



SPITZNAS
CUSTOMIZED POWER SOLUTIONS

Hydraulic Vertical Grinder

Type 1 2060 0010

Underwater Tool



Illustration can differ from the original

Operation and Maintenance Manual

Translation of the original manual,
compiled: 12.07.17

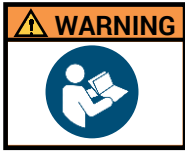
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Signal Word and Symbol Definition

The signal words and symbols used in the technical documentation (safety instructions, operating booklet, etc.) have the following meaning:



WARNING – Read the operation and maintenance manual

It is imperative to familiarize with this operation and maintenance manual and its safety instructions before starting your SPITZNAS machine. Stick to the operating processes and avoid accidents due to improper use of the machine.



This symbol has the following meaning:

DANGER – Indicates an **immediate danger**, which causes serious injuries to any person or even death, if not avoided.

WARNING – Indicates a **threatening danger**, which can cause serious injuries to any person or even death, if not avoided.

CAUTION – Indicates a **danger or unsafe procedure**, which can cause injuries to any person or material damages, if not avoided.

NOTICE – Indicates a **potentially dangerous situation**, which can cause damage to the product or its surroundings, if not avoided.



WARNING – explosive atmosphere

Air and flammable substances can mix and result in an explosive atmosphere. In areas exposed to explosion hazards, supplementary instructions and directives apply. Observe the safety instructions of the employer as well.



WARNING – explosive material

Caution should be exercised when working with explosive material or in its surrounding area.



PROHIBITION – No naked flame, fire, or ignition source and no smoking

Prevent from fire and explosion hazards, which can be caused by naked flame, open ignition source or by smoking.



Eating and drinking forbidden – The prohibition sign forbids the consumption of food.



REQUIREMENT – Observe the instruction

Ensure that the operation process is adhered to and avoid accidents and expensive break down times due to improper use of machines, devices and tools.

By using the mandatory sign you refer to the adherence of operation instructions.



NOTICE – Gives recommendations and important hints for handling the product

IMPORTANT – Indicates application advice and other particularly useful information.

This symbol has the following meaning:

REMARK:

In each case the used symbol does not replace the safety text. The text must always be read fully. In some cases other symbols will be used with the signal words.

Technical Specification

Operating pressure	90–140 bar
Power	3.5 kW
Volume flow	20 - 45 l/min, optimal 38 l/min
Free speed	3600 1/min at 45 l/min
Tool holder/ thread	Ø 22.2 mm/ 5/8-11 UNC
max. wheel diameter	230 mm; 2 – 8 mm width
Peripheral speed	approx. 42 m/sec
Hydraulic connection machine	SAE PORT No. 8 (3/4 x 16 UNF – 2 B)
Hydraulic connection hose set	Flat-Star A250-OM/OF-1/2”BSP
Hydraulic fluid	Hydraulic oil
Hydraulic circuit	Open circuit
Oil filtering	ISO purity degree 20/18/13
Temperature of oil	- 34 °C to + 82 °C
Viscosity of oil	> 13 centistokes
Weight (without hoses)	5.8 kg
Sound pressure level $L_{pA}^{(1)}$	98 db(A)
Sound power level L_{WA}	107 db(A)
Vibration ⁽²⁾	3 m/s ²
⁽¹⁾ Remark: Measurement acc. to DIN EN ISO 15744	Messunsicherheit K: 3 dB (A)
⁽²⁾ Remark: Measurement acc. to DIN EN ISO 28927-1	Messunsicherheit K: 1.5 m/s ²

The performance specifications are guide values only, they basically depend on the application, the working pressure and the accessories used.

Intended Use

SPITZNAS machines are designed for industrial use only.

Only trained, skilled personnel are allowed to operate the machine.

The capacity/ grinding force of the machines are designed for two hand grinding work.

Only grinding tools conforming to bore tolerance DIN ISO 13942 should be used.

The grinder is suitable for under water use as well.

Improper Use

Any use deviating from the intended use as described is considered to be improper use.

- Working without personal protection equipment.
- Using the machine in an inadmissible area.
- Grinding self-flammable material.

Product Description

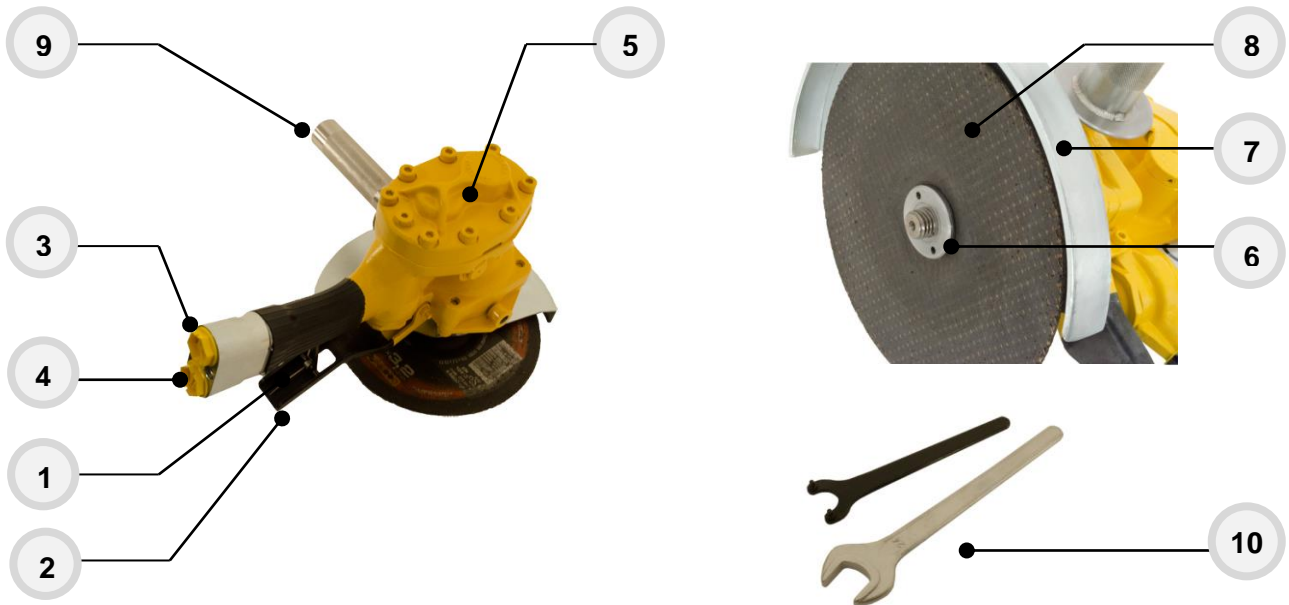




Fig. 1

- | | |
|--------------------------|---|
| 1 Locking lever | 6 Flange and wheel flange |
| 2 Valve lever | 7 Guard |
| 3 Hydraulic connection P | 8 Tool: Grinding wheel (not contained in the scope of delivery) |
| 4 Hydraulic connection T | 9 Handle |
| 5 Hydraulic motor | 10 Accessories |

Identification

Type sign

CE specification

	SPITZNAS CUSTOMIZED POWER SOLUTIONS	
		n_{leer} 3600 min ⁻¹
Typ 1 2060 0010		p_{max} 140 bar
Bj/Sr-Nr. XXXXXXXXXX		Q_{max} 45 l/min
Maschinenfabrik GmbH - Fellerstr. 4 - 42555 Velbert - Germany		

Address _____

Technical specification _____

Serial number (1. and 2. figure BJ = refer to the year of manufacture/ following figures Sr = refer to the series)

Type description _____

Company name and Logo _____

Installation

Hydraulic system requirements

The following is required for an optimum performance of the hydraulic vertical grinder:

- Provide a volume flow of 20 to 45 l/min at an operating pressure of 90 up to 140 bar.
- The system should not have more than 17 bar back pressure.
- The hydraulic system should have sufficient heat rejection capacity to limit the maximum oil temperature to 60° C at the maximum expected ambient temperature.

It is recommended:

- That filter elements are sized for a volume flow of at least 114 lpm for cold temperature startup and for maximum dirt holding capacity.
- The hydraulic system should have a minimum of 10 to 25 micron of full-flow filtration.

Connecting the hydraulic supply to the hydraulic vertical grinder

The machine is designed for an open circuit.

Check:

- The circuit type (open circuit or closed circuit), before connecting the machine,
- that all hose couplings are clean, before connecting the hoses,
- that there are no signs of leakage,
- that the machine is clean and dry,
- that all assembly parts and fixing elements are firmly fixed, respectively tight.

The recommended hose size is from 12 mm to 16 mm for the inner diameter and between 15 and 30 m for the length. Always connect the return hose first and disconnect it at last (see fig. 2).



P (Pump connection) = Supply
T (Tank connection) = Return flow

Fig. 2

Startup

General

The following assembly and disassembly tools are contained in the scope of delivery:

- Pin type face wrench
- Single head wrench AF 24

Changing the grinding wheel

- Disconnect the machine from the hydraulic supply.
- Hold the grinding shaft with the single head wrench AF 24. (see fig.3).



Fig. 3



Fig. 4

- Unscrew the wheel flange with the pin type face wrench.
- Mount a new grinding wheel.
- Tighten the wheel flange (see fig. 4).



Fig. 5

Underwater Use

Before underwater operation

Ensure that:

- All hydraulic hoses are properly connected.
- The machine is tested for leakage and for the functioning of all parts.

Notice: Keep in mind that 10 meter water depth corresponds to 1 bar.

When working in greater depths match the diameter of the supply and exhaust hose appropriately.

After underwater operation

- Clean and dry the machine with compressed air.
- Spray all moving parts with multi-oil-spray: Spitznas order no. 9 9902 0120 (or similar).

Basic Safety Instructions



Read operation instructions/safety instructions!

Before working on or with the tool, read the safety instructions and follow the instructions during operation.

Do not modify the machine or the machine tools and accessories after receipt. Any constructive changes or modifications need the manufacturer's acceptance and have to be in compliance with the safety instructions. Use the machine only for its determination. Consider the technical data of the equipment and the ambient temperatures. Pay attention to labels, restrictions of use and special instruction notes on the machine tools and the machine itself. Check regularly that the type plate and symbols on the machine are legible. If necessary, contact the manufacturer to replace them. Only operators with technical knowledge, trained by authorized responsible technical personnel, may install, adjust, operate, transport and store the machine.

Employer's Obligations

Generally, the employer is responsible for the faultless condition/operation of the machine and the adherence to the safety regulations. The machine is designed and manufactured according to the state of the art and the recognized safety rules and regulations. However, using it, there is still a risk of accidents to the operator or third parties or damage to the machine or other objects. All current regulations and specifications, which apply to the site of operation in regards to accident prevention, installation of electrical and mechanical systems as well as radio interference must be considered.



IMPORTANT - The employer must make sure that...

- risk assessment is carried out for the specific risks, which can occur due to any operation of the machine,
- the function of the safety equipment is regularly checked,
- the safety symbols and safety notes on the machine/ device and the operating instruction booklet are considered,
- the safety instructions and the operating instruction booklet are available completely and in legible condition on site with the machine.

The employer is obliged to allow personnel to work on the machine only, who:

- Are familiar with the basic work environment safety rules and accident preventing regulations. Also, those persons must have been instructed in the correct use of the machine,
- have read and understood the safety and warning notes in the operating instruction booklet as well as all the other documentation pertaining to the machine,
- have been tested at regular intervals in regards to their safety-conscious operation.

Safety-conscious working

Additionally to the safety instructions in this manual and the intended use, the following safety regulations have to be considered:

- Accident prevention instructions, safety and operation regulations,
- explosion protection directives,
- safety regulations for the operation with hazardous material,
- effective norms and laws.

Operator's Obligations

All persons who are assigned to work with the machine are obligated to:

- Pay always attention to the basic safety and accident preventing regulations,
- read always and follow the safety and warning notes in the operating instruction booklet.

Explanation of Symbols for Protective Equipment and for Accident Prevention



Use protective clothes – Protective clothes are necessary for diverse applications, e.g. protection against chemicals, heat and cold. Provide appropriate protective clothes to your staff and identify this requirement by convincing signage.



Use head protection – Keep staff and visitors from head injury. Provide enough safety helmets and identify the obligation for using safety helmets by appropriate mandatory signs.



Use eye protection – whether goggles, laser safety goggles or etc. – identify areas where eye protection has to be used, by appropriate mandatory signs.



Use ear protection – Capsule hearing protectors or hearing protectors have to be used for ear protection, depending on the sound intensity at the work place. Provide appropriate ear protection and identify the obligation for using ear protection by appropriate mandatory signs.



Use foot protection – Foot injuries by vehicles, objects, hot material or hazardous substances can be avoided by appropriate protective shoes. Equip your staff with appropriate protective shoes and identify those requirements properly.



Use hand protection – Identify convincingly the safety requirement „Use hand protection“ by a gloves sign, respectively a gloves symbol.



Use respiratory protection – Ensure that the specified protection equipment is available and that it is used. Identify by mandatory signs, where and when respiratory masks are required.

Danger Zones

Operational condition ----- Life phase	Normal function	Malfunction	Improper use	Expected use
Transport	Transport of the machine in an inoperable condition	Drop of the machine	Transport of the machine in an operable condition	unknown
Startup	Equipment of the machine with the designated grinding wheel	unknown	Equipment of the machine with other tools	unknown
Operation	Machine works only with actuated valve Machine moves the grinding wheel	Machine runs without intended actuation Machine blocks	Valve is blocked in actuated condition unknown	unknown
Maintenance	Regular cleaning	Breakdown of the machine	unknown	unknown
Hazard notes regarding the hydraulic powerpack: refer to the manufacturer				

Safety Instructions for Prevention of Workplace Hazards



WARNING – The following applies unless otherwise stated in the machine's operating instructions booklet: The machine is not insulated to protect against an electrical power surge.



CAUTION – risk of injury!
Hands may be crushed, seized or otherwise injured.
Keep your hands away from areas, which are marked with this symbol.



CAUTION – risk of injury!
Remove all sources of danger, which could lead to slipping, tripping or falling (e.g. slippery surface, hoses, cables).
Keep the work area clean and tidy.



PROHIBITION – Eating, drinking and smoking are forbidden during operation.



WARNING – Explosion hazard!
Operate the machine only according to the intended use.
This machine is not intended to be used in explosible areas.

Consider the following:

- Valid local explosion protection directives.
- Technical specification of the machine.
- Markings on the machine.



- Flammable and explosible material has to be removed from the work area before starting work. Among others, this relates to dust deposits, cardboard, packing material, textile, wood and wooden splints, but also flammable fluids and gas.

Ensure adequate lighting.

Be extra careful in unfamiliar surroundings. There is a risk of hidden hazards such as electric lines or other supply lines. Make sure when operating the machine that no electrical cables, gas pipes or similar could be damaged. Use suitable and personal protective equipment.

Safety Instructions for Prevention of Hazards caused by Hydraulic



WARNING – Hydraulic can cause severe injury. Before working on the tools (e.g. installation, changing accessories or machine tools, prior to a long standstill, maintenance, etc.) depressurize hydraulic equipment.

CAUTION – Risk of injury by whipping hydraulic hose.
Check hydraulic hoses, connection components and fittings regularly for any damages and proper fixture.

When connecting / disconnecting the machine to / from the hydraulic supply, please pay careful attention not to actuate the valve while doing so. Never remove a pressurized hydraulic hose. Always switch the power supply off first and then depressurize the machine.

The maximum operating pressure according to the technical specification must not be exceeded. A pressure regulator should be installed, which regulates the pressure before it reaches the machine. Never direct a hydraulic hose at yourself or anyone else. Do not carry or pull the machine at the hydraulic hose.

Safety Instructions for Prevention of Operating Hazards

Before starting work make sure that the hands are protected against: impacts, crushing, hits, cuts, abrasions and heat. The operating and maintenance personnel must be physically able to handle the bulk, the weight, the power and/or the torque of the machine. Do not use the machine if you have taken any medication or drugs, after drinking alcohol or with any other constraints on your vision, reaction time or judgment. Work in the best possible position so that you can react with both hands to any normal or unexpected movements of the machine. Maintain a balanced body position and secure footing in order to avoid improper strain and to be able to support the reaction torque of the machine. If you cannot safely support the reaction torque of the machine, use a torque reaction bar (e.g. linear stand, telescopic arm, holding fixture/ holder-on, support grip).

Additionally observe the following:

- Operate the machine only after having carefully read the operation manual.
- The work place has to be secured according to the instructions, in order to avoid injury to persons nearby due to projectiles coming-off.
- The machine is for hand-held operation only.
- Consider the producer's specification when selecting the grinding wheel.
- Ensure that the safety instructions for the intended use given by the manufacturer of the grinding wheel are observed. Use appropriate grinding wheels.
- Never use damaged or modified grinding wheels.
- Check the secure fixing of the grinding wheel before starting the machine.
- Ensure all protection devices to be properly fixed before connecting the machine to the hydraulic supply.
- Wear protective clothes (goggles, gloves, hearing protection, long-sleeved shirt).
- Do not touch the grinding wheel after connecting the hydraulic supply.
- Consider the rotation direction of the grinding wheel.
- Consider the rotation direction of the machine.
- Do not touch the running grinding wheel.
- It is possible that the drill bit keeps on running after the machine has been switched off. Wait until it stops.
- Never stop the grinding wheel by hand.



WARNING

Risk of injury due to damaged, wrongly mounted or installed grinding wheels. Only use undamaged grinding wheels and mount them properly. Never use the machine without guard when working with grinding wheels.



NOTICE

Grinding wheels are breakable. Therefore utmost care is requested when using grinding wheels!

Remark: Further safety recommendations and instructions are given in relevant laws, guidelines, safety instructions and technical norms in the various countries as well as in the FEPA Safety Code for the appropriate use of grinding wheels.

Safety Instructions for Prevention of Entanglement Hazards



CAUTION – Loose clothing, personal jewellery (e.g. necklace), scarves/ ties, long hair or gloves can get caught up in the machine tool or accessories and thus cause severe injuries (lack of breath by throttling, abrasions, skin injuries and/ or cuts and lacerations).



Wear suitable, close fitting work clothing!

Wear a hair net, if you have long hair.

When handling the machine, jewellery, necklaces, etc. have to be removed or are forbidden, respectively.

Safety Instructions for Prevention of Noise Hazards



Always wear hearing protection – This refers to the operator, as well as to any other person within the vicinity of the machine. Observe the instructions of the employer and of the professional association.

During operation high noise levels can cause permanent hearing problems such as tinnitus (ringing, buzzing, whistling or humming in the ears), hardness of hearing or even deafness.

Safety Instructions for Prevention of Vibration Hazards

Vibrations can cause damage of nerves and blood vasculares in hands and arms, therefore observe the following hints:

- Wear warm clothing and keep your hands warm and dry when working in cold conditions. Exercise hands and fingers regularly.
- Use stands and/or weight balancers, if possible.
- When using a support (e.g. stand) make sure the machine is securely fixed. If no support is used, hold the machine with light but safe grip. The tighter the grip the greater the risk of vibrations.
- Mount the machine tools as described in the operating instruction booklet in order to avoid high vibrations.
- Stop work immediately, if you feel any numbness, tingling, pain or whitening of fingers or hands. Inform the employer and consult a doctor.

Safety Instructions for Prevention of Dust and Fume Hazards



Wear respiratory protection - Use respiratory protection as instructed by your employer and as required by occupational health and safety regulations. Potentially generated or disturbed dust and fumes in the working environment or from using the machine can cause illness (e.g. cancer, birth defects, asthma and/ or dermatitis).

- Carry out risk assessment regarding dust and fume hazards and implement appropriate measures.
- Keep the working place clean.
- Keep in mind that working in certain materials may create dust and fumes causing a potentially explosive atmosphere.

Remark: Some material may have toxic coatings.

Please pay particular attention to avoid skin contact and breathing in, when working with those materials.

Always use a protective mask. Ask your material supplier about special safety instructions and stick to them.

Safety Instructions for Prevention of Projectile Hazards



Wear impact-resistant safety goggles – This refers to the operator, as well as to the persons within the vicinity of the machine. Assess and determine the grade of protection required depending on the individual case. The risks to others should also be assessed at this time.



On overhead work, wear a safety helmet. If a work piece, accessories, inserted tools, or the tool itself breaks, there is danger from high velocity projectiles.

- Check all parts for damages before using the machine.
- Replace damaged parts immediately.
- When working on brittle material make sure that you are protected against harmful splinters.

Safety Instructions for Prevention of Accessory Hazards

Use only machine tools, accessories and consumables, which are recommended by the manufacturer. Make sure choosing the correct size and the correct type. Use only accessories, which are in proper condition.



CAUTION – Injury due to carelessness!

If the machine is fixed to suspension equipment make sure that it is secure. Never hang the machine onto the supply line.



- Separate the machine from any external energy source before changing the machine tool or any accessory.
- Avoid direct contact with the machine tool during and after use as it can be hot or sharp.
- Wear protective gloves when changing a tool or an accessory!

Notice: Defective/ inappropriate gloves can lead to injury. Wear only proper hand protection, adapted to the work place requirements.

Safety Instructions for Prevention of Transport Hazards



ATTENTION – Improper Transport, injury due to parts falling down!
Damage of the machine!

- Separate the machine from any external energy source before transportation. Check that the machine is undamaged and in proper condition.
- Never carry the machine at the supply line.



Wear worker's protective shoes!

Service and Maintenance

Basic Safety Instructions:



WARNING – Maintenance and repair work on hydraulic equipment. Hydraulic can cause severe injury. Observe legal regulations. Take precautions for persons and environment.

Additionally, observe the following:

- Secure the machine against unintentional starting and let the machine cool down to the ambient temperature
- Protection against tipping, tumbling or falling down when assembling/ disassembling the machine/parts.

CAUTION – Skin exposure to hazardous dusts may cause severe dermatitis. Dust at the work place can be raised during the maintenance procedure and can be inhaled. Clean the machine and the work place before maintenance work.



PROHIBITION - Eating, drinking and smoking are forbidden during maintenance and repair work



NOTICE – Use only **original SPITZNAS spare parts**, in order to avoid damages.



Otherwise you risk a decrease in machine performance and an increase in maintenance work. Check the adherence to the technical specifications according to the operation manual after each maintenance work.

IMPORTANT – There is no warranty for damages and liability is disclaimed, if **non-original spare parts** are used.

Maintenance Instruction

Generally, hydraulic machines need little maintenance. If these rules are followed, the machine will have the expected durability and high reliability. Service life and performance of the machines are decisively determined by:

- The purity degree of the hydraulic oil
- The lubrication conditions and maintenance
- The **regular control of the hydraulic filter/ the hydraulic fluid**, as well as the **regular checking of the machine with regards to external damages**.

Disassembly and re-assembly of the machine have to be executed by qualified staff only. Incorrect assembly can lead to danger of accident for the operator and to defects on the machine.

Furthermore we recommend giving the hydraulic vertical grinder a general overhaul by the supplier once a year.

After completing maintenance and repair work and before restarting production make sure that...

- all materials, tools and other equipment which are required for maintenance or repairs have been removed from the work area of the machine,
- any fluid leaks have been removed ,
- all safety devices on the machine have proper function,
- fixtures of screw connections are tight ,
- removed covers, screens or filters were reinstalled.

The employer ensures that all maintenance, inspection and assembly work is done by authorized and qualified experts.

Disassembly- Re-assembly

Maintenance and repair

Disassembly and re-assembly should be done according to the exploded views, respectively the sectional drawings (see repair instruction). All work regarding disassembly and re-assembly have to be executed by SPITZNAS or skilled staff only.



DANGER – Working with the machine without appropriate preparation and disregarding of instructions. Shut down the machine properly and let it cool down to the ambient temperature.



NOTICE – Special instructions apply for the repair of machines. Retrofits or modifications of the machine can impair safety. Therefore, they need the manufacturer's acceptance.

Storage

Unused machines and machine tools should be kept in a dry, closed room.

Keep them free from damaging influences such as damp, frost or large temperature fluctuations as well as mechanical damage. Always store the machine in a way that important machine instructions, e.g. on stickers and signs, are legible.

NOTICE – Always connect the loose ends of the hoses with each other, if possible.

Disposal

Dispose of machine and worn out/defective machine tools according to the local/national regulations. Fully disassemble the machine for the necessary disposal. Separate materials according to local environmental specifications. Dispose environmentally hazardous greasing, cooling or cleaning agents in order to avoid environmental contamination.

Environmental Regulations

When working on or with the equipment, it is imperative to observe all legal requirements in regards to waste-disposal and proper recycling.

In particular during installation, repair and maintenance work, water damaging agents, such as



- lubricating grease and oil,
- hydraulic fluid,
- coolant,
- solvent containing cleaning agents

must not leak into the ground or reach the sewage system.

These materials must be stored, transported, contained and disposed of in suitable containers!

Troubleshooting

The following table shows possible problems and their causes:

	Problem	Cause	Remedy
a	Machine does not start	Not connected to hydraulic supply Defective hydraulic hoses or quick couplings	Connect and open the hydraulic line Replace hydraulic hoses or quick couplings
b	Machine keeps on running after releasing the valve	Hydraulic hoses inverted	Connect hydraulic hoses correctly
c	Low speed	Too little operating pressure Too small hose diameter Too little volume flow Too high back pressure	Increase operating pressure Choose larger hose diameter Increase volume flow Reduce back pressure
d	Speed too high	Too high operating pressure Too high volume flow	Adjust to max. operating pressure (see technical specification) Reduce volume flow
e	Hydraulic fluid leaking	Wrong hydraulic fluid Damaged sealings	Use appropriate hydraulic fluid Ensure sufficient cooling Replace sealings
g	Other problems		Contact authorized expert company

We ask you to send the machine to the supplier, if necessary.

Warranty and Liability

Unless otherwise specified, our „General Sales Terms” apply. Warranty and liability claims in regards to persons or equipment damages are invalid, if one or more of the following causes apply:

- Improper use of the machine,
- improper assembly, startup, operation or maintenance of the machine,
- operation of the machine with defective safety devices or improperly fixed or non-functioning safety and protection devices,
- not considering of the instructions in the operating instruction booklet concerning transport, storage, assembly, startup, operation, maintenance and setting up of the machine,
- independent structural alterations or settings on the machine beyond the intended purpose,
- inadequate supervision of wear parts,
- improperly carried out repairs, inspections or maintenance,
- catastrophic cases due to foreign objects, acts of god or other reasons which are beyond our control.

Scope of Delivery

Check, if the scope of delivery is complete:

- 1 Operation and maintenance manual
- 1 Hydraulic vertical grinder,
- 1 Carrying case.

Declaration of conformity

as defined in the European Union Machine Directive 2006/42/EC
for usable machines

We, the company
SPITZNAS Maschinenfabrik GmbH, Fellerstraße 4, 42555 Velbert–Langenberg,
declare that the following product

Description: Hydraulic Vertical Grinder
Model: **1 2060 0010**

in the version supplied by us, complies with the European Union Machine Directive 2006/42/EC.

Applied harmonized norms are:

DIN EN ISO 12100
DIN EN ISO 11148-7

Name of the authorized person for documentation: Mr. Simon Witt
Address of the authorized person for documentation: see manufacturer's address
42555 Velbert, 12.07.17

Note:



Maschinenfabrik GmbH
Fellerstraße 4, 42555 Velbert
Germany

Tel.: +49 2052 605 0
Fax: +49 2052 605 29
E-Mail: spitznas@spitznas.de
www.spitznas.de

Tools for the Specialist