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# AMIAD Water Systems Ltd.

## Filtomat MG110 Electronically Controlled

Serial Number:	_____
Order Number:	_____
Catalog Number:	_____
Filtration Degree:	_____
Tested By:	_____

## Installation, Operation and Maintenance Instructions



## **AMIAD Water Systems Ltd.**

### **Filtomat MG110 Electronically Controlled**

This document is the user-manual of the Filtomat MG110 Electronically Controlled filter. It describes the installation, the operation and the maintenance procedures of the filter.



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With any inquiry please quote Filter Serial Number, located on the filter housing.

## TECHNICAL SPECIFICATIONS

### General

Maximum flow rate	MG110	350m <sup>3</sup> /h; 1542USgpm	Consult manufacturer for optimum flow depending on filtration degree & water quality.
Min. Working pressure		2.0 bar; 30 psi	
Max. Working pressure		10 bar; 150 psi	Or lower if pressure is increased for flushing
Total Filtration area		17,780 cm <sup>2</sup> ; 2,756 in <sup>2</sup>	
Net Filtration area		13,600 cm <sup>2</sup> ; 2,108 in <sup>2</sup>	
Inlet/Outlet diameter		250mm, 10"	Flange standards as per request.
Max. Working temperature		60°C; 140°F	
Empty weight MG110		325kg / 717lb	

### Flush data

Exhaust valve	40 mm; 1 1/2"	Two flushing valves
Flushing cycle time	30 seconds	Depending on the working pressure
Wasted water per cycle	250 liter; 70USgallon	at 2bar; 30psi
Minimum flow for flushing	30m <sup>3</sup> /h; 130USgpm	at 2bar; 30psi
Flush criteria	Differential pressure of 0.5 bar; 7psi, time and manual operation	

### Construction materials

Filter housing	Epoxy-coated carbon steel 37-2 (St. St. 316 available on request)
Filter lid	Epoxy-coated carbon steel 37-2
Coarse screen	Reinforced nylon
Fine screen	Stainless Steel 316, molded plastic support structure
Cleaning mechanism	PVC and Stainless Steel 316L
Motor assembly	Reinforced nylon, brass, stainless steel
Hydraulic piston	Stainless Steel 316, brass
Control tubing	Polyethylene
Seals	BUNA-N
Control	Aluminum, Brass, Stainless Steel 316, PVC

### Filtration degrees available

Type	Molded screen					
Micron	500	300	200	130	100	80
mm	0.5	0.3	0.2	0.13	0.1	0.08

## Safety Instructions

### General Safety Instructions

- Amiad filtration products always operate as components in a larger system. It is essential for the system designers, installers and operators to comply with all the relevant safety standards.
- Prior to installation, operation, maintenance or any other type of action carried out on the filter, read carefully the safety, installation and operation instructions.
- During installation, operation or maintenance of the filter all conventional safety instructions should be observed in order to avoid danger to the workers, the public or to property in the vicinity.
- Please note: The filter enters into a flushing mode automatically, without prior warning.
- No change or modification to the equipment is permitted without a written notification given in advance by the manufacturer or by its representative, on the manufacturer's behalf.
- Always observe standard safety instructions and good engineering practices whilst working in the filter's vicinity.
- Use the filter only for its intended use as designed by Amiad, any misuse of the filter may lead to undesired damage and may affect your warranty coverage. Please consult with Amiad prior to any non-regular use of this equipment.
- Obey and comply with the instructions given by each safety stickers found on the filter.

## Installation

### General

- Install the filter according to the detailed Installation Instructions provided with the filter by the manufacturer and according to the description given in this manual.
- Make sure to leave enough clearance so as to enable easy access for future treatments and safe maintenance operations.
- The user should arrange suitable lighting at the area of the filter to enable good visibility and safe maintenance.
- The user should arrange suitable platforms, ladders and safety barriers to enable easy and safe access to the filter without climbing on pipes and other equipment. The user should verify that any platform, barrier, ladder or other such equipment is built, installed and used in accordance with the relevant local authorized standards.
- Check and re-tighten all bolts during commissioning and after the first week of operation.
- Use only appropriate standard tools and equipment operated by qualified operators when installing, operating and maintaining the filter.
- When installation is required in hazardous environment sites, underground or high above ground, make sure that the site design and the auxiliary equipment are appropriate and that installation procedures are carried out in accordance with the relevant standards and regulations.
- Ensure walking areas about the installation are slip free when wet.

### Shipment and transporting

- Shipping and transporting the filter must be done in a safe and stable manner and in accordance with the relevant standards and regulations.
- For shipping, lifting and positioning the filter, use only approved lifting equipment and authorized employees and contractors.

### Electricity

- Electric wiring should be performed by an authorized electrician only, using standardized and approved components.
- Install a **lockable** main power cut-off switch close to the control panel.
- If due to site constraints, the control panel is installed without a clear line-of sight of the filter, an additional **lockable** power disconnect cut-off switch should be installed near each filter unit.
- Installation of the filter should be performed so as to avoid direct water splashing on the electrical components or on the control panel.

## Pneumatics

- Install a **lockable** main cut-off switch, **featured with a pressure release mechanism**, on the compressed air supply line close to the control panel.
- If the control panel is installed far away and there is no eye contact with the filter, a **lockable** compressed air cut-off switch, **featured with a pressure release mechanism**, should be installed near each filter unit.
- The user should make sure that the compressed air supplied to the filter never exceeds the maximum designated pressure for this filter. An air-pressure reduction valve should be installed on the compressed air supply line upstream of the filter's pneumatic inlet port.

## Hydraulics

- Extra safety devices should be installed on hot water applications to avoid skin burn danger.
- The user should install a manual Water Cut-off Valve next to the filter's inlet port.
- In cases where the downstream piping network downstream of the filter is pressurized an additional manual Water Cut-off Valve should be installed next to the filter outlet port.
- The user should make sure that the system includes a Pressure Release / Drainage Valve to enable release of residual pressure prior to any maintenance procedure performed on the filter.
- The user should make sure that the filter is never exposed to water pressure exceeding the maximum designated pressure for this filter, if needed a Pressure Reduction Valve should be installed upstream of the filter's water inlet port.
- Please note that the maximum working pressure indicated at the filter's specifications table includes the pressure caused by fluid hammer and pressure surge effects.

## Civil Engineering

- Make sure that the filter installation is done by Amiad qualified technicians.
- Make sure that any civil engineering work at the installation site such as construction, lifting, welding, etc. is done by qualified workers / technicians / contractors and in accordance with the relevant local standards.
- While using lifting equipment, make sure that the filter or the lifted part is chained securely and in a safe manner.
- Do not leave lifted equipment if there is no necessity. Avoid working below lifted equipment.
- Wear a safety helmet while using lifting equipment.
- Make sure that the flooring is sloped for drainage and to avoid accumulation of liquids.

## Commissioning

- Read carefully the Commissioning and the First Start-up Operation instructions prior to any attempt to operate the filter.
- In order to achieve maximum performance and smooth operation of the filter it is crucial to perform the Startup and First Operation procedures exactly as described in this manual.
- Commissioning the filter should be done by an authorized Amiad technician, do not attempt to commission the filter unaccompanied since this may lead to undesired damage and may affect your warranty coverage.

## Operation and Control

- Do not operate the filter before reading carefully and being familiar with its operation instructions.
- Observe the safety stickers on the filter and never perform any operation contradicting the instructions given.
- Never operate or use the filter for purposes other than its original design and operational envelope.

## Maintenance

### Before any maintenance or non-regular operation please read the following:

- Servicing the filter should be done only by technicians authorized by Amiad.
- Disconnect the filter from the power supply and lock the Main Power Switch.
- Disconnect the compressed air supply, release the residual pressure and lock the Pneumatics Main Valve.
- Disconnect the filter from the water system by closing and securing the Manual Inlet Valve. In cases where the downstream piping network is pressurized, close and secure the Manual Outlet Valve also.
- Release the residual water pressure by opening the Pressure Release / Drainage Valve.
- Empty the filter by opening the Drainage Valve.
- In hot water systems wait till the filter components cool off to a safe temperature.
- Place warning signs around the work area as required by the local standards and procedures.
- Inspect the filter's safety stickers and replace any damaged or faded sticker.

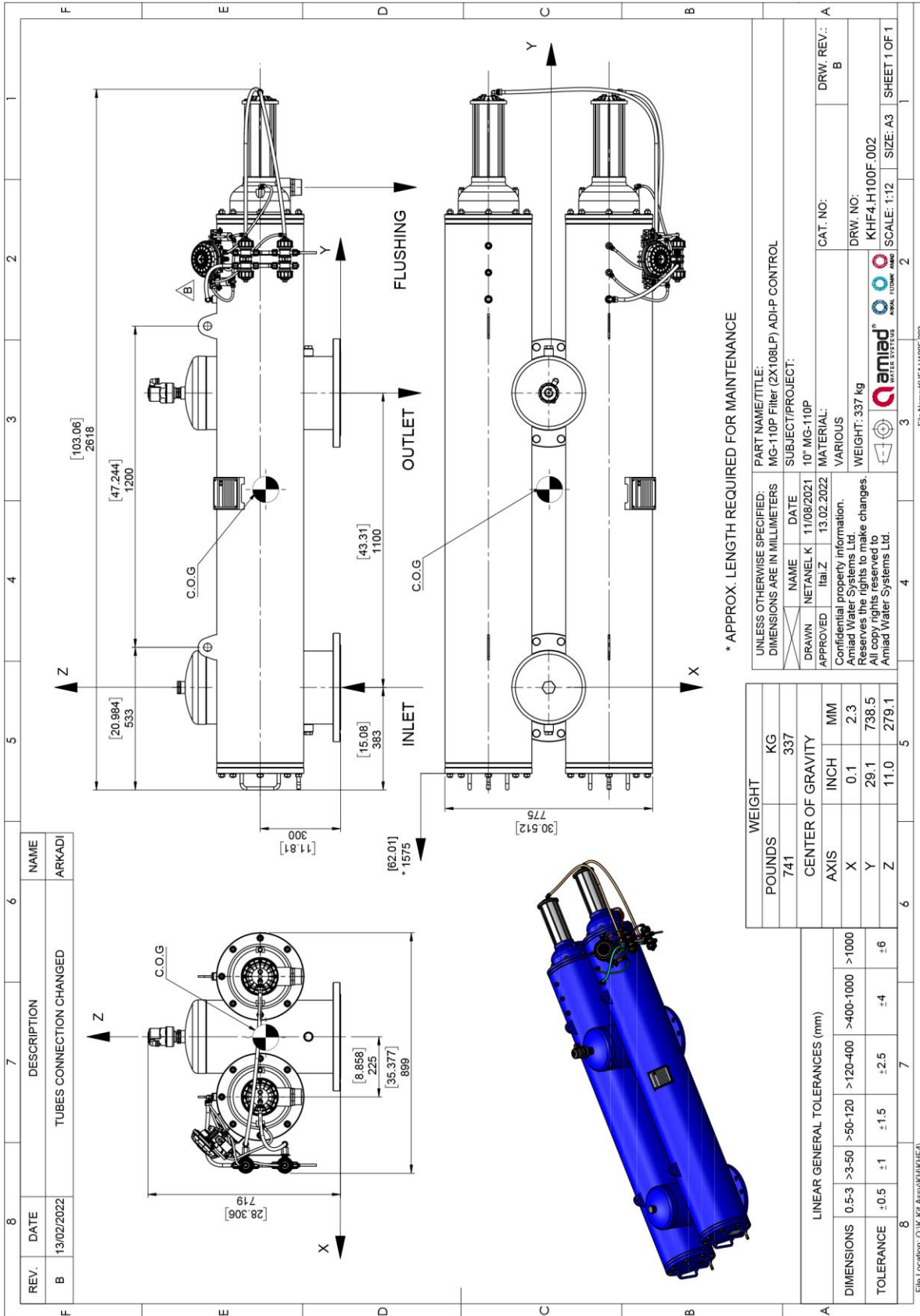
### Mechanical

- When working on the filter use only appropriate standard tools.
- Always open and close valves slowly and gradually.
- Remove grease and fat material residues in order to avoid slipping.
- Before disconnecting the filter from the water supply, electricity and pneumatics and before releasing the filter's residual pressure do NOT:
  - loosen or unscrew bolts
  - remove any protection cover
  - open any service port flange
- Avoid splashing and water leakage so as to minimize slippage, electrification or damage to the equipment, caused by moisture.
- While using lifting equipment, make sure that the filter or the lifted part is chained securely and in a safe manner.
- Do not leave lifted equipment if there is no necessity. Avoid working below lifted equipment.
- Wear a safety helmet, goggles, gloves, and any other personal safety equipment required by the local standards and regulations.
- Human entry into a filter must be done in accordance with the relevant local safety instructions, standards and regulations for working in hazardous environment.
- Manual cleaning of filter media using high water pressure or steam should be performed in accordance with the cleaning system instructions, the local standards and regulations and without endangering the operator or the vicinity
- Manual cleaning of filter element using acid or other chemical agents should be performed in accordance with the relevant material safety instructions, the local standards and regulations and without endangering the operator or his vicinity.

### Before returning to regular operation

- Re-assemble any protection covers or protection mechanisms removed during service or maintenance operations.
- Make sure that all the tools, ladders, lifting devices, etc. used during the maintenance procedures are taken away from the filter area and stored
- In order to return the filter to regular operation, follow the First Start-up Operation instructions as detailed in your user manual.
- For filters used in potable water systems it is required to disinfect the filter according to the local water authority standards and regulations before putting it back to service.

# Dimensional Drawings





## Introduction

### General Description

The **FILTOMAT MG110** is a sophisticated, yet easy-to-operate automatic filter, with a self-cleaning mechanism driven by a hydraulic turbine. It is designed to work with various types of screens in filtration degrees from 500 to 80 micron, and is available in 10" inlet/outlet diameter.

The **FILTOMAT MG110** filter is configured to meet your specific needs according to flow rates and water quality. The filter can be installed as a stand-alone unit for low flow rates or assembled in a group on a manifold when high flow rates and/or a large screen area are required. The filters are delivered fully assembled, requiring simple connections to the inlet and outlet, and to the drain.

### Basic Filter Operation

Water enters the filter from the inlet pipe, and passes through a coarse screen, which protects the automatic cleaning mechanism from any large particles or debris. The coarse screen is not cleaned automatically and should not accumulate large quantities of solids. The water then flows through a fine screen which filters out the smaller particles. Water that has passed through the fine screen is clean and passes into the outlet pipe. Particles of dirt accumulate on the fine screen and form a "filtration cake," which starts to restrict water flow. As the restriction, or clogging, increases, the pressure in the outlet pipe becomes lower than in the inlet pipe. When the pressure differential reaches a pre-set value, a self-cleaning cycle is initiated. The self-cleaning cycle takes approximately 45 seconds and does not interrupt the flow of water through the filter.

### Self-Cleaning Cycle

At a preset pressure differential (0.5 bar —7 psi), which is detected by a pressure differential switch, the flushing controller operates pulse solenoids which allow water to flow to the relay valves, which then activate the hydraulic pistons and open a valve to the rotor chamber (See Figures 2 below). The water from the rotor chamber flows out the drain. The pressure in the rotor chamber drops, releasing a strong flushing stream that flows through the filter.

This drop in pressure and corresponding release of the backflush stream create a suction effect at the nozzle inlets. This effect actuates spot cleaning directly in front of the openings of each nozzle at the inner side of the fine screen. The water and particles passing through the hydraulic rotor cause the suction scanner to rotate, and the piston moves in an axial direction to the opposite end of the filter.

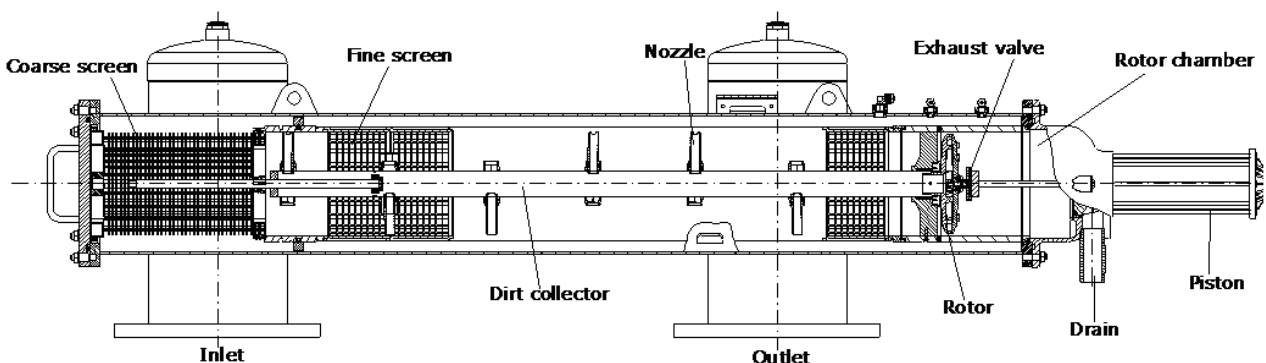
The combination of rotational and axial movement of the suction scanner assembly ensures that the nozzles sweep the entire inner side of the fine screen in a spiral pattern.

When the first stroke is completed, the flushing valve closes and after a short interval the flushing controller activates the second backflush stroke. The suction scanner assembly spins, moving with the piston in the opposite direction and returning to its original position.

This self-cleaning process takes about 45 seconds, depending on the operating pressure.

It is essential that there be at least 2 bar pressure at the inlet to the filter for proper cleaning to take place during flushing.

The flushing controller may be operated by pressure differential, manual activation, or by timer.



## Installation

### Design Recommendations

- The inlet and outlet pipes must be the same or a larger diameter than the inlet and outlet diameters of the filter.
- The upstream pressure source should not drop below 30 psi (2 bar) during the rinse cycle. If this cannot be ensured, consult the manufacturer.
- If a prolonged pipeline fill time causes a temporary high flow and low pressure situation, it is recommended that you install a pressure sustaining valve downstream of the filter. The pressure sustaining valve will ensure a controlled fill-up of the line.
- If continued water delivery is essential even during "down time" maintenance periods, it is recommended that a manual or automatic by-pass be installed, and that isolating valves be installed up and downstream of each filter unit for isolation purposes.
- Shut off valves must be installed in the inlet and outlet lines to enable maintenance.
- A non-return valve should be installed where water hammer or back flow may be a problem.
- The filter must be installed in the direction of flow indicated by the arrow on the filter body.
- Secure the drain pipe so that there is no movement during flushing.
- The highest point of the drain pipe should be no more than one half meter above the filter.
- The drain pipe must allow free flow and be free of restrictions.

### Preparations for Installation

- Ensure suitable lighting at the area of the filter to enable good visibility and safe maintenance.
- Arrange suitable platforms and safety barriers to enable easy, safe access to the filter.
- Allow a convenient approach and enough space for dismantling and maintenance.

### Installation Instructions

- Ensure the direction of flow is according to arrows marked on the filter housing
- Install a drain valve in place of one of the pipe plugs in the inlet or outlet pipe on the installation manifold.

### Important!

- **Prevent static back pressure or reverse flow through the filter.**
- **Install a manual or a hydraulic valve downstream of the filter.**
- **The filter may enter flushing mode automatically, without warning.**

## First-time Operation

1. Remove a plastic plug from one of the outlet holes on the top of the filter to bleed air from the filter.
2. Open the inlet valve.
3. Close the plastic plug when all the air is bled from the filter.
4. Make sure the filter is clean and dry.
5. Check all fittings and flanges for leaks.
6. Open the outlet valve.
7. Perform manual flushing, by selecting "Manual" in the flushing controller.
8. Check that the inlet pressure does not drop below 2 bar during flushing.

The filter is ready for operation. Observe at least one automatic flushing cycle, activated by time or differential pressure.

## Maintenance

**NOTE:** Depressurize the filter before maintenance (close inlet, and then outlet valve).

### Checking the Filter

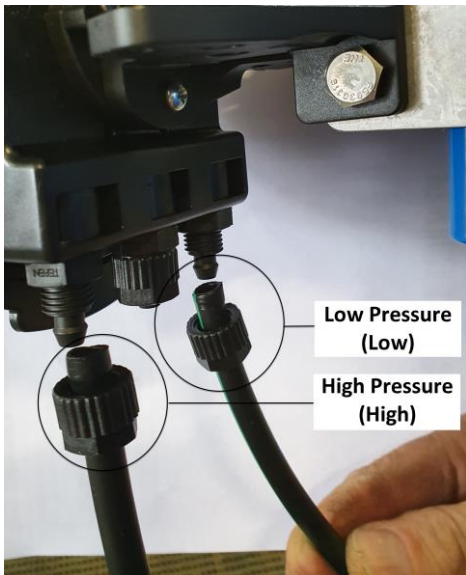
1. Unscrew the filter lid's long bolt; **for safety reasons do not remove its nut!**
2. Unscrew and remove the other nuts from the filter's lid bolts. Do not remove the long bolt's nut!
3. Open the lid by pulling it carefully; leave it to hang on the long bolt. **Do not remove the long bolt's nut!**
4. Extract the coarse screen and clean if necessary.
5. Extract the fine screen and clean if necessary. Cleaning may be performed by hosing the screen from outside-in, and/or with a nylon brush.
6. Check the O-rings of the fine screen and apply grease, if necessary.
7. Reassemble the fine screen and the coarse screen.

**NOTE:** Check that the dirt collector shaft is properly aligned in the bearing.

8. Close the filter's lid by turning it back to its original close position and fasten the nuts.
9. Perform the procedure described on the "**First Operation of Filter**" paragraph of this document.

## Winterization

Filter operations should be suspended in climates where the filter is exposed to freezing temperatures.



1. Check that the outlet isolating valve is closed and perform two manual rinses.
2. Close the inlet valve to the filter and release the pressure.
3. Mark the tubes that are linked to the ADI-P controller and disconnect it from the controller for the duration of the winter season.
4. Remove the following items from the filter and store in a dry place:
  1. Top lid assembly
  2. Coarse and fine screen assembly
5. Apply grease to the O-rings of the fine screen before storing.

At the beginning of the operation season, reassemble the filter elements and check the "**Preparations**" and the "**First Operation of the Filter**" paragraphs of this document.

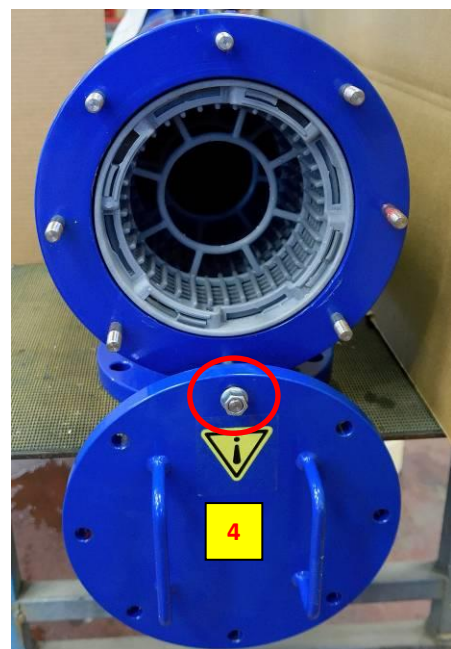
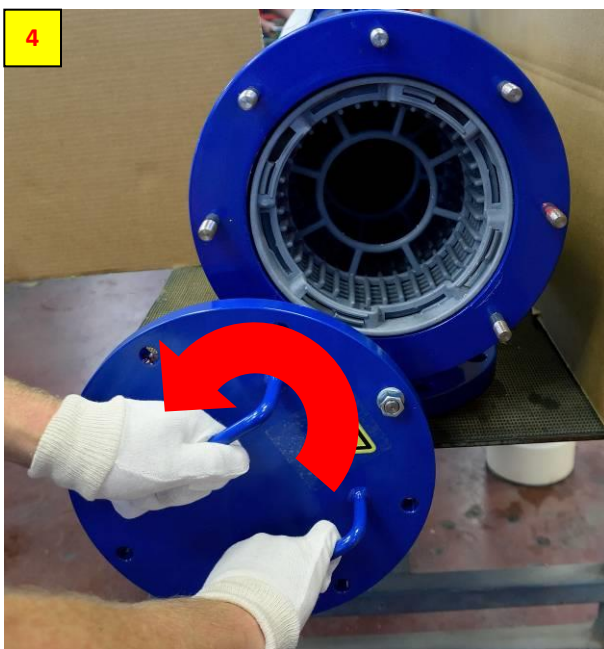
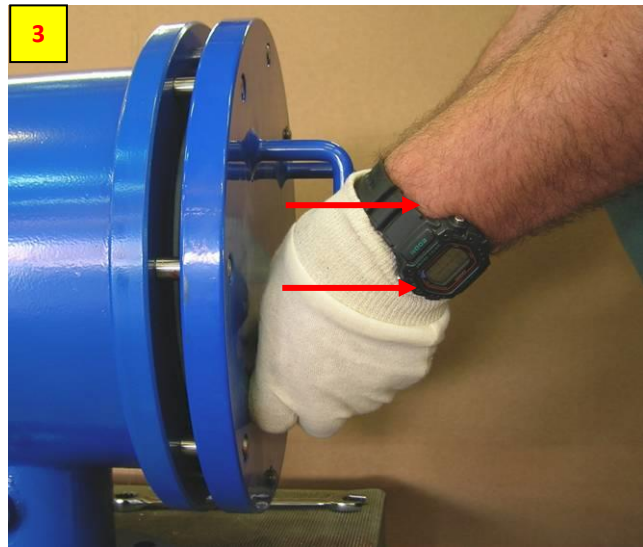
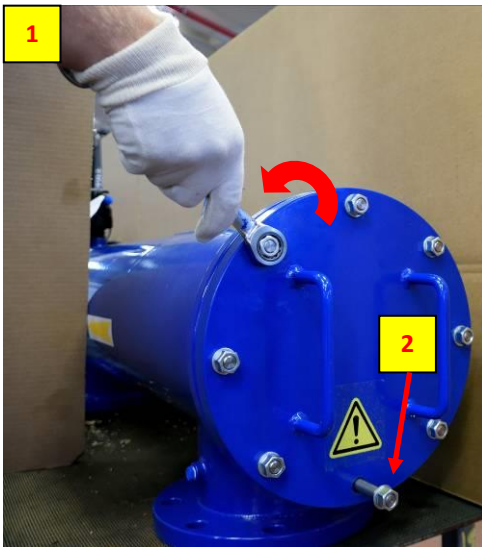
## Servicing

### Draining the Filter

1. Close the filter's upstream (inlet) valve.
2. Close the filter's downstream (outlet) valve and isolate the filter from the water system.
3. Use the manual start function of the electronic flushing controller and start a flushing cycle to release the pressure of the filter housing.

### Removing the Screen and the Dirt Collector

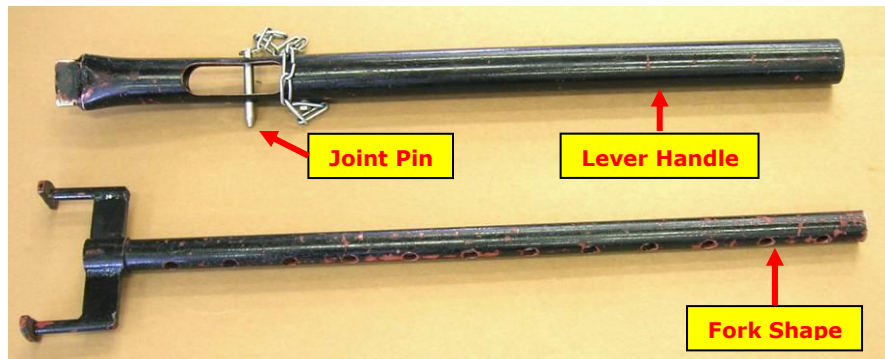
1. Drain the filter as described above.
  2. Unscrew and remove the nuts from the filter's lid bolts [1] **but do not remove the long bolt nut!** [2]
  3. Open the lid by pulling it [3] and carefully leave it to hang on the long bolt [4]. **Do not remove the long bolt's nut!**
- Note: Attempting to remove the screen from the piston-side of the filter will cause damage to the system.



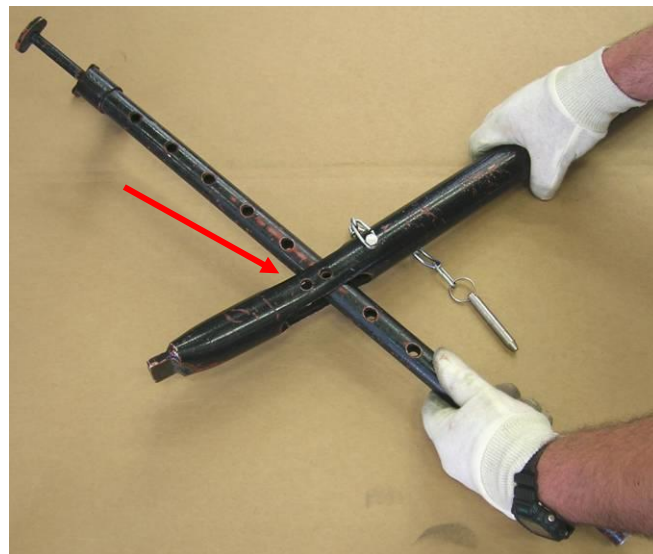
4. Pull the coarse screen out of the filter housing.

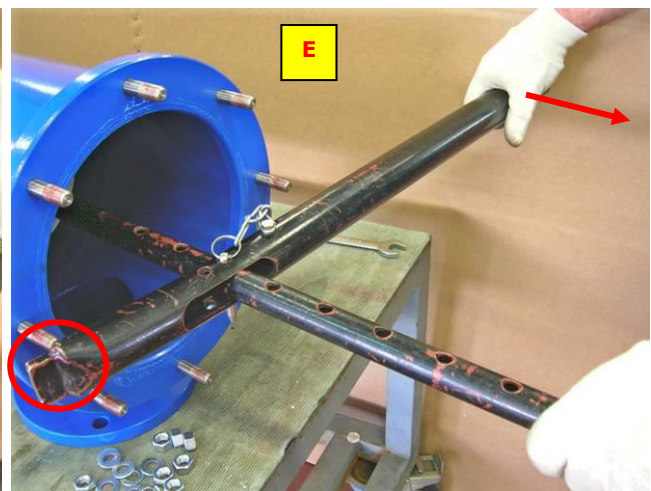
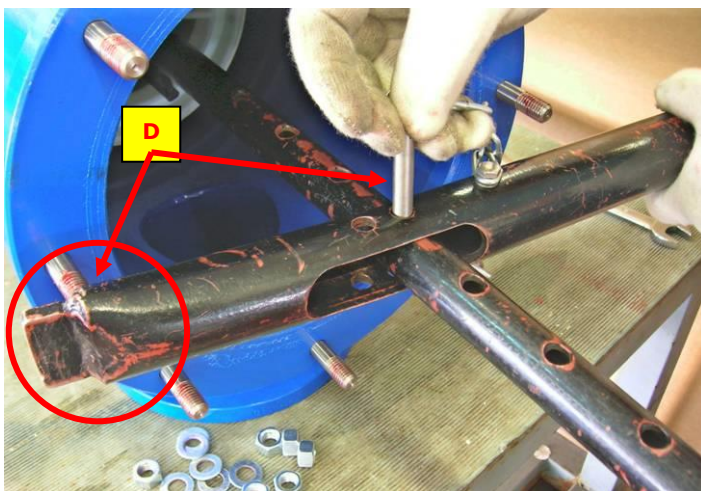
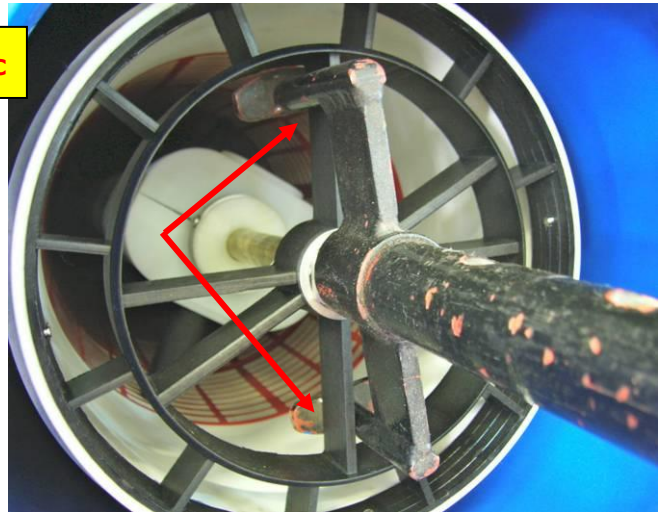
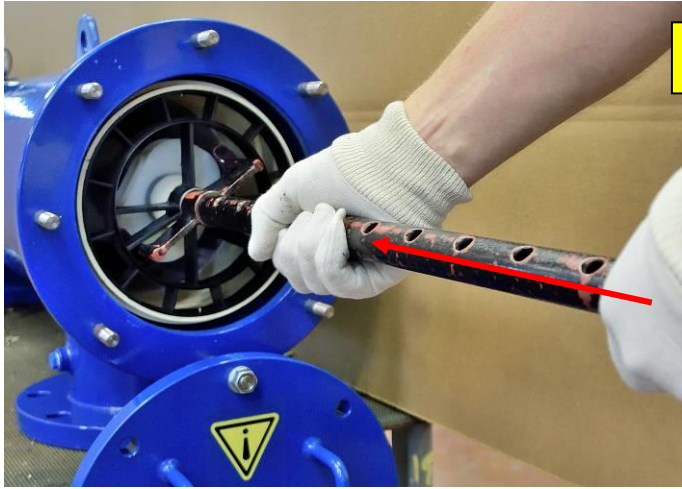


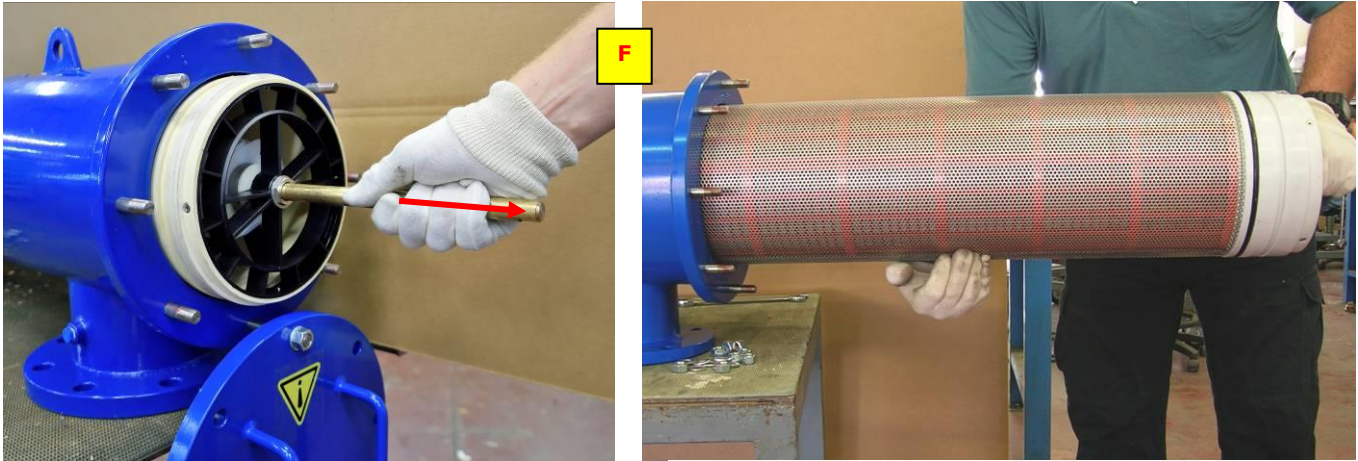
5. Pull the fine screen out of the filter housing. If it is difficult to release the screens use Amiad's Push Pull Tool (Catalog Number 7001900-001985) to extract the screen by performing the following procedure:
- A. Assemble the tool by inserting the fork shape part into the lever handle.
  - B. Insert the fork shape part over the dirt collector shaft.
  - C. Turn the tool clockwise until the fork teeth catch the fine screen handle.
  - D. Lay the tip of the tool's lever handle on one of the filter's housing cover bolts (in order not to damage the filter paint coating) and secure the joint pin.
  - E. Pull the handle firmly to release the screen.
  - F. Pull the screen out of the filter housing.



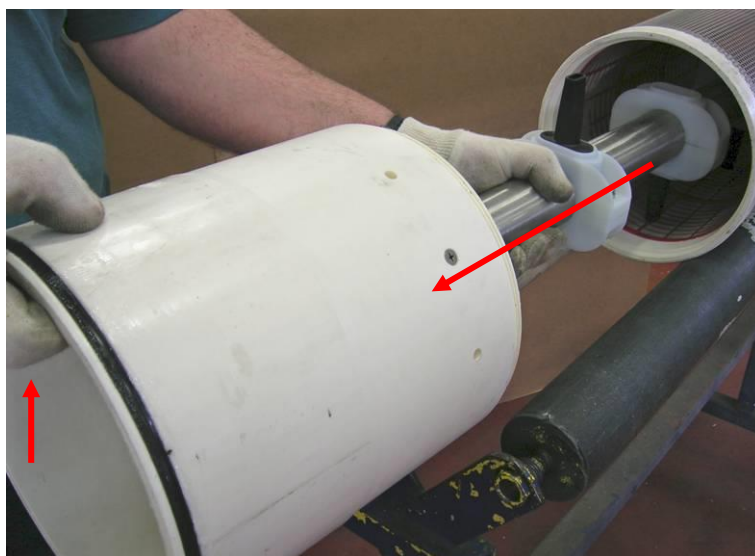
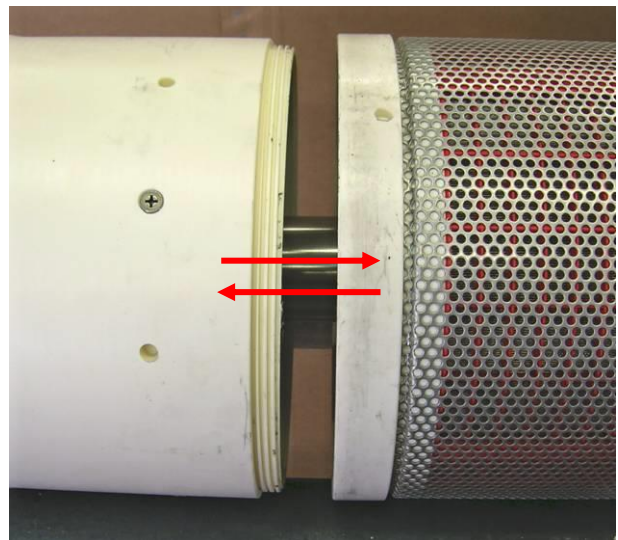
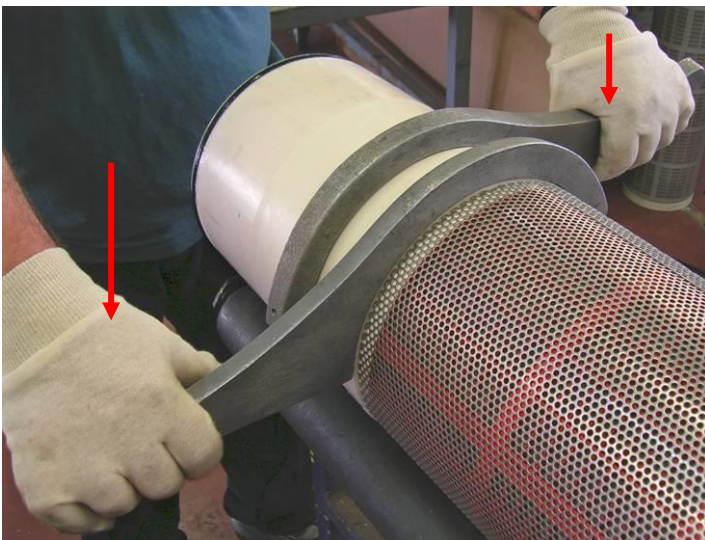
**A**







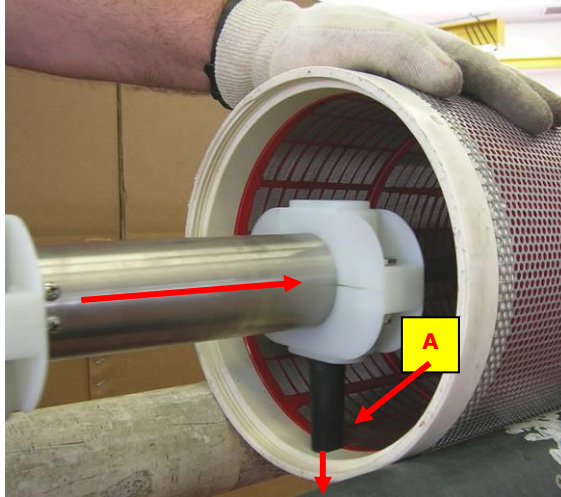
6. Depending on the actual diameter of your filter use two units of Amiad's Screen Separation Tool (Catalog Number 700190-001985 for 2"-8" , 700190-002139 for 10"-12" or 700190-002150 for 14"-16" filters) to separate the Chamber Flat Screen and the Dirt Collector from the Fine Screen.





### Re-installing the Screen and the Dirt Collector

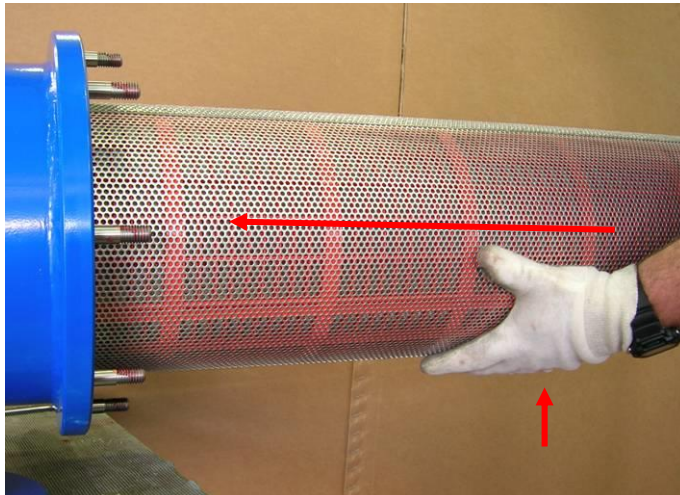
1. Insert the Dirt Collector to the Fine Screen. Make sure that the first suction nozzle of the Dirt Collector (A) is pointing downwards when inserted into the Fine Screen.



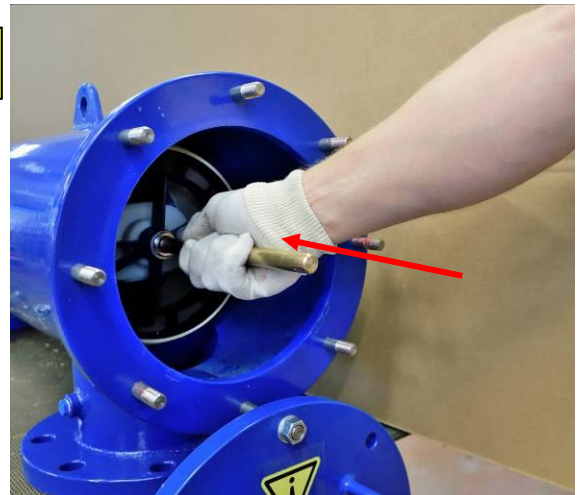
2. Use the two Amiad's Screen Separation Tools to reconnect the Chamber Flat Screen and the Fine Screen.

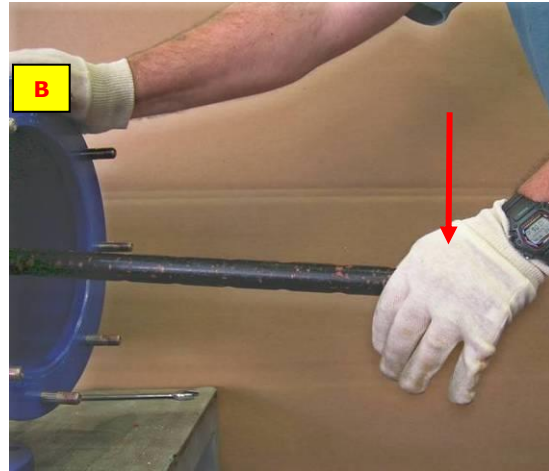
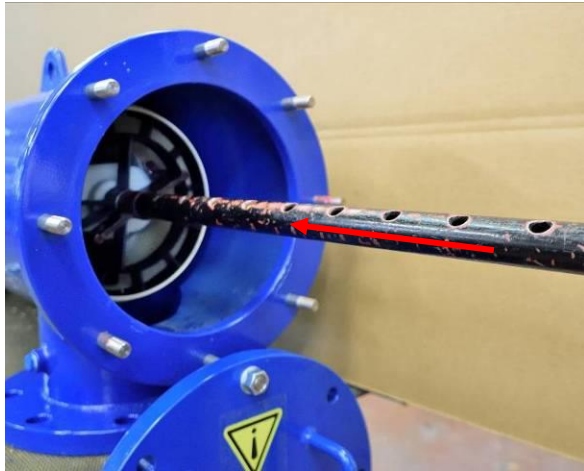


3. Insert the fine screen back to the filter housing (A). Use the fork part of the Push Pull Tool to lift the screen and push it through the last few centimeters till it is correctly seated in the filter housing (B).

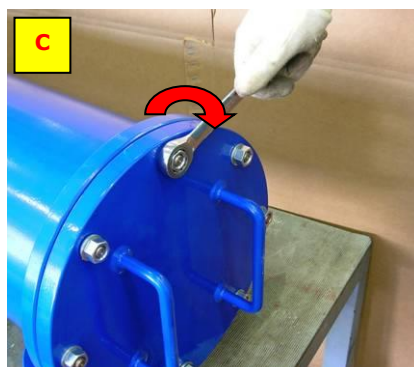
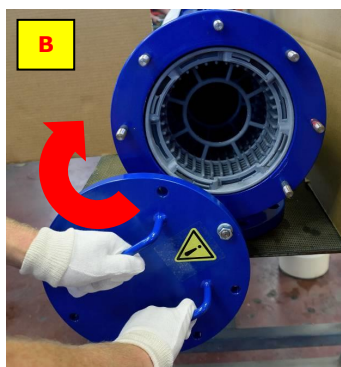
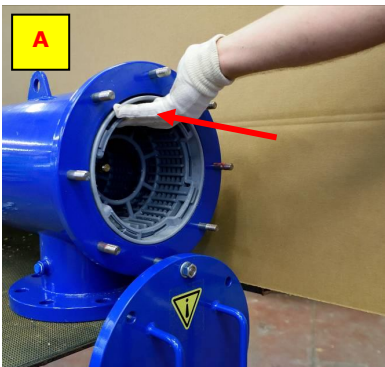


**A**





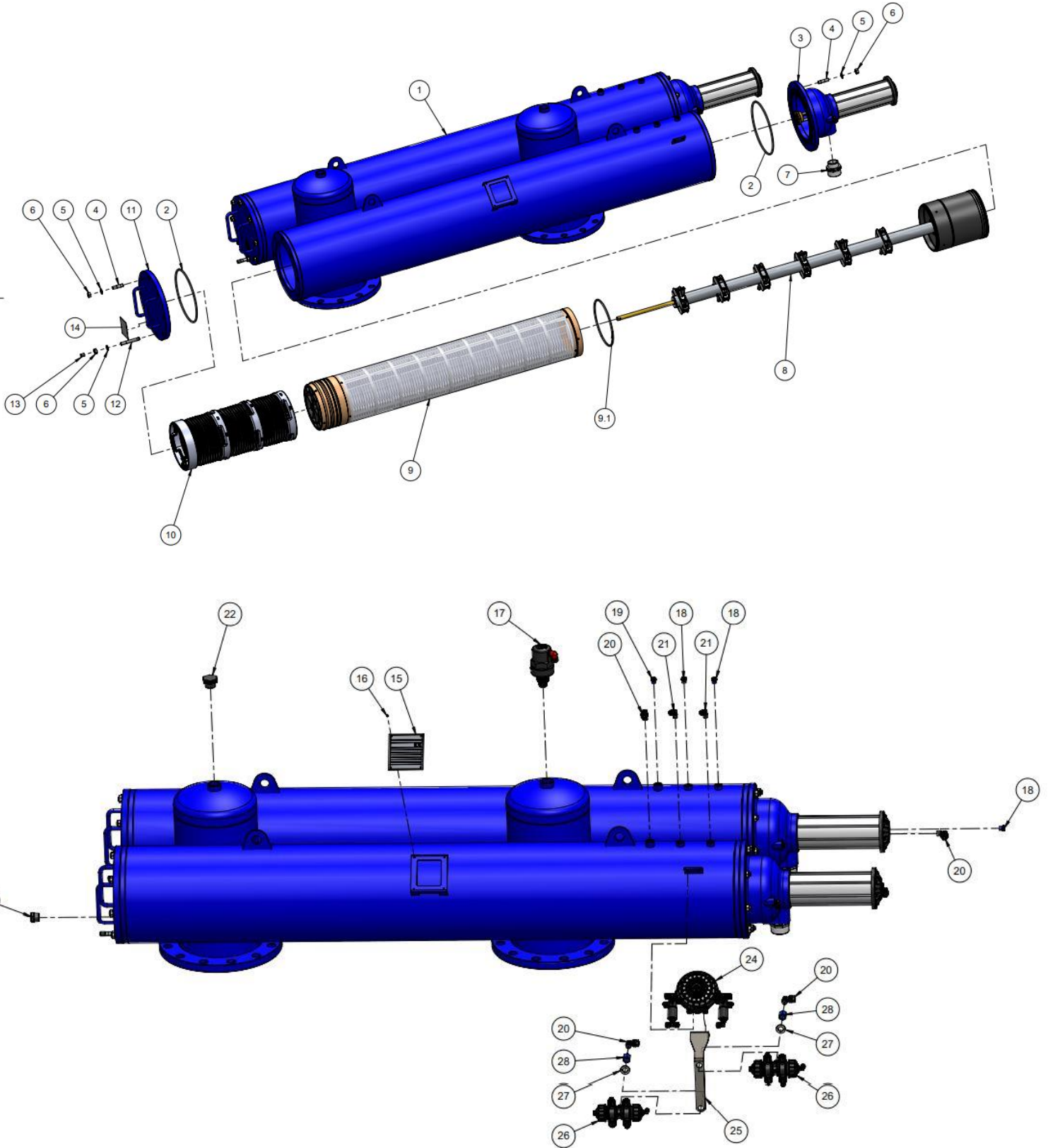
4. Insert the Coarse Screen back to the filter housing (A), return the filter's lid back to its closed position (B) and re-tighten the lid bolts nuts (C).



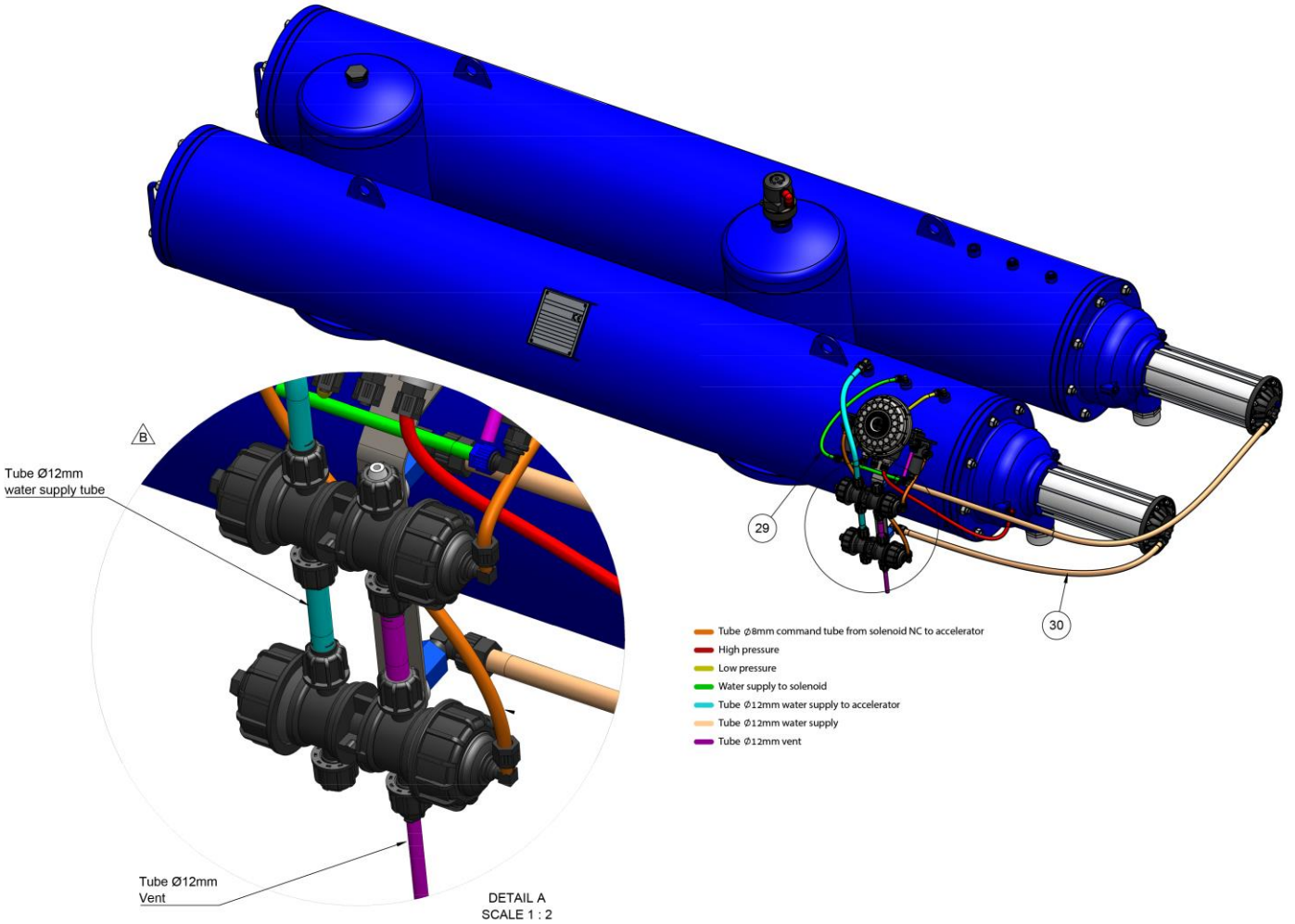
## Parts Schedule MG110

No.	CAT. No.	Description	Qty	Material
1	710105-xxxxxx	MG110-P Filter Housing (2x108LP) RAL5010 PLOYESTER - By Demand	1	ST. 37-2
2	770102-000174	O-Ring P2-448 SAF-6000 Drive Unit Adaptor	4	NBR
3	700190-001541	Cover Assembly Cast-Iron	2	Various
4	760104-000075	Stud Bolt Special1/2"UNCX50 Long 20/12	30	S/ST 303
5	760103-000077	Flat Washer M12 DIN125 Zinc Plated C/ST	32	Zinc Plated
6	760102-000052	Nut UNC Galvanize ANSI 1/2"	32	Z.PLATED C/ST
7	780101-000611	Threaded Reducing Nipple 2"x11/2"	2	PP
8	700190-001670	DIRT COL.ASSY 6 NOZ+PARTITION STD M104XLP/110P	2	Various
9	700101-000599	Molded ST316 6800 SQ.CM Sxxx Micron For M100-6800A	2	VARIOUS
9.1	770102-000217	O-Ring Seal674 Shore 55-60	2	NBR
10	700190-004629	Injected Coarse Screen Assembly M108LP/M110P	2	PP+40% GF
11	710105-000362	Cover M1XX Epoxy PKPK-5010	2	ST. 37-2
12	760104-000081	Stud Bolt Short UNC1/2"X92/20/10 S/St303	2	S/ST 303
13	760190-000666	RUBBER BOLT COVER 1/2" BLACK	2	RUBBER
14	900102-000318	LABEL GENERAL DANGER CLEAR PVC BLACK/YELLOW 75X85MM ACRILIC SILK	2	NA
15	900103-000001	Aluminum Filtomat Nameplate, CE, EN	1	Aluminum
16	760105-000036	Rivet Blind 3x6 DIN7337 S/ST316	4	S/ST 316
17	730108-000120	BARAK D-040-P 1" BSPT NYLON3 16BAR	1	PP
18	720501-000190	Plug 1/4"M Blue	6	PVC
19	720501-000336	Fitting Plug 3/8"M Blue	1	PE
20	720501-000172	L-CONNECTOR 3/8"M X12MM BSPT ACETAL BLACK TEFEN	5	PP Copolymer
21	720501-000229	L-CON. 1/4"M X8MM BSPT AC BLK-BLUE TEFEN	2	NYLON
22	780101-000947	PLUG 1" BSP M PP PLASSON DW	1	PP
23	780101-000946	Fitting Plug 3/4"M BSP PP	2	PP
24	700103-001764	ADI-P DC KIT PACKAGE TWO SOLENOIDS NC	1	VARIOUS
25	710103-011847	BRACKET MG S/ST304 BOOSTER	1	S/ST304
26	700190-006136	AMIAD ACCELERATOR ASSEMBLY	2	VARIOUS
27	760103-000128	FLAT WASHER M16 DIN125 S/ST316	2	S/ST 316
28	720501-000157	COUPLING 3/8"F BSPT PA66 BLUE TEFEN	2	PA66
29	720502-000017	CONTROL TUBE 8MM W/GREEN STRIPE	4	PA
30	720502-000021	CONTROL TUBE 12MM BLACK	2	PA

**Parts Drawing MG110**

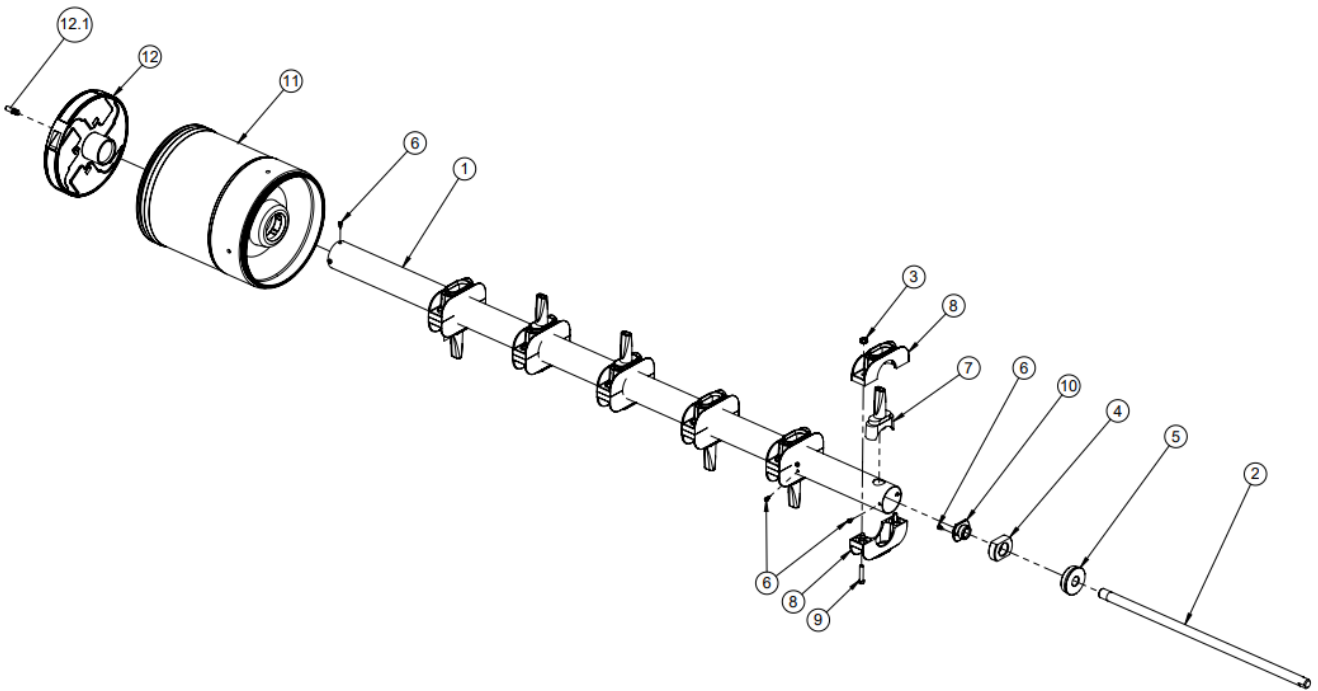


**Control Tubes Scheme MG110**



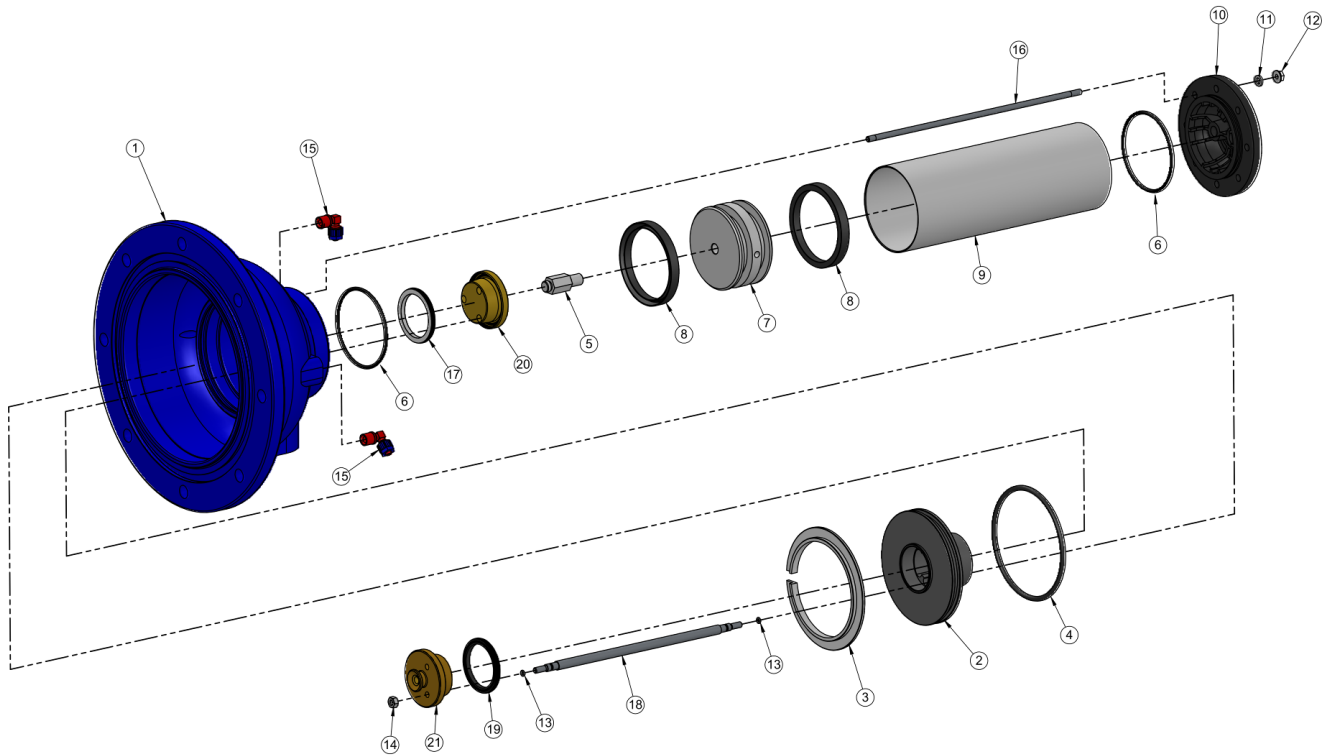
## Dirt Collector - Parts Schedule & Parts Drawing

No.	CAT No.	DESCRIPTION	Qty.	Material
1	710103-000920	Body Dirt Collector S/St304 (6 Noz)	1	S/ST 304
2	710103-001483	Shaft Dirt Collector M-X04L/8L(P) Brass	1	Brass
3	760102-000097	NYLON INSERT LOCKNUT 1/4"UNC S/ST316 DIN985	12	S/ST 316
4	710103-000800	Central Support Collector	1	NYLON 30%GF
5	710103-000802	Upper Plug Collector	1	NYLON 30%GF
6	760101-000688	Phillips Pan Tap Screw #8x3/8" S/St316	12	S/ST 316
7	710101-000704	Nozzle Suction Oval Clamped	6	NYLON
8	710101-000693	Nozzle Suction OD52 Dirt Collector	12	NYLON 30%GF
9	760101-000417	Hex Bolt Partial Thread 1/4"UNCX1 1/4" S/ST304	12	S/ST 304
10	710103-010021	CONNECTOR M100 BRASS F/DIRT COLLECTOR	1	Brass
11	710101-001614	M100 FLUSHING CHAMBER RPP BLACK	1	RPP+30% GF
12	710101-001629	M100 TURBINE PISTON RPP BLACK	1	Various
12.1	710103-011620	BEARING M100 PISTON K110/D2	1	K110/D2



### Cover - Parts Schedule & Parts Drawing

No.	CAT No.	DESCRIPTION	Qty.	Material
1	710103-000819	Cover 8 Holes Blue M10X(X)(L)	1	Cast Iron
2	710103-000901	Seat Valve Seal M106 (Cast-Iron Cover)	1	Delrin
3	710103-000902	Ring Retaining Cover Seat Seal M106	1	PVC
4	770102-000156	O-Ring Seal (P2-351) 50+5 NBR	1	NBR
5	710103-000869	Rod Piston M1XX(L)(P) S/St316	1	S/ST 316
6	770102-000126	O-Ring Seal (P2-237) Nat	2	NBR
7	710103-000900	Holder Cylinder Seal M1XX(L)(P) Delrin	1	Delrin
8	770105-000019	Seal U-Ring 95x75x10 65+-5 NBR	2	NBR
9	710103-000843	Cylinder for M10X(L)(P) Piston ID95 S/St316	1	S/ST 316
10	710103-000799	Plug Piston M10X(L)(P)	1	PP
11	760103-000094	Flat Washer M6 DIN125 S/ST316	8	S/ST 316
12	760102-000097	NYLON INSERT LOCKNUT 1/4"UNC S/ST316 DIN985	8	S/ST 316
13	770102-000058	O-Ring Seal 009 NAT	10	NBR
14	760102-000078	Hex Nut 1/4"UNC S/ST316 B18.2.2	5	S/ST 316
15	720501-000908	L-Connector 1/4"MX8MM Red-Blue	2	RPP
16	710103-000903	Rod Tie M106 Cover Cylinder S/ST303	8	S/ST 303
17	710104-000039	RL For Valve Seat New	1	NBR
18	710103-000895	Spacer Bolt Valve	3	S/ST 303
19	710104-000040	Bearing Valve Combined Assy RL	1	Rubber
20	710103-001037	Seat Valve Seal	1	Brass
21	710103-001038	Housing Bearing Valve Brass	1	Brass



## Amiad Limited Warranty

1. This certificate applies to Amiad Water Systems Ltd. ("**Amiad**") products purchased by you (the "**Buyer**") from Amiad unless specifically agreed otherwise in writing by Amiad. This Warranty extends only to the original purchaser, and is not transferable to anyone who subsequently purchases, leases, or otherwise obtains the product from the original purchaser.
2. Amiad hereby warrants that the products are and will be free from defects in material and workmanship under normal use and service. Amiad warrants that it will correct manufacturing defects in the products, in accordance with the conditions set out in this Warranty.
3. This Warranty is enforceable for a period of 12 months after the date upon which the products were delivered (the "**Warranty Period**").
4. In the event that during the Warranty Period the Buyer discovers a defect in material and/or workmanship in any product or part (the "**Defective Product**"), it shall submit a written complaint to Amiad using Amiad's standard Buyer Complaint Form. For the receipt of the Buyer Complaint Form, the submission of the complaint or any questions please contact your service representative.
5. Upon written demand by Amiad the Buyer shall return the Defective Product - or a sample thereof - to Amiad, at Amiad's cost. If the Buyer ships any such Defective Product, Amiad suggests the Buyer package it securely and insure it for value, as Amiad assumes no liability for any loss or damage occurring during shipment. Provided however that in the event Amiad determines that this Warranty does not apply to such product, Buyer shall promptly reimburse Amiad for such cost (including freight and customs). Any returned product or part must be accompanied by the Warranty certificate and the purchase invoice. It is clarified that the Buyer may not return the Defective Product unless such return was coordinated and approved by Amiad in advance.
6. Amiad's obligation under this Warranty shall be limited to, at Amiad's option, the repair or exchange, free of charge, of the product or any part which may prove defective under normal use and service during the Warranty Period. The provision of a repair or replacement of a product during the Warranty Period will result in an extension of the Warranty Period by an additional period of 12 months, provided that the total accumulated Warranty Period shall in any event be no more than 18 months from the date upon which the products were delivered.
7. This Warranty is valid on the condition that the products are installed according to Amiad's instructions as expressed in Amiad's instruction manuals and according to the technical limitations as stipulated in Amiad's literature or as stated by a representative of Amiad.
8. This Warranty will not apply to damaged or defective products resulting from or related to:
  - (i) Fire, flood, power surges or failures or any other catastrophe and/or unforeseen occurrence, such as but not limited to those for which the Buyer is customarily insured for, or any force majeure events;
  - (ii) Fault, abuse or negligence of the Buyer;
  - (iii) Intake water not meeting the agreed standards, as set forth in a written document, approved by Amiad, or improper storage;
  - (iv) Improper or unauthorized use of the product or related parts by the Buyer, including Buyer's failure to operate the product in conformity with the recommendations and instructions of Amiad, as set forth in Amiad's manuals and other written materials, the operation of the product other than by a trained and qualified operator, or improper installation of the product by a third party not authorized by Amiad;
  - (v) Performance by the Buyer of maintenance or operation other than in conformity with the recommendations and instructions of Amiad, or other than in accordance with procedures defined in the literature supplied for products (including the timely replacement of requisite parts), and for services provided other than by a trained and qualified advanced operator; or
  - (vi) Any alteration, modification, foreign attachment to or repair of the products, other than by Amiad or its authorized technical representatives.
9. In no event shall Amiad be liable to the Buyer or any third party for any damages to property, or for any intangible or economic loss, including loss of profits, loss of customers or damage to reputation, for any damages, including indirect, special, consequential damages, or punitive damage arising out of or in connection with this Warranty, or arising out of or in connection with the product's performance or failure to perform, even if it has been advised of the possibility of such damages.
10. Amiad will be excused for failure to perform or for delay in performance hereunder if such failure or delay is due to causes beyond its reasonable control or force majeure preventing or hindering performance.
11. This Warranty set forth herein is the only contractual warranty given by Amiad and is provided in lieu of any other warranties created by any documentation, packaging or otherwise.
12. Amiad makes no warranty whatsoever in respect to accessories or parts not supplied by Amiad. In the event that Amiad is required to correct a Defective Product or product not covered by this Warranty, it will do so solely in consideration for additional fees.
13. The parties will actively endeavor to amicably settle any dispute arising between them. In the event that the parties are unable to reach an equitable settlement of such dispute, any claim or lawsuit related to the Warranty, its validity execution, its performance be brought before only the courts of Tel-Aviv, Israel. Israeli law will govern the Warranty, to the exclusion of any conflict of law rules.



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