

THERMOWRAP

Precise temperature control for chemical canisters



TCube edge



ThermoWrap Kit

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SAFETY PRECAUTIONS AND SYMBOLS



Read the MSDS for the coolant used and follow **all** safety precautions listed in the MSDS prior to removing coolant tubes or opening the fill cap as this could result in contact with the coolant inside.

CAUTION

- * Please refer to Chiller manual for chiller safety precautions, set-up and operating instructions.
 - * Only use the ThermoWrap with Solid State Cooling Systems chillers using a centrifugal pump with max pressure less than 20 psig. Use of other chillers will void the warranty.
 - * Never run the ThermoWrap at coolant pressures exceeding 20 psig.
 - * Never store the ThermoWrap at temperatures below 0 °C or over 100 °C.
 - * Never operate the ThermoWrap with fluid temperatures below 0 °C or over 50 °C.
 - * Never operate the coolant within 5°C of its freezing point.
 - * Never ship the Thermowrap with water inside as freezing temperatures may be encountered, causing leaks during operation.
 - * Do not fully refill the coolant tank in the chiller connected to the wrap after the wrap is filled with fluid. Doing so may result in the tank overflowing when the pump is turned off, due to fluid returning to the tank.
 - * Blue ThermoWrap pads are made with non-flame retardant polyurethane coated nylon.
 - * Yellow ThermoWrap pads are made using flame-retardant polyurethane coated nylon.
 - * The neoprene insulating bag is not flame retardant.
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Symbols Used in this Manual



CAUTION

The red CAUTION equilateral triangle symbol appears throughout the manual. Please follow the important instructions accompanying this symbol to avoid significant damage to the chiller.



WARNING

The red WARNING equilateral triangle symbol appears throughout the manual accompanying certain maintenance and repair activities. Please follow the important instructions accompanying this symbol to avoid situations that could cause injury to the operator or other personnel.



THERMOWRAP KIT

PRECISION TEMPERATURE CONTROL OF
CHEMICAL CANISTERS OR FLUID BOTTLES

PRODUCT

Manual

SECTION 1 INTRODUCTION



ThermoWrap is a low-cost alternative to temperature control of chemical / liquid containers. When used with one of Solid State Cooling Systems' thermoelectric recirculating chillers, the ThermoWrap kit provides up to $\pm 0.1^{\circ}\text{C}$ temperature control for process chemicals, MOCVD, bioprocessing, laboratory use, life sciences applications or any other application requiring precise control.

Each standard ThermoWrap Kit includes:

- 1 recirculating fluid pad
- 2 fully insulated fluid hoses
- 1 insulating bag for optimum temperature control

The fluid pad easily conforms to various size canisters. Customized sizes are available for higher volume applications. Additional pads, additional insulated hoses or different size hoses may be purchased separately.

SECTION 2

SPECIFICATIONS

The complete cooling system is comprised of three parts:

- 1 recirculating fluid pad
- 2 fully insulated fluid hoses
- 1 insulating bag for optimum temperature control



Specifications:

Fluid Operating Range:	0°C to 50°C
Ambient Temperature Range:	10°C to 40°C non-condensing
Stability / Repeatability:	±0.1°C with constant load (even near ambient)
Maximum fluid pressure:	20 psig
Recommended SSCS Chiller:	T-Three, TCube edge or ThermoCube with centrifugal pump
Coolant / Process Fluid:	Koolance (27% propylene glycol / water mix) or 27-50% ethylene glycol / water mix (contact SSCS for advice on other fluids)
Warranty:	2 years (Only valid when used with an SSCS chiller)

SECTION 3

HOOK UP



Read the Coolant MSDS
Prior to using the
ThermoWrap Kit



Use only recommended
coolants

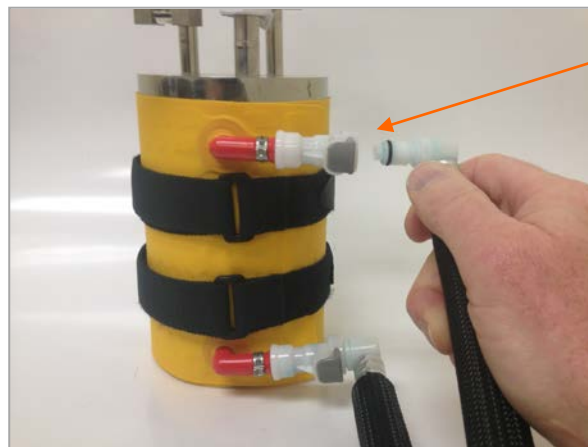
Use the following instructions to set up the ThermoWrap Kit and Chiller:

- 1) Wrap the ThermoWrap pad around your canister, bottle, or small gas cylinder, using the elastic Velcro straps to cinch the pad to the canister.



Elastic Hook &
Loop Cinching
Straps

- 2) Connect the coolant hoses to the pad using the APC connectors. The elbowed or straight APC connector on the hose is connected to the female connector on the ThermoWrap pad.



Connect
hoses to
ThermoWrap
Pad

- 3) Insert the wrapped canister into the top of the thermal insulated bag, running the hoses and any other hoses out the top or sides of the bag.

Place
canister in
insulating
bag



- 4) Seal the top and sides of the bag using the hook & loop strips sewn inside.

Close bag



- 5) Connect the coolant hoses to a Solid State Cooling Systems chiller using the CPC connectors (see Specifications for recommended chiller or contact SSCS). Note that the hose connected to the outlet of the chiller should be connected to the lower of the two connectors on the pad for optimum flow.

- 6) Start-up the chiller and set the desired temperature (see section 4).



CAUTION

Only use the ThermoWrap
with Solid State Cooling
Systems chillers

Important Note:

Do not fully refill the chiller tank after the unit is turned on. Doing so may result in tank overflow when the unit is turned off.

SECTION 4

START UP



WARNING

Electrical Shock Hazard:
Never plug in the chiller
line cord with wet hands

Once the hook up is complete, make sure there is sufficient process fluid / coolant in your chiller tank. Then power on the chiller and set the desired control temperature.

See the Solid State Cooling Systems chiller manual for start-up procedures.

Important Note:

Only chillers with centrifugal pumps with less than 20 psig max pressure should be connected to the ThermoWrap. Diaphragm and gear pumps can damage the pad causing leaks from excessive pressure.

SECTION 5

OPERATION



CAUTION

Please read the Chiller
Manual before
operating the unit

See the Solid State Cooling Systems chiller manual for complete operating instructions for the chiller. The SSCS chiller system allows you to set the desired temperature of the process fluid running through the ThermoWrap pad.

Depending on your specific set up, canister size, ambient environment and desired control temperature, you may have to use a fixed offset between the chiller set point and the desired canister fluid temperature.

We encourage all customers to use the insulating bag and ensure it is fully closed to provide the best temperature stability.

SECTION 6

SYSTEM ALARMS/TROUBLESHOOTING



CAUTION

Please see the Chiller Manual to troubleshoot any issues with the Chiller

LEAKING PAD: Check all connections to make sure the quick disconnects are fully inserted. *If the pad itself is leaking or damaged in any way contact Solid State Cooling Systems for an RMA number to return the ThermoWrap pad for replacement.*

LEAKING HOSE: Check all connections to make sure the quick disconnects are fully inserted. *If the insulated hose itself is leaking or damaged in any way contact Solid State Cooling Systems for an RMA number to return the hose for replacement.*

CHILLER TANK OVERFLOW: If the tank is fully refilled after the system is turned on and the ThermoWrap pad is filled with fluid, the tank may overflow when the system is powered down and the pad deflates. If this occurs, drain some of the process fluid from your system. **Note: If the tank fluid level becomes too low, the Chiller display will read “Tank Level Low”.**

OTHER ISSUES: If you encounter any other issues, please contact Solid State Cooling Systems (see section 7).

SECTION 7

TECHNICAL SUPPORT

Delighting our customers is our highest priority. Please contact us immediately for technical assistance whenever you have questions or concerns.

Hours: 8 a.m. to 5 p.m. Eastern Time, weekdays

Telephone: (845) 296-1300

Fax: (845) 296-1303

E-mail: info1@sscooling.com

WARRANTY POLICY

The ThermoWrap Kit is covered under a two-year parts and labor warranty from the date of shipment, assuming proper use and maintenance. **Note that the warranty only valid if the ThermoWrap with Solid State Cooling Systems chillers using a centrifugal pump with max pressure less than 20 psig.** All warranty work shall be performed at Solid State Cooling Systems' facility, currently located in Wappingers Falls, NY, USA and requires pre-authorization by SSCS. Malfunctioning products should be returned to Solid State Cooling Systems by the method described below. Solid State Cooling Systems will provide a Failure Analysis Report to the customer and will determine if the problem is covered under the warranty.

Warranty Coverage:

Products with defects in components or manufacturing which are reported to Solid State Cooling Systems before the end of the warranty period will be repaired or replaced at no cost (see below for reporting requirements). The warranty period begins on the date the product was initially shipped from Solid State Cooling Systems' factory.

Excluded from Warranty:

Excluded from warranty is any damage caused to the product occurring during, but not limited to, such events as shipment, installation, storage, or usage occurring during a situation specifically cautioned against or noted in the product manual.

Specific situations, which invalidate the warranty, include (but are not limited to):

- Removing the serial number label.
- Any disassembly (partial or complete) of the product.
- Changing any components of the product.
- Subjecting the product to temperatures below the freezing point of the coolant used.
- Subjecting any product to temperature, voltage, current, or pressure (internal or external) greater than that specified in the product manual.
- Any actions prohibited in the "Caution" section of the product manual.

Returned Goods Procedure and Reporting Requirements

Before a failed product is returned to the factory, a Returned Materials Authorization (RMA) number must be obtained from Customer Service at (845) 296-1300. The date the RMA is requested will be the reporting date noted and relevant to the warranty. Products, which have received an RMA, must be received at SSCS's factory, within 30 days or the reporting date will be moved ahead 30 days and a new 30-day waiting period will begin. Customers shall pay shipping cost of returning any unit to SSCS and SSCS shall pay shipping cost of returning any unit repaired under warranty to the customer.

All out of warranty returned goods will require an evaluation purchase order prior to receipt at Solid State Cooling Systems. The evaluation costs will depend on product model and will be deducted from the cost of any repairs required.