COMPLEMENTARY PRODUCTS AND ASSEMBLY FITTINGS

CTG AC20

PNR

INTRODUCTION

INDEX

INDEX

TECHNICAL PUBLICATIONS

TECHNICAL PUBLICATIONS

PNR manufactures a complete range of spray nozzles for industrial applications, as well as products and systems specially designed for specific industries. Information about our Company and our product range is available through the following catalogues.

PRODUCT RANGE	CTG TV
GENERAL PURPOSE SPRAY NOZZLES	CTG UG
AIR ASSISTED ATOMIZERS	CTG AZ
COMPLEMENTARY PRODUCTS AND ASSEMBLY FITTINGS	CTG AC
INDUSTRIAL TANK WASHING SYSTEMS	CTG LS
EVAPORATIVE COOLING LANCES	CTG LN
FIRE FIGHTING PRODUCTS	CTG FF
PAPERMILL PRODUCTS	CTG PM
STEELWORK NOZZLES	CTG SW
SPRAY DRYING NOZZLES	CTG SP

As a result of a continuous product improvement, our documentation is regularly updated and mailed to Customers whose names and addresses are registered in our Catalogue Mailing List. We will be pleased to register your name if you mail the form on page 33 to your nearest PNR office or Distributor. Latest versions of all documents are also regularly uploaded on our websites.

NOTES

NOTES

Our products and their performances are continuously revised, upgraded and modified to keep up with the latest technologies. We regret not to be able to give our Customers any notice about such modifications: all data and product specifications given in this catalogue are always to be deemed as an indication and do not firmly bind our Company. Should your application imperatively require one or more characteristics of one of our products to be strictly adhered to, we suggest you to contact us and ask for a written confirmation before placing your orders. All information contained in this catalogue, including product data, codes, diagrams and photographs, is an exclusive property of Flowtech Srl.
It is forbidden to reproduce any part of this catalogue without a written permission.
Dimensions in this catalogue are given in millimeters (mm).
All threads are manufactured according to the ISO 228 standards, except where indicated otherwise.
(European norms BS 2779 - DIN 259 - UNI 338).
Explanations about the abbreviations used in this catalogue and warranty conditions are given at page 33.

Our Company qualified its Quality Management System in compliance with the ISO 9001/2008 Norms.

DNV
Cert. 04111-99-AQ
MIL SINCERT

COMPLEMENTARY PRODUCTS

The majority of the industrial processes based on the spraying of liquids require a large variety of supplementary operations such as drying by means of compressed air, mixing of fluids with Venturi eductors, heating or filtering of the liquid to be sprayed.
Our experience in the field of fluid dynamics and the continuous cooperation with several customers on the major markets worldwide, enables us to offer a range of equipments which have not only been tested in many years of successful applications, but are continuously updated to meet the most modern technical levels and specific needs of technologically advanced industrial processes.

ASSEMBLY ACCESSORIES

The choice of the most suitable nozzle or atomizer for a certain process does not exhaust a plant designer's task as it also includes the correct choice of proper accessories that should be easy and quick to be assembled during installation and removed for maintenance and cleaning, assure the correct nozzle orientation and, in general, optimize the efficiency of the whole plant process.
Our experience, built up studying thousands of practical applications in which proper fittings proved to give remarkable results, enables us to offer a wide range of high quality accessories. If the problem is contending with a previously specified non ideal solution a system that needs protection against clogging, or other product associated problems a designer has to face during the commissioning of a plant, you will find many suitable and professional solutions within the PNR range of accessories, developed working for many years in close cooperation with companies like yours.

PNR MATERIALS CODES

Many of the products shown in this catalogue are available in different standard materials (listed for each product in the related catalogue page) and, therefore, their identification code in the Catalogue is not complete. The last two digits of the a code are used to specify the material and are left undetermined as XX. Once you have selected the required material, please complete the product code adding the two final digits corresponding to the available materials listed on the specific product page. If a special material is required, other than those specified in our product data, please contact our Sales Team.
The codes of the most popular materials are listed here below.

A1	Mild steel
A8	Zinc coated steel
A9	Nickel coated steel
B1	AISI 303 stainless steel
B2	AISI 304 stainless steel
B21	AISI 304 L Stainless steel
B3	AISI 316 Stainless steel
B31	AISI 316 L Stainless steel
B8	AISI 309 Stainless steel
C2	AISI 416 Stainless steel, hardened
D1	Polyvinylchloride (PVC)
D2	Polypropylene (PP)
D21	Moulded polypropylene

D3	Polyamide (PA)
D5	Talcum filled Polypropylene
D6	PP, 25% glassfibers
D7	High density polyethylene
D8	Polyvinylidenefluoride (PVDF)
E0	EPDM
E1	Polytetrafluorethylene (PTFE)
E2	PTFE, 25% glassfibers
E31	Acetalic resin (POM)/Delrin
E7	Viton
E8	Synthetic rubber (NBR)
G1	Cast iron
H1	Titanium Grade 2

L1	Monel 400
L2	Incolloy 825
L61	Hastelloy C22
L8	Hastelloy C276
P6	Acrilyc but. styrene (ABS)
T1	Brass
T2	Brass, chrome plated
T3	Copper
T5	Bronze
T8	Brass, nickel plated
T81	Brass, electroless nickel plated
V1	Aluminum
V7	Aluminum, ENP

COMPLEMENTARY PRODUCTS

AIR BLOWERS

In many industrial processes some products must be cleaned, dried, wiped-off, dusted, cooled or simply moved to another side of a conveyor. Compressed air is often used to perform such operations but it is relatively expensive and creates excessive noise in most cases. Recent developments in flow dynamics now allow to reduce air consumption and noise level and to improve process efficiency. This is obtained by means of air nozzles with a streamlined outside surface that allows a small jet of high pressure air to drag in a bigger volume of surrounding air.
The resulting air stream has a lower speed and a higher mass: the impact efficiency is preserved, whereas both sound level and air consumption drop dramatically.
Page 3

PLANT CLEANING PRODUCTS

Pharmaceutical, chemical and food plants require by law that high levels of cleanliness are kept at all times and, to assure production control, stricter and stricter norms are applied to all quality procedures. In addition to our wide range of tank-washers for the internal cleaning of tanks and vats, we offer a line of products specifically designed for various cleaning operations to provide plants with an efficient service in a clean and orderly environment. This line includes professional cleaning guns and high quality stainless steel hose reels.
Page 5

MIXING EDUCTORS

A water eductor sometimes can be a simple solution to a variety of problems. We offer a range of eductors suitable for several applications like producing hot cleaning water from an existing steam line, heating liquids in reservoirs by means of steam, keeping chemical solutions or paints properly mixed inside their vats and emptying tanks with a high pressure jet of water when a submersible pump is not available. Producing hot water under pressure from a steam line with a static device not requiring electric motors is a very useful solution for those applications where a tank needs to be washed in explosion-proof facilities.
Page 11

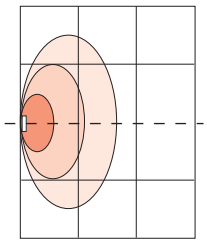
STATIC LINE FILTERS

In a process plant a plugged nozzle can cause all types of issues, from troublesome maintenance problems to severe breakdowns. The protection of your spraying system by means of an adequately selected filter or filtering system should always be considered while designing your production process. In this catalogue section we present a range of small and medium size line filters, including self-cleaning systems.
Large industrial filters and by-pass filtering systems, specifically designed for a single application, are also outlined. They can be supplied in different materials to suit any specific application.
Page 13

AIR BLOWING NOZZLES

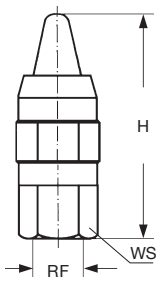
UEA D020

These air blowers are engineered to direct a powerful air stream on a well defined area. Their carefully studied profile creates a laminar pattern of air with very low turbulence that drags in the surrounding ambient air to increase the local impact of the air stream. Due to the low turbulence, both loss of energy and sound wave emissions are kept very low. The blower is made in lightweight electroless nickel plated aluminum or 316L stainless steel. The table shows the air capacities as a function of the air pressure, while the graph gives the noise level as a function of the front and side distances from the nozzle for an air pressure value of 2 bar.



Noise level diagram at 2 bar air pressure.

68 dB
72 dB
75 dB
1m



These air blowers meet the requirements of American OSHA regulations

Materials

Body **V7** Aluminum, electroless nickel plated
LT 95° C - **LP** 15 bar

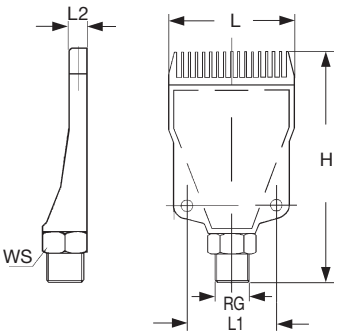
B31 AISI 316 L Stainless steel
LT 110° C - **LP** 15 bar

Code	RF inch	Air capacity Ncm/h					H mm	WS mm
UEA D020 B31xx	1/4	15	20	25	31	35	55	17
UEA D020 V7xx		15	20	25	31	35	55	17
Pressure (bar)		*2,0*	*3,0*	*4,0*	*5,0*	*6,0*		

xx = Thread Codes
SG = BSP **SN** = NPT

UEA L022

These air blowers were designed for applications in which a flat blade-shaped air stream with specifically high impact is offered, for example, to cover a given width on a moving conveyor. Here again the external profile gets a strong suck up action on the surrounding air, generating a high impact laminar air blade and avoiding the highly turbulent conditions of a free-air jet with a consequent reduction of energy and noise.



Materials

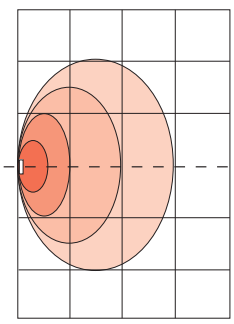
E31 Polyacetalic resin (POM)
LT 80° C - **LP** 5 bar

V7 Aluminum, electroless nickel plated
LT 95° C - **LP** 15 bar

Code	RG inch	Air capacity Ncm/h					H mm	L mm	L1 mm	L2 mm	WS mm
UEA L022 E31xx	1/4	10	17	22	28	33	90	48	35	6,5	16
UEA L022 V7xx		10	17	22	28	33	90	48	35	6,5	16
Pressure (bar)		*1,0*	*2,0*	*3,0*	*4,0*	*5,0*					

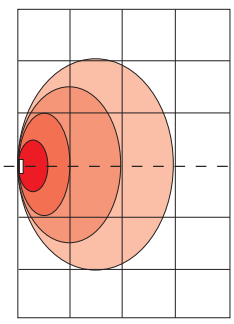
These air blowers meet the requirements of American OSHA regulations

xx = Thread Codes
SG = BSPP **SN** = NPT



Noise level diagram at 3 bar air pressure.

70 dB
72 dB
74 dB
78 dB
1m



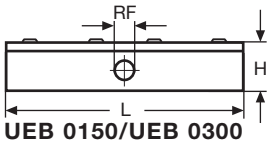
Noise level diagram at 6 bar air pressure.

76 dB
78 dB
80 dB
82 dB
1m

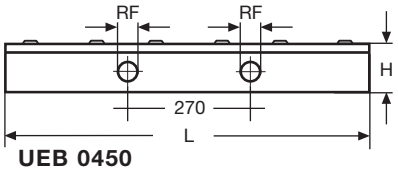
COMPLEMENTARY PRODUCTS

UEB

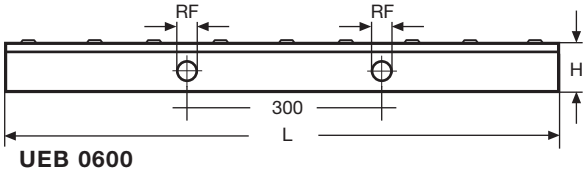
AIR BLOWING NOZZLES



UEB 0150/UEB 0300



UEB 0450



UEB 0600

UEB blowers produce a laminar jet of compressed air, with a high efficiency and a limited noise level. Their unique design provides an air stream that comes out from a protected position and may change its direction for adhesion to a radiused profile due to the Coanda effect. Their design gives remarkable advantages:

- The exit orifice is not exposed to the risk of being damaged by impact.
- The bar can be built on request in any desired length, up to 600 mm.

Materials

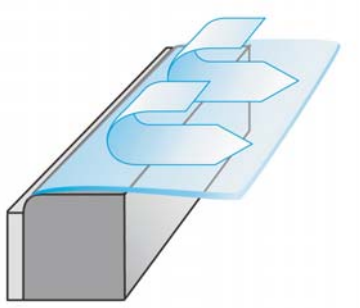
Body	**V7**	Electroless nickel plated aluminum
Upper Plate	**A9**	Nickel plated steel
		LT 95° C - **LP** 7 bar

The table shows air capacity as a function of air pressure, while the below graphs show the noise level as a function of the front and side distances from the nozzle, operating at an air pressure of 2 bar.
As the air leaving the nozzle orifice drags along ambient air, the air blade produced by the nozzle (AIR OUT) has a larger flow rate which is a multiple of the feed air flow (AIR IN).

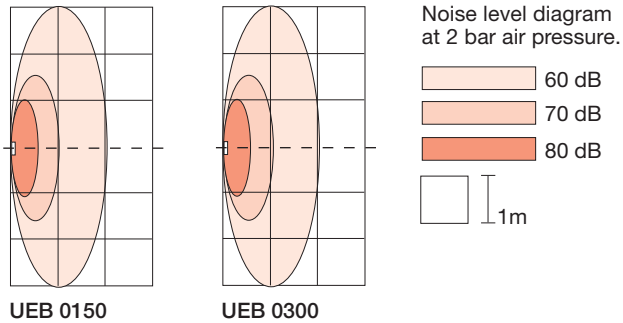
Code	RF	Air capacity Ncm/min										H	L	W
	inch	AI	AO	AI	AO	AI	AO	AI	AO	AI	AO	mm	mm	kg
UEB 0150 V7xx	1/4	0,26	4,70	0,34	6,00	0,42	7,10	0,51	8,60	0,60	10,6	30	150	0,3
UEB 0300 V7xx		0,52	9,40	0,68	12,0	0,84	14,2	1,02	17,2	1,20	21,2		300	0,7
UEB 0450 V7xx		0,78	14,1	1,03	18,0	12,6	21,3	1,53	25,8	1,80	31,8		450	0,9
UEB 0600 V7xx		1,03	18,7	1,40	24,0	1,68	28,4	2,04	34,4	2,40	42,4		600	1,4
Pressure (bar)		***2,0***		***3,0***		***4,0***		***5,0***		***6,0***				

xx = Thread Codes
SG = BSP
SN = NPT

Performances shown in the table were measured at room temperature of 20° C.



The air blade coming out through the side slot follows the radiused profile and leaves the body with an angle of 90° from the original direction, as shown in the drawing. This remarkable feature, based on the Coanda effect, enables to have the air outlet orifice in a totally protected position, a very interesting advantage, for instance, when products oscillating on a chain conveyor could damage conventional air blowers.



UEB 0150 UEB 0300

SAFETY NORMS

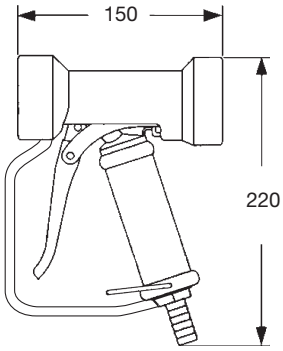
Safety norms determine the maximum sound level which people can be exposed to in their working place. The supplied noise level diagrams show the noise level measured for one blower as a function of the distance from the blower itself. UEB series blowers meet the OSHA noise requirements. Should your system consist of more than one blower, we recommend to check if the resulting noise level complies with the requirements of the health and safety regulations where applicable.

WATER GUNS

UMV

The UMV series washgun was primarily designed to avoid hot water waste, while assuring very comfortable operational conditions. Its thick rubber casing not only effectively protects operators' hands from hot water but it also ensures an excellent protection in case the washgun is dropped or falls to the ground as it avoids any damage to floor tiles or equipments. This carefully designed water gun, mainly used in the food industry, also includes a grease and detergent resistant quality rubber and its bright blue colour makes it immediately and clearly visibile against white or clear foregrounds. Its trigger is lined too and can be held open by means of a lock-ring. The spray pattern can be continuously adjusted from a closed straight jet to a wide angle spray, to obtain the most suitable pattern for any activity and purpose.

Materials		
Body	**T2**	Brass casting, chrome plated
	B3	AISI 316 Stainless Steel
Lining	**E0**	EPDM
Stem	**B3**	AISI 316 Stainless steel
Trigger	**B3**	AISI 316 Stainless steel, rubber lined
	LT	80° C
	LP	25 bar
	LQ	21 lpm @ 3 bar UMV 2210
		61 lpm @ 3 bar UMV 2211
Hose shank		13 mm – 1/2" hose fitting
Weight		0.9 kg



UMV 2210 xx

The versatility of this washgun is enhanced by the additional model UMV 2211, which can be equipped with nozzles or different lances through its 1/2" female thread. The three different lance models shown herein can be easily fit to the gun body with a 1/2" male nipple and offer the following operational choices:

1 Foaming machines and equipment prior to washing operations. The foam lance comes with a quick connect female coupling and a matching coupling must be fit to the gun outlet.

2 General purpose 1/4" fem thread outlet, 1/4" male thread inlet. Available both with a heat protection sleeve or in zinc-plated steel. To be fit to the gun, the general purpose lance requires a connection nipple 1/4" fem to 1/2" male. Please find the complete washguns and components codes here below.

Complete guns

UMV 2210 xx	Standard, adjustable jet
UMV 220A xx	With foam lance
UMV 220B xx	With 1/4" fem outlet, bare lance
UMV 220C xx	With 1/4" fem outlet, heat protected lance

Please complete product codes , ending with (xx), filling in the code of required material eg **T2**, chrome plated brass, or **B3** for AISI Stainless steel 316.

Single components

UMV 2211 xx	With 1/2" female quick thread, without lance
XUM V001 B3	Foam lance
XUM V002 B3	Quick connect coupling for foam lance, 1/2" M
XUM V003 B3	Universal lance, 1/4" F out, heat protection
XUM V004 B3	Universal lance, 1/4" F out, zinc-plated steel
XUM V005 T2	Nipple, 1/4" F – 1/2" M, chrome plated brass

UMV 2211 xx + XUM V002 B3 + XUM V001 B3 = UMV 220A T2

+ XUM V005 T2 + XUM V004 B3 = UMV 220B T2

+ XUM V005 T2 + XUM V003 B3 = UMV 220C T2

COMPLEMENTARY PRODUCTS

XUM ACCESSORIES

XUM VQM3 B3

XUM VQF6 B3

FLEXIBLE HOSE

This hose can be used with all types of UMV hot water-guns as it is made in top quality EPDM for an excellent resistance to high temperatures and wear.
Inlet and outlet ends are outfitted with female quick couplings available both in 1/2" and 3/4" size.

Max operation temperature **LT** 160° C
Max operation pressure **LP** 8 bar

Materials **Hose** **E0** EPDM
Couplings **B3** AISI 316 Stainless steel

Code	Size inch	LF m
XUM VT25 E0	1/2	25
XUM VT20 E0	3/4	20

QUICK COUPLINGS

Supplied as standard in combination with XUM P- hoses, they can be ordered separately with the following codes:

Material **B3** AISI 316 Stainless steel

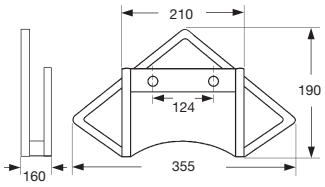
Code	Quick coupling connection	Thread inch	Diameter mm
XUM VQF1 B3	Female	1/2 M	
XUM VQF2 B3	Female	1/2 F	
XUM VQF3 B3	Female	3/4 M	
XUM VQF4 B3	Female	3/4 F	
XUM VQF5 B3*	Female		13
XUM VQF6 B3*	Female		19
XUM VQM1 B3	Male	1/2 M	
XUM VQM2 B3	Male	1/2 F	
XUM VQM3 B3	Male	3/4 M	
XUM VQM4 B3	Male	3/4 F	

* These couplings have a hose shank with the shown dia size.

HOSE STAND

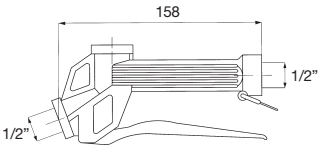
This hose stand keeps the gun detached from the ground to ensure better hygienic conditions. Two 8,5 mm holes on the back plate enable to fix it on any wall.
Material **B2** AISI 316 Stainless steel

XUM US10 B2



UMS

UMS 0037 E3



UMS 0038 E3

To wash or wet small surfaces, this gun offers the convenience of sturdy internal parts in stainless steel covered with a plastic shell for an optimum shock resistance. The gun has a 1/2" female outlet thread to meet any type of nozzle.
Alternatively, it can be fit with a short plastic lance designed to house our range of nozzle tips, both full cone BX series or flat fan jet GX series, secured through a retaining nut.

Max operation temperature **LT** 100° C
Max operation pressure **LP** 50 bar
Max capacity **LQ** 70 lpm
Weight **W** 0.17/0.25 Kg
Inlet thread **RF** 1/2" F BSP

Materials Inner parts B1 AISI 303 Stainless steel
Inside seal E7 Viton
Outside shell E3 Acetalic resin

HIGH PRESSURE GUNS

UMW

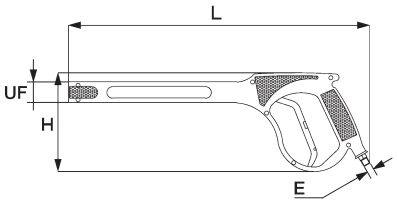
A wide range of high pressure washguns and lances have been fully tested for many years of satisfactory use. Their sturdy manufacture, their carefully designed outer shell protecting operators' hands from high temperatures and the possibility to lock their trigger in place for continuous service, make these professional products well accepted and suitable for every market.

Materials

Body	**D4**	Nylon, Glassfibers reinforced
Inside parts	**B1**	AISI 303 Stainless steel
	C3	AISI 440 Stainless steel, hardened
	T1	Brass

UMW 0006 D4

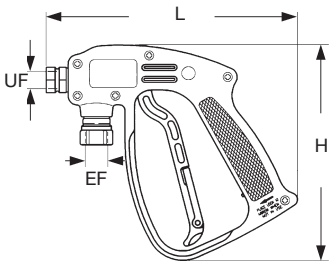
The UMW 0006 D4 gun offers a quick connection on the gun outlet for an easy disassembly and replacement of the extension lances.



Nominal pressure		200 bar
Max operation temperature	**LT**	100° C
Max operation pressure	**LP**	220 bar
Capacity	**LQ**	24 lpm

Code	E inch	UF inch	H mm	L mm	W kg
UMW 0006 D4	3/8	1/4	155	914	1,45

The UMW 0010 D4 is a basic washgun suitable for general applications and offers an optimum performance at a limited cost.

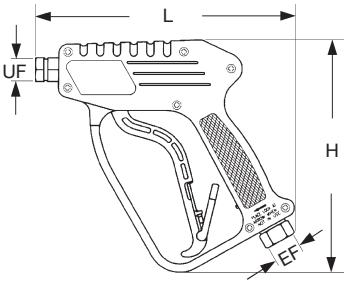


UMW 0010 D4

Nominal pressure		200 bar
Max operation temperature	**LT**	160° C
Max operation pressure	**LP**	220 bar
Capacity	**LQ**	30 lpm

Code	EF inch	UF inch	H mm	L mm	W kg
UMW 0010 D4	3/8	1/4	162	185	0,27

The UMW 0020 D4 features the same robust design with a higher operating pressure range and a bigger capacity.

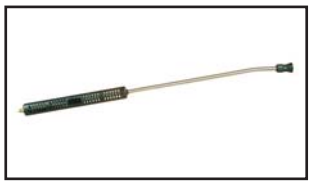


UMW 0020 D4

Nominal pressure		310 bar
Max operation temperature	**LT**	160° C
Max operation pressure	**LP**	350 bar
Capacity	**LQ**	40 lpm

Code	EF inch	UF inch	H mm	L mm	W kg
UMW 0020 D4	3/8	1/4	183	202	0,78

A range of different lances are available to fit the UMW guns; please ask for detailed Data Sheets.
All lances have a 1/4" BSP male inlet and a 1/4" NPT female outlet, a stainless steel pipe and a temperature shield.



UMW 0030 B3
Basic model

UMW 0045 B3
Lance with heat shield and nozzle protection

UMW 0047 B3
Lance with filter

COMPLEMENTARY PRODUCTS

UMU

HOSE REELS

These top quality hose reels have been specially designed for applications where strict hygiene conditions need to be kept at all times, like in pharmaceutical, chemical, cosmetic and food industries. The flexible hose can be kept in a safe and proper place to prevent collection of dirt and pollutants. They are entirely manufactured in polished stainless steel to avoid corrosion and rust. Their polished surface withstands the attack of dust and dirt and is not subject to corrosion or rust. These hose reels can be hung on a wall or locked on a trolley for mobile operations.

Material **B2** AISI 304 Stainless steel

PRODUCT CODES

In the following pages we present a complete range of reels and high quality food-grade flexible hoses, designed to work at low or high operating pressures.

As every hose reel has a given internal housing, the maximum hose length that can be housed depends on the hose size. For this reason hose reel codes do not include any hose, which has to be ordered separately: hoses and reels are delivered combined. In the table listing all types of available reels, MF shows the suitable hose size/sizes, whereas LF indicates the possible hose length for each hose size.

The table on page 10 shows the ordering code per meter length of each hose type.

UMU A/B

MANUAL REWIND REELS

The UMU A/B basic type of hose reel, with a manual rewinding device, is perfectly suitable for light cleaning operations or to be assembled on a mobile cleaning cart for activities that need to be carried out in different places. Swivel bases and tailor-made designed carts can be quoted on request.

UMU AD20 B2HSB

Code	LP bar	E inch	U inch	DI mm	MF inch	LF m	W kg	DE mm	H mm	S mm	Swivel code
UMU BF10 B2LSB	20	1	1	20	1	10	12	500	460	270	on request
UMU BF20 B2LSB					1	20	13	500	460	340	
UMU AC20 B2HSB	200	1/2	1/2	10	3/8	20	9	390	330	300	
UMU AD20 B2HSB					1/2	20					
UMU BC50 B2HSB					3/8	50	12	500	460	270	
UMU BD35 B2HSB					1/2	35					
UMU BC70 B2HSB					3/8	70	13	500	460	340	
UMU BD50 B2HSB					1/2	50					

Abbreviations shown in the table are specified at page 33.

HOSE REELS - AUTO REWIND

UMU G/H

UMU G/H spring-powered hose reels are very useful in applications where frequent cleaning operations are performed, to save time and increase operator's efficiency.
The hose can be easily pulled out of the reel for the required length and maintains its position with no effort while washing is ongoing: with a further short pull the hose easily rewinds onto the reel. A swivel base can be supplied for each reel in this model range. Look for the right swivel in the below table.

UMU HD20 B2HSB

Code	LP bar	E inch	U inch	DI mm	MF inch	LF m	W kg	DE mm	H mm	S mm	Swivel code
UMU HE13 B2LSB **UMU HF08 B2LSB**	20	1	1	20	3/4 1	13 8	18 18	530	55O	300	XUM US20 B2
UMU HE18 B2LSB **UMU HF15 B2LSB**	20	1	1	20	3/4 1	18 15	24 24	530	550	480	XUM US22 B2
UMU GD15 B2HSB **UMU GD20 B2HSB** **UMU HC20 B2HSB** **UMU HD20 B2HSB**	200	1/2	1/2	10	1/2 1/2 3/8 1/2	15 20 20 20	13 18 18 18	550 550 530 530	430 430 550 550	230 260 300 300	XUM US15 B2 XUM US20 B2

Abbreviations shown in the table are specified at page 33.

AUTO REWIND & ADJUSTABLE OUTLET

UMU L/K

In addition to all the characteristics of the UMU G/H auto-rewind types, the UMU L/K reels offer, the convenience of an adjustable wall swivel device. This feature allows the operator to point the reel in the ideal working position.
The possibility to pull the hose in any direction increases the ease of use and the flexibility of the installation.

UMU KD20 B2HSB

Code	LP bar	E inch	U inch	DI mm	MF inch	LF m	W kg	DE mm	H mm	S mm	Swivel code
UMU LE13 B2LSB **UMU LF08 B2LSB**	20	1	1	20	3/4 1	13 8	18 18	530	55O	300	XUM US20 B2
UMU LE18 B2LSB **UMU LF15 B2LSB**	20	1	1	20	3/4 1	18 15	24 24	530	550	480	XUM US22 B2
UMU KD15 B2HSB **UMU KD20 B2HSB**	200	1/2	1/2	10	1/2	15 20	13 18	500 500	480 480	250 280	XUM US15 B2 XUM US20 B2

Abbreviations shown in the table are specified at page 33.

COMPLEMENTARY PRODUCTS

UMU J/I

LARGE CAPACITY REELS

UMU J/I reels, well engineered to hold a convenient length of flexible hose up to 40 meters (depending on the hose diameter), can be handled by a special design double recovery spring which ensures a proper and quick rewinding. They are recommended whenever long tunnels or machines must be cleaned from one single feed point.

UMU ID40 B2HSB

Code	LP bar	E inch	U inch	DI mm	MF inch	LF m	W kg	DE mm	H mm	S mm	Swivel code
UMU JE30 B2LSB	20	1	1	20	3/4	30	40	530	550	520	–
UMU JF25 B2LSB				20	1	25					–
UMU ID25 B2HSB	200	1/2	1/2	10	1/2	25	26	530	550	370	XUM US30 B2
UMU IC40 B2HSB				10	3/8	40	36				–
UMU ID40 B2HSB				10	1/2	40	36	530	550	420	–

Abbreviations shown in the table are specified on page 33.

XUM

FLEXIBLE HOSES

To complete our range of reels, we supply the following set of flexible hoses, with different temperature and pressure operation ratings.
All hoses are made in food-grade NBR resistant to animal and vegetable greases and have a very smooth and glossy surface finish to avoid adhesion of dirt and pollutants.

Please note that codes below refer to a 1 meter length

Example of order:
Being the selected reel the UMU JE30 B2LSB, the first one in the above table, required are 14 meters of a 3/4" hose designed to withstand a pressure of 20 bar.

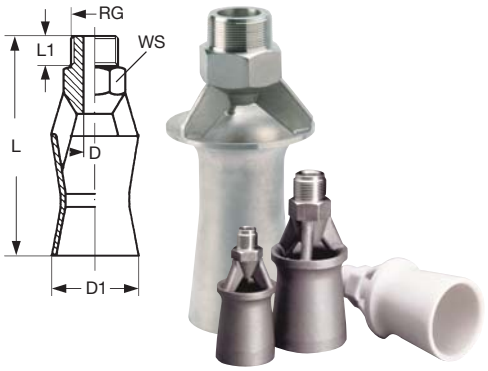
Hose reel	UMU JE30 B2LSB	**1 piece**	
Reel 3/4 hose capacity		**LF = 30 m**	See above UMU J/I table
Max. working pressure 20 bar		**Selected hose YXT RFEC E8**	See table below
Order code	YXT RFEC E8	**14 pieces**	

Hose code for 1 m length	LP bar	LT °C	3/8 inch	1/2 inch	3/4 inch	1 inch
YXT RDCB E8	10	95		•		
YXT RFCB E8					•	
YXT RGCB E8						•
YXT RDEC E8	20	100		•		
YXT RFEC E8					•	
YXT RGEC E8						•
YXT RCKE E8	210	155	•			
YXT RDKE E8	190			•		
YXT RCPE E8	400	155	•			
YXT RDNE E8	350			•		

MIXING EDUCTORS

UPB

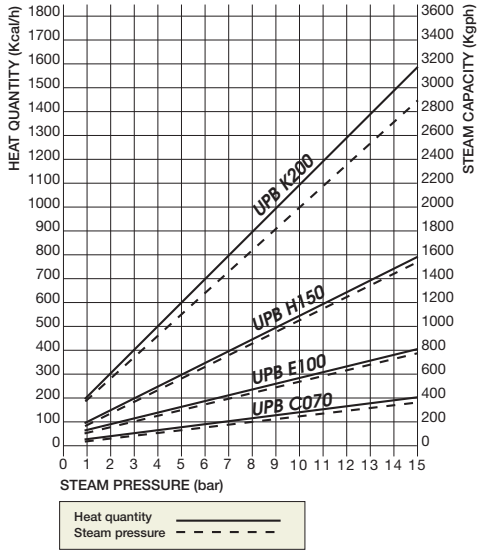
These eductors are the ideal devices for continuous blending and stirring of liquids or solutions in tanks, when sedimentation of heavier matters and local variations in density must be avoided.
Stainless steel types are often used for steam heating processes in water tanks.
Their distinctive design combines the efficiency of the Venturi profile with a body of high structural strength, where the eductor is cast or moulded for sturdy thick sections. This feature minimizes the risk that the eductor gets damaged during maintenance works.



Maximum operating temperature LT 80° C (PP) - 90° C (PVDF)
Materials **B31** AISI 316L Stainless steel
D6 PP, chemically bonded fiberglass
D82 PVDF, moulded (3/8" Parallel Male thread)

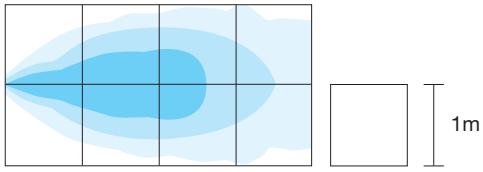
Code	RG inch	D mm	Flow rate at pressure lpm bar 1,0	2,0	3,0	4,0	5,0	D1 mm	L mm	L1 mm	WS mm
UPB C070 B31Sx	3/8	7,0	34	48	59	68	76	45	98	15	22
UPB C070 D6Sx		7,0	34	48	59	68	76				
UPB E100 B31Rx	1/2	10	63	89	109	126	141	60	132	20	30
UPB E100 B31Sx	3/4	10	63	89	109	126	141	60	132	20	30
UPB E100 D6Sx											
UPB H150 B31Sx	1 1/2	15	155	220	268	310	346	80	230	30	60
UPB K200 B31Sx	2	20	206	287	357	410	460	102	295	30	70

x = Thread Codes
B = **BSPT,** S. Steel only **- G** = **BSPP,** PP and PVDF **- N** = **NPT,** all materials



The side table shows the eductor water capacity as a function of the pressure drop between the inlet pressure and the outlet back pressure.
The diagram pictures the steam heating, the unbroken lines show the Heat Quantity and the dotted lines the Steam Capacity, as a function of feed pressure.

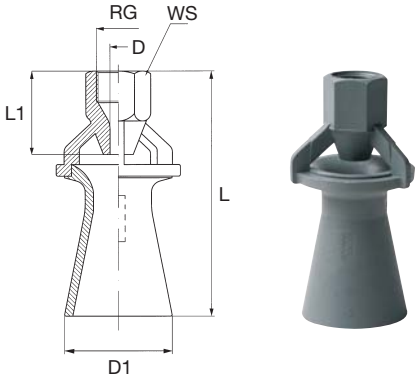
The graph on the left shows the effective range of type UPB E100, as tested in a water tank at 50 cm depth.
Under normal working conditions, for feed pressure values ranging between 2 and 4 Bar, eductors with a total capacity equal to 20% of the liquid volume to be agitated proved to be suitable for most applications.
Detailed suggestions about eductor layouts in tanks are given in the product Data Sheet.



MIXING EDUCTORS

UPD

The UPD series eductors are similar to the UPB series and the only difference is that they come with a female thread connection.
This design offers the advantage of an easier removal from the feed pipe, should the eductor be broken while the plant is being serviced.



Materials **B31** AISI 316L Stainless steel
D6 PP, chemically bonded fiberglass **LT** 80° C (PP)

Code	RF inch	D mm	Flow rate at pressure lpm bar 1,0	2,0	3,0	4,0	5,0	D1 mm	L mm	L1 mm	WS mm
UPD E100 D6xx	3/4	10	63	89	109	126	141	75	147	30	34
UPD H150 D6xx	1 1/2	15	141	199	243	280	313	80	225	45	60
UPD H150 B31xx	1 1/2	15	141	199	243	280	313	80	239	83	60
UPD K200 B31xx	2	20	206	287	357	410	460	102	295	83	70

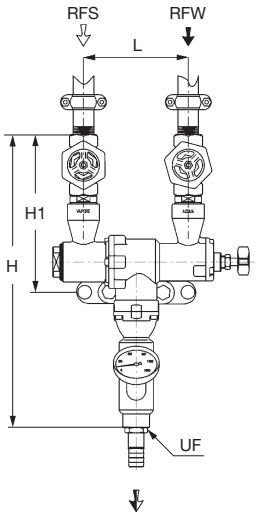
XX = Thread Codes
SG = BSP **SN** = NPT

Pressure (bar) **1,0** **2,0** **3,0** **4,0** **5,0**

COMPLEMENTARY PRODUCTS

UPL

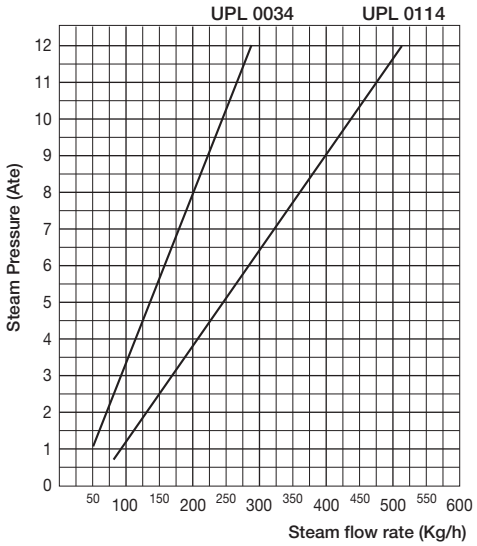
SMALL STEAM HEATERS



UPL steam-water heaters are a simple, cheap and noiseless solution to the problem of hot water production in factories. The simple connection of the mixer inlet to cold water and steam lines ensures a ready supply of hot sanitary water for all your cleaning processes. All the steam energy is given to the water, the heating process is extremely efficient, and grants a low cost per liter and no need of stock: you may just get the quantity you need. Two inlet valves allow to adjust the temperature value that can be read on the thermometer placed in front of the mixer. A safety valve automatically closes the steam inlet in the absence of water. Please read the User Manual included in the packaging before using the units.

Max operation temperature	**LT**	90° C
Max steam pressure	**LP**	10 bar
Material	**B3**	AISI 316 Stainless steel

STEAM CONSUMPTION CHART



Code	RFW inch	RFS inch	UF inch	H mm	H1 mm	L mm	W kg
UPL 0034 B3	3/4	3/4	3/4	356	183	136	4,7
UPL 0114 B3	1¼	1¼	1¼	530	275	196	15,7

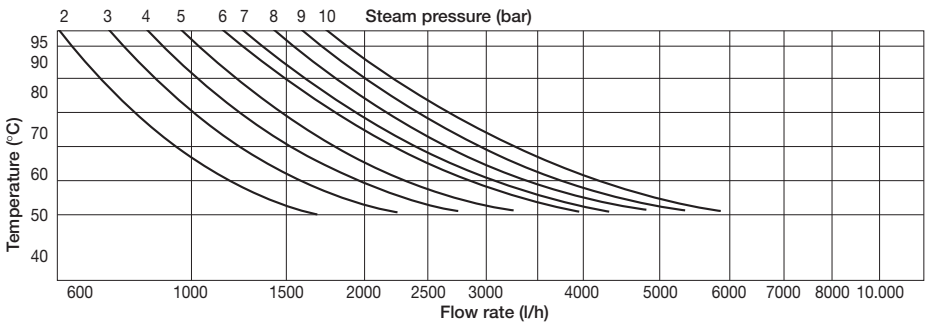
Steam inlet
Globe valve PN 25, with metal sealing seat.
Max temperature 180° C
Max working pressure 10 bar

Water inlet
Globe valve PN 16, with metal sealing or PTFE seat.

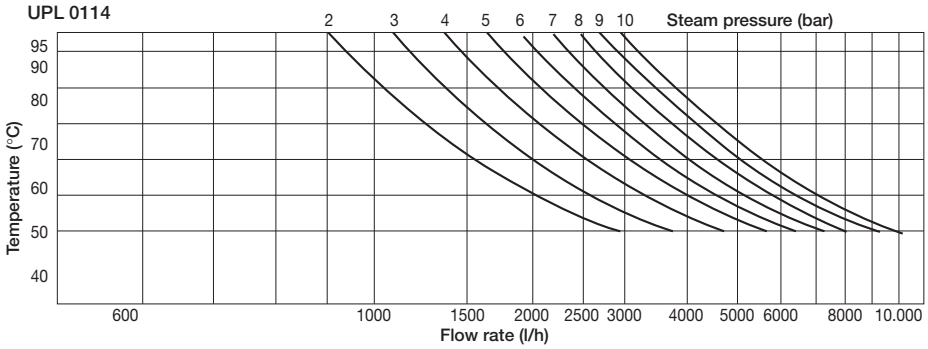
The tables beside give capacity of hot water (Lph) for inlet water temperature of 15° C, as a function of steam pressure.

PRESSURE/CAPACITY WATER TEMPERATURE=15° C

UPL 0034



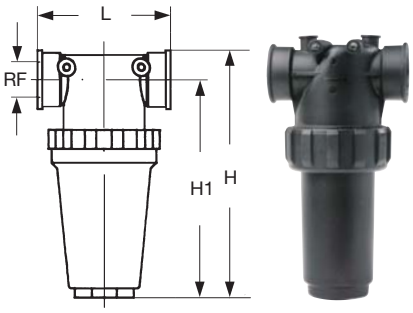
UPL 0114



PLASTIC BODY FILTERS

VEH

The VEH series line filters are a functional and economical solution for applications in which severe operating conditions are not to be expected. They are entirely made in polypropylene and carry two brass bushings (1/4" female thread) for wall fitting.
The threaded coupling between bowl and head allows a quick cleaning or replacement of the filter cartridge with no need of tools.



Max operation temperature **LT** 80° C
Max steam pressure **LP** 15 bar

Materials
Body **D21** Moulded Polypropylene
Seal **E0** EPDM

Code	RF inch BSP	H mm	H1 mm	L mm	Q lpm	Cartridge	C	M mesh
VEH 0050 D21	1/2	136	118	99	140	XVE H050 DA2	B	32
VEH 0051 D21						XVE H051 DA2	U	50
VEH 0052 D21						XVE H052 DA2	R	100
VEH 0075 D21	3/4	136	118	99	140	XVE H050 DA2	B	32
VEH 0076 D21						XVE H051 DA2	U	50
VEH 0077 D21						XVE H052 DA2	R	100
VEH 0100 D21	1	165	143	107	140	XVE H053 DA2	B	32
VEH 0101 D21						XVE H054 DA2	U	50
VEH 0102 D21						XVE H055 DA2	R	100
VEH 0125 D21	1 1/4	279	239	146	250	XVE H060 DA2	B	32
VEH 0126 D21						XVE H061 DA2	U	50
VEH 0127 D21						XVE H062 DA2	R	100
VEH 0150 D21	1 1/2	279	239	146	250	XVE H060 DA2	B	32
VEH 0151 D21						XVE H061 DA2	U	50
VEH 0152 D21						XVE H062 DA2	R	100

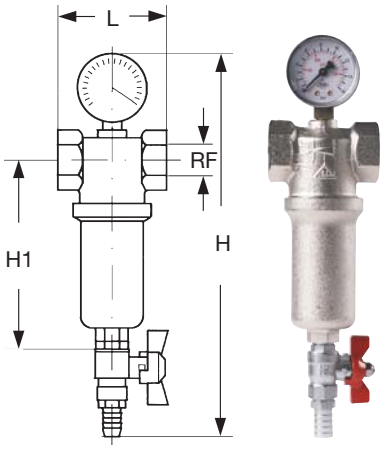
Different cartridge colors are used to identify the available filter gauges. The last column on the right shows mesh dimensions according to the American mesh size.
Our cartridge code includes the mesh size, which is not formerly necessary to specify in the purchase order.

Color code: **B = White**
U = Blue
R = Red

BRASS BODY FILTERS

VEL

VEL type filters are the ideal solution for small systems requiring easy and frequent cleaning. When necessary, the dirt accumulated inside the cartridge can be easily expelled simply by opening the valve at the bottom of the filter, whereas the filter bowl should be removed only to eliminate possibile bigger particles of dirt. A manometer on the filter head shows the outlet pressure and hence the drop of pressure through the filter. The filter cartridge is available with a 150 mesh net only.



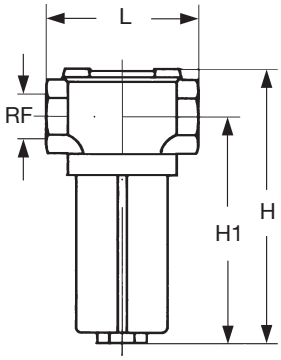
Code	RF inch BSP	H mm	H1 mm	L mm	Q lpm	Cartridge	M mesh
VEL 0039 T8	3/8	285	133	50	14	XVE L171 B2	150
VEL 0051 T8	1/2	288	136	56	25		
VEL 0076 T8	3/4	288	132	67	38	XVE L172 B2	
VEL 0101 T8	1	295	137	80	72		
VEL 0126 T8	1 1/4	343	169	92	118	XVE L200 B2	
VEL 0151 T8	1 1/2	356	179	110	178	XVE L201 B2	
VEL 0201 T8	2	362	179	110	213		

Max operating temperature **LT** 100° C
Max operation pressure **LP** 16 bar

Materials
Body **T8** Nickel plated Brass
Cartridge **B3** AISI 316 Stainless steel

COMPLEMENTARY PRODUCTS

VEM



LARGE CAPACITY FILTERS

VEM FILTERS have been specifically engineered for highly efficient performances and easy maintenance in difficult conditions. Their bowl houses big stainless steel cartridges, to extend operating time and reduce maintenance time, and has a thread connection to the body for a quick removal without the aid of tools. Moreover, a plug at the bottom of the bowl allows to fit a ball valve to purge the filter.

Max working pressure **LP** 20 bar

Materials Body & bowl **V1** Aluminum casting
Cartridge **B2** AISI 304 Stainless steel

Code	RF inch BSP	H mm	H1 mm	L mm	LP bar	Q lpm	Cartridge	M mesh	W kg
VEM 0050 V1	1/2	210	152	105	40	70	XVE M075 B2	60	0,9
VEM 0051 V1							XVE M076 B2	80	
VEM 0075 V1	3/4	210	152	105	40	95	XVE M075 B2	60	
VEM 0076 V1							XVE M076 B2	80	
VEM 0100 V1	1	210	152	105	40	140	XVE M075 B2	60	
VEM 0101 V1							XVE M076 B2	80	
VEM 0125 V1	1 1/4	270	210	140	30	280	XVE M150 B2	60	1,6
VEM 0126 V1							XVE M151 B2	80	
VEM 0150 V1	1 1/2	270	210	140	30	315	XVE M150 B2	60	
VEM 0151 V1							XVE M151 B2	80	
VEM 0200 V1	2	400	318	200	10	750	XVE M300 B2	30	5,6
VEM 0201 V1							XVE M301 B2	60	
VEM 0202 V1							XVE M302 B2	80	
VEM 0250 V1	2 1/2	400	318	200	10	810	XVE M300 B2	30	
VEM 0251 V1							XVE M301 B2	60	
VEM 0252 V1							XVE M302 B2	80	
VEM 0300 V1	3	400	318	200	10	1050	XVE M300 B2	30	
VEM 0301 V1							XVE M301 B2	60	
VEM 0302 V1							XVE M302 B2	80	

SELF-CLEANING FILTERS

Every industrial process needs to be adequately protected by means of a proper filtration. We offer a wide range of standard self-cleaning filters but also customized filters can be engineered and supplied on request. Please see on page 30 for further information and fill in the form on page 32 with your requirements and send it to us. We will be glad to submit our best quotation for customized self-cleaning filters.

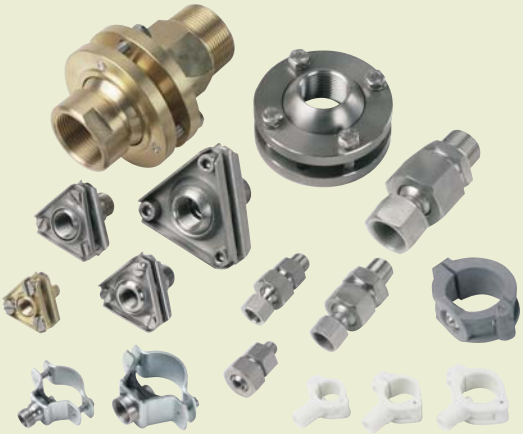
CARTRIDGE SIZING TABLE

Mesh number	Free Passage mm
30 - 32	0.6 - 0.58
50	0.3
60	0.25
75	0.2
80	0.18
100	0.15
150	0.1
200	0.075

NIPPLES, LOCKNUTS AND INTERNAL FILTERS

We offer a range of nipples and locknuts in different types and materials to suit most of our customers' requirements. Produced in high quality materials and under strict tolerances, they ensure a precise and reliable assembly with all nozzles in your system. Small size filters ensure individual protection against clogging for individual low capacity nozzles.
Page 16

PIPE CLAMPS AND SWIVEL JOINTS



The most extensive range of nozzle clamps engineered for industrial applications to give your system a modern and efficient design, with the added value of an easy and precise fitting. Our products will help to keep your plant clean and well kept at peak performance and for long periods of time. Three series of swivels in a wide size range allow the proper connection and quick pointing of the nozzles in your system, improving its overall performances. Swivel joints are available in brass and several stainless steel qualities.
Page 20

SURFACE TREATMENT PRODUCTS

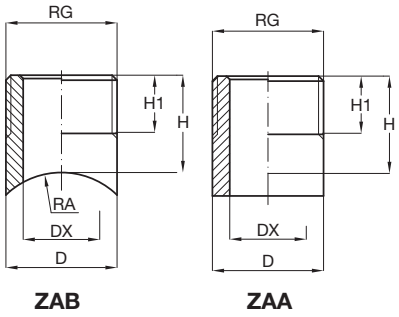
The widest available range of products specifically designed for pre-treatment tunnels. Since the ZPF model was invented by PNR and introduced in the market in 1982, we continue to supply the most modern products to the major equipment manufacturers in the world and to revolutionize the design of modern surface pre-treatment plants. The latest innovation in this field is a tongue nozzle with a patented quick-coupling that fits existing sphere equipped clamps. Its 60° spray angle improves the efficiency of your system by increasing the impact force of the spray.
Page 24

CUSTOM MADE FILTERS

Self-cleaning filters designed to suit specific industrial needs, made in carbon steel, plastic materials, stainless steel or any other material or alloy required by your production process. A complete range of filtering elements made in different styles and materials. Painting or coating cycles based on the operating environment. All is necessary to provide an accurate and reliable filtering service.
Page 30

ASSEMBLY ACCESSORIES

ZAA/ZAB



ZAB ZAA

NIPPLES

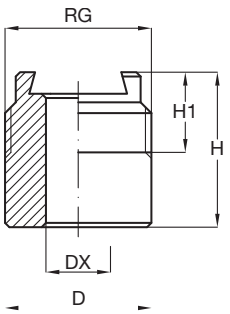
ZAA welding nipples allow the assembly of GX, BX or KX series nozzle tips on pipes and spray manifolds. The 3/8" BSPP threaded nipple meets filters of the VEA, VEC, VED series for the protection of single nozzle tips. Welding nipples can be supplied radiused for the welding connection. The radius values are listed as RA in the code table.

Materials
B1 AISI 303 Stainless steel
B31 AISI 316 L Stainless steel

Radiused nipples
We offer nipples with a radiused base for an easier and faster welding to the manifold pipe. See RA values for radius in the table here beside.

Code	RG inch	H mm	H1 mm	D mm	DX mm	RA mm	W g
Standard							
ZAA C018 xx	3/8	18	10	17	11,5	-	20
ZAA E027 xx	3/4	27	15	27	18,0	-	61
Radiused							
ZAB C018 xxD	3/8	18	10	17	11,5	10	20
ZAB C018 xxE						12,5	
ZAB C018 xxF						16	
ZAB C018 xxG						20	
ZAB C018 xxH						25	

ZAC



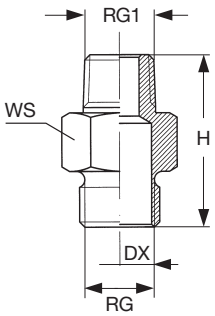
NIPPLES

ZAC welding nipples are manufactured with a matching dovetail end, to host GY dovetail nozzle tips and keep them pointed in the desired position.

Material
B31 AISI 316 L Stainless steel

Code	RG inch	H mm	H1 mm	D mm	DX mm	W g
ZAC C018 xx	3/8	18	10	17	7,5	20
ZAC E027 xx	3/4	27,5	14	27	14	61
ZAC G040 xx	1 1/4	40	21	42	20	280

ZLA / ZLC



NIPPLES

ZLA series nipples feature a male BSPT thread on the inlet side and meet VEA, VEC, VED filters for the protection of single nozzle tips (whereas the others are cone-shaped). Unlike those of smaller size, the ZLC 7575 nipples have both male threads straight BSP.

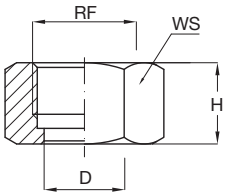
Materials
B31 AISI 316 L Stainless steel
T1 Brass

Code	RG inch	RG1 inch	DX mm	H mm	WS mm	W g
ZLA 3825 xxB	3/8	1/4	7,5	32,5	19	25
ZLA 3838 xxB	3/8	3/8	10	35	19	25
ZLC 7575 xxB	3/4	3/4	18	35	32	90

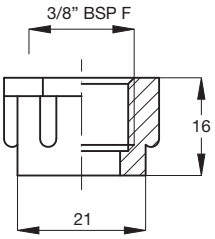
LOCKNUTS

VAA

VAA locknuts are designed to be assembled to our Z series nipples. They are available in stock in brass and stainless steel and can be supplied in any other machineable material on request. A top quality polypropylene retaining nut, highly resistant to water absorption, is available to fit 3/8" nipple and ZPB clamp outlets.



Materials
- **B1** AISI 303 Stainless steel
- **B3** AISI 316 Stainless steel
- **D6** PP, chemically bonded fiberglass
- **T1** Brass



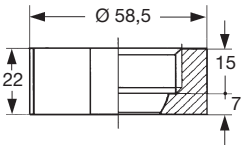
VAA 0380 D6B

Code	RF inch	D mm	H mm	WS mm
VAA 0380 xxB	3/8	12,9	12	22
VAA 0381 xxB	3/8	12,5	15	22
VAA 0750 xxB	3/4	20,5	16	32
VAA 1250 xxB	1 1/4	32,5	27	50

LOCKNUTS

VAB

The VAB 0125 D6 locknut is designed to be used on ZPF, ZPL, ZPN and ZPQ pipe clamps. Its special thread and external shape allow to assemble the cap by hand very easily without using tools, making maintenance activities easier and faster. The high quality plastic material has a very low water absorption, a high dimensional stability at different temperatures and a high tensile strength to avoid the risk that the cap might come loose even under vibrations.



VAB 0125 D6

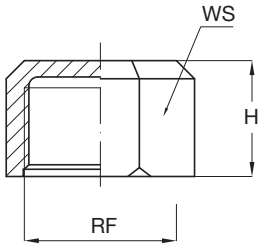
Max working temperature **LT** 80° C

Material **D6** PP, chemically bonded fiberglass

LOCKNUTS

VAE

The VAE blind cap design serves the purpose to close the ends of spray manifolds in surface pre-treatment plants. It is moulded in the same high quality thermoplastic material used for all the other products of the surface pre-treatment range.



Max working temperature **LT** 80° C

Material **D6** PP, chemically bonded fiberglass

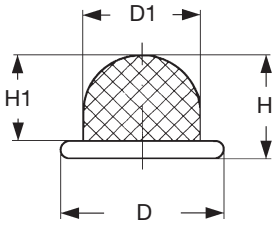
Code	RF inch	H mm	WS mm
VAE 1000 D6	1	25	42
VAE 1250 D6	1 1/4	32	52
VAE 1500 D6	1 1/2	32	60

ASSEMBLY ACCESSORIES

VE

INTERNAL FILTERS

VEA

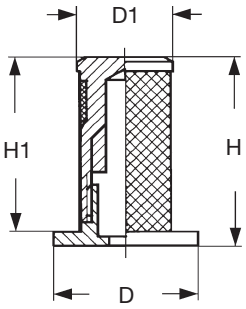


VEA

These filters match all 3/8” nipple outlets and ZPB series clamps. Three different mesh dimensions are available, as shown in the table at the bottom of the page.

Materials	Collar	Copper
	Wire net	AISI 316 Stainless steel

VEC

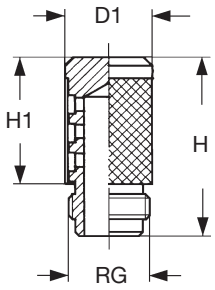


VEC

Used with nozzle tips, VEC type filters offer a large cartridge surface area if compared to the orifice cross section and ensure a longer service time before any maintenance is required. These filters match all 3/8” nipple outlets and ZPB series clamps.

Materials	Body	**B1**	AISI 303 Stainless steel
		B3	AISI 316 stainless steel
		T1	Brass
	Wire net	**B2**	AISI 304 Stainless Steel

VEF



VEF

These threaded filters can be used with internally threaded low-flow flat fan jet 1/4” JB, HB series. Their thread is a 3/8" UNF standard.

Materials	Body	**B1**	AISI 303 Stainless steel
		B3	AISI 316 stainless steel
		T1	Brass
	Wire net	**B2**	AISI 304 Stainless Steel

Code	**D** mm	**D1** mm	**RG** inch	**H** mm	**H1** mm	**M** mesh
VEA 0138 T9	14,5	9,5	-	8,5	7,3	100
VEA 0238 T9						75
VEA 0338 T9						50
VEC 0138 xx	15	10	-	20	18,5	100
VEC 0238 xx						75
VEC 0338 xx						50
VEF 0138 xx	-	10,2	3/8 UNF	21	15	100
VEF 0238 xx						75
VEF 0338 xx						50

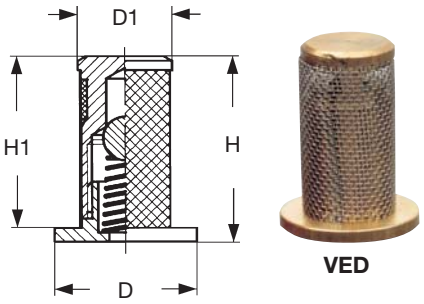
Please ask for detailed information about specific filters to be assembled on RX/RZ series nozzles.

INTERNAL FILTERS WITH CHECK VALVE

VE

VED

VED filters are provided with an internal one-way ball valve to avoid dripping when the spray is turned off. Two different pressure rated springs are available to select the preferred opening pressure value, indicated by a C or a D as the final digit in their code.



VED

Code	D mm	D1 mm	H mm	H1 mm	M mesh	Opening bar
VED 0138 xxC	15	10	20	18,5	100	1,4
VED 0238 xxC					75	
VED 0338 xxC					50	
VED 0138 xxD	15	10	20	18,5	100	2,8
VED 0238 xxD					75	
VED 0338 xxD					50	

VE series filters can be supplied in different materials and standard parts available in stock are detailed in the table below. Other materials may be quoted on request.

Material code	VEC	VED	VEF
B1/AISI **303**	•	•	•
B3/AISI **316**			•
D3/Nylon	•	•	
T1/Brass	•	•	•

CARTRIDGE SIZING TABLE

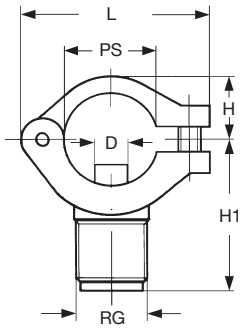
Mesh number	Free Passage mm
30 - 32	0.6 - 0.58
50	0.3
60	0.25
75	0.2
80	0.18
100	0.15
150	0.1
200	0.075

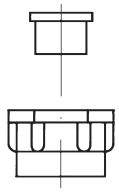
INTERNAL FILTERS

VE filters provide an individual protection for each single nozzle tip. We recommend the use of individual filters on low capacity nozzles and nozzle tips, where outlet orifices and internal passages have limited dimensions and clogging is therefore likely to happen. These should be used in addition to a main filter on the supply line of the system. For an efficient protection, it is recommended to select a mesh size with a free-passage dimension smaller than the 70% of the free-passage dimension of the nozzle orifice.

ASSEMBLY ACCESSORIES

ZPB





VAA 0380 D6B

PIPE CLAMPS

ZPB series clamps allow nozzles to adapt to manifolds in an easy, fast and professional way. Only one hole is required, no threading or welding, and a 3/8" male nipple is readily available for nozzle connection. The quality of the polypropylene used to produce our ZPB clamps offers a good tensile strength at high temperatures and low values of water absorption, ensuring a safe assembly during use. A retaining nut moulded in the same material matches the nipple of all ZPB clamps.

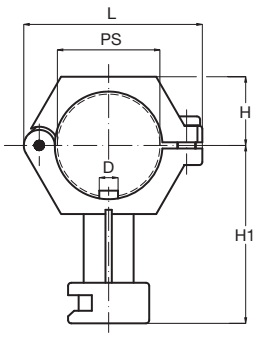
Max working temperature	**LT**	80° C
Max working pressure	**LP**	8 bar

Materials	Body	**D6**	PP, chemically bonded fiberglass
	O-ring	**E8**	NBR
	Metal parts	**B2**	AISI 304 Stainless steel

Code	RG inch	PS inch	PD mm	D mm	H mm	H1 mm	L mm	W g
ZPB 0050 D6	3/8	1/2	20/22	7,6	16,0	36	44	20
ZPB 0075 D6		3/4	25/27	7,6	17,5	39	51	26
ZPB 0100 D6		1	32/34	10,8	21,0	46	61	30
ZPB 0125 D6*		1 1/4	40/43	12,0	30,0	54	85	75

* Please note this model is also available with opposed 3/8" male outlet, ask for ZPE model data-sheet.

ZPC



BAYONET CLAMPS

ZPC series clamps can be easily fastened onto a manifold and secured with a screw, offering the convenience to assemble a flat fan jet nozzle tip with a simple twist and maintain the correct spray direction. The flat fan jet pointing is set with a 10° deviation angle from the manifold axis to avoid jet overlapping. Designed and delivered as standard to match the PNR nozzle tips, two additional locknuts are available to meet tips by other manufacturers too (further information is available on request).

Max working temperature	**LT**	90° C
Max working pressure	**LP**	8 bar

Materials	Body	**D82**	PVDF, moulded
	O-ring	**E7**	Viton
	Metal parts	**B3**	AISI 316 Stainless steel

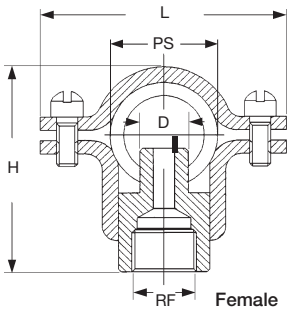
QUICK RELEASE COUPLING

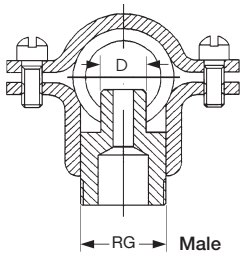
Code	PS inch	PD mm	D mm	H mm	H1 mm	L mm	W g
ZPC 0050 D82	1/2	20/22	7,6	16,0	36	44	21
ZPC 0075 D82	3/4	25/27	–	17,5	40	50	25

METAL CLAMPS

ZPM

ZPM clamps include two contoured pressings, a nipple and a gasket, and their assembly on the pipe is secured by two screws: the tightening method allows working pressures higher than those possible with plastic moulded clamps.
Nipples are available in different materials and thread sizes.
For a precise product identification, please complete the clamp code as shown in the table below.





Max working temperature **LT** 80° C
Max working pressure **LP** 17 bar

Materials	Body	**B2**	AISI 304 Stainless steel
		A8	Zinc coated steel
	Screws	**B2**	AISI 304 Stainless steel
	Nipple	**B1**	AISI 303 Stainless steel
		T1	Brass
	Gasket	**E0**	EPDM

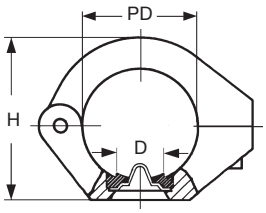
Code	PS inch	RF/RG inch	LP bar	LQ lpm	D mm	H mm	L mm
ZPM 0050 xxAW	1/2	1/8	17	11	7	40	49
ZPM 0050 xxBW		1/4					
ZPM 0050 xxUW		3/8				48	
ZPM 0075 xxAW	3/4	1/8	17	11	7	45	58
ZPM 0075 xxBW		1/4					
ZPM 0075 xxUW		3/8				53	
ZPM 0100 xxAW	1	1/8	17	11	7	45	65
ZPM 0100 xxBW		1/4					
ZPM 0100 xxUW		3/8				53	
ZPM 0125 xxYW	1 1/4	1/4	9	45	17	68	71
ZPM 0125 xxYW		3/8					
ZPM 0125 xxYW		1/2					
ZPM 0150 xxYW	1 1/2	1/4	9	45	17	72	90
ZPM 0150 xxYW		3/8					
ZPM 0150 xxYW		1/2					
ZPM 0200 xxYW	2	1/4	9	45	17	85	100
ZPM 0200 xxYW		3/8					
ZPM 0200 xxYW		1/2					
ZPM 0250 xxYW	2 1/2	1/4	9	45	31,5	110	118
ZPM 0250 xxYW		3/8					
ZPM 0250 xxYW		1/2					

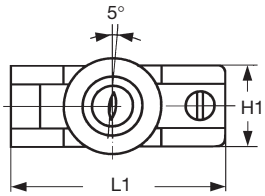
CODE COMPLEMENTS Replace xx and YW in the above codes as shown below

XX	For clamp material	Y	For nipple thread	W	For nipple material
A8	Zinc coated steel	A	1/8” BSP Fem	A	Brass
B2	AISI 304	B	1/4” BSP Fem	B	AISI 303
		C	3/8” BSP Fem	C	AISI 316
		D	1/2” BSP Fem		
		U	3/8” BSPP Male		

ASSEMBLY ACCESSORIES

ZPH





FILTERPRESS CLAMPS

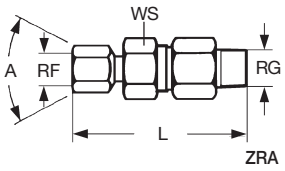
ZPH clamps have been specially designed to allow a fast and economic assembly of the clog resistant flat fan jet disc nozzles of the GE series. GE nozzles are the best solution to wash band filter cloths used in mud drying filter presses. Thanks to its special design, the clamp lets the back part of the nozzle enter the pipe to enable the cleaning of the orifice by means of a rotating stainless steel brush.

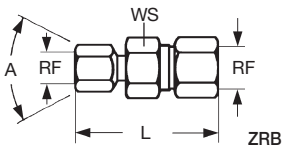
Max working temperature	**LT** 80° C	
Max working pressure	**LP** 7 bar	
Fitting dimensions	Outer pipe diameter	**50 mm**
	Inner pipe diameter	**47 mm**
	Feed hole	**19 mm**

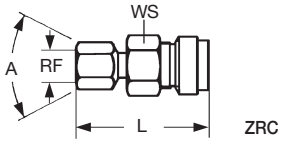
Materials	Clamp	**D6**	PP, chemically bonded fiberglass
	Pin, bolt	**B3**	AISI 316 stainless steel

Code	PD mm	D mm	H mm	H1 mm	L1 mm
ZPH 0150 D6	50	19	70	34	91

ZRA







SWIVEL JOINTS

ZRA swivel joints suit a wide range of nozzles keeping a functional pipe lay-out. Fitting and adjustment may be easily carried out tightening the hexagonal screw cap. A female thread meets the nozzle and a male threaded connection fits in the feed line.

Max working pressure	**LP**	21 bar
Materials	**B31**	AISI 316L Stainless steel
	T1	Brass

ZRB/ZRC

This type of swivel joint can also be supplied with a female pipe connection (code ZRB) or a weld-on connection (code ZRC), with the same range as shown in the ZRA table beside.
Data Sheet for ZRB and ZRC types are available on request.

Code	RG poll	RF poll	L mm	A deg	WS mm	W g
ZRA 1212 xx SB	1/8	1/8	38	50	22	57
ZRA 2525 xx SB	1/4	1/4	57			75
ZRA 2626 xx SB	1/4	1/4	67	60	27	147
ZRA 3826 xx SB	3/8	1/4	67			150
ZRA 3838 xx SB	3/8	3/8	70			155
ZRA 5050 xx SB	1/2	1/2	74	40	27	186
ZRA 7575 xx SB	3/4	3/4	92		40	468

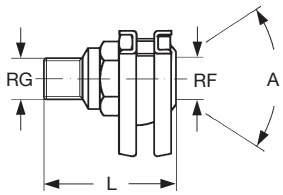
SWIVEL JOINTS

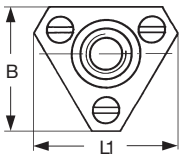
ZRP

ZRP swivel joints are very popular as adjustments can be done locking the sphere between the two flanges.
A female thread meets the nozzle and a male threaded connection fits in the feed line.

Max working pressure **LP** 15 bar

Materials **B2** AISI 304 stainless steel
T1 Brass





Code	RG inch	RF inch	L mm	B mm	L1 mm	A deg	W g
ZRP 1212 xx	1/8	1/8	30	40	35	50	65
ZRP 2512 xx	1/4	1/8	32				92
ZRP 2525 xx	1/4	1/4	40	50	45	60	140
ZRP 2538 xx	1/4	3/8	40				150
ZRP 3825 xx	3/8	1/4	40				150
ZRP 3838 xx	3/8	3/8	40				150

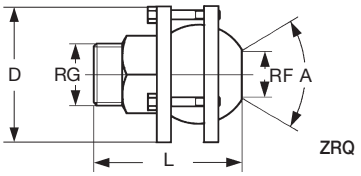
SWIVEL JOINTS

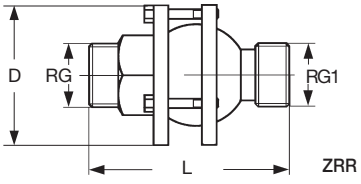
ZRQ

ZRQ swivel joints are designed to allow jet pointing for large nozzles. Fitting and adjustments are carried out locking the clamping flange. These joints have a male thread connection to the feed pipe and a male or female connection for the nozzle.

Max working pressure **LP** 9 bar

Materials **B31** AISI 316L Stainless steel
T1 Brass

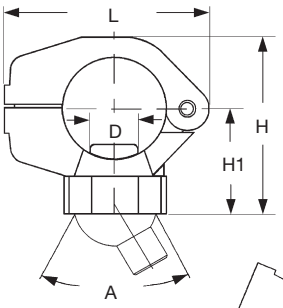


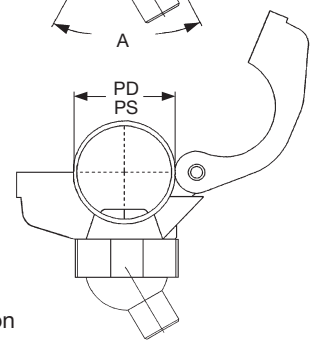


Code	RG inch	RG1 inch	RF inch	L mm	D mm	A deg	W kg
ZRQ 8080 xx	1		1	89	92	40	1,8
ZRQ 8282 xx	1 1/4		1 1/4	130			2,1
ZRQ 8482 xx	1 1/2		1 1/4	133			2,4
ZRR 8282 xx	1 1/4	1 1/4		130	92	40	2,2
ZRR 8284 xx	1 1/2	1 1/4		130			2,2
ZRR 8484 xx	1 1/2	1 1/2		130			2,4
ZRR 8686 xx	2	2 1/2		203	158	40	8,0
ZRR 8888 xx	2 1/2	2 1/2		229			8,8

ASSEMBLY ACCESSORIES

ZPF





Assembly description
ZPF A125 D6
VAB 0125 D6
HGQ 2195 D5/ZBA B038

PIPE CONNECTION

ZPF clamps are available with three different nipple sizes (D1) in 14.3, 17.0 and 20 mm diameters. The single product codes are shown in the table beside.

SWIVEL NOZZLE CLAMPS

ZPF clamps, firstly introduced by PNR, have revolutioned the design of modern surface pre-treatment plants. They combine the convenience of nozzle pointing and the easiness of quick assembly. It is possible to fit a wide range of nozzles with jets correctly pointed simply drilling one hole, without welding a nipple to the manifold, and fixing the clamp with one screw. Check and replacement of the nozzles can be quickly and easily performed without tools. ZPF can be fit with swivel body moulded nozzles or with female threaded spheres to meet any nozzle with threads between 1/8" and 1/2". For extra strength, 1 1/2" clamps have a stainless steel threaded captive nut moulded in the body.

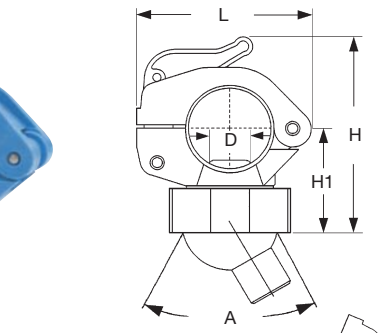
Max operating temperature **LT** 80° C
Max operating pressure **LP** 3 bar

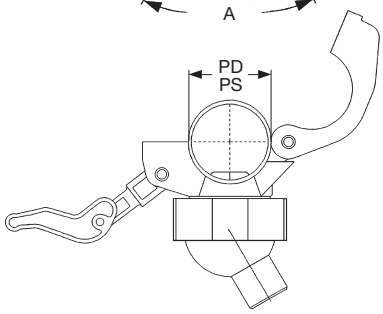
Materials

Body	**D6**	PP, chemically bonded fibreglass
Pin & bolt	**B3**	AISI 316 Stainless steel
O-ring	**E8**	NBR

Code	PS inch	PD mm	D mm	H mm	H1 mm	L mm	A deg	W g
ZPF A125 D6 **ZPF B125 D6** **ZPF C125 D6**	1 1/4	41/43	20,0 17,0 14,0	83	54	84	40	85
ZPF A150 D6 **ZPF B150 D6** **ZPF C150 D6**	1 1/2	46/49	20,0 17,0 14,0	90	57	90	40	88

ZPQ





As easy as 1, 2, 3...just wrap the clamp around the pipe and lock the lever...and that's it!

CAM & LEVER CLAMPS

ZPQ clamps are the most modern product developed for use in surface treatment plants: they significantly reduce the time and labour required for maintenance, disassembling and cleaning operations. A patented cam and lever system quickly secures the clamp to the pipe without the aid of tools. The clamp design, in which the body cam and lever are connected by stainless steel pins, avoids any risk of loosing single parts during assembling and disassembling. To prevent any leakage and consequent dirt buildup on the swivel ball, the ball seat is provided with a unique soft seal. ZPQ clamps use the same retaining nut and sphere nozzles as the other PNR clamps.

Max working temperature **LT** 70° C
Max working pressure **LP** 4 bar (tested at 20° C)
Locknut code **VAB 0125 D6**

Materials

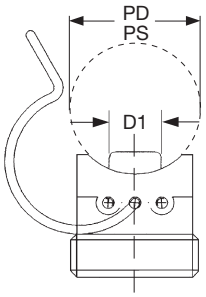
Plastic parts	**D6**	PP, chemically bonded fiberglass
Pins	**B3**	AISI 316 Stainless Steel
O-ring	**E8**	NBR
Seal	**D22**	Soft polypropylene

Code	PS inch	PD mm	D1 mm	H mm	H1 mm	L mm	A deg	W g
ZPQ A125 D6 **ZPQ B125 D6**	1 1/4	42/43	20,0 17,0	93	41	84	40	87
ZPQ A150 D6 **ZPQ B150 D6**	1 1/2	48/49	20,0 17,0	96	44	95	40	97

SPRING PIPE CLAMPS

ZPL

ZPL clamps are an efficient and cost-effective solution to fit nozzles in light duty plants. They use the same range of accessories (retaining caps, nozzle spheres, threaded spheres and o-rings) as the ZPF clamps, for maximum flexibility in system design and reduction of stock to a minimum. The clamp can be fit to the pipe quickly and without tools locking the profiled spring around the pipe, minimizing the time required to install or service a plant.

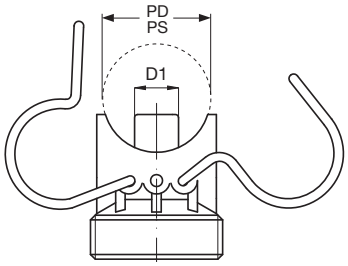


ZPL

Max working temperature **LT** 80° C
Max working pressure **LP** 2 bar
Locknut Code **VAB 0125 D6**

Materials

Body	**D6**	PP, chemically bonded fibreglass
Spring	**N1**	AISI 302 Stainless steel, heat treated
O-ring	**E8**	NBR



ZPN

Code Single spring	Double spring	PS inch	PD mm	D mm	A deg	W g
ZPL C100 D6	**ZPN C100 D6**	1	34/32	14,0	40	
ZPL A125 D6	**ZPN A125 D6**	1 1/4	43/41	20,0	40	
ZPL B125 D6	**ZPN B125 D6**			17,0		
ZPL C125 D6	**ZPN C125 D6**			14,0		46/65
ZPL A150 D6	**ZPN A150 D6**	1 1/2	49/46	20,0	40	
ZPL B150 D6	**ZPN B150 D6**			17,0		
ZPL C150 D6	**ZPN C150 D6**			14,0		

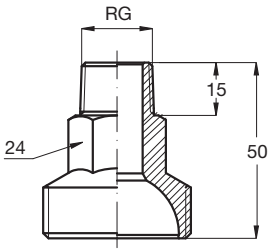
ZPN

For bigger manifold sizes and when standpipes are subject to excessive vibrations, we recommend to use the double spring ZPN clamp to ensure a firmer connection to the pipe. Product codes are listed in the table beside.

THREADED NIPPLE

ZLF

The ZLF threaded nipple meets all HG nozzles and ZBA threaded spheres and is designed to fit where standard clamps cannot be used or to the feed manifold. Available in two different thread sizes and with European or American threads, it is made in the same high quality polypropylene as all our pre-treatment products.



Max working temperature **LT** 80° C
Max working pressure **LP** 4 bar
Locknut code **VAB 0125 D6**

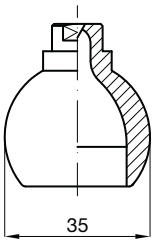
Material **D6** PP, chemically bonded fiberglass

Code	RG inch BSPT	RG inch NPT	W
ZLF A038 D6	3/8	-	15
ZLF B038 D6	-	3/8	
ZLF A050 D6	1/2	-	
ZLF B050 D6	-	1/2	

Assembly description
VAB 0125 D6
ZLF A050 D6
HGQ 2155 D5

ASSEMBLY ACCESSORIES

HG/RG



HGQ 2195 D5

HGQ 2155 D5

HGQ 2270 D5

HGQ 1390 D5

RGN 2390 D5

SWIVEL NOZZLES

This range of moulded nozzles with spherical connection is designed to fit ZLF, ZPF , ZPQ and ZPL/N clamps and are available with flat fan jet and hollow cone spray patterns.
A wider range of catalogue listed stainless steel nozzles can be assembled by means of the several moulded ZBA balls with female threads shown here below.

FLAT FAN JET NOZZLES

A wide range of flow rates, from 3.3 to 33.5 lpm at 2 bar, together with a 60° spray angle, make the HGQ series nozzles the mostly preferred choice in pre-treatment plants.
HGQ nozzles are available moulded in high quality polypropylene.

Materials **D5** Powder-filled polypropylene
D6G PP, 25% glassfibers

Code	Flow rate lpm					Color	W g
HGQ 1390 xx	1,7	2,0	2,4	2,9	3,3	Black	16
HGQ 1770 xx	3,2	3,8	4,5	5,5	6,4	Violet	
HGQ 1980 xx	4,0	4,7	5,6	6,9	8,0	Brown	
HGQ 2117 xx	4,6	5,5	6,5	8,0	9,2	Yellow	
HGQ 2135 xx	5,5	6,5	7,8	9,5	11,0	Grey	
HGQ 2155 xx	6,2	7,4	8,8	10,8	12,5	Red	
HGQ 2195 xx	7,8	9,2	11,0	13,5	15,6	Green	
HGQ 2230 xx	9,5	11,3	13,5	16,5	19,1	Blue	
HGQ 2270 xx	10,9	12,8	15,4	18,8	21,7	Sky blue	
HGQ 2337 xx	13,9	16,4	19,6	24,0	27,7	White	
HGQ 2410 xx	16,7	19,8	23,6	29,0	33,5	Pink	
Pressure (bar)	***0.5***	***0.7***	***1.0***	***1.5***	***2.0***		

HOLLOW CONE NOZZLES

High flow rates and little risk of clogging are ensured by large free-passage X-vanes that make these nozzles the perfect choice for rinsing and treatment processes. A 50° spray angle offers high impact values at considerable distances, even at low feed pressures. Totally moulded in high quality polypropylene, they ensure low liquid absorption and resistance to high temperatures.

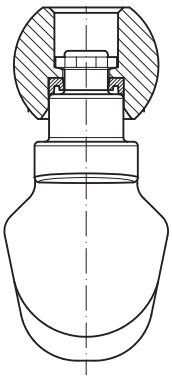
Material **D5** Powder filled Polypropylene

Code	Flow rate lpm					Color	W g
RGN 2175 D5	7,1	8,4	10,1	12,4	14,2	Red	25
RGN 2215 D5	8,7	10,4	12,4	15,2	17,5	Blue	
RGN 2390 D5	15,9	18,8	22,5	27,5	31,8	Orange	
Pressure (bar)	***0.5***	***0.7***	***1.0***	***1.5***	***2.0***		

FLAT FAN JET QUICK-FIT SPOON NOZZLES

KS

A range of high impact moulded spoon nozzles is now available for all our pre-treatment nozzle clamps. The nozzles are connected to the specific sphere ZBA QQN1 D6 and equipped with a special seal that reduces pressure loss and avoids leakage, thanks to a new PNR patented quick-fit design. Their new design offers the ideal combination for a pre-treatment nozzle, a 60° spray angle and the highest possible impact for a given feed pressure, up to 60%, compared with a standard turbulence flat fan jet nozzle.
Switch to greater efficiency in minutes!



Materials **D6** PP, 25% glassfibers

Code	Flow rate					lpm	Color	W g
KSQ 2155 D6QQ	6,2	7,4	8,8	10,8	12,5		Red	23
KSQ 2195 D6QQ	7,8	9,2	11,0	13,5	15,6		Green	
KSQ 2230 D6QQ	9,5	11,3	13,5	16,5	19,1		Blue	
KSQ 2270 D6QQ	10,9	12,8	15,4	18,8	21,7		Sky blue	
KSQ 2337 D6QQ	13,9	16,4	19,6	24,0	27,7		White	
KSQ 2390 D6QQ	15,9	18,8	22,5	27,6	31,8		Orange	
KSQ 2410 D6QQ	16,7	19,8	23,6	29,0	33,5		Pink	
KSQ 2433 D6QQ	17,7	21,0	25,0	30,6	35,3		Brown	
Pressure (bar)	***0.5***	***0.7***	***1.0***	***1.5***	***2.0***			

QUICK RELEASE COUPLING

NEW PATENT PENDING

FLAT FAN JET QUICK-FIT NOZZLES

HT

With this complete range of flat fan jet nozzles,connected to the specific sphere ZBA QQN1 D6 and suitable for any existing PNR plastic swivel clamp, you can improve your machines design and reduce maintenance time at a negligible cost.
Product data-sheet is available for further details.

QUICK RELEASE COUPLING

THREADED AND QUICK-FIT SPHERES

ZBA

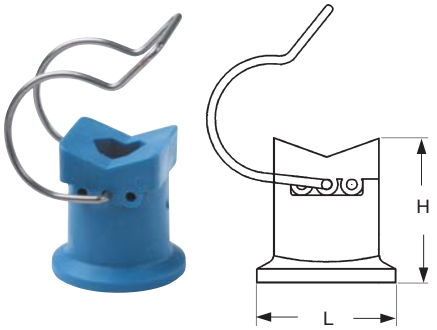
ZBA series are designed to meet male threaded metal nozzles and provide an extremely versatile nozzle combination system. Nozzles of different type, material, flow rate and spray angle can be fit to all our clamps receiving these threaded spheres. Threads are compliant with the European (BSP) and American (NPT) norms. The ZBA QQN1 D6 spheres are designed to meet our new series of quick-fit spoon and standard flat fan jet nozzles.
The next table shows the available connections and includes the blind sphere ZBA 0000 D5.

Code	BSP inch	NPT inch
ZBA A025 D5	1/4F	
ZBA B025 D5		1/4F
ZBA A038 D5	3/8F	
ZBA B038 D5		3/8F
ZBA A039 D5	3/8M	
ZBA A050 D5	1/2F	
ZBA 0000 D5	blind	
ZBA QQN1 D6	Quick connection	

ASSEMBLY ACCESSORIES

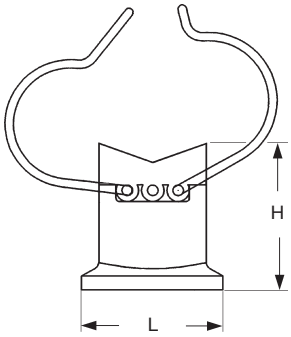
ZPG

PIPE HOLDERS



ZPG type pipe holders are an easy and convenient solution to hold spray manifolds on the tunnel walls in surface treatment plants and to speed up maintenance and cleaning operations. Their high quality springs are suitable both for steel and plastic pipes, with sizes ranging from 3/4" up to 11/2". These springs, manufactured in a special grade stainless steel, are heat treated and will not lose their elastic properties even after several disassemblies . Each ZPG holder can be equipped with two springs, to be used with heavy manifolds or pipes that are subject to strong vibrations. The below table shows the product codes for one and two springs holders.

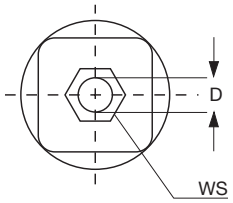
Materials Body **D6** PP, chemically bonded fiberglass
Springs **N1** AISI 302 Stainless steel, heat treated

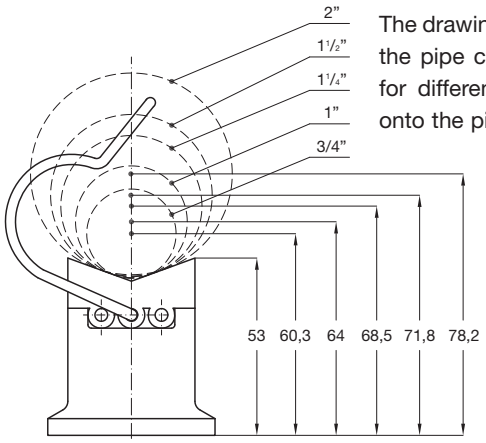


Code Single spring	Double spring	PS inch	D mm	H mm	L mm	WS mm	W g
ZPG 1075 D6	**ZPG 2075 D6**	3/4	11	53	50	17	72
ZPG 1100 D6	**ZPG 2100 D6**	1					72
ZPG 1125 D6	**ZPG 2125 D6**	1 1/4					90
–	**ZPG 2150 D6**	1 1/2					90
–	**ZPG 2200 D6**	2					110

Weight values are based on the double spring version

The ZPG body is designed to be secured to the wall with one M10 bolt with hexagonal 17 mm head.



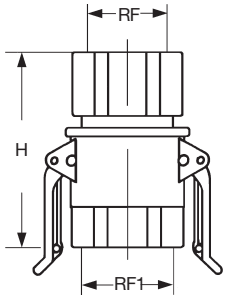


The drawing shows the distances of the pipe center axis from the wall, for different pipe sizes assembled onto the pipe holder.

QUICK COUPLING JOINTS

ZSA

ZSA quick coupling joints are a very popular solution to connect standpipes to manifolds in surface treatment plants and offer the advantage of an easy handling and quick positioning. PNR couplings, designed bearing in mind the industries requirements and needs, offer sturdy bodies and high quality materials carefully chosen to withstand mechanical stress and chemical attacks. Standard types come with sintered 316 stainless steel levers and synthetic rubber seals. PVDF levers and Viton seals are available as an option.



Code	RF1 inch	RF inch	H mm	LP bar	W kg
ZSA 0075 B3x	3/4	3/4	85	15	*
ZSA 0100 B3x	1	1	73	15	
ZSA 0100 D6x			73	7	
ZSA 0125 B3x	1 1/4	1 1/4	110	15	
ZSA 0125 D6x				7	
ZSA 0150 D6x	1 1/2	1 1/4	110	6	
ZSA 0151 B3x	1 1/2	1 1/2	110	15	
ZSA 0151 D6x				6	

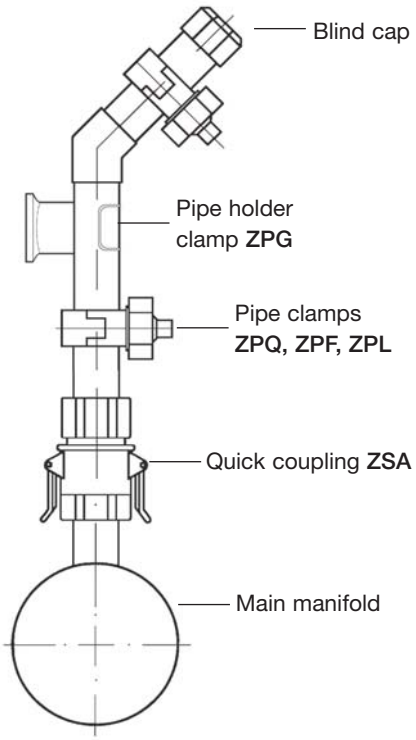
* *Weight values for different materials are given on request*

Materials

Body	D6	Polypropylene, chemically bonded glass fibers
	B3	Aisi 316 stainless steel
Levers	B31	Aisi 316L stainless, cast
	B35	Aisi 316 stainless, sintered
	D8	PVDF, Polyvinylidenefluoride
O-ring	E0	EPDM
	E7	Viton
	E8	NBR

ZSA quick couplers are available in a wide range of different assemblies, including types with fixed pointing, levers in special materials and other combinations. Therefore, when you order, please select the required option from the following list and replace it to the "x" in the product code.

X	Orientation	Lever material	O-ring	Rings
B	Fixed	AISI 316, sint	EPDM	AISI 316
C	Fixed	PVDF	EPDM	AISI 316
D	Fixed	PVDF	VITON	AISI 316
H	Fixed	AISI 316, sint	VITON	AISI 316
S	Free	AISI 316, sint	EPDM	AISI 316
T	Free	PVDF	EPDM	AISI 316
U	Free	PVDF	VITON	AISI 316
Y	Free	AISI 316, sint	VITON	AISI 316



QUICK FITTING RISERS AND HEADER MANIFOLDS

Our range of products for surface pre-treatment plants is the most complete on the market, developed in close cooperation with the most important plant designers worldwide. As requested by our customers, PNR designed most of the assembly accessories that are currently commonly adopted in pre-treatment plants. Thanks to our remarkable and long experience, many of the most advanced plants are now equipped with high quality products that are unequalled for their functional and efficient design. All parts that are necessary for a professional assembly of risers and pipe manifolds are available for our customers as shown in the diagram and can be quickly delivered ready from stock at competitive prices.

COMPLEMENTARY PRODUCTS

SELF-CLEANING FILTERS

We provide industry with small, medium and large size filters designed according to our customers' specific requirements for several applications, mainly in the chemical and food industry and whenever a safe treatment of fluids is necessary.
Our supply includes the filter design, in compliance with the most important norms like PED and ASME, manufacturing and final site commissioning for medium and large size filters only.
All our filters are normally manufactured in AISI 304 and 316L stainless steel for chemical compatibility with most fluids. Their design makes them highly suitable to be used in severe conditions and to withstand frequent cleaning cycles with no wear.
Their cover is fit with bolts or swivel clamps while an o-ring ensures that the assembly is perfectly watertight .
All parts, including the filter legs, are electro-polished to avoid any point of corrosion.

SELF-CLEANING FILTERS / SINGLE CARTRIDGE

Our range of standard self-cleaning filters is designed to satisfy the majority of industrial applications: flow rates range from 50 to 1000 cubic meters/hour and micron ratings from 2000 to 50 microns may be selected to match the design operating conditions of most critical processes with outstanding performances in terms of reliability and cost effectiveness.
Housings are normally manufactured in AISI 304 or AISI 316L and equipped with viton, EPDM or teflon o-rings; PVC housings are available on request to withstand longer service time with corrosive fluids .
The inlet and outlet flange can be positioned with 90° offset angles, according to the feeding line layout.
Idle time between consecutive cycles, drainage valve opening time as well as the ratio between drainage and cleaning cycles can be easily selected from the command module. Filters are delivered with pre-set parameters according to the specific application they are requested for.
Fill in the data collection questionnaire on page 32 and send it to your nearest PNR distributor to get an answer for all your process filtering needs.

Maximum operation pressure	**LP**	**10 bar g**
Maximum operation temperature	**LT**	**80° C**

CUSTOM-MADE FILTERS

With our range of available filtering elements and materials as well as our experience and know-how in designing and manufacturing sophisticated parts, we can quote and produce functional solutions for virtually all filtration problems.
Every special construction is defined after a careful and attentive examination of Customer's data and requirements and designed in full compliance with the applicable international norms for pressure vessels. Final manufacturing is made only after our drawings have been approved by the Customer.
Finally we commission our filters on site and issue a Commissioning Report.
Fill in the data questionnaire on page 32 and send it to your nearest PNR distributor to get the answer to your process filtering needs.

CUSTOM MADE FILTERS

MULTIPLE CARTRIDGE FILTERS

Maximum operation pressure	LP 20 bar
Inlet and outlet ports size	1 1/2" and 2 inches normally BSPP male thread
Upper relief plug/valve	3/8" BSP female

BAG FILTERS

Maximum operation pressure	LP 20 bar
Inlet and outlet ports size	1 1/2" and 2 inches normally BSPP male thread
Upper relief plug/valve	3/8" BSP female
Bag size range	1 to 4

BASKET FILTERS

Maximum operation pressure	LP 20 bar
Inlet and outlet ports size	1 to 2 inches normally BSPP male thread
Upper relief plug/valve	3/8" BSP female
Outlet port at filter bottom	Designed for total drainage
Standard basket	Designed for pressure drop 4 bar Special designs on request

Maximum operation pressure	LP 20 bar
Standard basket	Designed for pressure drop 4 bar Special designs on request
Inlet and outlet ports size	1" - 1 1/2" and 2" inches normally BSPP male thread
Upper relief plug/valve	3/8" BSP female

The above mentioned multiple cartridge, bag and basket filters are recommended for fluids with a vapor tension lower than 0.5 barg at the highest allowed temperature.
CE marking and Declaration of Conformity are not required as for these devices art. 3, para 3 of PED Regulation 97/23/CE applies.

NORMS APPLIED
AD Merkblatt
ASME VIII Div 1,
VSR.

CONSTRUCTION MATERIALS
Austenitic stainless steels, series 304 and 316L
Duplex Stainless steels
Hastelloy
Inconel.

CERTIFICATION NORMS
97/23/ CE PED
ASME U-Stamp.

COATINGS
Hard rubber
Neoprene
Vitrification
Halar
PTFE.

FILTER SPECIFICATION FORM

Company name	Country
Mr./Mrs.	Contact info
Job/position	Phone Fax
Date	E-mail

OPERATION DETAILS

PROCESS INFO	Application			
	Line flow rate	cubic meter / hour		
	Process pressure range	min: bar g --- max: bar g		
	Fluid properties	Specific weight gr/l	Suspended solids gr/l	Susp. solid dimensions mm
	Compressed air pressure bar g		Electric supply V	
FILTER REQUIREMENTS	Required filtration degree	µm		
	Design temperature	degree C / F		
	Material of construction and/or corrosive agents in the fluid			
	Max dimensions	mm	height x diameter x weight	
	Construction norms to apply, if any			
	NOTES			

ADDITONAL INFORMATION

LIST OF ABBREVIATIONS

AE	Air capacity, inlet	Ncm/min
AU	Air flow, outlet	Ncm/min
C	Cartridge ident color	—
CA	Internal volume	liter
DE	Depth	mm
DI	Nipple inner dia (hose reels)	mm
D,D1	Diameter	mm
DX	Nipple inner diameter	mm
E	Inlet thread size	inch
FF	Flange Nominal Dia	inch
H, H1	Height	mm

HE	Height	mm
LF	Hose length	m
LP	Max operation pressure	bar
LQ	Maximum capacity	lpm
LT	Max operation temperature	°C
M	Wire net mesh size	mesh
MF	Flexible hose size	inch
P	Depth	mm
PD	Pipe external diameter	mm
PS	Pipe size	inch
Q	Capacity	lpm

RA	Radius	mm
RF	Female thread	inch
RFS	Inlet thread steam	inch
RFW	Inlet thread water	inch
RG	Male thread	inch
S	Thickness	mm
SV	Swivel base model	—
U	Outlet thread size	inch
UF	Outlet fem thread size	inch
W	Weight	kg
WF	Water inlet	inch
WS	Wrench size	mm

PRODUCT WARRANTY

PNR products will be replaced or repaired free of charge at PNR own discretion if proved to be flawed in manufacture, labeling or packaging. The above warranty conditions will apply if notice of flaw claim is received by PNR within 30 days from the date of product installation or one year from the date of shipment. All replacement or repair costs shall be the final solution for any breach of any warranty, and PNR shall not be held liable for any damage due to personal injuries or commercial losses caused by product malfunction.

REJECTED PRODUCTS

Receiving returned product/s that cannot be precisely identified may cause delays in handling them and even the possibile loss of some. In order to avoid such problems, please strictly follow the PNR procedure here below described.

PRODUCT/S ERRONEOUSLY DELIVERED BY PNR

1 Ask PNR to give you a RIN (Return Identification Number) and the related Form.
2 Return defective product/s to PNR including the Form correctly filled in and quoting the RIN number.
3 Upon receipt, PNR will issue a Credit Note in your favour including product and transport costs.

PRODUCT/S ERRONEOUSLY ORDERED TO PNR

1 Rejected product/s will be accepted by PNR only if in returned in the original condition and properly packed.
2 Ask PNR to give you a RIN (Return Identification Number) and the related Form.
3 Return the product/s to PNR including the Form correctly filled in and quoting the RIN number.
4 A 10% inspection and re-stocking charge, as well as all transport costs, are charged to the Customer.
5 A Credit note for the correct amount will be issued and settled.

SPECIAL PRODUCTS NOT INCLUDED IN THE CATALOGUE

The rejection and return of these products is possible only after PNR has issued a purchase offer, if deemed adequate.

DISCLAIMER

Our products are manufactured with the best care and according to the latest technology developments, but we cannot assure that each one of our products is perfectly suitable for any possible specific process.
The information supplied in this Catalogue is provided "as is" and we cannot give any guarantee as to the data herein contained or their accuracy. This publication may include technical inaccuracies or typographical errors and information and data may be periodically revised and changed made without warning.

SENDING LIST

If you wish to receive regular updates of our technical documentation, please photocopy this card and mail it back to us in a sealed envelope. Your details will be kept in our Permanent Mailing List.

CTG AC20

01	COMPANY		PNR PRODUCT RANGE		PAPERMILL PRODUCTS	
02	NAME		GENERAL PURPOSE SPRAY NOZZLES		STEELWORK NOZZLES	
03	FUNCTION		AIR ASSISTED ATOMIZERS		SPRAY DRYING NOZZLES	
04	ADRESS		COMPLEMENTARY PRODUCTS AND ASSEMBLY FITTINGS		FIRE FIGHTING COMPONENTS	
05	PHONE	FAX	TANK WASHING SYSTEMS			
06	WEB SITE	E-MAIL	EVAPORATIVE COOLING SYSTEMS			

CTG AC20

www.pnr.eu

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PNR Benelux
PNR Czech Republic
PNR Deutschland
PNR France
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PNR Mexico
PNR U. Kingdom

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