

Please refer to membrane datasheet for full operating and test parameters and refer to the manufacturer’s guidelines for housing and membrane installation.

Membrane Soft Start

After element installation/replacement is completed it is advisable that the system should be filled with low-pressure water (pump not used) prior to starting the high-pressure pump. Any new elements should be rinsed to drain to remove any residual preservative chemicals. System operating data should be collected after the plant performance stabilises (this is normally within 24 hours).

CAUTION: NEW OR CLEANED MEMBRANES MUST BE FLUSHED FOR AT LEAST 1 HOUR TO REMOVE THE PRESERVATIVE FROM THE MEMBRANE. DISCARD ALL OF THE PERMEATE AND CONCENTRATE, WHICH IS PRODUCED DURING THE FLUSH.

Clean-In-Place (CIP) Procedure

Should the reverse osmosis system be shut down and dormant for any period of time the membrane will need to be flushed through to help prevent premature fouling. There are several different membrane cleaning methods, such as forward flush, backward flush and air flush.

Forward Flush - When forward flush is applied, membranes are flushed with feed water or permeate forward. The feed water or permeate flows through the system more rapidly than during the production phase. Because of the more rapid flow and the resulting turbulence, particles that are absorbed to the membrane are released and discharged. The particles that are absorbed to membrane pores are not released. These particles can only be removed through backward flushing.

Backward Flush - Backward flush is a reversed filtration process. Permeate is flushed through the feed water side of the system under pressure, applying twice the flux that is used during filtration. When the flux has not restored itself sufficiently after back flushing, a chemical cleaning process can be applied.

Chemical Clean - During a chemical cleaning process, membranes are soaked with a solution of chlorine bleach, hydrochloric acid or hydrogen peroxide. First the solution soaks into the membranes for a number of minutes and after that a forward flush or backward flush is applied, causing the contaminants to be rinsed out. Chemical cleaning is a far more varied cleaning process as the cleaners available on the market are vast. A general step by step guide to cleaning with chemicals is as follows:

Dosing	<ol style="list-style-type: none"> 1. Install a dosing tank with a feed transfer pump in line with chemical manufacturer guidelines. 2. Fill the CIP tank with permeate water, measured to allow for correct ratio when chemical added. 3. Mix chemical cleaner with water in CIP tank, follow manufacturer’s instructions to ensure correct concentration is used. 4. Connect RO feed from pump. 5. Connect permeate and concentrate lines to CIP tank. 6. Recirculate as per manufacturer’s instructions.
Rinse	<ol style="list-style-type: none"> 7. Reconnect feed to water source and operate unit with both concentrate and permeate running to drain for time as detailed by a chemical manufacturer. 8. After specified time check TDS level. 9. Reconnect permeate and concentrate lines. 10. Run all fluid to concentrate by fully opening concentrate valve for the time detailed by the chemical manufacturer. 11. Check TDS level – if acceptable move on to step 12, if not continue rinsing for a further 10 minutes.
Operation	<ol style="list-style-type: none"> 12. Reset concentrate valve to desired rejection. 13. Check for leaks. 14. Run unit as required.

Please note that the CIP procedure detailed above is for guidance only. The chemical manufacturer’s guidelines should supersede the above and be followed accordingly.