PARKER RETURN SYSTEM INSTALLATION AND MAINTENANCE INSTRUCTIONS
RETURN SYSTEMS R-7 TO R-9 WITH DUAL BURKS PUMPS
FOR STEAM BOILERS 70 H.P. TO 150 H.P.

The drawing furnished illustrates the recommended installation of the Return System with the required connections that must be properly followed for correct operation of the System. The equipment should be installed in an accessible location near the boiler for efficient operation.

10. **WATER FEED LINE TO BOILER:** This line should be connected from the pump discharge lines to the boiler at least 1-1/2" size and increased in over 10' in length. The pump discharge lines should be piped full 1" size from the 10C check valve to the main water feed line on boilers 70 to 90 H.P., and full 1-1/4" size on boilers 115 to 150 H.P. A 10C check valve, 10PA pump discharge shut-off valve (not furnished) and a union should be installed near each boiler feed pump. A 10A shut-off valve (not furnished) must be installed near the boiler. Both valves 10A and 10PA must be open at all times the pump or boiler is in operation. 10D relief valves (not furnished) should be installed on each pump discharge line on the pump side of the check valves to protect the pumps in event of restriction or stoppage in the discharge line.

20. **PUMP INLETS FROM RETURN TANK:** These lines are furnished completely piped as shown in the drawing from the Return Tank to the boiler feed pumps. The 20A shut-off valves must be open at all times when the boiler or pumps are in operation. The 20S strainers have been installed to prevent dirt, foreign particles or scale from damaging the pump. The strainers should be cleaned at least every 30 days. The 20FH high temperature flexible rubber hoses have been installed to eliminate vibration and piping strain on the pump.

21. **TURBINE BOILER FEED PUMPS:** The pumps are furnished for the purpose of pumping water into the boiler under pressure. The heavy duty Burks Pumps are a close coupled bronze fitted turbine type equipped with stainless steel shafts. The pumps are standardly furnished with mechanical shaft seals so that no leakage should be experienced from the pumps. The pumps themselves do not require any packing or lubrication. The motor bearings should be lubricated annually. After years of service, it may be desirable to adjust the impellers to compensate for water wear. This may be necessary because of reduced capacity or pressure and may be done without disturbing piping or disassembling the pumps by use of the external impeller adjustment. The pumps must always be securely mounted to the mounting brackets and motors. Never operate the pumps without water as this may damage the seals.

    Caution should be taken never to close a valve (10PA or 10A) on the pump discharge line while the pumps are in operation as no relief valve is built into the pumps and closing the valve would seriously harm the pumps. To protect from the danger of closed valves or restriction in the discharge line (10), A 10D relief valve should be installed. All piping should be installed to the pumps in the proper manner so there is no strain on the pumps.

    The boiler pumps are to be wired through the motor starting relays on the boiler and are controlled by the water level control for the purpose of maintaining proper water level in the boiler. The pump motors are wired to start the first pump when water is required in the boiler and to start the second pump at a slightly lower level.

22. **RETURN TANK:** The Return Tank serves as the storage supply for water make-up and condensate return. Each tank is standardly equipped with an automatic float valve and assembly which should be adjusted to maintain a satisfactory water level in the tank with and additional volume available for condensate return. The proper water level in the tank is at least 2" above the bottom of the well but normally not above half full. On installations where this is no condensate return, the water level can be adjusted to an increased height. The float valve is installed so that there is always an air gap between the valve discharge nozzle and the top of the tank to comply with Code Requirements. The well is designed so that the lower end is always below the water level, thereby, preventing steam returning from escaping out of the tank. The water level can be checked by looking at the water level in the 22WG water gauge glass. The dust cover cap should always be kept over the valve to prevent dirt or dust from getting into the system. Each tank is standardly furnished with two suction shut-off valves, strainers and flexible rubber hoses. The Return Tank should be inspected every 30 days and cleaned to eliminate any accumulation from damaging the pump.

23. **CONDENSATE RETURN CONNECTIONS:** All return lines should be properly trapped and connected back to the Return Tank. It is considered good practice to conveniently grade the return lines back to the tank so that condensate return will flow by gravity to the tank. It is very beneficial to return all clean condensate to the tank and no steam should be dissipated when the condensate can be piped to the Return Tank. If only one connection is used, the other connection should be sealed with a capped nipple or plug.

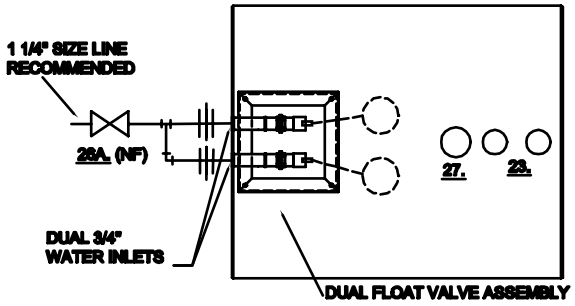
25. **CASA FLOAT VALVE:** The Casa Float Valve is furnished for the purpose of admitting water to the Return Tank as required. The valve is designed with a plunger having a removable rubber disc which should be replaced when the valve leaks. The plunger leather should also be replaced when the valve leaks around the plunger. It is considered advisable to have extra rubber discs and leathers in stock available for immediate replacement. Adjustment of the tank water level can be made easily by loosening the screw on the arm of the valve and rotating to the proper shut-off point. If additional adjustment is require, the clevis must be loosened and the vertical float rod either lengthened or shortened to the proper shut-off point by screwing the clevis either up or down. Two Casa Float Valves are furnished on Return Systems for 115 H.P. and larger boilers.

26. **WATER INLET:** The main water supply should be connected with galvanized pipe to the tee furnished on the Return Tank. A 26A shut-off valve (not furnished) should be installed near the tank with a union on the tank side. This valve should be shut-off any time the system is not in use. A minimum 1" size line should be installed for boilers 90 H.P. and smaller, and 1-1/4" up to 150 H.P. boilers. If water pressure is less than 40 PSI, the line should be increased sufficiently to supply at least 20 gallons per minute for boilers up to 90 H.P. and at least 30 gallons per minute for boilers up to 150 H.P. If water pressure exceeds 75 PSI, a water pressure reducing valve should be installed to prevent leaks and possible damage to the float valve.

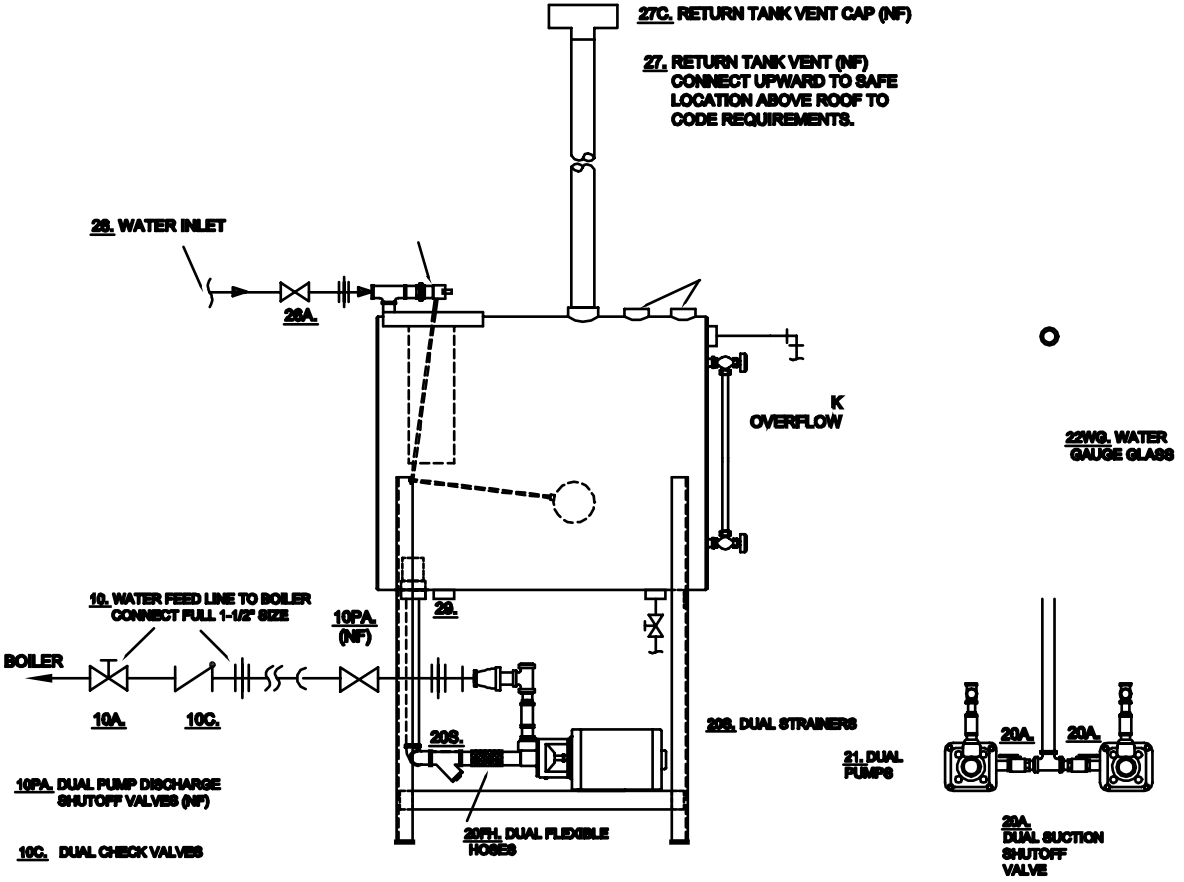
27. **RETURN TANK VENT OUTLET:** Should be connected upward to a safe location. A minimum 2" vent size should be installed. If the vent is not straight, size should be increased. Vent is preferably galvanized pipe installed to prevent leaks and in accordance with Local Codes.

28. **RETURN TANK OVERFLOW:** Should be piped downward to a safe open drain or floor sump. Overflow should be piped minimum 1-1/4" size. If the overflow continuously leaks, the valve assembly should be properly adjusted or repaired.

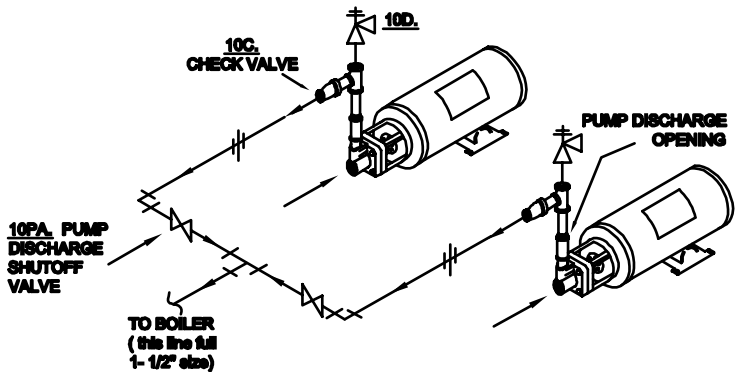
29. **RETURN TANK DRAIN:** This line should be installed full 1" size to a safe drain with 29A shut-off valve (not furnished) conveniently near the tank. The drain line should be piped from the opening provided on the bottom of the tank opposite the well assembly. The other drain opening should be sealed with a capped nipple or plug and used for inspection or additional drain. The Return Tank should be flushed and cleaned out every 30 days or as required.



TOP VIEW OF DUAL FLOAT VALVE ASSEMBLY
RETURN SYSTEM R-9 & R-10
STEAM BOILERS 115 & 300 H.P.



VIEW OF RECOMMENDED PIPING CONNECTING PUMPS



106DUAL.DWG