Operator's manual

TKF 104 - 1

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english

TRUMPF

GB

9 Cutting tool

21 Eccentric shaft

36 Clamping screw (= fastening screw for die carrier)

37 Cheesehead screw (2) to fasten handle

38 Handle (can be mounted in 2 positions)

45 Rest plate

50 Support

52 Supporting body

58 Roller guide

345 On/off switch

358 Quick-release coupling

Bevelling Machine TKF 104-1 Fig. 11422

TKF 104-1 specifications

Length of bevels set "l_s"

- Material tensile strength 400 N/mm² l_s max. 11 mm
- Material tensile strength 600 N/mm² l_s max. 8.5 mm
- Material tensile strength 800 N/mm² l_s max. 6 mm

Maximum sheet thickness "s"	25 mm
Minimum sheet thickness "s"	3 mm
Angle of bevel "ß"	30°/37.5°/45°
Smallest inner radius	50 mm
Working speed	approx. 2.5 m/min
Nominal power consumption	2900 W
Number of strokes under maximum load	400/min
Weight with handle	14.3 kg
Operating pressure (flow pressure)	6 bar
Operating pressure (flow pressure)	6 bar
Air consumption at 6 bar	3.1 m³/min
Required inner ∅ of compressed air hose (max. output not reached if ∅ is smaller)	18 mm

Noise / Vibration

The A-weighted noise level of the unit is typically: Sound level 88 dB(A); Acoustic capacity level 96 dB (A).

Wear ear protection!

The hand-arm vibration is typically lower than 2.5 m/s².

Proper use

The **TRUMPF TKF 104-1 bevelling machine** a pneumatic hand machine

- for preparation of all K-, V-, X-, and Y-shaped welding joints with three different bevel angles and correspondingly adjustable bevel lengths needed for gas and electrical fusion-welding,
- for shaping even, non-oxidizing, bare metal bevel edges in steel and aluminium,
- for machining chrome steel and other high-tensile materials,
  (Recommendation: model with speed control),
- for bevelling straight and curved edges provided that the minimum radius of concave curves is 55mm,
- for bevelling edges on flat and bent workpieces, particularly tubes, with an inner diameter of at least 80mm,
- for bevelling edges in both directions, in which bevelling can be started and terminated anywhere on the sheet edge,
- for bevelling edges in normal position (carrier under the machine) and in "upside-down position" (carrier over the machine). This is particularly advantageous when bevelling X- and K-shaped welding joints.

Safety instructions

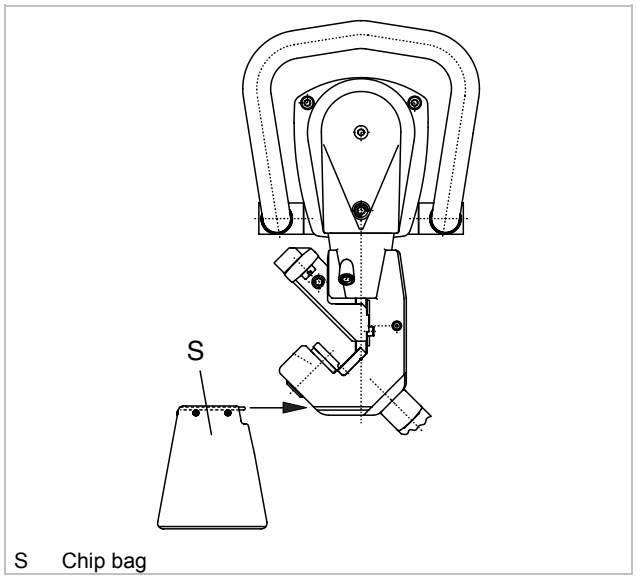
Hazardless working with this unit is only feasible if you read the operating manual and safety instructions (red print with the TRUMPF identity number 125699) completely and follow the instructions included therein.

Danger of injury

Check the unit, compressed-air tube and reception coupling before each use.
Have all damaged parts repaired by an expert.

Danger of injury

Hot chips are ejected from the chip ejector at extremely high speeds. You should therefore use a swarf box to collect the ejected chips.



S Chip bag

Fig. 10977

Danger of injury

The machine is supported by the workpiece as long as they are in contact when the cutting arrangement is "normal" (workpiece is horizontal). Remember that the entire weight of the machine must be supported as soon as it is removed from the machined edge. (aid: suspension bracket with balancer or retaining rope).

Always wear safety glasses, ear protection, protective gloves and proper footwear when working with the machine.

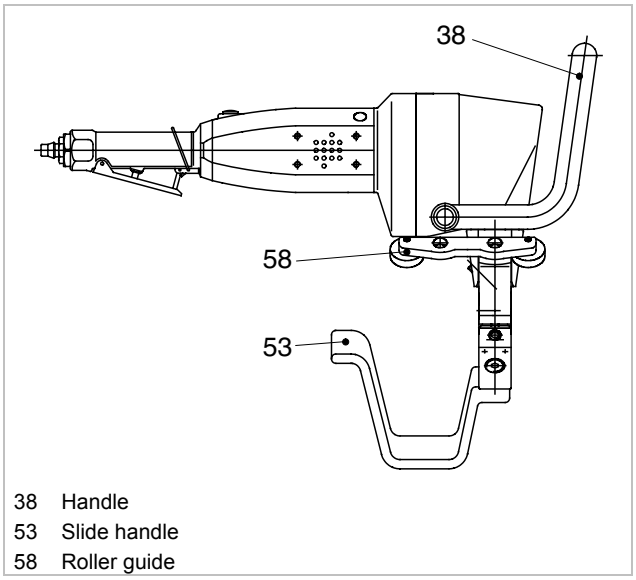
- Do not connect the compressed air unless the machine is turned off.
- Always disconnect the compressed-air tube from the machine before beginning any work on the machine!
- Always guide the compressed-air tube back away from the unit.
- **Use only original TRUMPF accessories.**

Before initial use

1. Read the chapter on safety.

Safety instructions

2. Mount the handle and the roller guide, if necessary (these parts are provided separately when a new machine is delivered).



38 Handle
53 Slide handle
58 Roller guide

Fig. 11423

3. Check whether the installed cutting tool is suitable for the material that is to be machined. Use special cutting tools for high-tensile sheets and aluminium!

Select cutting tool

4. Sharpen or replace blunt tools.

Sharpen cutting tool

5. Check the bevel angle.

Bevel angle

6. Check the bevel angle (length of bevel set).

Set length of bevel angle

7. Adjust the machine to the sheet thickness of the workpiece.

Sheet thickness

8. The flow pressure of the compressed air must be 6 bar at the point of extraction.
9. Oil lubrication must take place for the compressed-air motor.

Maintenance

Operating instructions

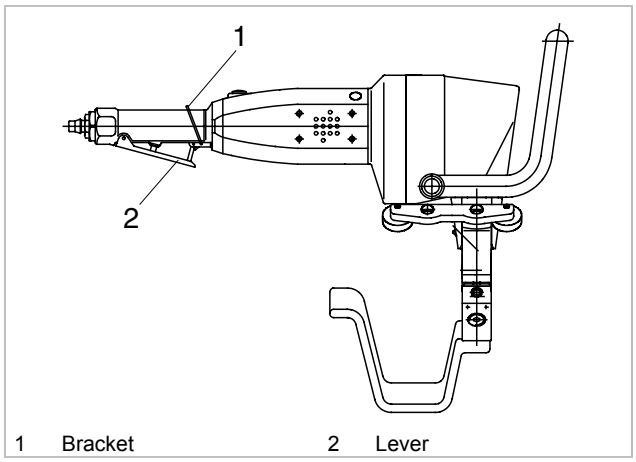
Damage to property

Check the edge of the cutting tool every hour.

Check the oil lubrication of the compressed-air motor every hour.

Never work with blunt tools!
(the compressed-air motor may stop).

Turning the unit on and off



1 Bracket 2 Lever

Fig. 11424

Turning on the unit: Push lever 1 forward (releases compressed-air). Shift lever 2 (= motor ON). The motor runs as long as the lever is pressed. Release lever 1.

Turning off the unit: Release lever 2 (the lever springs back into initial position and the flow of compressed air is interrupted).

Cooling and lubrication
The cutting results are improved and the service life of the cutting tool is increased if

- **before machining the workpiece**
  the cutting track is coated with oil.

  Recommended for steel:
  Punching and nibbling oil, order no. 103387

  Recommended for aluminium:
  Wisura oil, order no. 125874

Working with the machine

Damage to property

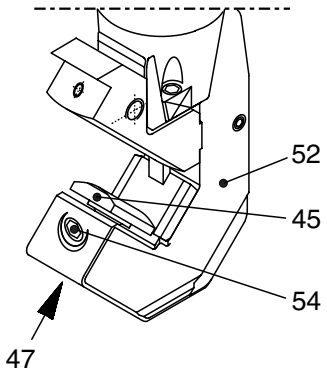
Turn on the machine before beginning to cut the sheets.!

- Put the machine on the sheet and leave a few centimetres clearance between the cutting tool and the edge of the sheet.
- Turn on the machine and push it against the edge of the sheet as far as possible (piercing).
- Push the machine along the sheet so that the machine axle is approximately parallel to the sheet edge. Press the machine against the sheet edge.

Sheet thickness

☞ **Fig. 11408**

- Place the machine on the sheet (working position).
- Unscrew the clamping screw (54).
- Adapt the rest plate (45) to the sheet thickness using the spindle (47). In doing so, leave 0.5 to 1 mm play.
- Tighten spindle (47) with clamping screw (54).

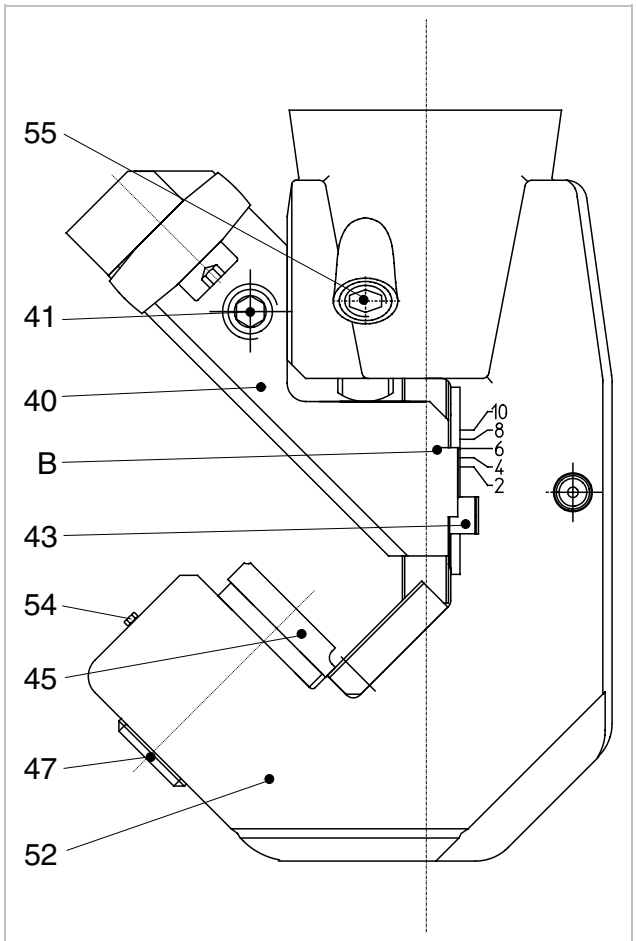


45	Rest plate	52	Supporting body
47	Spindle	54	Clamping screw

Fig. 11408

Setting the length of the bevel set

- Unscrew the set screw (41).
- Set the stripper (40) in such a way that the desired length of the bevel (dial scale on supporting body 52) corresponds to the reference edge B.
- Attach the set screw (55) lightly in this position and then tighten set screw (41).



40	Stripper	52	Supporting body
41	Set screw (tightening)	54	Clamping screw
43	Wearing plate	55	Set screw (supporting)
45	Rest plate		
47	Spindle	B	Reference edge

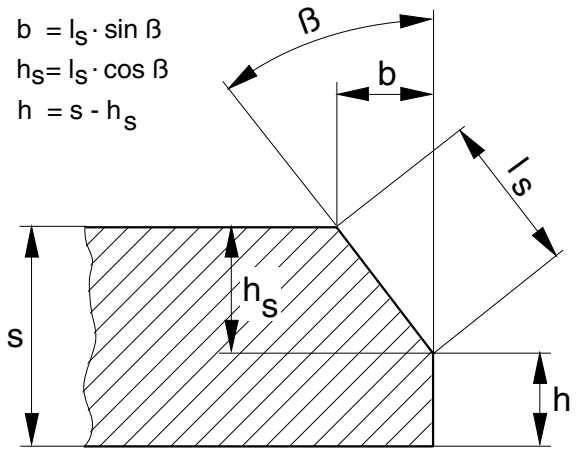
Fig. 10980

Bevel angle

3 supporting bodies, with the angles 30° / 37.5° / 45° are available for the bevelling machine.
Selection of the angle occurs by changing the entire supporting body:

☞ **Fig. 10981**

- Unscrew the clamping screw (36).
- Turn the supporting body (52) by 45°.
- Pull the supporting body (52) out from the bottom.
- Install a different supporting body.
- Tighten the clamping screw (36).



ß 45°	10,8	9,4	8	6,5	5,1	3,7	ls (mm)
	7,6	6,6	5,6	4,6	3,6	2,6	b (mm)
	7,6	6,6	5,6	4,6	3,6	2,6	hs (mm)
ß 37,5°	10,5	8,9	7,3	5,6	4	2,4	ls (mm)
	6,4	5,4	4,4	3,4	2,4	1,4	b (mm)
	8,3	7	5,8	4,4	3,1	1,9	hs (mm)
ß 30°	11	9	7	5	3	1	ls (mm)
	5,5	4,5	3,5	2,5	1,5	0,5	b (mm)
	9,5	7,8	6	4,3	2,6	0,8	hs (mm)

ls = Length of the bevel set
ß = Angle of bevel (45°/37,5°/30°)
s = Sheet thickness

Fig. 11406

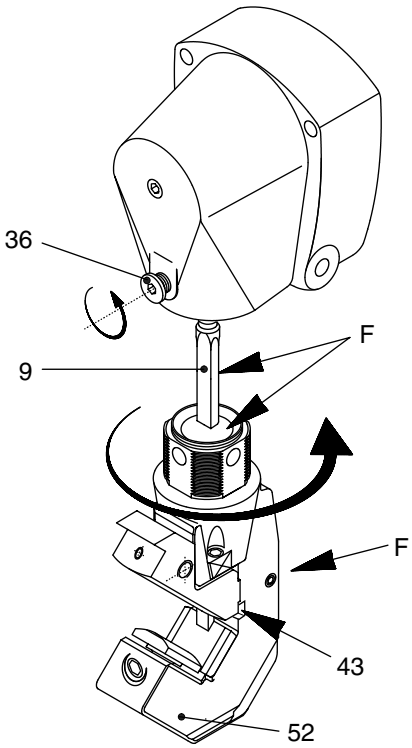
Changing the cutting tool

The cutting tool must be sharpened or replaced if blunt.

☞ Sharpening the cutting tool

Disassembling the cutting tool ☞ **Fig. 10981**

a) Unscrew the clamping screw (36).
b) Turn the supporting body (52) by 45°.
c) Pull the supporting body (52) out from the bottom.
d) Unscrew the cutting tool (9).



9	Cutting tool	52	Supporting body
36	Clamping screw	F	Lubricating grease "S1"
43	Wearing plate		TRUMPF order no. 121486

Fig. 10981

Installing the cutting tool ☞ **Fig. 10981**

- Check the wearing plate (43).

☞ Maintenance

Grease the rectangular part of the cutting tool and the bore of the supporting body lightly with lubricating grease "S1" TRUMPF order no. 121486.

☞ **See "F" in Fig. 10981**

Ensure that the penetration depth is correct.

☞ Adjusting the height of the cutting tool

Adjusting the height of the cutting tool

The height of the cutting tool (9) must be set so that it penetrates the support (50) by approx. 1 mm.

- Turn the eccentric shaft (21) until the cutting tool (9) reaches its lowest point (LT = lower dead centre).
- Unscrew the clamping screw (36).
- Turn the supporting body (52) 360° as many times as necessary to reach the correct punch penetration depth "E".
- Retighten the clamping screw (36).

9 Cutting tool

21 Eccentric shaft

36 Clamping screw

50 Support

52 Supporting body

E Depth of penetration = approx. 1 mm

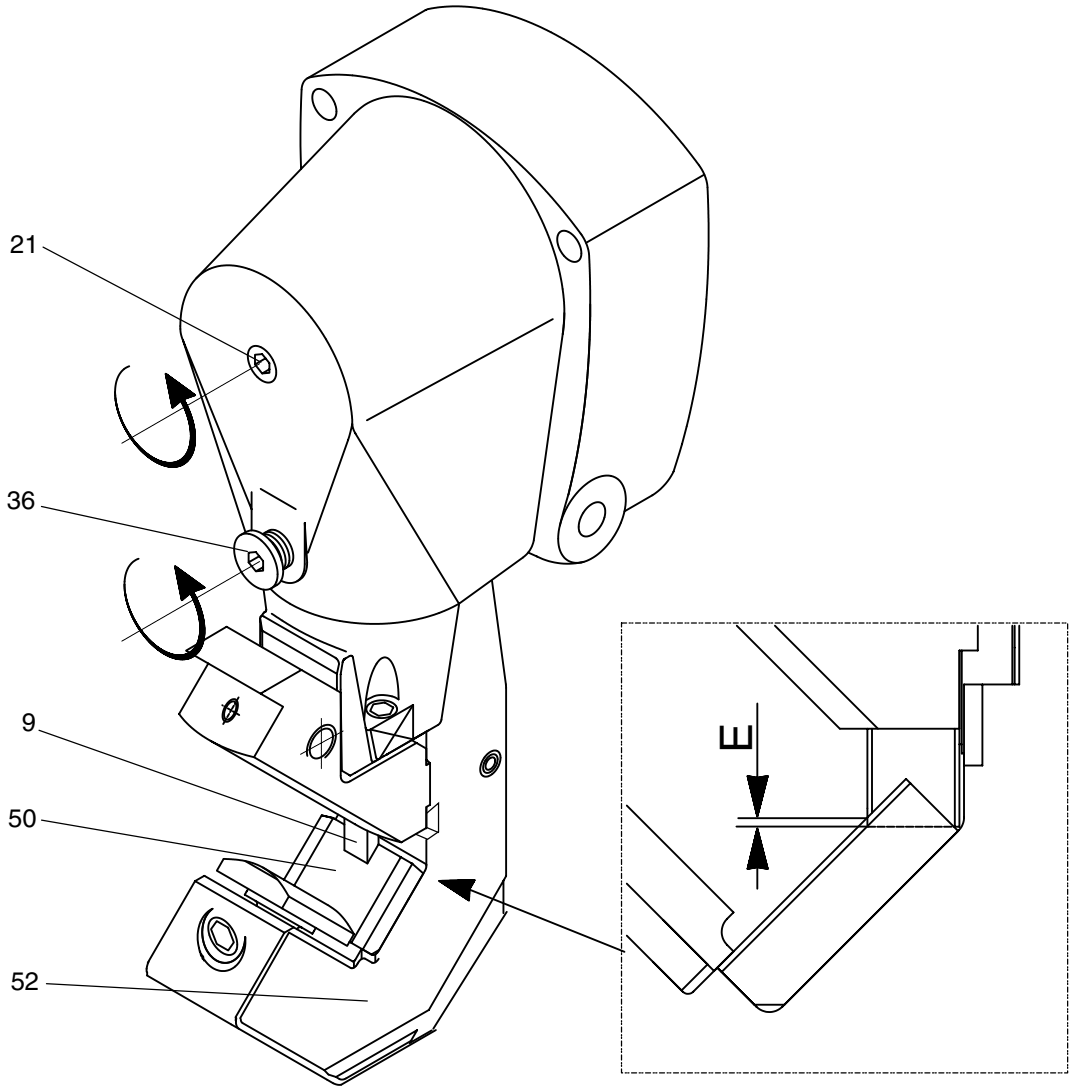


Fig. 11042

Selecting a cutting tool

The following cutting tools may be used to machine sheets made of various materials and with various tensile strengths:

☞ **Fig. 9666**

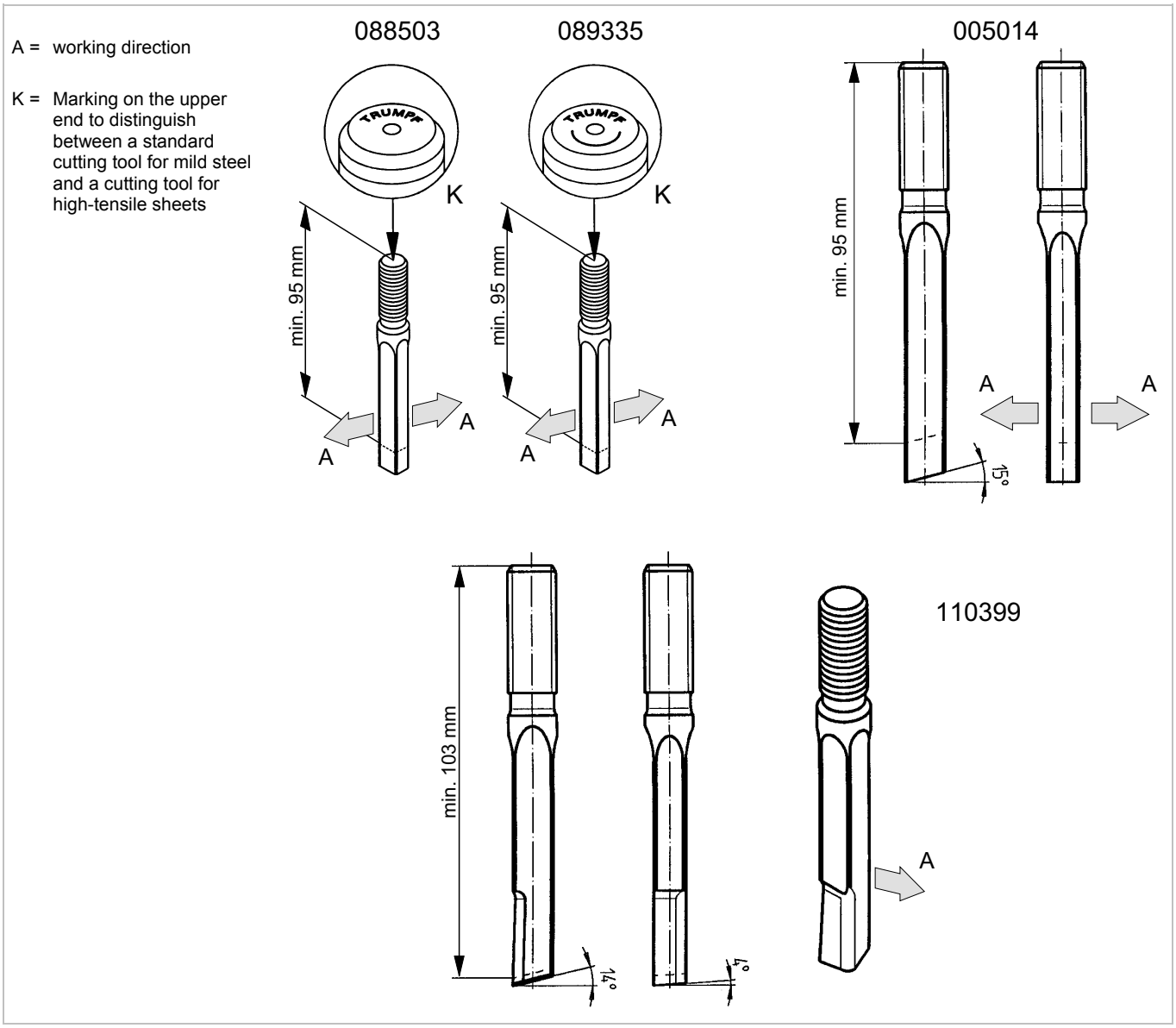
Cutting tool	**Order no.**
• for mild steel (= standard cutting tool)	088503
• for high-tensile sheets	089335
• for aluminium	005014
• heavy-duty cutting tool	110399

Warning: Optimal application of the heavy-duty cutting tool is guaranteed only in conjunction with speed control (Option for electrical model of the bevelling machine). Order no. of speed control: 081763

Sharpening the cutting tool

☞ **Fig. 9666**

- The cutting tool for mild steel (order no. 088503) and high-tensile sheets (order no. 089335) has two cutting edges. It must be resharpened when both edges are blunt.
- Resharpen the cutting tool at the ends (90°) on the front side if both cutting edges are blunt.
  The minimum length must be maintained. Shorter cutting tools are useless.
- The cutting tools for aluminium and the heavy-duty cutting tools are sharpened slantways at the front side. Please observe the corresponding sharpening diagram.



Sharpening diagram for cutting tools for the TKF 104 bevelling machine Fig. 9666

Maintenance

Danger of injury

Always disconnect the compressed-air tube from the machine before beginning any work on the machine!

Cutting tool guide l u b r i c a t i o n

- after 50 meters have been cut
- after each tool change

Original grease: Lubricating grease " S1" tube TRUMPF order no. 121486

☞ **See Fig. 14194 (next page)**

Gear/gear head l u b r i c a t i o n

Gear grease must be refilled or changed after repairs but no later, however, than after 300 hours of operation.

Original grease: Lubricating grease "G1" TRUMPF order no. 139440

Alternative greases: BLASER BLASOLUBE 308
BP Energrease HTB2
FUCHS Renoplex EP 1
MOBIL Mobiltemp SHC 32

Compressed-air motor l u b r i c a t i o n

Damage to property

Lubrication of the compressed-air motor is very important. The motor will fail if it is operated without lubrication even for a short time.

There are two ways to check that the compressed-air motor is properly lubricated:

1. For short operating times or varying operating sites via the **internal oil chamber**.

   ☞ **See Fig. 11425**

   - You must ensure that the oil level in the oil chamber is sufficient before each use.

   Lubricating interval: approx. 1 operating hour

   - Oil is refilled through the opening in the sealing screw, screw-plug (313).
   - Ensure that the oil level is not too high.

2. It is receommended that an **oil mist lubricating device** (e.g. Atlas Copco DIM 25) be installed in the compressed-air line for continuous operation.

Checking the oil supply of the motor

Hold a piece of paper in front of the exhaust opening in the motor housing while the machine is running. The oil supply is sufficient if oil stains form.

Recommended oils (compressed-air motor lubrication):

- BP Energol RD 80 (-15 to +10° C),
- BP Energol RD-E80 (+10 to +30° C),
- Shell Tellus Oil 15 (-15 to +10° C),
- Torculla 33 (+10 to +30° C).

Motor bearing l u b r i c a t i o n

The ball bearing in the motor flange is to be lubricated via the lubricating head using a grease gun.

☞ **See Fig. 11425**

Lubricating interval: every 10 operating hours

Recommended greases: BP Energrease LS-EP 2
SHELL Alvania Grease EP 2

312 Lubricating head for motor bearing lubrication
313 Sealing screw of oil filler neck
314 O-ring (9.2 x 1.8) under the sealing screw
355 Filter
358 Quick-release coupling
M center machine axle
max. Maximum oil level when refilling oil (15 mm under the filler neck when the center axle is horizontal)
Note: If the oil level is too high, oil will spill out of the motor housing exhaust opening

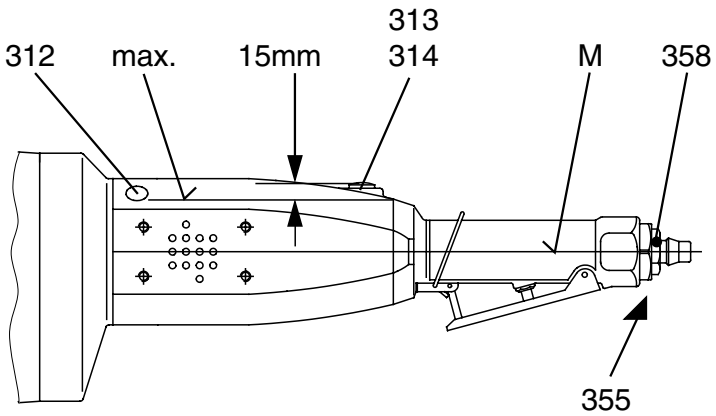


Fig. 11425

Check the wear on the cutting tool guide in the stripper (40)

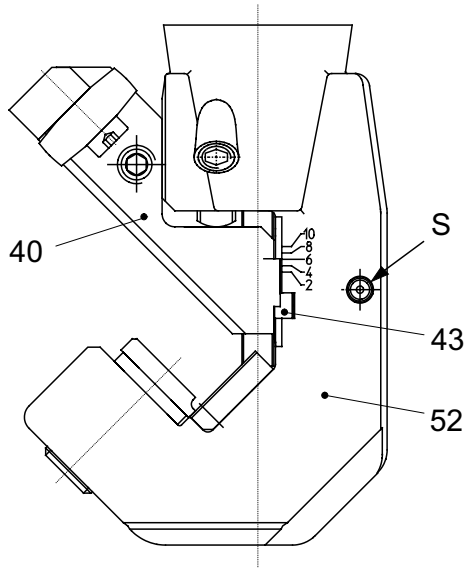
☞ **See Fig. 14194**

The stripper (40) must be replaced if the clearance between the stripper and the cutting tool is greater than 0.3mm.

Checking and replacing the wearing plate

☞ **See Fig. 14194**

- Remove the supporting body (52).
- Check the wearing plate (43) for scratching marks; if the running surface has been worn down approx. 0.2mm (see outer ring = "wearing mark", the wearing plate must be removed by levering it out with two screwdrivers and turned or replaced.



40 Stripper
43 Wearing plate
52 Supporting body
S Grease nipple for lubrication of cutting tool guide with a grease gun (order no. 068624)

Fig. 14194

Cleaning

Clean the filter 355 every 10 operating hours in order to prevent throttling or power loss.

☞ See the spare parts list for an diagram of filter 355.

Speed limiter and ball bearing are to be lubricated with gear grease during regular machine maintenance.

Warning: Speed limiter 324 is to be handled with particular care, as damage can cause overspeed.

☞ See diagram in the spare parts list.

Changing vanes

The performance of the machine decreases if the vanes are excessively worn.
Vane replacement and all other repair work is to be carried out by an expert!

☞ Vane set (4) on the rotor of the compressed-air motor. See Item 310 in the spare parts list for corresponding diagram.

Repairs

Danger of injury

Pneumatic tools conform to the applicable safety regulations. Repairs may only be carried out by qualified electricians in order to prevent unnecessary accidents.

TRUMPF Use only original spare parts.

Please note the specifications on the output plate.

☞ You will find a list of TRUMPF representatives at the back of this operating manual.

Wearing parts

TKF 104	Order no.
Cutting tool (Standard)	088503
Cutting tool for high-tensile materials	089335
Cutting tool for aluminium	005014
Special heavy-duty cutting tool for machining high-tensile materials	110399
Stripper 30°/37.5°/45°(40)*	104313/314/315
Wearing plate (43)*	104297
Support Fig. (50)*	109921

*See item in the spare parts list.

Original accessories

Accessories delivered with the machine

Description		Order no.
Cutting tool (installed)		
Quick-release coupling (machine part)		141944
Quick-release coupling (hose part)		141945
Allan key	DIN 911-12	067920
Allan key		118860
Cheesehead screw	M14x25-8.8 DIN 912	099123
2 cheesehead screws to fasten handle (37)*	M14x45-8.8 DIN 912	105083
Cheesehead screw (59)*	M8x12-12.9 DIN 912	014907
3 clamping sleeves (42)*	4x12-FDST DIN 7344	070858
Handle (38)*		103555
Slide handle Fig. (53)*		110400
Roller guide (56, 57, 58)*		104305
Grease gun		068624
Punching and nibbling oil for steel (0.5l)		103387
Lubricating grease "S1" (cutting tool guide lubrication)		121486
Operating instructions		128640
Safety instructions (red print)		125699

* See item in the spare parts list.

Options

Case	121585
Suspension bracket	105001
Chip bag	116199
Punching and nibbling oil for aluminium (1l)	125874
Muffler for motor, complete	114244

Ordering spare parts and wearing parts

To avoid delays and wrong deliveries, please proceed as follows when ordering replacement parts:

- When ordering spare parts or wearing parts, please use the 6-digit TRUMPF stock number of the respective part.
- Other information required with an order:
  - for electrical parts: voltage
  - required quantity
  - machine type
- Information required for shipping:
  - your exact address
  - desired mode of shipment (e.g. air mail, express mail, ordinary freight, parcel post, etc.)
- Send your order to your TRUMPF representative.

☞ You will find a list of TRUMPF representatives at the back of this operating manual.

Notes on documentation

The document was written by the Technical Documentation department of TRUMPF Werkzeugmaschinen GmbH + Co. KG