

# Troubleshooting Guide

Product Flow	Salt Rejection	Delta Pressure	Direct Cause	Indirect Cause	Corrective Action
Decreasing	Decreasing	Increasing in Second Stage	Scale Fouling	No Antiscalant; Antiscalant Underfeed	Carry out mass balance. Confirm that antiscalant is present in the concentrate stream and ensure shutdown flush is operating to determine source of problem. Clean the system
		Increasing in First Stage	Colloidal Fouling	Poor Pretreatment	Clean the System. Improve the pretreatment performance
			Compaction	Poor Pretreatment; System Operation outside of limits	Stop train and clean before the DP increases beyond 52 psi (3.6 bar); Improve pretreatment as colloidal fouling on the front end membrane normally accompanies first element compaction.
			Incompatible Chemicals	Use of non approved products; Carryover from pretreatment processes	Review chemical compatibility; Clean the system
			Biofouling	Ineffective or absent biocide program	Carry out a bacterial survey; Disinfect/Clean the entire system and piping; Add or increase biocide injection and continue to monitor until the system proves to be under control
	No Change	No Change	Organic Fouling	Oil and/or Polyelectrolyte residual in RO feedwater	Investigate source water and improve pretreatment. Clean the system.
	Increasing	No Change	Compaction	High Pressure; Uneven flux	Compacted elements are irreparably damaged. Replace effected membranes and determine how to reduce pressure and re-balance flow rates
Increasing	Decreasing	No Change	Oxidation Damage	Free chlorine or use of an incompatible cleaner	Attempt to Resize to restore performance temporarily; Replace affected elements
			Membrane Failure	Product backpressure or vacuum abrasion installation damage to permeate tube	Remove source of backpressure/vacuum ; improve pretreatment
			O-ring leak	Movement or improper installation	If possible, probe elements to determine which membrane(s) in the vessel are effected. Replace o-ring, shim vessel ; Determine how to avoid "ramming" the membranes during system start-up. down.