

Manual for 18028CSU or 18018CSU with 18094 Therm-O-Cycle

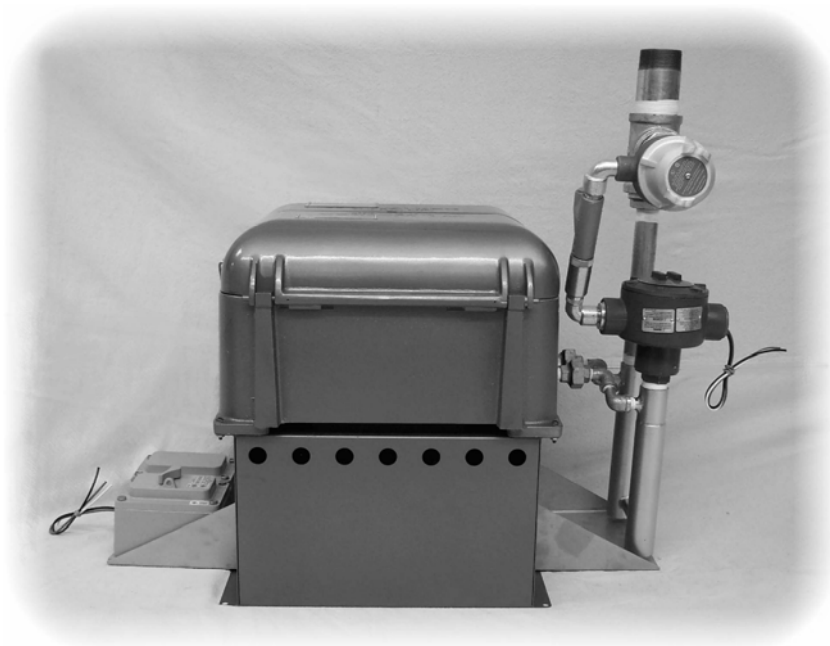
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For machines with serial numbers beginning with letter U and ending with letter I

March 27, 2008

**W. L. WALKER 115 VOLT  
THERM-O-CYCLE  
HEATED CENTRIFUGE  
EXPLOSION-PROOF C.S.A. APPROVED**

**For Class I, Division 1, Group D, T3B**



Machine pictured with optional 18094 Therm-O-Cycle Heater

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# Certificate of Compliance

**Certificate:** 1559365 (LR 88082-1) **Master Contract:** 180880  
**Project:** 1980307 **Date Issued:** 2008/01/23  
**Issued to:** W. L. Walker Company Incorporated  
1009 South Main Street  
Tulsa, OK 74119  
USA  
Attention: James Action

*The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US'*



**Issued by:** Matthew Brock

**Authorized by:** Patricia Pasemko, Operations Manager

## PRODUCTS

**CLASS 8728 81** - LABORATORY EQUIPMENT - For Hazardous Locations - Certified to US Standards  
**CLASS 8728 01** - LABORATORY EQUIPMENT - For Hazardous Locations

Class I, Division 1, Group D, T3C

Model 18018, 18028 Centrifuge rated 115 V, 60 Hz, 1.9 FLA, 1/12 Hp.

Model 18018, 18028 Centrifuge rated 115 V, 60 Hz, 5 FLA, ¼ Hp.

The 'C' and 'US' indicators adjacent to the CSA Mark signify that the product has been evaluated to the applicable CSA and ANSI/UL Standards, for use in Canada and the U.S., respectively. This 'US' indicator includes products eligible to bear the 'NRTL' indicator. NRTL, i.e. National Recognized Testing Laboratory, is a designation granted by the U.S. Occupational Safety and Health Administration (OSHA) to laboratories which have been recognized to perform certification to U.S. Standards.



**Certificate:** 1559365 (LR 88082-1)

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Class I, Division 1, Group D, T3B

Model 18018, 18028 Centrifuge rated 115 V, 60 Hz, 1.9 FLA, 1/12 Hp.

**APPLICABLE REQUIREMENTS**

CSA Standard C22.2 No. 0 M1982 - General Requirements Canadian Electrical Code, Part II

CSA Standard C22.2 No. 0.4 M2004 - Bonding and Grounding of Electrical Equipment (Protective Grounding)

CSA Standard C22.2 No. 0.5 1982 - Threaded Conduit Entries

CSA Standard C22.2 No. 30 M1986 - Explosion Proof Enclosures for Use in Class I Hazardous Location

CSA Standard C22.2 No. 151 M1986- Laboratory Equipment

UL STD. 1203, Third Ed. - Explosion-proof and Dust-Ignition proof Electrical Equipment for Use in Hazardous Locations.

UL STD. 508, Seventeenth Edition - Industrial Control Equipment.

Specifications for 18028CSU (Short Cone) or 18018CSU (Pear Shaped) Centrifuge with optional 18094 Heater

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Notice: All specifications and information are subject to change without notice.

RPM: 1725

Relative Centrifugal Force (RCF) @ 1725 RPM = 592

Voltage: 115 AC 60 Hertz

Amps: Centrifuge motor only 1.9 (running) 9.0 (momentary on startup)  
Heater only 6.5

API criteria: Meets requirements of API MPMS 10.4 "Determination of Water and Sediment in Crude Oil by the Centrifuge Method (Field Procedure)"

CSA Approved: 'Canadian Standards Association' approved for Hazardous Locations of Class I, Division 1, Group D, T3B

Weight: Centrifuge only = 93 lbs. (42.2 kilograms)  
Heater only = 24 lbs. (10.9 kilograms)

Volume of liquid required for Centrifuge / Heater assembly: 8 quarts (7.6 liters) approx.

Dimensions:

Note: some variation in dimensions may occur due to assembly and make-up.

Depth including switchbox = 23-1/4 inches (590mm)

Depth less switchbox = 18 inches (457mm)

Depth with Heater attached = 32 inches (812mm)

Width with lids closed = 18 inches (457mm)

Width with lids open = 24 inches (610mm)

Height with lids closed = 19-1/4 inches (489mm)

Height with lids open = 24 inches (610mm)

Height of Heater = 27-1/2 inches (698mm)

Note: see pages 12, 13 & 14 for more information on dimensions

## Setup and filling of 18028CSU or 18018CSU Centrifuge with 18094 Therm-O-Cycle Heater

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Locate and mount the machine on a workbench or table that is capable of supporting the combined weight of the Centrifuge and Therm-O-Cycle Heater assembly. Take care to allow for proper spacing around the Centrifuge / Heater assembly as parts of heater will reach temperatures capable of causing burns to personnel or surrounding equipment.

### Attaching Therm-O-Cycle Heater to centrifuge:

- Attach the support for the heater assembly (shipped inside the centrifuge) in the same manner as the control box support.
- Break the unions on the Therm-O-Cycle Heater unit and remove the outer halves. Apply dope or thread tape to the threads of the nipple end of the unions and screw the nipples into the two threaded holes at the back of the centrifuge. Attach the Therm-O-Cycle Heater to the centrifuge by mating and tightening the unions

### Wiring:

Centrifuge and Heater should be wired in accordance with the National Electrical Code.

### Filling:

Fill the unit with an appropriate mixture of permanent type antifreeze and water. For most applications a 50/50 mix should be fine. Note: straight water is not recommended due to the possibility of freezing and not providing corrosion protection for the internal parts of the centrifuge and heater. Approx. 8 quarts (7.6 liters) should be on hand to fill the centrifuge / heater assembly.

### To fill the unit:

- Remove or loosen the small vent screws and washers that are located in the corner of each preheater pocket. This will allow trapped air to escape from the water chamber as the unit is filled.
- Add the 50/50 mix through the 2" x 4" nipple on the Therm-O-Cycle Heater unit until the liquid is observed coming out each of the vent holes.
- Replace the washers and screws into the vent holes and tighten.
- Continue to add the 50/50 mixture until it covers the float (visible through the 2" x 4" nipple) inside the Therm-O-Cycle Heater assembly. The final liquid level should be approx. 2" (50mm) below the top of the 2" x 4" nipple. The unfilled portion of the nipple will allow for expansion of the liquid as it is heated.
- Check unions, nipples and all fittings for leaks.

A quantity of the 50/50 mix should be on hand to maintain the proper liquid level as there will be a small amount of loss due to heating and venting of trapped air on a regular basis.

## NOTE: ALL ADJUSTMENTS TO THE THERMOSTAT MUST BE MADE WITH THE CURRENT OFF

The Therm-O-Cycle Heater unit is preset to approximate temperature and may need to be adjusted for the users specific requirements and conditions. Allow the unit to come up to temperature. The overall temperature of the unit should stabilize in approx. 1 hour to 90 minutes depending on ambient conditions and the temperature required. Place a sample tube or tubes into the preheater pockets of the centrifuge and place a thermometer into the tubes. Allow the temperature of the sample to stabilize. Make needed adjustments to the thermostat as follows:

- 1) Turn the current to the unit off.
- 2) Remove the cover from the thermostat control housing.
- 3) Rotate the thermostat clockwise for higher temperature or counterclockwise for lower temperature.
- 4) Replace the cover of the thermostat housing and tighten firmly.
- 5) Turn the current supply on and allow the sample temperature to stabilize.

Repeat this procedure as needed to obtain the required temperature of samples.

Little adjustment is required once the desired temperature is set.

### Notes on trapped air in water jacket:

Air trapped in the water jacket can cause the preheater pockets to not heat the samples to the set temperature and or take a longer than normal length of time to for samples to reach desired temperature.

Trapped air will also expand at a greater amount than the antifreeze mix and can cause the mix to overflow the 2" x 4" nipple of the Therm-O-Cycle Heater.

Any trapped air must be removed from the water jacket on a regular basis for proper and efficient operation. Do not remove the vent screws and washers from the tops of the preheater pockets after the unit is filled with the proper amount of antifreeze mix. The vent screws need only to be loosened enough (1 or 2 turns) to allow the trapped air to escape and a small amount of the antifreeze mix to become visible under the vent screw. Each preheater pocket should be vented of trapped air each day of operation. Tighten each vent screw after the pocket is vented. The liquid level in the 2" x 4" nipple of the heater unit should be observed during the venting procedure and replenished as needed. Note that if the power to the Therm-O-Cycle Heater is off for a length of time that allows the unit to cool down, the unit will need to be carefully vented of trapped air on restart.

### Operation of Centrifuge:

Check the shields in the centrifuge head to be sure that all the plastic plugs are in place at the bottom of shields and that the felt cushions are present.

Remove the heated samples from the preheater pockets and place them into the shields of the centrifuge head.

Take care to equally fill each tube for proper balance. If running more than one set of samples at a time, note should be made of the number on the arm of the head by each shield.

(continued on page 6)

Operation of Centrifuge: (continued from page 5)

Close and latch the lids for safety purposes and to retain heat. The closed and latched lids also allow the motor to operate more efficiently. Turn the machine on an run for the necessary length of time.

Turn off the machine and allow the head to come to a complete stop. Unlatch the lids and remove samples for inspection.

For complete details as to proper methods of testing, we suggest the use of the following "American Petroleum Institute" publications.

- API MPMS Ch. 10.3
- API MPMS Ch. 10.4
- API MPMS Ch. 10.6

These publications are available from

"American Petroleum Institute"  
1220 L Street, Northwest  
Washington, D.C. 20005-4070

202-682-8000

[www.api.org](http://www.api.org)



## Maintenance

There is very little maintenance required for the 18028CSU or 18018CSU centrifuge with optional 18094 Therm-O-Cycle heater when used on regular duty cycle.

For units that are expected to run on multiple shifts or are in a critical need situation, there are a few spare parts that should be ordered in advance to avoid as much downtime as possible. The following items should be on hand for possible repairs over the course of one year.

### For Centrifuge:

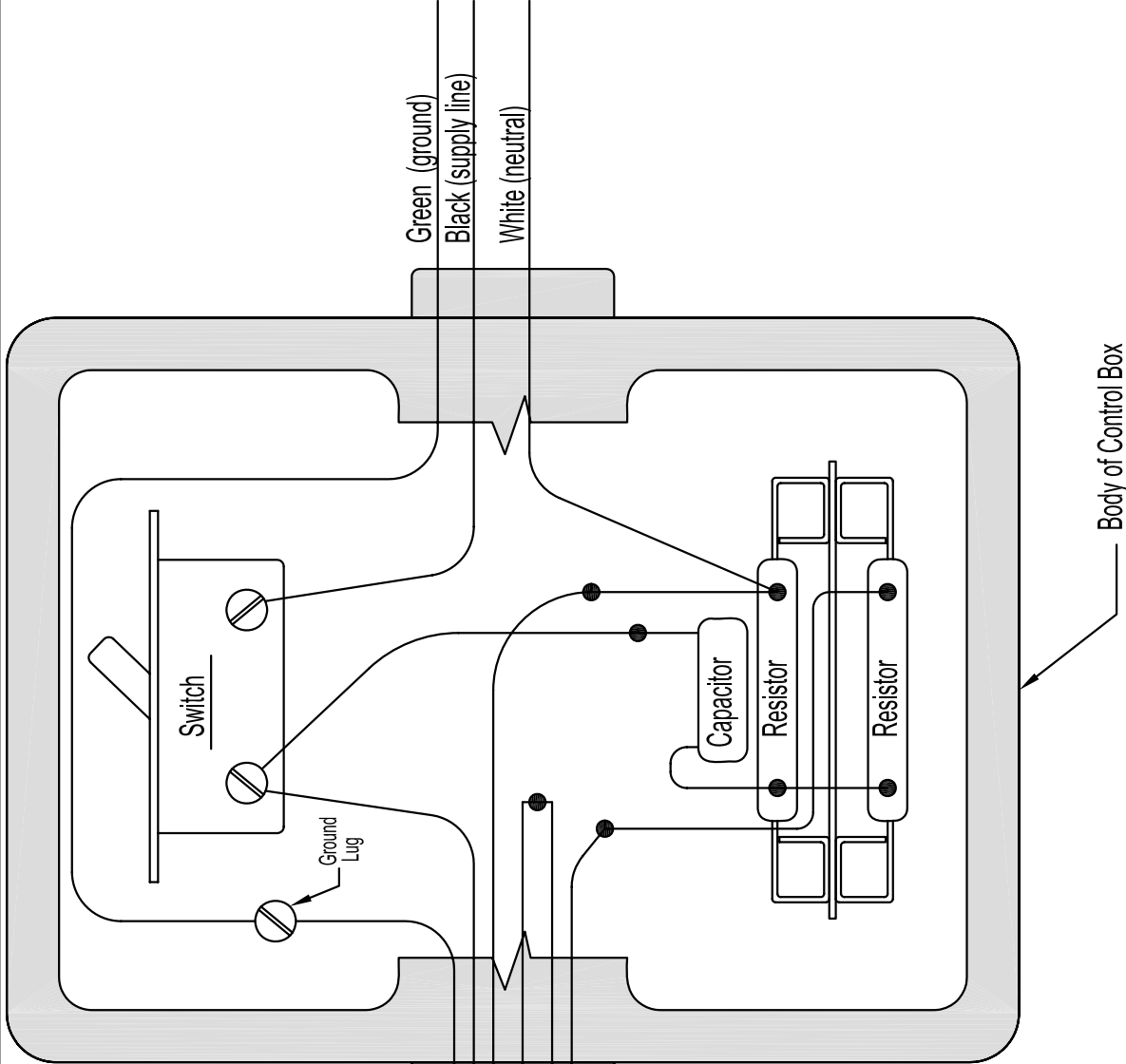
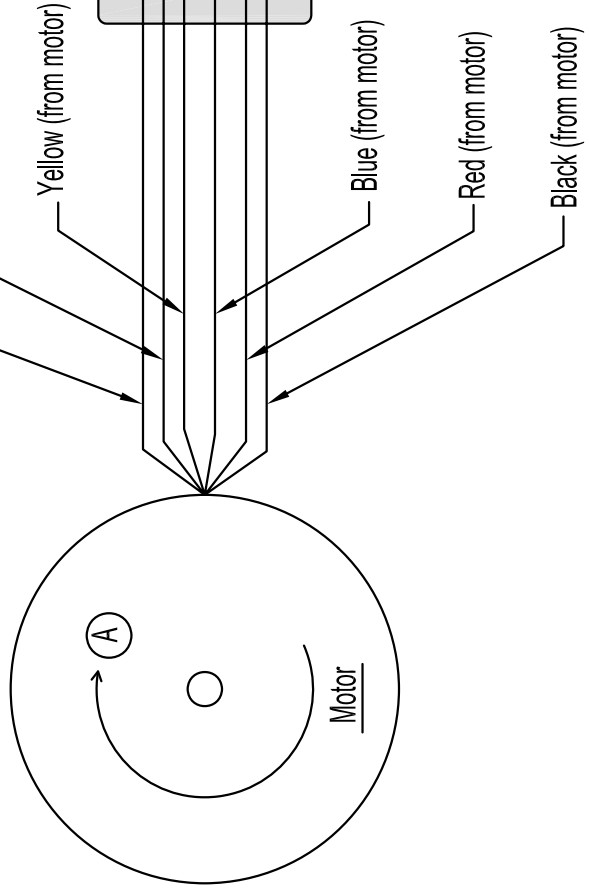
<u>Quan.</u>	<u>Inv.#</u>	<u>Description</u>
2	18437	bearing
1	18434	shaft extension
2	18438	retainer ring for bearing
4	18097	bleeder screws (vent screws)
4	1809701	gaskets for bleeder screws
1	18431	motor

### For 18094 Therm-O-Cycle Heater

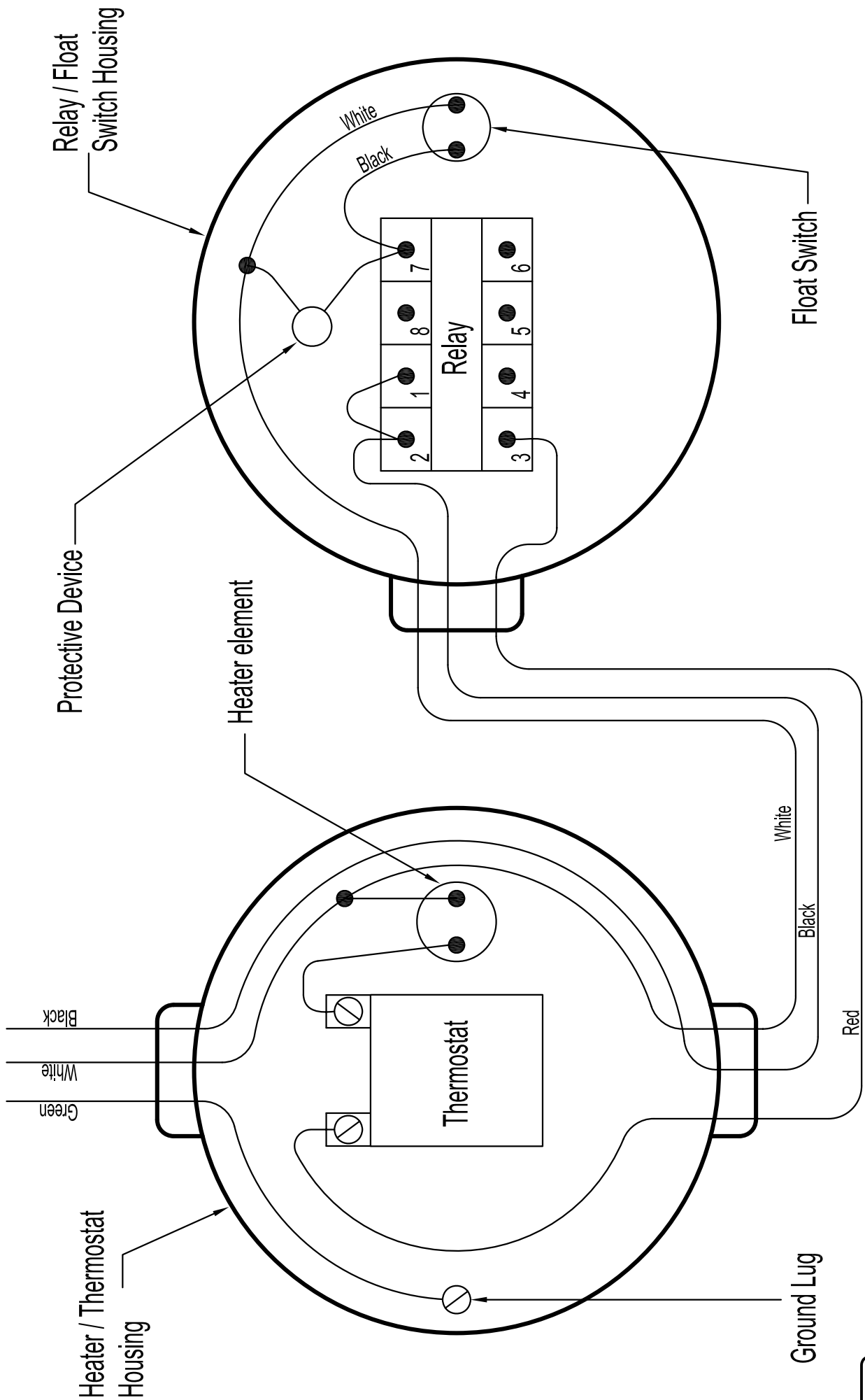
1	18099	heater / thermostat assembly
1	1809901	thermostat only for 18099

All units may be shipped to W.L.Walker Co. Inc. facility in Tulsa, Oklahoma for evaluation and repair with shipper to pay all shipping costs unless prior arrangements are made.

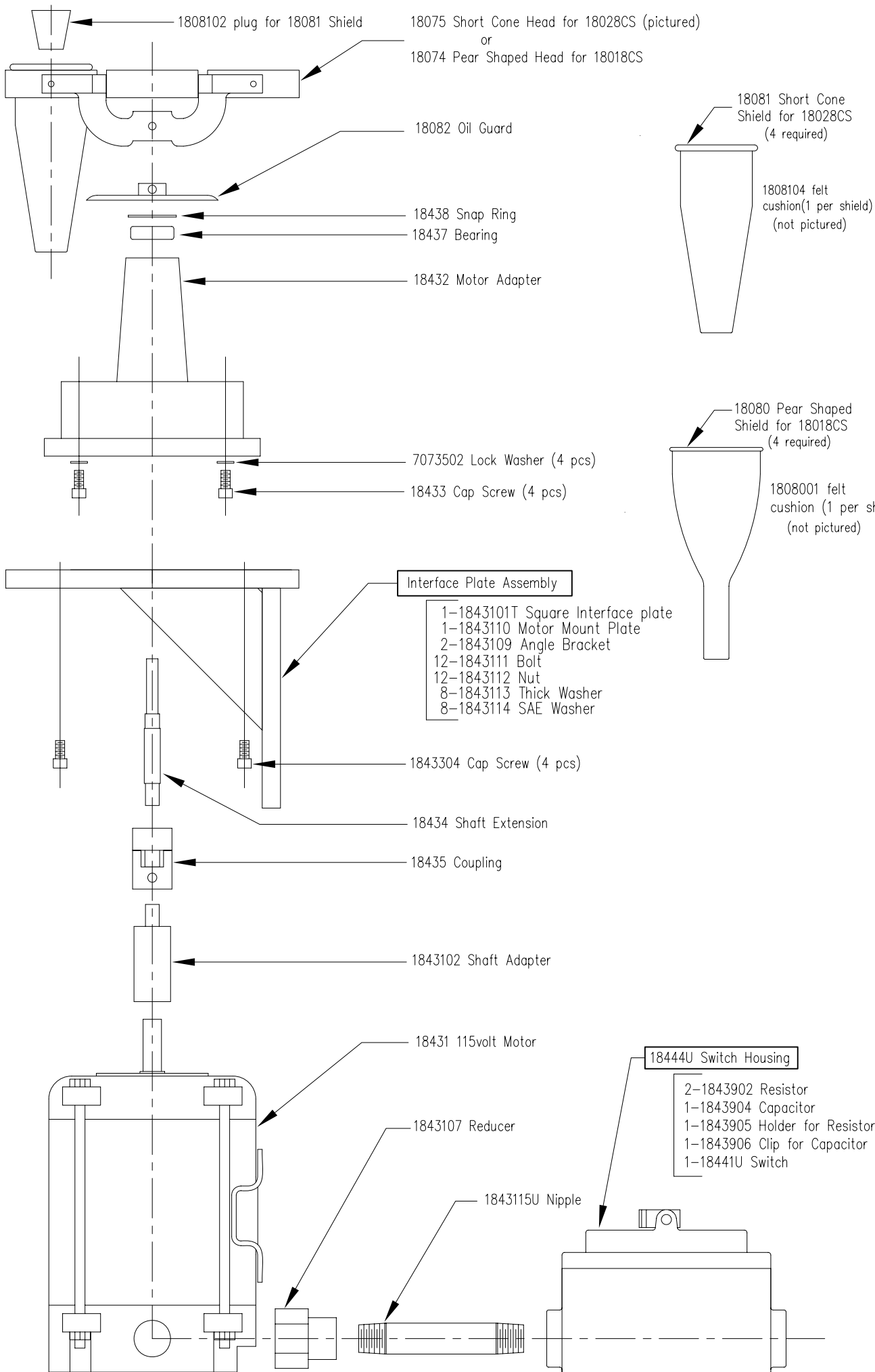
A) This wiring should produce rotation in the clockwise direction (as viewed from the shaft end of motor)



Note: Machines with these motors were manufactured starting in Jan. of 2008  
 Also note that the wiring diagram gives the basic layout and connection of the components inside the control box although actual wiring connection points and layout may vary.



Wiring for 18094 Therm-O-Cycle Heater  
 Jan. 8, 2008



Title: Motor / Motor Switch / Head Spindle Assembly for 18028CSU or 18018CSU  
For units with CSA CIUS Rating and Serial Numbers beginning with letter U  
and ending with letter T

Drawn By: J.A

Date: March 27, 2008

Scale: not to scale

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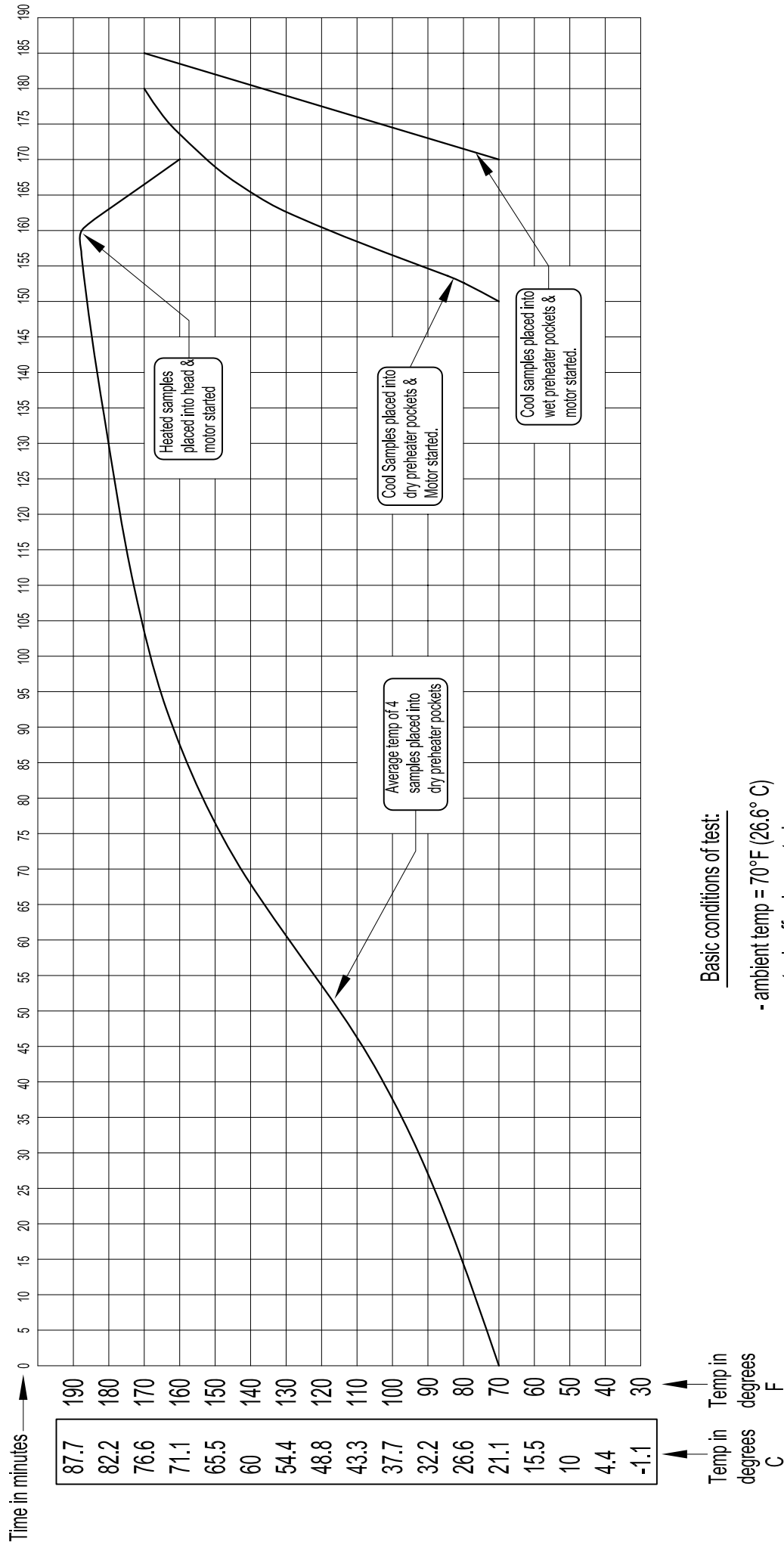
W.L. Walker Co., Inc.

Heat up time of 18028CS using 18094 Therm-O-Cycle Heater with samples placed into the 4 preheater pockets inside machine.

Note: This information is for reference only.

Actual field results will vary with conditions on hand.

These tests conducted in controlled environment under 'best conditions'.

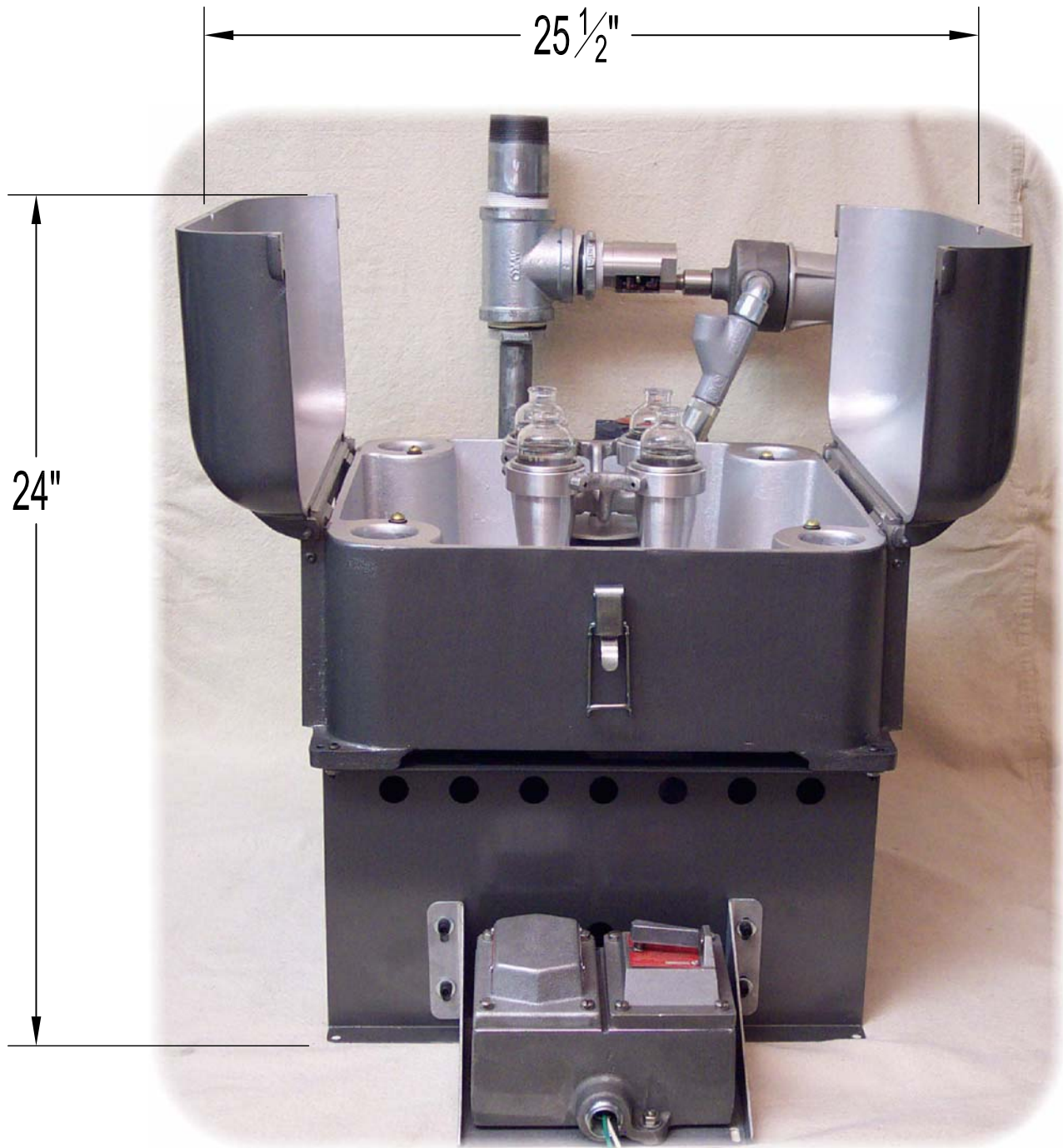


Basic conditions of test:

- ambient temp = 70°F (26.6° C)
- motor is off unless noted
- thermostat is set to max.
- sample liquid is water

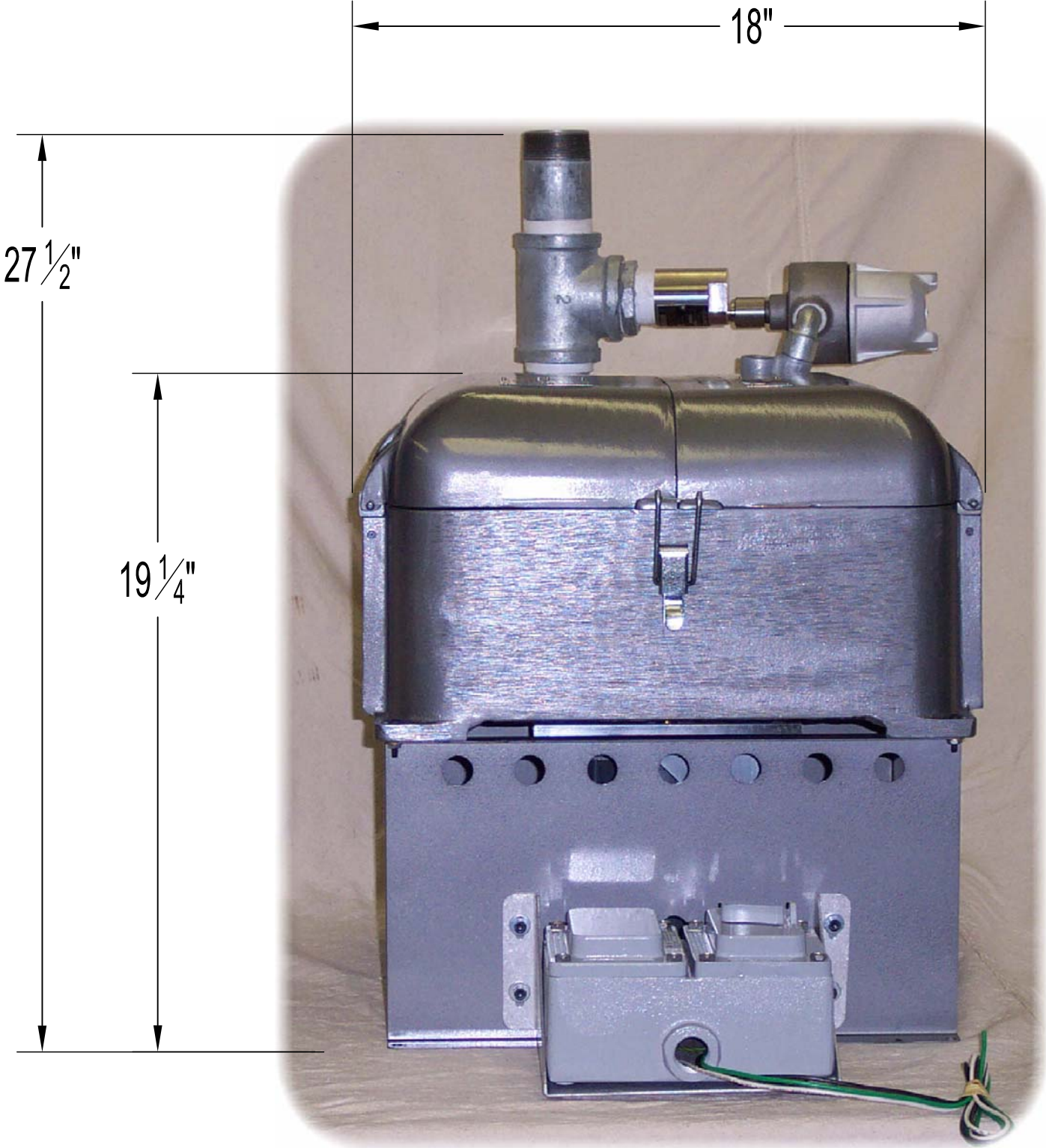
Front view of 18028CSU or 18018CSU with 18094 Heater attached and lids open.

Note: 18028CSU (short cone) pictured here



Note: Dimensions are subject to change due to availability of parts, make-up of parts and or design changes.

Front view of 18028CSU or 18018CSU with 18094 Heater attached and lids closed.



Note: Dimensions are subject to change due to availability of parts, make-up of parts and or design changes.

Side view of 18028CSU or 18018CSU with 18094 Heater attached.

Note: Dimensions are subject to change due to availability of parts, make-up of parts and or design changes.

