

PREASSEMBLED SAMPLING PANELS



- ***Protect operators and measuring devices***
- ***Improve Sampling Accuracy***
- ***Reduce Installation Costs***



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MADDEN ENGINEERED PRODUCTS

Sample Cooler Panels - Part Number Format

Madden sample cooler panel part number tree. Contact factory for assistance defining the complete sample cooler panel required.

PANEL MATERIAL	SAMPLE COOLER MODELS	ADDITIONAL ANC. EQ.
"SPC" - CS Back Panel "SPS" - SS Back Panel "SPA" - Aluminum Panel	<i>(List Quantity + SC Model)</i> Qty " _ " + "1" - SC0001 Qty " _ " + "2" - SC102 Qty " _ " + "3" - SC0003 Qty " _ " + "5" - SC105 Qty " _ " + "6" - SC106 Qty " _ " + "7" - SC107 Qty " _ " + "8" - SC108	1 - SS Sink 2 - Relief Valve 3 - Pressure Let Down Valve 4 - H.P. Inlet Isolation Valve 5 - C.W. Flow Control (Globe) Valve 6 - SS Wall Mount Cabinet 7 - CS Wall Mount Cabinet 8 - SS Counter Top 9 - Thermal Shut Off Valve
TYPE OF STATION		"CUSTOMIZATION"
"1" = Wall Mount "2" = Free Standing (CS) "3" = Free Standing (SS)	Note 1: For multiple models included on a common station, list each model in order, example: (2) SC102's + (1) SC106, write "2216" Note 2: For 304SS sample cooler shells, add "A" at the end of each model. Example: "22A16A"	C - Compact version w/ tight panel layout & tray style sink. Z - Anything that causes BOM to vary from standard P/N.

NOTE 1: Standard components in a Madden Sampling Panel include - metering valve, pressure gauge, temperature gauge, connecting tubing, and necessary isolation valves.

NOTE 2: CS Panels have red oxide primer and gray acrylic enamel top coat. SS and Aluminum are bead blasted.

NOTE 3: Standard free standing structures are made of 10" 15.3# structural C channel steel, painted.

Full P/N Example:

SPS2	—	22A16A	—	12349
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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. Preassembled

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

- 1. Model No. SPC1-12-12C** – single cooler station designed for water based grab samples.
- 2. Model No. SPC1-16-12C** – single cooler station designed for steam based grab samples.
- 3. Model No. SPC2-2216-TBD** – (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_DataSheet_V5.0.pdf” 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 SC102 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

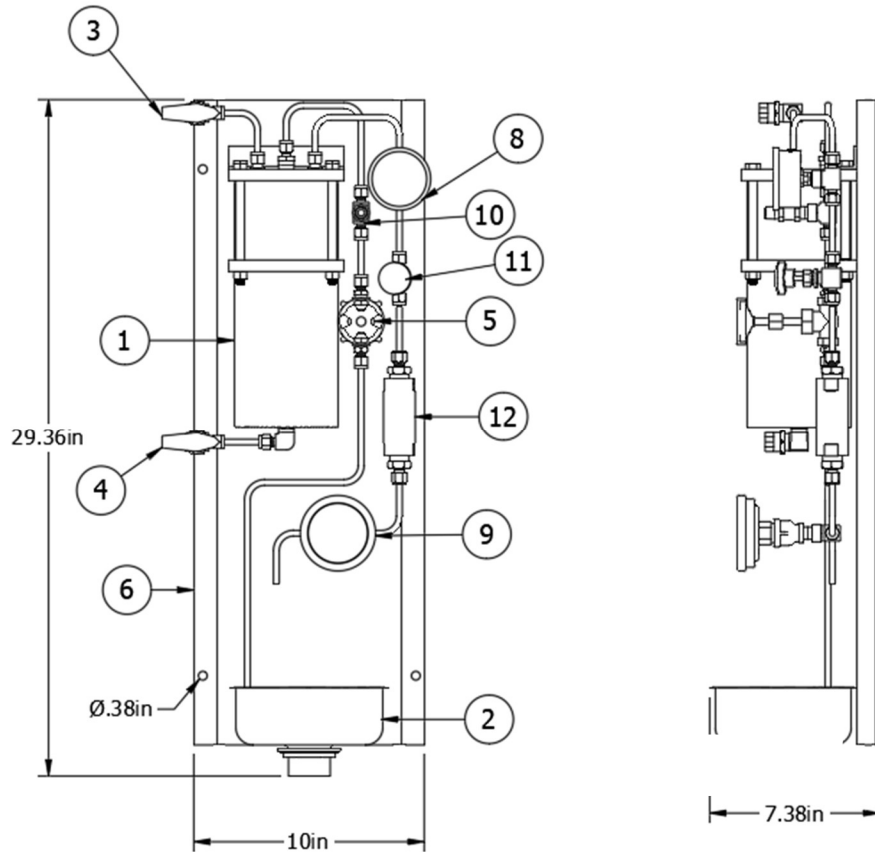
exchanging surface area. For steam sample grabs, use a unit with at least 2.6 sq. ft. Contact the factory for further assistance with sample cooler selection.

STANDARD SAMPLE COOLER STATION OFFERINGS - Madden currently offers (3) standard sampling station designs:

1. **Model SPC1-12-12C** - this system is highlighted within this data sheet. It offers a 1.3 sq. ft. 316SS sample coil rated to 3,850 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 SPC1-16-12C** - 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 SPC2-2216-TBD** - 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.**

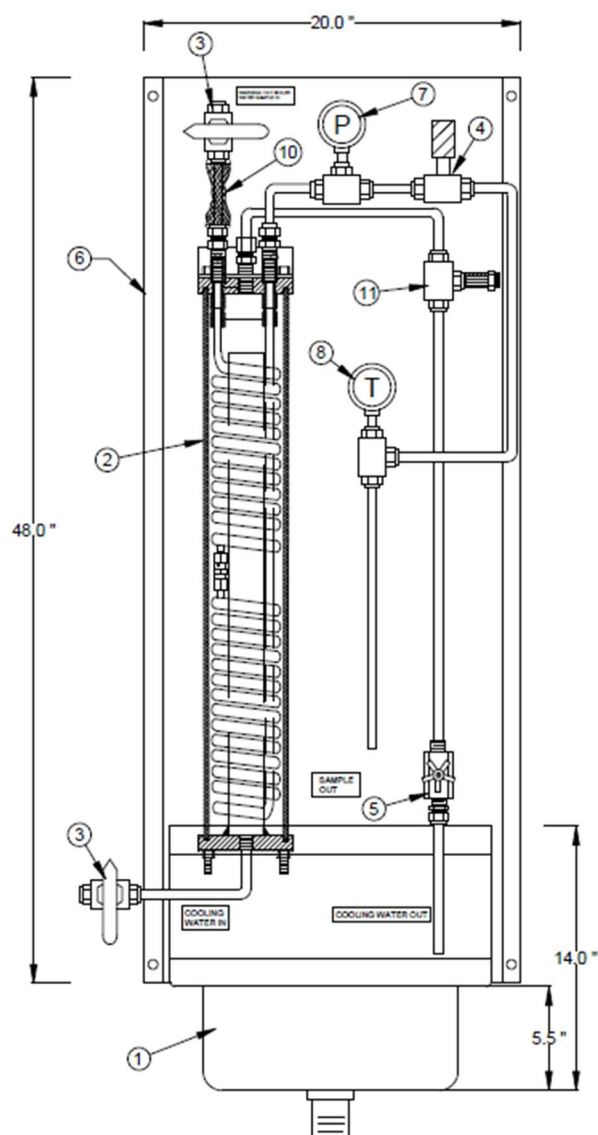
Model SPC1-12-12C: Compact and Cost Effective

Water Based Sample Testing



ITEM	QTY	PART No.	DESCRIPTION
1	1	SC102	SAMPLE COOLER (<i>FOR CONDENSED/SATURATED PROCESSES – BOILER DRUM, FEED WATER, D/A</i>): 1.3 SQ. FT. OF HEAT EXCHANGE CAPACITY, 316SS COIL, ¼" OD x 0.035", PAINTED CS SHELL AND TOP AND BOTTOM PLATES (304SS AVAILABLE FOR COST ADDER), ¼" SAMPLE CONNECTIONS, ½" C.W. CONNECTIONS. SHELL SIDE RATED 300 PSI @ 212 DEG F, COIL RATED TO 3,850 PSI @ 1,000 DEG F.
2	1	TF106E	SINK: 6-7/8" X 6-3/8" X 2-1/2" (L X W X D), 22 GA, SS, 1-1/4" DRAIN
3	1	#	SAMPLE INLET: BALL VALVE, 316SS, ¼" X ¼" OD COMPRESSION FITTING
4	1	#	COLD WATER INLET: BALL VALVE, 316SS, ½" FNPT X 1/2" FNPT, CLASS 150
5	1	V-GB-A2	COLD WATER FLOW CONTROL (<i>OPTIONAL – NOT STANDARD – SPEC' IF REQ'D</i>): GLOBE VALVE, 304SS, 3/8" FNPT X 3/8" FNPT, CLASS 150
6	1	#	WALL MOUNT PANEL: 11 GA. CARBON STEEL PLATE, 22" X 10", EDGES ARE BENT TO PROVIDE 1" DEPTH AND 1" TRIM FOR BOLTING TO WALL. (4) 3/8" BOLT HOLES. FINISHED WITH ACRYLIC GRAY INDUSTRIAL PAINT (304SS AVAILABLE FOR COST ADDER)
7	1	#	PIPING: SAMPLE SIDE – ¼" OD X 0.035" TUBE, 316SS; C.W. SIDE – ½" X 0.035" TUBE, 316SS, W/ 316SS FNPT FITTINGS
8	1	GA-P-BBAM	PRESSURE GAUGE: ¼" MNPT, SS, 2-1/2" DIAL, 0-150 PSI (<i>SPECIFY LARGER RANGE IF NEEDED</i>)
9	1	GA-T-CCA2L	TEMPERATURE GAUGE: ½" MNPT, SS, 3" DIAL, 0-240 DEG F.
10	1	IN250	PRESSURE RELIEF VALVE (<i>OPTIONAL – NOT STANDARD – REQ'D IF ITEM 5 IS SELECTED</i>): POPPET CHECK VALVE, ¼" MNPT X MNPT, 316SS, 150 PSI SET PRESSURE
11	1	V-MT-A2P-MF	SAMPLE FLOW METERING VALVE: ¼" OD X OD COMPRESSION FITTING, 316SS, KNURLED HANDLE, CV 0.03
12	1	#	THERMAL SHUT OFF VALVE (<i>OPTIONAL – NOT STANDARD – SPEC' IF REQ'D</i>): ¼" OD X OD COMPRESSION FITTINGS, 316SS, 125-135 DEG F RANGE, FULLY CLOSED AT 135 DEG F
13	-	#	LABELS (OPTIONAL, SPECIFY IF REQUIRED)

Model SPC1-16-12C: Steam Based Sample Testing



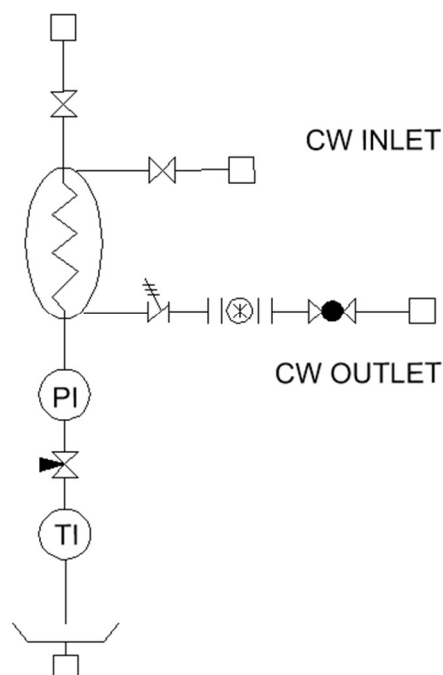
NOTES:

- 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/BRAKET: 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

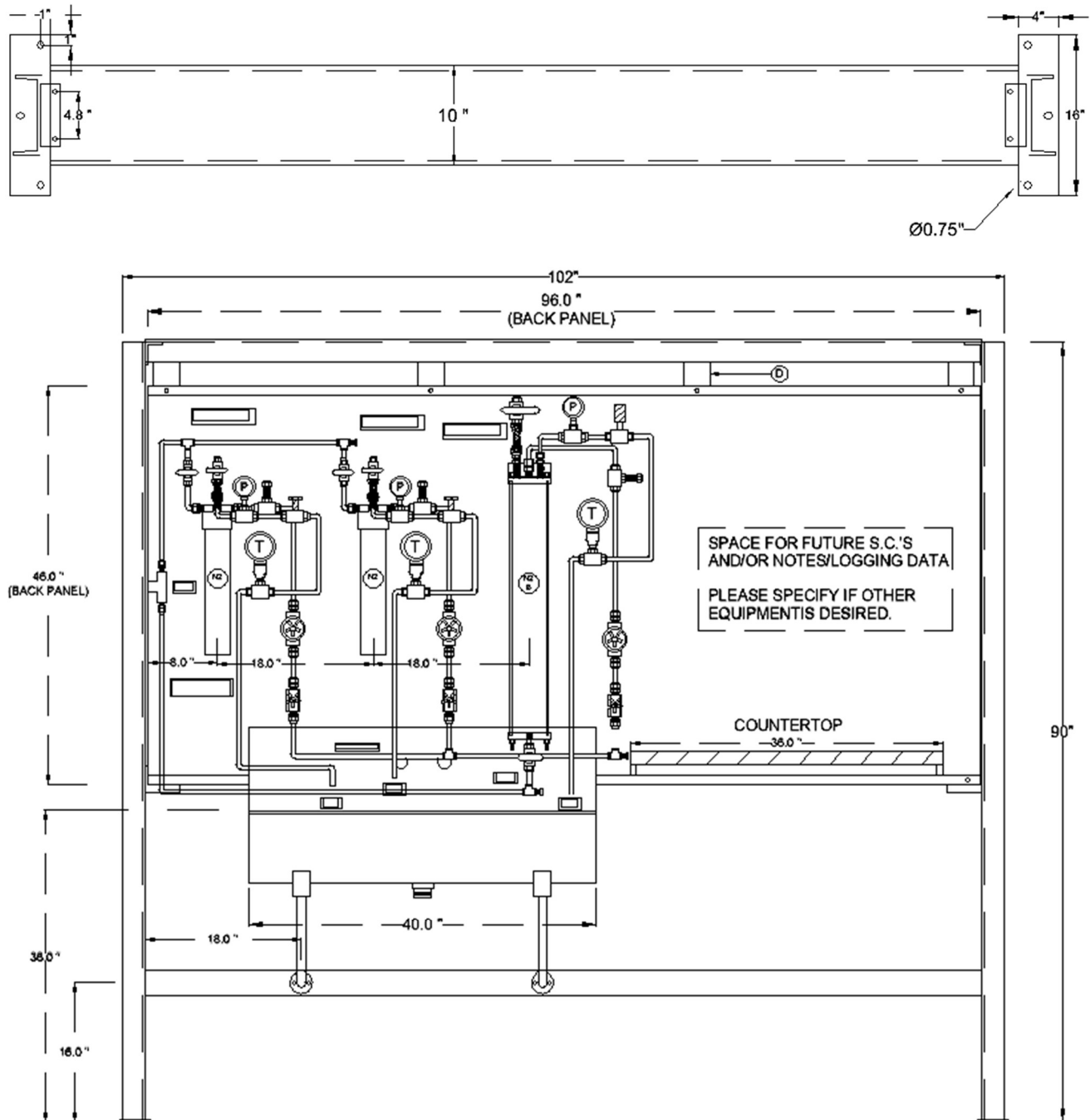
OTHER NOTES:

- 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 SPC2-2216-TBD: Free Mount Sample Station Panel



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

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