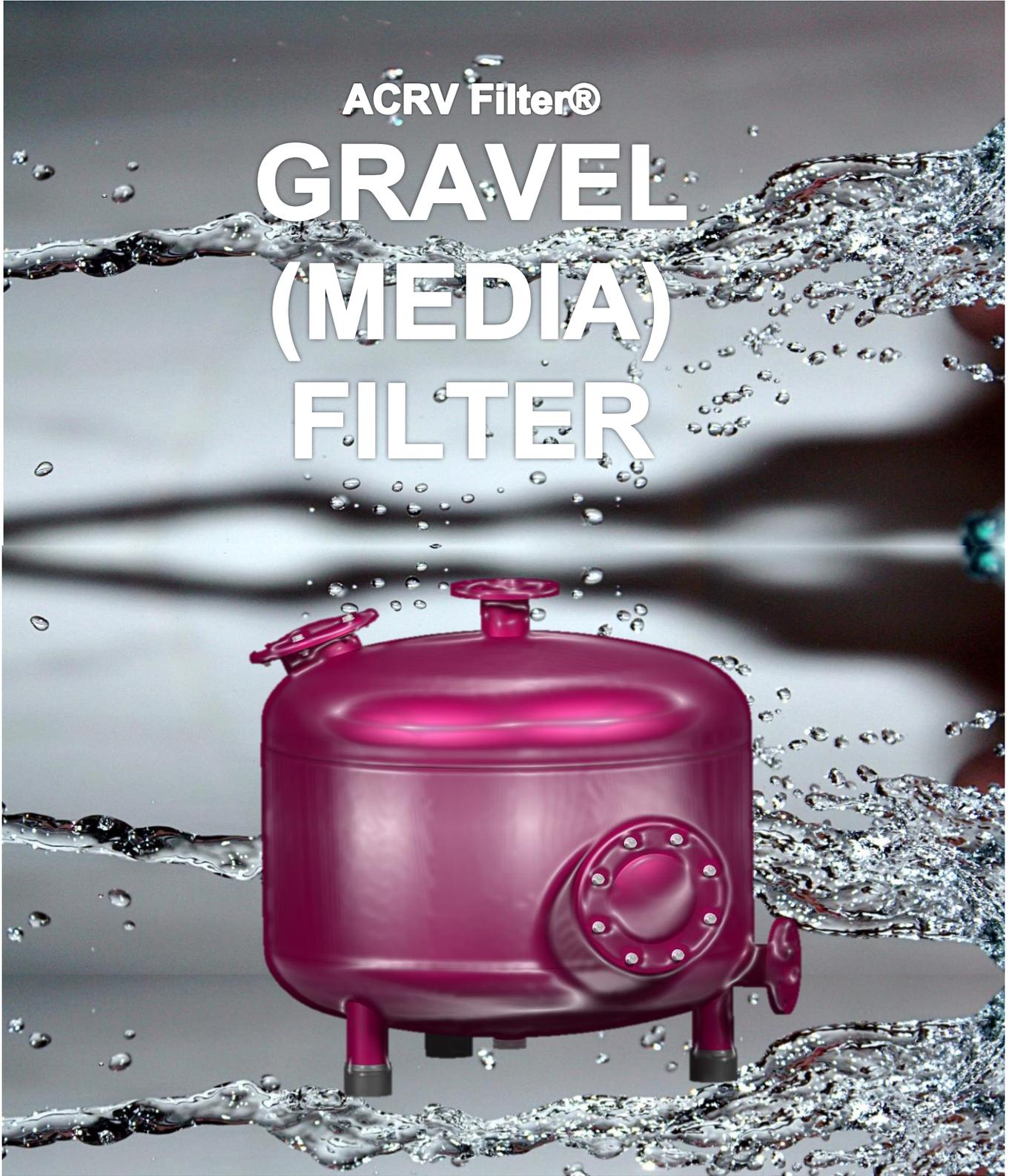


ACRV Filter®

GRAVEL (MEDIA) FILTER



TECHNICAL SPECIFICATIONS & USER MANUAL

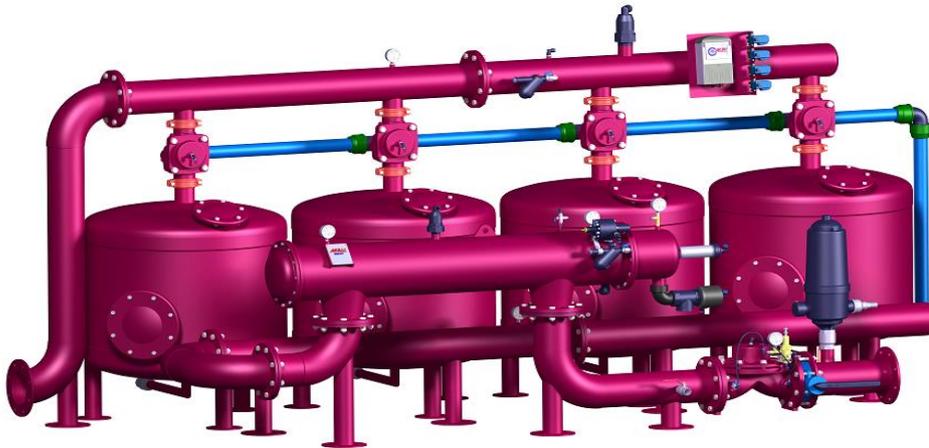




ACRV Filter® GRAVEL (MEDIA) FILTER



SINGLE
MODELS



ARRAY
SYSTEMS





ACRV Filter® GRAVEL (MEDIA) FILTER

ACRV Gravel (Media) Filter is a type of filter that uses a bed of sand, or other material to filter water for agricultural irrigation, swimming pools, aquaculture, general irrigation, stormwater management and other applications. Media filters are particularly effective for filtering moss, algae, organic matter and recycled, Used for waters acquired from lakes, channels, rivers, pools and such water storage units.

Modular desing particulary suitable for flexibility in assembly of arrays for various flow rates.

ACRV Gravel (Media) Filter can be used in a system combined with screen filters, disc filters and hydrocyclone filters.

ACRV Filter® produces Gravel (Media) Filters in 18", 24", 36" and 48" body diamters with 2", 2,5", 3", 4" input and output dimensions for various water capacities.

SUPERIOR FEATURES

- * Best designed for perfect water distribution during filtering and backwashing.
- * High quality corrosion resisting, polyester coated steel tanks.
- * Cleaned steel with phosphate pre-treated.
- * Thick layer with thermoplastic coated paintitng.
- * Extended filtration area with high quantity plastic mushroom nozzles.
- * Tested in high pressures and can operate max in 8 bar.
- * Consists of the necessary accessories for constructing a fully operational filtration application, a complete line of manifolds, collectors, standard connectors, valves, granular media types , measurement devicesand control units.
- * Wide range of media types and sizes suitable for various filtration applications.
- * Can combined with all types of filters to solve many filtering problems.
- * Filters are suitable for all automatic control systems.

ACRV Filter® uses high tech standart/basic control units which supplying from import or own programmed control system software which belongs to Acarmaksan. Own programed control panels are equipped with PLC control unit, touch screen, high reaction quality of selenoid valves, transmitters, and high quality electronic accessories.

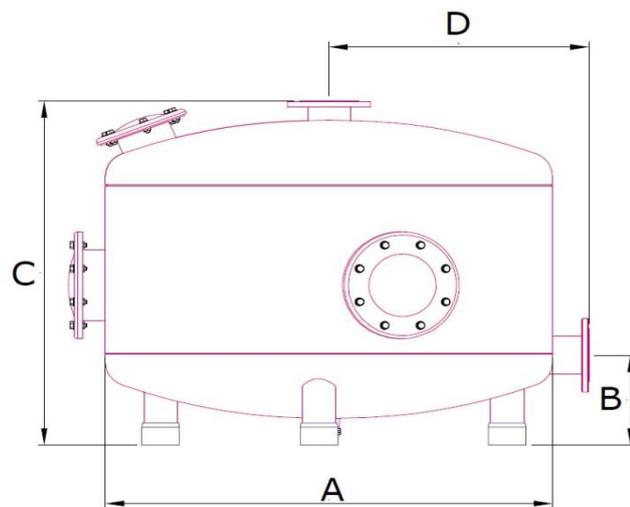
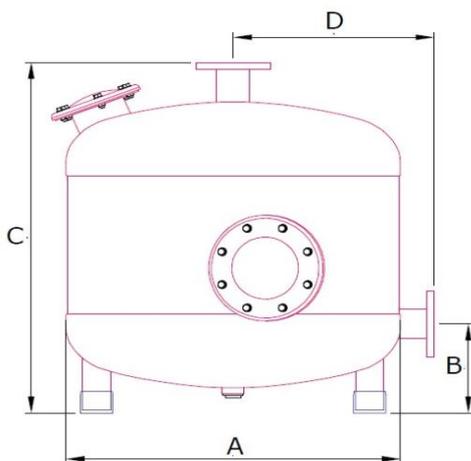
* Production comply with TSE K 270 Turkish Standart related with ICS 91.140.40 ISO International Standarts, certificated with CE /EC Declararation of Conformity for 2006/42/EC Safety of Machinery.

* Managing with TS EN ISO 9001:2008 with in scope of EA 14-18.

* Produced and ensured by **ACRV Filter®** and **ACARMAKSAN Co.**



ACRV Filter® GRAVEL (MEDIA) FILTER



MODEL	A (mm)	B (mm)	C (mm)	D (mm)	Empty Weight
GFM-20-18	450mm (18")	320	1090	310	50 Kg
GFM-25-18	450mm (18")	320	1090	310	50 Kg
GFM-30-24	600mm (24")	350	1180	385	82 Kg
GFM-30-36	900mm (36")	350	1130	540	152 Kg
GFM-40-48	1200mm (48")	350	1110	690	290 Kg



ACRV Filter® GRAVEL (MEDIA) FILTER 18"



Product Code	In-Out	Body Diameter	Mushrooms	Capacity
GFM-20-18	2"	18" (450mm)	21 pcs.	20 m3/h
GFM-25-18	2,5"	18" (450mm)	21 pcs.	30 m3/h

TECHNICAL SPECIFICATIONS

Filtering Capacity	20 m3/h - 30 m3/h
Curved Sheet Metal Thickness	2,5 mm
Body Sheet Metal Thickness	3 mm
Mushrooms Connection Sheet Thickness	4 mm
Input-Output	2" - 2,5" PN 10 Flange
Mushrooms (Nozzles)	21 unit
Buttom Drain	1"
Legs	3 unit
Mushrooms Sheet Metal Lower Support Legs	3 unit
Paint (Coating)	Chemical Cleaning Process + Phosphate Coating + Thermoplastic Electrostatic Powder Coating+Ovened Painting
Paint (Coating) Thickness	150-200 micron
Sand Drainage Covers	6", 1 unit.
Top cover	6", 1 unit.



ACRV Filter® GRAVEL (MEDIA) FILTER 24"



Product Code	In-Out	Body Diameter	Mushrooms	Capacity
GFM-30-24	3"	24" (600mm)	37 pcs.	42 m3/h
GFM-40-24	4"	24" (600mm)	37 pcs.	60 m3/h

TECHNICAL SPECIFICATIONS

Filtering Capacity	42 m3/h - 60 m3/h
Curved Sheet Metal Thickness	3 mm
Body Sheet Metal Thickness	3 mm
Mushrooms Connection Sheet Thickness	4 mm
Input-Output	3" PN 10 Flange
Mushrooms (Nozzles)	37 unit
Buttom Drain	1"
Legs	3 unit
Mushrooms Sheet Metal Lower Support Legs	3 unit
Paint (Coating)	Chemical Cleaning Process + Phosphate Coating + Thermoplastic Electrostatic Powder Coating+Ovened Painting
Paint (Coating) Thickness	150-200 micron
Sand Drainage Covers	6", 1 unit.
Top cover	6", 1 unit.



ACRV Filter® GRAVEL (MEDIA) FILTER 36"



Product Code	In-Out	Body Diameter	Mushrooms	Capacity
GFM-30-36	3"	36" (900mm)	81 pcs.	52 m3/h
GFM-40-36	4"	36" (900mm)	81 pcs.	70m3/h

TECHNICAL SPECIFICATIONS

Filtering Capacity	52 m3/h - 70 m3/h
Curved Sheet Metal Thickness	4 mm
Body Sheet Metal Thickness	4 mm
Mushrooms Connection Sheet Thickness	4 mm
Input-Output	3" - 4" PN 10 Flange
Mushrooms (Nozzles)	81 unit
Bottom Drain	1" , 1/4"
Legs	3 unit
Mushrooms Sheet Metal Lower Support Legs	3 unit
Paint (Coating)	Chemical Cleaning Process + Phosphate Coating + Thermoplastic Electrostatic Powder Coating+Ovened Painting
Paint (Coating) Thickness	150-200 micron
Sand Drainage Covers	8", 2 unit.
Top cover	6", 1 unit.



ACRV Filter® GRAVEL (MEDIA) FILTER 48"



Product Code	In-Out	Body Diameter	Mushrooms pcs.	Capacity
GFM-40-48	4"	48" (1200mm)	121 pcs.	80 m3/h

TECHNICAL SPECIFICATIONS

Filtering Capacity	80 m3/h
Curved Sheet Metal Thickness	5 mm
Body Sheet Metal Thickness	5 mm
Mushrooms Connection Sheet Thickness	4 mm
Input-Output	4" PN 10 Flange
Mushrooms (Nozzles)	121 unit
Bottom Drain	1" , 1/2"
Legs	3 unit
Mushrooms Sheet Metal Lower Support Legs	12 unit
Paint (Coating)	Chemical Cleaning Process + Phosphate Coating + Thermoplastic Electrostatic Powder Coating+Ovened Painting
Paint (Coating) Thickness	150-200 micron
Sand Drainage Covers	8", 3 unit.
Top cover	6", 1 unit.



ACRV Filter® GRAVEL (MEDIA) FILTER

TECHNICAL DETAILS

- * **ACRV Gravel (Media) Filter** uses gravel (or/sand) for depth filtration.
- * Double bottom chamber with (mushroom) diffusers for efficient filtration and backflushing.
- * Max. Recommended operating pressure is 8 bar (120 psi)
- * Max. (Test) Pressure is 10 bar (150 psi)
- * Rubber coated metal legs isolate the filter from the ground to prevent corrosion and damage to the protective coating.
- * Large cover is mounted for service and maintenance
- * **ACRV Gravel (Media) Filter** use a unique design of a double bottom chamber, divided by a welded reinforced steel plate.
- * The upper chamber contains the gravel (or sand) media the lower chamber is empty and collects the filtered water.
- * The plate is covered by mushroom diffusers which are plastic, slotted conical units.
- * They disperse the water uniformly, using effectively the whole media volume avoiding the occurrence of channeling or caking when operated correctly.
- * This filter is particularly suitable for backflushing a process involving the reversal of the water flow, causing a turbulent expansion of the media as a fluidised bed. This flushes out the entrapped debris effectively.
- * After the backflushing is completed, the filter resumes its normal filtering mode as clean as a new filter.
- * The backflushing process can be activated manually or automatically by controller or computer.

PROTECTIVE COATING

150-200 micron extra-durable thermoplastic coated, applied electrostatically and oven-cured on a zinc-phosphate layer for maximal anti-corrosion protection.

PRESSURE RELIEF VALVE

A pressure relief valve must be inserted before the filtering installation if pressure is not controlled effectively

BASALT / QUARTZ SAND

The most important fact is basalt or quartz sand in Gravel (Media) filter. **ACRV Filter®** advises between (2 and 4 mm) or (1 and 3 mm) basalt sand in filter media.

END CONNECTIONS

Available with three end connections.

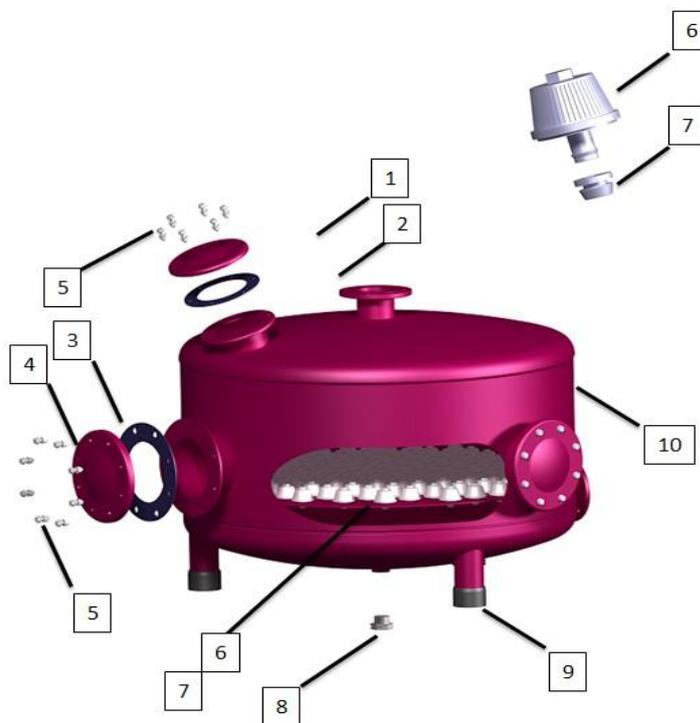
Thread (M),
Flange (F),
Victaulic (V).





ACRV Filter® GRAVEL (MEDIA) FILTER

SPARE PARTS



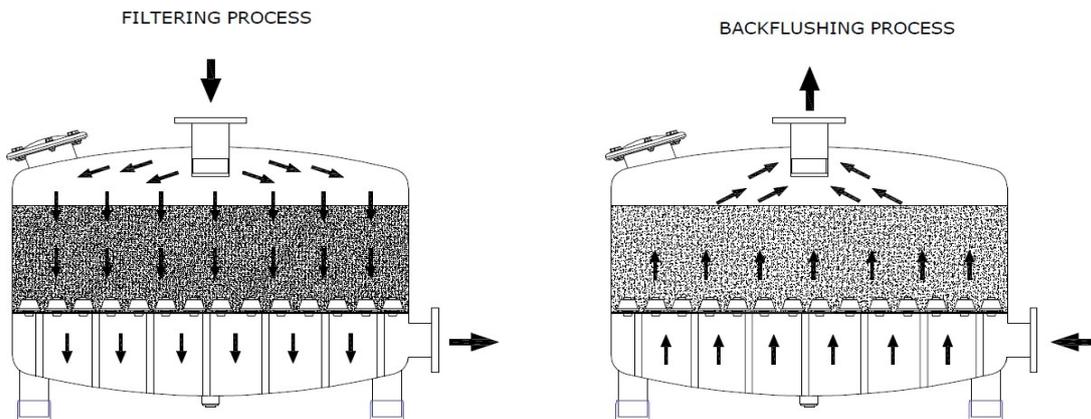
NO	PART NAME	18"	24"	36"	48"
1	COVER	YDK-00-40 (6")	YDK-00-40-(6")	YDK-00-40-(6")	YDK-00-40-(6")
2	COVER GASKET	YDK-00-60 (6")	YDK-00-60 (6")	YDK-00-60 (6")	YDK-00-60 (6")
3	SERVICE COVER GASKET	YDK-00-80 (6")	YDK-00-80 (6")	YDK-00-80 (8")	YDK-00-80 (8")
4	SERVICE COVER	YDK-00-100 (6")	YDK-00-100 (6")	YDK-00-100 (8")	YDK-00-100 (8")
5	BOLT, NUT, STAMP	YDK-00-120	YDK-00-120	YDK-00-120	YDK-00-120
6	MUSHROOM	YDK-00-130	YDK-00-130	YDK-00-130	YDK-00-130
7	RUBBER BUSHING	YDK-00-130	YDK-00-130	YDK-00-130	YDK-00-130
8	MALU PLUG	YDK-00-150 (1 1/4")	YDK-00-150 (1 1/2")
9	RUBBER LEG	YDK-00-160 (2,5")	YDK-00-160 (3")
10	FILTER BODY	YDK-18	YDK-24	YDK-36	YDK-48



ACRV Filter® GRAVEL (MEDIA) FILTER

GENERAL INSTRUCTIONS

- * For best results, the filter must be correctly installed and properly operated.
- * Special attention must be given to proper backflushing of the filter at the specified periodic intervals,
- * Automatic backflushing is a optional even for a single filter.
- * Backflushing of an array of filters is performed without interfering with irrigation.



OPERATION

- * Normal working conditions are obtained when headloss is less than 0,3 bar (5 psi) with clean filter.
- * If headloss exceeds 0,3 bar (5 psi) filter is either partially clogged or operation under an excessive flow rate
- * Backflush the filter at the beginning and at the end of irrigation.
- * Backflush filter when pressure difference increases above the 0,5 bar (7psi) above headloss of clean filter, or every 1 hours, which ever comes first.
- * Verify headloss of filter by measuring pressure difference with installed pressure gauge and 3 way valve selector.
- * Automatic backflushing by controller or computer is recommended
- * Maximal operational pressure should not exceed 8 bar (120 psi)
- * Filter is designed to withstand a maximum pressure of 10 bar (150 psi)
- * Do not tighten or open covers during operation or under pressure.



ACRV Filter® GRAVEL (MEDIA) FILTER

BACKFLUSHING OF A SINGLE FILTER

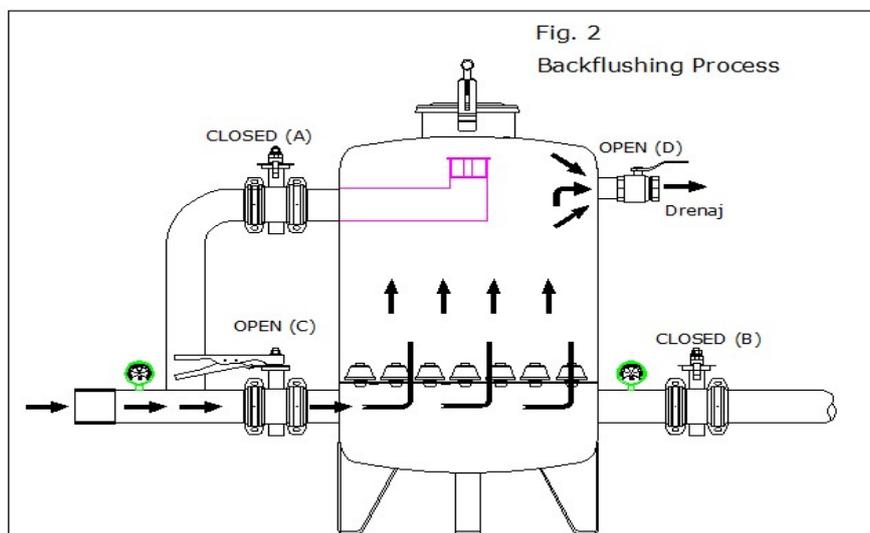
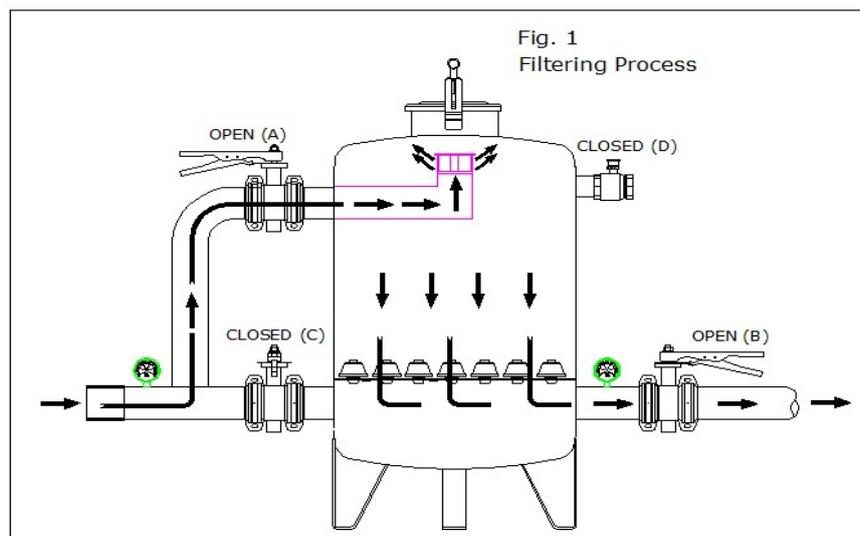
During normal filtering (irrigation), valves A and B open, while valves C and D are closed. (see fig. 1)

Backflushing of Manual Filter:

- a . The filter must be backflushed periodically to water quality, water flow and field conditions.
- b . Close valves A and B, then open valves C and D. (see fig. 2)

As standard factory dettings backflush for
 24" Gravel (Media) Filter 20 to 30 second,
 36" Gravel (Media) Filter 40 to 60 seond
 48" Gravel (Media) Filter 60 to 90 second

- c . Return to r





ACRV Filter® GRAVEL (MEDIA) FILTER

BACKFLUSHING OF AN ARRAY OF FILTERS

Backflushing of an array performed one filter at a time using filtered water from the other filters, without necessarily interfering with irrigation.

During normal filtering (irrigation), valve A is open and valve C is closed (see fig.4)

Automatic backflushing of filter;

a. The filter must be backflushed periodically according to water quality, water flow and field conditions.

b. Valve A closed and valve C open (see fig. 5).

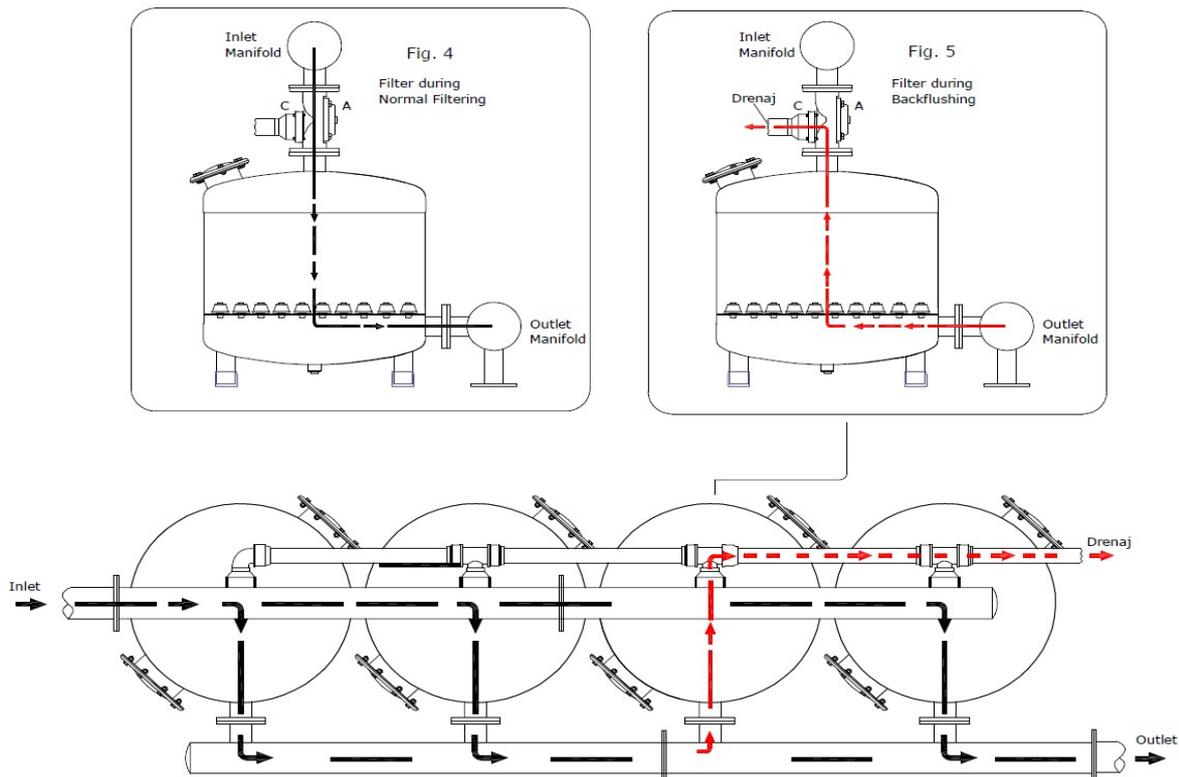
As standard factory settings backflush for
 24" Gravel (Media) Filter 20 to 30 second,
 36" Gravel (Media) Filter 40 to 60 second
 48" Gravel (Media) Filter 60 to 90 second

c. When backflushing terminates, the filter array returns to normal; valve C closes and valve A opens (see fig. 4)

NOTE:

The steps described in b and c are performed automatically by an adequate controller (e.g. time and differential pressure controller or computer control) backflushing one filter at a time or a number of filters.

Integrated backflushing valves can replace valves A+C and thus system can operate manually

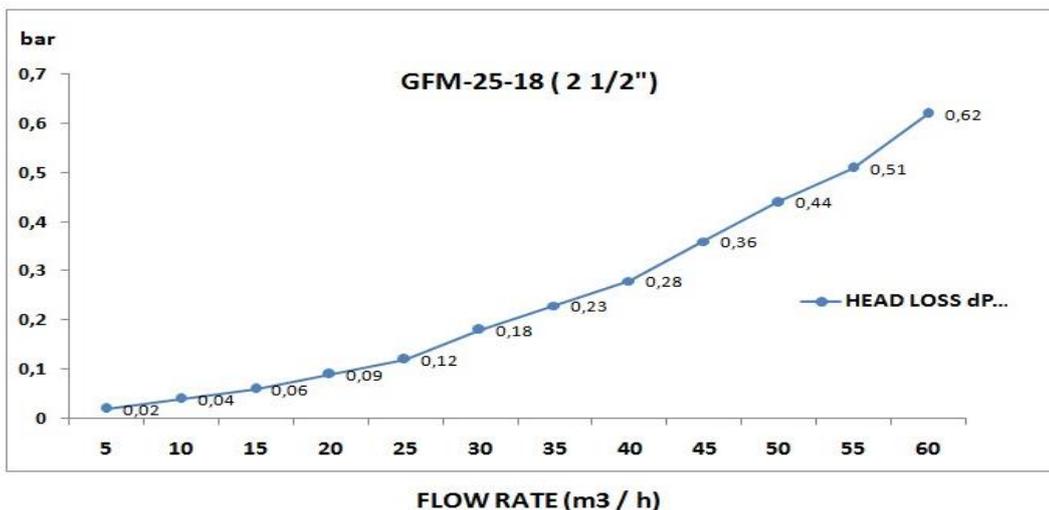
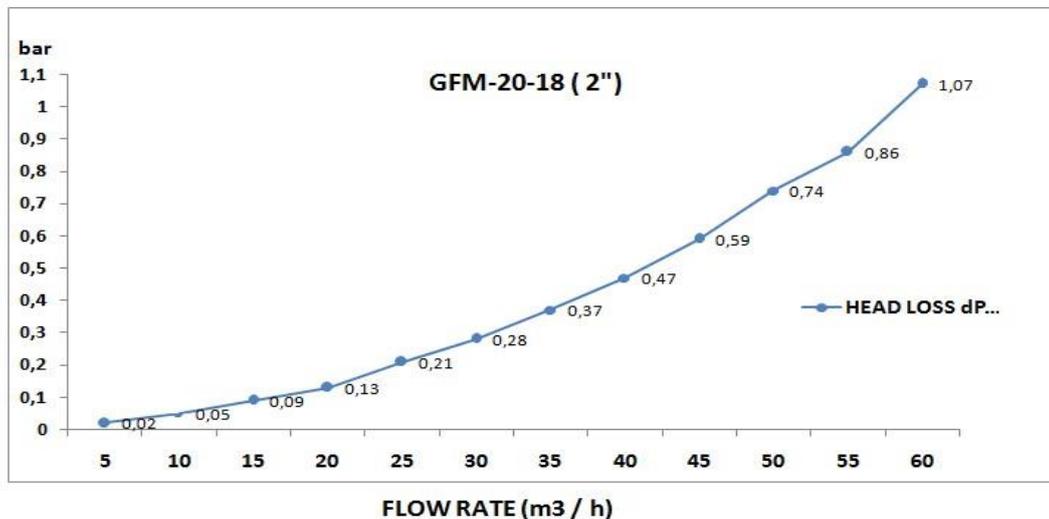




ACRV Filter® GRAVEL (MEDIA) FILTER

HEAD LOSS GRAPHICS

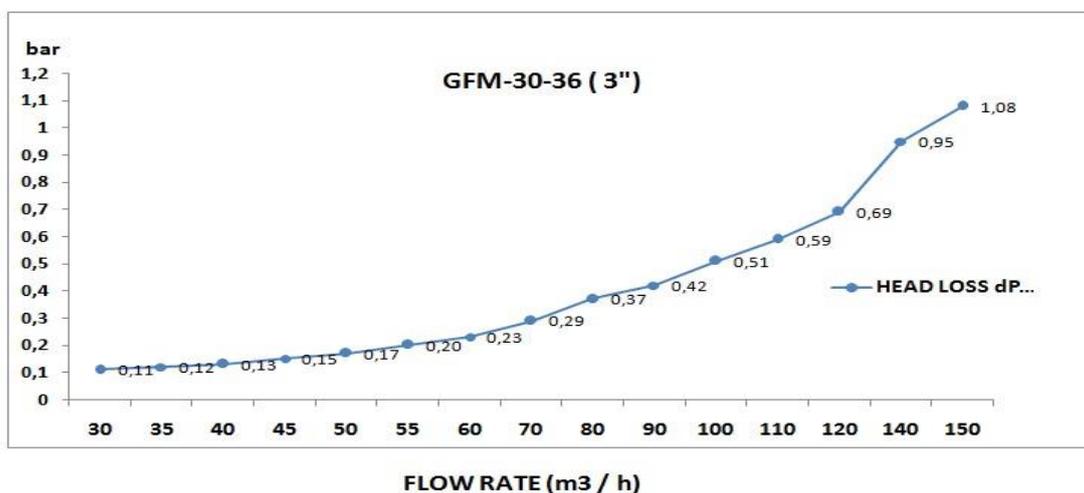
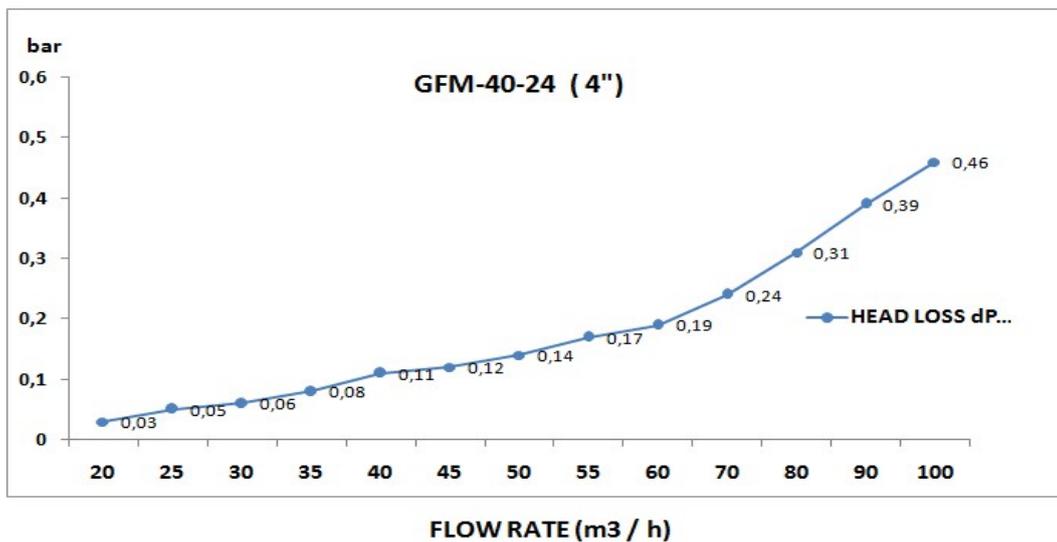
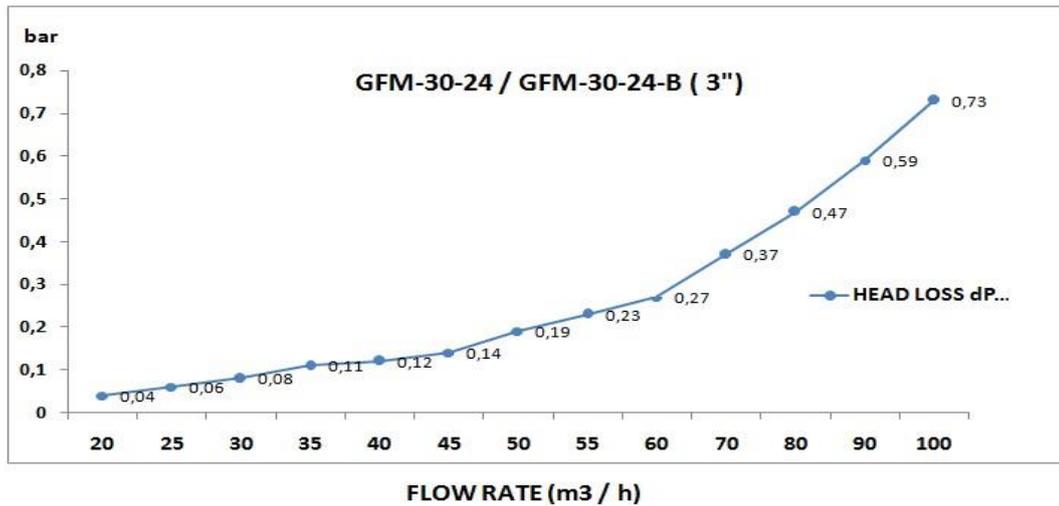
MODEL	FLOW RATE (m3/h)																				
	5	10	15	20	25	30	35	40	45	50	55	60	70	80	90	100	110	120	140	150	160
	HEAD LOSS dP (bar)																				
GFM-20-18-B	0,02	0,05	0,09	0,13	0,21	0,28	0,37	0,47	0,59	0,74	0,86	1,07									
GFM-25-18-B	0,02	0,04	0,06	0,09	0,12	0,18	0,23	0,28	0,36	0,44	0,51	0,62									
GFM-30-24-B				0,04	0,06	0,08	0,11	0,12	0,14	0,19	0,23	0,27	0,37	0,47	0,59	0,73					
GFM-30-24				0,04	0,06	0,08	0,11	0,12	0,14	0,19	0,23	0,27	0,37	0,47	0,59	0,73					
GFM-40-24				0,03	0,05	0,06	0,08	0,11	0,12	0,14	0,17	0,19	0,24	0,31	0,39	0,46					
GFM-30-36						0,11	0,12	0,13	0,15	0,17	0,20	0,23	0,29	0,37	0,42	0,51	0,59	0,69	0,95	1,08	
GFM-40-36						0,10	0,11	0,12	0,13	0,14	0,15	0,17	0,21	0,24	0,25	0,26	0,26	0,37	0,47	0,52	
GFM-40-48								0,08	0,08	0,10	0,12	0,13	0,15	0,17	0,18	0,20	0,23	0,25	0,33	0,37	0,43





ACRV Filter® GRAVEL (MEDIA) FILTER

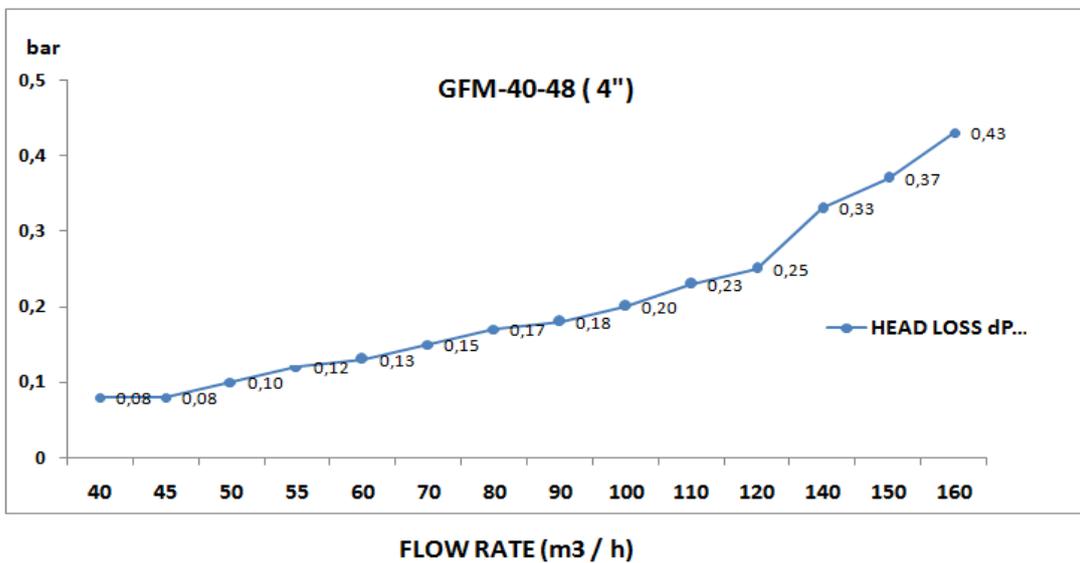
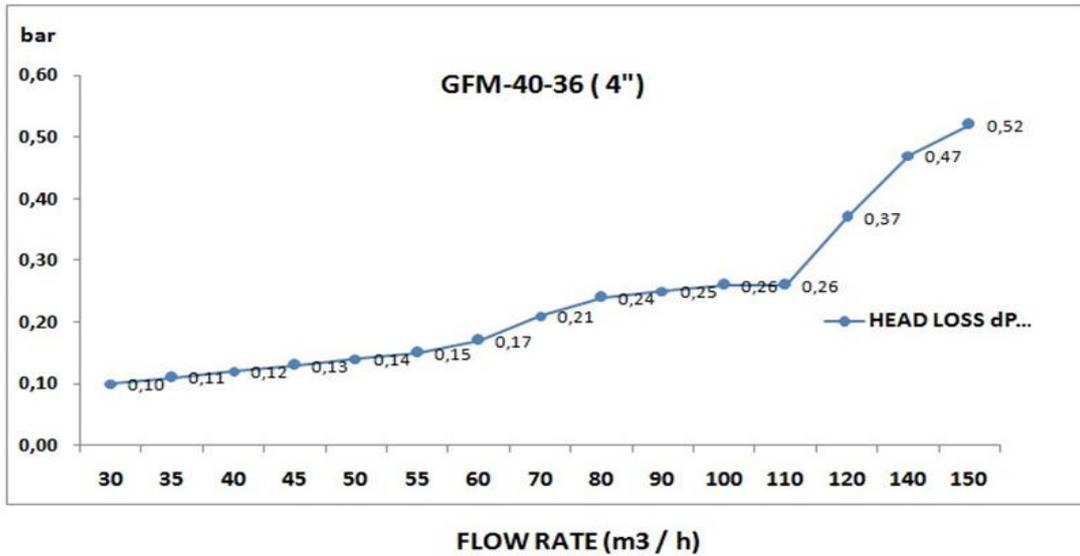
HEAD LOSS GRAPHICS





ACRV Filter® GRAVEL (MEDIA) FILTER

HEAD LOSS GRAPHICS





ACRV Filter® GRAVEL (MEDIA) FILTER

ARRAY GRAVEL (MEDIA) FILTERS (COMBINATION WITH DIFFERENT TYPE OF FILTERS)



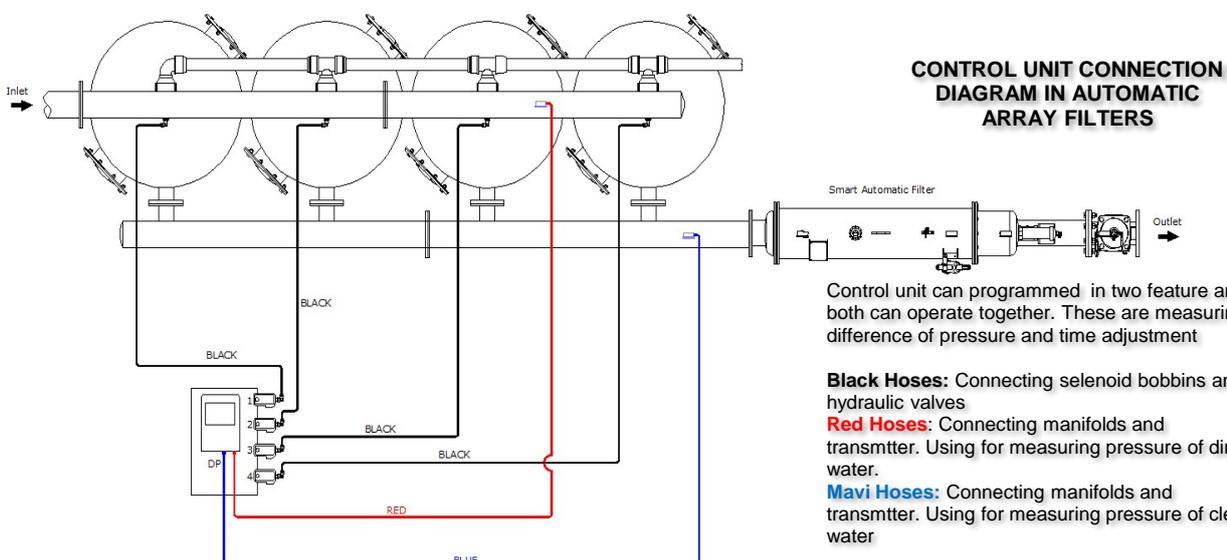
* **ACRV Gravel (Media) Filters** can be used as array filters combined with screen or disc filters to provide complete solutions. Most favorable Array Gravel (Media) filters are combined with **ACRV Filter®** production of **SMART®** Hydraulic Automatic Screen Filters.

* Multiple filter systems can be designed as automatic control. Array Gravel (Media) Filters and combined screen or disc filters can control via control panels integrated to the system with several connection units. In this process **ACRV Filter®** use both supplied control panels and own control units.

* According to demands of customers **ACRV Filter®** uses own programmed control system software. Control panels are equipped with PLC control unit, touch screen, high reaction quality of solenoid valves, transmitters, and high quality electronic accessories.

* Array filter quantities are determined according to system capacity. **ACRV Filter®** technical authorities assist in order to drawing proper system for irrigation filtering project.

* Array filters can be designed in mobile systems with using wheeled trailer





ACRV Filter® GRAVEL (MEDIA) FILTER

SAFETY INSTRUCTIONS

- * Provide safe transport so that the package is not damaged when transporting the **ACRV Gravel (Media) Filter** to the installation area.
- * Cut the strips when opening the filter package, use protective gloves during cutting. Remove the cut strips and packages from the assembly area.
- * Check that the floor is smooth for the system to work efficiently (If the concrete floor is properly prepared with water balanced gage the working efficiency and service life of the gravel filters are extended.)
- * Mount the connections of the filters to the manifolds using the appropriate key.
- * Fix the outlet manifolds of the filter system to the floor with the aid of a bolts
- * Check the bolts of the gravel maintenance cover and basalt sand filling cover before operating the Gravel filter system. Tighten loosens.
- * Provide drainage of filter system by moving the dirty water drain line away from the work area.
- * Check the hoses between the control unit of the filter system and the hydraulic valve, and seat the water leakage hoses against slip hazard.
- * The maximum working pressure of the filter system is 8 bar. Check the manometers on the inlet and outlet manifolds.
- * The outlet pressure should be at least 2 bar so that the filter system can clean itself in good quality. Check the output pressure.
- * Install the PS valve to the system outlet if the filter system is located in the upper area of the main irrigation area.

MAINTENANCE AND CONTROLS

*Regular maintenance and controls listed below are essential for efficient operation of the **ACRV Gravel (Media) Filters**.*

- * Check the frequency of the nuts at periodic times. Tighten loosens as necessary to avoid klapej.
- * Check the connection hoses after the Gravel system is running. Check for holes in the hoses and if there replace them with new ones.
- * Check the cover gaskets, replace the deformed gaskets with new ones.
- * Open the gravel filter bottom drain and empty any debris that accumulates at the bottom at certain intervals.
- * Emptied so that no water remains in the Gravel filter when the irrigation season is over.
- * Replace the batteries in the electronic control unit once a year.
- * Protect the control unit from external influences or store it in any safety storage when the irrigation season is over.
- * Paint damaged areas due to impact or brunt and avoid rusting