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# AMIAD WATER SYSTEMS LTD.

## Arkal Semi-automatic Suction Screen Filters 3" - 4" Angle



Installation and Maintenance  
Instructions

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## **SAFETY INSTRUCTIONS**

### **General**

1. Prior to installation or any treatment given to the filter, read carefully the installation and operation instructions.
2. While treating 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.
3. No changes or modifications to the equipment are permitted without a written notification given by the manufacturer or by its representative, on the manufacturer behalf.

### **Installation**

1. Install the filter according to the installation instructions detailed in this manual.
2. Make sure to leave enough clearance so as to enable easy access for future treatments and safe maintenance operations.
3. Extra safety devices should be installed on hot water applications to avoid skin burn danger.

### **Operation and Maintenance**

1. Loosening or unscrewing bolts should be done only after the pressure in the filter had been released.
3. Avoid splashing and water leaking to minimize slipping danger or damage to the equipment caused by moisture.
4. Always open and close valves slowly and gradually.
5. Remove grease and fat material residues in order to avoid slipping.
6. After treatment has been completed, re-assemble the protection covers.
7. Manual cleaning of filter element using high water pressure or steam should be performed in accordance with the cleaning system instructions and without endangering the operator or his vicinity.
8. Manual cleaning of filter element using acid or other chemical agents should be performed in accordance with the relevant material safety instructions and without endangering the operator or his vicinity.

### **Use of Lifting Equipment**

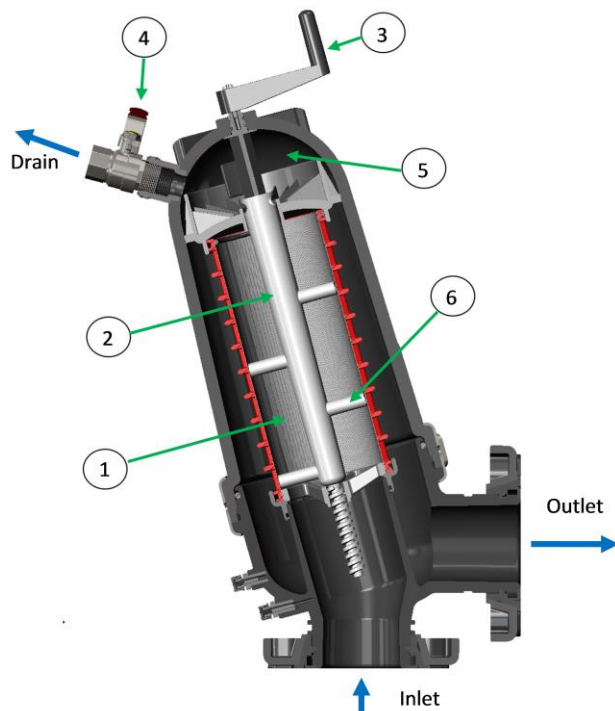
1. While using lifting equipment, make sure that the filter or the lifted part is chained securely and in a safe manner.
2. Do not leave lifted equipment if there is no necessity. Avoid working below lifted equipment.
3. Wear a safety helmet while using lifting equipment.

## Introduction:

The Semi-automatic Suction Screen Filters provide an excellent method of manually cleaning the filter screen without removing the screen itself.

Arkal's 3" - 4" Super Angle Semi-Automatic filters consists of the following major parts:

1. Screen
2. Dirt Collector
3. Handle
4. Flushing Ball Valve
5. Flushing Chamber
6. Nozzles



## Installation

1. Remove the complete product from the box.
2. Install the filter at the user's water system and connect the inlet and the outlet ports of the filter to the system; make sure that the flow-direction is correct (see the above picture).
3. Connect the drainpipe to the flush ball valve outlet opening (at least 32 mm or 1" diameter and 5m long). Make sure that water runs freely out of the drainpipe.
4. Check that all connections are secured properly.

## Operation instructions:

### Filtration Mode

Water enters the filter through the "Inlet" and flows to the inner surface of the screen [1], which purifies the flow by separating smaller particles from the water. Clean water flows out of the filter through its "outlet" port. As more water flows through the screen, a "filtration cake" accumulates on the inner screen surface; causes head loss to develop between the internal-section of the screen (1) and its external section.

## Operation

1. Gradually open the filter's inlet valve (If an outlet valve is installed, then make sure it is open).
2. Check the filter assembly and its connections for leaks.
3. Turn the handle counterclockwise until it stops and then do the same in the opposite direction (don't use force).
4. Perform a manual flush cycle as described below.
5. After the filter is cleaned, make sure that the differential pressure between inlet and the outlet does not exceed 0.1 bars.

## Cleaning Process of the Suction Type Filter

1. Cleaning of the filter must be done when pressure differential across the screen reaches to more than 0.8-bar.
2. **Cleaning the filter must be done while the filter is under pressure.**
3. Before opening the flushing ball valve the operator should check:  
That the dirt collector is fully returned inward to the rear side of the filter by turning the handle clockwise until it stops (don't use force).



4. Open the flushing ball valve gradually.



Water starts to flow out to the drain.

5. Turn the dirt collector handle counterclockwise until a full scanning of the screen is performed (do not use force). The combination of linear movement and rotation cleans the entire inner surface of the screen.



6. Close the flushing ball valve gradually.



7. Return the dirt collector inward to the rear side of the filter by turning the handle clockwise until it stops (don't use force).



8. In case that the filter is still clogged, repeat the above while the downstream valve of the filter is closed.  
In most cases, this should clean the screen; however, if necessary, close the filter's upstream valve, drain the filter and clean it manually as described in the maintenance section of this manual.

## Maintenance:

**Note: Detailed disassembly instructions of the filter appear at the end of this chapter!**

### At the beginning of each season:

1. Check that the filter operates properly, following a general inspection.
2. If necessary, take care of any leak found.
3. Check the condition of the handle bearing and sealing. Replace any defective (oval) bearing with a new one.
4. Check the condition of the screen; if defective replace the screen.
5. Check the length of the dirt collector suction nozzles; if defective replace.
6. In case of reduction in cleaning ability of the filter, remove the screen and the dirt collector mechanism and visually check the condition of these parts.

## Troubleshooting

### Leakage from the nut handle:

1. Check if the sealing tightening nut handle is turned to the end (without force).
2. If necessary, replace the sealing “o-ring “.

### The handle does not turn:

1. Open the filter cover. **See the detailed disassembly instructions below.**
2. Check for foreign objects trapped under the nozzles, release if necessary.
3. Check the condition of the handle sealing and the tightening nuts, release if necessary.

### The handle turns but the filter is not clean:

1. Open the filter. **See the detailed disassembly instructions below.**
2. Check the length of the suction nozzles. If the nozzles are damaged, replace the dirt collector.
3. Remove the dirt collector and check the hexagon hole in its upper side. If damaged, replace the dirt collector.

**Check the spiral thread on the upper side of the dirt collector. If it is damaged, replace the dirt collector.**

## Screen Removal and disassembly

1. Shut off the inlet water supply.
2. Open the drain ball valve and the flushing valve in order to release the pressure.





3. Pull the safety pin, open the clamp and remove it.



4. Holding the cover with two hands, shake it gently right and left and separate it from the body. Pull the cover (with the screen and the dirt collector) away from the filter body.



5. Remove the handle.



6. Remove the centralized seat and then the dirt collector.



7. Remove the screen and clean it with water jet.



### Screen and cover assembly

1. Place the screen firmly on its upper seat. Make sure that the seals are positioned right.

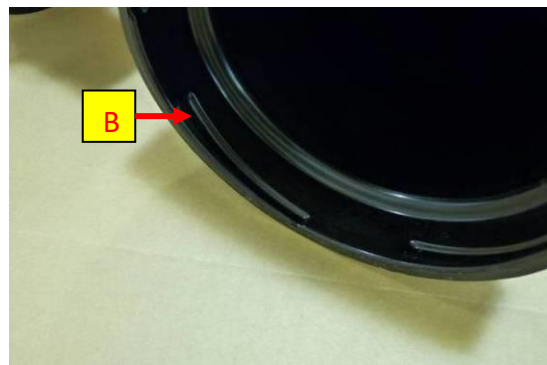


2. Reassemble the dirt collector and the centralized seat.



3. Assemble the cover to the filter body.

Important: the connection of the cover to the body is of a bayonet type. In order for the cover to be correctly connected to the body, three half ball shapes on the body's outer circumference [A] must be inserted to their designated grooves in the cover's internal circumference [B].



4. Hold the cover (with the screen, the dirt collector and centralized seat) over the body.



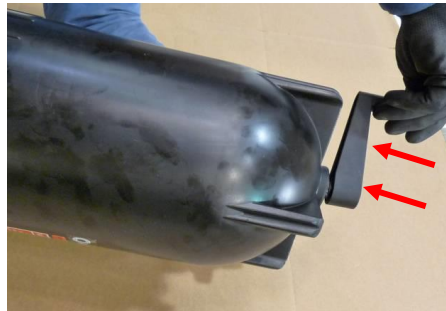
5. Hold the cover with two hands, turn it over the body in order to secure the bayonet connector [A], make sure the cover is correctly locked on the body [B].



6. Secure the clamp and the safety pin.

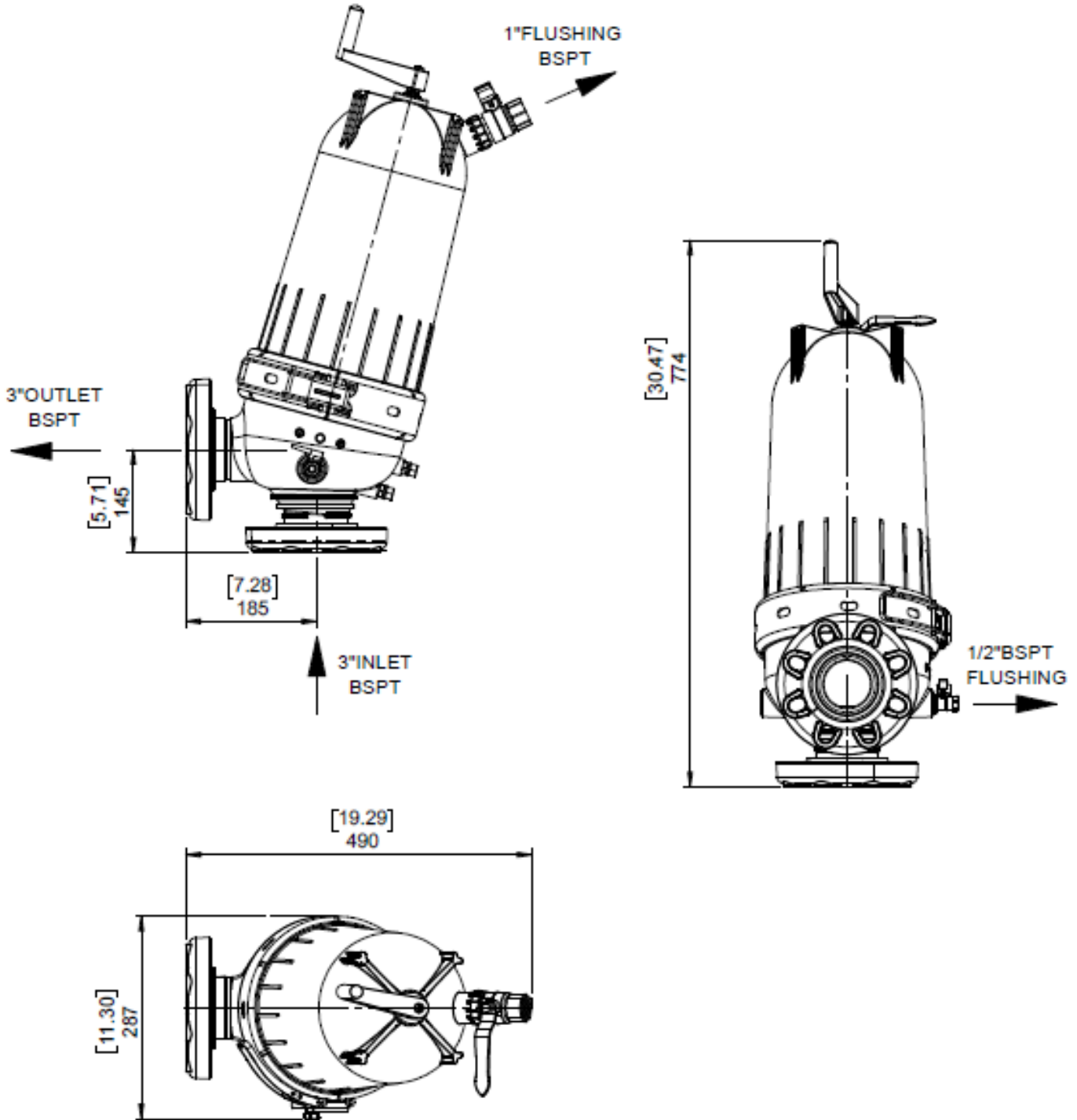


7. Reassemble the handle



8. Perform a flushing cycle to ensure that there are no leaks.

### Dimensional Drawing - 3"



## Spare Parts List 3"

No.	CAT. No.	Description	Qty
1	700190-000128	3"Angle Vic. Body Assembly + A.K.Flange	1
2	700190-000223	3" A.K. Flange	2
2.1	770104-000034	3" Seal for Q/F	2
2.2	710101-000135	3"A.K. Flange Conical Stop .Disc	2
2.3	710103-004931	3" A.K. Flange	2
3	700190-000124	3"Angle Vic. Body Assembly	1
3.1	730104-000217	1/2"x1/4" BSPP BALL VALVE	1
3.2	710101-000148	Gauge Port Nut with Hole 3mm	2
3.3	770104-000045	Gauge Port Seal	2
4	770102-000041	O-Ring 2-249	1
5	710101-001347	SCREEN SEAT	1
6	770104-000254	3-4" Hydraulic Seal	1
7	760108-000122	4-6" Clamp for Super Leader	1
8	710101-001332	Centralized Scanner	1
9	770101-000101	O-Ring 129.2X5.7	2
10	700101-001267	MWW 316L 130M ANGLE/S.LEAD W/O-RINGS*	1
11	710101-000415	Dirt Collector	1
12	710101-000100	Dirt Collector Axis	1
13	770101-000017	O-Ring 14*3	2
14	700190-000043	6" Cover Assembly	1
15	710101-000137	Circlip F/A.K. Semi-Auto Filter	1
16	710101-000175	Handle	1
17	730104-000009	1" Ball Valve F/M	1
18	760101-000034	Phillips Pan Tap SCRW #14X1 1/2" 304	1

\*Screen available options: 100μ, 130μ, 200μ

### Materials

RPP - Reinforced Polypropylene

PP - Polypropylene

RPA - Polyamide

POM - Polyacetal

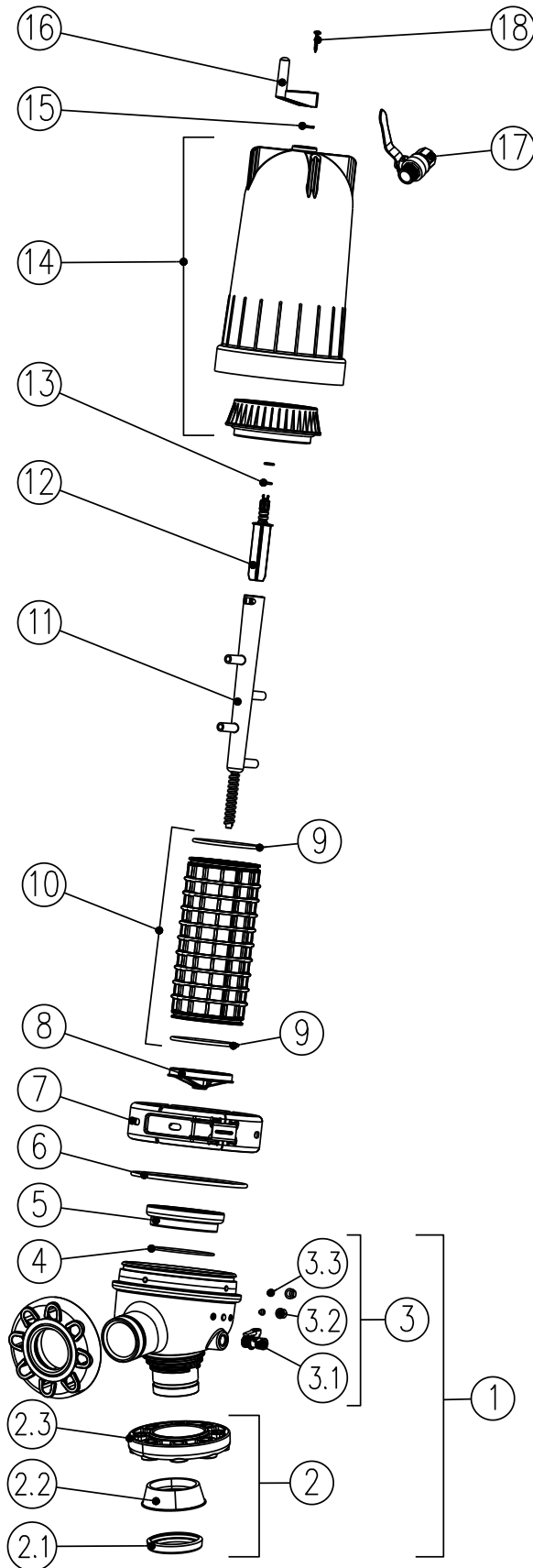
SS - Stainless Steel

### Filtration Grade Conversion Table

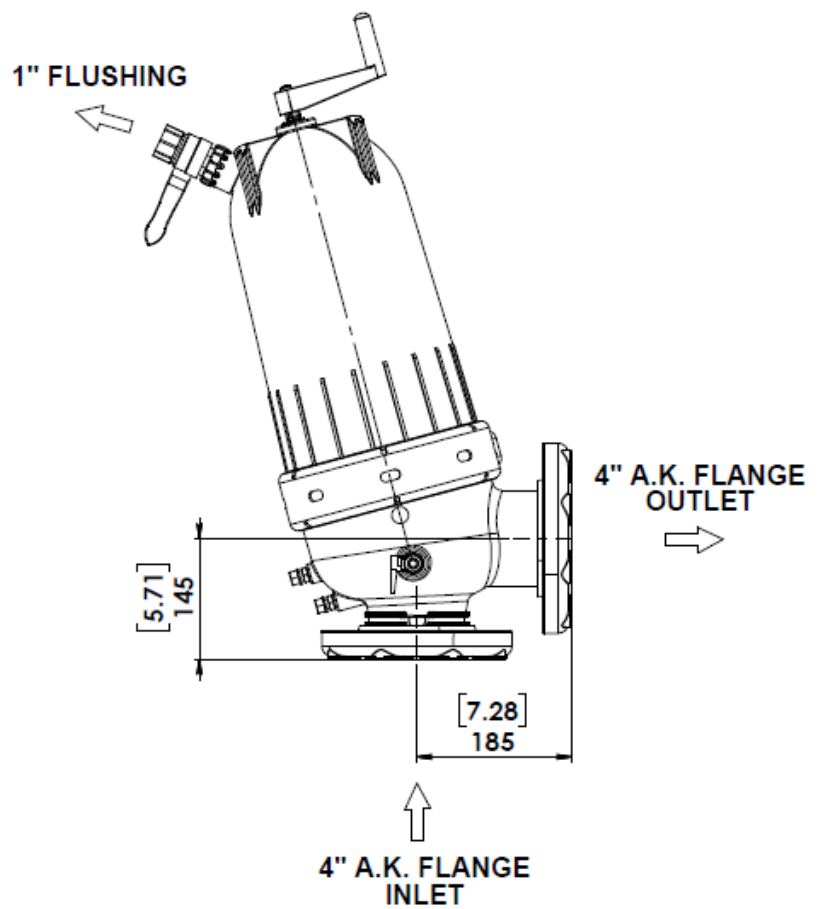
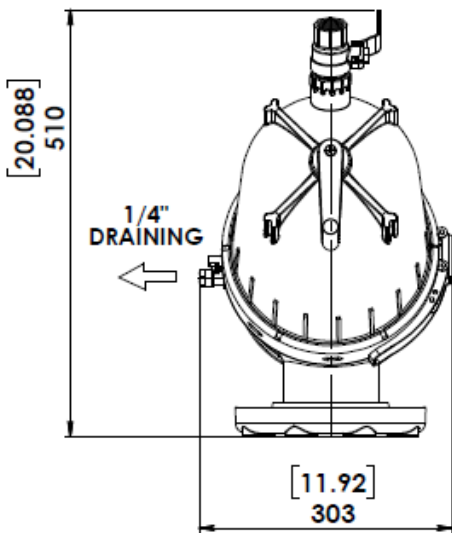
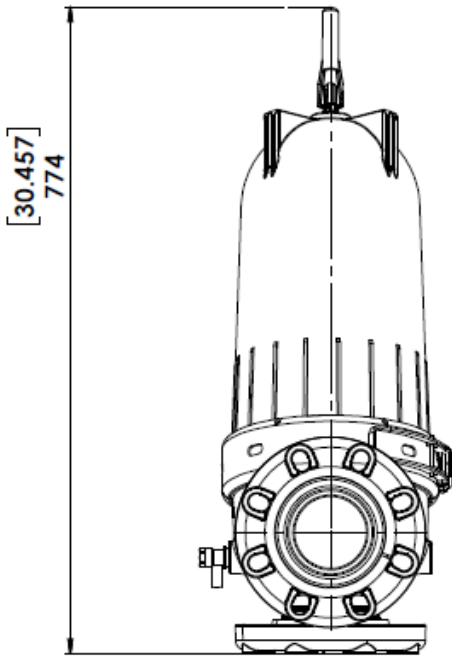
Micron	100	120	200	400
Mesh	140	120	80	40



**Spare Parts Drawing 3"**



### Dimensional Drawing - 4"

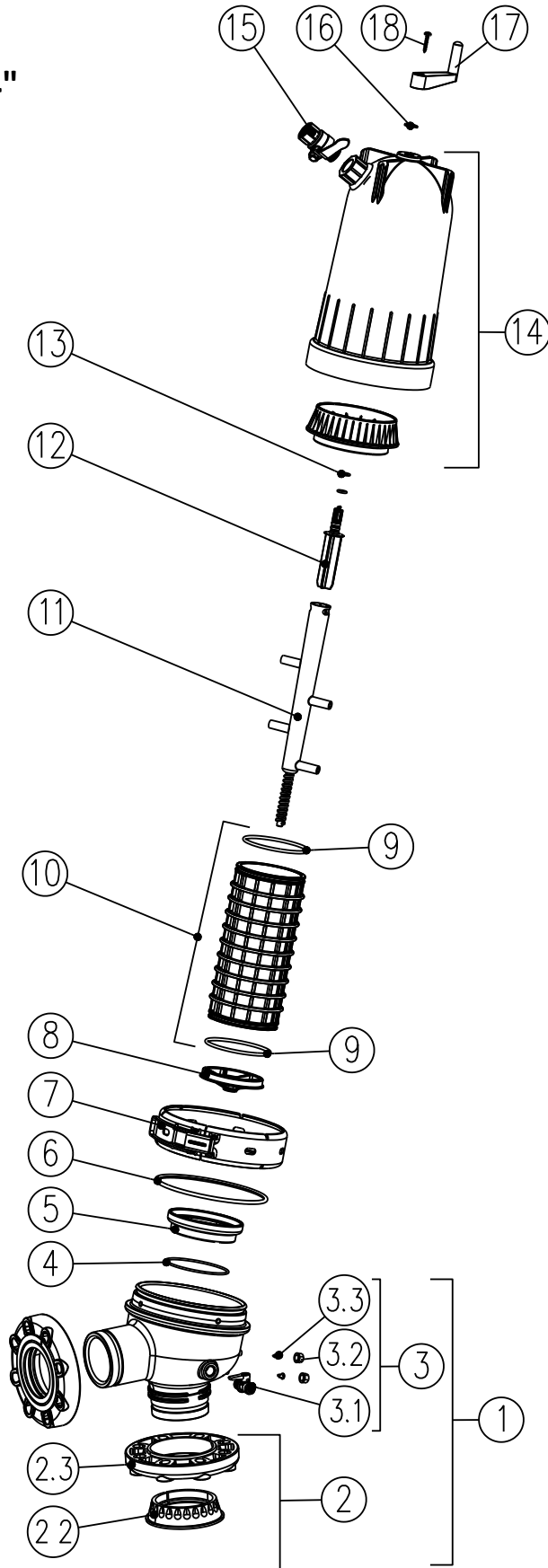


## Spare Parts List 4"

No.	CAT. No.	Description	Qty
1	700190-000145	4"Angle Filter Body Assembly + A.K. Flange	1
2	700190-000227	4" A.K. Flange	2
2.1	770104-000253	4" Seal for Q/F	2
2.2	710101-000431	4"A.K. Flange Ring Stopper	2
2.3	710103-004932	4"AK FLANGE MACHINED	2
3	700190-000142	4" Angle Filter Body Assembly	1
3.1	730104-000217	1/2"x1/4" Ball Valve	1
3.2	710101-000148	Gauge Port Nut with Hole 3mm	2
3.3	770104-000045	Gauge Port Seal	2
4	770102-000041	O-Ring 2-249	1
5	710101-001347	SCREEN SEAT	1
6	770104-000254	3-4" Hydraulic Seal	1
7	760108-000122	4-6" Clamp for Super Leader	1
8	710101-001332	Centralized Scanner	1
9	770101-000101	O-Ring 129.2X5.7	2
10	700101-001267	MWW 316L 130M ANGLE/S.LEAD W/O-RINGS*	1
11	710101-000415	Dirt Collector	1
12	710101-000100	Dirt Collector Axis	1
13	770101-000017	O-Ring 14*3	2
14	700190-000043	6" Cover Assembly	1
15	730104-000009	1" Ball Valve F/M	1
16	710101-000137	Circlip F/A.K. Semi-Auto Filter	1
17	710101-000175	Handle	1
18	760101-000034	Phillips Pan Tap SCRW #14X1 1/2" 304	1

\*Screen available options: 100μ, 130μ, 200μ

**Spare Parts Drawing 4"**



## General Technical Data

Max Pressure: 10bar / 145 psi

Max. Temperature: 60°C / 140°F

Filtration Grades (currently): 400µ, 200µ, 120µ

Model Cat. Num.	Conn. Size ØD (Inch)	Screen Area (Cm <sup>2</sup> )	* Max. Flow Rate (m <sup>3</sup> /h)	L (mm)	H (mm)	Weight (Kg)
AKSP3LT	3	1250	60	825	509	12
AKSP3LV	3	1250	60	789	509	12
AKSP3LF	3	1250	60	789	509	13
AKSP4LV	4	1250	90	789	509	12
AKSP4LF	4	1250	90	789	509	14

AKSP = Arkal Semi Automatic Polypropylene

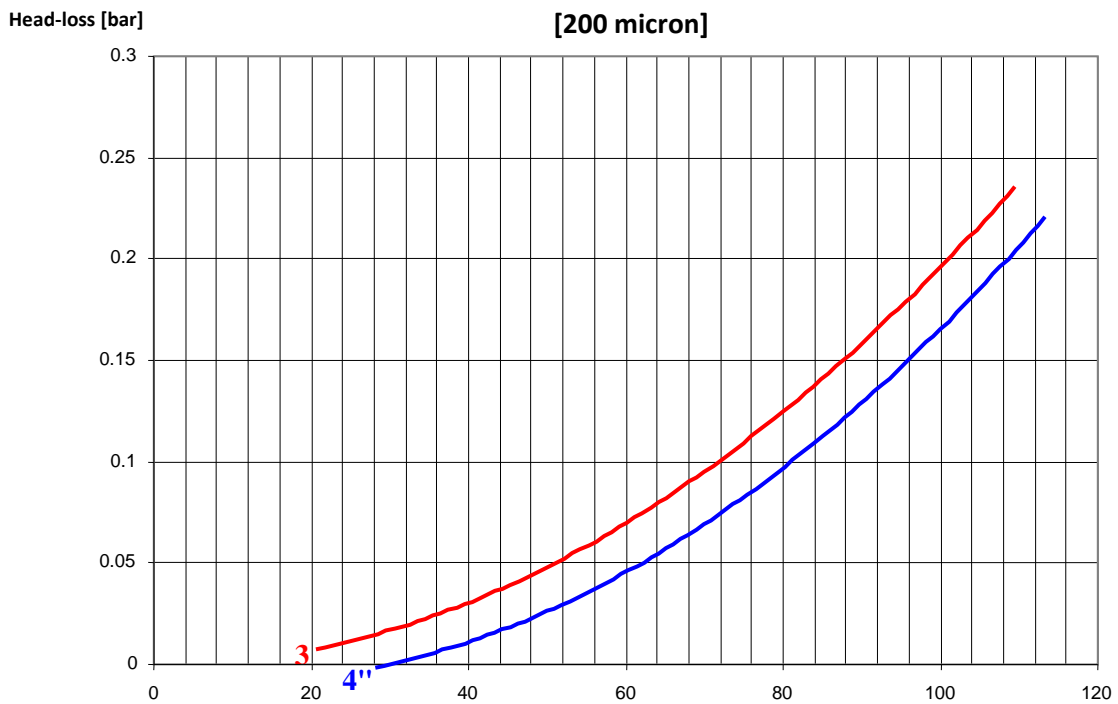
L = Angel Filter Connection

T = Threaded Filter Connection

V = Victaulic Filter Connection.

F = Flanged Filter Connection.

## Head-loss chart for ARKAL Semi Automatic Screen Filter



## 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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