



## **AF-9800N Series Electric Hydraulic Self-Cleaning Screen Filter**

### **SERVICE & MAINTENANCE MANUAL**



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# 1. Introduction

## General

**YAMIT Filtration & Water Treatment Ltd.** (hereinafter **YAMIT**) congratulates you on purchasing the new **AF-9800 N SERIES** self-cleaning filter. This filter now joins the wide family of filters produced and supplied by **YAMIT** for agriculture, municipal water and sewage systems, and all types of industrial applications. All products manufactured by **YAMIT** are easy to install, use and service and don't require special skills to operate them.

For operation and maintenance of the filter please follow the instructions in this manual.

## 2. Safety Instructions

1. It is necessary to use a noise protection device while the filter is in operation.
2. In the model with 12V DC power supply use the device which is provided by YAMIT or equivalent (with certifications and power rating).
3. Verify that the control panel is grounded. Also verify that the AC power cord is connected to the control panel through 3 x 6A-fuse protector.
4. Verify that the filter housing is grounded to the appropriate location.
5. Confirm AC power disconnection prior to service.
6. Confirm filter draining prior to service.
7. Take precautions while lifting, transporting or installing the filter.
8. Installation and operation of the filter should be performed so as to avoid direct water splashing on the control unit.
9. Confirm that filter weight, when full, meets the support construction requirements.
10. Prior to installation confirm line pressure matches filter's operational pressure.
11. During installation, use standard flanges and connections only.
12. Check that all filter flanges bolts are properly secured.
13. Please note, the filter enters a flushing mode automatically, without prior warning.
14. Use original parts only, while servicing the filter.
15. No changes or modifications to the equipment are allowed.
16. Do not perform any maintenance activities other than those given in this manual.

### 3. Description & Operation

#### Filter Assembly General Description (Figure 1)

The **AF-9800N** Hydro electric self-cleaning screen filter enables high quality filtering at filtering degrees of 10-3000 micron from different types of fluid sources such as sewage, reservoirs, rivers, lakes, and wells.

The **AF-9800N SERIES** filter contains the following parts:

- |                     |                     |
|---------------------|---------------------|
| 1. Inlet            | 6. Flushing chamber |
| 2. Coarse screen    | 7. Dirt Collector   |
| 3. Fine screen      | 8. Suction nozzle   |
| 4. Flushing valve   | 9. Electric motor   |
| 5. Hydraulic piston | 10. Outlet          |

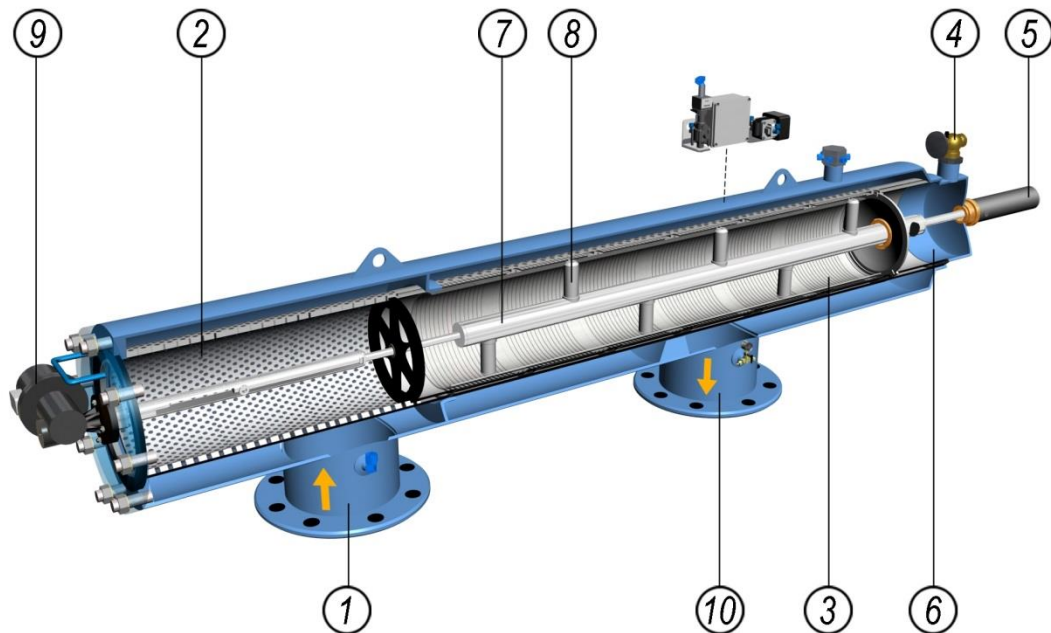


Figure 1: Filter Assembly

## **Filter Operation General Description (Figure 1)**

### **Filtration**

Water enters the filter through the “Inlet” (1) and passes through the coarse screen (2) that functions as a “first stop” for rough particles. Water then reaches the fine screen (3), which further purifies the flow by separating smaller particles from the water. As more water flows through, impurities build up on the fine screen. As impurities on the screen accumulate, a pressure imbalance is built up between the internal section of the fine screen (3) and its external section.

### **Cleaning Process**

When the difference in pressure ( $\Delta P$ ) reaches the preset value on the differential pressure indicator, Or when the preset time in the controller arrives, a series of events is triggered while water continues to flow to the system units. The controller transmits a signal for a 15 second flushing cycle. The solenoid opens the flushing valve (4), and release the pressure from the hydraulic piston (5). Water flows outside from the flushing valve (4). Pressure in the hydraulic chamber (6) and the dirt collector (7) is significantly lowered resulting in a suction process via the suction nozzles (8) to the dirt collector (7) and from there to the hydraulic chamber (6) through the flushing valve (4) outside. The electric motor (9) simultaneously rotates the dirt collector (7) around its axis. The pressure is released from the piston (5) and the high pressure inside the filter causes linear movement of the dirt collector. The combination of the linear movement and rotation efficiently cleans the entire internal screen (3) surface.

At the end of the 15 second cycle the flushing valve (4) closes and the operation of the electric motor (9) is stopped. The increased water pressure returns the hydraulic piston (5) to its initial position. The filter is now ready for the next cycle, with clean and filtered water flowing through the “Outlet” (10).

The 15 second flushing cycle resumes operation whenever the difference in pressure reaches the preset pressure value set on the differential pressure indicator. Or when the preset time in the controller is triggered on. If the pressure difference remains unchanged after one cycle, another cycle will start after a delay of 10 seconds.

## 4. Technical Data

### Standard Features

- Minimum operating pressure: 1.5 bar (21.8 psi)
- Maximum operating pressure: 10 bar (145 psi)
- Clean filter pressure loss: 0.1 (2 psi)
- Maximum water temperature: 65°C (149°F)
- Filtration range: 10-3000 micron
- Electric motor: 380V 3-phase 1/4 Hp 180watt
- Flush water consumption (at minimum working pressure): 70 liters (18.5 gallons)
- Filter housing materials: carbon steel coated w/baked on epoxy

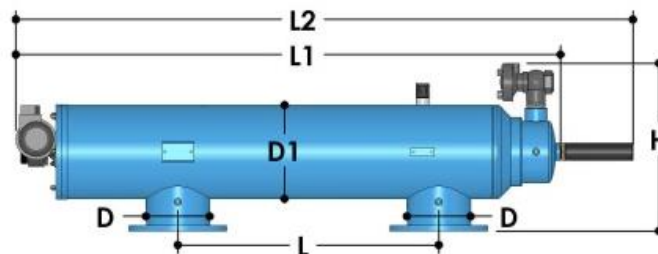
### Measurements & Weight

Model	In/Out D (inch)	D1 (inch)	H (mm) (inch)	L (mm) (inch)	L1 (mm) (inch)	L2 (mm) (inch)	Packing Weight (kg) (lb)	Packing Volume L*W*H (m) (ft)
AF9803NL	3	10	545 21.44	450 17.72	1227 48.29	1473 57.99	128 282	0.87x0.6x1.6 2.85x1.97x5.4
AF9804NL	4	10	545 21.44	900 35.43	1623 63.88	1873 73.72	153 337	0.77x0.6x2.0 2.53x1.97x6.5
AF9804NX	4	10	545 21.44	900 35.43	2019 79.47	2265 89.17	172 379	0.77x0.6x2.4 2.53x1.97x7.8
AF9806NL	6	12	580 22.81	900 35.43	1692 66.61	1938 76.32	165 364	0.77x0.6x2.4 2.53x1.97x7.8
AF9806NX	6	10	555 21.84	900 35.43	2089 82.22	2335 91.93	175 386	0.77x0.6x2.4 2.53x1.97x7.8
AF9808NL	8	12	580 22.81	900 35.43	74.09 89.68	83.8 99.39	205 452	0.87x0.63x2.6 2.85x1.97x8.5
AF9810NL	10	14	595 23.41	900 35.43	2282 89.82	2528 99.53	230 507	0.87x0.63x2.6 2.85x1.97x8.5

**L** = Long      **R** = Parallel      **X** = Extra-long filter with extra-large filtration area

\* Flow rate data is for high quality water at filtration grade of 120 microns.

\*\* Flushing flow rate data is for minimum operational pressure (1 bars / 15 psi).



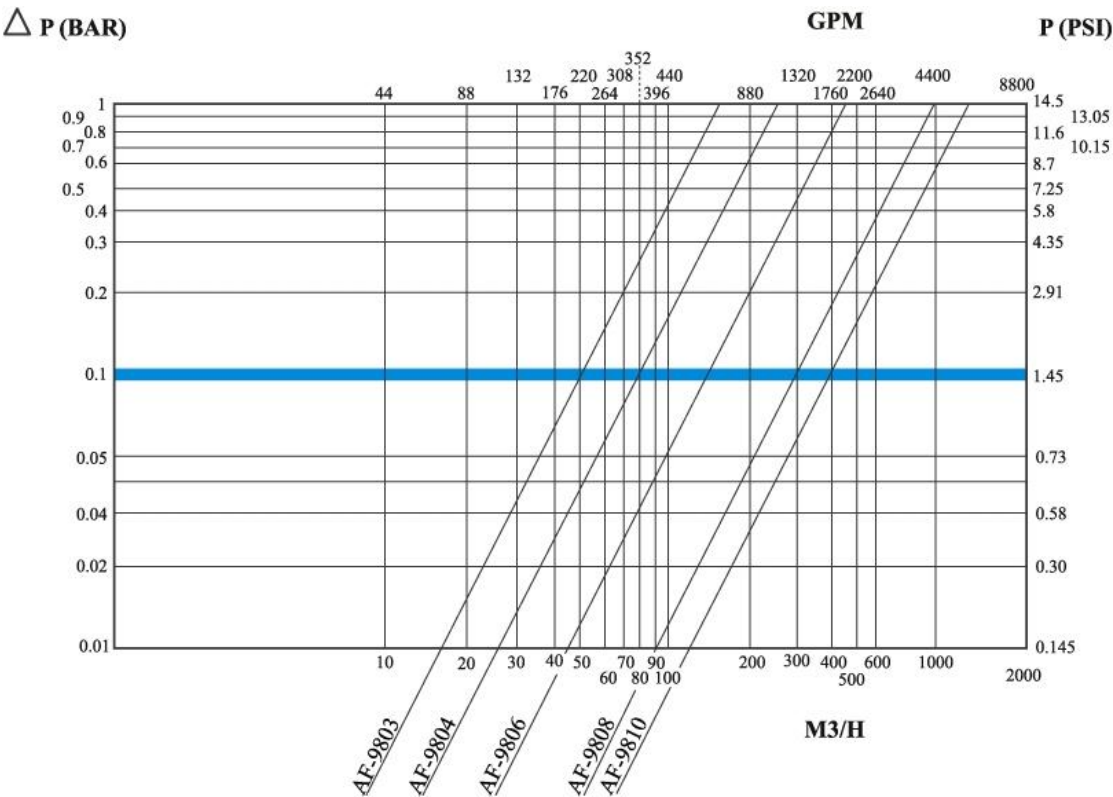
Flow Rate

Model	Int/Outlet ØD		Max. Flow Rate		Screen area		Flushing Flow rate		Flushing Volume	
	(mm)	(in)	(m3/h)	(gpm)	(cm²)	(in²)	(m3/h)	(gpm)	(m³)	(gal)
AF9803NL	75	3	50	220	3220	499	30	130	0.083	18.84
AF9804NL	100	4	80	440	5780	896	30	130	0.083	18.84
AF9804NX	100	4	100	440	8410	1304	30	130	0.083	18.84
AF9806NL	150	6	150	660	5780	896	30	130	0.083	18.84
AF9806NX	150	6	160	700	8410	1304	30	130	0.083	18.84
AF9808NL	200	8	300	1320	8410	1304	30	130	0.083	18.84
AF9810NL	250	10	400	1760	8410	1304	30	130	0.083	18.84

Filtration Grade Conversion Table

Micron	10	25	30	40	50	80	100	120	150	200	300	400	500	800	1000	1500	2000	3000
Mesh	1500	650	550	400	300	200	150	120	100	80	55	40	30	20	15	10	8	5

Pressure Loss at 120 micron



## 5. Initial Installation & Operation

### General

The filter assembly is protectively packed with all parts assembled.

### Installation

1. Take the filter assembly out of the wood platform.
2. Install the filter assembly to the inlet line and outlet line.
3. Connect a drainpipe to the hydraulic flushing valve outlet opening (at least 63 mm or 2" diameter and no longer than 5m). Confirm that water runs freely out of the drainpipe.
4. Position the control panel in such a way as to be protected against humidity and solar radiation.
5. Connect the control panel to the power source.
6. Check that all connections are properly secured.
7. Check that all bolts and nuts on filter periphery are properly tightened and secured.

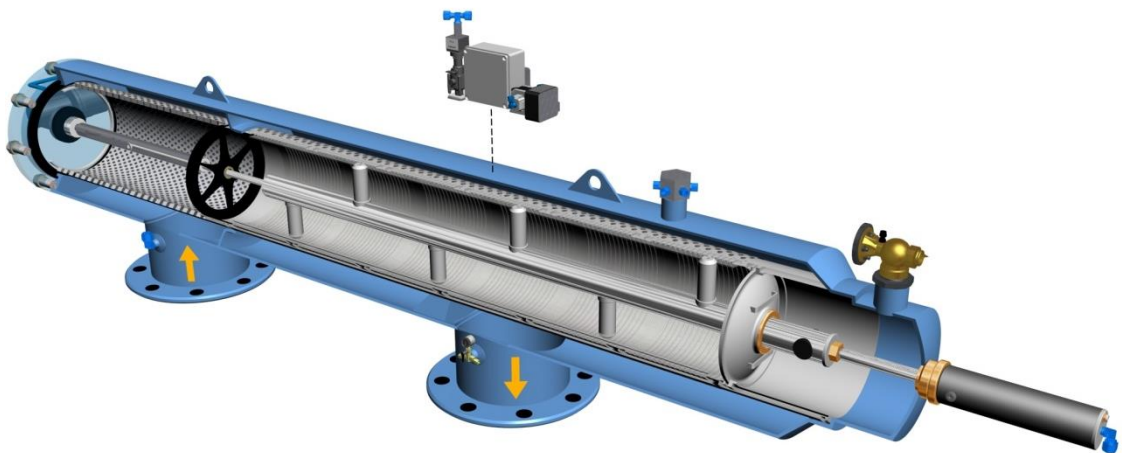


Figure 2: Initial Filter Installation



## Initial Operation

1. Gradually open the inlet valve (make sure that the outlet valve, if installed, is open).
2. Check the filter assembly and its connections for leaks.
3. Perform a flushing cycle by disconnecting the low pressure tube from the differential pressure indicator (closing of the electrical circuit) – re connect it immediately as flushing start.
4. Verify that the hydraulic flushing valve closes after 10 seconds.
5. Verify that the hydraulic piston fully extends during back flush.
6. When the filter is clean, verify that the differential pressure between inlet and outlet does not exceed 0.1 bar.
7. Check that the differential pressure is set to 7 psi or 0.5 bar in the controller (see appendix no 1).
8. Perform an additional flushing cycle manually by pushing the manual bottom (M on the screen display). (See Figure 3).



Figure 3: Control Unit

## 6. Maintenance & Periodical Checks

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### 6.1 – Electric Motor Removal & Installation

1. Close the inlet and the outlet line valves.
2. Set the main switch at the control panel to "0" position.
3. Verify that filter is drained prior to service.
4. **A qualified technician will carry out the electrical connections.**
5. Disconnect the electric motor from the electrical power source. Prior to removal, mark the electrical wiring connections (according to colors) on the new motor.
6. Remove the screw in the rear part of the motor.
7. Remove the four nuts and washers attaching the motor assembly to the filter assembly.
8. Carefully remove the old motor assembly. Verify existence of splint on the motor axis groove.
9. Remove the splint out of the old motor axis groove.
10. Carefully slide the new motor assembly into the filter assembly.
11. Install the splint into the new motor axis groove.
12. Install the four nuts and washers attaching the motor assembly to the filter assembly and the screw to the rear part of the motor.
13. Connect the electric motor to the electrical power source according to the marking previously made in step 5.
14. Set the main switch at the control panel to "1" position.
15. Open the inlet and the outlet line valves.

#### **WARNING**

Take precautions while operating the filter as the filter may enter a flushing mode automatically, without prior warning.

16. Perform a flushing cycle by pressing the MANUAL FLUSH switch at the control panel.
17. Verify that the motor is spinning clockwise and the hydraulic flushing valves close after 15 seconds.
18. Check for leaks.

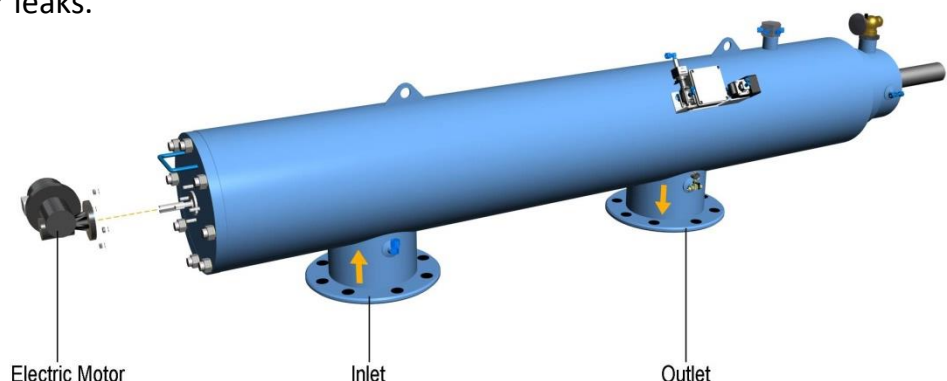


Figure 4: Electric Motor Removal & Installation

## 6.2 - Solenoid Removal & Installation

The solenoid hydraulically controls the flushing valve's operation.

1. Set the main switch at the control panel to "0" position.
2. Close the inlet and outlet valves of the filter and verify that filter is drained prior to service.
3. Disconnect the solenoid control tubes.
4. Remove the fittings from the damaged solenoid.
5. Remove the 4 screws attaching the electric connection box
6. Disconnect the electrical wiring from the connection box terminals.
7. Remove the nut from the solenoid lower section.
8. Pull the solenoid out of the control assembly.
9. Insert a new solenoid into the control assembly.
10. Install the nut on the solenoid lower section.
11. Install the fittings on the ports of the new solenoid.
12. Connect the solenoid control tubes.
13. Connect the electrical wiring to the connection box terminals.

### **WARNING**

Take precautions while operating the filter as the filter may enter a flushing mode automatically, without prior warning.

14. Open the inlet and outlet valves of the filter
15. Set the main switch at the control panel to "1" position.
16. Perform a flushing cycle by disconnecting the low pressure tube from the differential pressure indicator (closing of the electrical circuit) – re-connect it immediately as flushing start.
17. Verify that the hydraulic flushing valve closes after 15 seconds.
18. Perform a flushing cycle by pressing the MANUAL FLUSH switch at the control panel.

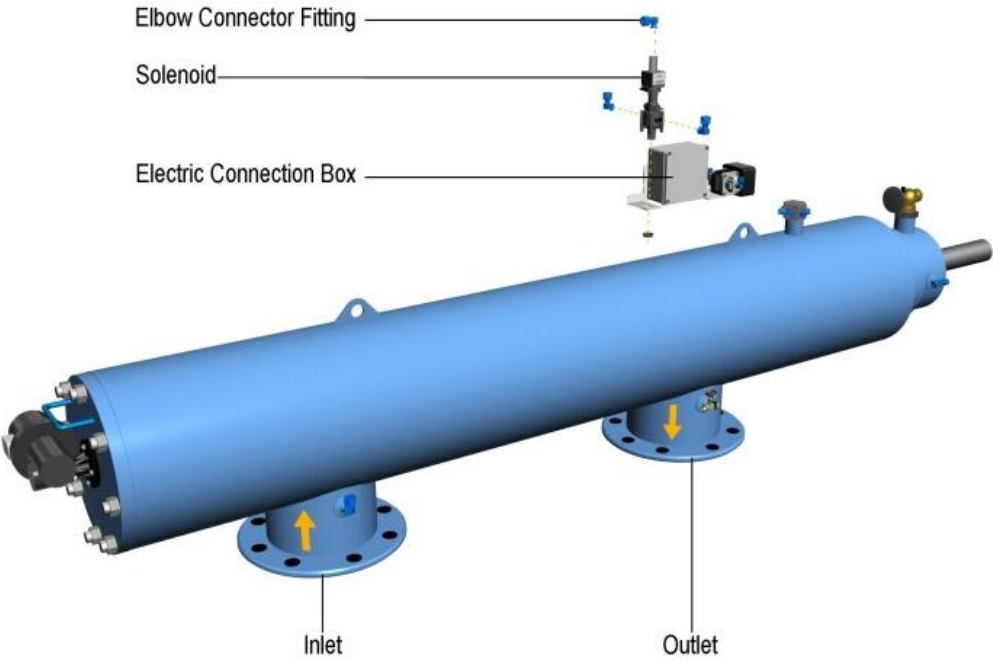


Figure 5: Solenoid Removal & Installation

## 6.3 – Differential Pressure Indicator Removal & Installation

The differential pressure indicator supplies data to the electronic control unit, which controls the filter's self-cleaning process.

1. Set the main switch at the control panel to "0" position.
2. Close the inlet and outlet valves of the filter and verify that filter is drained prior to service.
3. Disconnect the two control tubes from the differential pressure indicator.
4. Remove the 4 screws attaching the electric connection box.
5. Disconnect the electrical wiring from the electric terminal in the connection box.
6. Remove the two nuts located at the bottom of the electronic control unit assembly and remove the screws.
7. Pull the differential pressure indicator out of the control assembly.
8. Insert a new differential pressure indicator into the control assembly.
9. Install the two screws and nuts at the bottom of the electronic control unit assembly.
10. Connect the two control tubes to the differential pressure indicator [note that the high pressure and the low pressure connected to the right fittings.
11. Connect the electrical wiring to terminals D and P on the electric terminal connection box.

### **WARNING**

Take precautions while operating the filter as the filter may enter a flushing mode automatically, without prior warning.

12. Set the main switch at the control panel to "1" position.
13. Perform a flushing cycle by disconnecting the low pressure tube from the differential pressure indicator (closing of the electrical circuit) – re-connect it immediately as flushing start.
14. Verify that the hydraulic flushing valve closes after 15 seconds.
15. Perform a flushing cycle by pressing the MANUAL FLUSH switch at the control panel.

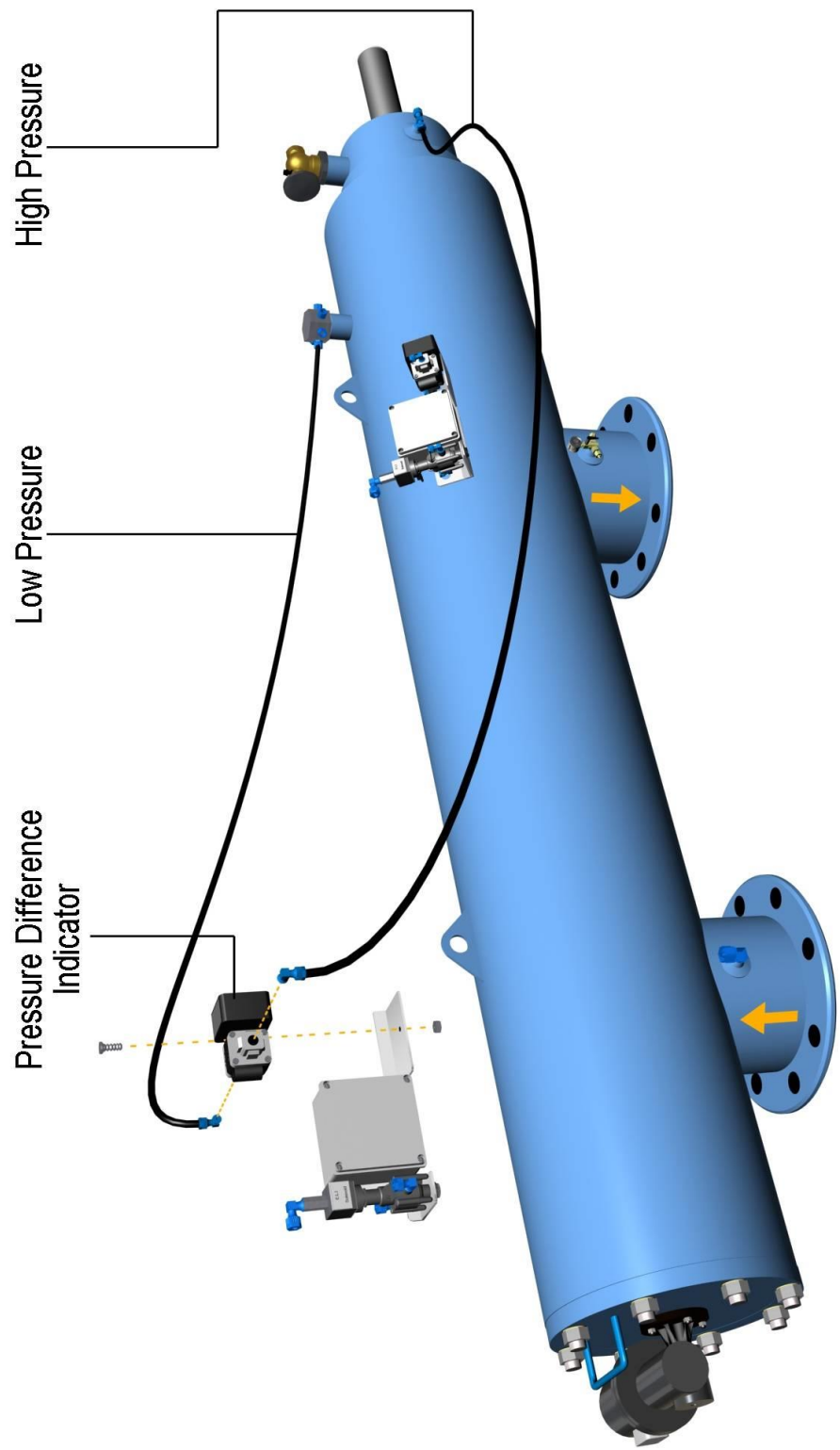


Figure 6: Differential Pressure Indicator Removal & Installation

## 6.4 – Hydraulic Piston Assembly Removal & Installation

The hydraulic piston enables the linear movement of the dirt collector.

1. Set the main switch at the control panel to "0" position.
2. Close the inlet and the outlet line valves
3. Verify that the filter is drained prior to service.
4. Disconnect the control tube from the piston assembly's upper section.
5. Spin and screw the brass base out of the filter body and carefully remove the piston assembly.
6. Remove the seal from the current piston assembly, forward section.
7. Position the forward seal in the new piston assembly.
8. Lubricate the forward seal with **silicon grease**.
9. Carefully slide the new piston assembly into the filter housing.
10. Spin and screw the brass base into the filter body and tie it gently.
11. Connect the control tube to the piston assembly's upper section.
12. Set the main switch at the control panel to "1" position.
13. Open the inlet and outlet line valves.

### **WARNING**

Take precautions while operating the filter as the filter may enter a flushing mode automatically, without prior warning.

14. Check for leaks.
15. Perform a flushing cycle by pressing the MANUAL FLUSH switch at the control panel.
16. Push the piston indicator (on the rear side of the piston) inside.
17. Verify that the piston travels its complete path and that the indicator pops up.
18. Verify that the hydraulic flushing valve closes after 15 seconds.



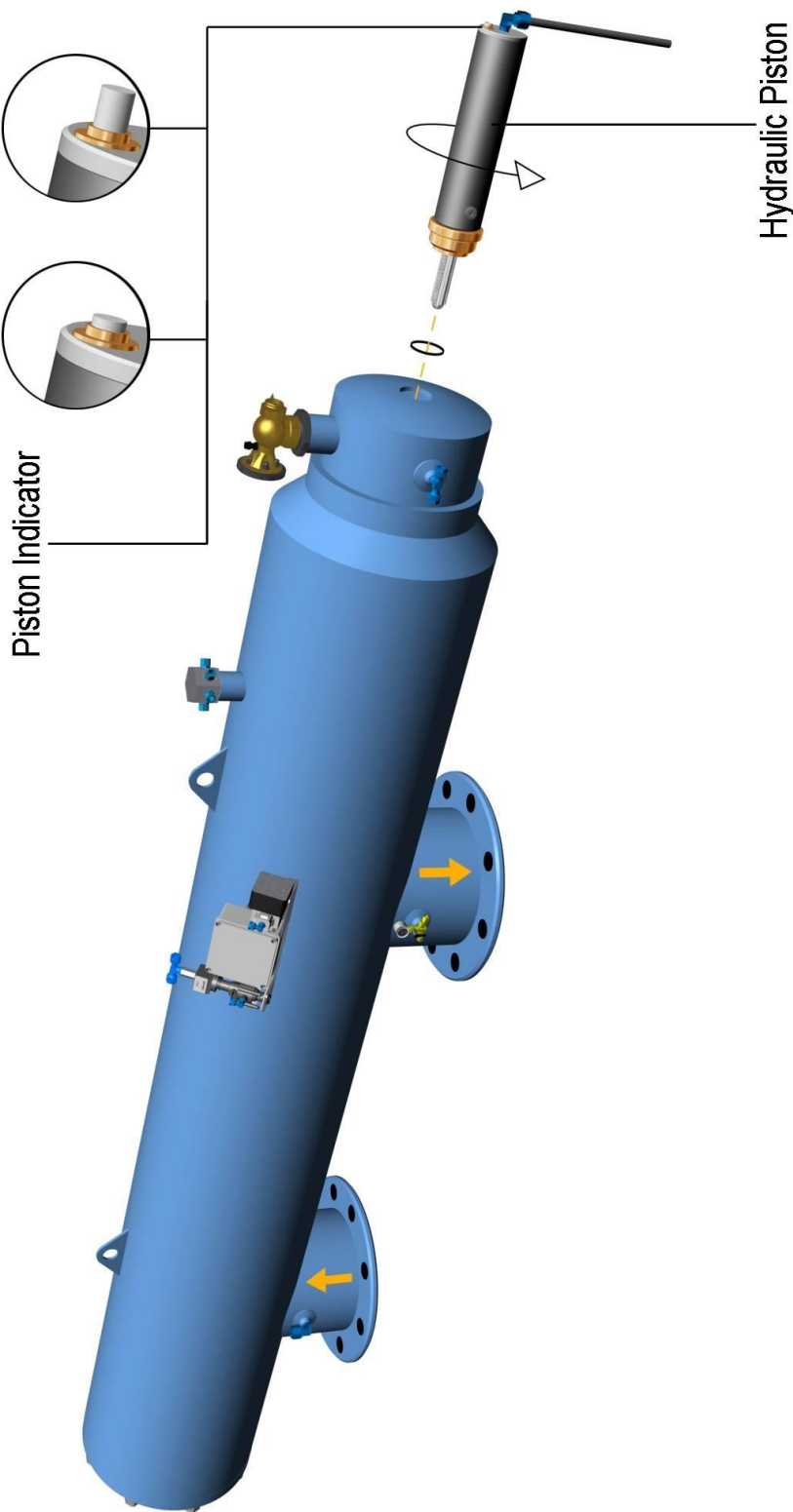


Figure 7: Hydraulic Piston Assembly Removal & Installation

## 6.5 - Coarse Screen Removal & Installation

1. Close the inlet and the outlet line valves.
2. Set the main switch at the control panel to "0" position.
3. Verify that filter is drained prior to service.
4. Remove the nuts and washers attaching the cover to the filter housing.
5. Remove the cover with the motor assembly and the motor's dirt collector axis housing.
6. Remove the body seal from the cover groove.
7. Pull the old coarse screen out of the fine screen assembly
8. Slide the new coarse screen into the fine screen assembly.
9. Verify that the straight side of the body seal fits into the groove located in the cover.
10. Put the cover into it's place on the filter. (Take care that the motor's dirt collector axis housing is slide on the dirt collector axis).
11. Install the nuts and washers attaching the cover to the filter housing.
12. Set the main switch at the control panel to "1" position.
13. Open the inlet and outlet line valves.

### **WARNING**

Take precautions while operating the filter as the filter may enter a flushing mode automatically, without prior warning.

14. Perform a flushing cycle by pressing the MANUAL FLUSH switch at the control panel.
15. Check for leaks.

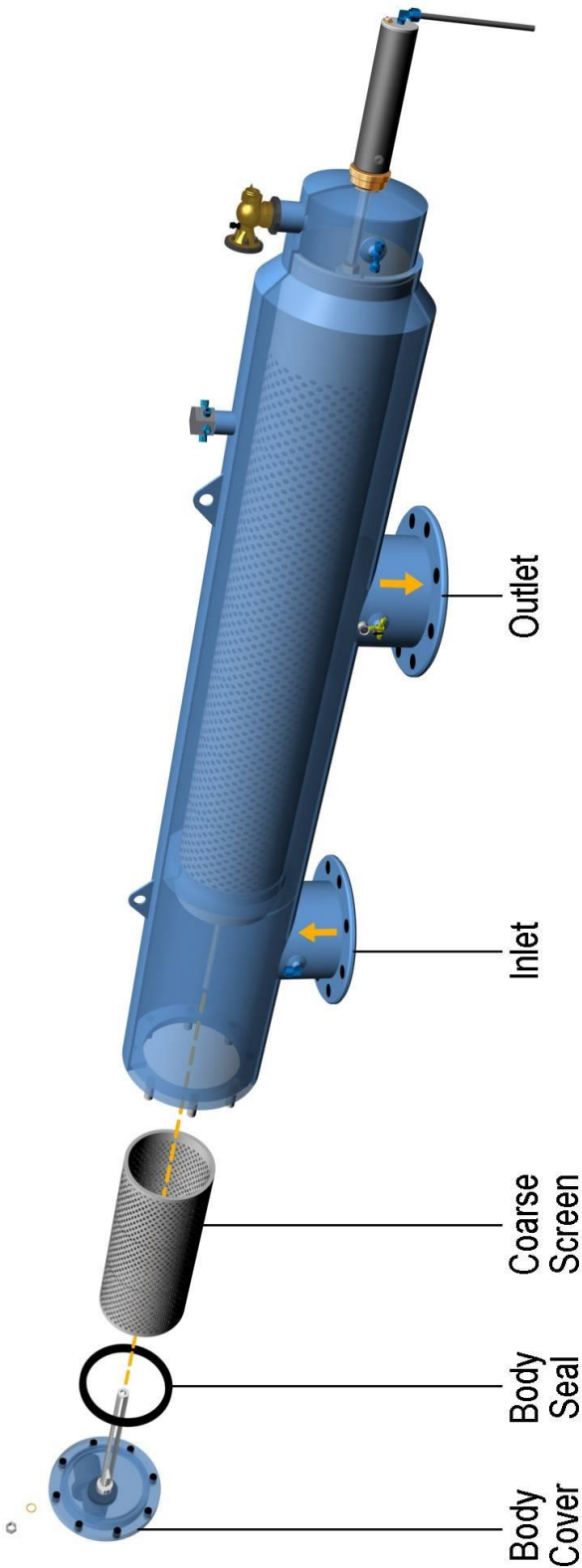


Figure 8: Coarse Screen Removal & Installation

## 6.6 - Fine Screen Assembly Removal & Installation

1. Close the inlet and the outlet line valves.
2. Set the main switch at the control panel to "0" position.
3. Verify that filter is drained prior to service.
4. Remove the nuts and washers attaching the cover to the filter housing.
5. Remove the cover with the motor assembly.
6. Remove the body seal from the cover groove.
7. Pull the coarse screen out of the fine screen assembly
8. Unscrew the leading screw from the end of the dirt collector axis.
9. Pull the fine screen assembly out of the filter housing assembly with the dirt collector.
10. Remove the spring ring that holds the flushing chamber plate and pull the plate out of the screen assembly.
11. Carefully pull the dirt collector out of the fine screen assembly.  
**Note:** Be sure that the suction nozzles are in the right position to pass the ring in the screen assembly.
12. Remove both upper and lower seals from the current fine screen assembly.
13. Remove the screen bearing (installed on the screen handle) from the current screen assembly.
14. Remove the flushing chamber (unscrew it) from the old fine screen.
15. Position both upper and lower seals into the new fine screen assembly.
16. Lubricate upper and lower seals with **silicon grease**.
17. Install the screen bearing in the new fine screen assembly upper section.
18. Slide the dirt collector into the new fine screen – make sure that the suction nozzles are in the right position to pass the ring in the fine screen assembly and the dirt collector axis is inside the screen bearing.
19. Install the flushing chamber plate on the back side of the dirt collector and tie it to its place with the spring ring.
20. Slide the new fine screen assembly into the filter housing assembly.
21. Slide the coarse screen into the fine screen assembly.
22. Verify that the straight side of the body seal fits into the groove located in the cover.
23. Install the leading screw on the end of the dirt collector axis.
24. Put the cover into it's place on the filter. (Take care that the motor's dirt collector axis housing is slide on the dirt collector axis)
25. Install the nuts and washers attaching the cover to the filter housing.
26. Set the main switch at the control panel to "1" position.
27. Open the inlet and outlet line valves.
28. Perform a flushing cycle by pressing the MANUAL FLUSH switch at the control panel.
29. Check for leaks

### **WARNING**

Take precautions while operating the filter as the filter may enter a flushing mode automatically, without prior warning.

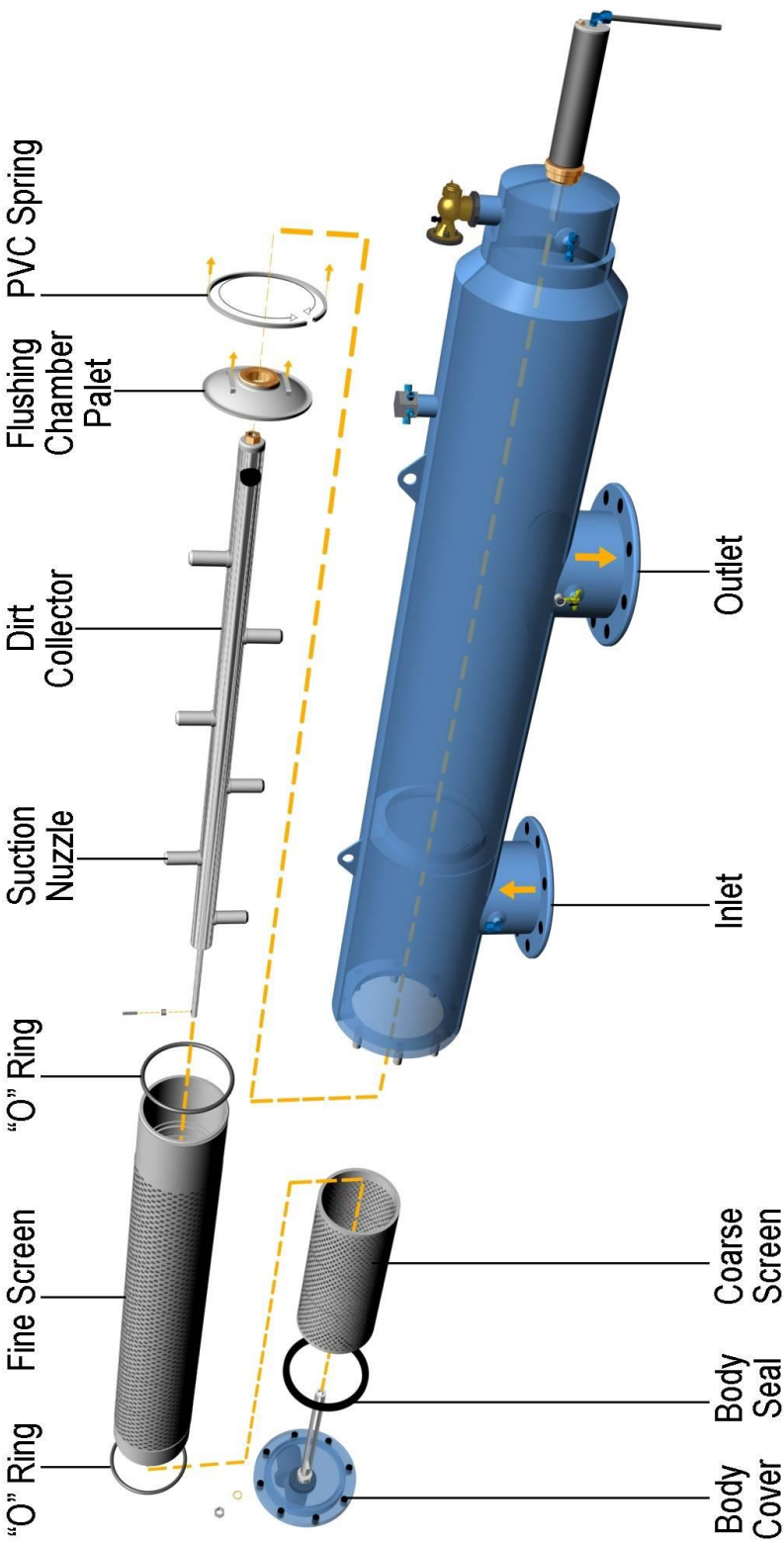


Figure 9: Fine Screen Assembly Removal & Installation

## 6.7 - Dirt Collector Removal & Installation

1. Close the inlet and the outlet line valves.
2. Set the main switch at the control panel to "0" position.
3. Verify that filter is drained prior to service.
4. Remove the nuts and washers attaching the cover to the filter housing.
5. Remove the cover with the motor assembly.
6. Remove the body seal from the cover groove.
7. Pull the coarse screen out of the fine screen assembly
8. Unscrew the screw from the end of the dirt collector axis.
9. Pull the fine screen assembly with the dirt collector out of the filter housing assembly
10. Remove the old dirt collector from the fine screen.
11. Lubricate upper and lower seals with **silicon grease**.
12. Slide the new dirt collector into the new fine screen.
13. Install the screw on the top of the dirt collector axis.
14. Slide the fine screen assembly with the new dirt collector into the filter housing assembly.
15. Slide the coarse screen into the fine screen assembly.
16. Verify that the straight side of the body seal fits into the groove located in the cover.
17. Put the cover into its place on the filter. (Take care that the motor's dirt collector axis housing is slide on the dirt collector axis).
18. Install the nuts and washers attaching the cover to the filter housing.
19. Set the main switch at the control panel to "1" position.
20. Open the inlet and outlet line valves.

### **WARNING**

Take precautions while operating the filter as the filter may enter a flushing mode automatically, without prior warning.

21. Perform a flushing cycle by pressing the MANUAL FLUSH switch at the control panel.
22. Check for leaks.

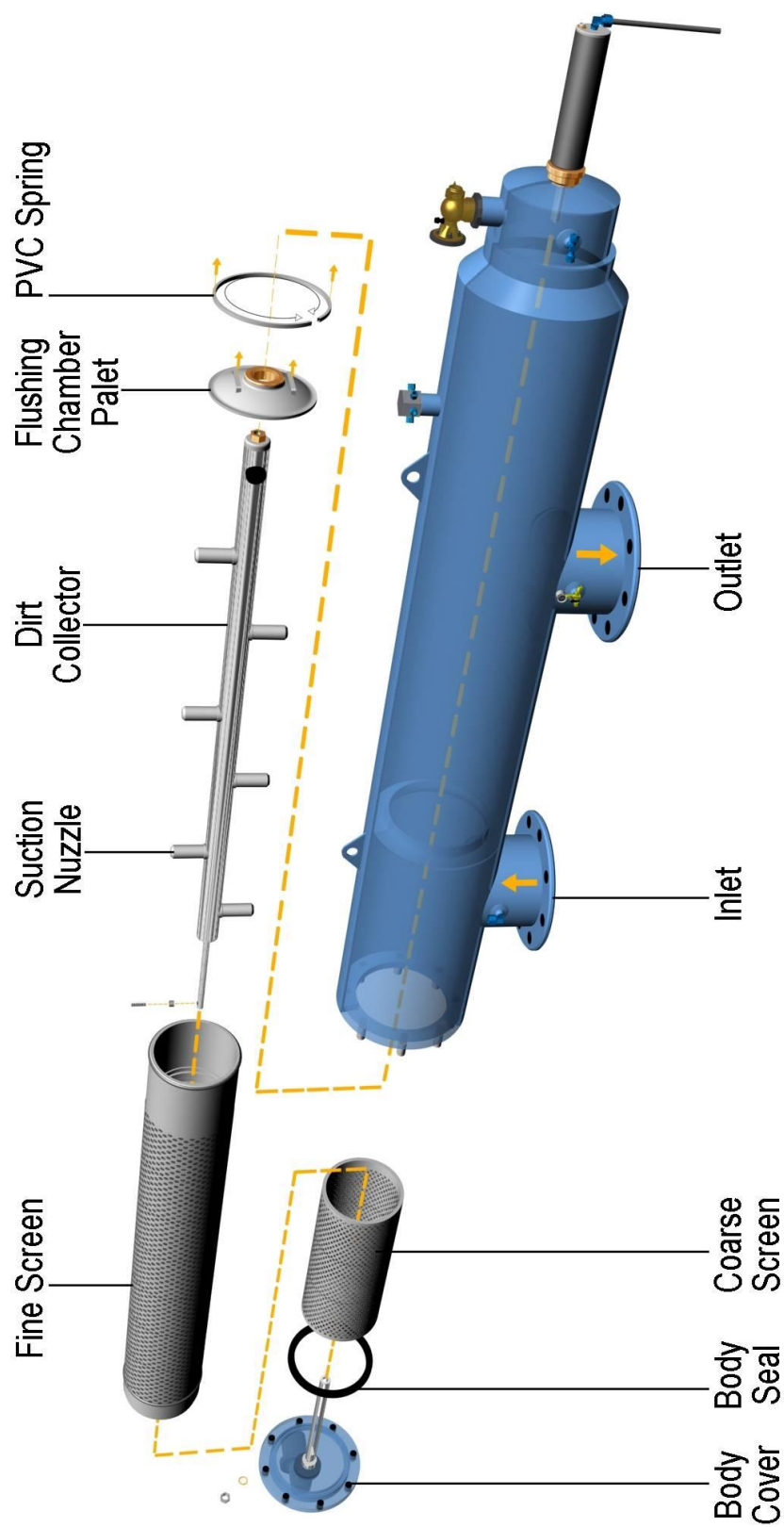


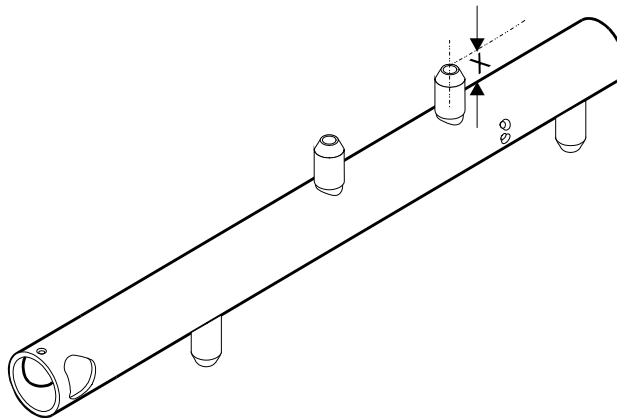
Figure 10: Dirt Collector Removal & Installation

## 6.8 - Periodical Checks

Perform yearly Periodical Checks at the beginning of the season, according to the following instructions:

1. Check the condition of the coarse screen. If defective, replace according to "**Coarse Screen Removal & Installation**".
2. Check the condition of the fine screen assembly. If defective, replace according to "**Fine Screen Assembly Removal & Installation**".
3. Check seals condition. Lubricate with **silicon grease**.
4. Remove the dirt collector according to "**Dirt Collector Removal & Installation**" and check the dirt collector suction nozzles height (see table). If defective, screw out the nozzle and replace with a new one.
5. Check condition of the bearings, replace if damaged or deformed.
6. Remove the Piston according to "**piston removal & installation**" check its condition, clean it from sediments and replace seals if required.
7. Check existence of grease on the motor axis.
8. Check the filter housing for paint damage and corrosion. If required, clean area with sandpaper and apply a thin layer of basic + epoxy paint.
9. Check for leaks.

### Dirt Collector Suction Nozzles Height Table



**Type Number**

AF9800" 3", 4", 6", 8" & 10"

**X(Nozzle Height)**

76.5 mm



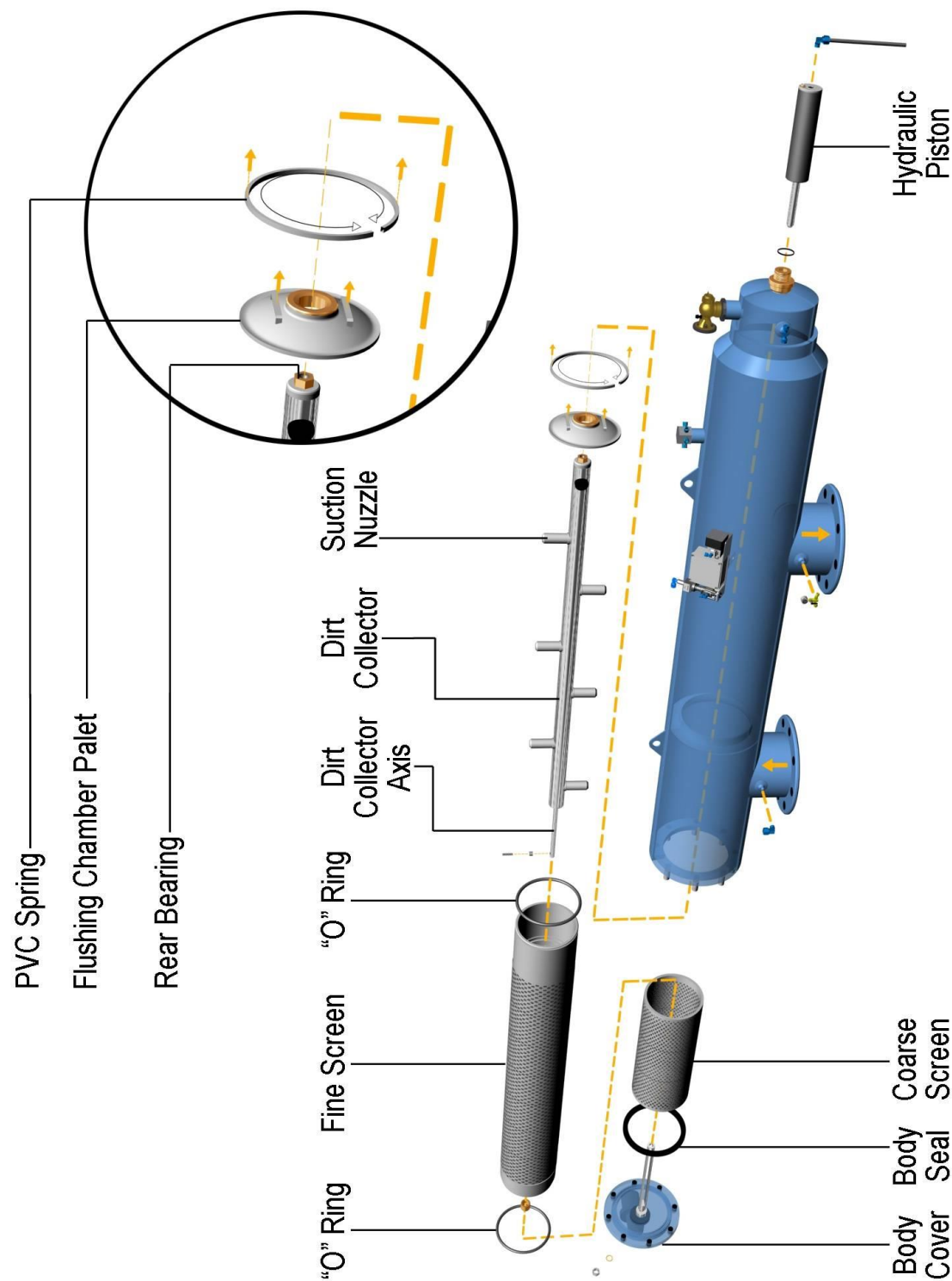
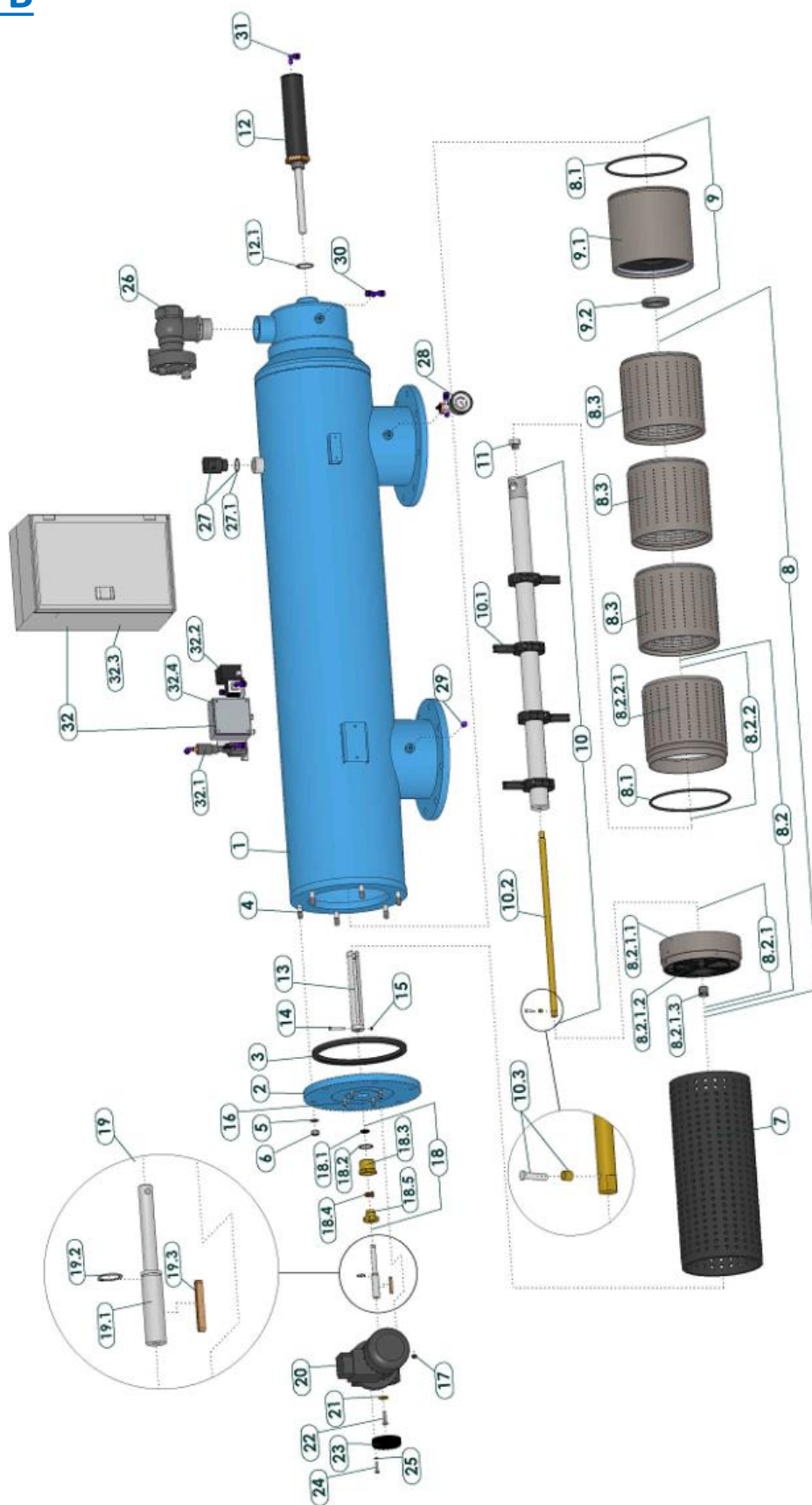


Figure 11: Periodical Checks

## 7. IPB



IPB No	Filters	Catalog No	Description
1	AF9800N	N/A	FILTER BODY
2	AF9800N	N/A	FILTER COVER
3	AF9800N	5311250100	U-RING FOR COVER 10"-14"
4	AF9803NL-808NL	5292143001-048	STUD 1/2"NC*48 SS304
	AF9810NL	5292143001-055	STUD 1/2"NC*55 SS304
5	AF9800NL	4121123001	WASHER M12 SS304
6	AF9800NL	4112140401	NUT 1/2"NC HOT GALVANIZED
7	AF9803NL	E7005600101-01	COARSE SCREEN PVC225 AF9803L/4L/4X/N
	AF9804NL		
	AF9804NX		
	AF9806NL	E7005600103-01	COARSE SCREEN PVC225 AF9806X/6L/6XN/6LN
	AF9806NX		
	AF9808NL	E7005600105-01	COARSE SCREEN PVC225 AF9808R/10L/8RN/10LN
	AF9810NL		
8	AF9803NL	E7005602005-02##	COMP FINE SCREEN PVC225 AF9803N
	AF9804NL	E7005604003-02##	COMP FINE SCREEN PVC225 AF9804NL/6NL/8NR
	AF9804NX		
	AF9806NL		
	AF9806NX	E7005606000-02##	COMP FINE SCREEN PVC225 AF9804NX/6NX/8NL/10NL
	AF9808NL		
	AF9810NL		
8.1	AF9800N	4081202100-445	O-RING 445
8.2	AF9800N	E5005600102-01##-03	FINE SCREEN UPPER SECTION PVC225 ASSM803-10L/98N
8.2.1	AF9800N	E5005600902-03	UPPER SCREEN ADAPTER PVC225 ASSM AF9800N
8.2.1.1	AF9800N	5005600902	UPPER SCREEN ADAPTER PVC225
8.2.1.2	AF9800N	5021640500	SCREEN WHEEL 225 NYLON
8.2.1.3	AF9800N	5172301700	SCREEN BEARING F/SHAFT AF9/800/500B/700/9800N
8.2.2	AF9800N	E5005600102-01##-01	FINE SCR UPPER SEC PVC225+ORING AF800/9800N
8.2.2.1	AF9800N	W5005600102-01##	FINE SCREEN UPPER SECTION PVC225
8.3	AF9800N	W5005600300-01##	FINE SCREEN MIDDLE SECTION PVC225
9.1	AF9800N	W5005601101-01	FLUSHING CHAMBER PVC225 AF800N/9800N
9.2	AF9800N	5172635000	DELIN BEARING FOR D/COLLECTOR 50 AF800N/9800N
10	AF9803NL	E7102300200-01	COMP D/COLLECTOR 50 SS304 2 NOZZLE AF9803NL
	AF9804NL	E7102300400-01	COMP D/COLLECTOR 50 SS304 4 NOZZLE AF9804NL-8NR
	AF9806NL		
	AF9804NX	E7102300600-01	COMP D/COLLECTOR 50 SS304 6 NOZZLE AF9804NX-10NL
	AF9806NX		
	AF9808NL		
	AF9810NL		
10.1	AF9800N	E5122670302	SUCTION NOZZLE (SADDLE) AF800N/9800N

IPB No	Filters	Catalog No	Description
10.2	AF9803NL	5131391709	DIRT COLLECTOR SHAFT 17mm BRASS AF9803NL/4NL
	AF9804NL		
	AF9804NX		
	AF9806NL	5131391710	DIRT COLLECTOR SHAFT 17mm BRASS AF9806NL/6NX
	AF9806NX		
	AF9808NL	5131391711	DIRT COLLECTOR SHAFT 17mm BRASS AF9808NL/8NR
	AF9810NL	5131391713	DIRT COLLECTOR SHAFT 17mm BRASS AF9810NL
10.3	AF9800N	E6163101001-01	COMP DRIVE BOLT AF9800/9800N
11	AF9800N	W5173390002-01	HEAD COLLECTOR BEARING BRASS AF800N/9800N
12	AF9800N	E7160406300	HYD PISTON 40 DELRIN AF800N/9800N
12.1	AF9800N	4081040100-223	O-RING 223
13	AF9800N	W6073001001-01	DRIVE TUBE AF9800/9800N
14	AF9800N	6163100503	BOLT HEX HEAD M5*40 SS316 AF9800/9800N
15	AF9800N	4111053002	NYLOCK NUT M5 SS304
16	AF9800N	5292113001-029	STUD 5/16"NC*29 SS304
17	AF9800N	4112113901	NUT 5/16"NC BRASS
18	AF9800N	E5182391300-01	COMP SEALING ROPE HOUSING-BRASS AF5/75/98
18.1	AF9800N	4082013100	U-RING 12.7*20.63*5.5
18.2	AF9800N	4081030100	O-RING 30*3
18.3	AF9800N	5182391300	SEALING ROPE HOUSING-BRASS AF5/75/98
18.4	AF9800N	5319000900	SEALING ROPE
18.5	AF9800N	5181391300	TIGHTENING NUT FOR SEALING ROPE-BRASS AF5/75/98
19	AF9800N	E5133301901-01	COMP GEAR DRIVE SHAFT SS304 AF9800
19.1	AF9800N	5133301901	GEAR DRIVE SHAFT 18.9mm SS304 AF9800
19.2	AF9800N	4133205001	EXTERNAL RETAINING RING J-20-DIN471 SS420
19.3	AF9800N	5203390602	GEAR KEY BRASS AF9800/9800N
20	AF9800N	E4060251000	MOTOR 3 PHASE 0.25Hp 1500rpm 1:10 AF9800
21	AF9800N	6143902301	WASHER 23 BRASS AF9800/9800N
22	AF9800N	4102113001-020	BOLT HEX HEAD 5/16"NC*3/4" SS304
23	AF9800N	5331630001	MOTOR COVER DELRIN AF9800/9800N
24	AF9800N	4101063001-025	BOLT HEX HEAD M6*25 SS304
25	AF9800N	4121063001	WASHER M6 SS304
26	AF9800N	E4510020003-07-1M	COMP HYDRAULIC VALVE DOROT GALIL 09AN 2"BSP
27	AF9800N	E5412036301-01	SHORT DISTRIBUTOR DELRIN ASSM
27.1	AF9800N	4081034100-126	O-RING 126
28	AF9800N	CS11010015	PRESSURE GAUGE SET AF800/9800/500
29	AF9800N	4640314002	PLUG 1/4" PLASTIC
30	AF9800N	4640214082	MALE BRANCH T 8*1/4"*8 PLASTIC
31	AF9800N	4640618082	MALE ELBOW 1/8"*8 PLASTIC
32	AF9800N	CSE0200114403	CONTROLLER ELI-02 COMPLETE AF9800/9800N
32.1	AF9800N	4430030901	SOLENOID AC GALSOL 24V
32.2	AF9800N	4410000004	DP PRESSURE SWITCH UNITED 24-15384
32.3	AF9800N	8500010100-03	CONTROL BOARD ELI-02 AF9800/9800N
32.4	AF9800N	8500010801	JUNCTION BOX FOR ELI-02 CONTROLLER

## 8. Appendix

### 8.1 –ELI 02 Controller & Electrical Wiring ( V-08-2019)

**Warning - Do not operate the system without checking the motor rotation.**

#### Summary of Abbreviations

**DP** = Differential pressure switch which measures the differential pressure across the filter, And activates the flushing mechanism above a set point.  
(Normally set to 0.5 bar)

**SV** = Flushing solenoid , Which activates the flush filter hydraulic mechanism.

**TP** = DP sw. On/Off Delay time.

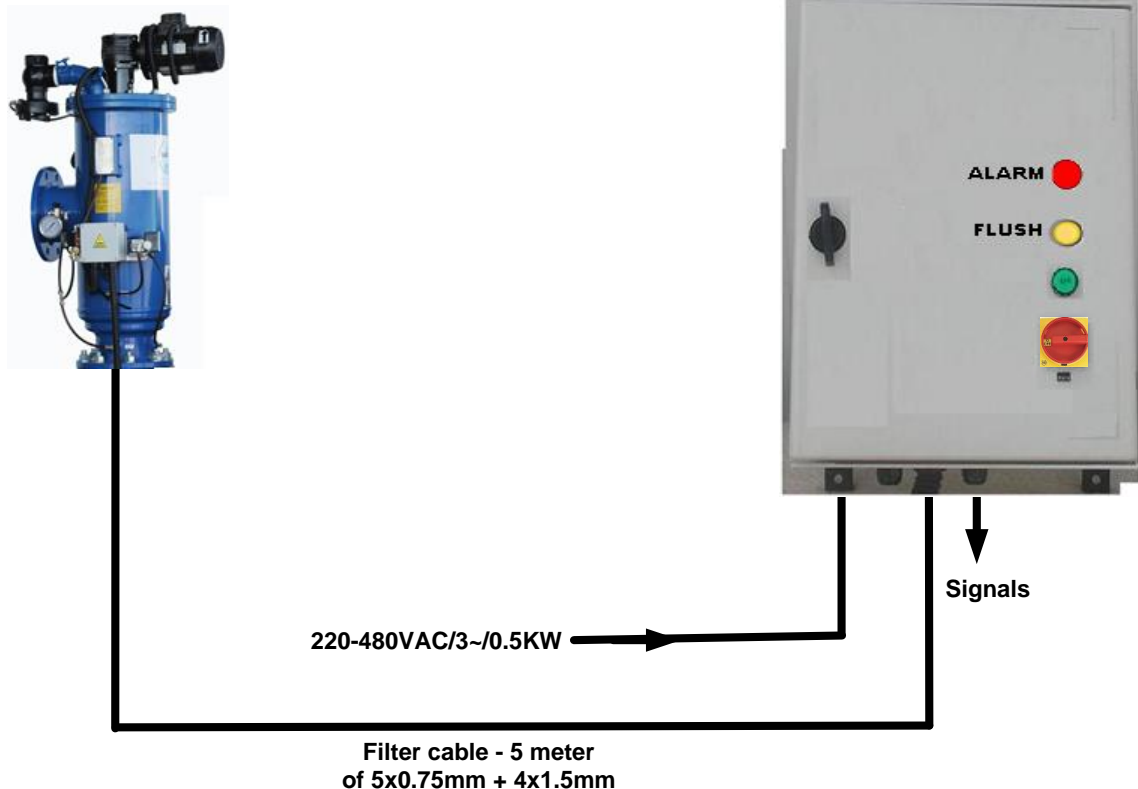
Note that The internal on delay timer is provided to assure that accidental DP switch vibrating will not activate the flushing mechanism.

**TD** = Flush Interval time. (Factory set to . , 9999 min. , can be adjust by the user)

**TF** = Flush time. (Factory set to 5 sec., can be adjust by the user)

**TC** = Differential pressure check time after DP flush.

## AF 7xx



## A. PANEL CONTROLS DESCRIPTION.

1. **MAIN** , Toggle switch 0-1.  
Enable Connection of the MAIN voltage supply to the control unit.  
Light indicator (Green) – indicates 24VDC internal supply.
2. **FLUSH** , Push-button switch (Yellow) , Enable manual flushing.  
Note that **FLUSH** indicator will lit during flushing process.
3. **FAULT** , Push-button switch (RED) , Pressing this switch in FAULT state  
(While red indicator illuminates) will reset the control unit.

## B. INTERNAL CONTROLS DESCRIPTION.

1. **PLC** , Programmable logic controller.  
(CROUZET XD10 /24VDC , Cat. No. 88 974 144).
2. **PS1** , Low voltage 24VDC Power Supply.
3. **OL1** , Motor over load protection 1.0-1.63 amp. with aux. contacts.
4. **C1** , power relay which controls filter motor.
5. **F1** , 1ampK. Half Automate Circuit breaker which serve as a main protect for PS1.
6. **F2** , 1ampK. Half Automate Circuit breaker which protect against accidental short circuit on the PLC / SV solenoids/outlets. (24VDC)
7. **FPLC** , 1.6ampT Fuse which protect against accidental short circuit on the PLC.
8. **FOUT** , 1.6ampT Fuse which protect against accidental short circuit on the solenoid/outlets. (24VDC)

## C. TERMINAL CONNECTIONS.

- |            |   |
|------------|---|
| TB 1-4     | L1/L2/L3+ Gnd , 115-230-380-420-440-480V , 50/60 hz. supply voltage inlets.   |
| TB 5-8     | U/V/W 230 -380-420-440-480V + GND, 3 phase,50/60 hz. motor supply voltage outlets.  |
| TB 9 / 10  | SV, Flushing Solenoid outlet. (24VDC/10W)   |
| TB 11 / 12 | DP, Differential Pressure switch contacts inlets. (N.O)   |
| TB 19 / 20 | REM , Remote flush inlets. (N.O. Pulse activated , Voltage free contacts inlets.)<br>This inlet is pulse activated through voltage free external contacts with pulse duration of at least 100 msec. |
| TB 22 / 23 | FLUSH , Aux. Flush signal contacts outlets. (N.O)   |
| TB 24 / 25 | FAULT , Aux. Fault signal contacts outlets. (N.O)   |

- WARNING**
1. Aux. Inlets REM are connected to PLC inputs.  
**BE SURE** to connect Voltage free Contacts or switches to this inlets.  
In case of signaling through remote system outlets, use auxiliary relays (K) to isolate between remote system voltage and PLC inputs.
  2. **FLUSH** and **FAULT** aux. signal is voltage free N.O. contacts that withstand max. of 230V / 2Amp. That must be protectors accordingly.

D. INSTALLATION

**General** – The control unit & Filter junction box are supplied with 5 meters cables in flexible conduit.

The user must connect only the line supply cable through a PG-13.5 mm conduit.

**Requirements** : 5 x 1-1.5mm supply cable.

1. Connect the line supply cable (5 x 1-1.5mm) to the control unit terminals :

**IMPORTANT !** 1x2-4amp protectors **MUST** protect line supply.

- TB GND - GND Wire.
- TB1 - N Natural wire.
- TB2 - L1 Line phase supply.
- TB3 - L2 Line phase supply.
- TB4 - L3 Line phase supply.

<u>Control board</u>	<u>Filter Junction box</u>
TB5 - Motor GND. wire. _____	TB5
TB6 - Motor U phase wire. _____	TB6
TB7 - Motor V phase wire. _____	TB7
TB8 - Motor W phase wire. _____	TB8
TB9 – SV flushing solenoid common. _____(1)_____	TB9
TB10 – SV flushing solenoid , live _____(2)_____	TB10
TB11 – DP switches common _____(3)_____	TB11
TB12 – DP switch live _____(4)_____	TB12

2. Motor synchronization

**Motor synchronization must be carried out as follows :**

Switch the **MAIN** switch to **START** position and Verify that **ON** (L1) indicator lit.  
Press push button **FLUSH** momentarily and Verify that **FLUSH** indicator lights and the motor activated simultaneously.  
Check the motor axis rotation (Which drives the filter dirt collector) ,

**The rotation must be at the same arrow label direction.**

If not , switch the **MAIN** switch to **STOP** position , and exchange between two of the Motor phase and check again.(e.g. Between motor connection to TB 6<>7 or TB 7<>8 in the control board or in the filter junction box.)



## E. FLUSHING PROCESS.

**General** – A Filter flush cycle is activated by the PLC which cause the flushing solenoid (SV) and the motor (M) to switch on for preset time (TF).

When the solenoid is in ON position , hydraulic command is applied to the filter flushing Valve causing it to open while the hydraulic piston starts it's movement across the screen. After **TF** elapsed time the solenoid will returned to it's OFF position causing the filter flushing valve to close while the filter internal pressure will restored the hydraulic piston to it's starting position.

**NOTE** that the practical flushing time is the time required for the hydraulic piston to complete it's movement due to a given line pressure.

In order to minimize the flushing time/waste of flushed water set **TF** respectively.

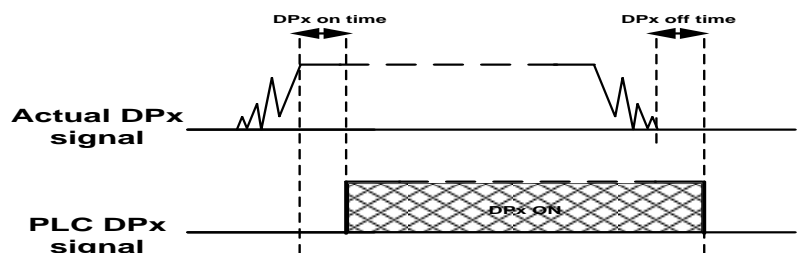
**1. NON-DP FLUSH** Is activated in three conditions :

1. Pressing the **FLUSH** switch.
2. Interval Timer **TD** (Internal) - If set by the operator.  
Note that setting TD hrs/min is set to 0 , will disable this option.
3. Transition from OFF to ON.  
(Applying short circuit for min. of 0.1 sec.at REMOTE inlets.)

### 2. DP FLUSH cycle.

A DP flush is caused by a differential pressure across the filter.

Signal at DP inlet for **DP ON TIME** (Factory set to 5 sec., can be adjust by the user) will activates the DP FLUSH mechanism while a DP signal absence for more than **DP OFF TIME** is consider as no DP signal.



Once a DP signal is registered , the flushing mechanism will execute a **FLUSHING** cycle by activating the motor and SV solenoid for **TF** preset time.

After flush cycle completion the control unit will check the DP signal for **TC** preset time.

- If DP signal is removed after TC preset time the system will return to normal state.
- If the DP is still signaling after **TC** preset time , 2<sup>nd</sup> flush cycle will be executed.
- If after X consecutive flushes , (Preset by **NFL** , Factory set to 3 times ) , The DP signal is not removed the system will enter a fault state - **FLUSH FAULT** state is declared (FAULT Indicator lit constantly) and any further flushes are inhibited.

**Note that entering 0 on one or both the above parameters will disable the DP FLUSH ALARM.**

--- Pressing the **FAULT** switch will reset the fault state and resume operation.



## F - CROUZET – XD-10 Controller

The first LCD display to appear is the Input/Output image table and the Real Time clock. An i/o no. indicates inactive i/o while a darkened i/o no. indicates an active i/o.



- PLC inputs display.
- PLC outputs display.
- Time display.
- PLC run indication.(rotating)
- PLC operation keys

### Updating time & date.

1. press **OK** key.
2. Move to **MISCELLANEOUS** line by pressing [ - ] key **twice** and press [ **OK** ] key.
3. Move to **CLOCK** line by pressing [ - ] key and press the [ **OK** ] key.
4. On **DATE/HOUR SETUP** press the [ **OK** ] key and move to the required field using [ - ]/ [ + ] keys.

When the required field blinking and darkened , Press the [ **OK** ] key - the field is blinking but not darkened, in this state use the [ - ]/ [ + ] keys to change the field value.

When done, press the [ **OK** ] key to enter the new value - the field is blinking and darkened again.

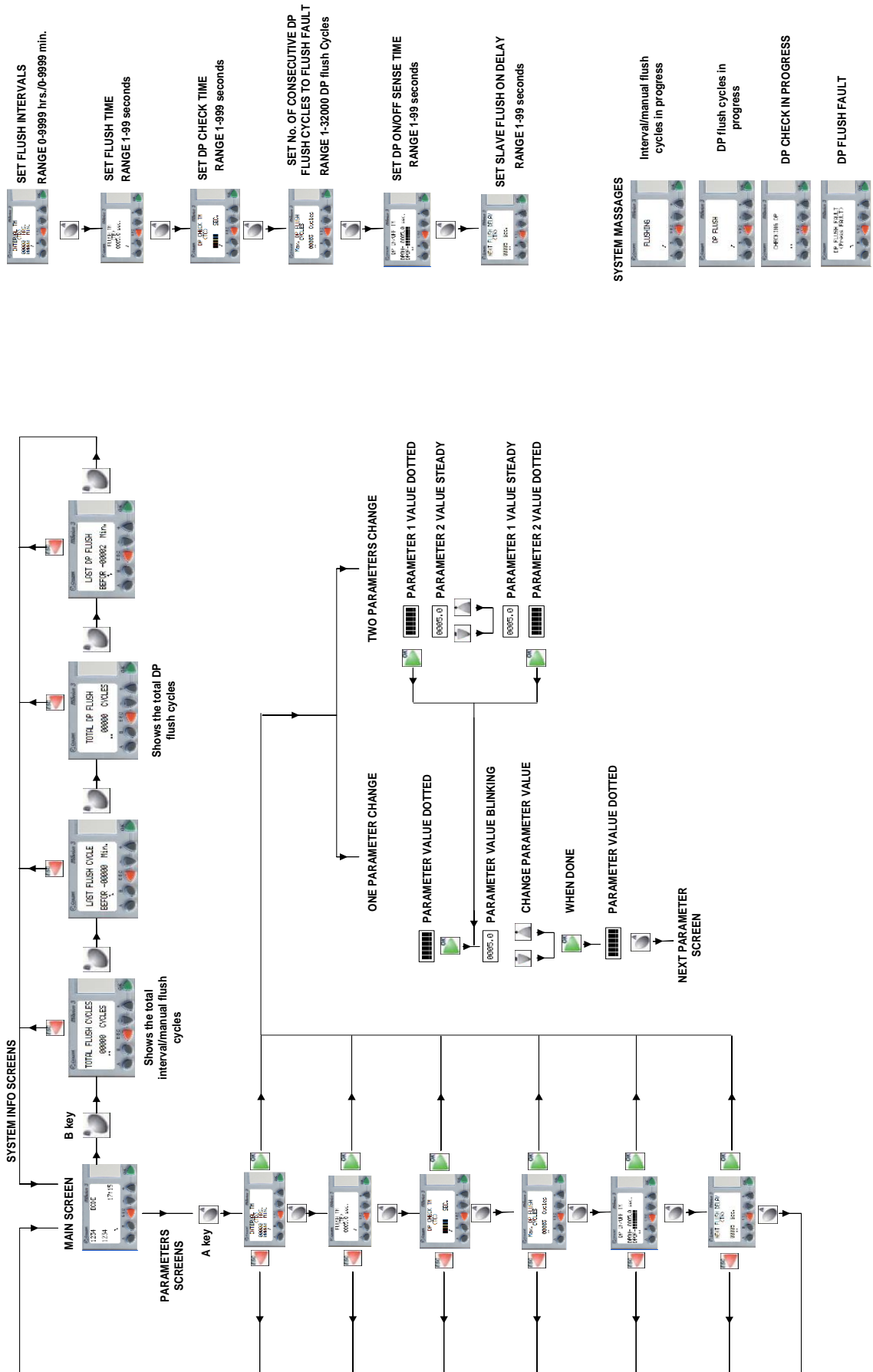
5. Move to other fields or exit to the main screen by pressing the [ **ESC** ] key until the main Screen appears.

### PARAMETERS CHANGE/UPDATE PROCEDURE.

When a desire parameter screen displayed , it's value is darkened with black dots. (In case of parameter with two fields like DP ON/OFF TM use the [ - ]/ [ + ] keys to move between them.)

### **To change a value –**

- A. Press the [ **OK** ] key > the value is blinking without the darkened dots.
- B. Change the value by pressing the [ - ]/ [ + ] keys.  
(Note that you can hold the [ - ]/ [ + ] keys for fast change or to click them for slow change.)
- C. When done press the [ **OK** ] key to enter the new value > the new value is darkened with black dots again.
- D. Move to the next parameter by pressing the [ **A** ] key again or exit by pressing the [ **ESC** ] Key.

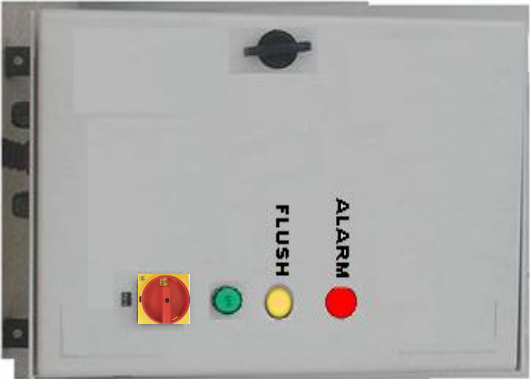


F. ELECTRICAL DRAWINGS.

AF 7xx



Control unit ELI-02/PLC

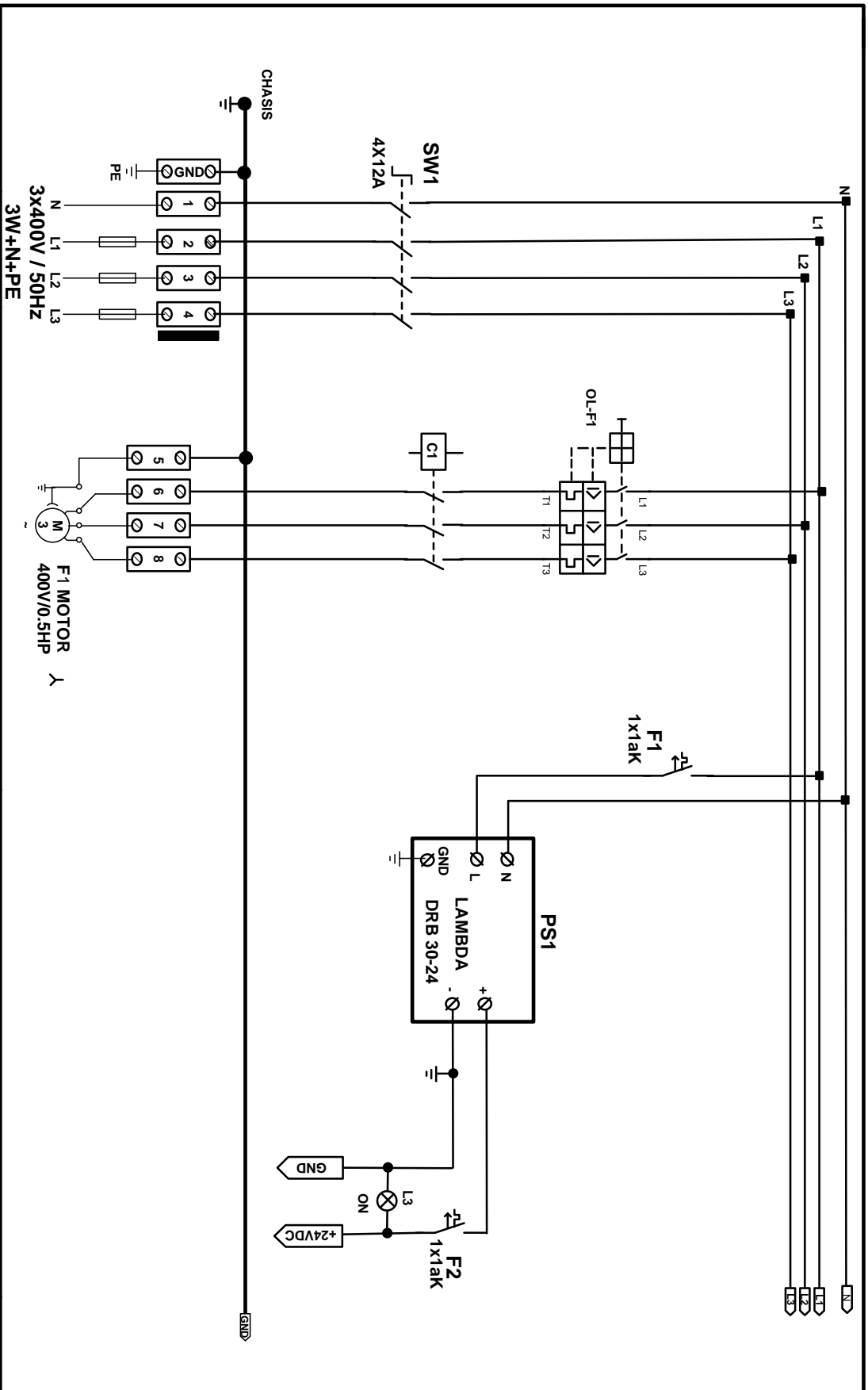



220-480VAC/3~/0.5KW

Filter cable - 5 meter  
5x0.75mm + 4x1.5mm

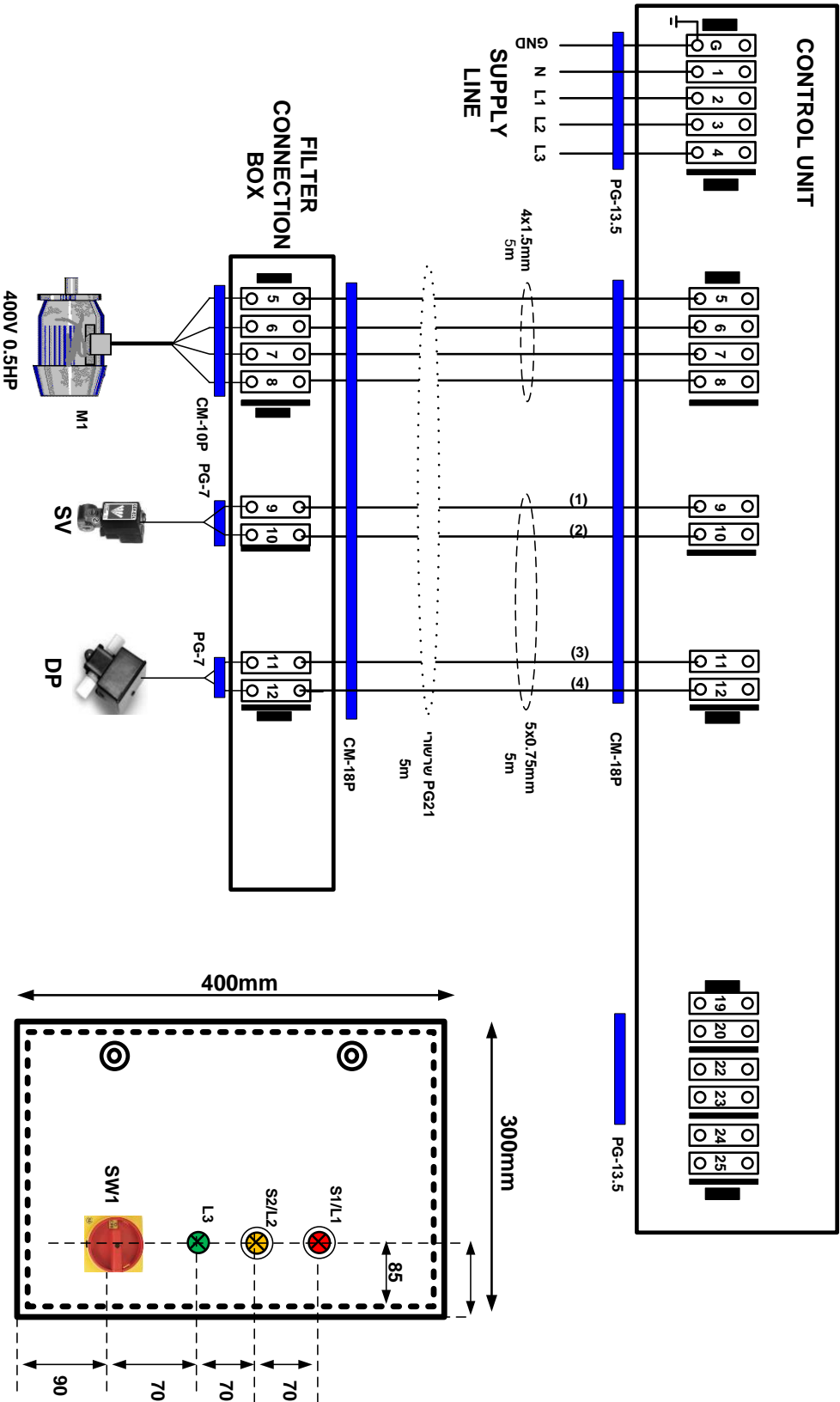
Signals

YAMIT FILTRATION		DATE 25/08/2019	PROJECT ELI-02 CROUZET XD10-CE- VER- 08-19	DESCRIPTION General System view		DRAWN BY DAVID.Z
PAGE 1 OF 5	FILENAME VISIODOCUMENT	CONTROL CROUZET	Cat. No. 8500010106	Authorized by DAVID.Z		



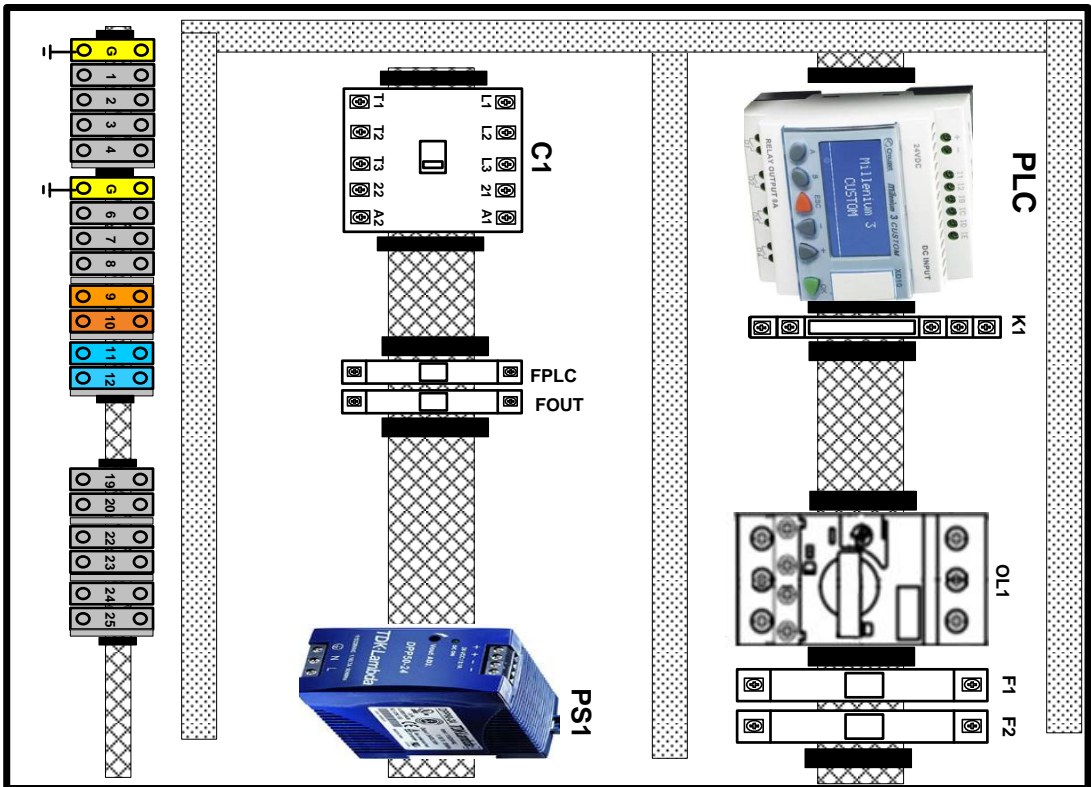
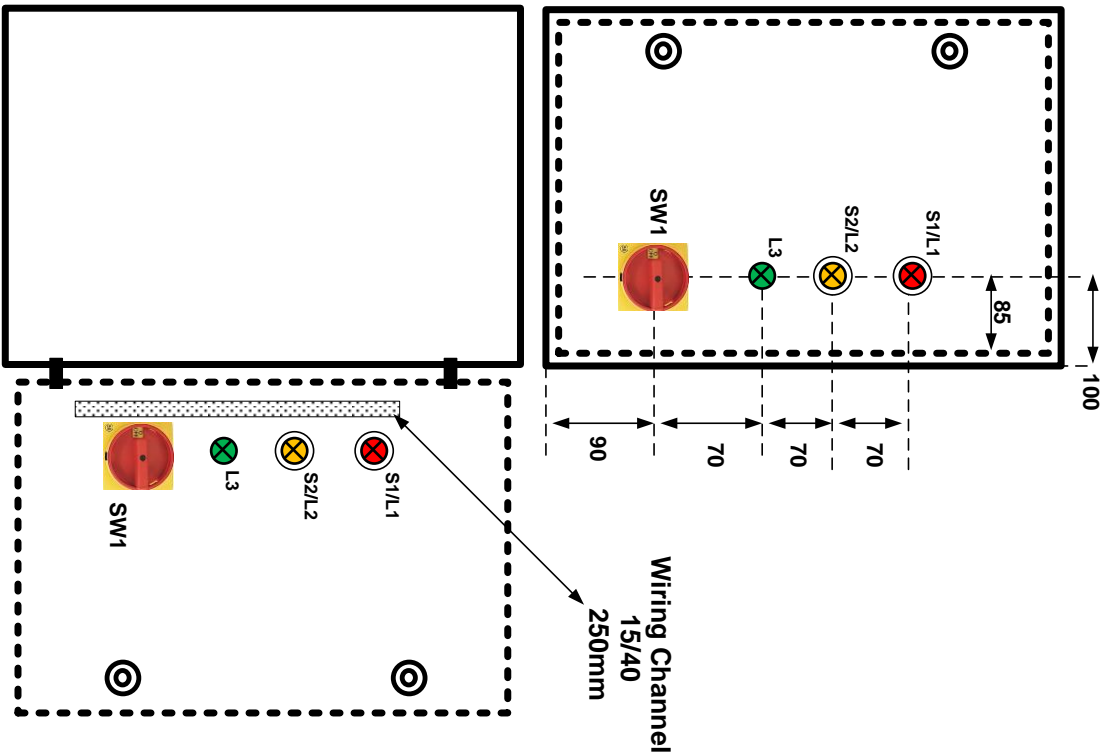
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	25/08/2019	ELI-02 CROUZET XD10-CE- VER- 08-19			
	PAGE	FILENAME	CONTROL	Cat. No.	Authorized by
	2 OF 5	VISIODOCUMENT	CROUZET	8500010106	DAVID.Z





YAMIT FILTRATION		DATE 25/08/2019	PROJECT ELL-02 CROUZET XD10-CE- VER- 08-19	DESCRIPTION SYSTEM WIRING		DRAWN BY DAVID.Z
PAGE 4 OF 5	FILENAME VISIODOCUMENT			CONTROL CROUZET	Cat. No. 8500010106	Authorized by DAVID.Z

ARIA 400/300/170



## 9. STANDARD INTERNATIONAL WARRANTY

**YAMIT Filtration & Water Treatment Ltd.** (hereinafter -" **YAMIT**") guarantees to the customers who purchased **YAMIT**'s products directly from **YAMIT** or through its authorized distributors, that such products will be free from defect in material and/or workmanship for the term set forth below, when such products are properly installed, used and maintained in accordance with **YAMIT**'s instructions, written or verbal.

Should such products prove defective within one year as of the day it left **YAMIT**'s premises, and subject to receipt by **YAMIT** or its authorized representative, of written notice thereof from the purchaser within 30 days of discovery of such defect or failure - **YAMIT** will repair or replace or refund the purchase price, at its sole option, any item proven defective in workmanship or material.

**YAMIT** will not be responsible, nor does this warranty extend to any consequential or incidental damages or expenses of any kind or nature, regardless of the nature thereof, including without limitation, injury to persons or property, loss of use of the products, loss of goodwill, loss of profits or any other contingent liabilities of any kind or character alleged to be the cause of loss or damage to the purchaser.

This warranty does not cover damage or failure caused by misuse, abuse or negligence, nor shall it apply to such products upon which repairs or alterations have been made by other than an authorized **YAMIT** representative.

This warranty does not extend to components, parts or raw materials used by **YAMIT** but manufactured by others, which shall be only to the extent warranted by the manufacturer's warranty.

No agents or representatives shall have the authority to alter the terms of this warranty nor to add any provisions to it not contained herein or to extend this warranty to anyone other than **YAMIT**'s customers.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, EXCEPT THIS WARRANTY WHICH IS GIVEN IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.