

# Installation, Operation and Maintenance Instructions

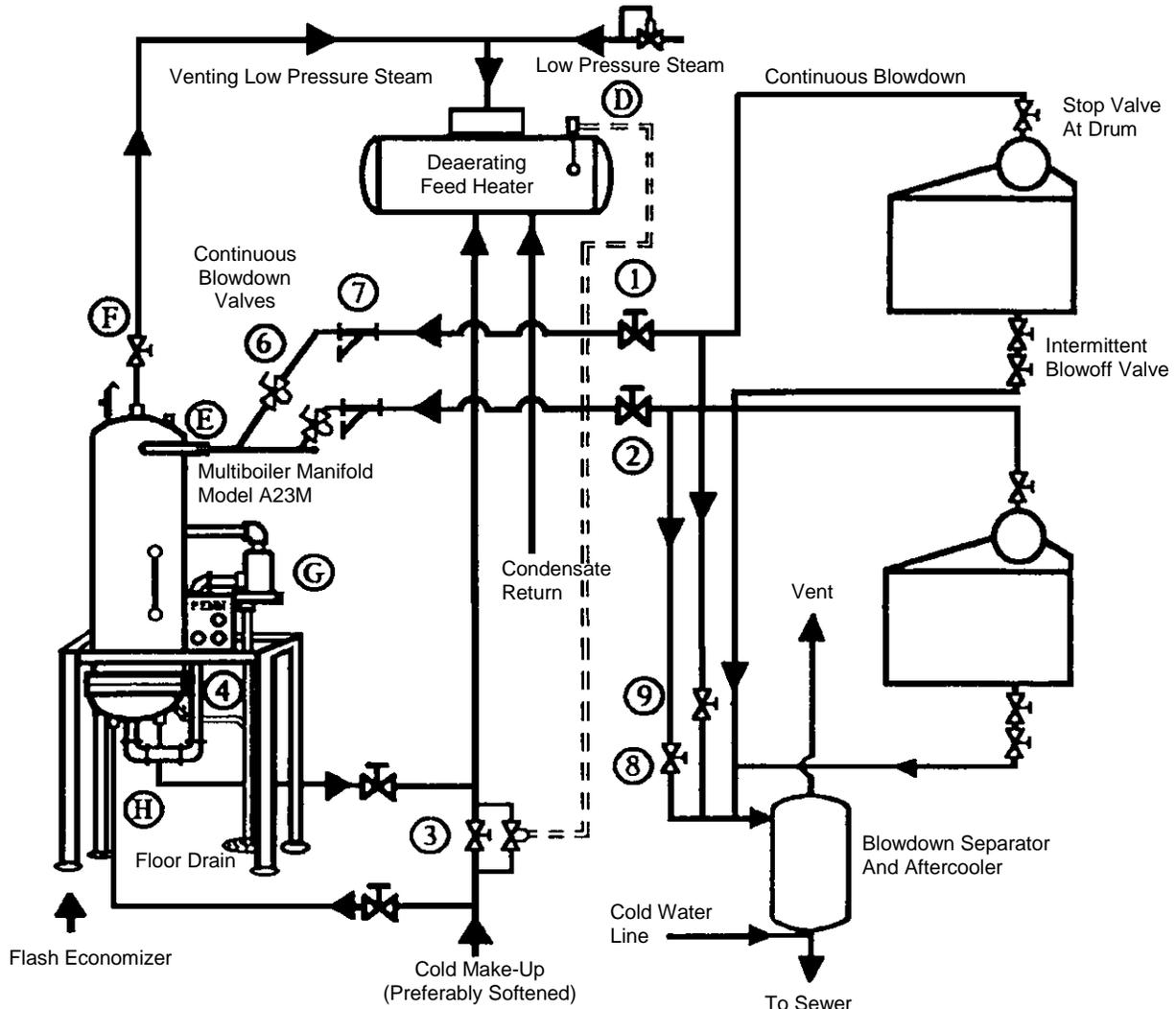
## Flash Economizer

### The Continuous Blowdown Connection

Most boilers are provided with a continuous blowdown connection. This connection takes blowdown from the boiler just below the water level. If your boiler is not equipped with a continuous blowdown connection, contact your boiler manufacturer for their recommendation. If the boiler requires field welding, check with your boiler insurance inspector.

### Blowdown Piping

From the continuous blowdown tap on the boiler run schedule 80, minimum, steel piping to the Flash Economizer inlet (E). A continuous blowdown or metering valve (6) and a strainer (7) should be connected in this line to regulate the amount of continuous blowdown. When more than one boiler is being used, it is convenient to regulate blowdown flow from one point as shown. These items would not be required on an automatic TDS system because the flow is regulated by the controller. If you have ordered the multi-boiler manifold with blowdown valves install these to the Flash Economizer inlet first.



### **Make-up Piping**

The make-up inlet and outlet are located in the bottom head of the Flash Economizer (H). The make-up should be piped to these connections to allow make-up water to circulate through the vertical coil. The Flash Economizers are rated for a maximum make-up capacity. If more makeup is required than the rated capacity, a globe or similar type valve (3) could be used to proportion the make-up at the maximum rate. If Automatic Controls (D) are used to control the make-up rate, they should be used in conjunction with the proportioning valve when flows can exceed the economizer rating. If the make-up water is not softened we would recommend using one of our Chemical Feeders AF-251 in the line between the feed pumps and the boiler. Heat is transferred best if the make-up enters the (H) connection located the same side as the inlet first.

### **Vent Piping**

The steam vent (F) should be connected to a low pressure steam use. This can be piped directly to the use or piped to the line providing low pressure steam. A shutoff valve should be used in the vent line to isolate the Flash Economizer for maintenance. A check valve might be required if the continuous blow-down flow cycles or is irregular. This line and Economizer will operate at the same pressure as the low pressure steam user.

The drain from the external float (G) should be piped to a floor drain. The size of the floor drain should be one pipe size larger than the Flash Economizer drain. We recommend the floor drain have a minimum 1' slope per 100' of unobstructed drain. More slope should be added for obstructed or angled drains. A clean-out valve (4) provided on the lower head should also be piped to a floor drain.

### **Start-Up Procedure**

The make-up water flow should first be established. The proportioning valve (3) can be opened to allow the maximum rated water flow through the Flash Economizer. Once the cold water make-up flow is started through the coil you can now open the continuous blowdown valve to the desired setting. Your boiler manufacturer or water treatment company, along with boiler water testing for total dissolved solids, should be used to determine the correct continuous blowdown valve setting and flow rate. After the system has been running for 15 minutes check the temperature gauges on the Flash Economizer panel. The units are designed to cool the condensate to drain at 100-110 deg. F at maximum capacities. More make-up can be directed to the economizer to bring down the drain temperature if it is higher than 110 deg. F. The make-up in and out temperatures should show an increase in make-up temperature as the drain temperature decreases.

If you are using a automatic TDS system, turn on cold make-up water as described above and follow the check out procedure for the controller.

### **Maintenance Suggestions**

The clean-out valve (4), located in the lower head, should be opened periodically while the unit is in operation. This will drain any sediment that has accumulated in the lower section. This valve should be piped to the floor drain. The frequency of this clean-out is determined by the amount of continuous blow-down going into the unit. We would recommend this once a week to start. If you notice a gradual increase in water level this may indicate the need to perform this procedure more frequently. At the end of the first year of operation the Flash Economizer should be completely drained and the lower section unbolted to allow the coil to drop out of the unit. A thorough washing and wire brushing of the coil should be sufficient to remove any sludge or encrusting not eliminated by the weekly blowdown. Your first year inspection may reveal that you do not have to repeat this every year. Depending on the conditions, a unit could go several years without removing the coil for cleaning. The temperature gauges can be watched to determine when the coil needs removed and cleaned. A loss of heat transfer can be an indication the coil needs cleaned. The boiler can still be operated during clean-out simply close the line valves (1 & 2) and open valves (8 & 9) by passing the flow to the Blowdown Separator and Aftercooler.

