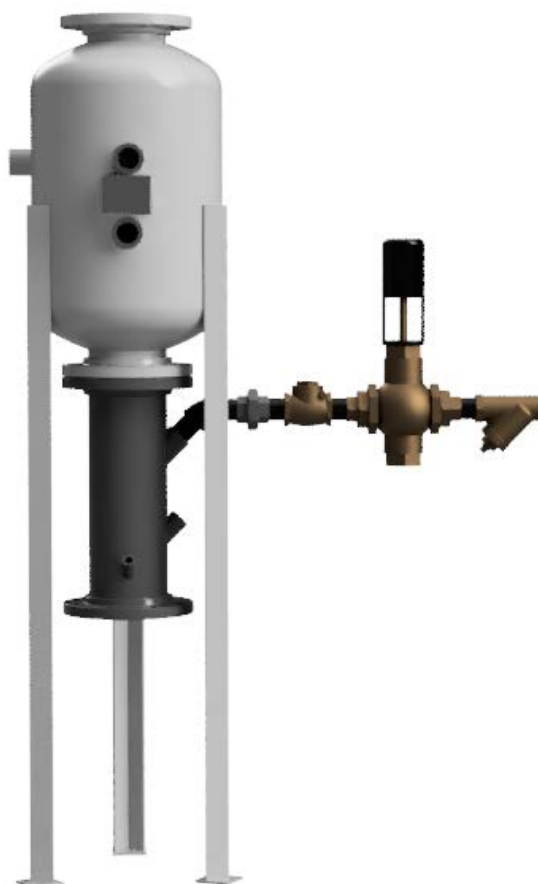


INSTALLATION & MAINTENANCE GUIDELINES



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MADDEN ENGINEERED PRODUCTS

Boiler Blowdown Separators

Purpose and Function

Madden Blowdown Separators provide a safe, compact, and economical solution for cooling and venting intermittent bottom blowdown from boilers operating up to 300 PSIG. The separator functions as a flash vessel that safely separates steam from hot condensate. Flash steam is vented to atmosphere through a properly sized vent line, while the remaining condensate drains into an attached aftercooler where it is quenched with cold water before discharge. The final effluent temperature is maintained at or below 140°F to meet municipal and environmental discharge regulations.

Design and Construction

Fabricated to ASME Sec. VIII, Div. 1 standards.

Design and working pressure: Designed to ASME BPVC for 150 PSIG @ 450 deg F, typically operates at 0-5 PSIG.

Typical shell and head material: SA516 (or SA455) Grade 70 Carbon Steel, painted with red oxide primer on exterior only.

Configured with:

- Centrifugal inlet with 304SS steel wear plate
- Vent outlet, Drain outlet, and Inspection ports.
- (3) support legs with footpads
- Aftercooler Kit, consisting of a cold water inlet connection, self operating cold water valve sensing probe connection, and temperature gauge connection. Self operating cold water valves and temperature gauges are always included.
- Optional Accessories: cold water supply line with pipe, fittings, Y-strainer, and check valve.

Safety Information

⚠ Important: Always follow OSHA and facility safety procedures when operating blowdown equipment.

- Do not exceed the tank's rated pressure or temperature.
- Only one boiler may be blown down at a time.
- Ensure the vent is piped to a safe location where flash steam will not endanger personnel.
- Verify cold water supply pressure is adequate before initiating blowdown.
- Never operate the separator with isolation valves closed on the vent or drain connections.

Installation Guidelines

Inspection: Upon receipt, check for shipping damage or nonconformities. Contact Madden before installation if any issues are found.

Mounting: Lag the vessel securely to the floor or skid. Use the provided support leg bolt holes.

Connections:

- Vent: Pipe to atmosphere in a safe location.
- Drain: Pipe to city sewer or floor drain per local codes.
- Inlet(s): Connect boiler blowdown piping to centrifugal inlet.
- Quench Line: Include Y-strainer, self-operating valve, check valve, and bypass as recommended. Installed into the aftercooler's coupling connections.

Operation

Initial Blowdown Test: Perform a short (5–10 second) blowdown while observing the self-operating cold water valve. Verify that the valve opens and cold water is flowing to the aftercooler before full operation.

Normal Operation: Perform blowdowns per boiler manufacturer's recommendations. Each blowdown should allow flash steam to vent freely while the remaining condensate drains through the aftercooler. Verify the discharge temperature remains $\leq 140^{\circ}\text{F}$.

Shutdown: Close all isolation valves, relieve system pressure, and inspect for leaks or obstructions before maintenance.

Recommended Inspection & Maintenance

Task	Frequency	Notes
External visual inspection	Monthly	Check for leaks, corrosion, or abnormal vibration
Vent piping inspection	Quarterly	Ensure vent is clear and properly supported.
Aftercooler temperature check	Quarterly	Confirm effluent temperature $\leq 140^{\circ}\text{F}$.
Internal inspection (if accessible)	Annually	Inspect for corrosion, scale, or sediment buildup.
Cold water valve operation	Annually	Cycle and clean strainer as needed.

Troubleshooting Guide

Issue	Possible Cause	Corrective Action
Effluent $> 140^{\circ}\text{F}$	Insufficient quenching water or cold water valve failure	Verify water pressure and valve operation
Excessive steam release	Vent piping inadequate	Verify vent routing and size per design engineer
Corrosion or scale buildup	Improper water chemistry or exposure	Consult water treatment provider; schedule repair/refurbishment

Storage & Handling (Pre-Installation)

Store indoors whenever possible.

If outdoors: cover with a tarp and ensure paint coating is intact.

Handle with forklift or lifting equipment sized appropriately.

Service & Support

For technical assistance, spare parts, or service inquiries:

Phone: (574) 295-4292 (8:00 am – 4:30 pm EST)

Email: info@maddenep.com or sales@maddenep.com

Warranty

Warranty of Seller's Products – Except where a different express warranty has been issued with respect to a particular product, no warranty of any kind, express or implied, is extended by the Seller to any person or persons other than its direct Buyers. To direct Buyers, the Seller warrants only that it will furnish by freight a replacement for, or at its option repair, any product of its manufacture or part or portion thereof, proved to its satisfaction to be defective in material or workmanship under normal use and service (i) within a period of eighteen (18) months from date of shipment or (ii) within one year from the date all other equipment or part thereof is first placed in use. These warranty terms apply only to Seller's equipment manufactured at the Elkhart, IN facility. Any ancillary components sourced from another vendor will be subject to said vendor's standard warranty terms and conditions. See note "Goods of Other Manufacturers" below.

The Seller shall have no responsibility for the performance of any product sold by it under conditions varying materially from those under which such product is usually tested under existing industry standards, nor for any damage to the product from abrasion, erosion, corrosion, deterioration or the like due to abnormal temperatures or corrosive fluids or the influence of foreign matter or energy, or flow induced vibration caused by associated equipment or external influences; nor for the design or operation of any system of which any such product may be made a part or for the suitability of any such product for any particular application. The Seller shall not be liable for any cost or expense, including, without limitation, labor expense, in connection with the circumstances for any damage beyond the price of the goods sold. Any freight allowance in connection with a replacement will be on the same terms as were applicable to the original sale, except that a replacement for a product or part or portion thereof which is proved to the Seller's satisfaction to be defective in material or workmanship as provided herein above, will in any event be furnished with freight (but not local cartage) allowed, within the country of origin, to the first destination. Any substitution of parts not of Seller's manufacture or not authorized by Seller, or any modification, tampering, or manipulation of Seller's product, shall void the warranty.

Other Warranties – The foregoing warranty is in lieu of all other warranties of any kind, express or implied, and of all other obligations or liabilities, on the part of the Seller. The Seller neither assumes, nor does it authorize any other person to assume on its behalf, any other liability in connection with the sale of its products. Seller expressly disclaims the implied warranties of merchantability and fitness for a particular purpose.

Goods of Other Manufacturers – Goods of other manufacturers sold by the Seller are not warranted except by express warranties which may be issued in writing from time to time with respect to a particular product or a particular sale; but the Seller will endeavor to secure for its direct Buyers the benefits of warranties extended by the manufacturers of such goods sold but not manufactured by the Seller.

MADDEN
ENGINEERED PRODUCTS

SOLD BY:

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