

Dairy Tech, Inc.  
*Service Manual: DT Silver*

# Operator Manual DT-Platinum Series

DT10R, DT10W, DT30R, DT30W

# Dairy Tech, Inc.

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Thank you for purchasing a Dairy Tech, Inc. DT Platinum Series Pasteurizer. Your satisfaction with this product is very important to us. This guide will help you understand how your pasteurizer operates, and how to get the most benefit from it for you and your dairy operation.

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**THIS PASTEURIZER IS INTENDED TO BE USED IN THE MANNER DESCRIBED IN THIS USE AND CARE GUIDE. IT IS NOT INTENDED TO PASTEURIZE MILK FOR HUMAN CONSUMPTION.**

Dairy Tech, Inc. has provided this use and care guide to assist you in the assembly, installation, and maintenance of your DT Platinum Series Batch Pasteurizer (the "Pasteurizer"). Serious injury and even death to persons and livestock can occur from improper installation and use of the Pasteurizer. Serious property damage can result from improper installation and use of the Pasteurizer.

DAIRY TECH, INC. RECOMMENDS THAT INSTALLATION OF ANY ELECTRICAL, MECHANICAL, GAS OR PLUMBING DEVICES REQUIRED FOR THE INSTALLATION, OPERATION AND MAINTENANCE OF THE DT SERIES PASTEURIZERS BE DONE ONLY BY QUALIFIED INDIVIDUALS.

It is your responsibility or the responsibility of the electrician, plumber or other qualified installation expert to obtain all necessary permits and certifications required by your town, county, state or other jurisdiction before installation of the Pasteurizer. It is your responsibility to read and understand the operational requirements of the pasteurizer before using it and to observe all safety precautions. It is also your responsibility to see that your personnel are properly trained to operate and maintain the Pasteurizer.

DAIRY TECH, INC. PROVIDES YOU WITH INSTRUCTIONS AND WARNINGS IN THIS USE AND CARE GUIDE, BUT WE ARE UNABLE TO COVER ALL POSSIBLE CONDITIONS AND SITUATIONS THAT MAY OCCUR IN YOUR DAIRY OPERATION. IT MUST BE UNDERSTOOD THAT COMMON SENSE, CAUTION AND CAREFULNESS ARE FACTORS WHICH CANNOT BE BUILT INTO THE PASTEURIZER. THESE FACTORS MUST BE SUPPLIED BY THE PERSON(S) INSTALLING, MAINTAINING OR OPERATING THE PASTEURIZER.

Under no circumstances is Dairy Tech, Inc., its directors, officers, shareholders or employees responsible for damage to property or injury to persons or livestock resulting from the improper installation or use of the Pasteurizer. Installation by an unqualified individual and improper use and improper maintenance may also void any equipment warranty that Dairy Tech, Inc. offers.

This use and care guide is based on information and data considered to be accurate; however, no warranty is expressed or implied regarding the accuracy of the information or data herein or the results to be obtained from the use of this data or information.

**Please read this guide carefully and thoroughly before installing and operating the pasteurizer.**

If you believe the pasteurizer is operating incorrectly, please refer to the trouble shooting guide included with these instructions before calling our service department. If you still have questions, contact your local representative or call 1-866-DTI-COWS and we will help you to address your needs.

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### ***Did you know?***

Dairy Tech, Inc. has a Dairy Veterinarian on staff full time. If you have questions regarding calf health issues or other veterinary related topics, we would be glad to organize a conference call for you to discuss these. On site visits are also available to more thoroughly investigate any problems you may be encountering with calf health. Please call and ask our veterinarian to contact you about these concerns.

**For your safety, the recommendations and information in the manual must be followed to minimize the risk of serious burns or electrocution, as well as to prevent property damage, personal injury or death.**

We recommend professional installation by qualified plumbers and electricians familiar with such devices

**If you are burned by the heating coil, hot water, steam or hot milk:** Contact a physician or other medical personnel for expert advice, or go to an emergency treatment facility.

Do not feed pasteurized milk to calves without first cooling it back down to a minimum of 110°F (43°C). Milk hotter than 110° can cause severe burns to the calves.

### ***Product Warranty***

This product is warranted to be free of manufacturing defects. For up to one year from the date of purchase, all parts will be covered by a free replacement guarantee. This warranty is intended for equipment in use under normal operating conditions and does not cover damages incurred by improper use. Determination of covered defects, damages or repairs is at the discretion of Dairy Tech, Inc. This warranty covers only the cost of replacement parts at Dairy Tech, Inc. current pricing. Service is not covered by this warranty.

### ***Product Registration***

If this product was purchased directly from Dairy Tech in Windsor, CO, it has already been registered and no further action is required. If the product was purchased by a distributor or other representative, please call Dairy Tech, Inc. at 866-384-2697 within 10 days to register the product. Failure to do so may result in a decreased or voided warranty period for your unit. When calling, please have the serial number which can be found on the back side of the control housing.



### ***Receiving your pasteurizer***

Use care when unpacking your DT Platinum Series pasteurizer. It will have arrived in one box or crate. Please make a note of any cautionary labels that are used on the carton suggesting orientation, where to cut with a knife, fragile, etc.

The pasteurizing unit is typically shipped with the unit fully assembled. In some instances, mounting of the control box will be required. Gently remove the controller from the milk pot. Four mounting holes are provided on the lid of the unit. Using the bolts that are provided, attach the control unit in an upright fashion to the top lid of the pasteurizer. The electrical connections must also be made by inserting the male and female sides of the connector together. See the diagram below for a completed view.

The motor shaft must also be attached using the included L key and the set screws in the shaft coupler.

### ***Important Safety Instructions***

#### **Warning:**

To reduce the risk of electric shock, burns, serious injury or death to persons when using the Pasteurizer, follow these basic precautions:

1. Read all instructions before using the Pasteurizer.
2. Always disconnect the electrical power before attempting service. Disconnect by grasping the plug, not the cord.
3. Do not allow children to operate or play around the Pasteurizer. Close observation of children is necessary when the unit is used with children nearby.
4. Do not reach into the Pasteurizer when the power is on and the paddle is turning.
5. Hot Surfaces include the brass plumbing fixtures, electrical fixtures, hoses, heater body, heating coil, draining water and the milk or colostrum. Touching these surfaces during operation may result in severe burns.
6. Do not try to change the settings in the pasteurizer controller without consulting a technical expert at Dairy Tech, Inc.
7. Do not repair or replace any part of the Pasteurizer, or attempt any servicing unless specifically recommended in

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the trouble-shooting portion of this manual. Any modifications made to the unit beyond these instructions will void all warranties.

8. Always clean the unit immediately after each use, according to the instructions in the "Cleaning of your Pasteurizer" section of this manual. Build up of residue on the propeller or tank will decrease heating and cooling efficiency, as well as harbor potentially harmful pathogens.
9. During the heating cycle, always make certain the Pasteurizer lid is firmly seated on the pot of milk.
10. Use the pasteurizer only for its intended purpose. DO NOT use for milk intended for human consumption as this product has not been approved for such use.
11. Do not touch the tank of milk, motor, hoses or brass fittings while the unit is hot and working.
12. Do not attempt to tilt the machine while it is full. It is extremely heavy and can cause severe injury to the operator. It can also spill coolant internally and damage refrigeration components which will void the warranty.
13. To prevent severe burns, always allow the milk or colostrum to cool completely before handling or feeding to calves.
14. The Pasteurizer must be electrically grounded. DO NOT modify the plug that is provided with the Pasteurizer; if it will not fit the outlet, have an electrician install a proper electrical outlet.

### Installation:

#### Warning:

Install the unit according to the installation instructions. To reduce the risk of fire, electric shock, serious injury or death to persons, read the important safety instructions before operating this Pasteurizer. Before using this unit for the first time, wash out the inside of the drum with hot soapy water and rinse clean.

### Criteria for Selecting a Location

- a) Choose a spot that will be protected from the elements. Extreme heat will allow milk spoilage and freezing temperatures will damage the unit.
- b) Cold water is required to be connected to the unit for water cooled models, but local hot water is also necessary for proper cleaning.
- c) Floor drains will allow for proper cleaning and rinsing of the product as well as to clean up milk spills.
- d) Power requirements are 120vac GFI for the DT10W and DDcontrol board and 240vac 40 amp for the heater.
- e) Wall space for the control board is 16" x 20".
- f) Floor space requirements are approx that of a normal 55 gallon drum.
- g) Avoiding extremely drafty areas will improve heating efficiency of the unit.

### Mounting the Control Panel

The control panel is supplied fully pre-assembled for your convenience. The panel is 12" x 16" and should be bolted to the wall directly behind the location of the pasteurizing unit. Use the mounting brackets that are included with the panel box. They simply screw onto the back of the box and can then be used to mount the box to the wall. Position the panel at a height so that the operator can still reach the key pad.

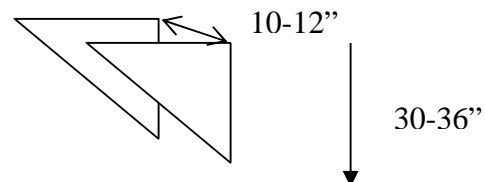
### Connecting the Hoses

**WATER SUPPLY:** This blue hose (or marked with blue tape) supplies all the cold water to the unit to charge the system for heating and to cool the product when finished. It can come from any cold water source including a hose but it **MUST BE ON AT ALL TIMES DURING OPERATION**. Using the supplied clamp, attach one end to the barb at the back bottom of the tank; Connection A in the diagram, and the other end to the water supply.

**WATER DRAIN:** This black hose takes cold water out of the unit once it has absorbed heat during the cooling cycle. It should be directed to a drain, cistern, stock tank or other collection system. Using the supplied clamp, connect one end to the hose barb on the back top of the unit labeled Connection B in the diagram, with the other end free to flow.

### WALL MOUNT BRACKET INSTALLATION

Two wall mounting brackets are available to hold the lid while not in use. These brackets should be securely fastened to the wall within a few feet of where the pasteurizer will be positioned. The distance between the two brackets should be 10-12" and approximately 30-36" from the floor.



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### ***Lid Assembly***

To assemble the lid of the pasteurizer, simply remove the propeller and shaft from the shipping cartons. There is an L-key on the shaft that can be used for tightening the coupler to the shaft of the motor. Slide the coupler onto the motor shaft so that it gently touches the plastic water-shield already placed on the motor shaft. Once in place, simply tighten the two set-screws that are provided in the coupler.

Next, remove the thermocouple from the packaging. Place the thermocouple through the hole near the motor on top of the lid. The thermocouple should extend as far as possible through the lid to the point of touching the relief springs on the thermocouple. Once in place, position the included 1/8" brass nut over the end of the thermocouple from the underside and use it to tighten the brass thermocouple fitting to the lid. Then snugly tighten the compression fitting on the thermocouple to hold it in position.

See Diagram 2 for a detailed view of the assembled product.

### ***Electrical Hook-Up Requirements***

The standard electrical cord emerging from the top of the control box should be plugged directly into a 120vac GFI receptacle on a 20amp breaker. Failure to meet these requirements will void the warranty and could result in serious damage to the unit, bodily injury or death. The receptacle should be fitted with a water resistant cover for added protection. This connection is shown as Connection C in the diagram.



- Be certain to use a GFI receptacle for the 120vac
- The receptacle should be sharing minimal usage with other equipment to avoid unexpected outages and tripping. The Pasteurizer cycle will reset if the power is lost and will not resume automatically.
- The 120vac breaker should be 20 amp.
- DO NOT use an extension cord to operate the unit other than the one provided.
- Check your electrical system to make certain it is properly grounded to avoid the possibility of electrical shock.

The 240vac supply for the electric heater emerges through the top of the control box. A 4' length is supplied for termination into a junction box, or this cord may be removed and wired direct from the panel box by a certified electrician. The gauge of wire selected for L1 and L2 are very important and will depend on the distance from the panel box and expected amperage. The heater at full capacity will draw 37 amps on a single phase system. 40 amp breakers are sufficient in most

instances. Some installations may require a 50 amp service, but always consult a certified electrician. Refer to Connection D in the diagram.

The Pasteurizer is equipped with a cord having an equipment grounding conductor and a grounding plug. The plug must be plugged into an appropriate ground-fault outlet that is installed and grounded in accordance with all local codes and ordinances. DO NOT modify the plug provided with the Pasteurizer; if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

#### **WARNING:**

DO NOT wire to 3 phase connections or 480vac.  
Pasteurizer controls are 120vac, 20 amp, 50-60Hz  
Heater is 240vac, 40 amp, single phase

### ***Final Connections:***

The last two connections to make are from the lid of the pasteurizer to the control box. The black motor power cord is connected at the quick connect fitting provided on the underside of the control box. The thermocouple quick connection is located adjacent to that. The thermocouple cord has the appearance of a phone cord and plugs into the thermocouple mounted through the lid on one end, and the underside of the control box on the other end.

**Failure to have this thermocouple cord properly plugged in will result in an Error on the display and the unit will not operate until the connection is made.**

There are three other connections between the unit and the control panel that should already be attached when the unit is delivered to you: The 240vac cord that goes to the small electric box mounted on the back of the pasteurizer to power the heating elements, the 120vac cord that provides power to all of the solenoid valves within the base of the pasteurizer, and the thermocouple cord that plugs in to the back of the pasteurizer to monitor the temperature of the heat bath.

### ***External Circuit Breakers***

The unit is equipped with 8 external circuit breakers on the door of the control panel. These push button circuit breakers protect delicate electronics and also serve as a troubleshooting

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guide in cases of system malfunction. The layout of the circuit breakers is described in Diagram 2.

### ***Initial Start-up of the Unit***

#### ***(Pressurizing the System)***

After making all the proper plumbing and electrical connections, pressurize the system by turning on the cold water supply.

#### **It is CRITICALLY IMPORTANT**

that the water level in the outer drum is above the level of the heating elements before the power to the unit is turned on. This will be necessary the first time you start the unit and any time that the water is fully drained from this drum for cleaning or repair; otherwise, the system will normally keep the water level maintained above these elements so that this task does not need to be routinely done.



### ***Use of the Pasteurizer***

The unit is now ready for milk or colostrum to be added for pasteurization, but first properly clean the drum to remove oil residues from manufacturing.

Next ... Simply place the milk drum inside the pasteurizer and latch the two handles together with the provided latches. This prevents the inner tank from floating if there are small quantities of product being treated. Fill the milk drum with up to 18 gallons of milk or colostrum, and then place the lid on the drum with the thermocouple and propeller down in the milk. The drum must be filled to a level that allows the thermocouple and propeller to be immersed in the product for even heating and process control. If the volume is inadequate, there will be uneven heating and possibly errant temperature readings by the thermocouple system. It is also important to not overfill the drum as it will leak over the sides while stirring once the unit is lowered.

### ***Running the Cycles***

- Power the unit on by toggling the red rocker switch; the display should indicate "IDLE".
- START is used to initiate a complete heat/cool cycle.
  - Press twice for immediate start
  - Instructions for delayed functions are on the reverse side

- The display will indicate the temperature, stage of cycle and TIME to complete the current cycle.
- HEAT ONLY is depressed if only the heating portion of the pasteurization process is desired.
  - The milk will not cool down at the end of the timing.
  - The display will indicate temperature and time, and "END" when complete.
- COOL ONLY is depressed when the milk has already been pasteurized completely, but is not yet cool enough to feed or handle.
  - The display will indicate temperature and then "END" when complete.
- UP and DOWN keys are used during programming or alterations to the settings.
- AUXILARY / INTERRUPT is used only for the MaRK Series pasteurizers and will not function.
  - This allows the user to operate the pump any time that the display is in the "IDLE" mode or the "END" mode.
- An alarm will beep several times at the end of a completed cycle, and the display will indicate "END".
- If the cycle has not completed properly within a preset window of time, the alarm will beep continuously and indicate an error in the display.
- If the display indicates other "ERRORS", look in the trouble shooting guide or call customer service.
- To power down the unit, turn off the red toggle switch or unplug the unit from the wall. The unit should be toggled off after the completion of each cycle, unless set for a delayed start.

To STOP Pasteurizer cycle: Pause by pressing the button used to start the cycle (Start, Heat Only or Cool Only), or flip the toggle switch off, or unplug the unit from the receptacle.

To restart from the Pause position, simply press the same button again and the cycle will resume. If power is interrupted, the cycle will only pick up with the current product temperature. It will not automatically restart a cycle. Only use the "Cool Only" button to restart if you are certain that the product was at the required temperature for the entire length of time necessary before the power was lost.

#### **DELAYED START**

- a. Press either the START or HEAT ONLY button so that the word "NOW" is displayed.
- b. Then press the UP key once so that the "dStrt" is displayed.
- c. By pressing the START key once again, the clock will appear and the UP and DOWN keys can be used to set the time you wish the cycle to begin.

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- d. Once the time is set, press START again and the screen will again display “dStrt”.
- e. The unit will now come on at the time you have set.

### **SETTING THE CLOCK**

- Power the unit on so that “IDLE” is displayed on the screen of the controller.
- Depress the START and INTERRUPT (PUMP ONLY) buttons at the same time and hold for several seconds. The real time clock will be displayed.
- Use the UP or DOWN buttons to change the time.
- Depress the HEAT ONLY button to accept the changes and return to the “IDLE” mode.

### **CLEANING THE SYSTEM (be sure the equipment is powered OFF)**

#### **Warning:**

The aluminum drums and lid can cause severe burns if handled before the product is completely cooled. Always finish the cooling cycle before handling the milk. Grasp the lid by the handles and do not handle the milk or colostrum unless it has cooled.

- With the unit powered OFF, raise the lid from the milk drum and place it on the wall racks for cleaning and storage.

**HINT:** Cut the side out of an old plastic 55 gallon used drum and place it below and between the two wall brackets. This will provide a back splash so that the propeller and shaft can be sprayed off after each use

- Clean the following milk surfaces with hot water and an appropriate disinfectant. Go over all the exposed surface areas with a soapy rag or mild abrasive pad to remove excess residue on the following components:
  - Motor shaft, coupler and propeller
  - thermocouple probe
  - SS underside of the pasteurizer lid
  - Milk tank
  - accessory spigots, pitchers or hoses
- Stubborn residues may be cleaned with a scour sponge if necessary. Avoid the use of acids as they are likely to corrode the aluminum tanks. Follow manufacturers handling recommendations for all chemicals.

### ***Filling and Emptying the Milk Drum***

While some dairies may elect to have the milk line pump directly into the pasteurizer, most dairies will be dealing with volumes that can be dumped into the unit from milk cans or collection buckets. It is advisable to place the milk drum inside the pasteurizer before filling it. The weight of the full milk drum may exceed 150 pounds (68kg).

To remove the milk: A 2-qt stainless steel pitcher is included to dip the product out in allotments to fill bottles or to store colostrum in freezer bags. Other options could include a siphon hose or a stainless steel sump pump to remove the product more quickly.

#### **Energy and Time Saving Tips**

- Pasteurize the milk as quickly as possible after collection to take advantage of the heat already in the milk to improve energy efficiency. This will also prevent the immediate heavy growth of bacteria in this fresh product.
- Avoid placing the unit in an area of high drafts to prevent convection heat losses from the drums while pasteurizing.
- Colostrum can be stored in the refrigerator for an extended period of time if it is handled cleanly once it has been pasteurized. Filling freezer bags allows for a disposable system that makes it easy to keep track of dates and colostrum quality. These bags also allow the product to be warmed more quickly when they are needed for the newborn.
- Do not dip bottles into the tank for filling as this will likely contaminate the product with bacteria from the bottom and sides of the bottles.
- Always wear nitrile or latex gloves when handling the milk or colostrum to prevent the spread of pathogens from the skin surface.

### ***Propeller Speed***

The speed of the propeller is controlled by a dial knob on top of the control box. There is a recommended setting labeled, but it can be increased or slowed if the product seems to be sticking to the tank or whipping too much.

### ***When Service is Required***

If you purchased the Pasteurizer from an authorized dealer, contact them directly with inquiries or repair questions. For prompt service, work through the troubleshooting guide in this manual to give an accurate description of the problem.

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Repair by an unauthorized servicer will void the warranty.

### Trouble Shooting Guide



- 1) Display does not come on, no power to the unit.
  - a) Check to be certain unit is plugged into 120vac outlet.
  - b) Be certain that breakers in panel box or ground fault receptacle are not tripped
    - i) If the breakers are being tripped, have the system checked by a certified electrician before operating.
  - c) Check the 15amp circuit breaker (CB1) and make certain it is not popped out. Have a certified electrician check continuity across CB1 with an ohm meter when the power to the unit is off, or check for voltage across CB1 with power on.
  - d) Make certain that the 15pt plug is securely plugged into the back of the controller if there is power across CB1.
- 2) Flashing an Error message.
  - a) Check to make certain that the thermocouple retractable cord is plugged into the female outlets on the pasteurizer lid and the control box. There may also be corrosion at a terminal, or a break in continuity of the thermocouple system that is causing the error.
  - b) Error codes
    - i) Error 1, Error 2 or Error 3: controller malfunction. Cycle the power off and then back on. If the error persists, return the controller for replacement.
    - ii) Error 4: calibration error in the controller. Return the controller for recalibration or replacement.
    - iii) Error 5 and Error 7: temperature sensor input 1 (milk) is incompatible with the controller, has lead wires improperly terminated (leads switched at the terminal) or is measuring a condition below the normal temperature range. Check the lead wires for t/c 1 and check the controller for proper t/c selection and parameters. Check all t/c connections to make certain they are making a good connection. The system may be too cold to operate.
  - iv) Error 6 and Error 8: temperature sensor input 1 (milk) is incompatible with the controller, has lead wires improperly terminated (leads switched at the terminal) or is measuring a condition above the normal temperature range. Check the lead wires for t/c 1 and check the controller for proper t/c selection and parameters. Check all t/c connections to make certain they are making a good connection.
  - v) Error 9 and Error 11: temperature sensor input 2 (heater) is incompatible with the controller, has lead wires improperly terminated (leads switched at the terminal) or is measuring a condition below the normal temperature range. Check the lead wires for t/c 2 and check the controller for proper t/c selection and parameters. Check all t/c connections to make certain they are making a good connection. The system may be too cold to operate.
  - vi) Error 10 and Error 12: temperature sensor input 2 (heater) is incompatible with the controller, has lead wires improperly terminated (leads switched at the terminal) or is measuring a condition above the normal temperature range. Check the lead wires for t/c 2 and check the controller for proper t/c selection and parameters. Check all t/c connections to make certain they are making a good connection.
  - vii) Error 13: ambient temperature around the equipment is too high or too low.
  - viii) Error 14: Real time clock error. Not a fatal error but may need replaced if the clock is not able to be used properly for delayed start function.
- 3) The pasteurizer does not heat the milk up to the required temperature.
  - a) Check heater function
  - b) Check Supply Valve function
  - c) Check Controller function



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### Heater function

- ☑ 220vac power supply
  - check the breaker and make certain that there is 120vac to each leg of the contactor (HCC1).
  - Be certain that the breaker is at least 40 amp to prevent failure.
  - If no power to the heater, check the circuit breaker at the panel box or call a certified electrician to check power supply.
- ☑ Power from the contactor (HCC1)
  - During the Start or Heat Only phase, check to see if there is 120vac from the contactor (HCC1) going to the heater
    - Yes ...
      - Turn OFF the 240 VAC breaker. Check the heating elements with an ohm meter for continuity to determine if they have been shorted out. ... call for replacement elements.
    - No...
      - Have an electrician call to determine if there is power to solid state relay 2 (SSR2) from the controller.

**Supply Valve (Red Tubing) failure** ... milk does not heat properly because the valve prevents filling of the vessel to allow good heat exchange. IS THE WATER TURNED ON?

- ☑ Check for power to the solenoid valve and listen for actuation when starting a heating cycle.

- Yes ... the valve is powered but the solenoid or diaphragm may be broken if no water can flow through. Turn off power and water supply, open the valve body to check for obstructions.
- No ... check for 120vac at the terminal board TB1 where the red wire from this valve enters the box.
  - Yes ... check for continuity across the two wires of the float switch with the float in the down position. If no continuity, check for damage to the float or its wires, or for a loose wire at the terminal blocks under the base of the unit.
  - No ... check for 120vac at the black/red wire and black/brown wire on the bottom of cube relay CR1 while in the heating cycle.
    - Yes ... check for continuity across CB6 and CB7 to make certain these breakers are OK.
    - No ... check for 120vac signal to the top of the CR1 at the brown wire coming from the controller P1 during the heating cycle.
      - Yes .... Replace the cube relay
      - No ... call for assistance in troubleshooting the **Controller Function**.

4.) The milk or colostrum is **too hot, becomes too thick or is sticking to the tank** severely.

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a) Make certain the motor is stirring the product properly. The speed of the motor can be increased using the dial on top of the control box. IF the motor is not operating, see Motor Function below.

b) **DRAIN VALVE (YELLOW TUBING)**

Make certain that the DRAIN VALVE is working during the Time Out Phase, during Cooling Phase, and when unit is powered off. Water should be running from the yellow drain hose at the bottom of the pasteurizer. Is there 120vac power to the valve during the heating cycle?

Yes ...check to make certain that the drain opening inside the tank is not plugged, turn off the power and open the valve body to check for a plug, and call for assistance in trouble shooting.

NO ... check for power at the terminal board TB1 where the orange wire enters from the drain valve. IF there is power during the heating cycle, check the wired to the valve and at the terminal board under the pasteurizer base. If there is no power at TB1, check for continuity at CB6 and CB7, and check for power at the black/red and black/brown wires coming out of the base of CR1 during the heating cycle for 120vac.

NO Power ... check for 120vac power to the brown wire at the top of CR1 during the heat cycle. IF no power, call for assistance in trouble shooting the controller.

C) Compare the product temperature that is displayed with a reading from another thermometer to make certain the temperature reading is correct.

D) Call for assistance in checking the temperature settings in the controller for the heat bath, the milk temperature and the timing.

**Cold valve (black solenoid)** ... milk will heat but not cool down ... Make certain that the operator is starting the cycle with the Start Button and not the Heat Only option as this will prevent cooling also.

- ☑ Check power to the valve during the cool cycle (milk or t/c temperature must be above 110°F to initiate)
  - Yes ... valve or diaphragm may need to be replaced
  - No ... check for 120vac at both terminals of circuit breaker CB8 while in the cooling cycle, or check for continuity with the unit powered down.
    - Yes ... wiring to the valve

- No ... check for 120vac power at the blue/white wire on the bottom of cube relay CR2 during the cooling cycle.
  - Yes ... recheck CB8 and wiring to valve
  - No ... check for 120vac power coming into the top of CR2 via the blue wire from the controller P1.
    - Yes ... replace cube relay 2
    - No ... call for assistance in troubleshooting the controller function.
- ☑ Water continues to flow after the milk is cooled, causing excess cooling
  - Check for 120vac at blue/white wire bottom of cube relay CR2 when the water is running but the cycle has ended.
    - Yes ... CR2 is sticking and needs to be replaced
    - No ... solenoid of Cold valve is sticking open.
      - Turn off the power and remove the solenoid then replace it to see if that actuates the plunger.
      - Check the diaphragm of the valve by removing the 4 screws with the water turned off to see if there is debris preventing the diaphragm from seating properly and closing the valve.
      - Replace the valve.

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**Motor function** ... motor does not come on and stir the milk.

- ☑ Check for 120vac power to the motor while in the heating or cooling cycle. The motor receives 3 phase power from the inverter, but each of the three leads should carry 120vac.
  - Yes ... check for faulty wiring or replace motor
  - No ... check for 120vac power at circuit breaker CB5 while in a heating or cooling cycle, or check CB5 for continuity with the unit powered off.
    - Yes ... check wiring to the motor for loose connection
    - No ... check for 120vac power at solid state relay SRR1 at terminal 1 and 2 during a heating or cooling cycle.
      - Yes ... recheck CB5 and wiring
      - No ... call for assistance in troubleshooting controller function and the black and red wires from the controller at P1.

Replacement elements are available by calling Dairy Tech, Inc., but they are also available at most hardware stores. The specs for the elements are 3500 or 4500 watt 240volt.

### ***Replacing Heating Elements***



The DT-Silver is equipped with dual heating elements that either screw in, or are bolted in through the wall of the outer vessel. To determine if an element has burned out, SHUT OFF POWER TO THE UNIT AND SHUT OFF THE 240VAC BREAKER. Open the small control box on the back of the pasteurizer by loosening the 4 corner plastic screws. Check the elements for signs of splitting, cracking or severe burn marks. Check the two leads of the element for continuity if there is no obvious external damage.

To replace the elements, simply disconnect the wires from the leads and unscrew or unbolt the element. Insert the new element with new gaskets if necessary. Tighten snugly and fill the inner vessel with water to check for leaks before replacing the wires and closing the box.

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### Assessing controller function

\*\*\* IMPORTANT WARNING\*\*\*

**DO NOT ALTER SETTINGS IN THE CONTROLLER WITHOUT CONSULTING A DAIRY TECH REPRESENTATIVE .... ANY UNAUTHORIZED ADJUSTMENTS WILL VOID THE PRODUCT WARRANTY AND MAY LEAD TO SERIOUS HEALTH CONSEQUENCES FOR THE CALVES.**

To access the controller main menu for milk/heater temperature settings as well as process timing, follow these steps:

### Instructions for setting the Dairy Tech LP Series controller functions:

**Number the keypad buttons across the top then bottom from left to right**

<b>1</b>	<b>2</b>	<b>3</b>
<b>4</b>	<b>5</b>	<b>6</b>

1. Turn power on to the display so that it reads IDLE.
2. Press and hold **3** and **6** for 3 seconds until straight lines appear across the screen.
3. Press and hold **4** and **5** for 3 seconds to get into the menu screen .. eType should appear on the screen.
4. Press **1** to go into this menu. DO NOT go into other menus.
5. Use **3** and **6** to toggle up and down thru this menu. The code and its numeric value will flash back and forth between each other. The following 5 parameters are set here:
  - a. Setpt – pasteurization temperature to reach
  - b. Coolt – temperature milk will cool to
  - c. Mntr – maximum temperature of heater
  - d. tHeat – length of time at Setpt temperature
  - e. terr - time allotted for complete cycle before alarm sounds
6. Press **1** to select a parameter to change; the numeric value will be displayed.
7. Press **3** or **6** to raise or lower the value.
8. Press **2** to accept the change ... repeat steps 6-8 for any other changes.
9. Press **2** repeatedly until you are back to the idle screen and the changes should have been accepted.

### Pasteurize Profile

#### Starting the Profile

The Pasteurize Profile can run three different modes, Full Mode, Heat Only Mode, and the Cool Only Mode. Each of these modes can be started immediately or set to start at a programmed time. When the initial key is pressed (see description below) the display reads nOW. If the same initial key is pressed, the selected mode will start immediately. At the nOW display, the increment and decrement keys can be used to select between nOW and dELAY. Initially at the dELAY display, if the same initial key is pressed, 12:00AM time will be displayed. The user may set the starting time by using the increment and decrement keys to adjust the time. When the same initial key is pressed, the control will remain in the Idle State (the display will now read dSTrt ), but will start the appropriate mode of the Pasteurize Profile at the time selected. This delay time will be used only once. A user must set the delay time before each delayed start.

Using the Start key (Key A) as described above will select the Pasteurize Profile in the Full Mode. When the Full Mode starts, the Pasteurize Profile will execute both the Heat Stage and the Cool Stage (first the Heat Stage and once it completes, the Cool Stage will begin).

Using the Heat Only key (Key B) as described above will select the Pasteurize Profile in the Heat Only Mode. When the Heat Only Mode starts, the Pasteurize Profile will execute only the Heat Stage.

Using the Cool Only key (Key E) as described above will select the Pasteurize Profile in the Cool Only Mode. When the Cool Only Mode starts, the Pasteurize Profile will execute only the Cool Stage.

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### **Heat Stage**

When the Heat Stage is initiated, the heater (Output 1) is enabled to control heat to the setpoint (setpt parameter in the Equipment Type Submenu), the cooler (Output 2) will turn continuously off, and the motor (Output 3) will turn continuously on. Once the heater temperature sensor (Sensor Input 1) value becomes greater than or equal to the setpoint (Setpt parameter in the Equipment Type Submenu), an internal timer is started. The internal timer will be set to expire in a time interval equal to the t<sub>heat</sub> parameter in the Equipment Type Submenu. Once the internal timer expires and if the Start key (Key A) was used to start the profile, the Cool Stage will begin. Else if when the internal timer expires and the Heat Only key (Key B) was used to start the profile, the profile will be completed.

### **Cool Stage**

When the Cool Stage is initiated, the heater (Output 1) is disabled from controlling heat, and the cooler (Output 2) and the motor (Output 3) will turn continuously on. Once the heater temperature sensor (Sensor Input 1) value becomes less than or equal to the cool setpoint (Coolt parameter in the Equipment Type Submenu), the cooler (Output 2) and the motor (Output 3) will turn continuously off, and the profile will be completed.

### **Pausing the Profile**

If the Pasteurize Profile is in the Full Mode, a single press of the Start key (Key A) will pause the profile. An additional press of the Start key (Key A) will resume the profile running. If the Pasteurize Profile is in the Heat Only Mode, a single press of the Heat Only key (Key B) will pause the profile. An additional press of the Heat Only key (Key B) will resume the profile running. If the Pasteurize Profile is in the Cool Only Mode, a single press of the Cool Only key (Key E) will pause the profile. An additional press of the Cool Only key (Key E) will resume the profile running.

### **Canceling the Profile**

If the Pasteurize Profile is in the Full Mode, pressing and holding the Start key (Key A) for 3 seconds will cancel the profile. If the Pasteurize Profile is in the Heat Only Mode, pressing and holding the Heat Only key (Key B) for 3 seconds will cancel the profile. If the Pasteurize Profile is in the Cool Only Mode, pressing and holding

the Cool Only key (Key E) for 3 seconds will cancel the profile.

### ***Contact Dairy Tech, Inc.***

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