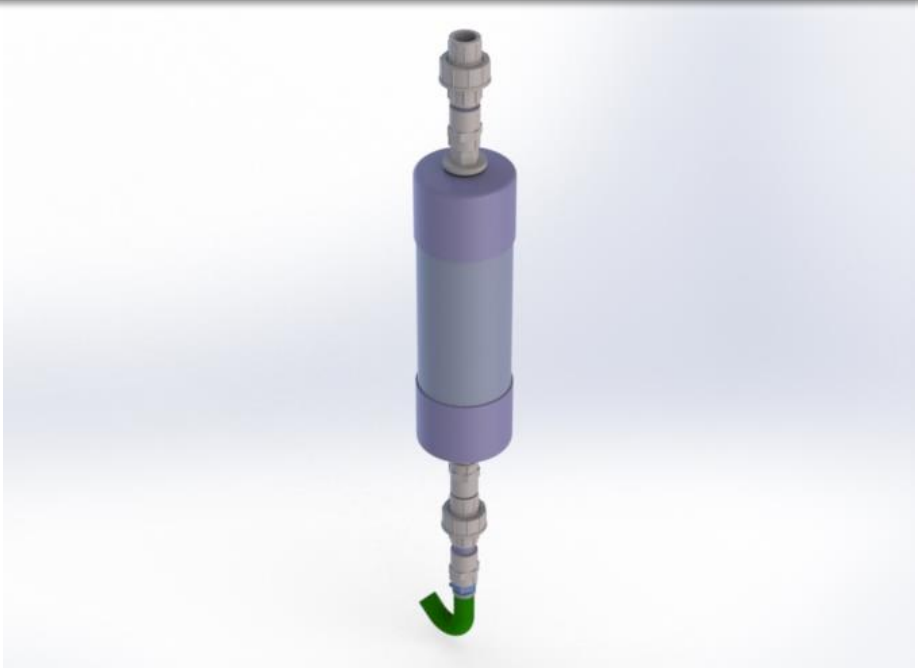
VIGYAN ASHRAM

SAND FILTER- SUPPLEMENT FOR WATER PURIFIER



Do-It-Yourself Manual

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DASSAULT SYSTEMES
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Vigyan Ashram has designed & developed a "Sand filter" for schools / small houses/ bungalows and remote locations. Users of the manual will be able to build their own Sand filter using this manual. All the Bills of Materials (BOM) and dimensions of the systems are given in the design. We have provided designs files drawn using Solidworks along with this manual. Users are suggested to read the manual carefully along with the site conditions before fabrication of the unit.

2. Purpose of Manual

- To share standardized design of Sand filter suitable for small bungalows, hamlets, schools and institutes.
- Design to be made available online for students, peoples to build Sand Filter for their uses.

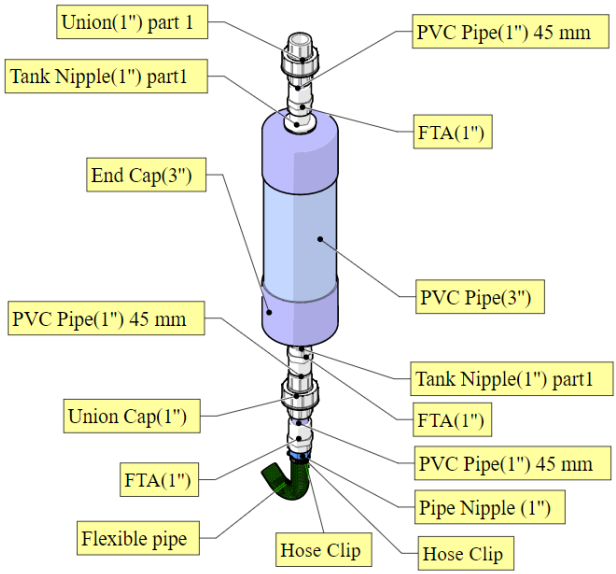
3. Safety Instructions

During fabrication of the system we should use safety equipment such as hand gloves, shoes and glasses.

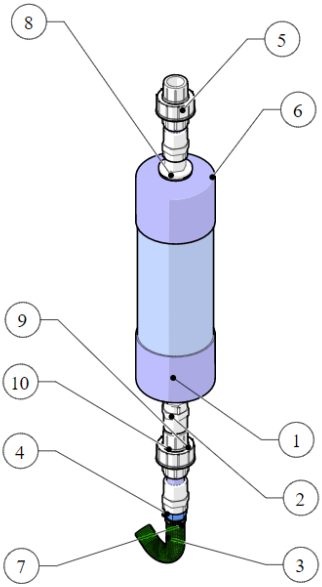
(And as appropriate)

We have developed a Sand Filter-Supplement for water purifier system. This system is deployed after a storage tank of water & before water filtration system. It having 2” PVC pipe structure & 2” standard piping connections. This structure contains layers of stones(150gm), charcoal(200gm), gravels(200gm) and fine sand(250gm) respectively. We are able to reduce particulate matters, turbidity of output water from storage tank. It is act as a pre water conditioner. It will helpful to increase the life of water purifier.

The detail view and BOM are shown in below:



BOM ID	Description	Qty
1	End Cap(3")	2
2	FTA(1")	3
3	Flexible pipe	1
4	Hose Clip	1
5	PVC Pipe(1") 45 mm	3
6	PVC Pipe(3")	1
7	Pipe Nipple (1")	1
8	Tank Nipple(1") part	8
9	Union Cap(1")	2
10	Union(1") part	6



- https://drive.google.com/file/d/1WAXXj0bgEcT_FYbbmwbkiOkvowAWnMUW/view?usp=sharing
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- https://drive.google.com/file/d/1Vz2GLT8qqHFxLisbvXFDImvQgDFo9qGN/view?usp=sharing

5. Features

- Method Used: Upward water flow
- Compact System
- Use:
    - Drinking water production
    - Swimming pools
    - Groundwater treatment
    - Fruit and vegetable processing industry

NOTE: There is no conclusive evidence that produce grown hydroponically are more nutritious or healthier than produce grown by any other method.

6. Parts for purchase

Sr. No.	Part Name	Dimensions	Materials	Qty.
1.	Tank Nipple	½''	U-PVC	2
2.	F.T.A. (Female Threaded Adapter)	½''	PVC	4
3.	End Cap	3''	PVC	2
4.	PVC Pipe	3''(300mm)	PVC	1
5.	Union	½''	U-PVC	2
6.	Hose clip	½''	GI	2
7.	Flexible pipe	½''	HDPE	1
8.	Teflon	Polytetrafluoroethylene		1
9.	PVC solution			1
10.	UPVC pipe	½''(300mm)	U-PVC	1

Sr. No.	Tool	Image
1.	Drill Machine	
2.	Measuring Tape	
3.	Hole saw	
4.	Hack Saw	

8. How it works? – Sand Filter

Sand filters are used as a step in the water treatment process of water purification.

To remove or to reduce the remaining impurities still further, and to produce safe water, the water is filtered through the beds of fine granular material, such as sand, charcoal etc.

Filtration may help in removing colour, odour, turbidity and some pathogenic bacteria from water.

The unfiltered water is distributed in the top of the sand filter and will slowly sink through the filter bed.

This filter bed consists of sand, gravel or another filter medium. The small pores ensure that the dirt particles are not able to pass through and retain the dirt particles.

9. Step by Step installation

Step 1: PVC pipe cutting

Step 2: End Cap cutting

Step 3: Filter material preparation

Step 4: Pipe fittings assembly

- Make holes on End Cap properly at specified positions.
- Plumbing as shown in the diagram of pipe connections must be proper to avoid leakages from joints.
- Sand Filter casing should be leak proof.

11. Disclaimer

The content in this DIY manual is the developed by Vigyan Ashram. All instructions are merely for educational purpose and to create a sharable open source D-I-Y document.

While the information in this document has been verified to the best of our abilities, we cannot guarantee the performance. All the observation and data are taken from various experiments on system at Vigyan Ashram.

We reserve the right to change the design. Please contact our website or our expert team for any clarification.