

MADDEN

ENGINEERED PRODUCTS, LLC

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SAMPLING STATIONS

Boiler Water and Steam Conditioning and Collection
using efficient liquid to liquid mini heat exchangers.
Customization friendly to satisfy a variety of other sampling applications.

(3) Standardized Models + Build To Order



Single Unit "Grab" Sample Station

- **Protects the Operator and Measuring Equipment.**
- **Improves Sampling Accuracy and Thereby Boiler Water Quality.**
- **Saves \$\$\$ on Installation Costs.**



Complete, Free Standing Sampling Station

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Madden Sampling Stations OVERVIEW

Madden sample panels, or sample stations, are pre-piped mechanical assemblies designed to provide the boiler room operator with the basic components required to safely take an accurate water or steam-based grab sample. These turnkey systems reduce time and costs required to install a grab sampling station otherwise. Reducing the temperature of your boiler water or steam samples ensures no flashing will occur which increases the accuracy of your water quality measurements. It also increase the service life of hand held water quality meters.

Madden offers the following (3) “standardized” models:

- 1. Model No. SC201-0003** – single cooler station designed for water based grab samples.
- 2. Model No. SC201-106** – single cooler station designed for steam based grab samples.
- 3. Model No. SC203-0003-106** – (2) sample coolers for water, (1) for steam, and a countertop for setting down your measuring instrumentation and data recording devices. *In lieu of the countertop, Madden can build this free mount sampling station with up to (5) sample coolers on the back panel.*

CONTACT THE FACTORY FOR CUSTOM FREE MOUNT STATION BUILDS.

General Sample Station FEATURES

SAMPLE COOLERS COME IN A VARIETY OF MATERIALS AND SIZES

- See our SC'22-DataSheet for our full line of sample coolers.
- SS and Copper coils, Steel and SS shells.
- Mix and match to find your balance of durability and cost effectiveness.

COUNTERFLOW COOLING

- Both our Type 1 and Type 2 style sample coolers utilize counterflow for efficient cooling.
- Minimal pressure drop, vibration, and scaling equates to long service life.
- Added Teflon linear ensures coil will not rub and deteriorate against shell during thermal expansion.

UNITS CAN BE EASILY DISASSEMBLED

- Madden sample coolers can be completely disassembled for maintenance if required to ensure you get the longest service life from our products as is achievable.

TURNKEY DESIGN, SIMPLE YET EFFECTIVE

- Madden sample cooler stations focus on providing a turnkey solution without adding unnecessary features to the design.
- Our standard design includes gauges to confirm pressure drop and temperature before grabbing the sample.
- We use Swagelok compression fittings and valves where possible to keep the station compact, rugged, and leak free.
- Intended to be the best “happy medium” on the market. Not the bare minimum equipment offered, but also not more high tech and expensive than it needs to be.

FAST LEAD TIMES

- Madden keeps completed SC0003 and SC106 sample coolers in stock and has the panels, sinks, valves, and tubing in inventory so the above “1” and “2” standard sampling stations can be shipped within a week.

GENERAL INFORMATION

(Important! Read before 1st use)

WARNING! - The most important step to remember when grabbing a boiler water sample or a steam sample, is to ENSURE COLD WATER FLOW BEFORE OPENING THE SAMPLE LINE. When boiler water samples are taken without being properly cooled and the pressure is not reduced, the sample can flash to steam causing an inaccurate measurement of the boiler water quality as well as risk the safety of the operator.

GENERAL INFORMATION - These systems are a low pressure drop system used for monitoring boiler water and steam quality without shutting down the boiler system to do so. They are designed to be compact and provide minimal disturbance to your boiler room system pressure. Tubing within the sample coolers are maintenance free.

The essential elements of true representative sampling per your current boiler water/steam conditions are precise temperature, pressure, and flow control. Madden sampling stations offer a cost effective and reliable solution to meet these essential elements. The simple design is easily understood allowing for boiler room operators to use and maintain the system without the aid of outside water quality experts.

START UP - When grabbing a water or steam sample follow these basic steps:

1. Open cold water valve and ensure consistent flow.
2. SLOWLY open the sample valve and adjust its metering valve accordingly.
3. Double check gauges to confirm optimal sampling temperature.
4. Purge the sample line before grabbing a sample: As a rule of thumb, allow approximately three full "line volume

lengths" to pass through the sampling station before grabbing your sample.

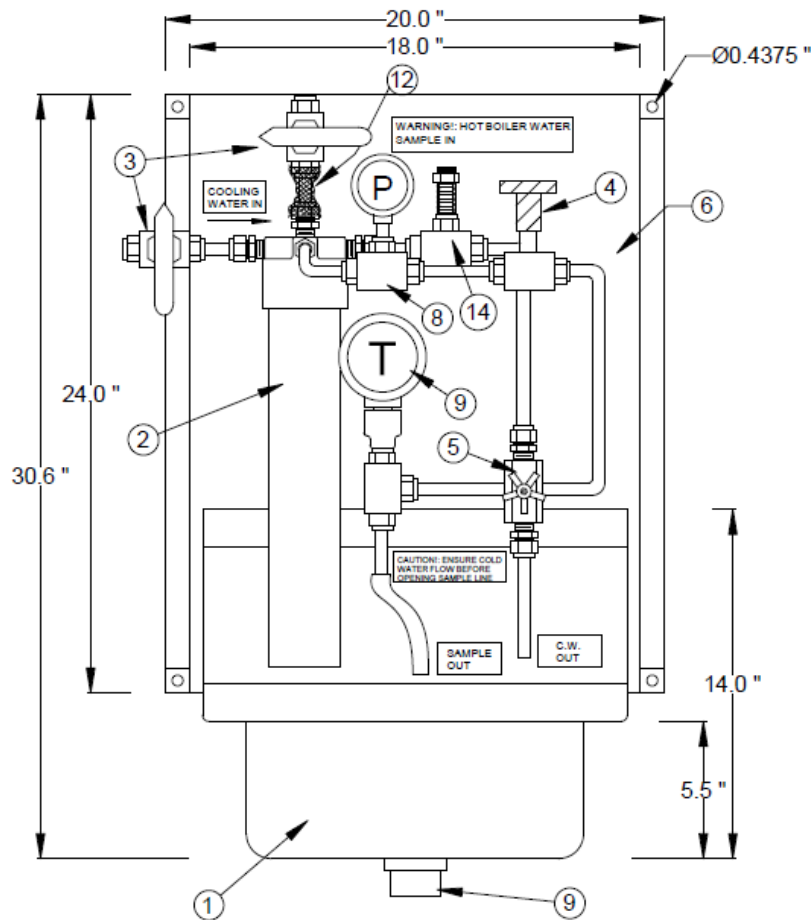
5. Close off valves in reverse order.

BOILER WATER OR STEAM? - For grab samples we recommend using one of our sample coolers with 1.3 or 1.9 sq. ft. of heat exchanging surface area. For steam sample grabs, use a unit with at least 2.6 sq. ft. Contact the factory for further assistance with sample cooler selection.

STANDARD SAMPLING STATION OFFERING
Madden currently offers (3) standard sampling station designs:

1. **Model SC201-0003** - this system is highlighted within this data sheet. It offers a 1.3 sq. ft. 316SS sample coil rated to 3,000 PSI with a steel shell rated to 300 PSI. It is the best balance between cost effectiveness and durability for a typical boiler room WATER grab sample.
2. **Model SC201-106** - this system offers a 3.8 sq. ft. 316SS sample coil rated to 2,500 PSI with a steel shell rated to 150 PSI. It is the best balance between cost effectiveness and durability for a typical boiler room STEAM grab sample.
3. **Model SC203-0003-106?** – this station offers multiple water sample coolers and one steam sample cooler. It also includes a counter to set down measuring instruments and data recording devices. In lieu of the counter top, you can add additional sample coolers for more blowdown processes to be measured. *CONTACT THE FACTORY FOR CUSTOM FREE MOUNT STATION BUILDS.*

Model SC201-0003 – Water Based Sample Testing

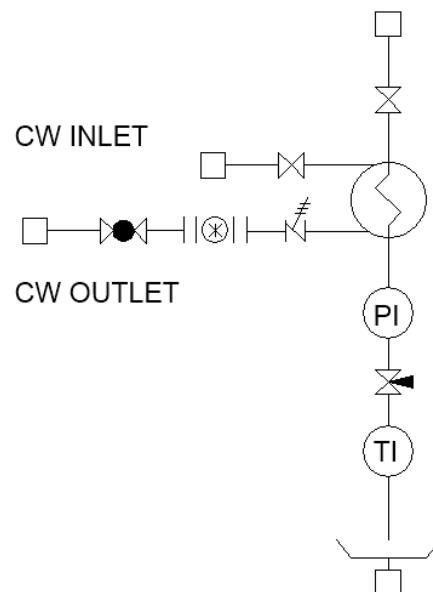


NOTES:

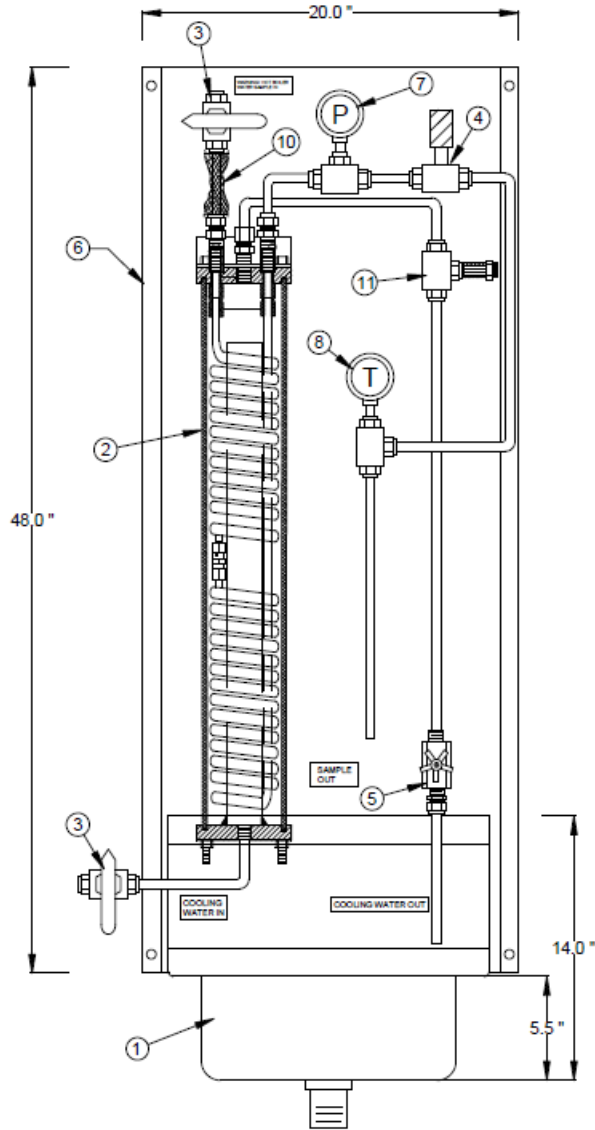
- N1. STAINLESS STEEL SINK W/ DRAIN
 - N2. SC0003 SAMPLE COOLER: 1.3 SF HEAT EXCHANGE, 316 SS COIL, 1/4" OD
 - N3. (2) SHUT OFF BALL VALVES - SPECIFY PREFERRED TERMINAL CONNECTION TYPE (IE. FNPT, MNPT, COMP.)
 - N4. SWAGELOK HIGH FLOW METERING VALVE, 1/4" COMP. CV .03 @ 300 PSI.
 - N5. GLOBE VALVE, SS, 1/4" NPT
 - N6. WALL MOUNT/BRACKET: 20" X 24", 11 GA. CS, ACRYLIC GREY PAINT FINISH
 - N7. PIPING: 1/4" TUBE, 316 STAINLESS STEEL
 - N8. PRESSURE GAUGE, SS: 2-1/2" DIAL, 1/4" NPT
STANDARD SCALE: 0-300 PSI
OPTIONAL SCALES AVAILABLE UP TO 3,000 PSI
 - N9. TEMPERATURE GAUGE, SS: 3" DIAL, 1/2" NPT
SCALE: 0-240 DEG. F.
(1) PRESSURE & (1) TEMPERATURE
 - N10. DRAIN: 1-1/2"
 - N11. NAMEPLATES/LABELS
 - N12. FLEXIBLE TUBE
 - N13. INSULATION SLEEVE
 - N14. IN250 PRESSURE RELIEF VALVE, SET @ 150 PSI
(PIPE TO OPEN FLOOR DRAIN OR BD SEPARATOR)
- COOLING WATER SIDE PRESSURE: 300 PSI DWP
SAMPLE SIDE PRESSURE: 3,000 PSI DWP
- TEMPERATURE LIMITS
SAMPLE SIDE/LINE: UP TO 1,000 DEG F.
VALVES ON SAMPLE SIDE AFTER COOLER: 400 DEG F.
COOLING WATER SIDE: 212 DEG F.

PANEL WEIGHT: 55 LBS

SAMPLE SIDE INLET



Model SC201-106 – Steam Based Sample Testing



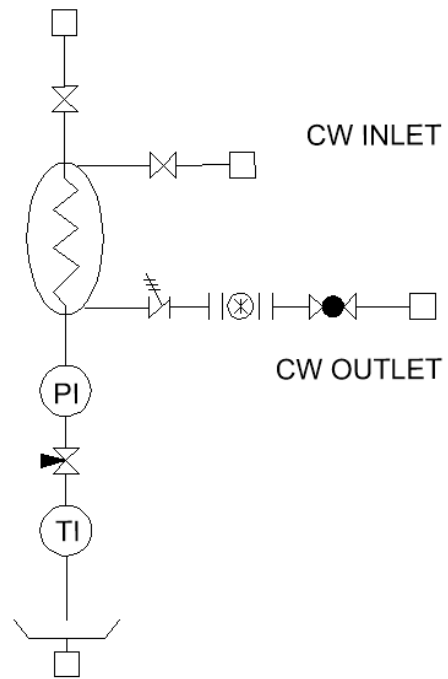
NOTES:

- N1. SS SINK, 17" X 15" X 14", W/ 1-1/2" DRAIN
- N2. SAMPLE COOLER, TYPE 2, P/N SC106, 3.8 SF OF HX SURFACE AREA. 3/8" OD, 316 SS COIL
- N3. (2) ON/OFF SWAGelok BALL VALVES, 3/8" COMPRESSION CONNECTIONS
- N4. SWAGelok HIGH FLOW METERING VALVE, 1/4" COMPRESSION, CV .03 @ 300 PSI.
- N5. GLOBE VALVE, 3/8" NPT, SS
- N6. WALL MOUNT/BACKET: 20" X 48", X 1/4", W/(2) 1" BENDS ON EACH SIDE, CS, ACRYLIC GREY PAINT FINISH
- N7. PRESSURE GAUGE, 0-300 PSI, 1/4" NPT, SS, 2-1/2" DIAL
- N8. TEMPERATURE GAUGE, 40-240 DEG F, SS, 1/2" NPT, 3" DIAL
- N9. (OPTIONAL) TYGON TUBE ON SAMPLE DISCHARGE
- N10. TECHFLEX EXPANDABLE INSULATION SLEEVE
- N11. COOLING WATER/SHELL SIDE PRV: SWAGelok POPPET CHECK VALVE

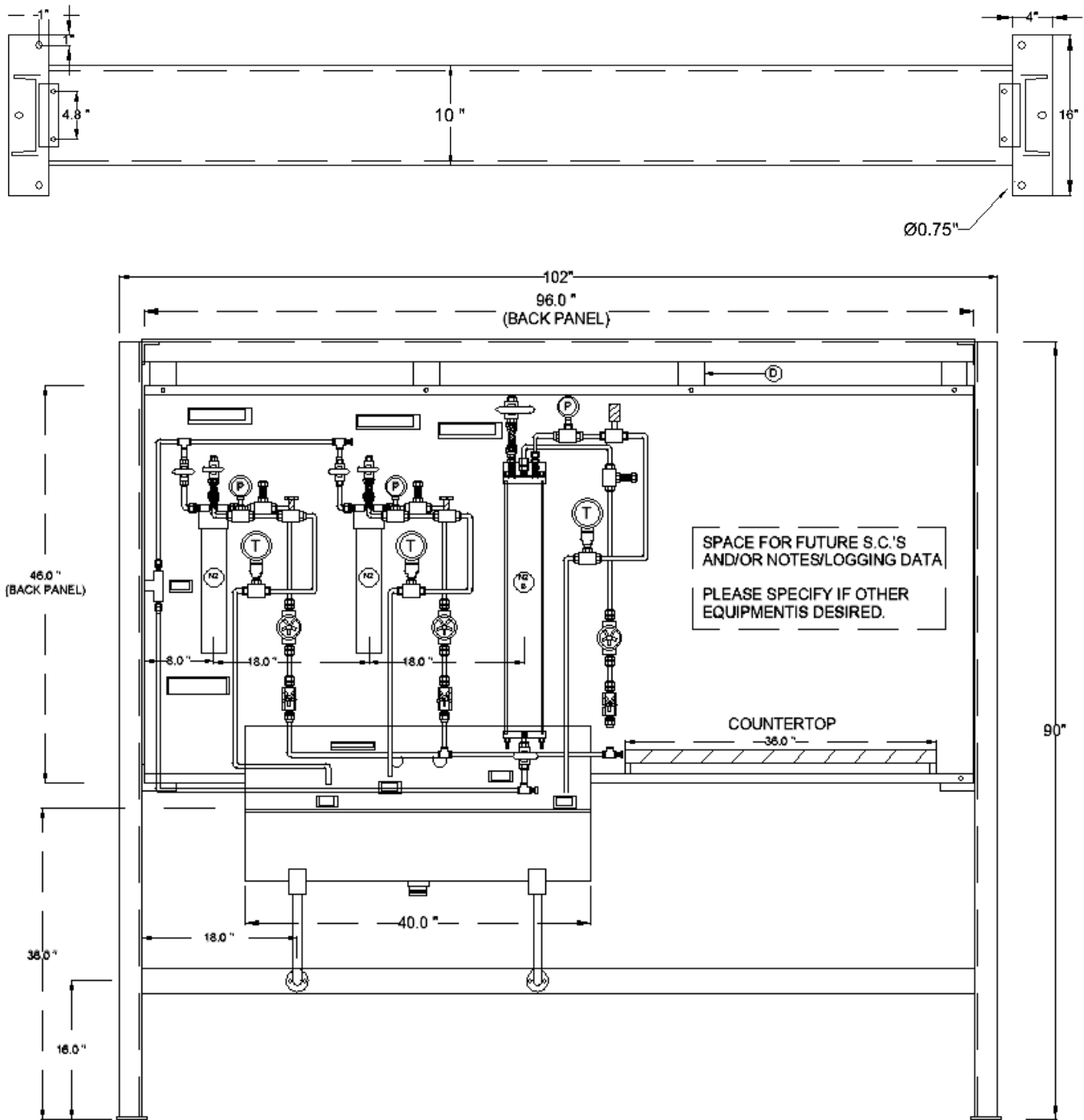
OTHER NOTES:

- A. PIPING: 3/8" OD TUBE, 316 STAINLESS STEEL
- B. NAME PLATES SHOWN PROVIDED BY MADDEN
- C. PRESSURE RATINGS
 COOLING WATER SIDE: 150 PSI DWP
 SAMPLE TUBING: 2,500 PSI @ 1,000 DEG F
 SAMPLE SIDE EQ. AFTER PASS THROUGH: 300 PSI

STEAM SAMPLE, INLET



Model SC201-0003-106 – Complete, Free Mount Sample Station Panel



**** P&ID's & Notes from Previous two pages apply to this system as well ****

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