



Operating & Safety Manual

Grinding chains instructions for use including parts list

SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE.



WARNING

These instructions are for your personal safety. Always ensure that you have read and understood these instructions before using the grinding chains.

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HAMMERHEAD®
TRENCHLESS EQUIPMENT

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To watch practical demonstration videos, or to download an electronic copy of these instructions, please visit www.picotesolutions.com or www.hydraliner.com. Please note that videos, where available, are not intended as a replacement or alternative to this operating and safety manual, but only as an additional learning tool.

Safety Information



This section contains important safety information. Failure to comply could result in serious injury or death.

Safety Symbols

Safety symbols are used throughout this manual to draw attention to potential hazards.



Danger risk of serious injury, follow instructions



Danger risk of serious injury from rotating parts

Personal Protective Equipment (PPE)

Always use personal protective equipment when using the grinding chains and Miller systems, including suitable overalls / protective clothing & footwear and the following:



Always wear suitable eye protection when using the grinding chains to prevent epoxy or other dust/debris from irritating your eyes.



Always wear suitable ear protection when using the grinding chains and Miller systems to prevent any hearing loss.



Always wear suitable cut-resistant gloves when using the grinding chains to prevent any hand injuries. Any open injuries or skin irritations should be covered at all times to avoid contact with epoxy or other dust/debris.



Always wear a suitable ventilation mask when using the grinding chains or Miller systems to prevent any epoxy resin or other dust/debris being inhaled or consumed, which can cause occupational asthma or epoxy dermatitis as well as eye irritation.

Always remember



Dust produced when working can be dangerous to your health, inflammable or explosive.

Make sure the drain pipe has been **opened** and **ventilated** to stop any gases forming in the lateral drain where the work takes place.



Before assembly, use, replacement of parts or maintenance, unplug the Picote milling machine or your hand drill from its power socket. **Failure to comply may lead to serious injury including electric shock or injury from rotating parts.**

DRAIN CLEANING PRODUCTS

Cyclone Chain

Suitable for use with pipes that are in a bad state or even cracked. The centrifugal force is evenly distributed inside the pipe so it will not bang the sides. Easily removes hard materials, such as lead, tree roots and concrete. The Cyclone is also used to eliminate any excess debris after using the Twister to remove collapsed liner inside cast iron pipes

Material: Stainless Steel

Pipe Type: Cast iron, concrete or clay

Original Chain

For the general cleaning of pipes these are highly regarded as the first choice of many technicians.

Material: Stainless Steel

Pipe type: Cast iron, concrete or clay

For clay or PVC pipes you can use the Smart Cutter™ to grind away debris or scale.



USING GRINDING CHAINS WITH WATER

Grinding chains are a highly efficient way to clean pipes. Although it is possible to perform dry grinding if necessary, it is advised that you use water when grinding with chains. This flushes out all of the debris while you work and prevents build-up of debris or blockages resulting from such a build-up.



EXTEND LIFE SPAN

Use a Sleeve with Bearing for the shaft outer casing to extend the life span of the shaft and the outer casing. Available in three sizes. See page 9.



DRY GRINDING WITH CHAINS

When there is a risk from water damage because of holes or cracks in the drains, dry cleaning with the chains is used. In this case vacuums are used to suck waste from the drains, without using water. Kitchen lines will often have blockages and might also have holes requiring dry cleaning. In this case, all drains connecting to the kitchen line are sealed during the cleaning process.



CHOOSING YOUR POWER SOURCE

The grinding chains can be attached to one of a range of milling machines or to a hand drill for lengths less than 32ft.



Milling Machines

There are currently four versions of electric milling machine available.



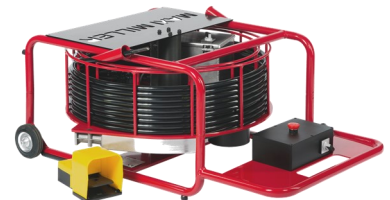
MICRO MILLER



MINI MILLER



MIDI MILLER



MAXI MILLER

Choosing the correct machine for the job:

MILLER	FOR PIPE DIAMETER	RANGE	ADAPTER	SHAFT DIAMETER
	inches	ft		inches
MICRO	1¼"-4	39	-	⅓
MINI	2"-4"	55	-	⅓
MIDI	3"-8"	39	YES	½
MAXI	4"-10"	100	YES	½

*DN 32 only with 6mm shaft

BEFORE YOU BEGIN CLEANING WITH GRINDING CHAINS

Always check the following before you begin:



⚠ WARNING

When attaching a grinding chain always check that the shaft **power source is switched off** and **unplugged** to avoid risk of electric shock or serious personal injury.

1. Choose the correct size of chain for the job. This can be determined by the diameter of the pipe you are working on + 25%.
2. Verify that the chain is in good condition and that the carbides have not significantly worn off.
3. Make sure that the shaft is long enough for the job that you need to complete.
4. Verify that the shaft is in good order and that the outer casing is the correct length. Cut off a piece of outer casing at the end of the shaft so that you can then attach the chain to the shaft.



2" maximum gap

5. If there is more than 2" of bare shaft left over between the chain and the end of the outer casing then grind away the excess shaft with an angle grinder. When using the angle grinder always round off the end of the shaft to avoid cuts.



6. For short distances the grinding chains can be powered by a hand drill for a maximum of 32ft, or for longer distances using one of Picote's Milling Machines. The recommended rpm is approximately 2000.
7. When using a hand drill, attach the shaft socket to the shaft, making sure that the screws are tight.

ATTACHING THE CYCLONE CHAIN TO THE SHAFT

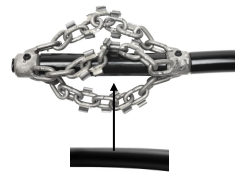
1. Loosen the screws at the side of the chain. Push the shaft through the chain.



2. When attaching the Cyclone, ensure that there is around ½" of bare shaft left over at the end so that the screws can be properly secured.
3. **Firmly tighten** all screws.

ATTACHING THE ORIGINAL CHAIN TO THE SHAFT

1. Loosen the screws on the chain. Push the shaft through the chain.
2. Cut off a small piece of outer casing to protect the middle of the shaft .
3. Check that both ends of the chain are aligned, so that the chain is not twisted.
4. Double-check that the shaft is protected by outer casing where required.
5. **Firmly tighten** all screws.



MAINTENANCE

CARING FOR THE FLEXIBLE SHAFT



The flexible shaft is pre-treated with **paraffin oil** and the casing replaced prior to shipping. Always inspect the condition and apply oil between the flexible shaft and its outer casing when required. If necessary remove the shaft from its casing to treat. When the casing has been replaced, rotate manually for even coverage.

INSPECTING CHAINS

Both the Original and the Cyclone grinding chains are stainless steel and will not rust. It is advisable to pay close attention to the condition of the carbides on the chains. If more than 50% of the carbides look worn it is advisable to replace the chain for maximum performance.

FASTENER SCREWS

If you are unable to tighten the fastener screws properly, due to worn out hex socket heads, replace the fastener screws immediately. Otherwise, the chain can detach from the shaft during the cleaning process and fall into the pipe.



PRACTICAL TIPS & SAFETY ADVICE

Here are some useful tips on how to get the most out of your Picote grinding chains system. Always use the recommended tools for maintenance to avoid personal injury.



SHAFT ROUNDER



The shaft rounder smooth's the end of the flexible shaft, preventing the user from being cut by the otherwise sharp metal edge .



ATTACHING A SHAFT SOCKET



Feed the shaft through the socket to the end and **securely fasten**. The outer casing should reach all the way to the base of the shaft socket to protect the shaft.

CUTTING THE FLEXIBLE SHAFT



Always inspect the flexible shaft before each use. If there are potential weak points or the shaft is damaged, cut off the damaged length using an angle-grinder. This should be done outside in a clear area as there will be sparks generated by the process.



ADDING A VISUAL MARKER FOR SAFETY



Attach a visual marker (tape) to the outer casing of the flexible shaft. Place it around half a meter from the end point of the shaft. The mark will indicate the chain's location and prevent possible injuries when the chain is removed from the drain, including injury by rotating parts.



PARTS LIST

Here is a list of grinding chains and outer casing sleeves currently on offer. Please check with your reseller/salesperson for up-to-date information.

Original Chain



PRODUCT NUMBER	PRODUCT NAME	SIZE (inches)	SHAFT SIZE (inches)
922-8114	ORIGINAL CHAIN	1¼	¼
922-8115	ORIGINAL CHAIN	2	⅓
922-8116	ORIGINAL CHAIN	3	⅓
922-8117	ORIGINAL CHAIN	4	⅓
922-8118	ORIGINAL CHAIN	6	⅓
922-8119	ORIGINAL CHAIN	3	½
922-8120	ORIGINAL CHAIN	4	½
922-8121	ORIGINAL CHAIN	6	½
922-8122	ORIGINAL CHAIN	8	½



Cyclone Chain

PRODUCT NUMBER	PRODUCT NAME	SIZE (inches)	SHAFT SIZE (inches)
922-8123	CYCLONE CHAIN	3	⅓
922-8124	CYCLONE CHAIN	4	⅓
922-8125	CYCLONE CHAIN	6	⅓
922-8126	CYCLONE CHAIN	3	½
922-8127	CYCLONE CHAIN	4	½
922-8128	CYCLONE CHAIN	6	½
922-8129	CYCLONE CHAIN	8	½
922-8130	CYCLONE CHAIN	10	½

Sleeve with bearing for outer casing



PRODUCT NUMBER	PRODUCT NAME	SIZE (inches)	SHAFT SIZE (inches)
922-8089	½" SLEEVE	-	½
922-8209	½" SLEEVE for thick casing		½
922-8211	⅓" SLEEVE	-	⅓



INNOVATIVE THINKING

In Finland, Picote is a very well established contracting company, successfully rehabilitating thousands of drains and sewer pipes with trenchless methods since 2008.

By focusing on in-house research and development, our company also offers a growing range of unique, patented and patent-pending products, which are now available to the international market.

These resourceful tools and machinery have been devised and perfected as a direct result of feedback and evaluation from worksites.

As a contractor ourselves, we know that durability, reliability and safety do matter at the work site, and that value for money is also a priority. That's why at Picote we are proud of our innovative, quality products.

Designed for professionals, by professionals.

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