

OPERATING INSTRUCTIONS

Safety precautions

INDEX

TRAUB

Safety precautions

CNC Lathes

Note on applicability

Illustrations in this publication may deviate from the product supplied. Errors and omissions due to technical progress expected.

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Explanation of symbols

This chapter explains the symbols that are used in the user documentation to call attention to dangers and important notes.



This symbol warns against a direct imminent danger to the life and health of individuals. Failure to observe this danger warning may result in severe health impairment such as perilous injury and even death.



This symbol indicates important notes for the proper operation of the machine. Failure to observe this information may result in damage to or malfunction of the machine or its components.



This symbol warns against a direct imminent danger from electricity. Failure to observe this danger warning may result in severe health impairment such as perilous injury and even death.



This symbol indicates important notes for the proper operation of the machine. Failure to observe this information may result in damage to or malfunction of the machine or its components.

Definitions

Environmental conditions

The following environmental conditions according to DIN EN 60204 must be observed:

- electromagnetic conditions according to IEC 61000-6-2 and DIN EN 55011 (limit class A)
- relative humidity (at 40 °C) max. 50%
- max. altitude 1,000 m a.s.l.
- contamination of environment including contamination caused by the machine itself
- no ionizing or non-ionizing radiation
- no explosion hazard in the environment
- strong and vibration-free foundation
- ambient temperature at the location of use 5°C to 40°C
- ambient temperature during transport and storage -15°C to 55°C (for 24 h also up to 70°C)
- brightness conditions at the machine according to DIN EN 12464

Intended use

The machine has been designed and manufactured according to state-of-the-art technology and is exclusively intended for use in an industrial environment. Nevertheless, residual dangers exist even if the machine is used properly according to its specifications.

The machine has been designed mainly for cold working of common metallic materials without requiring access to the working area during machining. The limits specified in the technical data (e.g., maximum rotational speed or maximum turning length) must be observed.

Only one person at a time may work on the machine. If more than one person is required in exceptional cases, the operator must appoint one person as the person responsible. The machine and its auxiliary units must not be entered.

Foreseeable misuse

Modifications to the machine may result in a safety risk. This applies particularly to all safety equipment, electrical circuits, and the machine control system software and parameters. Modifications approved by the manufacturer must be documented in a retraceable manner. Significant modifications to the machine may lead to non-conformance with the applicable directives for product safety. The machine must not be operated in an explosive atmosphere.

Machining of the following materials is not permitted:

- explosives
- materials releasing hazardous substances or dusts during the machining process (e.g., toxic or radioactive substances)
- flammable materials
This does not apply for titanium alloys if appropriate fire-safety measures are met when dealing with the collection of chips.
- materials without sufficient inherent stability

Owner obligations

The operator must ensure that all the specified limits, ambient conditions, and clearances in the vicinity of the machine are observed at the place of installation.

Prior to commencing operation of the machine:

- The personnel responsible must read and understand the user documentation including the caution labels. This applies particularly to the safety labels and warnings.
- The machine operator must understand the dialog language of the control system user interface.
- The personnel responsible must be sufficiently qualified to perform the work assigned to it. This applies particularly to commissioning, maintenance and servicing, as well as any working on electrical equipment and components.
- All safety equipment must be properly attached and functional; it must not be tampered with or disabled.
- Devices and measures to override the restricted access to the controller (e.g., keys for switches, passwords) must be accessible only by authorized personnel.
- The machine must be in proper functional condition. Any damaged or defective parts must be replaced immediately. This applies particularly to all safety equipment.

Personal protective equipment

The machine operator must provide for personal safety equipment. The use of personal safety equipment should be agreed with the safety representative.

Personal safety equipment that may be required:

- tightly fitting work clothes
- safety shoes
- safety goggles
- hairnet
- safety helmet
- safety gloves
- hearing protection
- skin barrier cream

Resources

If climbing aids (ladders or steps) are used to carry out certain activities, be sure to observe the safety regulations and instructions for the intended use published by the respective manufacturer.

Personnel qualification

The personnel responsible must be sufficiently qualified to perform the work assigned to it. Individuals undergoing training must not work on the machine without constant supervision by a person having the required qualification.

Qualified personnel must meet the following requirements:

Operating personnel

- Skilled or semi-skilled worker
- Comprehensive instruction on the machine
- Operator training by machine manufacturer

Set-up personnel

- Skilled worker
- Set-up training by machine manufacturer
- Programming training by machine manufacturer

Programming personnel

- Skilled worker
- Programmer training for the machine or programming system by the machine manufacturer

Maintenance and service personnel

- Skilled worker
- Maintenance and service training by the machine manufacturer

Expert

- A person who has sufficient knowledge of the machine based on professional training and experience and who is familiar with all regulations, thereby enabling evaluation of the inspected machine with regard to occupational safety.

General safety information



All specifications in the user documentation as well as the applicable directives and regulations must always be observed. For integrated components made by third parties, the user documentation of the respective manufacturers must be observed as well.

Clamp workpiece

The clamping system forms the interface between the machine and the workpiece and serves to absorb the forces occurring during the machining process. For this reason, the clamping system is of particular importance.

The shape and mass of the machined workpiece before, during and after machining are vitally important. Therefore, workpieces must have a balanced mass. For unbalanced workpieces, the clamping device must be adapted appropriately.

In general:

- Only clamping devices that have been approved by the machine manufacturer may be used. When in doubt, the machine or clamping device manufacturer should be consulted.
- The clamping device must be dimensioned and used according to the specifications in the (third party manufacturer's) user documentation and applicable directives.
- All components of the clamping system must be maintained in proper and functional condition.
- The maximum permitted rotational speed must be limited. In this regard, the lowest permissible rotational speed of all components involved (clamping device or workpiece) determines the maximum permitted rotational speed.
- The rotational speed limitation must be stored in the controller and written into the machining program.
- The prescribed rotational speeds must be adhered to.
- Components of the clamping system may only be modified after consultation with the machine manufacturer.
- When chucks (jaw chucks) are used, the resistance class of the respective machine must be observed. The calculation must be carried out using the formulas in the relevant standards (including DIN EN ISO 23125).
- Remove chips only with suitable tools.

Clamping pressure and clamping force

The required clamping force must be determined based on applicable directives and regulations. The actuation forces of the clamping system and the centrifugal forces acting on the clamping device must be taken into consideration in determining the clamping force required.

The clamping force determined is set via the pressure at the clamping cylinder. However, the set clamping pressure does not give a direct indication of the actual clamping force. Therefore, the clamping force must be measured when the workpiece is set up. The measurement must be performed as specified by the manufacturer of the clamping device.

The clamping force decreases due to wear and contamination of the clamping device. The clamping force must therefore be checked at regular intervals. If the clamping force is found to be reduced, the clamping device must be serviced according to the manufacturer's specifications.

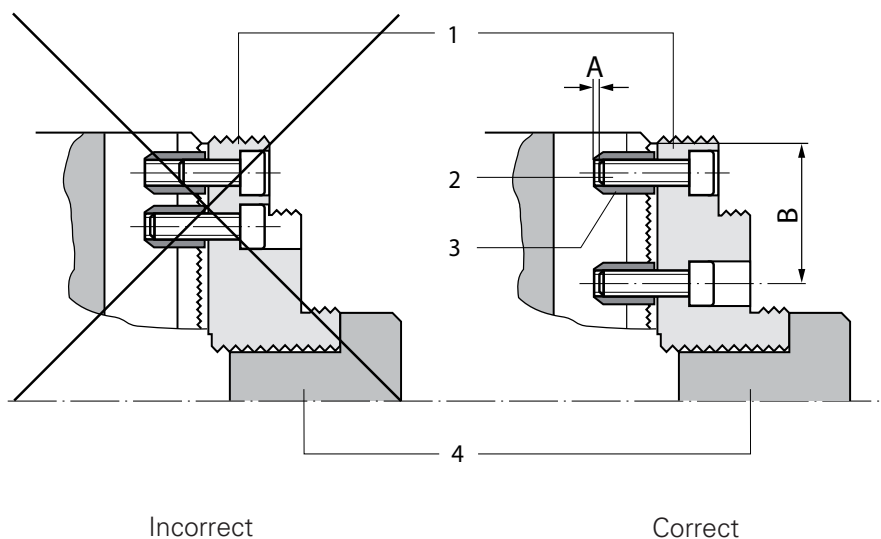
Anomalous operating conditions can occur depending on the workpiece (e.g., for highly unbalanced parts or special jaws). This may change the permitted rotational speed, chuck actuating forces and other characteristics required for safely clamping the workpiece.

Chuck and jaws

When a part is being placed in a chuck, there is a risk that fingers will be crushed between the jaws and the part.

In general:

- The original mounting means of the clamping device manufacturer must be used to mount the jaws.
- Mounting screws of the maximum possible length must be used.
- The mounting screws must be tightened with a torque spanner. The torque must be selected according to the strength class of the screws or in conformity with the specifications of the clamping device manufacturer.
- When a part is clamped, the jaw stroke of each jaw must not exceed 4 mm. It must be ensured that the jaws are molded accordingly.
- Distance A (refer to drawing) between the end of the screw and the end of the T-nut must not exceed 2 mm.
- Distance B (refer to drawing) must be as large as possible.
- Jaws with a maximum permissible rotational speed that is less than that of the clamping device or the spindle must be marked in a clearly visible manner (e.g., with the maximum permissible rotational speed).
- For single-spindle lathes: If a clamping travel of < 4 mm cannot be achieved, a foot-operated switch (in jog mode and integrated panic switch and a mid-position valve) must be used.
- For multi-spindle lathes: Manual loading and unloading in automatic mode is not allowed. For manual loading and unloading in setup mode with clamping strokes > 4 mm, appropriate safety measures must be taken.



- 1 Jaws
2 Mounting screw
3 Slot nut
4 Workpiece

Machining of bar stock

The following always applies to the machining of bar stock:

- The spindle passage must be adjusted to the diameter and profile of the bar stock (e.g., with reduction sleeves).
- Bar stock must not protrude beyond the end of the spindle. If this cannot be avoided due to the length of the bar stock, a bar guide or a bar feeder approved by the machine manufacturer must be used.

Changing tools

When tools are changed, there is a risk of injury from protruding and sharp-edged tools.

In general:

- Suitable personal safety equipment must be used.
- Tool holders must be moved to an ergonomically convenient position.
- Suitable protective measures must be taken (e.g., cloth or protective sleeves) for protruding tools (e.g., boring bars).
- Suitable tools (e.g., torque spanner with extension) must be used.
- The required torque must be observed. The respective specifications can be found in the tool holder catalog.
- When using laser systems for tool breakage monitoring, avoid looking directly into the laser source.
- For live tools and tool holders, the maximum permitted rotational speed and corresponding balance quality must be maintained.

Mechanical interface

Only tools or tool holders may be used that are designed for the corresponding mechanical interface and match the technical data of the drive unit or the tool carrier (turret). The operator/owner is responsible for the correct installation of the tools or tool holders.



Chip conveyor

The chips resulting from the machining are transported by a chip conveyor from the work area to a collection bin. The chip conveyor has a conveyor belt that transports the chips sideways and upwards, so that they can be dropped into the collection bin.

The chip conveyor does not transport the chips continuous out of the work area, but at (adjustable) intervals.

The staff at the machine is not able to see when the chip conveyor starts the transport operation. This results in conjunction with a variety of possible crushing or shearing points in the work area of the machine and at the discharge point of chips to an increased risk of injury.

Walking on the chip conveyor is always forbidden.

To avoid injury of the staff at the machine, the following measures have been taken:

- The interval circuit of the chip conveyor is disabled when the working area door is open.
- At the beginning of each conveying interval, the conveyor belt moves only a small section. This so-called start-up motion is to warn the staff at the machine of the imminent start of the conveyor belt in order to allow them to leave the danger zone.
- A discharge chute is attached to the discharge point of the chip conveyor, which prevents direct access to the conveyor belt.
The discharge chute may only be dismantled if access to the conveyor belt is prevented in a different way (e.g., by a cover with a hole exactly matched to the discharge opening).
- The chip conveyor has a button at the discharge chute, by which the running direction of the conveyor belt can be reversed. This allows the operator to remove accumulated chips clogging the transport channel without dismantling the discharge chute or other covers.
- An emergency stop button is located at the discharge chute on the chip conveyor, by which the machine and the conveyor can be stopped simultaneously.

Safety functions and equipment

Some machine components, aside from their technical functions, also fulfill a safety function that is designed to protect personnel from dangers at the machine. For this reason, safety functions must not be tampered with, disabled or removed.

In case of damage to or failure of safety functions or equipment, the machine must be put out of service immediately.

Removal of safety functions is only allowed during repair work on the machine. Once the repairs are finished, all safety equipment must be reinstalled and checked for proper functioning.

working area enclosure and working area door

The area enclosure and work area door are safety partitions in accordance with Directive 2006/42/EC.

During set-up and production of workpieces, it is possible for machine parts or workpieces to accidentally become loose and thrown around. If this happens, the safety partition protects the personnel at the machine against dangers resulting from this situation. For this reason, no modifications may be made to the safety partition.

The specified impact resistance of the safety partition must be observed. Detailed specifications for the resistance classes can be found in the applicable standards. The impact resistance is rated based on the maximum forces expected, but it may be exceeded due to special process parameters. This applies, in particular, when specially adapted clamping devices are used. In these cases, the process parameters must be adapted to the impact resistance.

The protective measures were implemented according to type C standards, although a residual risk always remains.

During production, a distance of at least 20 cm from the working chamber door, which must always be closed, must be maintained. During set-up, the possible movements are severely restricted (e.g., by reduced axis speeds) when the working area door is open.

If an automatic working area door is used, a switch rail prevents persons from becoming caught. Automatic working area doors do not have handles to prevent people from getting caught during movements of the door.

The interlock on the work area door must not be tampered with or disabled.

Clamping stroke monitoring

When a chuck is used, the clamping stroke monitoring must be activated or the clamping position must be monitored.

Each time the clamping device is changed, the associated trip cam (for open-center cylinders as a contact ring, for closed-center cylinders as a contact piece or contact ring) for monitoring the travel distance must be replaced together with the clamping device (monitoring of clamping device stroke).

On some machines, the clamp stroke is monitored electronically, i.e., there are no trip cams or contact rings to be changed.

A description of clamp stroke monitoring is included in the respective user documentation.

Machines with a short-stroke clamping cylinder have no clamping stroke monitoring. For this reason, they are operated exclusively with collets.

Pressure tanks

According to the pressure equipment directive 97/23/EC, the pressure accumulators built into the machine are of category I / module A. They are provided with a CE mark by the manufacturer, and a declaration of conformity has been issued. Due to this categorization, the pressure accumulators must be subjected to an external and internal inspection and a strength test by a qualified person after a period of time recommended by the pressure accumulator's manufacturer. For pressure units with gas cushions, an internal inspection is recommended after 10 years at the latest.

We recommend to replace the pressure accumulator after 5 years to avoid an internal inspection that is laborious and expensive for this size of pressure accumulator.

The machine operator is obliged to check the pressure accumulator according to applicable rules and regulations. According to applicable regulations, defective pressure accumulators must be depressurized and disposed of by an authorized expert. The guidelines and regulations applicable in the country of use must be followed. The pressure accumulator must be replaced as specified in the user manual of the manufacturer.

Electrical energy

Improper practices when working on the electrical equipment of the machine may result in death or serious injury.

All work on the electrical equipment must be carried out exclusively by properly trained and instructed qualified personnel. All specifications in the wiring diagrams must be observed; this applies particularly to the connection of the machine.

Prior to commencing any work on the electrical equipment, the main switch must be switched off and locked out. To avoid damages to the machine, the prescribed power on/off sequence of the machine must be observed.

Electrical components may carry electric energy even after the machine has been switched off. These components are labeled and must not be touched before the specified discharging time has elapsed.

Some electrical components of the machine generate high voltages (e.g., power modules of the drives in the control cabinet). Any work on these components must be carried out with utmost care, as any mistake in this respect may result directly in death.

Electrical components may only be replaced with components having identical ratings.

After finishing work on electrical assemblies, the electrical equipment must be inspected by qualified personnel. In particular, it must be ensured that all the required protective covers have been attached correctly.

Prior to switching on the machine, all doors to electrical installation spaces must be closed and secured against unauthorized access.

In case of a power failure, the main switch must be switched off and locked out. The machine may only be switched back on after the power system has been restored.

Operating fluids and additives

For all work in connection with operating fluids, the information in the data sheets of the respective manufacturers and the information in the document **Notes on Operating Materials** must be observed.

The filling volume of the operating materials can be obtained from the respective fluid diagrams.

The following always applies to handling of operating fluids and additives:

- Leaked or spilled liquids must be removed immediately to prevent people from slipping, stumbling, or falling.
- Filling aids (e.g., funnels) must be used for adding fluids.
- Skin contact with lubricants and cooling lubricants must be avoided.
- The manufacturers' material safety data sheets and instructions for use must be observed.
- Personal safety equipment must be used.
- Operating fluids and additives must be disposed of in a safe and environmentally friendly way.
- The specifications for additives and operating fluids in the user documentation must be observed.

Extreme machining operations may cause impermissible emissions (dusts, gases, or cooling lubricant vapors) that require an exhaust system. An exhaust system is optionally available and can be obtained—together with the machine—from INDEX-TRAUB. The connector for the defined interface to the exhaust system is to be used. Follow the supplier documentation and the drawing provided.

Noise emission

Noise emitted from the machine is measured according to the applicable directives and regulations. The actual noise emission at the machine depends on the production process and the environmental conditions at the installation location.

According to DIN EN ISO 23125, we are required to issue the following statement:

"The values mentioned are emission levels and not necessarily safe working levels. Although there is a correlation between the degree of noise emission and the degree of noise pollution, it can not be used reliably to determine whether additional protective measures are required or not. Among the factors that affect the actual noise level to which workers are exposed, are the properties of the work area and other sources of noise, etc., that is, the number of machines and other processes in the vicinity and the duration during which an operator is exposed to noise. In addition, the permissible exposure level may vary from country to country. However, this information should allow the user of the machine a better assessment of the hazards and risks."

Laser radiation

Laser-based systems may be used on the machine. The lasers used, at maximum intensity, conform to Class 2 (according to DIN EN 60825).

Caution signs are posted around the usage site of the lasers, warning against directly looking into the laser beam to avoid burns (particularly of the retina) due to laser radiation.

IT and data security

Direct access to the production network should be protected by a firewall and hence according to the current IT security standards. Nevertheless, it is the operator's responsibility to verify that the measures taken in the existing network are sufficient.

External data storage media as well as maintenance and service devices represent basic security risks. These devices should be scanned for viruses before they are used.

Only software that is required for production is installed on the controller. Installation of additional software is not permitted.

Only network connections that are necessary, secure and have been selected for the production process (e.g., for remote maintenance) can be set up on the controller. Unrestricted Internet access to the controller must be prevented.

Additional protection can be achieved by network segmentation (e.g., by separating the production network from the office network) to prevent mutual interference.

Situational safety information

Transport and packing

All covers and doors must be closed and secured.

The hydraulic system must be depressurized before transport. The vent hole in the fluid reservoir must be closed during transport (e.g., by a screw plug).

Transporting the machine with the working area open and tools mounted poses an increased risk of injury from protruding, sharp-edged tools. If necessary, the tools must be wrapped with a cloth or covered with protective sleeves.

The prescribed transport locks must be used. Only suitable, trouble-free transport means having sufficient load-carrying capacity may be used. Damaged transport means must not be used. The transport means must be attached to the fastening points provided for this purpose. The cargo must be secured for transport with suitable lashing straps.

The machine must not be lifted at the control cabinet.

Before transporting, the mounting of the batteries must be checked in the control cabinet.

People must be kept away from under hanging or suspended loads. Danger areas must be avoided and the required safety distances must be observed when the machine is maneuvered/moved. The transport route must be kept free of obstacles and checked for levelness, floor damages, ascending or descending slopes, etc.

The applicable rules and directives for air and sea transport must be observed.

Assembly and installation

The load-carrying capacity of the floor space must be observed. It must be chosen such that, when the machine is installed, the machine legs do not rest on openings in the floor (e.g., manhole covers) and there are no crushing or shearing points around the machine. The latter applies particularly to all movable parts of the machine (e.g., covers and doors). The required specifications can be found in the user documentation.

To avoid unintentional movements, the machine must be switched off before removing the transport locks.

Any hydraulic, pneumatic or electric lines or hoses damaged during transport must be replaced immediately. The hydraulic and cooling lubricant equipment must be checked (for leak tightness) before being switched on.

The chip conveyor discharge chute must be provided with an access guard by the customer, e.g. with a cover (depending on the version of the chip conveyor).

Commissioning (set-up mode)

Set-up mode with the working area door open allows movements at reduced speeds, which may pose a certain risk. To reduce the risk, the following measures are required:

- Lock the tool carriers or move them to the lowest position.
- The working area door should be closed as much as possible, especially during workpiece and tool movements.
- Avoid reaching into the working area when the spindle is rotating (max. rotational speed during set-up mode is 50 rpm).
- The required personal safety equipment must be used, especially safety goggles.
- After set-up is complete, the machine must be left in a state that allows it to start (resume) production mode.

When work is performed inside the working area (e.g., changing of tools), there is a risk of injury from sharp-edged tools.

Therefore, the following applies:

- Tool holders must be moved to an ergonomically convenient position.
- Suitable protective measures must be taken (e.g., cloth or protective sleeves) for protruding tools (e.g., boring bars).
- Suitable tools (e.g., torque spanner with extension) must be used.
- The required torque must be observed. The respective specifications can be found in the tool holder catalog.
- When using laser systems for tool breakage monitoring, avoid looking directly into the laser source.
- For live tools and tool holders, the maximum permitted rotational speed and corresponding balance quality must be maintained.

When the tailstock quill is actuated, there is a risk of injury from the travel of the quill tip. The use of an insertion aid and wearing of protective gloves are recommended for manual tooling and when using a tailstock.

In case of a power supply failure, do not reach into the work area until all spindles, drives and tool carriers have come to a halt.

If persons are accidentally trapped or detained, observe the following:

- Locking in persons accidentally is impossible, due to the design of the machine.
- Freeing trapped persons must be carried out by skilled personnel only, by traversing the corresponding NC axis, depending on the particular situation.
- Freeing trapped persons must take place by manual movement (using auxiliary equipment).

Operation (production mode)

The machine need not be supervised during production operation. However, unattended operation of the machine requires (usually in advance) a detailed analysis and assessment of the planned production process in terms of the additional risks and hazards that may be caused by this (e.g., effects of cooling lubricant or material fires). Here, in particular the physical and chemical properties of the machined material and the auxiliary materials and operating fluids as well as the safety functions, monitoring functions and interfaces to supply and disposal facilities must be considered in the risk assessment with (e.g., the possible emergence of a cooling lubricant fire and its further spread).

The working area door must be kept closed at all times during production mode.

The working area light must be maintained in clean condition to ensure safe working.

Work in the working area must be carried out with the work lamp switched on.

The machining sequence must be checked before starting the production (test run).

The prescribed rotational speeds must be adhered to.

When the tailstock quill is actuated, there is an increased safety hazard from the travel of the quill tip. The use of an insertion aid is recommended for manual tooling and when using a tailstock.

Bar stock may only be machined in combination with a bar guide or bar feeder. If no bar feeder is used, the opening in the machine covering provided for this purpose must be closed.

Do not reach between the pallets or workpieces during operation when using a workpiece feeder and discharge unit.

Chips may only be removed with suitable tools.

The cooling lubricant spray gun may only be used for cleaning workpieces and clamping devices. Always use appropriate protective equipment, especially goggles, during use. Use is only allowed with the working area door open.

Sufficient cooling of the entire machining process must be ensured.

After every collision, the machine must be checked according to the instructions in the user documentation. When in doubt, the manufacturer should be consulted.

For machines with accessible tool and workpiece magazines, the machine must be switched off and locked out before troubleshooting problems with the tool or workpiece logistics.

Maintenance and repair

Maintenance and repair is to be performed only by authorized and trained personnel. This applies particularly to work on motors (spindle motors) or other electrical assemblies. The instructions in the respective manufacturer documentation must be followed for such work.

As the battery for the controller can only be replaced when the machine is powered on, it must be replaced by qualified personnel. The control system manufacturer's instructions must be observed.

We recommend the use of original spare parts and accessories. For damages caused by the use of parts from third-party providers, liability and warranty are excluded. The use of such products may change the structural characteristics of the machine and negatively affect the active or passive safety.

In general, maintenance and repair is to be carried out with the machine turned off. The main switch must be locked out. Electrical components may carry electric energy even after the machine has been switched off. These components are identified with an information label and must not be touched before the specified discharging time has elapsed. In a few cases, maintenance and repair need to be performed with the machine turned on (e.g., replacement of backup batteries). These activities must be carried out with special care.

Prior to working on the machine, it must be allowed to cool down, as hot parts may be located under the covers.

Care must be taken when performing any maintenance and repair activities on the machine. Fasteners must be loosened carefully and parts must be secured against falling down. When elastic items (springs) are removed/replaced, appropriate devices must be used. Any non-horizontal axes that pose a risk of falling down must be moved to their end positions or secured against falling down.

Pedal switches must be put aside to avoid inadvertent actuation.

For removing machine parts, suitable lifting gears must be used. Removed machine parts must be placed in a safe position and secured against falling over.

It may be necessary to remove or disable protective equipment to carry out repairs. Any removed protective equipment must be reinstalled immediately after finishing the repair.

When the control cabinet is open or the machine covers are open or removed, no cellular or wireless phones may be used within a 2 m radius.

Flexible hydraulic hoses made of elastomer-based plastics are subject to a natural ageing process and should be replaced regularly. The machine operator is responsible for compliance with the laws and regulations of the country of use with regard to the use of hydraulic hoses. In Germany, the relevant institutions recommend a renewal cycle of 6 years for the hydraulic hoses.

Any hydraulic, pneumatic or electric lines or hoses that are damaged must be renewed immediately.

If the machine was disconnected from the mains, the main switch must be switched off and locked out (e.g., using a padlock) before the machine is reconnected.

After all maintenance and repair activities and work on electrical assemblies are finished, a test run or functional check must be performed.

Storage and decommissioning

The following must be observed if the machine will not be used for an extended period of time:

- Switch off the machine and lock it out.
- Close and secure all covers and doors.
- Move tool carriers to their bottom end position.

Disposal

For the disposal of the machine as well as machine parts, consumables, coolants, and operating fluids, the applicable regulations and directives must be observed. The disposal of the machine may only be carried out by personnel trained for this purpose. If necessary, a specialist company must carry out the disposal.

Fire protection

The owner is generally responsible for preventing fires/explosions. The operator should establish the required measures in consultation with the appropriate bodies (e.g., occupational health and safety organizations, fire safety engineer, fire brigade).

The use of some cooling lubricants in combination with certain manufacturing parameters and the material to be machined poses an increased risk of deflagration and fire. As this puts the personnel at the machine at an elevated risk, suitable precautions must be taken to prevent deflagration and fires.

High heat generation, open fire or other ignition sources (e.g. cigarettes) in the vicinity of the machine are prohibited.

Despite all technical protection measures, the exit of flames can not be entirely ruled out. Therefore, there is a low residual risk for the personnel at the machine.

Environmental conditions

Ambient temperature during transport and storage -10°C to 50°C

No permanent work place may be in the vicinity where potential flame exit points of the machine (e.g. table for cleaning the workpieces)

Remaining permanently in the vicinity where there are potential flame exit points must be avoided as far as possible.

Intended use

The fire protection system is intended only for detecting and extinguishing cooling lubricant fires within the working area of the machine and for directed deflection of the shock wave of a deflagration (low-pressure explosion) that may occur in such a case.

The fire protection system is enabled only when the working area door is closed.

If CO₂ is used as an extinguishing agent, the chamber volume must be 10 m³/kg CO₂.

The fire protection system allows the use of a water-based cooling lubricant with an oil content > 15% and cutting oil based on mineral oil. The amount of cooling lubricant at the cutting edge must always be as high as possible to avoid the development of ignitable mists.

The cooling lubricant must have the following properties:

- Viscosity ≥ 10
- Flash point > 145°C
- Evaporation loss < 60%

Foreseeable misuse

The fire protection system is not designed to fight fires that are caused by combustible materials or their dusts (e.g., magnesium). When combustible materials are used, other suitable measures must be taken to protect against fires and explosions.

Using a minimal quantity lubrication system or dry machining poses a potential fire risk. Therefore, such a system may only be used after consulting the manufacturer. In this case, it must be checked what other equipment (e.g., an exhaust unit) is required for the safe operation of the machine.

The machine must be operated under supervision when using of flammable cooling lubricants.

Owner obligations

The operator is responsible for following the applicable regulations and directives for fire protection and to train its personal for an emergency.

The fire protection system does not relieve the operator from the usual preventive or defensive measures in case of fires. This applies particularly to the environment of the machine.

A CO₂ concentration of > 5% in the environment constitutes a health hazard. This must be considered especially if the extinguishing gas is able to flow into spaces at a lower level.

Sufficient cooling must be ensured during the entire machining process. The cooling lubricant must be checked at regular intervals and its correct fill level must be maintained. Sparking must be avoided.

The fire protection system must be serviced at regular intervals by qualified personnel according to the specifications of the manufacturer of the fire protection system.

Push in the extinguishing opening only in case of fire; during operation, the opening must be closed.

After the extinguishing process, the cover must be refitted.

The following always applies in event of a fire event:

- if a warning signal (e.g. signal horn) sounds, leave the danger area immediately; the personnel must be instructed accordingly for this purpose.
- Access to the area where the fire event took place may only be granted after this has been approved by an authorized person (e.g. fire safety engineer, fire insurance company, fire department).

Central extraction system

If the machine is connected to a central extraction system, the interaction with substances that are processed or used in other connected machines must be checked.

For assembly and tolerance reasons, a flexible pipe section is often installed between the central extraction system and the machine.

The flexible pipe section between the extraction system and the machine must be kept as short as possible and consist of non-combustible material due to the risk of fire.

Personal protective equipment

Required are:

- tightly fitting, flame-retardant work clothes
- work clothing appropriate for activities on the machine
- safety glasses (suitable eye protection)

Work clothes contaminated with oil must be removed immediately.

Product monitoring

We are committed to monitoring our products during their entire service life.

Therefore, we request that you notify us of any concerns related to the safety of the machine. This applies also to necessary specifications that are not included in the documentation.

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Declarations of Conformity

Samples of the declarations of conformity are shown below.

		INDEX 
EG-Konformitätserklärung		
im Sinne der Richtlinie 2006/42/EG, Anhang II 1A		
Maschinentyp		CNC-Drehmaschine
Maschinenbaureihe		XYZ
Baujahr		2013
Maschinennummer		111111
Projektnummer		222222
Verkaufsauftragsnummer		333333
<p>Hiermit wird bescheinigt, dass die oben genannte Maschine mit allen einschlägigen Bestimmungen der Richtlinie 2006/42/EG übereinstimmt. Weiterhin wurden die Richtlinien #####/EG und #####/EG berücksichtigt.</p>		
<p>Folgende harmonisierte Normen wurden unter anderem angewendet:</p>		
<p>Die Bereitstellung der technischen Unterlagen im Sinne der Richtlinie 2006/42/EG erfolgt durch die Geschäftsführung des Herstellers (Anschrift siehe oben).</p>		
<p>Bei einer nachträglichen Veränderung der Maschine durch den Betreiber verliert diese Bescheinigung ihre Gültigkeit, dies gilt insbesondere für sicherheitsrelevante Veränderungen.</p>		
<p>Ort, 01.01.2013</p>		
Verantwortlicher Produktion	Verantwortlicher Konstruktion	Verantwortlicher Steuerungstechnik



Einbauerklärung

im Sinne der Richtlinie 2006/42/EG, Anhang II 1B

Maschinentyp	CNC-Drehmaschine
Maschinenbaureihe	XYZ
Baujahr	2013
Maschinennummer	111111
Projektnummer	222222
Verkaufsauftragsnummer	333333

Hiermit wird bescheinigt, dass die oben genannte, unvollständige Maschine mit den grundlegenden Anforderungen Richtlinie 2006/42/EG, Anhang I 1 übereinstimmt. Weiterhin wurden die Richtlinien #####/EG und #####/EG berücksichtigt.

Die technischen Unterlagen gemäß Anhang VII B wurden erstellt und werden, auf begründetes Verlangen, der zuständigen nationalen Behörde in elektronischer Form zur Verfügung gestellt.

Die Bereitstellung der technischen Unterlagen im Sinne der Richtlinie 2006/42/EG erfolgt durch die Geschäftsführung des Herstellers (Anschrift siehe oben).

Der Betrieb der oben genannten unvollständigen Maschine ist solange untersagt, bis festgestellt wurde, dass die Maschine, in welche die oben genannte Maschine eingebaut wurde, mit den Bestimmungen der Richtlinie 2006/42/EG übereinstimmt.

Ort, 01.01.2013

Verantwortlicher Produktion

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