

MANUAL BEVELLING AND DEBURRING SYSTEM B15 AIR



ord. No. 27 220

Operating Instructions for the device

Subject to change

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Before use, always read the operating instructions thoroughly

1. General Information

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

This manual contains all instructions for installation, adjustment, operation and maintenance of the machine B15 AIR in compliance with the applicable safety standards.

Information contained in this manual may be subject to changes due to further improvement of machines. If on doubt upon finding any differences, please contact N.KO Machines.

Never carry out any operations with the machine until you read the instructions contained in this manual and understand them. The majority of accidents which happen in the workplace are caused due to failure to comply with instructions and recommendations contained in the manual.

Graphic symbols used in the manual are used for highlighting of important information concerning safety and operation of the machine.



Caution:
Important information for personal safety of operators.



Important:
An instruction which must be followed to ensure the correct operation of the machine.

2. Description of the machine B15 AIR

The machine B15 AIR is intended only for the following applications:

B15 AIR is intended only for bevelling and deburring of metal materials in a workshop or a production hall.

It is a manual, hand-operated machine. The main advantage of the machine is its ability to machine both flat and shaped workpieces, openings as well as pipes. The machining angle can be changed upon replacing of the cutter head. B15 AIR can also round edges of workpieces. For this application, a special tool (see below) is also necessary.

Use the machine only in the environments protected from rain, snow and other adverse climatic effects.

3. Identification Data

The identification data of the B15 AIR machine are stated in the rating plate attached to the drive body.

4. Tests

The chamfering machine is tested in our testing laboratory.

During this test, the correct function of bevelling of sheets and profiles of various types and sizes is tested.

5. Warranties

The seller grants the warranty for the bevelling system B15 that it will not have any material or manufacturing defects for the period of 12 months from the date of delivery.

The warranty for flawless function of the goods and the materials used is granted for the period of 12 months from the date of delivery of the goods.

The seller undertakes to remove any possible defects covered by the warranty free of charge and without undue delay, so that the buyer of the goods can use the product properly. Should the buyer exercise rights arising from the liability for the defects which are not covered by the warranty, he/she shall pay all related costs to the seller.

The manufacturer's warranty shall be deemed void in the event of:

- improper use of the machine,
- use contrary to national or international standards,
- incorrect installation,
- faulty supply of compressed air or its poor quality
- serious deficiencies in maintenance,
- unauthorized modifications and/or interventions,
- use of other than genuine spare parts and accessories or spare parts and accessories approved by the manufacturer for the respective model,
- total or partial non-compliance with the instructions included in the manual,
- exceptional events, natural disasters and others.

6. Safety Considerations

 **Caution:**

In order to prevent injuries, observe the following:

Prior to bevelling, check whether the machine is not mechanically or otherwise damaged. **Put the machine into service only if the supply pressure hose is not damaged.**

Check the **pressure hose and air connections** regularly. If damaged, have them replaced in the service authorized to carry out such repairs. Contact your vendor.

Personal Injury Protection

at work, use safety goggles, solid footwear, ear protectors, suitable head wear, e.g. a hard cap.

- Connect the machine to the compressed air distribution only if the starting valve of the machine is in the OFF position.
- Prior to each use, check whether the device or the compressed air supply are not damaged. Do not use the machine if there are any damages.
- Protect the device from moisture and do not use it in the wet environment.
- Ensure good lighting of the workplace, so that the risk of possible injury or sight impairment are prevented.
- Caution. The tool (cutter) is sharp. There is a risk of injury. While replacing, use protective gloves, **never touch the cutter when in motion.**
- The material subject to machining must always be fixed firmly and horizontally. The optimum workpiece height is 900 mm above the ground.
- While working, pay attention to the supply hose; it should always be freely lying on the ground away from the material subject to machining and any other sharp objects.
- After work, disconnect the device from the compressed air supply.
- Do not overload the machine engine. The machine works better if it is not overloaded.
- While working, hold the machine with both your hands.
- Pay attention to the risk of injury by hot metal chips.

 **Important:**

In the event of damage, have your machine repaired by the service authorized to carry out such repairs. For more information, contact your supplier.

7. Technical Specifications

Bevel angle	removable head 30°, 37,5°, 45°, 50°, 60° other angles upon request
Bevel width	0 to 15 mm < 400N/mm ² - 0 to 8 mm > 400N/mm ²
Radius	max R3.5mm
Engine	pneumatic
Engine power	2984 W
Speed	6000 rpm
Air consumption	750 L/min
Working pressure	6bar
Weight	7.5 kg
Number of Cutting Tips	6 pcs (cutter head for edge rounding - 3 pcs)
Fitting of the compressed air inlet	G 1/2"

7.1. Beveling of holes – minimal dimensions

Bevel angle α° Minimal diameter of the hole in mm

30°	Ø 34mm
37,5°	Ø 28mm
45°	Ø 28mm
50°	Ø 28mm
60°	Ø 27mm
R 2,5mm	Ø 41mm
R 3,5/4mm	Ø 40mm

8. Accessories

Cutter head 30° (including cutting tips, screws, bolt and roller)	27 223
Cutter head 37.5° (including cutting tips, screws, bolt and roller)	27 227
Cutter head 45° (including cutting tips, screws, bolt and roller)	27 222
Cutter head 50° (including cutting tips, screws, bolt and roller)	27 224
Cutter head 60° (including cutting tips, screws, bolt and roller)	27 240
Coated cutting tips, four-blade for 30°/37.5°/ 45°/50°/ 60 (10 pcs in packing)	27 231
Screws for mounting the cutting tips	27 241
Cutter head for rounding R 2,5 mm (including cutting tips, screws, bolt and roller)	27 234
Cutter head for rounding R 3,5 mm and 4 mm (including cutting tips, screws, bolt and roller)	27 233
Coated cutting tips, four-blade for rounding R 2,5 mm (10 pcs in packing)	26 109
Coated cutting tips, four-blade for rounding R 3,5 mm (10 pcs in packing)	26 110
Coated cutting tips, four-blade for rounding R 4 mm (10 pcs in packing)	26 111
Pneumatic hose, complete, including quick couplings	27 229
Filtration and pre-lubrication unit, including regulation	27 228

9. Unpacking of the Device

Unpack the machine from the boxboard and check whether everything is all right and whether the machine is free of any defects. Should you have any questions, contact your distributor.

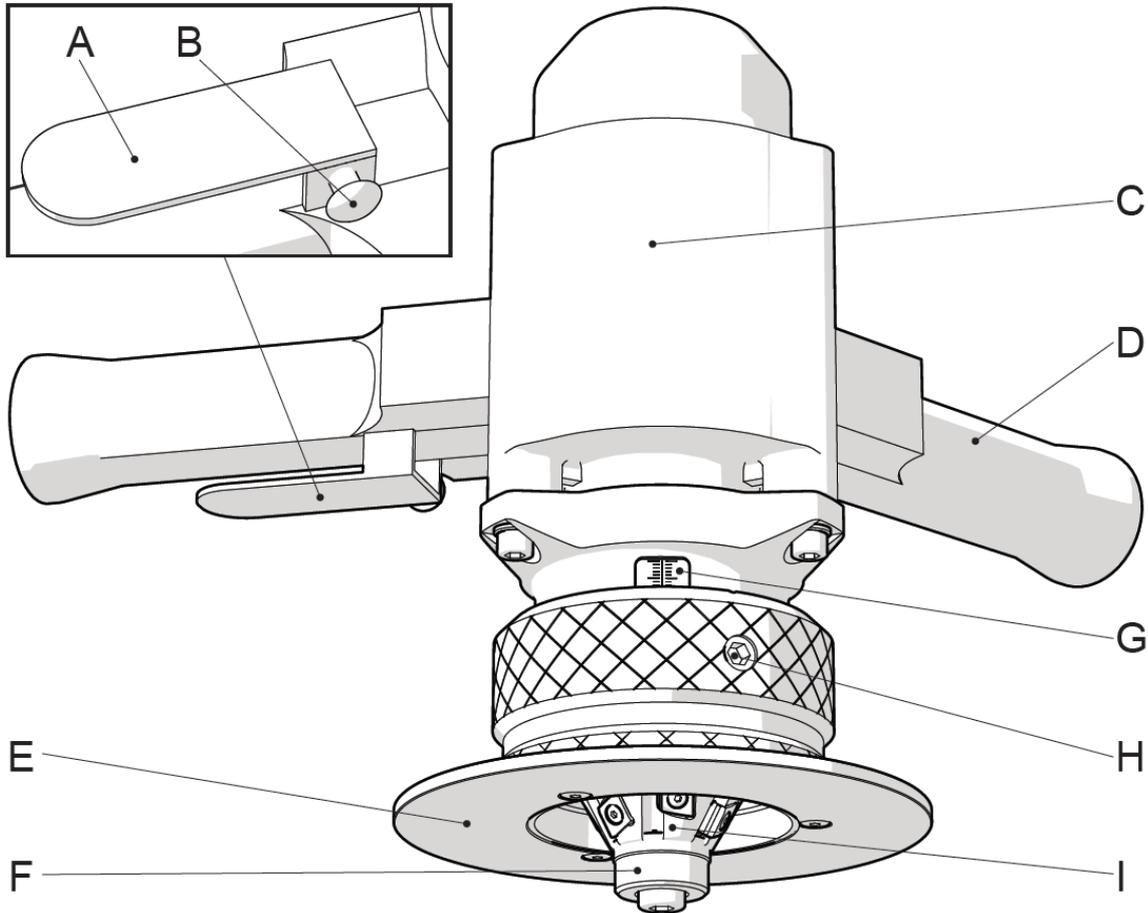
The machine B15 AIR is supplied together with the necessary tools for operation, but without the tool and quick coupling for air supply.

The tools, pressure hose and required couplings, filter and regulating unit can be purchased if needed.

Please refer to the catalogue of N.KO Machines and contact your distributor.

10. B15 AIR Control Elements

Fig. 10.0.1



- A. Starting valve
- B. Starting valve fuse
- C. Engine body
- D. Right and left handle
- E. Pressure disc with a sleeve
- F. Guide, stop roller of the cutter
- G. Scale for reading of bevel angle settings
- H. Locking screw of the pressure disc sleeve - Locking of the set draft
- I. Cutter body with cutting tips

11. Use

Important:

The device can be used only if it is fitted with cutting tips supplied by your distributor or the manufacturer of the equipment. They are four-side cutting tips. The device is fitted with 6 cutting tips. It is strongly advisable that you use only genuine cutting tips.

11.1 Setting of the draft

Caution:

While adjusting the machine, use working gloves and other personal protective equipment. Operations must be performed with the still machine and after the machine has been disconnected from the compressed air distribution.

- Disconnect the compressed air distribution.
- Loosen the locking setting screws (fig. 10.0.1, position H)
- Turn the guide disc (fig. 10.0.1, position E) to set the draft size. The current settings can be read from the scale (fig. 10.0.1, position G). The scale is for reference only and the resulting draft can be other for various angles of cutter heads.
- For settings, tighten both the screws (fig. 10.0.1, position H)

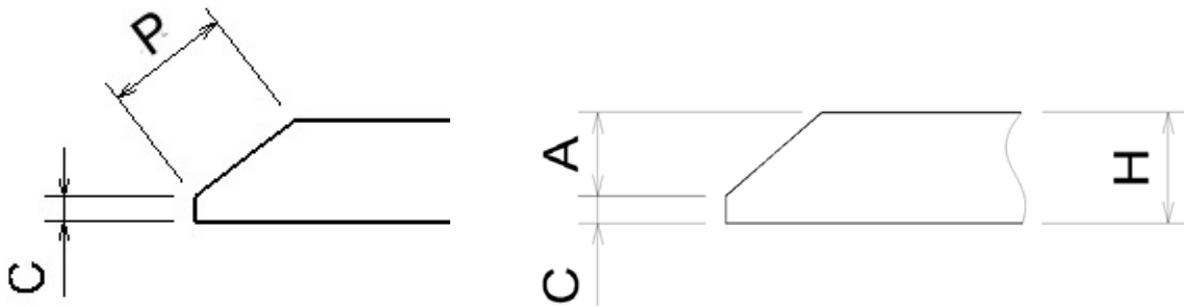
Important:

The maximum draft is 15 mm of the bevel width (dimension P, fig. 11.1.1). This draft must be achieved within multiple steps. It depends on the strength of material. Testing is recommended.

Start with a smaller draft and increase the value gradually, until the work with machine is comfortable and the cutting tips are able to carry out continuous draft without any increased vibrations. For informative settings, use the below-mentioned tables.

We recommend to keep the work log, where you can write down the measured values and your own machining procedures.

fig. 11.1.1



For indicative settings of the draft size and the actual machining process, you can use the tables for settings of various bevel angles.

Important:

The values in the table are calculated from the so-called 0 point. The 0 point is the point, when the cutter touches the material edge for the first time. The point can be set by gradual turning of the pressure disc (fig. 10.0.1, position E) and attaching to the material edge.

45° - For full bevel ($P = 15 \text{ mm}$), the pressure disc must be turned by 5.2 revolutions.

Chip no.	Hypotenuse P	Bevel height A	Number of pressure disc revolutions
I.	5mm	3.5mm	2 revolves
II.	11mm	7.8mm	2 revolves
III.	15mm	10.6mm	1,2 revolves

See fig. 11.1.1.

30° - For full bevel ($P = 15 \text{ mm}$), the pressure disc must be turned by 6.2 revolutions.

Chip no.	Hypotenuse P	Bevel height A	Number of pressure disc revolutions
I.	5mm	4.3mm	2 revolves
II.	10mm	8.6mm	2 revolves
III.	15mm	13mm	2.2 revolves

See fig. 11.1.1.

 **Important:**

The machine was designed for preparation of weld surfaces. The accuracy of machining is in the range of +/- 1 mm. Satisfactory results can be achieved only under the condition that the edges of the material have been prepared perfectly. Unfortunately, material is often burnt or sheared. These inaccuracies, of course, have impact on the results of machining.

 **Important:**

If it is difficult to machine the bevel in the number of steps recommended by us, we recommend that you divide the process into multiple chips. The reason may consist in wear and tear of the cutting tips or worse machinability of the material.

11.2 Beveling

- Connect the device to the compressed air distribution system and set the pressure regulator to the max. value 6 bar.
- Lubrication shall be set to the medium position.
- After careful settings of the first draft (refer to section 11.1), hold the device with both your hands, unlock the fuse of the starting valve and start the machine.
- Put the machine on the material, so that the pressure/contact disc (fig. 10.0.1, position F) touches the material with maximum of their surfaces.
- Slowly get the machine closer to the material until you feel that the cutter is starting to be engaged. CAUTION!!! Now, a kickback may occur. Therefore, be careful.
- Move the machine further towards the material until the cutter is inserted in the material in the entire profile of the set chip. Now the contact roller must touch the workpiece edge. The pressure disc must lie flat with its surface on the material.
- Now, you can start machining from left to right. The machine shall be moved constantly only at the speed, so that the cutter is able to remove material in the set chip profile continuously. Otherwise the cutter will be pushed out from the material and the bevel will be uneven.

 **Caution:**

While working, use working gloves and other personal protective equipment.

Maintenance operations must be performed with the still machine and after the machine has been disconnected from the compressed air distribution.

 **Important:**

The machining movement is always from the left to the right.

⚠ Caution:

Operators must hold the device with both their hands.

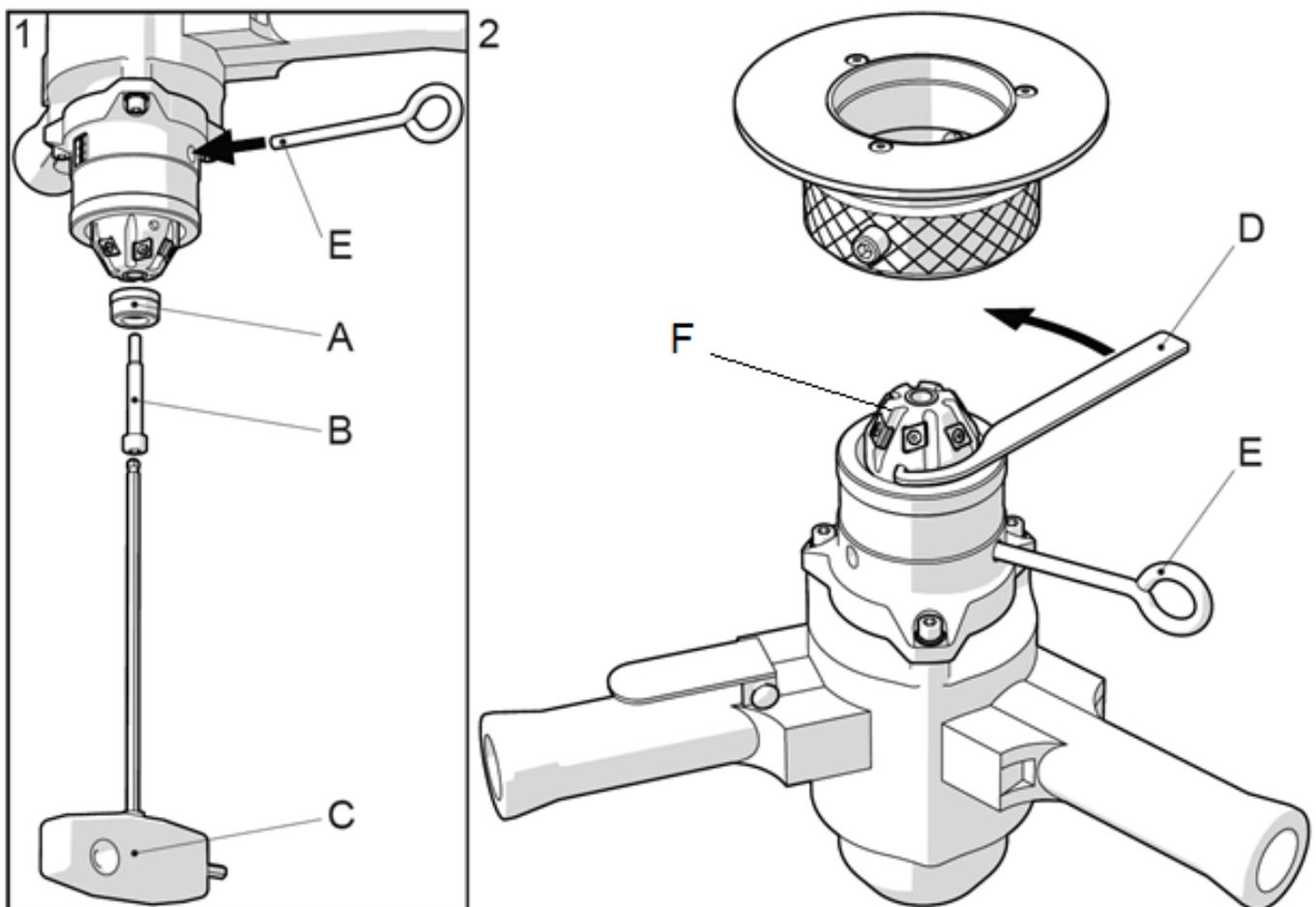
11.3 Change to the Bevel Angle and Shape Replacing of the Cutter Head

The machine B15 AIR is designed for the use of multiple kinds of cutter heads, see chapter 8. **Accessories**

When replacing the head, proceed as follows:

- Disconnect the compressed air distribution.
- Loosen the locking setting screws (fig. 10.0.1, position H)
- Turn the guide disc (fig. 10.0.1, position E) until you dismantle it fully from the machine.
- Lock the spindle against turning using the enclosed mandrel (fig. 11.2.1, position E)
- Using the supplied Allen key (fig. 11.2.1, position C) loosen and dismantle the roller screw (fig. 11.2.1, position B) and the roller (fig. 11.2.1, position A)
- Now dismantle the actual cutter head (fig. 11.2.1, position F) using the supplied hook spanner (fig. 11.2.1, position D).
- Following the same procedure, install the new head and re-assemble the machine.
- All joints must be tightened properly.

Fig. 11.2.1



⚠ Caution:

While adjusting the machine, use working gloves and other personal protective equipment. Operations must be performed with the still machine and after the machine has been disconnected from the compressed air distribution.

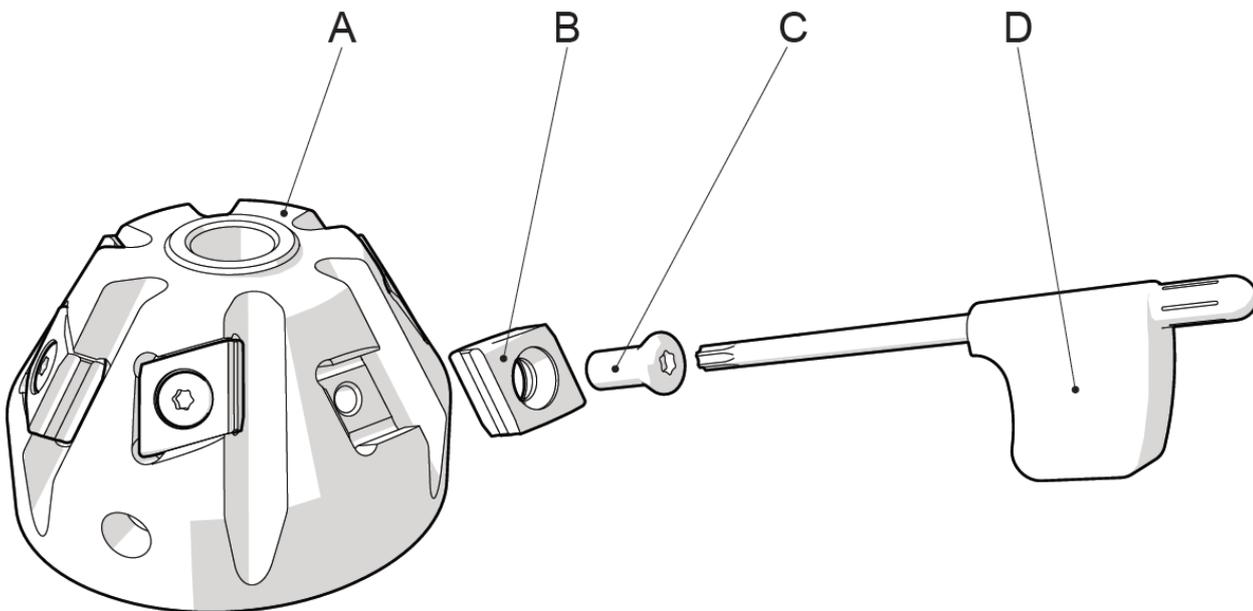
11.4 Replacement of Cutting Tips

● Important:

Work only with sharp and undamaged cutting tips. Thus you can avoid damages to the machine. If the cutting tips are worn or broken, replace them.

- Using the supplied spanner (fig. 11.3.1, position D), loosen the screws fixing the cutting tips (fig. 11.3.1, position C).
- The cutting tips (fig. 11.3.1, position B) shall be replaced by the new ones, other ones or turn them, so that you use all cutting edges. Caution! Due to their specific shape, be careful while performing this task.
- Re-tighten the cutting edges properly (fig. 11.3.1, position C).
- Install the assembly of the guide disc according to chapter 11.2.

Fig. 11.3.1



12. Maintenance and Operation

The machine B15 AIR is equipped with a pneumatic drive. For flawless operation, provide for compressed air with sufficient quality.

In order to achieve such quality, there are filtration and lubrication units.

The correct selection of the unit shall be consulted with your supplier or directly with the manufacturer of the B15 AIR device, i.e. N.KO machines.

For lubrication, choose the oil suitable for lubrication of pneumatic drives. The lubrication cycle should be set for 1 – 2 drops per minute.



Important:

Moving parts, threads and air connections must be continuously cleaned, preferably with compressed air, and conserved (lubricated).



Caution:

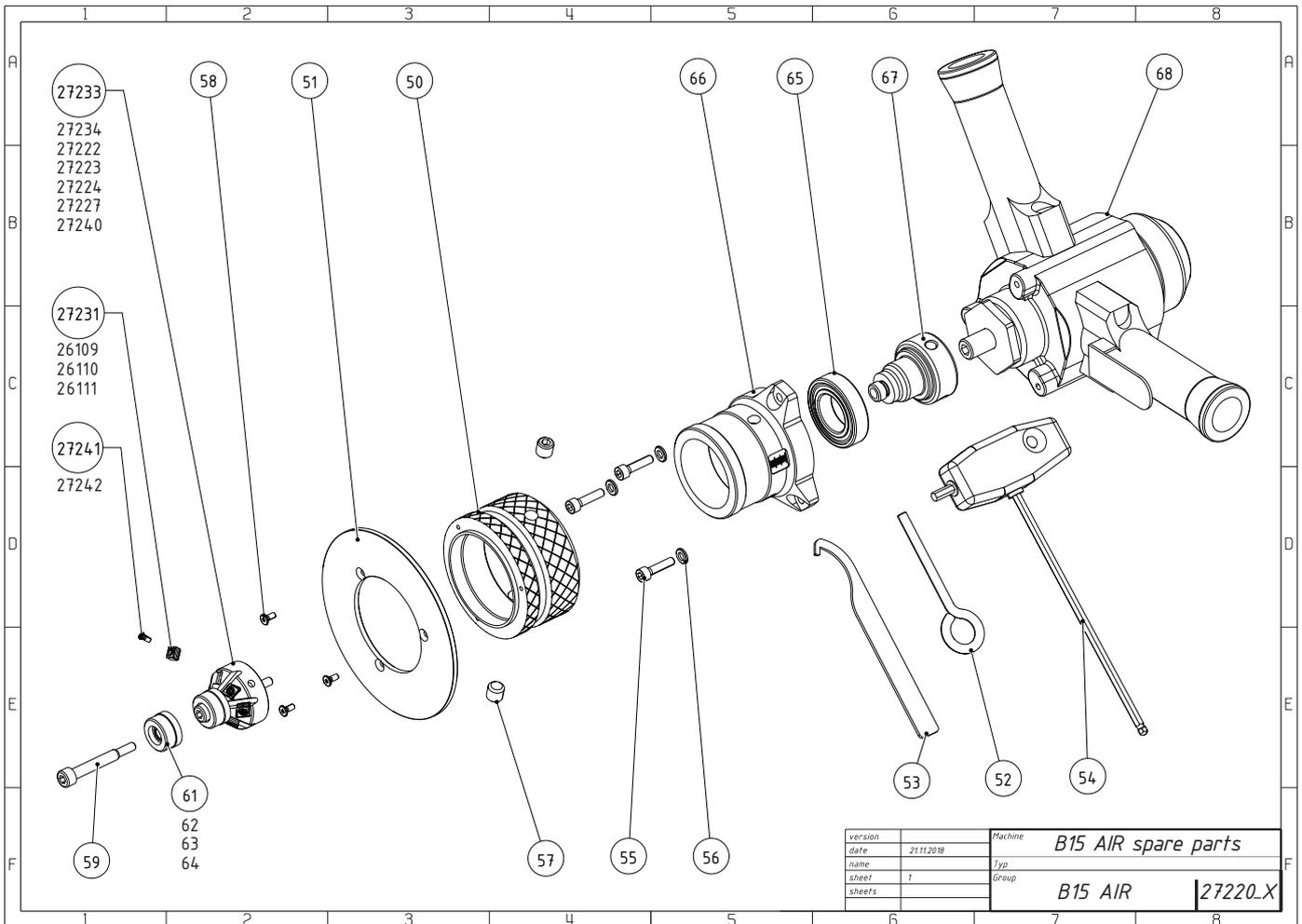
While using compressed air for the purpose of cleaning, wear safety goggles and never use pressure exceeding the value of 2 bars.

13. Spare Parts

Orders of spare parts must include the following data:

- machine type,
- serial number,
- description of the required component and its number,
- quantity.

13.1 List of Spare Parts

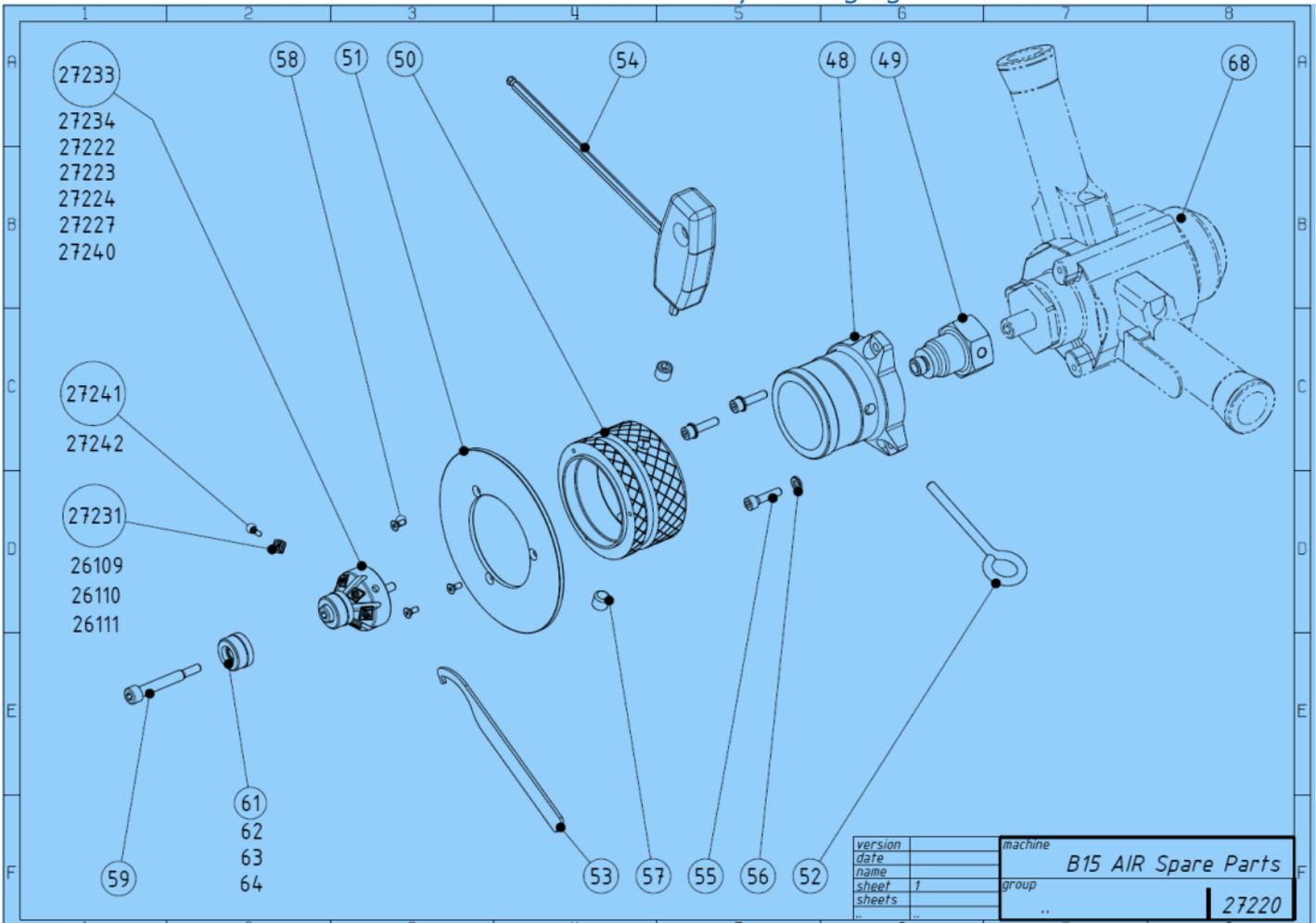


B15 AIR SPARE PARTS

drawing no. 27220_X B15 AIR

Number	Fig	Part name	Note	Pcs
27233	27233	milling head	radius R3,5 mm (complete head incl. inserts, all screws and impeller)	1
27234	27234	milling head	radius R2,5 mm (complete head incl. inserts, all screws and impeller)	1
27222	27222	milling head	vertex angle 45° (complete head incl. inserts, all screws and impeller)	1
27223	27223	milling head	vertex angle 30° (complete head incl. inserts, all screws and impeller)	1
27224	27224	milling head	vertex angle 50° (complete head incl. inserts, all screws and impeller)	1
27227	27227	milling head	vertex angle 37,5° (complete head incl. inserts, all screws and impeller)	1
27231	27231	insert	standard for beveling only	6
27240	27240	milling head	vertex angle 60° (complete head incl. inserts, all screws and impeller)	1
27241	27241	screw	for standard insert	6
27242	27242	screw	for radius insert	3
26109	26109	insert	R2,5 mm (10 pcs)	3
26110	26110	insert	R3,5 mm (10 pcs)	3
26111	26111	insert	R4 mm (10 pcs)	3
27220.50	50	backstop		1
27220.51	51	disk		1
27220.52	52	stop pin with eye		1
27220.53	53	wrench		1
27220.54	54	key		1
27220.55	55	screw		3
27220.56	56	washer		3
27220.57	57	screw		2
27220.58	58	screw		3
27220.59	59	screw		1
27220.61	61	bearing roller	for milling head 37,5° no: 27227, 45° no: 27222, 50° no: 27224, 60° no: 27240	1
27220.62	62	bearing roller	for milling head 30° no: 27223	1
27220.63	63	bearing roller	for radius milling head R3,5 no: 27233	1
27220.64	64	bearing roller	for radius milling head R2,5 no: 27234	1
27220.65X	65	bearing roller		1
27220.66X	66	neck		1
27220.67X	67	adapter		1
27220.68	68	assembled power unit		1

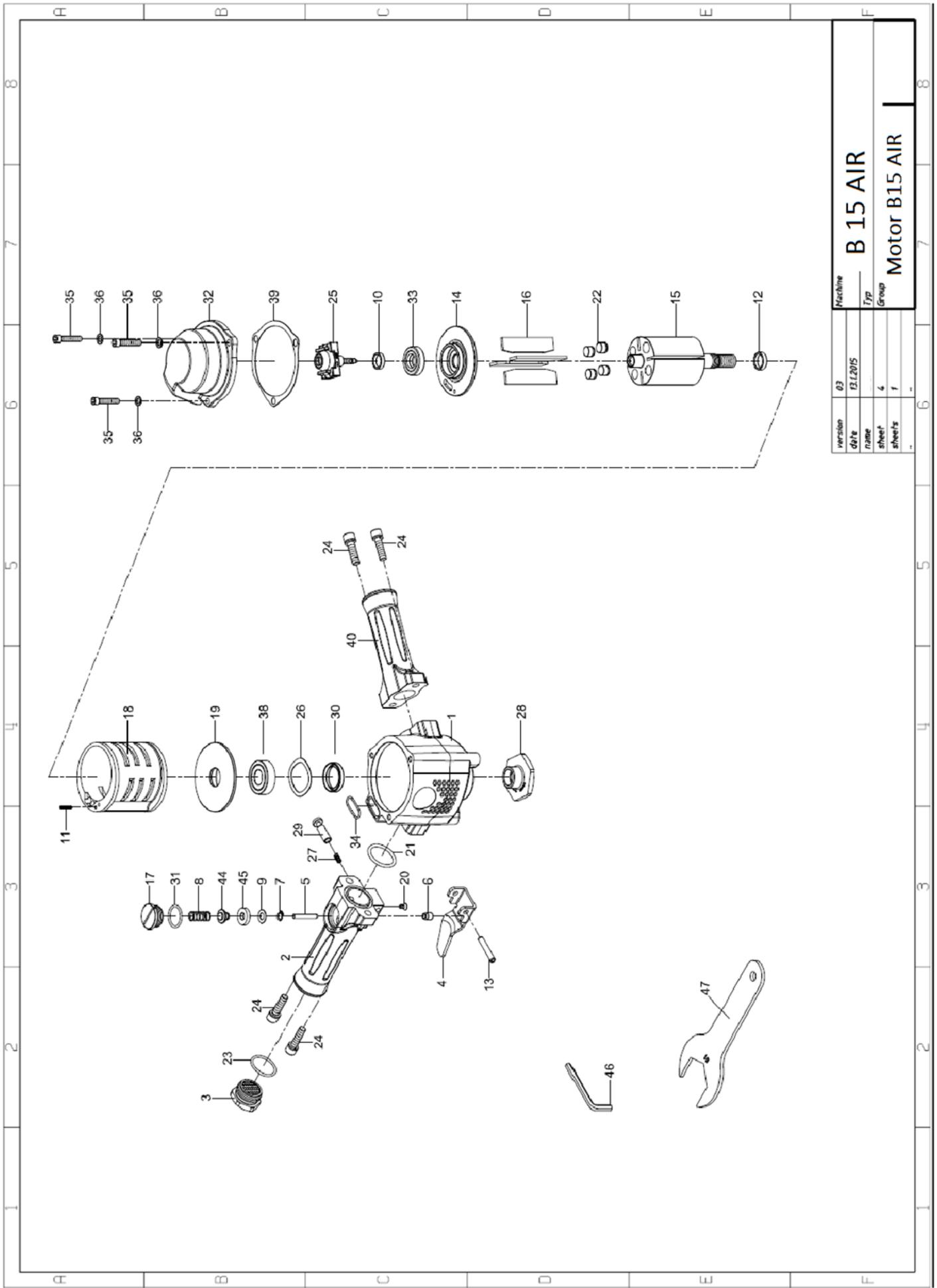
Attention! Older version of the B15 AIR without Auxiliary bearing fig. 27220.65X



B15 AIR SPARE PARTS

drawing no. 27220 B15 AIR

Number	Fig	Part name	Note	Pcs
27233	27233	milling head	radius R3,5 mm (complete head incl. inserts, all screws and impeller)	1
27234	27234	milling head	radius R2,5 mm (complete head incl. inserts, all screws and impeller)	1
27222	27222	milling head	vertex angle 45° (complete head incl. inserts, all screws and impeller)	1
27223	27223	milling head	vertex angle 30° (complete head incl. inserts, all screws and impeller)	1
27224	27224	milling head	vertex angle 50° (complete head incl. inserts, all screws and impeller)	1
27227	27227	milling head	vertex angle 37,5° (complete head incl. inserts, all screws and impeller)	1
27231	27231	insert	standard for beveling only	6
27240	27240	milling head	vertex angle 60° (complete head incl. inserts, all screws and impeller)	1
27241	27241	screw	for standard insert	6
27242	27242	screw	for radius insert	3
26109	26109	insert	R2,5 mm (10 pcs)	3
26110	26110	insert	R3,5 mm (10 pcs)	3
26111	26111	insert	R4 mm (10 pcs)	3
27220.48	48	neck		1
27220.49	49	adapter		1
27220.50	50	backstop		1
27220.51	51	disk		1
27220.52	52	stop pin with eye		1
27220.53	53	wrench		1
27220.54	54	key		1
27220.55	55	screw		3
27220.56	56	washer		3
27220.57	57	screw		2
27220.58	58	screw		3
27220.59	59	screw		1
27220.61	61	bearing roller	for milling head 37,5° no: 27227, 45° no: 27222, 50° no: 27224, 60° no: 27240	1
27220.62	62	bearing roller	for milling head 30° no: 27223	1
27220.63	63	bearing roller	for radius milling head R3,5 no: 27233	1
27220.64	64	bearing roller	for radius milling head R2,5 no: 27234	1
27220.68	68	assembled power unit		1



SPARE PARTS

Drawing no.

Motor B 15 AIR

Number	Fig.	Part name	Note
27 220.1	1	Motor housing	
27220. 2	2	Handle	
27220. 3	3	Inlet bushing	
27220. 4	4	Throttle lever	
27220. 5	5	Throttle pin	
27220. 6	6	Throttle pin bushing	
27220. 7	7	Retaining ring	
27220. 8	8	Throttle lever spring	Stw8
27220. 9	9	Washer	
27220. 10	10	Washer	
27220. 11	11	Spring pin	3x16L
27220. 12	12	Front rotor collar	
27220. 13	13	Spring pin	6.35x38.1L
27220. 14	14	End plate	
27220. 15	15	Rotor	
27220. 16	16	Vane	4pc
27220. 17	17	Throttle lever cap	
27220. 18	18	Cylinder	
27220. 19	19	Front end plate	
27220. 20	20	screw	(M4x8L)
27220. 21	21	O-ring	30.7x3.5
27220. 22	22	Plug	4pc
27220. 23	23	O-ring	29.x2.5
27220. 24	24	screw	M8x30L
27220. 25	25	Governor assembly	
27220. 26	26	Wave washer	
27220. 27	27	Spring	
27220. 28	28	Driving flange	
27220. 29	29	Safe lever	
27220. 30	30	Seal	
27220. 31	31	O-ring	20.8x2.4
27220. 32	32	End cap	
27220. 33	33	Ball bearing	R10-2RS
27220. 34	34	O-ring	21.95x1.78
27220. 35	35	screw	3pc 1/4"-20UNCX1 1/4L
27220. 36	36	Spring washer	3pc
27220. 38	38	Ball bearing	6203ZZ
27220. 39	39	Gasket	
27220. 40	40	Dead handle	
27220. 44	44	Throttle valve	
27220. 45	45	Throttle valve seal	
27220. 46	46	Hex. Key wrench	
27220. 47	47	Spanner 51mm	

A copy of this manual is supplied with each machine B15 AIR.

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