



# ***Blowdown Separator*** **& Aftercoolers**

Installation, Operation, & Maintenance





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## **INSTALLATION — BLOWDOWN SEPARATOR**

Installation of the FS Blowdown Separator is not complicated. However, proper installation is necessary and the following may suggest some possible system configurations. In the examples that follow, the boiler, blowdown valves, and piping to and from the separator would be provided by others. Installations may vary from the examples shown.

The inlet should be piped from the boiler blowdown valves using Sch. 80 min. code rated materials. The piping pressure to the inlet should be rated to the design pressure of the boiler. A 'dead-boiler' drain should be provided off the inlet piping as shown.

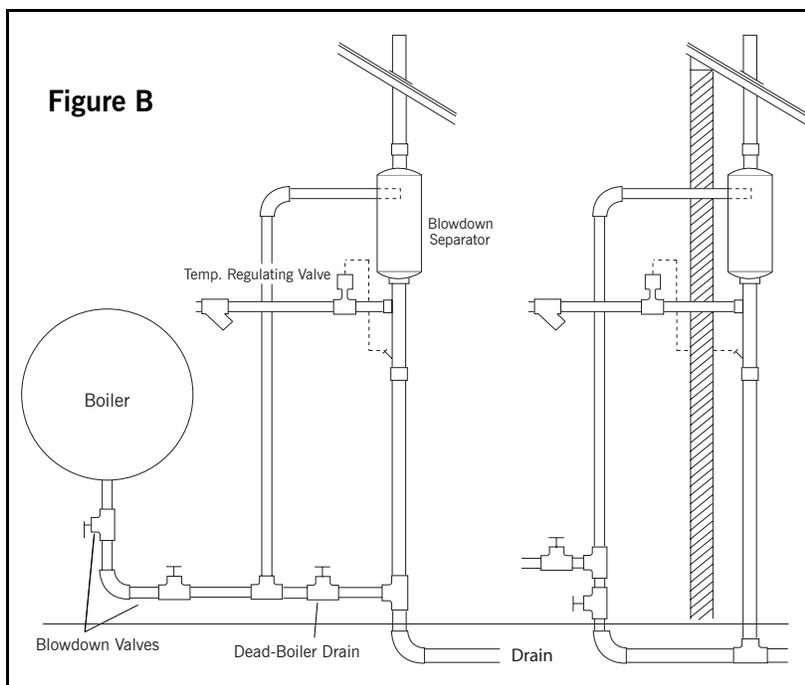
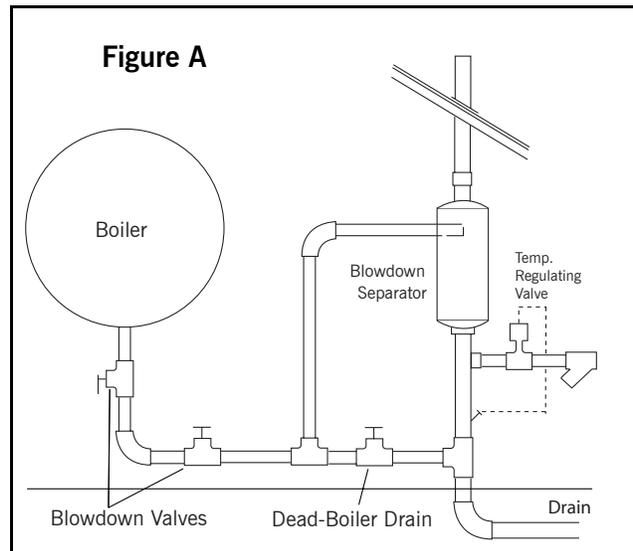
The FS separator is an instantaneous separator - therefore sufficient drainage must be provided to allow the unit to drain as quickly as the blowdown flow is separated. The floor drain should be steel, cast iron, or concrete of the same size or larger than the separator drain and aftercooler. Drains should be sloped a minimum of 1' per 100'. More slope or larger size should be used on obstructed or angled drains.

The vent should also be as direct as possible to atmosphere to limit pressure drop. The same size pipe as the separator vent should be used. The vent should be extended above buildings, work areas, and personnel to a safe point of discharge. Flashing should be used when vent is through a composition roof. Use common sense about roof discharge.

**Figure A** shows the simplest and most practical installation. This arrangement will provide ready drainage for most heating or process boilers. A dead-boiler drain is also included (boiler, piping, and blowdown valves provided by others).

Optional angle iron legs can be provided to support the separator off the floor. These legs vary in length depending on the size of drain and type of after cooler used.

As an option, water tempering may be added to the separator as shown. Our water tempering aftercooler package includes aftercooler fitting, temperature regulator valve, strainer and bi-metal thermometer. A check valve and pressure reducing valve (not shown) could also be provided as an option. Cooling water pressure to the valve should be limited to 60 psig. See additional instructions below for the aftercooler fitting installation.



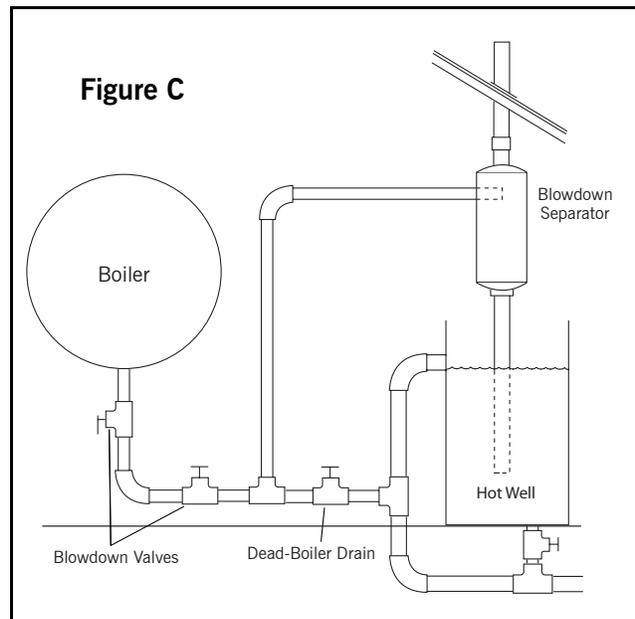
Elevated or outdoor installations (**Figure B**) may be used where boiler room floor space is at a premium.

Outdoor installations are popular because “underroof” space is not consumed. The installation can be off the ground as in Figure A or elevated as in Figure B. Because the separator is self-draining, there is no risk of freezing. The temperature regulator valve should be located indoors and the bulb and capillary protected from freezing. Wall mounting brackets can be supplied as an option for wall mounted installations.



Localities requiring storage tempering may use a blowdown separator only if discharged to a holding device such as an open, closed but vented, slotted or grid top receiver. The receiver should be capable of holding the accumulation of two blowdowns. A manual drain or a siphon drain may be used on the receiver. The siphon drain turn should be located at the top of the first blowdown level. The separator should be located at a sufficient height so that additional blowdown mixes well with the cooled blowdown being held in the receiver. A manual drain should always be provided on the receiver for periodic cleaning.

Local regulations should prevail at all times. Consult your insurance agency for additional requirements regarding the use and installation of blowdown separators. Welding on an ASME code pressure vessel requires a certified welder who carries the appropriate stamp for the procedure.



**These separators handle hot steam and condensate. Caution should be used when working on or around the pressure vessel.**

## OPERATION and MAINTENANCE

The separator is an integrally welded unit with no removable or replaceable parts. The only maintenance required on the separator is to keep the vessel exterior clean and free of rust.

Normal boiler blowdown procedures as recommended by the boiler manufacturer should be used as the operating procedure for the separator.

To minimize shock and water hammer, the blowdown valve should be opened slowly to allow the blowdown line and separator to warm. This can also help cooling water mixing to start.

Refer to aftercooler instructions below for separators with drain water cooling accessories.

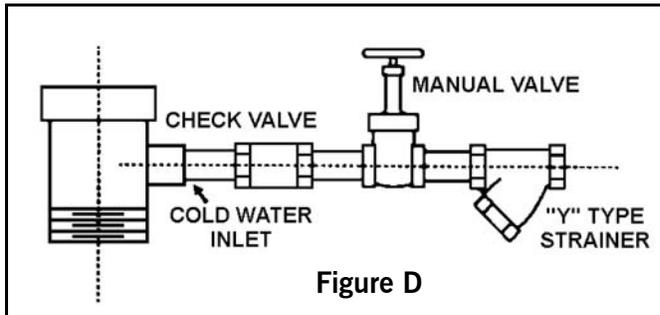
Since the separator is self-draining and self-drying, there are no other instructions. Simply follow the normal boiler blowdown procedure.

## INSTALLATION AND OPERATION — AFTERCOOLERS

The selected aftercooler is screwed into the drain line after the separator. The cold water inlet coupling should then be piped to the cooling water through the valve and accessories as illustrated below. The bottom of the aftercooler is then piped to a service drain. The drain should be steel, cast iron, or concrete of the same size or larger than the aftercooler. Drains should be sloped a minimum of 1' per 100'. More slope or larger size should be used on obstructed or angled drains.



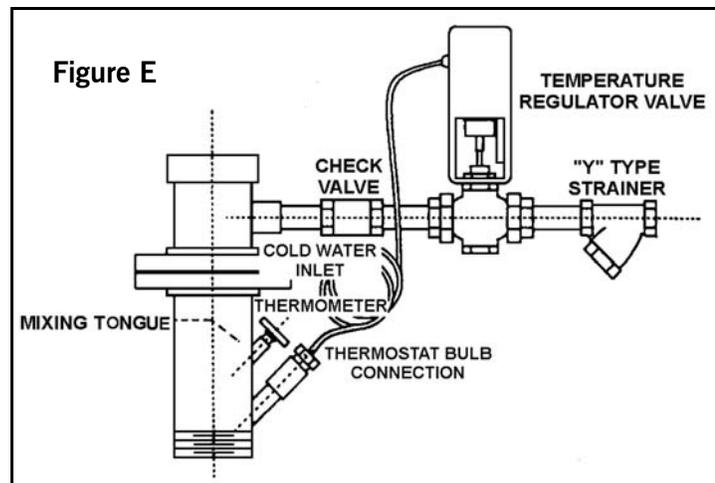
**Figure D** shows the MC manual aftercooler with recommended piping including manual valve and accessories.



The MC is a manual aftercooler. Cooling water is added to the hot condensate stream by opening the manual valve. The check valve and strainer protect the manual valve.

**Figure E** shows the AC automatic aftercooler with recommended piping for the temperature regulator valve and accessories.

The AC is an automatic aftercooler. The self-actuating valve senses the drain temperature and adds cooling water until the set temperature is met. A mixing tongue is provided on 4" units and larger. The drain temperature can be continuously monitored on the bi-metal thermometer. The middle flanges permit rotation for various pipe fitting requirements and also serve as a dismantling point.



The self actuating temperature regulating valve bulb or the solenoid valve sensing element and the bi-metal thermometer stem are inserted into the bulb connections on the aftercooler in that order. If a bulb does not fit correctly into the aftercooler, a nipple could be added to lengthen the connection. The bulbs should project into at least the center of the aftercooler. Instructions also accompany the temperature regulator valve or solenoid valve.

FS aftercoolers are non-clogging. The short nozzles and high velocities prohibit deposit buildup and clogging which can typically occur at high temperatures.



**The surface of the aftercooler may be hot. Use caution when working around the vessel.**







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