



1 Safety information

1.1 Supplemental directives

- ▶ Always keep this safety information pamphlet easily accessible for users.
- ▶ Make sure that all users have read and understood the safety information and safety instructions before they put the milling tool into service.
- ▶ Make sure that these safety instructions are observed at all times.
- ▶ In addition to these safety instructions, also observe all safety instructions of the robot manufacturer for the safe use of the milling tool. Refer to the applicable provisions of the respective operating instructions of the particular robot you use.

1.2 General safety messages

1.2.1 Meaning of the signal words

WARNING

Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

NOTICE

Indicates information considered important, but not hazard related.

1.2.2 Personal protective equipment (PPE)

WARNING

Always wear your personal protective equipment (PPE):



▶ **Appropriate protective clothing**



▶ **Acid-resistant work gloves**



▶ **Helmet, respirator masks, safety goggles, ear protector and Safety shoes.**



Failing to do so may lead to

– serious injury or death.



– cuts from protruding diamond grains or cutting edge.



– burns from hot milling cutter after use.



– infection due to contamination of the milling tool by hazardous pathogens in the sewer.

– injury from accidental falling of the milling tool.



Safety information for the correct and efficient use of milling tools for sewer rehabilitation robots

1.2.3 General instructions for the use of milling tools

- ▶ **The use of this milling tool is only permitted on CAMERA-MONITORED SEWER REHABILITATION ROBOTS in NON-ACCESSIBLE SEWERS.**
- ▶ Make sure that all tasks are carried out only by fully trained personnel who are familiar with sewer rehabilitation robots and milling tools for sewer rehabilitation.
- ▶ Avoid mechanical damage to the milling tool from an operational forces and impacts. Handle with care. Store the milling tool only in the packaging box supplied and only transport it in this packaging box.
- ▶ **Make sure that the milling tool is suitable for the application in question. For details refer to the user table in the catalog.**
- ▶ Check the milling tool for damage before each use and replace a damaged milling tool immediately.
- ▶ Always shut off the milling motor before attaching and detaching the milling tool. Refer to the operating instructions of your robot manufacturer for additional safety information.
- ▶ Prevent unintentional start of the milling motor. Always disconnect the robot from the power supply before attaching and detaching the milling tool. Refer to the operating instructions of your robot manufacturer for additional safety information.
- ▶ Always use only the appropriate tools when attaching or detaching the milling tool on the milling shaft at the appropriate milled grooves and boreholes.
- ▶ Make sure that the seat of the milling tool matches the milling motor shaft according to the applicable standard.
- ▶ Check the correct fit and tightness of the milling tool on the milling motor shaft.
- ▶ Check the direction of the rotation of the milling shaft of the robot and only operate the milling tool in CLOCKWISE direction.
- ▶ Never exceed the maximum rpm's of the milling tool.
Maximum rpm's = 18,000.
Compare this figure with the maximum rpm's of your robot.
- ▶ Avoid excess loads:
 - Make sure vibrations are kept to a minimum. If necessary, adjust advancement, rpm's and machining depth.
 - void prolonged continuous operation. Always allow sufficient cooling phases.
 - Be aware that excessive load can cause fracture of the cutting edges or the diamond segments and can result in a loss of cutting performance.
- ▶ Dispose of worn or defective milling tools according to regional or national regulations or mail these, if necessary, to the manufacturer for inspection.

1.3 Specific safety messages

1.3.1 Hazards during use of the milling tool

WARNING

Never use the milling tool on any hand-operated device!



Avoid death or serious injuries cutting from the rotating milling tool.

Life-threatening hazards from hand-operated devices recoiling or from flying small parts and shavings.

WARNING

Use only in inaccessible sewers!



Death or serious injury can occur if milling tool is put into operation outside an inaccessible sewer.

Start only AFTER positioning the robot into an inaccessible sewer.

Avoid death or serious injuries cutting from the rotating milling tool. Life-threatening hazards from tool recoil or from flying small parts and shavings.

WARNING

Never alter or modify the milling tool!



Modified or altered milling tools may not be safe and can lead to serious injury or death.

Only experienced tool makers to replace worn or damaged diamond segments or cutting edges on the milling tools.

Never use a robot which is not in a good working order, has defective safety equipment or other faulty components.

NOTICE

Avoid damage to the milling tool, the robot or the sewer pipe.

Never modify or alter the milling tool.

Only experienced tool makers to replace worn or damaged diamond segments or cutting edges on the milling tools.

Never use a robot which is not in a good working order, has defective safety equipment or other faulty components.