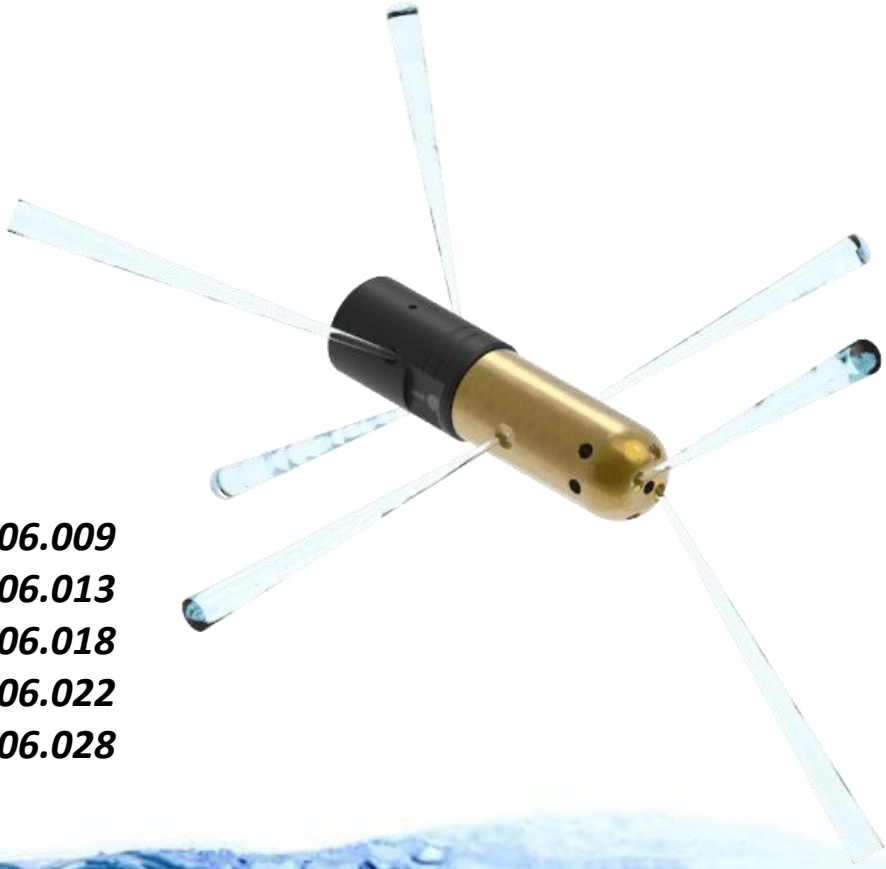
UC Nozzles



06.009
06.013
06.018
06.022
06.028

Operating Manual
English
December 24| Version 1.2

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Version	Revision	Date	Signature
1.0	created	November 20	fkr
1.1	UC 15 added	May 21	bbi
1.2	UC 15 removed	December 24	bbi

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Preface

Dear customer
Thank you for the trust you have placed in us by the choice of our product.
We would be more than pleased to receive any improvement suggestions and any constructive suggestions. We consider your cooperation as contribution to the optimum execution of our product and the corresponding documentation.

If you have any questions or suggestions, please contact our customer services directly:

enz® technik ag
Schwerzbachstrasse 10
CH-6074 Giswil / Switzerland

Tel. +41 41 676 77 66
info@enz.com
www.enz.com

Person responsible for the documentation:
Bryan Bieri (Tech. Support / Head of QM)

Changes and further developments due to technical progress as well as print errors are reserved.

Purpose of the document

These operating instructions serve to use our product in a comprehensive sense according to its intended use, correctly, effectively and safely. The users are informed about the risks, reasonably foreseeable misuse and residual risks.



Important!
Before using the product for the first time, read these original operating instructions, handle accordingly and keep them in a safe place for future reference.

Carefully read through the operating instructions before working with the cleaning tool. Make sure that it has been understood by all persons working with the product.

The operating instructions should be made available to the operating personnel at all times. It must be stored at an easily accessible location. If the operating instructions are lost or have been destroyed, a copy can be requested from your local dealer, direct from the manufacturer or printed out online.

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1 ⚠ Safety

1.1 ⚠ Consequences when disregarding the safety instructions

Disregarding the safety instructions may lead to accidents with serious personal injury, property or environmental damage.
The manufacturer is not liable for damage that results from disregarding the safety instructions.

1.2 ⚠ Target group

These operating instructions are intended for all persons that are involved in assembly, commissioning and operation of the pipe cleaning tool.

1.3 ⚠ Requirements on the user

All persons that are involved in the assembly, commissioning
and operation of the tool must ...

- be familiar with the cleaning work environment and have professional knowledge;
- be trained and instructed accordingly for the use of the product;
- have read and understood the operating instructions, in particular the chapter « ⚠ **Safety**».

If the personnel do not have the necessary knowledge, this must be trained. If necessary, this can be carried out by the manufacturer of the pipe cleaning tool.

Only the maintenance and repair activities described in these operating instructions may be carried out by users who fulfil the requirements specified. All other maintenance and repair work may only be carried out by qualified personnel of the manufacturer.



Observe the instructions in the chapter «**Maintenance**».

1.4 ⚠ Meaning of the general safety instructions

The general safety instructions in this chapter inform you about potential residual risks which, despite correct use of the product, may be permanently present or occur unexpectedly.
To avoid personal injury, property or environmental damage, it is essential that all persons working with the product observe the safety instructions. For these persons, it is therefore mandatory that this chapter is read and understood.

1.5 ⚠ Types of instructions in these operating instructions

	**DANGER!** Designates dangers which, if disregarded, will result in **death** or severe injuries!
	**WARNING!** Designates dangers which, if disregarded, may result in **death**, severe injuries and / or invalidity!
	**CAUTION!** Designates dangers which, if disregarded, may result in injuries and significant property, financial or environmental damage!
	Information for the technically correct and efficient use of the product.

1.6 ⚠ Intended use

Due to the high pressures and temperatures, there is a risk of property damage as well as a risk of injury for the user and other persons. For the correct and intended use of the product, the following points must be observed:

- ⚠ The product may only be operated using filtered fresh water. Filter size 0.005 mm or 0.001 mm (1 µm) and smaller.
- ⚠ The product may be used exclusively in pipes or pipe-like channels. In doing so, the profile to be cleaned must be closed and surrounded by material.
- ⚠ The product is suitable for operation in steel pipes.
- ⚠ Consult the manufacturer for use in pipes made of other materials.
- ⚠ The product may only be operated with correct hose connections free of faults.
- ⚠ During operation including setup and clearing work, the cleaning area (shaft, feed, etc.) must be sufficiently secured.
- ⚠ During operation, **no** persons may remain in the pipes or at the ends of the pipes.
- ⚠ The max. pressure specified on the nozzle may **not** be exceeded.
- ⚠ The dirty water may **not** be directed into streams or rivers.
- ⚠ Before putting into operation each time, the correct state of the product must be checked.
- ⚠ Defects must be rectified before putting into operation.
- ⚠ Only flawless tools may be used. (For nuts, use only matching spanners)
- ⚠ Secure hose lines in such a way that they cannot be damaged during operation.
- ⚠ Only accessory parts provided and approved by ***enz® technik ag*** may be used.

1.7 ⚠ Safety instructions for modifications

It is forbidden to carry out any conversions or modifications to the pipe cleaning tool. Only parts authorised by the manufacturer be used. The manufacturer is not liable for damage that results in conjunction with conversions to the product made at your own authority.

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1.8 ⚠ Personal protective equipment

Wearing personal protective equipment cannot influence or eliminate dangers. PPE can however reduce or eliminate the negative impacts of dangers to persons. They contribute significantly to avoiding accidents and occupational illnesses.



Breathing protection

Isolation device (breathing apparatus) for remaining in dangerous atmospheres and for rescue operations. Isolation devices for self-rescue (self-contained open-circuit compressed air breathing apparatus and regenerative devices) for remaining in channels and for first supply of persons injured.



Harness

Rescue harness or safety clothing with sewn-in neck eyelet. During the rescue operation, the rescue rope is attached to the neck eyelet. Lifting the injured person is carried out, e.g. By means of a rescue lifting device with automatic load backstop.



Protective clothing

Closed work clothing that protects against water jets, contamination of skin and possible infections.



Protective apron

At pressure ranges higher than 800 bar, a protective apron provides additional protection.



Suitable shoes

The safety shoes should, in particular, offer good support, anti-slip and leak proof as well as protect against water jets. At pressure ranges higher than 800 bar, protective gaiters provide additional protection.



Hand protection

Suitable gloves protect against hand injuries and contact against substances hazardous to health and contaminated water.



Hard hat

The hat protects the persons head against falling objects as well as against knocking against fixed components and objects.

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Face protection

A suitable face protection protects against water jets and contamination.



Ear protection

For noise which can damage hearing, e.g. ear protector capsules with integrated headset can be worn.



Eye protection

If there is a danger from splitters, splashing of hazardous substances, etc. eyes must be protected.



Gas detector

In event of possible poisonous vapours in work areas, a suitable gas detector may be useful.



Network-independent lighting

For example, a splash-proof torch or a lamp fixed to a hard hat must be carried.



Hose guard

With pressure ranges higher than 800 bar, a suitable hose guard (e.g. Made of Kevlar) provides additional protection against water jets.

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1.9 ⚠ General safety instructions



Danger! | High-pressure water jets

Defective products or incorrect operation of the product may generate dangers from splash water under pressure. Before operation, ensure the trouble-free state of the product. Powerful water jets may cause sever injuries or even sever limbs. Non-observance of the safety instructions may result in **death** or very serious injuries!



Danger! | Poisonous substances

Channels, pipes and tanks may contain poisonous vapours. Wear the prescribed protective equipment such as gas masks, gas alarms and rescue harnesses. Inhaling poisonous vapours or air contaminated with particles may result in **death** or very serious injuries from the particles penetrating into the lungs!



Danger! | Suspended load

In the working environment, there is a danger from suspended loads such as tools or objects on cranes to be cleaned. Never stand under suspended loads. **Death** or very serious injuries may result from objects falling down.



Danger! | Falling objects

In the area of open shafts, objects may fall into the shaft. When inserting the product, never remain directly under the shaft opening. Secure the shaft access against parts that may fall down. Do not throw any tools or objects into the shaft. Never access shafts that are in danger of collapsing. Persons could be buried. Non-observance of safety instructions may result in **death** or very serious injuries!



Warning! | Corrosive substances

Channels, pipes and tanks may contain unknown, corrosive or other harmful substances. Wear the respective protective clothing.. Use the prescribed protective equipment. Chemical burns to skin and eyes as well as infections with pathogens may be the consequence.

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Warning! | Risk of falling

In the area where work is carried out using the product, open shafts are to be expected. Open shafts must be indicated. Take care where you step. Persons falling may result in **death** or very serious injuries!



Warning! | Hand injuries

With a modification of the product, there is a risk of hand injuries from entrapment or abrasion. Wear gloves when working. Observe where you hold the product. Carry heavy devices with the assistance of a second person. If disregarded, this may result in crushing, abrasion up to the severing of limbs.



Caution! | Tipped objects

With a modification of the product, there is a risk of hand injuries from sharp edges. Wear gloves when working. Observe where you hold the product. If disregarded, this result in cut injuries to hands or other body parts.



Caution! | Risk of falling

In the area where work is carried out with the product, lines and objects are to be expected on the ground. Take care where you step. Keep the operating area clean and tidy. Falling caused by tripping may result in injury.



Caution! | Hot surfaces

The product may heat strongly during operation. This can result in burns.

1.10 Applied Standards and Directives

- Machinery Directive: 2006/42/EC
- EN1829-1:2018 High-pressure water jet machines - Safety requirements - Part 1: Machines
- EN1829-2:2008 High-pressure water jet machines - Safety requirements - Part 2: Hoses, hose lines and connectors
- EN ISO 4413:2010 Hydraulic fluid power - General rules and safety requirements for systems and their components
- Recommended procedure for the use of high-pressure water jet devices (WJTA-IMAC)
- Recommended procedure for high-pressure water jets (WJA)
- Industrial Cleaning Foundation (Stiftung Industrielle Reinigung)(The Netherlands) – SIR

2 Rights

2.1 Copyright

This manual may not be partially or completely copied, photocopied, reproduced, translated or converted in an electronically of machine-readable form without the prior written consent of **enz® technik ag**.

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2.2 Disclaimer

The manufacturer is not liable for damage that:

- has resulted in conjunction with modifications to the product carried out at your own authority.
- have resulted from disregarding the safety instructions.

2.3 Guarantee conditions

In line with our terms of sales and delivery, we issue a guarantee. However, the guarantee is omitted:

- When used under conditions stipulated otherwise by us.

- When using replacement or accessory parts that are not original from **enz® technik ag**.

- In event of damage caused by:
  - Incorrect use
  - Non-observance of the operating instructions
  - Unsuitable operating material
  - Routing of the hose or pipelines incorrectly or inappropriately
  - Changes, modifications or conversions to the product at your own authority.

3 Environment

3.1 Disposal

Old devices have valuable recyclable materials that should be recycled. Therefore, please dispose of old devices via enz® technik ag or suitable collecting points.

3.2 Environmental protection

Please observe that surfaces can only be cleaned where the composition is known. Chemicals or other poisonous substances must never be released to the environment. Take care to avoid excessive use or water. In this way, you help to protect natural resources.

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4 Technical data

4.1 Introduction

The enz® UC nozzles are designed especially for the internal cleaning of pipes up to 1,500 bar. They are suitable for the removal of the hardest deposits on pipes.
The UC nozzles are equipped with two radial jets for releasing deposits and polishing the wall of the pipe. The UC nozzles are also equipped with two semi-radial jets directed to the front for opening total blockages.
Due to the offer of different nozzle diameters and optional thrust, the nozzles cover a wide area of application.

4.2 Area of application

- Opening and polishing of small pipes (inner pipe cleaning)
- Also suitable in elbows due to the short design
- Especially suitable for heat exchangers
- Suitable for automatic as well as manual cleaning

4.3 Designation of the parts

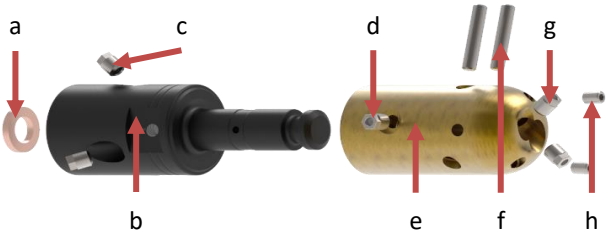

Figure 1: Designation of the parts

4.3.1 Legend

a	Copper disc	d	Nozzle insert, radial	g	Nozzle insert, front
b	Stator	e	Cross jet nozzle	h	Threaded pin
c	Nozzle insert, thrust	f	Cylinder pin	a	

4.4 Legend for technical data

	Connecting thread [“]		Rotating nozzles / bore
	Weight [kg]		Thrust jet
ØxL	Mass		Area of application
max	Maximum operating pressure		Min. flow as max. operating pressure
	Front jet		optional

Table 1: Legend for technical data

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4.5 UC9 male 06.009



Order no.						ØxL				max	
		mm	mm	mm	inch	mm	inch	l/min	US gpm	bar	psi
06.009-18-Ub-2	5/16" UNF male	4x0.45	-	12-18	0.5-0.7	9.5x46	0.4x1.8	15/18	4.0/4.8	1,000/1,500	14,500/22,000

Table 2: Technical data UC9 male

4.6 UC9 06.009



Order no.						ØxL				max	
		mm	mm	mm	inch	mm	inch	l/min	US gpm	bar	psi
06.009-18-M-2	M7	4x0.45	-	12-18	0.5-0.7	9.5x39	0.4x1.5	15/18	4.0/4.8	1,000/1,500	14,500/22,000
06.009-18-MS-2	M7	4x0.45	3x0.60	12-18	0.5-0.7	9.5x39	0.4x1.5	30/36	7.9/9.5	1,000/1,500	14,500/22,000
06.009-18-N-1	1/16" NPT	4x0.45	-	12-18	0.5-0.7	9.5x39	0.4x1.5	15	4.0	1,000	14,500
06.009-18-NS-1	1/16" NPT	4x0.45	3x0.60	12-18	0.5-0.7	9.5x39	0.4x1.5	30	7.9	1,000	14,500
06.009-18-U-2	1/4" x 28 UNF	4x0.45	-	12-18	0.5-0.7	9.5x39	0.4x1.5	15/18	4.0/4.8	1,000/1,500	14,500/22,000
06.009-18-US-2	1/4" x 28 UNF	4x0.45	3x0.60	12-18	0.5-0.7	9.5x39	0.4x1.5	30/36	7.9/9.5	1,000/1,500	14,500/22,000
06.009-18-UL-2	1/4" x 28 UNF LH	4x0.45	-	12-18	0.5-0.7	9.5x39	0.4x1.5	15/18	4.0/4.8	1,000/1,500	14,500/22,000
06.009-18-ULS-2	1/4" x 28 UNF LH	4x0.45	3x0.60	12-18	0.5-0.7	9.5x39	0.4x1.5	30/36	7.9/9.5	1,000/1,500	14,500/22,000

Table 3: Technical data UC9

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4.7 UC13 06.013



Order no.											
		mm	mm	mm	inch	mm	inch	l/min	US gpm	bar	psi
06.013-18-2	BSPP 1/8"	4x0.50	-	16-20	0.6-0.8	13x48	0.5x1.9	16/18	4.2/4.8	1,000/1,500	14,500/22,000
06.013-18-S-2	BSPP 1/8"	4x0.50	3x0.60	16-20	0.6-0.8	13x48	0.5x1.9	28/36	7.4/9.5	1,000/1,500	14,500/22,000
06.013-18-N-1	1/8"NPT	4x0.50	-	16-20	0.6-0.8	13x48	0.5x1.9	16	4.2	1,000	14,500
06.013-18-NS-1	1/8"NPT	4x0.50	3x0.60	16-20	0.6-0.8	13x48	0.5x1.9	28	7.4	1,000	14,500
06.013-18-UA-2	1/4" x 28 UNF	4x0.50	-	16-20	0.6-0.8	13x48	0.5x1.9	16/18	4.2/4.8	1,000/1,500	14,500/22,000
06.013-18-UAS-2	1/4" x 28 UNF	4x0.50	3x0.60	16-20	0.6-0.8	13x48	0.5x1.9	28/36	7.4/9.5	1,000/1,500	14,500/22,000
06.013-18-UAL-2	1/4" x 28 UNF LH	4x0.50	-	16-20	0.6-0.8	13x48	0.5x1.9	16/18	4.2/4.8	1,000/1,500	14,500/22,000
06.013-18-UALS-2	1/4" x 28 UNF LH	4x0.50	3x0.60	16-20	0.6-0.8	13x48	0.5x1.9	28/36	7.4/9.5	1,000/1,500	14,500/22,000
06.013-18-UB-2	3/8" x 24 UNF	4x0.50	-	16-20	0.6-0.8	13x48	0.5x1.9	16/18	4.2/4.8	1,000/1,500	14,500/22,000
06.013-18-UBS-2	3/8" x 24 UNF	4x0.50	3x0.60	16-20	0.6-0.8	13x48	0.5x1.9	28/36	7.4/9.5	1,000/1,500	14,500/22,000
06.013-18-UBL-2	3/8" x 24 UNF LH	4x0.50	-	16-20	0.6-0.8	13x48	0.5x1.9	16/18	4.2/4.8	1,000/1,500	14,500/22,000
06.013-18-UBLS-2	3/8" x 24 UNF LH	4x0.50	3x0.60	16-20	0.6-0.8	13x48	0.5x1.9	28/36	7.4/9.5	1,000/1,500	14,500/22,000

Table 4: Technical data UC13

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Order no.		mm	mm	mm	inch	mm	inch	l/min	US gpm	bar	psi
06013-30-2	BSPP 1/8"	4x0.70		16-20	0.6-0.8	13x48	0.5x1.9	24/30	6.3/7.9	1,000/1,500	14,500/22,000
06.013-30-S-2	BSPP 1/8"	4x0.70	3x0.60	16-20	0.6-0.8	13x48	0.5x1.9	42/52	11.1/13.7	1,000/1,500	14,500/22,000
06.013-30-N-1	1/8"NPT	4x0.70		16-20	0.6-0.8	13x48	0.5x1.9	24	6.3	1,000	14,500
06.013-30-NS-1	1/8"NPT	4x0.70	3x0.60	16-20	0.6-0.8	13x48	0.5x1.9	42	11.1	1,000	14,500
06.013-30-UA-2	1/4" x 28 UNF	4x0.70		16-20	0.6-0.8	13x48	0.5x1.9	24/30	6.3/7.9	1,000/1,500	14,500/22,000
06.013-30-UAS-2	1/4" x 28 UNF	4x0.70	3x0.60	16-20	0.6-0.8	13x48	0.5x1.9	42/52	11.1/13.7	1,000/1,500	14,500/22,000
06.013-30-UAL-2	1/4" x 28 UNF LH	4x0.70		16-20	0.6-0.8	13x48	0.5x1.9	24/30	6.3/7.9	1,000/1,500	14,500/22,000
06.013-30-UALS-2	1/4" x 28 UNF LH	4x0.70	3x0.60	16-20	0.6-0.8	13x48	0.5x1.9	42/52	11.1/13.7	1,000/1,500	14,500/22,000
06.013-30-UB-2	3/8" x 24 UNF	4x0.70		16-20	0.6-0.8	13x48	0.5x1.9	24/30	6.3/7.9	1,000/1,500	14,500/22,000
06.013-30-UBS-2	3/8" x 24 UNF	4x0.70	3x0.60	16-20	0.6-0.8	13x48	0.5x1.9	42/52	11.1/13.7	1,000/1,500	14,500/22,000
06.013-30-UBL-2	3/8" x 24 UNF LH	4x0.70		16-20	0.6-0.8	13x48	0.5x1.9	24/30	6.3/7.9	1,000/1,500	14,500/22,000
06.013-30-UBLS-2	3/8" x 24 UNF LH	4x0.70	3x0.60	16-20	0.6-0.8	13x48	0.5x1.9	42/52	11.1/13.7	1,000/1,500	14,500/22,000

Table 5: Technical data UC13

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4.8 UC18 05.018



Order no.						ØxL				max	
		mm	mm	mm	inch	mm	inch	l/min	US gpm	bar	psi
06.018-30-A-2	BSPP 1/8"	4x0.50	-	22-25	0.9-1.0	18x65	0.7x2.6	20/24	5.3/6.3	1,000/1,500	14,500/22,000
06.018-30-AS-2	BSPP 1/8"	4x0.50	3xM3	22-25	0.9-1.0	18x65	0.7x2.6	33/44	8.7/11.6	1,000/1,500	14,500/22,000
06.018-30-B-2	BSPP 1/4"	4x0.50	-	22-25	0.9-1.0	18x65	0.7x2.6	23/30	5.3/6.3	1,000/1,500	14,500/22,000
06.018-30-BS-2	BSPP 1/4"	4x0.50	3xM3	22-25	0.9-1.0	18x65	0.7x2.6	36/50	8.7/11.6	1,000/1,500	14,500/22,000
06.018-30-NB-1	1/4" NPT	4x0.50	-	22-25	0.9-1.0	18x65	0.7x2.6	20	5.3	1,000	14,500
06.018-30-NBS-1	1/4" NPT	4x0.50	3xM3	22-25	0.9-1.0	18x65	0.7x2.6	33	8.7	1,000	14,500
06.018-30-UBL-2	3/8" x 24 UNF LH	4x0.50	-	22-25	0.9-1.0	18x65	0.7x2.6	20/24	5.3/6.3	1,000/1,500	14,500/22,000
06.018-30-UBLS-2	3/8" x 24 UNF LH	4x0.50	3xM3	22-25	0.9-1.0	18x65	0.7x2.6	33/44	8.7/11.6	1,000/1,500	14,500/22,000
06.018-30-UC-2	9/16" x 18 UNF	4x0.50	-	22-25	0.9-1.0	18x65	0.7x2.6	20/24	5.3/6.3	1,000/1,500	14,500/22,000
06.018-30-UCS-2	9/16" x 18 UNF	4x0.50	3xM3	22-25	0.9-1.0	18x65	0.7x2.6	33/44	8.7/11.6	1,000/1,500	14,500/22,000
06.018-30-UCL-2	9/16" x 18 UNF LH	4x0.50	-	22-25	0.9-1.0	18x65	0.7x2.6	20/24	5.3/6.3	1,000/1,500	14,500/22,000
06.018-30-UCLS-2	9/16" x 18 UNF LH	4x0.50	3xM3	22-25	0.9-1.0	18x65	0.7x2.6	33/44	8.7/11.6	1,000/1,500	14,500/22,000

Table 6: Technical data UC18

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Order no.						ØxL				max	
		mm	mm	mm	inch	mm	inch	l/min	US gpm	bar	psi
06.018-50-A-2	BSPP 1/8"	4x0.75	-	22-25	0.9-1.0	18x65	0.7x2.6	35/45	9.2/10.6	1,000/1,500	14,500/22,000
06.018-50-AS-2	BSPP 1/8"	4x0.75	3xM3	22-25	0.9-1.0	18x65	0.7x2.6	52/67	13.7/17.7	1,000/1,500	14,500/22,000
06.018-50-B-2	BSPP 1/4"	4x0.75	-	22-25	0.9-1.0	18x65	0.7x2.6	35/45	9.2/10.6	1,000/1,500	14,500/22,000
06.018-50-BS-2	BSPP 1/4"	4x0.75	3xM3	22-25	0.9-1.0	18x65	0.7x2.6	52/67	13.7/17.7	1,000/1,500	14,500/22,000
06.018-50-NB-1	1/4" NPT	4x0.75	-	22-25	0.9-1.0	18x65	0.7x2.6	35	9.2	1,000	14,500
06.018-50-NBS-1	1/4" NPT	4x0.75	3xM3	22-25	0.9-1.0	18x65	0.7x2.6	52	13.7	1,000	14,500
06.018-50-UBL-2	3/8" x 24 UNF LH	4x0.75	-	22-25	0.9-1.0	18x65	0.7x2.6	35/45	9.2/10.6	1,000/1,500	14,500/22,000
06.018-50-UBLS-2	3/8" x 24 UNF LH	4x0.75	3xM3	22-25	0.9-1.0	18x65	0.7x2.6	52/67	13.7/17.7	1,000/1,500	14,500/22,000
06.018-50-UC-2	9/16" x 18 UNF	4x0.75	-	22-25	0.9-1.0	18x65	0.7x2.6	35/45	9.2/10.6	1,000/1,500	14,500/22,000
06.018-50-UCS-2	9/16" x 18 UNF	4x0.75	3xM3	22-25	0.9-1.0	18x65	0.7x2.6	52/67	13.7/17.7	1,000/1,500	14,500/22,000
06.018-50-UCL-2	9/16" x 18 UNF LH	4x0.75	-	22-25	0.9-1.0	18x65	0.7x2.6	35/45	9.2/10.6	1,000/1,500	14,500/22,000
06.018-50-UCLS-2	9/16" x 18 UNF LH	4x0.75	3xM3	22-25	0.9-1.0	18x65	0.7x2.6	52/67	13.7/17.7	1,000/1,500	14,500/22,000
06.018-70-B-2	BSPP 1/4"	4x0.90	-	22-25	0.9-1.0	18x65	0.7x2.6	48/56	12.7/14.8	1,000/1,500	14,500/22,000
06.018-70-BS-2	BSPP 1/4"	4x0.90	3xM3	22-25	0.9-1.0	18x65	0.7x2.6	78/96	20.6/25.4	1,000/1,500	14,500/22,000
06.018-70-NB-1	1/4" NPT	4x0.90	-	22-25	0.9-1.0	18x65	0.7x2.6	48	12.7	1,000	14,500
06.018-70-NBS-1	1/4" NPT	4x0.90	3xM3	22-25	0.9-1.0	18x65	0.7x2.6	78	20.6	1,000	14,500
06.018-70-UBL-2	3/8" x 24 UNF LH	4x0.90	-	22-25	0.9-1.0	18x65	0.7x2.6	48/56	12.7/14.8	1,000/1,500	14,500/22,000
06.018-70-UBLS-2	3/8" x 24 UNF LH	4x0.90	3xM3	22-25	0.9-1.0	18x65	0.7x2.6	78/96	20.6/25.4	1,000/1,500	14,500/22,000
06.018-70-UC-2	9/16" x 18 UNF	4x0.90	-	22-25	0.9-1.0	18x65	0.7x2.6	48/56	12.7/14.8	1,000/1,500	14,500/22,000
06.018-70-UCS-2	9/16" x 18 UNF	4x0.90	3xM3	22-25	0.9-1.0	18x65	0.7x2.6	78/96	20.6/25.4	1,000/1,500	14,500/22,000
06.018-70-UCL-2	9/16" x 18 UNF LH	4x0.90	-	22-25	0.9-1.0	18x65	0.7x2.6	48/56	12.7/14.8	1,000/1,500	14,500/22,000
06.018-70-UCLS-2	9/16" x 18 UNF LH	4x0.90	3xM3	22-25	0.9-1.0	18x65	0.7x2.6	78/96	20.6/25.4	1,000/1,500	14,500/22,000

Table 7: technical data UC18

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4.9 UC22 05.022



Order no.						ØxL				max	
		mm	mm	mm	inch	mm	inch	l/min	US gpm	bar	psi
06.022-A-2	BSPP 1/4"	4xM4	-	26-30	1.0-1.2	22x73	0.9x2.9	25/30	6.6/7.9	1,000/1,500	14,500/22,000
06.022-AS-2	BSPP 1/4"	4xM4	3xM4	26-30	1.0-1.2	22x73	0.9x2.9	40/50	10.6/13.2	1,000/1,500	14,500/22,000
06.022-NA-1	1/4" NPT	4xM4	-	26-30	1.0-1.2	22x73	0.9x2.9	25	6.6	1,000	14,500
06.022-NAS-1	1/4" NPT	4xM4	3xM4	26-30	1.0-1.2	22x73	0.9x2.9	40	10.6	1,000	14,500
06.022-NB-1	3/8" NPT	4xM4	-	26-30	1.0-1.2	22x73	0.9x2.9	25	6.6	1,000	14,500
06.022-NBS-1	3/8" NPT	4xM4	3xM4	26-30	1.0-1.2	22x73	0.9x2.9	40	10.6	1,000	14,500
06.022-UB-2	9/16" x 18 UNF	4xM4	-	26-30	1.0-1.2	22x73	0.9x2.9	25/30	6.6/7.9	1,000/1,500	14,500/22,000
06.022-UBS-2	9/16" x 18 UNF	4xM4	3xM4	26-30	1.0-1.2	22x73	0.9x2.9	40/50	10.6/13.2	1,000/1,500	14,500/22,000
06.022-UBL-2	9/16" x 18 UNF LH	4xM4	-	26-30	1.0-1.2	22x73	0.9x2.9	25/30	6.6/7.9	1,000/1,500	14,500/22,000
06.022-UBLS-2	9/16" x 18 UNF LH	4xM4	3xM4	26-30	1.0-1.2	22x73	0.9x2.9	40/50	10.6/13.2	1,000/1,500	14,500/22,000

Table 8: Technical data UC22

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4.10 UC28 05.028



Order no.						ØxL				max	
		mm	mm	mm	inch	mm	inch	l/min	US gpm	bar	psi
06.028-A-2	BSPP 1/4"	4xM4	-	30-42	1.2-1.7	28x83	1.1x3.3	25/30	6.6/7.9	1,000/1,500	14,500/22,000
06.028-AS-2	BSPP 1/4"	4xM4	3xM4	30-42	1.2-1.7	28x83	1.1x3.3	40/50	10.6/13.2	1,000/1,500	14,500/22,000
06.028-B-2	BSPP 3/8"	4xM4	-	30-42	1.2-1.7	28x83	1.1x3.3	25/30	6.6/7.9	1,000/1,500	14,500/22,000
06.028-BS-2	BSPP 3/8"	4xM4	3xM4	30-42	1.2-1.7	28x83	1.1x3.3	40/50	10.6/13.2	1,000/1,500	14,500/22,000
06.028-NB-1	3/8" NPT	4xM4	-	30-42	1.2-1.7	28x83	1.1x3.3	25	6.6	1,000	14,500
06.028-NBS-1	3/8" NPT	4xM4	3xM4	30-42	1.2-1.7	28x83	1.1x3.3	40	10.6	1,000	14,500
06.028-UB-2	9/16" x 18 UNF	4xM4	-	30-42	1.2-1.7	28x83	1.1x3.3	25/30	6.6/7.9	1,000/1,500	14,500/22,000
06.028-UBS-2	9/16" x 18 UNF	4xM4	3xM4	30-42	1.2-1.7	28x83	1.1x3.3	40/50	10.6/13.2	1,000/1,500	14,500/22,000
06.028-UBL-2	9/16" x 18 UNF LH	4xM4	-	30-42	1.2-1.7	28x83	1.1x3.3	25/30	6.6/7.9	1,000/1,500	14,500/22,000
06.028-UBLS-2	9/16" x 18 UNF LH	4xM4	3xM4	30-42	1.2-1.7	28x83	1.1x3.3	40/50	10.6/13.2	1,000/1,500	14,500/22,000

Table 9: Technical data UC28

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5 Installation

5.1 Equipping

To match the UC nozzle optimally to the pump, enz® technik ag needs the following parameters for each order:

- Pumping capacity: l/min US gpm
- Pump pressure: bar psi
- Hose diameter: mm inch
- Hose length: m feet
- Hose material: Plastic Rubber



If changes are made to the parameter, you should re-calibrate the tool.

5.2 Assembly of the tools

The UC nozzle is delivered ready for operation. After unpacking, check , that the delivery is complete. Then the UC nozzle is screwed onto the high-pressure hose or the lance. An additional copper washer is enclosed as seal in the stator for metric and BSPP threads. The different thread dimensions can be viewed in chapter «Technical data» from page **14**.

As standard, the tool rotates counter-clockwise. This means that it cannot be disconnected from the hose during operation.

5.3 Preparation work

Before use, we recommend clarifying several points. Knowledge of the following points are useful for the preparation and setting of the tool:

- Pipe run
- Internal diameter of the pipe to be processed
- Material quality of the pipe to be processed
- Type of contamination in the pipe
- Access possibilities to the pipe

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5.4 Setting up the workplace

Before starting work, the following measures must be taken:

- ⚠ Install any barriers and protective equipment (Triopan warning sign, fencing ropes, etc.).
- ⚠ Obtain the necessary information about the waste water introduced to the pipe (chemical substances, gases, vapours, etc.).
- ⚠ The necessary measuring devices such as explosimeter, oxygen meter, gas alarm, etc. must be ready for use.
- ⚠ The working area must be cordoned off such that there is no danger for other persons.
- ⚠ Make sure that the suitable nozzles are present for the pipe cleaning. The area of application of each nozzle is apparent in chapter “Technical data”, from page **14**.
- ⚠ The pipe run (plans) must be known before starting work in order to prevent the nozzle from exiting at the end of the line. Possible exit location must be monitored by support staff.
- ⚠ The surface of the workplace must be clean and have sufficient grip, loose obstructions at the workplace must be removed.
- ⚠ Ensure that the workplace is sufficiently illuminated.
- ⚠ The workplace must be dimensioned such that the high-pressure blaster has sufficient freedom of movement and can assume a stable working posture.
- ⚠ The workplace must ensure that water can drain or run away.
- ⚠ Scaffolding must be fixed, stable and secured against tipping, moving and falling over.
- ⚠ Work platforms must be setup in a stable manner and must not be moved by the cleaning work.
- ⚠ Scaffolding and work platforms must comply with the standards on occupational protection and may only be installed by trained specialist personnel.
- ⚠ Before starting work, the high-pressure machine operator and high-pressure blaster must agreed clearly defined hand signals for switching the high-pressure system on and off as under certain circumstances, acoustic communication may not function due to the noise level.
- ⚠ Loose parts to be cleaned must be secured before commencing work.

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6 Operation

6.1 Operating principle

The rotor (1) is suspended on the stator (2) by a thin film of water. The UC nozzles have four jets on the rotor (1). The two radial drive jets (3) drive the UC nozzle, loosen the deposits on the pipe wall and polish this at the same time. The two front jets (4) loosen deposits to the front and are particularly suitable for total blockages. The optional thrust jets (5) ensure for sufficient pulling force in case the US nozzle has been screwed onto a hose.

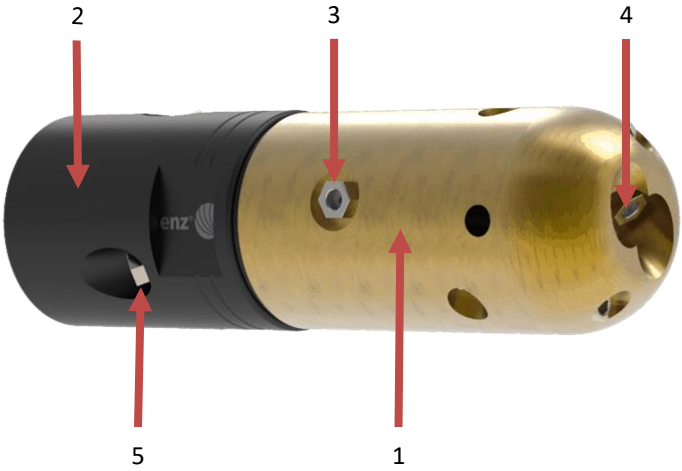

Figure 2: Operating principle of the UC nozzles

6.2 Work methods

Generally, the safest method should be selected. The following belong to the different methods:

- fully automated cleaning
- semi-automatic cleaning
- manual cleaning when using a spiral with stop ring and hose catcher

6.3 Operating the UC nozzle

1. Flush the entire system.
2. Measure the length of the pipe to be cleaned (marking on the shaft) and check this during cleaning.
3. Screw the UC nozzle onto the high-pressure hose or the lance.
4. Push the entire length of the tool into the pipe to be cleaned.
5. Increase the pressure to the work pressure.
6. Start cleaning the pipe.
7. When pulling the nozzle back, continue running the water. This prevent dirty water running into the inside of the UR nozzle through the openings.

Operation of the UC nozzles is possible only when using a hose retention system. This prevents the UC nozzle from exiting the pipe during operation.



DANGER!

UC nozzles must never be operated outside of pipes. This may result in death or very serious injuries.



DANGER!

The maximum work pressure must never be exceeded; there is potential mortal danger (see “Technical data” from page **14**).

If the nozzle ruptures, walls of the pipe may be pierced through and parts thrown away at high speed.



DANGER!

Operation of high-pressure water jet systems directly under or in the vicinity of high-voltage plants is forbidden. This may result in death or very serious injuries.

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DANGER!

When working in closed rooms, poisonous vapours may accumulate. Wear the prescribed protective equipment such as gas masks, gas alarms. Inhaling poisonous vapours or air contaminated with particles may result in **death** or very serious injuries from the particles penetrating into the lungs!



WARNING!

When working with high-pressure water jets, an emergency escape person who maintains permanent visual contact with the high-pressure cleaner during the cleaning is absolutely essential.



CAUTION!

Work only with filtered water (filter size 0.005 mm or 0.001 mm (1 µm) and smaller). This may result in over pressure caused by blockages.



To increase safety during work, we recommend using a hose breakage protection.



With strongly contaminated pipes we recommend that , the tool is pulled back at regular distances. The prevents clogging from fragments and detached material.



When cleaning with hot water (max. 100°C) or additives, it must be observed that the entire system must be suitable for this.



After use, blast through the tools with compressed air and dry them up. Then preserve the tool with Motorex Oil Spray Bio (C191).

7 Maintenance

The maintenance and repair activities described in these operating instructions may only be carried out by users who have the necessary knowledge.

7.1 Changing the nozzle inserts

After being used each time, the nozzle inserts must be checked visually for damage in order to guarantee an optimum cleaning performance. The wear depends on the degree of contamination of the water used.



CAUTION!

Worn nozzle inserts impair the cleaning performance and there is an increased risk when working with higher pressures. This can result in damage to the tool.

Another reason to change nozzle inserts is a repositioning. In this case, the JetCalc must be used for determination of the nozzle inserts.

Follow the next steps in order to replace the nozzle inserts:

1. Clean the nozzle insert. During the approx. 10 seconds, heat it with the gas torch (C158).



2. Disassemble the nozzle insert using the socket spanner WAF3.5 (C104 or C261).

With the UC18, the nozzle inserts must be loosened using socket spanner WAF3 (C100).



3. Clean the threaded hole and the new nozzle insert, e.g. with acetone.



4. Coat the thread of the nozzle insert with Loctite 638 (C109).



5. Assembling the nozzle insert using the socket spanner WAF3.5 (C104 or C261).

With the UC18, the nozzle inserts must tightened using socket spanner WAF3 (C100).



6. Leave the adhesive to harden for at least 48 hours at room temperature (approx. 22°C).

Table 10: Changing the nozzle inserts

	**CAUTION!** The nozzle inserts must be replaced by identical nozzle inserts. This can result in the speed and kick-back force changing.
	**CAUTION!** Never use a pipe wrench or pliers with teeth. These may damage the tool or the hose. This may lead to the tool bursting during operation.

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The nozzle inserts and the female thread on the tool must be clean, dry and free from oil and grease.

7.2 Care

The UC nozzles must be thoroughly cleaned after being used each time. After cleaning, the UC nozzles must be lubricated with Motorex Oil Spray Bio (C191) to protect them against corrosion.

7.3 Storage

The UC nozzles must be stored in a dry location protected from dust. We recommend using a plastic container with lid.

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8 Spare parts / Accessories

8.1 Nozzle inserts

Figure	Designation	Article number
	Nozzle insert M4	22.04
	Nozzle insert M3	22S

Table 11: Nozzle inserts

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8.2 Maintenance

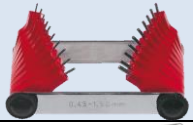
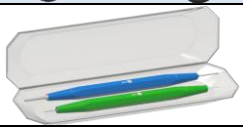
Figure	Designation	Article number
	Wiha socket wrench 3.5 mm	C104
	Futuro socket wrench 3.5 mm	C261
	Wiha socket wrench 265 3 mm	C100
	Gas torch	C158
	Oil Spray Bio	C191
	Loctite 638 50 ml	C109
	Nozzle gauge with 20 pins 0.45-1.50 mm	C200
	Nozzle cleaning set	C202

Table 12: Maintenance accessories

9 Directory

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10 Notes



enz® technik ag
Schwerzbachstrasse 10
CH-6074 Giswil / Switzerland
Tel. +41 41 676 77 66
info@enz.com
www.enz.com