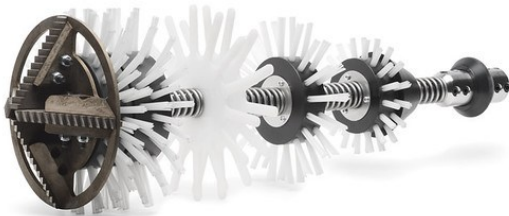
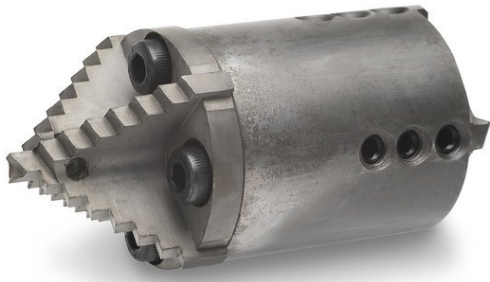




MAXI MILLER POWER+ TOOLING

OPERATION & SAFETY MANUAL



! 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

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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

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 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)

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



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.

ENVIRONMENT, TRANSPORT, STORAGE & DISPOSAL

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

ENVIRONMENT:

- Operational Ambient Temperature Range: 0°C to +50°C (32°F to 122°F)
- Storage Ambient Temperature Range: -20°C to +50°C (-4°F to 122°F)
- Condensation Free

TRANSPORT:

The Picote Maxi Power+ tools should be transported inside of a vehicle properly secured to prevent any sudden movements caused by hard braking or accident. Using lidded boxes which are fastened and stored on the bottom of the vehicle is recommended.

Never transport the Picote Maxi Power+ with tooling attached to the shaft.

STORAGE:

It is recommended that tools are stored indoors protected from rain and sunlight and in constant ambient temperature.

Clean used tools with fresh water after being removed from the pipe. Store them in a place where the tools can dry out properly. Water exposure and attached dirt expose the tools to rust.

DISPOSAL:

The tools can be disposed of in metal waste collection point.

Always follow local waste handling rules and regulations.

GENERAL INFORMATION: POWER+ CHAINS

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

CHAIN VERSIONS

PREMIUM CHAINS:

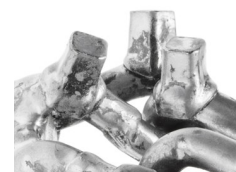
Larger and heavier U carbide (7-ridge)

A versatile tool for tough descaling, hard deposits and removing residual concrete or failed liner, including inconsistencies, wrinkles and remains.



TORNADO CHAINS:

With strong hardened stainless steel links instead of carbides, these chains are long-lasting and ideal for descaling and removing hard deposits inside cast iron pipes.



CHAIN STYLES

ORIGINAL CHAIN:

Original Cleaning Chains are designed to make fast work of pipe cleaning, whether it is tree roots, scale, calcium build-up, concrete, lead, soft blockages, failed gaskets or pipe imperfections. They are a good all-round cleaning option and are often referred to as the starter chain because they are slightly adjustable; this allows you to make minor adjustments to the chain size to compensate for reduced pipe interior for initial cleaning of blocked pipes and then readjust them to their optimal diameter. It is recommended to build up leaders when Original Chains are used to enable faster tool change and prolong the service life of the flexible shaft.

Always select the largest possible chain for the job. Original Chains should always be used on a Leader, which preserves the shaft on the Miller as you do not have to keep cutting the shaft back to use other tools.

How to set up the Original Chains correctly:

1. Place fully stretched out Original Chain next to the leader.
2. Cut front section of outer casing on leader just behind the rear connector and set aside.
3. Feed Original Chain over the exposed shaft, ensuring chain has not twisted, then lock the front connector onto the shaft.
4. Take the two outer chains and slowly pull them apart until the measured distance is equal to the bore of uncleaned pipe.
5. Finally re-check that the chains are not twisted, then lock rear connector in place.
6. During the cleaning operation the operator may need to slightly adjust the size of the chain by moving the rear connector towards the front connector.



Note: A section of the leftover outer shaft casing should be placed between the two connectors to prevent the steel shaft from being damaged or breaking.

GENERAL INFORMATION: POWER+ CHAINS

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

CYCLONE CHAIN:

Cyclone Chains are a great option for finishing cleaning because they accurately hone the pipe back to near original condition. They are suitable for use in fragile pipes that including cracks because the centrifugal force is evenly distributed inside the pipe, so it will not hit the sides aggressively. Cyclone chains can remove hard materials, such as heavy scale, encrustation, tree roots and concrete. The Cyclone is also used to remove any excess CIPP liner or Concrete material, after using either the Twister Liner Remover or Twister Concrete Remover for . When cleaning pipes, the Cyclone Chain is normally used after the Original Chain.



The Cyclone Chain should only be used to remove the final 10% of deposits on the pipe wall as the diameter of the chain is fixed and cannot be adjusted.

SPECIAL COMBINATION TOOLS:

Operate carefully as these combinations makes cleaning work much more strenuous on the Millers and the safety clutch may engage more frequently.

Example: Combining DN70 (3") Smart Crusher+ & Original Chains

The DN70 (3") Smart Crusher+ can be used on a leader, in the front of the Original Chains, to create a tool which can progress forward even in badly corroded or heavily scaled pipes. This combination is also very effective at removing roots.



Selecting the correct Chain for the job:

ORIGINAL PREMIUM CHAIN	TORNADO ORIGINAL CHAIN	CYCLONE PREMIUM CHAIN	TORNADO CYCLONE CHAIN
DN100 (4")	DN100 (4")	DN100 (4")	DN150 (6")
DN125-150 (5-6")	DN125-150 (5-6")	DN125 (5")	DN200 (8")
DN200 (8")	DN200 (8")	DN150 (6")	DN225 (9")
DN225-250 (9-10")	DN225-250 (9-10")	DN200 (8")	DN250 (10")
DN300 (12")	DN300 (12")	DN225 (9")	DN300 (12")
		DN250 (10")	
		DN300 (12")	

CHOOSING YOUR MILLER/POWER SOURCE:

The Chains have been designed for and can ONLY be operated with the **Picote Maxi Miller Power+**

GENERAL INFORMATION: SMART SPIDER+

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

AVAILABLE TYPES AND SIZES

Smart Spider+:

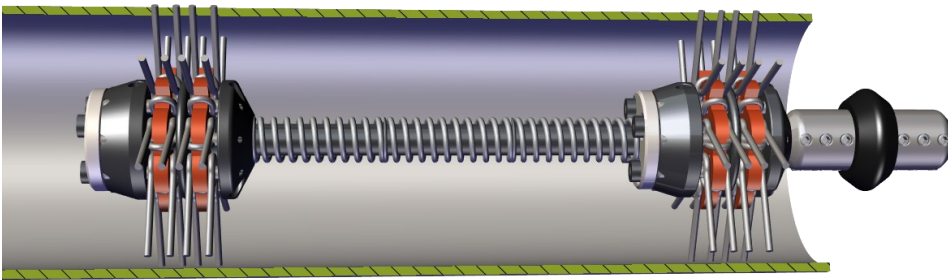
A special tool for cleaning fragile or damaged pipes. The Smart Spider+ can go through pipes where sections of the pipe are missing, without getting stuck. As the tool rotates the Smart Spider+ legs adapt to the diameter of the pipe. The Smart Spider+ can also be used also in plastic pipes, however, it must be used with extra care. It is also effective in removing build-ups of Fats, Oil and Grease (FOG's).

NOTE: The legs on the Smart Spider+ are designed to be larger than the inside of the pipe so that the tool stays centralised and will not fall out .

Do not trim the legs back to fit the tool inside of the pipe as the tool will fall through the missing sections.

Selecting the correct Smart Spider+ for the job

Choose your Smart Spider+ according to the size of the original host pipe.

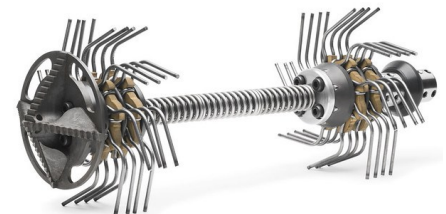


SMART SPIDER +	Shaft size mm/inches	BEND 90°	BEND 45°
Smart Spider DN150 (6")	18 (¾")	YES	YES
Smart Spider DN200 (8")	18 (¾")	YES	YES
Smart Spider DN225 (9")	18 (¾")	YES	YES

CHOOSING YOUR DRILL HEAD:

The Smart Spider+ can be used with or without the Drill or Crusher Heads by adding a Hub Disc. The Drill Head and the Crusher are used when there is blockage in the centre of the pipe.

If the Smart Spider+ can fit through the pipe without the Drill Head, the tool should be used without one. Without the Drill Head all the force is applied to the legs.



GENERAL INFORMATION - SMART SWEEPER+

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

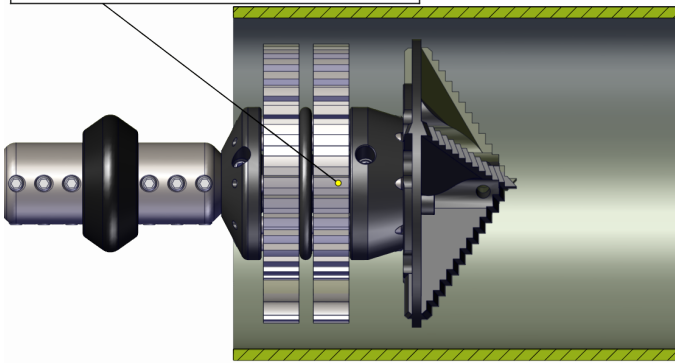
AVAILABLE SIZES & POWER SOURCES:

The **Smart Sweeper+** is designed to remove a failed or collapsed lining. Smart Sweeper blades are self-controlled and use centrifugal force to open. Blades adapt to the required pipe size when the tool is rotating. The Drill Head can be changed according to the situation.

Selecting the correct Smart Sweeper+ Lining Remover for the job

Choose your Smart Sweeper+ according to the size of the original host pipe.

Make sure that Smart Sweeper legs are completely inside the pipe before powering up Smart Sweeper!



SMART SWEEPER+	Shaft size mm/inches	BEND 90°	BEND 45°
Smart Sweeper DN150-225 (6-9")	18 (¾")	YES	YES

CHOOSING YOUR POWER SOURCE:

The Smart Sweeper+ has been designed for and can ONLY be operated with the **Picote Maxi Miller Power+** machine.

CHOOSING YOUR DRILL HEAD:

The Smart Sweeper+ can be used with or without Drill or Crusher Heads by adding a Hub Disc. The Drill Head and the Crusher are used when removing failed or collapsed linings.

If access is restricted by the failed lining, the Smart Sweeper+ might not fit in the pipe with a Drill Head attached. In this case, the Drill Head may be replaced with a Hub Disc. Without the Drill Head all the force is applied to the blades. Sweeper legs will remove any remaining lining from pipe walls as needed.



Drill Head
Attached



Crusher Head
Attached

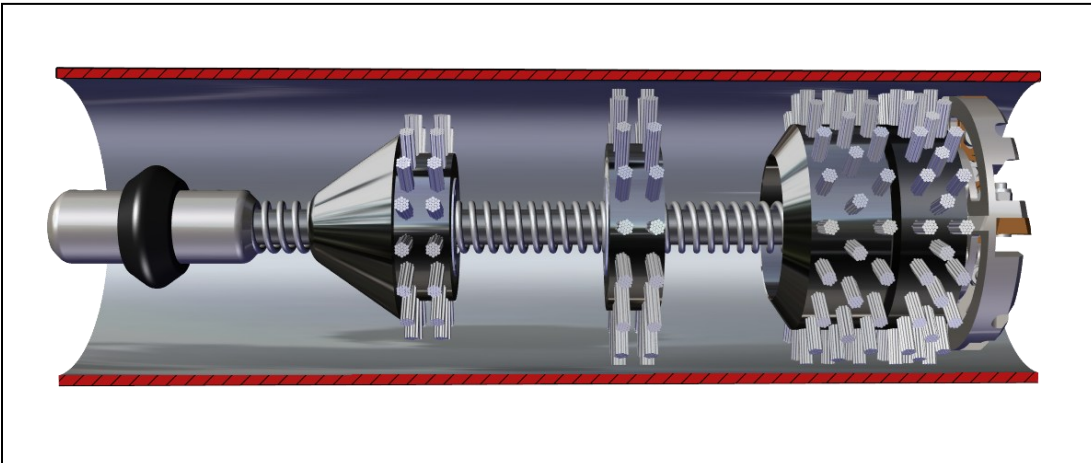
GENERAL INFORMATION: SMART CRUSHER+

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

AVAILABLE SIZES & POWER SOURCES:

The Smart Crusher+ products have a variety of different application purposes. Choose the correct tool for the job. With correct tool head it can be used to remove collapsed linings, concrete & limestone. The Smart Crusher+ tools are recommended for the toughest removal work.

Selecting the correct Smart Crusher+ for the job: Choose your Smart Crusher+ according to the size of the original host pipe. Place the tool completely inside the pipe before powering up the tool



SMART CRUSHER+	Shaft Size	BEND 90°	BEND 45°
Crusher DN70 (3")	18 (3/4")	YES	YES
Crusher DN100 (4")	18 (3/4")	YES	YES
Crusher DN150 (6")	18 (3/4")	YES	YES
Crusher DN200 (8")	18 (3/4")	YES	YES
Crusher DN225 (9")	18 (3/4")	YES	YES

CHOOSING YOUR POWER SOURCE:

The Smart Crusher+ has been designed for and can ONLY be operated with **Picote Maxi Miller Power+**.

CHOOSING YOUR DRILL HEAD:

The Smart Crusher+ body can be equipped with a Smart Crusher, Concrete Removal or Front Drill Head depending on the operational requirement.

GENERAL INFORMATION: SMART TWISTER+

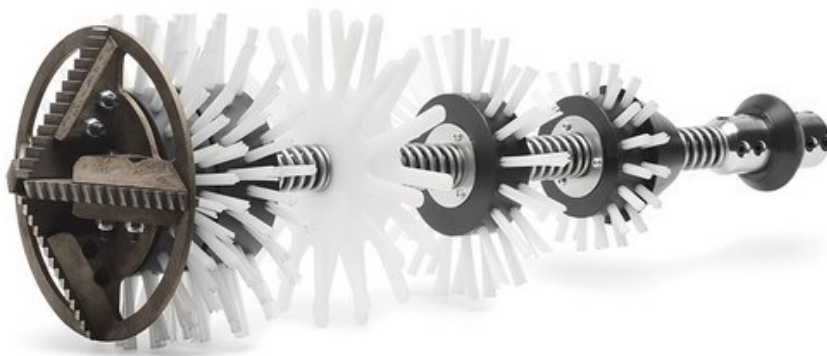
SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

AVAILABLE SIZES & POWER SOURCES:

The Twister+ products have a variety of different application purposes. When a correct tool head is adapted the main purpose of the Twister+ is to be used for reinstatements. With the Crusher head, the Twister+ can be used to remove collapsed linings, concrete, limestone or nails & other metal inserts. The actual Smart Crusher+ tool with a different body is recommended for tough removal work.

Selecting the correct Twister+ for the job:

- Choose your Twister+ according to the size of the original host pipe.
- Place the tool completely inside the drain before powering up the tool.



TWISTER+	Shaft size mm/inches	BEND 90°	BEND 45°
Twister DN150 (6")	18 (¾")	YES	YES
Twister DN200 (8")	18 (¾")	YES	YES
Twister DN225 (9")	18 (¾")	YES	YES

CHOOSING YOUR POWER SOURCE:

The Twister+ with the 18mm (¾") diameter shaft connection has been designed for and can ONLY be operated with the **Picote Maxi Miller Power+**.

CHOOSING YOUR DRILL HEAD:

The Twister+ can be used with the Drill, Concrete Remover or Crusher Heads.

GENERAL INFORMATION: SMART CUTTER+

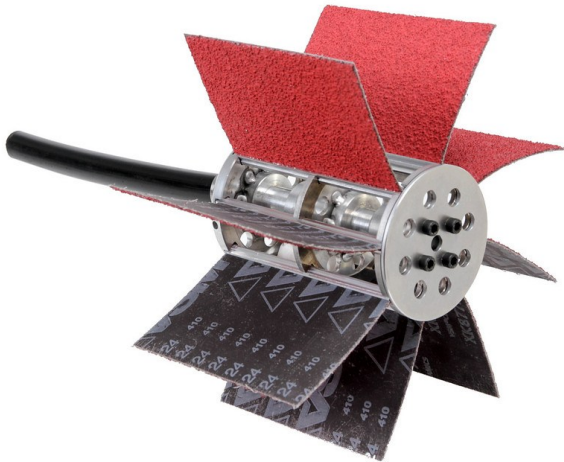
SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

AVAILABLE SIZES & POWER SOURCES:

The Smart Cutter+™ is a fine tuning tool. It can be used to fine tune remaining edges after a connection has been reinstated using the Twister tools. It can also be used to remove any remaining lining or inconsistencies, after a collapsed lining has been removed using either the Smart Crusher+, Sweeper+ or Grinding Chains. The side grinding panels adapt to the pipe size when the tool rotates.

Selecting the correct Smart Cutter+™ for the job:

Choose your Smart Cutter+™ according to the size of the original host pipe.



SMART CUTTER+™	Shaft size mm/inches	BEND 90°	BEND 45°
Smart Cutter+™ DN100 (4")	18 (¾")	YES	YES
Smart Cutter+™ DN150 (6")	18 (¾")	YES	YES
Smart Cutter+™ DN200-300 (8-12")	18 (¾")	YES	YES

CHOOSING YOUR POWER SOURCE:

The Smart Cutter+™ for the 18mm (¾") diameter shaft connection has been designed for and can ONLY be operated with the Picote Maxi Miller Power+.

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE



Original Premium Chain

Larger and heavier U carbide (7-ridge) makes it stronger and faster than any other chain on the market. A versatile tool for cast iron pipes. For tough descaling, hard deposits and removing residual concrete or failed liner, including inconsistencies, wrinkles and remains.

Product #	Pipe Size	Shaft Size
1380185100U	4"	3/4"
1380185150U	5-6"	3/4"
1380185200U	8"	3/4"
1380185250U	9-10"	3/4"
1380185300U	12"	3/4"



Cyclone Premium Chain

Larger and heavier U carbide (7-ridge) makes it stronger and faster than any other chain in the market. No need to adjust, the centrifugal force centers the tool inside the pipe. For tough descaling, hard deposits and removing residual concrete or failed liner.

Product #	Pipe Size	Shaft Size
1381185100U	4"	3/4"
1381185125U	5"	3/4"
1381185150U	6"	3/4"
1381185200U	8"	3/4"
1381185225U	9"	3/4"
1381185250U	10"	3/4"
1381185300U	12"	3/4"



Tornado Original Chain

With strong hardened stainless steel links instead of carbides these chains are long-lasting and ideal for descaling and removing hard deposits inside cast iron pipes.

Product #	Pipe Size	Shaft Size
1380185100T	4"	3/4"
1380185150T	5-6"	3/4"
1380185200T	8"	3/4"
1380185250T	9-10"	3/4"
1380185300T	12"	3/4"

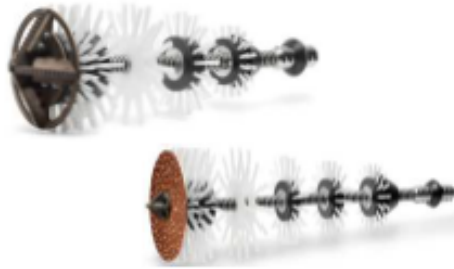


Tornado Cyclone Chain

With strong hardened stainless steel links instead of carbides these chains are long-lasting and ideal for descaling and removing hard deposits inside cast iron pipes.

Product #	Pipe Size	Shaft Size
1381185150T	6"	3/4"
1381185200T	8"	3/4"
1381185225T	9"	3/4"
1381185250T	10"	3/4"
1381185300T	12"	3/4"

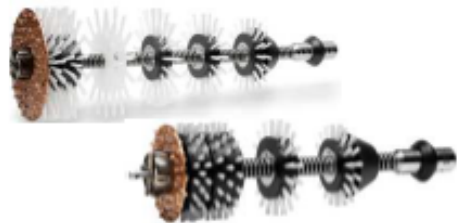
SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE



Twister+

For quick reinstatements in large pipes. Make the first initial cut with a Twister+ and follow up by grinding remaining edges with the right size Smart Cutter™+.

Product #	Pipe Size	Shaft
1230130150	6"	3/4"
1230175200	8"	3/4"
1230200225	9"	3/4"
1230225250	10"	3/4"
1230275300	12"	3/4"



Twister Concrete Remover+

For efficient concrete, grout & slurry removal. Use Steering Axle models where pipe is less than 50% full of material and you have access points from both ends. Feed a pulling cable through the pipe and attach it to steering axle on the Twister.

Product #	Pipe Size
1234130150	6"
1234175200	8"
1234200225	9"
1234130150SA*	6"
1234175200SA*	8"
1234200225SA*	9"

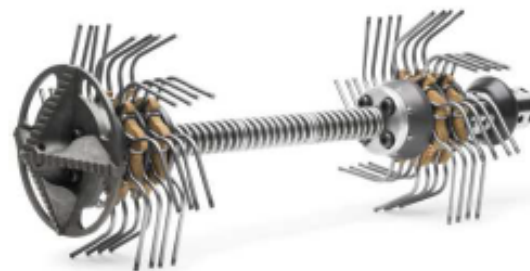
*Steering Axle Model

Front Drill Head Concrete Remover+

1300215057



Used with Concrete Remover+ with Front Metal Panels. Diameter of the drill head is 2.36".



Smart Spider+

For descaling damaged pipes with missing bottoms or holes where typical chains or other descaling methods may be too aggressive, get stuck in the missing sections or holes, or can come out from the pipe. Also good for Fats, Oils & Grease (FOGs). Includes blank Hub Disc, Drill head in photo sold separately.

Product #	Model/Part
1390180150	Smart Spider+ 6"
1390180200	Smart Spider+ 8"
1390180225	Smart Spider+ 9"
1000200059	Smart Hub Disc 6-g"
1000210059	Smart Hub Disc with Hole 6-g"
1390180001	Smart Spider+ Legs 6"
1390180002	Smart Spider+ Legs 8"
1390180003	Smart Spider+ Legs 9"
1390180004	Smart Sweeper/Spider+ 6-g" Axle
1390180005	Smart Spider Rubber Flex

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE



Smart Crusher

For situations where the collapse of CIPP lining is in the center or fully collapsed. Makes the initial removal, follow up with Cyclone Premium or Smart Cutter™. Front Drill Head can be used for liner that has sagged from the top. For 3/4" Shaft.

Product #	Model/Part
1370180070	Smart Crusher 3"
1370180100	Smart Crusher 4"
1370180150	Smart Crusher 6"
1370180200	Smart Crusher 8"
1370180225	Smart Crusher 9"
1300218100	Front Drill Head 4"
1300218150	Front Drill Head 6"
1300218200	Front Drill Head 8"
1300218225	Front Drill Head 9"
900000713	Smart Crusher Blade 4"
900000663	Smart Crusher Blade 6"
900000709	Smart Crusher Blade 8"
900000710	Smart Crusher Blade 9"
9990700026	Screws 4": DINg12 M5x18
1350000140	Screws 6, 8 & 9": DINg12 M6x20
1300215060	Front Drill Head 3"
1300215085	Front Drill Head 4"
1300215130	Front Drill Head 6"
1300215175	Front Drill Head 8"
1300215200	Front Drill Head 9"
900000723	Screws 8-9": DINg12 M6x30
900000694	Front Drill Head Blade 8"
900000716	Front Drill Head Blade 9"



Smart Sweeper+

A self-centralizing and sideways grinding tool for challenging liner removal situations where the collapsed material is around the wall of the pipe. Use with the Front Drill Head to remove collapsed liner, or for situations where too big of a liner has been installed in the pipe. For 3/4" shaft. See Smart Crusher Spare Parts List for replacement Front Drill Heads and Blades.

Product #	Model/Part
1360180150	Smart Sweeper+ 6"
1360180200	Smart Sweeper+ 8"
1360180225	Smart Sweeper+ 9"
1360180001	Spare Legs 6-9"
1390180004	Spare Axle 6-9"

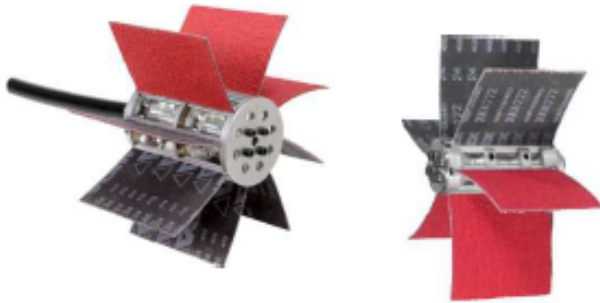


Front Metal Panel

Panel thickness: 3mm. Grit 6.
For Twister Concrete Remover+.

Product #	Panel Size	Pipe Size
1210510130	5.1"	6"
1210510175	6.9"	8"
1210510200	8"	9"

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE



Smart Cutter™ Hub

A cleaning & fine-tuning tool. For reinstatements make the first initial cut with a Twister+ and follow up by grinding remaining edges with the Smart Cutter™+. Also, removes inconsistencies, wrinkles and remains of failed liner. Use in cast iron, concrete, clay and PVC pipes.

Product #	Pipe Size	Shaft	Panels & Size (W)x(L)
1001250100A*	4-6"	1/2"	6 Panels 4x4"
1001870150A	6-8"	3/4"	8 Panels 6x6 & 8x8"
1021800200	8-12"	3/4"	8 Panels 6x8 & 6x10"

Side Grinding Panels

Sold in packages of 12. See the Smart Cutter™ Hub Selection Guide on the Picote Institute.

Product #	Panel Size
1202100100	4x4"
1202150150	6x6"
1202150200	6x8"
1202150250	6x10"



Hub Discs

Hub Discs for Smart Cutter™ use on the Maxi Power+. See the Smart Cutter™ Hub Selection Guide on the Picote Institute.

Product #	Disc	Size
1000200050	XL	2"
1000200070	XXL	2.75"
1000200100	XXXL	4"



Shaft Connector 3/4" to 3/4"

1313002185

Maxi Power+ Spare Part
For connecting 3/4" to 3/4" Shaft.



Strain Relief Spring Maxi Power+

9570000034-2



Maxi Power+ Shafts - 3/4"

Product #	Miller
1312021180020	Replacement Shaft 3/4" - 67 ft
1312021180011	Shaft Extension 36 ft



Sleeve for 3/4" Shaft Outer Casing

93212520180SB

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE



Original Premium Chain

Larger and heavier U carbide (7-ridge) makes it stronger and faster than any other chain on the market. A versatile tool for cast iron pipes. For tough descaling, hard deposits and removing residual concrete or failed liner, including inconsistencies, wrinkles and remains.

Product #	Pipe Size	Shaft Size
1380185100U	DN100	18mm
1380185150U	DN125-150	18mm
1380185200U	DN200	18mm
1380185250U	DN225-250	18mm
1380185300U	DN300	18mm



Tornado Original Chain

With strong hardened stainless steel links instead of carbides these chains are long-lasting and ideal for descaling and removing hard deposits inside cast iron pipes.

Product #	Pipe Size	Shaft Size
1380185100T	DN100	18mm
1380185150T	DN125-150	18mm
1380185200T	DN200	18mm
1380185250T	DN225-250	18mm
1380185300T	DN300	18mm



Cyclone Premium Chain

Larger and heavier U carbide (7-ridge) makes it stronger and faster than any other chain in the market. No need to adjust, the centrifugal force centres the tool inside the pipe. For tough descaling, hard deposits and removing residual concrete or failed liner.

Product #	Pipe Size	Shaft Size
1381185100U	DN100	18mm
1381185125U	DN125	18mm
1381185150U	DN150	18mm
1381185200U	DN200	18mm
1381185225U	DN225	18mm
1381185250U	DN250	18mm
1381185300U	DN300	18mm



Tornado Cyclone Chain

With strong hardened stainless steel links instead of carbides these chains are long-lasting and ideal for descaling and removing hard deposits inside cast iron pipes.

Product #	Pipe Size	Shaft Size
1381185150T	DN150	18mm
1381185200T	DN200	18mm
1381185225T	DN225	18mm
1381185250T	DN250	18mm
1381185300T	DN300	18mm

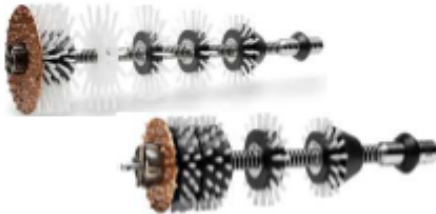
SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE



Twister+

For quick reinstatements in large pipes. Make the first initial cut with a Twister+ and follow up by grinding remaining edges with the right size Smart Cutter™+.

Product #	Pipe Size	Shaft
1230130150	DN150	18mm
1230175200	DN200	18mm
1230200225	DN225	18mm
1230225250	DN250	18mm
1230275300	DN300	18mm



Twister Concrete Remover+

For efficient concrete, grout & slurry removal. Use Steering Axle models where pipe is less than 50% full of material and you have access points from both ends. Feed a pulling cable through the pipe and attach it to steering axle on the Twister.

Product #	Pipe Size
1234130150	DN150
1234175200	DN200
1234200225	DN225
1234130150SA*	DN150
1234175200SA*	DN200
1234200225SA*	DN225

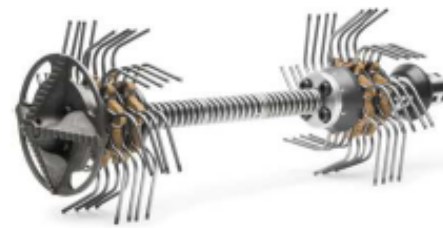
*Steering Axle Model

Front Drill Head Concrete Remover+

1300215057



Used with Concrete Remover+ with Front Metal Panels. Diameter of the drill head is 60mm.



Smart Spider+

For descaling damaged pipes with missing bottoms or holes where typical chains or other descaling methods may be too aggressive, get stuck in the missing sections or holes, or can come out from the pipe. Also good for Fats, Oils & Grease (FOGs). Includes blank Hub Disc, Drill head in photo sold separately.

Product #	Model/Part
1390180150	Smart Spider+ DN150
1390180200	Smart Spider+ DN200
1390180225	Smart Spider+ DN225
1000200059	Smart Hub Disc DN150-225
1000210059	Smart Hub Disc with Hole DN150-225
1390180001	DN150 Spare Smart Spider Legs
1390180002	DN200 Spare Smart Spider Legs
1390180003	DN225 Spare Smart Spider Legs
1390180004	DN150-225 Spare Smart Spider Axle
1390180005	Smart Spider Rubber Flex

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE



Smart Crusher

For situations where the collapse of CIPP lining is in the centre or fully collapsed. Makes the initial removal, follow up with Cyclone Premium or Smart Cutter™. Front Drill Head can be used for liner that has sagged from the top. For 18mm Shaft.

Product #	Model/Part
1370180070	Smart Crusher DN70
1370180100	Smart Crusher DN100
1370180150	Smart Crusher DN150
1370180200	Smart Crusher DN200
1370180225	Smart Crusher DN225
1300218100	Front Drill Head DN100
1300218150	Front Drill Head DN150
1300218200	Front Drill Head DN200
1300218225	Front Drill Head DN225
900000713	Blade DN100
900000663	Blade DN150
900000709	Blade DN200
900000710	Blade DN225
9990700026	Screws DN100: DIN912 M5x18
1350000140	Screws DN150, 200 & 225: DIN912 M6x20
1300215060	Front Drill Head DN70
1300215085	Front Drill Head DN100
1300215130	Front Drill Head DN150
1300215175	Front Drill Head DN200
1300215200	Front Drill Head DN225
900000723	Screws DN200 & 225/DIN912 M6x30
900000694	Front Drill Head Blade DN200
900000716	Front Drill Head Blade DN225



Smart Sweeper+

A self-centralising and sideways grinding tool for challenging liner removal situations where the collapsed material is around the wall of the pipe. Use with the Front Drill Head to remove collapsed liner, or for situations where too big of a liner has been installed in the pipe. For 18mm Shaft. See Smart Crusher Spare Parts List for replacement Front Drill Heads and Blades.

Product #	Model/Part
1360180150	Smart Sweeper+ DN150
1360180200	Smart Sweeper+ DN200
1360180225	Smart Sweeper+ DN225
1360180001	Spare Legs DN150-225
1390180004	Spare Axle DN150-225

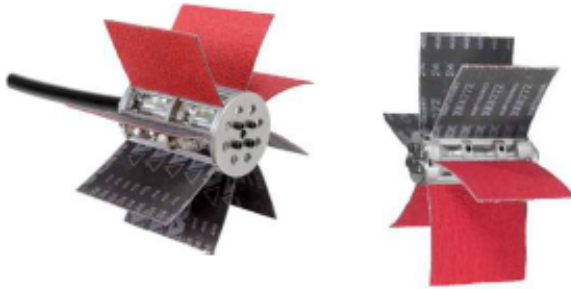


Front Metal Panel

Panel thickness: 3mm. Grit 6.
For Twister Concrete Remover+.

Product #	Panel Size	Pipe Size
1210510130	130mm	DN150
1210510175	175mm	DN200
1210510200	200mm	DN225

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE



Smart Cutter™ Hub

A cleaning & fine-tuning tool. For reinstatements make the first initial cut with a Twister+ and follow up by grinding remaining edges with the Smart Cutter™+. Also, removes inconsistencies, wrinkles and remains of failed liner. Use in cast iron, concrete, clay and PVC pipes.

Product #	Pipe Size	Shaft	Panels & Size (W)x(L)
1001250100A*	DN100-150	12mm	6 Panels 50x100
1001870150A	DN150-200	18mm	8 Panels 70x150
1021800200	DN200-300	18mm	8 Panels 100x150

Side Grinding Panels

Sold in packages of 12. See the Smart Cutter™ Hub Selection Guide on the Picote Institute.

Product #	Panel Size
1202100100	100x100
1202150150	150x150
1202150200	150x200
1202150250	150x250



Hub Discs

Hub Discs for Smart Cutter™ use on the Maxi Power+. See the Smart Cutter™ Hub Selection Guide on the Picote Institute.

Product #	Disc	Size
1000200050	XL	0x50x3
1000200070	XXL	0x70x3
1000200100	XXXL	0x100x3



Shaft Connector 18mm/18mm

1313002185

Maxi Power+ Spare Part

For connecting 18mm to 18mm Shaft.



Strain Relief Spring Maxi Power+

9570000034-2



Maxi Power+ Shafts - 18mm

Product #	Miller
1312021180020	Replacement Shaft - 20.5m
1312021180011	Shaft Extension - 11m



Sleeve for 18mm Shaft Outer Casing

93212520180SB

MAINTENANCE TOOLS

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

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.

Hex Keys



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

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.

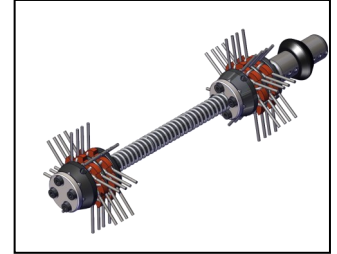
Product #	Size
1350000020	0.5L Bottle
1350000021	6 Bottle Package

TOOL HEAD REPLACEMENT: SMART SPIDER+

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

! WARNING

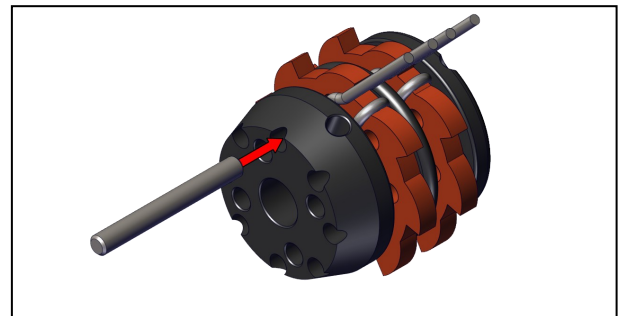
This section contains important safety information.
Failure to comply could result in serious injury or death.



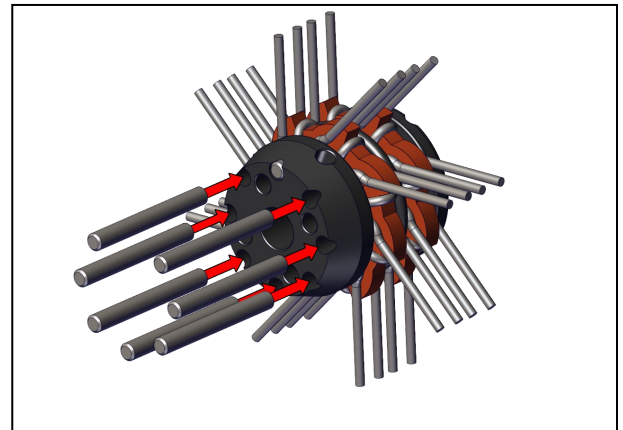
ASSEMBLY INSTRUCTIONS:

Recommended: Loctite 542 Thread Sealant

Step 1. Place the Smart Spider Rubber Flex's in their slots.
Place two Smart Spider legs as shown below and lock them with an axle.

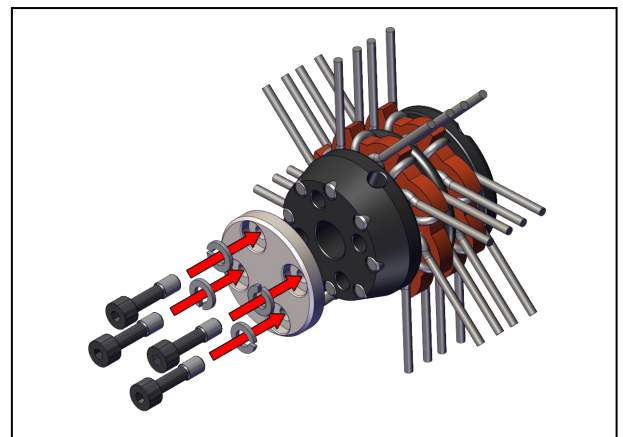


Step 2. Add the other legs and axles.



Step 3. Insert Hub Disc, Spring Washers and Allen Bolts (M8 "light") into their slots. Repeat the same with the other Smart Spider body using the Hub Disc.

Recommended: Loctite 542 Thread Sealant

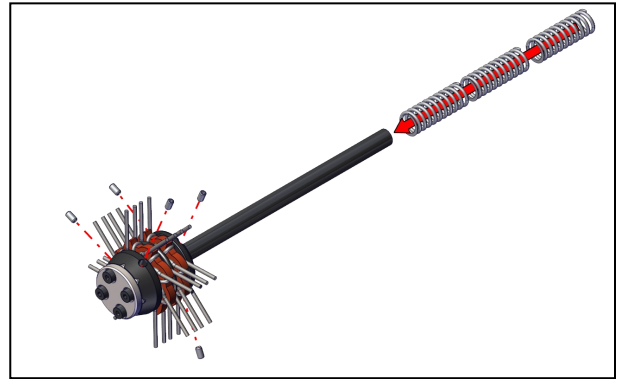


TOOL HEAD REPLACEMENT: SMART SPIDER+

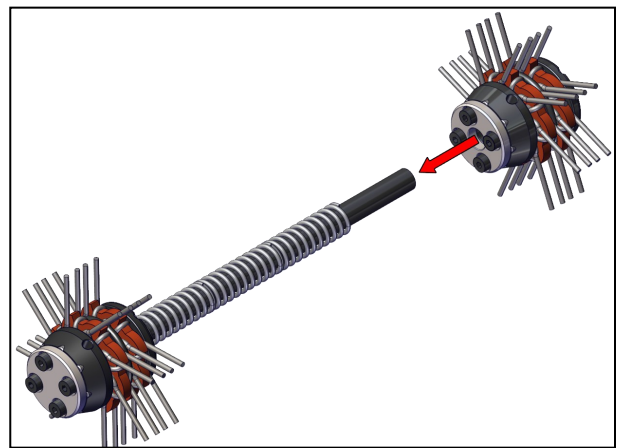
SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

Step 4. Install the front Smart Spider body to the shaft and tighten the screws.

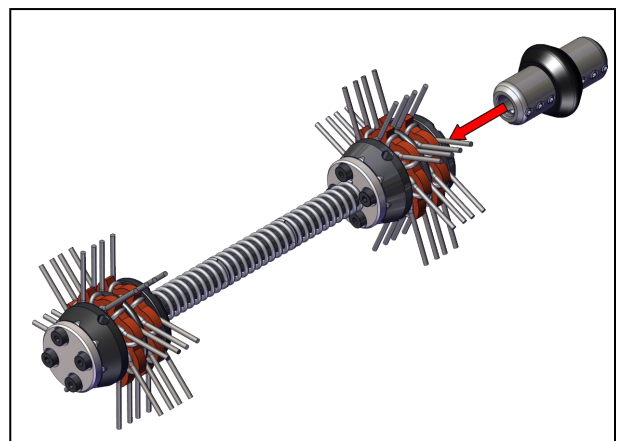
Add the three Compression Springs.



Step 5. Add the other assembled Smart Spider body with the Hub Disc.



Step 6. Add the Shaft Connector.

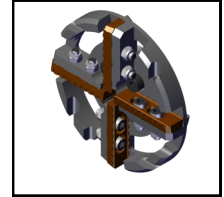


TOOL HEAD REPLACEMENT: SMART CRUSHER HEAD

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

! WARNING

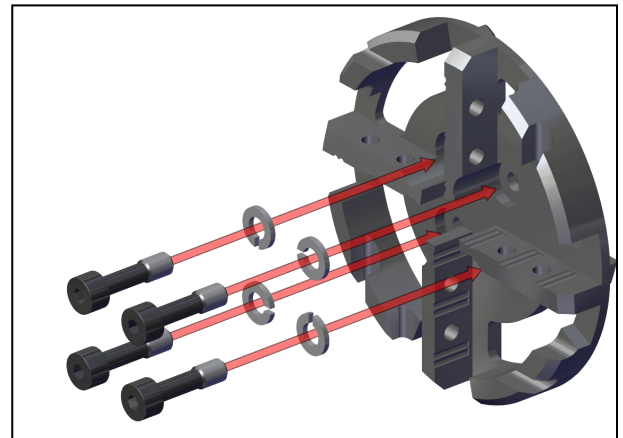
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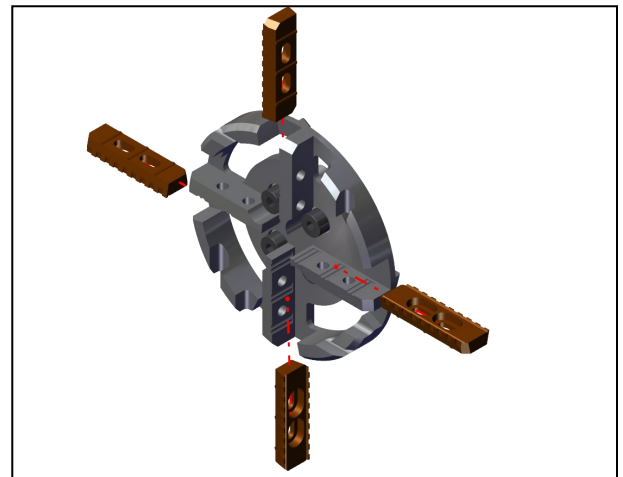
ASSEMBLY INSTRUCTIONS: SMART CRUSHER HEAD

Step 1. Insert Lock Washers and Hex Bolts into their slots.

Recommended: Loctite 542 Thread Sealant



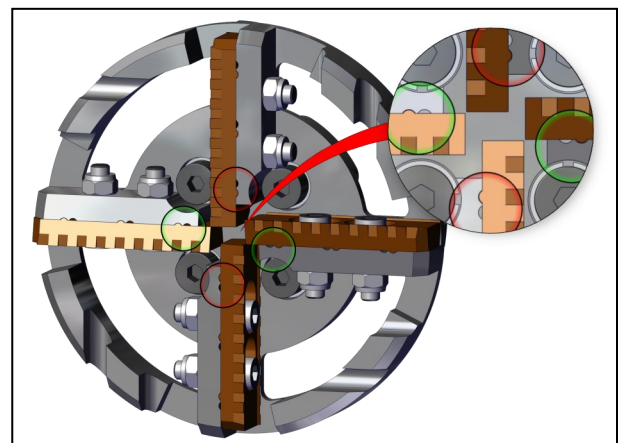
Step 2. Place the Smart Crusher Blades into their slots.
Pay close attention to alignment.



Step 3. Place every second blade in alternative slots of the body. The Smart Crusher+ can only operate at maximum diameter when the blades are inserted correctly.

The two opposite blades need to be closer to the centre.

If the blades are placed incorrectly the head may not be able to progress through the pipe.



TOOL HEAD REPLACEMENT: DRILL HEADS

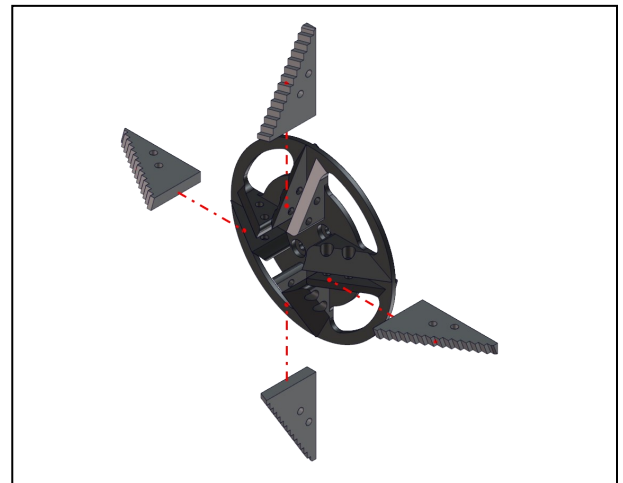
SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

! WARNING

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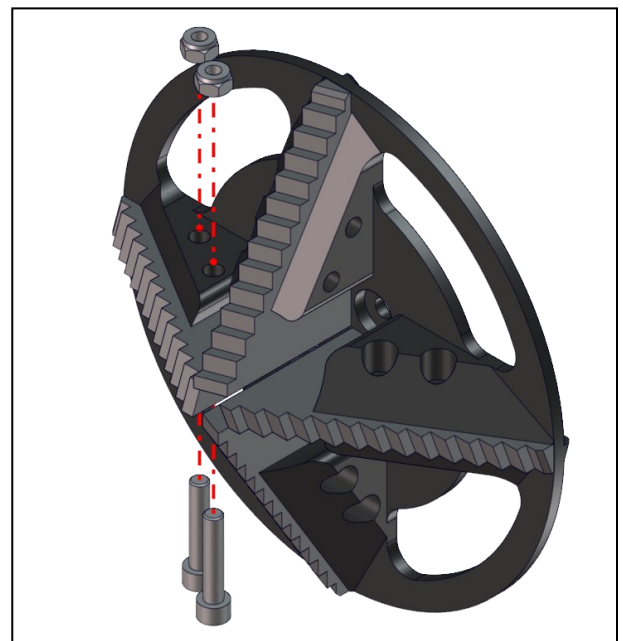
Step 1. Insert the blades into their slots.



Step 2. Place the bolts and nuts in position and tighten them.

Locking nuts must be used!

Recommended: use Loctite 542 Thread Sealant.



TOOL HEAD REPLACEMENT: DRILL HEADS

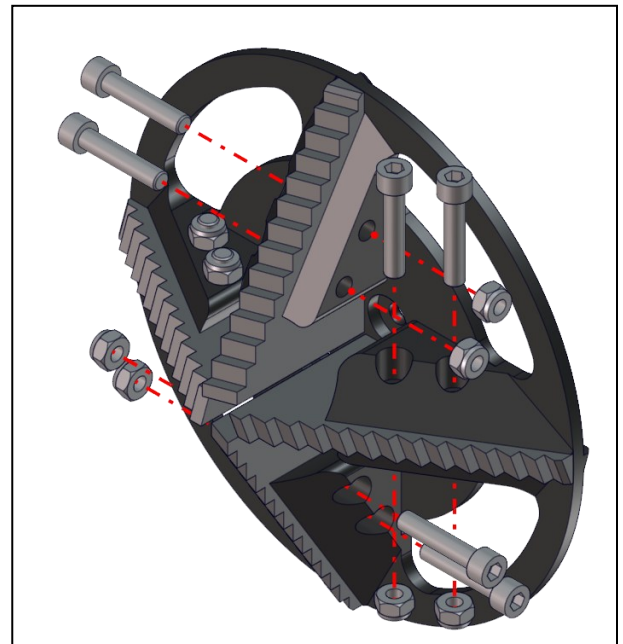
SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

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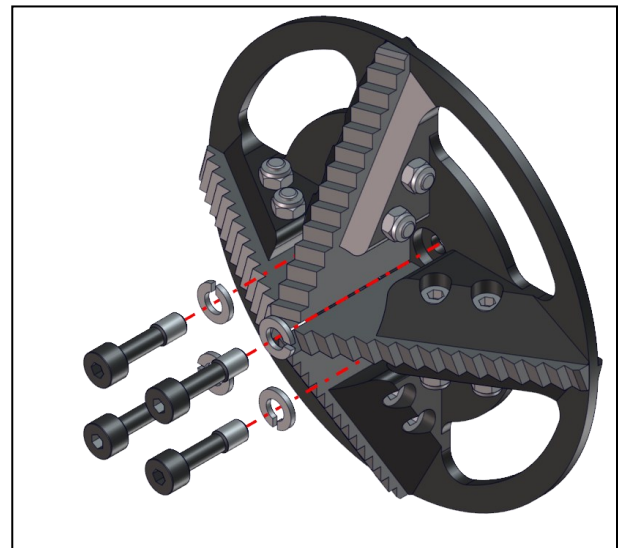
This section contains important safety information.
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Step 3. Insert other bolts and nuts into their slots.



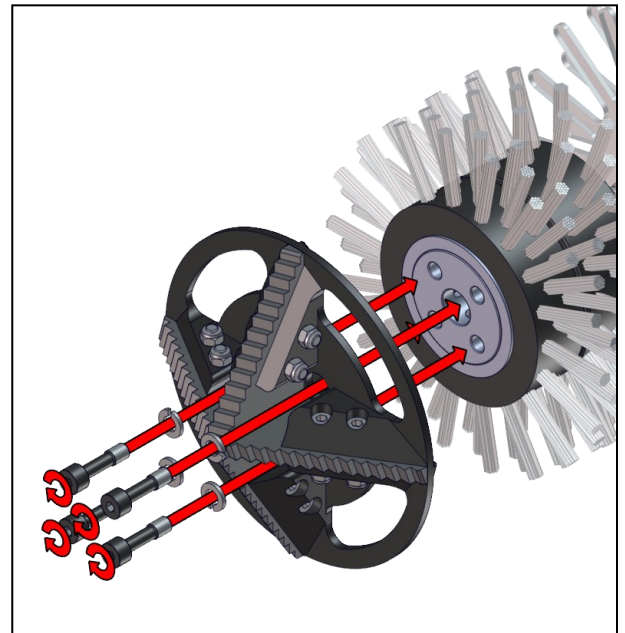
Step 4. Place the Allen Bolts (M8) and locking washers into their slots.



TOOL HEAD REPLACEMENT: DRILL HEADS

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

5. Attaching the Front Drill Head to the Smart Crusher / Twister body

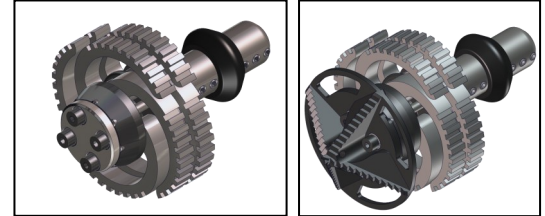


TOOL HEAD REPLACEMENT: SMART SWEEPER+

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

! WARNING

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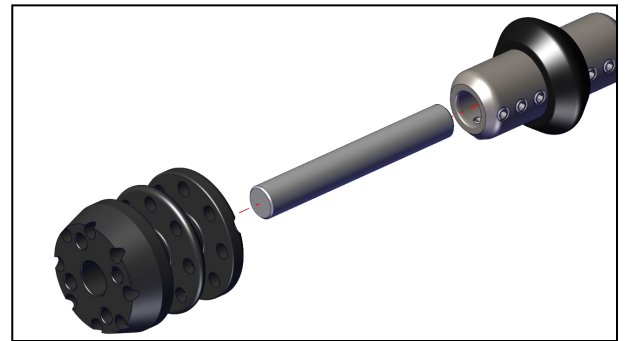


TOOL CHANGE SMART SWEEPER+:

Assembly Instructions

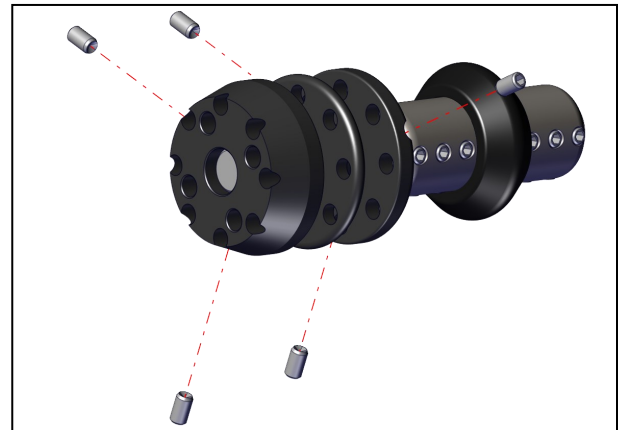
Recommended: Loctite 542 Thread Sealant.

Step 1. Combine shaft connector, shaft and Smart Sweeper body.



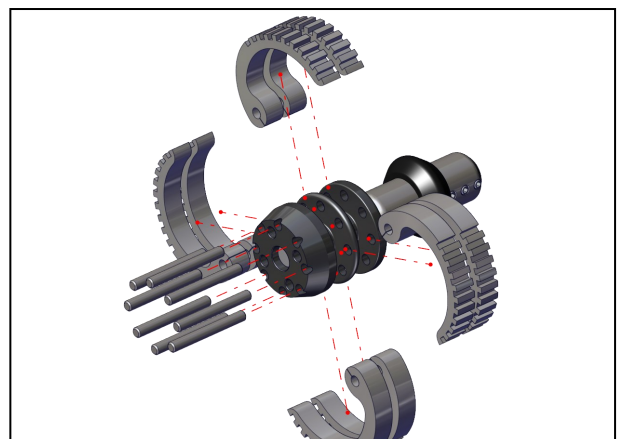
Step 2. Add holding screws and tighten them.

Use Loctite 542 to secure the screws.



Step 3. Place Smart Sweeper legs into their slots and align the holes with the body.

Insert pins through the holes to lock the legs in place.



TOOL HEAD REPLACEMENT: SMART SWEEPER+

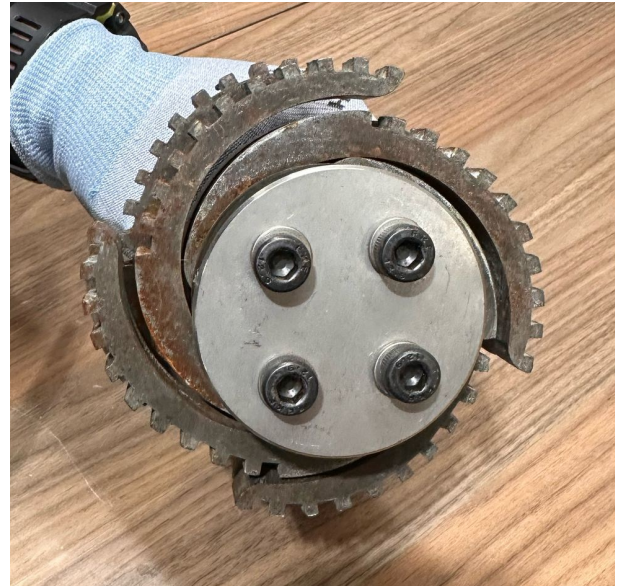
SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

Attaching the End Plate

Step 4a. Insert end plate, lock washers & hex bolts.

Tighten the bolts.

Use Loctite 542.

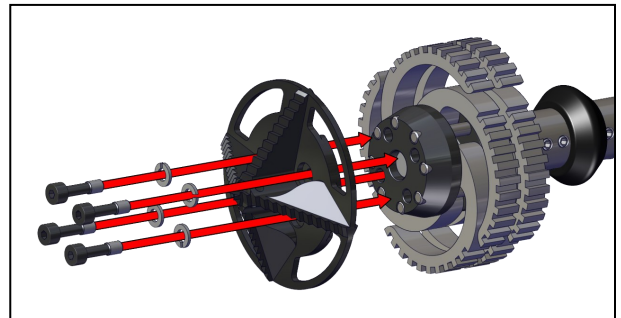


Attaching the Drill Head

Step 4b. Insert Drill head, lock washers & hex bolts.

Tighten the bolts.

Use Loctite 542.

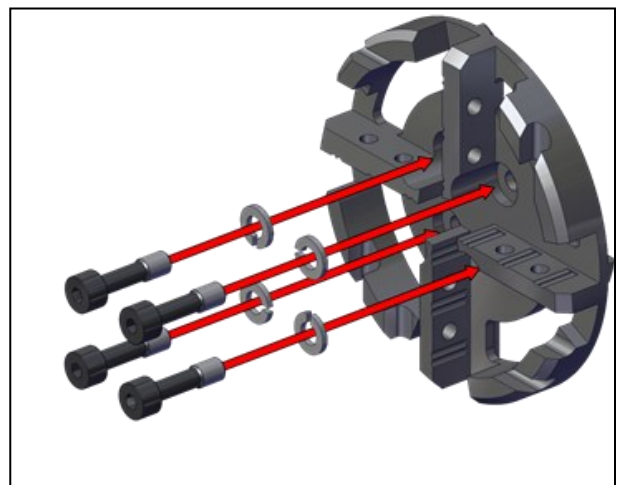


Attaching the Crusher Head

Step 4c. Insert Crusher head, lock washers & hex bolts.

Tighten the bolts.

Use Loctite 542.



INSTALLATION & SETUP

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.



BEFORE USE:

Select the correct size tooling and drill head for your job.

Ensure water is flowing in the pipe or the vacuum extraction is ready (dry cleaning).

Ventilate working area properly.

Ensure that all metallic drain pipes are grounded/earthed. The Smart Spider+ and Smart Sweeper+ cause high friction and there is risk of electric shock.

Using a CCTV camera verify the correct position to locate the tool.

Place tooling inside the pipe ensuring that it fits completely inside before turning the Miller on.

DURING USE:

Switch power on. Initially start at 500 RPM and slowly increase the speed. Adjust the speed while working but do not exceed 800 RPM when using the Smart Spider+ or Smart Sweeper+, as the tooling may get stuck. Hold the shaft tightly.

Move the tool in back and forth movement in the pipe.

Always use a CCTV camera to check how you are progressing.

Do not force the tool through the pipe - let the tool do the work. If too much force or excessive high speed is used the tool might get stuck resulting in damage or breakage of the tooling, shaft or pipe.

Use either water or vacuum to remove the debris.

Use lower speed when working in fragile or damaged sections of the pipe.

Please Note!: The legs on the Smart Spider+ and Smart Sweeper+ may get very hot during use. Where water cooling is not being used, you need to take breaks to **cool down the tool head after 15-20 minutes of continuous use.**

Always wear heat resistant gloves when handling the tools after the machine has been used.

The tooling can be cooled down using water or left to cool in the open air.

Always observe the temperature of the outer shaft casing and let the Miller cool down after **every 30-45 minutes** of constant work.

INSTALLATION & SETUP

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

ATTACHING PICOTE POWER+ TOOLS TO MILLER SHAFT:

- Always inspect the Picote Power+ shaft before each use.
- If the shaft is damaged or there are potential weak points, cut off the damaged length or replace the entire shaft as needed.
- Round off any sharp edges to avoid cuts and to make it easier to insert the shaft into the tooling. Please see the Picote Power+ Operation & Safety Manual for instructions.
- Run the shaft for 30 seconds and then check that there is sufficient length of exposed flexible shaft, without its outer casing, to adequately attach tooling and allow for shaft movement.



Damaged Shaft.
Needs to be trimmed.

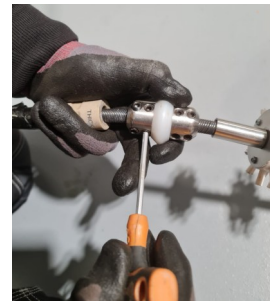


Leave a gap between the sleeve and the Power+ tools 6mm (1/4").



TIGHTENING SET SCREWS / ALLEN BOLTS:

- Check that all bolts have been loosened so that the shaft can be easily inserted.
- Position the shaft inside the tooling as far as it will go.
- Always tighten the screws starting from the screw furthest away from the end of the flexible shaft (where applicable).



AFTER USE:



Be careful when removing the tool from the pipe as the tool head can be very hot.
Always turn the power off before you remove the tool out from the pipe!
There is a risk of serious injury or even death!

Inspect the condition of the Body, Tool Head, Grub Screws and shaft.

Replace worn-out parts. If part of the shaft is damaged, it can be removed using a portable band saw or disc cutter/angle grinder. Finally, shorten outer casing accordingly.

MAINTENANCE

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

CARING FOR THE FLEXIBLE SHAFT:

The Flexible Shaft is pre-treated with **Picote Flexible Shaft Lubricant (1350000020)** and the casing replaced prior to shipping. Always inspect the condition of the Flexible Shaft and apply lubricant between the Flexible Shaft and its outer casing every 2 to 3 months depending on usage. Refer to the relevant machine Operation and Safety Manual for servicing the flexible shaft and its outer casing.



INSPECTION OF THE SMART SPIDER AND SMART SWEEPER TOOLS:

Check the condition of the Rubber Flexes for wear and tear on the Smart Spider and replace if damaged or perished. Check the legs for any damage and wear and replace if necessary. The legs on the Smart Spider will wear down and will need to be replaced when they are not long enough to support the tool inside of the pipe.



FASTENER SET SCREWS:

If you are unable to tighten the set screws properly, due to worn out hex socket heads, replace the fastener screws immediately.

Always use Loctite 542 on the screw threads to prevent the screws from vibrating loose. Otherwise, the tooling may become loose and fall into the pipe during use.



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 can easily and quickly switch between tools. **Leaders should always be used if possible.**



ADDING A VISUAL MARKER FOR SAFETY:

If not using a Leader, attach a visual marker (tape) on the outer casing of the Flexible Shaft. Place it around 500mm (20") from the end of the shaft.

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



WARRANTY POLICY & PROCEDURE

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

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, NON INFRINGEMENT, 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.

TRAINING

SAVE ALL WARNINGS AND INSTRUCTIONS FOR FUTURE REFERENCE

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.

Visit our website at www.picotegroup.com or contact us at training@picotesolutions.com to find out about course offerings, pricing, and scheduling.



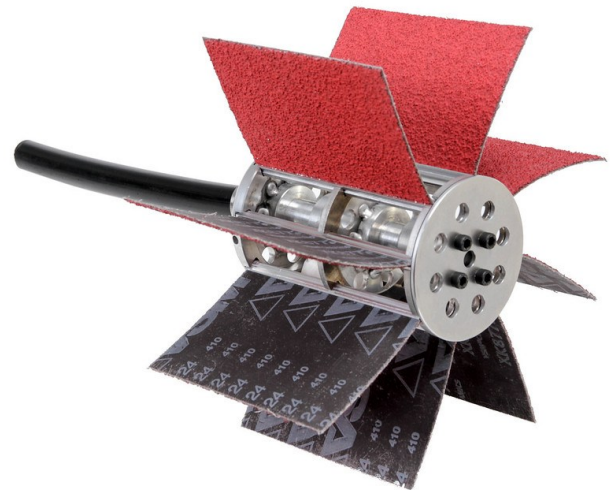
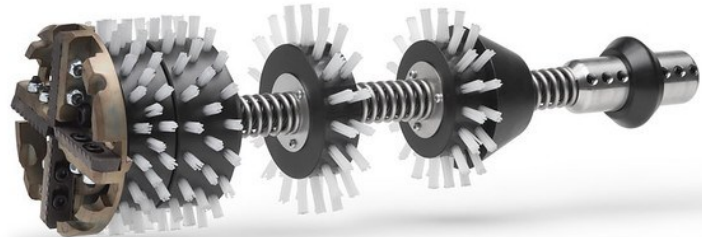
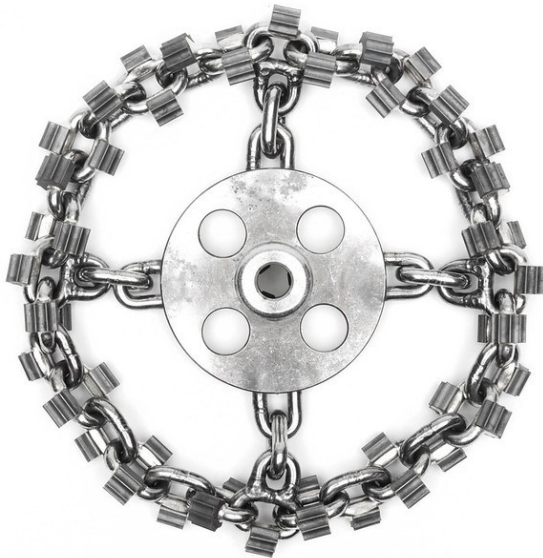


Revision Date: March 2025

Revision number: 1

Author: Richard Swan

Accepted: Ryan Boldan: March 2025



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