

# OPERATION AND MAINTENANCE MANUAL

## AQUA BOOTWASHER PLUS

### (AQUA-BW PLUS)



**Automatic sole washer with side cleaning, sanitiser dosing and drainage**

Washer made of stainless steel 1.4301.  
 Profiled rotary brush.  
 Water supply: 1/2".  
 Water drain: PVC ø 50 mm.  
 Power supply: 400 V, 50 Hz.  
 Drive: 0,25 kW, IP 55.  
 Switch placed in holder (M) or sensor (F).  
 Automatic volume regulated washing or disinfectant liquid supply.

CE

No	length (mm)	width (mm)	height (mm)	weight (kg)
550601	600	400	1100	46,0



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## 1. Important notes

### 1. Important notes

#### 1.1. Explanation of pictograms

It is essential to follow the safety instructions and warnings contained in this manual!

	<b>Danger!</b> Threat to human life and health
	<b>Warning!</b> Possible damage to the machine
	<b>Tip!</b> Draws attention to the use, eg. during startup and other useful information.
	<b>Low shoes washing</b>
	<b>Place on a canister of liquid cleaning agent / disinfectant</b>
 	<b>Warning!</b> Warning of electric shock
	<b>Warning!</b> Rotating components



#### 1.2. General remarks

Before beginning operations related to transport, installation, commissioning, cleaning, maintenance and repair of the device, read this instruction manual. All persons involved in the execution of these tasks, must observe this manual. To protect the people and things you should follow all safety rules contained in this document.

Compliance with the information and recommendations contained in this document, safety rules and instructions for startup and any other instruction is necessary in order to avoid hazards and damage.

It is required that all work related to transportation, assembly, installation (connection to the electricity grid, connection to water and sewage networks), commissioning, cleaning,

## 1. Important notes

maintenance and repairs performed by qualified personnel with the appropriate permissions. Qualified personnel are persons who, because of their education, experience and training as well as knowledge of relevant standards, accident prevention regulations and operating conditions are authorized to perform the tasks required for mobilization of equipment hygiene. In carrying out the above mentioned operations should be observed first of all technical data and information about permissible use, assembly, connected, ambient conditions and operation described in the product documentation.

In order to avoid malfunctions, the recommended maintenance and inspections should be performed by trained personnel.

### 1.3. Packaging, transportation, storage

#### PACKAGING

The manufacturer sends the device protected by two layers of foil:

- outer layer - foil stretch,
- inner layer - foil technology (not applicable to devices with surface polished ceramic).

Before installation steps should be removed from the machine stretch foil and check if the device has not been damaged during transport.



#### WARNING!

It is prohibited to install and run devices damaged.

If in doubt, contact the service.

If not detected any damage to the device, you can remove the foil technology.

#### TRANSPORTATION

During transport device should be prevented from slipping, falling over, strong shocks and other mechanical damage.

Internal transport should be means of transport adapted to the dimensions and weight of the device. When transporting large devices with large weight manufacturer suggests the use of a pallet truck or forklift.

#### STORAGE

Before installing and operating the device should be stored in a closed, dry place, protected from mechanical damage.

## 2. Sole and leg washing unit for low-heeled shoes

### 2. Sole and leg washing unit for low-heeled shoes



#### 2.1. Intended use

Washer used for mechanical cleaning and disinfection of working low-heeled shoes.

In accordance with the *Regulation of the European Parliament and EC Council no. 852/2004 of 29.04.2004 in hygiene of foodstuffs* food market entrepreneur shall ensure proper hygienic conditions in order to prevent contamination of foodstuffs.

#### 2.2. Technical details

No.	Length, mm	Width, mm	Height, mm
550601	850	400	1100

Drive unit:	0.25 / 0.37 kW * detailed data according to nameplate
Power supply:	400 V, 50 ÷ 60 Hz
Water supply:	G ½"
Water discharge:	PVC Ø 50 mm
Number of rotary brushes:	1 profiled rotary brush
Actuation:	photocell (F) or switch placed in holder (M)
Type of liquid	- cleaner - disinfectant cleaner - disinfectant
Installation water pressure:	5 ÷ 6 bar
Temp. of water connected to washer:	max. 40 ° C
Security level:	IP 55
Weight:	~ 30 kg

#### 2.3. Design

Washer body are made of stainless steel 1.4301, rotary brushes of plastic, while shaft support bearings of self-lubricating polyethylene.

The main element of the washer is the body with built-in remaining elements of the device. A handle in the form of a properly shaped pipe with a photocell (F) / switch (M) at the end is adapted to the side wall of the body (the photocell can also be placed in one of the walls of the washcloth). The body is supported on adjustable footers. The working element of the washer comprises one profiled rotary brush. Brush is driven by a gear motor.

Mixed water is supplied to the washer working area (sprayed onto the brush) by means of spray tubes. Water flow during washer operation is controlled by a solenoid valve. Water used during the washing process is discharged into the sewage system through a bottom outlet. The

## 2. Sole and leg washing unit for low-heeled shoes

cleaner / disinfectant cleaner / disinfectant is supplied from the container by means of an injector built into the plumbing system. The washer electrical system is built-in inside the body, while the controller box is placed in a safe housing. The device is delivered with a power supply cable L = 4 metre with a 16 A / 400 V plug with five pins.



### **2.4. Installation**

The washer should be installed as per site's separate technological design.

The washer installation involves:

- **It is necessary to clean the water system before connecting the device to it.**
- levelling the washer by means of adjustable feet,
- connection to the electrical system, from a 400 V socket – **FIVE-WIRE SUPPLY LINE, SOCKET SECURED WITH RESIDUAL-CURRENT DEVICE**  
connection to the electrical system should ensure appropriate direction of brush rotary motion
- connection to the plumbing system via a hose ending with a shut-off valve with strainer filter, connection diameter G ½”,
- connection to the sewage system, ensuring water tightness of connections (Ø 50 mm).



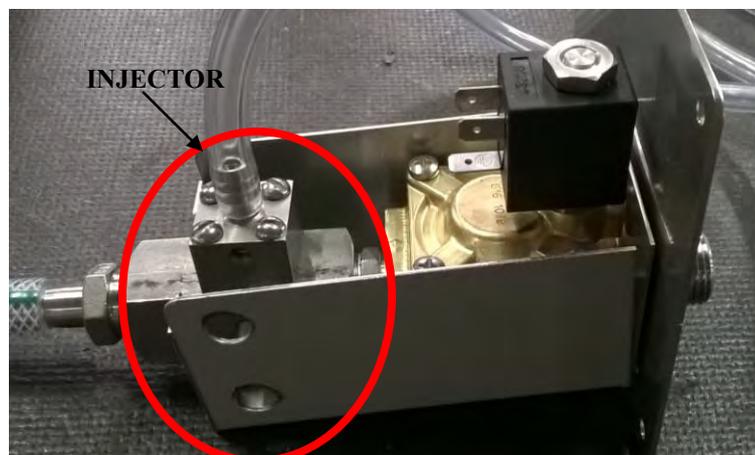
### **2.5. Device personalization**

- 1) Setting cleaner / disinfectant cleaner / disinfectant feeding amount

The amount of liquid fed to the brushes is controlled via the injector knobs (see photo 2.). In order to control amount of the fed liquid, unscrew the metal plate on the side wall of the body and slide-mounted system in which is arranged an injector (see photo 1).

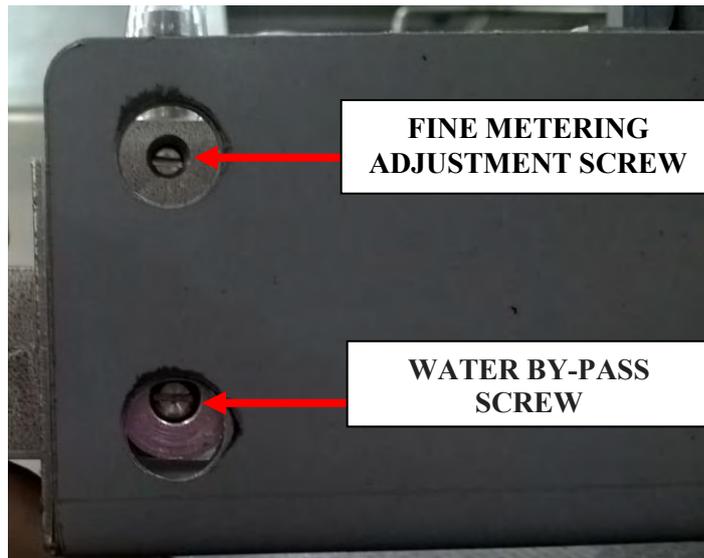
Detailed manual injector was connected to the OMM (Appendix 2).

**Photo 1.**



## 2. Sole and leg washing unit for low-heeled shoes

**Photo 2.**



### 2.6. Operation

In order to wash footwear, the worker should put the foot with the shoe in the washer (put it on the brush). Then, pressing the switch or closer to the thumb photocell or put the shoe in the bathtub (photoelectric bath tub). Brush is started by the control system. Brush is started simultaneously with opening of the solenoid valve. It enables supply of water to the spray tube. Water flow activates the injector which sucks in the cleaner / disinfectant - cleaner / disinfectant from the container. The necessary condition for the intake of liquid to occur is water intake. The amount of the obtained liquid is directly proportionate to the amount of collected water but it also depends on the installation water pressure value and personal settings of the device. The water sprayed on the brush supports the cleaning process and facilitates drainage of removed contamination.

Brush will rotate as long as you hold (press) button (switch) or the thumb will be in range of the photocell or how long will the shoe be in the tub.

### 2.7. Cleaning and maintenance

#### 2.7.1. Cleaning

Due to hygienic reasons, daily cleaning of the washer is necessary. The washer structure enables simple and not requiring the use of additional tools removal of brushes and their preparation for cleaning.

Procedure for cleaning the device:

- 1) Close the water supply and switch off the main power supply.
- 2) Remove the brushes by lifting them up.
- 3) Larger contamination needs to be manually removed from the washer bath.



## 2. Sole and leg washing unit for low-heeled shoes

- 4) Wash all brushes with high pressure washing equipment using a suitable cleaner and rinse them thoroughly afterwards.

**NOTE! Follow the instructions of the cleaning agent manufacturer.**

- 5) Spray the entire device with a suitable cleaning agent.

**NOTE! Follow the instructions of the cleaning agent manufacturer.**

- 6) After a specified time rinse agent used for cleaning the surface of the device.
- 7) Wipe the photocell with a soft cloth without the use of cleaning agents.
- 8) Place the washed brushes back in the washer bath.
- 9) Switch on the main power supply and water connection.
- 10) Check whether the device is functioning properly.

**The device may be cleaned with a pressure device at the following pressure settings  $\leq 14$  bar.**

**DO NOT:**

- use chloric detergents for washing the device.

**Detailed rules of stainless steel maintenance and cleaning have been attached to this OMM (Appendix 1).**



### 2.7.2. Maintenance

Each time after cleaning the device, check all metal parts in terms of their functioning, material wear and tear as well as device tightness.

In order to effectively clean footwear soles and uppers, brushes should have bristle of appropriate length.

Depending on the brush wear, it is possible to replace its the entire brush. **In order to replace used up brushes, contact the service.**

Repairs and maintenance inspections may be performed only by one trained and authorized person. Periodical inspections should be performed every 1000 hours after disconnecting the washer from the mains. Inspection should include:

- checking the oil level in the gear motor transmission (according to the instruction of the gear motor),
- checking solenoid valve operation (if necessary, disassemble the valve head and remove the accumulated deposit),
- check the water tightness of connections (if necessary, replace the gaskets).

In case of hard or iron-containing water, perform the valve inspection every 500 h.

**Periodically (as per relevant regulations), inspect the condition and resistance of wiring insulation, as well as the effectiveness of neutral grounding.**

3. OHS rules; 4. Utilization; 5. Final remarks; 6. Guarantee; 7. Manufacturer

3. **OHS rules**

General Industrial Safety regulations apply.

4. **Utilization**

The device must be disposed according to its properties and applicable regulations.

5. **Final remarks**

The manufacturer reserves the right to any construction changes.

6. **Guarantee**

Statutory guarantee period for this type of devices applies. Failing to comply with the rules herein may result in losing the guarantee rights.

7. **Manufacturer**

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**WARNING!**

**The manufacturer is not liable in the event of improper use of the machine and non-use of the manual.**

## STAINLESS STEEL MAINTENANCE AND CLEANING

### 1. INTRODUCTION

The products of our company are made of 304 grade stainless steel.

304 grade stainless steel is austenitic chrome-nickel low carbon steel. It is used in food and chemical industry equipment, etc. This steel is corrosion-resistant in the atmospheric environment, natural water, alkali solutions and some organic and inorganic acids.

Chemical composition of 304 grade stainless steel:

C < 0.03%;

Si < 1.0%;

Mn < 2.0%;

P < 0.045%;

S < 0.015%;

N < 0.011%;

**Cr = 18.0%-20.0%;**

**Ni = 10.0%-12.0%**

### 2. PASSIVE LAYER

In stainless steels, oxygen reacts with chrome atoms contained in steel. Chrome atoms and oxygen form a layer of chromium oxide which provides a natural protection against corrosion factors. The above phenomenon is called a surface passivation reaction, hence the resulting protective layer is referred to as a passive layer.

### 3. CORROSION

Although, the passive layer is formed on stainless steel surfaces, **there are cases when it corrodes due to the following conditions:**

- influence of hydrochloric acid and chlorine,
- no ongoing maintenance which leads to the formation of strong acid solutions on steel walls (water evaporates and an acid solution remains),
- an environment more aggressive than steel provided for it;
- contamination during installation and manufacture (lime, cement, foreign metallic inclusions as a result of using angle grinders nearby or unsuitable assembly tools),
- contact with normal carbon steel (scratching with black steel during transportation or storage),
- insufficient room ventilation or even their absence in aggressive environments (there must always be an air flow in ventilation ducts).

## STAINLESS STEEL MAINTENANCE AND CLEANING

Symptoms of stainless steel corrosion are different. One can notice that corrosion appears usually on various types of internal (non-metallic inclusions, separations, deformations) and external (edges, scratches, dents, residues of scale, sediments, etc.) surfaces, while smooth and homogenous surfaces are much more resistant to corrosion. Therefore, it is necessary to ensure proper pickling and passivation of a surface.

The mechanism of destruction and the type of corrosion depend on a specific environment and steel affected by it. The following types of corrosion may occur depending on the environment and stainless steel:

- surface (uniform),
- pitting,
- intergranular,
- stress,
- crevice.

Pitting corrosion is the most frequently occurring corrosion caused by inappropriate stainless steel maintenance, more specifically due to the use of chlorinated cleaning agents.

Pitting corrosion is a form of a localised environmental attack leading to local losses (pits) in material. It is caused by the influence of galvanic cells formed between a passivated steel surface and clearly localised non-passivation areas laying on it. Oxygen or oxidising substances in a cathodic cell areas (passivated) are required for pitting corrosion to occur. If they are absent, cathodic areas polarize and the cell stops functioning.

Solutions which cause pitting corrosion of stainless steels most frequently are chlorine solutions. For this type of corrosion, condition of a steel surface is very important. The smoother and cleaner the surface, the smaller the intensity of the said corrosion.

A quality assessment of the effects of this type corrosion is difficult since damage can be very serious at a minor weight loss. It is assumed that an average number of pits per area unit and their greatest depth can serve as some indicators.

#### **4. MAINTENANCE AND CLEANING**

When using stainless steel furniture and equipment, a layer of chromium oxide present on the steel surface must be taken care of. Compounds used in food industry which disturb the passive layer (chromium oxide) include compounds containing chlorides – salt, disinfectants and acids (water from sauerkraut, cucumbers, acid juices, vinegar, etc.). Water is the most effective neutraliser of chlorides and weak acids.

Of course, each material requires to be kept clean. Stainless steel is not an exception to this rule and each user must be aware that regular cleaning and maintenance of stainless products is required.

Cleaning should remove dirt and sediments, which left for too long on a stainless steel surface may initiate corrosion and tarnishing of the surface. In a highly contaminated or aggressive environment (seaside towns, rooms of increased humidity and temperature, rooms requiring frequent use of disinfectants, in particular

## STAINLESS STEEL MAINTENANCE AND CLEANING

containing chloride compounds), cleaning should be done more frequently. The frequency of cleaning should be empirically determined.

In order to prevent a surface of stainless steel equipment from being destroyed due to inappropriate maintenance, the following guidelines should be complied with:

- The following should not be used: agents containing chlorides and bleach or – under no circumstances - silver cleaners.
- Steel wool, sand paper, rough cleaners, scouring, grinding and polishing powders, etc. shall not be used as they scratch the surface.
- Steel pads for scouring or wire brushes shall not be used – they can leave sediments of carbon steel on the surface which will eventually lead to material rusting.
- First discolouration and dusts appearing during material use can be removed with a regular piece of cloth, chamois leather or a nylon sponge in case of higher contaminations.
- If iron particles generated during installation, etc. appear on stainless steel components, they should be immediately removed. Such particles corrode, thus they can break the passive layer protecting stainless steel, leading to corrosion as a result. Such sediments should be removed mechanically or with stainless steel cleaning agents.
- If there are pits on a component, they should be pickled with acid or removed mechanically.
- Local discolouration, grease marks – if small, they can be removed with soap water.
- **Products for cleaning stainless steel and alcohol-based preparations can be used for cleaning – they do not pose a threat to the corrosion properties of stainless steel.**
- After cleaning, it is always recommended to polish the surface with a dry piece of cloth.

The table below presents the most frequent types of contaminations and methods of handling:

Contaminations	Cleaners
<b>Finger marks</b>	Water with soap and detergent Glass cleaning agents without chlorides
<b>Lime sediment</b>	Vinegar-water solution
<b>Oils and greases</b>	Alcohol-based agents (only with methyl alcohol, isopropyl alcohol) Solvents, e.g. acetone
<b>Paints</b>	Agents for removing paint coating, based on alkaline compounds or solvents
<b>Cement and mortar</b>	Solvent containing a small amount of phosphoric acid, then water
<b>Iron particles – from tools and after contact with structural steel</b>	At an early stage – mechanically If pits appear – with pickling and passivating pastes

The frequency of cleaning components made of stainless steel is individual – it all depends on the degree of wear and contamination. It should be done in such intervals so as to reduce the risk of stainless steel

## STAINLESS STEEL MAINTENANCE AND CLEANING

component rusting. The frequency of cleaning of stainless steel devices is analogous to the frequency of cleaning household sinks, stainless steel.

### **5. OHS RULES**

Prior to proceeding with cleaning, it is absolutely required to read data sheets of products applied for cleaning and follow manufacturers' guidelines. It is necessary to use personal protective equipment, ensure adequate ventilation and pay attention to fire hazards.

## ADJUSTABLE SINGLE INJECTOR INSTALLATION INSTRUCTION

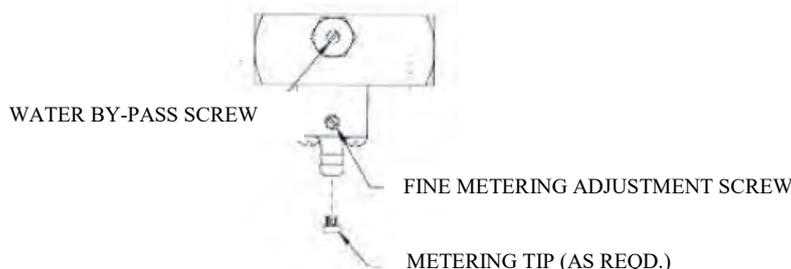


FIGURE 1.

### 1. INSTALLATION

The injector may be installed in any position in the water line with the arrow in the director of flow. Drop end of plastic tubing with strainer into fluid product container. Cut tubing to convenient length, and slip open end over injector fitting.

### 2. OPERATION

**Warning: Use care when handling hazardous chemicals.**

**Note: The injector will not operate if the input water temperature exceeds 70 ° C.**

See Fig. 1 for location of water bypass screw and fine metering adjustment screw. Turn on water supply valve. The injector may draw momentarily as the system is filling but normally will stop as the system builds up to full pressure. To actuate injector, turn the bypass screw clockwise until product begins to be drawn from the container. After the fluid reaches the injector, the feed rate may be adjusted to the desired rate by turning the bypass screw. The maximum injection rates are shown in Table 2. For low injection rates, it is advisable to set the bypass screw for more injection than required; then turn the fine metering screw clockwise to reduce injection to the desired rate. Table 1 shows the operation range of the injector. If the injector will not draw with the bypass screw full in, then the water flow is below the range of the injector. If the injector draws with the screw full out but pressure lose is excessive, then flow is above the range of the injector.

# ADJUSTABLE SINGLE INJECTOR

TABELE 1

Water Pressure (bar)	Operating Range (Liter per Minute)
0,7	1,9 – 13,2
1,4	2,1 – 16,6
2,8	2,7 – 20,4
4,1	3,0 – 24,2
6,9	3,8 – 30,2
13,8	5,3 – 41,6
27,6	7,2 – 56,7
34,5	7,9 – 64,3
* 48,3	9,5 – 75,6
* 68,9	11,2 – 86,9
* 103,4	13,2 – 105,8
* 137,9	17,8 – 139,9
* 206,8	18,9 – 170,1

\*SPECIFY – S Stainless Steel Knob – Part No. 24-32S or Part No. 24-32ST (for tips) for pressure exceeding 48,3 bar.

TABELA 2

Fluid Viscosity (cps)	Maximum Injection (l/min.)
1	0,5
75	0,25
200	0,12

### 3. SERVICING



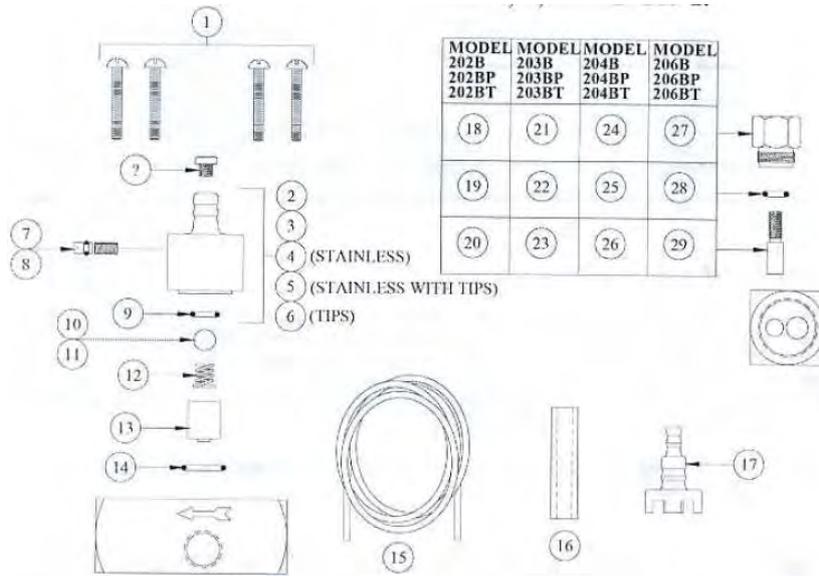
**CAUTION: Turn off water supply before servicing.**

The check valve parts are in the metering knob and can be cleaned by removing the four screws. The knob may be rotated if it is more convenient to have the adjusting screw on another side of the injector. As with any injector, if spray jets become clogged or downstream restriction increases in any manner, the injector will stop drawing fluid. If it is inconvenient to remove the restriction immediately, the injector may be put back into operation by turning the water bypass screw further clockwise; this adjusts the injector to the lower flow rate. The bypass screw should be reset once the restriction is removed.

**CAUTION: When servicing, make sure that replacement parts have been installed according to drawing. Be certain to check valve parts are in place.**

# ADJUSTABLE SINGLE INJECTOR

## 4. SPARE PARTS



**FIGURE 2.**

<i>NO.</i>	<i>PART NO.</i>	<i>DESCRIPTION</i>
1	24-33	Screw #8 - 32 x 7/8 Lg. (4 Reqd.)
2	24032	Metering Knob Assy.
3	24032PS	Metering Knob Assy.
4	24-32S	Metering Knob Assy. (Stainless)
5	24-32ST	Metering Knob Assy. (Stainless Steel with Tips)
6	24-32T	Metering Knob Assy. (Tips)
7	100-24	Metering Screw
8	100—24PS	Metering Screw (-BP Injectors)
9	24-25	Check Valve O-Ring (EP)
10	24-24P	Check Valve Ball (Teflon)
11	24-24S	Check Valve Ball (Stainless)
12	24-23	Check Valve Spring
13	24-34-	Check Valve Core (Specify Model No.)
14	25-29	O-ring (EP)
15	100-12	Vinyl Tubing (3/8" OD x 8' Lg.)
16	61-107-2	Ceramic Weight (1/4" ID, 3/8" OD Tubing)
17	24-11MP	Foot Strainer
21	24-36	By-pass Screw Retainer
22	24-25	O-Ring (EP) (7/32 x 11/32 x 1/16)
23	24-35	By-pass Screw