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MIDI MILLER

MODEL:

MIDI MILLER 12/12

OPERATION & SAFETY MANUAL



WARNING

These instructions are for your personal safety. Always ensure that you have read and understood these instructions before using the machinery. SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE.

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To watch practical demonstration videos, or to download an electronic copy of these Instructions, please visit www.picotesolutions.com. Please note that videos 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.

Safety Symbols

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



Danger risk of serious injury or death by electrocution, follow instructions.



Danger risk of serious injury, follow instructions.



Danger risk of serious injury from rotating parts, follow instructions.



Danger risk of serious injury from hot parts, follow instructions.



Danger do not touch. Risk of injury, follow instructions.

Personal Protective Equipment (PPE)

Always use Personal Protective Equipment when using the Midi Miller, including suitable overalls / protective clothing & footwear and the following:



Always wear suitable eye protection when using the Midi Miller to prevent sewage, chemicals or other dust from irritating your eyes.



Always wear suitable ear protection when using the Midi Miller to prevent any hearing loss.



Always wear suitable cut-resistant gloves when using the Midi Miller to prevent any hand injuries. Any open injuries or skin irritations should be covered at all times to avoid contact with sewage, chemicals or dust.



Always wear a suitable ventilation mask when using the Midi Miller to prevent any resin dust or fumes being inhaled or consumed, which can cause occupational asthma or dermatitis as well as eye irritation.

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

GENERAL MACHINE SAFETY WARNING



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

Always read all safety warnings and instructions. Failure to follow warnings and instructions may result in electric shock, fire and/or serious injury.

SAFETY REQUIREMENTS





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



1. **Always wear eye and ear protection as well as cut-resistant gloves.** Other personal protective equipment, such as dust mask, gloves and overalls should be worn when necessary. Dust produced when working can be dangerous to your health, inflammable or explosive. Always wear appropriate protective equipment.

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

3. Always ensure that the machine is fully turned off and unplugged before inspection, maintenance, or installing any accessories to the machine. Always follow the instructions in the Picote Solutions manual.
4. **Before each use** inspect the machine carefully for any potential break or damage. **Change damaged parts immediately.** It is especially important to check the end of the flexible power shaft for any signs of wear and tear, and repeat the process for the outer casing.
5. When in use, it is very important that the machine is stable and on an even surface at all times.
6. **Never leave the machine running unattended.** Always hold the cable when operating the machine.
-  7. **Do not touch** the Cutter or Grinding Chains immediately after use; they may be hot and could burn your skin.
8. If the working environment is extremely hot and humid, or badly polluted by conductive dust, use a GFCI-enabled power outlet to ensure the safety of the operator.
9. Make sure that the job location is well ventilated before grinding or drilling. Always use a vacuum extraction system in the pipe to remove dust. The operator must wear a dust mask when using dry grinding to clean pipes.
10. Ensure that the ventilation openings are kept clear when working in dusty conditions. If it should become necessary to clear dust, first unplug the machine. Avoid damaging internal parts.
11. Do not use the machine on any materials containing asbestos.
-  12. **Never touch rotating parts.** Do not stand on the machine.
13. Only use this machine with the accessories and spare parts offered by the Picote Solutions. Accessories and spare parts should only be used in the manner intended and as described by the Picote Solutions.
14. Only operate the foot pedal or OPC as instructed. Never place anything on it in place of a foot.
15. Do not extend the shaft by more than one extension (10m/33ft). Use only shaft extension and connectors manufactured by Picote Solutions.

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE



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

TRANSPORT

Midi Miller should be transported in car or other vehicle laid down and secured with ratchet straps to prevent any sudden movements or accidents caused by hard braking or accident.

Never transport machine with tool attached to the shaft.

If using pick-up or trailer to transport Picote milling machines, cover the unit to protect it from raining water and dust.

STORAGE

Midi Miller should be stored under cover in between +10 °C to +40 °C (50 °F to 104 °F). It is recommended that milling machines are stored indoors protected from rain and sunlight and in constant temperature. Best way to store the machines is in the same box that the machine has been shipped.

If Midi Miller will be stored in colder environment than +10 °C (50 °F), the milling machine should be stood at room temperature for 24 hours before use.

If Midi Miller has been stored for long periods of time (over 2-3 months), it should be checked and tested according to maintenance program before use.

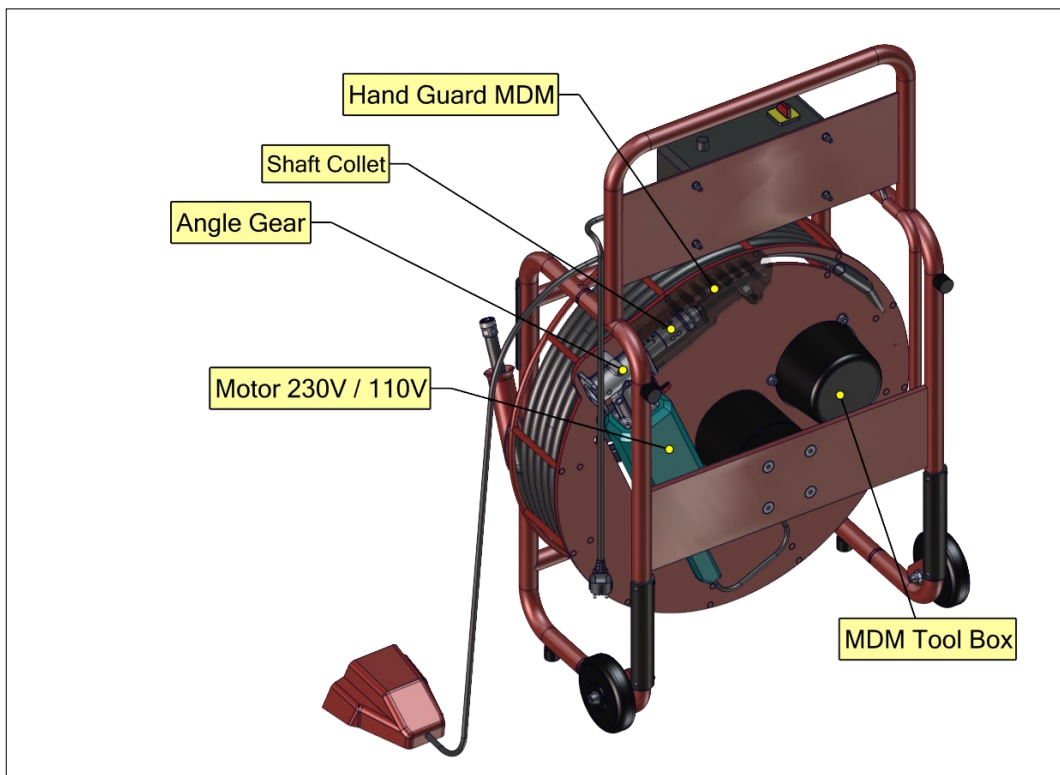
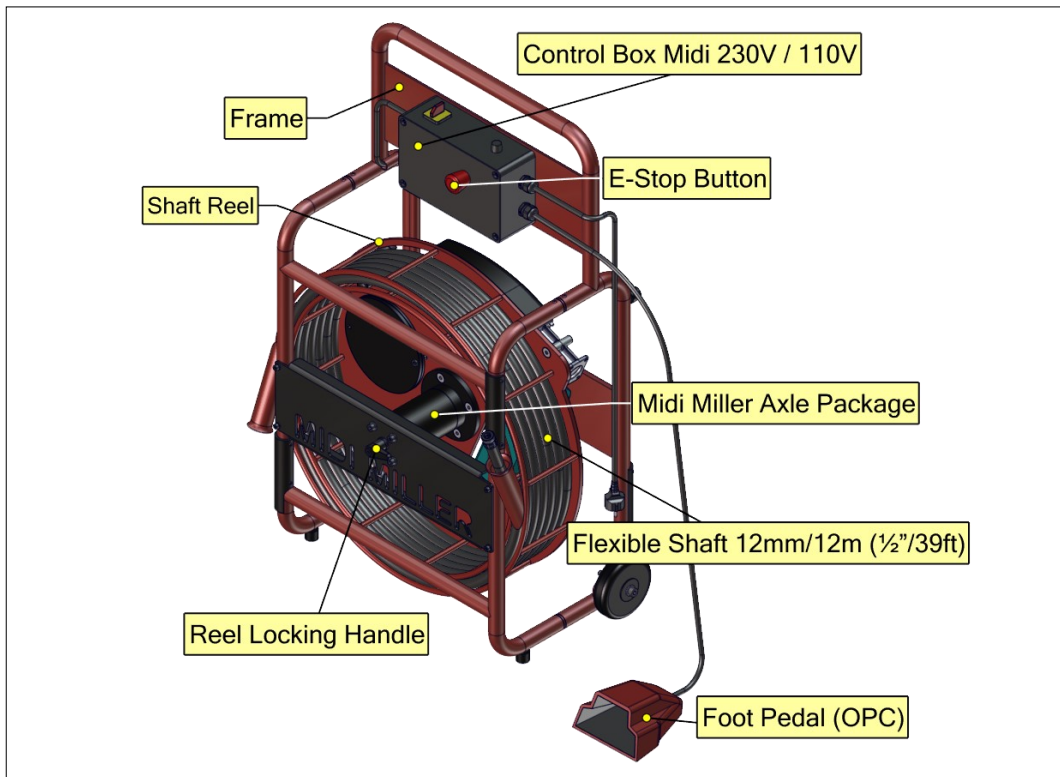
DISPOSAL

Midi Miller motor, control box, electric wires and axle package including slip ring can be disposed in Europe at Waste Electrical and Electronic Equipment (WEEE) collection points. Miller frame, reel and shaft can be recycled in metal waste collection points. Outer casing of the shaft can be disposed of as plastic waste.

Always follow the local waste handling rules and regulation.

Picote Midi Miller 12/12

GENERAL INFORMATION



CAUTION When in use, always lay the machine down horizontally on the floor. When not in use some non-hazardous Picote Flexible Shaft Lubricant might leak from the hand guard.

Picote Midi Miller 12/12

TECHNICAL DATA

Size (mm/inches)	Shaft (mm/inches)	Range (m/feet)	Diameter (mm/inches)	Rotating speed (rpm)	Voltage/Output (V:W)	Power Source	Weight (kg/lb)
1060x732x405 30 x 26 x 12	12 / ½"	12 / 39	DN70-DN200 3" - 8"	1100-1600	110V:1050W 230V:1050W	Electric Motor	48/106

INTENDED USE

This machine is intended for the following uses;

1. Cleaning and unblocking pipes, drains and sewers by grinding.
2. Descaling pipes
3. Reinstating branches in sewers and drains by drilling and grinding.
4. Cutting excess length of cured linings.
5. Removing collapsed linings.

Always follow the Picote Solutions instructions when installing and using the machine with accessories.

AVAILABLE TOOLING

Original Chain

Cyclone Chain

Original PVC Chain

Cyclone PVC Chain

Smart Spider

Twister Mini/Twister Express/Twister

Mini Sweeper

Special Drill Head

Twister Metal Grinder

Twister Liner Remover

Twister Concrete Remover

Smart Cutter™

Wire Brush

Coating Brush

Twister Cleaner

All the Picote tools for 8mm shaft can be used with 12/8 shaft connector and 8mm shaft extension.

Please check Picote Solutions Quick Cleaning Guides and Tool Manuals for more detailed information.

Picote Midi Miller 12/12

VOLTAGE & POWER SUPPLY

Ensure that the supply voltage is correct. The voltage of the power source must match the value given on the name-plate of the machine within the tolerances of $\pm 10\%$. Machines with a 230V plate can be used in 220V mains and 110V machines in the 120V grid.

The machine has been double sealed according to European standards. The power source has to be grounded.

Power plugs

For safety purposes, use only grounded outlets. If the plug does not fit securely or match the outlet, do not force it — contact an electrician to determine required power supply. Never alter the plug in any way. Use the plug with an extension cord only if it can be fully inserted into the receptacle. Use the Midi Miller with a heavy duty extension cord only.

If a power generator is used as power source, ensure that the power rating is sufficient.

220-230V: EU Schuko 230V 16A. Power cable lead minimum thickness 2.5mm^2

110-125V: The Midi Miller is equipped with a 15 amp (125V) NEMA 5-15 plug. Power cable lead minimum thickness 2.5mm^2 / 13 AWG. The Midi Miller must be supplied with sufficient power and proper current rating. A minimum of 15 amps are needed to operate it safely and efficiently. When used with an extension cord, the cord must be a 3 prong, 15amp (125V). If power generator is used, minimum 3 kW required. Adapters may be necessary for generator connections. Contact your reseller or Picote technical support for more information.

AUSTRALIA/UK: Midi Millers in these regions have special plugs.

Australia: CEE 16A 230V color blue. Power cable minimum lead thickness 2.5mm^2 .

UK: UK Plug BSEN 60309 16A 110V color yellow. Power cable lead minimum thickness 2.5mm^2 . Midi Miller requires a transformer to comply with the site power regulations and safe usage in UK.

SAFETY FEATURES



The machine is equipped with an Emergency Switch Off Button. The power supply to the motor is cut off when the Emergency Switch Off Button is pushed. Always make sure the Emergency Switch Off Button is pressed or completely unplug the machine when the machine accessories (e.g. Cutter or Grinding Chains) are not inside a pipe. Always unplug the machine from the power source when performing any maintenance or repairs to the machine.

The machine is operated by foot pedal (Operator Presence Control or 'OPC'). When the control is not held down, the machine stops. Never place any kind of object on the place of a foot (such as a brick).

NOISE LEVEL, VIBRATION & EMISSIONS

⚠ WARNING

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

The typical A-weighted noise level determined according to **EN60745**:



WEAR EAR PROTECTION

Sound pressure level (LpA): 90 dB (A)

Sound power level (LWA): 103 dB (A)

Emissions during actual use of the machine can differ from declared values depending on the ways that the machine is used. Safety measures to protect the operator should be determined by actual conditions, taking into account all aspects of the operating cycle (such as when the machine is switched off and when it is running idle).

Due to continuing product development, the specifications herein are subject to change without notice.

VIBRATION

Hand vibration levels depend on the tool head distance to user and working conditions. Vibration levels in here have been measured during normal lining work activities at working site in Finland. Vibration has been determined according to ISO-5349 and EU-directive 2002/44/EG. In table above are shown safe daily exposure time for user.

Exposure Action Value (EAV) 2,5 m/s²

Exposure Limit Value (ELV) 5,0 m/s²

Tooling	Working Distance	EAV	ELV
Twister DN100 / 4"	2m / 6.6ft	Over 24h	Over 24h
Twister DN100 / 4"	12m / 39.4ft	13h 25 min	Over 24h
Original Cleaning Chain DN150 / 6"	0-2m / 0-6.6ft	1h 33min	6h 11 min
Original Cleaning Chain DN150 / 6"	10m / 32.8ft	3h 14min	12h 57min

CE DECLARATION OF CONFORMITY

We Picote Solutions Oy Ltd as the responsible manufacturer, declare that the following Picote Solutions Oy Ltd machine:

Midi Miller

Model No: 12/12

is of series production and

Conforms to the following EU Directive:

2006/42/EC

And is manufactured in accordance with the following standards or standardised documents:

EN60745

The technical documentation is kept by our authorised representative in Europe who is:

Picote Solutions Oy Ltd, Urakoitsijantie 8
06450 Porvoo, Finland

1st June 2017

A handwritten signature in black ink, appearing to read 'Katja Lindy-Wilkinson', with a long horizontal flourish extending to the right.

Katja Lindy-Wilkinson
C.E.O.

Picote Solutions Oy Ltd
Urakoitsijantie 8, 06450 Porvoo, Finland

OPERATING INSTRUCTIONS

Before operation:



WARNING



- Before installing Picote tools, always make sure that the machine is fully turned off and unplugged.



CAUTION

- Always round off the sharp edges of the shaft to avoid cuts and to make it easier to insert the shaft into the tool to be used.

- Check that there is the correct length of flexible shaft (without its plastic casing) at the end of the flexible shaft and that all screws have been loosened so that the shaft can be easily inserted inside the tool. Position the shaft inside the tool, as far as it will go, and tighten the screws. **Consult accessory manuals (cutters & grinding chains) for detailed information.**

Always check that the tool is set to rotate in the **clockwise direction**. Due to its fabrication, the natural and intended rotational direction of the shaft should be clockwise so that the torque is at its optimum.

DO NOT ROTATE THE CABLE IN REVERSE UNDER LOAD!

While in operation:

- Always lay the machine down horizontally on the floor. During drilling, grinding and cutting processes, always use a separate vacuum extraction system or run water in the drain to remove dust.

STARTING & USING THE MACHINE



WARNING

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

1. Check the rotational speed of motor before powering on. The control of the rotational speed is located in the control box. The rotational speed increases when the speed control is turned clockwise.
2. Place the tool inside the pipe.
3. Turn on the power switch.
4. Release the Red Emergency Switch Off Button.
5. The machine starts when the OPC foot pedal is pressed down. Always hold the flexible shaft firmly while operating the machine.
6. Rotating the tool makes it easier to move the tool forward inside the pipe.
7. The machine has an operator presence control or 'OPC'. When the control is not held down, the machine stops. The machine can also be stopped by pushing the Emergency Stop Button down, rotating the power gear to O or unplugging the machine.
8. The life span of the shaft outer casing can be prolonged by using Sleeve Bearing designed for the outer casing.

Avoid overloading the motor. It is recommended to use Maxi Miller instead of Midi Miller if heavy duty work is performed continuously.

MAINTENANCE PROGRAM

Maintenance task	Months			
	3	6	12	24
Change motor carbon brushes			I	R
Tightness of motor fixing			I	I
Alingment of motor			I	I
Condition of frame			I	I
Condition of wheels & rubber bushes			I	I
Condition of control box			I	I
Condition of electric cables	I	I	I	I
Condition of electrical connections	I	I	I	I
Operation of E-STOP	I	I	I	I
Lubricate Shaft	P	P	P	P

I: Inspect, fix or replace if needed.

P: Perform, replace if needed.

R: Replace

WARRANTY PERIODS

Picote Solutions grants limited warranty for certain machines, equipment & components. Read more detailed information on page 20 Picote Warranty Policy and Procedure.

Service Period	3 months	6 months	1a
A			
B			
C			

- A Milling machine & spare parts, except
- B Electric motors
- C Service Centre repair work



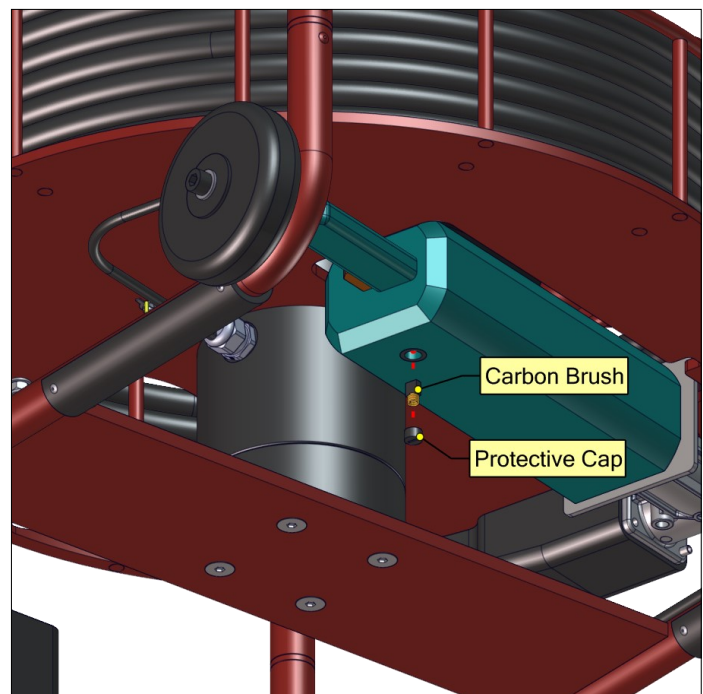
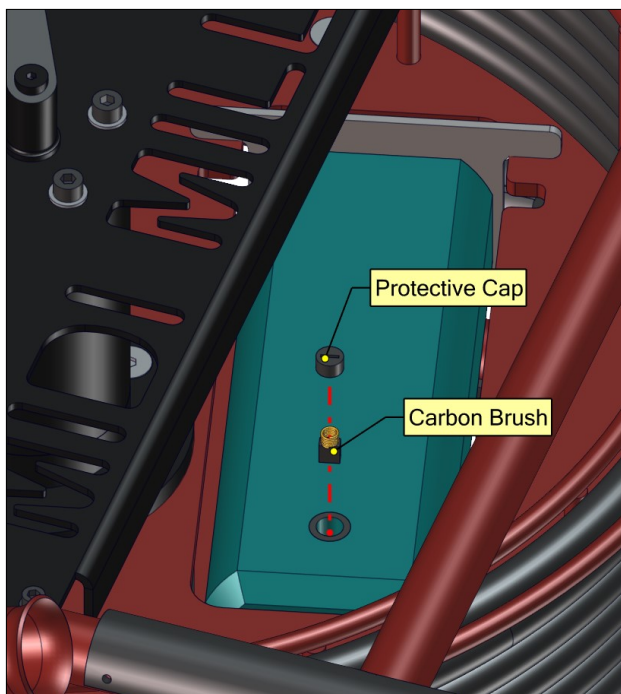
1. Before performing any maintenance always check that the machine is fully turned off and unplugged.

2. Carefully inspect the flexible shaft and its casing on a regular basis to ensure that there are no signs of wear and tear. Change the flexible shaft and casing as and when required.
3. For safety and efficiency, always keep the machine and its motor, drive unit, ventilation and cooling slots clean.
4. Check that the screws for the shaft socket are securely tightened.
5. Check that all the bolts and screws on the machine are securely tightened.

REPLACING CARBON BRUSHES

Remove and check carbon brushes regularly and replace when worn down to the limit mark. Keep the carbon brushes clean and free to slip in the holders. Both carbon brushes should be replaced at the same time. Use only identical carbon brushes.

Use a screwdriver to remove the brush holder caps. Take out the worn carbon brushes, insert the new ones and secure the brush holder caps.



SERVICING THE FLEXIBLE SHAFT & ITS OUTER CASING



The flexible shaft is pre-treated with Picote Flexible Shaft Lubricant and the casing replaced prior to shipping. Always inspect the condition of the shaft and its outer casing regularly. Also, inspect at least every fifth working day that the shaft is properly attached under the hand guard at the machine end. If the shaft appears to have gaps between the windings from the beginning to the end, the entire shaft will need to be replaced.

Lubricant can be added between the flexible shaft and its outer casing when the shaft is attached to the machine. In order to add lubricant the cable needs to be removed from the reel. The shaft needs to be taken out from outer casing about 1 –1,5m (3-5ft) and lubricant needs to be added on the other side inside the cavity. No more than 20ml/20g/1oz will be required for the entire shaft. Too much lubricant can cause strain on the cable. After lubricant is poured, the free shaft end should be pushed through the outer casing. The shaft will push the lubricant evenly inside the outer casing. Connect the shaft to the machine and rotate with low rotation speed so shaft will push excess oil outside. Use a mat to protect the work area under the machine to prevent damage to floors.

Keeping the shaft well lubricated will prolong its life span and decrease the friction caused by the shaft when it turns around. Lower friction will decrease the burden caused to the motor.

If preferred, the shaft can be taken out of its outer casing for lubrication.

Appropriate oil to use: Picote Flexible Shaft Lubricant

CHANGING THE FLEXIBLE SHAFT

Only use the shaft and its outer casing specified by Picote Solutions. Order the replacement shaft from your reseller. The flexible shaft is pre-treated with Picote Flexible Shaft Lubricant and the casing replaced prior to shipping.

1. Loosen the bolts holding the hand guard and remove the hand guard.
2. Loosen the screws in the shaft socket that hold the shaft. Remove strain relief. Pull the old shaft out of the machine.
3. Insert new shaft. Before inserting the shaft inside the shaft socket, add strain relief. Verify that the shaft goes all the way to the end. Tighten the screws.

FLEXIBLE SHAFT EXTENSION

Flexible extension shafts are available for the Midi Miller in lengths of 10 metres (33ft). **Do not** extend the shaft by more than **one** extension and only use a Picote Solutions shaft extension and connector.

Before attaching or removing the shaft extension always make sure that the machine is fully turned off and unplugged.

1. Machine as far as possible with the flexible shaft before fitting the extension.
2. Remove the flexible shaft from the pipe.
3. Push the extension down the pipe and then connect onto the existing flexible shaft using a shaft connector.
4. You can then carry on machining.

Note: for vertical pipes connect the extension onto the existing flexible shaft before pushing the extension down the pipe.

In case there is problem that you cannot solve using this manual, please consult your reseller or the Picote Solutions.

ACCESSORIES & SPARE PARTS

⚠ WARNING You must use only the Picote Solutions accessories and attachments with the machine described in this operations manual. The use of other accessories or attachments could present a risk of injury or death. The accessories or attachments should only be used in the proper and intended manner, and always follow Picote Solutions instructions.

MIDI MILLER

3550031212	Midi Miller BB12/12
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SPARE PARTS

1312020125013	Midi Miller / 12mm Shaft / 13.5 metres (44.3ft)
1312020125010	Flexible Shaft 12mm / 10 metres (33ft)
1313002125	Shaft Connector 12mm/12mm
93212321125	Sleeve 2 Plastic 12mm
9550000034	Strain Relief Midi Miller
1350000020	Picote Flexible Shaft Lubricant 0.5 liters
1350000021	Picote Flexible Shaft Lubricant Package, includes 6 bottles

ADDITIONAL TOOLS

1100400001	Bearing Cleanser
1350000005	Pliers
1350000007	Cutter for Steering Wire
1350000018	Shaft Rounder
1350000006	Sheath Cutter 1
1350000011	Sheath Cutter 2 (Shaft inside outer casing)
1350000012	Cutter for Side Grinding Panels
1350000008	Hex Key 4mm
1350000009	Hex Key 3mm
1350000010	Hex Key 2.5mm
1350000013	Combo Hex Key 1-6mm
1350000001	Wrench 8mm

PRACTICAL TIPS & SAFETY ADVICE

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



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 a band saw.

CUTTING THE OUTER CASING



Always inspect the outer casing before each use. Easiest and safest way to shorten the outer casing to the correct length is using sheath cutter. Only the needed amount of bare shaft should be exposed in all times.



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



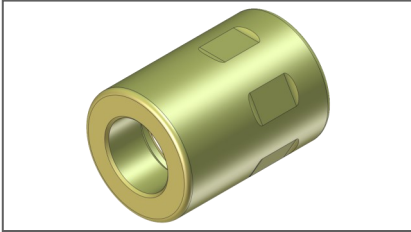
Feed the shaft through the socket to the end and **securely fasten**. The outer casing should reach all the way to the base of the shaft socket to protect the shaft.

PRACTICAL TIPS & SAFETY ADVICE

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



SLEEVE BEARING



Always use Sleeve Bearing when using Midi Miller. It prolongs the lifetime of the flexible shaft and prevents the outer casing from melting in the tool end. Sleeve bearings can be re-used when outer casing is shortened.

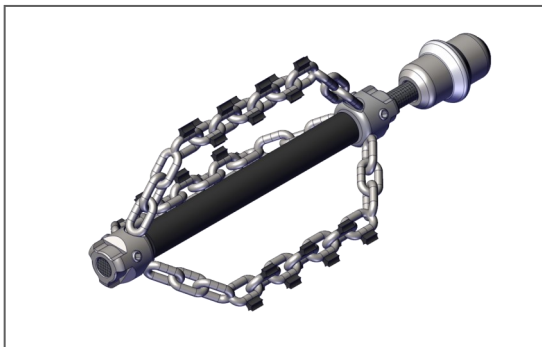
ADDING A VISUAL MARKER FOR SAFETY



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 tools location and prevent possible injuries when the tool is removed from the pipe, including injury by rotating parts.



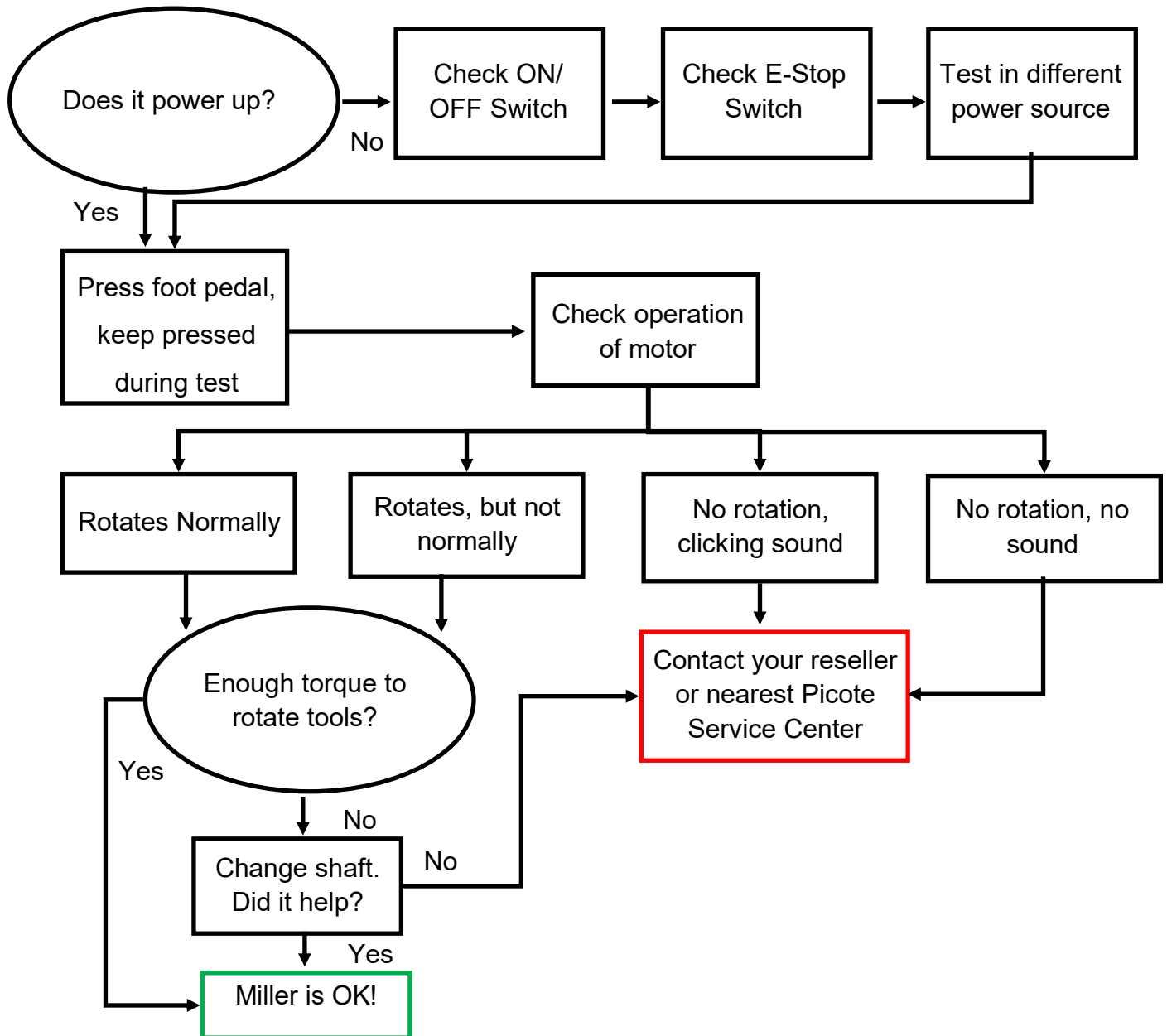
CREATING LEADERS



You can extend the life of the flexible shaft and increase productivity on site by making individual leaders for the most commonly used tools. This way you easily and quickly switch between tools.



TROUBLESHOOTING FLOWCHART



If there is problem that you cannot resolve with this manual, please consult your Picote Reseller or Picote Solutions.

WARRANTY POLICY AND PROCEDURE

Limited Warranty:

Picote warrants to the original End User that the Product purchased by such End User will operate in accordance with and substantially conform to their published specifications when shipped or otherwise delivered to the End User and for a period of one (1) year, except electric motors for which the warranty period shall be six (6) months, provided, however, that Picote does not warrant any claim or damage under this

Warranty if such claim or damage results from:

1. Consumable parts or normal wear and tear resulting from use of the Products,
2. Product overload or overheated motor,
3. Regular periodic maintenance of Products,
4. Misuse, neglect, or improper installation or maintenance of the Products, or use of Products not for their intended purpose,
5. Products that have been altered, modified, repaired, opened or tampered with by anyone other than Picote or an authorized Picote Service Centre, or unsuitable or unauthorized spare parts, accessories or third party products when using the Products or;
6. the use of the Products not in compliance with their respective Documentation, user manuals, safety and maintenance instructions, and any usage restrictions contained therein, or
7. accident, fire, power failure, power surge, or other hazard.

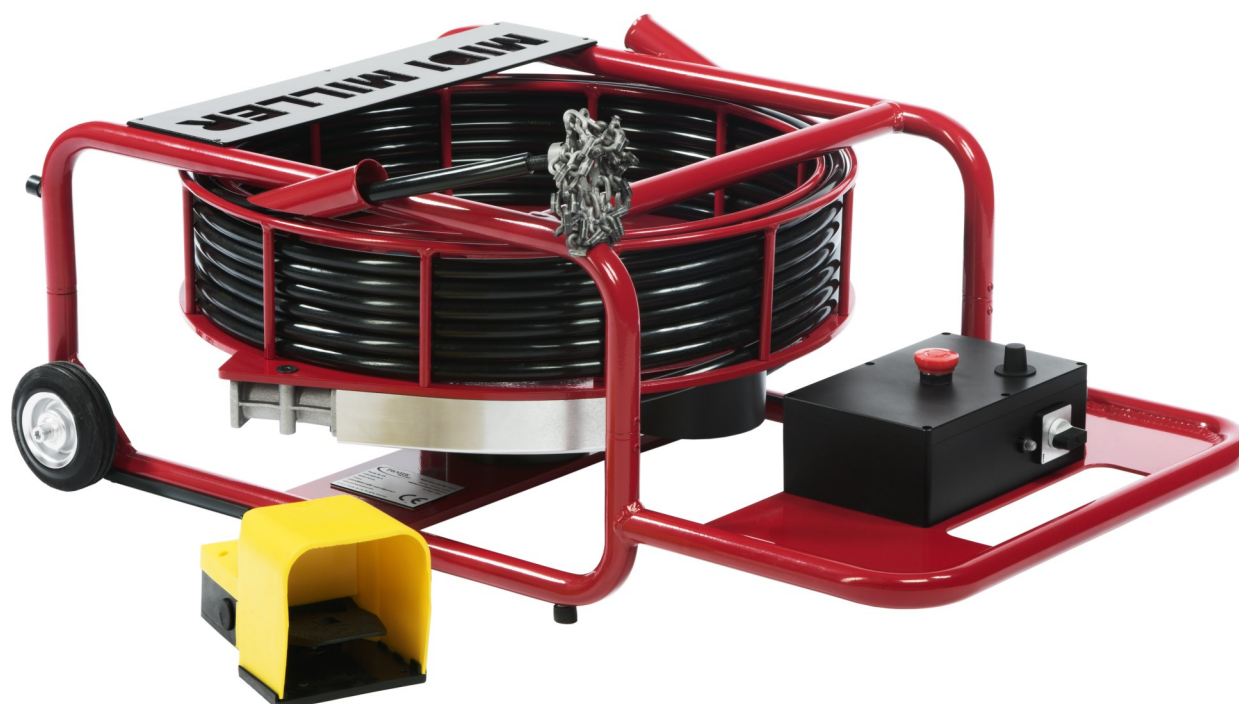
Otherwise, the Products are sold AS IS. End User is responsible for using the Products within their specifications and instructions as contained in the Documentation.

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