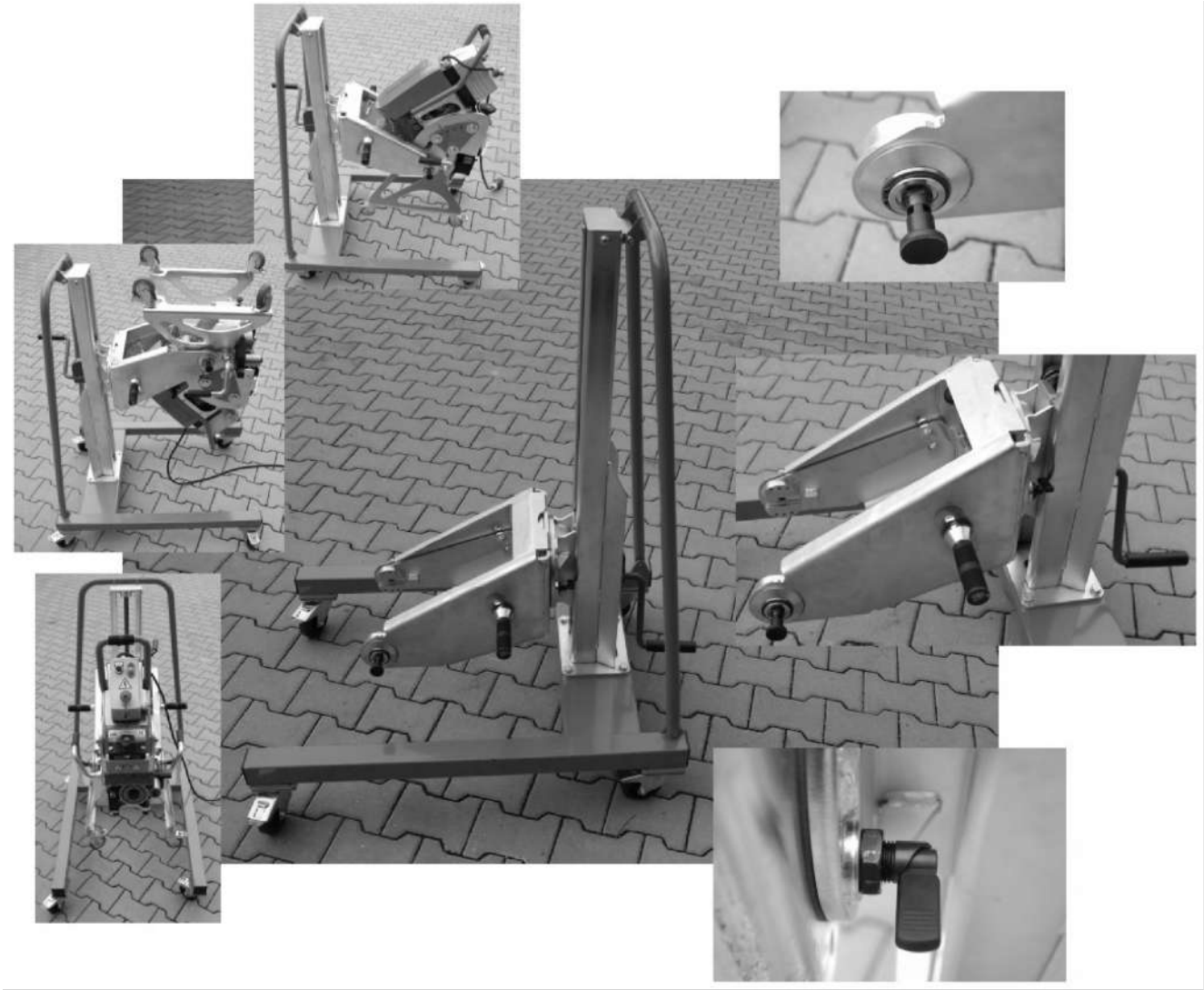
# User Manual

# 3D MANIPULATOR

Accessory for UZ15 Rapid, UZ18 Hardworker and UZ12 Ultralight bevelling machines.



## Quality certificate

Congratulations on purchasing this high-quality product manufactured by N.KO spol s r.o. The product has undergone an internal inspection at the end of the production process and is of a high technical standard. N.KO guarantees the requisite quality for all the uses listed below.
In the event of any defect contact your supplier and present the receipt for your 3D Manipulator.

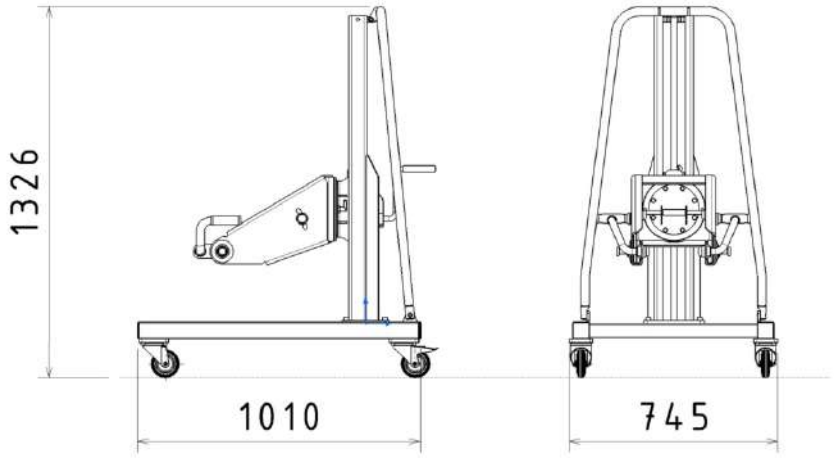
## General description

The 3D Manipulator is an industrial manipulation system developed as an accessory for the UZ15 Rapid, UZ18 Hardworker and UZ12 Ultralight bevelling systems (only with special adapters – see the UZ12 Ultralight catalogue sheet) .
It is prohibited to use this device for any purpose other than that specified in this manual and it is also prohibited to use the 3D Manipulator with any equipment other than the UZ15 Rapid, UZ18 Hardworker and UZ12 Ultralight.

The 3D Manipulator is designed for manipulating, positioning and moving the UZ15 Rapid, UZ18 Hardworker and UZ12 Ultralight bevelling systems.
It is not complicated to work with the system. It may be operated by one person.
The operator must abide by all the relevant safety standards prescribed for work with this system. The instructions in this user manual must also be followed.

## Technical data

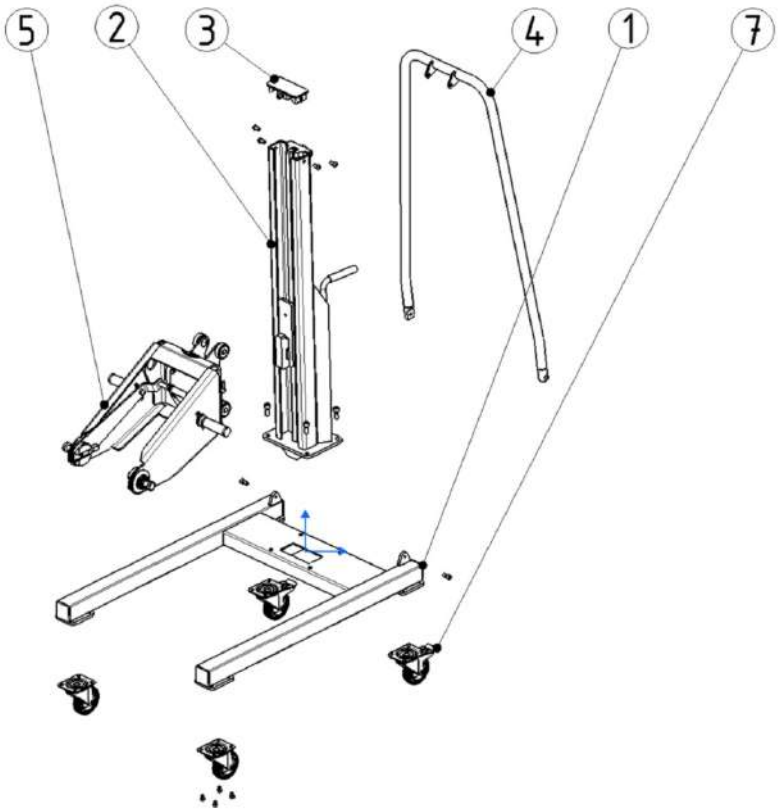
Weight of 3D Manipulator: 85 kg
Delivery dimensions (wooden crate): 1240 x 600 x 840 mm
Dimensions of assembled 3D Manipulator:



## Transport and assembly

To facilitate storage and transport the 3D Manipulator is supplied in a wooden crate, partially assembled.

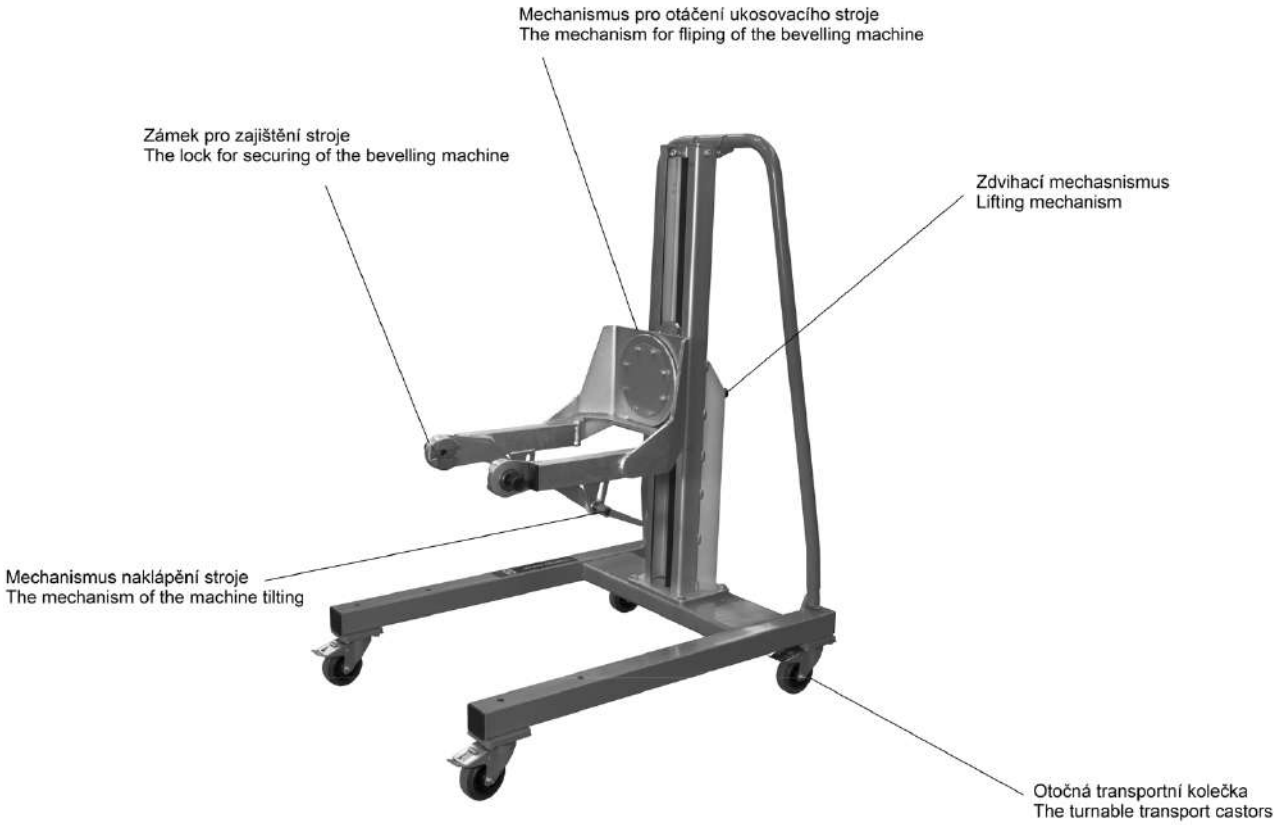
| **Chassis** | **pos. 1** |
|---|---|
| Stand | pos. 2 |
| Stand cover | pos. 3 |
| Handle | pos. 4 |
| Trolley with turntable **/** adapter | pos. 5 |
| Castors (4) | pos. 7 |




## Procedure for assembling 3D Manipulator:

1. Attach the four rotating braked transport castors (M8x15 screws) to the chassis (pos. 1). Before proceeding any further, the BRAKE MUST BE APPLIED to all four transport castors!
2. Fit the stand (pos. 2) onto the assembled chassis. Use M12x30 screws.
3. Now install the handle (pos. 4) onto the chassis and stand. Use screws (M10x20)
4. Now slide the trolley/adapter with turntable (pos. 5) into the stand from above. Secure the trolley/adapter to prevent the stand cover (pos. 3) from sliding out; screw the stand cover to the top of the stand (M10x20 screw).
   The trolley/adapter must be installed in the right position in the stand (see Fig. 1)
   Before installing the trolley, secure the machine rotating mechanism to prevent it from turning (locking pin). Otherwise there is the risk of injury!

Fig. 1




## Detailed description of 3D Manipulator and setup options

The 3D Manipulator is designed for manipulating, positioning and moving the UZ15 Rapid, UZ18 Hardworker and UZ12 Ultralight bevelling systems (only with special adapters - see UZ12 Ultralight catalogue sheet).

The Manipulator is designed for three types of use:

1. The 3D Manipulator is designed for situations when you have to machine large, difficult-to-handle workpieces (sheet metal, profiles…), which are placed on supports.
2. The 3D Manipulator can be used as a stationary holder for the bevelling machine when machining small products (sheet metal, profiles…), which are inserted manually directly into the machine.
3. The 3D Manipulator can be used as a positioner for adjustment and service work on bevelling machines.

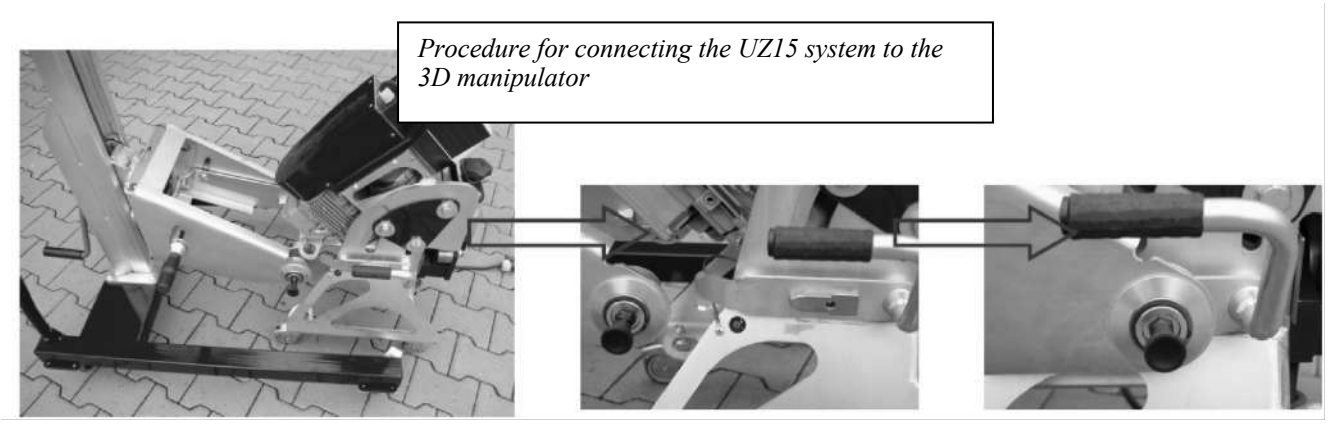
## Connecting the 3D Manipulator and bevelling machine

1. Use the lifting mechanism (see Fig. 1.) to set the height of the clamping jaws to the same height as the bevelling machine clamping adapters.

2. Release the locking pins on both sides of the clamping jaws (see Fig. 1.)

3. Release the tilting mechanism (see Fig. 1.) to enable the level of the clamping jaws to be adjusted to the level of the clamping adapters.

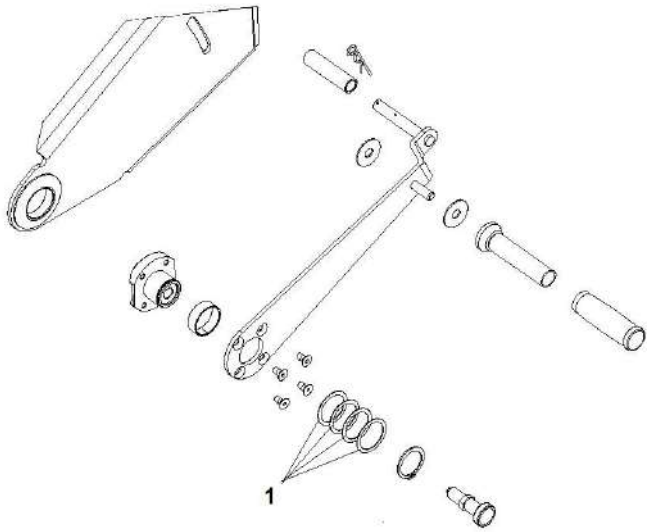
4. Apply gradual pressure to the 3D Manipulator to slide the 3D Manipulator clamping jaws onto the bevelling machine clamping adapters and, when correctly in place, secure them with pins on both sides of the 3D Manipulator clamping jaws (see Fig. 1.). If the pins do not fit in the prepared holes, the 3D MANIPULATOR must not be used.



*Procedure for connecting the UZ15 system to the 3D manipulator*

## Calibration of the connection between the bevelling machine and 3D Manipulator (applicable only for older versions manufactured prior to 2018)

Each UZ15 Rapid, UZ18 Hardworker or UZ12 Ultralight and each 3D Manipulator has certain permitted dimensional variations. In certain cases it may happen that the machine cannot be connected to the 3D Manipulator. The reason for this may be a different spacing between the clamping adapters and clamping jaws. This can be corrected using washers (pos. 1 - see illustration below text), which are fitted as needed outside or inside the clamping jaws, thus adjusting the spacing between the 3D Manipulator by approx. 4-6mm.



**Working with the 3D Manipulator**

**Procedure for machining larger parts** (the 3D Manipulator moves along the workpiece)
Move the 3D Manipulator with the clamped bevelling system to the sheet to be machined, which should be placed on supports and as level as possible. If there are any waves or deformations in the machined material, the 3D Manipulator system cannot be guaranteed to work properly.

Use the lifting mechanism (see Fig. 1.) to set the required working height.

Release the machine tilt lock (see Fig. 1.) to enable the working height of the machine to be adjusted to suit the material to be machined.

When working it is advisable to leave all the moving axes on the machine (Fig. 4) free. This prolongs the lifetime of the machine, enabling it to better adapt to any unevenness or deformations in the metal.
After the machine has been moved to the material, it is also advisable to turn the handle to adjust the lifting mechanism (see Fig. 1.) to a position approx. 50mm lower. This enables the working height of the machine to be automatically corrected if necessary.

⚠CAUTION !! When the machine is approaching the end of the material, the lifting mechanism (see Fig. 1) needs to be returned to the current working height of the machine.

⚠CAUTION!! If the workplace floor is uneven or if the bevelled material is not level or otherwise deformed, the machine cannot be guaranteed to work properly.
The machine may be overloaded, stop working or move away from the material. This may damage the machine.

**TIP!!** If the conditions for using the manipulator together with the UZ15 are unsuitable for the above reasons, after the machine has moved to the material the 3D Manipulator may be disconnected from the machine. The machine then moves along the material by itself. Before it reaches the end of the material the 3D Manipulator must be reconnected to the machine, otherwise there is the risk of the machine falling!

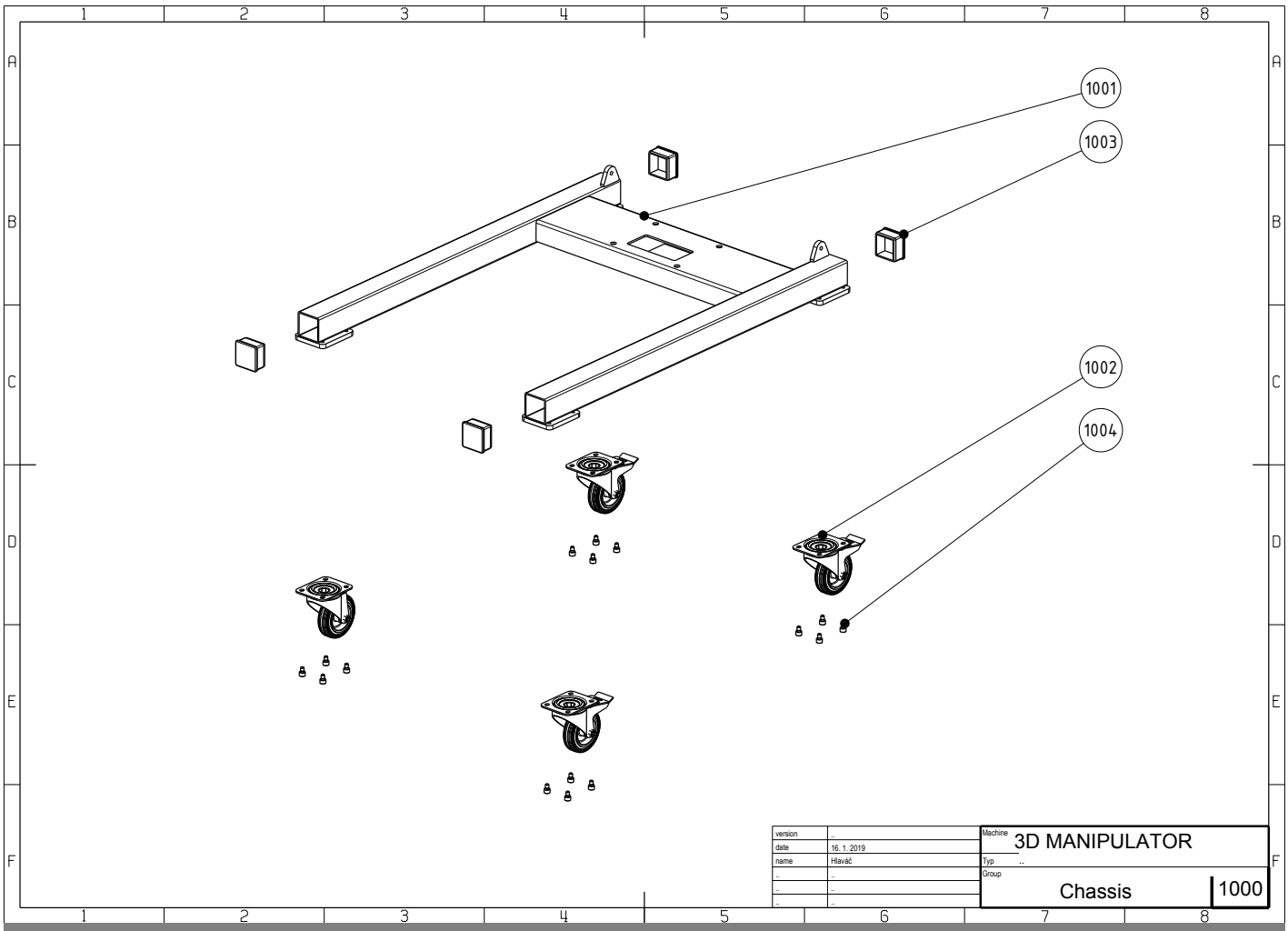
After the top edge of the material has been bevelled, (if bevelling on both sides) the machine can be rotated by 180º and, after adjusting the working height and level, a double-sided bevel may be performed. This means there is no need to move the machined material.
If you want to rotate the machine in the manipulator, the lock on the rotating mechanism needs to be released.

**Procedure for machining smaller parts.**
The 3D Manipulator can be used as a work station for a bevelling machine.
Use the lifting mechanism (see Fig. 1.) to set the bevelling machine at the required working height and lock the 3D Manipulator in all axes. The machine is now ready for use as a stationary bevelling unit.

**Safety regulations:**

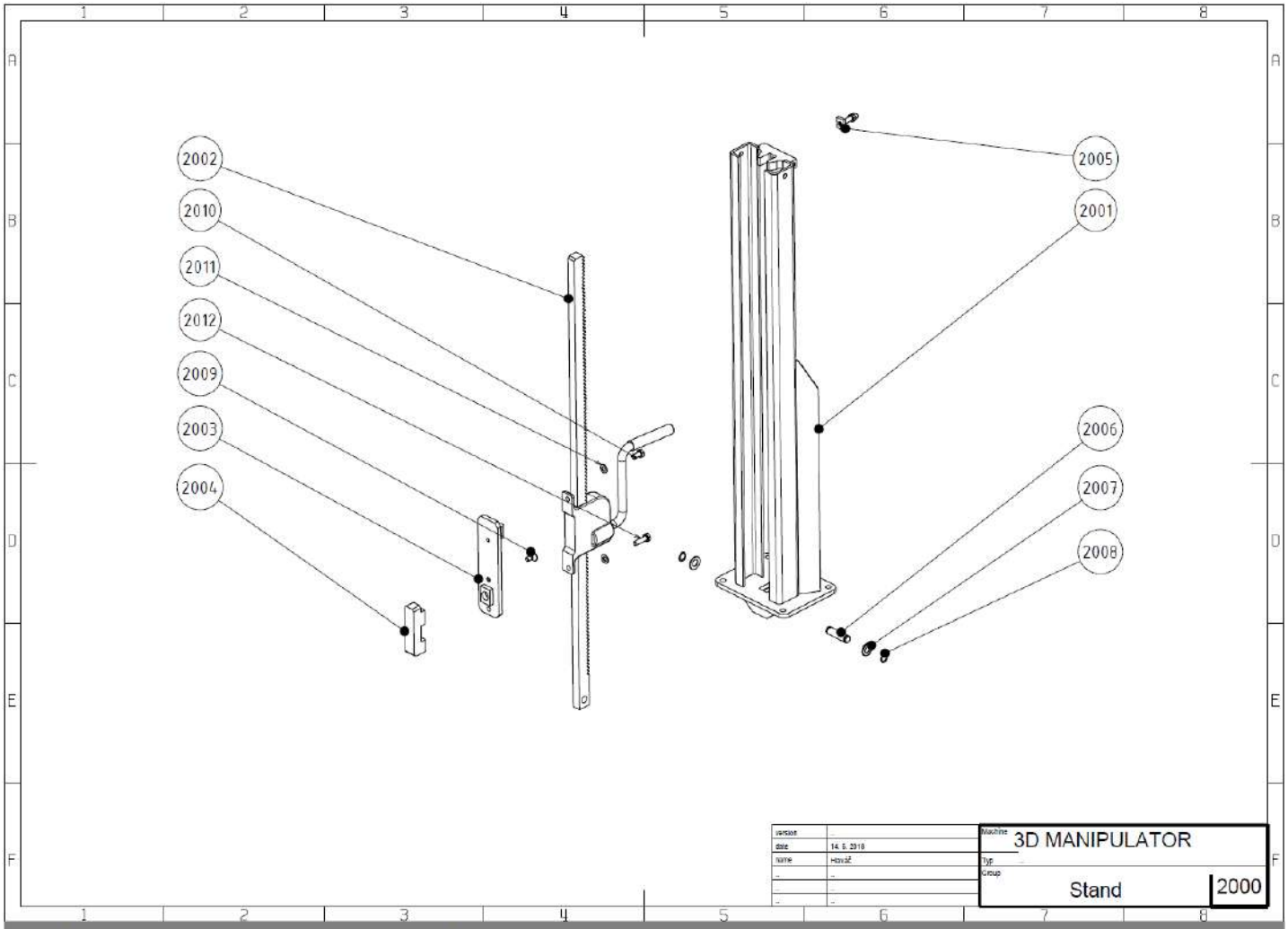
**⚠ Caution:**
**Operators must always:**

1. Ensure that all safety covers are fitted and that safety devices are function before starting to use the machine.
2. Avoid wearing clothing or jewellery that could get caught in moving parts.
3. Wear the approved safety footwear, such as boots with a non-slip tread, ear protectors and goggles.
4. Apply safety standards, ensure that they are always followed and. If in doubt, always re-check the user manual before starting to use the machine.
5. Contact the machine supplier if unable to rectify any defects and thus use the machine safely.
6. It is essential to comply with all the applicable safety regulations defining how to work with machine tools.
7. The 3D Manipulator may only be used by professionally qualified and trained staff.
8. Work only in a dry, well-ventilated environment.
9. Ensure that the power cable does not come into contact with the bevelling machine or 3D Manipulator.
10. When using the 3D Manipulator, vibrations can cause nuts and screws to come loose. This can cause the device to work incorrectly and could result in more serious damage. It is therefore essential to constantly check that all nuts and screws are tight.



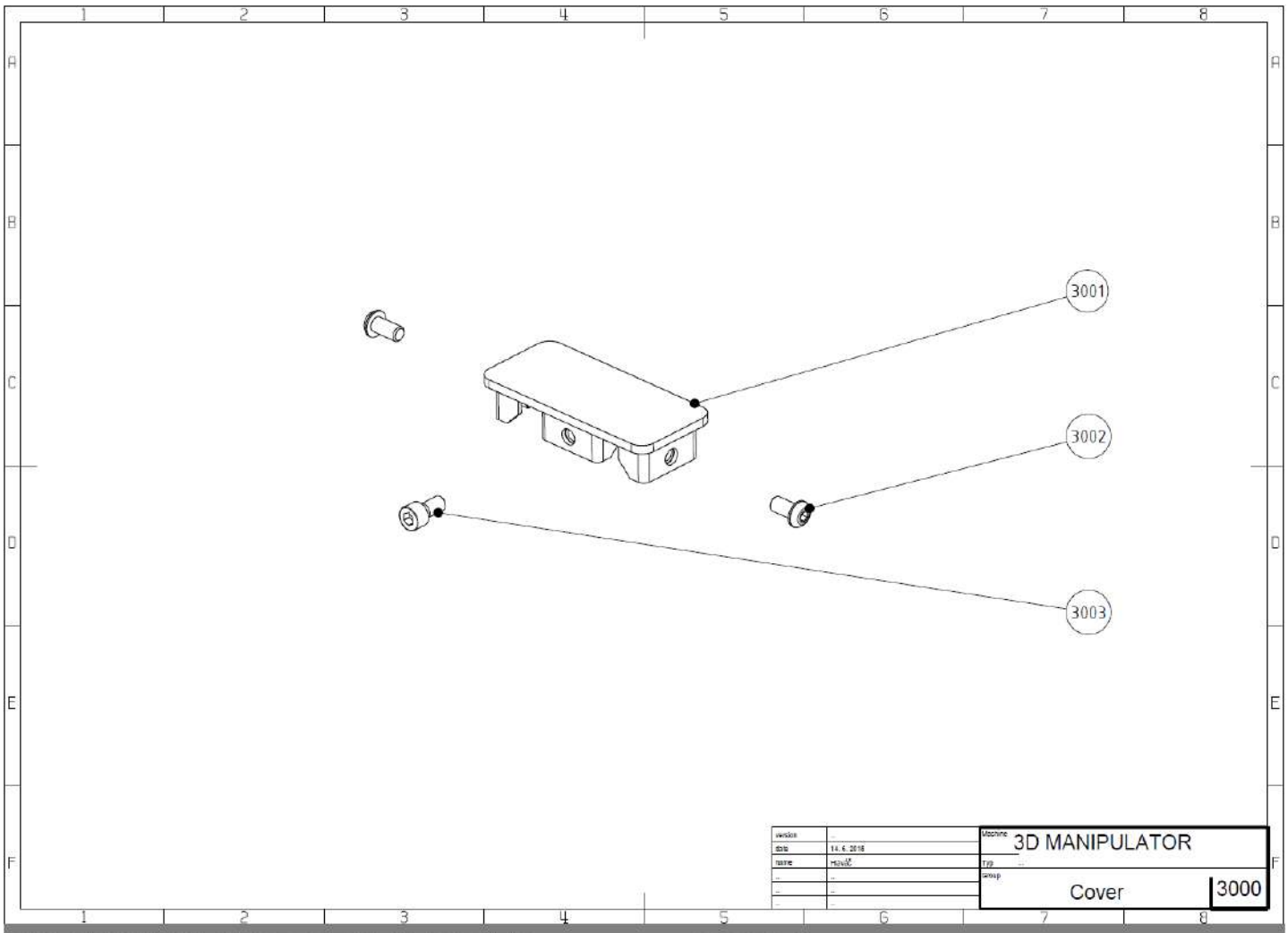

# 3D MANIPULATOR SPARE PARTS drawing no. 1000 Chassis

| Number | Fig | Part name | Note | Pcs |
|---|---|---|---|---|
| **1930.1001** | ***1001*** | Frame | | *1* |
| **1930.1002** | ***1002*** | Wheel | | *4* |
| **1930.1003** | ***1003*** | Plug | | *4* |
| **1930.1004** | ***1004*** | Screw | | *16* |



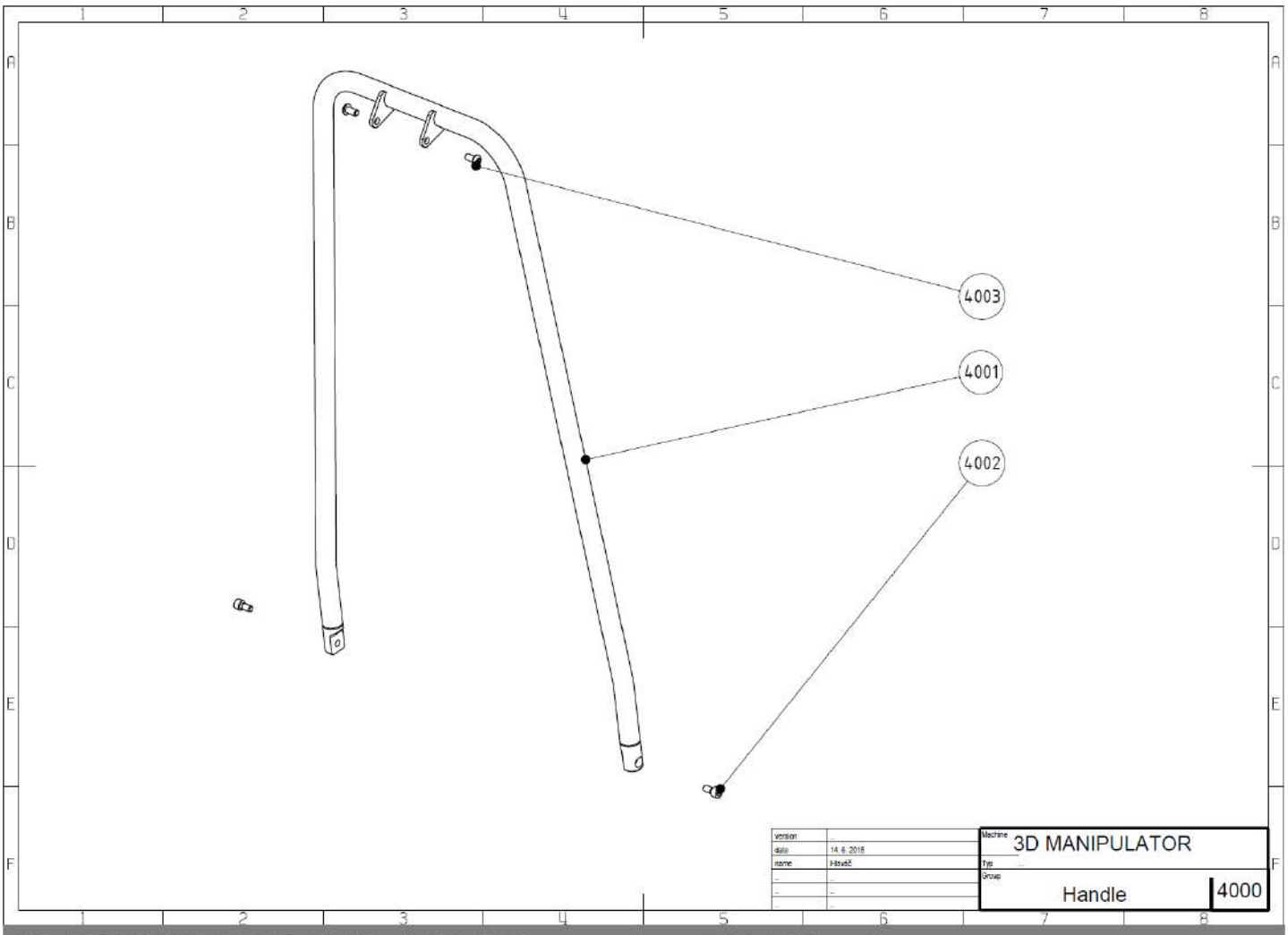

# 3D MANIPULATOR SPARE PARTS drawing no. 2000 Stand

| Number | Fig | Part name | Note | Pcs |
|---|---|---|---|---|
| 1930.2001 | *2001* | Post | | *1* |
| 1930.2002 | *2002* | Jack | | *1* |
| 1930.2003 | *2003* | Adapter | | *1* |
| 1930.2004 | *2004* | Stop | | *1* |
| 1930.2005 | *2005* | Adjusting screw | | *1* |
| 1930.2006 | *2006* | Pin | | *1* |
| 1930.2007 | *2007* | Washer | | *2* |
| 1930.2008 | *2008* | Retaining ring | | *2* |
| 1930.2009 | *2009* | Sunk screw | | *1* |
| 1930.2010 | *2010* | Screw | | *1* |
| 1930.2011 | *2011* | Washer | | *2* |
| 1930.2012 | *2012* | Screw | | *1* |



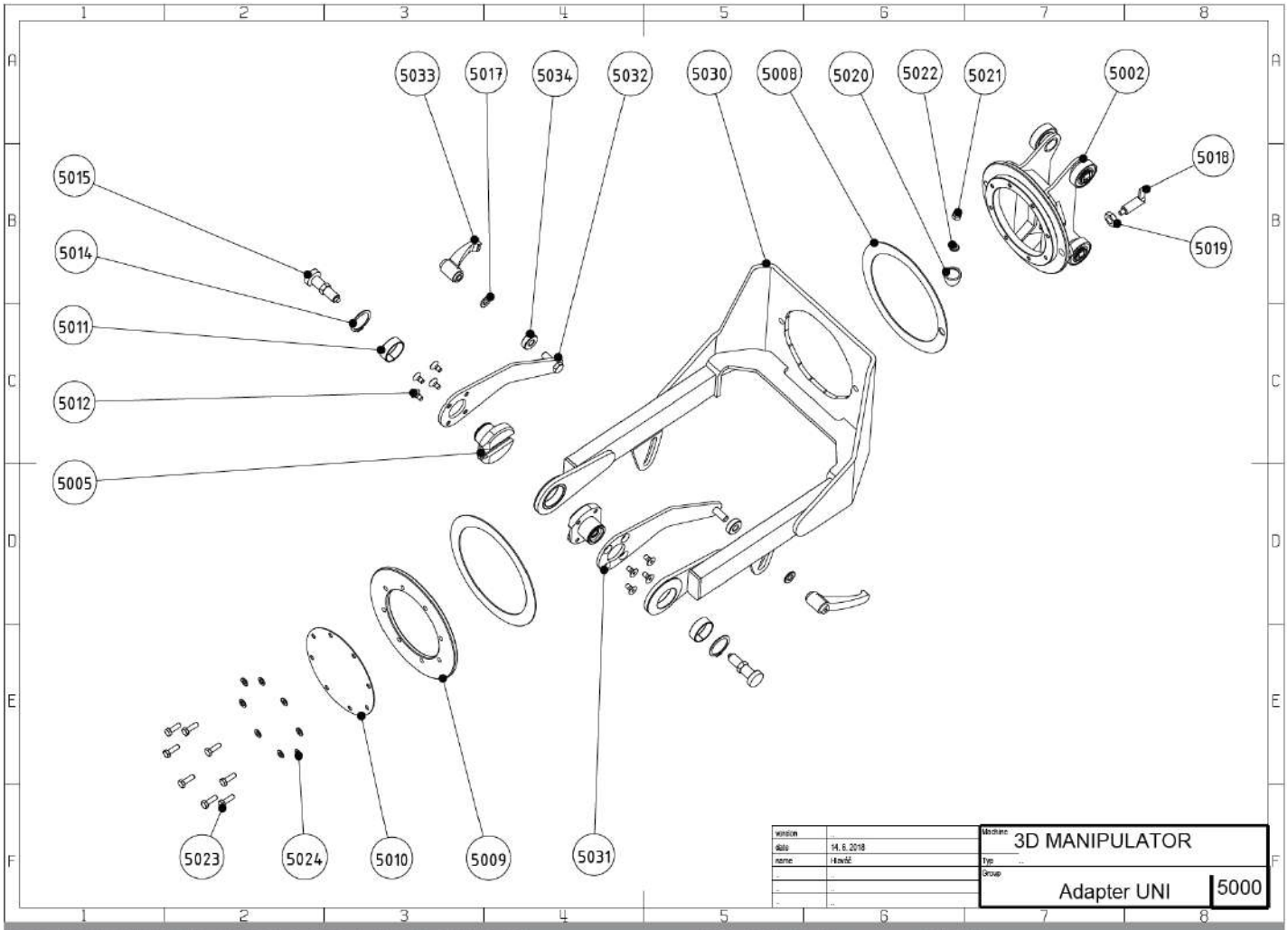

## 3D MANIPULATOR SPARE PARTS drawing no. 3000 Cover

| Number | Fig | Part name | Note | Pcs |
|---|---|---|---|---|
| 1930.3001 | *3001* | Cap | | *1* |
| 1930.3002 | *3002* | Screw | | *2* |
| 1930.3003 | *3003* | Screw | | *1* |




## 3D MANIPULATOR SPARE PARTS drawing no. 4000 Handle

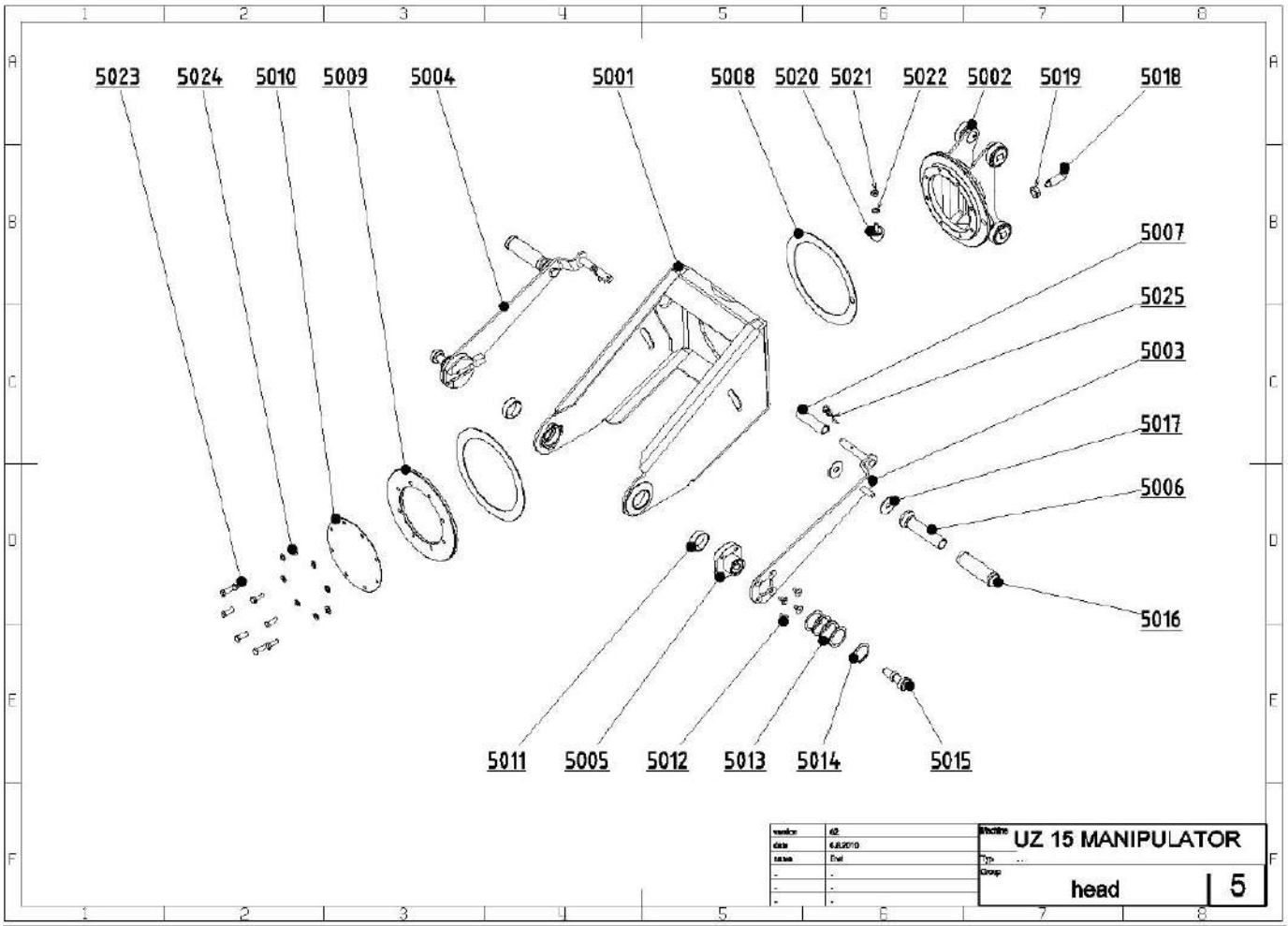
| Number | Fig | Part name | Note | Pcs |
|---|---|---|---|---|
| 1930.4001 | *4001* | Grab bar | | *1* |
| 1930.4002 | *4002* | Screw | | *2* |
| 1930.4003 | *4003* | Screw | | *2* |




## 3D MANIPULATOR SPARE PARTS drawing no. 5000 Adapter UNI

| Number | Fig | Part name | Note | Pcs |
|---|---|---|---|---|
| 1930.5002 | *5002* | Trolley | | *1* |
| 1930.5005 | *5005* | Retainer | | *2* |
| 1930.5008 | *5008* | Ring | | *2* |
| 1930.5009 | *5009* | Flange | | *1* |
| 1930.5010 | *5010* | Cap | | *1* |
| 1930.5011 | *5011* | KU sleeve | | *2* |
| 1930.5012 | *5012* | Sunk screw | | *8* |
| 1930.5014 | *5014* | Retaining ring | | *2* |
| 1930.5015 | *5015* | Locking pin | | *2* |
| 1930.5017 | *5017* | Washer | | *2* |
| 1930.5018 | *5018* | Locking cam pin | | *1* |
| 1930.5019 | *5019* | Nut | | *1* |
| 1930.5020 | *5020* | Buffer | | *1* |
| 1930.5021 | *5021* | Nut | | *1* |
| 1930.5022 | *5022* | Washer | | *1* |
| 1930.5023 | *5023* | Screw | | *8* |
| 1930.5024 | *5024* | Washer | | *8* |
| 1930.5030 | *5030* | Body | | *1* |
| 1930.5031 | *5031* | Right lever | | *1* |
| 1930.5032 | *5032* | Left lever | | *1* |
| 1940.8008 | *5033* | Grip | | *2* |
| 1930.5034 | *5034* | Distance Ring | | *2* |

**Only for older versions manufactured prior to 2018**




| 3D MANIPULATOR SPARE PARTS | | drawing no. 5000 old version | | |
|---|---|---|---|---|
| Number | Fig | Part name | Note | Pcs |
| 1930.5001 | 5001 | Body | Older version | 1pc |
| 1930.5002 | 5002 | Troley | | 1pc |
| 1930.5003 | 5003 | Lever left | Older version | 1pc |
| 1930.5004 | 5004 | Lever right | Older version | 1pc |
| 1930.5005 | 5005 | Retainer | | 2pc |
| 1930.5006 | 5006 | Handle | Older version | 2pc |
| 1930.5007 | 5007 | Connection tube | Older version | 1pc |
| 1930.5008 | 5008 | Ring | | 2pc |
| 1930.5009 | 5009 | Flange | | 1pc |
| 1930.5010 | 5010 | Cap | | 1pc |
| 1930.5011 | 5011 | KU sleeve | | 2pc |
| 1930.5012 | 5012 | Sunk Screw | | 8pc |
| 1930.5013 | 5013 | Calibration washers | Older version | 4pc |
| 1930.5014 | 5014 | Retaining ring | | 2pc |
| 1930.5015 | 5015 | Locking pin | | 2pc |
| 1930.5016 | 5016 | Rubber covering | Older version | 2pc |
| 1930.5017 | 5017 | Washer | | 2pc |
| 1930.5018 | 5018 | Locking cam pin | | 1pc |
| 1930.5019 | 5019 | Nut | | 1pc |
| 1930.5020 | 5020 | Buffer | | 1pc |
| 1930.5021 | 5021 | Nut | | 1pc |
| 1930.5022 | 5022 | Washer | | 1pc |
| 1930.5023 | 5023 | Screw | | 8pc |
| 1930.5024 | 5024 | Washer | | 8pc |
| 1930.5025 | 5025 | Split pin | Old version | 2pc |

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