PICOTE
LIFE FOR PIPES

SUPER MIDI

Super Midi Miller 12/20

OPERATION & SAFETY MANUAL

PICOTE
ORIGINAL INSTRUCTIONS
SOLUTIONS

WARNING

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

SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE.

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SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

To watch practical demonstration videos, take a course, or to download an electronic copy of these Instructions, please visit www.picoteinstitute.com. Please note that videos and courses are not intended as a replacement or alternative to this operating and safety manual, but only as an additional learning tool.

SAFETY INFORMATION

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.

Safety Symbols

Danger risk of serious injury, follow instructions.

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

Danger risk of serious injury from moving 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)

Suitable eye protection to protect against injuries and chemicals from irritating eyes.

Suitable ear protection to protect against hearing loss.

Suitable heat and cut-resistant gloves to help prevent any hand injuries. Any open injuries or skin irritations should always be covered to avoid contact with sewage, chemicals or dust.

Suitable respirator to prevent any dust or fumes being inhaled or consumed, which could cause occupational asthma or dermatitis.

GENERAL MACHINE SAFETY INFORMATION

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1. **Always wear eye and ear protection as well as heat and cut-resistant gloves.**
   Other personal protective equipment, such as dust mask and protective clothing should be worn when necessary.
2. 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 manufacturer's manual.
3. **Before each use** inspect Miller and shaft carefully for any potential damage. **Change damaged parts immediately.**
4. Ensure the pipe has been opened and ventilated to prevent any gases accumulating.
5. Dust produced when working can be dangerous to your health, inflammable or explosive. 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.
6. If the working environment is extremely hot and humid, or badly polluted by conductive dust, use a GFCI-enabled power outlet to increase operator safety.
7. Ensure that the Miller ventilation openings are kept clear when working in dusty conditions to avoid damaging internal parts. If it should become necessary to clear dust, first unplug the machine.
8. When in use, it is very important that the machine is stable and on an even surface at all times.
9. **Never leave the machine running unattended**.
10. Always hold the shaft when operating the machine.
11. **Never touch rotating parts**.
12. **Do not touch the tooling immediately after use**, it may be hot and could burn skin.
13. **Do not use on any pipes containing asbestos fibres.**
14. Do not stand on the machine.
15. **Only operate the foot pedal (OPC) as instructed. Never place anything on it in place of the operator's foot.**
16. **Do not extend the shaft by more than one extension.**
17. Only use the Miller 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 Picote Solutions.

ENVIRONMENT, TRANSPORT, STORAGE & DISPOSAL

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ENVIRONMENTAL:

- Operational Ambient Temperature Range: -10°C to 50°C (14°F to 122°F), frost and condensation free.
- Storage Ambient Temperature Range: -20°C to 60°C (-4°F to 140°F), frost and condensation free.
- Maximum Altitude: 2000m (6500 ft). Derate above 1000m (3280 ft): 1% / 100m (328 ft).
- Maximum Humidity: 95% non-condensing.

TRANSPORT:

Picote Millers should be transported laid down and secured with ratchet straps to prevent any sudden movements or accidents caused by hard braking or an accident.

Never transport with tooling attached to the shaft.

If using a pick-up or trailer to transport, always suitably cover the Miller to protect it from the elements.

STORAGE:

It is recommended that Picote Millers be stored indoors to protect them from rain and sunlight, and also in a constant ambient temperature. The best way to store the machines is using the same box that the machine has been shipped in.

Millers should be stored under cover in between +10°C to +40°C (50°F to 104°F). If the Miller has been stored in an environment colder than +10°C or 50°F , the machine should be stood at room temperature for 24 hours before use.

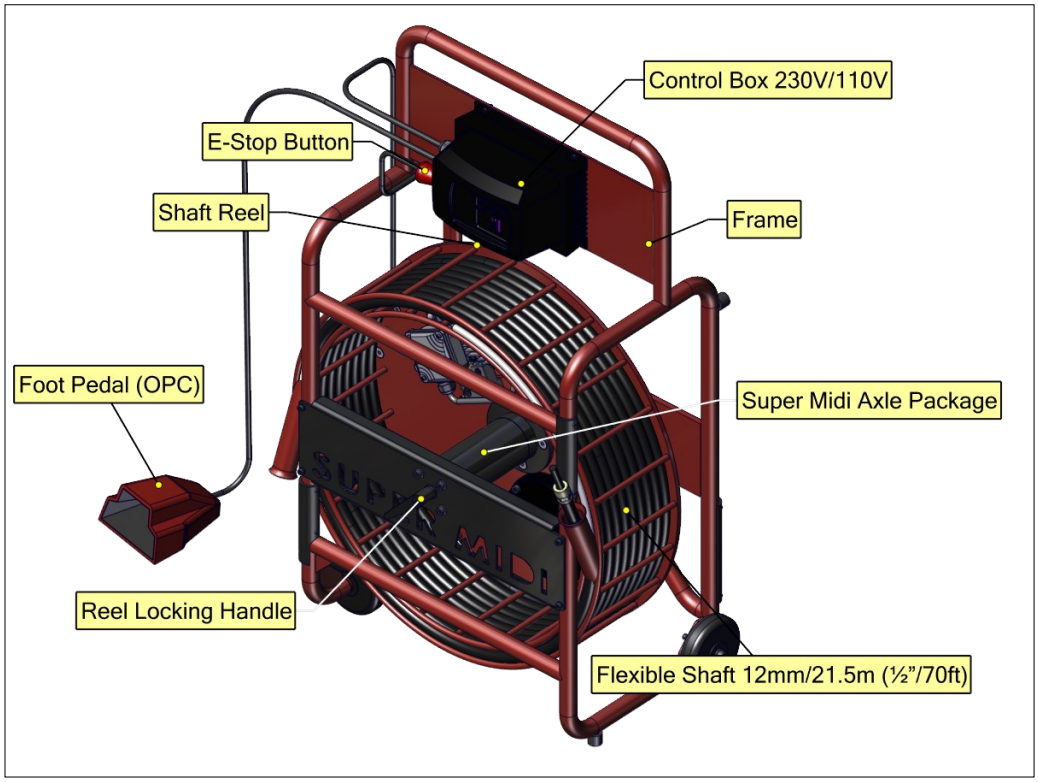
If the Miller has been stored for long periods of time (over 2-3 months), it should be checked and tested according to the maintenance programme before use.

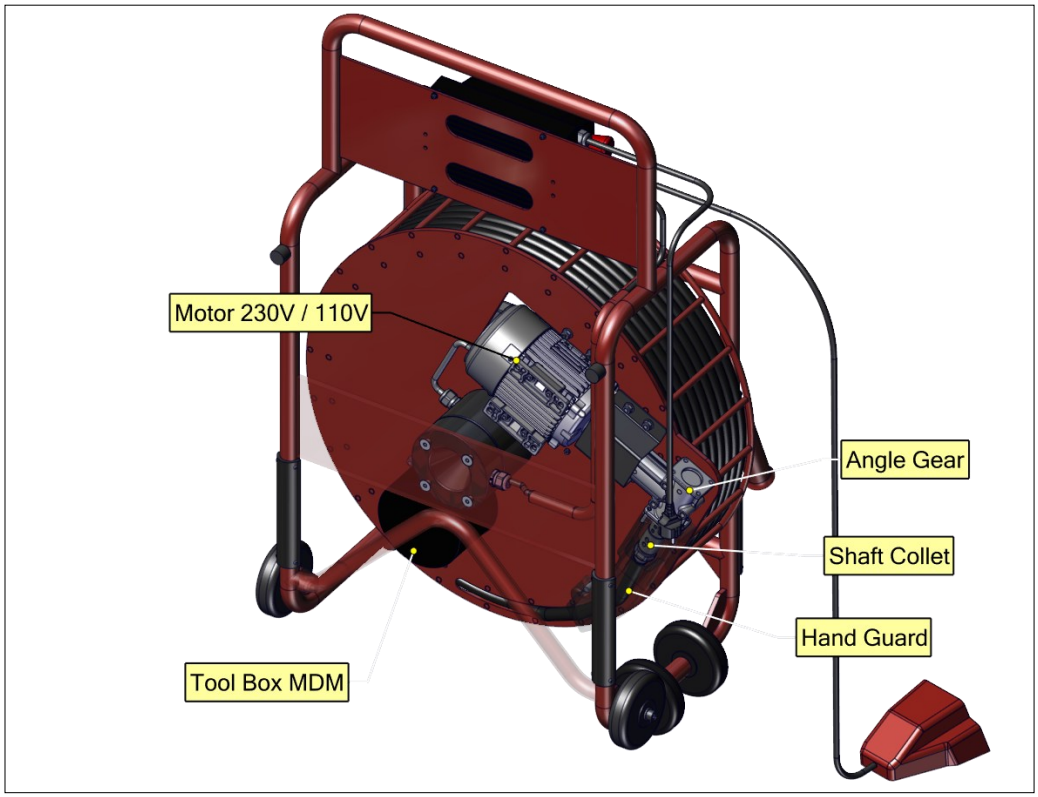
DISPOSAL:

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.

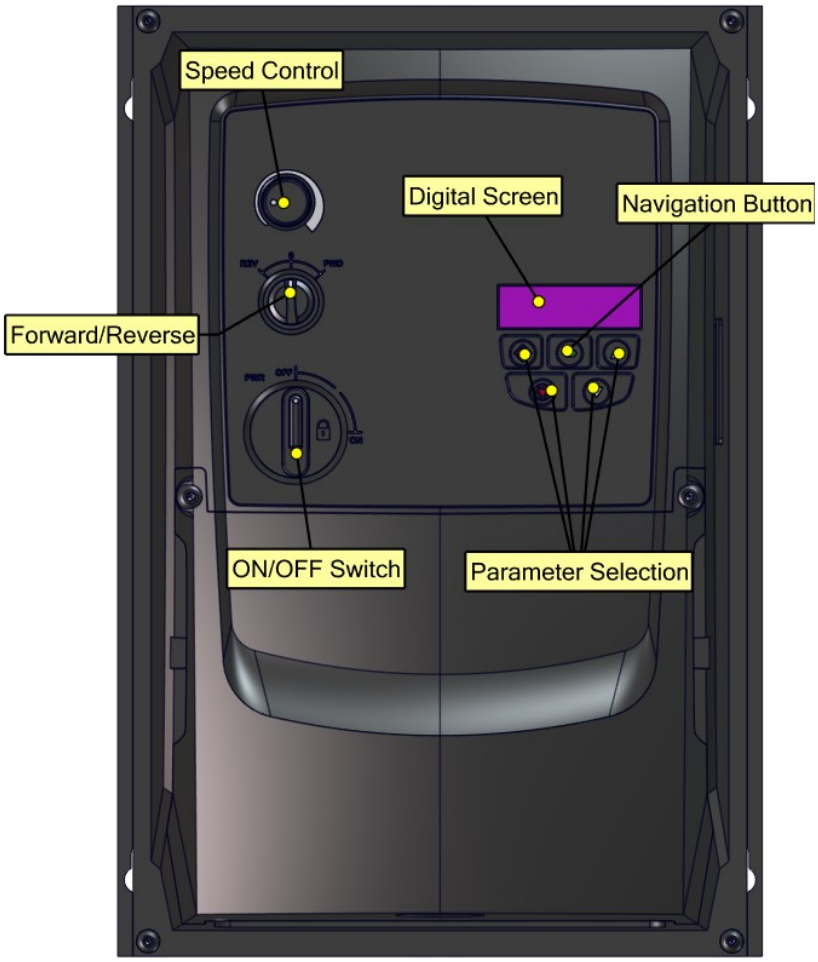
Always follow local, state, and country specific waste handling rules and regulations.





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

DIGITAL CONTROL BOX:



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Parameters of your Miller have been pre-set by the manufacturer.

The Control Box has been pre-programmed and requires no additional adjustments.

Picote Solutions accepts no liability for failures or accidents caused by tampering or changing manufacturer settings.

Opening the Control Box or changing the factory settings may cause damage and will void the warranty.

The Navigation button can be pressed to see the rotational speed (rpm), amount of current sent to motor (Amp), power generated in motor (kW), and power frequency of motor (Hz).

Do not hold the button down continually.

TECHNICAL DATA

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

Size (mm/inches)	Shaft (mm/inches)	Range (m/feet)	Diameter (mm/inches)	Rotation (rpm)	Voltage Output (V:W)	Power Source	Weight (kg/lb)	IP Class
1122x712x466 (44 x 28 x 18”)	12 (½”) Regular Casing)	21 (65)	DN70-150 (3-6”)	500-1500	110V:1.5kW 230V:1.5kW	Electric Motor	69 (152)	54

INTENDED USE:

1. Cleaning, descaling and unblocking pipes, drains and sewers.
2. Reinstating CIPP lined connections drilling and grinding.
3. Cutting excess length of cured linings.
4. Removing metallic obstructions
5. Removing deformed or collapsed CIPP linings.
6. Internal pipe coating using the Picote Brush Coating System™

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

AVAILABLE TOOLING:

Original Chains	Cyclone Chains	Tiger Drill Chain
Tiger Twister	Twister Express	Tiger Bore
Tiger Bore	Special Drill Head	Mini Sweeper
Smart Spider	Express Drill Chain	Twister Metal Grinder
Smart Cutter™	3D Chains (Premium/ PVC)	Wire Brush

Please check Picote Solutions Quick Guides and Tool Manuals for more detailed information: **www.picoteinstitute.com**

VOLTAGE & POWER SUPPLY | SAFETY FEATURES

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

Ensure that the supply voltage is correct. The voltage of the power source must match the value given on the nameplate of the machine within the tolerances of ±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.

The frequency transformer of the motor can cause residual current device or GFI to trip out. If this happens frequently, change the power source to one without residual current device or GFI.

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 or adapt the plug in any way.** If a power generator is used as power source, ensure that the power rating is sufficient. Only an appropriately gauged, heavy duty extension cord that can be fully inserted into the cord's socket.

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

110-125V: **US:** The Super Midi Miller is equipped with a 15A (125V) NEMA 5-15 plug. Power cable lead minimum thickness 2,5mm^2 / 12 AWG. The Super Midi Miller must be supplied with sufficient power and proper current rating. A minimum of 15A is needed to operate it safely and effciently. If a power generator is used, a minimum 3kW required. Adapters may be necessary for generator connections. Contact your reseller or Picote technical support for more information.

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

Australia: CEE 16A 230V colour blue. Power cable minimum lead thickness 2.5mm^2.
UK: UK Plug BSEN 60309 16A 110V colour yellow. Power cable lead minimum thickness 2,5mm^2.
Super Midi Miller requires a transformer to comply with the site power regulations and safe usage in UK. For example: 3.3KVA Site Transformer 1 X 16A outlet 110V.
NOTE: If working with a generator always use the 110V transformer. Do not plug directly in to the generator.

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 tooling and accessories (e.g. Cutter or Chains) are not inside a pipe. Always engage the Emergency Switch Off Button and unplug the machine from the power source when performing any maintenance or repairs to the machine.

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

NOISE LEVELS, VIBRATIONS & EMISSIONS

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

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:

- Sound pressure level (LpA): 85 dB (A)
- Sound power level (LWA): 98 dB (A)

WEAR EAR PROTECTION:

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 distance from the tool head to the user and working conditions.
The vibration levels detailed below have been measured at the Picote training facilities in Finland.
Vibration has been determined according to ISO-5349 and EU-directive 2002/44/EG.

The table below details the safe daily exposure time for the user depending on tool used.

Safe daily exposure time for user:

- **Exposure Action Value (EAV) 2,5 m/s^2**
- **Exposure Limit Value (ELV) 5,0 m/s^2**

Tooling	Working Distance (m/ft)	EAV	ELV
Twister DN100 (4”)	2m (6.6 ft)	Over 24h	Over 24h
Twister DN100 (4”)	12m (39.4 ft)	13h 25 min	Over 24h
Original Cleaning Chain DN150 (6”)	0-2m (0-6.6 ft)	1h 33min	6h 11 min
Original Cleaning Chain DN150 (6”)	10m (32 ft)	3h 14min	12h 57 min

CE DECLARATION OF CONFORMITY

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

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

Super Midi Miller
Model No: 12/20

is of series production and

Conforms to the following EU Directive:

2006/42/EY

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

EN62841-1

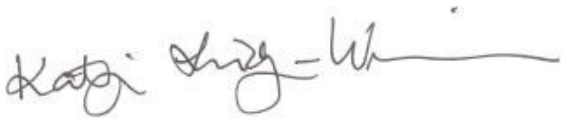
EN62841- 3-14

ISO-5349-1:2001

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

Picote Solutions Oy Ltd, Pienteollisuustie 24
06450 Porvoo, Finland

15th June 2018



Katja Lindy-Wilkinson
C.E.O.
Picote Solutions Oy Ltd
Pienteollisuustie 24, 06450 Porvoo, Finland

OPERATING INSTRUCTIONS

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

WARNING **This section contains important safety information.**
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BEFORE OPERATION:

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

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

Check that there is the correct length of flexible shaft (without its outer casing) exposed and that all screws have been loosened so that the shaft can be easily inserted completely inside the tooling. Position the shaft inside the tooling, as far as it will go, and tighten the screws. **Consult accessory tooling manuals for detailed information.**

DO NOT ROTATE THE SHAFT IN REVERSE UNDER LOAD!

WHILE IN OPERATION:

Always lay the machine down horizontally on the floor. During cleaning and cutting processes, always use a separate vacuum extraction system or run water in the drain to remove dust. When not in use some non-hazardous Picote Flexible Shaft Lubricant might leak from the hand guard.

STARTING & USING THE MACHINE:

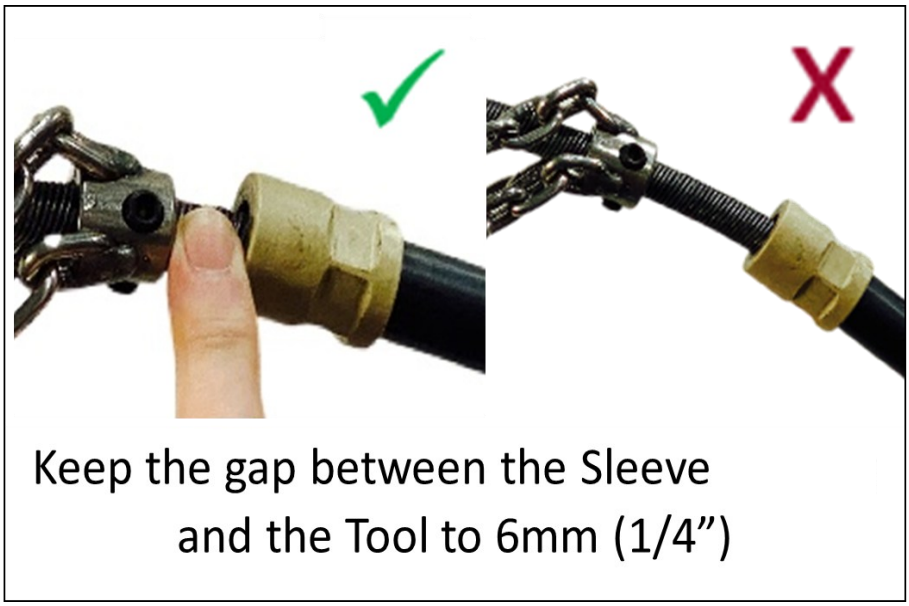
1. The machine has an Operator Presence Control Foot Control Pedal or 'OPC'. The machine will only run when the control is pressed/held down.
2. The machine can also be stopped by pushing the Emergency Stop Button down, rotating the power gear to "O" or unplugging the machine.
3. Check the rotational direction of the shaft and the rpm. The rotational direction switch is on the Control Box (forward or reverse). The control of the rotational speed is also located on the Control Box. The rotational speed increases when the Speed Control Knob is turned clockwise.
4. Place the tooling inside the pipe.
5. Turn on the power switch.
6. Release the Red Emergency Switch Off Button.
7. The machine starts when the OPC foot pedal is pressed down.
8. Always hold the shaft with both hands firmly while operating the machine.
9. Rotating the tooling slowly makes it easier to move forward inside the pipe.
10. The lifespan of the shaft outer casing can be prolonged by using a Sleeve designed for the outer casing.

CONTROL BOX DISPLAY MESSAGES:

There is a display on the frequency transformer. The following messages may occur:

- **Stop:** The Miller s ready and waiting for Foot Pedal (OPC) activation.
- **. . . .** (**RED** flashing dots)**:** The Super Midi is using more current than nominal current.
- **E-trip:** The Miller is overloaded to the point that the power will be cut off momentarily. Lift your foot off the pedal and press the pedal down again to continue. Avoid overloading the motor.

ATTACHING TOOLING:



SLEEVE

TIGHTENING THE SET SCREWS:

When you add a tool always tighten the screws starting from the screw furthest away from the end of the flexible shaft (where applicable).

MAINTENANCE PROGRAMME & WARRANTY PERIODS

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

	Months		
Maintenance Task	**3**	**6**	**12**
Tightness of motor attachment			I
Alignment of motor & gear box			I
Condition of frame			I
Condition of wheels & rubber feet			I
Condition of Control Box			I
Condition of electric cables	I	I	I
Condition of electrical connections	I	I	I
Lubricate Shaft	P	P	P
Operation of E-Stop	I	I	I

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 in the Picote Warranty Policy and Procedures section.

Service Period	3 months 6 months 1 year
A	
B	
C	
A	Milling machine & spare parts, except;
B	Electric motors
C	Service Centre repair work

MAINTENANCE

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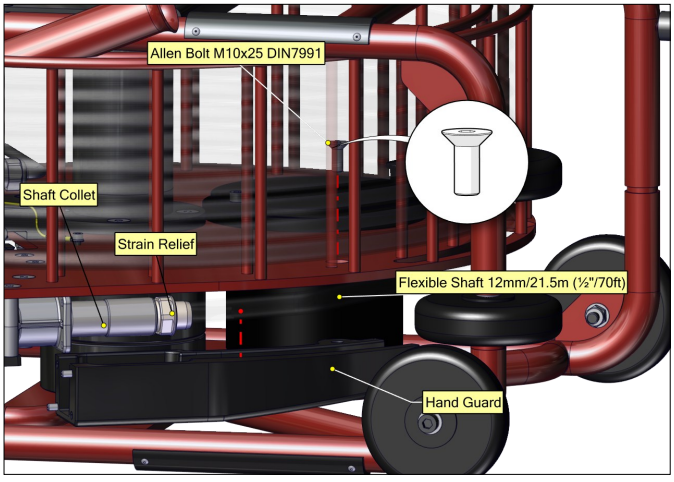
1. **Before performing any maintenance always check that the machine is fully turned off and unplugged.**
2. Always inspect the flexible shaft before each use. If there are potential weak points, or the shaft is damaged, cut off the damaged length using a band saw or replace the entire shaft as needed.
3. For safety and efficiency, always keep the machine and its motor, drive unit, ventilation and cooling slots clean.
4. Remove handguard and check that the bolts for the shaft socket are securely tightened (weekly).
5. Check that all the bolts and screws on the machine are securely tightened.
6. It is recommended that the oil in the Angle Gear should be changed about every 12 months. Only use regular oil developed for gear boxes.

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 bolts 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.
4. Verify that the shaft goes all the way to the end. Tighten the bolts.
5. Mount the hand guard & tighten the bolts.
6. Look at the assembly under hand guard from below.

ASSEMBLY UNDER THE HAND GUARD:



MAINTENANCE

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

SERVICING THE FLEXIBLE SHAFT & 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 once a week that the shaft is well 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.

To add lubricant the shaft has to be disconnected from the clutch and removed from the reel. Around 1-1.5m (3-5ft) of shaft should be removed from the outer casing, with the lubricant applied to the inside of the casing. No more than **20ml/20g/1oz** will be required for the entire shaft. Too much lubricant can cause a strain on the shaft. After the lubricant has been 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 on a low rotation speed so that the shaft will push excess lubricant to the 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 lifespan and decrease the friction caused by the shaft while it turns round. 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 (available from your reseller).

FLEXIBLE SHAFT EXTENSION:

Shaft extensions are available for the Super Midi Miller in lengths of 10 metres (32 ft).

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 & 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.

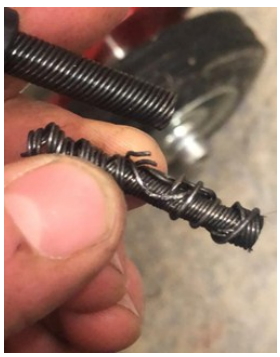
Note: for vertical pipes connect the extension onto the existing flexible shaft before pushing the extension down the pipe.

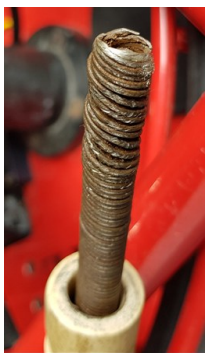
INSPECTING FLEXIBLE SHAFT FOR DAMAGE:

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.

Damaged shaft needs to be trimmed back before attaching tools (see examples to right).





CHANGING OIL IN THE ANGLE GEAR:

The oil should be changed after every 3,000 hours of use or 12 months.

1. Dismount the gear guard and the hand guard.
2. Take the shaft socket off of the shaft.
3. Loosen the bolts holding the angle gear.
4. Pull the angle gear away from the motor following the axle of the motor.
5. When the angle gear has been dismounted, loosen the oil bolt (there is only one bolt on the gearbox).
6. Pour the old oil out and add the new oil.
7. Reassemble the angle by repeating the previous steps in reverse order.

Appropriate oils to use:

Shell omala 100 or Agip blasia 100 or Tamoil ep 100

Amount of oil:

42 g / 1.5 oz / 47ml

If there is problem that you cannot resolve with this manual,
please contact your Picote Reseller or Picote Solutions at claims@picotesolutions.com

PRODUCTS, ACCESORIES & SPARE PARTS

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US Models:

Super Midi Miller

- 1/2" shaft
- Cleaning 3-6"
- Cutting 3-6"
- Coating 3-8"
- Max Range: 65 ft + 32 ft ext
- Weight: 150 lbs
- Speed: 500-1500rpm

The Super Midi Miller is designed for cleaning, descaling, root removal, and cutting/reinstatements in 3-6" pipes. It has a range of 65 ft that can be increased by an additional 32 ft with a shaft extension. It can also be paired with the Picote Maxi Coating Pump or Xpress Coating System to coat pipes 3-8". Offers the added strength of the larger 1/2" shaft paired with a thinner shaft casing for increased flexibility. It is fed by a standard wall outlet making it very easy to use on almost any job site.

Standard safety features: protective outer shaft casing, operator presence foot control, electronic safety clutch, and an E-stop.

Product #	Model
3551031220US	120v

EU/ROW Models:

Super Midi Miller

- 12mm shaft
- Cleaning DN70-150
- Cutting DN70-150
- Coating DN70-200
- Max Range: 20m + 10m ext.
- Weight: 69kg.
- Speed: 500-1500rpm.

The Super Midi Miller is designed for cleaning, descaling, root removal and cutting/reinstatements in DN70-150 pipes. It has a range of 20m that can be increased by an additional 10m with a shaft extension. It can also be paired with the Picote Maxi Coating Pump or Xpress Coating System to coat pipes DN70-200. Offers the added strength of the larger 12mm shaft paired with a thinner shaft casing for increased flexibility. It is fed by a standard wall outlet making it very easy to use on almost any job site.

Standard safety features: protective outer shaft casing, operator presence foot control, electronic safety clutch and E-stop. Operate with a 1.5kVA 110V/16amp transformer in UK.

Product #	Model
3551031220	230v
3551031220UK	110v

SPARE PARTS:

1312020125022	Super Midi Miller Replacement Shaft, 12mm (½"), Regular Outer Casing, 21.5m (75 ft)
1312020125010	Flexible Shaft Extension, 12mm (½"), 10m (32 ft)
1313002125	Shaft Connector, 12mm to 12mm (½" to ½")
93212321125	Sleeve 12mm (½"), Regular

SERVICE TOOLS

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Shaft Rounder

1350000018

Rounds sharp edges of the shaft.

Sheath Cutter 1

1350000006

Used when there is no shaft in the outer casing.

Sheath Cutter 2 (Shaft inside outer casing)

1350000011

Used when there is shaft inside the outer casing.

Cutter for Side Grinding Panels

1350000012

Used when there is no shaft in the outer casing.

Picote Flexible Shaft Lubricant

Prolong the lifespan of your Miller with Picote's Flexible Shaft Lubricant. Instructions on maintaining the shaft, including how to lubricate are included in your Miller operating manuals.

Product #	Size
1350000020	.5L / 16.9 oz Bottle
1350000021	6 Bottle Package

Hex Keys

Product #	Model
1350000008	Hex Key 4mm
1350000009	Hex Key 3mm
1350000010	Hex Key 2.5mm
1350000013	Combo Hex Key 1-6mm

PRACTICAL TIPS & SAFETY ADVICE

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

WARNING

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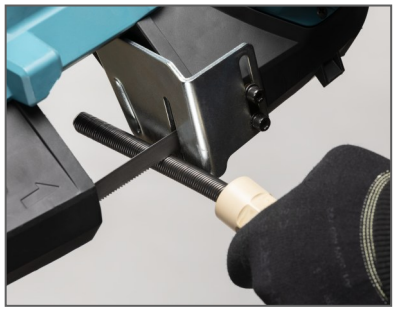
Here are some useful tips on how to get the most out of your Picote system.
Always use the recommended tools for maintenance to avoid personal injury.

CUTTING THE FELXIBLE SHAFT



Always inspect the flexible shaft before each use. Run the machine briefly in clockwise direction to allow the shaft to return to it's resting position.

If there are potential weak points or the shaft is damaged, cut off the damaged length using a band saw.

For most tools, the shaft should extend ~40mm (1½") past the casing/Sleeve.

Hubs and Original chains without a leader require more exposed shaft.

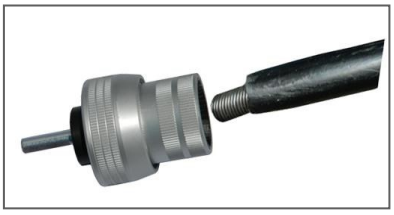
CUTTING THE OUTER CASING

Always inspect the outer casing before each use.

The easiest and safest way to shorten the outer casing to the correct length is using a sheath cutter.

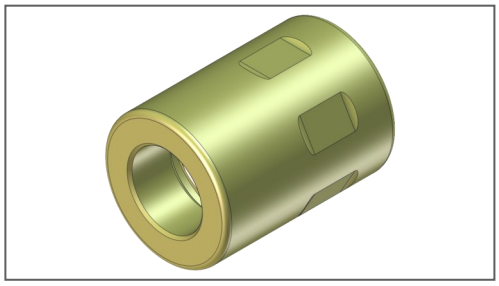
Only the necessary amount of bare shaft should be exposed at any time.

SHAFT ROUNDER



The Shaft Rounder is used to smooth the end of the flexible shaft, preventing the user from being cut by the otherwise sharp metal edge.

SLEEVE

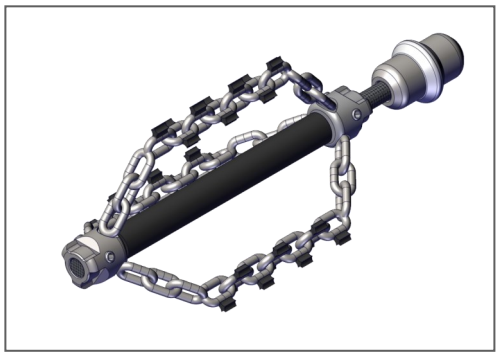


Always use a Sleeve when working with the Super Midi.

It prolongs the life of the flexible shaft and prevents the outer casing from melting in the tool end.

The Sleeve can be reused when the outer casing is shortened.

CREATING LEADERS



You can extend the life of the flexible shaft and increase productivity by making individual leaders for the most commonly used tools.

This way you easily and quickly switch between tools.

Leaders should always be used if the situation permits it.

ADDING A VISUAL SAFETY MARKER

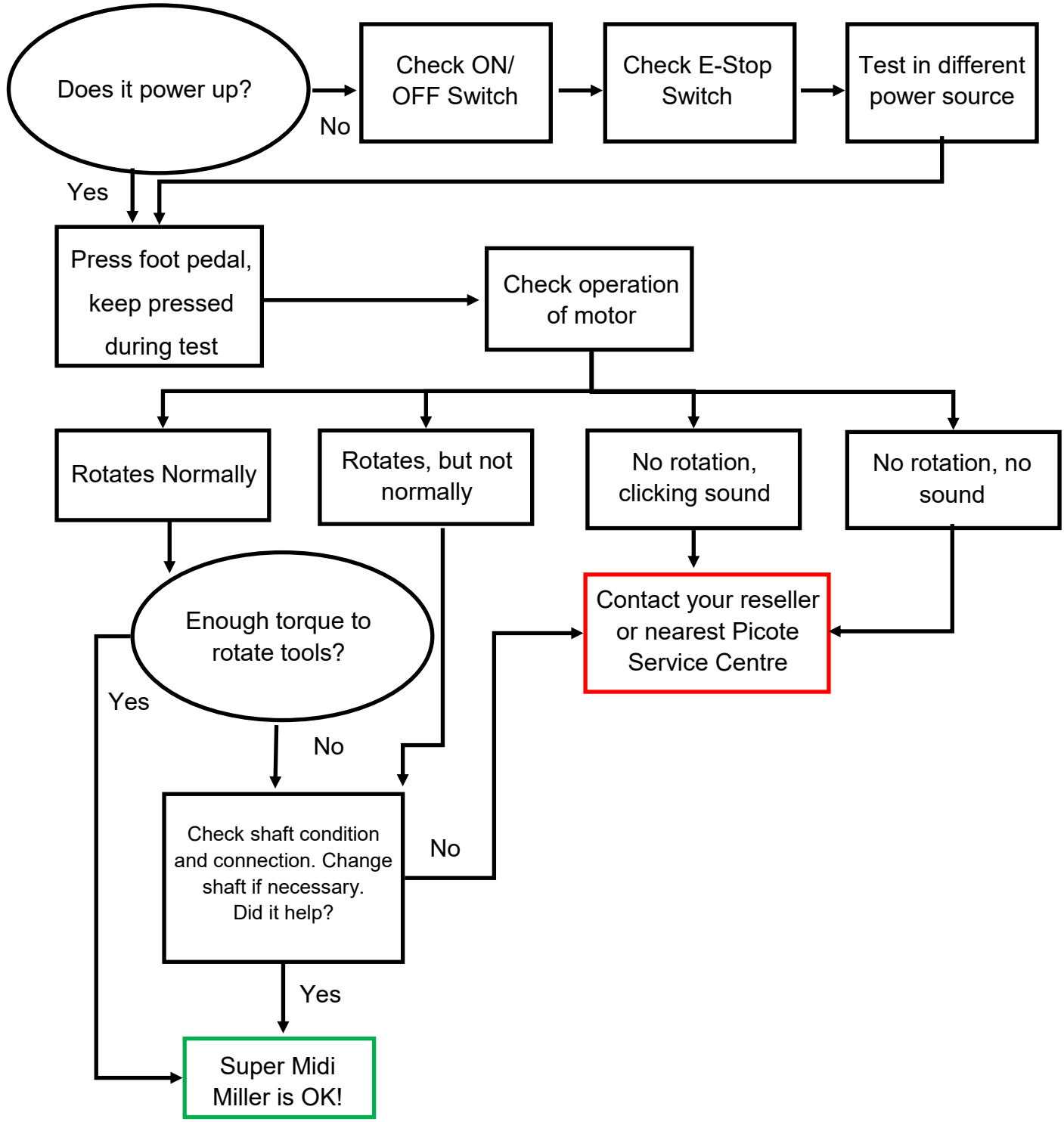
If not using a “leader” attach a visual marker (tape) on the outer casing of the flexible shaft.

Place it ≈ 500mm (20”) from the end of the shaft.

The marker will indicate the tools location and help prevent possible injury from the rotating parts by alerting you when the tool is about to exit the pipe.

TROUBLESHOOTING FLOWCHART

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE



If there is problem that you cannot resolve with this manual,
please contact your Picote Reseller or Picote Solutions at claims@picotesolutions.com

TROUBLESHOOTING FAULT CODES

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

TROUBLE SHOOTING:

The Control Box will show fault codes according to different problems which the machine may encounter during use.

Please check from the list below the most common fault codes.

If a code other than those shown below is received, or if the fault does not correct, please write down the error code and contact your reseller or Picote Solutions.

Fault Code	Description	Suggested Cause
no-F$_L$t	No Fault	Not required
0-1	Output over current	Instantaneous over current on the drive output. Excess load or shock load on the motor. Note: Following a trip, the drive cannot be immediately reset. A delay time is inbuilt, which allows the power components of the drive time to recover to avoid damage.
1 _t-trP	Motor thermal overload	The drive has tripped to prevent damage to the motor. Try not to overload motor. Ensure sufficient cooling air is free to circulate around the motor and that the entry and exit vents are not blocked or obstructed.
P5-trp	Power stage trip	Check for short circuits on the motor and connection cable.
0-volt	Over voltage on DC bus	Check the supply voltage is within the allowed tolerance for the drive.
U-volt	Under voltage on DC bus	The incoming supply voltage is too low. This trip occurs routinely when power is removed from the drive. If it occurs during running, check the incoming power supply voltage and all components in the power feed line to the drive.
0-t	Heatsink over temperature	The drive is too hot. Check the ambient temperature around the drive is within the drive specification: +50°C (122°F). Ensure sufficient cooling air is free to circulate around the drive. Increase the panel ventilation if required. Ensure sufficient cooling air can enter the drive, and that the bottom entry and top exit vents are not blocked or obstructed.
U-t	Under temperature	Trip occurs when ambient temperature is less than -10°C (14°F). Temperature must be raised over -10°C (14°F) in order to start the drive.
E-trip	External trip	Normally closed contact has opened for some reason. Check if the motor is too hot.
FLt-dc	DC bus ripple too high	Check incoming supply phases are all present and balanced.
P-L055	Input phase loss trip	Check incoming power supply phases are present and balanced.
h 0-1	Output over current	Check for short circuits on the motor and connection cable. Note: Following a trip, the drive cannot be immediately reset. A delay time is inbuilt, which allows the power components of the drive time to recover to avoid damage.
dAtA-F	Internal memory fault (IO)	Press stop-key. If fault persists, consult Picote Solutions.
dAtA-E	Internal memory fault (DSP)	Press stop-key. If fault persists, consult Picote Solutions.
Fan-F	Cooling Fan Fault	Consult Picote Solutions.
0-hEAt	Drive internal temperature too high	Drive ambient temperature too high, check adequate cooling air is provided. Increase the panel ventilation if required. Ensure sufficient cooling air can enter the drive, and that the bottom entry and top exit vents are not blocked or obstructed.
Out-F	Output fault	Indicates a fault on the output of the drive, such as one phase missing, motor phase currents not balanced. Check the motor and connections.

Write down the Error Code flashing in the screen of Control Box if needed to contact the Picote Service Centre. The Error Code narrows down the list of possible problems with your Miller unit.

If there is problem that you cannot resolve with this manual, please contact your Picote Reseller or Picote Solutions at claims@picotesolutions.com

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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TRAINING CENTRES:

- Phoenix, Arizona, **USA**
- Porvoo, **Finland**
- Sandhurst, England, **UK**

Picote is highly recommended to get the most out of your investment.

Certificates are awarded for all certification trainings.

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