

OPERATION

STARTUP

- A. Temperature controls are factory-set to give refrigerators an approximate temperature of 35°F (1.6°C) and freezers an approximate temperature of -10°F (-23.3°C). Allow unit to function several hours, completely cooling cabinet before changing the control setting.

Temperature Control Location and Settings.

- Temperature control type will vary upon model and age of cabinet.
 - Mechanical control or electronic control without display:
 - Inside cabinet
 - Behind cabinet
 - Behind front or rear access grill
 - Electronic control with display:
 - In countertop
 - In top louvered panel
 - In or behind bottom louvered grill
- B. Excessive tampering with the control could lead to service difficulties. Should it ever become necessary to replace temperature control, be sure it is ordered from your TRUE dealer or recommended service agent.

MECHANICAL TEMPERATURE CONTROLS

MECHANICAL TEMPERATURE CONTROL GENERAL SEQUENCE OF OPERATION

HOW TO DIAGNOSE

CHECKING THE CUT IN AND CUT OUT OF THE TEMPERATURE CONTROL

CONDITIONS THAT COULD CAUSE A TEMPERATURE CONTROL MISDIAGNOSIS

CHANGING OUT AND INSTALLING A MECHANICAL TEMPERATURE CONTROL

WHEN TO MAKE AN ADJUSTMENT TO A MECHANICAL TEMPERATURE CONTROL

HOW TO ADJUST A MECHANICAL TEMPERATURE CONTROL

MECHANICAL TEMPERATURE CONTROLS

COIL SENSING

An evaporator coil sensing temperature control ensures that the evaporator coil will remain clear of frost and ice by not allowing the compressor to restart until the coil temperature is above the freezing temperature. This is considered an **off cycle defrost**.

Note: Some Deli Cabinets with a gravity coil system will use a regular defrost cycle without heaters to assist in clearing the coil.



AIR SENSING

An air sensing temperature control used in a freezer application will require a defrost cycle with heaters to ensure that the evaporator coil is kept clear of frost and ice.

Note: Air sensing control used for wine/chocolate do not utilize a defrost cycle as coil temperatures are above freezing.



MECHANICAL TEMPERATURE CONTROL GENERAL SEQUENCE OF OPERATION

MECHANICAL CONTROL REFRIGERATOR GENERAL SEQUENCE OF OPERATION

1. Cabinet is plugged in.
 - a. Interior lights will illuminate on Glass Door Models only. If lights do not come on verify the light switch is in the "ON" position. Solid door cabinets may or may not have lights that may be controlled by the door switch.
2. The compressor and evaporator fans will start if the temperature control is calling for cooling. (If the compressor does not start, verify that the temperature control is not in the "OFF" or "0" position.)
3. The temperature control may cycle the compressor and evaporator fan(s) on and off together.
 - a. The temperature control is sensing the evaporator coil temperature.
 - b. The temperature control should be set on the #4 or #5.
 - c. The warmest setting is #1, the coldest is #9, and #0 is the off position.
 - d. The thermometer is designed to read and display a cabinet temperature not a product temperature. The thermometer may reflect the refrigeration cycle swings of up and down temperatures. The most accurate temperature on a cabinet's operation is to verify the product temperature.
4. There is not a defrost timer as the temperature control will initiate the off-cycle defrost during each refrigeration cycle.
 - a. At this time, the compressor will and the evaporator fan(s) may turn off. Defrost heaters are not installed on refrigerators and therefore will not be energized.
 - b. After the evaporator coil temperature has been reached, as determined by the temperature control, the compressor will restart.
5. There may be a timer located on the condensing unit base. This timer is not used for a defrost event. The timer will change the rotation of the reversing condenser fan motor.

MECHANICAL TEMPERATURE CONTROLS

MECHANICAL CONTROL FREEZER GENERAL SEQUENCE OF OPERATION

1. Cabinet is plugged in.
 - a. Interior lights will illuminate on glass door models only. If lights do not come on, verify the light switch is in the "ON" position. Solid door cabinets may or may not have lights that may be controlled by the door switch.
2. The compressor only will start if the temperature control is calling for cooling. (If the compressor does not start, verify that the temperature control is not in the "OFF" or "0" position or the cabinet is not in a defrost event.)
 - a. The evaporator fan(s) will remain off until a specific temperature of the evaporator coil is reached.
3. The temperature control may cycle the compressor and evaporator fan(s) on and off together.
 - a. The temperature control is sensing the air temperature.
 - b. The temperature control should be set on the #4 or #5.
 - c. The warmest setting is #1, the coldest is #9, and #0 is the off position.
 - d. The thermometer is designed to read and display a cabinet temperature not a product temperature. The thermometer may reflect the refrigeration cycle swings of up and down temperatures. The most accurate temperature on a cabinet's operation is to verify the product temperature.
4. The defrost timer will initiate defrost during specific times of day.
 - a. At this time, the compressor and evaporator fan(s) will turn off and the evaporator coil heater and drain tube heater will be energized. Some cabinets may also change the rotation of the reversing condenser fan motor.
 - b. After the predetermined evaporator coil temperature has been reached or duration for defrost has expired, the compressor will restart and the evaporator fan(s) will remain off until a specific temperature of the evaporator coil is reached.

MECHANICAL CONTROL DELI DISPLAY GENERAL SEQUENCE OF OPERATION

1. Cabinet is plugged in.
 - a. Interior lights will illuminate. If lights do not come on verify the light switch is in the "ON" position.
2.
 - a. The compressor and evaporator fans will start on a model TCGR if the temperature control is calling for cooling. (If the compressor does not start, verify that the temperature control is not in the "OFF" or "0" position.)
 - b. The compressor will start on models TSID, TDBD, and TCGG if the temperature control is calling for cooling. (The above 3 models are a gravity style coil design and do not have an evaporator fan motor.)
3. The temperature control may cycle the compressor and evaporator fan(s) on and off together.
 - a. The temperature control is sensing the evaporator coil temperature.
 - b. The temperature control should be set on the #4 or #5.
 - c. The warmest setting is #1, the coldest is #9, and #0 is the off position.
 - d. The thermometer is designed to read and display a cabinet temperature not a product temperature. The thermometer may reflect the refrigeration cycle swings of up and down temperatures. The most accurate temperature on a cabinet's operation is to verify the product temperature.
4. There is not a defrost timer on a model TCGR as the temperature control will initiate the off-cycle defrost during each refrigeration cycle.
 - a. At this time, the compressor will turn off. Defrost heaters are not installed on refrigerators and therefore will not be energized.
 - b. After the evaporator coil temperature has been reached determined by the temperature control, the compressor will restart.

The defrost timer will initiate defrost on models TSID, TDBD, and TCGG during specific times of day.

 - a. At this time, the compressor will turn off. No heaters will be energized.
 - b. After the predetermined duration has expired, the compressor will restart.

MECHANICAL TEMPERATURE CONTROLS

MECHANICAL CONTROL TFM/TDC/THDC GENERAL SEQUENCE OF OPERATION

1. Cabinet is plugged in.
2. The compressor only will start if the temperature control is calling for cooling. (If the compressor does not start, verify that the temperature control is not in the "OFF" or "0" position.
3. The temperature control will cycle the compressor on and off.
 - a. The temperature control is sensing the coil temperature.
 - b. The temperature control should be set on the #4 or #5.
 - c. The warmest setting is #1, the coldest is #9, and #0 is the off position.
 - d. The thermometer is designed to read and display a cabinet temperature **not a product temperature**. The thermometer may reflect the refrigeration cycle swings of up and down temperatures. The most accurate temperature on a cabinet's operation is to verify the product temperature.
4. The control will not initiate defrost.
 - a. The cabinet will need to be manually defrosted. The manual defrost frequency will depend on the unit's usage, environment and the amount of frost.

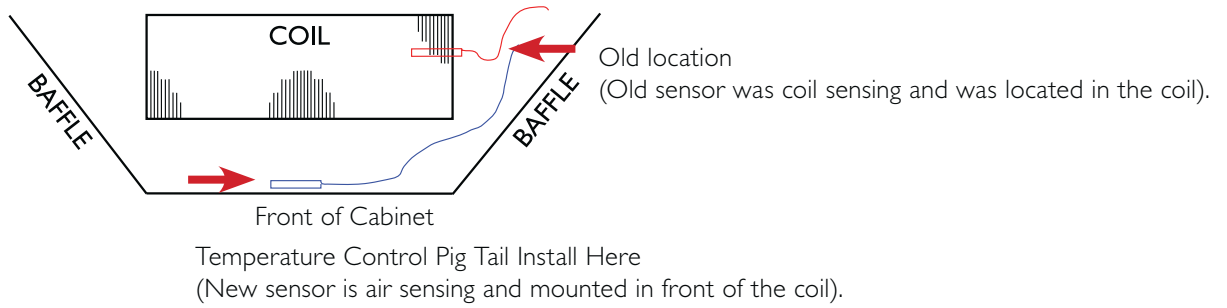
MECHANICAL CONTROL HEATED CABINET GENERAL SEQUENCE OF OPERATION

1. Cabinet is plugged in.
 - a. Interior lights will illuminate if the rocker switch on the outside panel is in the "ON" position.
2. The temperature control will energize the heat elements if the control is calling for heat.
3. The temperature control will cycle the heating elements on and off.
 - a. The temperature control is sensing the air temperature.
 - b. The temperature control should be set between 140°-180°.
 - c. The temperature control has an "OFF" position.
 - d. The thermometer is designed to read and display a cabinet temperature not a product temperature. This cabinet temperature may reflect the heating cycle determined by the temperature control. The most accurate temperature on a cabinets operation is to verify the product temperature.

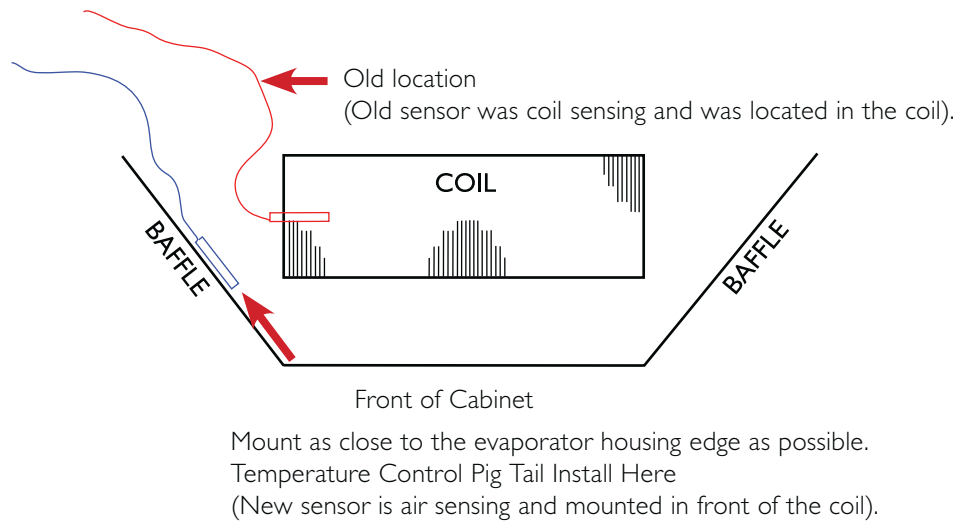
MECHANICAL TEMPERATURE CONTROLS

White Wine: 45-50°F (8.2-10°C)
Red Wine / Chocolate: 50-55°F (10-12.8°C)

GDM / T-Series Coolers



TBB Units



MECHANICAL TEMPERATURE CONTROLS

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.

Information is provided to verify cut-in/cut-out range for diagnostic purposes only. True recommends replacing OEM control with the same part number.

OLD TRUE P/N	NEW TRUE P/N (KIT)	MFG P/N	APPLICATION	CUT-IN °F (C)	CUT-OUT °F (C)
800303		9531N376		35.0 (1.7)	14.5 (-9.7)
800304		9530N1490		-8.5 (-22.5)	-14.5 (-25.8)
800306		9531N251		40.0 (4.4)	19.0 (-7.2)
800312		9530N1284		-8.5 (-22.5)	-14.5 (-25.8)
800313		9531N335		36.5 (2.5)	16.0 (-8.9)
800320		9530N1185		32.5 (0.3)	26.5 (-3.1)
800325		9530N1318	RED WINE, CHOCOLATE	62.0 (16.7)	55.0 (12.8)
800335		9530N1376		38.0 (3.3)	20.0 (-6.7)
800340		9530N1155		26.1 (-3.3)	10.9 (-11.7)
800345	988271	077B1264		-2.6 (-19.4)	-15.5 (-26.6)
800357		9530266		-3.0 (-19.4)	-8.0 (-22.2)
800358		077B1214		-8.5 (-22.7)	-14.4 (-26.0)
800363		9530C311		-2.6 (-19.2)	-12.5 (-24.7)
800366	988282	077B6806		37 (2.8)	16.5 (-8.7)
800368	988285	077B6857		39.6 (4.3)	26.2 (-3.2)
800369	988266	077B1212		-2.6 (-19.4)	-12.3 (-24.8)
800370	988267	077B1216		-4.0 (-20.2)	-15.3 (-26.5)
800371	988286	077B6863		41.9 (5.5)	23.7 (-4.6)
800382	988284	077B6856		37.2 (2.9)	18.1 (-7.8)
800383	988268	077B1227		0.3 (-17.8)	-5.6 (-21.1)
800384	988270	077B1229		24.8 (-4.0)	18.7 (-7.4)
800385	988269	077B1228	WHITE WINE	44.2 (6.8)	34.7 (1.5)
800386	988287	077B6871		43.2 (6.3)	20.1 (-6.7)
800387	988288	077B6887	FLOWER COOLER	39.2 (4.0)	21.2 (-6.0)
800390		9530N1329	SUPER NOVA	13.1 (-10.5)	8.1 (-13.3)
800393	988283	077B6827		41.7 (5.4)	20.5 (-6.4)
800395		931N370	HIGH ALTITUDE	40.0 (4.4)	22.8 (-5.1)
800399		9530C304		0.4 (-17.6)	-5.4 (-20.8)
822212	988291	CAP-075-174R	HEATED	165.0 (73.9)	174.0 (78.9)
822213	988289	077B6894		37 (2.8)	21.6 (-5.8)
822214	988273	077B1309		32.0 (0.0)	17.9 (-7.9)
822223	988274	077B1331		25.7 (-3.5)	8.6 (-13.0)
831931	988272	077B1277		-2.0 (-19.0)	-9.0 (-23.0)
831932		3ART56VAA4		40.0 (4.4)	18.0 (-7.8)
831987	988265	077B0995	RED WINE, CHOCOLATE	57.2 (14.1)	49.6 (9.9)
908854	988290	077B6926		36.3 (2.4)	10.4 (-12.1)
908975	988275	077B1352		-12.1 (-24.7)	-25.1 (-32.0)
911427	988276	077B1354		37.6 (3.1)	26.2 (-3.2)
913382	988277	077B1367		-11.0 (-24.1)	-22.5 (-30.5)
917838	988278	077B1369		0.3 (-17.8)	-14.1 (-25.8)
930794	988279	091X9775		41.5 (5.3)	24.9 (-3.9)
933190	988280	077B3264		41.7 (5.4)	19.4 (-7.1)
942659	988281	077B3315		39.6 (4.3)	26.2 (-3.2)
952478		077B3347		43.2 (6.3)	20.1 (-6.7)
954800		077B3531		41.9 (5.5)	23.7 (-4.6)
958745		3ART55VAA4		39.2 (4.0)	17.6 (-8.0)
958747	988264	077B3548		37.2 (2.9)	18.1 (-7.8)
958857		3ART5VAA198		8.0 (-13.3)	-6.0 (-21.1)
959268	988294	3ART55VAA3		39.6 (4.2)	26.2 (-3.2)
960640	988296	3ART55VAA5		43.1 (6.2)	20.2 (-6.6)
962728		3ART55VAA6		41.8 (5.4)	20.4 (-6.4)
963056		3ART55VAA2		39.2 (4.0)	15.8 (-9.0)

All temps are at mid-point setting #5

All temps advised have a +/- 1.8 to 2 degree variance depending upon control

MECHANICAL TEMPERATURE CONTROLS

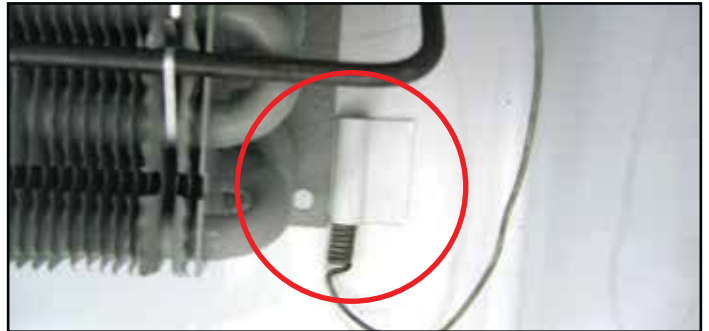
CHECKING THE CUT IN AND CUT OUT OF THE TEMPERATURE CONTROL

COIL SENSING



Example of checking coil temperature for a coil sensing thermostat. Position thermometer as close as possible to the control sleeve in the evaporator coil.

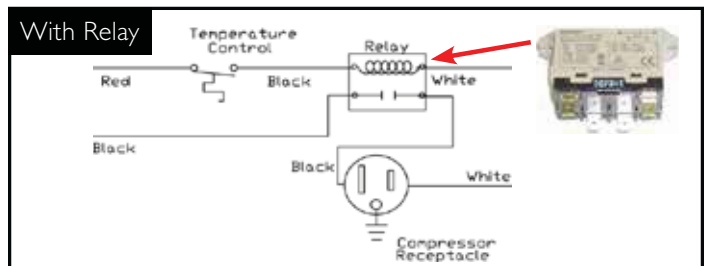
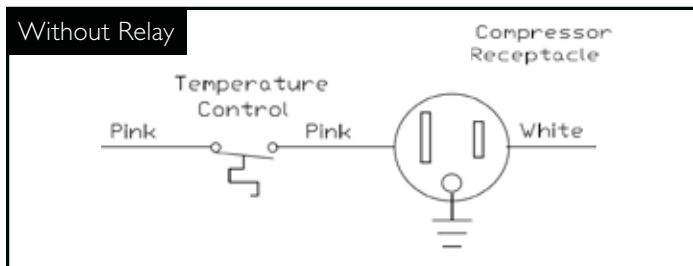
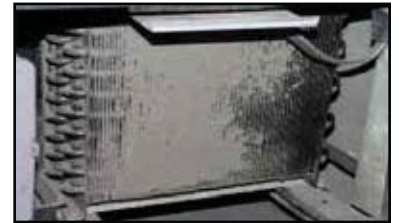
AIR SENSING



Example of checking air temperature for an air sensing thermostat. Position thermometer as close as possible to the "pig tail" at the end of the thermostat bulb.

CONDITIONS THAT COULD CAUSE A TEMPERATURE CONTROL MISDIAGNOSIS

- Dirty Condensing Coil
- Bad Door Gasket
- Poor Ventilation / High Ambient Conditions
- Refrigeration System Failure
- Temperature Control Relay



MECHANICAL TEMPERATURE CONTROLS

WHEN TO MAKE AN ADJUSTMENT TO A MECHANICAL TEMPERATURE CONTROL

We advise to make a mechanical temperature control adjustment only for a high altitude location.



HOW TO ADJUST A MECHANICAL TEMPERATURE CONTROL

GE TEMPERATURE CONTROL ADJUSTMENT FOR HIGH ALTITUDE APPLICATIONS:

REQUIRED TOOLS:

- Jewelers screwdriver (Small screwdriver)

GE CONTROL INSTRUCTIONS:

The scale to the right may be used as a guide for measuring degrees of rotation required for altitude correction. See Figure 1. The arrows indicate direction of screw rotation. Turn calibration screw clockwise to obtain warmer operating temperatures.

STEP 1 - Unplug cooler.

STEP 2 - Remove the screws that secure the temperature control to the inset box.

STEP 3 - To make these adjustments it may be necessary to remove the temperature control from the housing.

NOTE: You may have to remove the wires attached to the control. Take note as to which wire is on which spade terminal.

STEP 4 - Pull out gently from cabinet.

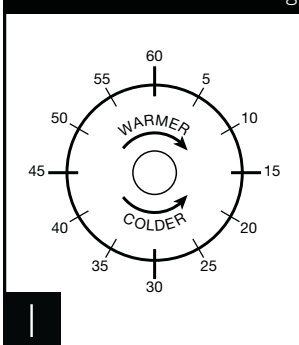
STEP 5 Each 1/4 turn of the calibration screw is equal to approximately 2 degrees F (1.1 degree C). Do not make more than 3/4 turn. After making adjustment, measure temperature during three cycles before adjusting again.

NOTE: Only adjust the screw (small flathead) on the face of the control (next to the cam). See Figure 3.

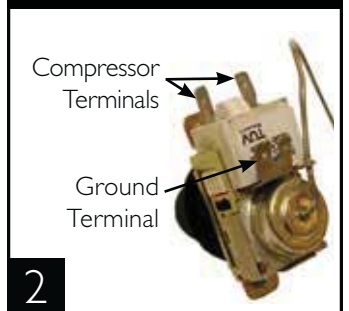
STEP 6 - Make sure to reconnect the wires to the proper spade terminal when reinstalling.

Follow the Altitude Correction Table to the right.

Scale Guide for Measuring



Back of Temperature Control



Altitude Correction

Front of Temperature Control



Calibration Screw

To adjust the temperature control take the control knob off to view the cut-in screw. (See Photo Above)

ALTITUDE CORRECTION TABLE:
CALIBRATION SCREW ADJUSTS BOTH
CUT-IN AND CUT-OUT

Altitude (Feet / Meters)	Clockwise Turns
2000 / 610	7/60
3000 / 914	11/60
4000 / 1219	15/60
5000 / 1524	19/60
6000 / 1829	23/60
7000 / 2134	27/60
8000 / 2438	30/60
9000 / 2743	34/60
10,000 / 3048	37/60