

**GUIDE ON PROPER BOILER OPERATION**  
**PARKER STEAM BOILERS**

The Manufacturer has prepared this Bulletin as a Guide for Users of Parker Steam Boilers to Summarize the Basic Requirements that are necessary for proper Installation, Operation and Long Life Boiler Service. A complete set of Installation Instructions, Operating Instructions and an Operation and Maintenance Manual are furnished with each Boiler. Be sure to review these completely and follow Instructions as applicable.

The Parker Boiler is recognized as one of the safest and most economical operating Steam Boilers. The Boiler is known as one of the least complicated and easiest to operate and maintain. As with any Steam Boiler System, these Basic Requirements are necessary and must be followed if long life and economical service are to be obtained.

1. **PRIOR TO INSTALLATION:** Carefully read the General Basic Installation Instructions, the specific Installation Instructions, Floor Plan Drawings and the Installation Check-off Sheets.
2. **PROPER INSTALLATION:** Be certain the Boiler is installed in compliance with the prevailing Codes and in accordance with the Manufacturer's minimum recommendations as outlined in the above mentioned Bulletins. Installation and operating permits must be obtained from the local Inspection Jurisdiction. Competent installation personnel should always be used.
3. **BLOWDOWN AND DRAIN LINES:** Be certain that the Boiler is installed with the required and proper size blowdown lines and blowdown tank. Since the Parker Boiler may require blowdown at full operating pressure on a periodic schedule, it is necessary that the blowdown tank and lines not be restrictive.
4. **FINAL INSTALLATION CHECK:** At completion of installation, the Manufacturer's Installation & Startup Check-off Sheets should be filled out to be certain that installation conditions are proper before operating the boiler.
5. **WATER TREATING PROGRAM: This is one of the most Important Items of Consideration in Boiler Operation. Carefully review Water Treating Bulletins No. 1001-B & 1001-C.**  
The Manufacturer recommends the services of local water treating firms that are competent and knowledgeable providing they comply with the Manufacturer's standards and offer a regular monthly follow-up water analysis service. The Basic Water Treating Program must include the following:
  - A. An initial water sample and analysis must be taken of the raw water supply to determine the water treating program. See Water Sample Instruction 1002.
  - B. A water softener should be installed in addition to the chemical treatment system if calcium carbonate or limestone hardness exceeds 3 gpg with no condensate return or 4 gpg with more than 50% condensate return. Softener should be regularly regenerated any time hardness exceeds one grain per gallon.
  - C. The proper boiler water treatment should be used consistently, uniformly and adequately as determined from the water analysis. The boiler water treatment must meet the Manufacturer's standards of Bulletin 1001-B. The treatment must be used to maintain a satisfactory pH between 10.0 to 11.5. It must include an oxygen scavenger, provide a protective metal coating and treat for hardness or other conditions determined from the analysis.
  - D. The compound must be added in adequate quantities uniformly throughout the shift. An automatic chemical feed system should be purchased or included with your chemicals so these chemicals are induced into the feedwater line or the condensate holding tank 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.
  - E. The plant should also purchase a conductivity meter and water test kit to be familiar with the treatment and confirm proper chemical levels in the boiler.
  - F. Plant personnel should run a conductivity test and sulfite test daily before blowdown until a pattern develops. A log should be kept to record the data (i.e. Parker Bulletin 1001-C) and filed for future reference. The blowdown frequency and chemical usage can be set from this information. Once this pattern is developed, set a pattern of testing for two or three days a week (testing should take a maximum of only 20 minutes).
  - G. Water sample containers, convenient for mailing, are available upon request. Water Analysis are furnished by the Manufacturer as explained in Bulletin 1002.
6. **BLOWDOWN PROGRAM:** The boiler must be blown down as recommended in the Daily Boiler Blowdown Instruction sheet. Parker Boilers can be either completely blowdown or partially blowdown. The type of blowdown and frequency of blowdown needs to be set for a particular job based on make-up water conditions, amount of condensate return, boiler load, and the chemical analysis of the boiler water. An initial blowdown schedule should be recommended by the chemical supplier and this schedule should be adjusted as necessary based on the chemical analysis of the boiler water and the water treatment program.

The total concentrated solids (TDS) in the boiler should be between 2600-3200 PPM (3600-4600 micromhos/cm) and the blowdowns must be regulated not to exceed this safe limit. Boiler should always be refilled with water after blowdowns and not left dry. In cold environments, protect boiler from freezing.

7. **OPERATING INSTRUCTIONS:** The Operating Instructions must be followed as outlined in the Operating Instruction Sheet.
8. **DAILY CHECK ON LOW WATER CUTOFF:** The low water cutoff should be checked daily and each time the boiler is blown down to be certain that it properly shuts off the fuel supply on a low water level.
9. **SAFETY CONTROL CHECKS:** A regular pattern of checking all the boiler safety controls should be established. Refer to yearly, quarterly and weekly maintenance report sheets and tune-up sheets.
10. **RETURN TANK:** The Return Tank and strainer should be inspected every 90 days and cleaned or flushed as required. This is important to prevent any sediment accumulation from entering the pump or boiler.
11. **BOILER WATER FEED PUMP:** Burks Pumps do not require packing or lubrication. Current models have sealed permanently lubricated motor bearings when manufactured. The Mechanical Seal and O-ring should be promptly replaced if water leaks from the pump around the Motor Shaft. Be certain both check valves are functioning properly before replacing Mechanical Seal. NOTE: WHEN BOILER IS NOT IN USE IN AREAS SUBJECT TO FREEZING CONDITIONS DRAIN PUMP AND WATER FEED LINES. BEFORE STARTING PUMP BE CERTAIN WATER INLET VALVE AND ALL VALVES ON WATER FEED LINE ARE OPEN OR PUMP MAY BE DAMAGED.
12. **BLOWDOWN TANK:** The Blowdown Tank should be inspected every 90 days and cleaned as required.
13. **INTERNAL INSPECTIONS:** Internal tube inspections should be made every 60 days until the Water Treatment Program is properly regulated. This is important so any detrimental tube conditions can be recognized and corrective measures can be taken to prevent any problems. 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 reinstalling plugs. See Bulletin 117 -1001 S&G.
14. **TUNE-UPS:** Overall boiler operation and burner condition should be evaluated as outlined and described on tune-up sheets.
15. **OTHER IMPORTANT MAINTENANCE:** The Boiler should be regularly serviced and properly maintained in accordance with the Operating, Daily Boiler Blowdown Instructions, Safety and Preventive Maintenance Sheets and all other Maintenance Sheets as furnished in the Boiler Operation & Maintenance Manual.

### **WARNINGS**

1. ONLY TRAINED AND KNOWLEDGEABLE QUALIFIED PERSONNEL SHOULD BE ALLOWED TO OPERATE, SERVICE OR REPAIR THE BOILER. WEAR SAFETY GLASSES AT ALL TIMES.
2. ALWAYS SHUTOFF THE MAIN ELECTRICAL SUPPLY SWITCH(ES) BEFORE WORKING ON THE BOILER OR CONTROLS. NEVER ATTEMPT TO WORK ON ANY PIPING OR PRESSURE PARTS WHEN THERE IS PRESSURE IN BOILER. ALWAYS SHUTOFF THE BOILER AND BLOWDOWN TO ZERO PRESSURE.
3. **NEVER PUT AN EXTENSION ON VALVE HANDLE FOR MORE LEVERAGE. DO NOT APPLY UNDUE FORCE ON FITTINGS OR TO OPEN VALVES WHILE THERE IS PRESSURE IN BOILER.** ANY PRESSURE PARTS AND PIPING SHOULD BE PROMPTLY REPLACED ON INDICATION OF LEAKS, DETERIORATION OR AN UNSAFE CONDITION. PROMPTLY REPLACE ANY FAULTY PARTS OR VALVES.
4. ALL STEAM VALVES AND BLOW-OFF VALVES MUST BE OPENED CAREFULLY AND SLOWLY. REPLACEMENT OF ANY VALVES OR PRESSURE PARTS MUST COMPLY WITH THE CODE FOR STEAM PRESSURE STAMPED ON THE BOILER.
5. NEVER BYPASS SAFETY CONTROLS. IMMEDIATELY REPAIR OR REPLACE FAULTY CONTROLS AND TEST BEFORE PLACING BOILER IN OPERATION.
6. THE WATER INLET VALVE TO RETURN TANK SHOULD BE CLOSED WHEN BOILER IS NOT IN USE IF THERE IS A POSSIBILITY OF WATER DAMAGE TO PROPERTY.

The Manufacturer and Parker Dealers are sincerely interested to cooperate with each field installation to assist in obtaining the best in long life and satisfactory service deserving of the Parker equipment. Any additional instructions or assistance will be gladly provided on request.