

INTENSIFIER: The water supplied to the intensifier is critical to waterjet cutting due to its direct influence on the service life of equipment components such as check valves, seals and the sapphire orifices that shape the cutting stream. A high concentration of total dissolved solids (TDS) causes accelerated wear of these components due to the inherent abrasiveness of the water.

As part of installation planning, a water quality analysis should be performed by a commercial company that specializes in water conditioning equipment. A water purification supplier should be consulted to supply the most suitable equipment for specific conditions. The minimum information that should be supplied regards Total Dissolved Solids (TDS) silica content and pH value.

Inlet water should be treated for either the removal of hardness or the reduction in TDS. Water softening is an ion exchange process that removes scale-forming minerals such as calcium. TDS reduction can be accomplished with either deionizing (DI) or reverse osmosis (RO) equipment. Generally, DI or RO provides better component life than water softening.

The best treatment process for specific application is a function of the original water quality and desired service life of affected components. **A water treatment producing TDS content of less than 0.5 ppm is not recommended** since the aggressiveness of the purified water may damage the pump components.

WATER TREATMENT GUIDELINES:

| | | Recommended Treatment |
|-----------------------------------|---|---|
| Total Dissolved Solids TDS | Low TDS (<100 ppm) | Considered good water quality. Can be treated by softening. |
| | Moderate TDS (<100 - 200 ppm) | Can be treated by softening or TDS reduction (RO or DI) |
| | High TDS (>200 ppm) | Considered poor water quality. Should be treated with RO or DI. |
| Silica Content | High Content (> 15 ppm) | Dual Strong Base DI. |
| pH Value | Treated water must have a value of 6 to 8 | |

HEAT EXCHANGER: The heat exchanger uses regular tap water for cooling the hydraulic fluid. Fluid temperature must be maintained below 120° F (49° C). A consistent water flow of 5 to 12 gpm (19 to 45 lpm), depending on pump model, is required at an inlet temperature not exceeding 70° F (21° C). Public utility water is usually acceptable for cooling purposes. In situations where water contains heavy mineral deposits, the exchanger tubes may eventually become restricted by particle buildup. If this is a chronic problem, prefiltration and/or softening may be necessary. Depending on plant setup, ambient temperature can also be a factor in cooling. Additional cooling may be required if the equipment is confined to a small, high-temperature space.