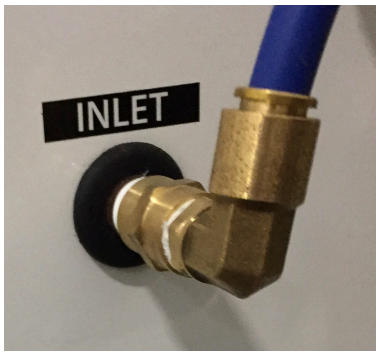
Incoming Water Treatment Supply to the Pump Station



All humidity control systems require water treatment specifically designed for high pressure humidity control systems and water qualities unique to each project location.

Incoming "Treated" water supply is to be plumbed for continuous flow maintaining 1.5 x's the rated gpm pump capacity at a minimum of 20-40 psi delivered at the pump inlet. The key principle is to avoid starving the high pressure pump due to continuous flow rate not being sustainable for extended duration of operating time.

The Pump Station comes with 10 feet of 1/2" low pressure nylon tube. Make sure the location of the water treatment system is located within 10' of the water inlet end of the pump station. The pump station will have a 1/2" Slip-Lok "Inlet" connection to receive the water supply from the 5 micron pre-filter. The order of flow is first through the "specialized" water treatment system selected for the humidification system and then pliumbing in the 5 micron pre-filter as the last water treatment function on the incoming water line to the pump Slip-Lok inlet connection. Pump connections will be labeled.

Note: if the 5 micron filtration is included in the "specialized" water treatment system such as the Reverse Osmosis (RO) OR the DIBS (Deionized Blending System), then do not use the included 5 micron filter as it is a duplicate function.

All Humidification Systems Require Two Forms of Water Treatment: Filtration of Suspended Solids (to 5 Micron Purity) and "Specialized" Treatment of Total Dissolved Solids (TDS filtration range between 20-50 ppm).

1. FILTRATION OF SUSPENDED SOLIDS – Undissolved solids suspended in water can form blockages at microscopic levels and dissrupt the free flow of even atomization and moisture plumes at the exit point of each nozzle head. Filtration of solids down to 5 micron sized particle sizes, is accomplished by the inclusion of the 5 micron cartridge type filter located on the incoming water supply line to the pump – addresses suspended solids which can disrupt the flow and quality of pump pressurization, optimum pump valve functionality and optimum nozzle atomization. Additionally, each nozzle has an included inserted 5 micron filter which holds fines which may be formed as the by-product of pump operation. Five micron filtration is standard in both pre-pump low pressure and post pump high pressure supply lines – *one micron is one millionth of a meter or visually the diameter of a hair.*


Example of 5 Micron Sediment Pre-Filter with drain line tied into supply line

5 Micron Water Pre-Filter: Included in with your pump package is a five micron pre-filter housing with cartridge. Directions for locating the filter housing on the pump stand: You will have a white round filter bracket, a blue filter housing with pre-installed filter cartridge (part #92608), tubing and fittings. Attach the white round filter bracket using the provided nut and washers. The white fiber washer is intended to be installed between the bracket and the mounting surface. Place the blue filter housing inside the round filter bracket with the outlet fitting pointing towards plumbing end of pump. Insert the short piece of tubing into the outlet fitting of the filter housing. Push in to lock tight. Insert the other end into the inlet fitting of the pump (90 degree ½" slip x 3/8" MPT installed into solenoid valve). Insert the 10' piece of tubing to the inlet fitting of the filter housing. Push in to lock tight. Fasten the other end to the exit side of the form of water treatment required for the project. Replace cartridges as needed but no less than once a year (spare cartridge included).

Continued... All Humidification Systems Require Two "Specialized" Forms of Water Treatment:

2. **FILTRATION OF TOTAL DISSOLVED SOLIDS (TDS)** – addressing the presence of solids in a dissolved state understood as "in solution" which divide into two general categories: "dissolved calcium ions" and "total dissolved solids" (TDS).

• **Dissolved Calcium Ions** form scale over time within the pump system, the nozzle body and surface of the nozzle cap and negatively affect pressurization, water flow rate and desired atomization patterns. Calcium scale is controlled by two forms of water treatment:

• **Water Softening** – exchanges calcium ions (scale producing) with sodium ions (harmless) through the use of salt and is the answer to scale for woodworking and textile applications. We recommend local sourcing for water softening equipment and ongoing support.

• **ScaleX2** – Is Template Induced Crystallization – an alternative to softening – chemical free scale prevention rendering calcium ions as temporarily inactive and harmless microscopic crystals; the calcium ions remain in solution and pass through as harmless and non-scaling particles. ScaleX2 is an example of this type of treatment. And again, a solution for woodworking and textiles. When ever this technology is chosen for a project, we inlcude the specifications and cost in the project quotation. Note: see separate pdf for ScaleX2 Water Treatment.

• **Total Dissolved Solids (TDS)** are an issue primarily in applications where air quality is a major issue such as printing, labels, or electronics environments. The main issue is the total of all dissolved solids which occur in untreated water will plate out upon moisture phase change to evaporation – turning from a dissolved state to particle solids in the air – forming fine white powder dust known in the industry as "Air Dusting". Two water treatment systems are utilized to filter out most of the TDS: Reverse Osmosis Systems (RO) and Deionized Blending Systems (DIBS). Note: for most applications, a range of TDS from 20-50 ppm is desireable.

• **Reverse Osmosis (RO)** is a membrane filtration which removes all total dissolved solids down to a range of 96% purity. A very safe approach to the solution of calcium and total dissolved solids. We recommend local sourcing for RO systems and ongoing support.

• **Deionized Blending System (DIBS)** uses deionized water and blends back untreated water to a desired parts per million (ppm) of solids generally set at 20-50 ppm TDS. *An inexpensive alternative to RO and addresses the fundamental issues of calcium and TDS.* Note: see separate pdf for DIBS Water Treatment.

Industrial Humidity Control provides guidance in all of our projects as to the recommended approach for addressing the total need for water treatment in all applications. It is always best to consult with local water treatment experts such as Total-Water based in Madison WI with support capability over the midwest and eastern US region.