

# Original- Operating Instructions

## AirMAB 5000







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Dear Customer,

Before using the machine, please read the operating instructions contained in these operating instructions on startup, safety, intended use as well as cleaning and care.

The links and illustrations in these instructions refer to the illustrations on the inside of the cover.

Keep these operating instructions for later use and pass them onto the next owner of the machine.

**General instructions**

**Copyright**

This document is copyrighted. Any duplication or reprinting, in whole or in part, and the reproduction of the illustrations, even in modified form, is only permitted with the written approval of the manufacturer.

**Liability disclaimer**

All technical information, data and instructions for commissioning, operation and maintenance of the machine contained in these operating instructions represent the latest status at the time of printing.

The manufacturer assumes no liability for damage or injury resulting from failure to observe the operating instructions, use for other than the intended purpose, unprofessional repairs, unauthorised modifications or use of non-approved spare parts and accessories, tools and lubricants.

**Instructions on disposal**



The packaging materials used can be recycled. When no longer required, dispose of the packaging materials according to local environmental regulations.



This product may not be disposed of in the domestic refuse within the European Union. Dispose of the device via communal collection points.

## Safety warning structure

The following warnings are used in these operating instructions:

### **WARNING**

**A warning of this category indicates a potentially dangerous situation.**

If the dangerous situation is not avoided, it may lead to injuries.

- ▶ Follow the instructions in this warning to avoid possible danger of serious personal injuries.

### **CAUTION**

**A warning statement for this safety risk class indicates a damage risk.**

If the situation is not avoided, it may lead to material damage.

- ▶ Follow the instructions in this warning to avoid material damage.

### **NOTE**

- ▶ A note indicates additional information that simplifies the use of the machine.

## Intended use

The machine is intended solely for drilling operations in magnetic and non-magnetic metals within the limits specified in the technical data.

Any use other than previously stated is considered as improper use.

### **WARNING**

**Danger resulting from improper use!**

If not used for its intended purpose and/ or used in any other way, the machine may be or become a source of danger.

- ▶ Use the machine only for its intended purpose.
- ▶ Observe the procedures described in these operating instructions.

No claims of any kind will be accepted for damage resulting from use of the appliance for other than its intended purpose.

The risk must be borne solely by the user.

### **NOTE**

- ▶ If used commercially, pay attention to compliance with the accident prevention and occupational safety regulations.

## Safety

### WARNING

**When using tools driven by compressed air, pay attention to the following basic safety measures for protection against injuries and damage to property!**

### Fundamental safety precautions

- Do not use the machine in flammable or potentially explosive environments.
- Persons who are unable to operate the machine due to their physical, mental or motor response abilities may only use the machine under supervision of or instruction by a responsible person.
- Children must not be allowed to use the machine.
- Check the machine and do not put a damaged machine into operation.
- Check the compressed air line for visible external damage before use and do not put a damaged compressed air line into operation.
- Before beginning any work, check for proper condition of the safety chain and the function of the operating elements of the machine.
- Only allow repairs to the machine to be carried out by an authorised workshop or customer service. Unqualified repairs can lead to considerable danger for the user.
- Repairs to the machine during the warranty period may only be carried out by a service centre authorised by the manufacturer otherwise the guarantee will be invalidated.
- Defective parts may only be replaced with original spare parts. Only original spare parts guarantee that the safety requirements are met.
- Do not leave the machine unsupervised during operation.
- Store the machine in a dry, temperate location out of the reach of children.
- Do not leave the machine standing outdoors and do not expose it to moisture.
- Make sure that your work area is sufficiently lit (>300 Lux).
- Do not use low-power machines for heavy working.
- Make sure that your workplace is clean.
- Keep the machine clean, dry and free of oil and grease.
- Follow the instructions on lubricating and cooling the tool.

## Danger in conjunction with polymers

### WARNING

#### Risk to health from PTFE (synthetic fully fluorinated polymers)

#### Absorbing or inhaling PTFE is a health risk!

Pay attention to the following safety notes to avoid danger from PTFE because PTFE particles can deposit on the inside of the housing as a result of operating the drive unit:

- ▶ Do not smoke when carrying out maintenance work.
- ▶ PTFE particles may not come into contact with naked flames, embers or heat
- ▶ Motor parts must be cleaned with a cleaning solution and not by blowing compressed air.
- ▶ After completing all work, wash your hands.

## Danger from compressed air

### WARNING

#### Risk of injury when applying non-permissible pressures!

Pay attention to the following safety notes to avoid danger from compressed air:

- ▶ Only operate the machine with prescribed air quantity and operating pressure.  
Danger of explosion if not observed.

## Risk of injury

### WARNING

#### Risk of injury from motor starting unintentionally!

Pay attention to the following safety notes to avoid danger from motor starting unintentionally:

- ▶ To completely stop the motor:  
Move the motor switch to the OFF position.  
Disconnect the compressed air supply.

### WARNING

#### Improper handling of the machine increases the risk of injury!

Observe the following safety precautions to avoid injuring yourself and/or others:

- ▶ Operate the machine only with the protective equipment stipulated in these operating instructions (see **Personal protective equipment** section).
- ▶ **Do not** wear protective gloves when the machine is running. A glove can be caught by the drilling machine and torn off the hand. Risk of losing one or more fingers.
- ▶ Remove loose jewellery before beginning work. Wear a hair net if you have long hair.
- ▶ Always switch off the machine before changing tools, performing maintenance or cleaning. Wait until the machine has come to a complete standstill.
- ▶ Always disconnect the compressed air supply before changing tools, cleaning or performing maintenance work in order to avoid unintentional starting of the machine.

**⚠ WARNING**

- ▶ Do not put your hand into the machine while it is in operation. Remove swarf only when the machine is at a standstill. Wear protective gloves when removing swarf.
- ▶ When working on scaffolding, the operator must be secured with a safety belt as the machine can oscillate dangerously in the event of failure of the compressed air supply.
- ▶ Check for secure clamping of the magnets on the substrate before every use (see **Preparation** section).
- ▶ Secure the machine with the safety chain (D) supplied when working in an inclined or vertical position and during overhead work. The machine could fall down when the magnet is released.
- ▶ Check that the tool is tightened securely before using (see **Inserting the tool** section).
- ▶ Do not allow the compressed air line to hang over edges (trip wire effect).

**Preventing damage****CAUTION****Potential damage to property if the machine is improperly used!**

Observe the following instructions to avoid property to damage:



- ▶ Only use the prescribed air quality, air quantity and operating pressures for compressed air supply (see section **Preparing**).
- ▶ Always carry the machine by the handle.

**CAUTION**

- ▶ Do not crush the compressed air line.
- ▶ Do not expose the compressed air line to heat or chemical liquids.
- ▶ Do not pull the compressed air line across sharp edges or hot surfaces.
- ▶ Lay the compressed air line in such a way that it cannot be caught and wound up in the rotating part of the machine.

**Safety appliances****Symbols on the machine**




The symbols on the machine have the following meaning:

Symbol	Meaning
	Read the operating instructions before beginning work!
	Wear protective goggles and ear protection!



## Personal protective equipment

Wear the following protective equipment at all times when operating the machine:

Symbol	Meaning
	Close-fitting work protection clothing with a low tear strength
	Goggles for protecting eyes against flying parts and liquids and ear protection in areas with noise emission >80 dB(A)
	Safety shoes for protecting feet against falling objects

Also wear the following protective equipment during special work:

Symbol	Meaning
	Helmet for protecting your head against falling objects
	Wear a harness where there is a danger of falling
	Gloves for protection against injuries

## Components / delivery contents

### Machine overview

1	Core drill (not supplied as standard)
2	Tool mounting
3	MK2 spindle taper
4	Drive motor (pneumatic)
5	Handle
6	Hand lever (3-stage)
7	Magnetic foot
8	Machine slide and guide
9	Compressed air connection
10	Motor switch
11	Operating lever for the magnetic foot
12	Lock for the operating lever of the magnetic foot

### Scope of supply

20	Magnetic core drilling machine
21	Pump bottle for cutting oil/drilling emulsion
22	ZAK075 and ZAK100 ejector pin
23	Transport case
A	KEYLESS quick-change drill chuck system 19 mm Weldon (3/4")
B	Safety chain
C	MK2 ejector pin

## Before using for the first time

### Transport inspection

As standard, the machine is supplied with the components indicated in the **Components/delivery contents** section.

#### NOTE

- ▶ Check for visible signs of damage or missing items on delivery. Report an incomplete or damaged delivery to your supplier/retailer immediately.

## Preparation

This section contains important instructions on the required preparation before beginning any work.

### Additional safety measures for certain work

Additional safety precautions must be taken for the following operations with the machine:

#### Non-horizontal work position

#### WARNING

##### **Risk of injury from a falling machine.**

When working in inclined or vertical position and during overhead work, the machine must be secured to prevent it from falling using the safety chain (B) supplied.

- ▶ Check the safety chain for proper function before every use. A damaged safety chain must not be used. Replace a damaged safety chain immediately.

#### WARNING

- ▶ Attach the safety chain in such a way that the machine moves away from the operator in the event of slipping.
- ▶ Lay the safety chain as tightly as possible around the handle of the machine.
- ▶ Check the secure fitting of the safety chain and lock before starting work.
- ▶ Use the protective equipment stipulated in the section **Personal protective equipment**.

#### Work on scaffolding

#### WARNING

##### **Risk of falling from sudden oscillating movements of the machine.**

When working on scaffolding, the machine can make a sudden oscillating movement on starting or in the event of failure of the compressed air supply.

- ▶ Secure the machine with the safety chain supplied.
- ▶ Wear a safety harness to protect yourself against falling.

# Preparation

## Check the condition of the substrate

The magnetic clamping force is dependent on the condition of the substrate. The clamping force is significantly reduced by paint, zinc and scale coatings and rust.

The substrate must satisfy the following conditions in order to achieve sufficient magnetic clamping force:

- The substrate must be magnetic.
- The clamping surface and the magnetic foot (7) must be clean and grease-free.
- The clamping surface must be completely smooth and level.

### NOTE

- ▶ Clean the substrate and the magnetic foot (7) of the machine before use.
- ▶ Remove any unevenness and loose rust from the substrate.
- ▶ The BDS range of accessories includes special holding devices.

The best clamping effect is obtained on low-carbon steel substrate with a thickness of at least 20 mm.

## Steel with low thickness

When drilling into low thickness steel, an additional steel plate (minimum dimensions 100 x 200 x 20 mm) must be placed under the workpiece. Secure the steel plate to prevent it from falling.

## NF metals or workpieces with an uneven surface

A special holding device must be used when drilling into NF metals or into workpieces with an uneven surface.

### NOTE

- ▶ BDS offers a range of accessories with special clamping devices for tubes and non-magnetic materials.

## Inserting the tool

The machine is equipped with an MK tool holder.

Depending on the type of tool to be used, corresponding drill chucks, quick-clamping systems or adapters must be used.

Tool	Tool holder to be used
Tools with Weldon-19 mm shank	Use KEYLESS (A) quick-change drill chuck system
Tools with MK taper	Insert the tool directly into the spindle taper (3)
Tools with straight shank	Use drill chuck with MK2/B16 tapered mandrel (available as an accessory).

### WARNING

#### Risk of injury!

- ▶ Do not use damaged, soiled or worn tools.
- ▶ Change tools only when the machine is switched off and at a standstill. Disconnect the compressed air supply

**⚠ WARNING****Risk of injury!**

- ▶ After inserting, check that the tool is engaged securely.
- ▶ Only use tools, adapter and accessories that match the machine.

**MK tool mounting****Inserting the tool**

- ◆ Before mounting, clean the shank of the tool, adapter or drill chuck and the spindle taper (3) of the machine.
- ◆ Insert the tool into the spindle taper (3) of the machine from below.

**⚠ WARNING****Risk of injury from incorrectly inserted tool!**

- ▶ Check the proper seating of the tool, adapter or drill chuck in the MK tool mounting.

**Removing the tool**

- ◆ Insert the ejector pin (C) into the ejector pin holder of the spindle taper MK2 (3).
- ◆ Lever out the tool with the ejector pin (C) or loosen the tool by tapping against the ejector pin.

**Using the drill chuck****Inserting the tool**

- ◆ Insert the drill chuck onto the tapered mandrel and insert the combination into the spindle taper (3) of the machine.
- ◆ Open the drill chuck and insert the tool into the drill chuck.
- ◆ Close the drill chuck by hand and then tighten the drill chuck with the chuck key.

**Removing the tool**

- ◆ Loosen the drill chuck with the chuck key and remove the tool.

**⚠ WARNING****Risk of injury!**

- ▶ Only tighten the drill chuck with the chuck key provided.
- ▶ Always remove the chuck key from the drill chuck after tightening or loosening.

## Keyless quick-change drill chuck system

### Inserting the tool

- ◆ Before mounting, clean the shank of the tool, adapter or drill chuck and the spindle taper (3) of the machine.
- ◆ Push the KEYLESS quick-change drill chuck system (A) from below into the spindle taper of the machine.
- ◆ Connect the line of the pump bottle for cutting oil/drilling emulsion (21) to the connection for the KEYLESS quick-change drill chuck system.
- ◆ Open the KEYLESS quick-change drill chuck system by pushing up the outside sleeve and insert the tool into the chuck.

#### NOTE

- ▶ Insert the appropriate ejector pin before inserting the core drill.

#### WARNING

#### Risk of injury from incorrectly inserted tool or tool mounting!

- ▶ Check by briefly turning the tool whether the collet is engaged.

### Removing the tool

- ◆ Open the KEYLESS quick-change drill chuck system (A) by pushing up the outside sleeve and pull the tool down out of the chuck.

## Compressed air supply

Perfect function and performance of the drive unit depends on the air quality and the quantity of air supplied.

The following requirements must be met by the compressed air in order to achieve perfect function and performance of the drive unit:

- The air quality is optimum at a dew point of 10 °C and precipitation of solid particles larger than 15 micrometres as well as 90 % of liquid water.
- The compressed air must contain oil in order to guarantee the required air lubrication.
- Set the oil quantity according to the air requirement.  
 $L$  = air consumption (1/sec)  
 $D$  = number of drops per minute  
 (1 drops = 15 mm<sup>2</sup>);  $L * 0.2 = D$ .
- The compressed air connection must have an operating pressure of 6 - 7 bar = 600 - 700 kPa = 6 - 7 kp/cm<sup>2</sup>.
- Before connecting, blow through the compressed air hose carefully to clean it.  
 Hose diameter: min.10 mm (3/8").

#### NOTE

- ▶ Only connect to the machine when it is switched off.
- ▶ Air consumption of the motor is 1000 l/min.  
 The motor performance is reduced when the air supply is decreased!

## Use

### Activating/deactivating the magnetic clamp

#### Activating the magnetic clamp

- ◆ Turn the lever for the permanent magnet (11) to the right (ON position) to activate the magnets.

#### Deactivating the magnetic clamp

- ◆ Hold the handle tightly (5) to stop the machine from slipping.
- ◆ Push the locking button (12) and turn the lever (11) for the magnetic clamps to the left (OFF position) to release the magnets.

### Switching the machine ON/OFF

#### Switching on the machine

- ◆ Turn the motor switch (10) to the ON position to activate the motor.

#### Switching off the machine

- ◆ Turn the motor switch (10) to the OFF position to deactivate the motor.

### WARNING

#### Risk of injury from motor starting unintentionally!

Pay attention to the following safety notes to avoid danger from motor starting unintentionally:

- ▶ To completely stop the motor:  
Move the motor switch to the OFF position.  
Disconnect the compressed air supply.

## Drilling with the machine

### Drilling with core drills

When drilling with core drills, proceed as follows:

- ◆ Mount the KEYLESS quick-change drill chuck system (A).
- ◆ Install the appropriate ejector pin in the core drill and insert the core drill into the quick-change drill chuck system.
- ◆ Place the machine at the working location, align it and switch on the magnetic clamps.

### NOTE

Observe the following instructions when drilling with core drills:

- ▶ Drilling with core drills does not require great force. The drilling process is not accelerated by higher pressure. The drill wears faster and the machine can be overloaded.
- ▶ Use the pump bottle for cutting oil/drilling emulsion (21) with BDS 5000 high-performance cutting oil supplied for the machine.
- ▶ When working overhead, use ZHS 400 high-performance grease spray. Spray the drill with grease spray on the inside and outside before drilling. Repeat this procedure when drilling deeper holes.
- ▶ Make sure that swarf is removed regularly. With larger drilling depths, break the chip.

## Drilling with twist drills

When drilling with twist drills, proceed as follows:

- ◆ Push twist drills with MK taper into the spindle taper (3) of the machine from below.
- ◆ Push twist drills with straight shank into the drill chuck after fitting the drill chuck.
- ◆ Place the machine at the working location, align it and switch on the magnetic clamps.

### NOTE

- ▶ Under excessive pressure, the drill can wear out and the machine can be overloaded.
- ▶ Make sure that swarf is removed regularly. With larger drilling depths, break the chip.

## Eliminating blockages

### WARNING

#### **Danger of cut injuries from broken tool parts or swarf.**

- ▶ Put protective gloves on before starting work.

### **Blockages caused by a broken tool:**

- ◆ Switch the machine off using the motor switch. Leave the magnetic clamp switched on.
- ◆ Disconnect the compressed air supply
- ◆ Use the handle to move the machine slide to the upper position.
- ◆ Replace defective tool. Remove swarf.

### **Other blockages:**

- ◆ Switch the machine off using the motor switch. Leave the magnetic clamp switched on.
- ◆ Disconnect the compressed air supply
- ◆ Use the handle to move the machine slide to the upper position.
- ◆ Remove swarf and check tool.

### WARNING

#### **Risk of injury from motor starting unintentionally!**

Pay attention to the following safety notes to avoid danger from motor starting unintentionally:

- ▶ To completely stop the motor:  
Move the motor switch to the OFF position.  
Disconnect the compressed air supply.

## Cleaning

### ⚠ WARNING

- ▶ Switch off the machine and disconnect from the compressed air supply before performing maintenance or cleaning.
- ▶ When using compressed air for cleaning, wear protective goggles and gloves and protect other persons in the working area.
- ▶ Motor parts must be cleaned with cleaning solution and not by blowing compressed air.
- ▶ Do not smoke when servicing.
- ▶ After completing all work, wash your hands.

### CAUTION

- ▶ Never immerse the machine in water or other liquids.

## After every use

- ◆ Remove the inserted tool.
- ◆ Remove swarf and coolant residues.
- ◆ Clean the tool and the tool holder on the machine.
- ◆ Clean the guide of the machine slide.
- ◆ Put the machine and accessories into the transport case.

## Maintenance

### ⚠ WARNING

#### **Danger caused by unqualified repairs!**

Unqualified repairs can lead to considerable danger for the user and cause damage to the machine.

- ▶ Repairs to and maintenance on the drive motor may only be carried out by the works customer service or by specialists trained by the manufacturer.

## Adjusting the machine slide guide

If the machine slide guide (8) exhibits too much clearance, it must be adjusted. To do this, proceed as follows:

- ◆ Loosen the clamping bolts.
- ◆ Tighten the adjusting screws evenly.
- ◆ Tighten the clamping bolts again.

## Customer service/service

Should you have any questions on customer service/service, please contact BDS. We will be happy to give you the address of your nearest service partner.



## Storage

If you do not intend to use the machine for a longer period of time, clean it as described in the section **Cleaning**. Store the machine and all its accessories in the transport case at a dry, clean and frost-free location.

## Troubleshooting

Fault	Possible cause	Remedy
The motor does not start after pressing the ON/OFF switch or stops during operation.	Compressed air supply not connected.	Connect the compressed air supply .
	Compressed air supply not switched on.	Switch on the compressed air supply.
	Compressed air supply not sufficient.	Check the compressed air supply and set up according to specifications.
The magnetic clamp does not function.	Magnet not switched on.	Switch on magnet.
	The surface is not magnetic.	Use a suitable base.
Tools wear excessively/are damaged.	No lubrication or not sufficiently greased.	Supply lubrication (e.g.,:use pump bottle for cutting oil/drilling emulsion (21)).


### NOTE

- ▶ If you cannot resolve the problem with the steps described above, please contact customer service.

**Technical data**

<b>Model</b>	<b>AirMAB 5000</b>	<b>Unit</b>
Dimensions (L x W x H)	165 x 322 x 345-535	mm
Magnetic foot (L x W x H)	90 x 190 x 60	mm
Approx. net weight.	17.5	kg
Motor power	830	W
Nominal torque	27	Nm
Air consumption	1000	l/min
Noise emission	96	db(A)
Vibration	1.55	m/s <sup>2</sup>
Stroke	160	mm
Core drill (short) max. Ø	12 - 35	mm
Cutting depth max.	55	mm
Twist drill max. Ø	23	mm
Gear stage 1 speed	290 - 575	rpm
Core drill assembly	Weldon 19 mm (3/4")	

## EC Declaration of Conformity

Name/address of the manufacturer:	<b>BDS Maschinen GmbH</b> Martinstraße 108 D-41063 Mönchengladbach
We hereby declare that the product	
Model:	<b>Magnetic core drilling machine</b>
Type	<b>AirMAB 5000</b>
conforms to the following relevant regulations: <ul style="list-style-type: none"> <li>■ <b>EC Directive 2006/42/EC on machinery</b></li> </ul>	
The following harmonised standards were applied in whole or in part: <ul style="list-style-type: none"> <li>● DIN EN ISO 12100-2010</li> <li>● DIN EN ISO 11148-3:2013</li> </ul>	
Responsible person for documentation according to EC Directive 2006/42/EC - Annex II Pt.A.2. was:	
<hr style="width: 60%; margin: auto;"/> (Surname, forename, position in company of the manufacturer)	
Mönchengladbach, 22nd January, 2014	 <hr style="width: 80%; margin: auto;"/> Wolfgang Schröder, Technical Director <hr style="width: 80%; margin: auto;"/> (Legally binding signature of the issuer)

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