



tooling for punch presses

# THICK TURRET

# INDEX

|   |   |    |
|---|---|----|
| ● | <b>COMPANY PROFILE</b>                        | 2  |
| ● | <b>OUR PRODUCTS</b>                           | 3  |
| ● | <b>WHAT'S NEW</b>                             | 4  |
| ● | <b>JETFORM</b>                                | 6  |
|   | COMMON FORMING                                | 8  |
|   | SPECIAL FORMING                               | 9  |
|   | CONTINUOUS FORMING                            | 10 |
| ● | <b>CLUSTER TOOL</b>                           | 11 |
| ● | <b>MULTIMATRIX</b>                            | 12 |
| ● | <b>GREEN SERIES</b>                           |    |
|   | A STATION                                     | 16 |
|   | B STATION                                     | 17 |
|   | C STATION                                     | 18 |
|   | D STATION                                     | 19 |
|   | E STATION                                     | 20 |
| ● | <b>WHITE SERIES</b>                           |    |
|   | A STATION                                     | 22 |
|   | B STATION                                     | 24 |
|   | C STATION                                     | 26 |
|   | D STATION                                     | 27 |
|   | E STATION                                     | 28 |
|   | F STATION                                     | 29 |
| ● | <b>RED SERIES</b>                             |    |
|   | A STATION                                     | 30 |
|   | B STATION                                     | 31 |
|   | C STATION                                     | 32 |
|   | D STATION                                     | 33 |
|   | E STATION                                     | 34 |
|   | F STATION                                     | 35 |
| ● | <b>ACCESSORIES</b>                            |    |
|   | STANDARD ADAPTORS                             | 38 |
|   | PARTING TOOLS                                 | 39 |
|   | PARTING TOOLS CLOSE TO CLAMP                  | 40 |
|   | TRUMPF® ADAPTORS                              | 42 |
|   | MURATA WIEDEMANN® ADAPTORS                    | 43 |
|   | SPECIAL SPRINGS SETS                          | 44 |
|   | CENTERING TOOLS                               | 45 |
|   | OPTIONS                                       | 46 |
|   | LUBRIFICATION - GRINDING                      | 48 |
| ● | <b>JETFORM</b>                                |    |
|   | <b>JETFORM GREEN SERIES</b>                   | 50 |
|   | JETFORM WHITE SERIES                          | 52 |
| ● | <b>MATRIX SHAPE CODING</b>                    | 54 |
| ● | <b>OPTION LEGEND</b>                          | 55 |
| ● | <b>GUIDE TO PRODUCT CODES - MATRIX CODING</b> | 55 |

## 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.



## WHAT'S NEW?

New series Green, White and Red offer a **great compatibility level** with different types of tools already on the market, getting **advantageous solutions** for each punching requirement.

New series of Murata-Wiedemann® adaptors for the use of tools of this known brand on thick turret machines, continuing to improve solutions dedicated to Trumpf® tools.

All this, together with the high and **well known quality** which has been always characterizing Matrix' products. For any tools model, or lubricating or end scrap evacuation system, **our products can satisfy any requirement as far as quality, performing and innovation.**



## WHITE SERIES

The most compatible series of Matrix' range

The recent introduction of punch holders for tools W90 LINE and F station, make of WHITE Series the **suitable solution** to replace any other similar product available on the market, granting very high performances.

Like for GREEN Series, **perfect compatibility with the most common type of tools** for a thick turret either for original long type, with or without lubrication, or different models lubricated short.

The stroke adjusting by mean of push button, is now available also on A and B stations, getting more and more performing.



## GREEN SERIES

**Green series punch holders represent the best of Matrix' offer**

Characterized by a quick adjusting and technical solutions for a better and longer tool life.

Perfectly compatible, **they perform with the most common thick turret tools available on the market**, either long original style, with or without lubrication, or various short and lubricated models.

Continuous tools stroke adjusting and quick stripper replacement, **keyless.**



## RED SERIES

**Economical and efficient series**

Totally compatible with long original style turret tools, with or without lubrication, punch holders RED Series are **the right choice for heavy working.**

Besides the holders with integrated strippers, the solution with interchangeable strippers is also available on A and B station, already appreciated on other Matrix' series.

New adjustable springs sets are available to **double tools life** and to adjust the height properly.

**F station punch holders** available also on RED Series.





# JETFORM

Jetform, line of tools for sheet metal forming, for **efficient machine performances**. Processings available from extrusions to engravings, clips and embosses and many others.

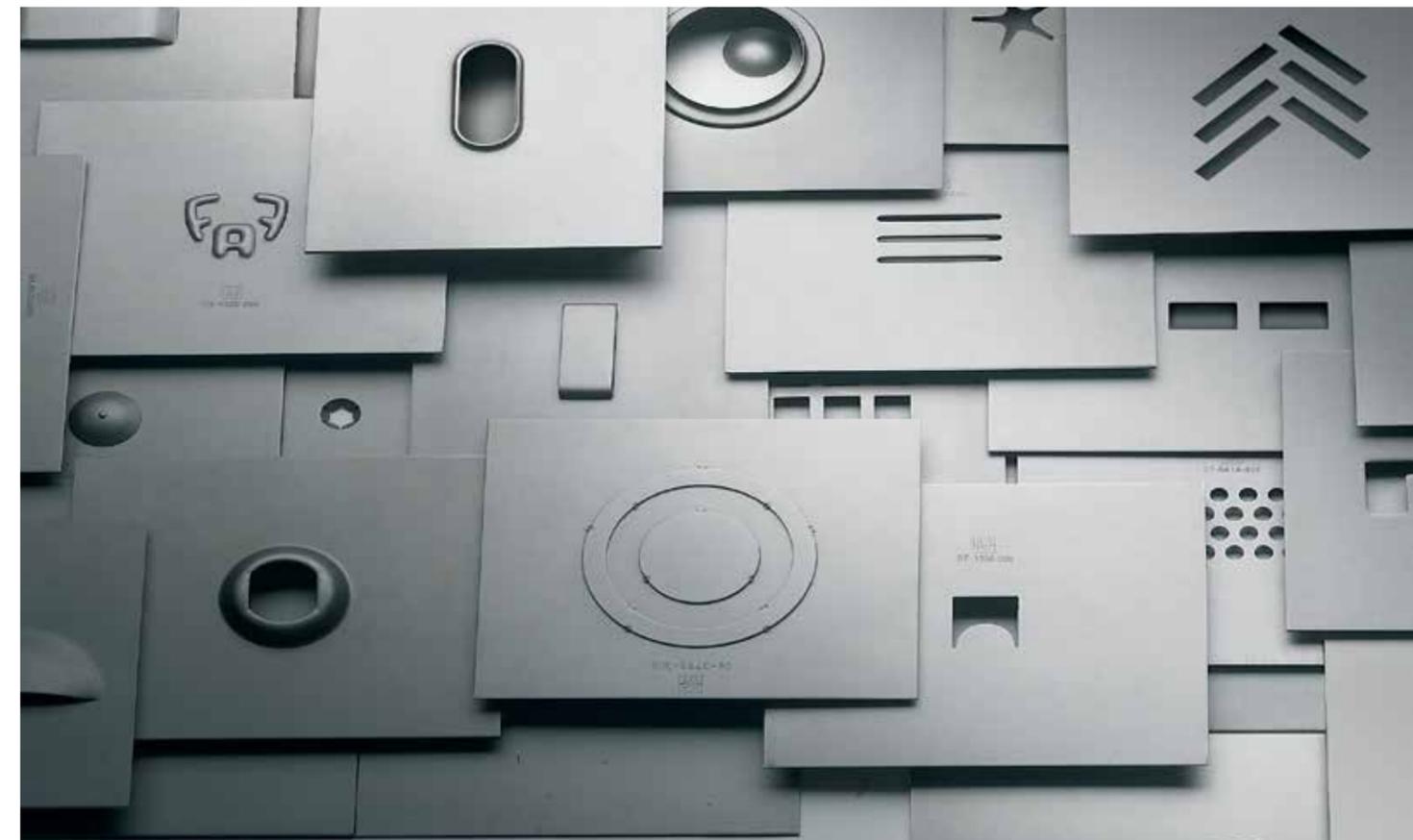
JETFORM inserts holder line is available on B, C, D and E station, with interchangeable inserts to reduce the costs for a new forming.

To better adapt to the specific customer's needs, Matrix' offer includes two types of inserts holders.

The Green Series characterized by an **accurate step adjusting of tool height**; the best choice for punching machines with imprecise or missing stroke adjusting.

The White series, **without adjusting**, exploits the stroke adjusting of the most recent punching machines.

All inserts holders are manufactured with a **total components lubrication system**; this works by getting a specific oil from the top, either automatically or manually.



## COMMON FORMING - JETFORM

The most common forming are embosses, countersinks, engravings, logos, louvers and many others. The great diffusion of these forming allows to handle a **wide offer of standardized products**, reducing drastically delivery times. This type of forming is continuously growing, so please contact our sales department for assistance.



**M01**  
ENGRAVED COUNTERSINK  
FORMING



**M02**  
EXTRUDED HOLE  
FORMING



**M03**  
ROUND EMBOSS  
FORMING



**M04**  
ROUND COUNTERSINK  
FORMING



**M09**  
SHELF CLIP  
SHEARING AND FORMING



**M12**  
RADIUS BACK LOUVER  
SHEARING AND FORMING



**M13**  
SHEAR BUTTON  
SHEARING AND FORMING



**M14**  
ENGRAVING  
ENGRAVING



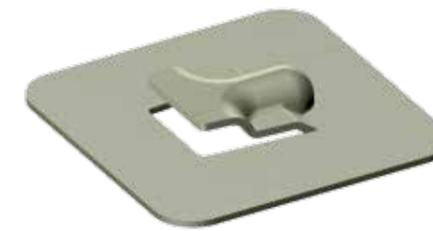
**M23**  
DOT SCRIBER  
ENGRAVING

## SPECIAL FORMING - JETFORM

Our technical department is available to develop the **best solutions for our customer's requirements**. Thanks to this versatility we have no limits to satisfy the most complex requirements. The constant research of **new solutions** extends the possibility on the forming field, adding to normal engraving also **tridimensional images**.



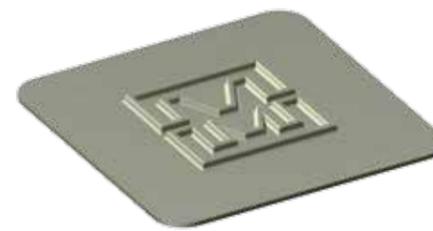
**M24 - STRENGTHENED CLIP UP WITH SAFETY BUTTON**  
SHEARING AND FORMING



**M25**  
STRENGTHENED SPECIAL CLIP UP  
SHEARING AND FORMING



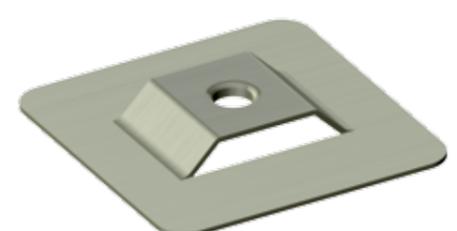
**M10**  
MULTIPLE KNOCKOUT  
SHEARING AND FORMING



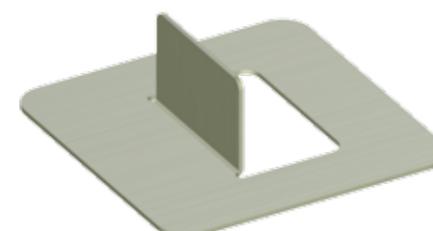
**M22**  
CUSTOM LOGO  
RELIEF



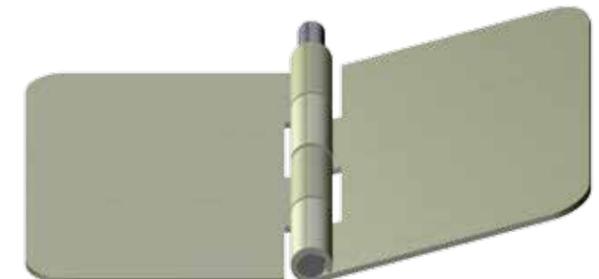
**M26**  
EMBOSS FOR ELECTRICAL CABLES  
SHEARING AND FORMING



**M27**  
BRIDGED & EXTRUDED HOLE DOWN  
SHEARING AND FORMING



**M28**  
BENDING TOOL  
FORMING



**M29**  
HINGE  
FORMING

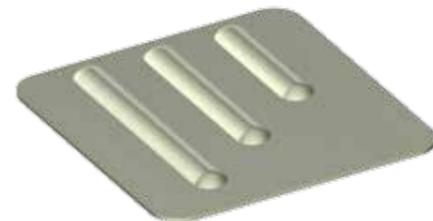
# CONTINUOUS FORMING AND SPECIAL APPLICATIONS - JETFORM

The most recent technical solutions implemented on the modern punching machines for **much better tools control than in the past**, gives great impulse to new applications. New special tools have been developed to shear the protecting film laid on the sheet metal or continuous embosses or to deburr sheared parts.

These are only some examples of what you could get from your punching machine just using Matrix products.



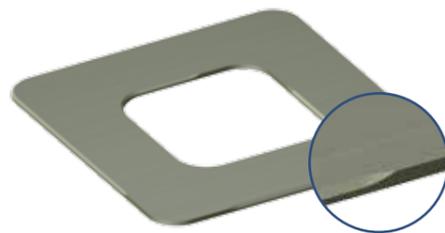
**M15**  
CONTINUOUS RADIUS BACK LOUVER  
SHEARING & FORMING



**M20**  
CONTINUOUS OBOUND EMBOSS  
FORMING



**M30**  
SCRIBER  
ENGRAVING



**M31**  
DEBURR  
ENGRAVING



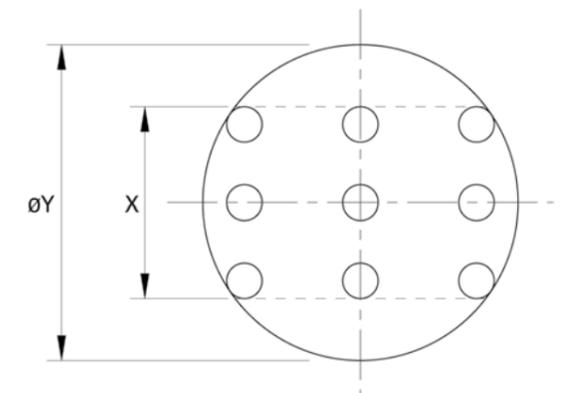
**M32**  
FOIL SLITTING TOOL  
ENGRAVING

# CLUSTER TOOL

Punching of cluster holes is easier with cluster tools which grants **great accuracy of final result**.

This particular type of tools can be manufactured either as integral tool or with interchangeable inserts for a **considerable saving** already on the medium use.

As for all our specials, our cluster tools – round and shaped – are followed up to testing by mean of coding and electronic filing of all particulars, for a **quick and precise availability**.



|    | B Station | C Station | D Station | E Station |
|----|-----------|-----------|-----------|-----------|
| X  | 21        | 21        | 56        | 71        |
| øY | 31,7      | 50,8      | 88,9      | 114,3     |



# MULTIMATRIX

Innovation, maximum rigidity and less tool wear are the peculiar characteristics of our multitool

- Available in several models:
- number of tools variable from 4 to 10;
  - rotating and indexable;
  - for mono head and turret punching machines.

|                             | NUMBER OF TOOLS | MAX Ø SIZE       | MAX WORKING LIMITS                 |
|-----------------------------|-----------------|------------------|------------------------------------|
| MULTIMATRIX Series 24 MMX   | 6               | mm 24            | max tonnage 15 tons                |
| MULTIMATRIX Serie 10/18 MMX | 10              | mm 18            | max tonnage 12 tons                |
| MULTIMATRIX 4/B MMX         | 4               | mm 31,7          | max tonnage 15 tons                |
| MULTIMATRIX 6/24 - 6 ERHP   | 6               | mm 24            | max tonnage 15 tons                |
| MULTIMATRIX 6/A             | 6               | mm 12,7          | vary according to the punch holder |
| MULTIMATRIX 2A/2B           | 2+2             | mm12,7 - mm 31,7 | vary according to the punch holder |

## TOOLING FOR MULTITOOL - MULTIMATRIX

### MULTIMATRIX LINE

Tool with the **best axial stability** on the market, directly from whom first have introduced long guided tools on thick turret Multitool.

### Multimt LINE

Tools for the most common multitool on the market, manufactured with our **high qualitative standard** of all Matrix products, and with an extremely quick delivery system.

### ADJUSTING TOOL

This solution for thick turret Multitool, introduced from Matrix first in 2007, **triplicates tool life**.  
On the new Multimatrix Series 6/24 AR and Multimt Series 6/24-6 AR, combined use of a universal head and punch with threaded extremity, allows **total height adjusting in few seconds, keyless**.



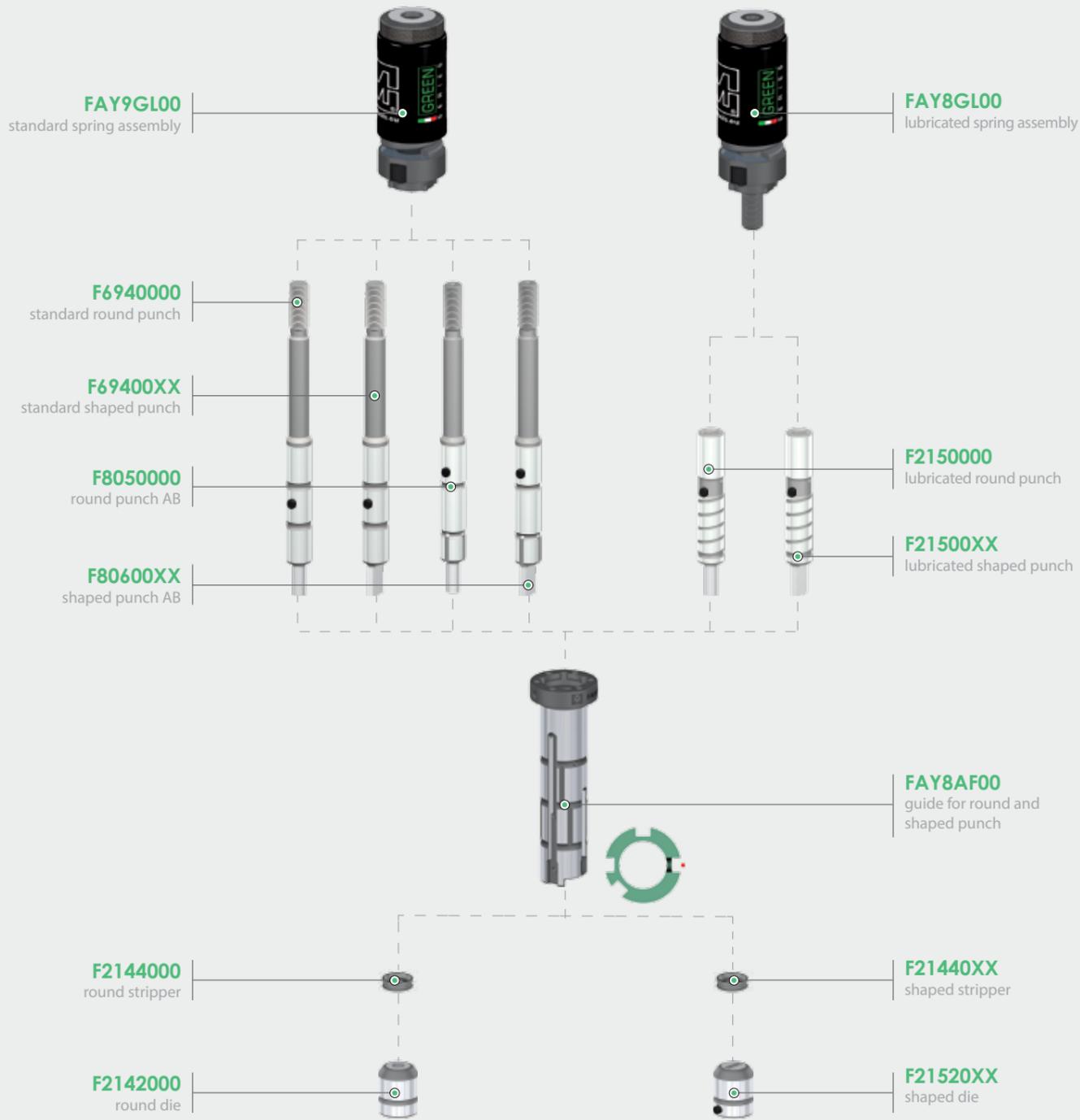


# PUNCH HOLDERS AND TOOLS

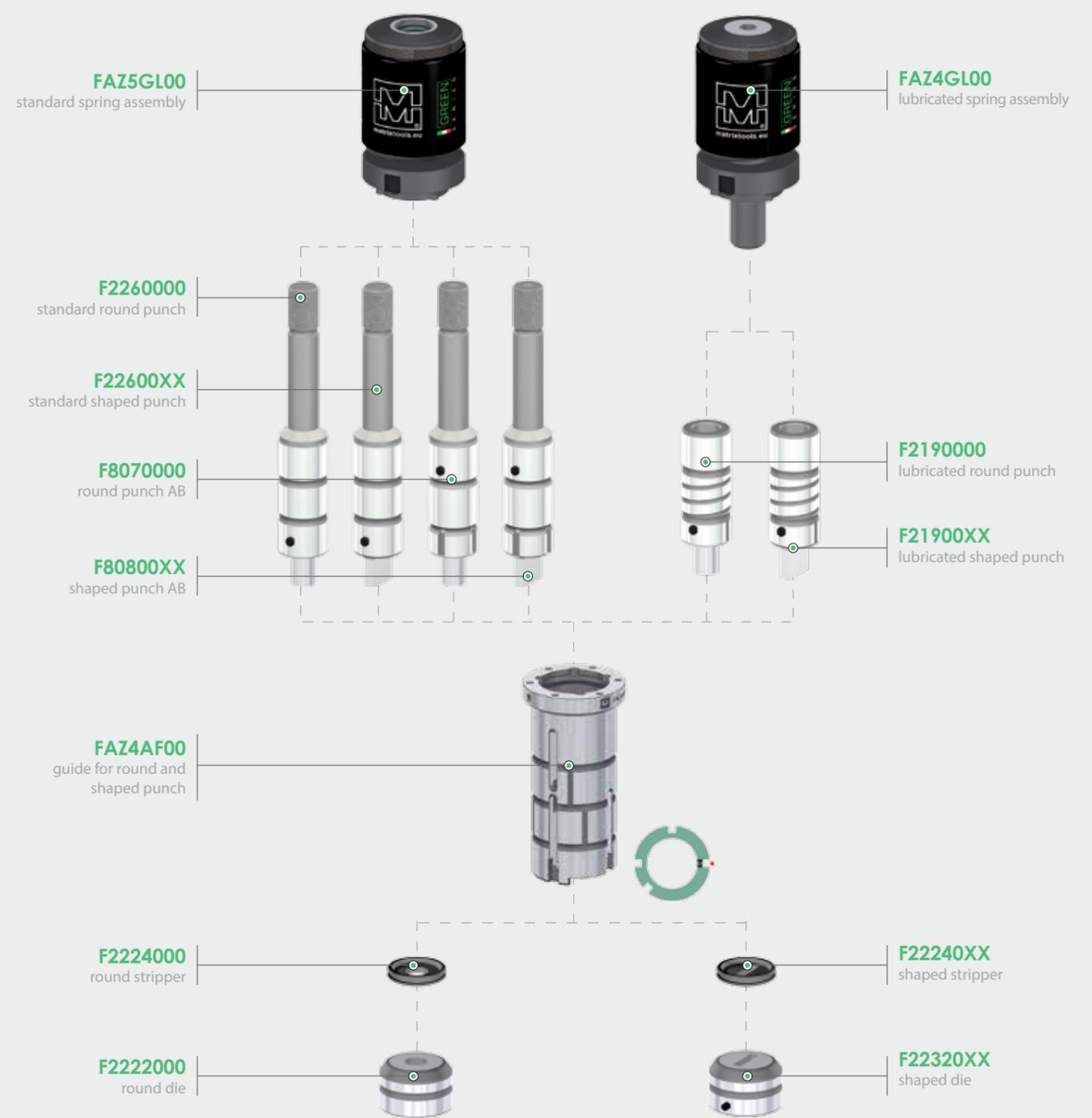


Tools codes indicated in our catalogues refer to the corresponding shape and can vary accordingly.

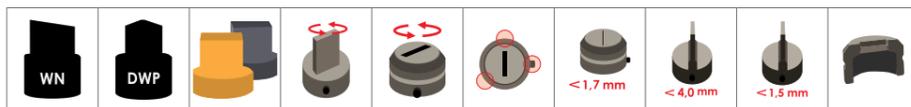
### GREEN SERIES - A STATION - MAX Ø ∅ = mm 12,7



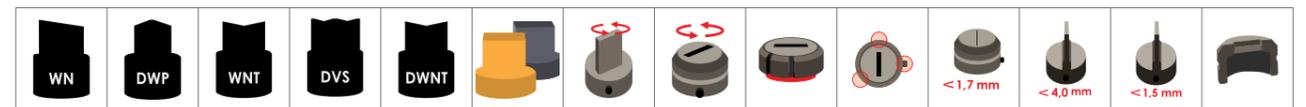
### GREEN SERIES - B STATION - MAX Ø ∅ = mm 31,7



### OPTIONS AND NOTES

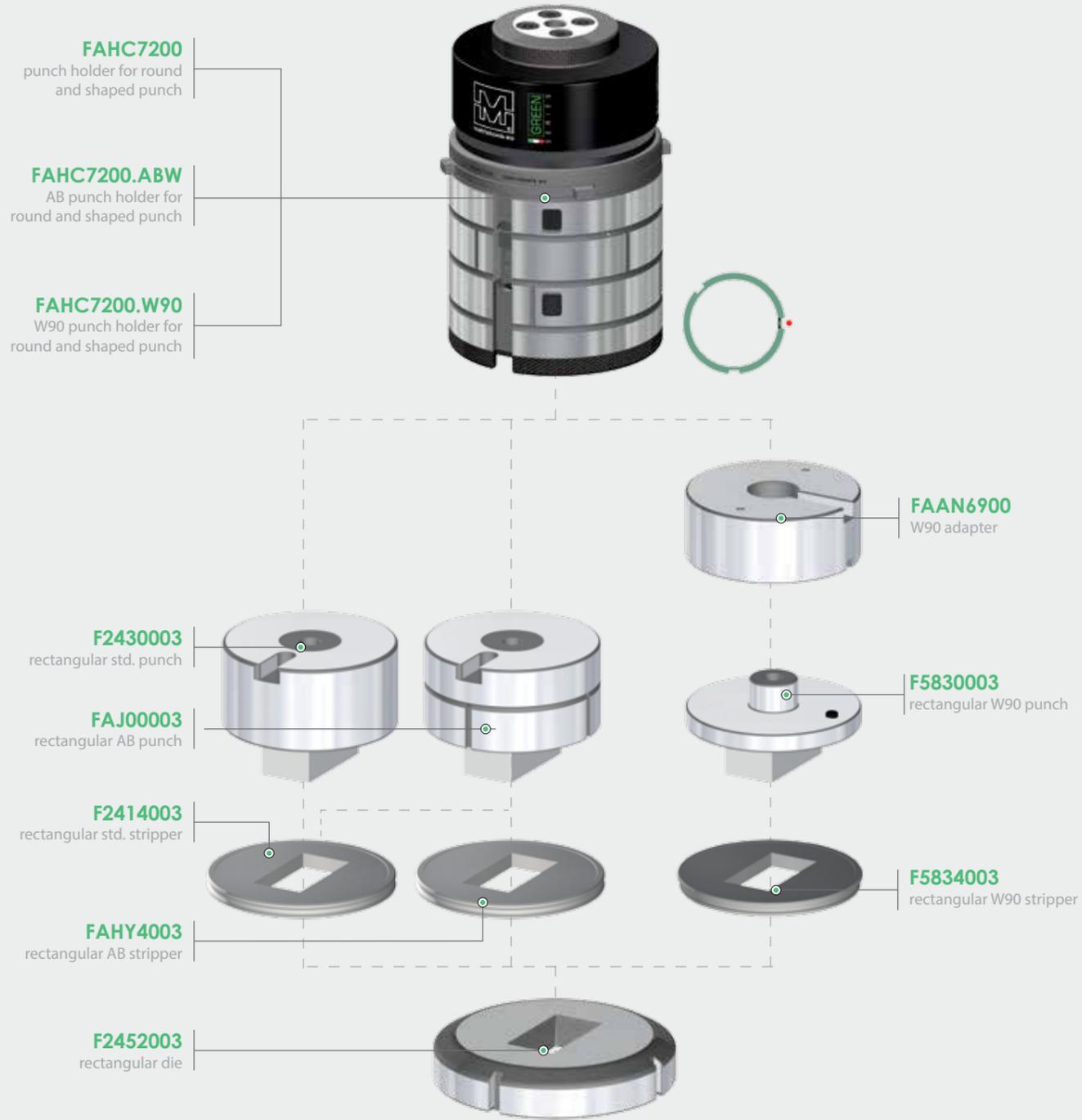


### OPTIONS AND NOTES

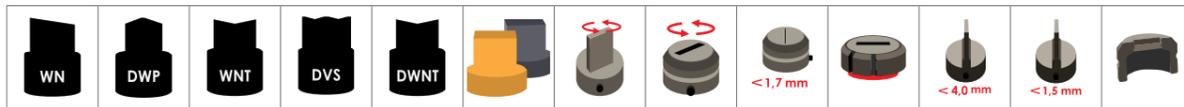




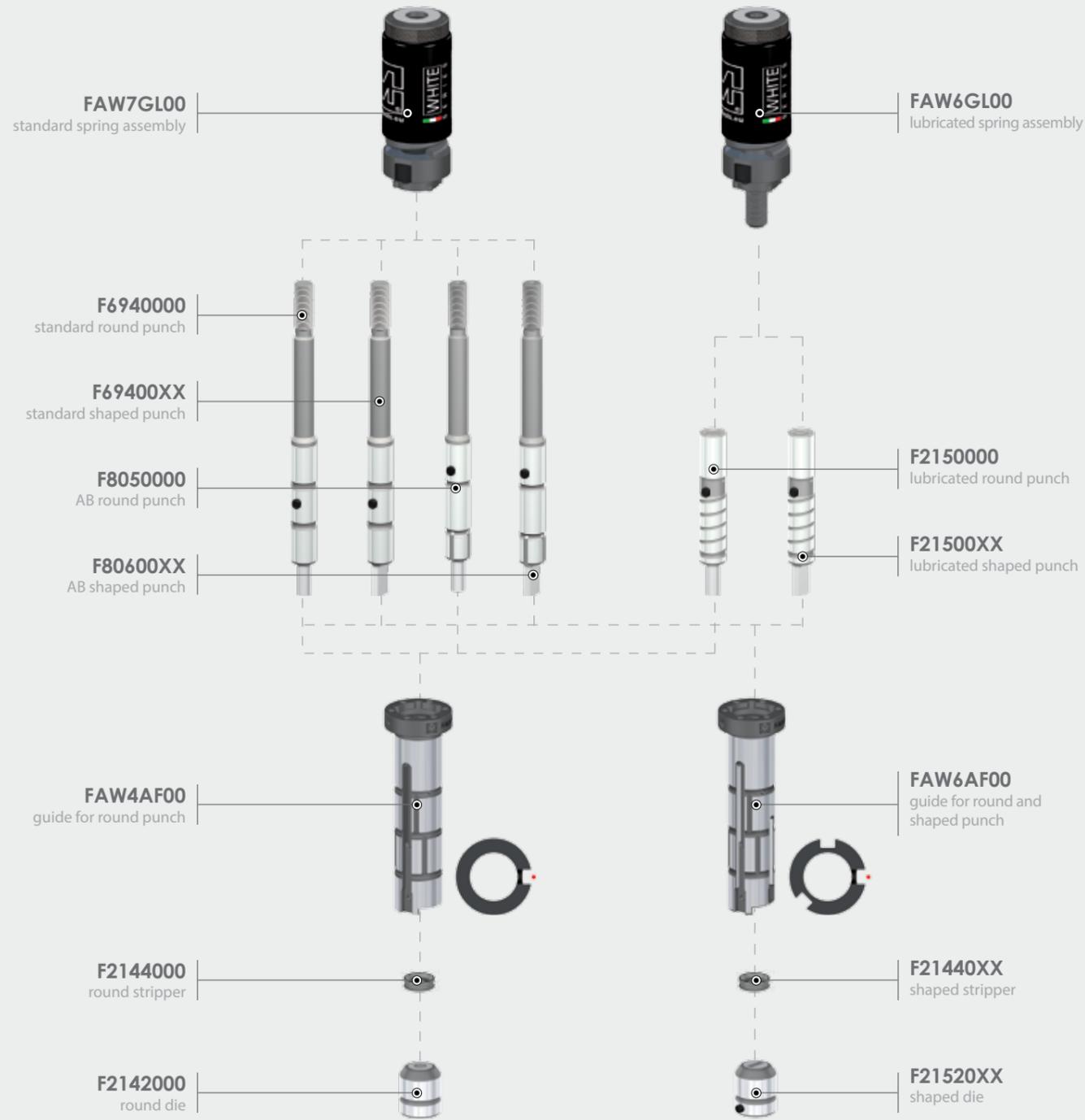
**GREEN SERIES - E STATION** - MAX Ø ∅ = mm 114,3



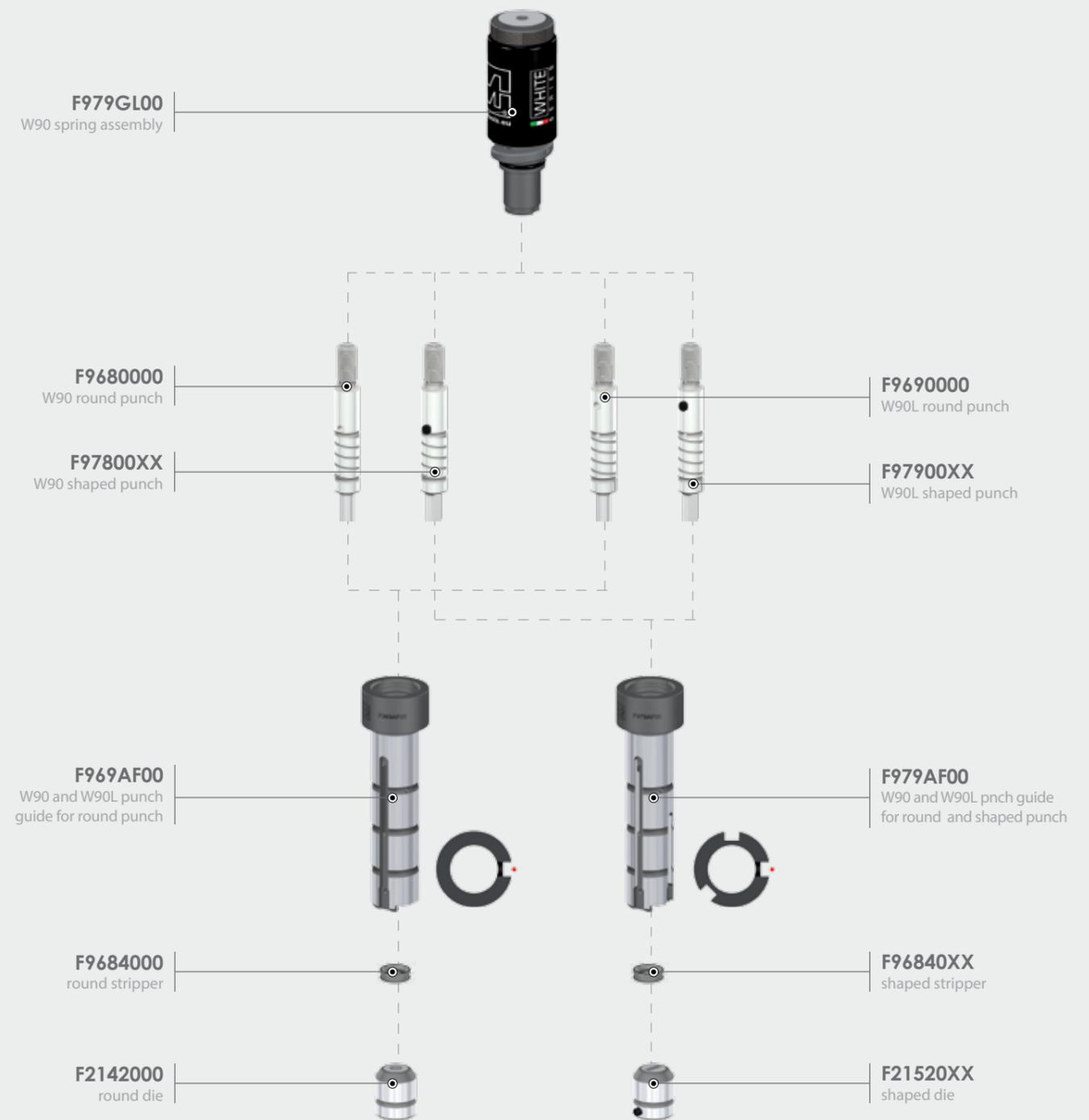
**OPTIONS AND NOTES**



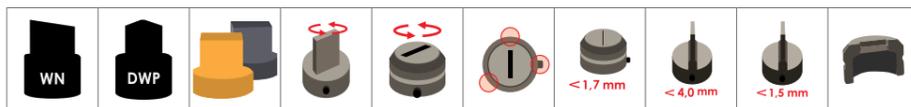
WHITE SERIES - A STATION - MAX Ø  $\varnothing$  = mm 12,7



WHITE SERIES - A STATION - W90 - MAX Ø  $\varnothing$  = mm 12,7



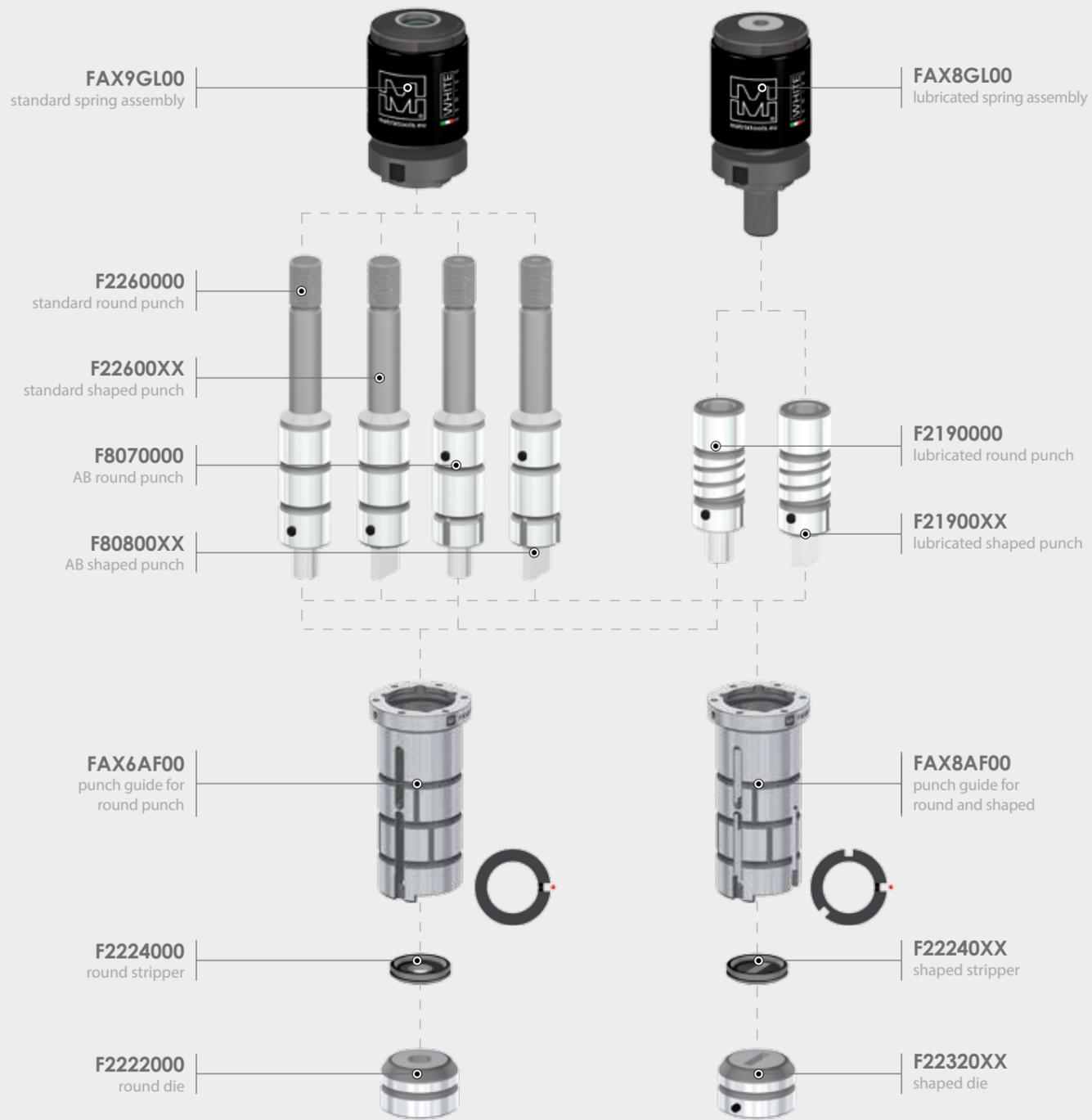
OPTIONS AND NOTES



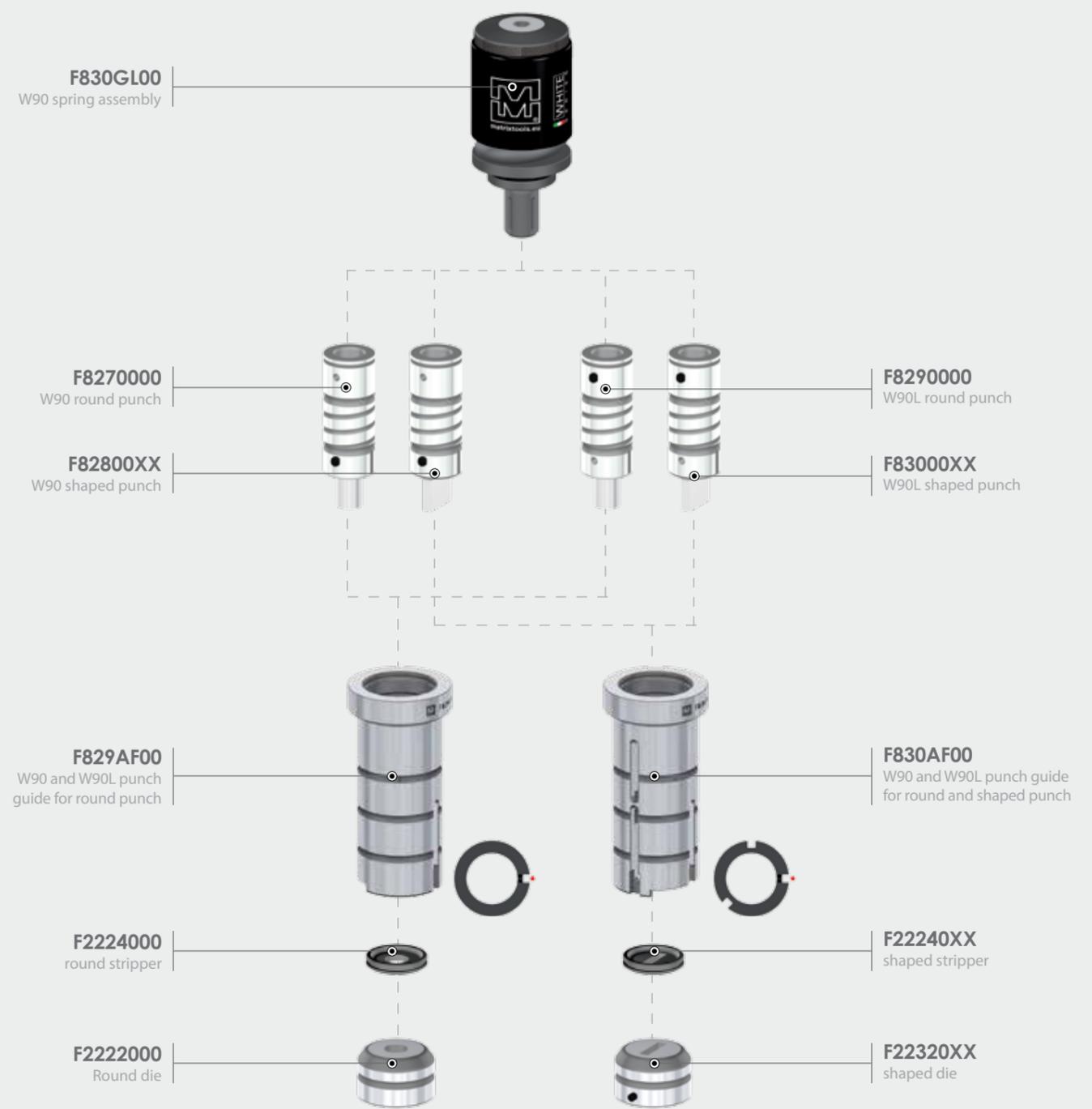
OPTIONS AND NOTES



### WHITE SERIES - B STATION - MAX Ø ∅ = mm 31,7



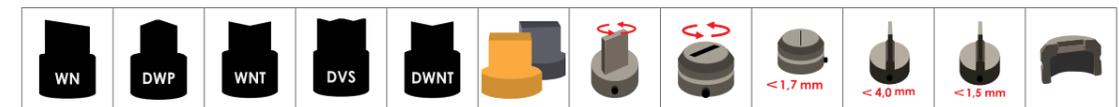
### WHITE SERIES - B STATION - W90 - MAX Ø ∅ = mm 31,7



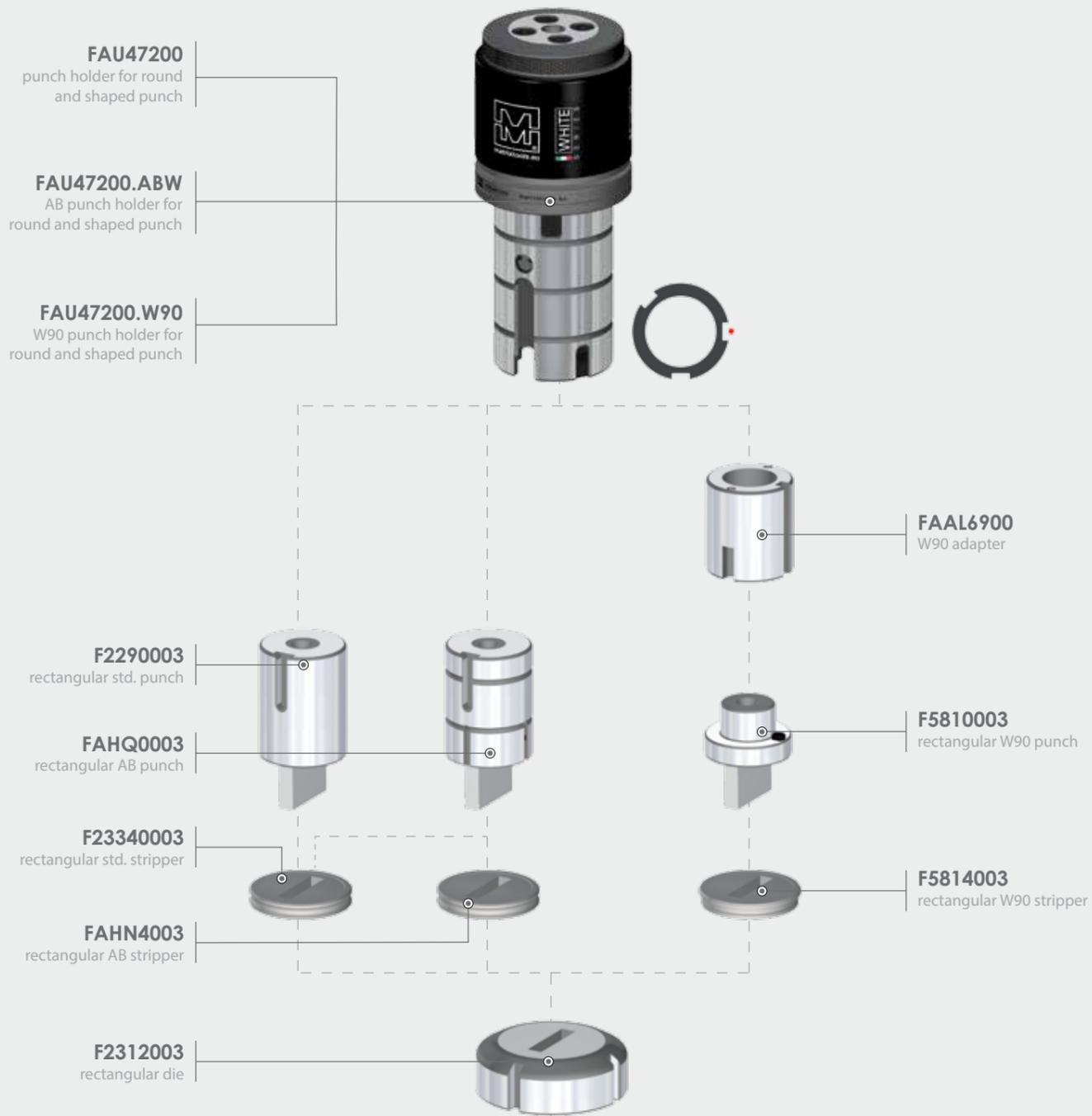
### OPTIONS AND NOTES



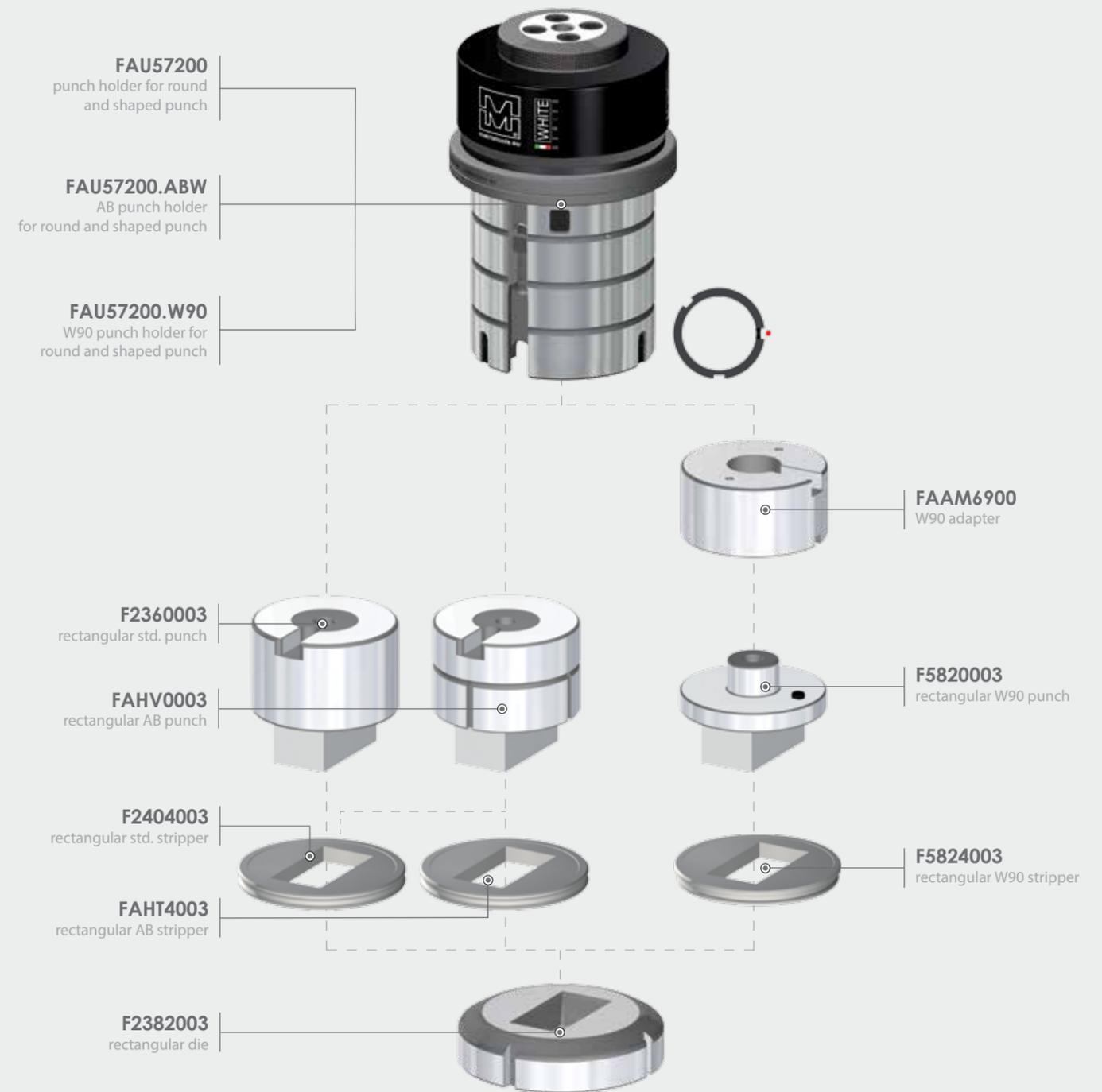
### OPTIONS AND NOTES



### WHITE SERIES - C STATION - MAX Ø $\varnothing$ = mm 50,8



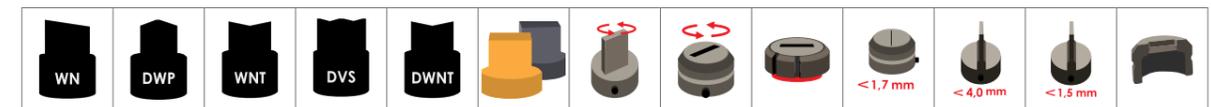
### WHITE SERIES - D STATION - MAX Ø $\varnothing$ = mm 88,9



#### OPTIONS AND NOTES

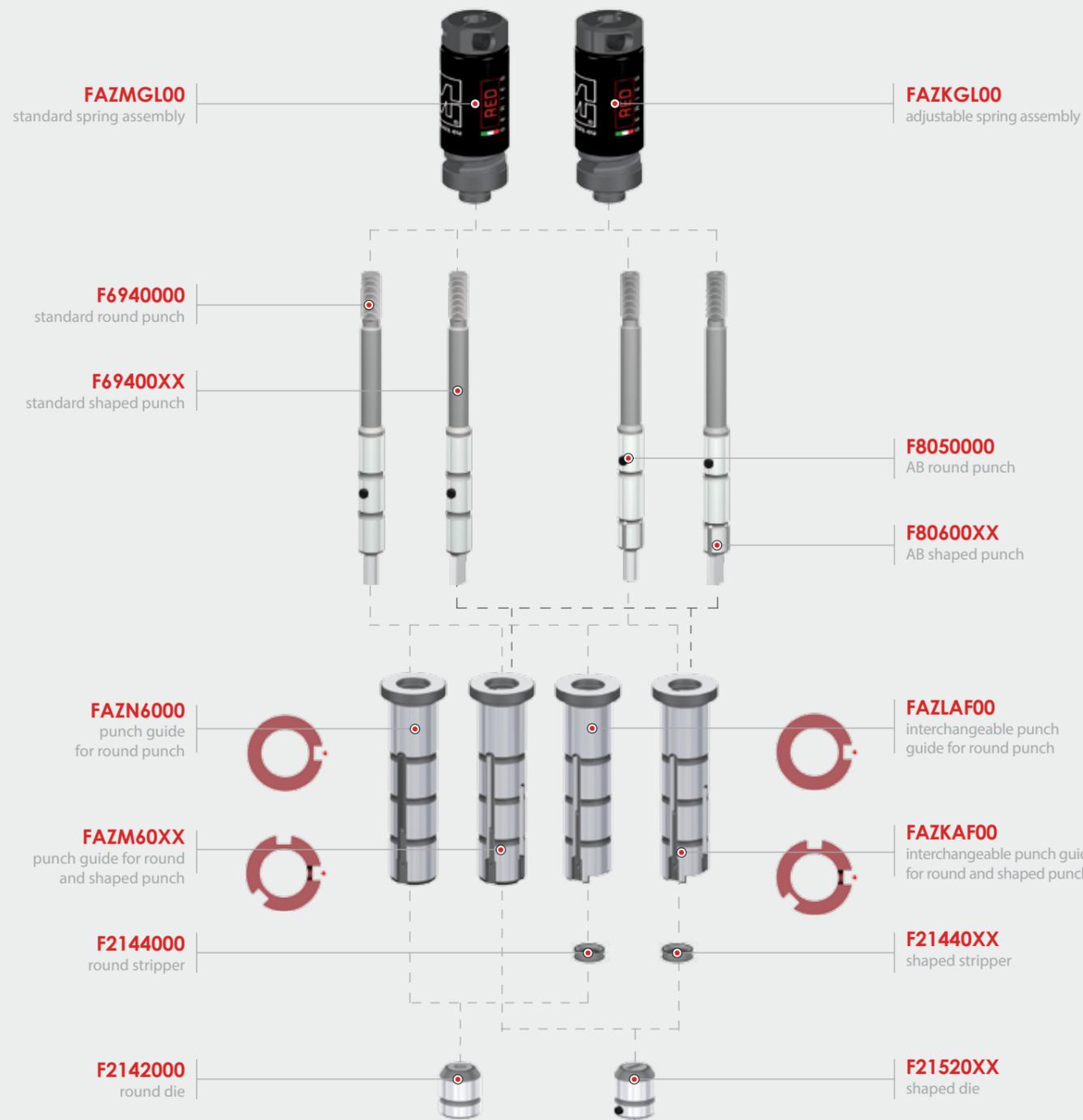


#### OPTIONS AND NOTES

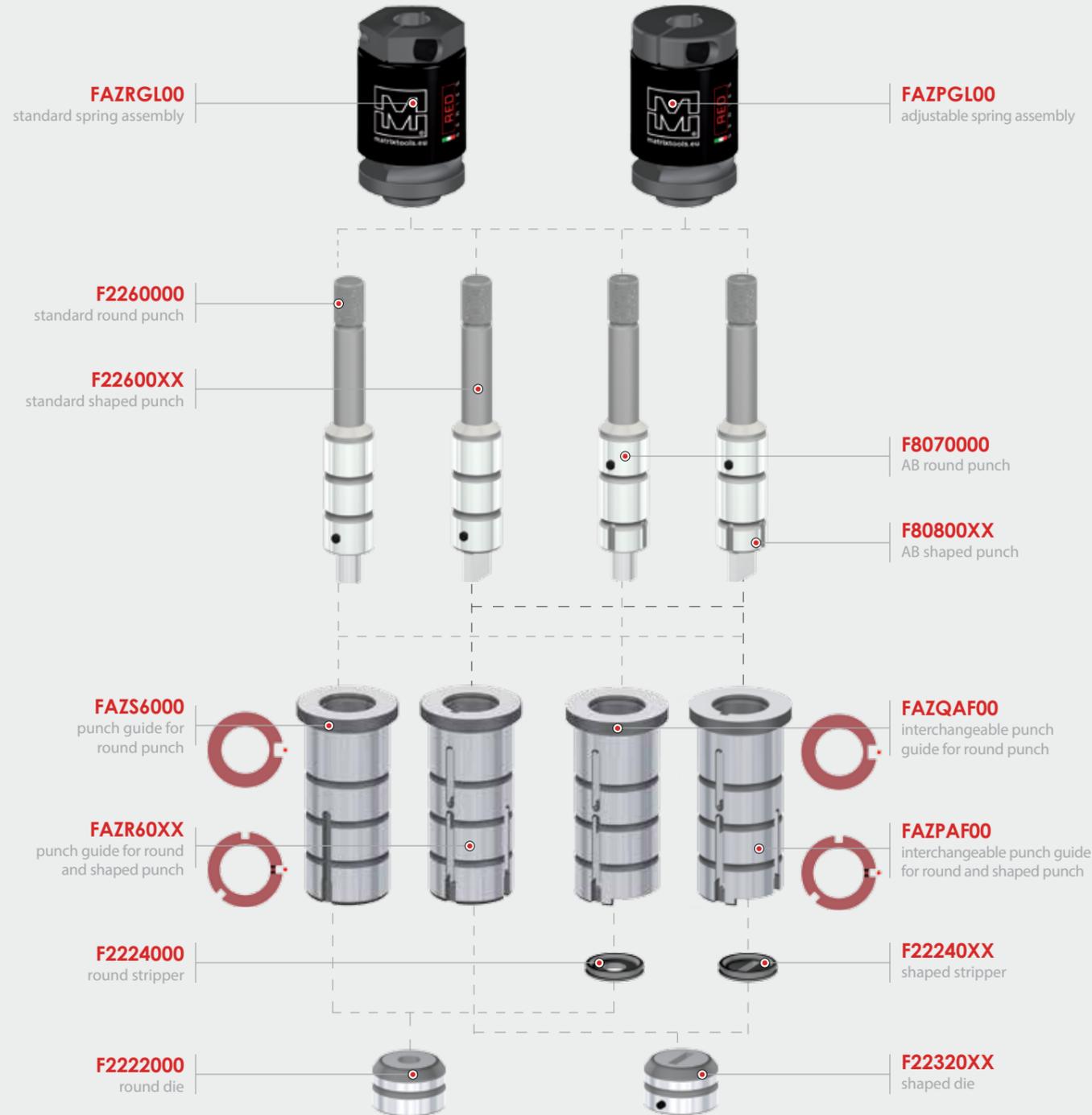




### RED SERIES - A STATION - MAX Ø $\varnothing$ = mm 12,7



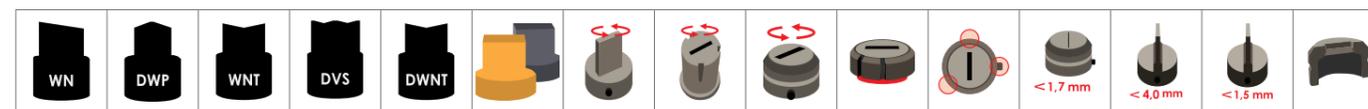
### RED SERIES - B STATION - MAX Ø $\varnothing$ = mm 31,7



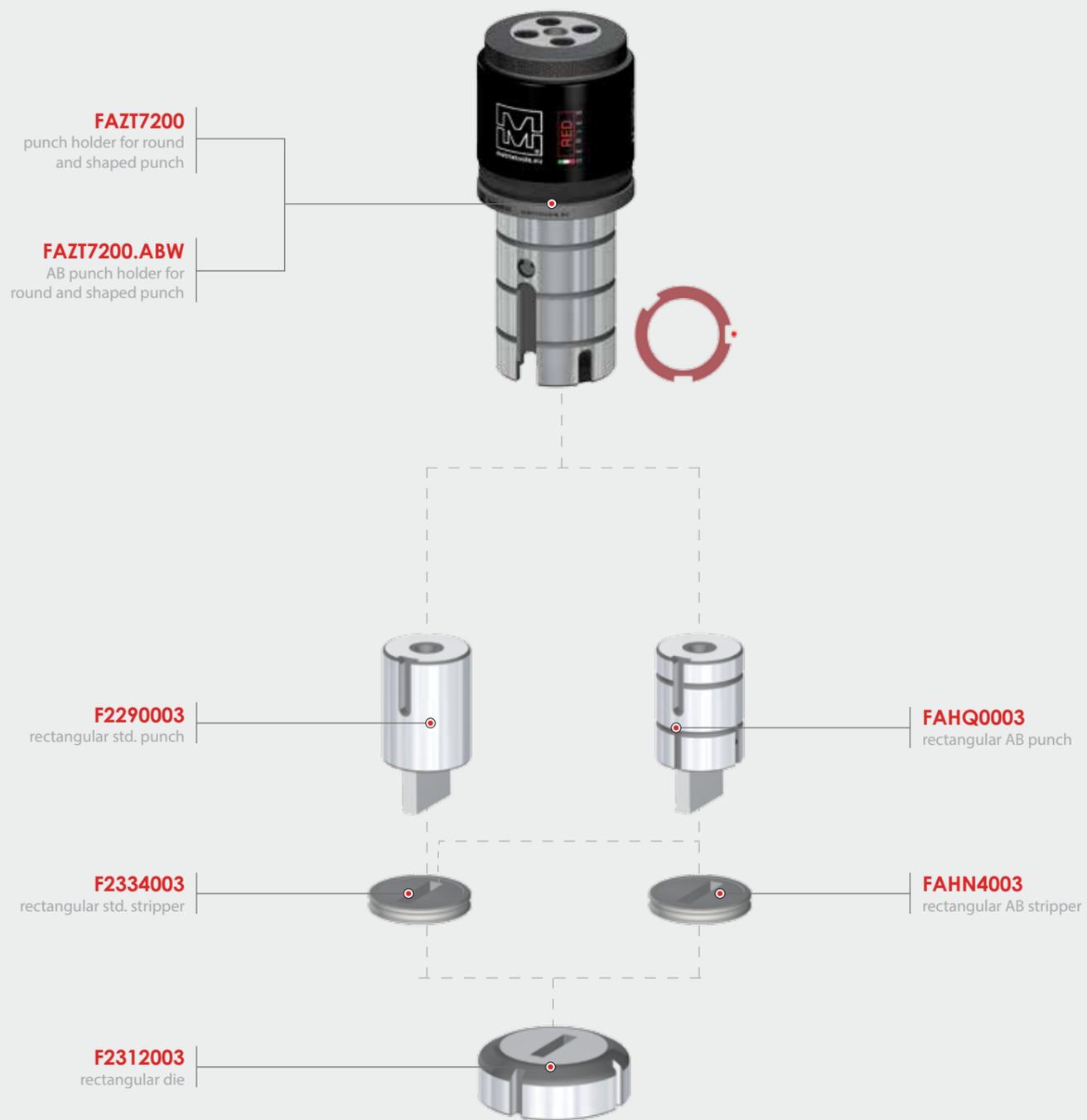
### OPTIONS AND NOTES



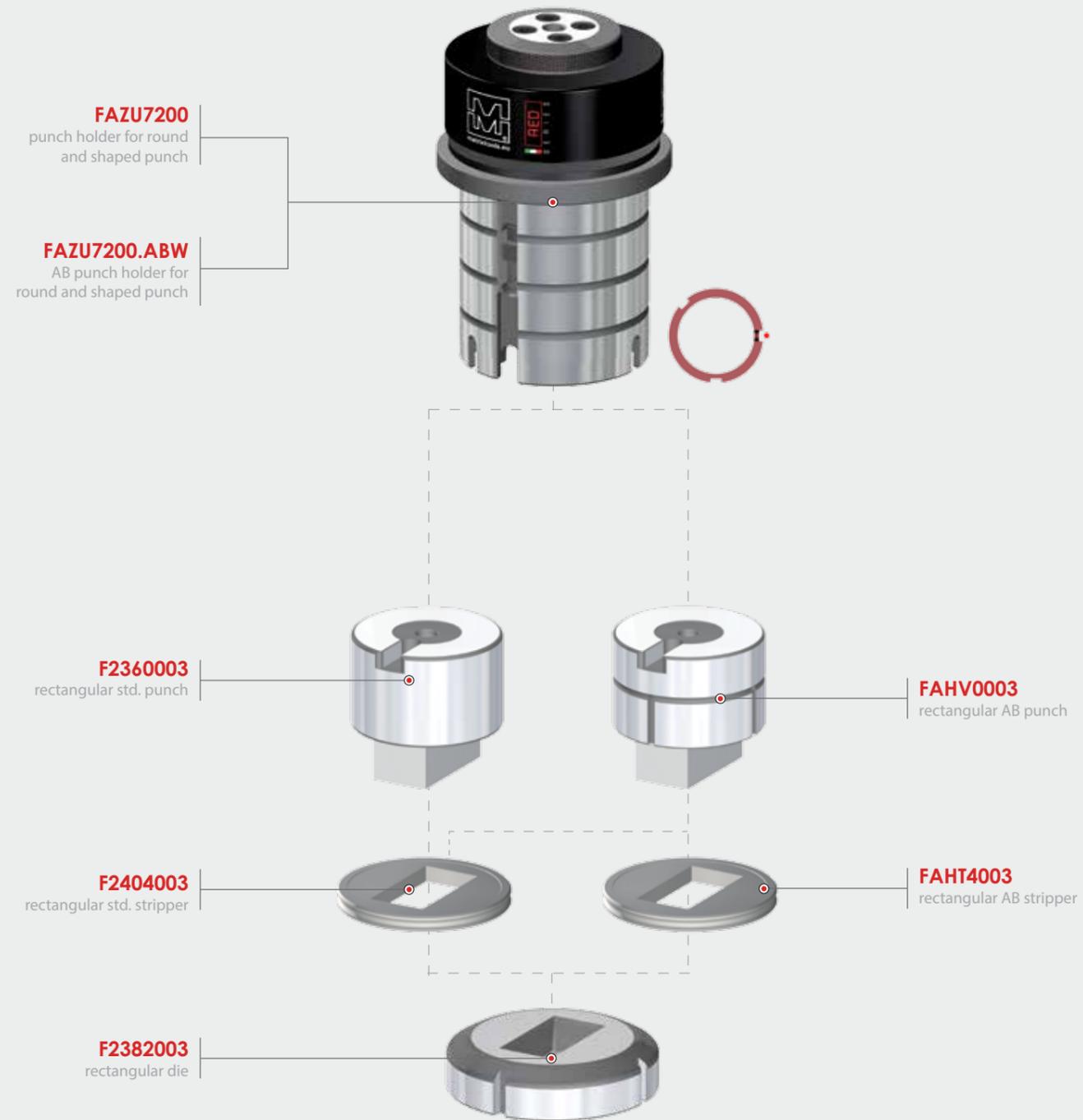
### OPTIONS AND NOTES



### RED SERIES - C STATION - MAX Ø $\varnothing$ = mm 50,8



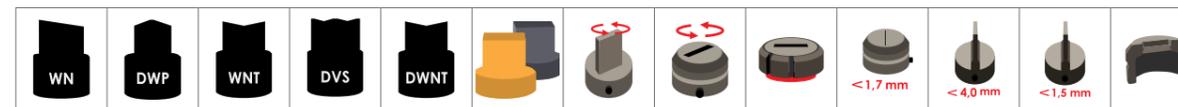
### RED SERIES - D STATION - MAX Ø $\varnothing$ = mm 88,9



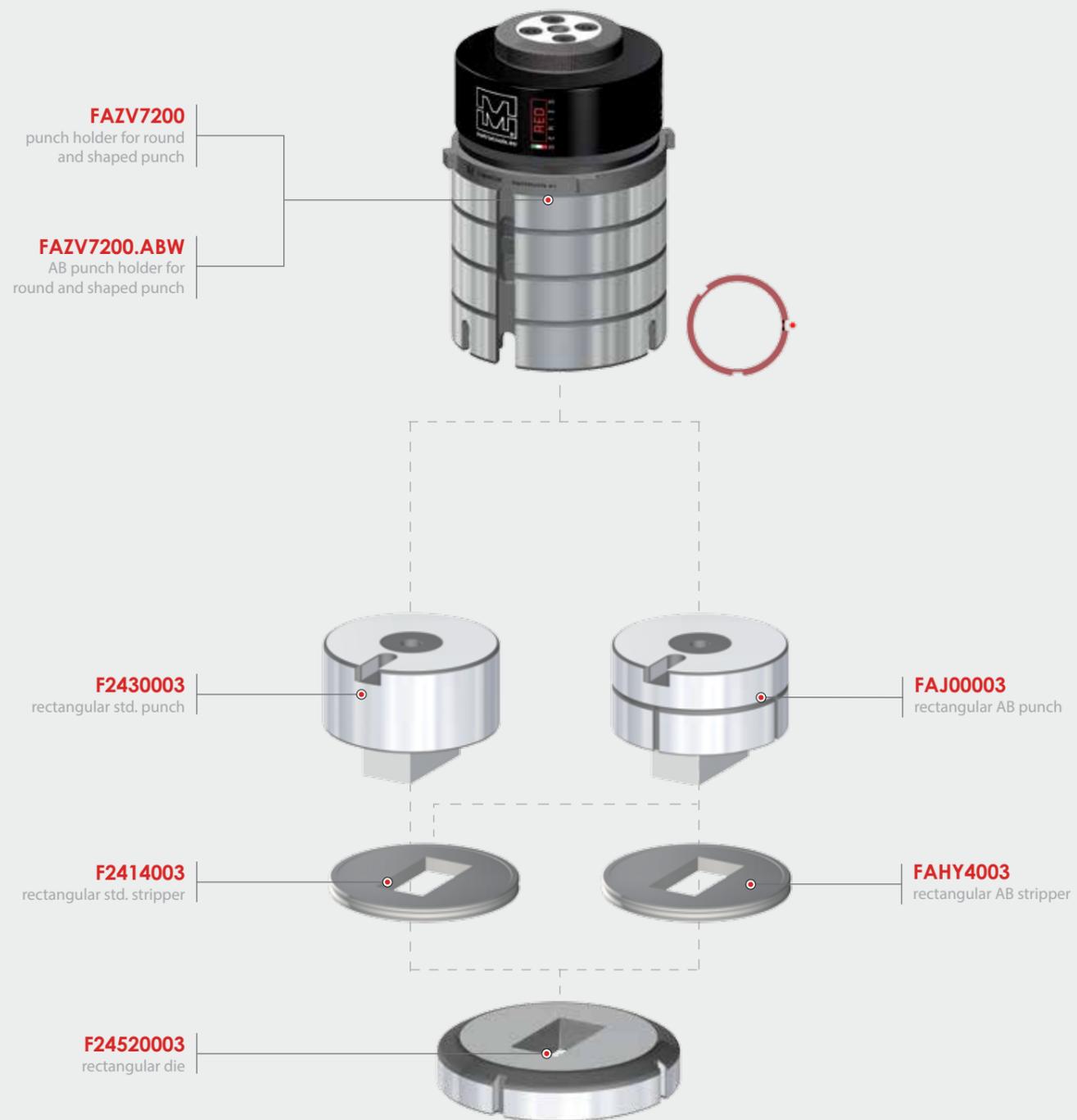
### OPTIONS AND NOTES



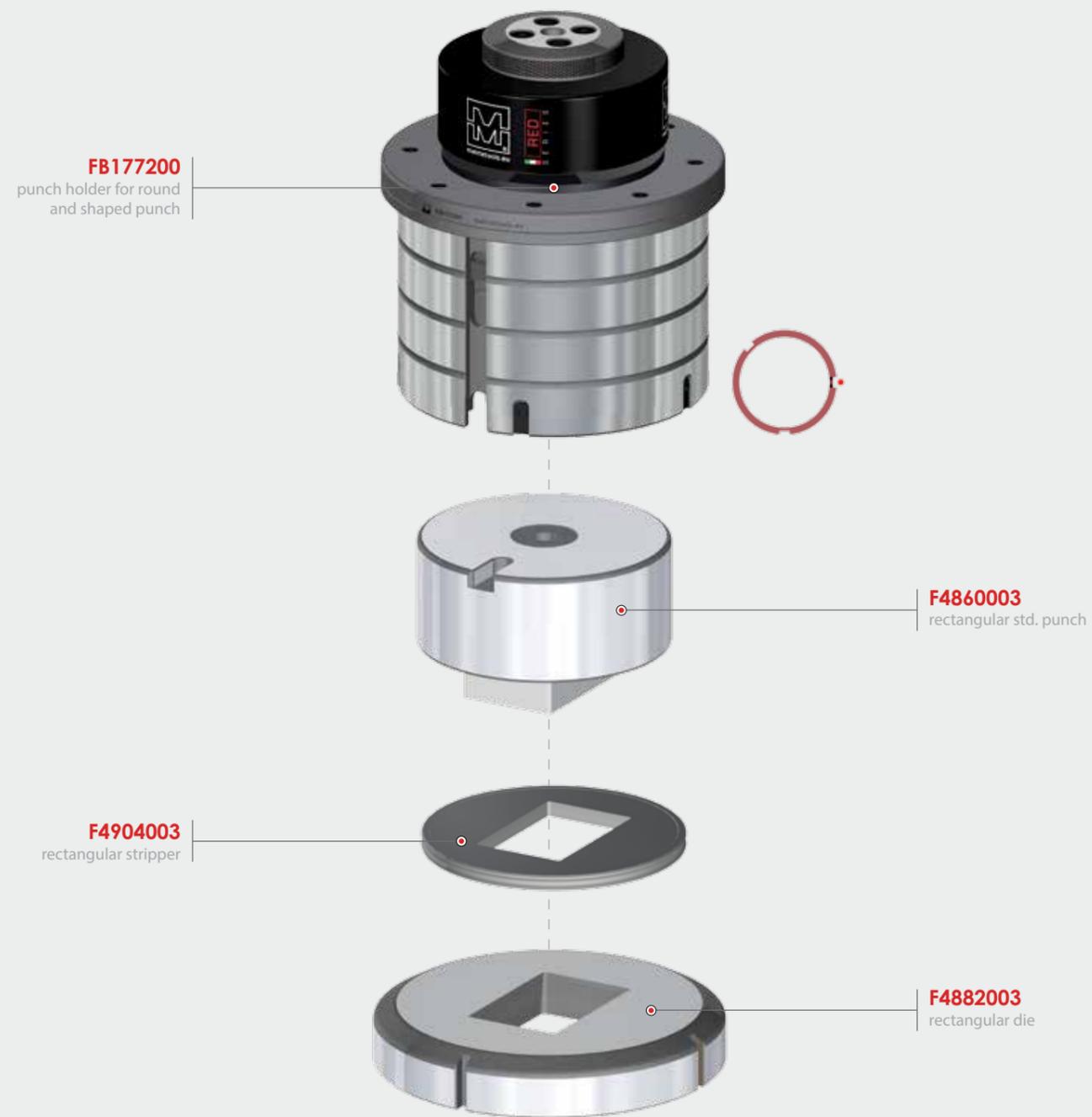
### OPTIONS AND NOTES



**RED SERIES - E STATION - MAX Ø ∅ = mm 114,3**



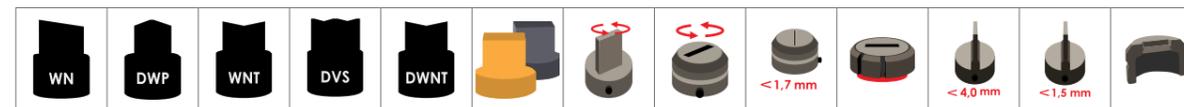
**RED SERIES - F STATION - MAX Ø ∅ = mm 153,5**



**OPTIONS AND NOTES**



**OPTIONS AND NOTES**





# ACCESSORIES

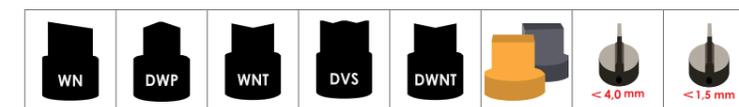
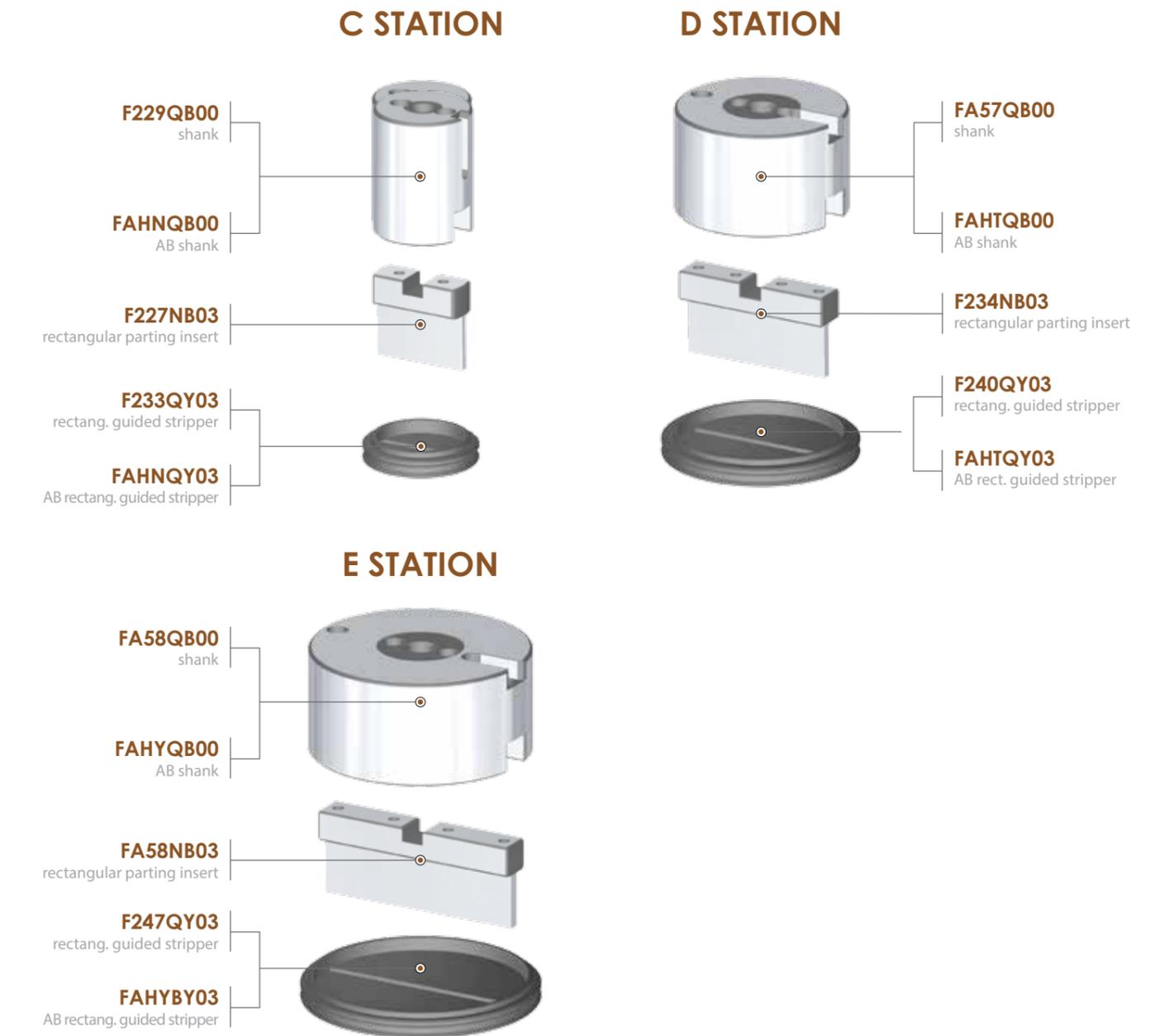
## STANDARD ADAPTORS - thick turret

Essential for monopunch machines, for a better flexibility even on thick turret punching machines. With specific adaptor it is possible to use smaller stations.



## PARTING TOOLS - thick turret

Simple inserts replacement for an economical solution, preserving the supports elements. Special stripper available as parting insert guide, for wearing reduction and better system rigidity.



## PARTING TOOLS CLOSE TO CLAMP - thick turret D station

Used for cutting metal sheets close to clamps; special stripper as parting insert guide, for wearing reduction and better system rigidity.



## PARTING TOOLS CLOSE TO CLAMP - thick turret E station



## TRUMPF® ADAPTORS - MAX Ø ∅ = mm 76,2

For Trumf® tools to be used on Thick Turret D station. For standard and sharpened tools, standard strippers. After sharpening, for a longer life the tools height is restored by step adjustment and without modifying the punch press stroke. Quick tools replacement, tools oriented from 0° to 360° with 45° steps. All this, for great performances.



## MURATA WIEDEMANN® ADAPTORS - MAX Ø ∅ = mm 76,2

For punches and dies Murata Wiedemann® Series 114 on C and D thick turret stations, either for sharpened or standard tools. Spring assembly for a powerful pulling, improved by a mechanical stripper which replaces the standard polyurethane one. Fast tool interchange, done off the holder; tool orienting from 0° to 360°.



## SPECIAL SPRINGS SETS FOR GREEN AND WHITE SERIES

Different types of processing might require particular performances of the punch holders so, because of this, specific springs sets are available to satisfy every need. For punching soft materials such as copper and aluminum it is necessary to reduce the working loading pressure in order to minimize the scratches. It is also recommended to do the same in case of deep punching and/or forming, allowing a stroke increase without risks of springs breakage. There are some heavy processing which require to increase the pulling power. However the different types of springs loading is one of the aspects to be considered. The same interest is given to the speed reaction of the springs, very important aspect in case of high speed processing and nibbling. By replacing the springs set with one duly dimensioned set, it can be a satisfying solution to the above mentioned situations.

**A STATION**



**B STATION**



**C STATION**



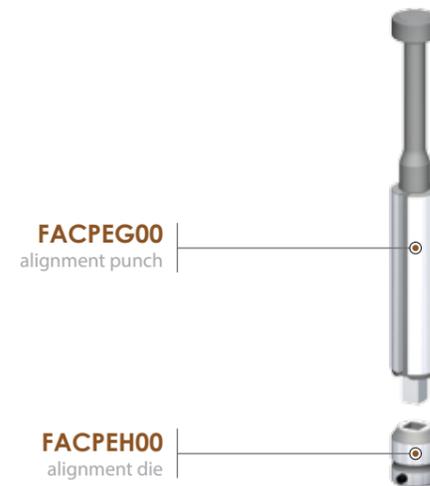
**D - E STATION**



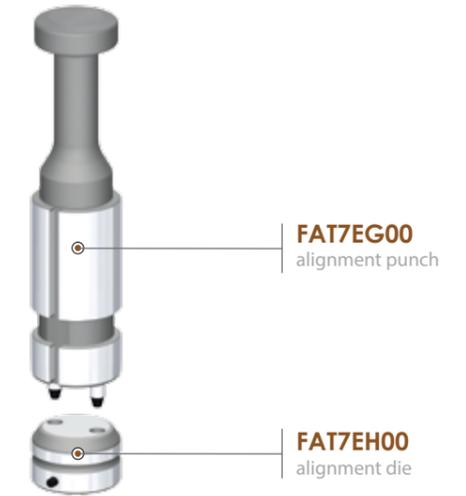
## CENTERING TOOLS A - B - C - D Stations

It requires great care to keep in good condition punch holders and tools as well as a perfect centering of the punching machine. Specific tools for the most common stations, characterized by high precision, for a simple and quick maintenance.

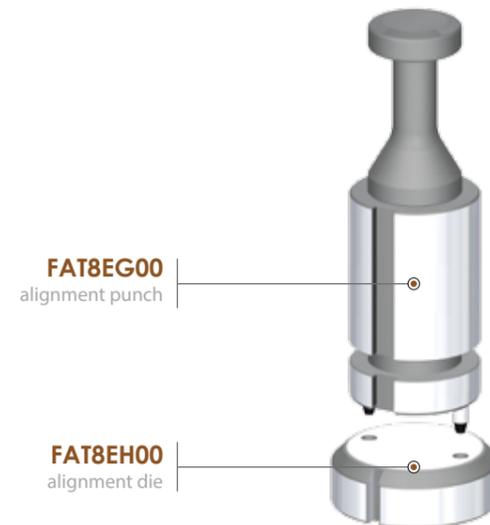
**A STATION FACP7800**



**B STATION FAT77800**



**C STATION FAT87800**



**D STATION FAT97800**



# 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



## MAX DIAGONALS THICK TURRET TOOLS

| A Station | B Station | C Station | D Station | E Station | F Station |
|-----------|-----------|-----------|-----------|-----------|-----------|
| mm 12.7   | mm 31.7   | mm 50.8   | mm 88.9   | mm 114.3  | mm 153.5  |

## 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        |

Exemple:

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

## DIES TOLERANCE IN PERCENTAGE TO THICKNESS

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

\* Blanking: when the scrap is the requested part.



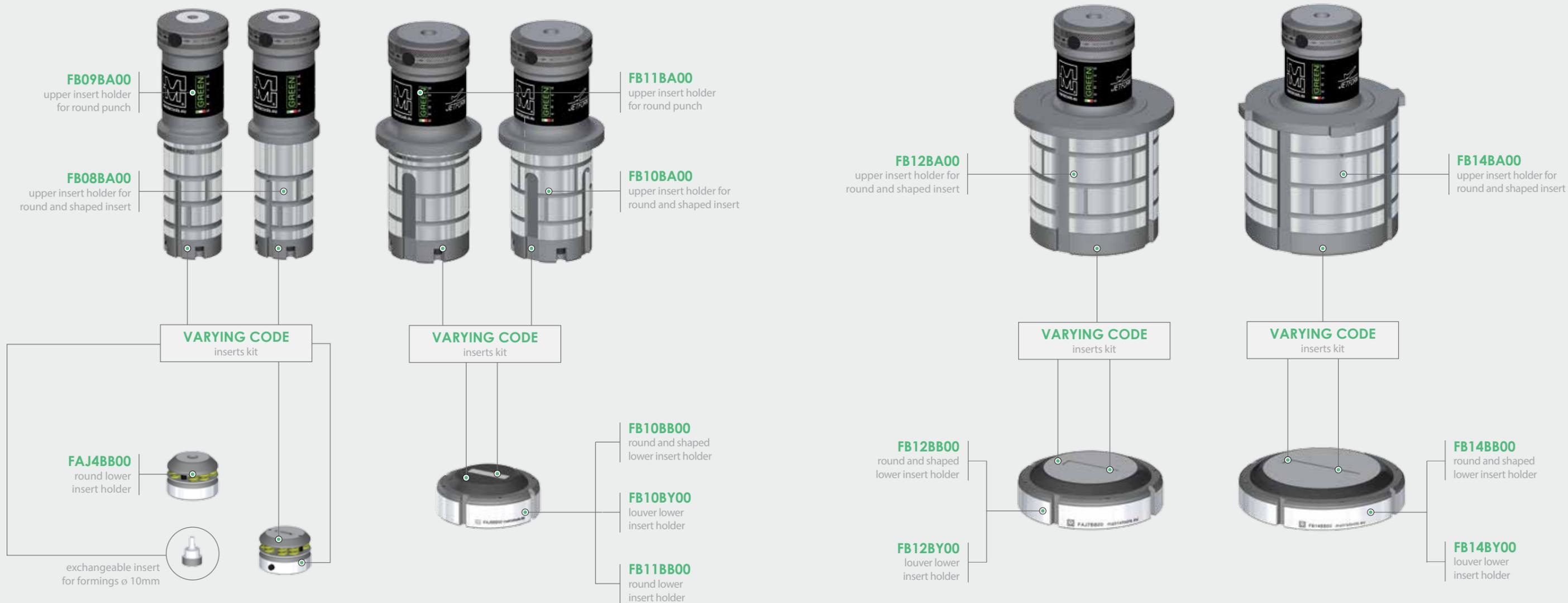
## JETFORM - GREEN SERIES - ADJUSTABLE HEIGHT

### B STATION MAX Ø ∅ = mm 25

### C STATION MAX Ø ∅ = mm 40

### D STATION MAX Ø ∅ = mm 70

### E STATION MAX Ø ∅ = mm 105



Accurate tool height adjusting by mean of 0.08 mm steps which characterize Green Series punch holders, for the maximum performances on punching machines with imprecise or without stroke adjusting.

Tools for the most common formings are available for a quick delivery. Our sales department is at your complete disposal to provide you with updated list.

## JETFORM - WHITE SERIES

### B STATION

MAX Ø  $\nabla$  = mm 25



**FAZFBA00**  
upper insert holder  
for round insert

**FB24BA00**  
upper insert holder for  
round and shaped insert

**VARYING CODE**  
inserts kit

**FAJ4BB00**  
round lower  
insert holder

exchangeable insert  
for formings  $\phi$  10mm



### C STATION

MAX Ø  $\nabla$  = mm 40



**FAZGBA00**  
upper insert holder  
for round insert

**FAQ9BA00**  
upper insert holder for  
round and shaped insert

**VARYING CODE**  
inserts kit

**FB10BB00**  
round and shaped  
lower insert holder

**FB10BY00**  
louver lower  
insert holder

**FB11BB00**  
round lower  
insert holder



### D STATION

MAX Ø  $\nabla$  = mm 70



**FAR0BA00**  
upper insert holder for  
round and shaped insert

**VARYING CODE**  
inserts kit

**FB12BB00**  
round and shaped  
lower insert holder

**FB12BY00**  
louver lower  
insert holder



### E STATION

MAX Ø  $\nabla$  = mm 105

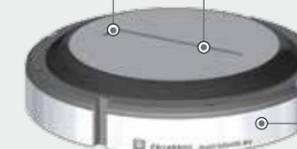


**FAR1BA00**  
upper insert holder for  
round and shaped insert

**VARYING CODE**  
inserts kit

**FB14BB00**  
round and shaped  
lower insert holder

**FB14BY00**  
louver lower  
insert holder



White Series punch holders, for extremely advantageous forming processes on punching machines recently manufactured, taking advantage from the stroke adjusting.

Tools for the most common formings are available for a quick delivery. Our sales department is at your complete disposal to provide you with updated list.







**MATRIX**

Via Ponte d'Oro, 8 • 36015 • Schio • Vicenza • Italy  
T. +39 0445 67.10.15 • F. +39 0445 67.10.35  
[www.matrixtools.eu](http://www.matrixtools.eu) • [sales@matrixtools.eu](mailto:sales@matrixtools.eu)