

CytoTherm

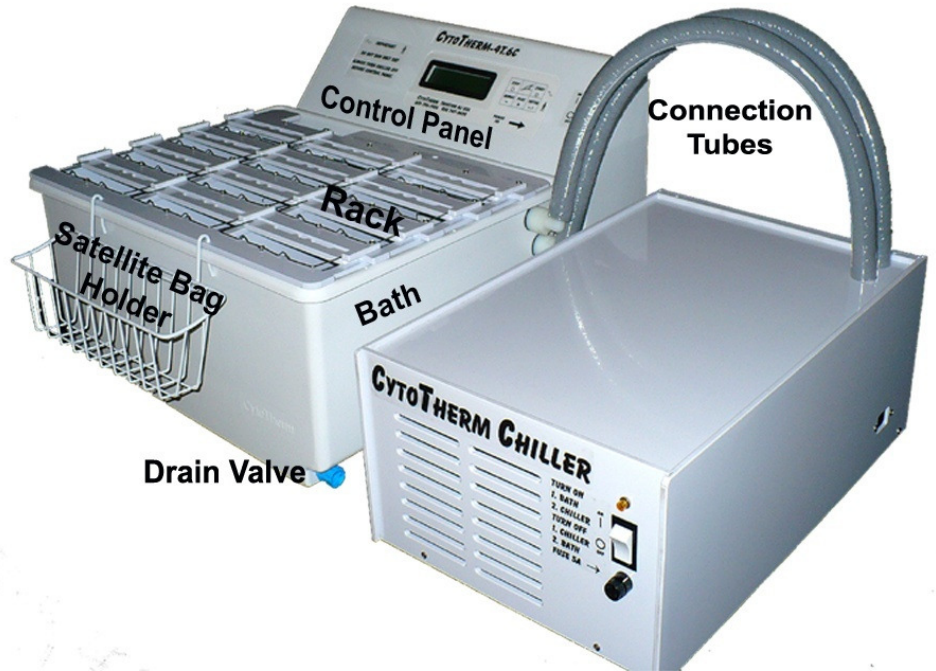
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CytoTherm 4T.6C

**ROCKING WATER BATH
 with CHILLER to
 THAW PLASMA at 6°C to
 be used in the manufacture of
 Cryoprecipitated AHF.**

Model CT-4T.6C

Owners Manual
 Software version
 CT4T6C511 and higher



WARRANTY

Each CytoTherm product is produced under rigid quality control standards. This unit is fully warranted for a period of two years from the date of purchase. Call 609 396-1456 or 800 747-9699 for help. If necessary send unit to:
 CytoTherm 110 Sewell Ave. Trenton, NJ USA Tel 609 396-1456 Fax 609 396-9395

Please mail in your warranty card. Please record the following:

Control Panel Ser.# _____ Bath Ser.# _____ Chiller Ser. # _____ Date of Purchase _____

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Draw\Instruct CT Products\CT4T6CinsY 29 Jun 2016

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SPECIFICATIONS

BATH: Thawing temperature is adjustable (4.0°C programmable or 5.0°C default) to 20.0°C. Preset thawing temperature is 6.0°C. Overtemp Alarm 1.0°C over thawing temperature. 45°C safety thermostat. Accuracy 0.1°C. Easy to do, digital temperature calibration. Power 770 Watt, Available in 120 or 230 Volts, 50 or 60 Hz. (must be grounded).

CHILLER: Available in 120 or 230 Volts, 50 or 60 Hz. Current is 4 Amps at 120 Volts, 2 Amps at 240 Volts.

DESCRIPTION

The CytoTherm-4T.6C (CT-4T.6C) is a laboratory instrument that consists of a recirculating water temperature bath that uses a rocking action to massage the plasma. This action speeds up the plasma thawing time. An external CHILLER lowers the temperature so that thawing can occur at 6°C. The CT-4T.6C is used in the manufacture of Cryoprecipitated AHF. It is not used for thawing Cryoprecipitated AHF which requires thawing at 37°C.

The CT-4T.6C comes with a RACK that will thaw 1 to 12 plasma units at a time. The operator's hands stay dry when handling the plasma bags. The RACK keeps the entry ports of flat-frozen units out of the water.

A large digital display indicates the temperature and counts down the thawing time.

SETTING-UP

The unit comes packed in 2 boxes. Make sure you have received the following:

..... Control Panel Bath
..... Rack with 12 Bag Clamps 2 Arms
..... Drain Tubing Condensate Drip Tray
..... 2 x Power CordInstruction Book
..... Overwrap bags2 x Connecting Tubes
..... ChillerAlgaecide. Part # ALG240 (USA only)
..... Satellite Bag Holder	

Links to instructional videos found at www.cytotherm.com.

The CT-4T.6C consists of a modified standard plasma thawer Model CT-4T and an accessory CHILLER to lower the thawing temperature. The CHILLER is positioned to the right of the CT-4T.

Please watch the enclosed video or DVD on how to set up the standard CT-4T Plasma Thawer.

Screw the ARMS to the side of the CONTROL SECTION. The notched side of the ARMS faces up.

Place the BATH in front of the CONTROL SECTION so that the chassis on the BATH is next to the indented portion of the CONTROL SECTION.

Connect the umbilical cord of the CONTROL SECTION to the plug receptacle on the back of the BATH section. The label on the connector faces up. ** THE POWER SWITCH MUST BE OFF WHEN CONNECTING OR DISCONNECTING THIS CORD **

Lift the BATH and position it so that the pivots on the side of the BATH slip into the notches on the ARMS.

Make sure the power switch is OFF. Plug the power cord into a properly grounded electrical outlet.

Fill the BATH with cold tap water to 2.5" (8 cm.) from the top of the bath. After the unit is loaded with plasma bags, add water to get more coverage of the bags, but not so high that it will spill as the unit rocks.

If your tap water contains a lot of lime, use distilled or de-ionized water, and add a pinch of salt to make the water conductive so that the level sensors will work. Do NOT use saline solution. Add 5.5 ml. of Algaecide Part #ALG240 (1.0 ml. per 4 liters of water . Available USA only) to the water. Do NOT add bleach to the water.

Place the RACK inside the bath. The RACK holds up to 12 individual plasma bags. Mount the SATELLITE BAG HOLDER on the front of the BATH.

Slide the Condensate drip tray underneath the BATH.

Place the CHILLER to the right of the BATH and plug it into an outlet. Connect the 2 CONNECTION TUBES between the BATH and the CHILLER.

Turn the power switch of the Thawer ON. The display will say "Push Enter if Chiller connected". Make sure the TUBES are connected and push ENTER. The unit will turn on the pump and will display "Turn on cooler! Push PLUS". It is

important that water is recirculated through the CHILLER, before turning on the CHILLER. Turn ON the CHILLER and then push PLUS to let the Thawer know that the CHILLER is turned ON.

VERY IMPORTANT. The bath recirculating pump must always be ON when the CHILLER is ON.

NOTES:

When turning OFF the Thawer, the CHILLER must be turned off first. Then the THAWER can be turned off. Always wait 3 minutes after you turn the CHILLER OFF, before turning the CHILLER back ON

The unit will cool until it reaches 6°C (The target temperature is adjustable. See PROGRAM MODE). The CHILLER will stay on constantly and the display will show “HEAT ON” when the unit is heating to control temperature.

OPERATION

Wait for the water to cool to 6.0°C. You can speed cooling by adding ice to the bath water.

The plasma bag can be thawed with or without an overwrap bag because the bag ports are kept sterile out of the water.

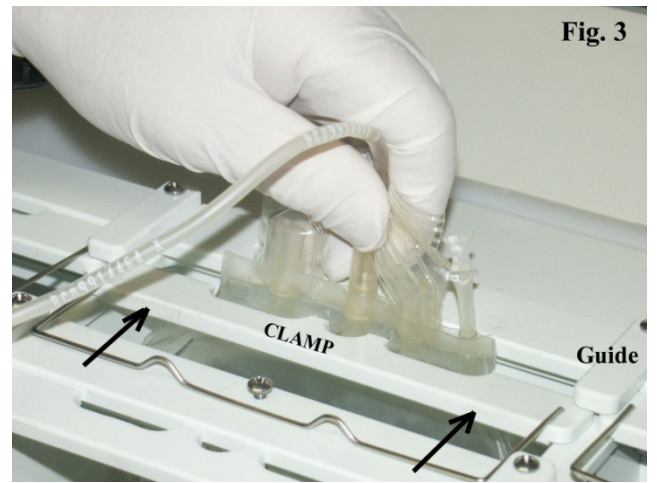
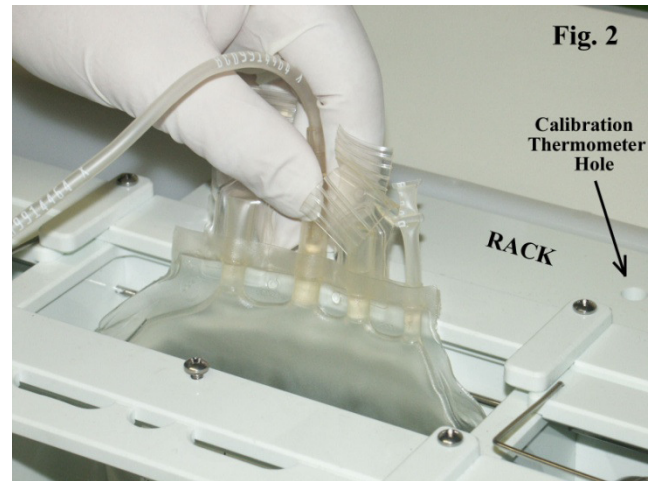
Position the plasma bag in the slot in the RACK so that the end of the bag is against the back side of the RACK and the ports of the bag are in the air. Fig. 2.

Guide the CLAMP under the Guides and push it forward to hold the plasma bag. Fig. 3. Lock the CLAMP in place by pushing the SPRING over the SCREW. Fig. 4. The SPRING force can be adjusted by bending the SPRING out.

Place the SATELLITE bag in the BAG HOLDER. Fig. 5

Overwrap bags 15 cm. wide by 30 cm. (6” x 12”) long are available from US Plastics 1390 Neubrecht Rd. Lima OH 45801 Tel. 800 537-9724. Part #47352.

Push START to begin thawing for the programmed time (pre-programmed to 50 minutes). The Rocking Motor will turn on. Use PLUS or MINUS to increase or decrease the thawing time. When the time is finished, the buzzer will call the operator back. The STOP switch ends the thawing. If more thawing time is needed, hold PLUS while pushing START and the unit will thaw for another 3 minutes.



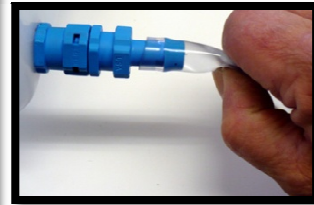
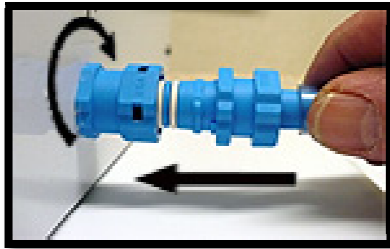
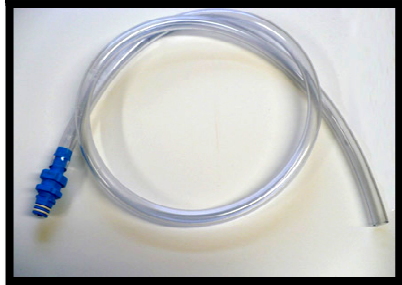
LEAKY PLASMA BAG

If a Plasma bag leaks and you used an overwrap bag the bath water will not be contaminated. If you did not use an overwrap bag, you will need to clean the bath.

CLEANING the BATH

Clean the BATH

1. Turn off the Chiller. Remove the RACK, clean under running water and wipe with bleach towelettes or a 10% bleach solution. Rinse off the bleach with water.
2. Drain the bath. Pull out the Drip Tray. Insert the Drain tubing Assembly # C-VLVM into the Drain Valve housing #C-VLVF and Twist clockwise until it engages. This will start the draining flow.



After water starts to flow, gently pinch the drain tubing and release to remove any air inside the tubing to improve flow. Manually tilt the bath towards the front.

3. Wipe the BATH with bleach towelettes or a cloth moistened in a 10% bleach solution. Use only water and bleach towelettes or cloths cleaning. **DO NOT USE CONCENTRATED BLEACH.** Use alcohol for removing oil or grease. **WIPE THE INSIDE OF THE BATH. DO NOT IMMERSE THE WHOLE BATH. WIPE THE PUMP SCREEN FROM THE OUTSIDE ONLY. DO NOT REMOVE THE SCREWS. WIPE THE DRAIN. WIPE THE DRAIN VALVE INSIDE THE BATH.** Wiping with the bleach towelettes, will disinfect the bath. Rinse off the bleach with water and drain out the water. Close the DRAIN valve. Fill the bath with water. If you use deionized or distilled water add a little pinch (about 0.01 gr.) of table salt to make the water conductive. Mount the RACK. Add 5.5 ml. of Algaecide Part #ALG240 (1.0 ml. per 4 liters of water .(Available USA only) to the water.

Flush out the water in the Chiller.

Keep Chiller OFF. Fill the bath with water, connect the pump outlet tube fitting of the bath to one of the thick tubes of the Chiller. Put the end of the second thick tube into a bucket. Plug the control unit in and turn ON the unit. The display will say "push Enter if Chiller is connected", even though only one hose is connected, push Enter. Water will pump from the bath through the Chiller and into the bucket. Let it pump for a few seconds and when the water coming out of the chiller looks clean, turn the unit OFF. Reconnect the second Chiller tube to the bath.

SWITCH FUNCTIONS There are 6 switches on the front panel:

There are 6 switches on the front panel:

START. Starts function.

STOP. Stops function.

ENTER. Records parameter changes.

PLUS. Steps through parameters and increases value of parameter.

MINUS. Allows change in parameter and decreases value of parameter.

Sketch of FIN logo. Not currently used. Future expansion.

MODES

STANDBY MODE. The unit maintains 6.0°C, but does not rock. Holding ENTER will turn on the rocking motor.

THAWING MODE. The unit rocks the bath and recirculates the tempered water. The display counts down the remaining time. Pushing START starts thawing. Pushing STOP stops thawing.

DIAGNOSTIC MODE. Hold MINUS as you turn the unit on.

1. To restore the unit to initial factory settings, press ENTER while still holding MINUS. The unit displays “UNIT RESET”. Turn the unit off. You have to re-calibrate the temperature after resetting the unit.
2. Work the pump and the rocker motor. When in DIAGNOSTICS release MINUS then push ENTER to verify that you are a technician. The display shows “PUMP TEST”. MINUS turns on the pump, ENTER turns on the rocker motor. Push PLUS to go to next function.

PROGRAM MODE allows you to:

1. Program the thawing time.
2. Calibrate the temperature.
3. Set the target thawing temperature. The Alarm temperature is 1.0°C above the target temperature.

Enter PROGRAM MODE by holding ENTER while turning the unit ON. Follow the displayed instructions to program.

Programming the Thawing Time. When the thawing time is displayed, press MINUS because you want to change the time. Use PLUS or MINUS to set the desired new thawing time, press ENTER to program in the new time. Turn the unit off.

Calibrating Temperature. Turn the unit on. Wait until the unit cools to 6.0°C. Check the displayed temperature with your own certified or calibrated accurate thermometer. If the displayed temperature needs to be changed, turn the unit off. Enter PROGRAMMING MODE by holding ENTER as you turn the unit on. When the thawing time is displayed push PLUS until the display shows “CALIBRATE TEMPERATURE”. Push MINUS because you want to change the displayed temperature. Use PLUS or MINUS to make the displayed temperature agree with your thermometer. Push ENTER to record the calibration. Turn the unit off.

Programming the Target Thawing Temperature. When the thawing temperature is displayed, press MINUS because you want to change the temperature. Use PLUS or MINUS to set the desired new thawing temperature, press ENTER to program in the new temperature. Turn the unit off.

Lowest temperature Programming. When the Lowest temperature is displayed, press MINUS because you want to change the lowest temperature. Press plus to change the lowest temperature. There are two choices: 5.0°C, which is recommended and 4.0°C. Test have shown that the Factor VIII yields are lower when thawed below 6.0°C.

TROUBLESHOOTING

English: Unit should be opened by qualified technicians only.

French: Ne puet etre ouvert que un techicien autorize.

Bath is "dead"	Verify that you are plugged into a live, grounded outlet. Have qualified technician check if fuse is blown or connectors are loose. The 120 VAC model unit uses 2 x 8A 3AG fuses. The 240 VAC model uses 2 x 5A 3AG fuses.
Chiller is "dead"	Check fuse on panel. 5A Slow Blow 3AG fuse.
Unit is not responding, but the display is backlit.	Turn the unit off for 10 seconds and then turn it back on. (Reboot)
Display says "low water" but there is water.	The unit is not sensing that water is present. a. Make sure you are using tap water or adding salt to deionized water to make it conductive. b. The level sensor (screw 2 cm. above the stainless tube temperature sensor) inside the bath is dirty. Scrape it and then clean with alcohol.
Unit does not heat but "heating" is displayed	Check the Safety thermostat (#C-TH) and the heaters (#14-77) for continuity. Check for loose connections in the umbilical connector.
6C will be out of range during calibration.	Check TP on circuit board. Should be 0.205 Vdc. It is marked 0.395 on board for 37°C calibration.
Temperature calibration changed unexpectedly.	Replace temperature sensor (#CT4-TS).
Pump does not circulate. No hum.	No power to pump or pump winding open. Check the umbilical connector. Check the pump (#14-PM). DO NOT DISASSEMBLE the pump.
Pump does not circulate. Makes humming noise.	Blow air through pump outlet tubing to clear small debris. Check pump (#14-PM). DO NOT DISASSEMBLE. Any evidence of leaking on motor side means pump must be replaced.
Waterbath not rocking.	Check if cam is loose on motor. Check the rocking motor (#C-RM).
CHK FLOW/CHILLER message and alarm. when unit is first turned after 60 minutes of cooling the water.	If the starting room or water temperatures are very warm. Most likely everything is working correctly but the system was not cooled low enough. More time is required to cool the water to a lower temperature. Turn the units, Chiller and bath OFF. Wait 5 minutes and turn the bath and then the Chiller ON and let it cool the water. If the water temperature started cool (under 20C), check the pump & chiller. See fuller instructions below, CHK FLOW/CHILLER

MESSAGES, Troubleshooting

CHK FLOW/CHILLER **PRESS ENTER** Means that the water is not being cooled. The problem can be caused by a water pump failure, a chiller failure or the heat exchanger in the chiller freezing up. Press START to stop the audible alarm

CHK/FLOW CHILLER and then after checking **TURN UNIT OFF** is displayed. To check the flow to the chiller, remove the RACK, Observe the pump. There is a hole on the housing to force water to flow across the temperature sensor. If there is a visible flow from the pump housing, then the water pump is working.

Check if the water is recirculating in the bath, that means water is pumped to the CHILLER and then flows back to the bath. The problem then would be that the CHILLER is not working.

If the the pump is working and water is not recirculating in the bath, then the heat exchanger is frozen.

If the heat exchanger is frozen, turn the CONTROL PANEL and the CHILLER off and let it thaws out overnight. Turn the unit on the next day and check if the water is recirculating in the bath. If the water is not recirculating, contact the factory.

TOO HOT is an audible and displayed alarm condition that indicates that the bath temperature is 1.0°C higher than the set temperature. This message will not sound until the bath is cooled to the thawing temperature the first time. After that if the temperature rises above the thawing temperature the alarm will activate.

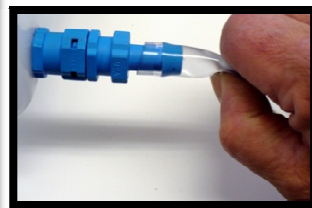
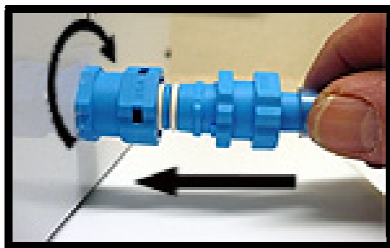
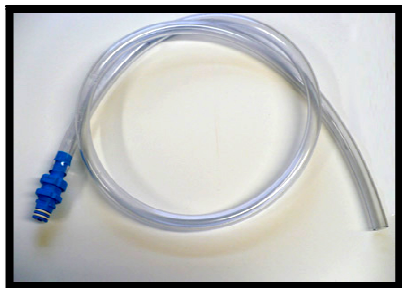
LOW WATER First make sure that a pinch (0.01 gr) of salt was added if deionized water was used. Pour water into the BATH to the correct level (see SETTING UP).

MAINTENANCE

Daily: Wipe off the unit.

Every Week: Clean the BATH

1. Turn off the Chiller. Remove the RACK, clean under running water and wipe with bleach towelettes or a 10% bleach solution. Rinse off the bleach with water.
2. Drain the bath. Remove the Drip Tray Insert the Drain tubing Assembly # C-VLVM into the Drain Valve housing #C-VLVF and Twist clockwise until it engages. This will start the draining flow.



After water starts to flow, gently pinch the drain tubing and release to remove any air inside the tubing to improve flow. Manually tilt the bath towards the front.

3. Wipe the BATH with bleach towelettes or a cloth moistened in a 10% bleach solution. Use only water and bleach towelettes or cloths cleaning. **DO NOT USE CONCENTRATED BLEACH.** Use alcohol for removing oil or grease. **WIPE THE INSIDE OF THE BATH. DO NOT IMMERSE THE WHOLE BATH. WIPE THE PUMP SCREEN FROM THE OUTSIDE ONLY. DO NOT REMOVE THE SCREWS. WIPE THE DRAIN. WIPE THE DRAIN VALVE INSIDE THE BATH.** Wiping with the bleach towelettes, will disinfect the bath. Rinse off the bleach with water and drain out the water. Close the DRAIN valve. Fill the bath with water. If you use deionized or distilled water add a little pinch (about 0.01 gr.) of table salt to make the water conductive. Mount the RACK. Add 5.5 ml. of Algacide Part #ALG240 (1.0 ml. per 4 liters of water .(Available USA only) to the water.

Flush out the water in the Chiller.

Keep Chiller OFF. Reassemble the unit, fill the bath with water, connect the pump outlet tube fitting of the bath to one of the thick tubes of the Chiller. Put the end of the second thick tube into a bucket. Plug the control unit in and turn ON the unit. The display will say "push Enter if Chiller is connected", even though only one hose is connected, push Enter. Water will pump from the bath through the Chiller and into the bucket. Let it pump for a few seconds and when the water coming out of the chiller looks clean, turn the unit OFF. Reconnect the second Chiller tube to the bath.

Every 3 Months suggested: even if tested later and the specifications are met, then the unit is in calibration for the time between the tests. If it went out of specification, it will stay out of specification.

Temperature Calibration. Run temperature calibration at about every 3 months or more often if your institution procedures or regulations require. See PROGRAM MODE > TEMPERATURE CALIBRATION.

Overtemperature Alarm Test. Start with the unit set up and ready to operate with the Chiller connected and the Bath filled with water. See SETTING UP. Let the system run until the temperature comes down to the set temperature. Keep the system running for 30 minutes to get everything stabilized. Turn the Chiller OFF. The water temperature will heat up from the room air which is warmer. When the temperature reaches 1.0C above the target temperature the alarm will sound. Turn OFF the unit. If alarm does not sound, contact CytoTherm.

PARTS LIST CT-4T.6C

CDR-MP6	Pump, Magnetic	DP-SW	Switch, 2-pole
14-77	Heater (2 needed)	C-TH	Safety Thermostat
CT4-PC	Printed Circuit Board	C4-DISP	Display
C6C-BTH	Bath Section	C4-UMB	Wiring Harness
C-RM	Rocking Motor	C6C-PM	Program Module
C4-TS	Temperature Sensor	C6C-CLM	Clamp (bag to rack)
ALG240	Algaecide (USA only)	C6C-RK	Rack (12 units)
C4-TR	Transformer (120V)	C6C-CHLR	Chiller
C4-TR2	Transformer (240 V)	C6C-DRTR	Condensate DRip TRay
C-VLVF	Drain Valve Female	C-VLVM	Drain Valve, Insert +Tubing
C6C-GRT	Gum Tubing for Chiller		

Always specify model and serial number when ordering.

SOURCES for SUPPLIES

BAGS overwrap 15 cm. wide by 30 cm. (6" x 12") long are available from US Plastics 1390 Neubrecht Rd. Lima OH 45801 Tel. 800 537-9724. Part #47352.

SAFETY FEATURES

SAFETY TESTING. This unit is equipped with a Line Filter and safety MOVs whose impedance draws about 180 uA. This is not leakage. Any leakage current measurement should have the 180 uA subtracted from the reading.

WATER LEVEL SENSOR. The unit will sound an alarm and not heat if there is not enough water to cover the level sensor, a screw located 2 cm. above the temperature sensor. The water must be conductive. Use tap water or add a few salt crystals if you use de-ionized or distilled water.

OVERTEMP ALARM. An alarm will sound and the heater is turned off if the temperature reaches 1.0°C above the thawing temperature. An independent safety thermostat will turn off the heaters if the temperature goes above 45 °C.

FUSING. There are 2 fuses located on the circuit board inside the CONTROL PANEL. Use a standard 8A (5A for 240Volt) AG3 fuse. Correct the cause of the blown fuse.

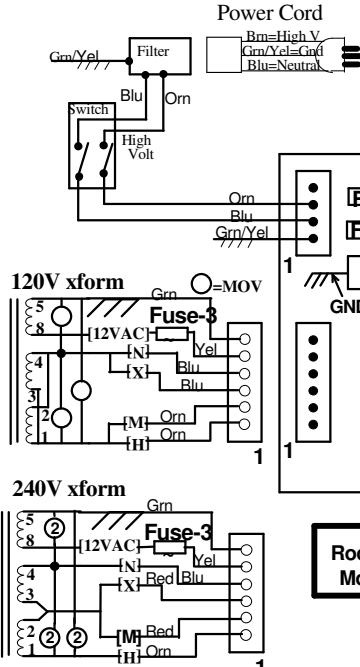
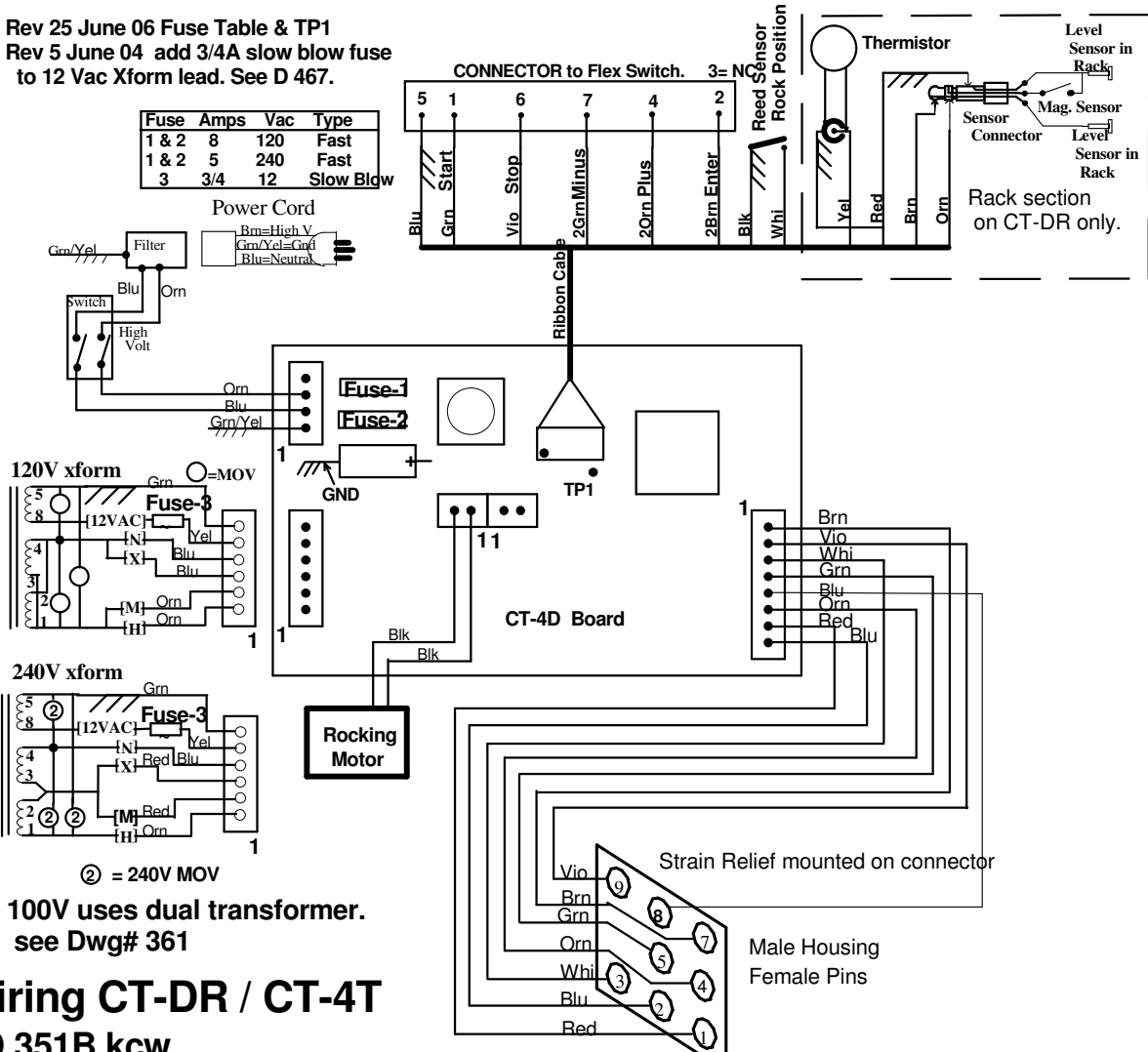
ISOLATION. The circuitry is isolated from the power lines by a transformer and from the heaters by an opto-coupled solid state relay.

POWER OUTAGE. In case of a temporary power outage the chiller will remain on, but the CT-4T.6C will reset with the pump off. It will wait for 30 seconds before sounding an alarm to “Turn off Chiller”. The Chiller must be off when the unit is off.

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Rev 25 June 06 Fuse Table & TP1
 Rev 5 June 04 add 3/4A slow blow fuse
 to 12 Vac Xform lead. See D 467.

Fuse	Amps	Vac	Type
1 & 2	8	120	Fast
1 & 2	5	240	Fast
3	3/4	12	Slow Blow



② = 240V MOV
 100V uses dual transformer.
 see Dwg# 361

Wiring CT-DR / CT-4T D 351B.kcw

File \Draw#D#351.kcw Home Test Point 1: 0.395 for 37C. Models CT-DR & CT-4T
 30 Nov 2000 : 0.205 for 6C Model CT-4T.6C
 1 Jul 02. 8A Fuses for 120/100

120/100V wired as shown
 240V the 2 heaters are in seri

Rev B. 4 Jan 04

1. Add separate Neutral wire from Bath Conn# 5 to 9-pin conn #8. Wire separate neutral wires to heaters & pump.
2. Spade connectors on heaters.
3. CT-DR & 4T on one drwg.
4. Move heater wires to 1/4" spade connectors from BATH connector.
5. Remove SWITCH conn. & solder wires directly to board.

