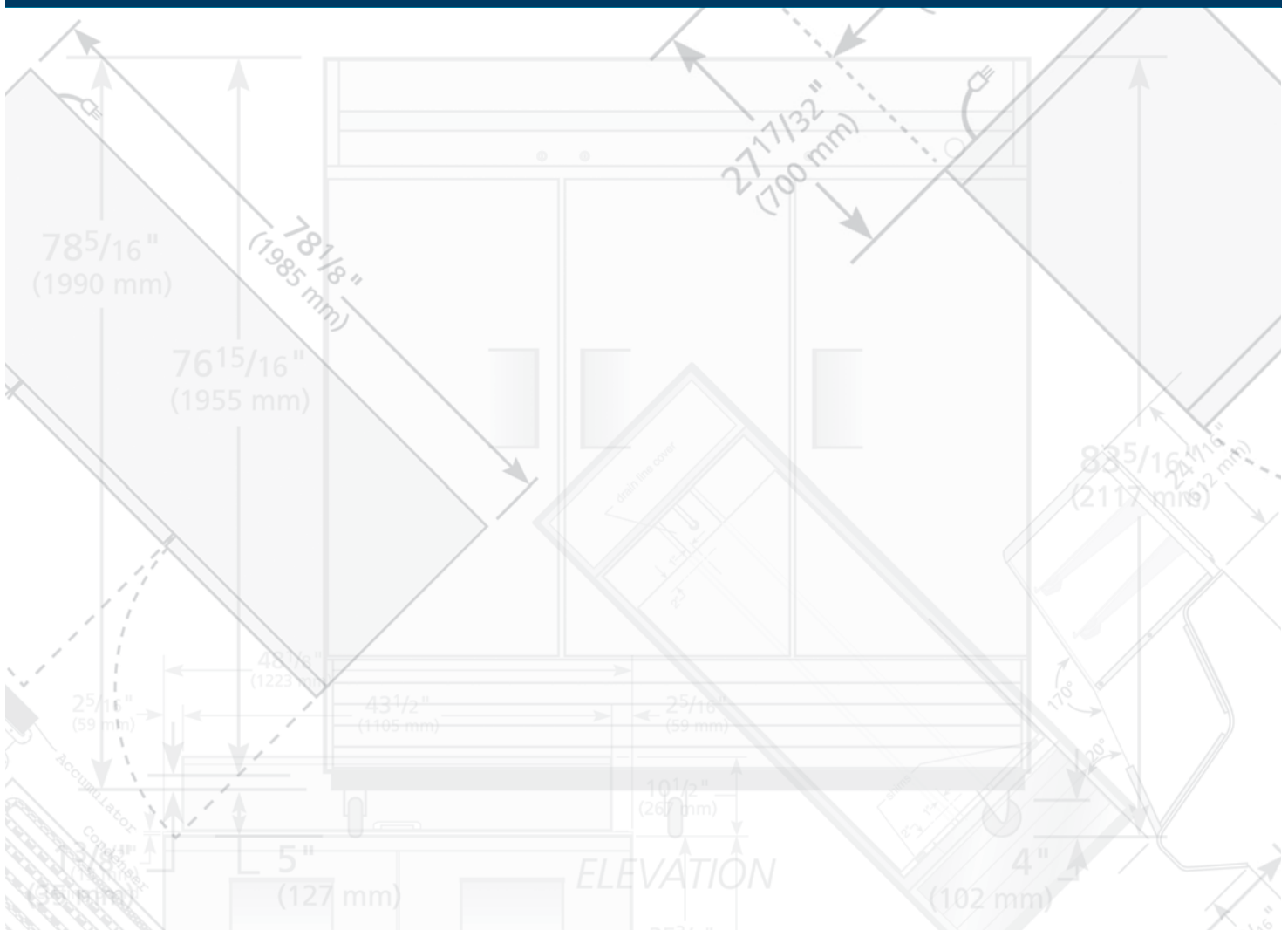


# TEMPERATURE CONTROLS/ THERMOMETER/TIMERS



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## NOTES

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# TEMPERATURE CONTROLS/ THERMOMETER/TIMERS



## Temperature Control Repairs

## HOW TO DIAGNOSE

**STEP 1** - Control must operate within its pre-calibrated range of temperatures.

**STEP 2** - Cut-in is the ON temperature.

**STEP 3** - Cut-out is the OFF temperature.

### NOTE:

All temps are at mid-point setting #5. All temps advised have a +/- 2 degree variance.

### Confirmed Calibration

TRUE P/N	MFG P/N	APPLICATION	CUT-IN	CUT OUT
800303	9531N376		35	15
800304	9530N1490		-9	-15
800306	9531N251		40	19
800312	9530N1284		-8	-15
800313	9531N335		37	16
800320	9530N1185		33	27
800325	9530N1318	RED WINE, CHOCOLATE	62	55
800335	9530N1376		38	20
800340	9530N1155		26	11
800345	077B1264		-3	-16
800357	9530266		-3	-8
800358	077B1214		-9	-14
800363	9530C311		-3	-13
800366	077B6806		37	17
800368	077B6857		42	23
800369	077B1212		-3	-12
800370	077B1216		-14	-25
800371	077B6863		42	24
800382	077B6856		37	18
800383	077B1227		0	-6
800384	077B1229		25	19
800385	077B1228	WHITE WINE	43	34
800386	077B6871		41	20
800387	077B6887	FLOWER COOLER	39	21
800390	9530N1329	SUPER NOVA	13	8
800393	077B6827		42	21
800395	931N370	HIGH ALTITUDE	40	23
800399	9530C304		0	-5
822212	CAP-075-174R	HEATED		
822213	077B6894		37	22
822214	077B1309		31	17
822223	077B1331		26	9
831931	077B1277		-2	-9
831932	3ART56VAA4		40	18
831987	077B0995	RED WINE, CHOCOLATE	57	50
908854	077B6926		36	10
908975	077B1352		-16	-32
911427	077B1354		38	26
913382	077B1367		-11	-23
917838	077B1369		0	-14
930794	091X9775		42	25
933190	091X9796		42	19
958745	3ART55VAA4		39	18
958747	095X0028		37	
958857	3ART5VAA198		8	-6
959268	3ART55VAA3		40	26
960640	3ART55VAA5		43	20
962728	3ART55VAA6		42	20
963056	3ART55VAA2		39	16

# HOW TO CHECK THE CUT-IN AND CUT-OUT OPERATION OF A TEMPERATURE CONTROL

## OPERATION INSTRUCTIONS

### Tools Required

- 1/4" Nut Driver or Socket
- Digital Thermometer or Equivalent
- Multi-Meter (Optional)



**STEP 1** - Disconnect the power to the cabinet.

**STEP 2** - Locate the temperature control and note its setting. The temperature control should be set at mid-range, about 5.

**NOTE:** If the control was set to high (colder) this could be why the product is freezing. Reset the control and check the cabinet operation in 24-48 hours. You may have to use your multi-meter to check and see if the control has power and is closing.

**STEP 3** - Remove the four 1/4" hex head screws that secure the fan guard in place. This will expose the evaporator motor fan blade. Keep in mind that there might be more than one evaporator fan motor.

**STEP 4** - Remove the nut that holds the fan blade in place. See image 2.

**STEP 5** - Remove the fan blade. If there are additional fan blades remove all. See image 3

**STEP 6** - Insert your digital thermometer into the evaporator coil as close to the temperature control copper tube as possible. This would be to the right side of the opening. See image 4.

**STEP 7** - Plug the unit in. The compressor should come on. The evaporator temperature will come down very fast allowing you to see approximately what temperature the control opened up and the compressor shut off. This is your cut-out point. Check this against the spec's for the control to determine if the operation is where it should be.

**NOTE:** This process should not take more than 10 minutes. If it does, there might be a problem with the refrigeration system.

**STEP 8** - Open up the cabinet door (s) to allow the warm air to come into the cabinet. This will warm up your evaporator coil and close the temperature control, turning the compressor on. This is your cut-in point. Check this against the spec's for the control to determine if the operation is where it should be.

### THE TEMPERATURES THAT YOU READ COULD BE + 2° F.

**STEP 9** - Based on your findings you may have to replace or adjust the control. Repeat Steps 7 and 8 several times to verify the operation after you have made the necessary repairs.

**STEP 10** - Remove the power cord. Starting with Step 5 and working backwards place the fan blade and fan guard in place and put the unit back together.

**STEP 11** - Plug the unit back in.

**Most of the cooler temperature controls are coil sensing constant cut-in controls.**

## REPLACING TEMPERATURE CONTROLS IN GDM-7, GDM-10, AND GDM-12 MODELS (OLD MODELS)

### INSTALLATION INSTRUCTIONS

**STEP 1** - Unplug Cooler and turn temperature control to "off" ("0") position.

**STEP 2** - Pull off the black control knob from the control.

**STEP 3** - Remove the mounting plate from the evaporator housing.

**STEP 4** - Remove the temperature control from the plate and disconnect the 2 wires.

**STEP 5** - Remove the lamp from the front of the cooler and remove the front panel.

**STEP 6** - Reach in to the side of the evaporator coil and remove the permagum from around the control bulb. Then remove the old thermostat control bulb from the sleeve completely.

**STEP 7** - Insert the new thermostat control bulb into the new copper sleeve extension until about 1/2 inch protrudes from the swaged end. Using a low temperature lubricant on the control bulb is advisable.

**STEP 8** - Using the protruding end of the control bulb as a guide, insert it into the copper sleeve (elbow) in the rear of the evaporator. Then push the sleeve extension over the end of the elbow to lock the two tubes together.

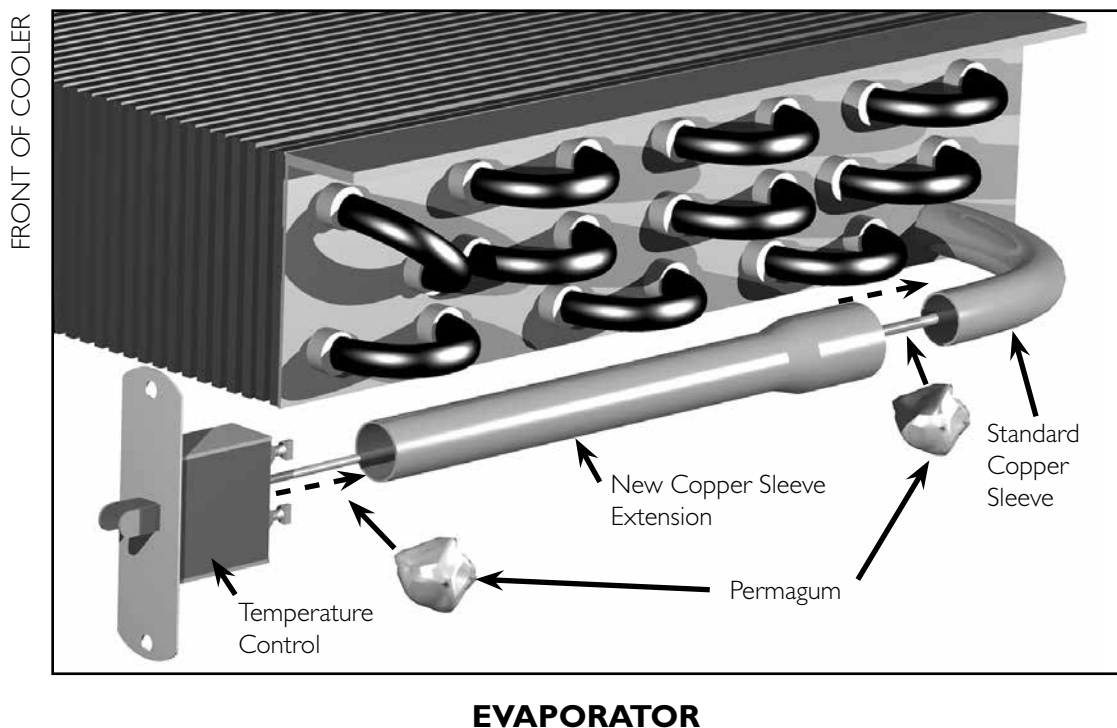
**STEP 9** - Gently push the control bulb through the joined sleeves in 1-2 inch increments until it reaches the end inside the evaporator; taking care not to kink the line.

**STEP 10** - Seal both ends of the new control sleeve with permagum to keep moisture out.

**STEP 11** - Remove the mounting plate from the evaporator housing. Connect the 2 wires to the new control, the control to the mounting plate, the plate to the cooler; and replace the control knob.

**STEP 12** - Turn the control knob to the #5 setting.

**STEP 13** - Reassemble front of cooler and plug it in.



# TEMPERATURE CONTROL REPLACEMENT (FOR GDM & T-SERIES FREEZER CABINETS WITH LARGER THAN 1/3 H.P. COMPRESSORS) WITH DANFOSS CONTROL.

## INSTALLATION INSTRUCTIONS



### WARNING:

Failure to disconnect power to the unit may result in electrocution to field personnel.

### Qualified Repair Personnel

- These repairs should be performed by a qualified service technician.

### Tools Required

- Phillips-head Bit
- 1/4" Nut Driver Bit
- Wire Cutters
- Drill
- Needle-Nose Pliers
- Wire Strippers
- Crimping Tool
- Voltmeter
- Plastic Mallet or Hammer
- Slotted Screwdriver

### Contents of Relay Kit

- Relay (and mounting screws)
- Relay Shield (and mounting screws)
- (4) Relay wires: 2 blacks, 1 pink, 1 white with insulated female spade connectors on one end.
- Grommet
- (4) Sta-con connectors
- New temperature control
- Instructions

**STEP 1** - Removing Power: Disconnect power to the unit.

### STEP 2

#### Slide Door

Remove Louvered Grill:

- A. To remove grill, loosen upper screw on each end of grill and remove lower screws. Gently swing grill forward and up.



**1a - Removing louvered grill (slide door model)**

#### Swing Door

Remove Louvered Grill:

- A. Remove screws as indicated by arrows.



**1b - Removing louvered grill (swing door model)**

**STEP 3** - Accessing Wire Connections:

- A. Remove ballast box cover by backing out two hex head screws. (See Image 2).

**NOTE:** Wiring diagram is positioned on inside cover.



**2 - Removing ballast box cover**

**STEP 4** - Relay Connection Mounting:

- A. With slotted screw driver and plastic mallet or hammer, drive out knock out positioned on left side of ballast box. (See Image 3).
- B. Install the supplied grommet\* into the knockout hole. (See Image 4).
- C. Mount relay to underside of unit on the left side of ballast box, and 3/4" back from the front edge of the underside.

**NOTE:** Mount relay next to the ballast box, so that when the relay shield is installed it covers the relay and all exposed wiring.



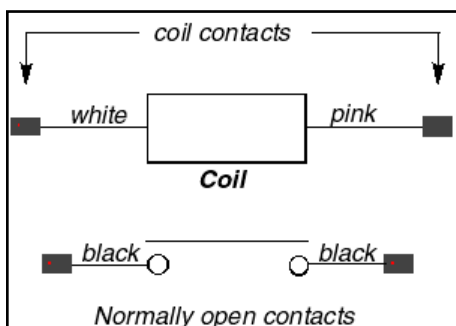
**3 - Driving out knockout**



**4 - Installing the grommet**



**5 - Anchoring relay**



**6 - Relay wiring diagram**



**7 - Routing relay wires**



**8 - Temperature control leads**

Relay should be anchored with two self-tapping screws, (supplied in kit), as pictured in Image 5.

**STEP 5** - Relay Temperature Control Wiring:

A. Connect the wires included in kit to the relay as follows:

1. Connect one black wire to one of the normally open contacts of the relay.
2. Connect the other black wire to the other normally open contact on the relay.
3. Connect the pink wire to one side of the relay coil.
4. Connect the white wire to the other side of the relay coil.

**NOTE:** Each relay has a wiring diagram on the side of it. (See Illustration 6).

B. Feed wires into the ballast box through the knockout. (See Image 7).

C. Using the Sta-Con connectors in the relay kit, make the following connections inside the ballast box:

1. Locate the pink wire coming from the temperature control and connecting to the black compressor receptacle wire. Cut this connection and connect this pink wire from the temp control to the pink wire going to the relay.
2. Connect one black wire on relay to the black wire cut from the compressor receptacle.
3. Connect the white wire coming from the relay to the white wire bundle that is connected to the white on the main power cord.
4. Connect one black wire to the black wire bundle that is connected to the outgoing terminal on the main power switch located on the ballast box.

**STEP 6** - Replace existing temperature control with new Danfoss control in repair kit: (See Image 8).

- A. Connect one pink wire from old control to terminal #4 on new temperature control.
- B. Connect other pink wire from old control to terminal #3 on new Danfoss temperature control.



**STEP 7** - Anchor the Relay Shield: (See Image 9).

- A. Secure the new relay by attaching the relay shield.
- B. Relay shield includes two self-tapping screws. When installing shield, place shield in position to cover relay and all exposed wiring.

**STEP 8** - Checking Relay Operation:

- A. Unplug the condensing unit from the compressor receptacle ( located on the ballast box).
- B. Turn the new control to the "0", (zero), position by aligning the zero indication on control knob with the arrow stamped into the evaporator housing. Ensure that control is off by listening for an audible click. This will indicate an off position.
- C. Plug voltmeter into compressor receptacle.
- D. Plug cabinet into power source.

Securing Ballast Box:

- A. Reinstall ballast box cover.
- B. Anchor cover with two screws.
- C. Check voltage at compressor receptacle. Voltage should equal voltage at wall outlet.
- D. If voltage is correct, turn temperature control to "0", (zero).
- E. Plug condensing unit cord back into the compressor receptacle.

**STEP 9** - Replacing Louvered Grill:

- A. Reinstall grill by reversing earlier procedure.

**STEP 10** - Re-connect Power Cord.

**STEP 11** - Return Temp Control to normal setting, and check cabinet operation.



## TMC-49/49D-S/58/58D-S TEMPERATURE CONTROL RELAY KIT

### INSTALLATION INSTRUCTIONS

#### Tools Required

- Drill
- 7/16" Drill Bit
- Philips Screwdriver
- 1/4" Nut Driver

#### TEMPERATURE CONTROL RELAY KIT INCLUDES (936481):

- (1) Temperature Control (822213)
- (1) Temperature Control Relay (800182)
- (1) Cover (890353)
- (1) Bushing (811209)
- (1) Pink Wire (800705)
- (1) White Wire (800706)
- (2) Black Wires (800720) All wires come with insulated Sta-con connectors installed.
- (4) Screws (830592)
- (4) White Wire Nuts (802143)

#### NOTE:

First, remove the power to the unit

**STEP 1** - Inspect the supplied temperature control relay kit for all its parts.

**STEP 2** - Remove the power supply from the cabinet.

**STEP 3** - Remove the louvered grill (bottom rear of the cabinet). Locate the electrical box on the lower right hand side of the compressor compartment. The compressor compartment is at the bottom of the cabinet. Remove the cover to the electrical box. (See Image 1).

**STEP 4** - Place the wires on the temperature control relay. The two black wires go on terminals #4 and #6. The pink wire should go on terminal #1 and the white wire should go on terminal #0.

**STEP 5** - Secure the temperature control relay near the electrical box using two of the screws that were supplied. Be sure to leave enough room to allow the cover to be put on. (See Image 2).

**STEP 6** - Drill a 7/16" hole in the end of the electrical box and place the plastic bushing in it.

**STEP 7** - Locate the pink wire coming from the temperature control, which connects to the black compressor receptacle wire. Cut this wire and connect the pink wire from the temperature control relay to this pink wire. Be sure to run the wires through the hole that was just drilled in the front of the electrical box.

**STEP 8** - Connect one black wire from the relay (Normally open contact point), to the black wire cut from the compressor receptacle. Be sure to run the wires through the hole that was just drilled in the front of the electrical box.

**STEP 9** - Connect the white wire coming from the temperature control relay to the white wire bundle that is connected to the main power cord. Be sure to run the wires through the hole that was just drilled in the front of the electrical box.

**STEP 10** - Connect the lone black wire (Normally open contact point) to the black wire bundle that is connected to the main power cord. Be sure to run the wires through the hole that was just drilled in the front of the electrical box.

**STEP 11** - Install the cover around the temperature control relay using the remaining two screws. (See Image 3).

**STEP 12** - Install the cover back on the electrical box.

**STEP 13** - Plug the unit back in and check the operation of the temperature control.

**STEP 14** - Reinstall the louvered grill.



# DANFOSS TEMPERATURE CONTROL REPLACEMENT FOR REFRIGERATORS & FREEZERS (FOR TPP, TUC, TWT, & TSSU CABINETS WITH LARGER THAN 1/3 H.P. COMPRESSORS)

## INSTALLATION INSTRUCTIONS



### WARNING:

Failure to disconnect power to the unit may result in electrocution to field personnel.

### Qualified Repair Personnel

These repairs should be performed by a qualified service technician.

### Tools Required

- Phillips-head Bit
- 1/4" Nut Driver Bit
- Wire Cutters
- Drill
- Needle-Nose Pliers
- Wire Strippers
- Crimping Tool
- Voltmeter
- Plastic Mallet or Hammer
- Slotted Screwdriver

### Contents of Relay Kit

- Relay (and mounting screws)
- Relay Shield (and mounting screws)
- (4) Relay wires: 2 blacks, 1 pink, 1 white with insulated female spade connectors on one end.
- Grommet
- (4) Sta-con connectors
- New temperature control
- Instructions

### Kit Part Numbers

- #882635 for the TPP-93, TUC/TWT-93, TSSU-72-18's
- #882636 for the TSSU-72-30M-B's
- #883552 for the TPP-119, TWT-119, TUC-119

**STEP 1** - Removing Power - Disconnect power to unit.

**NOTE:** Step 2 and 3 are related to TSSU, TUC, and TWT-72 models only. All other models go directly to Step 4.

**STEP 2** - Removing shelving standards and I-beams (for TUC, TSSU, & TWT-72 only):

- A. To remove side shelf standards back-out two plastic thumb screws on either side of the cabinet (See Image 1a). Then back-out four 1/4" hex screws that support the center I-beam in the rear of the cabinet (See Image 1b). Mark locations and positions of standards with tape for easy installation.

**STEP 3** - Removing Evaporator Housing Cover (TUC, TSSU, & TWT-72).

- A. Remove four slotted thumb screws with a standard screw driver. Then remove two Phillips-head screws next to the temperature control knob. At this point all cabinets with pans (TSSU models) can have the pans removed for easier access to the temperature control. Gently move the evaporator cover away from the rear of the cabinet to reveal the temperature control. (See Image 2).

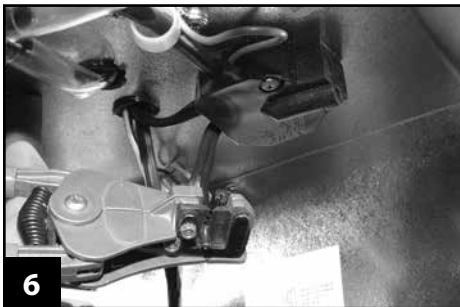
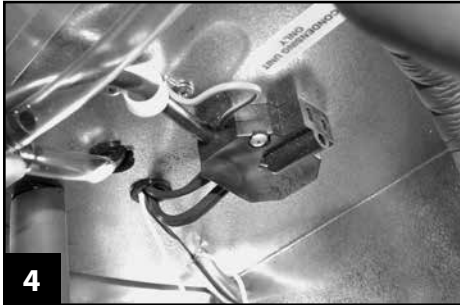
**STEP 4** - Locating and removing temperature control (for all models):

- A. The temperature control is inside the cabinet on the right-hand side. Back-out two thumb screws holding the temperature control plate in place. (See image 3).

**STEP 5** - Replace existing temperature control with new Danfoss control in repair kit:

- A. Once the temperature control is revealed you can then disconnect the old temperature control (remove the control knob and then back out two phillips screws).
- B. Unplug control wiring from old control.
- C. Pull control capillary out of 3/16" tubing inserted into coil.





**NOTE:** Be careful not to pull 3/16" tubing out of coil.

- D. To install new control push control capillary into 3/16" tubing until it stops. This must be a minimum of 8 inches. Using permagum reseal around capillary & 3/16" tubing.

**STEP 6** - Installing and wiring relay for all TPP, TUC, TWT, and TSSU cabinets (REFRIGERATORS ONLY):

- A. The new relay can be installed in the back of the cabinet behind the rear grill (philips screws will need to be backed out of the rear grill for easy access).
- B. Pull wire pair down until it stops. You should have approximately 4 inches of wire to work with. This amount of wire will be more than enough.

**NOTE:** After pulling the wire down, cut the wire so there is equal distance from the relay and to the source from which you pulled the wire down from.

- C. Cut the wire pair for the temperature control as shown in image 5. This pair is located on the side of the receptacle opposite the mounting screw location.
- D. Strip each wire approximately 1/2" (See image 6).
- E. Mount relay to back wall using provided self tapping screws. (See image 7).
- F. Connect both ends of the previously cut ribbed wire with a 14ga loose black wire using a supplied Sta-con. Connect other end of wire to the normally open contacts of the relay. (See image 8 & 13 for the next 3 steps).
- G. Connect the smooth wire from the junction block to the other loose black wire. Connect other end of wire to the other normally open contacts of the relay.
- H. Connect the smooth wire from inside the cooler (temp control) to the supplied pink wire. Connect the other end of the pink wire to one side of the relay coil.
- I. Cut visible white wire. Strip both ends. Reconnect along with supplied loose white wire. Connect other end of white wire to the other side of the relay coil.

#### FOR FREEZERS:

- A. Cut the yellow wire from the junction block (leave enough wire to connect wires to the relay). Connect yellow wire from junction block to terminal #6. Connect other yellow wire to #1.
- B. Cut the black wire that travels from junction block to interior of cabinet. Black loose wire terminal #4 connects to both ends of cut black wire. (See image 11 & 12).
- C. Cut white wire that is connected to blue heater wire, white wire from relay and white wire from junction block.

**STEP 7** - Installing new Danfoss temperature control:

- A. Connect one black wire from old control one of the horizontal terminals on the new temperature control.

- B. Place the plastic-coated spade clip on secondary on the other horizontal terminal.
- C. Connect other black wire from old control to the single vertical terminal on the new temperature control. (See image 9).

**STEP 8** - Checking Relay Operation:

- A. Unplug the condensing unit from the compressor receptacle (located on the ballast box).
- B. Plug cabinet into power source.
- C. Turn the new control to the "0", (zero), position by aligning the zero indication on control knob with the arrow stamped into the evaporator housing. Ensure that control is off by listening for an audible click. This will indicate an off position.
- D. Plug voltmeter into compressor receptacle.
- E. Turn control between 4-5 and check voltage at receptacle. Receptacle voltage should be at cabinet rating.
- F. If voltage is correct, unplug main power, reinstall compressor cord, and reinstall components.

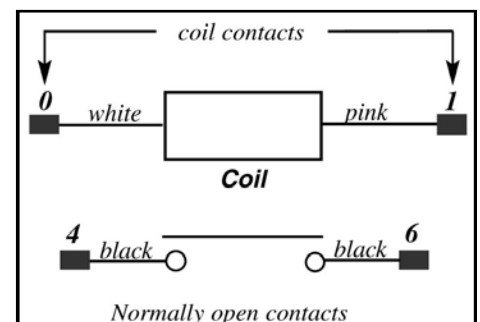
**STEP 9** - Reinstall rear grill and all other components.

**STEP 10** - Re-connect Power Cord.

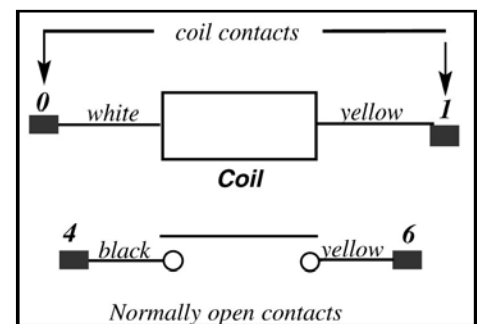
**STEP 11** - Return Temp Control to normal (#5 position) setting, and check cabinet operation.



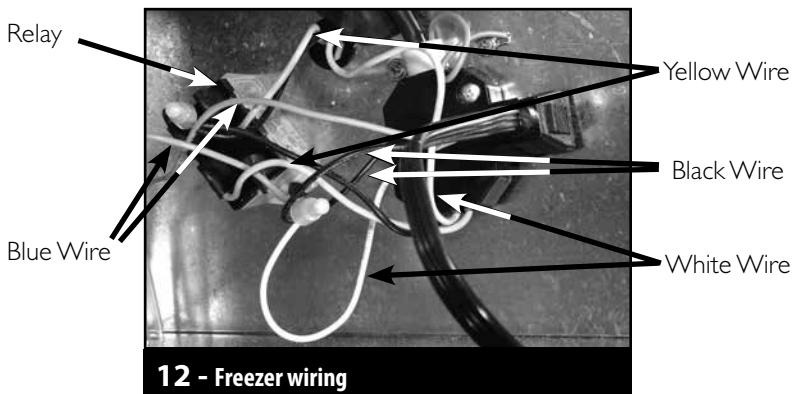
**9** - Danfoss temperature control wiring.



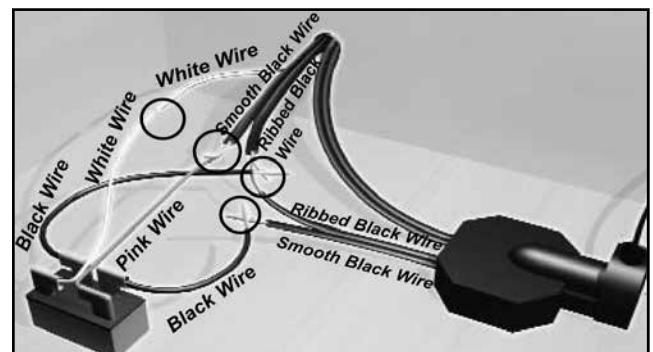
**10** - Relay wiring diagram for refrigerators



**11** - Relay wiring diagram for freezers



**12** - Freezer wiring



**13** - Relay wiring illustration for refrigerators



# DANFOSS TEMPERATURE CONTROL REPLACEMENT FOR TD-95-38 UNITS

## INSTALLATION INSTRUCTIONS



### WARNING:

Failure to disconnect power to the unit may result in electrocution to field personnel.

### Qualified Repair Personnel

These repairs should be performed by a qualified service technician.

### Tools Required

- Phillips-head Bit
- 1/4" Nut Driver Bit
- Wire Cutters
- Drill
- Needle-Nose Pliers
- Wire Strippers
- Crimping Tool
- Voltmeter
- Plastic Mallet or Hammer
- Slotted Screwdriver

### Contents of Relay Kit

- Relay (and mounting screws)
- Relay Shield (and mounting screws)
- (4) Relay wires: 2 blacks, 1 pink, 1 white with insulated female spade connectors on one end.
- Grommet
- (4) Sta-con connectors
- New temperature control
- Instructions

### Kit Part Numbers

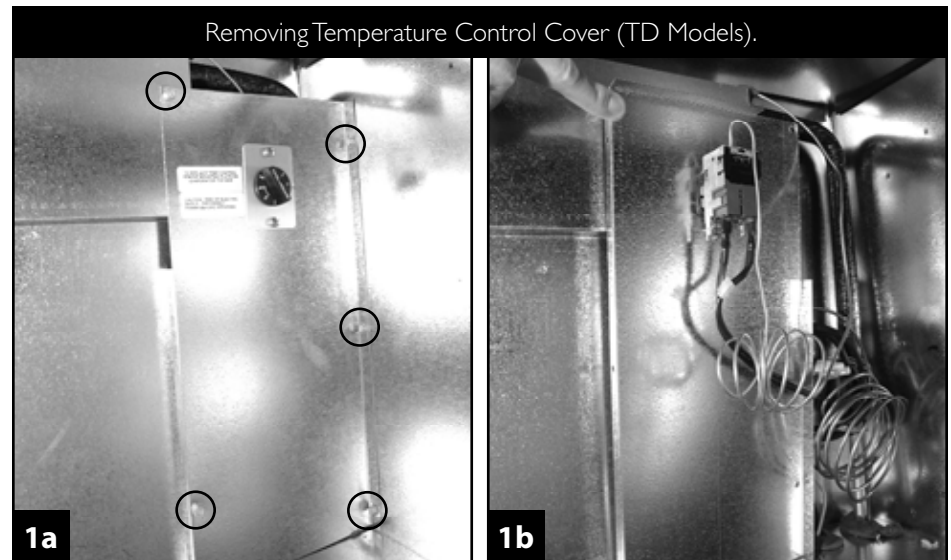
- #883694 for the TD-95-38 models

### STEP 1 - Removing Power:

- Disconnect power to the unit and move bin dividers out of the way.

### STEP 2 - Removing Temperature Control Panel:

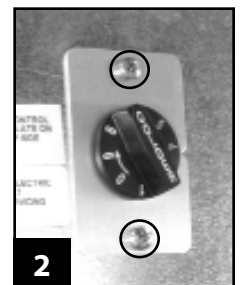
- To remove temperature control panel use a 1/4" nut driver bit to remove 5 screws (See Image 1a). Image 1b displays the backside of the temperature control panel.



### STEP 3 - The temperature control can be released from the panel by using a phillips head screw driver (See Image 2).

### Replace existing temperature control with new Danfoss control in repair kit:

- Once the temperature control is revealed you can then disconnect the old temperature control (remove the control knob and then back out two Phillips screws).
- Unplug control wiring from old control.
- Pull control capillary out of 3/16" tubing inserted into coil.



**NOTE:** Be careful not to pull 3/16" tubing out of coil.

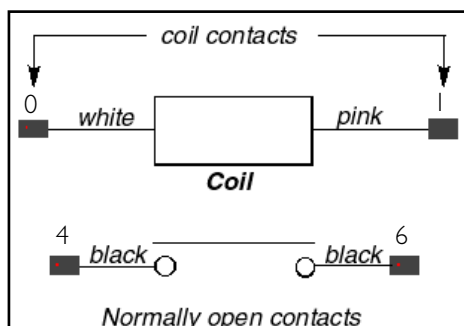
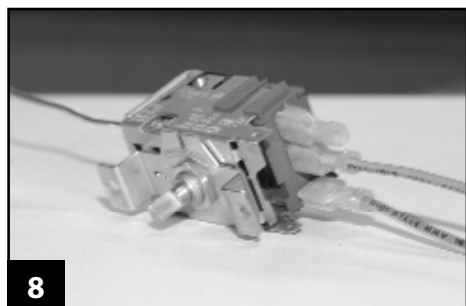
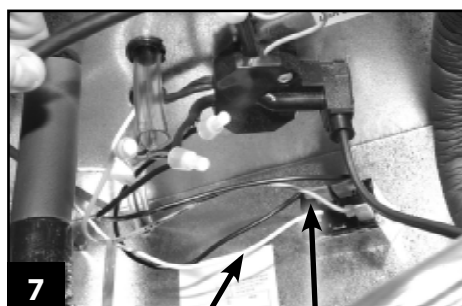
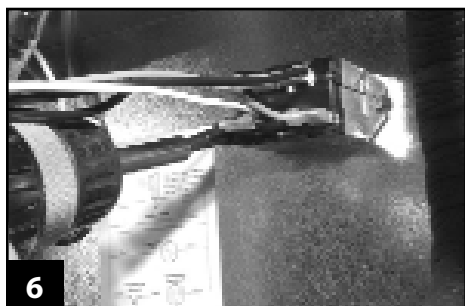
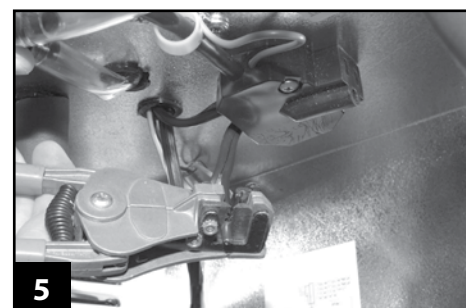
- To install new control push control capillary into 3/16" tubing until it stops. This must be a minimum of 8 inches. Using permagum reseal around capillary & 3/16" tubing.

#### STEP 4 - Installing and wiring relay:

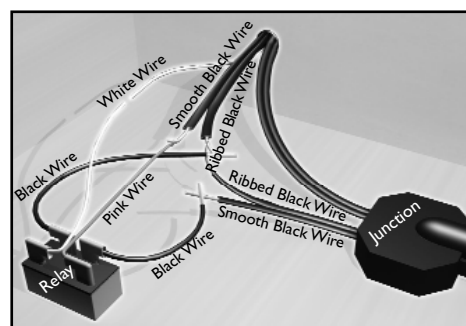
- A. The new relay can be installed in the back of the cabinet behind the rear grill (philips screws will need to be backed out of the rear grill for easy access).
- B. Pull wire pair down until it stops. You should have approximately 4 inches of wire to work with. This amount of wire will be more than enough.

**NOTE:** After pulling the wire down, cut the wire so there is equal distance from the relay and to the source from which you pulled the wire down from.

- C. Cut the wire pair for the temperature control as shown in image 4. This pair is located on the side of the receptacle opposite the mounting screw location.
- D. Strip each wire approximately 1/2". (See image 5).
- E. Mount relay to back wall using provided self tapping screws. (See image 6).
- F. Connect both ends of the previously cut ribbed wire with a 14ga loose black wire using a supplied Sta-con. Connect other end of wire to the normally open contacts of the relay. (See image 7 & 10 for the next 3 steps).
- G. Connect the smooth wire from the junction block to the other loose black wire. Connect other end of wire to the other normally open contacts of the relay.
- H. Connect the smooth wire from inside the cooler (temp control) to the supplied pink wire. Connect the other end of the pink wire to one side of the relay coil.
- I. Cut visible white wire. Strip both ends. Reconnect along with supplied loose white wire. Connect other end of white wire to the other side of the relay coil.



9 - Relay wiring diagram for refrigerators



10 - Relay wiring illustration for refrigerators

**STEP 5** - Installing new Danfoss temperature control:

- A. Connect one black wire from old control one of the horizontal terminals on the new temperature control.
- B. Place the plastic-coated spade clip on secondary on the other horizontal terminal.
- C. Connect other black wire from old control to the single vertical terminal on the new temperature control. (See Image 8).

**STEP 6** - Checking Relay Operation:

- A. Unplug the condensing unit from the compressor receptacle (located on the ballast box).
- B. Plug cabinet into power source.
- C. Turn the new control to the "0", (zero), position by aligning the zero indication on control knob with the arrow stamped into the evaporator housing. Ensure that control is off by listening for an audible click. This will indicate an off position.
- D. Plug voltmeter into compressor receptacle.
- E. Turn control between 4-5 and check voltage at receptacle. Receptacle voltage should be at cabinet rating.
- F. If voltage is correct, unplug main power, reinstall compressor cord, and reinstall components.

**STEP 7** - Reinstall rear grill and all other components.

**STEP 8** - Re-connect Power Cord.

**STEP 9** - Return Temp Control to normal (#5 position) setting, and check cabinet operation.



# DANFOSS TEMPERATURE CONTROL REPLACEMENT FOR TBB-3G, TBB-4PT, TBB-GAL-3G, TDD-3G, TDD-4G MODELS

## INSTALLATION INSTRUCTIONS



### WARNING:

Failure to disconnect power to the unit may result in electrocution to field personnel.

### Qualified Repair Personnel

These repairs should be performed by a qualified service technician.

### Tools Required

- Phillips-head Bit
- 1/4" Nut Driver Bit
- Wire Cutters
- Drill
- Needle-Nose Pliers
- Wire Strippers
- Crimping Tool
- Voltmeter
- Plastic Mallet or Hammer
- Slotted Screwdriver

### Contents of Relay Kit

- Relay (and mounting screws)
- Relay Shield (and mounting screws)
- (4) Relay wires: 2 blacks, 1 pink, 1 white with insulated female spade connectors on one end.
- Grommet
- (4) Sta-con connectors
- New temperature control
- Instructions

### Kit Part Numbers

- #883772 for the TBB-3G, TBB-4PT, TBB-GAL-3G, TDD-3G, TDD-4G models

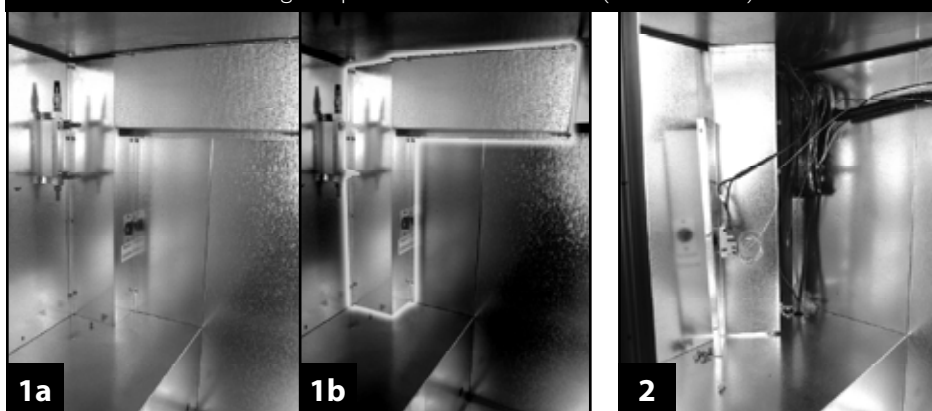
### STEP 1 - Removing Power:

- A. Disconnect power to the unit.

### STEP 2 - Removing temperature control housing (for TDD models only):

- A. To remove temperature control housing use a 1/4" nut driver bit to back-out screws. A top cover will need to be removed before the cover containing the temperature control (See Image 1a & 1b). Image 2 displays the backside of the temperature control panel.

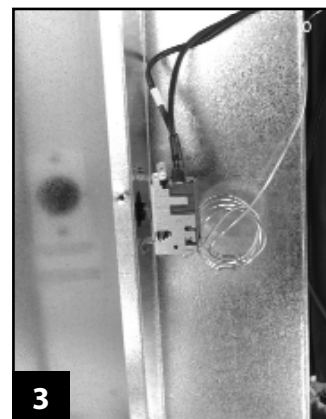
Removing Temperature Control Cover (TDD Models).



### STEP 3 - The temperature control can be released from the panel by using a phillips head screw driver (See Image 3).

Replace existing temperature control with new Danfoss control in repair kit:

- A. Once the temperature control is revealed you can then disconnect the old temperature control (remove the control knob and then back out two Phillips screws).
- B. Unplug control wiring from old control.
- C. Pull control capillary out of 3/16" tubing inserted into coil.



**NOTE:** Be careful not to pull 3/16" tubing out of coil.

- D. To install new control push control capillary into 3/16" tubing until it stops. This must be a minimum of 8 inches. Using permagum reseal around capillary & 3/16" tubing.

### STEP 4 - Installing and wiring relay:

- A. The new relay can be installed in the back of the cabinet behind the rear grill (Phillips screws will need to be backed out of the rear grill for easy access).

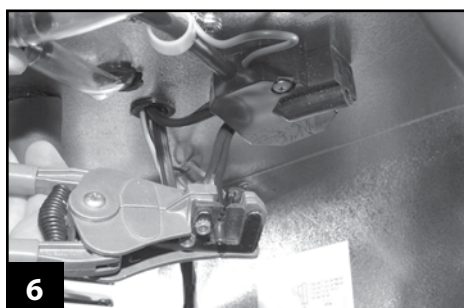


- B. Pull wire pair down until it stops. You should have approximately 4 inches of wire to work with. This amount of wire will be more than enough.

**NOTE:** After pulling the wire down, cut the wire so there is equal distance from the relay and to the source from which you pulled the wire down from.

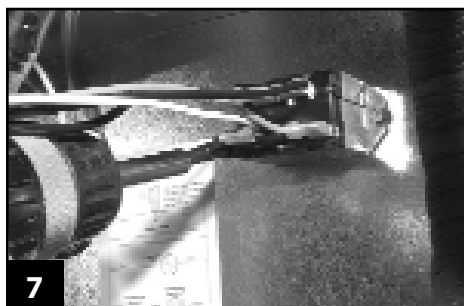


- C. Cut the wire pair for the temperature control as shown in image 5. This pair is located on the side of the receptacle opposite the mounting screw location.
- D. Strip each wire approximately 1/2". (See image 6).
- E. Mount relay to back wall using provided self tapping screws. (See image 7).
- F. Connect both ends of the previously cut ribbed wire with a 14ga loose black wire using a supplied Sta-con. Connect other end of wire to the normally open contacts of the relay. (See image 8 & 11 for the next 3 steps).
- G. Connect the smooth wire from the junction block to the other loose black wire. Connect other end of wire to the other normally open contacts of the relay.
- H. Connect the smooth wire from inside the cooler (temp control) to the supplied pink wire. Connect the other end of the pink wire to one side of the relay coil.
- I. Cut visible white wire. Strip both ends. Reconnect along with supplied loose white wire. Connect other end of white wire to the other side of the relay coil.



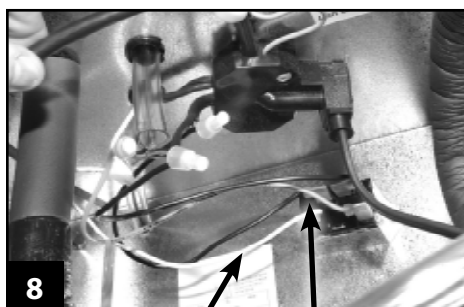
#### STEP 5 - Installing new Danfoss temperature control:

- A. Connect one black wire from old control one of the horizontal terminals on the new temperature control.
- B. Place the plastic-coated spade clip on secondary on the other horizontal terminal.
- C. Connect other black wire from old control to the single vertical terminal on the new temperature control. (See Image 9).

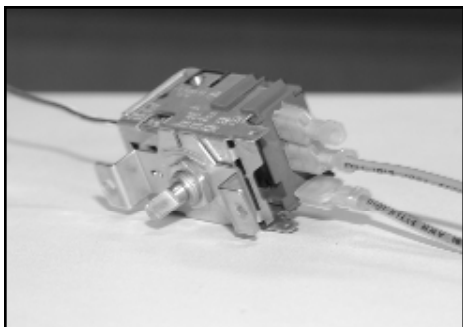


#### STEP 6 - Checking Relay Operation:

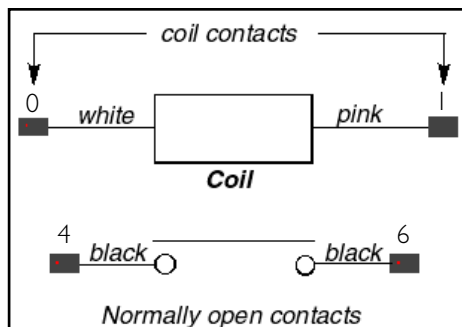
- A. Unplug the condensing unit from the compressor receptacle (located on the ballast box).
- B. Plug cabinet into power source.
- C. Turn the new control to the "0", (zero), position by aligning the zero indication on control knob with the arrow stamped into the evaporator housing. Ensure that control is off by listening for an audible click. This will indicate an off position.
- D. Plug voltmeter into compressor receptacle.
- E. Turn control between 4-5 and check voltage at receptacle. Receptacle voltage should be at cabinet rating.
- F. If voltage is correct, unplug main power, reinstall compressor cord, and reinstall components.



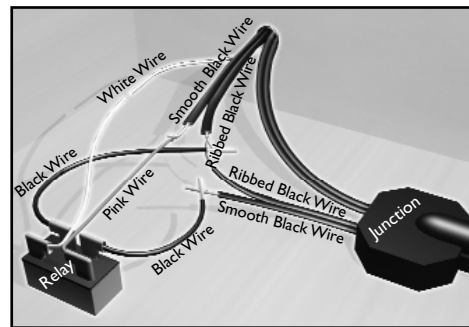
White wire      Pink wire



**9 - Danfoss temperature control wiring**



**10 - Relay wiring diagram for refrigerators**



**11 - Relay wiring illustration for refrigerators**

**STEP 7** - Reinstall rear grill and all other components.

**STEP 8** - Re-connect Power Cord.

**STEP 9** - Return Temp Control to normal (#5 position) setting and check cabinet operation.

# DANFOSSTEMPERATURE CONTROL REPLACEMENT FORTRCB-110 UNITS

## INSTALLATION INSTRUCTIONS



### WARNING:

Failure to disconnect power to the unit may result in electrocution to field personnel.

### Qualified Repair Personnel

These repairs should be performed by a qualified service technician.

### Tools Required

- Phillips-head Bit
- 1/4" Nut Driver Bit
- Wire Cutters
- Drill
- Needle-Nose Pliers
- Wire Strippers
- Crimping Tool
- Voltmeter
- Plastic Mallet or Hammer
- Slotted Screwdriver

### Contents of Relay Kit

- Relay (and mounting screws)
- Relay Shield (and mounting screws)
- (4) Relay wires: 2 blacks, 1 pink, 1 white with insulated female spade connectors on one end.
- Grommet
- (4) Sta-con connectors
- New temperature control
- Instructions

### Kit Part Numbers

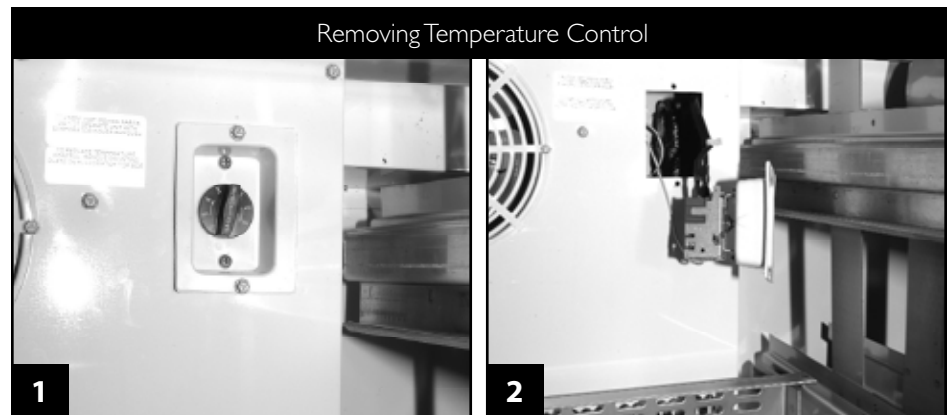
- #883773 for the TRCB-110 model

### STEP 1 - Removing Power:

- A. Disconnect power to the unit. The temperature control is located behind the top left drawer. Remove this drawer.

### STEP 2 - Removing temperature control (forTRCB-110 only):

- A. After locating the temperature control back-out the two screws holding it in place. (See Image 1). Image 2 displays the backside of the temperature control.



**STEP 3** - The temperature control can be released from the panel by using a phillips head screw driver (See Image 3). Replace existing temperature control with new Danfoss control in repair kit:

- A. Once the temperature control is revealed you can then disconnect the old temperature control (remove the control knob and then back out two Phillips screws).
- B. Unplug control wiring from old control.
- C. Pull control capillary out of 3/16" tubing inserted into coil.

**NOTE:** Be careful not to pull 3/16" tubing out of coil.

- D. To install new control push control capillary into 3/16" tubing until it stops. This must be a minimum of 8 inches. Using permagum reseal around capillary & 3/16" tubing.

### STEP 4 - Installing and wiring relay:

- A. The new relay can be installed in the back of the cabinet behind the rear grill (Phillips screws will need to be backed out of the rear grill for easy access).
- B. Pull wire pair down until it stops. You should have



Removal of Side Grill



Placement of Relay  
(above compressor)

approximately 4 inches of wire to work with. This amount of wire will be more than enough.

**NOTE:** After pulling the wire down, cut the wire so there is equal distance from the relay and to the source from which you pulled the wire down from.

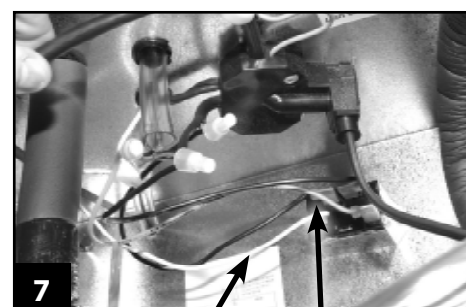
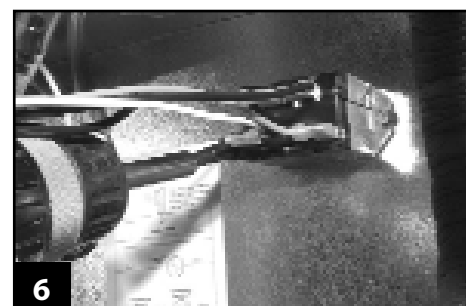
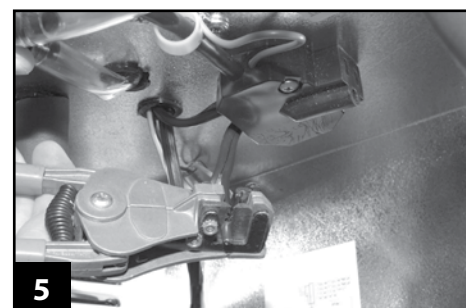
- C. Cut the wire pair for the temperature control as shown in image 5. This pair is located on the side of the receptacle opposite the mounting screw location.
- D. Strip each wire approximately 1/2". (See image 5).
- E. Mount relay to back wall using provided self tapping screws. (See image 6).
- F. Connect both ends of the previously cut ribbed wire with a 14ga loose black wire using a supplied Sta-con. Connect other end of wire to the normally open contacts of the relay. (See image 7 & 10 for the next 3 steps).
- G. Connect the smooth wire from the junction block to the other loose black wire. Connect other end of wire to the other normally open contacts of the relay.
- H. Connect the smooth wire from inside the cooler (temp control) to the supplied pink wire. Connect the other end of the pink wire to one side of the relay coil.
- I. Cut visible white wire. Strip both ends. Reconnect along with supplied loose white wire. Connect other end of white wire to the other side of the relay coil.

#### STEP 5 - Installing new Danfoss temperature control:

- A. Connect one black wire from old control one of the horizontal terminals on the new temperature control.
- B. Place the plastic-coated spade clip on secondary on the other horizontal terminal.
- C. Connect other black wire from old control to the single vertical terminal on the new temperature control. (See Image 8).

#### STEP 6 - Checking Relay Operation:

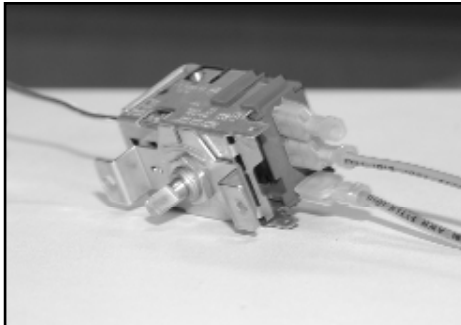
- A. Unplug the condensing unit from the compressor receptacle (located on the ballast box).
- B. Plug cabinet into power source.
- C. Turn the new control to the "0", (zero), position by aligning the zero indication on control knob with the arrow stamped into the evaporator housing. Ensure that control is off by listening for an audible click. This will indicate an off position.
- D. Plug voltmeter into compressor receptacle.
- E. Turn control between 4-5 and check voltage at receptacle. Receptacle voltage should be at cabinet rating.
- F. If voltage is correct, unplug main power; reinstall compressor cord, and reinstall components.



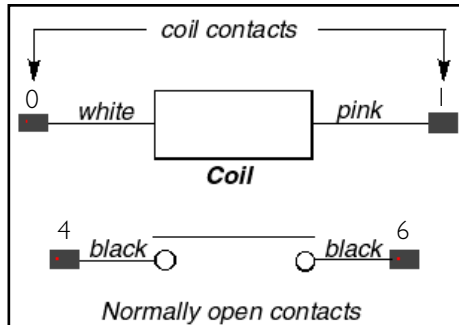
White wire

Pink wire

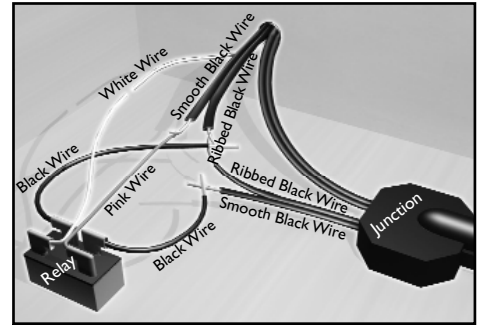




**8 - Danfoss temperature control wiring**



**9 - Relay wiring diagram for refrigerators**



**10 - Relay wiring illustration for refrigerators**

**STEP 7** - Reinstall rear grill and all other components.

**STEP 8** - Re-connect Power Cord.

**STEP 9** - Return Temp Control to normal (#5 position) setting, and check cabinet operation.

## TDBD TEMPERATURE CONTROL RELAY RETROFIT

### RETROFIT INSTRUCTIONS

**STEP 1** - Disconnect the electrical power to the unit.

**STEP 2** - Remove the louvered grill on the backside of the unit or the strait side.

**STEP 3** - Remove the electrical box cover facing the outside wall. (See image 1).

**STEP 4** - Also remove the three 1/4" hex head screws holding the panel for the condensing unit receptacle.

**NOTE:** This will give better access to drill the holes to mount the new relay.

**STEP 5** - Now mount the new relay close to the condensing unit receptacle.

**NOTE:** Check clearances before mounting

**STEP 6** - Looking at the condensing unit receptacle you will see a pink wire attached to its black wire remove the pink wire.

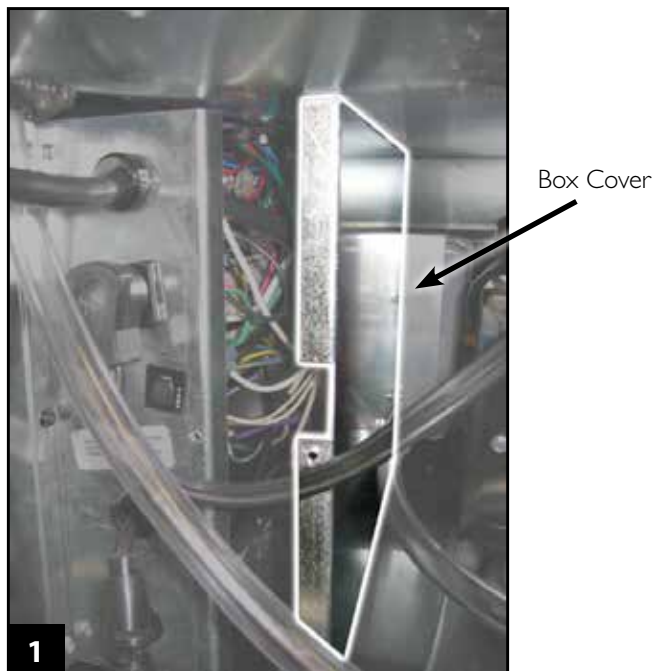
**STEP 7** - Place a push on connector on the pink wire and attach it to the new relays #0 terminal.

**STEP 8** - The black wire on the receptacle will now get its power from the new relays #6 terminal by adding a push on connector to the black wire from the receptacle.

**STEP 9** - Now you will need to pull a new wire from the main power lines black wire you will need to splice into this with the other black wires already attached to this line and hook the new wire to the #4 terminal on the new relay.

**STEP 10** - You also need to pull a new wire from the main neutral wire bundle over to the #1 terminal on the new relay.

**STEP 11** - Now when the new temperature control closes it will send power to the coil on the relay and close the contacts on the relay sending power to the condensing unit.



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## NOTES

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