
TRUMPF

TruServices

# Punching Tools

# Order easily – with the correct specifications for the right tool.

## Have you thought of everything?

- ☑ **Machine type**
- ☑ **Machine number**
- ☑ **Tool type**
- ☑ **Dimensions or drawings in a conventional CAD format (e.g. DXF)**
- ☑ **Sheet thickness**
- ☑ **Material**
- ☑ **Quantity**
- ☑ **Desired delivery date**

! **Important ordering specifications**
Please observe the "Important ordering specifications" on each product page as well.

Order your punching tools securely and conveniently 24 hours a day, 7 days a week in our E-Shop at:

**www.trumpf.com/mytrumpf**

Alternatively, practical inquiry and order forms are available to you in the chapter "Order forms".

TRUMPF Werkzeugmaschinen SE + Co. KG
International Sales Punching Tools
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70839 Gerlingen
Germany
E-mail: export.tooling@trumpf.com
Homepage: www.trumpf.com

# Content















TruServices

# Your Partner in Performance


## What do you need for your success?

To be successful in the future, you need the right services to keep you on track for the long term. Do you want to create the perfect manufacturing environment or make the best use of your TRUMPF equipment and tailor it to your evolving needs? Whatever the case, we're on hand to help you maximize your added value and lock those benefits in. TRUMPF is the right choice if you're looking for a reliable partner that can support you with a wide range of custom solutions and service packages, ensuring that your manufacturing business continues to be a resounding success.

### EMPOWER

Looking to create the best conditions for successful manufacturing? We can give you the support you need.

### SUPPORT

Are flexibility and machine availability top priorities in your ongoing manufacturing activities? We're on hand to help.

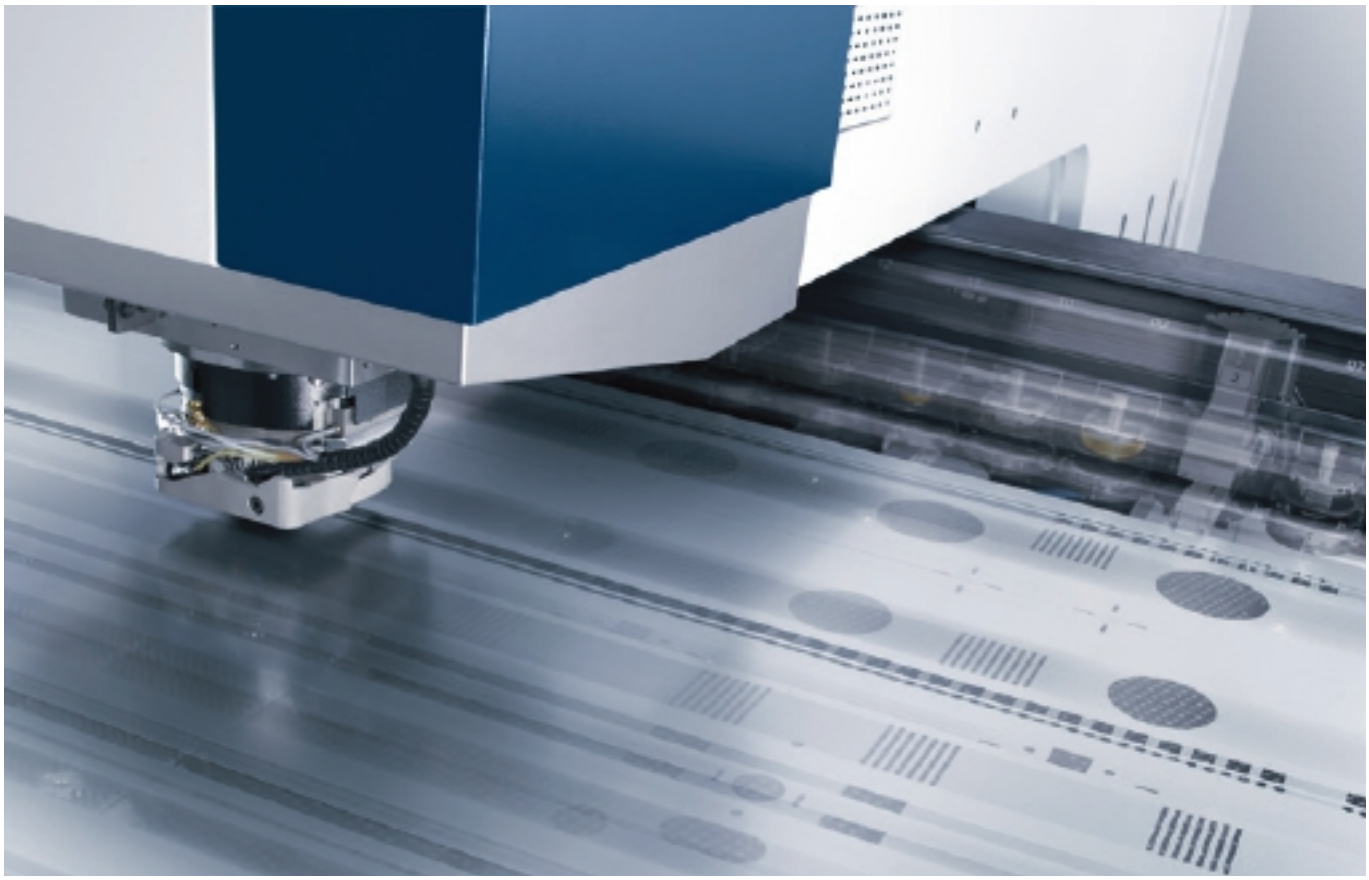
### IMPROVE

Do you want to gradually shift your production processes towards maximum added value? We can achieve that together.


SUPPORT
IMPROVE

The TRUMPF system:

# Efficient and versatile



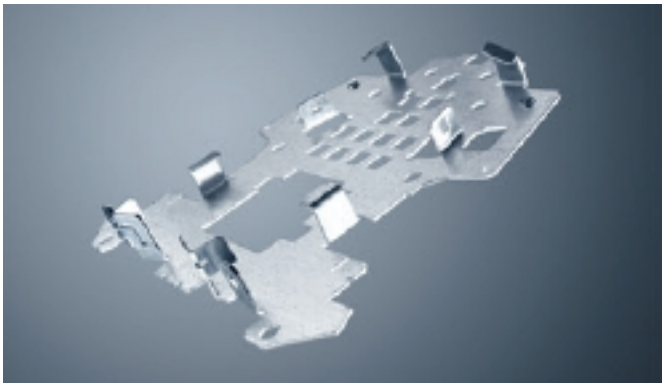
## Everything on one machine

Punching technology from TRUMPF allows you to flexibly conduct complete processing across a varied spectrum of parts. To this end, the machine, tools and software are all adapted to work together in perfect harmony, letting you produce your sheet metal parts extremely cost-effectively. Applications extend from simple workpieces through to complex examples with numerous formed sections. You can also produce large and small quantities from a wide range of materials fully automatically if desired: with optimal edge and surface quality. The 360° rotation of the punching head and tools produced in-house offer you the flexibility that you need.

Experience the
**360° tool rotation** in action
www.trumpf.info/0jwp6k

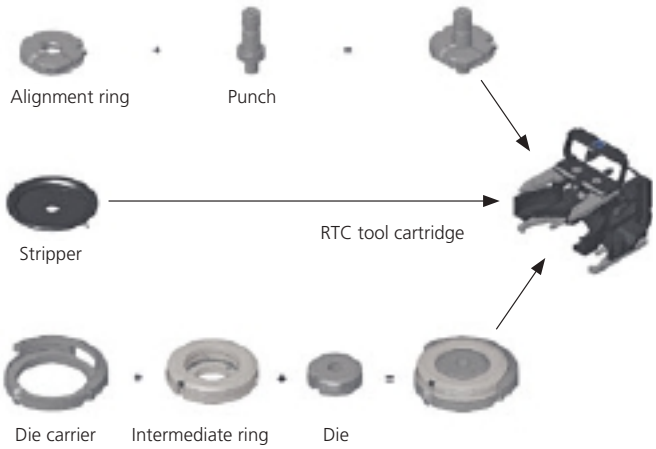
TRUMPF punching technology:

1. Resource-efficient processing
2. Punching, forming and deburring
3. Complete tool flexibility
4. Quality for all requirements
5. Customized automation



## Strength as standard

Our Classic System tools can be used on TRUMP punching and punch laser machines of all generations and boast impressively long service lives. A variety of shapes are available in various tool sizes. From the smallest punching operation in tool size 0 right through to tool size 2 geometries, you only need to use the universal RTC tool cartridge on the machine.
You can optimize your standard tools for custom operations with different tool shears and coatings.




## Forming – punching in the third dimension

Your punching machine can do more than just punch. Fitted with an intelligent punching head and the right tool, your machine will also demonstrate its talent for forming. This allows you to fully process a great diversity of sophisticated components on one machine – and even burr-free if required. What's more, it is efficient for small quantities too, as tool costs are low and setup times are short.

## Special developments for your success

Custom applications require custom tools. Our experts will draw from their many years of experience to provide you with comprehensive specialist advice and identify the best solution. Our specialists will work together with you to develop tools for your specific application. By manufacturing the products ourselves and carrying out intensive tests on the tools using TRUMPF machines, we can guarantee the highest quality available.

# Tools from the Smart Factory

Industry 4.0: Short delivery times thanks to networked production.

In our punching tool factory in Gerlingen, we are continually optimizing our processes, investing in the intelligent networking of person, machine and part throughout the entire process - starting with your order and going through to the successful use of the tool in production. This is how we achieve high availability and a quick delivery time.
Order the most frequent consumables and punching tools quickly and easily, and maintain a complete overview while doing so. Start our 24x7 production automatically.

Thanks to our automated punch and die production, we can deliver from more than 31 million standard tool variants on the same day if they are ordered before 2.0 pm.
Get in touch with us.

We would be glad to show you in detail where and how our punching tools are produced. Or would you like to find out more about Industry 4.0 in the TRUMPF punching tool production? We would be very pleased if you came to visit.

## Talk to us.

We'll be happy to show you in detail just how and where your punching tools take shape. Or perhaps you'd like to learn more about how Industry 4.0 is implemented in TRUMPF's punching tool production? Simply get in touch with us. We look forward to your visit.

Experience the **Industry 4.0**
in our punching tool production
www.trumpf.info/mucgdf

# We've thought of everything

## Support across the board

If you choose our punching tools, you will not only get the very best manufacturing results, but also a partner who supports you with everything related to your processes. Free additional services make your everyday punching tasks easier, a wide variety of trial offers help you satisfy new requirements, and financing models ensure that you have flexibility in your investment.

### A convincing price-performance ratio

Included in every purchase order: a comprehensive range of free additional services that turn your investment into a profit.

1. Free punch shears
2. Free EasyUse scale on dies and shims
3. Free TiCN coating for cluster tools

### Satisfy new customer requirements

Test new machine functions and tools in order to react flexibly to customer requirements and expand your portfolio.

1. Testing of new applications on your machine
2. Trial activation of the machine function including testing tool
3. Consultation from TRUMPF experts during the test phase

### Invest flexibly

Attractive lease-purchase models for setup and grinding devices give you greater freedom in your investment. Secure the best conditions for yourself and a long operational capability for your tools.

1. Attractive lease-purchase models for setup and grinding devices
2. Financial planning security thanks to fixed payment installments
3. Transfer of setup and grinding devices to your ownership


The MyTRUMPF customer portal: information and services related to your tools

## Order tools around the clock.

You can buy your tools conveniently and quickly around the clock through our E-Shop. You can maintain a constant overview of your order alongside information on prices and parts availability: A tracking number gives you direct access to the delivery tracking service, where you can view the status of your purchase order at any time. In addition, you can benefit from exclusive online offers.

## Stay up to speed with everything.

Inform yourself about new tools, read exciting application reports or receive helpful tips and tricks related to punching technology from the specialist experts at TRUMPF. You have access to all tool-specific documents such as technical information bulletins at any time.

## Speed up your processes.

After your special tool has been successfully tested, we provide you with the required programming data such as the DXF and tool data files in the form of a download. This means you can take care of the associated programming tasks even before you receive your tool, allowing you to start production straight away once it arrives. All tool data is saved for future reference in a clearly arranged database and can be retrieved again at any time if needed. This saves you the time and effort involved in archiving and searching for your files.

Do you want to enjoy all the benefits of MyTRUMPF?
If so, please register at
**www.trumpf.com/mytrumpf**

# Great punching made easy

## Punching with TRUMPF tools.

TRUMPF represents high-quality punching tools for maximum service life. We offer tools made from the highest quality steels that have been produced using the latest production technology. The best conditions for your production.

The Classic System is the leading tool system for punching machines as well as for punching and laser cutting machines. A wide range of forms, shears, coatings, and available accessories makes the tools very flexible. The system is equipped with EasyUse as a standard feature, guaranteeing simple setup.

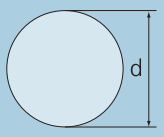
Our MultiTool makes your machine more productive by integrating up to ten different punches and dies into one tool. The strengths of the MultiTool are particularly notable in processing sheet metal parts with small punches of different sizes.

Our MultiUse tool is distinguished by its extremely reliable setup. Setup errors are effectively eliminated by clearly defining the angular position.

# Punching

# Round

**Description and application**
The reliable and cost-effective TRUMPF round tool for punching and nibbling




**Your benefits at a glance**
- With a wide range of options there is something to suit every requirement
- Maximum flexibility with the existing TRUMPF tool inventory
- Complete compatibility with TRUMPF accessories
- Simple setup with EasyUse

| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | dependent on the geometry and punching force see p. 132 Punching force and shear strength |

| Useful information | |
|---|---|
| Punching tool accessories | see p. 116 |
| Dimensions and regrinding | see p. 130 |
| Punch selection | see p. 134 |
| Die selection | see p. 135 |
| Stripper selection | see p. 138 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Sheet flatness | see p. 151 |
| Low-scratch/scratch-free processing | see p. 153 |
| Increasing dimensional accuracy | see p. 155 |
| Order forms | see p. 175 |

## Item

### Punch

- Optional: Longer service life with coating
- Optional: Free Whisper/roof shear

| Order no. | EUR |
|---|---|
| 699800 | |

### Die

- Simple setup with EasyUse

| Order no. | EUR |
|---|---|
| 699810 | |

### Stripper

- Optional: Special coating to avoid marks

| Order no. | EUR |
|---|---|
| 699820 | |

**Important ordering specifications**
Punch, die: machine, sheet thickness, material, size, dimensions, options (reinforced punch requires special alignment ring).
Stripper: machine, sheet thickness, material, dimensions, options.

## Prices

| Size | Punch (d) mm | Punch chuck required | EUR | Die (d) mm | EUR | Stripper (d) mm | EUR |
|---|---|---|---|---|---|---|---|
| 0 | 1.00 - 6.00 | Yes (6 mm) | | -32.00 | | -78.00 | |
| | 1.00 - 6.00 | Yes (10.5 mm) | | | | | |
| | 6.01 - 10.50 | | | | | | |
| 1 | 2.00 - 30.00 | No | | | | | |
| 2 | 30.01 - 40.00 | | | 32.01 - 77.80 | | | |
| | 40.01 - 60.00 | | | | | | |
| | 60.01 - 76.20 | | | | | | |

## Punch options

| Size | Coating MultiDur TiCN | MultiDur Performance | MultiDur Alu | Shear Whisper | Roof | Version Reinforced |
|---|---|---|---|---|---|---|
| 0 | | | | | | |
| 1 | | | | | | |
| 2 | | | | | | |

## Die options

| Size | Version Slug retention die | Reinforced |
|---|---|---|
| 1 | | |
| 2 | | |

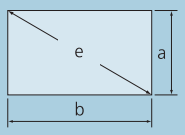
## Stripper options

| Special coating |
|---|
| |

# Rectangle

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | dependent on the geometry and punching force see p. 132 Punching force and shear strength |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Dimensions and regrinding | see p. 130 |
| Punch selection | see p. 134 |
| Die selection | see p. 135 |
| Stripper selection | see p. 138 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Sheet flatness | see p. 151 |
| Low-scratch/scratch-free processing | see p. 153 |
| Increasing dimensional accuracy | see p. 155 |
| Order forms | see p. 175 |

**Description and application**
The reliable and cost-effective TRUMPF rectangular tool for punching and nibbling




**Your benefits at a glance**
- With a wide range of options there is something to suit every requirement
- Maximum flexibility with the existing TRUMPF tool inventory
- Complete compatibility with TRUMPF accessories
- Simple setup with EasyUse

## Item

### Punch

- Optional: Longer service life with coating
- Optional: Free Whisper/roof shear

| Order no. | EUR |
|---|---|
| 699802 | |

### Die

- Simple setup with EasyUse

| Order no. | EUR |
|---|---|
| 699812 | |

### Stripper

- Optional: Special coating to avoid marks

| Order no. | EUR |
|---|---|
| 699822 | |

**Important ordering specifications**
Punch, die: machine, sheet thickness, material, size, dimensions, options (reinforced punch requires special alignment ring).
Stripper: machine, sheet thickness, material, dimensions, options.

## Prices

| | Punch | | | Die | | Stripper | |
|---|---|---|---|---|---|---|---|
| Size | (e) mm | Punch chuck required | EUR | (e) mm | EUR | (e) mm | EUR |
| 0 | 1.80 - 6.00 | Yes (6 mm) | | - 32.00 | | - 78.00 | |
| | 6.01 - 10.50 | Yes (10.5 mm) | | | | | |
| 1 | 2.00 - 30.45 | No | | | | | |
| 2 | 30.46 - 40.00 | | | 32.01 - 78.00 | | | |
| | 40.01 - 50.80 | | | | | | |
| | 50.81 - 60.00 | | | | | | |
| | 60.01 - 76.20 | | | | | | |

## Punch options

| | Coating | | | Shear | | Version |
|---|---|---|---|---|---|---|
| Size | MultiDur TiCN | MultiDur Performance | MultiDur Alu | Whisper | Roof | Reinforced |
| 0 | | | | | | |
| 1 | | | | | | |
| 2 | | | | | | |

## Die options

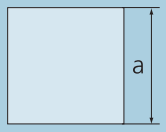
| | Version | |
|---|---|---|
| Size | Slug retention die | Reinforced |
| 1 | | |
| 2 | | |

## Stripper options

| Special coating |
|---|
| |

# Square

**Description and application**
The reliable and cost-effective TRUMPF square tool for punching and nibbling




**Your benefits at a glance**
- With a wide range of options there is something to suit every requirement
- Maximum flexibility with the existing TRUMPF tool inventory
- Complete compatibility with TRUMPF accessories
- Simple setup with EasyUse

| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | dependent on the geometry and punching force see p. 132 Punching force and shear strength |

| Useful information | |
|---|---|
| Punching tool accessories | see p. 116 |
| Dimensions and regrinding | see p. 130 |
| Punch selection | see p. 134 |
| Die selection | see p. 135 |
| Stripper selection | see p. 138 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Sheet flatness | see p. 151 |
| Low-scratch/scratch-free processing | see p. 153 |
| Increasing dimensional accuracy | see p. 155 |
| Order forms | see p. 175 |

## Item

### Punch

- Optional: Longer service life with coating
- Optional: Free Whisper/roof shear

| Order no. | EUR |
|---|---|
| 699801 | |

### Die

- Simple setup with EasyUse

| Order no. | EUR |
|---|---|
| 699811 | |

### Stripper

- Optional: Special coating to avoid marks

| Order no. | EUR |
|---|---|
| 699821 | |

**Important ordering specifications**
Punch, die: machine, sheet thickness, material, size, dimensions, options (reinforced punch requires special alignment ring).
Stripper: machine, sheet thickness, material, dimensions, options.

## Prices

| | Punch | | | Die | | Stripper | |
|---|---|---|---|---|---|---|---|
| Size | (a) mm | Punch chuck required | EUR | (a) mm | EUR | (a) mm | EUR |
| 0 | 1.00 - 4.20 | Yes (6 mm) | | - 22.00 | | - 55.00 | |
| | 4.21 - 7.40 | Yes (10.5 mm) | | | | | |
| 1 | 1.00 - 20.00 | No | | | | | |
| 2 | 20.01 - 28.00 | | | 22.01 - 55.00 | | | |
| | 28.01 - 35.00 | | | | | | |
| | 35.01 - 42.00 | | | | | | |
| | 42.01 - 53.80 | | | | | | |

## Punch options

| | Coating | | | Shear | | Version |
|---|---|---|---|---|---|---|
| Size | MultiDur TiCN | MultiDur Performance | MultiDur Alu | Whisper | Roof | Reinforced |
| 0 | | | | | | |
| 1 | | | | | | |
| 2 | | | | | | |

## Die options

| | Version | |
|---|---|---|
| Size | Slug retention die | Reinforced |
| 1 | | |
| 2 | | |

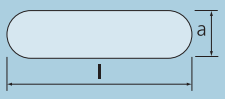
## Stripper options

| Special coating |
|---|
| |

# Oblong

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | dependent on the geometry and punching force see p. 132 Punching force and shear strength |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Dimensions and regrinding | see p. 130 |
| Punch selection | see p. 134 |
| Die selection | see p. 135 |
| Stripper selection | see p. 138 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Sheet flatness | see p. 151 |
| Low-scratch/scratch-free processing | see p. 153 |
| Increasing dimensional accuracy | see p. 155 |
| Order forms | see p. 175 |

**Description and application**
The reliable and cost-effective TRUMPF oblong tool for punching and nibbling




**Your benefits at a glance**
- With a wide range of options there is something to suit every requirement
- Maximum flexibility with the existing TRUMPF tool inventory
- Complete compatibility with TRUMPF accessories
- Simple setup with EasyUse

## Item

### Punch

- Optional: Longer service life with coating
- Optional: Free Whisper/roof shear

| Order no. | EUR |
|---|---|
| 699803 | |

### Die

- Simple setup with EasyUse

| Order no. | EUR |
|---|---|
| 699813 | |

### Stripper

- Optional: Special coating to avoid marks

| Order no. | EUR |
|---|---|
| 699823 | |

**Important ordering specifications**
Punch, die: machine, sheet thickness, material, size, dimensions, options (reinforced punch requires special alignment ring).
Stripper: machine, sheet thickness, material, dimensions, options.

## Prices

| | Punch | | | Die | | Stripper | |
|---|---|---|---|---|---|---|---|
| Size | (l) mm | Punch chuck required | EUR | (l) mm | EUR | (l) mm | EUR |
| 0 | 1.80 - 6.00 | Yes (6 mm) | | - 32.00 | | - 78.00 | |
| | 6.01 - 10.50 | Yes (10.5 mm) | | | | | |
| 1 | 2.00 - 30.00 | No | | | | | |
| 2 | 30.01 - 40.00 | | | 32.01 - 78.00 | | | |
| | 40.01 - 50.80 | | | | | | |
| | 50.81 - 60.00 | | | | | | |
| | 60.01 - 76.20 | | | | | | |

## Punch options

| | Coating | | | Shear | | Version |
|---|---|---|---|---|---|---|
| Size | MultiDur TiCN | MultiDur Performance | MultiDur Alu | Whisper | Roof | Reinforced |
| 0 | | | | | | |
| 1 | | | | | | |
| 2 | | | | | | |

## Die options

| | Version | |
|---|---|---|
| Size | Slug retention die | Reinforced |
| 1 | | |
| 2 | | |

## Stripper options

| Special coating |
|---|
| |

# Shapes – category A

**Description and application**
Standardized shape tools for your own individual application

**Your benefits at a glance**
- Can be configured individually to suit your requirements
- Tool Data Import makes tool programming easy
- With a wide range of options there is something to suit every requirement
- Simple setup with EasyUse

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | dependent on the geometry and punching force see p. 132 Punching force and shear strength |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Dimensions and regrinding | see p. 130 |
| Punch selection | see p. 134 |
| Die selection | see p. 135 |
| Stripper selection | see p. 138 |
| Cutting clearance | see p. 142 |
| Tool Data Import | see p. 145 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Sheet flatness | see p. 151 |
| Low-scratch/scratch-free processing | see p. 153 |
| Increasing dimensional accuracy | see p. 155 |
| Order forms | see p. 175 |

## Item

### Punch

- Optional: Longer service life with coating
- Optional: Free Whisper/roof shear

| Order no. | EUR |
|---|---|
| 699850 | |

### Die

- Simple setup with EasyUse

| Order no. | EUR |
|---|---|
| 699860 | |

### Stripper

- Optional: Special coating to avoid marks

| Order no. | EUR |
|---|---|
| 699870 | |

**Important ordering specifications**
Punch, die: machine, sheet thickness, material, size, form, dimensions, options (reinforced punch requires special alignment ring).
Stripper: machine, sheet thickness, material, form, dimensions, options.

## Prices

| | Punch | | | Die | | Stripper | |
|---|---|---|---|---|---|---|---|
| Size | Outer circle in mm | Punch chuck required | EUR | Outer circle in mm | EUR | Outer circle in mm | EUR |
| 0 | 1.00 - 10.50 | Yes (10.5 mm) | | - 32.00 | | - 78.00 | |
| 1 | 10.51 - 30.00 | No | | | | | |
| 2 | 30.01 - 40.00 | | | 32.01 - 78.00 | | | |
| | 40.01 - 50.80 | | | | | | |
| | 50.81 - 60.00 | | | | | | |
| | 60.01 - 76.20 | | | | | | |

## Punch options

| | Coating | | | Shear | | Version |
|---|---|---|---|---|---|---|
| Size | MultiDur TiCN | MultiDur Performance | MultiDur Alu | Whisper | Roof | Reinforced |
| 0 | | | | | | |
| 1 | | | | | | |
| 2 | | | | | | |

## Die options

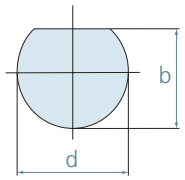
| | Version |
|---|---|
| Size | Reinforced |
| 1 | |
| 2 | |

## Stripper options

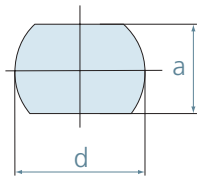
| Special coating |
|---|
| |

# Shapes – category A

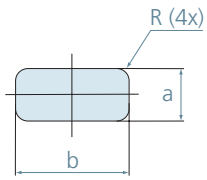
**Shape 6**



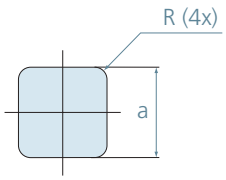

**Shape 7**



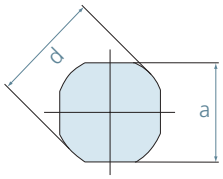

**Shape 9**



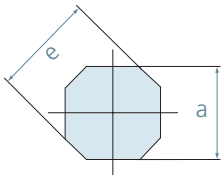

**Shape 10**



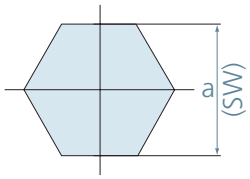

**Shape 11**



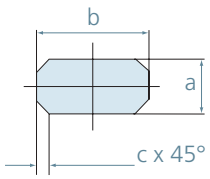

**Shape 12**



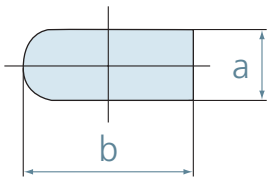

**Shape 13**



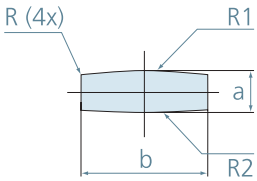

**Shape 30**



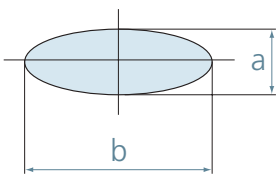

**Shape 32**



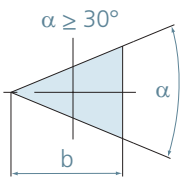

**Shape 29**



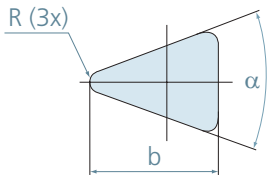

**Shape 36**



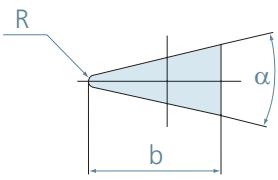

**Shape 20**



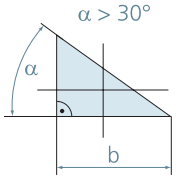

**Shape 22**



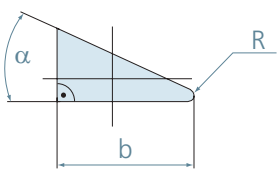

**Shape 23**



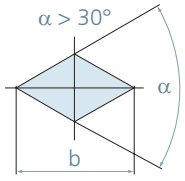

**Shape 21**



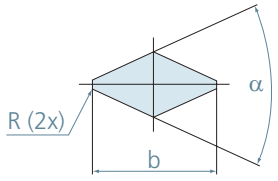

**Shape 24**



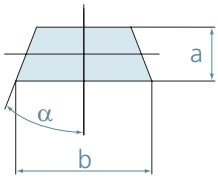

**Shape 16**



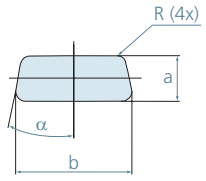

**Shape 17**



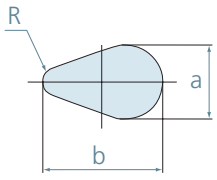

**Shape 25**




**Shape 18**




**Shape 39**




**Important ordering information**
The smallest possible radius is 0.2 mm. With forms 16, 20, 21, and 25, the b-size is reduced.

# Shapes – category B

**Description and application**
Standardized shape tools for your own individual application

**Your benefits at a glance**
- Can be configured individually to suit your requirements
- Tool Data Import makes tool programming easy
- With a wide range of options there is something to suit every requirement
- Simple setup with EasyUse

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | dependent on the geometry and punching force see p. 132 Punching force and shear strength |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Dimensions and regrinding | see p. 130 |
| Punch selection | see p. 134 |
| Die selection | see p. 135 |
| Stripper selection | see p. 138 |
| Cutting clearance | see p. 142 |
| Tool Data Import | see p. 145 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Sheet flatness | see p. 151 |
| Low-scratch/scratch-free processing | see p. 153 |
| Increasing dimensional accuracy | see p. 155 |
| Order forms | see p. 175 |

## Item

### Punch

- Optional: Longer service life with coating
- Optional: Free Whisper/roof shear

| Order no. | EUR |
|---|---|
| 699850 | |

### Die

- Simple setup with EasyUse

| Order no. | EUR |
|---|---|
| 699860 | |

### Stripper

- Optional: Special coating to avoid marks

| Order no. | EUR |
|---|---|
| 699870 | |

**Important ordering specifications**
Punch, die: machine, sheet thickness, material, size, form, dimensions, options (reinforced punch requires special alignment ring).
Stripper: machine, sheet thickness, material, form, dimensions, options.

## Prices

| | Punch | | | Die | | Stripper | |
|---|---|---|---|---|---|---|---|
| Size | Outer circle in mm | Punch chuck required | EUR | Outer circle in mm | EUR | Outer circle in mm | EUR |
| 0 | 1.00 - 10.50 | Yes (10.5 mm) | | - 32.00 | | - 78.00 | |
| 1 | 10.51 - 30.00 | No | | | | | |
| 2 | 30.01 - 40.00 | | | 32.01 - 78.00 | | | |
| | 40.01 - 50.80 | | | | | | |
| | 50.81 - 60.00 | | | | | | |
| | 60.01 - 76.20 | | | | | | |

## Punch options

| | Coating | | | Shear | | Version |
|---|---|---|---|---|---|---|
| Size | MultiDur TiCN | MultiDur Performance | MultiDur Alu | Whisper | Roof | Reinforced |
| 0 | | | | | | |
| 1 | | | | | | |
| 2 | | | | | | |

## Die options

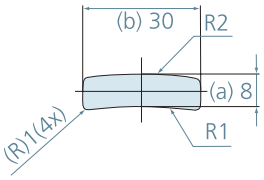
| | Version |
|---|---|
| Size | Reinforced |
| 1 | |
| 2 | |

## Stripper options

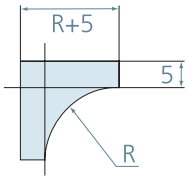
| Special coating |
|---|
| |

# Shapes – category B

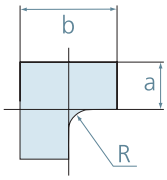
**Shape 37**



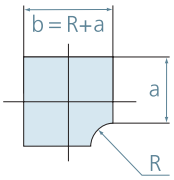

**Shape 35**



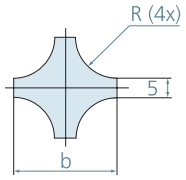

**Shape 15**



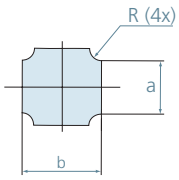

**Shape 15**



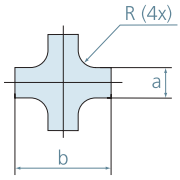

**Shape 14**



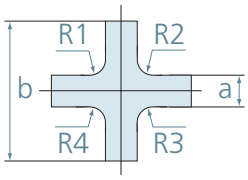

**Shape 14**



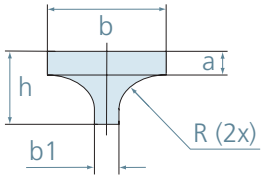

**Shape 14**



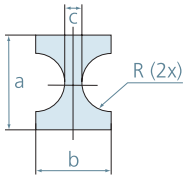

**Shape 40**



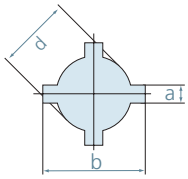

**Shape 28**



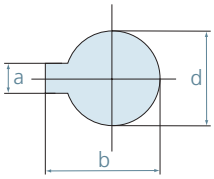

**Shape 31**



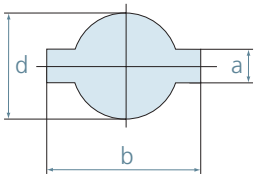

**Shape 27**



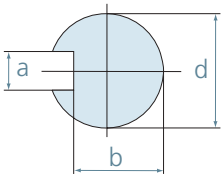

**Shape 1**



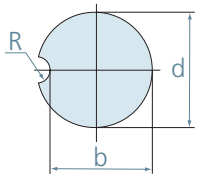

**Shape 2**



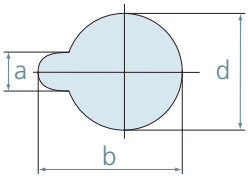

**Shape 3**



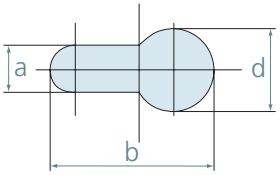

**Shape 38**



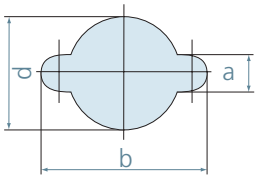

**Shape 4**



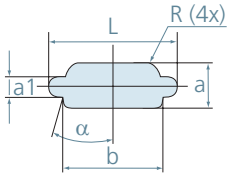

**Shape 5**




**Shape 8**




**Shape 19**

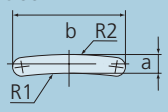


# Banana tool

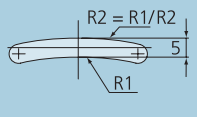
**Description and application**
The tool for punching curved shapes

**Your benefits at a glance**
- Can be customized to suit your requirements
- Can be used for large openings and circular punching
- Tool Data Import makes tool programming easy
- With a wide range of options there is something to suit every requirement
- Simple setup with EasyUse

**Shape 33**




**Shape 34**




| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | dependent on the geometry and punching force see p. 132 Punching force and shear strength |

| Useful information | |
|---|---|
| Punching tool accessories | see p. 116 |
| Dimensions and regrinding | see p. 130 |
| Punch selection | see p. 134 |
| Die selection | see p. 135 |
| Stripper selection | see p. 138 |
| Cutting clearance | see p. 142 |
| Tool Data Import | see p. 145 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Sheet flatness | see p. 151 |
| Low-scratch/scratch-free processing | see p. 153 |
| Increasing dimensional accuracy | see p. 155 |
| Order forms | see p. 175 |

## Item

### Punch

- Optional: Longer service life with coating
- Optional: Free Whisper/roof shear

| Order no. | EUR |
|---|---|
| 699850 | |

### Die

- Simple setup with EasyUse

| Order no. | EUR |
|---|---|
| 699860 | |

### Stripper

- Optional: Special coating to avoid marks

| Order no. | EUR |
|---|---|
| 699870 | |

**Important ordering specifications**
Punch, die: machine, sheet thickness, material, size, form, dimensions, options (reinforced punch requires special alignment ring).
Stripper: machine, sheet thickness, material, form, dimensions, options.

## Prices

| | Punch | | Die | | Stripper | |
|---|---|---|---|---|---|---|
| Size | Outer circle in mm | EUR | Outer circle in mm | EUR | Outer circle in mm | EUR |
| 1 | 10.51 - 30.00 | | - 32.00 | | - 78.00 | |
| 2 | 30.01 - 76.20 | | 32.01 - 78.00 | | | |

## Punch options

| | Coating | | | Shear | | Version |
|---|---|---|---|---|---|---|
| Size | MultiDur TiCN | MultiDur Performance | MultiDur Alu | Whisper | Roof | Reinforced |
| 1 | | | | | | |
| 2 | | | | | | |

## Die options

| | Version |
|---|---|
| Size | Reinforced |
| 1 | |
| 2 | |

## Stripper options

| Special coating |
|---|
| |

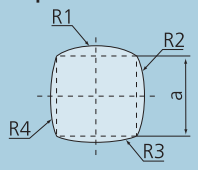
# MultiCut radii tool

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | dependent on the geometry and punching force see p. 132 Punching force and shear strength |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Dimensions and regrinding | see p. 130 |
| Punch selection | see p. 134 |
| Die selection | see p. 135 |
| Stripper selection | see p. 138 |
| Cutting clearance | see p. 142 |
| Tool Data Import | see p. 145 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Sheet flatness | see p. 151 |
| Low-scratch/scratch-free processing | see p. 153 |
| Increasing dimensional accuracy | see p. 155 |
| Order forms | see p. 175 |

**Description and application**
The adaptable tool with four different radii for producing round holes

**Your benefits at a glance**
- Short processing time for producing round holes
- Can be customized to suit your requirements
- Tool Data Import makes tool programming easy
- Simple setup with EasyUse

**Shape 26**




## Item

### Punch

- Optional: Longer service life with coating
- Optional: Free Whisper/roof shear

| Order no. | EUR |
|---|---|
| 699850 | |

### Die

- Simple setup with EasyUse

| Order no. | EUR |
|---|---|
| 699860 | |

### Stripper

- Optional: Special coating to avoid marks

| Order no. | EUR |
|---|---|
| 699870 | |

**Important ordering specifications**
Punch, die: machine, sheet thickness, material, size, form, dimensions, options (reinforced punch requires special alignment ring).
Stripper: machine, sheet thickness, material, form, dimensions, options.

## Prices

| | Punch | | Die | | Stripper | |
|---|---|---|---|---|---|---|
| Size | Outer circle in mm | EUR | Outer circle in mm | EUR | Outer circle in mm | EUR |
| 1 | 10.51 - 30.00 | | - 32.00 | | - 78.00 | |
| 2 | 30.01 - 76.20 | | 32.01 - 78.00 | | | |

## Punch options

| | Coating | | | Shear | | Version |
|---|---|---|---|---|---|---|
| Size | MultiDur TiCN | MultiDur Performance | MultiDur Alu | Whisper | Roof | Reinforced |
| 1 | | | | | | |
| 2 | | | | | | |

## Die options

| | Version |
|---|---|
| Size | Reinforced |
| 1 | |
| 2 | |

## Stripper options

| Special coating |
|---|
| |

**Recommended dimensions**
a=26.5 mm when R1=25, R2=40, R3=50, R4=65
a=42.0 mm when R1=50, R2=60, R3=80, R4=100

# Shapes – customized

**Description and application**
Shape tools produced to suit your individual requirements

**Your benefits at a glance**
- Individual consultation with punching specialists to discuss feasibility and application
- Quick delivery times as a result of the latest production methods
- Tool Data Import makes tool programming easy
- Simple setup with EasyUse

| **Machine type** | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | dependent on the geometry and punching force see p. 132 Punching force and shear strength |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Dimensions and regrinding | see p. 130 |
| Punch selection | see p. 134 |
| Die selection | see p. 135 |
| Stripper selection | see p. 138 |
| Cutting clearance | see p. 142 |
| Tool Data Import | see p. 145 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Sheet flatness | see p. 151 |
| Low-scratch/scratch-free processing | see p. 153 |
| Increasing dimensional accuracy | see p. 155 |
| Order forms | see p. 175 |

## Item

### Complete tool

| Order no. | EUR |
|---|---|
| 323300 | |

### Punch

- Optional: Longer service life with coating

| Order no. | EUR |
|---|---|
| 323301 | |

### Die

- Simple setup with EasyUse

| Order no. | EUR |
|---|---|
| 323311 | |

### Stripper

- Optional: Special coating to avoid marks

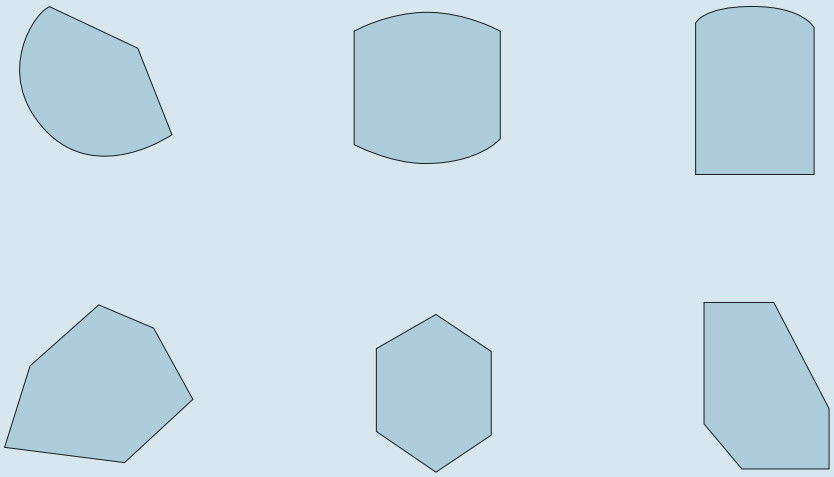
| Order no. | EUR |
|---|---|
| 323305 | |

**Important ordering specifications**
Initial order of complete tool: Drawing in common CAD format (e.g. DXF), machine, sheet thickness, material, options.
Reordering individual components: Entry of TRUMPF drawing number.

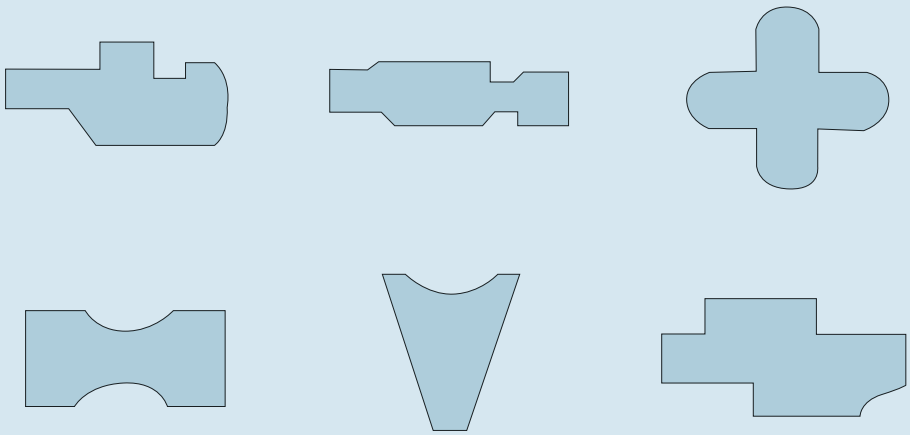
# Shapes – customized

## Shapes to suit your individual requirements

**Examples of shapes in category A**



**Examples of shapes in category B**



In addition to the large quantity of standard shapes, TRUMPF can create a shape to suit your individual requirements. Please send us a drawing in a conventional CAD format (e.g. DXF). If you order a customized shape, you will automatically receive all the data required for programming.

**We will be happy to advise you.**

# Punching

## Tools with guided cutting edge

**Description and application**
Tools for punching holes with dimensions that are less than the sheet thickness

**Your benefits at a glance**
- Reduced risk of breakage when punch load is increased
- Reliable punching of very small geometries
- Punch insert and guide bushing can be replaced individually

| **Machine type** | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | |
| Round | max. 4.0 mm |
| Rectangle, Square and Oblong | max. 2.5 mm |
| **Useful information** | |
| Dimensions and regrinding | see p. 130 |
| Punch selection | see p. 134 |
| Die selection | see p. 135 |
| Stripper selection | see p. 138 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Sheet flatness | see p. 151 |
| Low-scratch/scratch-free processing | see p. 153 |
| Increasing dimensional accuracy | see p. 155 |
| Order forms | see p. 175 |

## Item

### Guided punch, round

- Optional: Longer service life with coating

| Order no. | EUR |
|---|---|
| 699900 | |

### Guided punch, square

- Optional: Longer service life with coating

| Order no. | EUR |
|---|---|
| 699900 | |

### Guided punch, rectangle

- Optional: Longer service life with coating

| Order no. | EUR |
|---|---|
| 699900 | |

### Guided punch, oblong

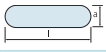
- Optional: Longer service life with coating

| Order no. | EUR |
|---|---|
| 699900 | |

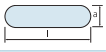
**Important ordering specifications**
Initial order of complete tool: Drawing in common CAD format (e.g. DXF), machine, sheet thickness, material, options.
Reordering individual components: Entry of TRUMPF drawing number.

## Inserts

### Precision piercing punch

| | | Dimensions mm | Order no. | EUR |
|---|---|---|---|---|
| Round |  | (d) = 1.00 - 6.00 | 699901 | |
| Square |  | (a) = 1.00 - 7.40 | | |
| Rectangle |  | (e) = 1.30 - 10.50 | | |
| Oblong |  | (l) = 1.30 - 10.50 | | |

### Guide bushing/presser foot

| | | Type | Order no. | EUR |
|---|---|---|---|---|
| Round |  | Guide bushing | 699902 | |
| Square |  | Presser foot | 699903 | |
| Rectangle |  | | | |
| Oblong |  | | | |

## Punch options

| **Coating** | | |
|---|---|---|
| **MultiDur TiCN** | **MultiDur Performance** | **MultiDur Alu** |
| | | |

## Accessories and single parts

| **Item** | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Hollow spring element (round) | 093928 | |
| Spring element (square, rectangle, oblong) | 517153 | |

# Cluster tools

**Description and application**
Tools for the highly efficient production of perforated sheets and perforations

**Your benefits at a glance**
- Numerous geometries ensure there is something to suit every requirement
- Individual consultation with punching specialists to discuss feasibility and application
- Quick delivery times as a result of the latest production methods
- Tool Data Import makes tool programming easy
- Attractive professional package with prefabricated punch plate and TiCN-coated punch inserts for longer service life

| **Machine type** | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | dependent on the geometry and punching force see p. 132 Punching force and shear strength |

| **Useful information** | |
|---|---|
| Punching tool accessories | see p. 116 |
| Dimensions and regrinding | see p. 130 |
| Punch selection | see p. 134 |
| Die selection | see p. 135 |
| Stripper selection | see p. 138 |
| Cutting clearance | see p. 142 |
| Tool Data Import | see p. 145 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Sheet flatness | see p. 151 |
| Low-scratch/scratch-free processing | see p. 153 |
| Increasing dimensional accuracy | see p. 155 |
| Order forms | see p. 175 |

## Item

### Complete tool

| Order no. | EUR |
|---|---|
| 326400 | |

### Punch

- One-piece punch or with replaceable inserts
- Optional: Longer service life with coating

| Order no. | EUR |
|---|---|
| 326450 | |

### Die

- Optional: Leveling effect to improve sheet evenness

| Order no. | EUR |
|---|---|
| 326411 | |

### Stripper

- Optional: Special coating to avoid marks

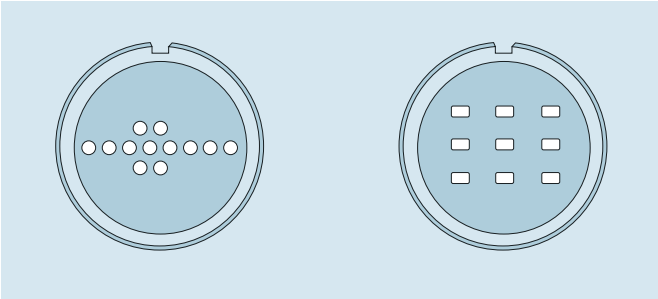
| Order no. | EUR |
|---|---|
| 326405 | |

**Important ordering specifications**
Initial order of complete tool: Drawing in common CAD format (e.g. DXF), machine, sheet thickness, material, options.
Reordering individual components: Entry of TRUMPF drawing number.

# Cluster tools

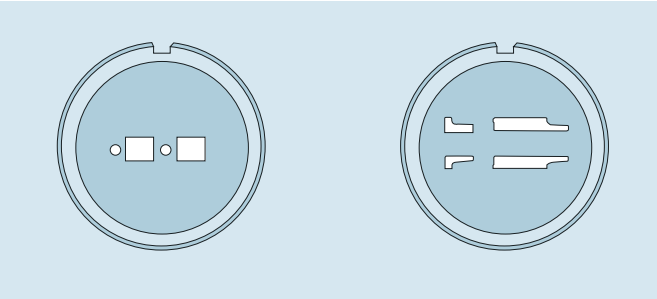
## The technology

Cluster tools are able to simultaneously punch several holes in a single stroke. They are produced individually upon request with interchangeable punch inserts or from a single piece, depending on the application and requirements in question.



**Punch with replaceable punch inserts**

- Punch inserts can be individually replaced, e.g. in the event of wear
- Easy assembly
- Well suited for smaller dimensions and standard forms
- Particularly economical for large quantities



**One-piece punch**

- A solid punch, can be optionally supplied with integrated alignment ring
- Can be combined with a range of geometries
- Particularly suited to larger geometries, special shapes, or high-precision processing

## The expertise

For the best results with all our tools' features, we draw on the wealth of TRUMPF specialist knowledge: There's so much we can offer, including different coatings, the leveling effect, slug retention function and much more. The only things limiting production using cluster tools are their maximum outer circle dimension of 72 mm and the machine’s punching force.

The machine and tool are subjected to particularly high demands during serial production of perforated sheets using cluster tools in continuous operation. That's why TRUMPF recommends only using cluster tools in continuous operation at up to two thirds of the maximum punching force and adapting the tool geometry as appropriate. These actions relieve the machine and considerably extend the service life of the tool. In short-term operation, cluster tools can be used without any restrictions.

# MultiTool 5-station

**Description and application**
The original MultiTool from TRUMPF with a tool adapter for 5 inserts – ideal for lots of small punches with different sizes

**Your benefits at a glance**
- Number of tools on the machine is increased with 5 tool inserts in one tool adapter
- Shorter tool setup and change times
- Considerable increase in productivity for small punches
- Die inserts can be reground one at a time
- The gear rim with special coating runs exceptionally well

| **Machine type** | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | MultiTool |
| **Sheet thickness s** | |
| Aluminum | 0.5 - 4.5 mm |
| Steel | 0.5 - 4.5 mm |
| Stainless steel | 0.5 - 3.0 mm |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Dimensions and regrinding | see p. 130 |
| Punching force and shear strength | see p. 132 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Sheet flatness | see p. 151 |
| Low-scratch/scratch-free processing | see p. 153 |
| Increasing dimensional accuracy | see p. 155 |
| Order forms | see p. 175 |

## Item

**Complete MultiTool**

| Order no. | EUR |
|---|---|
| 699830 | |

**Punch holder**

| Order no. | EUR |
|---|---|
| 629134 | |

**Die holder**

| Order no. | EUR |
|---|---|
| 629150 | |

**Stripper**

| Order no. | EUR |
|---|---|
| 629161 | |

**Important ordering specifications**
Machine, MultiTool type (4-, 5-, 6-,10-station). The "MultiTool" machine option is a prerequisite.

## Inserts

**Punch insert**

| | | Dimensions mm | Order no. | EUR |
|---|---|---|---|---|
| Round |  | (d) = 1.00 - 16.00 | 699804 | |
| Square |  | (a) = 1.00 - 11.30 | | |
| Rectangle |  | (e) = 1.80 - 16.00 | | |
| Oblong |  | (l) = 2.00 - 16.00 | | |
| Shapes A/B see p. 18-20 | | 1.00 - 16.00 | | |

**Die insert**

| | | Dimensions mm | Order no. | EUR |
|---|---|---|---|---|
| Round |  | (d) = 1.00 - 16.90 | 699814 | |
| Square |  | (a) = 1.00 - 12.20 | | |
| Rectangle |  | (e) = 2.50 - 16.90 | | |
| Oblong |  | (l) = 2.00 - 16.90 | | |
| Shapes A/B see p. 18-20 | | 1.00 - 16.90 | | |

## Punch options

**Coating**

| MultiDur TiCN | MultiDur Performance | MultiDur Alu |
|---|---|---|
| | | |

## Die options

**Die holder with brush inserts**

| Order no. | EUR |
|---|---|
| 668915 | |

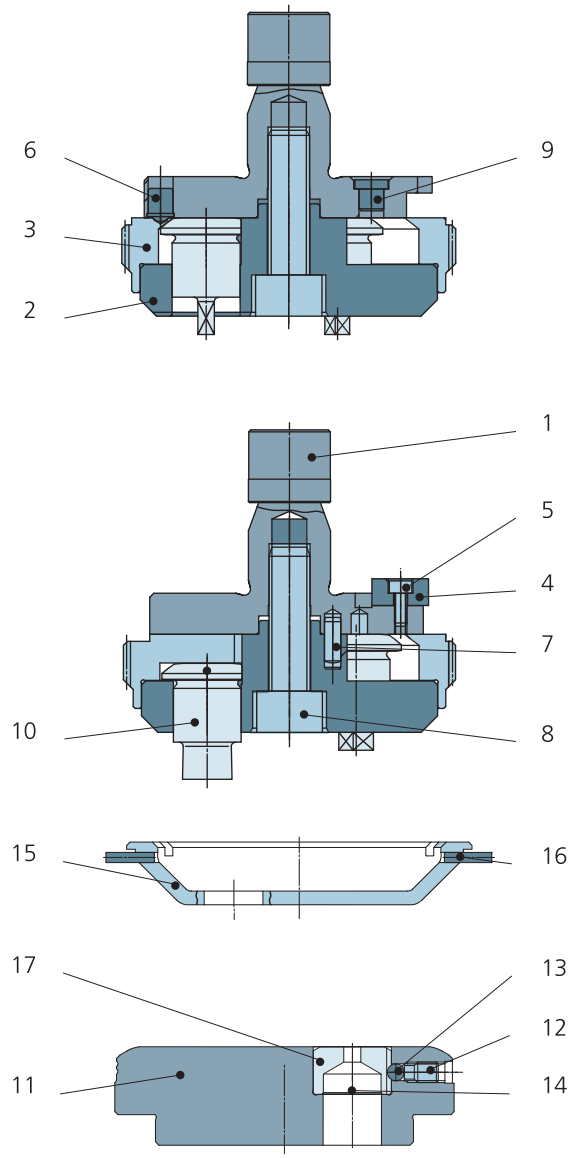
## Stripper options

**Stripper, close-fit**

| Order no. | EUR |
|---|---|
| 699827 | |

**Important ordering specifications**
Machine, sheet thickness, material, MultiTool type (4-, 5-, 6-, 10-station), shape, dimensions, options.

# MultiTool 5-station




## Accessories and single parts

| | Item | | | |
|---|---|---|---|---|
| | Designation | Pieces | Order no. | EUR |
| 1) | Punch shank | 1 | 629117 | |
| 2) | Punch holder body | 1 | 629120 | |
| 3) | Gear rim | 1 | 629121 | |
| 4) | Adjustment key | 1 | 063548 | |
| 5) | Cheese-head screw M3x8 | 1 | 014346 | |
| 6) | Thrust piece | 1 | 355256 | |
| 7) | Cylindrical pin | 2 | 023116 | |
| 8) | Cheese-head screw M10x35 | 1 | 015199 | |
| 9) | Grease nipple | 1 | 029556 | |
| 10) | Punch insert | 5 | 699804 | |
| 11) | Die holder body | 1 | 629136 | |
| 12) | Set screw M6x10 | 5 | 074438 | |
| 13) | Ball | 5 | 030210 | |
| | Shim 0.1 mm | 10 | 1460499 | |
| 14) | Shim 0.3 mm | 5 | 1460502 | |
| | Shim 0.5 mm | 5 | 1460503 | |
| 15) | Complete stripper | 1 | 629161 | |
| 16) | Clamping pin 3x14, stripper | 2 | 146927 | |

| | Item | | | |
|---|---|---|---|---|
| | Designation | Pieces | Order no. | EUR |
| 17) | Die insert | 5 | 699814 | |
| | Brush insert (not pictured) | 5 | 540021 | |
| 18) | Plain washer 0.1 mm for brush insert (not pictured) | 5 | 540026 | |
| | Plain washer 0.3 mm for brush insert (not pictured) | 5 | 540027 | |

Experience the **MultiTool 5-station** in action
www.trumpf.info/hnkdqb

# MultiTool 10-station

**Description and application**
The original MultiTool from TRUMPF with a tool adapter for 10 inserts – ideal for lots of small punches with different sizes

**Your benefits at a glance**
- Number of tools on the machine is increased with 10 tool inserts in one tool holder
- Shorter tool setup and change times
- Considerable increase in productivity for small punches
- Die inserts can be reground one at a time
- The gear rim with special coating runs exceptionally well

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | MultiTool |
| **Sheet thickness s** | |
| Aluminum | 0.5 - 4.5 mm |
| Steel | 0.5 - 4.5 mm |
| Stainless steel | 0.5 - 3.0 mm |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Dimensions and regrinding | see p. 130 |
| Punching force and shear strength | see p. 132 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Sheet flatness | see p. 151 |
| Low-scratch/scratch-free processing | see p. 153 |
| Increasing dimensional accuracy | see p. 155 |
| Order forms | see p. 175 |

## Item

### Complete MultiTool

| Order no. | EUR |
|---|---|
| 699830 | |

### Punch holder

| Order no. | EUR |
|---|---|
| 630593 | |

### Die holder

- With brush insert for low-scratch processing

| Order no. | EUR |
|---|---|
| 358911 | |

### Stripper

| Order no. | EUR |
|---|---|
| 641046 | |

**Important ordering specifications**
Machine, MultiTool type (4-, 5-, 6-, 10-station). The "MultiTool" machine option is a prerequisite.

## Inserts

### Punch insert

| | Dimensions mm | Order no. | EUR |
|---|---|---|---|
| Round | (d) = 1.00 - 10.50 | 699804 | |
| Square | (a) = 1.00 - 7.40 | | |
| Rectangle | (e) = 1.80 - 10.50 | | |
| Oblong | (l) = 2.00 - 10.50 | | |
| Shapes A/B see p. 18-20 | 1.00 - 10.50 | | |

### Die insert

| | Dimensions mm | Order no. | EUR |
|---|---|---|---|
| Round | (d) = 1.00 - 11.00 | 699814 | |
| Square | (a) = 1.00 - 7.70 | | |
| Rectangle | (e) = 1.80 - 11.00 | | |
| Oblong | (l) = 2.00 - 11.00 | | |
| Shapes A/B see p. 18-20 | 1.00 - 11.00 | | |

## Punch options

### Coating

| MultiDur TiCN | MultiDur Performance | MultiDur Alu |
|---|---|---|
| | | |

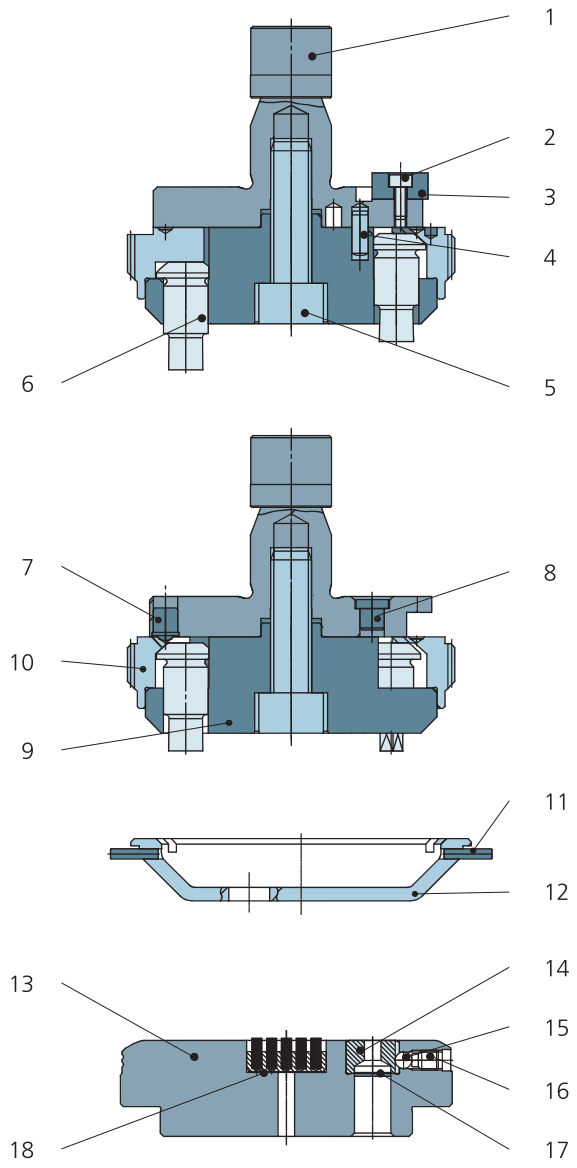
## Stripper options

### Stripper, close-fit

| Order no. | EUR |
|---|---|
| 699827 | |

**Important ordering specifications**
Machine, sheet thickness, material, MultiTool type (4-, 5-, 6-, 10-station), shape, dimensions, options.

# MultiTool 10-station




## Accessories and single parts

| | Item | | | |
|---|---|---|---|---|
| | Designation | Pieces | Order no. | EUR |
| 1) | Punch shank | 1 | 629117 | |
| 2) | Cheese-head screw M3x8 | 1 | 014346 | |
| 3) | Adjustment key | 1 | 063548 | |
| 4) | Cylindrical pin 4m6x10 | 1 | 023116 | |
| 5) | Cheese-head screw M10x35 | 1 | 015199 | |
| 6) | Punch insert | 10 | 699804 | |
| 7) | Thrust piece | 1 | 355256 | |
| 8) | Grease nipple | 1 | 029556 | |
| 9) | Punch holder body | 1 | 630586 | |
| 10) | Gear rim | 1 | 630587 | |
| 11) | Clamping pin 3x14, stripper | 2 | 146927 | |
| 12) | Complete stripper | 1 | 641046 | |
| 13) | Die holder body | 1 | 358911 | |
| 14) | Die insert | 10 | 699814 | |
| 15) | Ball | 10 | 030210 | |
| 16) | Set screw M6x8 | 10 | 053720 | |

| | Item | | | |
|---|---|---|---|---|
| | Designation | Pieces | Order no. | EUR |
| | Shim 0.1 mm | 20 | 1460490 | |
| 17) | Shim 0.3 mm | 10 | 1460493 | |
| | Shim 0.5 mm | 10 | 1460496 | |
| 18) | Brush insert | 1 | 0540023 | |

Experience the **MultiTool 10-station** in action
www.trumpf.info/hnkdqb

# MultiTool, mark-free

**Description and application**
The original MultiTool from TRUMPF for optimal surface quality on the upper and underside of the sheet

**Your benefits at a glance**
- Number of tools on the machine is increased with 5 or 10 tool inserts in one tool holder
- Mark-free sheet top thanks to patented control element in punch holder
- Imprint-free sheet underside thanks to solid die with brush inserts
- Specially coated stripper for a flawless surface finish
- Simplified setup process and regrinding thanks to two-part die

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | MultiTool |
| **Sheet thickness s** | |
| Aluminum and steel | 2.0 mm with medium degree of punching<br>3.0 mm with low degree of punching |
| Stainless steel | 2.0 mm |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Dimensions and regrinding | see p. 130 |
| Punching force and shear strength | see p. 132 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Sheet flatness | see p. 151 |
| Low-scratch/scratch-free processing | see p. 153 |
| Increasing dimensional accuracy | see p. 155 |
| Order forms | see p. 175 |

## Item

### Complete MultiTool

| Order no. | Design | EUR |
|---|---|---|
| 2253653 | 5-station | |
| 2253654 | 10-station | |

### Punch holder

■ With patented control element

| Order no. | Design | EUR |
|---|---|---|
| 2252586 | 5-station | |
| 2252698 | 10-station | |

### Die, 2-part

■ With brush inserts

| Order no. | Design | EUR |
|---|---|---|
| 2252376 | 5-station | |
| 2252494 | 10-station | |

### Stripper, close-fit

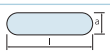
■ With special coating

| Order no. | Design | EUR |
|---|---|---|
| 399999 | 5-station | |
| 399999 | 10-station | |

**Important ordering specifications**
Machine, MultiTool type (5-, 10-station). The "MultiTool" machine option is a prerequisite.
To ensure optimum results, use of the descending die or active die is recommended.

## Inserts

### Punch insert

| | | Dimensions mm 5-station | Dimensions mm 10-station | Order no. | EUR |
|---|---|---|---|---|---|
| Round |  | (d) = 1.00 - 16.00 | (d) = 1.00 - 10.50 | 699804 | |
| Square |  | (a) = 1.00 - 11.30 | (a) = 1.00 - 7.40 | | |
| Rectangle |  | (e) = 1.80 - 16.00 | (e) = 1.80 - 10.50 | | |
| Oblong |  | (l) = 2.00 - 16.00 | (l) = 2.00 - 10.50 | | |
| Shapes A/B | see p. 18-20 | 1.00 - 16.00 | 1.00 - 10.50 | | |

## Punch options

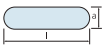
### Coating

| MultiDur TiCN | MultiDur Performance | MultiDur Alu |
|---|---|---|
| | | |

# MultiTool, mark-free

## Inserts

**Blanking die**

| | | Dimensions mm 5-station | Dimensions mm 10-station | Order no. | EUR 5-station | EUR 10-station |
|---|---|---|---|---|---|---|
| Round |  | (d) = 1.00 - 16.90 | (d) = 1.00 - 11.00 | 399998 | | |
| Square |  | (a) = 1.00 - 12.20 | (a) = 1.00 - 7.70 | | | |
| Rectangle |  | (e) = 2.50 - 16.90 | (e) = 1.80 - 11.00 | | | |
| Oblong |  | (l) = 2.00 - 16.90 | (l) = 2.00 - 11.00 | | | |
| Shapes A/B | see p. 18-20 | 1.00 - 16.60 | 1.00 - 11.00 | | | |

**Important ordering specifications**
Machine, sheet thickness, material, MultiTool (5-, 10-station), shape, dimensions, options.

## Accessories and single parts

| | Item | | 5-station | | 10-station | |
|---|---|---|---|---|---|---|
| | Designation | Pieces | Order no. | EUR | Order no. | EUR |
| 1) | Control element, complete | 1 | 2244642 | | 2250948 | |
| 2) | Brush insert, oblong | 4 | 2244646 | | 2244646 | |
| 3) | Brush insert, round | 1 | 0540021 | | 0540023 | |
| 4) | Installation device, complete | 1 | 2259076 | | 2259201 | |
| 5) | Mounting bolt for brushes, round | 1 | 2258987 | | 2258988 | |

# MultiTool 4-station

**Description and application**
The original MultiTool from TRUMPF with a tool holder for 4 inserts – ideal for lots of small punches with different sizes

**Your benefits at a glance**
- Number of tools on the machine is increased with 4 tool inserts in one tool holder
- Shorter tool setup and change times
- Considerable increase in productivity for small punches
- Die inserts can be reground one at a time

| | |
|---|---|
| **Machine type** | |
| TC | 190 R, 200 R, 240 R, 260 R, 500 R, 600 L |
| **Required machine option** | MultiTool |
| **Sheet thickness s** | |
| Aluminum | 0.5 - 3.0 mm |
| Steel | 0.5 - 3.0 mm |
| Stainless steel | 0.5 - 2.0 mm |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Dimensions and regrinding | see p. 130 |
| Punching force and shear strength | see p. 132 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Sheet flatness | see p. 151 |
| Low-scratch/scratch-free processing | see p. 153 |
| Increasing dimensional accuracy | see p. 155 |
| Order forms | see p. 175 |

## Item

**Complete MultiTool**

| Order no. | EUR |
|---|---|
| 699830 | |

**Punch holder**

- For TC 240/TC 260 (Order no. 203629)

| Order no. | EUR |
|---|---|
| 712118 | |

**Die holder**

| Order no. | EUR |
|---|---|
| 75560 | |

**Important ordering specifications**
Machine, MultiTool type (4-, 5-, 6-,10-station). The "MultiTool" machine option is a prerequisite.

## Inserts

**Punch insert**

| | Dimensions mm | Order no. | EUR |
|---|---|---|---|
| Round | (d) = 1.00 - 16.00 | 699804 | |
| Square | (a) = 1.00 - 11.30 | | |
| Rectangle | (e) = 1.80 - 16.00 | | |
| Oblong | (l) = 1.50 - 16.00 | | |
| Shapes A/B see p. 18-20 | 1.00 - 16.00 | | |

**Die insert**

| | Dimensions mm | Order no. | EUR |
|---|---|---|---|
| Round | (d) = 1.00 - 16.60 | 699814 | |
| Square | (a) = 1.00 - 11.90 | | |
| Rectangle | (e) = 1.80 - 16.55 | | |
| Oblong | (l) = 2.00 - 16.60 | | |
| Shapes A/B see p. 18-20 | 1.00 - 16.60 | | |

## Punch options

**Coating**

| MultiDur TiCN | MultiDur Performance | MultiDur Alu |
|---|---|---|
| | | |

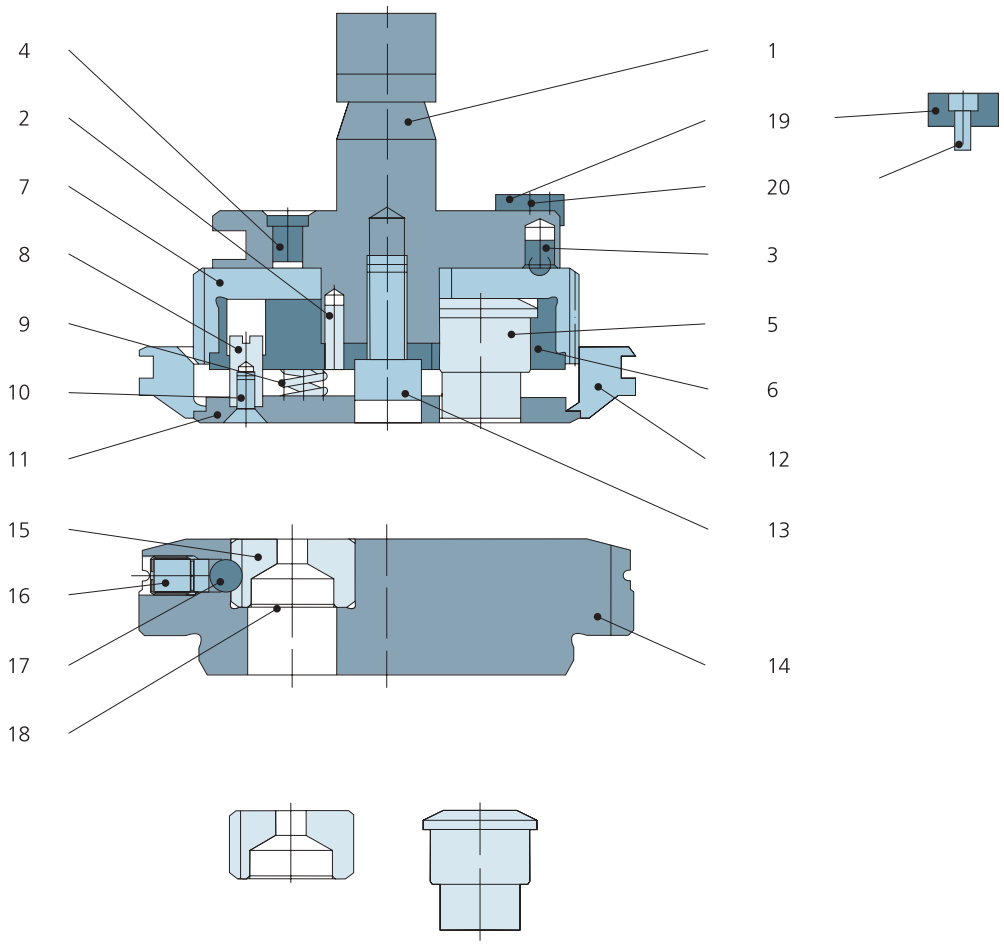
## Die options

**Die holder with brush inserts**

| Order no. | EUR |
|---|---|
| 540019 | |

**Important ordering specifications**
Machine, sheet thickness, material, MultiTool type (4-, 5-, 6-, 10-station), shape, dimensions, options.

# MultiTool 4-station




## Accessories and single parts

| | Item | | | |
|---|---|---|---|---|
| | Designation | Pieces | Order no. | EUR |
| 1) | Punch shank | 1 | 540538 | |
| 2) | Cylindrical pin | 1 | 023116 | |
| 3) | Thrust piece | 1 | 355256 | |
| 4) | Grease nipple | 1 | 029556 | |
| 5) | Punch insert | 4 | 699804 | |
| 6) | Punch holder body | 1 | 203625 | |
| 7) | Gear rim | 1 | 203626 | |
| 8) | Bolt | 4 | 062171 | |
| 9) | Compression spring | 4 | 630128 | |
| 10) | Countersunk screw | 4 | 017965 | |
| 11) | Presser foot | 1 | 711957 | |
| | Presser foot for TC 240/TC 260 | 1 | 203627 | |
| 12) | Complete stripper | 1 | 712115 | |
| | Complete stripper for TC 240/TC 260 | 1 | 203619 | |
| 13) | Cheese-head screw | 1 | 016349 | |
| 14) | Die holder body | 1 | 066205 | |
| 15) | Die insert | 4 | 699814 | |

| | Item | | | |
|---|---|---|---|---|
| | Designation | Pieces | Order no. | EUR |
| 16) | Set screw | 4 | 073865 | |
| 17) | Ball | 4 | 062005 | |
| | Shim 0.1 mm | 8 | 366744 | |
| 18) | Shim 0.3 mm | 4 | 366745 | |
| | Shim 0.5 mm | 4 | 366746 | |
| 19) | Adjustment key | 1 | 063548 | |
| 20) | Cheese-head screw | 1 | 014346 | |

# MultiTool 6-station

**Description and application**
The original MultiTool from TRUMPF with a tool adapter for 6 inserts – ideal for lots of small punches with different sizes

**Your benefits at a glance**
- Number of tools on the machine is increased with 6 tool inserts in one tool holder
- Shorter tool setup and change times
- Considerable increase in productivity for small punches
- Die inserts can be reground one at a time

| Machine type | |
|---|---|
| TC | 190 R, 200 R, 240 R, 260 R, 500 R, 600 L |
| **Required machine option** | MultiTool |
| **Sheet thickness s** | |
| Aluminum | 0.5 - 3.0 mm |
| Steel | 0.5 - 3.0 mm |
| Stainless steel | 0.5 - 2.0 mm |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Dimensions and regrinding | see p. 130 |
| Punching force and shear strength | see p. 132 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Sheet flatness | see p. 151 |
| Low-scratch/scratch-free processing | see p. 153 |
| Increasing dimensional accuracy | see p. 155 |
| Order forms | see p. 175 |

## Item

### Complete MultiTool

| Order no. | EUR |
|---|---|
| 699830 | |

### Punch holder

- For TC 240/TC 260 (Order no. 203635)

| Order no. | EUR |
|---|---|
| 712120 | |

### Die holder

| Order no. | EUR |
|---|---|
| 75554 | |

**Important ordering specifications**
Machine, MultiTool type (4-, 5-, 6-,10-station). The "MultiTool" machine option is a prerequisite.

## Inserts

### Punch insert

| | Dimensions mm | Order no. | EUR |
|---|---|---|---|
| Round | (d) = 1.00 - 10.50 | 699804 | |
| Square | (a) = 1.00 - 7.40 | | |
| Rectangle | (e) = 1.80 - 10.50 | | |
| Oblong | (l) = 2.00 - 10.50 | | |
| Shapes A/B see p. 18-20 | 1.00 - 10.50 | | |

### Die insert

| | Dimensions mm | Order no. | EUR |
|---|---|---|---|
| Round | (d) = 1.00 - 11.10 | 699814 | |
| Square | (a) = 1.00 - 7.80 | | |
| Rectangle | (e) = 1.80 - 11.00 | | |
| Oblong | (l) = 2.00 - 11.10 | | |
| Shapes A/B see p. 18-20 | 1.00 - 11.10 | | |

## Punch options

### Coating

| MultiDur TiCN | MultiDur Performance | MultiDur Alu |
|---|---|---|
| | | |

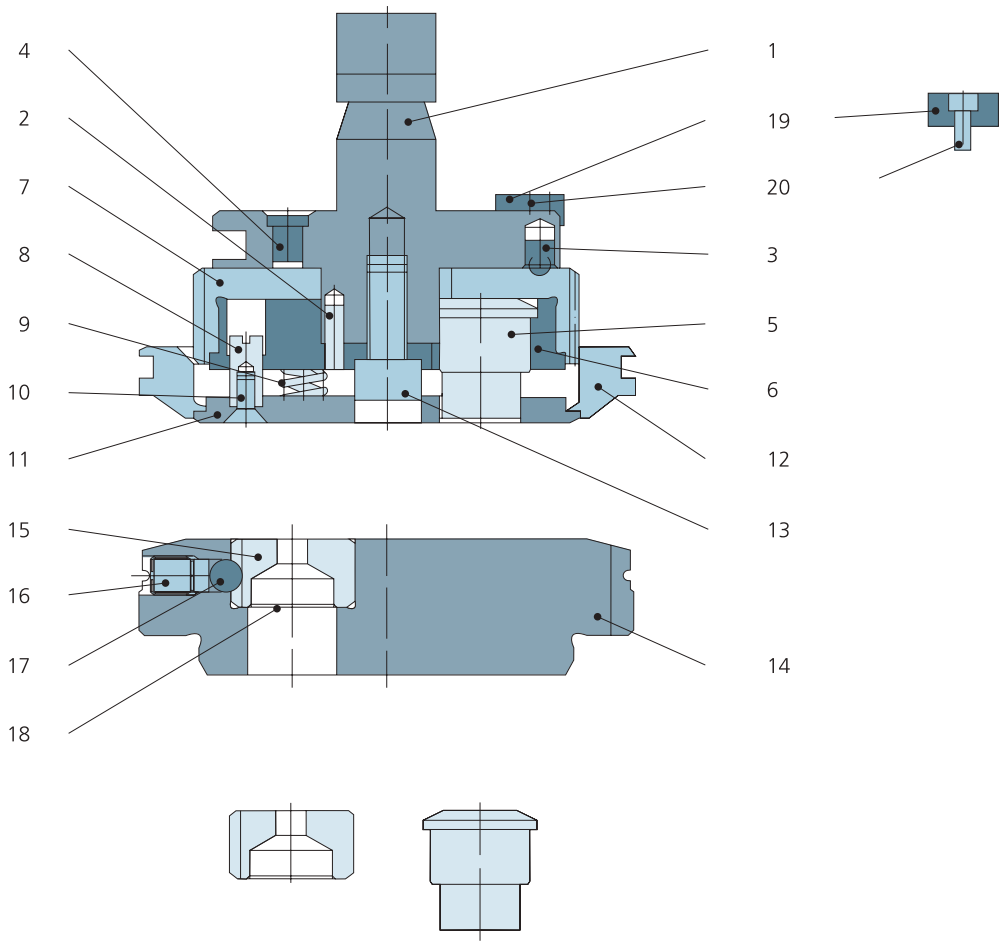
## Die options

### Die holder with brush inserts

| Order no. | EUR |
|---|---|
| 540041 | |

**Important ordering specifications**
Machine, sheet thickness, material, MultiTool type (4-, 5-, 6-, 10-station), shape, dimensions, options.

# MultiTool 6-station




## Accessories and single parts

| | Item | | | |
|---|---|---|---|---|
| | Designation | Pieces | Order no. | EUR |
| 1) | Punch shank | 1 | 073722 | |
| 2) | Cylindrical pin | 1 | 756338 | |
| 3) | Thrust piece | 1 | 355256 | |
| 4) | Grease nipple | 1 | 029556 | |
| 5) | Punch insert | 6 | 699804 | |
| 6) | Punch holder body | 1 | 203631 | |
| 7) | Gear rim | 1 | 203632 | |
| 8) | Bolt | 3 | 062171 | |
| 9) | Compression spring | 3 | 091714 | |
| 10) | Countersunk screw | 3 | 017965 | |
| 11) | Presser foot | 1 | 712129 | |
| | Presser foot for TC 240/TC 260 | 1 | 203633 | |
| 12) | Complete stripper | 1 | 712115 | |
| | Complete stripper for TC 240/TC 260 | 1 | 203619 | |
| 13) | Cheese-head screw | 1 | 016349 | |
| 14) | Die holder body | 1 | 075195 | |
| 15) | Die insert | 6 | 699814 | |

| | Item | | | |
|---|---|---|---|---|
| | Designation | Pieces | Order no. | EUR |
| 16) | Set screw | 6 | 013218 | |
| 17) | Ball | 6 | 062005 | |
| | Shim 0.1 mm | 12 | 366747 | |
| 18) | Shim 0.3 mm | 6 | 366748 | |
| | Shim 0.5 mm | 6 | 366749 | |
| 19) | Adjustment key | 1 | 063548 | |
| 20) | Cheese-head screw | 1 | 014346 | |

# MultiUse

**Description and application**
Tool system with reliable setup and interchangeable punch and die inserts

**Your benefits at a glance**
- Quick and easy setup
- Tool setup errors are eliminated by the unmistakable mounting position
- Will not twist when under load from one side
- Economical for large lot sizes
- Maximum regrind length up to 9.5 mm

| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | |
| Punch | dependent on the geometry and punching force see p. 132 Punching force and shear strength |
| Die - stainless steel | 0.5 - 1.5 mm |
| Die - steel and aluminum | 0.5 - 2.0 mm |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Dimensions and regrinding | see p. 130 |
| Stripper selection | see p. 138 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Sheet flatness | see p. 151 |
| Low-scratch/scratch-free processing | see p. 153 |
| Increasing dimensional accuracy | see p. 155 |
| Order forms | see p. 175 |

## Item

### Punch holder

| Order no. | EUR |
|---|---|
| See table | |

### Punch insert

- Optional: Longer service life with coating
- Optional: Free Whisper/roof shear

| Order no. | EUR |
|---|---|
| 699345 | |

### Die holder

| Order no. | EUR |
|---|---|
| See table | |

### Blanking die

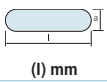
| Order no. | EUR |
|---|---|
| 699346 | |

**Important ordering specifications**
Punch insert: machine, sheet thickness, material, form, dimensions, options.
Blanking die: machine, sheet thickness, material, form, dimensions.

## Punch holder

| Outer circle (mm) | Order no. | EUR |
|---|---|---|
| 1.00 - 40.00 | 363450 | |
| 40.01 - 76.20 | 363494 | |

## Punch insert

| Round | | Square | | Rectangle | | Oblong | |
|---|---|---|---|---|---|---|---|
|  | |  | |  | |  | |
| (d) mm | EUR | (a) mm | EUR | (e) mm | EUR | (l) mm | EUR |
| 1.50 - 30.50 | | 1.50 - 21.22 | | 1.50 - 30.42 | | 1.50 - 30.42 | |
| 30.51 - 40.00 | | 21.23 - 28.29 | | 30.43 - 40.00 | | 30.43 - 40.00 | |
| 40.01 - 56.00 | | 28.30 - 39.60 | | 40.01 - 56.00 | | 40.01 - 56.00 | |
| 56.01 - 66.00 | | 39.61 - 46.68 | | 56.01 - 66.00 | | 56.01 - 66.00 | |
| 66.01 - 76.20 | | 46.69 - 50.80 | | 66.01 - 76.20 | | 66.01 - 76.20 | |

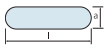
## Die holder

| Outer circle (mm) | Order no. | EUR |
|---|---|---|
| 1.00 - 40.00 | 358373 | |

| Outer circle (mm) | Order no. | EUR |
|---|---|---|
| 40.01 - 56.00 | 358374 | |

# MultiUse

## Blanking die

| Round | | Square | | Rectangle | | Oblong | |
|---|---|---|---|---|---|---|---|
|  | |  | |  | |  | |
| (d) mm | EUR | (a) mm | EUR | (e) mm | EUR | (l) mm | EUR |
| 1.50 - 40.00 | | 1.60 - 28.29 | | 1.60 - 40.00 | | 1.60 - 40.00 | |
| 40.01 - 56.00 | | 28.30 - 39.48 | | 40.01 - 56.00 | | 40.01 - 56.00 | |

## Punch options

| | Coating | | | Shear | |
|---|---|---|---|---|---|
| Outer circle (mm) | MultiDur TiCN | MultiDur Performance | MultiDur Alu | Whisper | Roof |
| 1.50 - 30.50 | | | | | |
| 30.51 - 76.20 | | | | | |

## Accessories and single parts

| Item | | |
|---|---|---|
| Designation | Order no. | EUR |
| Adjustment key for MultiUse punch | 063548 | |
| Spacer for punch 1.00 - 40.00 mm | 1460891 | |
| Spacer for punch 40.01 - 76.20 mm | 1460892 | |
| Plain washer for die 1.00 - 40.00 mm | 1496972 | |
| Plain washer for die 40.01 - 56.00 mm | 1496991 | |

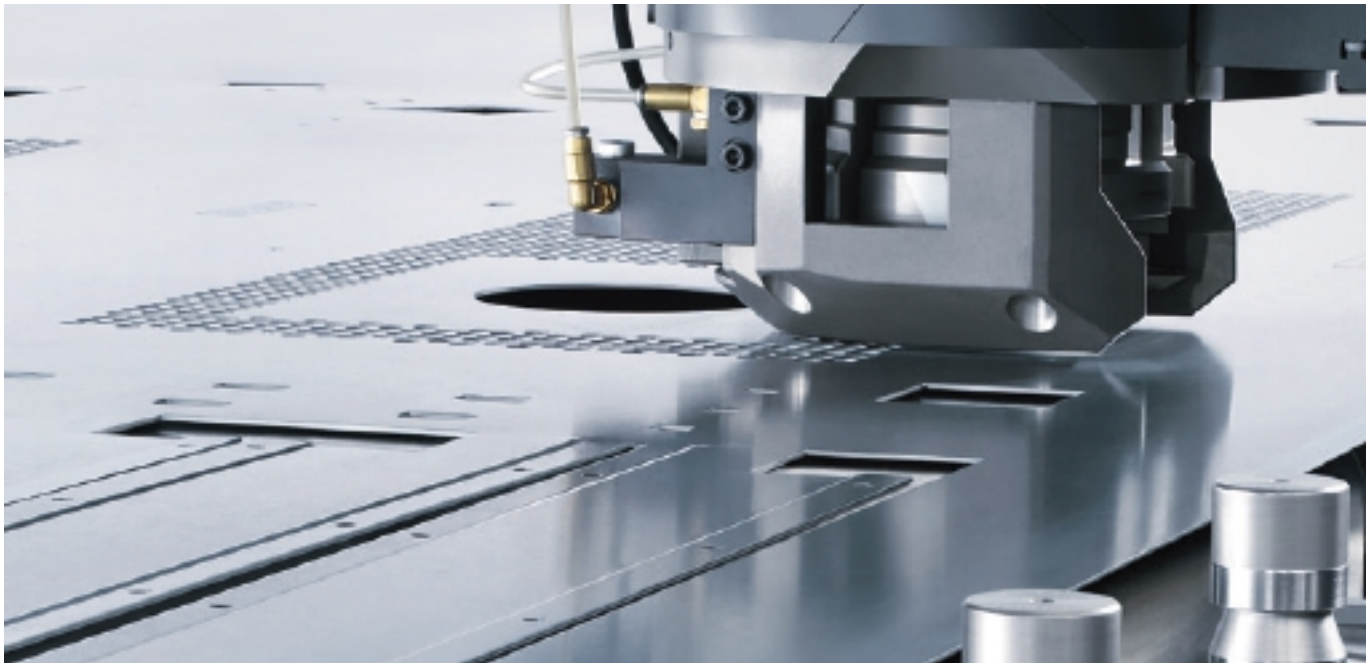
# Perfect for every cut

## Cutting with TRUMPF tools.

One of the most important applications of a punching machine is to cut sheet metal. TRUMPF has the perfect tools for every requirement, regardless of whether it is the traditional slitting of contours, separating cuts on formed sections, or visible edges without nibbling marks. Cost-effective and versatile.

The slitting tool size 5 is ideal for the reliable removal of small parts. The part is tipped by the beveled die and is safely discharged through the part removal flap or part chute – simply and reliably.

Our film slitting tool with ball tip (patent pending) cuts films perfectly. It cuts film flawlessly, leaving behind no scratches or marks on the sheet, and for every conceivable contour.



# Cutting

# Slitting tool with interchangeable cutting blades

**Description and application**
The cost-effective universal tool for cutting sheet metal

**Your benefits at a glance**
- Economical cutting due to interchangeable cutting blades
- Different cutting measurements and geometries create a range of options
- Top level of productivity enabled by cutting speeds of up to 26 m/min
- Maximum setup reliability with the integrated alignment ring

| **Machine type** | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | Skeleton-free processing required for bi-level stripper |
| **Sheet thickness s** | 1.0 - 3.0 mm |
| **Useful information** | |
| Dimensions and regrinding | see p. 130 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Low-scratch/scratch-free processing | see p. 153 |
| Edge quality | see p. 157 |
| Cutting close to formed sections | see p. 161 |
| Reliable removal | see p. 162 |
| Order forms | see p. 175 |

## Item

### Slitting punch with cutting blade

- Optional: Longer service life with coating

| Order no. | EUR |
|---|---|
| 699895 | |

### Separating die with cutting blades

- Optional: With brush inserts for low-scratch processing
- Includes 1 shim set

| Order no. | EUR |
|---|---|
| 699891 | |

### Stripper

| Order no. | EUR |
|---|---|
| See table | |

### Bi-level stripper

- For clamping and rotating large parts
- "Skeleton-free processing" machine option required

| Order no. | EUR |
|---|---|
| See table | |

**Important ordering specifications**
Machine, sheet thickness, material, slitting geometry, dimensions, options if required.

## Prices

### Slitting punch with cutting blade (rectangle with corner radii)

| Size in mm | Order no. | EUR |
|---|---|---|
| 5 x 30 | 699895 | |
| 5 x 56 | | |
| 5 x 76.20 | | |

### Slitting die with cutting blades (rectangle with corner radii)

| Size in mm | Order no. | EUR |
|---|---|---|
| 5 x 30 | 699891 | |
| 5 x 56 | | |
| 5 x 76.20 | | |

### Stripper

| Size in mm | Order no. | EUR |
|---|---|---|
| 6 x 31 | 157059 | |
| 6 x 57 | 157060 | |
| 6 x 77.20 | 157058 | |

### Trapezoid stripper

| Size in mm | Order no. | EUR |
|---|---|---|
| 6 x 31 | 157266 | |
| 6 x 57 | 157267 | |
| 6 x 77.20 | 157268 | |

### Dovetail stripper

| Size in mm | Order no. | EUR |
|---|---|---|
| 6 x 31 | 157272 | |
| 6 x 57 | 157273 | |
| 6 x 77.20 | 157274 | |

### Bi-level stripper

| Size in mm | Order no. | EUR |
|---|---|---|
| 6 x 31 | 1648707 | |
| 6 x 57 | 1648706 | |
| 6 x 77.20 | 1648705 | |

### Push-out stripper (spring-loaded)

| Size in mm | Order no. | EUR |
|---|---|---|
| 6 x 31 | 606514 | |
| 6 x 57 | 606527 | |
| 6 x 77.20 | 606539 | |

# Slitting tool with interchangeable cutting blades

## Cutting blades

| | Punch | Die |
|---|---|---|
| |  |  |

### Slitting geometry, rectangle with corner radii

| | Punch | | Die | |
|---|---|---|---|---|
| Size in mm | Order no. | EUR | Order no. | EUR |
| 5 x 30 | 699894 | | 699890 | |
| 5 x 56 | | | | |
| 5 x 76.20 | | | | |

### Dovetail microjoint

| | Punch | | Die | |
|---|---|---|---|---|
| Size in mm | Order no. | EUR | Order no. | EUR |
| 5 x 30 | 699894 | | 699890 | |
| 5 x 56 | | | | |
| 5 x 76.20 | | | | |

### Trapezoid microjoint

| | Punch | | Die | |
|---|---|---|---|---|
| Size in mm | Order no. | EUR | Order no. | EUR |
| 5 x 30 | 699894 | | 699890 | |
| 5 x 56 | | | | |
| 5 x 76.20 | | | | |

## Punch options

| Coating | | |
|---|---|---|
| MultiDur TiCN | MultiDur Performance | MultiDur Alu |
| | | |

## Die options

| Size in mm | Version with brush insert |
|---|---|
| 5 x 30 | |
| 5 x 56 | |
| 5 x 76.20 | |

## Accessories and single parts

| Item | | |
|---|---|---|
| Designation | Order no. | EUR |
| Tapered set screw for punch | 187769 | |
| Cylindrical pin for punch | 010782 | |
| Cheese-head screw for die | 207494 | |
| Shim plate 0.2/5 x 30; 5 x 56 | 207489 | |
| Shim plate 0.3/5 x 30; 5 x 56 | 207490 | |
| Shim plate 0.5/5 x 30; 5 x 56 | 207491 | |
| Shim plate 0.2/5 x 76.20 | 106143 | |
| Shim plate 0.3/5 x 76.20 | 106144 | |
| Shim plate 0.5/5 x 76.20 | 106145 | |

**Important ordering information**
Order no. for TC 240/TC 260 on request.

# Slitting tool for cutting close to formed sections

**Description and application**
Self-stripping tool for cutting close to formed sections

**Your benefits at a glance**
- Outstanding separating cuts close to formed sections with the self-stripping punch
- Tool available with urethane stripper or integrated steel presser foot as an option
- Punch version with roof shear to reduce punching force and noise
- Die with interchangeable cutting blades for flexible use

| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 0.5 - 2.0 mm |

| Useful information | |
|---|---|
| Dimensions and regrinding | see p. 130 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Low-scratch/scratch-free processing | see p. 153 |
| Edge quality | see p. 157 |
| Cutting close to formed sections | see p. 161 |
| Reliable removal | see p. 162 |
| Order forms | see p. 175 |

## Item

### Solid slitting punch, complete

- With urethane stripper
- Also available in trapezoid or dovetail form

| Order no. | EUR |
|---|---|
| 699897 | |

### Solid slitting punch, single

- Also available in trapezoid or dovetail form

| Order no. | EUR |
|---|---|
| 699896 | |

### Slitting punch with interchangeable cutting blades

- With steel presser foot and interchangeable springs
- Also available in trapezoid or dovetail form

| Order no. | EUR |
|---|---|
| 699895 | |

### Separating die with interchangeable cutting blades

- Optional: With brush inserts / segments for low-scratch processing
- Includes 1 shim plate block

| Order no. | EUR |
|---|---|
| 699891 | |

**Important ordering specifications**
Machine, sheet thickness, material, slitting geometry, dimensions, options if required.

## Punch prices

| Dimensions | Order no. | EUR |
|---|---|---|
| 5 x 56 | 699897 | |
| | 699896 | |
| | 699895 | |
| 5 x 76.2 | 699897 | |
| | 699896 | |

## Die prices

| Dimensions | Order no. | EUR |
|---|---|---|
| 5 x 56 | 699891 | |
| 5 x 76.2 | 699891 | |

## Punch options

| Coating | | |
|---|---|---|
| MultiDur TiCN | MultiDur Performance | MultiDur Alu |
| | | |

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Spring element 5 x 56 | 103090 | |
| Spring element 5 x 76.2 | 103123 | |
| Stop screw | 538560 | |
| Compression spring 20 x 10 x 25, red | 362900 | |
| Compression spring 20 x 10 x 25, blue | 362901 | |
| Compression spring 10 x 5 x 25, red | 362902 | |

# Slitting tool 8 x 40 (thicker sheet metal)

| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 4.0 - 6.0 mm (depending on punching force of machine) |

| Useful information | |
|---|---|
| Dimensions and regrinding | see p. 130 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Low-scratch/scratch-free processing | see p. 153 |
| Edge quality | see p. 157 |
| Cutting close to formed sections | see p. 161 |
| Reliable removal | see p. 162 |
| Punching thicker sheets | see p. 169 |
| Order forms | see p. 175 |

**Description and application**
Reinforced version of the tool for cutting thick sheets

**Your benefits at a glance**
- Ideal for sheet thicknesses over 3 mm due to the specially reinforced punch and die
- Punch version with roof shear to reduce punching force and noise
- Optional: Special coating increases service life

## Item

### Slitting punch

- Reinforced version with roof shear and MultiDur TiCN

| Order no. | EUR |
|---|---|
| 680648 | |

### Separating die

- Reinforced version

| Order no. | EUR |
|---|---|
| See table | |

### Stripper

- Standard version
- Dimension: 9 x 41 mm

| Order no. | EUR |
|---|---|
| 699822 | |

**Important ordering specifications**
Machine, sheet thickness, material, punch version.

## Die prices

| Sheet thickness s in mm | Order no. | EUR |
|---|---|---|
| 4.0 | 728956 | |
| 5.0 | 728967 | |
| 6.0 | 728981 | |

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Alignment ring for reinforced punch | 201519 | |

# MultiShear

**Description and application**
The innovative TRUMPF slitting tool for flawless edge quality

**Your benefits at a glance**
- Outstanding edge quality without nibble marks due to patented cutting technology
- Special coating on cutting blades results in long service life
- Low-scratch production thanks to dies with brush inserts
- Stepped stripper for cutting close to formed sections, available as an option

| **Machine type** | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | MultiShear |
| **Sheet thickness s** | 0.5 - 3.0 mm |
| **Useful information** | |
| Dimensions and regrinding | see p. 130 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Low-scratch/scratch-free processing | see p. 153 |
| Edge quality | see p. 157 |
| Cutting close to formed sections | see p. 161 |
| Reliable removal | see p. 162 |
| Order forms | see p. 175 |

## Item

### Complete tool

| Order no. | EUR |
|---|---|
| 699362 | |

### Punch

- Dimensions: 5 x 76.2 mm
- Optional: Longer service life with coating

| Order no. | EUR |
|---|---|
| 699363 | |

### Die

- With brush inserts for low-scratch processing

| Order no. | EUR |
|---|---|
| 699364 | |

### Stripper

| Order no. | EUR |
|---|---|
| 699366 | |

**Important ordering specifications**
Machine, sheet thickness, material, dimensions, options if required. The "MultiShear" machine option is a prerequisite.

## Cutting blade for die

**One-part/Two-part**

| | Sheet thickness s (in mm) | Order no. | EUR |
|---|---|---|---|
|  | 0.5 / 1.0 / 1.5 / 2.0 / 2.5 / 3.0 | 699365 | |

## Punch options

**Coating**

| MultiDur TiCN |
|---|
| |

## Stripper options

**Stepped stripper**

| Order no. | EUR |
|---|---|
| 1475487 | |

## Accessories and single parts

**Item**

| Designation | Order no. | EUR |
|---|---|---|
| Adjustment key with countersunk screw | 1585069 | |
| Cheese-head screw M4x22 | 014451 | |
| Cheese-head screw M4x25 | 014460 | |
| Cheese-head screw M3x8 | 014346 | |
| Adjustment key | 1062170 | |
| Brush insert | 519626 | |
| Shim 0.3 mm | 519637 | |
| Shim 0.5 mm | 519640 | |

# MultiShear for trimming

| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | MultiShear |
| **Sheet thickness s** | 0.5 - 3.0 mm |
| **Useful information** | |
| Dimensions and regrinding | see p. 130 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Low-scratch/scratch-free processing | see p. 153 |
| Edge quality | see p. 157 |
| Cutting close to formed sections | see p. 161 |
| Reliable removal | see p. 162 |
| Order forms | see p. 175 |

**Description and application**
The innovative slitting tool for flawless edge quality when trimming sheet metal blanks

**Your benefits at a glance**
- Outstanding trimming edges without nibble marks due to patented cutting technology
- Special coating on cutting blades results in long service life
- Low-scratch production thanks to dies with brush inserts

## Item

### Complete tool

| Order no. | EUR |
|---|---|
| 699384 | |

### Punch

- Coated with MultiDur Performance
- Dimensions: 18 x 73 mm

| Order no. | EUR |
|---|---|
| 1641520 | |

### Die

- With brush inserts for low-scratch processing

| Order no. | EUR |
|---|---|
| 699386 | |

### Stripper

| Order no. | EUR |
|---|---|
| 1641497 | |

**Important ordering specifications**
Machine, sheet thickness, material. The "MultiShear" machine option is a prerequisite.

## Cutting blade for die

**One-part**

| | Sheet thickness s (in mm) | Order no. | EUR |
|---|---|---|---|
|  | 0.5 / 1.0 / 1.5 | 699387 | |

**Two-part**

| | Sheet thickness s (in mm) | Order no. | EUR |
|---|---|---|---|
|  | 2.0 / 2.5 / 3.0 | 699387 | |

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Adjustment key with countersunk screw | 1585069 | |
| Cheese-head screw M4x22 | 014451 | |
| Cheese-head screw M4x25 | 014460 | |
| Cheese-head screw M3x8 | 014346 | |
| Adjustment key | 1062170 | |
| Brush field | 1641462 | |
| Shim 0.3 mm | 1630968 | |
| Shim 0.5 mm | 1630969 | |

# Ejector tool

**Description and application**
Fast, reliable removal of laser-cut small parts

**Your benefits at a glance**
- Fast, reliable removal of laser-cut small parts through the die using microjoint technology and a single stroke
- Removal of rectangular geometries up to 50.1 mm
- Removal of circular geometries up to 70.1 mm

| | |
|---|---|
| **Machine type** | |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 240 L, 260 L, 600 L |
| **Sheet thickness s** | 0.5 - 4.0 mm |
| **Useful information** | |
| Dimensions and regrinding | see p. 130 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Low-scratch/scratch-free processing | see p. 153 |
| Edge quality | see p. 157 |
| Cutting close to formed sections | see p. 161 |
| Reliable removal | see p. 162 |
| Order forms | see p. 175 |

## Item

**Complete ejector punch**

| Order no. | EUR |
|---|---|
| 186419 | |

**Ejector die, round**

| Order no. | EUR |
|---|---|
| 537936 | |

**Ejector die, square**

| Order no. | EUR |
|---|---|
| 186469 | |

## Accessories and single parts

**Item**

| Designation | Order no. | EUR |
|---|---|---|
| 1) Punch shank | 186424 | |
| 2) Piercing punch, 3 mm | 186426 | |
| 3) Piercing punch, 8 mm | 186428 | |
| 4) Set screw M5x8 | 013846 | |

# Ejector tool for sorting

| | |
|---|---|
| **Machine type** | |
| TruMatic | 1000 (K07), 3000 (K09) |
| **Required machine option** | Small part ejection |
| **Sheet thickness s** | 1.0 - 6.0 mm |
| **Useful information** | |
| Dimensions and regrinding | see p. 130 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Low-scratch/scratch-free processing | see p. 153 |
| Edge quality | see p. 157 |
| Cutting close to formed sections | see p. 161 |
| Reliable removal | see p. 162 |
| Order forms | see p. 175 |

**Description and application**
Reliable removal and sorting of small laser-cut parts

**Your benefits at a glance**
- Fast, reliable removal of small laser-cut parts using microjoint technology
- Good parts are sorted from scrap and removed through the part chute
- Removal of circular geometries up to 62 mm and rectangular geometries up to 45 mm
- Larger geometries can be removed through the part chute

## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| See table | |

**Complete punch**

| Order no. | EUR |
|---|---|
| See table | |

**Complete die**

| Order no. | EUR |
|---|---|
| 2242957 | |

**Stripper**

| Order no. | EUR |
|---|---|
| See table | |

## Prices

**Complete tool**

| | | Dimensions mm | Order no. | EUR |
|---|---|---|---|---|
| Round |  | (d) = 3.00 | 2242744 | |
| | | (d) = 8.00 | 2242743 | |
| Square |  | (a) = 3.00 | 2242745 | |
| | | (a) = 8.00 | 2242746 | |
| Rectangle |  | (a) x (b) = 2.00 x 8.00 | 2242747 | |

**Stripper**

| | | Dimensions mm | Order no. | EUR |
|---|---|---|---|---|
| Round |  | (d) = 4.00 | 2242802 | |
| | | (d) = 9.00 | 2242804 | |
| Square |  | (a) = 4.00 | 2242759 | |
| | | (a) = 9.00 | 2242760 | |
| Rectangle |  | (a) x (b) = 3.00 x 9.00 | 2242801 | |

**Complete punch**

| | | Dimensions mm | Order no. | EUR |
|---|---|---|---|---|
| Round |  | (d) = 3.00 | 2242749 | |
| | | (d) = 8.00 | 2242748 | |
| Square |  | (a) = 3.00 | 2242771 | |
| | | (a) = 8.00 | 2242750 | |
| Rectangle |  | (a) x (b) = 2.00 x 8.00 | 2242772 | |

Experience the **Ejector tool for sorting** in action
www.trumpf.info/b6uo7f

# Ejector MultiTool

**Description and application**
Reliable removal of small laser-cut parts with short tool change times

**Your benefits at a glance**
- Fast, reliable removal of small laser-cut parts using microjoint technology
- Circular and rectangular punch inserts enable the processing of different contours using just one tool
- Removal of circular geometries of up to 54 mm
- Removal of square contours of up to 46 mm
- Removal of rectangular contours of up to 62 x 25 mm

| | |
|---|---|
| **Machine type** | |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 3000 L, 6000 L |
| **Required machine option** | MultiTool |
| **Sheet thickness s** | 1.0 - 4.0 mm |
| **Useful information** | |
| Dimensions and regrinding | see p. 130 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Low-scratch/scratch-free processing | see p. 153 |
| Edge quality | see p. 157 |
| Cutting close to formed sections | see p. 161 |
| Reliable removal | see p. 162 |
| Order forms | see p. 175 |

## Item

**Complete punch**

| Order no. | EUR |
|---|---|
| 1522306 | |

**Die**

| Order no. | EUR |
|---|---|
| 1494454 | |

**Stripper**

| Order no. | EUR |
|---|---|
| 1522720 | |

**Important ordering specifications**
Machine, sheet thickness, material. The "MultiTool" machine option is a prerequisite.

## Inserts

**Punch insert**

| | | | Dimensions mm | Order no. | EUR |
|---|---|---|---|---|---|
|  | Round |  | (d) = 3.00 | 1494450 | |
| | | | (d) = 8.00 | 1494419 | |
|  | Square |  | (a) = 3.00 | 1494452 | |
| | | | (a) = 8.00 | 1494451 | |
|  | Rectangle |  | (e) = 2.00 x 8.00 | 1494453 | |

Experience the **Ejector MultiTool** in action
www.trumpf.info/gdk7si

# Slitting tool size 5 for removing small parts

| | |
|---|---|
| **Machine type** | |
| TruPunch | 3000 (S11), 3000 (S20), 5000 (S10), 5000 (S12) |
| TruMatic | 3000 (K09), 6000 (K05), 6000 (K06), 7000 (K02), 7000 (K08) |
| **Required machine option** | Active die or descending die |
| **Sheet thickness s** | 0.5 - 3.0 mm |
| **Useful information** | |
| Dimensions and regrinding | see p. 130 |
| Cutting clearance | see p. 142 |
| Tool life | see p. 146 |
| Tool maintenance and setup | see p. 148 |
| Low-scratch/scratch-free processing | see p. 153 |
| Edge quality | see p. 157 |
| Cutting close to formed sections | see p. 161 |
| Reliable removal | see p. 162 |
| Order forms | see p. 175 |

**Description and application**
The slitting tool from TRUMPF for reliable removal of small parts

**Your benefits at a glance**
- The tool can be used for conventional separating cuts and for removing small parts
- No need to sort good parts from scrap because parts are removed through the part chute
- Reduced processing times since push-out process is not required
- Maximum process reliability through monitoring of the part removal process

## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| On request | |

**Punch**

| Order no. | EUR |
|---|---|
| On request | |

**Die**

| Order no. | EUR |
|---|---|
| On request | |

**Stripper**

| Order no. | EUR |
|---|---|
| On request | |

**Important ordering specifications**
Machine, sheet thickness, material. The "Active die" or "Descending die" machine option is a prerequisite.

## Accessories and single parts

**Item**

| Designation | Order no. | EUR |
|---|---|---|
| Tool cartridge size 5 | 1500495 | |
| Adapter (for stripper) | 1633067 | |

Experience the **Slitting tool size 5 for removing small parts** in action
www.trumpf.info/5wmjgs

# Film slitting tool

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | Engraving |
| **Sheet thickness s** | 0.5 - 8.0 mm |
| **Max. film thickness** | 0.15 mm |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |

**Description and application**
The tool (patent pending) cuts protective films on sheet metal on the machine

**Your benefits at a glance**
- Flawless cutting without damaging the sheet metal, due to the spring-loaded punch
- Long service life due to wear-resistant ball tip
- Large spring range in the tool provides flexibility in the cutting of different film thicknesses
- Easy film detachment with programming support in TruTops: Automatic integration of the peeling contour based on a sequence of pointed tips on the film slitting contour

## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 1360352 | |

**Punch**

| Order no. | EUR |
|---|---|
| 1360350 | |

**Die**

| Order no. | EUR |
|---|---|
| 1482571 | |

**Stripper**

- Round 20.0 mm

| Order no. | EUR |
|---|---|
| 159496 | |

**Important ordering specifications**
Machine, order no., the "engraving" machine option is a prerequisite.

## Accessories and single parts

**Item**

| Designation | Order no. | EUR |
|---|---|---|
| Ball tip | 1668396 | |
| Modification kit | 1668776 | |

# Punching in three dimensions

## Forming with TRUMPF tools.

Our tools enable you to not only punch holes, but to form sheet metal plastically, that is, permanently. TRUMPF tools, therefore, allow you to reliably perform the entire spectrum of processing operations on one machine.

In addition to standard forming, there are many other possibilities. The application examples at the end of this chapter are only a small sample of what is possible. There are no limits to your ideas.

The size 5 tools allow for longer and higher sections to be formed in one single stroke. Extra-large forms are also possible without the "active die" option.

From A-Z: From alignment tools to Z-bending tools, we have everything you need for your components. For example, our deburring tools ensure that burr-free parts come out of punching and punch laser machines. The resulting outstanding part quality eliminates the need for manual finishing in a separate work cycle.

# Forming

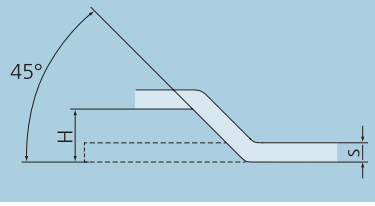
# Stepping tool

**Description and application**
Tool for producing any form length in nibbling mode

**Your benefits at a glance**
- Can be used to create both straight and curved forms of any length
- Cost-effective tool due to its simple construction
- Reduced cost because the entire process is completed on one machine

**Application examples**
For the stiffening of sheet metal, sheet metal facades, e.g. in housing construction. Also well suited for circular raised sections that cannot be produced with a bending machine.

| **Machine type** | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 1.0 - 3.0 mm |
| **Folding height H** | 1.0 - 5.0 mm |
| **Angle α** | 45° |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Cutting close to formed sections | see p. 161 |
| Particularly high/large formed sections | see p. 165 |
| Request form – Stepping tool | see p. 178 |




## Item

| Complete tool | Punch | Die |
|---|---|---|
|  |  |  |
| Order no. 699200 EUR | Order no. 699201 EUR | Order no. 699202 EUR |

**Important ordering specifications**
Machine, sheet thickness, material, dimensions.

## Step height and permissible sheet thickness

| Step height H (in mm) | Permissible sheet thickness s (in mm) |
|---|---|
| 1.0 | 1.0 |
| 1.5 | 1.0 - 1.5 |
| 2.0 | 1.0 - 2.0 |
| 2.5 | 1.0 - 2.5 |
| 3.0 | 1.0 - 3.0 |
| 4.0 | 1.0 - 3.0 |
| 5.0 | 1.0 - 3.0 |

**Important ordering information**
Stepping tools are always designed for a specific sheet thickness. Other dimensions on request. Please use our order forms in the appendix.

# Roller offsetting tool

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | Roller technology |
| **Sheet thickness s** | |
| Aluminum | 0.8 - 2.5 mm |
| Steel | 0.8 - 2.0 mm |
| Stainless steel | 0.8 - 1.5 mm |
| **Traveling speed** | up to max. positioning speed |
| **Minimum travel radius** | 25 mm |
| **Folding height H** | 1.5 / 3.0 mm |
| **Angle α** | 45° |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Request form – Stepping tool | see p. 178 |

**Description and application**
Tool for producing continuous forms using roller forming

**Your benefits at a glance**
- Roller technology allows for the highest processing speed
- Can be used to create both straight and curved forms of any length
- Reinforced axes for longer service life

**Application examples**
For the stiffening of sheet metal, sheet metal facades, e.g. in housing construction. Also well suited for circular raised sections that cannot be produced with a bending machine.

## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 699368 | |

**Complete punch**

| Order no. | EUR |
|---|---|
| 699369 | |

**Complete die**

| Order no. | EUR |
|---|---|
| 699370 | |

**Important ordering specifications**
Machine, sheet thickness, material, dimensions. The "roller technology" machine option is a prerequisite.

## Roller unit

**Item**

| Designation | Order no. | EUR |
|---|---|---|
| top | 699371 | |
| bottom | 699372 | |

**Important ordering information**
Roller offset tools are always designed for a specific sheet thickness. Other dimensions on request. Please use our order forms in the appendix.
Roller offsetting tool without reinforced axes (previous standard) available upon request

# Countersink tool (upper side of the sheet)

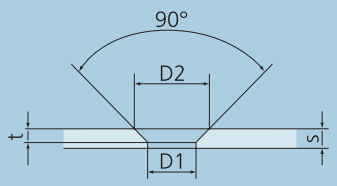
| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 R, 240 L, 260 R, 260 L, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 1.0 - 4.0 mm |

| Useful information | |
|---|---|
| Tool maintenance and setup | see p. 148 |
| Cutting close to formed sections | see p. 161 |
| Countersinks for every requirement | see p. 167 |
| Order forms | see p. 175 |

**Description and application**
Tool for non-cutting production of countersinks for screw and rivet heads

**Your benefits at a glance**
- Cost-effective solution for producing countersinks
- Many special geometries available on request

**Application examples**
Fastening technology, countersinks for screws and rivets.




## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 699335 | |

**Punch size 2**

| Order no. | EUR |
|---|---|
| 699340 | |

**Die size 1**

| Order no. | EUR |
|---|---|
| 699337 | |

**Important ordering specifications**
Machine, sheet thickness, material, version, and dimensions of the countersink.

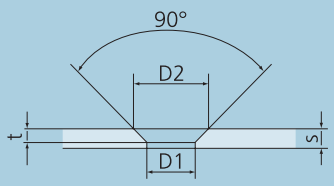
## Countersink

| Countersink shape A: Countersunk screws DIN EN ISO 2009 (“slotted”) and DIN EN ISO 7046-1 (“cross recess”) | | | Countersink shape F: Hexagon socket countersunk head screws DIN EN ISO 10642 | | |
|---|---|---|---|---|---|
| **A** | **D2** | **Permissible sheet thickness s (in mm)** | **F** | **D2** | **Permissible sheet thickness s (in mm)** |
| 2.5 | 5.9 | 1.0 - 3.0 | - | - | - |
| 3 | 6.7 | 1.0 - 3.0 | 3 | 7.1 | 1.0 - 3.0 |
| 4 | 8.8 | 1.5 - 3.0 | 4 | 9.4 | 1.5 - 3.0 |
| 5 | 10.6 | 1.5 - 4.0 | 5 | 11.7 | 1.5 - 4.0 |
| 6 | 12.7 | 2.0 - 4.0 | 6 | 14 | 2.0 - 4.0 |
| 8 | 16.7 | 2.0 - 4.0 | 8 | 18.5 | 2.0 - 4.0 |

**Important ordering information**
Countersink tools are always designed for a specific sheet thickness. The countersink depth t is no more than 75% of the sheet thickness. It may be necessary to replace the punch and the die when changing the countersink. Other dimensions on request. Please use our order forms in the appendix.

# Countersink tool with integrated presser foot (upper side of the sheet)

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 1.0 - 4.0 mm |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Cutting close to formed sections | see p. 161 |
| Countersinks for every requirement | see p. 167 |
| Request form – Countersink tool with integrated presser foot | see p. 180 |




**Description and application**
Tool for non-cutting production of countersinks for screw and rivet heads

**Your benefits at a glance**
- Outstanding process quality with the integrated presser foot
- Interchangeable components make the tool extremely versatile
- Many special geometries available on request
- Improved sheet flatness due to presser foot and leveling effect

**Application examples**
Fastening technology, countersinks for screws and rivets.

## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 699335 | |

**Punch**

| Order no. | EUR |
|---|---|
| 699336 | |

**Die**

| Order no. | EUR |
|---|---|
| 699337 | |

**Punch insert**

| Order no. | EUR |
|---|---|
| 699338 | |

**Important ordering specifications**
Machine, sheet thickness, material, version, and dimensions of the countersink.

## Countersink

| Countersink shape A: Countersunk screws DIN EN ISO 2009 (“slotted”) and DIN EN ISO 7046-1 (“cross recess”) | | | Countersink shape F: Hexagon socket countersunk head screws DIN EN ISO 10642 | | |
|---|---|---|---|---|---|
| **A** | **D2** | **Permissible sheet thickness s (in mm)** | **F** | **D2** | **Permissible sheet thickness s (in mm)** |
| 2.5 | 5.9 | 1.0 - 3.0 | - | - | - |
| 3 | 6.7 | 1.0 - 3.0 | 3 | 7.1 | 1.0 - 3.0 |
| 4 | 8.8 | 1.5 - 3.0 | 4 | 9.4 | 1.5 - 3.0 |
| 5 | 10.6 | 1.5 - 4.0 | 5 | 11.7 | 1.5 - 4.0 |
| 6 | 12.7 | 2.0 - 4.0 | 6 | 14 | 2.0 - 4.0 |
| 8 | 16.7 | 2.0 - 4.0 | 8 | 18.5 | 2.0 - 4.0 |

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Presser foot | 699339 | |
| Spring element | 152545 | |

**Important ordering information**
Countersink tools are always designed for a specific sheet thickness. The countersink depth t is no more than 75% of the sheet thickness. When the countersink is changed, the punch insert, presser foot, and die must also be replaced. Other dimensions on request. Please use our order forms in the appendix.

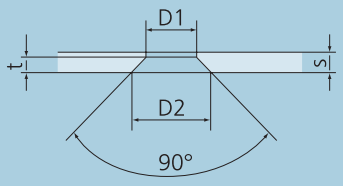
# Countersink tool with integrated presser foot (underside of the sheet)

| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 1.0 - 4.0 mm |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Tool maintenance and setup | see p. 148 |
| Countersinks for every requirement | see p. 167 |
| Request form – Countersink tool with integrated presser foot | see p. 180 |

**Description and application**
Tool for non-cutting production of countersinks for screw and rivet heads

**Your benefits at a glance**
- Outstanding process quality with the integrated presser foot
- Interchangeable components make the tool extremely versatile
- Many special geometries available on request

**Application examples**
Fastening technology, countersinks for screws and rivets.




## Item

| Complete tool | Punch | Die | Die insert |
|---|---|---|---|
|  |  |  |  |
| Order no. 699916 | Order no. 699917 | Order no. 699918 | Order no. 699919 |
| EUR | EUR | EUR | EUR |

**Important ordering specifications**
Machine, sheet thickness, material, version, and dimensions of the countersink.

## Countersink

| Countersink shape A: Countersunk screws DIN EN ISO 2009 (“slotted”) and DIN EN ISO 7046-1 (“cross recess”) | | | Countersink shape F: Hexagon socket countersunk head screws DIN EN ISO 10642 | | |
|---|---|---|---|---|---|
| **A** | **D2** | **Permissible sheet thickness s (in mm)** | **F** | **D2** | **Permissible sheet thickness s (in mm)** |
| 2.5 | 5.9 | 1.0 - 3.0 | - | - | - |
| 3 | 6.7 | 1.0 - 3.0 | 3 | 7.1 | 1.0 - 3.0 |
| 4 | 8.8 | 1.5 - 3.0 | 4 | 9.4 | 1.5 - 3.0 |
| 5 | 10.6 | 1.5 - 4.0 | 5 | 11.7 | 1.5 - 4.0 |
| 6 | 12.7 | 2.0 - 4.0 | 6 | 14 | 2.0 - 4.0 |
| 8 | 16.7 | 2.0 - 4.0 | 8 | 18.5 | 2.0 - 4.0 |

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Die ejector | 699920 | |
| Spring element | 152745 | |

**Important ordering information**
Countersink tools are always designed for a specific sheet thickness. The countersink depth t is no more than 75% of the sheet thickness. Other dimensions on request. Please use our order forms in the appendix.

# Knock-out tool

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 1.0 - 2.0 mm |
| **Diameter D** | 15 - 45 mm |
| **Number of tabs** | 2 |
| **Useful information** | |
| Tool Data Import | see p. 145 |
| Tool maintenance and setup | see p. 148 |
| Cutting close to formed sections | see p. 161 |
| Request form – Knock-out tool | see p. 181 |


**Description and application**
Connects punching slugs to the sheet by two tabs, which can be snapped off if required

**Your benefits at a glance**
- Tool for round or other geometries
- Available in versions to knock out upward or downward
- Available as a tool for multiple knock-outs

**Application examples**
Switch cabinet construction, housing construction, cable bushings.

## Item

| Complete tool | Punch | Die |
|---|---|---|
|  |  |  |
| Order no. 699293 EUR | Order no. 699294 EUR | Order no. 699295 EUR |

**Important ordering specifications**
Machine, sheet thickness, material, dimensions.

**Important ordering information**
Knock-out tools are always designed for a specific sheet thickness. Please use our order forms in the appendix for your request.

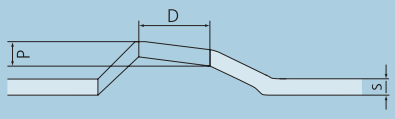
# Thread punch tool

| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 0.8 - 1.5 mm |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Cutting close to formed sections | see p. 161 |
| Request form – Thread punch tool | see p. 182 |

**Description and application**
Tool for the production of formed threads

**Your benefits at a glance**
- Cost-effective joining technology for thin sheet metal
- Formed sections are produced in just two work cycles: Pre-punching and forming
- Available for sheet metal screws in accordance with DIN or for special dimensions

**Application examples**
Joining of metal sheets using a sheet metal screw.




## Item

| Complete tool | Punch | Die | Die insert |
|---|---|---|---|
|  |  |  |  |
| Order no. 699933 | Order no. 699934 | Order no. 699936 | Order no. 699937 |
| EUR | EUR | EUR | EUR |

**Important ordering specifications**
Machine, sheet thickness, material, dimensions, and tool version (punching upward or downward).

## Thread and pitch

| Thread D | Pitch P | Sheet thickness s (in mm) |
|---|---|---|
| 3.3 / 3.5 | 1.3 | 0.8 - 1.2 |
| 3.9 | 1.4 | 0.9 - 1.3 |
| 4.2 | 1.4 | 0.9 - 1.3 |
| 4.8 | 1.6 | 1.0 - 1.5 |

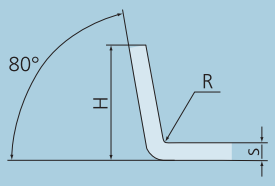
## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Punch (without alignment ring) | 699935 | |
| Spring element for punching upward | 609712 | |
| Spring element for punching downward | 609720 | |
| Spring element for die | 105732 | |

**Important ordering information**
Thread punch tools are always designed for a specific sheet thickness. Screws with metric threads cannot be used for screw fittings. Other dimensions on request. Please use our order forms in the appendix.

# Flanging tool

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 1.0 - 2.5 mm |
| **Flange height H** | max. 7.0 mm |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Cutting close to formed sections | see p. 161 |
| Particularly high/large formed sections | see p. 165 |
| Request form – Flanging tool | see p. 183 |




**Description and application**
Tool for producing any flange length in nibbling mode

**Your benefits at a glance**
- Can be used to create both straight and curved flanges of any length
- Cost-effective tool due to its simple construction
- Reduced cost because the entire process is completed on one machine
- High level of geometry flexibility thanks to continuous processing

**Application examples**
Large extrusions, countersinks, weld flanges, and for the reinforcement of sheet edges in nibbling mode.

## Item

| Complete tool | Punch | Die |
|---|---|---|
|  |  |  |
| Order no. 699203 EUR | Order no. 699204 EUR | Order no. 699205 EUR |

**Important ordering specifications**
Machine, sheet thickness, material, dimensions.

**Important ordering information**
Flanging tools are always designed for a specific sheet thickness. Other dimensions on request. Please use our order forms in the appendix.

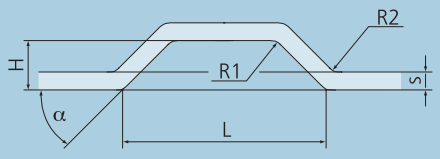
# Bridge tool

| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 0.8 - 2.5 mm |
| **Useful information** | |
| Tool Data Import | see p. 145 |
| Tool maintenance and setup | see p. 148 |
| Particularly high/large formed sections | see p. 165 |
| Request form – Bridge tool | see p. 184 |

**Description and application**
Tool for cutting and forming bridges

**Your benefits at a glance**
- Increased processing speed since punching and forming operations are performed in a single stroke
- Broad product range e.g. double bridges
- Tool is self-stripping and has interchangeable wear parts

**Application examples**
Plug-in units, ventilation slots, spacers, card holders, and cable guides. Can also be used to join sheets together on the front side using sheet metal screws.




## Item

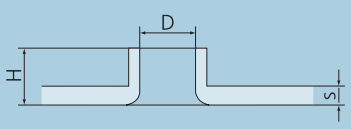
| Complete tool | | Punch | | Die | |
|---|---|---|---|---|---|
|  | |  | |  | |
| Order no. | EUR | Order no. | EUR | Order no. | EUR |
| On request | | On request | | On request | |

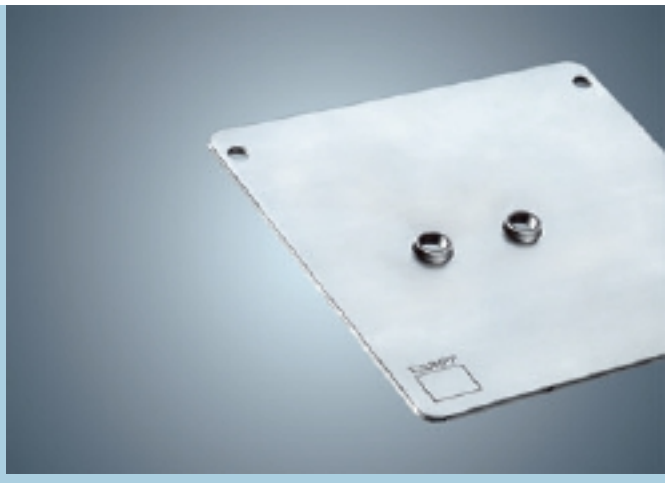
**Important ordering specifications**
Machine, sheet thickness, material, dimensions.

**Important ordering information**
Bridge tools are always designed for a specific sheet thickness. Please use our order forms in the appendix for your request.

# Extrusion tool (upward)

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 1.0 - 3.0 mm |
| **Forming height H** | 2 x sheet thickness s, max. 5.0 mm |
| **Thread sizes for tapping** | M2.5 - M10 |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Particularly high/large formed sections | see p. 165 |
| Request form – Extrusion tool | see p. 185 |



**Description and application**
Tool for producing extrusions

**Your benefits at a glance**
- Tool for preparing tapping in thin sheets
- Available in a range of standard sizes
- Coated die insert has long service life and high process reliability
- Adapted to the original tapping tool from TRUMPF

**Application examples**
Extruded holes as an alternative to press-in elements, cable guides, nonslip structure, or fasteners. Guides for small tubes, e.g. heat exchangers.

## Item

| Complete tool | Punch | Die | Die insert |
|---|---|---|---|
|  |  |  |  |
| Order no. 699921 EUR | Order no. 699922 EUR | Order no. 699923 EUR | Order no. 699925 EUR |

**Important ordering specifications**
Machine, sheet thickness, material, diameter D, application (thread forming or thread cutting in accordance with DIN 7952).

## Extrusion and thread size

| Size | Possible sheet thicknesses s (in mm) for thread forming | Extrusion diameter D for thread forming | Possible sheet thicknesses s (in mm) for thread cutting | Extrusion diameter D for thread cutting |
|---|---|---|---|---|
| M2.5 | 1.0 / 1.5 | 2.30 | 1.0 - 1.5 | 2.10 |
| M3 | 1.0 / 1.5 / 2.0 | 2.80 | 1.0 - 1.5 | 2.55 |
| M4 | 1.0 / 1.5 / 2.0 /2.5 | 3.70 | 1.0 - 2.0 | 3.35 |
| M5 | 1.0 / 1.5 / 2.0 / 2.5 / 3.0 | 4.65 | 1.0 - 2.0 | 4.25 |
| M6 | 1.0 / 1.5 / 2.0 / 2.5 / 3.0 | 5.55 | 1.5 - 2.5 | 5.10 |
| M8 | 1.5 / 2.0 / 2.5 /3.0 | 7.40 | 2.0 - 2.5 | 6.80 |
| M10 | 1.5 / 2.0 / 2.5 /3.0 | 9.30 | 2.0 - 2.5 | 8.50 |

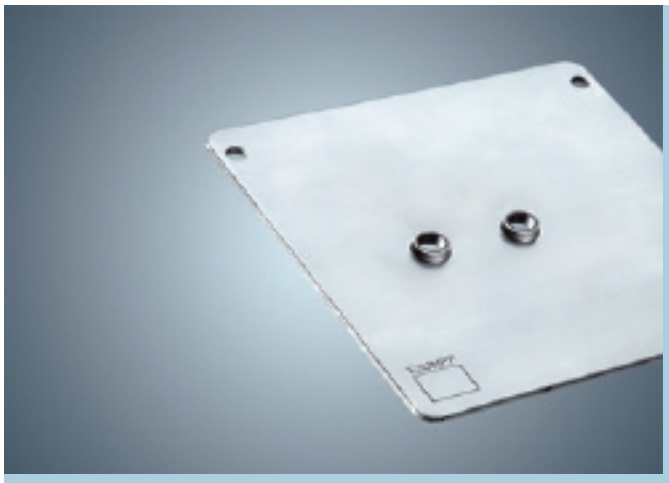
## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Single extrusion punch | 699924 | |
| Spring element for punch M2.5 - M8 | 157289 | |
| Spring element for punch M10 | 157295 | |
| Spring element for die | 729576 | |

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Die ejector | 699926 | |
| Die ejector, close-contacting | | |
| Ejector with Ampco alloy for die | | |
| Ejector with Ampco alloy for die, close-fit | | |

**Important ordering information**
Extrusion tools are always designed for a specific sheet thickness. A special die is required for thread size M10. Other dimensions on request. Please use our order forms in the appendix.

# Extrusion tool (downward)

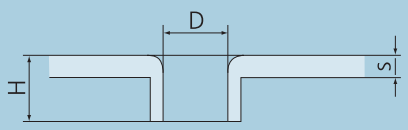


| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 0.8 - 2.0 mm |
| **Forming height H** | max. 2 x sheet thickness s |
| **Thread sizes for tapping** | M2.5 - M6 |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Request form – Extrusion tool | see p. 185 |

**Description and application**
Tool for producing extrusions

**Your benefits at a glance**
- Tool for preparing tapping in thin sheets
- Available in a range of standard sizes
- Coated punch insert has long service life and high process reliability
- Adapted to the original tapping tool from TRUMPF

**Application examples**
Extruded holes as an alternative to press-in elements, cable guides, nonslip structure, or fasteners. Guides for small tubes, e.g. heat exchangers.




## Item

| Complete tool | | Punch | | Die | | Single extrusion punch | |
|---|---|---|---|---|---|---|---|
|  | |  | |  | |  | |
| Order no. | EUR | Order no. | EUR | Order no. | EUR | Order no. | EUR |
| 699206 | | 699207 | | 699208 | | 699209 | |

**Important ordering specifications**
Machine, sheet thickness, material, diameter D, application (thread forming or thread cutting in accordance with DIN 7952).

## Extrusion and thread size

| Size | Possible sheet thicknesses s (in mm) for thread forming | Extrusion diameter D for thread forming | Possible sheet thicknesses s (in mm) for thread cutting | Extrusion diameter D for thread cutting |
|---|---|---|---|---|
| M2.5 | 1.0 / 1.5 | 2.30 | 0.8 - 1.5 | 2.10 |
| M3 | 1.0 / 1.5 / 2.0 | 2.80 | 0.8 - 1.5 | 2.55 |
| M4 | 1.0 / 1.5 / 2.0 | 3.70 | 1.0 - 2.0 | 3.35 |
| M5 | 1.0 / 1.5 / 2.0 | 4.65 | 1.0 - 2.0 | 4.25 |
| M6 | 1.0 / 1.5 / 2.0 | 5.55 | 1.0 - 2.0 | 5.10 |

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Guide bushing | 699210 | |
| Drawing die, single | 699211 | |
| Ejector | 699212 | |
| Spring element for punch (hollow spring element) | 093928 | |
| Spring element for die | 094107 | |

**Important ordering information**
Extrusion tools are always designed for a specific sheet thickness. Other dimensions on request. Please use our order forms in the appendix.

# Deburring MultiTool

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | MultiTool |
| **Sheet thickness s** | 0.8 - 2.5 mm |
| **Deburring geometries** | |
| Smallest corner radius | 0.2 mm |
| Smallest diameter | 5.0 mm |
| Cut on both sides | 5.0 mm |
| **Useful information** | |
| Tool Data Import | see p. 145 |
| Tool maintenance and setup | see p. 148 |
| Order forms | see p. 175 |

**Description and application**
Patent pending tool technology for deburring small inner contours

**Your benefits at a glance**
- Shorter production times because the entire process is completed on one machine
- Die inserts are adjusted to the sheet thickness, to ensure burrs are neatly flattened
- Wide range of deburring geometries increases flexibility

**Application examples**
Safe edges for subsequent assembly.

## Item

### Complete tool

Order no. 699348 — EUR

### Punch

Order no. 699349 — EUR

### Die

- Includes die inserts

Order no. 699350 — EUR

### Thrust piece

- Steel: All materials between 0.8 - 2.5 mm, particularly film-coated sheet metal
- Plastic: Sheets between 1.0 - 2.5 mm processed without imprints

Order no. 699351 — EUR

**Important ordering specifications**
Machine, sheet thickness, material, type of thrust piece. The "MultiTool" machine option is a prerequisite.

## Die insert

- Triangle for inner contours with angle ≥ 45°< 90°
- Square designed for cutting with MultiShear or slitting tool
- Round for bore holes ≥ 5 mm and oblong

| | Shape | Sheet thickness s (mm) | Order no. | EUR |
|---|---|---|---|---|
|  | Triangular | 0.8 - 1.4 | 699352 | |
| | | 1.5 - 2.5 | | |
|  | Square | 0.8 - 1.4 | | |
| | | 1.5 - 2.5 | | |
|  | Round | 0.8 - 1.4 | | |
| | | 1.5 - 2.5 | | |

# Roller deburring tool

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | Roller technology |
| **Sheet thickness s** | 0.8 - 4.0 mm |
| **Deburring geometries** | |
| Smallest diameter | 40.0 mm |
| Cut on both sides | 5.0 mm |
| **Useful information** | |
| Tool Data Import | see p. 145 |
| Tool maintenance and setup | see p. 148 |
| Order forms | see p. 175 |

**Description and application**
Patented tool technology for deburring punched contours

**Your benefits at a glance**
- Shorter production times because the entire process is completed on one machine
- Roller geometry is adjusted to the sheet thickness, to ensure burrs are neatly flattened
- Interchangeable rollers for every requirement

**Application examples**
Safe edges for subsequent assembly.

## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 699327 | |

**Complete punch**

| Order no. | EUR |
|---|---|
| 699328 | |

**Complete die**

| Order no. | EUR |
|---|---|
| 699329 | |

**Important ordering specifications**
Machine, sheet thickness, material, roller variant. The "roller technology" machine option is a prerequisite.

## Spare rollers

| Version | Designation/Sheet thickness s | Order no. | EUR |
|---|---|---|---|
| top | Cylindrical steel roller | 699330 | |
| | Back-tapered steel roller | | |
| | Plastic roller | | |
| bottom | s = 0.8 - 1.4 mm | 699331 | |
| | s = 1.5 - 2.5 mm | | |
| | s = 2.6 - 4.0 mm | | |

Experience the **Roller deburring tool** in action
www.trumpf.info/23clmq

# Ball deburring tool

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | Engraving |
| **Sheet thickness s** | 1.0 - 6.0 mm |
| **Deburring geometries** | |
| Smallest corner radius | 0.5 mm |
| Smallest diameter | 3.0 mm |
| Cut on both sides | ≥ Sheet thickness 3.0 mm |
| **Useful information** | |
| Tool Data Import | see p. 145 |
| Tool maintenance and setup | see p. 148 |
| Order forms | see p. 175 |

**Description and application**
Deburring different sized punch geometries directly on the machine

**Your benefits at a glance**
- Shorter production times because the entire process is completed on one machine
- High degree of flexibility based on deburring different sized and complex contours using just one tool
- The tapered punch head permits deburring close to formed sections

**Application examples**
Safe edges for subsequent assembly.

## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 2355384 | |

**Complete punch**

| Order no. | EUR |
|---|---|
| 2355383 | |

**Complete die**

| Order no. | EUR |
|---|---|
| 2355382 | |

**Important ordering specifications**
Machine, sheet thickness, material. The "engraving" machine option is a prerequisite.

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Ball roller | 2355379 | |
| Set screw | 053720 | |
| Ball roller (old version) | 1840068 | |
| Set screw (old version) | 74438 | |

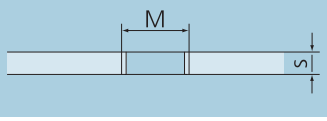
# Tapping tool

**Description and application**
The reliable TRUMPF tool for non-cutting thread production on a punching machine

**Your benefits at a glance**
- Reduced cost because the entire process is completed on one machine
- High strength due to strain hardening of the material
- Can be used for a variety of thread dimensions
- Many thread options are available for a diverse range of requirements

**Application examples**
The fastening of sheet metal components using metric screws.

| **Machine type** | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 R, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | Tapping |
| **Sheet thickness s (tapping in a level sheet)** | |
| M2.5 - M5 | 1.5 - 5.0 mm |
| M6 - M10 | 3.0 - 8.0 mm |
| **Metric threads** | |
| Type I | M2; M2.5; M3; M3.5; M4; M5 |
| Type II | M6; M8; M10 |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Order forms | see p. 175 |




## Item

**Complete tool**

- Includes die for upward extrusions
- A special die is required for thread size M10

| Order no. | EUR |
|---|---|
| 699214 | |

**Tapping module**

| Order no. | EUR |
|---|---|
| 699216 | |

**Forming tap 6HX**

- Standard tolerance 6HX
- Price for thread size M2 and M10 on request

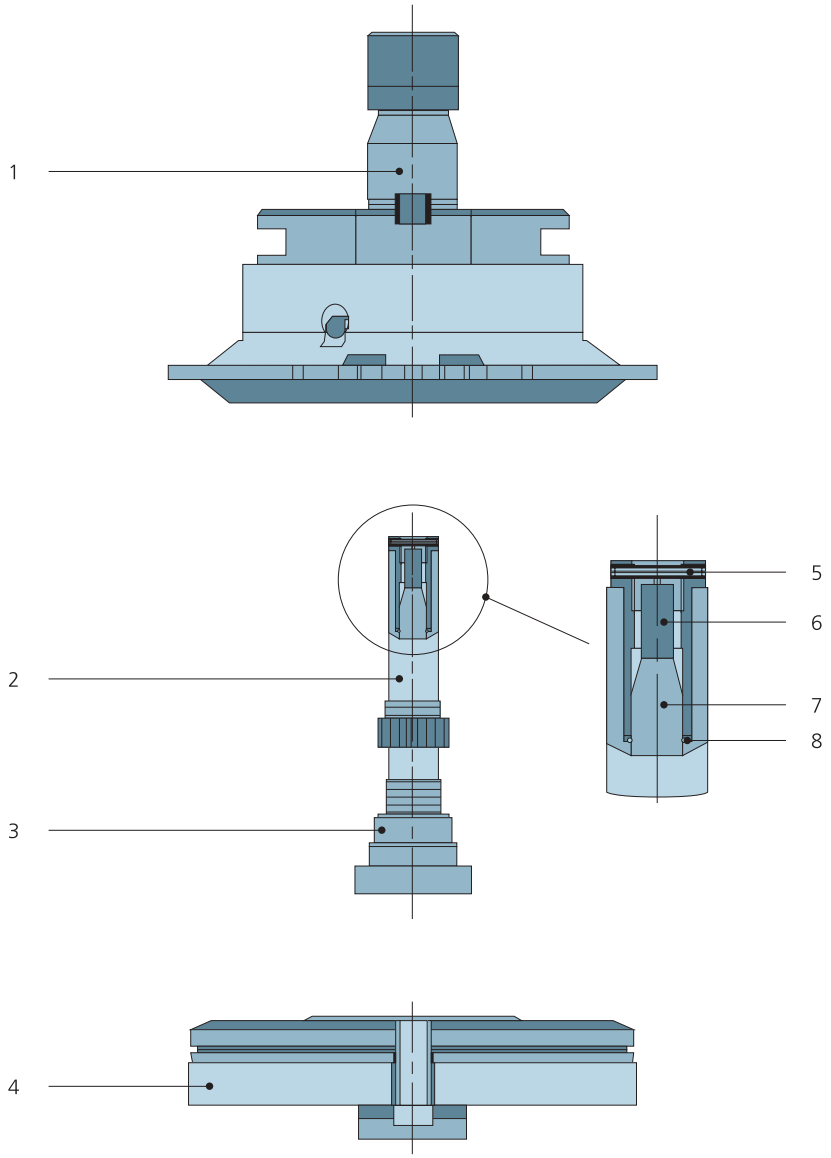
| Order no. | EUR |
|---|---|
| 699217 | |

**Important ordering specifications**
Machine, sheet thickness, material, thread size. The "tapping" machine option is a prerequisite.

## Accessories and single parts

| **Item** | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Tapping die for upward extrusions | 699220 | |
| Tapping die for upward and downward extrusions (only up to thread size M6) | 699220 | |
| Tapping die for M10 | 171311 | |

# Tapping tool




## Accessories and single parts

| | Item | | | |
|---|---|---|---|---|
| | Designation | Pieces | Order no. | EUR |
| 1) | Punch | 1 | 699215 | |
| 2) | Lead screw (metric thread) | 1 | 699218 | |
| 3) | Spindle nut | 1 | 699219 | |
| 4) | Die | 1 | 699220 | |
| 5) | Clamping pin | 1 | 111352 | |
| 6) | Spring element | 1 | 169337 | |
| 7) | Forming tap | 1 | 699217 | |
| 8) | Spring ring | 1 | 111353 | |

**Important ordering information**
The standard version for tapping has it to a tolerance of 6HX. This is also available to tolerances of 6G, 6E, 7G, and in inches on request. A special die is required for thread size M10.

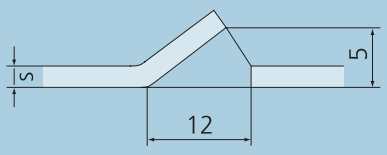
# Louver tool (single louvers)

**Description and application**
Tool for producing ventilation louvers in a single stroke

**Your benefits at a glance**
- Outstanding form quality because cutting and forming are performed in a single stroke
- Can be used for a variety of sheet thicknesses with the revolving punch cutting blades
- Interchangeable die inserts make the tool economical

**Application examples**
Interchangeable die inserts make the tool economical

| **Machine type** | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 0.8 - 2.5 mm |
| **Dimensions (L x W x H)** | 60 x 12 x 5 mm |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Tool Data Import | see p. 145 |
| Tool maintenance and setup | see p. 148 |
| Particularly high/large formed sections | see p. 165 |
| Request form – Louver tool (single louvers) | see p. 186 |




## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 699222 | |

**Punch**

| Order no. | EUR |
|---|---|
| 699223 | |

**Die**

| Order no. | EUR |
|---|---|
| 699224 | |

**Louver insert for die**

| Order no. | EUR |
|---|---|
| 93951 | |

**Important ordering specifications**
Machine, sheet thickness, material.

## Accessories and single parts

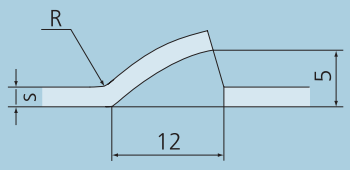
**Item**

| Designation | Order no. | EUR |
|---|---|---|
| Cutting blade for punch | 093948 | |
| Spring element for punch | 093950 | |
| Spring element for die (4 required) | 093952 | |

**Important ordering information**
Other dimensions on request. Please use our order forms in the appendix.

# Louver tool (continuous louvers)

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 0.8 - 3.0 mm |
| **Dimensions (W x H)** | 12 x 5 mm |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Tool Data Import | see p. 145 |
| Tool maintenance and setup | see p. 148 |
| Request form – Louver tool (continuous louvers) | see p. 187 |




**Description and application**
Tool for producing ventilation louvers, with variable lengths, using nibbling mode

**Your benefits at a glance**
- Louvers of any length can be produced using continuous operation
- Cost-effective tool due to its simple construction
- Interchangeable die inserts make the tool economical

**Application examples**
Ventilation technology, switch cabinet construction, chiller construction, covers for electrical devices.

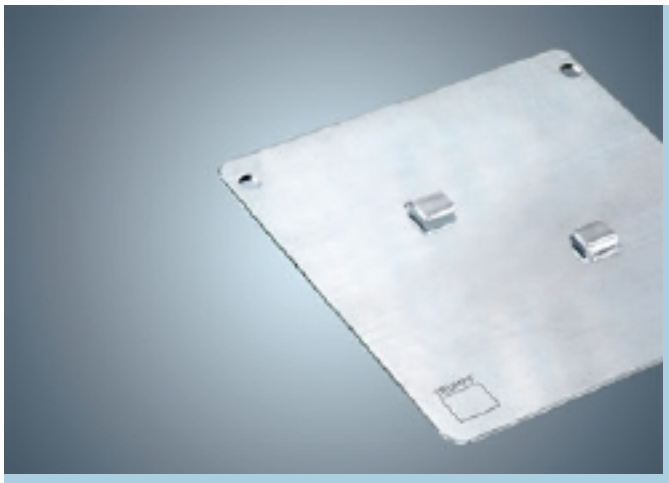
## Item

| Complete tool | Punch | Die | Louver cutting insert for die |
|---|---|---|---|
|  |  |  |  |
| Order no. 699229 EUR | Order no. 699230 EUR | Order no. 699231 EUR | Order no. 69539 EUR |

**Important ordering specifications**
Machine, sheet thickness, material.

**Important ordering information**
Continuous louver cutting tools are always designed for a specific sheet thickness. Other dimensions on request. Please use our order forms in the appendix.

# Bracket tool

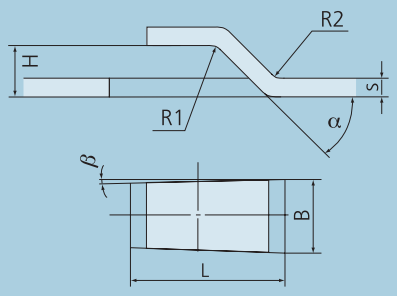


**Description and application**
Tool for cutting and forming brackets

**Your benefits at a glance**
- Brackets are created in a single stroke
- Interchangeable forming inserts make the tool economical
- Broad product range for every requirement

**Application examples**
Stops, card holders, cable clamps, connection technology, mounting built-in parts, fastening, and tool clamping.

| **Machine type** | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 0.5 - 2.5 mm |
| **Useful information** | |
| Tool Data Import | see p. 145 |
| Tool maintenance and setup | see p. 148 |
| Request form – Bracket tool | see p. 188 |




## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| On request | |

**Punch**

| Order no. | EUR |
|---|---|
| On request | |

**Die**

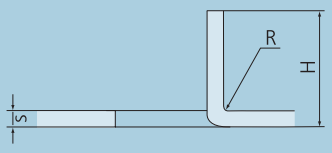
| Order no. | EUR |
|---|---|
| On request | |

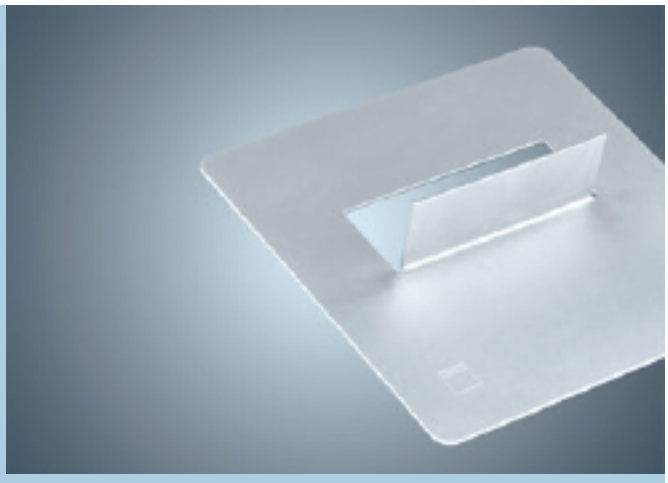
**Important ordering specifications**
Machine, sheet thickness, material, dimensions.

**Important ordering information**
Bracket tools are always designed for a specific sheet thickness. Please use our order forms in the appendix for your request.

# MultiBend

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | MultiBend |
| **Sheet thickness s** | 1.0 - 2.0 mm |
| **Bend lengths** | One bend length: 55 mm |
| **Bend height H** | One bend height: 10 - 25 mm |
| **Bending angle** | up to 90° ± 1° |
| **Useful information** | |
| Tool Data Import | see p. 145 |
| Tool maintenance and setup | see p. 148 |
| Order forms | see p. 175 |



**Description and application**
Tool for producing 90° bends using a punching machine

**Your benefits at a glance**
- 90° bends in a variety of lengths up to 55 mm
- Reduced cost per part because entire process is completed on one machine
- Bends are produced without marks because a bending roller is used
- Also available with a reinforcing bead

**Application examples**
Complete processing of door locks and lock cases, production of small bends in large blanks or parts, complete processing of brackets.

## Item

### Complete tool

| Order no. | EUR |
|---|---|
| 699235 | |

### Punch

- With bending bar

| Order no. | EUR |
|---|---|
| 699236 | |

### Die

| Order no. | EUR |
|---|---|
| 699237 | |

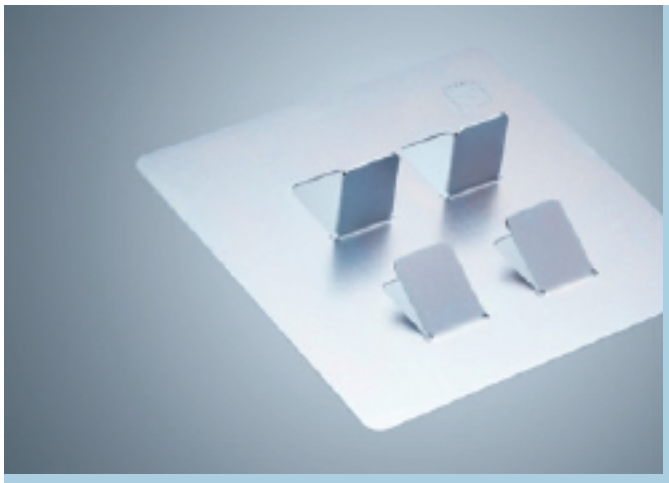
**Important ordering specifications**
Machine, sheet thickness, material, dimensions. The "MultiBend" machine option is a prerequisite.

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Bending roller for die | 699238 | |
| Bending bar, single | 699239 | |
| Die ejector | 688788 | |

**Important ordering information**
There are two versions of bending rollers, one for sheets between 1.0 and 1.5 mm thick and one for sheets that are 2.0 mm thick. The size of the bending roller must be set to the corresponding size before the bending process begins. Price for MultiBend tool with a different bending length on request.

# MultiBend Extended



| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | MultiBend |
| **Sheet thickness s** | 1.0 - 2.0 mm |
| **Bend lengths** | Multiple bend lengths: 10 - 90 mm |
| **Bend height H** | Multiple bend heights: 10 - 25 mm |
| **Bending angle** | up to 90° |
| **Useful information** | |
| Tool Data Import | see p. 145 |
| Tool maintenance and setup | see p. 148 |
| Order forms | see p. 175 |

**Description and application**
Producing different bend lengths and heights in a single stroke

**Your benefits at a glance**
- Reduced cost per part because entire process is completed on one machine
- High degree of flexibility thanks to modular construction
- Reduced degree of material removal in the area of the brackets when processing on TruMatic machines

**Application examples**
Complete processing of door locks and lock cases, production of small bends in large blanks or parts, complete processing of brackets.

## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| See table | |

**Complete punch**

| Order no. | EUR |
|---|---|
| See table | |

**Complete die**

| Order no. | EUR |
|---|---|
| 2035962 | |

**Important ordering specifications**
Machine, sheet thickness, material, dimensions. The "MultiBend" machine option is a prerequisite.

## Prices

**Complete tool**

| Sheet thickness s in mm | Order no. | EUR |
|---|---|---|
| 1.0 | 2035983 | |
| 1.5 | 2036964 | |
| 2.0 | 2036965 | |

**Complete punch**

| Sheet thickness s in mm | Order no. | EUR |
|---|---|---|
| 1.0 | 2035942 | |
| 1.5 | 2036967 | |
| 2.0 | 2036969 | |

## Accessories and single parts

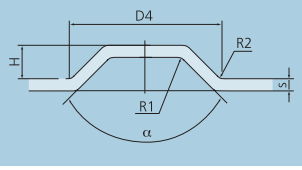
**Item**

| Designation | Order no. | EUR |
|---|---|---|
| Bending bar s = 1.0 mm | 2035946 | |
| Bending bar s = 1.5 mm | 2036113 | |
| Bending bar s = 2.0 mm | 2036119 | |
| Bending roller for die | 2035982 | |
| Compression spring D 8.0 L 25.0 | 341492 | |
| Compression spring D 7.3 L 26.0 | 146087 | |
| Clamping element (elastic) | 2035945 | |
| Adjustment key | 63548 | |
| Screw M3x8 | 14346 | |
| Extension set, adjustment key and screw | 1585069 | |
| Locking screw | 2035970 | |

**Important ordering information**
Tool cartridge size 5 is required for use of the MultiBend Extended.

# Cup tool (upward)

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | |
| Aluminum and steel | 1.0 - 3.0 mm |
| Stainless steel | 1,0 - 2,5 mm |
| **Height H** | 0.5 - 5.0 mm |
| **Diameter D4** | 5.0 - 40.0 mm |
| **Angle α** | 90° - 179° |
| **Useful information** | |
| Tool Data Import | see p. 145 |
| Tool maintenance and setup | see p. 148 |
| Request form – Cup tool | see p. 189 |




**Description and application**
Tool for producing a cup form

**Your benefits at a glance**
- A wide range of forms and dimensions are available
- Produced specifically to your requirements
- Cost-effective tool due to its simple construction

**Application examples**
Spacers, checker plates, housing feet, reinforcements, screw countersinks, fluid outlets, asthetic design.

## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 699991 | |

**Punch**

| Order no. | EUR |
|---|---|
| 699992 | |

**Die**

| Order no. | EUR |
|---|---|
| 699993 | |

**Important ordering specifications**
Machine, sheet thickness, material, dimensions.

## Prices

**Cup height H = 0.5 - 2.5 mm**

| Article | Size | Diameter D4 (in mm) | Order no. | EUR |
|---|---|---|---|---|
| Complete tool | 1 | 1.00 - 15.00 | 699991 | |
| Punch | | | 699992 | |
| Die | | | 699993 | |
| Complete tool | 2 | 15.01 - 48.00 | 699991 | |
| Punch | | | 699992 | |
| Die | | | 699993 | |

## Prices

**Cup height H = 2.51 - 5.0 mm**

| Article | Size | Outer Circle (mm) | Order no. | EUR |
|---|---|---|---|---|
| Complete tool | 1 | 1.00 - 15.00 | 699991 | |
| Punch | | | 699992 | |
| Die | | | 699993 | |
| Complete tool | 2 | 15.01 - 48.00 | 699991 | |
| Punch | | | 699992 | |
| Die | | | 699993 | |

**Important ordering information**
Cup tools are always designed for a specific sheet thickness. Other dimensions on request. Please use our order forms in the appendix.

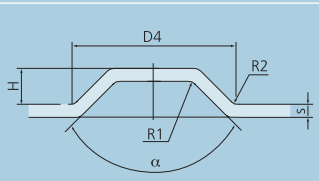
# Cup tool with ejector (upward)

**Description and application**
Tool for producing a cup form

**Your benefits at a glance**
- A wide range of forms and dimensions are available
- Produced specifically to your requirements

**Application examples**
Spacers, checker plates, housing feet, reinforcements, screw countersinks, fluid outlets, asthetic design.

| **Machine type** | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | |
| Aluminum and steel | 1.0 - 3.0 mm |
| Stainless steel | 1,0 - 2,0 mm |
| **Height H** | 0.5 - 5.0 mm |
| **Diameter D4** | 5.0 - 40.0 mm |
| **Angle α** | 60° - 179° |
| **Useful information** | |
| Tool Data Import | see p. 145 |
| Tool maintenance and setup | see p. 148 |
| Request form – Cup tool | see p. 189 |




## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 699991 | |

**Punch**

| Order no. | EUR |
|---|---|
| 699992 | |

**Die**

| Order no. | EUR |
|---|---|
| 699993 | |

**Important ordering specifications**
Machine, sheet thickness, material, dimensions.

## Prices

**Cup height H = 0.5 - 2.5 mm**

| Article | Size | Diameter D4 (in mm) | Order no. | EUR |
|---|---|---|---|---|
| Complete tool | 1 | 1.00 - 15.00 | 699991 | |
| Punch | | | 699992 | |
| Die | | | 699993 | |
| Complete tool | 2 | 15.01 - 48.00 | 699991 | |
| Punch | | | 699992 | |
| Die | | | 699993 | |

## Prices

**Cup height H = 2.51 - 5.0 mm**

| Article | Size | Outer Circle (mm) | Order no. | EUR |
|---|---|---|---|---|
| Complete tool | 1 | 1.00 - 15.00 | 699991 | |
| Punch | | | 699992 | |
| Die | | | 699993 | |
| Complete tool | 2 | 15.01 - 48.00 | 699991 | |
| Punch | | | 699992 | |
| Die | | | 699993 | |

## Ejector options

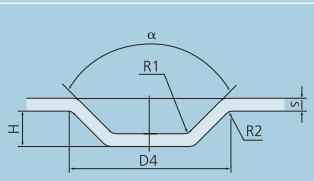
**Ampco alloy for the die ejector**

| Order no. | EUR |
|---|---|
| | |

**Important ordering information**
Cup tools are always designed for a specific sheet thickness. Other dimensions on request. Please use our order forms in the appendix.

# Cup tool (downward)

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | |
| Aluminum and steel | 1.0 - 3.0 mm |
| Stainless steel | 1,0 - 2,5 mm |
| **Height H** | 0.5 - 5.0 mm |
| **Diameter D4** | 5.0 - 40.0 mm |
| **Angle α** | 90° - 179° |
| **Useful information** | |
| Tool Data Import | see p. 145 |
| Tool maintenance and setup | see p. 148 |
| Request form – Cup tool | see p. 189 |




**Description and application**
Tool for producing a cup form

**Your benefits at a glance**
- A wide range of forms and dimensions are available
- Produced specifically to your requirements
- Cost-effective tool due to its simple construction

**Application examples**
Spacers, checker plates, housing feet, reinforcements, screw countersinks, fluid outlets, asthetic design.

## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 699991 | |

**Punch**

| Order no. | EUR |
|---|---|
| 699992 | |

**Die**

| Order no. | EUR |
|---|---|
| 699993 | |

**Important ordering specifications**
Machine, sheet thickness, material, dimensions.

## Prices

**Cup height H = 0.5 - 2.5 mm**

| Article | Size | Diameter D4 (in mm) | Order no. | EUR |
|---|---|---|---|---|
| Complete tool | 1 | 1.00 - 15.00 | 699991 | |
| Punch | | | 699992 | |
| Die | | | 699993 | |
| Complete tool | 2 | 15.01 - 48.00 | 699991 | |
| Punch | | | 699992 | |
| Die | | | 699993 | |

## Prices

**Cup height H = 2.51 - 5.0 mm**

| Article | Size | Diameter D4 (in mm) | Order no. | EUR |
|---|---|---|---|---|
| Complete tool | 1 | 1.00 - 15.00 | 699991 | |
| Punch | | | 699992 | |
| Die | | | 699993 | |
| Complete tool | 2 | 15.01 - 48.00 | 699991 | |
| Punch | | | 699992 | |
| Die | | | 699993 | |

**Important ordering information**
Cup tools are always designed for a specific sheet thickness. Other dimensions on request. Please use our order forms in the appendix.

# Roller pinching tool

**Description and application**
Tool for chamfering cut edges on TruMatic machines with a laser cut

**Your benefits at a glance**
- Laser-cut contours can be deburred directly on the machine
- Indentations can also be created as a predetermined bending point or for manual bending
- Extremely flexible due to the large number of available rollers

**Application examples**
Chamfering laser-cut edges, one-sided pinching to prepare for sharp-edged bending, part break line, preparation for bending by hand.

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | Roller technology |
| **Sheet thickness s** | |
| Aluminum | 0.8 - 2.5 mm |
| Steel | 0.8 - 2.0 mm |
| Stainless steel | 0.8 - 1.5 mm |
| **Traveling speed** | up to max. positioning speed |
| **Minimum travel radius** | 500 mm (chamfered laser edge: 15 mm) |
| **Angle α** | |
| Cutting | 60° |
| Bending by hand | 95° |
| Chamfered laser edge | 120° |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Order forms | see p. 175 |

## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 699376 | |

**Complete punch**

| Order no. | EUR |
|---|---|
| 699377 | |

**Complete die**

| Order no. | EUR |
|---|---|
| 699378 | |

**Important ordering specifications**
Machine, sheet thickness, material, angle α. The "roller technology" machine option is a prerequisite.

## Roller unit

**Item**

| Designation | Order no. | EUR |
|---|---|---|
| top | 699379 | |
| bottom | 699380 | |

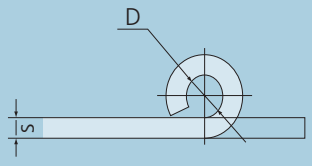
## Application

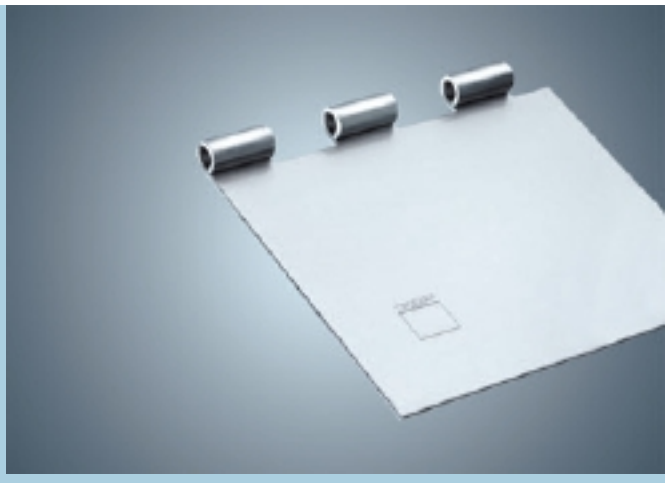
| Application | Material | Sheet thickness s (in mm) | Note |
|---|---|---|---|
| Cutting | Steel, stainless steel | 0.8 - 2.0 | |
| | Aluminum | 0.8 - 2.5 | |
| Bending by hand | Steel, stainless steel | 0.8 - 2.0 | |
| | Aluminum | 0.8 - 2.5 | |
| Chamfered laser edge | Steel, stainless steel, aluminum | 0.8 - 8.0 | TruMatic 6000, 7000 |
| | Steel, stainless steel, aluminum | 0.8 - 4.4 | TruMatic 1000, 3000 |

Experience the **Roller pinching tool** in action
www.trumpf.info/j6udxg

# Hinge tool

| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s and diameter D** | |
| 1.0 mm | 4.0 / 5.0 / 6.0 mm |
| 1.5 mm | 5.0 / 6.0 mm |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Request form – Hinge tool | see p. 192 |



**Description and application**
Tool set for producing a hinge

**Your benefits at a glance**
- Workpieces, including the hinge, are produced using the punching machine
- Cost advantages because there is no need to purchase hinges, fixtures, or assembly services
- The tool can be used in a variety of ways on the component

## Item

### Complete tool

| Order no. | EUR |
|---|---|
| 699242 | |

### Lever for tool 1

| Order no. | EUR |
|---|---|
| 699244 | |

### Die insert for tool 1

| Order no. | EUR |
|---|---|
| 508747 | |

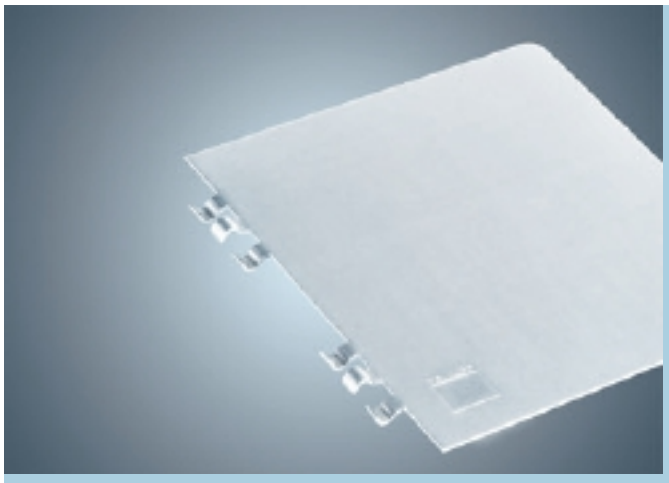
### Spring element for tool 2

| Order no. | EUR |
|---|---|
| 508755 | |

**Important ordering specifications**
Machine, sheet thickness, material, dimensions.

**Important ordering information**
A hinge is produced using two tools and four work steps. Hinge tools are always designed for a specific sheet thickness and a specific diameter. Other dimensions on request. Please use our order forms in the appendix.

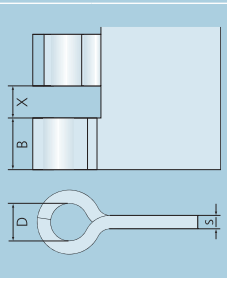
# Hinge tool for multiple hinges



**Description and application**
Produces the upper and lower shell for hinges in a single stroke

**Your benefits at a glance**
- Considerable reduction in processing time because several formed sections are produced in a single stroke
- Saves a tool station on the machine
- Simple programming in TruTops

| **Machine type** | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 1.0 - 2.0 mm |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Tool Data Import | see p. 145 |
| Tool maintenance and setup | see p. 148 |
| Particularly high/large formed sections | see p. 165 |
| Request form – Hinge tool for multiple hinges | see p. 193 |




## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| On request | |

**Punch**

| Order no. | EUR |
|---|---|
| On request | |

**Die**

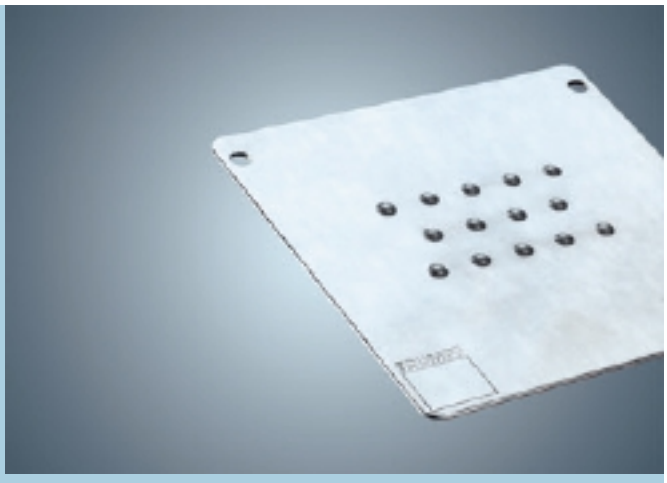
| Order no. | EUR |
|---|---|
| On request | |

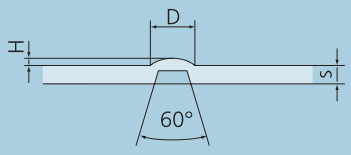
**Important ordering specifications**
Machine, sheet thickness, material, dimensions.

**Important ordering information**
Hinge tools for multiple hinges are always designed for a specific sheet thickness and a specific diameter. Please use our order forms in the appendix for your request.

# Weld boss tool

| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 0.63 - 3.2 mm |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Request form – Weld boss tool | see p. 195 |






**Description and application**
Tool for forming weld bosses

**Your benefits at a glance**
- Cost-effective weld preparation
- Forming complies with DIN 8519
- Interchangeable components make the tool extremely versatile

**Application examples**
For fastening spacers and as preparation for projection welding (in accordance with DIN 8519), design, nonslip structure.

## Item

### Complete tool

| Order no. | EUR |
|---|---|
| 699912 | |

### Punch

| Order no. | EUR |
|---|---|
| 699914 | |

### Die

| Order no. | EUR |
|---|---|
| 699913 | |

### Die insert

| Order no. | EUR |
|---|---|
| 699915 | |

**Important ordering specifications**
Machine, sheet thickness, material, dimensions.

## Diameter and forming height

| Diameter D (in mm) | Sheet thickness s (in mm) | Forming height H |
|---|---|---|
| 2.5 | 0.63 - 1.00 | 0.63 |
| 3.2 | 0.63 - 1.60 | 0.80 |
| 4.0 | 1.00 - 2.50 | 1.00 |
| 5.0 | 1.60 - 2.50 | 1.25 |
| 6.3 | 2.50 - 3.20 | 1.60 |

## Accessories and single parts

**Item**

| Designation | Order no. | EUR |
|---|---|---|
| Spring element for die | 103469 | |

**Important ordering information**
Weld boss tools are always designed for a specific sheet thickness range. Other dimensions on request. Please use our order forms in the appendix.

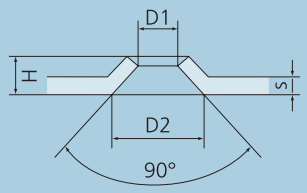
# Countersink forming tool (upward)

| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 0.5 - 3.0 mm |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Tool maintenance and setup | see p. 148 |
| Request form – Countersink forming tool | see p. 194 |

**Description and application**
Tool for producing countersinks in accordance with DIN 74 and EN ISO 15065

**Your benefits at a glance**
- Available for different screw dimensions
- Large support area for the screw head even in thin sheet metal when the head is completely flush
- Interchangeable components make the tool extremely versatile

**Application examples**
Countersink for countersunk screws, nonslip structure, water outlets, non-skid protection, loading ramps.




## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 699947 | |

**Punch**

| Order no. | EUR |
|---|---|
| 699948 | |

**Die**

| Order no. | EUR |
|---|---|
| 699949 | |

**Die insert**

| Order no. | EUR |
|---|---|
| 699950 | |

**Important ordering specifications**
Machine, sheet thickness, material, dimensions.

## Thread size and diameter

| Thread size | Diameter D2 (in mm) |
|---|---|
| M2.5 | 5.9 |
| M3 | 7.1 |
| M4 | 9.4 |
| M5 | 11.7 |
| M6 | 14.0 |
| M8 | 18.5 |
| M10 | 23.0 |

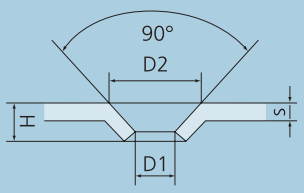
## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Spring element for die M2.5 - M6 | 105732 | |
| Spring element for die M8 - M10 | 105733 | |

**Important ordering information**
Countersink forming tools are always designed for a specific sheet thickness and a specific countersink diameter. Other dimensions on request. Please use our order forms in the appendix.

# Countersink forming tool (downward)

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 0.5 - 2.5 mm |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Tool maintenance and setup | see p. 148 |
| Request form – Countersink forming tool | see p. 194 |




**Description and application**
Tool for producing countersinks in accordance with DIN 74 and EN ISO 15065

**Your benefits at a glance**
- Available for different screw dimensions
- Large support area for the screw head even in thin sheet metal when the head is completely flush
- Cutting and forming in a single stroke

**Application examples**
Countersink for countersunk screws, nonslip structure, water outlets, non-skid protection, loading ramps.

## Item

| Complete tool | Punch | Die | Spring element for punching |
|---|---|---|---|
|  |  |  |  |
| Order no. 699251 EUR | Order no. 699252 EUR | Order no. 699253 EUR | Order no. 157291 EUR |

**Important ordering specifications**
Machine, sheet thickness, material, dimensions.

## Thread size and diameter

| Thread size | Diameter D2 (in mm) |
|---|---|
| M2.5 | 5.9 |
| M3 | 7.1 |
| M4 | 9.4 |
| M5 | 11.7 |
| M6 | 14.0 |

**Important ordering information**
Countersink forming tools are always designed for a specific sheet thickness and a specific countersink diameter. Other dimensions on request. Please use our order forms in the appendix.

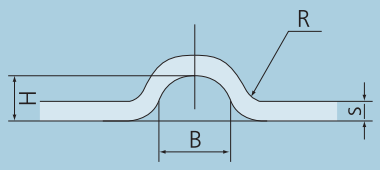
# Beading tool

| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 1.0 - 3.0 mm |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Tool maintenance and setup | see p. 148 |
| Request form – Beading tool | see p. 196 |

**Description and application**
Tool for producing continuous beads in nibbling mode

**Your benefits at a glance**
- Cost-effective tool due to its simple construction
- Reduced cost per part because the entire process is completed on one machine
- High level of geometry flexibility due to continuous operation mode
- Reduced material costs because thinner sheet metal can be used

**Application examples**
For the reinforcing of sheet metal, fluid or cable guides.




## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 699256 | |

**Punch**

| Order no. | EUR |
|---|---|
| 699257 | |

**Die**

| Order no. | EUR |
|---|---|
| 699258 | |

**Important ordering specifications**
Machine, sheet thickness, material, dimensions.

## Prices

**Complete tool**

| Size | Available dimensions H x W (in mm) | Order no. | EUR |
|---|---|---|---|
| 1 | 2.0 x 4.0 | 699256 | |
| | 3.0 x 6.0 | | |
| 2 | 3.0 x 6.0 | | |
| | 4.0 x 8.0 | | |
| | 5.0 x 10.0 | | |

**Punch**

| Size | Available dimensions H x W (in mm) | Order no. | EUR |
|---|---|---|---|
| 1 | 2.0 x 4.0 | 699257 | |
| | 3.0 x 6.0 | | |
| 2 | 3.0 x 6.0 | | |
| | 4.0 x 8.0 | | |
| | 5.0 x 10.0 | | |

**Die**

| Size | Available dimensions H x W (in mm) | Order no. | EUR |
|---|---|---|---|
| 1 | 2.0 x 4.0 | 699258 | |
| | 3.0 x 6.0 | | |
| 2 | 3.0 x 6.0 | | |
| | 4.0 x 8.0 | | |
| | 5.0 x 10.0 | | |

**Important ordering information**
Beading tools are always designed for a specific sheet thickness and specific beading dimensions. Other dimensions on request. Please use our order forms in the appendix.

# Roller beading tool

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | Roller technology |
| **Sheet thickness s** | |
| Aluminum | 0.8 - 2.5 mm |
| Steel | 0.8 - 2.0 mm |
| Stainless steel | 0.8 - 1.5 mm |
| **Traveling speed** | up to max. positioning speed |
| **Minimum travel radius** | 30 mm |
| **Dimensions (W x H)** | |
| | 5 x 2.5 mm |
| | 6 x 3 mm |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Request form – Beading tool | see p. 196 |

**Description and application**
Tool for producing beads by roller forming

**Your benefits at a glance**
- Fast processing speed due to roller technology
- Roller processing results in outstanding part quality with no nibble marks
- Reduced material costs because thinner sheet metal can be used
- "Gradual plunging" option reduces approach marks
- Reinforced axes for a longer service life

**Application examples**
For the reinforcing of sheet metal, fluid or cable guides.

## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 699354 | |

**Complete punch**

| Order no. | EUR |
|---|---|
| 699355 | |

**Complete die**

| Order no. | EUR |
|---|---|
| 699356 | |

**Important ordering specifications**
Machine, sheet thickness, material, dimensions. The "roller technology" machine option is a prerequisite.

## Roller unit

**Item**

| Designation | Order no. | EUR |
|---|---|---|
| top | 699357 | |
| bottom | 699358 | |

**Important ordering information**
Roller beading tools are always designed for a specific sheet thickness and specific beading dimensions. Other dimensions on request. Please use our order forms in the appendix.
Roller beading tool without reinforced axes (previous standard) available upon request

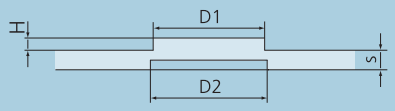
# Center boss tool (upward)

| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 1.0 - 3.0 mm |
| **Forming height H** | up to 0.5 x sheet thickness s |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Tool Data Import | see p. 145 |
| Tool maintenance and setup | see p. 148 |
| Request form – Center boss tool | see p. 197 |

**Description and application**
Tool for cutting and forming center bosses

**Your benefits at a glance**
- Cost-effective production of fastening points and stops
- Many special shapes available, in addition to round
- Highly flexible due to height-adjustable forming insert (up to max. 0.5 x sheet thickness s)

**Application examples**
For centering or producing spacers on components, nonslip structure, positioning aid for spot welding (fixture may be omitted).




## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 699905 | |

**Punch**

| Order no. | EUR |
|---|---|
| 699906 | |

**Die**

| Order no. | EUR |
|---|---|
| 699907 | |

**Piercing punch for die**

| Order no. | EUR |
|---|---|
| 699910 | |

**Important ordering specifications**
Machine, sheet thickness, material, dimensions.

## Inside diameter and outside diameter

| Inside diameter D2 (in mm) | Outside diameter D1 (in mm) |
|---|---|
| 2.0 | 1.9 |
| 3.0 | 2.9 |
| 4.0 | 3.9 |
| 5.0 | 4.9 |
| 6.0 | 5.9 |

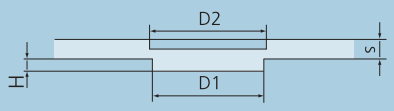
## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Single punch without spring element and alignment ring | 699908 | |
| Spring element for punch | 157288 | |
| Spring element for die | 103469 | |

**Important ordering information**
Other dimensions on request. Please use our order forms in the appendix.

# Center boss tool (downward)

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 1.0 - 3.0 mm |
| **Forming height H** | up to 0.5 x sheet thickness s |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Tool Data Import | see p. 145 |
| Tool maintenance and setup | see p. 148 |
| Request form – Center boss tool | see p. 197 |




**Description and application**
Tool for cutting and forming center bosses

**Your benefits at a glance**
- Cost-effective production of fastening points and stops
- Many special shapes available, in addition to round
- Highly flexible due to height-adjustable forming insert (up to max. 0.5 x sheet thickness s)

**Application examples**
For centering or producing spacers on components, nonslip structure, positioning aid for spot welding (fixture may be omitted).

## Item

| Complete tool | Punch | Die | Punch insert |
|---|---|---|---|
|  |  |  |  |
| Order no. 699842 EUR | Order no. 699843 EUR | Order no. 699844 EUR | Order no. 699845 EUR |

**Important ordering specifications**
Machine, sheet thickness, material, dimensions.

## Inside diameter and outside diameter

| Inside diameter D2 (in mm) | Outside diameter D1 (in mm) |
|---|---|
| 2.0 | 1.9 |
| 3.0 | 2.9 |
| 4.0 | 3.9 |
| 5.0 | 4.9 |
| 6.0 | 5.9 |

## Accessories and single parts

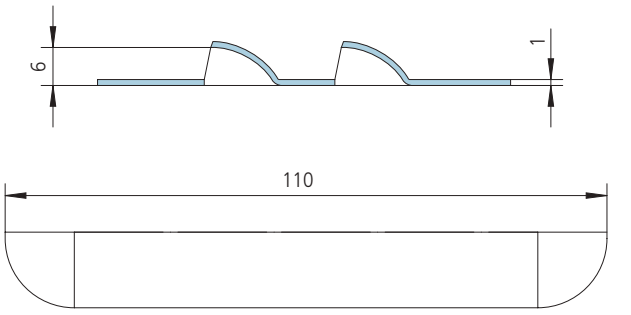
| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Ejector for the punch | 1710633 | |
| Individual downwards center boss die | 699846 | |
| Individual center boss die ejector | 699847 | |
| Spring element for punch | 1710634 | |
| Spring element for die | 1710636 | |

**Important ordering information**
Other dimensions on request. Please use our order forms in the appendix.

# Size 5 tools

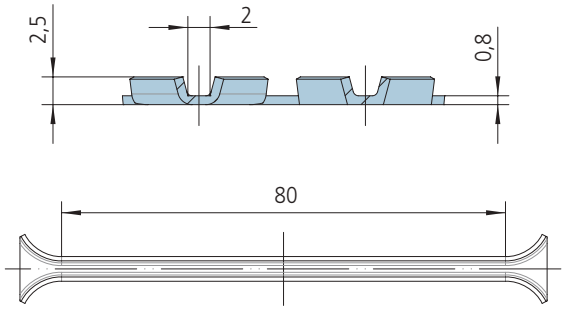
| Machine type | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Particularly high/large formed sections | see p. 165 |

## Louver tool size 5



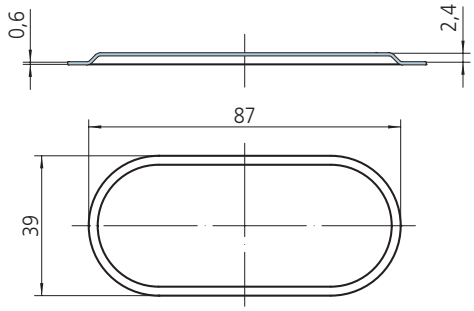

| Order no. | EUR |
|---|---|
| On request | |

## Card guide tool size 5




| Order no. | EUR |
|---|---|
| On request | |

## Cup tool oblong size 5




| Order no. | EUR |
|---|---|
| On request | |

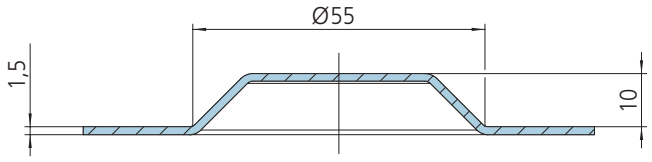
**Important ordering specifications**
Drawing in common CAD format (e.g. DXF), machine, sheet thickness, material

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Tool cartridge size 5 | 1500495 | |

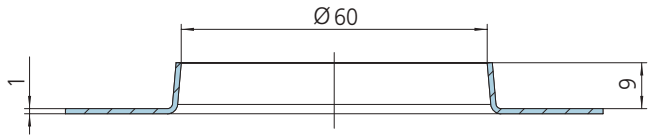
# Tools for the active die

| | |
|---|---|
| **Machine type** | |
| TruPunch | 5000 (S10) |
| TruMatic | 7000 (K02) |
| **Required machine option** | Active die |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Particularly high/large formed sections | see p. 165 |



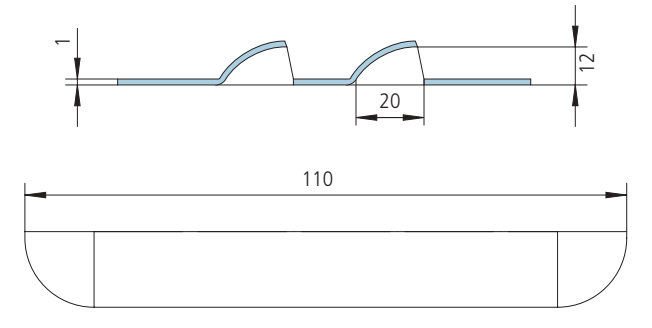

| Order no. | EUR |
|---|---|
| On request | |

**Cup tool size 5 (active die)**




| Order no. | EUR |
|---|---|
| On request | |

**Extrusion tool size 5 (active die)**




| Order no. | EUR |
|---|---|
| On request | |

**Louver tool size 5 (active die)**

**Important ordering specifications**
Drawing in popular CAD format (e.g. DXF), machine, sheet thickness, material. The "Active die" machine option is a prerequisite.

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Tool cartridge size 5 | 1500495 | |

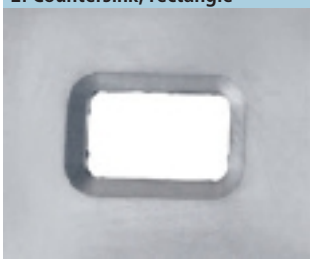
Experience the **Tools for the active die** in action
www.trumpf.info/8ycp4x

# Application examples of forming

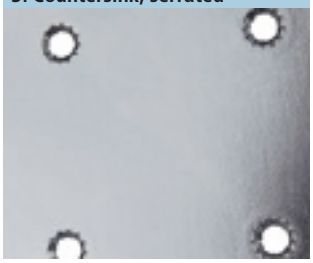
## Countersinks

1. Countersink, flat

2. Countersink, rectangle



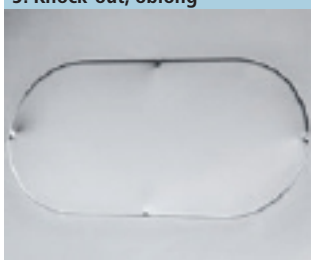
3. Countersink, serrated



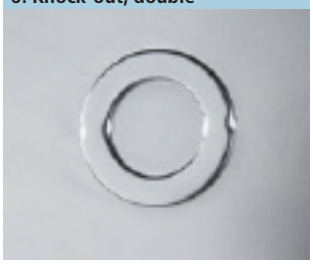
4. Countersink, serrated

## Knock-outs

5. Knock-out, oblong



6. Knock-out, double

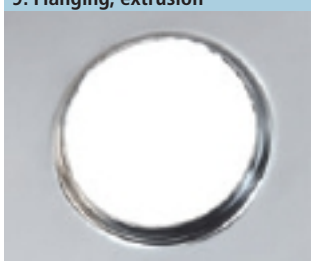


7. Knock-out, form

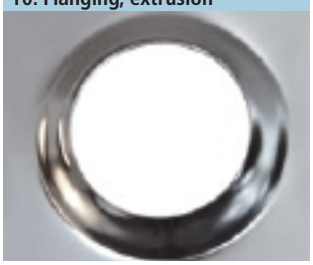
8. Knock-out, form

## Flangings

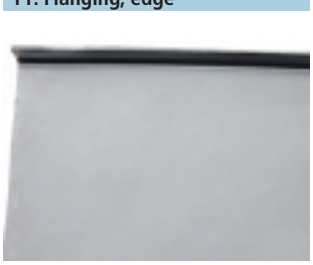
9. Flanging, extrusion



10. Flanging, extrusion



11. Flanging, edge

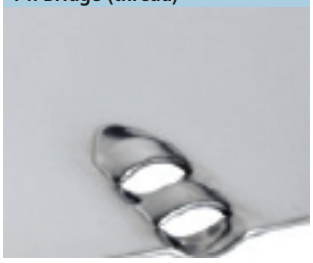


12. Flanging, form

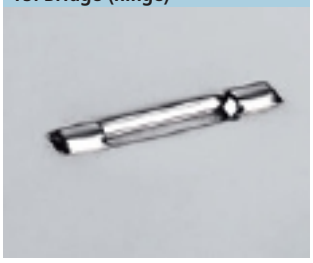
## Bridges

13. Bridge with offset

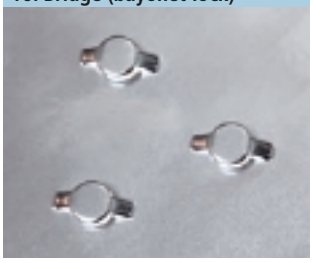
14. Bridge (thread)



15. Bridge (hinge)

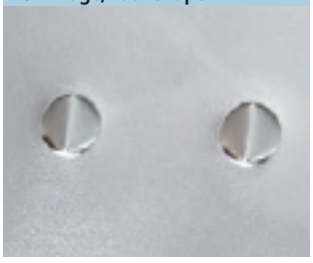


16. Bridge (bayonet lock)

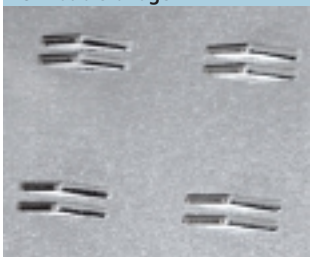


17. Bridge, roof shape

18. Bridge, roof shape



19. Double bridge



20. Bridge, roof shape

# Application examples of forming

## Card guides

21. Card guide

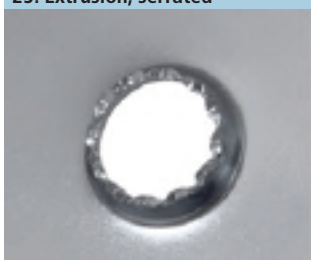
22. Card guide

## Extrusions

23. Extrusion, form

24. Extrusion, keyhole

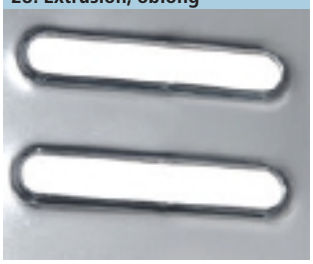
25. Extrusion, serrated



26. Extrusion (grip protection)

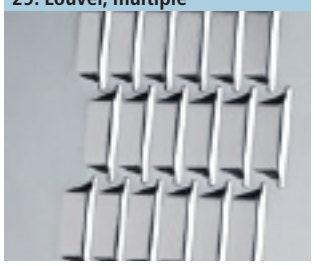
27. Extrusion, form

28. Extrusion, oblong

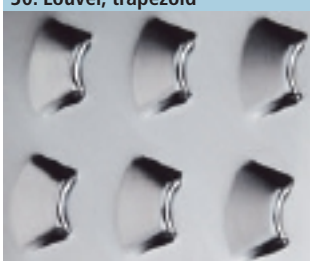


## Louvers

29. Louver, multiple



30. Louver, trapezoid

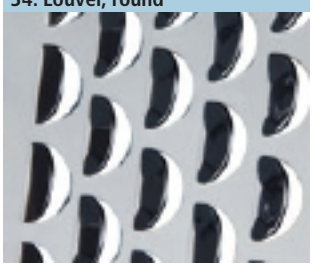


31. Louver, rectangle

32. Louver, trapezoid

33. Louver, rectangle

34. Louver, round



35. Louver, rectangle

36. Louver, form

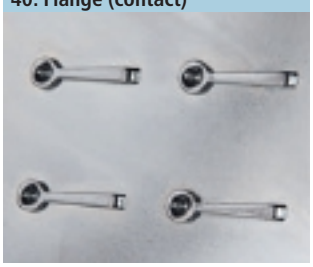
## Flanges

37. Flange, double

38. Flange, form

39. Flange, form

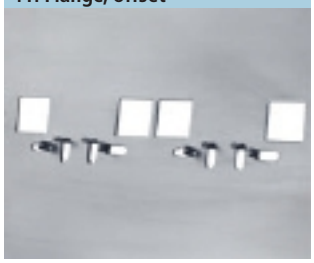
40. Flange (contact)



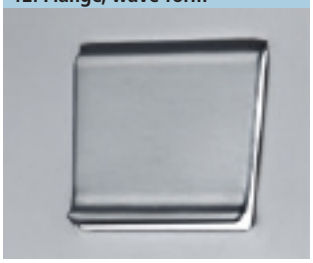
# Application examples of forming

## Flanges

41. Flange, offset



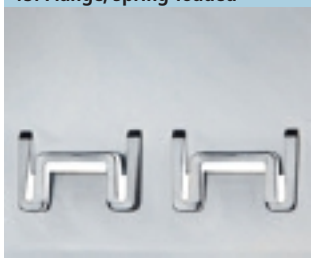
42. Flange, wave form



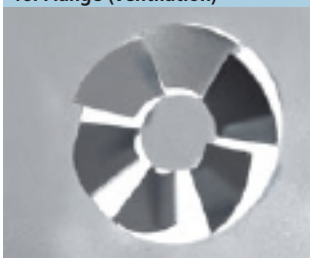
43. Flange, wave form

44. Flange, form

45. Flange, spring-loaded

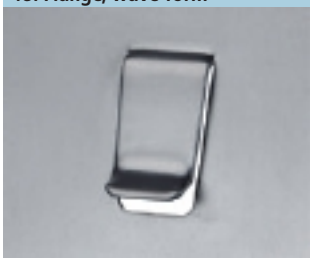


46. Flange (ventilation)



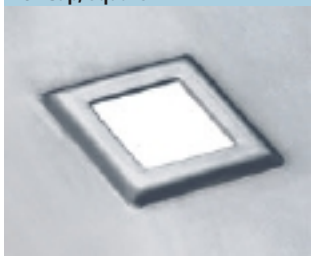
47. Flange, oblong

48. Flange, wave form

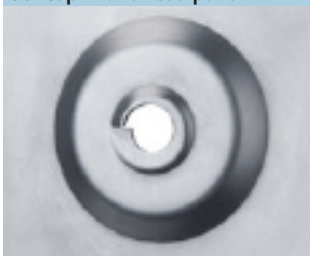


## Cups

49. Cup, square

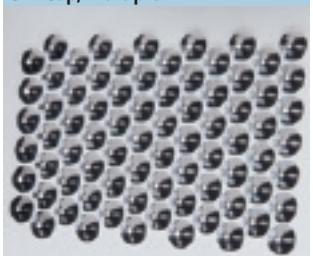


50. Cup with thread punch



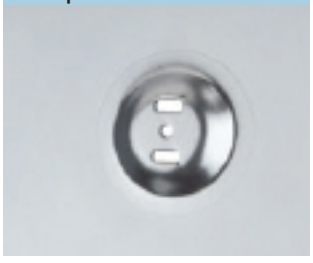
51. Cup, funnel form

52. Cup, multiple



53. Cup, hexagon

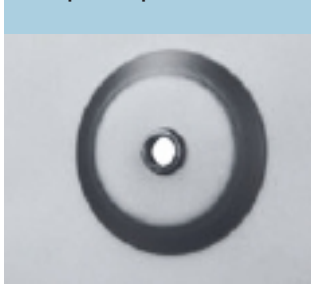
54. Cup with holes



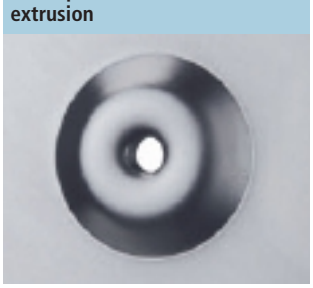
55. Cup, spherical

56. Cup, hexagon

57. Cup with upward extrusion

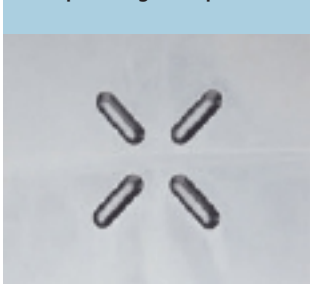


58. Cup with downward extrusion



59. Cup, hole

60. Cup, oblong, multiple

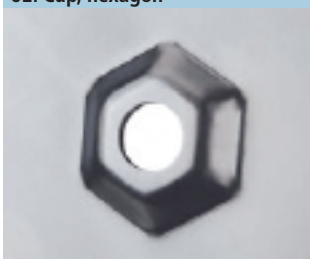


# Application examples of forming

## Cups

61. Cup, roof shape

62. Cup, hexagon

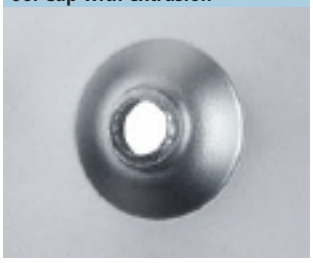


63. Cup, pyramid

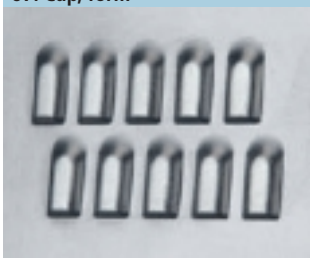
64. Cup, form

65. Cup, rectangle

66. Cup with extrusion



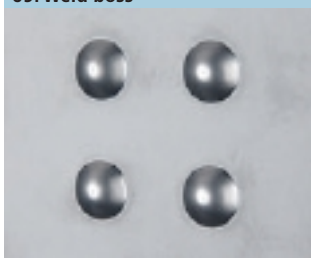
67. Cup, form



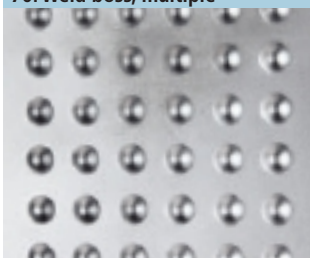
68. Cup, oblong

## Weld bosses

69. Weld boss



70. Weld boss, multiple

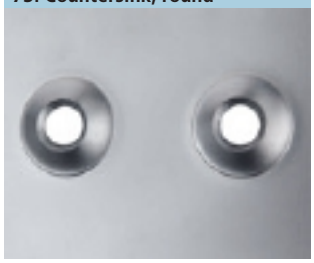


## Countersinks

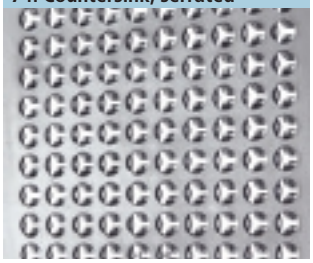
71. Countersink, teardrop

72. Countersink, nonslip structure

73. Countersink, round



74. Countersink, serrated

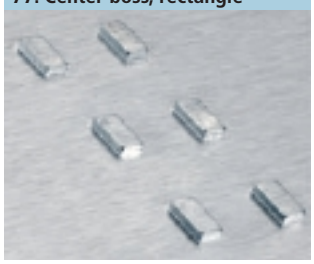


75. Countersink, square

76. Countersink, square hole

## Center bosses

77. Center boss, rectangle



78. Center boss, up-/downward

79. Center boss (braille)

80. Center boss with hole

Marking

# Always recognizable

## Marking with TRUMPF tools.

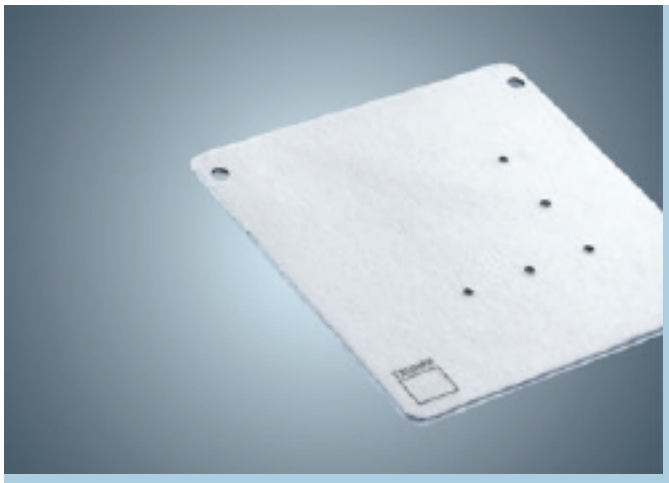
Whether it is intricate images or company logos, serial numbers, the year of manufacture, or a batch number: with tools from TRUMPF you can easily mark your components in a way tailored to your needs.

It is becoming increasingly important to identify sheet metal parts for production, legal, or quality assurance purposes. As different as the identification markings can be, they all have one thing in common: they create transparency and document the responsibility of the part manufacturer.

And regardless of how diverse your requirements or applications are, TRUMPF has the perfect solution for marking your components.

# Marking

# Center punch tool (upper side of the sheet)



| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 1.0 - 8.0 mm |
| **Center punch angle** | 60° / 90° / 120 ° |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Tool maintenance and setup | see p. 148 |
| Embossing quality | see p. 160 |
| Request form – Center punch tool | see p. 179 |

**Description and application**
Tool for creating center marks

**Your benefits at a glance**
- Cost-effective tool due to its simple construction
- Economical thanks to interchangeable center punch pins
- Used for positioning and centering for subsequent manual processing and mounting

## Item

**Punch**

| Order no. | EUR |
|---|---|
| 699261 | |

**Die size 1**

- Without hole

| Order no. | EUR |
|---|---|
| 213906 | |

**Spare center punch pin**

| Order no. | EUR |
|---|---|
| 699262 | |

**Important ordering specifications**
Machine, sheet thickness, material, center punch angle.

**Important ordering information**
The theoretical center punch depth is 0.3 - 0.8 mm, depending on the machine type and sheet thickness tolerance. The center punch depth can be improved using ram adjustment. Other dimensions on request. Please use our order forms in the appendix.

# Center punch tool (underside of the sheet)

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 1.0 - 8.0 mm |
| **Center punch angle** | 60° / 90° / 120 ° |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Tool maintenance and setup | see p. 148 |
| Embossing quality | see p. 160 |
| Request form – Center punch tool | see p. 179 |

**Description and application**
Tool for creating center marks

**Your benefits at a glance**
- Cost-effective tool due to its simple construction
- Economical thanks to interchangeable center punch pins
- Used for positioning and centering for subsequent manual processing and mounting

## Item

| Complete tool | | Punch | | Die | | Spare center punch pin | |
|---|---|---|---|---|---|---|---|
|  | |  | |  | |  | |
| Order no. | EUR | Order no. | EUR | Order no. | EUR | Order no. | EUR |
| 699927 | | 699928 | | 699929 | | 699930 | |

**Important ordering specifications**
Machine, sheet thickness, material, center punch angle.

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Spring element for die | 103469 | |

**Important ordering information**
The theoretical center punch depth is 0.3 - 0.8 mm, depending on the machine type and sheet thickness tolerance. The center punch depth can be improved using ram adjustment. Other dimensions on request. Please use our order forms in the appendix.

# Engraving tool


| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | Engraving |
| **Sheet thickness s** | 1.0 - 8.0 mm |
| **Depth and width of engraving** | 0.2 mm |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Embossing quality | see p. 160 |
| Order forms | see p. 175 |

**Description and application**
Tool for versatile marking of sheet metal parts in path mode

**Your benefits at a glance**
- Non-cutting marking results in outstanding inscription quality
- Marking pin with diamond tip made from wear-resistant material guarantees long service life
- Maximum contour versatility due to a narrow line width, e.g. for fine engravings

## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 1482545 | |

**Punch**

| Order no. | EUR |
|---|---|
| 1482544 | |

**Die**

| Order no. | EUR |
|---|---|
| 1482571 | |

**Marking pin**

| Order no. | EUR |
|---|---|
| 1482543 | |

**Important ordering specifications**
Machine, sheet thickness, material. The "engraving" machine option is a prerequisite.

## Accessories and single parts

**Item**

| Designation | Order no. | EUR |
|---|---|---|
| Replacement ball roller for the die | 0143498 | |

# Ink marking tool

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | |
| | Engraving |
| | Engraving/quick beading |
| **Sheet thickness s** | 1.0 - 8.0 mm |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Embossing quality | see p. 160 |
| Order forms | see p. 175 |


**Description and application**
Tool for the marking of all metal, non-metal and film-coated sheets

**Your benefits at a glance**
- All conceivable contours can be made in red or blue with the marker tip of the Edding 3000
- Imprint-free surfaces because there are no mechanical influences in the process
- The ink can be removed from the sheet using a solvent
- Easy ink refill thanks to the refill opening in the punch shank

## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 699247 | |

**Punch**

| Order no. | EUR |
|---|---|
| 699248 | |

**Die**

| Order no. | EUR |
|---|---|
| 1482571 | |

**Important ordering specifications**
Machine, sheet thickness, material. The "engraving" or the "engraving/quick beading" machine option is a prerequisite.

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Punch chucks | 2344065 | |
| Punch support plate | 2344066 | |
| Compression spring | 2345164 | |
| Set screw M6x6 | 13129 | |
| Screw M3x8 | 18511 | |
| Alignment rings size 0, 1 | 72061 | |
| Red ink refill (30ml) | 2344070 | |
| Blue ink refill (30ml) | 2344082 | |
| Red magnetic flap | 2344083 | |
| Blue magnetic flap | 2344085 | |
| Red wear package | 2348021 | |
| Blue wear package | 2348022 | |
| Tip | 2344069 | |
| Replacement ball roller for the die | 0143498 | |

# Marking tool (upper side of the sheet)

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | Engraving/quick beading |
| **Sheet thickness s** | 0.5 - 8.0 mm |
| **Marking depth** | 0.2 $^{\pm 0.05}$ mm |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Embossing quality | see p. 160 |
| Order forms | see p. 175 |

**Description and application**
Tool for versatile marking of sheet metal parts

**Your benefits at a glance**
- Fast processing speed due to operation in marking mode
- Can be used with all sheet thicknesses
- Cost-effective tool due to its simple construction

## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 720252 | |

**Punch**

| Order no. | EUR |
|---|---|
| 721501 | |

**Die size 1**

■ Without hole

| Order no. | EUR |
|---|---|
| 213906 | |

**Round stripper**

■ D = 20 mm

| Order no. | EUR |
|---|---|
| 159496 | |

**Important ordering specifications**
Machine, sheet thickness, material. The "engraving/quick beading" machine option is a prerequisite.

## Accessories and single parts

**Item**

| Designation | Order no. | EUR |
|---|---|---|
| Marking pin | 209003 | |

# Marking tool (underside of the sheet)

| | |
|---|---|
| **Machine type** | |
| TruPunch | 5000 |
| TruMatic | 7000 |
| **Required machine option** | Marking from below/Active die |
| **Sheet thickness s** | 1.0 - 8.0 mm |
| **Marking depth** | 0.2 $^{\pm 0.05}$ mm |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Embossing quality | see p. 160 |
| Order forms | see p. 175 |

**Description and application**
Tool for marking sheet metal parts from below

**Your benefits at a glance**
- Time-saving thanks to direct marking from below on the machine without turning the sheet over
- Avoids marks and scratches thanks to gentle counter-force of the sheet by the punch's plastic ball roller
- Reduced noise and vibration in the sheet in combination with the active die
- Use in combination with the calibration tool produces perfect results when there are sheet thickness fluctuations

## Item

| Complete tool | Complete punch | Complete die |
|---|---|---|
|  |  |  |
| Order no. 1733342 | Order no. 1733320 | Order no. 1733341 |
| EUR | EUR | EUR |

**Important ordering specifications**
Machine, sheet thickness, material. The "Marking from below/Active die" machine option is a prerequisite.

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Ball roller | 1735020 | |
| Tolerance ring | 343471 | |
| Marking pin | 1761095 | |
| Thread pin M14 x 1.5 | 61706 | |

Experience the **Marking tool (underside of the sheet)** in action
www.trumpf.info/5ygtl6

# Embossing tool – line

**Description and application**
Tool for embossing numbers and letters in a digital-style font, and for embossing lines and corners for positioning assembly parts

**Your benefits at a glance**
- Parts can be marked with flexibility using a wide range of letters and numbers
- Ideal for marking consecutive serial numbers
- Tool can be used for imprinting on the upper or underside of the sheet

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 1.0 - 8.0 mm |
| **Size of the symbol** | 3.0 / 4.0 / 5.0 / 6.0 / 8.0 mm |
| **Embossing depth** | $0.5^{+0.1}$ mm |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Tool maintenance and setup | see p. 148 |
| Embossing quality | see p. 160 |
| Order forms | see p. 175 |
| Request form – Embossing tool | see p. 190 |
| Request form – Embossing forming tool | see p. 191 |

## Item

### Complete tool

| Order no. | EUR |
|---|---|
| 699265 | |

### Punch

| Order no. | EUR |
|---|---|
| 699266 | |

### Die size 1

■ Without hole

| Order no. | EUR |
|---|---|
| 213906 | |

### Stripper

■ D = 32 mm

| Order no. | EUR |
|---|---|
| 161335 | |

**Important ordering specifications**
Machine, sheet thickness, material, line length.

# Embossing tool – symbol (upper side of the sheet)

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 1.0 - 3.0 mm |
| **Size of the symbol** | 4.0 / 5.0 / 6.0 / 8.0 / 10.0 / 12.0 mm |
| **Embossing depth** | |
| | 0.3 $^{+0.1}$ mm (A5 - A6) |
| | 0.5 $^{+0.1}$ mm (A8 - A12) |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Tool maintenance and setup | see p. 148 |
| Embossing quality | see p. 160 |
| Request form – Embossing tool | see p. 190 |
| Request form – Embossing forming tool | see p. 191 |

**Grounding symbol**

**Protective ground symbol**

**Noiseless ground**

**Chassis ground**

**Description and application**
Tool for embossing individual symbols or logos

**Your benefits at a glance**
- Many standard symbols (e.g. ground symbols, protection symbols) available in different dimensions
- Tool can be used for upper and underside of the sheet
- Customized symbols and logos can be produced on request

## Item

### Complete tool

| Order no. | EUR |
|---|---|
| 699269 | |

### Punch

| Order no. | EUR |
|---|---|
| 699270 | |

### Die size 1

- Without hole

| Order no. | EUR |
|---|---|
| 213906 | |

### Stripper

- D = 32 mm

| Order no. | EUR |
|---|---|
| 161335 | |

**Important ordering specifications**
Machine, sheet thickness, material, symbol, symbol size, embossing depth if necessary.

**Important ordering information**
The nominal size does not correspond to the actual size of the embossing symbol. The actual size is derived from the "primary standard" according to DIN 40011. Other dimensions on request. Please use our order forms in the appendix.

# Embossing tool – symbol (underside of the sheet)

**Description and application**
Tool for embossing individual symbols or logos

**Your benefits at a glance**
- Many standard symbols (e.g. ground symbols, protection symbols) available in different dimensions
- Tool can be used for upper and underside of the sheet
- Customized symbols and logos can be produced on request

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | 1.0 - 6.0 mm |
| **Size of the symbol** | 4.0 / 5.0 / 6.0 / 8.0 / 10.0 / 12.0 mm |
| **Embossing depth** | |
| | $0.3^{+0.1}$ mm (A5 - A6) |
| | $0.5^{+0.1}$ mm (A8 - A12) |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Tool maintenance and setup | see p. 148 |
| Embossing quality | see p. 160 |
| Request form – Embossing tool | see p. 190 |
| Request form – Embossing forming tool | see p. 191 |

**Grounding symbol**

**Protective ground symbol**

## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 699953 | |

**Punch**
**Sheet thickness 1.0 - 6.0 mm**

| Order no. | EUR |
|---|---|
| 699954 | |

**Die**

| Order no. | EUR |
|---|---|
| 699955 | |

**Important ordering specifications**
Machine, sheet thickness, material, symbol, symbol size, embossing depth if necessary.

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Die insert, single | 699956 | |

**Important ordering information**
The nominal size does not correspond to the actual size of the embossing symbol. The actual size is derived from the "primary standard" according to DIN 40011. Other dimensions on request. Please use our order forms in the appendix.

# Embossing tool – numbers and letters (upper side of the sheet)

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 190 R, 200 R, 240 L, 260 L, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Sheet thickness s** | |
| | 1.0 - 6.0 mm |
| | 1.0 - 8.0 mm (TruPunch 5000/TC5000R, TruMatic 6000/TC6000L, TruMatic 7000) |
| **Font size (according to DIN 1451-B)** | A3 / A4 / A5 |
| **Embossing depth** | 0.3 $^{+0.1}$ mm |
| **Useful information** | |
| Punching tool accessories | see p. 116 |
| Tool maintenance and setup | see p. 148 |
| Embossing quality | see p. 160 |
| Order forms | see p. 175 |
| Request form – Embossing tool | see p. 190 |
| Request form – Embossing forming tool | see p. 191 |

**Description and application**
Tool for marking components with a fixed character string

**Your benefits at a glance**
- Interchangeable embossing inserts ensure maximum versatility
- Many standard font sizes in stock
- Tool can be used for imprinting on the upper or underside of the sheet

## Item

**Complete tool**

- Complete (incl. blank types)

| Order no. | EUR |
|---|---|
| 699273 | |

**Punch**

- Complete (incl. blank types)

| Order no. | EUR |
|---|---|
| 699274 | |

**Die size 2**

- Without hole

| Order no. | EUR |
|---|---|
| 60766 | |

**Important ordering specifications**
Machine, sheet thickness, material, font size.

## Embossing inserts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Numbers 0-9 (single) | 699275 | |
| Letters A-Z/Ä,Ö,Ü (single) | 699275 | |
| Special characters / - . (single) | 699275 | |
| Blank types/spaces (single) | 699275 | |
| Set of numbers 0-9, A3 | 540668 | |
| Set of numbers 0-9, A4 | 540672 | |
| Set of numbers 0-9, A5 | 540677 | |

**Important ordering information**
Also available for TC 240 R and TC 260 R on request. This requires a height-adjustable die (order no. 075571) and a setup cartridge (order no. 201781). The quantity of numbers that can be placed in the holder is determined by the font size. With font size A3 / A4 a maximum of 12 inserts can be integrated into the holder. With font size A5 the maximum number of inserts is 10.

# Embossing MultiTool Easy Type


**Description and application**
The TRUMPF innovation for embossing the alphabet and all numbers with a single tool

**Your benefits at a glance**
- Just one tool with five inserts is required for embossing the alphabet and numbers
- TruTops support makes programming as simple as possible
- Different letter sizes are available

| **Machine type** | |
|---|---|
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | MultiTool |
| **Sheet thickness s** | 0.5 - 8.0 mm |
| **Font size** | 4,0 / 5,0 / 6,0 / 8,0 / 10,0 mm |
| **Embossing depth** | max. 0.4 mm |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Embossing quality | see p. 160 |
| Order forms | see p. 175 |

## Item

**Complete tool**

- Including embossing inserts and stripper

| Order no. | EUR |
|---|---|
| 699283 | |

**Punch**

- Including embossing inserts

| Order no. | EUR |
|---|---|
| 699284 | |

**Single embossing insert**

| Order no. | EUR |
|---|---|
| 699285 | |

**Die size 2**

- Without hole

| Order no. | EUR |
|---|---|
| 60766 | |

**Important ordering specifications**
Machine, sheet thickness, material, font size. The "MultiTool" machine option is a prerequisite.
Single embossing insert: machine, sheet thickness, material, letter height, slot number in MultiTool.

## Accessories and single parts

| **Item** | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Stripper | 629161 | |

Experience the **Embossing MultiTool Easy Type** in action
www.trumpf.info/q5scpa

# Embossing MultiTool 10-station (upper side of the sheet)

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 2020, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | MultiTool |
| **Sheet thickness s** | |
| | 0.5 - 6.0 mm |
| | 1.0 - 8.0 mm (TruPunch 5000/TC5000R, TruMatic 6000/TC6000L, TruMatic 7000) |
| **Font size** | 4,0 mm |
| **Embossing depth** | 0.5 $^{+0.1}$ mm |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Embossing quality | see p. 160 |
| Order forms | see p. 175 |

**Description and application**
Tool for versatile embossing in MultiTool mode

**Your benefits at a glance**
- The tool has 10 embossing inserts that can be actuated individually for flexible and fast embossing
- Easy programming in TruTops
- Many standard and special characters are available

## Item

**Punch holder**

- Without embossing inserts

| Order no. | EUR |
|---|---|
| 630593 | |

**Die size 2**

- Without hole

| Order no. | EUR |
|---|---|
| 60766 | |

**Stripper**

| Order no. | EUR |
|---|---|
| 641046 | |

**Important ordering specifications**
Machine, sheet thickness, material, selection of embossing inserts (see below). The "MultiTool" machine option is a prerequisite.

## Embossing inserts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Numbers 0-9 (single) | 699279 | |
| Letters A-Z (single) | 699279 | |
| Special characters / - . (single) | 699279 | |

# Calibration tool

| | |
|---|---|
| **Machine type** | |
| TruPunch | 1000, 2000, 3000, 5000 |
| TruMatic | 1000, 3000, 6000, 7000 |
| TC | 1000 R, 3000 R, 3000 L, 5000 R, 6000 L |
| **Required machine option** | Adaptive stroke calibration |
| **Sheet thickness s** | 0.5 - 8.0 mm |
| **Accuracy** | ± 0.03 mm |
| **Useful information** | |
| Tool maintenance and setup | see p. 148 |
| Embossing quality | see p. 160 |
| Order forms | see p. 175 |

**Description and application**
Tool for measuring the exact sheet thickness – patented process that compensates for any variations in the sheet thickness

**Your benefits at a glance**
- Tool setup with integrated alignment ring and die carrier provide outstanding dimensional accuracy and repeatability
- Rejects and manual intervention are eliminated because the tool automatically compensates for variations in the sheet thickness

## Item

**Complete tool**

| Order no. | EUR |
|---|---|
| 1312897 | |

**Punch**

| Order no. | EUR |
|---|---|
| 1312892 | |

**Die**

| Order no. | EUR |
|---|---|
| 1312844 | |

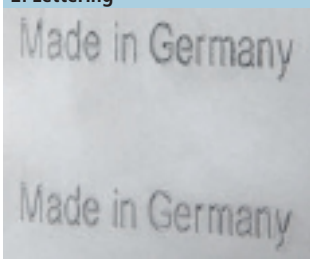
**Important ordering specifications**
Machine, sheet thickness, material. The "adaptive stroke calibration" machine option is a prerequisite.

# Application examples of marking

## Embossing

**1. Lettering**

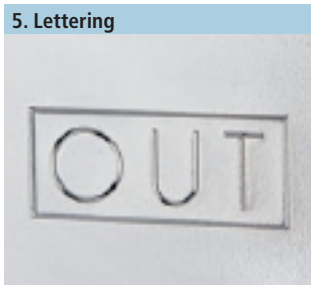

**2. Lettering**



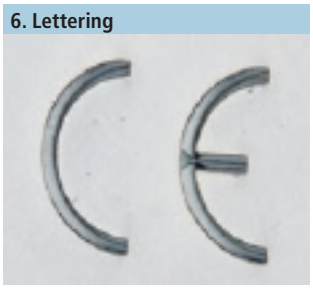

**3. Lettering**


**4. Warning**

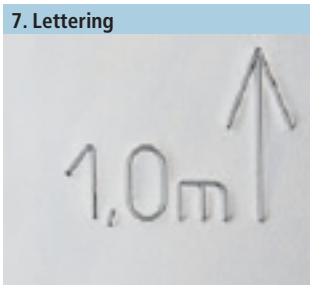
**5. Lettering**



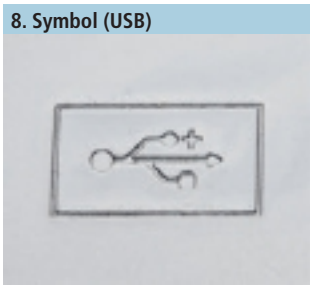

**6. Lettering**



**7. Lettering**

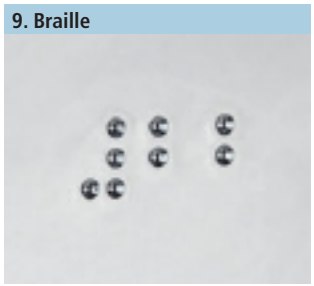



**8. Symbol (USB)**

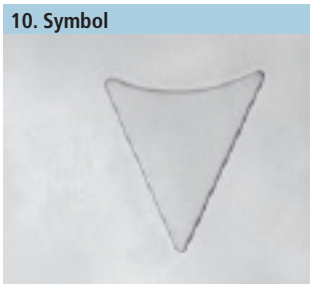


## Embossed forms

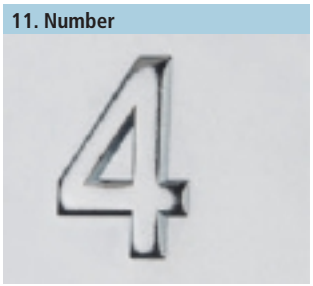
**9. Braille**



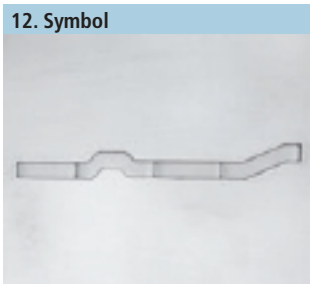
**10. Symbol**



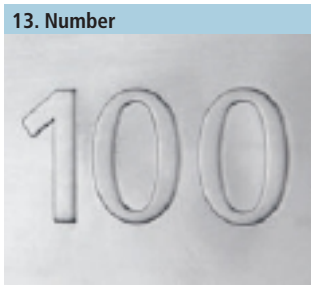
**11. Number**



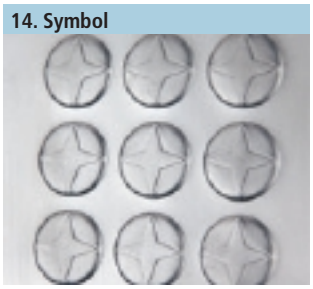

**12. Symbol**



**13. Number**

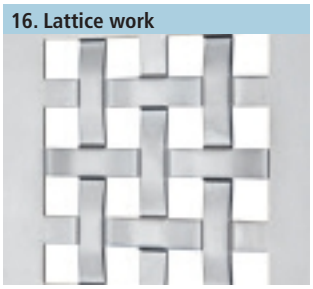



**14. Symbol**



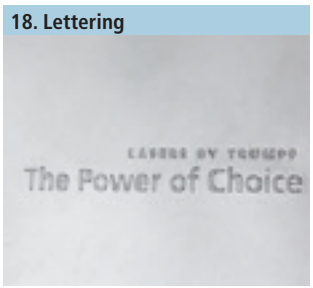
**15. Lattice work**

**16. Lattice work**

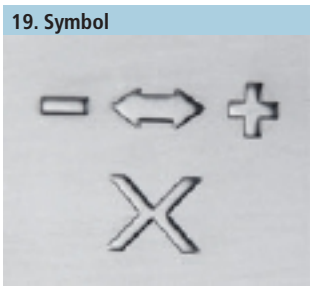


**17. Protective ground symbol**

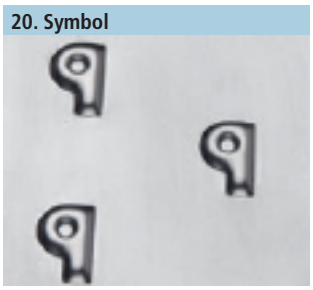
**18. Lettering**




**19. Symbol**



**20. Symbol**



# Fully equipped for punching

## Accessories for TRUMPF tools.

To produce a flawless punching finish, it is crucial that the settings are exact and the tools are regularly reground. We provide you with the appropriate accessories to make setting up and maintaining your punching tools as convenient, time-saving, and effective as possible.

Our product range includes accessories for easy setup, such as our EasyUse shim, intelligent products for low-scratch processing, and additional equipment for all aspects of the punching process. The QuickSharp from TRUMPF ensures your tools are perfectly ground and the QuickSet ensures your punching tools have the correct settings. With the RTC tool cartridges, you and your machines can change tools in no time at all.

# Accessories

# Punching tool accessories

## Alignment rings

**Alignment ring size 0 and 1**

| Order no. | EUR |
|---|---|
| 72061 | |

**Alignment ring size 2**

| Order no. | EUR |
|---|---|
| 72062 | |

**Alignment ring for reinforced punch**

| Order no. | EUR |
|---|---|
| 201519 | |

## Punch chucks

**Punch chuck**

■ Size 0 (D = 6.0 mm)

| Order no. | EUR |
|---|---|
| 150159 | |

**Punch chuck**

■ Size 0 (D = 10.5 mm)

| Order no. | EUR |
|---|---|
| 150162 | |

## Intermediate rings

**Intermediate ring**

| Order no. | EUR |
|---|---|
| 60216 | |

**Intermediate ring with brush insert**

■ To prevent scratches

| Order no. | EUR |
|---|---|
| 746088 | |

**Intermediate ring with Ampco insert**

■ To prevent scratches

| Order no. | EUR |
|---|---|
| 1350349 | |

# Punching tool accessories

## Adhesive pads

### Adhesive pad for stripper

| Order no. | EUR |
|---|---|
| 260186 | |

### Adhesive pad for intermediate ring

| Order no. | EUR |
|---|---|
| 260188 | |

### Adhesive pad for die size 2

| Order no. | EUR |
|---|---|
| 260187 | |

### Adhesive pad for separating die

| Order no. | EUR |
|---|---|
| 725432 | |

### Adhesive pad for square die

| Order no. | EUR |
|---|---|
| 725512 | |

## Other small parts

### Lock spring for die keyway

■ 10 pieces

| Order no. | EUR |
|---|---|
| 55154 | |

### Clamping pins for stripper

■ 10 pieces

| Order no. | EUR |
|---|---|
| 31429 | |

### MultiTool pins

■ 1 pieces

| Order no. | EUR |
|---|---|
| 146927 | |

# Punching tool accessories

## EasyUse shims

The patented EasyUse shims come complete with a hole-based identification system (a hole corresponds to a thickness of 0.1 mm). This means that you can quickly and easily find the right shim to place underneath the reground die. Additional information on setup and tool maintenance can be found in the "Useful information" chapter under "Tool maintenance and setup".

**Shim set size 1**

| Order no. | EUR |
|---|---|
| 60067 | |

**Shim 0.1 mm size 1**

| Order no. | EUR |
|---|---|
| 59888 | |

**Shim 0.3 mm size 1**

| Order no. | EUR |
|---|---|
| 59890 | |

**Shim 0.5 mm size 1**

| Order no. | EUR |
|---|---|
| 59891 | |

**Shim set size 2**

| Order no. | EUR |
|---|---|
| 60068 | |

**Shim 0.1 mm size 2**

| Order no. | EUR |
|---|---|
| 59384 | |

**Shim 0.3 mm size 2**

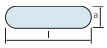
| Order no. | EUR |
|---|---|
| 59385 | |

**Shim 0.5 mm size 2**

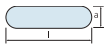
| Order no. | EUR |
|---|---|
| 59386 | |

## Spring elements for punch size 1

**Spring element for punch size 1 (short version)**

| | | Order no. | EUR |
|---|---|---|---|
| Round |  | 699840 | |
| Square |  | | |
| Rectangle |  | | |
| Oblong |  | | |

**Spring element for punch size 1 (long version)**

| | | Order no. | EUR |
|---|---|---|---|
| Round |  | 699840 | |
| Square |  | | |
| Rectangle |  | | |
| Oblong |  | | |

**Important ordering specifications**
Machine, form, dimensions.

# RTC tool cartridge

| | |
|---|---|
| **Application range** | |
| Tool type | All tools size 0, 1, and 2 |
| **Technical data** | |
| Weight (without tools) | 0.6 kg |
| Material of die base | Fiber-reinforced plastic |
| **Ordering information** | |
| Order no. | 2258880 |
| EUR | |

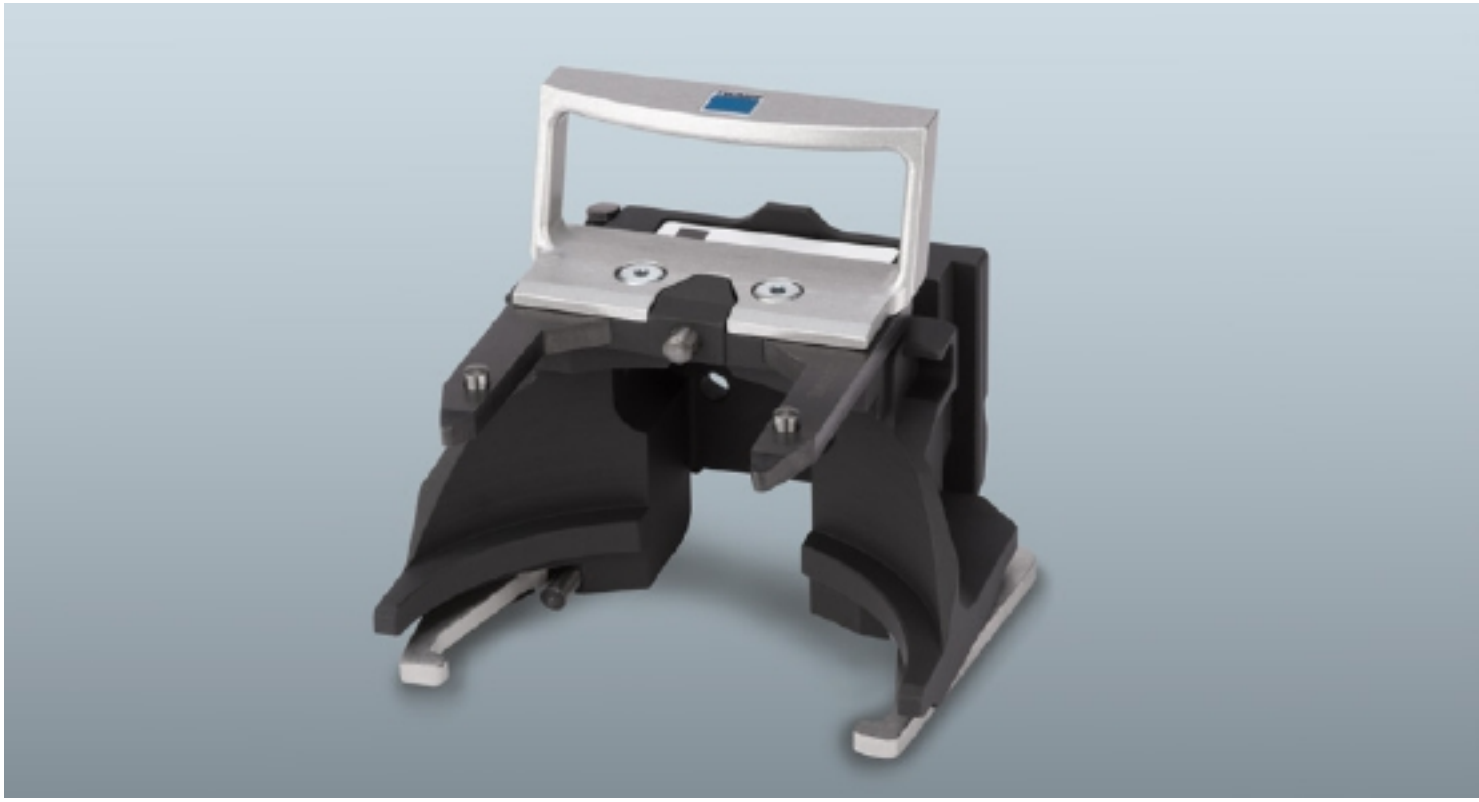
**Description and application**
The new generation of the original standard tool cartridge from TRUMPF made out of fiber-reinforced plastic for maximum productivity and reliable tool change

**Your benefits at a glance**
- Low weight for high acceleration values and productivity
- Long service life
- Quick and reliable punching tool change
- Secure grip on tools, holding even heavy tools firmly thanks to optimally supported cartridge arms
- Efficient handling with the ergonomic handle and integrated carrying aid to transport three tool cartridges at a time in one hand
- Easy tool organization by machine program, application or sheet thickness using color-coded cartridge identification with five possible color clips

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Die carrier | 0222137 | |
| Storage medium (magnetic) | 0909671 | |
| Color clip blue | 2055137 | |
| Color clip green | 2055136 | |
| Color clip yellow | 2055139 | |
| Color clip orange | 2055138 | |
| Color clip light gray | 2055135 | |

# Tool cartridge size 5



| | |
|---|---|
| **Application range** | |
| Tool type | All size 5 tools |
| **Technical data** | |
| Weight (without tools) | 0.9 kg |
| Material of die base | Aluminum |
| **Ordering information** | |
| Order no. | 1500495 |
| EUR | |

**Description and application**
The original tool cartridge from TRUMPF for the reliable setup of tools size 5

**Your benefits at a glance**
- Top acceleration values on the machine with reinforced retaining springs
- The cartridge arms are specially heat treated, resulting in a longer service life
- High stability level for heavy tools size 5 due to the aluminum die base

**Important ordering information**
When using a size 5 tool cartridge in machines with ToolMaster, an additional modification kit is required (order no. 1550283).

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Adapter (for stripper) | 1633067 | |
| Information carrier (magnetic) | 0909671 | |

# Steel tool cartridge – universal

| | |
|---|---|
| **Application range** | |
| Tool type | All tools size 0, 1 and 2 |
| **Technical data** | |
| Weight (without tools) | 2.3 kg |
| Material of die base | Steel |
| **Ordering information** | |
| Order no. | 1602725 |
| EUR | |

**Description and application**
The original steel cartridge from TRUMPF for secure tool change

**Your benefits at a glance**
- Fast and reliable change of punching tools
- Secure grip on tools due to the extra strong springs
- The cartridge arms are specially heat treated, resulting in a longer service life
- Efficient handling due to the ergonomic handle
- Long service life

**Important ordering information**
Steel tool cartridge – universal required with the TC 500 R with ToolMaster, TC 600 L with ToolMaster, TC 6000 L with ToolMaster and TruMatic 6000 (K01) with ToolMaster.

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Die carrier | 0222137 | |
| Information carrier (magnetic) | 0909671 | |

# QuickSharp

| | |
|---|---|
| **Application range** | |
| Tool type | All TRUMPF punching tools |
| Shear | flat, beveled (Whisper, roof) |
| **Technical data** | |
| Space requirements | 630 x 780 mm |
| Weight | 415 kg |
| Height | 1,835 mm |
| Grinding area (ø x Z) | 100 x 99.9 mm |
| Grinding wheel (ø) | 125 mm (CBN) |
| Grinding drive speed | 4,600 rpm |
| **Scope of delivery** | |
| QuickSharp | |
| Punching fixture for Whisper shear with adjustment aid | |
| Pulling fixture | |
| Clamping fixture for reinforced dies | |
| 10 paper band filters | |
| 5 l cooling lubricant concentrate | |
| Setup aids | |
| Documentation | |
| **Ordering information** | |
| Order no. | 358910 |
| EUR | |

**Description and application**
The fully automatic QuickSharp tool grinding device is the perfect solution for regrinding your TRUMPF punching tools

**Your benefits at a glance**
- Simple, safe grinding process and user-friendly operation
- Outstanding surface finish with the front grinding process for long service life
- Integrated clamping tool provides intelligent tool clamping
- Simple regrinding process, even for punches with shears such as the Whisper or roof shear
- Automatic tool length measurement

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Boron nitride grinding wheel | 0032498 | |
| 5 l cooling lubricant concentrate | 1645498 | |
| Filter package | 1234583 | |
| Corundum brick | 0038843 | |
| Universal clamping fixture for grinding | 1242673 | |
| MultiShear punch adapter | 1295486 | |
| Stepped clamping fixture for MultiTool die | 1247313 | |
| Punch grinding fixture for Whispertool punch | 1214030 | |

Experience the **QuickSharp** in action
www.trumpf.info/1wmxz0

# QuickGrind


| | |
|---|---|
| **Application range** | |
| Tool type | All TRUMPF punching tools |
| Shear | flat, beveled (Whisper, roof) |
| **Technical data** | |
| Space requirements | 520 x 820 mm |
| Weight | 150 kg |
| Height | 675 mm |
| Grinding wheel (ø) | 125 mm (CBN) |
| Grinding drive speed | 4,200 rpm |
| **Scope of delivery** | |
| QuickGrind | |
| 1 hook wrench | |
| 1 l cooling lubricant concentrate | |
| Documentation | |
| **Ordering information** | |
| Order no. | 1250244 |
| EUR | |

**Description and application**
The easy-to-use QuickGrind manual tool grinding device for TRUMPF punching tools

**Your benefits at a glance**
- Easy grinding process by manual placement and feed
- Integrated tool clamping for safe, reliable handling
- Low investment costs
- Punches with shears, such as the Whisper or roof, can also be reground

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| 1 l cooling lubricant concentrate | 1651216 | |
| Grinding wheel | 0357935 | |
| Sieve | 0357933 | |

Experience the **QuickGrind** in action
www.trumpf.info/1wmxz0

# QuickSet (KS51)

| | |
|---|---|
| **Application range** | |
| Tool type | All TRUMPF punching tools |
| Shear | Flat, beveled (Whisper, roof) |
| **Technical data** | |
| Space requirements | 523 x 450 mm |
| Weight | 48 kg |
| Height | 581 mm |
| **Scope of delivery** | |
| QuickSet | |
| Reference disc | |
| Alignment block | |
| Tool setup aid | |
| Supply and power cable (global use) | |
| Documentation | |
| **Ordering information** | |
| Order no. | 2658171 |
| EUR | |

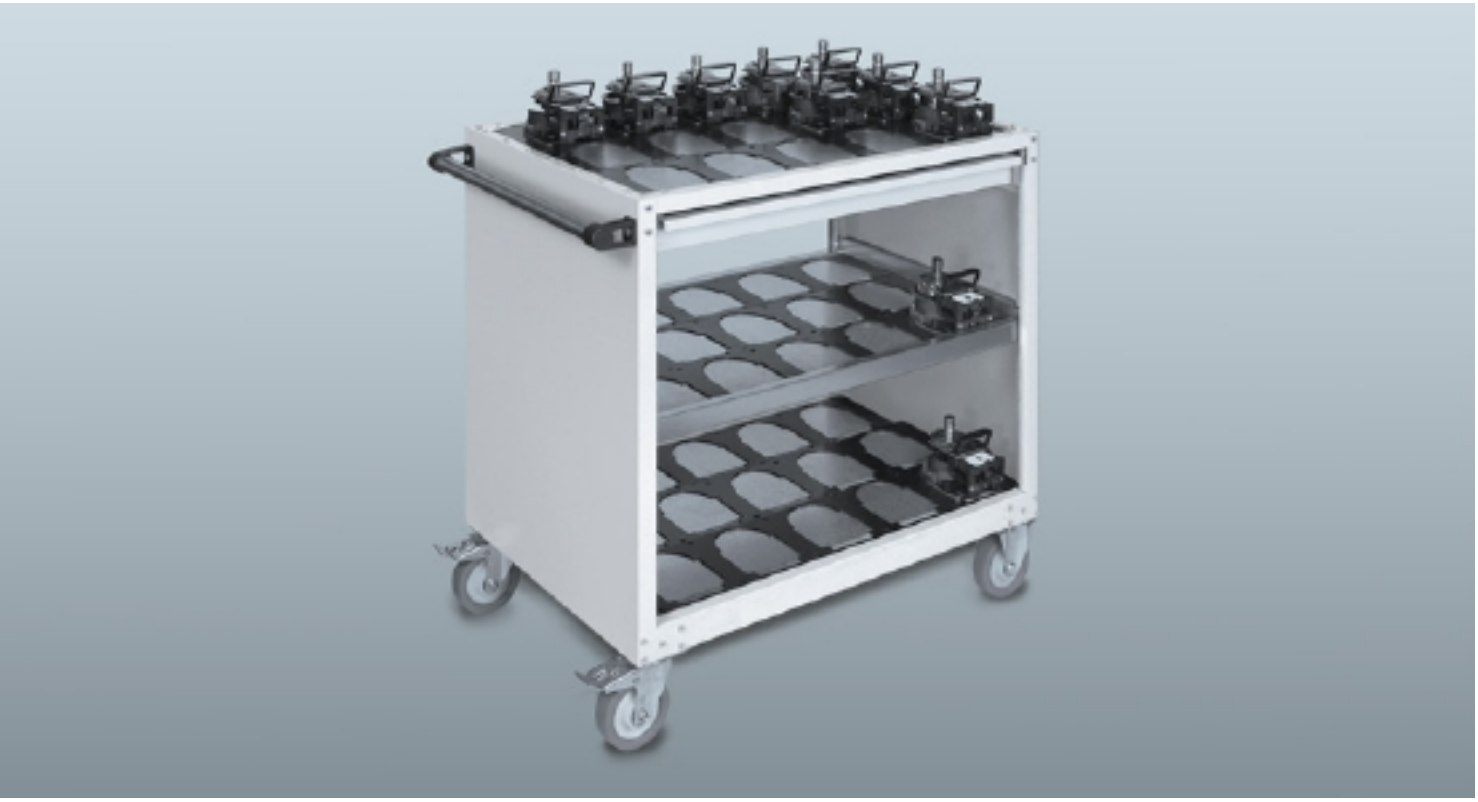
**Description and application**
The new generation of our tried and proven punching tool measuring device QuickSet.
A combination of QuickSet and QuickLoad in one device.
It enables the quick and precise setup of punching tools for long tool service lives and optimal processing results.

**Your benefits at a glance**
- Shorter setup time (up to 40% time savings per tool)
- Determination of all of the needed tool parameters in one measuring stroke.
- Tool setup performed directly in the setup cartridge.
- TRUMPF punching tool (lower case) are set up quickly and reliably
- Precise alignment of punch and die
- Aligning the punch and alignment ring is simple
- Easily check the cutting clearance between the punch and die using a test stroke

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Tool holder for stripper | 979815 | |

# Punching Tool Cart



| | |
|---|---|
| **Application range** | |
| Tool type | All TRUMPF punching tools |
| Tool cartridges | RTC tool cartridge, tool cartridge size 5, steel tool cartridge – universal |
| **Technical data** | |
| Number of cartridge stations | 45 |
| Space requirements | 582 x 1,002 mm |
| Weight | 78 kg |
| Height | 922 mm |
| Max. load | 400 kg |
| **Ordering information** | |
| Order no. | 1948969 |
| EUR | **On demand** |

**Description and application**
The Punching Tool Cart makes it possible to transport previously set up tool cartridges quickly and conveniently from the setup station to the machine

**Your benefits at a glance**
- Comprehensive overview of the tool cartridges with 45 stations
- Simple loading and unloading of set-up tool cartridges
- Easy to steer and position with its 2 fixed rollers, 2 pivotal rollers and parking brake
- Pull-out holder which can be mounted on either side for the setup plan and accompanying documents
- Solid stainless steel handle for reliable placement

# Punching Tool Cabinet

| Application range | |
|---|---|
| Tool type | All TRUMPF punching tools |
| Tool cartridges | RTC tool cartridge, tool cartridge size 5, steel tool cartridge – universal |

| Technical data | |
|---|---|
| Number of storage spaces | up to 700 punching tools |
| Space requirements | 1,040 x 1,050 mm |
| Height | 1,240 mm |
| Weight (without tools) | 380 kg |

**Scope of delivery**

- Punching Tool Cabinet
- 4 shelves for punch size 1 and 2
- 4 shelves for die size 1
- 4 shelves for size 2 dies and strippers
- 4 shelves for strippers
- 2 shelves for shape tools and special tools
- 2 shelves for tool cartridges
- 3 shelves for punch size 0 and alignment rings
- 2 shelves for cutting blades
- Documentation

| Ordering information | |
|---|---|
| Order no. | 383987 |
| EUR | |

**Description and application**
The Punching Tool Cabinet is a place to store your tools cleanly, and in a clearly organized way, providing more order and efficiency in production

**Your benefits at a glance**
- Ergonomic tool handling with the perfectly designed pull-out cabinet
- Reduced setup times because of clear organization and easily accessibility of tools
- Safe and secure storage of tools with specially designed tool holders
- Moving the cabinet is quick and easy with the practical notches for forklifts
- Outstanding quality and maximum occupational safety due to a wheel load of up to 900 kg for each vertical pull-out compartment
- Dust-free storage means that tool cleaning time is reduced

## Accessories and single parts

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Shelf for punch size 1 and 2 | 383965 | |
| Shelf for size 2 die and stripper | 383978 | |
| Shelf for special tools and shape tools | 383979 | |
| Shelf for punch size 0 and alignment rings | 383980 | |

| Item | | |
|---|---|---|
| **Designation** | **Order no.** | **EUR** |
| Shelf for size 1 die | 383981 | |
| Shelf for stripper | 383983 | |
| Shelf for tool cartridges | 383984 | |
| Shelf for cutting blades | 383985 | |

# Consumables and additional equipment

## Setup aids

### Tool setup aid

- Setting up tool cartridges

| Order no. | EUR |
|---|---|
| 232090 | |

### Tool adjustment aid

- Aligning punch and alignment ring

| Order no. | EUR |
|---|---|
| 937592 | |

### Lever

- Removing the tools in the linear magazine

| Order no. | EUR |
|---|---|
| 259684 | |

### Operating tool

- Removing a jammed die

| Order no. | EUR |
|---|---|
| 919978 | |

## Punching and nibbling oil

### Punching and nibbling oil - 500 ml spray

| Order no. | EUR |
|---|---|
| 111309 | |

### Punching and nibbling oil - 10 l container

| Order no. | EUR |
|---|---|
| 111311 | |

**Application range**
Spray lubrication of punch and die for processing steel and stainless steel.

## Akamin cutting oil

### Akamin cutting oil - 1 l container

| Order no. | EUR |
|---|---|
| 125874 | |

### Akamin cutting oil - 20 l container

| Order no. | EUR |
|---|---|
| 61461 | |

**Application range**
Spray lubrication of punch and die for processing aluminum and aluminum alloys.

## Lubricant for punches and dies

### Gadus S2 V220 - 0.5 kg

- For MultiUse punching tool

| Order no. | EUR |
|---|---|
| 40265 | |

### Microlube GL 261 - 1 kg

- For MultiBend and roller tools

| Order no. | EUR |
|---|---|
| 106491 | |

### Gleitmo 805 - 1 kg

- For tapping punch

| Order no. | EUR |
|---|---|
| 98749 | |

## Variocut C462 tapping oil

### Variocut C462 - 1 l container

| Order no. | EUR |
|---|---|
| 116941 | |

### Variocut C462 - 20 l container

| Order no. | EUR |
|---|---|
| 116938 | |

**Application range**
Spray lubrication for tapping aluminum and aluminum alloys.

## Variocut B30 tapping oil

### Variocut B30 - 1 l container

| Order no. | EUR |
|---|---|
| 124302 | |

### Variocut B30 - 20 l container

| Order no. | EUR |
|---|---|
| 113149 | |

**Application range**
Spray lubrication for tapping mild and stainless steel.

# Knowing how

## Useful information on TRUMPF tools.

Different issues and problems occur during production. For example, how do you avoid scratches, or how can you increase the service life of your tool? In addition to answering these questions, this chapter contains important basic information on punching. Images, examples from experience, cutting clearance tables, and explanations on punch lengths and the correct stripper selection enable improved understanding of the punching process.

If you find that your question has not been answered, please contact us. We would be happy to help you.

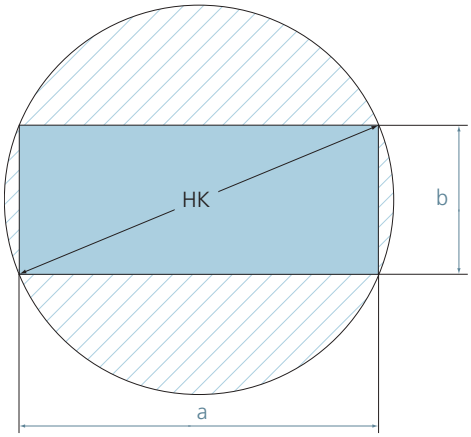
# Useful information

# Dimensions and regrinding

With punching, there are a variety of important dimensions to consider. They don't just include the dimension of the cut geometry, but also the punch length and permissible reduction in the tool length caused by regrinding.

## Outer circle

**Outer circle (OC) using a rectangle as an example**

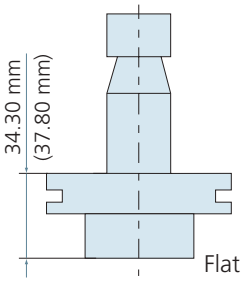



Outer circle = $\sqrt{(a^2+b^2)}$

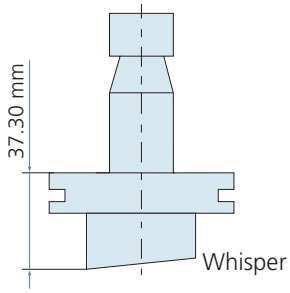
■ The outer circle is the circle that completely surrounds the punching geometry.

## Punch lengths

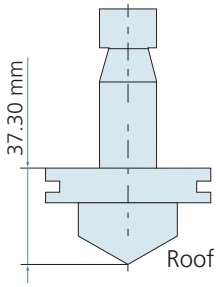
**Punch lengths of different shear types**




■ Punch with flat cutting surface




■ Punch with beveled cutting surface in Whisper form




■ Punch with beveled cutting surface in roof form

Punches with flat cutting surfaces are available in the flat version (34.3 mm) and in the long, flat version (37.8 mm). The length is measured from the upper edge of the alignment ring to the end of the tool. A punch with a length of 37.8 mm is advantageous because of the greater regrinding length and the faster stroke rate when the presser foot is active.
All current TRUMPF punching machines (e.g. TruPunch 1000) can be fitted with flat punches of both lengths; older machines (e.g. TC 500 R) can only be fitted with the shorter version.

## Rule of thumb

The general rule of thumb is: punch width = at least sheet thickness s. For punch dimensions that are smaller than the sheet thickness, it is advisable to use punches with a guided cutting edge.

# Dimensions and regrinding

## Regrind amounts

| Tool | Tool component | Tool length (in mm) | Regrind amount (in mm) |
|---|---|---|---|
| Classic System | Punch, flat | 34.3 | 3.0 |
| | Punch, flat, long | 37.8 | 6.5 |
| | Punch, beveled (Whisper, roof) | 37.3 | 3.0 |
| | Die size 1 | 18.0 | 1.0 |
| | Die size 2 | 20.0 | 1.0 |
| MultiShear | Punch | 44.2 | 2.8 |
| MultiTool | Punch inserts | 24.0 | 0.5 |
| | Die inserts | 24.0 | 1.0 |
| | Blanking die d = 72 mm | 12.0 | 1.0 |
| MultiUse | Punch insert | Flat: 28.3 | 6.0 |
| | | Beveled: 31.3 | 6.0 |
| | | Long: 31.8 | 9.5 |
| | Die insert | 10.0 | 2.0 |
| Slitting tool | Punch cutting blade | 25.3 | 3.0 |
| | Die cutting blade | 5.0 | 1.0 |

# Punching force and shear strength

The choice of punching force depends on a number of different factors. It depends on the sheet thickness and the length of the cutting edge, as well as the choice of shear on the punch.

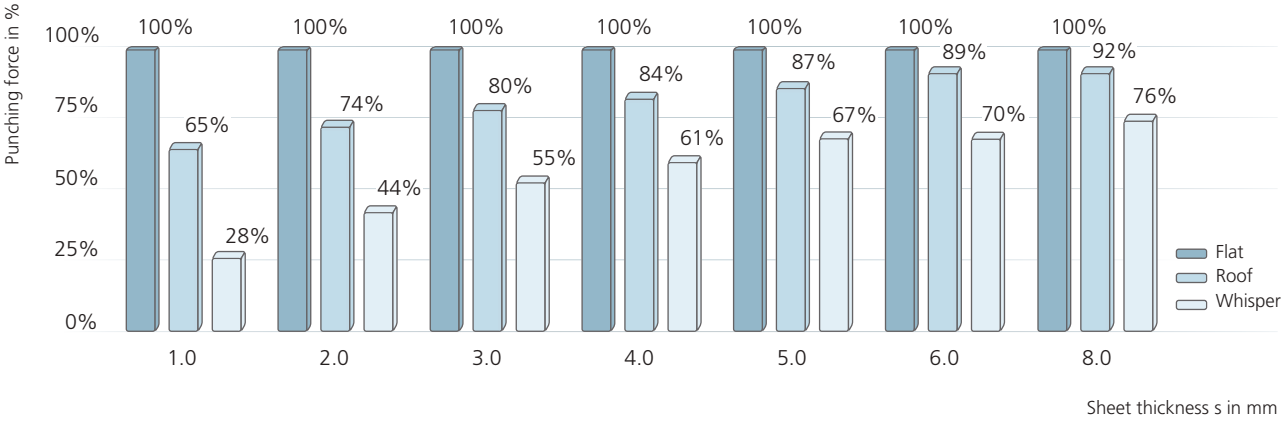
## Beveled punches

Beveled punches are 3 mm longer than punches with flat cutting surfaces. The additional length comes from the bevel, which has a maximum angle of 5°. TRUMPF will put a bevel grind on a punch free of charge.

Once the outer circle of a punch reaches a certain size, the use of beveled punches has considerable advantages:

- Decreased sheet metal distortion as tension in the part is up to 20% lower
- Sound level is reduced by up to 14 dB(A); this corresponds to a reduction in the sound level of more than 50%
- Required punching force is reduced by up to 72%, depending on the sheet thickness

How the punch shear and sheet thickness affect the punching force:




## Determining the theoretical punching force

The punching force F is determined using the following formula:

$$F = \frac{\text{Cutting edge length L (mm) x Sheet thickness s (mm) x Tensile strength RM of the material (N/mm²)}}{\text{Shear factor X (only for bevels)}}$$

### This means:

| | |
|---|---|
| Round punch: | **F = Π x Ø x s x RM ÷ X** |
| Square punch: | **F = 4 x a x s x RM ÷ X** |
| Rectangular/oblong hole punch: | **F = (a+b) x 2 x s x RM ÷ X** |

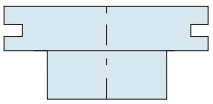
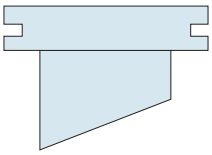
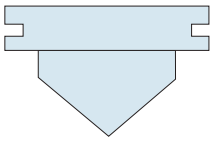
| Key | |
|---|---|
| **Π** | Pi |
| **s** | Sheet thickness |
| **a** | Side dimension |
| **RM** | Tensile strength |
| **X** | Shear factor |
| **Ø** | Diameter |

### Overview of tensile strength RM:

| | |
|---|---|
| Steel | approx. 400 N/mm² |
| Stainless steel | approx. 700 N/mm² |
| Aluminum | approx. 300 N/mm² |

# Punching force and shear strength

## Shear factor

| Sheet thickness s (in mm) | Shear factor flat X | Shear factor Whisper X | Shear factor roof X |
|---|---|---|---|
| |  |  |  |
| 1.0 | 1.00 | 3.50 | 1.53 |
| 1.5 | 1.00 | 2.66 | 1.44 |
| 2.0 | 1.00 | 2.25 | 1.35 |
| 2.5 | 1.00 | 2.00 | 1.30 |
| 3.0 | 1.00 | 1.83 | 1.25 |
| 3.5 | 1.00 | 1.71 | 1.11 |
| 4.0 | 1.00 | 1.62 | 1.19 |
| 5.0 | 1.00 | 1.50 | 1.15 |
| 6.0 | 1.00 | 1.41 | 1.12 |
| 8.0 | 1.00 | 1.31 | 1.08 |
| 10.0 | 1.00 | 1.25 | approx. 1.00 |

## Example:

Calculation of the required punching force for a square punch-out measuring 40 x 40 mm in 2 mm thick sheet steel.
A Whisper punch is used.

$$\frac{4 \text{ x } 40 \text{ mm x } 2 \text{ mm x } 400 \text{ N/mm}^2}{2.25} = 56{,}889 \text{ N}$$

The reduced punching force is therefore F = 57 kN or 5.7 tons.

## Punching force in relation to the punch type and sheet thickness

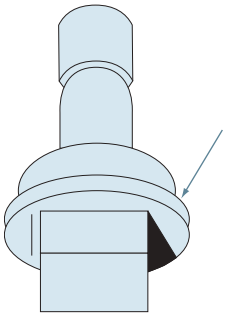
| Punch type | Max. punching force | Max. sheet thickness | | Material |
|---|---|---|---|---|
| | | Punching | Nibbling | |
| Flat punches, size 0:<br>Up to 6 mm outer circle diameter | 50 kN | Mild steel: 2.0 mm<br>Stainless steel: 1.5 mm | Not recommended | HSS<br>HSS |
| Punch, size 0:<br>6 - 10 mm outer circle diameter | 50 kN | Mild steel: 6.0 mm<br>Stainless steel: 3.0 mm | Mild steel: 3 mm<br>Stainless steel: not recommended | HSS<br>HSS |
| Flat punches, size 1:<br>(max. outer circle diameter: 30 mm) | 200 kN | Up to maximum permissible sheet thickness of the machine | Up to maximum permissible sheet thickness of the machine | HSS |
| Flat punches, size 1 or 2:<br>(max. outer circle diameter: 76.2 mm) | 300 kN | Up to maximum permissible sheet thickness of the machine | Up to maximum permissible sheet thickness of the machine | HSS, oxidized |
| Punch with bevel | 200 kN | Up to maximum permissible sheet thickness of the machine | For a tensile strength of 400 N/mm² up to 3 mm<br>For a tensile strength of 800 N/mm² up to 2 mm | HSS |

# Punch selection

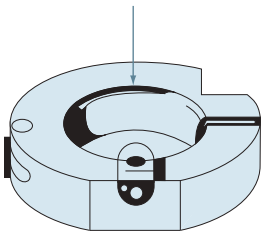
After the punch geometry has been selected, you must decide whether the punch should be adapted further. This is advantageous under certain conditions, above all when processing thick materials or when the punching force is high.

## Reinforcement

**A reinforced version of a punch and alignment ring**



■ Punch with reinforced shoulder



■ Alignment ring with larger inside diameter

Reinforced punches are used for punching forces over 200 kN, sheet thicknesses over 5 mm and for punching or nibbling high-tensile sheets. As the punch is reinforced at the shoulder, the inside diameter of the alignment ring is increased accordingly.
The maximum outer circle is therefore only 42 mm.

## Guided cutting edge

A punch with a guided cutting edge is a special tool for punching and nibbling very small holes in sheet up to 4 mm thick.

The application range of a punch with a guided cutting edge is dependent on the material and sheet thickness:

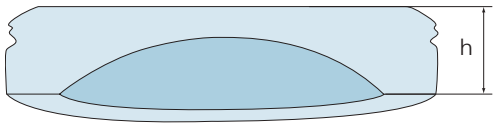
| Material | Tensile strength | Minimum punch diameter |
|---|---|---|
| Stainless steel<br>Chromium-nickel steel | 700 N/mm² | 1 x sheet thickness s |
| Mild steel | 400 N/mm² | 0.8 x sheet thickness s |
| Aluminum<br>Aluminum alloy | 300 N/mm² | 0.6 x sheet thickness s |

# Die selection

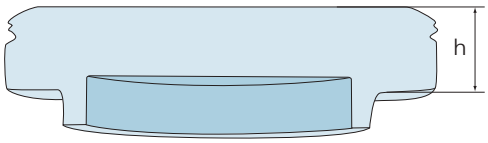
There are a variety of dies to choose from and picking the right one depends on the intended application. For example, keyways can make tools easier to use if they are a special shape.

## Die selection

**Standard die**




**Reinforced die**




Reinforced dies are available in addition to the standard version dies. The punch measurements, punching force and sheet thickness determine which die is the correct one to use. The last factor is of particular importance: As the sheet thickness increases, a larger cutting gap is required between the punch and the die. All dies can be reground by up to 1 mm. If the die is reground by more than 1 mm, burrs form and there is a risk that the die might break. Because the clamping height is decreased, the die may become tilted and this can lead to dangers during processing. In the tool holder, shims (0.1/0.3/0.5 mm) are placed under the reground dies.
TRUMPF also gives its standard dies a life-long warranty if the die should break.
The correct die dimension depends on the cutting clearance and is calculated from the punch geometry and the sheet thickness (see chapter "Cutting clearance").

## Choosing the die appropriate for a given punching force

| Die size | Die version | Max. punching force (in kN) | Die height h (in mm) | Max. outer circle (in mm) |
|---|---|---|---|---|
| 1 | All | 250 | Up to 18.00 | Up to 32.00 |
| 2 | Standard | 180 | Up to 20.00 | 32.01 - 78.40 |
| 2 | Reinforced | 250 | Up to 20.00 | 32.01 - 62.00 |

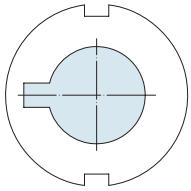
## Keyway position

In contrast to symmetrical shapes, every asymmetrical shape is equipped with multiple keyways. This ensures that the punch and die are correctly aligned with each other. It also makes programming easier as the die can be given a direction.

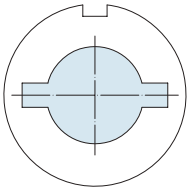
# Die selection

## Keyway position for shapes 1-20

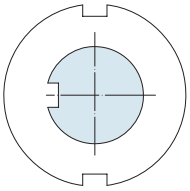
**Shape 1**



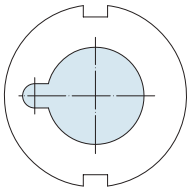
**Shape 2**



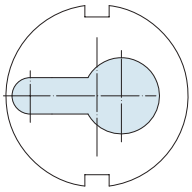
**Shape 3**



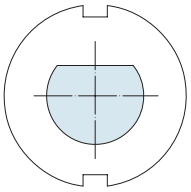
**Shape 4**



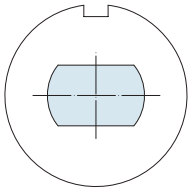
**Shape 5**



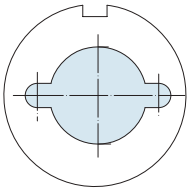
**Shape 6**



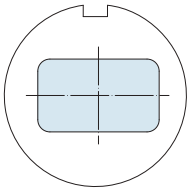
**Shape 7**



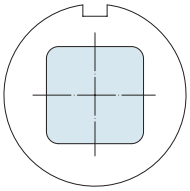
**Shape 8**



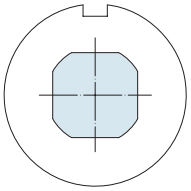
**Shape 9**



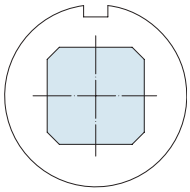
**Shape 10**



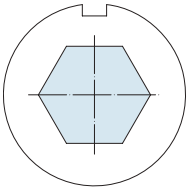
**Shape 11**



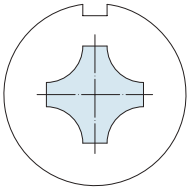
**Shape 12**



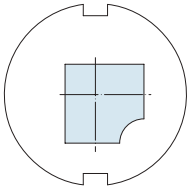
**Shape 13**



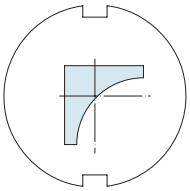
**Shape 14**



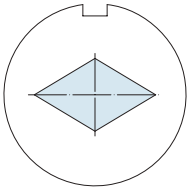
**Shape 15**



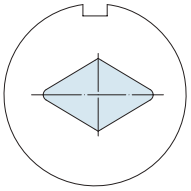
**Shape 15**



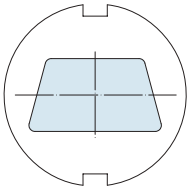
**Shape 16**



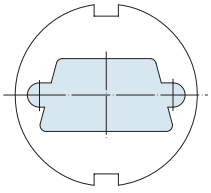
**Shape 17**



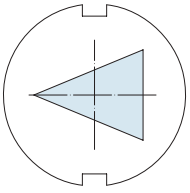
**Shape 18**



**Shape 19**

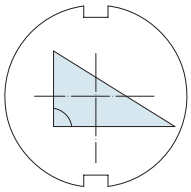


**Shape 20**

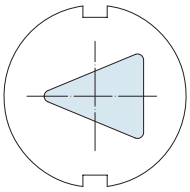


## Keyway position for shapes 21-40

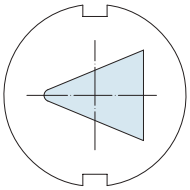
**Shape 21**



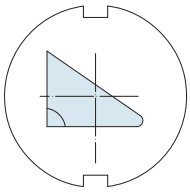
**Shape 22**



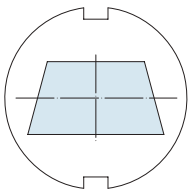
**Shape 23**



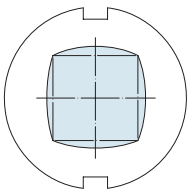
**Shape 24**



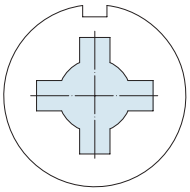
**Shape 25**



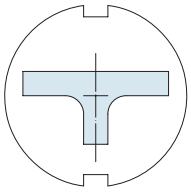
**Shape 26**



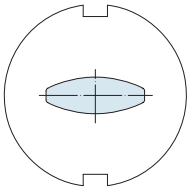
**Shape 27**



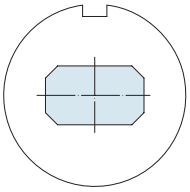
**Shape 28**



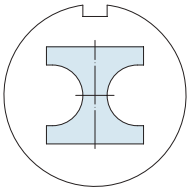
**Shape 29**



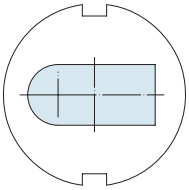
**Shape 30**



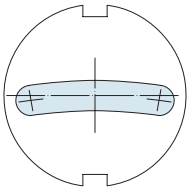
**Shape 31**



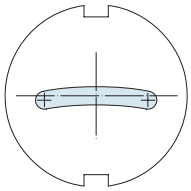
**Shape 32**



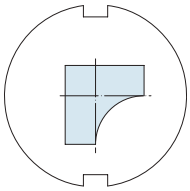
**Shape 33**



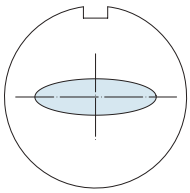
**Shape 34**



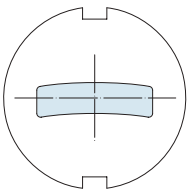
**Shape 35**



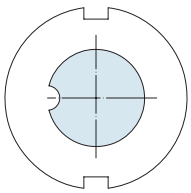
**Shape 36**



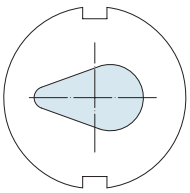
**Shape 37**



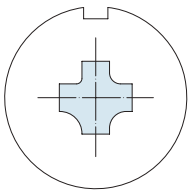
**Shape 38**



**Shape 39**



**Shape 40**



# Stripper selection

Selecting the right stripper is important to ensure that the punching process runs smoothly. But it is also difficult, as the right stripper is dependent on so many factors. The following tables and explanations will make it much easier to find the right stripper in the future.

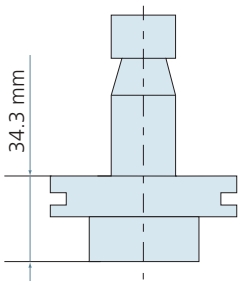
## Determining the right stripper in 4 simple steps

1. Measure the length of the punch.
2. Determine the sheet thickness to be processed.
3. Identify the outer circle diameter of the punch.
4. Using the tables below, establish which stripper is needed.

## 1. Measuring the length of the punch

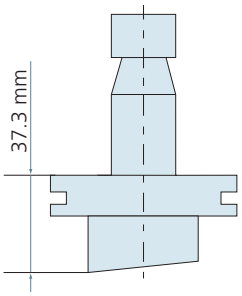
If the length of the punch has been decreased through regrinding, it must be measured again. The punch length is measured from the upper edge of the alignment ring to the end of the tool.

**Punch length of a punch with flat cutting surface**




QuickSet

**Punch length of a punch with beveled cutting surface**




It is particularly easy to determine the tool length using the QuickSet tool setting device (see chapter "Accessories"). The new plunging depth of the punch must be entered into the machine control system.

The value for the tool length takes you to the correct column in the stripper table. In this example, the punch length is **33.7 mm.**

| Tool length (mm) | 34.3 - 33.3 | | | | | | | | 33.2 - 32.3 | | | | | | | | 32.2 - 31.3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | For low-scratch processing: Select programmed sheet thickness + 1 mm.[1] | | | | | | | | | | | | | | | | | | | | | | | |
| Programmed sheet thickness s (mm) | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] |
| Punch outer circle diameter (mm) | Min. stripper diameter (mm) | | | | | | | | | | | | | | | | | | | | | | | |
| Needle punch up to 3.00 | 7 | 7 | 7 | – | – | – | – | – | 7 | 7 | 7 | – | – | – | – | – | 7 | 7 | 7 | – | – | – | – | – |
| Needle punch 3.01 - 6.00 | | | | | – | – | – | – | | | | 7 | – | – | – | – | | | 7 | 7 | – | – | – | – |
| Needle punch 6.01 - 10.50 | | | | | 12 | 12 | – | – | | | | 12 | 12 | 12 | – | – | | | 12 | 12 | 12 | 12 | – | – |
| Punch 1.00 - 5.99 | | | 14 | 14 | 14 | 14 | – | – | | 14 | 14 | 14 | 14 | 14 | – | – | 14 | 14 | 14 | 14 | 14 | 14 | – | – |
| Punch 6.00 - 10.50 | | | | | 14 | 14 | 14 | 31 | | | | | 14 | 14 | 14 | 31 | | | | | 14 | 14 | 14 | 31 |
| Punch 10.51 - 30.00[2] | | | | | | | | 31 | | | | | | 31 | 31 | 31 | | | | | 31 | 31 | 31 | 31 |
| Punch 30.01 - 40.00[2] | | | | | | | | 41 | | | | | | 41 | 41 | 41 | | | | | 41 | 41 | 41 | 41 |
| Punch 40.01 - 50.80[2] | | | | | | | | 52 | | | | | | 52 | 52 | 52 | | | | | 52 | 52 | 52 | 52 |
| Punch 50.81 - 76.20[2] | | | | | | | | | | | | | | | | | | | | | | | | |

[1] Example: Programmed sheet thickness 4 mm + 1 mm: Select column 5 mm

[2] Applies to all special shapes

[3] Only for machines with permitted sheet thickness > 6.4 mm

– Sheet thickness not permitted

Stripper dimension corresponds to punch dimension + 0.5 mm all the way around or + 0.5 mm per side

## 2. Determining the sheet thickness to be processed

The possible columns are narrowed down even further with the addition of the sheet thickness s that is to be processed.
In this example, the sheet thickness is **3 mm.**

| Tool length (mm) | 34.3 - 33.3 | | | | | | | | 33.2 - 32.3 | | | | | | | | 32.2 - 31.3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | For low-scratch processing: Select programmed sheet thickness + 1 mm.[1] | | | | | | | | | | | | | | | | | | | | | | | |
| Programmed sheet thickness s (mm) | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] |
| Punch outer circle diameter (mm) | Min. stripper diameter (mm) | | | | | | | | | | | | | | | | | | | | | | | |
| Needle punch up to 3.00 | 7 | 7 | 7 | – | – | – | – | – | 7 | 7 | 7 | – | – | – | – | – | 7 | 7 | 7 | – | – | – | – | – |
| Needle punch 3.01 - 6.00 | | | | | – | – | – | – | | | | 7 | – | – | – | – | | | 7 | 7 | – | – | – | – |
| Needle punch 6.01 - 10.50 | | | | | 12 | 12 | – | – | | | | 12 | 12 | 12 | – | – | | | 12 | 12 | 12 | 12 | – | – |
| Punch 1.00 - 5.99 | | | 14 | 14 | 14 | 14 | – | – | | 14 | 14 | 14 | 14 | 14 | – | – | 14 | 14 | 14 | 14 | 14 | 14 | – | – |
| Punch 6.00 - 10.50 | | | | | 14 | 14 | 14 | 31 | | | | | 14 | 14 | 14 | 31 | | | | | 14 | 14 | 14 | 31 |
| Punch 10.51 - 30.00[2] | | | | | | | | 31 | | | | | | 31 | 31 | 31 | | | | | 31 | 31 | 31 | 31 |
| Punch 30.01 - 40.00[2] | | | | | | | | 41 | | | | | | 41 | 41 | 41 | | | | | 41 | 41 | 41 | 41 |
| Punch 40.01 - 50.80[2] | | | | | | | | 52 | | | | | | 52 | 52 | 52 | | | | | 52 | 52 | 52 | 52 |
| Punch 50.81 - 76.20[2] | | | | | | | | | | | | | | | | | | | | | | | | |

[1] Example: Programmed sheet thickness 4 mm + 1 mm: Select column 5 mm

[2] Applies to all special shapes

[3] Only for machines with permitted sheet thickness > 6.4 mm

– Sheet thickness not permitted

Stripper dimension corresponds to punch dimension + 0.5 mm all the way around or + 0.5 mm per side

## 3. Identifying the outer circle diameter of the punch

The outer circle diameter of the punch takes you to the correct row in the table (for outer circle diameter calculations, see chapter "Dimensions and regrinding"). In this example, the outer circle diameter is **5 mm with a size 1 punch.**

| Tool length (mm) | 34.3 - 33.3 | | | | | | | | 33.2 - 32.3 | | | | | | | | 32.2 - 31.3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | For low-scratch processing: Select programmed sheet thickness + 1 mm.[1] | | | | | | | | | | | | | | | | | | | | | | | |
| Programmed sheet thickness s (mm) | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] |
| Punch outer circle diameter (mm) | Min. stripper diameter (mm) | | | | | | | | | | | | | | | | | | | | | | | |
| Needle punch up to 3.00 | 7 | 7 | 7 | – | – | – | – | – | 7 | 7 | 7 | – | – | – | – | – | 7 | 7 | 7 | – | – | – | – | – |
| Needle punch 3.01 - 6.00 | | | | | – | – | – | – | | | | 7 | – | – | – | – | | | 7 | 7 | – | – | – | – |
| Needle punch 6.01 - 10.50 | | | | | 12 | 12 | – | – | | | | 12 | 12 | 12 | – | – | | | 12 | 12 | 12 | 12 | – | – |
| Punch 1.00 - 5.99 | | | 14 | 14 | 14 | 14 | – | – | | 14 | 14 | 14 | 14 | 14 | – | – | 14 | 14 | 14 | 14 | 14 | 14 | – | – |
| Punch 6.00 - 10.50 | | | | | 14 | 14 | 14 | 31 | | | | | 14 | 14 | 14 | 31 | | | | | 14 | 14 | 14 | 31 |
| Punch 10.51 - 30.00[2] | | | | | | | | 31 | | | | | | 31 | 31 | 31 | | | | | 31 | 31 | 31 | 31 |
| Punch 30.01 - 40.00[2] | | | | | | | | 41 | | | | | | 41 | 41 | 41 | | | | | 41 | 41 | 41 | 41 |
| Punch 40.01 - 50.80[2] | | | | | | | | 52 | | | | | | 52 | 52 | 52 | | | | | 52 | 52 | 52 | 52 |
| Punch 50.81 - 76.20[2] | | | | | | | | | | | | | | | | | | | | | | | | |

[1] Example: Programmed sheet thickness 4 mm + 1 mm: Select column 5 mm

[2] Applies to all special shapes

[3] Only for machines with permitted sheet thickness > 6.4 mm

– Sheet thickness not permitted

Stripper dimension corresponds to punch dimension + 0.5 mm all the way around or + 0.5 mm per side

## 4. Using the tables to establish which stripper is needed

The dimension of the stripper to be used can be found in the cell that has been determined using this method. In the example where the punch length is 33.7 mm, the punch dimension is 5 mm and the sheet thickness is 3 mm, the stripper dimension required is **14 mm.**

# Stripper selection

## Table overview

If the stripper dimensions specified in the following tables are not observed, the stripper adapter may be damaged.

## Strippers for long, flat punches (Table A)

| Tool length (mm) | 37.8 - 36.8 | | | | | | | | 36.7 - 35.8 | | | | | | | | 35.7 - 34.8 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | For low-scratch processing: Select programmed sheet thickness + 1 mm.[1] | | | | | | | | | | | | | | | | | | | | | | | |
| Programmed sheet thickness s (mm) | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] |
| Punch outer circle diameter (mm) | Min. stripper diameter (mm) | | | | | | | | | | | | | | | | | | | | | | | |
| Needle punch up to 3.00 | 7 | 7 | 7 | – | – | – | – | – | 7 | 7 | 7 | – | – | – | – | – | 7 | 7 | 7 | – | – | – | – | – |
| Needle punch 3.01 - 6.00 | | | | | – | – | – | – | | | | | – | – | – | – | | | | | – | – | – | – |
| Needle punch 6.01 - 10.50 | | | | | | | – | – | | | | | | 12 | – | – | | | | | 12 | 12 | – | – |
| Punch 1.00 - 5.99 | | | | | 14 | 14 | – | – | | | | 14 | 14 | 14 | – | – | | | 14 | 14 | 14 | 14 | – | – |
| Punch 6.00 - 10.50 | | | | | | | 14 | 31 | | | | | | 14 | 14 | 31 | | | | | 14 | 14 | 14 | 31 |
| Punch 10.51 - 30.0[2] | | | | | | | | | | | | | | | | 31 | | | | | | | | 31 |
| Punch 30.01 - 40.00[2] | | | | | | | | | | | | | | | | 41 | | | | | | | | 41 |
| Punch 40.01 - 50.80[2] | | | | | | | | | | | | | | | | 52 | | | | | | | | 52 |
| Punch 50.81 - 76.20[2] | | | | | | | | | | | | | | | | | | | | | | | | |

[1] Example: Programmed sheet thickness 4 mm + 1 mm: Select column 5 mm

[2] Applies to all special shapes

[3] Only for machines with permitted sheet thickness > 6.4 mm

– Sheet thickness not permitted

Stripper dimension corresponds to punch dimension + 0.5 mm all the way around or + 0.5 mm per side

## Strippers for long, flat punches (Table B)

| Tool length (mm) | 37.8 - 36.8 | | | | | | | | 36.7 - 35.8 | | | | | | | | 35.7 - 34.8 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | For low-scratch processing: Select programmed sheet thickness + 1 mm.[1] | | | | | | | | | | | | | | | | | | | | | | | |
| Programmed sheet thickness s (mm) | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] |
| Punch outer circle diameter (mm) | Min. stripper diameter (mm) | | | | | | | | | | | | | | | | | | | | | | | |
| Needle punch up to 3.00 | 7 | 7 | 7 | – | – | – | – | – | 7 | 7 | 7 | – | – | – | – | – | 7 | 7 | 7 | – | – | – | – | – |
| Needle punch 3.01 - 6.00 | | | | | – | – | – | – | | | | 7 | – | – | – | – | | | 7 | 7 | – | – | – | – |
| Needle punch 6.01 - 10.50 | | | | | 12 | 12 | – | – | | | | 12 | 12 | 12 | – | – | | | 12 | 12 | 31 | 31 | – | – |
| Punch 1.00 - 5.99 | | | 14 | 14 | 14 | 14 | – | – | | 14 | 14 | 14 | 14 | 14 | – | – | 14 | 14 | 14 | 14 | 14 | 14 | – | – |
| Punch 6.00 - 10.50 | | | | | 14 | 14 | 14 | 31 | | | | 14 | 14 | 14 | 14 | 31 | | | | | 14 | 14 | 14 | 31 |
| Punch 10.51 - 30.00[2] | | | | | | | | 31 | | | | | | 31 | 31 | 31 | | | | | 31 | 31 | 31 | 31 |
| Punch 30.01 - 40.00[2] | | | | | | | | 41 | | | | | | 41 | 41 | 41 | | | | | 41 | 41 | 41 | 41 |
| Punch 40.01 - 50.80[2] | | | | | | | | 52 | | | | | | 52 | 52 | 52 | | | | | 52 | 52 | 52 | 52 |
| Punch 50.81 - 76.20[2] | | | | | | | | | | | | | | | | | | | | | | | | |

[1] Example: Programmed sheet thickness 4 mm + 1 mm: Select column 5 mm

[2] Applies to all special shapes

[3] Only for machines with permitted sheet thickness > 6.4 mm

– Sheet thickness not permitted

Stripper dimension corresponds to punch dimension + 0.5 mm all the way around or + 0.5 mm per side

## Table overview

If the stripper dimensions specified in the following tables are not observed, the stripper adapter may be damaged.

## Strippers for beveled punches (Whisper form)

| Tool length (mm) | 37.3 - 36.3 | | | | | | | | 36.2 - 35.3 | | | | | | | | 35.2 - 34.3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | For low-scratch processing: Select programmed sheet thickness + 1 mm.[1] | | | | | | | | | | | | | | | | | | | | | | | |
| Programmed sheet thickness s (mm) | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] |
| Punch outer circle diameter (mm) | Min. stripper diameter (mm) | | | | | | | | | | | | | | | | | | | | | | | |
| Needle punch up to 3.00 | 7 | 7 | 7 | – | – | – | – | – | 7 | 7 | 7 | – | – | – | – | – | 7 | 7 | 7 | – | – | – | – | – |
| Needle punch 3.01 - 6.00 | | | | | – | – | – | – | | | | 7 | – | – | – | – | | | 7 | 7 | – | – | – | – |
| Needle punch 6.01 - 10.50 | | | | | 12 | 12 | – | – | | | | 12 | 12 | 12 | – | – | | | 12 | 12 | 12 | 12 | – | – |
| Punch 1.00 - 5.99 | | | 14 | 14 | 14 | 14 | – | – | | 14 | 14 | 14 | 14 | 14 | – | – | 14 | 14 | 14 | 14 | 14 | 14 | – | – |
| Punch 6.00 - 10.50 | | | | | 14 | 14 | 14 | 31 | | | | 14 | 14 | 14 | 14 | 31 | | | 14 | 14 | 14 | 14 | 14 | 31 |
| Punch 10.51 - 30.00[2] | | | | | | | | 31 | | | | | | 31 | 31 | 31 | | | | | 31 | 31 | 31 | 31 |
| Punch 30.01 - 40.00[2] | | | | | | | | 41 | | | | | | 41 | 41 | 41 | | | | | 41 | 41 | 41 | 41 |
| Punch 40.01 - 50.80[2] | | | | | | | | 52 | | | | | | 52 | 52 | 52 | | | | | 52 | 52 | 52 | 52 |
| Punch 50.81 - 76.20[2] | | | | | | | | | | | | | | | | | | | | | | | | |

[1] Example: Programmed sheet thickness 4 mm + 1 mm: Select column 5 mm

[2] Applies to all special shapes

[3] Only for machines with permitted sheet thickness > 6.4 mm

– Sheet thickness not permitted

Stripper dimension corresponds to punch dimension + 0.5 mm all the way around or + 0.5 mm per side

## Strippers for flat punches

| Tool length (mm) | 34.3 - 33.3 | | | | | | | | 33.2 - 32.3 | | | | | | | | 32.2 - 31.3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | For low-scratch processing: Select programmed sheet thickness + 1 mm.[1] | | | | | | | | | | | | | | | | | | | | | | | |
| Programmed sheet thickness s (mm) | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] | 1 | 2 | 3 | 4 | 5 | 6 | 6.4 | >6.4[3] |
| Punch outer circle diameter (mm) | Min. stripper diameter (mm) | | | | | | | | | | | | | | | | | | | | | | | |
| Needle punch up to 3.00 | 7 | 7 | 7 | – | – | – | – | – | 7 | 7 | 7 | – | – | – | – | – | 7 | 7 | 7 | – | – | – | – | – |
| Needle punch 3.01 - 6.00 | | | | | – | – | – | – | | | | 7 | – | – | – | – | | | 7 | 7 | – | – | – | – |
| Needle punch 6.01 - 10.50 | | | | | 12 | 12 | – | – | | | | 12 | 12 | 12 | – | – | | | 12 | 12 | 12 | 12 | – | – |
| Punch 1.00 - 5.99 | | | 14 | 14 | 14 | 14 | – | – | | 14 | 14 | 14 | 14 | 14 | – | – | 14 | 14 | 14 | 14 | 14 | 14 | – | – |
| Punch 6.00 - 10.50 | | | | | 14 | 14 | 14 | 31 | | | | 14 | 14 | 14 | 14 | 31 | | | 14 | 14 | 14 | 14 | 14 | 31 |
| Punch 10.51 - 30.0[2] | | | | | | | | 31 | | | | | | 31 | 31 | 31 | | | | | 31 | 31 | 31 | 31 |
| Punch 30.01 - 40.00[2] | | | | | | | | 41 | | | | | | 41 | 41 | 41 | | | | | 41 | 41 | 41 | 41 |
| Punch 40.01 - 50.80[2] | | | | | | | | 52 | | | | | | 52 | 52 | 52 | | | | | 52 | 52 | 52 | 52 |
| Punch 50.81 - 76.20[2] | | | | | | | | | | | | | | | | | | | | | | | | |

[1] Example: Programmed sheet thickness 4 mm + 1 mm: Select column 5 mm

[2] Applies to all special shapes

[3] Only for machines with permitted sheet thickness > 6.4 mm

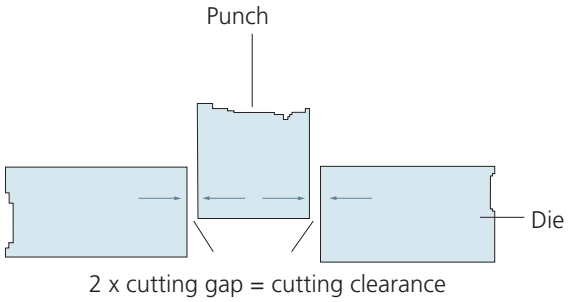
– Sheet thickness not permitted

Stripper dimension corresponds to punch dimension + 0.5 mm all the way around or + 0.5 mm per side

# Cutting clearance

The cutting clearance is important for determining the correct die dimension. The cutting clearance changes depending on the sheet thickness to be processed, meaning that the die dimension has to be adjusted.

## Cutting clearance




The cutting clearance is the difference between the diameter of the punch and the diameter of the die. It is calculated from the cutting gap, or the distance between the cutting edges of the punch and the die. It is very important to have the correct cutting clearance for punching. If thick material is processed using a die that has excessive or insufficient cutting clearance, the cutting edge of the punch will be under a high load. This means that the service life of the punch is reduced considerably as there is a danger of splinters breaking out of the cutting edge.

## Calculating the cutting clearance and die dimension

The cutting clearance generally amounts to approximately 20% of the sheet thickness (0.2 x sheet thickness s).
If punching is being carried out on softer materials such as aluminum, a cutting clearance of 10% is recommended.

| | |
|---|---|
| The cutting clearance is approx. 20% of the sheet thickness s. | |
| **Cutting clearance** | **= 0.2 x sheet thickness s** |
| **Die dimension** | **= (0.2 x sheet thickness s) + punch dimension** |

### Example:

The sheet thickness s is 1 mm and the diameter of a round punch d is 10 mm. This gives the following die dimension:
(0.2 x 1.0 mm) + 10 mm = 10.2 mm

For a round punch with d = 10 mm, a die with d = 10.2 mm is needed if the sheet thickness is 1 mm.

# Cutting clearance

In order to determine the desired balance between burr formation and tool wear, the values from the cutting clearance table below can be used as a reference.

The minimum value can be selected in each case for a particularly low level of burr formation. However, this increases the required punching force as well as the tool wear.

If the cutting clearance has been set to the maximum value, multiple sheet thicknesses can be covered. However, burr formation will increase proportionately.

Selection of the optimal value below will result in the ideal balance between burr formation and tool wear.

| Material type | Sheet thickness in mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| **Aluminum (AlMg3)** | | | | | | | | |
| Min. | 0.05 | 0.10 | 0.15 | 0.20 | 0.25 | 0.30 | 0.35 | 0.40 |
| Opt. (Cutting clearance 10%) | **0.10** | **0.20** | **0.30** | **0.40** | **0.50** | **0.60** | **0.70** | **0.80** |
| Max. (Cutting clearance 20%) | 0.20 | 0.40 | 0.60 | 0.80 | 1.00 | 1.20 | 1.40 | 1.60 |
| **Steel (DC01)** | | | | | | | | |
| Min. | 0.10 | 0.20 | 0.30 | 0.40 | 0.60 | 0.70 | 0.90 | 1.00 |
| Opt. (Cutting clearance 20%) | **0.20** | **0.40** | **0.60** | **0.80** | **1.00** | **1.20** | **1.40** | **1.60** |
| Max. | 0.30 | 0.60 | 0.80 | 1.00 | 1.20 | 1.40 | 1.60 | 1.80 |
| **Stainless steel (1.4301)** | | | | | | | | |
| Min. | 0.10 | 0.20 | 0.30 | 0.40 | 0.60 | 0.70 | 0.90 | 1.00 |
| Opt. (Cutting clearance 20%) | **0.20** | **0.40** | **0.60** | **0.80** | **1.00** | **1.20** | **1.40** | **1.60** |
| Max. | 0.30 | 0.60 | 0.80 | 1.00 | 1.20 | 1.40 | 1.60 | 1.80 |

# PunchGuide

All important punching calculations can also be made using the PunchGuide, the TRUMPF app for fast and simple punching calculations.

The following calculations are available in the PunchGuide:

- Punching force
- Cutting clearance
- Prepunching diameter
- Maximum edge length
- Stripper selection
- Sheet thickness conversion
- Sheet weight

Useful brochures on the topic of punching are also available to download.

Helpful additional features make the PunchGuide app quick and easy to operate: Under the menu item "More", the units of measurement can be converted from metric to imperial. In addition, the customer's own machines can be saved in the PunchGuide.

PunchGuide is available free of charge for iOS and Android in the respective app stores. Simply scan the QR code on this page and you will be automatically redirected to the appropriate app store, where you can install the app on your smartphone or tablet immediately.

With the PunchGuide from TRUMPF, punching calculations are easier than ever before. When it comes to punching sheet metal, you can benefit from TRUMPF's expertise.

**Android Store:**
www.trumpf.info/oxdr58

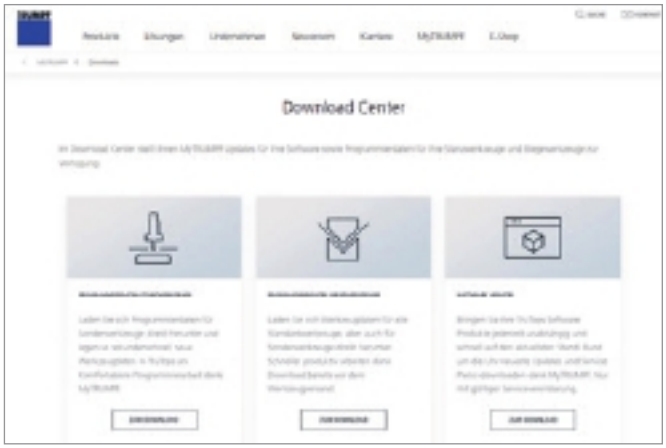
**Apple Store:**
www.trumpf.info/dowhz1

# Tool Data Import

To put customized tools into service as quickly and conveniently as possible, all necessary tool data is already made available to download in the MyTRUMPF customer portal before the tools are delivered. This allows programming work to be conducted before the tools are delivered, meaning that production can start immediately after they arrive.

## Information and benefits

Upon the order of a special tool, all of the needed data is made available for download in the customer portal MyTRUMPF: tool parameters, technical information and a tool file.




Download portal in MyTRUMPF: www.mytrumpf.com

The Tool Data Import significantly shortens the programming time for parts that have to be processed using a special tool. It is therefore not necessary to copy the tool geometry and measure the tool, and this helps avoid costly errors and run-in times on the machine. All technical information can be retrieved directly in TruTops. In addition, the geometric data is available in DXF format for users who do not have TruTops.

# Tool life

The harder the surface of a punching tool, the longer the service life. The high-quality MultiDur coatings from TRUMPF make your tools harder, more resistant and improve the coefficients of friction. Consequently, a coating prevents the metal particles of the processed material from fusing to the surface of the tool and building up at the edge. If material builds up at the edge, particles could break off from the punch during the punch upstroke. In turn, these imperfections are contact surfaces that cause additional wear.

The protection that a coating offers remains effective even after several regrinding operations. During a punching process, the majority of the friction originates on the cutting part of the punch, where the coating is not affected by regrinding.

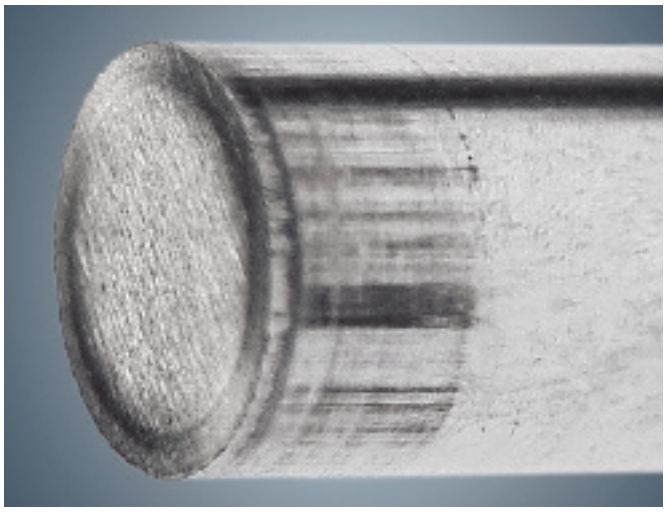
## MultiDur TiCN (Titanium carbo-nitride)

This coating, which has been tried and tested over many years, is suitable for all TRUMPF punching tools. MultiDur TiCN is characterized by its outstanding toughness and durability, and its excellent wear resistance, without being brittle. The service life is doubled. If the tool is used to punch mild steel, the period until the first regrinding can be doubled. And after regrinding, you can achieve better results as the level of wear is lower.

## MultiDur Performance

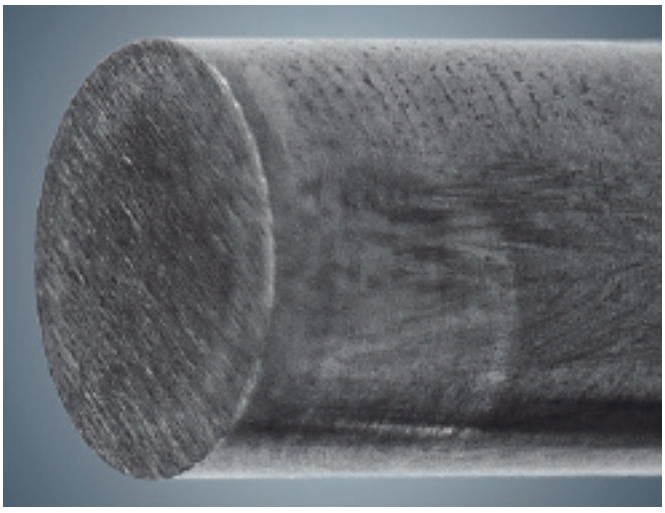
The MultiDur Performance coating is also suitable for the whole TRUMPF punching tool range. It reduces friction between the tool and the material and increases the oxidation resistance of the tool. Compared to tools that are coated with MultiDur TiCN, the level of wear is considerably lower still and the service life is increased by a factor of 4 in comparison with uncoated punches. In addition, less lubricant is required.

1 mm



Uncoated punch after 120,000 punching strokes in stainless steel using lubricants

1 mm



Punch with MultiDur Performance coating after 120,000 punching strokes in stainless steel using lubricants

# Tool life

## MultiDur Alu

The MultiDur Alu coating is the perfect coating for processing non-ferrous metals, such as aluminum. It increases the sliding capability of the tool, thus ensuring that only a small amount of lubricant is needed, if at all. The service life of punches with this coating is increased by a factor of 5 in comparison with uncoated punches. In addition, the occurrence of fine material abrasion and material build-up at edges is minimized.

## Other factors

The degree to which a tool's resistance to wear can be increased depends on a number of factors. In addition to the coatings, the properties of the material also influence the service life of a tool. Sheets made of stainless and other high-strength steels place enormous demands on tools and can lead to noticeably faster wear in comparison with other engineering steels.

Special requirements often have to be taken into account when using customized tool materials. For special geometries or if a longer service life is required with the same operating conditions, it is possible to resort to using powder metallurgy tool steels as the punching material. These steels feature an excellent grindability and are very resistant to bending, compression and wear.

To increase the service life of tools, the whole punch should always penetrate into the sheet metal. Our special trimming tools are perfect for trimming the edges of sheet metal if desired (see chapter "Edge quality").

# Tool maintenance and setup

Having the right tool maintenance regime is important for ensuring a long service life and for a precise and high-quality punching result.

## Regrinding

Regularly regrinding punching tools, for example using the QuickSharp (see chapter "Accessories"), ensures maximum edge quality and therefore produces the best possible results in punching. This means that there are fewer problems with the stripper. In addition, tools that have been reground preemptively will last longer.

QuickSharp

For a sharp cutting edge, the tool should be reground by between 0.1 and 0.25 mm using sufficient coolant. Cooling the tool well will prevent the formation of grinding cracks and the annealing of the material. It is advisable to use an oil stone to slightly sharpen the tool after the grinding process and to demagnetize it.

As a general rule, tools that are not coated should be reground after 60,000 to 80,000 strokes and tools that have a coating should be reground after 120,000 strokes.

In addition, it is important to regularly check the following factors to determine the grinding requirements:

- **Cutting edges**. The tool should be reground if the radius is larger than 0.1 - 0.25 mm.
- **Punching noise**. If there are discernible changes in the punching noise, the tool should be checked and reground if necessary.
- **Punching power**. The punching result should be checked for excessive burr formation and the tool should be reground if necessary.

## Lubrication

It is essential to have sufficient lubrication for punching and forming processes. However, excessive lubrication can encourage an accumulation of fine material abrasion and can render the tool inoperative. TRUMPF provides the perfect lubricant for your application in a range of container sizes.

| **Punching** | |
|---|---|
| **Material** | **Suitable lubricants** |
| Steel and stainless steel | TRUMPF punching and nibbling oil |
| Aluminum and steel | Akamin cutting oil |

| **Tapping** | |
|---|---|
| **Material** | **Suitable lubricants** |
| Steel and stainless steel | Variocut B30 |
| Aluminum and aluminum alloys | Variocut C462 |

Different lubrication intensities can be set on the machine. Increased lubrication is required in particular for processing stainless steel and aluminum to avoid wear and material adhesion at the edges. The technical information for the corresponding forming tool provides a range of useful information to find the ideal lubrication and/or the ideal lubricant for a specific tool and material.

# Tool maintenance and setup

## Maintenance

It is advisable to clear material abrasion and lubricant residues from the tool during removal. Minor damage on the tool can be removed by using an oil stone, for example. A visual inspection of the punch will reveal whether a material adhesion around the edge has formed. This deposition should be removed. Forming tools, and in particular their associated spring elements and ejectors in spring-loaded dies, should be continuously checked and kept free from material build-up around the edges. The punch should then be lubricated for conservation purposes, preferably with an oil that does not resinate. The die carrier and the adapter should also be regularly cleaned of dirt and material abrasions, then lubricated. Spring elements in forming tools can wear out over time and as a result of dirt and heat production. If this happens, the spring elements should be replaced.

## Storage

It is important to store tools in a clean and orderly manner: If the tools are not exposed to dirt then they will not begin to rust and the cutting edges will not be damaged. Conserving the tools with oil will also protect against rust. TRUMPF tool cabinets (see chapter "Accessories") create the perfect conditions for storing tools: Specially designed tool holders carefully store the tools in a dust-free environment, reducing the cleaning times required for the tools.

Punching Tool Cabinet

## Setup

During setup, the main concerns are reducing non-productive times and avoiding setup errors. A few points should be taken into account in order to set tools up quickly and correctly.
When setting up a punch, for instance, it must be ensured that the punch cutting edge is precisely aligned to the alignment ring and that the correct alignment ring size is selected. For example, a size 2 punch must be fitted in a size 2 alignment ring within a tool cartridge. The QuickLoad tool cartridge loading device ensures a convenient setup (see chapter "Accessories").

Over the following pages tool features are presented which contribute to fast, simplified setup and help prevent errors in the process.

# Tool maintenance and setup

## EasyUse


Fig.1: EasyUse die

When setting up a die, it is important to check whether the die has been reground or not because the shims need to be selected accordingly. The patented TRUMPF tool standard EasyUse in the Classic System, uses a regrind scale on the die to show how much a die has already been reground, without the need for remeasuring. The corresponding shims are just as easy to find thanks to the hole labeling system. Several shims can be used to compensate for the regrind amount.

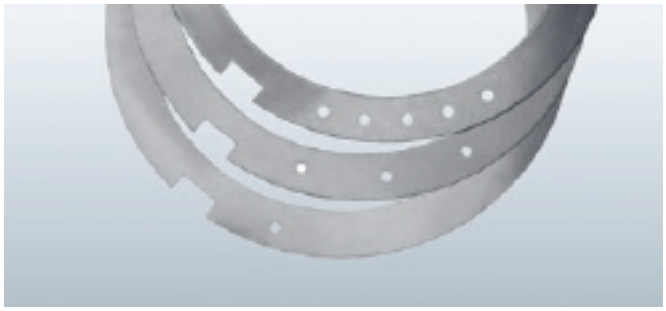


Fig.2: EasyUse shims

### The correct shim is identified as follows:

1. **Read the regrind scale interval.**
   The value of the interval indicates the thickness of the shims required in tenths of a millimeter. Compare with Fig.1.
2. **Select the shims.**
   The shims feature hole labeling. One hole corresponds to a thickness of 0.1 mm. Select the shims so that their thickness corresponds to the value that has been determined using the regrind scale of the die. Compare with Fig.2.

Experience the **EasyUse** in action
www.trumpf.info/xfptjk

### More tips

- A test stroke with the QuickSet device can check whether the die and punch are positioned for best results (see chapter "Accessories").
- When setting up the tools, it is important to ensure that the correct cutting clearance (see chapter "Cutting clearance") and the correct stripper (see chapter "Stripper selection") are selected.
- The Punching Tool Cart (see chapter "Accessories") allows you to quickly and conveniently transport tool cartridges that have been set up from the setup station to the machine.

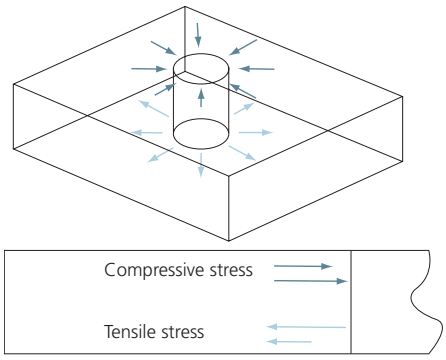
QuickSet

# Sheet flatness

Unwanted deformations can occur in the sheets, particularly if lots of geometries are punched very close to one another. These deformations then have to be corrected in a separate work cycle, which requires considerable effort.

## Development of sheet unevenness

**Tensions when punching in sheet metal**




Tensile and compressive stresses are generated in the sheet during the punching process. When the punch penetrates the sheet metal, the material on the upper side of the sheet is pulled into the cutting gap and is deformed in the process. This can lead to sheet unevenness, particularly if lots of punching strokes occur close together. Formed sections pushed upward or downward also generate tensions in the workpiece, which can severely affect the sheet evenness.

There are numerous approaches to counteracting sheet unevenness: using the active presser foot, tools with a leveling effect, the “integrated flattening” function with the corresponding tools and an appropriate choice of processing strategies.

## Active presser foot

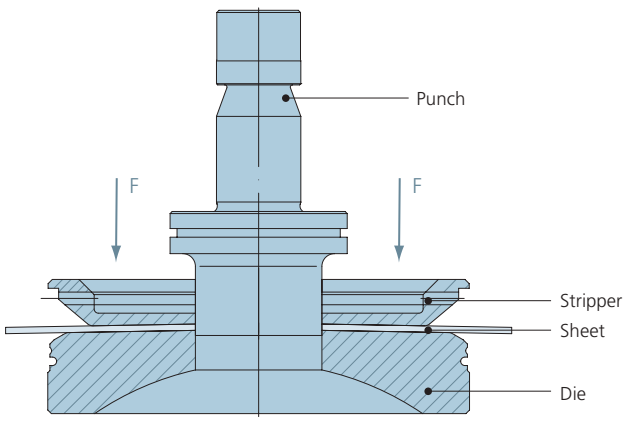
The active presser foot reduces sheet deformation: On the upstroke of the punch as it pulls out of the sheet, the sheet is held steady by the stripper and is not pulled upward. In this way, the sheet does not become wedged with the punch when the punch returns to its working height.

With malleable materials such as copper or aluminum, the presser foot may also have the opposite effect if it pushes against the sheet, causing the sheet metal to sag. This risk can be reduced if necessary on machines that have an adjustable presser foot pressure. To improve the positioning accuracy and the cut quality of the punches, the "delayed single stroke – precision stop" can also be activated on the machine.

## Tools with leveling effect

If tools with a leveling effect are used, this leveling effect will be more pronounced than when using the active presser foot. Tools with a leveling effect have a non-regrindable, convex die and a stripper with a concave-turned lower surface which are individually adapted to the customer's workpieces. The punch is still a standard punch.
It is important that the die and stripper are precisely aligned with each other. This means that the angle of both bevels needs to be exactly the same. This leveling effect generates counter-stresses in the sheet that limit the tensions caused by the punching process. In this way, the sheet metal distortion can be minimized.
The angle of the die and stripper must be adjusted depending on the material being processed.

**Leveling effect**



# Sheet flatness

## Integrated flattening,

With integrated flattening, the sheet is pressed against the stripper by the active die of the machine and the tool's die before every punching stroke. This means that compressive and tensile stresses in opposition to the stresses created by the punching process are applied to the sheet. The punching stroke is then applied to the pre-tensioned sheet using the same tool. Once the punching process has ended, the tensions will have neutralized each other and the sheet remains flat.

Integrated flattening is performed using convex size 1 dies. The stripper with a special coating features a recess that allows the sheet to be flattened appropriately.

TruTops' integrated rules provide support for programming. The flattening parameters can still be adjusted afterwards on the machine itself.

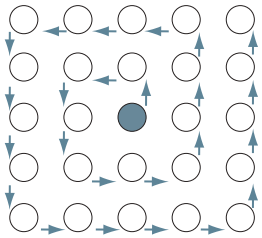
The following table gives an overview of the various options:

| | Active presser foot | Tools with leveling effect | Integrated flattening |
|---|---|---|---|
| **Improvement of flatness** | + | ++ | +++ |
| Influence on the flattening effect | Using the force of the presser foot | Using the force of the presser foot and the tool geometry | Using the active die and a special tool design |
| Flexibility | Manual or programmable adjustment of the presser foot force | Manual or programmable adjustment of the presser foot force | The customer can make a custom setting for the flattening effect independently and easily (on the machine itself) |
| Tools | No special tools required | Various tools necessary depending on requirements; determination of the appropriate tool for specific customer application in cooperation with your contacts at TRUMPF | One tool (die and stripper) can be flexibly used for any requirement |

Experience the **tools for integrated flattening** in action
www.trumpf.info/hsc0lm

## Processing strategy

**Processing strategy from the inside out**



■ Schematic diagram of the spiral

The tension in the sheet can also be decreased using a skillful processing strategy. A good flat surface can be achieved with a differentiated setting of punches and formed sections in the sheet. However, there are no hard and fast rules on how to do this, though. The right strategy can only be discovered through experience. It may be helpful to process the sheet following a spiral pattern, working from the inside out. This can be easily programmed in TruTops.

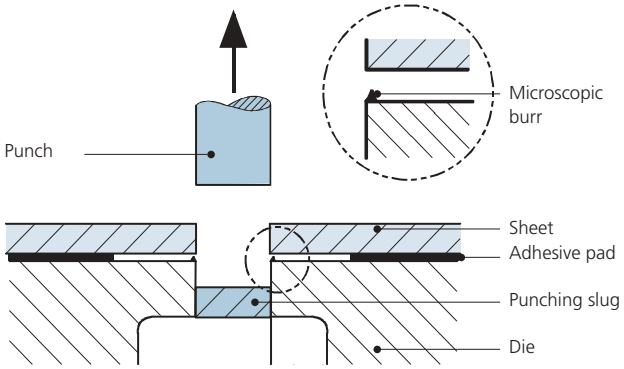
# Low-scratch/scratch-free processing

The standards expected of the processed sheet metal surface finish are constantly increasing. Whether you are producing a housing, facade or a device, TRUMPF offers a range of solutions for minimizing the formation of scratches and marks during sheet processing. It goes without saying that these solutions can be combined with an existing tool inventory.

## Development of scratches

When punching a workpiece, the friction between machine parts, tools and the workpiece can cause scratches to occur on the upper side and underside of the workpiece.
One typical cause of scratches is a minuscule burr on the upper edge of the die. A protrusion of size 1 dies beyond the intermediate ring likewise leads to increased formation of scratches.

**Development of scratches**




## Avoiding scratches

### 1. Ampco

Intermediate ring with Ampco insert

The malleable and wear-resistant Ampco alloy, made from copper, aluminum and tin, prevents scratches on the underside of the sheet thanks to its flexibility and lubricating effect. Ampco alloys are particularly good at preventing scratches when used with intermediate rings for forming dies. The intermediate rings are supplied with an Ampco insert for thin sheets or with an Ampco lid for all sheet thicknesses. An ejector for forming tools is also available in this variant.

### 2. Brush inserts

Intermediate ring with brush insert

Another possible method for reducing scratches on the underside of the sheet is to use brush inserts in dies and intermediate rings. They can be used flexibly and are particularly suited to use with thin sheet metal. As the brush inserts are approx. 1 mm higher than the upper edge of the tool, they prevent the tool surface from making direct contact with the sheet being processed.

### 3. Adhesive pads

Adhesive pad

Adhesive pads are preformed, self-adhesive films that are 0.3 mm thick. Different adhesive pads can be adhered to dies, intermediate rings (for the underside of the sheet) and strippers (for the upper side of the sheet). They prevent the formation of scratches and stripper marks on the workpiece. They are a simple and cheap way to improve the surface finish on the workpiece. Before applying the pad, the tool should be cleaned and all grease removed so that the adhesive pad sticks securely.

### 4. Specially coated stripper

Specially coated stripper

The specially coated stripper prevents marks and scratches forming on the upper side of the sheet. When it is used as an active presser foot, there are hardly any marks compared to an uncoated standard stripper. The stripper has a permanent coating that is wear-resistant thanks to its smooth, dirt-repellent surface; material abrasions have very little chance of sticking to the surface. The high-quality coating gently transfers the presser foot force onto the sheet.

# Low-scratch/scratch-free processing

## 5. MultiTool, mark-free

This special MultiTool features a patented control element in the punch which holds the inactive punches back. The blanking die of the die and the specially coated stripper, which is specifically adapted to the punch inserts and configuration also ensure a flawless result on the upper and underside of the sheet.

MultiTool, mark-free

## 6. Correct tool maintenance

Another measure that can be taken to avoid scratches is regular tool maintenance. If there are signs of wear such as abrasion or damage to the tool cutting edges,, the punch and die must be reground on the front to ensure low-scratch processing. The correct shims must then be placed underneath the reground die (see chapter "Tool maintenance").

## 7. "Descending die" or "active die" machine option

By using the descending die or active die, sheet metal parts with an outstanding finish can be produced. As the descending or active die moves downward, there is no contact between the die and the sheet during the travel motion.

## 8. Slug retaining function

Slug retention dies prevent the punching slug from being pulled upward on the upstroke of the punch and the travel motion from scratching the sheet metal. During the punching stroke, the high forces exerted cause the material to enter small grooves in the die. If the punching slug on the punch is then pulled upward, it is held back by the grooves. Using beveled punches remains possible. The use of slug retention dies is advisable if the suction system on the machine is turned off to prevent scratching.
Warning: If you are working in nibbling mode, the slug retaining effect described is not possible.

Slug retention die

## 9. Brush table

The use of brush tables prevents contact between the underside of the sheet and machine and tool parts that cause scratches, in particular the die. The sheet slides along on the brushes, which give in to the direction of movement due to their length. In contrast to tables that are equipped with ball rollers, where the ball marks may show up on the underside of the sheet, the brush table does not leave any kind of mark.

Brush table

## Tips for your daily work

**Working with an active presser foot**

Working with an active presser foot considerably reduces deformations in the sheet and therefore reduces the formation of scratches. Using a specially coated stripper can prevent marks from forming.

**Elevated working height**

Scratches on the upper side of the sheet that are caused by the stripper can be prevented by using an elevated working height (stripper is 1 mm higher).

**Additional measures**

- The punch and die should be precisely aligned with one another to avoid burr formation (for example, by using the TRUMPF QuickSet device, see chapter "Accessories") and regularly reground (for example, by using the TRUMPF QuickSharp device, see chapter "Accessories").
- Cleaning table surfaces, brushes and brush fields daily will prevent the formation of deposits that may cause scratches. It is advisable to readjust or replace the brushes and brush fields as and when required.
- Polishing the upper edges of dies and intermediate rings – and the underside of the stripper – will also help to prevent scratching.

# Increasing dimensional accuracy

In some cases, it is necessary to ensure a particularly high level of dimensional accuracy, for example when producing blanks or punches for joints. TRUMPF has a range of solutions for increasing dimensional accuracy.

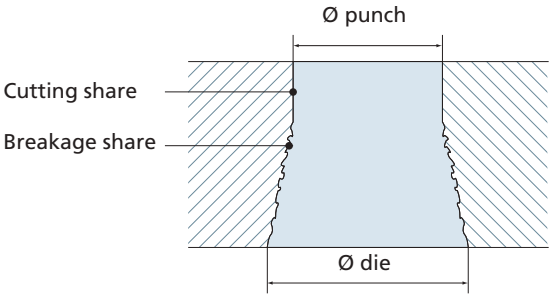
## Restricted tool tolerance

TRUMPF tools are high-precision tools and are manufactured as standard with restricted tool tolerances. However, in particular circumstances, it may be sensible to restrict the manufacturing tolerance of the punch and die even further. This is advisable when processing thin sheet metal using very narrow cutting gaps, for example.
The following table shows the manufacturing tolerances and restricted tolerances of standard tools for punches and dies.

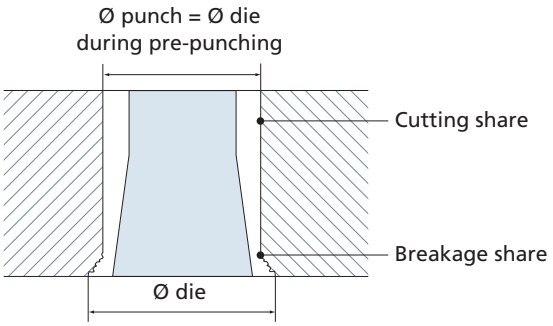
| Manufacturing tolerances of standard tools (in mm) | | Restricted tolerances (in mm) | |
|---|---|---|---|
| Punch | 0.00<br>- 0.03 | Punch | 0.00<br>- 0.01 |
| Die | + 0.05<br>0.00 | Die | + 0.03<br>0.00 |

## Punching precision fits

**Cutting shares for normal punching operations in comparison with precision fits**




■ Normal punching




■ Precision fit punching

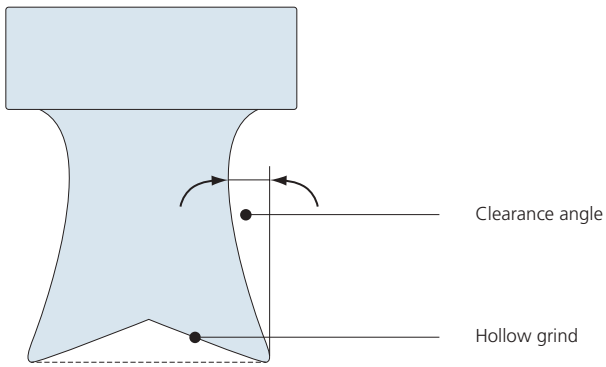
As well as being able to restrict the tolerances, TRUMPF offers another solution for high-precision punching operations: a special punch for precision fits. The tolerance class that can be achieved varies depending on the measurement range and is approx. H9/10. The tolerance is also influenced by the sheet thickness and material quality. Precision fits are more exact as the cutting share is increased by the following values in comparison with normal punching operations:

| | Normal punching | Precision fit punching |
|---|---|---|
| Cutting share | 33% | 80% |
| Breakage share | 67% | 20% |

# Increasing dimensional accuracy

## Operating principle

**Special punch for precision fits (for post-punching)**




To increase the cutting share when punching precision fits, the punching process must take place in two working steps. A special punch featuring a specific design for precision fits is required.

**1. Prepunching**

The first working step consists of prepunching using a standard punch where the diameter is reduced by the size of the cutting clearance (see chapter "Cutting clearance").

**Prepunching diameter d = punch dimension - cutting clearance**

Example: Round 4 mm punch in 2 mm sheet, cutting clearance: 0.4 mm
Prepunching diameter d = 4.0 mm - 0.4 mm = 3.6 mm

**2. Post-punching**

In the second working step, the special punch for precision fits is used for post-punching. A standard die with a cutting clearance of approx. 0.1 – 0.2 mm can be used for this.
The special punch has a larger clearance angle and a hollow grind and therefore has an extremely sharp cutting edge, which is used to scrape out the hole.

## Punch with integrated alignment ring

When processing sheet metal thicker than 2.5 mm or using nibbling mode, it is advisable to use a punch with an integrated alignment ring. This prevents the punch from twisting in the event of off-center load and heavy forces.

# Edge quality

Sharp sheet edges present a risk of injury and are particularly undesirable on visible edges. In these cases, it is often necessary to carry out follow-up work where the punching burrs are subsequently removed. With its special punching tools, TRUMPF demonstrates how the edge quality can be improved with complete processing performed directly on TRUMPF punching and punch laser machines.

MultiShear slitting tool

## MultiShear slitting tool

When cutting out sheet metal parts, conventional slitting tools often create annoying nibbling marks. By contrast, the MultiShear slitting tool for TruPunch and TruMatic machines ensures exceptional edge quality and saves on costly reworking. The MultiShear can be used for outer and inner contours as well as for common separating cuts. The MultiShear die has brush inserts for low-scratch processing. When the sheet is moved, it slides across the brushes so that there is no direct contact between the sheet and the die. A stepped stripper is available for cutting close to formed sections. The edge quality is further improved by subsequently using deburring tools.

MultiShear for trimming

The TRUMPF MultiShear for trimming is specially designed for trimming sheet edges without leaving marks.
When trimming with the MultiShear, the overlap, i.e. the separated sheet metal strip, should be at least 3 mm wide. An overlap of 10 mm is recommended. This ensures the lowest possible wear on the tool and the highest possible part quality. Compared with conventional tools for trimming, this small overlap saves on material and costs. In addition, the punch is supplied with a MultiDur Performance coating to prolong the service life (see chapter "Tool life").

Trimming punch with bevel shear

## Trimming punch with bevel shear

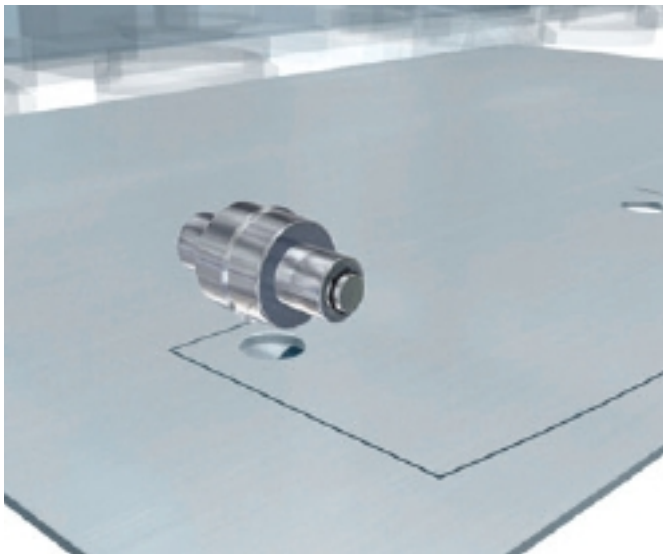
The trimming punch with bevel shear offers another option for trimming. The geometry of the punch stabilizes it and makes it possible to use the punch from all four sides.
The TRUMPF MultiDur TiCN coating also ensures that the punch is particularly resistant to wear and can therefore be used longer (see chapter "Tool life"). The integrated alignment ring prevents the punch from twisting while processing.

# Edge quality

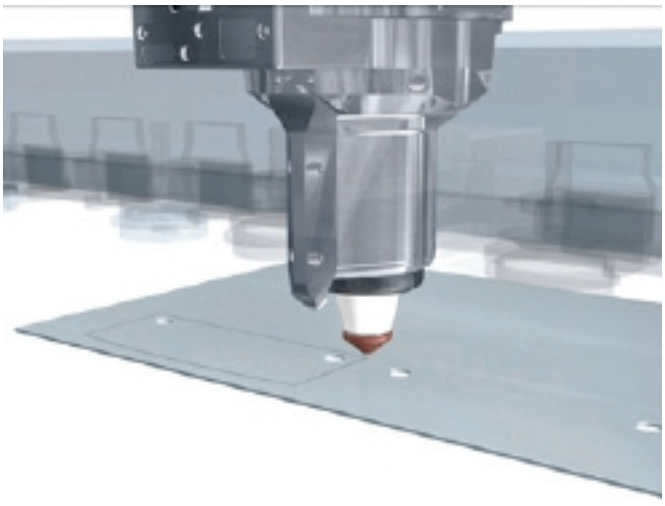
## Chamfered laser edge

When producing laser edges, a chamfer is often required to round off the sharp 90° edges. This guarantees simple and safe handling.

With the "chamfered laser edge" function, this is easy to do: On the TruMatic 6000 and TruMatic 7000 machines, laser edges can be quickly finished using the roller pinching tool to chamfer, without having to adjust the laser parameters or perform follow-up work. First, a notch with a 120° angle is made in both sides of the sheet metal using a roller pinching tool. Then the laser separates the sheet by directing the cutting beam at the notch base. The result: a perfectly chamfered laser edge.



**Notch.** The roller pinching tool creates a 120° notch on both sides.



**Laser cut.** The cutting beam is directed at the notch base and perfectly separates the sheet by chamfering.

Experience the **roller pinching tool** in action
www.trumpf.info/j6udxg

# Edge quality

## Deburring

When manufacturing burr-free sheet metal parts on punching and punch laser machines, there are various tools to allow components to be deburred on the machine itself. This eliminates the need and effort of subsequently removing the punching burrs and considerably reduces throughput time, particularly in the case of coated sheets and formed parts. What's more, the improved edge quality reduces the risk of injury during the subsequent processing.

Depending on the application in question and the required quality, there are various solutions available to increase edge quality: the patented roller deburring tool – which delivers the highest quality results in combination with the deburring MultiTool – and the ball deburring tool as an alternative for flexible use.

## Ball deburring tool

For deburring small and large contours alike

The ball deburring tool can be used for deburring both small and large contours and therefore offers the highest flexibility. It is especially well suited for the deburring of complex holes and the corners of workpieces. The punching burr is compressed between the two balls in the punch and die, which causes a chamfer to develop on the upper and lower side of the sheet. Deburring is also possible near to formed sections thanks to the beveled punch head.

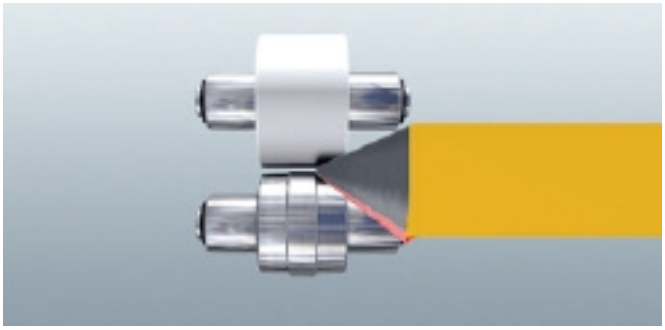
**Ball deburring tool:** Both balls in the punch and die compress the punching burr.

## Roller deburring tool and deburring MultiTool

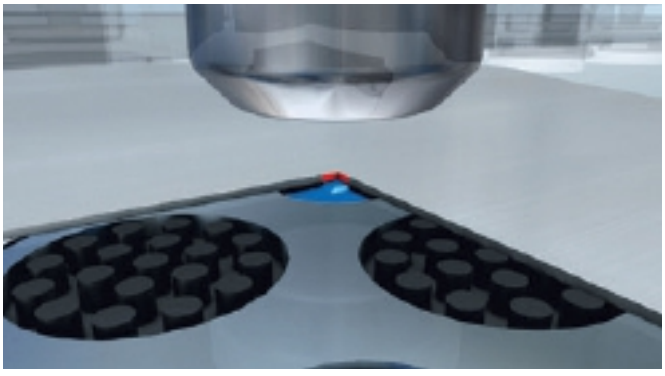
For deburring simple, large contours with optimum deburring results

The roller deburring tool is mainly used for simple, large contours. The deburring MultiTool is used for forms whose travel radius is smaller than 20 mm. The remaining punching burr is processed in single-stroke or nibbling mode using the three integrated embossing inserts in the die.

Due to the fact that the punched edges are perfectly rounded off with the roller deburring tool and parts which are practically free of burrs can be achieved, it is particularly suited for visible edges. By modifying the roller contour to the altered burr and the width of the separation gap, a high-quality result is ensured in all sheet thickness ranges. You can achieve an even better edge quality if the MultiShear slitting tool is used as well.



**Roller deburring tool:** The embossing roller (below) dislodges the burr (red) and chamfers the sheet edge (gray).



**Deburring MultiTool:** :The embossing insert in the die dislodges the burr at the corner and chamfers the sheet edge.

Experience the **roller deburring tool** and the **Deburring MultiTool** in action
www.trumpf.info/23clmq

# Embossing quality

In practice, sheet thickness is rarely consistent and, according to DIN EN 10139, may even exhibit tolerances within a single batch. Variations in the sheet thickness may negatively impact the forming and embossing processes and therefore the part quality.
This means that the depths of the embossing and identification marks in the sheet fluctuate and the proportions of formed sections vary as well. TRUMPF provides a simple solution in the form of adaptive stroke calibration; you can determine the exact sheet thickness before processing and adjust the tools in use to that sheet thickness.

## Adaptive stroke calibration

Embossing too deep

Embossing too shallow

Ideal embossing – with adaptive stroke calibration

Using adaptive stroke calibration and the calibration tool, TRUMPF punching machines and punch laser machines can determine the sheet thickness on their own, thus avoiding embossing that is too deep or too shallow. After the measuring procedure, the machine accurately adjusts the lower dead point of the ram's movement to the measured sheet thickness: As soon as the calibration tool detects the position of the sheet surface, the ram control on the machine detects the position of the ram. The ram stroke is then accurately calibrated. This achieves the best possible results in embossing and forming. Sheet thickness tolerances are automatically compensated and products are of the highest quality from the very first part.
Another advantage: The processing result can be reproduced as you require, even on other machines with adaptive stroke calibration.

Calibration tool

Adaptive stroke calibration with a calibration tool is worthwhile for the following processes:

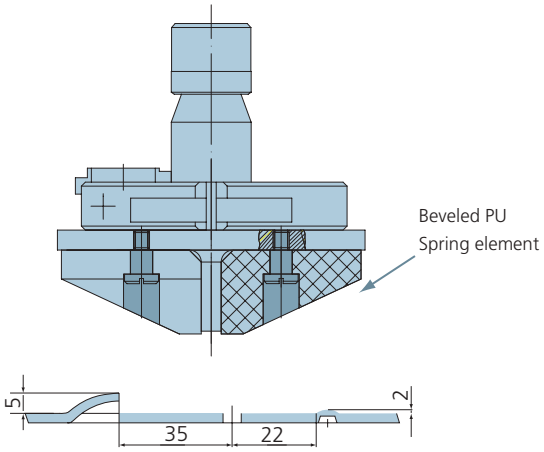
- Embossing tools: for a consistent embossing depth
- Forming tools: for a consistent forming height
- MultiShear: for consistently good cutting quality
- MultiBend: for angles that are always correct
- Roller pinching: for consistent predetermined breaking points

# Cutting close to formed sections

It is often necessary to cut sheet metal parts close to formed sections. In doing so, though, you will soon come across problems with the standard slitting tool. If the cut is too close to the formed section, the formed section or the tool could be damaged. For this reason, TRUMPF offers customized solutions for cutting close to formed sections, namely a stripper with an elastomeric spring made from a special synthetic (PU stripper) or the steel presser foot.

## PU stripper

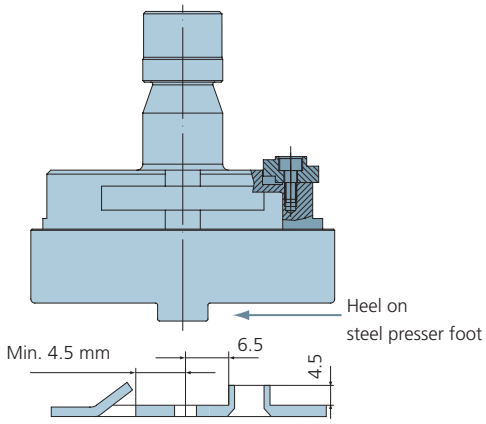
**Slitting tool for cutting close to formed sections**




The TRUMPF slitting tool for cutting close to formed sections has an integrated PU spring element that replaces the use of a standard stripper. The PU spring element takes on the stripper function. The bevel on the spring element means that it is possible to cut closer to an existing formed section than with a conventional slitting tool with a standard stripper. In addition to the standard PU spring element, TRUMPF offers spring elements for specific requirements that can be customized to your needs.

## Steel presser foot

**Slitting tool for cutting close to formed sections**




To cut even closer to formed sections, a steel presser foot can be used. As the steel presser foot has a heel, it is possible to have a smaller clearance between the separating cut and the formed section. The steel presser foot works in a similar way to an active presser foot by pushing the sheet metal down on the upstroke. Specially adapted spring packages are available from TRUMPF.

# Reliable removal

The removal of small parts may cause errors: With thin sheets, parts may catch when being pushed out, and removal through the chip tube means that sorting is necessary later. TRUMPF offers a range of solutions that can make the removal of small parts simple and reliable.

Ejector tool

## Ejector tool

With small, laser-cut parts that have complicated geometries, removal using a part removal flap or a laser console is often not possible. The ejector tool offers support in this process. It is used to eject small laser-cut parts using microjoint technology – quickly and with high process reliability. For this purpose, the ejector punch is placed on the microjoint, the part is cut off with a single stroke and ejected through the die. The maximum part area to be ejected is limited by the die size and amounts to 50.1 mm (square) or 70.1 mm (round).

Ejector MultiTool

## Ejector MultiTool

The ejector MultiTool likewise reliably separates microjoints and ejects small laser-cut parts through the die and into the punching console with high process reliability. By contrast to the ejector tool, the ejector MultiTool features a punch with five different round or angular inserts to match any part geometry. A round or straight contour can be processed without the need for a tool change.

Experience the **Ejector MultiTool** in action
www.trumpf.info/gdk7si

Ejector tool for sorting

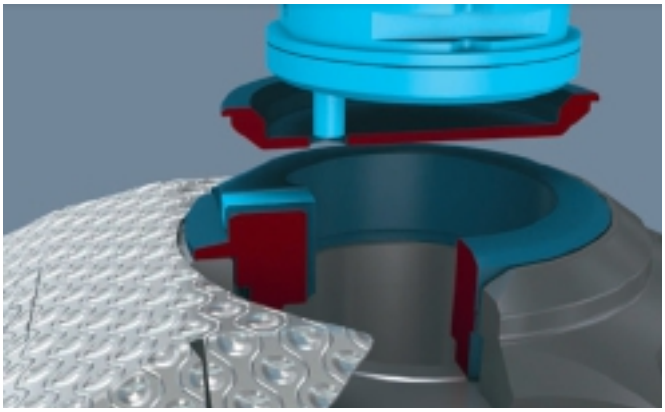
## Ejector tool for sorting

The ejector tool for sorting doesn't only eject small laser-cut parts with high process reliability. Its advantages become obvious when sorting finished parts and remaining parts in particular: Thanks to the special machine drive on the TruMatic 1000 fiber, the so-called Delta Drive, the ejector tool sorts small laser-cut parts into up to four different containers. This is made possible because the patented Delta Drive allows the punching head to move in the Y-direction for the first time. Because of this, the punch and die are able to move independently of each other and both cutting edges of the dies can be moved into position.

Experience the **Ejector tool for sorting** in action
www.trumpf.info/b6uo7f

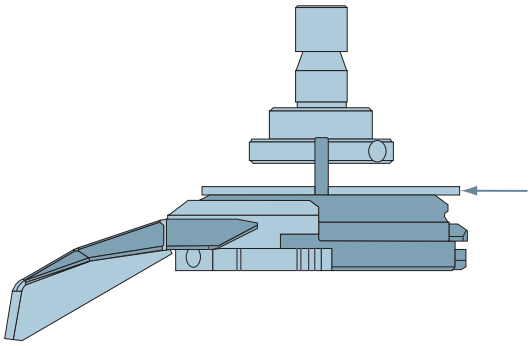
# Reliable removal

In the ejection process itself, the scrap pieces are first separated from the sheet using the cutting edge on the inside of the die. These fall through the die into the chip container. The finished parts are then ejected into the finished parts container via the cutting edge on the outside of the die and the part chute. This renders the subsequent sorting of finished parts and scrap pieces unnecessary and minimizes scratches on the finished parts. If the size of the scrap pieces exceeds the size of the die opening, they can also alternatively be ejected via the part chute

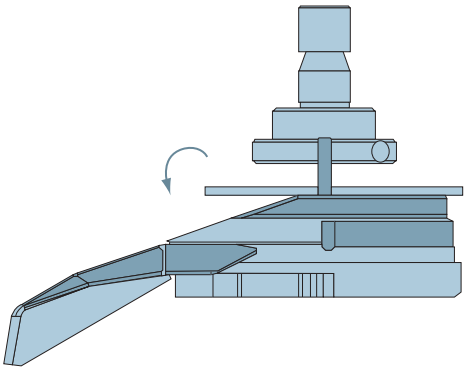


## Slitting tool size 5 for removing small parts

### Pushing out vs. tipping



■ Until now, small parts have been ejected by, for instance, getting pushed out.



■ However, with the size 5 slitting tool, small parts can now also be tipped by the die and reliably ejected.

The size 5 slitting tool substantially simplifies the removal of small parts: The part is tipped by the bevel on the die and is removed reliably through the part removal flap or part chute.
But the size 5 slitting tool for removing small parts also has other functions. It can be used for cutting, as is usual, or for clamping and rotating in combination with the bi-level stripper for skeleton-free processing (see following page). This simplifies processing on all machines that have an active or descending die.

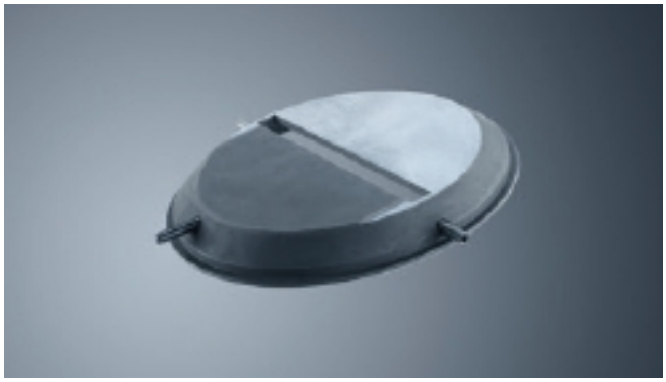
Slitting tool size 5 for removing small parts

Experience the **slitting tool size 5 for removing small parts** in action
www.trumpf.info/5wmjgs

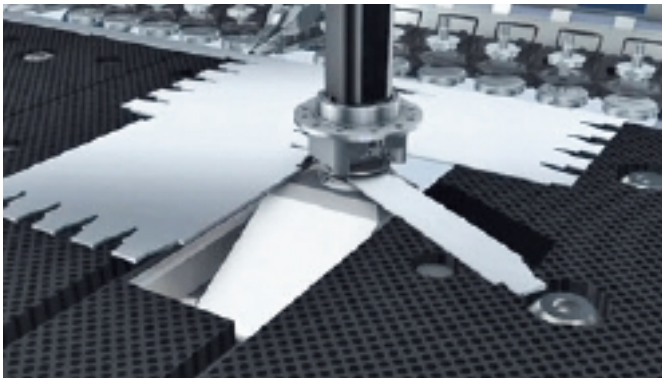
# Reliable removal

## Bi-level stripper with clamping function for skeleton-free processing

The bi-level stripper allows sheet metal parts to be clamped and rotated between the die and the stripper during separation. The sheet metal parts can then be easily ejected via the part chute. This means that even large parts which exceed the maximum dimensions of 180 mm in width and 500 mm in length can be ejected via a part chute. The remaining strips of scrap can also be cut into smaller pieces and ejected via the bi-level stripper, meaning that it is no longer necessary to manually remove the strips of scrap.



Bi-level stripper with clamping function



Clamping and rotating parts

# Particularly high/large formed sections

At the customer's request, TRUMPF can produce forming tools with a new scale. Size 5 tools facilitate the production of large forms in a single stroke and can be used on the new generation of punching machines and punch laser machines without additional machine options. This substantially increases the range of processing options.
The TRUMPF product range includes size 5 forming tools for the "active die" machine option which allow you to exploit the potential of TRUMPF machines even further.

Tried-and-tested punching and forming possibilities

| Size 0 | Size 1 | Size 2 |
|---|---|---|
| Punch outer circle up to 10.5 mm | Punch outer circle up to 30.0 mm | Punch outer circle up to 76.2 mm |

Enhanced size 5 forming possibilities

| Size 5 | Size 5 active die |
|---|---|
| Punch outer circle up to 110.0 mm | Punch outer circle up to 110.0 mm |

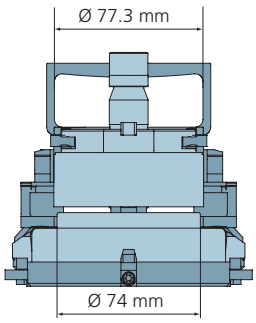
## Size 5 forming tools

Louver tool size 5

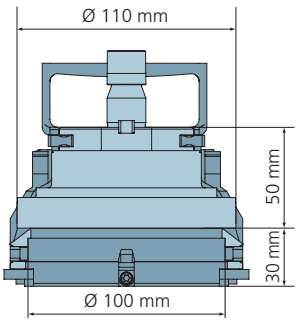
Punches have an outer circle which is limited by the the design of punching machines to 76.2 mm (size 2). TRUMPF goes beyond this, though, offering enhanced design possibilities for sheet metal forming with size 5 tools, meaning that punch dimensions up to 110 mm can be realized. This is made possible by an enlarged installation space for the tools. No new machine options are required for **size 5 forming tools.** The tools can be installed directly into your current machine with a size 5 tool cartridge (e.g. TruPunch 1000). Top quality formed sections are achieved in a single stroke.

The maximum dimensions specified are for general reference. Size 5 forming tools are always accurately tailored to the requirements and produced after individual consultation.

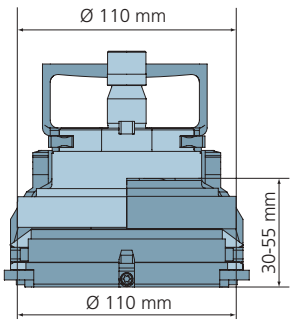
**Enlarged installation spaces for size 5 tools**




■ Maximum dimensions, size 2




■ Maximum punch, size 5




■ Size 5 offers more flexibility for the die height in machines with the "active die" machine option

# Particularly high/large formed sections

## Active die

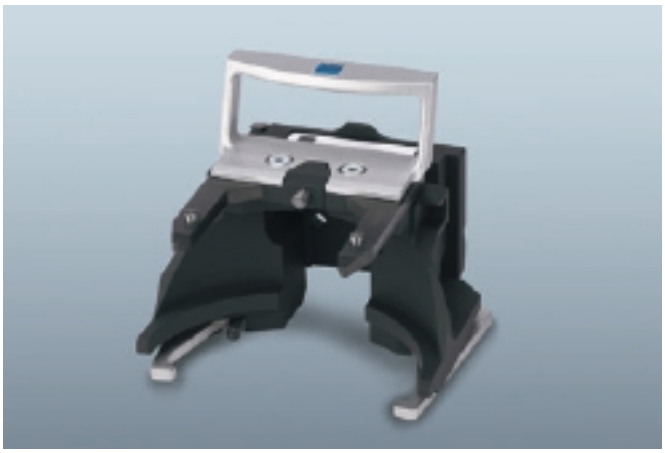
With the "active die" machine option and the appropriate forming tools, either size 2 or size 5, TRUMPF enables formed sections to be processed with heights never before seen. To produce the high formed sections, the die is lowered out of the formed section, enabling an active forming stroke to be performed from below. As processing with an active die is designed to be done with tools that do not have a beveled key tip, a greater surface area is available for tool design and processing. Aside from the forming process, the active die facilitates low-scratch punching and forming processes because it can be lowered automatically so that it does not touch the sheet during positioning. This also makes it even easier to perform forming processes close to a clamp.

Extrusion tool size 5 for the active die

Experience the **tools for the active die** in action
www.trumpf.info/8ycp4x

## Tool cartridge size 5

The construction of the size 5 tool cartridge differs from that of the smaller cartridges. Thanks its improved support, large tools can be used reliably.
The die carrier is integrated into the die. The die itself is supported around the outside by a wide collar on the cartridge.
The punch with integrated alignment ring is held in place by a larger centering pin on the cartridge and by reinforced spring-loaded cartridge arms. These measures ensure that no size 2 standard tool can be set up in a cartridge designed for a size 5 tool. Errors can therefore be prevented during setup.



Tool cartridge size 5

# Countersinks for every requirement

As a general rule, countersinks of up to 75 percent of the sheet thickness are possible. However, there are applications for which 100 percent countersinks are required – cases in which an improved hold is required for screws.

TRUMPF offers various solutions that enable you to react flexibly to different requirements – both for 75 percent countersinks and countersinks of up to 100 percent of the sheet thickness.

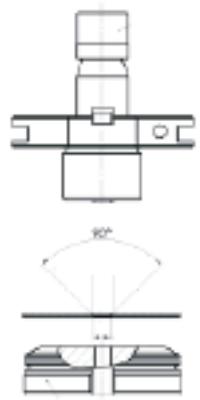
## Countersink tool

A cost-effective solution for geometries with a maximum countersink depth of 75 percent

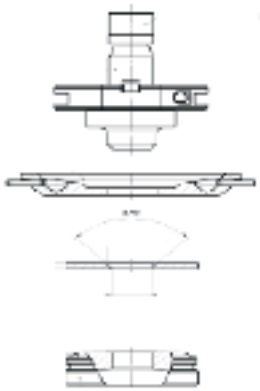
Thanks to its simple construction with a size 2 punch and a size 1 die, this countersink tool is a very cost-effective solution for the production of countersinks for screws.

If greater sheet flatness is required, there is the option of implementing a countersink tool with a reinforced stripper which then functions as an active presser foot.

Prepunching is performed first for both tools before the countersink is put in the sheet. The maximum possible countersink depth is 75 percent of the sheet thickness.



Countersink tool without reinforced stripper



Countersink tool with reinforced stripper

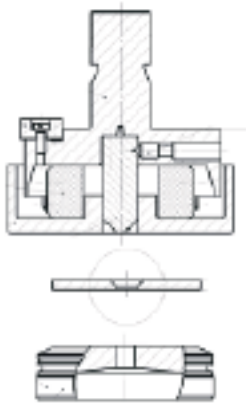
## Countersink tool with integrated presser foot

A flexible solution for various countersink geometries with a maximum countersink depth of 75 percent

This countersink tool is highly flexible, covering a wide range of applications. Its interchangeable components allow it to be used for many different countersink geometries. What's more, a high degree of sheet flatness can be achieved using this tool because the presser foot is integrated into the tool itself.

Countersinks conforming to DIN standards can be manufactured with off-the-shelf products. Special geometries can also be manufactured upon request.

Prepunching is also performed first with this countersink tool before the countersink is formed in the sheet. The maximum possible countersink depth is 75 percent of the sheet thickness.



Countersink tool with integrated presser foot

# Countersinks for every requirement

## Countersinking with the special "star" punching tool

A cost-effective solution for a countersinking geometry with a countersink depth of up to 100 percent

To produce countersinks with a countersink depth of up to 100 per cent of the sheet thickness, a star-shaped prepunching operation is required, for example using the special "star" punching tool.

This tool is designed for a specific countersinking geometry. Prepunching using a round tool is therefore entirely omitted.
After prepunching using the special "star" punching tool, the countersink of almost 100 percent is made using a countersink tool with a reinforced stripper.

If the evenness of the sheet is of great importance, this can subsequently be optimized using a planishing tool.

Special "star" punching tool

## Countersinking using tool shape 36

A flexible solution for various countersinking geometries with a countersink depth of up to 100 percent

Countersinks of up to 100 percent can be manufactured with this solution – and that even applies for various countersinking geometries.

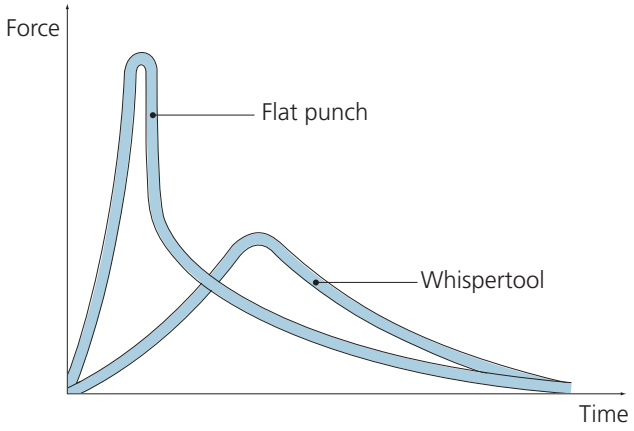
After prepunching with a round tool, the elliptical tool shape 36 is used to create a star shape in eight strokes. In the process, two different sizes of tool shape 36 can cover all standard countersinking depths.
Finally, a countersink tool with a reinforced stripper can in turn be used to achieve the 100 percent countersink.

Countersinks produced in this way can also be post-processed using a planishing tool if the sheet flatness is unsatisfactory.

Tool shape 36

# Punching thicker sheets

When processing sheets that are thicker than 3 mm, high punching forces are created, which could reduce the service life of the tool and machine. The punching forces can be decreased with a bevel. The reinforced punch and die versions make the tool more stable. Diameters that are smaller than the sheet thickness can be achieved with a punch that has a guided cutting edge.



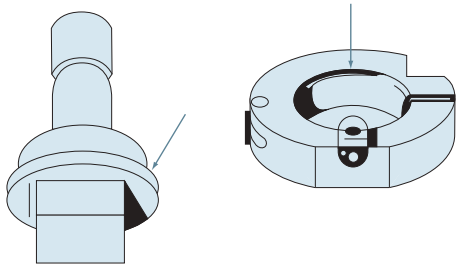
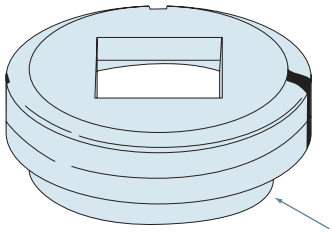

Force/time graph

## Bevel to reduce punching force

Beveled punches reduce the punching force that is required for processing thicker sheets (see chapter "Punching force and shear strength"). Depending on the sheet thickness, the punching force required can be reduced by up to 72% in comparison with a flat tool. As the surface of the punch penetrates more slowly into the sheet thanks to the bevel, the force progresses over a longer period of time and only a fraction of the original punching force needs to be applied.

## Reinforced version

If the sheet metal is particularly thick, has a high tensile strength, or is made of heavy-duty steel, it is advisable to use reinforced versions of tools to increase stability and avoid tool breakage. In many cases, it is sufficient to just use a reinforced die.

| | **Punch with reinforced shoulder and alignment ring with large inside diameter** | **Reinforced die** |
|---|---|---|
| |  |  |
| **Maximum outer circle** | ■ 42.0 mm | ■ 62.0 mm |
| **Application ranges** | ■ Dependent on material, sheet thicker than 3 mm<br>■ For punching and nibbling mode in high-tensile sheets<br>■ For punching forces from 150 kN<br>■ For awkward punching geometries | |
| **Result** | ■ Prevention of tool breakage if punching forces are too high | |

# Punching thicker sheets

## Punch with guided cutting edge

If you are using punch dimensions that are smaller than the thickness of the material, it is worth using punches that have a guided cutting edge. These are specially designed for punching of very small holes in sheet up to 4 mm thick. The application range of a punch with guided cutting edge depends on the material and the sheet thickness:

| Material | Tensile strength | Minimum punch diameter |
|---|---|---|
| Stainless steel, chromium-nickel-steel | 700 N/mm² | 1 x sheet thickness s |
| Mild steel | 400 N/mm² | 0.8 x sheet thickness s |
| Aluminum, aluminum alloy | 300 N/mm² | 0.6 x sheet thickness s |

## Coatings

When punching thicker sheets, a high level of friction is generated between the punch and sheet. This causes the tools to wear out quickly. By using coatings (see chapter "Tool life"), the friction between the punch and sheet metal can be reduced, thus increasing the service life of the tool considerably.

# Punching thinner sheets

Particular challenges arise when punching very thin sheet metal that is no thicker than 0.5 mm. On the one hand, the sheet can be pulled upward by the force of the upstroke during punching; on the other hand, the small cutting clearance required for thin sheets means that the punch and die have to be accurately positioned centrically. TRUMPF has a range of solutions for these challenges.

## Slug retention die

Slug retention die

A slug retention die prevents the punching slug from being pulled upward on the upstroke of the punch. This die can be used for the whole punching process. However, this kind of die is particularly recommended for use when processing sheets that are less than 1 mm thick as it prevents the punching slug from catching on the sheet. During the punching stroke, the material "flows" into small keyways in the slug retention die because of the high force exerted. If the punching slug on the punch is then pulled upward, it stays in position in the grooves. It is still also possible to use beveled tools (such as the Whispertool).

Slug retention dies can also be used for low-scratch processing if the suction system on the machine is switched off (see chapter "Low-scratch processing").

Warning: The slug retention effect does not work in nibbling mode.

## Close-fit stripper

A stripper with the maximum dimensions is used as standard with a MultiTool. This can cause thin sheets to be pulled upward on the upstroke, creating marks on the sheet.
Using a close-fit stripper that is precisely adjusted to the geometry of the MultiTool inserts means that unwanted marks on the sheet can be avoided.

# Punching non-metallic materials

For some applications, conventional sheet metal is not appropriate and non-metallic materials need to be processed instead. These can also be processed extremely efficiently on TRUMPF machines and using TRUMPF punching tools.
As it is not necessary to move to another machine and use different tools, non-metallic materials represent an attractive option: New customers and orders can be acquired and the efficiency of the machinery increases.
To ensure that the interaction between the new material, the machine and the punching tool is the best that it can be, in-depth consultation is required beforehand. The TRUMPF specialists have a wealth of experience in this field.

## Application examples

| Material type | Application | Feature | Solution |
|---|---|---|---|
| Composite panel | Interior lining in vehicle cabs | Combination of tensile material and elasticity | Punch a plastic layer between two aluminum layers |
| Wood | Connecting elements in furniture construction without fins, with low waste | The wood fibers must be broken before punching | Emboss a contour and break the grain structure in a single stroke |
| Plastic | Profile supports with small diameters for radiotherapy | Plastically deformable material at low temperatures | Burr-free holes in thermoplastic material with a cluster tool and special die geometry |
| Laminate panel | Ceiling lining | Flawless visual effect without burr formation using low number of punching strokes | Process a laminate panel made from paper that is coated with synthetic resin using a cluster tool with narrow cutting clearance |
| Polyurethane | Sieve bottoms | Flexible material | Process in a clamping frame, special tools with negative cutting gap |

# Ordering made easy

## Order forms for TRUMPF tools.

A convenient and easy ordering process is essential for ensuring that your tool is delivered on time. In this chapter, you will find request and order forms that will simplify the ordering process for you. They will help you ensure that you have given us all the important information we need. Special forms, e.g. for defining and ordering a shape tool, provide additional supporting information.

Have you thought of everything? Our check list in the front inside cover of the catalog provides helpful tips. Please consider the "Important ordering specifications" on each product page as well.

Whether it is by e-mail, phone, fax, or online, we would be happy to advise you promptly and professionally.

# Order forms

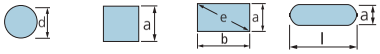
# Order form

## Standard punching tools

TRUMPF Werkzeugmaschinen GmbH + Co. KG
**E-mail: export.tooling@trumpf.com**

| | |
|---|---|
| **Company:** | **Order no.:** |
| | **Date:** |
| | **Page:** |
| **Customer number:** | **Machine type:** |
| **Contact person:** | **Material:** |
| **Phone:** | **Sheet thickness s in mm:** |
| **Fax:** | **Delivery date:** |

☐ Order ☐ Request

| Quantity | Name | | | | | Shape | | | | | Dimension | Coating MultiDur | Punch shear | | | Reinforced version | MultiTool | MultiUse | Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Punch | | | | |  | | | | | | | | | | | | | |
| | Size 0 | Size 1 | Size 2 | Die | Stripper | | | | | 1 - 40 | a, b, d, e, l, R, α | TiCN Performance, Alu | Flat | Whisper | Roof | | 4-, 5-, 6-, 10-station | | EUR |
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For accessory parts and special tools, please see separate ordering list

**Comments**

# Order form

## Accessories + special tools

TRUMPF Werkzeugmaschinen GmbH + Co. KG
**E-mail: export.tooling@trumpf.com**

| | |
|---|---|
| **Company:** | **Order no.:** |
| | **Date:** |
| | **Page:** |
| **Customer number:** | **Machine type:** |
| **Contact person:** | **Material:** |
| **Phone:** | **Sheet thickness s in mm:** |
| **Fax:** | **Delivery date:** |

☐ Order ☐ Request

| Quantity | Name | Dimension (mm) | Order no. | Price/item in EUR |
|---|---|---|---|---|
| | | | | |
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**Comments**

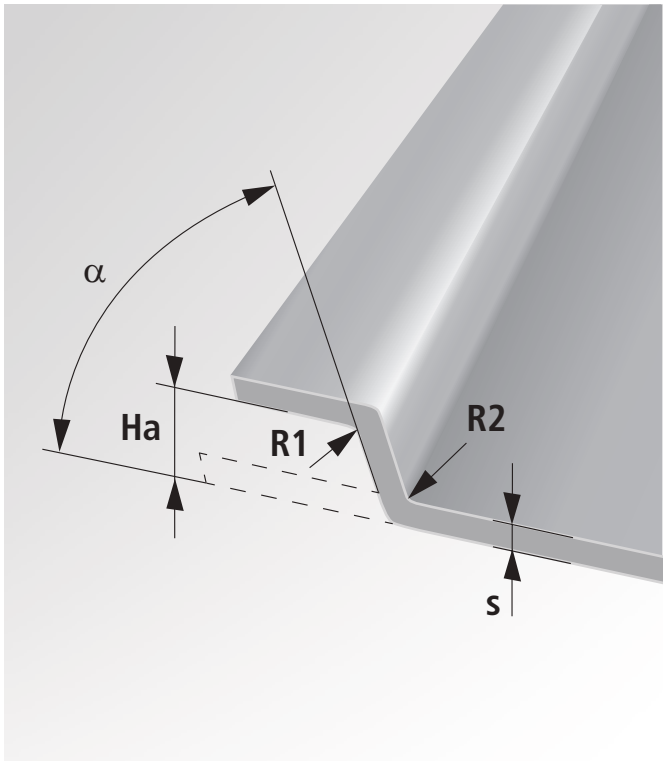


TRUMPF Werkzeugmaschinen SE + Co. KG
Hermann-Dreher-Strasse 20 · 70839 Gerlingen · Germany
E-mail: export.tooling@trumpf.com

TRUMPF

# Stepping tool

TRUMPF
export.tooling@trumpf.com




| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

**Important specifications (please provide as much detail as possible)**

| | |
|---|---|
| Machine type: | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ |
| Sheet thickness s: | mm |
| Center punch depth t: | mm |
| Angle α: | ° |
| Embossing direction: | ☐ from above ☐ from below |

**Are there other formed sections within a 50 mm radius?**

☐ no ☐ yes (please include a sketch)

Sketch/comments

TRUMPF
export.tooling@trumpf.com

# Center punch tool

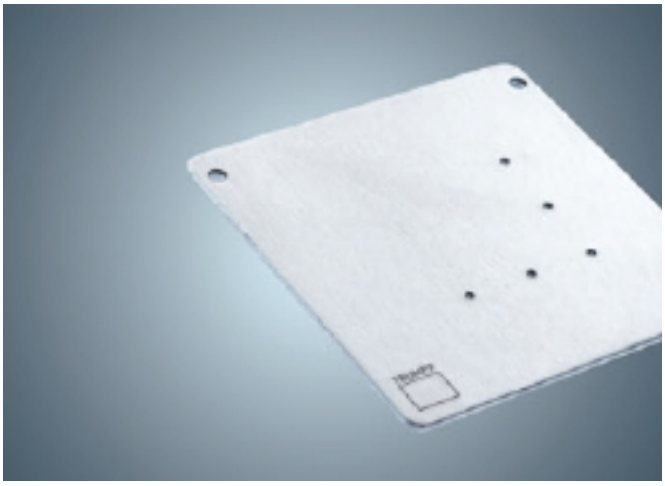
| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

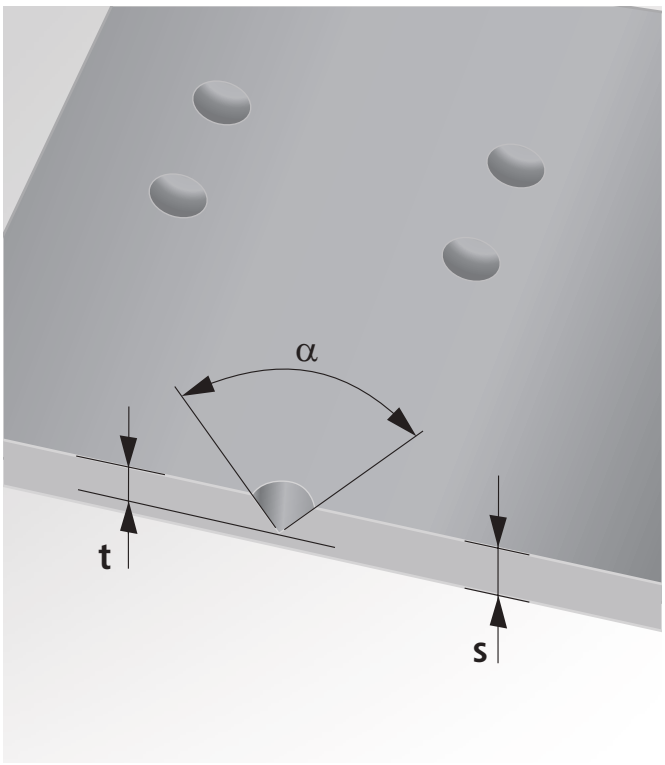
**Important specifications (please provide as much detail as possible)**

| | |
|---|---|
| Machine type: | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ |
| Sheet thickness s: | mm |
| Center punch depth t: | mm |
| Angle α: | ° |
| Embossing direction: | ☐ from above ☐ from below |

**Are there other formed sections within a 50 mm radius?**

☐ no ☐ yes (please include a sketch)






Sketch/comments

# Countersink tool with integrated presser foot

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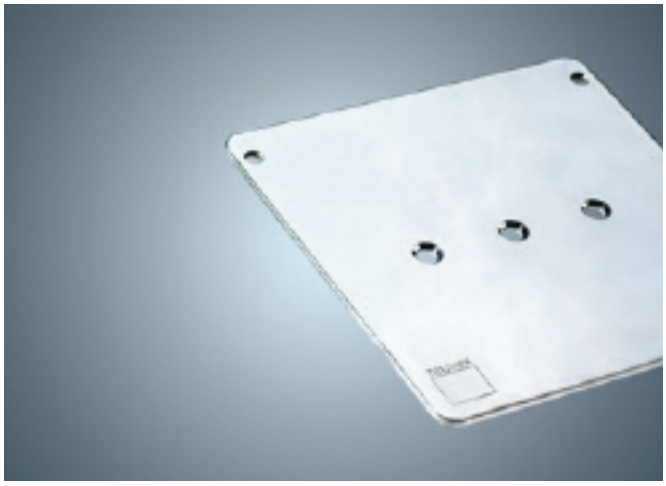
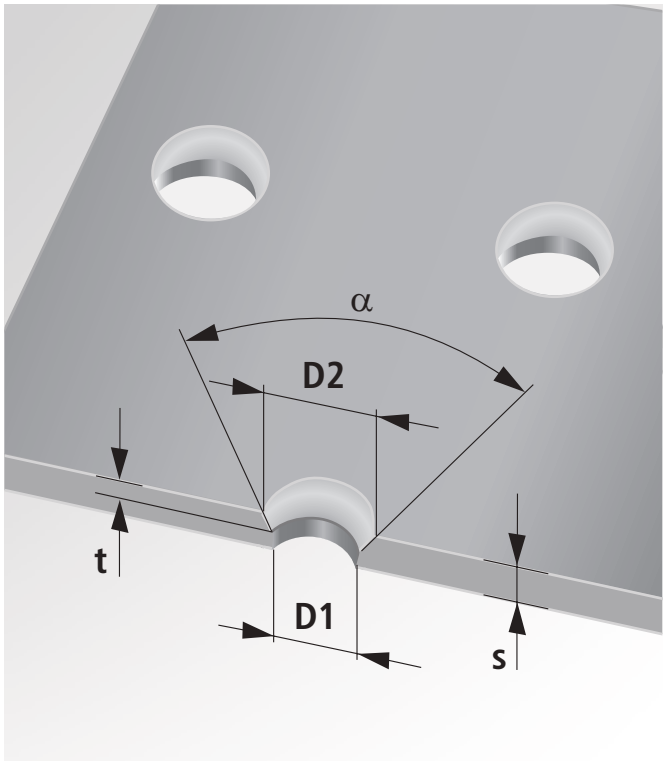
export.tooling@trumpf.com






| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

**Important specifications (please provide as much detail as possible)**

| | |
|---|---|
| Machine type: | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ _____ |
| Sheet thickness s: | mm |
| Diameter: | D1: mm D2: mm |
| Countersink depth t (max. 75% of sheet thickness s): | mm |
| Angle α: | ° |
| Embossing direction: | ☐ from above ☐ from below |
| Tool Version: | ☐ simple construction<br>☐ presser foot<br>☐ TRUMPF decision |

Are there other formed sections within a 50 mm radius?

☐ no ☐ yes (please include a sketch)

Sketch/comments

TRUMPF
export.tooling@trumpf.com

# Knock-out tool

| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

**Important specifications (please provide as much detail as possible)**

| | |
|---|---|
| Machine type: | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ |
| Sheet thickness s: | mm |
| Diameter D: | mm |
| Forming direction: | ☐ upward ☐ downward |

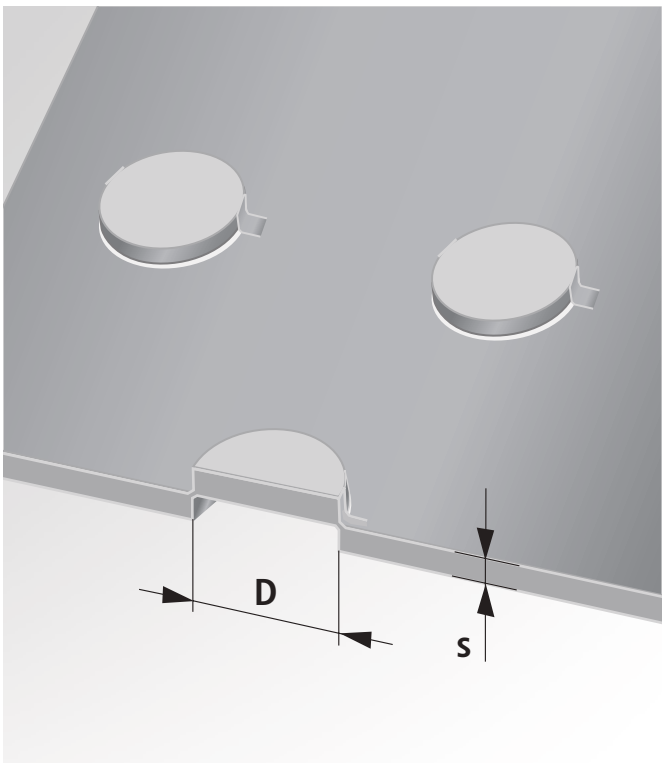
**Are there other formed sections within a 50 mm radius?**

☐ no ☐ yes (please include a sketch)

**Is the formed section close to the edge of the sheet?**

☐ no ☐ yes (please include a sketch)

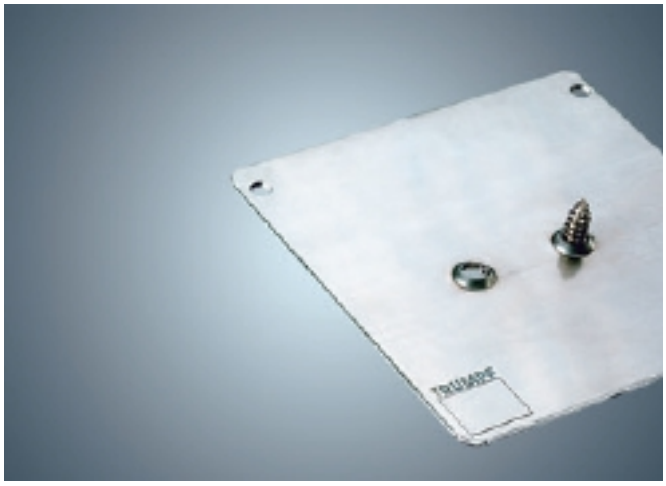
**Recommendation: version with 2 tabs**

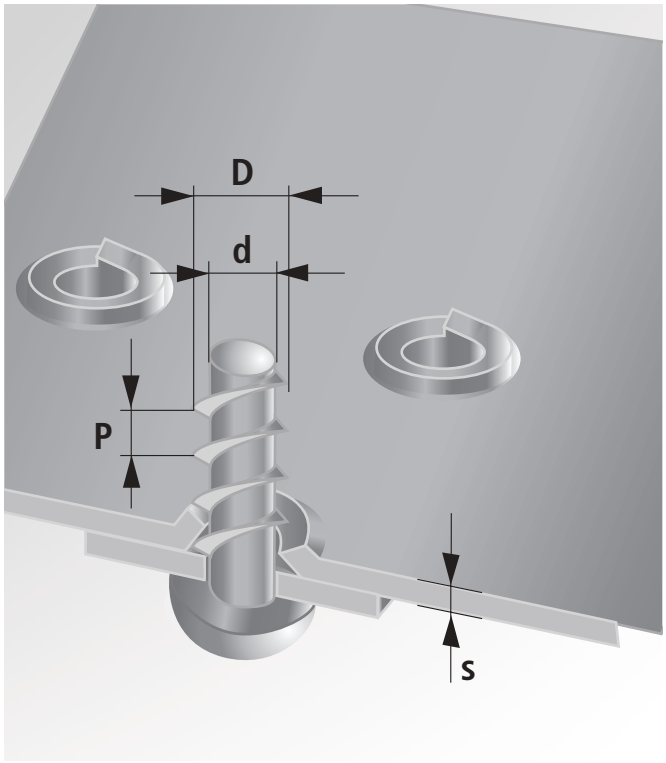



Sketch/comments

# Thread punch tool

TRUMPF
export.tooling@trumpf.com






| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

**Important specifications (please provide as much detail as possible)**

| | |
|---|---|
| Machine type: | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ |
| Sheet thickness s: | mm |
| Pitch P: | mm (min. 1 x sheet thickness s) |
| Thread size D: | mm |
| Core diameter d: | mm |
| Forming direction: | ☐ upward ☐ downward |

**Are there other formed sections within a 50 mm radius?**

☐ no ☐ yes (please include a sketch)

**Is the formed section close to the edge of the sheet?**

☐ no ☐ yes (please include a sketch)

Sketch/comments

TRUMPF
export.tooling@trumpf.com

# Flanging tool

| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

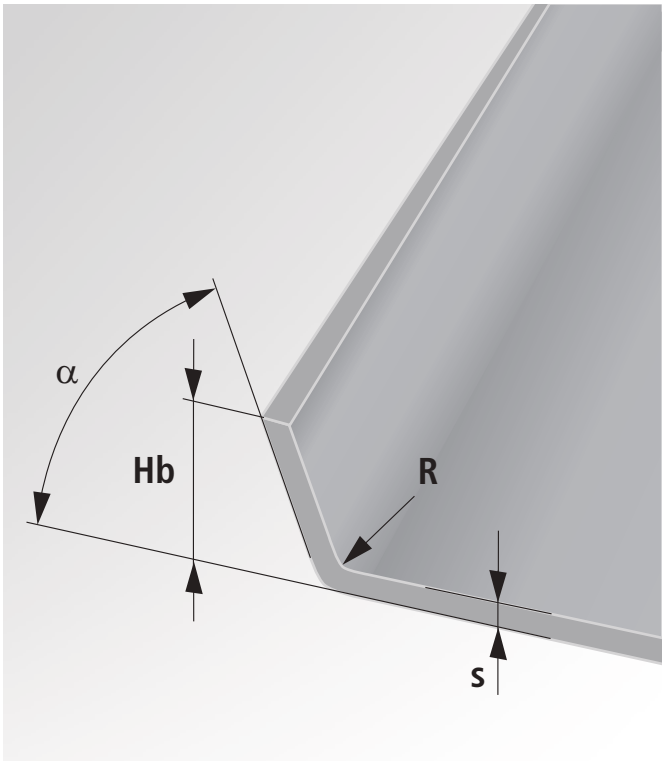
**Important specifications (please provide as much detail as possible)**

| | |
|---|---|
| Machine type: | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ |
| Sheet thickness s: | mm |
| Height Hb: | mm |
| Angle α: | ° |
| Radius: | ☐ R: mm<br>☐ To be determined by TRUMPF. |
| Forming direction: | ☐ upward ☐ downward |

**Are there other formed sections within a 50 mm radius?**

☐ no ☐ yes (please include a sketch)

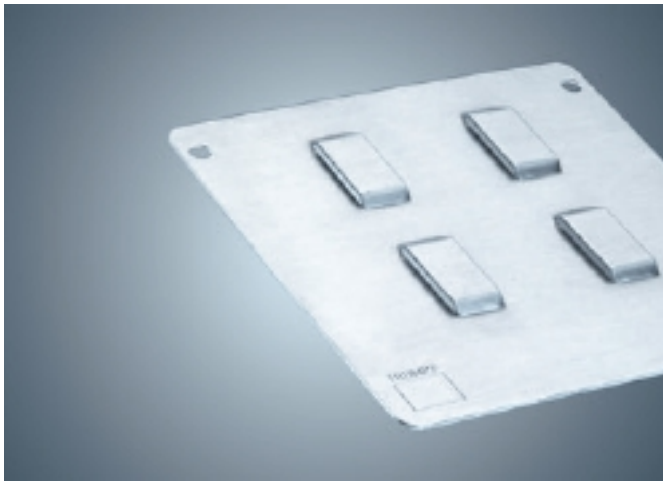
**If arc segments are flanged, please include a sketch.**

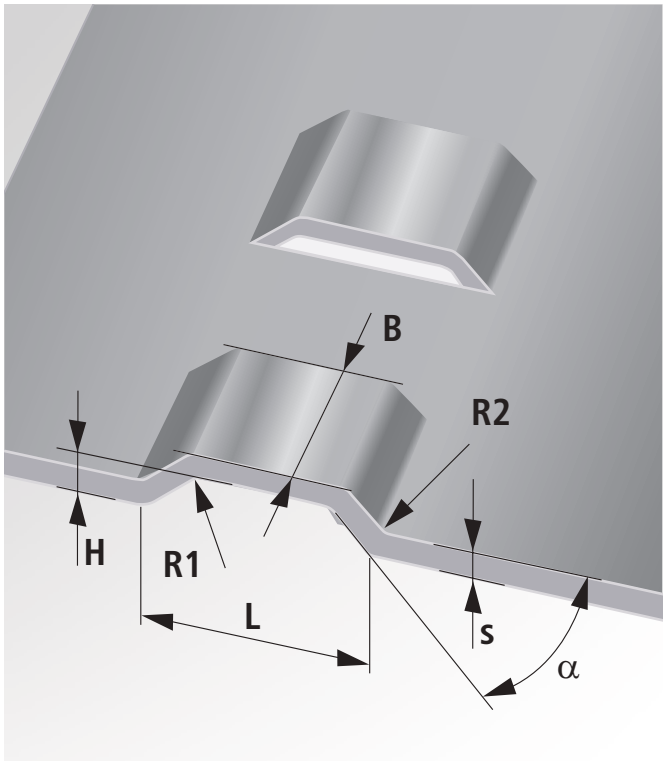



Sketch/comments

# Bridge tool

TRUMPF
export.tooling@trumpf.com






| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

**Important specifications (please provide as much detail as possible)**

| | | | |
|---|---|---|---|
| Machine type: | | | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ | | |
| Sheet thickness s: | mm | Height H: | mm |
| Length L: | mm | Width B: | mm |
| Angle α: | ° | | |
| Radii: | ☐ R1: mm ☐ R2: mm<br>☐ To be determined by TRUMPF. | | |
| Forming direction: | ☐ upward ☐ downward | | |

**Are there other formed sections within a 50 mm radius?**

☐ no ☐ yes (please include a sketch)

**Is the formed section close to the edge of the sheet?**

☐ no ☐ yes (please include a sketch)

Sketch/comments

TRUMPF
export.tooling@trumpf.com

# Extrusion tool

| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

**Important specifications (please provide as much detail as possible)**

| | |
|---|---|
| Machine type: | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ |
| Sheet thickness s: | mm |
| Height H: | mm |
| Diameter D: | mm |
| Radius: | ☐ R: mm<br>☐ To be determined by TRUMPF. |
| Forming direction: | ☐ upward ☐ downward |

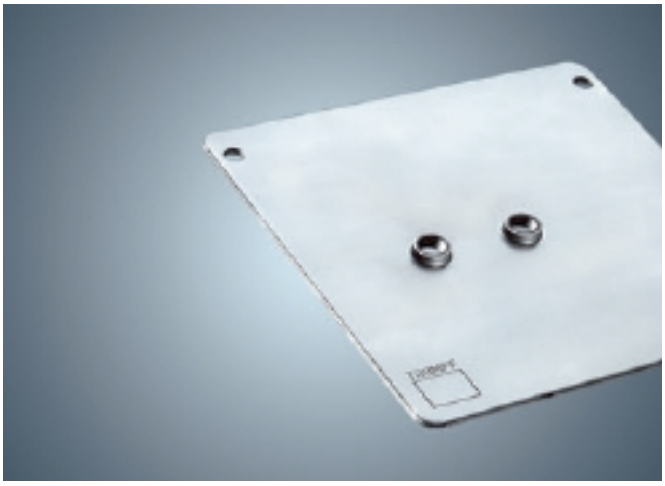
**Are there other formed sections within a 50 mm radius?**

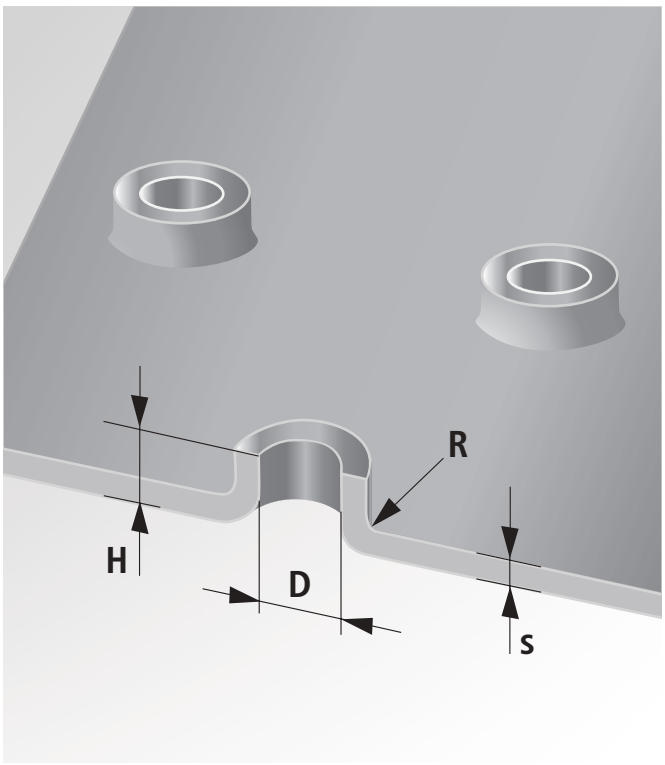
☐ no ☐ yes (please include a sketch)

**Is the formed section close to the edge of the sheet?**

☐ no ☐ yes (please include a sketch)

☐ Tapping ☐ Thread cutting

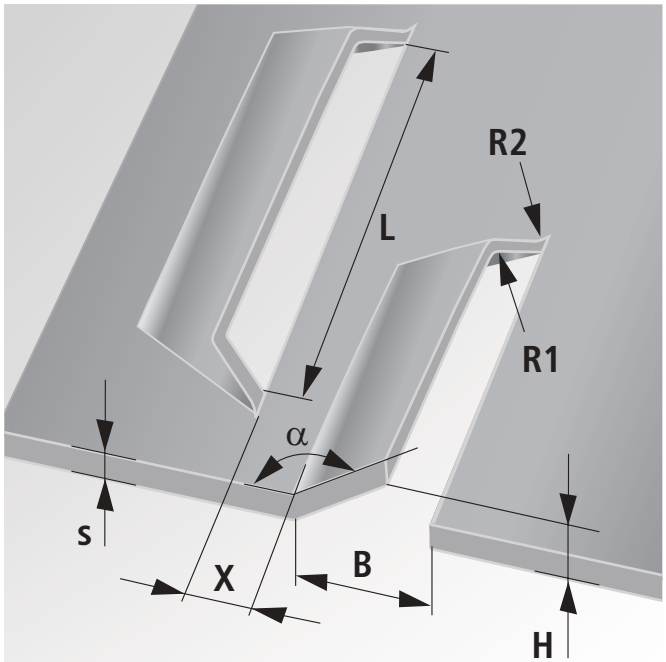





Sketch/comments

# Louver tool (single louvers)

TRUMPF
export.tooling@trumpf.com




| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

**Important specifications (please provide as much detail as possible)**

| | | | |
|---|---|---|---|
| Machine type: | | | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ | | |
| Sheet thickness s: | mm | Height H: | mm |
| Length L: | mm | Width B: | mm |
| Angle α: | ° | | |
| Distance X: | mm | | |
| Radii: | ☐ R1: mm ☐ R2: mm<br>☐ To be determined by TRUMPF. | | |
| Forming direction: | ☐ upward ☐ downward | | |

**Are there other formed sections within a 50 mm radius?**

☐ no ☐ yes (please include a sketch)

**Is the formed section close to the edge of the sheet?**

☐ no ☐ yes (please include a sketch)

Sketch/comments

TRUMPF
export.tooling@trumpf.com

# Louver tool (continuous louvers)

| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

**Important specifications (please provide as much detail as possible)**

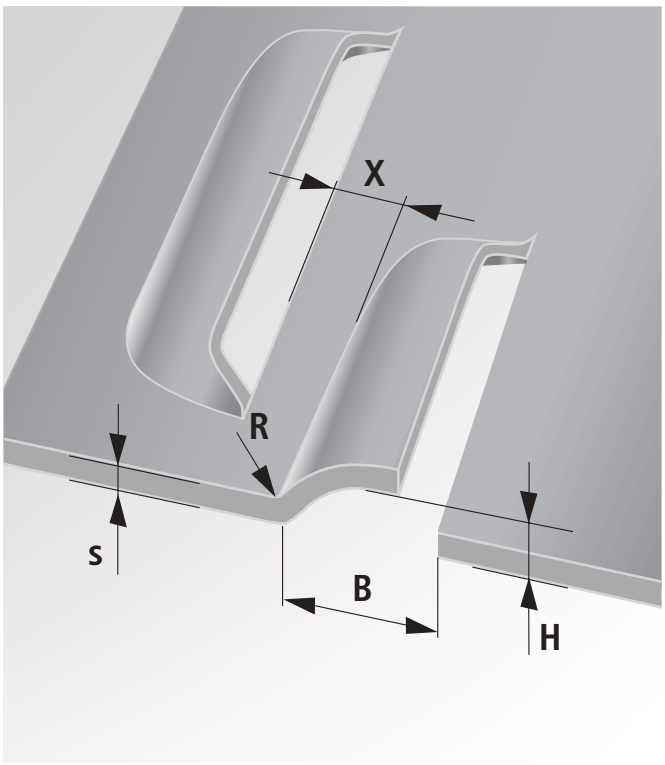
| | |
|---|---|
| Machine type: | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ |
| Sheet thickness s: | mm |
| Height H: | mm |
| Width B: | mm |
| Distance X: | mm |
| Radius: | ☐ R: mm<br>☐ To be determined by TRUMPF |
| Forming direction: | ☐ upward ☐ downward |

**Are there other formed sections within a 50 mm radius?**

☐ no ☐ yes (please include a sketch)

**Is the formed section close to the edge of the sheet?**

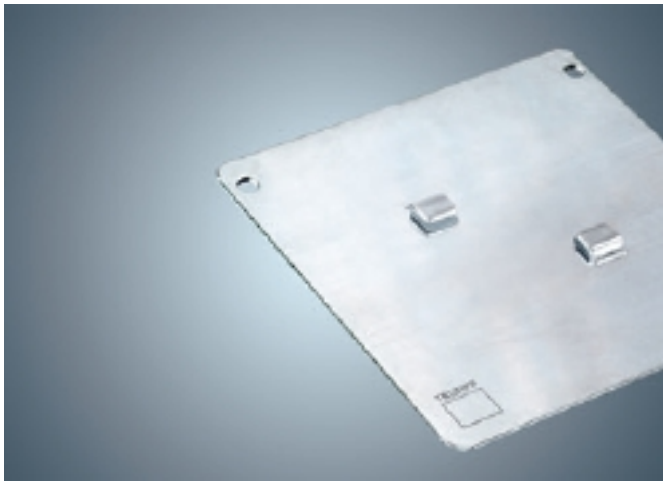
☐ no ☐ yes (please include a sketch)

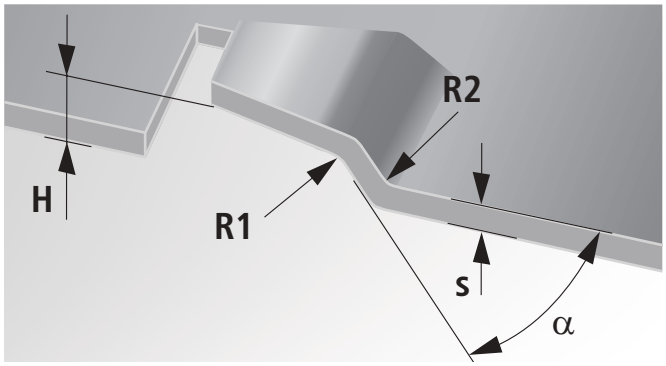


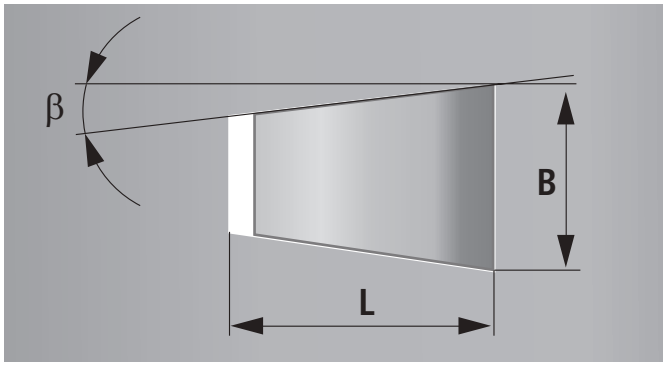

Sketch/comments

# Bracket tool

TRUMPF
export.tooling@trumpf.com






| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

**Important specifications (please provide as much detail as possible)**

| | | | |
|---|---|---|---|
| Machine type: | | | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ | | |
| Sheet thickness s: | mm | Height H: | mm |
| Length L: | mm | Width B: | mm |
| Angle α: | ° | Angle β: (2° recommended) | ° |
| Radii: | ☐ R1: mm ☐ R2: mm<br>☐ To be determined by TRUMPF. | | |
| Forming direction: | ☐ upward | ☐ downward | |

**Are there other formed sections within a 50 mm radius?**

☐ no ☐ yes (please include a sketch)

**Is the formed section close to the edge of the sheet?**

☐ no ☐ yes (please include a sketch)

Sketch/comments

# Cup tool

TRUMPF
export.tooling@trumpf.com

| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

**Important specifications (please provide as much detail as possible)**

| | |
|---|---|
| Machine type: | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ |
| Sheet thickness s: | mm Height H: mm |
| Diameter: | D1*): mm D2: mm |
| Angle α: | ° |
| Radii: | ☐ R1: mm ☐ R2: mm<br>☐ To be determined by TRUMPF. |
| Forming direction: | ☐ upward ☐ downward |

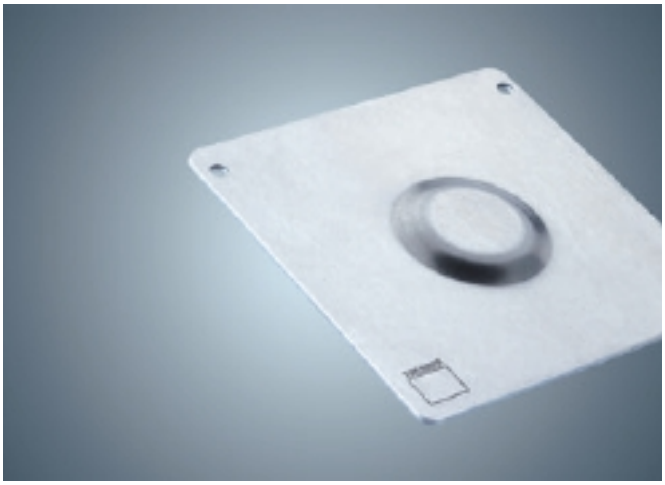
**Are there other formed sections within a 50 mm radius?**

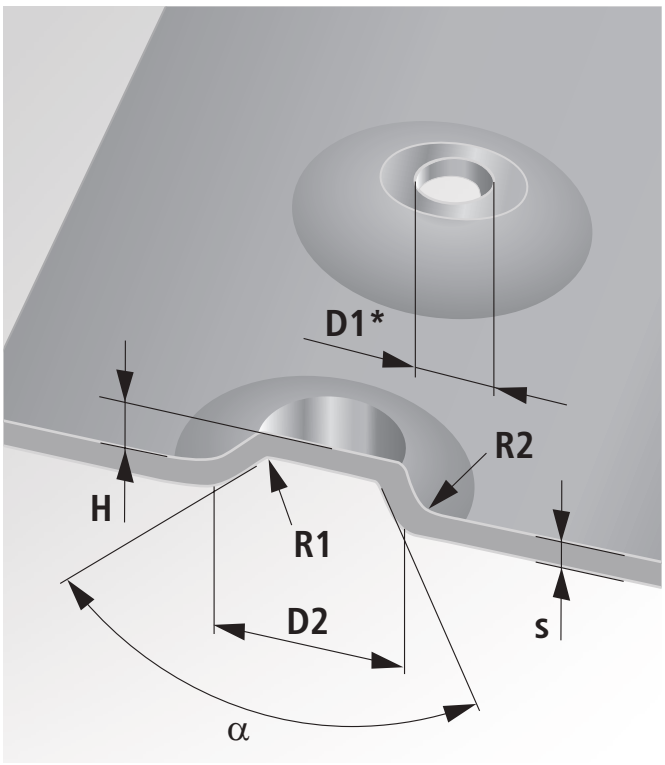
☐ no ☐ yes (please include a sketch)

**Is the formed section close to the edge of the sheet?**

☐ no ☐ yes (please include a sketch)

*) If punched hole D1 is required, please specify the diameter.

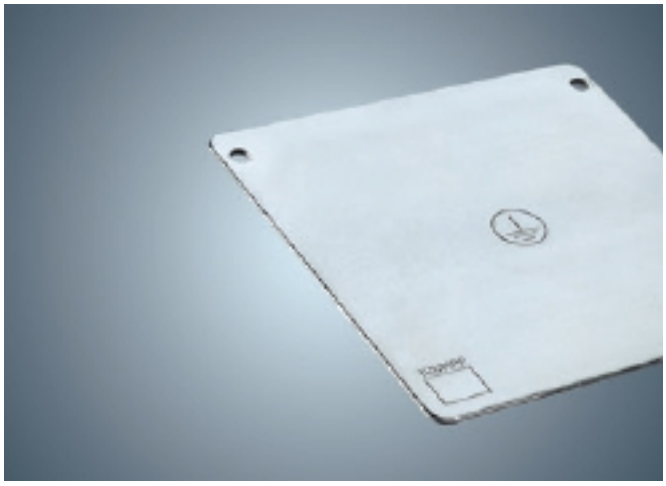





Sketch/comments

# Embossing tool

TRUMPF
export.tooling@trumpf.com



| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

**Important specifications (please provide as much detail as possible)**

| | |
|---|---|
| Machine type: | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ |
| Sheet thickness s: | mm |
| Outer circle K: | mm |
| Embossing direction: | ☐ from above ☐ from below |

**Are there other formed sections within a 50 mm radius?**

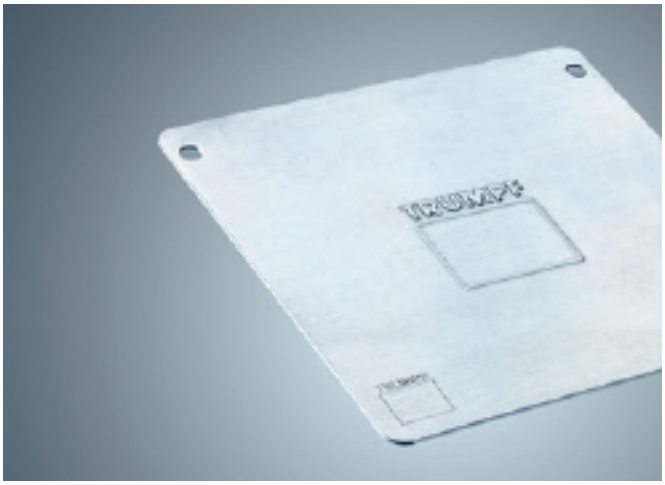
☐ no ☐ yes (please include a sketch)

**If available, please send us the logo/symbol as a DXF file.**

Sketch/comments

TRUMPF
export.tooling@trumpf.com

# Embossing forming tool



| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

**Important specifications (please provide as much detail as possible)**

| | |
|---|---|
| Machine type: | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ |
| Sheet thickness s: | mm |
| Outer circle K: | mm |

**Are there other formed sections within a 50 mm radius?**

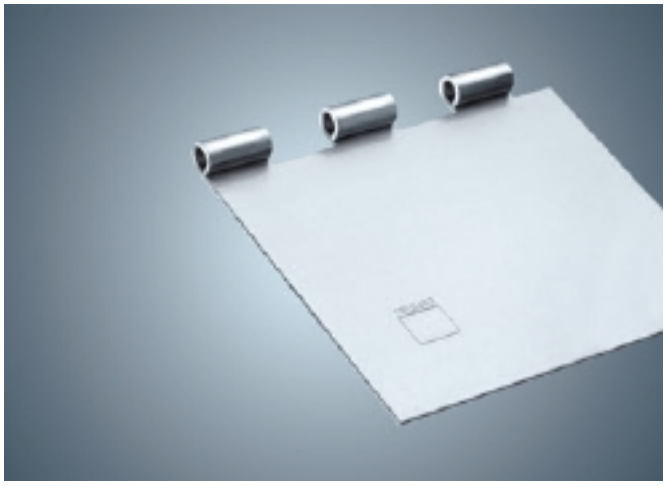
☐ no ☐ yes (please include a sketch)

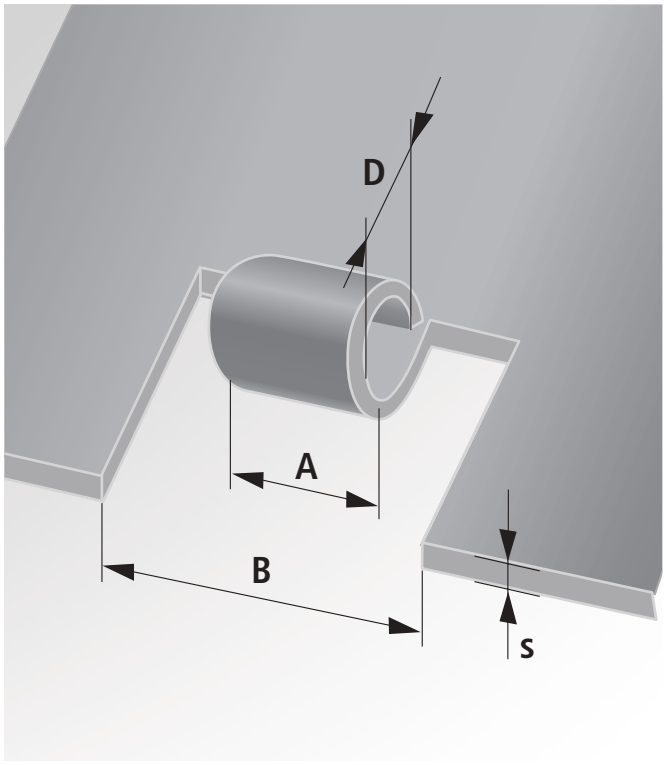
**If available, please send us the logo/symbol as a DXF file.**

Sketch/comments

# Hinge tool

TRUMPF
export.tooling@trumpf.com






| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

**Important specifications (please provide as much detail as possible)**

| | |
|---|---|
| Machine type: | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ |
| Sheet thickness s: | mm |
| Height H: | mm |
| Diameter D: | mm |
| Angle α: | ☐ ° ☐ Standard 60° |
| Forming direction: | ☐ upward |

**Are there other formed sections within a 50 mm radius?**

☐ no ☐ yes (please include a sketch)

**Is the formed section close to the edge of the sheet?**

☐ no ☐ yes (please include a sketch)

Sketch/comments

TRUMPF
export.tooling@trumpf.com

# Hinge tool for multiple hinges

| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

**Important specifications (please provide as much detail as possible)**

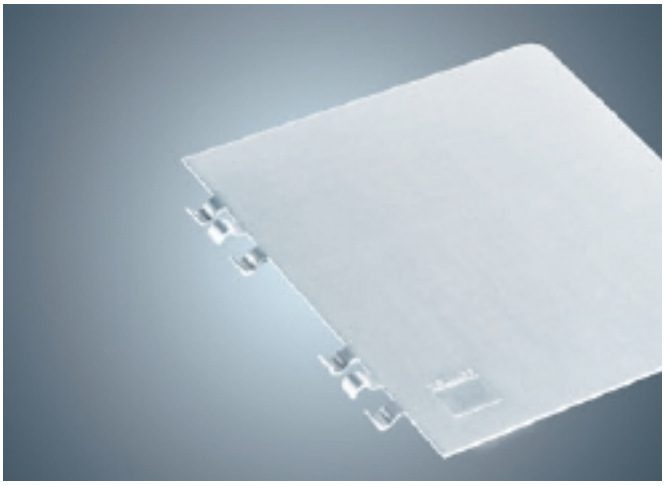
| | |
|---|---|
| Machine type: | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ |
| Sheet thickness s: | mm |
| Diameter D: | mm |
| Width B: | mm |
| Distance X: | mm |

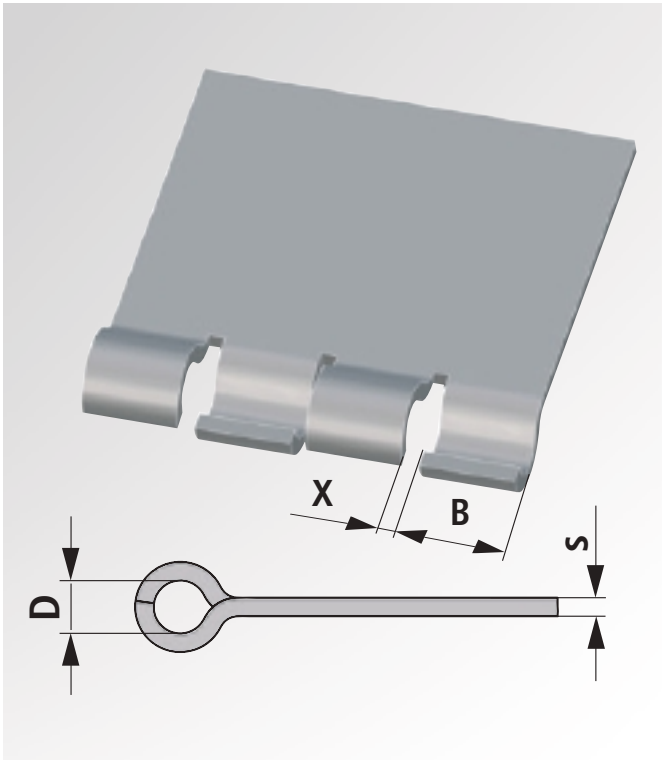
**Are there other formed sections within a 50 mm radius?**

☐ no ☐ yes (please include a sketch)

**Is the formed section close to the edge of the sheet?**

☐ no ☐ yes (please include a sketch)

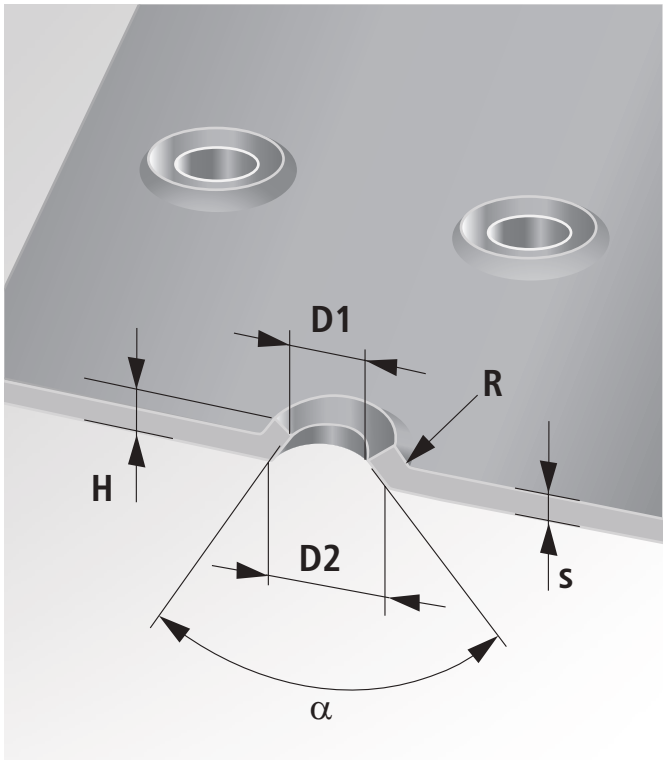





Sketch/comments

# Countersink forming tool

TRUMPF
export.tooling@trumpf.com




| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

**Important specifications (please provide as much detail as possible)**

| | |
|---|---|
| Machine type: | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ |
| Sheet thickness s: | mm Height H: mm |
| Diameter: | D1: mm D2: mm |
| Angle α: | ° |
| Radius: | ☐ R: mm<br>☐ To be determined by TRUMPF. |
| Forming direction: | ☐ upward ☐ downward |

**Are there other formed sections within a 50 mm radius?**

☐ no ☐ yes (please include a sketch)

**Is the formed section close to the edge of the sheet?**

☐ no ☐ yes (please include a sketch)

Sketch/comments

TRUMPF
export.tooling@trumpf.com

# Weld boss tool

| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

**Important specifications (please provide as much detail as possible)**

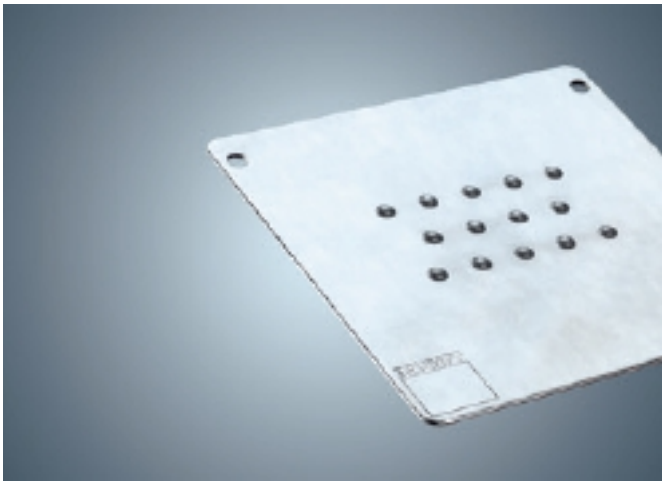
| | |
|---|---|
| Machine type: | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ _____ |
| Sheet thickness s: | mm |
| Height H: | mm |
| Diameter D: | mm |
| Angle α: | ☐ ° ☐ Standard 60° |
| Forming direction: | ☐ upward |

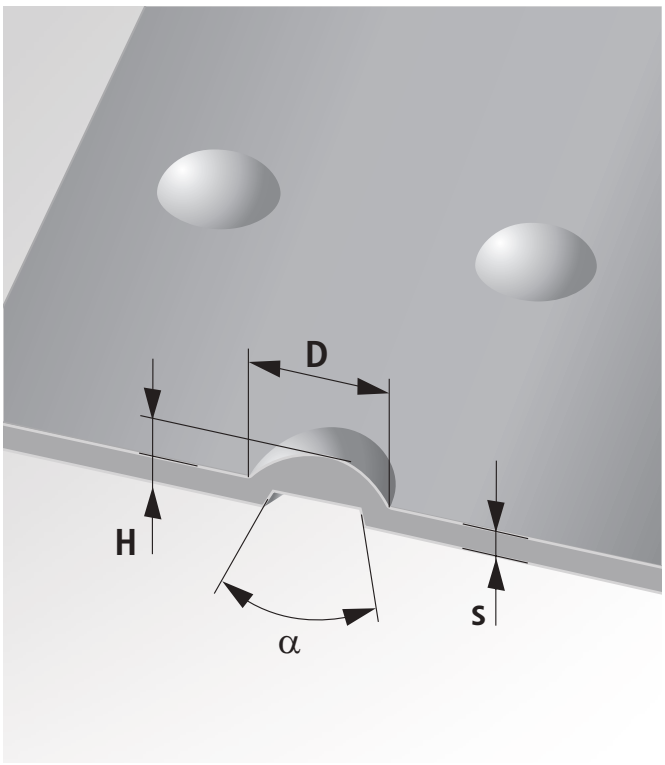
**Are there other formed sections within a 50 mm radius?**

☐ no ☐ yes (please include a sketch)

**Is the formed section close to the edge of the sheet?**

☐ no ☐ yes (please include a sketch)

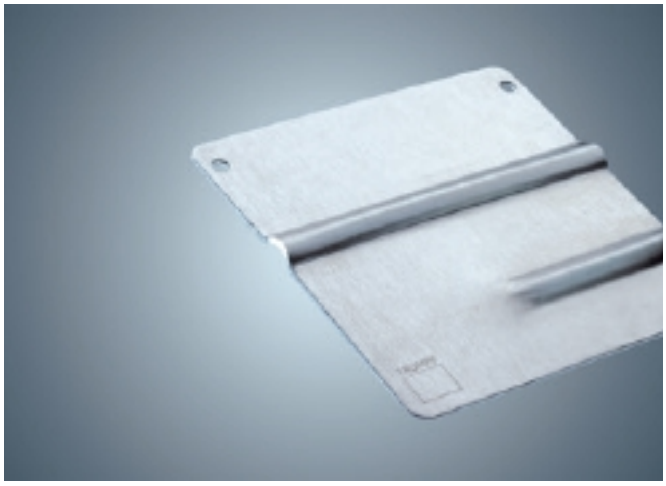


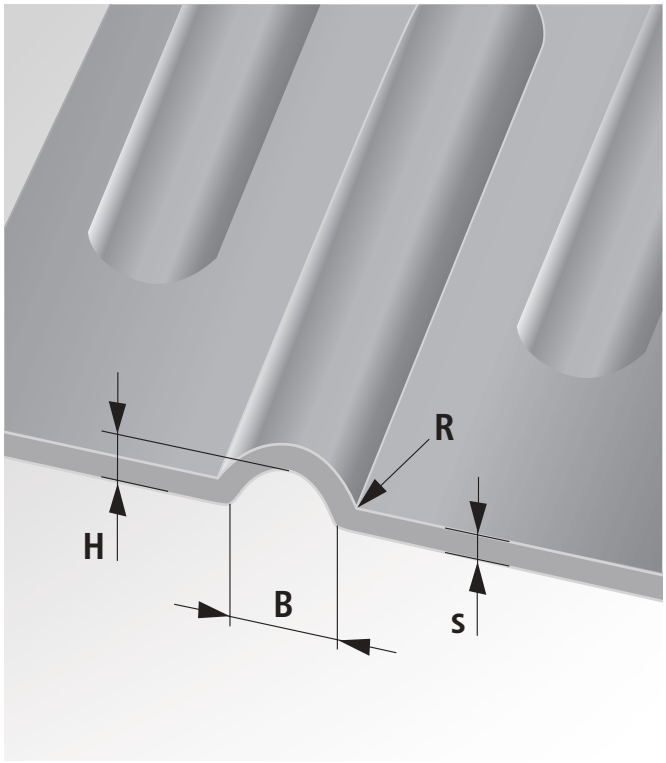



Sketch/comments

# Beading tool

TRUMPF
export.tooling@trumpf.com






| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

**Important specifications (please provide as much detail as possible)**

| | |
|---|---|
| Version: | ☐ Continuous process tool ☐ Roller tool |
| Please note: | For roller tools, the "roller technology" machine option is required |
| Machine type: | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ _____ |
| Sheet thickness s: | mm |
| Height H: | mm |
| Width B: | mm |
| Radius: | ☐ R: mm<br>☐ To be determined by TRUMPF. |
| Forming direction: | ☐ upward ☐ downward |

**Are there other formed sections within a 50 mm radius?**

☐ no ☐ yes (please include a sketch)

**Is the formed section close to the edge of the sheet?**

☐ no ☐ yes (please include a sketch)

Sketch/comments

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# Center boss tool

| | |
|---|---|
| Company: | |
| Customer number: | |
| Street: | |
| Zip code/city: | |
| Contact person: | |
| Phone: | |
| E-mail: | |
| Fax: | |
| Date: | |

**Important specifications (please provide as much detail as possible)**

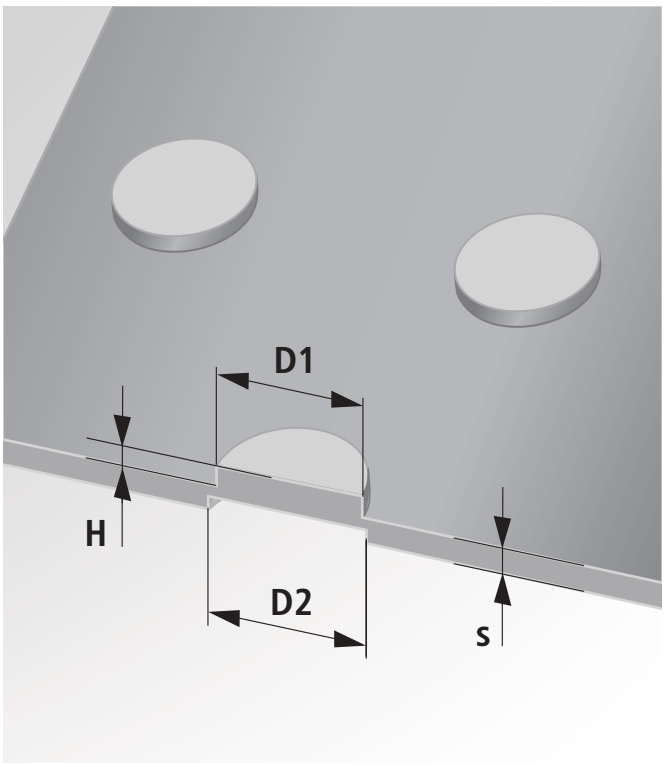
| | |
|---|---|
| Machine type: | |
| Material: | ☐ ST ☐ SS ☐ AL ☐ |
| Sheet thickness s: | mm |
| Height H: | mm (max. 0.5 x sheet thickness s) |
| Diameter: | D1: mm D2: mm |
| Forming direction: | ☐ upward ☐ downward |

**Are there other formed sections within a 50 mm radius?**

☐ no ☐ yes (please include a sketch)

**Is the formed section close to the edge of the sheet?**

☐ no ☐ yes (please include a sketch)




Sketch/comments

# General information

## Terms of delivery

For delivery of the products listed in this catalog, the applicable terms of delivery stipulated by the supplying TRUMPF company or its representative are decisive. TRUMPF or its representative will be happy to provide you with these terms.

## Price validity

Prices valid as of April 1, 2022. From this date onward, old price lists are no longer valid.
Prices are shown without sales tax at the statutory rate.
TRUMPF reserves the right to change prices.

## Service

TRUMPF offers a repair and regrinding service. Please contact your national representative.

We recommend that you use only original spare parts and original accessories from TRUMPF. This will ensure that your tool works faultlessly and that the warranty claim is approved in the event of a problem.

## ISO certification

All products listed in this catalog are manufactured in our production facilities, which are certified in accordance with ISO 9001.

## Subject to change

The data contained within this catalog is subject to change, errors and printing errors; any liability is excluded. Technical data in particular is subject to change without prior notification. Individual features may vary depending on country-specific factors.

Images are not exact and may contain minor deviations from the original.

All specifications without guarantee.

# Index

# Index

## S



## T



## U



## V



## W

## Notes

TRUMPF is certified according to ISO 9001:2008

(for additional information see www.trumpf.com/en/company/quality)

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