

## Inlet Water Quality

Water quality dramatically effects how well your ultrahigh-pressure waterjet system operates. Using this document as a guide ensures that your ultrahigh-pressure pumps and components give you the best performance.

There are two requirements for water in your ultrahigh-pressure pump system: the primary water used for the jet, and the water for cooling. A Direct Drive pump has only a source of water equivalent to the filtered water in and needs to be treated accordingly

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*Extend component life— and maximize the life of your waterjet system*

### Primary Water

### Requirements Water

#### Source

Recommendation is to use a municipal tap water supply source (or equivalent) for the water that is pressurized to Ultra High Pressures by the pump.

This water (Filtered Water In) to the pump; Process water, boiler condensate, or untreated water sources are generally not acceptable. Water treated by reverse osmosis (RO) or deionization (DI) should not be used except when pure water is necessary.

#### Water Hardness

The primary water should have a hardness level of 17 ppm or less. In most cases, this will require a water softener. Only a sodium ion exchange water softening system should be used. The water softening system should be sized for a capacity that is at least 1.5 times the maximum flow rate for your high pressure pump (see chart on back).

Additionally, you should be aware that most water utilities change the source of the water supply seasonally, causing the water hardness at your facility to change significantly. It is important to select a softener of sufficient capacity to handle the highest hardness levels expected.

As ion exchange water softening systems require regular regeneration, the system you select needs to accommodate your longest duty cycles. Normally, a dual system is recommended as this can provide a continuous supply of treated water by alternating between media tanks. Water softening systems are available from your local water treatment company. If a Timed regeneration is selected, It is very critical that the time or regeneration always happens when the machine is not operating.

#### pH

Satisfactory pH value are, between 6.5 and 9.5 is required.

#### Iron (Fe) Content

The dissolved iron content of the water should be less than 0.1 ppm. A standard sodium ion exchange water softener will normally remove some iron along with water hardness. If iron levels are unusually high, your water treatment supplier can supply a water softener option that will enhance its iron removal capabilities. Sometimes this includes using a salt designed to remove rust.

#### Silica

If silica levels in the water exceed 15 ppm, you may need to consider ultra-filtration. Ultra-Filtration is very expensive, and therefore may be an option that is better to be left untreated.

#### Pressure

The following pressures must be maintained during operation:

5X, COUGAR, HyPlex ..... 25–100 psi [1.8–7 bar]  
All others .....10–100 psi [0.7–7 bar]

#### Temperature

Intensifier Pumps (i.e. 5X, 7X, 50iS, 100iD) ..... 35–80°F [2–26°C]  
Direct Drive and HyPlex Pumps..... 35–72°F [2–23°C]

## Plumbing

All plumbing connections between the pump and the primary water source or water softener should be made with 1/2 inch or larger Schedule 80 PVC. Do not use iron pipe or fittings.

## Suspended Particulate Filtration

The primary water must be filtered for suspended particulate matter. Filters Mounted on the pump are there to trap the suspended particles prior to entering the pump. Replacement of the filter cartridges as specified in the maintenance manuals is all that is necessary. The filters are .5 and 1 micron filters with absolute ratings. Do not substitute with other filters.

## Coolant Water

### Requirements (not applicable to HyPlex pumps)

Cooling water can be provided from a standard water source, such as tap water, or from a closed loop cooler/chiller system, with the exception of the Hyplex pump.

With a tap water source, water is connected to the ultrahigh-pressure pump (Cooling Water In) where it is internally routed through heat exchangers or other cooling circuits. After cooling the pump, the warm water is routed out of the pump (Cooling Water Out) and, typically, to a drain. The water supply should be sized for at least 3 gpm [12 lpm] per 50 horsepower at 60°F, and maintained at a temperature between 35–72°F [2–23°C].

With a closed loop cooler/chiller system, the water that passes through the pump for cooling is recirculated to a water cooling or chilling system to remove the waste heat before being routed back to the pump. **Cannot be used on a Hyplex pump.**

No special water treatment is required for cooling water.

## Technical Questions

If you need additional assistance or have any questions concerning water quality, call SuperSonich2O at (734-679-9318)

