

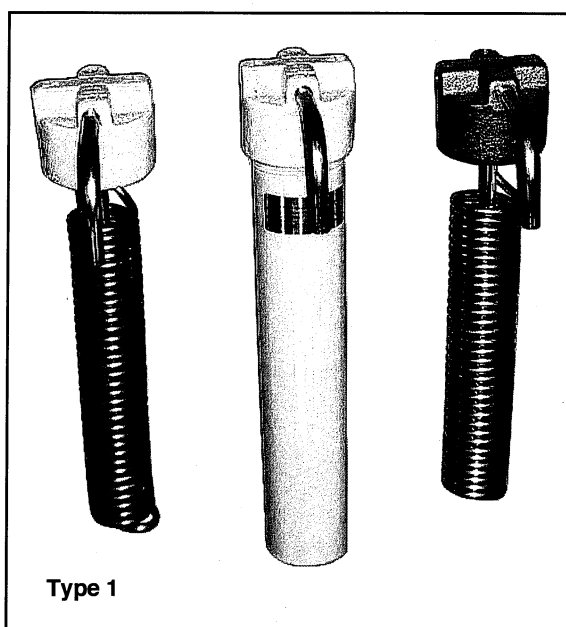
# MADDEN

MANUFACTURING, INC.

Simple, Rugged Quality

## Sample Cooler Pump Seal Flush Cooler

Efficient liquid to liquid mini heat exchangers.  
Available with copper and stainless steel coils.

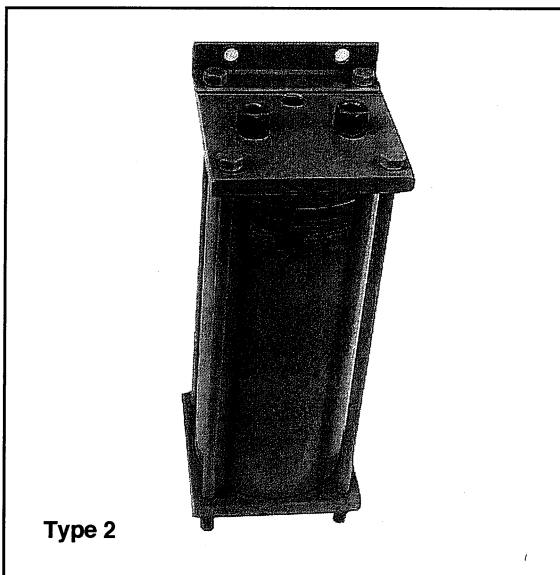


Type 1

Madden Sample Coolers are miniature heat exchangers designed to reduce high temperature liquid samples to safe, usable temperatures for analysis. They also function as effective coolers for pump seal flush liquid. The counter flow design efficiently cools the tube side liquid.

Sample coolers are available in copper and Type 316 stainless steel tube coil material. All Madden sample coolers disassemble with standard tools for cleaning, or replacement of damaged coils. Carbon steel shell parts are painted with grey acrylic enamel. Shell side pressure rating is 150 psi. Madden Type 2 models may be constructed using a variety of materials to meet a customer's specific requirements. Contact the factory for a quotation for applications with special material specifications.

**Type 1** sample cooler models have all the piping connections for the sample and the cooling water on the threaded cap on the top of the sample cooler. All coils are 1/4" OD tubing, and all piping connections are 1/4" NPT. Cooling water enters on the left and exits opposite on the right. Sample inlet connection is vertical on the top, and the cooled sample exits from the spout.



Type 2

**Type 2** sample coolers offer both 1/4" and 3/8" OD tubing coils. Sample connections are 1/4" NPTF and are made on the top plate. Cooling water connections are 3/8" NPTF located on both top and bottom plates. On our Type 2 design, we can offer up to 1" NPT cooling water connections.

Typically, liquid grab samples can be cooled with 1.3 square foot coil surface area models. For continuous cooling of samples for instrument probes, or for steam samples, 2.6 sf or larger coil surface area is recommended.

Part Number	Max. Coil PSI	Description - Type, coil surface area, coil material, coil tube size	Weight
SC0001	300	Type 1, 1.3 sf, copper coil w/ CI head, 1/4" OD tube	15#
SC0002	300	Type 1, 2.6 sf, copper coil w/ CI head, 1/4" OD tube	25#
SC0003	1,200	Type 1, 1.3 sf, 316 SS coil w/ SS head, 1/4" OD tube	15#
SC0003A	1,200	Type 1, 1.3 sf, 316 SS coil w/ SS head, 1/4" OD tube, SS shell	15#
SC0004	1,200	Type 1, 2.6 sf, 316 SS coil w/ SS head, 1/4" OD tube	25#
SC0004A	1,200	Type 1, 2.6 sf, 316 SS coil w/ SS head, 1/4" OD tube, SS shell	25#
SC101	300	Type 2, 1.3 sf, copper coil, 1/4" OD tube	25#
SC102	1,200	Type 2, 1.3 sf, 316 SS coil, 1/4" OD tube	25#
SC103	250	Type 2, 1.9 sf, copper coil, 3/8" OD tube	30#
SC104	250	Type 2, 3.8 sf, copper coil, 3/8" OD tube	59#
SC105	1,200	Type 2, 1.9 sf, 316 SS coil, 3/8" OD tube	30#
SC106	1,200	Type 2, 3.8 sf, 316 SS coil, 3/8" OD tube	55#
SC107	5,000	Type 2, 3.8 sf, 316 SS coil, 3/8" OD tube	61#
SC108	5,000	Type 2, 1.9 sf, 316 SS coil, 3/8" OD tube	35#

## Dimensions and Specifications

Technical drawing of Type 1 Sample Cooler. The front view shows a vertical cylindrical shell with a diameter of 2.7/8 inches. The top cap has a diameter of 3-1/2 inches and a height of 1/2 inch. A MYLAR sleeve protects the tube coil. The shell material is 2-1/2 inch steel or stainless steel pipe. The top view shows a circular cap with a diameter of 1-3/4 inches. It features a 1/4 inch NPTF sample inlet, a 1/4 inch NPTF cooling water inlet and outlet, and a 1/4 inch pipe sample outlet spout with a 90-degree bend. The total height of the unit is 7-1/2 inches.

Part Number	Coil Area	Coil Material	Cap Material	"H"
SC0001	1.3 sf	Copper	CI	17.25"
SC0002	2.6 sf	Copper	CI	31.50"
SC0003	1.3 sf	316 SS	316 SS	17.25"
SC0003A	1.3 sf	316 SS	316 SS	17.25"
SC0004	2.6 sf	316 SS	316 SS	31.50"
SC0004A	2.6 sf	316 SS	316 SS	31.50"

**Type 1 - Sample Cooler Specifications**  
 The Contractor shall furnish and install \_\_\_\_\_ sample coolers to cool the hot liquid sample to the desired temperature for safe handling and analysis. The sample cooler will be a Type 1 as manufactured by Madden Manufacturing, Inc. The unit will be constructed with a 1/4" OD (copper or 316 stainless steel) tube coil for the sample, with a surface area of (1.3 or 2.6) square feet. The coil will be rated for a maximum (300 or 1,200) psi service. The shell will be sch. 40 pipe with a threaded cap made of (cast iron or SS). All piping connections are 1/4" NPT located on the threaded cap. The cap will be removable for cleaning or coil replacement. *Valves for the sample and cooling water inlets are to be provided and installed by the contractor.*

Technical drawing of Type 2 Sample Cooler. The front view shows a vertical cylindrical shell with a diameter of 2.5 inches and a height of A inches. It has two mounting holes of size .406 inches. The top view shows a square cap with a side length of 5 inches and a height of 2.75 inches. It features a 3/8 inch NPT cooling water outlet, a 3/8 inch NPT cooling water inlet, a 1/4 inch NPTF sample inlet, and a 1/4 inch NPTF sample outlet. The side view shows a coil for cooling the sample and a baffle inside the shell.

**Type 2 - Sample Cooler Specifications**  
 The Contractor shall furnish and install (qty) sample coolers to cool the hot liquid sample to the desired temperature for safe handling and analysis. The sample cooler will be a Type 2 model no. SC10\_\_ as manufactured by Madden Manufacturing, Inc. The unit will be constructed with a (1/4" or 3/8") OD (copper or 316 SS) tube coil for the sample, with a coil surface area of ( ) square feet. The coil will be rated for a maximum ( ) psi service. The shell will be carbon steel. Cooling water connections will be ( ) NPTF and sample connections will be 1/4" NPTF. The unit will disassemble for cleaning or coil replacement. *Valves for the sample and cooling water inlets are to be provided and installed by the contractor.*

Part Number	Max. Coil PSI	Description	Weight	Dim. A
SC101	300	Type 2, 1.3 sf, copper coil, 1/4" OD tube	25#	13.38"
SC102	1,200	Type 2, 1.3 sf, 316 SS coil, 1/4" OD tube	25#	13.38"
SC103	250	Type 2, 1.9 sf, copper coil, 3/8" OD tube	30#	17"
SC104	250	Type 2, 3.8 sf, copper coil, 3/8" OD tube	59#	34"
SC105	1,200	Type 2, 1.9 sf, 316 SS coil, 3/8" OD tube	30#	17"
SC106	1,200	Type 2, 3.8 sf, 316 SS coil, 3/8" OD tube	55#	34"
SC107	5,000	Type 2, 3.8 sf, 316 SS coil, 3/8" OD tube	61#	34"
SC108	5,000	Type 2, 1.9 sf, 316 SS coil, 3/8" OD tube	35#	17"