



TRUMPF

THICK TURRET

SALVAGNINI

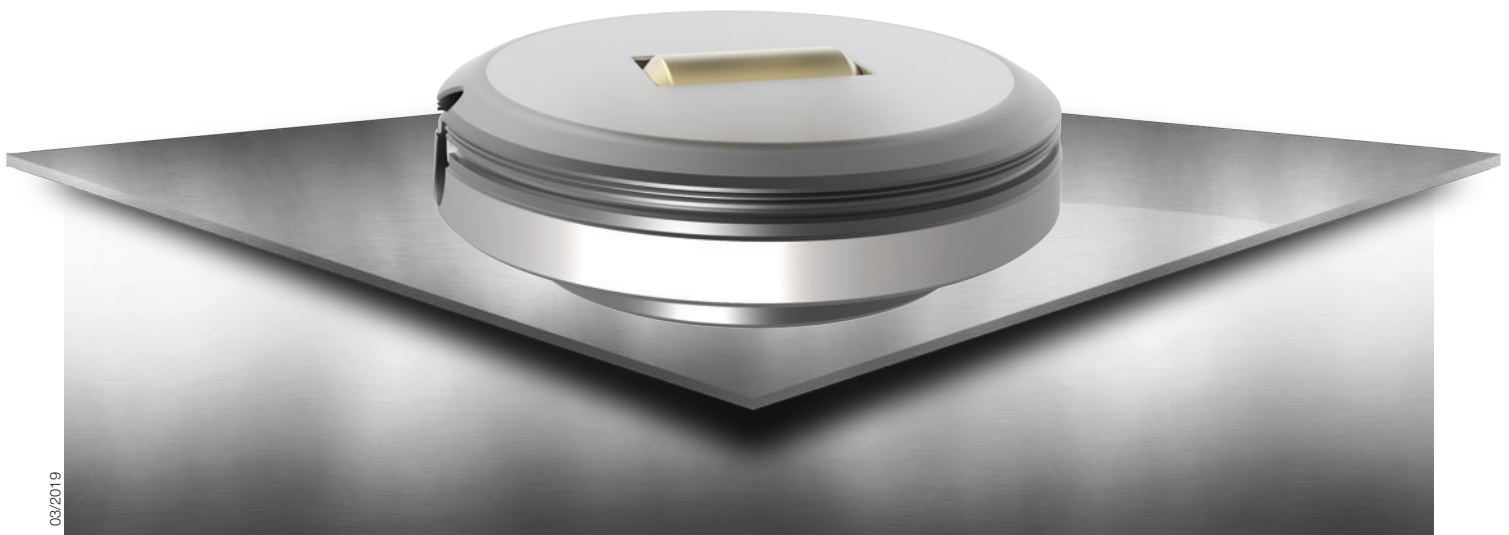
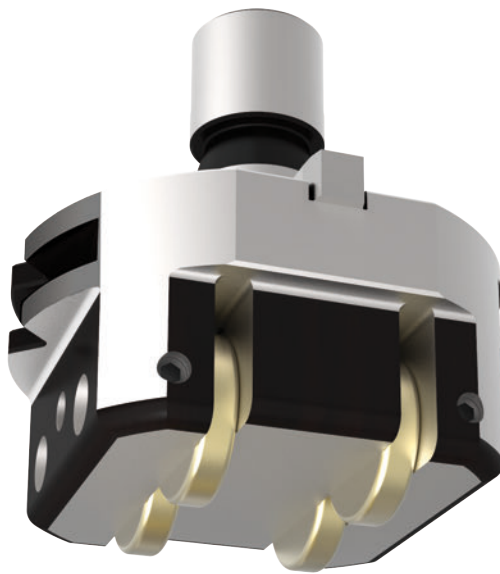


AWARDS / NEWS / INNOVATION  
**REVIEW 2019**

# ps:<sup>®</sup>wheel-straighten

FOR MACHINE TYPES TRUMPF & THICK TURRET

- straighten tool for reducing sheet warpage during wheel beading
- for sheet materials:  
aluminium, steel, stainless steel
- Application in combination with a wheel-tool:
  1. pre-machining with a beading tool
  2. processing with ps:<sup>®</sup>wheel-straighten to compensate sheet warpage



# ps:®wheel-straighten

## FOR MACHINE TYPES TRUMPF & THICK TURRET

The PASS wheel tools ps:®wheel are available for a different range of applications, e.g. offset-, deburring-, reinforcing- or beading-tools, especially for large sheets.

The special feature of wheel beading tools consists of the patented and segmented wheels whereby the tool can simply produce reinforced beads with a small radius. The wheels thereby work as a differential: The internal component rotates slower, the external turns faster than the center. Thus, the resulting thrust as well as chatter marks cease to appear. Furthermore, the segmented wheels contribute to a minimized sheet warpage through its operation.

But occasionally it may be that a bigger sheet warpage occurs when producing a large number of beads in a row or beads of an enormous size.

In order to counteract this, PASS Stanztechnik AG has now developed a new solution:

### ps:®wheel-straighten

The new straighten tool **ps:®wheel-straighten** for improving the mentioned sheet warpage is applied in combination with a wheel-tool:

In the first step, the sheet is processed with a beading tool, in the second step **ps:®wheel-straighten** comes into action through which the occurred sheet warpage is counteracted through the integrated Ampco-wheels. In practice this means that the sequence of beading and straighten alternates to reach the improved result on the sheet.

Sheet metal working with a  
wheel beading tool  
Typical: sheet warpage upwards



Sheet metal working with a  
wheel beading- and a straighten tool  
Improved flatness  
UT-OFFSET = 0



Sheet metal working with a  
wheel beading- and a straighten tool  
sheet warpage downwards  
UT-OFFSET = -0,2

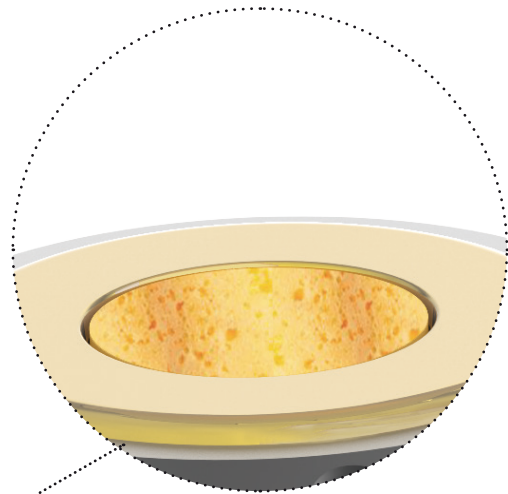


**ps:®wheel-straighten** will be adapted to customer needs as well as products and is available for the tooling systems TRUMPF and THICK TURRET.

# ps:<sup>®</sup>sponge-tool

FOR MACHINE TYPES TRUMPF & THICK TURRET

- lubricating tool for exact formings
- sheet metal lubrication on CNC sheet metal working machines from the **bottom side** for the first time
- quality improvements in formings and protection of the sheet surface
- significantly lower friction during the forming process
- controlled applications
- high process reliability
- significant improvement in tool lifetime
- special sponge with an insert of  $\varnothing$  30 mm and a capillary effect for oil
- commercial lubricants can be used
- for all sheet thicknesses and materials: aluminium, steel, stainless steel



10/2019

# ps:<sup>®</sup>sponge-tool

## FOR MACHINE TYPES TRUMPF & THICK TURRET

When forming sheet metal, oil in the right place is an important requirement for best forming results and a component for a long tool lifetime. Until now, oil lubrication from the bottom of the tool on CNC-controlled machines was not possible which is why lubrication is usually completely dispensed with. As a result, poor tool lifetime has to be accepted as well as poor formings are achieved often. In order to meet the quality requirements, PASS Stanztechnik AG has developed a solution:

### ps:<sup>®</sup>sponge-tool

The new lubrication tool **ps:<sup>®</sup>sponge-tool** enables sheet metal lubrication on CNC sheet metal working machines from the bottom side for the first time and thus ensures selective lubrication exactly at the point on the sheet metal where it is necessary.

**ps:<sup>®</sup>sponge-tool** contains a sponge with a capillary effect for oil which is included in the die. The die is equipped with an oil filler screw through whose filling hole the corresponding oil is filled in (approx. 50 ml). Now the sponge absorbs the oil and the screw can be closed again. Furthermore, the new tool is equipped with steel springs as well as an Ampco-stripper for low-scratch material handling due to the low effort needed. You will find further information about low-scratch material handling on our website.

In practice, the whole thing works as follows: In the production of an extrusion for example, the sheet metal is pre-punched first. Then, **ps:<sup>®</sup>sponge-tool** executes a hit at the corresponding position. The sponge is pressed on the sheet metal and oil is precisely applied to it. The next step – the creation of a hit – is to place the oil film exactly where it is needed. Another classical application are forming tools such as the round emboss tool. In this case, lubrication results in significantly lower friction during the forming process. As a consequence, formings are produced in better quality.

The advantages of **ps:<sup>®</sup>sponge-tool** are obvious:

- quality improvements in formings
- controlled applications
- significant improvement in tool lifetime of the successively used forming tools
- high process reliability

What's behind the magic sponge that can do it?

**ps:<sup>®</sup>sponge-tool** is a special sponge which operates the essential functions for sheet metal forming: liquid absorption, storability as well as retention capacity. This means, that the sponge doesn't constantly release oil but exactly at that point on the sheet that is affected by the forming process. Its oil film acts like a lubricating film and thus protects the surface during processing.

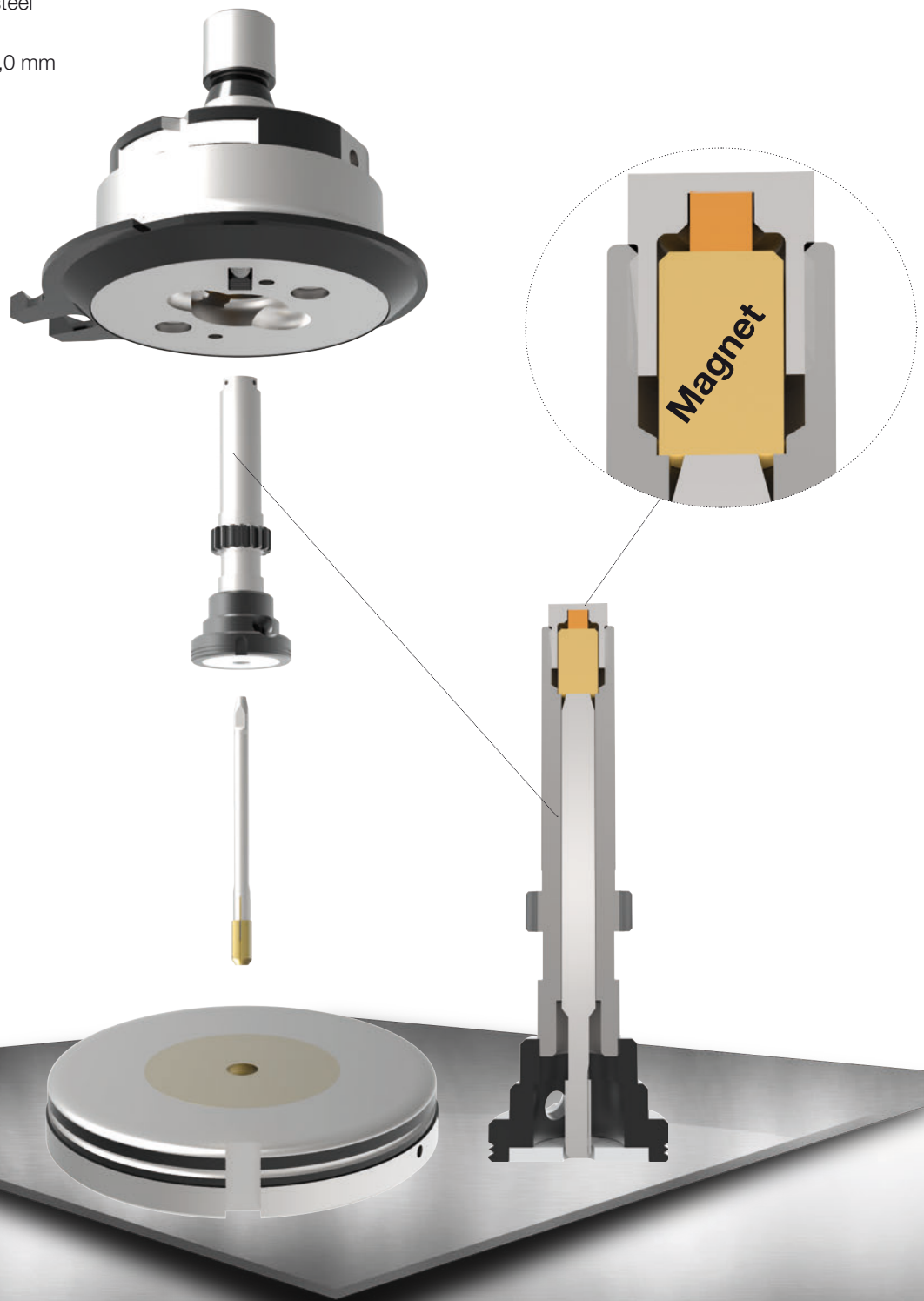
**ps:<sup>®</sup>sponge-tool** is currently available with a sponge insert of 30 mm diameter and for tools of the THICK TURRET and TRUMPF machine systems. Designs for other tool types are of course available on request. The sponge has no limit to the sheet thickness. Two further positive characteristics of the sponge are its high chemical fastness and solvent resistance. Thus, commercial lubricants can be used without damaging the material. Replacement sponges for **ps:<sup>®</sup>sponge-tool** are of course available at a reasonable price.

## PRODUCT INFORMATION

# ps:<sup>®</sup>single-thread-TP

FOR MACHINE TYPE TRUMPF - MACHINE GROUP I

- for all sheet materials:  
aluminium, steel, stainless steel
- sheet thickness:  $s = 1,0 - 8,0$  mm
- thread M2.5 up to M10



# ps:®single-thread-TP

## FOR MACHINE TYPE TRUMPF - MACHINE GROUP I

Threads can be found in different areas when products are connected together.

In order to further advance automated thread forming on a TruPunch/TruMatic machine, the tool technology was scrutinized and completed with further effective developments. The user-friendly technology is based on a further development of the already existing thread forming tool of the tooling system TRUMPF and is now available at PASS:

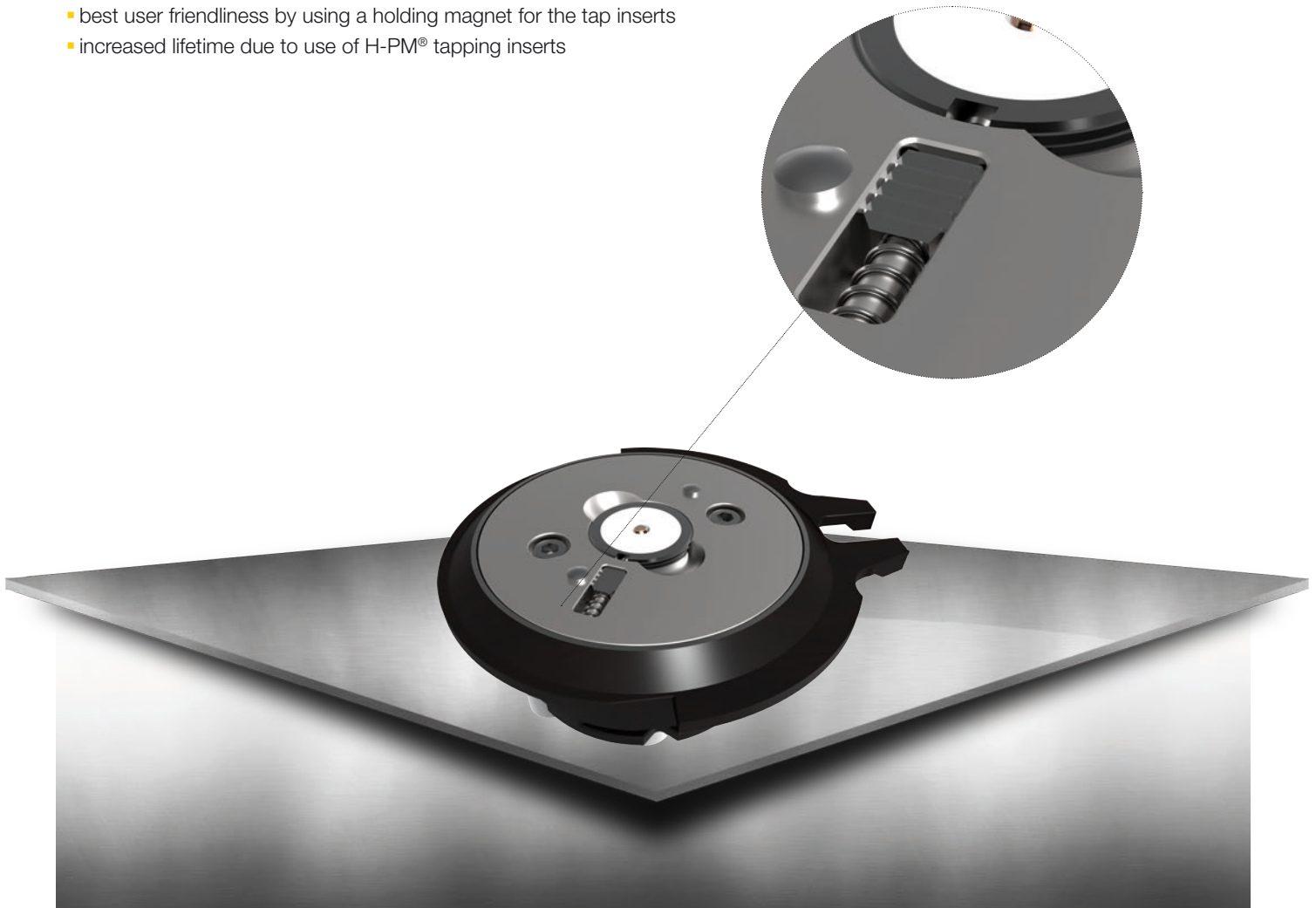
### ps:®single-thread-TP

A magnet in the upper part of the leading spindle ensures a fast and secure fastening of the tap insert without the need for an additional tool.

The module is fixed flush by actuating the locking slide. Here also, no additional tools are required to enable a quick tool change. A decisive focus was placed on the material of the leading screw: instead of "brass", "hardened steel" is now used in order to achieve a longer tool life and thus higher operational safety.

#### Advantages at a glance:

- max. operating safety by hardened leading screw
- easy handling for assembling and disassembling of tapping modules by slide-part system
- best user friendliness by using a holding magnet for the tap inserts
- increased lifetime due to use of H-PM® tapping inserts



## PRODUCT INFORMATION

# ps:<sup>®</sup>beta-V2<sup>®</sup>

FOR MACHINE TYPE THICK TURRET

- assembled spring unit
- replaceable stripper plates
- tool length can be adjusted by simple, quick and safe handling
- closed, solid head unit made of **metal** secures highest obtainable reliability of operation in case of spring breakage
- optional available as ABS-version
- easy adjustable regrinding length to 9,5 mm (s = 1,0 mm), without using compensating shims



08/2008



# ps:®beta-V2®

## FOR MACHINE TYPE THICK TURRET

PASS developed with the **ps:®beta-V2®** one tooling system for THICK TURRET punching machines.

The system is characterized by a simple, quick and safe handling, a tough assembly and an extremely short set-up time.

The **ps:®beta-V2®** consists of a tightened head-spring-unit, one punch guide independent of the form, and the wear and tear parts "punch body and stripper plate".

This means that the tool can be modified to other shapes within a very short time by changing only the punch and the cost-efficient stripper plate.

The length adjustment of the punch as well as the changing of the stripper plate will be carried out "at a push of a button". A secure and exact length adjustment can be guaranteed by using the integrated snap valve. The stripper plate can be disassembled in the same way.

The **ps:®beta-V2®** can also be delivered for machines with lubrication (ABS). It has to be emphasized that the head-spring-unit keeps also the same but with a hole channel for the lubrication system.

### Technical data:

- useable for all machines with tooling system THICK TURRET
- available for tooling stations A, B, C, D and E
- punch length adjustment by turning the assembled spring unit
  - adjusting range at station A: per one turn 1,2 mm / per click 0,15 mm
  - adjusting range at station B, C, D und E: per one turn 1,6 mm / per click 0,2 mm
- secure locking by snap valve mechanic (with springs)
- for sheet thickness up to 6 mm
- 9,5 mm regrinding length (calculated for sheet thickness 1,0 mm)
- changing stripper plates
  - Stat. A+B by radial insertion
  - Stat. C, D and E by axial clipping (with pins for simple removal)
- also available for machines with ABS
- useable up to 400 kN punch force due to a solid construction
- hardened and polished punch guide
- closed, solid head unit made of **metal** secures highest obtainable reliability of operation in case of spring breakage

# ps:®marking-all-in-one

FOR MACHINE TYPE THICK TURRET / PRIMA-POWER

- multifunctional tool for engraving, signing, marking and foil cutting
- 1 tool – 4 functions
- minimum conversion times for quick change to a new function due to clickable head screw
- incl. two dies: flat die (signing), ball roller die (engraving, marking and foil cutting)
- incl. special marker pen with Dry Safe Ink
- for all sheet materials and a sheet thickness from  $s = 0,8 \text{ mm}$

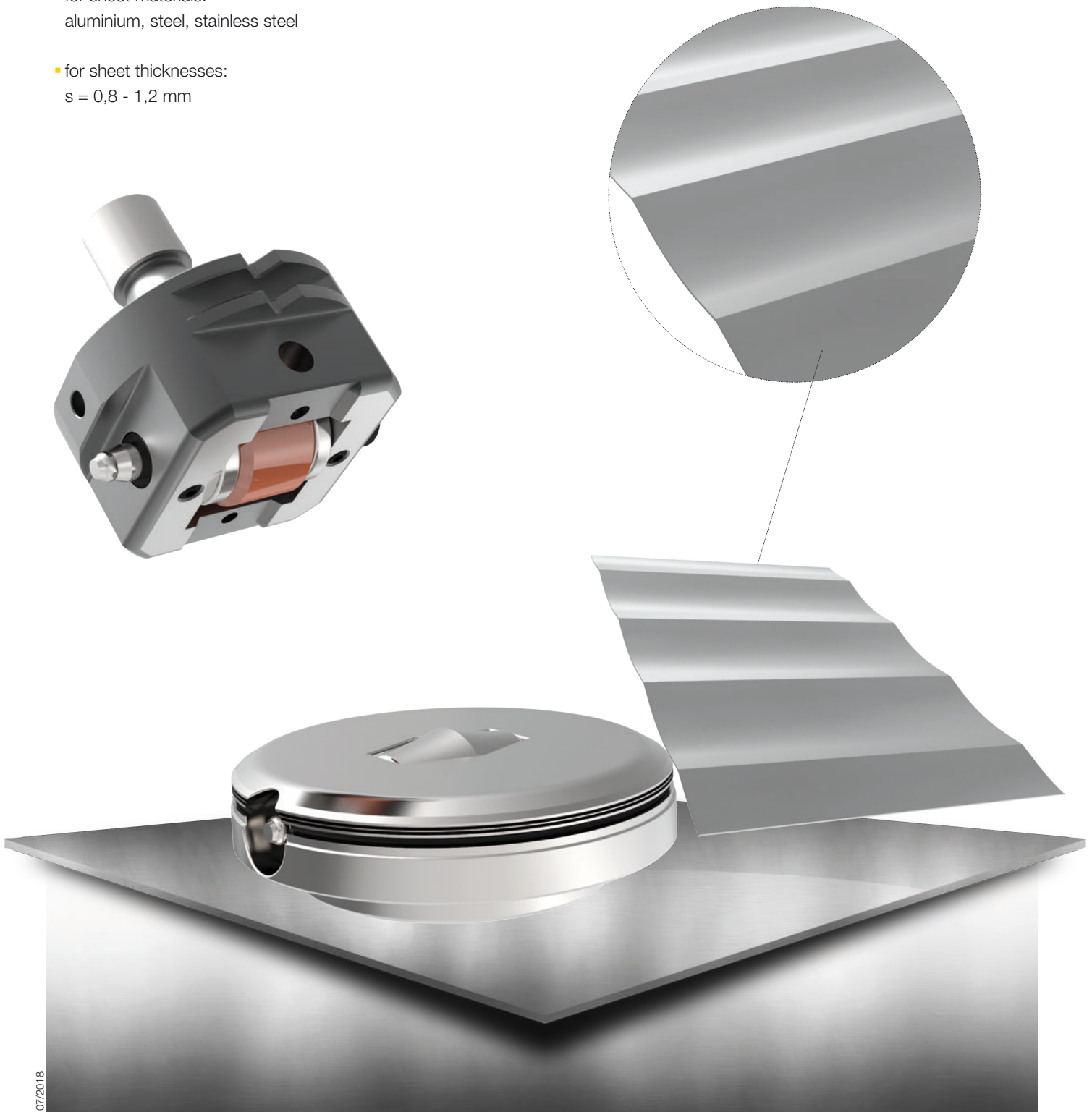


10/2019

# ps:<sup>®</sup>wheel-crowning

FOR MACHINE TYPES TRUMPF & THICK TURRET

- for production of corrugated metal sheets and peaks in sheets
- for sheet materials: aluminium, steel, stainless steel
- for sheet thicknesses:  $s = 0,8 - 1,2 \text{ mm}$



# ps:<sup>®</sup>wheel-deburr-V3

FOR MACHINE TYPE SALVAGNINI

- for sheet materials:  
aluminium, steel, stainless steel
- high operating safety by spring-loaded ball inserts (safety mechanism)
- for usage on sheet edge or 5 mm slitting
- low-maintenance
- 2 versions available:  
V3 (ball Ø 15)  
Deburring on upper-side and bottom side simultaneously possible. Deburring of combined slittings
- V4 (ball Ø 8)  
Deburring close to edges possible (upper-side and bottom-side)
- possibility for double-side deburring close to edges
- for sheet thickness  $s = 0,8 - 4 \text{ mm}$



02/2016

# ps:<sup>®</sup>wheel-deburr-V3

## FOR MACHINE TYPE SALVAGNINI

Our ball deburring tool **ps:<sup>®</sup>wheel-deburr-V3** is an updated, modified version of a wheel tool.

Deburring of material is a normal operation in the fabricating work day. The **ps:<sup>®</sup>wheel-deburr-V3** meets the claim of a fast and effective operation in order to save time and money.

The ball is integrated in a solid bed and is available in 2 versions: V3 version (Ø 15 mm) is designed for a double-side operation. V4 version (Ø 8 mm) is designed for one-side operation. Double-side deburring close to the inside edges is possible (a complete deburring is possible when edge radius is min.  $r = 3$  mm).

The ball for deburring works free of clearance under pressure during the process. The ball rack is polished and provides a trouble-free procedure.

The tool is designed with a fully adjustable pre-loaded spring in the upper part for fine adjustment of the spring force up to  $s = 4$  mm. The interchangeable spring in the upper part provides a rough adjustment of the spring force for different sheet types (e.g. aluminium, steel oder stainless steel).

The tool is designed and produced for low maintenance and a long tool life.

	ps: <sup>®</sup> wheel-deburr-V3 made by PASS	also available on the market
1.	fully adjustable pre-loaded spring in the upper part for fine adjustment	solid upper part
2.	interchangeable spring in the upper part for rough adjustment of the spring force for different sheet types (aluminium / steel / stainless steel)	limited usability for stainless steel sheets
3.	balls integrated in a <b>solid</b> and hardened rack	ball integrated in a aluminium case
4.	ball for deburring - works free of clearance under pressure during process	cannot work free of clearance under pressure
5.	ball rack is polished and provides a trouble-free procedure	aluminium case
6.	low maintenance - long tool life	permanent maintenance necessary
7.	can be used in the smallest space - no blocking of large stations	

## PRODUCT INFORMATION

# ps:<sup>®</sup>slitting5

FOR MACHINE TYPE TRUMPF

- for normal slittings and process-reliable discharge of small parts
- reduced processing times
- active or lowerable die necessary
- for sheet thickness  $s = 0,5 - 3,0$  mm
- maximum process reliability due to monitored ejection process

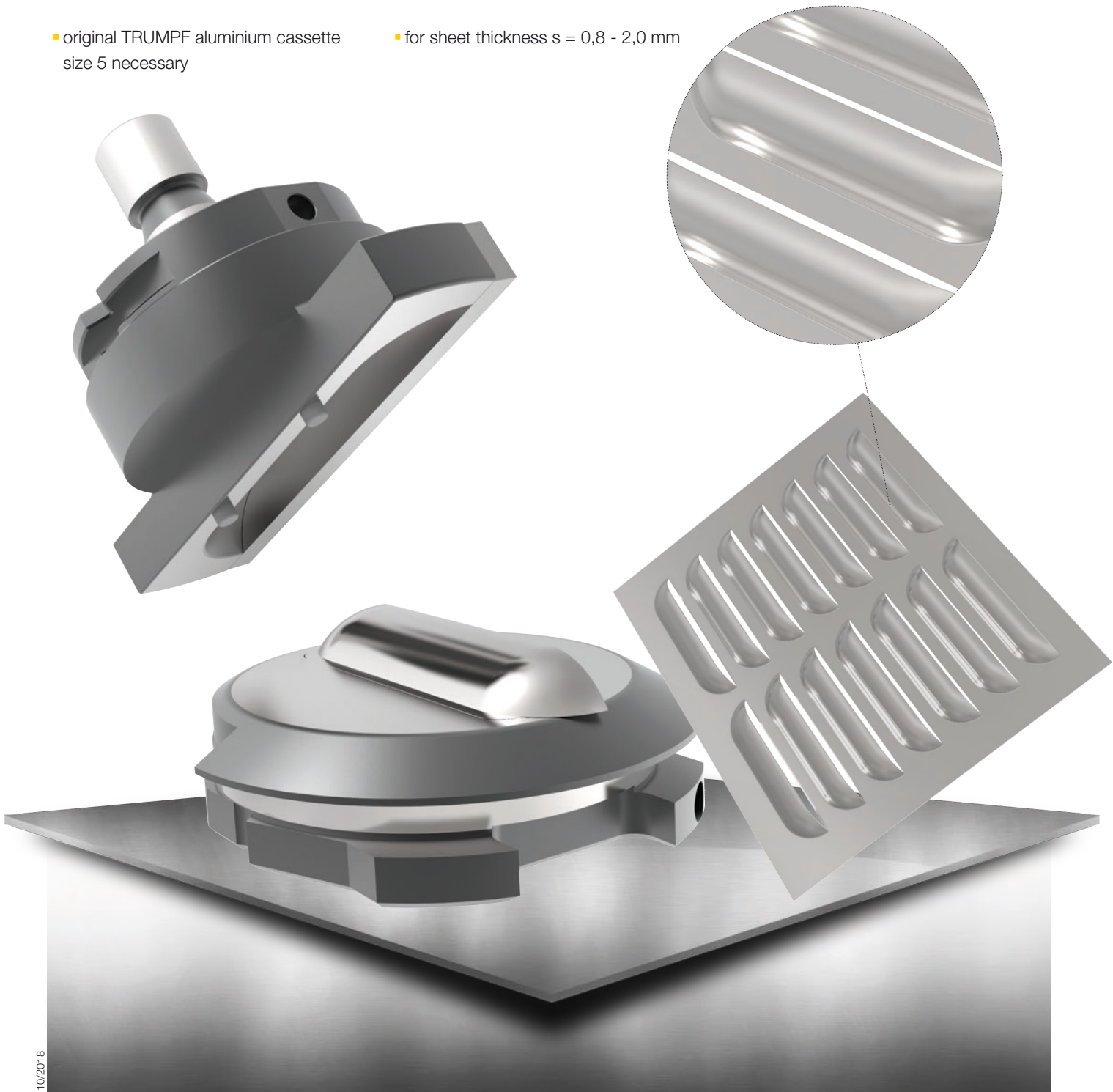


09/2018

# ps:<sup>®</sup>louver5

FOR MACHINE TYPES TRUMPF & THICK TURRET

- louver tool, size 5
- louver length 100 mm in ONE hit
- active die necessary
- original TRUMPF aluminium cassette size 5 necessary
- ejector pins and rotating die plate in the upper part
- special size bottom part with exchangeable die plate insert
- for sheet thickness  $s = 0,8 - 2,0$  mm
- for sheet materials: steel, aluminium, stainless steel



# ps:<sup>®</sup>script

FOR MACHINE TYPE TRUMPF, THICK TURRET & SALVAGNINI

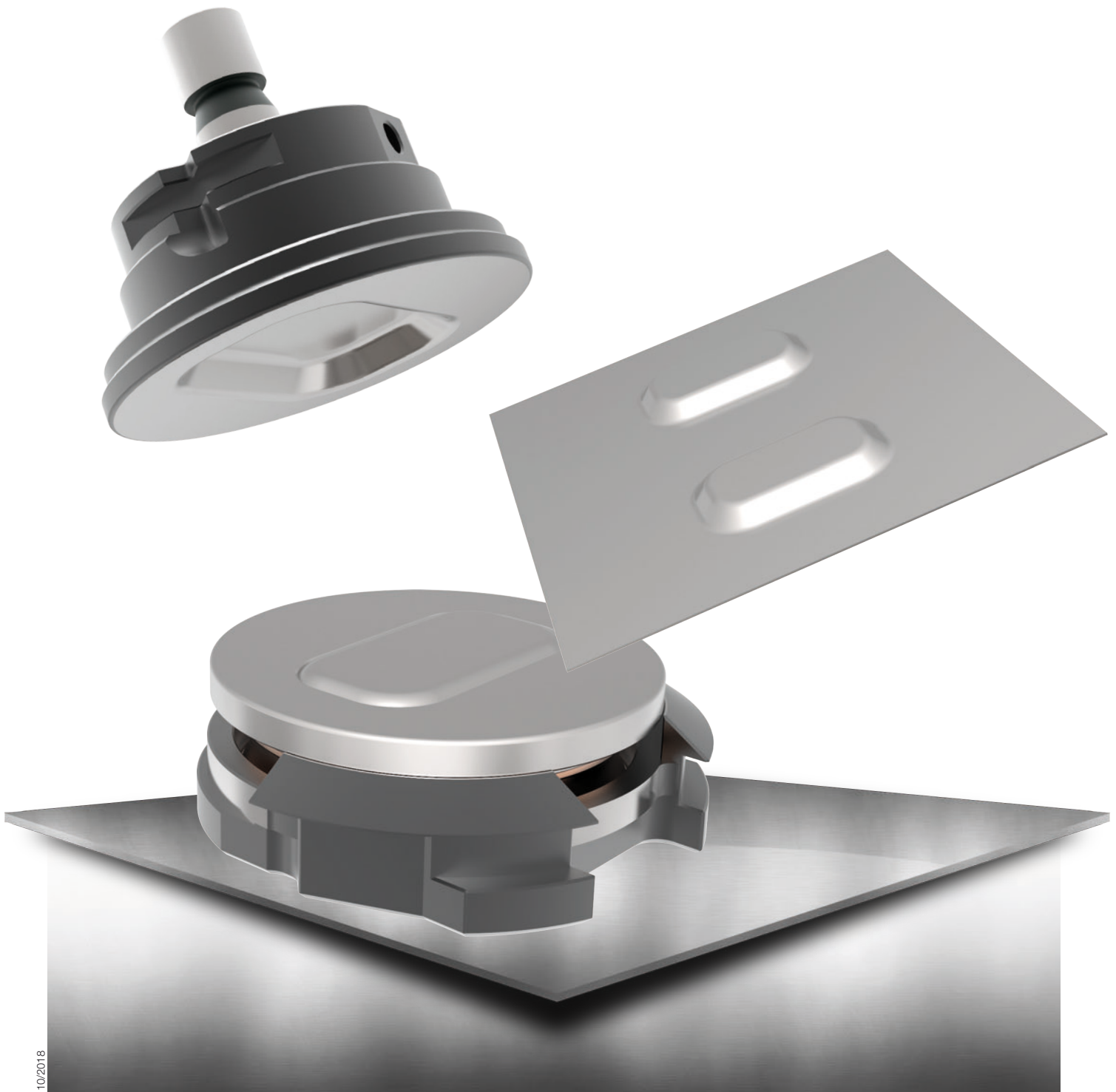
- spring-loaded tool with exchangeable punch insert
- for sheet thickness  $s = 0,8 - 1,2 \text{ mm}$
- upper part with special relief for producing standardised braille
- for all sheet materials





ps:<sup>®</sup>emboss5  
FOR MACHINE TYPE TRUMPF

- special tools with max. size as spring-loaded bottom part (Ø 98,5 mm)
- extended upper part with enlarged surface
- special assembly for reducing sheet warpage for large embossings
- active die necessary



10/2018

## PRODUCT INFORMATION

# ps:<sup>®</sup>flange90°

FOR MACHINE TYPE TRUMPF

- bend, e.g. with dimension 30 x 70
- for all sheet materials
- spring-loaded to ensure process reliability
- field of application: recessed grips of medical boxes or cable bushings for example
- flanging with second tool



10/2019

# ps:<sup>®</sup>flange180°

FOR MACHINE TYPE TRUMPF

- bend, e.g. with dimension 30 x 70
- for all sheet materials
- spring-loaded to ensure process reliability
- field of application: recessed grips of medical boxes or cable bushings for example
- flanging with second tool



10/2019

# LIFETIME OF TOOLS - REGRIND ADVICE

TOOL SYSTEMS THICK TURRET, TRUMPF & SALVAGNINI

“We have 120.000 hits to punch in a stainless steel with sheet thickness of  $s = 3$  mm. How many punches do we need?”

OR

“What is the operation time expected for nibbling aluminium sheet with sheet thickness of  $s = 1$  mm?”

OR

“At what quantity of hits should we regrind our tools?”

These kind of questions come to us daily for many years.

Unfortunately the answers to all these questions are not easy to make as a lot of different factors have to be observed.

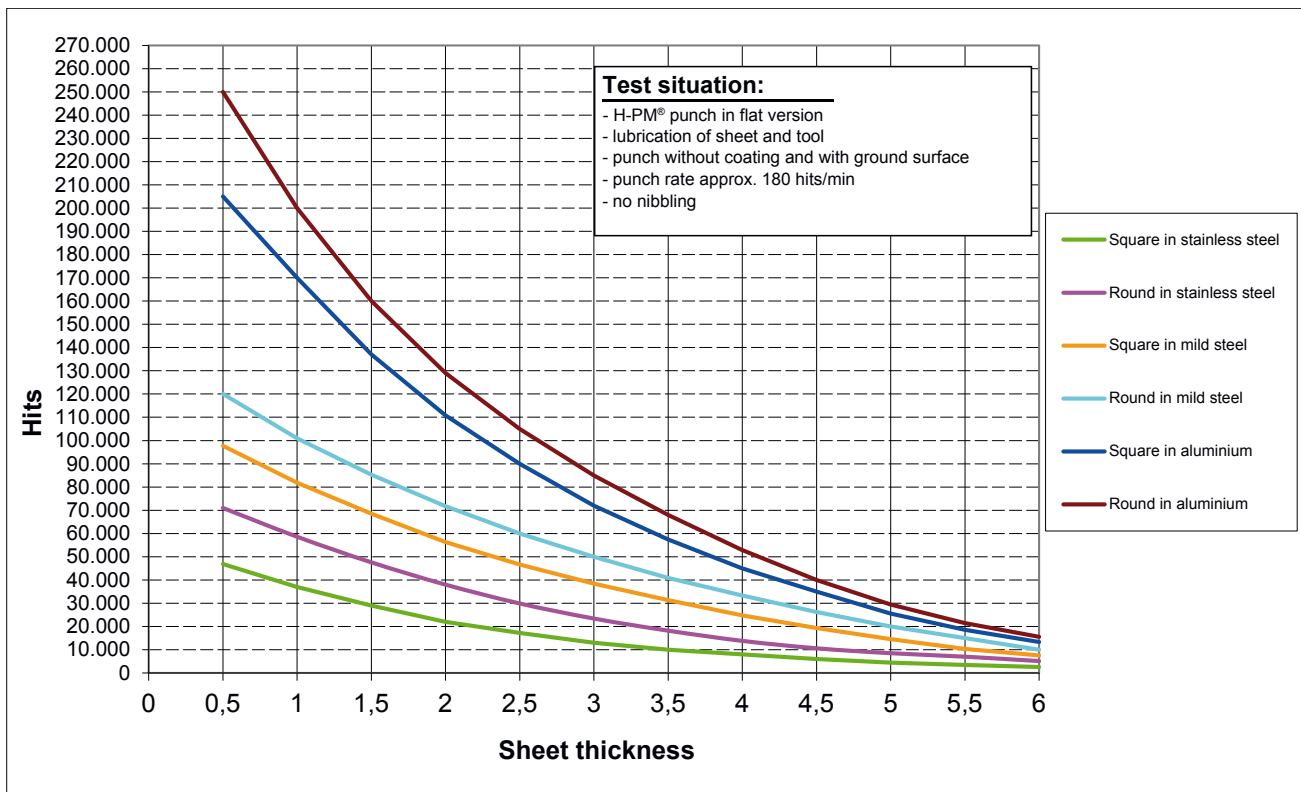
For approximately 30 years we collected technical information from our customers which allows references to be made for operation times of tools and regrinding times.

Today we place this collected data at your disposal with the purpose to facilitate the estimated lifetime of tools.

The following chart is compiled by indicating the recommended regrind after the relevant quantity of hits as there will be a difference for the regrind of the different machine types (tooling system).

The chart, however, should clarify as well that the punching process contains a big variety of influencing factors affecting possibly more or less the increase or decrease of the punching hits.

A precondition by using this data is preconditioned and optimal adjusted punching machine with a solid C- or O-frame.



# LIFETIME OF TOOLS | REGRIND ADVICE

TOOL SYSTEMS THICK TURRET, TRUMPF & SALVAGNINI

INFLUENCING FACTORS	FACTOR
Zinc coated sheet / stainless steel with foil / aluminium anodized	0,5 - 0,8
No sheet lubrication	0,4 - 0,6
Punch coating (TICN for stainless steel / T-MAX for zinc coated steel / A-MAX for aluminium)	2,0 - 4,0
PASS X3-PM punch	6,0 - 10,0
Nibbling	0,7 - 0,9
Notching	0,5 - 0,7
Shear	0,8 - 0,9
Punching rate > 300 hits / min.	0,8 - 0,9
Cutting part with EDM surface	0,4 - 0,8
Cutting part with polished surface	1,5 - 3,0
Cutting part smaller than 1,5x sheet thickness	0,6 - 0,8
Cutting part smaller than 1,0x sheet thickness	0,3 - 0,5
Using of a too small clearance	0,4 - 0,9

An average decrease of the tool life of 5-10 % per regrind has to be taken in account for the first regrind.

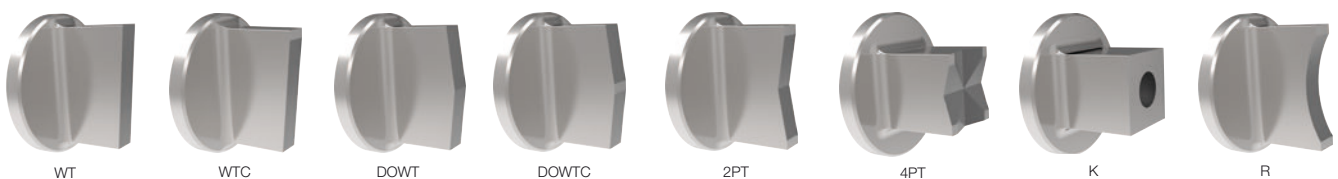
**PASS Stanztechnik AG offers a grinding service.** For this reason please contact your contact partner at PASS. We are able to grind all your punching tools from a punching needle up to cluster tools for all tooling systems.

Your punches will be grinded fast, professional, reliable and effective in order to get a good and sustainable punching result.

Please take in mind: only sharp tools will ensure good end products!

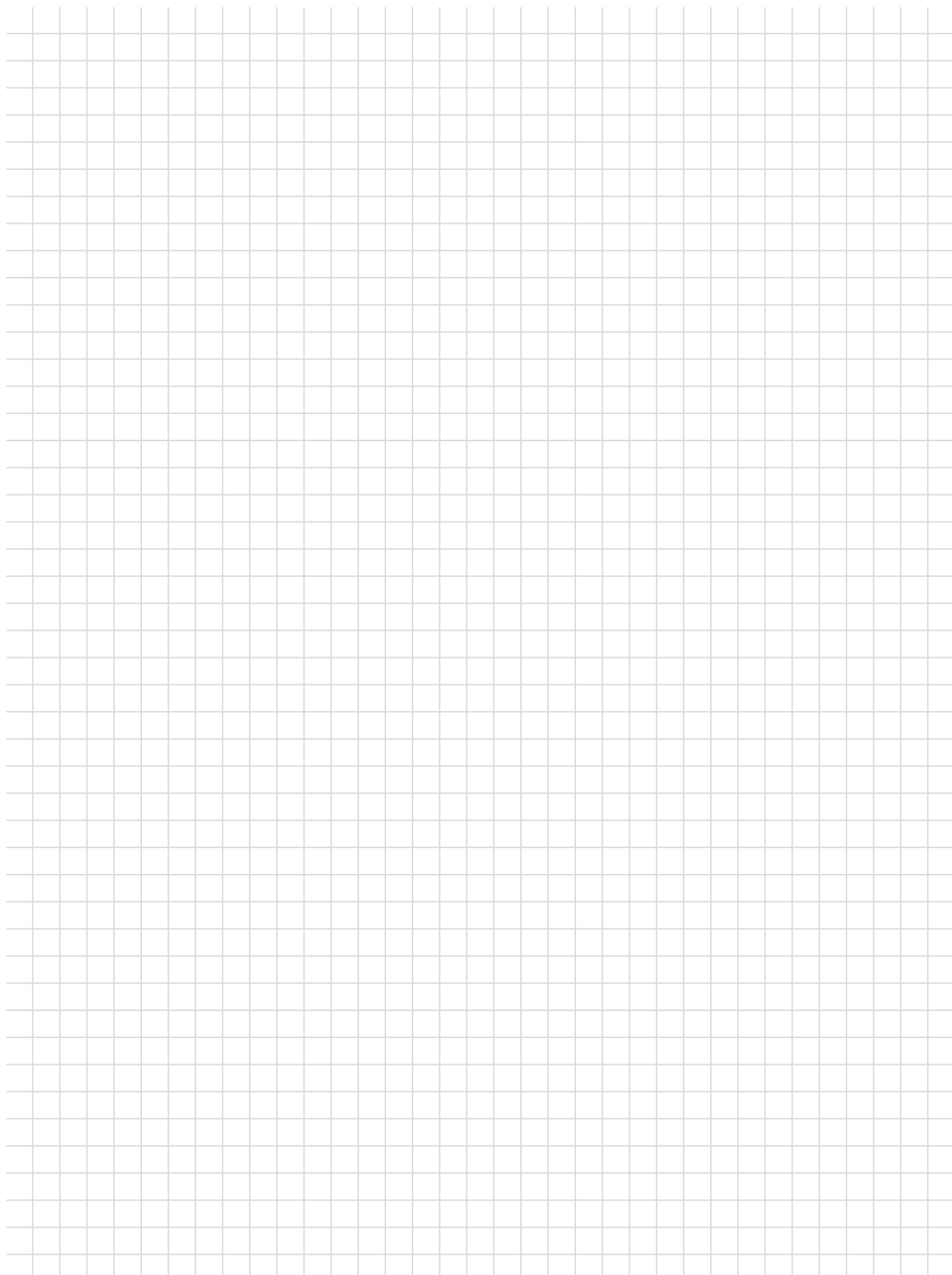
## SHEAR TYPES

TOOL SYSTEMS THICK TURRET, TRUMPF & SALVAGNINI



# NOTES

A large grid of graph paper for taking notes, consisting of 20 columns and 40 rows of small squares.



SALVAGNINI | THICK TURRET | TRUMPF



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