SPITZNAS
CUSTOMIZED POWER SOLUTIONS

Hydraulic Chain Saw

Type 5 1030 0010

ATEX and Underwater Tool

II 2G Ex h IIB T5 Gb

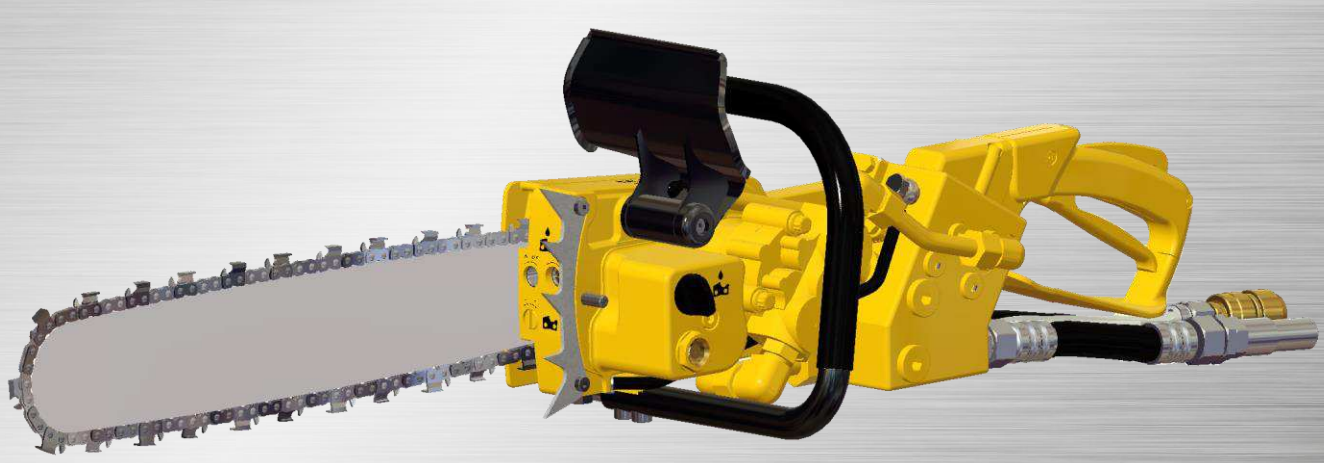


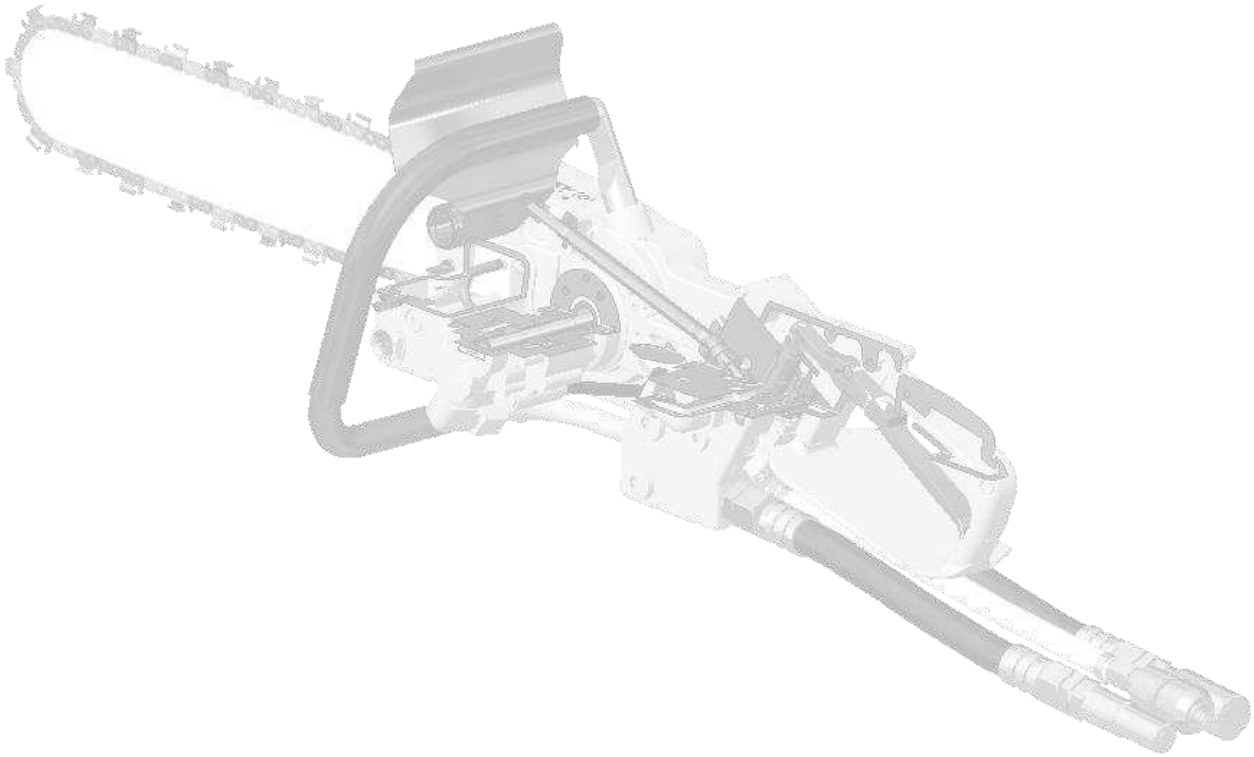
Illustration can differ from the original

Operation and Maintenance Manual

Translation of the original manual,
compiled: 29.10.19

Techn. Doc. No. 564

Directory



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 – hot surface
Risk of burns when touching the surfaces having this warning sign!

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.

This symbol has the following meaning:

NOTICE – Gives recommendations and important hints for handling the product
IMPORTANT – Indicates application advice and other particularly useful information.

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	140 – 200 bar (2030 – 2900 psi)
Volume flow	40 – 50 l/min (11 – 13 gpm)
Power	7.7 kW (10.5 hp)
Motor speed	5000 1/min (5000 rpm)
Max. chain speed	13.2 m/s
Chain braking time	< 0.12 sec
Amount of teeth of the chain wheel	8
Chain oil tank capacity	250 cm^3 (15 in^3)
Water connection	Gardena ID ½" / 16 mm
Length without chain bar	53 cm (21")
Weight without chain bar, chain and hose set	10.5 kg (23 lbs)
Hydraulic connection motor	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
Fluid circuit	Open circuit
Oil filtering	ISO purity degree 20/18/13
Oil temperature	- 34°C up to + 82°C (- 30°F up to + 180°F)
Oil viscosity	> 13 Centistokes
Sound pressure level L_{pA} (1)	86.8 dB (A)
Sound power level L_{WA}	97.2 dB (A)
Vibration (2)	3.6 m/s^2
ATEX Classification	Ex II 2G Ex h IIB T5 Gb
(1) Remark: Measurement acc. to DIN EN ISO 22868 (2) Remark: Measurement acc. to DIN EN ISO 22867	Measurement uncertainty K: 3 dB (A) Measurement uncertainty K: 1.5 m/s^2

The performance data are guide values only, they depend basically on the application, the operating pressure and the applied accessories.

Intended Use

SPITZNAS machines are designed for industrial use only.
Only trained, skilled personnel are allowed to operate the machine.
Depending on the cutting set, the hydraulic chain saw is designed for cutting:

- Wood and plastic (standard saw chain),
- steel, ductile and concrete (diamond saw chain),
- in dry and wet areas, as well as in those exposed to explosion hazards (depending on the type and classification).

For the application in:

- construction industry, pipe construction, refineries, offshore and underwater.

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.
- Cutting of wood and self-flammable material.

Scope of Delivery

Fig. 1

A Chain saw
B Chain bar
C Saw chain
D Saw chain guard
E Hydraulic hose set
F Water hose, assy.
G Wrench

Product Description

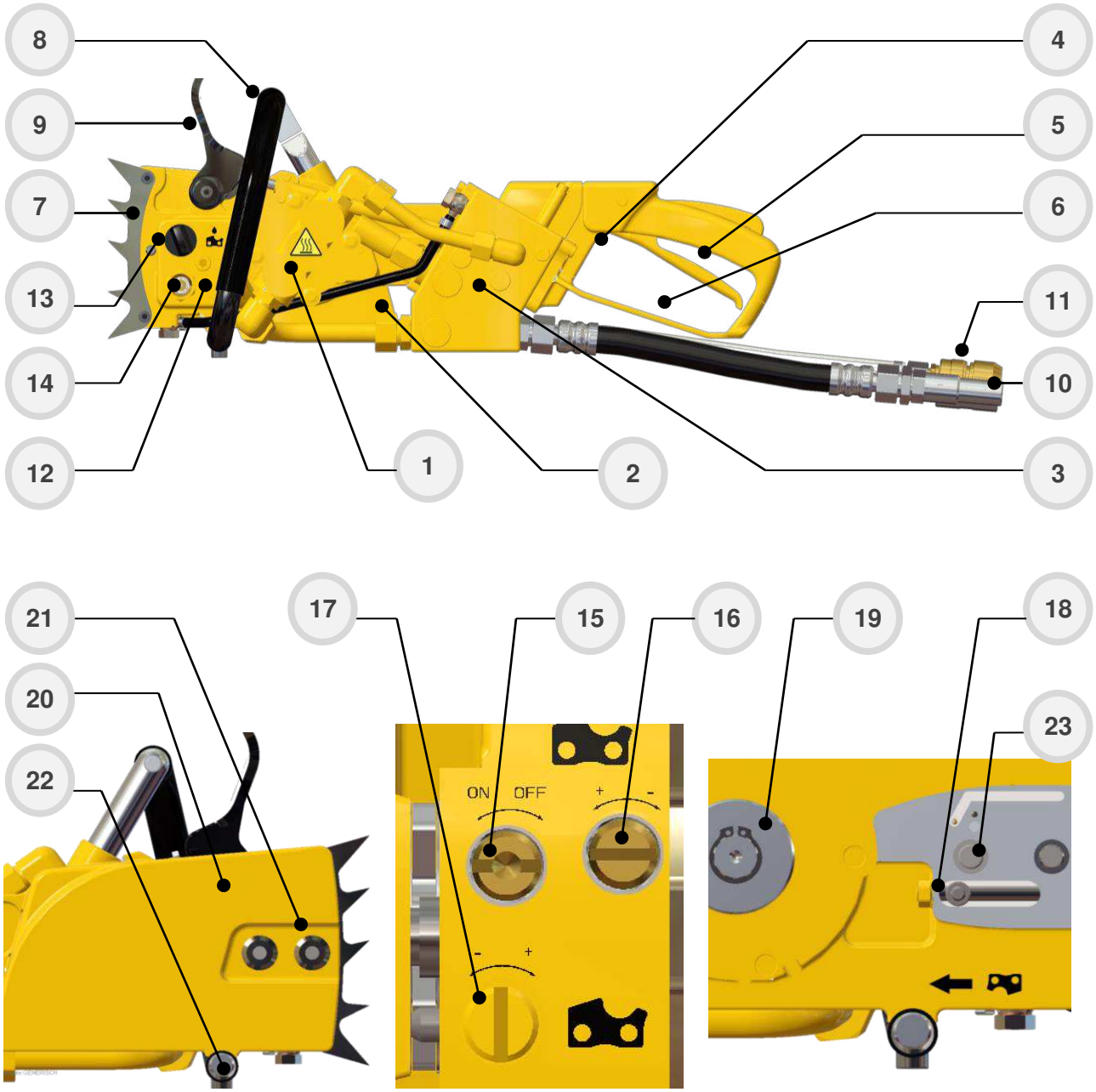


Fig. 2

1 Drive motor
2 Base plate, assy.
3 Control valve
4 Handle, assy.
5 Locking lever
6 Switch lever
7 Spiked strip
8 Second handle
9 Brake lever
10 Hydraulic connection
11 Water connection
12 Oil tank
13 Locking screw
14 Oil gauge glass
15 Switch on/off for chain lubrication
16 Adjusting screw for chain lubrication
17 Adjusting screw for saw chain
18 Tensioning bolt
19 Sprocket
20 Cover
21 Hexagonal nut
22 Chain catcher
23 Fixing bolt

Identification

Type sign

CE specification with number of the notified body

Technical specification

Identification of the internal technical documentation number

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

Type description

Company name and address

Category 2 (usable in category 3 as well)
Explosion group IIB usable in explosion group IIA as well.

Explanation of ATEX Identification

Specification
acc. to 2014/34/EU

II2GExhIIBT5Gb

Machine group II
Explosive atmospheres
e. g. Industry

Category 2

Very high level of safety	1
High level of safety	2
Normal level of safety	3

Ex-Atmosphere G
Gas, vapor and mist

Marking according to standard - Ex-Symbol

Ignition protection category h
Code letter h for all non-electrical equipment

Explosion group IIB

e.g. Methane, Propane	IIA
e.g. Ethylene, Town gas	IIB
e.g. Hydrogene, Acethylene	IIC

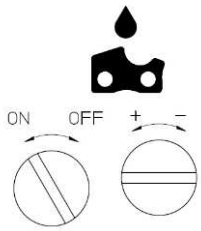
Temperature class T
Surface limit temperature

450°C	T1
300°C	T2
200°C	T3
135°C	T4
100°C	T5
85°C	T6

Equipment Protection Level

Group II	EPL Gb

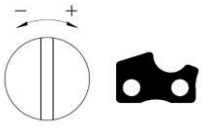
Chain lubrication



Switch - on / off

Adjustment

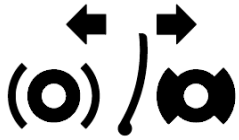
Chain tension



(–) slackening

(+) tensioning

Chain brake



Brake released

Brake tightened

Chain running direction

Basic Type

5 1030 0010 with water cooling and disengageable chain lubrication for cutting:
Wood, plastic, carbon steel, ductile pipes, reinforced steel, reinforced concrete, construction material, bricks and reinforced glass fiber as well as for above and underwater application (see page 3 “intended use” as well).

Fig. 3

Attention!
Only the cutting sets mentioned hereunder are allowed.

Cutting Sets

Chain bar length	Chain pitch
27 up to 103 cm (11 up to 41”)	0,404” 3/8”

Startup

Hydraulic system requirements
The following is required for an optimum performance of the hydraulic chain saw:

- Provide a volume flow of 40 to 50 l/min (11 to 13 gpm) at an operating pressure of 140 to 200 bar (2030 to 2900 psi),
- the system should never have more than 17 bar (247 psi) back pressure,
- the hydraulic system must have sufficient heat rejection capacity to limit the maximum oil temperature to 60°C (140°F) at the maximum expected ambient temperature.

It is recommended:

- That filter elements are sized for a volume flow of at least 114 l/min (30 gpm) 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.

Cold weather operation
If the saw has to be used during cold weather, pre-heat the hydraulic fluid at low motor speed. If the normally recommended fluids are used, the fluid temperature should be 10°C (50°F) (82 Centistokes) or more, before operating the machine. Too high viscosity damages the hydraulic motor (the hydraulic system).

Connecting the hydraulic supply to the hydraulic chain saw
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 to 16 mm (0.47 to 0.63 inch) for the inner diameter and between 15 and 30 m (591 and 1181 inch) for the length. Always connect the return hose first and disconnect it at last (see fig. 4).
P (Pump connection) = Supply
T (Tank connection) = Return

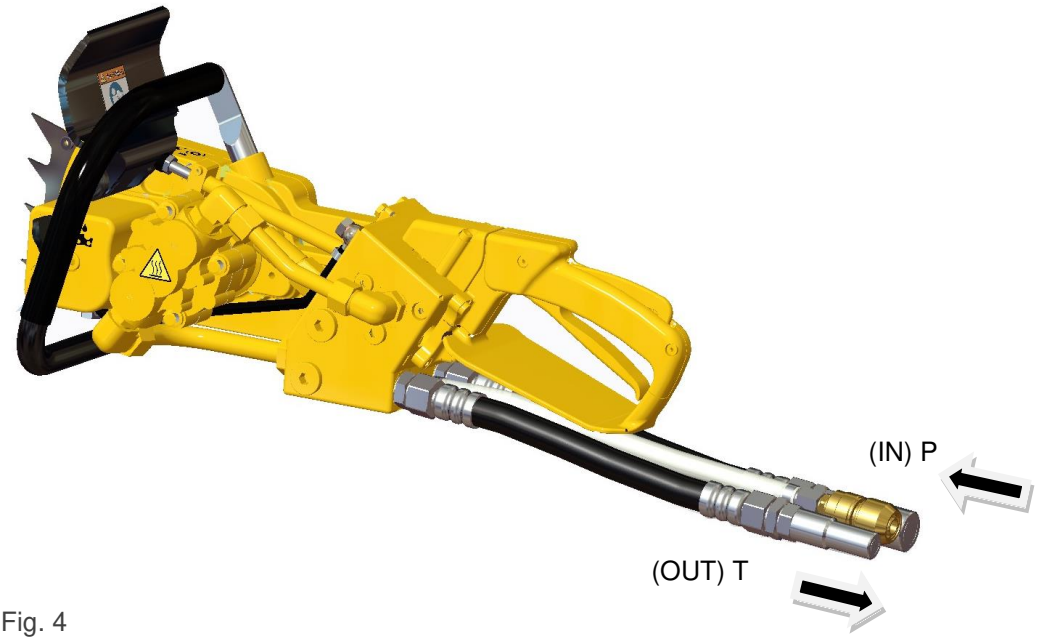


Fig. 4

Operation

Mounting the chain bar and the saw chain

Notice: Connect the hydraulic supply only after the assembly.
The saw chain pitch must match the pitch of the chain wheel and the thickness of the chain driving link must match the groove width of the chain bar. Only use approved saw chain bars and saw chain combinations.
Warning! Disregarding the instruction may lead to injury! Put on protective gloves!

- Unscrew 2 x hexagonal nut item 21 and remove cover item 20 (see fig. 5).
- Turn adjusting screw item 17 in anti-clockwise direction (–), until the tensioning bolt item 18 sits on the left side of the housing slot (see fig. 6 and 7).

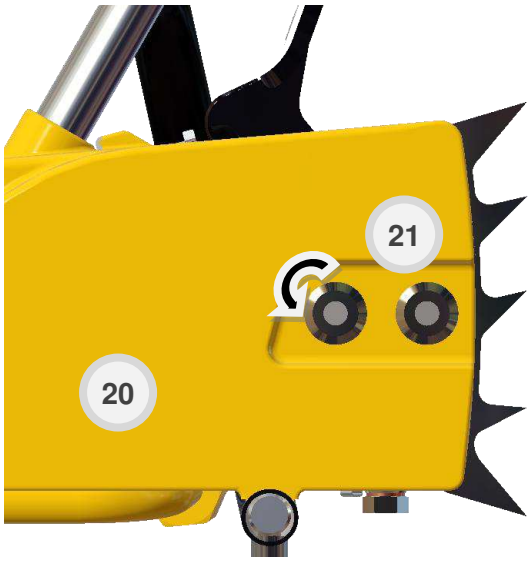


Fig. 5

Fig. 6

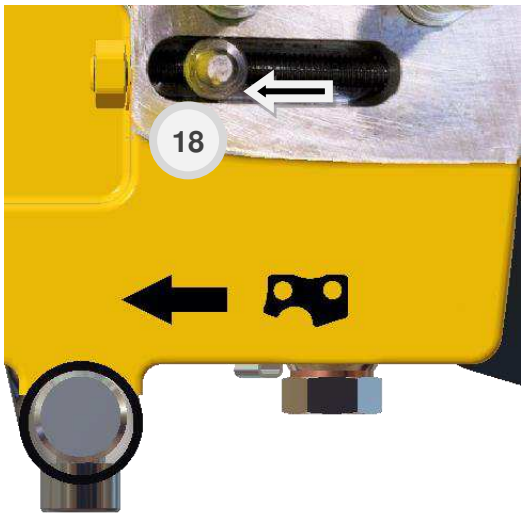


Fig. 7

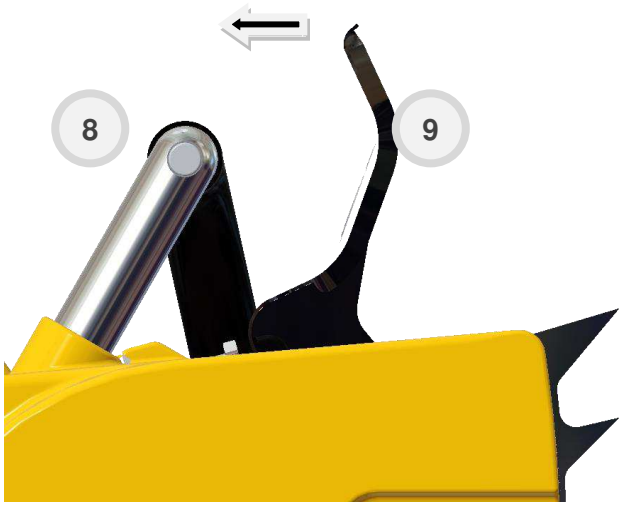


Fig. 8

- Release the chain brake – press the brake lever item 9 into the direction of the second handle item 8. (see fig. 8).

- Mount the saw chain (begin at the chain bar nose) (see fig. 9).
- Lay the chain bar over the fixing bolts item 23 and the tensioning bolt item 18.
- Consider the mounting position of the saw chain (see fig. 7 and 10).
- Lay the saw chain over the sprocket item 19 (see fig. 10).
- Turn the adjusting screw item 17 (see fig. 11) in clockwise direction (+), until only a little slack is left at the bottom of the saw chain and the lugs of the drive links lay in the groove of the chain bar.
- Mount the cover item 20 and tighten manually the hexagonal nuts item 21 only a little bit (see fig. 12).
- Then tension the saw chain.

Fig. 9

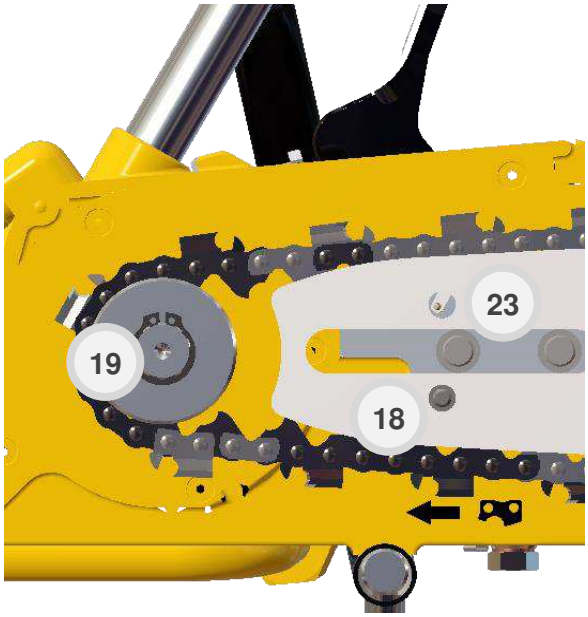


Fig. 10

Fig. 11

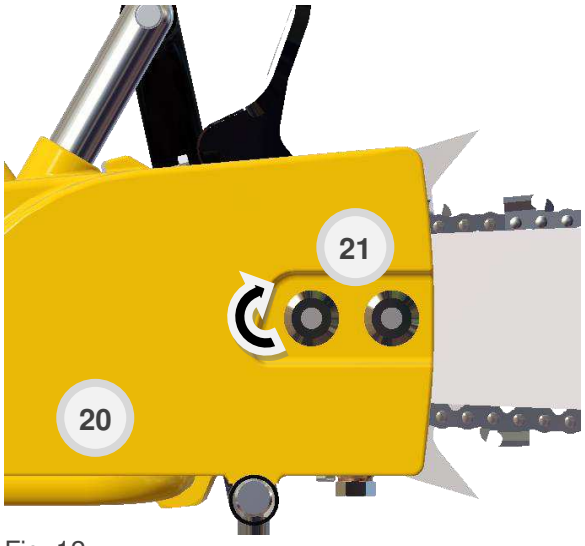


Fig. 12

Tensioning the saw chain
For tensioning and re-tensioning of the saw chain:

- Switch off the chain saw and disconnect it from the hydraulic supply,
- unscrew the hexagonal nuts item 21 (see fig. 13),
- turn the adjusting screw item 17 (see fig. 14) in clockwise direction (+) until the saw chain touches the bottom of the chain bar
- re-tighten the chain bar with the hexagonal nuts item 21 (see fig. 15).

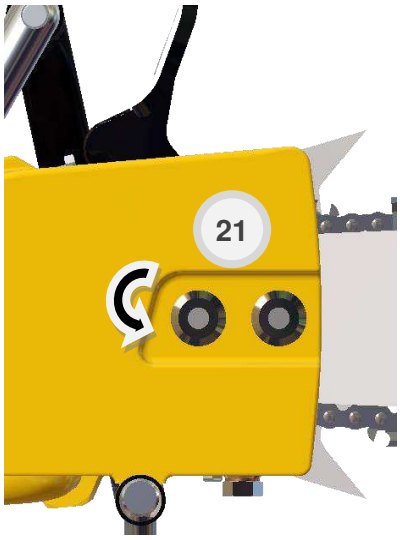


Fig. 13

Fig. 14

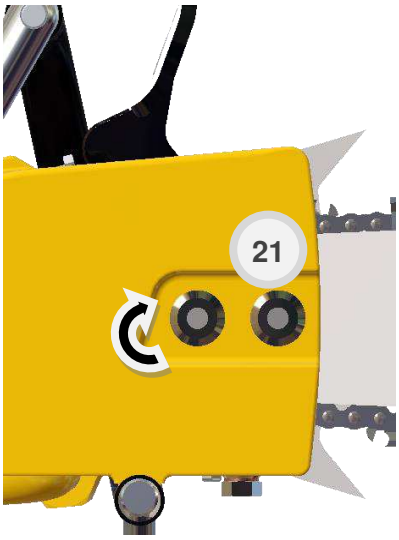


Fig. 15

Tension of the saw chain
For checking:

- Put on protective gloves!
- Switch off the machine and disconnect it from the hydraulic supply.
- The saw chain has to touch the bottom of the chain bar. It must be possible to pull it manually over the guiding groove of the chain bar, when the chain brake is released (see fig. 16).
  If necessary, re-tension the saw chain.

Notice: A new saw chain has to be re-tensioned more often.
Check the tension of the chain more often – see paragraph “during operation“(see page 28).

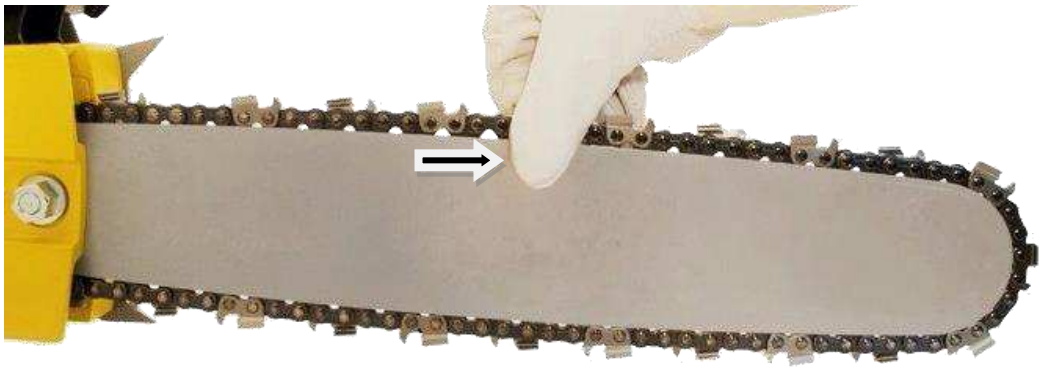


Fig. 16

Chain lubrication for cutting wood
The lubricating of the saw chain is done automatically. The oil tank item 12 (approximate volume 250 cm^3 / 15 $inch^3$) has to be filled with chain saw oil before starting.

- Switch on the chain lubrication in direction „ON“ item 15 (see fig. 17).
- Remove the locking screw item 13 and fill the oil tank (see fig. 18).

The oil storage is sufficient for 2 operating hours.
It is possible to check whether the saw chain is supplied with oil by holding the running saw with the nose pointing downwards.

If the adjustment is correct, an oil trace can be clearly observed on light colored ground or on paper (see fig. 19). Use machine oil with adhesive additives, viscosity c St 49-55 (6.5-7.5 E) at 50°C (122°F).

Fig. 17

Filling in the chain lubricating oil

Fig. 18

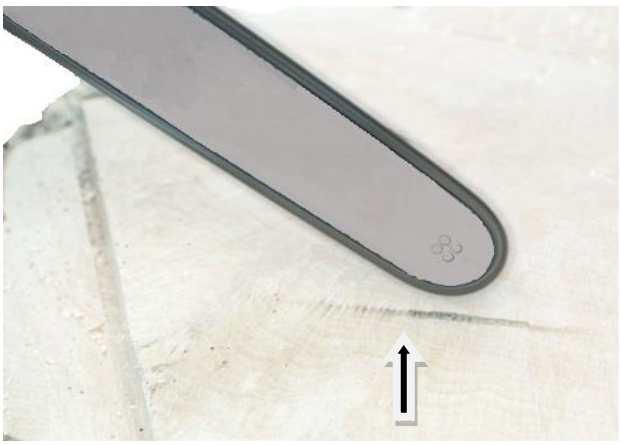


Fig. 19

Thoroughly clean the tank cap and the surrounding to prevent entering impurities.
Avoid smoking and any naked flame.

Adjusting the chain lubrication

CAUTION – Personal injury due to carelessness!
Due to the risk of injury, the oil adjustment is only done at standstill of the saw.

Fig. 20

Fig. 21

- The oil tank has to be tight.
- Switch on the chain lubrication in direction „ON“ item 15. (see fig. 20).
- Adjust the required quantity of oil with the adjusting screw item 16 (see fig. 20). If the oil quantity in the oil tank is not reducing, there is a failure in transporting the lubricating oil: Check the chain lubrication, clean oil passages, eventually contact the SPITZNAS- Service.
- The saw chain always has to sling off little oil.
- When cutting wood, never work without chain lubrication! If the chain runs dry, the cutting set will be irremediably destroyed within very short time.
- Before starting work always check the chain lubrication and the oil level in the tank at the oil gauge glass item 14 (see fig. 21).

Every new chain needs a run-in period of time of 2 to 3 minutes. After running-in, check the chain tension and adjust it, if necessary. Paragraph “Checking the chain tension“ (see page 11).

Chain brake

Blocking the saw chain with the chain brake

Fig. 22

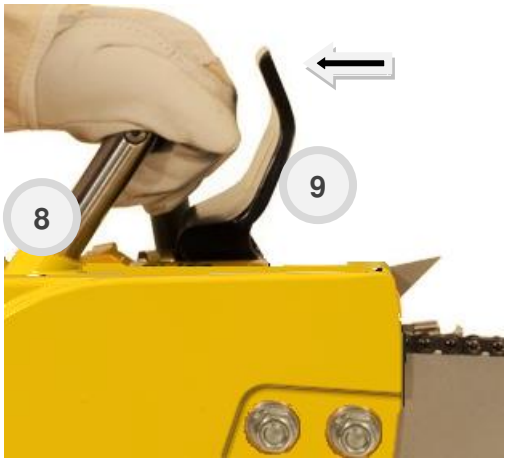


Fig. 23

In case of emergency: Press brake lever item 9 to the chain bar nose – with the left hand - or it is automatically actuated by the kickback: The chain saw gets blocked and stops (see fig. 22).

Releasing the chain brake: Pull the brake lever item 9 to the second handle item 8 (see fig. 23).
Notice: Before opening the valve and before cutting, the chain brake must be released.

Function control before starting work:

- Block the saw chain (brake lever in direction of the chain bar nose) – and open the valve shortly (max. 3 sec.).
- The saw chain must not run either.
- The brake lever must be clean and easy to move.

Chain cooling for cutting:

- Cast steel,
- plastic,
- GRP und GRP pipes,
- ductile and concrete.

Switch off the chain lubrication item 15, connect the water cooling item 11 and the splash guard: Mount Spitznas reference no.: 5 1030 9100 (see fig. 24, 25 and 26).

Fig. 24

Fig. 25

Choose the chain bar and the saw chain according to the material (see fig. 26).


Fig. 26

Notice: You can use the clamp device (see accessories) for cutting pipes.

Mounting the splash guard
Unscrew the socket head screws on the base plate item 2 und disassemble the spiked strip item 7. (see fig. 27). Slide the washer and spring onto the bolt. Fix the splash guard with the socket head screws on the base plate item 2 (see fig. 28).

Fig. 27


Fig. 28

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,
- the oil tank is empty and tight (see fig. 29),
- the chain lubrication is switched off (see fig. 30).

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 return hose appropriately.

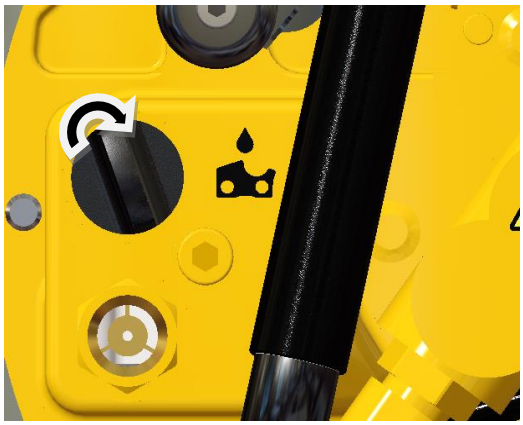


Fig. 29

Fig. 30

After underwater operation

- Clean and dry the machine.
- 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 in accordance with state-of-the-art technology 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 chain bar and chain	unknown	Equipment of the machine with other tools	unknown
Operation	Machine works only with actuated valve Machine moves the chain	Machine runs without intended actuation Machine does not move the chain	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. The machine is designed for the use in areas exposed to explosion hazards as well. The generation of heat and –eventually- sparks is characteristic for cutting. Therefore cool continuously.

Consider the following:

- Valid local explosion protection directives.
- Technical specification of the machine.
- Markings on the machine.
- Avoid the generation of sparks.
- When operating the machine, do not push or beat against other material and hold the machine firmly and safely by hand, respectively fix it in a clamping device.
- Do not slide the machine over the ground.
- If heat generation exceeds the specified surface temperature, the machine has to be stopped instantly.
  It may be re-started only after having eliminated the cause for the fault.
- The work area and the other close working areas should always be protected from sparks.
- 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.

- All dust deposits in and on the machine have to be removed regularly.
- Consider that there must be no flammable dusts at the place where the machine is operated. The non-availability of an explosive gas-and- air-mixture has to be checked with a gas detector (not contained in the scope of delivery).

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 the 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.

Additionally consider the following:

- Operate the machine only after thorough study of the operation manual
- If the machine shows signs of irregular function and performance, stop the use immediately and have it serviced or repaired.
- Do not use the chain saw with excessive force.
- Before using the machine, thoroughly check all parts or protective devices. It has to be ensured, that they function properly and fulfil the required function.
- Have damaged or malfunctioning protective devices or valves replaced or repaired by qualified personnel.

Any power tool can be dangerous.
Please follow these simple procedures.
They are for your protection.

Special safety measures are necessary when working with the chain saw.

Working with it is a lot faster than with an axe or a hand saw and you are working with a high speed chain.

The clothing has to be appropriate and shall not hinder.
Wear tight clothes with cut protection inlay - insert-combined suit, no working suit**!**

There should be no clothing, no scarf, no tie, no jewels – that can possibly get into wood or undergrowth. Take care of long hair (e.g. hair-net)!

Wear tight and non-slip gloves !

Wear safety boots with maximal grip and steel cap!

Use a hard hat, if parts could fall down!
Wear ear protection!
Wear safety goggles!
Wear personal noise protection – like e. g. ear flaps!

Consider sufficient cooling and lubrication of chain and bar.

WARNING – Explosion hazard!
Do not allow foreign objects: Stones, nails, etc. to get into contact with the saw chain, because sparks can be generated.

Observe the accident prevention regulations of the employer's liability insurance association, as well as locally applicable explosion protection instructions!

Minors are not allowed to work with such a chain saw except for juveniles over the age of 16, who get trained under supervision.

WARNING – Risk of injury!
Keep children, animals and viewers away (see fig. 31)!

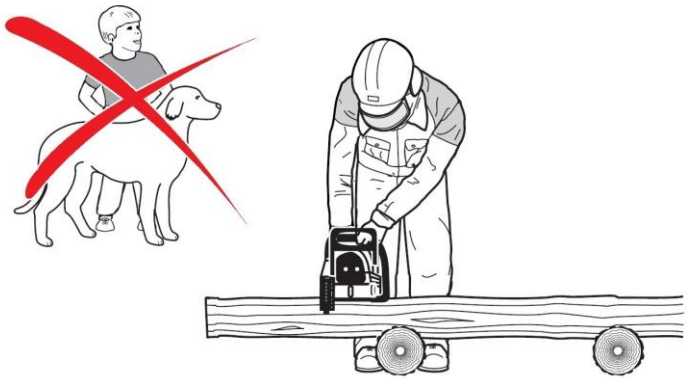


Fig. 31

The user is responsible for accidents or risks, which can be against other people or their property!
Give or lend the chain saw only to people, who are familiar with this model and its handling.

Who is working with a chain saw :

- Has to be fit, awake, healthy and in good shape;
- must lodge working breaks in good time.
- It is forbidden to work with the chain saw after consumption of alcohol, medication, which can impair the capacity of reaction, or drugs.

Do not work alone!
Keep hearing distance to other persons, who can help you in case of emergency.

Use only attachments, which have been delivered by SPITZNAS or have been explicitly released for the attaching! Other attachments must not be used, because they could lead to bigger dangers. SPITZNAS takes out any liability for person- and property damage, in which non-approved attachments are used.

Before starting
Check, if the chain saw is in reliable condition:

- Properly mounted chain bar,
- properly tightened saw chain,
- valve lever and valve lever latch are fingertip easy – valve lever has to rebound into the neutral position by itself,
- do not make changes on the operating and safety equipment,
- keep the handles clean and dry from resin,
- correct operation pressure (see technical specifications),
- reliable chain brake,
- when working in explosive areas, pay attention to proper lubricating and cooling of the chain and the bar.

Consider the corresponding chapters in the operating instruction.
The chain saw may be only used in reliable condition – danger of accident!

Starting the chain saw
The chain saw is operated by one person only – do not tolerate other people in the working area!
Always hold the chain saw with both hands – for proper guiding. The right hand is holding the (valve) handle, assy. (even left-hander) and the left hand is holding the second handle.

Ensure a solid and secure footing.
Place the spiked strip firmly and start cutting under full power – only then start cutting.
For plastic, cast iron and concrete dismount the spiked strip, mount the accessories, like e. g. the splash guard, and then start cutting.

Prevent from dangers in general!
When wearing ear protection, there is particular care and attention is required, as the perception of dangerous sounds (screams, signal sounds, etc.) is reduced.
Instantly switch off the motor if there is any threatening danger or emergency.

Do not lay parts of the body into the enlarged swivel area of the chain saw (see fig. 32)

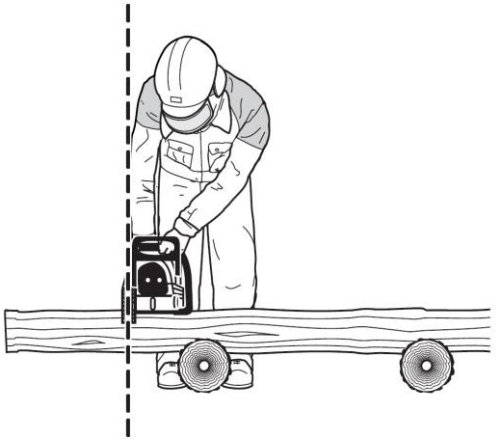


Fig. 32

Pull the chain saw out of wood only with the running chain.
When cutting wood, never work without the spiked strip (only cutting wood) – the saw can pull the operator forward.
Work attentively and calm,

- only with good light and clear sight,
- do not endanger others,
- work carefully.

Use a chain bar which is as short as possible.
Be careful at slickness, at moisture, at snow or ice, or uneven terrain, or on bark.

When working on height, a lift working platform should always be used!
Never work on a ladder! Never work above shoulder level! (see fig. 33)
Never work in unsolid places!
Never work with only one hand!

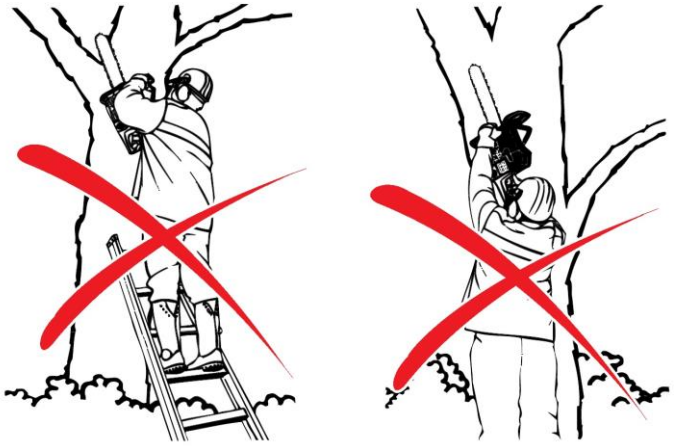


Fig. 33

Do not use the chain saw for lifting up or scooping away cut-off pieces or other things.
Avoid touching foreign objects with the chain saw - risk of kickback!

Use a safe support when cutting timber (if possible, use sawhorses, see fig. 34)
The wood must not be held with the foot or by another person.
Round timber has to be secured against twisting during cutting.
Be careful when cutting splintered wood. Risk of injury due to entrained pieces of wood.

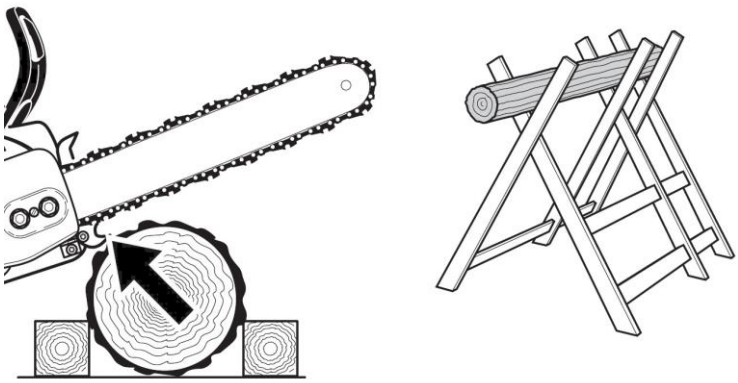


Fig. 34

DANGER – due to kickback!
Kickback can lead to deadly cutting injury.

When kicking back, the chain saw is slinging uncontrolled towards the operator.
This can happen, if:

- the chain hits wood or a hard object in the upper quarter of the bar nose. (see fig. 35),
- the chain on the bar nose gets stuck in the cut.

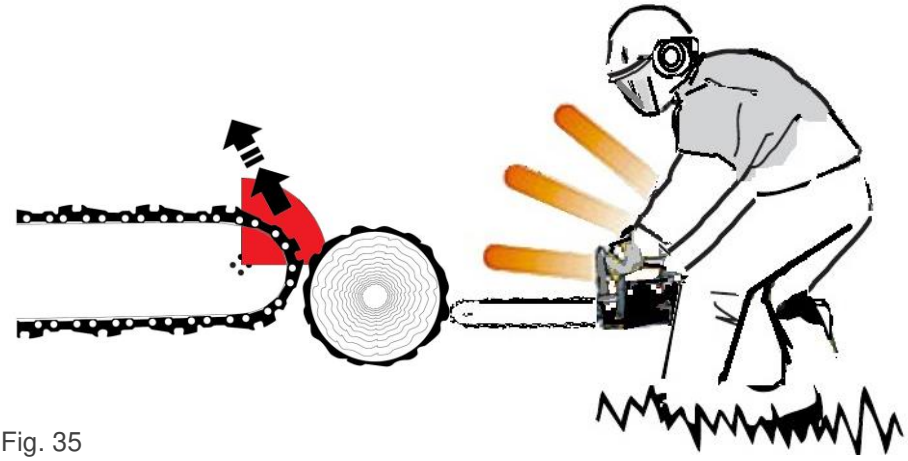


Fig. 35

Minimizing danger of kickback.

- Hold the saw tightly with both hands and safe grip.
- Cut only with full power.
- Watch always the bar nose.
- Do not cut with the bar nose.
- Do not bend over too much.
- Do not cut above shoulder level.
- Put the bar only very carefully in a commenced cut.
- Only „plunge“, if you are familiar with this working procedure.
- Pay attention to the position of the trunk and to the clamping forces which could jam the chain.

Work only with an appropriately sharpened and tensioned chain!
Reduce the risk of accidents.

Releasing the chain brake: With this device the risk of injury can be reduced in certain situations.
The kickback itself cannot be avoided. When releasing the chain brake the chain comes to a standstill in a split second - as described in the paragraph „chain brake“.

Cutting set:
The danger of kickback will be reduced by using low bouncing, properly sharpened saw chain, as well as a chain bar with a small bar nose.

A
If the chain jams or touches a hard object in the wood, during cutting with the bottom side (forehand-cut), the chain saw can be abruptly pulled towards the trunk – always place the spiked strip safely (see fig. 36).

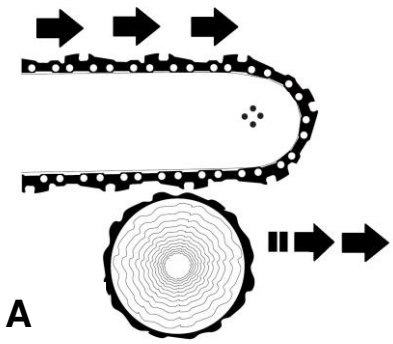


Fig. 36

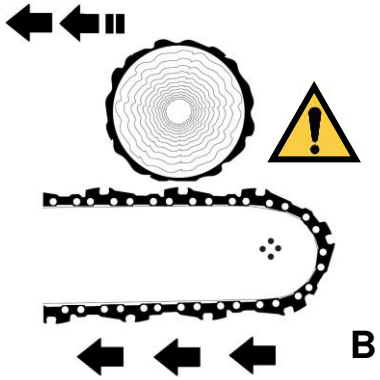


Fig. 37

B
If the chain jams or touches a hard object in the wood, during cutting with the top side (backhand-cut), the chain saw can be abruptly pushed towards the operator (see fig. 37).

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 the nerves and the vascular system in hands and arms, therefore consider 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 as described in the operating instruction booklet in order to avoid unusually 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.

WARNING – Explosion hazard!
When operating the machine in areas exposed to explosion hazards, use only accessories, respectively devices, which are ATEX approved and specified.

Safety Instructions for Prevention of Transport Hazards

ATTENTION – Risk of injury due to improper transport!

Never carry or transport the chain saw with the running saw chain!
Separate the machine form any external energy source before transportation.
Check that the machine is undamaged and in proper condition.

- Never hold and carry the machine at the hoses.
- During transport and when changing the work area, the chain saw has to be switched off or the chain brake has to be released in order to avoid unintentional starting of the chain.
- When transporting over long distances the chain bar protection has to be fixed.
- Carry the chain saw only at the bow handle. The chain bar has to point to the back. (see fig. 38).

Fig. 38

Service and Maintenance of the Chain Saw

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.
- Attention! Risk of burns! Let the machine cool down to the ambient temperature.
- Protect 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.

WARNING – Danger of explosion! Generation of sparks during maintenance work!

Consider local safety regulations. Avoid use of force when disassembling and assembling the machine. Always do maintenance work outside explosion hazardous areas.

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

NOTICE – Use only original SPITZNAS spare parts.

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.**

Inspection and maintenance can be done by the operator. 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.

Disconnect the machine from the hydraulic supply:

- For checking the chain tension,
- for re-tightening the saw chain,
- for replacing the saw chain,
- for mounting accessories,
- for remedial work.

Check the chain catcher. Replace it, if it is damaged. Always ensure the proper condition of the saw chain, properly sharpened, tensioned and well lubricated.
Additionally to the measures described before, we recommend a general overhaul of your hydraulic chain saw by your manufacturer 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,
- unscrewed screw-connections are re-tightened,
- removed covers, screens or filters were reinstalled.

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

The chain brake is subject to natural wear and tear. With regards to its liability, trained personnel (e. g. service) has to service and maintain regularly as follows:

Fulltime:	every 3 months
Occasionally:	every 6 months
Rarely:	annually

Keep the chain bar in good working condition. Turn over the chain bar each time after changing the chain in order to avoid partial wear.

Lubrication:
1A = Oil inlet hole,
1B = oil outlet port and
1C = regularly clean the chain bar groove.

Fig. 39

Always consider: Actuate the valve only when the chain brake is released. Actuating the valve when the chain brake is blocked (saw chain stands still) leads after short time to damages at the chain drive.

Check the chain tension repeatedly!
A new saw chain has to be re-tensioned more often. In cold condition: The saw chain has to touch the chain bar at the bottom side, but it must be possible to pull it manually over the bar. If necessary, re-tension the chain: Paragraph “Tensioning the saw chain” (see page 11).

The saw chain stretches and slacks. The drive links at the bottom side of the chain bar must not protrude from the groove – otherwise the chain could jump off. Re-tension the saw chain: Paragraph “Tensioning the saw chain”! It is important to slacken the chain after work! When cooling down, the chain contracts. If not enough slackened, the chain could damage the motor shaft and the bearings.

Rare operating periods: Consider the Paragraph “Machine storage” (see page 33 and page 34).

Maintenance of the cutting sets

CAUTION – Injury due to carelessness!

Wear gloves when checking the cutting set of the chain saw.

Sharpness of the chain
Re-sharpen the chain, if:

- Mealy chips are generated during cutting wood,
- the saw chain ropes hardly into the wood,
- the cutting edge is damaged,
- the saw chain runs one-sided in the wood.

Sharpen the saw chain often, but remove only little material. Two or three file strokes are enough for simple re-sharpening. After having re-sharpened several times, contact a specialized company for re-sharpening the saw chain.

Sharpening criteria

- All cutting teeth (HZ) must have the same length (dimension a).
- Do not sharpen the saw chain, if dimension a < 3 mm.
- Observe the distance b between depth limiter (TB) and the cutting edge of the cutting tooth (HZ) (see fig. 40).
- The filing angle α must be the same for all cutting teeth,
- the side plate angle β must be from 60° to 85°, depending on the chain type (see fig. 41).

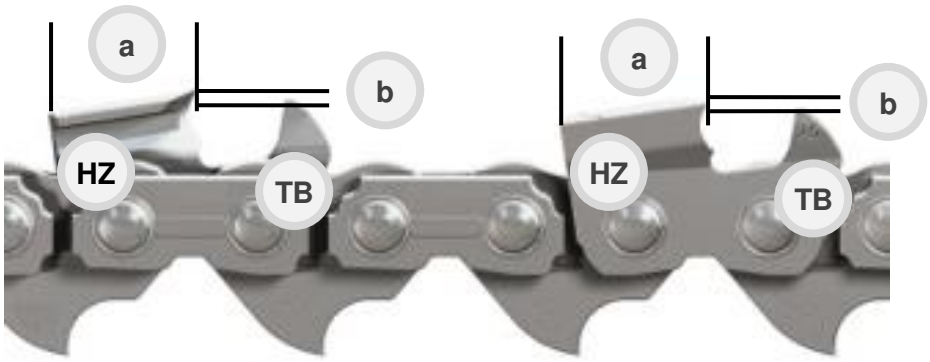


Fig. 40

Fig. 41

Important!
The listed angles and dimensions have to be followed:
A chain with a wrong sharpening - especially too low depth limiter - can increase the risk of kickback.

Choose sharpening tools which fit to the pitch of the chain – allowed pitches of the chain, see „Technical Specification“. The size for the pitch of the chain (e.g. 3/8“) is stamped on each depth limiter (TB).

Use only special saw chain files!
Other files do not fit in shape and cut.
The file diameter must be chosen accordingly to the pitch.

Type of chain
Always use the type of bar and chain recommended by the manufacturer.

α = filing angle
β = side plate angle

Type of chain		α	Angle β
Rapid-Micro	(RM)	30°	85°
Rapid-Super	(RS)	30°	60°
Picco-Micro	(OM/PMN)	30°	85°

Mould of teeth:

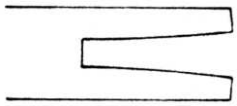
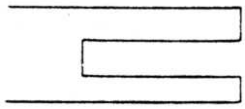
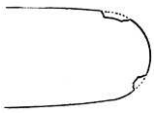
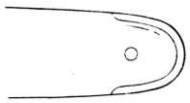
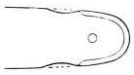
Micro	=	Half-chisel tooth	
Super	=	Chisel tooth	
Sprocket:		5 1026 7070	5 1030 7070
Pitch:		0.404“	3/8“
Thickness of the drive wheels:		0,063“ (1,6 mm)	0,063“ (1,6 mm)

The angles have to be the same for all teeth of the chain.
If the angles are different, the chain is running roughly and the wear gets tougher or even the chain breaks.

Chain bar

IMPORTANT! The chain bars are designed for guiding the saw chain only, and are not allowed to be used as crowbars. Every spinning, twisting or levering in wood shortens the life time of the chain bars. There is no warranty accepted for those cases.

The chain bar must be serviced as carefully as the saw chain. The running surfaces have to be even and smooth, the groove must not be extended. Check the groove. Use a straight-line guard-rail and a cutter. If there is a clearance between the guard-rail and the chain bar, the chain bar is o.k. If the chain tilts and there is no clearance between the chain bar and the guard-rail, the groove is worn. Use a new chain bar!

Bar Condition	**Cause**
Worn groove 	Wear due to long service.
Shallow groove, narrow running surface 	Chain tilted. Cutting teeth damaged on one side. Drive link tongues worn.
Blueish areas on running surface. 	Groove compressed in the areas. Friction of the drive links has caused heating and blue coloration.
Reinforcement chipped 	Bar was used improperly. Saw jammed in the cut. Log slid over bar.
Running surface scored 	Improper use caused extreme lateral pressure on the running surface of the bar nose.
Cavities in bar 	Impact of the chain behind the reinforced area of the bar as a result of the insufficient chain tension. Dull cutting teeth. High pressure applied to the bar.

Sprocket

A damaged sprocket is ruining your chain. Replace a damaged sprocket immediately.

Avoid problems:
Check it each time you mount a new chain and replace it, if it shows signs of wear.
Always make sure that the chain tension is sufficient.

Maintenance recommendation

		Before starting work	after work or daily	weekly	monthly	at breakdown	at damage	if necessary
Complete saw	visual checking (condition, tightness)	X						
	cleaning		X					
Valve lever, Valve lever latch	functional gauging	X						
Chain brake	functional gauging	X	X					
	checking by SPITZNAS Service							X
Lubricating oil tank	checking	X			X			
Chain lubrication	checking	X						
Saw chain	checking, taking care for sharpness	X	X					
	checking chain tension	X	X					
	sharpening							X
Guide bar	checking (wear, damage)	X						
	cleaning and turning			X		X		
	deburring			X				
	replacing						X	X
Sprocket	checking			X				
Accessible screws and nuts (excepted adjusting screws)	tightening							X
Chain catcher	checking	X						
	replacing						X	

Storing the saw
(At operating breaks from about 3 months on)

Consider the following:

- Take off the chain and the chain bar, clean and spray them with protective oil.
- Clean the saw properly.
- Fill the lubricating oil tank.
- Store the machine at a dry and safe place.
- Protect it against unauthorized use (e.g. by children).

Safety Assembly Parts

Item	Components	Material number
32	Sprocket	5 1026 7070
26	Brake band	5 1026 1320
75	Brake spring	9 1804 0200
4	Handle assy. (rear hand protection)	5 1030 6000
5	Second handle	5 1030 6500
31	Brake lever (front handle protection)	5 1026 6800

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 explosion-proof machines.
Retrofits or modifications of the machine need the manufacturer's acceptance.
The explosion-proof machine is designed in the type of protection „c" constructive safety.
All work executed on the machine, influencing the explosion protection, e. g. repairs with mechanical machining, require an approval of an authorized expert or have to be done by the manufacturer.

The internal structure must remain unmodified.

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 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 safety lever control	Hydraulic hoses inverted	Connect hydraulic hoses correctly
c	Low speed	Too little operating pressure Too small hose diameter Too little volume flow	Increase operating pressure Choose larger hose diameter Increase volume flow
d	Too high speed	Too high operating pressure Too high volume flow	Consider 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
f	Machine make strong noise	Hydraulic motor defective	Contact authorized expert company
g	Strong vibration when cutting	Inappropriate saw chain Too much feed Saw chain is blunt	Mount appropriate saw chain Reduce feed Sharpen saw chain or replace it
h	Other problems		Contact authorized expert company.

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

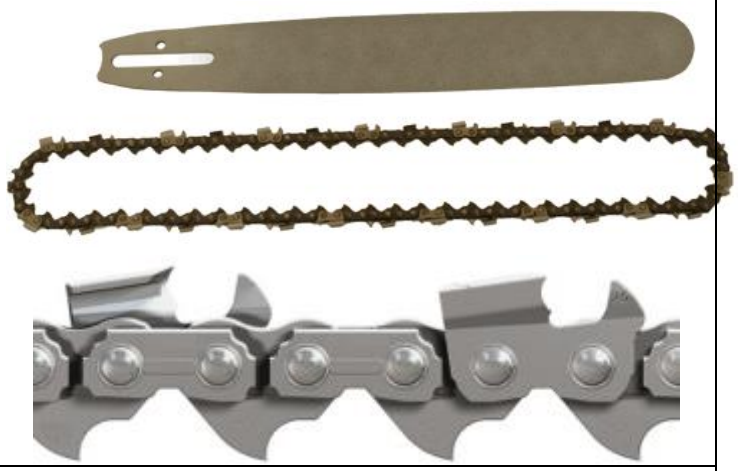
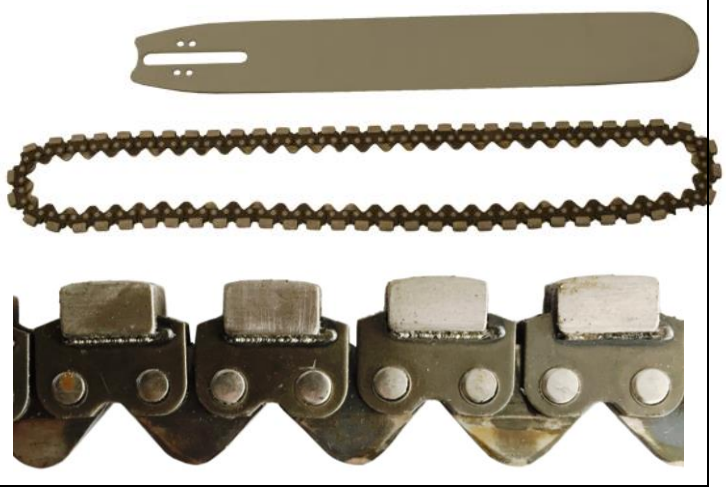
Warranty and Liability

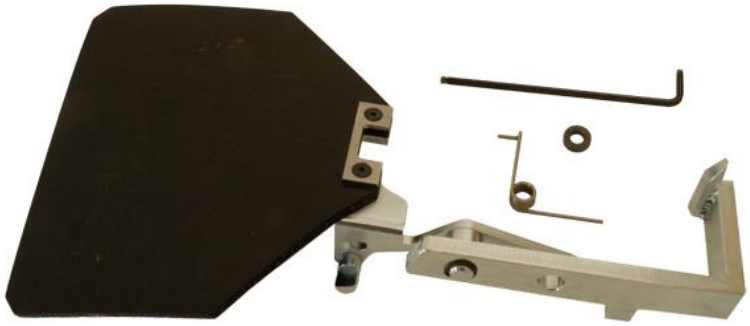
Unless otherwise specified, our „General Sales Terms" apply. Warranty and liability claims in regards to persons or equipment damages are invalid, if one or more of the following causes apply:

- 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.

Spare Parts and Accessories

Only genuine Spitznas spare parts may be used. There is no warranty for damages and liability is disclaimed, if non-original spare parts and accessories are used. The repairing of the machine is allowed authorized expert companies only. The accessories applicable with our machine are listed in our brochure.

Accessories			
	Length	**Application**	
Chisel chain, chain bar 3/8“ – 1,6 mm 0.404“ – 1,6 mm	27 cm (11“) 43 cm (17“) 63 cm (25“) 73 cm (29“) 103 cm (41“)	Wood	
Carbide- tipped saw chain, chain bar 3/8“ – 1,6 mm 0.404“ – 1,6 mm	27 cm (11“) 43 cm (17“) 63 cm (25“) 73 cm (29“) 103 cm (41“)	Wood, plastic	
Diamond saw chain, chain bar 3/8“ – 1,6 mm 0.404“ – 1,6 mm	43 cm (17“) 43 cm (15“)	Cast iron, concrete, ductile pipe	

Chain guard	45 cm (18“) 90 cm (35“)	
Sprocket 3/8“ 0.404“		
Stop disc 3/8“ 0.404“		 
Wrench		
Splash guard		

Accessories:

Order number	Description
5 1030 7970	Sprocket for chain pitch 3/8“
5 1030 9300	Clamp device for pipes up to Ø700 mm
5 1007 9910	Set of chain spare parts for saw chain 5 1007 9930
9 2550 0030	File holder, assy. with 2 round files
5 1030 7160	Spiked strip

More accessories on request.

Declaration of conformity

as defined in the Machine Directive 2006/42/EC and in the
EU-ATEX-Directive 2014/34/EU for usable machines

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

Description:	Hydraulic Chain Saw
Model:	**5 1030 0010**

in the version supplied by us, complies with the Machine Directive 2006/42/EC and the EU-Directive 2014/34/EU (ATEX – group II, Category 2, G Ex h IIB T5 Gb).

Applied harmonized norms are:
DIN EN ISO 12100
DIN EN ISO 11681-1
DIN EN 60079-0
DIN EN ISO 80079-36
DIN EN ISO 80079-37

The EC type approval test was done by:
DPLF
Deutsche Prüf- und Zertifizierungsstelle
für Land- und Forsttechnik GbR
Spremberger Straße 1
D-64823 Groß-Umstadt
EC type approval no.: K-EG 2016/7873

According to section 13 (1) b) ii) of the Directive 2014/34/EU the technical documentation is deposited under reference No. 557/Ex-Ab 2647/16 at the following office:
TÜV Rheinland Industrie Service GmbH
Am Grauen Stein, 51105 Köln
(Registration No. 0035 for the scope of
the Directive 2014/34/EC)

Name of the authorized person for documentation: Mr. Simon Witt
Address of the authorized person for documentation: See manufacturer's address

42555 Velbert, 29.10.19

SPITZNAS
CUSTOMIZED POWER SOLUTIONS

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Tools for the Specialist