

**ARKAL SCREEN LINE
H - SERIES
Hydraulically Operated Self-Cleaning
Screen Filter**

SERVICE & MAINTENANCE MANUAL



Table of Contents

<u>Subject</u>	<u>Page No.</u>
Introduction	2
Safety Instructions	3
Description & Operation	4
Technical Data	6
Pressure Loss At 120 Micron	7
Initial Installation & Operation	8
Maintenance & Periodical Checks	10
9V Battery Removal & Installation	10
Control Card Removal & Installation	11
Solenoid Removal & Installation	12
Differential Pressure Indicator Removal & Installation	14
Hydraulic Piston Assembly Removal & Installation	16
Coarse Screen Removal & Installation	18
Fine Screen Assembly Removal & Installation	20
Dirt Collector Removal & Installation	22
Periodical Checks	24
Troubleshooting	26
IPB	31
Appendixes	33
Appendix 1 - AC Controller	33
Appendix 2 - Control Loops Schematic Drawing For AK HL3 Filter Only	36
Appendix 3 - Control Loops Schematic Drawing	36
Appendix 4 – Warranty	37

Introduction

General

Arkal Filtration Systems congratulates you on purchasing the new **H 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 can not accept responsibility for any changes or modifications to the equipment.

Description & Operation

Filter Assembly General Description (Figure 1)

The **H SERIES** self-cleaning filter enables high quality filtration from grades of 50-3000 micron from various types of fluid sources such as sewage, reservoirs, rivers, lakes, and wells.

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

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

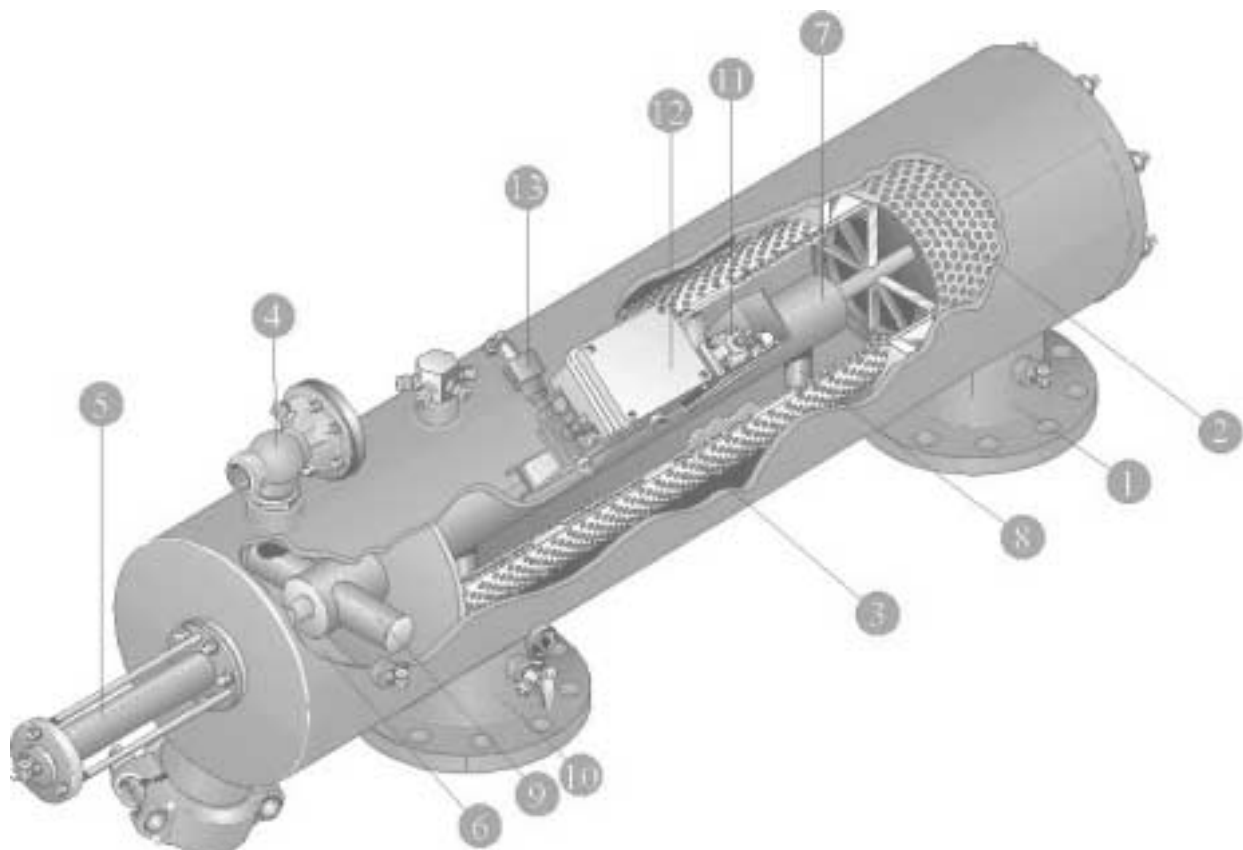


Figure 1: Filter Assembly

Filter Operation General Description (Figure 1)

Water enters the filter through the “Inlet” (1) and passes through the coarse screen (2) that functions as a “first stop” for rough particles. Water then reaches the fine screen (3), which further purifies the flow by separating smaller particles from the water. As more water flows through, impurities build up on the fine screen. As impurities on the screen accumulate, a pressure imbalance is built up between the internal section of the fine screen (3) and its external section. When the difference in pressure (ΔP) reaches the preset value on the differential pressure indicator (11), 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 (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 (3) surface.

The flushing cycle takes **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 (Figure 1)

The electrical system controls the cleaning process through the differential pressure indicator (11), that close a circuit and triggers the electronic control unit (12). The electronic control unit controls the opening and the closing of the flushing valves (4) via the solenoid valve (13). The flushing cycle, which takes a total of **10 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.

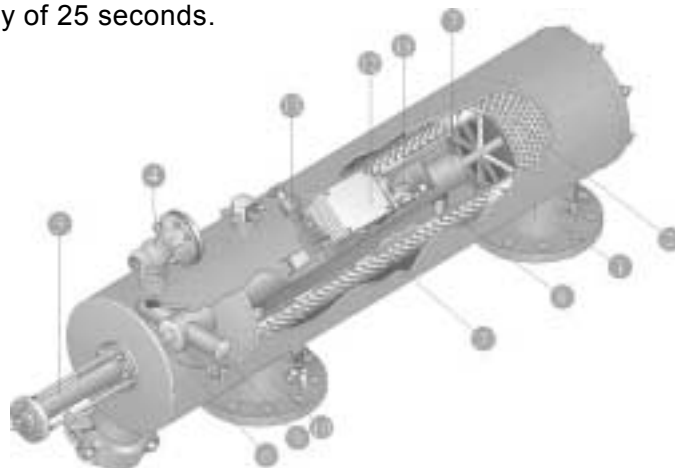


Figure 1: Filter Assembly

Technical Data

Standard Features

- Minimum operating pressure: 2 bar (29 psi)
- Maximum operating pressure: 10 bar (145 psi)
- Clean filter pressure loss: 0.1 (1.45 psi)
- Maximum water temperature: 65°C (149°F)
- Filtration range: 50-3000 micron
- Control voltage: 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

General Technical Data

Model Number	Conn. Size Ø (inch)	Screen Area (cm ²)	Max. Flow Rate * (m ³ /h)	Flushing Flow Rate ** (m ³ /h)	D1 Ø (inch)	D2 Ø (inch)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	H (mm)	Weight (Kg)
AK HL*3	3	3220	50	25	10	4	450	1135	1410	1750	580	85
AK HL*4	4	5780	100	25	10	4	900	1530	1800	2500	580	110
AK HL*6	6	5780	150	25	12	4	900	1600	1870	2570	640	135
AK HX*6	6	8410	160	25	10	4	900	1990	2260	3360	590	130
AK H*8	8	5780	160	25	12	4	900	1790	2060	2760	640	145
AK HL*8	8	8410	300	25	12	4	900	2190	2460	3560	640	170
AK H*10	10	8090	350	50	16	4	1100	1980	2250	3040	720	280
AK HL*10	10	8410	400	25	14	4	900	2190	2460	3560	670	200
AK HX*10	10	11710	450	75	16	4	1100	2720	2990	5200	720	340
AK H*12	12	11710	600	75	16	4	1100	2720	2990	5200	720	350
AK H*14	14	12990	900	75	18	4	1270	2720	2990	5200	770	420
AK H*16	16	12990	1100	75	18	4	1270	2720	2990	5200	770	470
AK HX*16	16	17020	1500	75	24	4	1270	2720	2990	5200	920	650

H = Hydraulic **X** = Extra long filter with extra large filtration area ***P** = Parallel ***I** = In line

L = Long filter with large filtration area

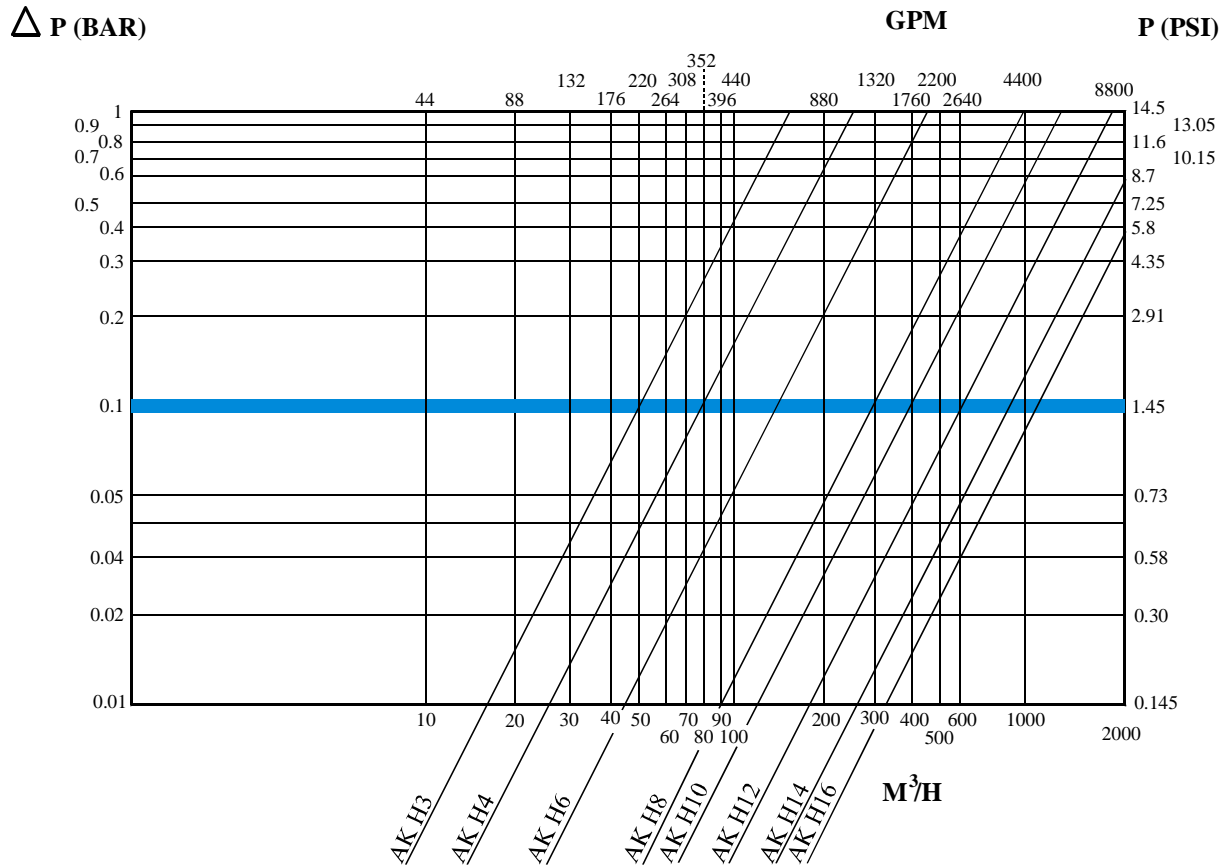
* Flow rate data are for high quality water at filtration grade of 120 micron.

** 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	800	1500	3000
Mesh	300	200	150	120	100	80	40	20	10	5

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 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 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 battery located in the control unit box as explained in the "Initial Operation" See Figure 3 Page 9).

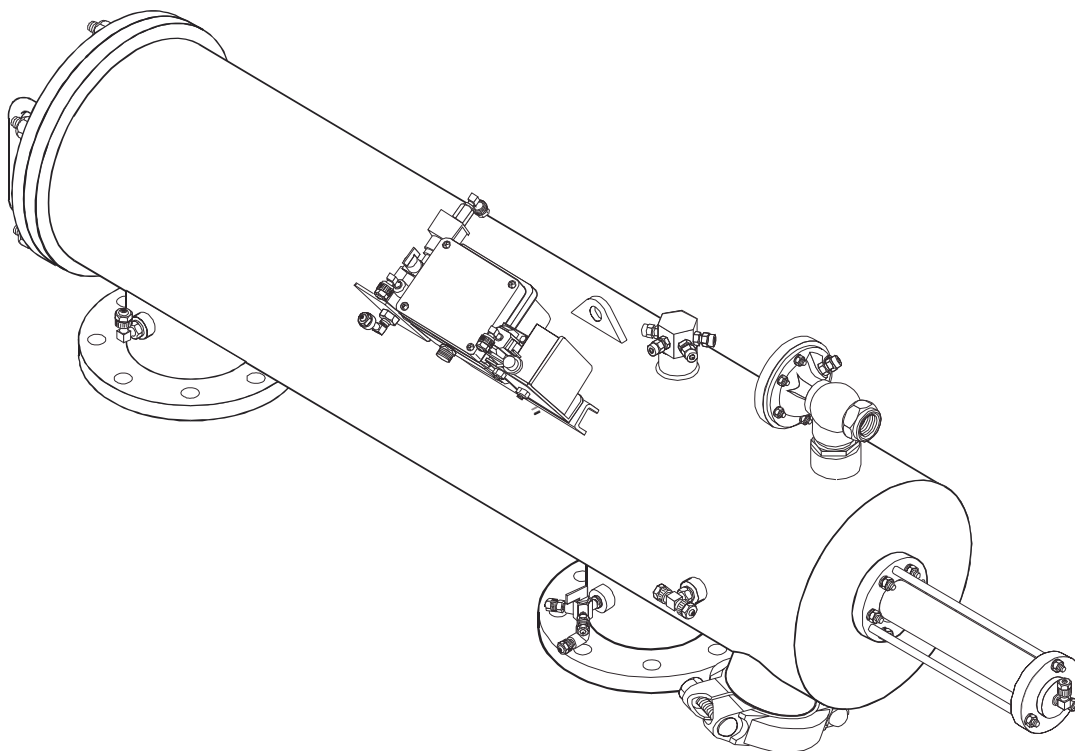


Figure 2: Initial Filter Installation

Initial Operation

1. Gradually open the inlet valve (make sure that the outlet valve, if installed, is open).
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 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 (rotate clockwise) located on the solenoid (See Figure 3).

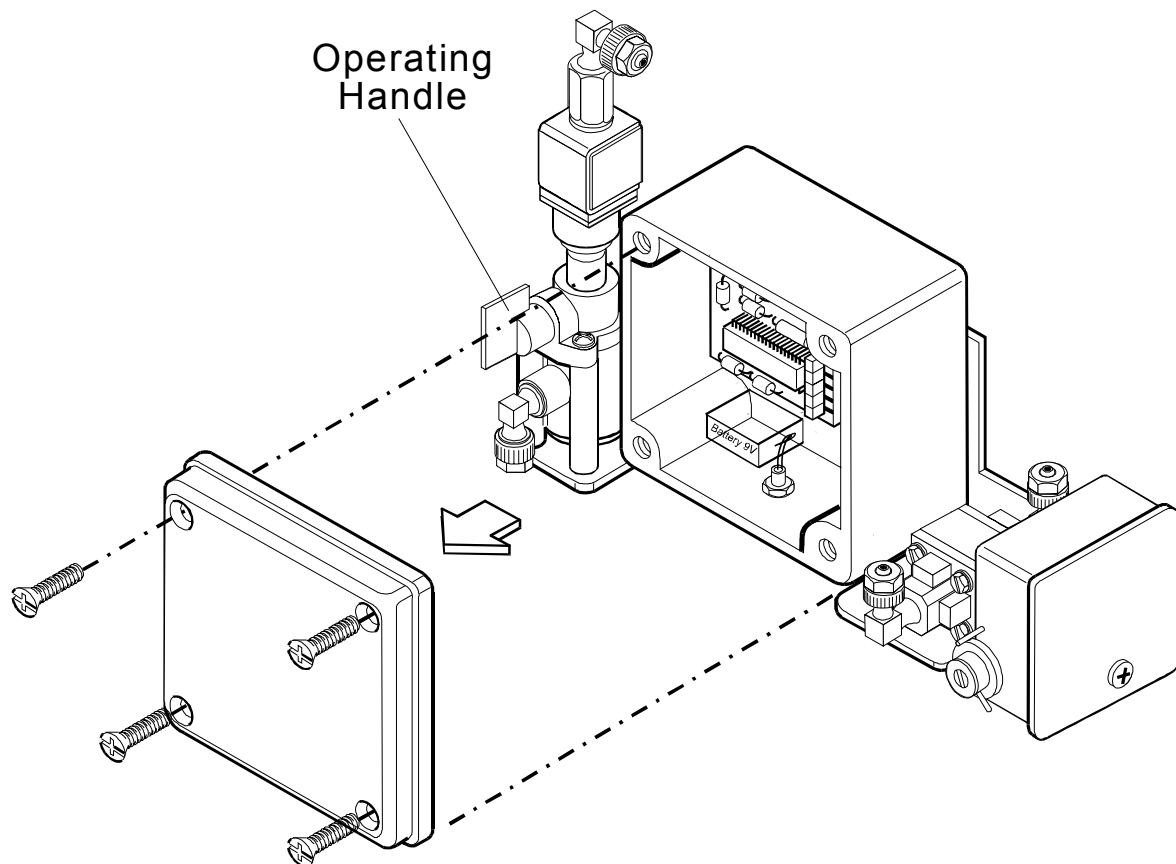


Figure 3: Battery Removal & Installation

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 10 seconds.
8. Perform an additional flushing cycle manually, by operating the handle (turn clockwise 90°) located on the solenoid (See Figure 3).

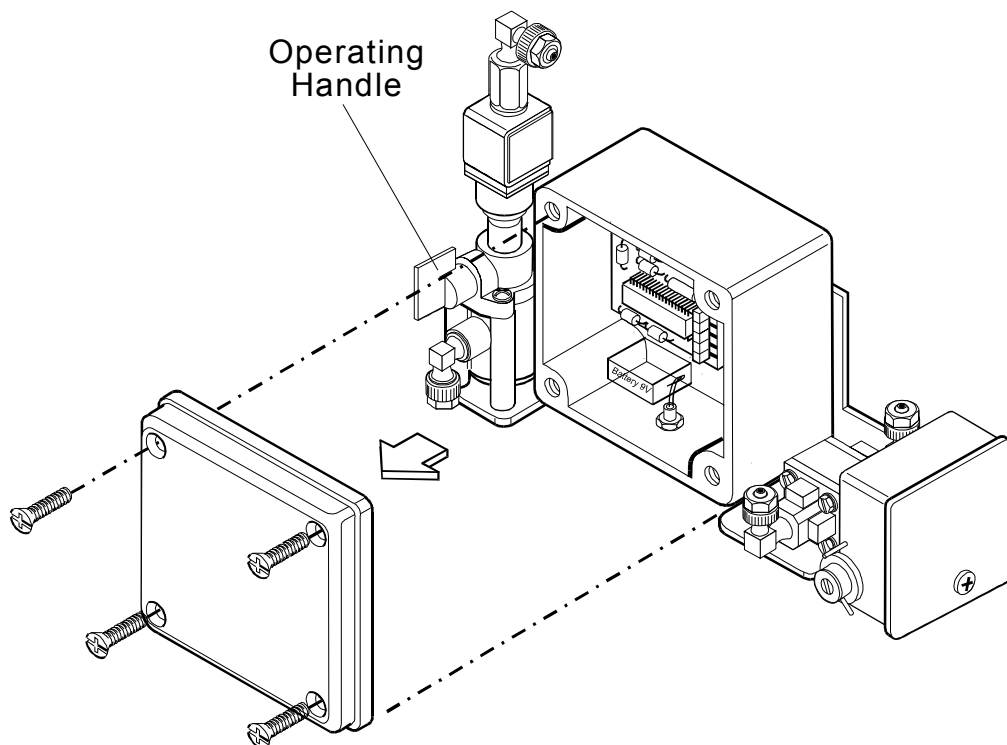


Figure 3: Battery Removal & Installation

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 the solenoid, two wires for the differential pressure indicator).
5. Connect the electrical wiring to the new control card terminals (white (+), red (o) and black (c) wires for solenoid, two wires (D & P) for 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 10 seconds.
12. Perform an additional flushing cycle manually, by operating the handle (turn clockwise 90°) located on the solenoid (See Figure 4).

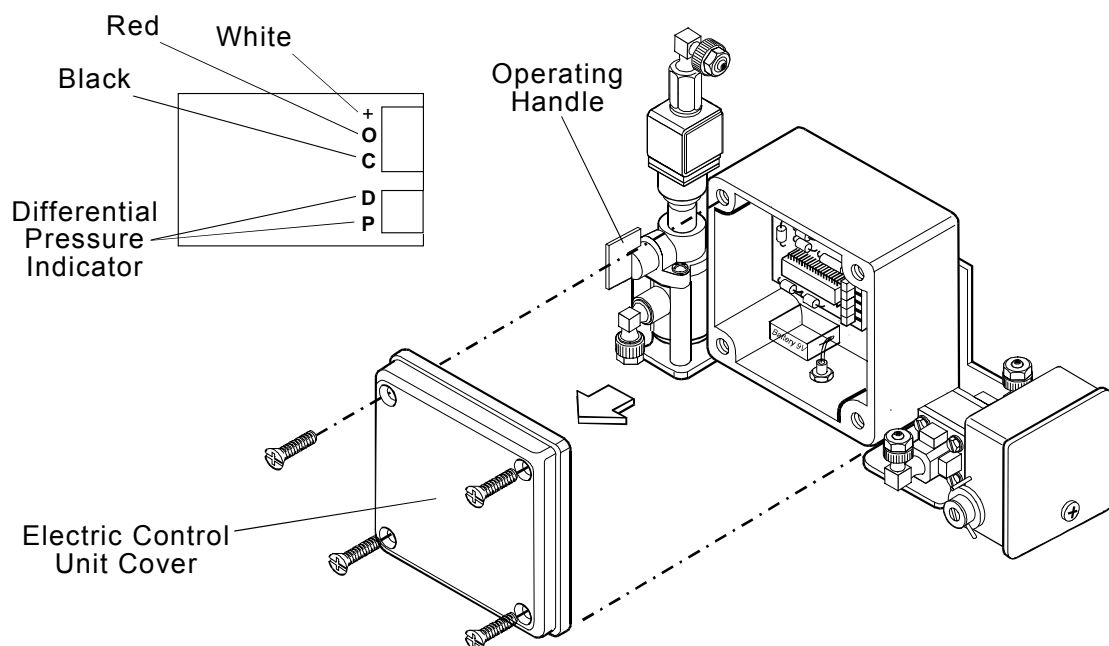


Figure 4: Control Card Removal & Installation

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 10 seconds.
16. Perform an additional flushing cycle manually, by operating the handle (turn clockwise 90°) located on the solenoid (See Figure 3).

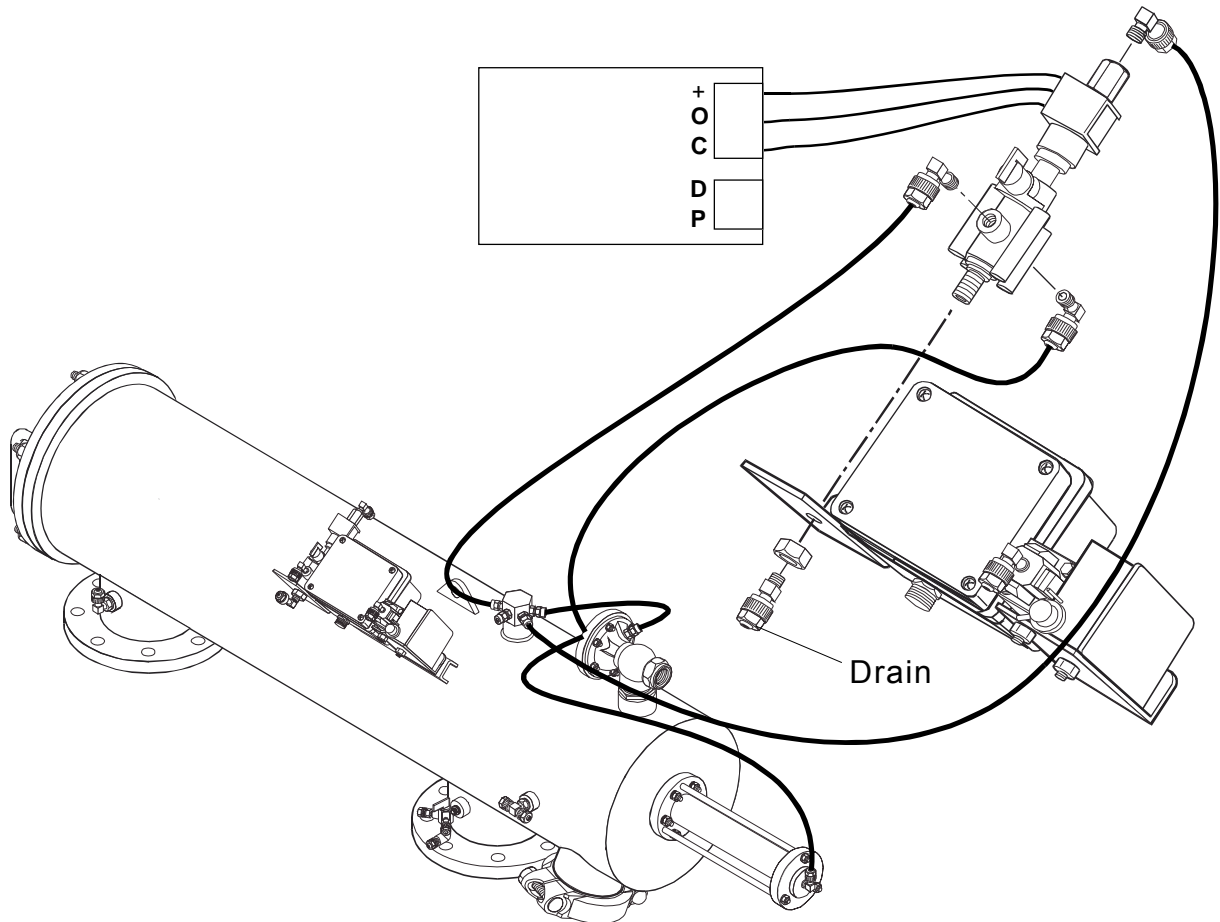


Figure 5: Solenoid Removal & Installation

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 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).

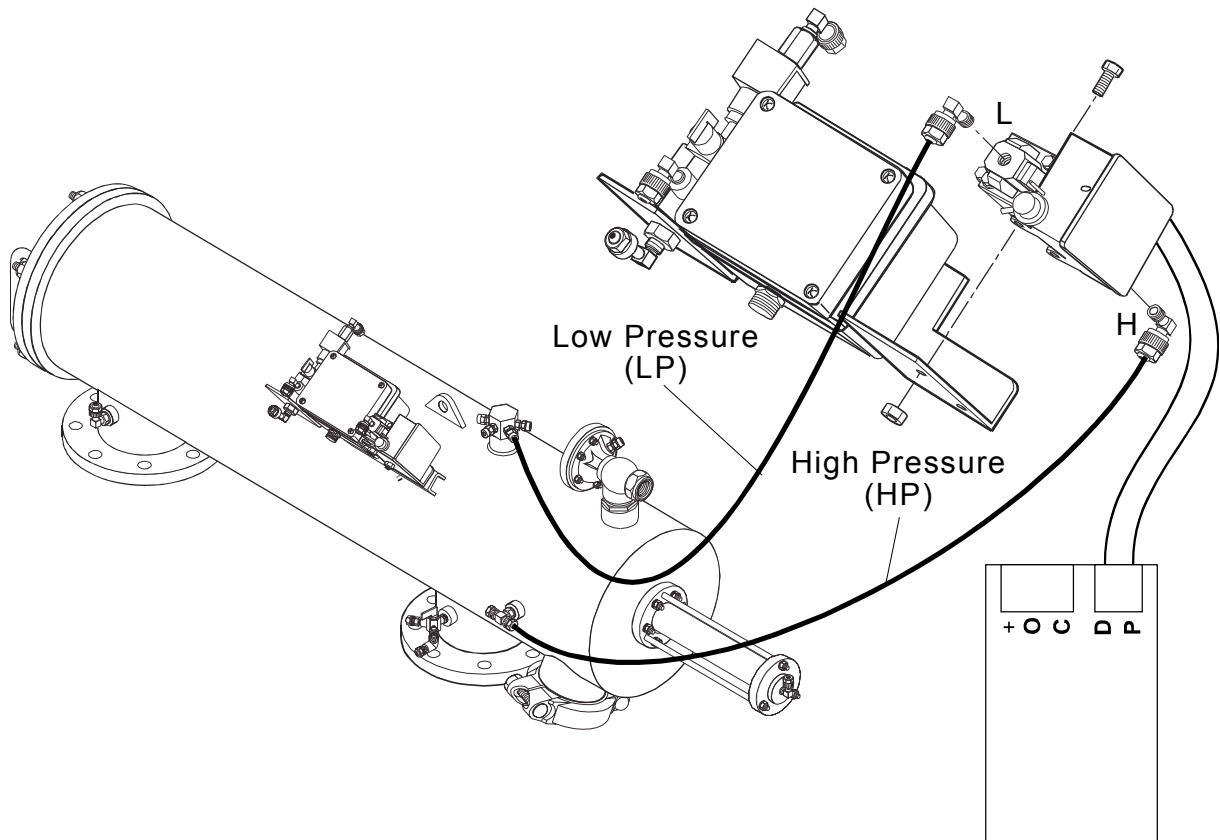


Figure 6: Differential Pressure Indicator Removal & Installation

Hydraulic Piston Assembly 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. 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. For AC controlled filter, refer to Appendix 1.
15. 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.
16. Verify that the hydraulic flushing valve closes after 10 seconds.
17. Perform an additional flushing cycle manually, by operating the handle (turn clockwise 90°) located on the solenoid (See Figure 3).

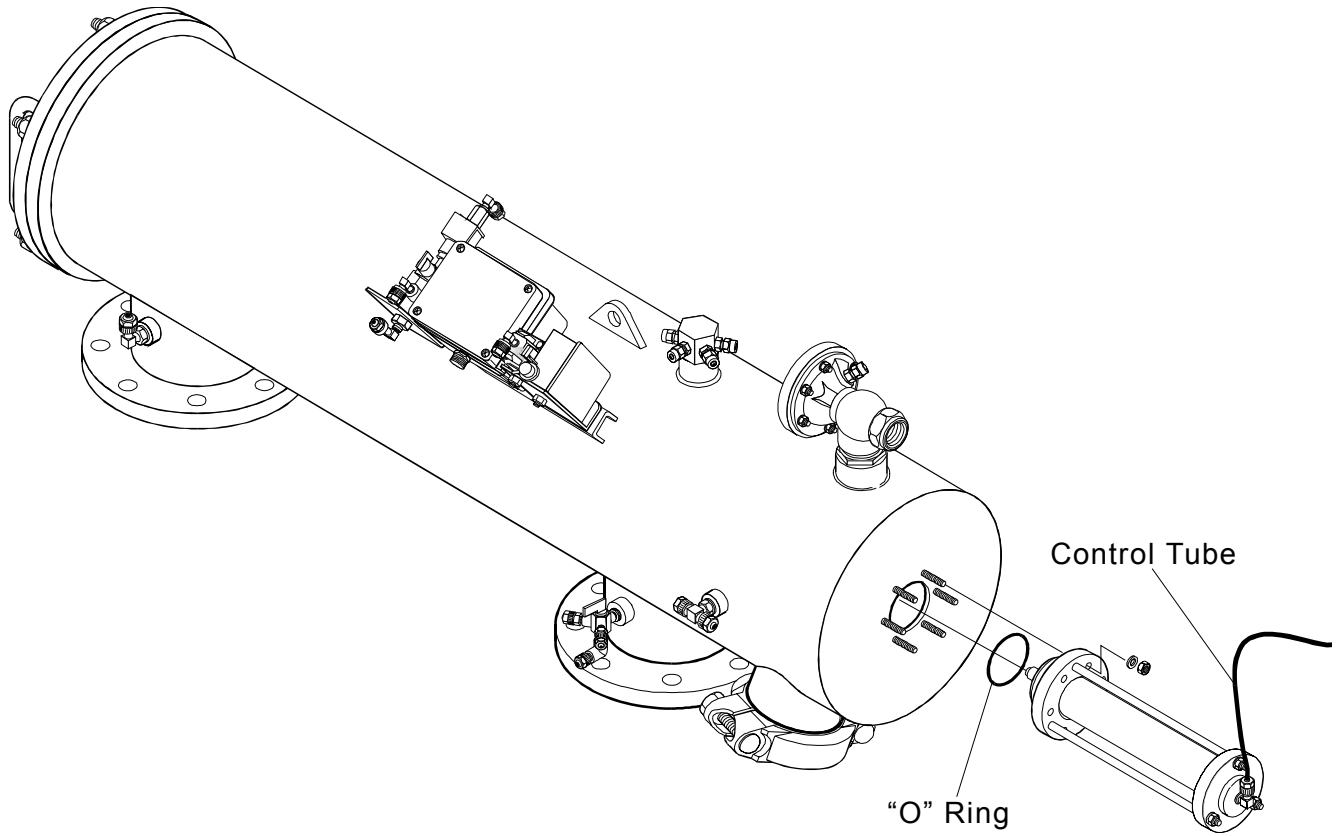


Figure 7: Piston Assembly Removal & Installation

Coarse Screen Removal & Installation (Figure 8)

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. 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 10seconds.
14. Perform an additional flushing cycle manually, by operating the handle (turn clockwise 90°) located on the solenoid (See Figure 3).

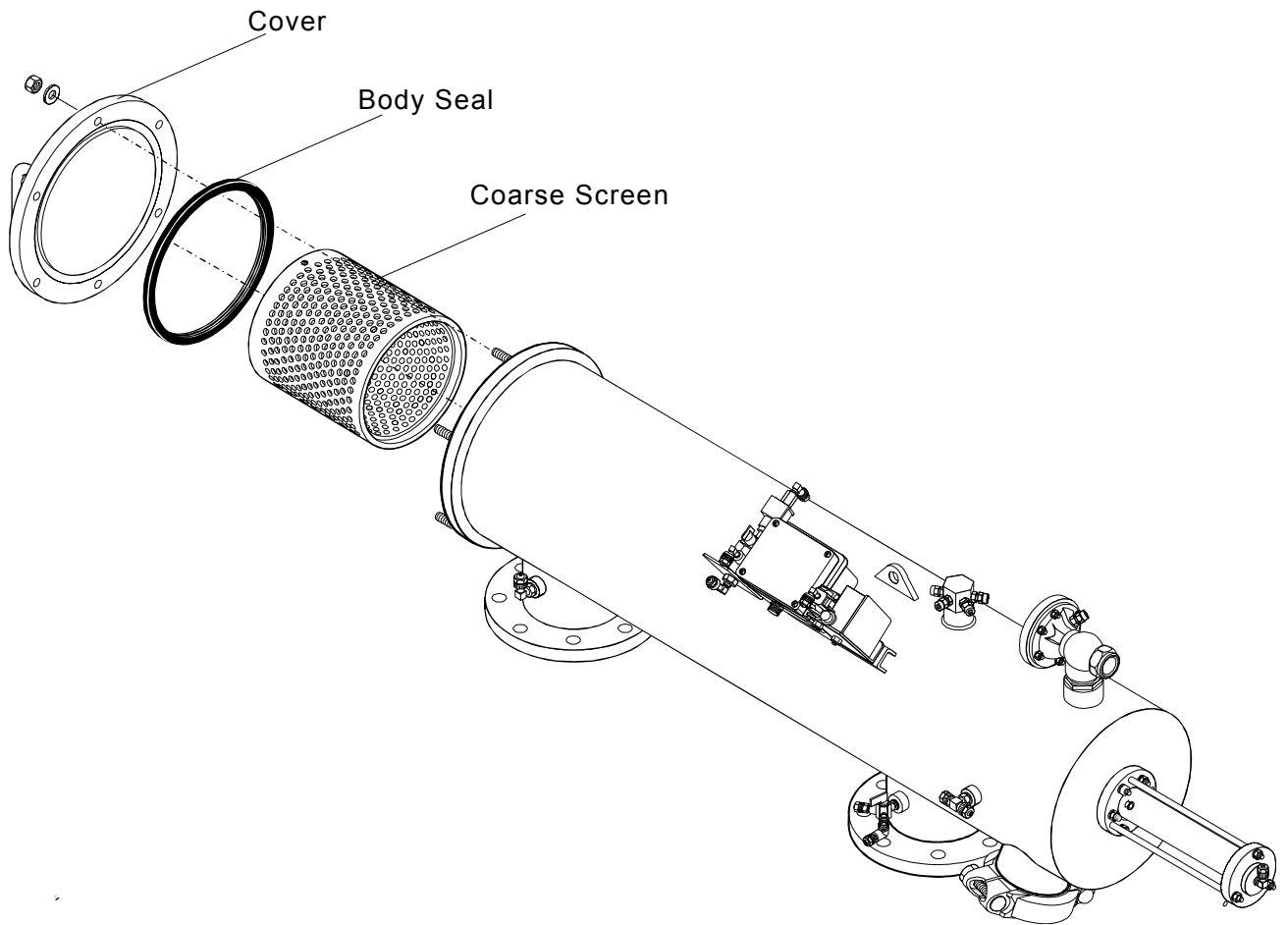


Figure 8: Coarse Screen Removal & Installation

Fine Screen Assembly Removal & Installation (Figure 9)

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

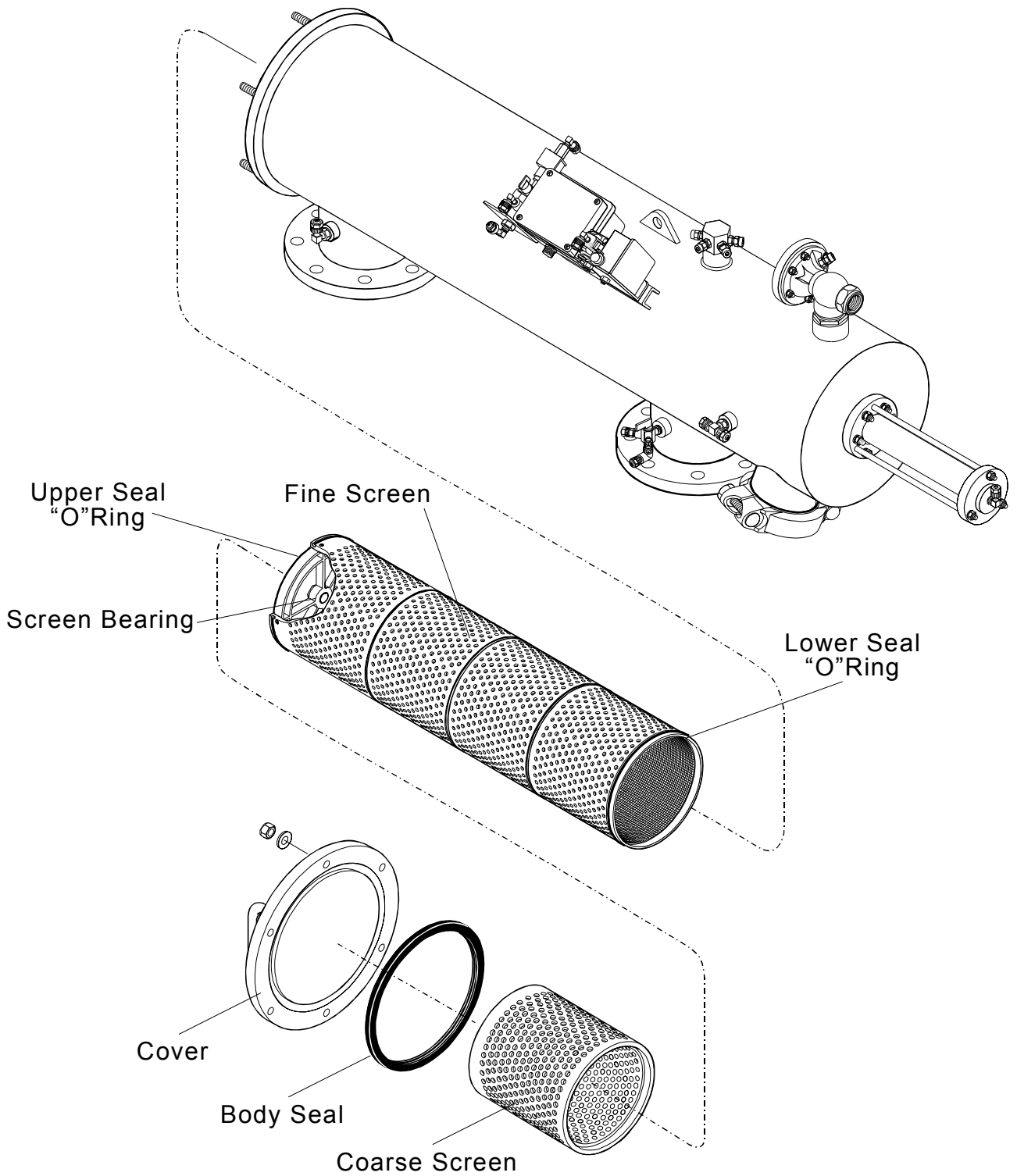


Figure 9: Fine Screen Assembly Removal & Installation

Dirt Collector Removal & Installation (Figure 10)

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

WARNING

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

26. For AC controlled filter, refer to Appendix 1.
27. 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.
28. Verify that the hydraulic flushing valve closes after 10seconds.
29. Perform an additional flushing cycle manually, by operating the handle (turn clockwise 90°) located on the solenoid (See Figure 3).

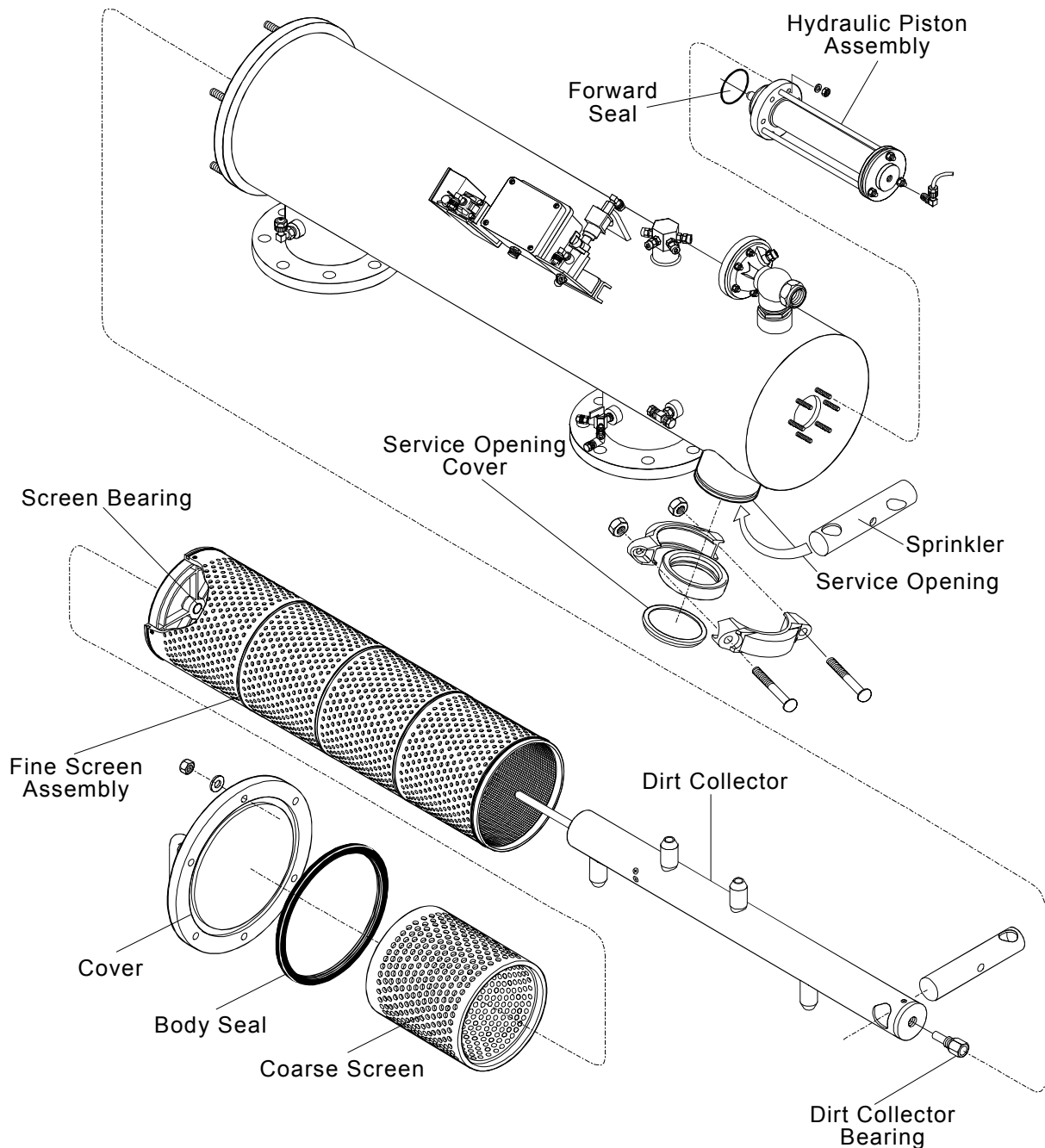


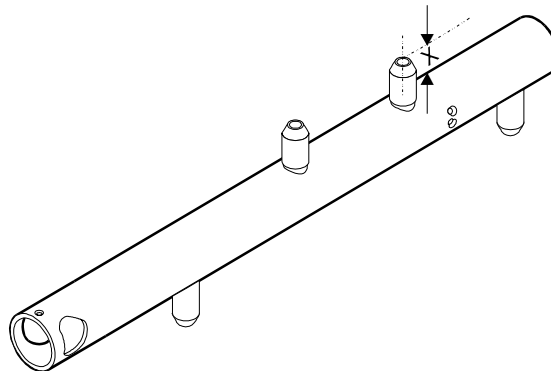
Figure 10: Dirt Collector Removal & Installation

Periodical Checks (Figure 11)

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

1. Replace the 9V battery at the beginning of every season or every six months, refer to "**9V Battery 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



<u>Type Number</u>	<u>X(Nozzle Height)</u>
AK HL3	76 mm
AK HL4/6/8/10 / HX6 / H8	63 mm
AK H10 / HX10 / H12	83 mm
AK H14/16	99 mm
AK HX16	143 mm

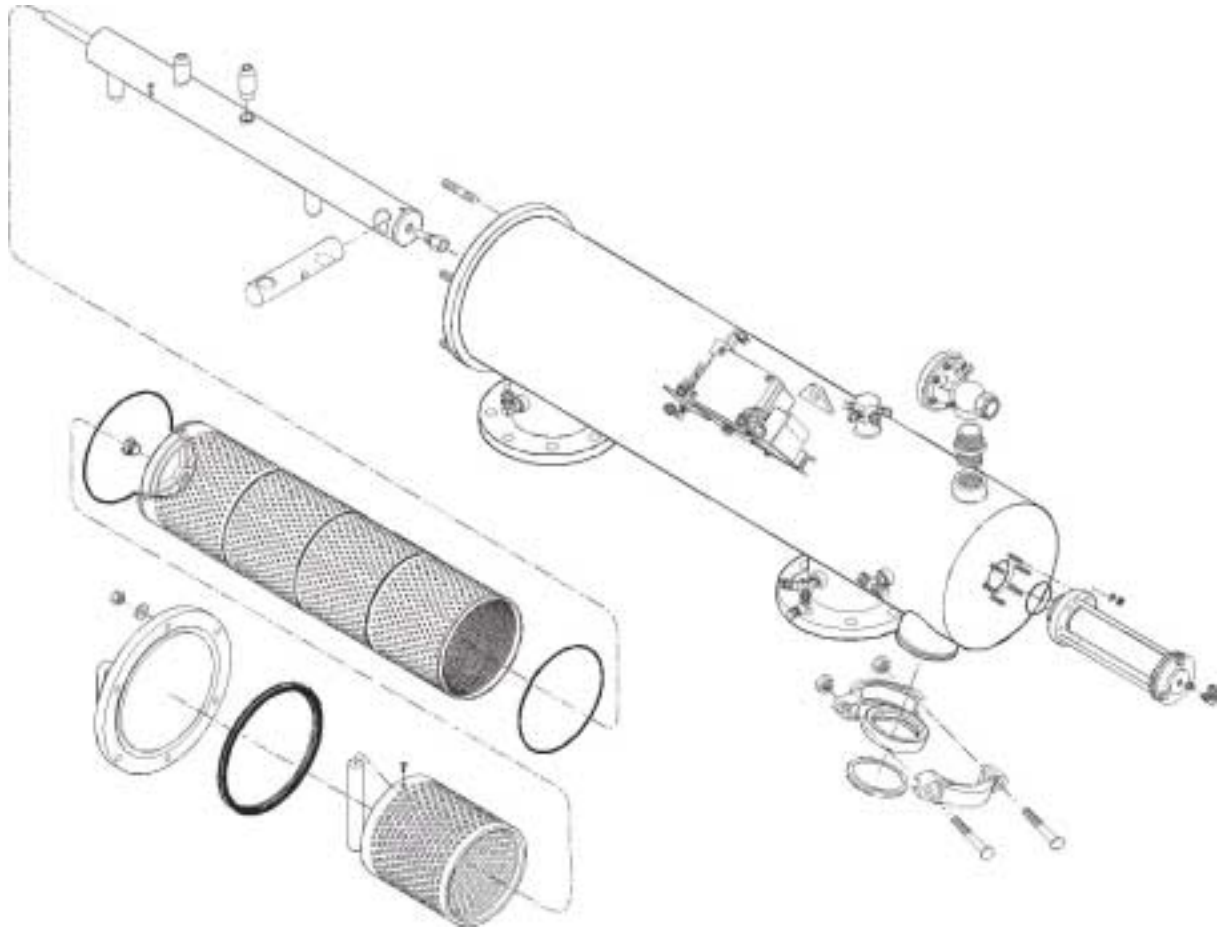
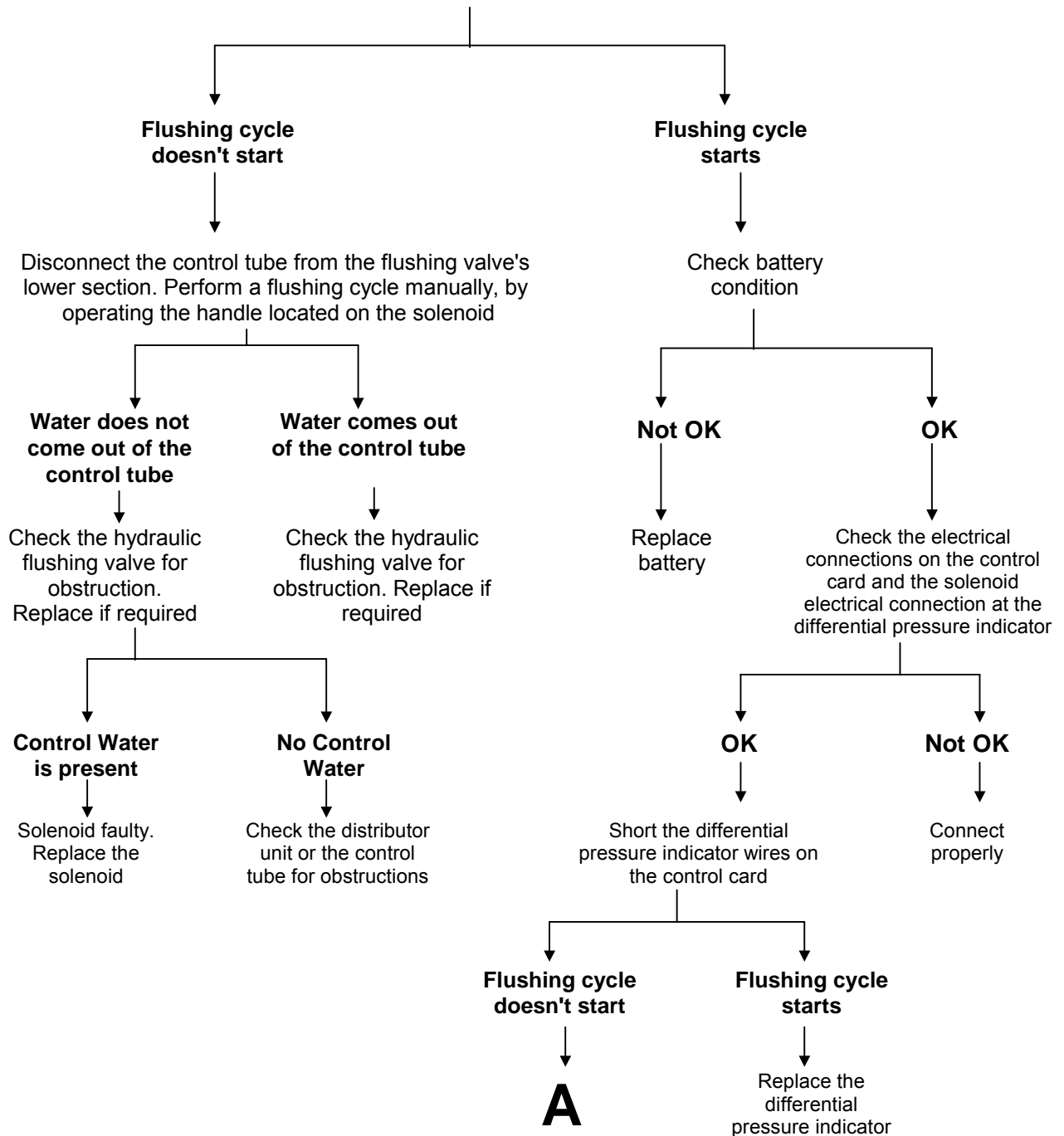


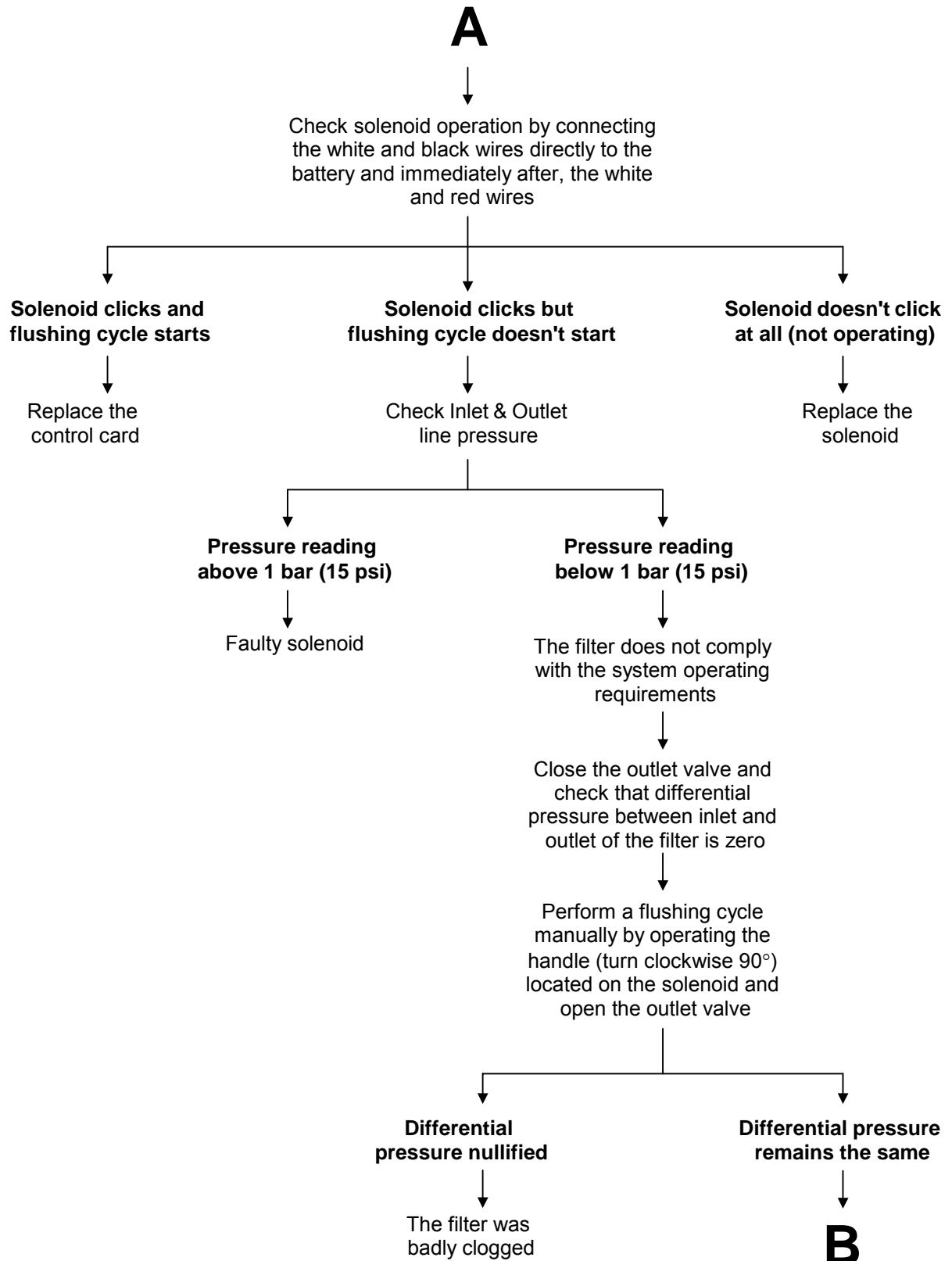
Figure 11: Periodical Checks

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.

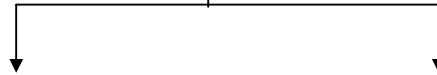




B

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



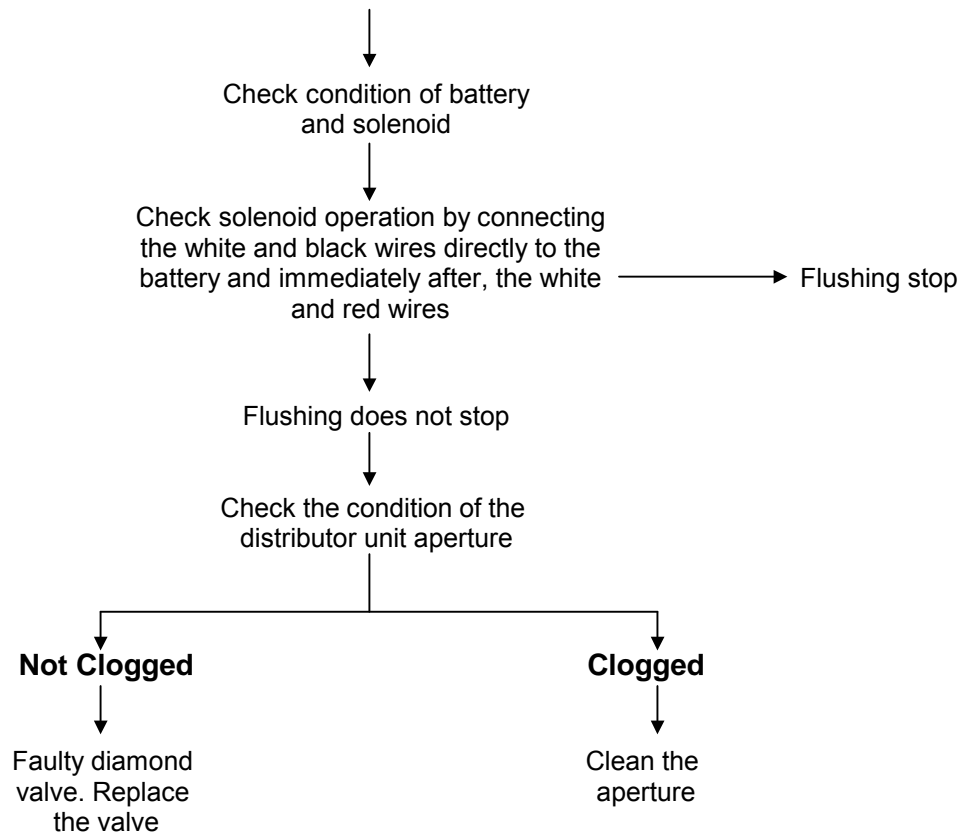
Reassemble the filter and operate the system

Filter found serviceable

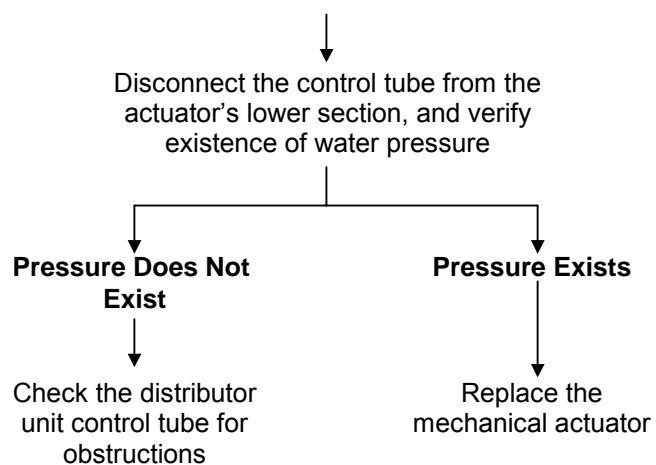


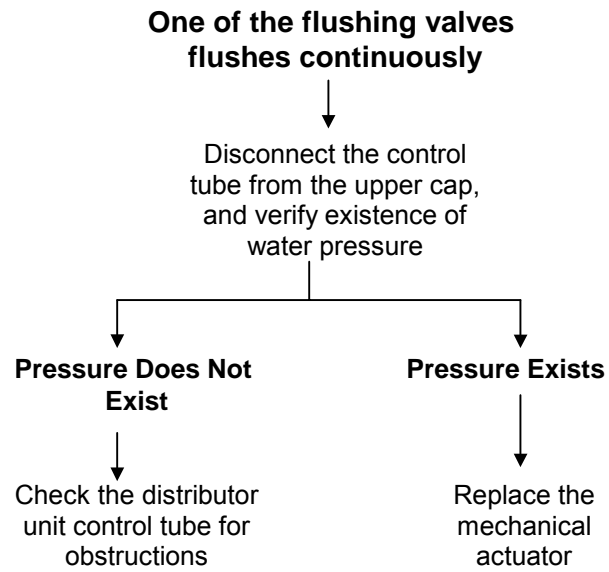
The problem was not solved during a regular service check. Call technician

Filter flushing cycle does not stop

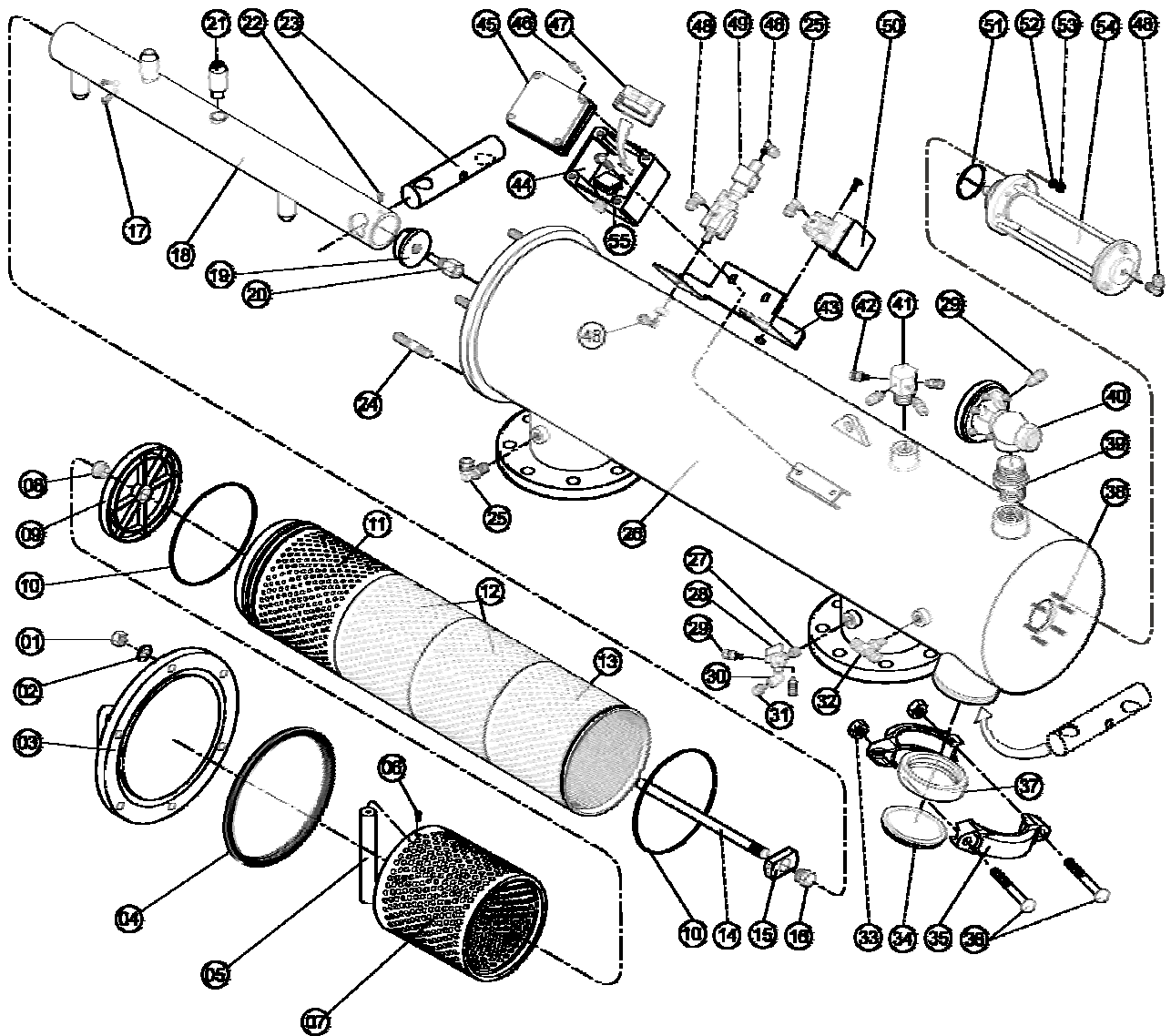


One of the flushing valves does not flush





IPB



Spare Parts

No.	Description
01	Nut
02	Washer
03	Cover
04	Seal
05	Gripping handle
06	Attachment screw
07	Coarse screen
08	Screen bearing
09	Screen handle
10	O-ring
11	Fine screen upper part
12	Fine screen middle part
13	Fine screen lower part
14	Dirt collector axis
15	Dirt collector axis support
16	Dirt collector axis tightening plug
17	Attachment screw
18	Dirt collector
19	Dirt collector plug
20	Dirt collector lower bearing
21	Suction nozzles
22	Attachment screw
23	Dirt collector motor
24	Stud
25	$\frac{1}{4}$ " Control fitting elbow
26	Filter housing
27	Adaptor $\frac{1}{4}$ x $\frac{1}{8}$ nipple

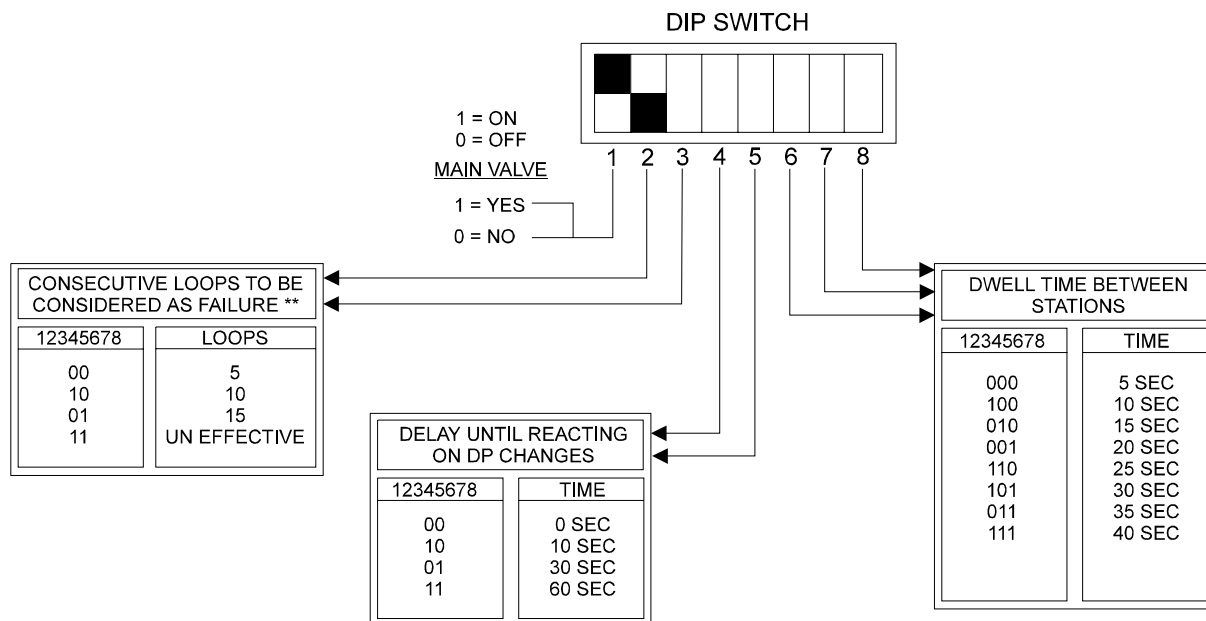
No.	Description
28	Three position valve
29	Control fitting connector
30	$\frac{1}{4}$ " Elbow
31	$\frac{1}{4}$ " Plug
32	Control fitting "T" connector
33	Nut
34	Victaulic end plug
35	Victaulic coupling
36	Victaulic coupling bolt
37	Victaulic coupling u-ring
38	Stud
39	2" nipple
40	2" flushing valve
41	Distributor
42	Control fitting connector
43	Controller unit base
44	Controller box
45	Controller box cover
46	Controller box attachment screw
47	Electronic control card
48	$\frac{1}{8}$ " Control fitting elbow
49	Solenoid valve
50	Differential pressure indicator
51	Piston o-ring
52	Washer
53	Piston nut
54	Piston housing
55	Battery 9V

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 is override, the time based cycles will continue uninterrupted according to the selected intervals.

Main Valve

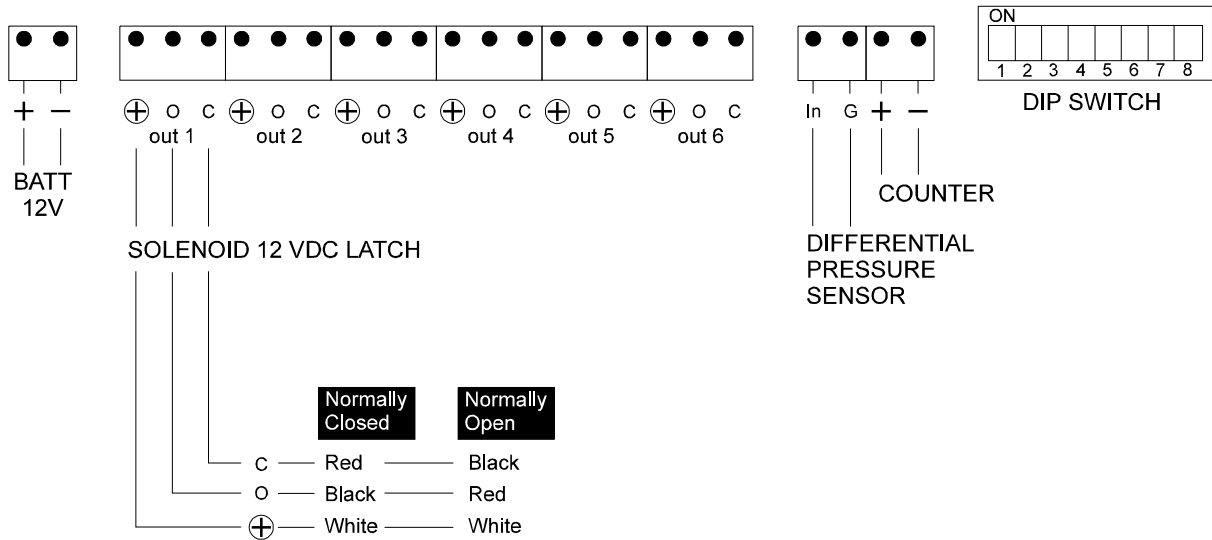
The unit can control a downstream main valve, which is turned off while flushing to increase pressure. When such a main valve is incorporated into the system, DIP SWITCH No. 1 must be set to ON. In a system without a main valve it will remain OFF. The main valve will be connected last on the terminal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

Technical Data

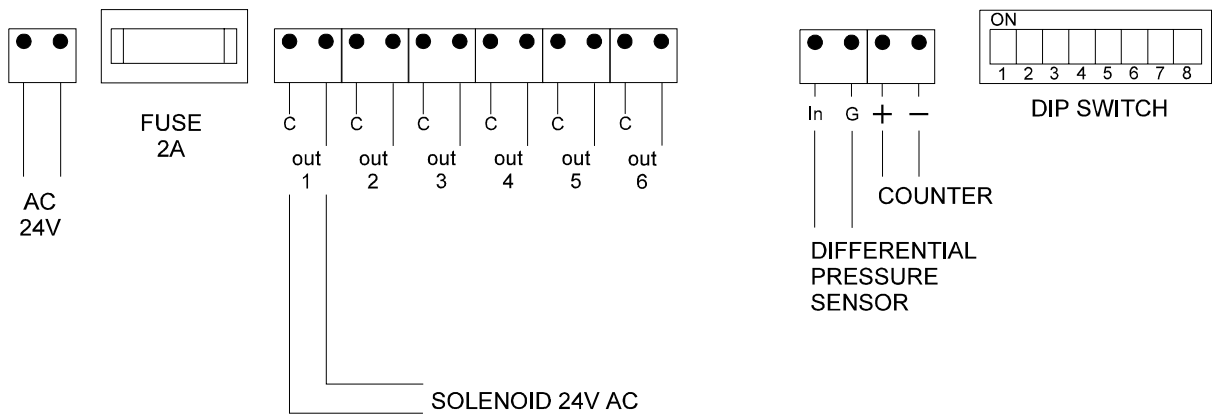
POWER SOURCES: FOR AC MODELS - 220V/50HZ, 24V REGULATED.
 MAXIMUM POWER 25W.

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

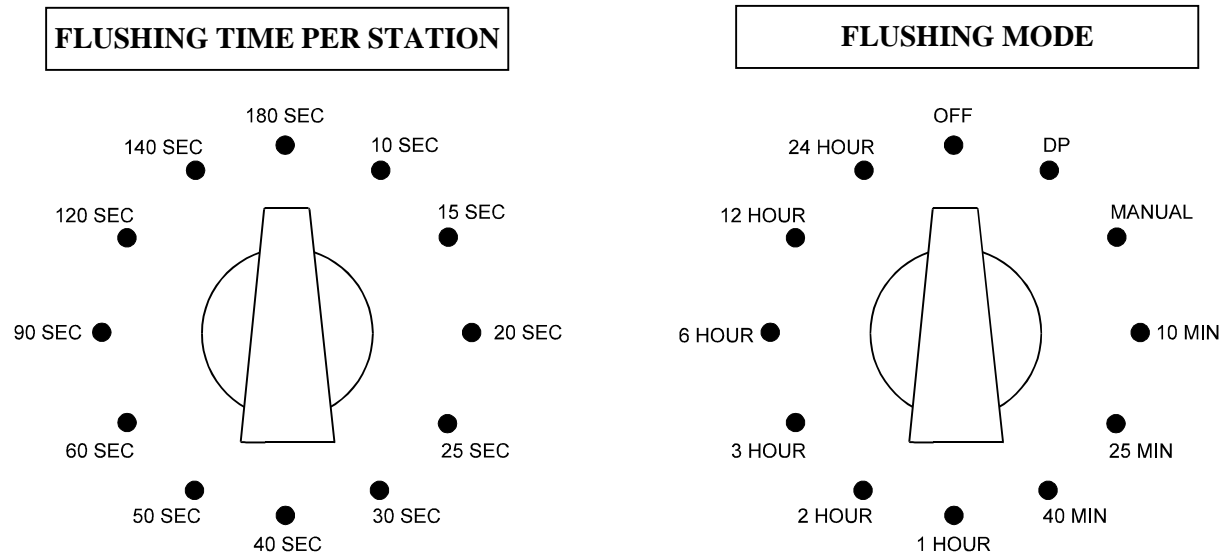
Connection Board (DC Model)



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.

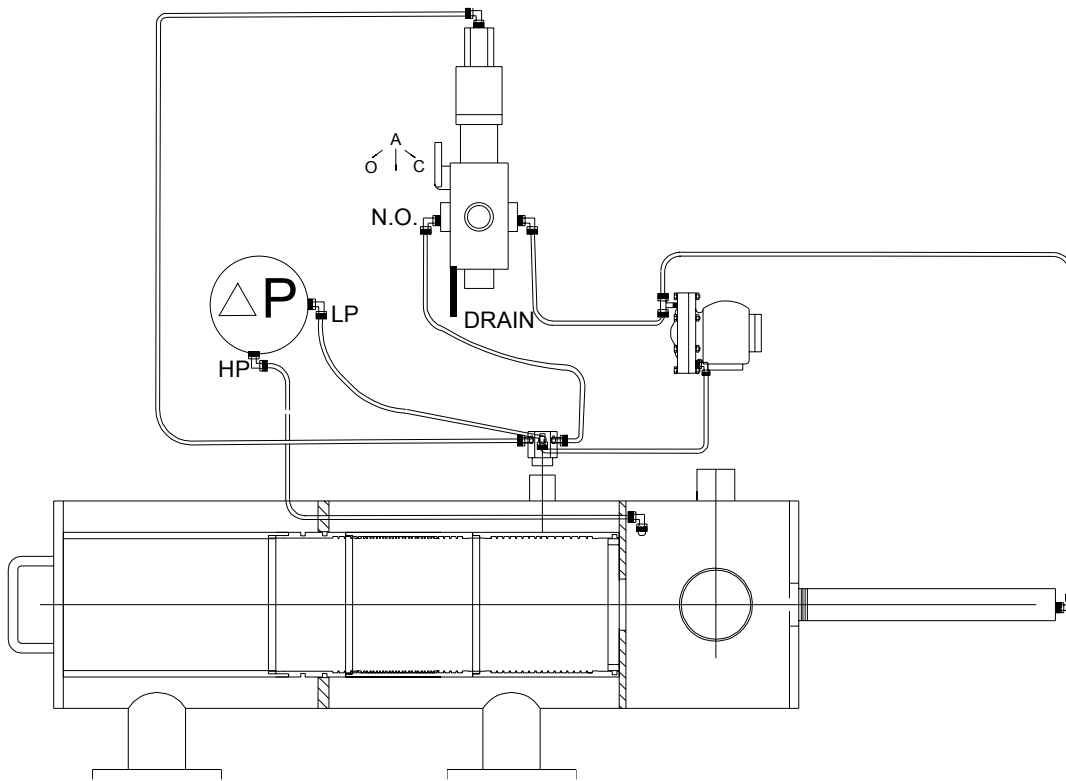


- When the right switch points to the OFF position the controller is switched off and no flushing will take place. The internal buzzer keeps sounding every 4 seconds to indicate that the controller is energized.
- When the right switch points to the DP position the controller will start backflushing 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.

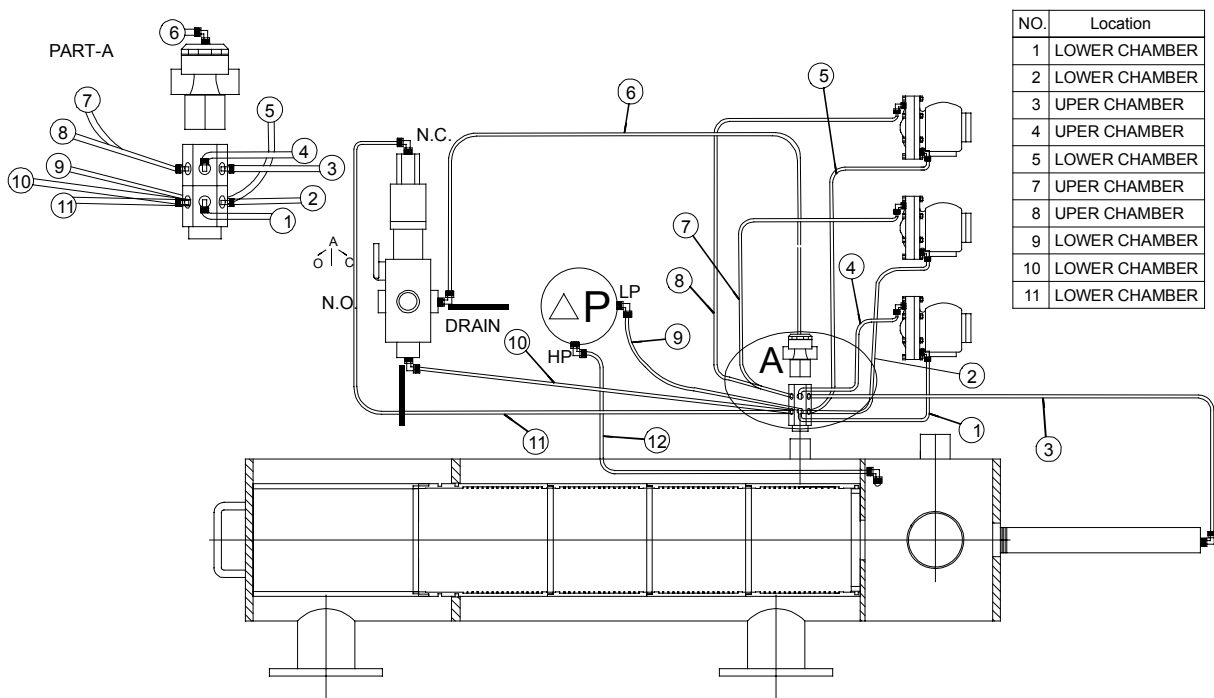
HOW TO READJUST THE KNOBS OF THE ROTARY SWITCHES IN CASE THEY BECOME LOOSE:

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 For AK HL3 Filter Only



Appendix 3 - Control Loops Schematic Drawing



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.

