Mach Clean

AUTOMAT®
Creating a Green World®

Manual & Automatic Sand Media Filters

5 CORROSION-FREE YEAR WARRANTY*

IS : 14606:1998

CM/L : 8300145208

Corrosion-free polymeric technology

Installation Operation & Maintenance Manual

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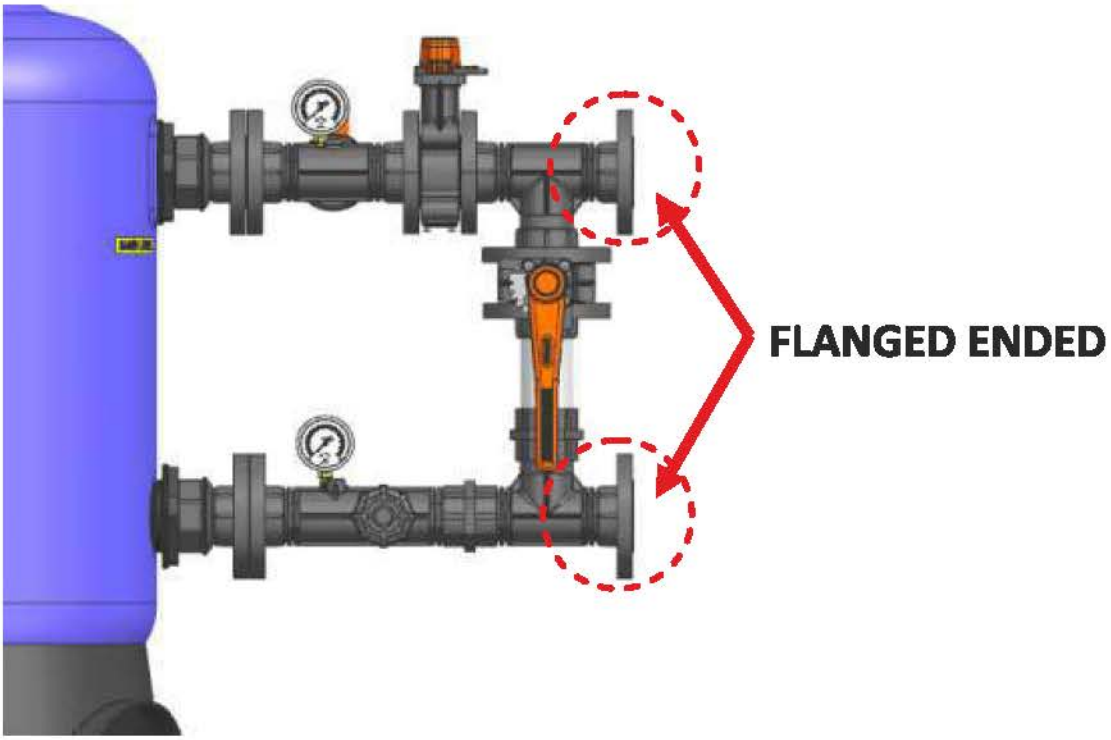
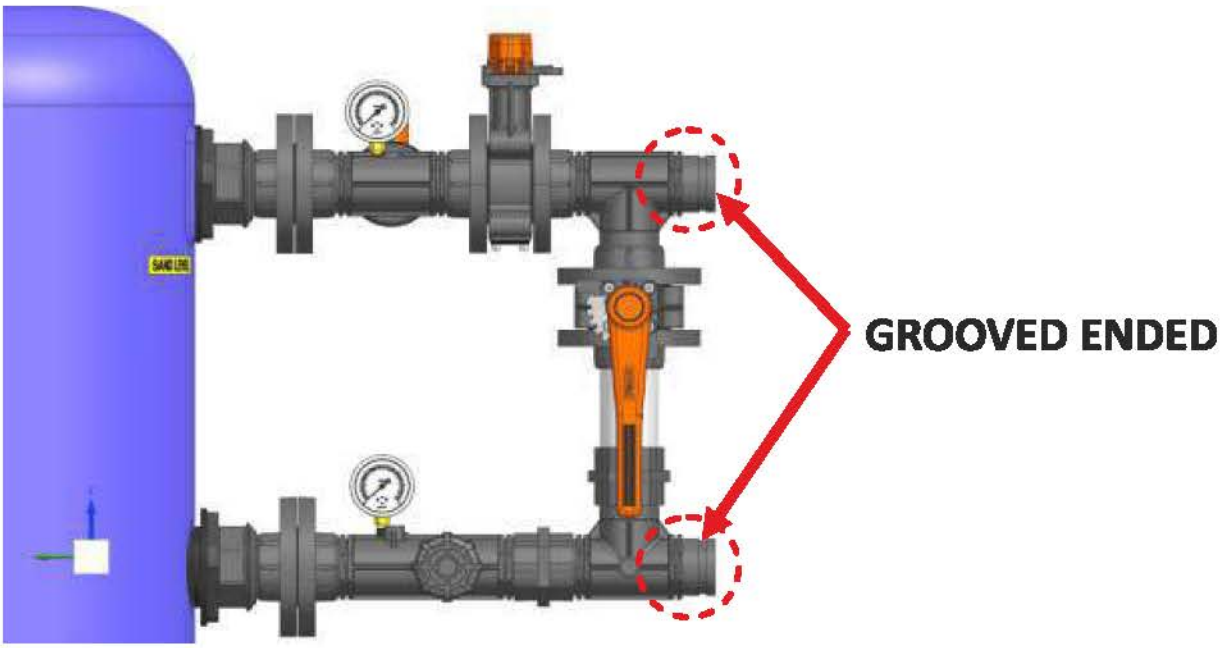
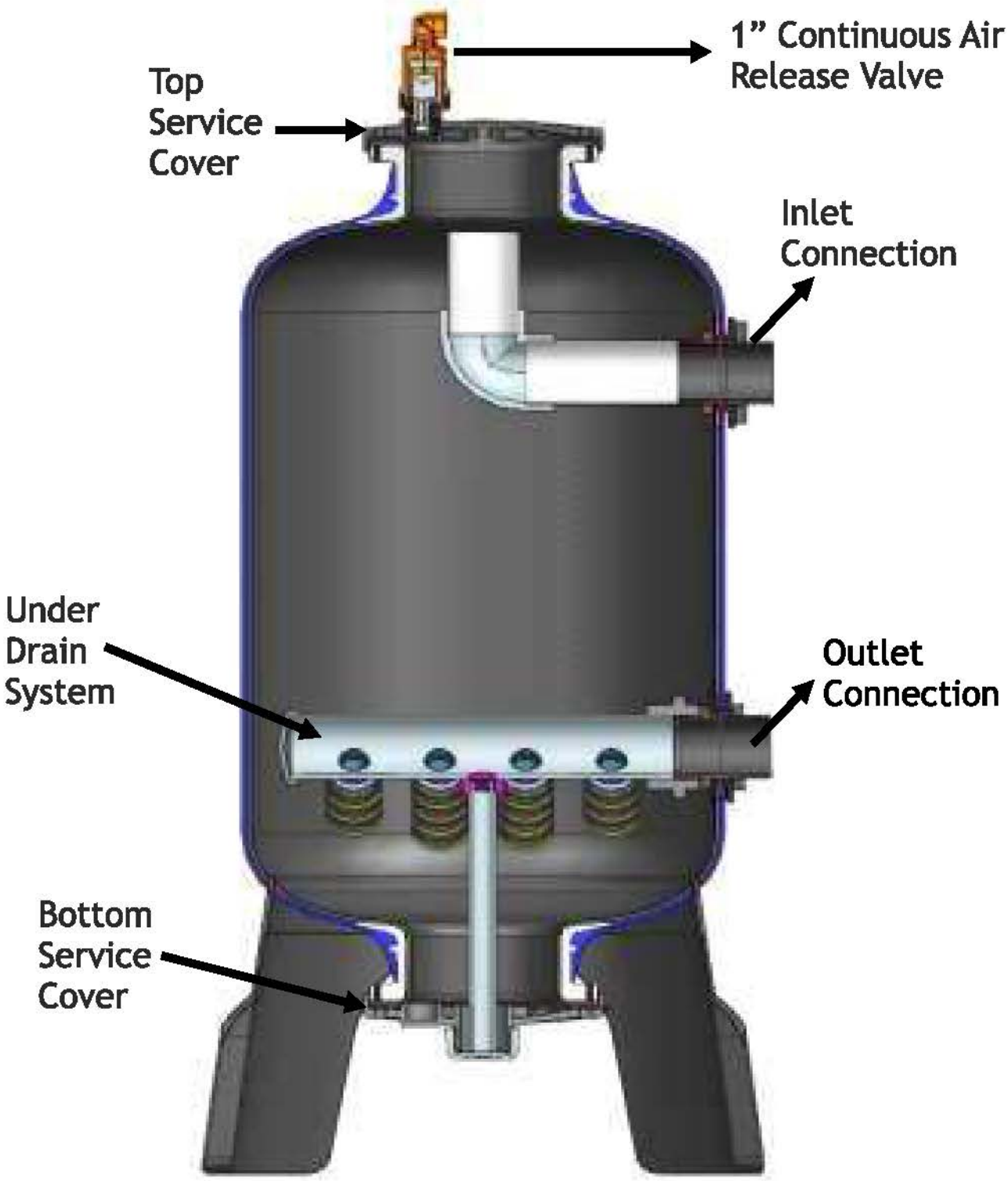
Available Connections





Product Illustration & Components



Technical Specification

BODY DIAMETER		INLET/ OUTLET		RECOMMENDED FLOW RANGE	BACK FLUSH FLOW	EMPTY TANK WEIGHT	EMPTY TANK VOLUME	SAND BED HEIGHT	SAND QUANTITY /TANK	CONNECTION TYPE
INCH	MM	INCH	MM	M^3/HR	M^3/HR	KG	LITRE	MM	KG	
20" HT-563	500	2	50	20~30	12~14	36	145	400	150	Threaded/ Flanged/ Grooved
20" HT-564	500	2.5	65	27~35	12~14	36	145	400	150	Threaded/ Flanged
24" HT-565	600	2.5	65	35~45	14~16	42	230	400	200	Threaded/ Flanged
24" HT-566	600	3	80	35~45	14~16	42	230	400	200	Threaded/ Flanged/ Grooved
30" HT-567	750	3	80	45~52	16~18	52	320	370	350	Threaded/ Flanged/ Grooved
Maximum Working Pressure : 4 Kg/cm^2										
Material of Construction : FRP, EPDM, PPGF										

Back Flushing Data	
Flushing Cycle Time*	90 Seconds
Back Flushing Frequency*	Once every 3 hours
Minimum Backwash Pressure	1.5 kg/cm^2

Note:- * Flushing Time and no of cycles per day, Depends On Quality of water.
But at least one cycle of back flushing is strongly recommended after every irrigation cycles.

General Description

Gravel/Sand filtration has proven to be the best & effective filtration solution for various water sources like ponds, canals, rivers, reservoirs & other open sources.

MachClean sand media filter is designed to provide high-quality and cost-effective filtration solutions for water having high contamination of organic matter, algae & silt. Most of the impurities get trapped on the upper surface of the media and the rest along the way on the media particles which helps in removing all types of impurities & prevent clogging of the irrigation system. Water passes through a sand media bed at a relatively slow rate. The design allows high-quality filtration with an effective backflushing mechanism ensuring a clean water supply for a long time consistently.

The filter comes with a 5-year corrosion-free warranty.

Unboxing

Tear the foam wrap with the help of a cutter/knife

Carefully unpack the tank

Cut The Foam Sheet Near The Inlet/outlet Coneection

Unbox the carton of backflush assembly carefully with the help of knife/cutter

Backflush Assembly Components & Parts

Unpack Flange, Gasket And Nut Bolts

1" Air Release Valve

Backflush Assembly Complete Components

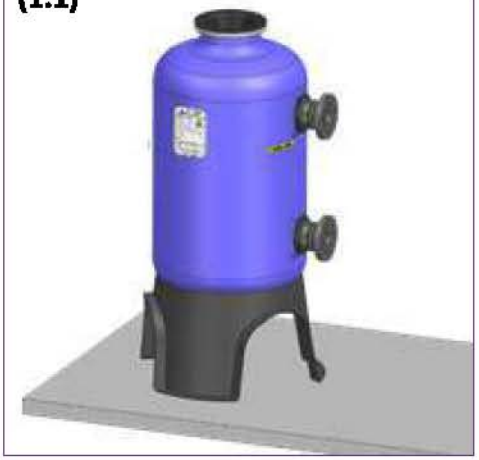
Installation (General Tools)

Wrench

Cutter

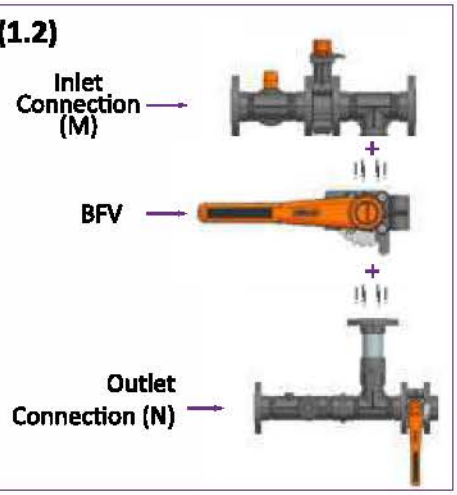
Stand Alone Media Filter Installation

(1.1)



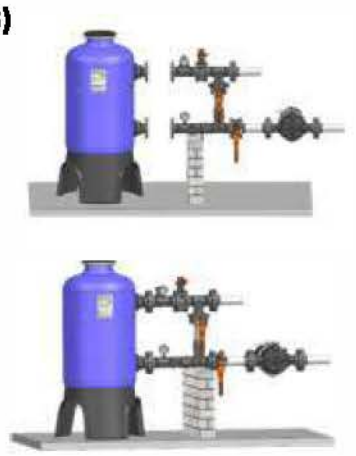
Place the filter on concrete platform with support as shown

(1.2)



Join "M", "N" & BFV as shown. Install complete backwash assembly with filter by joining the flanges / grooved coupling with nut bolts as shown

(1.3)



Position & align tank & connect inlet to water source and outlet to the inlet of secondary filter as shown

(1.4)

First, fill approximately half of the tank with water thru inlet

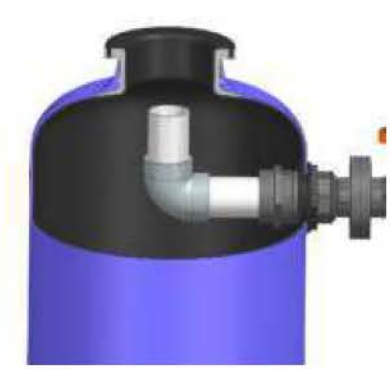
(1.5)

Cover the inlet of the elbow with a cloth before filling the sand to avoid the entry of sand in the inlet

(1.6)

Fill sand in tank till it reaches the optimum l evel mark as indicated on the filter & mentioned under the 'sand bed height' in technical specification (Table 1).
Do not fill sand in dry tank

(1.7)



Remove the cloth from elbow after filling sand.

(1.8)

Put rubber gasket & close the top cover by cross closing nut bolts

(1.9)

Install CARV (Continuous Air Release Valve) on the top cover as shown.

(1.10)

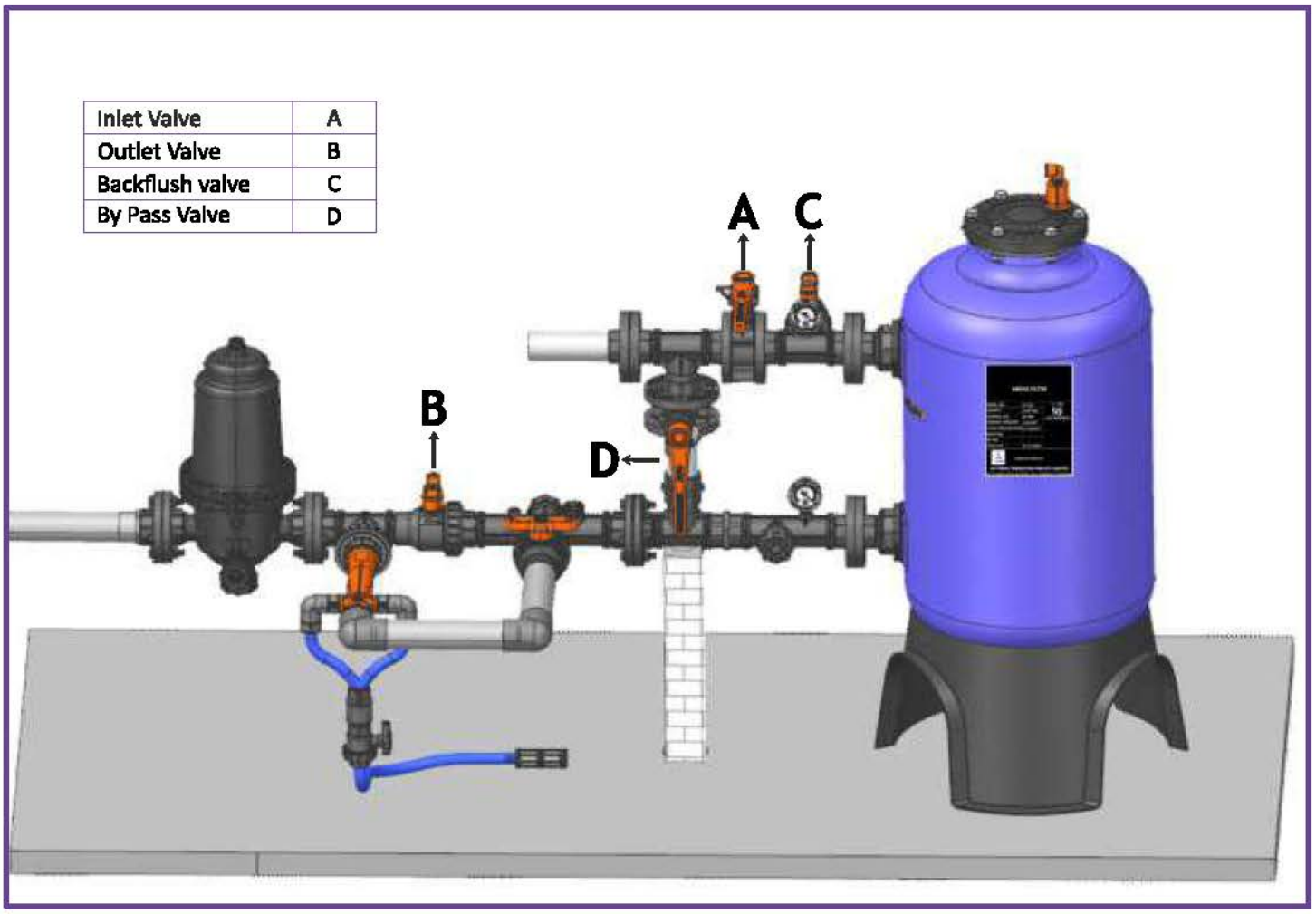
The setup is complete & the filter ready to use

Initial Start Up

2.1Close downstream valve B & open valves A, C, D & start the pump.

2.2Gradually close inlet valve A such that backwash flow matches with the flow as mentioned in table 1 (of Technical specification) at 1.5 bar as per filter model, to wash sand for 5 minutes. It will remove dust present in the sand & prevents instant chocking of the secondary filter & drippers.

2.3Set the desired backwash discharge as shown in table-1 (of Technical specification) backflush water for any sand coming out of it. No sand should come out from backflush valve.



Filtration Mode

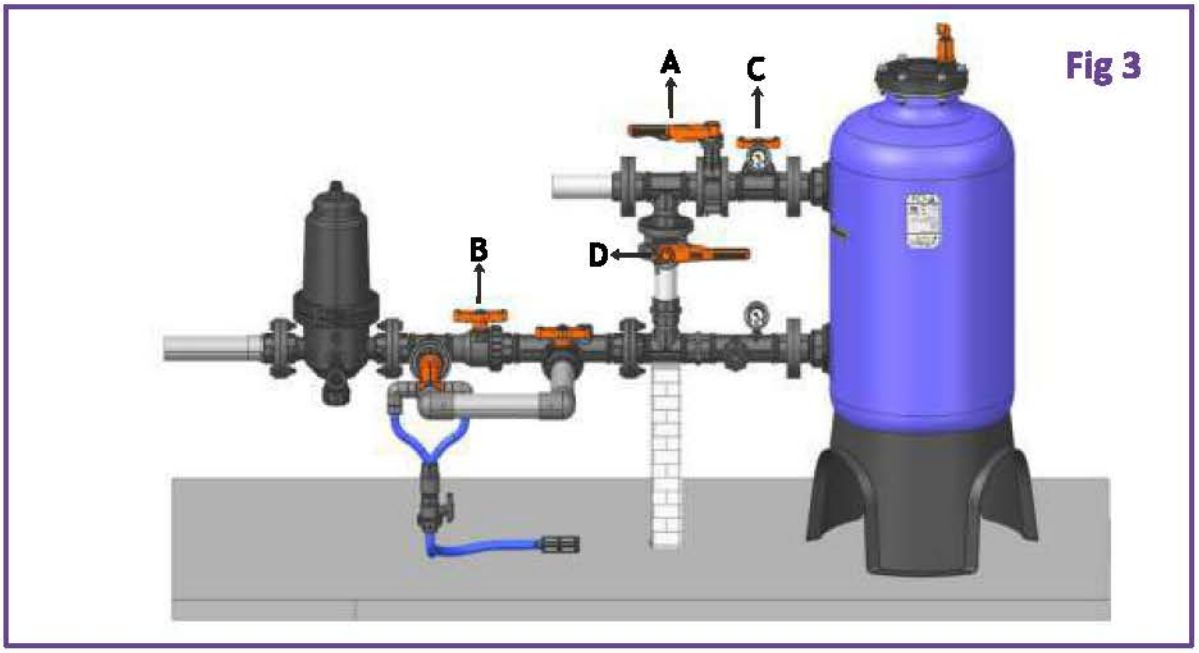
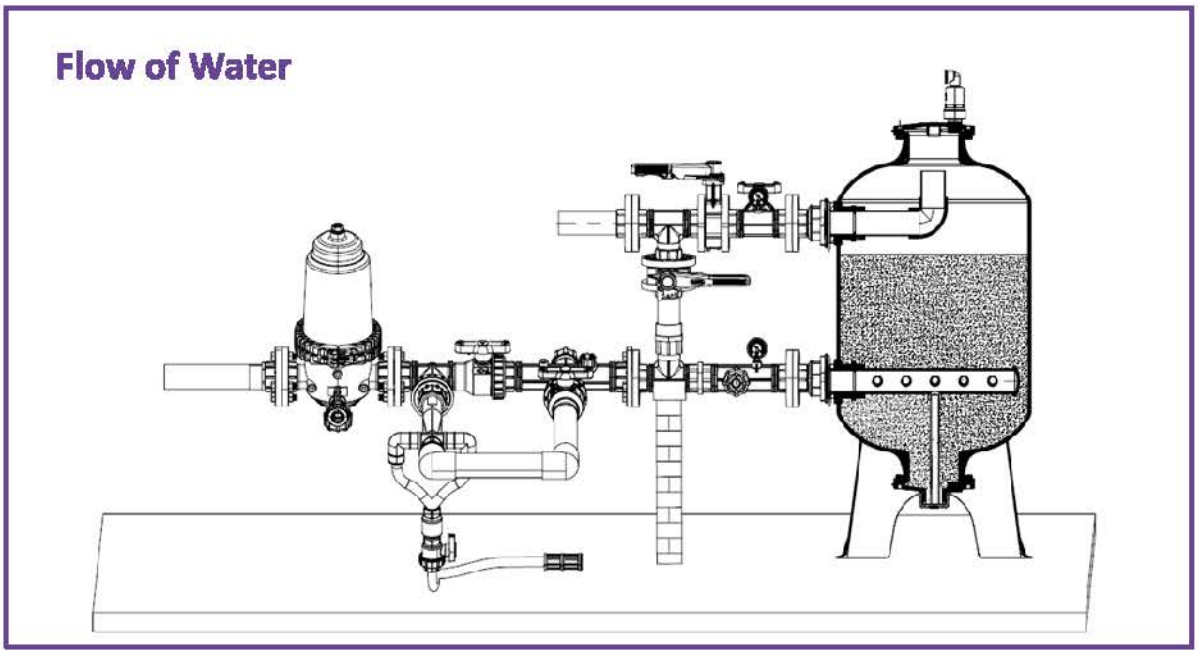


Fig 3

Flow of Water



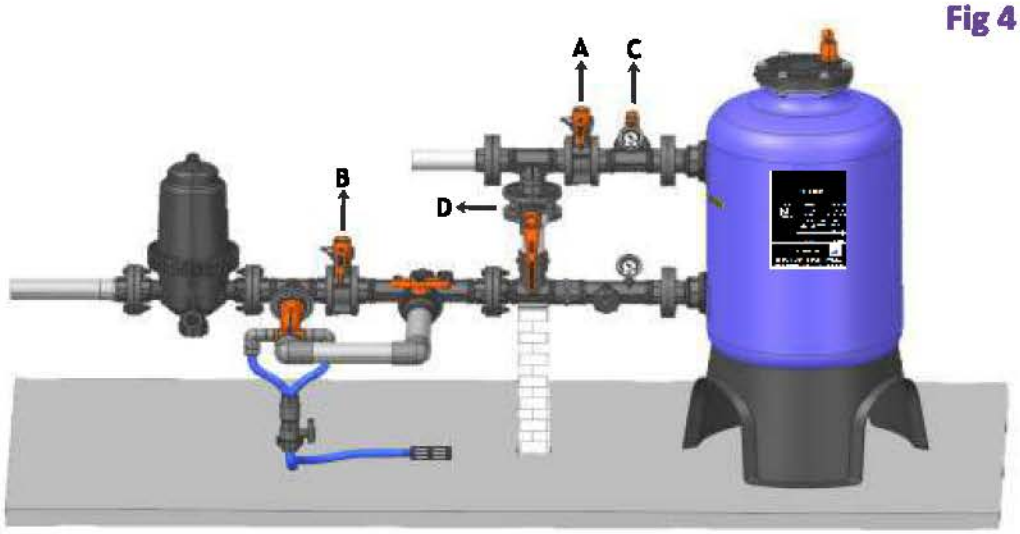
Step 1	Step 2	Step 3	Step 4	Step 5
Open Valve B	Open valve A	Close Valve C	Close Valve D	Now filter is in operation mode

Back Washing Mode

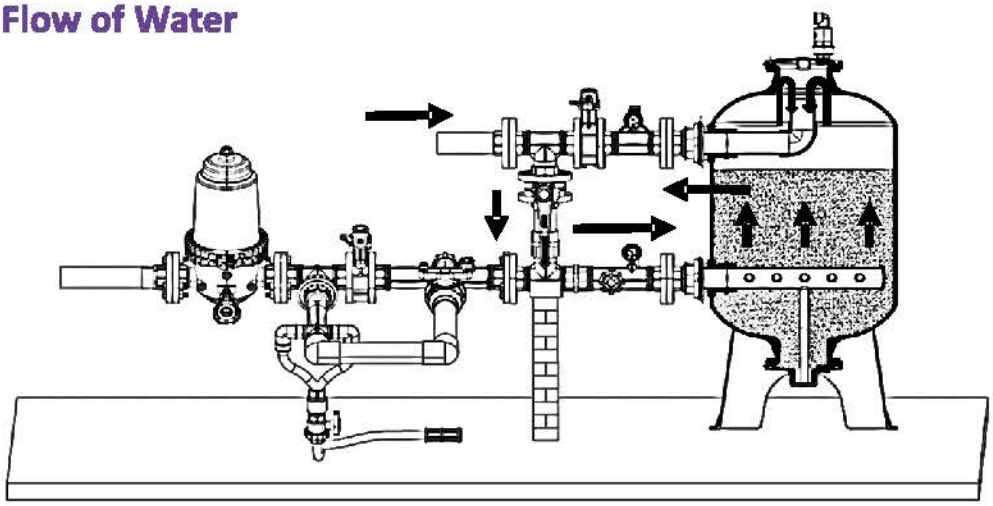
4.1 It is highly recommended to do back washing every 3 hours for 90 seconds to properly clean media filter.

4.6 It is recommended to maintain minimum backflush flow as given in table 1 at 1.5 kg/cm^2 pressure while backwashing the filter to get best results of backwashing.

Fig 4



Flow of Water



Step 1	Step 2	Step 3	Step 4	Step 5
Open flush valve C	Close Outlet valve B.	Open Back wash valve D.	Close Inlet valve A.	Now filter is in backwash mode

General & Safety Instructions

1. We recommend to install suitable upstream and downstream isolation valves before and after the filter.

2. Always install the filter in the direction of flow arrow marked on the filter and do not allow water to flow in the reverse direction.

3. Make sure you have enough space around the filter assembly for easy maintenance in the future.

4. Filter system should be properly supported at both side to avoid jerks, vibrations and undue forces coming on manifolds.

5. The diameter of the upstream pipe must not be smaller than the filter inlet.

6. It is recommended to install a pressure relief valve before the filter to protect the upstream line and filter from pressure surge.

7. Ensure the filter is not exposed water pressure that exceeds the maximum pressure defined in technical specifications. If needed, a pressure reducing valve should be installed upstream of the filter.

8. During the flushing process, a minimum back pressure of 1.5 bar should be maintained at the filter for efficient cleaning. In the event that the system cannot provide the minimum backwash pressure, a pressure sustaining valve should be installed downstream of the filter.

9. Please note that the maximum working pressure indicated in the filter's specifications table includes the pressure caused by water hammer and pressure surge effects.

10. It is recommended to install flow control throttling valve after the back flush valve for controlling the back flush flow as mentioned in technical specification table.

11. Before installation of the filter, it is recommended to thoroughly flush the main line at the connection point to remove large objects that may damage the filter's internal mechanism.

12 .Backflush line should not be reduced after the flush valve or should not be too long that it creates back pressure on the filter. This can affect cleaning of the filter during backwashing.

Safety & Maintenance

Safety Instructions

- Maximum working pressure of the filter is 4 kg/cm2. before operation make sure that inlet pressure should not be higher than this.
- Ensure Inlet Valve A & outlet valve B are open before start of the system.
- Do not perform any maintenance or try to open filter parts when filter is in operation. Release filter pressure before doing any maintenance.
- Do not apply excessive force or pressure on the filter and backwash assembly.
- Always use proper tooling and wrenches for maintenance of the filter
- Always use recommended spare parts while replacing them during maintenance.
- Do not lift filter assembly buy holding the tank from inlet /Outlet of the filter.
- Do not overtight nuts bolts.
- Use Teflon tape where ever it is necessary to avoid leakage from threaded joints.

Maintanance Instructions

Weekly Maintanance

- Check the secondary filter and if clogged, take out the filtration element and clean it. Reinstall the element as before.
- Check the filtration system and backwash assembly visually for any leakage from joints and covers.
- Do check if sand coming out from backflush port. If sand is coming please follow the procedure given in point no. 3 of installation page.

Quaterly Maintanance

- Perform steps 1 -3 as described in the weekly maintenance section above.
- Release the pressure of the system by opening any valve downstream from the filtration system until the pressure is fully released.
- Check the level of media inside the filters. If the level is lower than the media level mark on the filter tank, then add media up to the mark.
- Manually stir the media inside the tank and check for media solidification.
- Perform chemical cleaning of the media as given in table 2.

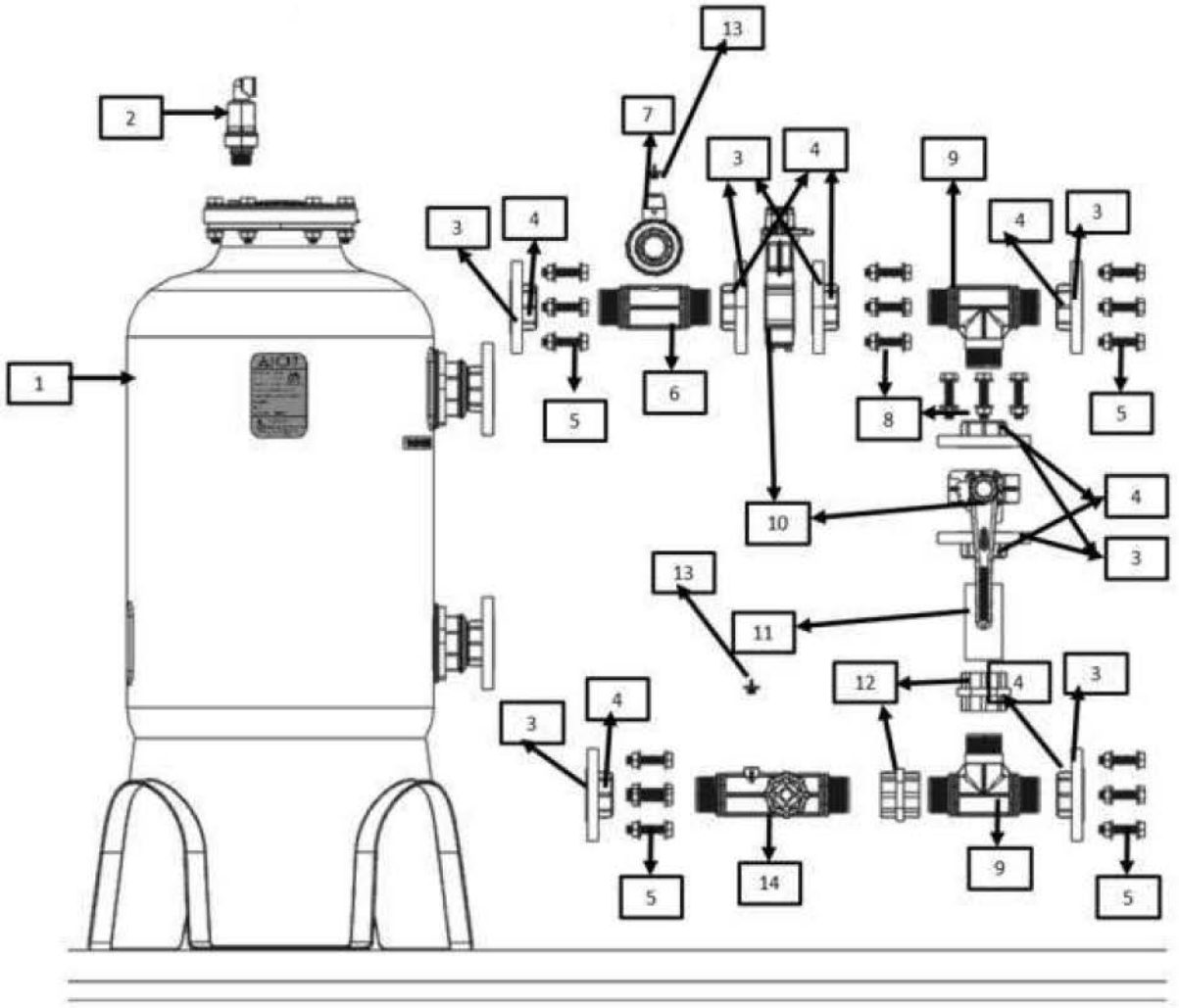
Tank Diameter	Quantity of sodium hypochlorite (NaClO) (liter)		Quantity of hydrogen peroxide (H2O2) (liter)
	Domestic liquid 3% concentration	Technical liquid 10% concentration	Technical liquid 30% concentration
20	1.1	0.4	0.2
24	1.5	0.5	0.2
30	3.0	1.0	0.3

- Gently stir the media inside each tank with a wooden stick. Ensure while stirring no flutes should get damage and tank is full of water with chemical.
- Wait at least 3 hours for proper chemical reactions and close the top service ports of all the tanks as before.
- Start the system in the system and backwash the filter 2~3 times as required.

Trouble Shooting Guide

SYMPTOMS	PROBABLE CAUSES	SOLUTIONS
Poor filtration	Insufficient / Improper back flushing	Do proper back flushing as given in Back flushing column
	Insufficient Sand bed height	Add more media to the recommended level
	Wrong media selection	Use correct media
	High pressure differential forcing contaminates through the filter	Do proper back flushing as given in Back flushing column
Increased frequency of back wash	Change in quality of water source	Check source water. More filters required
	Insufficient Backwash flow rate /Pressure	Set proper backwash flow rate at 1.5bar pressure as given in Table-1
Constant high pressure differential	Filters gets clogged	Scrape top layer from sand, flush tank until gets cleaned. Refill sand to the level.
	High filter flow	Adjust the inlet flow of water.
	Insufficient frequency of back washing	Do proper back flushing as given in table 1

Bill of Material



Saaembly Bom of Mach Clean Twin Automatic Media Filter		
S.NO.	Description	Quantity
1	SMF Tank	1
2	1" Air Release Valve	1
3	Slip On Flange	8
4	Slip On Socket	8
5	14x60 Ms Nut Bolts	16
6	Reducing Tee	1
7	By Pass Valve	1
8	14x125 Ms Nut Bolts	8
9	Tee	2
10	Butterfly Valve	2
11	PVC Pipe	1
12	PVC FTA	2
13	¼" End Plug	2
14	Head Unit	1

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Mach Clean | Turbo | hydromat | Autodrip

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