

# **SR-3 Controller Operation Handbook**

TK 61581-2-OP (Rev. 0, 01-18)

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# Operating Instructions

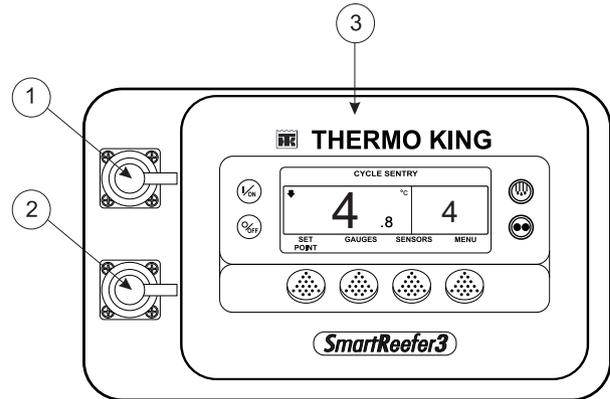
## SMART REEFER 3 (SR-3) Controller Overview

Thermo King has applied the latest advances in computer technology to develop a device that controls temperature and unit function, and displays operating information quickly and accurately.

There is nothing complicated about learning to operate the SR-3 Controller, but you will find that a few minutes studying the contents of this manual will be time well spent.

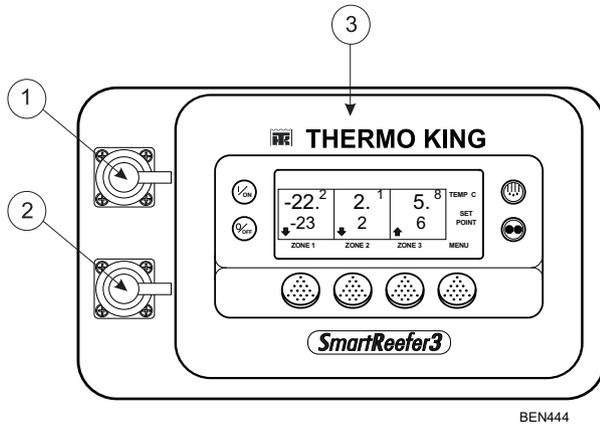


**WARNING:** Do not operate the unit until you are completely familiar with the location and function of each control.



1.	CargoWatch Download Port
2.	USB Port
3.	HMI Control Panel

Figure 1: SLXi Single-Temperature Controller Display



1.	CargoWatch Download Port
2.	USB Port
3.	HMI Control Panel

Figure 2: SLXi Multi-Temperature Controller Display

## Switching “ON” the unit

1. On/Off Master Isolator Switch must be ON.
2. Press the I/ON Microprocessor key for 1 second.
3. Unit is switched “on”.

## Microprocessor ON/OFF switch

Microprocessor On/Off Switch is located above engine inside the unit. The switch is normally left in On position.

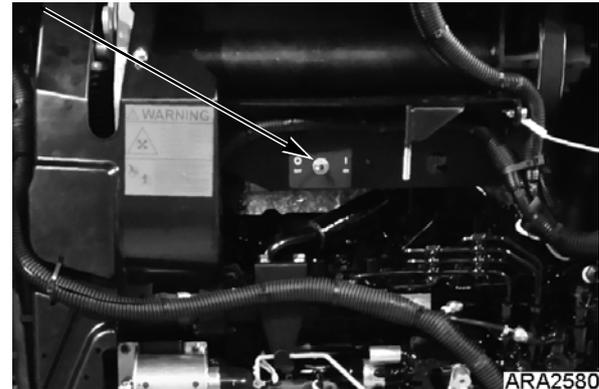


Figure 3: Microprocessor On/Off Switch

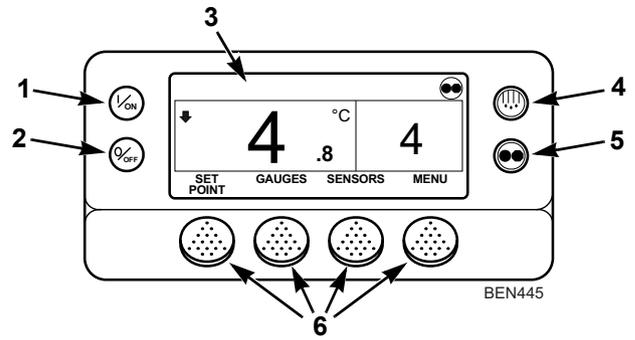
## HMI Control Panel

The HMI control panel has a display and eight touch sensitive keys. The display is capable of showing both text and graphics. The four keys on the left and right sides of the display are dedicated keys. The four keys under the display are “soft” keys. The function of “soft” keys change depending on the operation being performed. If a soft key is active, its function will be shown in the display directly above the key.

### Control Panel Display

The display is used to supply unit information to the operator. This information includes setpoint, current box temperature operating information, unit gauge readings, system temperatures and other information as selected by the operator.

The default display is called the Standard Display. It is shown in Figure 4 and will be described in detail later in this chapter.



1.	On Key (Dedicated Key)
2.	Off Key (Dedicated Key)
3.	Display
4.	Defrost Key (Dedicated Key)
5.	CYCLE-SENTRY/Continuous Mode Key (Dedicated Key)
6.	Soft Keys

**Figure 4: Control Panel Display and Keys**

## Control Panel Keys

The four keys on the left and right sides of the display screen are “dedicated keys” (see Figure 4). Their functions are listed below.



**On Key:** This key is used to turn the unit on. First the display will briefly show the Thermo King Logo and then the statement "Configuring System - Please Wait". When the power-up sequence is complete the display shows the Standard Display of box temperature and setpoint.



**Off Key:** This key is used to turn the unit off. First the display will briefly show "System is Powering Down - Please Wait. Press On to Resume" and then "Off" will appear momentarily. When the power-down sequence is complete the display will be blank.



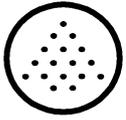
**Defrost Key:** Press this key to initiate a Manual Defrost cycle.



### **CYCLE SENTRY/Continuous Mode Key:**

Press this key to switch back and forth between the CYCLE-SENTRY mode and the Continuous Run mode. If OptiSet Plus is in use, it may not be possible to change the Mode.

## Operating Instructions



The four "soft" keys under the display are multi-purpose keys. Their function changes depending on the operation being performed. If a soft key is active the key function is shown in the display directly above the key. The keys are numbered from left to right, with Key 1 on the far left and Key 4 on the far right.

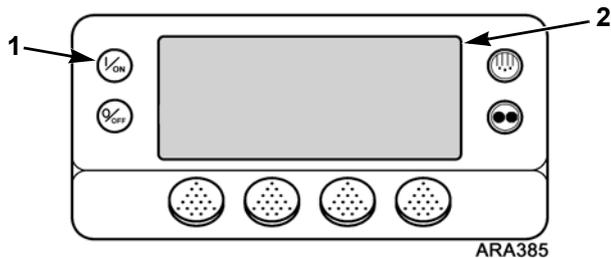
Typical soft key applications:

- Setpoint
- Gauges
- Sensors
- Menu
- Next/Back
- Yes/No
- +/-
- Select/Exit
- Clear/Help
- Hourmeters

## Turning Unit On

Complete the following steps to turn on the unit:

1. Press the **ON** key. See Figure 6.



1.	On Key
2.	Display

**Figure 5: Press On Key**

2. The display briefly shows a Thermo King Logo. See Figure 6 on page 10.

**IMPORTANT:** The ON key must be held down until the Thermo King Logo appears. If the ON key is not held down long enough (approximately 1/2 second), the display may flicker but the unit will not start up. If this occurs, hold the ON key down until the Thermo King logo appears.

**NOTE:** With extremely cold ambient temperatures it may take up to 15 seconds for the first display to appear.

3. The “Configuring System” Screen briefly appears while communications are established and the unit prepares for operation. See Figure 6.

**NOTE:** If more than one language has been enabled, a prompt will appear at this point to allow the desired language to be chosen. If this occurs, go to “More Than One Language Enabled” on page 11 to continue the unit start up procedure. If this does not occur, only one language is enabled and you can continue with the unit start up Step 4 below.

4. The Standard Display showing box temperature and setpoint briefly appears. See “Figure 6: Turning Unit On Screen Sequence, One Language Enabled,” on page 10.
5. The “Diesel Engine Starting” Screen briefly appears as the engine preheats and starts.

## Operating Instructions

6. The Standard Display showing box temperature and setpoint reappears when the unit is running. (See Figure 6.)

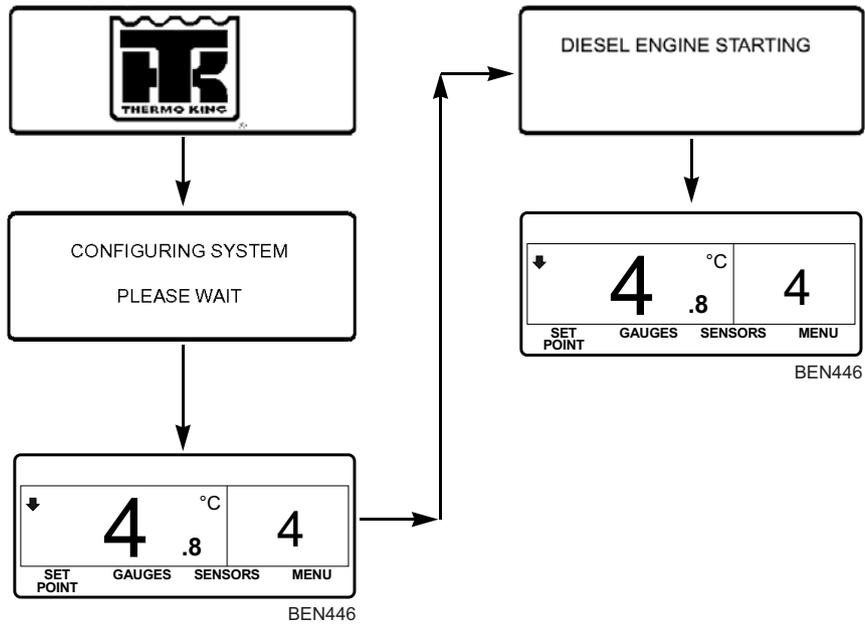


Figure 6: Turning Unit On Screen Sequence, One Language Enabled

## More Than One Language Enabled

If more than one language has been enabled, a prompt will appear to allow the desired language to be chosen. Only languages enabled from the Guarded Access Menu are available. Press YES to select the language displayed. If a different language is desired, press the NO key as shown in Figure 7.

**IMPORTANT:** *The engine start is not delayed by the language prompt as shown in Figure 7. The prompt will appear for 10 seconds and then the engine will start. After the engine is started the display will return to the prompt shown in Figure 7.*

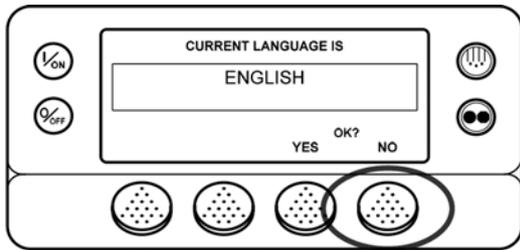


Figure 7: NO Key

The Language menu will appear as shown in Figure 8. Press the + or - keys to select the desired language. When the desired language is shown press the YES key to confirm the choice.

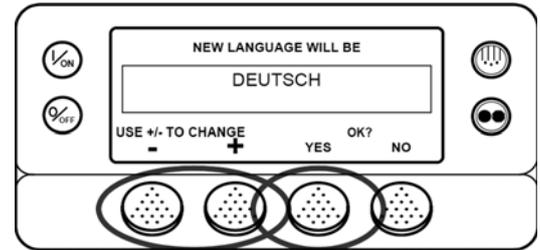
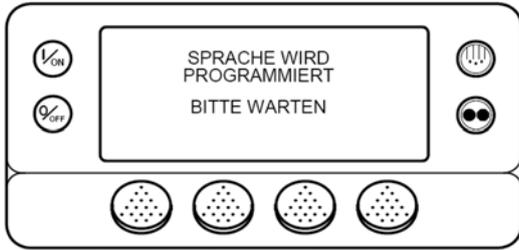


Figure 8: Language Menu

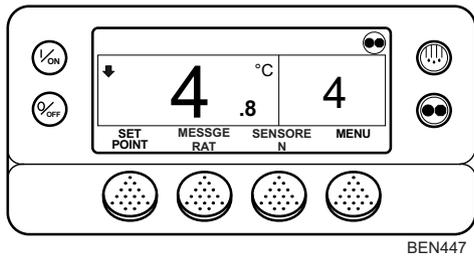
The display will briefly show PROGRAMMING LANGUAGE - PLEASE WAIT in the new language as shown in Figure 9.

## Operating Instructions



**Figure 9: New Language**

The new language is confirmed, and then the Standard Display will appear in the new language as shown in Figure 10. The unit is now ready to run.



BEN447

**Figure 10: Standard Display**

The “Diesel Engine Starting” Screen will briefly appear as the engine preheats and starts.

The Standard Display showing box temperature and setpoint will reappear (as shown in Figure 10) when the unit is running.

## Turning Unit Off

Complete the following steps to turn unit off:

1. Press the **OFF** key.
2. The engine will immediately shut off.
3. The “System is Powering Down” Screen will briefly appear.
4. The Off Screen will briefly appear.
5. The screen goes blank when the unit power is off. To start the unit again, press the ON Key.

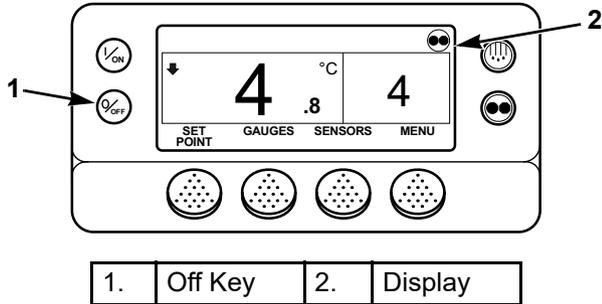


Figure 11: Press Off Key

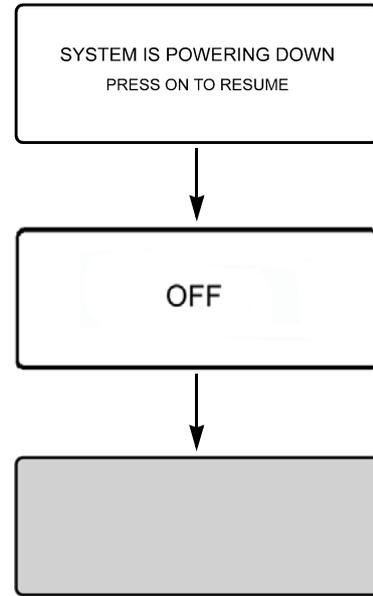
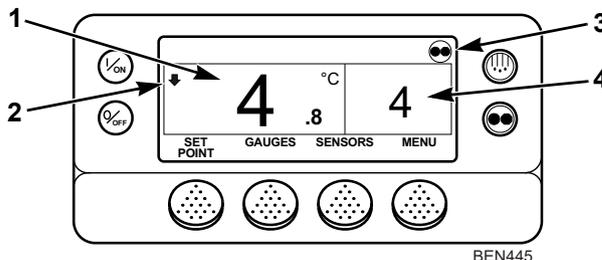


Figure 12: Turning Unit Off Screen Sequence

## Standard Display

The Standard Display is the default display. It appears if no other display function is selected. The Standard Display shows the box temperature and setpoint. The box temperature is measured by the controlling sensor. The return air sensor is the controlling sensor except when the controller is programmed to use the discharge air sensor as the controlling sensor during modulation. The box temperature shown below in Figure 13 is 4.8 C. The setpoint shown is 4 C. The CYCLE-SENTRY Icon in the upper right corner of the display shows the unit is operating in the CYCLE-SENTRY mode. The arrow pointing down indicates the unit is cooling.

**NOTE:** The *CYCLE-SENTRY* icon will appear when the unit is operating in *CYCLE-SENTRY* mode as shown below. If the *CYCLE-SENTRY* icon is not present the unit is operating in *Continuous* mode.



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1.	Box Temperature	3.	CYCLE-SENTRY Icon
2.	Cooling	4.	Setpoint

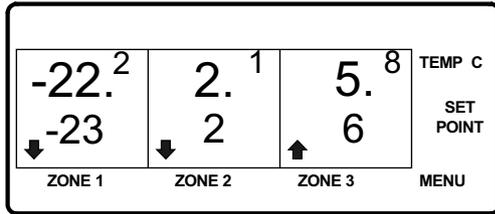
Figure 13: Standard Display

## Two/Three Zone Standard Display

The Two/Three Zone Standard Display adds a second or third zone for units equipped with zones. The Three Zone Standard Display is shown in Figure 14. The soft key under each zone allows the Setpoint for that zone to be changed. In addition, the

## Operating Instructions

soft keys under Zone 2 and Zone 3 are used to turn those zones on and off. The soft key labeled MENU allows the Main Menu to be selected.



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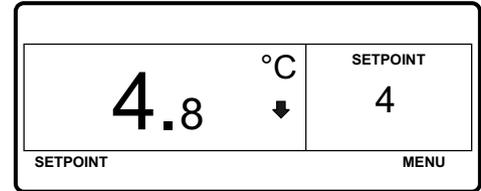
**Figure 14: Three Zone Standard Display**

### Single Zone Standard Display

This feature, if enabled in Guarded Access, allows Single Zone Control operation to be selected by choosing the Main Menu and then selecting Single Zone Control from the Mode submenu. (2) When this feature is selected, all zones will be forced on and will control to the same selected setpoint. The Single Zone Control Standard Display is shown in Figure 15. It

functions the same way as the other Standard Displays. The top of the display shows that the unit is operating in Continuous mode.

The box temperature for all zones is 4.8 C and all zones are controlling to a 4 C setpoint. The down-pointing arrow indicates that all zones are cooling. The soft key labeled Setpoint allows the setpoint for all zones to be changed. The soft key labeled Menu allows the Main Menu to be selected. See see “Selecting Single Zone Control or Multi Zone Control” on page 57.



BEN449

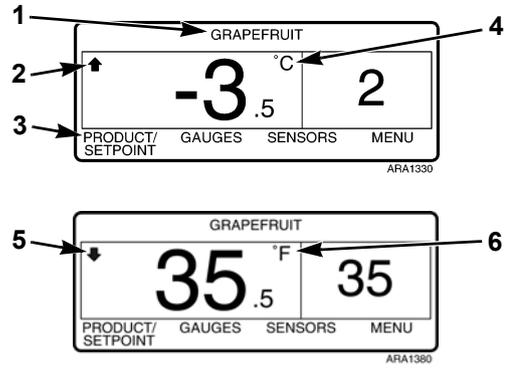
**Figure 15: Single Zone Standard Display**

## Standard Display Variations when OptiSet Plus is in Use

The Standard Display has variations. A display showing any of the following variations is still considered a Standard Display (see Figure 16).

The top of the display may show a named product if the controller has been programmed with OptiSet Plus temperature profiles. The far left soft key may display **PRODUCT** or **PRODUCT/SETPOINT** if the Base Controller has been programmed with OptiSet Plus temperature profiles. See “OptiSet Plus” on page 73 for information about selecting or changing the named product or the setpoint if the Base Controller has been programmed with OptiSet Plus temperature profiles. Contact your Thermo King dealer for information about programming the Base Controller with OptiSet Plus temperature profiles.

The temperature can be displayed in degrees Fahrenheit (F) or degrees Celsius (C). An arrow pointing upwards indicates the unit is heating. An arrow pointing downwards indicates the unit is cooling.



1.	Named Product
2.	Heating
3.	PRODUCT or PRODUCT/SETPOINT Soft Key
4.	Degrees Celsius
5.	Cooling
6.	Degrees Fahrenheit

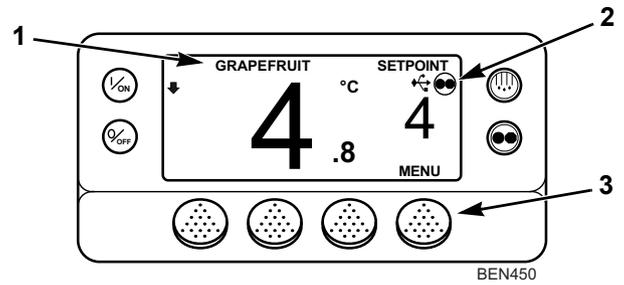
Figure 16: Standard Display Variations

## Temperature Watch Display

The Standard Display defaults to the Temperature Watch Display after about 2-1/2 minutes of non-use (when no keys are pressed) and no check, prevent or shutdown alarms are present. The Temperature Watch Display shows the same box temperature and setpoint but in larger fonts. This creates easy operator viewing from a distance. To return to the Standard Display press the **MENU** soft key (or any of the other three soft keys that are not assigned).

*NOTE: A named product may appear above the temperature reading if the Base Controller has been programmed with OptiSet Plus temperature profiles and a named product has been selected.*

*NOTE: The CYCLE-SENTRY icon will appear in the Temperature Watch display when the unit is operating in CYCLE-SENTRY mode as shown below. If the CYCLE-SENTRY icon is not present the unit is operating in Continuous mode.*



1.	Named Product (If Selected)
2.	CYCLE-SENTRY Icon
3.	Menu Soft Key

Figure 17: Temperature Watch Display

## Alarm Display

If a unit alarm condition occurs the large Alarm Icon will appear on the Standard Display as shown below in Figure 18.

**NOTE:** A shutdown alarm will also cause the display and backlight to flash on and off, and the display will switch from normal video to reverse video and back to normal video (light areas become dark and dark areas become light).

**IMPORTANT:** Always record any Alarm Codes shown. This information is very valuable to service personnel.

See Alarm Codes App at the following link:

<http://www.europe.thermoking.com/tools/> for information about displaying and clearing alarms.

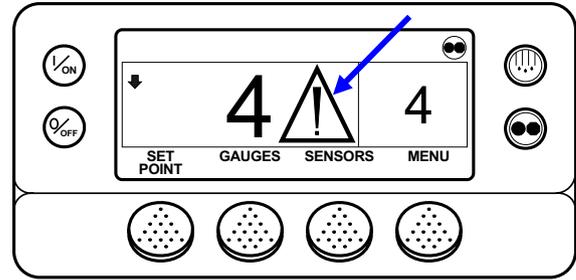


Figure 18: Alarm Display

### Starting the Diesel Engine

Diesel engine preheats and starts automatically in both Continuous Mode and CYCLE-SENTRY mode. The engine will preheat and start if necessary when the unit is turned on. The engine preheat and start will be delayed in CYCLE-SENTRY mode if there is no current need for the engine to run. If a key or sequence of keys are pressed on the HMI Control Panel before the engine starts, the engine will preheat and start approximately 10 seconds after pressing the last key.

See “Turning Unit On” on page 9.



**CAUTION:** *The engine may start automatically any time the unit is turned on.*



**WARNING:** *Never use starting fluid.*

**NOTE:** *Run a pretrip test if the unit has not been used recently. See “Pretrip Tests” on page 64.*

### Unit Fails To Start

If the engine does not start and the Alarm Icon appears on the display, take the following steps.

1. Check for and correct any alarm conditions. See “Viewing and Clearing Alarms Screen Sequence” on page 46.
2. Clear all alarms. See “Viewing and Clearing Alarms Screen Sequence” on page 46.
3. Press the **OFF** key to turn the unit off.
4. Press the **ON** key to turn the unit on.
5. The Base Controller will go through the start up screens and then after a 10 second delay the unit will start automatically.
6. If the engine will still not start, turn the unit off. Determine and correct the cause for not starting.
7. Repeat the procedure.

### After Start Inspection

After the unit is running, check the following items to confirm that the unit is running properly.

**Oil Pressure:** Check the engine oil pressure by pressing the **GAUGES** soft key. See “Viewing Gauge Readings” on page 31. The Engine Oil Pressure Display should indicate OK not LOW.

**Ammeter:** Check the ammeter reading by pressing the **GAUGES** soft key. See “Viewing Gauge Readings” on page 31. The Amps Display should indicate a positive charge amperage rate to the battery. A negative (-) number indicates a discharge condition.

**Compressor Oil:** The compressor oil level should be visible in the compressor sight glass after 15 minutes of operation. If not, check the compressor oil level using the procedure in the appropriate maintenance manual.

**Pre-Cooling:** Make sure that the setpoint is at the desired temperature. See “Changing the Setpoint” on page 21. Allow the unit to run for a minimum of 30 minutes (longer if possible) before loading the trailer.

This provides a good test of the refrigeration system while removing residual heat and the moisture from the trailer interior to prepare it for a refrigerated load.

**Defrost:** When the unit has finished pre-cooling the trailer interior, manually initiate a Defrost cycle. See “Initiating a Manual Defrost Cycle” on page 28. This will remove the frost that builds up while running the unit to pre-cool the trailer.

## Changing the Setpoint

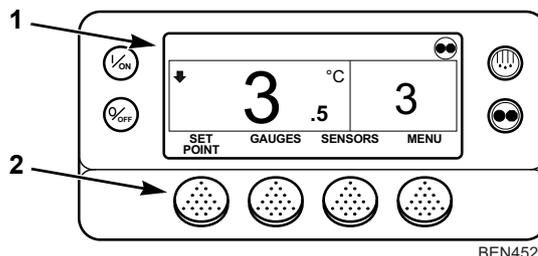
To change the setpoint complete the following steps.

**NOTE:** If the **SETPOINT** soft key (far left) displays **PRODUCT** or **PRODUCT/SETPOINT**, the Base Controller has been programmed with *OptiSet Plus* temperature profiles. See “*OptiSet Plus*” on page 73 for information about selecting or changing the named product or the setpoint.

1. Begin at the Standard Display.  
If the Temperature Watch Display is showing, press the **MENU** soft key once to return to the Standard Display.
2. Press the **SETPOINT** soft key on the Standard Display. See Figure 19. The “Setpoint” Screen briefly appears, then the “Current Setpoint” Screen appears. See Figure 20.
3. Press the **+** or **-** soft keys to change the setpoint reading. See Figure 20.

**NOTE:** If the setpoint is changed using the “+” or “-” keys, the change must be confirmed or rejected by pressing the **YES** or **NO** soft key within 10 seconds of changing the setpoint. A warning beep will sound for 5 seconds as a reminder.

4. Press the **YES** or **NO** soft key accordingly as described below. See Figure 20.



1.	Standard Display
2.	Setpoint Soft Key

**Figure 19: Changing Setpoint**

- If the **NO** key is pressed the setpoint change made with the “+” or “-” soft keys **will not** be accepted, the setpoint will not be changed and the display will return to the Standard Display.
- If the **YES** soft key is pressed, the setpoint change made with the “+” or “-” soft keys will be accepted, and display screens will appear as shown in Figure 20.

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- If the YES or NO key is not pressed within 10 seconds of making a change with the "+" or "-" key, the setpoint is not changed and the display returns to the Setpoint Display. The display briefly shows [SETPOINT NOT CHANGED] and Alarm Code 127 Setpoint Not Entered is set, to indicate that the setpoint change was started but not completed.
- 5. The “Programming New Setpoint” Screen will appear. See Figure 20.
- 6. The “New Setpoint Is XX” Screen briefly appears. See Figure 20.
- 7. The Standard Display appears with setpoint changed to the new setpoint. See Figure 20.

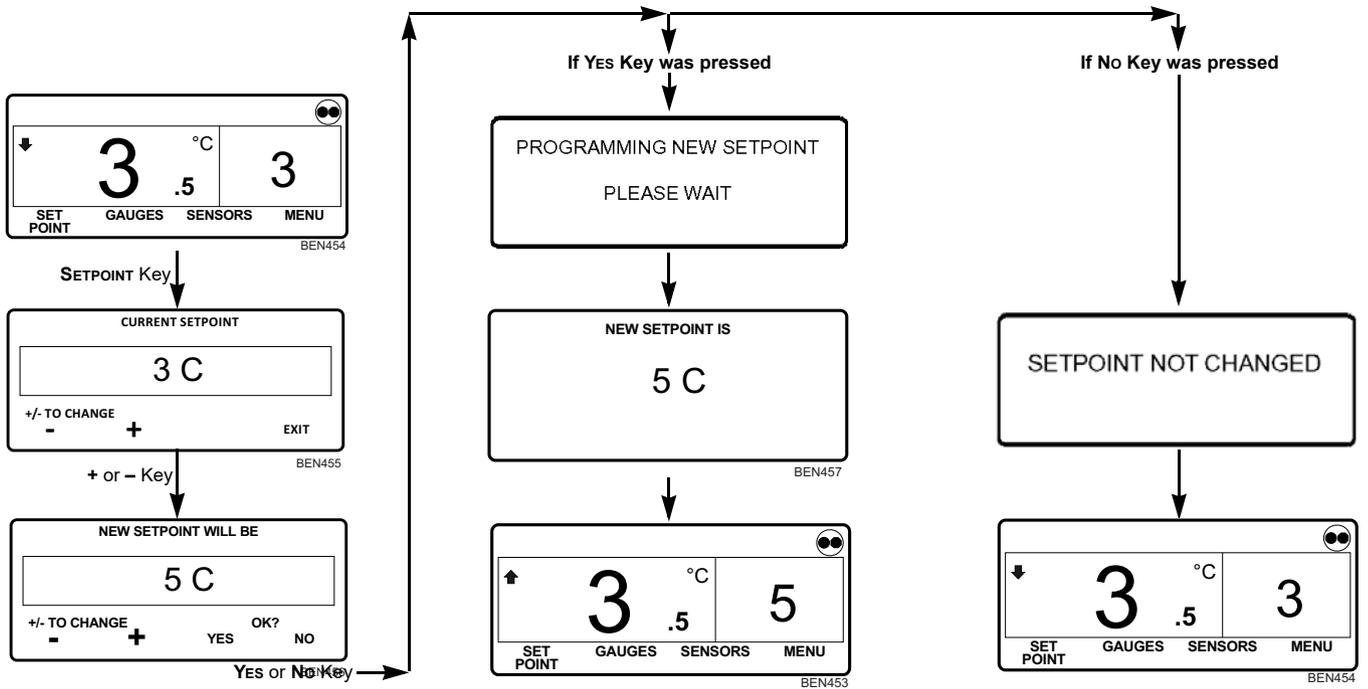


Figure 20: Changing the Setpoint Screen Sequence

# Selection of Operating Modes

The Thermo King CYCLE-SENTRY system is designed to save refrigeration fuel costs. The savings vary with the commodity, ambient temperatures and trailer insulation. However, not all temperature controlled products can be properly transported using CYCLE-SENTRY operation. Certain highly sensitive products normally require continuous air circulation. Use the following guidelines to select the proper operating mode to protect the commodity you are transporting.

Examples of products normally acceptable for CYCLE-SENTRY Operation:

- Frozen foods (in adequately insulated trailers)
- Boxed or processed meats Poultry
- Fish
- Dairy products
- Candy
- Chemicals
- Film
- All non-edible products.

Examples of products normally requiring Continuous Run Operation for air flow:

- Fresh fruits and vegetables, especially asparagus, bananas, broccoli, carrots, citrus, green peas, lettuce, peaches, spinach, strawberries, sweet corn, etc.
- Non-processed meat products (unless pre-cooled to recommended temperature).
- Fresh flowers and foliage.

The above listings are not all inclusive. Consult your grower or shipper if you have any questions about the operating mode selection of your type of load.

***IMPORTANT: If OptiSet Plus is in use, it may not be possible to change the Mode.***

***NOTE: From Q2 2018, a third mode can be activated by your Dealer. "Hybrid Mode". However, there will be no change in the controller operation.***

## Selecting CYCLE-SENTRY or Continuous Mode

When CYCLE-SENTRY mode is selected the unit will start and stop automatically to maintain the setpoint, keep the engine warm, and the battery charged. When Continuous mode is selected, the unit will start automatically and run continuously to maintain setpoint and provide constant airflow.

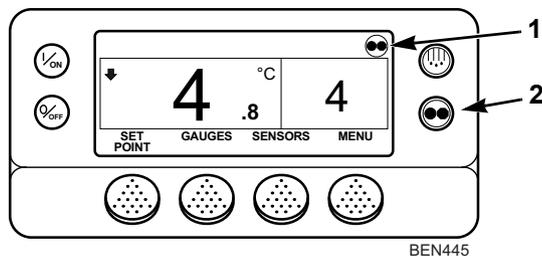
If the unit is operating in Cycle Sentry Mode, the Cycle Sentry Icon will be present in the upper right corner of the display as shown in Figure 21. If the Cycle Sentry Icon is not present the unit is operating in Continuous Mode.

**IMPORTANT:** *If OptiSet Plus is in use, it may not be possible to change the Mode.*

Complete the following steps to change modes:

**NOTE:** *The mode can also be changed using the Mode Menu Screen in the Main Menu. See “Turning CYCLE-SENTRY On or Off” on page 54.*

1. Press the **CYCLE SENTRY/CONTINUOUS MODE** key. See Figure 21.



1.	CYCLE-SENTRY Icon Shows Mode Selected Displayed for CYCLE-SENTRY Mode Not Displayed for Continuous Mode
2.	CYCLE SENTRY/Continuous Mode Key

**Figure 21: Changing Mode**

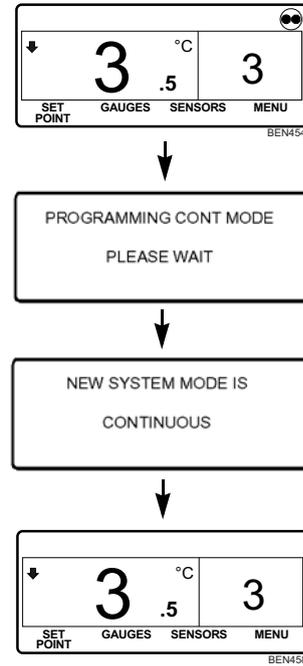
2. The “Programming Continuous Mode” or “Programming CYCLE-SENTRY Mode” Screen briefly appears. See Figure 22 and Figure 23.
3. The “New System Mode is Continuous” Screen or the “New System Mode CYCLE-SENTRY” Screen briefly appears. See Figure 22 and Figure 23.

## Operating Instructions

- The Standard Display appears showing the new mode. See Figure 22 and Figure 23.
- Press the **CYCLE SENTRY/CONTINUOUS MODE** key again to change the unit back to the previous mode.

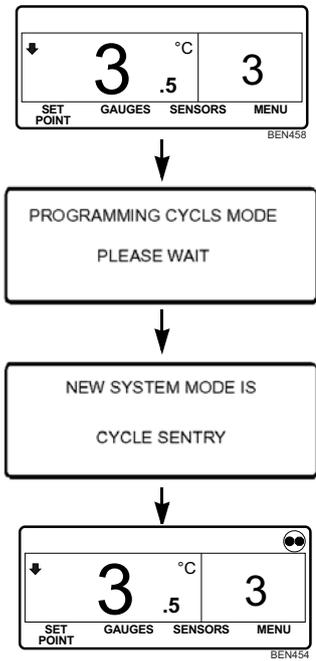
**IMPORTANT:** *If the unit is in Cycle Sentry null and the mode is switched to Continuous Mode, the unit will start automatically.*

**NOTE:** *Cycle Sentry or Continuous mode may be disabled by OptiSet Plus.*



**Figure 22: Screen Sequence for Changing from CYCLE-SENTRY Mode to Continuous Mode**

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**Figure 23: Screen Sequence for Changing from Continuous Mode to CYCLE-SENTRY Mode**

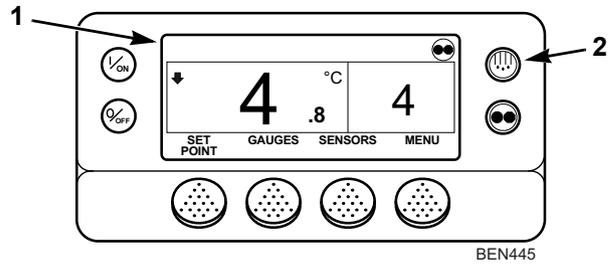
## Initiating a Manual Defrost Cycle

Defrost cycles are usually initiated automatically based on time or temperature. Manual Defrost is also available if the unit is running and the coil temperature is less than 7 C (45 F).

Other features such as door switch settings may not allow Manual Defrost to be initiated.

Use the following steps to initiate a Manual Defrost:

1. Press the **DEFROST** key. See Figure 24.
2. The “Defrost” Screen briefly appears. See Figure 25.
3. The “Programming Defrost” Screen briefly appears. See Figure 25.
4. The “Defrost Started” Screen briefly appears. See Figure 25.



1.	Standard Display
2.	Defrost Key

Figure 24: Initiating a Manual Defrost Cycle

## Operating Instructions

5. A modified Standard Display appears. The bar indicator will fill in showing time remaining to complete the Defrost cycle. The bar indicator in the figure shows that the Defrost cycle is 50% complete. When the Defrost cycle is complete the display returns to the Standard Display. See Figure 25.

The unit may be prevented from going into a Manual Defrost. For example, this can occur if the coil temperature is more than 7 C (45 F). If defrost is not available, the “Defrost Not Available” message will appear and the display will return to the Standard Display. See Figure 25.

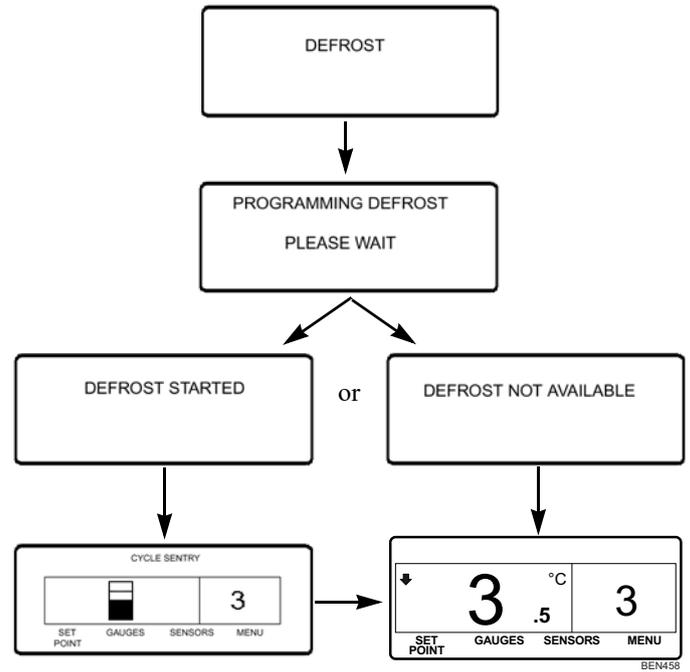


Figure 25: Initiating Manual Defrost Screen Sequence

## Terminating a Defrost Cycle

The Defrost cycle will terminate automatically when the coil temperature reaches 14 C (58 F), or when the defrost timer expires. The defrost timer is normally set for 45 minutes, but can be set for 30 minutes. Defrost can also be terminated by turning the unit off.

***NOTE: If the defrost timer consistently terminates Defrost because the evaporator coil temperature fails to reach 14 C (58 F), have the unit checked by a Thermo King dealer to see if it is working properly.***

# Viewing Gauge Readings

Use the following steps to view the gauge readings:

1. Begin at the Standard Display.  
If the Temperature Watch Display is showing, press the **MENU** soft key once to return to the Standard Display.
2. Press the **GAUGES** soft key to enter the Gauges Menu. See Figure 26.
3. Press **BACK** or **NEXT** soft keys to scroll through available gauges:

## Gauges Available

**Coolant Temperature:** Displays the temperature of the engine coolant.

**Coolant Level:** Displays the coolant level in the overflow tank.

**Oil Pressure:** Displays the engine oil pressure as OK or LOW.

**Oil Level:** Displays the engine oil level as OK or LOW.

**Amps:** Displays the current flow in amps flowing to or from the unit battery

**Battery Voltage:** Displays the voltage of the unit battery.

**Engine RPM:** Displays the engine speed in RPMs.

**Fuel Level Sensor:** Displays the fuel level if a fuel level sensor is installed.

**Discharge Pressure:** Displays the unit discharge pressure. (ETV units only)

**Suction Pressure:** Displays the unit suction pressure. (ETV units only)

**ETV Position:** Displays the current position of the ETV valve. (ETV units only)

**I/O (Input/Output State):** Displays the current state of the input/output devices listed below.

- High Speed Relay/Electric Heat as ON or OFF
- Run Relay
- Run Relay Feedback
- Alternator Excite Output

## Operating Instructions

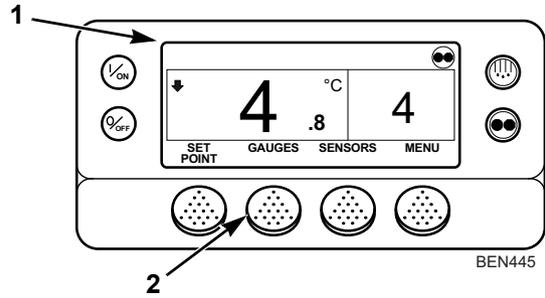
- Defrost Damper
- Heat Output
- Alternator Frequency
- Diesel/Electric Relay (Model 50 units only)
- Electric Ready Input (Model 50 units only)
- Electric overload (Model 50 units only)
- Hot Gas Bypass (ETV units only)

Selecting I/O enters a group of screens that are used only by technicians. See Figure 27. If no keys are pressed within 30 seconds, the screen will return to the standard display.

**NOTE: Units without an Electronic Throttling Valve (ETV) will not display the Discharge Pressure, Suction Pressure, and ETV Position. SLXi-100 and SLXi-200 units do not have an ETV, they have a mechanical throttling valve (MTV).**

4. Press the **LOCK** soft key to display any Gauge Screen for an indefinite period. Press the key again to unlock the screen.

5. Press the **EXIT** soft key to return to the Standard Display.



1.	Standard Display Screen
2.	Gauges Soft Key

**Figure 26: Viewing Gauges**

# Operating Instructions

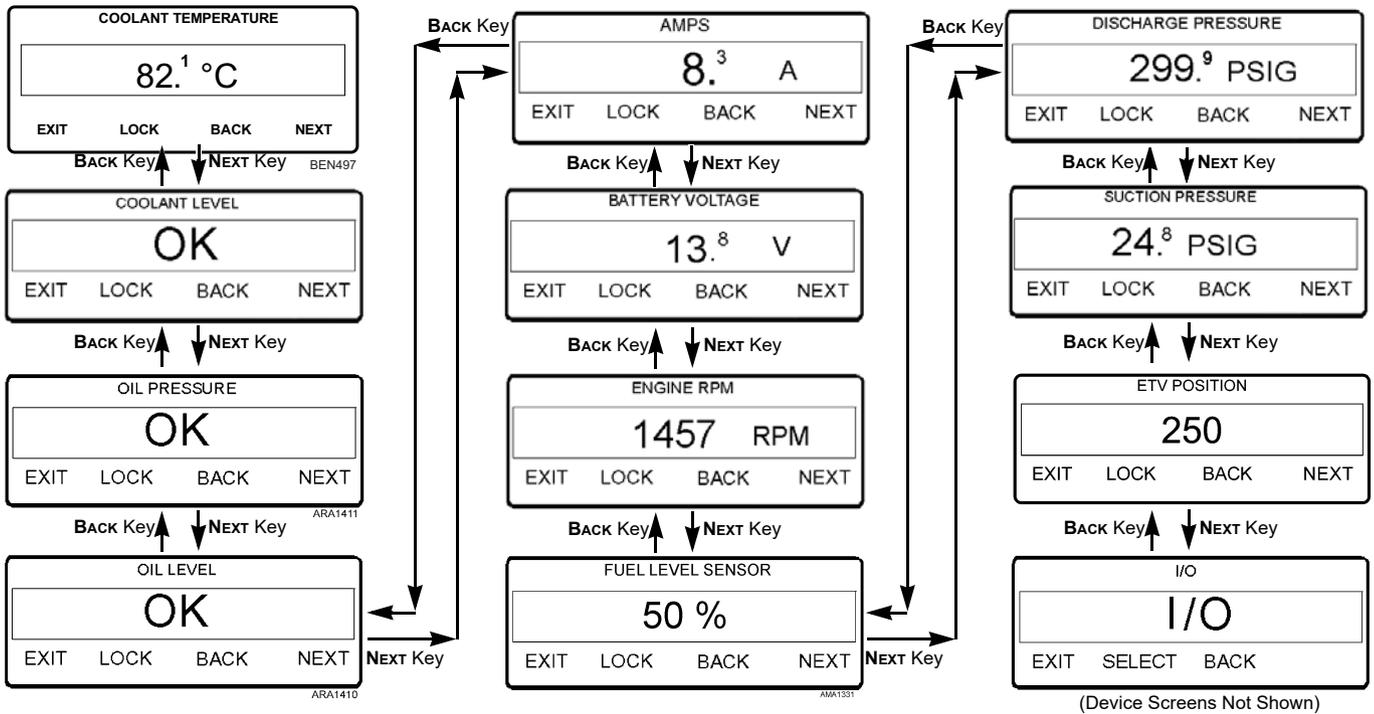
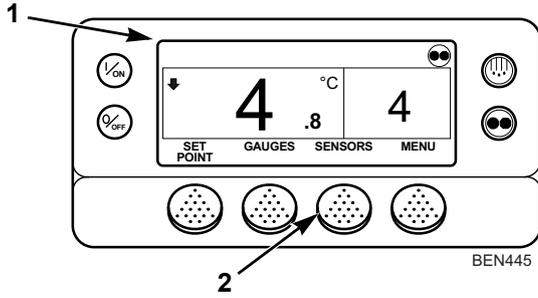


Figure 27: Viewing Gauges Screen Sequence

## Viewing Sensor Readings

Use the following steps to view the sensor readings.

1. Begin at the Standard Display.  
If the Temperature Watch Display is showing, press the **MENU** soft key once to return to the Standard Display.
2. Press the **SENSOR** soft key to enter the Sensor Menu. See Figure 28.



1.	Standard Display
2.	Sensors Soft Key

Figure 28: Viewing Sensors

3. Press the **BACK** or **NEXT** soft keys to scroll through the sensor screens. Pressing the **LOCK** key will lock the current sensor on the display. (Figure 29)

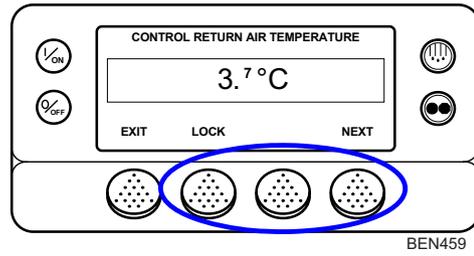


Figure 29: NEXT, BACK, LOCK Keys

### Sensors Available

Control Return Air Temperature - Displays the temperature of the control return air sensor.

Display Return Air Temperature - Displays the temperature of the display return air sensor.

Control Discharge Air Temperature - Displays the temperature of the control discharge air sensor.

## Operating Instructions

Display Discharge Air Temperature - Displays the temperature of the display discharge air sensor.

Temperature Differential - Displays the calculated difference between the control return air sensor and the control discharge air sensor.

Evaporator Coil Temperature - Displays the temperature of the evaporator coil sensor.

Ambient Air Temperature - Displays the temperature of the ambient air sensor.

Spare 1 Temperature - Displays the temperature of the spare 1 temperature sensor.

Log Sensor 1 - Displays the temperature of the CargoWatch Data Logger temperature sensor 1.

Log Sensor 2 - Displays the temperature of the CargoWatch Data Logger temperature sensor 2.

Datalogger Sensor 3 Temperature - Displays the temperature of the CargoWatch Data Logger temperature sensor 3.

Datalogger Sensor 4 Temperature - Displays the temperature of the CargoWatch Data Logger temperature sensor 4.

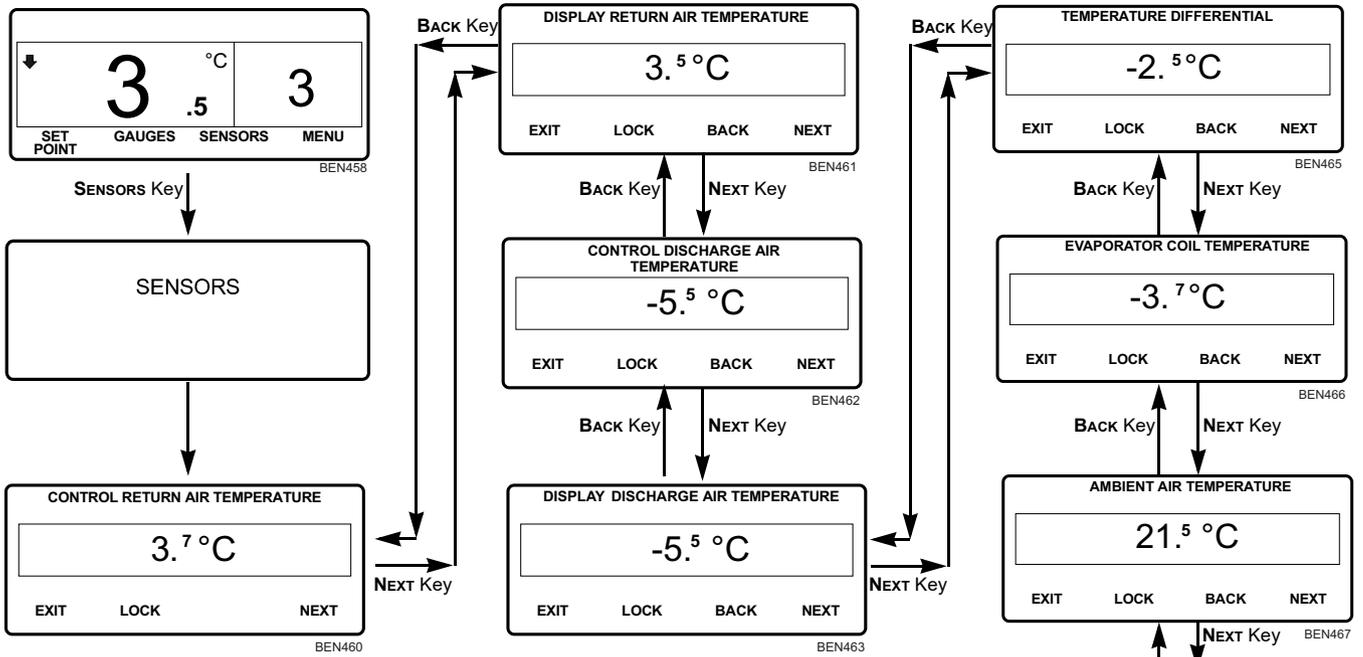
Datalogger Sensor 5 Temperature - Displays the temperature of the CargoWatch Data Logger temperature sensor 5.

Datalogger Sensor 6 Temperature - Displays the temperature of the CargoWatch Data Logger temperature sensor 6.

Board Temperature Sensor - Displays the internal temperature of the HMI Control Panel pc board. The Base Controller will turn the HMI display heater on if this temperature goes below a certain point in extremely cold ambient temperatures.

See Figure 30 and Figure 31. If no keys are pressed within 30 seconds, the screen will return to the Standard Display.

4. Press the **LOCK** soft key to display any sensor screen for an indefinite period. Press the key again to unlock the screen.
5. Press the **EXIT** soft key to return to the Standard Display.



Continued on next page

Figure 30: Viewing Sensors Screen Sequence (continued on next page)

Continued from previous page

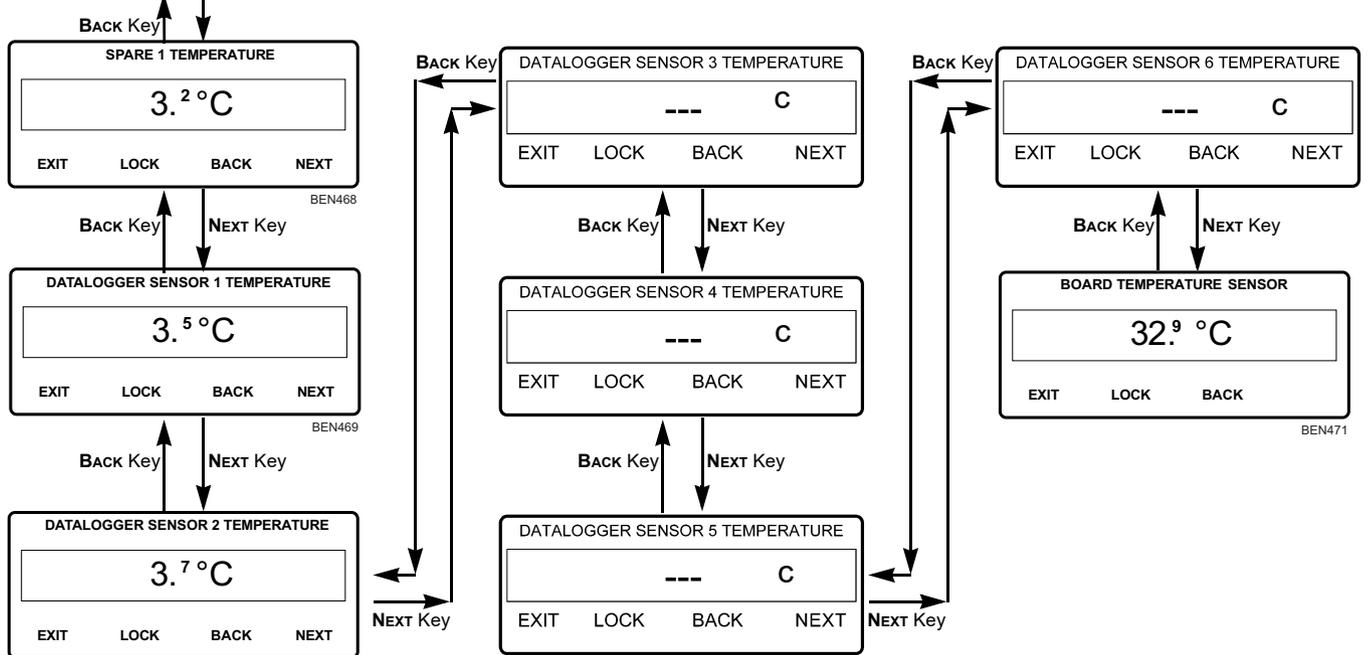
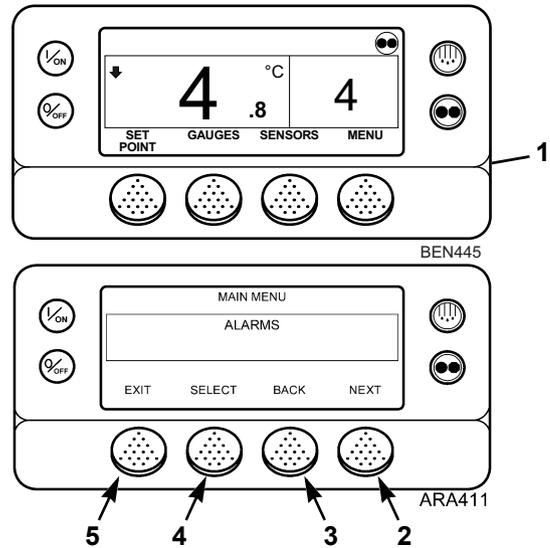


Figure 31: Viewing Sensors Screen Sequence (continued from previous page)

## Navigating the Main Menu

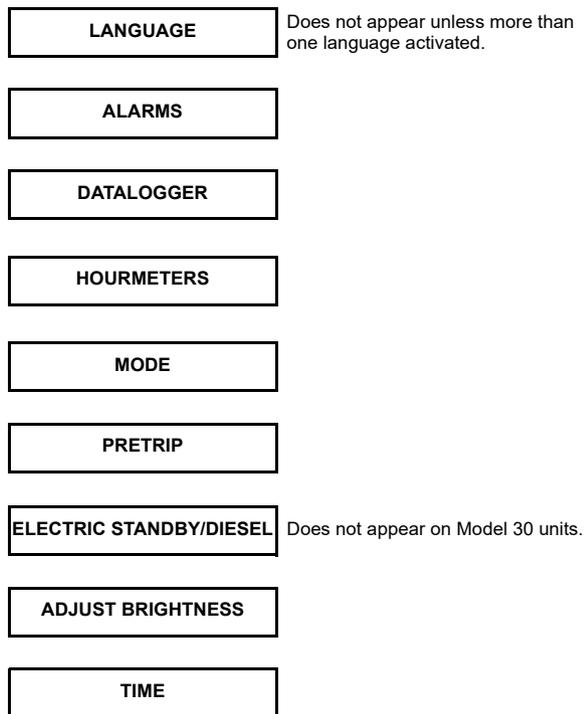
The Main Menu contains several additional submenus that allow the operator to view information and modify unit operation. Use the following steps to access these menu areas:

1. Begin at the Standard Display.  
If the Temperature Watch Display is showing, press the **MENU** soft key once to return to the Standard Display.
2. Press the **MENU** soft key. See Figure 32.
3. Press **NEXT** and **BACK** soft keys to scroll up or down through the main menu areas. See Figure 32 and Figure 33.
4. Press the **SELECT** soft key to access a specific menu area when shown on the display screen. See Figure 32.
5. Press the **EXIT** soft key. To return to the Standard Display. The Main Menu choices are shown on the next page. For detailed information on each menu area, see the individual explanations of each menu item on the following pages of this manual.



1.	Menu Soft Key	4.	Select Soft Key
2.	Next Soft Key	5.	Exit Soft Key
3.	Back Soft Key		

Figure 32: Accessing Main Menu



**Figure 33: Main Menu Choices**

## Main Menu Choices

- 1. Language Menu:** This menu only appears if the Base Controller is programmed to activate more than one language. It allows the operator to select which language is used. All other subsequent displays are shown in the selected language. English is the default language. See page 40.
- 2. Alarms Menu:** Shows any active alarms and allows alarms to be cleared. See page 18.
- 3. Datalogger Menu:** Allows the operator to view the datalogger displays. See page 47.
- 4. Hourmeters Menu:** If enabled, allows the operator to view the hourmeter displays. See page 50.
- 5. Mode Menu:** Allows the operator to change unit operating modes between CYCLE-SENTRY mode and Continuous Run mode, select Keypad Lockout, and start Sleep mode. See page 53.
- 6. Pretrip:** Allows the operator to run a Pretrip. See page 64.
- 7. Electric Standby/Diesel Mode (Model 50 Only):** This menu only appears on Model 50 units. It allows the operator to manually select Electric Standby or Diesel operation.

**8. Adjust Brightness:** Allows the operator to adjust the display intensity as required by conditions. See page 70.

**9. Time:** Allows the operator to view the Time and Date. The Time is displayed in 24 hour military time. See page 72.

## Language Menu

If the Language feature is enabled, an alternate language can be selected from the Language Menu. After a new language is chosen all displays will appear in that language. If the language feature is not enabled this menu does not appear. The default language is English. Only languages that have been enabled in Guarded Access will appear.

***IMPORTANT: Exercise care when changing languages, as once changed all HMI Control panel displays will be in the new language. If the user is not familiar with the new language, problems may be experienced returning to the default language.***

The languages available are dependent on the HMI control panel software revision.

- Software Revision 7B xx supports English, Spanish, French, German, Italian, Dutch, Portuguese, Greek, Turkish, Hebrew and Arabic.
- Software Revision 7C xx supports English, Danish, Russian, Norwegian, Swedish, Finnish, Polish, Hungarian, Romanian, Bulgarian and Czech.
- Software Revision 7Dxx supports English, Japanese and Chinese.
- Software Revision 7Exx supports English, English and Spanish or allows any 5 languages from Software Revision 7Bxx and Software Revision 7Cxx to be selected. Note that Japanese and Chinese are not available for use with this feature.

Other than the languages supported, software revisions 7Bxx, 7Cxx, 7Dxx and 7Exx are identical.

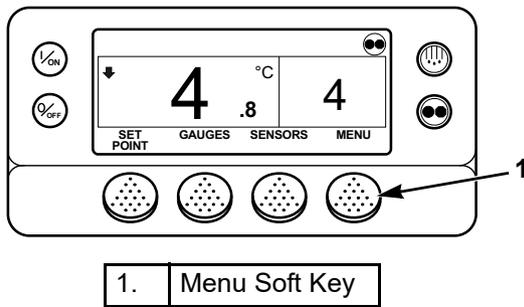
To select an alternate language:

1. Begin at the Standard Display.

***NOTE: If the Temperature Watch Display is showing, press the MENU soft key once to return to the Standard Display.***

## Operating Instructions

2. Press the **MENU** soft key on the Standard Display. See Figure 34.



**Figure 34: Standard Display**

3. If more than one language is enabled, the Language Menu is the first Main Menu item to appear. Press the **SELECT** soft key to choose the Language Menu Screen. See the Language Menu Screen in Figure 35.
4. The “NEW LANGUAGE WILL BE” Screen will appear. See Figure 35.

5. Press the **+** or **-** soft keys to select the desired language. Only languages enabled from the Guarded Access Menu are available. German is shown in Figure 35.
6. When the desired language is shown, press the **YES** soft key to confirm the choice.
7. The “PROGRAMMING LANGUAGE PLEASE WAIT” Screen briefly appears. See Figure 35.
8. The “LANGUAGE SELECTED IS XXX” Screen briefly appears.
9. The display returns to Language Menu Screen, but will show the new language. German is shown in Figure 35.
10. The Standard Display will appear in the new language. German is shown in Figure 35.

**NOTE: Exercise care when changing languages, as once changed all HMI Control panel displays will be in the new language. If the user is not familiar with the new language, problems may be experienced returning to the default language.**

11. Repeat the process to select a different language. Press the **NEXT** soft key to select a different Main Menu item. Press the **EXIT** soft key to return to the Standard Display.

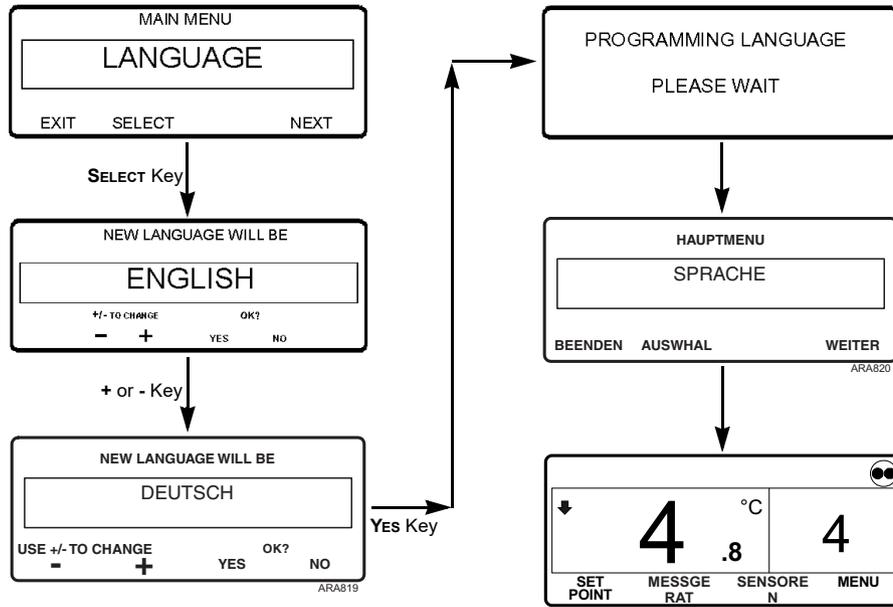
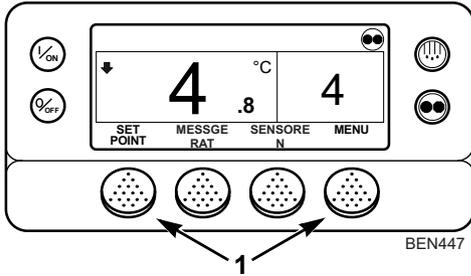


Figure 35: Change Language Screen Sequence

## Return to English at Any Time

**IMPORTANT:** *If necessary, English and all other languages in the software version may be accessed from the Standard Display.*

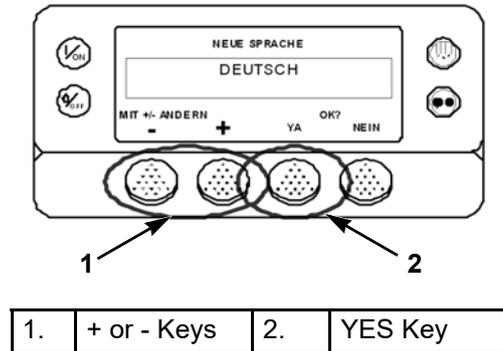
When the Standard Display is shown press and hold the first and last soft key for 5 seconds as shown in Figure 36. This example is Deutsch (German).



1.	Press These Soft Keys
----	-----------------------

**Figure 36: Standard Display**

After 5 seconds the Language Menu will appear in the current language as shown in Figure 37. Press the + or - Keys to select the desired language. When the desired language is shown press the YES Key to confirm the choice.



**Figure 37: + or - Keys, YES Key**

**NOTE:** *All languages in the installed software can be selected using this method.*

## Alarms Menu

If an alarm condition occurs the large Alarm Icon will appear on the Standard Display. See “Alarm Display” on page 18.

Alarms are viewed and cleared using the Alarm Menu as follows:

1. Begin at the Standard Display.  
If the Temperature Watch Display is showing, press the **MENU** soft key once to return to the Standard Display.
2. Press the **MENU** soft key on the Standard Display.

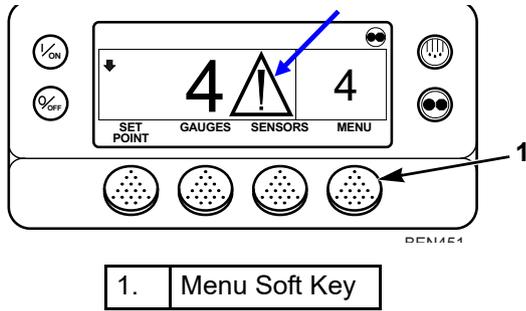


Figure 38: Standard Display

3. The Language Menu or Alarm Menu will appear. If the Language Menu appears, press the **NEXT** soft key until the Alarm Menu appears.
4. Press the **SELECT** soft key. The Alarm Display will appear. See Figure 39.
5. If no alarms are present, the “No Alarm” Screen is shown. Press the **EXIT** soft key to return to the Standard Display.
6. If alarms are present, the quantity of alarms (if more than one), the alarm code number and alarm description will be shown on the display. In the following example (see Figure 39), there are two alarms present. The most recent is Alarm Code 6. This alarm code indicates a problem with the coolant temperature sensor.

**NOTE:** *If a serious alarm occurs, the unit will be shut down to prevent damage to the unit or the load. If this occurs, the display will show that the unit is shut down and display the alarm code that caused the shutdown.*

**IMPORTANT:** *Always record any Alarm Codes that occur - in the order that they occur - as well as any other pertinent information. This information is extremely valuable to service personnel.*

## Operating Instructions

7. After the alarm situation is resolved press the **CLEAR** key to clear the alarm. To display the next alarm, press the **NEXT** key (see Figure 39).

**NOTE:** For additional information regarding the alarm shown on the display press the **HELP** soft key. A help message will appear.

### Important Alarm Notes

- If an alarm will not clear, it may still exist. If the alarm is not corrected, it will not clear.
- If an alarm cannot be cleared from the Main menu, the **CLEAR** key will not appear. These alarms must be cleared from the Guarded Access Menus.
- All alarms must be viewed before any of the alarms can be cleared.

- If optional Fuel Level Sensor is installed, Check Alarm Code 96 (Low Fuel Level) is set when the fuel level falls to 15%. The Base Controller can be programmed to set a shutdown Alarm Code 44 (Check Fuel System) when the fuel level falls to 5%. Shutdown Alarm Code 44 can be manually cleared with the **CLEAR** key. In that case it becomes a check alarm and the unit will continue to run until it runs out of fuel (if it is not refilled). Alarm Code 96 and Alarm Code 44 are both automatically reset when the fuel tank is refilled above 25%.

**NOTE:** Shutdown Alarm Code 44 reappears when it is manually cleared from the Alarms Menu. However, it changes to a check alarm so the unit will now start after you exit the Alarms Menu.

Contact your supervisor or a Thermo King dealer for information about alarm codes that will not clear.

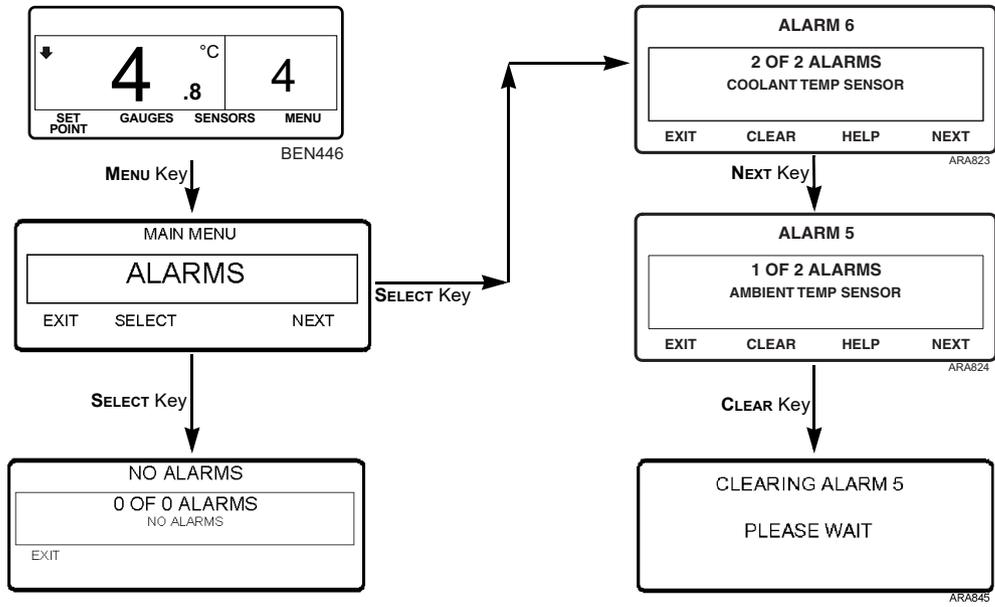


Figure 39: Viewing and Clearing Alarms Screen Sequence

## Datalogger Menu

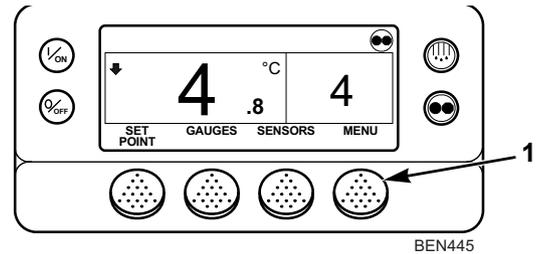
### Initiating a Start of Trip

A “Start Of Trip” places a marker in the datalogger memory. It is typically initiated when the cargo is being loaded. The Start Of Trip marker then shows when the trip started in the data that is downloaded or printed from the datalogger. A Start Of Trip can be initiated through the use of WinTrac datalogging software, or manually in the field. The following procedure covers manual initiation. For more information on datalogging, see the WinTrac User Manual included with the WinTrac software.

1. Begin at the Standard Display.  
If the Temperature Watch Display is showing, press the **MENU** soft key once to return to the Standard Display. See Figure 40.
2. Press the **MENU** soft key on the Standard Display.
3. Press the **NEXT** soft key until the Datalogger Menu appears. See Figure 41.
4. Press the **SELECT** soft key on the Datalogger Menu. The “Start Trip” Screen will appear.

5. Press the **SELECT** soft key. The “Start Of Trip” Screen will appear.
6. Press the **SELECT** soft key to initiate a start of trip.
7. A Start Of Trip Marker has been inserted into the datalogger memory.

**NOTE:** *The start of trip marker is sent to both the CargoWatch/TouchPrint and ServiceWatch data loggers.*



1. Menu Soft Key

**Figure 40: Standard Display**

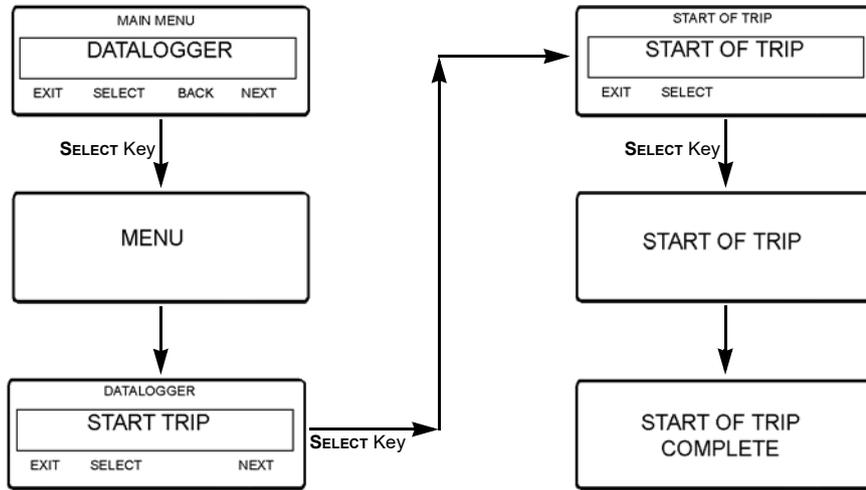


Figure 41: Start of Trip Screen Sequence

## Printing a Trip Report

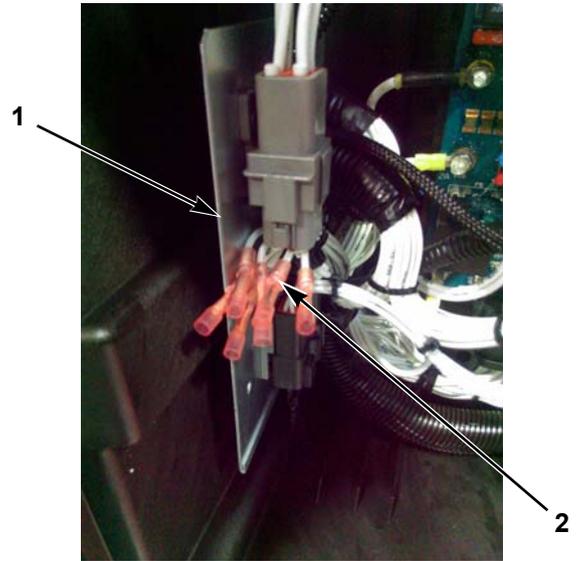
This procedure shows how to connect a TouchPrint Printer, TouchPrint datalogger or equivalent to the SLX unit. The printed record shows things such as the unit and Base Controller identification numbers, dates and times, the setpoint, and the data from the optional sensors connected to the CargoWatch datalogger. If no sensors are connected, the printed record shows the same things without the sensor data.

1. Connect the printer to the 6-spliced wires located inside the control box.

**NOTE:** Contact your *Thermo King* dealer about printer connection location options.

2. Please refer to your TK 61009-11-OP TouchPrint Operator Manual (or third party printer manual) for instructions for setup and use.

**NOTE:** For additional information concerning the *TouchPrint Printer* or *CargoWatch/TouchPrint Datalogger* contact your *Thermo King* dealer.



1.	LVD Bracket
2.	Printer wire splices

Figure 42: Printer Connection Location

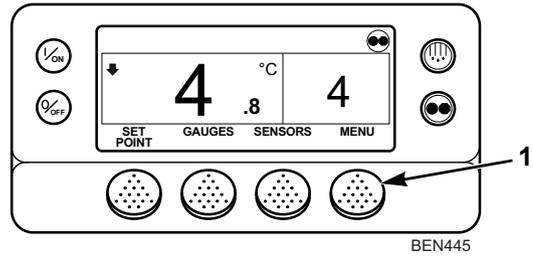
## Hourmeters Menu

The Hourmeters are programmable to be visible or hidden in the Base Controller. Hourmeters that are visible are displayed. Hourmeters that are hidden are not displayed, but they do count hours. The default setting for Model 30 units is to display only the Engine Hours. The default setting for Model 50 units is to display Total Run Time Hours, Engine Hours, and Electric Run Hours. The Hourmeters Menu will not appear if all hourmeters are hidden. Contact your Thermo King dealer for information about programming the Base Controller.

Hourmeters can be viewed in the Hourmeters Menu as follows:

1. Begin at the Standard Display.  
If the Temperature Watch Display is showing, press the **MENU** soft key once to return to the Standard Display.
2. Press the **MENU** soft key on the Standard Display.
3. Press the **NEXT** soft key until the Hourmeters Menu appears. See Figure 44.
4. Press the **SELECT** soft key to enter the Hourmeters Menu.

5. Press the **NEXT** and **BACK** soft keys to view the hourmeter displays. Press the Exit soft key to return to the Standard Display.



1. Menu Soft Key

**Figure 43: Standard Display**

# Operating Instructions

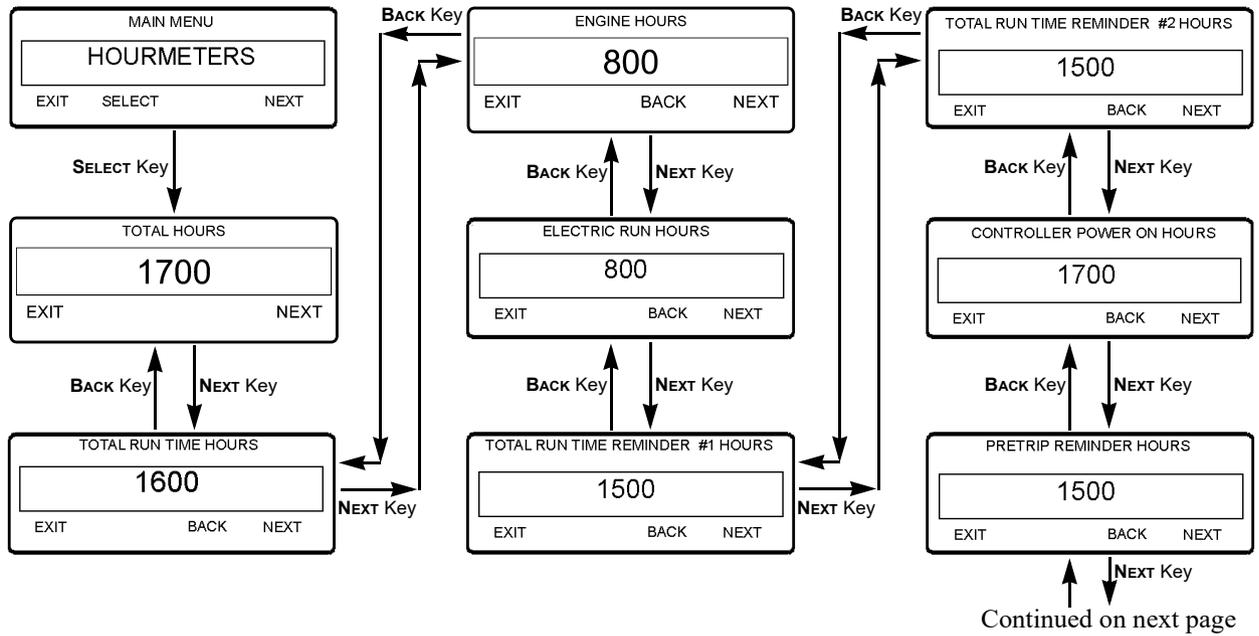


Figure 44: Viewing Hourmeters Screen Sequence (continued on next page)

Continued from previous page

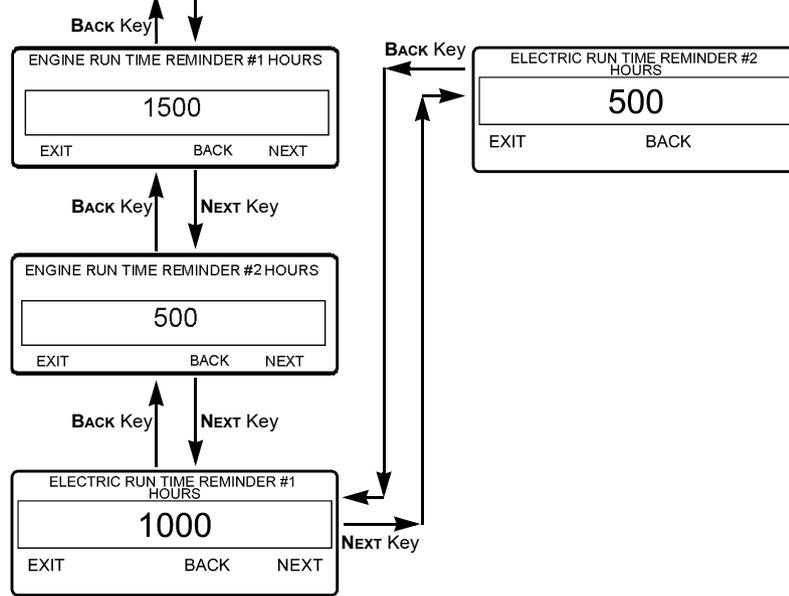


Figure 45: Viewing Hourmeters Screen Sequence (continued from previous page)

### Mode Menu

Various operating modes can be selected using the Mode menu. Not all modes may be available, depending on OptiSet Plus usage and settings of other programmable features. The following modes may be available.

#### Turn Cycle Sentry On or Off

The CYCLE-SENTRY Mode can be turned On or Off. If CYCLE-SENTRY is turned off the unit runs in Continuous mode. See “Turning CYCLE-SENTRY On or Off” on page 54.

***NOTE: OptiSet Plus may prevent selecting CYCLE-SENTRY or Continuous. If this happens, the display will advise that the selection is not available.***

#### Select Temperature Units

If this feature is enabled in Guarded Access / Main Menu Configuration, the operator can select temperature units to be displayed as either degrees Fahrenheit or degrees Celsius.

- Day to Wake Up: The day the unit is to wake up can

### Keypad Lockout

If enabled in Guarded Access, the keypad can be locked to prevent unauthorized use. If the keypad is locked only the On and Off keys function. The keypad will remain locked even if the unit is turned off and back on. If Keypad Lockout is active, press and hold any soft key for 5 seconds to deactivate the feature. See “Selecting Single Zone Control or Multi Zone Control” on page 57.

### Start Sleep Mode

If this feature is enabled in Guarded Access / Main Menu Configuration, the operator can select and set Sleep Mode from the Mode Menu. Sleep Mode is used to keep the engine warm and the battery charged when the unit is not in use. When the unit is in Sleep Mode the display will show “SLEEP” and the current time. See “Selecting Sleep Mode” on page 60.

- Program Wakeup Time: This feature allows a wakeup time to be specified. When the selected time is reached the unit will start and resume normal operation.

If Wakeup Time is selected:

be specified.

## Operating Instructions

- Hour to Wake Up: The hour the unit is to wake up can be specified.
- Minute to Wake Up: The minute the unit is to wake up can be specified.
- Run Pretrip on Wake Up: A Pretrip Test can be enabled to automatically run when the unit wakes up.

7. The display then returns to the Mode Menu. Press the **SELECT** soft key again to change the mode again.



**CAUTION:** *If the unit is in CYCLE-SENTRY null and the mode is switched to Continuous mode, the unit will start automatically.*

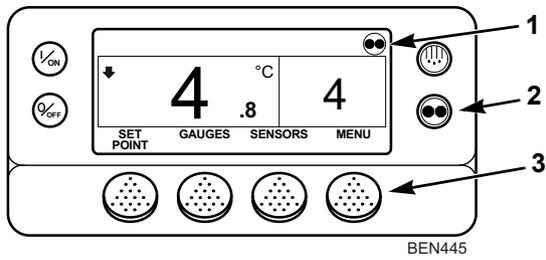
**IMPORTANT:** *If OptiSet Plus is in use, it may not be possible to change the Mode.*

## Turning CYCLE-SENTRY On or Off

The easiest way to switch between CYCLE-SENTRY and Continuous Run is to press the Mode key (see page 25). But you can also switch modes in the Mode Menu as follows:

1. Begin at the Standard Display.  
If the Temperature Watch Display is showing, press the **MENU** soft key once to return to the Standard Display.
2. Press the **MENU** soft key on the Standard Display.
3. Press the **NEXT** soft key until the Mode Menu appears.
4. Press **SELECT** soft key to enter the Mode Menu. See Figure 47.
5. Press the **SELECT** soft key, to switch between modes.
6. The new mode is then confirmed for 10 seconds.

## Operating Instructions



1.	CYCLE-SENTRY Icon Shows Current Mode Displayed for CYCLE-SENTRY Mode Not Displayed for Continuous Mode
2.	Mode Key
3.	Menu Soft Key

**Figure 46: Standard Display**

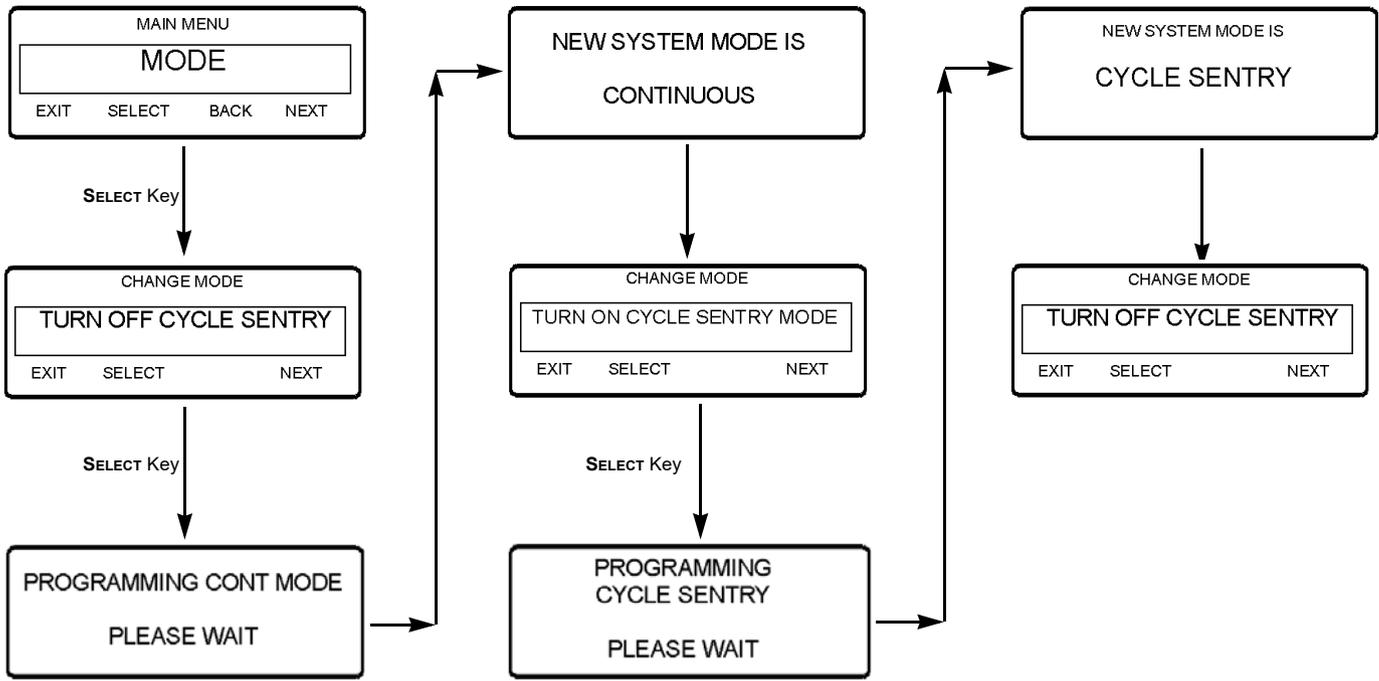


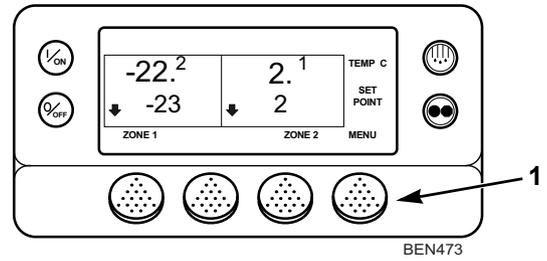
Figure 47: Selecting Mode Screen Sequence

## Selecting Single Zone Control or Multi Zone Control

*NOTE: This feature is only applicable for multi-temperature/Spectrum unit models*

This feature must be enabled in Guarded Access to be available. See “Single Zone Standard Display” on page 15 and for more information about Single Zone Control. Use the following steps to select Single Zone Control or Multi Zone Control:

1. Begin at the Standard Display.  
If the Temperature Watch Display is showing, press any soft key to return to the Standard Display.
2. Press the **MENU** soft key on the Standard Display.

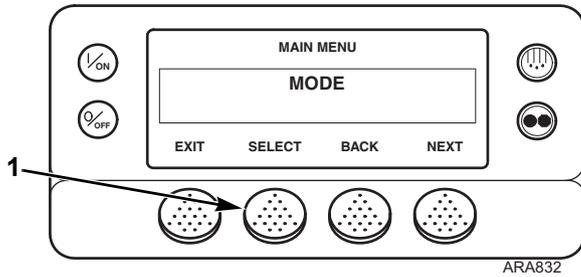


- |    |                     |
|----|---------------------|
| 1. | Press Menu Soft Key |
|----|---------------------|

**Figure 48: Standard Display**

3. Press the **NEXT** soft key until the Mode Menu appears.
4. Press the **SELECT** soft key to enter the Mode Menu. The Turn CYCLE-SENTRY On/Off Screen will appear.

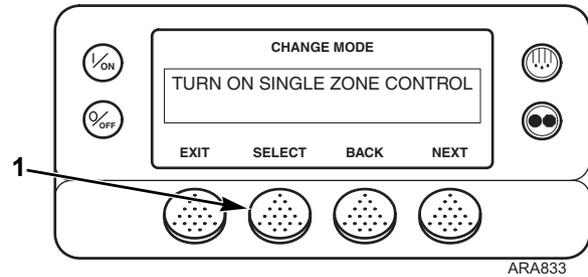
## Operating Instructions



1. Press Select Soft Key

**Figure 49: Mode Menu Display**

5. Press the **NEXT** soft key to display the Single Zone Control On/Off Display.
6. Press the **SELECT** soft key to turn Single Zone Control On or Off.



1. Press Select Soft Key

**Figure 50: Single Zone Control On/Off Display**

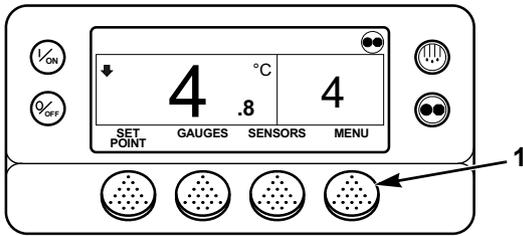
7. The new mode is then confirmed for 10 seconds.
8. The display then returns to the Mode Menu.

Press the Exit soft key to return to the Standard Display. If no keys are pressed within 30 seconds, the screen will return to the Standard Display.

## Selecting Keypad Lockout

This feature must be enabled in Guarded Access to be available. See “Keypad Lockout” on page 53 for more information about Keypad Lockout. Use the following steps to select Keypad Lockout:

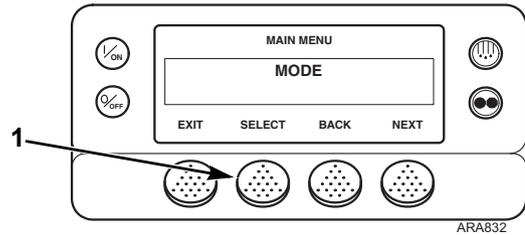
1. Begin at the Standard Display.  
If the Temperature Watch Display is showing, press any soft key to return to the Standard Display.
2. Press the **MENU** soft key on the Standard Display.



1. Press Menu Soft Key

**Figure 51: Standard Display**

3. Press the **NEXT** soft key until the Mode Menu appears.
4. Press the **SELECT** soft key to enter the Mode Menu. The Turn CYCLE-SENTRY On/Off Screen will appear.



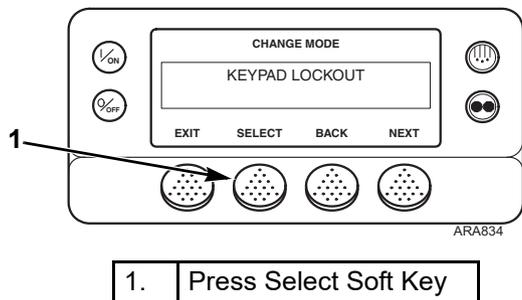
1. Press Select Soft Key

**Figure 52: Mode Menu Display**

5. Press the **NEXT** soft key until the Keypad Lockout Display appears.

## Operating Instructions

6. Press the **SELECT** soft key to select Keypad Lockout.



**Figure 53: Keypad Lockout Display**

7. The new mode is then confirmed for 10 seconds.
8. The display then returns to the Mode Menu.
9. Press the Exit soft key to return to the Standard Display. If no keys are pressed within 30 seconds, the screen will return to the Standard Display.

**NOTE:** *If Keypad Lockout is active, press and hold any soft key for 5 seconds to deactivate the feature.*

## Selecting Sleep Mode

This feature must be enabled in Guarded Access to be available. Sleep mode starts and stops the unit as required to keep the unit battery in a charged condition and keep the unit engine warm in cold ambient conditions. Sleep mode does not maintain setpoint. Sleep Mode keeps the compartment temperature near the ambient temperature when the unit is running. This is useful in extremely cold weather or when the unit is to be out of service for an extended time.

The following features are available in Sleep Mode.

**Program Wakeup Time:** This feature allows a wakeup time to be specified. When the selected time is reached the unit will start and resume normal operation.

If a Wakeup Time is selected the following features are available:

**Day to Wake Up:** The day the unit is to wake up can be specified.

**Hour to Wake Up:** The hour the unit is to wake up can be specified.

## Operating Instructions

**Minute to Wake Up:** The minute the unit is to wake up can be specified.

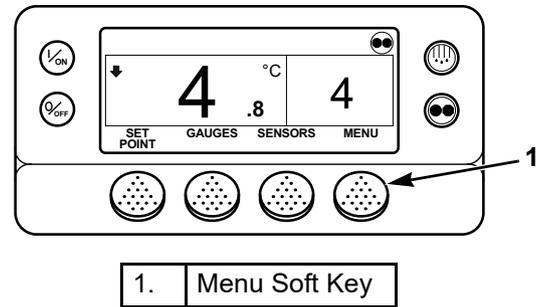
**Run Pretrip on Wakeup:** A Pretrip Test can be enabled to automatically run when the unit wakes up.

Sleep mode operates in both Diesel mode and Electric mode. In Diesel mode the unit will start and stop as required to maintain engine temperature and battery charge. In Electric mode the unit starts and stops as necessary to maintain battery charge only.

When Sleep mode is entered, the operator can program an automatic Wake-up Time up to a week away. Using this feature, the unit will automatically restart and run normally at the determined time. If a Wake-up Time is programmed, the operator can also program an automatic Pretrip Test when the unit restarts.

Select Sleep Mode as follows:

1. Begin at the Standard Display.  
If the Temperature Watch Display is showing, press the **MENU** soft key once to return to the Standard Display.
2. Press the **MENU** soft key on the Standard Display.



**Figure 54: Standard Display**

3. Press the **NEXT** soft key until the Mode Menu appears. See Figure 55.
4. Press **SELECT** soft key to enter the Mode Menu.
5. Press the **NEXT** soft key as required to display the Sleep Mode Screen.
6. Press the **SELECT** soft key to start the Sleep mode.
7. You now choose to program a Sleep mode Wake-up Time or simply enter Sleep mode immediately. Press the **No** soft key to immediately enter Sleep mode.

## Operating Instructions

- a. The display will show “SLEEP” and the unit will start and stop as required to keep engine warm and/or the battery charged. Sleep mode does not maintain the compartment temperature.
  - b. Press the **EXIT** soft key to exit Sleep mode or turn the unit off and back on. The unit will resume normal operation and control to setpoint.
8. To enter a Wake-up Time verify that the unit clock is set properly (see “Time Display” on page 72). Then press the **YES** soft key at the “Program A Wake-Up Time?” Screen.
  9. Press the **+** or **-** soft keys to select the day the unit is to restart in normal operation. In this example Monday has been chosen. Press the **YES** soft key to confirm the day.
  10. The display will now prompt you for the hour the unit is to restart in normal operation. In this example 18:00 hours has been chosen. Note that 24 hour “military time” is used. Press the **YES** soft key to confirm the hour.
  11. The display will now prompt you for the minute the unit is to restart in normal operation. In this example 18:37 hours has been chosen. Press the **YES** soft key to confirm the minute.
  12. The display will now prompt you to “Run A Pretrip On Wake-Up?” Press **YES** soft key or the **NO** soft key accordingly and the display will show the unit is programming the Sleep mode.
  13. The display will show “SLEEP” and the unit will start and stop as required to keep the engine warm and/or the battery charged. Sleep mode does not maintain setpoint.
  14. The unit will restart at the programmed time (in this example 18:37 hours) and perform a Pretrip (if selected). After the Pretrip is complete the test results will be displayed and the unit will resume normal operation and control to setpoint.
  15. To exit Sleep mode before the selected Wake-up time press the **EXIT** soft key or turn the unit off and back on. The unit will resume normal operation and control to setpoint.

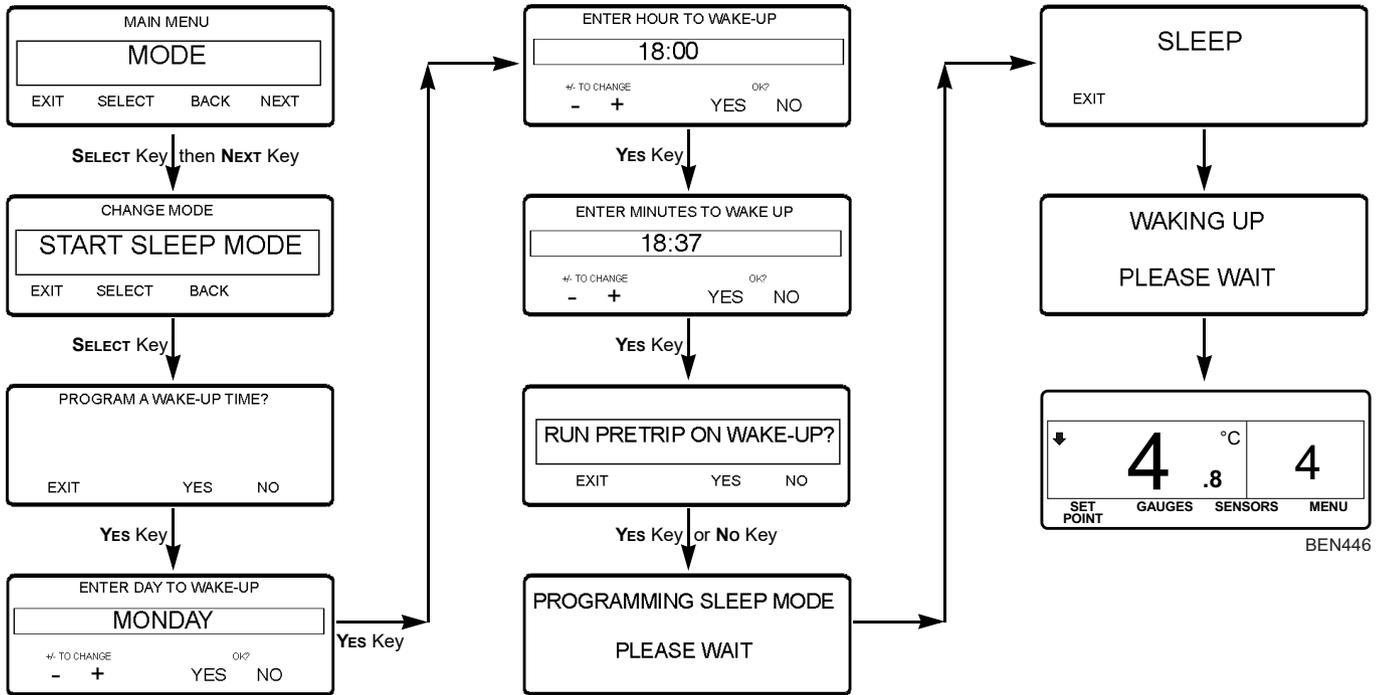


Figure 55: Selecting Sleep Mode Screen Sequence

# Pretrip Tests

A Pretrip test verifies unit operation. This display allows a Pretrip Test to be selected and initiated by the operator. If the Pretrip Test is entered with the unit shut down a Full Pretrip Test with device amp checks will be performed. If the Pretrip Test is entered with the unit running in either diesel or electric mode a Running Pretrip Test is performed. Test results are reported as PASS, CHECK or FAIL when the Pretrip Test is completed.

## Pretrip Test Conditions

- Current unit settings are saved and restored at the end of the Pretrip Test or if the unit is turned off and back on.
- Pretrip Test can be run in either Diesel or Electric Mode.
- The unit will auto switch from Diesel Mode to Electric Mode or from Electric Mode to Diesel Mode during a Pretrip Test if these features are enabled and the auto switch conditions occur.
- Engine or Electric Motor Start – The engine or electric

## Conditions where Pretrip Tests are not allowed

- If any shutdown alarms are present. Pretrip tests are allowed with some Check and Log alarms.
- If the unit is in Sleep Mode.
- If the unit is in Service Test Mode, Interface Board Test Mode or Evacuation Mode.



**CAUTION:** Monitor the return air temperature when performing a Pretrip Test on a loaded trailer. The controller may not maintain setpoint during the Pretrip Test.

## Full Pretrip

A Full Pretrip occurs when Pretrip is initiated before the engine or electric motor starts running. The Full Pretrip test proceeds in the order shown below:

- Amp Checks – Each electrical control component is energized and the current drawn is confirmed to be within specification.  
motor will start automatically.

## Operating Instructions

- Defrost – If the coil temperature is below 7 C (45 F), a Defrost cycle is initiated.
- Cool Check – The ability of the unit to cool in low speed is checked.
- RPM Check (Diesel Mode only) – If the unit is running in the Diesel Mode, the engine RPM in high and low speed is checked during the Cool Check.
- Heat Check - The ability of the unit to heat in low speed is checked.
- Report Test Results – The test results are reported as “PASS”, “CHECK” or “FAILED” when the Pretrip is completed. If test results are Check or Failed, alarm codes will exist to direct the technician to the source of the problem.

## Running Pretrip

A Running Pretrip occurs when Pretrip is initiated after the engine or electric motor is running. The Running Pretrip test proceeds in the order shown below:

- Defrost – If the coil temperature is below 7 C (45 F), a Defrost cycle is initiated.
- Cool Check – The ability of the unit to cool in low speed is checked.
- RPM Check (Diesel Mode only) – If the unit is running in the Diesel Mode, the engine RPM in high and low speed is checked during the Cool Check.
- Heat Check - The ability of the unit to heat in low speed is checked.
- Report Test Results – The test results are reported as “PASS”, “CHECK” or “FAILED” when the Pretrip is completed. If test results are Check or Failed, alarm codes will exist to direct the technician to the source of the problem.

### Pretrip Test Issues

When performing a Pretrip Test, the following issues should be considered.

- Whenever possible, run pretrip tests on empty, dry trailers with the doors closed.
- If running a Pretrip Test on a trailer loaded with dry cargo, insure that proper airflow can occur around the load. If the load restricts airflow, false test results may occur. Also, SR-3 units have high refrigeration capacity which results in rapid temperature changes. Sensitive dry cargo may be damaged as a result.
- If running a Pretrip Test on a trailer that has just been washed down, the extremely high humidity inside the trailer may result in false test results.
- If running a Pretrip Test on a trailer loaded with sensitive cargo, monitor the load temperature during the test as normal temperature control is suspended during pre-trip operation.
- Always perform Pretrip Tests with the trailer cargo doors closed to prevent false test failures

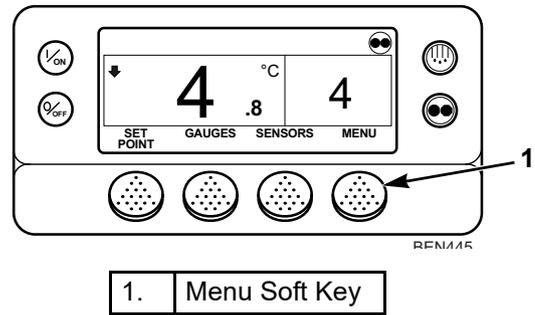
### Initiating a Pretrip Test

Before initiating a Pretrip Test, clear all alarm codes.

To stop a Pretrip Test at any time, turn the unit off.

Use the following procedure to initiate a Full Pretrip or a Running Pretrip. A Running Pretrip can also be initiated by starting at step 3 with the unit running.

1. If the unit is running, press the **OFF** key to stop the unit.
2. Press the **ON** key to turn the unit on.

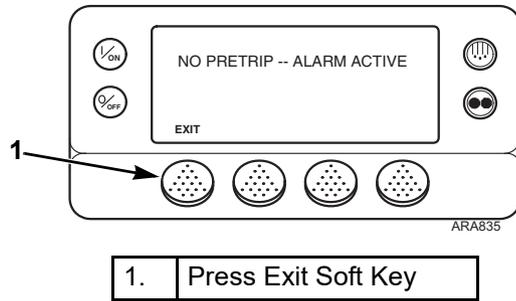


**Figure 56: Standard Display**

## Operating Instructions

3. To initiate a Full Pretrip press the **MENU** soft key as soon as the Standard Display appears and before the unit starts. To initiate a Running Pretrip let the unit start before pressing the **MENU** soft key on the Standard Display.
4. Press the **NEXT** soft key until the Pretrip Screen appears. See Figure 58.
5. Press the **SELECT** soft key to start a Pretrip.

**NOTE:** *If all alarms were not cleared, a prompt appears as shown below. Press the **EXIT** key to exit the Pretrip Test, clear all alarms and repeat the Pretrip Test.*



**Figure 57: No Pretrip Alarm Active Display**

6. The Pretrip display appears. See Figure 58.
  - The top line of the display indicates the unit is performing the non-running (or running) portion of the Pretrip Test.
  - The second line shows Test 1 of 49 is being performed. Note that the tests may not be performed in numerical order.
  - The soft keys may be used during the Pretrip Test to select the Hourmeter, Gauge or Sensor menus.

In a Full Pretrip, when the non-running tests are complete the unit will start automatically and continue with the running tests.

7. When all tests are complete, the results are reported as "PASS", "CHECK" or "FAILED". If "FAILED" appears, the unit will shut down. If the results are Check or Failed, the accompanying alarm codes will direct the technician to the cause of the problem.

## Operating Instructions

8. If the Pretrip Test results are “CHECK” or “FAILED”, the problem should be diagnosed and corrected and the Pretrip Test repeated and passed before the unit is released for service. The Pretrip Test result screen will exit to the Main Menu Alarm Submenu for convenient access to any alarms generated during the Pretrip Test.

### Stopping a Pretrip Test

Turn the unit off to stop a Pretrip Test at any time. This will generate Alarm Code 28–Pretrip Abort. Other alarm codes may also be generated. This is normal when the Pretrip test is stopped before completion.

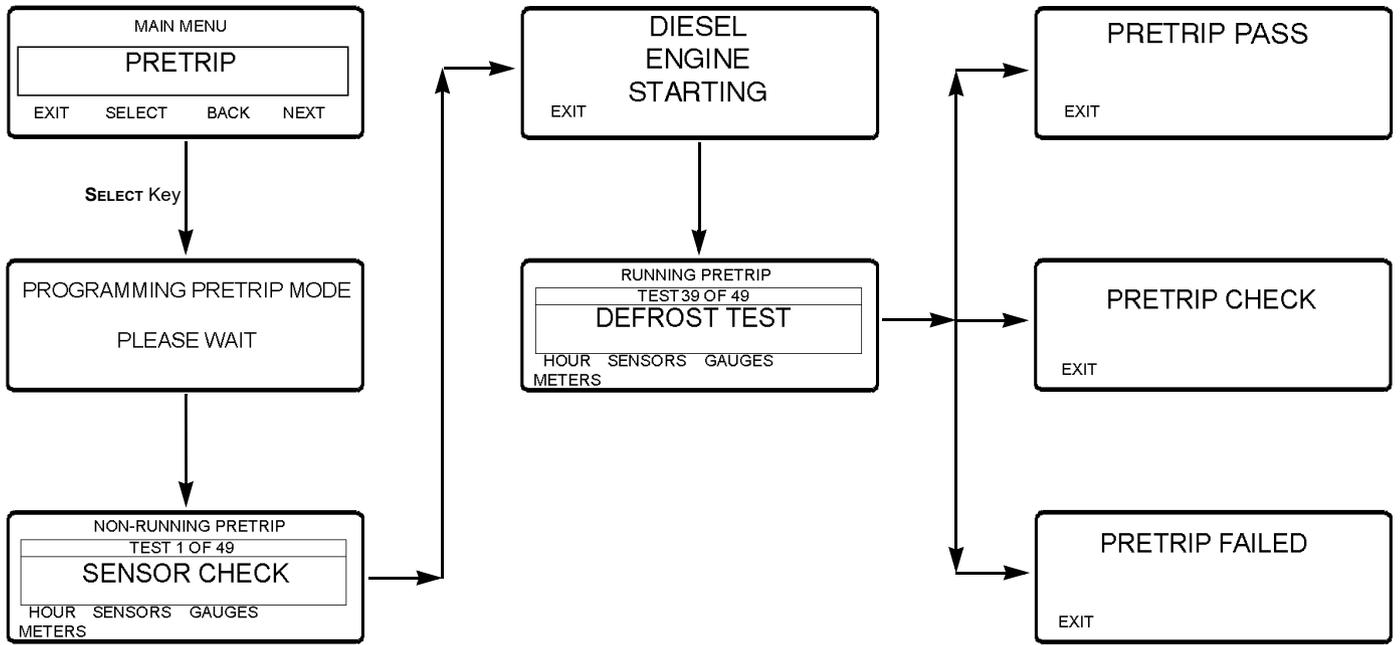


Figure 58: Pretrip Test Screen Sequence

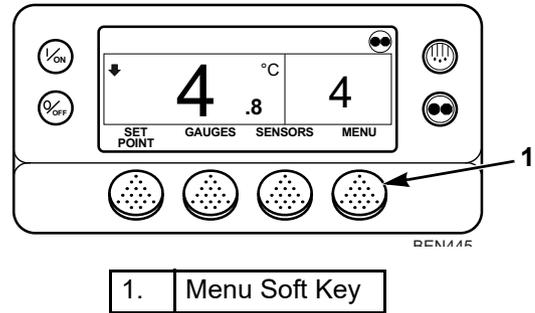
## Adjust Brightness Menu

The brightness of the HMI Control Panel display backlight can be adjusted to allow for changing ambient light conditions. The choices available to the operator are HIGH, MEDIUM, LOW, and OFF. OFF actually results in a very dim backlight suitable for low light conditions.

**IMPORTANT:** Before replacing an HMI Control Panel with no backlight, check the Adjust Backlight feature to be sure the backlight is turned on.

Adjust the display brightness as follows:

1. Begin at the Standard Display.  
If the Temperature Watch Display is showing, press the **MENU** soft key once to return to the Standard Display.
2. Press the **MENU** soft key on the Standard Display.



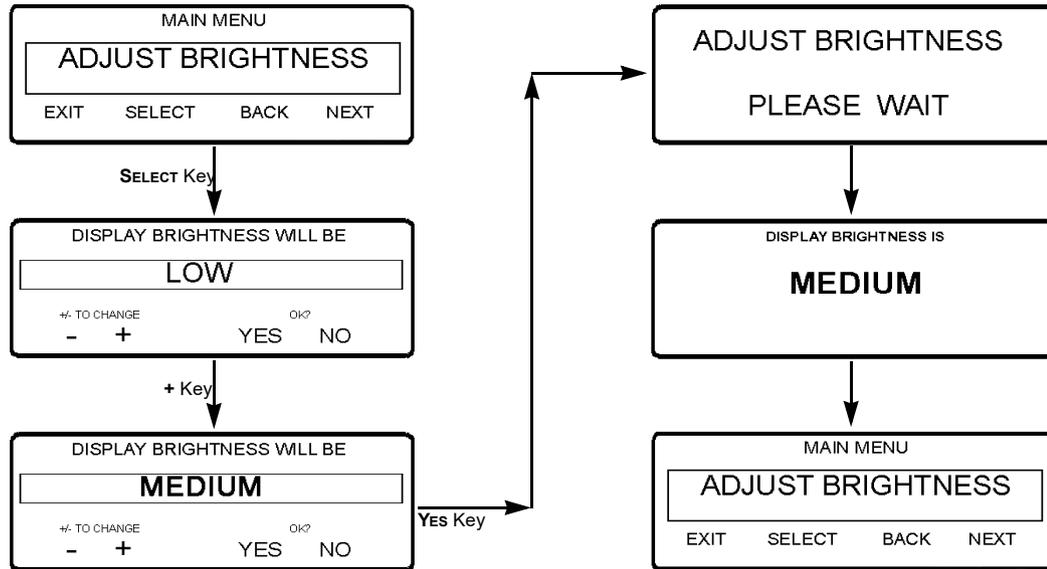
**Figure 59: Standard Display**

3. Press the **NEXT** soft key until the Adjust Brightness Menu appears. See Figure 60.
4. Press the **SELECT** soft key to enter the Adjust Brightness Menu. See Figure 60.
5. Press the **+** or **-** soft keys to select the desired brightness. See Figure 60. This example shows changing screen brightness from low to medium.
6. Press the **YES** soft key to enter the new brightness level.

## Operating Instructions

7. The “ADJUSTING BRIGHTNESS - PLEASE WAIT” Screen briefly appears.
8. The selected level appears on the screen.

9. The Adjust Brightness Main Menu Screen reappears.
10. Press the Exit soft key to return to the Standard Display. If no keys are pressed within 30 seconds, the screen will return to the Standard Display.



**Figure 60: Adjusting Display Brightness Screen Sequence**

## Time Display

The time and date held by the HMI Control Panel real time clock can be checked. Time and Date cannot be changed from the Main Menu. The time and date are changed by programming the HMI Control Panel. Contact your Thermo King dealer for information about programming the HMI Control Panel.

View the time and date as follows:

1. Begin at the Standard Display.  
If the Temperature Watch Display is showing, press the **MENU** soft key once to return to the Standard Display.
2. Press the **MENU** soft key on the Standard Display.
3. Press the **NEXT** soft key until the Time Display appears.
4. Press the **SELECT** soft key to view the time and date.

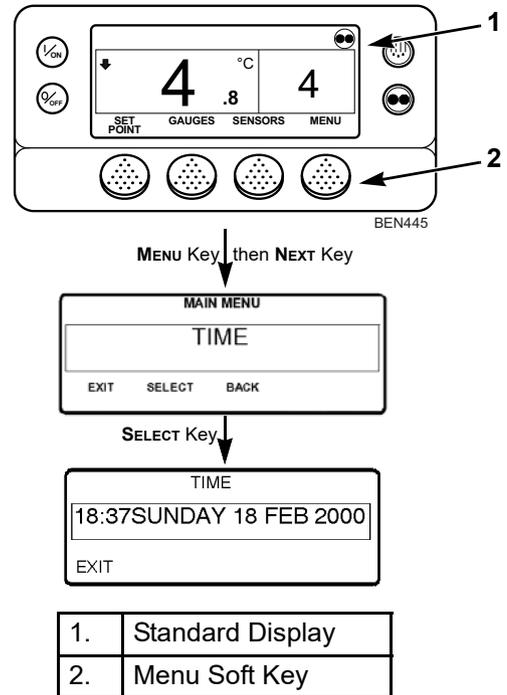


Figure 61: Time and Date Screens

## OptiSet Plus

The Base Controller can be programmed with OptiSet Plus temperature profiles that allow the user to select named products. Contact your Thermo King dealer for information about programming the Base Controller with OptiSet Plus temperature profiles.

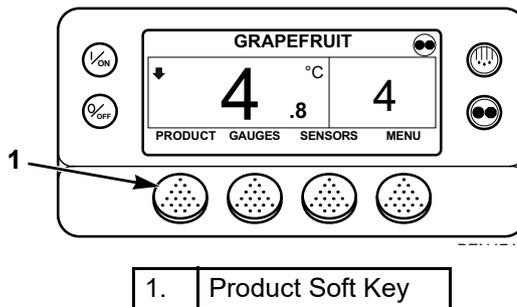
- Named products can have a single setpoint, or they can have a setpoint range that allows the user to select a setpoint within that range.
- The Base Controller can be programmed to allow only named products to be selected. In which case the far left soft key will display **PRODUCT**. See Figure 62.
- The Base Controller can be programmed to allow named products or numeric setpoints to be selected. In which case the far left soft key will display **PRODUCT/SETPOINT**. See Figure 63.

***NOTE:** In OptiSet Plus the terms “numeric setpoint” and “setpoint” mean the same thing and are displayed as numbers. The terms “named product” and “product” mean the same thing and are displayed as words.*

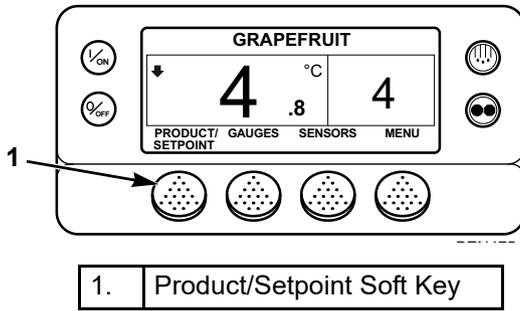
See “Selecting a Named Product” on page 74 for information about selecting or changing the named product.

See “Changing the Setpoint for a Named Product” on page 80 for information about changing the setpoint for a named product.

See “Selecting a Setpoint” on page 83 for information about selecting or changing the setpoint.



**Figure 62: Standard Display with Product Soft Key**



**Figure 63: Standard Display with Product/Setpoint Soft Key**

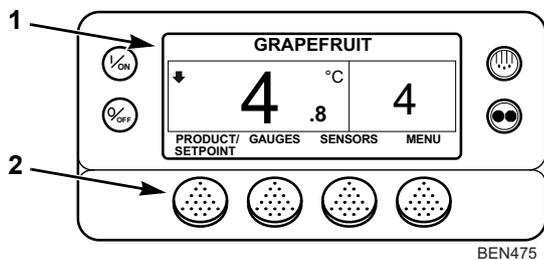
2. Press the **PRODUCT/SETPOINT** (or **PRODUCT**) soft key on the Standard Display. See Figure 64.
3. The “Named Product / Numeric Setpoint?” (or Named Product) Screen briefly appears, then the “Named Product or Numeric Setpoint?” (or Named Product) Screen will appear. See Figure 65.
4. Press the **NAMED** soft key. See Figure 65.
5. The “Product” Screen briefly appears, then the “Current Product Is” Screen will appear. See Figure 65.
6. Press the **+** or **-** soft keys to change the named product. See Figure 65.

## Selecting a Named Product

To select or change a named product complete the following steps. This example shows the Standard Display with the **PRODUCT/SETPOINT** soft key. Using the Standard Display with the **PRODUCT** soft key is basically the same but some of the screens differ slightly.

1. Begin at the Standard Display.  
If the Temperature Watch Display is showing, press the **MENU** soft key once to return to the Standard Display.

## Operating Instructions



1.	Standard Display
2.	Product/Setpoint Soft Key

**Figure 64: Selecting Named Product**

7. Press the **YES** or **NO** soft key accordingly as described below. See Figure 65.
  - If the **No** key is pressed the named product change made with the “+” or “-” soft keys **will not** be accepted, the named product will not be changed and the display will return to the Standard Display.

- If the **YES** soft key is pressed, the named product change made with the “+” or “-” soft keys will be accepted, and the following screens will appear.

**NOTE:** Alarm Code 127 may be generated if the + or - soft keys are used to change the named product, but the **YES** or **NO** soft keys are not used to accept or decline the new named product.

8. The “Programming Named Product” Screen will briefly appear. See Figure 65.

**NOTE:** If the “Change Setpoint for XXXXX” Screen appears, the named product has been programmed with a setpoint range. See “Selecting the Setpoint for a Named Product” on page 78.

9. The “New Named Product Is XXXXX” Screen briefly appears. See Figure 65.
10. The Standard Display appears with the new named product. See Figure 65.

**NOTE:** Pressing the **EXIT** soft key at any point will return to the Standard Display.

## Operating Instructions

*NOTE: If no keys are pressed for 30 seconds while in the Named Product Changer Screens, the HMI Control Panel will return to the Standard Display.*

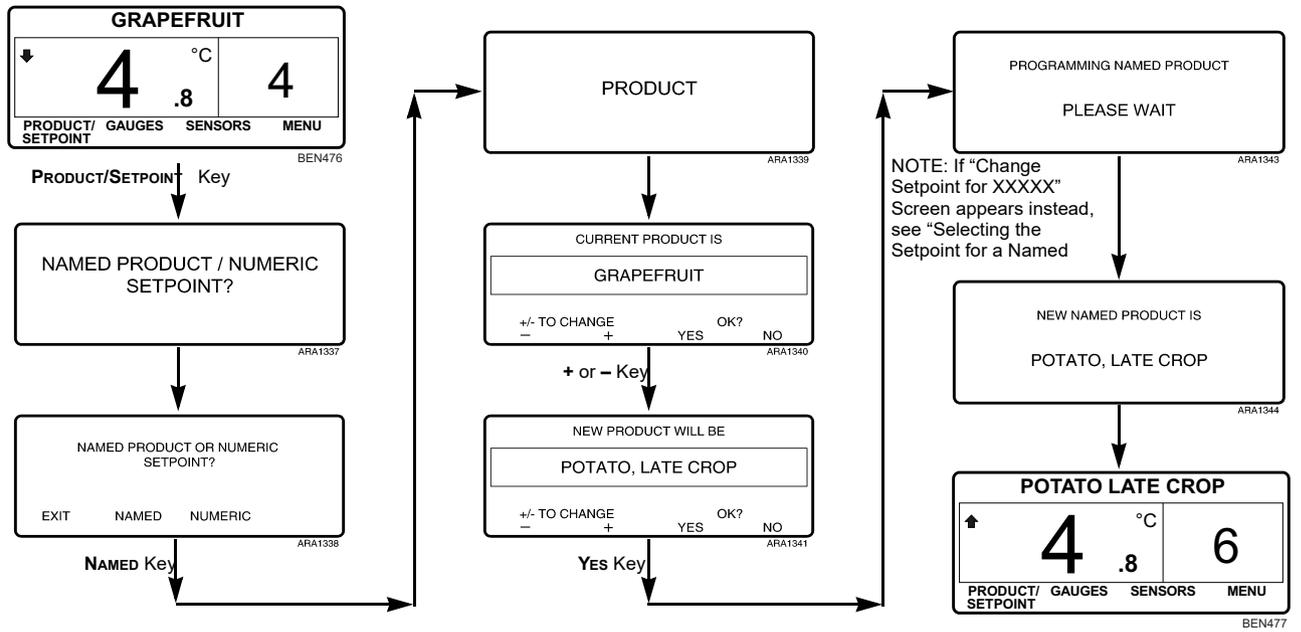


Figure 65: Selecting or Changing Named Product Screen Sequence

### Selecting the Setpoint for a Named Product

If the “Change Setpoint for XXXXX” Screen appears after pressing the **YES** soft key to select a named product, the named product has been programmed with a setpoint range. Complete the following steps to select a setpoint for the named product.

1. The “Change Setpoint for XXXXX” Screen briefly appears, then the “Current Setpoint of XXXXX & Setpoint Range Is XX to XX” Screen will appear. See Figure 66.
2. Press the **+ /-** or **EXIT** soft keys accordingly as described below. See Figure 66.
  - Press the **+** or **-** soft keys to change the current setpoint for the named product and then go to step 3.
  - Press the **EXIT** soft key to accept the current setpoint for the named product. The Standard Display will appear with the named product and setpoint. See Figure 66.
3. If the **+** or **-** soft keys were pressed to change the current setpoint for the named product, the “New Setpoint for XXXXX Will Be” Screen will appear. See Figure 66.

4. Press the **YES** soft key to accept the new setpoint for the named product.

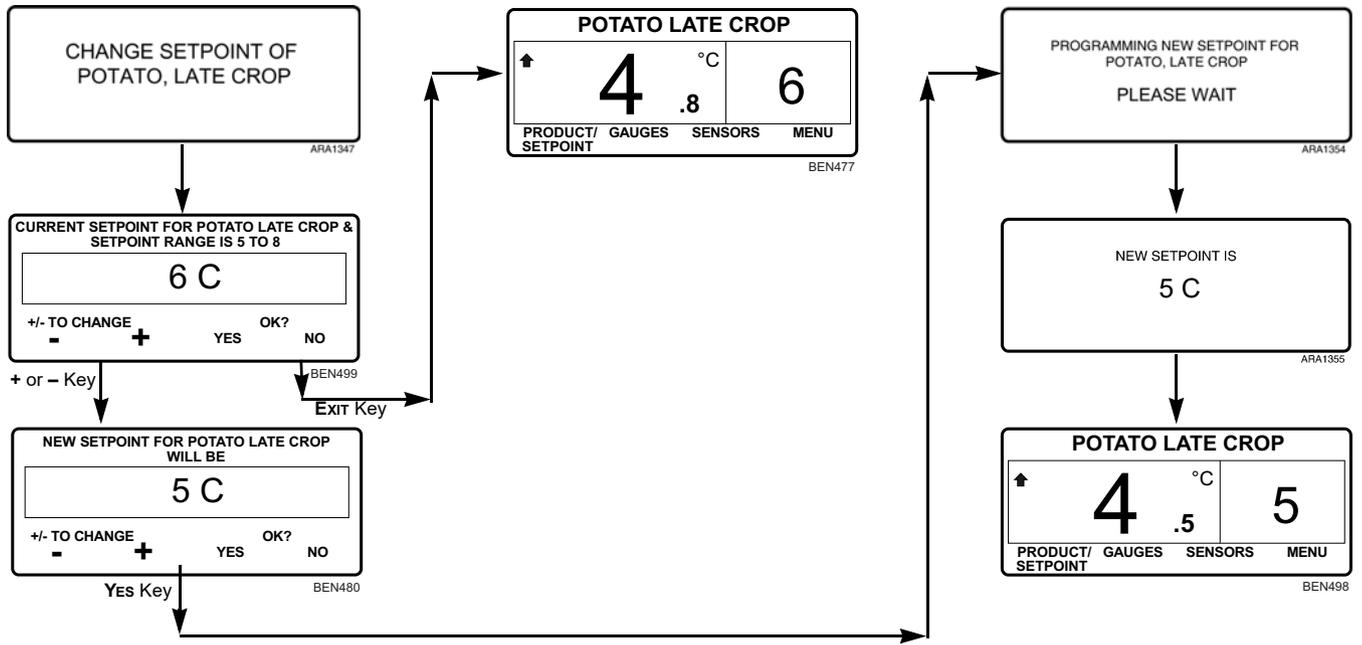
**NOTE: If the **NO** key is pressed the setpoint will not be changed and the display will return to the Standard Display.**

5. The “Programming New Setpoint for XXXXX” Screen will briefly appear. See Figure 66.
6. The “New Setpoint Is XX” Screen briefly appears. See Figure 66.
7. The Standard Display appears with the named product and new setpoint. See Figure 66.

**NOTE: Pressing the **EXIT** soft key at any point will return to the Standard Display.**

**NOTE: If no keys are pressed for 30 seconds while in the Named Product Changer Screens, the HMI Control Panel will return to the Standard Display.**

# Operating Instructions

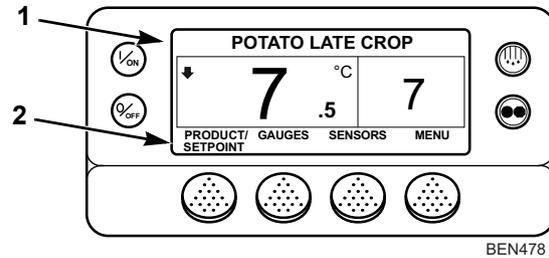


**Figure 66: Selecting Setpoint for Named Product Screen Sequence**

## Changing the Setpoint for a Named Product

If the named product has been programmed with a setpoint range, the setpoint for the named product can be changed. Complete the following steps to change the setpoint for a named product. This example shows the Standard Display with the **PRODUCT/SETPOINT** soft key. Using the Standard Display with the **PRODUCT** soft key is basically the same but some of the screens differ slightly.

1. Begin at the Standard Display.  
If the Temperature Watch Display is showing, press the **MENU** soft key once to return to the Standard Display.
2. Press the **PRODUCT/SETPOINT** (or **PRODUCT**) soft key on the Standard Display. See Figure 67.
3. The “Named Product, Numeric Setpoint or Change Setpoint?” (or Named Product or Change Setpoint?) Screen will appear. See Figure 68.



1.	Standard Display
2.	Product/Setpoint Soft Key

**Figure 67: Changing Setpoint for Named Product**

4. Press the **CHANGE SP** soft key. See Figure 68.
5. The “Change Setpoint for XXXXX” Screen briefly appears, then the “Current Setpoint for XXXXX & Setpoint Range Is XX to XX” Screen will appear. See Figure 68.
6. Press the **+** or **-** soft keys to change the setpoint reading. See Figure 68.

## Operating Instructions

7. Press the **YES** or **NO** soft keys accordingly as described below. See Figure 68.
  - If the **NO** key is pressed the named product setpoint change made with the “+” or “-” soft keys *will not* be accepted, the named product setpoint will not be changed and the display will return to the Standard Display.
  - If the **YES** soft key is pressed, the named product setpoint change made with the “+” or “-” soft keys will be accepted, and the following screens will appear.
8. The “Programming New Setpoint for XXXXX” Screen will briefly appear. See Figure 68.
9. The “New Setpoint Is XX” Screen briefly appears. See Figure 68.
10. The Standard Display appears with the new setpoint. See Figure 66.

**NOTE:** Pressing the **EXIT** soft key at any point will return to the Standard Display.

**NOTE:** If no keys are pressed for 30 seconds while in the Named Product Changer Screens, the HMI Control Panel will return to the Standard Display.

# Operating Instructions

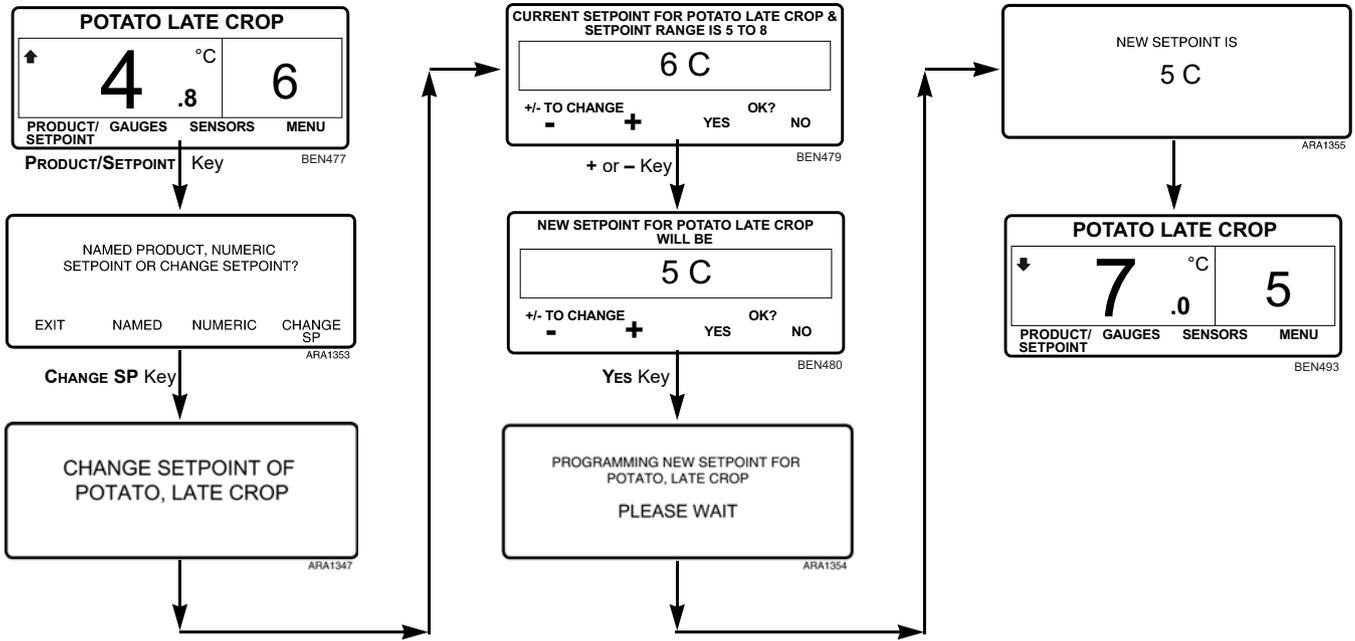
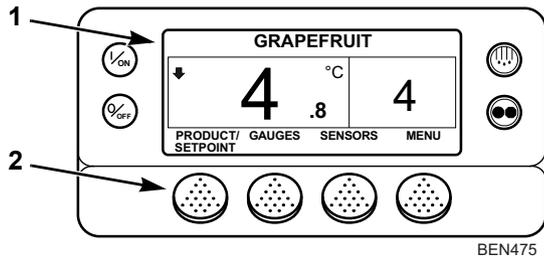


Figure 68: Changing Setpoint for Named Product Screen Sequence

## Selecting a Setpoint

To select or change a setpoint complete the following steps.

1. Begin at the Standard Display.  
If the Temperature Watch Display is showing, press the **MENU** soft key once to return to the Standard Display.
2. Press the **PRODUCT/SETPOINT** soft key on the Standard Display. See Figure 69.



1.	Standard Display
2.	Product/Setpoint Soft Key

**Figure 69: Selecting or Changing Setpoint**

3. The “Named Product / Numeric Setpoint?” Screen briefly appears, then the “Named Product or Numeric Setpoint?” Screen will appear. See Figure 70.
4. Press the **NUMERIC** soft key. See Figure 70.
5. The “Setpoint” Screen briefly appears, then the “Current Setpoint Is” Screen will appear. See Figure 70.
6. Press the **+** or **-** soft keys to change the setpoint. See Figure 70.
7. Press the **YES** or **NO** soft key accordingly as described below. See Figure 70.
  - If the **No** key is pressed the setpoint change made with the “+” or “-” soft keys **will not** be accepted, the setpoint will not be changed and the display will return to the Standard Display.
  - If the **YES** soft key is pressed, the setpoint change made with the “+” or “-” soft keys will be accepted, and the following screens will appear.
8. The “Programming New Setpoint” Screen will appear. See Figure 70.

## Operating Instructions

9. The “New Setpoint Is XX” Screen briefly appears. See Figure 70.
10. The Standard Display appears with setpoint changed to the new setpoint. See Figure 70.

***NOTE: Pressing the EXIT soft key at any point will return to the Standard Display.***

***NOTE: If no keys are pressed for 30 seconds while in the Named Product Changer Screens, the HMI Control Panel will return to the Standard Display.***

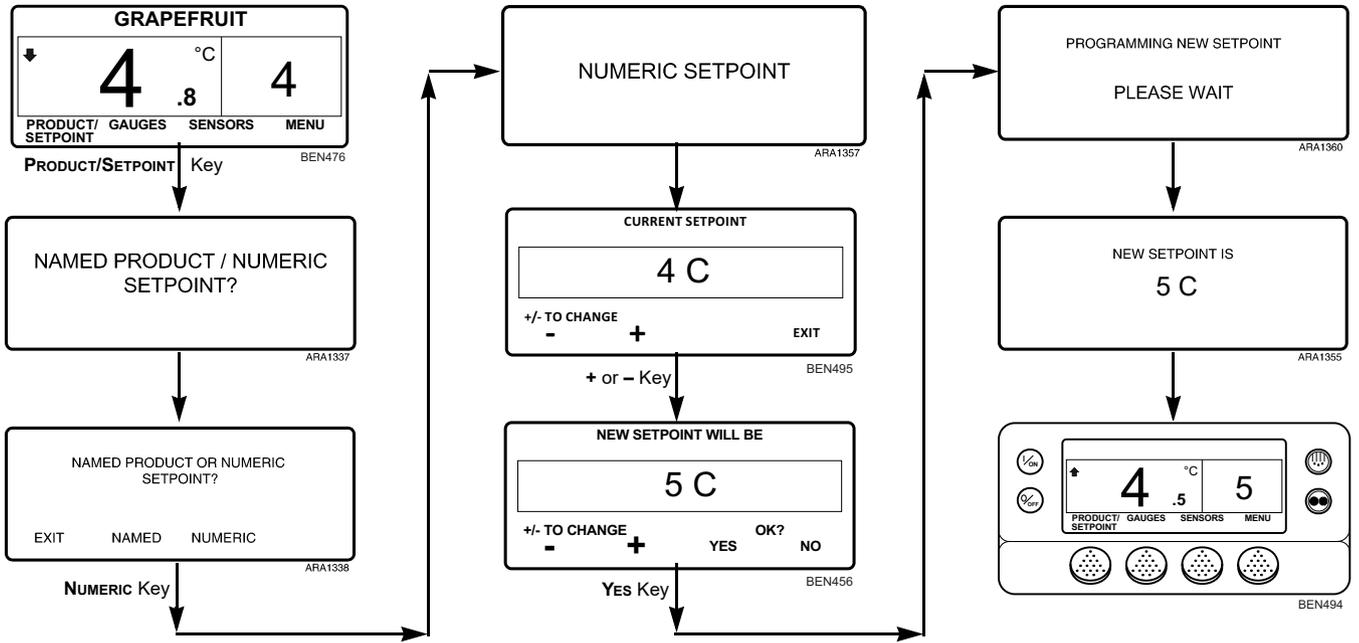


Figure 70: Selecting or Changing Numeric Setpoint Screen Sequence