

## Sand/media filter 4000 Series

### General instructions:

This filter is designed and manufactured to meet the highest standards of quality and workmanship. This media filter uses sand (or gravel) as a filter bed and collects suspended dirt from the water that flows through it.

Media filters are especially suitable for filtering algae, organic materials, and recycled water. The (4000 Series) media filters have a specially designed double bottom, which is separated by a welded reinforced steel plate. **Filtering process**

This makes these filters suitable for effective backwashing.

Automatic backwashing is an option, even for a single filter.

For best results, the filter must be installed correctly, and the backwash operation should be set properly.

### Working:

The unfiltered water is spread in the top section of the filter, and drops slowly through the filter bed. This filter bed consists of sand, gravel, or another filter medium. The small pores prevent the dirt particles from passing through, thus retaining them. During the backwash operation, the filter bed expands and the pores widen so that the (organic) dirt can be washed away. This is then discharged with the flushing water.

### Installation:

Place the filter in position.

Fit the valves and connect the filter to the water system.

Pay particular attention to the correct direction of the water flow.

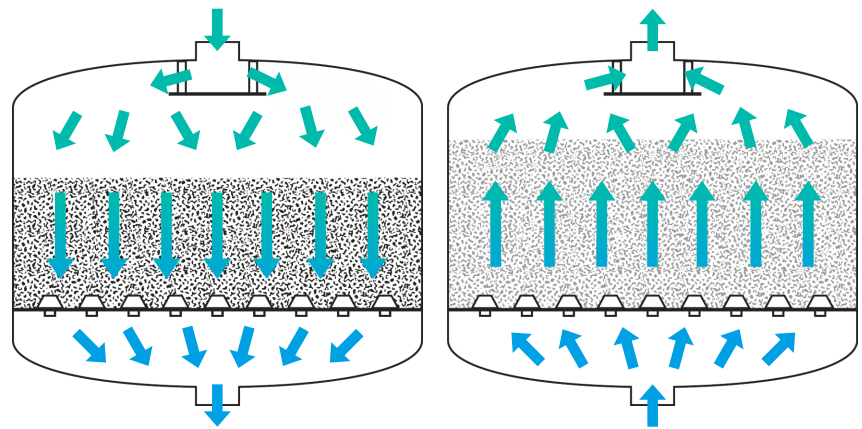
For automatic backwashing, preferably install a differential-pressure switch and (Bernad) backwash valve(s). Install pressure gauges to monitor the working pressure, and to be able to determine the differential pressure.

Check the filter plugs and manholes for proper installation.

Use the filling hole to fill the filter, no higher than the level indicated, and evenly distribute the sand in the filter.

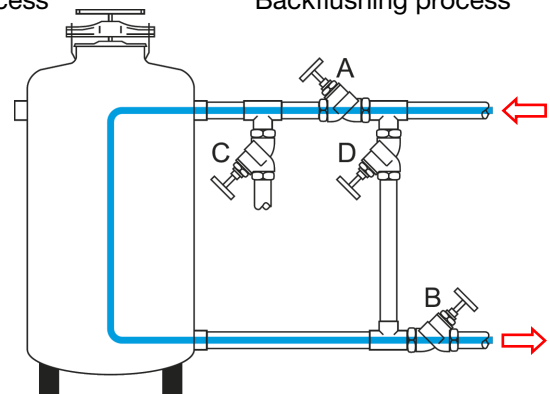
The filter media must have irregular, sharp edges for effective filtration (minimum grain size of medium: 0.4 mm).

Close the filling hole with the cover.

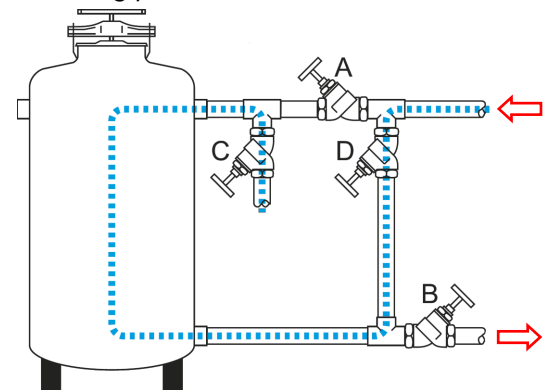


Filtering process

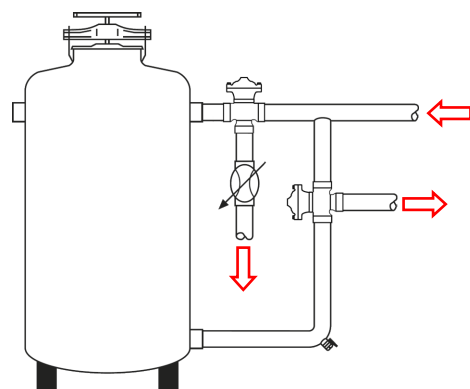
Backflushing process



Filtering process with standard valves



Backflushing process with standard valves



Configuration with backflushing valves

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Carefully place the bridge and spindle, and secure the cover.

Fill the filter with water from below.

Make sure that all service covers, valves, and accessories are properly sealed. Check for leaks. Backwash the filter containing the new filling in order to wash out impurities, dust, and fine matter. Do this for at least 2 minutes.

Reduce the flow of the flush valve in such a way that no sand will be flushed from the filter during backwashing, and set the proper backwashing speed.

Before using the filter for the first time, it is necessary to perform the backwash operation in order to check it for proper performance.

The maximum working pressure is up to 8 bar.

The filter is designed to withstand a maximum pressure of 10 bar, and a differential pressure of up to 1 bar.

A pressure relief valve must be installed upstream of the filtering installation if the pressure is not sufficiently under control. Install an **UDI** screen filter after a media filter as a safety feature.

In case of breakdowns, this will prevent damage to installations and/or devices downstream.

### Operation:

Normal operating conditions are achieved when the pressure loss across a clean filter is less than 0.2 bar.

When the pressure loss exceeds 0.2 bar, the filter is partially clogged, or the flow is far too high. Backwashing is required when the differential pressure has reached 0.4-0.6 bar.

Check the differential pressure across the filter by measuring the differential pressure with the installed pressure gauges.

Automatic backwashing using a controller or a computer is recommended.

For the recommended capacities, see the table on the next page.

Backwash at the proper flow rate for 3-5 minutes.

**Do not open the filter cover and do not tighten it while the filter is being used or under pressure!**

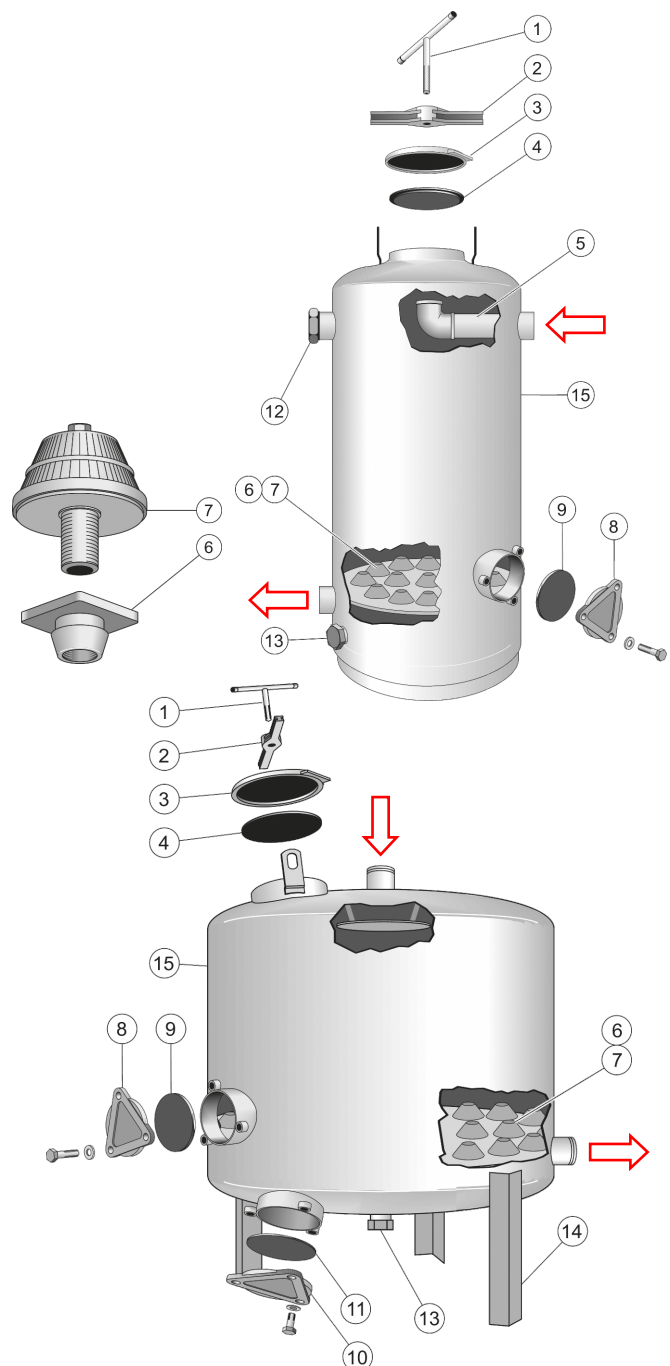
### Flushing:

The filter must be backwashed regularly, depending on the degree of soiling of the water and the amount of filtered water.

During normal filtration, valves A and B will be open, whereas valves C and D will be closed. Valve C must be adjustable in order to be able to set the backwash capacity correctly.

1. Close valves A and B and then open valves C and D. Backwash for 3-5 min.
2. After this, first close valve D and then C, and then open valves A and B.

The filter is now clean and operating again.



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### Periodic inspection:

Start a back-flush cycle manually and complete it. Close the valves of the filter inlet and outlet. Relieve the pressure in the filter and open the filling hatch.

Inspect the height and the degree of soiling of the sand.

If the filter material is no longer working effectively (short service time, too much coagulation, rubbed down), replace the filter material (see 'replacing the filter material'). Backwash the filter at the start and the end of a season.

### Disinfection:

It is recommended to disinfect the filter with chlorine (e.g. NaOCl) at the end of the season or at crop rotation, using a concentration of 80 to 100 ppm for a 30-minute period of non-use. Follow this with a thorough backwash of at least 5 minutes.

When the filter is not in use, at the end of the season or at crop rotation, the filter can be drained after having been disinfected, and left in a dry condition until being used again.

Before putting the filter back into service, it should first be disinfected again, as described above.

### Replacing the filter material:

Replace the filter material once it is no longer effective.

Close the supply to the filter and relieve the pressure in the filter before opening the filling hatch.

Open the service covers on the side of the filter, and drain all the water.

Remove the filter material from the filter through the service holes on the side of the filter.

Thoroughly clean the inside of the filter with clean water.

Inspect the filter plugs and the double bottom of the filter.

Check the protective coating and repair any damage immediately.

Carefully close the service covers on the side.

Fill the filter through the filling hole and continue to follow the instructions in the section 'Installation'.

### Note:

In view of on-going improvements, we reserve the right to change specifications at any time without prior notice.

Each filter comes with this manual which includes installation, operating and maintenance instructions.

### Maintenance:

Apply a film of grease on the thread of the spindle (01) each year.

Any damage to the protective coating of the filter must be repaired immediately. Before applying the protective paint, the damaged spot must be cleaned thoroughly using a steel wire brush.

Type	Unit	4121	41615	4202	4242	43025	4363	4423	4484	4604
Diameter	inch	12"	16"	20"	24"	30"	36"	42"	48"	60"
Capacity	m <sup>3</sup> /h	3,5	6,5	10	14	22	32	45	58	90
Connection	inch	1"	1,5"	2"	2"	2,5"	3"	3"	4"	4"
Sand filling	kg	50	75	125	200	250	375	500	650	1000
Backwashing approx.*	m <sup>3</sup> /h	3	6	9	12	19	28	38	50	75

## Sand/media filter 9000 Series

### General instructions:

The 9000 Series filters are horizontally positioned cylinders with connections on one side. Two rows of filter plugs are mounted on a low-lying pipe located in the filter bed.

### Installation:

Place the media filter in a perfect horizontal position on a solid ground so that it is easily accessible for service and maintenance. For further installation, see sand/media filters 4000 Series.

### Note:

In view of on-going improvements, we reserve the right to change specifications at any time without prior notice.

Each filter comes with this manual which includes installation, operating and maintenance instructions.

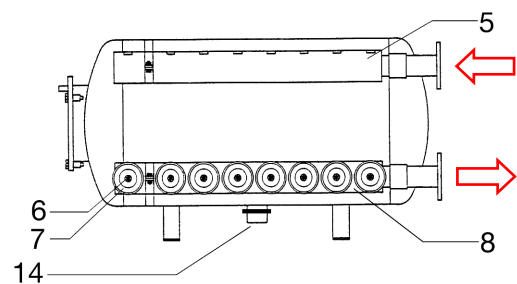
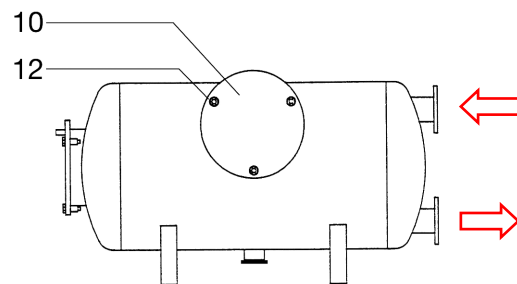
### Operation:

All operating instructions are the same as for the 4000 Series.

**Do not open the filter cover and do not tighten it while the filter is being used or under pressure!**

### Maintenance:

Apply a film of grease on the thread of the bolts. Any damage to the protective coating of the filter must be repaired immediately. Before applying the protective paint, the damaged spot must be cleaned thoroughly using a steel wire brush.



Type	Unit	9202	9243
Diameter	inch	20"	24"
Capacity	m <sup>3</sup> /h	22	32
Connection	inch	2,5"	3"
Sand filling	kg	150	250
Backwashing approx.*	m <sup>3</sup> /h	19	28

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