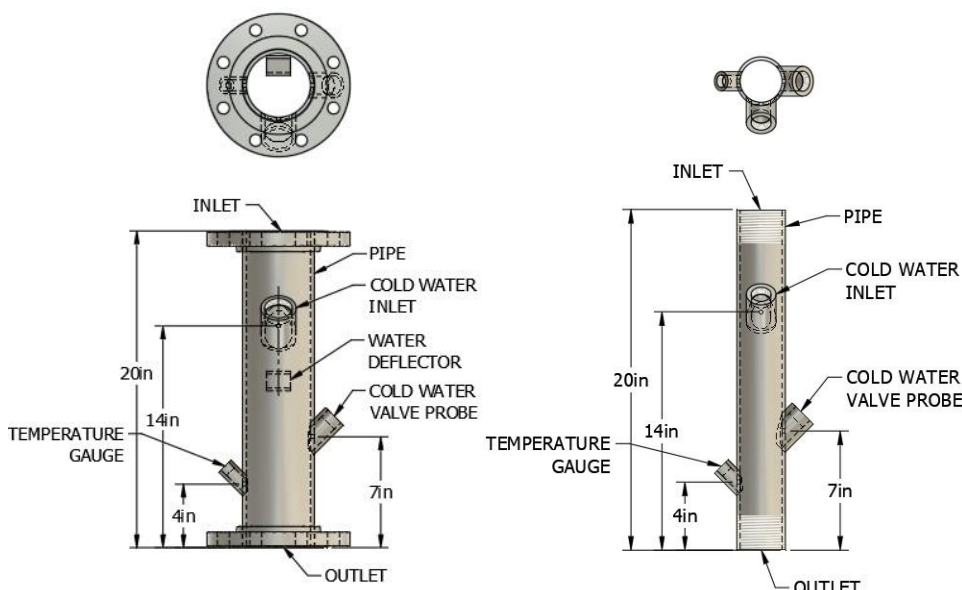
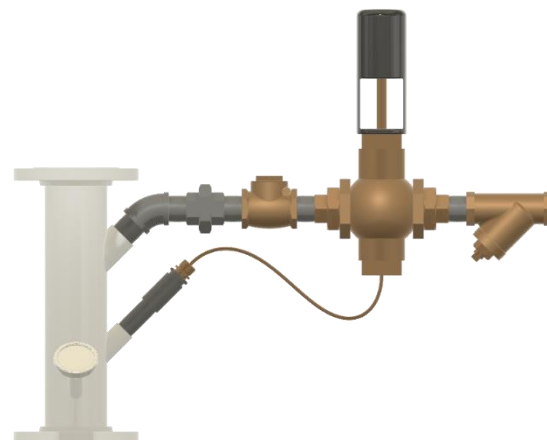


OVERVIEW

Madden Aftercooler assemblies are designed to quench hot condensate with a cold-water supply to bring the resulting mixture down to acceptable municipal sewage temperature limits. When hot condensate enters the pipe assembly a self-operating cold-water valve actuates, allowing cold water to enter and temper to a field set standard temperature control range of 60-140 deg F.

Aftercoolers are commonly installed on boiler blowdown separator drain connections; but they can also be used for general hot drain processes such as steam to water heat exchanger drain lines.



FEATURES & APPLICATION NOTES

- Fast Lead Times.** Typically ≤ 1 week after receipt of order.
- Robust.** Sch 40 Carbon Steel (standard) and 304SS (option) vessel material.
- Automatic.** The cold-water valve is spring actuated when the sensing bulb fluid expands due to hot condensate flow. Set it and forget it.
- Versatile.** Ideally installed vertically, but designed to function horizontally as well.
- Cost Effective.** Non-ASME Code Pipe, built following ASME B31.1 standards.

AFTER COOLER ASSEMBLIES • PRE-DESIGNED

Condensate (after flash) @ 212°F reduced to $\leq 120^\circ\text{F}$ with 70°F Cooling Water

Contact factory for application specific sizing

Aftercooler Model	AC Pipe Size	Max Condensate Flow Rate	Required Quench Flow Rate	Resulting Cold Water Valve size
AC20__-8T	2" NPT	7,500 PPH (15 GPM)	14,000 PPH (28 GPM)	3/4" NPT (Cv 7.7)
AC2H__-8T	2-1/2" NPT	10,500 PPH (21 GPM)	18,500 PPH (37 GPM)	1" NPT (Cv 9.72)
AC30__-13F	3" Flg	20,000 PPH (40 GPM)	37,000 PPH (74 GPM)	(D) 1-1/4" NPT (Cv 21)
AC40__-13F	4" Flg	28,500 PPH (57 GPM)	52,500 PPH (105 GPM)	(D) 1-1/2" NPT (Cv 30)
AC50__-13F	5" Flg	46,000 PPH (92 GPM)	85,000 PPH (170 GPM)	(D) 2" NPT (Cv 47)
AC60__-13F	6" Flg	65,000 PPH (130 GPM)	120,000 PPH (240 GPM)	(D) 2-1/2" FLG (Cv 69)

Note 1: CW valve sizing assumes water supply line will be the same size, requires ≥ 20 PSI water pressure.

Note 2: CW valve sizes can be interchanged with other AC pipe size selections to match your process pipe connection. But one should ensure the combined flow is < 5 FPS through the remaining drain pipe. Contact the factory for assistance.

Note 3: Cold water regulating valves with "D" denote a double seated valve design, opposed to single seat.

Note 4: Aftercooler pipes sizes 2", 2-1/2", and 3" can be fabricated with NPT or FLG connections.

OVERVIEW

Standard Madden Aftercooler assemblies include the aftercooler pipe, cold water valve, and temperature indicator. Madden cold water supply “lines” / “spools” are optional add-ons which ship fully assembled for client convenience.

Feature	Cold Water “Line”	Cold Water “Spool”
Intended Use	Intermittent processes (e.g., bottom boiler blowdown only)	Frequent or continuous tempering processes (e.g. continuous surface blowdown)
Additional Components	Y-strainer, swing check valve, fittings	Y-strainer, swing check valve, (2) isolating gate valves, manual globe bypass
Purpose	Simple, compact, cost-effective. Replacement or maintenance of valve done between blowdowns.	Allows bypassing of the automatic CW valve during maintenance – zero process interruption.
Typical Sizes	½” – 2-1/2” (most commonly NPT)	¾” – 3” (NPT or Flanged)

COLD WATER LINE

~29in

COLD WATER VALVE

CHECK VALVE

UNION

Y-STRAINER

COLD WATER SPOOL

~44in

*Max length, Note 3

COLD WATER VALVE

GLOBE VALVE

GATE VALVE

CHECK VALVE

GATE VALVE

Y-STRAINER

OPTIONS & NOTES:

- NOTE 1:** See page 4 for all available CWL and CWS options. Madden can build these assemblies with many materials (Bronze, CS, SS, Etc) and fittings types (NPT, FLG, Socket).
- NOTE 2:** Typical boiler blowdown applications require ≤ 2-1/2” cold water valves and supply lines. As a result, threaded assemblies are commonly accepted and preferred at this size to save space and costs.
- NOTE 3:** When specifications or preference call for a flanged cold water supply spool assembly, the overall length will typically range between 36” – 72” long. For example, a 2-1/2” cold water supply line built by Madden in 2023 included all class 150 flanged fittings and valves. This was 72-3/16” in overall length.
- OPTIONS:** Madden fabricates welded assemblies following ASME B31.1 standards, but standard assemblies do not include ASME certification or paperwork (Madden in-house quality and hydro reports provided). For ASME certification, Madden can outsource fabrication to local shops for a cost adder.

AFTERCOOLER – PART NUMBERING SYSTEM				
AFTERCOOLER SERIES		COLD WATER VALVE SIZE		CW VALVE FEATURES
AC – Standard Aftercooler		0 – 3/8" NPT		8 – 8-1/4" X 3/4" Sensing Probe
ACBT– Aftercooler for BDT's		1 – 1/2" NPT		9 – 9" X 3/4" Sensing Probe
		2 – 3/4" NPT		13 – 13" x 1" Sensing Probe
DIAMETER OF AC PIPE		3 – 1" NPT	—	BW – Brass Thermowell (If App.)
20 – 2"		4 – 1-1/4" NPT		SW – SS Thermowell (If App.)
2H – 2-1/2"		5 – 1-1/2" NPT		
30 – 3"		6 – 2" NPT		AC PIPE CONNECTION
40 – 4"		7 – 2-1/2" FLG		T – MNPT
50 – 5"		D – Add "D" after number if using double seated valve design, opposed to single seat valve design.		F – Class 150 RF Flg
60 – 6"				FF – Class 300 RF Flg
NOTE – Temperature Regulating Valve P/N's: This part number tree can be used for standalone cold water regulating valves as well. All P/N's for valves only start with "AC10__", then add the relevant information from center and right column.				
Ex.) AC404D - 9F				

COLD WATER SUPPLY – PART NUMBERING SYSTEM				
LINE/SPOOL		MATERIAL OF VALVES	—	NOTE: STANDARD B.O.M.
CWL – Cold Water Line		1 – Bronze		CWL = (1) Y-Strainer, (1) Swing Type Check Valve, and necessary steel pipe and fittings to ship as an assembly (“line”).
CWS – Cold Water Spool		2 – Stainless Steel		CWS = (2) Isolating Gate Valves, (1) Manual Globe Valve, (1) Y-Strainer, (1) Swing Type Check Valve, and necessary steel pipe and fittings to ship as an assembly (“spool”).
		3 – Carbon Steel		
SIZE		4 – Cast Iron		
100 – 3/8”		5 – Brass		
101 – 1/2”				
102 – 3/4”		CONNECTION TYPE		
103 – 1”		T – Threaded		
104 – 1-1/4”		F - Flanged		
105 – 1-1/2”				
106 – 2”		OPTIONS		
107 – 2-1/2”	S – Support Legs/Stand			
108 – 3”	A – ASME BXX.X Code (\$\$\$)			

Ex.) CWS105 - 1T