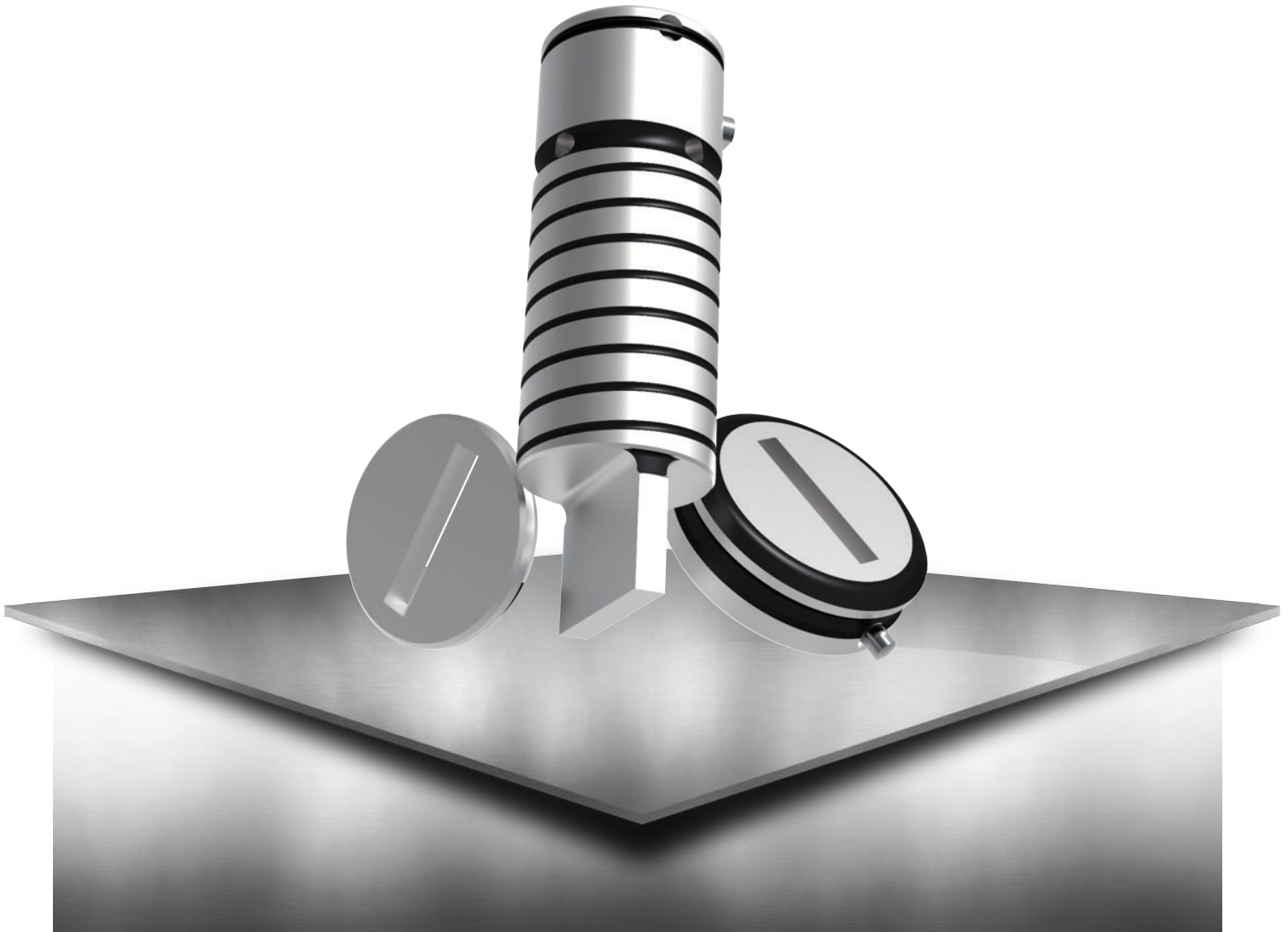




CATALOG 08/2019-WW-A.4
INSERTS FOR PRIMA POWER/MULTITOOLS



SCOPE OF APPLICATION:

Deliveries and services provided by PASS Stanztechnik AG are effected exclusively according to PASS delivery and payment conditions. These conditions shall be deemed accepted at the latest upon receipt of the goods or services.

GENERAL REMARKS:

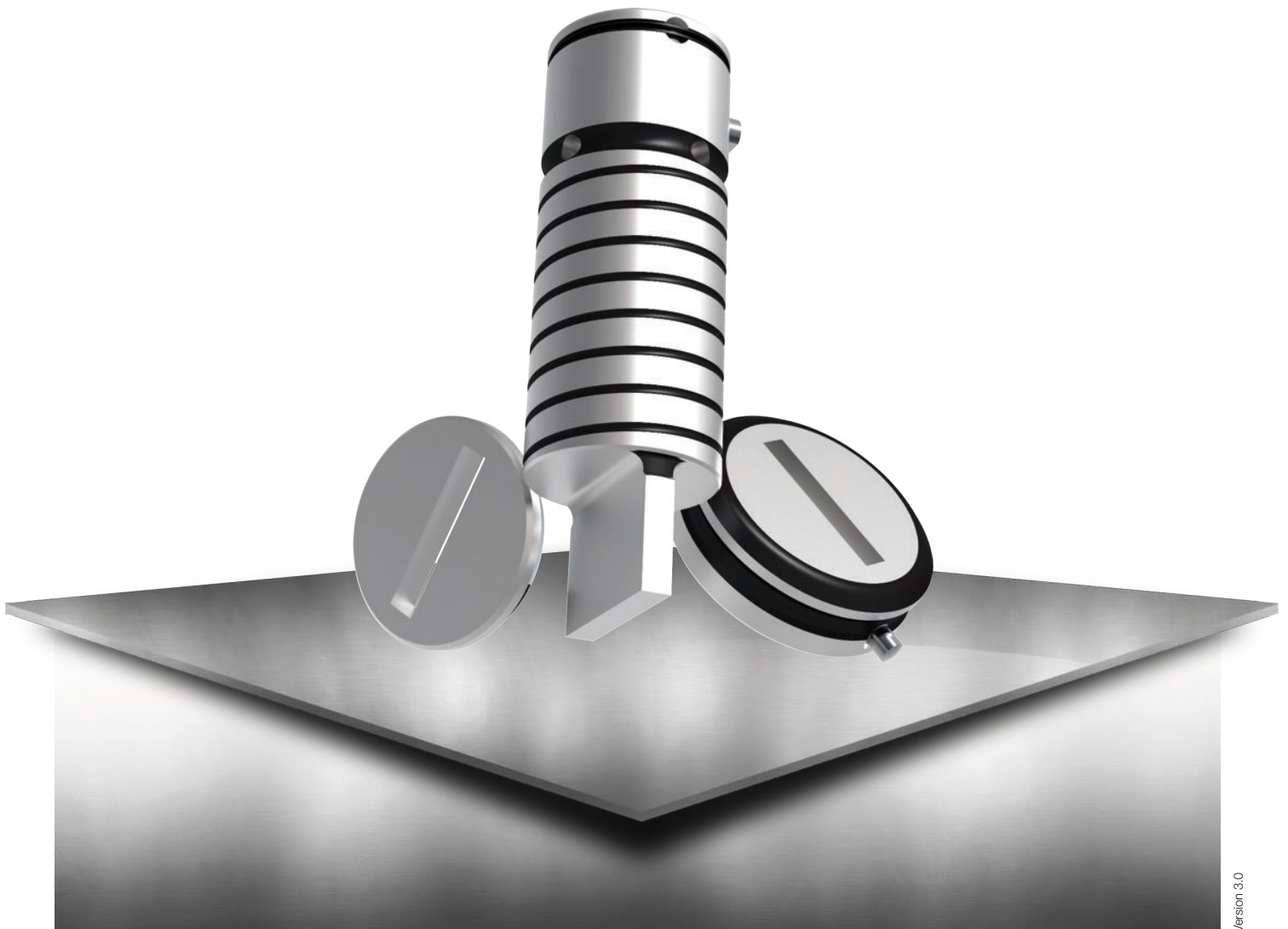
You can find our general terms and conditions on our Homepage under: www.pass-ag.com

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INSERTS FOR PRIMA POWER/ MULTITOOLS

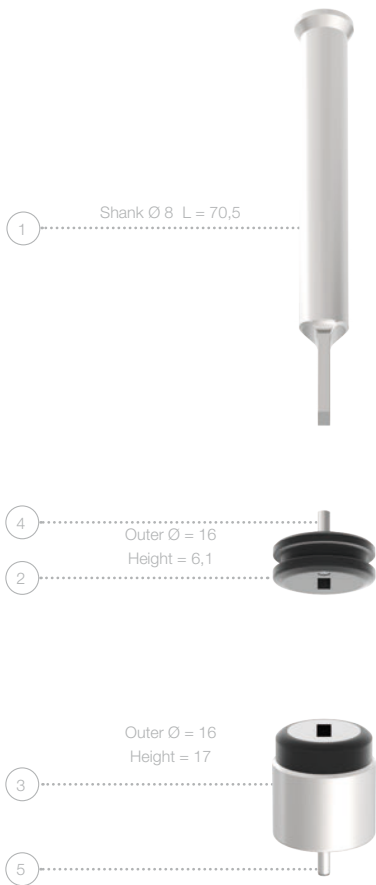
PASS TOOLS FOR YOUR
PRIMA POWER/MULTITOOL SYSTEM

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PRIMA POWER

MTPi24-8; MTP16-8; MT24-8; MTH16-8



	POS.-NO.	PART-NO.
PUNCH (H-PM®)		
Round	1	413121
Square	1	413122
Rectangle	1	413123
Oblong	1	413124
O.D. Ground Special Shape	1	41312G
EDM Required Special Shape	1	41312E
STRIPPER		
Round	2	415121
Square	2+4	415122
Rectangle	2+4	415123
Oblong	2+4	415124
O.D. Ground Special Shape	2+4	41512G
EDM Required Special Shape	2+4	41512E
DIE (HWS)		
Round	3	414121
Square	3+5	414122
Rectangle	3+5	414123
Oblong	3+5	414124
O.D. Ground Special Shape	3+5	41412G
EDM Required Special Shape	3+5	41412E

ADDITIONAL COSTS FOR PUNCHES

TICN coating
 T-MAX coating
 A-MAX coating
 WT-shear
 DOWT-shear
 2 PT-shear
 4 PT-shear
 Cutting part under 1,00 mm

ADDITIONAL COSTS FOR DIES

Reinforced version
 H-PM® Quality
 Additional pin hole

PRIMA POWER

MTPi10-16; MTP8-16; MT10-16; MTH16-16

	POS.-NO.	PART-NO.
PUNCH (H-PM®)		
Round	1	413021
Square	1	413022
Rectangle	1	413023
Oblong	1	413024
O.D. Ground Special Shape	1	41302G
EDM Required Special Shape	1	41302E
STRIPPER		
Round	2	415021
Square	2+4	415022
Rectangle	2+4	415023
Oblong	2+4	415024
O.D. Ground Special Shape	2+4	41502G
EDM Required Special Shape	2+4	41502E
DIE (HWS)		
Round	3	414021
Square	3+5	414022
Rectangle	3+5	414023
Oblong	3+5	414024
O.D. Ground Special Shape	3+5	41402G
EDM Required Special Shape	3+5	41402E



ADDITIONAL COSTS FOR PUNCHES

TICN coating
 T-MAX coating
 A-MAX coating
 WT-shear
 DOWT-shear
 2 PT-shear
 4 PT-shear
 Cutting part under 1,00 mm

ADDITIONAL COSTS FOR DIES

Reinforced version
 H-PM® Quality
 Additional pin hole

PRIMA POWER

MTPi8-24; MTP5-24; MT8-24



	POS.-NO.	PART-NO.
PUNCH (H-PM®)		
Round	1	413131
Square	1	413132
Rectangle	1	413133
Oblong	1	413134
O.D. Ground Special Shape	1	41313G
EDM Required Special Shape	1	41313E
STRIPPER		
Round	2	415131
Square	2+4	415132
Rectangle	2+4	415133
Oblong	2+4	415134
O.D. Ground Special Shape	2+4	41513G
EDM Required Special Shape	2+4	41513E
DIE (HWS)		
Round	3	414131
Square	3+5	414132
Rectangle	3+5	414133
Oblong	3+5	414134
O.D. Ground Special Shape	3+5	41413G
EDM Required Special Shape	3+5	41413E

ADDITIONAL COSTS FOR PUNCHES

- TICN coating
- T-MAX coating
- A-MAX coating
- WT-shear
- DOWT-shear
- 2 PT-shear
- 4 PT-shear
- Cutting part under 1,00 mm

ADDITIONAL COSTS FOR DIES

- Reinforced version
- H-PM® Quality
- Additional pin hole

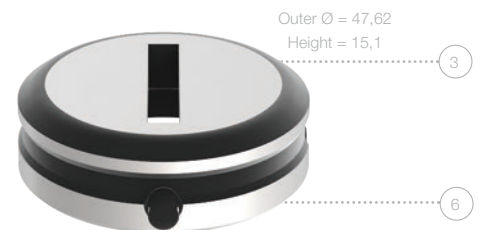
PRIMA POWER

MT3Ri-31,75; MT3i-31,75

		POS.-NO.	PART-NO.
PUNCH (H-PM®)			
Round	1+4+5	413181	
Square	1+4+5	413182	
Rectangle	1+4+5	413183	
Oblong	1+4+5	413184	
O.D. Ground Special Shape	1+4+5	41318G	
EDM Required Special Shape	1+4+5	41318E	

STRIPPER			
Round	2	415181	
Square	2	415182	
Rectangle	2	415183	
Oblong	2	415184	
O.D. Ground Special Shape	2	41518G	
EDM Required Special Shape	2	41518E	

DIE (HWS)			
Round	3	414181	
Square	3+6	414182	
Rectangle	3+6	414183	
Oblong	3+6	414184	
O.D. Ground Special Shape	3+6	41418G	
EDM Required Special Shape	3+6	41418E	



ADDITIONAL COSTS FOR PUNCHES

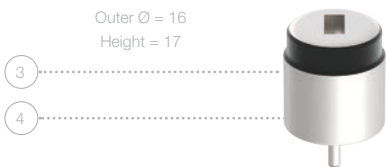
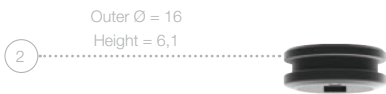
TICN coating
 T-MAX coating
 A-MAX coating
 WT-shear
 DOWT-shear
 2 PT-shear
 4 PT-shear
 Cutting part under 1,00 mm

ADDITIONAL COSTS FOR DIES

Reinforced version
 H-PM® Quality
 Additional pin hole

PRIMA POWER

MT20i-8



	POS.-NO.	PART-NO.
PUNCH (H-PM®)		
Round	1	413111
Square	1	413112
Rectangle	1	413113
Oblong	1	413114
O.D. Ground Special Shape	1	41311G
EDM Required Special Shape	1	41311E
STRIPPER		
Round	2	415111
Square	2	415112
Rectangle	2	415113
Oblong	2	415114
O.D. Ground Special Shape	2	41511G
EDM Required Special Shape	2	41511E
DIE (HWS)		
Round	3	414111
Square	3+4	414112
Rectangle	3+4	414113
Oblong	3+4	414114
O.D. Ground Special Shape	3+4	41411G
EDM Required Special Shape	3+4	41411E

ADDITIONAL COSTS FOR PUNCHES

- TICN coating
- T-MAX coating
- A-MAX coating
- WT-shear
- DOWT-shear
- 2 PT-shear
- 4 PT-shear
- Cutting part under 1,00 mm

ADDITIONAL COSTS FOR DIES

- Reinforced version
- H-PM® Quality
- Additional pin hole

PRIMA POWER

MT8Ri2-16 (VERSION 2)

	POS.-NO.	PART-NO.
PUNCH (H-PM®)		
Round	1	413151
Square	1	413152
Rectangle	1	413153
Oblong	1	413154
O.D. Ground Special Shape	1	41315G
EDM Required Special Shape	1	41315E
STRIPPER		
Round	2	415151
Square	2	415152
Rectangle	2	415153
Oblong	2	415154
O.D. Ground Special Shape	2	41515G
EDM Required Special Shape	2	41515E
DIE (HWS)		
Round	3	414151
Square	3+4	414152
Rectangle	3+4	414153
Oblong	3+4	414154
O.D. Ground Special Shape	3+4	41415G
EDM Required Special Shape	3+4	41415E

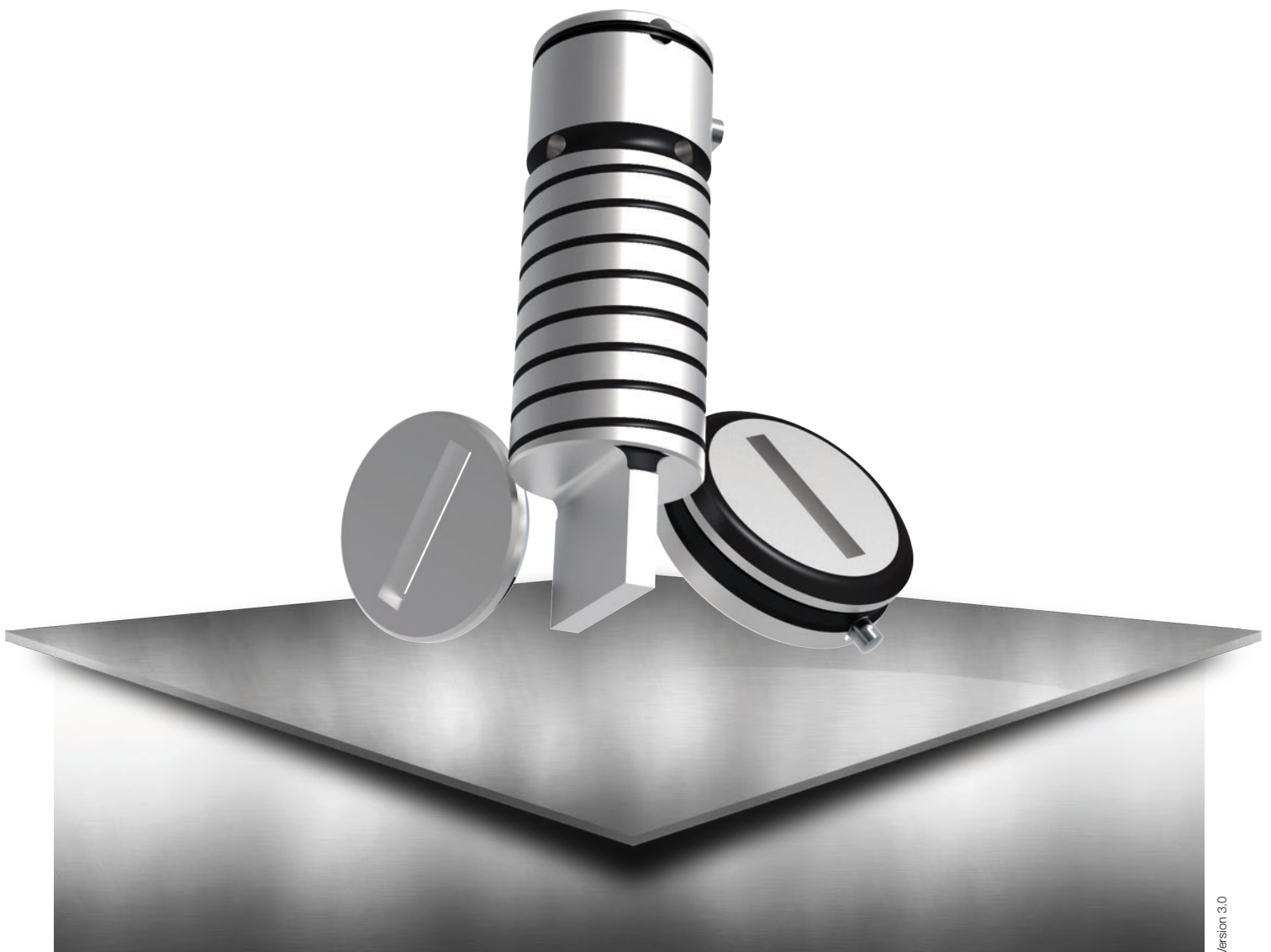


ADDITIONAL COSTS FOR PUNCHES

TICN coating
 T-MAX coating
 A-MAX coating
 WT-shear
 DOWT-shear
 2 PT-shear
 4 PT-shear
 Cutting part under 1,00 mm

ADDITIONAL COSTS FOR DIES

Reinforced version
 H-PM® Quality
 Additional pin hole



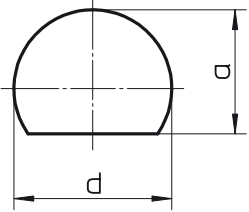
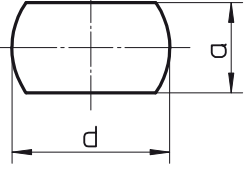
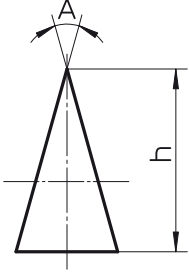
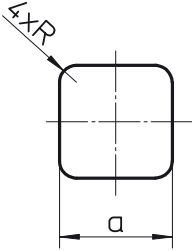
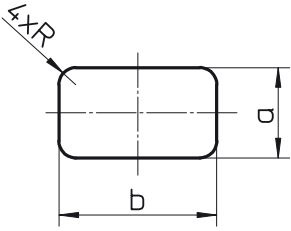
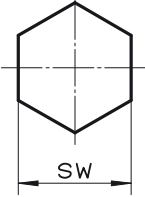
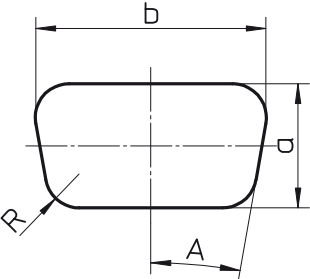
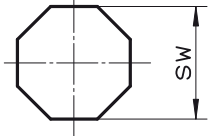
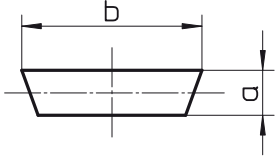
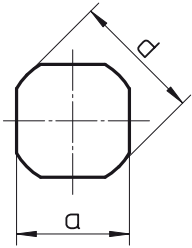
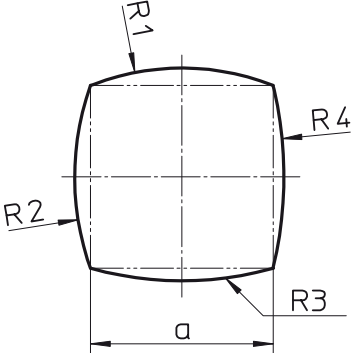
TECHNICAL INFORMATION

INFORMATION ABOUT OUR TOOLS FOR YOUR THICK TURRET SYSTEM

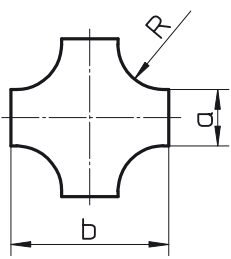
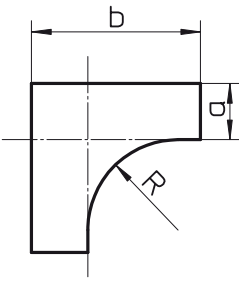
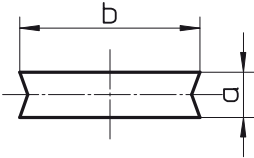
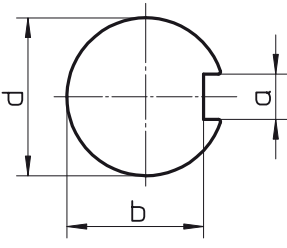
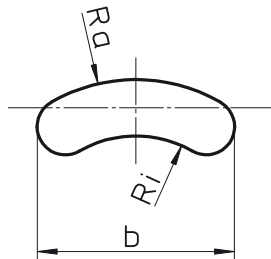
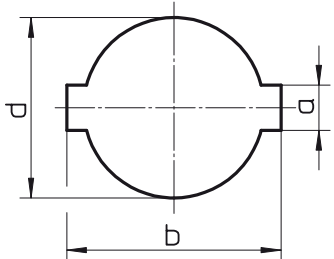
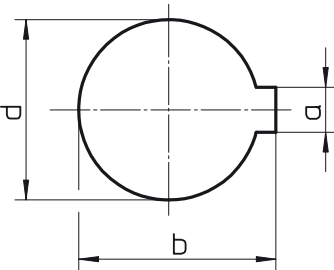
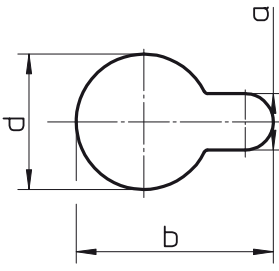
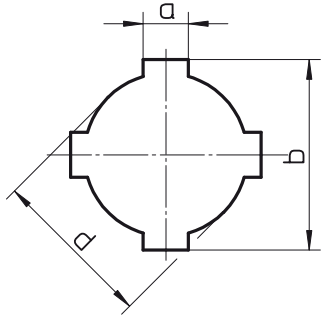
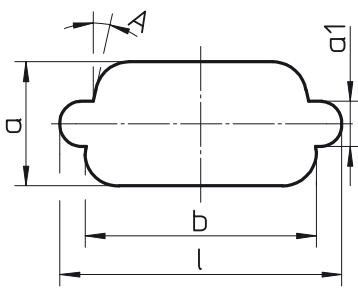
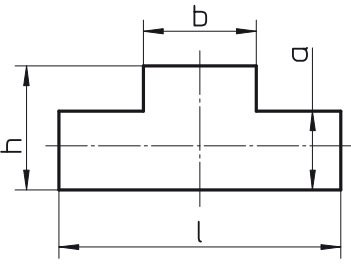
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O.D. GROUND SPECIAL SHAPES

 <p>G01</p>	 <p>G02</p>	 <p>G03</p>
 <p>G04</p>	 <p>G05</p>	 <p>G06</p>
 <p>G07</p>	 <p>G08</p>	 <p>G09</p>
 <p>G10</p>	 <p>G11</p>	

EDM REQUIRED SPECIAL SHAPES

 <p>E01</p>	 <p>E02</p>	 <p>E03</p>
 <p>E04</p>	 <p>E05</p>	 <p>E06</p>
 <p>E07</p>	 <p>E08</p>	 <p>E09</p>
 <p>E10</p>	 <p>E11</p>	

PASS TOOL VARIETY

HWS

HWS tools are made of a secondary hardened cold work steel with superior toughness. This type of steel is especially suitable for dies.

Advantage for customer:

- excellent cost in accordance to performance

H-PM®

H-PM® tools are produced with steel made on powder-metallurgical base with a high degree of purity.

This guarantees a segregational uniformed microstructure in the complete cross-section of the tool.

Advantage for customer:

- excellent cost in accordance to performance
- good stability for edges by increased toughness
- high tool life time due to the uniformed microstructure
- increased current hit-flex-capability; suitable as an excellent base for dies

X3-PM

The X3-PM tools are made of a high-end powder-metallurgical steel with the best possible performance characteristics for punches in the punching technology due to the best possible degree of purity.

The segregational uniformed microstructure with high vanadium concentration in the complete cross-section of the punch guarantees best possible wear resistance regarding tool life time.

Advantage for customer:

- best efficiency by multiple increase of the punch hit count
- best possible stability for cutting edges
- extremely high abrasion resistance
- utmost compressive strength

X8-PM

The X8-PM tools are made of a high-end powder-metallurgical steel the best possible performance characteristics for dies in the punching technology caused by best possible degree of purity.

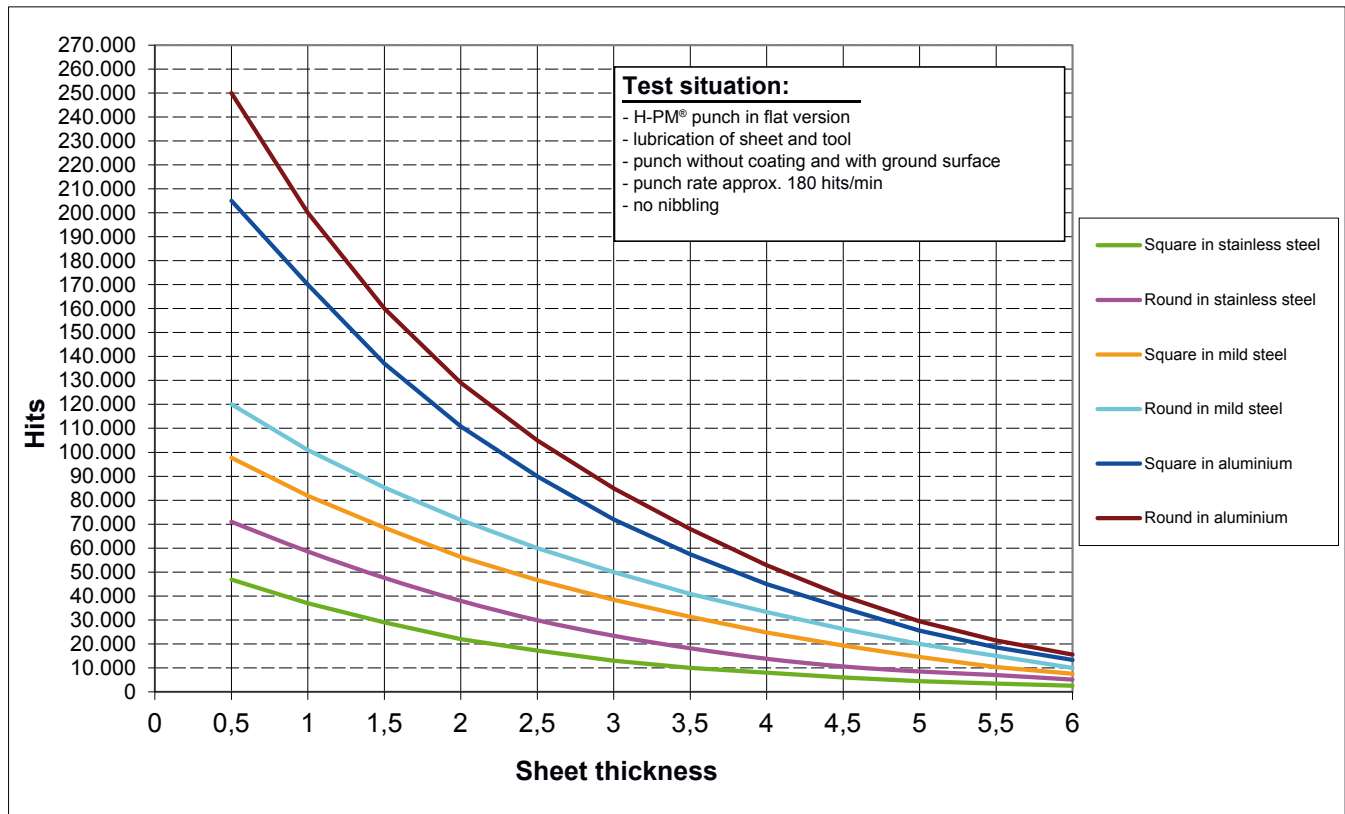
The high ductility of the segregational uniformed microstructure guarantees best possible fatigue limit. This kind of steel is especially suitable for dies with risk-breakage in regards to special shapes.

Advantage for customer:

- best possible absorption of hit-flex stress; prevents fatigue breakage
- high abrasion resistance

LIFE-TIME OF TOOLS / REGRIND ADVICE

PASS punches and dies are made of high-end special steel in order to guarantee best life-time of tools together with high robustness.



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
Whisper tool	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 COATING VERSIONS / DRAW-POLISHING

TO REDUCE MATERIAL BUILD-UP

H-PM[®] tools are produced with steel made on powder-metallurgical base with a high degree of purity to fulfill the highest punching demands.

Furthermore we attach great importance to a high quality hardening process by repeated tempering and deep-freeze subsequently.

This process guarantees an extremely high hardness with an outstanding wear resistance of our punching tools.

Associated with modern production methods (grinding of the cutting edges with special grinding wheels) we can ensure that the wide range of different sheet qualities can be punched up to 1.600 N/mm² - no matter if it concerns mild alloyed aluminium, mild steel, stainless steel or spring band steel.

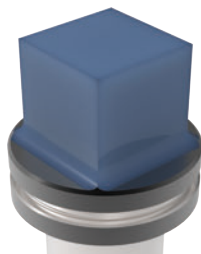
A high punch hardness as well as an excellent grinding surface are important in order to counteract the problem with edge build-up.

Tests show us that the well-known TiCN coating is a good coating to increase the lifetime (especially working with stainless steel). However, the problem of material buildup on the edges have not really been counteracted.

Built-up edges are known especially when working with

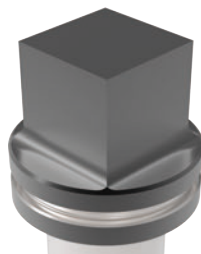
- zinc steel
- aluminium

After specialized tests at PASS Stanztechnik AG the below mentioned coatings turned out to be the most successful coatings:



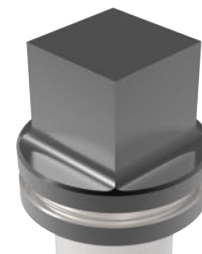
TiCN

for working with stainless steel



A-MAX

for dry processing with aluminium sheet



T-MAX

for working with galvanized sheet / zinc

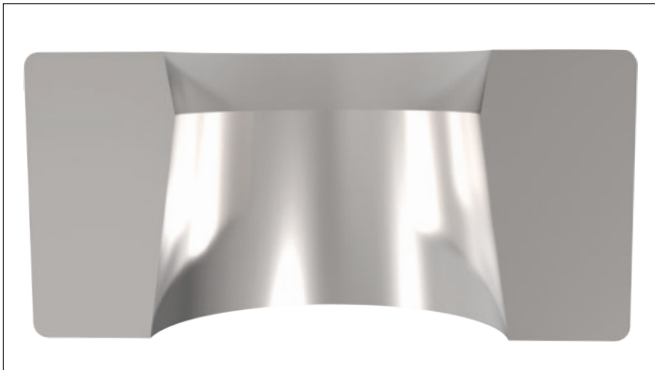
We recommend draw-polished punch edges to increase tool lifetime and reduce material build up (prices on request).



DIE VERSIONS

SLUG-STOP AND SLUG-SNAP (AVOID THE BUILD-UP OF THE SLUGS)

SLUG-STOP (STANDARD)



PASS dies for tooling system THICK TURRET are produced in standard version with a slug-stop version (without additional costs).

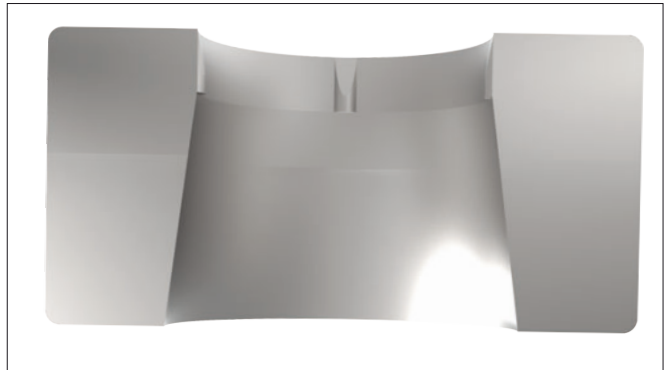
This means that the upper part of the cutting part is produced with a negative angle.

The slug will be held with the complete circumference in the die.

This is not recommended for:

- shapes smaller than 1,25 mm
- clearance smaller 0,1 mm

SLUG-SNAP (SPECIAL VERSION - ADDITIONAL COSTS)



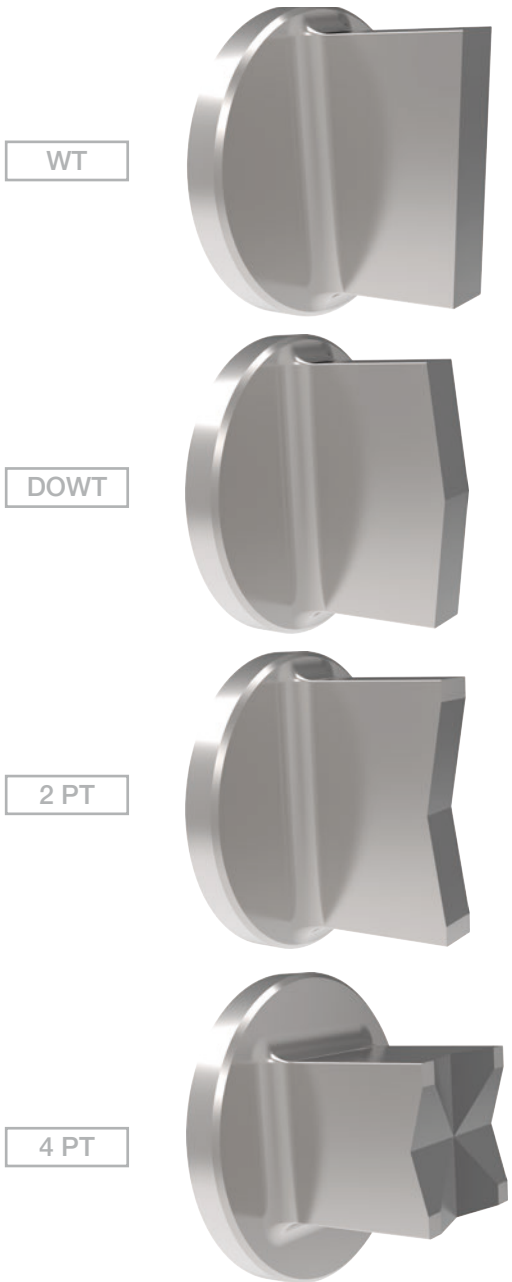
Alternatively we offer our slug-snap version (additional costs).

In this case special holding bolts are included in the die, clamping the slug positively (better than the slug-stop version).

The slug-snap version is also more convenient for:

- shapes smaller than 1,25 mm
- clearance smaller 0,1 mm

PUNCHES WITH DIFFERENT SHEAR TYPES



WT

DOWT

2 PT

4 PT

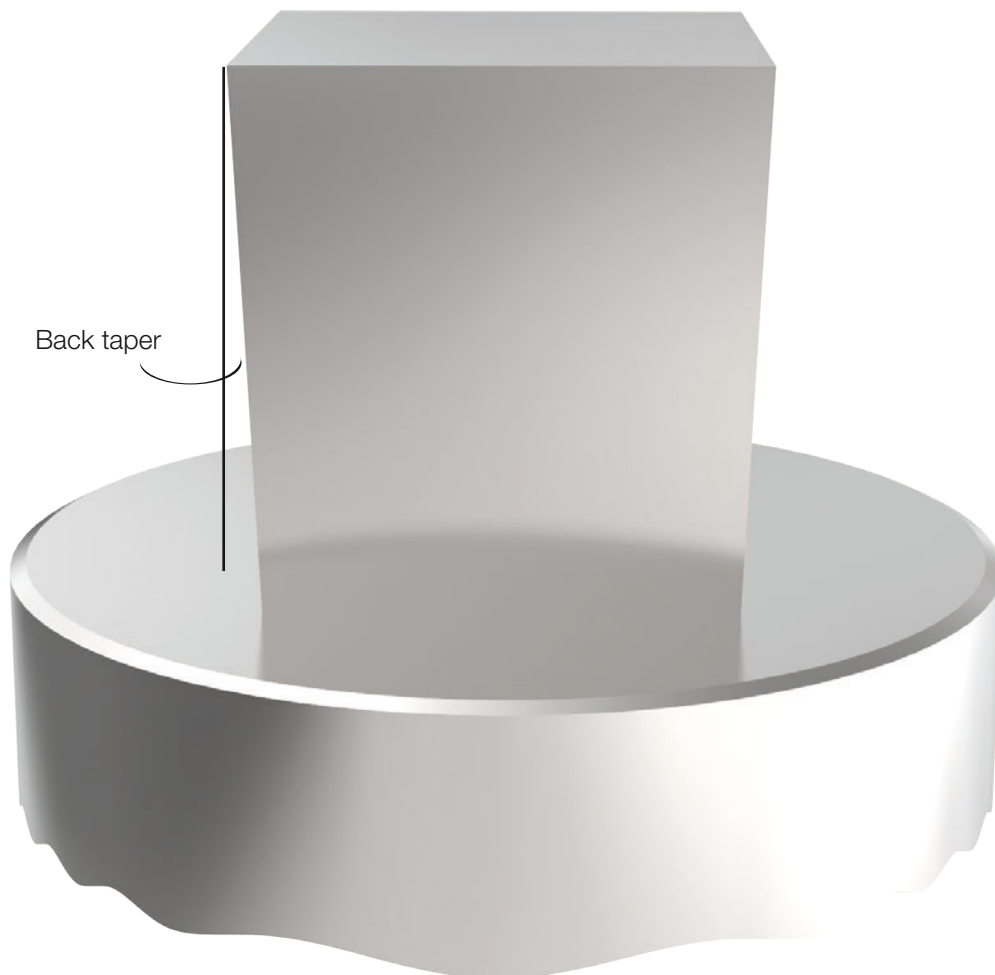
	DESCRIPTION
WT	
Advantage	easy regrindable
Disadvantage	lateral forces
DOWT	
Advantages	easy regrindable no lateral forces
Disadvantage	only reasonable for big shapes
2 PT	
Advantages	no lateral forces optimal die cutting
Disadvantages	only reasonable for big and slim shapes difficult to regrind
4 PT	
Advantages	no lateral forces optimal die cutting suitable for trimming
Disadvantages	only reasonable for big shapes difficult to regrind

BACK TAPER ON PUNCHES

PASS punches are normally produced with back taper to reduce galling and premature punch wear.

However it should be mentioned that back taper is very important when punching materials such as stainless steel or very thick material to reduce galling and eliminate breakage of the tool corners and edges.

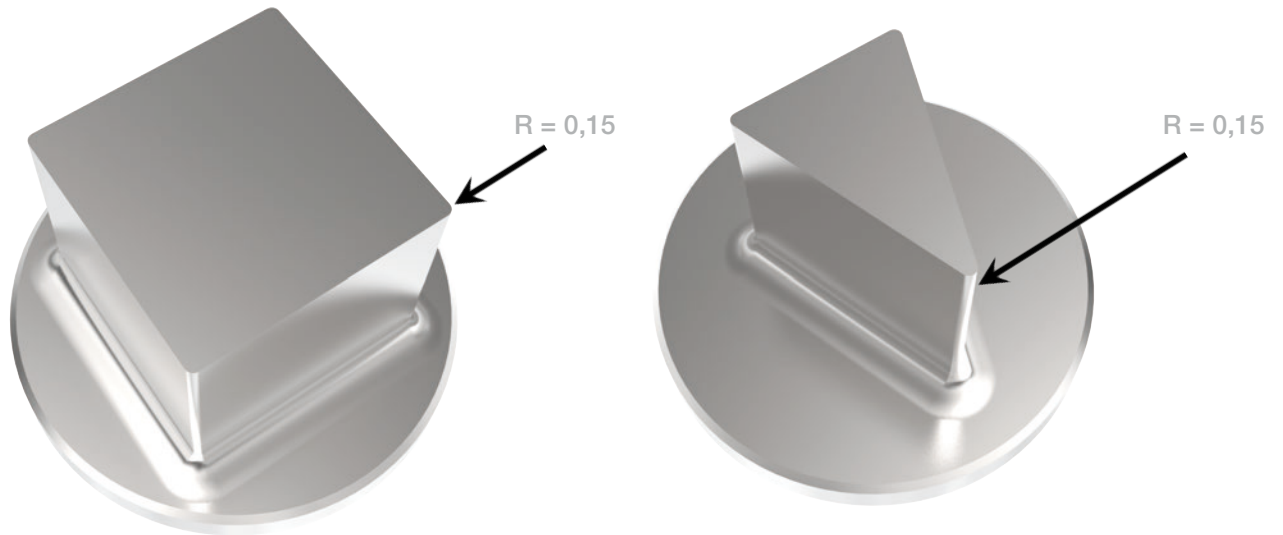
We recommend a line polished version for cutting parts, which have to be produced sink-eroded (special shape with internal shape, e.g. cross-form, U-form, etc.) and in high quality sheets.



PASS CORNER RADIUS ON PUNCHES

PASS punches are automatically produced with corner radius $R = 0,15$ mm. This process increases the life-time as the corner abrasive wear will be decreased considerably.

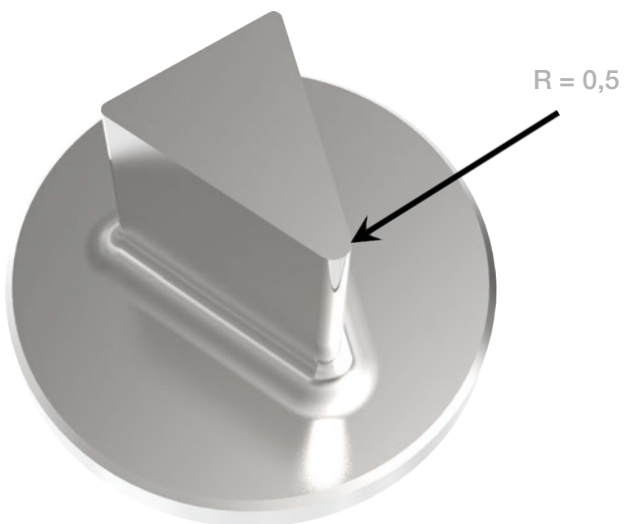
E.g.: square and triangle punch



The corner radius can be changed on customer's request.

E.g.:

$R = 0,5$ mm instead of $R = 0,15$ mm for stainless steel in order to increase tool-life.



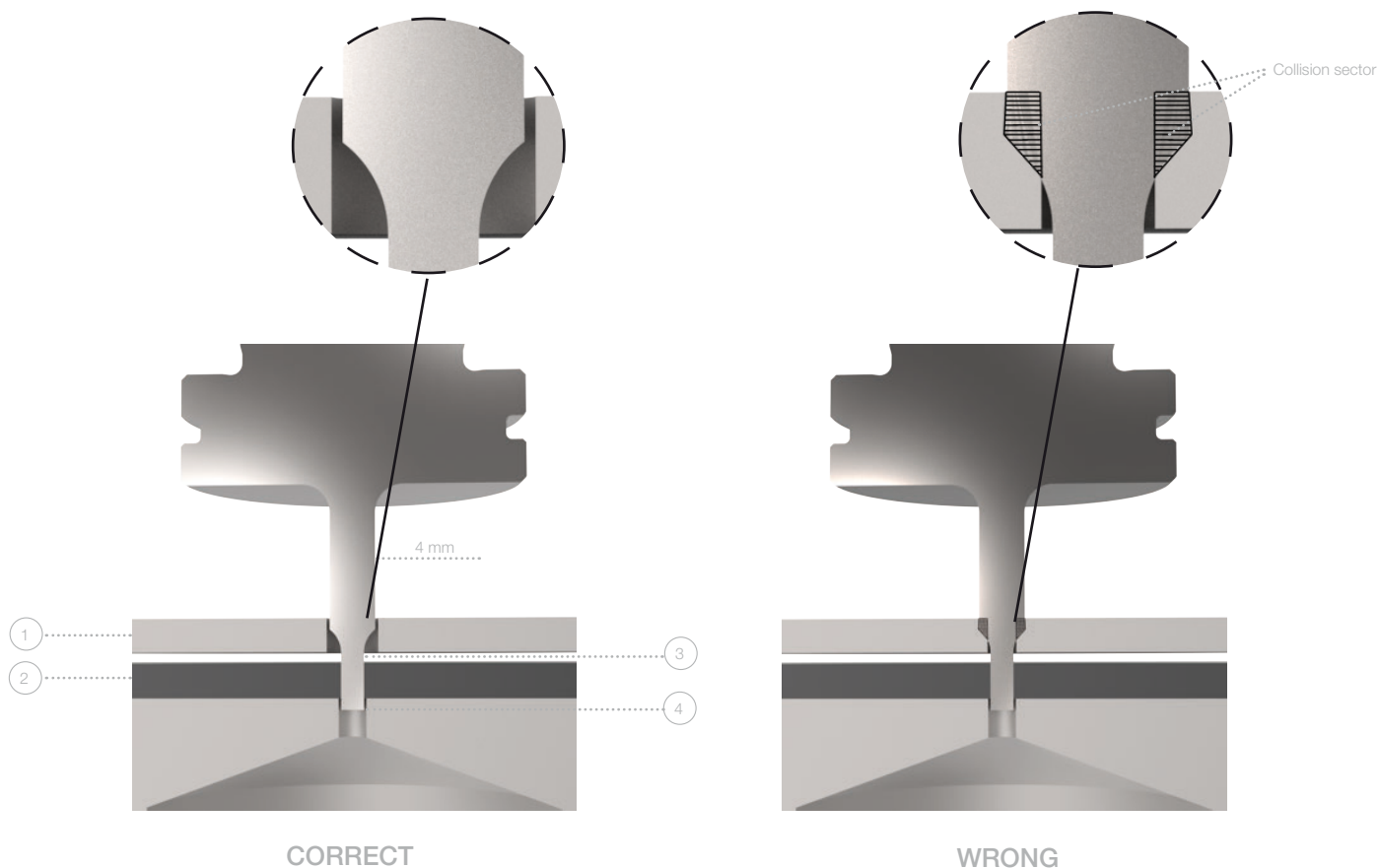
PASS PUNCHES WITH REINFORCED SHOULDER

All PASS punches are produced with a 4 mm reinforced shoulder as soon as the cutting section is required smaller than 4 mm.

This guarantees that you will get a tool with highest stability in order to punch also thicker and high-strength sheets.

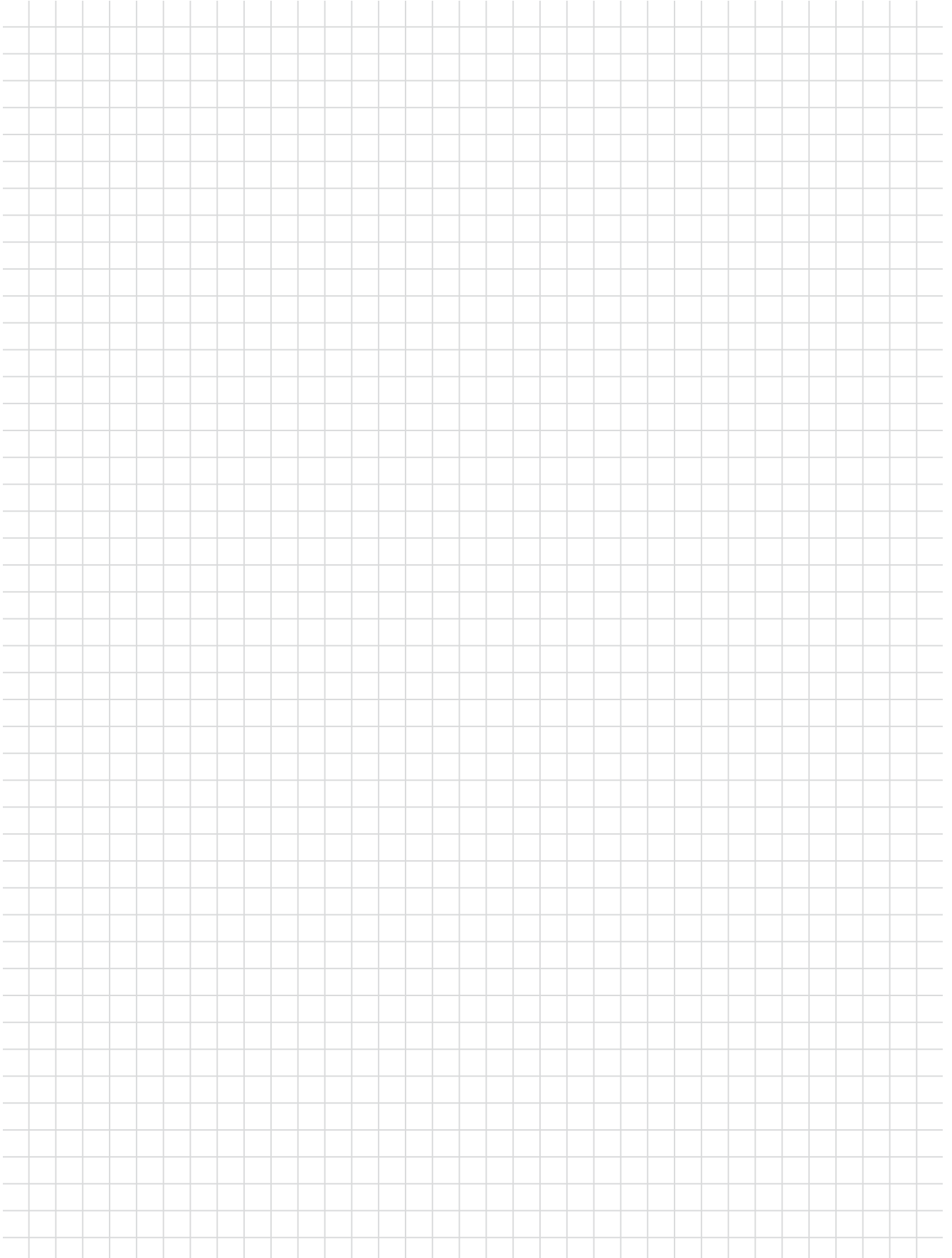
However, the correct stripper size has to be selected in subject to machine type, tool design, sheet thickness (1), immersion depth (2), stripper thickness (3) and stripper overlap (4).

It might be possible that it gets necessary to use a stripper with an appropriate big shape (width min. 4,5 mm) in order to get sure that the reinforced punch shoulder can immerse into the stripper.



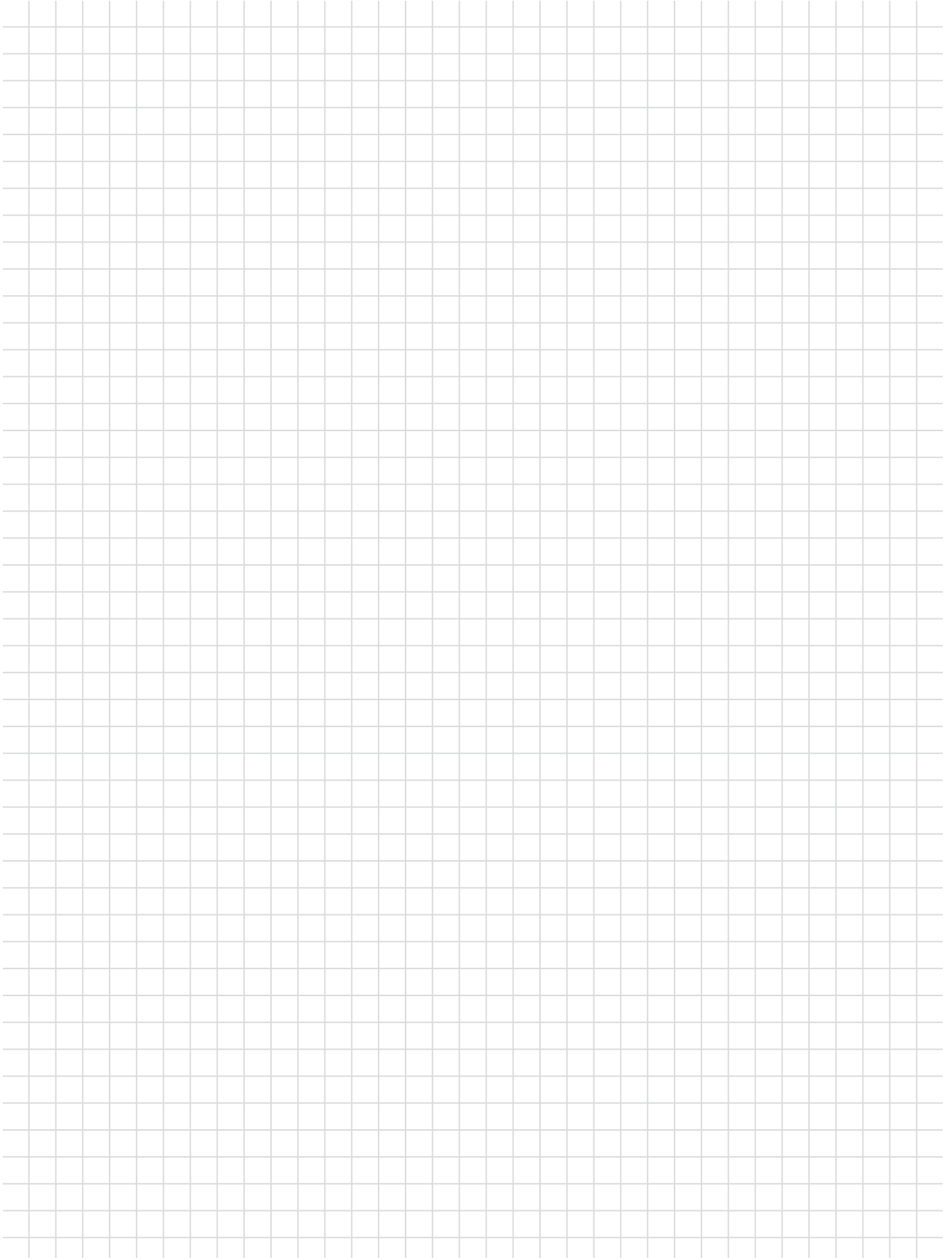
NOTES

A large grid of graph paper for taking notes, consisting of 20 columns and 30 rows of small squares.



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