SUCCESS WITH Atwood® TRAINING

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Welcome to SWAT Training

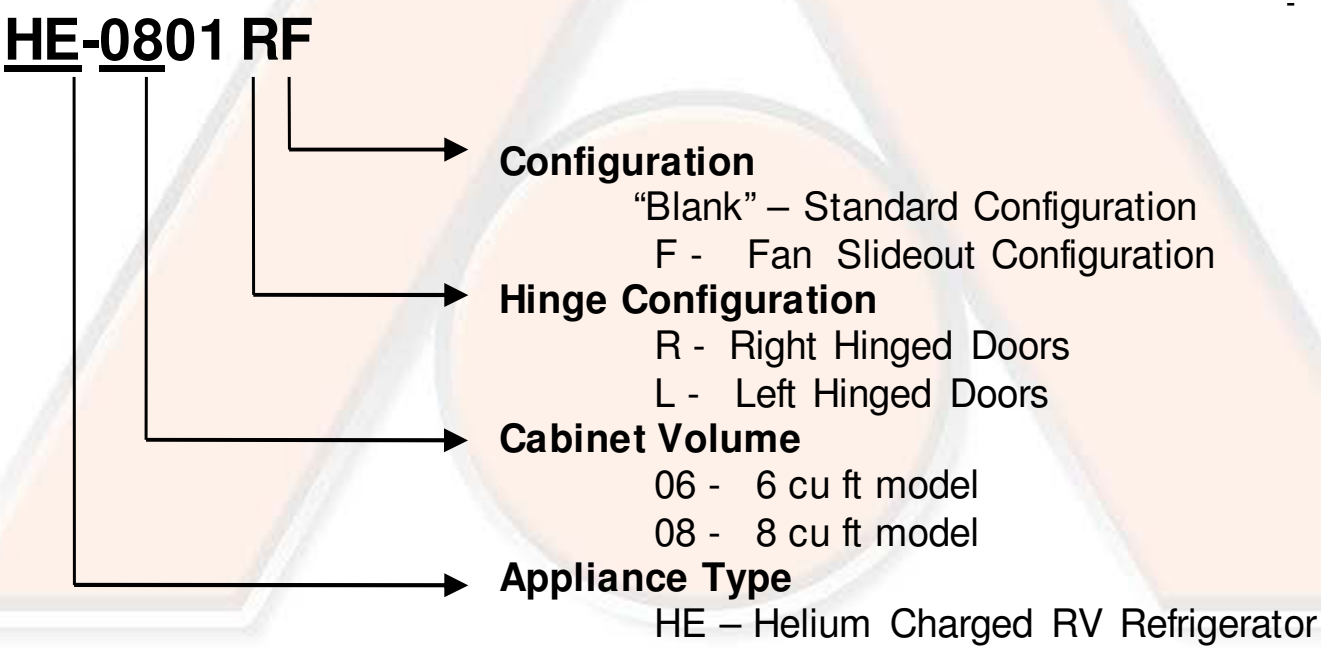
Atwood Refrigerator Technical Training

1. Introduction
2. Sequence of Operations
3. Component Identification
4. Troubleshooting
5. Installation

Customer Service 866-869-3118
Service@atwoodmobile.com

Model Number Identification

Model Number Description



Product overview standard offering 7 and 8 CuFt

ATWOOD® HELIUM REFRIGERATOR ADVANTAGES

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Features and Benefits

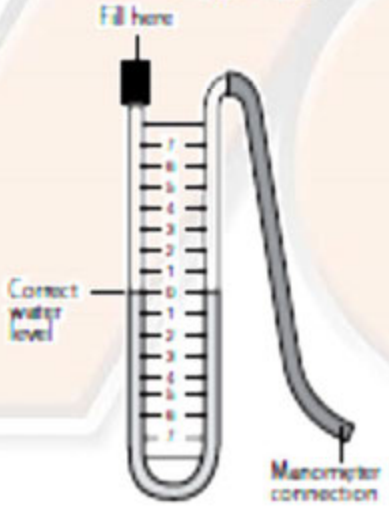
ATWOOD FEATURES	BENEFITS	DOMETIC	NORCOLD
HELIUM BASED COOLING SYSTEM (Patent Pending)	When used at severe levels of inclination, traditional HYDROGEN based cooling systems can generate excessive heat that over time may compromise system integrity. Atwood's HELIUM based system works to minimize excessive heat in those out of level situations.	NO (Hydrogen)	NO (Hydrogen)
TILT SENSOR TECHNOLOGY (Patent Pending)	Atwood's exclusive tilt sensor monitors the angle at which the refrigerator is operated to protect the user from potential hazards attributed to nearly all RV refrigerators when operated at severe angles of inclination.	NO	NO
CLASS LEADING STORAGE CAPACITY	Provides up to 10% more interior storage capacity.	NO	NO
MODERN DESIGN	Blue control panel lights, blue interior LED light, and blue tinted crisper bins and door shelves add up to give a new modern look to RV refrigerators.	NO (Dated)	NO (Dated)
STANDARD DOOR AJAR ALARM	An audible alarm lets you know if the door is not fully closed.	NO	✓
INTEGRATED STORAGE LATCHES	Integrated latches hold the refrigerator doors open when the unit is in storage to avoid mold or mildew.	NO (Not Integrated)	✓
2-YEAR WARRANTY	Atwood stands behind our appliances with a 2-year warranty.	✓	1-Year

Recommended Tools and Equipment

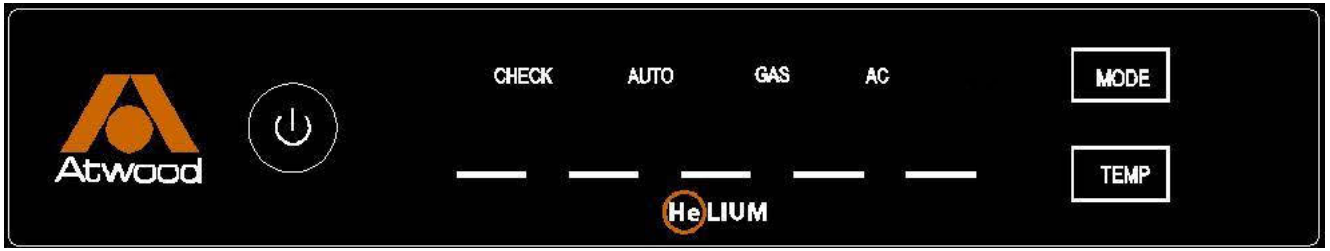
U-Tube Manometer - This is the most accurate device for measuring gas pressure. If you use a dial-type manometer, calibrated it periodically.

Multi-meter - This is the most versatile meter and will test continuity and 12VDC. These tests will allow one to verify voltage problems or faulty components. The entire electronic system can be tested with this meter.

U-TUBE MANOMETER
with 1/8" pipe nipple



MULTI-METER TO TEST CONTINUITY & VOLTAGE



CONTROL PANEL
The refrigerator control panel is located between the fresh food and freezer compartments of your refrigerator. The refrigerator control requires +12 volts DC to operate. There are three pushbuttons.

POWER ON – Pressing this pushbutton turns the refrigerator on and off.

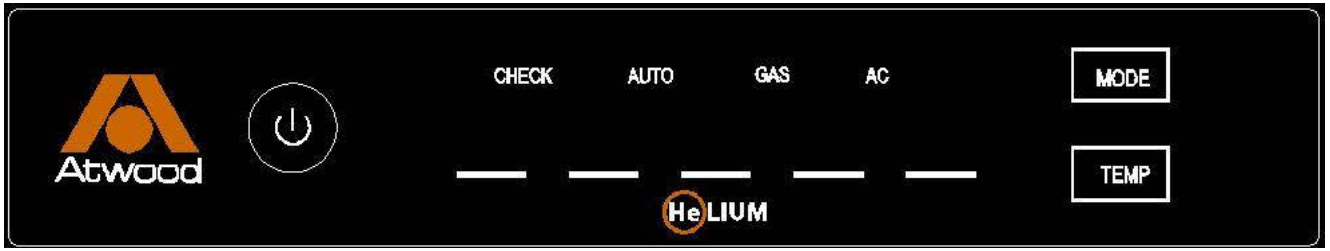
MODE – Pressing and holding this pushbutton cycles the mode selections from AUTO, manual GAS, and manual AC. Releasing the pushbutton selects the last mode displayed. The selected mode will be displayed for approx 5 seconds before all the mode indicators are turned off. The active mode can be displayed at any time by pressing and releasing the MODE pushbutton.

TEMP – Pressing and holding this pushbutton cycles the temperature settings from 1 through 5 with 5 being the maximum cool setting. Releasing the pushbutton selects the last temperature setting displayed. The selected temperature setting will be displayed for approx. 5 seconds before all the temperature indicators are turned off. The active temperature setting can be displayed at any time by pressing and releasing the TEMP pushbutton.

AUTO MODE
When the refrigerator is in the AUTO mode, the control automatically selects the best energy source which is available. When a more efficient energy source becomes available, the refrigerator automatically switches to the more efficient source. AC energy is considered the more efficient energy source and is the first choice selected by the control. Propane gas is the second choice and is selected in the AUTO mode only when AC energy is not available

GAS MODE
The GAS mode can be selected either automatically or manually. When switching to gas operation, the refrigerator control begins a 40 second trial ignition cycle. During this period, the control opens the gas safety valve and begins sparking the burner. If after 40 seconds the control fails to detect the presence of a flame, the control shuts off the gas safety valve and stops sparking the burner. The CHECK indicator on the control panel turns on indicating that the burner failed to ignite. The CHECK indicator can be reset by turning the refrigerator off and then back on again and a new 40 second trial ignition cycle begins. On initial start up or after changing a propane tank, it is possible that air in the gas supply lines will require 2 or 3 ignition trials before successfully lighting the burner. If after repeated attempts, the burner fails to ignite, stop and consult your local dealer or an authorized Atwood Service Center.

MANUAL MODES
The manual modes allow for selection of either the AC or GAS modes directly. If the selected mode's energy source is not available, the refrigerator is turned off, the CHECK is turned on and the selected mode indicator flashes on and off indicating which energy source is not available.



DOOR HANDLES
The door handles latch when closed to prevent the doors from opening during travel. When closing the doors, push each door into the refrigerator cabinet until you hear a distinct "click" sound which will indicate that the door is latched. To open a door, pull the handle away from the refrigerator cabinet to unlatch the handle.

During off-season storage, the handle has a storage latch which prevents the door from completely closing. Keeping the doors partially opened during long term storage prevents odors from building up in the cabinet. To engage the storage latch, open each door about 1/2 inch, hold the door handle in the open position, and push the storage latch into the cutout of the strike plate. Never use the storage latch as a travel latch because the doors will not be fully closed.

DOOR AJAR ALARM
This refrigerator has an alarm to alert you if the fresh food compartment door is not fully closed. If the door is left open for more than 2 minutes, the CHECK light will be lit and a beeper will sound a chirp approx. every 5 seconds until the door is closed.
The refrigerator will continue to operate normally throughout the door ajar alarm sequence.

MOISTURE DIVIDER HEATER
This refrigerator has a heater which is automatically controlled and prevents moisture from forming on the center divider located between the freezer and fresh food compartments.

BACKUP TEMPERATURE CONTROL SYSTEM
This refrigerator has a backup temperature control system which allows the owner to have variable temperature control of the refrigerator even if the temperature sensor should fail.

If the control cannot read the temperature sensor, the control uses the last selected temperature setting to control the refrigerator duty cycle and adjust the temperature accordingly.

THERMAL SWITCH MONITOR
This refrigerator has a thermal switch which serves as an overheating monitor.

TILT SENSOR TECHNOLOGY
This refrigerator control incorporates a patent pending tilt sensor which enables the control to constantly monitor the angle at which the refrigerator is operated. This feature protects the user from potential hazards attributed to prolonged operation at severe angles of inclination. This monitoring function is completely invisible to the user and only becomes apparent to the user in the rare event that the refrigerator has been operated for prolonged periods of time at severe tilt angles. Normal care in leveling of your vehicle will prevent this feature from ever being noticed.

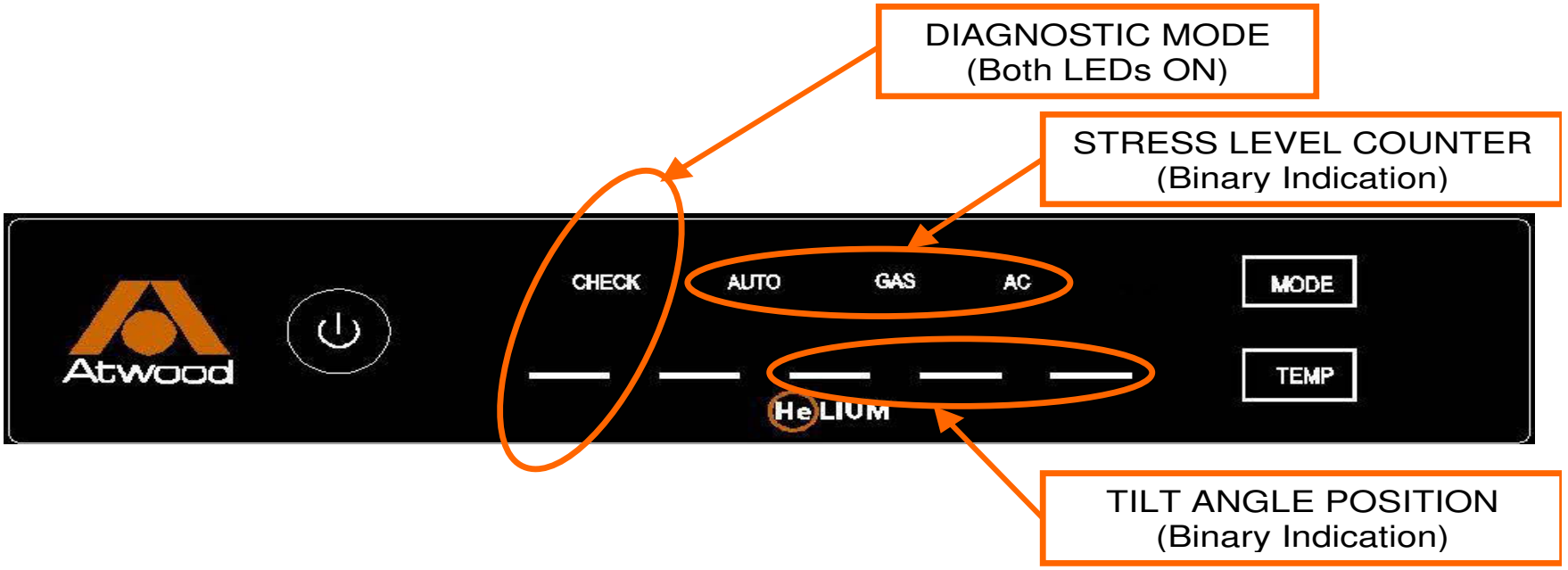
DIAGNOSTIC MODE WORK INSTRUCTION OF REFRIGERATOR rev 1

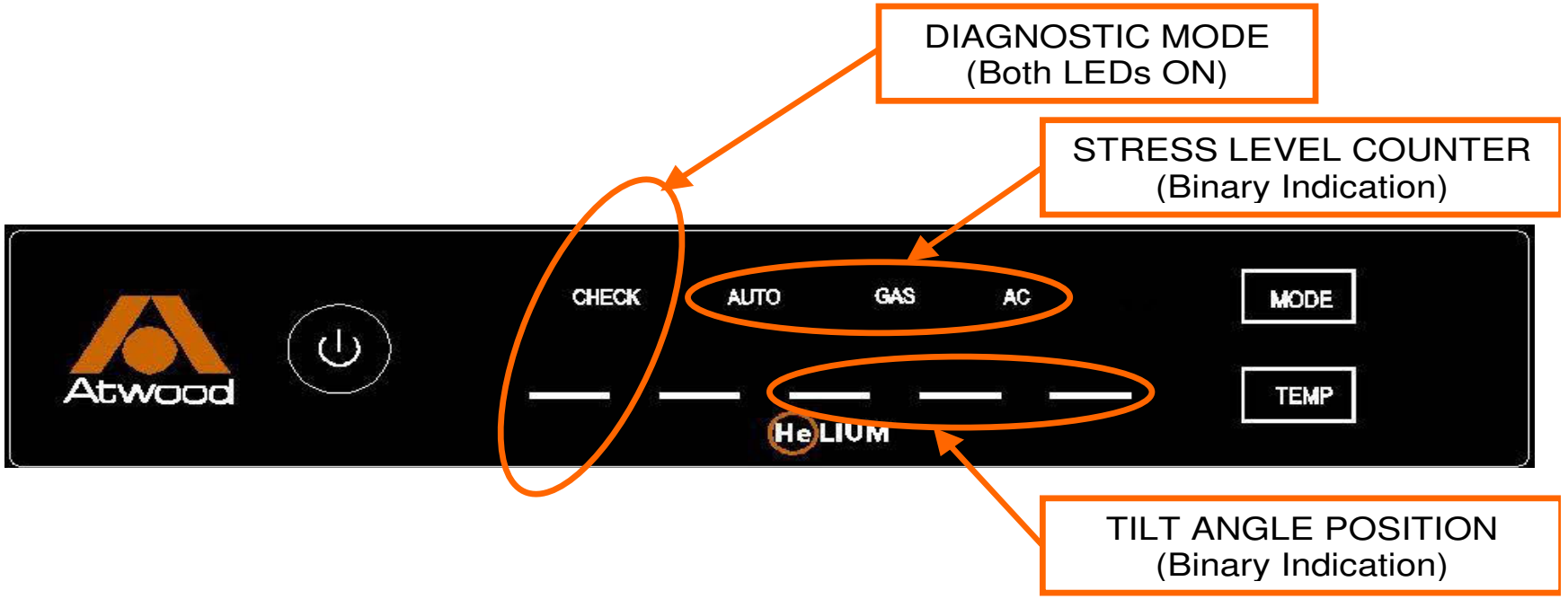
(NOTE: The diagnostic mode is only accessible from a normal, power on condition)

1. Make sure the refrigerator is powered on and functioning normally.

2. To enter the Diagnostic Mode, perform the following steps:

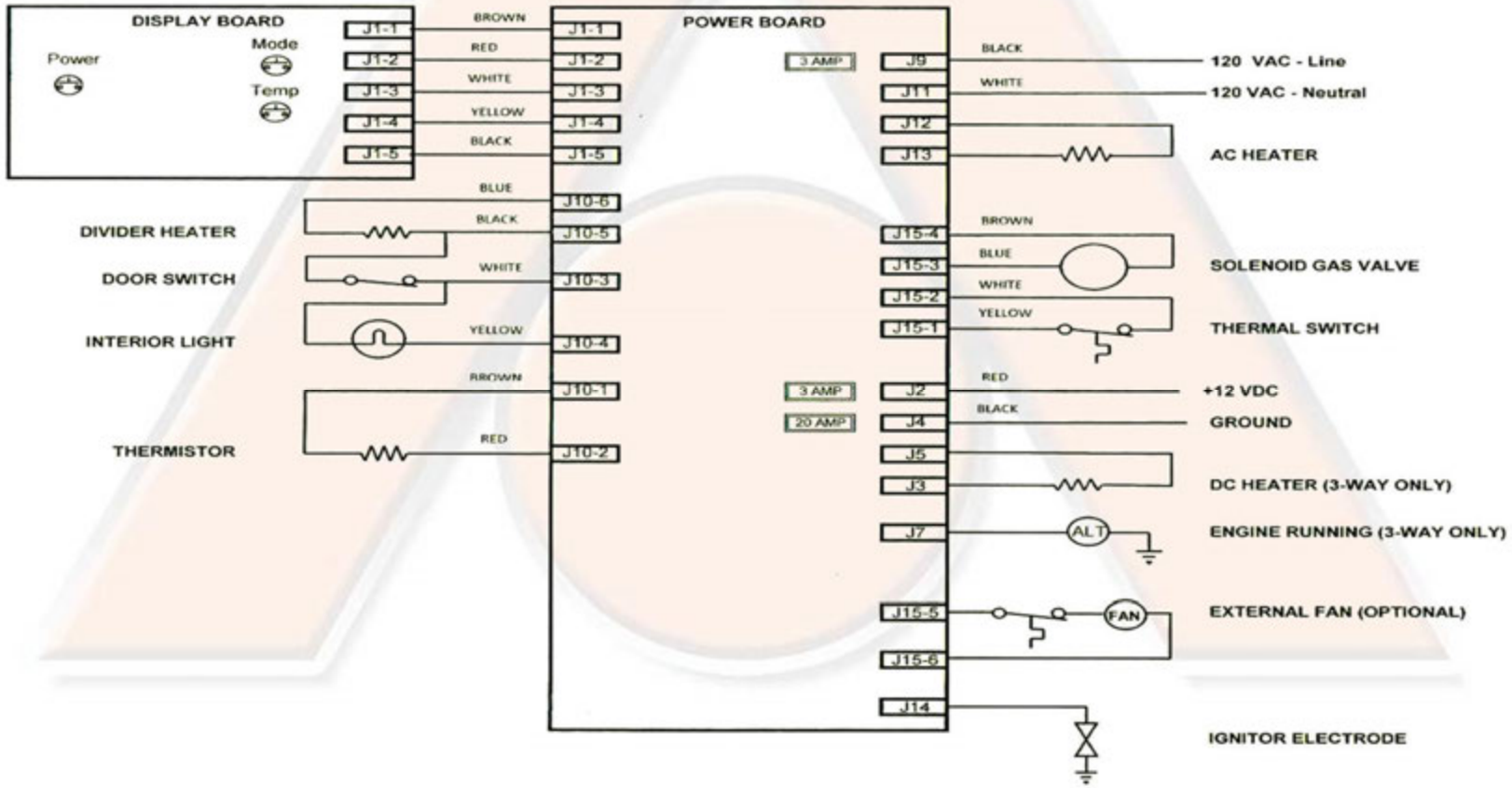
1. Press and hold both the TEMP and MODE pushbuttons together while watching the LEDs on the left hand side of the display board;
2. After about 2 seconds of holding both pushbuttons down, both the CHECK LED and the leftmost bar indicator on the temperature setting LEDs will turn on.
3. Release both the TEMP and MODE pushbuttons within 1 second of the two LEDs becoming lit and the display will be in the diagnostic mode.
    a) The CHECK and the leftmost bar both ON indicates that the display is in diagnostic mode
    b) The AUTO, GAS, and AC LEDs indicate the contents of the stress level counter in binary with the AC indicator being the least significant bit and the AUTO indicator being the most significant bit
    c) The 3 LEDs on the right-hand side of the temperature setting LEDs indicate the tilt position angle of the power board in binary with the rightmost LED being the least significant bit.
4. To exit the diagnostic mode and return to normal operation, press either the MODE or TEMP buttons.





4. Normally the tilt angle position is zero (all LEDs OFF) when the powerboard is mounted on the refrigerator and the refrigerator is standing vertical. As the powerboard is tilted approximately 5 degrees either to the right or the left, one rightmost LED will light. As the powerboard is tilted to 10 and 15 degree angles off of vertical, the tilt position will count up in binary to "010" and "011" respectively. When the refrigerator is returned to the vertical position, all three LEDs should again be OFF. This indicates that the tilt sensor is performing normally. If none of the LEDs turn on as the refrigerator is tilted thru these angles – you should contact an authorized service center immediately. If when the refrigerator and the powerboard are standing vertical and all three of the LEDs are not OFF – this indicates that the tilt calibration procedure may need to be performed. Please contact an authorized service center.
5. Normally the stress level counter is zero (all LEDs OFF) indicating that the control has not been operated at severe position angles for any length of time. It is possible that the counter might display "001" or a "010" – this indicates that the refrigerator had been operated at a severe angle for short periods of time. The owner should be alerted that better care of leveling needs to be taken when operating his refrigerator particularly during long-term storage. If the counter displays "110" or "111" - the owner should contact an authorized service center immediately as the refrigerator has been operated for long periods of time at severe position angles.

Power Board Operation



Sequence of Operations

Control Sequence of Operation

The ON/OFF pushbutton allows the refrigerator control to power up. The indicator lights on the display board will light up and display the MODE and the current TEMP SETTING.

The refrigerator will be in one of three modes: AC manual mode, GAS manual mode, AUTO mode

AC Manual Mode
If the cabinet temperature is higher than 60°F, then 110VAC is applied to the AC heater and 110VAC can be read across terminals J11 and J13. The AC heater creates heat inside the generator portion of the cooling system (inside the canister) which causes the cabinet fin to get colder which in turn lowers the temperature in the freezer and the refrigerator cabinet. The cabinet will continue to get colder until it reaches the LOW TEMP to TURN OFF thermostatic setpoint determined by the TEMP SETTING 1 thru 5 as detailed on the table on page 7.

When the cabinet fin temperature reaches the lowest point for the selected TEMP SETTING – 110VAC is removed from the AC heater resulting in a reading of 0 VAC across the terminals J11 and J13. The AC heater remains OFF until the cabinet fin temperature rises to the HIGH TEMP to TURN ON thermostatic setpoint determined by the TEMP SETTING 1 thru 5 as detailed on the table on page 7.

Sequence of Operations *cont.*

GAS Manual Mode

If the cabinet temperature is higher than 60°F, the GAS solenoid valve is energized and the control begins a 40 second ignition trial period. During this 40 second time period, the control attempts to ignite the burner. During this 40 second time period there are 3 separate bursts of ignition tries, specifically a 20 sec burst followed by a short pause followed by a second 10 sec burst followed by a short pause followed by a third 8 sec burst. If after 40 seconds the control cannot ignite the burner, then the control enters a CHECK mode with the CHECK indicator light being lit, the GAS indicator light flashes, and the gas solenoid valve is de-energized. This can be reset by turning OFF the refrigerator for 5 seconds and then turning the refrigerator back ON and the 40 second ignition trial begins again.

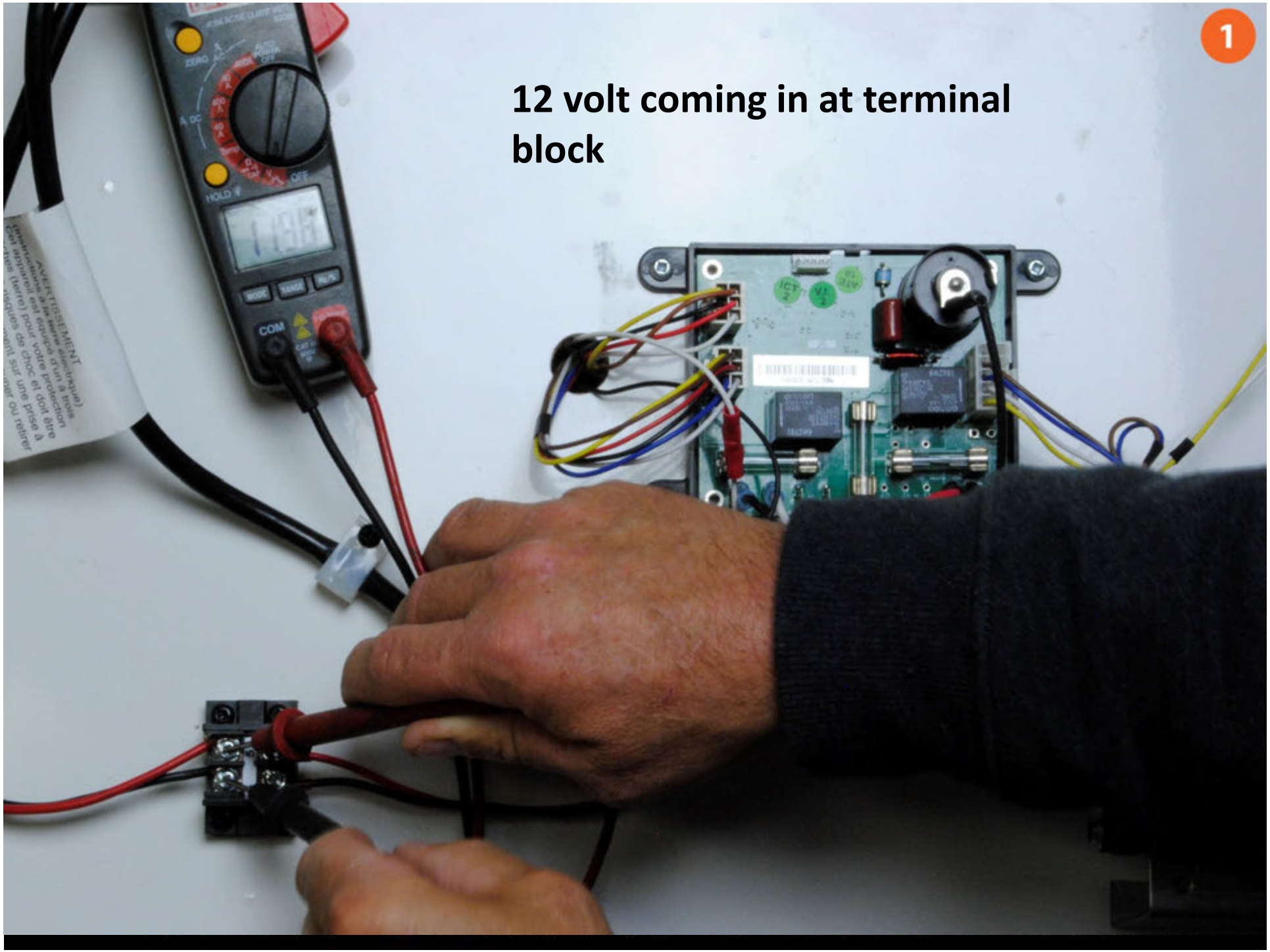
Once the burner is ignited, the gas burner creates heat inside the generator portion of the cooling system (inside the canister) which causes the cabinet fin to get colder which in turn lowers the temperature in the freezer and the refrigerator cabinet. The cabinet will continue to get colder until it reaches the LOW TEMP to TURN OFF thermostat setpoint determined by the TEMP SETTING 1 thru 5 as detailed on the table on page 7.

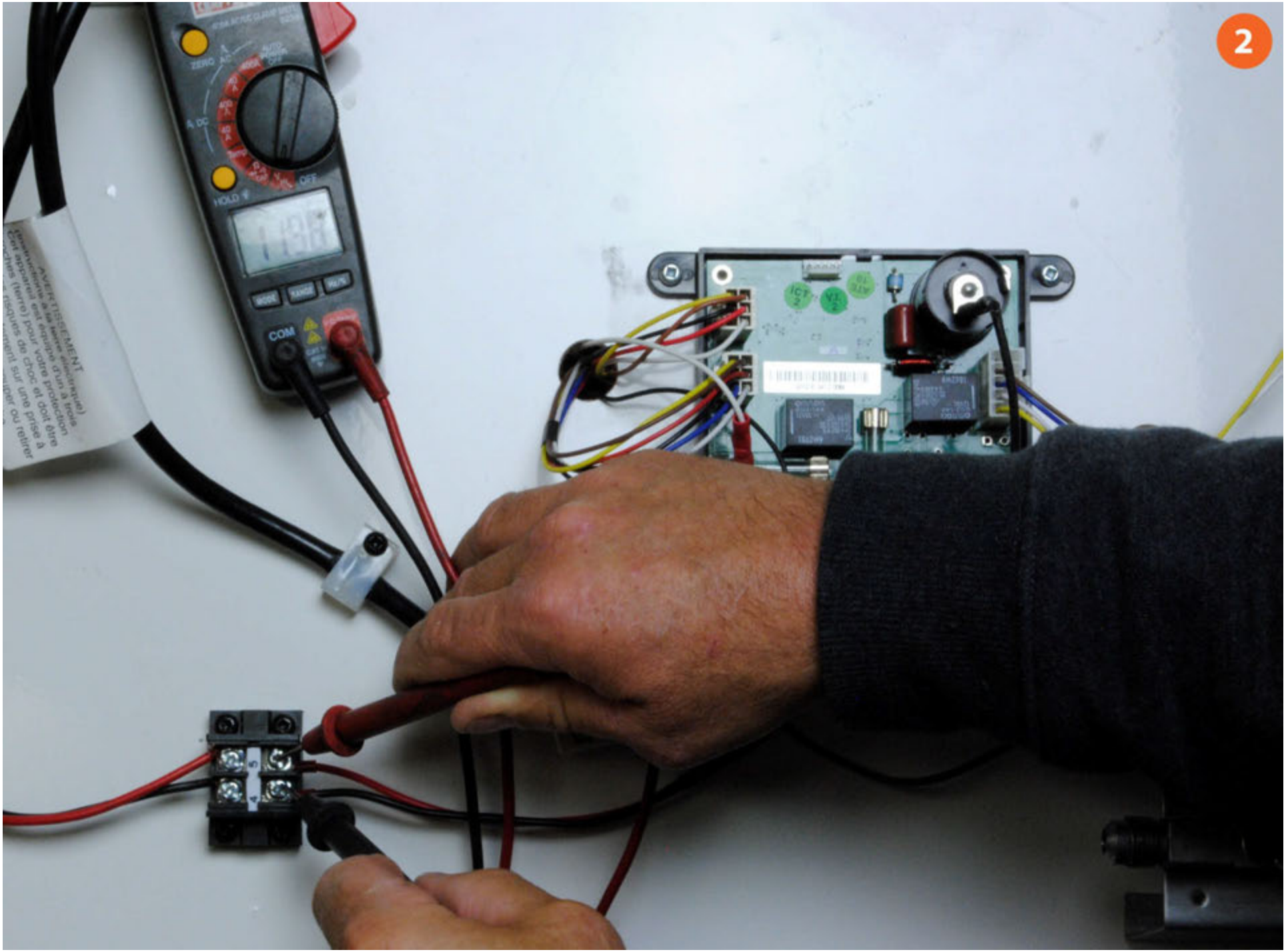
When the cabinet fin temperature reaches the lowest point for the selected TEMP SETTING – the gas solenoid valve is shut off and the flame at the burner is extinguished. The gas burner remains OFF until the cabinet fin temperature rises to the HIGH TEMP to TURN ON thermostatic setpoint determined by the TEMP SETTING 1 thru 5 as detailed on the table on page 7.

There is a high temperature cut-off switch which is located on the canister several inches above the burner box. This switch is normally CLOSED. The +12VDC power for the output drivers on the control board is routed thru this switch. If the cooling system has an abnormally high generator temperature the high temperature cut-off switch OPENS and +12VDC is removed to the output drivers – disabling and turning OFF both the AC heater and the gas solenoid valve. The display board will light the CHECK light and all of the mode indicator lights across the top of the display board.

AUTO Mode

In the Automatic mode, if AC is present and available to the control board – the control goes into AC mode and energizes the AC heater in the same manner as in the AC Manual mode. If AC is not available, the control automatically switches into GAS mode and energizes the gas solenoid valve and begins a 40 sec ignition trial in the same manner as the GAS Manual Mode. The only difference is that is AC becomes available while the refrigerator is in AUTO GAS, the control switches automatically to AUTO AC mode.


1
12 volt coming in at terminal block


2
ZERO
OFF
HOLD
COM

```
ERROR: stackunderflow
OFFENDING COMMAND: ~

STACK:
```

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www.myrvworks.com/manuals

Over the years of running a mobile RV repair service, having a dedicated place to access service manuals for all the different appliances and components found on RVs was something that I always had a desire to create.

I hope this resource makes your RV repairs easier, as it has mine, but please be careful and follow proper safety practices when attempting to repair your own RV.

If in doubt, please consult with a professional RV technician!

DARREN KOEPP - OWNER, MY RV WORKS, INC.

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