ENGLISH

YAMIT FILTRATION

AF-800 Series Automatic Hydraulic Self-Cleaning Screen Filter

SERVICE & MAINTENANCE MANUAL

V13-Oct-20
90061080001

YAMIT Filtration & Water Treatment, POBox232, MoshavTnuvot 4283000, Israel
Tel: +972-4-6220006 Fax: +972-4-6220042 e-mail: yamit@yamit-f.com www.yamit-f.com

Table of Contents

Subject			Page No.
1.	Introduction		3
2.	Safety Instruction		3
3.	Description & Operation		4
4.	Technical Data		6
5.	Initial Installation & Operation		8
6.	Maintenance & Periodical Checks		10
	6.1	6V (4X1.5V) Batteries Removal and Installation	10
	6.2	Control Card Removal and Installation	11
	6.3	Solenoid Removal and Installation	13
	6.4	Hydraulic Piston Assembly Removal and Installation	14
	6.5	Coarse Screen Removal and Installation	15
	6.6	Fine Screen Assembly Removal and Installation	16
	6.7	Dirt Collector Removal and Installation	18
	6.8	Periodical Checks	20
7.	Troubleshooting		22
8.	IPB		27
9.	Appendix		34
	9.1	Filtron 1-10 (DC/AC)	34
	9.2	Control Loops Schematic Drawing	42
		ONE VALVE hydraulic Scheme DC1-10 CTRL AF800	42
		ONE VALVE hydraulic Scheme AC1-10 CTRL AF800	43
		THREEE VALVES hydraulic Scheme DC1-10 CTRL AF800	44
		THREEE VALVES hydraulic Scheme AC1-10 CTRL AF800	45
10.	International Warranty		46

1. Introduction

General

YAMIT Filtration & Water Treatment (hereinafter **YAMIT**) congratulates you on purchasing the new **AF-800 SERIES** self-cleaning filter. This filter now joins the wide family of filters produced and supplied by **YAMIT** or 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.

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. Prior to installation or handling of the filter, read carefully the installation and operation instructions.
4. 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.
5. Verify that the filter housing is grounded to the appropriate location.
6. Confirm AC power disconnection prior to service.
7. Confirm filter draining prior to service.
8. Take precautions while lifting, transporting or installing the filter.
9. Installation and operation of the filter should be performed so as to avoid direct water splashing on the control unit.
10. Confirm that filter weight, when full, meets the support construction requirements.
11. Prior to installation confirm line pressure matches filter's operational pressure.
12. During installation, use standard flanges and connections only.
13. Check that all filter flanges bolts are properly secured.
14. Please note, the filter enters a flushing mode automatically, without prior warning.
15. Use original parts only, while servicing the filter.
16. No changes or modifications to the equipment are allowed.
17. Do not perform any maintenance activities other than those given in this manual.

3. Description & Operation

Filter Assembly General Description (Figure 1)

The **AF-800 SERIES** self-cleaning filter enables high quality filtration from grades of 10-3000 micron from various types of fluid sources such as sewage, reservoirs, rivers, lakes, and wells.
The **AF-800 SERIES** filter contains the following parts:

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

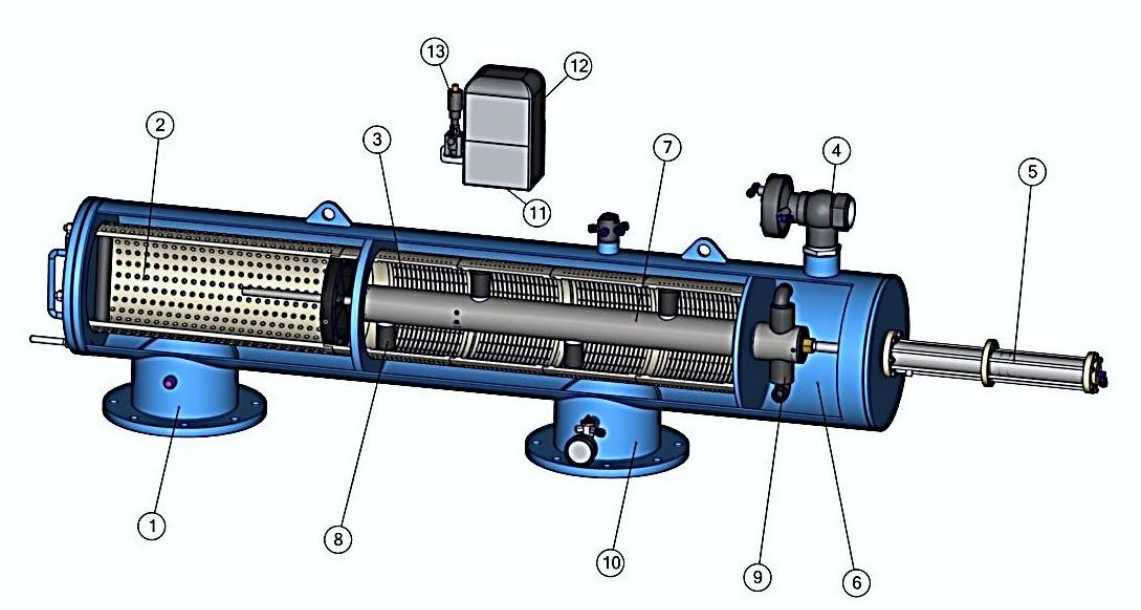


Figure 1: Filter Assembly

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 (ΔP) reaches the preset value in the electronic control unit (12), a series of events is triggered while the water continues to flow to the system units. 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 whole 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 cycle, with clean and filtered water flowing through the “Outlet” (10).

General Description of the Electronic Control System

The electronic system (12) controls the cleaning process based on time difference (DT) and / or through the differential pressure indicator – (11)(DP), that close a circuit and triggers the electronic control unit after 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 25 seconds.

4. Technical Data

Standard Features

- Minimum operating pressure: 2 bar (30 psi)
- Maximum operating pressure: 10 bar (150 psi)
- Clean filter pressure loss: 0.1 (2 psi)
- Maximum water temperature: 65°C (149°F)
- Filtration range: 50-3000 micron
- Control voltage: 6V DC, 24V AC
- Flush water consumption (at minimum working pressure): 80 liters (21 gallons)
- Filter housing materials: carbon steel coated with baked on epoxy

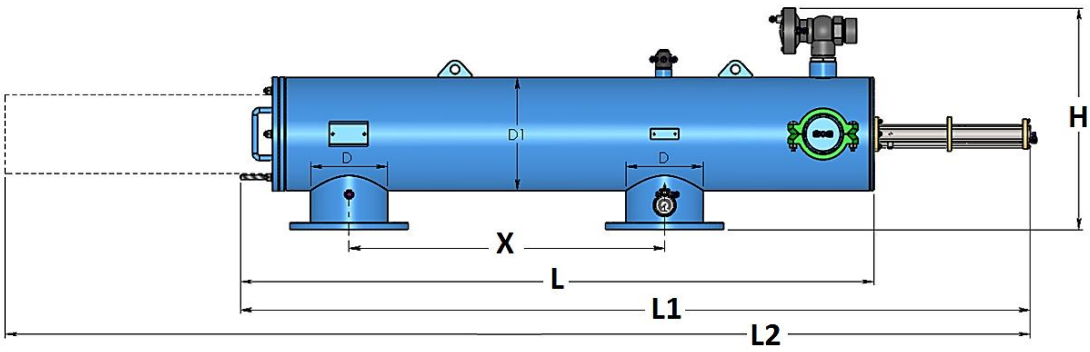
Measurements & Weight

Model	In/Out D (mm)	(in)	D1 (in)	H (mm)	(in)	X (mm)	(in)	L (mm)	(in)	L1 (mm)	(in)	L2 (mm)	(in)	Shipping weight (kg)	(lb)	Packaging volume LxWxH (m)	(ft)
AF810X	250	10	16	720	28.4	1100	43.3	2700	106.3	3145	123.8	5420	213.4	405	893	3.4x1.0x0.7	11.1x3.3x2.4
AF812R	300	12	16	720	28.4	1100	43.3	2700	106.3	3145	123.8	5420	213.4	410	904	3.4x1.0x0.7	11.1x3.3x2.4
AF814R	350	14	18	770	30.3	1270	50.0	2700	106.3	3145	123.8	5420	213.4	482	1063	3.4x1.0x0.7	11.1x3.3x2.4
AF816R	400	16	18	770	30.3	1270	50.0	2700	106.3	3145	123.8	5420	213.4	500	1102	3.4x1.0x0.7	11.1x3.3x2.4
AF816X	400	16	24	925	36.4	1270	50.0	2705	106.5	3150	124.0	5420	213.4	695	1532	3.4x1.2x0.9	11.1x3.9x3.2

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 (2 bars / 29 psi).



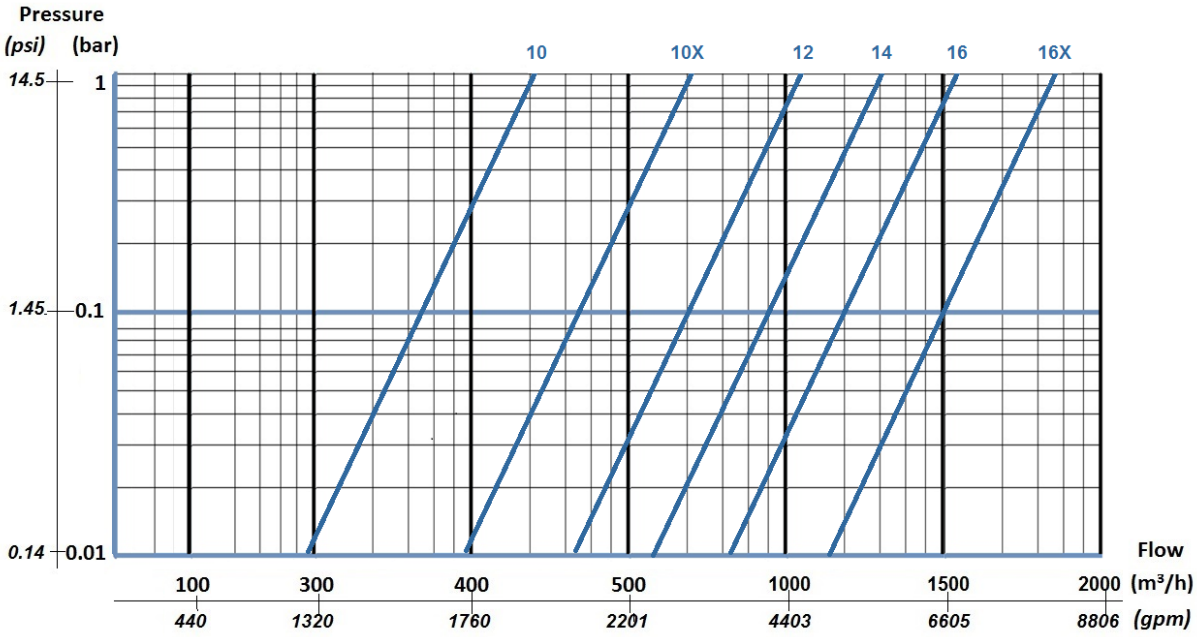
Flow Rate

Model	In/Out D (mm)	(in)	Maximum Flow Rate (m3/h)	(gpm)	Screen area (cm^2)	(in^2)	Flushing Flow Rate (m3/h)	(gpm)	Flushing volume (m^3)	(gal)
AF810X	250	10	450	1980	11710	1815	90	396	0.250	66.04
AF812R	300	12	600	2640	11710	1815	90	396	0.250	66.04
AF814R	350	14	900	3960	12990	2015	90	396	0.250	66.04
AF816R	400	16	1100	4840	12990	2015	90	396	0.250	66.04
AF816X	400	16	1500	6600	17020	2640	90	396	0.250	66.04

Filtration Grade Conversion Table

Micron	50	80	100	120	150	200	300	400	500	800	1000	1500	2000	3000
Mesh	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. 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 or 2” diameter 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 the “Initial Operation” (See Figure 3).

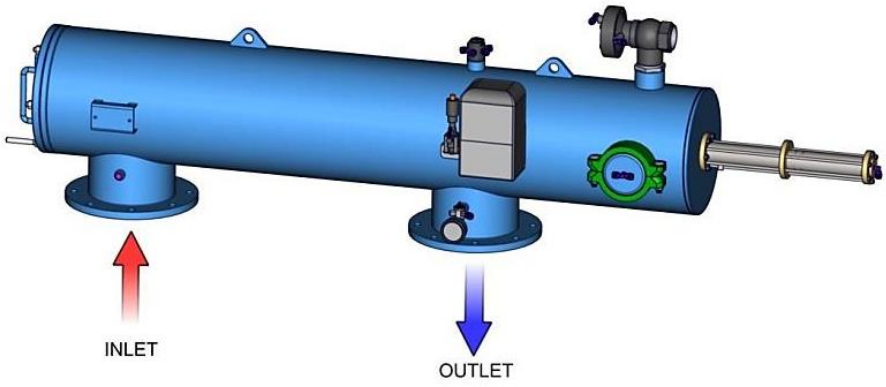


Figure 2: Initial Filter Installation

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.
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

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 "bip" 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 (closing of 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)

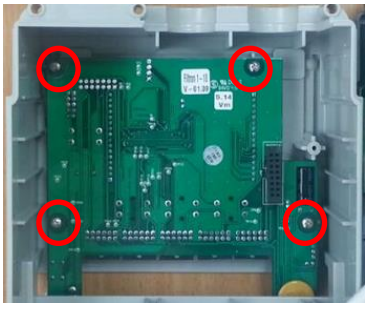
4. Turn on back and separate the back cover:

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 & Installation

The solenoid hydraulically controls the flushing valve's operation.

1. Remove the upper cover, 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 2 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. Install the nut on the solenoid lower section.
9. Install the fittings on the ports of the new solenoid.
10. Connect the 2 electrical wiring to the control card terminals (See Figure 5).
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)

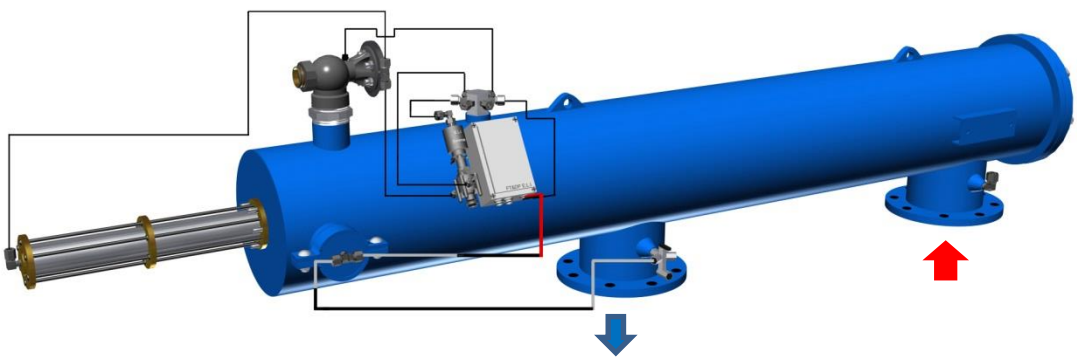


Figure 5: Solenoid Removal & Installation

6.4 - Hydraulic Piston Assembly Removal & Installation

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. Remove the six nuts and washers connecting the piston assembly's to the filter housing.
5. Carefully remove the piston assembly.
6. Remove the seal from the old piston assembly forward section.
7. Position the forward seal into the new piston assembly.
8. Lubricate the forward seal with **silicon grease**.
9. Carefully slide the new piston assembly into the filter housing.
10. Install the six nuts and washers connecting the piston assembly's to the filter housing.
11. Connect the control tube to the piston assembly's upper section.
12. Open the inlet and the outlet line valves.
13. Check for leaks.

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

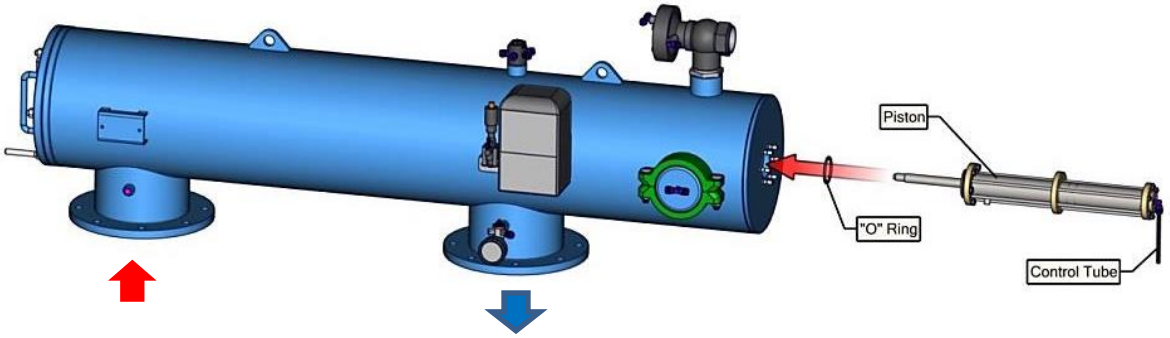


Figure 6: Piston Assembly Removal & Installation

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 body seal from the cover groove.
5. Pull the coarse screen out of the fine screen assembly using the gripping handle (On 10" filters and above, the coarse screen is screwed into the fine screen assembly).
6. Slide the new coarse screen into the fine screen assembly using the gripping handle (On 10" filters and above, the coarse screen is screwed into the fine screen assembly).
7. Verify that the straight side of the body seal fits into the groove located in the cover.
8. 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 by disconnecting the low pressure tube from the differential pressure indicator (closing of the electrical circuit) – re-connect it immediately as flushing starts.
12. Verify that the hydraulic flushing valve closes after 10seconds.
13. Perform an additional flushing cycle manually by pushing manual bottom (M on the screen display). (See Figure 3)

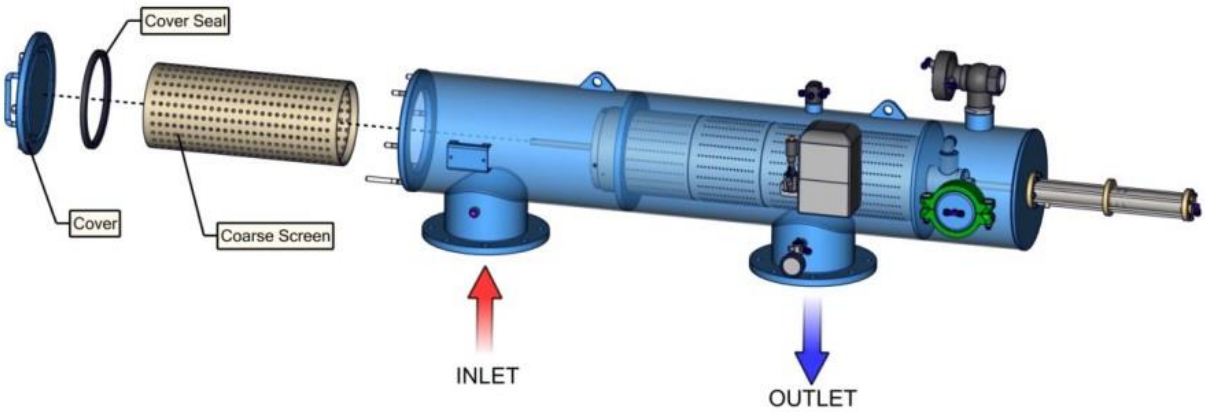


Figure 7: Coarse Screen Removal & Installation

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.
5. Remove the body seal from the cover groove.
6. Pull the coarse screen according to paragraph "**Coarse Screen Removal & Installation**".
7. Pull the fine screen assembly out of the filter housing assembly.
8. Remove the screen bearing from the fine screen assembly upper section.
9. Remove both upper and lower seals from the old fine screen assembly.
10. Position both upper and lower seals into the new fine screen assembly.
11. Lubricate upper and lower seals with **silicon grease**.
12. Install the screen bearing into the new fine screen assembly upper section.
13. Slide the new fine screen assembly into the filter housing assembly (Verify that the dirt collector axis passes through the screen bearing).
14. Slide the coarse screen into the fine screen assembly, refer to "**Coarse Screen Removal & Installation**"
15. Verify that the straight side of the body seal fits into the groove located in the cover.
16. 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 by disconnecting the low pressure tube from the differential pressure indicator (closing of the electrical circuit) – re-connect it immediately as flushing starts.
20. Verify that the hydraulic flushing valve closes after 10 seconds.
21. Perform an additional flushing cycle manually by pushing the manual bottom (M on the screen display). (See Figure 3)

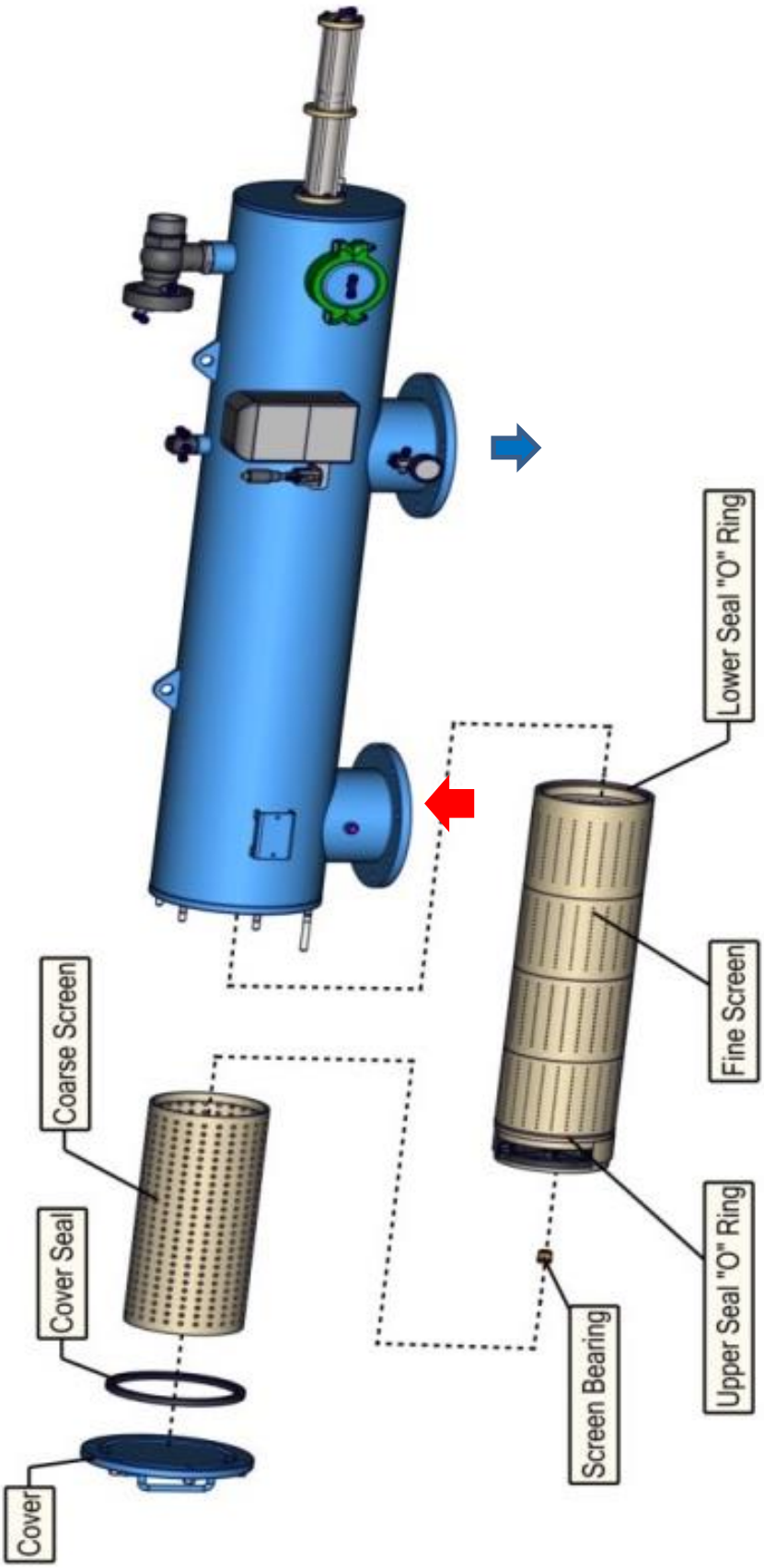


Figure 7: Fine Screen Assembly Removal & Installation

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 body seal from the cover groove.
5. Remove quick coupling holding the service opening cover to the filter housing and remove it.
6. Remove the piston assembly according to paragraph "**Hydraulic Piston Assembly Removal & Installation**".
7. Through the service opening, remove the bearing from the dirt collector aft section using a 28 mm (1¼") spanner.
8. Manually rotate the dirt collector until hydraulic motor spokes appears at the service opening.
9. Pull the hydraulic motor from the dirt collector through the service opening.
10. Pull the coarse screen according to paragraph "**Coarse Screen Removal & Installation**".
11. Pull the fine screen assembly according to paragraph "**Fine Screen Assembly Removal & Installation**".
12. Remove the defective dirt collector out of the filter housing assembly.
13. Install the new dirt collector into the filter housing assembly.
14. Insert the hydraulic motor into the dirt collector through the service opening (verify that the hydraulic motor's round hole (not oval) is located in front of the dirt collector threading).
15. Install the bearing into the dirt collector aft section using a 28 mm (1¼") spanner.
16. Position the service opening cover in its position and tied it with the couplings.
17. Install the piston assembly according to paragraph "**Hydraulic Piston Assembly Removal & Installation**".
18. Install the fine screen assembly according to paragraph "**Fine Screen Assembly Removal & Installation**". Verify that the dirt collector axis passes through the screen bearing
19. Slide the coarse screen into the fine screen assembly using the gripping handle, refer to "**Coarse Screen Removal & Installation**" (On 10" filters and above, the coarse screen is screwed into the fine screen assembly).
20. Verify that the straight side of the body seal fits into the groove located in the cover.
21. Install the nuts and washers connecting the cover to the filter housing.
22. Open the inlet and outlet line valves.
23. Check for leaks.

WARNING

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

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

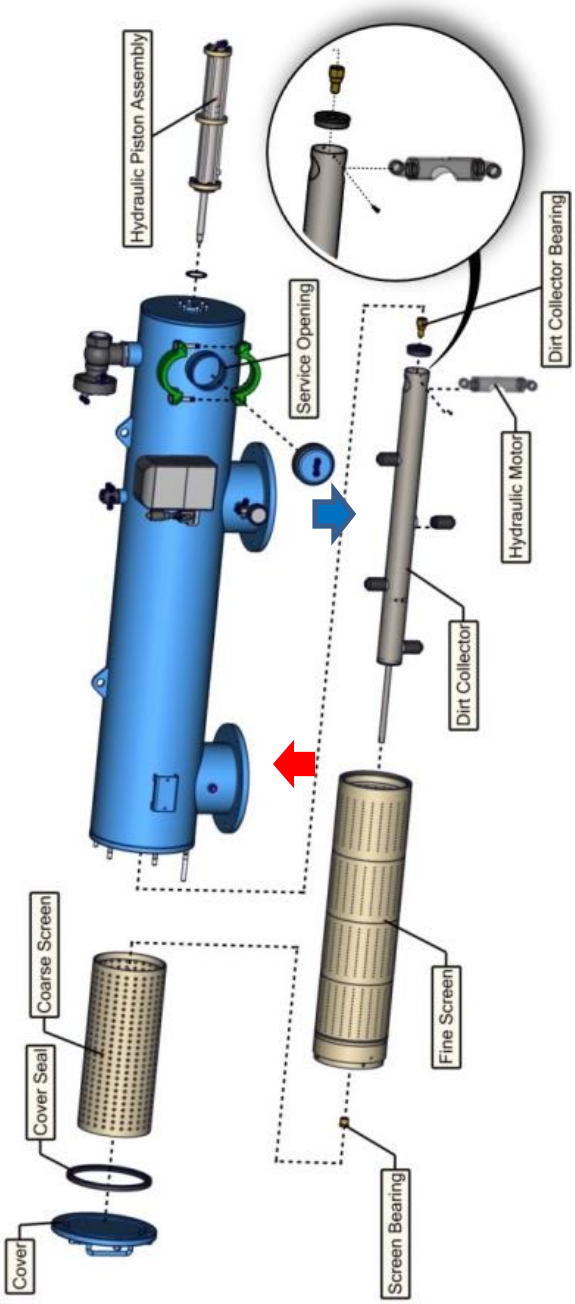


Figure 8: Dirt Collector Removal & Installation

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 & Installation**".
2. Check the condition of the coarse screen. If defective, replace according to "**Coarse Screen Removal & Installation**".
3. Check the condition of the fine screen assembly. If defective, replace according to "**Fine Screen Assembly Removal & Installation**".
4. Check the condition of the dirt collector bearing and screen bearing. If any of the bearings are deformed, (oval), replace with a new one.
5. Check the mechanical condition of the hydraulic piston assembly. Verify piston's free movement. If defective, replace according to "**Hydraulic Piston Assembly Removal & Installation**".
6. Check the dirt collector suction nozzles height (see table). If defective, replace according to "**Dirt Collector Removal & Installation**".
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	X(Nozzle Height)
AF 810R / 812R / 810 X	83 mm
AF 814R / 816PR	99 mm
AF816X	143 mm

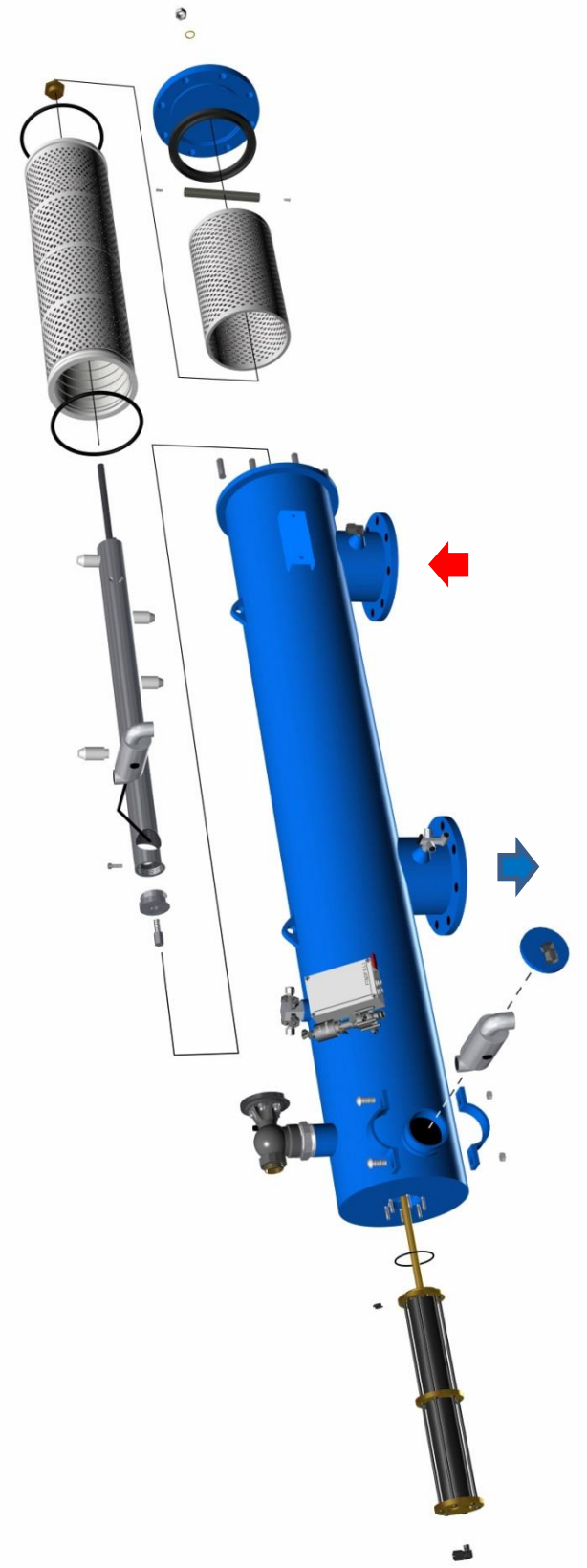
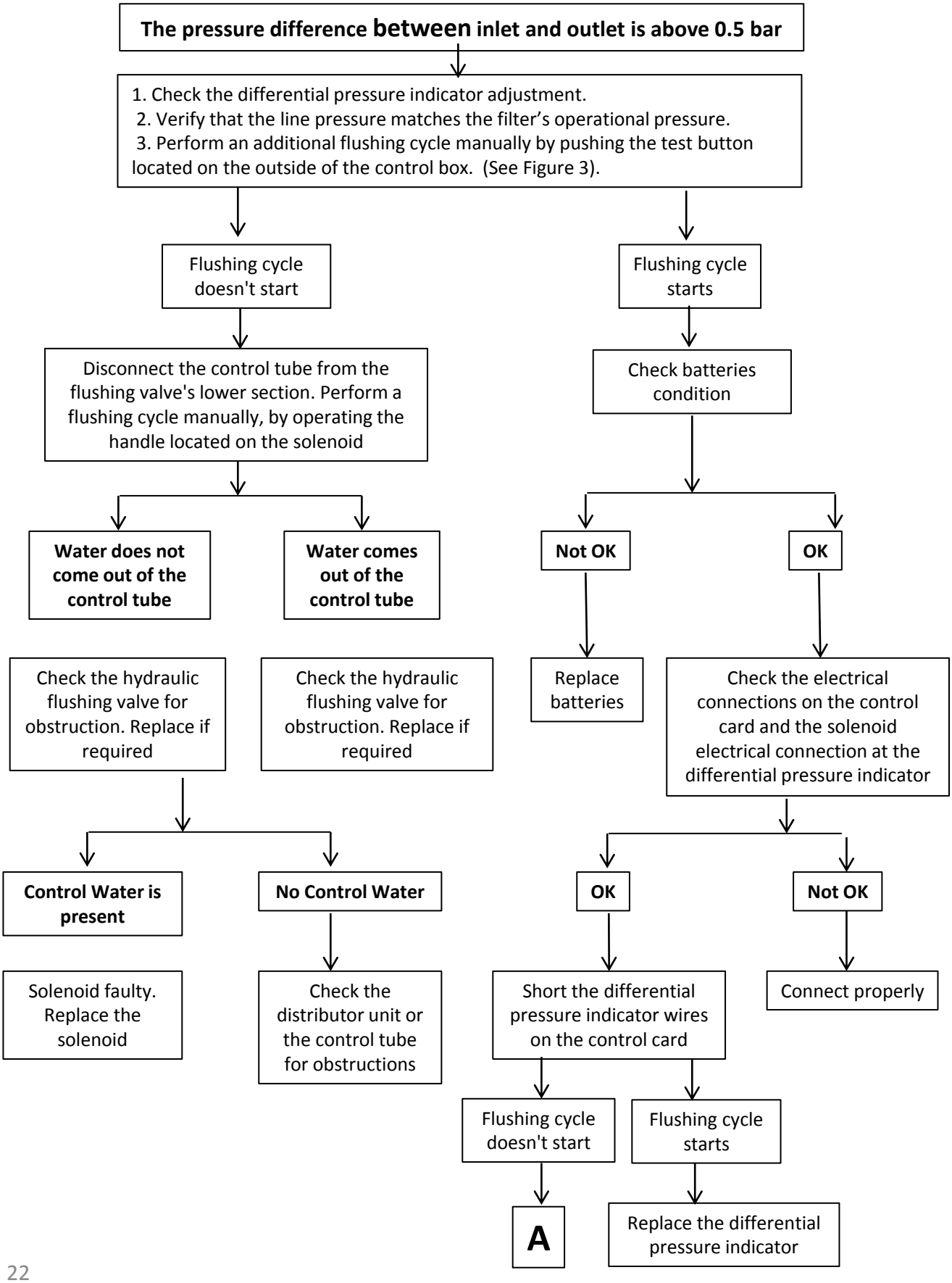
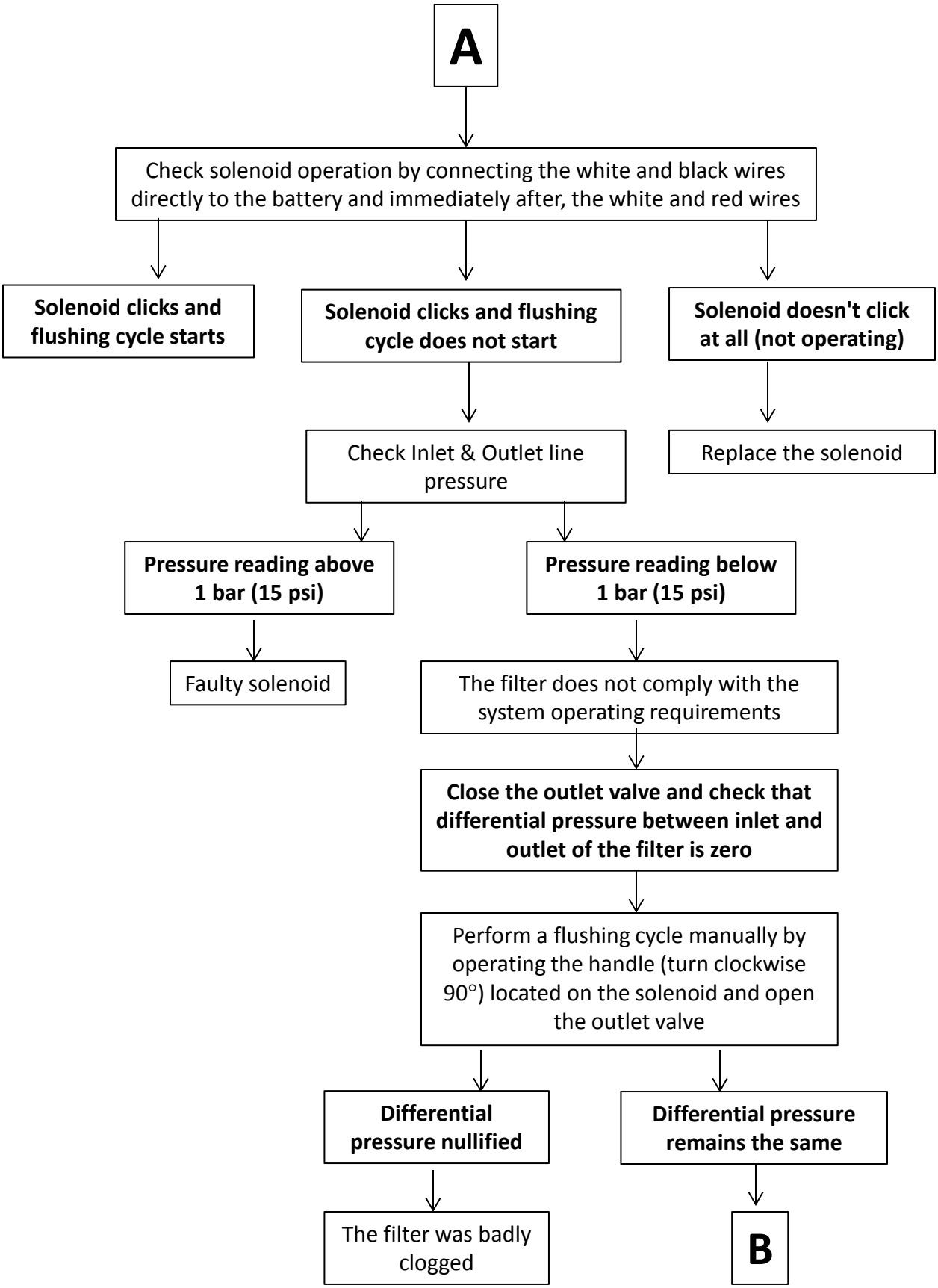
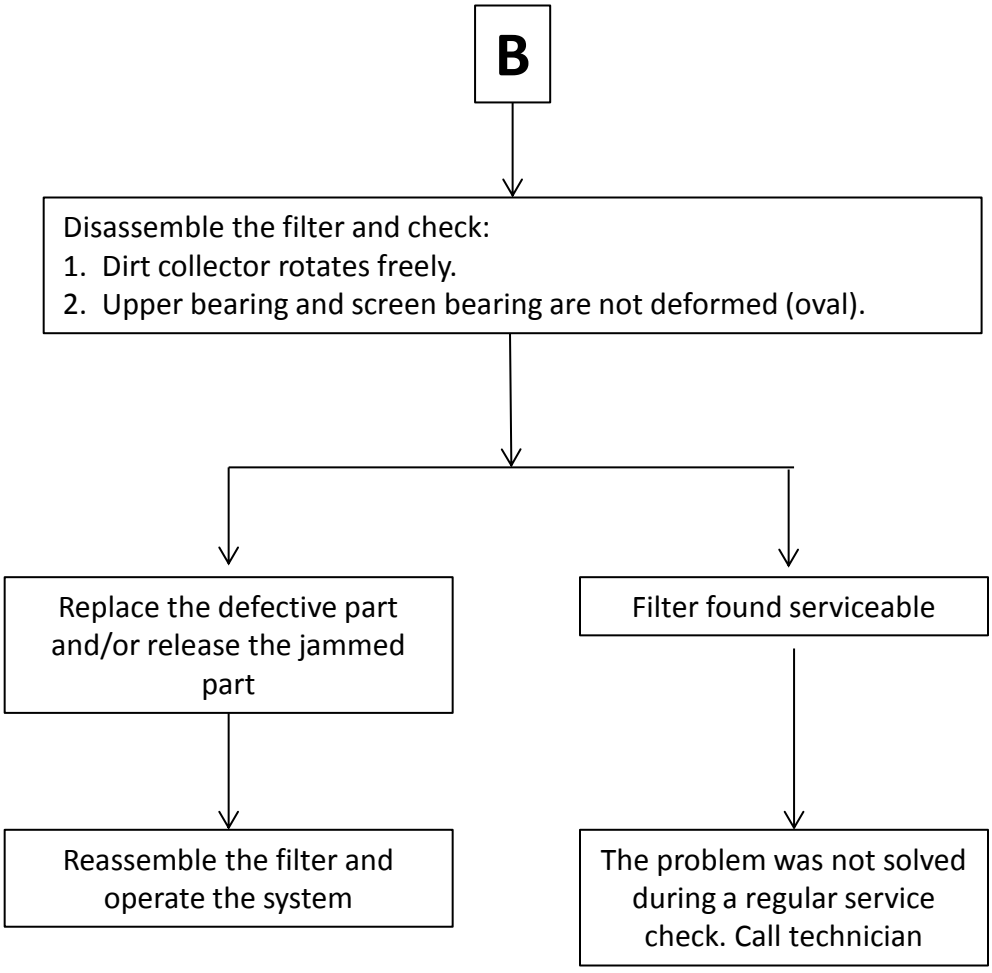


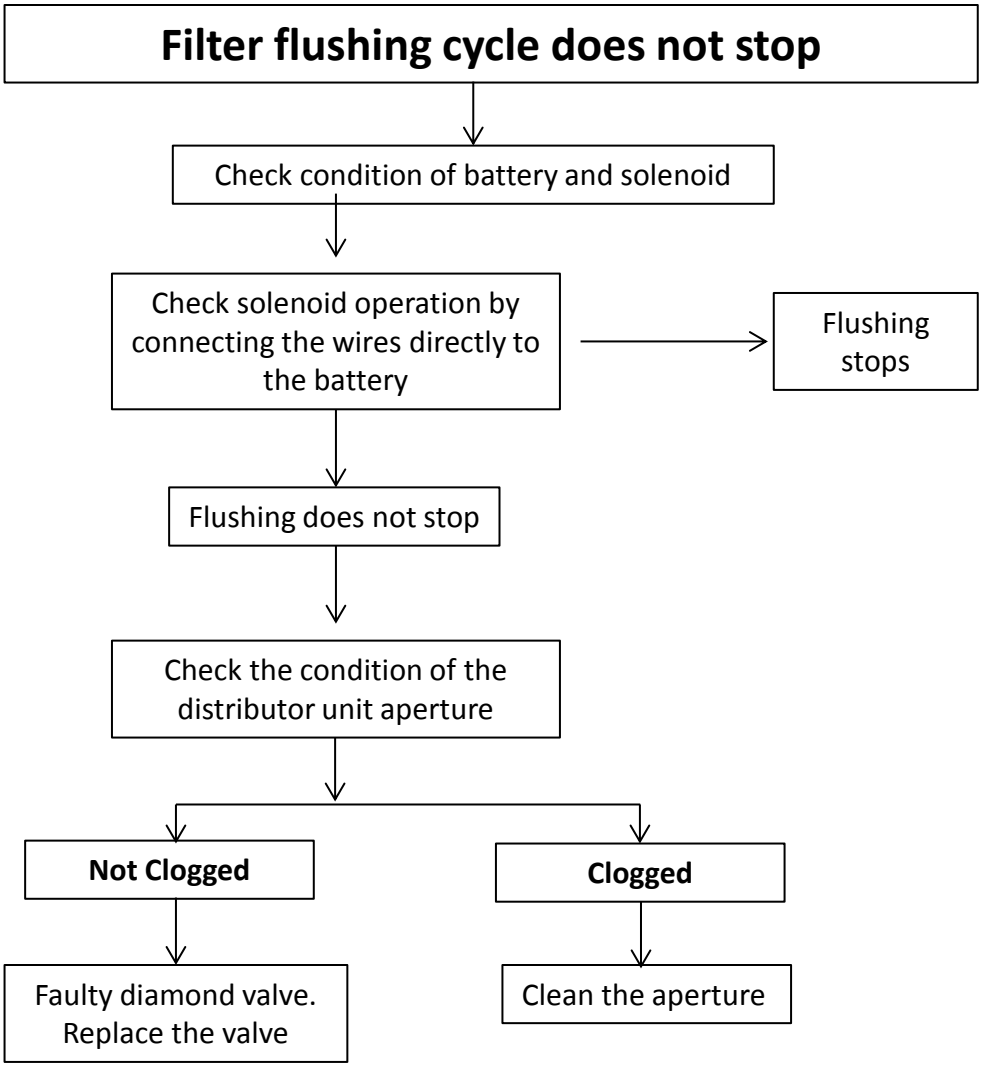
Figure 9: Periodical Checks

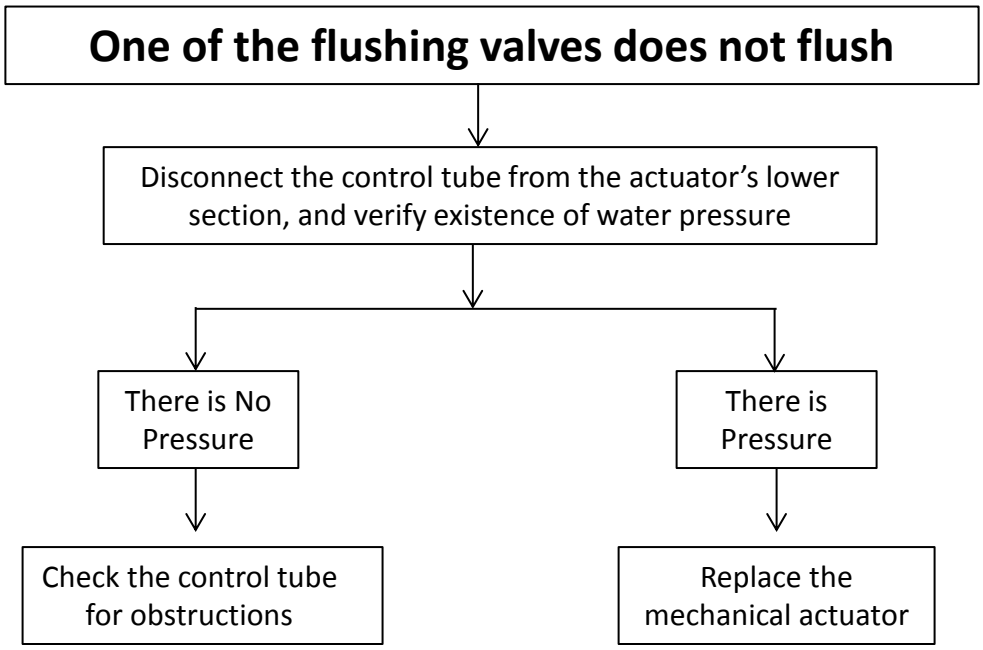
7. Troubleshooting

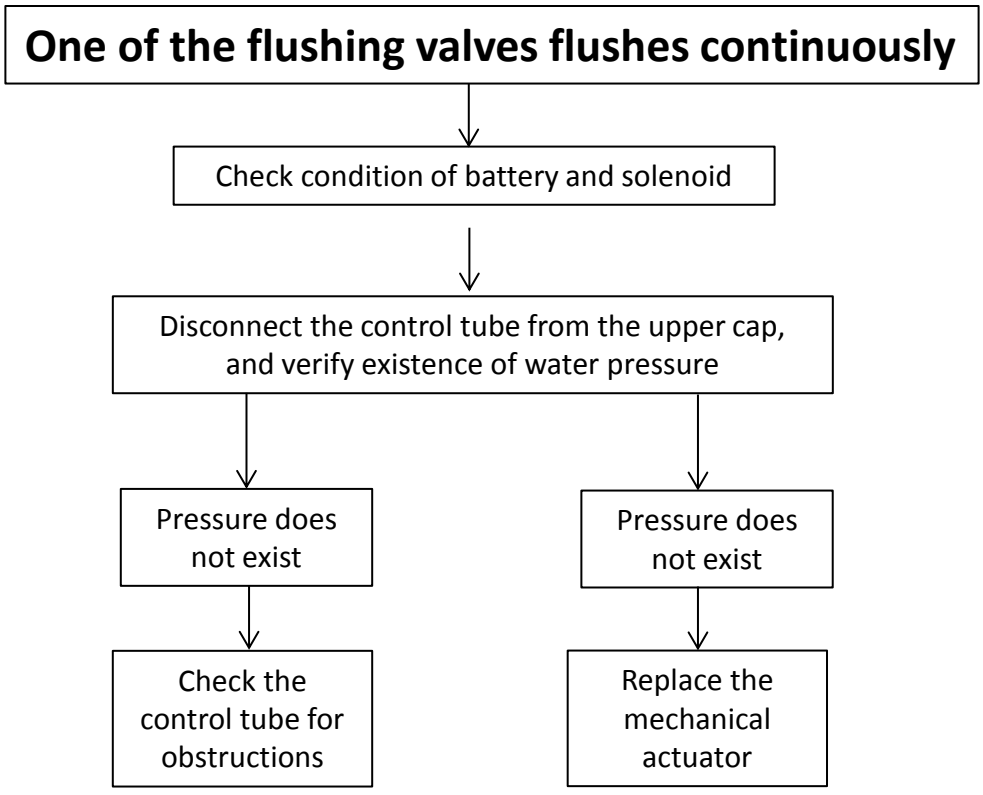



A
Check solenoid operation by connecting the white and black wires directly to the battery and immediately after, the white and red wires
Solenoid clicks and flushing cycle starts
Solenoid clicks and flushing cycle does not start
Solenoid doesn't click at all (not operating)
Check Inlet & Outlet line pressure
Replace the solenoid
Pressure reading above 1 bar (15 psi)
Pressure reading below 1 bar (15 psi)
Faulty solenoid
The filter does not comply with the system operating requirements
Close the outlet valve and check that differential pressure between inlet and outlet of the filter is zero
Perform a flushing cycle manually by operating the handle (turn clockwise 90°) located on the solenoid and open the outlet valve
Differential pressure nullified
Differential pressure remains the same
The filter was badly clogged
B

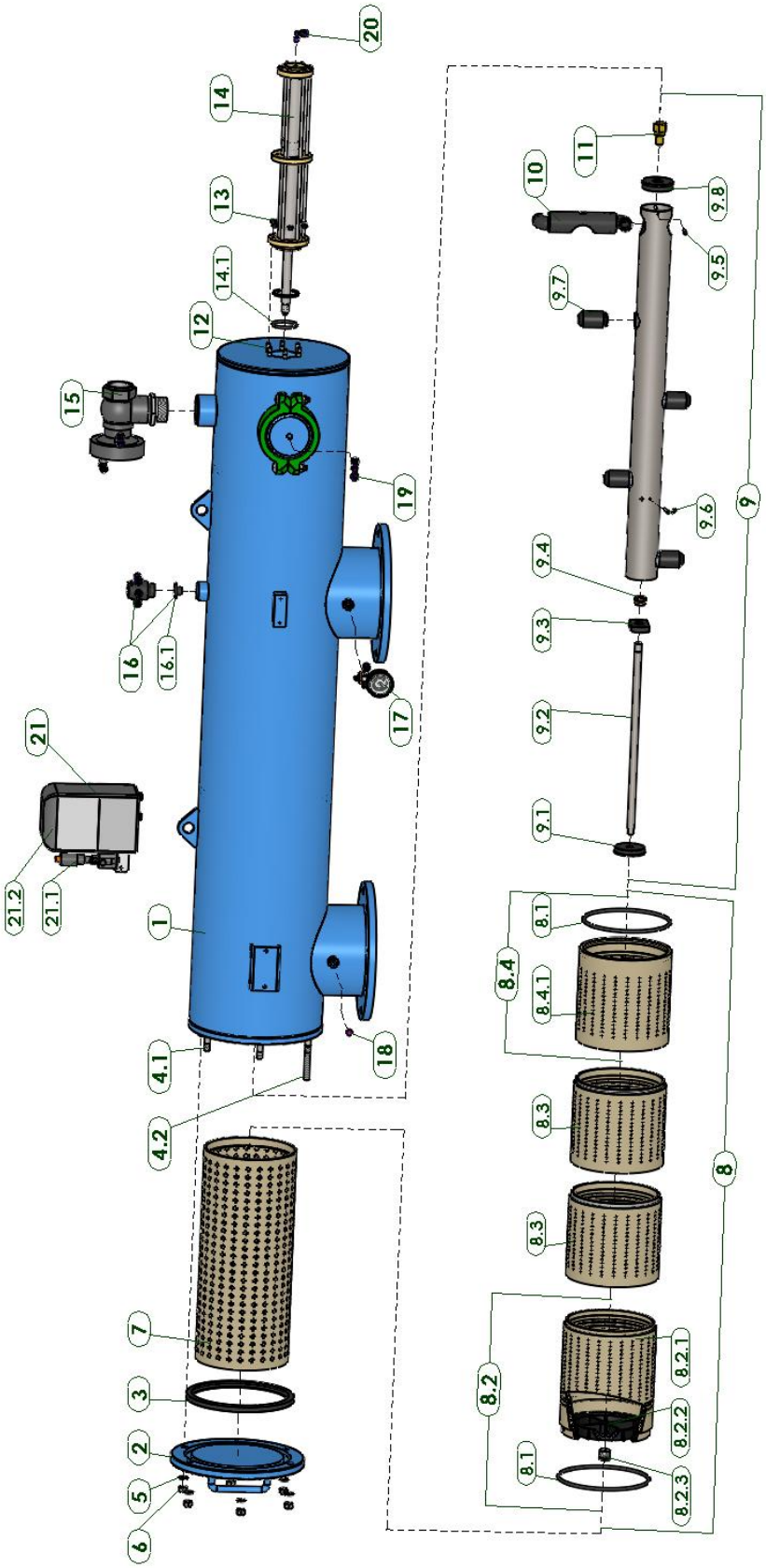

B
Disassemble the filter and check:
1. Dirt collector rotates freely.
2. Upper bearing and screen bearing are not deformed (oval).
Replace the defective part and/or release the jammed part
Filter found serviceable
Reassemble the filter and operate the system
The problem was not solved during a regular service check. Call technician


Filter flushing cycle does not stop
Check condition of battery and solenoid
Check solenoid operation by connecting the wires directly to the battery
Flushing stops
Flushing does not stop
Check the condition of the distributor unit aperture
Not Clogged
Clogged
Faulty diamond valve. Replace the valve
Clean the aperture


One of the flushing valves does not flush
Disconnect the control tube from the actuator's lower section, and verify existence of water pressure
There is No Pressure
There is Pressure
Check the control tube for obstructions
Replace the mechanical actuator


One of the flushing valves flushes continuously
Check condition of battery and solenoid
Disconnect the control tube from the upper cap, and verify existence of water pressure
Pressure does not exist
Pressure does not exist
Check the control tube for obstructions
Replace the mechanical actuator

8. IPB


20
14
13
14.1
12
15
19
16
16.1
17
21
21.2
21.1
1
4.1
18
4.2
7
3
2
5
6
11
10
9.8
9.5
9.7
9.6
9
9.4
9.3
9.2
9.1
8.1
8.4
8.4.1
8.3
8
8.3
8.2
8.2.1
8.2.2
8.1
8.2.3

IPB No	Filters	Catalog No	Description
1	AF800	N/A	FILTER BODY
2	AF800	N/A	FILTER COVER
3	AF803L	5311250100	U-RING FOR COVER 10"-14"
	AF804L		
	AF806L		
	AF804X		
	AF806X		
	AF808L		
	AF808R		
	AF810L		
	AF810R	5311400100	U-RING FOR COVER 16"
	AF810X		
	AF812R		
	AF814R	5311450100	U-RING FOR COVER 18"
	AF816R		
	AF816X	5311600100	U-RING FOR COVER 24"
	AF818X		
4.1	AF803L	5292143001-048	STUD 1/2"NC*48 SS304
	AF804L		
	AF806L		
	AF804X		
	AF806X		
	AF808L		
	AF808R		
	AF810L	5292143001-055	STUD 1/2"NC*55 SS304
	AF810R	5292183001-073	STUD 3/4"NC*73 SS304
	AF810X		
	AF812R		
	AF814R		
	AF816R		
	AF816X	5292183001-080	STUD 3/4"NC*80 SS304
	AF818X		
4.2	AF810R	5292183001-130	STUD 3/4"NC*130 SS304
	AF810X		
	AF812R		
	AF814R		
	AF816R		
	AF816X		
	AF818X		
5	AF803L	4121123001	WASHER M12 SS304
	AF804L		
	AF806L		
	AF804X		
	AF806X		
	AF808L		
	AF808R		
	AF810L		
	AF810R	4121203001	WASHER M20 SS304
	AF810X		
	AF812R		
	AF814R		
	AF816R		
	AF816X		
	AF818X		

IPB No	Filters	Catalog No	Description
6	AF803L	4112140401	NUT 1/2"NC HOT GALVANIZED
	AF804L		
	AF806L		
	AF804X		
	AF806X		
	AF808L		
	AF808R		
	AF810L		
	AF810R	4112180401	NUT 3/4"NC HOT GALVANIZED
	AF810X		
	AF812R		
	AF814R		
	AF816R		
	AF816X		
	AF818X		
7	AF803L	E7005600100-01	COARSE SCREEN PVC225 AF803L/4L/4X/N/903/4
	AF804L		
	AF804X		
	AF806L	E7005600102-01	COARSE SCREEN PVC225 AF806X/6L/6XN/6LN
	AF806X		
	AF808L	E7005600104-01	COARSE SCREEN PVC225 AF808R/10L/8RN/10LN
	AF808R		
	AF810L		
	AF810R	E7006600200-01	COARSE SCREEN PVC280 AF810R
	AF810X	E7006600300-01	COARSE SCREEN PVC280 AF810X-12R
	AF812R		
	AF814R	E7007600300-01	COARSE SCREEN PVC315 AF814R-16R
	AF816R		
	AF816X	E7008600300-01	COARSE SCREEN PVC400 AF816X-18X
	AF818X		
8	AF803L	E7005602006-02##	COMP FINE SCREEN PVC225 AF803L
	AF804L	E7005604004-01##	COMP FINE SCREEN PVC225 AF804L-8R
	AF806L		
	AF808R		
	AF804X	E7005606001-01##	COMP FINE SCREEN PVC225 AF804X-10L
	AF806X		
	AF808L		
	AF810L		
	AF810R	E7006604000-01##	COMP FINE SCREEN PVC280 AF810R
	AF810X	E7006606000-01##	COMP FINE SCREEN PVC280 AF810X-12R
	AF812R		
	AF814R	E7007606000-01##	COMP FINE SCREEN PVC315 AF814R-16R
	AF816R		
	AF816X	E7008606001-01##	COMP FINE SCREEN PVC400 AF816X-18X
	AF818X		
8.1	AF803L	4081202100-445	O-RING 445
	AF804L		
	AF806L		
	AF804X		
	AF806X		
	AF808L		
	AF808R		
	AF810L		
	AF810R	4081266100-450	O-RING 450
	AF810X		
	AF812R		
	AF814R	4081291100-452	O-RING 452
	AF816R		
	AF816X	4081380100-459	O-RING 459
	AF818X		

IPB No	Filters	Catalog No	Description
8.2	AF803L	E5005600102-01##-03	FINE SCREEN UPPER SECTION PVC225 ASSM803-10L/98N
	AF804L		
	AF806L		
	AF808R		
	AF804X		
	AF806X		
	AF808L		
	AF810L		
	AF810R	E5006600100-01##-01	FINE SCREEN UPPER SECTION PVC280 ASSM AF810R-12R
	AF810X		
	AF812R		
	AF814R	E5007600100-01##-01	FINE SCREEN UPPER SECTION PVC315 ASSM AF814R-16R
	AF816R		
	AF816X	E5008600100-01##-01	FINE SCREEN UPPER SECTION PVC400 ASSM AF816X-18X
	AF818X		
8.2.1	AF803L	E5005600102-01##-06	FINE SCREEN UPPER SECTION PVC225
	AF804L		
	AF806L		
	AF804X		
	AF806X		
	AF808L		
	AF808R		
	AF810L		
	AF810R	W5006600100-01##	FINE SCREEN UPPER SECTION PVC280
	AF810X		
	AF812R		
	AF814R	W5007600100-01##	FINE SCREEN UPPER SECTION PVC315
	AF816R		
	AF816X	W5008600100-01##	FINE SCREEN UPPER SECTION PVC400
	AF818X		
8.2.2	AF803L	5021640500	SCREEN WHEEL 225 NYLON
	AF804L		
	AF806L		
	AF804X		
	AF806X		
	AF808L		
	AF808R		
	AF810L		
	AF810R	5021010600-P	SCREEN WHEEL 280 STEEL
	AF810X		
	AF812R		
	AF814R	5021010700-P	SCREEN WHEEL 315 STEEL
	AF816R		
	AF816X	5021010800-P	SCREEN WHEEL 400 STEEL
	AF818X		
8.2.3	AF800	5172301700	SCREEN BEARING F/SHAFT AF9/800/500B/700/9800N
8.3	AF803L	W5005600300-01##	FINE SCREEN MIDDLE SECTION PVC225
	AF804L		
	AF806L		
	AF804X		
	AF806X		
	AF808L		
	AF808R		
	AF810L		
	AF810R	W5006600300-01##	FINE SCREEN MIDDLE SECTION PVC280
	AF810X		
	AF812R		
	AF814R	W5007600300-01##	FINE SCREEN MIDDLE SECTION PVC315
	AF816R		
	AF816X	W5008600300-01##	FINE SCREEN MIDDLE SECTION PVC400
	AF818X		

IPB No	FIlters	Catalog No	Description
8.4.	AF803L	E5005600201-01##-01	FINE SCREEN LOWER SECTION PVC225 ASSM
	AF804L		
	AF806L		
	AF804X		
	AF806X		
	AF808L		
	AF808R		
	AF810L		
	AF810R	E5006600200-01##-01	FINE SCREEN LOWER SECTION PVC280 ASSM
	AF810X		
	AF812R		
	AF814R	E5007600200-01##-01	FINE SCREEN LOWER SECTION PVC315 ASSM
	AF816R		
	AF816X	E5008600200-01##-01	FINE SCREEN LOWER SECTION PVC400 ASSM
	AF818X		
8.4.1	AF803L	W5005600201-01##	FINE SCREEN LOWER SECTION PVC225
	AF804L		
	AF806L		
	AF804X		
	AF806X		
	AF808L		
	AF808R		
	AF810L		
	AF810R	W5006600200-01##	FINE SCREEN LOWER SECTION PVC280
	AF810X		
	AF812R		
	AF814R	W5007600200-01##	FINE SCREEN LOWER SECTION PVC315
	AF816R		
	AF816X	W5008600200-01##	FINE SCREEN LOWER SECTION PVC400
	AF818X		
9	AF803L	E7103610201-01	COMP D/COLLECTOR 2" PVC 2 NOZZLE AF803L
	AF804L	E7104610400-01	COMP D/COLLECTOR 75 PVC 4 NOZZLE AF804L-8R
	AF806L		
	AF808R		
	AF804X	E7106300600-01	COMP D/COLLECTOR 76 SS304 6 NOZZLE AF804X-10L
	AF806X		
	AF808L		
	AF810L		
	AF810R	E7105300400-01	COMP D/COLLECTOR 3" SS304 4 NOZZLE AF810R
	AF810X	E7105300600-01	COMP D/COLLECTOR 3" SS304 6 NOZZLE AF810X-12R
	AF812R		
	AF814R	E7105300601-01	COMP D/COLLECTOR 3" SS304 6 NOZZLE AF814R-16R
	AF816R		
	AF816X	E7105300602-01	COMP D/COLLECTOR 3" SS304 6 NOZZLE AF816X-18X
	AF818X		
9.1	AF803L	5113610100	DIRT COLLECTOR 2" UPPER PLUG AF803L
	AF804L	5114610100	DIRT COLLECTOR 75 UPPER PLUG AF804L-8R
	AF806L		
	AF808R		
	AF804X	5116610100	DIRT COLLECTOR 76 UPPER PLUG AF804X-10L
	AF806X		
	AF808L		
	AF810L		
	AF810R	5115610100	DIRT COLLECTOR 3" UPPER PLUG AF810R-18X
	AF810X		
	AF812R		
	AF814R		
	AF816R		
	AF816X		
	AF818X		

IPB No	FIlters	Catalog No	Description
9.2	AF803L	5131391704	DIRT COLLECTOR SHAFT BRASS 17mm AF803
	AF804L	5131391703	DIRT COLLECTOR SHAFT BRASS 17mm AF804-10L
	AF806L		
	AF804X		
	AF806X		
	AF808L		
	AF808R		
	AF810L		
	AF810R	5131391702	DIRT COLLECTOR SHAFT BRASS 17mm AF810R-18X
	AF810X		
	AF812R		
	AF814R		
	AF816R		
	AF816X		
	AF818X		
9.3	AF804L	5114610300	DIRT COLLECTOR 75 MIDDLE PLUG AF804L-8R
	AF806L		
	AF808R		
	AF804X	5116610300	DIRT COLLECTOR 76 MIDDLE PLUG AF804X-10L
	AF806X		
	AF808L		
	AF810L		
	AF810R	5115610300	DIRT COLLECTOR 3" MIDDLE PLUG AF810R-18X
	AF810X		
	AF812R		
	AF814R		
	AF816R		
	AF816X		
	AF818X		
9.4	AF804-18	5110390400	DIRT COLLECTOR SHAFT TIGHTENING NUT AF804-818
9.5	AF803L	4102043003-016	ATTACHMENT SCREW NC10*5/8" FLAT HEAD SS304
	AF804L		
	AF806L		
	AF808R		
	AF804X	4102043003-019	ATTACHMENT SCREW NC10*3/4" FLAT HEAD SS304
	AF806X		
	AF808L		
	AF810L		
	AF810R		
	AF810X		
	AF812R		
	AF814R		
	AF816R		
	AF816X		
	AF818X		
9.6	AF804-18	4102043002-019	ATTACHMENT SCREW NC10*3/4" OVAL HEAD SS304
9.7	AF803L	5121610314	SUCTION NOZZLE AF803L
	AF804L	5121610312	SUCTION NOZZLE AF804L-8R
	AF806L		
	AF808R		
	AF804X	5121610313	SUCTION NOZZLE AF804X-10L
	AF806X		
	AF808L		
	AF810L		
	AF810R	5121610403	SUCTION NOZZLE AF810R-12R
	AF810X		
	AF812R		
	AF814R	5121610404	SUCTION NOZZLE AF814R-16R
	AF816R		
	AF816X	5121610405	SUCTION NOZZLE AF816X-18X
	AF818X		

IPB No	FIlters	Catalog No	Description
9.8	AF803L	5113610200	DIRT COLLECTOR 2" LOWER PLUG AF803L
	AF804L	5114610200	DIRT COLLECTOR 75 LOWER PLUG AF804L-8R
	AF806L		
	AF808R		
	AF804X	5116610200	DIRT COLLECTOR 76 LOWER PLUG AF804X-10L
	AF806X		
	AF808L		
	AF810L		
	AF810R	5115610200	DIRT COLLECTOR 3" LOWER PLUG AF810R-18
	AF810X		
	AF812R		
	AF814R		
	AF816R		
	AF816X		
	AF818X		
10	AF803L	W5143610200-01	HYDRAULIC MOTOR PVC AF803
	AF804L	W5144610200-01	HYDRAULIC MOTOR PVC AF804L-8R
	AF806L		
	AF808R		
	AF804X	W5146320200-01	HYDRAULIC MOTOR SS304 AF804X-10L
	AF806X		
	AF808L		
	AF810L		
	AF810R	W5145320200-01	HYDRAULIC MOTOR SS304 AF810R
	AF810X	W5145320201-01	HYDRAULIC MOTOR SS304 AF810X-18
	AF812R		
	AF814R		
	AF816R		
	AF816X		
	AF818X		
11	AF803L	W5173390000-01	DIRT COLLECTOR HEAD BEARING BRASS AF803
	AF804-18	W5173390001-01	DIRT COLLECTOR HEAD BEARING BRASS AF804-18
12	AF800	5293113007-029	STUD 5/16"NC*29 SS304
13	AF800	4112113901	NUT 5/16"NC BRASS
14	AF803L	E7160403000	HYD PISTON 40 SS304 AF803/9800
	AF804-18	E7160503000	HYD PISTON 50 SS304 AF800
14.1	AF800	4081056100-331	O-RING 331
15	AF800	E4510020003-07	COMP HYDRAULIC VALVE DOROT GALIL 09AN 2"BSP
16	AF803L-10L	E5412036301-01	SHORT DISTRIBUTOR DELRIN ASSM
	AF810R-18	E5412036302-01	DOUBLE DISTRIBUTOR DELRIN ASSM
16.1	AF800	4081034100-126	O-RING 126
16.2	AF810R-18	4470030300	DIAMOND VALVE DOROT 10 Bar 25-300 3/8"
17	AF800	CS11010015	PRESSURE GAUGE SET AF800/9800/500
18	AF800	4640314002	PLUG 1/4" PLASTIC
19	AF800	4640214082	MALE BRANCH T 8*1/4"*8 PLASTIC
20	AF800	4640618082	MALE ELBOW 1/8"*8 PLASTIC
21	AF800-DC	CSD1100112100	CONTROLLER 1-10 DC + 1 SOLENOID COMPLETE
	AF800-AC	CSA1100114100	CONTROLLER 1-10 AC + 1 SOLENOID COMPLETE
21.1	AF800-DC	4430010902	SOLENOID DCL GALSOL 2W
	AF800-AC	4430030901	SOLENOID AC GALSOL 24V
21.2	AF800-DC	4440211002	CONTROLLER 1-10 DC 2 PORTS + DP
	AF800-AC	4440311002	CONTROLLER 1-10 AC 2 PORTS + DP
21.2.1	AF800-DC	4450110200	EXPENSION CARD FOR 1-10 DC CONTROLLER
	AF800-AC	4450110300	EXPENSION CARD FOR 1-10 AC CONTROLLER

9. Appendixes

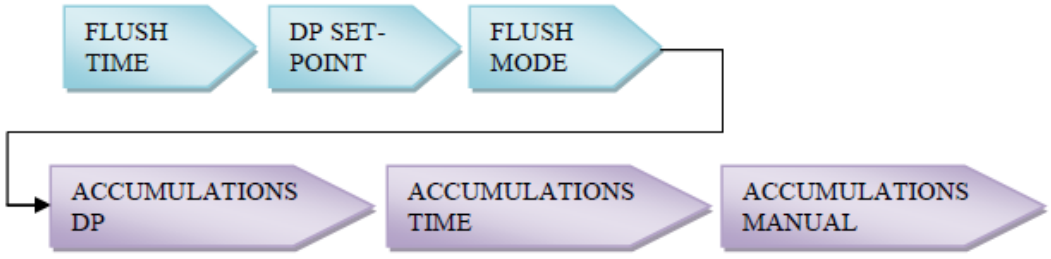
9.1 - Filtron 1-10 (AC/DC)

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 FITRON 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 and 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" filed 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 Main0valve, 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

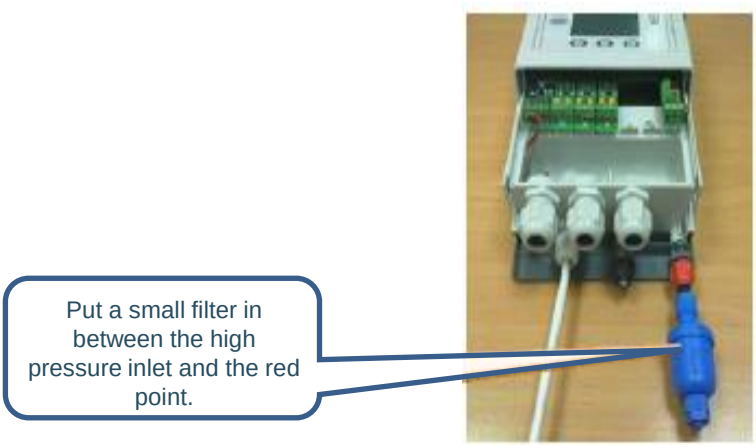
As explained before, endless looping problems can be detected when the number of consecutive flushing cycles triggered by the DP sensor exceeds the "looping limit" set during configuration. The fact that endless looping problem was detected will be indicated on the display and will cause the activation 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.

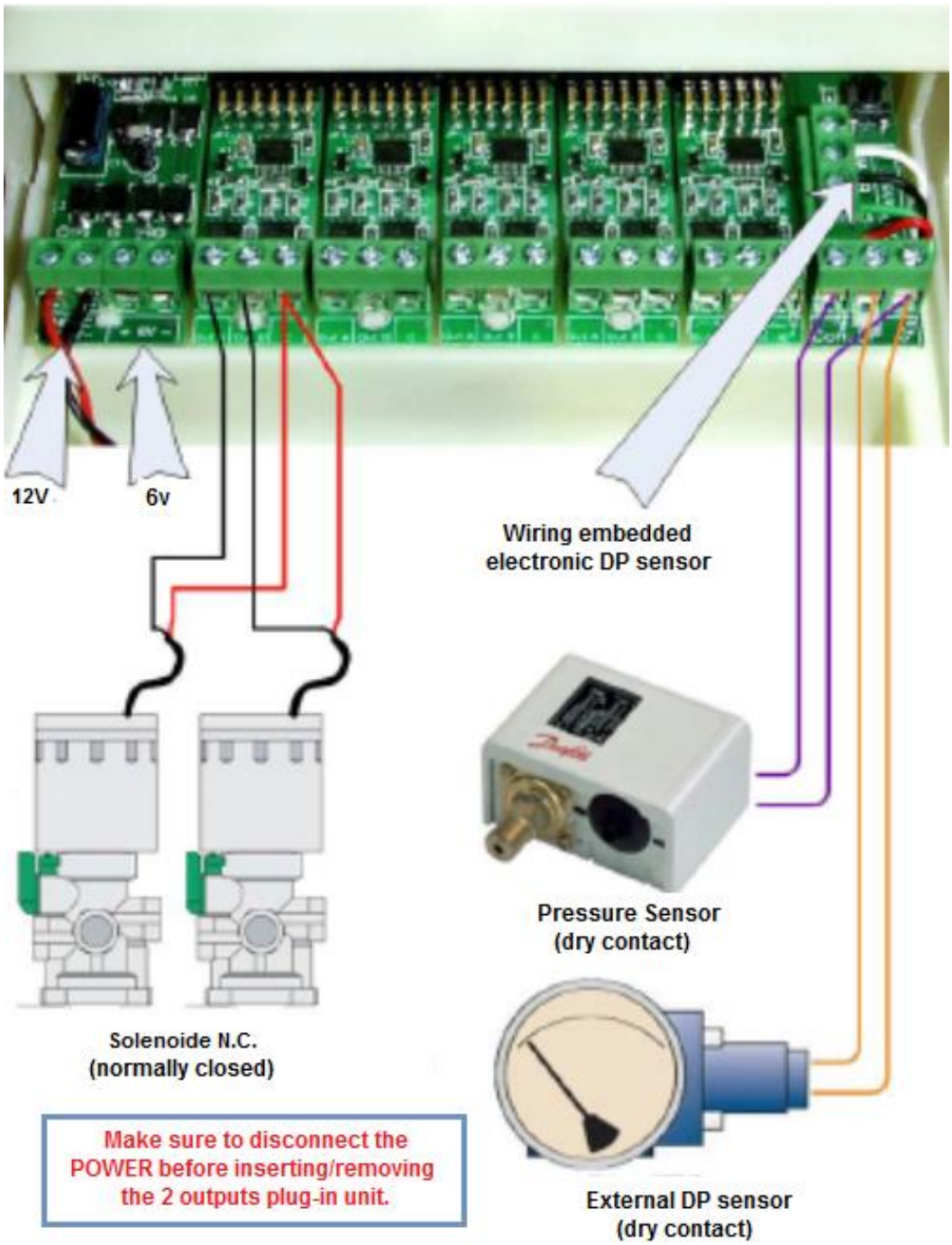
AC MODEL

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.

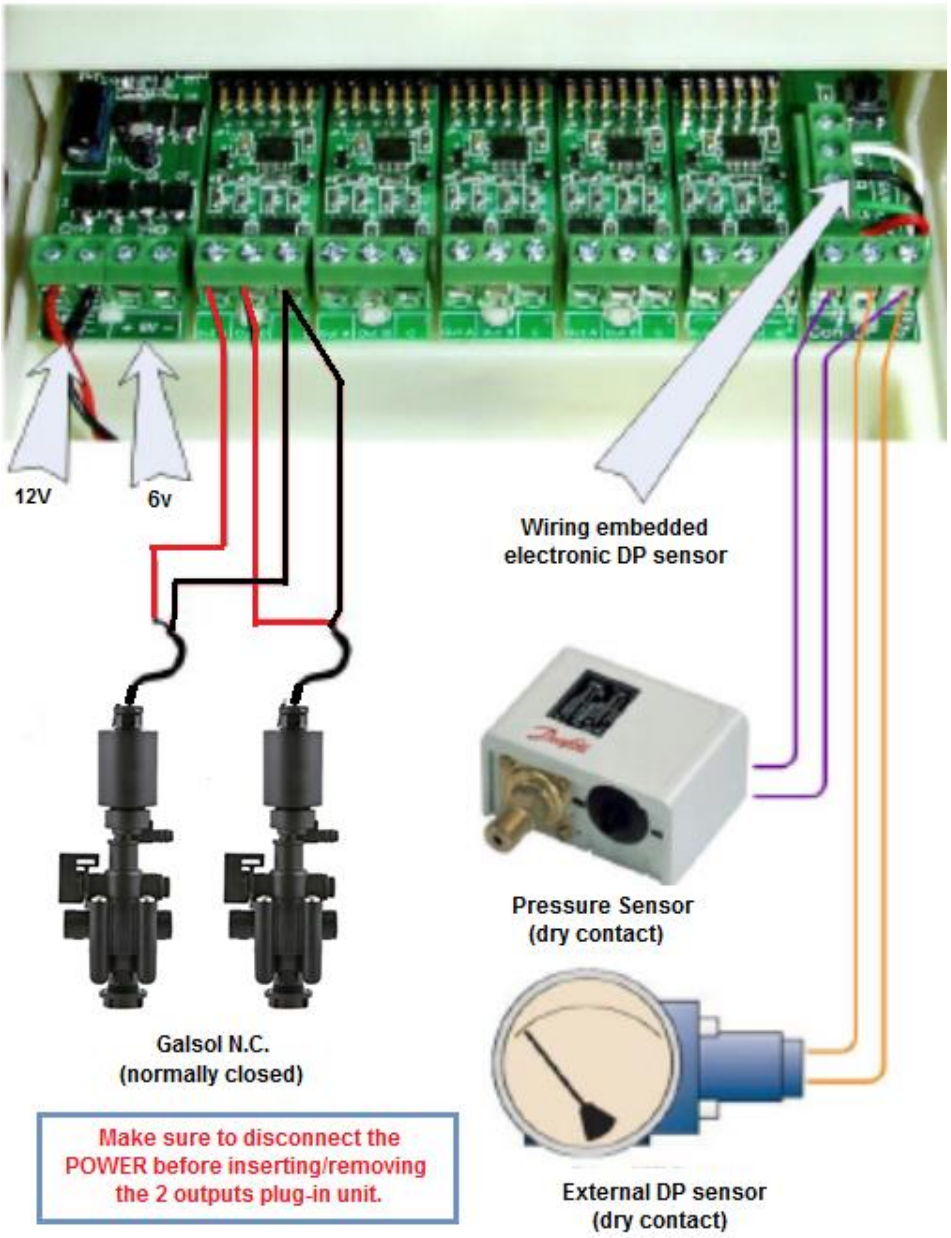
Wiring diagram

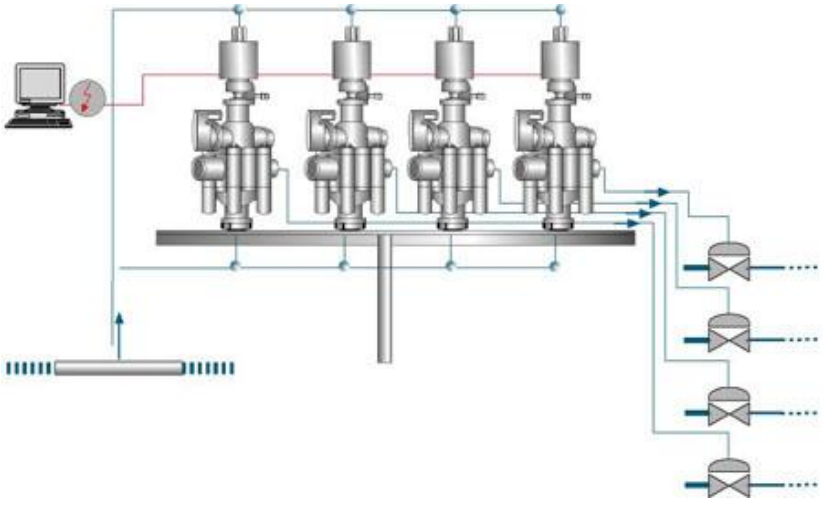
DC MODEL

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



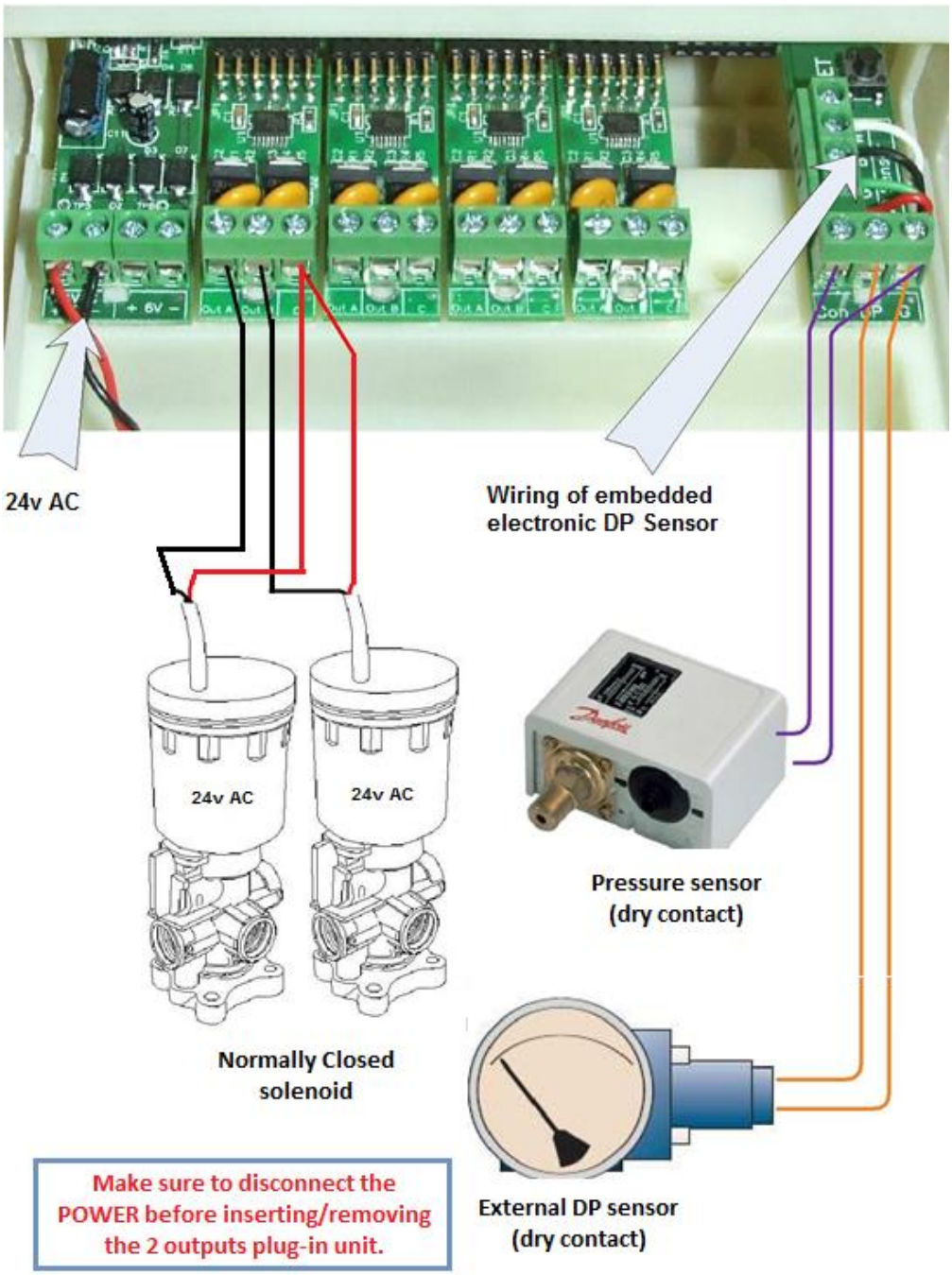


Wiring diagram

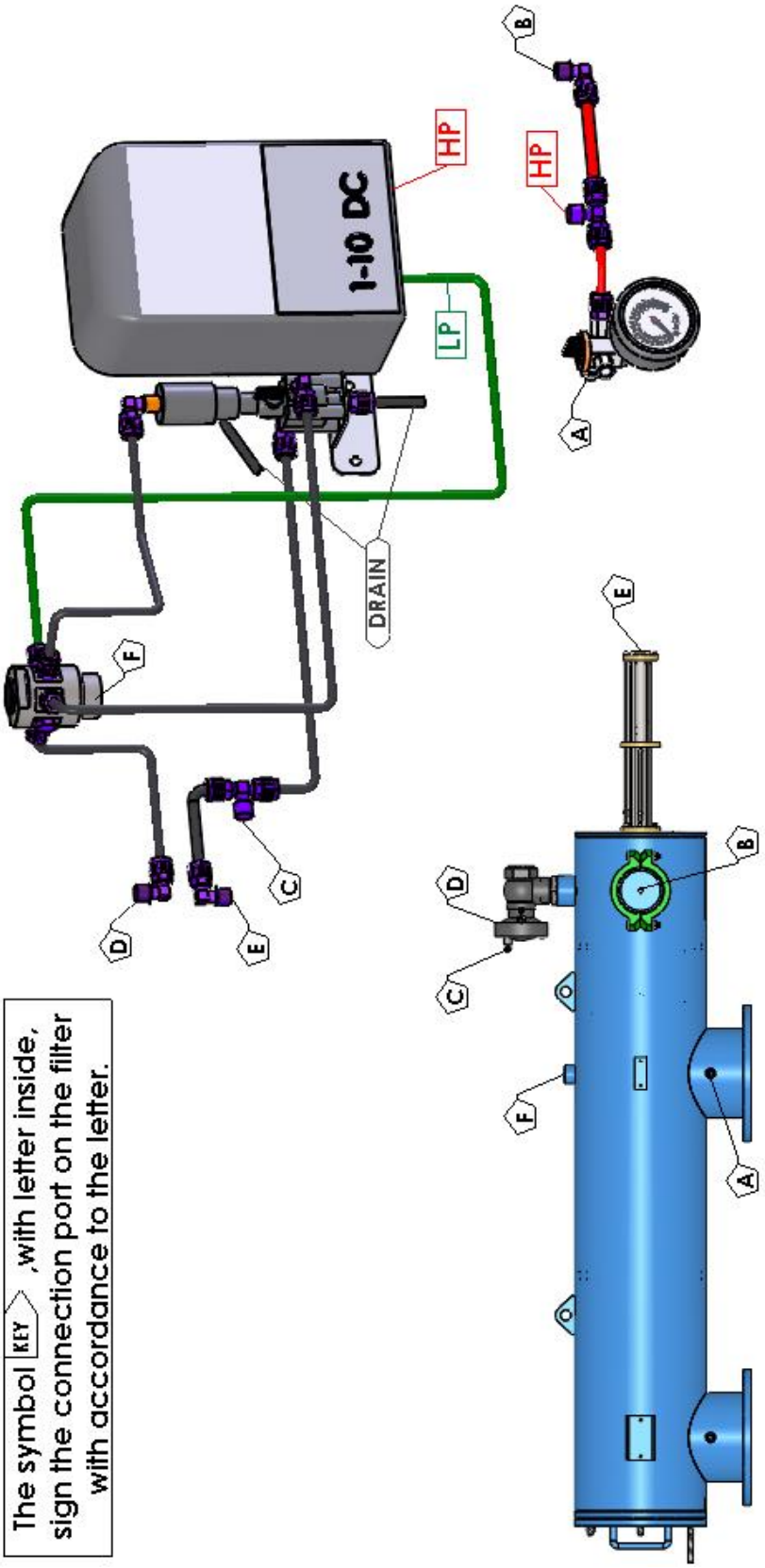
AC MODEL

The drawing shows the wiring of the AC model of the controller.
Notice that:

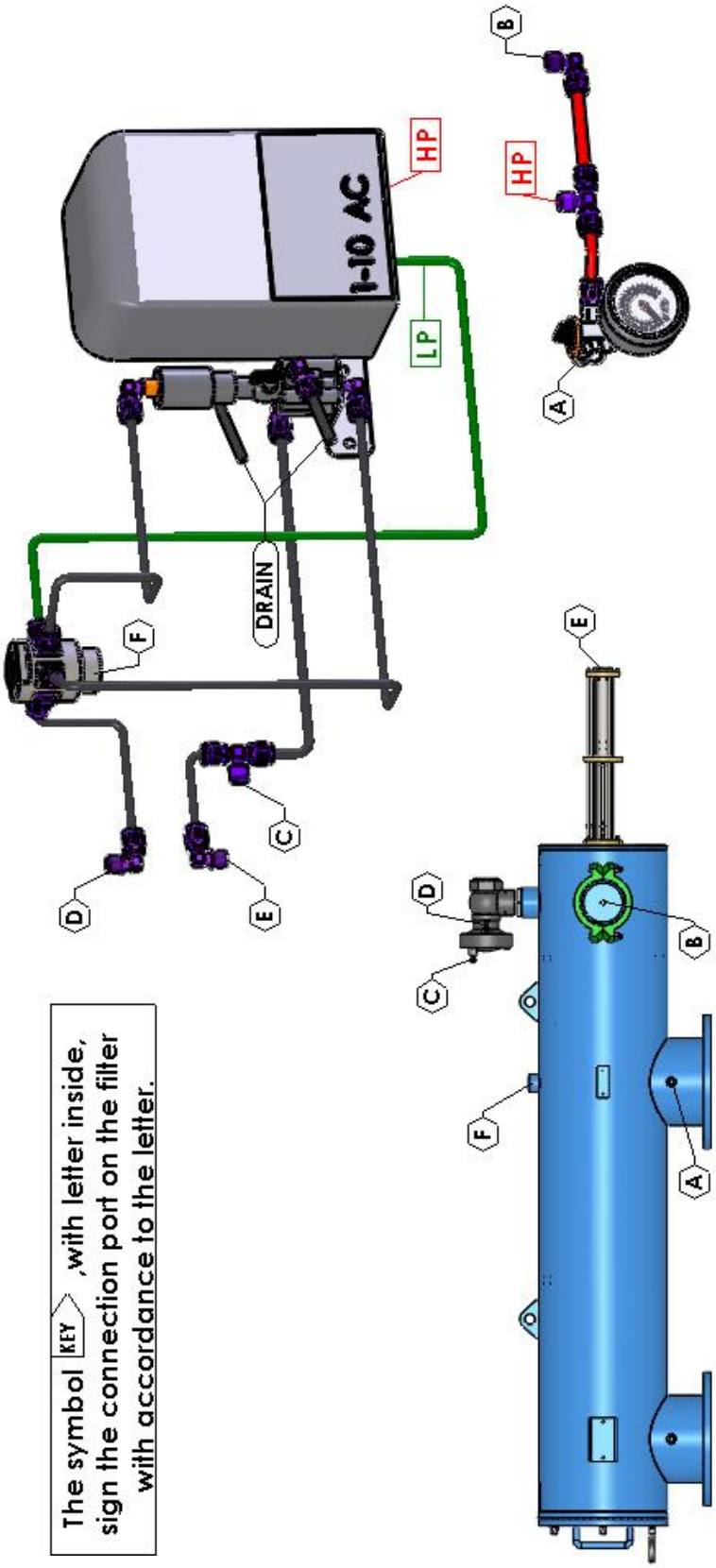
1. The external DP sensor is optional and it is intended for use in case there is no Embedded Electronic DP included.
2. The powering of the unit is by 24v AC transformed from 220/110 v AC.
3. The solenoids are 24v AC.



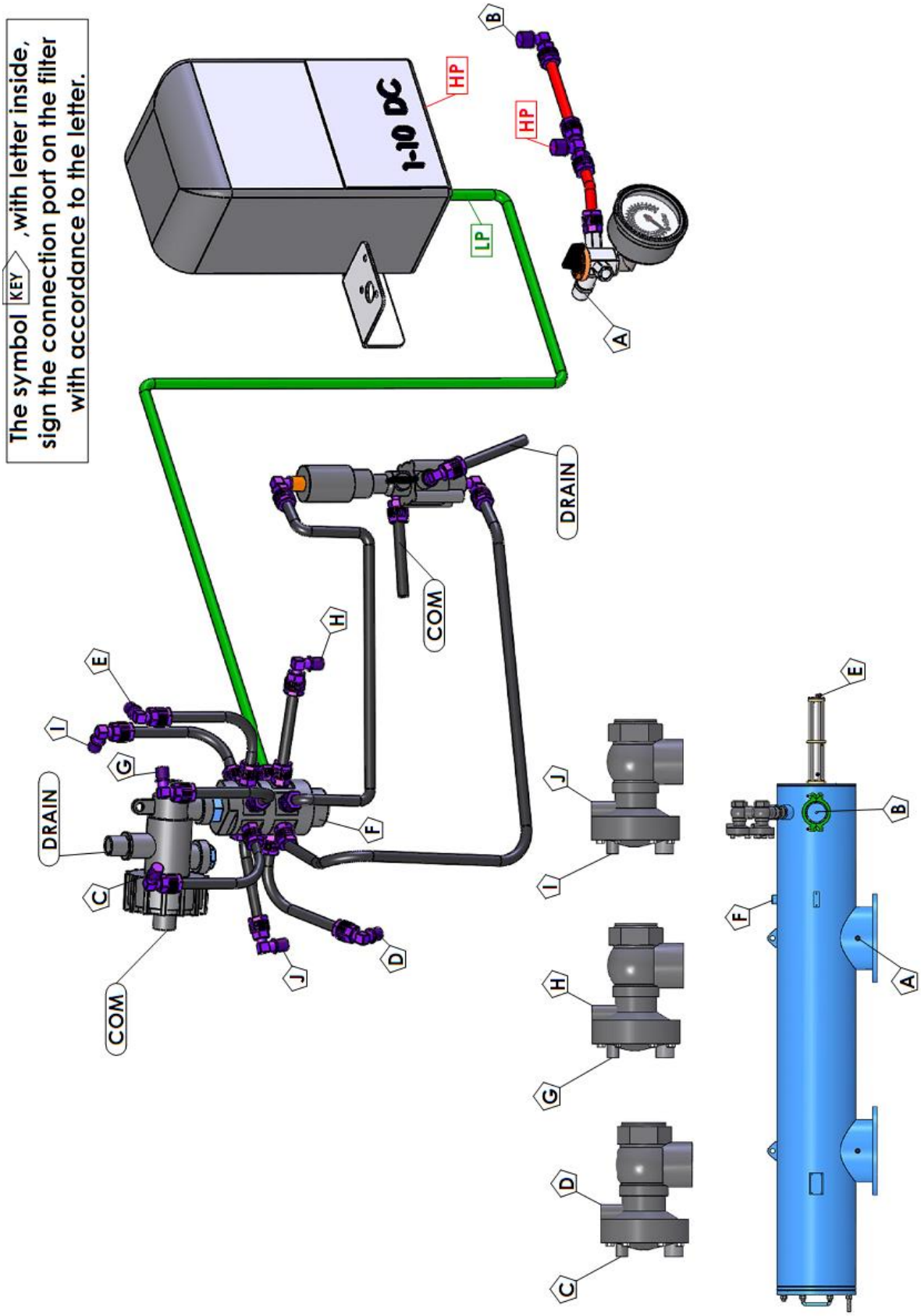
9.2 - Control Loops Schematic Drawing
ONE VALVE hydraulic Scheme DC1-10 CTRL AF800



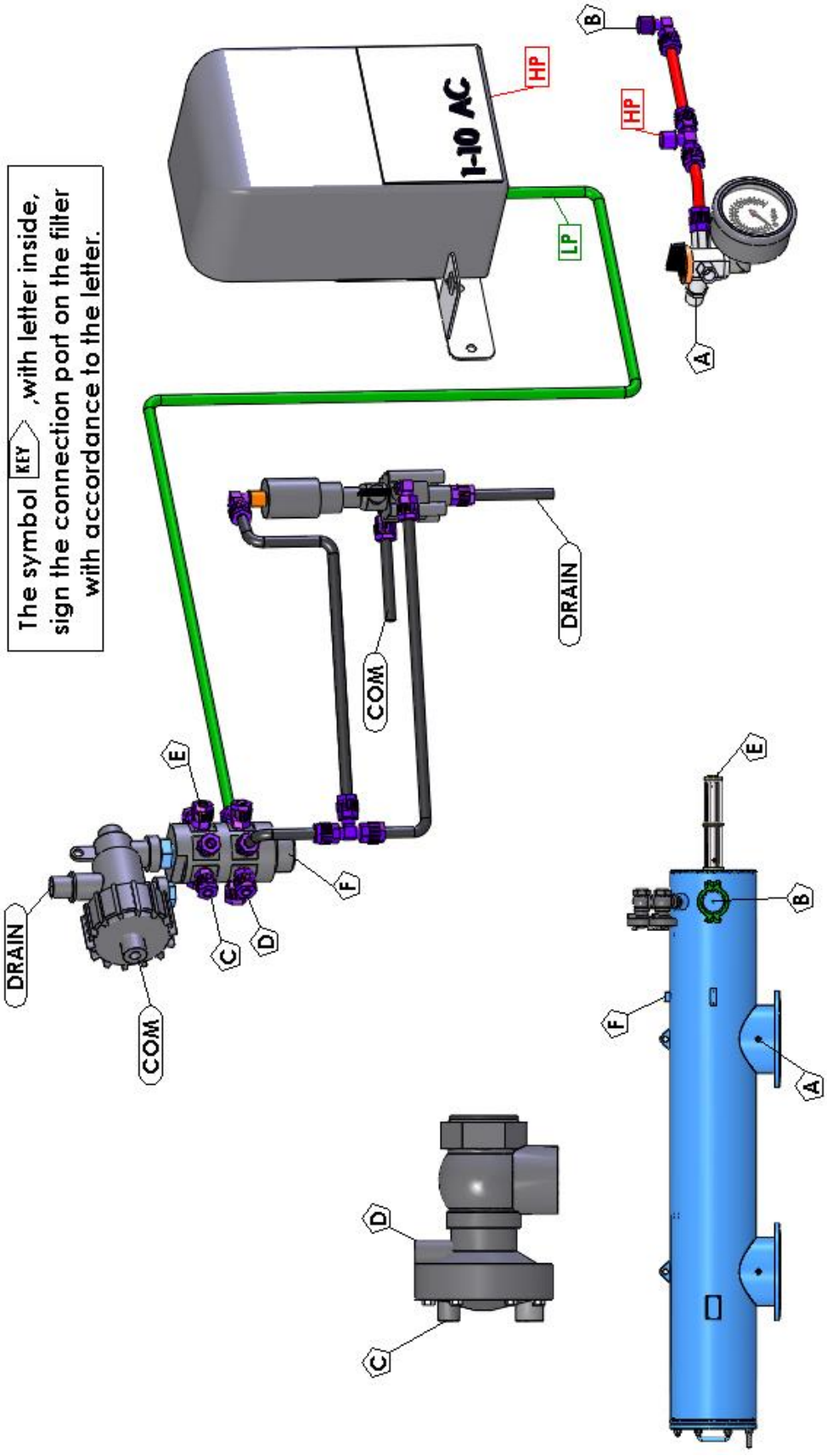
ONE VALVE hydraulic Scheme AC1-10 CTRL AF800



THREE VALVE hydraulic Scheme DC1-10 CTRL AF800



THREE VALVE hydraulic Scheme AC1-10 CTRL AF800



10. STANDARD INTERNATIONAL WARRANTY

YAMIT Filtration & Water Treatment (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.