



AF800N Series Hydraulic Automatic Self-Cleaning Screen Filter

SERVICE & MAINTENANCE MANUAL



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9006108002



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1. Introduction

General

YAMIT Filtration Ltd congratulates you on purchasing the **AF800N SERIES** self-cleaning filter. This filter is part of 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.

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2. Safety Instructions

1. Prior to installation or handling of the filter, read carefully the installation and operation instructions carefully.
2. Confirm filter draining prior to service.
3. Take precautions while lifting, transporting or installing the filter.
4. Installation of the filter should be performed so as to avoid direct water splashing on any of the filter parts and especially on the electronic control unit.
5. Confirm that filter weight, when full, meets the support construction requirements.
6. Prior to installation confirm that line pressure matches filter's operational pressure.
7. During installation, use standard flanges and connections only.
8. Check that all filter flange bolts are properly secured.
9. Please note, the filter enters a flushing mode automatically, without prior warning.

10. Use original parts only when servicing the filter.

11. YAMIT can not accept responsibility for any changes or modifications to the equipment.

3. Description & Operation

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Filter Assembly General Description (Figure 1)

The **AF800N SERIES** self-cleaning filter enables high quality filtration from grades of 80-1000 micron from various types of fluid sources such as sewage, reservoirs, rivers, lakes, and wells.

The **AF800N SERIES** filter contains the following parts:

- | | |
|----------------------------|------------------------|
| 1. Inlet | 8. Suction nozzle |
| 2. Coarse screen | 9. Hydraulic motor |
| 3. Fine screen | 10. Outlet |
| 4. Flushing valve | 11. Electronic DP unit |
| 5. Hydraulic piston | 12. control unit |
| 6. Hydraulic motor chamber | 13. Solenoid valve |
| 7. Dirt collector | |

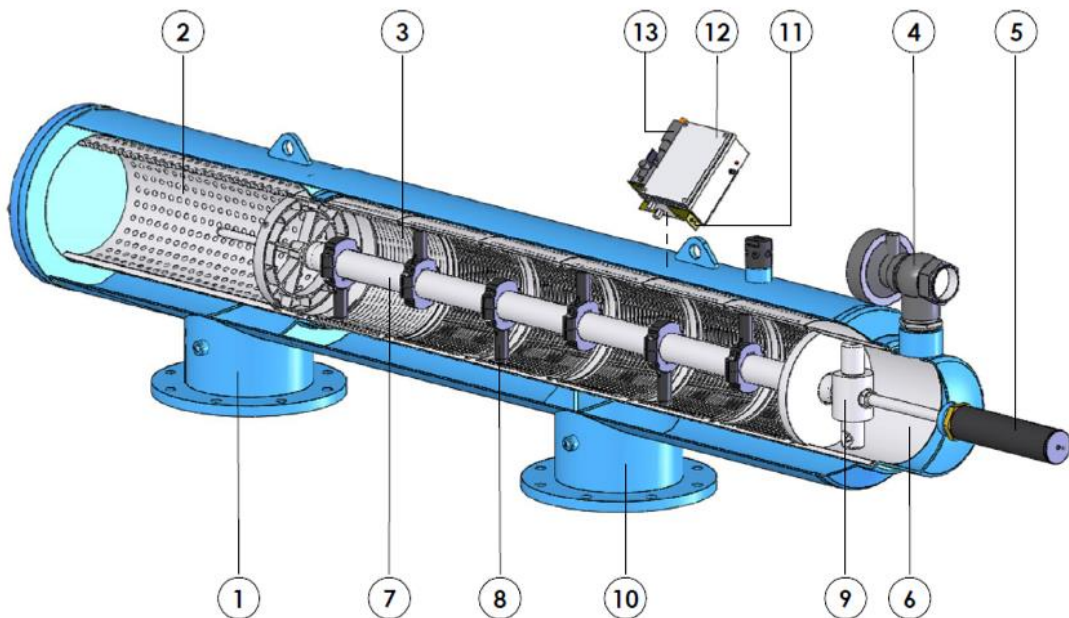


Figure 1: Filter Assembly

Filter Operation - General Description (Figure 1)

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. When the difference in pressure (DP) reaches the preset value in the electronic control unit (12), a series of events is triggered while the water continues to flow to the user. The flushing valve (4) opens, pressure is released from the hydraulic piston (5) and water flows outside. Pressure in the hydraulic motor chamber (9) and the dirt collector (7) is significantly lowered, and the dirt collector nozzles (8) begin a suction process. The water flows through the hydraulic motor (9) which rotates the dirt collector (7) around its axis. The pressure released from the piston (5) and the high pressure inside the filter cause linear movement of the dirt collector. The combination of the linear movement and rotation significantly cleans the entire internal screen (3) surface.

The flushing cycle takes about **10 seconds**. The flushing valve (4) closes at the end of the cycle and the increased water pressure returns the hydraulic piston (5) to its initial position. The filter is now ready for the next flushing cycle, with clean and filtered water flowing through the “Outlet” (10).

Note: At the back of the piston is an indicator that pops up when the piston reaches the end of its motion. – this indicator helps us to check whether the dirt collector, inside the filter, completed it’s motion.

General Description of the Electronic Control System

The electronic system (12) initiates the cleaning process based on either time differential (DT) and / or pressure indicator differential. The trigger closes a circuit and then triggers the electronic control unit after a delay of 15 seconds. The electronic control unit (12) controls the opening and the closing of the flushing valves (4) via the solenoid valve (13). The flushing cycle, which takes a total of about **10 seconds** (can be adjusted by the operator), resumes its operation whenever the time cycle ends or the difference in pressure reaches the preset pressure value set in the controller. If the difference in pressure remains unchanged after one cycle, another cycle will start after a delay of 15 seconds.

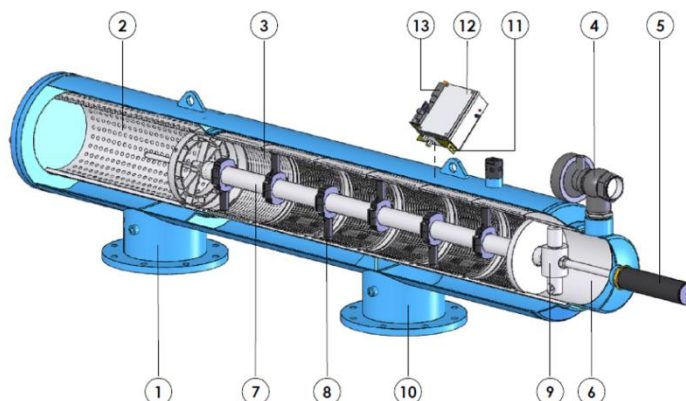


Figure 1: Filter Assembly

4. Technical Data

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Standard Features

Minimum operating pressure:	2 bar (29 psi)
Maximum operating pressure:	10 bar (145 psi)
Clean filter pressure loss:	0.1bar (1.45 psi)
Maximum water temperature:	65°C (149°F)
Filtration range:	80-1000 microns
Control voltage:	6V 12V DC, 24V AC, 220V AC
Flush water consumption (at minimum working pressure):	80 liters (21 gallons)
Filter housing materials:	carbon steel coated with baked on epoxy

Measurements & Weight

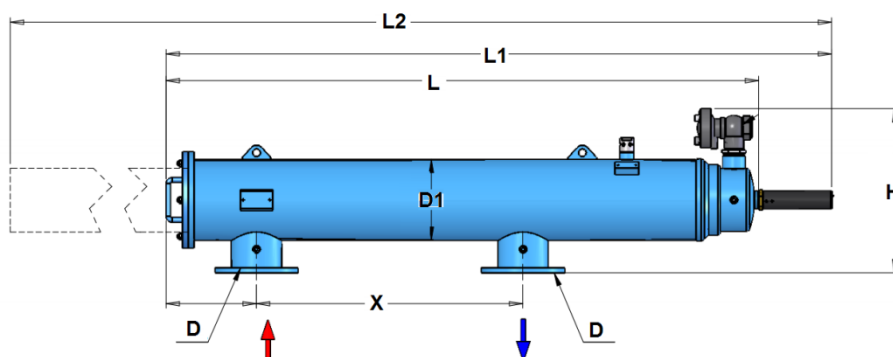
Model	In/Outlet D (mm) (in)		D1 (in)	H (mm)(in)		X (mm) (in)		L (mm) (in)		L1 (mm) (in)		L2 (mm) (in)		Weight Package (kg) (lb)		Volumen Package LxAxH (m) (ft)	
AF803NL	75	3	10	545	21.4	450	17.7	1139	44.8	1386	54.6	2040	80.3	110	243	1.6x0.6x0.8	5.3x2.0x2.6
AF804NL	100	4	10	545	21.4	900	35.4	1535	60.4	1782	70.1	2820	111.0	135	298	1.9x0.6x0.8	6.6x2.0x2.6
AF804NX	100	4	10	545	21.4	900	35.4	1931	76.0	2178	85.7	3620	142.5	154	340	2.4x0.6x0.8	7.9x2.0x2.6
AF806NL	150	6	12	580	22.8	900	35.4	1605	63.2	1851	72.9	2890	113.8	147	324	1.9x0.6x0.8	6.6x2.0x2.6
AF806NX	150	6	10	555	21.8	900	35.4	2001	78.8	2247	88.5	3680	144.9	157	346	2.4x0.6x0.8	7.9x2.0x2.6
AF808NL	200	8	12	579	22.8	900	35.4	2190	86.2	2437	95.9	3870	152.4	187	412	2.6x0.6x0.8	8.5x2.0x2.6
AF810NL	250	10	14	595	23.4	900	35.4	2194	86.4	2437	96.1	3870	152.4	212	467	2.6x0.6x0.8	8.5x2.0x2.6

X = Extra-long filter with extra-large filtration area

L = Long filter with 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 (2 bars / 29 psi).



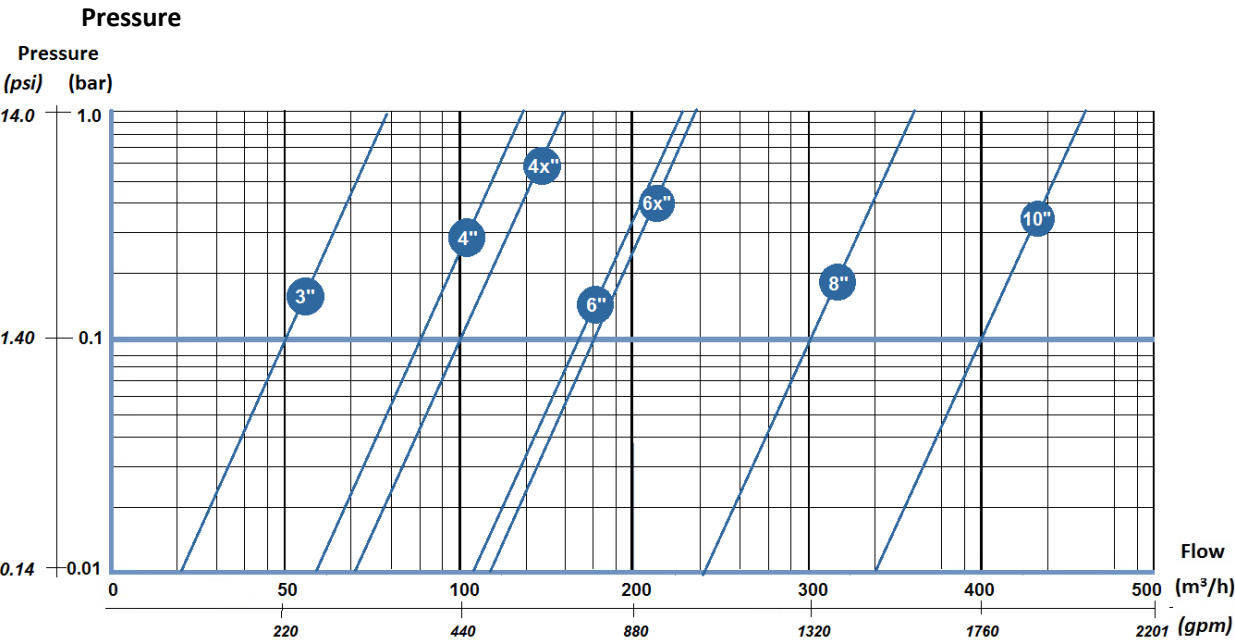
Flow Rate

Model	In/Out D		Maximum Flow Rate		Screen area		Flushing Flow Rate		Flushing volume	
	(mm)	(in)	(m3/h)	(gpm)	(cm ²)	(in ²)	(m3/h)	(gpm)	(m ³)	(gal)
AF803NL	75	3	50	220	3220	500	30	132	0.083	22.01
AF804NL	100	4	80	350	5780	895	30	132	0.083	22.01
AF804NX	100	4	100	440	8410	1303	30	132	0.083	22.01
AF806NL	150	6	150	660	5780	895	30	132	0.083	22.01
AF806NX	150	6	160	700	8410	1303	30	132	0.083	22.01
AF808NL	200	8	300	1320	8410	1303	30	132	0.083	22.01
AF810NL	250	10	400	1760	8410	1304	30	132	0.083	22.01

Filtration Grade Conversion Table

Micron	80	100	120	150	200	300	400	500	800	1000
Mesh	200	150	120	100	80	55	40	30	20	15

Pressure Loss at 120 micron



5. Initial Installation & Operation

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General

The filter assembly is protectively packed with all parts assembled.

Installation

1. Remove the filter assembly from the wood platform.
2. Connect the filter assembly to the inlet line and outlet line.
3. Connect a drain pipe to the hydraulic flushing valve outlet opening (at least 63 mm plastic pipe or 2" metal pipe and no more than 5 m long)
Confirm that water runs freely out of the drainpipe.
4. Check that all connections are properly secured.
5. Check that all nuts and bolts on the filter periphery are properly tightened and secured.
6. Connect the batteries located in the control unit box as explained in "Initial Operation" (See Figure 3).

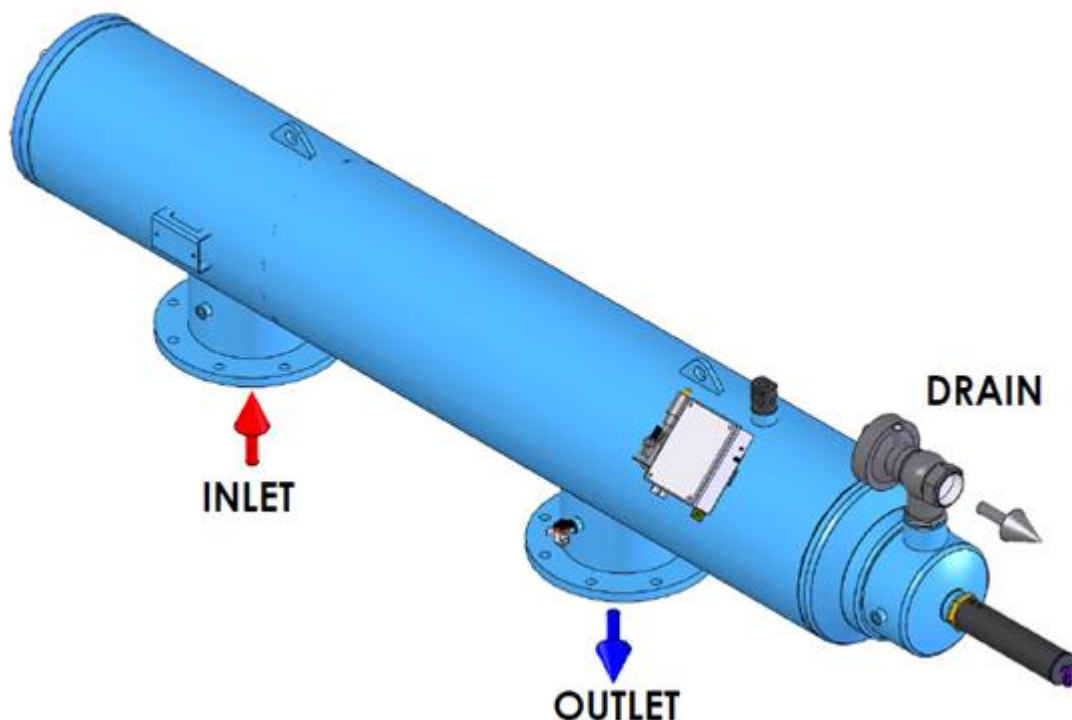


Figure 2: Initial Filter Installation

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. Perform a flushing cycle manually by pushing the test button located on the outside of the control box (See Figure 3).
3. Verify that the hydraulic piston fully extends during back flush.
4. Verify that the hydraulic flushing valve closes after 10 seconds.
5. When the filter is clean, verify that the differential pressure between inlet and outlet does not exceed 0.1 bar.
6. Check that the differential pressure is set to 7 psi or 0.5 bar (5 meter) in the controller (see Appendix 1).



Figure 3: Control Unit

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6. Maintenance & Periodical Checks

6.1 - 6V (4 x 1.5V) Battery Removal & Installation

The 4 x 1.5V battery enables the electronic control unit's operation. The battery can last for 3000 flushing cycles, but should be replaced every six months. Use **ONLY ALKALINE** type battery.

1. Remove the upper cover of the controller.
2. Disconnect and remove the used battery.
3. Connect a new battery according to the correct polarity. The controller will perform long "beep" sound.
4. Close the upper cover.

WARNING

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

5. Perform a flushing cycle by disconnecting the low pressure tube from the differential pressure indicator (thereby closing the electrical circuit) – re-connect it immediately as flushing starts.
6. Verify that the hydraulic flushing valve closes after 10 seconds.
7. Perform an additional flushing cycle manually by pushing the manual bottom (M on the screen display). (See Figure 3).



Figure 3: Battery Removal & Installation

6.2 - Control Card Removal & Replacement

1. Disconnect the controller from power (AC) or remove batteries (DC)
2. Remove upper and lower cover. If there are any outputs card connected to the controller disconnect them.



3. Unscrew 5 screws (Red Circles).
Disconnect power wires (Both AC & DC model - Blue Square)
Disconnect DP sensor, Pressure sensor and external DP (If exists - Yellow Square)



4. Turn on back and separate the back cover:



DC MODEL

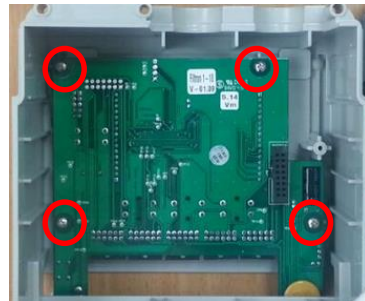


AC MODEL

5. For DC model only– Unscrew and remove step-up card



6. Unscrew the main card – 4 screws (Red circles). Remove the card.



7. Place the new card and go backwards through the same steps as described above:
 - Fasten the 4 screws.
 - Place the Step-up cards and fasten the screw (DC MODEL ONLY)
 - Join the two plastic parts (Front and back) and turn to front.
 - Connect DP sensor, Pressure sensor and external DP (If exists – Yellow square)
 - Connect power cable (Blue Square)
 - Fasten the 5 screws (Red Circles)
 - Reconnect the output cards to the controller. Reconnect solenoids (If disconnected before)
 - Return the upper and lower cover
 - Connect to power.

6.3 - Solenoid Removal & Replacement

The solenoid hydraulically controls the flushing valve's operation.

1. Remove the upper cove, disconnect and remove the 4 x 1.5V batteries.
2. Disconnect the solenoid control tubes.
3. Remove the fittings from the damaged solenoid.
4. Disconnect the electrical wiring from the control card terminals.
5. Remove the nut from the solenoid lower section.
6. Pull the solenoid out of the control assembly.
7. Insert a new solenoid into the control assembly.
8. Re-Install the nut on the solenoid lower section.
9. Install the fittings on the ports of the new solenoid.
10. Connect the 2 wires of the solenoid (black wire to "C" port, red wire to "1" port).
11. Connect the solenoid control tubes
12. Connect the 4 X 1.5V batteries according to the correct polarity and close the electronic control unit cover.

WARNING

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

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 starts.
14. Verify that the hydraulic flushing valve closes after 10 seconds.
15. Perform an additional flushing cycle manually by pushing the manual bottom (M on the screen display). (See Figure 3).

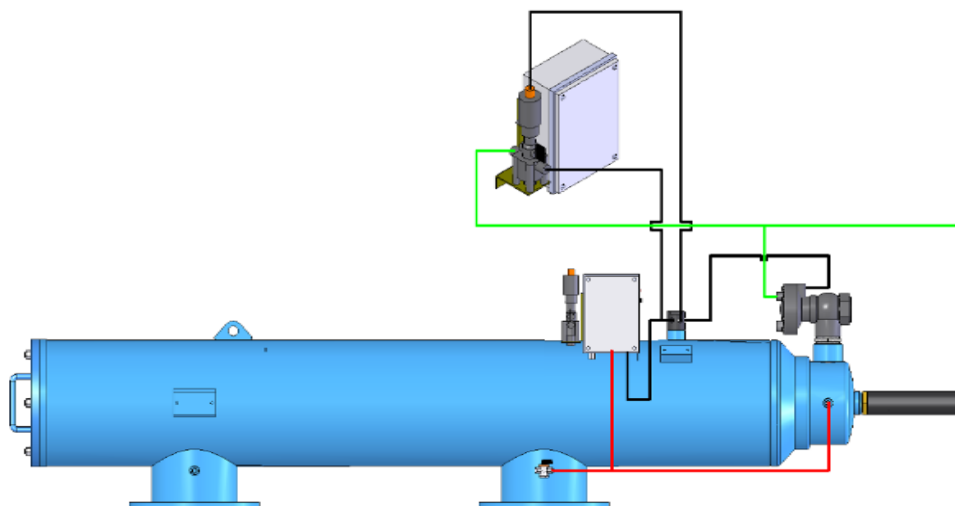


Figure 5: Solenoid Removal & Replacement

6.4 - Hydraulic Piston Assembly Removal & Replacement

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

1. Close the inlet and the outlet line valves.
2. Verify that the filter is drained prior to service.
3. Disconnect the control tube from the piston assembly's upper section.
4. Screw the brass base out (clockwise) of the filter body and carefully remove the piston assembly.
5. Remove the O-ring from the current piston assembly.
6. Position the O-ring in the new piston assembly.
7. Lubricate the O-ring with silicon grease.
8. Carefully slide the new piston assembly into the filter housing.
9. Screw (counterclockwise) the brass base into the filter body and tighten it gently.
10. Connect the control tube to the piston assembly's upper section.
11. Open the inlet and the outlet line valves.
12. Check for leaks.

WARNING

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

13. Push the piston indicator (on the rear side of the piston) inside.
Perform a flushing cycle manually by pushing the manual bottom (M on the screen display). (See Figure 3).
14. Verify that the piston travels its complete path and that the indicator pops up.
Verify that the hydraulic flushing valve closes after 10 seconds

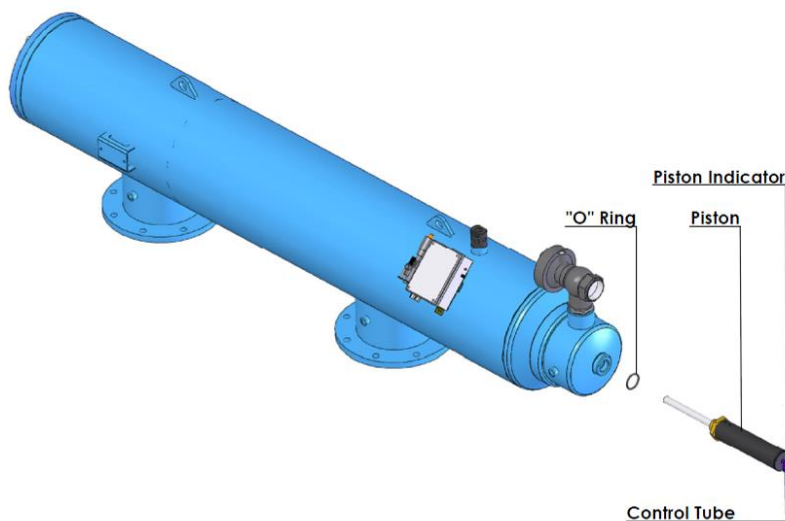


Figure 6: Piston Assembly Removal & Installation

6.5 - Coarse Screen Removal & Installation

1. Close the inlet and the outlet line valves.
2. Verify that the filter is drained prior to service.
3. Remove the nuts and washers connecting the cover to the filter housing.
4. Remove the cover seal from the cover groove.
5. Pull out the damaged coarse screen out from the fine screen assembly using the gripping handle.
6. Slide the new coarse screen into the fine screen assembly using the gripping handle.
7. Verify that the straight side of the cover seal fits into the groove located in the cover.
8. Put the cover on its place on the filter's housing and Install the nuts and washers connecting the cover to the filter housing.
9. Open the inlet and outlet line valves.
10. Check for leaks.

WARNING

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

11. Perform a flushing cycle manually by pushing manual bottom (M on the screen display). (See Figure 3)
12. Verify that the hydraulic flushing valve closes after 10 seconds.

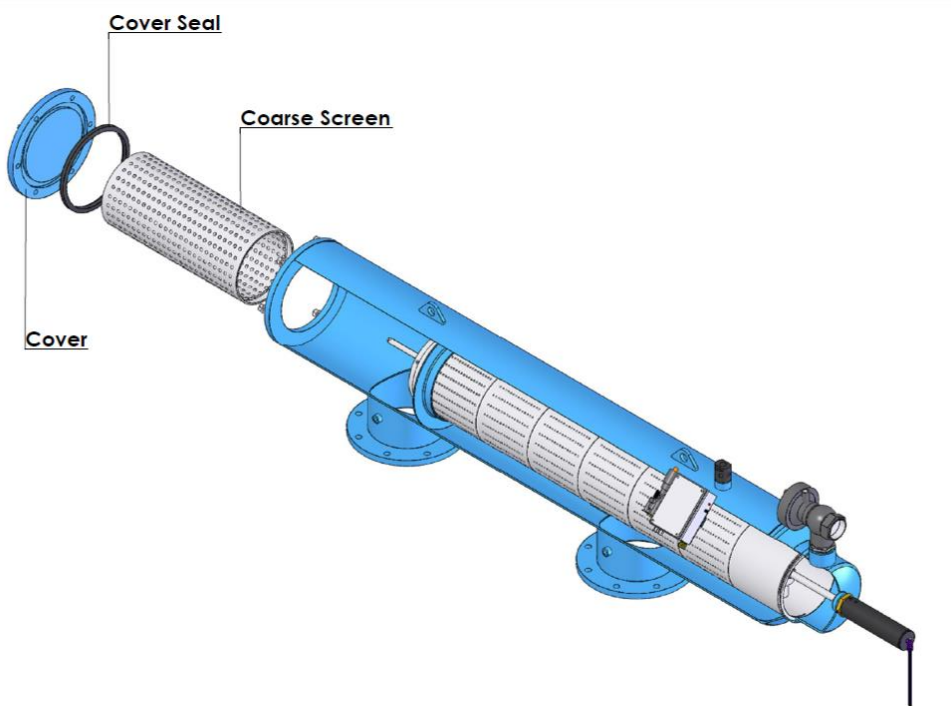


Figure 7: Piston Assembly Removal & Installation

6.6 - Fine Screen Assembly Removal & Installation

1. Close the inlet and the outlet line valves.
2. Verify that the filter is drained prior to service.
3. Remove the nuts and washers connecting the cover to the filter housing.
4. Remove the cover from the filter's housing and remove the cover seal from the cover groove.
5. Pull out the coarse screen from the fine screen assembly using the gripping handle.
6. Pull the fine screen assembly out of the filter housing assembly with the dirt collector.
7. Remove both o-rings (445) from the current fine screen assembly.
8. Unscrew (clockwise - cw) the hydraulic motor from the dirt collector.
9. Unscrew (counterclockwise -ccw) the fine screen handle section from the fine screen, loosen using screen wrenches.
10. Carefully pull the dirt collector out of the fine screen assembly.
11. Unscrew (ccw) the fine screen damaged sections and replaced them with new sections.
12. Slide the dirt collector into the fine screen, through the dirt collector bearing.
13. Position both o-rings (445) into the new fine screen assembly, if required replace them.
14. Lubricate the o-ring (445) with silicon grease.
15. Screw (cw) the fine screen handle section to upper screen section; make sure the dirt collector axis passes through the screen bearing. Tighten using screen wrenches.
16. Screw (ccw) the hydraulic motor to the dirt collector.
17. Slide the new fine screen assembly into the filter housing assembly.
18. Slide the coarse screen into the fine screen assembly.
19. Verify that the straight side of the cover seal fits into the groove located in the cover.
20. Put the cover on its place on the filter's housing and Install the nuts and washers connecting the cover to the filter housing.
21. Open the inlet and the outlet line valves.
22. Check for leaks.

WARNING

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

23. Perform a flushing cycle manually by pushing the manual bottom (M on the screen display). (See Figure 3).
24. Verify that the hydraulic flushing valve closes after 10 seconds.

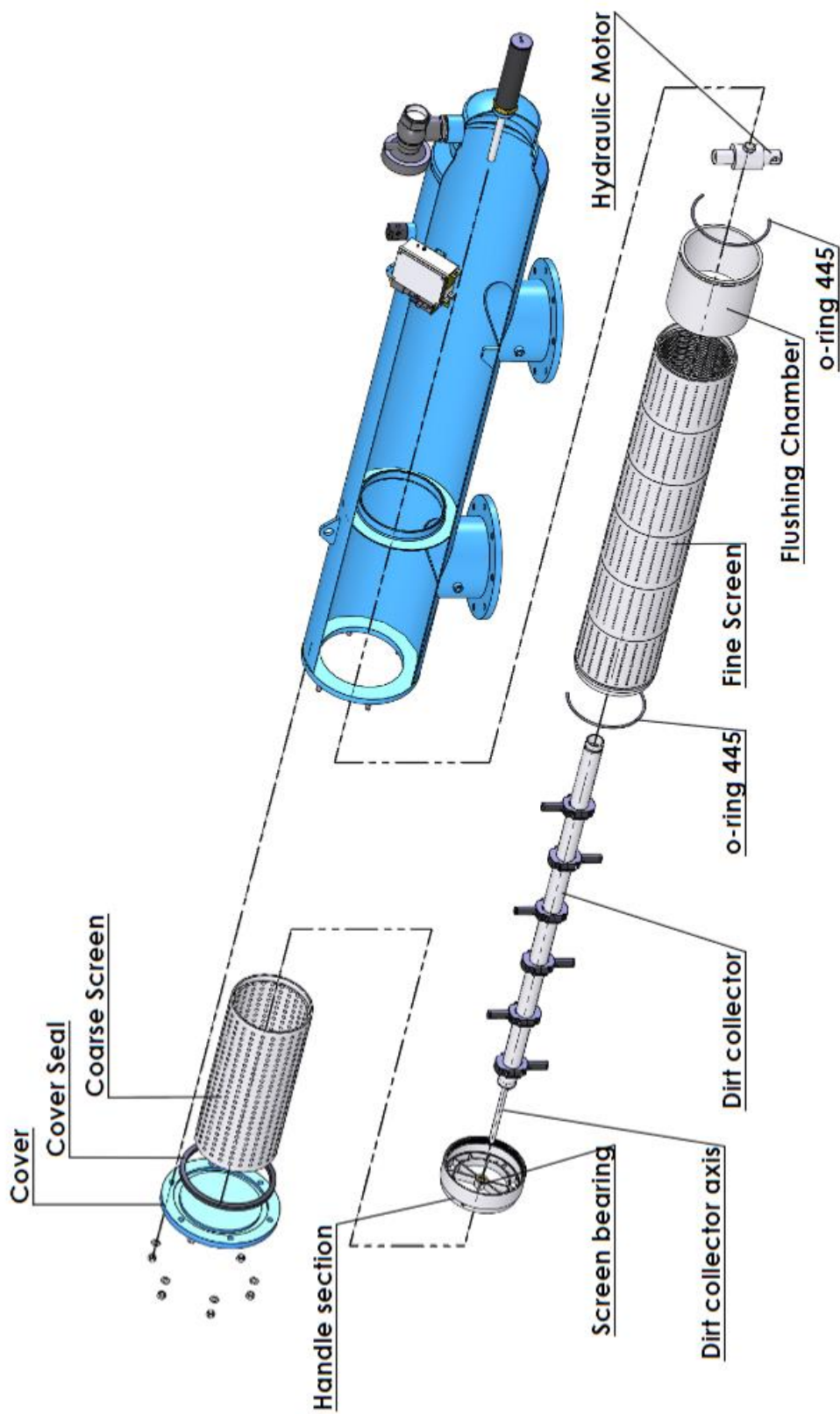


Figure 8: Fine Screen Assembly Removal & Replacement

6.7 - Dirt Collector Removal & Installation

1. Close the inlet and the outlet line valves.
2. Verify that the filter is drained prior to service.
3. Remove the nuts and washers connecting the cover to the filter housing.
4. Remove the cover from the filter's housing and remove the cover seal from the cover groove.
5. Pull out the coarse screen from the fine screen assembly using the gripping handle.
6. Pull the fine screen assembly out of the filter housing assembly with the dirt collector.
7. Unscrew (clockwise - cw) the hydraulic motor from the dirt collector.
8. Unscrew (counterclockwise -ccw) the fine screen handle section from the fine screen, loosen using screen wrenches.
9. Carefully pull the dirt collector out of the fine screen assembly.
10. Slide the new dirt collector into the fine screen, through the dirt collector bearing.
11. Screw (cw) the fine screen handle section to upper screen section; make sure the dirt collector axis passes through the screen bearing. Tighten using screen wrenches.
12. Screw (ccw) the hydraulic motor to the dirt collector.
13. Slide the fine screen assembly into the filter housing assembly.
14. Slide the coarse screen into the fine screen assembly.
15. Verify that the straight side of the cover seal fits into the groove located in the cover.
16. Put the cover on its place on the filter's housing and Install the nuts and washers connecting the cover to the filter housing.
17. Open the inlet and the outlet line valves.
18. Check for leaks.

WARNING

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

19. Perform a flushing cycle manually by pushing the manual bottom (M on the screen display). (See Figure 3).
20. Verify that the hydraulic flushing valve closes after 10 seconds.

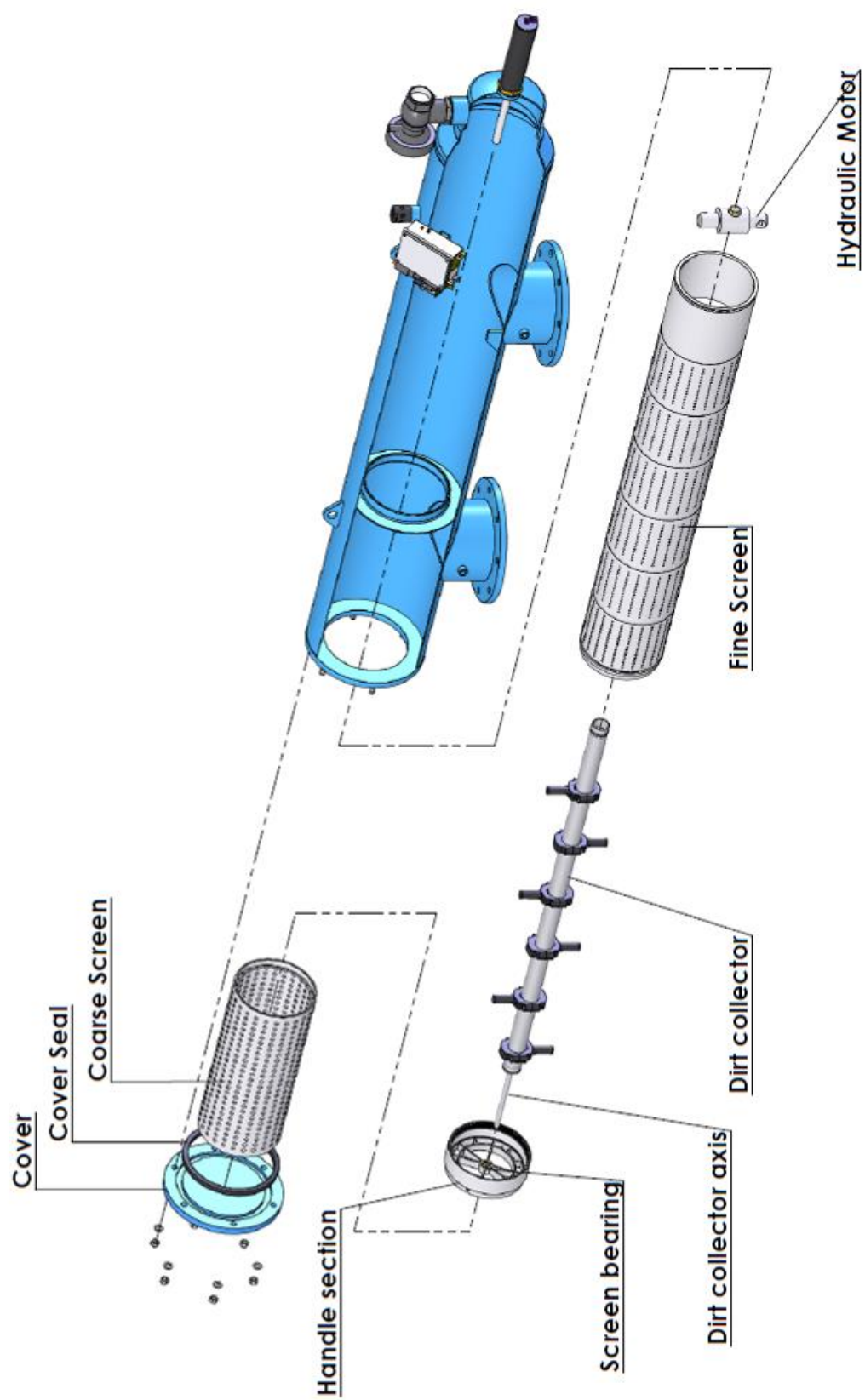


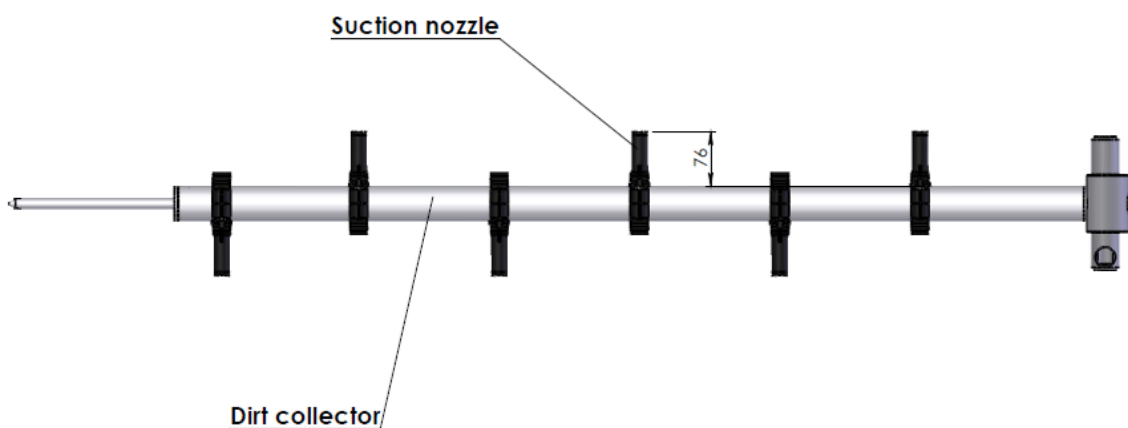
Figure 9: Dirt Collector Removal & Replacement

6.8 - Periodical Checks

Perform yearly or periodical checks at the beginning of the season, according to the following:

1. Replace the 4X1.5V batteries at the beginning of every season or every six months; refer to "**Batteries Removal & Replacement**".
2. Check the condition of the coarse screen. If damaged, replace according to "**Coarse Screen Removal & Replacement**".
3. Check the condition of the fine screen assembly. If damaged, replace according to "**Fine Screen Assembly Removal & Replacement**".
4. Check the condition of the dirt collector bearing and screen bearing. If any of the bearings have become misshaped, (oval), replace with a new one.
5. Check the mechanical condition of the hydraulic piston assembly. Verify piston's free movement. If damaged or deteriorated, replace according to "**Hydraulic Piston Assembly Removal & Replacement**".
6. Check the dirt collector suction nozzles height (see table). If damaged, replace according to "**Dirt Collector Removal & Replacement**".
7. Check the condition of the controller while operating with running water.
8. Check the filter housing for paint damage or corrosion. If required, clean the area with sandpaper and apply a thin layer of basic + epoxy paint.
9. Check for leaks

Dirt Collector Suction Nozzles Height Table



Type Number
All filters

Nozzle Height
76mm

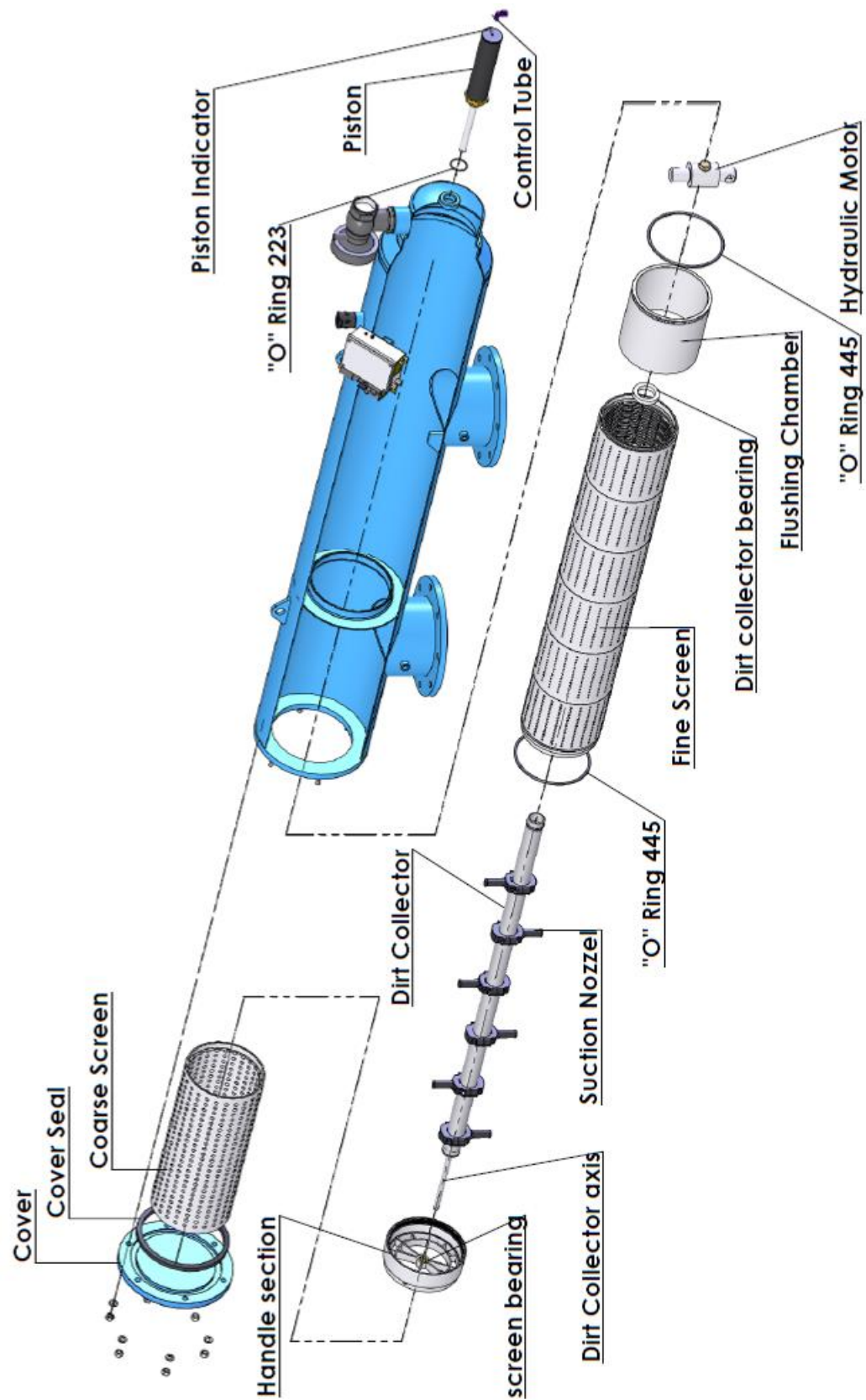
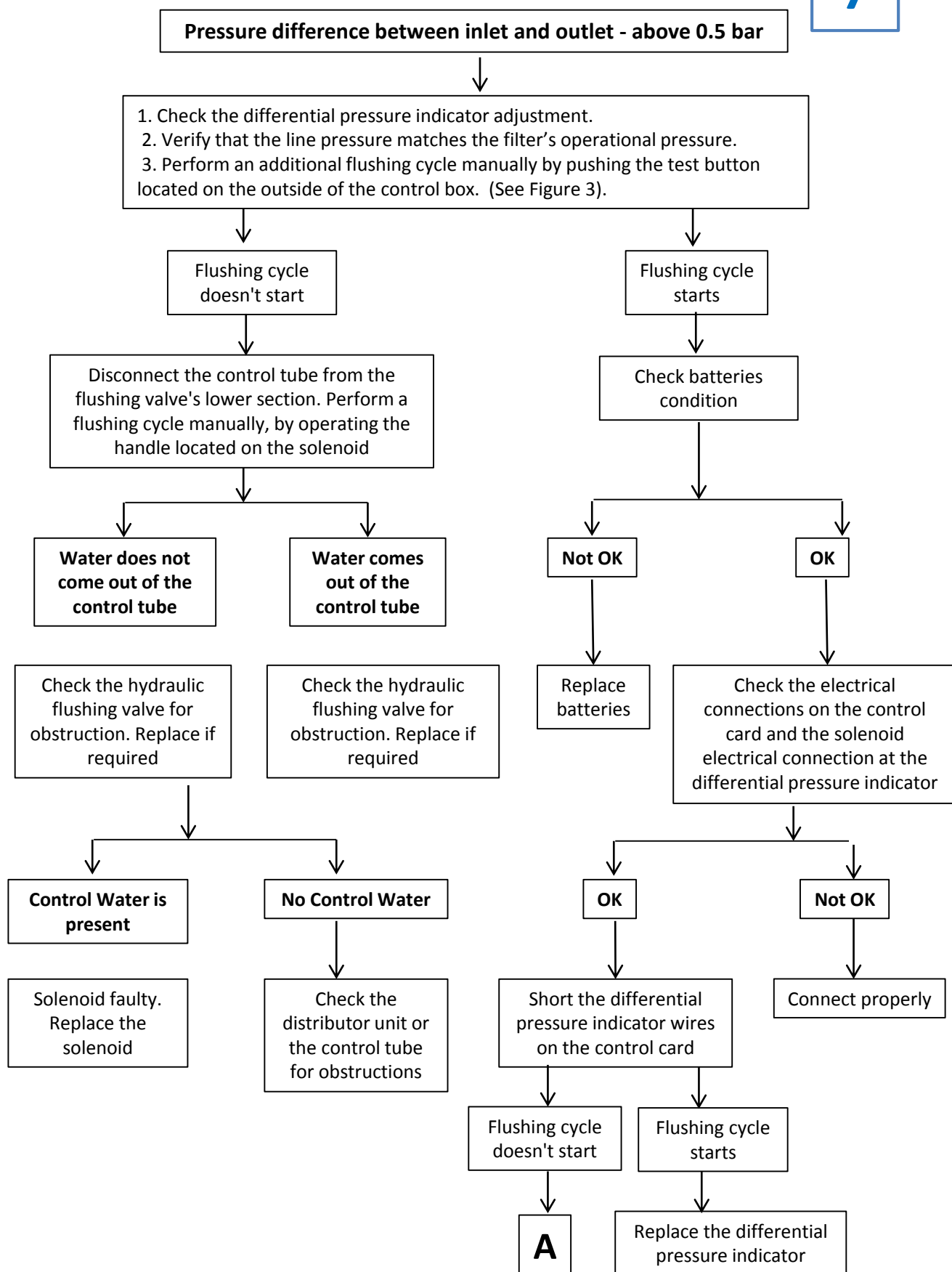
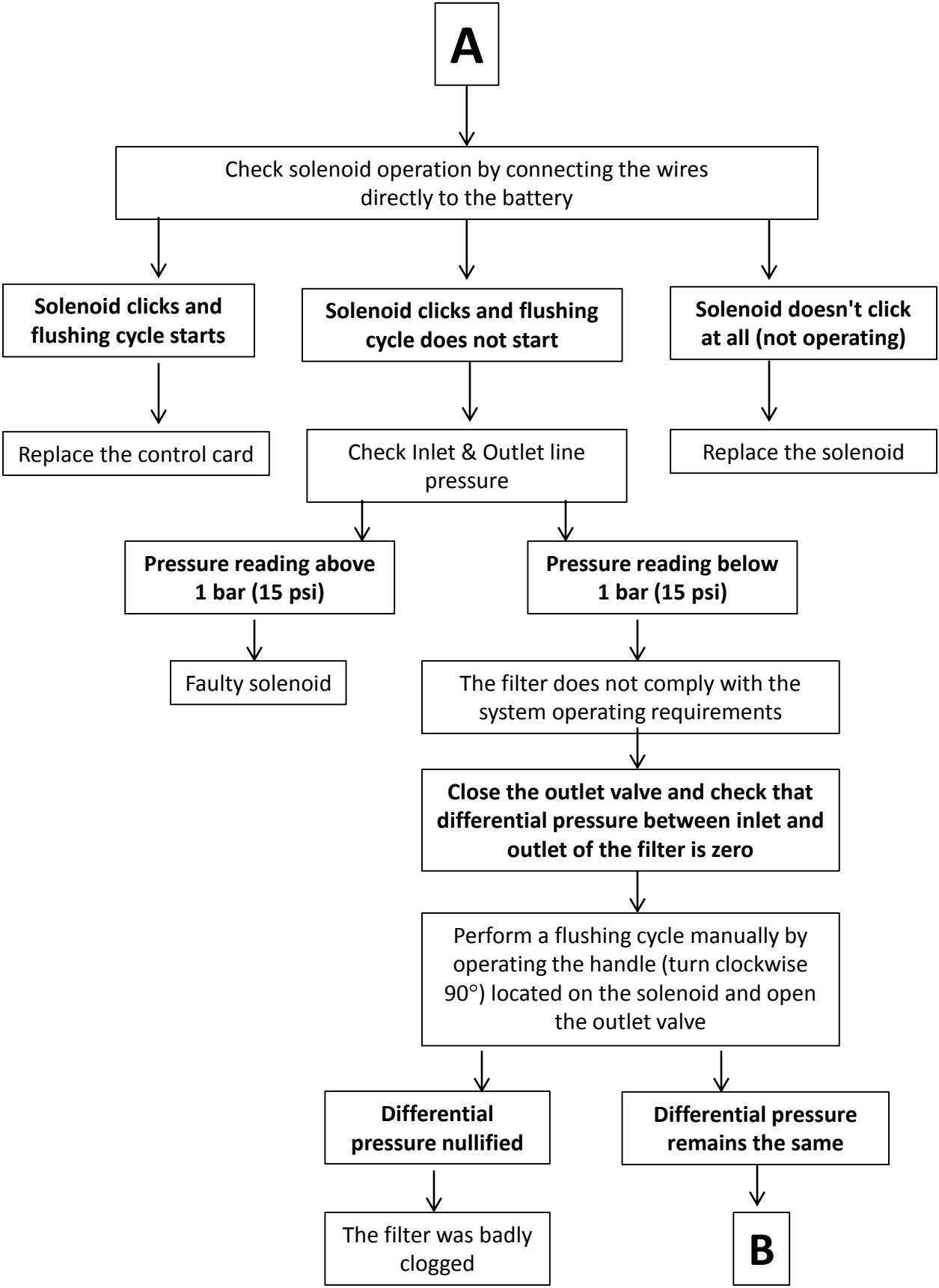


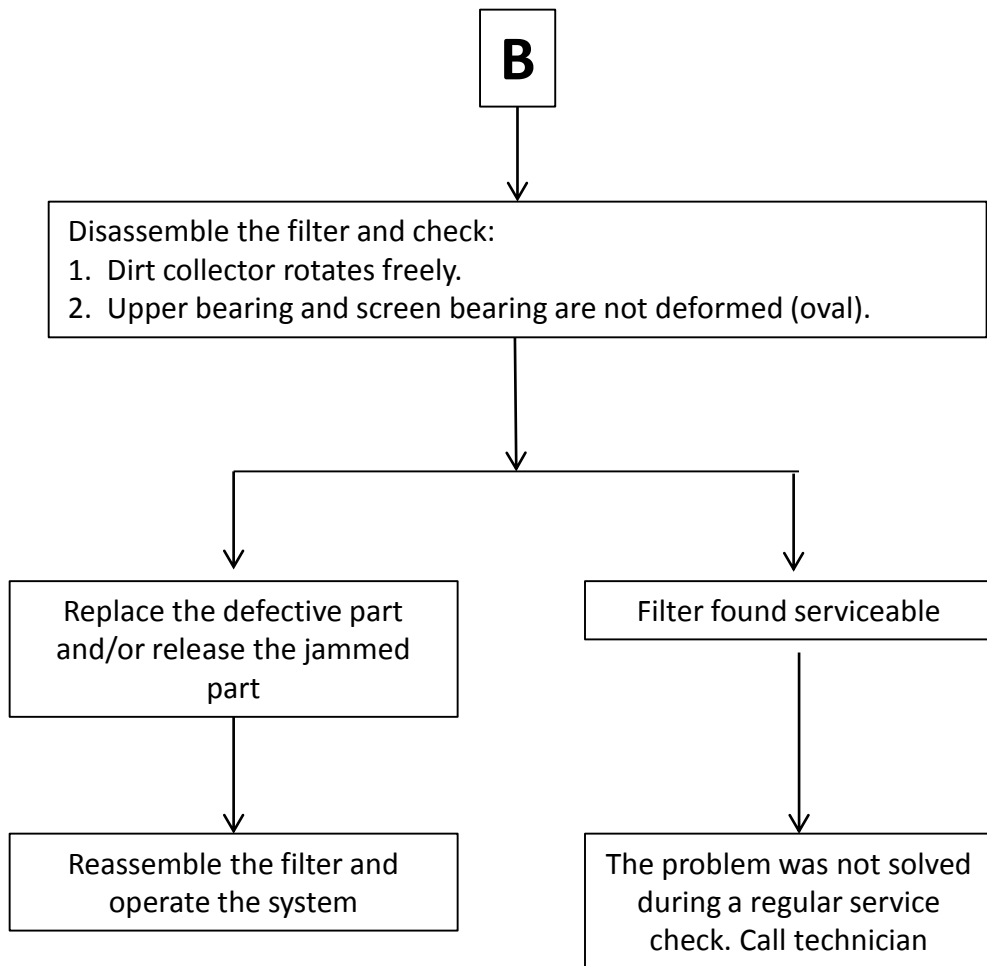
Figure 10: Periodic Checks

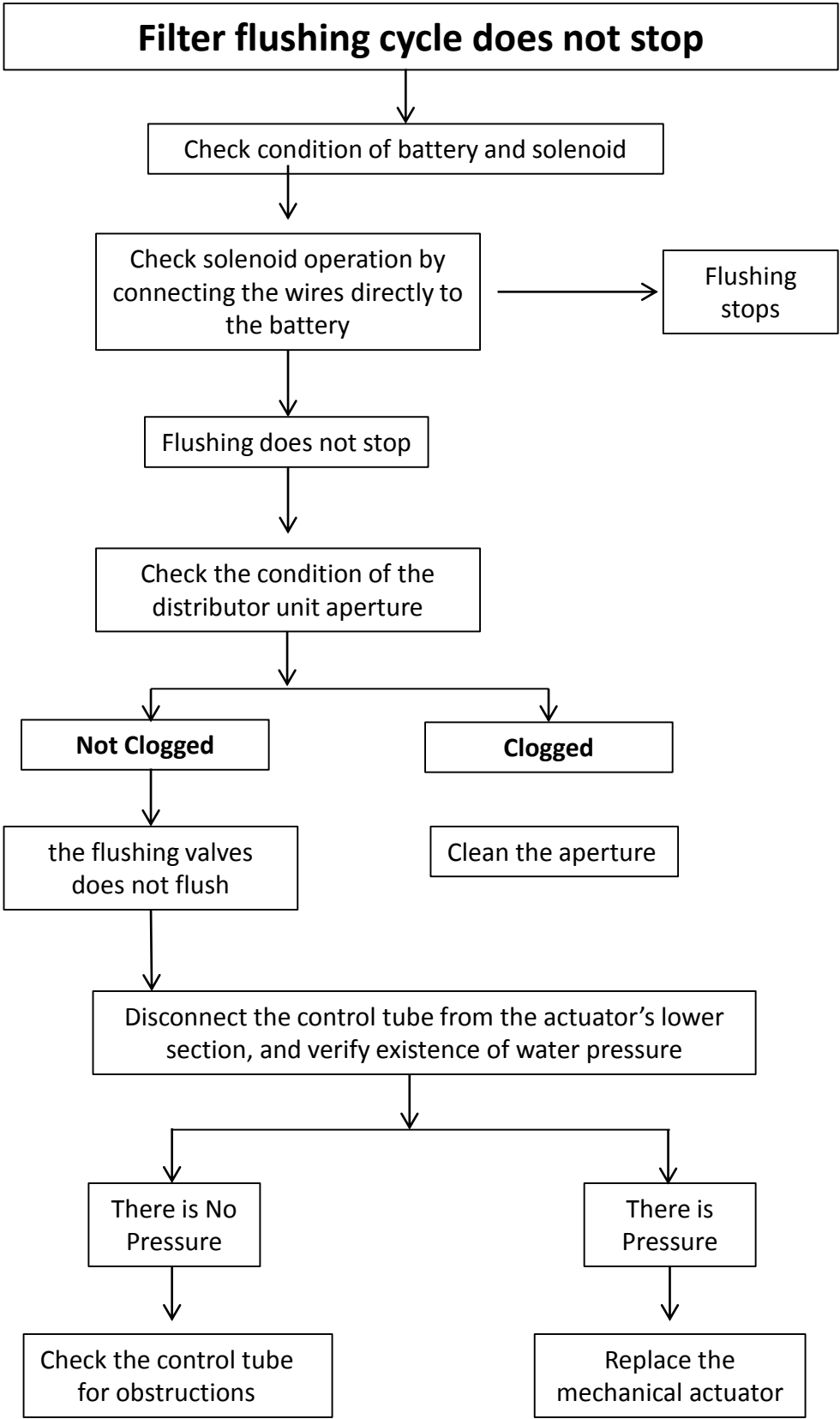
7. Troubleshooting

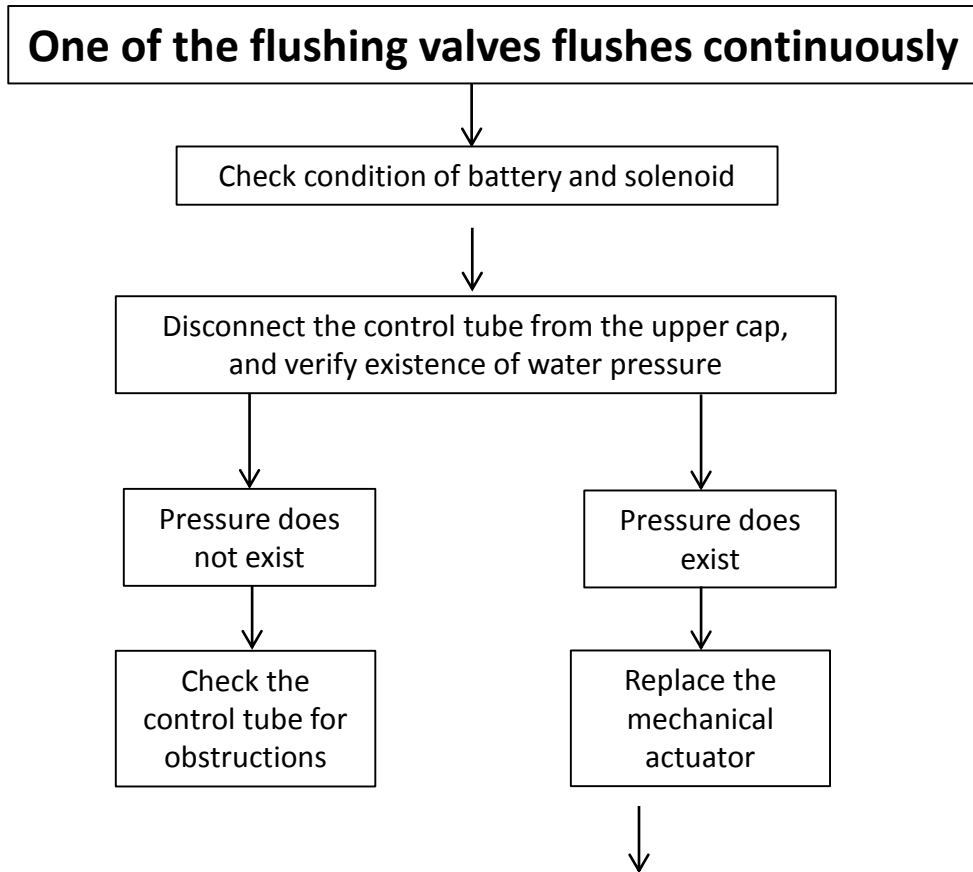
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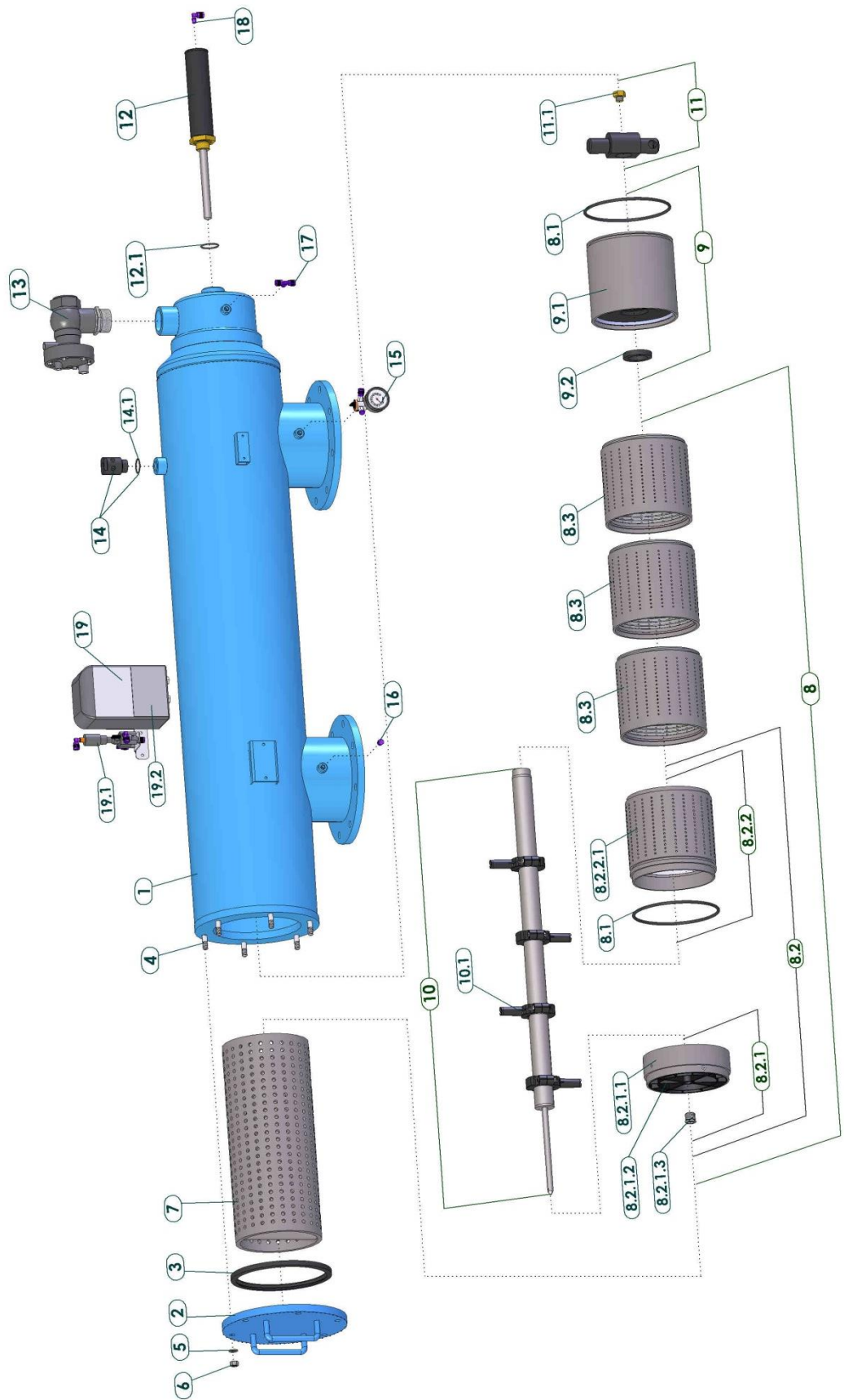






8. IPB

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IPB No	Model	Catalog No	Description
1	AF800N	N/A	FILTER BODY
2	AF800N	N/A	FILTER COVER
3	AF800N	5311250100	U-RING FOR COVER 10"-14"
4	AF803NL-808NL	5292143001-048	STUD 1/2"NC*48 SS304
	AF810NL	5292143001-055	STUD 1/2"NC*55 SS304
5	AF800NL	4121123001	WASHER M12 SS304
6	AF800NL	4112140401	NUT 1/2"NC HOT GALVANIZED
7	AF803NL	E7005600100-01	COARSE SCREEN PVC225 AF803L/4L/4X/N/903/4
	AF804NL		
	AF804NX		
	AF806NL	E7005600102-01	COARSE SCREEN PVC225 AF806X/6L/6XN/6LN
	AF806NX		
	AF808NL	E7005600104-01	COARSE SCREEN PVC225 AF808R/10L/8RN/10LN
	AF810NL		
8	AF803NL	E7005602005-01##	COMP FINE SCREEN PVC225 AF803N
	AF804NL	E7005604003-01##	COMP FINE SCREEN PVC225 AF804NL/6NL/8NR
	AF806NL		
	AF804NX	E7005306001-01-01#	COMP FINE SCREEN PVC225 AF804NX/6NX/8NL/10NL
	AF806NX		
	AF808NL		
	AF810NL		
8.1	AF800N	4081202100-445	O-RING 445
8.2	AF800N	E5005600102-01##-02	FINE SCREEN UPPER SECTION PVC225 AF800N
8.2.1	AF800N	E5005600902-02	UPPER SCREEN ADAPTER PVC225 ASSM AF800N
8.2.1.1	AF800N	W5005600102-01##	FINE SCREEN UPPER SECTION PVC225
8.2.1.2	AF800N	5021640500	SCREEN WHEEL 225 NYLON
8.2.1.3	AF800N	5172391500	SCREEN BEARING F/DIRT COLLECTOR SHAFT AF800N
8.3	AF800N	W5005600300-01##	FINE SCREEN MIDDLE SECTION PVC225
9	AF800N	E5005601101-01	FLUSHING CHAMBER PVC225 AF800N/9800N
9.1	AF800N	W5005601101-01	FLUSHING CHAMBER PVC225 AF800N/9800N
9.2	AF800N	5172635000	DELRIN BEARING FOR D/COLLECTOR 50 AF800N/9800N
10	AF803NL	E7102300201-01	COMP D/COLLECTOR 50 SS304 2 NOZZLE AF803NL
	AF804NL	E7102300401-01	COMP D/COLLECTOR 50 SS304 4 NOZZLE AF804NL-8NR
	AF806NL		
	AF804NX	E7102300601-01	COMP D/COLLECTOR 50 SS304 6 NOZZLE AF804NX-10NL
	AF806NX		
	AF808NL		
	AF810NL		

IPB No	Model	Catalog No	Description
10.1	AF800N	E5122670302	SUCTION NOZZLE (SADDLE) AF800N/9800N
11	AF803NL	E5142610200-01	COMP HYDRAULIC MOTOR PVC AF803NL
	AF804NL	E5142610200-02	COMP HYDRAULIC MOTOR PVC AF804NL/6NL/8NR
	AF806NL		
	AF804NX	E5142610200-03	COMP HYDRAULIC MOTOR PVC AF804NX/6NX/8NL/10NL
	AF806NX		
	AF808NL		
	AF810NL		
11.1	AF800N	W5173390002-01	HEAD COLLECTOR BEARING BRASS AF800N/9800N
12	AF800N	E7160406300	HYD PISTON 40 DELRIN AF800N/9800N
12.1	AF800N	4081040100-223	O-RING 223
13	AF800N	E4510020003-07-1M	COMP HYDRAULIC VALVE DOROT GALIL 09AN 2"BSP
14	AF800N	E5412036301-01	SHORT DISTRIBUTOR DELRIN ASSM
14.1	AF800N	4081034100-126	O-RING 126
15	AF800N	CS11010015	PRESSURE GAUGE SET AF800/9800/500
16	AF800N	4640314002	PLUG 1/4" PLASTIC
17	AF800N	4640214082	MALE BRANCH T 8*1/4"*8 PLASTIC
18	AF800N	4640618082	MALE ELBOW 1/8"*8 PLASTIC
19	AF800N-DC	CSD1100112100	CONTROLLER 1-10 DC + 1 SOLENOID COMPLETE
	AF800N-AC	CSA1100114100	CONTROLLER 1-10 AC + 1 SOLENOID COMPLETE
19.1	AF800N-DC	4430010902	SOLENOID DCL GALSOL 2W
	AF800N-AC	4430030901	SOLENOID AC GALSOL 24V
19.2	AF800N-DC	4440211002	CONTROLLER 1-10 DC 2 PORTS + DP
	AF800N-AC	4440311002	CONTROLLER 1-10 AC 2 PORTS + DP
19.2.1	AF800N-DC	4450110200	EXPENSION CARD FOR 1-10 DC CONTROLLER
	AF800N-AC	4450110300	EXPENSION CARD FOR 1-10 AC CONTROLLER

9. Appendixes

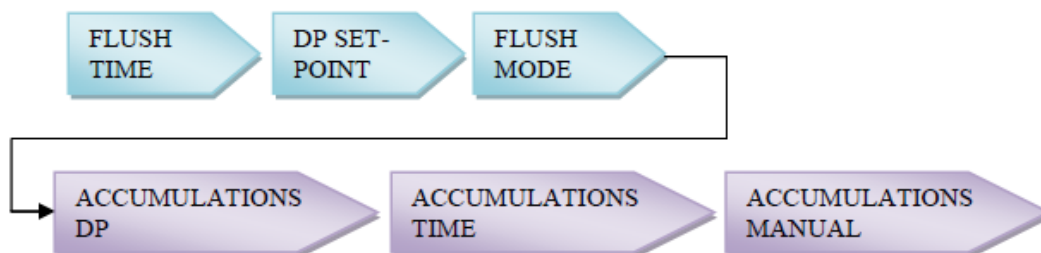
9.1 - Filtron 1-10 (AC/DC)

List of features

- The FILTRON 1-10 is a modular controller suitable for flushing 1 to 10 filters
- The FILTRON 1-10 is available in both DC or AC models
- The FILTRON 1-10 can be ordered with a built-in analog DP sensor that enables reading the actual value as well as triggering the flushing cycle by a preset value.
- By detecting a maximum number of automatic repeating cycles, endless looping problems are automatically eliminated.
- The FILTRON 1-10 can also control a downstream pressure sustaining valve for the cases of systems suffering from pressure shortage.
- The FILTRON 1-10 is equipped with a large customized LCD display and keyboard.
- The FILTRON 1-10 keeps track of all flushing cycles triggered by DP, by time and manually.
- The FILTRON 1-10 is suitable for gravel filters, disc filters and screen filters
- In the DC model – 4 standard “D” alkaline batteries or 12v DC from an external source
- In the AC model – built-in 110V or 220V power supply

The chain of editable fields

The existence of the DP SET-POINT field depends on whether the System contains a built-in electronic DP or not.



Flush time

Defines the duration of the flushing time per station. The following options are selectable:

- 5- 20 sec. in steps of 1 sec.
- 20-55 sec. in steps of 5 sec.
- 1- 6 sec. in steps of 0.5 min

The DP set point

At this field the user defines the pressure difference between the filter's inlet and outlet that when reached, a flushing cycle will take place. This field is meaningless when there is no built in electronic DP sensor included, therefore, the user is expected to define the DP set point to be 00, as a result the actual DP value will appear as (--).

When the pressure is expressed in BAR the range of values is 0.1-2.0 BAR.

When the pressure is expressed in PSI the range of values is 1-3 PSI.

When the system does not include the built-in electronic DP sensor but uses instead an external DP sensor, the flushing request signal arrives in the shape of a closed dry contact at the appropriate input terminals.

The flush mode

The Flush Mode defines how the flushing cycles are triggered. The selectable options are as follows:

OFF	no flushing will take place
By time	in this case the flushing cycle will be repeated in a selected interval or will be triggered by
the DP signal	depending on what happens first. No matter how was the flushing cycle started the interval to the next cycle will start to be measured again after
each ending of	a flushing sequence. The selectable intervals are as follows:
	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60 minutes
	2, 3, 4, 5, 6, 8, 12, 18, 24, 72, 120 hours
dp	flushing will be triggered by DP only

If the “+” and “-” keys are pressed and held down simultaneously, the “Flush Mode” field will show the left time until next cycle, alternately hours and minutes.

The accumulations

The unit accumulates and displays the number of flushing cycles caused by DP, by time, or manually. At each of the accumulation fields, the “+” or “-” keys may be used for cleaning the accumulated value.

The configuration

In order to enter into the configuration process, press and hold down the ENTER key for at least 3 seconds.

The unit will detect how many “plug-in” boards (each of 2 outputs) are used in each particular case.

How will the outputs be allocated will depend on the definitions made during the configuration process described below. The following rules apply:

- 1- Back flush valves will be allocated starting from output 1 and up.
- 2- The last back-flush valve can be canceled and then its allocated output will be left unused.
- 3- Alarm output, Delay-Valve and Main-Valve when defined, will be allocated in this order, right after the last back-flush valve (whether in use or not).

Example:

Assuming there are 3 “plug-in” boards, this makes 6 outputs for use. If there are no Alarm-output, no Delay-Valve and no Main-Valve all the 6 outputs will be allocated for back flush valves.

If additionally a Main-Valve is defined, the first 5 outputs will be allocated for backflush valves and output No. 6 for the Main-Valve. Output No. 5 (of the last backflush valve) can be canceled and left unused. If additionally a Delay-Valve is defined it will be allocated to output 5 right before the Main-Valve, leaving the first 4 outputs for backflush valves, and once again output No. 4 (of the last backflush valve) can be canceled and left unused. If additionally and Alarm-Output is defined it will be allocated before the Delay-Valve leaving only 3 of the first outputs for backflush valves. No. 3 can again be canceled.

During the configuration process the following features are defined:

Main valve	(sustaining valve) YES/NO. When the answer is YES the Pre Dwell delay between the main valve opening and the opening of Station nr. 1 can be defined. The selectable delay steps are: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55 seconds. 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6 minutes
Duel time	delay between stations – 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, or 60 sec.
DP delay	the delay during which the DP sensor reading is expected to remain stable before reaction: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60 sec
Looping limit	the number of consecutive flushing cycles triggered by the DP sensor before deciding that there is an endless looping problem. The options are: 1-10 or “no” which means ignoring the looping problem.
Alarm	YES/NO – allocating one output for alarm activation
Delay valve	YES/NO – allocating an output for Delay Valve activation
View outputs	it is a special mode that enables passing through the list of outputs to see how each output was allocated. Use the + key to change the “no” for a “yes” and confirm by “Enter”, then keep using the + key to pass through the list. At the bottom left corner the ordinal number of the output is displayed and its allocated function appears in large letters at the center of the screen. Notice that the number of possible outputs that can be used is always an even number since the result is from the number of “plug in” boards (each of 2 outputs) included. However, if the number of outputs needed is not an even number, then the last valve allocated for flushing bay be canceled by use of the STOP manual operation key.
Pressure Unit	deciding about the units to be used for pressure measurement. Selecting between BAR or PSI.
Calibration	Zero calibration of the built in electronic DP sensor. While the sensor ports are disconnected Select Calibration = YES
Version display	the last screen of the configuration supplies information about the software version of the controller. The version consists of 4 digits like the following: 00 / 13

Handling “endless looping” problems

As explained before, endless looping problems can be detected when the number of consecutive flushing cycles triggered by the DP sensor exceeds the “looping limit” set during configuration. The fact that endless looping problem was detected will be indicated on the display and will cause the activation of the ALARM output, additionally, the DP indication will no longer be considered as a trigger for flushing. The following flushing cycles will be triggered by the interval count down only.

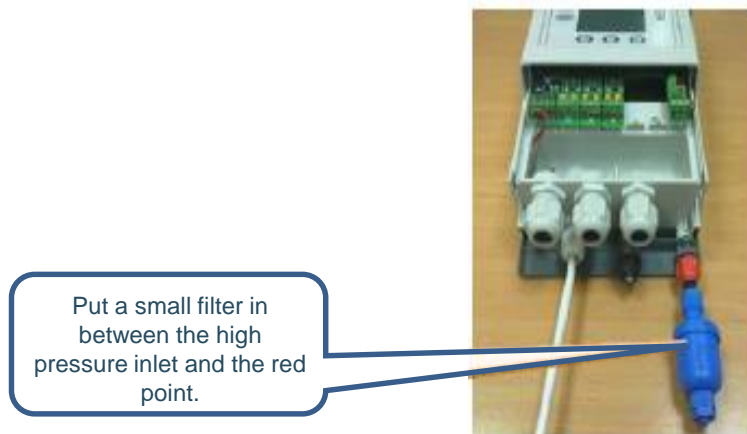
The problem will be considered solved when the constant indication of the DP sensor will be removed.

Handling low pressure

When a closed contact indication is received at the low pressure input of the controller, a symbol will appear blinking at the display. All activities will stop, including the countdown to the next flushing cycle. If the low pressure happens while a flushing sequence is in process, when the low pressure condition finishes, the flushing sequence will start from the beginning rather than continuing from the stop point.

Connecting the DP sensor to the filter system

The DP sensor is connected to the filter system by 2 command tubes: one that comes from the filter inlet (high pressure) which will be connected to the red point; the other that comes from the outlet (low pressure) and will be connected to the black point. It is important to put a small filter of 120 mesh (*not supplied*) between the red point and the high pressure connecting point.



Low battery

The unit has two options of low battery indication: a signal on the screen, when the battery voltage drops to the first level; and a shutdown of all outputs, when the battery drops further into the second level, and the screen will be cleared, leaving only the low battery icon.

Manual activation

A flushing sequence can be manually activated by the MANUAL key, and a “hand” will appear on the display. The same key will be used for manually ending of the sequence.

TECHNICAL DATA

DC MODEL

Power source:	6v supplied by 4 x1.5 "D" size alkaline batteries or one 12v DC dry battery or one 12v rechargeable battery with solar panel of 2
watts	
Outputs:	12v DC latching solenoids
DP:	embedded electronic analog DP sensor or external dry contact DP sensor.
Pressure sensor:	dry contact pressure sensor
Operating temperature:	0-60° C.

AC MODEL

Power source:	220 or 110 v AC 50 o 60 Hz with built-in transformer to
24v AC.	
Outputs:	24v AC solenoids
DP:	embedded electronic analog DP sensor or external dry contact DP sensor
Pressure sensor:	dry contact pressure sensor
Operating temperature:	0-60° C.

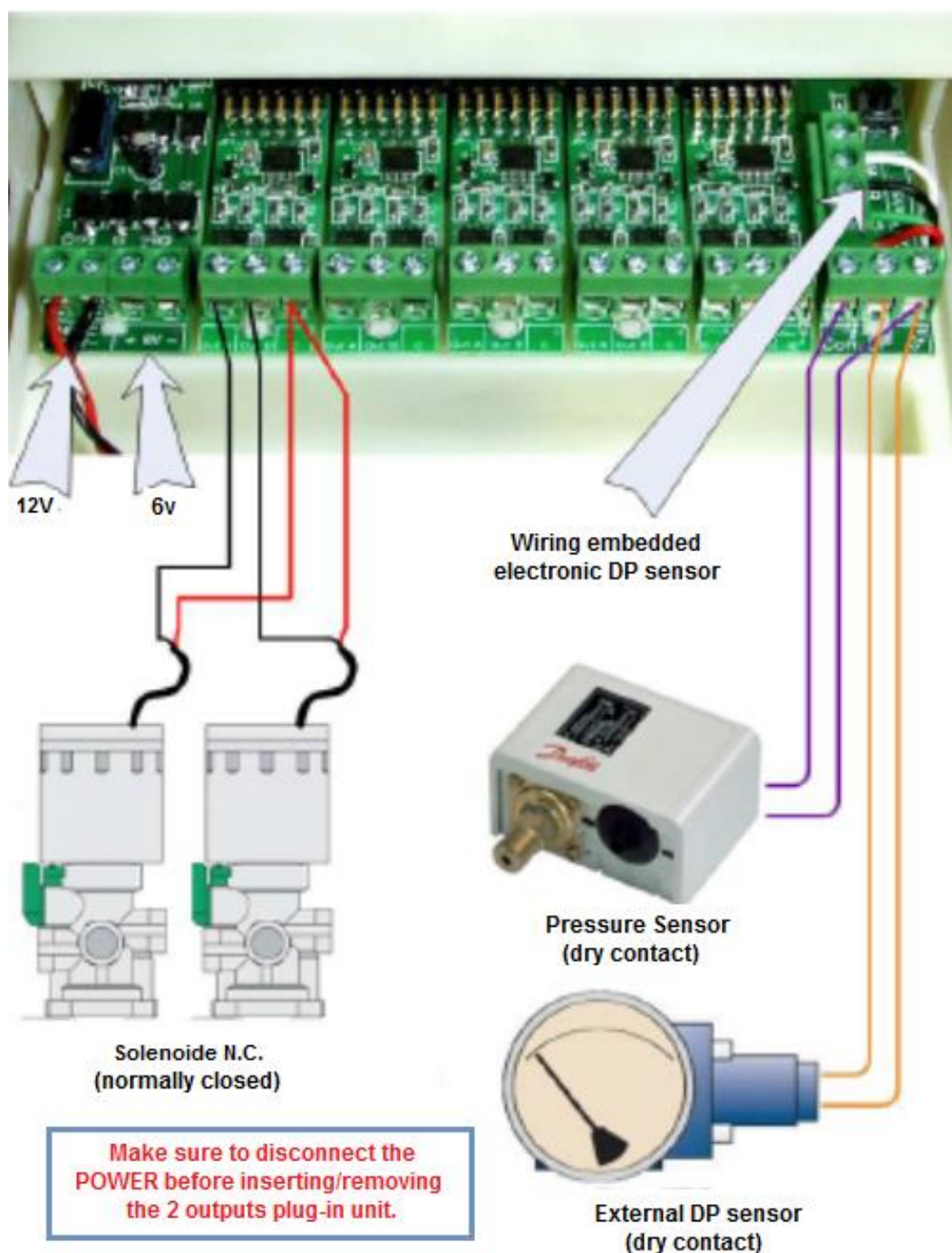
Wiring diagram

DC MODEL

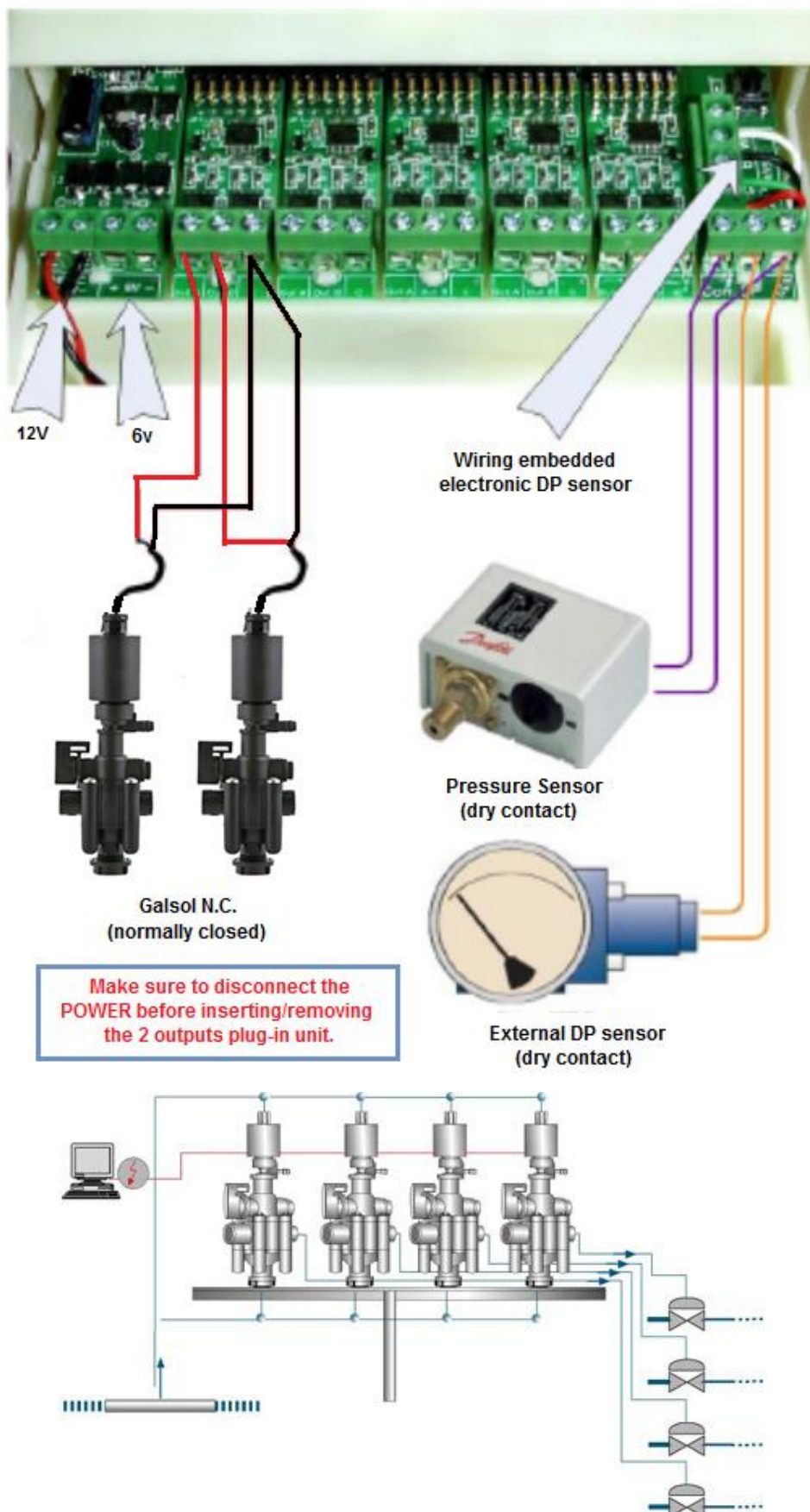
The drawing shows the wiring of the DC model of the controller.

Notice that:

1. The external DP sensor is optional and it is intended for use in case there is no Embedded Electronic DP included.
2. The powering of the unit can be either 6v DC or 24v DC.
3. The solenoids are 12v DC latch



DC MODEL – GALSOL DC



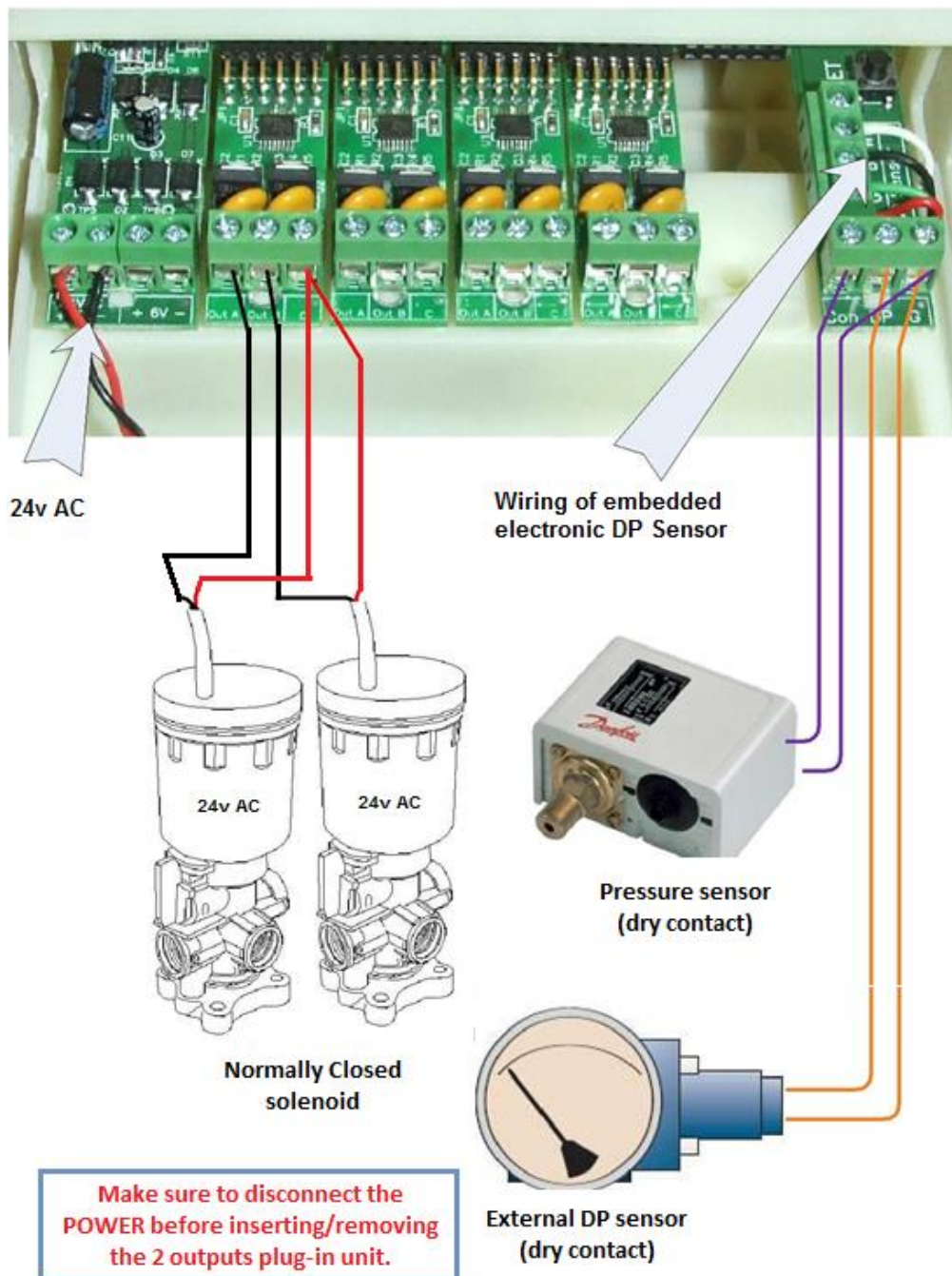
Wiring diagram

AC MODEL

The drawing shows the wiring of the AC model of the controller.

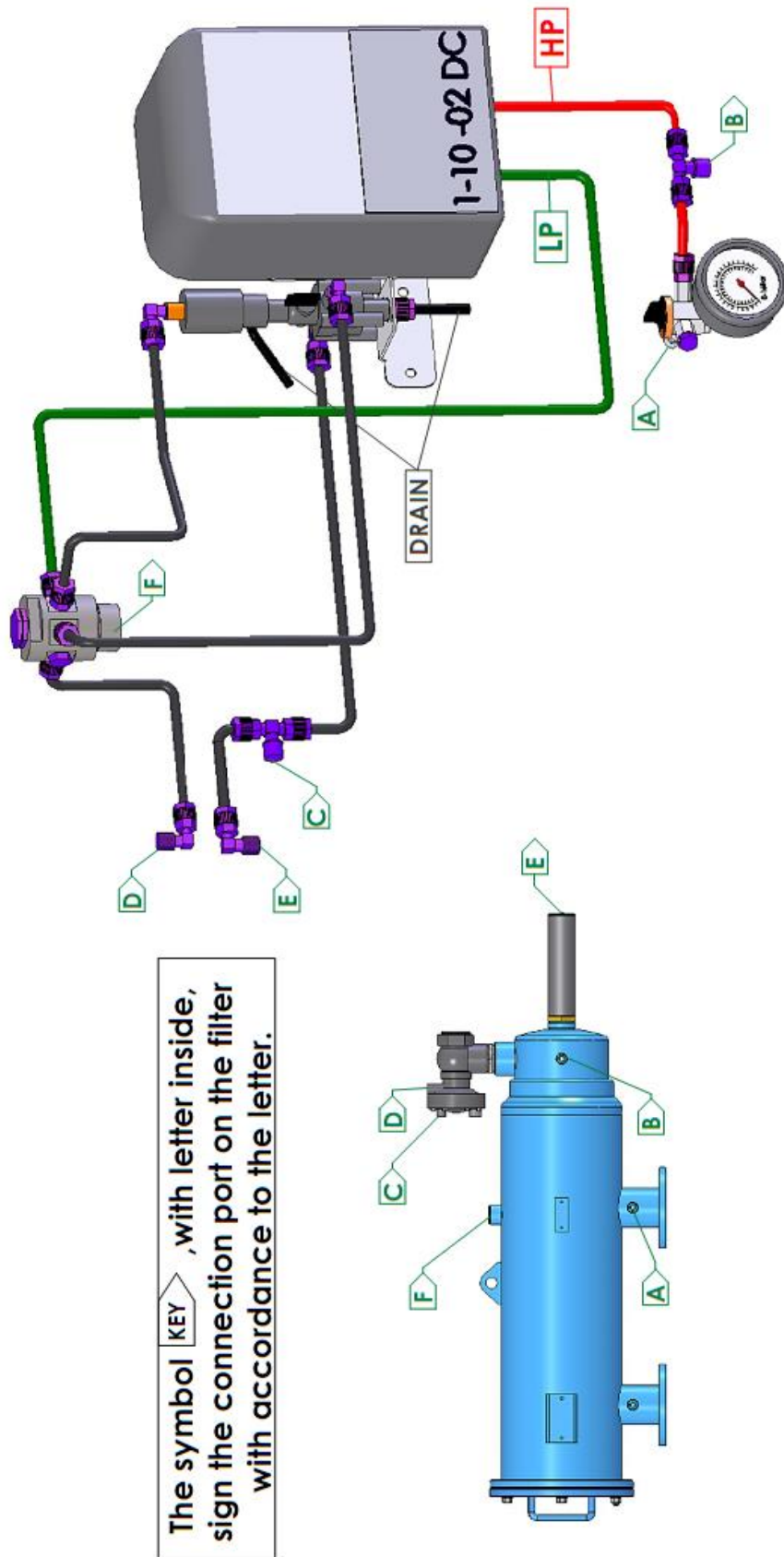
Notice that:

1. The external DP sensor is optional and it is intended for use in case there is no Embedded Electronic DP included.
2. The powering of the unit is by 24v AC transformed from 220/110 v AC.
3. The solenoids are 24v AC.

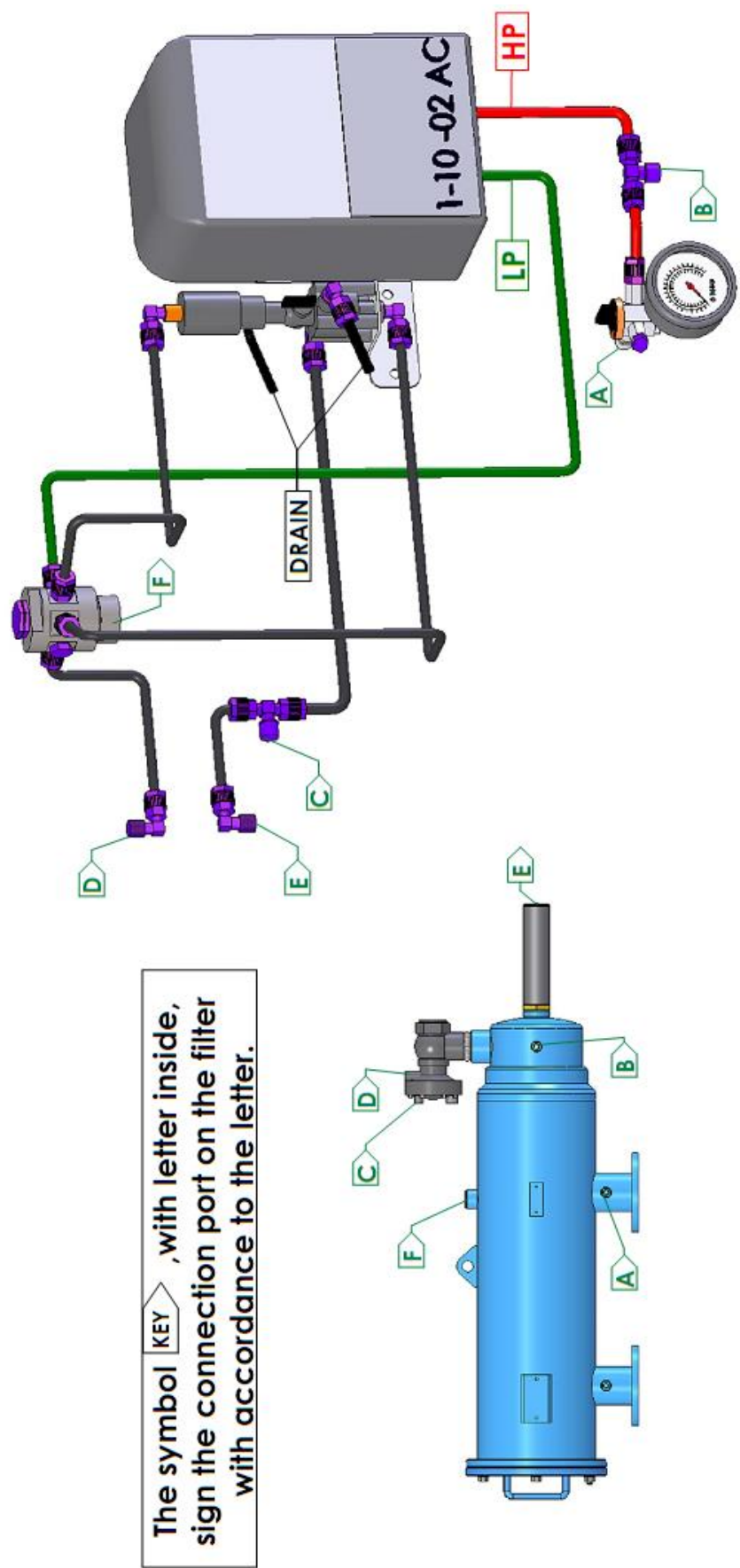


9.2 - Control Loops Schematic Drawing

ONE VALVE hydraulic Scheme DC1-10 CTRL AF800N



ONE VALVE hydraulic Scheme AC1-10 CTRL AF800N



10. 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.

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