



WTP RESTART GUIDE

1. Backwash/Soak the Pressure sand filter with high chlorine water i.e.10 PPM, for 15-20 min.
2. Rinse the filter with normal water and wait till free residual chlorine is nil.
- 3. Pressure Sand Filters are now operational.**
4. Backwash/Soak the Activated carbon filter with high chlorine water i.e.10 PPM, for 15-20 min.
5. Rinse the filter with normal water and wait till Free Residual Chlorine is nil.
- 6. Activated carbon filters are now operation.**
7. Regenerate the softener bed with double quantity of salt.
8. Rinse it properly and reduce the hardness for less than 5 ppm.
- 9. The softener is now operation.**
10. Remove air when filling the micron filter housing.
- 11. Place new cartridges in the housing and restart the plant.**
- 12. Place new bags in the housing and restart the plant, remove air when filling the housing.**
13. Do the CIP/SIP of the Ultra-filtration system with Acidic & Alkali chemicals & Hypochlorite.
14. Backwash the system thoroughly.
- 15. Start the system and check the SDI at outlet of UF**
16. Flush the Reverse Osmosis system with pure water.
17. Do the CIP/SIP of the RO system with Acidic & Alkali chemicals & Hypochlorite.

18. The RO system is now operational. Do check the Permeate water TDS

START-UP PROCEDURE FOR QUA FEDI

1. The feed water has to be tested to verify that the required parameters are within the limits of the required feed specifications shown on the specification sheet in the attached Appendix.
2. Verify the system piping is properly flushed to remove any foreign material prior to connecting the stacks.
3. In case of RO permeate break tank, installing a cartridge filter with 1 micron rating at the inlet to FEDI is **mandatory**.
4. Verify that all of the inlet and outlet valves to the FEDIR stack are open. If not, open all of these valves.
5. Make sure that water is actually going to the FEDIR stack(s). If a feed tank is supplied, make sure the minimum required water level in the feed tank is attained. Make sure that the pump suction valve is open. The feed pump should be started, keeping the bypass line (if available) open so that any initial water hammer is sent back to the tank. If a bypass line is not available, then care should be taken to gradually open the feed pump discharge valve to avoid any initial water hammer.
6. Adjust the feed inlet and product outlet valves of the stack until the specified product flow rate and outlet pressure are achieved. Verify that the inlet pressure to the stack does not exceed the design pressure of 6.9 bar (100 psi). Maintain the product water pressure in the range of 0.7- 2.0 bar (10-29 psi).
7. If you are installing FEDI-2 (DV) and /or FEDI Rx for flow option-B (>0.2 ppm hardness), make sure to adjust the Concentrate-1(OUT) flow as per the specifications. Adjust the Concentrate-1 (IN and OUT) valves while maintaining the pressure of Concentrate-1(OUT) as calculated from equation shown in Chapter 5 of this manual.

**The Concentrate-1 (IN) pressure must always be less than
the Feed pressure by 0.3 - 0.7 bar (5 - 10 psig)**

8. If you are installing FEDI-2 (DV), FEDI Rx (< 0.2PPM hardness) make sure to adjust the Concentrate 2 (IN and OUT) flow as per the specifications by adjusting the Concentrate-2 Inlet and Outlet valves such that the Concentrate-2 (OUT) pressure is lower than the Product Pressure by 0.3 to 0.7 bar (5 to 10 psi).
9. If you are installing FEDI-2 (SV), make sure to adjust the Concentrate-IN and OUT flow as per specifications by adjusting the Concentrate Inlet and Outlet valves such that the Concentrate-OUT pressure should be lower than the product pressure by 0.3 to 0.7 bar (5 to 10 psi).

**The FEDI-2 (SV) & FEDI Rx (<0.2PPM hardness) stacks are
fitted with a special interconnection arrangement of
Concentrate-1 (OUT) to Concentrate-2 (IN) so only
Concentrate- (OUT), also called Concentrate-2 (OUT),**

10. If you are installing FEDI-2 (HF), make sure to adjust the Concentrate-1 (IN and OUT) and Concentrate-2 (IN and OUT) flow rate as per specifications by adjusting the Concentrate-1 and 2 Inlet and Outlet valves such that the Concentrate-1 (OUT) and Concentrate-2 (OUT) pressure is lower than the Product Pressure by 0.3 to 0.7 bar (5 to 10 psi).
11. Adjust the Electrode Rinse (IN and OUT) flow as per specifications by adjusting the Electrode Rinse (IN and OUT) valves. The electrode rinse flow during the start-up phase should be increased a little more to remove the air trap in the system by keeping the electrode chamber flooded.

Make sure that the Electrode Rinse (IN) pressure does not exceed 4.8 bar (70 psig) & the Electrode Rinse (OUT) pressure does not exceed 4.0 bar (58 psig) under any condition.

12. Make sure that the minimum flows for the product; Concentrate-1 (OUT), Concentrate-2 (OUT) and Electrode Rinse Stream are maintained as per the specifications attached in the Appendix.

WARNING!!

**Water and Electricity DO NOT Mix!
Proper training and handling of the
FEDIR stacks is critical to your safety
and that of your fellow employees.**

13. Once the flow is adjusted for all inlet and outlet streams, the system is ready for the power supply. Make sure that the DC power connectors are properly connected to the stacks. Keep the DC panel voltage set to 100% and set the current at 0% (with FEDI-2 (DV) set both stages at these values). Switch ON the DC panel and adjust the current. Use the FEDI Engineering Tool to determine the approximate start-up current to be applied. Adjust the current and maintain the voltage at 100%.
14. Allow the system to stabilize and record all process parameters identified on the Operational Parameter Log Sheet, Section 19 of this manual.
15. All stacks are regenerated and tested prior to shipping. However, because of storage, the stacks may require up to 8 hours of on-line regeneration during the initial start-up in order to achieve the specified product quality.
16. ***All operating parameters must be recorded at least 3 times daily.***

HOaddress: 411, Lotus Business Park, Malad(W), Ram Baugh, off SV road, Mumbai – 400104

Projects address: Nupur Industrial Estate, Kachigam, Daman.

Website: ahura-aqua.com

E-mail: sales@ahuraaqua.net

Whatsapp no: +91 99301

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