

B Series

Compact, self-flushing screen filter



Features

- Installed in angle position
- Supplied in 2" - 8" inlet / outlet connections
- Low backwash water consumption

Technical Data

Model		B-2	B-3	B-4	B-6	B-8		B-2	B-3	B-4	B-6	B-8
	Metric						US					
Connection diameter	mm	50	90	110	160	225	inch	2	3	4	6	8
Screen area	cm ²	1100	1100	1630	4120	5240	inch ²	170	170	253	639	812
Flush flow rate at min. pressure	m ³ /h	6	6	6	20	20	gpm	26	26	26	88	88
Pressure range	bar	2-10					psi	29-145				
Max. temp.	°C	65					°F	149				
Control voltage		9 V DC or 220 V / 24 V AC						9 V DC or 110 V / 24 V AC				

Maximum Filtration Flow Rate / Water Quality

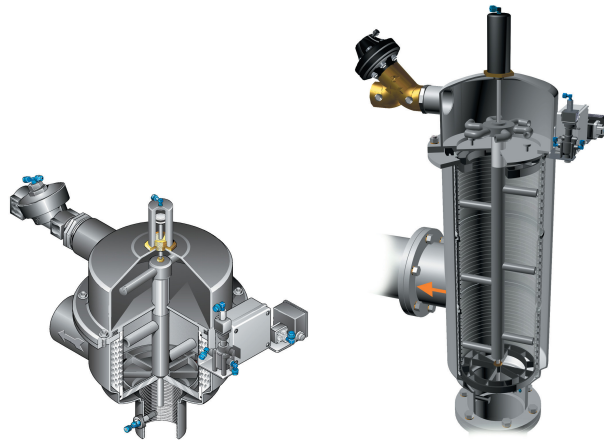
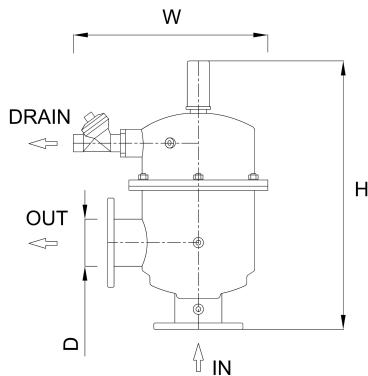
Model		B-2	B-3	B-4	B-6	B-8	B-2	B-3	B-4	B-6	B-8
Filtration Grade	Water Quality	m ³ /h					gpm				
400 μ	Good	25	40	80	130	200	110	176	352	572	880
	Average	25	40	80	130	200	110	176	352	572	880
	Poor	25	40	80	130	200	110	176	352	572	880
200 μ	Good	25	40	80	130	200	110	176	352	572	880
	Average	20	35	70	90	170	88	154	308	396	748
	Poor	15	25	40	70	130	66	110	176	308	572
150-100 μ	Good	25	40	80	130	200	110	176	352	572	880
	Average	15	25	40	70	150	66	110	176	308	660
	Poor	10	20	35	60	120	44	88	154	264	528
80-50 μ	Good	10	20	35	60	120	44	88	154	264	528
	Average	8	18	25	50	90	35	79	110	220	396
	Poor	6	15	20	40	60	26	66	88	176	264

B Series

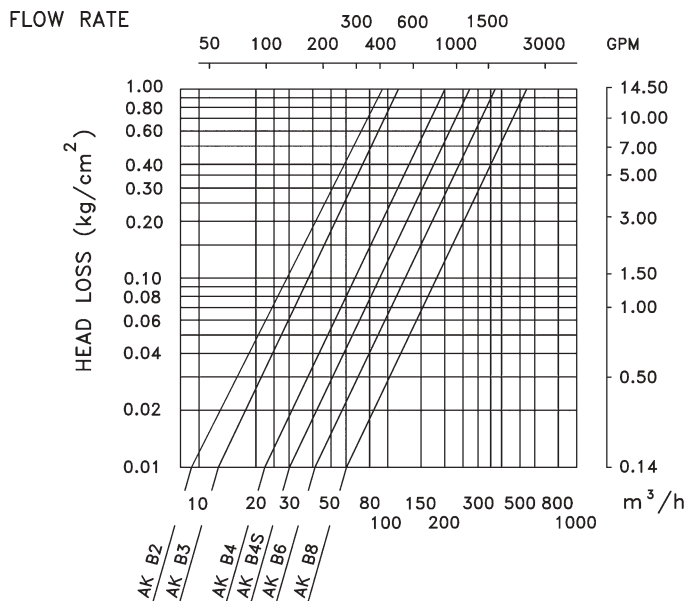
Compact, self-flushing screen filter

Dimensions and Weights

Model		B-2	B-3	B-4	B-6	B-8		B-2	B-3	B-4	B-6	B-8
D	mm	50	80	100	165	225	inch	2	3	4	6	8
H	mm	480	495	495	1025	1330	inch	25	25	35	43	47
W	mm	471.5	471.5	471.5	459	470	inch	19	19	19	18	18.5
Approximate shipping weight	kg	24	25	28	76	130	lbs	53	55	61	167	286



Head Loss Chart at, Clean State



B filtration units can be supplied in:
Polyester coated steel or
Stainless steel

**ARKAL SCREEN LINE
B - SERIES
Compact Self-Cleaning Screen Filter**

SERVICE & MAINTENANCE MANUAL



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Introduction

General

Arkal Filtration Systems congratulates you on purchasing the new **B SERIES** self-cleaning filter. This filter now joins the wide family of filters produced and supplied by **Arkal** for agriculture, municipal water and sewage systems, and all types of industrial applications. All products manufactured by **Arkal** 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.

Safety Instructions

1. Prior to installation or handling of the filter, read carefully the installation and operation instructions carefully.
2. Confirm filter draining prior to service.
3. Take precautions while lifting, transporting or installing the filter.
4. Installation of the filter should be performed so as to avoid direct water splashing on any of the filter parts and especially on the electronic control unit.
5. Confirm that filter weight, when full, meets the support construction requirements.
6. Prior to installation confirm that line pressure matches filter's operational pressure.
7. During installation, use standard flanges and connections only.
8. Check that all filter flange bolts are properly secured.
9. Please note, the filter enters a flushing mode automatically, without prior warning.
10. Use original parts only when servicing the filter.
11. Arkal cannot accept responsibility for any changes or modifications to the equipment.

Description & Operation

Filter Assembly General Description (Figure 1)

The **B SERIES** self-cleaning filter enables high quality filtration from grades of 50-400 micron from various types of water sources such as sewage, reservoirs, rivers, lakes, and wells.

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

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

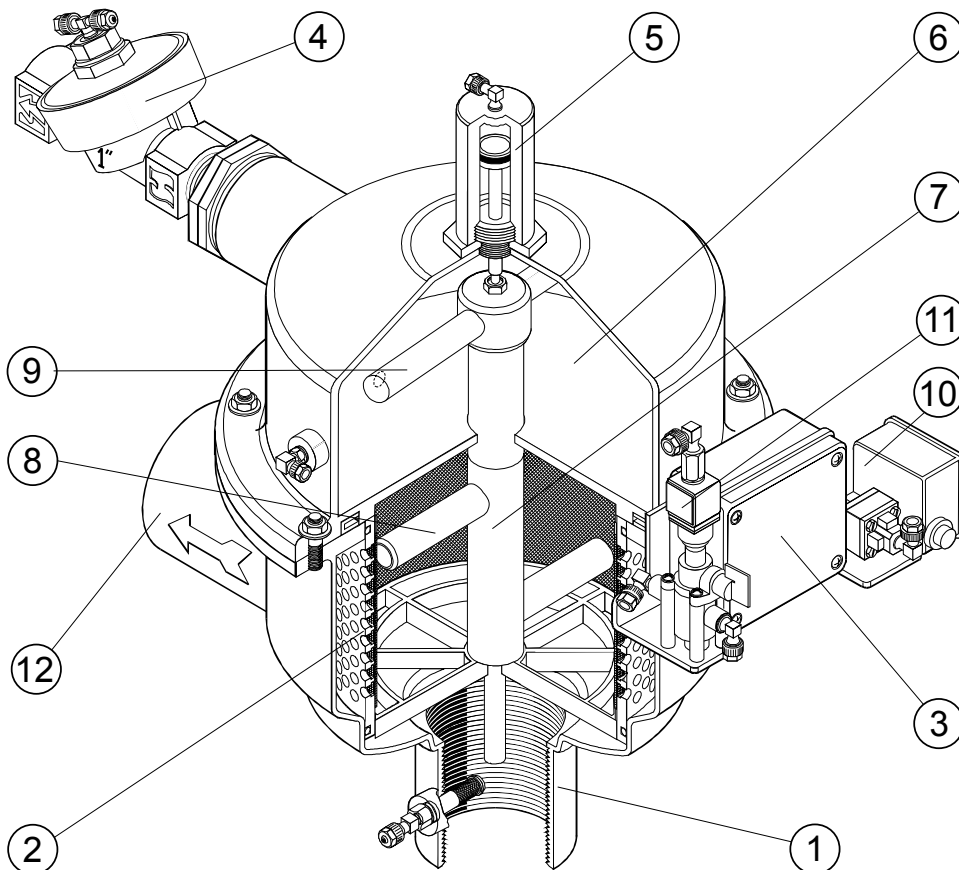


Figure 1: Filter Assembly

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 (Figure 1)

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.

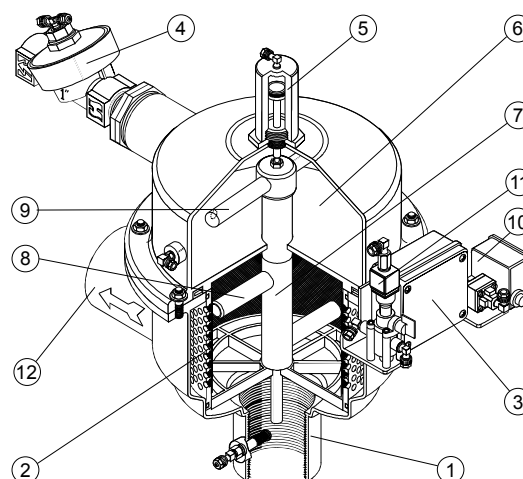


Figure 1: Filter Assembly

Technical Data

Standard Features

- Minimum operating pressure: 2 bar (29 psi)
- Maximum operating pressure: 10 bar (145 psi)
- Clean filter pressure loss: 0.1 bar (1.45 psi)
- Maximum water temperature: 65°C (149°F)
- Filtration range: 50-400 micron
- Control voltage: 12V DC, 24V DC
- Flush water consumption (at minimum working pressure): 7 liters (2.11 gallons)
- Filter housing materials: carbon steel coated with baked on epoxy
- Available connections: M = Threaded socket V = Vic. F = Flange

General Technical Data

Model Number	Conn. Size ØD (inch)	Screen Area (cm ²)	* Max. Flow Rate (m ³ /h)	** Flushing Flow Rate (m ³ /h)	ØD1 (inch)	X (mm)	Y (mm)	H (mm)	Weight (Kg)
AK B2	2	1100	30	6	10	177	174	480	24
AK B2-S	2	1630	30	6	10	177	174	625	26
AK B3	3	1100	40	6	10	192	188	495	25
AK B3-S	3	1630	50	6	10	192	188	640	27
AK B4	4	1630	80	6	10	220	210	650	28

B = Compact **S** = Filter with large filtration area

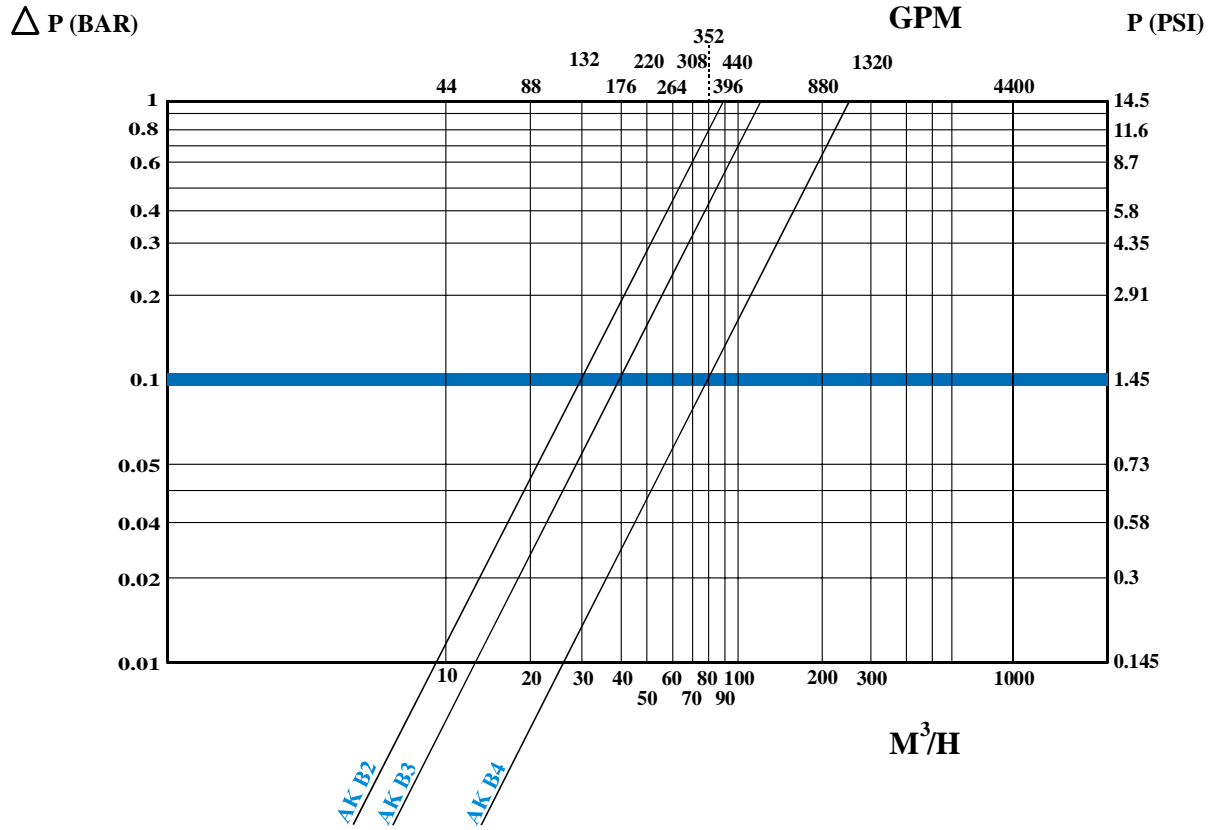
* Flow rate data are for high quality water at filtration grade of 120 micron.

** Flushing flow rate data are for minimum operational pressure (2 bar / 29 psi).

Filtration Grade Conversion Table

Micron	50	80	100	120	150	200	400
Mesh	300	200	150	120	100	80	40

Pressure Loss At 120 Micron



Initial Installation & Operation

General

The filter assembly is protectively packed with all parts assembled.

Installation (Figure 2)

1. Remove the filter assembly from the carton.
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 40 mm diameter and not 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 filter periphery are properly tightened and secured.
6. Connect the battery located in the control unit box as explained in the "Initial Operation" (See Figure 3 Page 9).

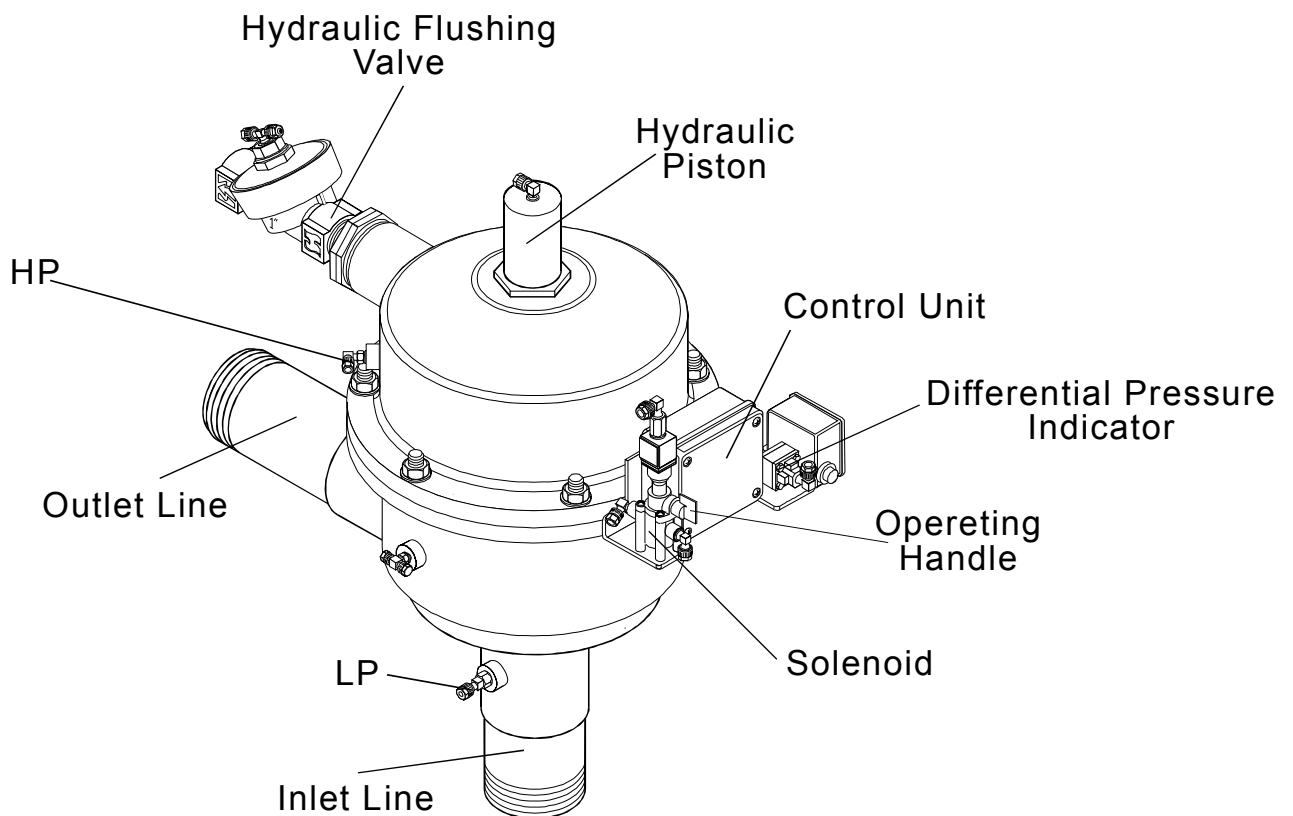


Figure 2: Initial Filter Installation

Initial Operation

1. Gradually open the inlet valve (make sure that the outlet valve, if installed, is open).

WARNING

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

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 starts.
4. Verify that the hydraulic flushing valve closes after 5 seconds.
5. Verify that the hydraulic piston fully extends during backflush.
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 indicator is set to 7 psi or 0.5 bar.
8. Perform an additional flushing cycle manually by operating the handle (turn clockwise 90°) located on the solenoid valve (See Figure 3).

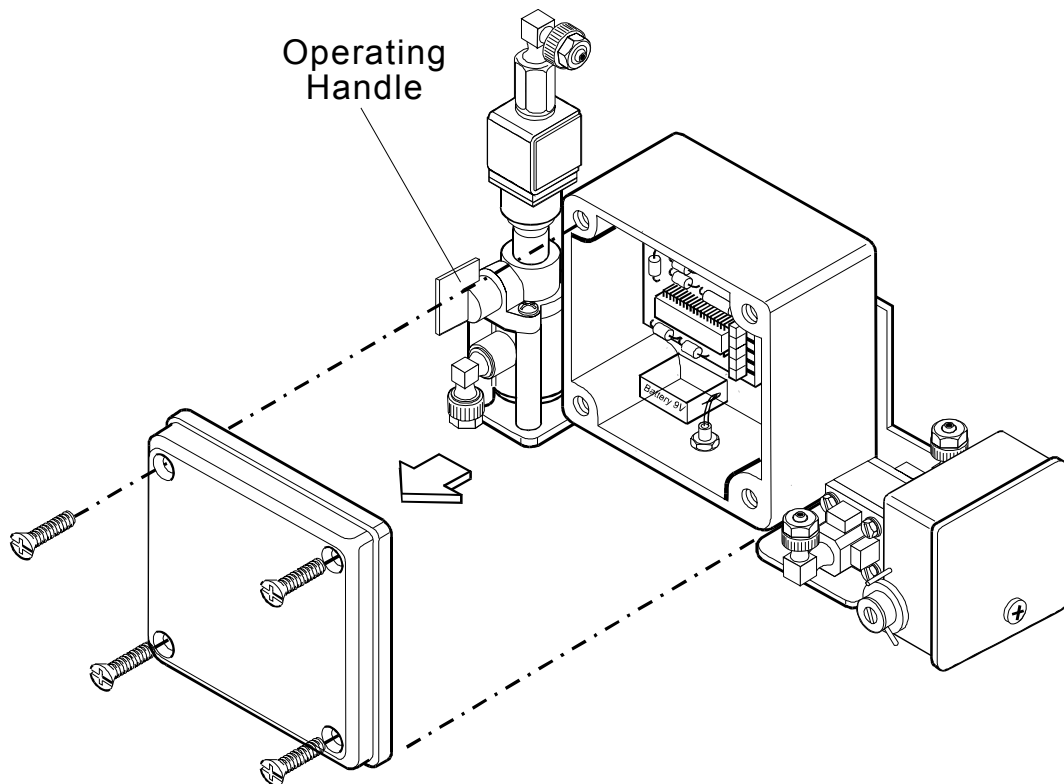


Figure 3: Battery Removal & Installation

Maintenance & Periodical Checks

9V Battery Removal & Installation (Figure 3)

The 9V 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 4 screws attaching the electronic control unit cover.
2. Disconnect and remove the used battery.
3. Connect a new battery according to the correct polarity.
4. Secure the electronic control unit cover with the 4 screws.

WARNING

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

5. For AC controlled filter, refer to Appendix 1.
6. 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.
7. Verify that the hydraulic flushing valve closes after 5 seconds.
8. Perform an additional flushing cycle manually, by operating the handle (turn clockwise 90°) located on the solenoid (See Figure 3).

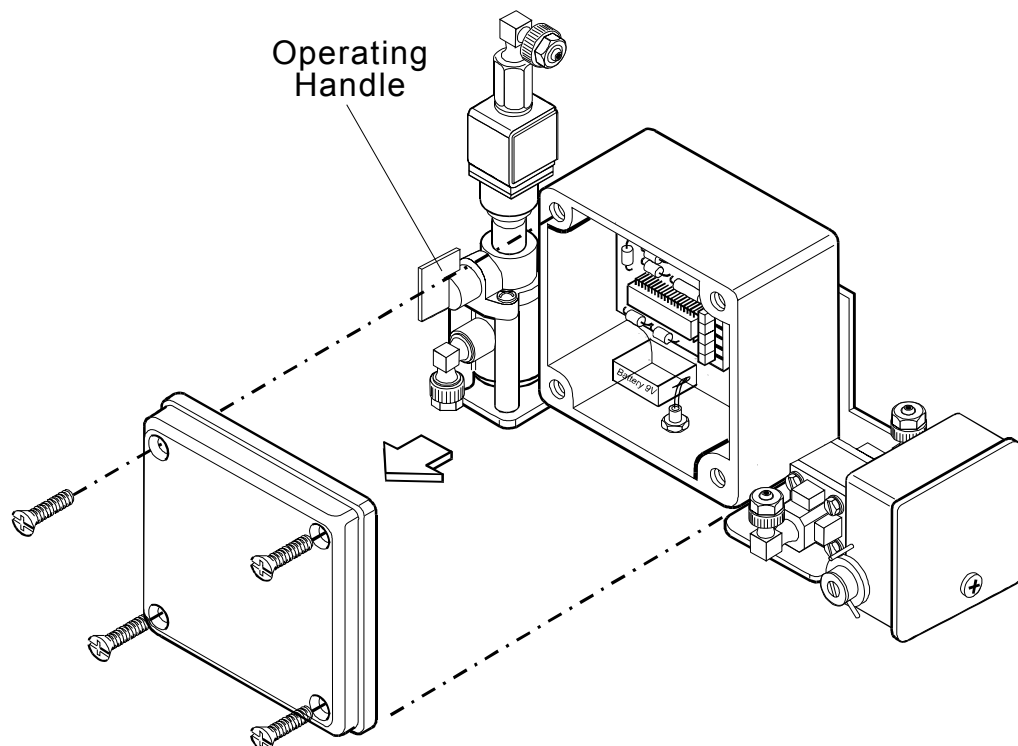


Figure 3: Battery Removal & Installation

Control Card Removal & Installation (Figure 4)

The electronic control unit contains the control card, which enables the filter's self-cleaning process.

1. Remove the 4 screws attaching the electronic control unit cover.
2. Disconnect and remove the 9V battery.
3. Pull out the defective control card.
4. Disconnect the electrical wiring from the control card terminals (white, red and black wires for solenoid, two wires for differential pressure indicator).
5. Connect the electrical wiring to the new control card terminals (white (+), red (o) and black (c) wires for the solenoid, two wires (D & P) for the differential pressure indicator).
6. Insert the new control card.
7. Connect the 9V battery according to the correct polarity.
8. Secure the electronic control unit cover with the 4 screws.

WARNING

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

9. For AC controlled filter, refer to Appendix 1.
10. 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.
11. Verify that the hydraulic flushing valve closes after 5 seconds.
12. Perform an additional flushing cycle manually, by operating the handle (turn clockwise 90°) located on the solenoid (See Figure 4).

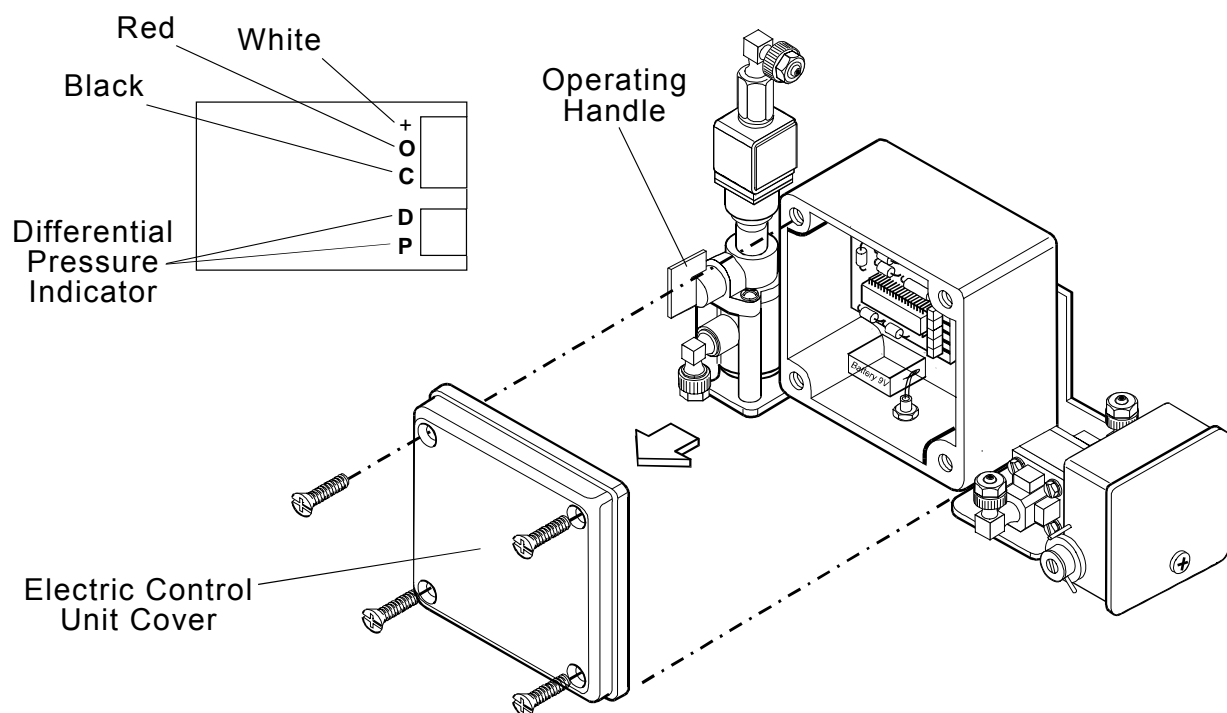


Figure 4: Control Card Removal & Installation

Solenoid Removal & Installation (Figure 5)

The solenoid hydraulically controls the flushing valve's operation.

1. Remove the 4 screws attaching the electronic control unit cover, disconnect and remove the 9V battery.
2. Disconnect the solenoid control tubes.
3. Remove the fittings from the damaged solenoid.
4. Disconnect the electrical wiring from the control card terminals (white (+), red (o) and black (c) wires).
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 electrical wiring to the control card terminals (white, red and black wires) (See Figure 5).
11. Connect the solenoid control tubes.
12. Connect the 9V battery according to the correct polarity and secure the electronic control unit cover with the 4 screws.

WARNING

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

13. For AC controlled filter, refer to Appendix 1.
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 5 seconds.
16. Perform an additional flushing cycle manually, by operating the handle (turn clockwise 90°) located on the solenoid (See Figure 3).

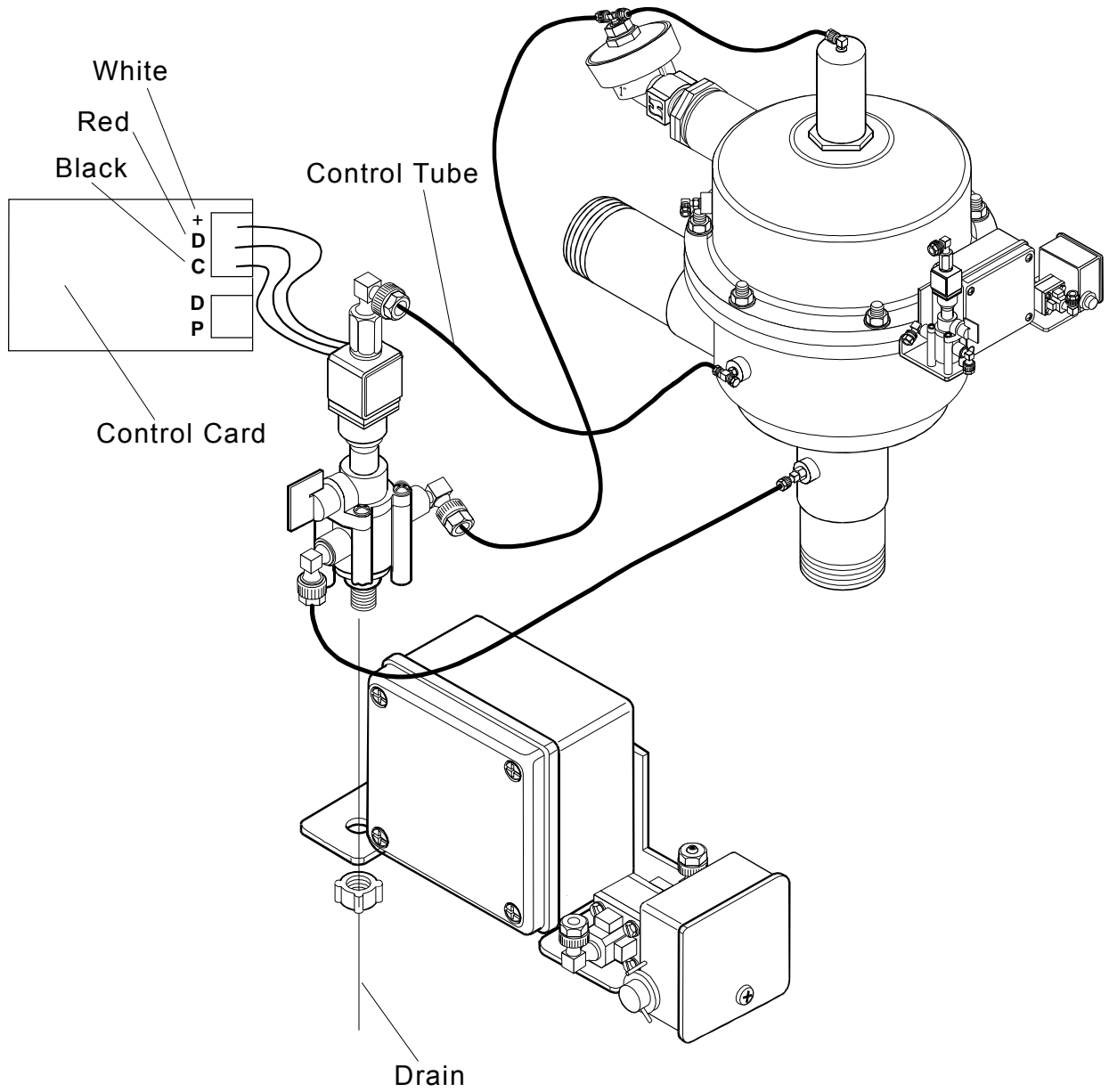


Figure 5: Solenoid Removal & Installation

Differential Pressure Indicator Removal & Installation (Figure 6)

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

1. Disconnect the two control tubes from the differential pressure indicator.
2. Remove the 4 screws attaching the electronic control unit cover, disconnect and remove the 9V battery.
3. Disconnect the electrical wiring from the control card terminals.
4. Remove the two nuts located at the bottom of the electronic control unit assembly.
5. Pull the differential pressure indicator out of the control assembly.
6. Insert a new differential pressure indicator into the control assembly.
7. Install the two nuts at the bottom of the electronic control unit assembly.
8. Connect the two control tubes to the differential pressure indicator (note that the high pressure and the low pressure are connected to the right fittings).
9. Connect the electrical wiring to terminals D & P on the control card (See Figure 6).
10. Connect the 9V battery according to the correct polarity and secure the electronic control unit cover with the 4 screws.

WARNING

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

11. For AC controlled filter, refer to Appendix 1.
12. 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.
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).

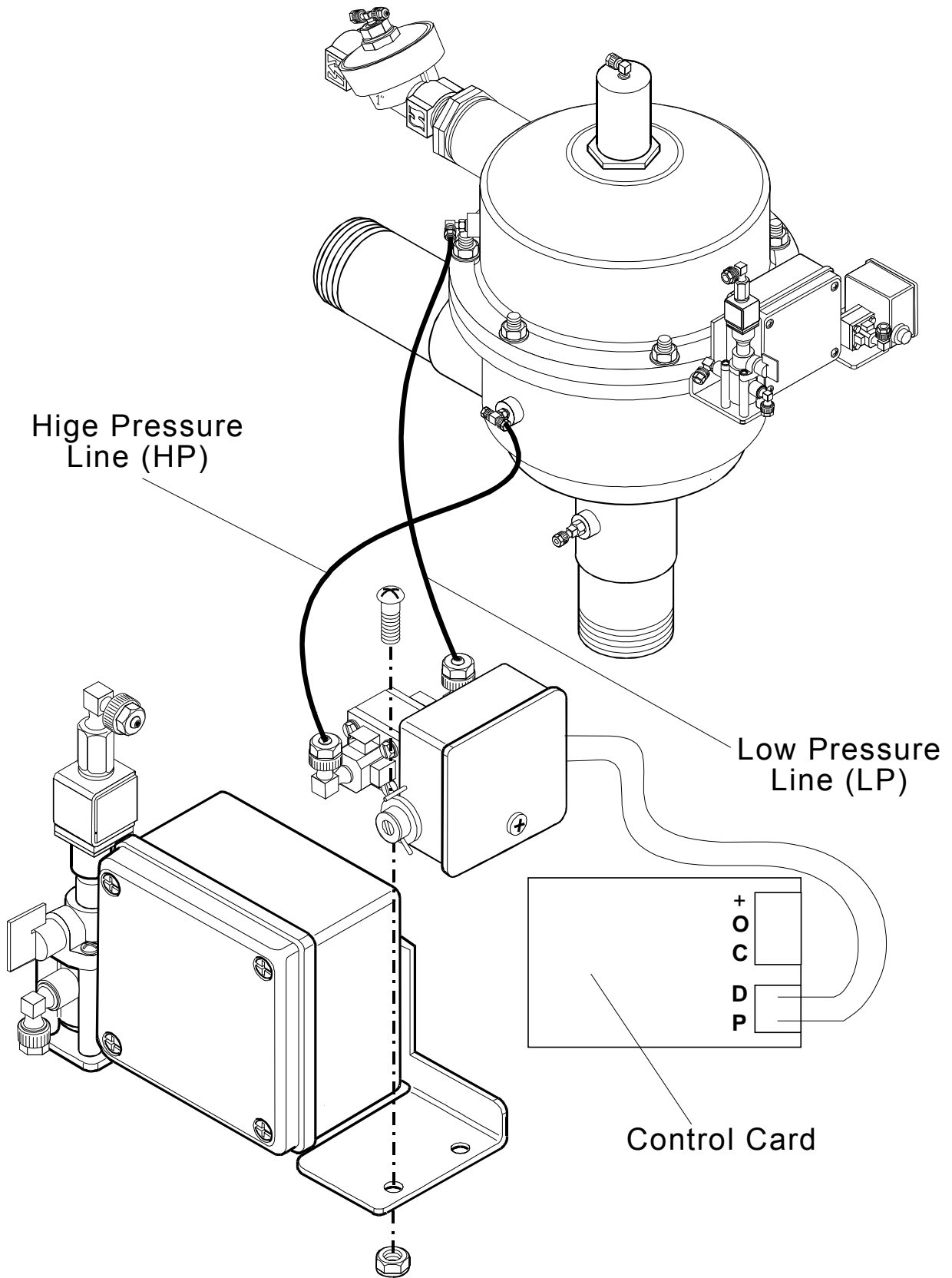


Figure 6: Differential Pressure Indicator Removal & Installation

Hydraulic Piston Removal & Installation (Figure 7)

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.
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. For AC controlled filter, refer to Appendix 1.
12. 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.
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).

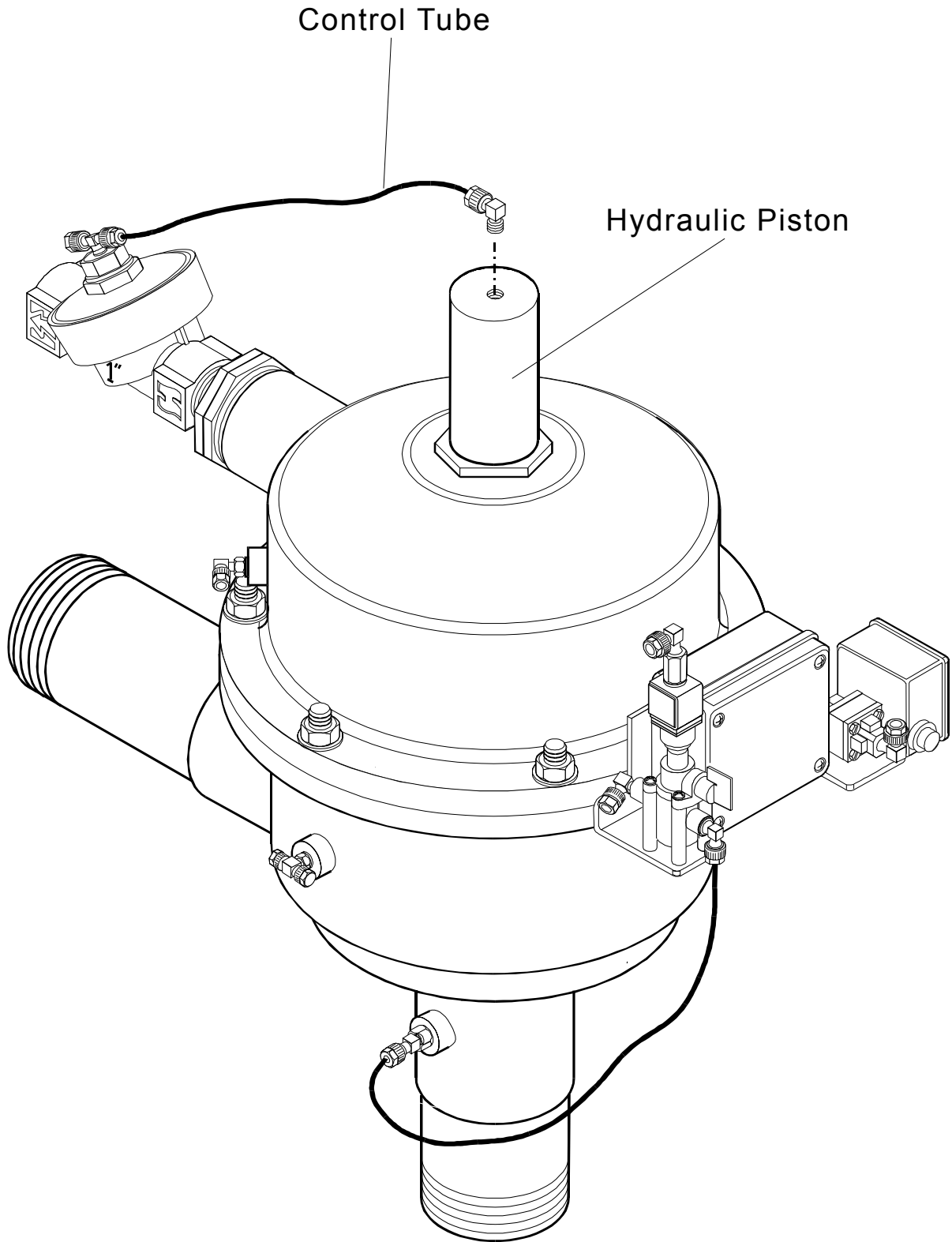


Figure 7: Piston Removal & Installation

Screen Removal & Installation (Figure 8)

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 8).
5. Carefully remove the control assembly.
6. Remove the upper part of the filter assembly together with the hydraulic motor and dirt collector.
7. Pull the screen out of the filter housing assembly.
8. Remove both upper and lower seals from the old screen.
9. Remove the screen bearing from the old screen's lower section.
10. Install the screen bearing into the new screen's lower section.
11. Position both upper and lower seals into the new screen.
12. Lubricate upper and lower seals with **silicon grease**.
13. Slide the new screen into the filter housing assembly.
14. Verify that the straight side of the body seal (U-Ring) fits into the groove located in the filter assembly's upper section.
15. Verify that the dirt collector axis passes through the screen bearing.
16. Install the upper part of the filter assembly together with the hydraulic motor and dirt collector.
17. Carefully attach the control assembly to the filter housing with one of the six nuts and washers connecting both parts of the filter housing.
18. Continue to cross connect both parts of the filter housing by using the additional five nuts and washers. Do not over-tighten.
19. Connect the control tubes to the filter assembly housing (See Figure 7).
20. Open the inlet and the outlet line valves.
21. Check for leaks.

WARNING

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

22. For AC controlled filter, refer to Appendix 1.
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).

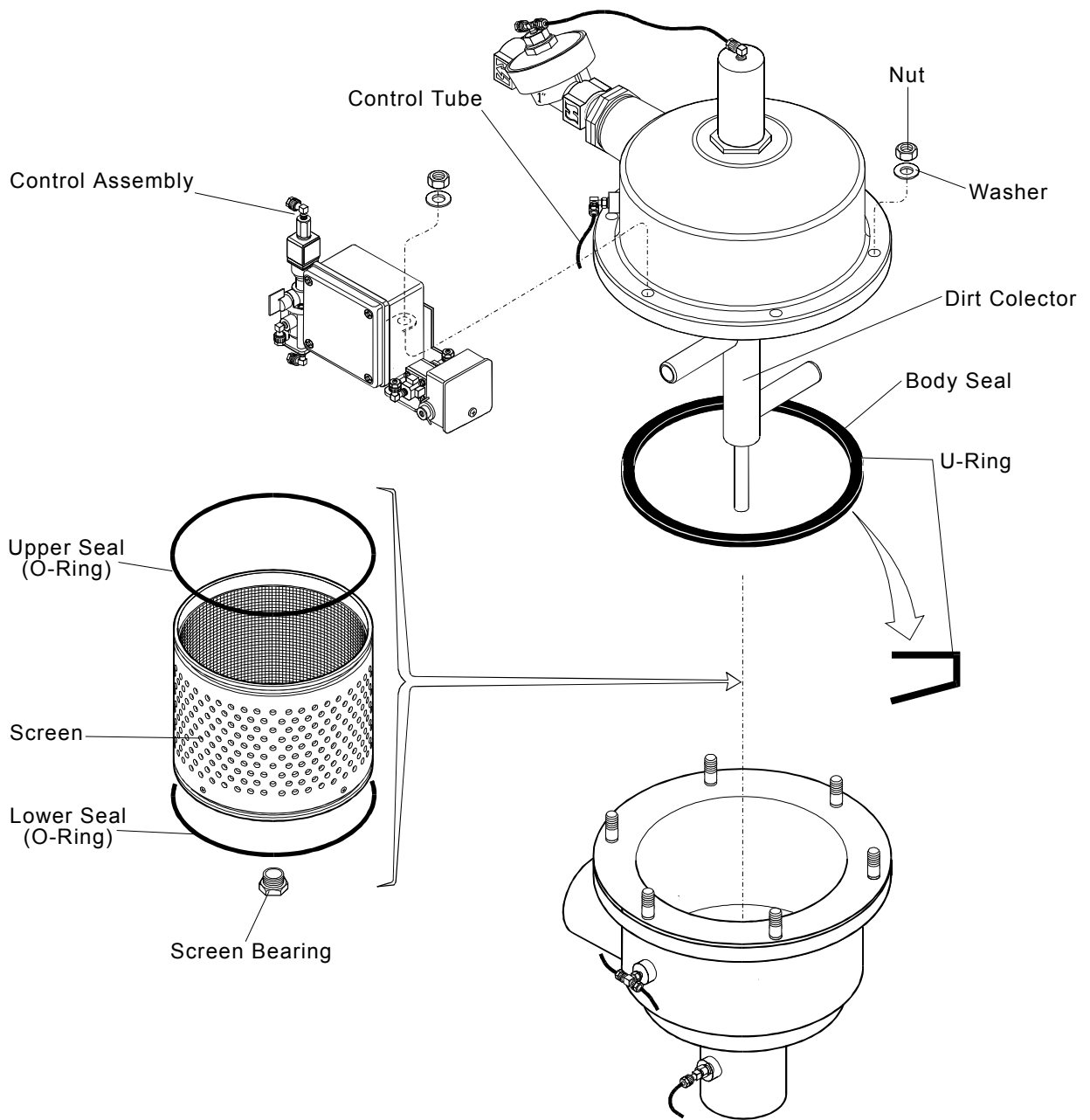


Figure 8: Screen Removal & Installation

Periodical Checks (Figure 9)

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

1. Unscrew the lower filtering nozzle and visually check for obstructions.
2. Replace the 9V battery at the beginning of every season or every six months, refer to "**9V Battery Removal & Installation**".
3. Check the condition of the screen. If defective, replace according to "**Screen Removal & Installation**".
4. Check upper and lower seals condition. Lubricate with **silicon grease**.
5. Check the condition of the screen bearing. If the bearing is deformed, (oval), replace with a new one.
6. Check the mechanical condition of the hydraulic piston assembly. Verify piston's free movement. If defective, replace according to "**Hydraulic Piston 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. 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. For AC controlled filter, refer to Appendix 1.
12. 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.
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).

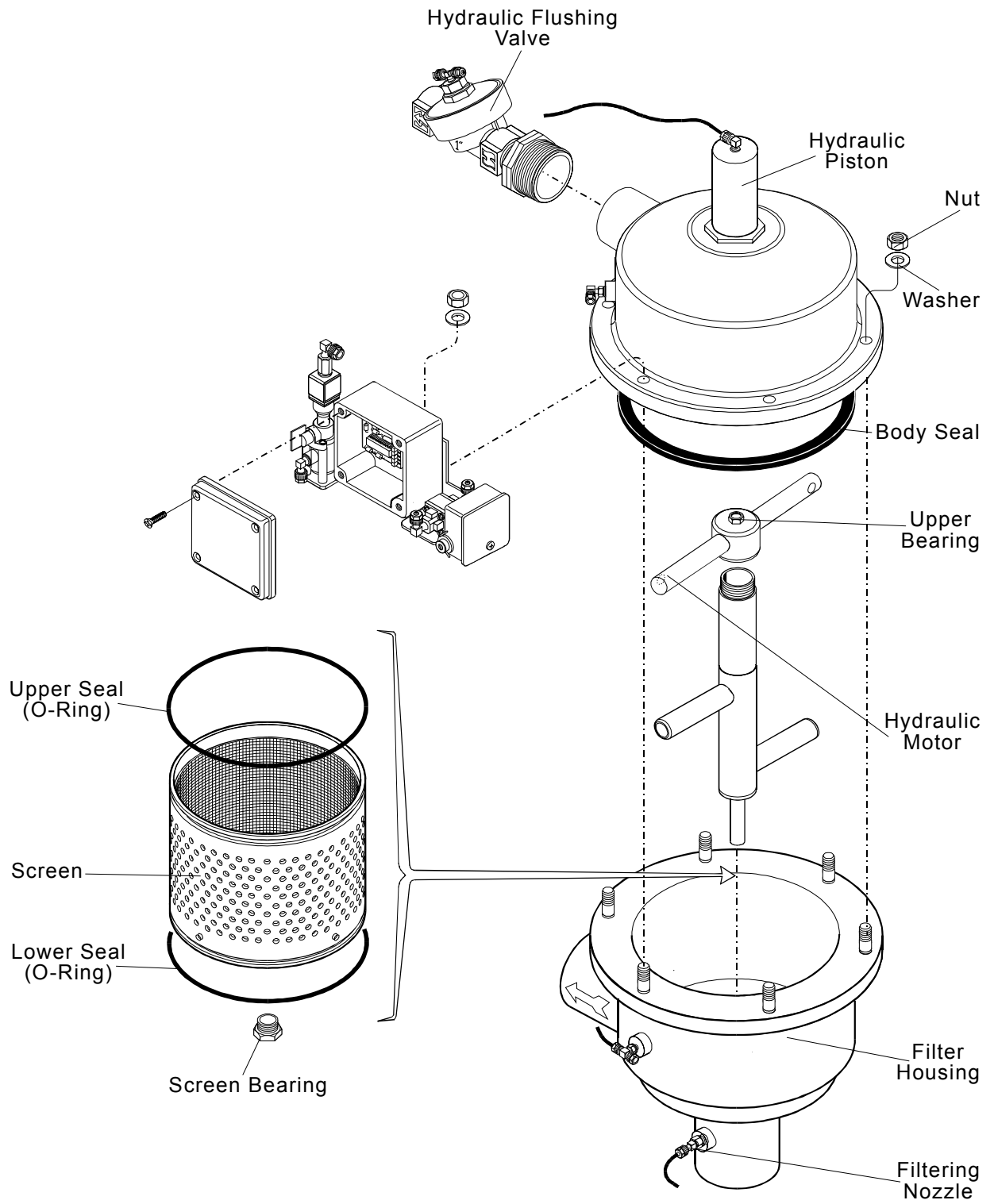


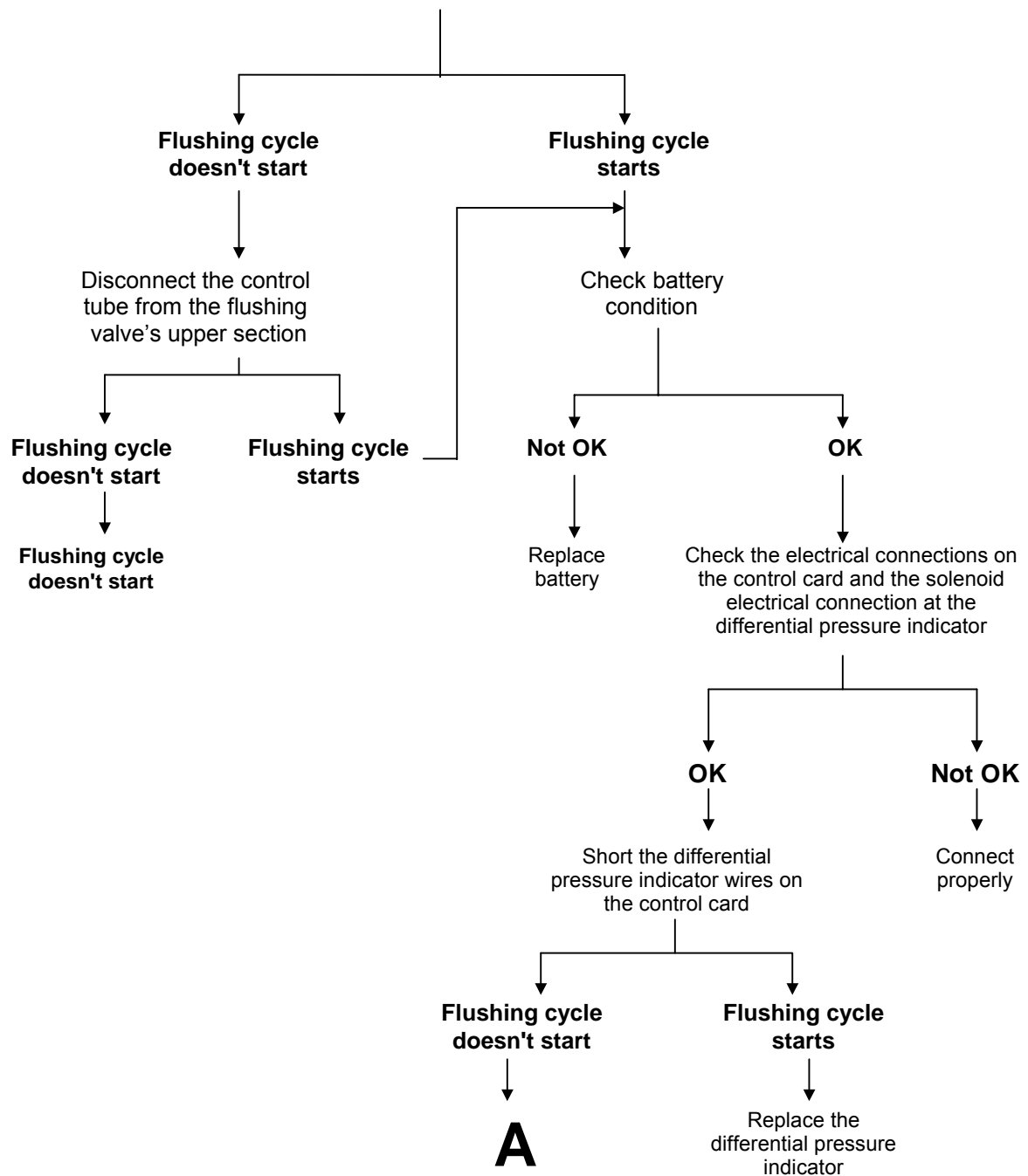
Figure 9: Periodical Checks

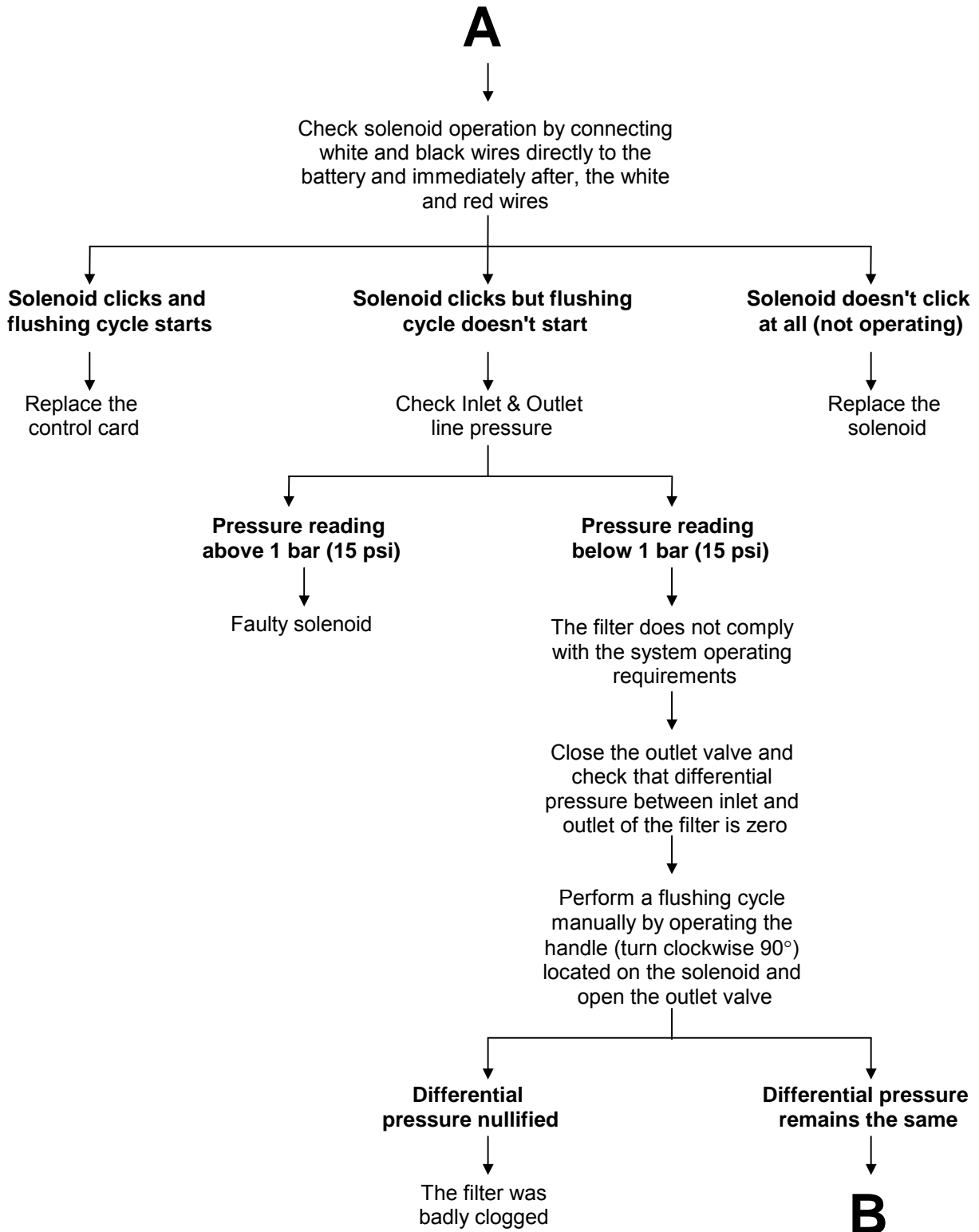
Troubleshooting

The pressure difference between inlet and outlet is above 0.5 bar



1. Check the differential pressure indicator adjustment.
2. Verify that the line pressure matches the filter's operational pressure.
3. Perform a flushing cycle manually, by operating the handle (turn clockwise 90°) located on the solenoid.

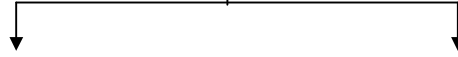




B

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



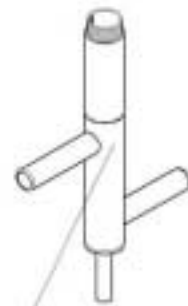
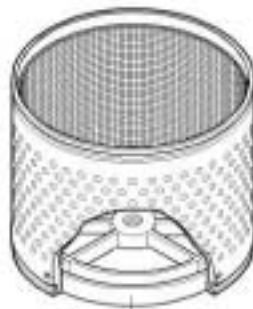
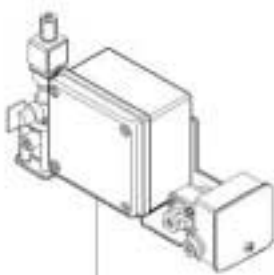
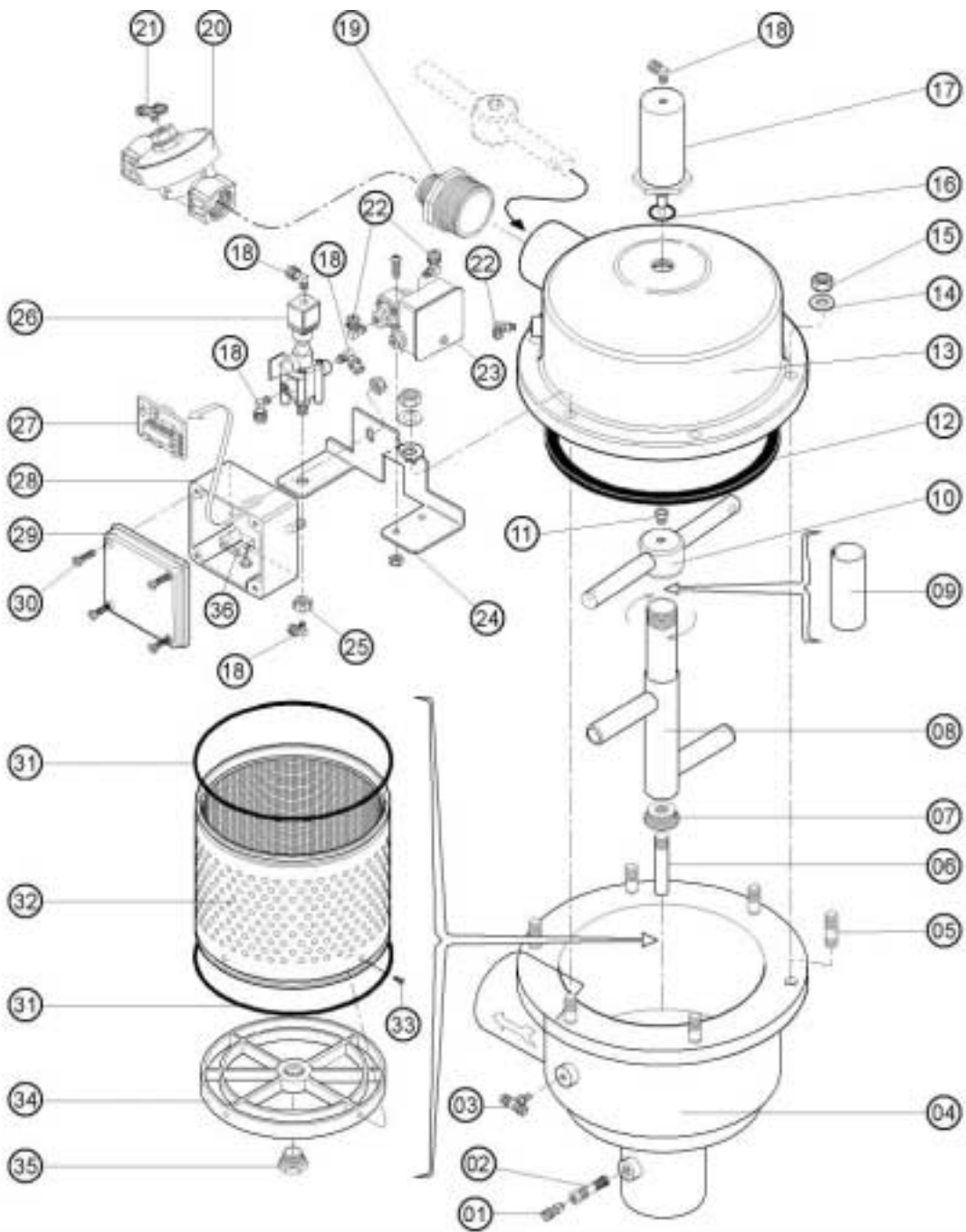
Reassemble the filter and operate the system

Filter found serviceable



The problem was not solved during a regular service check. Call technician

IPB



Spare Parts

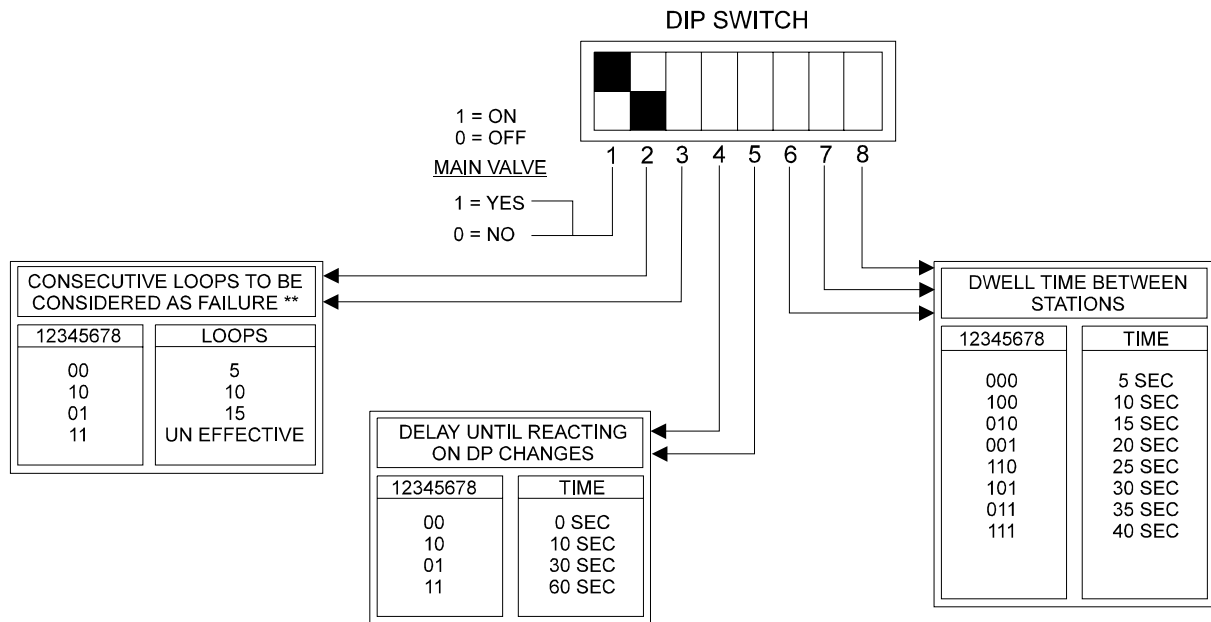
No.	Description
01	Control fitting ¼" x 6
02	Filtering nozzle
03	"T" control fitting connector 6 x ¼ x 6
04	Lower filter housing
05	Stud
06	Dirt collector axis
07	Dirt collector axis support
08	Dirt collector
09	Dirt collector sleeve
10	Hydraulic motor
11	Upper bearing
12	U-Ring
13	Filter cover
14	Washer
15	Nut
16	"O" ring
17	Hydraulic piston
18	6 x ⅛" control fitting elbow connector
19	2" x 1" reducing nipple
20	1" Hydraulic flushing valve
21	"T" connector 6 x ⅛ x 6
22	6 x ¼" control fitting elbow connector
23	Differential pressure indicator
24	Control unit assembly bracket
25	Solenoid nut
26	Solenoid valve
27	Electronic control card
28	Control box
29	Control box cover
30	Control box attachment screw
31	O-Ring
32	Screen
33	Attachment screw
34	Screen handle
35	Screen bearing
36	Battery 9V
B – A	Complete control unit assembly
B – B	Complete screen assembly
B – C	Dirt collector assembly

Appendixes

Appendix 1 - AC Controller

Setting The Constant Parameters

The constant parameters can be set by the internal DIP-SWITCH. The following chart describes the programming and control options of each DIP switch in the system. The DIP-SWITCH is located at the bottom right corner of the electronic board.



** When the DP signal does not stop, then, after the specified number of consecutive back flushing cycles it will be considered a failure. An alarm will indicate system failure, and there will be no more backflushing by DP until the DP signal is discontinued and the right rotary switch turned OFF and back to its normal position. If the selected flushing mode include time override, the time based cycles will continue uninterrupted according to the selected interval.

Main Valve

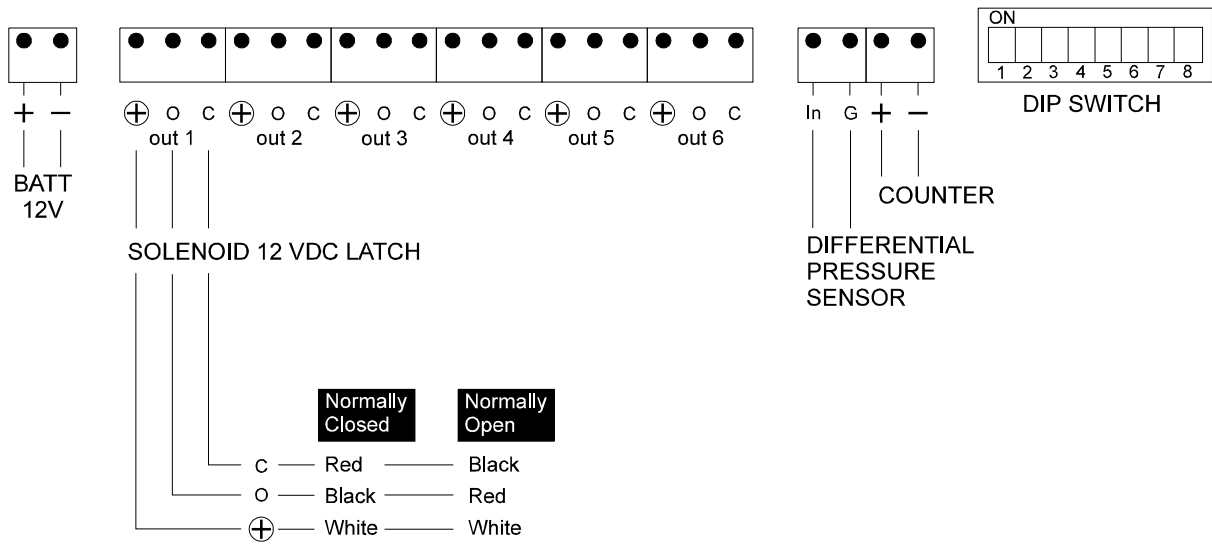
The unit can control a downstream main valve, which is turned off while flushing to increase pressure. When such a main valve is incorporated into the system, DIP SWITCH No. 1 must be set to ON. In a system without a main valve it will remain OFF. The main valve will be connected last on the terminal board after the last flushing valve.

Technical Data

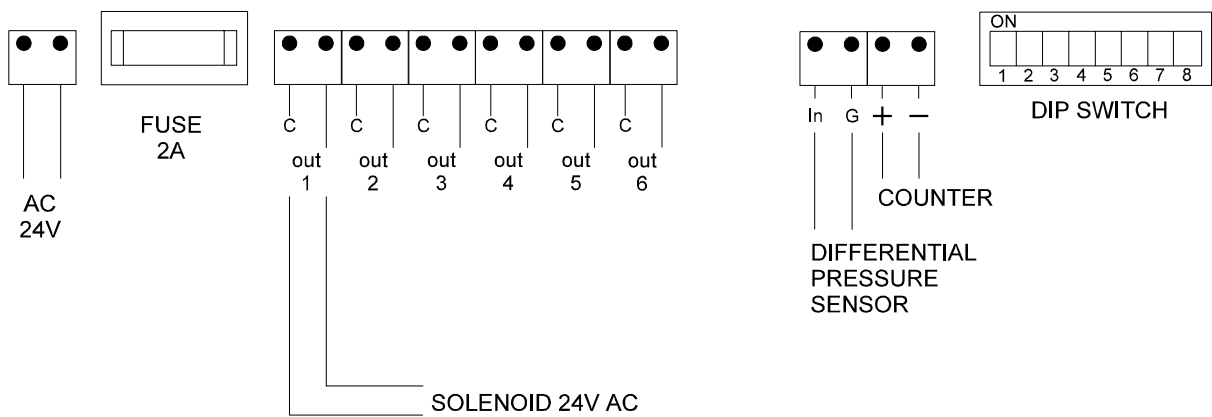
POWER SOURCES: FOR AC MODELS - 220V/50 Hz, 24V REGULATED.
 MAXIMUM POWER 25W.

FOR DC MODELS - 12V 6 AH. DRY ALKALINE BATTERY.

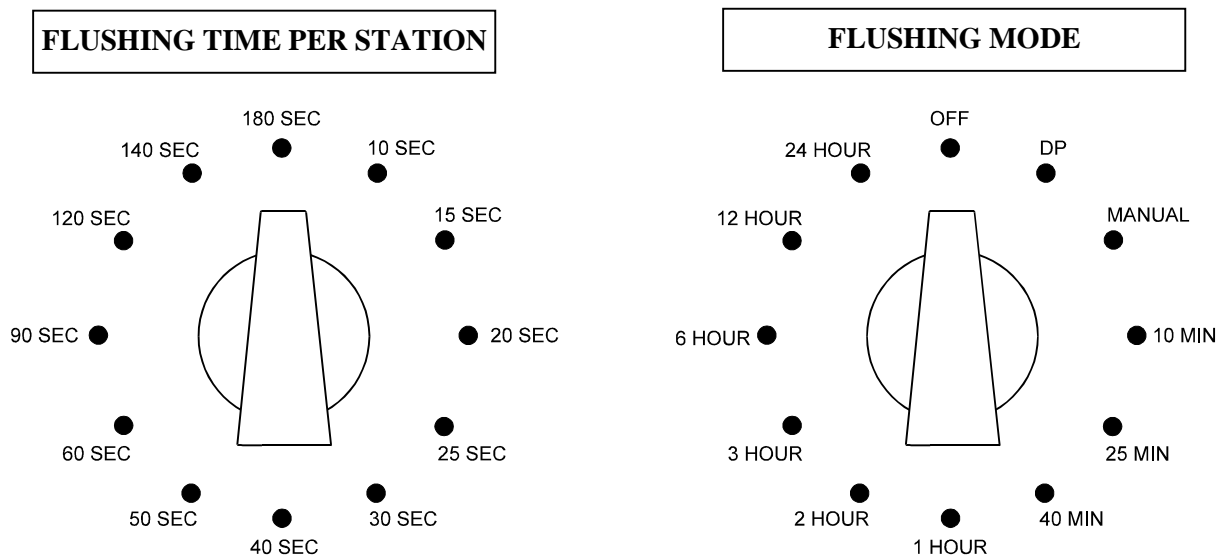
Connection Board (DC Model)



Connection Board (AC Model)



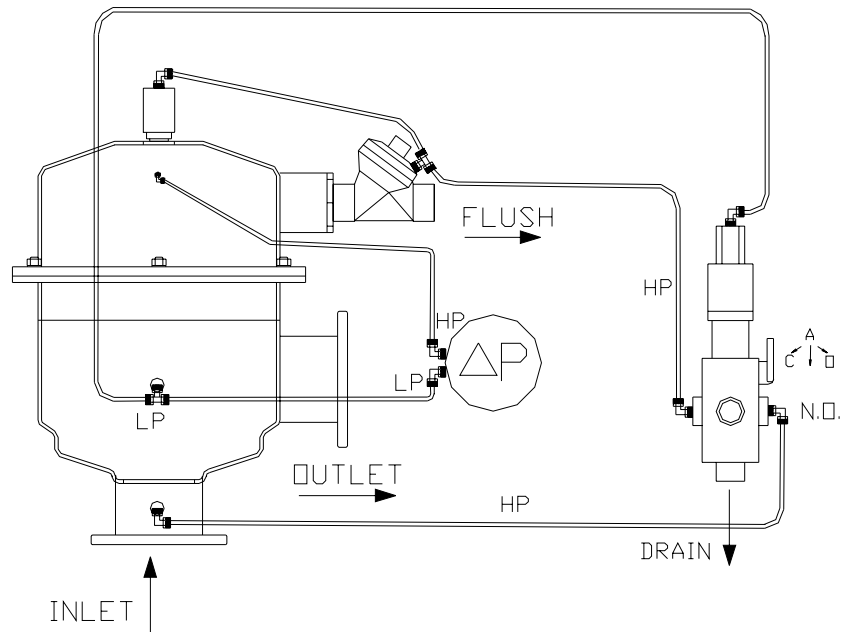
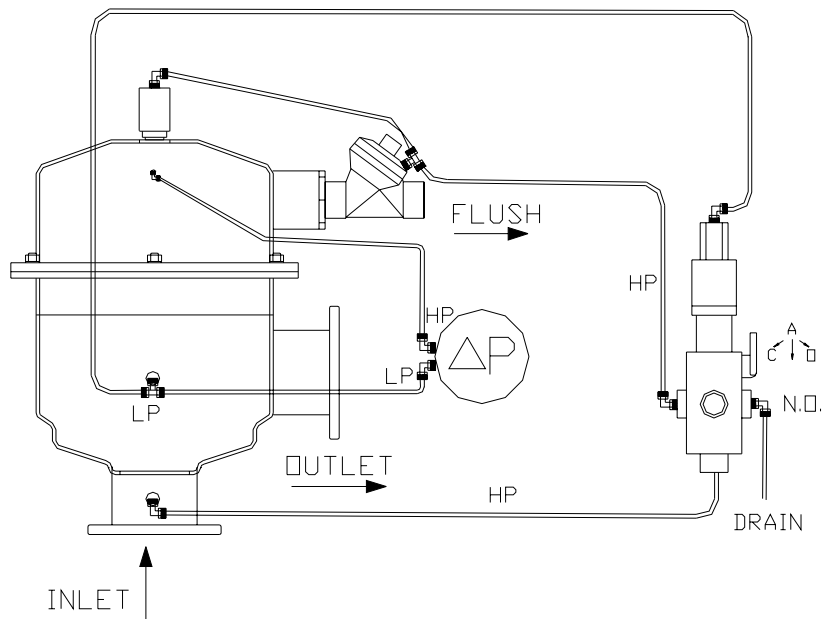
The two rotary switches on the front panel are used for selecting duration and mode of flushing. The right switch selects the FLUSHING MODE and the left switch selects the FLUSHING TIME PER STATION.



- When the right switch points to the OFF position the controller is switched off and no flushing will take place. The internal buzzer keeps sounding every 4 seconds to indicate that the controller is energized.
- When the right switch points to the DP position the controller will start backflushing only when the differential pressure indication is received.
- When the right switch points to MANUAL position a single flushing cycle is initiated.
- In all the other positions of the right switch, the controller will flush according to the specified cycle or upon detection of the differential pressure signal, whichever comes first.
- Changing the position of each of the switches will sound the buzzer. The right switch will cause a longer beep in the OFF position and at the left switch, the longer beep will be in the 10 SEC position. The longer beep helps to adjust the knobs.

HOW TO READJUST THE KNOBS OF THE ROTARY SWITCHES IN CASE THEY BECOME LOOSE:

1. Keep turning the rotary switch clockwise until you hear the longer beep.
2. At the right switch, tighten the knob with the arrow pointing to OFF.
3. At the left switch, tighten the knob with the arrow pointing to 10 SEC.

Appendix 2 - Control Loops Schematic Drawing DC**Appendix 3 - Control Loops Schematic Drawing AC**

ARKAL FILTRATION SYSTEMS STANDARD INTERNATIONAL WARRANTY

ARKAL FILTRATION SYSTEMS (hereinafter -"ARKAL FILTRATION SYSTEMS") guarantees to the customers who purchased ARKAL FILTRATION SYSTEMS products directly from Arkal 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 ARKAL FILTRATION SYSTEMS instructions, written or verbal.

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

ARKAL FILTRATION SYSTEMS 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 ARKAL FILTRATION SYSTEMS representative.

This warranty does not extend to components, parts or raw materials used by ARKAL FILTRATION SYSTEMS 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 ARKAL FILTRATION SYSTEMS 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.

