

## BURKS CT & CS BOILER FEED PUMPS

The Burks CT and CS Pump are a close coupled bronze fitted turbine type boiler feed pump designed to give efficient, dependable service with long life and low maintenance cost.

They are normally used and recommended on steam boilers through 150 HP size for pressures up to 150 PSI.

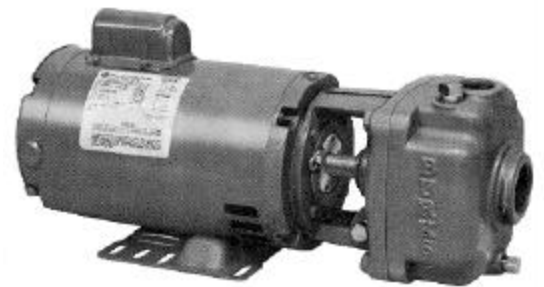
The pump is standardly furnished with a mechanical shaft seal so that no leakage should be experienced from the pump. The pump is built with heavy rugged construction with a stainless steel shaft and bronze impeller with monel blades.

### ADVANTAGES AND FEATURES

1. **Reliable Trouble-Free Operation:** Its unique design provides one of the most reliable and trouble-free operating pumps available. Once in operation, the pump will require no periodic maintenance other than annual lubrication of the motor bearings.
2. **Elimination of Leakage and Packing:** Since the pump is furnished with a mechanical seal, no leakage will be experienced on the boiler room floor and the necessity of continually tightening packing nuts and replacing the pump is eliminated.
3. **"LIFE-LOK" External Impeller Adjustment:** An external impeller adjustment is provided that allows readjustment of the impeller without disturbing piping, disassembling pump or replacing parts to compensate for normal wear after years of service. This feature alone can give up to 40% longer service life than other pump designs.
4. **Quiet Operation:** Exceptionally quiet operation can always be expected.
5. **Low Initial and Operating Costs:** The pump is inexpensive in initial and replacement costs in comparison to other types of boiler feed pumps. Elimination of packing and frequent lubrication reduces operating costs and is one of the pumps main advantages.
6. **Quality Construction and High Efficiency:** Annular rings or sealing grooves are machined into the face of the impeller and raceway and when assembled these grooves intermesh without metal-to-metal contact. A labyrinth seal is created by a thin film of water within the inter-meshing grooves. This liquid seal reduces friction to a minimum and permits the highest pump efficiency.



BURKS CT PUMP



BURKS CS PUMP

The bronze impeller and raceway are the heart of the pump and the impeller is the only moving part. Water enters the suction inlet of the raceway and proceeds to the inlet ports, through the raceway channels, and out the discharge ports through the raceway. As water is propelled through the raceway channels by the buckets of the impeller, it is energized, producing pressures and capacities not possible with other single-stage pumps of similar size.

### OPERATION:

Before starting, the pump should be primed by filling the pump and suction pipes with clean water. Caution should be taken that the pump is not operated at pressures above the rated capacity as to do so will overload the motor.

If the motor runs, but no water is pumped, be sure pump is primed and that there are no air leaks in suction piping, that all gate valves are open and all check valves operative, and that strainer is clean. Caution: Never operate the pump without water as this may damage the seal.

### I. INSTALLATION INSTRUCTIONS:

The following instructions are important for proper installation to receive the best operating life as results from the pump:

1. Before installing the new pump, thoroughly clean and flush the return tank and all connecting lines between the tank to the pump. Be sure all the water lines are thoroughly clean and free from dirt and rust particles.
2. Install suction feed line between the tank and pump. The strainer must be installed on the suction side or inlet to the pump. A hose connection is recommended that will provide flexibility and relieve any pipe strain. The suction opening is the center front connection to the pump.

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### **I. INSTALLATION INSTRUCTIONS (cont.):**

3. The water level in the tank should be 12" or more above the height of the boiler feed pump for proper results.
4. Install the new check valve furnished on the discharge side of the pump.
5. Be sure all lines are properly attached securely so there are no leaks or strain on pump.
6. Do not screw fittings too tight into the pump to cause damage to same.
7. Inlet lines must be tight or air will be sucked into the pump, causing pump to be noisy and inefficient.
8. Do not use a powdered boiler compound in the return tank. All compounds should be in liquid form or thoroughly dissolved before being placed into the tank.

### **II. SERVICE INSTRUCTIONS:**

1. **Normal Maintenance:** The pump does not require any packing or lubrication other than the motor bearings which are grease packed when pump is built. Additional grease is furnished with the pump and may be added as required or at least every year. Use Andok "C" grease from Standard Oil or equal.
2. **Replacement of Mechanical Seal:** The mechanical shaft should be replaced if water is leaking from the pump around the motor shaft. To replace the shaft seal:

#### **CT SERIES**

1. Remove the 4 cap screws (Number Symbol 15). Once these are removed, it will probably be easiest to remove the bolts mounting the pump motor bracket to the base of the return tank and slide the entire pump and motor away from the raceway (#14). In this manner, piping need not be disturbed. If it is not possible to slide the pump and motor back, disconnect suction and discharge piping and then remove raceway.
2. Loosen impeller locknut (#13), then remove impeller (#12). While removing impeller locknut, lock the pump shaft so it cannot turn by placing a small screwdriver or similar object through the hole in shaft. The best method of removing the impeller is to remove screw (#20) and adjusting screw lock (#19), then remove the 4 screws (#6) holding frame to the motor. By prying frame (#18) loose from the motor (#1), the impeller slides off. This may best be pried loose by use of a wheel puller locked against the shaft and frame. If not available, use two large screwdrivers to pry frame and motor loose. Slide frame off of the shaft.
3. Remove the seal assembly (#7). The rotating part of the seal assembly with the spring will slide easily off when the frame is taken off the shaft. To remove the stationary part of the seal assembly, use a small screwdriver or knife edge to free the seal from the frame seating surface.
4. Clean the frame seating surface.
5. Install the new stationary part of the seal assembly into the frame so that the ceramic surface will face out away from the motor when back in place. Force the frame and seal back into place over the shaft. Slide the rotating part of the seal assembly over the shaft with the hard black carbon surface against the ceramic seat.
6. Reinstall the impeller and locknut.
7. Tighten screws (#6) holding frame to motor.
8. Clean out raceway and then assemble pump and motor to raceway and tighten screws (#15). If the "O" ring is badly worn, replace it before reassembling pump and raceway.
9. Whenever a seal has been replaced, external impeller adjustment must be checked. See below.

#### **CS SERIES**

The mechanical seal in the CS Series may be replaced in a similar manner but it is necessary to first remove the outer pump case. When reassembling, the suction sleeve should be replaced if there is any sign of wear or deterioration.

3. **Replacement of Motor:** Follow same steps (1) to (4) for replacement of mechanical seal except replace the motor. Be sure to reinstall a new seal whenever changing a motor and then check external impeller adjustment.
4. **External Impeller Adjustment:** (See separate instruction on impeller adjustment)
  1. Remove screw and adjusting screw lock.
  2. Tighten impeller adjusting screw just enough to lock impeller against the raceway. Use spanner wrench to turn this adjusting screw. Looking at the front of the pump, turn adjusting screw clockwise to move impeller closer to raceway.
  3. Back out impeller adjusting screw the minimum amount required to allow shaft to rotate freely. Replace adjusting screw lock and screw.
  4. Test operation of pump to desired operating pressure in boiler. Readjust if necessary to obtain desired pressure.

Refer to the Burks Instruction Sheets for illustration on replacing mechanical seal and impeller adjustment.