

BOILER MAINTENANCE & WATER TREATMENT

It must be understood that every Steam Boiler system requires a proper Boiler Water Treatment Program with regular water analyses, adequate regulated blowdowns, correct maintenance, periodic safety checks and periodic inspection follow-up. All of these are necessary for long life and efficient boiler service. These are some of the basic essentials in your boiler program:

1. Soft water should be used at all times to prevent scale build-up and tube stoppage. Test daily and regenerate water softener when hardness exceeds 17 parts per million (or 1.0 Grain per Gallon).
2. Boiler water compound should be selected and regulated on the basis of actual water analysis. This compound should have the proper chemicals to treat for: (1) hardness up to 5.0 GPG, (2) maintain a pH level of 10.0 to 11.5 in the boiler water, (3) excessive oxygen by maintaining the Sodium Sulfite level between 40 to 100 ppm in the boiler water, (4) a protective metal coating material, and (5) other conditions found in the water analysis. A Boiler compound comparable to PB677 is standardly recommended. When steam may come in contact with potable water or food products for human consumption, a USDA approved compound, such as PB633, is required. For Parker PB677, 633, 647, OS2 (Oxygen Scavenger) usage quantities and instructions see Bulletin OS-125 and CPS-K-125-P.
3. The compound must be added in adequate quantities uniformly throughout the shift. An automatic chemical feed system should be purchased or provided by your chemical supplier so these chemicals are induced into the condensate holding tank or feedwater line as recommended by your chemical supplier. We recommend these chemicals be introduced as far before the boiler as possible to also protect the feed tank and feed lines.
4. Regular Water Analysis should be made as often as possible but at least every 30 days to assure water treatment is properly regulated. If there are indications of scale, corrosion, or any other unfavorable condition, water analysis may need to be performed more often until condition is corrected. Record these figures (i.e. Parker Bulletin 1001-C) for future reference. See Bulletin 1002 for instructions.
5. Partial blowdowns should be made in accordance with the Blowdown Instructions. The Boiler blowdowns must be made sufficiently so that total dissolved solids in the Boiler water between 2600-3200 PPM (3600-4200 micromhos/cm) and mud and sediment are removed from the boiler. The type of blowdown and period between blowdowns can be extended only when the total dissolved solids in the boiler are maintained below between 2600-3200 PPM (3600-4200 micromhos/cm).
6. Regular Internal Tube Inspections should be made every 60 days until the Water Treatment Program is properly regulated. Thereafter, every 6-12 months or more often if an unsatisfactory condition is found. This is done by removing at least two (2) of the plugs on the bottom and top of each Tube Header Section. Internal Drum Inspection is made by removing the Inspection Plugs on the heads of the Steam Drum. Water feed inlet should be Inspected every 6 months by removing the plug on the inlet fitting to Boiler Drum. Clean as necessary. Note: always use a high temperature teflon based anti-seize compound when re-installing plugs. See Bulletin 117 -1001 S&G.
7. The Return Tank and pump suction strainer should be inspected and flushed clean every 90 days or as needed. This is important to prevent any sediment accumulation from causing stoppage, or damage to Pump or Boiler.
8. Proper Grounding of the boiler is necessary if there is a possibility of electrolysis (a form of corrosion) and to help maintain normal tube life. Periodic internal inspections are necessary to determine if the thin protective coating has developed in the tubes. Proper grounding of the boiler requires driving a copper rod of 6' or more into the ground. Readings in excess of 35MV on ungrounded installations require grounding to prevent the onset of a corrosion problem.

WARNING: DO NOT BE MISLED BY PURCHASING YOUR COMPOUND AT A CHEAPER PRICE OR FROM A SUPPLIER THAT IS NOT FULLY COMPETENT TO PROVIDE YOU WITH INSTRUCTIONS, WATER ANALYSIS AND FOLLOW-UP SERVICE NECESSARY FOR SATISFACTORY RESULTS.

The Standard Boiler Warranty covers only original defects and does not cover the repairs resulting from a water condition such as corrosion or scale. It's up to you and is your sole responsibility to see that a proper Water Treatment and Maintenance Program are correctly followed at all times.

**RECOMMENDED BOILER WATER CONTROL RANGES
FOR PARKER STEAM BOILERS**

DATE OF ANALYSIS	SAMPLE DATE	ANALYSES RECORD					
		RAW H ₂ O	SOFT H ₂ O (i.e. Feed Water)	CONDENSATE RETURN WATER	CONDENSATE RETURN TEMP °F	BOILER 1 H ₂ O	BOILER 2 H ₂ O
RECOMMENDED RANGES/RECOMMENDATIONS - BOILER							
1. SOFT WATER HARDNESS CaCO₃: 0.0 GPG to 1.0 GPG							
{ When Hardness Exceeds 1.0 GPG Regenerate Softener							
2. BOILER WATER pH: 10.0 to 11.5 pH				8.2-8.8			
{ When Less 10.0 - Increase Treatment Dosage							
{ When More 11.5 - Decrease Treatment Dosage							
3. BOILER WATER SODIUM SULFITE SO₃: 40 to 100 PPM							
{ When Less 40 PPM - Increase Oxygen Scavenger							
{ When More 100 PPM - Decrease Oxygen Scavenger							
4. BOILER WATER TOTAL ALKALINITY PPM: 300 to 800 PPM							
{ When Over 800 PPM - Reduce Treatment Dosage							
5. BOILER WATER CHLORIDES CL: 0 to 40 GPG							
{ When Over 40 GPG - Increase Blowdowns & Check Water Softener							
6. BOILER WATER PHOSPHATE PO₄: 40 to 70 PPM							
{ When Less than 40 PPM - Increase Treatment Dosage							
{ When More 70 PPM - Decrease Treatment Dosage							
7. BOILER WATER TOTAL DISSOLVED SOLIDS: 2600-3000 PPM (3600-4600 mcromhos/cm)				0-50 ppm			
{ When less than 2600 PPM decrease blowdown intervals/duration							
{ When more than 3200 PPM minimum increase blowdown intervals/duration							

CUSTOMER NAME: _____ **TESTED BY:** _____

CONTACT: _____ **COMPANY:** _____

ADDRESS: _____ **ACTION TAKEN:** _____

CITY, STATE & ZIP: _____ MAILED COPY CALLED CUSTOMER E-MAILED

PHONE: _____ **FAX:** _____ FILED FAXED COPY FORWARDED TO CHEMICAL

NOTES: _____