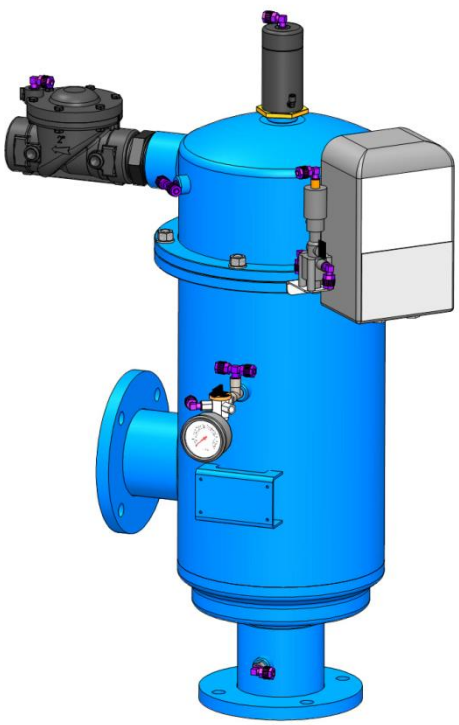
English

YAMIT FILTRATION

Bell AF200 Series Hydraulic Self-Cleaning Screen Filter

SERVICE & MAINTENANCE MANUAL



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YAMIT Filtration & Water Treatment Ltd. MoshavTnuvot, POBox 232, 4283000 Israel
Tel: +972-4-6220006 / e-mail: info@yamit-f.com / www.yamit-f.com

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1. Introduction

General

YAMIT Filtration & Water Treatment Ltd. (YAMIT) congratulates you on purchasing the new **AF200 SERIES** self-cleaning filter. This filter now joins the wide family of filters produced and supplied by **YAMIT** for agriculture, municipal water and sewage systems, and all types of industrial applications. All products manufactured by **YAMIT** are easy to install, use and service and don't require special skills to operate them.

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

2. Safety Instructions

1. It is necessary to use a noise protection device while the filter is in operation.
2. In the model with 12V DC power supply use the device which is provided by YAMIT or equivalent (with certifications and power rating).
3. Prior to installation or handling of the filter, read carefully the installation and operation instructions carefully.
4. Confirm filter draining prior to service.
5. Take precautions while lifting, transporting or installing the filter.
6. 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.
7. Confirm that filter weight, when full, meets the support construction requirements.
8. Prior to installation confirm that line pressure matches filter's operational pressure.
9. During installation, use standard flanges and connections only.
10. Check that all filter flange bolts are properly secured.
11. Please note, the filter enters a flushing mode automatically, without prior warning.
12. Use original parts only when servicing the filter.
13. **YAMIT Filtration & Water Treatment Ltd**. cannot accept responsibility for any changes or modifications to the equipment.

3. Description & Operation

Filter Assembly General Description (Figure 1)

The **AF200 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 **AF200 SERIES** filter contains the following parts:

1. Inlet
2. Fine screen
3. Electronic control unit
4. Hydraulic flushing valve
5. Hydraulic piston
6. Hydraulic motor chamber
7. Dirt collector
8. Suction nozzle
9. Hydraulic motor
10. Differential pressure indicator
11. Solenoid valve
12. Piston Indicator
13. Outlet

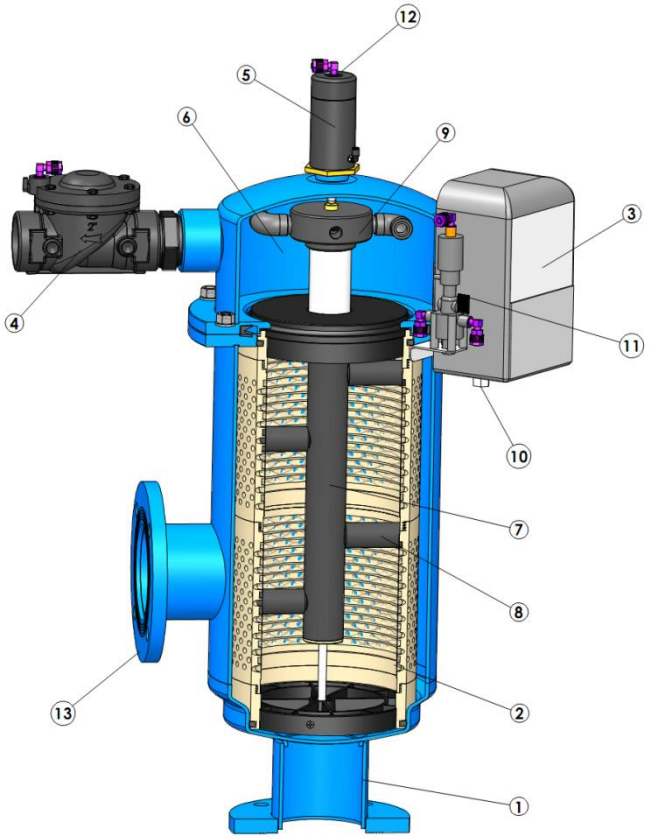


Figure 1: Filter Assembly

Filter Operation - General Description (Figure 1)

Water enters the filter through the “Inlet” (1). The water then reaches the fine screen (2), which 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 (2) and its external section.

When the difference in pressure (ΔP) reaches the preset value on the electronic control unit (3), a series of events is triggered while 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 (6) 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 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 surface. The flushing cycle takes **5 seconds**. The flushing valve (4) closes at the end of the cycle and the increased water pressure returns the system to its initial position. The filter is now ready for the next cycle, with clean and filtered water flowing through the “Outlet” (12).

General Description of the Electronic Control System

The electrical system controls the cleaning process through the differential pressure indicator (10), that closes a circuit and triggers the electronic control unit (3) that controls the opening and the closing of the flushing valve (4) via the solenoid valve (11). The flushing cycle, which takes a total of **5 seconds**, resumes its operation whenever the difference in pressure reaches the preset pressure value set on the differential pressure indicator. If the difference in pressure remains unchanged after one cycle, another cycle will start after a delay of 25 seconds.

4. Technical Data

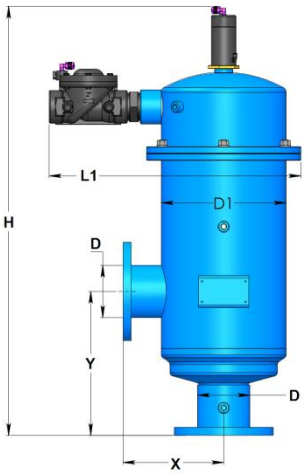
Standard Features

Minimum operating pressure: 2 bar (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: 80-3000 microns
Control voltage: 9V DC, 12V DC, 24V AC
Flush water consumption
(at minimum working pressure): 80 liters (21 gallons)
Filter housing materials: carbon steel coated with baked on epoxy
Available connections: V= Victaulic, F= Flange

Measurements & Weight

Model	D In/Out (mm)	D1 (inch)	X (mm)	Y (mm)	H (mm)	L (mm)	Shipping Weight (kg)	Packing Volume L*W*H (m)
AF202	50	10	220	197	507	465	43	0.58x0.58x0.77
AF202X	50	10	220	197	646	465	47	0.58x0.58x0.87
AF203	75	10	220	197	507	465	45	0.58x0.58x0.77
AF203X	75	10	220	210	641	465	48	0.58x0.58x0.87
AF204	100	10	220	210	641	465	50	0.58x0.58x0.87
AF204X	100	10	220	315	920	585	70	0.68x0.68x1.22
AF206	150	10	220	400	1150	585	90	0.68x0.68x1.41
AF208	200	16	303	450	1219	642	150	1.43x0.87x0.83

Model	D In/Out (in)	D1 (in)	X (in)	Y (in)	H (in)	L (in)	Shipping Weight (lb)	Packing Volume L*W*H (ft)
AF202	2	10	8.66	7.76	19.94	18.31	95	1.9x1.9x2.5
AF202X	2	10	8.66	7.76	25.44	18.31	103	1.9x1.9x2.9
AF203	3	10	8.66	7.76	19.94	18.31	95	1.9x1.9x2.5
AF203X	3	10	8.66	8.27	25.24	18.31	105	1.9x1.9x2.9
AF204	4	10	8.66	8.27	25.24	18.31	110	1.9x1.9x2.9
AF204X	4	10	8.66	12.4	36.22	23.04	154	2.2x2.2x4.0
AF206	6	10	8.66	15.75	45.28	23.04	198	2.2x2.2x4.3
AF208	8	16	11.93	17.72	48.00	25.26	331	2.9x2.7x4.7



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 / 30 psi).

Flow Rate

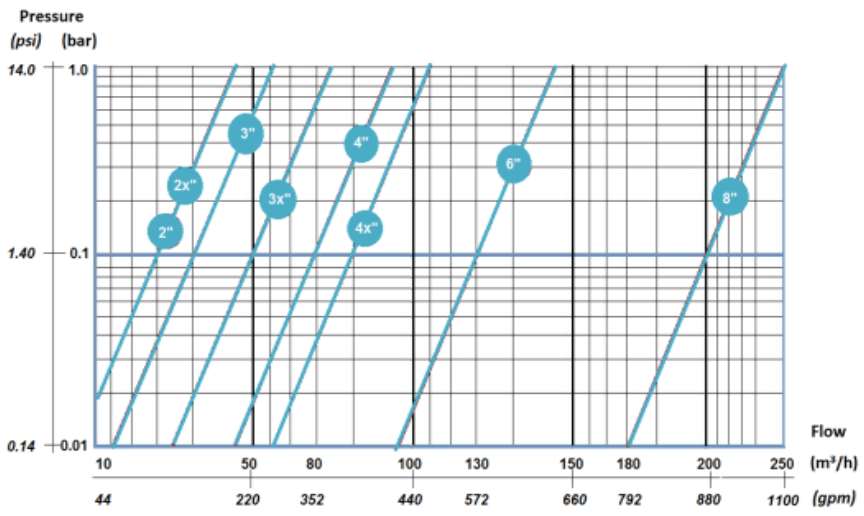
Model	In/Out D (mm)	Maximum Flow Rate (m^3/h)	Screen area (cm^2)	Flushing Flow Rate (m^3/h)	Flushing volume (m^3)
AF202	50	30	1100	6	0.0083
AF202X	50	30	1630	6	0.0083
AF203	75	40	1100	6	0.0083
AF203X	75	50	1630	6	0.0083
AF204	100	80	1630	6	0.0083
AF204X	100	90	2770	20	0.0278
AF206	150	130	4120	20	0.0278
AF208	200	200	5240	20	0.0278

Model	In/Out D (in)	Maximum Flow Rate (gpm)	Screen area (in^2)	Flushing Flow Rate (gpm)	Flushing volume (gal)
AF202	2	132	170	26	2.2
AF202X	2	132	253	26	2.2
AF203	3	176	170	26	2.2
AF203X	3	220	253	26	2.2
AF204	4	352	253	26	2.2
AF204X	4	396	430	87	7.4
AF206	6	572	640	87	7.4
AF208	8	880	812	87	7.4

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 50 mm plastic pipe or 2" metal pipe and no more then 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).

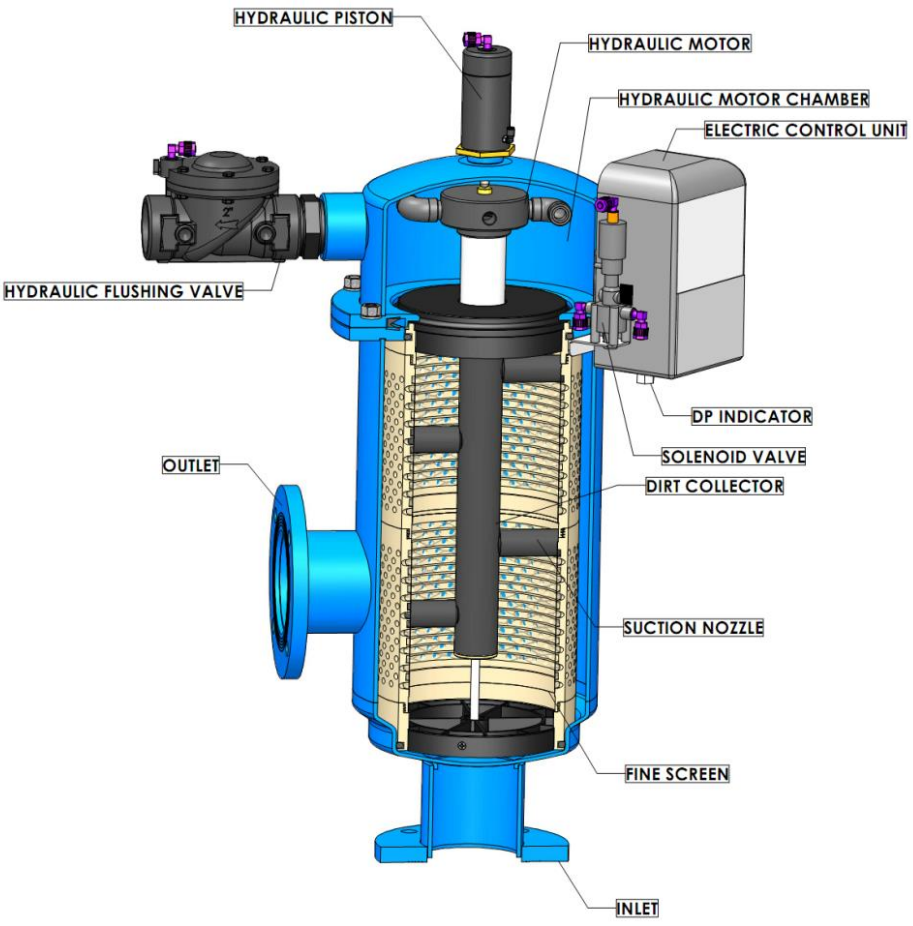


Figure 2: Initial Filter Installation

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.
3. Push the piston indicator into the piston, if it is in a popped-up position.
4. 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.
5. Verify that the hydraulic flushing valve closes after 5 seconds.
6. Verify that the hydraulic piston fully extends during back flush – make sure the piston indicator was pushed out by the piston.
7. When the filter is clean, verify that the differential pressure between inlet and outlet does not exceed 0.1 bar.
8. Check that the differential pressure indicator is set to 7 psi or 0.5 bar.
9. Push the piston indicator into the piston, Perform an additional flushing cycle manually by operating the handle (turn clockwise 90°) located on the solenoid valve (See Figure 3). Verify that the hydraulic piston fully extends during back flush – make sure the piston indicator was pushed out by the piston.
   Verify that the hydraulic flushing valve closes at the end of the flushing.

WARNING

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

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 "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).

WARNING

In the model with 12V DC power supply use the device which is provided by YAMIT or equivalent (with certifications and power rating)

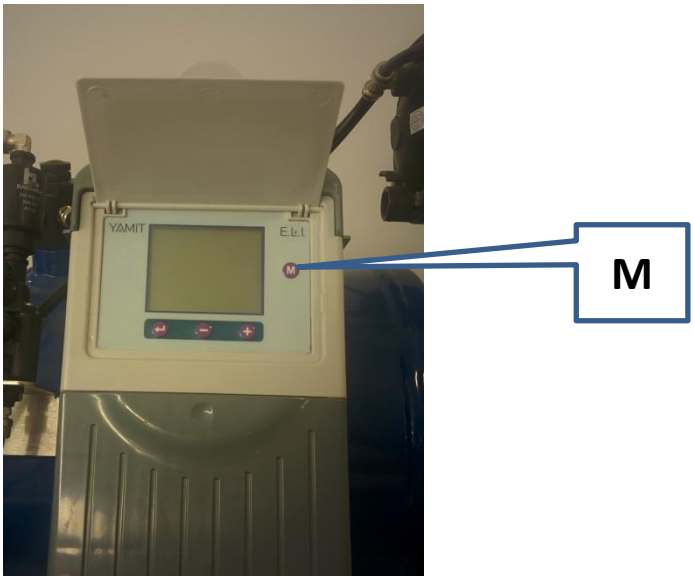


Figure 4: Battery Removal & Installation

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)

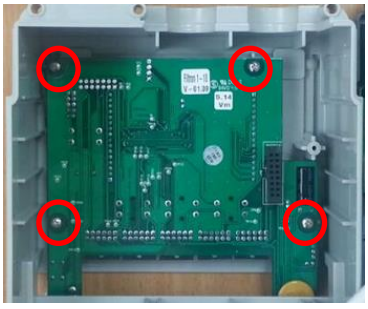
4. Turn on back and separate the back cover:

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 cover of the controller
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 Appendix 9.2, pg. 35- 36).**

6.4 - Hydraulic Piston Assembly Removal & Replacement

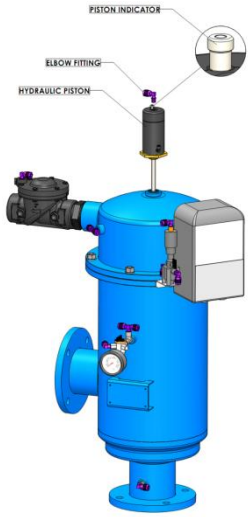
The hydraulic piston enables the linear movement of the dirt collector.

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. Carefully unscrew and remove the piston assembly's.
5. Remove the seal from the old piston assembly lower section.
6. Position the seal into the new piston assembly.
7. Carefully install the new piston assembly into the filter assembly.
8. Connect the control tube to the piston assembly's upper section. Push the piston indicator into the piston, if it is in a popped-up position.
9. Open the inlet and the 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 piston fully extends during back flush – make sure the piston indicator was pushed out by the piston.
13. Verify that the hydraulic flushing valve closes after 5 seconds.
14. Perform an additional flushing cycle manually, by operating the handle (turn clockwise 90°) located on the solenoid (See Figure 3).



6.5 – Screen Removal & Installation

1. Close the inlet and the outlet line valves.
2. Confirm filter draining prior to service.
3. Disconnect the control tube from the filter assembly's upper section.
4. Remove the six nuts and washers connecting both parts of the filter's housing (See Figure 6).
5. Carefully remove the control assembly.
6. Remove the cover of the filter assembly
7. Pull the plate out from the screen assembly together with the hydraulic motor and the dirt collector. Make sure the suction nozzles are in position to pass via the screen handle.
8. Pull the screen out of the filter housing assembly.
9. Remove both upper and lower seals from the old screen.
10. Remove the screen bearing from the old screen's lower section.
11. Install the screen bearing into the new screen's lower section.
12. Position both upper and lower seals into the new screen.
13. Lubricate upper and lower seals with **silicon grease**.
14. Slide the new screen into the filter housing assembly.
15. Install the dirt collector with the hydraulic motor and the plate into the screen assembly.
    Make sure the suction nozzles are in the right position to pass via the screen handle and the dirt collector axis is in the screen bearing.
16. Verify that the straight side of the body seal (U-Ring) fits into the groove located in the filter assembly's upper section.
17. Install the filter cover.
18. Carefully attach the control assembly to the filter housing with one of the six nuts and washers connecting both parts of the filter housing.
19. Continue to cross connect both parts of the filter housing by using the additional five nuts and washers. Do not over-tighten.
20. Connect the control tubes to the filter assembly housing (See Figure 6).
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 by disconnecting the low pressure tube from the differential pressure indicator (closing of the electrical circuit) – re-connect it immediately as flushing starts.
24. Verify that the hydraulic flushing valve closes after 5 seconds.
25. Perform an additional flushing cycle manually, by operating the handle (turn clockwise 90°) located on the solenoid (See Figure 3).

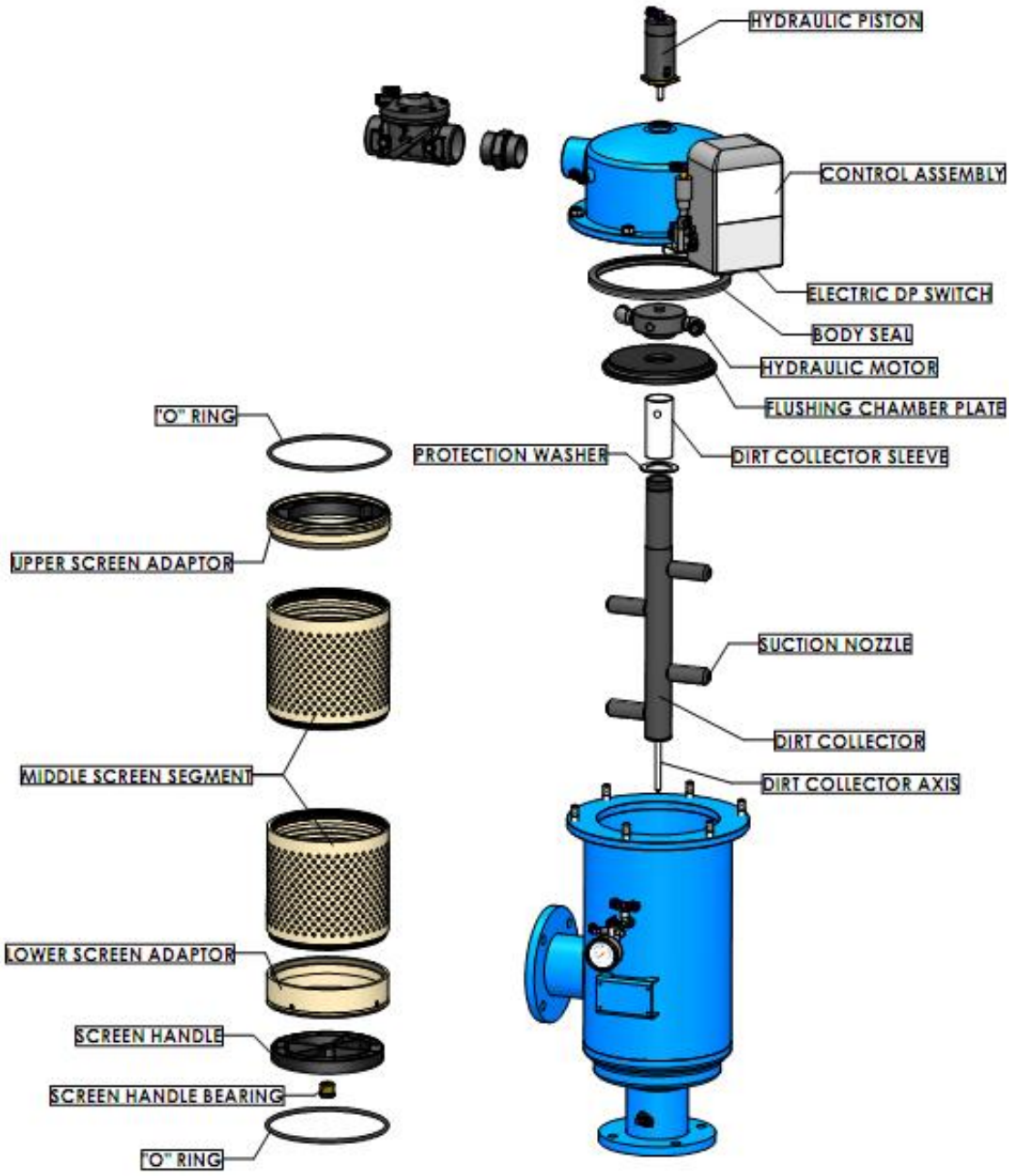


Figure 6: Coarse Screen Removal & Installation

6.6 - Dirt Collector Removal & Installation

1. Close the inlet and the outlet line valves.
2. Confirm filter draining prior to service.
3. Disconnect the control tube from the filter assembly's upper section.
4. Remove the six nuts and washers connecting both parts of the filter's housing (See Figure 7).
5. Carefully remove the control assembly.
6. Remove the cover of the filter assembly
7. Pull the plate out from the screen assembly together with the hydraulic motor and the dirt collector.
   Make sure the suction nozzles are in position to pass via the screen handle.
8. Disassemble the hydraulic motor from the damaged dirt collector.
9. Take out the stain less steel sleeve and the flushing chamber plate out of the damaged dirt collector.
10. Install the stain less steel sleeve on the new dirt collector.
11. insert the flushing chamber plate on the dirt collector and Install the Hydraulic motor on the new dirt collector.
12. Install the new dirt collector with the hydraulic motor and the plate into the screen assembly.
    Make sure the suction nozzles are in the right position to pass via the screen handle and the dirt collector axis is in the screen bearing.
13. Verify that the straight side of the body seal (U-Ring) fits into the groove located in the filter assembly's upper section.
14. Install the filter cover.
15. Carefully attach the control assembly to the filter housing with one of the six nuts and washers connecting both parts of the filter housing.
16. Continue to cross connect both parts of the filter housing by using the additional five nuts and washers. Do not over-tighten.
17. Connect the control tubes to the filter assembly housing (See Figure 7).
18. Open the inlet and the outlet line valves.
19. Check for leaks.

WARNING

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

20. 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.
21. Verify that the hydraulic flushing valve closes after 5 seconds.
22. Perform an additional flushing cycle manually, by operating the handle (turn clockwise 90°) located on the solenoid (See Figure 3).

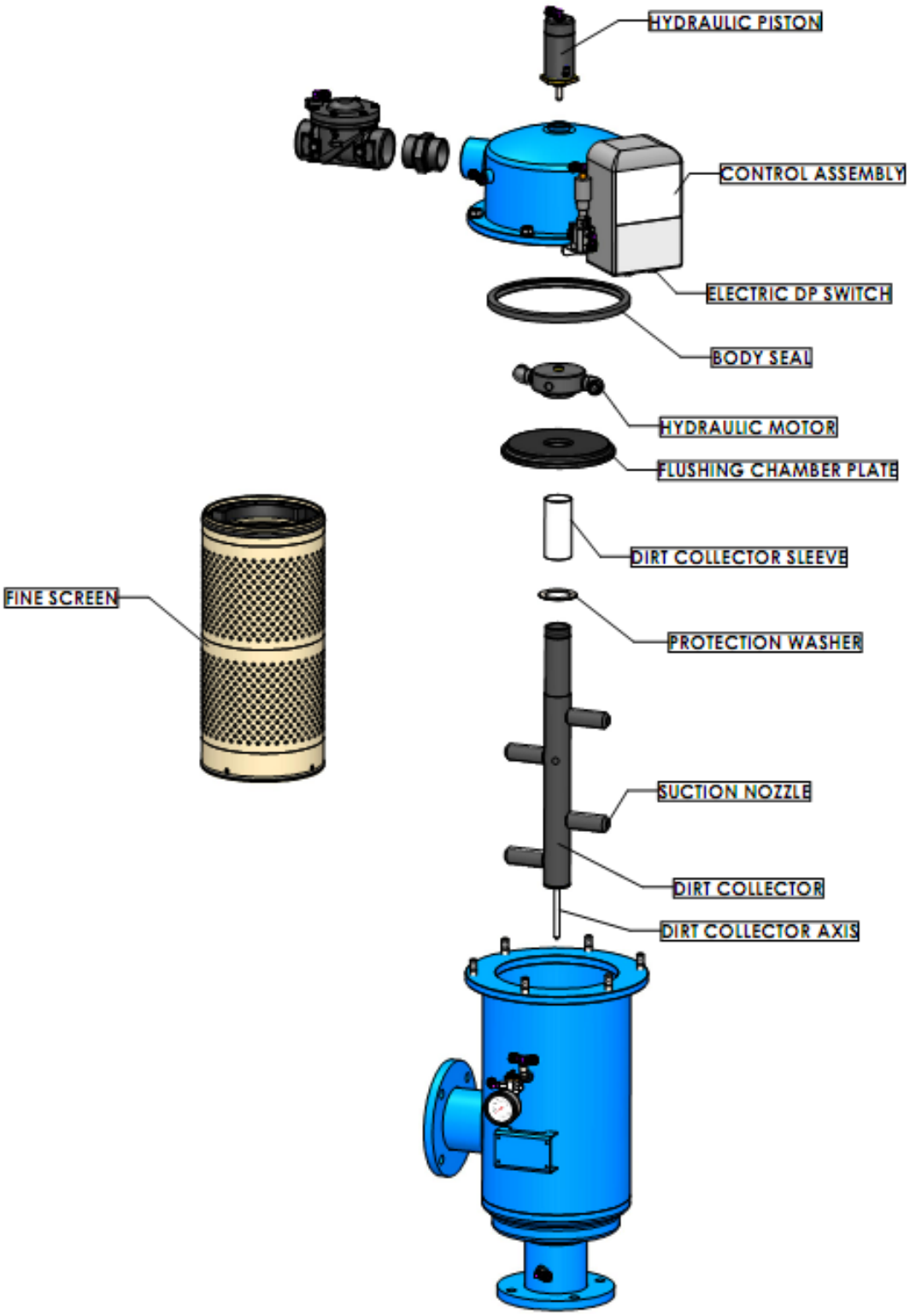


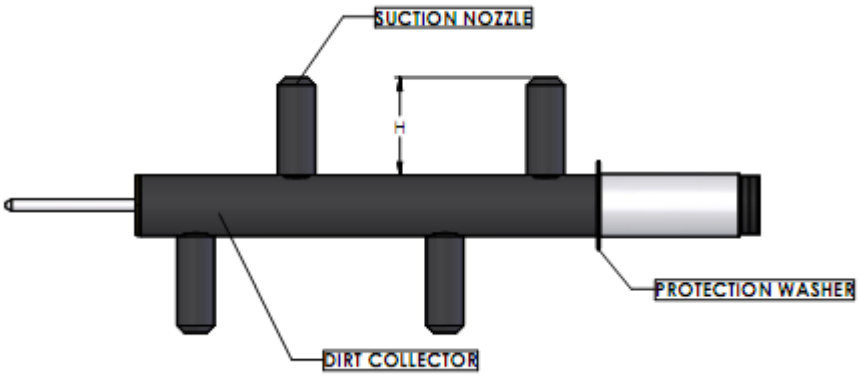
Figure 7: Dirt Collector Removal & Replacement

6.7 - 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	Nozzle Height
202-204	85mm
204X -206	76mm
208	104mm

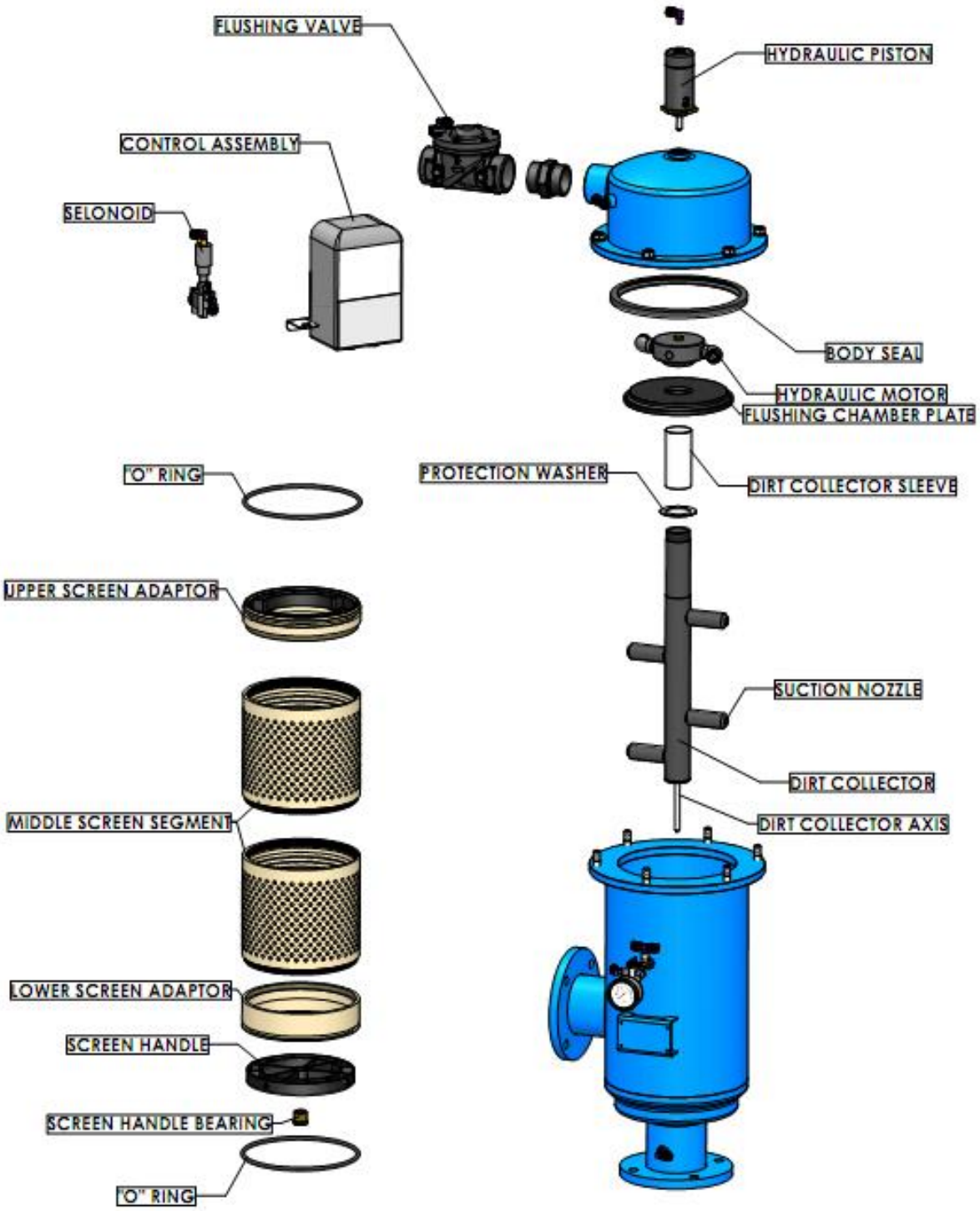
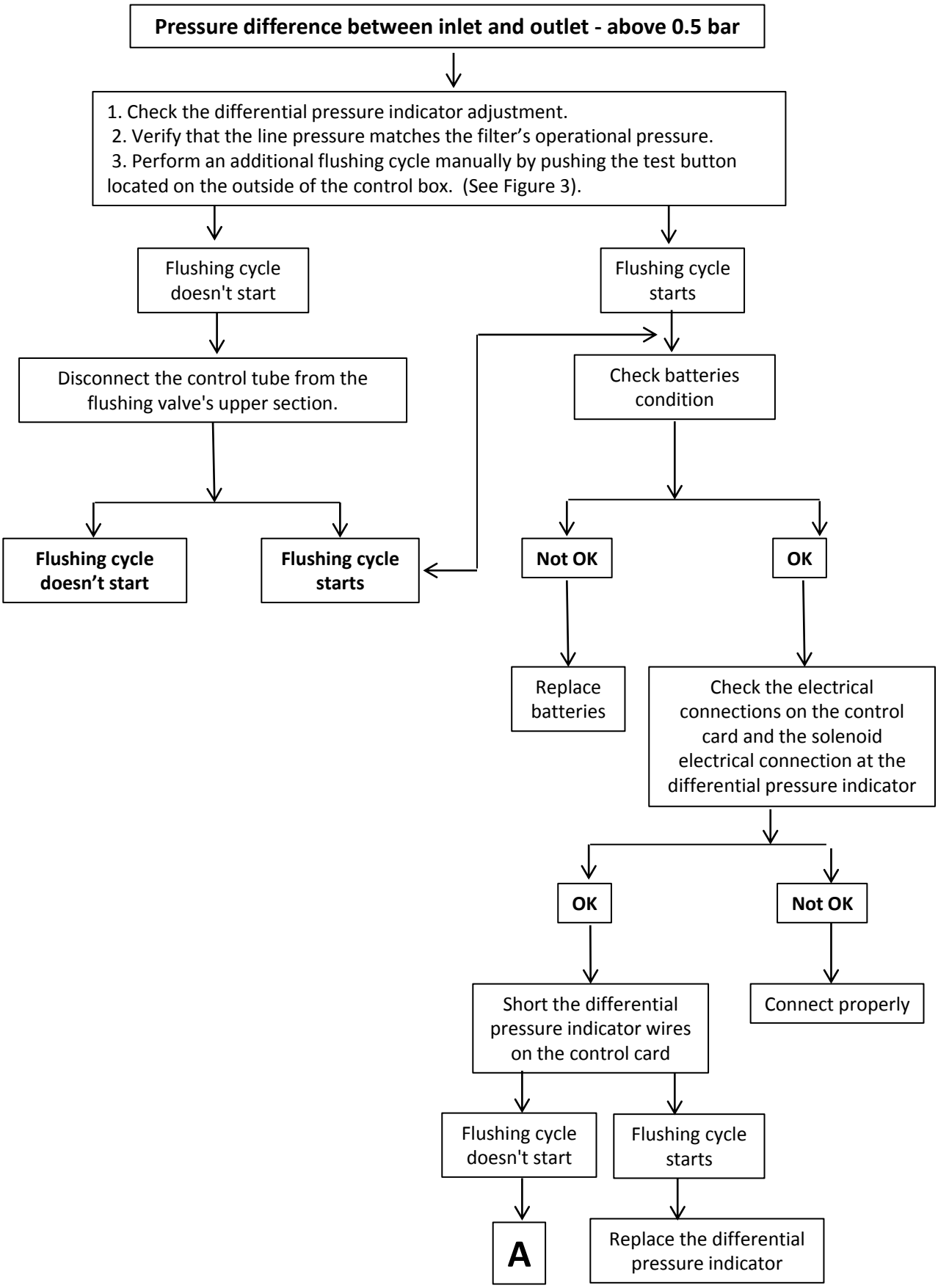
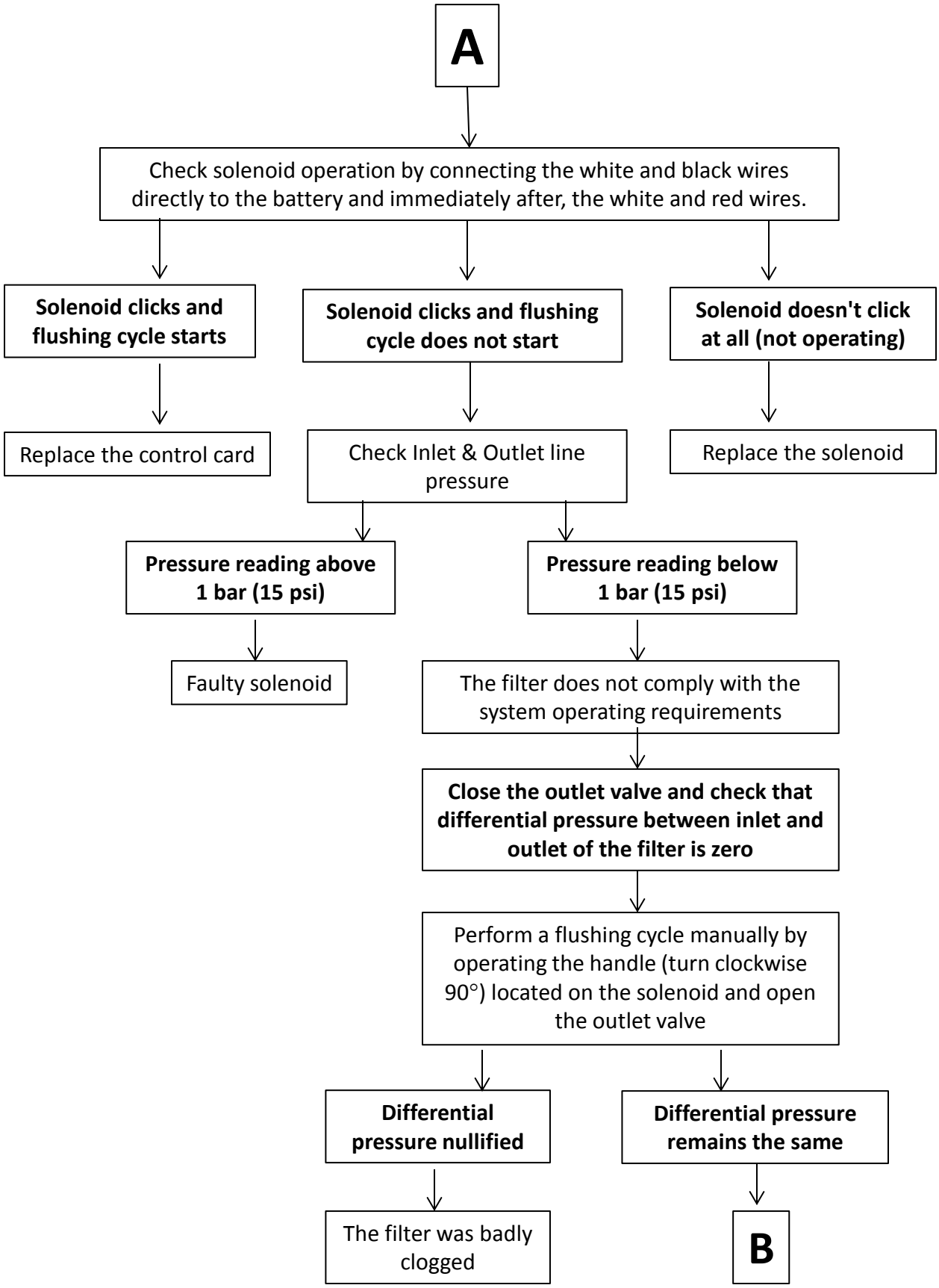
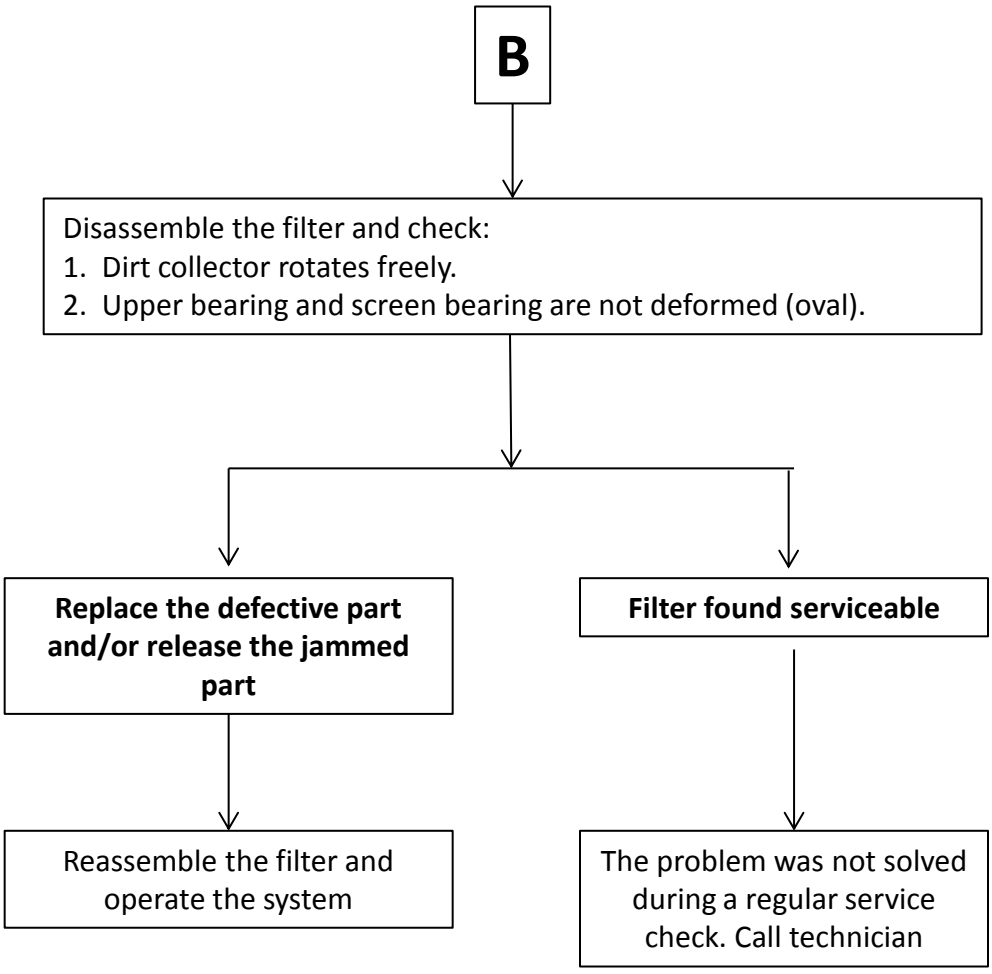


Figure 8: Periodic Checks

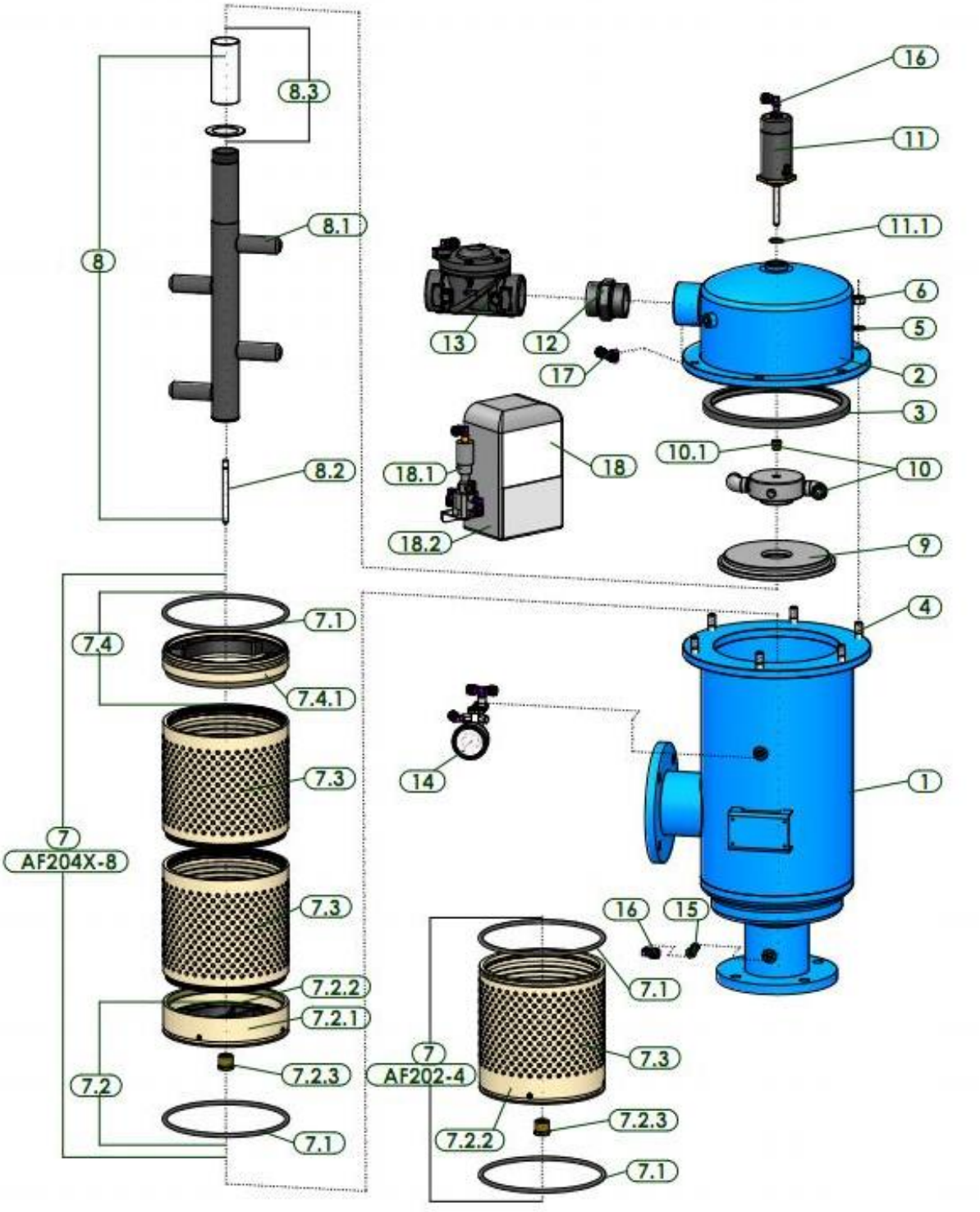
7. Troubleshooting




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)
Replace the control card
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

8. IPB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16
15
7.2.2
7.2.1
7.1
7.2.3
7.2
7
AF202-4
7.3
7.2.3
7.2.2
7.1

IPB No	Model	Catalog No	Description
1	AF200	N/A	FILTER BODY
2	AF200	N/A	FILTER COVER
3	AF202-206	5311250100	U-RING FOR COVER 10"-14"
	AF208F	5311400100	U-RING FOR COVER 16"
4	AF200	5292143001-043	STUD 1/2"NC*43 SS304
5	AF200	4121123001	WASHER M12 SS304
6	AF200	4112140401	NUT 1/2"NC HOT GALVANIZED
7	AF202/3	E7005601000-01##	COMP FINE SCREEN PVC225 AF202/3
	AF202X/3X/4	E7005601001-01##	COMP FINE SCREEN PVC225 AF202X/3X/4
	AF204X	E7005602001-01##	COMP FINE SCREEN PVC225 AF204X
	AF206	E7005603000-01##	COMP FINE SCREEN PVC225 AF206
	AF208	E7006603000-01##	COMP FINE SCREEN PVC280 AF208
7.1	AF202-206	4081202100-445	O-RING 445
	AF208	4081266100-450	O-RING 450
7.2	AF204X/6	E5005600900-01	UPPER SCREEN ADAPTER PVC225 ASSM AF204X/6
	AF208	E5006600900-01	UPPER SCREEN ADAPTER PVC280 ASSM AF208
7.2.1	AF204X/6	5005600900	UPPER SCREEN ADAPTER PVC225 AF204X/6
	AF208	5006600900	UPPER SCREEN ADAPTER PVC280 AF208
7.2.2	AF202-206	5021640500	SCREEN WHEEL 225 NYLON
	AF208	5021010600-P	SCREEN WHEEL 280 STEEL
7.2.3	AF200	5172391000	SCREEN BEARING F/DIRT COLLECTOR SHAFT AF200
7.3	AF202/3	W5005600400-01##	FINE SCREEN PVC225 AF202/3
	AF202X/3X/4	W5005600401-01##	FINE SCREEN PVC225 AF202X/3X/4
	AF204X/6	W5005600300-01##	FINE SCREEN MIDDLE SECTION PVC225
	AF208	W5006600300-01##	FINE SCREEN MIDDLE SECTION PVC280
7.4	AF204X/6	E5005601001-02	LOWER SCREEN ADAPTER PVC225 ASSM AF204X/6
	AF208	E5006601000-02	LOWER SCREEN ADAPTER PVC280 ASSM AF208
7.4.1	AF204X/6	E5005601001-01	LOWER SCREEN ADAPTER PVC225 AF204X/6
	AF208	E5006601000-01	LOWER SCREEN ADAPTER PVC280 AF208
8	AF202/3	E7101610200-01	COMP DIRT COLLECTOR 1" PVC 2 NOZZLE AF202/3
	AF202X/3X/4	E7101610201-01	COMP DIRT COLLECTOR 1" PVC 2 NOZZLE AF202X/3X/4
	AF204X	E7102610400-01	COMP DIRT COLLECTOR 1 1/2" PVC 4 NOZZLE AF204X
	AF206	E7102610600-01	COMP DIRT COLLECTOR 1 1/2" PVC 6 NOZZLE AF206
	AF208	E7102610601-01	COMP DIRT COLLECTOR 1 1/2" PVC 6 NOZZLE AF208
8.1	AF202-204	5121610101	SUCTION NOZZLE AF202/202X/3X/4
	AF204X/6	5121610201	SUCTION NOZZLE AF204X/206
	AF208	5121610202	SUCTION NOZZLE AF208
8.2	AF202/3	5131300900	DIRT COLLECTOR SHAFT SS304 9.5mm AF202/3
	AF202X-206	5131300901	DIRT COLLECTOR SHAFT SS304 9.5mm AF202X/3X/4/4X/6
	AF208F	5131300902	DIRT COLLECTOR SHAFT SS304 9.5mm AF208
8.3	AF202/3	5171303301	DIRT COLLECTOR SLEEVE 1" SS304 AF202/3
	AF202X/3X/4	5171303302	DIRT COLLECTOR SLEEVE 1" SS304 AF202X/3X/4
	AF204X/6	5171305000	DIRT COLLECTOR SLEEVE 50 SS304 AF204X/6
	AF208	E5171305001	DIRT COLLECTOR SLEEVE 50 ASSM SS304 AF208

IPB No	Model	Catalog No	Description
9	AF202-204	E5023010500-01	FLUSHING CHAMBER PLATE AF202/3/4
	AF204X/6	E5023010501-01	FLUSHING CHAMBER PLATE AF204X/6
	AF208	E5023010600-01	FLUSHING CHAMBER PLATE AF208
10	AF202-204	E5141630200-01	COMP HYDRAULIC MOTOR DELRIN AF202-204
	AF204X	E5142610202-01	COMP HYDRAULIC MOTOR PVC AF204X
	AF206/8	E5142610203-01	COMP HYDRAULIC MOTOR PVC AF206/8
10.1	AF200	5173360001	HYDRAULIC MOTOR BEARING BRONZE AF200
11	AF202/203	E7160306300	HYD PISTON 30 DELRIN AF202/3
	AF202X/203X/4	E7160306302	HYD PISTON 30 DELRIN AF202X/3X/4
	AF204X/6	E7160306303	HYD PISTON 30 DELRIN AF204X/6
	AF208	E7160306307	HYD PISTON 30 DELRIN AF208
11.1	AF200	4081020110	O-RING 20*3
12	AF202-204	4220106500	DOUBLE NIPPLE 1"BSP PLASTIC
	AF204X-8	4220200300	DOUBLE NIPPLE 2"BSP GALVANIZED
13	AF202-204	4510010004-1M	HYDRAULIC VALVE BERMAD 205 1"BSP
	AF204X-8	4510020004-1M	HYDRAULIC VALVE BERMAD 2"BSP MODEL 205
14	AF200	CS11010019	PRESSURE GAUGE SET AF200/200E
15	AF200	4470010000	FINGER FILTER 1/4"*1/8" PLASTIC
16	AF200	4640618082	MALE ELBOW 1/8"*8 PLASTIC
17	AF200	4640214082	TEE 8*1/4"*8 PLASTIC
18	AF200-DC	CSD1100112100	CONTROLLER 1-10 DC + 1 SOLENOID COMPLETE
	AF200-AC	CSA1100114100	CONTROLLER 1-10 AC + 1 SOLENOID COMPLETE
18.1	AF200-DC	4430010902	SOLENOID DCL GALSOL 2W
	AF200-AC	4430030901	SOLENOID AC GALSOL 24V
18.2	AF200-DC	4440211002	CONTROLLER 1-10 DC 2 PORTS + DP
	AF200-AC	4440311002	CONTROLLER 1-10 AC 2 PORTS + DP
18.2.1	AF200-DC	4450110200	EXPENSION CARD FOR 1-10 DC CONTROLLER
	AF200-AC	4450110300	EXPENSION CARD FOR 1-10 AC CONTROLLER

9. Appendixes

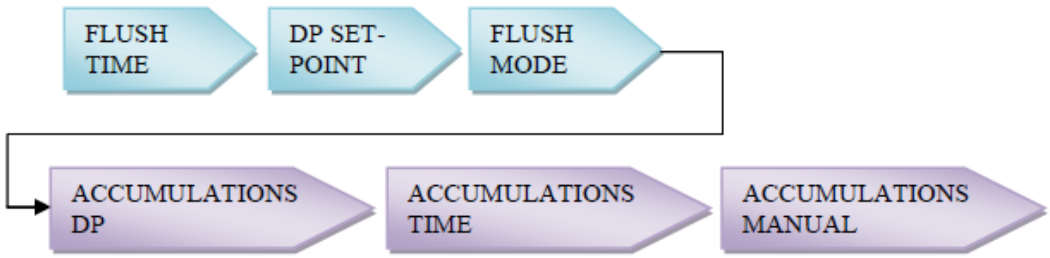
9.1 - Filtron 1-10 (AC/DC)

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

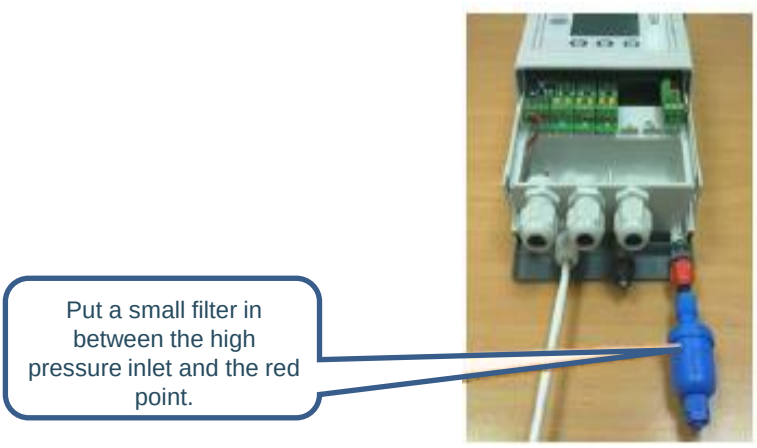
As explained before, endless looping problems can be detected when the number of consecutive flushing cycles triggered by the DP sensor exceeds the "looping limit" set during configuration. The fact that endless looping problem was detected will be indicated on the display and will cause the activation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

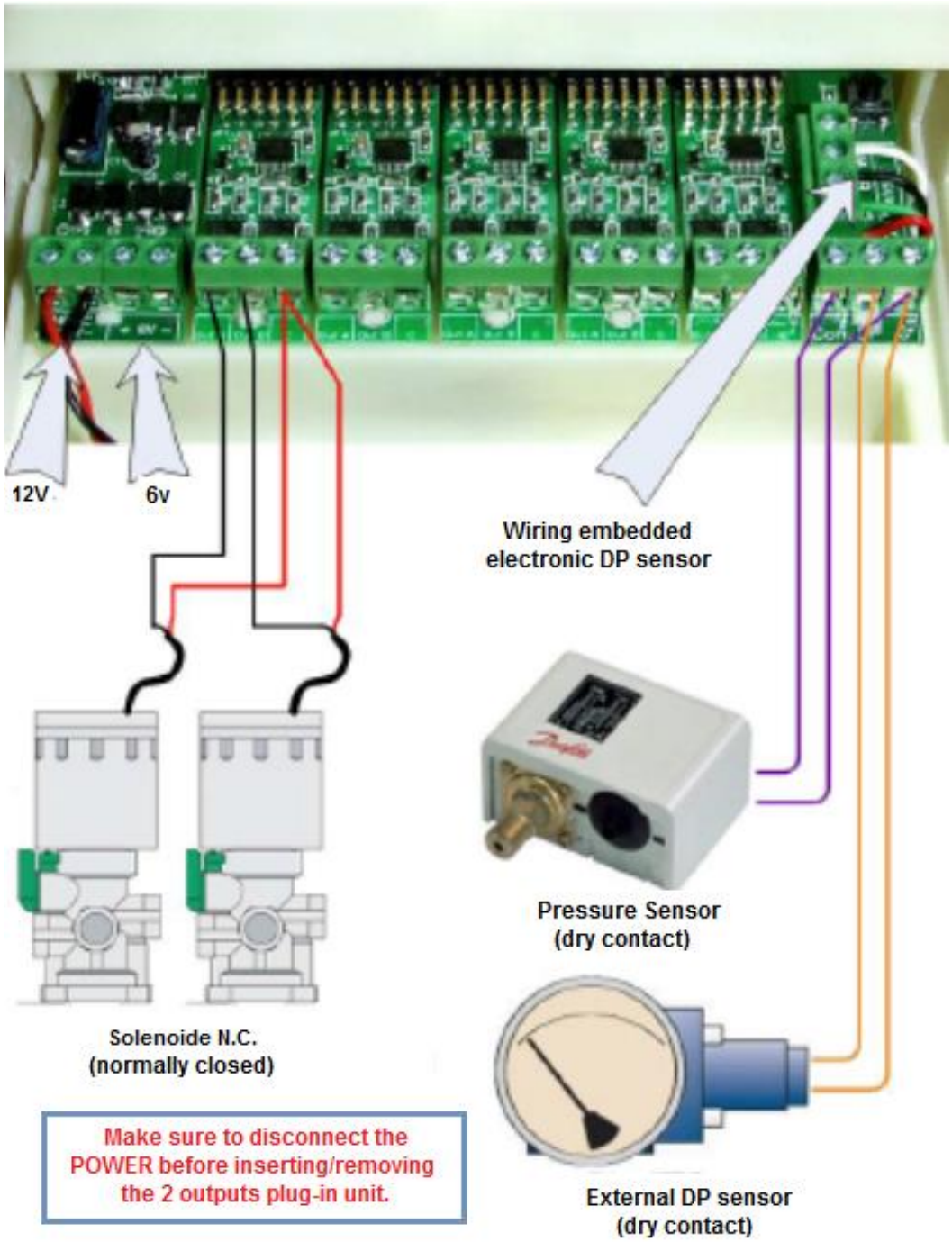
AC MODEL

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.

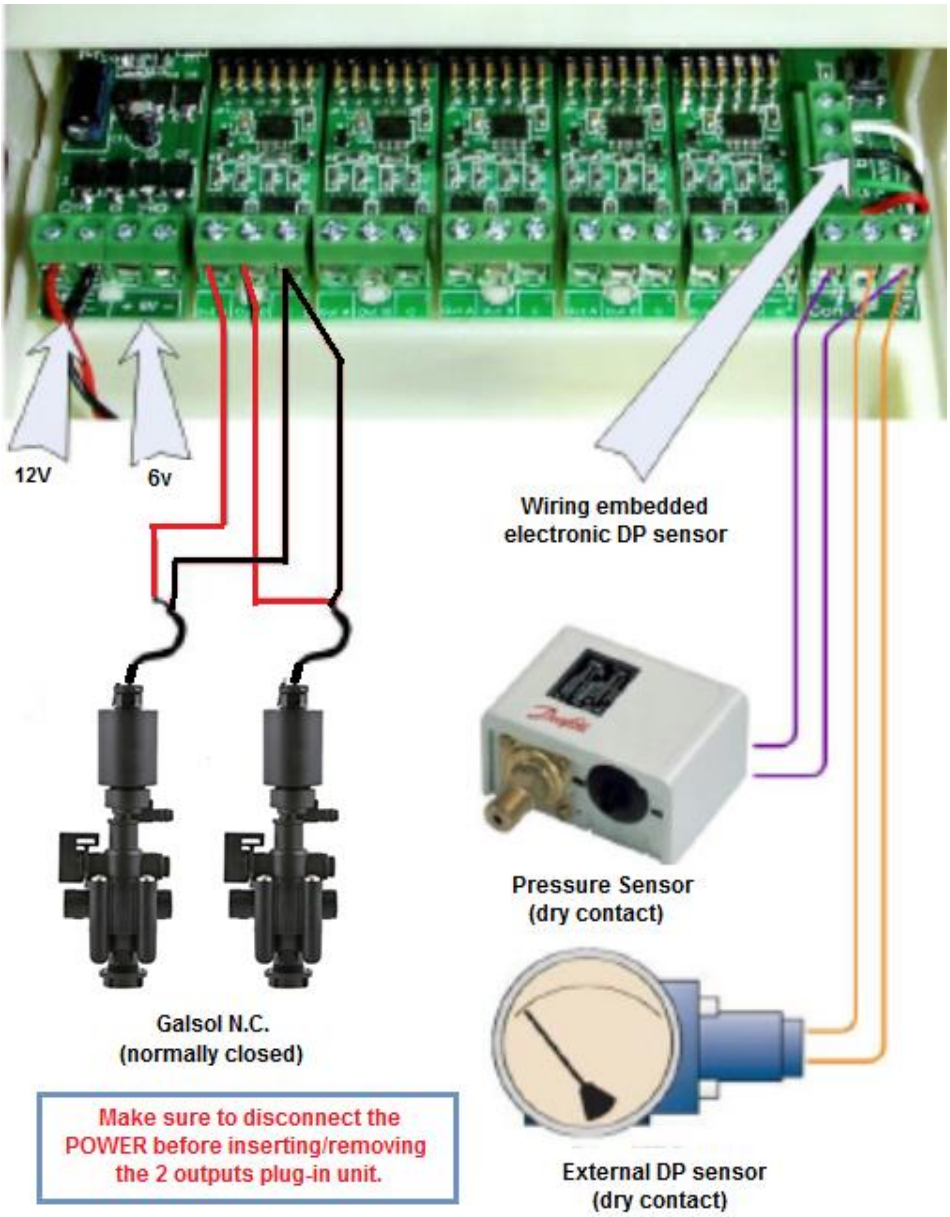
Wiring diagram

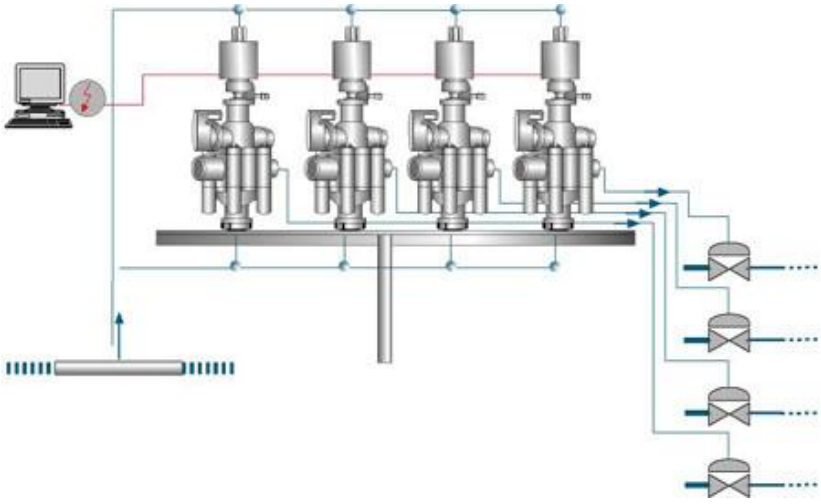
DC MODEL

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



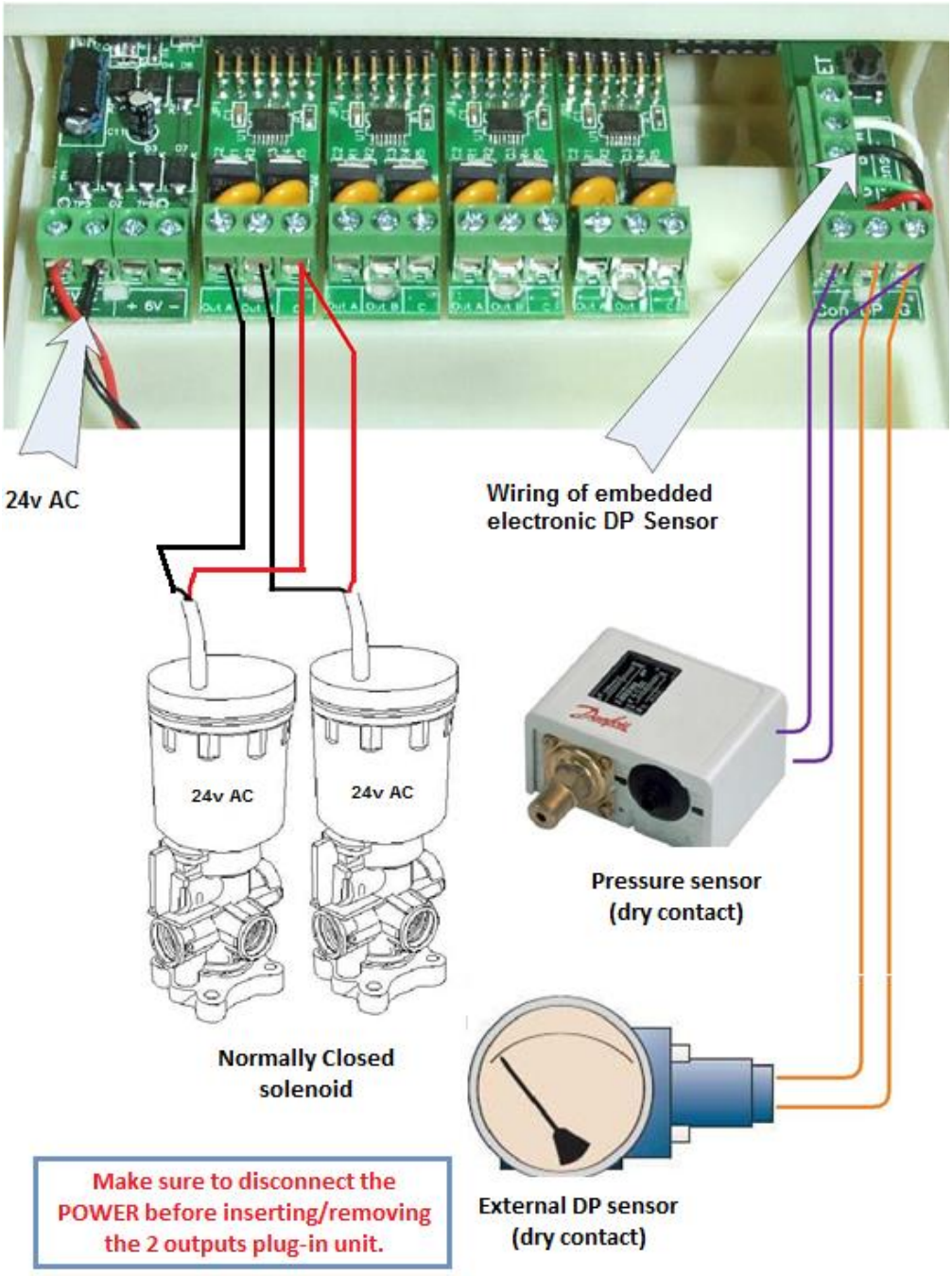


Wiring diagram

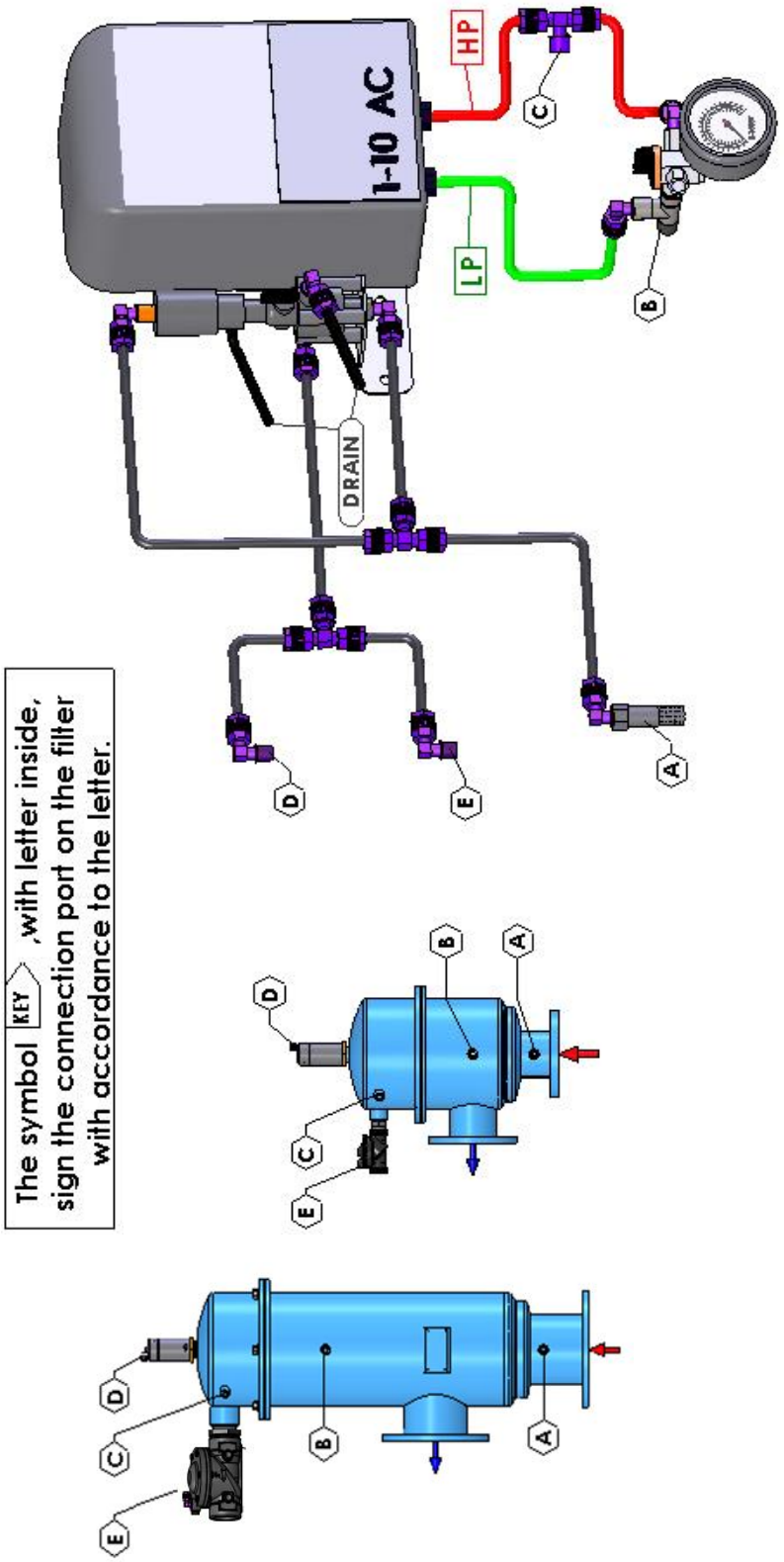
AC MODEL

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

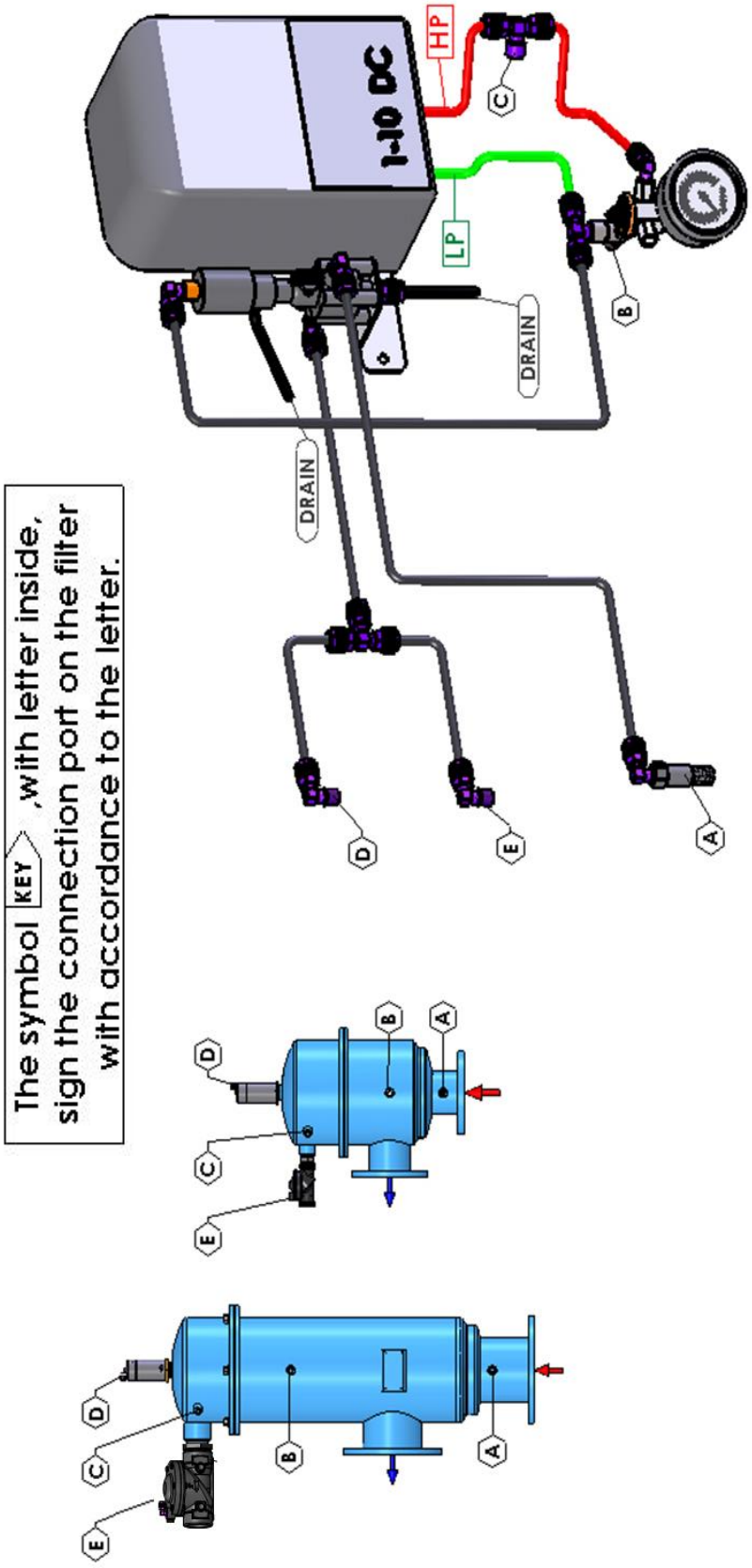
1. The external DP sensor is optional and it is intended for use in case there is no Embedded Electronic DP included.
2. The powering of the unit is by 24v AC transformed from 220/110 v AC.
3. The solenoids are 24v AC.



9.2 - Control Loops Schematic Drawing
Hydraulic Scheme AC1-10 Controller



Hydraulic Scheme DC1-10 Controller



9. 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.