# Operator's manual

# TruTool S 350 (2A1)

TRUMPF GmbH + Co. KG, Technische Redaktion
Johann-Maus-Straße 2, D-71254 Ditzingen
Fon: +49 7156 303 - 0, Fax: +49 7156 303 - 930540
Internet: http://www.trumpf.com
E-Mail: docu.tw@de.trumpf.com

TRUMPF

# Table of contents

# 1. Safety

## 1.1 General safety information

**⚠ WARNING**

- Read all the safety information and instructions including those in the brochure also supplied.
- Failure to comply with the safety information and instructions can cause electric shock, burns and/or serious injury.
- Retain all the safety information and instructions for future use.

**⚠ DANGER**

**Electrical voltage! Risk of fatal injury due to electric shock!**

- ➢ Remove the plug from the plug socket before undertaking any maintenance work on the machine.
- ➢ Check the plug, cable and machine for damage each time before using the machine.
- ➢ Keep the machine dry and do not operate it in damp rooms.
- ➢ Connect the fault current (FI) circuit breaker with a maximum breaking current of 30 mA when using the electric tool outside.
- ➢ Only use original TRUMPF accessories.

**⚠ WARNING**

**Damage to the machine due to improper handling.**

- ➢ Wear safety glasses, hearing protection, breathing protection, protective gloves and working shoes when working.
- ➢ Connect the plug only when the machine is switched off. Pull the power plug after use.
- ➢ Do not carry the machine by the cable.
- ➢ Have maintenance carried out by specialists.

## 1.2 Specific safety information for seam locker

**⚠ WARNING**

**Risk of injury to hands.**

- ➢ Do not reach into the processing line with your hands.
- ➢ Use both hands to hold the machine.

**⚠ WARNING**

**Risk of injury from hot and sharp chips!**

**Chips exit the chip ejector at high speed.**

- ➢ Use a chip deflector, which is neither damaged nor bent.

# 2. Description


| | | | |
|---|---|---|---|
| 1 | Fixed blade carrier | 8 | Ram |
| 2 | Adjusting screw | 9 | Axis |
| 3 | Fixing screw for the fixed cutter blade | 10 | On/Off switch |
| | | 11 | Hand grip |
| 4 | Fixed cutter blade | 12 | Speed controller (230V motor only) |
| 5 | Fixing screw for the moving cutter blade | 13 | Chip deflector (hand protection) |
| 6 | Threading for fastening the traction eyelet (optional) | | |
| 7 | Moving cutter blade | | |

TruTool S 350 shears (2A1) Fig. 28474

## 2.1 Intended use

The TRUMPF TruTool S 350 (2A1) shears is an electrically powered hand-held device for the following applications:

- Chip-free slitting and trimming of plate-shaped workpieces made of steel, aluminum, non-ferrous heavy metals and plastic.
- Producing straight-line and curved interior and exterior cutouts.
- Slitting from scribed lines.
- Slitting from coils.

## 2.2 Technical data

| | Other countries | | | USA |
|---|---|---|---|---|
| | Values | Values | Values | Values |
| **Voltage** | 230 V | 120 V | 110 V | 120 V |
| **Frequency** | 50/60 Hz | 50/60 Hz | 50/60 Hz | 50/60 Hz |
| **Permissible material thickness: steel up to 400 N/mm²** | 3.5 mm (coil 3.0 mm) | 3.5 mm (coil 3.0 mm) | 3.5 mm (coil 3.0 mm) | 0.138 in (coil 0.12 in) |
| **Permissible material thickness: steel up to 600 N/mm²** | 3.0 mm (coil 2.5 mm) | 3.0 mm (coil 2.5 mm) | 3.0 mm (coil 2.5 mm) | 0.12 in (coil 0.1 in) |
| **Permissible material thickness: steel up to 800 N/mm²** | 2.0 mm (coil 1.5 mm) | 2.0 mm (coil 1.5 mm) | 2.0 mm (coil 1.5 mm) | 0.079 in (coil 0.06 in) |
| **Permissible material thickness: aluminum up to 250 N/mm²** | 4.0 mm | 4.0 mm | 4.0 mm | 0.16 in |
| **Working speed** | 4 - 6 m/min | 4 - 6 m/min | 4 - 6 m/min | 13- 20 ft/min |
| **Nominal power consumption** | 1400 W | 1200 W | 1140 W | 1200 W |
| **Idle stroke rate** | 1865/min | 1420/min | 1420/min | 1420/min |
| **Weight** | 5.7 kg | 5.7 kg | 5.7 kg | 12.6 lbs |
| **Starting hold diameter** | 50 mm | 50 mm | 50 mm | 1.97 in |
| **Smallest radius right/left** | 30/16 mm | 30/16 mm | 30/16 mm | 1.18/0.623 in |
| **Protective insulation** | II / ⧈ | II / ⧈ | II / ⧈ | II / ⧈ |

Tab. 1

## 2.3 Icons

**Note**

The following symbols are important for reading and understanding the operator's manual. The correct interpretation of the symbols will help you operate the machine better and safer.

| Icon | Name | Meaning |
|---|---|---|
|  | Read operator's manual | Read the operator's manual and safety information in their entirety before starting up the machine. Closely follow the instructions given. |
|  | Safety class II | Indicates a doubly insulated tool. |
|  | Alternating current | Type or property of current |
| V | Volt | Voltage |
| A | Ampere | Current, current input |
| Hz | Hertz | Frequency (oscillations per second) |
| W | Watt | Power, power input |
| mm | Millimeters | Dimensions e.g.: material thickness, chamfer length |
| in | Inch | Dimensions e.g.: material thickness, chamfer length |
| $n_o$ | Idle speed | Revolution speed without load |

| Icon | Name | Meaning |
|---|---|---|
| .../min | Revolutions/strokes per minute | Revolution speed, stroke rate per minute |

Tab. 2

## 2.4 Noise and vibration information

**⚠ WARNING**

**Noise emission value may be exceeded.**

➢ Wear hearing protection.

**⚠ WARNING**

**The vibration emission value can be exceeded!**

➢ Select the right tools and exchange them in time in the event of wear.

➢ Have maintenance carried out by trained specialized technicians.

➢ Define additional safety measures for protecting the operator from the effect of vibrations (e. g. keep hands warm, organization of working procedures, machining at normal feed force).

➢ Depending on the operating conditions and state of the electric tool, the actual load might be higher or lower than the specified measured value.

**Notes**

- The specified vibration emission value was measured in accordance with a standardized testing procedure and can be used to compare one electric tool with another.
- The specified vibration emission value can also be applied for a provisional estimate of the vibration load.
- Times during which either the machine is switched off or running but not actually in use can considerably reduce the vibration load during the entire working period.
- Times during which the machine works independently and self-propelled do not have to be calculated.

| Designation of measured value | Unit | Value according to EN 60745 |
|---|---|---|
| Vibration emission value $a_h$ (vector sum of three directions) | $m/s^2$ | 8.8 |
| A-class acoustic pressure level $L_{PA}$ typically | dB (A) | 84 |
| A-class acoustic power level $L_{WA}$ typically | dB (A) | 95 |

| Designation of measured value | Unit | Value according to EN 60745 |
|---|---|---|
| Uncertainty K for noise emission value | dB | 3 |

Tab. 3

# 3. Setting work

## 3.1 Setting the stroke rate (230V motor only)

Reduced stroke rates improve the working results:

- When processing precisely from scribed line.
- When processing radii.
- When processing steel with a strength >400 N/mm² (better service life).


1 Setting wheel for speed controller on 230V motor

Fig. 71200

➢ Turn the wheel to adjust the speed.

## 3.2 Work station (optional)

**NOTICE**

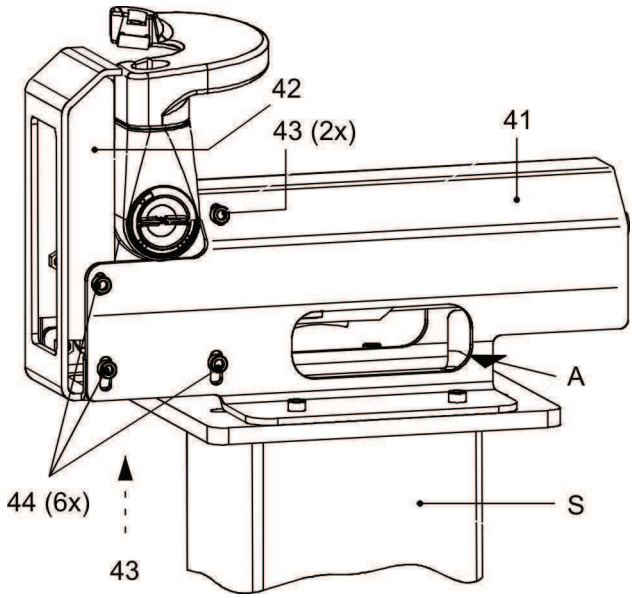
**Property damage resulting from incorrect operation!**

➢ Only move the workpiece into the machine once the machine is switched on and has reached the maximum speed.

**⚠ DANGER**

**Electrical voltage! Risk of fatal injury due to electric shock!**

➢ Remove the plug from the plug socket before changing the tool or undertaking any maintenance work on the machine.

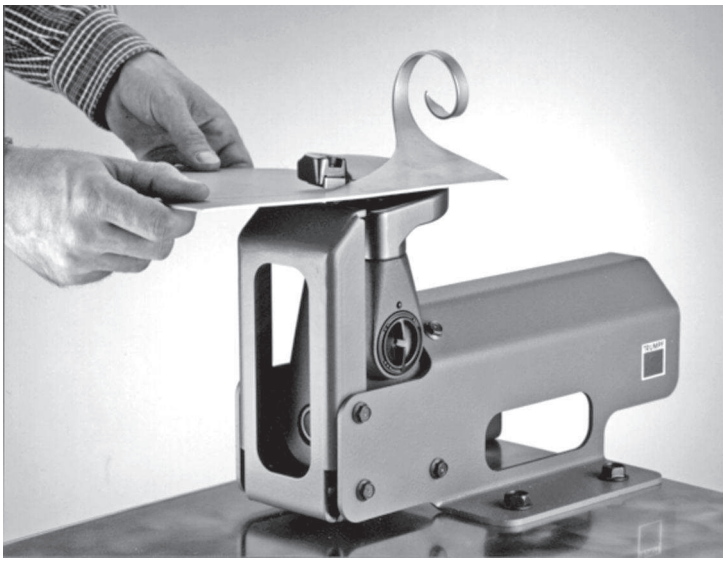



41 Casing
42 Front casing
43 Screw for fastening the machine to the work station
44 2x3 screws for attaching the casing
A Recess for the on/off switch
S Stand for the work station

Workstation Fig. 17461

The work station (order no. 979371) in which the machine can be fastened is used for machining small workpieces. It can be fastened using mounting holes:

- On a table (workbench).
- On a stand (order no. 003677).



Example: workpiece processing Fig. 17464

1. Screw on bracket and chip deflector.

2. Place machine into casing (41).
3. Fasten machine into the casing with the screws (43 and 44).
4. Fasten work station onto a workbench or TRUMPF stand (order no. 003677) with four screws.

## 3.3 Selecting blades

**NOTICE**

**Damage to property as a result of incorrect blade selection!**

**This strongly impairs the cut quality and the individual tools become overstressed.**

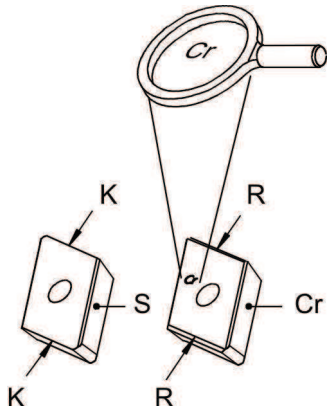
➢ Use suitable tools only.

The cutter is characterized by the following points:

- Moving cutter blade (upper blade) and fixed cutter blade (lower blade) are the same size and can be used (top or bottom) as much as desired.
- All cutters have two blades.
- They are "2-fold multi-edge cutters" which cannot be grinded again.

**Note**

Depending on the thickness or strength of the workpiece, two different types of blade can be selected for processing (see "Tab. 4", pg. 10).




| | | | |
|---|---|---|---|
| K | Sharp cutting edge with the standard cutter | Cr | Chromium steel cutter |
| S | Standard cutter | R | Radius 0.2 mm on the cutting edge of the chromium steel cutter |

Blade with type identification Fig. 14843

**Note**

Standard configuration blades with a tensile strength ≤400 N/mm² do not have any special identification. Chromium steel blades are identified with "Cr".

For this reason, it is recommended that the tools only be used in accordance with the details mentioned in the table.

| Cutter type | Sheet thickness ranges mm | Material type and tensile strength | Mat.-No. |
|---|---|---|---|
| Standard | 0.5 - 4.0 | Aluminum 250 N/mm$^2$ | 140451 |
| Standard | 0.5 - 3.5 (coil 0.5 - 3.0) | Mild steel 400 N/mm$^2$ | 140451 |
| Standard | 0.5 - 1.5 (coil 0.5 - 1.0) | Stainless steel 600 N/mm$^2$ | 140451 |
| Standard[1] | 1.5 - 3.0 (coil 1.9 - 2.5) | Stainless steel 600 N/mm$^2$ | 140451 |
| Cr | 1.5 - 3.0 | Stainless steel 600 N/mm$^2$ | 140452 |
| Cr | 0.5 - 2.0 (coil 0.5 - 1.5) | Stainless steel 800 N/mm$^2$ | 140452 |

Tab. 4

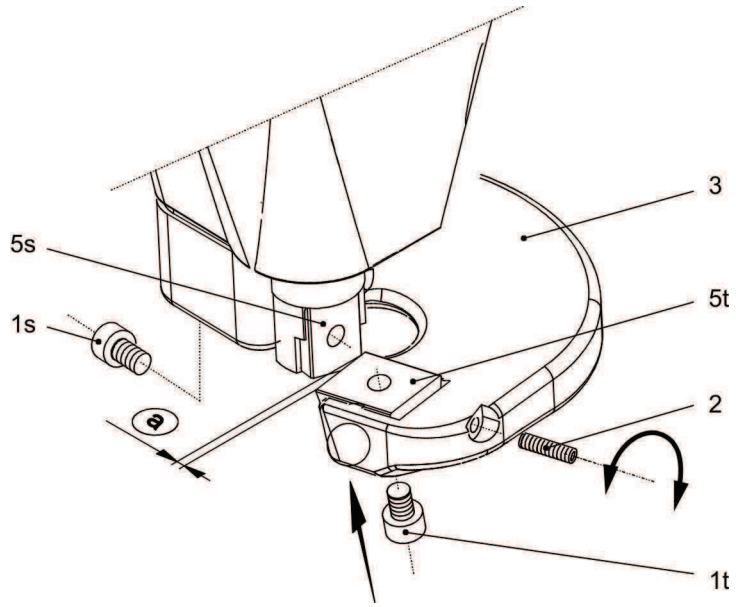
## 3.4 Selecting and setting cutting clearance

**DANGER**

**Electrical voltage! Risk of fatal injury due to electric shock!**

➢ Remove the plug from the plug socket before changing the tool or undertaking any maintenance work on the machine.

1 use is possible, with increased wear.




| | | | | | |
|---|---|---|---|---|---|
| a | Blade clearance = Cutting clearance | 2 | Adjusting screw | 5s | Moving cutter blade |
| 1s | Fastening screw for the moving cutter blade | 3 | Fixed blade carrier | 5t | Fixed cutter blade |
| 1t | Fastening screw for the fixed cutter blade | | | | |

Fig. 14844

**Selecting cutting clearance**

The cutting clearance needs to be 0.2x to the sheet thickness to be cut.

Examples:

| Sheet thickness s<br>mm | Blade clearance = Cutting clearance a<br>mm |
|---|---|
| 0.5 | 0.1 |
| 1.0 | 0.2 |
| 2.0 | 0.4 |
| 3.0 | 0.6 |
| 3.5 | 0.7 |

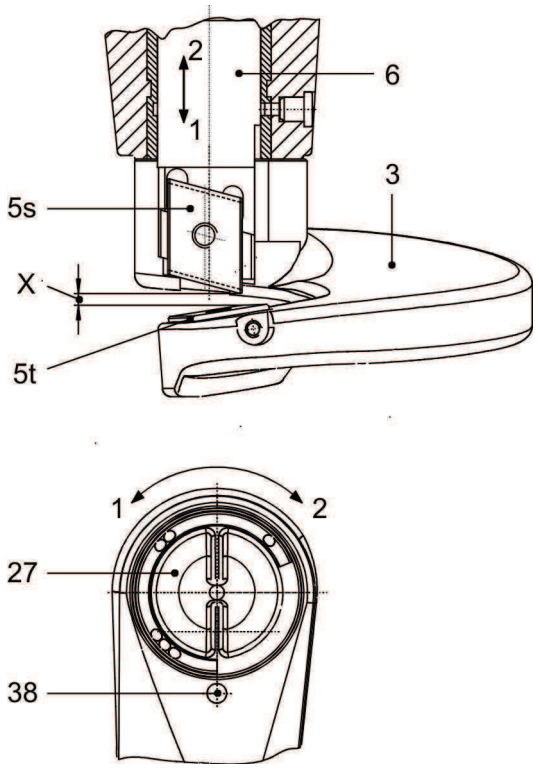
Tab. 5

**Setting cutting clearance**

1. Select cutting clearance.
2. Tap the on/off switch several times until the moving cutter blade (5s) has reached the lower dead point.
3. Gently fasten the fixed cutter blade (5t) with fixing screw (1t).
4. Set the fixed cutter blade (5t) to the desired cutting clearance using the adjusting screw (2) (check with feeler gauge).
5. Tighten the fixing screw (1t).
6. Gently tighten the adjusting screw (2).

## 3.5 Set height of the moving cutter blade

To achieve optimum cutting behavior both when slitting sheets and cutting curves, the distance between the moving and fixed cutter blades (plunging depth into the sheet) needs to be adapted to the intended cutting task and the sheet thickness.




| | | | |
|---|---|---|---|
| 1 | Rotational direction 1: setting value x becomes smaller | 6 | Ram |
| 2 | Rotational direction 2: setting value x becomes bigger | 27 | Turning handle with scale for adjusting the moving cutter blade's height (example for sheet thickness 3.5 mm) |
| 3 | Fixed blade carrier | 38 | Fixed point of the scale |
| 5s | Moving cutter blade (upper blade) | X | Setting value (height clearance between upper and lower blade)[2] |
| 5t | Fixed cutter blade (lower blade) | | |

Height adjustment of the moving cutter blade Fig. 14845

2 The ram is located at the upper dead point.

| Material thickness mm | Setting the turning handle | | |
|---|---|---|---|
| | Cutting curves | Cutting straight lines | Cutting coils |
| 3.5 | 3(+)[3] | 3(+) | - |
| 3.0 | 3(+) | 3 | 1 |
| 2.5 | 3 | 2(+) | 1 |
| 2.0 | 2(+) | 2 | 1 |
| 1.5 | 2 | 1(+) | 1 |
| 1.0 | 1(+) | 1 | 1 |
| 0.5 | 1 | 1(-)[4] | 1(-) |

Recommended values Tab. 6

1. Pressing and rotating turning handle when machine is running or switched off.

   The turning handle snaps into place when let go.

2. There are marking points on the turning handle (27) which need to be set according to the sheet thickness and application.

   This change in distance between the two cutters can be used to optimize the cutting behavior in an appropriate way.

3 (+) intermediate stage in rotational direction 2

4 (-) intermediate stage in rotational direction 1

# 4. Operation

**⚠ CAUTION**

**Damage to property due to excessively high line voltage**

**Motor damage**

- Check the line voltage. The power supply voltage must correspond to the information on the nameplate of the machine.
- When using an extension cord that is longer than 5 m, the cord must have a line diameter of at least 2.5 mm².

**⚠ WARNING**

**Damage to the machine due to improper handling.**

- Make sure the machine is always in a stable position when operating it.
- Never touch the tool while the machine is running.
- Always operate the machine away from your body.
- Do not operate the machine above your head.

## 4.1 Turning TruTool S 350 (2A1) on and off

**Switching on the machine**

1. Slide the On/Off switch forwards.

**Switching off the machine**

2. Slide the On/Off switch to the rear.

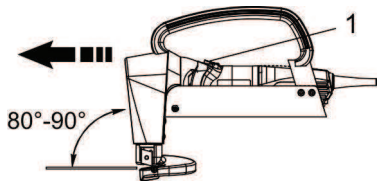
## 4.2 Working with TruTool S 350 (2A1)

Cutting radii

- Do not cant machine.
- Work only with low feed.

Cutting at the edge

- Cutting in upside-down position.
- The cutting edge faces upwards.




1 On/Off switch

Fig. 28475

1. Do not move the machine towards the workpiece until full speed has been reached.
2. Edit material.
   - Bring device to the sheet surface at an angle of 80 to 90°.

## 4.3 Overload protective device on the motor

**Notes**

- The appliance may switch off prematurely when affected by electromagnetic interference. The appliance will resume operation when the faults have been cleared.
- If the motor temperature is too high, the motor will switch off.

1. Allow the machine to run in idle until it has cooled down.
2. Operate the machine normally after it has cooled down.

# 5. Maintenance

**⚠ DANGER**

**Risk of fatal injury due to electric shock!**

➢ Remove the plug from the plug socket before changing the tool or undertaking any maintenance work on the machine.

**⚠ CAUTION**

**Damage to property caused by blunt tools!**

**Machine overload.**

➢ Check the cutting edge of the punch hourly for wear. A sharp punch provides good cutting performance and is easier on the machine.

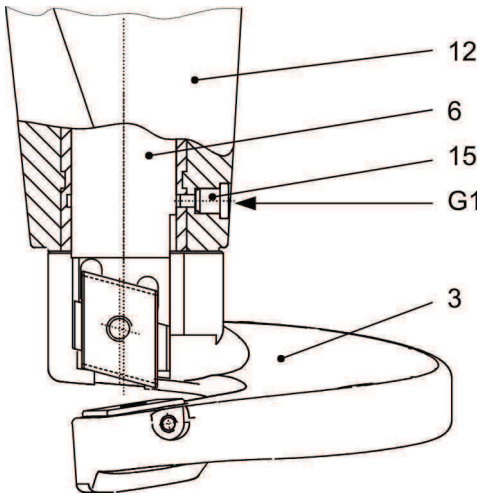
➢ Change the punch in a timely manner.

**⚠ WARNING**

**Risk of injury due to incorrect repair work**

**Machine does not work properly.**

➢ Maintenance may be carried out by trained specialist technicians only.




| | | | |
|---|---|---|---|
| 3 | Fixed blade carrier | 15 | Grease nipples |
| 6 | Ram | G1 | TRUMPF lubricating grease |
| 12 | Housing | | |

Grease nipple, ram guide Fig. 28476

| Maintenance point | Procedure and interval | Recommended lubricants | Order No. |
|---|---|---|---|
| Ram guide | Every 20 operating hours | Lubricating grease "G1" | 139440 |
| Gearbox and gear head | After 300 operating hours, arrange for a trained specialist to relubricate or to replace the lubricating grease. | Lubricating grease "G1" | 139440 |
| Fixed cutter blade | Turn if necessary | - | - |
| Fixed cutter blade | Change as needed | - | - |
| Moving cutter blade | Turn if necessary | - | - |
| Moving cutter blade | Change as needed | - | - |
| Ventilation slots | Clean as needed | - | - |

Tab. 7

## 5.1 Changing blade

**Turning/changing moving cutter blade**

1. Setting turning handle (27) to grade "0" (ram at lower position)(see "Fig. 14845", pg. 12).
2. Loosen the fixing screw (1s) (see "Fig. 14844", pg. 11).
3. Rotate moving cutter blade (5s) 180° and mount it again (or mount new blade).
4. Insert and tighten the fixing screw (1s).

**Turn/replace fixed cutter blade**

5. Loosen the fixing screw (1t).

**Note**

Take cutting clearance into consideration.

6. Turn the fixed cutter blade (5t) 180° and tighten with fixing screw (1t) again.

## 5.2 Changing the power cable

If the power cable is to be replaced, it should be procured from the manufacturer or an authorized dealer to avoid safety hazards.

**Note**

For TRUMPF service addresses, see www.trumpf-power-tools.com.

## 5.3 Replacing carbon brushes

The motor comes to a standstill whenever the carbon brushes are worn out.

**Note**

For TRUMPF service addresses, see www.trumpf-power-tools.com.

➢ Change the carbon brushes.

# 6. Accessories and consumables

**Note**

Moving cutter blade (upper blade) and cutting table blade (lower blade) are the same size and can be used (top or bottom) as much as desired. All cutters have two blades.

They are "2-fold multi-edge cutters" which cannot be grinded again.

| Name | Scope of delivery | Consumables | Accessories | Order number |
|---|---|---|---|---|
| 2 standard cutters for processing mild steel (moving cutter blade and fixed cutter blade, installed) | X | - | - | 140451 |
| 2 chromium steel cutters for processing high-tensile sheets (moving cutter blade and fixed cutter blade, installed) | X | - | - | 140452 |
| Lubricating grease "G1" | X | - | - | 0344969 |
| Case | X | - | - | 0982541 |
| Feeler gauge | - | X | - | 056856 |
| Allen key DIN 911-2 | - | X | - | 002946 |
| Allen key DIN 911-5 | - | X | - | 067857 |
| Grease gun | - | X | - | 0975466 |
| Traction eyelet | - | - | X | 107668 |
| Workstation | - | - | X | 979371 |
| Pedestal for work station | | | X | 003677 |
| Work station and pedestal | | | X | 918382 |
| Operator's manual | X | - | - | 1893441 |
| Safety information, other countries | X | - | - | 125699 |
| Safety information (red document), USA | X | - | - | 1239438 |

Tab. 8

## 6.1 Ordering consumables

**Note**

The following data must be specified in order to ensure that parts are delivered correctly and without delay.

1. Specify the order number.
2. Enter further order data:
   - Voltage data
   - Quantity
   - Machine type
3. Specify the complete shipping information:

- Correct address.
- Desired delivery type (e.g. air mail, courier, express mail, ordinary freight, parcel post).

**Note**

For TRUMPF service addresses, see www.trumpf-powertools.com.

4. Send the order to the TRUMPF representative office.

# 7. Appendix: Declaration of conformity, guarantee, replacement parts lists