

Feed Water Requirements for Electric Steam Boilers

Boiler feed water is required for continuous operation on all Sussman MBA, ES, and SSB series models. The water pressure should be at least 0.7bar (10psig) higher than the desired boiler operating pressure.

When the incoming water pressure is less than 0.7bar higher than the boiler operating pressure, the High Pressure Water Feed System option or the Condensate Return System option is required. The latter option should be selected when condensed steam (condensate) is returned to the boiler.

The High Pressure Water Feed System consists of a feed water pump & motor mounted with rubber AVMs on a mounting base plate. A jacketed cable is supplied for electrical connection. This unit requires field plumbing and wiring to the boiler.

The Condensate Return System is complete with a condensate tank with internal float control, feed water pump & motor, essential plumbing, gauge glass, vent and return fittings, and tank drain valve. A heavy duty vacuum breaker is also recommended, but not essential. The above equipment is mounted with rubber AVMs on a mounting base plate, and requires field plumbing and wiring to the boiler.

Water Quality Requirements for Carbon Steel Boilers

For optimum results, the feedwater supply should be tested prior to initial start-up. If the mineral content exceeds the following recommended limits, various external treatment processes (water softener, reverse osmosis, etc.) may be used to correct the problem.

NOTE: An analysis of the on-site boiler feedwater must be made by a recognized and reliable water treatment company to ascertain the existing condition and treatment required.

RECOMMENDED FEEDWATER QUALITY

HARDNESS, ppm	8 – 85 (~0.5 – 5gpg)
P-ALKALINITY, ppm	85 – 410 (~5 – 24gpg)
T-ALKALINITY, ppm	200 – 500 (~7 – 0gpg)
pH (strength of alkalinity)	8.0 – 11.4
SPECIFIC RESISTIVITY	~50k Ω cm (50,000 ohm-centimeter)

Blow down the boiler on at least a once-a-day basis. If boiler water or feed-water are outside the above limits, a more frequent blowdown is required.

Water quality can affect efficiency or result in boiler damage if neglected. Boiler feedwater contains impurities in solution and suspension. These impurities concentrate in the boiler since the steam generated is essentially pure. The concentration of these impurities increases as more feedwater is introduced into the boiler and steam is produced. If the suspended solids are allowed to concentrate beyond certain limits, a deposit or "scale" will form on the boiler's internal surfaces. This deposit can interfere with proper boiler operation and cause boiler failure.

The concentration of these impurities is generally controlled by the feedwater quality and by blowdown. Blowdown refers to removing a portion of the boiler water with high solids concentration and replacing it with make-up water of a lower concentration.

Water Quality Requirements for Stainless Steel Boilers

Water with a minimum specific resistivity of 1M Ω /cm (mega Ohm per centimetre) must be used for proper & safe boiler operation of stainless steel steam boilers i.e. deionised water with a maximum conductance of 1 μ S/cm (micro Siemen per centimetre). This is mandated under ASME regulations for the boiler certification.

NOTE: Condensate Return System for SSB Boilers - Stainless steel SSB boilers are for use with DI water, and generally, the steam is used for sterilization or process applications, where the steam is contaminated after the process. Contaminated condensate should not be returned to the boiler to make steam. There are a few instances where the steam is used for both closed loop and open loop systems; in these cases, a Condensate Return System may be considered for the closed loop steam. Please contact the factory for condensate return systems for use with stainless steel SSB boilers.