

DAILY BOILER BLOWDOWN INSTRUCTIONS
70-150 H.P. PARKER GAS, OIL OR COMBINATION FIRED BOILER

- I. BOILER BLOWDOWN:** The Boiler should be either fully or partially Blowdown from High Pressure as required to maintain the Total Dissolved Solids (TDS) below 2,500 PPM (4200 u mho/cm) in the boiler water and remove any mud or sediment buildup. The type and frequency of blowdown will be determined from water analysis in conjunction with your water treatment company. Blowdowns should be made in the middle or the start of each shift. The time period between Blowdowns may and should be extended when the Total Dissolved Solids (TDS) are maintained below 2,500 PPM (4200 u mho/cm) but the frequency must be increased when the TDS is higher. The Boiler must be promptly re-filled after each Blowdown and brought to steam pressure.
- A. PARTIAL BLOWDOWN:** Should be made at the start or the middle of each shift as follows:
1. While the Boiler is up to operating pressure, open Main Blow-Off Valve slowly and carefully for approximately 3-5 seconds. (When second slow opening valve is furnished, always open slowly and carefully after the quick opening valve and close it first.)
 2. Immediately close and allow boiler to operate in a normal manner.
- B. COMPLETE BLOWDOWN (ONLY WHEN REQUIRED):** The complete Blowdown is accomplished as follows:
1. Manually turn off the Main Fuel Valves nearest burner. Turn off the electrical Boiler Controls Switch. Close the main steam outlet valve if there is no check valve in steam line at boiler.
 2. Wait approximately 90 seconds and allow pressure to drop at least 15 PSI (on high pressure boilers). Then first open the two 2" quick opening main blow-off valves carefully and slowly until fully open. Next, open the two 1" header blow-off valves slowly. Allow the boiler to completely drain. Always alternate opening of each valve so that equal advantage of the first blowdown is accomplished on each leg of the drum. Do not throttle quick opening valves. (Then if a second slow opening blow-off valve is furnished, open it last carefully and slowly until fully open.) Allow boiler to completely drain.
 3. Turn on electrical Boiler Controls Switch. Turn off the Burner Switch to silence low water alarm. Allow pump to operate for approximately 30 seconds.
 4. With the pumps still running, close the second slow opening blow-off valve (if furnished). Close the quick opening main blow-off valves and next the header blow-off valves. If valves do not close freely, do not force, but let pump run longer to flush valve until they close easily. Open the main steam line valve.
 5. Allow pumps to refill boiler to normal water level. Do not leave boiler dry without water. Always refill the boiler promptly after blowdown and leave water in the boiler when not in use (Except, in areas subject to freezing conditions Boiler should be drained); consult factory for prolonged storage. If the boiler is left dry without water for any length of time, this may result in excessive oxygen in upper drum and cause rapid corrosion. NOTE: Be certain that the Boiler does not overflow by siphoning water from the Return Tank.
 6. When boiler is not in use turn off the Main Fuel Valves manually and the electrical Boiler Controls Switch.
 7. When ready to resume normal operation. Refer to the Operating Instruction Sheet for complete details.
- C. FLUSH OUT UNDER THE WATER LEVEL CONTROL AND TEST LOW WATER CUT-OFF:** At the beginning of each shift, open the drain valve under the water level control carefully and slowly until the water drains to a lower level in the glass and the main burner shuts off to check the low water cutoff, then close valves. Do not attempt to blow the Boiler down from the drain valve or to open for any longer period of time. Do not continue using the boiler if the low water cut-off does not function. Do not attempt to blow the boiler down from the drain valve or to open fully for any period of time while boiler is under pressure.

WARNING: NEVER BLOWDOWN THE BOILER OR DISCHARGE THE SAFETY VALVE WITHOUT FIRST CHECKING TO SEE THAT PIPING IS SAFE, SECURED AND TO A SAFE POINT OF DISCHARGE. WHEN A SECOND SLOW OPENING BLOW-OFF VALVE IS USED, ALWAYS OPEN LAST ON BLOWDOWN AND CLOSE FIRST WHEN REFILLING BOILER.

GENERAL BOILER MAINTENANCE INSTRUCTIONS
70 - 150 H.P. GAS, OIL, OR COMBINATION FIRED BOILER

OTHER IMPORTANT MAINTENANCE: The Boiler and all related components must be safely operated and properly maintained in accordance with good accepted practices and the Instruction Sheets furnished. Follow the Daily Blowdown Instructions, Operating Instructions and all other Maintenance Sheets as furnished in the Operation and Maintenance Manual.

- I. **SOFT WATER:** Test water daily and regenerate the Water Softener when hardness exceeds 1.0 grains per gallon. Be certain all salt is removed from water softener and water tests soft before placing in service to Boiler.
- II. **BOILER WATER TREATMENT:** For complete details see Bulletin 1001-B.
 1. Selection of proper boiler compound and amount of dosage should be based on water analysis. When using PB677 compound initial usage should be on basis of 1.0 ounce per BHP per eight hour shift and thereafter on basis of Boiler Water Analysis.
 2. Regular Water Analysis should be made at least every 30 days until treatment is properly regulated. Thereafter, every 3-6 months or immediately on indication of scale, corrosion, or any unfavorable condition.
 3. Compound must be added uniformly preferably with an automatic feeder system or in equal dosages at least every two hours. Usage should be regulated to maintain pH between 10.0-11.5 and a sodium sulfite level between 40-100 PPM in the Boiler water.
- III. **RETURN TANK:** Every 90 days, inspect and clean return tank and pump strainer as needed.
- IV. **BLOWDOWN TANK:** Should be inspected every 90 days and cleaned as required.
- V. **WATER GAUGE GLASS:** Should be promptly replaced on indication of leak or when dirty. Install new glass with (2) new rubbers. Do not install when there is pressure on the boiler and always shut off the gauge valves. If Penberthy is furnished, see Bulletin on Penberthy.
- VI. **INTERNAL INSPECTIONS:** 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 or more of the tube inspection plugs on each tube header section on both the front and rear of the boiler. If an unfavorable condition is found, remove additional inspection plugs as necessary. The two main lower headers are inspected by removing the caps in the nipples extending from the headers to the outside of the cabinet. Internal drum inspection is made by removing the two circular inspection plates on each end of the cabinet and the flanged inspection openings on each head of the drum. The mud drum leg should be inspected by removing the capped nipples at the bottom on each side of the Boiler and opening opposite the main blow-off connections. Water feed inlet should be inspected every 6 months by removing the plug on the inlet fitting to the Boiler drum. Clean as necessary.
- VII. **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, O-ring and suction sleeve should be promptly replaced if water leaks from the pump around the motor shaft. Be certain the check valves are functioning properly before replacing mechanical seal. **BEFORE STARTING PUMP, BE CERTAIN WATER INLET VALVE AND ALL VALVES ON WATER FEED LINE ARE OPEN OR PUMP MAY BE DAMAGED. NOTE: WHEN BOILER IS NOT IN USE IN AREAS SUBJECT TO FREEZING CONDITIONS, DRAIN PUMP AND WATER FEED LINES.**
- VIII. **OTHER IMPORTANT MAINTENANCE:** The boiler and all related components must be safely operated and properly maintained in accordance with good accepted practices and the Instruction Sheets furnished. Follow the Daily Blowdown Instructions, Operating Instructions and all other Maintenance Sheets as furnished in the Operation and Maintenance Manual. See Power Burner Instruction Sheets and Burner Manual for adjusting, cleaning, servicing and operating the burner.

WARNINGS

1. ONLY TRAINED AND KNOWLEDGEABLE QUALIFIED PERSONNEL SHOULD BE ALLOWED TO OPERATE, SERVICE OR REPAIR THE BOILER.
2. ALWAYS SHUT-OFF THE MAIN ELECTRICAL SUPPLY SWITCHES BEFORE WORKING ON THE BOILER OR CONTROLS. NEVER ATTEMPT TO WORK ON ANY PIPING OR PRESSURE PARTS WHEN THERE IS PRESSURE IN BOILER. ALWAYS SHUT-OFF 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 PRESSURE 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.