

Kanchan Arsenic Filter Trouble Shooting Manual

By Maclyn O'Donnell

Problem No.1 - Flow rate too low (less than 5 Liters per hour)

- Filter maintenance. Clean the top layer of sand. If doesn't work, then
- Check clogging in the diffuser basin. Take the basin out and pour water into the basin. If basin clogs, then remove and wash iron nails and brick chip to clean out the dirt. Also wash the basin and clear out any holes that has been blocked by iron sludge/ dirt. If doesn't work, then
- Remove all sand and gravel. Check for blockage in the pipe. Sieve sand and gravel. Re-install gravel and sand. Keep in mind that that there should be always water in the filter before adding gravel and/or sand to avoid trapped air bubbles. If doesn't work, then
- Contact ENPHO. This is interesting. We also want to know why.



- Top sand layer will clog. It is normal. It is because of the accumulation of dirt, dust, iron particles, and/or other contaminant particles.



- Filter maintenance (i.e. cleaning the top layer of sand) can often return the flow rate to normal



Iron nails and/or brick chips can be very dirty. They must be washed to remove dirt and sand particles before placing into the diffuser basin

Remove the diffuser basin to check for clogging in the basin





Iron nails and/or brick chips were not washed prior to installation. Dirt from nails and/or brick clogs the holes in the diffuser basin.

Holes too small will get clogged easily.
Holes too large will allow iron nails to pass.
Proper size is necessary.



Problem No.2 – Pipe broken

1. Replace the broken part with a new part. Use plastic fittings if available.
2. Don't tighten the pipe fittings too much. Use more Teflon tape.
3. Make sure the outer pipe is secured, preferably using a clip.
4. Place the filter away from children and animal to prevent hitting and damaging the pipe.
5. Re-installation of sand and gravel may be necessary in order to prevent trapped air bubbles



Problem No.3a – Pipe and container leakage for the Gem505

- If the leakage is on the outside pipe system, re-seal with Teflon tape and/or glue. If not, then
- Check leakage at the bottom of the Gem505 container. There may be a crack. Seal with glue. Put the filter on a very flat surface with a 3cm layer of sand. If not, then
- Remove all sand and gravel. Check for seal for the entire piping system. Re-seal if necessary. The tank nipple rings may be jammed. Replace entire pipe or fitting parts if necessary. If doesn't work, then
- Replacement of the plastic Gem505 container may be needed.



Leakage is commonly found here. Possible reasons may include:

- insufficient Teflon tape
- jammed rubber washer
- inadequate tightening



Due to the pressure of the sand and water, the bottom of the Gem505 container may crack. To prevent this problem, the filter must be placed on a very flat surface with a 3cm thick layer of sand. This will help support the pressure of the sand and water.

The filter should be placed indoors, away from the sun. Sun's UV ray will damage the plastic, making it fragile.

The filter should be placed on a flat, stable surface.



Problem No.3b –container leakage for the Concrete filters

- If cracks are present on the exterior of the filter then dry the area of the crack and patch the crack with grout or a thin layer of concrete
- If this does not repair the cracks then a new filter may be needed



Problem No.4 – Modifications to the spout of the filter

- Many consumers of the KAF like to install a tap into the outlet of the filter so they can have the filter give them water whenever they want it
- Unfortunately this will also increase the standing water level above the sand, which is designed to be 2-inches so that sufficient oxygen is present for the arsenic removal process.
- **If seen remove the taps**



- These taps need to be removed to keep the filters performing well

Problem No.5 – Nails present and evenly spread

- If there is an absence of nails altogether then add nails, spread them evenly then weigh them down with stones or brick chips
- If there are large gaps in the iron layer then break up the present nails (usually the nails rust together over time) then spread them evenly and weigh them down with stones or brick chips.



✓ Nails spread evenly and weight down sufficiently

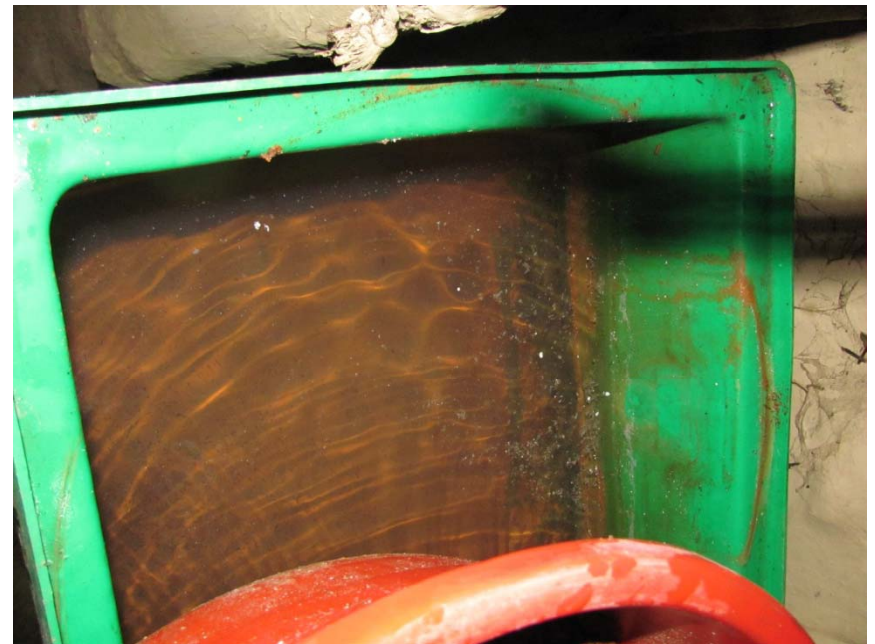
✗ No nails present

✗ Nails not weighed down enough, poring caused the nails to clump on the sides of the filter



Problem No.6 – Sand removed from the filter

- People sometimes remove too much sand during cleaning or remove it to increase flow rate
- If this is noticed then replace the sand until there is a 2-inch gap between the diffuser basin and the top sand layer



A filter with the right amount of sand

Problem No.7 – Flow rate too fast (more than 5 Liters per hour)

- First check the exterior of the filter for cracks or leaks and fill those. If not then
- In the Gem505 flow rate should be controlled by a diffuser in the spout neck. Check this and replace it with one that has smaller holes or fewer holes
- In the concrete filters flow rate is controlled by the sand layer.
 - First check if there is sand removed from the filter and if so replace it. If this does not fix the problem then,
 - Repacking of the sand is need. Remove the sand in the filter then repack with that sand or with new sand in the same way as a new filter

Problem No.8 – Missing instruction sheet

- Every filter should have a sheet on it or near it that explains how to use the filter and some things which should not be done to the filter
- If this is missing from a plastic filter then, after asking the owner's permission, put a sticker version of the instruction sheet on the filter
- If the owner does not want a sticker on their filter or the filter is made of concrete then give the owner a copy of the instruction sheet and offer to hang it somewhere near the filter
- A owner may feel the instruction sheet is not visually appealing and thus do not want it hanging in their house. Because of this do not press having the sheet in somewhere that is constantly visible. Though, if a filter's owner does not want the sheet in a visible location make sure you explain the sheet to the owner.

- # कचन आर्सेनिक फिल्टर Kanchan Arsenic Filter
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- ## फिल्टर सफा गर्ने विधि
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- गन्धुल घासीले हलत राखी सेंज सुधै ।
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- फिल्टर राखेको बाटा बाहिर निकाल्ने ।
-
- कालुको लफिलले जस्तै बल अडत हुनुपर्छ
जति पिन खनन हलत बिचार यस्तै जेज
कालुकोषी फलकोषी ।
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- थक फिल घुसायफकि कालुकोषीको
पोहर पासी जताले बाहिर बाहिरजना
निकाल्ने । धुनः बाटा राखेर फाली
सफाई हुई पटक खनन जस्तै जेज
सफा जस्तै ।
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- सफा जस्तै फिलकोको पोहर घासीलाई
सफाको सफा घुसाएको जोबरला
घुसाउने ।
-
- बाटा लई घासीले जस्तै जस्तै फिल्टरलाई
फिल्टर राखेर फाली सफाई
फिल्टर प्रयोग जस्तै जस्तै ।
- ## यस फिल्टरका विशेषताहरू
- अर्सेनिकको जस्तै जस्तै अर्सेनिक फिल्टर ।
 - घासीला जस्तै जस्तै जस्तै जस्तै ।
 - युक्त फिल्टर फिल्टर ।
 - प्रयोग जस्तै जस्तै जस्तै जस्तै ।
 - घासीला जस्तै जस्तै फिल्टर हुने ।
- ## फिल्टर प्रयोग गर्ने विधि
- फिल्टरको लफिलले जस्तै जस्तै जस्तै जस्तै ।
 - जस्तै जस्तै जस्तै जस्तै जस्तै ।
 - जस्तै जस्तै जस्तै जस्तै जस्तै ।
- ## ध्यान दिनु पर्ने कुराहरू
- फिल्टरलाई जस्तै जस्तै जस्तै जस्तै ।
 - फिल्टरलाई जस्तै जस्तै जस्तै जस्तै ।
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 - फिल्टरलाई जस्तै जस्तै जस्तै जस्तै ।
- ## थप जानकारीको लागि
- कचन आर्सेनिक फिल्टर सुचना केन्द्र
-
- वातावरण र जनस्वास्थ्य संस्था (एनफो)
- पिनः १०००-१००००००, काठमाडौं, नेपाल
- फोनः १०००-१००००००, काठमाडौं, नेपाल
- ईमेलः enpho@gmail.com
- वेबसाइटः www.enpho.org

Problem No.9a – Social Issues, cost of the filter

- Some of the previously noted problems and modifications are made with clear misunderstanding of how the filter worked, thus pointing to poor education on how the filter worked in the first place.
- This lack of knowledge and care for the filter was found more heavily with people who had received free or basically free filters. It was also found that people who had received free or basically free filters were less likely to report or try to fix problems with their filters
- So if a person says their filter was free or heavily subsidized, then there is a higher chance there could be something wrong with their filter.

Problem No.9b – Social Issues, the filter can change the water's temperature

- People often do not use the filter in winter.
- Since the groundwater doesn't change temperature over the seasons, it is about 20°C while the air temp is 15°C or less. This makes the raw groundwater more desirable than filter water which is equilibrated to the air temperature.
- If this is found then educate the filter owner on the dangers of arsenic poisoning and try to convince them to use the filter despite the change in temperature.