ORIGINAL OPERATING INSTRUCTIONS

Active Pure

vhf
CREATING PERFECTION

Contents

1 WELCOME

These operating instructions were prepared to help you understand all functions of your new portal milling machine.

1.1 Target group

These instructions are intended and released for the following groups of people:

- End users
- Authorized resellers
- Authorized service technicians

1.2 Symbols used

Calls to action

» Specific or general instructions

1. Numbered action step

✔ Result

Other symbols

Cross reference

- List (first level)
  - List (second level)

1. *Numbered image labels*

✔ **Correct** or **Do this**

✖ **Incorrect** or **Do not let this happen** or **Do not do this**

User interface description

<KEYS>

User interface text

1.3 Signal words

The following signal words may be used:

DANGER

DANGER indicates a dangerous situation that will lead to severe physical injury or death.

WARNING

WARNING indicates a dangerous situation that can lead to severe physical injury or death.

CAUTION

CAUTION indicates a dangerous situation that can lead to minor physical injury.

NOTE

NOTE indicates a situation that can lead to material damage on the machine or in the vicinity of the machine.

1.4 Copyright

This document is published by:

vhf camfacture AG

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72119 Ammerbuch, Germany

2 GENERAL SAFETY INFORMATION

2.1 Intended use

The portal milling machines are CNC machines designed for milling materials,. The machines are designed for commercial use.

» Only use additional equipment which is approved by vhf.

» If the following groups / persons are in the same room as the machine, always supervise these groups/persons and define further safety measures if necessary:

- Cleaning personnel, even if they have been instructed
- Persons who are not familiar with the machine
- Operators of other machines
- Employees who work in the immediate proximity of the machine
- Visitors
- Pregnant women
- Persons under 18 years of age

» Ensure that the following regulations for specific persons who handle the machine are observed:

- The person responsible for the machine (operator) and the persons who may work on the machine (operator) must be clearly defined.
- The responsibilities of the personnel for operation, conversion and maintenance must be clearly defined.
- Personnel to be trained may only work on the machine under the supervision of an experienced person.

Operators have the following obligations:

- inform themselves about the national and local laws on occupational health and safety and follow them.
- determine the risks arising from processing. Particularly in terms of material and shape of the workpieces used.
- take additional protective measures if necessary.

2.2 Approved materials

» Only process materials that have been approved for your machine by vhf:

- Aluminum and aluminum alloys
- Brass
- Copper
- Steel and stainless steel (up to 2 mm)
- Plastics: ABS, CFK, GFK, PA, PC, PE, PMMA, POM, PP, PVC-P, PVC-U
- Aluminum composite panels
- Wood and wood-based materials
- Foams

» If you wish to process other materials, contact vhf support.

2.3 Incorrect operation of the machine

» Never use the machine with safety devices open or disabled. Do not use the machine with defective, manipulated or bypassed safety devices.

» Only carry out repair and maintenance works which have been approved by vhf in writing and which are described in the respective operating instructions.

» Before you install, start up and carry out maintenance on the machine, read all the documents provided for the machine.

» If it is unclear how to operate the machine in any way, do not use the machine and contact customer service.

» Make sure that every user has access to this document.

» Instruct every user of the machine on safe and proper machine handling.

» Ensure that unauthorized persons do not have access to the machine.

2.4 Personal injury

2.4.1 Electric shock

Electric shock from touching live parts

If you come into contact with electrically charged parts, you may receive an electric shock. Water significantly increases the risk.

- Only have qualified electricians work on any electric equipment.
- Make sure that a residual current fuse is installed.
- Run electric cables so that they cannot be damaged by sharp edges.
- Check the power cable for damage before every startup.
- Do not switch on the machine until all electrical connections and devices have been connected.
- In the following cases, disconnect the machine immediately from the electrical source and secure it against restarting:
  - When machine connections or electrical cables are damaged
  - When liquid is leaking
  - Before you check or lay electrical cables
- Never perform a troubleshooting while the machine is in operation.
- Have the machine repaired only by authorized service technicians.
- Replace damaged cables with original spare parts from the manufacturer.
- Install all electrical connections according to the specifications of vhf.
- Do not touch the machine and especially the cables with wet or damp hands.
- Immediately remove all spilled liquids near the machine.
- Do not place any containers with liquids on the machine.
- Never put any machines or devices which are powered by electricity underneath the machine.
- Do not apply power to the system until all equipment and electrical cables have been installed.

2.4.2 Fire hazard

Working with flammable and/or explosive materials such as aluminum without appropriate safety measures can lead to death or serious injury.

- Do not use the machine in potentially explosive areas.
- Ensure that the dust extraction is properly installed.
- Fill the tool cooling system with a suitable cooling lubricant and ensure that the system is working properly.
- Only use cooling lubricants recommended by vhf.
- During machining, check continuously that the tool is cooled. Stop machining immediately if cooling is insufficient.

2.4.3 Air extraction system

Respiratory diseases when working with materials that generate harmful dust

If you use materials that cause harmful dust formation without proper safety precautions, you can inhale harmful dust and damage your respiratory tract.

- Only mill these materials with activated suction.
- Avoid materials that are hazardous to your health.
- Use an extraction system with a suitable filter system.

2.4.4 Cooling liquid

Danger to health if of the cooling liquid is handled incorrectly

If you use the wrong cooling liquid or handle the cooling system incorrectly, the cooling liquid can damage your health.

- Use only those cooling liquids that are prescribed by vhf for the respective material.
- Before using the cooling liquid, read the safety data sheet that was supplied with the cooling liquid.
- When handling the cooling liquid, always wear suitable protective clothing.
- Always store cooling liquid in the original container.

2.4.5 Housing

Danger of entrapment by moving housing parts

There is a risk of jamming at the moving parts of the enclosure, such as doors and flaps.

- If you move these housing parts, use only the designated grip points.
- Make sure that your hands are not trapped during movement.

2.4.6 Axis movements

Risk of crushing due to moving machine parts

Axis movements of the machine can cause bruises and contusions.

- Do not bypass or deactivate the safety devices of the machine.
- Check the machine regularly for damage, especially the safety devices.
- Have damaged safety devices repaired by an authorized service point only.
- Use only original manufacturer's equipment and original spare parts in the machine.
- Keep unauthorized persons away from the machine.

2.4.7 Tools and Spindle

Danger of cuts and burns from tools

If you touch tools or sharp edges on workpieces or the machine, you may get a cut.

- Only remove tools when the machining process is completed.
- Do not grasp the tools by the cutting edge and wear suitable gloves during the tool change / assembly / disassembly.
- Use the machine only with an enclosure around the entire working area or with a correctly positioned dust extraction (approx. 1 mm above the workpiece surface) around the rotating tool.
- Check the machine regularly for damage, especially the safety devices.
- Have damaged safety devices repaired by a service technician, unless otherwise stated in this document.
- Use only original manufacturer devices and original spare parts in the machine.
- Keep unauthorized persons away from the machine.

Danger of burns on the spindle or the tool

If you touch the hot spindle body or hot tools, you may suffer from burns.

- Wear gloves when you perform manual work at the machine or with workpieces / tools.

Danger due to ejecting parts

- Use only carbide metal tools.
- Use the machine only with a correctly positioned dust extraction (approx. 1 mm above the workpiece surface) around the rotating tool.
- Start the machining process only from the workstation. Do not approach the machine until after the program has ended.
- For operation without air extraction: All persons within reach of the machine must wear protective goggles.

2.4.8 Operating noise

Hearing loss and tinnitus due to regular loud working noises

- If loud working noises cannot be prevented, use an ear protector during machining.

2.4.9 Falling objects

Risk of injury from falling objects

Falling objects can cause injuries.

- Before starting the machining process, make sure that the workpiece is properly fixed.
- Safety shoes must be worn during operation and when loading workpieces.
- Do not place any objects, except the workpiece, on the machine.

2.4.10 Pneumatic components

Risk of injury from loose pneumatic components under air pressure when connections are open

Loose pneumatic components can move extremely fast and unpredictably and may cause injury.

- Before you run the pneumatic hoses, close the external air supply.
- Before you check the pneumatic hoses and pneumatic connections, set the air the pressure to the lowest possible value.
- In case of defective machine connections and pneumatic hoses, disconnect the machine from the external compressed air supply and the electrical source.
- Contact customer service if connections are damaged or defective.

2.4.11 Tripping, falling and slipping hazards

- Lay cables and hoses such that people cannot trip over them.
- Keep the work environment and the installation site clean.

2.4.12 Maintenance

Increased risk during maintenance

- Only carry out the maintenance work that is described in the operating instructions of the machine. Otherwise, you may be injured or your machine may be damaged.
- Do not step on the machine table.

Risk of injury in the event of malfunctions due to inadequate maintenance

Failure to maintain the machine as specified may cause malfunction, which could result in personal injury.

» Clean and maintain the machine as necessary. This is the only way that the machine can achieve a long service life.

» Observe the intervals and conditions specified in the maintenance table in the operating instructions. Carry out the respective maintenance work accordingly.

2.5 Material damage

2.5.1 Spindle

» Do not use any tools with high imbalance at high rotational speeds. Such an imbalance puts a great strain on the spindle's ball bearings, which can damage the ball bearings.

» When defining the machining parameters, pay attention to the maximum speed of each tool.

2.6 Operation of the machine via software

You operate the machine via a specially developed manufacturing software that is supplied with the machine.

» Always use the latest version of the manufacturing software that supports your machine.

» Read the manufacturing software documentation before using the machine.

3 TRANSPORT AND INSTALLATION

The machine will be delivered and installed by vhf. The operator is responsible for ensuring that a suitable forklift (as specified in the information leaflet) is available.

Only use the forks of the forklift at suitable places, otherwise the machine may be damaged.

The following conditions must be observed during the entire transport process and/or storage:

- Ambient temperature: between 0 °C and 32 °C
- Relative humidity: max. 80%, non-condensing

» Always transport the machine in the horizontal position.

» Take appropriate measures against corrosion when transporting the machine overseas.

3.1 Installation site

vhf clarifies critical points regarding the installation and the transport of the machine before delivery, (e.g. the accessibility of the installation site or the space conditions at the installation site).

You will receive an installation plan for your machine before delivery. With the floor plan you can ensure that all requirements for use are met (e.g. necessary electrical connections, compressed air connections).

» Select the installation location according to the following criteria:

- No potentially explosive atmospheres
- Firm and level ground, must bear the weight of the machine
- Room temperature:
  - between 10 °C and 32 °C
  - ideally between 18 °C and 25 °C
- Relative humidity: max. 80%, non-condensing
- Power supply: according to installation plan
- At least 1,000 mm clearance around the machine.
- Compressed air supply, in accordance with installation plan:
  - 6 bar – 8 bar available pressure
  - Quick coupling with an inner diameter of 6 mm

» If you have further questions about the Installation site, contact customer service to ensure trouble-free installation of the machine.

3.2 Installation plan

Required safety distance (light gray area) with free access to the machine. Figure not to scale.

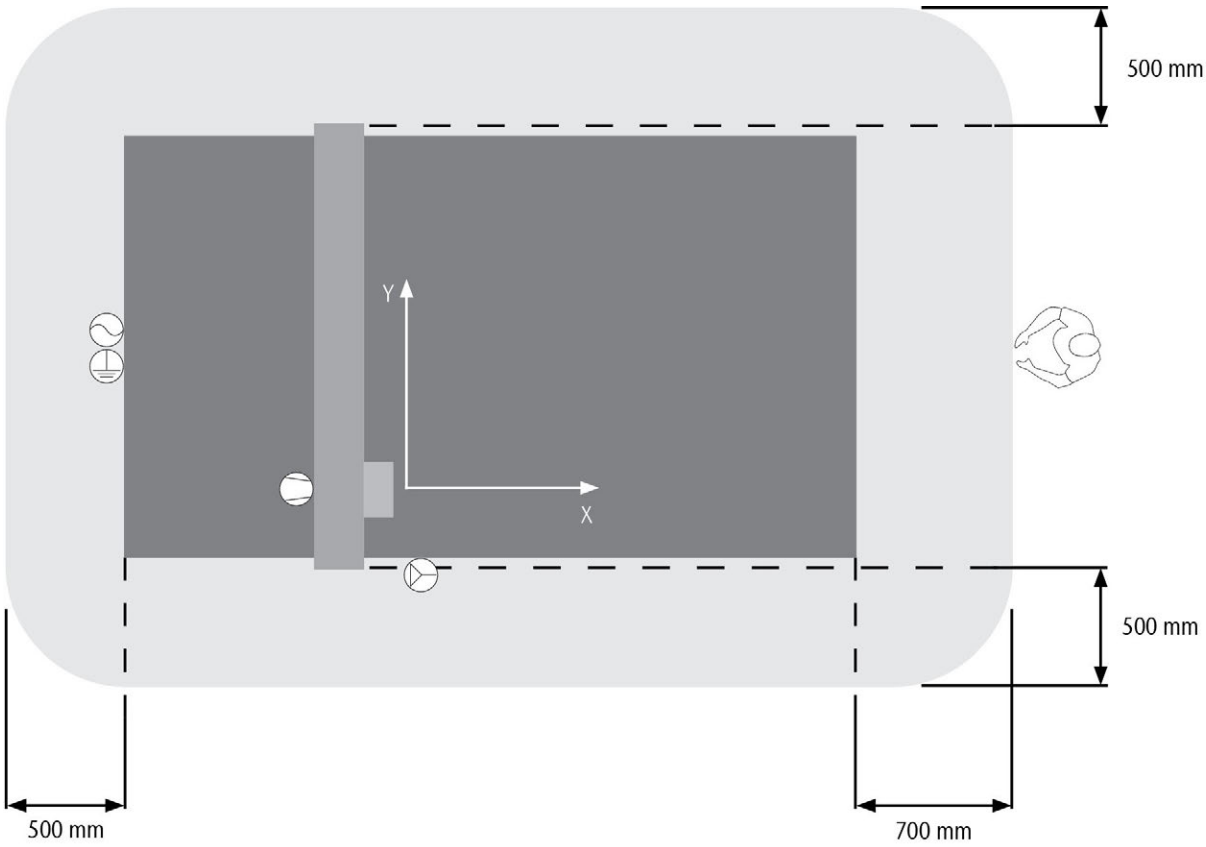

FIG. 1

Ground wire

Power supply

Dust extraction

Compressed air supply: 6 – 8 bar

You can find detailed information regarding connections in the leaflet Technical Data.

Depending on the equipment, you can place individual machine sides directly against a wall to prevent access. The safety distance at the respective machine side can be neglected.

For a placement directly against walls you need to ensure that all control elements of the machine can be reached.

4 GET TO KNOW YOUR MACHINE

4.1 General machine overview

FIG. 2

1. *Portal head*
2. *Portal*
3. *Machine table*
4. *Machine designation*
5. *Machine leg*

4.2 Machine axes

For easier understanding, the sides of the machine are specified. These designations are retained throughout the entire manual.

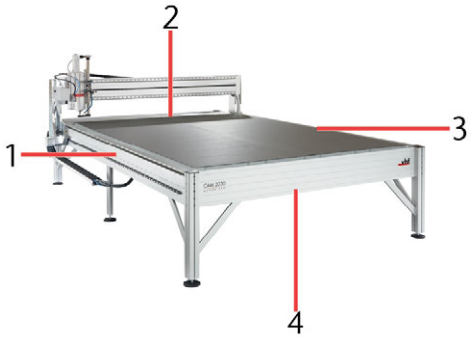

FIG. 3

1. *Left side*
2. *Back*
3. *Right side*
4. *Front*

This machine can be configured so that it can be operated from the front or from the left side.

- Operation from the front: The X-axis is parallel to the portal and the Y-axis is parallel to the sides of the machine.
- Operation from the left side: The Y-axis is parallel to the portal and the X-axis is parallel to the sides of the machine.

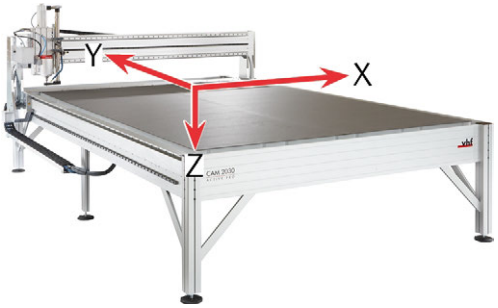

FIG. 4

FIG. 5

4.3 Machine zero point

The machine has a defined machine zero point. The zero point of the Active Pure is located above the rear left corner of the machine table. All axes (X-axis, Y-axis and Z-axis) are at 0 when approaching the machine zero point.

4.4 Name plate

The type plate of the Active Pure is located on the back of the machine. The type plate of the machine contains information such as the serial number, the weight of the machine, the machine designation and the year of production.

Structure

FIG. 6

1. *Machine designation*
2. *Design variant (here: CAM 2030 Active Pure)*
3. *Machine specific serial number*
4. *Control voltage (here: 24 V DC)*
5. *Power connection (here: 3~ 400 V AC 16 A)*
6. *Weight (here: 650 kg)*
7. *Year of production (here: 2023)*

4.5 Main power switch

The machine's main switch is located on the electrical box on the back of the machine. You disconnect and connect the power supply to the machine and all components that are supplied with power via the machine there.

FIG. 7

4.6 Emergency stop button

The emergency stop button is connected to the machine control unit and interrupts the control of the axes and of the spindle in an emergency or to prevent a hazard. After actuation, the emergency stop button locks. The original state can be restored by turning it. After unlocking, the machine does not restart by itself.

The emergency stop button is located on the operating element, which is mounted on the left side of the machine.

FIG. 8

4.7 Machine table

The machine table of the Active Pure is a vacuum table onto which workpieces are sucked and held in place by a vacuum.

The machine is equipped with several vacuum suction units that generate the required vacuum. The machine table is divided into lanes running lengthwise to the machine. The vacuum can be switched on and off separately for each web. The machine table must be covered with a vacuum fleece or a cutting pad, depending on the application.

FIG. 9 CAM 1520 ACTIVE PURE

4.8 Portal head

The portal head contains the spindle, tool cooling and dust extraction. The portal head travels along the portal. The spindle moves up and down.

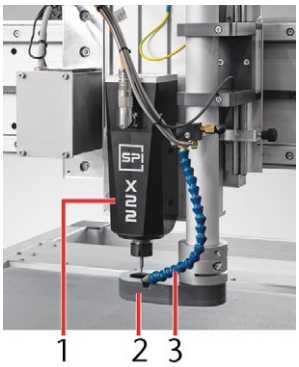

FIG. 10

1. *Spindle*
2. *Suction shoe including Dust extraction*
3. *Tool cooling*

4.9 Automatic Z adjustment

Before machining, the workpiece height is measured with the automatic Z adjustment. This measurement is taken via a contact between the tool tip of an electrically conductive tool and the Z-adjustment plate.

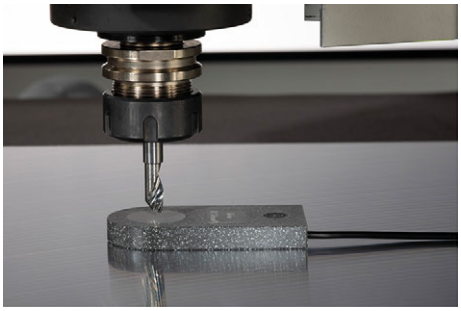

FIG. 11

4.10 Spindle

The spindle is used for milling. A three-phase spindle (SPC 2200) is installed in the Active Pure.

Spindle cooling

The spindle is cooled by a fan.

4.11 Dust extraction

The dust extraction system consists of the suction unit, the suction hose and the suction shoe. The suction shoe ensures targeted suction of the chips directly at the milling cutter and protects against tampering and thus possible injuries. The suction shoe must always be mounted for machining with the spindle.

Depending on the application, three different types of suction units are available:

- Dust class L
- Dust class M
- Dust class M with ATEX approval

4.12 Tool cooling

Cooling and lubrication of the tool with cooling liquid promotes longer tool life and better machining results at the same time. Many materials (e.g. aluminum) require continuous cooling during machining.

Cooling and spraying unit

The cooling and spraying device works according to the displacement principle. The nozzle has 2 supply lines, one for compressed air and one for cooling liquid. The cooling liquid is drawn from the cooling liquid tank by the compressed air through the displacement principle, atomized in the nozzle and sprayed onto the mold.

4.13 Control components

The control components include the machine control (CNC) and the frequency converter (SFU) of the spindle. These components are installed in the base of the machine.

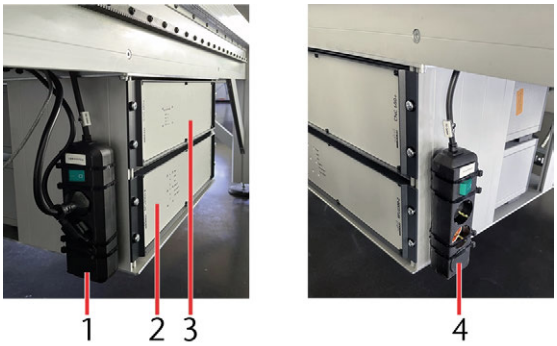

FIG. 12

1. *Toggle switch for CAM system*
2. *Frequency converter*
3. *Machine control*
4. *Toggle switch for PC system*

4.13.1 Machine control (CNC)

The machine control is responsible for implementing the machine movements stored in the job file.

A status LED on the front panel indicates the status of the control unit.

X-axis / Y-axis / Z-axis / T-axis

Green: Axis movement

Red: Reference point approached

Status

Blue (flashing): Machine is ready for operation

Stop

Orange: Emergency stop mode is active and the emergency stop button is pressed. The axes cannot be moved. The emergency stop button must be released and the machine must be referenced.

Red: Emergency stop mode is active and the emergency stop button is released. The machine can be referenced, then the axes can be moved freely again.

Stop

Orange: Machine is in stop

Spindle

Yellow: Spindle is ready for operation

Red: Spindle error

4.13.2 Frequency converter (SFU)

The frequency converter enables control of the spindle by controlling the speed of the drive.

A status LED on the front panel indicates the status of the frequency converter.

Power

Blue: Frequency inverter is ready for operation

Motor

Yellow: Spindle rotates

Error

Red: An error has occurred

Speed OK

Green: Spindle has reached the desired speed

Cone Locked 1

Red: No cone detection available

Cone Locked 2

Red: No cone detection available

4.14 Technical specifications

Three-phase spindles

	Unit	Value
Model		SPC 2200
S1	W	2,200
Pmax	W	2,500
Speed range	rpm	min. 5,000 / max. 30,000
Tool change		Manual
Sealing air		No
Spindle cooling (Cooling liquid)		No
Clamping range	mm	3 to 16

- S1: mechanical output power at continuous load of the spindle (100% machining time)
- Pmax: maximum mechanical output power of the spindle

Dust extraction

	Unit	Value
Model		CTL 36 AC, CTL 48 AC CTM 36 AC, CTM 48 AC
Dust class		*CTL:* L (maximum permissible concentration at the workplace >1 mg/m³) *CTM:* M (maximum permissible concentration at the workplace >0.1 mg/m³)
Area of application		*CTL:* Extraction of dusts that are not explosive and not hazardous to health *CTM:* Extraction of dusts from wood, ceramics, printed circuit boards, etc.
Power consumption	W	max. 1,200 W
Flow rate	l/min	max. 3,900 l/min
Negative pressure	bar	max. 0.24 bar
Filter surface	cm²	6,318 cm²
Filter cleaning		Automatic main filter cleaning
Container size	l	36 l, 48 l
Pipe outer diameter	mm	40 mm

Cooling and spraying unit

	Unit	Value
Number of nozzles		1
Position of the nozzles		Freely positionable

Vacuum suction unit (per unit, number depends on machine size)

	Unit	Value
Nominal voltage	V	230 V
Power consumption	W	1,200 W
Lifetime		approx. 1,000 hours
Suction volume	m³/h	144 m³/h at 220 mbar

Machine control

	Unit	Value
Output power	V	up to 40 V
Maximum current	A	up to 4 A

5 OPERATING THE MACHINE

5.1 Starting the machine

1. Make sure that no liquid is leaking and all cables and hoses are connected.
2. Make sure that there are no persons or objects in the safety area.
3. Remove all objects from the machine table with which the portal can collide during travel.
4. Switch on the main switch at the rear of the machine.
5. Switch on the toggle switch for the CAM system on the base of the machine.
6. Switch on the toggle switch for the PC system on the base of the machine.
7. Switch on the manufacturing computer.
8. Check the displays of the machine control and the frequency converter.
9. Check the pressure at the main pressure control valve of the machine. The inlet pressure must be 6.5 – 8 bar (recommended 7 bar).
10. Check the safety devices.
11. Start the manufacturing software.
    Make sure that no liquid is leaking and all cables and hoses are connected.

If the spindle is not in operation for a longer period (more than 4 days), break in the spindle such that the grease is evenly distributed in the spindle bearings.

5.2 Tools

5.2.1 Milling tool

SPC 2200

The tools must be inserted manually into the spindle. A collet chuck with a swivel nut is used for this purpose.

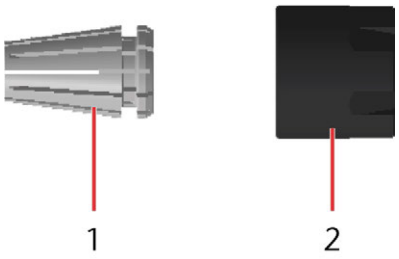

FIG. 13

1. *Collet chuck*
2. *Swivel nut*

1. Insert a collet chuck into the swivel nut. Press the collet chuck into the swivel nut until you hear a click. The click means that the collet chuck is locked in the swivel nut.
2. Loosely screw the swivel nut onto the spindle.
3. ⚠ **CAUTION!** Insert the tool into the collet chuck. Tighten the swivel nut slightly by hand.
   NOTICE! Push the shank of the tool into the collet chuck such that approx. 3 mm distance remains between the collet chuck and the flutes in the tool.
4. Tighten the swivel nut with the hook wrench. Counter the spindle with an open-end wrench on the flat surfaces of the spindle shaft.
5. When you have finished machining, remove the tool from the spindle. Use the hook wrench and the open-end wrench.

5.3 Tool cooling

NOTE **Damage caused by machining with unsuitable cooling liquid**

Machining without a suitable cooling liquid can damage the machine, tools and workpieces.

» Before doing any job, make sure the cooling liquid is clean, does not flocculate, and that the fluid level is adequate.

» Only use cooling liquids that meet the requirements listed below.

The machine requires a cooling liquid that meets the following requirements:

- Cooling liquid suitable for the application (View table)
- No added chlorine
- No carbonated water

Suitable cooling liquids

We recommend using TecLiquid Pro. Other listed cooling liquids can be used optionally.

	Material	Mixable with drinking water
TecLiquid Pro	Nonferrous metals, steels	Mixing ratio 1:19, concentration 5%
Alu-N	Nonferrous metals	No
AquaTec®	Nonferrous metals, steels	Mixing ratio 1:17 – 1:14, concentration 6 – 7%

⚠ **CAUTION!** Handle the cooling liquid carefully and wash your hands thoroughly afterwards. Have the cooling liquid and contaminated items disposed of properly. Observe the safety data sheet of the cooling liquid.

» Check the cooling liquid regularly before machining.

» Refill the cooling liquid when the cooling liquid level is below the min mark. Make sure you use the same type of the cooling liquid.

» Replace the cooling liquid if it is flocculated or contaminated

5.3.1 Cooling and spraying unit

Refilling the cooling liquid

1. Open the container of the new cooling liquid and place it next to the empty container under the machine table.
2. Remove the hose from the empty container.
3. Insert the hose into the full container.
4. Remove any leaked cooling liquid with a cloth.

5.3.2 Spray nozzle

FIG. 14

1. Remove the yellow protective caps on the spray nozzles.
2. Insert the nozzles into the side opening on the top of the suction shoe.
3. Orient the nozzles such that they cool the tool tip.

5.4 Suction shoe

Correct alignment

FIG. 15

1. Before milling, make sure that the suction shoe is mounted below the spindle.
2. Lift up the suction shoe and check the concentric alignment using the spindle opening.
3. If necessary, correct the alignment:
   a. Open the screw on the suction tube.
   b. Turn the suction shoe until it is flush with the opening in the spindle.
   c. Tighten the screw on the suction tube again.
4. Make sure that the suction shoe (marked blue) fits tightly against the counterpart (marked orange) with the sensor and that there is no soiling in the gap.
5. Confirm on the control element with the emergency stop and acknowledgment button that the suction shoe is correctly mounted. To do this, press the pushbutton and the rotary switch at the same time.
6. If the spindle does not start when machining is started, check the assembly of the suction shoe again. If necessary, reconfirm that the suction shoe is correctly mounted.

   ⚠ **CAUTION!** The spindle may start up and injure you.

FIG. 16 ELECTRONICALLY MONITORED SUCTION SHOE

FIG. 17 CONTROL ELEMENT WITH EMERGENCY STOP AND ACKNOWLEDGMENT BUTTON

5.5 Positioning workpieces

1. Remove all objects from the machine table.
2. Set the workpiece zero point via the manufacturing software.
3. Measure the workpiece height by using one of these methods:
   - Automatic Z adjustment: *Automatic Z adjustment – below*

5.5.1 Switching the vacuum on / off

Switching on the vacuum

1. Place the workpiece on the vacuum table and align it with the edges of the vacuum table.
2. Make sure that the switches directly on the vacuum suction units at the back of the machine are turned on.

   The corresponding vacuum suction units start up directly. Only switch on the vacuum suction units that contain the workpiece.
3. Cover the free surfaces of the vacuum table to optimize the vacuum generated and thus the holding force on the workpiece.

Switching off the vacuum

1. Switch off the vacuum suction unit at the rear of the machine using the switches directly on the respective vacuum suction unit.

5.5.2 Automatic Z adjustment

NOTE **Machine damage due to incorrect tool for automatic Z adjustment**

If diamond-coated tools attachments are used for the automatic Z adjustment, the machine will not detect the height. It continues to move in Z direction without braking.

» Do not measure the workpiece height with diamond-coated or diamond-tipped tools.

1. Place the workpiece onto the machine table and fasten it into its final position. Make sure that you do not move the workpiece after measuring the workpiece height, otherwise the measured value will be falsified.
2. ***NOTICE!*** Insert a tool into the spindle.
3. Move the tool over the workpiece. Make sure that the measuring plate of the automatic Z adjustment can be placed completely on the workpiece. Align the measuring plate such that the tool tip hits the measuring plate on the metal part.
4. ⚠ **CAUTION!** Start the automatic Z adjustment via the manufacturing software.

✔ The Z-axis moves down until there is contact between the tool and the measuring plate.

✔ The Z axis moves up again.

5. Remove the measuring plate immediately after measuring to prevent a collision.

5.6 Machining interruptions and cancellation of processing

Machining interruptions and machining aborts are always the result of unforeseen problems that require operator intervention.

Machining interruptions

Machining is *interrupted* in the following cases:

- The electronically monitored suction shoe is not detected by the sensor.
- Machining was interrupted via the manufacturing software.

» In the event of a machining interruption, ensure the following:

- The electronically monitored suction shoe is correctly attached and detected by the sensor. The suction shoe has been reset.
- Other errors that caused the interruption were fixed.

Machining aborts

Machining is *aborted* in the following cases:

- The machine has a malfunction.
- The power connection of the machine was interrupted.
- The control unit has detected a malfunction.
- Machining was finished via the manufacturing software.

» In the event of a machining abort, ensure the following:

- The CAM System switch and the main switch are switched off.
- All objects were removed such that the axes can be moved freely.

5.7 Switching off the machine

1. ⚠ **CAUTION!** Remove the clamped tool from the spindle.
2. Move the axes in the direction of the machine zero point.
3. Switch off the vacuum suction unit at the rear of the machine using the switches directly on the respective vacuum suction unit.
4. Close the manufacturing software.
5. Shut down the production computer.
6. Switch off the toggle switch for the CAM system on the base of the machine.
7. Switch off the toggle switch for the PC system on the base of the machine.
8. Switch off the main switch at the rear of the machine.
9. Remove the workpiece from the machine table.
10. Remove machining residue from the machine table.

6 MAINTENANCE

NOTE **Damage to the spindle when cleaning with compressed air**

Using compressed air to clean the spindle can damage the spindle bearings.

» Only clean the spindle with a clean cloth or soft brush.

Your machine needs regular maintenance for a long and productive life with minimum downtime. You can carry out the following maintenance yourself.

6.1 Basic maintenance and cleaning

Basic maintenance and basic cleaning includes all maintenance tasks that are necessary to maintain operation. This maintenance must be carried out by you at the prescribed intervals.

6.2 Warranty

The machine and additional equipment are guaranteed for 24 months in single-shift operation. The warranty covers material damage and manufacturing damage, provided that the operating instructions in this document have been observed. In addition, damage to wearing parts is covered, provided that this is not due to function-related wear.

6.3 Definition of wear parts

Wearing parts are parts of the machine which are worn out during normal function before the end of the machine's service life. The maintenance table lists all wearing parts of the machine and their average service life. At the end of the service life, these wearing parts should be replaced in order to maintain smooth operation.

6.4 Maintenance table

6.4.1 Daily maintenance

Task	Brief description
Checking the external power connection for damage	Visual inspection of the external power connection
Checking the external compressed air connection for damage	Visual inspection of the external compressed air connection
Checking the safety devices	Visual inspection and functional test of the safety devices
Checking the suction hose for damage	Visual inspection and functional test of the suction hose
Checking the cooling liquid and cooling liquid level	Visual inspection of the cooling liquid and the cooling liquid level
Daily cleaning of the machine	Daily cleaning of the machine ■ Cleaning the machine table ■ Cleaning the tools ■ Clean the spindle

6.4.2 Weekly maintenance

Task	Brief description
Weekly cleaning of the machine	Weekly cleaning of the machine ■ Cleaning and emptying the vacuum cleaner

6.4.3 Annual maintenance

Task	Brief description
Annual cleaning of the machine	Annual cleaning of the machine ■ Checking the control unit fan

6.5 Wear and spare parts (self-replacement)

6.5.1 Wear and spare parts (self-replacement)

Task	Brief description
Exchange the spindle	Exchange of the spindle
Exchange the control unit	Exchange of the machine control unit
Exchange the frequency converter (SFU)	Exchange of the frequency converter of the spindle
Exchange the computer	Exchange of the production computer
Exchange the cooling and spraying device	Exchange of the cooling and spraying device
Exchange the vacuum table element	Exchange of the vacuum table element

6.5.2 Wear and spare parts (customer service replacement)

Wear part	Brief description	Interval
Exchange the drive pinion	Exchange of the drive pinion	2,000 operating hours / 1 year / In case of damage
Exchange the track rollers	Exchange of the track roller	2,000 operating hours / 1 year / In case of damage
Exchange the Z-axis motor and clutch	Exchange of the motor and coupling of the Z-axis	2,000 operating hours / 1 year / In case of damage
Exchange the felts	Exchange of the felts	When necessary (heavy pollution)
Exchange the Z-axis limit switch	Exchange of the Z-axis limit switch	In case of damage
Exchange the limit switch X-axis / Y-axis	Exchange of the X- / Y-axis limit switch	In case of damage
Exchange the filter of the vacuum suction unit	Exchange of the vacuum suction unit	When necessary
Exchange the Z adjustment	Exchange of the automatic Z adjustment	When necessary

6.6 Daily maintenance

Checking the external power supply for damage (before switching on the machine)

Check the external power supply cable and the ground cable for kinks and damage. If one of the cables is damaged, the machine must not be started up.

The external power supply cable must be replaced by a qualified electrician, as it is firmly attached to the control unit.

Have the damaged cable replaced immediately by a qualified electrician trained on the machine by vhf. If you cannot replace the cable immediately, switch off the machine at the main switch and secure it with a lock to prevent it from being switched on again.

Checking the external compressed air supply for damage (before switching on the machine)

Check the hose of the external compressed air supply for kinks and damage. If the hose is damaged, the machine must not be started up. An insufficient compressed air supply can impair tool cooling. Replace the damaged hose immediately. If you cannot replace the hose immediately, switch off the machine at the main switch and secure it with a lock to prevent it from being switched on again.

Checking the safety devices (before starting work)

Check the safety devices before starting the machining operation. This check includes checking the emergency stop button. These components are necessary for safe machining. For this reason you should not start machining if a safety device is not fully functional.

1. Turn on the machine.
2. Wait until the status LED of the CNC control unit pulsates blue.

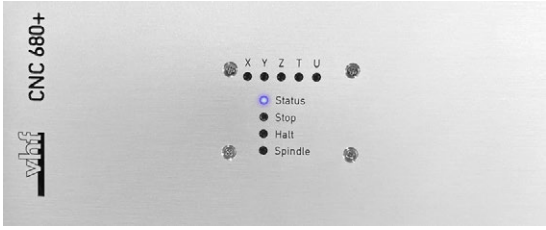

FIG. 18

3. Test the emergency stop button on the control element by pressing it. On the LED display of the CNC control unit, the **Emergency Stop** LED must light up orange as soon as the emergency stop button is pressed.

*FIG. 19 ORANGE LED **EMERGENCY STOP***

4. Release the emergency stop button and check if the **Emergency Stop** LED display on the CNC control unit lights up red.

*FIG. 20 RED LED **EMERGENCY STOP***

5. If the emergency stop button does not work properly, do the following:
   a. Turn off the machine.
   b. Turn off the main switch. Secure the main switch with a lock to prevent it from being switched on again.
   c. Contact vhf support.
6. Make sure that the electronically monitored suction shoe is mounted correctly.
   Suction shoe (Page 17)

Checking the cooling liquid of the tool cooling system (before starting to machine)

» Check the level and condition of the cooling liquid of the tool cooling system before starting to machine. If necessary, top up with cooling liquid or replace it.
Tool cooling (Page 16)

⚠ **CAUTION!** When machining aluminum and aluminum alloys, a functional tool cooling system is absolutely necessary.

Daily cleaning of the machine

The following work is carried out after machining and before switching off the machine:

- Cleaning the machine table
- Cleaning the tools

Cleaning the machine table
Required tools

- Vacuum cleaner
- Moist cloth
- Mild detergent (optional)

1. Remove all objects from the machine table.
2. Turn on the vacuum to fix the vacuum fleece in place.
3. Remove chips with the help of a vacuum cleaner.
4. Clean the sides of the table, the portal, and the portal head with a damp cloth. Remove heavy soiling with the help of a mild detergent.

Cleaning the tools
Required tools

- Brush

1. Clean the tool with a brush.

Clean the spindle

Required tools

- Clean cloth
- Brush

1. Clean the spindle with a clean cloth or soft brush.
2. Clean the fan grille and the cooling air outlet area.

6.7 Weekly maintenance

Cleaning and emptying the vacuum cleaner

1. Open the vacuum cleaner.
2. Empty the contents of the vacuum cleaner.
3. Clean the filter of the vacuum cleaner.
4. Close the vacuum cleaner.
5. Switch on the dust extraction system and check that the vacuum cleaner is working properly.
6. If the dust suction is inadequate: check the hose.
   - If the hose is clogged: Clean the hose.
   - If the hose is damaged: Replace the hose.
7. If the hose is not the cause of the problem: Connect another vacuum cleaner and test the dust extraction system.
   - If the suction is still inadequate, do not start up the machine.

6.8 Wear and spare parts (self-replacement)

Replacing the spindle

You can replace the spindle yourself.

» When doing so, mount the new machining unit of the same type and do not change the device file in the manufacturing software.

Replacing the control unit (CNC)

1. Turn off the machine.
2. Switch off the toggle switch for the CAM system on the base of the machine.
3. Turn off the main switch. Secure the main switch with a lock to prevent it from being switched on again.
4. Switch off the control unit at the switch on the rear panel.
5. Disconnect the power plug.
6. Disconnect the screw connector of the output connector **Output.**
7. Disconnect the screw connector of the input connector **Input.**
8. Disconnect the screw connector of the output connector **Extension Output**.
9. Disconnect the screw connector of the spindle communication **Spindle**.
10. Disconnect the screw connector **RS 232**.
11. Disconnect the USB cable to the production computer.
12. Unscrew the 4 screws that fasten the control unit in the base.
13. Pull the control unit out of the base towards the front.
14. Insert the new control unit into the base.
15. Screw in the 4 screws that fasten the control unit in the base.
16. Connect the USB cable to the production computer.
17. Connect the screw connector of the spindle communication **Spindle**.
18. Connect the screw connector **RS 232**.
19. Connect the screw connector of the input connector **Input**.
20. Connect the screw connector of the output connector **Output.**
21. Connect the 2 screw connectors of the output connector **Extension Output**.

22. Connect the power plug.
23. Turn on the control unit at the switch on the back of the control box.
24. Check the safety devices.
    Checking the safety devices (before starting work) (Page 23)

Replacing the spindle frequency converter (SFU)

1. Turn off the machine.
2. Switch off the toggle switch for the CAM system on the base of the machine.
3. Turn off the main switch. Secure the main switch with a lock to prevent it from being switched on again.
4. Disconnect the screw connector of the power plug.
5. Disconnect the screw connector of the spindle sensor **Spindle Sensor**.
6. Disconnect the screw connectors of the spindle cable **Spindle**.
7. Disconnect the screw connector of the cable to the control unit **Control.**
8. Disconnect the grounding cable.
9. Unscrew the 4 screws that fasten the frequency converter to the front of the base.
10. Pull the frequency converter out of the base towards the front.
11. Insert the new frequency inverter into the base.
12. Screw in the 4 screws that fasten the frequency converter to the front of the base.
13. Connect the grounding cable.
14. Connect the screw connectors of the spindle cable **Spindle**.
15. Connect the screw connector of the spindle sensor **Spindle Sensor**.
16. Connect the screw connector of the power plug.

Replacing the manufacturing computer

1. Turn off the machine.
2. Switch off the toggle switch for the PC system on the base of the machine.
3. Turn off the main switch. Secure the main switch with a lock to prevent it from being switched on again.
4. Disconnect the power plug.
5. Disconnect the Ethernet cable.
6. Disconnect the screen cable.
7. Disconnect the USB cables.
8. Replace the old production computer with the new one.
9. Connect the USB cables.
10. Connect the screen cable.
11. Connect the Ethernet cable.
12. Connect the power plug.

Replacing the nozzle of the mold cooling

1. Turn off the machine.
2. Unscrew the screw that secures the supply line to the nozzle hose. If you replace the nozzle together with the shut-off valve, also unscrew the supply line at the shut-off valve and mark the supply lines.
3. Unscrew the end switch from the machine. If you replace the nozzle together with the shut-off valve, unscrew the valve and remove it with the nozzle.
4. Screw the new nozzle hose to the machine. If applicable, screw the new shut-off valve together with nozzle hose to the machine.
5. Screw the supply line to the nozzle hose. If applicable, also screw the supply line tightly to the shut-off valve.
6. Align the new nozzle.
   Spray nozzle (Page 17)

7 DECOMMISSIONING AND DISPOSAL

7.1 Decommissioning

To prevent damage due to prolonged storage (more than 1 month), perform the following work:

Component	Task
Linear guide rails, toothed racks	Grease the linear guide rails and toothed racks.
Spindle	Clean the cone.
Machine in general	Switch off the machine at the main switch and secure it against being switched on again with a lock.
External compressed air connection	Disconnect the external compressed air connection.
Power connection	Disconnect the power supply.
Ethernet network cable	Disconnect the Ethernet network cable.

7.2 Dispose of the cooling liquid and machining residue

When disposing of the cooling liquid/machining residue, obey the following regulations:

- Avoid entry of hazardous machining residue into the soil, water and sewer system.
- Keep a sample of the product to be disposed of for at least 6 months.
- Observe the national and local laws of the disposal site.
- If required, have the products disposed of by an approved disposal company.

7.3 Disposal of the machine

The machine must not be disposed of together with residual waste. This is indicated by the symbol with the crossed-out garbage can. In the European Union (EU), this falls under Directive 2012/19/EU.

We will dispose of the machine at no cost. The owner will bear the costs for disassembly, packaging and transport.

» Before you send the machine in for disposal, contact your reseller's customer service or recycling@vhf.de.

» Delete all personal data under your own responsibility from all data carriers of the internal and/or external devices.

» If you dispose of the machine yourself, observe the national and local laws of the disposal location.

» If necessary, have the machine disposed of by an approved waste disposal company.

8 MACHINING PARAMETERS

DANGER **Flammable and/or explosive materials**

Working with flammable and/or explosive materials such as aluminum without appropriate safety measures can lead to death or serious injury.

- **Before** machining, make sure that the dust extraction system is suitable for flammable/explosive materials and functions properly.
- **Before** machining, make sure that the tool cooling system is filled with a suitable cooling lubricant and is functioning properly.
- Only use cooling lubricants recommended by vhf.
- **During** machining, check continuously that the tool is cooled. Stop machining immediately if cooling is insufficient.

Depending on the material to be machined, the speed and feed rate should be adjusted.

The following parameters are only reference values for the most common tools, depending on the experience that vhf collected.

For parameters of other tools from the vhf product range, please contact vhf customer service.

8.1 Thermoplastics

Almost all solid plastics without fiber reinforcement.

- Single-tooth cutter with polished flute (ES-PS-...)

Cutting edge diameter [mm]	3	4	6	8
Speed range [rpm]	25,000 – 30,000	25,000 – 30,000	20,000 – 25,000	15,000 – 20,000
Feed X / Y direction [mm/s]	35 – 45	40 – 50	55 – 65	60 – 75
Feed Z direction [mm/s]	3 – 5	3 – 5	5 – 8	8 – 10
Material removal [mm]	3 – 4.5	4 – 6	6 – 12	8 – 16

- Double-tooth cutter with polished flute (ZS-PS-...)

Cutting edge diameter [mm]	3	4	6
Speed range [rpm]	20,000 – 25,000	20,000 – 25,000	20,000 – 25,000
Feed X / Y direction [mm/s]	30 – 40	50 – 60	60 – 75
Feed Z direction [mm/s]	3 – 5	3 – 5	5 – 8
Material removal [mm]	3 – 4.5	4 – 8	6 – 12

- Engraving tools (GS -...)

Point angle [°]	15	36	60	90
Speed range [rpm]	19,000 – 24,000	19,000 – 24,000	17,000 – 22,000	15,000 – 20,000
Feed X / Y direction [mm/s]	8 – 14	8 – 16	10 – 16	10 – 16
Feed Z direction [mm/s]	2 – 3	2 – 3	2 – 3	2 – 3
Material removal [mm]	0.2 – 0.3	0.2 – 0.4	0.3 – 0.6	0.9 – 1.5

- Engraving cutter for acrylic glass (GF-...K-...)

Point angle [°]	30	60	90
Speed range [rpm]	11,000 – 16,000	10,000 – 15,000	10,000 – 15,000
Feed X / Y direction [mm/s]	14 – 20	13 – 20	15 – 20
Feed Z direction [mm/s]	2 – 3	2 – 3	2 – 3
Material removal [mm]	0.5 – 0.7	0.6 – 1	0.9 – 1.5

8.2 Aluminum composite panels (Dibond®)

Panels with a polyethylene core and aluminum face sheets.

- Single-tooth cutter Varius® (ES-SC-...)

Cutting edge diameter [mm]	3	4	6
Speed range [rpm]	25,000 – 30,000	25,000 – 30,000	23,000 – 28,000
Feed X / Y direction [mm/s]	35 – 45	50 – 60	65 – 75
Feed Z direction [mm/s]	3 – 5	3 – 5	5 – 8
Material removal [mm]	All at once	All at once	All at once

- V-groove cutter for aluminum composites (ES-AV-... and RB-AV-...)

Point angle [°]	90 (ES-AV-... max. 4 mm material removal)	90 (RB_AV-... max. 6 mm material removal)	135 (RB_AV-... max. 4 mm material removal)
Speed range [rpm]	25,000 – 30,000	15,000 – 20,000	15,000 – 20,000
Feed X / Y direction [mm/s]	65 – 75	30 – 40	30 – 40
Feed Z direction [mm/s]	5 – 8	5 – 8	5 – 8
Minimum remaining material [mm]	0.6 – 0.8	0.6 – 0.8	0.6 – 0.8

8.3 Aluminum

Soft aluminum alloys like AlMg3, AlMg1, AlMg4.5Mn, etc.

- Single tooth cutter with hawk beak (ES-HB-...)

Cutting edge diameter [mm]	3	4	6	8
Speed range [rpm]	25,000 – 30,000	25,000 – 30,000	25,000 – 30,000	20,000 – 25,000
Feed X / Y direction [mm/s]	25 – 35	35 – 45	45 – 55	50 – 60
Feed Z direction [mm/s]	2 – 4	2 – 4	4 – 6	4 – 6
Material removal [mm]	0.8 – 1.3	1 – 1.6	1.2 – 1.8	1.5 – 2

- Double-tooth cutter Varius® (ZS-SC -...)

Cutting edge diameter [mm]	3	4	6	8
Speed range [rpm]	25,000 – 30,000	25,000 – 30,000	18,000 – 23,000	15,000 – 20,000
Feed X / Y direction [mm/s]	25 – 35	35 – 45	45 – 55	50 – 60
Feed Z direction [mm/s]	2 – 4	2 – 4	4 – 6	4 – 6
Material removal [mm]	0.9 – 1.5	1.2 – 2	1.8 – 3	2 – 4

- Engraving tools (GS -...)

Point angle [°]	15	36	60	90
Speed range [rpm]	23,000 – 28,000	23,000 – 28,000	21,000 – 26,000	19,000 – 24,000
Feed X / Y direction [mm/s]	8 – 14	8 – 14	9 – 15	9 – 15
Feed Z direction [mm/s]	2 – 3	2 – 3	2 – 3	2 – 3
Material removal [mm]	0.2 – 0.3	0.2 – 0.4	0.3 – 0.6	0.4 – 0.8

8.4 Foams

Mainly PU or PE foams for case inserts.

- Triple-tooth cutter for foams (DS-FO-...)

Cutting edge diameter [mm]	Speed range	Feed X / Y direction [mm/s]	Feed Z direction [mm/s]	Material removal [mm]
3	25,000 – 30,000	25 – 35	5 – 10	Max. total cutting length
4	21,000 – 26,000	30 – 40	5 – 10	Max. total cutting length
6	15,000 – 20,000	40 – 50	5 – 10	Max. total cutting length
8	12,000 – 17,000	45 – 55	5 – 10	Max. total cutting length
10	10,000 – 15,000	40 – 60	5 – 10	Max. total cutting length

8.5 Wood-based materials

Wood-based materials such as solid wood, MDF, plywood, chipboard, etc.

- Single-tooth cutter Varius® (ES-SC-...)

Cutting edge diameter [mm]	3	4	6	8
Speed range [rpm]	25,000 – 30,000	25,000 – 30,000	20,000 – 25,000	18,000 – 23,000
Feed X / Y direction [mm/s]	25 – 35	35 – 45	55 – 65	60 – 80
Feed Z direction [mm/s]	3 – 5	3 – 5	5 – 8	5 – 8
Material removal [mm]	1.5 – 2.25	2 – 3	3 – 4.5	4 – 6

- Double-tooth cutter for wood-based materials (ZS-WO -...)

Cutting edge diameter [mm]	3	4	6	8
Speed range [rpm]	25,000 – 30,000	25,000 – 30,000	19,000 – 24,000	15,000 – 20,000
Feed X / Y direction [mm/s]	25 – 30	30 – 40	40 – 50	45 – 60
Feed Z direction [mm/s]	3 – 5	3 – 5	5 – 8	5 – 8
Material removal [mm]	2.25 – 3	3 – 4	4.5 – 6	6 – 8

8.6 Thread milling tools

Threading tools with which you can mill threads in thermoplastics, aluminum, base metals, aluminum composite plates and steels. The following parameters were tested for thermoplastics and aluminum.

A core hole must be pre-drilled for threads whose diameter is larger than the cutting head of the circular thread cutter.

8.6.1 Thread whirler

Thread size	Head diameter [mm]	Pitch [mm]	Core hole [mm]	Speed range	Feed X / Y direction [mm/s]
M2	1.55	0.40	1.60	25,000 – 30,000	10 – 20
M3	2.44	0.50	2.50	15,000 – 20,000	15 – 25
M4	3.20	0.70	3.30	11,000 – 16,000	15 – 25
M5	4.00	0.80	4.20	10,000 – 15,000	20 – 30
M6	4.85	1.00	5.00	10,000 – 15,000	20 – 30
M8	6.50	1.25	6.80	9,000 – 13,000	20 – 30
M10	7.90	1.50	8.50	8,000 – 12,000	20 – 30

8.6.2 Circular drill thread milling cutter

Thread size	Head diameter [mm]	Pitch [mm]	Additional immersion depth of drill bit [mm]	Core hole [mm]	Speed range
M2	1.55	0.40	1.30	1.60	28,000 – 30,000
M2.5 – M3	2.00	0.45 – 0.50	1.30	2.05 – 2.50	21,000 – 26,000
M4 – M5	3.15	0.70 – 0.80	1.30	3.30 – 4.20	16,000 – 21,000
M6	4.80	1.00	1.30	5.00	11,000 – 16,000
M8 – M10	5.90	1.25 – 1.50	2.30	6.80 – 8.50	10,000 – 15,000
M12 – M16	5.90	1.75 – 2.00	2.30	10.20 – 14.00	10,000 – 15,000
BGF-MKV	5.90	1.50	2.30	According to the size of the cable gland	10,000 – 15,000

Index

Original EC Declaration of Conformity

according to EC Directive for Machines 2006/42/EC Annex II A

We hereby

vhf camfacture AG
Lettenstraße 10
72119 Ammerbuch
Germany

expressly declare that the product

Machine:	**CNC portal milling machine**
Type:	**Active Pro**
Design:	**CAM ... Active Pro / CAM ... Active Pure**
Serial number:	**from AP01116...**

fulfills all the relevant provisions of the following directives:

– **2006/42/EC** Machinery Directive
– **2014/30/EC** EMC directive

References of the applied harmonized standards according to Article 7 (2):

– **EN 614-1:2006 + A1:2009**
– **EN ISO 12100:2010**
– **EN ISO 16090-1:2018**
– **EN ISO 13849-1:2015**
– **EN ISO 13849-2:2012**
– **EN 60204-1:2018**
– **EN IEC 61000-3-2:2019**
– **EN 61000-3-3:2013 + A1:2019 + A2:2021 + A2:2021/AC:2022**
– **EN 61326-1:2013**
– **EN 61326-2-1:2013**

The manufacturer undertakes to electronically transmit relevant information on the machinery in response to a reasoned request by the national authorities. Person established within the Community who is authorized to compile the technical file:

Dipl.-Ing. (FH) Frank Benzinger
Vorstandsvorsitzender / Chief Executive Officer (CEO)
vhf camfacture AG
Lettenstraße 10
D-72119 Ammerbuch

Ammerbuch, 7/17/2023

(Frank Benzinger, CEO)

Original Declaration of Conformity

according to Supply of Machinery (Safety) Regulations 2008

We hereby

vhf camfacture AG
Lettenstraße 10
72119 Ammerbuch
Germany

expressly declare that the product

Machine:	**CNC portal milling machine**
Type:	**Active Pro**
Design:	**CAM ... Active Pro / CAM ... Active Pure**
Serial number:	**from AP01116...**

fulfills all the relevant provisions of the following directives:

– Supply of Machinery (Safety) Regulations 2008
– Electromagnetic Compatibility Regulations 2016

References of the applied harmonized standards:

– BS EN 614-1: 2006 + A1: 2009
– BS EN ISO 12100: 2010
– BS EN ISO 16090-1:2018
– BS EN ISO 13849-1:2015
– BS EN ISO 13849-2: 2012
– BS EN 60204-1:2018
– BS EN IEC 61000-3-2:2019
– BS EN 61000-3-3:2013 + A2:2021
– BS EN 61326-1: 2013
– BS EN 61326-2-1: 2013

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Ammerbuch, 7/17/2023

(Frank Benzinger, CEO)

Made
in
Germany

vhf camfacture AG