

# MADDEN

ENGINEERED PRODUCTS

## PREASSEMBLED SAMPLE COOLER PANELS

- *Protects operators and measuring devices*
- *Improves Sampling Accuracy*
- *Saves \$\$\$ on Installation Costs*



**Single Unit "Grab" Sample Station**



**Complete, Free Standing Sampling Station**

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# MADDEN ENGINEERED PRODUCTS

## Sample Cooler Station - Part Number Format

Madden sample cooler station part number tree. Contact factory for assistance defining the complete sample cooler panel required. Madden keeps material in stock to build wall mount panels in 1-2 weeks. Free standing sample cooler panels are built to order. Further customization can be provided, contact the factory with your specifications if needed.

PANEL MATERIAL	SAMPLE COOLER MODELS	ANCILLARY EQ.
"SCSC" - CS Back Panel "SCSS" - SS Back Panel "SCSA" - Aluminum Panel	<b>TYPE 1</b> "0001" - 1.3 Sq. Ft., Copper "0003" - 1.3 Sq. Ft., 316SS "0003A" - 1.3 Sq. Ft., 316SS  <b>TYPE 2</b> "101" - 1.3 Sq. Ft., Copper "102" - 1.3 Sq. Ft., 316SS "102A" - 1.3 Sq. Ft., 316SS "105" - 1.9 Sq. Ft., 316SS "105A" - 1.9 Sq. Ft., 316SS "SC106" - 3.8 Sq. Ft., 316SS "S106A" - 3.8 Sq. Ft., 316SS  <i>- Fill in each model to be installed once, regardless of total used. Separate different models with another dash.</i>  <i>- See Sample Cooler Data Sheet for more details on individual Sample coolers.</i>	1 - Metering Valve 2 - Pressure Gauge 3 - Temperature Gauge 4 - Relief Valve 5 - C.W. Flow Indicator 6 - Equipment Labels 7 - Wall Mount Cabinet 8 - SS Countertop 9 - Thermal Shut Off Valve
<b>TYPE OF STATION</b> "20_" - 0 = Wall Mount "21_" - 1 = Free Standing - See below for "_"		
<b># OF COOLERS</b>  Fill in "___" - with number of individual coolers to be used in this system (regardless of different models being used). (1) S.C. per sampling source is recommended.		<b>"CUSTOMIZATION"</b> C - For our new (2024) compact, single cooler station with small food pan sink. Z - Used as a "catch all" for anything that deviates outside of a standard B.O.M.

**NOTE 1:** CS Panels have red oxide primer and gray acrylic enamel top coat. SS and Aluminum are sand blasted.

**NOTE 2:** Free standing structures are made of 10# structural C channel steel, painted.

**NOTE 3:** Piping used between sample coolers will match sample cooler model tubing.

**NOTE 4:** Isolating ball valves are provided as needed.

**Full P/N Example:**

<b>SCSC213</b>	-	<b>00003-106</b>	-	<b>1234</b>
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# Madden Sampling Stations OVERVIEW

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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. SCSC201-0003-1234** – single cooler station designed for water based grab samples.
- 2. Model No. SCSC201-106-1234** – single cooler station designed for steam based grab samples.
- 3. Model No. SCSC213-0003-106-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

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### SAMPLE COOLERS COME IN A VARIETY OF MATERIALS AND SIZES

- See our “SC\_DataSheet\_V4.2.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 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 1<sup>st</sup> 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.

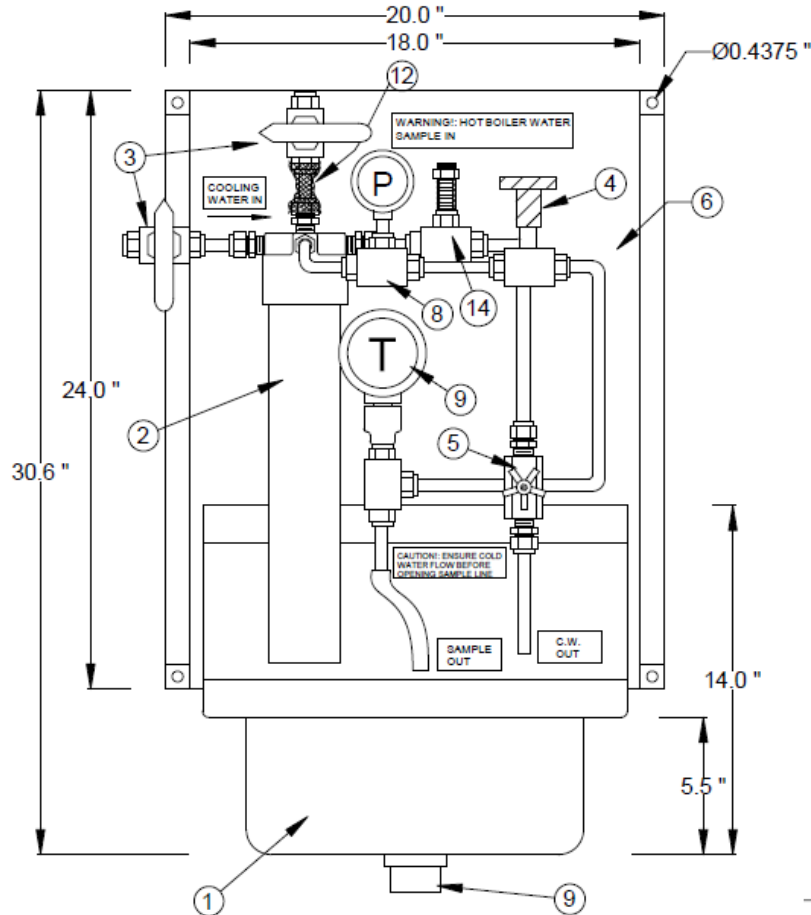
**BOILER WATER OR STEAM?** - For grab samples we recommend using one of our sample coolers with 1.3 or 1.9 sq. ft. of heat

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 SCS201-0003** - 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 SCS201-106** - 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 SCS213-102-106-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 SCSC201-0003-1234: 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)

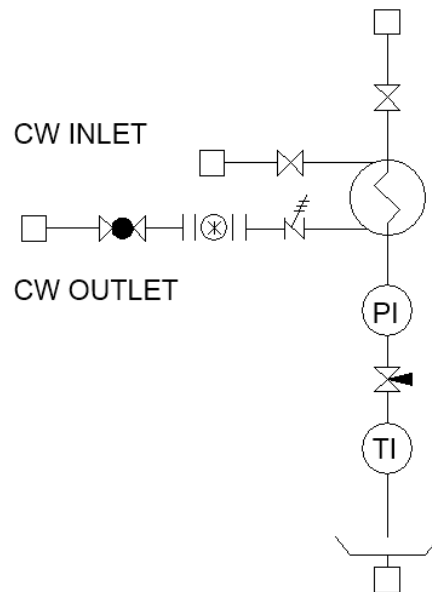
COOLING WATER SIDE PRESSURE: 300 PSI DWP  
SAMPLE SIDE PRESSURE: 3,000 PSI DWP

## TEMPERATURE LIMITS

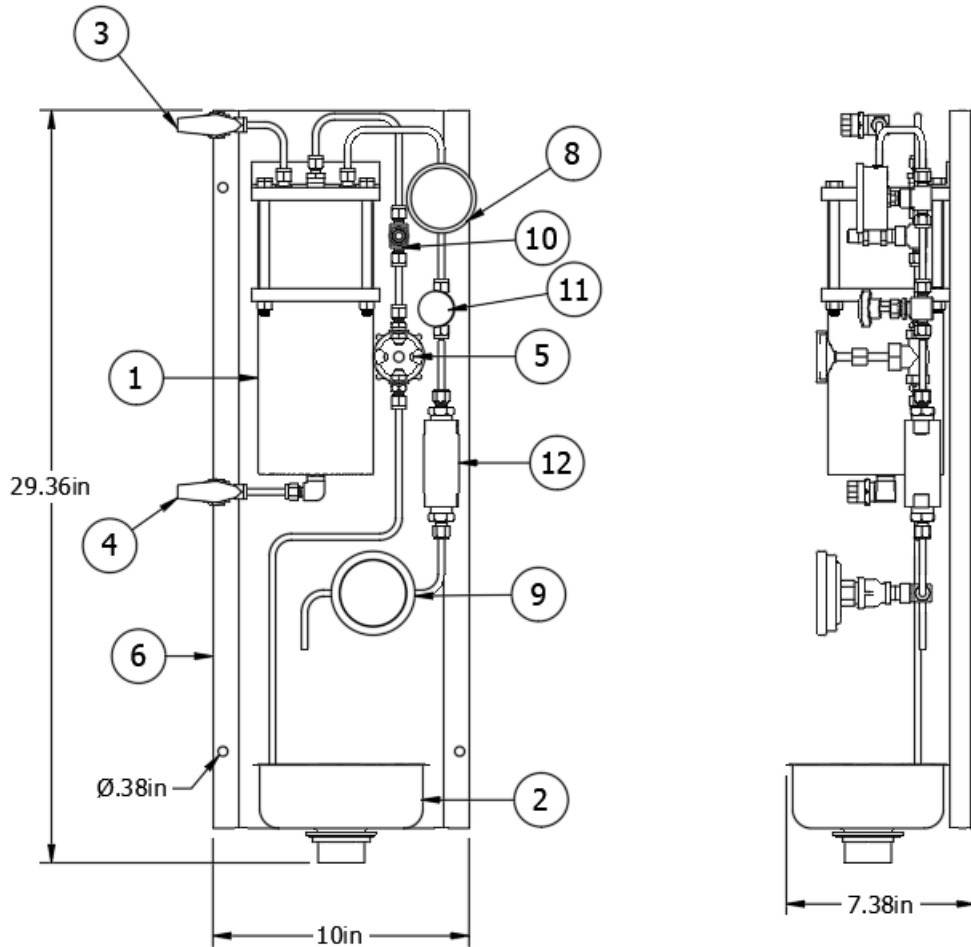
SAMPLE SIDE/LINE: UP TO 1,000 DEG F.  
VALVES ON SAMPLE SIDE AFTER COOLER: 400 DEG F.  
COOLING WATER SIDE: 212 DEG F.

PANEL WEIGHT: 55 LBS

## SAMPLE SIDE INLET



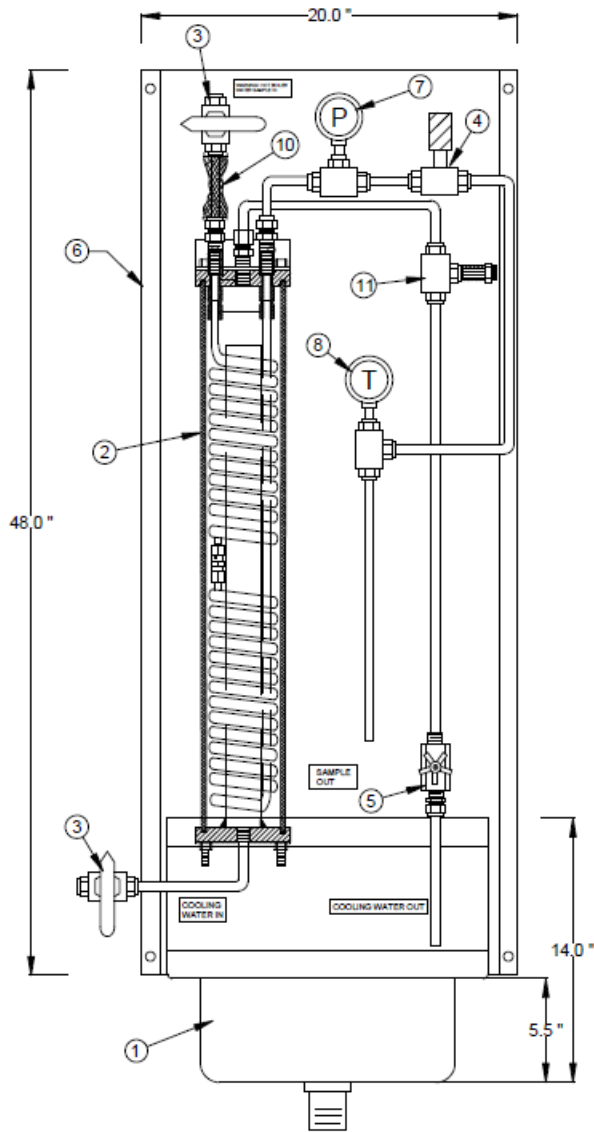
# Model SCSC201-0003-12349-C: Compact and Cost Effective Water Based Sample Testing



## BILL OF MATERIALS

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	SC102	SAMPLE COOLER (WATER/SATURATED STEAM DRUM B.D.): 1.3 SF HEAT EXCHANGE CAPACITY, 316SS COIL, 3/8" OD, SS SHELL AND TOP/BOTTOM PLATES, 1/4" CONNECTIONS. COIL SIDE RATED TO 3,850 PSI @ 1,000 DEG F, SHELL SIDE RATED TO 300 PSI.
2	1	#	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: SWAGelok COMPRESSION FITTING, SS, 1/4" COMPRESSION CONNECTION
4	1	#	COLD WATER INLET BALL VALVE: SWAGelok COMPRESSION FITTING, SS, 1/4" COMPRESSION CONNECTION
5	1	#	GLOBE VALVE: 1/4" FNPT x FNPT, SS
6	1	#	WALL MOUNT PANEL: 11 GA. CARBON STEEL, 22" LONG X 10" WIDE. EDGES TO BE BENT TO PROVIDE 1" DEPTH AND 1" TRIM FOR BOLTING TO WALL (4) 3/8" BOLT HOLES. FINISHED WITH ACRYLIC GRAY INDUSTRIAL PAINT.
7	1	#	PIPING: 1/4" OD X 0.035" TUBE, 316SS
8	1	#	PRESSURE GAUGE: 1/4" MNPT, SS, 2-1/2" DIAL, 0-150 PSI (OPTIONS UP TO 3,000 PSI)
9	1	#	TEMPERATURE GAUGE: 1/2" MNPT, SS, 3" DIAL, 0-240 DEG F.
10	1	IN250	PRESSURE RELIEF VALVE: SWAGelok POPPET CHECK VALVE, 1/4" MNPT, 316SS, 150 PSI CRACKING PRESSURE
11	1	IN201	FLOW METERING VALVE: SWAGelok FLOW METERING VALVE, 1/4" COMPRESSION, 316SS
12	1	#	(OPTIONAL) THERMAL SHUT OFF VALVE: 1/4" or 1/2" FNPT X FNPT, 300 or 3000 PSI, 125 DEG F SHUT OFF, SS
13	1	#	WARNING LABELS FOR SAMPLE IN AND REMINDER FOR COLD WATER (NOT SHOWN)

# Model SCSC201-106-1234: Steam Based Sample Testing



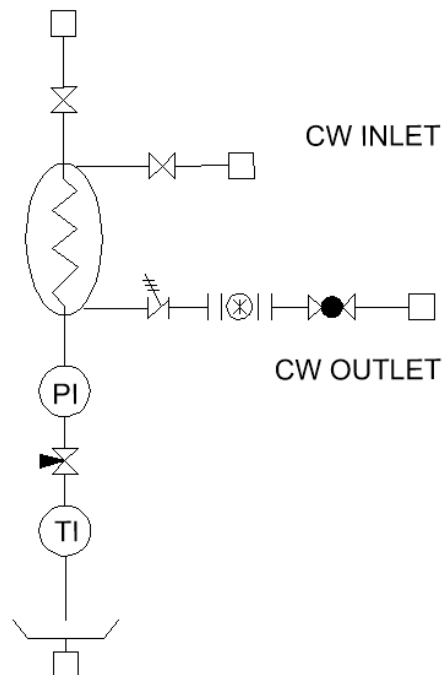
## NOTES:

- 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

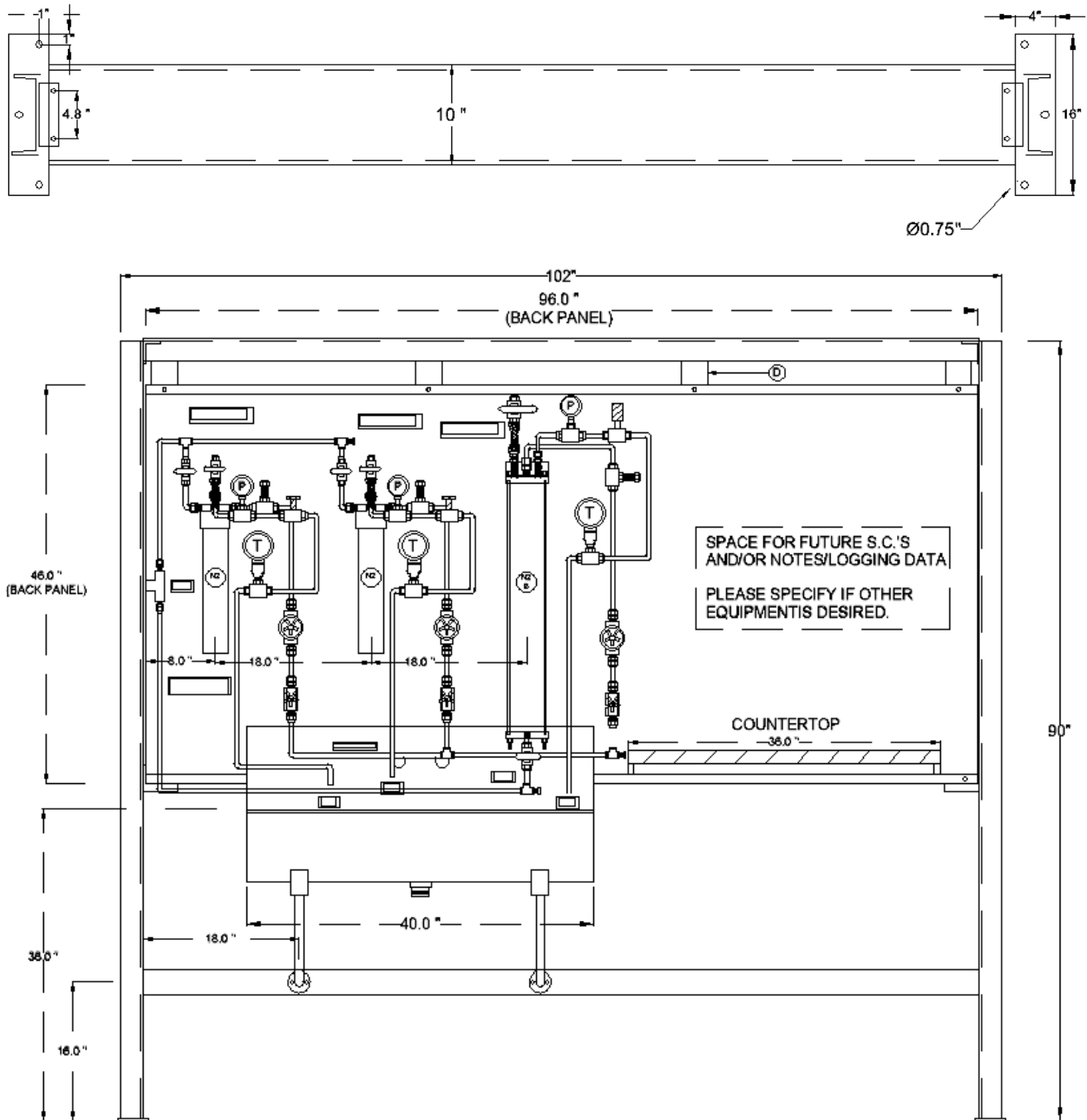
## OTHER NOTES:

- 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 SCSC213-102-106-123456: Free Mount Sample Station Panel



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

**MADDEN**  
ENGINEERED PRODUCTS

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