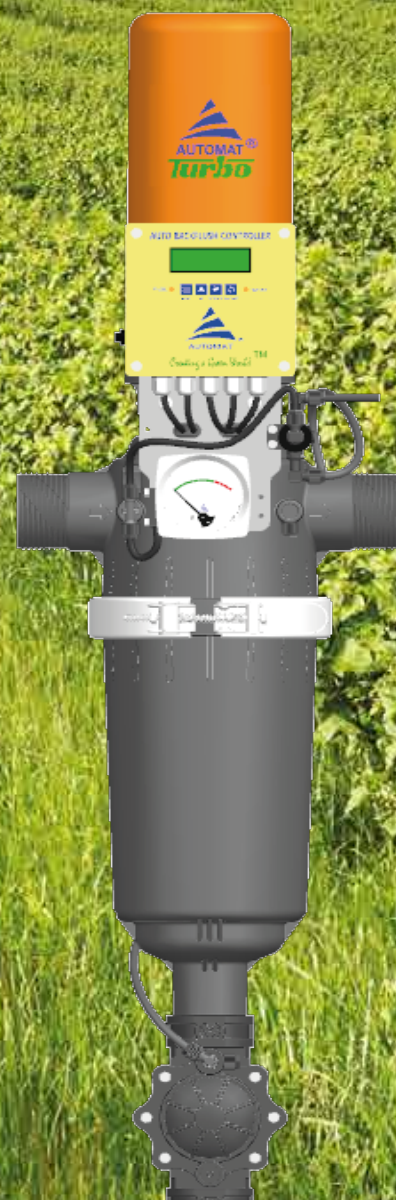




Innovative self-cleaning technology

Automatic Screen Filters



Installation, Operation and Maintenance Instructions

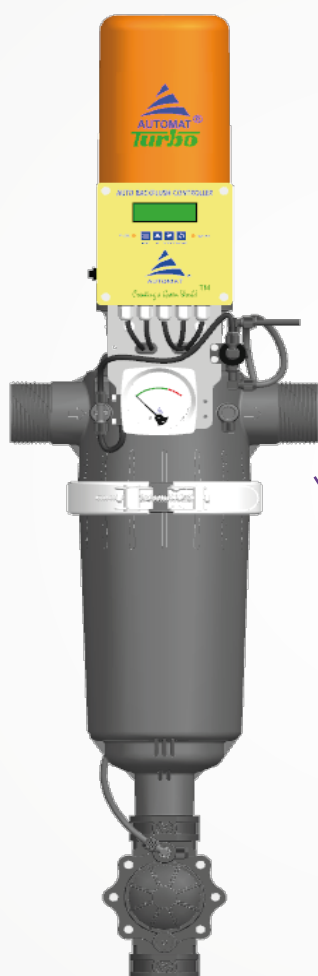
TABLE OF CONTENTS

Available Connections	03
Technical Specifications	04
Dimensions	04
General Instructions	05
Unpacking	06
Installation	07
General	07
Hydraulics	07
Tools Requirement	07
Recommended Installations	08
Installation Procedure	09
Initial Operation	10
Maintenance	11
General Safety Instructions	11
General Inspection Procedure	11
Long Term Termination of Filter Operation	11
Maintenance Schedule	11
Once a Week	11
At the end of irrigation season	11
Winterization	11
Cleaning Procedure	11
User Manual for Auto Backflush Controller	12
Filter Disassembly	16
Troubleshooting	20
Part List	21

AUTOMATIC SCREEN FILTERS

2" and 3"

Available Connections



Threaded



Flanged



Grooved

Specifications	Connection Size	Available Models		
		TURBO 800	TURBO 1200	TURBO 1600
Inlet/Outlet Connections	2" (50 mm)	Threaded / Grooved	Threaded / Grooved	-
	3" (80 mm)	-	Threaded / Flanged / Grooved	Threaded / Flanged / Grooved

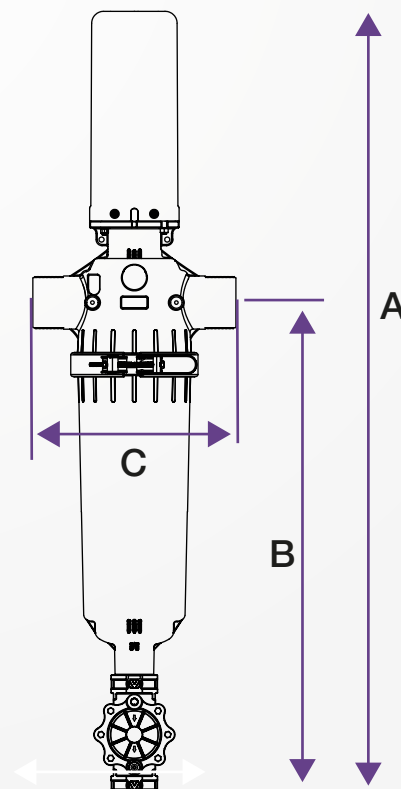
Technical Specifications

General				
Specifications	Available Models			
	Connection Size	TURBO 800	TURBO 1200	TURBO 1600
Maximum Operating Pressure		10 bar (150 psi)		
Maximum Flow Rate*	2" (50 mm)	25 m³/hr (110 GPM)	30 m³/hr (130 GPM)	—
	3" (80 mm)	-	40 m³/hr (175 GPM)	50 m³/hr (220 GPM)
Minimum Pressure during Flushing		2 bar (30 psi)		
Filtration Surface Area		800 cm² (124 inch²)	1200 cm² (186 inch²)	1600 cm² (248 inch²)
Material of Construction		— All Polymeric / EPDM / St.St.		
Available Filtration Degree	Microns	200 / 130 / 100		
	Mesh	80 / 120 / 150		
Flushing Data:				
Flushing Valve		2" (50 mm)		
Flushing Cycle Time*		15 sec		
Flush Water Volume Per Cycle		34 liters (9 gallons)	38 liters (10 gallons)	42 liters (11 gallons)
Flushing Flow Rate (m³/hr)		8.1 m³/hr (35 GPM)	9.1 m³/hr (40 GPM)	10 m³/hr (44 GPM)
Control and Electricity:				
Rated Input Supply (To Controller)		24V DC		

* Depends on water quality.

Dimensions

Dimensions		Turbo 800	Turbo 1200	Turbo 1600
A	cm	111.5	120	132.5
	inch	44	47 ¼	60
B	cm	62.5	71	83.5
	inch	24 ½	28	32 ⅞
C	cm	37		
	inch	14 ⅞		



General Instructions

Attention: Read the installation and operation manual carefully before handling the system.

- While working with the filter all conventional safety instructions should be observed in order to avoid danger to the person handling the system, the public or to the property in the vicinity.
- DO NOT make any changes or modify filter equipment without written permission from the manufacturer or by its representative.
- Do not hold the filter with Motor Cover, Connecting tubes or Controller to avoid damaging the product.
- Always use original spare parts supplied by the manufacturer.
- Always open and close isolation valves at upstream and downstream gradually to prevent water hammering.
- Air release valve should be installed in the system to release the air / break vacuum.
- Take care while handling acids and chemicals; wear suitable hand gloves, shoes, full sleeve top, trousers and eye protection gear.
- To avoid damage or breakage, the filter, including the cover and command tubes, must be drained prior to frost periods.
- Use rated power input for the controller as given in technical specifications.

Unpacking

Step 1: Open the box with the help of a suitable cutter.



Step 2: Open the box and pull the straps to remove the wooden support as shown.



Step 3: Take out flushing valve and the power supply cord.



Step 4: Pull out the filter from the box by holding the strap.



Step 5: Cut the straps and slide the wooden support towards the bottom of the filter as shown.



Step 6: Lift the filter from the box and lay it flat on the ground. Read the installation instructions carefully and then install the filter.



Do not pull out the filter with connecting tubes, DP switch, controller plate or the motor cover. It may damage the filter.

General

- Kindly read carefully the installation instructions detailed in this manual before installing the filter.
- Make sure to install the filter in the direction of flow arrow marked on the filter and do not allow water to flow in the reverse direction.
- Make sure you have enough space around the filter assembly for easy maintenance.
- Electric wiring should be done using standard and approved components by a qualified electrician only.
- It is recommended to provide an emergency cut-off switch near to the controller and should be easily accessible.
- Avoid direct water splash on electrical equipment.
- Filter system should be supported appropriately.
- Carefully handle the filter while shipping and handling.
- Use recommended tools for installation and maintenance.

Hydraulics

- We recommend to install suitable upstream and downstream isolation valves before and after the filter.
- The diameter of the upstream pipe must not be smaller than the filter inlet.
- It is recommended to install a pressure relief valve before the filter to protect the upstream line and filter from pressure surge.
- Ensure the filter is not exposed to water pressure that exceeds the maximum pressure defined in technical specifications. If needed, a pressure reducing valve should be installed upstream of the filter.
- During the flushing process, a minimum back pressure of 2 bar (30 PSI) should be maintained at the inlet of the filter for efficient cleaning. In the event that the system cannot provide the minimum backwash pressure, a pressure sustaining valve should be installed downstream of the filter.
- Please note that the maximum working pressure indicated in the filter's specifications table includes the pressure caused by water hammer and pressure surge effects.
- In case there is a chance of back flow, a non-return valve should be installed at downstream of the filter to avoid damage to screen.
- It is recommended to thoroughly flush the main line at the connection point to remove large objects that may damage the filter's internal mechanism.
- Backflush line should not be reduced after the flush valve or should not be too long that it creates back pressure on the filter. This can affect cleaning of the filter during backwashing.

Recommended Tools for Installation

- We recommend to install suitable upstream and downstream isolation valves before and after the filter.
- The diameter of the upstream pipe must not be smaller than the filter inlet.
- It is recommended to install a pressure relief valve before the filter to protect the upstream line and filter from pressure surge.
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Wrench



Cutter



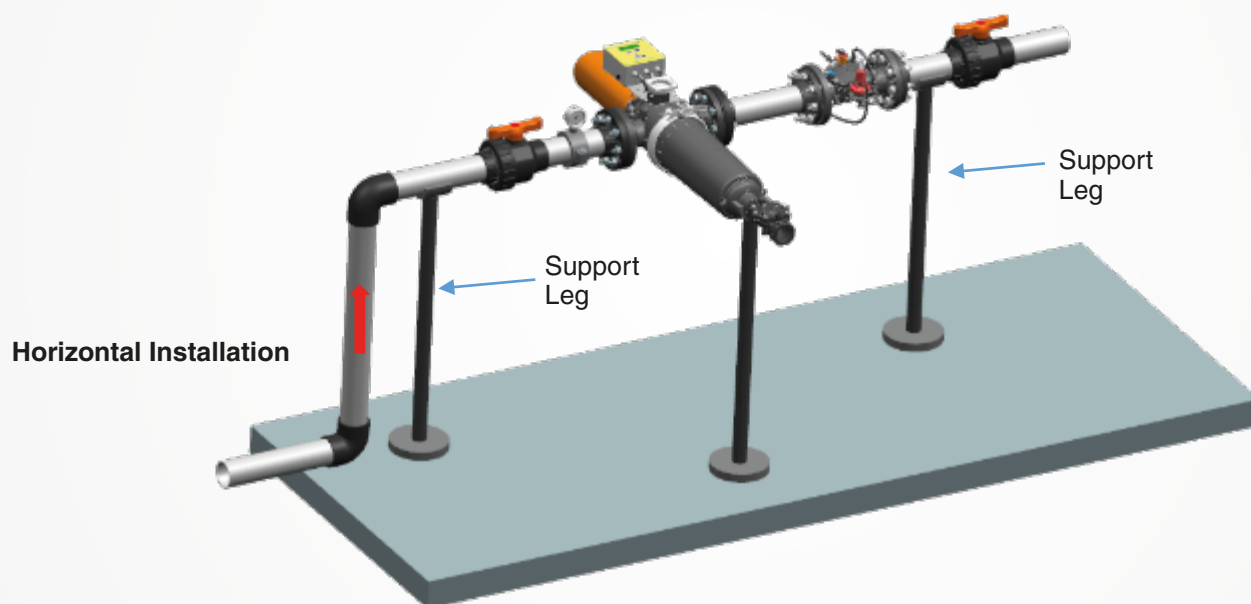
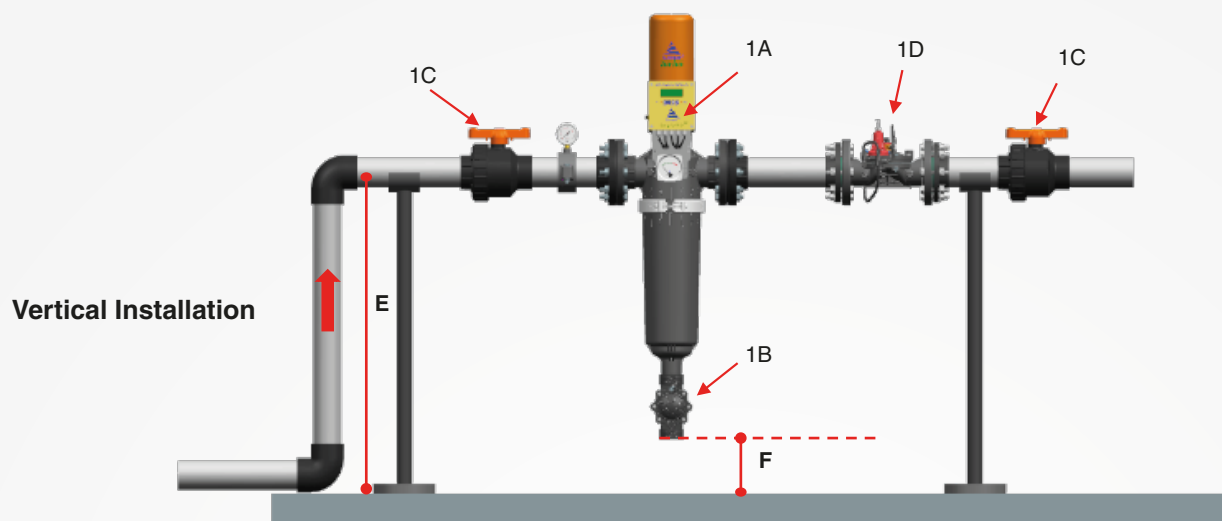
Screw Driver Set



Allen Key Set

Recommended Installations

The filter can be installed vertically as well as horizontally as shown below.



Dimensions			Turbo 800	Turbo 1200	Turbo 1600
E	Main pipe line center to ground level	cm	81.5	90	102.5
		inch	32	35 ½	40 ½
F	Flush Valve to Ground Level	cm	19		
		inch	7½		
1A	Filter Controller				
1B	Flush valve				
1C	Isolation Valve				
1D	Pressure Sustaining Valve*				

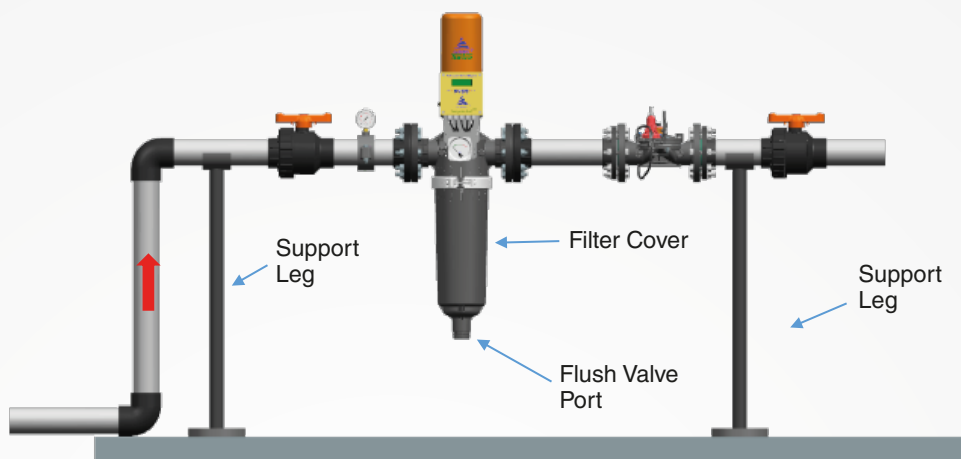
* To be used if minimum backwash pressure is less than 2 bar (30 PSI) during backflushing.

Installation Procedure

Step 1

Install the filter on the line with the help of suitable tools as shown in figure. The filter may be installed vertically or horizontally.

Note: End connection of the filter may be threaded, grooved or flanged.



Step 2

- 1) Connect the flush valve on male threaded port on the filter cover (at bottom) as shown in figure below. Refer to figure 2.1.
- 2) Take the connecting tube and connect with solenoid port '2' and 1/4" elbow on the flushing valve as shown in figure 2.2.

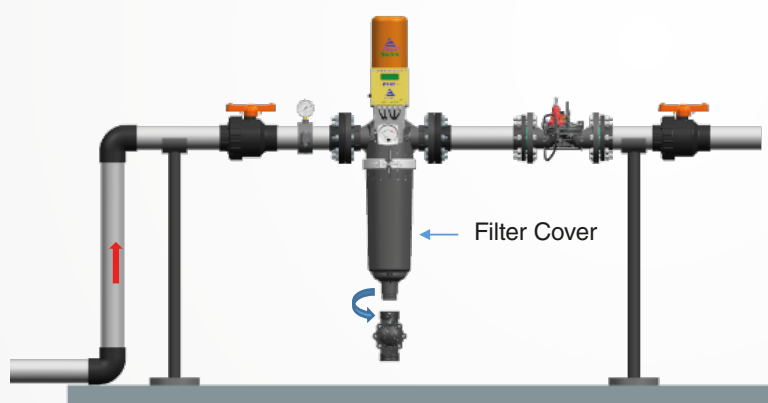
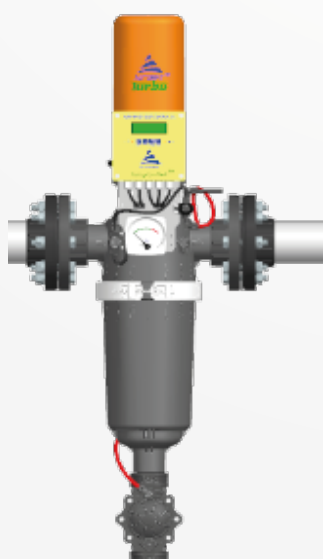


Figure 2.1



Attention

Ensure to use Teflon tape on threaded connections



Part2



1/4" Port

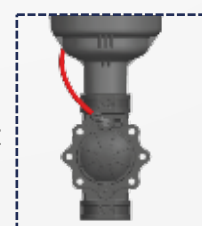
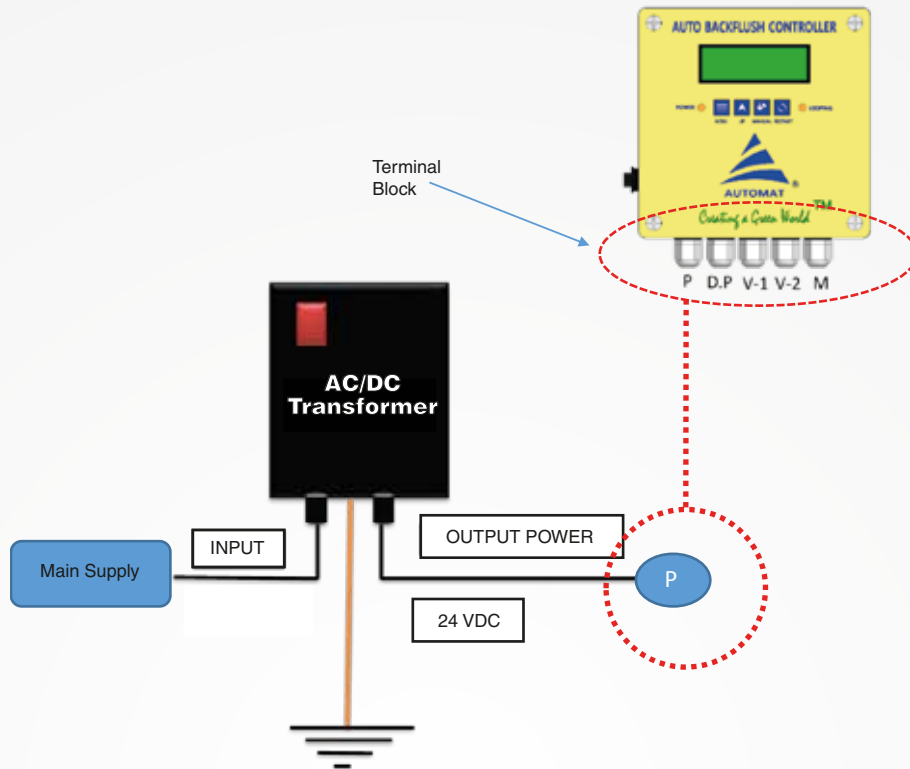


Figure 2.2

Step 3

Connect 24V DC to the “Power” terminal ‘P’ on the controller.

CONTROLLER WIRING LAYOUT



Initial Operation

- Carefully read this operation manual prior to operating the filter.
- Only a qualified technician should commission the filter.

For initial operation (or operation after maintenance) follow the below steps:

- Switch on the power supply to the controller & ensure display is coming on the controller screen.
- Start the pump or slowly open the upstream isolation valve while keeping the downstream isolation valve closed.
- Once the system is pressurized, check for any leakage through filter and connections.
- Now slowly open the downstream isolation valve.
- Initiate a manual flushing cycle, by pressing the “MANUAL” button on the controller. This will open the flush valve and cleaning will be initiated.
- Repeat step (4) for 2 to 3 times to evacuate air from the system.



Check the upstream pressure during the manual flushing cycle. Ensure it does not drop below 2 bar for efficient cleaning of the filter. Use pressure sustaining valve at filter outlet if required.

Maintenance

General Safety Instructions

- Installation, operation, and maintenance should be performed in accordance with instructions described in this manual.
- A general inspection of the filter operation should be done regularly and prior to any scheduled maintenance. This includes seasonal and post season check-ups.
- When under pressure, the filter may start a flushing cycle automatically at any time, without prior indication.
- Do not perform any maintenance work or try to open filter parts when the filter is in pressurized condition.

General Inspection Procedure

- Initiate a flushing cycle manually.
- Check that the flush valve opens and closes normally.
- Visually check the filter housing and valve for leakage.

Maintenance Schedule

Once a Week

- Visually inspect the filter and parts for leakage. Repair if necessary.
- Perform 2 to 3 manual flushing of the filter.
- Make sure that during the flushing cycle the inlet pressure does not drop below 2 bar.

At the end of irrigation season

- Close the downstream isolation valve.
- Perform 2 to 3 manual flushing of the filter.
- Turn off the pump and close the upstream isolation valve.
- Drain the filter by opening the end plug provided at the inlet of flushing valve .
- Visually inspect the filter, O-rings and seals for any damage. Replace damaged ones if necessary and apply Silicone Molykote OKS111 grease for lubrication. Perform manual cleaning of the screen if necessary (Refer to screen cartridge cleaning instructions given in this manual.)

Winterization

To avoid damage or breakage, the filter, including the cover, valves and command tubes, must be drained prior to frost periods. Filter operation should be suspended in climates where the filter is exposed to freezing temperatures.

Cleaning Procedure

During the operation, if the filter runs into flushing frequently and the looping alarm does not subside, it indicates that the screen is clogged. In this situation, the screen cartridge needs a manual or chemical cleaning.

Manual Cleaning Procedure:

- Remove the screen cartridge (Refer to step 3 in filter disassembly procedure).
- Remove the O-Rings from screen cartridge.
- Now take clean water in bucket and dip the screen in it.
- With the help of brush (with nylon bristle), clean the internal surface of the screen.
- Now wash the screen by applying high pressure water jet from outside of screen.
- If the impurities have deposited and do not get removed by brush and high pressure water jet, a chemical cleaning of the screen is required.



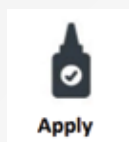
Attention

Take care while handling acids and chemicals; wear suitable hand gloves, shoes, full sleeve top, trousers and eye protection gear.



Chemical Cleaning Procedure

- Follow steps (1) and (2) given in manual cleaning procedure.
- Prepare a solution containing 7 liters of water and 3 liters of 30% HCL.
- Dip the screen in this solution for 2-3 hours.
- Now take out the screen and wash it with a jet of fresh water as shown in manual cleaning steps.
- Reinstall O-Rings as before.
- Reinstall screen cartridge in the filter.



Before installing the screen cartridge, ensure to apply grease on the O-Rings.

USER MANUAL FOR AUTO BACKFLUSH CONTROLLER FOR TURBO FILTER

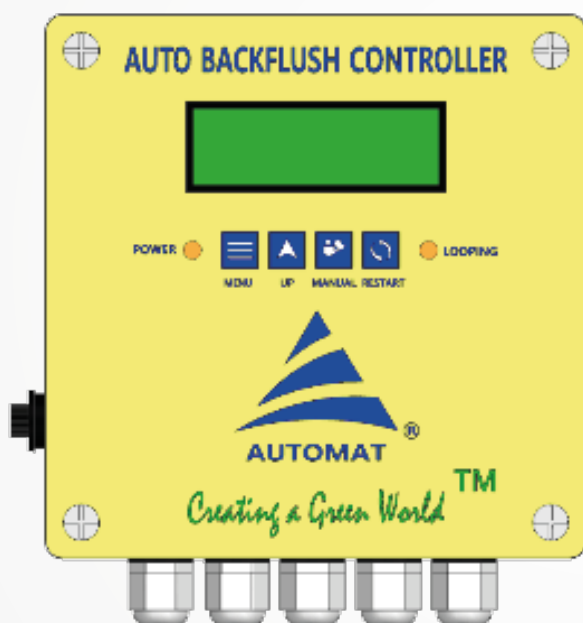


Table of contents

- Safety instructions
- General description
- General Features
- Flushing methods
- The User Interface panel
- Programming
- Monitoring
- Controller wiring layout
- Handling faults
- Warning

Safety Instructions

- Prior to operating the controller please read carefully the instructions given in this manual.
- Use this controller only for its intended use for turbo filter operation, any misuse of the controller may lead to damage to the controller and may affect your warranty coverage.
- Do not leave the wires loose, use cable ties.
- Electric wiring should be done using standard and approved components by a qualified electrician only.
- It is recommended to provide an emergency cut-off switch near to the controller and should be easily accessible.
- Avoid water splash on electrical equipment.
- Ensure proper earthing to avoid damage to controller or power supply unit.
- Ensure input voltage to the controller is 24V DC (+/- 2 V).

General Description

The “**FILTER SMART**” controller enables back flushing process of the Automatic “Turbo” series filters offered by Automat.

Controllers are configured to pre-set parameters that enables the installation, operation and monitoring easy & simple thus offering reliable & long-term operation.



Attention

Automat LCD controller is an outdoor model (IP 65) protected.

General Features

- **Inputs**
 - Supply to the controller 24 VDC.
 - Enable to operate one filter with solenoid coils 24 VDC and electric motor 24VDC ,4.8A
 - External digital differential pressure gauge (Bar/Psi)
 - External Switches: Menu / UP / Restart / Manual (IP65 protected)
 - Operating temperature (0-60 degree C)
- **Outputs**
 - V1-flush valve 24V DC
 - V2-downstream valve 24VDC (optional)
 - Alarm signal - looping error on controller.
 - Motor -24VDC
- **Looping:** The controller signals looping alarm after 5 consecutive flush cycles triggered by pressure differential across the filter.

Factory Set Default

- Flushing Duration: 15 seconds
- Time Based Flushing: 120 min
- DP Delay: 3 second
- Set DP: 0.50 bar

Note:

The Auto-flush controller is supplied as an integral part of the filter. The user needs to connect only the power supply (24 VDC) to the terminal block (PORT “P”) on controller.

Flushing Methods

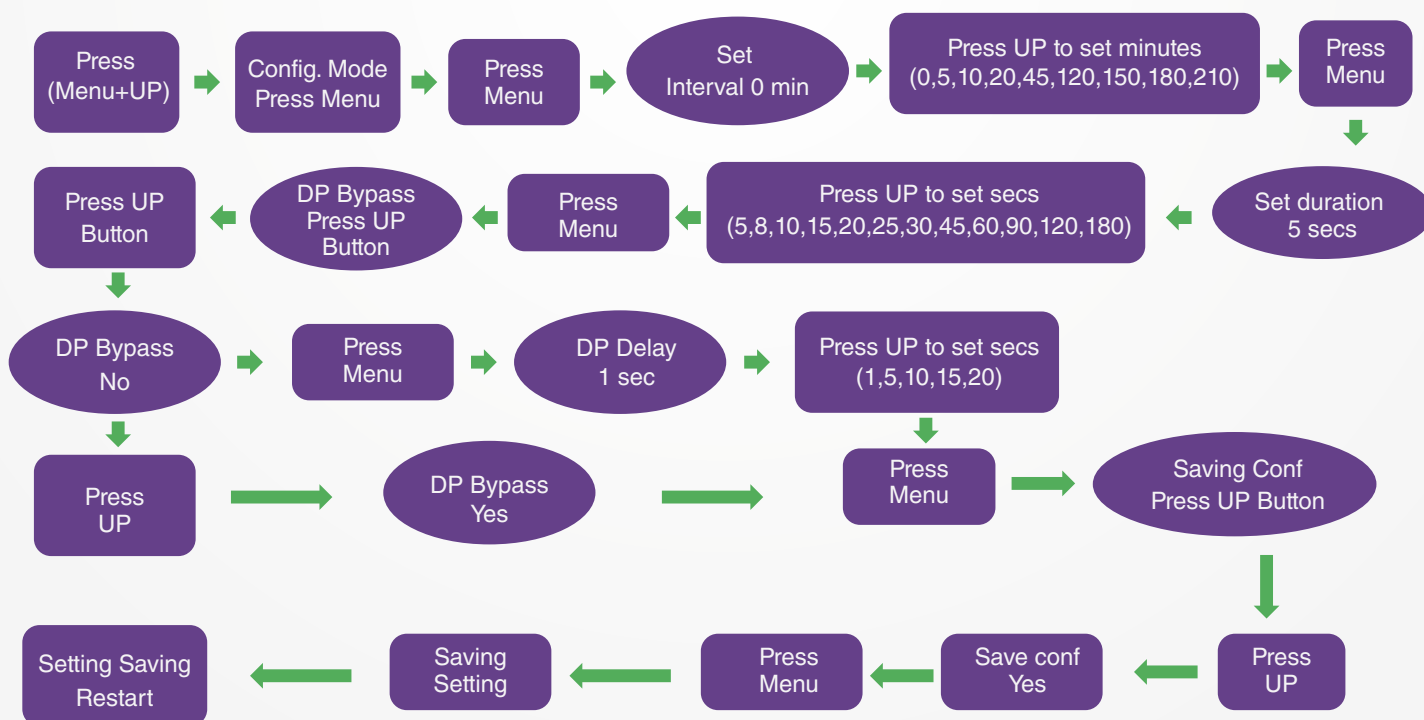
- Flushing triggered by pressure differential.
- Flushing triggered by time only.
- Manual flushing.



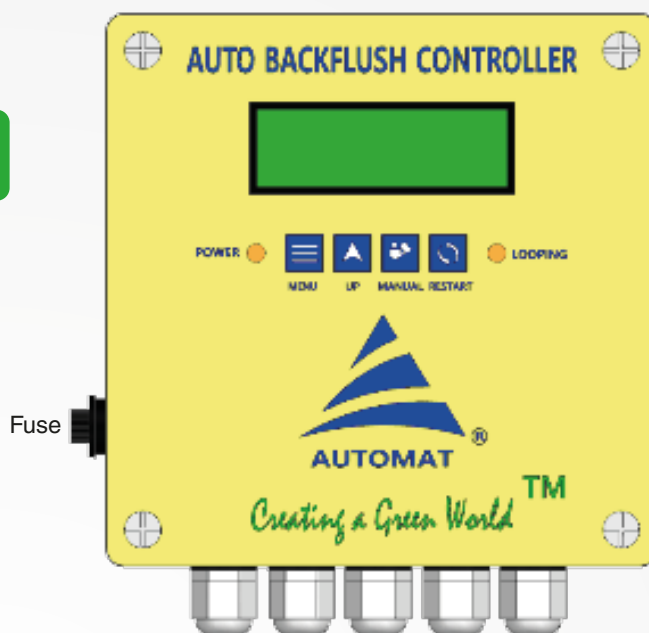
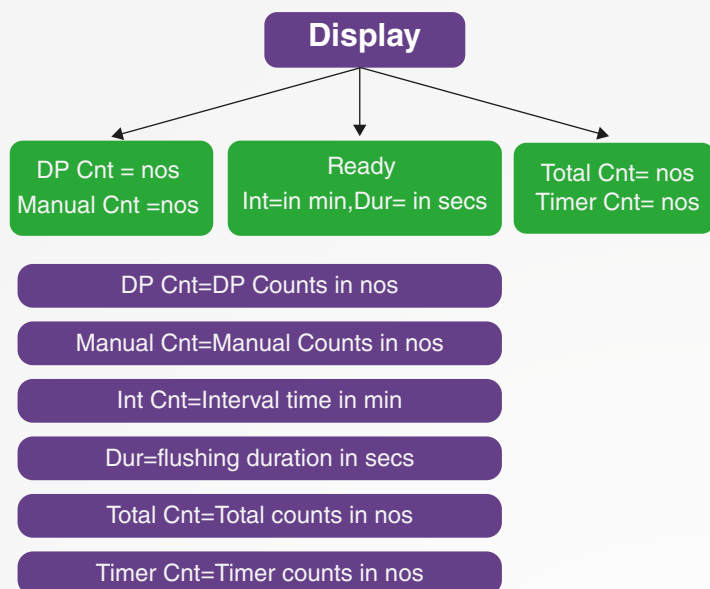
The User Interface panel

Display	➔ Display
POWER LED	➔ Indicates power is available in the controller
MENU	➔ To confirm the set parameters.
UP	➔ To change set programmed values
MANUAL	➔ To trigger manual flushing
RESTART	➔ To restart the backflush controller and save the changed settings.
LOOPING LED	➔ It indicates looping alarm/Buzzer
P	➔ Power terminal
D.P	➔ Differential pressure terminal (DP)
V-1	➔ Solenoid coil Terminal to operate flush valve V-1
V-2	➔ Solenoid coil Terminal to operate downstream valve V-2(Optional)
M	➔ Motor terminal (M)
F	➔ Fuse

Programming



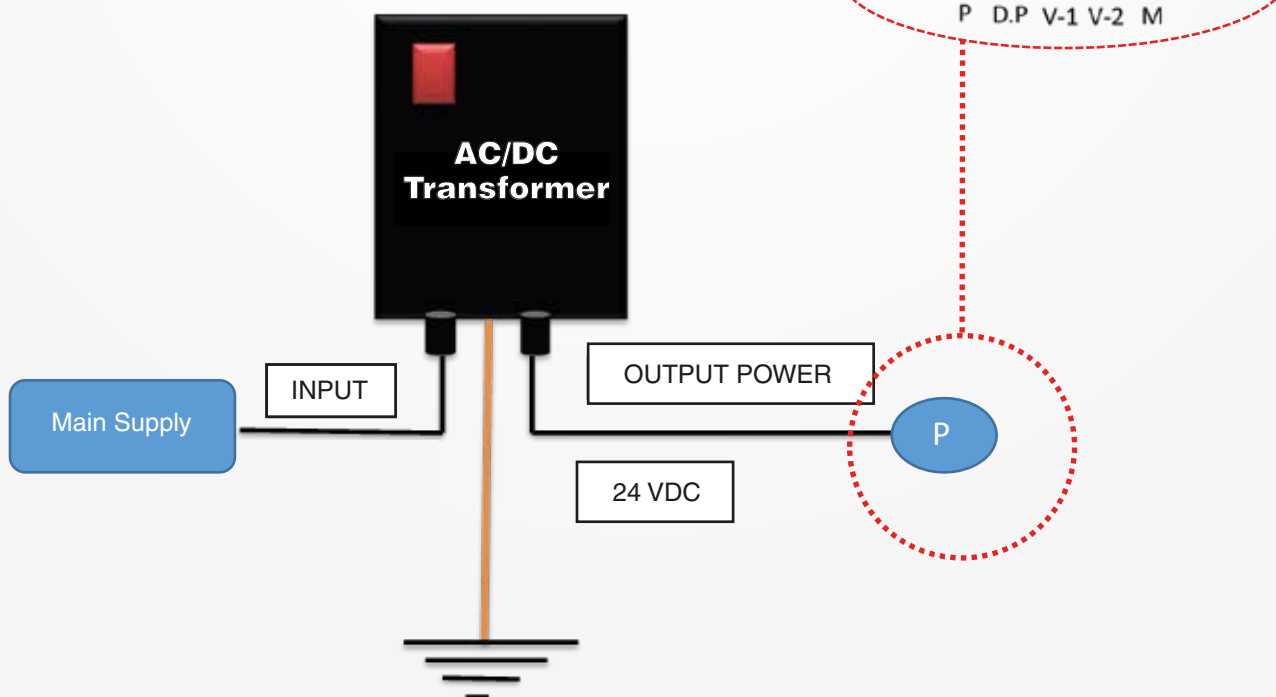
Monitoring



CONTROLLER WIRING LAYOUT: Earthing is must for SMPS

Electric

- 2 wires form SPMS output to be connected with (P) 24VDC Input to the controller .
- 2 wires for DP (Connected with DP)
- 2 wires for 24V DC solenoid coil (Connected with V-1) to Operate Valve-1
- 2 wires for down stream valve (PSV) –to Operate valve-2 (Optional)-Needs to be connected (V2) if installed .
- 2 wires for Motor (Connected with M)



Handling Faults :



Fuse: In case of no supply to the controller (power LED do not glow), check the fuse & replace if burnt.



DP Gauge: The DP gauge will provide years of maintenance free operation. Other than replacing a broken lens, there is only one area where this instrument may need attention. Erratic pointer or switch action may indicate the cleaning is required. Please refer to below instruction.

Step-1



Open the screws on the DP gauge and pull out the back plate.

Step-2



Pull out the diaphragm.

Step-3



Pull out the piston assembly.

Step-4



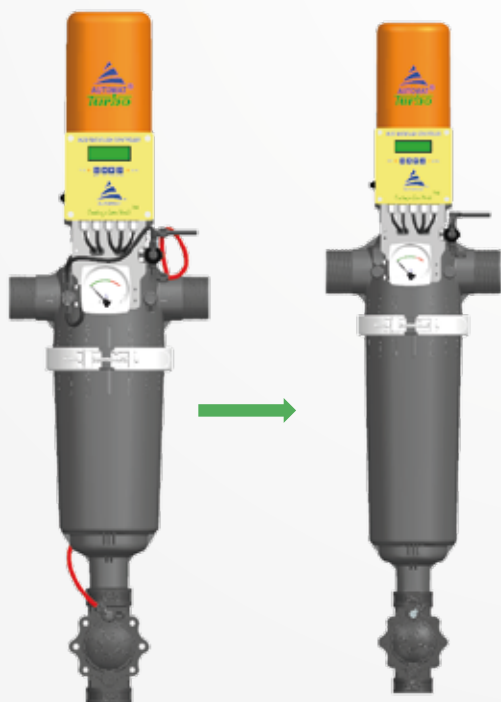
Clean the internal parts with clean water or pressurized air and assemble as before.

Filter Dis-assembly

In an event to replace the filter screw, follow the steps given below.

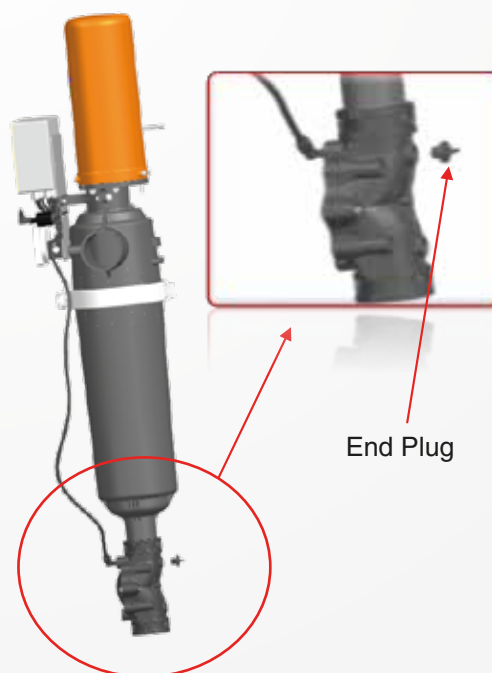
Step 1

Remove the command tube connecting the flush valve and the solenoid.



Step 2

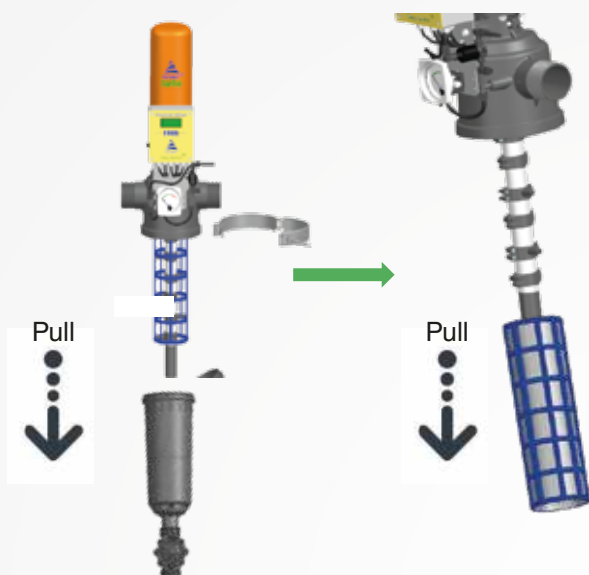
Drain the filter completely by opening the end plug provided at the upstream of flushing valve.



End Plug

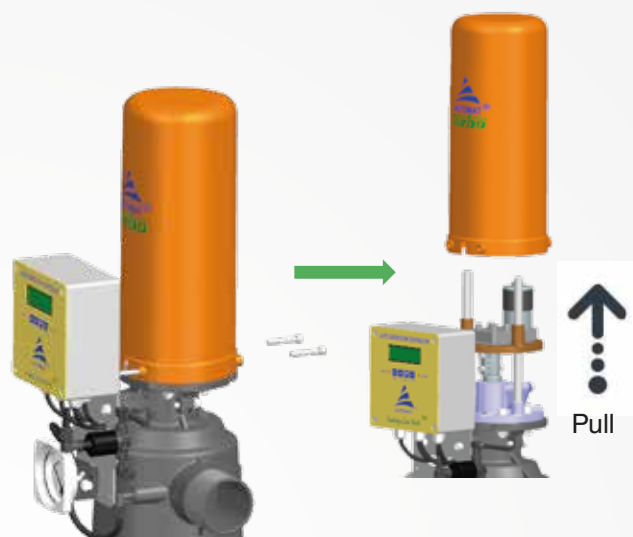
Step 3

- Open the clamp and remove the filter cover carefully.
- Now pull the screen cartridge downwards gently without affecting the suction scanner assembly.



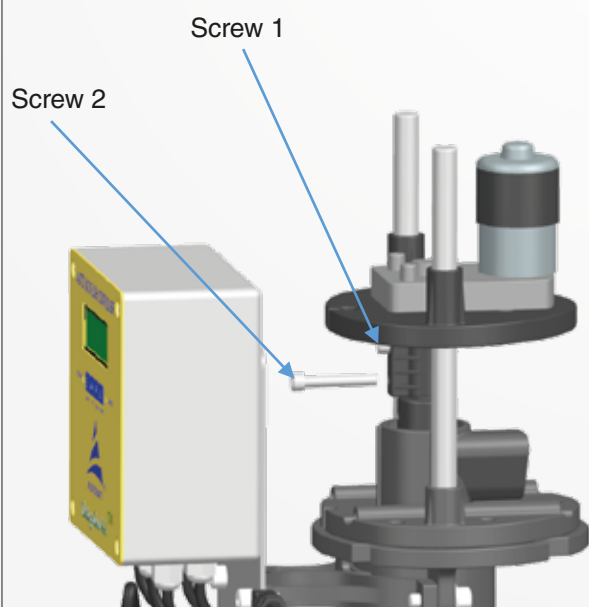
Step 4

Open the screws on the motor cover with the help of allen key set and carefully pull up the cover vertically.



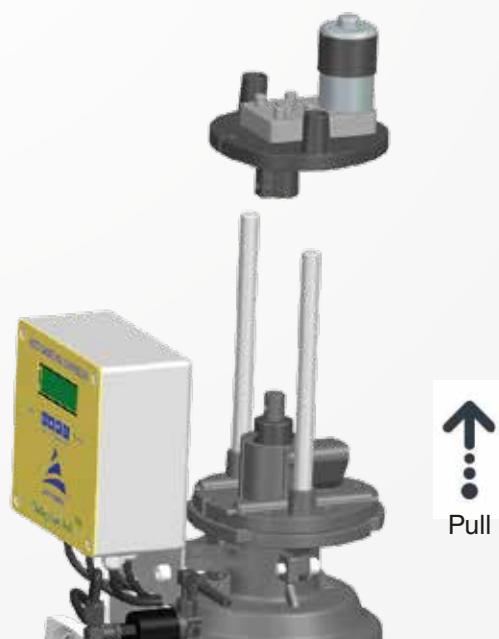
Step 4

Open the clamp and remove the filter cover carefully.



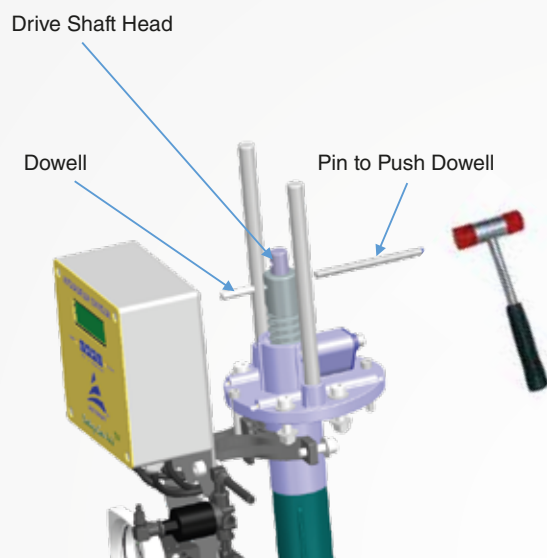
Step 5

Pull the motor mounting plate along with motor upwards carefully; disengaging the motor assembly from the filter.



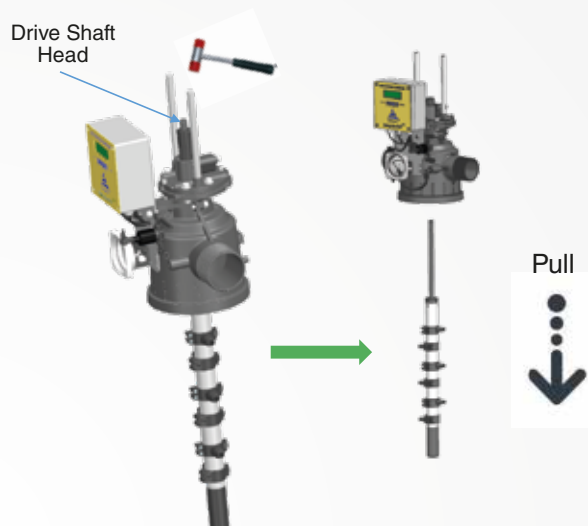
Step 6

- With the help of a suitable pin & plastic/rubber hammer, remove dowel pin connecting the drive shaft and the reversing screw. This will free the driving shaft and suction scanner assembly connection from reversing screw.



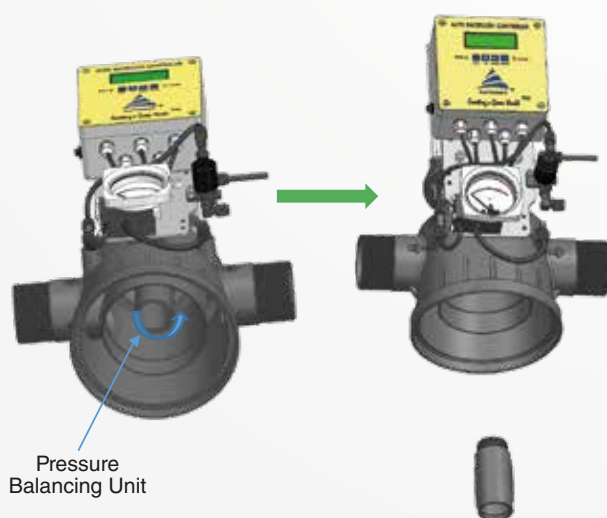
Step 6

Hold the suction scanner from bottom by one hand & hammer on the drive shaft from the top to loosen the drive shaft and suction scanner assembly. This will enable to pull the suction scanner from below.



Step 7

- Unscrew pressure balancing unit by rotating it in anticlockwise direction to unscrew it from screw housing and take out from the filter body .



Step 7

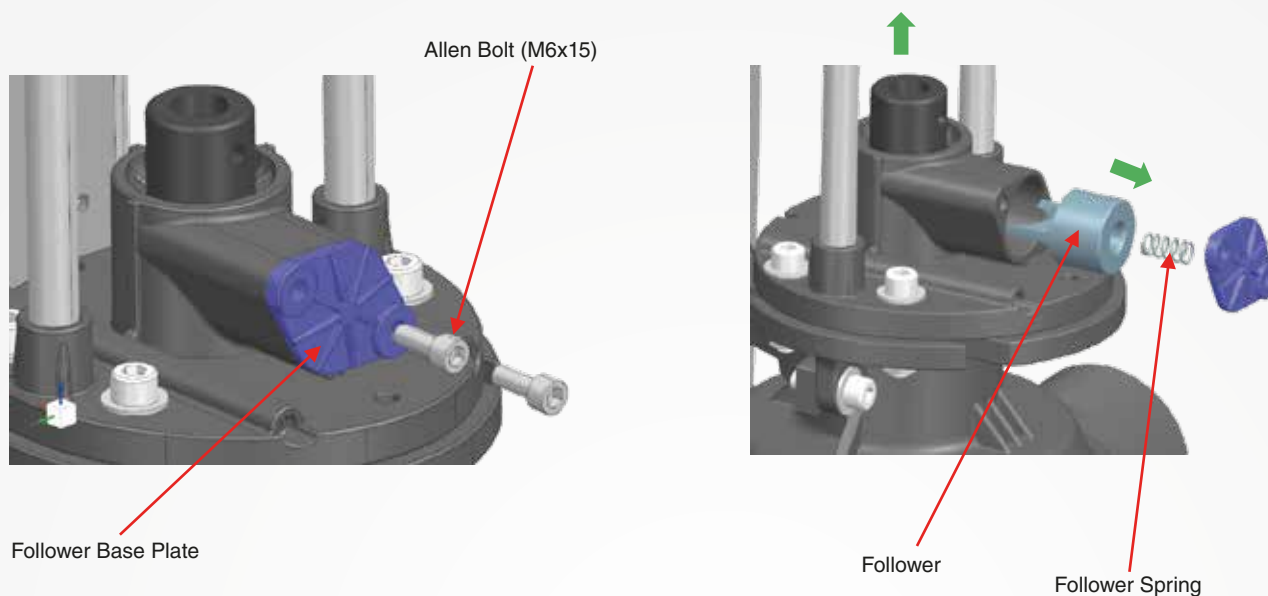
- Ensure the cup seal and O-Ring are not damaged. Replace if needed. While reassembling, apply grease.



Step 8

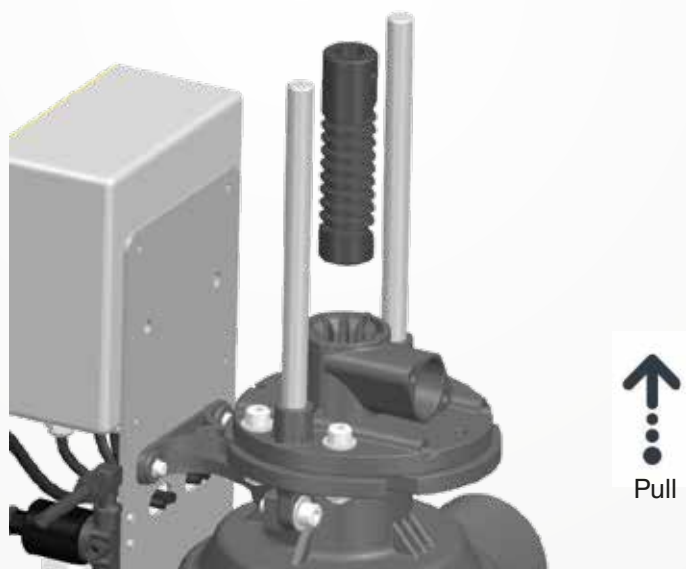
Disassembly of the reversing screw

First, unscrew the allen bolts of the follower cover. This will disengage the follower from reversing screw. Now slightly rotate the reversing screw by hand. This will push the follower outwards. Take out the spring & follower.



Step 8b

Pull the reversing screw upwards.



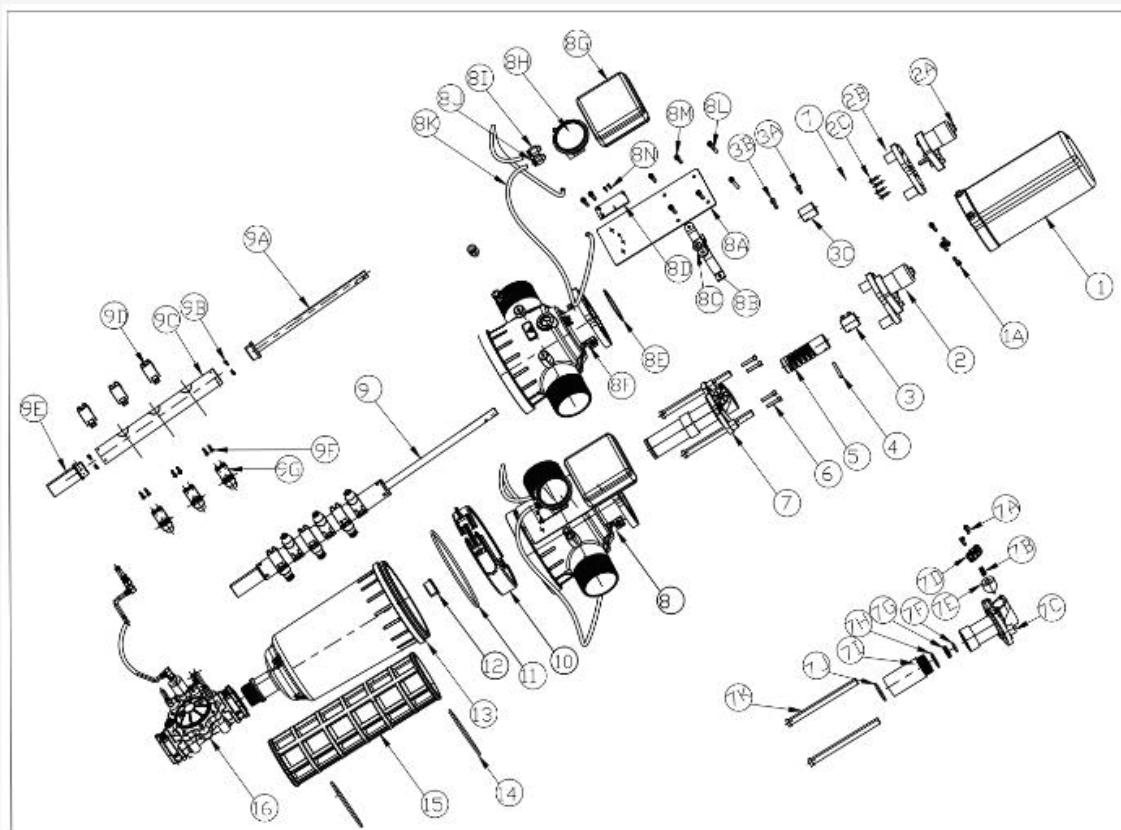
Assembly Procedure:

Before Reassembly:

- 1). Make sure all the parts are undamaged.
- 2). Replace damaged gaskets, O-Rings , Nozzles.
- 3). Make sure the screen cartridge is clean & undamaged. In case screen cartridge is damaged , replace it with new screen cartridge.
- 4). Apply silicone grease on O-Rings and Gaskets (Silicone Molykote OKS 111).
- 5) Re-Assemble parts as before.

Troubleshooting Guide

Problem	Cause	Solution
High pressure differential across the filter.	Screen cartridge is clogged.	1. Perform a manual flush cycle. Follow the steps given below.
		a Close the downstream isolation valve.
		b Press “Manual” button on controller for 5 seconds to initiate the cycle. Repeat the step twice.
		c Open the downstream isolation valve and verify the downstream pressure is slightly lower than the upstream pressure.
		If the problem persists, perform a chemical cleaning of the screen cartridge. For details, refer to “Chemical Cleaning Procedure” given in this manual.
Frequent flush cycles.	Water quality has changed.	Perform a manual flush cycle. Follow the steps given below.
	Screen cartridge is clogged.	Perform a chemical cleaning of the screen cartridge. For details, refer to “Chemical Cleaning Procedure” given in this manual.
	Faulty DP Gauge (Erratic pointer or switch action).	Check if DP gauge is working properly. Erratic pointer or switch action may indicate the cleaning is required. Please refer to “Handling Faults” in Controller Functions given in this manual.
Filter not flushing automatically.	No power supply to the controller.	Check power supply (or fuse) to the controller. Replace the fuse if faulty.
	Faulty DP Gauge	Check if DP gauge is working properly. Erratic pointer or switch action may indicate the cleaning is required. Please refer to “Handling Faults” in Controller Functions given in this manual.
	Faulty/Blocked Solenoid.	Dismantle and clean the solenoid. Check for “click” by supplying rated input (24 VDC). Replace the solenoid if faulty.
Flush valve remains open.	Solenoid base “Manual Override” not pointing towards port ‘2’.	Turn “Manual Override” of solenoid base towards port ‘2’.
	Blocked in-line finger filter.	Disconnect upstream tube and check for firm water stream. Clean or replace the finger if required.
	Debris on sealing seat (valve is continuously discharging small amount of water).	Manually operate the solenoid coil and let it remain open for sometime. If the problem persists, dismantle, clean and check that valve parts are not damaged.
	Damaged diaphragm (continuous water discharge).	Replace the diaphragm.



S. No	Part Name	Material	Quantity
1	Motor Cover	PP	1
1A	Allen bolt (M6x35)	St. St.	4
2	Motor assembly	Aluminium	1
2A	Motor	Various	1
2B	Motor Mounting Plate	PP	1
2C	CSK BOLT (M4x25)	St. St.	4
3	Coupler Assembly	Various	1
3A	Coupler	PPGF	1
3A-1	Brass Insert (M6x10mm)	Brass	2
3B	Allen bolt (M6x15)	St. St.	1
3C	Allen bolt (M6x40)	St. St.	1
4	Spring Dowel (Ø6x30)	St. St.	1
5	Reversing Screw	POM	1
6	Allen bolt (M6x35)	St. St.	4
7	Reverse Screw Housing Assembly	Various	1
7A	Allen bolt (M6x15)	St. St.	2
7B	Follower Spring	St. St.	1
7C	Reverse Screw Housing	POM	1
7D	Follower Cover	PPGF	1
7E	Follower	St. St.	1
7F	Drive Shaft O-ring	EPDM	1
7G	Cup Seal	NBR	1
7H	Big O-Ring	NBR	1
7I	PBU (Pressure Balancing Unit)	PPGF	1
7J	Small O-Ring	NBR	1
7L	Leader Pin	St. St.	2

S. No	Part Name	Material	Quantity
8	Filter Body Assembly	Various	1
8A	Controller Mounting Plate	St. St.	1
8B	Bracket	PPGF	1
8C	Anti vibration pads	NR	2
8D	Pressure Differential Mounting Plate	St. St.	1
8E	O-Ring	NBR	1
8F	Filter Body	PAGF	1
8F-1	Brass Insert (M6x10mm)	Brass	6
8F-2	Brass insert (1/4")	Brass	2
8G	Controller	Various	1
8H	Pressure Differential Gauge	Various	1
8I	HP Connector	St. St.	2
8J	LP Connector	St. St.	2
8K	Control Tubing	PE	2
8L	Allen bolt (M6x30)	St. St.	2
8M	Allen bolt (M6x15)	St. St.	6
8N	Allen bolt (M3x15)	St. St.	2
9	Suction Scanner Assembly	Various	1
9A	Drive Shaft	PAGF	1
9B	Screw Small 4X9.5MM	St. St.	6
9C	Suction Scanner Pipe (Ø40mm)	PVC	1
9D	Nozzle Lower Part	PP	6
9E	Suction Scanner Male Bush	POM	1
9F	Screw Big 8X19MM	St. St.	12
9G	Nozzle Upper Part	PP	6
10	Clamp	St. St.	1
11	Cover O-Ring	EPDM	1
12	Suction Scanner Female Bush	POM	1
13	Cover	PAGF	1
14	Cartridge O-ring	NBR	2
15	Cartridge	PAGF	1
16	ECV (3Way)	Various	1

