

FILTERS IN DRIP IRRIGATION

The filters which are indispensable of the drip irrigation systems take place between the pressure unit which is the heart of the drip irrigation system and the drip irrigation pipe. The lifetime of the laterals which are the most important parts of the drip irrigation is assessed according to their functional continuation of the drips which are placed on these laterals. The water pass channels which take place in the drips have been manufactured too narrow so as to diminish the energy of water and decrease the outlet pressure. This increases the partly or completely blockage risk of the drips. The blockage of these drips causes to end the function of the drip irrigation pipe. Therefore, the filtering group consists of a vital point in the system. At the meantime, it will demolish the product quantity and quality as this blockage risk will cause defects in equal water distribution. Hence, this will result the decrease of the product amount to be harvested from unit area.

THE FUNCTIONS OF FILTERS IN GENERAL:

- To filter water with less pressure loss,
- To avoid solid matters run in,
- To throw the solid matters out of the system easily,
- To put the filter in the initial position after every back flush and consume less water during this operation.

ISSUES TO BE CARED WHILE SELECTING FILTER:

The values such as

- The place where the water will be taken (well, lake, pool, etc.),
- The filthiness level of water (the density ratio of the pollutants such as grittiness and debris or moss),
- Flow rate of water,
- Diameter of pump outlet should be taken into consideration.

THE CHARACTERISTICS REQUIRED IN A GOOD FILTER:

- To infiltrate water without decreasing the water flow;
- Not to miss the solid matters;
- To throw the solid matters that it holds out of the system easily;
- To consume very little water during the back flush;
- Not to facilitate the augmentation of the bacteria.

DISC FILTER:

The filter with disc is consisted of synthetic discs which are seen to be overlapped on a column. These discs which function as a filter are tightened one above another. On the top and bottom surfaces of the discs are thin channels which set the filtering capability of the filter in micron level. These channels on the discs are on the opposite direction to each other. When the discs are put one above each other, the channels form many filtering layers which are cross wise. The water passing through these channels is infiltrated up to requested particle diameter.

ISSUES TO BE CARED IN FILTER USE:

A. Before starting the pump, the filter should be checked whether it is blocked or not. For this purpose, the filter should be controlled to see if it is clean or not by opening the cover of disc or screen filter.

B. When the filter is blocked during the irrigation, the filter input pressure increases and the output pressure decreases. When it is noticed that 1 Bar or more difference occurs between the input and output pressures, the filter needs to be cleaned. The blockage of the filter which has only one pressure gauge is discovered when the pressure gauge starts shaking. The most important stage in the filtering systems is the cleaning process of the filters. This is an issue which would never be forgotten. This process should definitely be realized due to the fact that the drip pipes are not blocked.

CLEANING OF THE FILTERS:

A. Unmounting and cleaning:

When a pressure difference is seen between the system input and output in the single or having no back flush systems, the system is stopped. After the filter is unmounted, disc or screen part are cleaned, they are mounted again and the system is started.

B. Back flush cleaning:

When there is pressure loss at the input and output of the system with the filter group having back flush valves in their system, the back flush valves are turned on and the accumulated particles in the system is thrown out by means of the valves and back flush.

C. Automation system:

Carrying out the process by means of electronic circuits which perceives the pressure differences in the system of the back flush process.

FILTER SELECTION IN TOO SANDY ENVIRONMENTS:

An excessive sand and debris may be seen especially due to the irrigation water taken from wells as the well is old or the use of bigger submersibles or the regional natures. In such environments, the use of hydro-cyclone is of a great importance so as to infiltrate the heavy sand particles in the system via cyclone movement for the purpose to enable the operation of our filter and duly functioning. According to the water flow, the hydro-cyclone may be single as well as being multi. The hydro-cyclone operates with the logic that the water moves in the system in cyclone movement. A disc or screen filter should be placed at the continuance of the system. That the hydro-cyclone systems which are selected as per the need are of reverse was manual or automatic constitutes of importance in terms of the productivity of the system.

FILTER SELECTION IN WATER TAKEN FROM LAKES, WATER COURSES AND PONDS:

The sand filter, which is also called gravel tank or moss tank, should be used in capturing the matters such as moss, leaf, beetle, etc. which are not wanted coming from the water source. The quartz sand which is consisted of various layers carries out the capturing function in these tanks. The system should be supported by a disc or screen filter afterwards. In case these systems are of by-pass, the back flush process should be realized manually or automatically by means of ancillary valves.

FERTILIZER TANK:

The nutrient of the plant in fertilizing which forms an important place in increasing the productivity in drip irrigation is met by means of drips being given through the system. This system can also be applied through dosage pumps as well as the fertilizer is given to the system thanks to metal tanks. The fertilizing should be installed before disc or screen filter. Fertilizer's direct injection to the dripping system may cause blockage of the drips by the unsolved fertilizer particles.

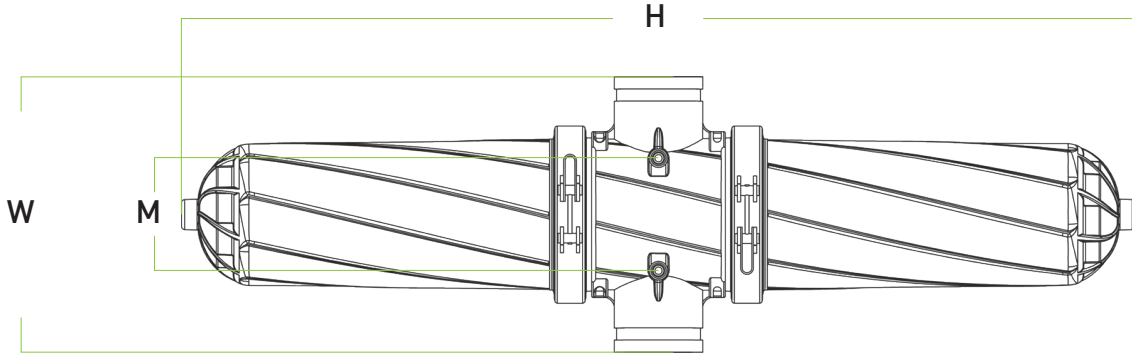
ISSUES TO BE CARED DURING THE FERTILIZING

- Basically, it is better to apply the phosphoric fertilizer to the soil directly in too much limed (hard) water. .
- The fertilizer irrigation should not be performed unless the system reaches to the full pressure and the all the lines are filled with water.
- The fertilizers to be used in the drip irrigation system should not be used without putting in fertilizer tank or without putting them in homogenous state. The fertilizer should be mixed in water properly and become a melt solution and provide the solid particle precipitated. Such application is not needed for potassium nitrate.
- The system should be operated at least 20-25 minute so as that the fertilizer in the system is completely discharged and given to the soil and make sure that the fertilizer in the tank is emptied fully.
- At the end of the irrigation season, the system should be operated with 0,05% HNO_3 (nitric acid) and a cleaning should be made; and HCL (hydraulic acid or H_2SO_4 (sulfuric acid) should be used so as to prevent the blockages in the system.

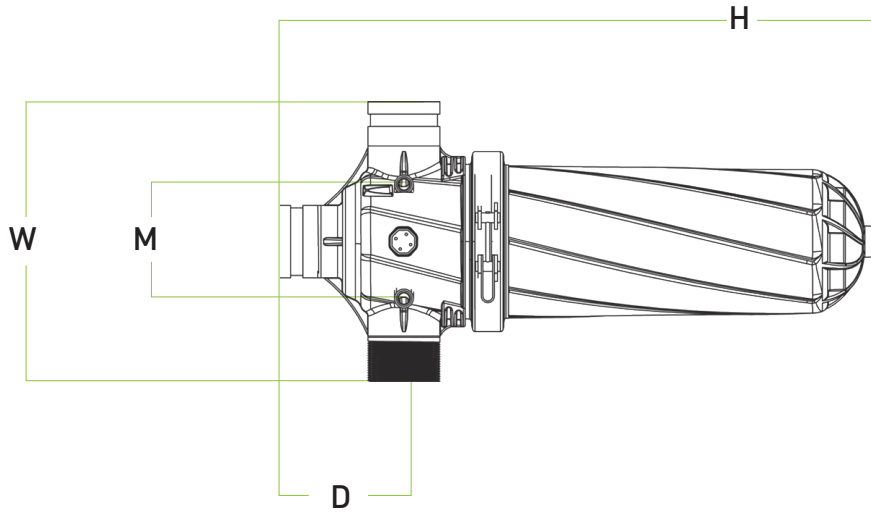
ISSUES TO BE CARED DURING ACID USE:

- Initially, it should be noted that the structures with acid will make reaction with water and the emitted gases should not be breathed directly.
- The tank is filled in 1\3 proportion and the acid is added in required rate and then water should be put on. (acid should not be directly put and then water should not be added)
- As the acid will go reaction with water, the cover of the tank should be closed after waiting a certain ratio.
- After the mixture given to the system, the wash up with water should be carried out at least 15 minutes and the chemicals in the system and tank should be emptied completely.

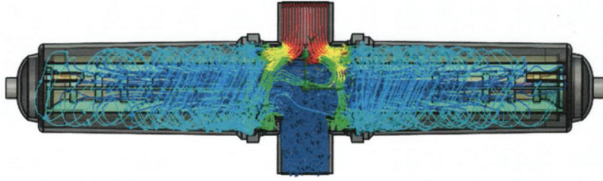
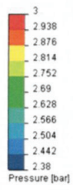




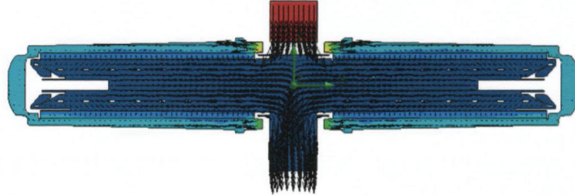
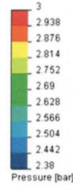
Bağlantı Çapı Connection Diameter	Cinsi Type	W	H	M
inch		mm	mm	mm
3"	Kısa - Short	340	960	140
	Uzun - Long		1200	
4"	Kısa - Short	340	960	140
	Uzun - Long		1200	



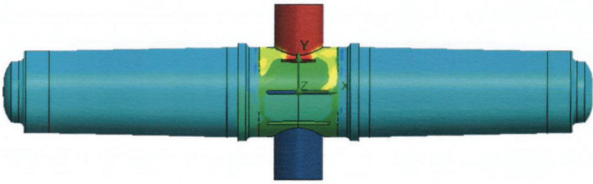
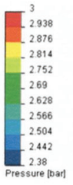
Bağlantı Çapı Connection Diameter	Cinsi Type	W	H	M	D
inch		mm	mm	mm	mm
2"	Kısa - Short	340	630	140	160
	Uzun - Long		740		
2 1/2"	Kısa - Short	340	630	140	160
	Uzun - Long		740		
3"	Kısa - Short	340	630	140	160
	Uzun - Long		740		



Akış Eğrileri - Flow Curves



Vektörel Hız Dağılımı ve Basınç Dağılımı Renk Skalası
Vectorial Velocity Distribution and Color Scale of Pressure Distribution

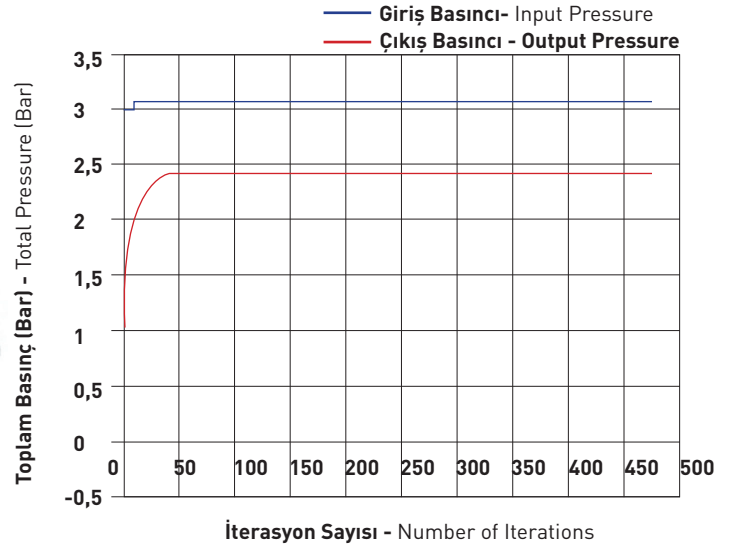


İç Yüzey Basınç Dağılımı - Inside Surface Pressure Distribution

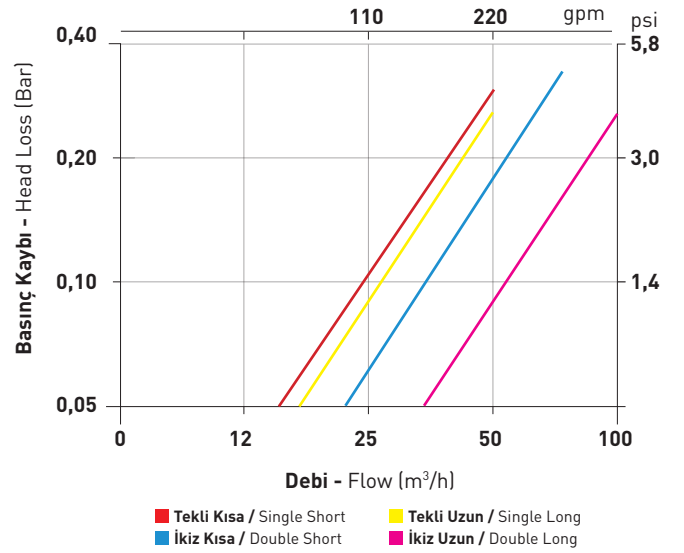
TEKNİK DETAYLAR/ TECHNICAL SPECS

Gövde - Body	Cam elyaf katkılı poliamid - Fiberglass reinforced polyamide
İç Takım - Cartridge	PP Disk - PP Disc Paslanmaz çelik elek - Stainless steel screen
Keleçe - Clamp	Mühendislik Plastiği - Engineering Plastic Paslanmaz çelik - Stainless steel
Contalar - O rings	Kauçuk - Rubber

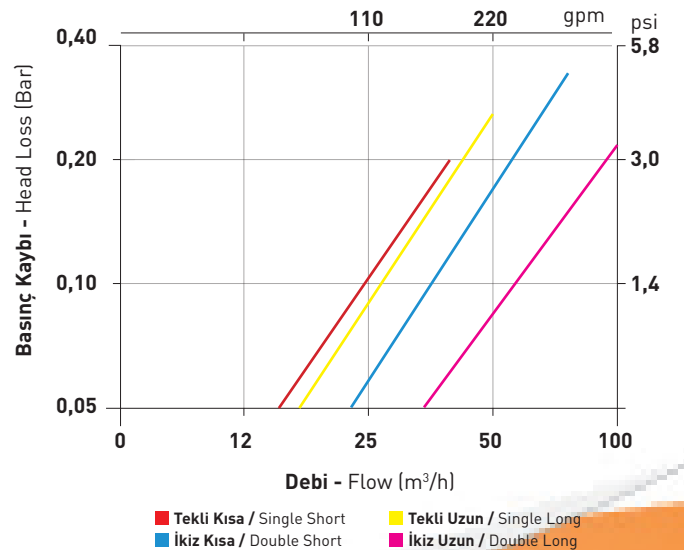
- ✓ Verilen sonuçlar 130 mikron disk ve elek iç takımlar içindir.
pH>4 | Maksimum sıcaklık 60 C | Maksimum basınç 10 Bar
- ✓ Given results are for 130 micron disc and screen cartridges.
pH>4 | Maximum temperature 60 C | Maximum pressure 10 Bar



ERHAS PLASTİK DİSK FİLTRELER BASINÇ KAYBI Erhas Plastic Disc Filters Head Loss

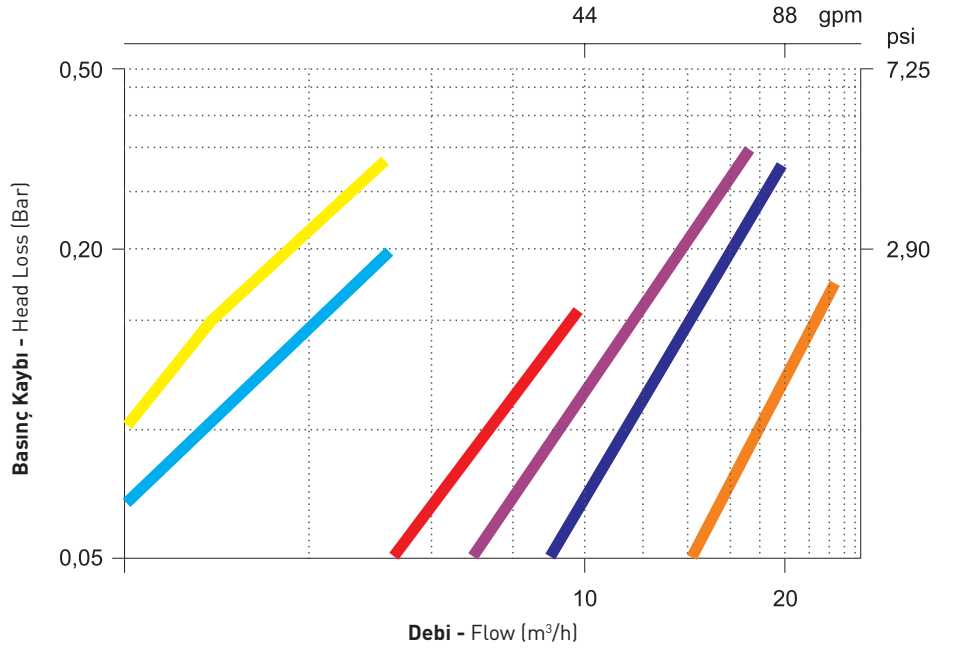


ERHAS PLASTİK ELEK FİLTRELER BASINÇ KAYBI Erhas Plastic Screen Filters Head Loss



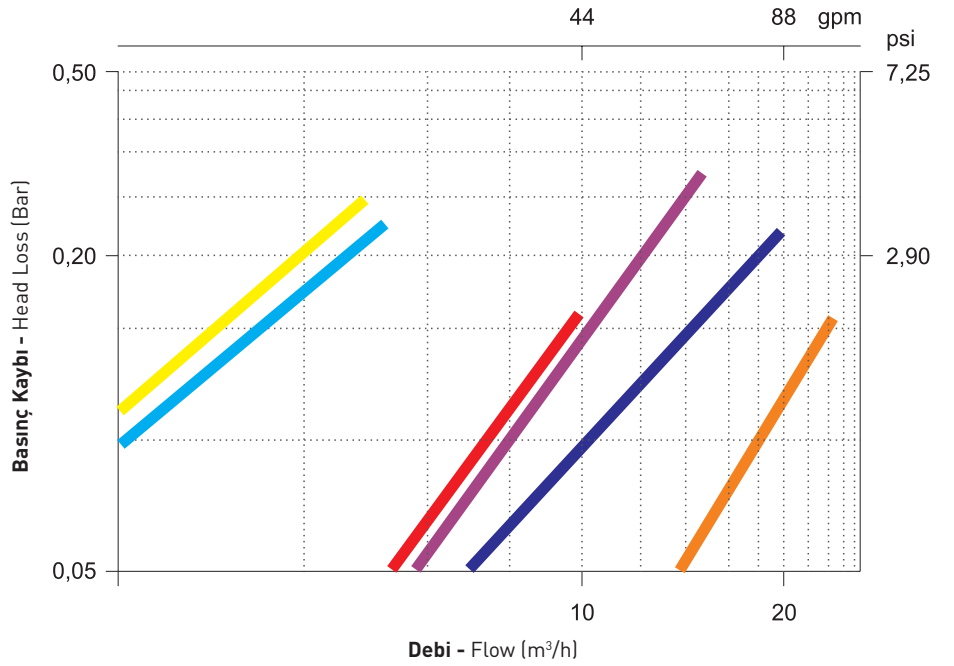
Y TİP DİSK FİLTRELER / Y TYPE DISC FILTERS

1 1/2"	+plus
2"	
1 1/4"	midi
1 1/2"	
3/4"	mini
1"	



Y TİP ELEK FİLTRELER / Y TYPE SCREEN FILTERS

1 1/2"	+plus
2"	
1 1/4"	midi
1 1/2"	
3/4"	mini
1"	

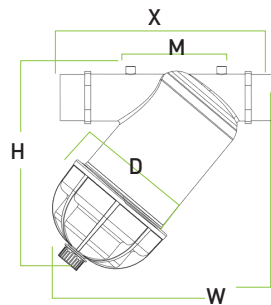


TEKNİK DETAYLAR/ TECHNICAL SPECS

Gövde - Body	Polipropilen - Polypropylene
İç Takım - Cartridge	PP Disk - PP Disc Paslanmaz çelik elek - Stainless steel screen
Contalar - O rings	Kauçuk - Rubber

- ✓ Verilen sonuçlar 130 mikron disk ve elek iç takımlar içindir. pH>4 | Maksimum sıcaklık 60 C | Maksimum basınç 10 Bar
- ✓ Given results are for 130 micron disc and screen cartridges. pH>4 | Maximum temperature 60 C | Maximum pressure 10 Bar

ÖLÇÜLER / DIMENSIONS



Cinsi Type	Bağlantı Çapı Connection Diameter	X	W	M	H	D
	inch	mm	mm	mm	mm	mm
+plus	1 1/2" x 1 1/2"	263	275	110	250	143
	2" x 2"					
midi	1 1/4" x 1 1/4"	230	225	95	205	115
	1 1/2" x 1 1/2"					
mini	3/4" x 3/4"	170	182	70	170	93,5
	1" x 1"					

Y TİP PLASTİK FİLTRE AKIŞ ANALİZLERİ VE TEKNİK ÇİZİMLERİ

Y TYPE PLASTIC FILTERS FLOW ANALYSIS AND TECHNICAL DRAWING