ACCS
Atwood Comfort Control System
By: ATWOOD MOBILE PRODUCTS
Agenda

- Introduction
- Overview of components
- Command Center
- Modes Of Operation
- Trouble Shooting
Introduction

- ACCS is a state-of-the-art climate control system.
- This presentation is designed to:
  - Give you an overview of ACCS components
  - Demonstrate how components interact and function.
Overview

- The ACCS is used to manage the climate in each vehicle by controlling all of the:

Control all of these appliances from one location!

- All standard furnaces, including the New Atwood Excalibur XT™ 2-Stage Furnace
- Standard 3-stage and standard 2-stage air conditioners
- Standard 2-stage and standard 1-stage air conditioners with heat pump
- Electric heat strip
- Hydronic heating systems
Overview

- The ACCS is used to manage the climate in each vehicle by controlling all of the:
  - Air Conditioning Units, Gas Heating Appliances
Components

- Command Center
Components

- Control Board
Components

- Control Board
Components

- Remote Sensor

Remote Sensors
Atwood Zone Control Modules (AZCM) provide the flexibility to configure zones throughout the vehicle.
Components

- RJ-45 Cable CAT-5
  - TWISTED PAIR
  - SHIELDED
INSTALLATION

- Command Center
- Zone Control
- Communication Cable
- 12 VDC Low Voltage Connections
- 120 VAC High Voltage Connections
- Remote Thermistors
- Freeze Sensor
- No Ambient Sensor (RVP)
Zone Control Dip Switches / Micro-interrupteurs de contrôle de zone

- **HEAT STRIP**
- **Zone b1**
- **Zone b0**
- **HEAT PUMP**
- **FURNACE**
- **2 STG/STD**
- **AC b1**
- **AC b0**

### ON

#### IF:
- **ZONE 1** OFF
- **ZONE 2** OFF
- **ZONE 3** ON
- **ZONE 4** ON

#### IF:
- **CARRIER DOMETIC RVP**
- **OFF**
- **OFF**
- **ON**
- **OFF**

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Air Conditioner Select
If furnace is 2-stage, turn "OFF", if furnace is standard, turn "ON"
If zone has a furnace, turn "ON"
If zone has a heat pump, turn "ON"
If zone has a heat strip, turn "ON"

NOTE: Switches are pictured in "OFF" position

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Sélection climatiseur
Si l'appareil est bi-étage, mettre sur "OFF",
   si l'appareil est standard, mettre sur "ON"
Si zone équipée d'un appareil de chauffage, mettre sur "ON"
Si zone équipée d'une thermopompe, mettre sur "ON"
Si zone équipée d'une bande chauffante, mettre sur "ON"

REMARQUE: Les interrupteurs sont sur "OFF" dans les illustrations
Command Center

- The Command Center is the backbone of the ACCS system.
  - Allows the user to program the running of individual “Zones”, up to four zones. One zone per air conditioner.
Command Center Display

- Fan Only
- Cool
- Furnace
- Off
- Heat Strip
- Heat Pump

Set Point: 72°F
Auto: High, Med, Low
Defrost
Aux. Heat
Zone 1 2 3 4
Command Center

- Liquid Crystal Display (LCD) displays the current room temperature with set point in Fahrenheit or Celsius, mode of operation, and fan speed setting.
- The LCD identifies each zone with all activity in any particular zone.
Command Center

- **OFF/ON SWITCH:**
  - Main system on/off control
  - 10 second programming period and the letters "Pr" will display on the LCD. After the programming period, the CC will display the current settings for zone one.
Command Center

- **ZONE BUTTON:**
  - Increments the zone display.

- **MODE BUTTON SELECTS:**
  - FAN ONLY, FAN ONLY COOL, FAN ONLY FURNACE, COOL, FURNACE, OFF, HEAT STRIP, OR HEAT PUMP.
  (The number of available modes is determined by the system installed in the vehicle.)
Command Center

- UP/DOWN BUTTONS:
  - SETS THE FAN SPEED IN EACH ZONE
  - SETS THE TEMPERATURE IN EACH ZONE
Command Center

- **APPLIANCE OPERATION INDICATOR:**
  - The small line below the number designating zone is turned on when there is an appliance active in a zone. This dash remains turned on for each zone regardless of what zone is currently being programmed.
Command Center

- LOAD SHED INDICATOR:
  - A small dot will flash when a Load has been Shed. This flashing dot indicates the compressor in that zone is temporarily suspended until such time as sufficient current is again available.
MODES OF OPERATION

● FAN ONLY
  - The FAN ONLY mode is the best way to exchange the air throughout your vehicle because both the air conditioner and furnace fans are operated to maximize the amount of air circulation.
## MODES OF OPERATION

- **FAN ONLY**

<table>
<thead>
<tr>
<th>FAN ONLY Fan Speed</th>
<th>Resulting Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH</td>
<td>The air conditioner fan and furnace fan are run on high speed.</td>
</tr>
<tr>
<td>MED*</td>
<td>The air conditioner fan is run on medium and the furnace fan is run on low.</td>
</tr>
<tr>
<td>MED* (with 2 blower heat pump)</td>
<td>The air conditioner fan is run on low and the furnace fan is run on high.</td>
</tr>
<tr>
<td>LOW</td>
<td>The air conditioner fan is run on low and the furnace fan is run on low.</td>
</tr>
</tbody>
</table>
MODES OF OPERATION

● FAN ONLY, COOL
  - In this mode both FAN ONLY and COOL are illuminated on the LCD. This mode runs the air conditioner fan only at the chosen fan speed (HIGH, MED, or LOW depending on the system installed in your vehicle).
MODES OF OPERATION

● FAN ONLY, FURNACE:
  - This mode is only available if the zone is equipped with an Atwood Excalibur XT 2-Stage Furnace.

  The Excalibur XT 2-stage furnace is capable of running the fan without gas heating. The available fan speeds are HIGH and LOW.
MODES OF OPERATION

● COOL

  – This mode runs the air conditioner in cooling. The operation is different depending on what fans speed is selected.

<table>
<thead>
<tr>
<th>Difference between SET POINT and Room Temperature</th>
<th>COOL, AUTO Fan Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°F to 4°F</td>
<td>LOW</td>
</tr>
<tr>
<td>4°F to 8°F</td>
<td>MED (3-blower A/C only)</td>
</tr>
<tr>
<td></td>
<td>HIGH (2-blower A/C)</td>
</tr>
<tr>
<td>Greater than 8°F</td>
<td>HIGH</td>
</tr>
</tbody>
</table>
MODES OF OPERATION

● FURNACE
  – Atwood Excalibur XT 2-Stage Furnace has more functions to choose from. With a 2-stage furnace, you can select between AUTO, HIGH, or LOW.
  – HIGH and LOW to cycle the furnace (in high or low BTU) on and off to maintain the selected set point.
**MODES OF OPERATION**

- **FURNACE**

<table>
<thead>
<tr>
<th>Difference between SET POINT and Room Temperature</th>
<th>FURNACE, AUTO Fan Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°F to 4°F</td>
<td>LOW</td>
</tr>
<tr>
<td>Greater than 4°F</td>
<td>HIGH</td>
</tr>
</tbody>
</table>

**OFF:** When the selected zone is turned off, all connected appliances will shut down and LCD will display the room temperature for that zone.
MODES OF OPERATION

- **HEAT STRIP**: This mode is only available with air conditioners that are equipped with an electric heat strip. The operation is different depending on what fan speed is selected.

- **HEAT STRIP, AUTO**: The fan blower in the air conditioner is cycled on and off with the heat strip. The fan speed is LOW. Notice that the unit enters an auxiliary heat (AUX. HEAT) mode if the differential is too large for the heat strip to overcome.
MODES OF OPERATION

- HEAT STRIP, AUTO, AUX. HEAT: If the room temperature falls below the set point by more than 6°F, the unit will turn off the heat strip and turn on the gas furnace. AUX. HEAT will be illuminated on the LCD screen. The gas furnace will run in HIGH until the room temperature rises to 5°F below the set point. At that point, the gas furnace will turn off and the heat strip will begin to operate again. If this happens five times, the heat strip will be locked out for two hours and only the gas furnace will operate.
MODES OF OPERATION

- **HEAT STRIP, MED/LOW:** Only those fan speeds available with the current system will be available to choose on the ACCS. The fan blower in the air conditioner will remain on in the selected fan speed and the heat strip will be cycled on and off to maintain the room temperature. Auxiliary Heat is not available in these fan speeds.
MODES OF OPERATION

- **HEAT PUMP**: This mode is only available with air conditioners that are equipped with an electric heat pump. The operation is different depending on what fan speed selected.

- **HEAT PUMP, AUTO**: The fan blower in the air conditioner is cycled on and off with the heat pump. The fan speed is set to LOW.
MODES OF OPERATION

- HEAT PUMP, HIGH/LOW: Only those fan speeds available with the current system will be available to choose on the ACCS. The fan blower in the air conditioner will remain on in the selected fan speed and the compressor will be cycled on and off to maintain the room temperature.
GREEN DOT PARTS

- RED CIRCUIT BOARDS LATEST REVISION.
COMMUNICATION

- The ACCS system utilizes the I2C-bus.
FAILURE MODES

- LOCK OUT
  - DISPLAY FREEZES
  - LOAD SHED LOOKS A LOT LIKE LOCK OUT
  - LOCK OUT IS A COMMUNICATION FAILURE
FAILURE MODES

- THERMISTOR LOCATION
- THERMISTOR OPEN
  - WILL REVERT TO COMMAND CENTER FOR THAT ZONE
FAILURE MODES

● GROUND PROBLEMS
  – POOR GROUND CONNECTION MAY RESULT IN ZONE CONTROL SOURCING GROUND THROUGH COMMUNICATION CABLE
FAILURE MODES

● THERMISTOR
  – THERMISTOR LOCATION ON BOARD
    ● AMBIENT
    ● REMOTE
  – AMBIENT CONNECTION IS NOT USED IN RVP
Atwood ACCS
Thermistor
Resistance Chart

<table>
<thead>
<tr>
<th>T (in F)</th>
<th>R(k Ohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>35.827</td>
</tr>
<tr>
<td>35</td>
<td>30.921</td>
</tr>
<tr>
<td>40</td>
<td>26.765</td>
</tr>
<tr>
<td>45</td>
<td>23.234</td>
</tr>
<tr>
<td>50</td>
<td>20.225</td>
</tr>
<tr>
<td>55</td>
<td>17.653</td>
</tr>
<tr>
<td>60</td>
<td>15.449</td>
</tr>
<tr>
<td>65</td>
<td>13.554</td>
</tr>
<tr>
<td>70</td>
<td>11.921</td>
</tr>
<tr>
<td>75</td>
<td>10.510</td>
</tr>
<tr>
<td>77</td>
<td>10.000</td>
</tr>
<tr>
<td>80</td>
<td>9.288</td>
</tr>
<tr>
<td>85</td>
<td>8.226</td>
</tr>
<tr>
<td>90</td>
<td>7.302</td>
</tr>
<tr>
<td>95</td>
<td>6.496</td>
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<tr>
<td>100</td>
<td>5.790</td>
</tr>
<tr>
<td>105</td>
<td>5.172</td>
</tr>
<tr>
<td>110</td>
<td>4.629</td>
</tr>
<tr>
<td>115</td>
<td>4.151</td>
</tr>
<tr>
<td>120</td>
<td>3.730</td>
</tr>
<tr>
<td>125</td>
<td>3.357</td>
</tr>
</tbody>
</table>
FAILURE MODES

● TEMPERATURE OVERSHOOT
  – ALMOST ALWAYS A THERMISTOR PROBLEM
    ● LOCATION
    ● UNPLUGGED
      – REVERTING TO COMMAND CENTER
FAILURE MODES

- A/C SCENARIO
  - TEMP DROPS RAPIDLY
  - TURN ON AIR 50 deg WITHIN 30 SEC.
  - REMOTE SENSOR IS REVERSED WITH FREEZE SENSOR
  - FREEZE SENSOR PLUGGED INTO REMOTE CONNECTOR
TROUBLESHOOTING

1. Reset System by turning it off and on.
2. Determine the appliances in each zone.
3. Check DIP switches
4. Check Wiring
5. While depressing the Mode and Zone button, turn the switch “ON” position. When “Fr” appears on the LCD, release the buttons and wait for 10 seconds.
6. Operate and confirm all zones and functions operate correctly.
Command Center

ERROR CODE MESSAGES:

- Alternating “lb/current temperature”, indicates a battery level/power level too low for the system to function properly. Correct the battery or power levels to the proper level of 12 volts.

- “:” these segments of the numbers in the LCD flashing indicates the Command Center has a faulty thermistor and is not sensing the temperature correctly for operation. Replace Thermistor or Command Center.
LOAD SHED

- LOAD SHED
  - 50 AMP Load Shed

- SEQUENCE
  - WASHER/DRYER
  - WATER HEATER
  - ZONE 3
QUESTIONS?
Where to Get More Information

- IOM
- INSTALATION MANUAL
- ATWOOD MOBILE PRODUCTS
  1120 N. MAIN STREET
  ELKHART, IN 46514
  (574)262-2655
This manual has been provided courtesy of
My RV Works, Inc.
www.myrvworks.com

You can find more RV service manuals here:
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!

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