

PiCo Pipe™ User Manual

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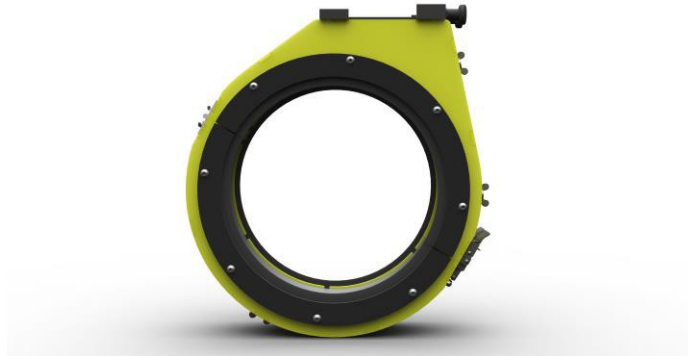
Closed Loop Grit Blasting





Any person intending to operate this equipment or any person intending to be in the vicinity during its operation must receive proper training.

Do not operate this equipment before reading and completely understanding all the warnings, cautions, operating procedures, and instructions contained in this manual. Do also read and understand the manual of the Pinovo® closed loop blasting and recycling unit PiSys™ and other relevant tools used with this equipment.



Patents pending

1 INTRODUCTION

The PiCo Pipe™ is a handheld closed loop grit blasting tool to be used with PiSys™ closed loop blasting and recycling unit. The tool is primarily intended for spot blasting and blast cleaning of small and medium sized metal structures. The surface is blast cleaned by using fused brown alumina as blasting medium. “White Metal” surface cleanliness according to SA 3 (ISO 8501-1) and SSPC-SP5 can be easily achieved in addition to an anchoring profile up to 120 µm. Furthermore, the Pinovo® closed loop grit blasting method inherently delivers feathered edges ideally suited to spot blasting and high-quality coating repair.

Another advantage of Pinovo® grit blasting tools is the closed loop circulation system covering the entire treatment process. The result is complete elimination of discharges in connection with the work, as well as excellent utilization of the blasting medium. Brown fused aluminum oxide circulates in the system and may be re-used up to 25 times reducing media consumption and waste generation up to 80 % compared to conventional dry abrasive blasting technologies. In addition, the operators are never in direct contact with the actual blasting and waste material, which is collected automatically in the integrated waste management system.

No significant clean-up or further work is required following the Pinovo® preparation process, the surface is ready for painting or other post-treatment. The low noise and dust free Pinovo® surface preparation process minimizes the impact on surrounding trades and equipment.

2 SAFETY INSTRUCTIONS

The products described in this manual are intended for knowledgeable, experienced users of abrasive blasting equipment. It is the responsibility of the user to ensure that proper training has been completed and to have the relevant certificates from the Pinovo training program.







It is the responsibility of the users to familiarize themselves with the appropriate laws, regulations and safe practices that apply to these products and materials that may be used with these products, and that a safe work environment is provided.

Any use outside the sphere of application specified by Pinovo is not approved. Such use, any failure to comply with the instructions given herein, or any modification of the product without the written consent of Pinovo will invalidate the warranty, and Pinovo refuses to accept liability.

In addition to information on installation and operation, this instruction manual may contain **WARNINGS** and **CAUTIONS** pertaining to user safety. A **WARNING** indicates a potentially hazardous situation, which if not avoided, could result in death or serious injury. A **CAUTION** indicates a potentially hazardous situation, which, if not avoided, may result in minor or major injury.

Do not attempt to operate this tool until you have read and understood all safety precautions and instructions listed in this manual. **INCORRECT OPERATION OF THIS UNIT CAN CAUSE SERIOUS INJURY.**

2.1 WARNINGS

 WARNING	This is powerful abrasive tool. Always keep the tool moving while performing vacuum blasting. Never leave the tool unattended on a pipe.
 WARNING	If left in a fixed position, the tool can blast a hole in a 4,5 mm thick pipe in less than 7 minutes.
 WARNING	Enclosed blasting equipment may cause serious injury – protect hands, feet, eyes and hearing.
 WARNING	Show outmost care when connecting and operating the system. ALWAYS THINK SAFETY FIRST!
 WARNING	Wear PPE at all times when operating the PiCo Pipe™. The type of respiratory protection should be considered depending on material being removed, e.g. lead-based coatings.
 WARNING	Do not use closed loop grit blasting tools on surfaces of unknown thickness or temperatures above 70°C without proper risk assessment.

⚠ WARNING	Before starting the PiCo Pipe™, ensure that all fixing screws, bolts and fittings are mounted correctly and securely tensioned. Also ensure that whip-checks and safety pins are used for all hose-connections and hook-ups.
⚠ WARNING	Check all hoses for damage before starting the system.
⚠ WARNING	Check for wear inside the PiCo Pipe™ regularly. Change adapters regularly. Clean PiCo Pipe™ from dust inside regularly.
⚠ WARNING	Do not repair or replace any portion of Pinovo equipment using components that are not original Pinovo replacement parts or components that are not approved by Pinovo.
⚠ WARNING	Do not cut, obstruct, restrict or pinch pneumatic control lines. Doing so could prevent the proper activation and deactivation of the remote control system, resulting in the release of high speed media and compressed air.
⚠ WARNING	The use of this product for any purpose other than originally intended or altered from its original design is prohibited.
⚠ WARNING	You must NEVER place your hand or fingers underneath the 'Blast Head' or point the 'Blast Head' of the PiCo Pipe™ at yourself or anybody else while the system is pressurised.

2.2 CAUTIONS

⚠ CAUTION	Never install, remove or perform any maintenance on the PiCo Pipe™ when the system is pressurized.
⚠ CAUTION	Always use the dead man's switch when operating the system. The dead man's switch must never be set deliberately in an interlocked or blocked position, which could hamper the safety release of the switch.
⚠ CAUTION	Only use Brown Fused Aluminum Oxide in the appropriate size, preferably F 12 to F 46
⚠ CAUTION	Blasting of oil contaminated parts may result in contaminated surfaces, clogged abrasive, and/or malfunctioning of the equipment.
⚠ CAUTION	Valves must be opened slowly to allow seal to function correctly and to give a safe operation.
⚠ CAUTION	Never operate the PiCo Pipe™ while wearing loose hanging chains, hanging ID/Security badges or garments.
⚠ CAUTION	Never start the PiCo Pipe™ before its hoses are properly secured and safely located.
⚠ CAUTION	The PiCo Pipe™ should be properly maintained and stored when not in use to avoid damage to parts.
⚠ CAUTION	Consider always the workplace, access and risk factor prior to installation.
⚠ CAUTION	Always connect the hoses with safety line on to fixed structure if working above 2 meters free fall.

3 CONFIGURATION

Compressed air supply: Min 8 bar, 10 m³/h, dry air.

Connection:

- PiSys 100: 2 inch BSP / 2 inch camlock
- PiSys Flex: 1 ½ inch BSP/2 inch Camlock / 4-lug “Chicago-coupling”
- Adapter with 3 x 2-lug “Chicago-coupling” can be supplied on demand

PiSys 100 or PiSys Flex (pictured)

Pisys Flex Blast Unit

Pisys Flex Vacuum Unit

Blast hose: 3/4 inch, Max 40 m

Vacuum hose: 3 inch, Max 3 x 12 m



“New” precursor: 5 m ¾” blast hose + 1 ½” vacuum hose, 6 mm nozzle
 “Old” precursor: 5 m ¾” blast hose + 2” vacuum hose, 6,4 mm nozzle

Twin hose with dead man’s handle. 40 m

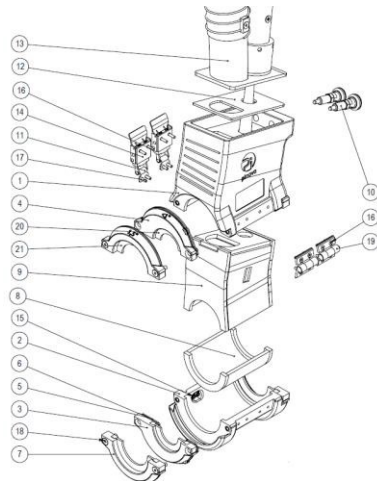
Pico Pipe. Recommended process parameters (PiSys Flex / PiSys™ 100):

- Blast pressure: 3 - 4.5 bar
- Suction pressure: 7-8 bar (For max suction: Open the regulator all the way, not just until it shows 8 bar)
- Grit feed: 4 turns. Alternatively: Close the grit valve and turn it slowly up while blasting and listening for grit flow on the blast hose
- Grit size: standard F16 Aluminum oxide (can be used with F12 – F46)
- Max surface roughness (RY): 120 µm



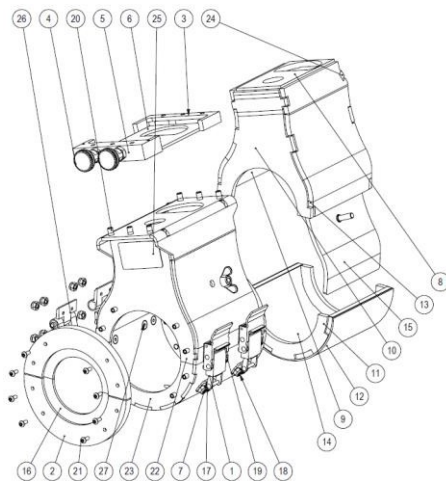
4 OPERATING INSTRUCTIONS

The following illustration shows the different parts of the different PiCo Pipe™ models:



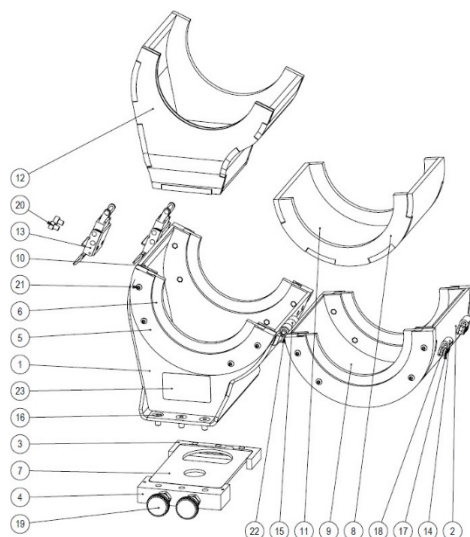
PiCo Pipe™ 1"
11612

1. Upper housing
2. Lower housing
3. Brush holder 1
4. Brush holder 2
5. Aluminum plate
6. Rubber plate
7. Brush holder 1 ½"
8. Lower rubber
9. Upper rubber
10. Index bolt
11. Strike catch
12. Rubber seal
13. Pre-cursor PiCo Pipe™
14. Latch
15. Lock nut M3
16. Screw M3x12
17. Screw M3x10
18. Screw M5x20
19. Hinge
20. Brush 1"
21. Brush 1 ½"



PiCo Pipe™ 2"
10234

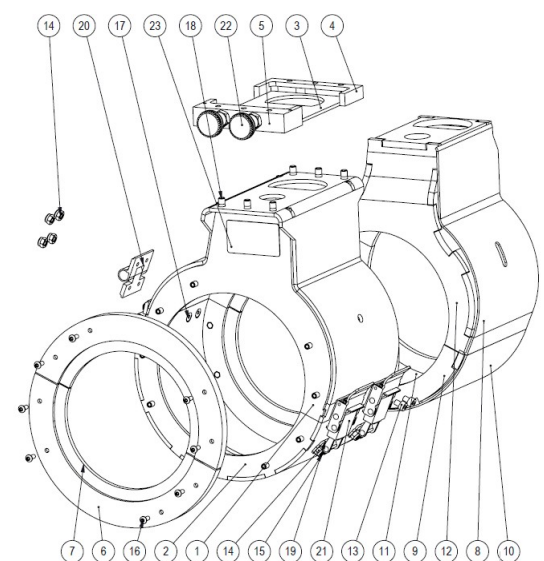
1. Latch
2. Brush holder
3. Front fixing frame
4. Back fixing frame
5. Index bolt
6. Rubber seal
7. Strike catch
8. Upper rubber
9. Upper rubber
10. Upper rubber
11. Upper rubber
12. Upper rubber
13. Upper rubber
14. Upper rubber
15. Upper wear plate
16. Brush
17. Lock nut M4
18. Screw M4x10
19. Screw M4x5
20. Screw M5x10
21. Screw M3x8
22. Upper housing
23. Lower housing
24. Upper rubber
25. Label
26. Hinge
27. Screw M4x12
28. Wing nut M5



1. Upper housing
2. Lower housing
3. Front fixing frame
4. Back fixing frame
5. Brush holder
6. Brush
7. Rubber seal
8. Lower rubber
9. Lower rubber
10. Upper rubber
11. Lower rubber
12. Upper rubber
13. Latch
14. Strike catch
15. Hinge
16. Screw M5x10
17. Screw M4x10
18. Lock nut M4
19. Index bolt
20. Screw M4x5
21. Screw M3x8
22. Screw M4x12
23. Label

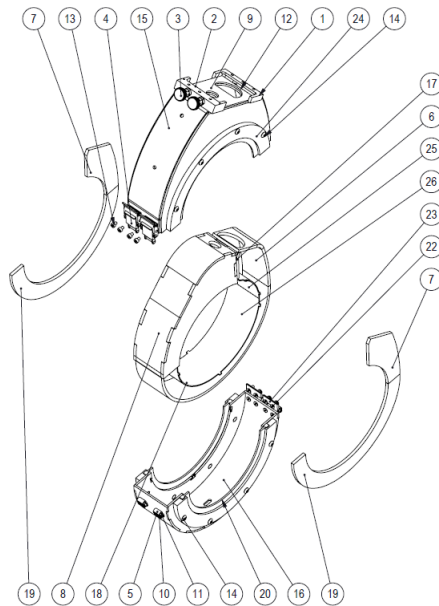
PiCo Pipe™ 3"

10235



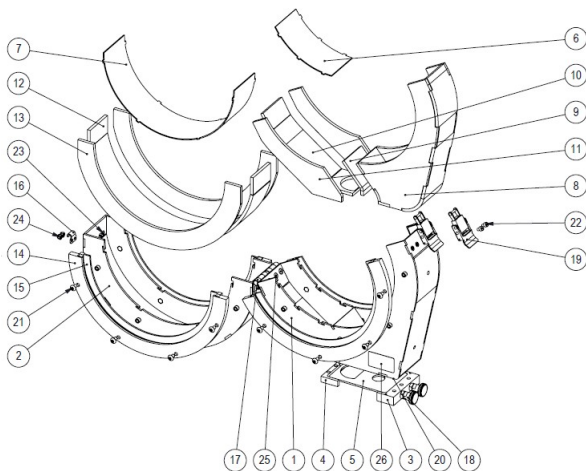
1. Upper housing
2. Lower housing
3. Rubber seal
4. Front fixing frame
5. Back fixing frame
6. Brush holder
7. Brush
8. Upper rubber
9. Lower rubber
10. Lower rubber
11. Lower rubber
12. Upper rubber
13. Screw M4x5
14. Lock nut M4
15. Screw M4x10
16. Screw M3x8
17. Screw M4x12
18. Screw M5x10
19. Strike catch
20. Hinge
21. Latch
22. Index bolt
23. Label

PiCo Pipe™ 4"
10236



PiCo Pipe™ 6"
10237

1. Front fixing frame
2. Back fixing frame
3. Index bolt
4. Latch
5. Strike catch
6. Upper rubber
7. Side plate rubber
8. Rubber wear part
9. Rubber seal
10. Screw M4x10
11. Lock nut M4
12. Screw M5x10
13. Screw M4x5
14. Screw M5x8
15. Upper housing
16. Lower housing
17. Rubber plate
18. Lower rubber
19. Half-moon rubber
20. Brush
21. Label
22. Screw M4x12
23. Hinge
24. Brush holder
25. Upper channel wall
26. Lower channel wall



PiCo Pipe™ 8"
11350

1. Upper housing
2. Lower housing
3. Back fixing frame
4. Front fixing frame
5. Rubber seal
6. Upper channel wall
7. Lower channel wall
8. Rubber wear part
9. Rubber wear part
10. Rubber wear part
11. Rubber wear part
12. Rubber wear part
13. Rubber wear part
14. Brush holder
15. Brush
16. Strike catch
17. Hinge
18. Index bolt
19. Latch
20. Screw M5x10
21. Screw M5x10
22. Screw M4x5
23. Screw M4x10
24. Lock nut M4
25. Screw M4x12
26. Label

- Before using the PiCo Pipe™, perform a visual inspection, ensuring that all parts are in place and in good condition.
- Ensure that all hoses and connections are properly fastened.

- Make sure that all hoses are earthed all the way from the PiSys™ unit to the blast head.
- When starting to work with the PiCo Pipe™, the 'Blast head' MUST be placed against the surface that is intended for blasting.
- You must **NEVER** place your hand or fingers underneath the 'Blast Head' of the PiCo Pipe™.
- You must **NEVER** point the 'Blast Head' of the PiCo Pipe™ at yourself or anybody else.
- Only to be used with fused brown alumina grit (size F12 – F46).
- Recommended process parameters (PiSys™ 100):
 - Blast pressure: 4 bar
 - Suction pressure: 7 bar
 - Grit feed: 4 turns
- To achieve full abrasive and dust recovery the blast head must be always in tight contact with the surface. Do not apply excessive force that may cause the sealing brush to bend into the abrasive flow. Make straight, even passes. When reversing direction, move the blast.
- head in a small radius to allow the bristles of the sealing brush to roll evenly and to prevent noise emission peaks.
- To start blast cleaning with the PiCo Pipe™, activate the dead man's handle.
- When stopping/pausing the blast operation, release the dead man's handle. Wait until the system has come to a complete stop (no grit passing through) before lifting the blast head off the blast area.
- The PiCo Pipe™ closed loop grit blasting tool in combination with the PiSys™ blast and recycling unit is approved for operation in potentially explosive atmospheres (ATEX zone 1 and zone 2).

5 ADAPTERS

- The PiCo Pipe 1" can be used for either ½", ¾", 1", or 1 ½" OD pipes. Choose the correct brush holder, brush, and rubber plate according to the table below.

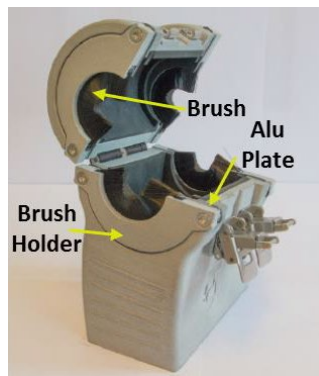
CAUTION

- Using the incorrect brush holder and/or brush length can cause dust and grit leakage, high noise levels, and may result in damage to other parts or the surroundings.

⚠ WARNING

- Before changing the brush holder and brush, ensure that the system cannot be started, for example by either:
 - Depressurizing the system (PiSys™) or
 - Disconnecting the dead man twin hose

The following “adapters” are available for the PiCo Pipe™ 1” closed loop grit blasting tool.



PiCo Pipe™ 1”
11612

Registered design

- OD ½”
 - Brush holder < 1”
 - Rubber plate
 - 26 mm (total height) brushes
- OD ¾”
 - Brush holder < 1”
 - Rubber plate
 - 21 mm (total height) brushes
- OD 1”
 - Brush holder < 1”
 - Rubber plate
 - 18 mm (total height) brushes
- OD 1 ½”
 - Brush holder 1 ½”
 - 18 mm (total height) brushes

6 EXCHANGE OF WEAR PARTS

- The suction hose, blast hose, and precursor connected to the PiCo Pipe™ housing should be checked prior to every start-up. In case of significant wear, the whole precursor with suction and blast hoses needs to be replaced.
- To exchange the precursor, open both index bolts, remove the worn precursor, put the new precursor in place, and attach it by closing the index bolts. Ensure that the blast nozzle (blast hose) is correctly placed above the small circular hole of the rubber seal.

Only use original replacement hoses supplied by Pinovo.

11561 PiCo Pipe™ Precursor

Precursor for PiCo Pipe™ closed loop grit blasting tools.
Includes base plate, nozzle, blast and suction hose.



Wear parts can be ordered by contacting your local Pinovo representative or directly via Pinovo's website: <http://www.pinovo.com/spares-requisition.html>

Please use article number provided in this manual for your orders.

The wear rubber inside the PiCo Pipe™ housing need to be inspected frequently, at least every hour of operation (PiCo Pipe™ 1" at least every 30 minutes of operation). In case the rubber thickness decreased to less than 2 mm, the wear rubber inserts need to be replaced.

The following PiCo Pipe™ wear rubber kits are available:

11752 PiCo Pipe™ 1" Wear Rubber Kit

Wear rubber assembly to protect the inside of the PiCo Pipe™ 1" housing.

11753 PiCo Pipe™ 2" Wear Rubber Kit

Wear rubber assembly to protect the inside of the PiCo Pipe™ 2" housing.

11754 PiCo Pipe™ 3" Wear Rubber Kit

Wear rubber assembly to protect the inside of the PiCo Pipe™ 3" housing

11755 PiCo Pipe™ 4" Wear Rubber Kit

Wear rubber assembly to protect the inside of the PiCo Pipe™ 4" housing.

11756 PiCo Pipe™ 6" Wear Rubber Kit

Wear rubber assembly to protect the inside of the PiCo Pipe™ 6" housing.

11757 PiCo Pipe™ 8" Wear Rubber Kit

Wear rubber assembly to protect the inside of the PiCo Pipe™ 8" housing.

Wear parts can be ordered by contacting your local Pinovo representative or directly via Pinovo's website: <http://www.pinovo.com/spares-requisition.html>

Please use article number provided in this manual for your orders.

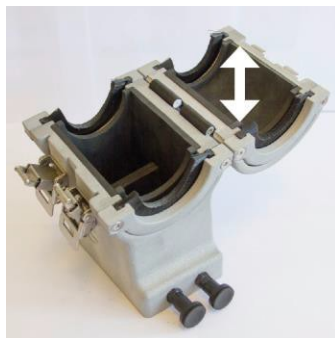
In order to replace the wear rubber, please, follow the instructions given below for the respective PiCo Pipe™ closed loop grit blasting tool:

PiCo Pipe™ 1"



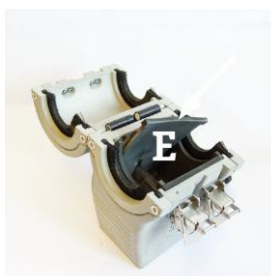
Replacement of upper wear rubber – back wall (Item 11619)

- Cut loose wear rubber
- Remove wear rubber
- Remove dirt from the tool
- Insert new wear rubber
- Glue wear rubber with a drop of instant adhesive (such as Loctite 460 or 406) to the back wall of the tool housing



Replacement of lower wear rubber insert (Item 11620)

- Remove wear rubber insert
- Remove dirt from the tool
- Insert new wear rubber insert
- No gluing needed



Complete replacement of upper wear rubber

- Cut loose wear rubber
- Remove all upper wear rubber parts
- Remove dirt from the tool
- Insert new wear rubber parts in shown assembly order (from A to F)
- Use a screw driver or similar tool to push the parts in place
- Glue wear rubber with 4 drops of instant adhesive (such as Loctite 460 or 406) to the tool housing as shown in the picture



PiCo Pipe™ 2", 3" & 4"




- Remove steel plate (PiCo Pipe™ 2" only)
- Cut loose wear rubber inserts
- Remove the two rubber inserts
- Remove dirt from the tool
- Insert new rubber inserts (A & C) and steel plate (B)
- Glue rubber inserts with a drop of instant adhesive (such as Loctite 460 or 406) to the side walls of the tool housing

PiCo Pipe™ 6" & 8"



- Cut loose wear rubber insert
- Remove the two rubber insert
- Remove dirt from the tool
- Add 2 – 3 drops of instant adhesive (such as Loctite 460 or 406) on the new insert (see picture)
- Insert new rubber insert
- Align nozzle holes of tool and insert
- Glue rubber inserts with 3 - 4 drops of instant adhesive (such as Loctite 460 or 406) to the side walls of the tool housing

7 TECHNICAL DATA

Size L x W x H (mm), excluding hoses and adapter	1": ca. 150 x 110 x 195 2": ca. 140 x 165 x 195 3": ca. 170 x 165 x 210 4": ca. 200 x 165 x 240 6": ca. 275 x 90 x 305 8": ca. 325 x 95 x 350
Nozzle Type	6.4 mm Venturi nozzle
ATEX conformity	CE  II 2G IIA T4

8 CONTACT

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