



# INDUSTRIAL TANK WASHING SYSTEMS

CTG LS15 BR



## INTRODUCTION

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### TECHNICAL PUBLICATIONS

PNR manufactures a complete range of spray nozzles for industrial applications, as well as several products and systems based on the spray technology. Complete information about our Company and our product range is available through the following publications

PRODUCT RANGE	CTG TV10 BR
GENERAL PURPOSE SPRAY NOZZLES	CTG UG14 BR
AIR ASSISTED ATOMIZERS	CTG AZ15 BR
COMPLEMENTARY PRODUCTS AND ASSEMBLY FITTINGS	CTG AC14 BR
INDUSTRIAL TANK WASHING SYSTEMS	CTG LS15 BR
EVAPORATIVE COOLING LANCES	CTG LN15 BR
SPRAYDRY NOZZLES	CTG SP10 BR

As a result of continuous product improvement, our technical publications are regularly updated, and automatically mailed to Customers whose address are registered into our Catalogue Mailing List .

We shall gladly register your name, when you mail to the nearest PNR Office or Distributor the form on page 21 duly filled with the required information.

### NOTES

Our products and their performances are continuously reconsidered and improved in order to keep up with the latest state of technology.

We regret not to be able to give our Customers previous advice concerning these modifications: for this reason the data and the product specifications given in this Catalogue are always to be understood as indicative, and do not firmly engage our Company.

In case your specific application should imperatively require that one or more characteristics of one of our products, as given by this Catalogue, is strictly adhered to, we ask you to obtain a written confirmation about your requirements before sending your order.

All information contained into this Catalogue , including product data, product codes, diagrams and photographs are the exclusive property of Flowtech srl.

It is formally forbidden to reproduce any part of this Catalogue without having obtained a written permission from Flowtech srl.

Dimensions in this Catalogue are given in millimeters ( mm )

All threads are manufactured according to the ISO 228 standards

( European norms BS 2779 – DIN 259 – UNI 338 )

Explanations about the abbreviations used in the Catalogue are given at page 21

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## TANK WASHING TECHNIQUES

The continuous research for higher efficiency in all kind of industries, and the requirement to assure a constant and higher quality level for their products, highlight the necessity that every step in the production, stocking and transporting processes are performed using clean systems and tanks.

At the same time, as disposing liquid effluents is becoming more and more costly, it becomes necessary that each cleaning process, while reaching a totally satisfactory result, is performed using the lowest possible volume of cleaning solution.

The two above factors have originated the introduction on the market of an always wider variety of tank cleaning devices, ranging from the classic fixed head to more and more sophisticated models to cope with the most demanding applications.

Our long experience in the field of tank cleaning suggests that the following basic concepts are given proper consideration in order to determine the correct washing cycle for each single application, and consequently the most suitable type of tank cleaning device.

### 1 PROPER FILTERING FOR THE WASHING LIQUID

Small inner passages and precision machined parts are typically found in tank washing equipment.

In such cases where the washing cycle is performed by means of a recycled solution the solid particles which may be dispersed into the solution must be identified for dimension and properties.

Suspended solid particles may affect proper operation of tank washing equipment, or require more frequent cleaning or service of the same.

A suitable line filter may be considered, see our Accessories Catalogue.

### 2 CORRECT CHOICE FOR WASHING CYCLE AND SOLUTION

Based on the type of product which has to be eliminated, each single process has to be examined in order to define such parameters as the appropriate washing fluid, the right temperature, jet pressure and washing time.

### 3 ADEQUATE MOTIVE MECHANISM

The number of products which need to be removed from the wall of a tank is near to endless, each one showing its own different properties.

Washing cycles can range from a quick water rinse at low pressure and ambient temperature, to long lasting cycles using hot water and caustic, sometimes at high pressure.

The latter situation requires both a slow motion of the fluid jets, which have to hit the tank wall without breaking into drops and loose their impact, and a properly indexed rotation so that the revolving jets do not hit the same path at each turn.

Our tankwashers range, the most complete on the market, is classified by number of rotation axis and type of motive mechanism.

### 4 CLEANING RADIUS / WETTING RADIUS

It is not possible to define the cleaning radius of any tank washing equipment without making reference to precise conditions as the product to be eliminated, the cleaning fluid, the operating pressure and temperature.

Such value can only be determined by experience, for each single given process.

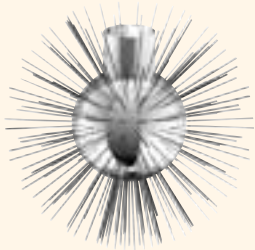
It is instead possible to define a wetting radius, as the radius where the equipment can wet the entire tank inner surface : in this condition it must be expected the fluid to hit the wall with a fraction of its original impact force.

The value for wetting radius is given for any of our equipment, in the general information table at page 20.

We shall be glad to put our experience at your service, and advise you about the most suitable equipment to perform your washing job with an optimum performance.

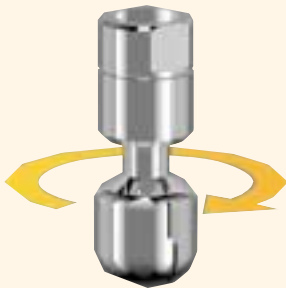
## WASHING EQUIPMENT TYPES

### FIXED SPRAY HEADS



The most simple tank washing device, fixed head are the classic equipment used in thousands of tanks still today. Their low impact properties and high volume fluid requirement limit their use to very small tank sizes and processes where easily cleaned liquids and non sticking powders have to be eliminated. Our models UAA and UAB are made out of high quality stainless steel and cover most possible applications, while we will quote for special models to suit individual requirements.

### ONE AXIS HEADS / REACTION DRIVE

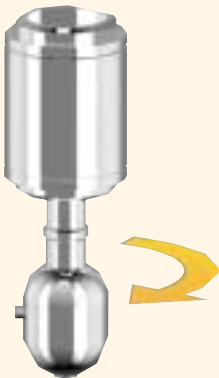


The washing is obtained through water jets coming from a rotating head, where the head motion is assured purely by the fluid reaction forces.

The rotation speed depends upon the operating pressure, which must be limited to avoid the water jets being broken into minute droplets.

These very popular devices perform very satisfactorily in a great number of general applications, with limited size tanks.

### ONE AXIS HEADS / MOTOR DRIVE



Here the fluid jets are projected from a head rotating around one axis, but a greater efficiency is reached because of lower head rotation speed.

The head is not rotating because of reaction force, but is powered instead by a very simple motor which keeps the speed limited to a few rpm.

The jets do not break into droplets, and all their original impact force is used to impact the tank wall.

### TWO AXIS HEADS / HIGH IMPACT WASHING



The most sophisticated tank washing equipment, where high impact fluid jets slowly move with a combined rotation around one vertical and one horizontal axis.

The motive mechanism assures the jet to hit always different paths at each turn, so that each single point of the inner tank surface is cleaned.

Our unique range includes different models to suit any requirement in the industry, with low and high pressure jets and a choice among reaction drive, positive drive actuated from the washing liquid itself, electric or compressed air external motors.

## FIXED HEADS

## UAA

UAA fixed spray heads are a simple, fast and efficient device for cleaning the inside of small size tanks where a simple rinsing action is required.

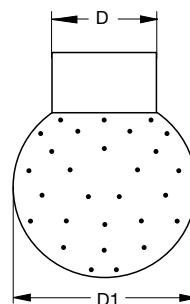
Their simple design allows for the head to be easily cleaned after being operated, which makes it possible to leave the heads ready for use, permanently in place inside the tank.

Because of the relatively high washing fluid flow rate, they are usually operated at low pressures and can achieve low impact action on the tank wall.

However, in those cases where fixed heads can achieve a satisfactory cleaning result, their simple design assures low investment cost and maximum reliability,

The figures for wetting radiuses shown at the right of the table have been obtained operating the heads with a water pressure value of 1 bar.

**Material** B31 Aisi 316L Stainless steel  
**Connection** Female BSP thread  
 Pipe clip



Code	D	D1	Flow values (lpm) at different pressures			WR (m)
			1	1,5	2	

UAA 1228 B3 ZB	1/4"	28	31	38	44	1,0
UAA 2050 B3 ZB	1/2"	50	90	110	127	1,6
UAA 2465 B3 ZB	3/4"	65	221	271	312	1,3
UAA 3990 B3 ZB	1"1/4	90	498	610	704	1,8

UAA 2040 B3 ZC	20	40	63	77	89	1,9
UAA 2041 B3 ZC	20	40	85	85	104	2,2
UAA 2050 B3 ZC	20	50	93	114	131	1,6
UAA 2650 B3 ZC	26	50	121	148	171	2,2
UAA 2666 B3 ZC	26	65	144	176	203	1,5
UAA 3066 B3 ZC	30	65	130	159	184	1,3
UAA 3690 B3 ZC	36	90	404	495	571	1,2

## PRODUCT CODE

The codes in the table beside refer to heads with a 360° spray pattern, BSP female thread or clip connection.

Please note the product code can be changed to identify different available spray patterns or thread, as indicated below. (NPT threads not available in the European Union).

Spray pattern		Connection	
Z	360°	B	BSP Female
T	180° up	N	NPT Female
S	180° down	C	Clip

Wetting radius has been measured with pressure of 1 bar.

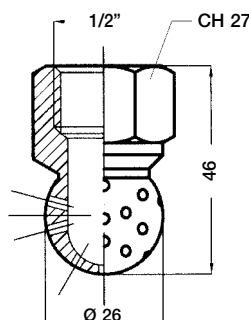
## UAB

UAB heads are a very compact devices, for applications like pipe washing or where only tight space is available.

The thick walls of this device, which is machined from a stainless steel rod, make it also a good choice where the washing process needs to be performed at high pressure and fast erosion should be avoided.

Code	E	Capacity (lpm) at different pressures (bar)			
		2	3	4	5

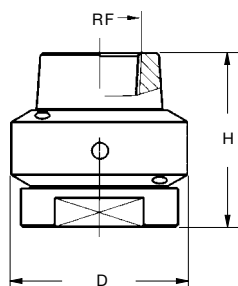
240°	UAB 2220 XX	0,8	11,9	22,0	25,4	28,4
	UAB 2343 XX	1,0	28,0	34,3	39,0	44,2
	UAB 2700 XX	1,5	57,0	70,0	80,9	90,3
	UAB 3110 XX	2,0	90,0	110	121	142



**Material** B1 Aisi 303 Stainless steel  
 B31 Aisi 316 L Stainless steel

## ONE AXIS HEADS

## REACTION DRIVE



## UBB

UBB heads are specially designed for applications where chemical attacks from strong acids are to be expected, or when contamination to the product being handled is to be excluded, and are therefore entirely made out of PTFE.

Their rotary motion is derived from the reaction forces of their water jets, which are arranged in such a way that the inner tank surface is thoroughly covered.

The simple design, a two-piece construction, assures for long, maintenance free service.

Four different capacities make for a range to suite many different applications.

Also available with American NPT thread connection.

Material E1 PTFE

Code	RF	Flow values (lpm) at different pressures (bar)				Dimensions	
		2	3	5	7	H	D
UBB 2319 E1	1/2"	26	32	-	-	60	60
UBB 2320 E1	3/4"	26	32	-	-	60	60
UBB 3120 E1	3/4"	105	120	176	214	60	60
UBB 3198 E1	1"	158	198	274	322	64	70

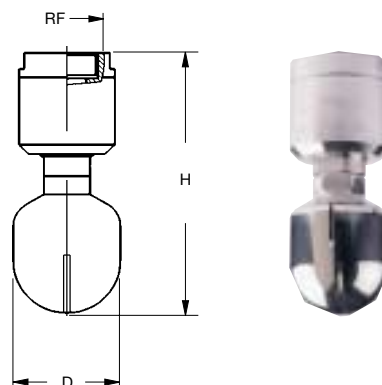
# ONE AXIS HEADS

## UBC

## REACTION DRIVE

UBC series heads are completely made out of stainless steel, with the rotating sphere rolling on two ball bearing rows, to make operation possible in any position. Inner and outer surfaces are carefully machined, cleaned and polished to avoid contamination for bacterial growth. UBC 2629 and 2900 heads are available with three different growth connections, that is a female thread, a clip-on or a weld-on connection. The two latter types are shown with more detail at the bottom of this page.

Their robust and simple design, high quality construction, long trouble-free service and remarkable efficiency have made them very popular for general purpose applications, in thousands of applications all over the world.



Material B31 Aisi 316L Stainless steel

Code	Capacity at different pressures (lpm) (bar)				Available spray pattern			Available pipe connection (RF)						Dimensions (mm)	
	2	3	5	7	360	180 $\Delta$	180 $\nabla$	1/2"	3/4"	1"	1+1/4"	clip	weld	H	D
UBC 2629 B3	51,4	63,0	77,7	91,2			Z	B						114	45
UBC 2630 B3	51,4	63,0	77,7	91,2			Z		B			C	S		
UBC 2899 B3	73,5	90	116	131	S			B							
UBC 2900 B3	73,5	90	116	131	S	T			B			C	S		
UBC 3120 B3	98	120	155	183	S	T				B					
UBC 3135 B3	110	135	165	195	S				B					130	60
UBC 3300 B3	245	300	388	457	S						B				

### COMPLETE CODE

The precise identification of each different head, including size, spray pattern and pipe connection is only obtained combining the different option coding into a complete code. Please notice examples below

UBC 2900 B3 SC Spray pattern 360° Clip connection  
 UBC 2900 B3 SB Spray pattern 360° 3/4" BSP female thread  
 UBC 2629 B3 ZB Spray pattern 180° down 1/2" BSP female connection

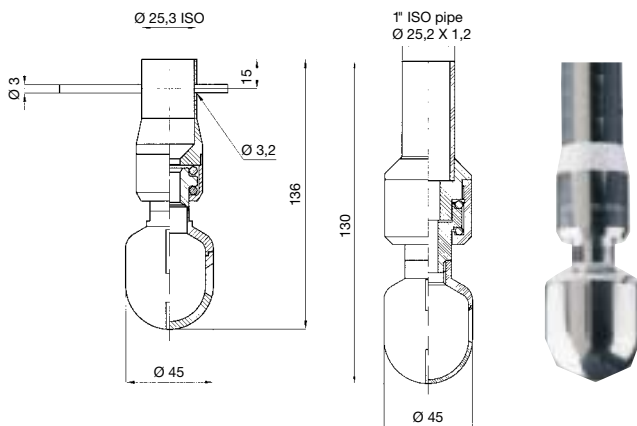
### Clip-on connection

This model can be assembled onto a fixed pipe entering the tank shell by means of a simple spring retaining pin, and offers a simple way for a quick removal of the head from its location, in those applications where easily performed cleaning is required. The clip end of the head will accept inside a standard 1" ISO pipe, with 25 mm outer diameter.

### Weld-on connection

The opposite case, where the head can be left in place between two washing cycles, or where the complete assembly of pipe and washing head can be removed from the top can require the installation of a weld-on pipe.

The connection end of the pipe will match a standard ISO pipe with 25 mm outer diameter and 1.2 mm thickness.

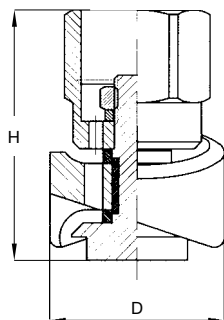




ONE AXIS HEADS

REACTION DRIVE

UBD



UBD rotary heads can profit from the special design of their rotary head, which allows for a very even water distribution, assuring optimum surface coverage.

They assure therefore very short washing cycles, using lower quantities of water, with a definite advantage in those applications where recycled water is not allowed as a washing medium, and the volumes sent to disposal must be kept to a minimum.

UBD heads work using Teflon slide bearings floating at high speed over a thin water film.

Only a fraction of the liquid energy is then used to power the washing head, while the high speed of the rotating disc produces instantly a cloud of high energy droplets all over the inside surface of the tank.

The clever design of this device results in no maintenance at all being necessary.

Large inside passages are not easily subject to plugging while an extremely simple design with only one moving part avoids any internal jamming.

All inside and outside surface are carefully polished, for fast and easy sanitizing.

Materials

Body, shaft and rotary head	B31	Aisi 316L Stainless steel
	L61	Hastelloy C22
Bearings	E1	PTFE

Code	Capacity at different pressures (lpm) (bar)					Available spray pattern			Available pipe connection			Dimensions (mm)	
	2	3	4	5	6	360	180 $\Delta$	180 $\nabla$	3/4"	1	1 1/2"	H	D
UBD 2530 B3 XX	43	53	62	69	75	A		C	F			57	38
UBD 2780 B3 XX	64	78	91	101	110	A	B	C		F		75	52
UBD 2870 B3 XX	71	87	100	112	123	A			F			57	38
UBD 3125 B3 XX	103	125	144	162	177	A		C		F		75	52
UBD 3140 B3 XX	114	140	162	181	198	A	B	C			F	105	68
UBD 3210 B3 XX	172	210	242	272	279	A					F	105	68

Complete code

UBD heads are available in the three above mentioned sizes, and in a variety of models, offering a choice among such features as

- Spray angle 360°, 180° upwards and 180° downwards
- Connection threads BSPT, NPT
- Lower flow models, with limited water requirements

The precise identification of each different head, including size, spray pattern and pipe connection is only obtained combining the different option coding into a complete head code.

Please notice examples below.

UBD 2780 B3 AF	Material Aisi 316	Spray pattern 360°	1" BSP fem thread
UBD 3140 L61 CF	Material Hastelloy C22	Spray pattern 180° down	1+1/2" BSP fem thread



## ONE AXIS HEADS

## UBE

## REACTION DRIVE

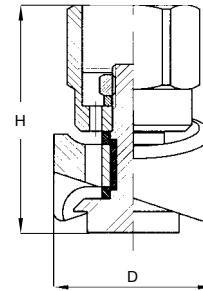
UBE rotary heads offer the same design as the UBD series, and therefore the same advantages like simplicity of design, easyness of cleaning and superior performance.

In addition, they are completely made out of pure Teflon, which assures an outstanding resistance to chemically aggressive media.

UBE heads are hence the most suitable devices to be used for tank cleaning in those applications where aggressive chemicals like strong acids are being handled.

They are available in three sizes, and a choice of different spray patterns (on request).

The table below shows liquid capacities for the different heads at several feed pressure values, and allows for complete coding identification for all the available sizes and types.



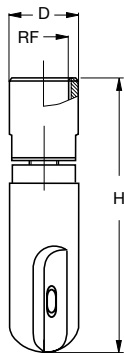
Material            E1            PTFE (Teflon)

Code	RF	PM	Flow values (lpm) (bar) at different pressures				Dimensions (mm)	
			1	2	3	4	H	D
UBE A087 E1 AF	3/4"	4,0	55	73	87	100	55	38
UBE A125 E1 AF	1	5,0	80	98	128	148	75	52
UBE A210 E1 AF	1 1/2"	7,0	130	168	210	242	105	68

Teflon is a registered trade mark from Dupont Co.

## ONE AXIS HEADS

### REACTION DRIVE



### UBF

UBF heads have been designed to be operated through small dimension openings, as small a 25 mm diameter hole.

They are made completely out of high quality stainless steel, with a carefully polished outside surface, and assure therefore both a long maintenance free service and easily kept perfect hygienic conditions.

Typically used for cleaning beer kegs, containers for soft drinks or small bore pipes.

**Material** B31 Aisi 316L Stainless steel

### EXCLUSIVE TRUMPET ORIFICE



The new trumpet design of the side orifices allows to obtain a real flat fan jet with a well defined spray angle, improving considerably the efficiency of the washing action.

Italian and International Patents applied for.

Code	RF	Flow values (lpm) at different pressures (bar)				Dimensions (mm)	
		3	5	10	12	H	D
<b>UBF 2270 B3</b>	1/2"	27,0	36,4	51,5	56,4	88	25
<b>UBF 2380 B3</b>	1/2	38,0	49,2	69,3	76	88	25

## ONE AXIS HEADS

## UBA

UBA series heads operate producing water jets out of a spray head rotating around a vertical axis, but feature more sophisticated design where the head is put in motion by a simple motor located into the unit upper body.

Since the motor produces a low rotation velocity, the jets do not break up into droplets and can work with a higher impact force onto the tank wall.

The head design includes one jet directed upwards, which is meant to clean the tank roof area around the feed pipe, a difficult area in many instances.

Because of this clever design some major advantages are then assured with respect to a reaction driven head, like superior cleaning power, faster cleaning cycles and lower volumes of cleaning solution required.

UBA washing heads are available in two sizes, and two different jet patterns, as shown in the diagram below.

Rotation speed varies, depending upon feed pressures, between 5 and 12 rpm.

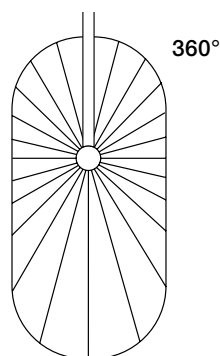
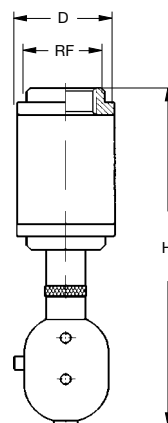
<b>Materials</b>	<b>Body and sphere</b>	<b>B31</b>	<b>Aisi 316L Stainless steel</b>	
	<b>Bushings</b>	<b>E1</b>	<b>PTFE</b>	
	<b>Motor ring</b>	<b>E1</b>	<b>PTFE</b>	

Code	RF	Flow values (lpm) at different pressures (bar)				Dimensions (mm)	
		3	5	7	10	H	D
<b>UBA 2400 B3</b>	3/4"	38	49	58	69	175	48
<b>UBA 2402 B3</b>	3/4"	38	49	58	69	175	48
<b>UBA 3150 B3</b>	1 1/2"	75	97	115	137	230	72

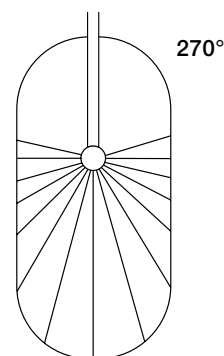
The smaller UBA model, UBA 2400, can be supplied with a specially designed head allowing for cleaning open tanks or vats.

In this case the water jets cover an angle limited to 270°, as shown in the diagram beside, avoiding fluid projections outside the vat.

## MOTOR DRIVE



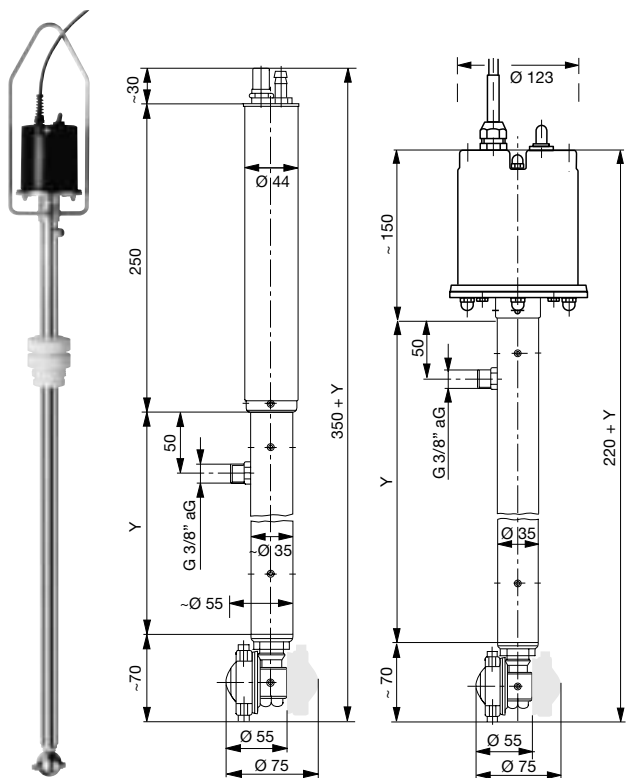
UBA 2400 B3



UBA 2402 B3

## TWO AXIS HEADS

### MOTOR DRIVE



### UBG

These proven units are powered from electric or compressed air motors located outside the tank, and assure the most reliable washing operation where the only shaft is protruding inside the tank.

The high quality motors and the stainless steel mechanism assure for years long trouble-free service, while a choice of models covers a wide application requirement range, with pressures up to 250 bar and capacities to 80 lpm, different shaft lengths and choice between 2 or 4 nozzles heads to better suit your washing cycle specifications.

The liquid capacity depends upon the size of its spray nozzles. Capacities for several sizes of nozzles are given in the table below, where the capacity is understood for a head equipped with two nozzles of the given size, and it must be doubled for double heads fitted with four nozzles.

Shaft lengths 1.0, 1.5 or 2.0 meters, see drawings for total length. Accessories, and specifications about air and electric motors, can be found at page 13.

#### Materials

Mechanical parts B3 Aisi 316 stainless steel

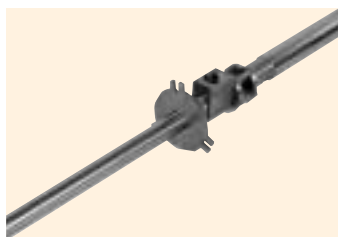
#### TANKWASHER CODE

UBG tankwashers code includes all the possible options, and it must be completed by means of the table below, choosing the appropriate value for X, Y and Z.

### UBG 12 x y B3 z B

Please complete the code as follows

X Motor type	A = Air	E = Electric		
Y Shaft length	A = 1.0 m	B = 1.5 m	C = 2.0 m	
Z Tank mount	A = Adapter	B = Threaded ring	C = Flange	Z = None



We supply mounting flanges to Customer design, or to any international Standard.

Code	NZ	Capacity at different pressures (lpm) (bar)							Dimensions		
		10	20	30	50	70	90	135	TL	DL	RF
UBG 12xy B3 zB	05	7	10	12	16	19	22	27	55	75	1"
UBG 18xy B3 zB	06	9	12	15	19	23	26	32			
UBG 24xy B3 zB	07	10	14	17	22	27	30	37			
UBG 36xy B3 zB	08	12	16	20	26	31	35	43			
UBG 48xy B3 zB	09	13	18	23	29	34	39	48			
UBG 54xy B3 zB	10	14	20	25	32	38	43	53			

Capacity values shown in the table only show the highest value that can be obtained through a rotating head fitted with two nozzles having the size shown under the column NZ. The precise capacity being sprayed into the tank depends upon friction losses between the pump outlet and the nozzles.

Additional technical details are given at page 13.

## TWO AXIS HEADS

## UBH

## MOTOR DRIVE

These proven units are powered from electric or compressed air motors located outside the tank, and offer a portable, reliable solution to your washing problems with limited size tanks.

The high quality motors and the stainless steel mechanism assure for years long trouble-free service, while a choice of models covers a wide application requirement range, with pressures up to 70 bar and capacities to 300 lpm, different shaft lengths and choice between 2 or 4 nozzles heads to better suit your washing cycle specifications.

The rotating head has enclosed gears and its liquid capacity depends upon the size of its spray nozzles.

Shaft lengths 1.0, 1.5 or 2.0 meters, see drawings for total length.

UBH heads is ideal to clean bulk trailers with 3 inch or larger cleanout.

## Materials

Mechanical parts B3 Aisi 316 stainless steel

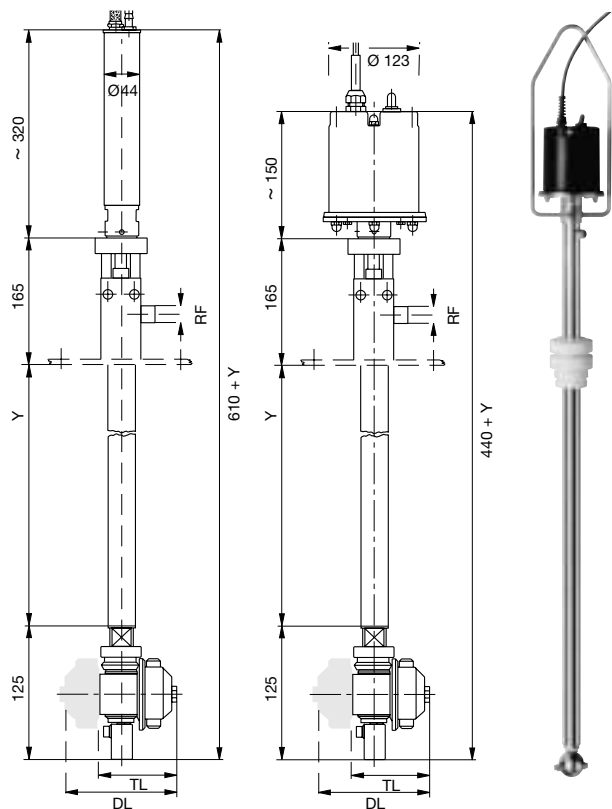
## TANKWASHER CODE

UBH tankwashers code includes all the possible options, and it must be completed by means of the table below, choosing the appropriate value for X, Y and Z.

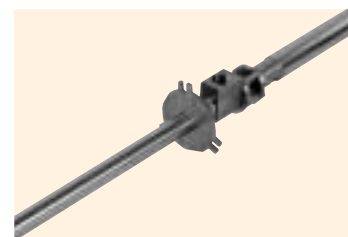
UBH 12 x y B3 z B

Please complete the code as follows

X Motor type      A = Air                      E = Electric  
Y Shaft length      A = 1.0 m                      B = 1.5 m                      C = 2.0 m  
Z Tank mount        A = Adapter                      B = Threaded ring              C = Flange                      Z = None



Code	NZ	Capacity at different pressures (lpm) (bar)							Dimensions		
		10	15	20	25	35	45	70	TL	DL	RF
UBH 12xy B3 zB	10	14	18	20	23	27	31	38	76	120	1"
UBH 18xy B3 zB	15	22	27	31	34	40	46	57			
UBH 24xy B3 zB	20	28	35	40	45	53	60	75			
UBH 36xy B3 zB	25	35	43	50	56	66	75	94			
UBH 48xy B3 zB	30	44	54	62	69	82	93	116			
UBH 54xy B3 zB	40	58	71	82	92	108	123	153			
UBH 72xy B3 zB	50	72	88	102	114	135	153	191			



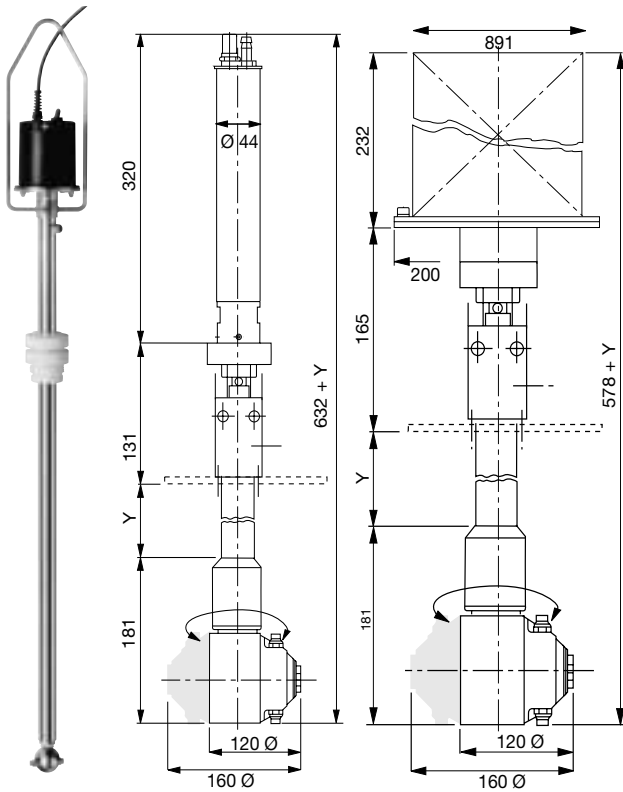
We supply mounting flanges to Customer design, or to any international Standard.

Capacity values shown in the table only show the highest value that can be obtained through a rotating head fitted with two nozzles having the size shown under the column NZ. The precise capacity being sprayed into the tank depends upon friction losses between the pump outlet and the nozzles.

Additional technical details are given at page 13.

## TWO AXIS HEADS

### MOTOR DRIVE



### UBK

These proven units are powered from electric or compressed air motors located outside the tank, and are expressly designed for those applications where high pressure operation is required.

The high quality motors and the stainless steel mechanism assure for years long trouble-free service, while a choice of models covers a wide application requirement range, with pressures up to 300 bar and capacities to 500 lpm, different shaft lengths and choice between 2 or 4 nozzles heads to better suit your washing cycle specifications.

The rotating head has enclosed gears and its liquid capacity depends upon the size of its spray nozzles.

Shaft lengths 1.0, 1.5 or 2.0 meters, see drawings for total length.

Accessories, and specifications about air and electric motors, can be found at page 13.

#### Materials

Mechanical parts B3 Aisi 316 stainless steel

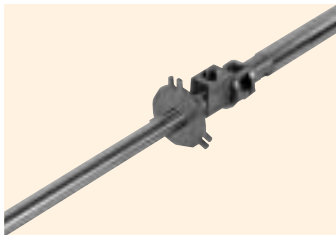
#### TANKWASHER CODE

UBH tankwashers code includes all the possible options, and it must be completed by means of the table below, choosing the appropriate value for X, Y and Z.

### UBK 12 x y B3 z B

Please complete the code as follows

X Motor type	A = Air	E = Electric		
Y Shaft length	A = 1.0 m	B = 1.5 m	C = 2.0 m	
Z Tank mount	A = Adapter	B = Threaded ring	C = Flange	Z = None



We supply mounting flanges to Customer design, or to any international Standard.

Code	NZ	Capacity at different pressures (lpm) (bar)							Dimensions		
		30	50	70	90	110	150	250	TL	DL	RF
UBK 12xy B3 zB	40	100	130	153	174	192	225	290	120	160	1"
UBK 18xy B3 zB	50	125	161	191	216	239	279	361			
UBK 24xy B3 zB	60	149	193	228	259	286	334	-			
UBK 36xy B3 zB	70	174	225	266	301	333	-	-			
UBK 48xy B3 zB	80	201	259	307	348	-	-	-			
UBK 54xy B3 zB	90	225	291	344	-	-	-	-			

Capacity values shown in the table only show the highest value that can be obtained through a rotating head fitted with two nozzles having the size shown under the column NZ. The precise capacity being sprayed into the tank depends upon friction losses between the pump outlet and the nozzles.

Additional technical details are given at page 13.

## UBG, UBH & UBK HEADS

### THREADED RING

The thread ring allows for a positive assembly of the tankwasher to a tank porthole with an inner thread.

The ring body is secured by a thread connection to the porthole, while the tankwasher shaft is passing through a conical sleeve with longitudinal cuts which can be compressed to smaller diameters.

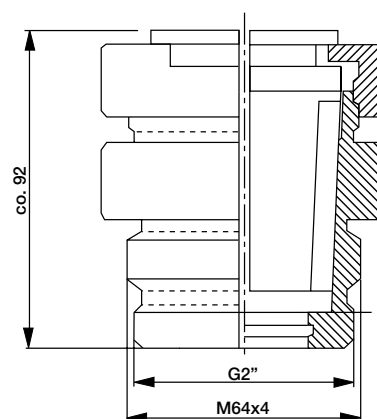
By tightening the locknut the tankwasher shaft is then securely locked in place.

An o-ring seal at the bottom of the body passage makes for a tight fit between the shaft and the manifold body.

The body has two threads, being apt to be fixed onto a 2" or a metric 64 x 4 female threads.

Material	B3	Aisi 316 stainless steel
	E11	Delrin

### ACCESSORIES AND INFO



### ELECTRIC MOTOR SPECIFICATIONS

Electric motors contain a gear box to reduce the revolutions per minute of the head.

The table below contains the main specifications for the different motors, based on the tankwasher type and spray head dimensions.

Tankwasher Model	Sprayhead dimension (mm)	Voltage (Volt)	Power (Watt)	Frequency (Hertz)	Revolutions (rpm)
UBG	42 & 55	230	56	50	11
UBH	76		56		11
UBK	120		150		19

Electric motors for the American market, working with 60 cycles, are available on request.

### AIR MOTOR SPECIFICATIONS ( Atlas Copco )

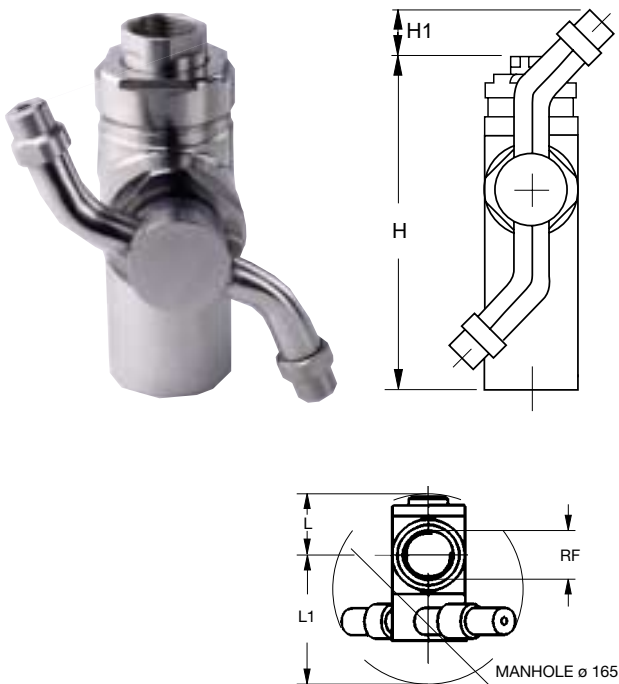
The table below contains the main specifications for the different motors, based on the tankwasher type, sprayhead dimensions and number of nozzles.

Tankwasher Model	Sprayhead dimension (mm)	Maximum pressure (bar)	Nozzle number	Air consumption (lps)	Revolutions per minute (rpm)
UBG	42 & 55	7.0	4	9.9	10 to 20
UBH	76		2		
	115		4		
UBK	120		2		
	160		4		



## TWO AXIS HEADS

### REACTION DRIVE



### UBL

UBL series heads have been the object of a long development work, representing today one of the most advanced achievements in the industry.

They offer the following noticeable advantages, all into one only device :

- A carefully polished outside surface, which avoids danger of bacterial growth and easily cleaned.
- A unique inside piston design assuring low rotation speed and powerful jet impact.  
The piston works as a brake for the rotating head, which is powered by the reaction forces from the jets. This unique design, the robust construction, and the choice of using only the best quality materials, assure unsurpassed simplicity and the most favourable operation and maintenance cost.  
You do away with expensive repairs and part replacements.
- A fixed pre-determined ratio between the number of turns in the two axis, so that the each one single water jet path is slightly spaced from the preceding one.  
The cleaning action will then accurately cover the entire inside surface of the tank leaving no spot behind.
- Contain no lubricants and need no lubrication, avoiding any risk of product contamination in case of malfunction or breakdown.
- can be easily left in place at all times, being made out of polished stainless steel and pure Teflon®.
- Assure high reliability, through their design containing a minimum of moving parts.

Maximum operation temperature 110°

Maximum operating pressure 8 bar

Materials All metal parts B31 AISI 316L Stainless steel  
Seals E1 PTFE

Code	RF	DIA	Flow values (lpm) at different pressures (bar)					Dimensions (mm)			
			2	3	5	7	10	H	H1	L	L1
UBL 2750 B3	1"	6	61	75	97	115	135	165	10	40	85
UBL 3115 B3	1"	8	93	115	148	176	206	165	10	40	85

## TWO AXIS HEADS

### UBS

### POSITIVE DRIVE

UBS heads have been designed to fulfill the requirements of those applications where intensive washing cycles at high pressure need to be performed. The sturdy stainless steel case houses an high precision driving mechanism based on an high speed turbine, operated by the washing liquid itself, and an epicycloid reduction gearbox. The gear ratio is expressly chosen so as to obtain a given pitch between the paths covered at each turn of the water jets. This design ensures that the inside surface of the tank is thoroughly cleaned, with an homogeneous result all over.

This well proven design, coupled with high precision machining, assures for a long, trouble-free operation life. It is, however, recommended to protect the head from premature wear damage using the cleanest possible washing solution. An inlet water filter (0.6 mm/38 mesh) is built inside the feed port, being the only part requiring to be cleaned regularly: it avoids large size foreign particles to enter the device.

UBS heads can be supplied to cope with a wide variety of capacity requirements: several inner setup values, based on the turbine feed injectors are available on request.

For any required capacity (lpm) the injectors bore value can be selected in order to obtain a rotary velocity value within the recommended operation range of 10 to 15 (rpm).

The diagram below gives the capacity in lpm and the rotary speed in rpm, based on the different available injector sizes: please note the injector size set-up can only be modified at the factory.

Each head model is supplied complete with four straight jet high pressure nozzles having the capacity size value shown in the table beside.

Operational conditions Water pressure max 140 bar  
Water temperature max 90° C

Material Head B2 Aisi 304 Stainless steel  
Wash nozzles C2 Aisi 416 hardened

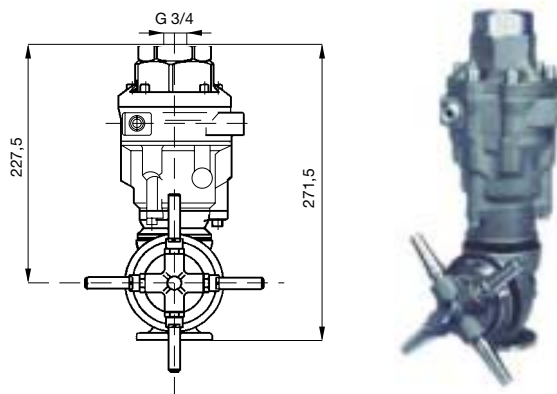
#### Operation example

With a pump delivering 50 lpm the head can be operated with three different set-ups:

Injectors 7.0 mm, speed 10 rpm

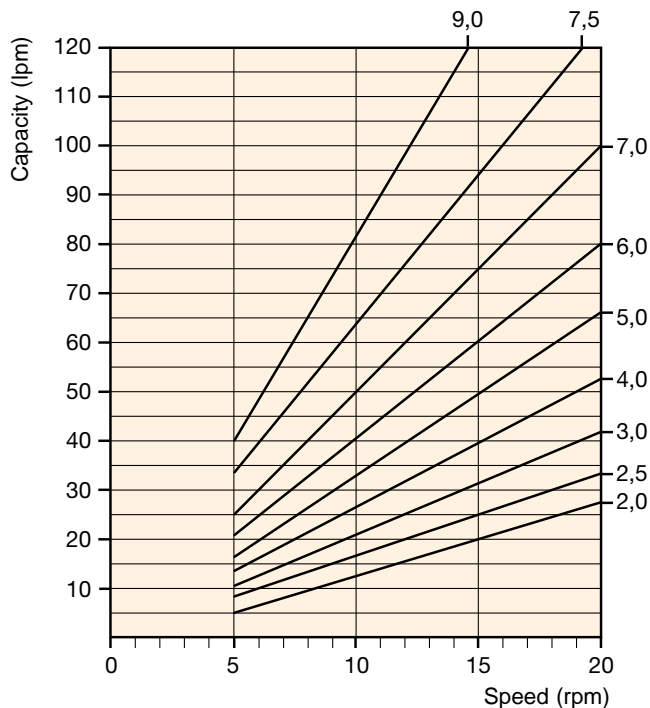
Injectors 6.0 mm, speed 12 rpm

Injectors 5.0 mm, speed 15 rpm



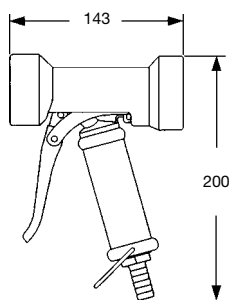
Code	Injector setup (mm)	Capacity (lpm)	Nozzle size NZ
UBS 2200 B2	2.0	20	025
UBS 2250 B2	2.5	25	03
UBS 2320 B2	3.0	32	04
UBS 2400 B2	4.0	40	045
UBS 2500 B2	5.0	50	06
UBS 2600 B2	6.0	60	07
UBS 2750 B2	7.0	75	09
UBS 2930 B2	7.5	93	11
UBS 3125 B2	9.0	125	15

Above capacity values are given for a max rotary speed of 15 rpm and feed pressure value 100 bar



## AUXILIARY EQUIPMENT

### HOT WATER GUN



#### UMV 2210 T2

The versatility of this washgun is enhanced from the additional model UMV 2211 T8 , which can be fitted with additional lances.

The two different lance models are easily fitted to the gun body with a 1/2" male nipple. and offer the following choice of operation

1

Foaming machines and equipment foaming prior to washing

The foam lance comes with a quick connect female coupling, and a matching coupling must be fitted at the gun outlet.

2

General purpose 1/4" fem thread outlet, 1/4" male thread inlet. Available both with heat protection sleeve, or bare zinc-plated steel.

The general purpose lance needs a connection nipple 1/4" fem to 1/2" male to be fitted on the gun.

Please see the complete washgun and components codes below.

### UMV

The UMV series washgun has been designed primarily to avoid hot water waste, while assuring very comfortable operation conditions.

Its thick rubber lining not only effectively protects the operator hands from the discomfort of hot water temperature, but also assures an excellent protection in case the washgun is dropped or falls to the ground since it avoids any damage to the tiles or the equipment.

The careful design, thought for the food industry, also includes a rubber quality resisting greases and usual detergents, plus a blue color choosen to give immediate visibility against a white/clear foreground.

The trigger is lined too with rubber, and can be hold in the open position by means of a lock ring.

The spray pattern can be adjusted continuously between a closed straight jet to a wide angle spray, so that the proper spray pattern can be choosen for each single job.

#### Materials

Body	T2	Brass casting	chrome plated
Lining	E0	Epdm	
Stem	B3	Aisi 316	stainless steel
Trigger	B3	Aisi 316	stainless steel, rubber lined
Connection	13	mm	hose fitting
Weight	0.9	kg	
Max temperature	95	°C	
Max pressure	24	bar	

#### Complete guns

UMV 2210 T2	Standard, adjustable jet
UMV 220A T2	With foam lance
UMV 220B T2	With 1/4" fem outlet, bare lance
UMV 220C T2	With 1/4" fem outlet, heat protected lance

#### Components

UMV 2211 T2	Washgun with 1/2" female 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" fem outlet, with heat protection
XUM V004 B3	Universal lance, 1/4" fem outlet, bare zinc-plated steel
XUM V005 T2	Chrome plated brass nipple ( 1/4" f / 1/2" m )



UMV 2211 T2 + XUM V002 B3 + XUM V001 B3 =

UMV 220A T2

+ XUM V005 T8 + XUM V004 B3 =

UMV 220B T2

+ XUM V005 T8 + XUM V003 B3 =

UMV 220C T2

## UPM

## STEAM WATER INJECTOR

The UPM steam injector is a remarkable device to be used with washguns and tank washing heads, in those factories where a steam supply is available.

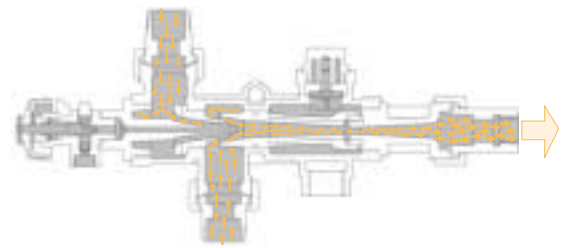
This device converts the steam energy into water pressure, and produces hot water under pressure from cold water at low pressure just adding steam.

Remarkably the hot water pressure can range between 2 and 3 times the inlet steam pressure, therefore saving the cost of purchasing an additional pump, with the following added advantages:

- Detergents can be added into an existing port in the injector body, with aspiration and mixing into the hot water stream is performed automatically, without the cost of additional piping.
- A safety by-pass unloads excess water, or closes the steam line should water supply be interrupted.
- Ideally suited for those areas where the presence of electric motors and electric lines would be hazardous.

Steam pressure            4 to 10 bar  
 Steam capacity         125 to 4500 kgph  
 Warm water pressure    7 to 25 bar

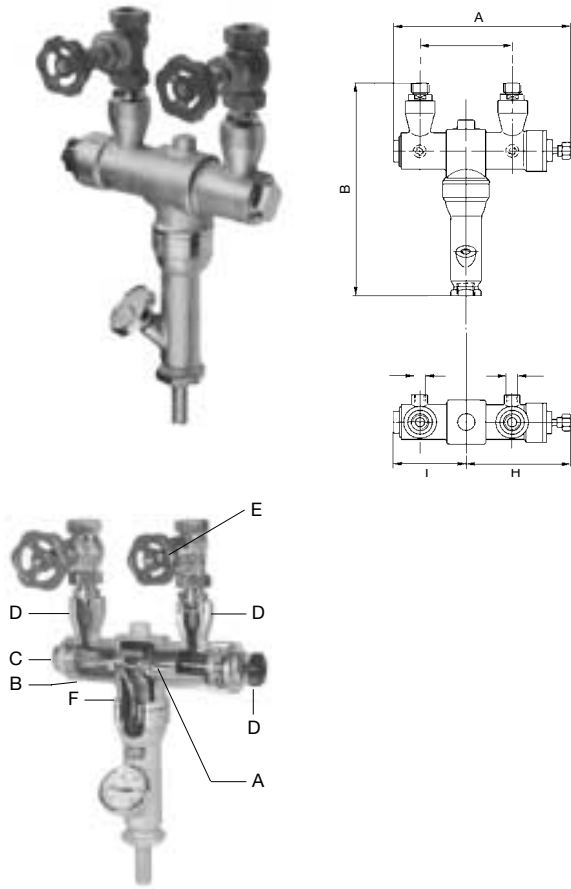
Material                    Body    T5    Bronze



Code	Hot water flow rates (lpm)
UPM 2830 T5	15 ÷ 83
UPM 3233 T5	116 ÷ 233
UPM 3633 T5	233 ÷ 633

# AUXILIARY EQUIPMENT

## STEAM WATER HEATER



<b>A</b>	Piston
<b>B</b>	Steam inlet valve
<b>C</b>	Return spring
<b>D</b>	Non-return valve
<b>E</b>	Wheel
<b>F</b>	Chamber

## UPL

The UPL steam operated water heater is the simple, efficient, cost effective and noiseless solution to the problem of producing hot water.

Simply connecting the mixer inlets to cold water and steam lines assures an instant supply of hot sanitary water for your cleaning processes.

All the steam energy is given to water, with an extremely efficient heating process which assures you the lowest cost per liter, while you make just the quantity you need.

Two inlet metering valves make the outlet temperature regulation very easy, an added thermometer indicates its value, and a safety valves provides for emergency shut-off should the water feed be interrupted.

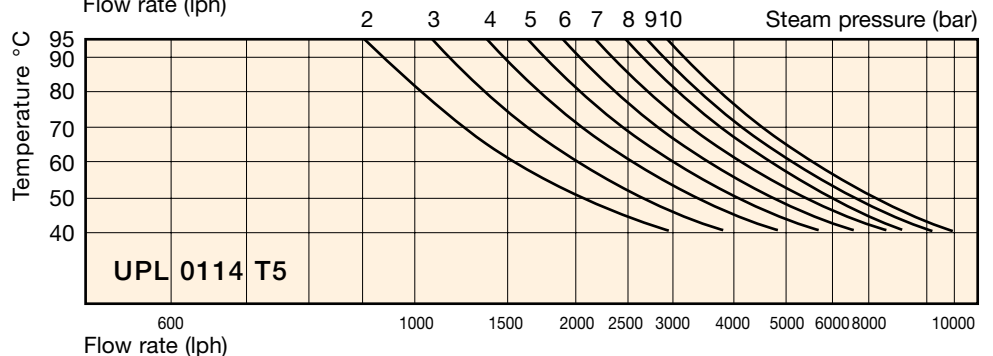
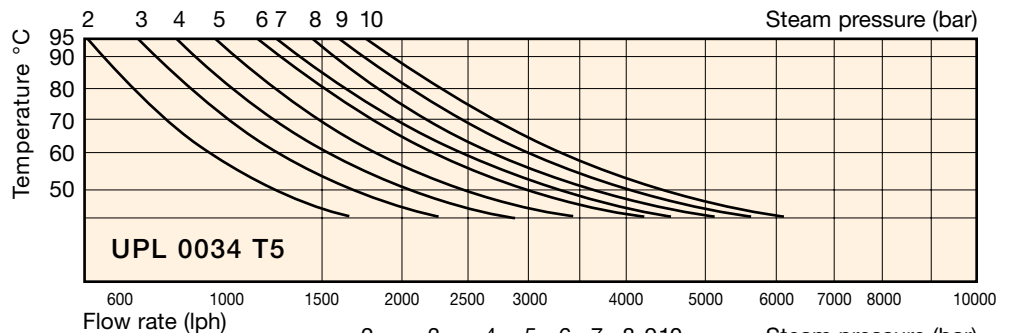
It is recommended the steam inlet into the mixer body to be protected by a filter, this will avoid foreign particles like lime scale or rusty chips to cause malfunctions.

<b>Materials</b>	<b>Body</b>	<b>T5</b> Bronze
	<b>Inside parts</b>	<b>B3</b> Stainless steel

<b>Max operating temperature</b>	<b>80°C</b>
<b>Max operating pressure</b>	<b>20 bar</b>
<b>Steam/Water max press ratio</b>	<b>3.5 (UPL 0034)</b>
	<b>2.5 (UPL 0114)</b>

Code	RF	RG	Dimensions (mm)						W
			A	B	E	F	H	I	
<b>UPL 0034 T5</b>	3/4"	3/4"	260	320	M10	136	153	107	7
<b>UPL 0114 T5</b>	1 1/4"	1 1/4"	350	480	M10	195	205	145	15,3

The table beside gives the hot water quantity produced (lph) for inlet water at 15°C and different values for steam pressure (bar).



## AUXILIARY EQUIPMENT

### PINTLE NOZZLES

An additional product of interest for cleaning processes.

Our range of pintle nozzles is designed for the purpose of staying normally closed with the pintle head protected inside the body, and having the head to pop up producing an effective washing jet when required.

This avoids the danger of powders or foreign material to enter the nozzle when washing is not required, and being assured of proper operation in some difficult to reach spot in the system.

A variety of different jet patterns is available, please ask for UAE data sheet.



### LINE FILTERS

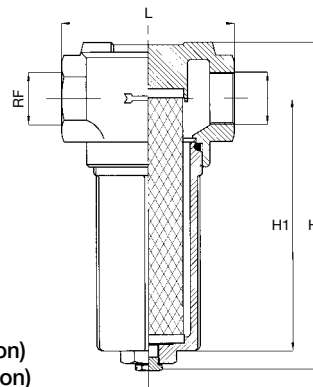
The line filters of the VEM series have been designed to assure high efficiency and ease of maintenance under difficult operating conditions.

The bowl houses large size cartridges, where the large filtering surface allows for extended operation times, and is connected to the filter body by means of a threaded connections for quick removal without tools.

A threaded plug at the bottom of the bowl, allows for fitting a ball valve to bleed filter if so desired.

#### Materials

Body	V1	Aluminum casting (Electroless nickel coated is option)
Bowl	V1	Aluminum casting (Electroless nickel coating is option)
Cartridge	B2	Aisi 304 Stainless steel
Plug	A7	Zinc coated steel
Bowl gasket	E0	Syntetic rubber



Code	RF	H	H1	L	MP	Q	Cartridge	M	W
VEM 0050 V1	1/2"	210	152	130	40	70	XVE M075 B2	60	0,9
VEM 0051 V1	1/2"	210	152	130	40	70	XVE M076 B2	80	0,9
VEM 0075 V1	3/4"	210	152	130	40	95	XVE M075 B2	60	0,9
VEM 0076 V1	3/4"	210	152	130	40	95	XVE M076 B2	80	0,9
VEM 0100 V1	1"	210	152	105	40	140	XVE M075 B2	60	0,9
VEM 0101 V1	1"	210	152	105	40	140	XVE M076 B2	80	0,9
VEM 0125 V1	1 1/4"	270	210	140	30	280	XVE M150 B2	60	1,0
VEM 0126 V1	1 1/4"	270	210	140	30	280	XVE M151 B2	80	1,0
VEM 0150 V1	1 1/2"	270	210	140	30	315	XVE M150 B2	60	1,0
VEM 0151 V1	1 1/2"	270	210	140	30	315	XVE M151 B2	80	1,0
VEM 0200 V1	2"	400	318	200	10	750	XVE M300 B2	30	5,0

### FILTER CARTRIDGES

Please note each filter is to be fitted the proper cartridge, and different mesh sizes are available for a single filter size. In the table beside you have the choice, for each filter size, between several mesh sizes (see under M the values available for mesh size).





## GENERAL INFORMATION

### ABBREVIATIONS

<b>A</b>	SPRAY ANGLE	degrees	<b>GM</b>	WETTING RADIUS	m	<b>MP</b>	MAX WORKING PRESSURE	bar
<b>D</b>	DIAMETER	mm	<b>H</b>	HEIGHT	mm	<b>NZ</b>	Straight jet nozzle capacity size	--
<b>D1</b>	DIAMETER	mm	<b>H1</b>	HEIGHT	mm	<b>PM</b>	MINIMUM FREE PASSAGE	mm
<b>D2</b>	DIAMETER	mm	<b>L</b>	WIDTH	mm	<b>Q</b>	MAX WATER CAPACITY	
<b>Dia</b>	NOZZLE ORIFICE DIAMETER	mm	<b>L1</b>	WIDTH	mm	<b>W</b>	WEIGHT	kg

### PRODUCT WARRANTY

Pnr products will be replaced or repaired, at the option of Pnr and free of charges, if found defective in manufacturing, labeling or packaging.

The above warranty conditions will apply if notice of defect is received by Pnr within 30 days from date of product installation or one year from date of shipment.

The cost of above said replacement or repair shall be the exclusive remedy for any breach of any warranty, and Pnr shall not be held liable for any damage due to personal injuries or commercial losses coming from product malfunction.

Our Company Procedure for warranty requires the following steps:

- 1 Contact our Quality Manager and obtain from Pnr a return authorization number
- 2 Return the products together with our form 3DA A04 duly filled
- 3 We shall issue a test report, send you a copy and return the product (replaced or repaired).

Our Company scope is obtaining full Customer satisfaction, and we are fully aware of the inconvenience which can be originated from a defective product.

Please be assured we shall do our best to make available a perfect product in the shortest possible time.

We also provide, for products which are not defective, a product return policy as follows.

#### PRODUCTS DELIVERED IN ERROR FROM PNR

- 1 Obtain from Pnr a return authorization number
- 2 Return the products together with our form duly filled
- 3 Pnr shall issue a Credit Note for full product and shipping costs.

#### PRODUCTS ORDERED INCORRECTLY TO PNR

- 1 Obtain from Pnr a return authorization number
- 2 Return the products, at your expense, together with our form duly filled
- 3 Products shall be in original conditions, inside the original packing
- 4 A re-stocking charge of 15% applies.
- 5 Pnr shall issue a credit note for 85% of the original product cost

#### NON CATALOG PRODUCTS

Can only be returned after a quotation from Pnr is obtained.

### SENDING LIST

In order to receive automatically updates of our Catalogues, please photocopy the card below and mail it to any Pnr Office in a sealed envelope.

Your details will be recorded into our permanent mailing list.

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# CTG LS15 BR



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