Inlet Water Quality

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

Water quality plays a crucial role in determining how well your ultrahigh-pressure waterjet system operates. Adhering to Flow International Corporation's (FLOW) recommended specifications for water quality ensures that your ultrahigh-pressure pumps* and components give you optimum 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. (HyPlex pumps do not require cooling water.)

Primary Water Requirements

Water Source

FLOW recommends using a municipal tap water supply source (or equivalent) for the primary 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 without consulting FLOW.

Water Hardness

The primary water should have a hardness level of 17 ppm or less. Typically 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.

pH

A pH value 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.

Silica

If silica levels in the water exceed 15 ppm, you may need to consider ultra-filtration. Please consult with Flow Technical Services if silica levels are excessive.

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) ..... 35–80ºF [2–26ºC]

Direct Drive and HyPlex Pumps ..... 35–70ºF [2–21ºC]

If inlet water temperature is outside these ranges, pump seal life will be reduced.

*Models 5X, 7X, 9XV, 20X, 25X, COUGAR, HyPlex, and HUSKY™ E-150

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Flow

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. All FLOW ultrahigh-pressure pumps include filters for this purpose. Replacement of the filter cartridges as specified in the maintenance manuals is all that is necessary. The filters used in FLOW pumps are extremely high grade 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 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 35–80°F [2–26°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.

FLOW recommends that a flow meter be installed in the plumbing that exits the high pressure pump to monitor flow.

No special water treatment is required for cooling water.

Primary Water Flow Rates (Does not include cooling water requirements)

Pump	GPM [LPM] @ 40K psi	GPM [LPM] @ 55K psi	GPM [LPM] @ 60K psi
5X	0.84 [3.18]	Not available	0.50 [1.93]
7XS	1.57 [5.94]	Not available	1.00 [3.79]
20XS	1.57 [5.94]	Not available	1.00 [3.79]
20XD	3.14 [11.88]	Not available	2.00 [7.57]
25X	6.00 [22.00]	Not available	3.60 [13.00]
50iS	Not available	Not available	1.00 [3.97]
100iD	Not available	Not available	2.00 [7.57]
HyPlex 30	Not available	0.82 [3.11]	Not available
HyPlex 50	Not available	1.25 [4.74]	Not available
HyPlex 75	Not available	2.00 [7.57]	Not available
HUSKY™ E-150	5.60 [21.17]	Not available	Not available
COUGAR	0.42 [1.59]	Not available	Not available

Technical Assistance

If you need additional assistance or have any questions concerning water quality, call FLOW's Technical Service Department at (253) 813-3318.