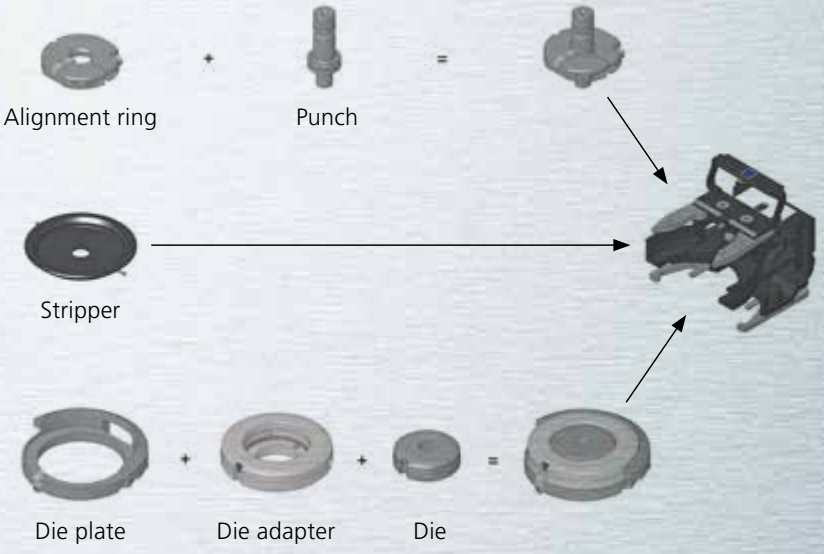
TRUMPF

TruServices

Punching Tools

The perfect tooling structure.



Alignment ring

The alignment ring is available in three different versions.

Punch

Punches are available in three different sizes (size 0, 1, and 2).

Punch chuck

The punch chuck is available in two different sizes and is used with size 0 punches. It has the same clamping diameter as all other punches.

Stripper

The outside diameter of the stripper is 100 mm.

Die

Dies are available in two different sizes (size 1 and 2).
Size 1 can be used in the same way as size 2 with the help of an die adapter.

Tool cartridge

Both die sizes are used with the same tool cartridge and the same Die plate.
A die adapter is used for holding size 1 dies.

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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

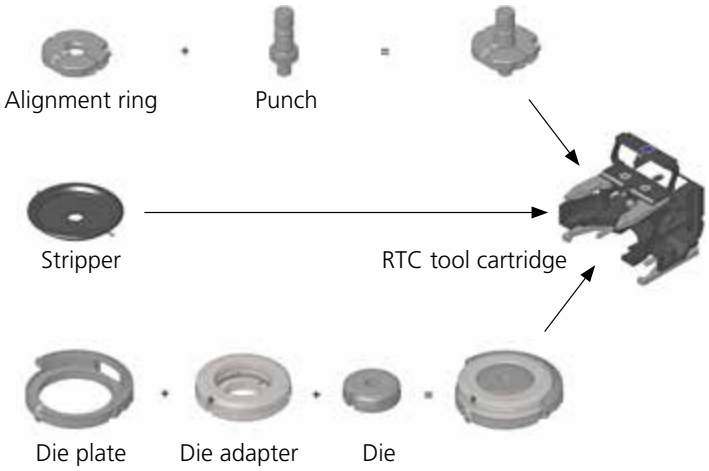
E-mail: tooling@us.trumpf.com / Phone: 1-800-724-8753 / Fax: 860-255-6433

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 TRUMPF punching and punch laser machines of all generations and boast impressively long service life. 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.

Expertise for every application.

We know that every punching machine performs at maximum capacity on a daily basis. And, for best results it comes down to the best possible interaction between all the components. Since this can only be guaranteed by original manufacturer products, we have been producing our own punching tools for 40 years – offering the highest quality and the widest range of tools on the market.

Focused expertise.

At the Farmington location, our employees produce all of the punching and forming tools that are used in our TruPunch and TruMatic machines throughout North America. Our punching tool specialists are there for you every step of the way; from technical consultation, to development and production, to shipping. We use state-of-the-art CAD systems and manufacturing methods to produce tools to the highest quality. And, we consistently focus on the most important thing: ensuring that you receive the best possible tool, and on time.

Our delivery reliability speaks for itself: in 98% of cases, our customers receive their order by the agreed deadline. We generally dispatch orders of standard tools on the same day they are received from our Farmington location. So even if there is an emergency, you can get production up and running again quickly.

Process specialists.

In order to consistently guarantee high availability and quick delivery times, we continuously work to improve our punching tool production procedures. We rely on our SYNCHRO production system for producing our punching tools to achieve the highest quality for our products and services.

Contact us.

If you are interested in where and how TruServices Punching Tools are created or if you would like to discuss an idea, please contact us. We look forward to hearing from you.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TRUMPF quality:

Made in USA.

1 Present: your local partner

If you need a tool then you have come to the right specialists. Whether it is by e-mail, phone, fax or through our E-Shop when it is convenient for you, you can contact us anywhere in the world or through our local sales partners.

2 Experienced: technical customer advice

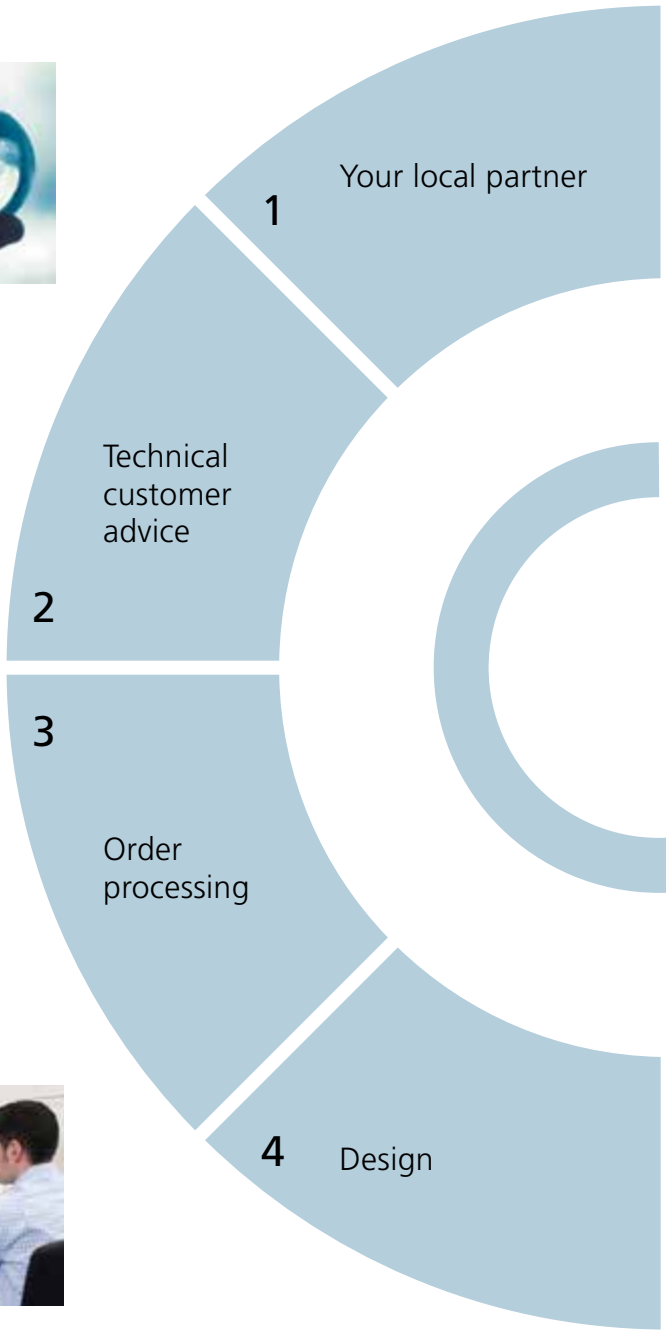
Extraordinary projects require extraordinary tools. Our specialists check the feasibility of your request and work together with you to design sophisticated special tools according to your requirements. Trust in our expertise.

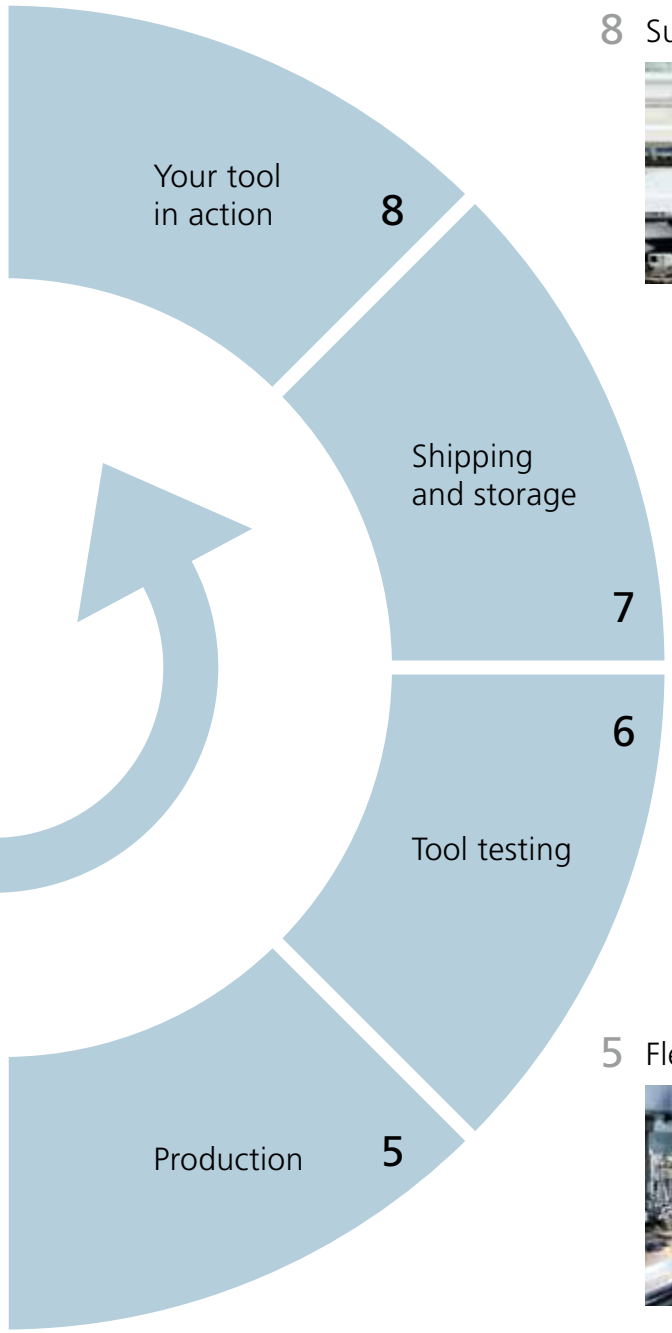
3 Efficient: order processing

Our sales representatives are distinguished by their outstanding expertise and experience. They arrange hassle-free processing of your order and work closely with our tool technicians to ensure this. Our team coordinates orders from all over North America.

4 Creative: design

If you need a special tool, we will design it and determine the machining strategy. Our tool designers know our machines inside out. This knowledge is the perfect basis for designing the ideal interaction between tool, machine, and software.





8 Successful: your tool in action

It goes without saying that we provide outstanding delivery reliability and exceptional quality. As a result, your production processes continue to run smoothly and on schedule. And if you order special tools, you will automatically receive all of the required programming data.

7 Reliable: shipping and storage

All tools are labeled with the TRUMPF marking laser. This allows you to order more single parts for the tool throughout the entire life cycle. We generally dispatch standard tools from our Farmington location on the same day.

6 Fault-free: tool testing

Before we dispatch a special tool for forming or embossing we put it through its paces, using TRUMPF machines of course! You can be sure that you will be able to achieve the best results with your new tool.

5 Flexible: production

Regardless of whether it is standard or custom, your tool is produced in our punching tool production facility according to the latest manufacturing methods and the TRUMPF SYNCHRO production principle. Our excellent processes guarantee fast delivery times and the best quality for products and services.

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.

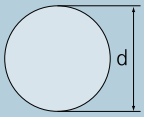
The Classic System is the leading tool system for punching machines as well as for punching and laser cutting machines. A wide range of shapes, forming, standard applications and available accessories makes the tools very flexible.

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.

Punching

Round

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



Advantages
- 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

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. 112 (punching force and shear strength)

Useful information	
Tooling accessories	see p. 96-98
Dimensions and regrinding	see p. 110-111
Punch selection	see p. 114
Die selection	see p. 115
Stripper selection	see p. 116-119
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance	see p. 124-125
Sheet flatness	see p. 126-127
Low-scratch/scratch-free processing	see p. 128-129
Increasing dimensional accuracy	see p. 130-131
Order forms	see p. 146-147

Item

Punch

Order no.	USD
699800	For prices, see table

Die

Order no.	USD
699810	For prices, see table

Stripper

Order no.	USD
699820	For prices, see table

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

Prices

	Punch			Die		Stripper	
Size	(d) inch	Punch chuck required	USD	(d) inch	USD	(d) inch	USD
0	.030" - .062"	Yes (size #1)	**$17.00**	.040" - 1.260"	**$47.00**	3.039"	**$39.00**
	.063" - .236"	Yes (size #1)	**$15.50**				
	.063" - .406"	Yes (size #2)	**$22.00**				
1	.060" - 1.181"	No	**$51.00**				
2	1.182" - 1.625"		**$101.00**	1.261" - 3.032"	**$106.00**		
	1.626" - 3.000"		**$126.00**				

Punch options

	Coating	Shear	Size	Heavy-Duty	
Size	TiCN	Whisper/Rooftop	Width < .06"	(d) inch	USD
0	**$17.00**	**$0.00**			
1	**$38.00**	**$0.00**	+25%	.158" - 1.181"	**$60.00**
2	**$60.00**	**$0.00**	n/a	1.182" - 1.625"	**$76.00**

Die options

	Keyway	Size
Size	Add (ea)	Width < .06"
1	**$25.00**	**+25%**
2	**$25.00**	**n/a**

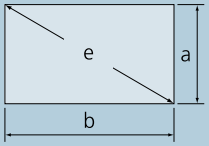
Stripper options

	Size
Size	Width < .06"
2	**+25%**

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. 112 (punching force and shear strength)
Useful information	
Tooling accessories	see p. 96-98
Dimensions and regrinding	see p. 110-111
Punch selection	see p. 114
Die selection	see p. 115
Stripper selection	see p. 116-119
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance	see p. 124-125
Sheet flatness	see p. 126-127
Low-scratch/scratch-free processing	see p. 128-129
Increasing dimensional accuracy	see p. 130-131
Order forms	see p. 146-147

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



Advantages
- With a wide variety of options there is something to suit every requirement
- Maximum flexibility with the existing TRUMPF tool inventory
- Complete compatibility with TRUMPF accessories

Item

Punch

- Optional: free Whisper/roof shear

Order no.	USD
699802	For prices, see table

Die

Order no.	USD
699812	For prices, see table

Stripper

Order no.	USD
699822	For prices, see table

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

Prices

	Punch			Die		Stripper	
Size	(e) inch	Shear Std	USD	(e) inch	USD	(e) inch	USD
1	.060″ - 1.181″	No	**$98.00**	.060″ - 1.260″	**$98.00**	3.039″	**$65.00**
2	1.182″ - 2.125″	Yes/Whisper	**$158.00**	1.261″ - 3.032″	**$180.00**		
2	2.126″ - 2.829″		**$196.00**				
2	2.830″ - 3.000″	Yes/Rooftop	**$196.00**				

Die options

	Keyway	Size	Heavy-Duty	
Size	Add (ea)	Width (a) < .06″	(e) inch	USD
1	**$25.00**	**+25%**	.197″- 2.440″	**$58.00**
2	**$25.00**	**n/a**		

Punch options

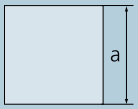
	Coating	Shear	Size	Heavy-Duty	
Size	TiCN	Whisper/Rooftop	Width (a) < .06″	(e) inch	USD
1	**$38.00**	**$0.00**	+25%	.197″ - 1.181″	**$78.00**
2	**$60.00**	**$0.00**	n/a	1.182″ - 1.732″	**$126.00**

Stripper options

	Size
Size	Width (a) < .06″
2	**+25%**

Square

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



Advantages
- 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

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. 112 (punching force and shear strength)

Useful information	
Tooling accessories	see p. 96-98
Dimensions and regrinding	see p. 110-111
Punch selection	see p. 114
Die selection	see p. 115
Stripper selection	see p. 116-119
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance	see p. 124-125
Sheet flatness	see p. 126-127
Low-scratch/scratch-free processing	see p. 128-129
Increasing dimensional accuracy	see p. 130-131
Order forms	see p. 146-147

Item

Punch

- Optional: free Whisper/roof shear

Order no.	USD
699801	For prices, see table

Die

Order no.	USD
699811	For prices, see table

Stripper

Order no.	USD
699821	For prices, see table

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

Prices

	Punch			Die		Stripper	
Size	(a) inch	Shear Std	USD	(a) inch	USD	(a) inch	USD
1	.060″ - .787″	No	**$93.00**	.060″ - .866″	**$95.00**	2.160″	**$60.00**
2	.788″ - 1.250″	Yes/Whisper	**$140.00**	.867″ - 2.048″	**$150.00**		
2	1.251″ - 2.000″		**$165.00**				

Die options

	Keyway	Size	Heavy-Duty	
Size	Add (ea)	Width (a) < .06″	(a) inch	USD
1	**$25.00**	**+25%**	.315″ - 1.726″	**$58.00**
2	**$25.00**	**n/a**		

Punch options

	Coating	Shear	Size	Heavy-Duty	
Size	TiCN	Whisper/Rooftop	Width (a) < .06″	(a) inch	USD
1	**$38.00**	**$0.00**	+25%	.315″ - .787″	**$103.00**
2	**$60.00**	**$0.00**	n/a	.788″ - 1.181″	**$108.00**

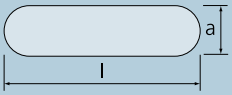
Stripper options

	Size
Size	Width (a) < .06″
2	**+25%**

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. 112 (punching force and shear strength)
Useful information	
Tooling accessories	see p. 96-98
Dimensions and regrinding	see p. 110-111
Punch selection	see p. 114
Die selection	see p. 115
Stripper selection	see p. 116-119
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance	see p. 124-125
Sheet flatness	see p. 126-127
Low-scratch/scratch-free processing	see p. 128-129
Increasing dimensional accuracy	see p. 130-131
Order forms	see p. 146-147

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



Advantages
- 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

Item

Punch

- Optional: free Whisper/roof shear

Order no.	USD
699803	For prices, see table

Die

Order no.	USD
699813	For prices, see table

Stripper

Order no.	USD
699823	For prices, see table

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

Prices

	Punch			Die		Stripper	
Size	(l) inch	Shear Std	USD	(l) inch	USD	(l) inch	USD
1	.060″ - 1.181″	No	**$98.00**	.060″ - 1.260″	**$98.00**	3.039″	**$65.00**
2	1.182″ - 2.125″	Yes/Whisper	**$158.00**	1.261″ - 3.032″	**$180.00**		
2	2.126″ - 2.829″		**$196.00**				
2	2.830″ - 3.000″	Yes/Rooftop	**$196.00**				

Die options

	Keyway	Size	Heavy-Duty	
Size	Add (ea)	Width (a) < .06″	(l) inch	USD
1	**$25.00**	**+25%**	.197″- 2.440″	**$58.00**
2	**$25.00**	**n/a**		

Punch options

	Coating	Shear	Size	Heavy-Duty	
Size	TiCN	Whisper/Rooftop	Width (a) < .06″	(l) inch	USD
1	**$38.00**	**$0.00**	+25%	.197″ - 1.181″	**$103.00**
2	**$60.00**	**$0.00**	n/a	1.182″ - 1.732″	**$126.00**

Stripper options

	Size
Size	Width (a) < .06″
2	**+25%**

Shapes – category A

Description and application
Standardized special shapes

Advantages
- Can be customized to suit your requirements
- With a wide range of options there is something to suit every requirement
- Tool data import files provided for each order

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. 112 (punching force and shear strength)
Useful information	
Tooling accessories	see p. 96-98
Dimensions and regrinding	see p. 110-111
Punch selection	see p. 114
Die selection	see p. 115
Stripper selection	see p. 116-119
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance	see p. 124-125
Sheet flatness	see p. 126-127
Low-scratch/scratch-free processing	see p. 128-129
Increasing dimensional accuracy	see p. 130-131
Order forms	see p. 146-147

Item

Punch

- Optional: longer tool life with coating
- Optional: free Whisper/roof shear

Order no.	USD
699850	For prices, see table

Die

Order no.	USD
699860	For prices, see table

Stripper

Order no.	USD
699870	For prices, see table

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

Prices

	Punch			Die		Stripper	
Size	Outer circle (inch)	Shear Std	USD	Outer circle (inch)	USD	Outer circle (inch)	USD
1	.236″ - 1.181″	No	**$135.00**	1.260″	**$120.00**		
2	1.182″ - 1.500″		**$175.00**				
2	1.501″ - 2.000″	Yes/Whisper	**$195.00**	1.261″ - 2.536″	**$198.00**	3.070″	**$85.00**
2	2.001″ - 2.500″		**$215.00**				
2	2.501″ - 3.000″	Yes/Rooftop	**$235.00**	2.537″ - 3.036″	**$225.00**		

Die options

	Keyway	Size	Heavy-Duty	
Size	Add (ea)	Width < .06″	Outer circle (inch)	USD
1	**$25.00**	**+25%**	.236″ - 2.440″	**$58.00**
2	**$25.00**	**n/a**		

Punch options

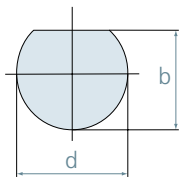
	Coating	Shear	Size	Heavy-Duty	
Size	TiCN	Whisper/Rooftop	Width < .06″	Outer circle (inch)	USD
1	**$38.00**	**$0.00**	+25%	.236″ - 1.181″	**$103.00**
2	**$60.00**	**$0.00**	n/a	1.182″ - 1.732″	**$126.00**

Stripper options

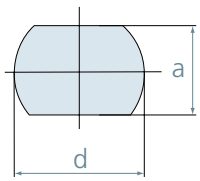
	Size
Size	Width < .06″
2	**+25%**

Shapes – category A

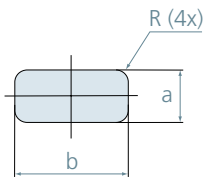
Shape 6



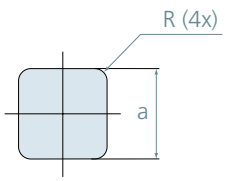
Shape 7



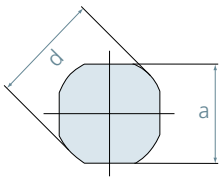
Shape 9



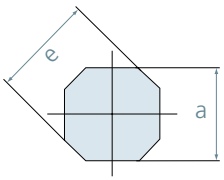
Shape 10



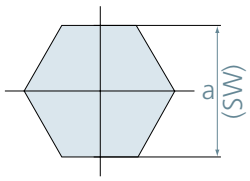
Shape 11



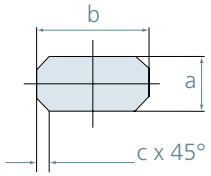
Shape 12



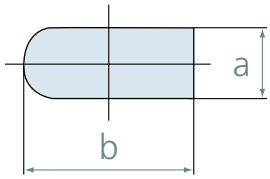
Shape 13



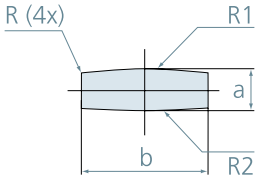
Shape 30



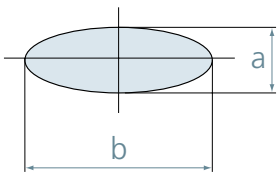
Shape 32



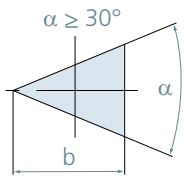
Shape 29



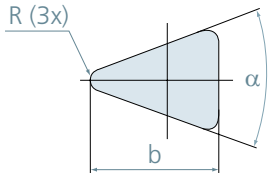
Shape 36



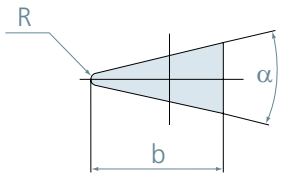
Shape 20



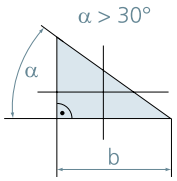
Shape 22



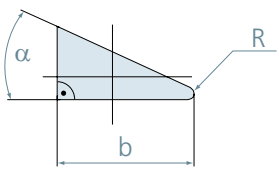
Shape 23



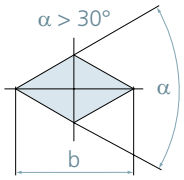
Shape 21



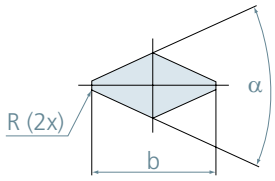
Shape 24



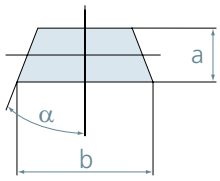
Shape 16



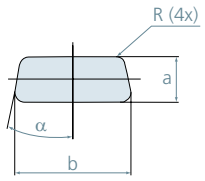
Shape 17



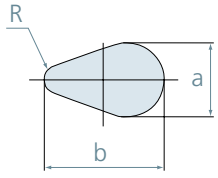
Shape 25



Shape 18



Shape 39



Important quote 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 special shapes

Advantages
- Can be customized to suit your requirements
- With a wide range of options there is something to suit every requirement
- Tool data import files provided for each order

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 d	dependent on the geometry and punching force see p. 112 (punching force and shear strength)
Useful information	
Tooling accessories	see p. 96-98
Dimensions and regrinding	see p. 110-111
Punch selection	see p. 114
Die selection	see p. 115
Stripper selection	see p. 116-119
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance	see p. 124-125
Sheet flatness	see p. 126-127
Low-scratch/scratch-free processing	see p. 128-129
Increasing dimensional accuracy	see p. 130-131
Order forms	see p. 146-147

Item

Punch

- Optional: longer tool life with coating
- Optional: free Whisper/roof shear

Order no.	USD
699850	For prices, see table

Die

Order no.	USD
699860	For prices, see table

Stripper

Order no.	USD
699870	For prices, see table

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

Prices

	Punch			Die		Stripper	
Size	Outer circle (inch)	Shear Std	USD	Outer circle (inch)	USD	Outer circle (inch)	USD
1	.236″ - 1.181″	No	**$175.00**	1.260″	**$156.00**		
2	1.182″ - 1.500″		**$225.00**				
2	1.501″ - 2.000″	Yes/Whisper	**$255.00**	1.261″ - 2.536″	**$205.00**	3.070″	**$85.00**
2	2.001″ - 2.500″		**$280.00**				
2	2.501″ - 3.000″	Yes/Rooftop	**$305.00**	2.537″ - 3.036″	**$235.00**		

Die options

	Keyway	Size	Heavy-Duty	
Size	Add (ea)	Width < .06″	Outer circle (inch)	USD
1	**$25.00**	**+25%**	.236″ - 2.440″	**$58.00**
2	**$25.00**	**n/a**		

Punch options

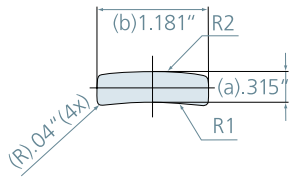
	Coating	Shear	Size	Heavy-Duty	
Size	TiCN	Whisper/Rooftop	Width < .06″	Outer circle (inch)	USD
1	**$38.00**	**$0.00**	+25%	.236″ - 1.181″	**$103.00**
2	**$60.00**	**$0.00**	n/a	1.182″ - 1.732″	**$126.00**

Stripper options

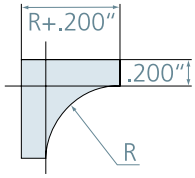
	Size
Size	Width < .06″
2	**+25%**

Shapes – category B

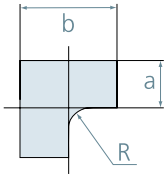
Shape 37



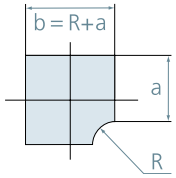
Shape 35



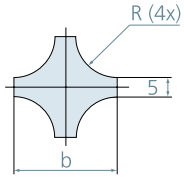
Shape 15



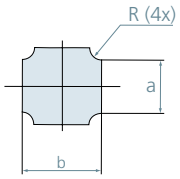
Shape 15



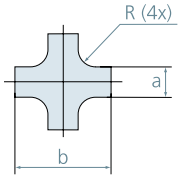
Shape 14



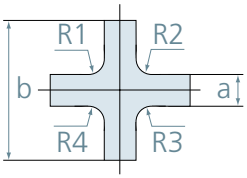
Shape 14



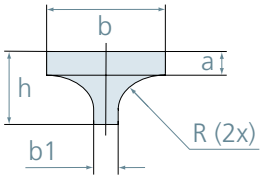
Shape 14



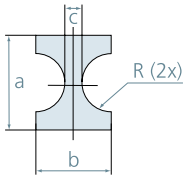
Shape 40



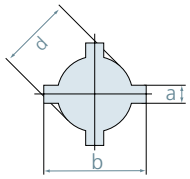
Shape 28



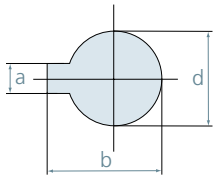
Shape 31



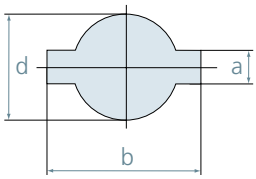
Shape 27



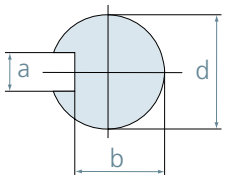
Shape 1



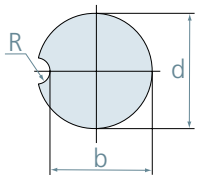
Shape 2



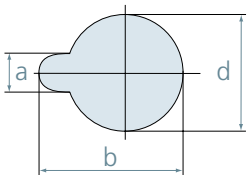
Shape 3



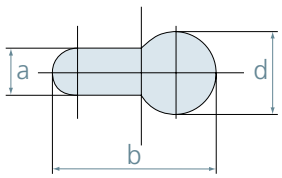
Shape 38



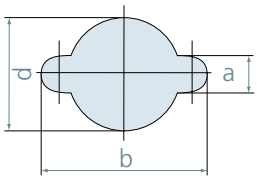
Shape 4



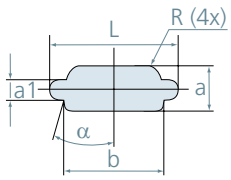
Shape 5



Shape 8



Shape 19

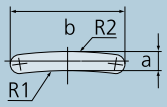


Banana tool

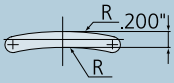
Description and application
The tool for punching curved shapes

Advantages
- Can be customized to suit your requirements
- Can be used for large openings and circular punching
- With a wide range of options there is something to suit every requirement
- Tool data import files provided for each order

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. 112 (punching force and shear strength)

Useful information	
Tooling accessories	see p. 96-98
Dimensions and regrinding	see p. 110-111
Punch selection	see p. 114
Die selection	see p. 115
Stripper selection	see p. 116-119
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance	see p. 124-125
Sheet flatness	see p. 126-127
Low-scratch/scratch-free processing	see p. 128-129
Increasing dimensional accuracy	see p. 130-131
Order forms	see p. 146-147

Item

Punch

- Optional: longer tool life with coating
- Optional: free Whisper/roof shear

Order no.	USD
699850	For prices, see table

Die

Order no.	USD
699860	For prices, see table

Stripper

Order no.	USD
699870	For prices, see table

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

Prices

	Punch			Die		Stripper	
Size	Outer circle (inch)	Shear Std	USD	Outer circle (inch)	USD	Outer circle (inch)	USD
1	.413" - 1.181"	No	**$189.00**	1.260"	**$149.00**	3.070"	**$85.00**
2	1.182" - 2.500"	Yes/Whisper	**$225.00**	1.261" - 2.536"	**$205.00**		
2	2.501" - 3.000"	Yes/Rooftop	**$315.00**	2.537" - 3.036"	**$245.00**		

Die options

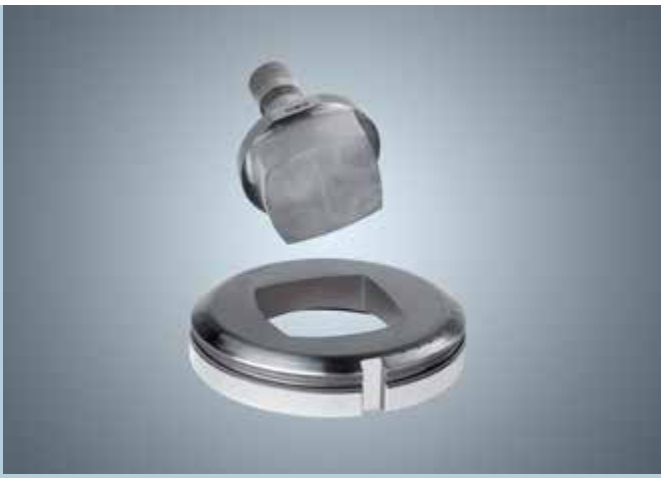
	Keyway	Heavy-Duty	
Size	Add (ea)	Outer circle (inch)	USD
1	**$25.00**	.236" - 2.440"	**$58.00**
2	**$25.00**		

Punch options

	Coating	Shear	Size	Heavy-Duty	
Size	TiCN	Whisper/Rooftop	Width (a) < .06"	Outer circle (inch)	USD
1	**$38.00**	**$0.00**	+25%	.236" - 1.181"	**$103.00**
2	**$60.00**	**$0.00**	n/a	1.182" - 1.732"	**$126.00**

MultiCut radii tool

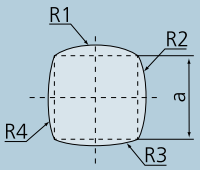
Machine type	
TruPunch	1000, 2000, 2020, 3000, 5000
TruMatic	1000, 3000, 6000, 7000
TC	190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L
Sheet thickness s	dependent on the geometry and punching force see p. 112 (punching force and shear strength)
Useful information	
Tooling accessories	see p. 96-98
Dimensions and regrinding	see p. 110-111
Punch selection	see p. 114
Die selection	see p. 115
Stripper selection	see p. 116-119
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance	see p. 124-125
Sheet flatness	see p. 126-127
Low-scratch/scratch-free processing	see p. 128-129
Increasing dimensional accuracy	see p. 130-131
Order forms	see p. 146-147



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

Advantages
- Short processing time for producing round holes
- Can be customized to suit your requirements
- Tool data import files provided for each order
- Multi-radius inserts available in MultiTool

Shape 26



Item

Punch

- Optional: longer tool life with coating
- Optional: free Whisper/roof shear

Order no.	USD
699850	For prices, see table

Die

Order no.	USD
699860	For prices, see table

Stripper

Order no.	USD
699870	For prices, see table

Important ordering specifications
Punch, die: machine, sheet thickness, mater, dimensions, options.

Prices

	Punch			Die		Stripper	
Size	Outer circle (inch)	Shear Std	USD	Outer circle (inch)	USD	Outer circle (inch)	USD
1	.413″ - 1.181″	No	**$189.00**	1.260″	**$149.00**		
2	1.182″ - 2.500″	Yes/Whisper	**$225.00**	1.261″ - 2.536″	**$205.00**	3.070″	**$85.00**
2	2.501″ - 3.000″	Yes/Rooftop	**$265.00**	2.537″ - 3.036″	**$235.00**		

Die options

	Keyway	Heavy-Duty	
Size	Add (ea)	Outer circle (inch)	USD
1	**$25.00**	.236″ - 2.440″	**$58.00**
2	**$25.00**		

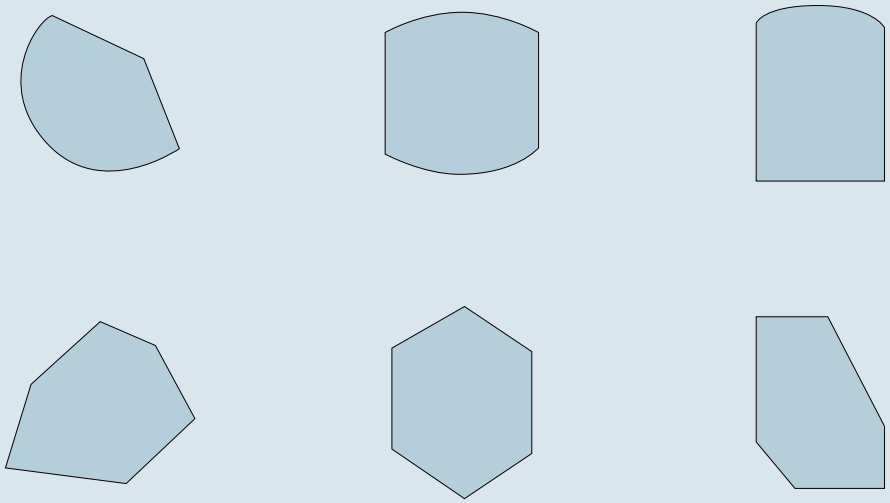
Punch options

	Coating	Shear	Heavy-Duty	
Size	TiCN	Whisper/Rooftop	Outer circle (inch)	USD
1	**$38.00**	**$0.00**	.236″ - 1.181″	**$103.00**
2	**$60.00**	**$0.00**	1.182″ - 1.732″	**$126.00**

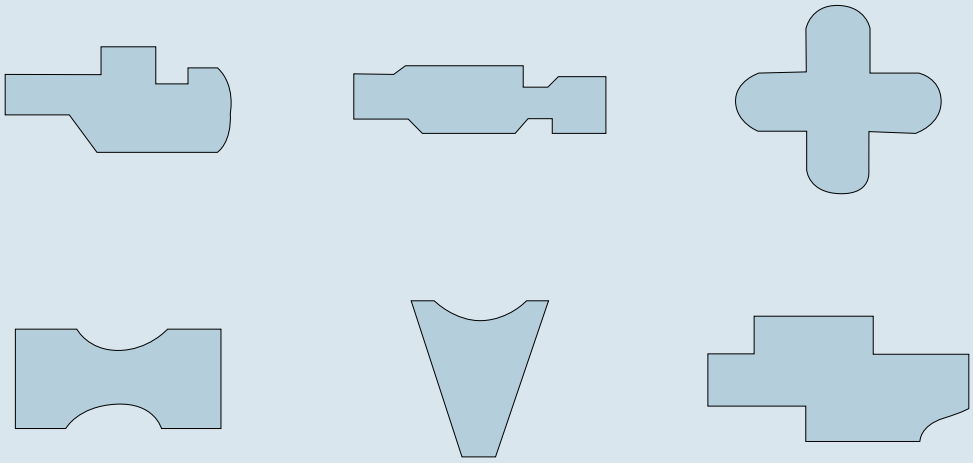
Shapes – customized

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 would be happy to help you.

Cluster tools

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. 112 Punching force and shear strength
Useful information	
Punching tool accessories	see p. 96-98
Dimensions and regrinding	see p. 110
Punch selection	see p. 114
Die selection	see p. 115
Stripper selection	see p. 116-119
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance and setup	see p. 124-125
Sheet flatness	see p. 126-127
Low-scratch/scratch-free processing	see p. 128
Increasing dimensional accuracy	see p. 130
Order forms	see p. 146-147

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

Your benefits at a glance
- Customized 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
- Tool data import files provided for each order

Item

Complete tool

Order no.	USD
	On request

Punch

Order no.	USD
	On request

Die

- Optional: Leveling effect to improve sheet evenness

Order no.	USD
	On request

Stripper

- Optional: Special coating to avoid marks

Order no.	USD
	On request

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.

Tools with guided cutting edge

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

Advantages
- 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. .157″
Square	max. .098″
Rectangle	max. .098″
Oblong	max. .098″
Useful information	
Dimensions and regrinding	see p. 110-111
Punch selection	see p. 114
Die selection	see p. 115
Stripper selection	see p. 116-119
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance	see p. 124-125
Sheet flatness	see p. 126-127
Low-scratch/scratch-free processing	see p. 128-129
Increasing dimensional accuracy	see p. 130-131
Order forms	see p. 146-147

Item

Guided punch, round

Order no.	USD
699900	**$625.00**

Guided punch, square

Order no.	USD
699900	**$815.00**

Guided punch, rectangle

Order no.	USD
699900	**$820.00**

Guided punch, oblong

Order no.	USD
699900	**$825.00**

Important ordering specifications
Machine, sheet thickness, material, shape, dimensions, options.

Inserts

Precision piercing punch

	Dimension (inch)	Order no.	USD
Round	(d) = .039″ - .236″	699901	**$49.00**
Square	(a) = .039″ - .291″		**$75.00**
Rectangle	(e) = .050″ - .413″		**$78.00**
Oblong	(l) = .050″ - .413″		**$80.00**

Guide bushing/presser foot

	Type	Order no.	USD
Round	Guide bushing	699902	**$95.00**
Square			
Rectangle	Presser foot	699903	**$225.00**
Oblong			

Accessories and single parts

Item		
Name	**Order no.**	**USD**
Hollow spring element (round)	093928	**$40.00**
Spring element (square, rectangle, oblong)	517153	

Punch options

Coating
TiCN
$38.00

MultiTool 5-station

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	
Steel	.020″ - .177″
Stainless steel	.020″ - .120″
Aluminum	.020″ - .177″
Useful information	
Tooling accessories	see p. 96-98
Dimensions and regrinding	see p. 110-111
Punching force and shear	see p. 112-113
Stripper selection	see p. 116-119
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance	see p. 124-125
Sheet flatness	see p. 126-127
Low-scratch/scratch-free processing	see p. 128-129
Increasing dimensional accuracy	see p. 130-131
Order forms	see p. 146-147

Description and application

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

Advantages

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

Item

Complete MultiTool

Punch adapter

Order no.	USD
629134	**$2,840.00**

Die holder

- Optional: with brush inserts for low-scratch processing (order no. 668915)

Order no.	USD
629150	**$1,394.00**

Stripper

Order no.	USD
629161	**$140.00**

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

Inserts

Punch insert

	Dimension (inch)	Order no.	USD
Round	(d) = .061″ - .630″	699804	**$60.00**
Square	(a) = .040″ - .445″		**$77.00**
Rectangle	(e) = .070″ - .630″		**$77.00**
Oblong	(l) = .080″ - .630″		**$77.00**

Die insert

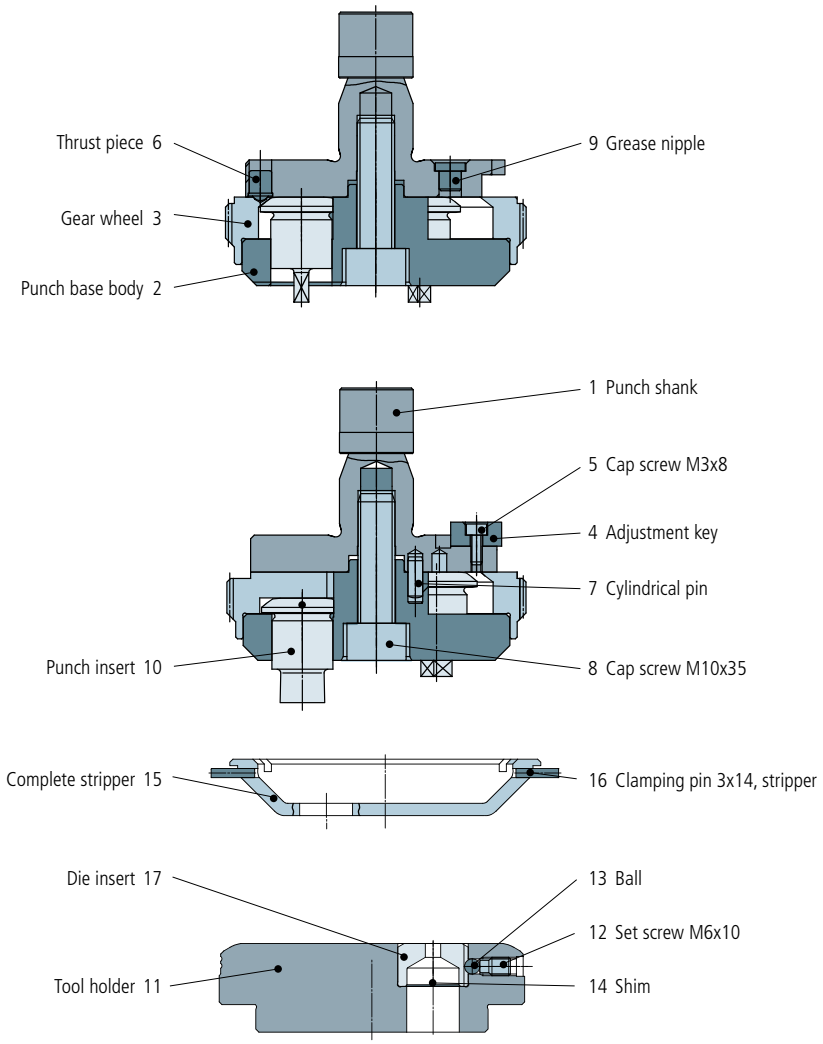
	Dimension (inch)	Order no.	USD
Round	(d) = .061″ - .665″	699814	**$50.00**
Square	(a) = .040″ - .480″		**$55.00**
Rectangle	(e) = .070″ - .665″		**$55.00**
Oblong	(l) = .080″ - .665″		**$55.00**

Important ordering specifications
Machine, sheet thickness, material, MultiTool type (4-, 5-, 6-, 10-station), shape, dimensions, options.
Multi radius inserts available upon request.

Punch options

Coating
TiCN
$25.00

MultiTool 5-station



Accessories and single parts

Item	Name	Quantity	Order no.	USD
1)	Punch shank	1	629117	
2)	Punch base body	1	629120	
3)	Gear wheel	1	629121	
4)	Adjustment key	1	063548	
5)	Cap screw M3x8	1	014346	
6)	Thrust piece	1	355256	
7)	Cylindrical pin	2	023116	
8)	Cap screw M10x35	1	015199	
9)	Grease nipple	1	029556	
10)	Punch insert	5	699804	**For prices, see table**
11)	Tool holder	1	629136	

	Name	Quantity	Order no.	USD
12)	Set screw M6x10	5	074438	
13)	Ball	5	030210	
14)	Shim 0.1 mm	10	1460499	**$10.90**
	Shim 0.3 mm	5	1460502	**$9.50**
	Shim 0.5 mm	5	1460503	**$9.50**
15)	Complete stripper	1	629161	**$140.00**
16)	Clamping pin 3x14, stripper	2	146927	
17)	Die insert	5	699814	**For prices, see table**
18)	Brush insert (not pictured)	5	540021	
	Plain washer 0.1 mm for brush insert (not pictured)	5	540026	**1**
	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

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	
Steel	.020" - .177"
Stainless steel	.020" - .120"
Aluminum	.020" - .177"
Useful information	
Tooling accessories	see p. 96-98
Dimensions and regrinding	see p. 110-111
Punching force and shear strength	see p. 112-113
Stripper selection	see p. 116-119
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance	see p. 124-125
Sheet flatness	see p. 126-127
Low-scratch/scratch-free processing	see p. 128-129
Increasing dimensional accuracy	see p. 130-131
Order forms	see p. 146-147

Description and application

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

Advantages

- Number of tools on the machine is increased with 10 tool inserts in one tool adapter
- Shorter setup and tool change times
- Considerable increase in productivity for small punches
- Die inserts can be reground one at time
- Punch gear with special coating runs exceptionally well.

Item

Complete MultiTool

Punch adapter

Order no.	USD
630593	**$2,850.00**

Die holder

- With brush insert for low-scratch processing

Order no.	USD
358911	**$1,950.00**

Stripper

Order no.	USD
641046	**$204.00**

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

Inserts

Punch insert

	Dimension (inch)	Order no.	USD
Round	(d) = .061" - .413"	699804	**$64.00**
Square	(a) = .060" - .291"		**$75.00**
Rectangle	(e) = .070" - .413"		**$78.00**
Oblong	(l) = .080" - .413"		**$78.00**

Die insert

	Dimension (inch)	Order no.	USD
Round	(d) = .061" - .433"	699814	**$48.00**
Square	(a) = .060" - .303"		**$67.00**
Rectangle	(e) = .070" - .433"		**$67.00**
Oblong	(l) = .080" - .433"		**$67.00**

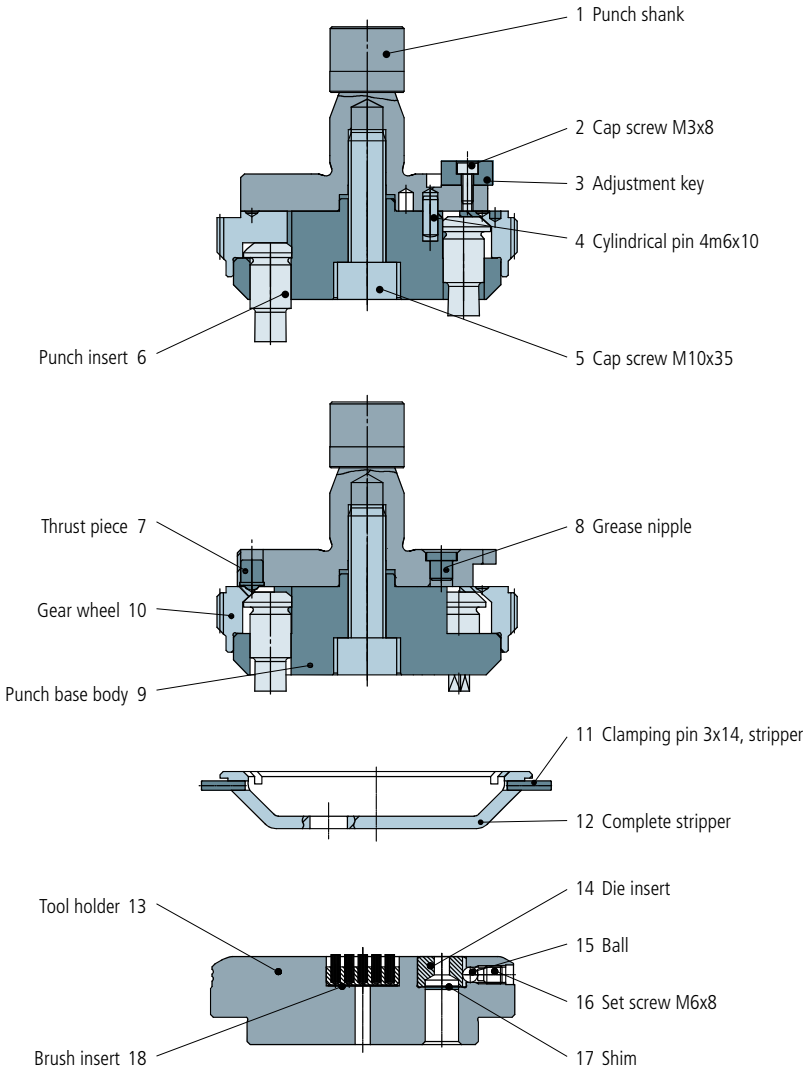
Important ordering specifications
Machine, sheet thickness, material, MultiTool type (4-, 5-, 6-, 10-station), shape, dimensions, options.
Multi radius inserts available upon request.

Punch options

Coating

TiCN
$25.00

MultiTool 10-station



Accessories and single parts

Item	Name	Quantity	Order no.	USD
1)	Punch shank	1	629117	
2)	Cap screw M3x8	1	014346	
3)	Adjustment key	1	063548	
4)	Cylindrical pin 4m6x10	1	023116	
5)	Cap screw M10x35	1	015199	
6)	Punch insert	10	699804	**For prices, see table**
7)	Thrust piece	1	355256	
8)	Grease nipple	1	029556	
9)	Punch base body	1	630586	
10)	Gear wheel	1	630587	

	Name	Quantity	Order no.	USD
11)	Clamping pin 3x14, stripper	2	146927	
12)	Complete stripper	1	641046	**$204.00**
13)	Tool holder	1	1282660	
14)	Die insert	10	699814	**For prices, see table**
15)	Ball	10	030210	
16)	Set screw M6x8	10	053720	
	Shim 0.1 mm	20	1460490	**$33.00**
17)	Shim 0.3 mm	10	1460493	**$17.50**
	Shim 0.5 mm	10	1460496	**$17.50**
18)	Brush insert	1	0540023	

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

MultiTool 4-station

Machine type	
TC	190 R, 200 R, 240 R, 260 R, 500 R, 600 L
Required machine option	MultiTool
Sheet thickness s	
Steel	.020" - .120"
Stainless steel	.020" - .080"
Aluminum	.020" - .120"
Useful information	
Tooling accessories	see p. 96-98
Dimensions and regrinding	see p. 110-111
Punching force and shear	see p. 112-113
Stripper selection	see p. 116-119
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance	see p. 124-125
Sheet flatness	see p. 126-127
Low-scratch/scratch-free processing	see p. 128-129
Increasing dimensional accuracy	see p. 130-131
Order forms	see p. 146-147

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

Advantages
- Number of tools on the machine is increased with 4 tool inserts in one tool adapter
- Shorter setup and tool change times
- Considerable increase in productivity for small punches
- Die inserts can be reground individually

Item

Complete MultiTool

Punch adapter

- For TC 240/TC 260 order no. 203624

Order no.	USD
712118	**$3,890.00**

Die holder

- Optional: with brush inserts for low-scratch processing (order no. 540019)

Order no.	USD
065958	**$1,510.00**

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

Inserts

Punch insert

		Dimension (inch)	Order no.	USD
Round		(d) = .061" - .630"	699804	**$62.00**
Square		(a) = .040" - .445"		**$68.00**
Rectangle		(e) = .070" - .630"		**$74.00**
Oblong		(l) = .080" - .630"		**$74.00**

Die insert

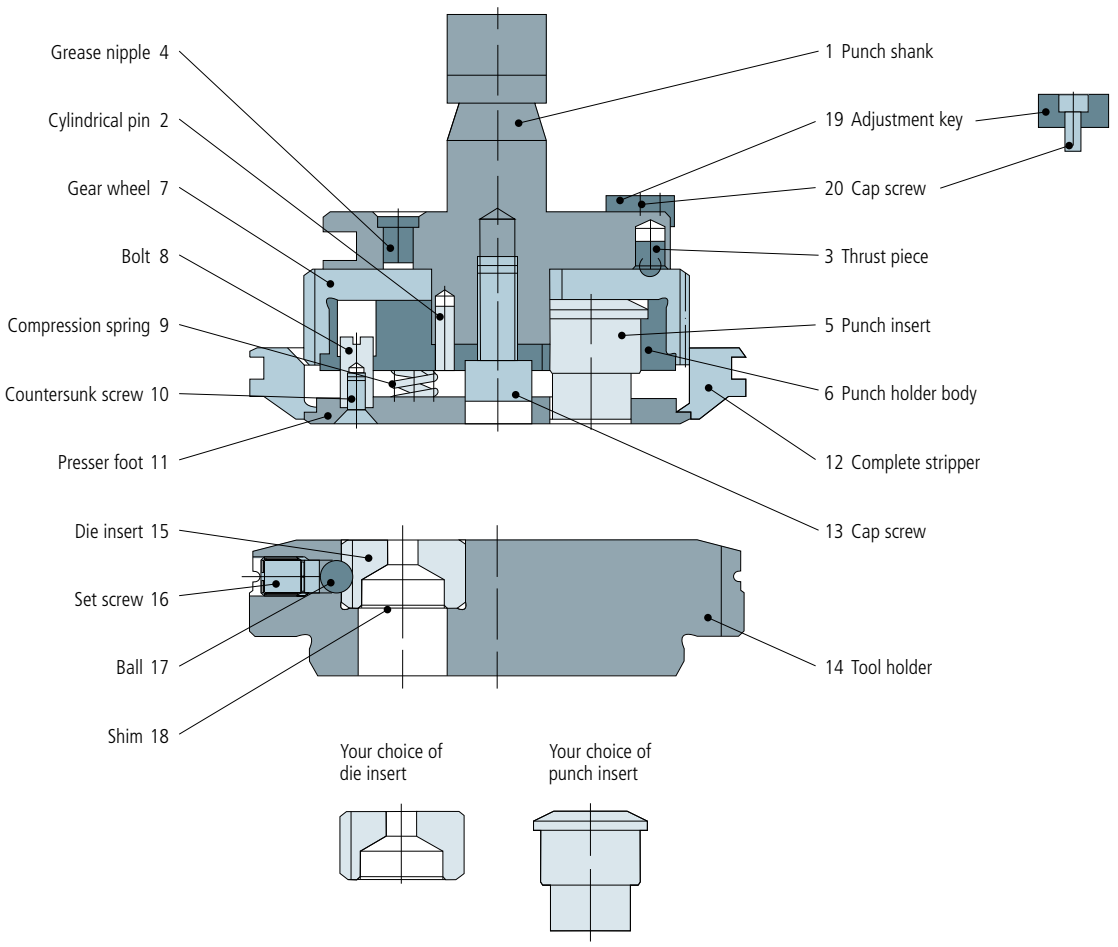
		Dimension (inch)	Order no.	USD
Round		(d) = .061" - .653"	699814	**$50.00**
Square		(a) = .040" - .468"		**$58.00**
Rectangle		(e) = .070" - .652"		**$58.00**
Oblong		(l) = .080" - .653"		**$58.00**

Important ordering specifications
Machine, sheet thickness, material, MultiTool type (4-, 5-, 6-, 10-station), shape, dimensions, options.
Multi radius inserts available upon request.

Punch options

Coating
TiCN
$25.00

MultiTool 4-station



Accessories and single parts

Item	Name	Quantity	Order no.	USD
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	For prices, see table
6)	Punch holder body	1	203625	
7)	Gear wheel	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	

Item	Name	Quantity	Order no.	USD
12)	Complete stripper	1	712115	
	Complete stripper for TC 240/TC 260	1	203619	
13)	Cap screw	1	016349	
14)	Tool holder	1	066205	
15)	Die insert	4	699814	For prices, see table
16)	Set screw	4	073865	
17)	Ball	4	062005	
18)	Shim 0.1 mm	8	366744	**$13.25**
	Shim 0.3 mm	4	366745	**$7.90**
	Shim 0.5 mm	4	366746	**$7.90**
19)	Adjustment key	1	063548	
20)	Cap screw	1	014346	

MultiTool 6-station

Machine type	
TC	190 R, 200 R, 240 R, 260 R, 500 R, 600 L
Required machine option	MultiTool
Sheet thickness s	
Steel	.020" - .120"
Stainless steel	.020" - .080"
Aluminum	.020" - .120"
Useful information	
Tooling accessories	see p. 96-98
Dimensions and regrinding	see p. 110-111
Punching force and shear	see p. 112-113
Stripper selection	see p. 116-119
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance	see p. 124-125
Sheet flatness	see p. 126-127
Low-scratch/scratch-free processing	see p. 128-129
Increasing dimensional accuracy	see p. 130-131
Order forms	see p. 146-147

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

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

Item

Complete MultiTool

Punch adapter

- For TC 240/TC 260 (order no. 203630)

Order no.	USD
712120	**$3,990.00**

Die holder

- Optional: with brush inserts for low-scratch processing (order no. 540041)

Order no.	USD
075192	**$1,625.00**

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

Inserts

Punch insert

		Dimension in mm	Order no.	USD
Round		(d) = .061" - .413"	699804	**$59.00**
Square		(a) = .040" - .291"		**$79.00**
Rectangle		(e) = .070" - .413"		**$79.00**
Oblong		(l) = .080" - .413"		**$79.00**

Die insert

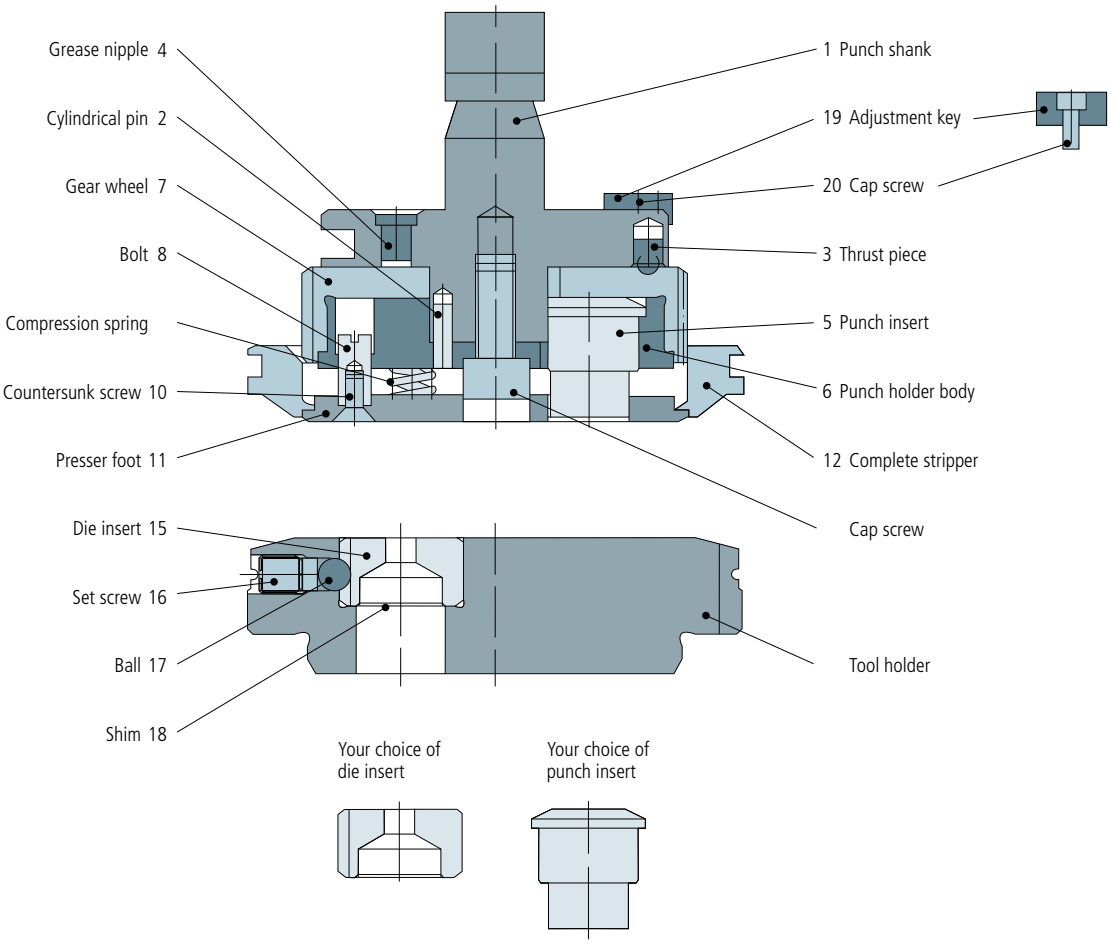
		Dimension in mm	Order no.	USD
Round		(d) = .061" - .437"	699814	**$48.00**
Square		(a) = .040" - .315"		**$67.00**
Rectangle		(e) = .070" - .433"		**$67.00**
Oblong		(l) = .080" - .437"		**$67.00**

Important ordering specifications
Machine, sheet thickness, material, MultiTool type (4-, 5-, 6-, 10-station), shape, dimensions, options.
Multi radius inserts available upon request.

Punch options

Coating
TiCN
$25.00

MultiTool 6-station



Accessories and single parts

Item	Name	Quantity	Order no.	USD
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	For prices, see table
6)	Punch holder body	1	203631	
7)	Gear wheel	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	

	Name	Quantity	Order no.	USD
12)	Complete stripper	1	712115	
	Complete stripper for TC 240/TC 260	1	203619	
13)	Cap screw	1	016349	
14)	Tool holder	1	075195	
15)	Die insert	6	699814	For prices, see table
16)	Set screw	6	013218	
17)	Ball	6	062005	
18)	Shim 0.1 mm	12	366747	**$17.50**
	Shim 0.3 mm	6	366748	**$9.75**
	Shim 0.5 mm	6	366749	**$9.75**
19)	Adjustment key	1	063548	
20)	Cap screw	1	014346	

Cutting:

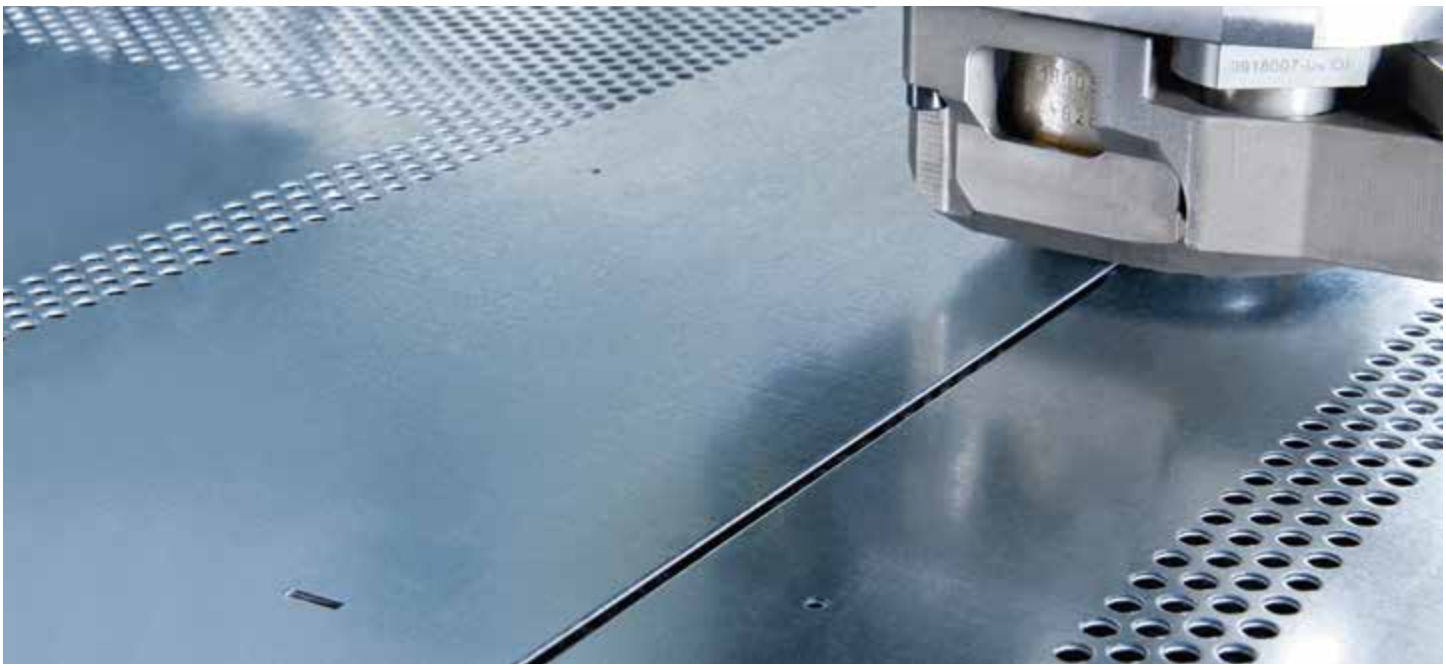
Perfect for every cut.

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 traditional slitting 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 – simple and safe.

Our film slitting tool with ball tip (patent pending) cuts films perfectly. It cuts film flawlessly, leaving behind no scratches or imprints 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

Advantages
- Economical cutting due to interchangeable cutting blades
- Different cutting measurements and geometries create a range of options
- Highest level of productivity provided by cutting speeds of up to 85 ft/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	.040" - .120"
Useful information	
Dimensions and regrinding	see p. 110-111
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance	see p. 124-125
Low-scratch/scratch-free processing	see p. 128-129
Edge quality	see p. 132
Cutting close to formed sections	see p. 136
Reliable removal	see p. 137
Order forms	see p. 146-147

Item

Slitting punch with cutting blade

- Optional: longer tool life with coating

Order no.	USD
699895	For prices, see table

Separating die with cutting blades

- Optional: with brush inserts for low-scratch processing
- Includes 1 die shim pack

Order no.	USD
699891	For prices, see table

Stripper

Order no.	USD
see table	For prices, see table

Bi-level stripper

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

Order no.	USD
see table	For prices, see table

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

Slitting tool with interchangeable cutting blades

Prices

Slitting punch with cutting blade (rectangle)			Separating die with cutting blades (rectangle)		
Size in mm	Order no.	USD	Size in mm	Order no.	USD
5 x 30	699895	$711.00	5 x 30	699891	$509.00
5 x 56		$715.00	5 x 56		$513.00
5 x 76.20		$719.00	5 x 76.20		$570.00

Stripper		
Size in mm	Order no.	USD
6 x 31	157059	$105.00
6 x 57	157060	
6 x 77.20	157058	

Bi-level stripper		
Size in mm	Order no.	USD
6 x 31	1648707	$260.00
6 x 57	1648706	
6 x 77.20	1648705	

Important ordering information
Order no. for TC 240/TC 260 on request. Trapezoid and dovetail shapes available on request.

Cutting blades

Punch

Die

Slitting geometry, rectangle with corner radii				
	Punch		Die	
Size in mm	Order no.	USD	Order no.	USD
5 x 30	699894	$85.00	699890	$105.00
5 x 56		$89.00		$109.00
5 x 76.20		$93.00		$165.00

Punch options

Coating
TiCN
$71.00

Accessories and single parts

Item	Order no.	USD
Taper thread pin for punch	187769	$7.00
Cylindrical pin for punch	010782	$4.00
Cap screw for die	207494	$2.00
Shim plate 0.2/5 x 30; 5 x 56	207489	$2.20
Shim plate 0.3/5 x 30; 5 x 56	207490	$2.20
Shim plate 0.5/5 x 30; 5 x 56	207491	$2.20
Shim plate 0.2/5 x 76.20	106143	$2.20
Shim plate 0.3/5 x 76.20	106144	$2.20
Shim plate 0.5/5 x 76.20	106145	$2.20

Slitting tool for cutting close to formed sections

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

Advantages
- Outstanding separating cuts on 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

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	.020″ - .080″
Useful information	
Dimensions and regrinding	see p. 110-111
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance	see p. 124-125
Low-scratch/scratch-free processing	see p. 128-129
Edge quality	see p. 132
Cutting close to formed sections	see p. 136
Reliable removal	see p. 137
Order forms	see p. 146-147

Item

Solid slitting punch, complete

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

Dimension	Order no.	USD
.200″ x 2.00″		**$458.00**
.125″ x 2.900″		**$475.00**

Solid slitting punch, single

- Also available in trapezoid or dovetail shape

Dimension	Order no.	USD
.200″ x 2.00″		**$298.00**
.125″ x 2.900″		**$315.00**

Solid slitting die, rectangle

Dimension	Order no.	USD
.200″ x 2.00″	699891	**$180.00**
.125″ x 2.900″		**$180.00**

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

Punch options

Coating
TiCN
$75.00

Accessories and single parts

Item		
Name	**Order no.**	**USD**
Urethane stripper .200″ x 2.00″	On Request	**$160.00 set**
Urethane stripper .125″ x 2.900″	1735833	**$160.00 set**
Stop screw	1935222	**$8.00**

Slitting tool .250" x 1.500" (heavy duty)

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	.136" - .250" (depending on punching force of the machine)

Useful information	
Dimensions and regrinding	see p. 110-111
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance	see p. 124-125
Low-scratch/scratch-free processing	see p. 128-129
Edge quality	see p. 132
Cutting close to formed sections	see p. 136
Reliable removal	see p. 137
Punching thicker sheets	see p. 141
Order forms	see p. 146-147

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

Advantages
- Ideal for sheet thicknesses over .120" due to the specially reinforced punch and die
- Punch version with roof shear to reduce punching force and noise
- Optional: special coating increases tool life

Item

Slitting punch

- Reinforced version with roof shear
- Recommended corner radius 0.015"

Version	Order no.	USD
.250" x 1.500"		**$301.00**
.250" x 1.500" TiCN		**$361.00**

Separating die

- Reinforced version

Sheet thickness s in inch	Clearance	USD
.135"	+.026"	**$278.00**
.187"	+.036"	**$278.00**
.250"	+.048"	**$278.00**

Stripper

- Standard version

Dimension in inch	Order no.	USD
.500" x 1.750"		**$65.00**

Important ordering specifications
Machine, sheet thickness, material, punch version. Recommended corner radius 0.015"

Accessories and single parts

Item		
Name	**Order no.**	**USD**
Alignment ring for reinforced punch	201519	**$158.00**

MultiShear

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

Advantages
- Outstanding edge quality without nibble marks due to patented cutting technology
- Cutting blades with special coating result in long tool life
- Dies with brush inserts mean low-scratch production
- Bi-level 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	.020″ x .120″
Useful information	
Dimensions and regrinding	see p. 110-111
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance	see p. 124-125
Low-scratch/scratch-free processing	see p. 128-129
Edge quality	see p. 132
Cutting close to formed sections	see p. 136
Reliable removal	see p. 137
Order forms	see p. 146-147

Item

Complete tool

Order no.	USD
Reference	

Punch

- Dimension: 5 x 76.2 mm
- Optional: longer tool life with coating

Order no.	USD
1046857	**$745.00**
1361264 TiCN	**$817.00**

Die

- With brush inserts for low-scratch processing

Mat. S	Order no.	USD
.020″	1046860	**$1,633.00**
.040″	1046861	**$1,633.00**
.060″	1046862	**$1,633.00**
.080″	1046863	**$1,633.00**
.100″	1046864	**$1,633.00**
.120″ steel	1046865	**$1,633.00**
.120″ SST	1046866	**$1,633.00**

Stripper

- Also available as stepped stripper: on request (1475487)

Order no.	USD
1046858	**$162.00**

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

Die cutting blade

One piece

Sheet thickness s (inch)	Order no.	USD
.020″ + .004″	1045976	**$312.00**
.040″ + .008″	1045977	**$312.00**
.060″ + .012″	1045978	**$312.00**

Two pieces

Sheet thickness s (inch)	Order no.	USD
.080″ + .016″	1038233	**$312.00**
.100″ + .020″	1045974	**$312.00**
.120″ steel + .024″	1038234	**$312.00**
.120″ SST + .032″	1038235	**$312.00**

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	.020" - .120"
Useful information	
Dimensions and regrinding	see p. 110-111
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance	see p. 124-125
Low-scratch/scratch-free processing	see p. 128-129
Edge quality	see p. 132
Cutting close to formed sections	see p. 136
Reliable removal	see p. 137
Order forms	see p. 146-147

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

Advantages
- Outstanding trimming edges without nibble marks due to patented cutting technology
- Cutting blades with special coating result in long tool life
- Dies with brush inserts mean low-scratch production

Item

Complete tool

Order no.	USD
On request	

Punch

- With MultiDur Performance coating
- Dimension: 18 x 73 mm

Order no.	USD
On request	

Die

- With brush inserts for low-scratch processing

Order no.	USD
On request	

Stripper

Order no.	USD
On request	

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

Die cutting blade

One piece

Sheet thickness s (in mm)	Order no.	USD
0.5 / 1.0 / 1.5	On request	

Two pieces

Sheet thickness s (in mm)	Order no.	USD
2.0 / 2.5 / 3.0	On request	

Accessories and single parts

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

Ejector tool for sorting

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 2.440" and rectangular geometries up to 1.770"
- Larger geometries can be removed through the part chute

Machine type	
TruMatic	1000
Required machine option	Small part ejection
Sheet thickness s	.040" - .236"
Useful information	
Dimensions and regrinding	see p. 110
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance and setup	see p. 124-125
Low-scratch/scratch-free processing	see p. 128
Edge quality	see p. 132
Cutting close to formed sections	see p. 136
Reliable removal	see p. 137
Order forms	see p. 146-147

Item

Complete punch

Punch

Order no.	USD
See table	**Prices see table**

Die

Order no.	USD
2242957	**1,490**

Stripper

Order no.	USD
See table	**Prices see table**

Prices

Punch

		Dimensions mm	Order no.	USD
Round		(d) = .118"	2242749	**On request**
		(d) = .315"	2242748	
Square		(a) = .118"	2242771	**On request**
		(a) = .315"	2242750	
Rectangle		(a) x (b) = .079" x .315"	2242772	**On request**

Stripper

		Dimensions mm	Order no.	USD
Round		(d) = .157"	2242802	**On request**
		(d) = .354"	2242804	
Square		(a) = .157"	2242759	**On request**
		(a) = .354"	2242760	
Rectangle		(a) x (b) = .118" x .354"	2242801	**On request**

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

Ejector MultiTool

Machine type	
TruMatic	1000, 3000, 6000, 7000
TC	3000 L, 6000 L
Required machine option	MultiTool
Sheet thickness s	.040" - .157"
Useful information	
Dimensions and regrinding	see p. 110
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance and setup	see p. 124-125
Low-scratch/scratch-free processing	see p. 128
Edge quality	see p. 132
Cutting close to formed sections	see p. 136
Reliable removal	see p. 137
Order forms	see p. 146-147

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 2.126"
- Removal of square contours of up to 1.811"
- Removal of rectangular contours of up to 2.441" x .984"

Item

Complete punch

Order no.	USD
1522306	**On request**

Die

Order no.	USD
1494454	**On request**

Stripper

Order no.	USD
1522720	**On request**

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

Inserts

Punch insert

			Dimensions mm	Order no.	USD
	Round		(d) = .118"	1494450	**On request**
			(d) = .315"	1494419	
	Square		(a) = .118"	1494452	**On request**
			(a) = .315"	1494451	
	Rectangle		(e) = .079" x .315"	1494453	**On request**

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

Slitting tool size 5 for removing small parts

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

Machine type	
TruPunch	3000 (S11), 5000 (S10), 5000 (S12)
TruMatic	6000 (K05), 7000 (K02), 7000 (K08)
Required machine option	Active die or descending die
Sheet thickness s	.020" - .120"
Useful information	
Dimensions and regrinding	see p. 110
Cutting clearance	see p. 120
Tool life	see p. 122-123
Tool maintenance and setup	see p. 124-125
Low-scratch/scratch-free processing	see p. 128
Edge quality	see p. 132
Cutting close to formed sections	see p. 136
Reliable removal	see p. 137
Order forms	see p. 146-147

Item

Complete tool	Punch	Die	Stripper
			
Order no. / USD	Order no. / USD	Order no. / USD	Order no. / USD
On request	**On request**	**On request**	**On request**

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

Accessories and single parts

Item		
Designation	**Order no.**	**USD**
Tool cartridge size 5	1500495	**On request**
Adapter (for stripper)	1633067	

Experience the
Slitting tool size 5 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	.020" - .315"
Max. film thickness	.006"
Useful information	
Tool maintenance and setup	see p. 124-125

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.	USD
Reference	

Punch

Order no.	USD
1360350	**$550.00**

Die

Order no.	USD
1482571	**$727.00**

Stripper

- Round .800"

Order no.	USD
328870	**$39.00**

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

Accessories and single parts

Item

Designation	Order no.	USD
Ball tip	1668396	**$95.00**
Modification kit	1668776	**On request**

Punching in three dimensions

Forming with TRUMPF tools.

Our tools enable you to not only punch holes, but to form sheet metal. 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 offset 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

Offset tool

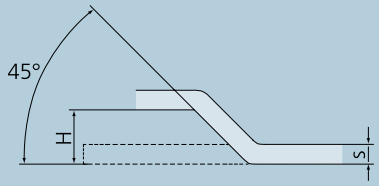
Description
Tool for producing any form length in nibbling mode

Advantages
- Can be used to create both straight and curved forms of any length
- Cost-effective tool due to its simple construction
- Reduced cost per part because the entire process is completed on one machine

Application examples
For stiffening sheet metal, sheet metal facades, e.g. in housing construction. Also well suited for circular forms that cannot be created using 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	.030″ - .125″
Form height H	.030″ - .250″
Angle α	45°

Useful information	
Tool maintenance	see p. 124-125
Cutting close to formed sections	see p. 136
Larger forming size	see p. 139-140
Order forms	see p. 146-147



Item

Complete tool	**Punch**	**Die**
		
Order no. **USD**	**Order no.** **USD**	**Order no.** **USD**
On request	On request	On request

Important quote specifications
Machine, sheet thickness, material, dimensions.

Offset height and permissible sheet thickness

Offset height H (inch)	**Permissible sheet thickness s (inch)**
.040″	.040″
.060″	.040″ - .060″
.080″	.040″ - .080″
.100″	.040″ - .100″
.120″	.040″ - .120″
.158″	.040″ - .120″
.200″	.040″ - .120″

Important quote information
Offset tools are always designed for a specific sheet thickness. Other dimensions on request. For quotations, reference our order form on pages 146-147.
Please include a drawing in a popular CAD format (.dxf) Email to tooling@us.trumpf.com.

Roller offset 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	
Steel	.030" - .080"
Stainless steel	.030" - .060"
Aluminum	.030" - .100"
Forming height H	.060" - .120"
Travel speed	up to max. positioning speed
Minimum travel radius	.984"
Angle α	45°
Useful information	
Tool maintenance	see p. 124-125
Order forms	see p. 146-147

Description
Tool for producing continuous forms using roller forming

Advantages
- Roller technology delivers the highest processing speed
- Can be used to create both straight and curved forms of any length
- Outstanding part quality with no visible marks from forming

Application examples
For stiffening sheet metal, sheet metal facades, e.g. in housing construction.
Also well suited for circular folds that cannot be created using a bending machine.

Item

Complete tool	Complete punch	Complete die	Top roller complete	Bottom roller complete
				
Order no. **USD**	**Order no.** **USD**	**Order no.** **USD**	**Order no.** **USD**	**Order no.** **USD**
On request	On request	On request	On request	On request

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

Important quote specifications
Roller offsetting tools are always designed for a specific sheet thickness. Other dimensions on request.

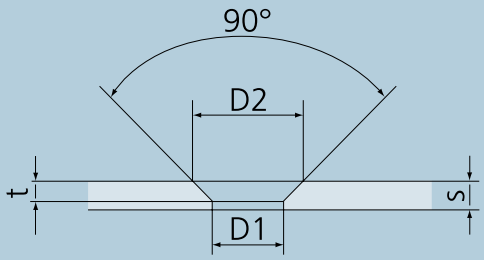
Countersink tool (upper side of the sheet)

Machine type	
TruPunch	1000, 2000, 2020, 3000, 5000
TruMatic	1000, 3000, 6000, 7000
TC	190 R, 200 R, 240 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	.030" - .250"
Useful information	
Tool maintenance	see p. 124-125
Cutting close to formed sections	see p. 136
Order forms	see p. 146-147

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

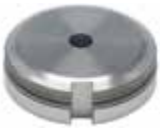
Advantages
- Outstanding process quality with the integrated presser foot
- Many special geometries available on request

Application examples
Assembly technology, countersinks for screws and rivets.



*Pre-Punch required; size determined at testing.

Item

Complete tool	Punch	Die	Urethane stripper (pushon)
			
■ Solid punch and die			
Order no. / USD: 1556333 / **$425.00**	Order no. / USD: **$360.00**	Order no. / USD: **$65.00**	Order no. / USD: **$50.00**

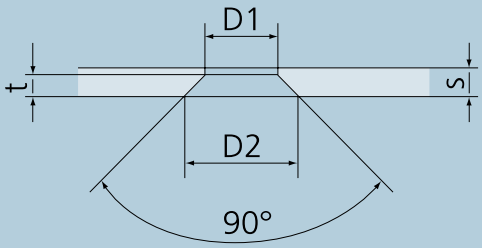
Important ordering specifications
Machine, sheet thickness, material, version, and dimensions of the countersink. Countersink tools are always designed for a specific sheet thickness. The countersink depth t is no more than 80% of the sheet thickness. Please use our order forms from p. 146-147. Pre-Punch tool is not included and is purchased separately.

Depth limits for best quality (D2 <= .500")
80% of S (.048" - .125") CRS, Aluminum
60% of S (.126" - .180") CRS, Aluminum
50% of S (.181" - .250") CRS, Aluminum
70% of S (.048" - .074") SST (D2 <= .300")
50% of S (.048" - .125") SST (D2 >= .301")

Important quote information
For quotations, reference our order form on page 146-147. Please include a drawing in a popular CAD format (.dxf) Include material type, thickness, D1, D2 and angle. Email to tooling@us.trumpf.com.

Countersink 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	.030" - .250"
Useful information	
Tooling accessories	see p. 96-98
Tool maintenance	see p. 124-125
Order forms	see p. 146-147



*Pre-Punch required; size determined at testing.

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

Advantages
- Outstanding process quality
- Replaceable components make the tool extremely versatile
- Many special geometries available on request

Application examples
Assembly technology, countersinks for screws and rivets.

Item

Complete tool	Punch	Die	Die insert
			
Order no. / **USD**	**Order no.** / **USD**	**Order no.** / **USD**	**Order no.** / **USD**
On request	On request	On request	On request

Important ordering specifications
Machine, sheet thickness, material, version, and dimensions of the countersink. Countersink tools are always designed for a specific sheet thickness. The countersink depth t is no more than 80% of the sheet thickness. Please use our order forms from p. 146-147. Pre-Punch tool is not included and is purchased separately.

Depth limits for best quality (D2 <= .500")
80% of S (.048" - .125") CRS, Aluminum
60% of S (.126" - .180") CRS, Aluminum
50% of S (.181" - .250") CRS, Aluminum
70% of S (.048" - .074") SST (D2 <= .300")
50% of S (.048" - .125") SST (D2 >= .301")

Important quote information
For quotations, reference our order form on page 146-147. Please include a drawing in a popular CAD format (.dxf) Include material type, thickness, D1, D2 and angle. Email to tooling@us.trumpf.com.

Knock-out tool

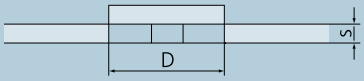
Machine type	
TruPunch	1000, 2000, 2020, 3000, 5000
TruMatic	1000, 3000, 6000, 7000
TC	190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L
Sheet thickness s	.030" - .125"
Diameter D	.375" - 2.50"
Number of tabs	2 std.

Useful information	
Tool maintenance	see p. 124-125
Cutting close to formed sections	see p. 136
Order forms	see p. 146-147

Description
Connects punching slugs to the sheet metal with one or several tabs – the slugs can be snapped off if required

Advantages
- 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

Order no.	USD
On request	

Punch

Order no.	USD
On request	

Die

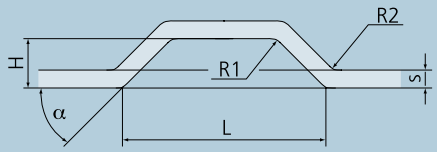
Order no.	USD
On request	

Important quote specifications
Machine, sheet thickness, material, dimensions.

Important quote information
Knock-out tools are always designed for a specific sheet thickness. Please use our order forms for your request, from p. 146-147.

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	.030" - .125"
Useful information	
Tool maintenance and setup	see p. 124-125
Larger forming size	see p. 139-140
Order forms	see p. 146-147



Description and application
Tool for cutting and forming bridges

Your benefits at a glance
- Increased processing speed combining punching and forming operations 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

Order no.	USD
On request	

Punch

Order no.	USD
On request	

Die

Order no.	USD
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.

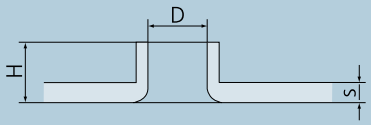
Extrusion tool (upward)

Description
Tool for producing extrusions

Advantages
- Tool for preparing tapping in thin sheets and for many other applications
- Optional coated die insert results in long tool life and high process reliability
- Adapted for the original tapping tool from TRUMPF

Application examples
Extruded holes as an alternative to insert elements, cable guides, safety steps, or fasteners. Guide for small tubes, e.g. heat exchanger.

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	.030" - .105"
Thread sizes for tapping	4-40 - 3/8-24
Forming height H	2 x sheet thickness s, max. .200"
Useful information	
Tool maintenance	see p. 124-125
Larger forming size	see p. 139-140
Order forms	see p. 146-147



*Pre-Punch required; size determined at testing.

Item

Complete tool

Order no.	USD
On request	

Punch

Order no.	USD
On request	

Die

Order no.	USD
On request	

Important quote specifications
Machine, sheet thickness, material, diameter D. Pre-punch is not included and is purchased separately.

Important quote information
Extrusion tools are always designed for a specific sheet thickness. A special heavy duty die is required for stainless steel over .050" thickness. Please use our order forms from p. 146-147.

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	.032" - .100"
Useful information	
Tool maintenance	see p. 124-125
Order forms	see p. 146-147

Description
Patent pending tool technology for deburring small inner contours in corners and radii.

Advantages
- 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 mounting edges.

Item

Complete tool	Punch	Die	Thrust piece
			
		■ Includes die inserts	■ Steel: all materials between .030" - .100", particularly film-coated sheet metal ■ Plastic: sheets between .040" - .100" processed without imprints
Order no. / **USD**	**Order no.** / **USD**	**Order no.** / **USD**	**Order no.** / **USD**
Reference	On request	On request	On request

Important quote specifications
Machine, sheet thickness, material, type of engagement pin. 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 holes ≥ .200" and oblong

	Form	Sheet thickness s (inch)	Order no.	USD
	Triangle	.032" - .055"		On request
		.056" - .100"		
	Square	.032" - .055"		
		.056" - .100"		
	Round	.032" - .055"		
		.056" - .100"		

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	.032" - .158"
Minimum travel radius	.787"
Useful information	
Tool maintenance	see p. 124-125
Order forms	see p. 146-147

Description
Patented tool technology for deburring punched contours

Advantages
- Shorter production times because the entire process is completed on one machine
- Roller geometries are adjusted to the sheet thickness, to ensure burrs are neatly flattened
- Very flexible due to interchangeable rollers for every requirement

Application examples
Safe mounting edges.

Item

Complete tool

Order no.	USD
On request	

Cylindrical steel roller, top

- Can be used with sheet thicknesses .032" - .158"

Order no.	USD
On request	

Back-tapered steel roller, top

- Processing with reduced chance of imprints

Order no.	USD
On request	

Plastic roller, top

- Processing with no imprints

Order no.	USD
On request	

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

Spare roller, bottom

Sheet thickness s (inch)	Order no.	USD
.032" - .055"		**On request**
.056" - .100"		
.101" - .158"		

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	.04" - .236"
Deburring geometries	
Smallest corner radius	.02"
Smallest diameter	.120"
Cut on both sides	≥ Sheet thickness .120"
Useful information	
Tool maintenance and setup	see p. 124-125
Order forms	see p. 146-147

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		Complete punch		Complete die	
					
Order no.	USD	Order no.	USD	Order no.	USD
Reference		2355383		2355382	

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

Accessories and single parts

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

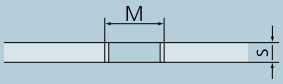
Tapping tool

Description
The reliable TRUMPF tool for non-cutting thread production using a punching machine

Advantages
- Cost per part is reduced because entire process is completed on one machine
- High level of resistance due to stress-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
Fixing 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	.059" - .197"
M6 - M10	.120" - .315"
Metric threads	
Type I	M2; M2.5; M3; M3.5; M4; M5
Type II	M6; M8; M10
Inch Threads	
Type I	2-56, 3-48, 4-40, 6-32, 8-32, 10-32
Type II	10-24, 12-24, 1/4-20, 1/4-28, 3/8-16, 3/8-24, 5/16-18
Useful information	
Tool maintenance	see p. 124-125
Order forms	see p. 146-147



Item

Complete tool

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

Order no.	USD
Reference	

Tapping module

Order no.	USD
On request	

Tap 6HX

- Standard tolerance 6HX

Order no.	USD
On request	

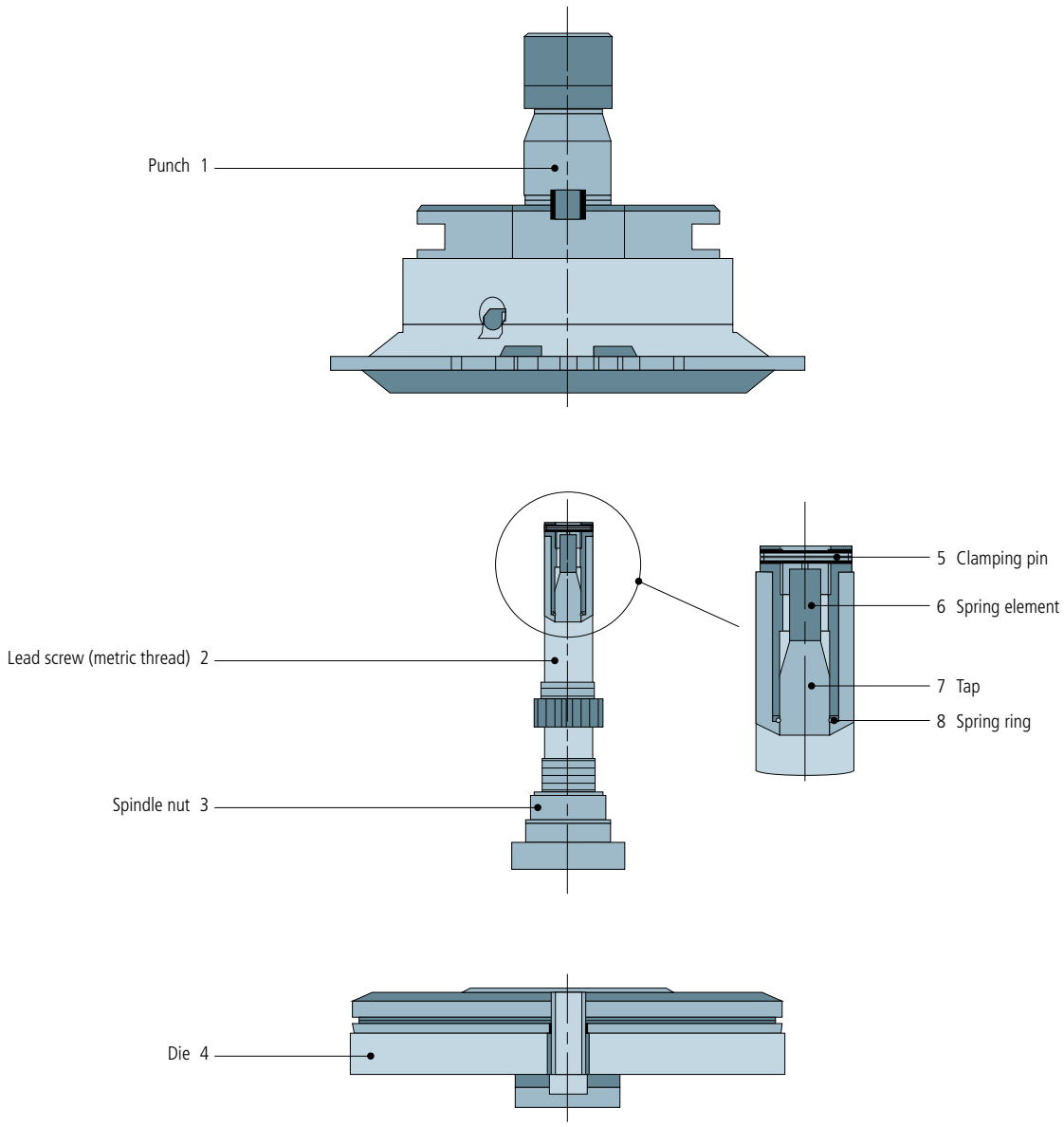
Important quote specifications
Machine, sheet thickness, material, thread size. The "tapping" machine option is a prerequisite.

Important quote 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 metric sizes on request. A special die is required for thread size M10.

Accessories and single parts

Item		
Name	**Order no.**	**USD**
Tapping die for upward extrusions	169249	**On request**
Tapping die for upward and downward extrusions (only up to thread size M8)	613446	
Tapping die for M10	171311	

Tapping tool



Accessories and single parts

Item				
	Name	Quantity	Order no.	USD
1)	Punch	1		
2)	Lead screw (metric thread)	1		
3)	Spindle nut	1		
4)	Die	1		
5)	Clamping pin	1	111352	**$2.40**
6)	Spring element	1	169337	**$2.40**
7)	Tap	1		
8)	Spring ring	1	111353	**$3.24**

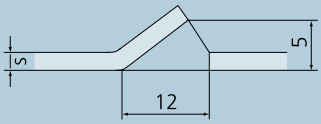
Louver tool (single)

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	.032" - .100"
Dimensions	12 x 5 x 60 mm
Useful information	
Tooling accessories	see p. 96-98
Tool maintenance	see p. 124-125
Larger forming size	see p. 139-140
Order forms	see p. 146-147

Description
Tool for producing ventilation louvers in a single stroke

Advantages
- 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
Ventilation technology, switch cabinet construction, chiller construction, covers for electrical devices.



Item

Complete tool		Punch		Die		Louver insert for die	
							
Order no.	**USD**	**Order no.**	**USD**	**Order no.**	**USD**	**Order no.**	**USD**
330322	**On request**	On request		On request		On request	

Important quote specifications
Machine, sheet thickness, material.

Important quote information
Other dimensions on request. Please use our order forms from p. 146-147.

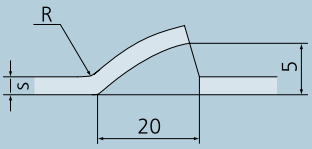
Accessories and single parts

Item		
Name	**Order no.**	**USD**
Cutting blade for punch	1804427	
Spring element for punch	On request	
Spring element for die (4 required)	On request	

E-mail: tooling@us.trumpf.com / Phone: 1-800-724-8753 / Fax: 860-255-6433

Louver tool (continuous)

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	.032" - .120"
Dimensions	20 x 5 mm
Useful information	
Tooling accessories	see p. 96-98
Tool maintenance	see p. 124-125
Order forms	see p. 146-147



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

Advantages
- Louvers of any length can be produced using continuous operation
- Cost-effective tool due to its simple construction

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

Item

Complete tool

*Stock tool for S = .060"

Order no.	USD
*328997	**On request**

Punch

Order no.	USD
On request	

Die

Order no.	USD
On request	

Important quote specifications
Machine, sheet thickness, material.

Important quote information
Continuous louver cutting tools are always designed for a specific sheet thickness. Other dimensions on request. Please use our order forms from p. 146-147.

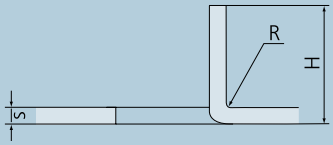
MultiBend tool

Description
Tool for producing 90° bends using a punching machine

Advantages
- 90° bends in a variety of lengths up to 2.165"
- Reduced cost per part because enitre process is completed on one machine – an additional process on the press brake is not required
- Bends are produced without imprints because a bending roller is used in the die
- Also available with a reinforcing bead

Application examples
Complete processing of door locks and lock cases, creating small bends in large blanks or parts, complete processing of brackets, e.g. fixtures.

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	.040" - .080"
Bend height H	.390" - .985"
Bending lengths	2.165"
Bending angle	up to 90° ±1°
Useful information	
Tool maintenance	see p. 124-125
Order forms	see p. 146-147



Item

Complete tool

- Bending length up to 3.540" with size 5 tool on request

Order no.	USD
Reference	

Punch

- With replaceable insert

Order no.	USD
On request	

Die

Order no.	USD
On request	

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

Important quote information
There are two versions of bending rollers, one for sheets between .040" - .060" thick and one for sheets that are .080" 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.

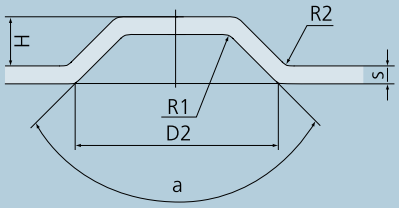
Accessories and single parts

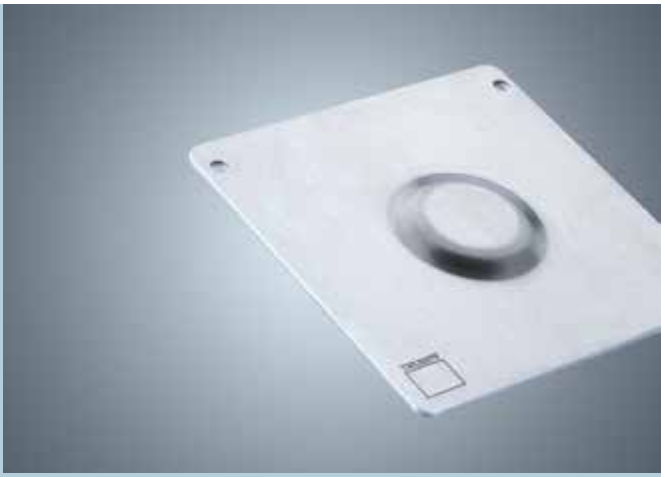
Item		
Name	**Order no.**	**USD**
Bending roller for die	On request	
Bending bar, single	On request	
Die ejector	688788	

E-mail: tooling@us.trumpf.com / Phone: 1-800-724-8753 / Fax: 860-255-6433

Emboss 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	.030" - .125"
Height H	.020" - .250"
Diameter D2	.200" - 2.50"
Angle α	90° - 179°
Useful information	
Tooling accessories	see p. 96-98
Tool maintenance	see p. 124-125
Larger forming size	see p. 139-140
Order forms	see p. 146-147





Description
Tool for producing a emboss form

Advantages
- A wide range of shapes and dimensions are available
- Produced specifically to your requirements
- Cost-effective tool due to its simple design

Application examples
Spacers, tread plates, housing feet, braces, screw countersinks, fluid outlets.

Item

Complete tool

Size	Order no.	USD
1 2	On request	

Punch

Size	Order no.	USD
1 2	On request	

Die

Size	Order no.	USD
1 2	On request	

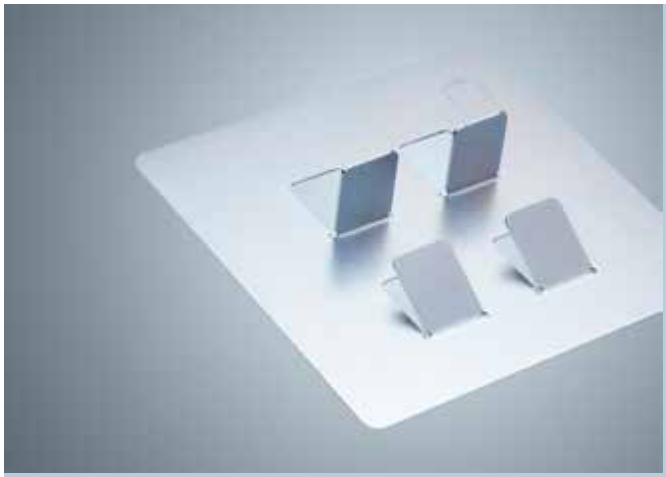
Important quote specifications
Machine, sheet thickness, material, dimensions, minimum spacing.

Dimensions

Size	Diameter D2 (inch)
Size 1	.200" - .590"
Size 2	.591" - 2.500"

Important quote information
Emboss tools are always designed for a specific sheet thickness. Other dimensions on request. For quotations, reference our order form on page 146-147.
Please include a drawing in a popular CAD format (.dxf). Email to tooling@us.trumpf.com.

MultiBend Extended



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 pre-cut size requirements in TruMatic machines

Application examples
Complete processing and production of small bends in large blanks or parts.

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	.040" - .080"
Bend lengths	Multiple bend lengths: .394" - 3.543"
Bend height H	Multiple bend heights: .394" - .984"
Bending angle	up to 90°
Useful information	
Tool maintenance and setup	see p. 124-125
Order forms	see p. 146-147

Item

Complete tool

Order no.	USD
See table	

Complete punch

Order no.	USD
See table	

Complete die

Order no.	USD
2035962	

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

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

Prices

Complete tool

Sheet thickness s inch	Order no.	USD
.04"	2035983	
.06"	2036964	
.08"	2036965	

Complete punch

Sheet thickness s inch	Order no.	USD
.04"	2035942	
.06"	2036967	
.08"	2036969	

Accessories and single parts

Item

Designation	Order no.	USD
Bending bar s = .04"	2035946	
Bending bar s = .06"	2036113	
Bending bar s = .08"	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	

Roller pinching 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	Roller technology
Sheet thickness s	
Aluminum	.032 - .080"
Steel	.032 - .060"
Stainless steel	.032 - .100"
Traveling speed	up to max. positioning speed
Minimum travel radius	19.70" (chamfered laser edge: .590")
Angle α	
Cutting	60°
Bending by hand	95°
Chamfered laser edge	120°
Useful information	
Tool maintenance and setup	see p. 124-125
Order forms	see p. 146-147

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.

Item

Complete tool	Spare roller, top	Spare roller, bottom
		
Order no. / USD	Order no. / USD	Order no. / USD
On request	On request	On request

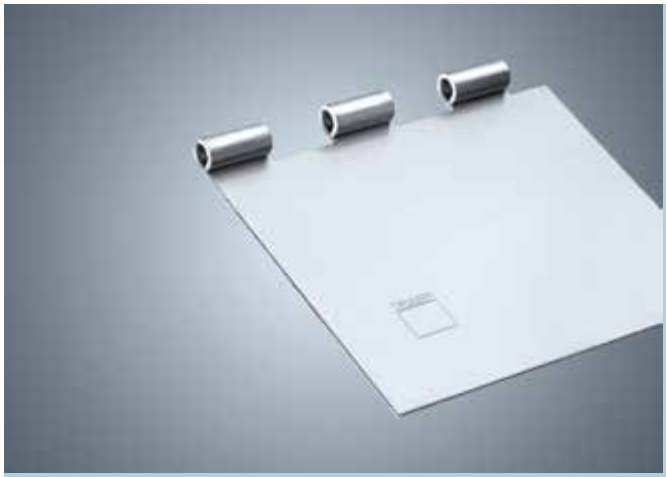
Important ordering specifications
Machine, sheet thickness, material, angle α. The "roller technology" machine option is a prerequisite.

Application

Application	Material	Sheet thickness s (in mm)	Note
Cutting	Steel, stainless steel	.032" - .080"	
	Aluminum	.032" - .100"	
Bending by hand	Steel, stainless steel	.032" - .080"	
	Aluminum	.032" - .100"	
Chamfered laser edge	Steel, stainless steel, aluminum	.032" - .315"	TruMatic 6000, 7000
	Steel, stainless steel, aluminum	.032" - .173"	TruMatic 1000, 3000

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

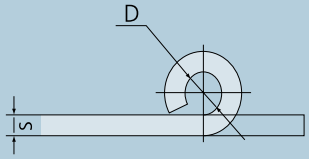
Hinge tool



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	
.040"	.125" / .187" / .236"
.060"	.187" / .236"
Useful information	
Tool maintenance and setup	see p. 124-125

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.	USD
On request	

Lever for tool 1

Order no.	USD
On request	

Die insert for tool 1

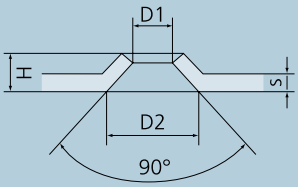
Order no.	USD
On request	

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.

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	.020" - .120"
Useful information	
Punching tool accessories	see p. 96-98
Tool maintenance and setup	see p. 124-125
Order forms	see p. 146-147



*Form download available upon request

Description and application
Tool for producing countersinks with increased bearing strength

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	Punch	Die
		
Order no. / USD	Order no. / USD	Order no. / USD
On request	On request	On request

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

Important ordering information
Countersink forming tools are always designed for a specific sheet thickness and a specific countersink diameter. Other dimensions on request.

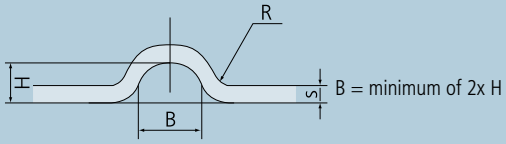
Beading tool

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	.035" - .125"
Useful information	
Tooling accessories	see p. 96-98
Tool maintenance	see p. 124-125
Order forms	see p. 146-147

Description
Tool for producing continuous beads in nibbling mode

Advantages
- 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 bracing sheet metal, guiding fluids or cables, inserting seals (round profile) for covers or doors.



Item

Complete tool

Size	Order no.	USD
1	Reference	
2		

Punch

Size	Order no.	USD
1	328998	On request
2	329000	

Die

Size	Order no.	USD
1	328999	On request
2	329001	

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

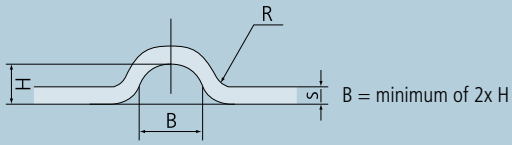
Dimensions, stock tools

Size	Available dimensions H x W (in mm)
Size 1	H = .125"; B = .250"; S = .035" - .074"
Size 2	H = .200"; B = .400"; S = .074" - .125"

Important quote information
Beading tools are always designed for a specific sheet thickness and specific beading dimensions. Other dimensions on request. Please use our order forms from p. 146-147.

Roller beading tool

Machine type	
TruPunch	1000, 2000, 2020, 3000, 5000
TruMatic	3000, 6000, 7000
TC	1000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L
Required machine option	Roller technology
Sheet thickness s	
Steel	.032" - .080"
Stainless steel	.032" - .060"
Aluminum	.032" - .100"
Dimensions H x W (inch)	.118" x .236" stock size
Travel speed	up to max. positioning speed
Minimum travel radius	1.180"
Useful information	
Tool maintenance	see p. 124-125
Order forms	see p. 146-147



B = minimum of 2x H

Description
Tool for producing beads using roller technology

Advantages
- 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 forming" option reduces approach marks

Application examples
For bracing sheet metal, guiding fluids or cables, inserting seals (round profile) for covers or doors.

Item

Complete tool	Spare roller, top	Spare roller, bottom
		
Order no. / **USD**	**Order no.** / **USD**	**Order no.** / **USD**
On request	On request	On request

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

Important ordering information
Roller beading tools are always designed for a specific sheet thickness and specific bead dimensions. Other dimensions on request. Please use our order forms from p. 146-147.

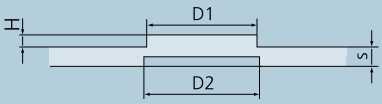
Shear tab tool

Description
Tool for cutting and forming a shear tab

Advantages
- Cost-effective production of fastening points and stops
- Many special shapes available, in addition to round

Application examples
For centering or creating spacers on components, safety steps, positioning aid for spot welding (fixture may be omitted).

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	.030" - .125"
Forming height	up to 0.6 x s
Useful information	
Tooling accessories	see p. 96-98
Tool maintenance	see p. 124-125
Order forms	see p. 146-147



Item

Complete tool

Order no.	USD
On request	

Punch

Order no.	USD
On request	

Die

Order no.	USD
On request	

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

Important quote information
Other dimensions on request. Please use our order forms from p. 146-147.

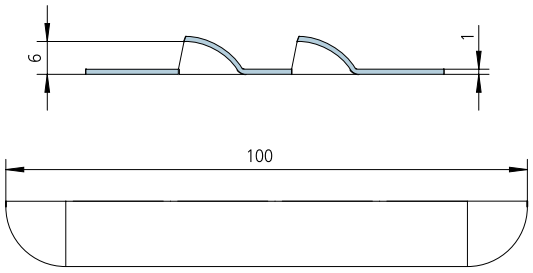
Accessories and single parts

Item		
Name	**Order no.**	**USD**
Single punch without spring element and alignment ring	On request	
Spring element for punch	On request	
Spring element for die	On request	

Tools size 5

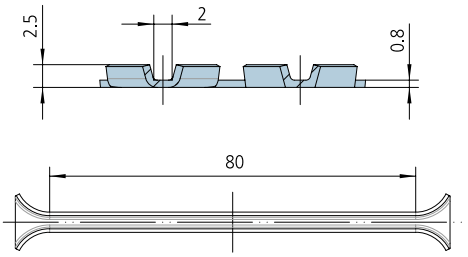
Machine type	
TruPunch	1000, 2000, 2020, 3000, 5000
TruMatic	1000, 3000, 6000, 7000
TC	1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L
Useful information	
Tool maintenance	see p. 124-125
Larger forming size	see p. 139-140

Louver tool size 5



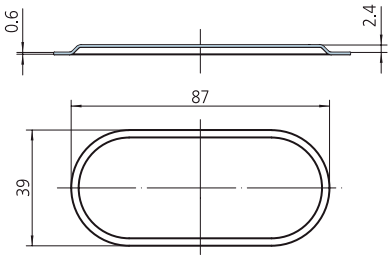
Order no.	USD
On request	**On request**

Card guide tool size 5



Order no.	USD
On request	**On request**

Emboss tool oblong size 5



Order no.	USD
On request	**On request**

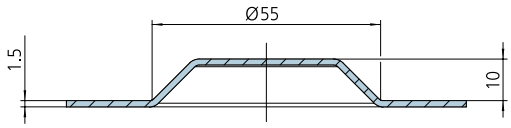
Important quote specifications
Drawing in common CAD format (e.g. DXF), machine, sheet thickness, material. Note: diagram measurements above in mm.

Accessories and single parts

Item		
Name	**Order no.**	**USD**
Tool cartridge size 5	1500495	**On request**

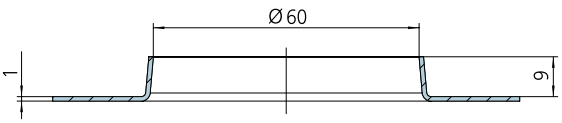
Tools for the active die

Machine type	
TruPunch	5000 (S10), 5000 (S12)
TruMatic	7000 (K02), 7000 (K08)
Required machine option	Active die
Useful information	
Tool maintenance	see p. 124-125
Larger forming size	see p. 139-140



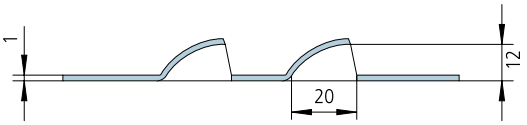
Order no.	USD
On request	**On request**

Emboss tool size 5 (active die)



Order no.	USD
On request	**On request**

Extrusion tool size 5 (active die)



Order no.	USD
On request	**On request**

Louver tool (active die)

Important quote specifications
Drawing in common CAD format (e.g. DXF), machine, sheet thickness, material. "Active die" machine option is a prerequisite. Note: diagram measurements above in mm.

Accessories and single parts

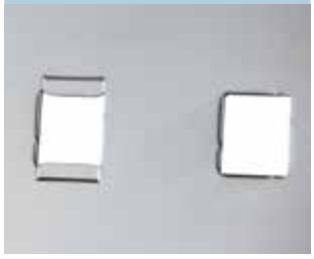
Item		
Name	**Order no.**	**USD**
Tool cartridge size 5	1500495	**On request**

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

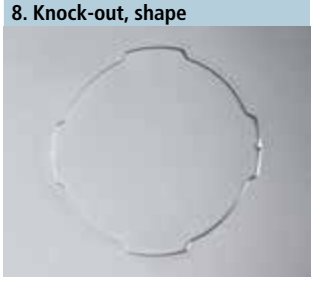
Knock-outs

5. Knock-out, oblong

6. Knock-out, double

7. Knock-out, shape

8. Knock-out, shape



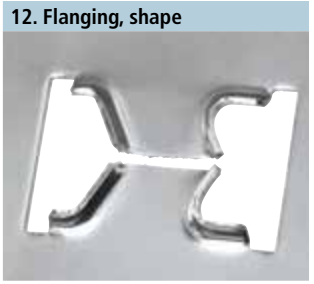
Flangings

9. Flanging, extrusion

10. Flanging, extrusion

11. Flanging, edge

12. Flanging, shape



Bridges

13. Bridge with offset

14. Bridge (thread)

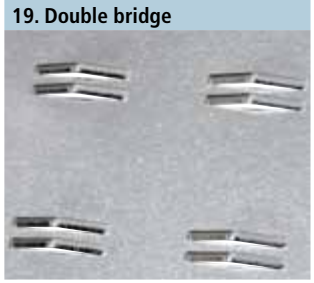
15. Bridge (hinge)

16. Bridge (bayonet lock)

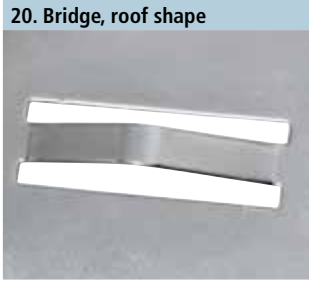
17. Bridge, roof shape

18. Bridge, roof shape

19. Double bridge



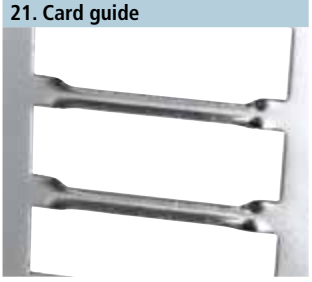
20. Bridge, roof shape



Application examples of forming

Card guides

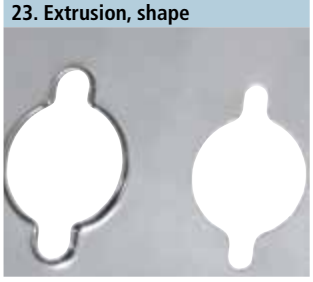
21. Card guide



22. Card guide

Extrusions

23. Extrusion, shape



24. Extrusion, keyhole

25. Extrusion, serrated

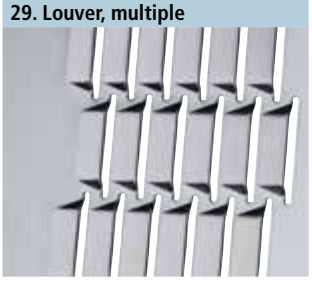
26. Extrusion (grip protection)

27. Extrusion, progressive

28. Extrusion, oblong

Louvers

29. Louver, multiple



30. Louver, trapezoid

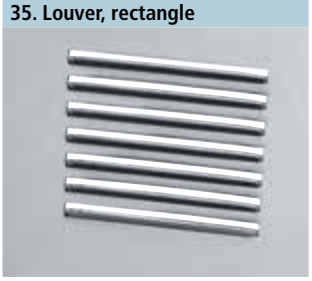
31. Louver, rectangle

32. Louver, trapezoid

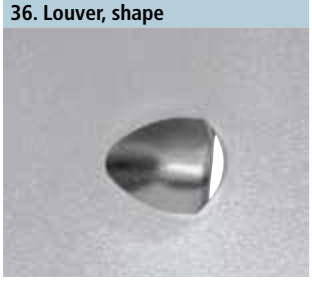
33. Louver, rectangle

34. Louver, round

35. Louver, rectangle



36. Louver, shape

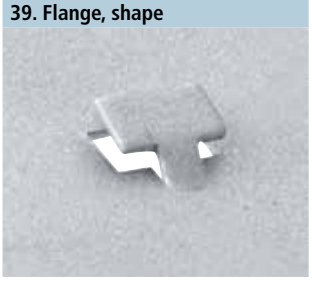


Flanges

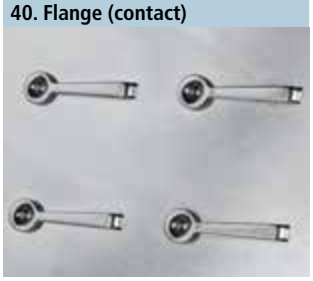
37. Flange, double

38. Flange, shape

39. Flange, shape



40. Flange (contact)



Application examples of forming

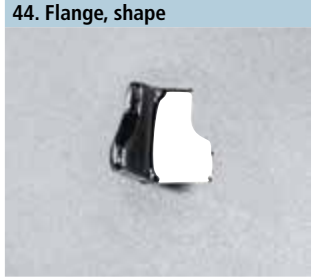
Flanges

41. Flange, offset

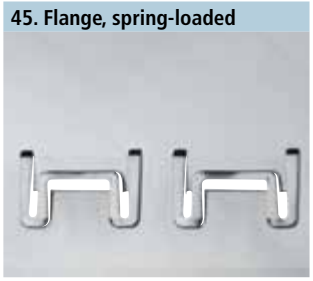
42. Flange, clip

43. Flange, clip

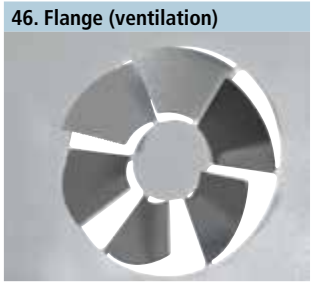
44. Flange, shape



45. Flange, spring-loaded

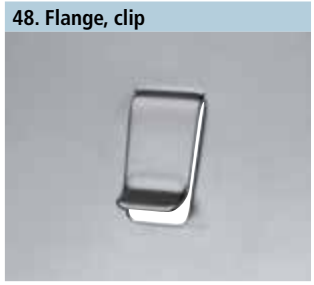


46. Flange (ventilation)



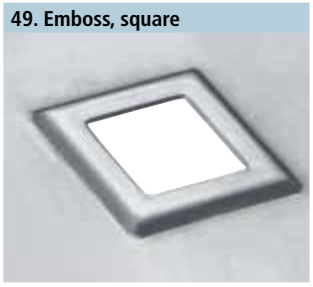
47. Flange, oblong

48. Flange, clip

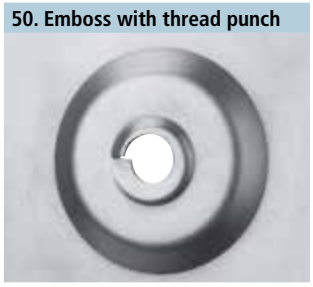


Embosss

49. Emboss, square

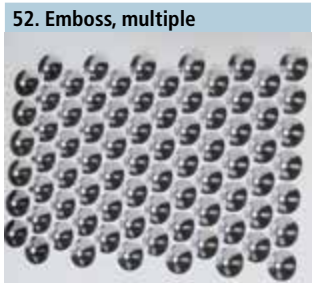


50. Emboss with thread punch

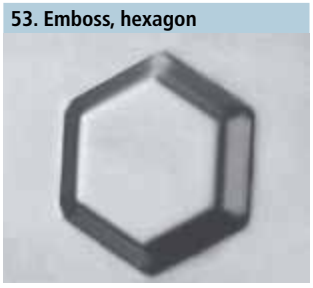


51. Emboss, funnel form

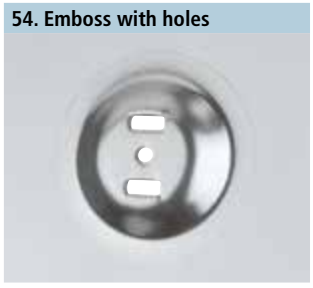
52. Emboss, multiple



53. Emboss, hexagon

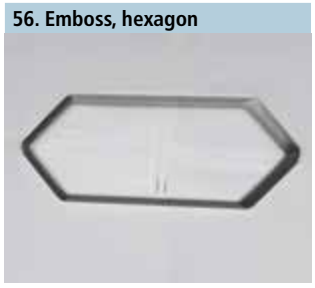


54. Emboss with holes

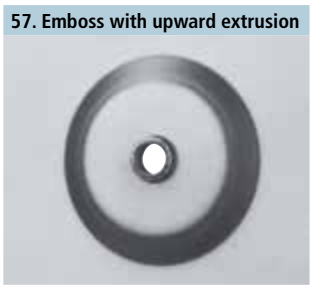


55. Emboss, spherical

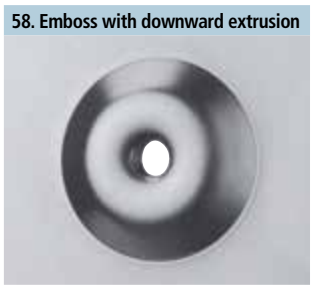
56. Emboss, hexagon



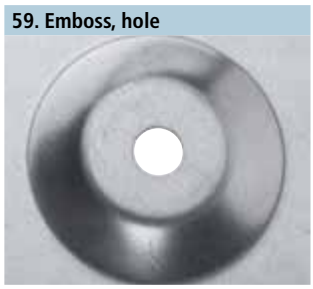
57. Emboss with upward extrusion



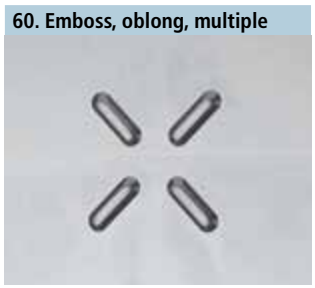
58. Emboss with downward extrusion



59. Emboss, hole



60. Emboss, oblong, multiple



Application examples of forming

Emboss

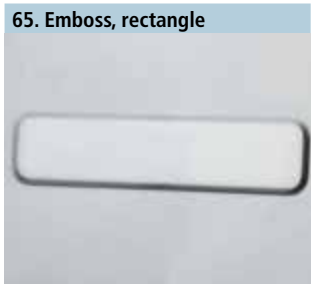
61. Emboss, roof shape

62. Emboss, hexagon

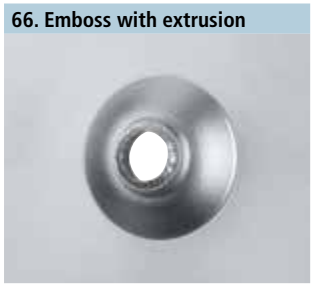
63. Emboss, pyramid

64. Emboss, form

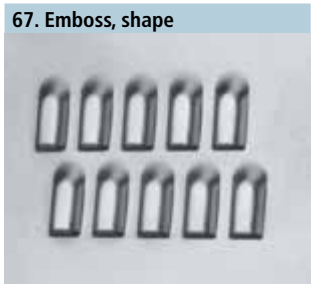
65. Emboss, rectangle



66. Emboss with extrusion



67. Emboss, shape

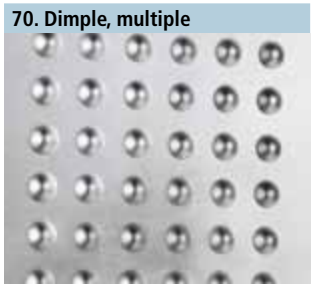


68. Emboss, oblong

Dimple

69. Dimple

70. Dimple, multiple



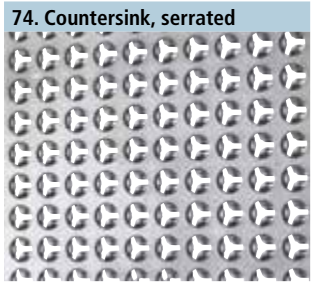
Countersinks

71. Countersink, teardrop

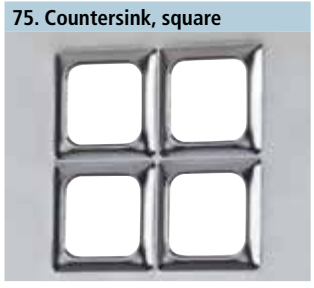
72. Emboss, safety steps

73. Countersink, round

74. Countersink, serrated



75. Countersink, square



76. Countersink, square hole

Shear tab

77. Shear tab, rectangle

78. Shear tab, upward/downward

79. Shear tab, (braille)

80. Shear tab, 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 (top 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	.04" - .315"
Center punch angle	60°
Useful information	
Tooling accessories	see p. 96-98
Tool maintenance	see p. 124-125
Embossing quality	see p. 135
Order forms	see p. 146-147

Description and application
Tool for creating center punches

Advantages
- Cost-effective tool due to its simple construction
- Interchangeable center punch pin makes the tool economical
- Used for positioning and centering for subsequent manual processing and mounting

Item

Punch

- Punch complete reference

Die size 1

- Solid die (no hole)

Order no.	USD
0329676	**$56.00**

Spare center punch pin

Sheet thickness	Order no.	USD
.04" - .177"	093701	**$39.00**
.178" - .315"	093702	**$39.00**

Important ordering specifications
Machine, sheet thickness, material, center punch angle. Compete assembly = size #2 chuck punch, size #1 alignment ring, die, insert.

Important quote information
The theoretical center punch depth is .012" - .032", depending on the machine type and sheet thickness tolerance. The center punch depth can be improved using ram adjustment. Other dimensions or form-up on request. Please use our order forms from p. 146-147.

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	.04" - .315"
Depth and width of engraving	.008"
Useful information	
Tool maintenance	see p. 124-125
Embossing quality	see p. 135
Order forms	see p. 146-147

Description and application
Tool for versatile marking of sheet metal parts

Advantages
- Non-compression marking results in outstanding inscription quality
- Engraving needle made from wear-resistant material guarantees long tool life
- Maximum contour versatility due to a narrow line width, e.g. for delicate engravings

Item

Complete tool

Order no.	USD
1482545	**$1,655.00**

Punch

Order no.	USD
1482544	**$928.00**

Die

Order no.	USD
1482571	**$727.00**

Engraving insert

Order no.	USD
1482543	**$484.00**

Important ordering specifications
Machine, sheet thickness, material. The "engraving" machine option is required.

Accessories and single parts

Item

Designation	Order no.	USD
Replacement ball roller for the die	0143498	

Ink marking tool

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

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	.040" - .315"
Useful information	
Tool maintenance and setup	see p. 124-125
Embossing quality	see p. 135
Order forms	see p. 146-147

Item

Complete tool

Order no.	USD
On request	

Punch

Order no.	USD
On request	

Die

Order no.	USD
1482571	**$727.00**

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

Accessories and single parts

Item		
Designation	**Order no.**	**USD**
Compression spring	2345164	
Alignment rings size 0, 1	72061	
Red ink refill (30ml)	2344070	
Blue ink refill (30ml)	2344082	
Red magnetic cap	2344083	
Blue magnetic cap	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	Marking/quick beading
Sheet thickness s	.02" - .315"
Marking depth	.008" ± .002"
Useful information	
Tool maintenance	see p. 124-125
Embossing quality	see p. 135
Order forms	see p. 146-147

Description and application
Tool for versatile marking of sheet metal parts

Advantages
- Fast processing speed in marking mode
- Can be used with all sheet thicknesses
- Cost-effective tool due to its simple construction

Item

Complete tool

- Reference

Punch

Order no.	USD
721501	**$525.00**

Die size 1

- Solid die (no hole)

Order no.	USD
0329676	**$56.00**

Round stripper

- D = .800"

Order no.	USD
0328870	**$39.00**

Important ordering specifications
Machine, sheet thickness, material. The "marking/quick beading" machine option is required.

Accessories and single parts

Item		
Name	**Order no.**	**USD**
Replacement marking pin	209003	**$30.00**

Marking tool (underside of the sheet)

Machine type	
TruPunch	5000
TruMatic	7000
Required machine option	Marking from below/Active die
Sheet thickness s	.040" - .315"
Marking depth	.008" ± .002"
Useful information	
Tool maintenance and setup	see p. 124-125
Embossing quality	see p. 135
Order forms	see p. 146-147

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

- Reference

Order no.	USD
1733320	On request

Complete punch

Order no.	USD
1733341	On request

Complete die

! **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.**	**USD**
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

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	.04" - .315"
Line length L	Up to .50" as requested
Embossing depth	.020" + .004"
Useful information	
Tooling accessories	see p. 96-98
Tool maintenance	see p. 124-125
Embossing quality	see p. 135
Order forms	see p. 146-147

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

Advantages
- 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 side or underside of the sheet on request

Item

Complete tool

- Reference

Punch

Order no.	USD
On request	

Die size 1

- Solid die (no hole)

Order no.	USD
0329676	**$56.00**

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

Embossing tool – symbol (upper side of the sheet)

Description and application
Tool for embossing individual symbols or logos

Advantages
- Many standard symbols available in different dimensions
- Tool can be used for upper side and underside of the sheet on request
- Customized symbols and logos can be produced on request

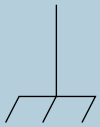
Machine type	
TruPunch	1000, 2000, 2020, 3000, 5000
TruMatic	1000, 3000, 6000, 7000
TC	190 R, 200 R, 240 L, 240 R, 260 L, 260 R, 500 R, 600 L, 1000 R, 2000 R, 2020 R, 3000 R, 3000 L, 5000 R, 6000 L
Sheet thickness s	.04″ - .315″
Symbol size	Up to .50″ as requested
Font size/embossing depth	
	.02″ + .004″
Useful information	
Tooling accessories	see p. 96-98
Tool maintenance	see p. 124-125
Embossing quality	see p. 135
Order forms	see p. 146-147

Grounding symbol

Protective ground symbol

Noiseless ground

Chassis ground



Item

Complete tool

- Reference

Punch

Order no.	USD
On request	

Die size 1

- Solid die (no hole)

Order no.	USD
0329676	**$56.00**

Important quote specifications
Machine, sheet thickness, material, symbol, symbol size, embossing depth if necessary.

Important quote 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 from p. 146-147

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 s	
	.04" - .315"
Font size	.125"
Embossing depth	.01" - .02" + .004"
Useful information	
Tooling accessories	see p. 96-98
Tool maintenance	see p. 124-125
Embossing quality	see p. 135
Order forms	see p. 146-147

Description and application
Tool for marking components with a fixed character string

Advantages
- Interchangeable embossing inserts ensure maximum versatility
- Many standard insert sizes in stock
- Tool can be used for imprinting on the upper side or underside of the sheet on request
- On request special larger, single, double rows and form-up possible

Item

Complete tool

- Reference

Punch

- Complete (with 12 inserts)

Order no.	USD
1521753	**$840.00**

Die size 2

- Solid die (no hole)

Order no.	USD
0329678	**$154.00**

Important ordering specifications
Machine, sheet thickness, material, list 12 insert types A-Z, 0-9.

Important quote information
Also available for TC 240 R and TC 260 R on request: this requires a second die height, call for pricing and delivery. The quantity of numbers that can be placed in the holder is 12.

Embossing inserts

Item		
Name	**Order no.**	**USD**
Numbers 0-9 (single)	PLI-X	**$10.65**
Letters A-Z (single)	PLI-X	**$10.65**
Special characters / - . (single)	PLI-X	**$10.65**
Blank types/spaces (single)	PLI-BLA	**$10.65**

Embossing MultiTool Easy Type

Description and application
The TRUMPF innovation for embossing the alphabet and all numbers with a single tool

Advantages
- Just one tool with five inserts is required for embossing the alphabet and numbers
- TruTops support makes programming as simple as possible

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	.02" - .315"
Font size	4 / 5 / 6 / 8 / 10 mm
Embossing depth	max. .015"
Useful information	
Tool maintenance	see p. 124-125
Embossing quality	see p. 135
Order forms	see p. 146-147

Item

Complete tool

Punch

- Without inserts
- Standard 5-station multitool punch

Order no.	USD
629134	**$2,840.00**

Individual embossing insert

Order no.	USD
On request	**$340.00**

Die size 2

- Solid die (no hole)

Order no.	USD
0329678	**$154.00**

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		
Name	**Order no.**	**USD**
Stripper	629161	**$140.00**

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	
	.04" - .250"
	.04" - .315" (TruPunch 5000/TC5000R, TruMatic 6000/TC6000L, TruMatic 7000)
Font size	.157"
Embossing depth	.02" + .004"
Useful information	
Tool maintenance	see p. 124-125
Embossing quality	see p. 135
Order forms	see p. 146-147

Description and application
Tool for versatile embossing in MultiTool mode

Advantages
- The tool has 10 embossing inserts that can be actuated individually for flexible and fast embossing
- Simple programming in TruTops
- Many standard and special characters are available on request

Item

Punch adapter

- Without embossing inserts

Order no.	USD
630593	**$2,850.00**

Die size 2

- Solid die (no hole)

Order no.	USD
0329678	**$154.00**

Stripper

Order no.	USD
641046	**$204.00**

Important ordering specifications
Machine, sheet thickness, material, selection of embossing inserts (see below). The "MultiTool" machine option is required.

Embossing inserts

Item		
Name	**Order no.**	**USD**
Numbers 0-9 (single)	1205-12-10-X	**$198.00**
Letters A-Z (single)	1205-12-20-X	**$198.00**
Special characters / - . (single)	1205-12-30-X	**$198.00**

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	.02" - .315"
Accuracy	± .001"
Useful information	
Tool maintenance	see p. 124-125
Embossing quality	see p. 135
Order forms	see p. 146-147

Description and application
Tool for measuring the exact sheet thickness – patented process that compensates for any variations in the sheet thickness

Advantages
- Tool setup with integrated alignment ring and Die plate provide outstanding Increasing 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.	USD
1312897	**$3,379.00**

Punch

Order no.	USD
1312892	**$667.00**

Die

Order no.	USD
1312844	**$2,712.00**

Important ordering specifications
Machine, sheet thickness, material. The "adaptive stroke calibration" machine option is required.

Application examples of marking

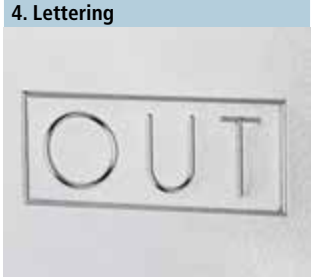
Embossing

1. Lettering

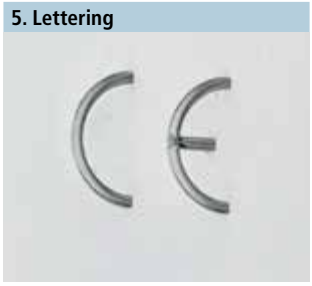
2. Lettering

3. Warning

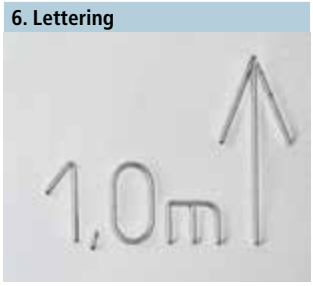
4. Lettering



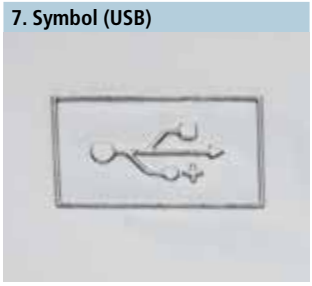
5. Lettering



6. Lettering

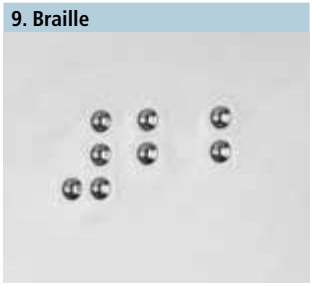


7. Symbol (USB)

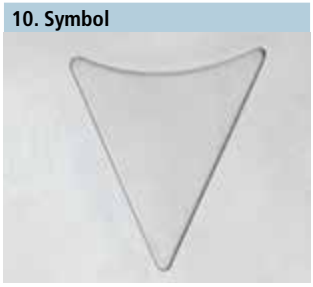


Embossed forms

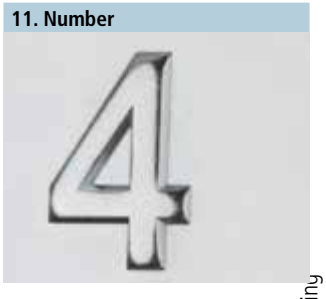
9. Braille



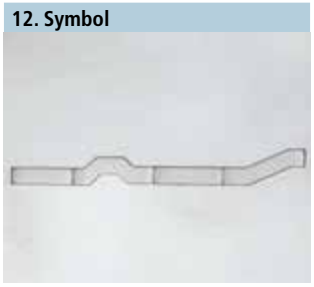
10. Symbol



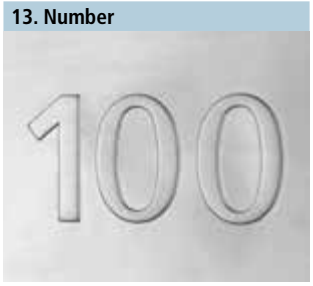
11. Number



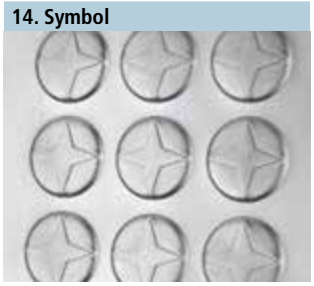
12. Symbol



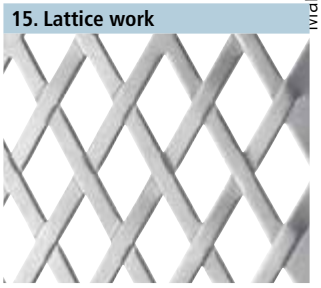
13. Number



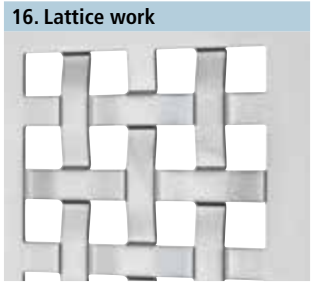
14. Symbol



15. Lattice work

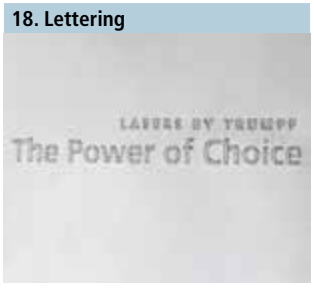


16. Lattice work

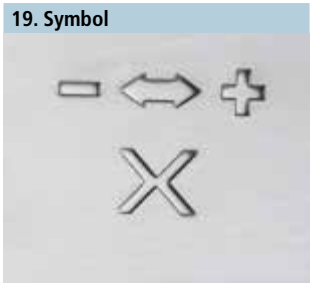


17. Protective ground symbol

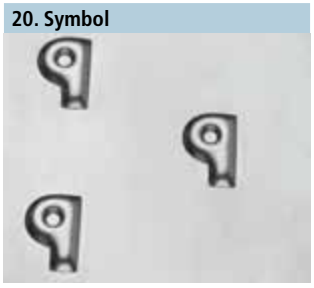
18. Lettering



19. Symbol



20. Symbol

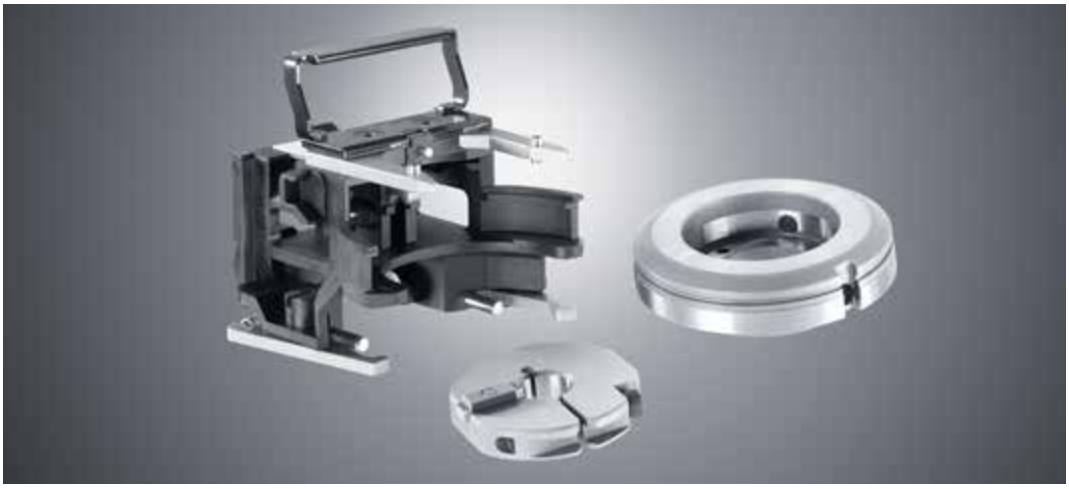


Everything to do with punching.

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 the blink of an eye.



Accessories

Tooling accessories

Alignment rings

Alignment ring size 0, 1

Order no.	USD
072061	**$180.00**

Alignment ring size 2

Order no.	USD
072062	**$158.00**

Alignment ring for reinforced punch

Order no.	USD
201519	**$158.00**

Punch chuck

Punch chuck

- Size 0 (D = .236")

Order no.	USD
150159	**$112.00**

Punch chuck

- Size 0 (D = .406")

Order no.	USD
150162	**$112.00**

Die adapters

Die adapter size 2 to 1

Order no.	USD
060216	**$165.00**

Die adapter with brush insert

- To prevent scratches

Order no.	USD
746088	**$240.00**

Die adapter with Ampco insert

- To prevent scratches

Order no.	USD
1350349	**on request**

Tooling accessories

Adhesive pads

Adhesive pad for stripper

Order no.	USD
260186	**$6.80**

Adhesive pad for die adapter

Order no.	USD
260188	**$6.80**

Adhesive pad for die size 2

Order no.	USD
260187	**$6.80**

Adhesive pad for slitting die

Order no.	USD
725432	**$8.50**

Adhesive pad for square die

Order no.	USD
725512	**$6.80**

Other small parts

Lock spring for die keyway

Order no.	USD
055154	**$8.92**

Clamping pins for stripper

Order no.	USD
031429	**$0.18**

Tooling accessories

EasyUse shims

The EasyUse shims come complete with hole labeling (a hole corresponds to a thickness of .004“). 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 on page 124-125.

Set of shims size 1

Order no.	USD
060067	**$9.50**

Shim .004“ size 1

Order no.	USD
059888	**$2.70**

Shim .012“ size 1

Order no.	USD
059890	**$2.70**

Shim .020“ size 1

Order no.	USD
059891	**$2.70**

Set of shims size 2

Order no.	USD
060068	**$11.00**

Shim .004“ size 2

Order no.	USD
059384	**$2.90**

Shim .012“ size 2

Order no.	USD
059385	**$2.90**

Shim .020“ size 2

Order no.	USD
059386	**$2.90**

Urethane stripper for punch size 1

Urethane stripper for punch size 1 (standard length)

	Order no.	USD
Round		**on request**
Square		**on request**
Rectangle		
Oblong		

Urethane stripper for punch size 1 (extended length)

	Order no.	USD
Round		**on request**
Square		**on request**
Rectangle		
Oblong		

Important quote specifications
Machine, shape, dimensions.

RTC tool cartridge

Application range	
Tool type	All tools size 0, 1, and 2
Technical data	
Weight (without tools)	1.3 lbs
Material of die base	Fiber-reinforced plastic
Ordering information	
Order no.	2258880
USD	**on request**

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		
Name	**Order no.**	**USD**
Die plate	0222137	**On request**
Storage medium (magnetic)	0909671	

Item		
Designation	**Order no.**	**USD**
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	All tools size 5
Specifications	
Weight (without tools)	2.0 lbs
Material of die base	Aluminum
Order information	
Order no.	1500495
USD	**On request**

Description and application
The original tool cartridge from TRUMPF for the reliable setup of tools size 5

Advantages
- Highest acceleration values on the machine with reinforced retaining springs
- The cartridge arms are specially heat treated, resulting in a longer tool 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		
Name	**Order no.**	**USD**
Adapter (for stripper)	1633067	**On request**
Storage medium (magnetic)	0909671	

Steel tool cartridge – universal

Application range	All tools size 0, 1, and 2
Specifications	
Weight (without tools)	5.0 lbs
Material of die base	Steel
Order information	
Order no.	1602725
USD	**On request**

Description and application
The original steel cartridge from TRUMPF, made from steel for secure tool change

Advantages
- Fast and secure changeover of punching tools
- Secure grip on tools due to the extra strong springs
- The cartridge arms are specially heat treated, resulting in a longer tool life
- Efficient handling with the ergonomic handle
- Long tool life

Important ordering information
Steel tool cartridge – universal is required for 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		
Name	**Order no.**	**USD**
Die plate	0222137	**On request**
Storage medium (magnetic)	0909671	

QuickSharp

Application range	
Tool type	All TRUMPF Punching Tools
Shear	flat, beveled (Whisper, roof)

Specifications	
Space requirements	24.8" x 30.7"
Weight	915 lbs
Height	72.3"
Grinding area (ø x Z)	3.94" x 3.93"
Grinding wheel (ø)	125 mm (CBN)
Grinding drive RPM	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
Adjustment aids
Documentation

Order information	
Order no.	358960
USD	**On request**

Description and application
The fully automatic QuickSharp tool grinding device is the perfect solution for regrinding your TRUMPF Punching Tools

Advantages
- Simple, safe grinding process and user-friendly operation
- Outstanding surface finish with the front grinding process for tool long tool 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		
Name	**Order no.**	**USD**
Boron grinding wheel	0032498	**On request**
5 l cooling lubricant concentrate	1645498	
Filter pack	1234583	
Corundum diamond	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

QuickSet

Application range	
Tool type	All TRUMPF Punching Tools
Shear	flat, beveled (Whisper, roof)
Specifications	
Space requirements	20.6" x 17.7"
Weight	106 lbs
Height	22.9"
Scope of delivery	
QuickSet	
Tool holder for stripper	
Supply and power cable (global use)	
Documentation	
Order information	
Order no.	2658171
USD	**On request**

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.

Advantages

- 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		
Name	**Order no.**	**USD**
Tool fixture / Alignment block	979815	**On request**

Experience the **QuickSet** in action
www.trumpf.info/1wmxz0

QuickLoad

Application range	
Tool type	All TRUMPF Punching Tools
Tool cartridges	RTC tool cartridge, tool cartridge size 5, steel tool cartridge – universal
Specifications	
Space requirements	17.9" x 11.6"
Weight	33.9"
Height	4.53"
Scope of delivery	
QuickLoad	
Documentation	
Order information	
Order no.	1785249
USD	**On request**

Description and application
QuickLoad enables tool cartridges to be set up quickly and securely with a punch, stripper, and die

Advantages
- Short setup times because it is easy to load the cartridge with a punch, stripper, and die
- Easy handling with pneumatic releasing device on the tool sets
- Treats sharpened tools gently
- Reduction in idle time due to time-saving setup in productive time

Experience the **QuickLoad** in action
www.trumpf.info/1wmxz0

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	22.9" x 39.5"
Weight	172 lbs
Height	36.3"
Max. load	882 lbs

Ordering information	
Order no.	1948969
USD	

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

Specifications	
Number of storage spaces	up to 700 punching tools
Space requirements	40.9" x 41.3"
Weight (without tools)	838 lbs
Height	48.82"

Scope of delivery
Punching Tool Cabinet
4 shelves for punches size 1 and size 2
4 shelves for dies size 1
4 shelves for dies size 2 and strippers
4 shelves for strippers
2 shelves for forming tools and special tools
2 shelves for tool cartridges
3 shelves for punches size 0 and alignment rings
2 shelves for cutting blades
Documentation

Description and application

The Punching Tool Cabinet is a place to store your tools clearly, cleanly, and in a space-saving way, providing more order and efficiency in production

Advantages

- Ergonomic tool handling with the perfectly designed apothecary cabinet
- Reduced setup times because tools are stored clearly and are easily accessible
- 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 ocembossational 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

Order information	
Order no.	383987
USD	**On request**

Accessories and single parts

Item		
Name	**Order no.**	**USD**
Shelf for punches size 1 and size 2	383965	**On request**
Shelf for dies size 2 and strippers	383978	
Shelf for special tools and forming tools	383979	
Shelf for punches size 0 and alignment rings	383980	

Name	**Order no.**	**USD**
Shelf for dies size 1	383981	**On request**
Shelf for strippers	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.	USD
232090	On request

Tool adjustment aid

- Aligning punch and alignment ring

Order no.	USD
937592	On request

Lever

- Removing the tools in the linear magazine

Order no.	USD
259684	On request

Operating tool

- Removing a jammed die

Order no.	USD
919978	On request

Punching and nibbling oil

Punching and nibbling oil - 500 ml spray

Order no.	USD
111309	On request

Punching and nibbling oil - 1 l container

Order no.	USD
111310	On request

Punching and nibbling oil - 10 l container

Order no.	USD
111311	On request

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.	USD
125874	On request

Akamin cutting oil - 20 l container

Order no.	USD
061461	On request

Gadus S2 V220 - 0.5 kg

- For MultiUse punching tool

Order no.	USD
40265	On request

Microlube GL 261 - 1 kg

- For MultiBend and roller tools

Order no.	USD
106491	On request

Gleitmo 805 - 1 kg

- For tapping punch

Order no.	USD
98749	On request

Application range
Spray lubrication of punch and die for processing aluminum and aluminum alloys.

Variocut C462 tapping oil

Variocut C462 - 1 l container

Order no.	USD
116941	On request

Variocut C462 - 20 l container

Order no.	USD
0116938	On request

Application range
Spray lubrication for tapping aluminum and aluminum alloys.

Variocut B30 tapping oil

Variocut B30 - 1 l container

Order no.	USD
124302	On request

Variocut B30 - 20 l container

Order no.	USD
113149	On request

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 tool 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.

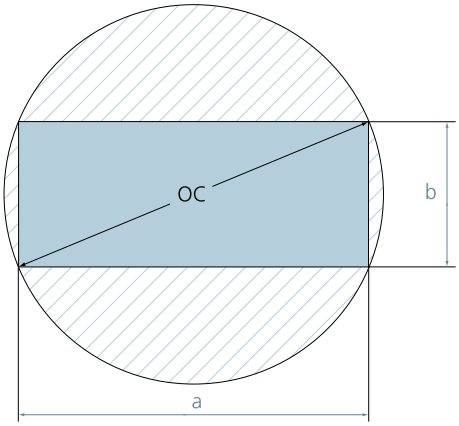
Useful information

Dimensions and regrinding

There are a number of important dimensions in the punching area. This doesn'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

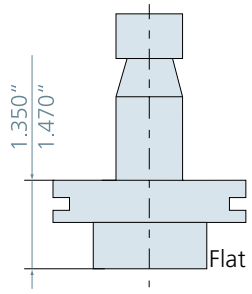


Outer circle = $\sqrt{(a^2+b^2)}$

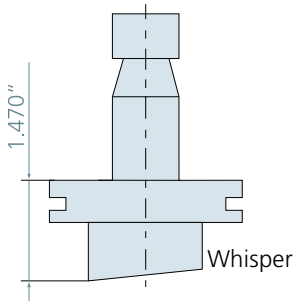
- The outer circle is the circle that is completely covered by the punching geometry.

Punch lengths

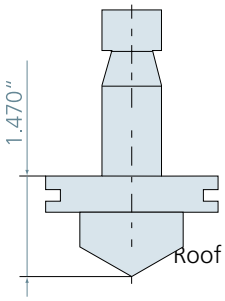
Punch lengths of different shear types



- Punch with flat cutting surface



- Punch with beveled cutting surface in whisper shear



- Punch with beveled cutting surface in rooftop shear

Punches with flat cutting surfaces are available in the short version (1.350") and in the long version (1.470"). The length is measured from the upper edge of the alignment ring to the end of the tool. A punch with a length of 1.470" is advantageous because of the greater regrind amount 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 using punches with a guided cutting edge is advised.

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 pre-emptively will last longer.

For a sharp cutting edge, the tool should be reground by between .004" and .010" using sufficient coolant. Cooling the tool well will prevent the build-up of grinding cracks and the annealing of the material. Using an oil stone to slightly sharpen the tool and demagnetize it after the grinding process is advised.

QuickSharp

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 .005".
- **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 if necessary, the tool should be reground.

The standard configuration for a punch is back-tapered with a clearance angle of 0.5° to reduce the retractive force. No taper punches can also be ordered on request.

Regrind amounts

Tool	Tool component	Tool length (inch)	Regrind amount (inch)
Classic System	Punch, flat	1.350"	.120"
	Punch, flat, long	1.470"	.240"
	Punch, beveled (Whisper, roof)	1.470"	.120"
	Die size 1	.709"	.040"
	Die size 2	.787"	.040"
MultiShear	Punch	1.740"	.110"
MultiTool	Punch inserts	.945"	.020"
	Die inserts	.551" (MultiTool 10-station: .394")	.040"

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.

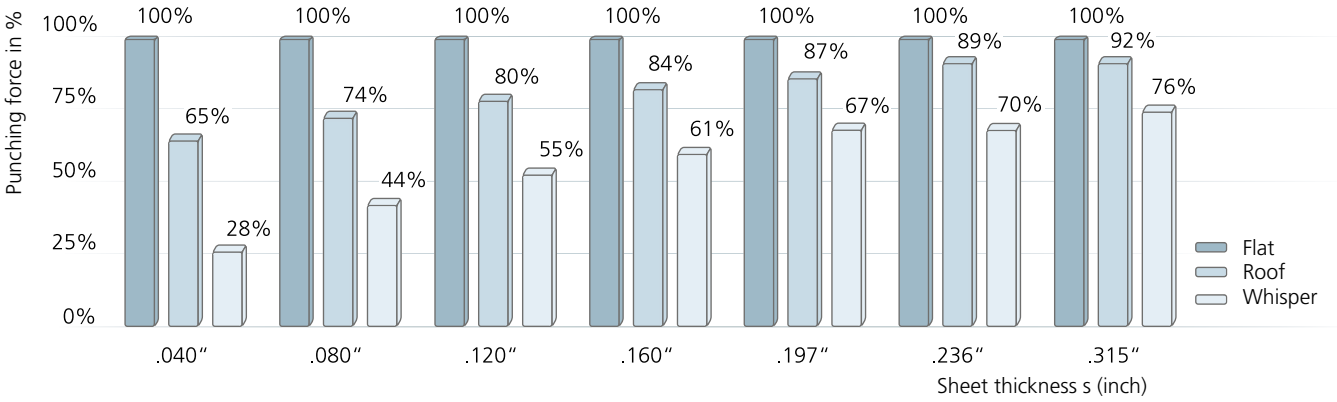
Shear punches

Shear punches are .120" longer than punches with flat cutting surfaces. The additional length comes from the shear angle, which has a maximum angle of 5°. TRUMPF will create a shear on a punch at no charge.

The use of shear punches has considerable advantages if the outer circle of the punch is a certain size:

- Decreased sheet metal distortion as component tension is up to 20% lower
- Sound pressure level is reduced by up to 14 dB(A); this corresponds to a reduction in the sound pressure level by 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:

$$F = \frac{\text{Cutting edge length L} * \text{Sheet thickness s} * \text{Tensile strength RM of the material (psi)}}{\text{Shear factor X}}$$

This means:

Round punch:	**F = Π * Ø * s * RM / X**
Square punch:	**F = 4 * a * s * RM / X**
Rectangular/oblong punch:	**F = (a+b) * 2 * s * RM / X**

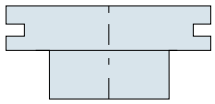
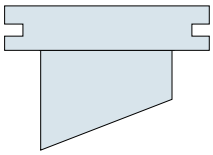
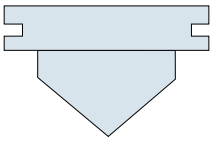
Key	
Π	Pi
s	Sheet thickness
a	Side dimension
RM	Tensile strength
X	Shear factor
Ø	Diameter

Overview of tensile strength RM:

Steel	approx. 55,000 psi
Stainless steel	approx. 85,000 psi
Aluminum	approx. 40,000 psi

Punching force and shear strength

Shear factor

Sheet thickness s	Shear factor flat X	Shear factor Whisper X	Shear factor rooftop X
			
.040″	1.00	3.50	1.53
.060″	1.00	2.66	1.44
.080″	1.00	2.25	1.35
.100″	1.00	2.00	1.30
.120″	1.00	1.83	1.25
.140″	1.00	1.71	1.21
.160″	1.00	1.62	1.19
.197″	1.00	1.50	1.15
.236″	1.00	1.41	1.12
.315″	1.00	1.31	1.08
.406″	1.00	1.25	approx. 1.00

Example:

Calculation of the required punching force for a square punch-out measuring 1.500″ in .080″ thick mild sheet.
A Whispertool punch is used.

$$\frac{4 \times 1.50'' \times .080'' \times 55{,}000\ \text{psi}}{2.25 \times 2000} = \frac{26{,}400}{4{,}500} = 5.9$$

The reduced punching force is therefore F = 5.9 tons.

Punching force in relation to the punch type and sheet thickness

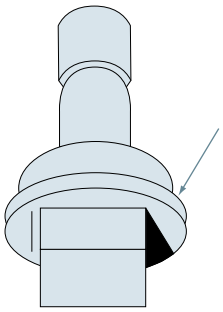
Punch type	Max. punching force US tons	Max. sheet thickness		Material
		Punching	Nibbling	
Flat punch, size 0: up to .236″ outer circle	5.6	Mild steel: .120″ Stainless steel: .080″	Not recommended	HSS HSS
Punch, size 0: .237″–.406″ outer circle	5.6	Mild steel: .236″ Stainless steel: .120″	Mild steel: .120″ Stainless steel: not recommended	HSS HSS
Flat punch, size 1: max. outer circle of 1.182″	22.5	Up to maximum permissible sheet thickness of the machine	Up to maximum permissible sheet thickness of the machine	HSS
Flat punch, size 1 or 2: max. outer circle of 3.00″	33.7	Up to maximum sheet thickness of the machine	Up to maximum sheet thickness of the machine	HSS
Punch with shear	22.5	Up to maximum sheet thickness of the machine	If tensile strength is 58,000 psi, up to .120″ If tensile strength is 116,000 psi, up to .080″	HSS

Punch selection

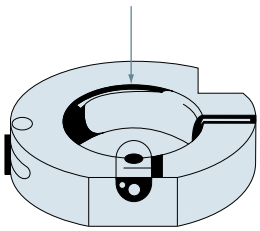
After the punch geometry has been selected you must decide whether the punch style should be adjusted. Under certain conditions this is advantageous, especially when processing thick materials or when the punching force is high.

Reinforcement (Heavy-Duty)

A reinforced version of a punch and alignment ring



■ Punch with reinforced shoulder



■ Alignment ring with larger inside opening

Reinforced punches are used for punching forces over 22.5 tons, sheet thicknesses over .197", and for punching or nibbling high-tensile sheets. As the punch is reinforced at the shoulder, the inside opening of the alignment ring is increased accordingly. The maximum outer circle is therefore, only 1.625".

Guided cutting edge

A punch with a guided cutting edge is a special tool for punching and nibbling the smallest holes in sheet metal that is no more than .157"thick.

The application range of a punch with a guided cutting edge is dependent on the material and sheet thickness:

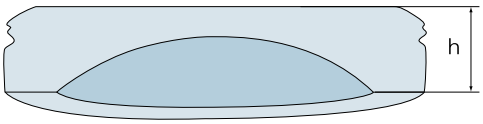
Material	Tensile strength	Minimum punch diameter
Stainless steel Chromium-nickel steel	85,000 psi	1 x sheet thickness s
Mild steel	55,000 psi	0.8 x sheet thickness s
Aluminum Aluminum alloy	40,000 psi	0.6 x sheet thickness s

Die selection

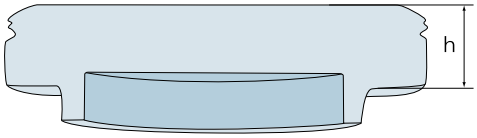
There are a variety of dies to choose from and picking the right one depends on the intended application. For example, when it comes to special shapes, keyways simplify the use of the tool.

Die selection

Standard die



Reinforced die (Heavy-Duty)



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. This last factor is of particular importance: as the sheet thickness increases, a larger cutting clearance is required between the punch and the die. All dies can be reground by up to .040". If the die is reground by more than .040", 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 (.004"/.012"/.020") are placed under the reground dies. TRUMPF also gives its standard dies a life-long guarantee if the die should break. The correct die measurement depends on the cutting clearance and is calculated from the punch geometry and the sheet thickness (see chapter "Cutting clearance").

Choosing the correct die depends on the punching force

Die size	Die version	Max. punching force (tons)	Die height h	Max. outer circle
1	All	28	Up to .709"	Up to 1.260"
2	Standard	20	Up to .787"	1.261" - 3.087"
2	Reinforced	28	Up to .787"	1.261" - 2.440"

Keyway position

In contrast to symmetrical forms, every non-symmetrical form is equipped with several keyways. This ensures that the punch and die are correctly aligned with each other. It also makes programming easier because the die can be given a direction.

Stripper selection (metric units)

Selecting the right stripper is important to ensure that the punching process runs smoothly, but it is also difficult because 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.

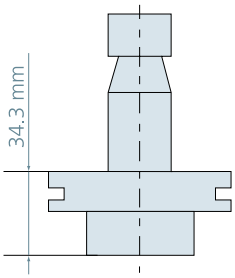
Determining the right stripper in 4 simple steps

1. Measure the length of the punch.
2. Determine the sheet thickness to be processed.
3. Identify the outer circle of the punch.
4. Using the table below, establish which stripper is needed.

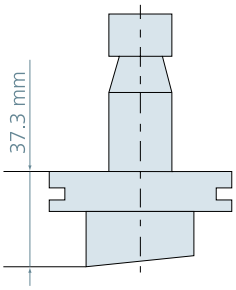
1. Measuring the length of the punch

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



Punch length of a punch with shear cutting surface



QuickSet

It is particularly easy to determine the tool length by using the QuickSet tool setting device (see chapter "Accessories"). The new penetration depth of the punch must be entered into the machine control.

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 the 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 sheet thickness > 6.4 mm

– Sheet thickness not permitted

Stripper dimension corresponds to punch dimension + 0.5 mm all the way around/+ 0.5 mm per side

Stripper selection (metric units)

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 the 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 sheet thickness > 6.4 mm

– Sheet thickness not permitted

Stripper dimension corresponds to punch dimension + 0.5 mm all the way around/+ 0.5 mm per side

3. Identifying the outer circle of the punch

The outer circle of the punch takes you to the correct row in the table (for outer circle calculations, see chapter "Dimensions and regrinding"). In this example, the outer circle 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 the 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 sheet thickness > 6.4 mm

– Sheet thickness not permitted

Stripper dimension corresponds to punch dimension + 0.5 mm all the way around/+ 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 (metric units)

Table overview

If the stripper dimensions specified in the following tables are not observed, the stripper adapter may be damaged.

Stripper for flat, long punch (table A)

Tool length (mm)	37.8 - 33.8								36.7 - 35.8								35.7 - 34.8							
	For low-scratch processing: select the 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 - 30.00[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 sheet thickness > 6.4 mm

– Sheet thickness not permitted

Stripper dimension corresponds to punch dimension + 0.5 mm all the way around/+ 0.5 mm per side

Stripper for flat, long punch (table B)

Tool length (mm)	34.7 - 33.8								33.7 - 32.8								32.7 - 31.8							
	For low-scratch processing: select the 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 sheet thickness > 6.4 mm

– Sheet thickness not permitted

Stripper dimension corresponds to punch dimension + 0.5 mm all the way around/+ 0.5 mm per side

Stripper selection (metric units)

Table overview

If the stripper dimensions specified in the following tables are not observed, the stripper adapter may be damaged.

Stripper for beveled punch (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 sheet thickness > 6.4 mm

– Sheet thickness not permitted

Stripper dimension corresponds to punch dimension + 0.5 mm all the way around/+ 0.5 mm per side

Stripper for flat 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	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 sheet thickness > 6.4 mm

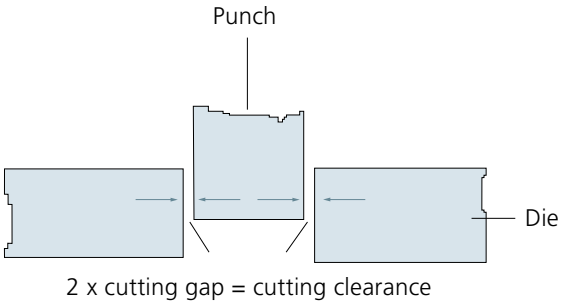
– Sheet thickness not permitted

Stripper dimension corresponds to punch dimension + 0.5 mm all the way around/+ 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 lot of pressure. This means that the tool life of the punch is reduced considerably because cutting edge can splinter.

Calculating the cutting clearance and die dimension

The cutting clearance is approx. 20% of the sheet thickness s.
Cutting clearance = 0.2 * sheet thickness s
Die dimension = (0.2 * sheet thickness s) + punch dimension

Example:

The sheet thickness s is .060" and the diameter of a round punch d is .500". This gives the following die dimension:
(0.2 x .060") + .500" = .512"

For a round punch where d = .500", a die where d = .512" is needed if the sheet thickness is .060".

A cutting clearance of 10% instead of 20% can also be selected to decrease burr formation.
However, this increases the required punching force as well as tool wear.

PunchGuide

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 inch. 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.

▶ PunchGuide in the iTunes Store
▶ PunchGuide in the Google Play Store

Tool life

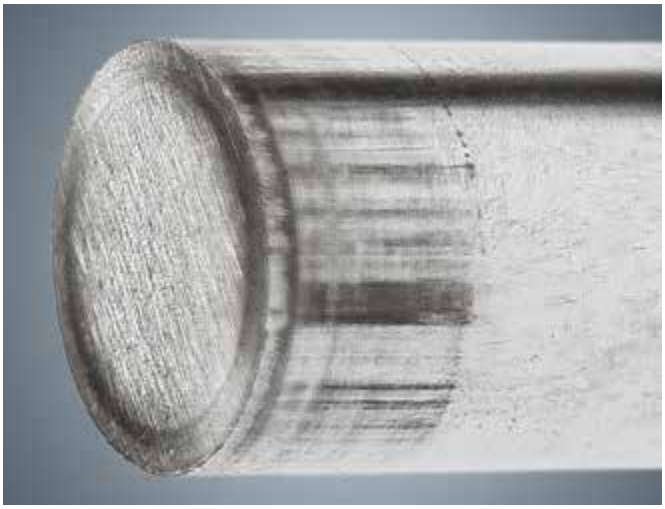
The harder the surface of a punching tool, the longer the tool life. The high-quality MultiDur coatings from TRUMPF make your tools harder, more resistant, and improve the coefficients of friction. Consequently, a coating prevents the metal particles of the processed material from fusing to the surface of the tool and forming a built-up edge. If a built-up edge is created, particles could break off from the punch on the punch upstroke. These imperfections are contact surfaces that cause additional wear.

However, the edge protection that a coating offers remains intact even after several regrindings. During the punching process, the majority of the friction originates on the side part of the punch, where the coating is not affected by regrinding.

MultiDur TiCN (Titanium Carbo-Nitride)

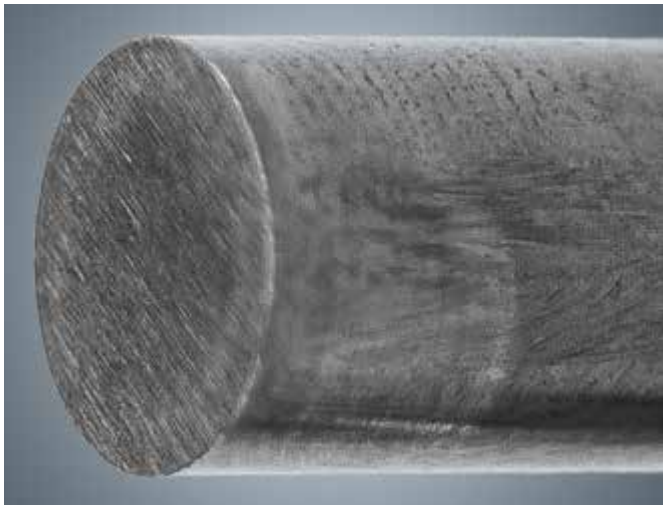
This coating, which has been tried and tested over many years, is well suited for all TRUMPF Punching Tools. MultiDur TiCN is characterized by its outstanding toughness and durability as well as excellent wear resistance, without being brittle. The tool life is doubled. If the tool is used to punch mild steel, the period before the first regrinding can be doubled. And after regrinding, you can achieve better results as the level of wear is lower.

1 mm



Uncoated punch after 120,000 punching strokes in stainless steel using lubricants

1 mm



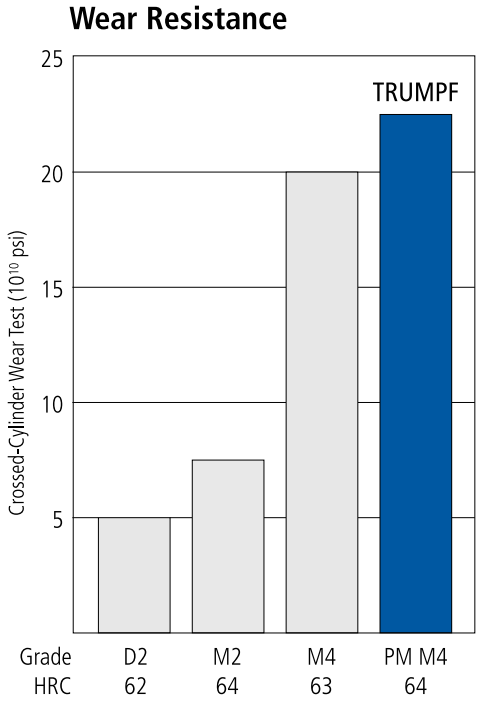
Punch with MultiDur Performance coating after 120,000 punching strokes in stainless steel using lubricants

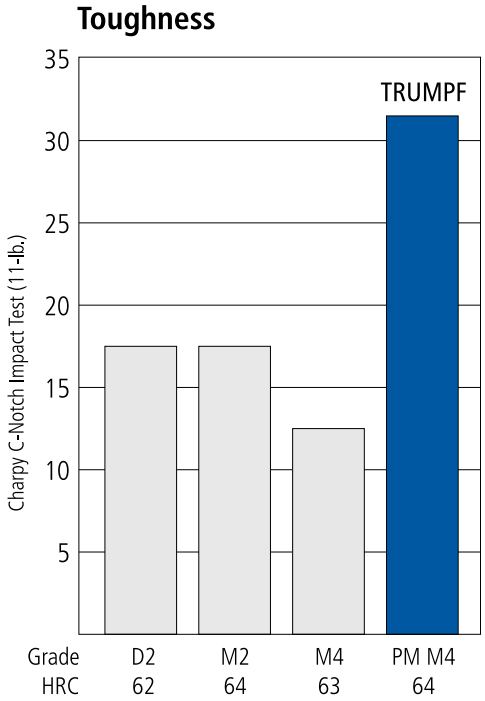
Other factors

The degree to which a tool's resistance to wear can increase depends on a number of factors. In addition to the coatings, the properties of the material also influence the tool life of a tool. Stainless and other high-strength steels really put a tool through its paces and can lead to noticeably faster wear in comparison with other tool steels.

The TRUMPF difference for longer tool life is to use PM M4, powder metallurgy tool steels as standard in our size 1, reinforced and multitool punches. PM M4 tool steel feature an excellent grindability and are very resistant to bending, pressure and wear.

The following charts show that the superior quality steel used by TRUMPF give you better wear resistance and toughness, for up to 200% longer tool life than other standard tool steels.





Tool maintenance

Having the right tool maintenance regiment is important for ensuring a long tool life and for a precise and high-quality punching result.

QuickSharp

Regrinding

There are several factors that indicate that tools should be reground:

- The radius of the cutting edges is more than .004" - .010"
- The noise level when punching is noticeably high
- Excessive burring

The earlier a tool is reground, the less it has to be ground. Generally, .002" is sufficient for regular maintenance of punches and dies. During grinding it is important that there is sufficient cooling to ensure that the cutting edges do not anneal. The QuickSharp automatic grinding machine (see chapter "Accessories") makes grinding especially easy and safe. Using an oil stone to remove sharp burr that result in sharpening and demagnetize it after the grinding process is advised.

Setup

When setting up a punch, you must ensure that the punch cutting blades are precisely aligned with the alignment ring. It is also important to select the correct alignment ring size. For example, in the tool cartridge, a size 2 punch should be set up in a size 2 alignment ring. The QuickLoad tool cartridge loading device provides convenient set up (see chapter "Accessories").

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 tool, 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 TRUMPF QuickMove device (see chapter "Accessories") allows you to quickly and conveniently transport prepared tool cartridges from the set up station to the machine.

QuickSet

Lubrication

It is essential to have sufficient lubrication for punching and forming processes. However, excessive lubrication can result in fine material abrasion accumulation and can render the tool inoperative. TRUMPF provides the perfect lubricant for your application in a variety of container sizes.

Punching	
Material	**Suggested lubricants**
Steel and stainless steel	TRUMPF punching and nibbling oil
Aluminum and steel	Akamin cutting oil

Tapping	
Material	**Suggested 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 the occurrence of built-up edges. To find the ideal lubrication and/or the ideal lubricant for a specific tool and material, check the technical information for the corresponding forming tool.

Maintenance

Clearing material abrasion and lubricant residues from the tool during removal is advised. 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 built-up edge has formed. This edge should be removed. Forming tools, in particular the associated spring elements and ejectors in spring-loaded dies, should be continuously checked and kept free from built-up edges. The punch should then be lubricated, preferably with an oil that does not dry. The Die plate and the adapter should also be regularly cleaned of dirt and material abrasions and 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 Punching Tool Cabinets (see chapter "Accessories") create the perfect conditions for storage. Specially designed tool holders carefully store the tools in a dust-free environment, reducing the cleaning times required for the tools.

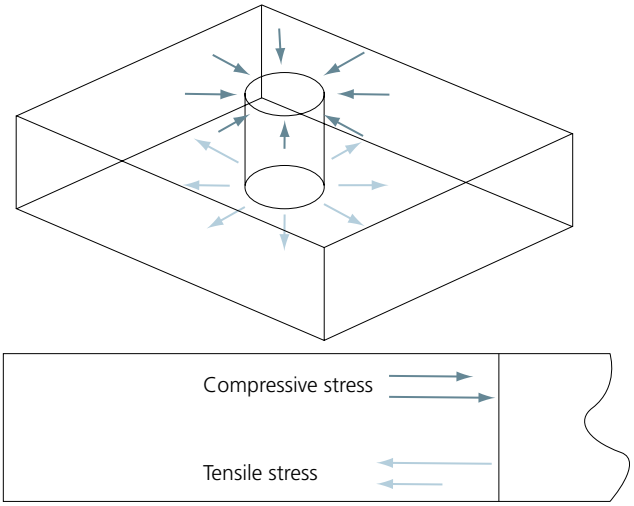
Punching Tool Cabinet

Sheet flatness

Unwanted deformations can occur in the sheets, particularly if a lot of geometries are punched very close to one another. These deformations then have to be corrected in a separate work cycle, which requires a great effort.

Uneven sheets

Tension when punching in sheet metal

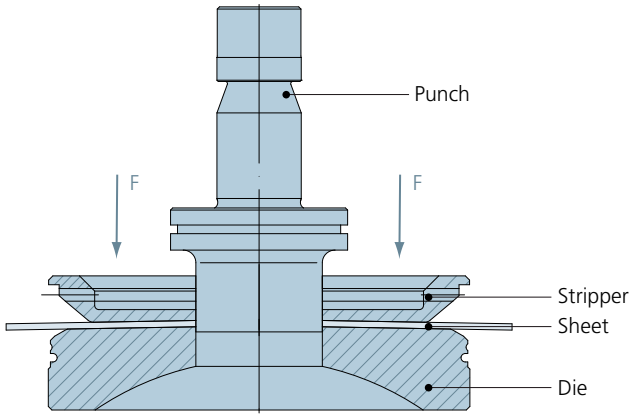


Tensile and compressive stress is generated in the sheet during the punching process. When the punch penetrates the sheet metal, the material on the upper side of the sheet is pulled into the cutting gap and is deformed in the process. This can lead to sheets that are uneven, particularly if a lot of punching strokes occur close together. However, formed sections pushed upward or downward also generate tension in the workpiece, which could severely affect the sheet flatness.

There are numerous approaches to counteracting uneven sheets: tools with a leveling effect, skillfully selected machining strategies, and the active presser foot.

Tools with leveling effect

Leveling effect



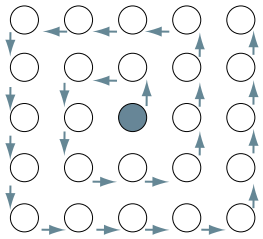
Tools with leveling effect have a non-regrindable, spherical die and a concave stripper that is milled upward, which are individually adapted to the customer's workpieces. The punch is still a standard punch. It is important that the die and stripper are precisely aligned with each other. This means that the angle of both bevels needs to be exactly the same. This leveling effect generates counter stress in the sheet that limits the tension during the punching process. In this way, the sheet metal distortion can be minimized.

Depending on the material, the angle of the die and stripper must be adjusted. Alternatively, the stripper can be milled cylindrically.

Here, only the die has to be readjusted if there is a material change.

Machining strategy

Machining strategy from the inside out



■ Diagram of the swirl

The tension in the sheet can also be decreased by using a skillful machining strategy. A good even surface can be achieved with a sophisticated setting for producing the punches and formed sections in the sheet. However, there are no rules on how to do this. The right strategy can only be discovered through experience. It may be helpful to process the sheet metal in a swirl formation, working from the inside out.

Active presser foot

In addition to the approaches previously discussed, an active presser foot can also be used during processing to counteract the surface tension. 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. Therefore, the sheet metal cannot 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 as the presser foot pushes against the sheet and may result in the sheet metal sagging. This risk can be reduced on machines that have an adjustable presser foot pressure. To improve the Increasing dimensional accuracy and the cut quality of the punches, the "delayed single stroke – precision stop" can also be activated on the machine.

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

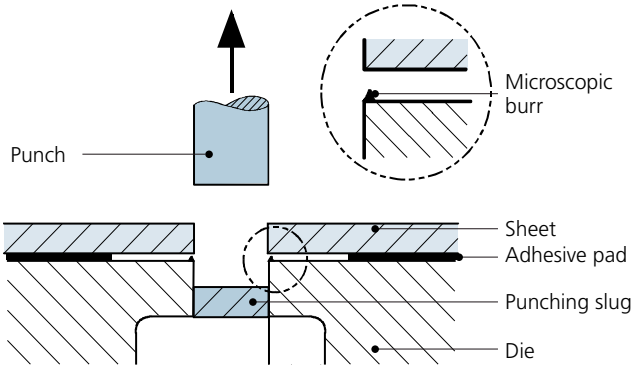
Low-scratch/Scratch-free processing

The standards expected of the processed sheet metal surface finish are constantly increasing. Whether you are producing housings, facades or a device, TRUMPF offers a range of solutions for minimizing 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 protusion of size 1 dies beyond the die adapter likewise leads to increased formation of scratches..

Development of scratches



Avoiding scratches

Die adapter with Ampco insert

1. Ampco

The malleable and wear-resistant Ampco alloy, made from copper, aluminum, and tin, prevents scratches on the underside of the sheet due to its flexibility and lubricating effect. Ampco alloys are particularly good at preventing scratches when used with die adapters for forming dies. The die adapters 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 with this option.

Die adapter with brush insert

2. Brush inserts

Another possible method for reducing scratches on the underside of the sheet is to use brush inserts in dies and die adapters. They are flexible and are particularly well suited for use with thin sheet metal. As the brush inserts are approx. .04" higher than the upper edge of the tool, they prevent the tool surface from making direct contact with the sheet being processed.

Adhesive pad

3. Adhesive pads

Adhesive pads are pre-formed, self-adhesive films that are .012" thick. Different adhesive pads can be adhered to dies, die adapters (for the underside of the sheet), and strippers (for the upper side of the sheet). They prevent the formation of scratches and stripper imprints 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.

Specially coated stripper

4. Specially coated stripper

The specially coated stripper prevents marks and scratches from forming on the upper side of the sheet. When it is used as an active presser foot there are virtually no imprints compared to an uncoated standard stripper. The stripper has a permanent coating that is wear-resistant as a result of its smooth, dirt-repellent surface, and material abrasions have very little chance of sticking to the surface. The high-quality coating gently transfers the presser foot pressure to the sheet.

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 abrasions 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 can be produced with an outstanding surface finish. As the descending or active die moves downward, there is no contact between the die and the sheet during the travel motion.

8. Brush table

The use of brush tables prevents contact between the underside of the sheet and machine and tool parts and machine parts that cause scratches, in particular the die. The sheet slides along on the brushes. In contrast to tables that are equipped with ball rollers, where the ball tracks may show up on the underside of the sheet, the brush table does not leave an imprint.

Brush table

Tips for practice

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 .040" 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 die adapters – 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 accuracy, for example when producing threads or punches for joints. TRUMPF has a range of solutions for increasing accuracy.

Restricted tool tolerance

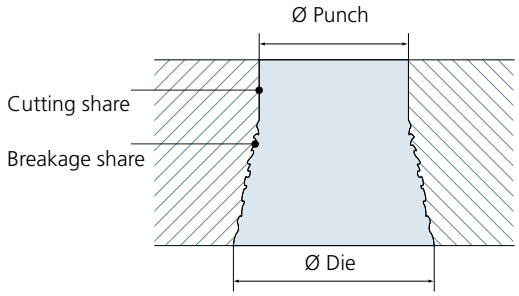
TRUMPF Punching Tools are high-precision tools and are manufactured as standard with restricted tool tolerances. However, in particular circumstances it may be sensible to restrict the manufacturing tolerance of the punch and die even further. This is advised when processing thin sheet metal, for example, using very small die clearance.

The following table shows the manufacturing tolerances and restricted tolerances of standard tools for punches and dies.

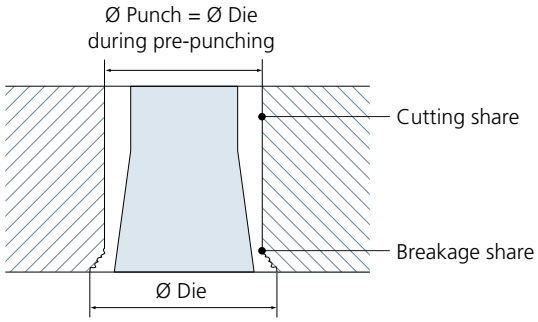
Manufacturing tolerances of standard tools (in mm)		Restricted tolerances (in mm)	
Punch	0.00	Punch	0.00
	- 0.03		- 0.01
Die	+ 0.05	Die	+ 0.03
	0.00		0.00

Punching precision fits

Cutting profile for normal punches in comparison with precision fits



■ Normal punch



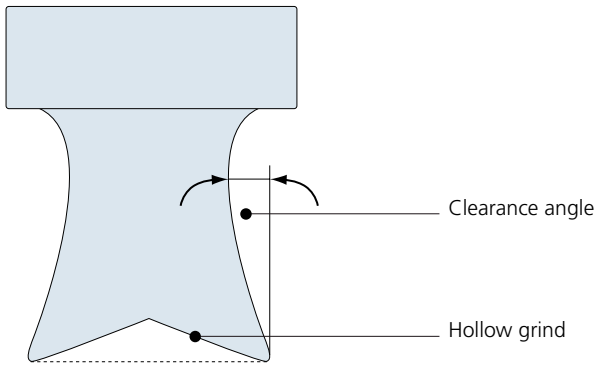
■ Punching a precision fit

In addition to having the ability to restrict tolerances, TRUMPF offers another solution for high-precision punches: a special-purpose punch for precision fits. The tolerance class that can be achieved varies depending on the measurement range and is approx. H9/H10. 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 punches:

	Normal punch	Punching a precision fit
Cutting share	33%	80%
Breakage share	67%	20%

Operating principle

Special-purpose 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-purpose punch with a particular structure for precision fits is required.

1. Pre-punching

The first work step consists of pre-punching using a standard punch where the diameter is reduced by the size of the cutting clearance (see chapter "Cutting clearance").

Pre-punching diameter d = punch dimension - cutting clearance

Example: Round .157" punch in .080" sheet, cutting clearance: .016"
Pre-punching diameter d = .157" - .016" = .141"

2. Post-punching

In the second work step, the special-purpose punch for precision fits is used for post-punching. A standard die with a cutting clearance of approx. .004" - .008" can be used for this.

The special-purpose 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.

Edge quality

Sharp sheet edges present an injury risk 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

When cutting out sheet metal parts, conventional slitting tools often create annoying nibble 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 slitting tool

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 .120" wide. An overlap of .400" 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 tool life (see chapter "Tool life").

MultiShear for trimming

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 integrated alignment ring prevents the punch from twisting while processing.

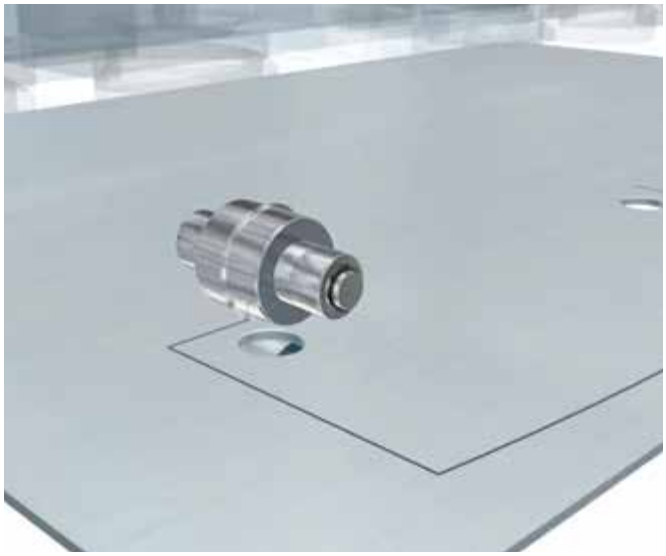
Trimming punch with bevel shear

Edge quality

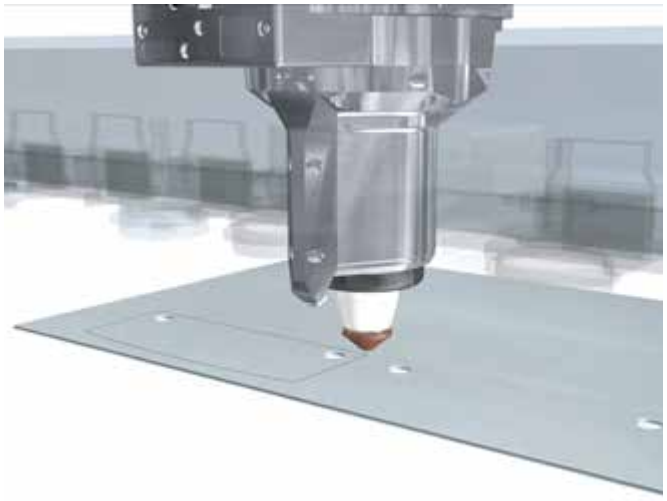
Chamfered laser edge

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.

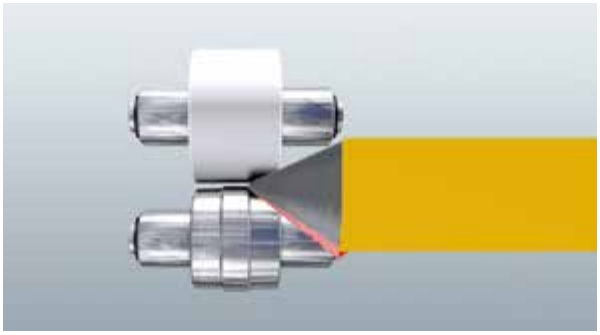
Depending on the application in question and the required quality, there are various solutions available to increase edge quality: the patented roller deburring tool – which delivers the highest quality results in combination with the deburring MultiTool – and the ball deburring tool as an alternative for flexible use.

Ball deburring tool: Both balls in the punch and die compress the punching burr.

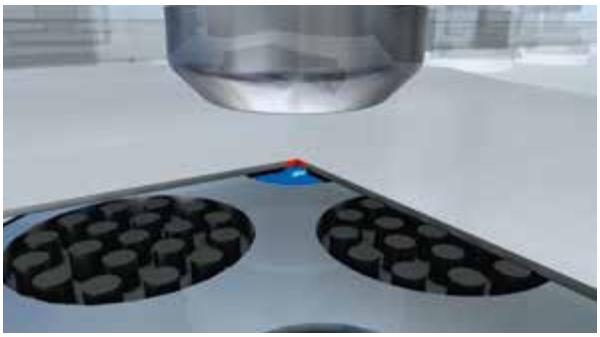
Ball deburring tool

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.



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.

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 .787". 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.

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 batch. Variations in the sheet thickness may negatively impact the forming and embossing processes and therefore, part quality. This means that imprinting and identification marks have to be made in the sheet at varying depths and the circumstances for formed sections vary as well. TRUMPF provides a simple solution with adaptive stroke calibration. You can determine the exact sheet thickness before processing and adjust the tool in use to the sheet thickness.

Adaptive stroke calibration

Imprinting too deep.

Imprinting too shallow.

Ideal imprinting – with adaptive stroke calibration.

Using adaptive stroke calibration and the calibration tool, TRUMPF punching machines as well as punching and laser cutting machines can determine the sheet thickness on their own, avoiding imprinting that is too deep or too shallow. After the measuring procedure, the machine accurately adjusts the dead center of the ram's movement to the measured sheet thickness. As soon as the calibration tool detects the sheet surface, the ram control on the machine recognizes the position of the ram. The ram stroke is then accurately calibrated. This achieves the best possible results in imprinting and forming. Sheet thickness tolerances are automatically compensated and from the outset, products are of the highest quality.

Another advantage: The processing result can be reproduced as required, even on other machines with adaptive stroke calibration.

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 a consistently good cutting quality
- MultiBend: for angles that always fit
- Roller pinching: for consistent predetermined breaking points

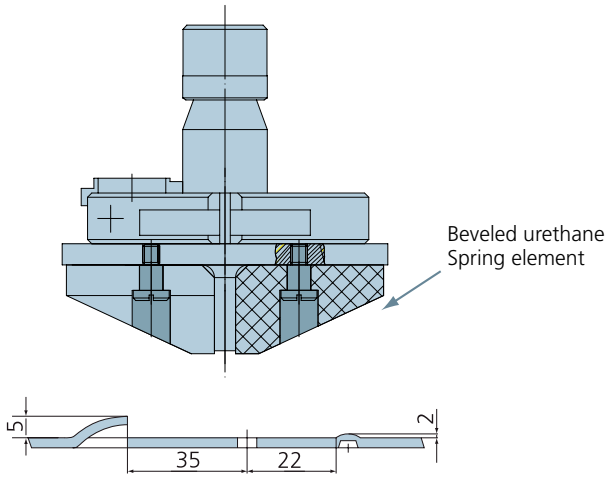
Calibration tool

Cutting close to formed sections

It is often necessary to cut sheet metal parts close to formed sections. With the standard slitting tool, you will soon run into problems. If the cut is too close to the formed section, the workpiece or the tool could be damaged. For this reason, TRUMPF offers customized solutions for cutting close to formed sections, specifically a stripper with a spring element made from a special plastic (urethane stripper).

Urethane stripper

Slitting tool for cutting close to formed sections



The TRUMPF slitting tool for cutting close to formed sections has an integrated urethane spring element that replaces the use of a standard stripper. The urethane 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 urethane spring element, TRUMPF offers spring elements for specific requirements that can be customized to your needs.

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 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

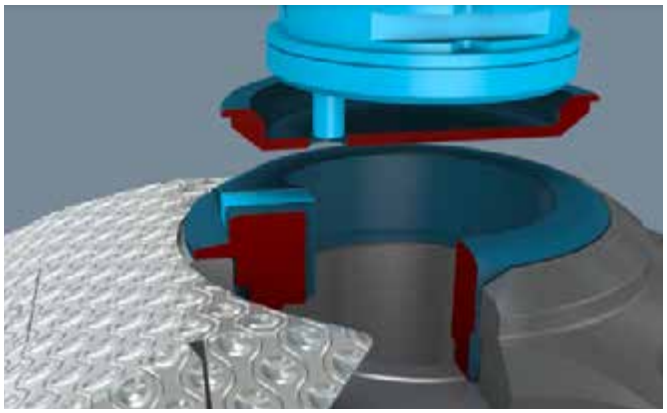
Ejector tool for sorting

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

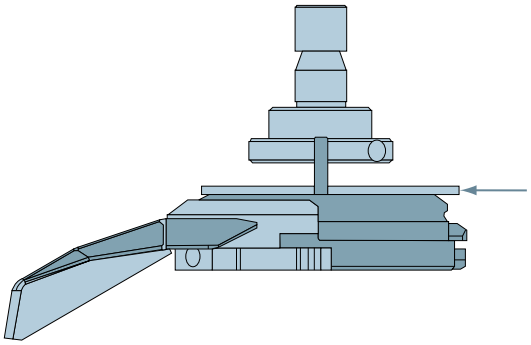
In the ejection process itself, the scrap pieces are first separated from the sheet using the cutting edge on the inside of the die. These fall through the die into the chip container. The finished parts are then ejected into the finished parts container via the cutting edge on the outside of the die 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



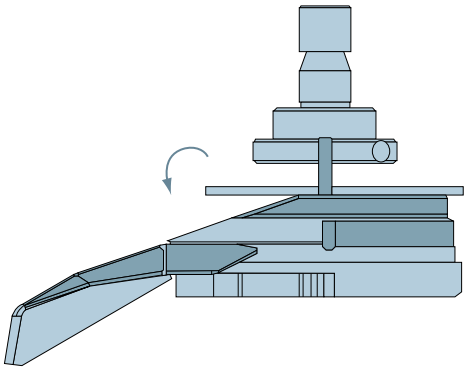
Reliable removal

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

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 large parts which exceed the maximum width of 7.086" and maximum length of 19.68" can be ejected via a part chuter. 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

Larger forming size

At the customer's request, TRUMPF can produce forming tools with a new scale. Tools size 5 facilitate the formation of large formed sections in a single stroke and can be used on the new generation of punching as well as of punching and laser cutting machines, without additional machine options. This substantially increases the range of processing options.

The TRUMPF product range includes forming tools size 5 for the "active die" machine option, which enable you to expand the potential of TRUMPF machines even further.

Tried-and-tested punching and forming capabilities

Size 0	Size 1	Size 2
Punch outer circle no bigger than .406"	Punch outer circle no bigger than 1.181"	Punch outer circle no bigger than 3.00"

Enhanced size 5 forming capabilities

Size 5	Size 5 active die
Punch outer circle no bigger than 4.330"	Punch outer circle no bigger than 4.330"

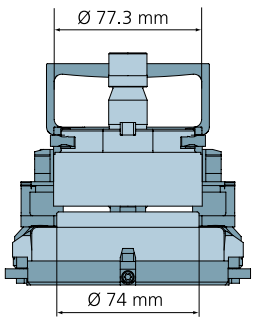
Forming tools size 5

Punches have a limited outer circle size of 3.00" (size 2), which is contingent upon the structure of the punching machines. In addition, TRUMPF offers enhanced design capabilities in sheet metal for forming with tools size 5, meaning that punch dimensions up to 4.330" can be achieved. This is made possible by an enlarged installation space for the tools. **No new machine options** are required for forming tools size 5. The tools can be installed directly into your current machine with a tool cartridge size 5 (e.g. TruPunch 1000). The highest quality formed sections are achieved in a single stroke.

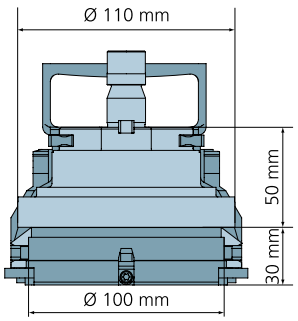
Louver tool size 5

The maximum dimensions specified are for general guidance. Forming tools size 5 are always accurately customized to the requirements and produced after an individual consultation.

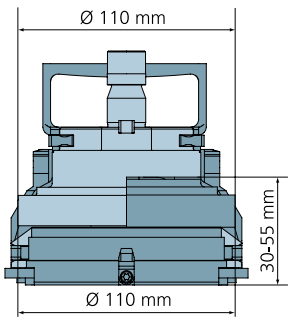
Enlarged installation spaces for tools size 5



■ Maximum dimensions, size 2



■ Maximum punch, size 5



■ Size 5 offers more flexibility for the die height in machines with the "active die" option

Larger forming size

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 plate 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

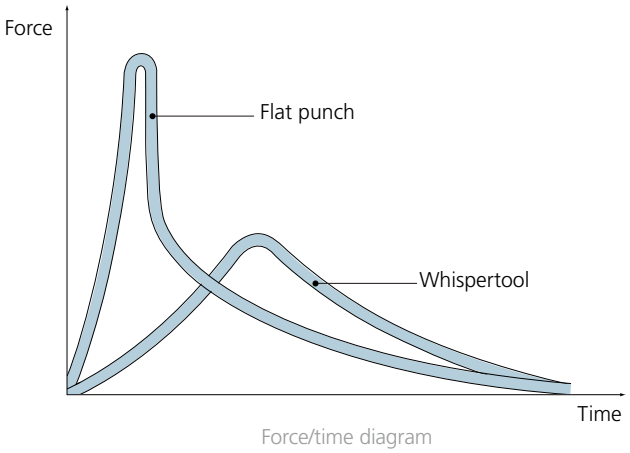
Punching thicker sheets

When processing sheets that are thicker than .120", high punching forces are created which could reduce the tool life of the tool and machine. The punching forces can be decreased with a shear. 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.

Shear for reducing punching force

Shear 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% compared to a flat tool.

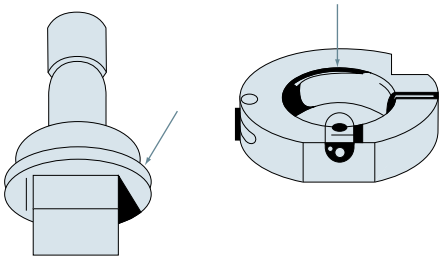
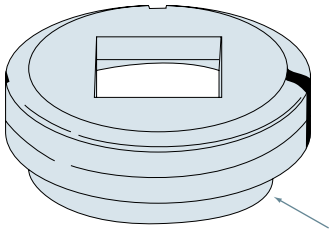
As the surface of the punch penetrates more slowly into the sheet due to the shear, the force progresses over a longer period of time and only a fraction of the original punching force needs to be applied.



Force/time diagram

Reinforced version

If the sheet metal is particularly thick, has a high tensile strength, or is made of heavy-duty steel, using reinforced versions of tools is advised to increase the 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 larger inside diameter	Reinforced die
		
Maximum outer circle	■ 1.625"	■ 2.440"
Application range	■ Dependent on material, sheet thicker than .120" ■ For punching and nibbling mode in high-tensile sheets ■ For punching forces from 16.9 tons (US) ■ For awkward punching geometries	
Result	■ Prevention of tool breakage in the event of punching forces that are too high	

Punching thinner 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 the smallest holes in sheet metal that is no more than .157" 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	85,000 psi	1 x sheet thickness s
Mild steel	55,000 psi	0.8 x sheet thickness s
Aluminum, aluminum alloy	40,000 psi	0.6 x sheet thickness s

Close-fit stripper

A stripper with the maximum dimensions is used as a standard with 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 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 efficiently on TRUMPF machines and using TRUMPF Punching Tools.

Since 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 tool is the best that it can be, an in-depth consultation is required. TRUMPF specialists have helpful 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 minimal waste	The wood fibers must be broken before punching	Imprint a contour and break the fiber pattern 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 synthetic resin coated paper using a cluster tool with narrow cutting clearance
Polyurethane	Sieve bottoms	Flexible material	Process in a clamping frame, special tools with negative cutting gap

Order forms

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

Standard punching tools

TRUMPF Inc., 111 Hyde Road, Farmington, CT 06032
Fax: 860-255-6433

Tooling orders over $500.00 - less 10% / $1,500.00 - less 15%

Company:	**Order no.:**
	Date:
	Page:
Customer number:	**Machine type:**
Contact person:	**Material:**
Phone:	**Sheet thickness s:**
Fax:	**Delivery date:**

☐ Order ☐ Request Quote

Quantity	Description					Shape					Dimension	Coating MultiDur TiCN,	Punch shear			Heavy-duty version	MultiTool	Price
	Size 0	Punch Size 1	Size 2	Die	Stripper					1 - 40	a, b, d, e, l, R, α		Flat*	Whisper**	Roof***		4-, 5-, 6-, 10-station	USD

For accessory parts and special tools, please see separate ordering form *Standard for tools size #1 **Standard for tools size #2 up to 2.835" ***Standard size #2 > 2.836"

Comments

TRUMPF Inc.
111 Hyde Road
Farmington, CT 06032
E-mail: tooling@us.trumpf.com / Fax: 860-255-6433

Accessories + special tools

TRUMPF Inc., 111 Hyde Road, Farmington, CT 06032

Fax: 860-255-6433

Tooling orders over $500.00 - less 10% / $1,500.00 - less 15%

Company:	**Order no.:**
	Date:
	Page:
Customer number:	**Machine type:**
Contact person:	**Material:**
Phone:	**Sheet thickness s:**
Fax:	**Delivery date:**

☐ Order ☐ Request Quote

Quantity	Name	Dimension	Order no.	Price/item in USD

Comments

E-mail: tooling@us.trumpf.com / Phone: 1-800-724-8753 / Fax: 860-255-6433

TRUMPF Inc.
111 Hyde Road
Farmington, CT 06032
E-mail: tooling@us.trumpf.com / Fax: 860-255-6433

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 would be happy to provide you with these terms.

Price validity

Prices valid as of March 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 us for more information.

We recommend that you use only original spare parts and original accessories from TRUMPF. This will ensure that your tool works flawlessly and that the guarantee claim is approved in the event of a problem.

ISO certification

All products listed in this catalog are manufactured in our production facilities that 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.

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Your ideas
know no
boundaries.

TRUMPF is certified according to ISO 9001:2008
(for additional information see www.trumpf.com/en/company/quality)

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