



SERVICE MODE (Troubleshooting Input Operations)

The service features in this electronic control system allow the technician to perform a series of key strokes at the control panel in order to verify, configure, query and troubleshoot the appliance and its electronic control system. These service features are activated while in the four sub-modes of the Service Mode.

The four sub-modes of the Service Mode are:

- 1) Diagnostics Mode
- 2) Operational Status Mode
- 3) Model Information Mode
- 4) Version Information Mode.

The technicians display, located behind the top grille assembly, utilizes a two (2) line X sixteen (16) character LCD. While in Service Mode, this display will indicate which sub-mode is active, the data being searched for, and what other data can be accessed. When not in the Service mode, the Technician's display will indicate system information as defined for each particular operational mode.

Basic instructions for working through the Service Mode menu can be found on the Technician's Display cover (See Figure 8-1). These basic instructions (the Key Symbol and Arrows), correspond with keys on the control panel, thus directing the technician as to what keys need be pressed in order to move in the direction indicated by the arrow closest to each key symbol.

NOTES:

- A complete Service Mode Menu can be found on the back of the wiring diagram and on the next page of this manual.
- Since it is possible to initiate, bypass, an/or step back through the four different sub-modes while in Service Mode, initiating Service Mode will always be the first step when explaining how to work through the Service Mode menu for the sub-modes.

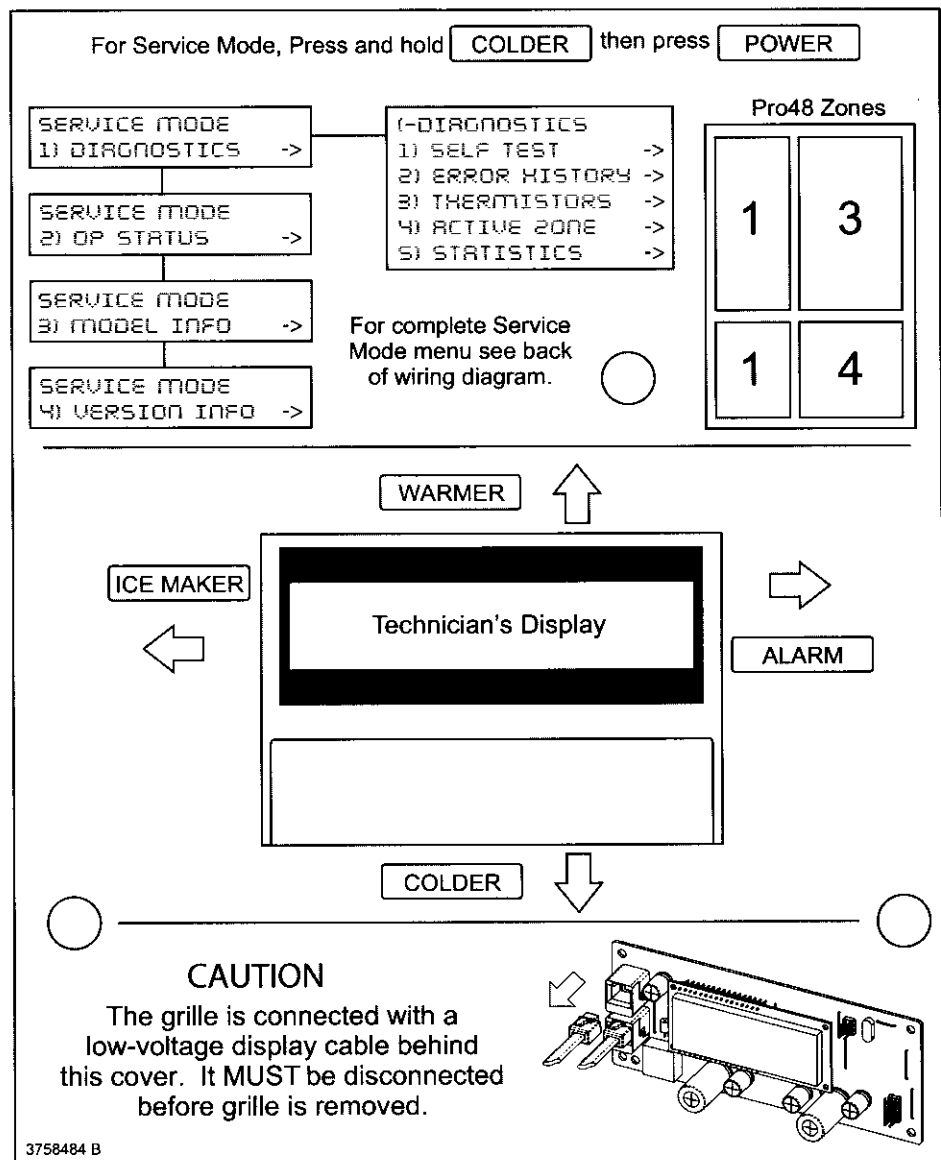


Figure 8-1. Technician's Display with Service Mode Menu

Non-Service Mode Display Information

Prior to initiating Service Mode, the following information will appear on the Technician's Display, depending on operational mode.

Operational Mode	LCD Line #1	LCD Line #2
Power Up	Scrolling Messages (every 2s) 1) Model ID # 2) Main Software Version # 3) Left Display Version # 4) Keyboard Version #	Scrolling Messages (every 2s) 1) Unit ID # 2) E2 Version # 3) Right Display Version # 4) Tech Display Version #
Off		
Showroom	Sub Zero	Showroom mode
Sabbath	Sub Zero	Sabbath mode
Normal	Scrolling Messages (every 2s) 1) Model Name 2) Zone #1 Status 3) Zone #2 Status 4) Zone #3 Status 5) Zone #4 Status	Scrolling Messages (every 2s) 1) S/N: XXXXX 2) Status 3) Status 4) Status 5) Status

Initiating Service Mode

To initiate Service Mode, press and hold any COLDER key, then press the POWER key, then release both keys (See Figure 8-2). "Service Mode, 1) Diagnostics" is the first sub-mode to appear in the Technician's Display, with a small arrow in the bottom right corner pointing right.

NOTES:

- By following the basic directions on the Technicians Display cover and the prompts that appear in the Technician's Display, a Service Technician will be able to work through the Service Mode menu, to the desired verification point, configuration portion, and troubleshooting section of the menu.
- For sake of space, the directions that follow will not explain or show what is seen in the display after each key stroke. Only the final, and/or desired result will be explained and illustrated.
- There are three (3) ways to exit Service Mode:
 1. To exit the Service Mode at any time, press the ICE MAKER key repeatedly until completely out of Service Mode menu.
 2. Pressing the POWER key will switch the unit OFF and exit Service Mode.
 3. If no keys are pressed for five (5) minutes after initiating Service Mode, the electronic control will automatically exit the mode.

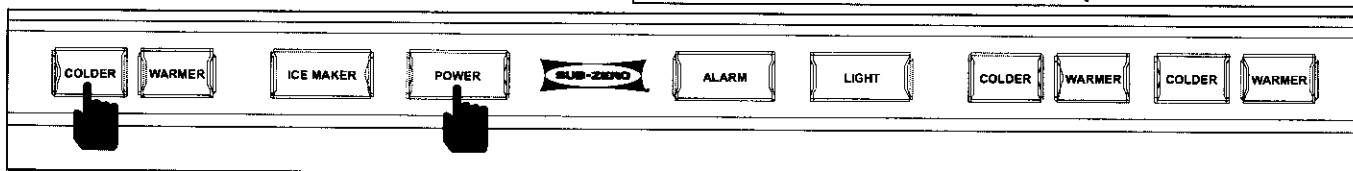
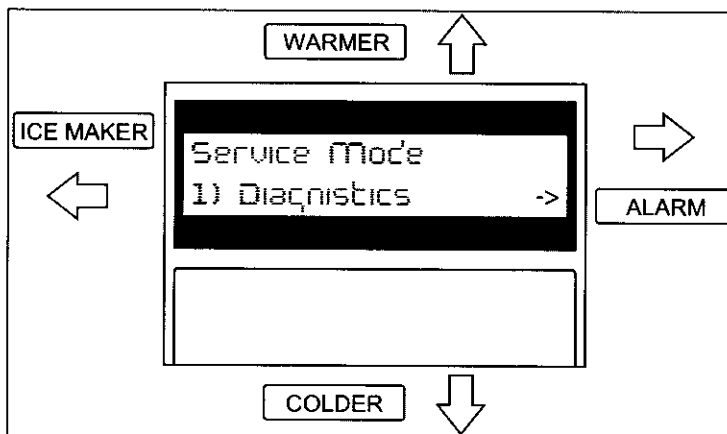
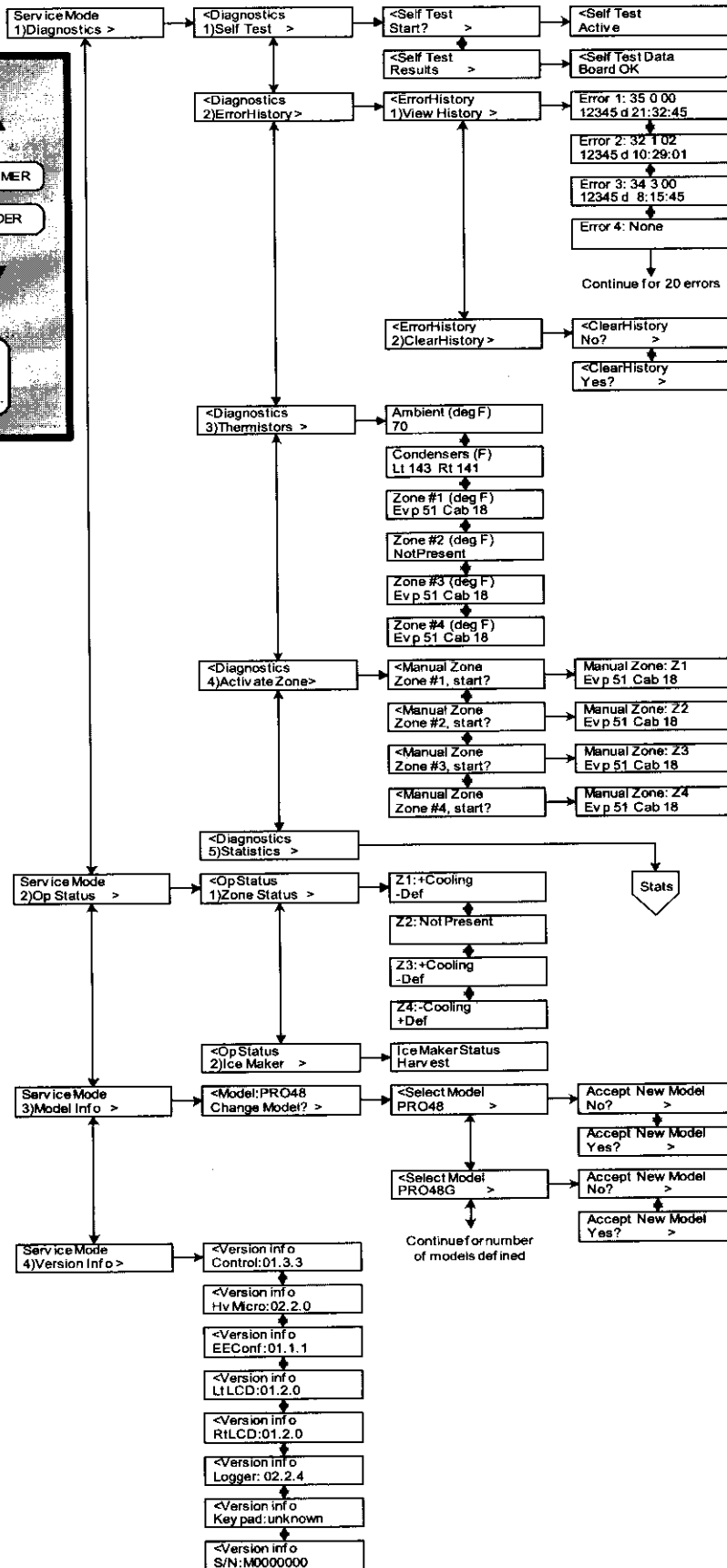
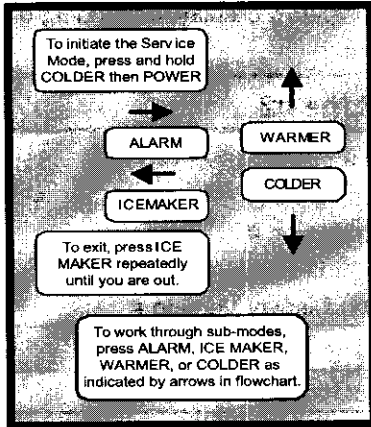


Figure 8-2. Key Strokes and Tech Display - Initiate Service Mode

Service Mode Menu



Error Code Table		
CODE	ZONE	SERVICE INSTRUCTION
01	X	Zone "X" Cabinet Thermistor Failure (Device or Wiring)
02	X	Zone "X" Evaporator Thermistor Failure (Device or Wiring)
03	X	Zone "X" Condenser Thermistor Failure (Device or Wiring)
04	0	Ambient Thermistor Failure (Device or Wiring)
20	X	Check Zone "X" Defrost Bi-metal for Proper Operation
21	X	Check Zone "X" Defrost Bi-metal for Proper Operation
22	X	Check Zone "X" Defrost Wiring
23	X	Check Zone "X" Defrost Wiring
24	X	Check Zone "X" Defrost Heater Ohms
30	0	Check for Stuck Icemaker or Water Valve Failure
35	X	Check Zone "X" Fan, Fan Speed Error
40	X	Zone "X" Excessive Run
41	X	Check Zone "X" Compressor and Wiring
42	0	Check Condenser Fan and/or Wiring
43	X	Check Left Refrigerant Valve and Wiring
44	X	Check Zone "X" Glass Door Heater and Wiring
45	X	Errors Detectable with Red Door Switches-Disabled Now. Check Overhead Lighting
46	0	Check Ice Accessory Wiring for Open Circuit
47	3	Check Accent Lighting Wiring for Short Circuit
80	X	Check Power to Compressor Controller for Zone "X", Troubleshoot with Manual Activation Mode
83	X	Replace Zone "X" VS Compressor and Filter-Drier
84	X	Check Zone "X" VS Compressor Wiring
85	X	Zone "X" VS Compressor Control Overheat
86	X	Check Communication Wiring, Replace Zone "X" VS Controller
87	X	Check for Broken Wiring or Open Defrost Heater
89	X	Check Icemaker Solenoid Valve and Wiring
90	X	Change Main Control Board
92	0	Check Keypad Wiring
93	0	Replace Keypad
94	1	Check Wiring / Replace User Display #1
94	3	Check Wiring / Replace User Display #2
96	0	Datalogger Malfunction
97	0	Check Communications Cables / Connectors
98	0	Brownout Check Input Power Supply



SEALED SYSTEM DIAGNOSTICS TABLES

NORMAL OPERATING PRESSURES TABLE NOTES:

- Only enter the sealed system to check pressures if the cause of the temperature problem could not be identified with the appliance in Service Mode.
- Always use solder-on process valves when entering the sealed system. Do NOT use bolt-on process valves as they are prone to leak.
- Whenever servicing the sealed system, the high-side filter-drier MUST be replaced.
- Pressures listed below are not indicative of initial pull down, but rather of a steadily running and properly functioning appliance.
- Pressures listed are for reference only, as actual pressure readings may vary because of one or more of the following reasons:
 1. Ambient temperatures (Pressures are based on a 70°F (21°C) Ambient).
 2. Temperature set-points (Pressures listed below are based on set-points of 0°F (-18°C) in freezers and 38°F (3°C) in refrigerators)
 3. Food load quantity and temperature.
 4. Condenser cleanliness.
 5. Whether or not one or both refrigeration systems are operating.
 6. Gauge calibration.

NORMAL OPERATING PRESSURES			
Model		Normal Low-Side Pressures	Normal High-Side Pressures
648PRO	Refrigerator	0 - 12 psi to 30 - 42 psi	75 psi to 110 psi
	Freezer	5" Vac - 1 psi to 6 - 12 psi	75 psi to 120 psi

PRESSURE INDICATIONS		
If low-side pressure is	& high-side pressure is	possible problem is
NORMAL	NORMAL	MECHANICAL (see General Troubleshooting Guide)
LOW	LOW	LEAK
LOW	HIGH	RESTRICTION
HIGH	LOW	INEFFICIENT COMPRESSOR
HIGH	HIGH	OVER CHARGE

EVAPORATOR TEMPERATURE / SEALED SYSTEM LOW-SIDE PRESSURE CORRELATION

NOTE: The temperature/pressure table at right is for reference only. A unit's temperature/pressure correlation may differ from those listed due to: variations in evaporator thermistor location, set-points, where the sealed system is in the refrigeration cycle, ambient temperature, etc.

If a unit is experiencing temperature problems, it is recommended that you initiate Service Mode and interpret the information therein before accessing the sealed system. After all mechanical and electrical components have been ruled out, sealed system pressures can be checked by applying solder-on process valves and referencing the preceding page. Do NOT use bolt-on process valves as they are prone to leak.

This table should only be used as a last quick check before entering the sealed system.

Temperature	Pressure
-30°F (-34°C)	10" Vac
-25°F (-32°C)	7" Vac
-20°F (-29°C)	4" Vac
-15°F (-26°C)	0" Vac
-10°F (-23°C)	2 Psi
-5°F (-21°C)	4 Psi
0°F (-18°C)	7 Psi
5°F (-15°C)	9 Psi
10°F (-12°C)	12 Psi
15°F (-9°C)	15 Psi
20°F (-7°C)	18 Psi
25°F (-4°C)	22 Psi
30°F (-1°C)	26 Psi
35°F (2°C)	30 Psi
40°F (4°C)	35 Psi
45°F (7°C)	40 Psi
50°F (10°C)	45 Psi
55°F (13°C)	51 Psi
60°F (16°C)	57 Psi
65°F (18°C)	64 Psi
70°F (21°C)	71 Psi
75°F (24°C)	78 Psi