

INSTALLATION INSTRUCTIONS - PENN FLASH SEPARATORS

The Penn Cyclone Flash Separator is designed to handle a predetermined amount of condensate. This condensate may come from a variety of sources, such as high pressure returns, steam traps, or continuous blowdown. Flashing can be to atmosphere or recovered to a lower pressure steam use. Because of the BTU's in the flashing steam, reclaiming this steam is usually advantageous. The inlet, drain, and vent piping should follow the instructions below depending on the application for pressurized steam recovery or atmospheric venting of the steam.

Fig. 1: PRESSURIZED SYSTEM— FLASH SEPARATOR WITH TRAP— Illustrates the installation of the steam trap on the Flash Separator condensate outlet. This allows the condensate to be drained from the unit while keeping the steam in the system. The steam trap should be large enough to handle the maximum possible load. This in some cases could be 2-3 times the normal flow. It is important the trap allows constant drainage of the Flash Separator because a high level in the unit can cause a carry over of condensate through the vent line. Because the trap will drain at a lower pressure, it should be located below the Flash Separator to accomplish a gravity drain. This drain can be piped to a heat exchanger, feedwater tank, surge tank, or a drain. **INLET PIPING**—Connect the condensate line to the inlet of the unit so the flow enters the tank on a tangent that starts the cyclone spinning action. The Flash Separator should be installed as near as possible to traps or process to reduce back pressure from the line, to prevent radiated heat loss, or loss of steam. Where two or more lines are connected into the Flash Separator each line should be isolated with a check valve. **VENTING THE SEPARATOR**— The steam can be recovered by piping the vent to a low pressure steam line to supplement the steam being used. A back flow device should be used on the vent for separators on applications with intermittent flows. For large volumes of air in condensate lines an air vent may be installed in the top of the Flash Separator to vent this air and keep it from entering the low pressure heating or process line. The vent line, Flash Separator, and condensate lines should be insulated.

FIG. 1

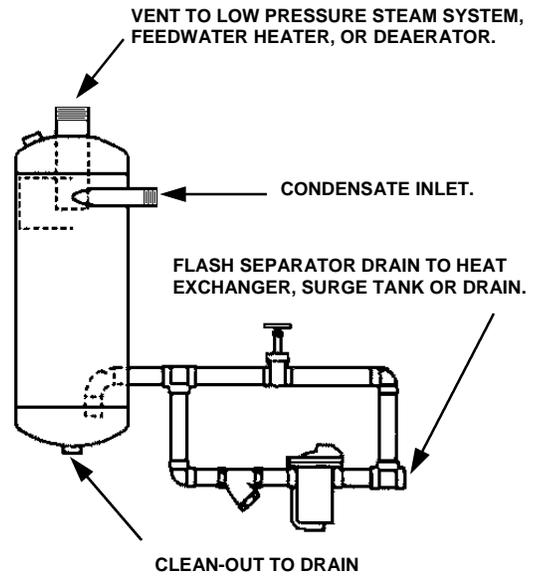
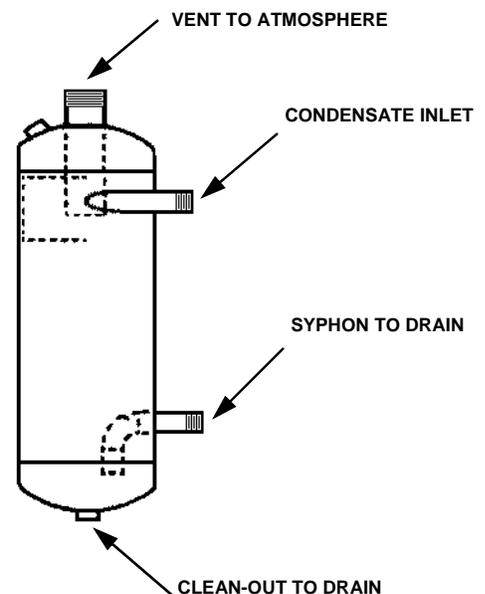


Fig. 2: NON PRESSURIZED—FLASH SEPARATOR WITH SYPHON DRAIN—Shows the connections of the Flash Separator designed to drain on a syphon principal. The drain of the Flash Separator goes directly into a floor drain or other equipment that is located below the Flash Separator and at atmospheric pressure. A Penn Aftercooler can be used to automatically cool condensate to drain. Floor drains should be steel, cast iron, or concrete of the same size or larger than the Flash Separator drain with a minimum slope of 1/8" per foot. More slope or a larger size should be used for obstructed or angled drains. The inlet from the condensate lines should be higher than and slant towards the inlet of the Flash Separator. Multiple inlets of different pressures can be piped directly to the separator. The vent should be as direct as possible to the atmosphere to limit back pressure on the separator and be piped to a safe location. A Penn Exhaust Head can be used on the vent for further protection of the vent line, personnel and surroundings.

FIG. 2



On applications not covered by this sheet consult the factory.



Warning: Flash Separators can contain high pressures and hot condensate. Improper installation of these vessels could lead to injury or death.



Consult Penn Catalog Page C-6.5 before operation or maintenance is performed on a Flash Separator.



OPERATION & MAINTENANCE INSTRUCTIONS OF PENN FLASH SEPARATORS

Maintenance Instructions:

The Penn Flash Separators are an integrally welded vessel with no removable or replaceable parts.

Under normal use the Flash Separator can collect sediment in the bottom of the vessel. Periodically the tank cleanout should be blown down to a drain. Severe conditions may require more frequent cleanouts.

All exterior surfaces should be kept clean and free of rust.

Under normal conditions the Penn Flash Separators are virtually maintenance free.

Operation Instructions:

The Penn Flash Separator has been sized to handle a predetermined amount of condensate. This condensate may come from a variety of sources, such as high pressure returns, steam traps, and continuous surface blowdown.

The Flash Separator is designed to separate condensate and the flash steam. The steam can be used in a low pressure application or vented to atmosphere. The condensate at the lower pressure would be easier to handle.

The condensate when entering the Flash Separator spins in a cyclone action. This throws the condensate to the outside walls of the separator where it settles to the bottom of the vessel. In the center of the vessel a vortex area is created. The steam follows this low pressure area to vent. The condensate collects in the tank until it reaches the overflow type outlet. The outlet acts as a steam trap on atmospheric installations. A steam trap would be required whenever there would be a pressure build up in the separator.

The Flash Separator is ASME Code constructed for a maximum pressure and temperature. There ratings are stamped on the name plate of the vessel. If the condensate line can develop a higher pressure than the tank rating a safety relief valve should be used to protect the tank from over-pressurizing. A build up of pressure or a raise in water level above the normal conditions indicates a problem has occurred. The condensate should be directed away from the Separator until the problem is corrected.

The Flash Separator will operate on its own. Even during adjustments of variances in flow rates. For installation instructions see our catalog sheet C6.



WARNING: Flash Separators can contain high pressures with hot condensate and steam. Caution should be taken when working on or around these pressure vessels.



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