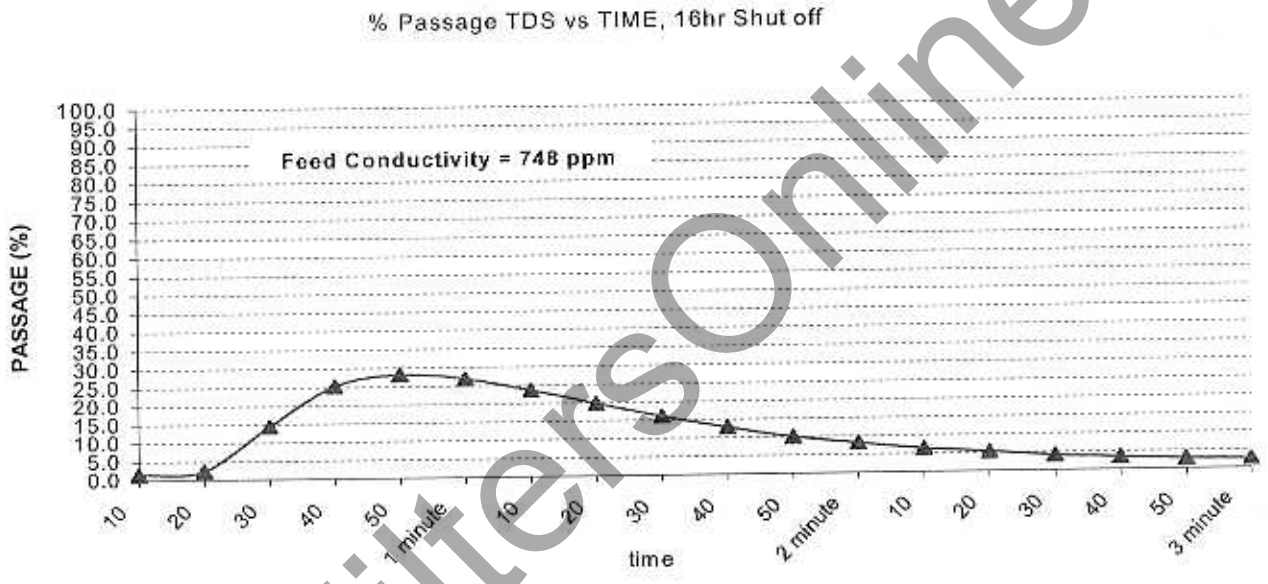
SALT DIFFUSION: There is a condition known as salt diffusion (or TDS creep), exhibited in the Merlin system as well as **all** filtration systems using RO technology. It is a condition where aqueous salts in the concentrate and feed water diffuse through the membrane into the permeate side of the membrane when the system is shut off. Many commercial and industrial systems are designed so they run permeate water to drain for a short time at start-up to discharge the higher TDS in the permeate water. While this condition also occurs in standard residential systems, the net effect is typically not noticed due to the large amount of permeate water in the storage tank to dilute the salts. While we have designed the Merlin system to reduce the net effects of salt diffusion, the condition still exists. The following attachment details the typical expected salt diffusion with the Merlin:



*Based on 40 psi, 65°F (2.76 bar, 18.3°C), on softened water

Through our extensive field testing we have learned that the level of salt diffusion exhibited by the Merlin can vary depending on feed water characteristics. Salt diffusion levels as high as 60% or more have been observed in certain locations around the world. There are a few general rules on this phenomenon:

1. The level of salt diffusion varies over time. It takes approximately 4-6 hours to reach its peak.
2. Inlet water pressure, temperature and chemistry has an effect on the % of salt passage into the permeate stream.
3. The lower the inlet TDS levels, the higher the percent passage.

In our manual and in the Application Guide we are recommending customers run their faucet for 2 minutes per day – typically in the morning.

Please keep in mind that even in situations where salt diffusion is high during the first minute or so of operation, the permeate water is still considerably better than the inlet water and the permeate TDS levels will tend to be well below those found in most bottled water.

For those applications (such as ice maker installations), where low permeate TDS is required at start-up and the unit sits for extended periods without use, we are offering an optional membrane rinsing accumulator tank. The function of this small tank is to rinse out the feed water situated around the membrane elements with RO permeate water when the system is shut down, thus removing any salt that may diffuse into the permeate. Rinsing the Merlin system will also increase the life of the membrane element. This tank is installed in the plugged 4th port (1/4" line), of the Merlin system. The flow paths of the system are designed so that no water from the rinsing tank enters into the permeate stream without passing through the membrane.