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# MINI PUMP

## PICOTE BRUSH COATING™ SYSTEM

# OPERATION & SAFETY MANUAL

**wrc**  
approved™  
PT/431/0918

**! WARNING**

These instructions are for your personal safety. Always ensure that you have read and understood these instructions before using any of the Picote Brush Coating™ System Range.

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To watch practical demonstration videos, or to download an electronic copy of these Instructions, please visit [www.picotesolutions.com](http://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 & Symbols



## WARNING

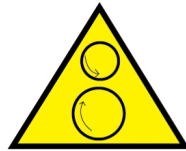
*This section contains important safety information.  
Failure to comply could result in serious injury or death.*

## Safety Symbols



### DANGER

Risk of serious injury,  
follow instructions



### DANGER

Risk of serious injury  
from rotating parts



### DANGER

Risk of serious injury  
from electric shock

## Personal Protective Equipment PPE

*Always use Personal Protective Equipment when using the Picote Coating System, including suitable overalls / protective clothing & footwear and the following:*



Always wear suitable eye protection when using the Coating System to prevent coating resin or other dust from irritating your eyes.



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



Always wear suitable ear protection when using the Coating System to prevent any hearing loss.



Always wear suitable resin-resistant gloves when using the Coating System to prevent any skin irritations. Any open injuries or skin irritations should be covered at all times to avoid contact with resin or dust.

## Always Remember



Always ensure that the machine is fully turned off and unplugged before inspection, maintenance, or installing any accessories to the machine. Failure to comply may lead to serious injury including electric shock.



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 from its power socket. Failure to comply may lead to serious injury including injury from rotating parts.

# CE Declaration of Conformity

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

Mini Coating Pump  
is of series production and

**Conforms to the following EU Directive:**

2006/42/EC

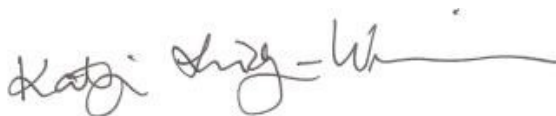
And is manufactured in accordance with the following standards or standardised documents:

EN60745

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

Picote Solutions Oy Ltd, Raudoittajantie 4  
06450 Porvoo, Finland

1st January 2017



Katja Lindy-Wilkinson  
C.E.O.

Picote Solutions Oy Ltd  
Raudoittajantie 4, 06450 Porvoo, Finland

## WRc APPROVED CERTIFICATE



Picote Brush Coating System™ has been granted with WRc Product Certificate for non-potable and waste water application for pipe diameters DN32 (1<sup>1</sup>/<sub>4</sub>" ) to DN300 (12").

**Certificate Number:** PT/431/0918

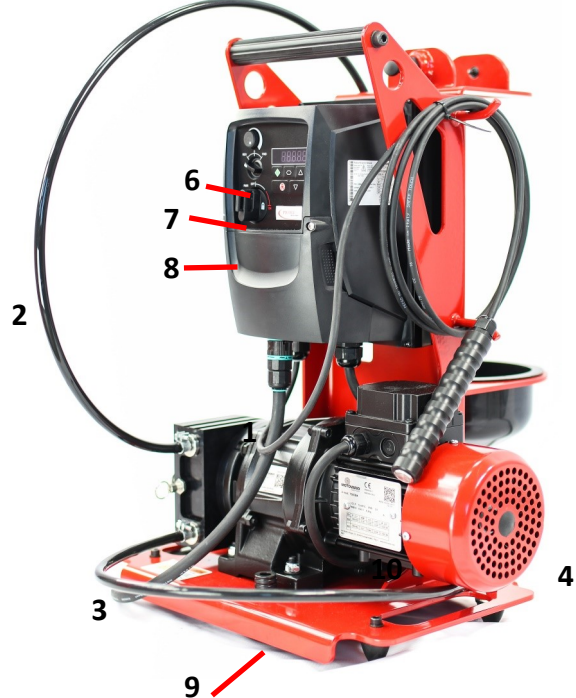
**Issued:** September 2018

**Expiry:** March 2020

Product Certificate and Assessment Schedule can be downloaded from [picotebrushcoating.com](http://picotebrushcoating.com).



# Picote Mini Miller Coating Pump



## General Description

- 1. Power Cord
- 2. Resin Supply Hose
- 3. Delivery Hose
- 4. Motor
- 5. Resin Cup Location
- 6. Speed Control
- 7. Reverse/Forward
- 8. On/Off Button
- 9. Release, locks pump to Miller
- 10. Resin Release Button
- 11. Smart Mixer Platform


## Intended Use


This machine is intended for the following uses:

- 1. Coating pipes from DN32-200 / 1.1/4" - 8"
- 2. Cleaning sewers and drains with degreaser.

Always follow the manufacture’s instructions when installing and using the machine with accessories.

SIZE	HOSE	RANGE	ROTATING SPEED	OUTPUT (kw)	POWER SOURCE	WEIGHT
41x42x54.4 cm	8/10mm	Max 22m	Depends on pipe diameter	0.18	110v or 230v	16kg
16.2.2x16.5x21.5"		Max 75ft				35.5 lb

**Voltage**

**Power Supply**

**Ensure that the supply voltage is correct.** The voltage of the power source must match the value given on the nameplate of the machine. Available in 230v and 110v.

The machine should be connected only to a power supply of the same voltage as indicated on the nameplate, and can only be operated on single-phase AC supply.

This machine has a hand-held locking operator control bottom or “LOC”. When the control button is pushed the pump is engaged and will operate until de-



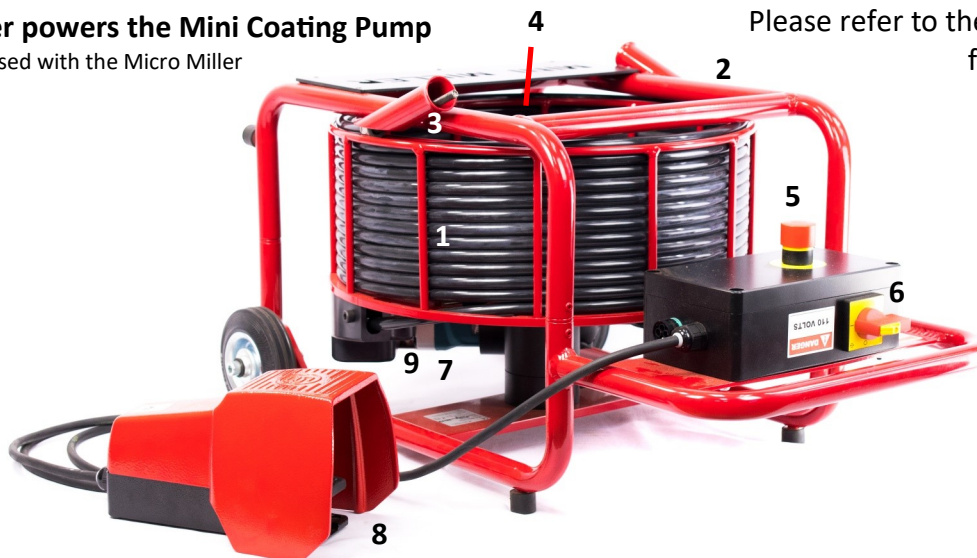
# Mini Miller 8/17

The Mini Miller powers the Mini Coating Pump

Note: can also be used with the Micro Miller

**! WARNING**

Please refer to the Mini Miller manual for more information



## General Description

1. Cable Rack
2. Frame
3. Flexible Shaft
4. Motor & Bevel Gear (not shown)
5. Emergency Stop Bottom (red)
6. Power Switch
7. Speed Control
8. Foot Pedal—Operator Presence Control
9. Hand Guard & Strain Relief/inside Hand Guard (not seen in photo)

## Intended Use

This machine is intended for the following uses:

1. Coating pipes from DN32-200 / 1.1/4" - 8"
2. Cleaning sewers, drains and pipes by grinding. (Picote Grinding Chains)
3. Reinstating branches in sewers and drains by drilling and grinding. (Picote Lateral Cutter)

Always follow the manufacture's instructions when installing and using the machine with accessories.

SIZE	SHAFT	RANGE	ROTATING SPEED	OUTPUT (kW)	POWER SOURCE	WEIGHT
752x519x389	8mm	17m	500-2900rpm	110V:1.1kW	110v or 230v	27kg
29.6x20x15.3"	1/3"	55ft		230V:1.2kW		59.5lb

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



### VOLTAGE

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



### POWER SUPPLY

The machine should be connected only to a power supply of the same voltage as indicated on the nameplate, and can only be operated on single-phase AC supply.



### FOOT PEDAL

The machine has an operator presence control or 'OPC'. When the control is not held down, the machine stops.











### EMERGENCY STOP

There is an Emergency Stop Button on the machine. The power supply to the motor is cut off when the Emergency Stop Button is pushed. Always make sure the Emergency stop Button is pressed and completely unplug the machine when the machine accessories (e.g. Cutter or Grinding Chains) are not inside the pipe.




# Required Parts

First make sure you have all the required parts.

PRODUCT NAME	PRODUCT NUMBER	DESCRIPTION	INFORMATION
1. MINI MILLER COATING PUMP			
	2220100001	Mini Miller Coating Pump EU 230v	Hoses, brushes & other parts sold separately
	2220100002	Mini Miller Coating Pump UK, US 110v	
2. MINI MILLER			
	3540000817	Mini Miller 230v, 17m range	8mm / 1/8" Shaft
	3540000817UK	Mini Miller 110v, 17m range	
	3540000817US	Mini Miller 110v, 55ft range	
3. HOSES & SHAFT			
	2220100004	Resin Supply Hose	Supplied in 25m/82ft lengths. Color-Red
	2220100003	Resin Delivery Hose	Supplied in 25m/82ft lengths. Color-Black
	1312030085017	Mni Miller spare shaft, 8mm with thick outer casing	17.5 meters/57.4ft
	9123050001	Shaft connector	Necessary if attaching a shaft extension
	2220100007	Hose Connector with two hose clamps (11 & 13mm)	
	93212321085	Sleeve 2 Plastic for 8mm thick casing	

# Required Parts

First make sure you have all the required parts.

PRODUCT NAME	PRODUCT NUMBER	DESCRIPTION	INFORMATION
<b>4. COATING BRUSHES &amp; BRUSH STOPPER</b> 	2120000050	For DN32/ 1.¼" drain	6mm/ ¼" shaft
	2120000075	For DN50/2" drain	
	2120000100	For DN70/3" drain	DN50/2" - DN200/8" fit
	2120000125	For DN100/4" drain	8mm/½" shaft only
	2120000175	For DN150/6" drain	
	2120000220	For DN200/8" drain	
	900000338	Brush Stopper	Extra stopper to secure brush
<b>5. PICOTE 100% SOLIDS EPOXY</b> 	2110001001	Picote Dual Color Epoxy Kit, 12lbs 5oz	6 Cartridge Kit (3 White, 3 Dark Grey) with 8 Tips & 3 Nuts.
	2130000002	Nut (pack of 10)	
	2130000001	Tip (pack of 10)	More information on p.37
	2110001003	Special Lubricant designed to reduce friction	1 quart hose lubricant
<b>6. PICOTE SMART MIXER</b> 	2130001001	Picote Smart Mixer	Battery powered cartridge case with spare battery, charger and additional 600ml piston. Please see the Smart Mixer operating manual for more information.
<b>7. DRAIN CAMERA</b>	Use your own mini camera		Mini camera is necessary for the process as a standard cam will weight the rush down too much and create problems with the finished product.
<b>8. OTHER ITEMS</b>	Duct Tape	Scissors	Be sure you have plenty of rags for the clean-up process.
	Resin Cups	7mm Nut Driver for Hose Clamps	
	Acetone, Rags & Bucket	2.5mm Hex Key for Screws	
	Latex/Nitrile Gloves	Spare Hose Clamps	
	Razor Knife		

# PREPARING THE ORIGINAL PIPE FOR CLEANING

Substrate preparation is one of the most crucial steps in the coating process as specialized coating resin is designed to bond to the host pipe. Be sure to remove all scale, grease, dust and any other debris completely from the pipe before coating. If coating plastic pipe be sure to abrade thoroughly with Picote Smart Cutter™ grinding panels.



**WARNING**

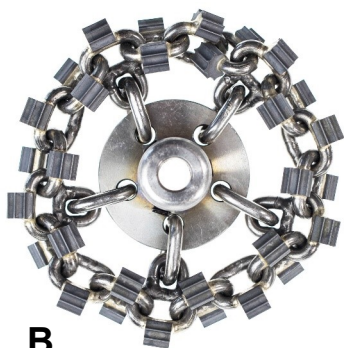
## STEP 1



Clean the host pipe very well. Use Original (a) or Cyclone (b) grinding chains with carbides for cast iron pipes and flush with water. For PVC pipes, use the special PVC chains (c). Use a wire brush (d) to remove final dust and other remaining particles.



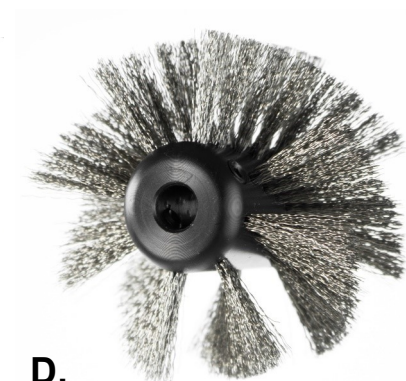
A.



B.



C.



D.

**OPTIONAL STEP:** For pipe with excessive build-up of fats, oils or grease (FOG) a degreaser may be necessary. This can be pumped into the pipe during cleaning if necessary using the coating pump system and Eco-friendly degreasing agent.



# Preparing The Original Pipe For Coating

## STEP 2



When necessary, run the Smart Cutter with side grinding panels through the pipe to create a rough surface and allow for the resin to have the best possible bond to the pipe wall.



## STEP 3



The pipe MUST be dry before continuing with the coating setup. Use the Picote Heater to expedite the process.



**Once the original pipe is clean, move on to the Coating System Pump Assembly**



# COATING SYSTEM ASSEMBLY >THE PUMP

## Required Tools & Parts

SCISSORS

NUT DRIVER 7mm

PICOTE HOSE LUBE

RESIN CUP

RED SUPPLY HOSE

BLACK DELIVERY HOSE

11mm & 13mm HOSE CLAMPS



## BEFORE BEGINNING ASSEMBLY



### DANGER

Risk of serious injury from rotating parts!

- Have plenty of rubber gloves and towels available. Wearing a double layer of rubber gloves is useful when applying lubricant.
- Be sure that all machines have the required power supply.
- Test machines and power source to ensure adequate and safe operation.

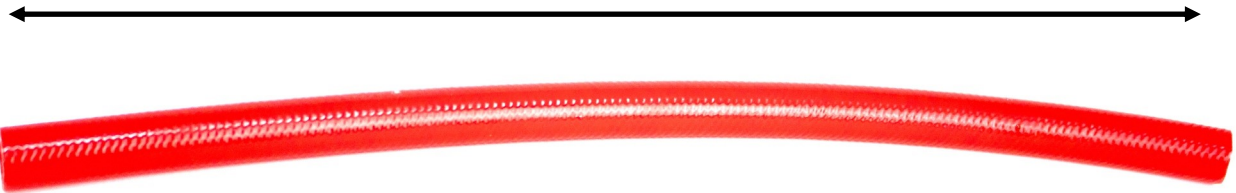
# Coating System Assembly

## >The Pump



**STEP 1** ▶ Cut the Resin Pump Supply Hose in between 248mm to 254mm (9.¾" to 10"). Ensure the ends are squared.

248mm to 254mm / 9.¾" to 10"



**STEP 2** ▶ Prepare the Hose Connectors and Hose Clamps to be inserted into Resin Supply Hose. There are 2 small hose clamps for black hose (10mm) and 2 larger hose clamps for red hose (13mm).



**STEP 3** ▶ Insert hose connectors and rotate notched surface up while following the natural curve of the hose. Ensure hose clamps are facing outward and inward. Once positioned properly tighten the hose clamps. This is important when installing into the pump housing.

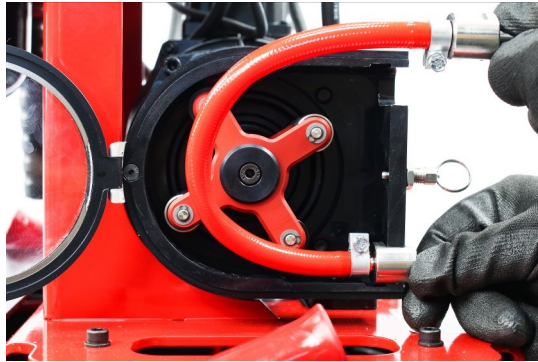




# Coating System Assembly

## >The Pump

**STEP 4** ► With hose clamps facing outward, insert the connector into bottom of the housing key-way.



**STEP 5** ► Push hose into housing and slowly rotate the pump rotor clockwise manually while feeding the hose into place. Tip! Silicone grease will make the process easier.



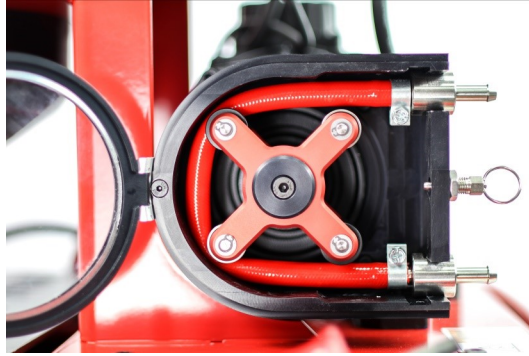
**STEP 6** ► Slide second connector into the top key-way.  
Note: light pressure will be needed to pull the top connector into the key-way.



# Coating System Assembly

## >The Pump

**STEP 7** ▶ Ensure hose clamps are facing inward and outward for easy access if required.



**STEP 8** ▶ Apply a small amount of a silicone grease to the underside of the hose at the bottom of the housing. This allows the hose to always return to the center after the rollers pass over it.



**STEP 9** ▶ Close housing door to secure connectors. Pump door should remain closed at all times during the coating process.

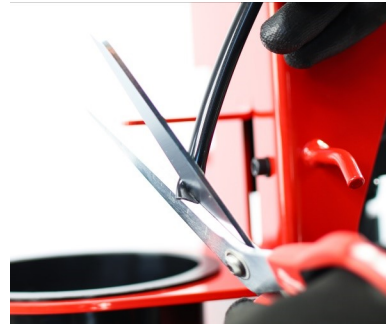




# Coating System Assembly

## >The Pump

**STEP 10** ▶ Cut a 1.2m or 47" piece of the black Delivery Hose to be used as a supply hose extension. One end will require a 45 degree angle and the other should be a square cut.



**STEP 11** ▶ Attach the square end of the hose to the top hose connector on pump using a small hose clamp.



**STEP 12** ▶ Take the 45 degree end and place in the resin cup at the back of the pump. Run the hose through the retaining holes on the back of the pump.



# COATING SYSTEM ASSEMBLY

## >Brushes

### Required Tools & Parts

**BRUSHES (1 or 2)**

**BRUSH STOPPER**

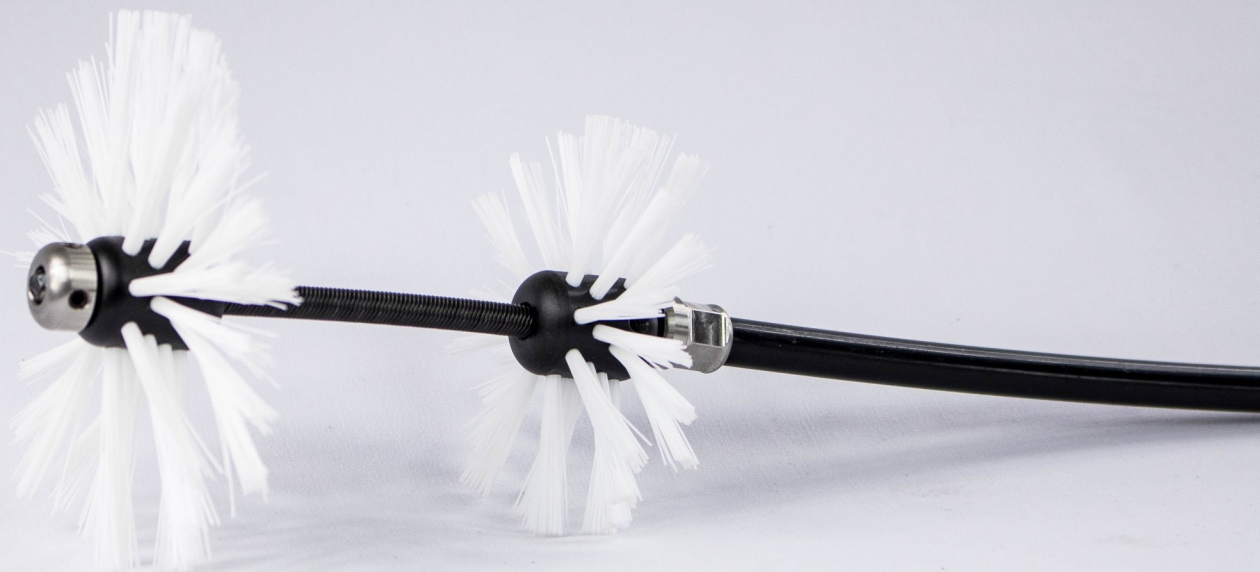
**SLEEVE BEARING**

**ALLEN KEY (2.5)**

**ADJUSTABLE WRENCH**

### Before Beginning Assembly

- Have extra brush stoppers and hose connectors available.
- Use angle grinder or portable band saw to cut Mini Miller shaft if necessary.
- Have a roll of duct tape available.



# Coating System Assembly

## >Brushes



### STEP 1

Select the appropriate brush size for the pipe. Always use a brush one pipe size larger than the pipe to be coated.

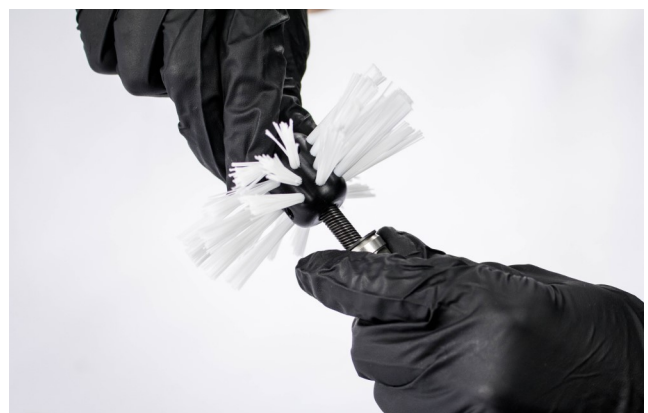
*Note: Although one brush can be used in straight pipe, dual brushes are required for pipes with bends or transitions.*

Recommended Coating Brush Diameters			
Host Pipe Diameter	Front Coating Brush Diameter (Straight)	Front Coating Brush Diameter (Multiple Bends)	Rear Coating Brush
DN32 (1.1/4")	40mm (1.1/2")	50mm (2")	40mm (1.1/2")
DN40 (1.1/2")	50mm (2")	50mm (2")	40mm (1.1/2")
DN50 (2")	75mm (3")	75mm (3")	50mm (2")
DN70 (3")	100mm (4")	125mm (5")	75mm (3")
DN100 (4")	125mm (5")	175mm (7")	100mm (4")
DN150 (6")	175mm (7")	225mm (9")	175mm (7")
DN200 (8")	225mm (9")	250mm (10")	225mm (9")
DN225 (9")	250mm (10")	275mm (11")	250mm (10")
DN300 (12")	350mm (14")	350mm (14")	300mm (12")

**\*\* The Mini Coating Pump can be used in DN200/8" drain if it is 10m/32' or less. If coating >8" pipes use the Maxi Coating Pump.**

### STEP 2

Always use a sleeve on the outer casing of the miller shaft. Attach the smaller brush against the sleeve leaving roughly 6mm / 1/4" between the brush hub and sleeve and secure the two 2.5mm set screws. **DO NOT OVER TIGHTEN OR SCREWS MAY STRIP THE NYLON HUB.**



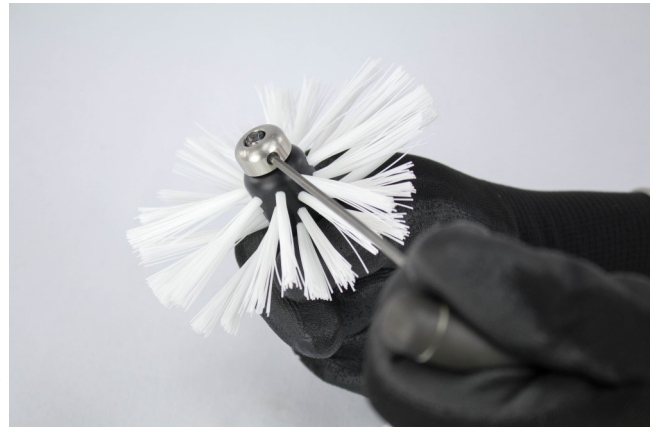


# Coating System Assembly

## >Brushes

*The larger of the two brushes will be the brush at the tip of the shaft and is used for finishing the resin. The closest brush helps to spread the resin and stabilize the brush set during coating.*

**STEP 3** ▶ Slide the larger brush onto the shaft followed by the supplied brush stopper. Bring to the end and tighten both securely



**STEP 4** ▶ Leave 100mm or 4" between the brushes with no need for casing over the shaft. This will allow for flexibility around bends.



**Once the brushes are assembled, move on to the Delivery Hose and Camera set up.**

# COATING SYSTEM ASSEMBLY

## >Delivery Hose & Camera

### Required Tools & Parts

DELIVERY HOSE

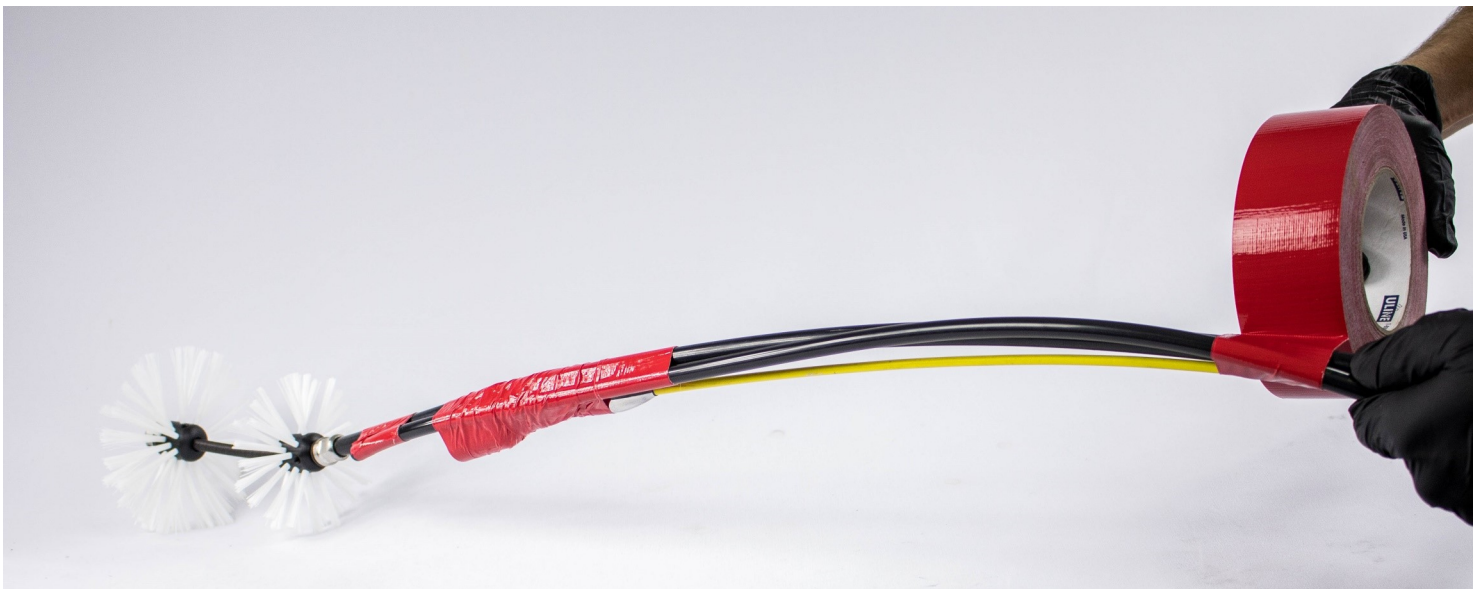
DUCT TAPE

CAMERA

NUT DRIVER

SCISSORS

11mm CLAMP





# Coating System Assembly

## >Delivery Hose & Camera

*When you are pulling the delivery hose from the roll, always pull from the center. This will keep the hose from getting tangled and messy.*



**STEP 1** ▶ Pulling from the center of the delivery hose roll, attach the delivery hose 5-7cm / 2-3'' behind the sleeve bearing with duct tape. Exactly 30cm / 1ft away, place a second piece of tape securing the delivery hose to the shaft.



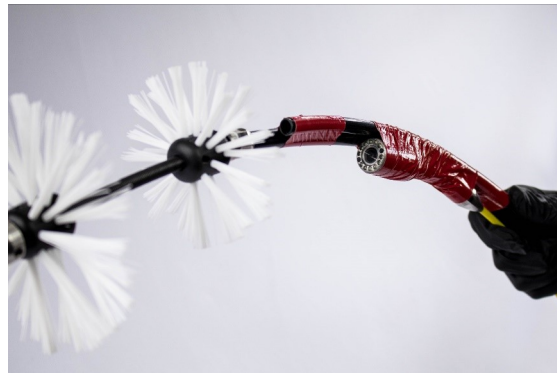
**STEP 2** ▶ Attach the camera head 10-15cm / 4-6'' behind the sleeve bearing. Watch your camera screen to ensure that you have full view of the brush.



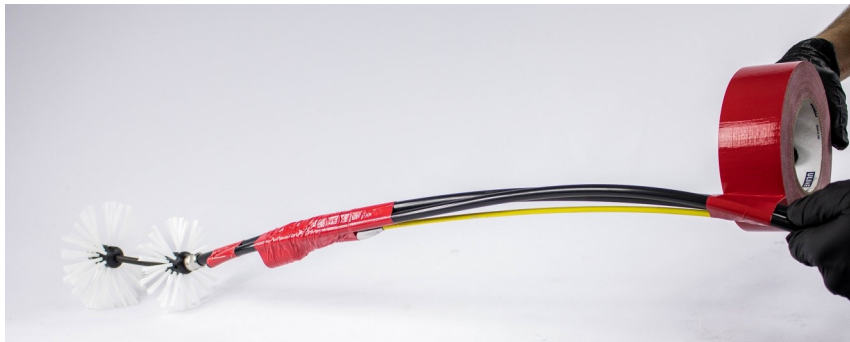
# Coating System Assembly

## >Delivery Hose & Camera

**STEP 3** ▶ Once the brush is in full view on the screen, tape the camera head from the very end all the way to the end of the camera spring. This will ensure the camera spring and connectors inside stay clean during the process.



**STEP 4** ▶ Once the camera is secure, insert the brushes in to the pipe opening. Push in about 1 meter/ 3ft and tape camera, delivery hose and miller cable all together.



**STEP 5** ▶ Continue taping every 1 meter / 3ft and pushing into the pipe until the end of the pipe to be coated has been reached.

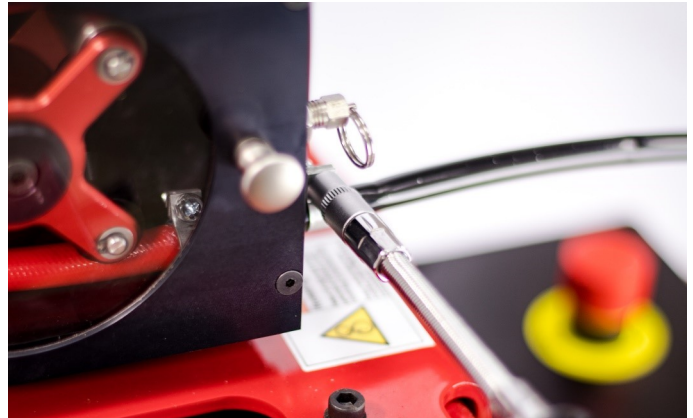
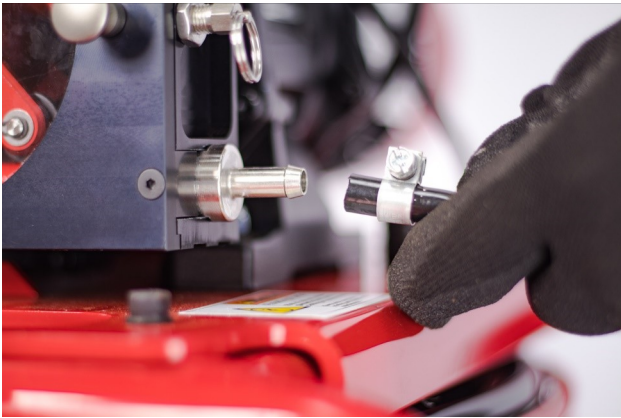


# Coating System Assembly

## >Delivery Hose & Camera

### STEP 6

With the pump and miller positioned as close to the opening as possible, cut off the delivery hose (square cut) and attach to the bottom connector on the pump. Secure with a hose clamp.



**Once the Delivery Hose & Camera are set up, begin preparing the Resin.**

# PREPARING THE RESIN

## Required Tools & Parts

**DUAL COLOR 100% SOLIDS  
EPOXY**

**STATIC MIXING TIP**

**SMART MIXER**

**GLOVES**

**RESIN CUP & BAG**

**SCISSORS**

**PIPE CUTTER**

**RAGS**

## Before Beginning Preparation

- In case of spills or accidents have plenty of rubber gloves, towels, chemical spill kit and acetone readily available.
- Be sure to prepare all cartridges before pumping any resin. This will allow you to have more efficient work-flow.
- Save a few cartridge caps to reseal unused material.



*TIP: Resins have limited work time. Higher temperatures will decrease the work time. If resin is over 29°C or 85°F upon installation, it is recommended to chill the resin slightly. If too cold the resin may become difficult to pump. Room temperature (18-27 °C / 65-80F) is always recommended.*



# Preparing The Resin



## Resin Calculator

Use the resin calculator to determine how much resin will be needed to complete all necessary coats. Refer to the chart below for recommended number of coats. To receive resin calculator, please send a request to [support@picotesolutions.com](mailto:support@picotesolutions.com).

PIPE DIAMETER RECOMMENDED	
DN32 / 1.1/4"	2
DN40 / 1.1/2"	2
DN50 / 2"	2
DN70 / 3"	3 to 4
DN100 / 4"	3 to 4
DN150 / 6"	4 to 5
DN200 / 8"	5 to 6
DN225 / 9"	6 to 7
DN300 / 12"	8 to 9

- A minimum of 4 coats need to be applied when the pipe is going to be cleaned using High Pressure Water Jetting .
- Maximum Water Jetting Pressure is 2600 PSI or 180 Bar.
- A minimum of 3 coats need for abrasion resistance.

## STEP 1

**Before you begin preparing the resin for application, verify the following:**

**(A)** The Mini Miller and Pump are ON. **(B)** The Speed of the Mini Miller is set to 950 to 1100 rpm (speed dial 2-3). **(C)** The Speed of the Pump is set to full speed. **(D)** The Pump is set to rotate clockwise.





# Preparing The Resin



## STEP 2 ►

To avoid contact with resin on skin, wear at least two pairs of safety gloves. The top pair will be removed during the cleanup process, leaving you with a clean pair of gloves on.



## STEP 3 ►

There are 4 stages to setting up the resin cartridge. Always keep the cartridge upright to avoid resin leakage and possible mixing of resin.

- A.** Choose the desired color of resin for the first application. Choose a color that gives the most contrast to the original pipe color. If you are coating a light pipe, use the dark gray first, or in dark pipe use the white resin to start with.
- B.** Remove the nut(1) and cartridge cap(2), and set aside for later.
- C.** Cut the mixer tip back two notches. This will improve the flow of resin and allow for cleaner operation of the Smart Mixer during operation.



# Preparing The Resin

**D.** Attach the static mixing tip and secure with the nut.



**STEP 4** ▶ Once the mixing tip and nut are securely fastened, insert the Epoxy Cartridge into the Smart Mixer. Now change the speed dial on the Smart Mixer to the 4th setting.



**STEP 5** ▶ Feather the trigger to allow the pistons to seat properly and evenly on the back of the cartridge. Once resin flows into the tip, slowly dose a small amount of resin (no more than 30g / 1 oz) into a cup or cartridge bag and dispose of it. This will ensure the resin is mixed properly.

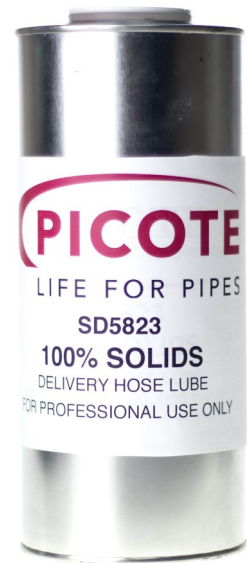


# OPERATING THE COATING SYSTEM

## TIP

If the piping system has several bends that are difficult to navigate or if the line set is difficult to push through the pipe, a special lubricant can be used to reduce friction. The Picote Delivery Hose Lube should be added to a spray bottle to be easily applied to the outside of the line set. Lightly coat the line set as it is being pushed into the pipe.

Please note: The lubricant is highly specialized and designed to be absorbed into the coating resin without causing negative effects. Any other lubricant **WILL** cause negative effects and can prevent the epoxy from bonding or curing properly. Excessive use is not needed or recommended.



After priming the static mixing tip, allow the resin to begin filling the resin cup to no more than  $\frac{1}{3}$  full. Filling the cup too full will generate heat too quickly and take away from overall working time.



## STEP 1

Once the cup is  $\frac{1}{3}$  full, begin priming the delivery hose. Set the variable speed dial on the pump to full speed and engage the pump to begin priming the delivery hose.



# Operating The Coating System

- STEP 2** ▶ Watch the CCTV screen for the resin flow. Note: it may be difficult to see the flow of resin if the camera is turned upside-down. Watch closely and move the camera back and forth if necessary to check for resin flow.



- STEP 3** ▶ Once resin can be seen flowing stop the pump and turn the variable speed dial down to the appropriate speed for the pipe diameter. Normally the pump is set to full speed and the Mini Miller in between 950—1100 rpm (speed dial 2-3).



- STEP 4** ▶ Start the coating from the far end. Pump out resin and brush it on. Pay close attention to the flow of resin and lay a consistent bead into the pipe. Also watch the bead of the resin around the edge of the brush. Pull slowly and evenly for 1m / 3ft.





# Operating The Coating System

## STEP 5



Stop the pump and brushes and push back into the pipe to visually verify the coating has covered all required areas evenly. Repeat this process in 1m / 3 ft sections until the pipe is fully coated.



## STEP 6



Average coat thickness is 0.7 to 0.8 mm. Carefully inspect that the resin covers the pipe everywhere. Be especially careful around bends.



## STEP 7



Once first coat is complete, apply heat after 20 minutes (Picote Heater) to the pipe before starting the next coat to speed up dry time.

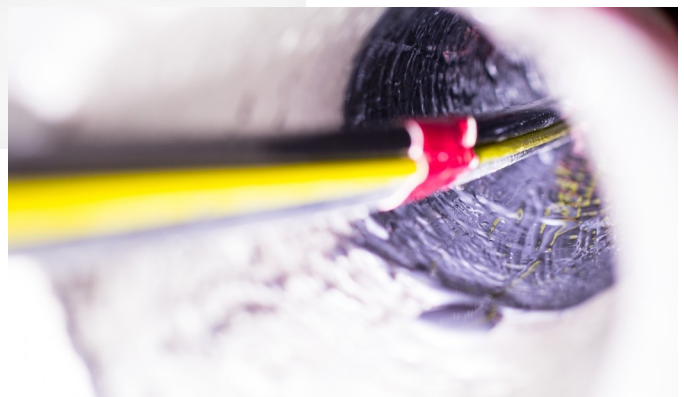
Please have a look at page 36 for more information about additional coats.

# Operating The Coating System

**STEP 8** ▶ If the next coat is applied after 24 hours, the original coat will need to be abraded with a Smart Cutter™ first to make sure that the layers bond well.



**STEP 9** ▶ Dual Color Method. Apply over existing color with new color. Verify that resin has been applied everywhere. The Dual Color Method allows for clear visual verification during application that resin has been evenly distributed everywhere.



# CLEANING UP THE COATING SYSTEM

## Required Tools & Parts Before Beginning Cleaning Process

**SCISSORS**

**ACETONE**

**RAGS**

**5mm DRILL BIT**

**NUT DRIVER**



- In case of spills or accidents have plenty of rubber gloves, towels, chemical spill kit and acetone readily available.
- Have buckets ready for cleaning the brushes and camera.
- Have a roll of duct tape and large waste bin nearby.





# Cleaning Up The Coating System



## STEP 1

When you have finished coating, turn the pump rotation to reverse. This will pull the resin back to the cup and reduce dripping resin during the cleaning process. When the resin stops dripping, put the brushes in a bucket of Acetone. Cover the opening and run brushes for a short time to rinse off resin. Brushes and cable should now be clean enough for reuse later.



## STEP 2

Wipe the camera head and the Mini Miller shaft clean with an acetone soaked rag.



## STEP 3

Cut away tape and recoil the cleaned camera and miller cables into their holders.





# Cleaning Up The Coating System

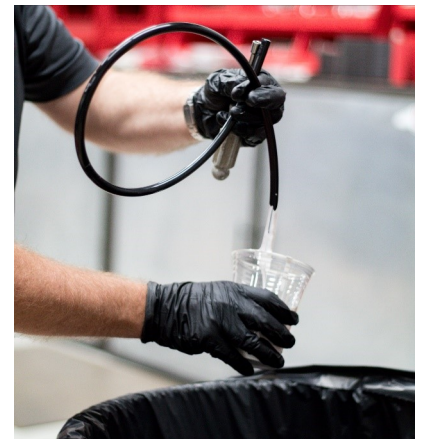
- STEP 4** ▶ Stop the pump from spinning in reverse and shut the system down completely. Isolate the power supply. Remove cartridge from the Smart Mixer. Recap for later if there is unused material in the cartridge



- STEP 5** ▶ Wipe down the delivery hose so as not to make a mess and remove the pump hose from the housing.



- STEP 6** ▶ Carefully remove the suction hose from the cup and wipe down the end. Watch for drips and tape the end closed if necessary.



# Cleaning Up The Coating System

**STEP 7** ▶ With the entire hose set removed from the pump, cut away the hose connectors and clamps for reuse



**STEP 8** ▶ Remove hose clamps and carefully cut away hoses and dispose of them.



**STEP 9** ▶ Hose connectors can be cleaned with acetone and a small wire brush or cotton swab, or they can be allowed to cure and drilled out later.

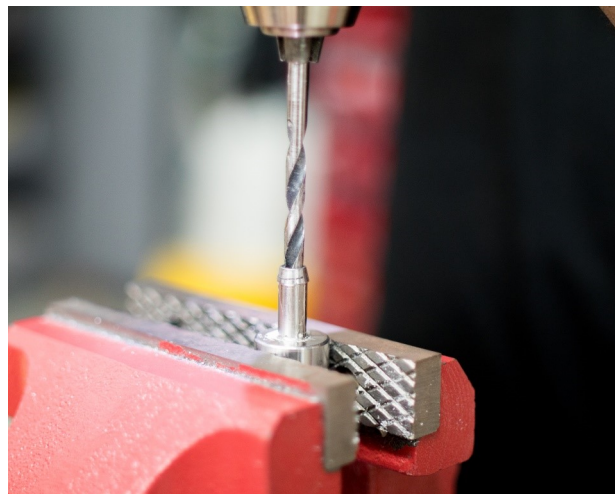


# Cleaning Up The Coating System

**STEP 10** ► Empty any remaining Epoxy in the resin cup into the trash can. Then wipe the container clean with acetone so that it can be used again later.



**STEP 11** ► If drilling, clamp the connector in a vise or hold tightly with locking pliers. Carefully drill the hardened resin out of the center entirely. Save clamps and connectors for reuse later.





# CURING & ADDITIONAL COATS

## CURING

During the curing process, it is very important to prevent any dirt, debris or water from getting into the pipe. The pipe must stay clean and dry during the entire coating and curing process. Water can keep the resin from bonding properly. The resin is ready for additional coats once the surface is dry to touch.

### AMBIENT CURING

Cure time: approximately 3 to 3.5 h in temperature 16 to 26 °C / 60 to 80 °F.

### HEAT CURING

Cure time: approximately 1.5 to 2 h at a temperature of 54 °C / 130 °F.

*When adding heat the pipe should never exceed a constant temperature of 65 °C / 150 °F.*

## ADDITIONAL COATS

Refer to the chart below to determine the recommended number of coats to apply. Additional coats should always be applied in contrasting layers. This will give a visual verification to each coat that is applied. If the previous coat sits longer than 24 h before coated again, the pipe will need to be abraded with Smart Cutter™.

**A minimum number of 4 coats needs to be applied to the pipes that will be cleaned using high pressure water jetting.**

**Maximum water jetting pressure is 2600 psi or 180 bar.**

**A minimum number of 3 coats is required for abrasion resistance.**

PIPE DIAMETER	RECOMMENDED COATS
DN32 / 1.1/4"	2
DN40 / 1.1/2"	2
DN50 / 2"	2
DN70 / 3"	3 to 4
DN100 / 4"	3 to 4
DN150 / 6"	4 to 5
DN200 / 8"	5 to 6
DN225 / 9"	6 to 7
DN300 / 12"	8 to 9



## RETURN TO SERVICE

Below are the proper wait times and conditions required before returning to service.

**4 HOURS:** Light use, water contact

**24 HOURS:** Pressure testing, completely cured

**For potable water pipes, the final coat should be white.**



# PICOTE DUAL COLOR EPOXY RESIN INFORMATION

## PICOTE 100% SOLIDS EPOXY

Mixing ratio 2:1 / Pot life about 25 min

### Package Sizes:

Cases contain 3 white and 3 dark gray cartridges each with 900ml of epoxy inside.

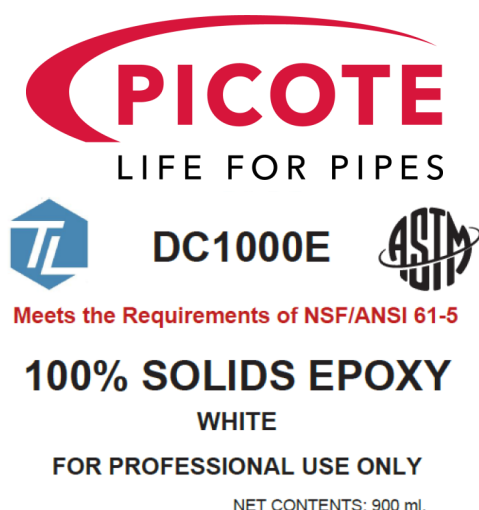


**Re-coat** - 2.5hrs @ 70F/21°C / **Restore flow** - 4hrs. / Final Cure - 24hrs.

Can be re-coated within 24hrs with no prep, sanding panels must be used after 24hrs.

**Installation:** 50F/10°C - 140F/60°C / **Storage:** Room Temp 60F/15.5°C - 85F/29°C

**Finished product:** up to 250F/121°C constant



**WARNING!** MAY CAUSE ALLERGIC SKIN OR RESPIRATORY REACTION. HARMFUL IF INHALED. MAY CAUSE EYE, SKIN, RESPIRATORY TRACT IRRITATION. MAY BE HARMFUL IF SWALLOWED.

**FIRST AID:** IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES OR SKIN WITH WATER FOR AT LEAST 15 MINUTES. REMOVE CONTAMINATED CLOTHING AND SHOES. CALL A PHYSICIAN IF IRRITATION DEVELOPS AND PERSISTS. WASH CLOTHING BEFORE REUSE. IF INHALED: REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. CALL A PHYSICIAN. IF SWALLOWED: DO NOT INDUCE VOMITING UNLESS DIRECTED TO DO SO BY A MEDICAL PHYSICIAN.

**FOR PROFESSIONAL USE ONLY:** USE THE NECESSARY SAFETY EQUIPMENT (NITRILE OR LATEX GLOVES, EYE PROTECTION) REVIEW SAFETY DATA SHEET (SDS) FOR FURTHER INFORMATION.



UN 2735, Amines, liquid, corrosive, n.o.s., (Tallow Amine), 8, PGIII

### Minimum Storage Temperature:

Room Temp 60F/15.5°C - 85F/29°C

**Shelf life:** 2 years from packaging when kept in accordance with storage instructions included in MSDS and Technical Data Sheet

**Industrial safety:** Ready-measured product must not be in contact with skin (it adheres)

**Gas emissions:** No harmful VOCs released during mixing or after hardening.

**Safety data sheet:** Delivered with first order.

# MACHINE MAINTENANCE

## CARING FOR THE FLEXIBLE SHAFT (Mini Miller)

The flexible shaft is pre-treated with **Picote Flexible Shaft Lubricant** 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.



**TIP:** Picote Flexible Shaft Lubricant Oil is now available for purchase.

## FASTENER SCREWS FOR THE SMART CUTTER HUB

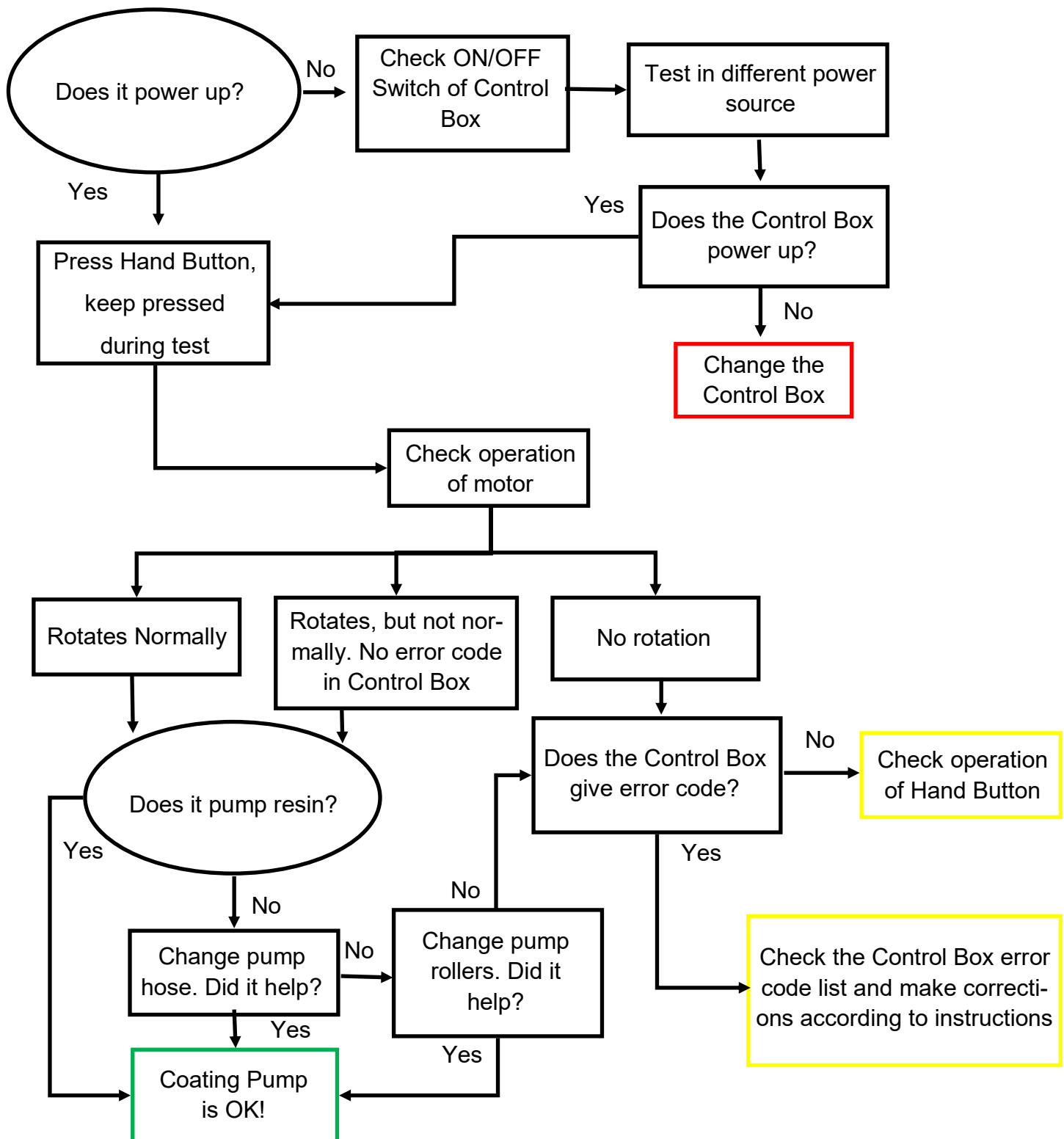
If you are unable to tighten the fastener screws properly, due to worn out hex socket heads, replace the fastener screws immediately. Otherwise, a brush or other tool can detach from the shaft during use, and fall into the pipe.

## PUMP & MILLER PARTS

Keep parts clean. Where possible, remove resin from the Coating Pump, brushes, Miller and other parts carefully with acetone. See pages 31-35 for more information.

**PLEASE READ YOUR **MINI MILLER** USER MANUAL FOR MORE DETAILED INSTRUCTIONS ON HOW TO PROPERLY MAINTAIN THE MACHINE**

# Troubleshooting flowchart— Mini & Maxi Coating Pump



# ERROR CODE LIST

## TROUBLE SHOOTING

The control box of the Mini Coating Pump 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 of the control box. 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.**

Fault Code	Description	Suggested Cause
no-F <sub>L</sub> 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.  <b>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.</b>
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.  <b>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.</b>
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
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.



# WARRANTY POLICY & 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.

**EXCEPT AS SPECIFIED IN THIS WARRANTY, ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS, AND WARRANTIES INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT, SATISFACTORY QUALITY OR ARISING FROM A COURSE OF DEALING, LAW, USAGE, OR TRADE PRACTICE, ARE HEREBY EXCLUDED TO THE EXTENT ALLOWED BY APPLICABLE LAW. TO THE EXTENT AN IMPLIED WARRANTY CANNOT BE EXCLUDED, SUCH WARRANTY IS LIMITED IN DURATION TO THE WARRANTY PERIOD. BECAUSE SOME STATES OR JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, THE ABOVE LIMITATION MAY NOT APPLY. This disclaimer and exclusion shall apply even if the express warranty set forth above fails of its essential purpose.**

# For More Information



## **Please Contact:**

Your Reseller / Salesperson or Picote Solutions

## **For Information and Support**

**Email:** [sales@picotesolutions.com](mailto:sales@picotesolutions.com)

*Picote offers a range of training options at our World-wide Training Centers in Anderson, SC, USA, Finland and in our new training center in UK. Contact your reseller or Picote Solutions for details.*



## **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. The resourceful tools and machinery have been devised and perfected as a direct result of feedback and evaluation from work sites. As a contractor ourselves, we know that durability, reliability and safety do matter at the work site, and that value of money is also a priority. That's why at Picote we are proud of our innovative, quality products.

*Designed for professionals, by professionals.*

### **Authorized Resellers:**

[www.picotesolutions.com/resellers](http://www.picotesolutions.com/resellers)  
[www.picotebrushcoating.com/](http://www.picotebrushcoating.com/)

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