mm 4	12%	15%	20%
Mild steel 30÷40% Kg/mm²	Up to mm 2,5	15%	18%	20%
	From mm 2,5 to mm 5	18%	22%	25%
	Over mm 5	20%	25%	30%
Stainless steel 60÷80% Kg/mm²	Up to mm 1,5	15%	20%	22%
	From mm 1,5 to mm 3	18%	22%	25%
	Over mm 3	20%	25%	28%

* Blanking: when the scrap is 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 maintenances and grinding grant constant and more durable performances to the punching tools.

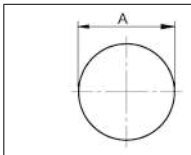
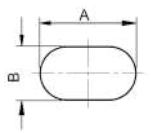
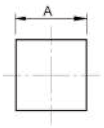
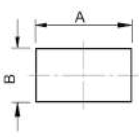
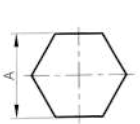
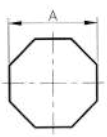
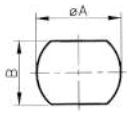
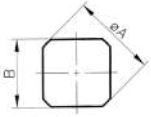
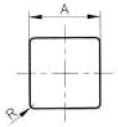
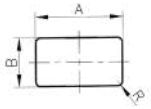
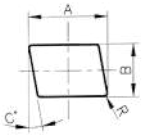
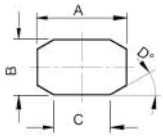
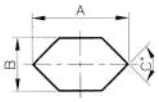
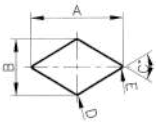
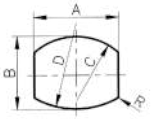
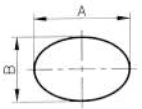
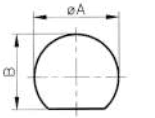
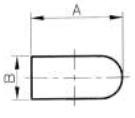
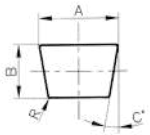
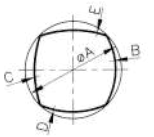
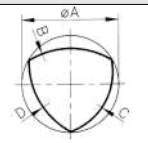
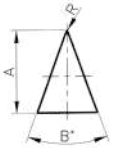
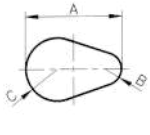
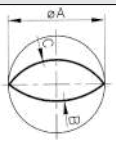
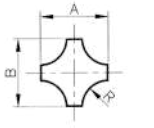
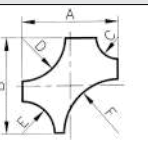
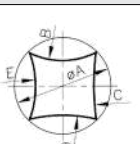
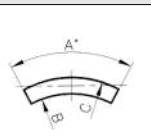
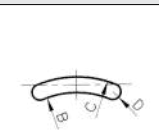
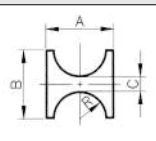
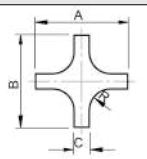
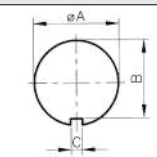
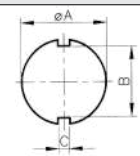
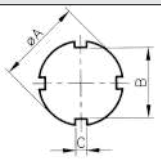
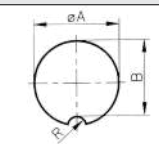
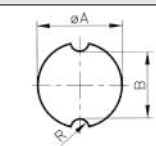
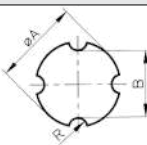
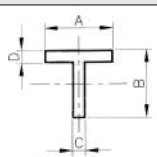
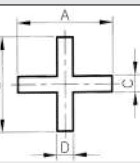
To the first wearing sign it is recommended to grind the tools considering that the material removal will be minimum:
wearing grows progressively, reducing the total number of hits performable with one single tool.

After sharpening it is recommended to demagnetize the tools to avoid scraps pulling and it is furthermore necessary to restore the punch height, in case it is adjustable or, otherways, the machine stroke.

All this can be done by machine operators with grinding machines and accessories for an easy, quick and economical operation.

Matrix can satisfy these requirements with a range of machines, accessories, lubricants and instructions. Specific documentation available on demand.

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)

WN Sharpening
for high thicknesses - very rigid and fast punching machines
(pag. 46)

DVS Sharpening
for shearing tools and high thicknesses
(pag. 46)

DWNT Sharpening
for thin thicknesses - nibbling processes with big shapes
(pag. 46)

WNT Sharpening
for thin thicknesses - nibbling processes with small shapes
(pag. 46)

Surface coatings (PVD)
In order to improve working characteristics, the surface of all punches can be coated.
5 extra working days required (pag. 46)

Punches with rotated shapes

Punch guides with rotated shapes

Dies with rotated shapes

Shaped dies with 3 references
references: 0° , -90° e -225°

Punches with small dim. shapes ≥1,5 mm
≥ 1,5 mm < 4,0 mm

Punches with small dim. shapes <1,5 mm
< 1,5 mm

Dies with small dim. shapes
< 1,7 mm including clearence

Strengthened shaped die
for high ticknesses

Standard external references

Anti slug
available on dies with clearence equal to mm 0,13 and over
(pag. 46)

ABS

Air Blow®
Japanese tools style

W90

90 Series®
American tools style

GUIDE TO PRODUCT CODES

MATRIX CODING

CODE BREAKDOWN

F	219	WW	XX	.YYY
TYPE OF ARTICLE	TOOLS FAMILIY	TOOLS AND OPTIONS	SHAPE	DIMENSIONS

Code	Description
F	finished
A	purchase
S	blank untempered
T	blank tempered

Code	Description
219	punch B station
223	die B station
236	thick turret D
FB11	Jetform C stat.
250	MultiMatrix
AJ4	Jetform B stat.
F254	Multimt
AAW	Jetform D stat.
ALP	6/24 R MMX
311	Trumpf®
[...]	[...]

Code	Description
00	punch
20	die
40	stripper
60	round punch guide
63	die adaptor
68	punch adaptor
AF	punch guide
EF	die holder
B0	punch coat. "A"
L0	DWP punch
[...]	[...]

Code	Description
00	round
01	obround
02	square
03	rectangle
A1	A01 special
B1	B01 special
C1	C01 special
CA	C10 special
D1	D01 special
E1	E01 special
[...]	[...]

Code	Description
000	ø 3 mm
001	ø 3,5 mm
002	ø 4 mm
003	ø 4,5 mm
004	ø 5 mm
005	ø 5,5 mm
006	ø 6 mm
007	ø 6,5 mm
008	ø 7 mm
018	ø 12 mm
[...]	[...]

NOTES

MATRIX

MULTITOOL-TOOLS LINK TABLE

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

MATRIX - MultiMATRIX 6/24-6 E-MMX		
Tooling:	*MultiMT Series 6/24-6*	**Page:** 15, 36
	MultiMT Series 6/24-6 AR	**Page:** 15, 36
MATRIX - MultiMATRIX 10/24-C R		
Tooling:	*MultiMATRIX Series 6/24*	**Page:** 13, 25
	MultiMATRIX Series 6/24 AR	**Page:** 13, 25
	Thick Turret - C Station	*See Thick Turret catalog*
MATRIX - MultiMATRIX 10/18 F MMX		
Tooling:	*MultiMATRIX Series 10/18*	**Page:** 17, 27
MATRIX - MultiMATRIX 10/18 FR MMX		
Tooling:	*MultiMATRIX Series 10/18*	**Page:** 17, 27
MATRIX - MultiMATRIX 10/18 N		
Tooling:	*MultiMATRIX Series 10/18*	**Page:** 17, 27
MATRIX - MultiMATRIX 10/18 NR		
Tooling:	*MultiMATRIX Series 10/18*	**Page:** 17, 27
MATRIX - MultiMATRIX 10/18 R		
Tooling:	*MultiMATRIX Series 10/18*	**Page:** 17, 27
MATRIX - MultiMATRIX 10/18 R MMX		
Tooling:	*MultiMATRIX Series 10/18*	**Page:** 17, 27
MATRIX - MultiMATRIX 10/18 RF MMX		
Tooling:	*MultiMATRIX Series 10/18*	**Page:** 17, 27
MATRIX - MultiMATRIX 10/18 RHP		
Tooling:	*MultiMATRIX Series 10/18*	**Page:** 17, 27
MATRIX - MultiMATRIX 10/18 RHP-N		
Tooling:	*MultiMATRIX Series 10/18*	**Page:** 17, 27
MATRIX - MultiMATRIX 10/18 RN		
Tooling:	*MultiMATRIX Series 10/18*	**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:	*Thick Turret - B Station Lubricated*	**Page:** 11, 23, 38
MATE PRECISION TOOLING - ULTRA MT8		
Tooling:	*Thick Turret - A Station Lubricated*	**Page:** 38
MATE PRECISION TOOLING - XMTE4		
Tooling:	*MultiMT Series XB*	**Page:** 36
MATE PRECISION TOOLING - XMTE6 (Long)		
Tooling:	*MultiMT Series 6/24-6*	**Page:** 15, 36
	MultiMT Series 6/24-6 AR	**Page:** 15, 36
MATE PRECISION TOOLING - XMTE10		
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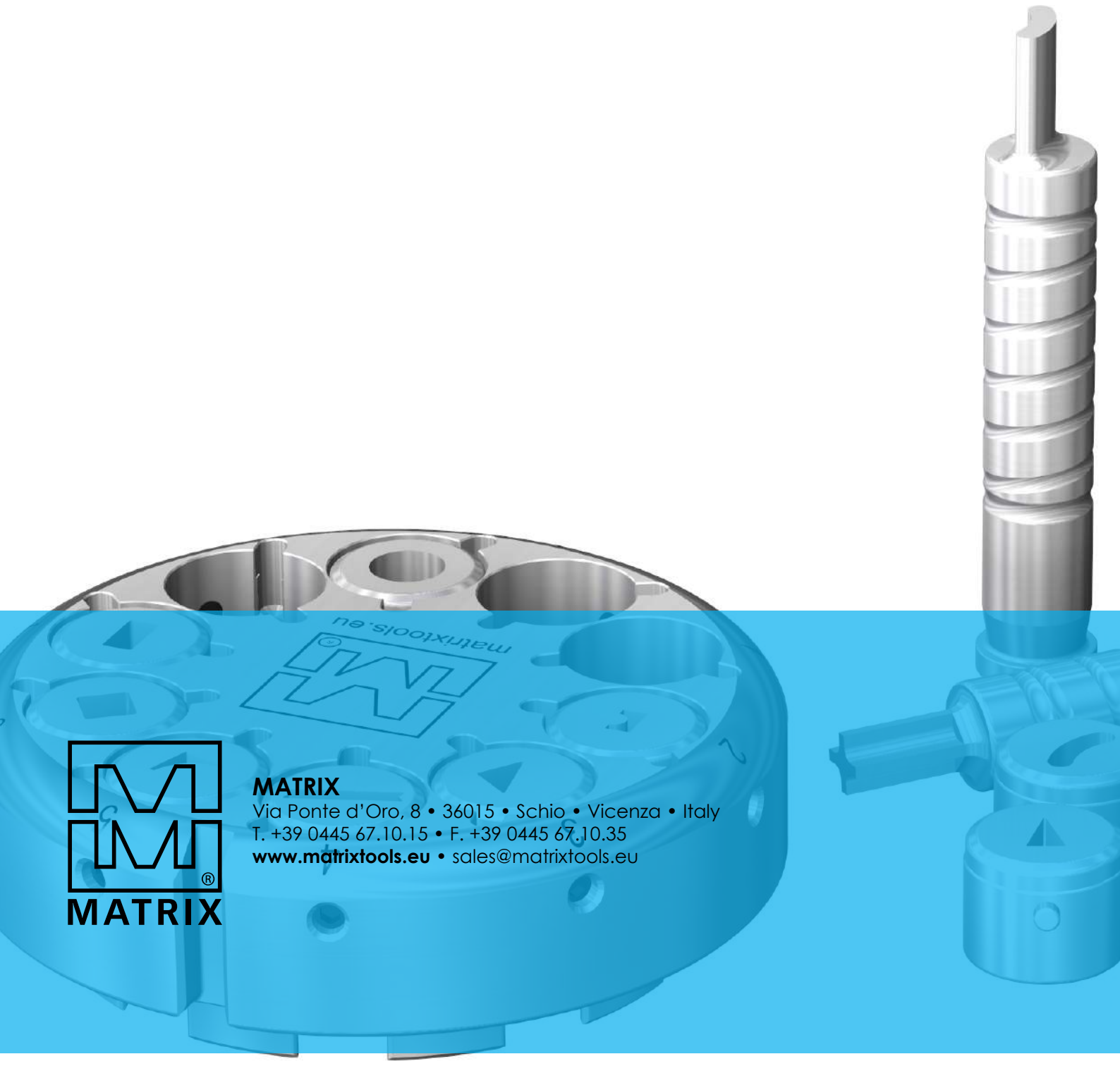

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