PASS | STANZTECHNIK AG

TRUMPF

THICK TURRET

SALVAGNINI

OPERATION MANUAL 12/2023-WW

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THANK YOU VERY MUCH,

for purchasing the **ps:®single-thread** tool from the system TRUMPF, developed and produced by PASS Stanztechnik AG.

It is our utmost intention to guarantee you a long-term service with your new PASS tool.
Therefore, we have prepared a detailed operation manual for you including notes on technology requirements, application area, installation, drawing and parts list as well as cleaning and care.

Please feel free to contact us in any case of questions.

Yours

PASS Stanztechnik AG

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SAFETY

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SAFETY

A. WARRANTY AND LIABILITY

Before using the tools for the first time, it is recommended to read this operation manual carefully, as PASS Stanztechnik AG does not assume any liability for damages and malfunctions resulting from non-observance of this operation manual.

Please contact us by email if you require further information: sales@pass-ag.com.

Basically, the „General Terms and Conditions of Delivery and Payment“ of PASS Stanztechnik AG are to be obtained. These will be made available to the operator at the latest when the contract is concluded. Warranty and liability claims concerning personal injury and damage to property are excluded if they are due to one or more of the following causes:

- improper use of the tool
- improper assembly, disassembly and maintenance
- non-compliance with the instructions in the operation manual
- inadequate control of tools or tool parts subject to wear and non-observance of the prescribed maintenance intervals
- improperly performed repairs
- disasters caused by foreign objects and force majeure

Furthermore, when using tools from PASS Stanztechnik AG, the standards, regulations and laws applicable in the respective country must be observed.

B. GENERAL SAFETY INSTRUCTIONS

Risk of cuts and bruises!

Working without approved protective work clothing can result in cuts and bruises.

Therefore, always wear suitable protective clothing such as work shoes and work gloves to avoid injuries.

Danger of ejected metal shavings!

When grinding tools, there is an increased risk of injury from flying metal chips.

Always wear safety goggles when working to prevent eye injury.

NOTES

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A. TECHNOLOGY REQUIREMENTS

Machines

Usable for machine group I:

- TruPunch 1000/2000/2020/3000/5000
- TruMatic 1000/3000/6000/7000

B. APPLICATION AREA

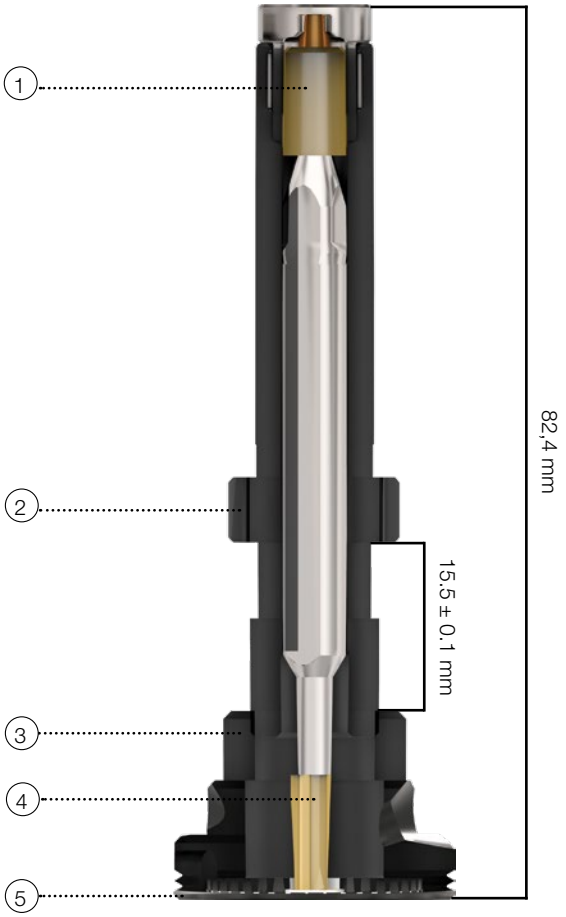
- sheet material: aluminium / steel / stainless steel
- sheet thickness: s = 1,00 up to 8,00 mm
- thread M2.5 up to M10 and UNC #2-56 up to UNC #3/8“-16

C. INSTALLATION

Basic holder type 1 and 2 / lower part type A and B

THREAD SIZE	BASIC HOLDER TO BE USED	TAP MODULE TO BE USED	DIE TO BE USED
M2,5	Type 1	M2,5	type A / type B
M3	type 1	M3	type A / type B
M4	type 1	M4	type A / type B
M5	type 1	M5	type A / type B
M6	type 2	M6	type A / type B
M8	type 2	M8	type A / type B
M10	type 2	M10	type A
UNC #2-56	type 1	M2,5	type A / type B
UNC #3-48	type 1	M3	type A / type B
UNC #4-40	type 1	M4	type A / type B
UNC #5-40	type 1	M4	type A / type B
UNC #6-32	type 1	M5	type A / type B
UNC #8-32	type 1	M5	type A / type B
UNC #10-24	type 2	M6	type A / type B
UNC #12-24	type 2	M6	type A / type B
UNC 1/4“-20	type 2	M8	type A / type B
UNC 5/16“-18	type 2	M10	type A / type B
UNC 3/8“-16	type 2	M10	type A
UNF #10-32	type 1	M5	type A / type B
UNF 1/4“-28	type 2	M6	type A / type B

Assembly tap module



1. magnet
2. leading screw
3. leading nut
4. tap inserts
5. plastic cover

- slide the tap insert into the leading screw until it is automatically held by the magnet
- put in the plasctic cover

CAUTION

Ensure that the dimension of 15,5 +/- 0,1 mm between the leading nut and gear ring is set correctly!

The total length of 82,4 mm varies to the tap modules of other manufacturers and is therefore **NOT** suitable for setting the tap modules.

In the worst case, adjustment based on the total length can lead to tool or machine damage.

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Further assembly

- Insert the set tap module from below into the basic holder.
- For this purpose, the basic holder must be in initial position in which the spring plungers engages.
- The keyway in the leading nut of the tap modules must be in alignment with the locking screw (version of other manufacturers) or with the locking slide (PASS version).
- Actuate the locking slide so that the tap module slides completely flush into the basic holder and then fixes tap module.

Programming

All further details on programming can be found in the machine data.

NOTE

Setting values for NC programming!

The setting values can be found in the machine manufacturer's manual.

Parameter

The quality and accuracy of a formed thread depends on the following parameters:

- pre-punch diameter
- sheet quality

Pre-punch diameter

The nominal dimension of the pre-punch diameter is larger for thread forming than for thread cutting, as the material is displaced within the thread and not cut. Only a limited space is available for the displaced material.

The pre-punch dimensions and the maximum number of turns are shown in the tables below:

Type 1 (metric threads)

THREAD	PRE-PUNCH DIAMETER	NUMBER OF TURNS (MM) TO BE PROGRAMMED							MAX. TURNS
	aluminium / steel / stainless steel	s = 1	s = 2	s = 3	s = 4	s = 5	s = 6	s = 8	
M2.5	2,30	1,1	1,3	1,5	1,7	1,8	2,2	–	2,5
M3	2,75	1,0	1,2	1,4	1,6	1,8	2,0	–	2,3
M4	3,70	0,9	1,0	1,1	1,3	1,4	1,5	–	1,7
M5	4,70	0,7	0,9	1,0	1,1	1,2	1,3	–	1,4

Type 2 (metric threads)

THREAD	PRE-PUNCH DIAMETER	NUMBER OF TURNS (MM) TO BE PROGRAMMED							MAX. TURNS
	aluminium / steel / stainless steel	s = 1	s = 2	s = 3	s = 4	s = 5	s = 6	s = 8	
M6	5,60	2,0	2,3	2,7	3,0	3,3	3,6	4,3	4,3
M8	7,50	1,5	1,8	2,1	2,4	2,6	2,9	3,5	3,5
M10	9,45	1,2	1,5	1,8	2,0	2,2	2,4	2,7	2,9

Type 1 (Inch threads)

THREAD	PRE-PUNCH DIAMETER	NUMBER OF TURNS (MM) TO BE PROGRAMMED							MAX. TURNS
	aluminium / steel / stainless steel	s = 1	s = 2	s = 3	s = 4	s = 5	s = 6	s = 8	
#2-56	2,00	1,1	1,3	1,5	1,8	2,0	2,2	–	2,5
#3-48	2,30	1	1,1	1,3	1,5	1,7	1,9	–	2,2
#4-40	2,60	1	1,1	1,2	1,4	1,5	1,7	–	2,0
#5-40	2,90	1	1,1	1,2	1,4	1,5	1,7	–	2,0
#6-32	3,20	0,7	0,9	1,0	1,1	1,2	1,3	–	1,4
#8-32	3,85	0,7	0,9	1,0	1,1	1,2	1,3	–	1,4

Type 2 (Inch threads)

THREAD	PRE-PUNCH DIAMETER	NUMBER OF TURNS (MM) TO BE PROGRAMMED							MAX. TURNS
	aluminium / steel / stainless steel	s = 1	s = 2	s = 3	s = 4	s = 5	s = 6	s = 8	
#10-24	4,40	2,8	3,4	3,1	3,4	3,7	4	4,9	5,6
#12-24	5,05	2,8	3,4	3,1	3,4	3,7	4	5	5,6
1/4“-20	5,80	2,3	2,9	2,6	2,9	3,1	3,4	4,5	4,7
5/16“-18	7,35	1,7	2,1	1,9	2,3	2,3	2,5	3,4	4,2
3/8“-16	8,85	1,7	2	2,1	2,2	2,2	2,4	3,2	3,7

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Technology data for thread forming in extrusions

- Definition: Extrusions are embossings that are manufactured using the tensile-compression method.

NOTE

Parameter determination for thread forming in extrusions!

At thread forming in embossings, the height of the embossing (offset) must be considered when defining the parameters.

- Number of turns: By adding the material thickness and drawing height, the number of turns for the whole embossing including sheet thickness must be programmed.

Lubrication

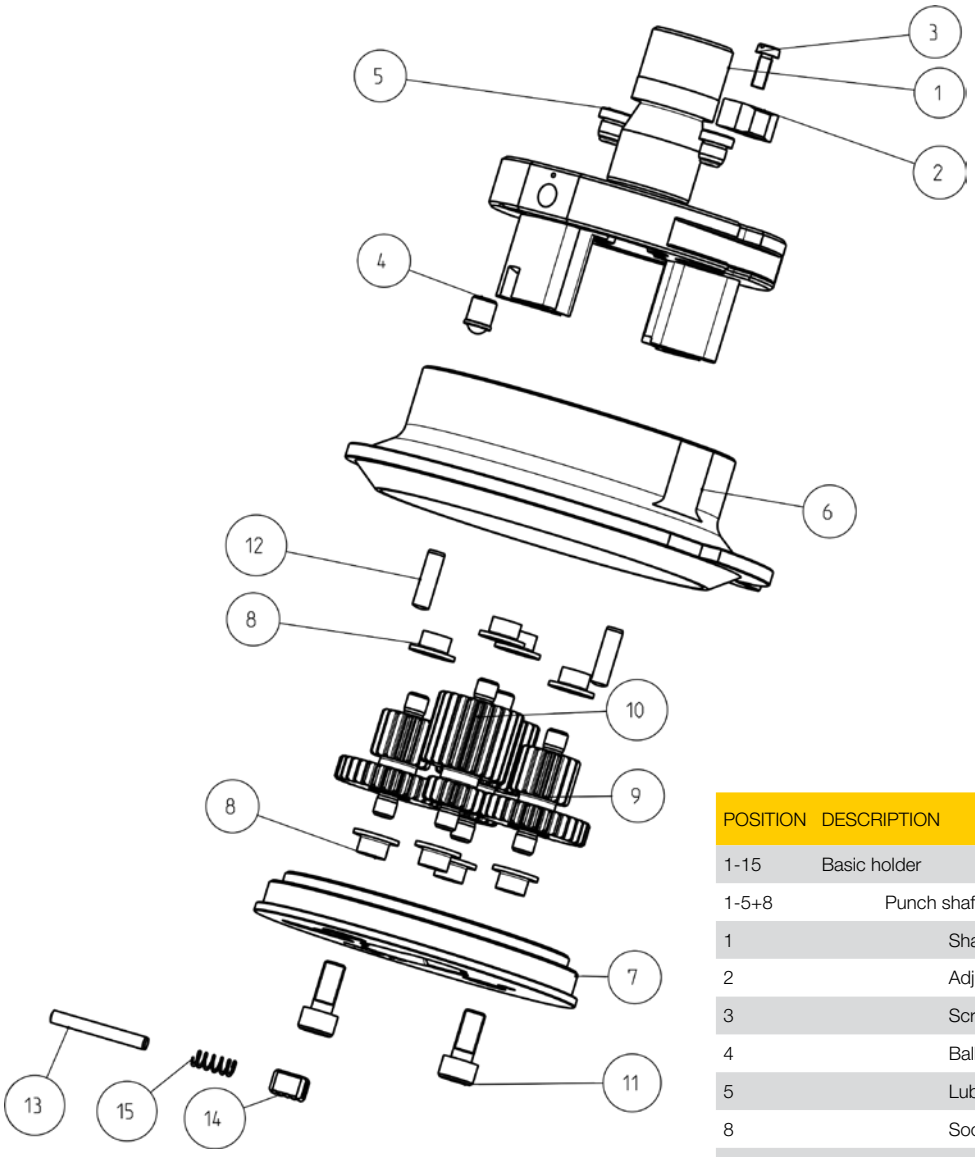
The required lubrication of the tap insert has to be done via the machine lubrication. Therefore, an oil impulse is added to the tapping insert at the beginning of each thread forming cycle via an injection lubricator with a nozzle. For this purpose, a hole is provided in the stripper as well as in the tool through which the oil reaches the tapping insert.

Safety

To ensure a high level of operational safety, the die is equipped with a protective mechanism so that the "FEED STOP" error message is automatically triggered if the tap insert is accidentally plunged too deep. Furthermore, the thread forming tool is secured against damage through a freewheel in the leading screw when the programmed number of turns is incorrectly, i.e. the tap insert is immersed too deeply into the die.

D. DRAWING AND PARTS LIST

Basic holder type 1



POSITION	DESCRIPTION	INSTALLED PIECES	PART-NO. (PER PIECE)
1-15	Basic holder	1	924GF1101
1-5+8	Punch shaft	1	924601003
1	Shaft	1	1620113
2	Adjusting key	1	1620114
3	Screw	1	1620115
4	Ball plunger	1	1620116
5	Lubrication nipple	2	1620117
8	Socket	4	1620118
6	Gear ring	1	924601020
7+8+11-15	Holder plate	1	924601006
7	Plate	1	1620122
11	Screw	2	1620123
12	Pin	2	1620124
8	Socket	4	1620125
13	Pin	1	1620126
14	Locking slide	1	1620127
15	Spring	1	1620128
9	Gear wheel	2	124601040
10	Gear wheel	2	124601050

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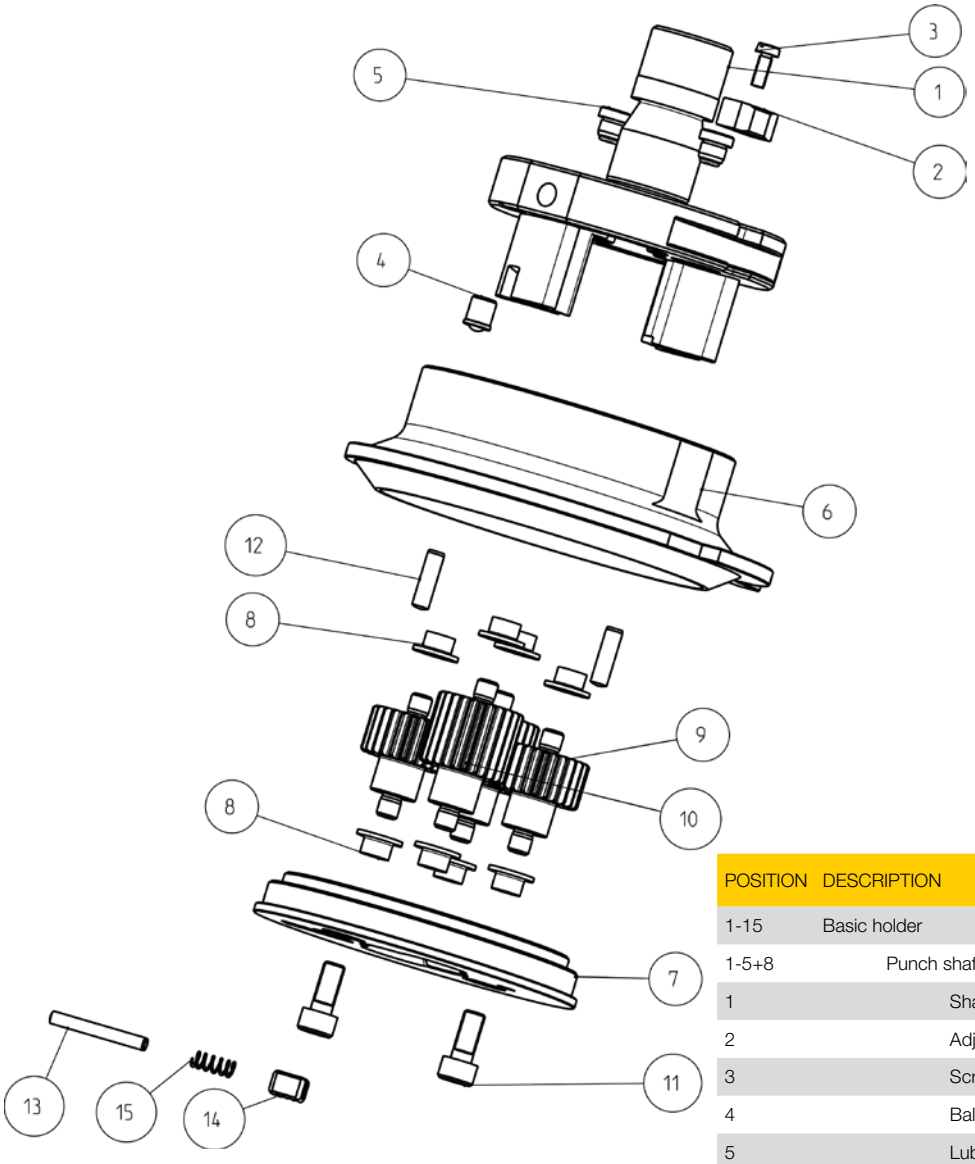
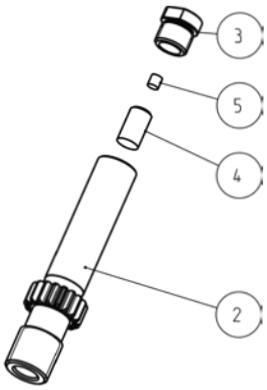
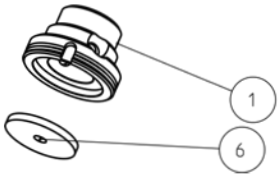
Basic holder type 2



POSITION	DESCRIPTION	INSTALLED PIECES	PART-NO. (PER PIECE)
1-15	Basic holder	1	924GF2101
1-5+8	Punch shaft	1	924602003
1	Shaft	1	1620213
2	Adjusting key	1	1620214
3	Screw	1	1620215
4	Ball plunger	1	1620216
5	Lubrication nipple	2	1620217
8	Socket	4	1620218
6	Gear ring	1	924601020
7+8+11-15	Holder plate	1	924602006
7	Plate	1	1620222
11	Screw	2	1620223
12	Pin	2	1620224
8	Socket	4	1620225
13	Pin	1	1620226
14	Locking slide	1	1620227
15	Spring	1	1620228
9	Gear wheel	2	124602040
10	Gear wheel	2	124602050

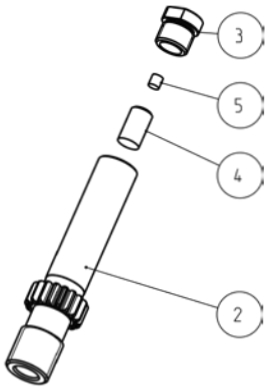
Tap module M2,5

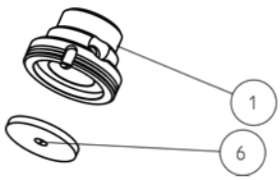




POSITION	DESCRIPTION	INSTALLED PIECES	PART-NO. (PER PIECE)
1-6	Tap module M2,5	1	924GF1301
2-5	Leading screw	1	16201BA
2	Leading screw	1	16201BB
3	Screw	1	16201BC
4	Magnet	1	16201BD
5	PU spring	1	16201BE
1	Leading nut	1	16201BG
6	Plastic cover	1	124614030

Tap module M3





POSITION	DESCRIPTION	INSTALLED PIECES	PART-NO. (PER PIECE)
1-6	Tap module M3	1	924GF1302
2-5	Leading screw	1	16201CA
2	Leading screw	1	16201CB
3	Screw	1	16201CC
4	Magnet	1	16201CD
5	PU spring	1	16201CE
1	Leading nut		16201CG
6	Plastic cover		124614030

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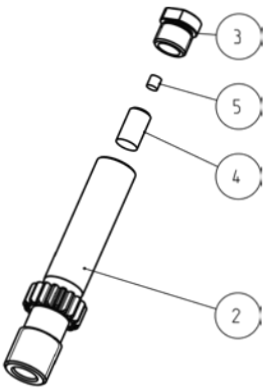
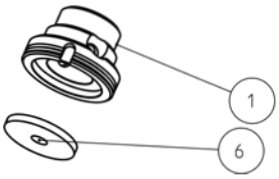
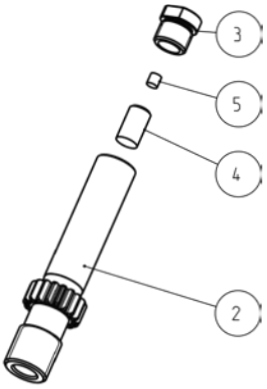
Tap module M4

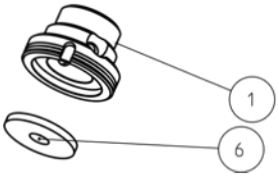




POSITION	DESCRIPTION	INSTALLED PIECES	PART-NO. (PER PIECE)
1-6	Tap module M4	1	924GF1304
2-5	Leading screw	1	16201DA
2	Leading screw	1	16201DB
3	Screw	1	16201DC
4	Magnet	1	16201DD
5	PU spring	1	16201DE
1	Leading nut	1	16201DG
6	Plastic cover	1	124614040

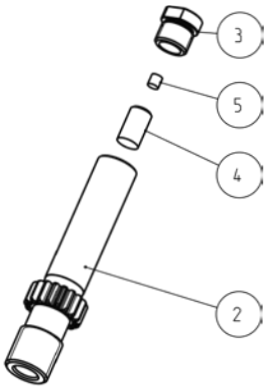
Tap module M5

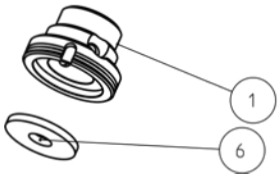




POSITION	DESCRIPTION	INSTALLED PIECES	PART-NO. (PER PIECE)
1-6	Tap module M5	1	924GF1305
2-5	Leading screw	1	16201EA
2	Leading screw	1	16201EB
3	Screw	1	16201EC
4	Magnet	1	16201ED
5	PU spring	1	16201EE
1	Leading nut	1	16201EG
6	Plastic cover	1	124614050

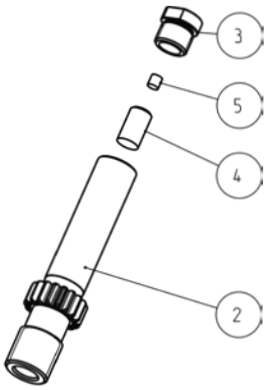
Tap module M6

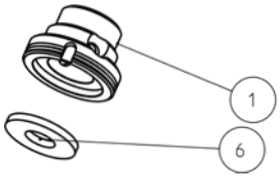




POSITION	DESCRIPTION	INSTALLED PIECES	PART-NO. (PER PIECE)
1-6	Tap module M6	1	924GF2301
2-5	Leading screw	1	16202FA
2	Leading screw	1	16202FB
3	Screw	1	16202FC
4	Magnet	1	16202FD
5	PU spring	1	16202FE
1	Leading nut	1	16202FG
6	Plastic cover	1	124614060

Tap module M8





POSITION	DESCRIPTION	INSTALLED PIECES	PART-NO. (PER PIECE)
1-6	Tap module M8	1	924GF2302
2-5	Leading screw	1	16202GA
2	Leading screw	1	16202GB
3	Screw	1	16202GC
4	Magnet	1	16202GD
5	PU spring	1	16202GE
1	Leading nut	1	16202GG
7	Plastic cover	1	124614080

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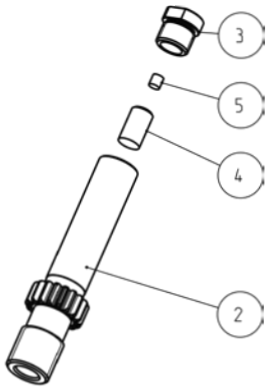
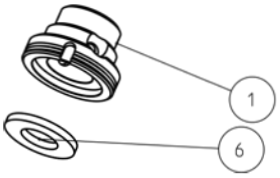
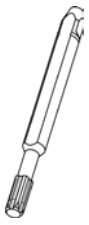
Tap module M10





POSITION	DESCRIPTION	INSTALLED PIECES	PART-NO. (PER PIECE)
1-6	Tap module M10	1	924GF2303
2-5	Leading screw	1	16202HA
2	Leading screw	1	16202HB
3	Screw	1	16202HC
4	Magnet	1	16202HD
5	PU spring	1	16202HE
1	Leading nut	1	16202HG
7	Plastic cover	1	124614100

Tap inserts



Type 1 (metric threads)

DESCRIPTION	INSTALLED PIECES	PART-NO. (PER PIECE)
M2.5	1	924GF1401
M3	1	924GF1402
M4	1	924GF1404
M5	1	924GF1405

Type 1 (Inch threads)

DESCRIPTION	INSTALLED PIECES	PART-NO. (PER PIECE)
UNC #2-56	1	924GFUC05
UNC #3-48	1	924GFUC10
UNC #4-40	1	924GFUC15
UNC #5-40	1	924GFUC20
UNC #6-32	1	924GFUC25
UNC #8-32	1	924GFUC30
UNF #10-32	1	924GFUF31

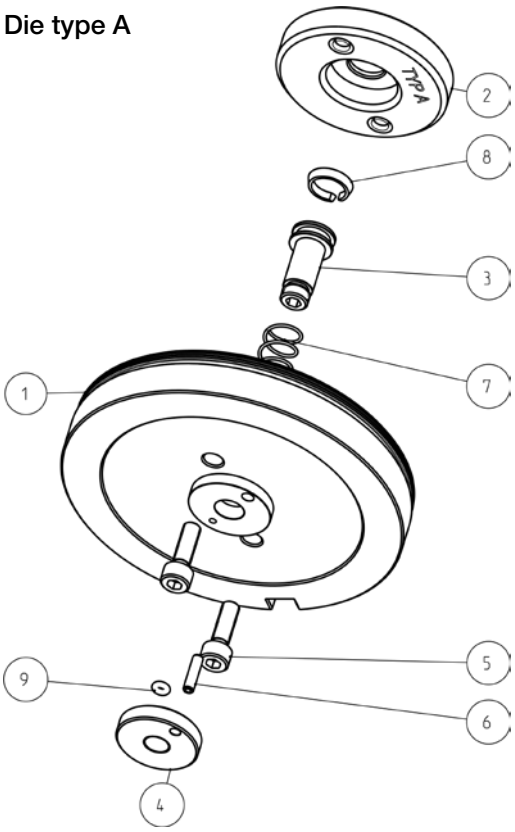
Type 2 (metric threads)

DESCRIPTION	INSTALLED PIECES	PART-NO. (PER PIECE)
M6	1	924GF2401
M8	1	924GF2402
M10	1	924GF2403

Type 2 (Inch threads)

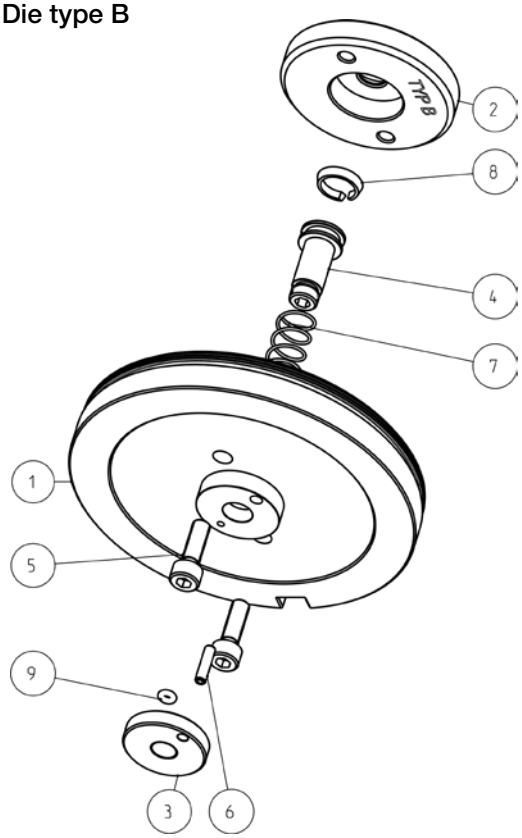
DESCRIPTION	INSTALLED PIECES	PART-NO. (PER PIECE)
UNC #10-24	1	924GFUC035
UNC #12-24	1	924GFUC40
UNC 1/4“-20	1	924GFUC45
UNC 5/16“-18	1	924GFUC50
UNC 3/8“-16	1	924GFUC55
UNF 1/4“-28	1	924GFUF32

Die type A



POSITION	DESCRIPTION	INSTALLED PIECES	PART-NO. (PER PIECE)
1-9	Die for flat sheets and extrusions upwards	1	924GF2201
1	Die holder	1	1620A42
2	Die plate	1	1620A43
3	Piston	1	1620A44
4	Clamping disc	1	1620A45
5	Screw	2	1620A46
6	Pin	1	1620A47
7	Spring	1	1620A48
8	Piston ring	1	1620A49
9	O-ring	1	1620A50

Die type B



POSITION	DESCRIPTION	INSTALLED PIECES	PART-NO. (PER PIECE)
1-9	Die for extrusions up- and downwards	1	924GF2211
1	Die holder	1	1620B42
2	Die plate	1	1620B43
3	Piston	1	1620B44
4	Clamping disc	1	1620B45
5	Screw	2	1620B46
6	Pin	1	1620B47
7	Spring	1	1620B48
8	Piston ring	1	1620B49
9	O-ring	1	1620B50

E. CLEANING & CARE

We recommend to check and if necessary to clean the tool daily. Especially when you work with galvanised steel, periodic visual inspections for wear and tear should be made more frequently. Sharpening or grinding the material in time increases the tool life enormously.

NOTE

Carry out periodic (daily) visual inspections and clean the tool if necessary!

Especially when soft and galvanised or foil-coated sheets are processed, abrasion of material, zinc or foils can get into the tool and can lead to a damage of the tool!

NOTES

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Operation Manual 12/2023-WW ps.®single-thread Version 2.1 - Z95027WW1

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