PNR ITALIA
LIQUIDS PULVERIZATION TECHNOLOGIES
FIRE-FIGHTING COMPONENTS
AND EQUIPMENTS

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USER MANUAL

Equipment: cleaning spray heads
Model ATEX: UBA - UBC - UBD - UBF

MANUAL AND MANUAL PARTS REVISIONS MATRIX

SECTION OF THE MANUAL	Revision	Date	Revision	Date	Revision	Date
Index	0.0	28/06/2013				
Chapter 0	0.0	28/06/2013				
Chapter 1	0.0	28/06/2013				
Chapter 2	0.0	28/06/2013				
Chapter 3	0.0	28/06/2013				
Chapter 4	0.0	28/06/2013				
Chapter 5	0.0	28/06/2013				
Chapter 6	0.0	28/06/2013				

Date	28/06/2013
Signature	

The Customer is responsible to make sure that, if this document undergoes any changes by the Manufacturer, only the updated versions of this Manual are actually available in the location where the equipment is being used.

THE OFFICIAL LANGUAGE CHOSEN BY THE MANUFACTURER IS **ITALIAN**

We will not accept any liability for translations in other languages that do not correspond to the original text of this Manual.

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0 FOREWORD

1 PURPOSE OF THE USER MANUAL

This manual is designed to provide the user with a general understanding and knowledge of the equipment and to enable its use in a safe condition.
The word "equipment" refers to the Single-axis Rotary Cleaning Heads for industrial washing systems, commercially known as "Cleaning Spray Heads" model ATEX series:
UBA-UBC-UBD-UBF and PNR encoding as described here below:

PNR PRODUCTS ENCODING												
UB X	/ Y	_ _ _ _	M M	w	z							
						Connections	C-N-B	G-C-S	G-N	N-G		
						Cover	D-E	A-B-C-D-E	A-B-E	LG-LN -E	B-D-E	B-D-E
						Construction material	B31	L61 B31	B31	L61 B31	L61 B31	L61 B31
						Capacity	N	N - L	N	N	L	L
						Subtype	==	==	==	==	/A	/S
						Type	UBA	UBC	UBD	UBF	UBF	UBF

Connections		Cover		Material		Capacity (litres/minute)					
C	Clip	A	180° up	Body		First digit	Number (N)	position of the decimal point			
N	NPT	B	180° down	B31	Stainless steel		*Example: 3210*	*210,0*			
B	Rc	C	270° up	L61	Hastelloy		Letter (L)	subtype			
G	gas – threaded connection	D	270° down	Bearings UBA–UBD-UBF		Altre tre cifre	Capacity at 3 bar in litres/minute				
S	welding connection	E	360°	E1	PTFE	**Pressure (bar)**					
		LG	100° Lateral	Bearings UBC		UBA	UBC	UBD	UBF	UBF/A	UBF/S
		LN	105° Lateral	B31	Stainless steel	3-5-7-10	2-3-5-7	2-3-4-5-7	2-3-7	2-3-4	2-3-4

This User Manual is an integral part of the equipment and its purpose is to provide all the information necessary to:

- a reference to the information necessary for the CE marking of the equipment, except for the serial number, as well as all relevant information to facilitate its maintenance (eg. address of the importer, repairer, etc.);
- description of the intended use of the equipment;
- a summary of the identified risks and of the preventive and/or protection measures to be used;
- instructions for a safe use:
  i. all the parts of the related instructions for the explosions protection among which for example the procedures to be adopted before the startup and during the operating life and use to ensure a safe use of the equipments;
  ii. startup;
  iii. use ;
  iv. installation, assembly and disassembly;
  v. maintenance
- if applicable, the indication of possible particular risks arising from the use of the device;
- if applicable, training instructions;
- the data that allow a decision to be taken beyond any doubt as to wether an equipment of a certain category can be safely used in a particular place under the foreseen operating conditions;

NOTE: these information are necessary for evaluating the danger of ignition. Occasionally a manufacturer will be aware of the dangers of ignition that may derive from the process, which cannot be controlled by the design of the equipment/device. In this case the manufacturer must inform the user that additional precautions will be necessary.

- pressure parameters, maximum surface temperatures or other limit values;
- if applicable, particular conditions of use, including possible misuses, which experience has proved may occur;
- where necessary, the essential characteristics of the accessories that can be mounted on the unit.

These instructions contain text, drawings and diagrams that are necessary for the start up, maintenance, inspection, check of correct operation, and, if applicable, to repair the systems, as well as all useful instructions, in particular with regard to safety.

This document assumes that, in the systems where the equipment must be installed, the current safety and hygiene standards are strictly observed.

The person in charge, in compliance with the Regulations in force, is required toread carefully the contents of this User Manual and have it read by the responsible operators and maintenance technicians, for what concerns the parts pertaining to them.

The instructions, documentation and drawings contained in this Manual are of a confidential technical nature, strictly owned by the Manufacturer and therefore, beyond the purposes for which it was created, any reproduction wether in whole or partial of its contents and/or format, must be made prior the consent of the Manufacturer.

2 ADRESSEES

This User Manual is addressed to the installer, operator/user and to the personnel qualified for the use and maintenance of the piece of equipment, which is intended for industrial use, so that its use is restricted to qualified operators and expert technicians who, in particular:

- are full age;
- are physically and mentally suitable to perform work of a particularly difficult technical nature;
- are properly trained in the use and maintenance of the equipment;
- have been considered suitable by the employer to carry our the tasks that were entrusted to them;

- are able to understand and interpret the operator and the safety regulations;
- know the emergency procedures and their implementation;
- have thoroughly understood the operating procedures defined by the Manufacturer of the equipment.

QUALIFIED PERSONNEL means those members of the staff who, for their education and professional expertise, have been expressely authorized to carry out the installation, the use and maintenance of the equipment.

3 RETENTION OF THE USER MANUAL

This User Manual must be carefully retained and must always follow the equipment in all the changes of property that may occur during its operating life cycle.

The retaining of the Manual must be favoured by handling it with care, with clean hands and not laying it on dirty surfaces.

No part of the Manual must be removed, torn or arbitrarily changed for any reason.

The Manual must be stored in a safe place protected from moisture and heat and kept in the close vicinity of the equipment to which it refers.

4 REVISION OF THE USER MANUAL

The Manufacurer considers himself liable only and exclusively for the Instructions drawn up and validated by himself (Original Instructions); any translation MUST always be accompanied by the Original Instructions, in order to be able to verify the correctness of the translation. In any case the Manufacturer shall not be liable for translations that are not approved by the Manufacturer himself, so, if any inconsistency is noticed, one should pay attention to the original language of the Manual and, if necessary, contact the Manufacturer who will then make the necessary changes.

The Manufacturer reserves the right to modify the project, make changes/improvements to the equipment and revise the User Manual without notice to Customers.

However, in the event of changes to the equipment already installed at the Customer, previously agreed with the Manufacturer and involving the adjustment of one or more chapters of the User Manual, the Manufacturer will take care of sending the Customer the modified parts of the Manual, along with the new comprehensive review of the same. The Customer, following the instructions supplied with the revised documentation, shall be responsible for the replacement in all the copies of the Manual in his hands of all the parts that are no longer valid with the new ones.

5 HOW TO READ THE USER MANUAL

The Manual is divided in chapters, each one dedicated to a specific category of information and then addresses to those operators whose specific skills have been defined.

To make the text immediately comprehensible, the meaning of the used words, abbreviations and pictograms, is explained in Paragraph 6.

NUMBERING OF THE FIGURES

Each figure is progressively numbered.

The numbering is devised as follows:

Example Figure 0.1.2

Figure	0	.	1	.	2
	↓		↓		↓
	Chapter	.	Paragraph	.	Progressive number

The progressive number restarts from 1 at each new paragraph.

NUMBERING OF THE TABLES

Each table is progressively numbered.
The numbering is devised as follows:
Example Table 0.1.2

Table	0	-	1	.	2
	↓		↓		↓
	Chapter	-	Paragraph	.	Progressive number

The progressive number restarts from 1 at each new paragraph.

ABBREVIATIONS

Chap. = Chapter
Sec. = Section
Fig. = Figure
Par. = Paragraph
Pag. = Page
Tab. = Table

UNITS OF MEASUREMENT

The units of measurement are those set in the International System (**IS**).

Sizes	Units of Measur.	Symbol	Used	Conversion
Time interval	second	s	Hour minute	1h = 3600s 1 min = 60s
Length	metre	m		
Mass	kilogram	kg		
Temperature	Kelvin	K	Celsius degrees	1K = 273°C
Volume	Cubic decimeter	dm^3	litre	1 dm3 = 1 l
Strength	newton	N		1 N = 1 kg m s^{-2}
Pressure	pascal	Pa		1 Pa = 1 N m^{-2} 10000 Pa =1bar
Work, energy, heat amount	joule	J		1 J = 1 N m
Power	watt	W		1 W = 1 J s^{-1}
Capacity	litres per minute	l/min		

6 DEFINITIONS

ATEX DIRECTIVE 94/9/CE (ART. 1 PARAGRAPH 3 AND 4 DEFINITIONS)

.....

3. For the purposes of this Directive the following definitions shall apply:

Equipment and protective systems intended for use in potentially explosive atmospheres

a) **"Equipment"** means machines, apparatus, fixed or mobile devices, control components and instrumentation thereof and detection or prevention systems which, separately or jointly, are intended for the generation, transfer, storage, measurement, control and conversion of energy for the processing of material and which are capable of causing an explosion through their own potential sorces of ignition.

b) **"Protective systems"** means devices, different from the equipments components here above defined, which are intended to halt incipient explosions and/or to limit the area at risk, and which are separately placed on the market for use as autonomous systems.

c) "Components" means any item essential to the safe functioning of equipment and protective systems, but with no autonomous function.

Explosive atmospheres: Mixture with air, under atmospheric conditions, of flammable substances in the form of gas, vapours, mists or dusts in which, after ignition has occurred, combustion spreads to the entire unburned mixture.

Potentially explosive atmosphere: An atmosphere which could become explosive due to local and operational contitions.

Equipment groups and categories

Equipment group I applies to equipment intended for use in underground parts of mines, and to those parts of surface installations of such mines, liable to be endangered by firedamp and/or combustible dust.

Equipment group II applies to equipment intended for use in other places liable to be endangered by explosive atmospheres.

The categories of equipment defining the required levels of protection are described in Annex I.

Equipment and protective systems may be designed for particular explosive atmospheres. In this case, they must be marked accordingly.

Intended use

The use of equipment, protective systems, and devices referred to in Art. 1 paragraph 2 in accordance with the equipment group and category, and with all the information supplied by the Manufacturer which is required for the safe functioning of equipment, protective systems and devices.

4. The following are excluded from the scope of this Directive:

- medical devices intended for use in a medical environment;
- equipment and protective systems where the explosion hazard results exclusively from the presence of explosive substances or unstable chemical substances;
- equipment intended for use in domestic and non-commercial environments where potentially explosive atmospheres may only rarely be created, solely as a result of the accidental leakage of fuel gas;
- personal protective equipment covered by Directive 89/686/CEE (1);
- seagoing vessels and mobile offshore units, together with equipment used on board such vessels or units;
- means of transport, i.e. vehicles and their trailers intended solely for transporting passengers by air or by road, rail or water networks, as well as means of transport in so far as such means are designed for transporting goods by air, by public road or rail networks or by water. Vehicles intended for use in a potentially explosive atmosphere shall not be excluded;
- the equipment covered by Article 223, par. 1, letter b) of the Treaty.

ANNEX I DIRECTIVE 94/9 ATEX

Criteria determining the classification of equipment-groups into categories

1. Equipment-group I

a) Category M1 comprises equipment designed and, where necessary, equipped with additional special means of protection to be capable of functioning in conformity with the operational parameters established by the Manufacturer and ensuring a very high level of protection.

Equipment in this category is intended for use in underground parts of mines as well as those parts of surface installations of such mines endangered by firedamp and/or combustible dust.

.....

Equipment in this category must comply with the supplementary requirements referred to in Annex II, 2.0.1.

b) Category M2 comprises equipment designed to be capable of functioning in conformity with the operational parameters established by the Manufacturer and ensuring a high level of protection.

Equipment in this category are intended for use in underground parts of mines as well as those parts of surface installationsnof such mines likely to be endangered by firedamp and/or combustible dust.

.....

Equipment in this category must comply with the supplementary requirements referred to in Annex II, 2.0.2.

2. Equipment-group II

a) **Category 1** comprises equipment designed to be capable of functioning in conformity with the operational parameters established by the Manufacturer and ensuring a very high level of protection.

Equipment in this category is intended for use in areas in which explosive atmospheres caused by mixtures of air and gases, vapours or mists or by air/dust mixtures are present continuously, for long periods or frequently.

Equipment in this category must ensure the required level of protection, even in the event of rare incidents relating to equipment, and is characterized by means of protection such that:

either, in the event of failure of one means of protection, at least an independent second means provides the required level of protection,

or

the required level of protection is assured in the event of two faults occurring independently of each other.

Equipment in this category must comply with the supplementary requirements referred to in Annex II, 2.1.

b) **Category 2** comprises equipment designed to be capable of functioning in conformity with the operational parameters established by the Manufacturer and of ensuring a high level of protection.

Equipment in this category is intended for use in areas in which explosive atmospheres caused by gases, vapours, mists or air/dust mixtures are likely to occur.

The means of protection relating to equipment in this category ensure the required level of protection, even in the event of frequently occurring disturbances or equipment faults which normally have to be taken into account.

Equipment in this category must comply with the supplementary requirements referred to in Annex II, 2.2.

c) **Category 3** comprises equipment designed to be capable of functioning in conformity with the operating parameters established by the Manufacturer and ensuring a normal level of protection.

Equipment in this category is intended for use in areas in which explosive atmospheres caused by gases, vapours, mists or air/dust mixtures are unlikely to occur ot, if they occur, are likely to so only infrequently and for a short period only.

Equipment in this category ensure the required level of protection during normal operation.

Equipment in this category must comply with the supplementary requirements referred to in Annex II, 2.3.

7 PICTOGRAMS

Some pictograms useful for the understanding of this manual are shown here below.

PICTOGRAM RELATED TO THE OPERATOR'S POSITION

SYMBOL	DESCRIPTION
	Oprator of the system using 1st level equipment

PICTOGRAMS RELATED TO THE STATUS OF THE EQUIPMENT

SYMBOL	STATUS OF THE SYSTEM USING THE EQUIPMENT
	**System off:** with sectioned hydraulic supply.
	**System on:** system is still and ready for activation .

1 GENERAL INFORMATION

1 IDENTIFICATION DATA OF THE MANUFACTURER

MANUFACTURER	PNR ITALIA srl		
REGISTERED OFFICE AND HEADQUARTERS	Via Gandini, 2 – 27058 VOGHERA (PV), ITALY		
TELEPHONE	+39 0383 344611	FAX	+39 0383 212 489
E-MAIL	info@pnr.it		

2 CE MARKING OF THE PIECE OF EQUIPMENT

Each equipment is identified by a CE identification plate on which all reference data of the equipment are affixed indelibly.

The Ex marking specific for protection against explosions, followed by the symbol of the equipment-group and category, for the equipment-group II, letter "G" (concerning explosive atmospheres caused by gases, vapours or mists, and/or letter "D" (concerning explosive atmospheres caused by dust.

The positioning of the plate on the equipment may vary from equipment to equipment.

In any communication with the Manufacturer or Service Centres, alway refer to these references.

PNR ITALIA

Via Gandini, 2 – Voghera (PV), Italy

ATEX CLEANING SPRAY HEAD

Models :	UBA xxxx_B31_x_x	UBF_xxxx_B31_x_x	UBF_xxxx_L61_x_x
	UBC_xxxx_B31_x_x	UBF/A_xxxx_B31_x_x	UBF/A_xxxx_L61_x_x
	UBD_xxxx_B31_x_x	UBF/S_xxxx_B31_x_x	UBF/S_xxxx_L61_x_x
Specific marking	CE Ex II 2GD T4 c T90°C 5°C≤Ta≤90°C		

Additional indications which are essential for the use in safe operating conditions are not necessary.

3 DECLARATIONS

CE DECLARATION OF CONFORMITY

(Annex II - DIRECTIVE 94/9/CE)

THE MANUFACTURER

Company		
PNR ITALIA srl		
Address	CAP	Province
Via Gandini, 2	**27058**	**PV**
Town		Country
VOGHERA		**IT**

HEREIN DECLARES THAT THE PIECE OF EQUIPMENT

Equipment	Model
SINGLE-AXIS ROTARY SPRAY HEADS	**UBA – UBC – UBD - UBF – UBF/A – UBF/S**
ID Number =====	Year of construction: 2013

Trading name

CLEANING SPRAY HEADS

Intended use

INDUSTRIAL CLEANING SYSTEMS

COMPLY WITH DIRECTIVES

Directive 94/9/EC of the European Parliament

References of harmonised standards

UNI EN ISO 1127-1 : 2011

EN 15198: 2008

EN 13463-1: 2009

EN 13463-5: 2011

References of technical specifications

CLC/TR 50404:2003

Place and date of issue of the document	The Manufacturer
Voghera, 28/06/2013	Eng. Federico Tonini
	Legal Representative

The equipment is made in conformity with the relevant and applicable EU Directives at the time of its release on the market.

BAN OF PUTTING INTO SERVICE

The piece of equipment cannot be put into service after having undergone modifications of construction or integrations of other components which are not part of the ordinary or extraordinary maintenance before it is again declared compliant with the requirements of 94/9/EC Directive and applicable EC Directives.

Place, date	The Manufacturer
Voghera, 28.06.2013	Ing. Federico Tonini
	Legal Representative

4 SAFETY REGULATIONS

The piece of equipment was manufactured in compliance with the Technical standards listed here below

STANDARD	Title
UNI EN ISO 1127-1 : 2011	Safety of the equipment - General design principles - Risk assessment and risk reduction
EN 15198: 2008	Methodology for the risk assessment of non-electrical equipment and components for intended use in potentially explosive atmospheres
EN 13463-1: 2009	Non-electrical equipment intended for use in potentially explosive atmospheres - Part 1: Basic method and requirements
EN 13463-5: 2011	Non-electrical equipment intended for use in potentially explosive atmospheres - Part 1: Basic method and requirements

5 INFORMATION ABOUT TECHNICAL ASSISTANCE SERVICE

The equipment is covered by warranty, as provided in the General Terms and Conditions of Sale. If, during the warranty validity period, you experience a malfunction or failures of parts of the equipment, which fall in the cases specified by the warranty, the Manufacturer, after the necessary checks on the equipment, will repair or replace all defective parts.

It should be noted that any modification made by the user, without the express written permission of the Manufacturer, will void the warranty and relieve the Manufacturer from any liability for damage caused by a defective product.

This is especially true when such modifications are performed on safety devices, degrading their effectiveness.

Therefore, we recommend our customers to contact our Customer Service, before making the above mentioned interventions on the equipment.

Any fault or defect, clearly and visibly present at the time of delivery of the product (aesthetic defects on the visible parts, cracks, dents, functional defects, missing parts, etc.) should be immediately reported to the manufacturing company.

The Manufacturer is not liable for defects reported by the Customer at the time of delivery.

6 PRELIMINARY WORK BY THE CUSTOMER

Without prejudice to other contractual arrangements, the preliminary works are charged to the customer.

7 GENERAL SAFETY INFORMATION

The cleaning/washing spray heads, while respecting the principle of the integration of the safety requirements of the washing system, have been designed and implemented so as to eliminate the reasonably foreseeable risks during their use, as required by the instructions of the standard UNI EN 1127-1 points 4 (Risks Assessment), 7 (Information for Use) and Appendix A (information about the ”use of tools in potentially explosive atmospheres") as applicable.

The information about the explosion groups and Categories of the equipment are given in paragraph 2 - “CE marking of the equipment”.

The description of the equipment as regards: performance, durability and configuration are described in Chapter “Description of the equipment”.

Before operating this equipment, carefully read the instructions in this manual and attentively follow the indications supplied in the same.

The complete assessment of the risk of ignition according to the applicable rules was made by the Manufacturer of the equipment.

The Manufacturer has made every effort to design this equipment appropriately so to make it as SAFE as possible.

With this prerequisite, the equipment has been equipped with all prevention and protection measures deemed necessary and supplied with sufficient information to be used safely and correctly.

Man-machine interaction

For this scope, for each man-machine interaction, when necessary, the following information are supplied:

- Minimum required qualification of the operator.
- Number of necessary operators.
- State of the equipment.
- Residual risks.
- Necessary or recommended means of personal protection.
- Human errors prevention.
- Prohibitions/obligations relating to a reasonably foreseeable misconduct.

Indications

By construction, the equipment is suitable to operate and undergo maintenance (cleaning) without operations which, if carried out under the conditions foreseen by the Manufacturer, may endanger people.

However, it is essential to follow carefully the following **instructions**:

- The washing operations must be performed with the sectioned hydraulic separation devices.
- Do not change for any reason any parts of the equipment; in case of malfunction due to a failure to comply with what stated above, the Manufacturer is not liable for the possible consequences. It is advisable to request changes directly to the Manufacturer.
- Assemble the equipment according to the assembly schemes supplied by the Manufacturer, otherwise the Manufacturer shall not be liable for any possible problem.
- During the assembling of the equipment, it is strongly recommended to avoid wearing clothes that might get stuck to parts of the equipment, the use of neckties or other fluttering

clothing, and to avoid wearing bulky rings or bracelets that could entangle the hands in parts of the equipment.

In addition, when necessary, further reccomendations will be specified by the user in the Manual regarding preventive measures, personal protective equipment, information aimed at preventing human errors and on prohibitions related to behaviours that are not allowed, but are reasonably foreseeable.

In any case, lthe user must properly integrate the information provided by the Manufacturer with additional work instructions to contribute to the safe operation of the equipment, obviously not in conflict with the contents of this User Manual.

The manufacturer is relieved from any liability for damage caused by the equipment to persons, animals or property in the event of:

- use of the equipment by operators who are not properly trained;
- improper use of the equipment;
- defective or inadequate power supply;
- incorrect installation;
- lack of scheduled maintenance or poor servicing;
- unauthorized changes or modifications;
- total or partial non-observance of the instructions;
- use contrary to specific national regulations;
- natural disasters or exceptional occurrences.

Checks and inspections

The checks must be carried out by a skilled person and must be of a visual and functional type, with the purpose of ensuring the safety of the equipment.

The results of the checks shall have to be recorded on a special card.

In case the technician in charge to perform the inspection finds cracks or dangerous anomalies, he must:

- promptly notify the Manufacturer of the equipment;
- place the equipment in an "out of service" status and arrange for the necessary checks and/or repairs.
- make sure that there are no foreign objects between parts of the equipment;
- check that, after any maintenance/servicing, no foreign object remains between the moving parts of the equipment. If the worn or defective parts are not promptly replaced, the Manufacturer shall not be liable for damages resulting from such accidents.

If anomalies are detected, they shall have to be eliminated before restarting the equipment, and the expert technician who performs the inspection, must annotate on a special form that the damage has been repaired, thus giving the green light to the use of the equipment.

However, in order to ensure the maximum safety of the equipment, it is FORBIDDEN to:

- tamper with any part of the equipment;
- leave the mobile elements unattended;
- use the equipment if it works but is not in full efficiency;
- modify the equipment for changing its originally established use, without the express written consent of the Manufacturer or without the assumption of full liability imposed by the Directive 94/9/EC;
- move the moving parts with manual operations in the case of absence of power.

8 INTENDED USE

The variety of products that must be removed from the walls of a tank or from a surface to be cleaned is very large.

A washing process can go from a quick rinse at low pressure and ambient temperature, to a time-based process with a specifically designed solution, high temperature and high pressure.

The latter situation requires both a slow motion of the rotating fluid jets, which must hit the walls without breaking into droplets and lose impact force, and a jets path studied with precision, to avoid that the jet passes on the same point at each turn.

The cleaning/wash heads have been designed for this scope, to be used with a liquid suitable for the working needs, but also suitable for the type of their construction material.

In addition, it was necessary to develop a range of products, the largest on the market today, which is suitable for environments at risk of explosion present during normal operation, classified Zone 1-2 or Zone 21-22 .

The ATEX series of wash heads, rotating single-axis UBC, UBD, UBF with reaction drive, and UBA with motor drive is made up of non-electrical equipment intended for the cleaning of surfaces in environments with risk of explosion that require equipment of **Category 2 with protection type "c" at constructional safety** carried out in compliance with EN 13463-1 and 5.

For a safe use the presence of a process liquid for lubrication is necessary.

The process liquid must not exceed the temperature of 90°C (363 K).

The materials used for construction do not cause reactions in the presence of explosive atmospheres and have no limitations of substances; they are tailored to the foreseen mechanical and thermal stresses and to resist the aggressive action of the substances that are present or foreseeable.

In particular:

- The metal materials used are: stainless steel AISI 316L and Hastelloy C22.

  Stainless steel has an excellent resistance to intergranular corrosion, it's easy to clean and offers a good hygienic coefficient; it can be used normally up to 460 °C, and is resistant to heat and cold;

  Hastelloy C-22 is a very versatile nickel-chromium-molybdenum-tungsten alloy, which has an enhanced corrosion resistance compared to nickel-chromium-molybdenum alloys (Alloys C-4 and C-276), it also has an excellent resistance to oxidizing agents in solution such as nitric acid, ferric ions and chlorine ions, and a good resistance to reducing agents. The C-22 alloy thus provides an optimal performance in environments where there are both oxidising and reducing agents, and for this reason it appears to be a decidedly very versatile material.

- The plastic material used is PTFE.

  It has a TI temperature corresponding to point 20000h according to EN 60079-0 -2006 clause 7.1.3) of at least 20 K higher than the local surface maximum temperature considering the maximum ambient temperature.
- The bearings have a maximum surface temperature, determined by laboratory tests by detecting the temperature difference in correspondence of the position of the balls of the bearing, equal to 361 K (88°C).
- The connection interface with other equipment is not a source of danger.
- There are no belts, engagement mechanisms, opening mechanisms, small surfaces or closed spaces.
- The use of liquids that may damage, corrode the material with which the cleaning spray is made, will void the warranty.
- The recommended operating pressure for an optimal yield/wear ratio, is shown in Table 2-5.1

9 CONTRAINDICATIONS FOR USE

The equipment must not be used:

- For uses other than those established by the manufacturer, different or not mentioned in this manual;
- With wash liquids not compatible with the construction materials AISI 316L and PTFE
- With gaseous liquids, air included.
- In case of overload during operation, taking into account the pressure limits of use.
- In a corrosive atmosphere or with a high concentration of dust or oily substances suspended in the air.
- With safety devices of the system of use of the equipment which are either excluded or not working.
- With mechanical means that exclude parts of the equipment itself.
- Without safety gloves for assembly/disassembly, for the possibility of hazardous temperatures due the washing fluid.
- In case of dangers arising from adverse weather conditions or from external perturbations, assessing possible environmental changes, extraneous voltages, humidity, vibrations, contamination or other external perturbations.
- Without having evaluated the effect of direct or indirect power short circuits or fulminations on the use system.
- Without having taken appropriate steps to avoid the formation of electrostatic charges that could result in electric shock hazard, taking into account the information provided by CLC/TR 50404:2003.
- Without having installed a filter upstream with a filtration degree suitable for the type of the cleaning spray head (internal free passage as in catalogue).
- Without having taken appropriate steps to avoid the impact with foreign matters and sparks caused by foreign matters.
- Without having put in place particular caution measures in the presence of explosive atmospheres due to the presence of carbon disulfide, carbon monoxide and ethylene oxide.
- Without having planned the dissipation or the isolation of accumulated energies in case of intervention of emergency switches and in the event of interruption of the power supply of the use system of the equipment.

The use of products/materials other than those specified by the Manufacturer, which can cause damage to the equipment and endanger the operator and/or people in proximity of the equipment, is considered incorrect and improper.

10 IDENTIFIED RISKS AND HAZARDS

According to Law 81/08 and Regulation EN 1127-1 the following risks have been identified:

- Hot surfaces
- Mechanically generated sparks
- Static electricity.

11 PREVENTIVE AND PROTECTIVE MEASURES

Precautions must be put in place when the formation of electrostatic charges is envisaged for the pipe materials used in the cleaning system.

12 SAFETY DEVICES

The equipment is not outfitted with own safety devices.

13 SAFETY SIGNS

The use of this equipment does not require specific safety signs.

14 RESIDUAL RISKS

It is necessary to pay attention to the following residual risks that are present during the use of the equipment and that cannot be eliminated:

- Limits arising from the Category assigned to the device.
- The temperature of the equipment at the end of the operation.

2 INSTRUCTIONS FOR A SAFE USE

1 INSTRUCTIONS FOR PROTECTION AGAINST EXPLOSIONS

Here are described the procedures for explosion protection to be made before starting to use the equipment, during its operating life and to ensure the safe use of the same.

STORAGE

In case of inactivity, the equipment must be stored by taking the following precautions:

- store in a closed place;
- protect from shocks and stresses;
- prevent it from being subjected to extreme temperatures and protect it from great temperature variations;
- prevent it from contact with substances that are not compatible with the materials used in its construction;

SET UP OF THE CONNECTION TO THE WATER SUPPLY

The use of the equipment requires the availability of an hydraulic system for its proper operation.
The hydraulic connection between the equipment and the plant set up by the user, must be made by qualified personnel.

These set ups are always charged and under the full responsibility of the user.

The Manufacturer shall not be responsible for damage to persons, animals or property, caused by non-compliance with such provision.

ASSEMBLY

The assembly of the equipment is done using tools and in compliance with Manufacturer's instructions.

The cleaning heads are designed to be installed on pipes equipped with free tapered pipe thread.

- Screw the piece up to a perceptible resistance, then use an appropriate wrench to tighten the threaded body to the liquid inlet pipe.
- Tighten with a default strength is not essential, as the weight itself and the type of generated motion are not sufficient to trigger an involuntary unscrewing.
- Check manually that there is no possibility to unscrew the body from the pipe.

PRELIMINARY CONTROLS

Before the start up of the washing system that uses the equipment, it is necessary to carry out a series of controls and checks in order to prevent mistakes and accidents and to verify the absence of anomalies:

- Control the correct connection of the external power source;
- Control that the hydraulic connections are well tight so as not to cause dangerous spills;
- Check that the equipment has not been damaged during assembly;
- Check, with special care, the integrity of the piping;
- Check that all moving parts move and rotate freely;

- Assess the need to test with a tool the electrical conductivity of the body with the liquid inlet pipe;
- Carry out no-load and load tests, if required by the specific use of the washing system

OPERATIONAL STARTUP

The equipment is supplied fully assembled, the only thing to do is mounting it in the washing system.

After powering the equipment or the line to which it belongs, carry out an accurate visual inspection of the entire system/equipment and make sure it is properly installed and that there are no objects or materials inadvertently left on top of it, or people who may hinder its normal operation.

USE

Use the equipment only for the conditions described in the intended use.

For the UBA and UBC series it is recommended to use the cleaning heads in a vertical position with liquid supply from the top.

No particular installations are required for using the equipment.

The stop of the equipment is done by interrupting the water supply source, or also by operating a possible Emergency Stop that the user may prearrange in the washing system that uses the equipment.

MAINTENANCE

The equipment has been designed to minimize routine maintenance, it is up to the operator to evaluate its working order and suitability for use.

However, it is recommended to stop the equipment and do maintenance whenever a non-optimal operation is noticed, this will allow to have always the maximum efficiency of the equipment.

Always use proper PPE - Personal Protective Equipment:

- Gloves for protection against hot parts
- Suitable clothing

Maintenance requires operations which, although simple, should be performed by Qualified Personnel, at the intervals shown in Table 3-4.1.

ADJUSTMENT

The installation and use do not require adjustments.

DISASSEMBLY

During disassembly use suitable PPE for protection against high temperatures or others required for the washing system.

TRANSPORT AND HANDLING

The equipment does not require any special means for its transport.

DECOMMISSIONING

During long periods of inactivity, it is necessary to disconnect the equipment from the water supply.

2 PARTICULAR RISKS

No particular risks may derive from the equipment other than those assessed by the user in the use system.

3 TRAINING

Staff members using the equipment in an ATEX environment must have the training required by IEC EN 60079-17 - Annex B - "Knowledge, skills and competencies of "responsible persons", "technical persons with executive function" and "operatives".

4 DATA AND CATEGORY

The data which allow to make a decision, beyond any reasonable doubt, that a non-electrical equipment with a safe construction in a given category can be safely used in expected the place provided by the expected operating conditions are:

- absence of underground works, in underground part of mines and in those parts of surface installations of such mines likely to be endangered by firedamp and/or combustible dust, because comprised in Equipment-group II.
- absence of Zones 0 and 20, because the equipment is classified in Category 2.
- absence of gases/vapours with ignition temperature below 135°C. (T4)
- maximum surface temperature that can be reached by an equipment for potential use in a dusty environment: 90°C.
- the maximum temperature range within which the equipment can be used in an explosive atmosphere is equal to: 5°C≤Ta≤90°C.

5 LIMIT VALUES FOR USE

The limit pressure values expressed in bar at the inlet of the washing head are summarized in Table 2-5.1.

Model	UBA	UBC	UBD	UBF	UBF/A	UBF/S
Pressure min/max	3 /10	2/7	2/7	2/10	2/4	2/4

Table 2-5.1

The limit temperature values of the washing liquid are 5°C and 90°C.

The tests to determine the maximum surface temperature of the equipment were performed at 90°C.

6 SPECIAL CONDITIONS FOR USE

There are no special conditions for use, including possible abuses that experience has shown might occur.

7 ACCESSORIES

No accessories are intended to be assembled on the equipment.

3 MAINTENANCE

1 STATE OF MAINTENANCE TRANSPORT AND HANDLING

The Maintenance operations must be carried out when the equipment is in the conditions described in item "STATE OF EQUIPMENT" in Table 3-5.1 of the Maintenance Schedule.

The equipment does not require to lubricate/grease periodically the mechanical parts that contribute to the handling of the mobile parts.

2 EQUIPMENT INSULATION

Before carrying out any maintenance and/or repair, it is necessary to insulate the equipment from the water supply, according to the procedures defined by the user based on the modalities of use.

3 SPECIAL PRECAUTIONS

During the works of maintenance and/or repair, strictly follow the instructions set by the user according to the constructed washing system.

The Manufaturer is not liable for the failure to comply with these recommendations and for any other use which does not comply or which is not mentioned in these instructions.

4 SCHEDULES AND ROUTINE MAINTENANCE

GENERAL MAINTENANCE RULES

The scheduled routine Maintenance includes regular inspections, controls and interventions which, in order to prevent interruptions and breakdowns, control the state of the parts subject to wear and tear with a systematic monitoring.
These operations are simple, yet they must be performed by Qualified Personnel.

SYMBOL	DESCRIPTION
	Operator of a system that uses a 1st level equipment.

PROCEDURES

Periodical checks

- Check periodically, every 20/30 hours of operation, the state of wear of the wash spray head, by verifying the correct screwing of the body to the inlet pipe.
- In case an unscrewing occurs, even partial, remove and install the wash spray head again. In such case a shorter check period must be scheduled.
- Check that the rotor is free to rotate and that there are no visible signs of wear.
- In case signs of wear are noticed, remove and replace the wash spray head. More checks and closer in time should be scheduled according to needs.
- Never use a gaseous flow; the wash spray head requires a liquid for lubrication and cooling. Its use with air only, compromises the integrity and safety of the unit.

Cleaning

The equipment, designed not to be disassembled and reassembled, requires:

- A cleaning, using products that are compatible with the material of construction, to be carried out at least every 15 days or more often, according to the work load, of the internal passages of small size and of the precision machined parts of the tank cleaning device.
- In cases where the washing process is done with solutions in a closed cycle, it is necessary to make sure that the solid particles possibly dispersed in the liquid do not exceed the maximum recommended size for that specific equipment.
- If a non clean liquid is used, it is always necessary to install an inline filter with suitable characteristics. Our Accessories Catalogue includes a range of filters for every need.
- Before starting any type of cleaning, it is necessary to isolate the equipment from the power source.
- The equipment can be checked periodically by visual inspection and replaced if necessary.

ROUTINE MAINTENANCE TABLE:

MAINTENANCE	TIMING	STATUS OF THE EQUIPMENT	SYMBOL
Check n. 1: Periodical checks	Before putting into service every 20÷30 hours of use	Insulation for Maintenance	
Check n. 2 Cleaning	every 15 days	Insulation for Maintenance	

Tab. 3-4.1

Failure to comply with these requirements, relieves the Manufacturer from any liability for the purposes of the Warranty.

EXTRAORDINARY MAINTENANCE

Any intervention of extraordinary maintenance will cause the loss of the warranty coverage.

Failure to comply with these requirements, relieves the Manufacturer from any liability for the purposes of the Warranty.

FAILURE DIAGNOSTICS

For faults and/or malfunctions of the equipment which are not described in this Manual, please contact the Manufacturer.

4 SPARE PARTS & ACCESSORIES

The equipment does not require accessories or spare parts for its use/operation.

1 TECHNICAL SUPPORT

The Manufacturer is always available for any kind of information regarding the installation, use and maintenance of the equipment.

Customers ought to formulate their questions clearly, referring to this Manual and its instructions.

2 STANDARD SUPPLY

The equipment is supplied complete and ready for its startup.

The equipment is supplied with:

- Instructions Manual for Use and Maintenance;
- EC Declaration of Conformity;
- EC Marking.

5 ADDITIONAL INSTRUCTIONS

1 WASTE DISPOSAL

According to the provisions of the local laws in force, the user is responsible to verify the correct disposal of all the waste produced by the equipment during processing.

2 SHUTDOWN AND DISASSEMBLY

While the equipment is being disassembled, it is necessary to separate the plastic parts from the metal ones, which must be collected and sent to recycling waste centres in compliance with the Regulations in force.

For what concerns the metal mass of the equipment, it is sufficient to separate the ferrous parts from those of other metals or alloys, for their correct transfer to a recycling centre equipped for melting.

3 SAFE WORK PROCEDURES

Provide adequate information and educate operators about the specific procedures for:

- A safe use of the equipment
- Possible emergency situations.

6 ATTACHMENTS

1 DATA SHEET

The following PNR cleaning spray heads are supplied with data sheets in attachment:

UBA: SITL01 – Rev. A

UBC: SITL02 – Rev. A

UBD: SITL03 – Rev. A

UBF: SITL04 – Rev. A