

Braukmann

F76S Water Filters and MV876B Automatic-Backwash Controls

INSTALLATION INSTRUCTIONS

FEATURES

F76

- Built-in backwash impeller provides efficient cleaning with supply pressures as low as 22 psi.
- Increased flow capacity on 1/2 in. to 1 1/4 in. models provides lower pressure drop.
- Robust backwash mechanism.
- No shut-off or disassembly is required for cleaning.
- During backwash, the F76S continues to supply filtered water without interruption through a secondary screen.
- Memory ring indicates when the next manual backwash is due.

MV876

- MV876B1018 bayonet fitting simplifies upgrade to automatic backwash.
- 16 field-selectable backwash intervals (from every four minutes to once every three months) on the MV876B eliminate need for external timer.
- Connections for external control on the MV876B provide for use in automated systems and differential pressure control.
- MV876B can be turned manually to initiate backwash.
- Battery (AA) backup to insure completion of backwash cycle in spite of power loss.



F76S



MV876B1018
(BAYONET
FITTING FOR
F76S)

APPLICATION

The F76S is a high flow capacity water filter used at point-of-entry (POE) to remove sediment and debris from residential or commercial water systems. Used as a prefilter, the F76S protects elements of the water system, including specialized treatment devices such as taste/odor or reverse osmosis (R/O) or other common fixtures and appliances. The flow, filtering capacity, and ease of cleaning make the F76S the ideal filter for the most demanding applications.

The MV876 Automatic-Backwash Control is available as an accessory. This control is fitted to the drain valve and is programmed by the user to automatically perform the backwash function according to the desired interval.

SPECIFICATIONS

F76S:

Models:

Water filters with 100 micron screens and hose connections. F76S100T: 1/2 in. sweat and NPT threaded tailpieces.

F76S101S: 3/4 in. sweat and NPT threaded tailpieces.

F76S102S: 1 in. sweat and NPT threaded tailpieces.

F76S1031: 1 1/4 in. sweat and NPT threaded tailpieces.

F76S104S: 1 1/2 in. NPT threaded tailpieces.

F76S105S: 2 in. NPT threaded tailpieces.

Dimensions: See Fig. 1.

Materials of Construction:

Body: Brass.

Screen: Stainless Steel.

Internal Construction: Acetal Copolymer.

Seals: NBR.

Ball Valve: Brass with PTFE Seals.

Sump: Engineered Plastic.

NOTE: Bronze sump available.

Inlet Pressure:

Minimum: 22 psi (with unrestricted backwash discharge).

Maximum:

Plastic Sump: 232 psi.

Bronze Sump: 400 psi.

NOTE: Pressures above 200 psi require an inlet pressure gauge with a range wider than the standard.

Differential: Maximum Recommended: 42 psi.

Operating Pressure Drop: Maximum Recommended: 3 psi (with clean screen).

Temperature (maximum):

Plastic Sump: 104°F (40°C).

Bronze Sump: 158°F (70°C).

Pipe Sizes (in in.): 1/2, 3/4, 1, 1 1/4, 1 1/2, and 2.

Connections: Union on inlet and outlet: External NPT threaded or sweat.

Capacity: See Table 1.

Screen Sizes:

Shipped with Device: 100 microns.

Available Kits: 20, 50, and 200 microns.

MV876 Automatic-Backwash Controls:

MV876B1018: Bayonet mounted shaft of 24 Vac motor and timer replaces ball valve manual control for automatic backwash at preprogrammed intervals. 24V transformer not included. For use with F76S Filters only.

Specifications:

Power: 4 VA.

Current: 170 mA.

Voltage: 24 Vac.

Cycle time: 20 seconds (approximate).

Timer: Variable. See Table 2.

Accessories (for F76S only except where noted):

0900747 Sump O-Ring Kit (10 O-Rings) for 1/2 to 1 1/4 in. F76S.

0900748 Sump O-Ring Kit (10 O-Rings) for 1 1/2 to 2 in. F76S.

0901444 Gasket Package (10 gaskets) for any 1/2 in. and 3/4 in. F76.

0901445 Gasket Package (10 gaskets) for any 1 in. F76.

0901446 Gasket Package (10 gaskets) for any 1 1/4 in. F76.

0901447 Gasket Package (10 gaskets) for any 1 1/2 in. F76.

0901448 Gasket Package (10 gaskets) for any 2 in. F76.

AF11DS-1/2A Double-Spin Screen insert (100 microns)

for 1/2 to 3/4 in. F76S.

AF11DS-1A Double-Spin Screen insert (100 microns) for

1 to 1 1/4 in. F76S.

AF11DS-1/2B Double-Spin Screen insert (20 microns)

for 1/2 to 3/4 in. F76S.

AF11DS-1B Double-Spin Screen insert (20 microns) for 1

to 1 1/4 in. F76S.

AF11DS-1/2C Double-Spin Screen insert (50 microns)

for 1/2 to 3/4 in. F76S.

AF11DS-1C Double-Spin Screen insert (50 microns) for 1

to 1 1/4 in. F76S.

AF11DS-1/2D Double-Spin Screen insert (200 microns)

for 1/2 to 3/4 in. F76S.

AF11DS-1D Double-Spin Screen insert (20 microns) for 1

to 1 1/4 in. F76S.

AF11S-1/2A Screen insert (100 microns) for 1/2 to 3/4

in. F76S.

AF11S-1A Screen insert (100 microns) for 1 to 1 1/4 in.

F76S.

AF11S-1/2B Screen insert (20 microns) for 1/2 to 3/4 in.

F76S.

AF11S-1B Screen insert (20 microns) for 1 to 1 1/4 in.

F76S.

AF11S-1/2C Screen insert (50 microns) for 1/2 to 3/4 in.

F76S.

AF11S-1C Screen insert (50 microns) for 1 to 1 1/4 in.

F76S.

AF11S-1/2D Screen insert (200 microns) for 1/2 to 3/4

in. F76S.

AF11S-1D Screen insert (20 microns) for 1 to 1 1/4 in.

F76S.

AF11S-11/2A Screen insert (100 microns) for 1 1/2 to 2

in. F76S.

AF11S-11/2B Screen insert (20 microns) for 1 1/2 to 2 in.

F76S.

AF11S-11/2C Screen insert (50 microns) for 1 1/2 to 2 in.

F76S.

AF11S-11/2d Screen insert (200 microns) for 1 1/2 to 2

in. F76S.

KF11S-1A Clear Plastic Filter Sump Kit for 1/2 to 1 1/4 in.

F76S.

KF11S-11/2A Clear Plastic Filter Sump Kit for 1 1/2 to 2

in. F76S.

FT09RS-1A Bronze Filter Sump Kit for 1/2 to 1 1/4 in.

F76S.

FT09RS-11/2A Bronze Filter Sump Kit for 1 1/2 to 2 in.

F76S.

KH11S-1A Ball Valve Assembly for 1/2 to 2 in. F76S.

M76K-200 Pressure Gauge, 200 psi maximum.

M76K-400 Pressure Gauge, 400 psi maximum.

U76S5007 Sweat Tailpiece for any 1/2 in. F76.

U76S5015 Sweat Tailpiece for any 3/4 in. F76.

U76S5023 Sweat Tailpiece for any 1 in. F76.

U76S5031 Sweat Tailpiece for any 1 1/4 in. F76.

U76S5039 Sweat Tailpiece for any 1 1/2 in. F76.

U76S5047 Sweat Tailpiece for any 2 in. F76.

U76T1004 Threaded Tailpiece for any 1/2 in. F76.
 U76T1014 Threaded Tailpiece for any 3/4 in. F76.
 U76T1022 Threaded Tailpiece for any 1 in. F76.
 U76T1030 Threaded Tailpiece for any 1 1/4 in. F76.
 U76T1038 Threaded Tailpiece for any 1 1/2 in. F76.

U76T1046 Threaded Tailpiece for any 2 in. F76.
 ZR10K-1 Sump Wrench for any 1 in. or 1 1/4 in. F76.
 ZR10K-1 1/2 Sump Wrench for any 1 1/2 in. or 2 in. F76.
 ZR10K-1 1/2 Sump Wrench for 1/2 in. and 3/4 in. F76A.G.
 ZR10K-3/4 Sump Wrench for 1/2 in. and 3/4 in. F76S.

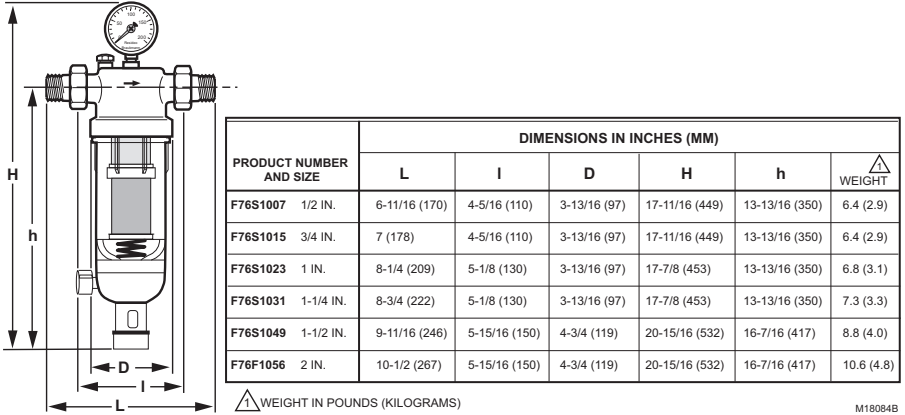


Fig. 1. F76S Dimensions.

Table 1. Capacity in Gallons Per Minute (gpm).

Pressure Drop (psi) Across Filter	Pipe Size (in.)					
	1/2	3/4	1	1-1/4	1-1/2	2
1	8	11	18	20	26	30
2	12	16	25	28	36	42
3	14	19	31	35	44	51
4	16	22	36	40	51	59
5	18	25	40	45	57	66
15	32	43	70	78	99	114
Flow Volume for 15 sec backwash at 60 psi inlet						
—	3.2	3.2	4.0	4.0	4.7	4.7

NOTE: C_v is equal to capacity at 1 psi pressure drop.

Table 2. MV876B Timer Selections.

Program Value	Backwash Interval
1	4 minutes
2	8 minutes
3	16 minutes
4	32 minutes
5	1 hour
6	2 hours
7	4 hours
8	8 hours
9	17 hours
10	34 hours
11	3 days
12	6 days
13	11 days
14	23 days
15	45 days
16	3 months

PLANNING THE INSTALLATION

The F76S should be sized based on the required flow rate and the resulting pressure drop across the filter. As a guideline for most applications, the F76S should be sized to avoid pressure drops exceeding 3 psi.

EXAMPLE

What size F76S is required to provide a flow rate of 30 gpm? Reading across Table 1 at 3 psi pressure drop, a 1 in. filter can provide 31 gpm without exceeding 3 psi pressure drop.

An increased pressure drop across the filter results when higher velocities are maintained to increase the capacity through any given size filter. Severe pressure drops will be encountered as capacity approaches that of the pipe size. To ensure the backwash cycle operates properly and cleaning action is not reduced, follow all recommendations in Fig. 2. Refer to Fig. 2a for an ideal installation.

NOTE: All filter installations are different. The size, type, and amount of dirt and debris and the flow rate must always be considered when choosing a screen and deciding to install multiple F76 Water Filters in parallel.

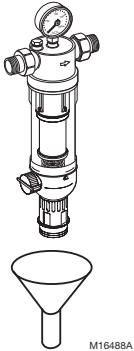


Fig 2a. Ideal F76S installation. A funnel mounted directly under the backwash port is the best installation layout.

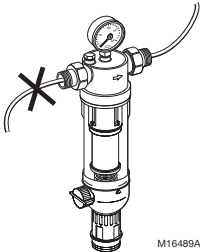


Fig 2a. Ensure the inlet pipe is not downsized. Do not use 1/4 or 3/8 inch tubing on 1/2 or 3/4 inch models.

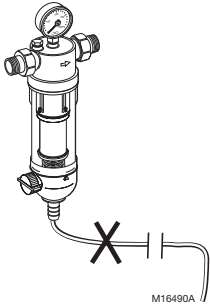


Fig 2c. Ensure the backwash outlet pipe is not downsized, long, or crimped. Instead, install a short oversized pipe on the backwash outlet. Do not use a low capacity solenoid valve to automate the backwash cycle.

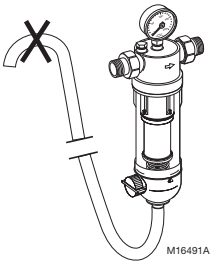


Fig 2d. Ensure the backwash outlet is not raised above the F76S. If the backwash outlet must be raised above the F76S, increase inlet pressure 5 psi for every 10 feet that it is raised.

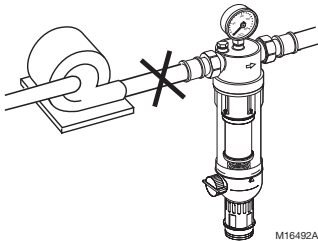


Fig 2e. Ensure the F76S is not used with an undersized pump. An undersized pump may not provide proper pressure or flow.

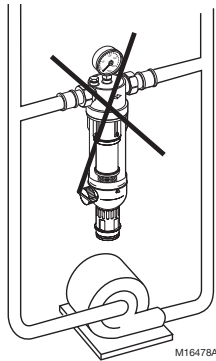


Fig 2f. Ensure the F76S is not installed in a bypass across a pump.

Fig. 2. Installation recommendations.

Commercial and Industrial Installations (1-1/2 and 2 in. models)

Commercial and industrial installations have high flow requirements. For proper operation, limit flow across the F76S screen. For example, a two-inch pipe may have a 120 gpm flow at 12 fps linear velocity across a clean screen. High linear velocity impacts dirt deeply into the screen, making it difficult to backwash and causing the screen to plug up quickly. In these situations, install multiple F76 filters in parallel. See Fig. 3.

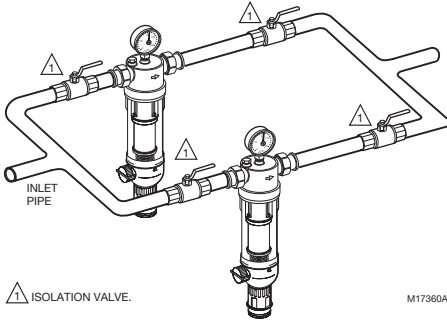


Fig. 3. Parallel installation of three F76S Water Filters.

Advantages of parallel installation:

- Increased cleaning capacity. Backwash interval is reduced.
- Elimination of system downtime. Can backwash one F76S while the others maintain required flow.

Another consideration in commercial and industrial installations is the backwash interval. Because of the high flow requirements, screens need cleaning on a regular basis. An MV876 Automatic-Backwash Control can be installed to backwash the F76S automatically.

INSTALLATION



CAUTION

Equipment Damage Hazard.

Excessive pressure or temperature can damage the device.

Ensure water temperature and pressure are below maximum ratings specified.



CAUTION

Equipment Damage Hazard.

Excessive heating can damage internal parts.

Before sweating, separate the tailpieces and nuts from the filter body.

F76S

When installing an F76S, use the following procedure:

1. Shut off water supply by closing the water supply valve.
2. Install the F76S in the water line with the arrow pointing in the direction of water flow.
3. Install pressure gauge in the F76S center port (see Fig. 5).

IMPORTANT

When using an MV876, stop here and install the MV876.

4. Ensure the F76S air vent is open.
5. Slowly open the water supply valve.
6. Once the F76S sump fills with water, close the air vent and fully open the water supply valve.

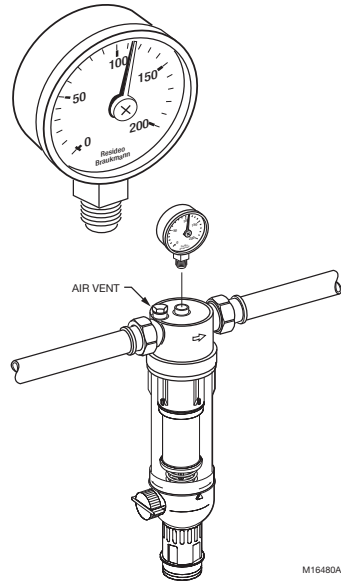


Fig. 4. Installing the F76S.

MV876

When adding an MV876 to an existing F76, the procedure can vary depending on the F76 model.

Installation on an F76S

1. Open the backwash outlet ball valve.
2. Remove the backwash outlet handle.
3. Install the MV876. See Fig. 5 and 6.

NOTE: When you rotate the MV876, it closes the backwash outlet ball valve.

4. Ensure the F76S air vent is open.
5. Slowly open the water supply valve.
6. Once the F76S sump fills with water, close the air vent and fully open the water supply valve.
7. Program the desired backwash interval by pushing the program button until the desired interval number appears in the display.

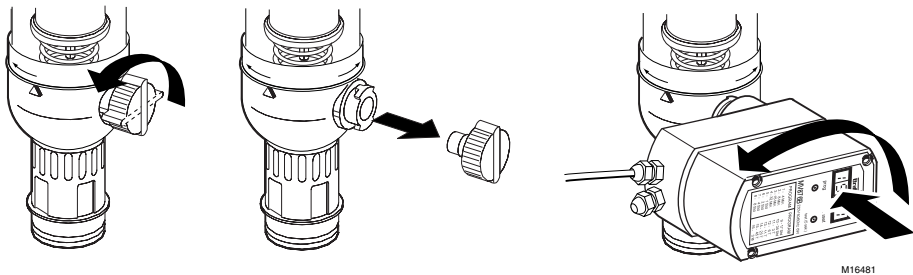


Fig. 5. Installing the F76S.

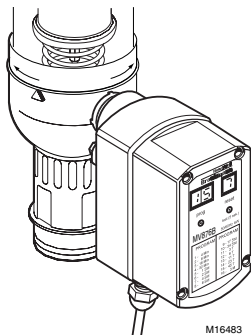


Fig. 6. Installing the MV876.

Installation on an F76A

1. Close the water supply valve to shut off water supply.
2. Drain all water from the F76A by opening both a fixture downstream, and the backwash outlet; loosen the air vent on top of the F76A.
3. Remove the backwash outlet (see Fig. 7):
 - a. Grip the F76A fixture with a wrench.
 - b. Using another wrench, turn the outlet counter-clockwise (viewed from the bottom).
4. Connect the MV876 to the F76A (see Fig. 7):
 - a. Ensure a plastic washer is placed between the filter sump and the backwash outlet.
 - b. Connect the externally threaded portion of the MV876 backwash outlet to the internally threaded F76A connection.
5. Connect the hose fitting to the MV876 backwash outlet (see Fig. 7).

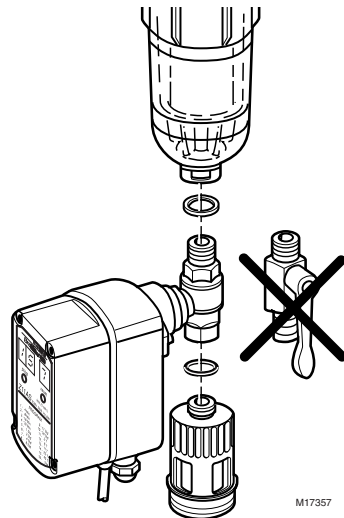


Fig. 7. Final position of MV876 and F76S components.

Set Pressure Gauge Needles

The black needle on the pressure gauge measures the F76S outlet pressure. When the F76S is running with clean screens, there is a small pressure drop across the F76S (3 psi at maximum recommended flow).

The red needle is a stationary needle that helps monitor backwash interval.

NOTE: The following assumes a constant inlet pressure. If inlet pressure is variable, another gauge on the inlet piping, or the air vent will provide more information regarding actual pressure differential.

1. Backwash F76S once to ensure the screens are clean.
2. With the F76S in operation, rotate the clear gauge cover to set the red needle to match the black needle.

As the F76S operates, screens become plugged. Backwash the F76S when the black needle measures about five psi lower than the red needle. However, each

installation is different. Residential applications can require backwash only once a week, or once every few weeks. Industrial applications can require backwash several times a day. To determine the backwash interval, see Determining Backwash Interval in the Operation section.

NOTE: For residential applications, backwash the F76S once a week regardless of need is an excellent guideline to follow to ensure F76S peak operating efficiency.

Fitting Batteries and Fuses

The batteries (not included) provide power to the MV876 in the event of a power loss. This is desirable especially when power loss occurs during the reverse rinsing cycle. To provide this, the MV876 requires four AA alkaline batteries. Install these batteries in the cover of the MV876:



CAUTION

Electrical Shock or Equipment Damage Hazard.
Can shock individuals or short equipment circuitry.

Disconnect power supply before installation.

1. Unscrew the four housing screws and set them aside. (see Fig. 8).

IMPORTANT

Ensure that the connecting cable is protected from damage while the MV876 cover is loose.

2. Remove the MV876 cover (see Fig. 8).
3. Insert four AA alkaline batteries (see Fig. 8).
4. Replace the cover.
5. Replace and tighten the four housing screws.

NOTES:

1. To avoid unnecessary battery drainage, connect the MV876 to power as soon as possible after inserting new batteries.
2. To ensure the availability of battery power, replace the batteries after a power loss.

If the 800 mA fuse blows, replace it:



CAUTION

Electrical Shock or Equipment Damage Hazard.
Can shock individuals or short equipment circuitry.

Disconnect power supply before installation.

1. Unscrew the four housing screws and set them aside. (see Fig. 8).

IMPORTANT

Ensure that the connecting cable is protected from damage while the MV876 cover is loose.

2. Remove the MV876 cover (see Fig. 8).
3. Remove and discard the old fuse (see Fig. 9).
4. Insert a new 800 mA fuse (see Fig. 9).
5. Replace the cover.

6. Replace and tighten the four housing screws.
7. Reconnect the power supply.

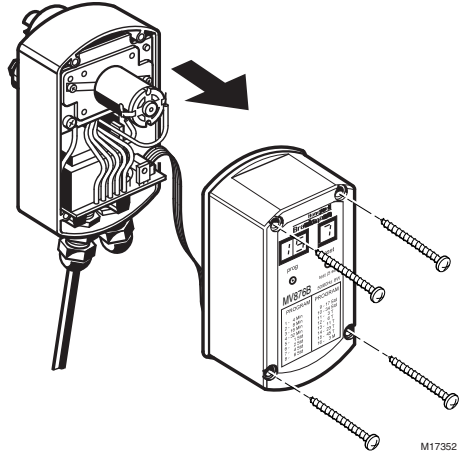


Fig. 8. Removing the MV876 cover.

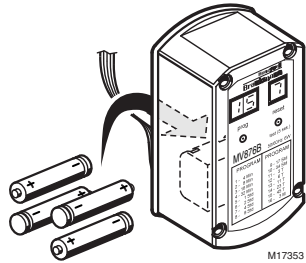


Fig. 9. Installing batteries in the MV876.

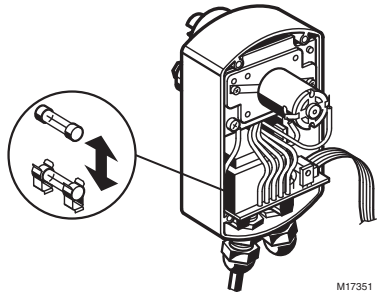


Fig. 10. Replacing the MV876 fuse.

WIRING



CAUTION

Electrical Shock or Equipment Damage Hazard.
Can shock individuals or short equipment circuitry.

Disconnect power supply before installation.

IMPORTANT

All wiring must comply with applicable codes and ordinances.

MV876

1. Mount the AT140A1034 Transformer and wire as shown in Fig. 11.
2. Ensure the F76 air vent is open.
3. Slowly open the water supply valve.
4. Once the F76 sump fills with water, close the air vent and fully open the supply valve.
5. Reconnect power to the system. When the system is powered, the MV876 will run through one backwash cycle (approximately 20 seconds).
6. Set MV876 backwash interval to the desired setting. See the Operation section.
7. Check MV876 operation by interrupting primary power to the transformer. When power is switched back on, the MV876 will backwash the F76 once.

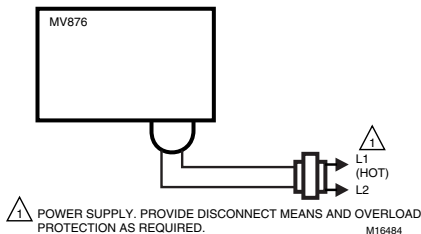


Fig. 11. Wiring diagram for F76 with MV876.

OPERATION

The F76S Water Filter removes sediment and debris from the water using an upper and lower screen. During normal operation, no water passes through the upper screen. Water is filtered as it flows through the lower screen. (See Fig. 12a.)

With continued operation, the lower screen becomes obstructed, reducing efficiency and creating a pressure drop across the F76S. Backwash the F76S periodically. Suggested interval is either once per week (residential applications) or when the black needle measures about five psi lower than the red needle.

To backwash the F76S manually, open the backwash outlet on the F76S bottom. This forces the entire filter insert downwards. Water flow to the lower screen outer side is blocked. The upper filter removes sediment and debris from the water.

While the upper screen filters the water. Some of the water passing through the upper screen is directed through the impeller to backwash the lower screen (from inside to outside). Remaining filtered water meets the needs downstream.

Water jets from the rapidly spinning impeller enhance the reversed water flow. The reverse flow removes trapped sediment and debris from the lower filter. This sediment drains out the backwash outlet. Cleaning the lower screen requires approximately 20 seconds. See Fig. 12b.

The F76S requires no maintenance if backwashed at the proper interval.

Determining Backwash Interval

All F76S applications are different and require backwashing at different intervals. Backwash interval is directly proportional to:

- The level and type of sediment in the local water supply.
- Water usage.

EXAMPLE

In northern states, water usage is higher in summer months than in winter months due to lawn watering in the summer. Therefore, the F76S should be backwashed more often in summer months than in winter months.

By accurately determining a proper backwash interval, the F76S will operate at a higher efficiency.

To determine the F76S backwash interval:

1. Backwash the system once to ensure the lower screen is clean.
2. The black pressure gauge needle measures outlet pressure. With clean screens, inlet pressure equals outlet pressure because of negligible pressure drop across the F76S.
3. Rotate the clear gauge cover to set the red needle to match the black needle.
4. Record the date and time.
5. Monitor the F76S closely. Over time, the screens become obstructed and outlet pressure drops.

NOTE: The F76S requires a backwash when the black needle measures about five psi lower than the red needle. Installations do vary and can require a backwash at different times.

6. Record date and time again. Residential applications can require an F76S backwash only once every few weeks to once per week. Industrial applications can require an F76S backwash several times a day.
7. Backwash the F76S regularly at the determined interval. A backwash can be done manually or automatically.
 - a. Manual Backwash: Open the backwash outlet for approximately 30 seconds.

NOTE: The amount of time required varies among installations. However, 30 seconds is the standard guideline to clean the lower screen.

- b. Automatic Backwash: Install an MV876 Automatic-Backwash Valve and select the backwash interval. See the Operation section.

a. F76S DURING NORMAL FLOW

b. F76S DURING BACKWASH CYCLE

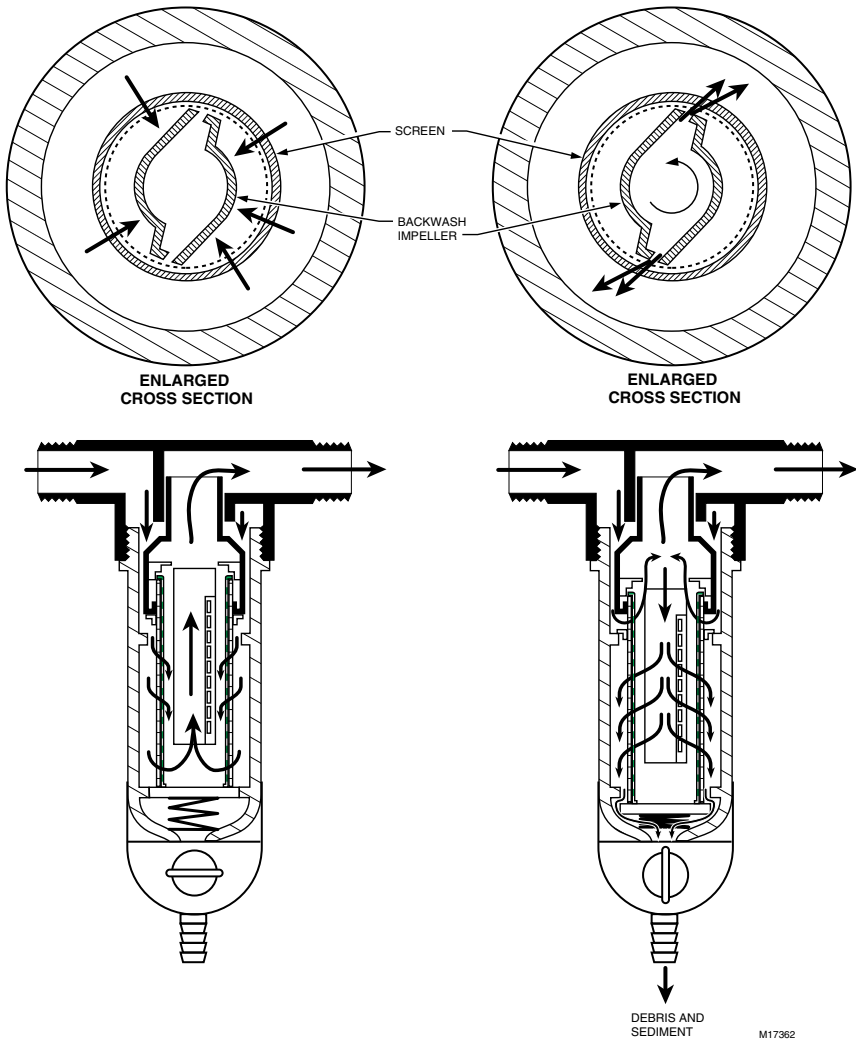


Fig. 12. Water flow through the F76S.

F76S REPLACEMENT PARTS LIST (SEE FIG. 13)

PARTS AND ACCESSORIES FOR NEW STYLE F76S FILTERS:

Description	1/2 inch	3/4 inch	1 inch	1-1/4 inch	1-1/2 inch	2 inch
(A)Pressure Gauge (new style F76S only) Standard Pressure (230 psi) High Pressure (400 psi)	M76K-200 M76K-400	M76K-200 M76K-400	M76K-200 M76K-400	M76K-200 M76K-400	M76K-200 M76K-400	M76K-200 M76K-400
(B)Tailpieces (same for new and old style) Sweat Threaded (shown)	U76S5007 U76T1004	U76S5015 U76T1014	U76S5023 U76T1022	U76S5031 U76T1030	U76S5039 U76T1038	U76S5047 U76T1046
(C)Union Nuts	N/A	N/A	N/A	N/A	N/A	N/A
(D)Tailpiece Gaskets (sold in packs of 10)	0901444	0901444	0901445	0901446	0901447	0901448
(E)Guide Barrel	N/A	N/A	N/A	N/A	N/A	N/A
Screen Insert Complete (new style only) With Double Spin Includes: 20 Micron (F), (G), (J)50 Micron 100 Micron 200 Micron	1/2 inch AF11DS-1B AF11DS-1C AF11DS-1A AF11DS-1D	3/4 inch AF11DS-1B AF11DS-1C AF11DS-1A AF11DS-1D	1inch AF11DS-1B AF11DS-1C AF11DS-1A AF11DS-1D	1-1/4 inch AF11DS-1B AF11DS-1C AF11DS-1A AF11DS-1D	1-1/2 inch	2 inch
Without Double Spin Includes: 20 Micron (F), (G), (J)50 Micron 100 Micron 200 Micron	1/2 inch AF11S-1B AF11S-1C AF11S-1A AF11S-1D	3/4 inch AF11S-1B AF11S-1C AF11S-1A AF11S-1D	1inch AF11S-1B AF11S-1C AF11S-1A AF11S-1D	1-1/4 inch AF11S-1B AF11S-1C AF11S-1A AF11S-1D	1-1/2 inch AF11S-11/2B AF11S-11/2C AF11S-11/2A AF11S-11/2D	2 inch AF11S-11/2B AF11S-11/2C AF11S-11/2A AF11S-11/2D
(H)Base Spring	N/A	N/A	N/A	N/A	N/A	N/A
(J)Chamber O Ring (sold in packs of 10)	0900747	0900747	0900747	0900747	0900748	0900748
Filter Sump Kits (new style only) Clear Plastic Bronze Includes: (J) Chamber O-Ring (K) Sump (L) Ball Valve O-Ring (M) Integrated Ball Valve (N) Memory Ring (P) Ball Valve Bowl (Q) Ball Valve Knob (R) Joint Ring Seal (S) Drain Connector	KF11S-1A FT09RS-1A	KF11S-1A FT09RS-1A	KF11S-1A FT09RS-1A	KF11S-1A FT09RS-1A	KF11S-112A FT09RS-112A	KF11S-112A FT09RS-112A
Ball Valve Assembly (new style only) Includes: (M) Ball Valve (L) Ball Valve O-Ring	KH11S-1A	KH11S-1A	KH11S-1A	KH11S-1A	KH11S-1A	KH11S-1A
Sump Wrench	ZR10K-34	ZR10K-34	ZR10K-1	ZR10K-1	ZR10K-112	ZR10K-112

N/A = Part number not available at time of printing.

^a Sold in packs of ten.

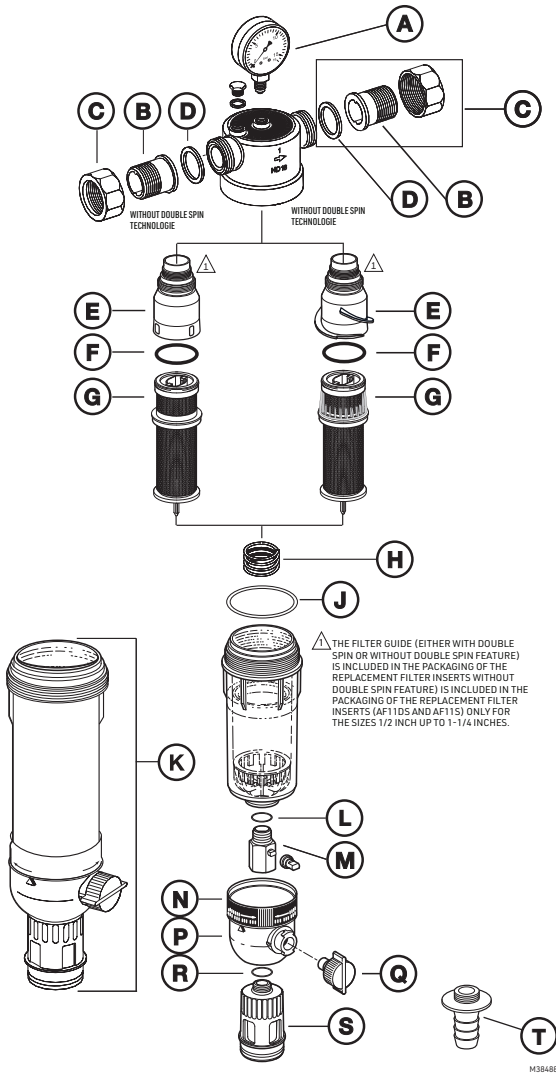


Fig. 13. F76S exploded view. Parts are keyed to F76S Replacement Parts List.



Resideo Technologies, Inc.
1985 Douglas Drive North, Golden Valley, MN 55422
1-800-468-1502
33-00557-01 M.S. Rev. 08-20 | Printed in United States