Bevelling Machine with Variable Angle and Automatic Feed

NKO MACHINES

UZ 18 Hardworker

Operating and Maintenance Instructions

CE

Contents

General information

1.1 Introduction

Thank you for purchasing one of our machines. We hope you will be fully satisfied with it.

This manual contains all the instructions for installation, adjustment, operation and maintenance of the UZ18 Hardworker machine in conformity with valid safety standards.

The information and data in this manual are subject to change as a result of further development of the machines. If in any doubt, please contact N.KO if you find any deviations.

Never carry out any operations on the machine until you have read and understood the instructions in this manual. Most accidents occurring in the workplace result from not observing instructions and recommendations in manuals.

Graphic symbols are used in the manual to highlight important information regarding machine safety and operation.

 **Attention:**
Important information for the operating personnel's safety

 **Important:**
Instruction which must be observed to ensure correct operation of the machine

1.2 Testing

The bevelling machine is tested in our technical test room.

During the test, correct functioning of the electric system, and correct functioning of the bevelling plates and profiles of different types and sizes are checked.

1.3 Guarantee

The Seller provides a guarantee for fault free material and workmanship of the UZ 18 Hardworker bevelling system for a period of 5 years from the delivery date of the goods.

A guarantee for correct functioning of the goods and materials used is provided for a period of 5 years from the delivery date of the goods.

The Seller undertakes to remove all possible defects covered by the guarantee, free of charge and without undue delay, so that the Purchaser can use the goods appropriately. Should the Purchaser make a claim based on a liability for defects not covered by the guarantee, s/he shall cover the expenses incurred by the Seller.

The guarantee period is suspended on the day when the Purchaser notifies the Seller of a defect covered by this guarantee, due to which the Purchaser is unable to use the goods and makes a claim based on the liability for defects covered by the guarantee granted, until the date when the defect is removed by the Seller.

The guarantee does not cover natural and normal wear of the goods and defects caused by incorrect use of the goods contrary to the training and documentation provided. Further, the guarantee does not cover defects due to overloading of the goods or those resulting from incompetent interference in the goods or incompetent repair or modification. Incompetent interference, repair or modification means any interference, repair or modification executed contrary to the training or documentation provided, or executed by any person other than the Seller or a person authorized or approved by the Seller.

Claims based on liability for defects under the guarantee granted must be made at the Seller without undue delay after the Purchaser has found the defect; at the latest, by the end of the guarantee period, however, otherwise these claims expire.

To make a claim based on liability for defects under the guarantee granted, the guarantee certificate must be submitted; otherwise, the Purchaser's claims cannot be allowed.

The Seller's liability for defects covered by the guarantee does not arise if the defects have been caused by passage of the risk of damage to the goods by external events. Particularly, external events include natural disasters, force majeure, or third persons' acts.

N.KO. considers the guarantee invalid in the event of:
- improper use of the machine;
- use contrary to national or international standards;
- incorrect installation;
- defective electrical power supply;
- serious maintenance shortcomings;
- incompetent modifications and/or interferences;
- usage of unoriginal or incorrect spare parts and equipment for the given model;
- full or partial infringement of instructions;
- exceptional events, natural or other disasters.

1.4 Identification data

The identification data of the bevelling machine are indicated on the aluminium CE label attached to the top of the bearing housing.

1.5 Reference standards (CE Declaration of Conformity)

EC Declaration of Conformity

1. Publisher´s name statement: N.KO,spol. s r.o.
   Adress: Táborská 398//22
   293 01 Mladá Boleslav
   Czech republic
   Identification number: 26161109

2. Scope statement:
   Name: Bevelling machine
   Type: UZ15
   Producer: N.KO spol. s r.o.

3. Purpose of use: Bevelling the edges of plates welding preparation

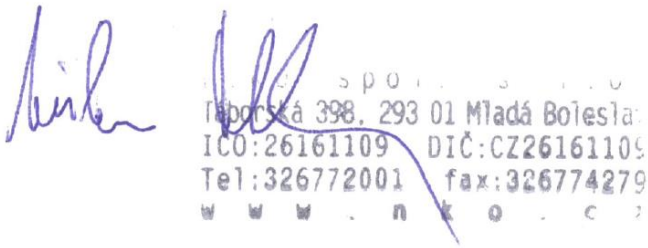
4. The object of declaration described above is in conformity with the requirements of the following documents

Directive 2006/42/EC:	Safety of machinery – Basic requirements
Directive 2004/108/EC:	Electromagnetic compatibility
EN ISO 12100:	Safety of machinery – General principles for design. Risk assesment and risk reduction
EN ISO 13857:	Safety of amchinery – Safety distances to prevent hazard zones being reached by upper and lower limbs
EN 953:	Safety of machinery - Electrical equipment of machines
EN 60204-1:	Safety of machinery – Electrical equipment of machines
EN 61000-6-3:	Electromagnetic compatibility – Generic standards – Emission Standard for residential, commercial and light-industrial environments

5. Information about accredited/ notified person:

Date and place of issue: 2.1. 2014 Mlada Boleslav, Czech Republic

Name and title of authorized person: Mr. Milan Richtr – managing director



SAFETY

2.1 Safety recommendations

Attention:
Read the following instructions carefully to prevent personal injuries and/or property damage.

- Never try to operate the machine unless you have carefully acquainted yourself with its functions. If after having read this manual carefully and fully you are still in doubt, contact the N.KO company.

- Make sure that all technical workers entrusted with operation and maintenance of the machine are fully acquainted with all the relevant safety recommendations.

- Transport and installation of the machine can only be done by specialized workers in conformity with the instructions in this manual.

- Before starting the machine, the operator must check that all safety devices are functional and all safety guards are in place.

- Never use the machine for any purposes not indicated in this manual. Never process products other than what is indicated here.

- If you want to use the machine for purposes other than those defined, ask the N.KO company for approval.

- The machine supply voltage values are dangerous; check whether all connections are executed correctly. Never perform any maintenance of the machine or replacement of its parts if the machine is connected to the electrical power supply. Never install any branches on the electrical connections.

- Replace defective parts with those recommended by the manufacturer. Never use non-original spare parts.

- Never wear clothing or jewellery which may get caught in the moving parts. It is recommended to use protective clothing, non-slip shoes, and protective goggles.

Important:
If during the machine lifetime any defects occur which cannot be removed with the help of this manual, it is advisable to ask the N.KO company to resolve the problem as soon as possible.

2.2 Safety labels

Safety labels are placed on the bevelling machine to protect the operators.

Meaning of the labels:

This label is placed on the electrical panel of the bevelling machine, and indicates the presence of high voltage.

Do not remove the label from the machine.

2.3 Qualification and protection of operators

The employer is obliged to inform the operators about safety standards; moreover, he must ensure their observance and make sure that the working area is large enough and well lit.

The term “operator” means any person who carries out installation, operation, adjustment, maintenance, cleaning or repairs of the machine.

⚠ Attention:
Before starting work with the machine, make sure that the operator understood the content of the operator manual.

⚠ Attention:
The operator must always:

1. Check that all safety guards are in place and safety devices are functioning before starting the machine.
2. Avoid wearing clothes or jewellery which may get caught in moving parts.
3. Wear approved protective clothing, such as non-slip shoes, ear protectors and protective goggles.
4. Apply safety standards; see that they are observed at all times; and, if in doubt, consult this manual again before taking any measures.
5. Contact the machine supplier if unable to remove defects causing its malfunction, if there are defective parts or the running is abnormal.

2.4 Safety devices

The machine is equipped with safety guards to isolate the zones potentially dangerous to the operators. The guards are attached to the frame or screwed to with the machine housing. They can be dismounted with suitable tools. This operation may be necessary during certain maintenance activities. An acrylic glass guard is mounted in front of the cutting tool (position A. Fig. 2.4.1) to protect the operator during bevelling.

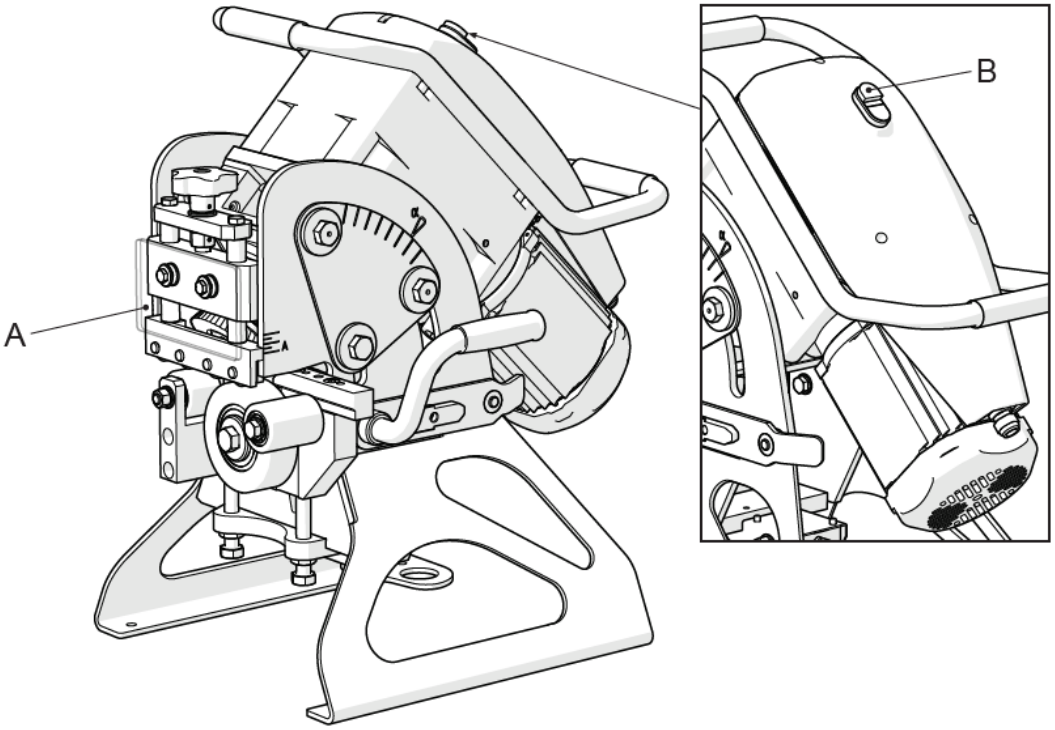
⚠ Attention:
The guard can only be removed if the machine is at standstill, with the power supply plug disconnected. Never use the machine without the safety guards in place.

The machine is equipped with a mushroom emergency button. This red button overrides all other operations and stops the machine immediately (position B, Fig. 2.4.1).

Use the emergency button:

- in case of immediate danger or mechanical accident;
- for short interventions, if the machine is switched off, to perform maintenance in this state;
- the button is also equipped with a lock to prevent start of the machine by an unauthorized person.

Fig. 2.4.1



2.5 Residual risks

The machine has been designed and manufactured with all devices and equipment for health protection and the safety of operators.

The machine is fully covered to minimize the risk of contact with movable parts.

There is, however, one risk remaining:

As mentioned above, the working zone is protected as much as possible; however, it has to remain open partly to enable feeding of the material to be bevelled.

Therefore, there is a risk of the operator putting his/her fingers into the zone in which both the cutting tool and the work piece holder are.

⚠ Attention:
Always keep your hands as far from the cutting zone as possible.

⚠ Attention:
Always apply the safety regulations contained in this manual and ensure their observation and the elimination of all residual risks.

TECHNICAL SPECIFICATIONS

3.1 Machine description

The bevelling machine model UZ 18 Hardworker has compact dimensions. One of its main features is the adjustable bevel angle and automatic material feed.

The machine is equipped with a hardened cutting tool, sturdy work piece holder, direct-reading scale used for setting values (bevel size and angle), and a special guide facilitating the loading of material.

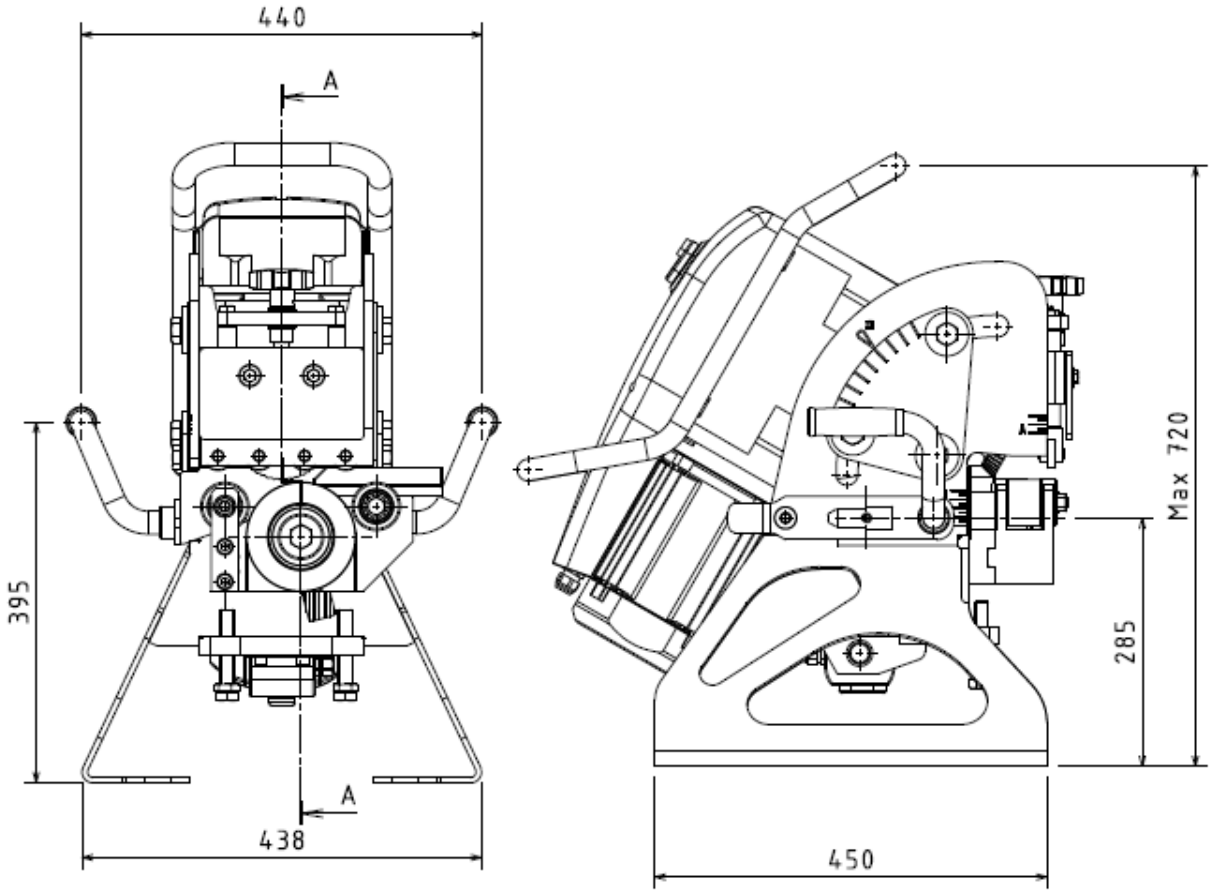
These characteristics enable easy setting of the working angle without exchange of the lower cylinder, and precise regulation of the bevel angle.

The UZ 18 Hardworker bevelling machine is reliable and requires minimum maintenance.

3.2 Technical data

Voltage	400/480/220 V*
Frequency	50/60 Hz*
Motor power	750W,
Sheet thickness	6 ÷ 40 mm / 0.23 ÷ 1.57 in
Max. bevel width	18 mm/0.71 in (600 MPa/87 022 PSI)
Bevel angle range	15° ÷ 50°
Feed	1,9 m/min./6.23 ft/min
Dimensions	450 x 800 x 400 mm
Weight	110 kg / 242.5 lb

(*) Exact voltage and frequency values are indicated on the motor identification label.



3.3 Noise level

The machine has been designed and manufactured so that it emits the minimum noise possible.
Measurements done at the operator's workplace, when the machine is running in the automatic cycle mode, ascertained these values:

- during cutting: **LpA m. = 74.9 dB**
  LwA = 84.1 dB

- during unloaded operation: **LpA m. = 64.5 dB**
LwA = 76.4 dB

3.4 Working conditions

The work environment of the machine must satisfy these values:

Temperature: 0 °C - 50 °C
Humidity: 10 % - 90 % (without condensation)

The machine must be placed in a covered room protected from rain.

Working conditions different from the above-mentioned ones might result in serious damage to the machine, particularly its electrical equipment.

If the machine is not used, you can store it in a place with temperatures ranging between:
-10^{o} C and 70^{o} C.

All the other values remain unaltered.

INSTALLATION

4.1 Transport and lifting

Important:
Activities described in this section must be performed by qualified personnel only.

Suitable unloading and setting means (cranes, forklift trucks, etc.) must be provided at the destination.

When delivered to the destination, check (in the presence of the forwarding firm) whether the machine conforms to the order specifications and has not been damaged during transport. Should you find any damage or parts missing, immediately send a detailed message to N.KO and the forwarding firm.

Attention:
Observe the following rules to ensure safe handling of the machine:

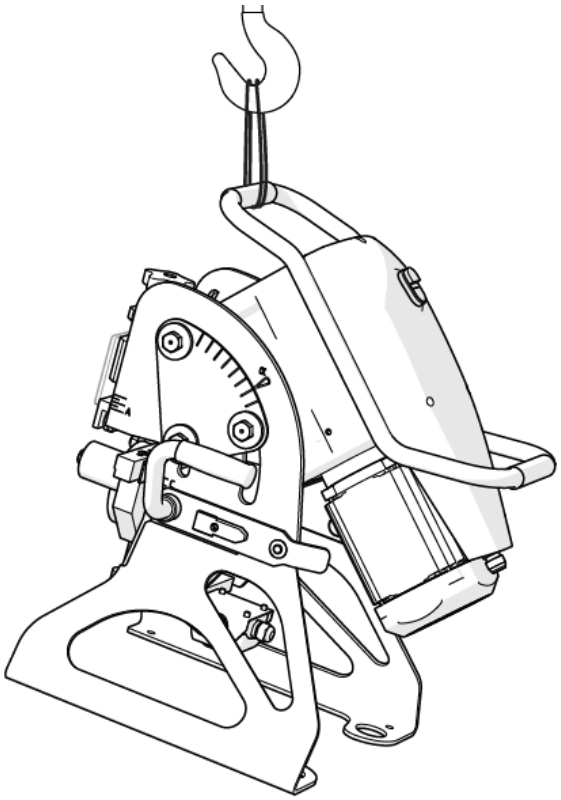
- Keep your distance from suspended loads and check that the lifting equipment and pertinent tools are in perfect condition, and suitable for the loads stated in paragraph 3.2.

- During handling of the machine, wear protective clothing, such as work gloves, non-slip shoes and helmet.

- If the machine is in the transport packaging, remove it and dispose in conformity with valid regulations of the pertinent country.

- Lift the bevelling machine. To do that, use the band attached to the upper handle. See Fig. 4.1.1.

Fig. 4.1.1

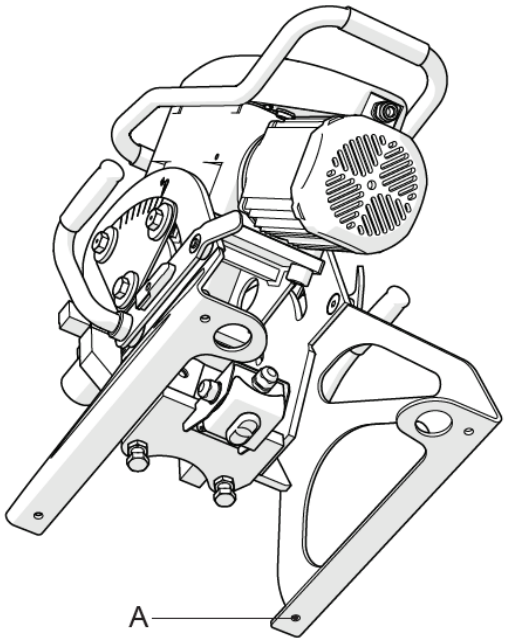


4.2 Setting and connection

Important:
Activities described in this section must be performed by qualified personnel only.

If you use the machine for processing small pieces, you must fix it to a level surface by means of the holes at the bottom of the stand (Fig. 4.2.1, position A).

Fig. 4.2.1.



If you use the machine for processing large pieces, you must place it on the work piece, on which it will move itself. When approaching the material and leaving the work piece at the end, it is advisable to suspend the machine on the belt, as illustrated in Fig. 4.1.1.

During electrical installation, proceed as follows:

- Check the frequency and voltage values on the motor identification label;
- Fit the end of the cable to the power supply with the plug according to your local power supply network.

4.3 Checking before use

Important:
Never start the UZ 18 Hardworker without carrying out the checks described in this section.

Before starting the machine, check whether it is in working order by means of the following checks and inspections in order to ensure the highest possible efficiency and to meet safety regulations:

- Check whether there are no loose screws or other parts.

- Make sure that all electrical connections are correct and the electrical cable is fixed in place with a cable gland.

- To start the machine, proceed as follows:
Green button (position B, Fig. 2.4.1). Press the button to turn on the engine. BE CAREFUL of the direction of rotation of the tool. Working direction is only clockwise.

To shut down the machine, proceed as follows:
Red button (position B, Fig. 2.4.1). Press this button to disconnect the power supply. When you press this button, the machine immediately stops prior to other commands.

4.4 Dismantling and disposal

When dismantling the UZ18 Hardworker machine, keep in mind it is made of safe materials. They involve in particular:

- enamelled and plated ferritic steel;
- stainless steel, series 300/400;
- plastic materials of various characteristics;
- hydraulic oil;
- electric motor;
- electrical cables with corresponding sheaths;
- electrical monitoring and exciting equipment.

Follow this procedure:

- Observe the regulation concerning work environment safety valid in your country.
- Disconnect the machine from the power supply.
- Dismount the machine; classify the parts according to their chemical characteristics.
- Scrap the machine parts in conformity with the regulations valid in your country.
- During dismantling, strictly follow valid work safety regulations.

USAGE

5.1 Correct usage

The bevelling machine model UZ 18 Hardworker has been designed, manufactured and sold for the purpose of bevelling the following kinds of metal parts and rolled metals: **iron, steel up to R=60kg/mm^2**, stainless steel, brass, copper and aluminium.
The maximum bevel dimensions and processed material thickness are indicated in detail in chapter 3, paragraph 3.2, “Technical specifications”.

Usage other than that described above is forbidden. Strictly speaking, it is forbidden to:

- process products different to those for which the machine has been designed and sold;
- modify operation of the machine;
- replace parts with non-original ones;
- modify electrical connections and bypass internal safety devices in this way;
- remove or modify protective guards;
- operate the machine in places with aggressive environment.

⚠ Attention:
It is strictly forbidden to bevel materials other than those indicated, since their processing may pose a risk to the operators and damage the machine.

Before making any modifications, you must ask the N.KO company for the corresponding approval. If you fail to do so, the N.KO company will reject any responsibility.

5.2 Description of control elements

The bevelling machine is operated by means of control devices located on the distributing box.

- **Green button** Press the button to turn on the engine. BE CAREFUL of the direction of rotation of the tool. Working direction is only clockwise.
- **Red button**. Press this button to disconnect the power supply. When you press this button, the machine immediately stops prior to other commands.

5.3 Preliminary settings

Attention:
During setting, use working gloves. The operations must be done on a stopped machine, disconnected from the power supply.

Before starting work, you must execute some settings according to the material thickness and bevel angle.

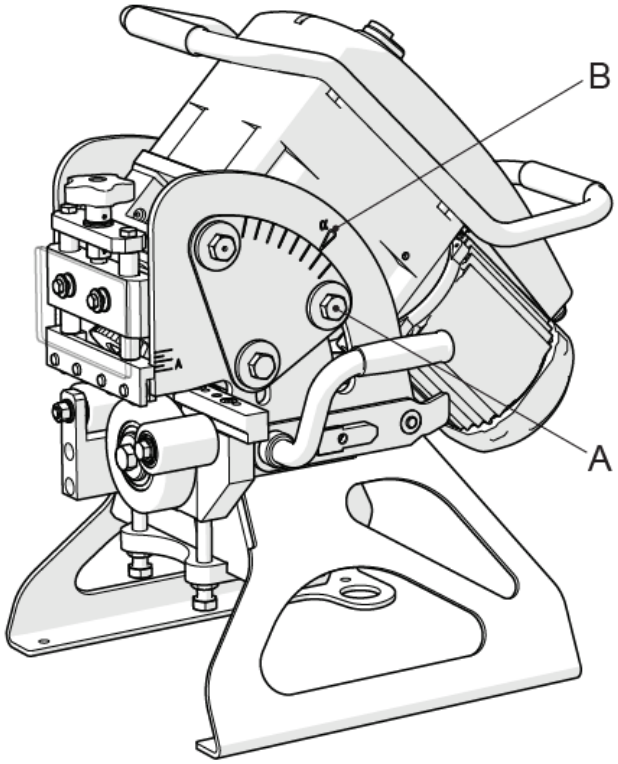
Setting the bevel angle
The bevel angle can be set from 15° to 50°.Perform the setting as follows:

- Loose sufficiently the 3 and 3 screws (position A, Fig. 5.3.1) located on both sides of the machine.
- Grip the upper handle and lower handle and pull it to set the entire cutting unit to the required angle.
- You can view the set angle value on the graduated scale located on the side of the machine (position B, Fig. 5.3.1).
- To complete the operation, properly again tighten the 3 and 3 side screws (position A, Fig. 5.3.1).

Important:
If you have problems setting the angle, the screws may not be loose enough (position A, Fig. 5.3.1).

Important:
The machine offers a range of operating angles from 15-50 deg. In practice, it is very difficult to achieve these limits. The condition for the attainment of these limit angles is the perfectly prepared the edges of the material. However, the edges before bevelling usually does not have 90 deg and there is no place to keep the machine on the material.

Fig. 5.3.1



Adjusting the lower cylinders (bottom support):

By adjusting the lower cylinders (bottom suport), you can set the size of the bevel. Proceed as follows:

- Loosen the central cylinder screw sufficiently (position A, Fig. 5.3.2).

- Raise or lower the bottom support by means of the lower right adjustable screw (position B, Fig. 5.3.2). If the left-hand support screw hampers lowering the bottom support, loosen it.

- Meanwhile, check the graduated scale (position D, Fig. 5.3.2), making sure the desired value has been reached.
(The scale indicator C is formed by the horizontal joint of the two parts of the assembly, the bottom support.)

- After setting of value of size of bevel, you have to adjust also the left screw as follow.
Turn the left screw, until it touches body of bottom support and the rotate about one half to whole rev so that left side of the lower support should be at same height as the right side.
During this operation the right adjustable screw has to be constantly in contact with the body of bottom support. It means that the right side of support must not be lifted up.

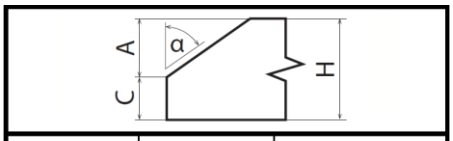
- After adjusting the bottom support, firmly tighten the central cylinder screw (position A, Fig. 5.3.2). Secure both the left and right-hand support screw with the locknuts included (position C, Fig. 5.3.2)

- Finally, check whether the main central cylinder is loose and can rotate freely. Otherwise, it is necessary to clean the space behind the cylinder or to replace bearings of the cylinder.

Important:
The scale value C (position D, Fig. 5.3.2) corresponds to the difference between the bevel height (dimension A in Fig. 5.3.1.0) and the total material thickness. So you set the so-called root face (feather, butt) on the scale (dimension C, Fig. 5.3.1.0).
In other words, to adjust a bevel size of 8x8x45º on 10-mm-thick material, you must set a scale value of 2 mm.

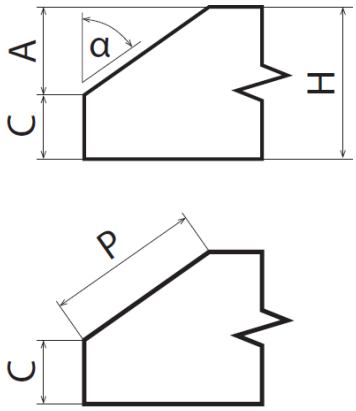
It is necessary to realize that when setting the facet height, you cannot set a value at which the hypotenuse length of the bevel created (dimension P, Fig. 5.3.1.0) exceeds 18 mm (maximum performance of the machine). You can check that in the table (Fig.5.3.1.1).

Fig.5.3.1.0



H	α	C ≥
3 - 12mm	20° - 50°	0mm
15	50°	3,5 mm
	45°	2,5 mm
	30°	0 mm
	20°	0 mm
20	50°	8,5 mm
	45°	7,5 mm
	30°	4,5 mm
	20°	3 mm
25	50°	13,5 mm
	45°	12,5 mm
	30°	9,5 mm
	20°	8 mm
30	50°	18,5 mm
	45°	17,5 mm
	30°	14,5 mm
	20°	13 mm
35	50°	23,5 mm
	45°	22,5 mm
	30°	19,5 mm
	20°	18 mm
40	50°	28,5 mm
	45°	27,5 mm
	30°	24,5 mm
	20°	23 mm

Fig.5.3.1.1



Important:

Table of maximum material removal.
On the scale C (position D, Fig. 5.3.2.), it is FORBIDDEN to set a value lower than that indicated in the right-hand column of the table. Otherwise, the machine may become overloaded.
Note: The data is valid only for strength of steel to 45 kg/mm².

It is forbidden to set value C lower than indicated in the table – the machine may become overloaded.

All of bevels where is the width of bevel (hypotenuse - position P Fig.5.3.1.0) bigger than 10mm, is necessary to bevel in two steps. For first step, set value C = C+1/2 A
It may be necessary to proceed the bevel in more than two steps for bevelling maximum bevel.

Example No. 1:

Can you create a bevel of 15x15x45° on 20mm thick material?

For correct setting, you must set the difference between the desired bevel height and the material thickness on the graduated scale C (position D, Fig. 5.3.2); that is, 20-15=5; so the scale C should read 5 mm. The table indicates that the graduated scale minimum value can be 7,5 mm. This means the bevel cannot be made because 5 mm is less than 7,5 mm; at this setting, the total bevel hypotenuse (dimension P, Fig. 5.3.1.0) exceeds the permissible 18 mm. So the machine may be damaged.

Example No. 2:

Can you create a bevel of 10x10x45° on 15mm thick material?

For correct setting, you must set the difference between the desired bevel height and the material thickness on the graduated scale C (position D, Fig. 5.3.2); that is, 15-10=5; so the scale should read 5 mm.
The table indicates that the graded scale C minimum value can be 2.5 mm. That means the bevel can be made because 5 mm is more than 2.5 mm; at this setting, the total bevel hypotenuse (dimension P, Fig. 5.3.1.0) does not exceed the permissible 18 mm.

Example No. 3:

Can you create a bevel of 8x8x45° on 10-mm-thick material?

For correct setting, you must set the difference between the desired bevel height and the material thickness on the graduated scale C (position D, Fig. 5.3.2); that is, 10-8=2 so the scale should read 2 mm.
The table indicates that there are no setting limits for materials up to a thickness of 12 mm. That means that the bevel can be made because even if you set 0 mm on the scale and create a **so-called sharp bevel on the plate, the total hypotenuse of the bevel (dimension P, Fig. 5.3.1.0) will not exceed the permissible 18 mm.**

Adjusting work piece holder cylinders

To ensure correct functioning of the machine, the work piece holder cylinders must slightly push on the work piece. Carry out their adjustment as follows:

- Turn the hand wheel in the upper part of the work piece holder (position F, Fig. 5.3.2) to adjust the holder cylinder height. Adjust the setting of the machine, so cylinders can press on the work piece lightly, check if their position is correct – adjust the bevel height (dimension A, Fig. 5.3.1.0) on the relevant scale A (position E, Fig. 5.3.2.) Indicator is the top of the cylinder bar.
- To ensure correct operation of the machine, it is important to check whether the settings are correct. None of the illustrated situations (Fig.5.3.3.) can occur: the position of the work piece machined in relation to the lower and holder cylinders must be as illustrated in situations 1 and 4 in (Fig. 5.3.3.)

Fig. 5.3.2

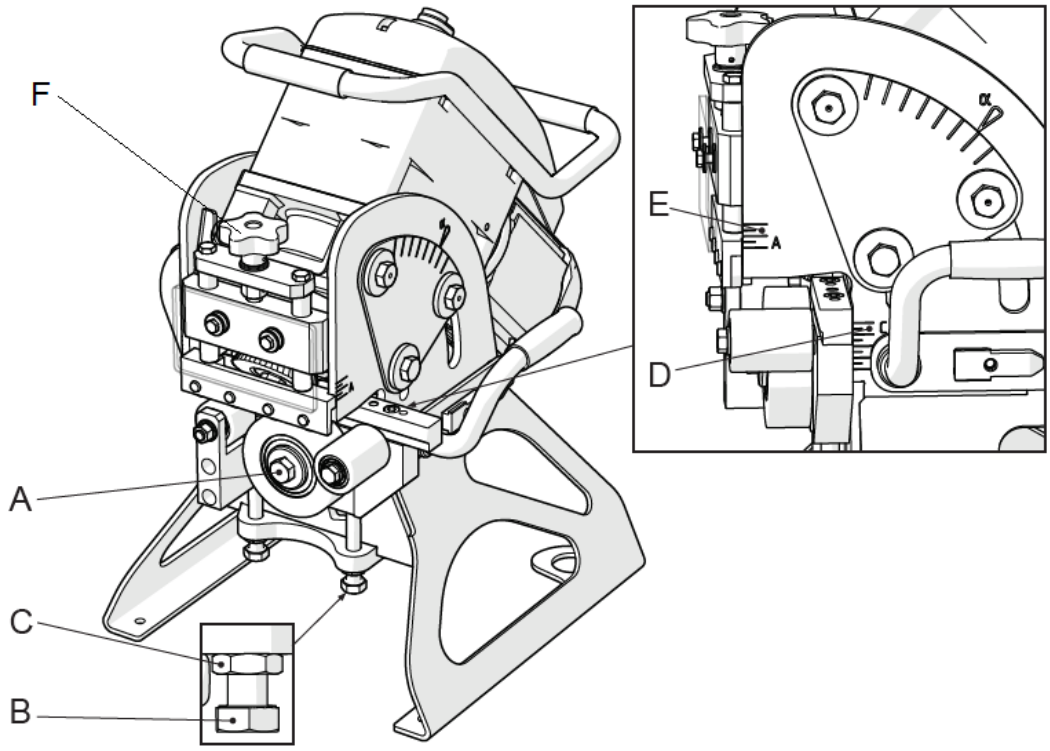
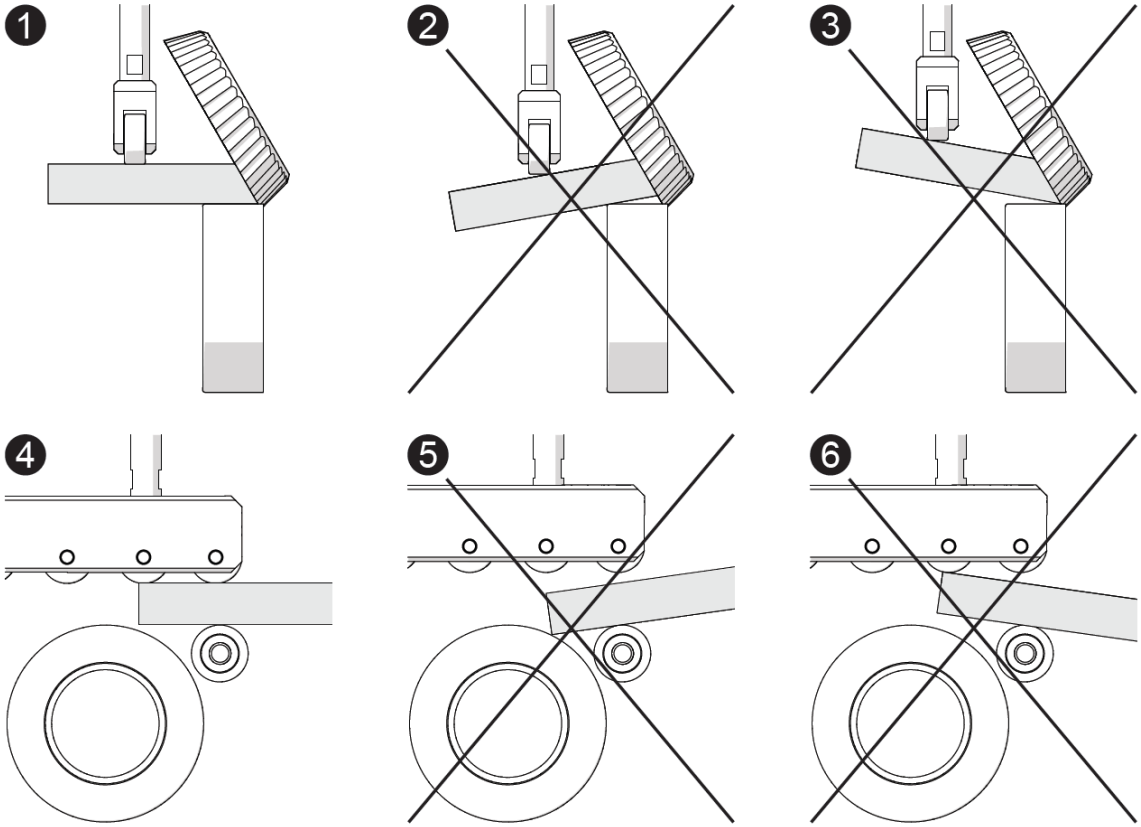


Fig. 5.3.3



5.4 Bevelling

Important:
Activities described in this paragraph must only be done after the adjustment according to the previous paragraphs.

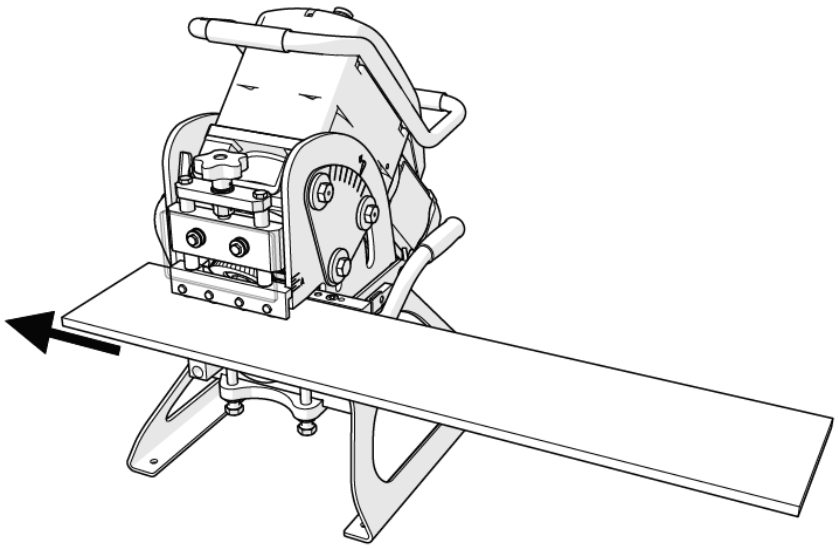
If profiles or rolled materials have small dimensions, the machine is used as a stationary as mentioned above in the chapter 4.2. In this case, the work pieces move and the machine stands during processing (Fig. 5.4.2).

After adjusting and starting the machine, push the work piece to all stops, from right to left, so that it can be caught by the cutting tool**.**

Important:
Protect the work piece coming out of the machine from falling by grasping it with both hands and pushing it to the rear part of the machine to prevent it spinning forwards.

Attention the tool rotation direction.
The correct direction of rotation of the tool is only in the clockwise direction.

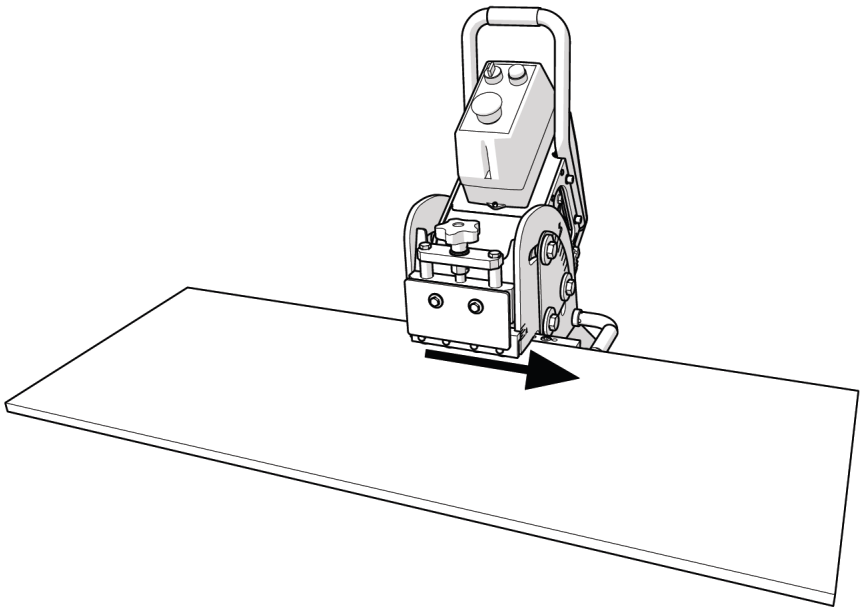
Fig.5.4.2



If you intend to bevel large and heavy work pieces, you must locate them at a minimum height of 400 mm above the ground. Then lift the machine and place it on to the right end of the work piece, if you stay behind the machine (Fig. 5.4.3).

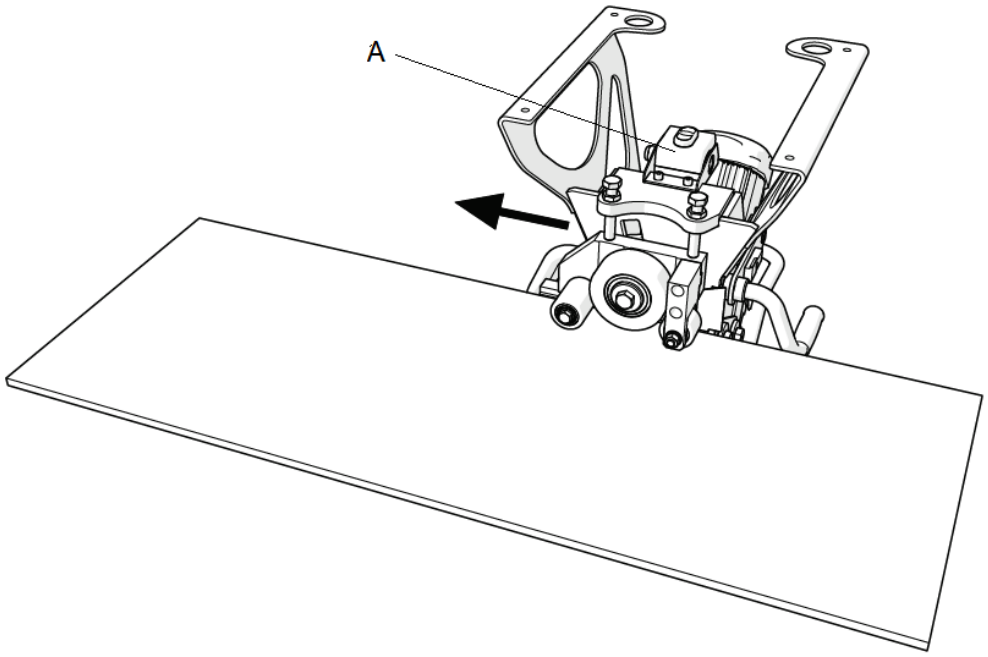
In the case of a double-sided bevel without need to manipulate with the material, it is necessary to flip the machine upside down and put it on the steel plate from the opposite side of the workpiece.

Fig. 5.4.3



Attention:
When using the machine in the inverted position, use preferably secondary switch (position A, Fig. 5.4.4)

Fig.5.4.4



Important:
In both of the above – mentioned modes of using, the machine moves on the work piece without any support required. However, you must hold the machine at the end of the bevel to prevent it from falling to the ground.

Attention:
When executing the above-described operations, wear work shoes and protective goggles.

MAINTENANCE AND ADJUSTMENT

6.1 Recommendations

Important:
Maintenance personnel must be qualified technicians.

Never work on moving parts of the machine, not even with tools or other objects.

It is strictly forbidden to remove safety devices, modify them, or handle the safety equipment of the machine. The manufacturer will reject any responsibility for machine safety in case of such activities.

Always use only original spare parts (see chapter 8 “Spare parts”).

Attention:
Always wear work gloves when maintaining the machine. Maintenance could be done only on the machine which is switched off and disconnected.

Before every work shift, and as necessary during work, clean the tool, cylinders and support ruler with compressed air.

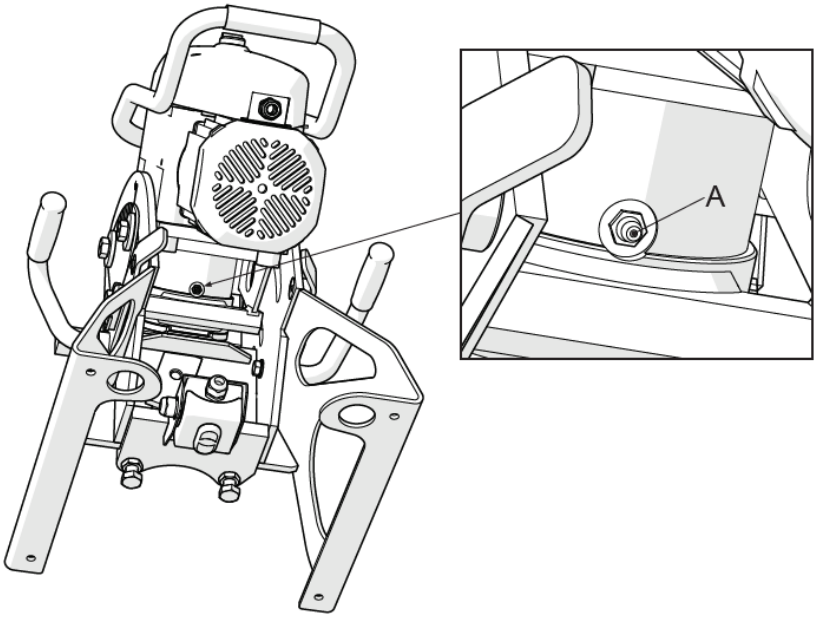
Attention:
When using compressed air for cleaning, wear protective goggles and never use pressure over 2 bar.

Use the delivered 24-mm spanner with the machine for setting screws when adjusting the machine.

6.2 Lubrication

For the assurance of the right operation of the machine, it is necessary to periodically grease the spindle head assembly. For lubricant use grease FUCHS Renolit EP2. Lubrication should be done at least one a year or every 700 operating hours of the machine. Recommended quantity od lubricant is 10g. Grease point is located on lower of the spindle head assembly. (position A, Fig. 6.2.1)

Fig. 6.2.1



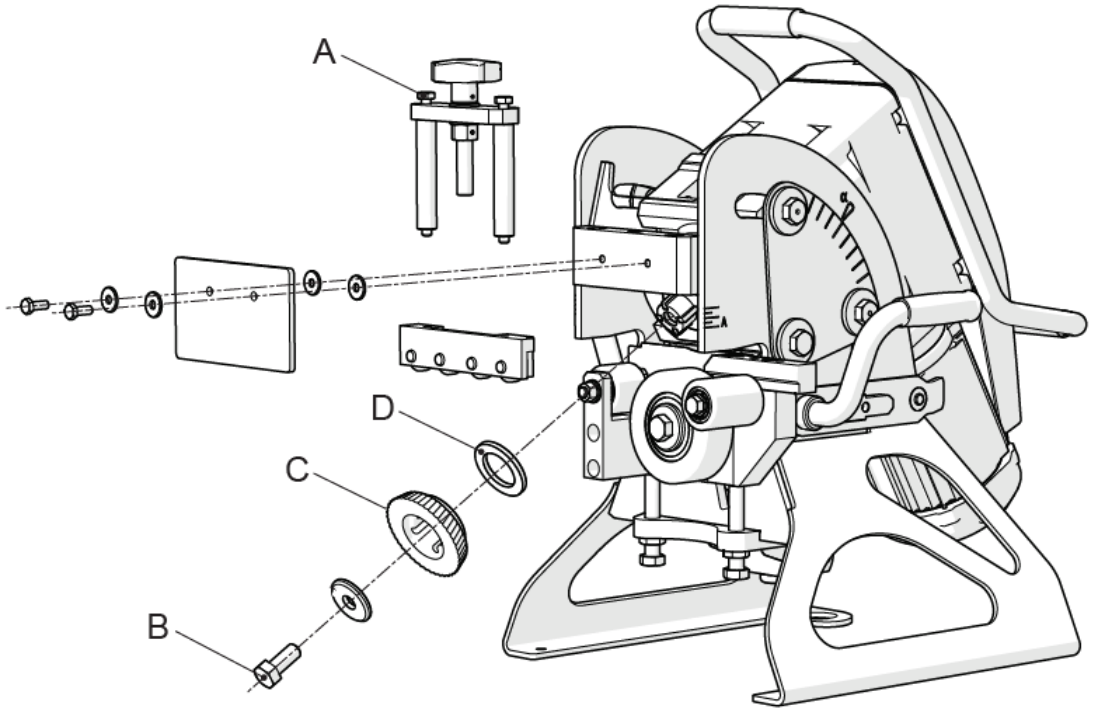
6.3 Exchange of tools

⚠ Attention:
Wear protective gloves when exchanging tools and safety goggles.

When exchanging worn tools, proceed as follows:

- Dismount the protective acrylic glass.
- Dismount the upper thrust bar (two screws, position A, Fig. 6.3.1).
- Loosen the main central roller and let the lower rest down to its lowest position.
- Loosen the screw securing the tool (position B, Fig. 6.3.1) and pull of the tool from the shaft. If the tool cannot be dismounted by hand, use a two-handed extractor.
- Mount a new cutting tool (position C, Fig. 6.3.1) and retighten the securing screw (position B, Fig. 6.3.1).
- Remount the upper thrust bar (two screws, position A, Fig. 6.3.1) and the protective acrylic glass.

Fig. 6.3.1



TIP:

You can grind the tool for maximum utilization. Do so on a magnetic flat-grinding machine, from the tool face until the galled, blunt edges are sharp again.

A blunt tool can be recognized visually. Its edges are galled, rounded. Now it is time to grind it.

If you continue working with a blunt tool, the blunt teeth may crack deep into the tool.
Then, a tool damaged in this way must be ground until the cracked teeth disappear. Thus, you of course lose many precious meters of potential bevel.
The grinding allowance is approx. 5 mm.

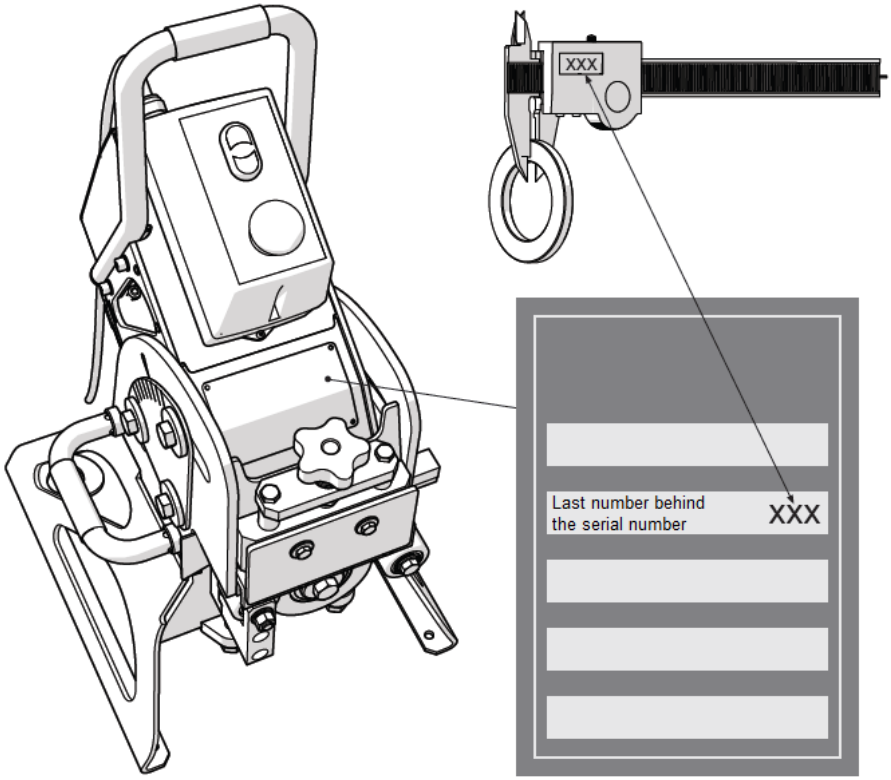
For correct functioning of the machine, it is advisable to pad out the ground tool by the height ground off. For that, use the original 0.5/1/2 mm pads, or a combination.
Set of compensating washers (0,5 / 1 / 2mm) order.nr. 2140.

The thickness of a new tool is 29 mm.

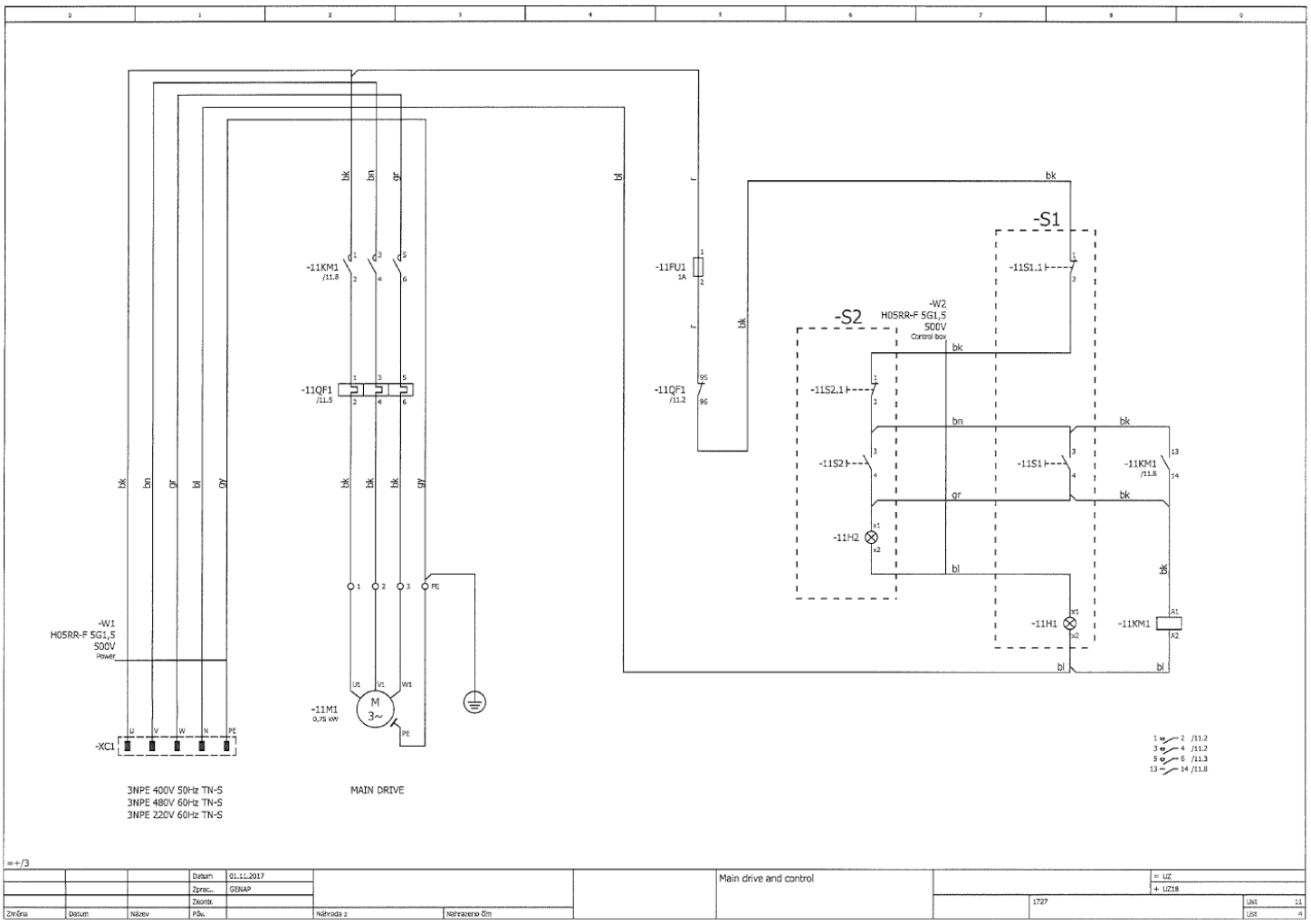
You must bear in mind that the tool is conical. Therefore, even if the tool is padded correctly, the machine will not be able to achieve the maximum possible bevel (15 mm hypotenuse) with a mill at the end of its lifetime. This fact is also apparent on the graduated scale for setting the lower cylinders; this scale may not correspond to the bevel created.

Important:
The tool padding (added to the current mill thickness) must not exceed 29 mm.
In such case, the machine will not work correctly and may be damaged.

- Under the cutter you can see also a base washer (see Exploded position 4011). This washer is unique and migth be different for each machine. If for some reason you lose or damage this washer, for new one, inform us about its precise thickness. This information can be found on the nameplate behind the serial number. In the case of using incorrect washer, the machine will not work correctly.



TECHNICAL DIAGRAMS
7.1. Wiring diagram



Attention:

When operating the machine in areas with particularly dangerous influences, AD or more, you must take measures to increase the machine protection against electric shock!

The electrical power supply must immediately be cut off in case of defects.
Work on the electrical equipment of the machine can only be done by a qualified electrician, or persons under his supervision, so that the work complies with electrical engineering regulations.

Attention:
None of the parts maintained or repaired must be disconnected from the power supply. You must check that the disconnected parts are not under voltage by means of a bipolar measuring device, then connect them to the ground, and isolate neighbouring parts under voltage!
Cut off voltage by turning the main switch to “0”, and disconnect the machine from the power supply.

Regularly check, or test, the switchboard electrical equipment. Defects, loose contacts or burned cables must be replaced immediately

SPARE PARTS

8.1 How to order spare parts

Orders for spare parts should contain the following information:

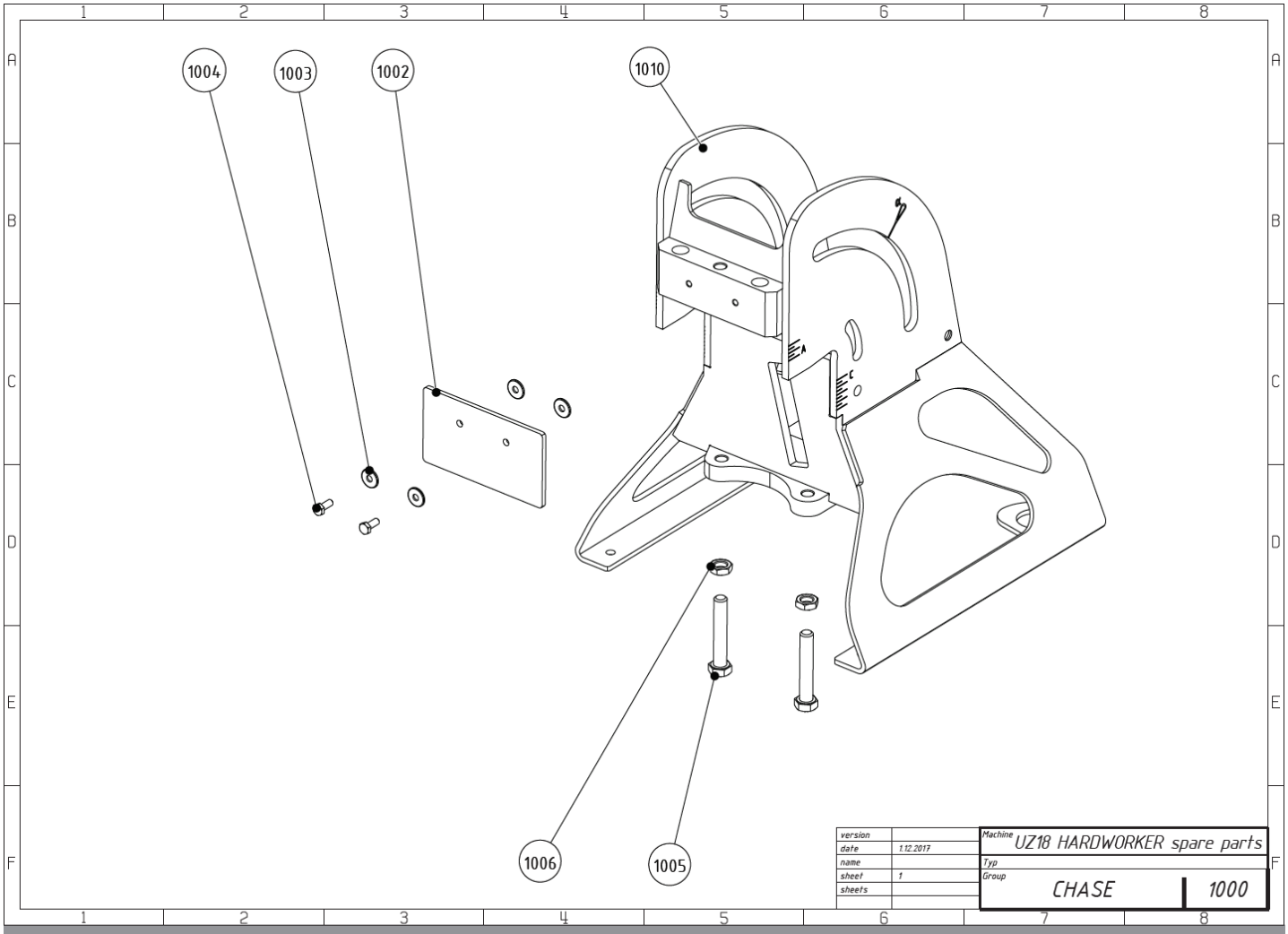
- machine type;
- serial number;
- required part description and its number;
- quantity.

8.2. Most wearing parts:

1) **cutting tool (can be ground) - pos. 2137, drawing 4000**
2) lower cylinders (bearings) - pos. 2020, drawing 2000
3) work piece holder cylinders - pos. 3002, drawing 3000
4) support bar - pos. 2002, drawing 2000
5) spindle feathers - 4 pcs. - pos. 4012, drawing 4000
6) cover sheet for drain off the chips - pos. 2004, drawing 2000
7) washer under the lower cylinder – pos. 2026, drawing 2000
8) bearings – pos. 2023, drawing 2000
9) Set of compensating washers (0,5 / 1 / 2mm) position 2140, drawing 2000

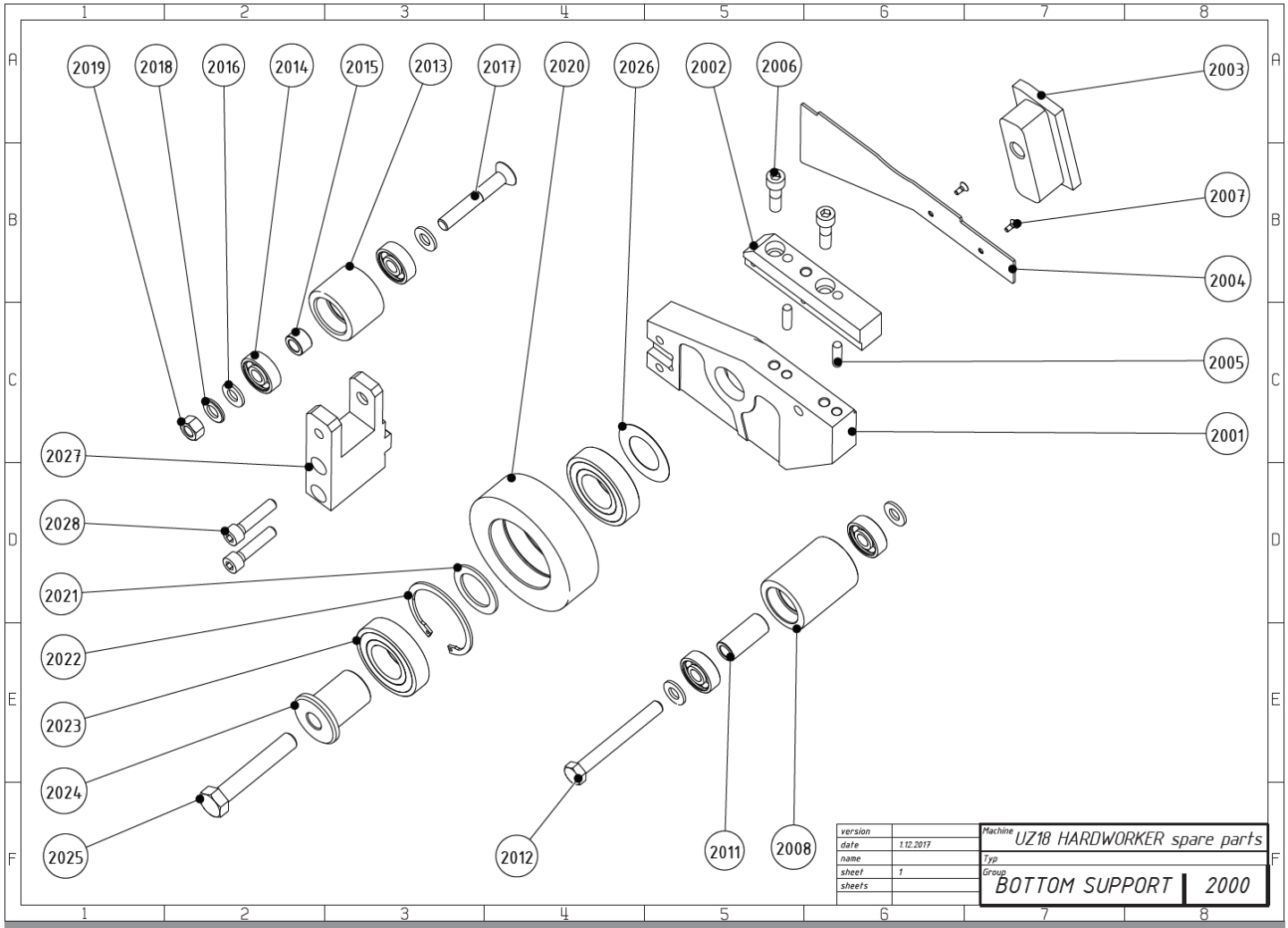
TIP:

The support bar fig 2002 guides the material towards the tool. All the bevelled material against this bar. Take into account that the bar will wear out eventually.
If this happens, you must replace the bar by replace. Otherwise, the machine may be damaged or the tool destroyed.



UZ18 SPARE PARTS drawing no. 1000 Chase

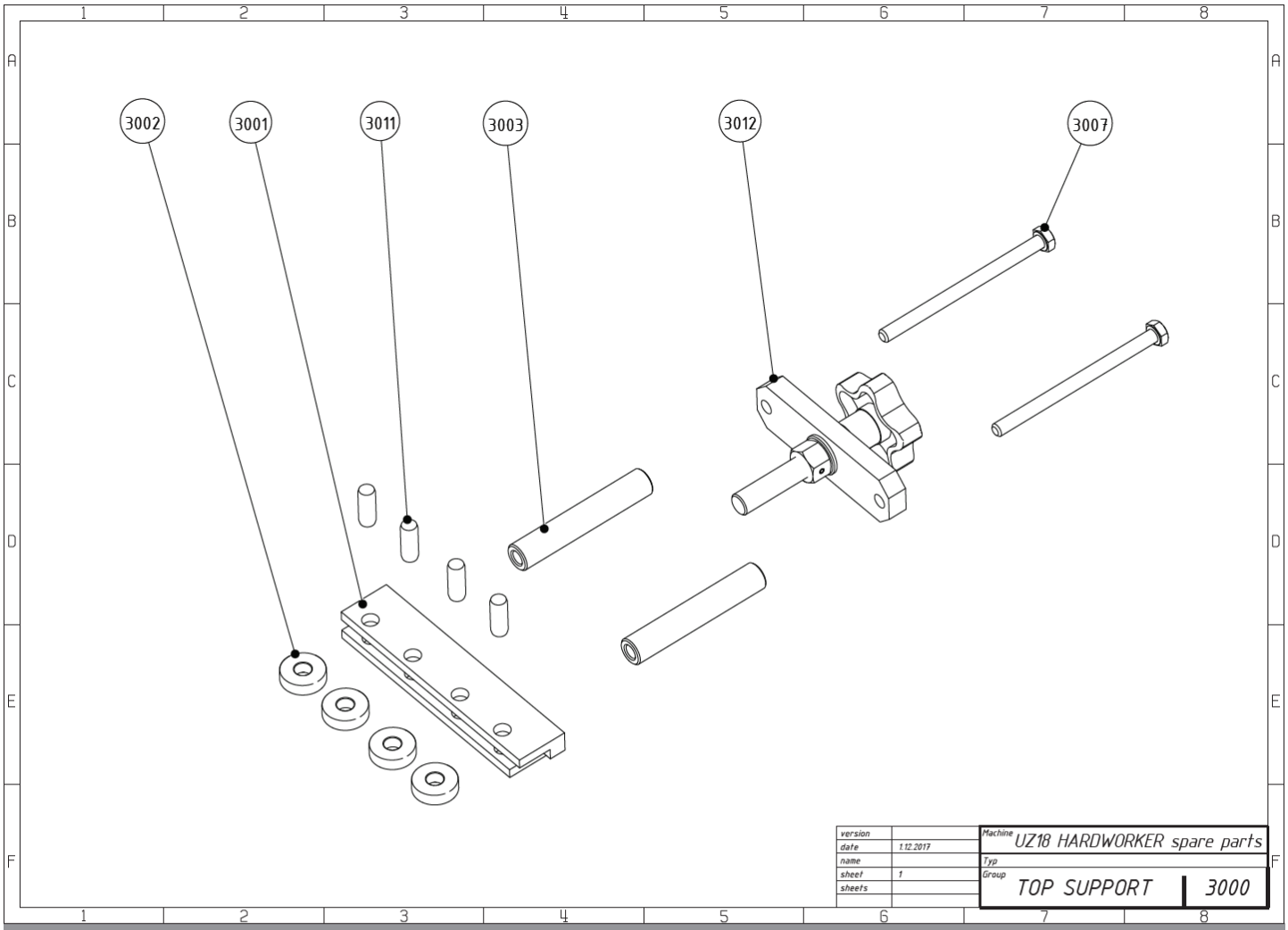
Number	Fig	Part name	Note	Pcs
1931.1002	*1002*	cover		*1*
1931.1003	*1003*	washer		*4*
1931.1004	*1004*	screw		*2*
1931.1005	*1005*	screw		*2*
1931.1006	*1006*	nut		*2*
1980.1010	*1010*	chase		*1*



UZ18 SPARE PARTS

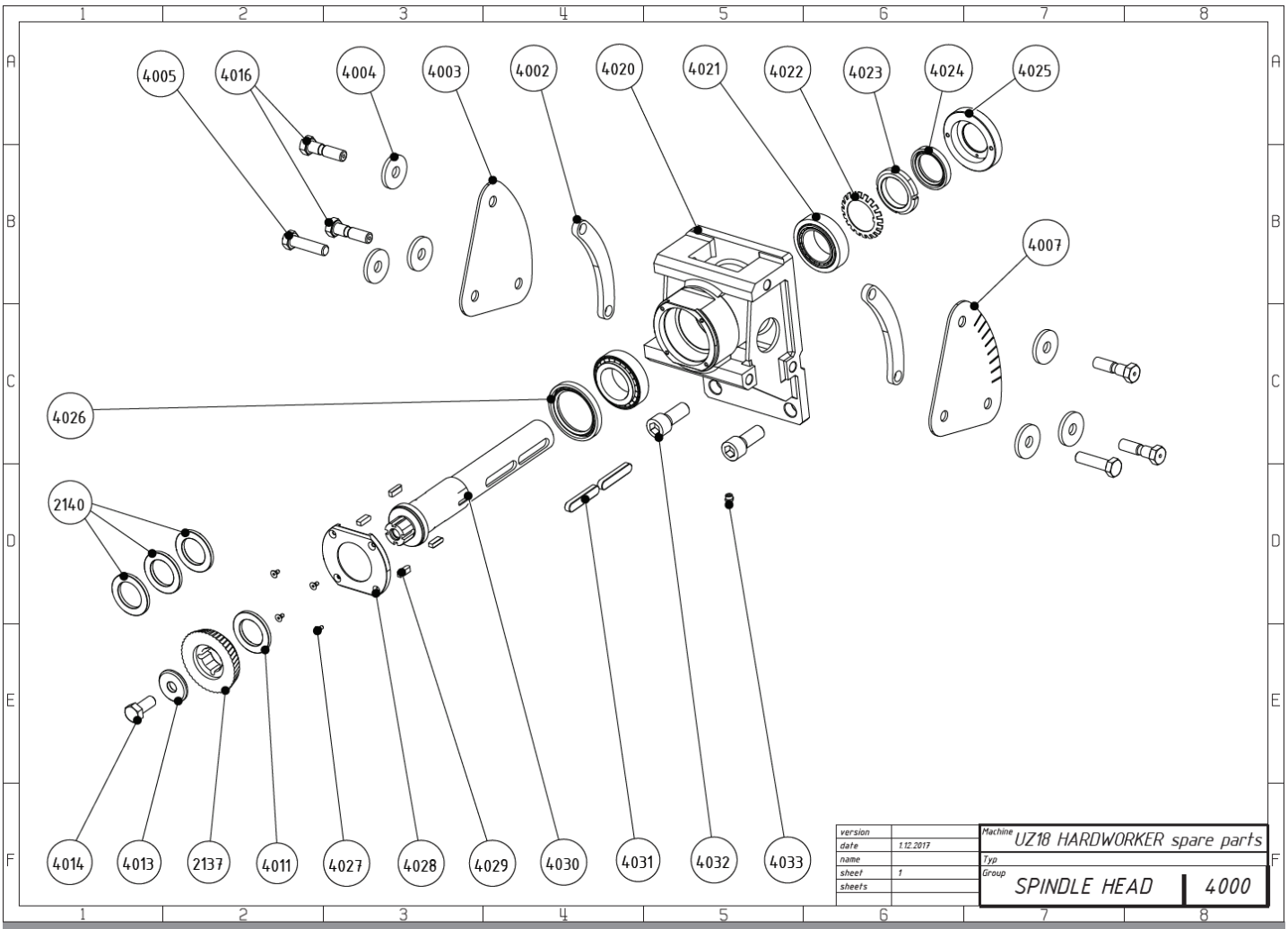
drawing no. 2000 Bottom Support

Number	Fig	Part name	Note	Pcs
1931.2001	*2001*	body		*1*
1931.2002	*2002*	support		*1*
1931.2003	*2003*	block		*1*
1931.2004	*2004*	sheet metal		*1*
1931.2005	*2005*	pin		*2*
1931.2006	*2006*	screw		*2*
1931.2007	*2007*	screw		*2*
1931.2008	*2008*	pulley 1		*1*
1931.2011	*2011*	tube 1		*1*
1931.2012	*2012*	screw		*1*
1931.2013	*2013*	pulley 3		*1*
1931.2014	*2014*	ball-bearing		*4*
1931.2015	*2015*	tube 2		*1*
1931.2016	*2016*	washer		*4*
1931.2017	*2017*	screw		*1*
1931.2018	*2018*	washer		*1*
1931.2019	*2019*	nut		*1*
1931.2020	*2020*	pulley 2		*1*
1931.2021	*2021*	ring		*1*
1931.2022	*2022*	lock Ring		*1*
1931.2023	*2023*	ball-bearing		*2*
1931.2024	*2024*	neck		*1*
1931.2025	*2025*	screw		*1*
1931.2026	*2026*	washer		*1*
1931.2027	*2027*	brace		*1*
1931.2028	*2028*	screw		*2*



UZ18 SPARE PARTS drawing no. 3000 Top Support

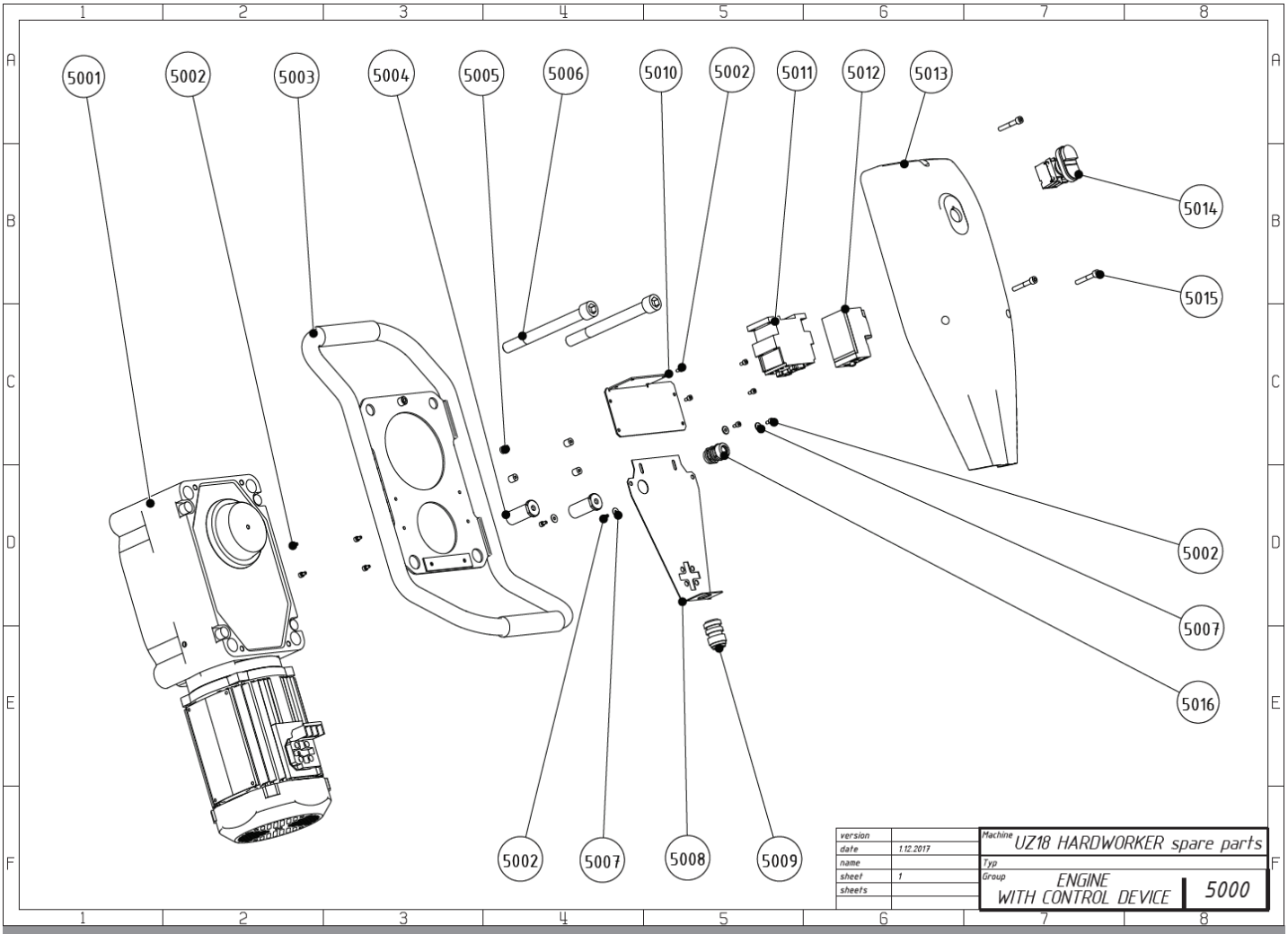
Number	Fig	Part name	Note	Pcs
1931.3001	*3001*	ribbon		*1*
1931.3002	*3002*	pulley		*4*
1931.3003	*3003*	tube		*2*
1931.3007	*3007*	screw		*2*
1931.3012	*3012*	endless screw		*1*
1931.3011	*3011*	pin		*4*



UZ18 SPARE PARTS

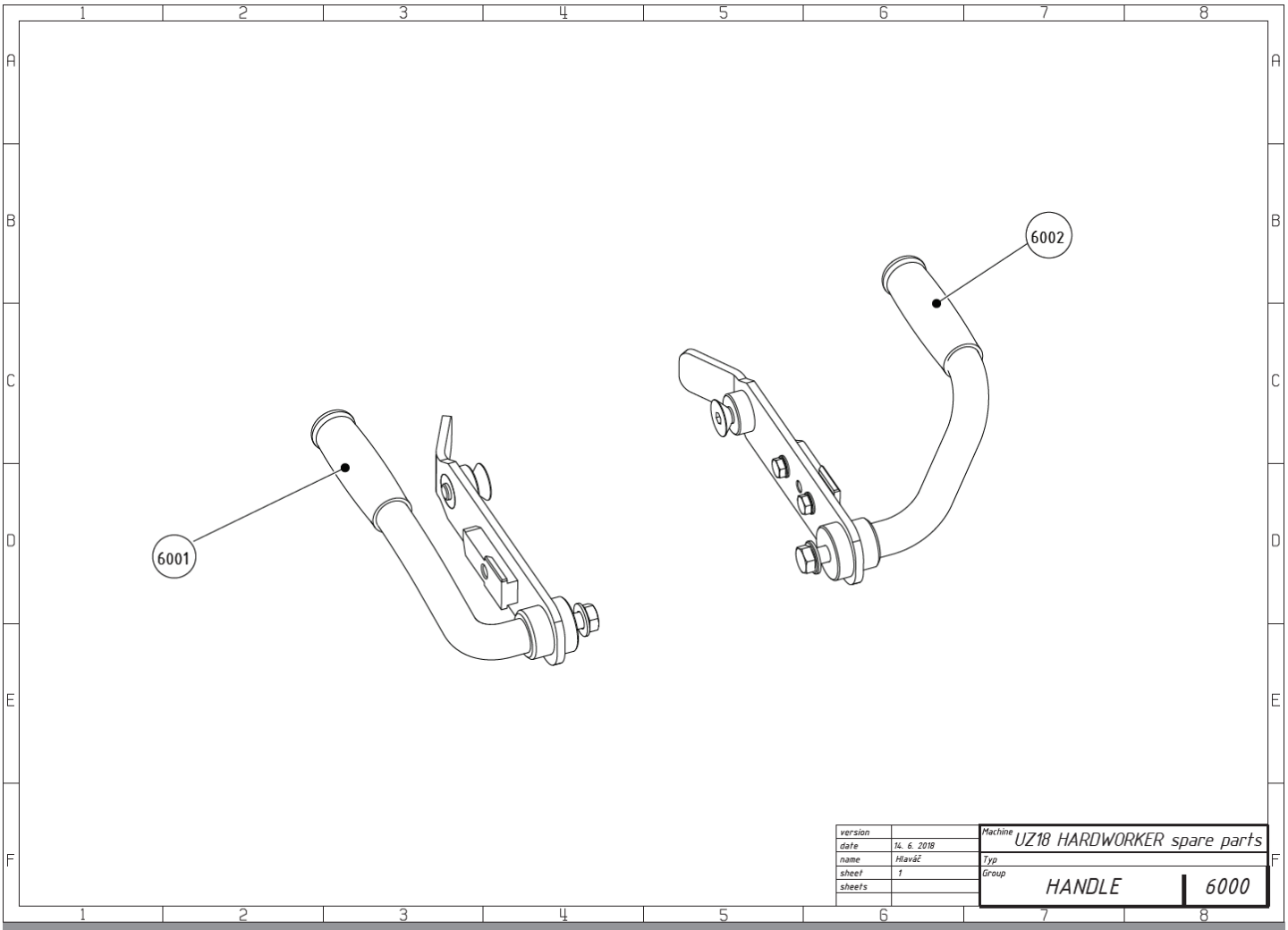
drawing no. **4000 Spindle Head**

Number	Fig	Part name	Note	Pcs
1931.4002	***4002***	insert		*2*
1931.4003	***4003***	sheet metal R		*1*
1931.4004	***4004***	washer		*6*
1931.4005	***4005***	screw		*2*
1931.4007	***4007***	sheet metal L		*1*
1931.4011	***4011***	tool washer	*ATTENTION, ALWAYS UNIQUE! see chapter 6.4*	*1*
1931.4013	***4013***	washer		*1*
1931.4014	***4014***	screw		*1*
1931.4016	***4016***	inox screw		*4*
1980.4020	***4020***	spindle body		*1*
1980.4021	***4021***	tapered roller bearing		*2*
1980.4022	***4022***	washer		*1*
1980.4023	***4023***	nut		*1*
1980.4024	***4024***	shaft seal		*1*
1980.4025	***4025***	cover		*1*
1980.4026	***4026***	shaft seal		*1*
1980.4027	***4027***	screw		*4*
1980.4028	***4028***	cover		*1*
1980.4029	***4029***	key		*4*
1980.4030	***4030***	shaft		*1*
1980.4031	***4031***	key		*2*
1980.4032	***4032***	screw		*2*
1980.4033	***4033***	plug		*1*
2137	***2137***	universal ECO tool	*see other types in the N.KO price list*	*1*
2140	***2140***	washer kit	*for adjustment of the correct clearance between cutter and main roll*	*1*



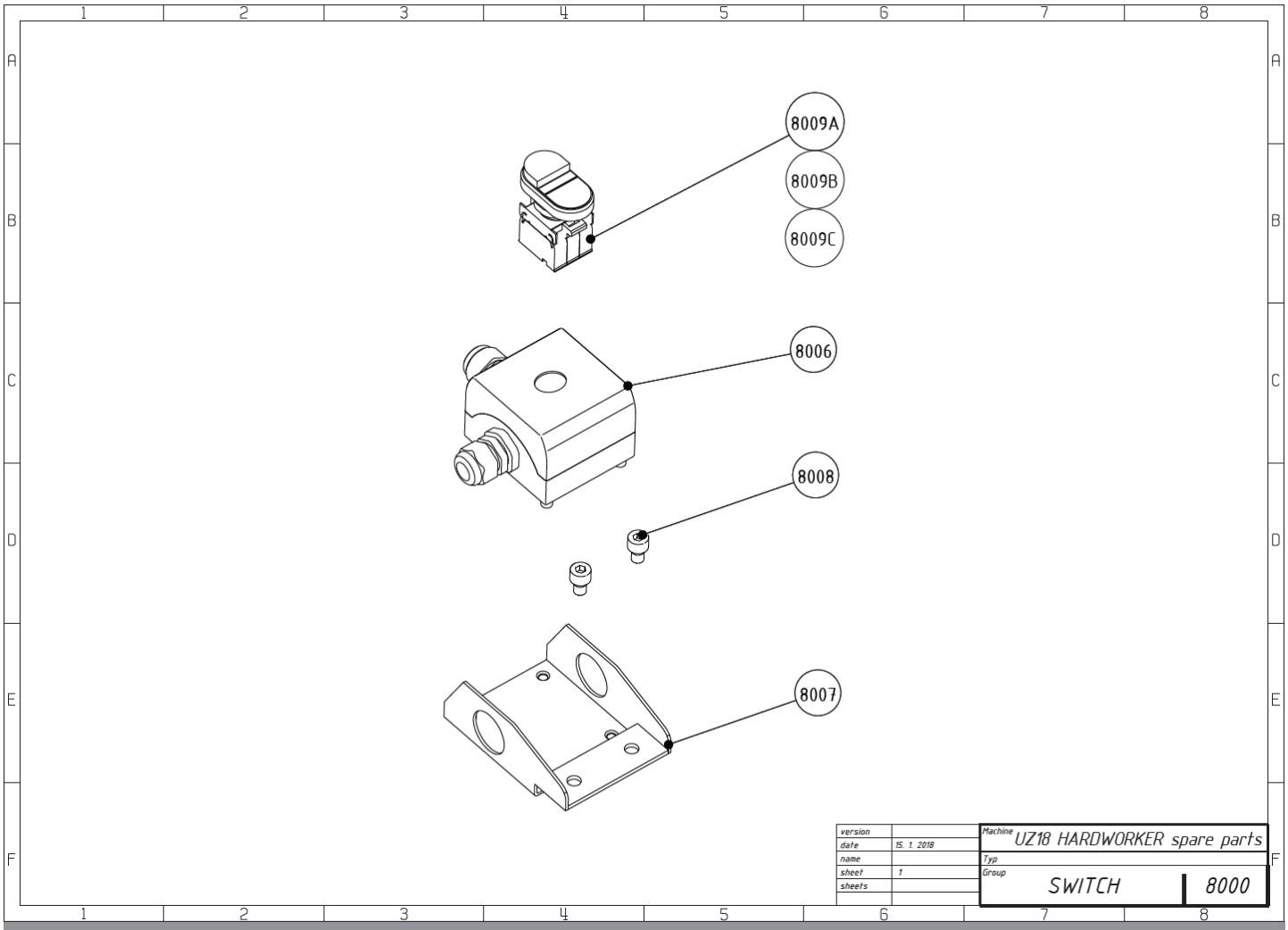
UZ18 SPARE PARTS drawing no. 5000 Engine with Control Device

Number	Fig	Part name	Note	Pcs
1980.5001A	*5001A*	engine	*400V/50Hz*	*1*
1980.5001B	*5001B*	engine	*480V/60Hz*	*1*
1980.5001C	*5001C*	engine	*3x220V/60Hz*	*1*
1980.5002	*5002*	screw		*12*
1980.5003	*5003*	handrail		*1*
1980.5004	*5004*	special screw		*2*
1980.5005	*5005*	rubber silent block		*4*
1980.5006	*5006*	screw		*2*
1980.5007	*5007*	washer		*4*
1980.5008	*5008*	sheet metal holder		*1*
1980.5009	*5009*	cable grommet		*1*
1980.5010	*5010*	sheet metal holder		*1*
1980.5001A	*5011A*	contactor	*400V/50Hz*	*1*
1980.5011B	*5011B*	contactor	*480V/60Hz*	*1*
1980.5011C	*5011C*	contactor	*3x220V/60Hz*	*1*
1980.5012A	*5012A*	thermal protection	*400V/50Hz*	*1*
1980.5013B	*5012B*	thermal protection	*480V/60Hz*	*1*
1980.5014C	*5012C*	thermal protection	*3x220V/60Hz*	*1*
1980.5013	*5013*	case		*1*
1980.5014A	*5014A*	switch	*400V/50Hz*	*1*
1980.5014B	*5014B*	switch	*480V/60Hz*	*1*
1980.5014C	*5014C*	switch	*3x220V/60Hz*	*1*
1980.5015	*5015*	screw		*3*
1980.5016	*5016*	cable grommet		*1*



UZ18 SPARE PARTS drawing no. 6000 Handle

Number	Fig	Part name	Note	Pcs
1980.6001	***6001***	assembled left handle with adapter 3D		*1*
1980.6002	***6002***	assembled right handle with adapter 3D		*1*



UZ18 SPARE PARTS drawing no. 8000 Switch

Number	Fig	Part name	Note	Pcs
1931.8006	*8006*	switch box		*1*
1931.8007	*8007*	sheet metal holder		*1*
1931.8008	*8008*	screw		*2*
1931.8009A	*8009A*	switch	*400V/50Hz*	*1*
1931.8009B	*8009B*	switch	*480V/60Hz*	*1*
1931.8009C	*8009C*	switch	*3x220V/60Hz*	*1*

Link to video operation manual and etc:

http://www.youtube.com/user/firmanko/videos?shelf_index=0&view=0&sort=dd

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