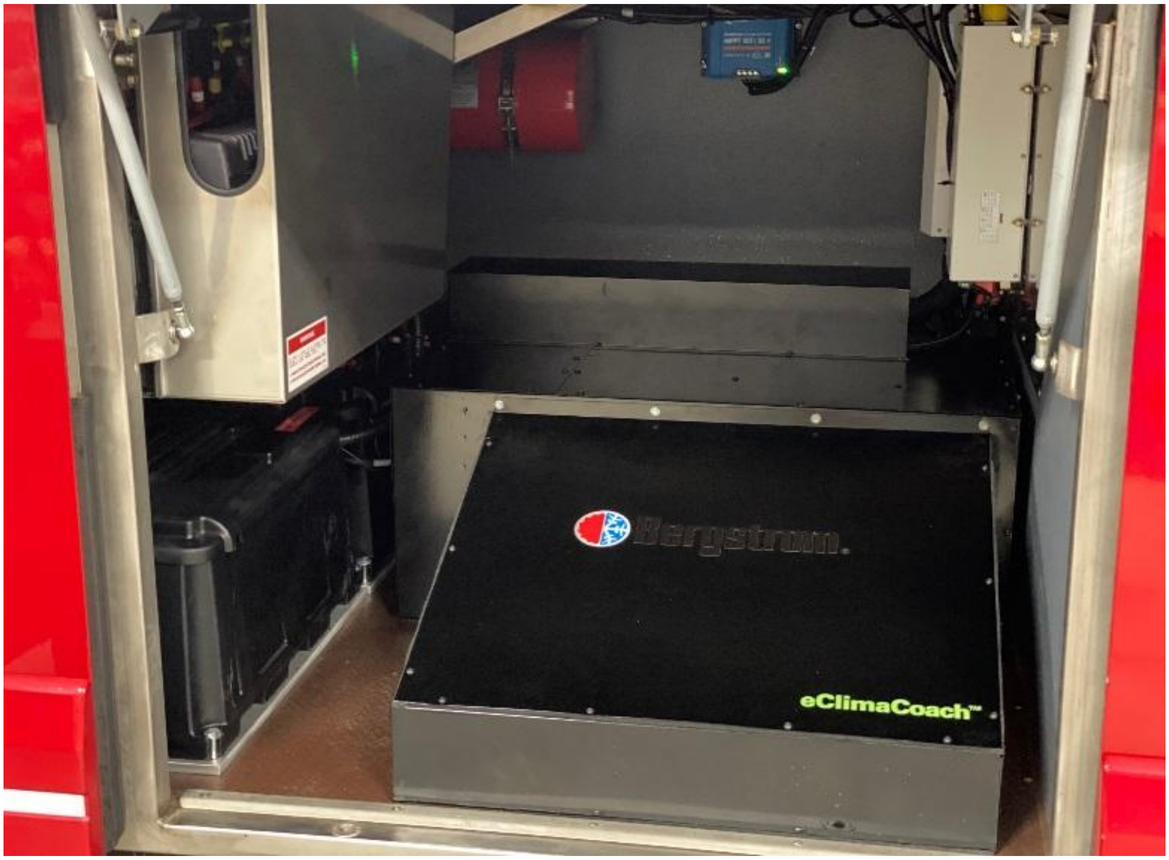
eClimaCoach

Service Manual

All Vehicles

Updated: 2/10/2026



Note (Not applicable for hard copies):

1. Phrases in blue are “**hyperlinks**” that allow user to jump directly to the respective section. Hold “**ctrl**” and click the link to use.
2. All section titles are “**hyperlinks**” allowing the user to jump back to the top of the document.

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Disclaimer

WARNING!!

The technical information provided in this service guide is intended for use by properly trained HVAC service personnel, who can ensure a safe and properly operating system. It is assumed that the user of this guide is trained and experienced in basic refrigeration principles, in addition to being familiar with Bergstrom eClimaCoach systems. Technicians who repair or service motor vehicle A/C systems must be certified by Section 609 (MACS) approved by the EPA.

Before any air conditioning service is started, it is the technician's responsibility to determine what type of refrigerant is contained in the system. Component marking and/or service port peculiarities are good places to start to identify the contents.

Bergstrom advises that the usual precautions associated with servicing a motor vehicle be exercised when servicing the HVAC system and assumes no liability regarding vehicle damage or personal injury. Additionally, Federal and any Local regulations regarding the handling and use of refrigerants should be always complied with.

NOTES:

TECHNICAL SUPPORT IS PROVIDED TO CERTIFIED TECHNICIANS ONLY.

THE AIR CONDITIONING SYSTEM CONTAINS REFRIGERANT R134A, UNDER HIGH PRESSURE, AND SHOULD BE SERVICED BY ONLY QUALIFIED PERSONNEL.

REPAIRS THAT ALTER THE DESIGN OF THE BERGSTROM SYSTEM, INCLUDING USE OF NON-BERGSTROM SUPPLIED PARTS, WILL VOID THE WARRANTY AND ANY BERGSTROM LIABILITY FOR THE HVAC SYSTEM.

THE BERGSTROM HVAC SYSTEM SHOULD BE SERVICED BY A FULLY TRAINED AND ENVIRONMENTALLY LICENSED TECHNICIAN. FAILURE TO AGREE TO ALL STATEMENTS COULD RESULT IN SERIOUS INJURIES, FINES AND POSSIBLE VOIDING OF ANY WARRANTIES.

Picture Symbol 

Caution: If installation care is not taken, damage to HVAC unit could occur. Please read all directions carefully!

Service

Safety Precautions & Warnings

Servicing Refrigerant Systems:

1. Always wear the proper protective eyewear and clothing before working on any refrigeration system. Remember, refrigerant in the air conditioning system can reach pressures of over 500 PSI – if one of those lines bursts while you're working on the system, it can cause serious injury. If refrigerant gets in your eye, it can freeze your eyeball, causing permanent damage or blindness.

2. Always wear work gloves whenever you're working with condensers or evaporators. The aluminum edges are sharp and can cause serious cuts.

3. Always stay clear of the belts and fan blade and be careful revving the engine on a vehicle with a flex fan – damaged blades have been known to come flying off without a moment's warning.

4. Always use a DOT-approved tank for storing used and recycled refrigerants. Look for the Department of Transportation stamp: DOT 4BW or DOT 4BA.

5. Always provide plenty of ventilation when using any electrical testing, recycling, or recovery equipment. Avoid breathing any refrigerant vapor, lubricant vapor, or mist. Exposure to these (particularly PAG oil mist) may irritate your eyes, nose, and throat.

6. Always follow the instructions for your recycling equipment; failure to follow those directions could end up causing personal injury or damaging your equipment. Never perform any maintenance or service on your recycling equipment while the unit is plugged in (unless directed to do so) or without first consulting with authorized service personnel. Removing internal fittings and filters can release pressurized refrigerant. Use care and always wear appropriate safety wear.

7. Never use compressed air to leak test or pressure test an R-134a/1234yf system or service equipment. Under certain conditions, pressurized mixtures of R-134a/1234yf and air can be combustible. Always follow the proper procedures to prevent any safety hazards. In addition, shop air injects moisture into the system, and a pressure surge could damage the evaporator.

8. Microprocessors and computers are susceptible to damage from electrostatic discharge. Always use a static strap when working with these components and always take the necessary precautions to prevent damage to electronic components.

Note: To prevent cross contamination between refrigerants, verify that the A/C system has the correct label and unique service fittings designed for R134a/1234yf refrigerant. If you're ever in doubt, check the system with a refrigerant identifier.

Service

Contact Information

2390 Blackhawk Road
Rockford, IL 61109
USA

Contact	Phone	E-Mail
Technical Support	866 204 8570	producttechsupport@bergstrominc.com
Customer Service	800 499 6849	customerservice@bergstrominc.com
Sales	800 499 6849	jporter@bergstrominc.com
Parts	800 499 6849	parts@bergstrominc.com

Main Website

bergstrominc.com/us/

NOTE: If you are looking for installation instructions, refer to the installation manual. It can be found here:

https://bergstrominc.com/us/manuals-and-support-installation-manuals/

Approved Manufacturers Website

Merlin Solar – www.merlinsolar.com

Service

Request for Technical Support Questionnaire

DESCRIPTION OF COMPLAINT:

____

____

____

DEALER:

____

CONTACT/TECH:______________________________PHONE #:

____

CHASSIS:______________________MODEL YR:________MODEL:

____

VEHICLE MANUFACTURER: ____

PRESSURE GAUGE READINGS:

LOW___________PSIG @ HIGH BLOWER SPEED

HIGH__________PSIG @ HIGH BLOWER SPEED

AIR TEMPERATURE & HUMIDITY READINGS:

HUMIDITY LEVEL:______%RH

RECIRCULATION INLET AIR TEMPERATURE:______________ºF

DISCHARGE AIR TEMPERATURE (VENT CLOSEST TO BASE UNIT):____________ºF

SUBTRACT THE TWO AIR TEMPERATURES =______________ºF DIFFERENTIAL

Comments

eClimaCoach System

System Summary

The Generation 2 - eCLIMACOACH is a powerful 24 VDC system that keeps the coach passenger compartments cool in hot weather without having to idle the coach engine – and without a genset. This system is intended to provide pre-cooling, maintenance cooling, or provide a cooling boost the main coach A/C system. The system consists of an electrified compressor/condenser unit installed in the underneath luggage bay, 2 evaporator units installed in the parcel rack, and an operator interface installed near or above the driver. It not only dramatically reduces fuel burned, but is also extremely environmentally friendly.

Note: The Generation 2 – eCLIMACOACH A/C unit will not pull down a hot bus that has been sitting in the sun without the factory A/C running. It is designed to maintain a low temperature in leiu of idiling the vehicle.

WARNING: The eClimaCoach unit must remain upright at all times. DO NOT TILT. The refrigerant inlet/outlet at the top of the unit should be capped when not in use.

The eClimaCoach unit is shipped under pressure. Use caution when removing shipping caps.

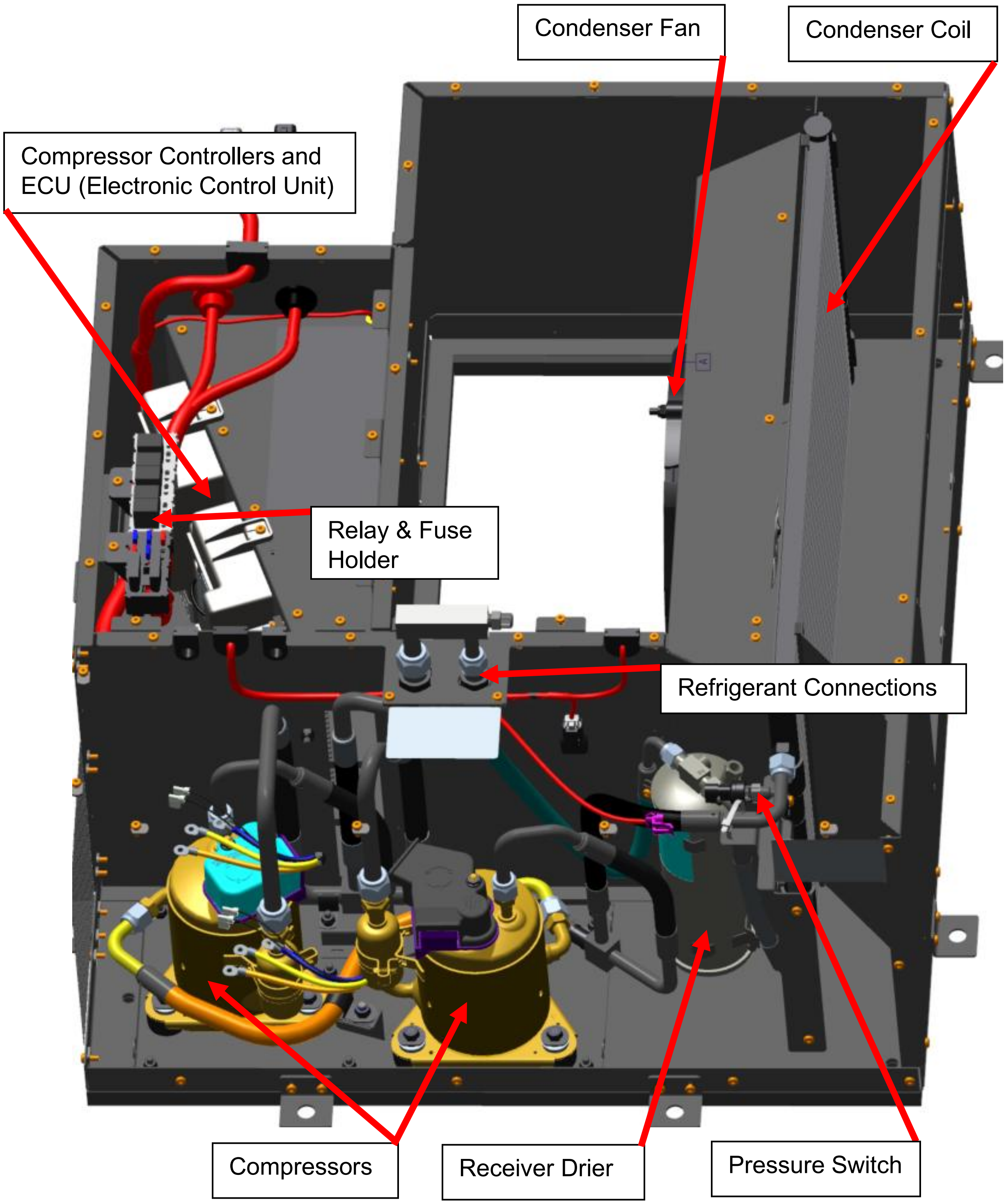
System Specifications

Performance – 8.7 kW cooling (peak)

Power – 2.4 kW (peak)

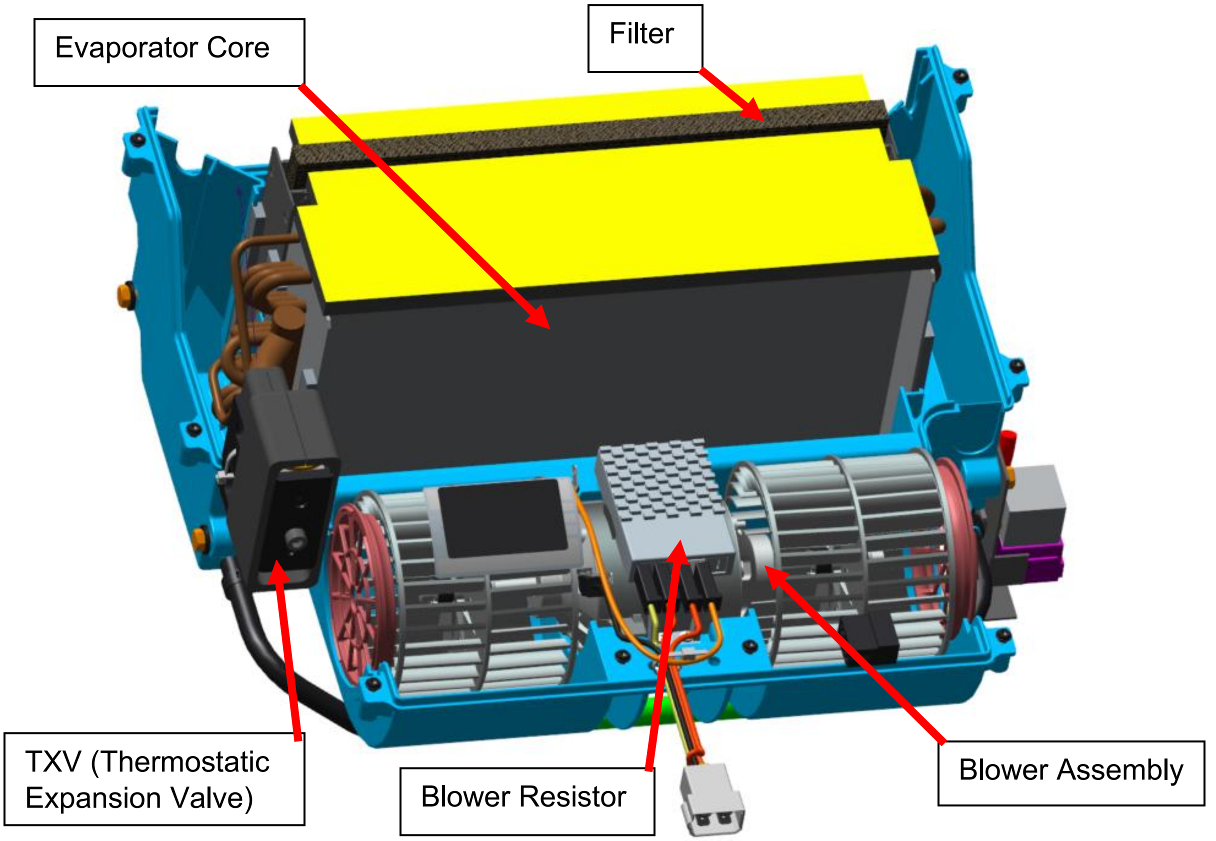
Internal Components

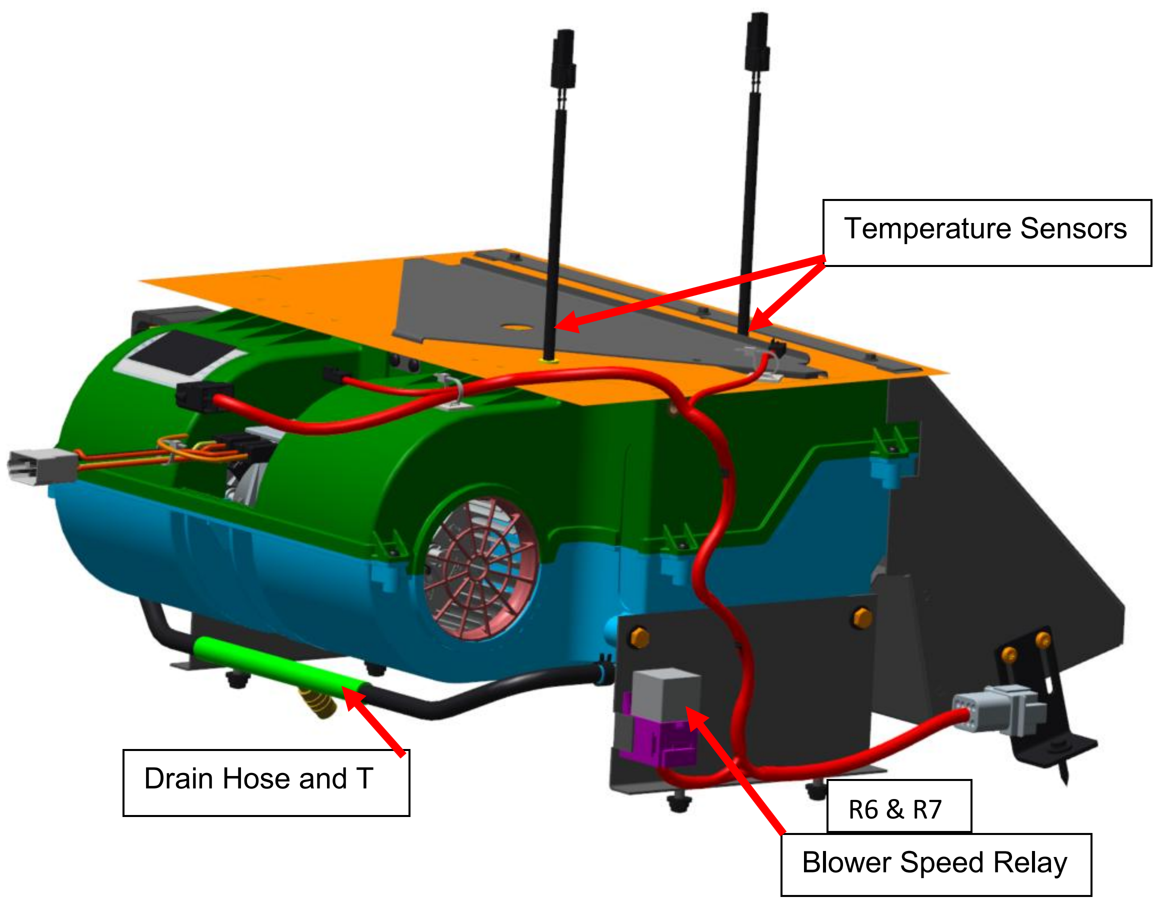
Compressor/Condenser Unit



eClimaCoach System

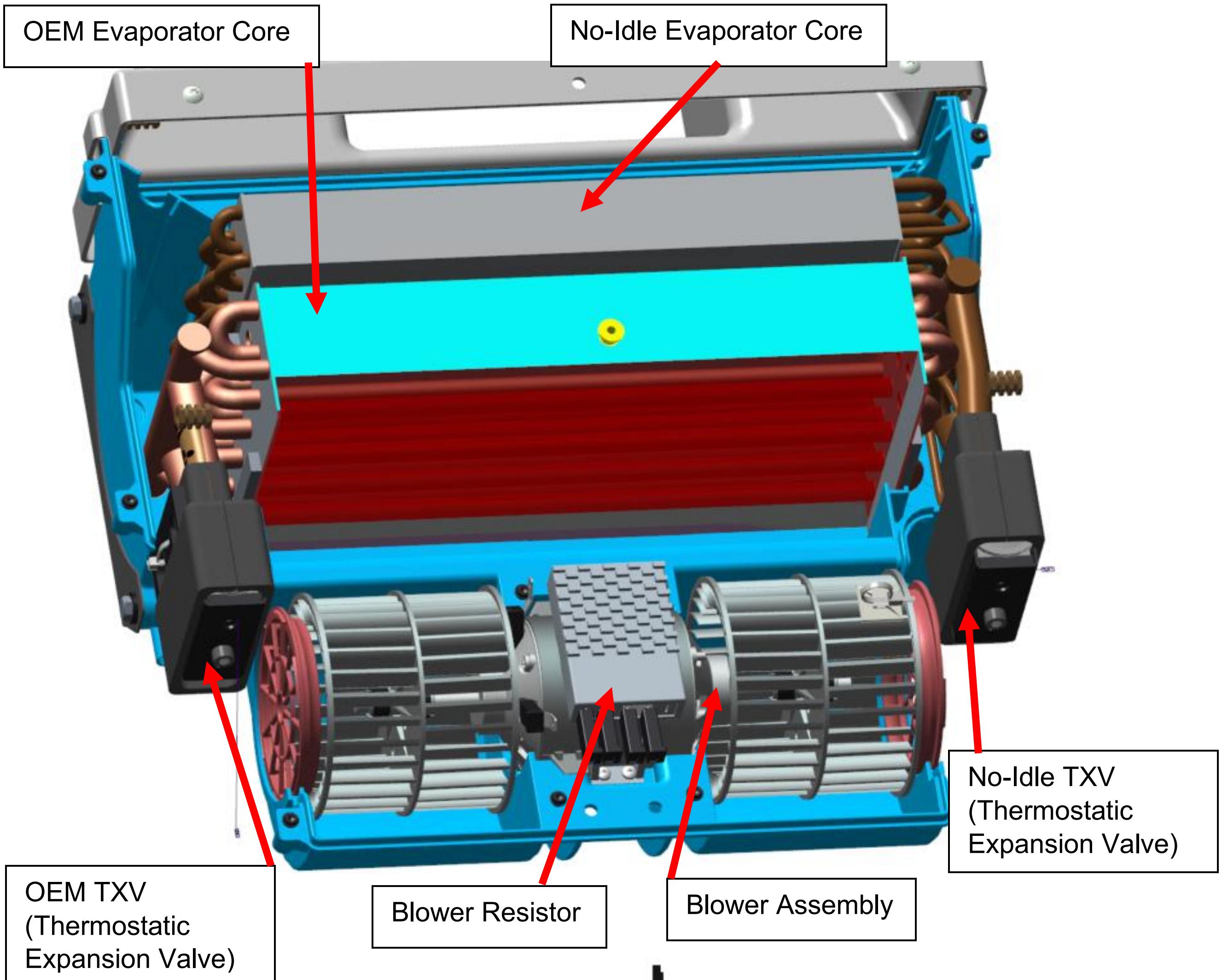
Evaporator (Parcel Rack) Unit – Vanhool Vehicles

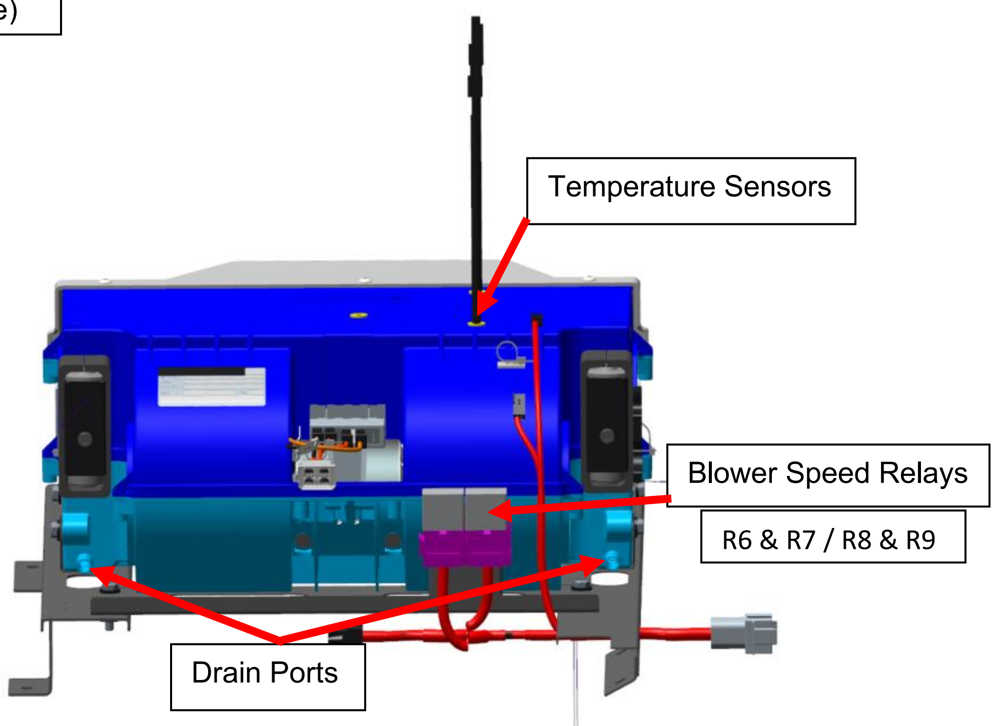




eClimaCoach System

Evaporator (Parcel Rack) Unit – MCI Vehicles



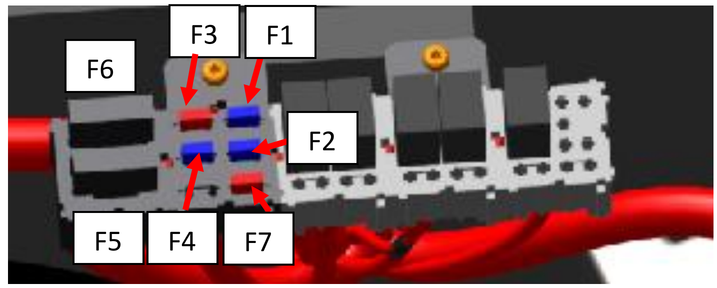


eClimaCoach System

Fuses

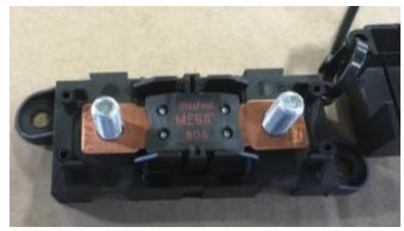
Internal to Compressor/Condesner Unit

F1 15 Amp – Blower 1 Power (Left)
F2 15 Amp – Blower 2 Power (Right)
F3 10 Amp – Control Power
F4 15 Amp – Condenser Power
F5 60 Amp – Compressor 1 Power
F6 60 Amp – Compressor 2 Power
F7 10 Amp – Heater Signal Power



External

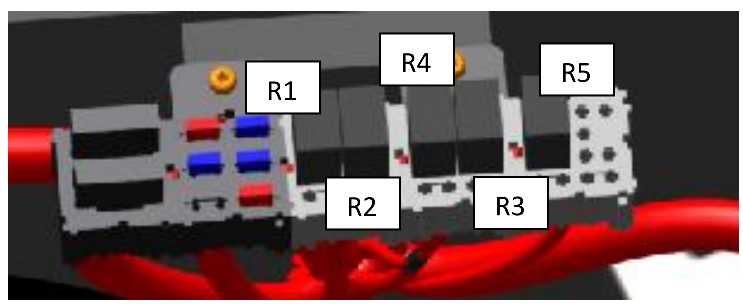
175 Amp – Main Power
    Installed near power source
5 Amp – Battery Remote Voltage Sense
    ATO fuse installed near power source



Relays

Internal to Compressor/Condenser Unit

R1 – Liquid Line Solenoid (MCI ONLY)
R2 – Condenser Fan
R3 – Heater Enable
R4 – Main Blower Low Speed
R5 – Main Blower High Speed



External – Parcel Rack/Evaporator Units

R6 – Blower 1
R7 – Blower 1
R8 – Blower 2 (MCI ONLY)
R9 – Blower 2 (MCI ONLY)

See above page 11 & 12 for identification of evaporator blower relays

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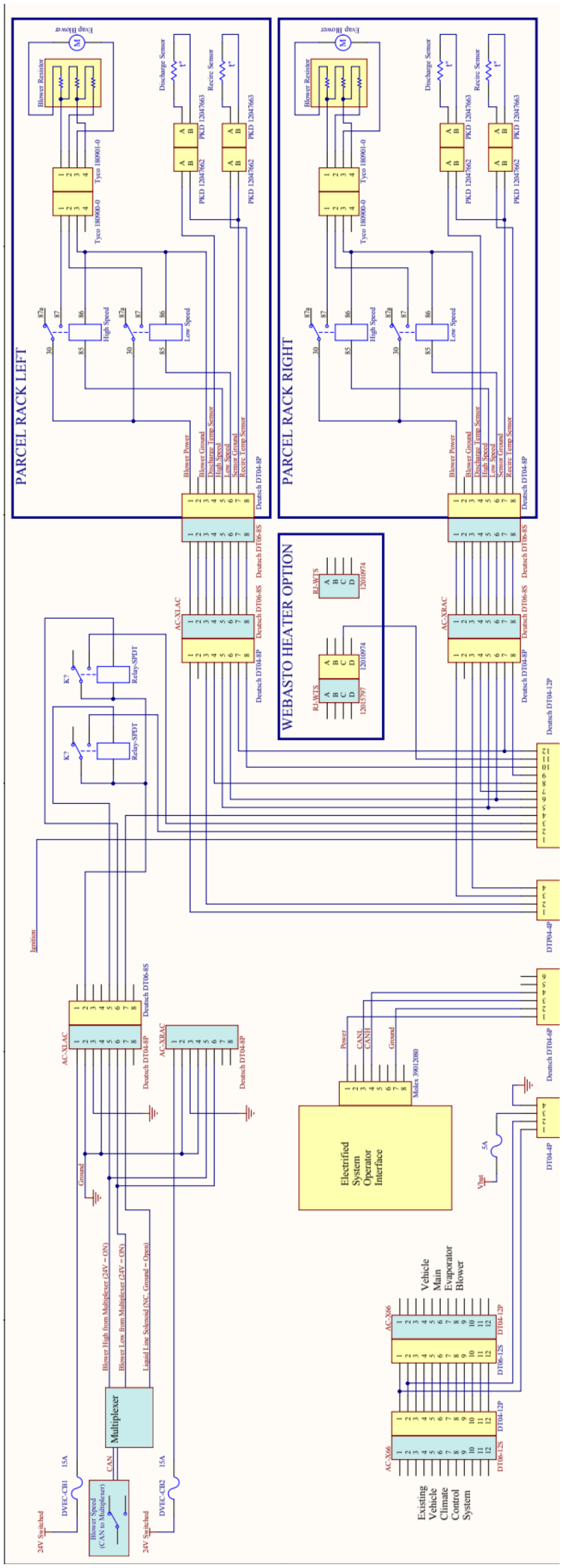
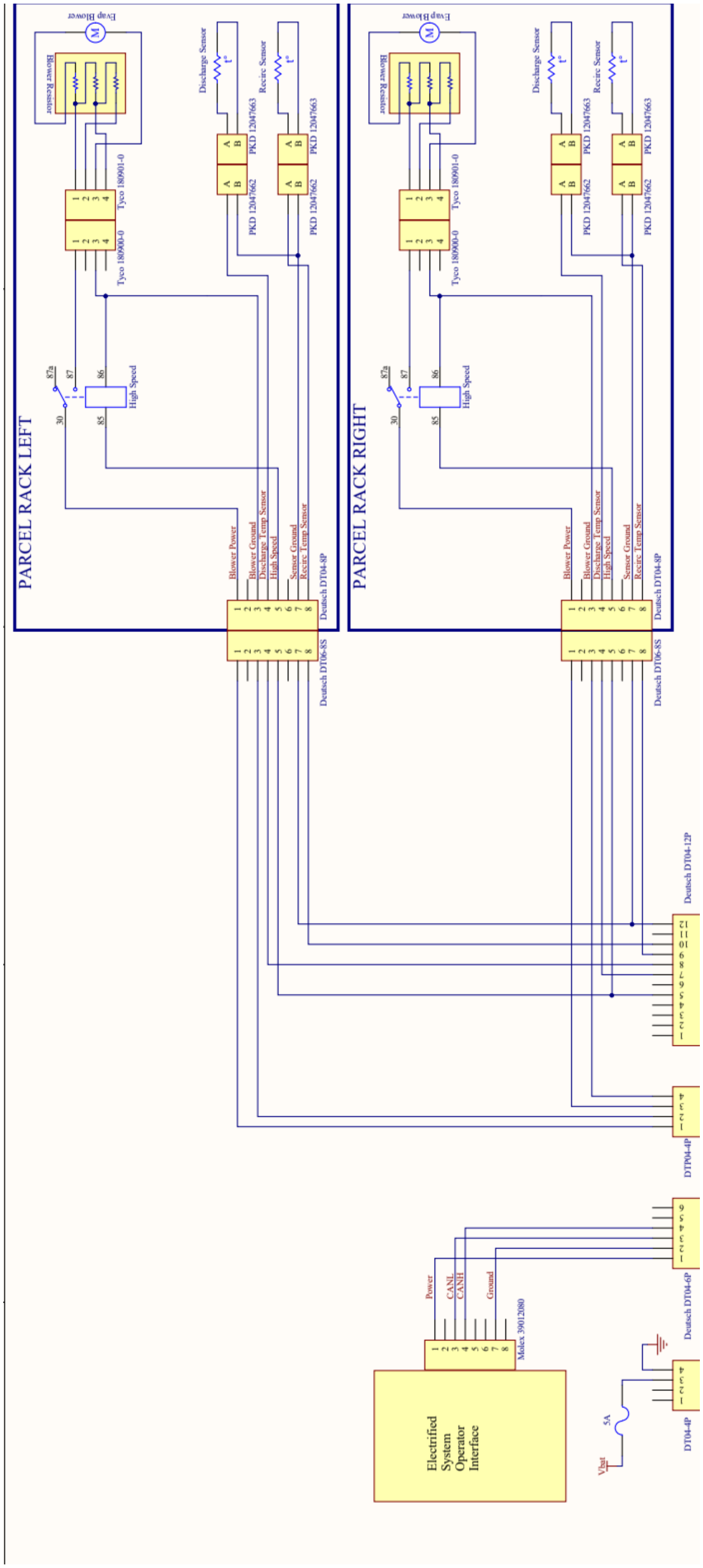
Electrical Schematics

External – MCI Vehicles



eClimaCoach System

External – Vanhool Vehicles



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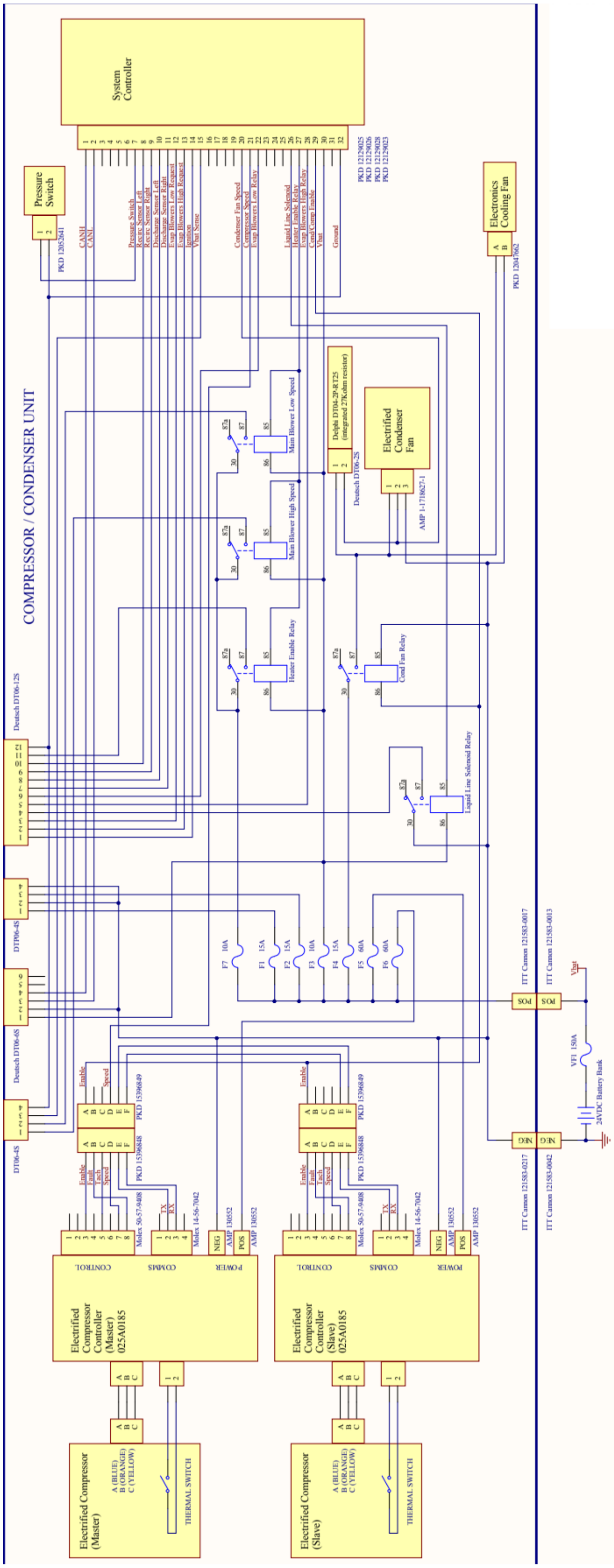
eClimaCoach System

Internal – All Vehicles



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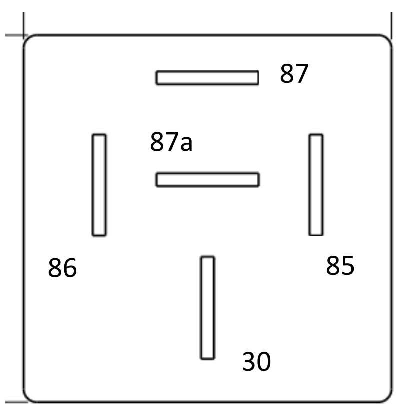
Diagnostics Guide

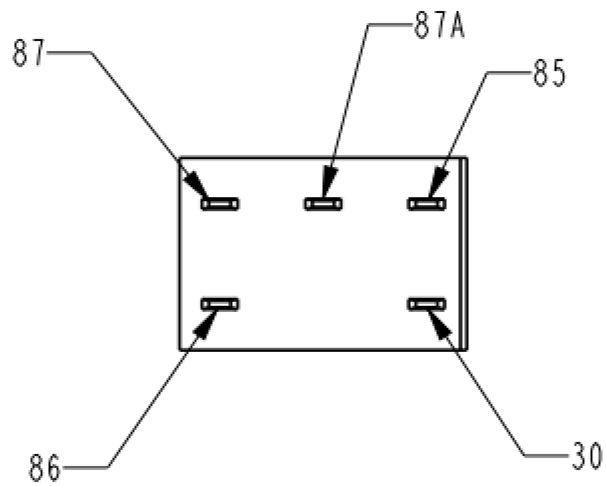
Problem	Possible Cause	Corrective Action
System completely inactive – **HMI inactive**, compressor inactive, condenser fan inactive, evaporator units inactive	Batteries inactive or disconnected.	Verify batteries are connected. Check battery voltage. Replace batteries if needed. Refer to WIRING.
	Fuse failure	Check main 175 Amp mega-fuse. Check voltage remote 5 Amp fuse. Refer to WIRING.
	HMI wiring issue or failure	Verify HMI is connected to harness. Verify harness is connected to compressor unit. Verify HMI harness connector has 24 VDC across pins 1 & 7. If yes, replace HMI.
Air out of evaporator units warm or ambient temperature – **HMI active**, compressor inactive (listen for vibration)	User setpoint temperature	Verify HMI is set to a temperature below the ambient.
	Fuse failure	Check fuse F5 & F6. Refer to FUSES.
	Low refrigerant charge	Verify system has been charged with refrigerant. Equilibrium pressure should be around 60 psig. Search for leaks if needed.
	Pressure switch failure	Verify pin 1 & 2 of pressure switch is grounded. Refer to WIRING. If pin 1 is floating, replace switch. Refer to PRESSURE SWITCH.

	Wiring or communication issue	Verify 24 VDC at compressor control board power studs (Master & Slave). Refer to WIRING. Verify CAN wiring between ECU and HMI. Verify 120-ohm resistance across CAN HI and CAN LOW. Refer to WIRING.
Compressors cycle - system blows cold sometimes.	Fuse failure	Check fuse F4. Refer to FUSES.
	Relay failure	Verify 24 VDC at pin 87 of R2. Refer to RELAYS and WIRING. If 0 VDC, verify 24 VDC at pin 86 of R2. If 24 VDC, replace relay R2. If 0 VDC, ECU needs troubleshooting.
	Condenser fan inactive	Verify 24 VDC at condenser fan connector across pins 1 & 3. Refer to WIRING. If 24 VDC measured, replace fan. Refer to CONDENSER FAN.
Evaporator unit inactive – **HMI active**	Fuse failure	Check fuse F1 & F2. Refer to FUSES.
	Relay failure	Check relays R6 & R7. Refer to RELAYS and WIRING. **MCI ONLY** – Check relays R4, R5, R8, & R9. Refer to RELAYS and WIRING.
	Blower resistor or motor failure	Verify 24 VDC at positive blade of blower (orange wire from resistor). If 0, replace resistor. If > 0, replace blower motor.

Heater inactive – optional feature	HMI setpoint temperature	Verify HMI is set to heat mode and setpoint temperature is above ambient.
	Fuse failure	Check fuse F7. Refer to FUSES.
	Relay failure	Check relay R3. Refer to RELAYS and WIRING.
	Wiring or heater issue	Verify 24 VDC at heater connector pin C (3). If 24 VDC, troubleshoot heater. Refer to WIRING.

Relay Diagram





If a problem still exists, please contact Bergstrom @ 866-204-8570

Fault Codes

Code	Description	Comments
0	No Faults	
1	Left parcel rack outlet sensor missing or shorted high	Compressor/condenser disabled
2	Left parcel rack outlet sensor shorted low	Compressor/condenser disabled
3	Right parcel rack outlet sensor missing or shorted high	Compressor/condenser disabled
4	Right parcel rack outlet sensor shorted low	Compressor/condenser disabled
5	Left parcel rack inlet sensor missing or shorted high	Defaults to 72F
6	Left parcel rack inlet sensor shorted low	Defaults to 72F
7	Right parcel rack inlet sensor missing or shorted high	Defaults to 72F
8	Right parcel rack inlet sensor shorted low	Defaults to 72F
9	High refrigerant pressure	Compressor/condenser disabled
10	Low voltage	Complete system disabled
11	Blower low and high are both active	Defaults to high speed
12	Not Used	
13	Not Used	
14	Not Used	
15	Not Used	
16	Not Used	
17	Not Used	
18	Loss of Unit CAN communication	Compressor/condenser disabled and parcel rack blowers will only work with key ON
19	Not Used	
20	Not Used	
21	Internal HMI temp sensor failure	No action taken. Sensor not used.

Bergstrom Technical Service Line: 1-866-204-8570

Component Servicing

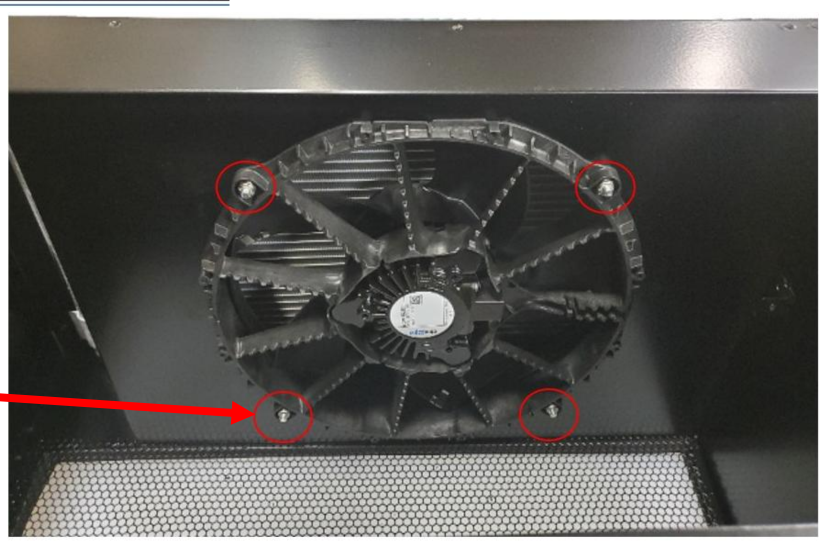
Condenser Fan

Condenser Fan Removal

1. Remove the top sheet metal shown by removing 16 T25 screws.
2. Unplug the fan electrical connector and cut zip tie if needed.
3. Remove the 4 ¼" nuts holding the fan to the sheet metal and slide out fan.

Condenser Fan Installation

1. Slide new fan into place and secure the 4 nuts. Torque to 28-32 in. lbs.
2. Connect electrical connector and secure harness with zip ties if needed.
3. Install top sheet metal and secure using 16 screws. Torque to 18-22 in. lbs.



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Component Servicing

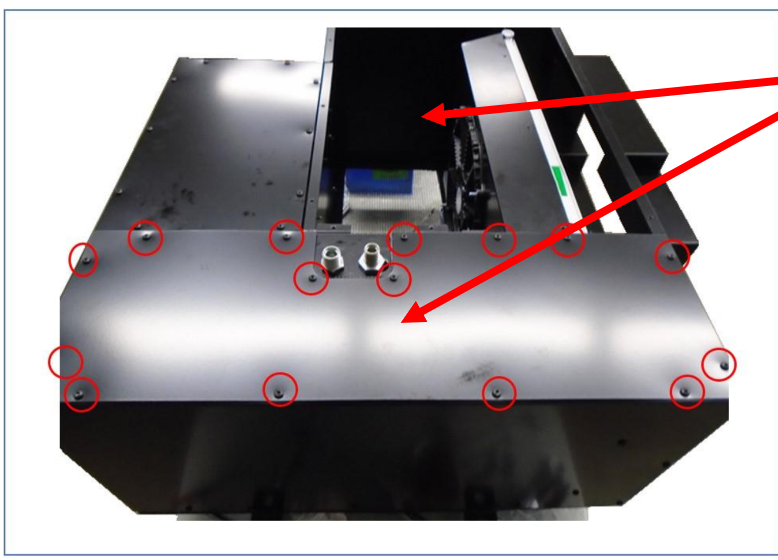
Condenser Coil

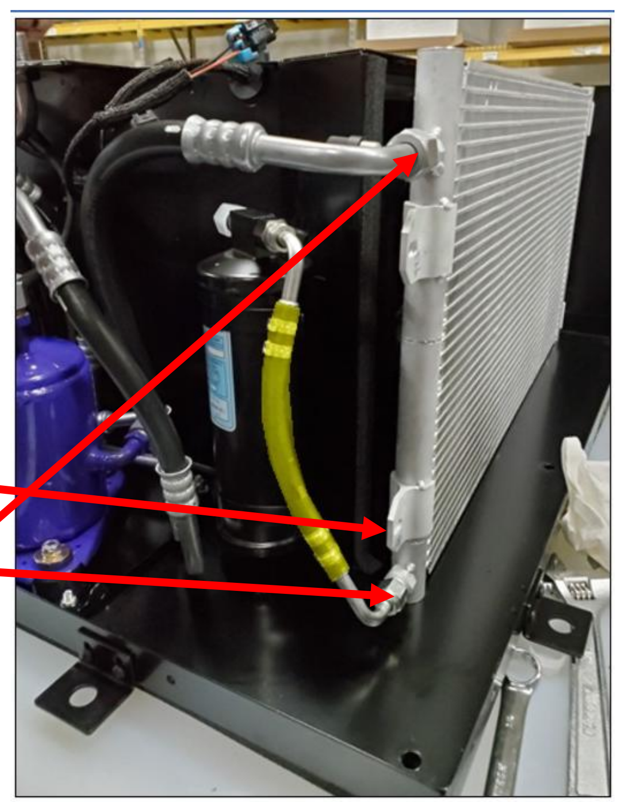
Condenser Coil Removal

1. Remove the 2 sheet metal tops shown by removing 16 T25 screws and 15 T25 screws. If needed, the sheet metal side closest to the condenser can also be removed by removing 8 T25 screws.
2. Remove the condenser IN and OUT refrigerant connections with a 19mm (3/4”) and 22mm (7/8”) wrench.
3. Remove the 4 T25 screws holding the condenser coil to the sheet metal.
4. Slide the condenser coil up and out of the unit.

Condenser Coil Installation

1. Slide the new coil into place in the unit. Secure with the 4 screws. Torque to 18-22 in. lbs.
2. Connect the IN and OUT refrigerant hose fittings to the condenser coil. Torque the bottom fitting to 11-13 ft. lbs. and the top fitting to 15-20 ft. lbs.
3. Secure the sheet metal tops with the 16 and 13 screws. Torque to 18-22 in. lbs.





Component Servicing

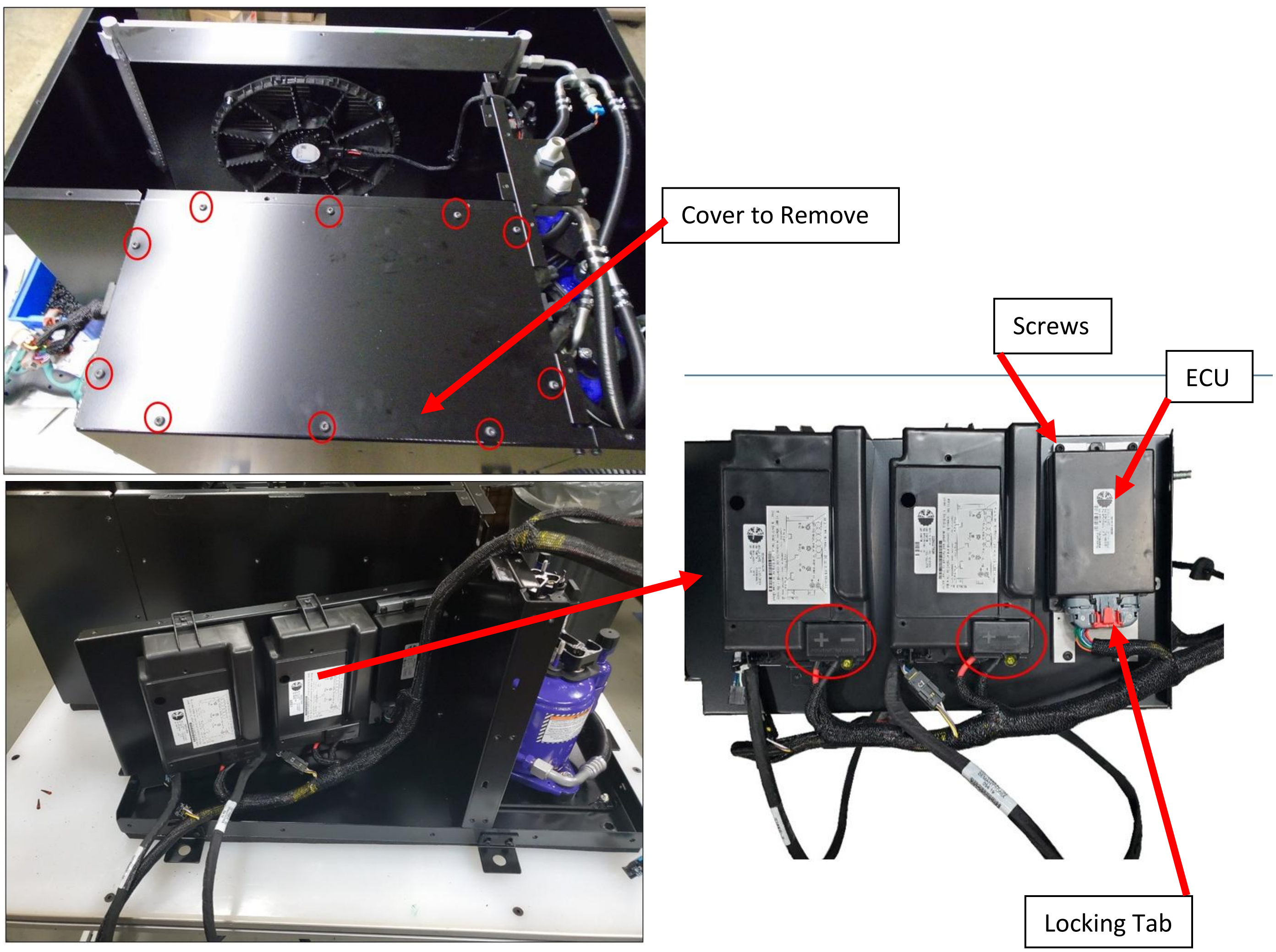
ECU (Electronic Control Unit)

ECU Removal

1. Remove the eClimaCoach unit sheet metal cover shown by removing 10 T25 screws.
2. Remove the 4 T25 screws holding the ECU + heat sink to the sheet metal.
3. Push back the red locking tab and then remove the harness connector from the ECU.

ECU Installation

1. Connect the ECU to the harness via the electrical connector. Push and secure the red locking tab.
2. Secure the ECU to the sheet metal with the 4 screws. Torque to 20 in. lbs.
3. Secure the sheet metal cover using the 10 screws. Torque to 20 in. lbs.



Component Servicing

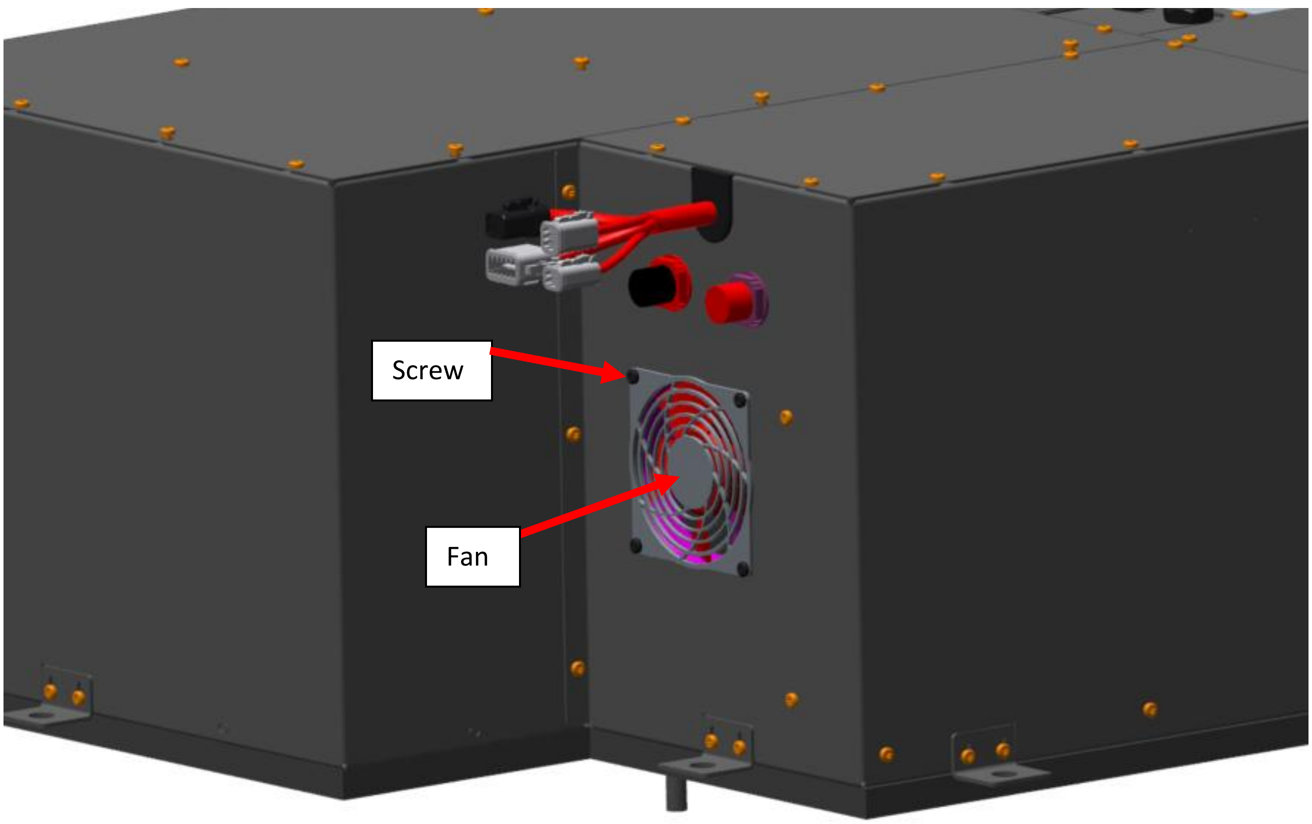
Cooling Fan

Cooling Fan Removal

1. Remove the outer 4 T25 screws holding the cooling fan to the sheet metal.
2. Pull the fan assembly outside of the sheet metal.
3. Disconnect the electrical connector to the fan.

Cooling Fan Installation

1. Connect the new fan electrical connector to the harness inside the unit.
2. Secure the fan to the sheet metal with the 4 screws. Torque to 20 in. lbs.



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Component Servicing

Pressure Switch

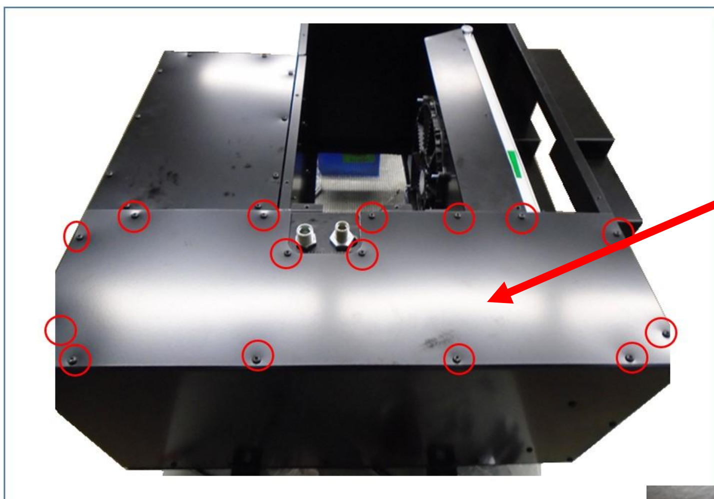
Pressure Transducer Removal

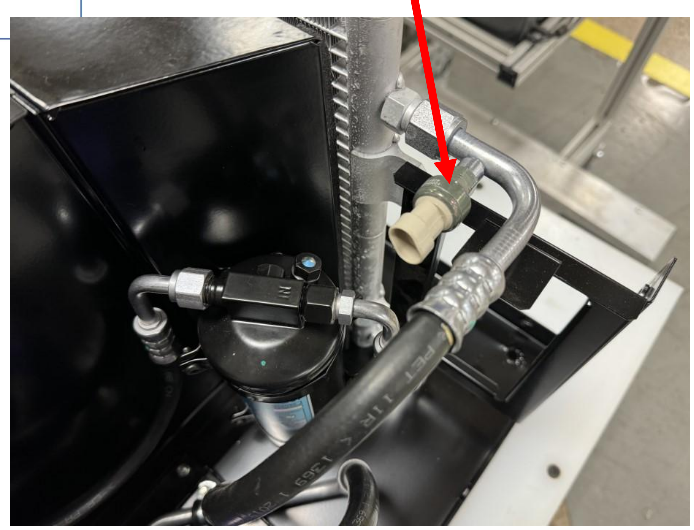
1. Remove the unit sheet metal cover shown by removing 16 T25 screws.
2. Remove the electrical connector from the pressure switch.
3. Using a crescent wrench, quickly loosen the switch fitting and remove.

NOTE: Due to internal Shrader valves, the pressure switch can be removed without evacuating refrigerant, however, it must be done quickly to avoid losing excess refrigerant.

Pressure Transducer Installation

1. Quickly screw the new pressure switch into the refrigerant fitting and tighten to 64 in. lbs.
2. Connect the electrical connector.
3. Secure the sheet metal cover using 16 screws. Torque to 20 in. lbs.





Component Servicing

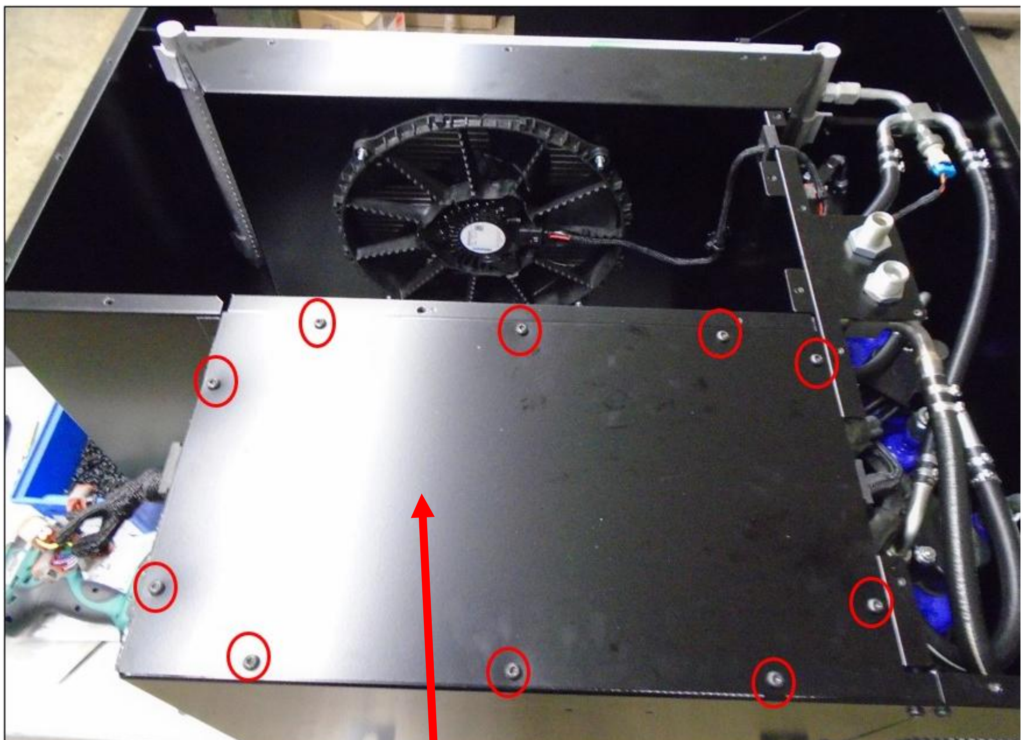
Fuses and Relays

Fuse and Relay Removal

1. Remove the eClimaCoach unit sheet metal cover shown by removing 10 T25 screws.
2. Remove the necessary fuse or relay. Refer to FUSES and/or RELAYS.

Relay Installation

1. Insert the new fuse or relay into the proper location on the fuse and relay holder.
2. Secure the sheet metal cover using the 10 screws. Torque to 20 in. lbs.



Cover to Remove

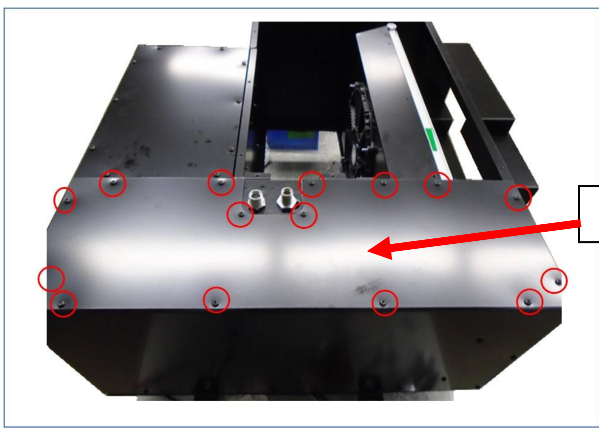
Receiver Drier

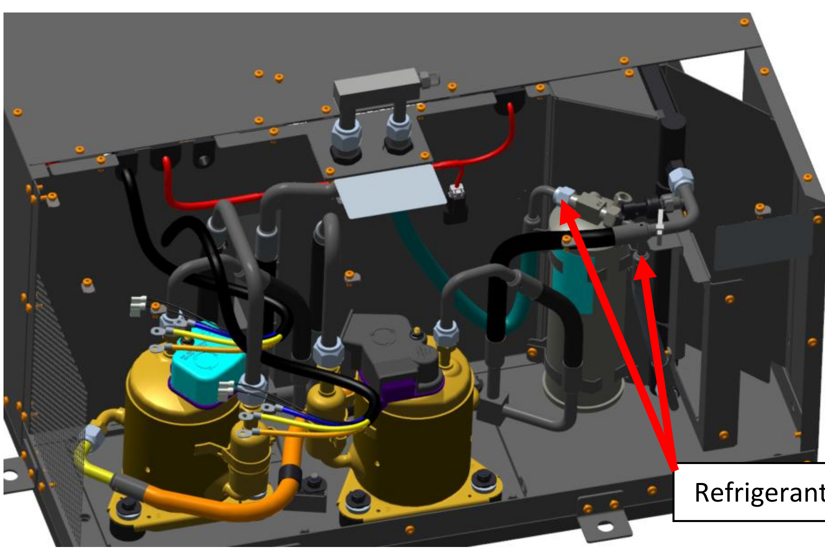
Receiver Drier Removal

1. Evacuate the system refrigerant.
2. Remove the unit sheet metal cover shown by removing 16 T25 screws.
3. Disconnect the inlet and outlet refrigerant fittings.
4. Remove the 2 T25 screws for the drier clamps. Remove drier.

Receiver Drier Installation

1. Insert the new drier into place and secure the 2 clamps with the screws. Torque screws to 20 in. lbs.
2. Connect the inlet and outlet refrigerant fittings. Torque to 12 ft. lbs.
3. Secure the sheet metal cover using 16 screws. Torque to 20 in. lbs.
4. Charge the system with refrigerant. Refer to “REFRIGERANT CHARGE INFORMATION”.





Component Servicing

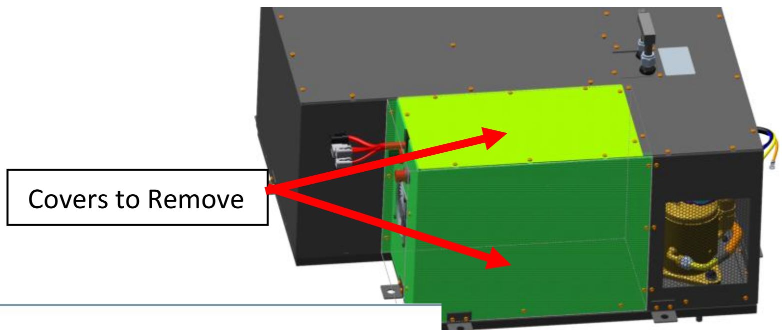
Compressor Controller

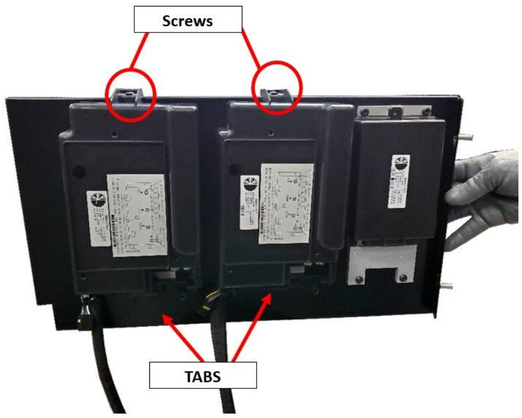
Compressor Controller Removal

1. Remove the unit sheet metal top and side cover shown by removing 10 & 11 T25 screws.
2. Remove the power connection cover by removing the T20 screw.
3. Disconnect the signal connector and the power ring terminals (8mm socket) from the controller.
4. Remove the phase harness from the corresponding compressor. Refer to Compressor Cap, Thermal Switch, and T-block.
5. Remove the T25 screw holding the controller to the unit and remove the controller with phase harness.

Compressor Controller Installation

1. Insert the new controller with phase harness into place. Verify the bottom tab is in place. Secure with the screw. Torque to 20 in. lbs.
2. Connect the phase harness to the corresponding compressor. Refer to Compressor Cap, Thermal Switch, and T-block.
3. Connect the signal connector to the harness and attach the power ring terminals to their respective studs. Orient them as shown. Torque to 20 in. lbs.
4. Secure the power connection cover with the screw. Torque to 20 in. lbs.
5. Secure the unit sheet metal top and side cover with the screws. Torque to 20 in. lbs.





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Component Servicing

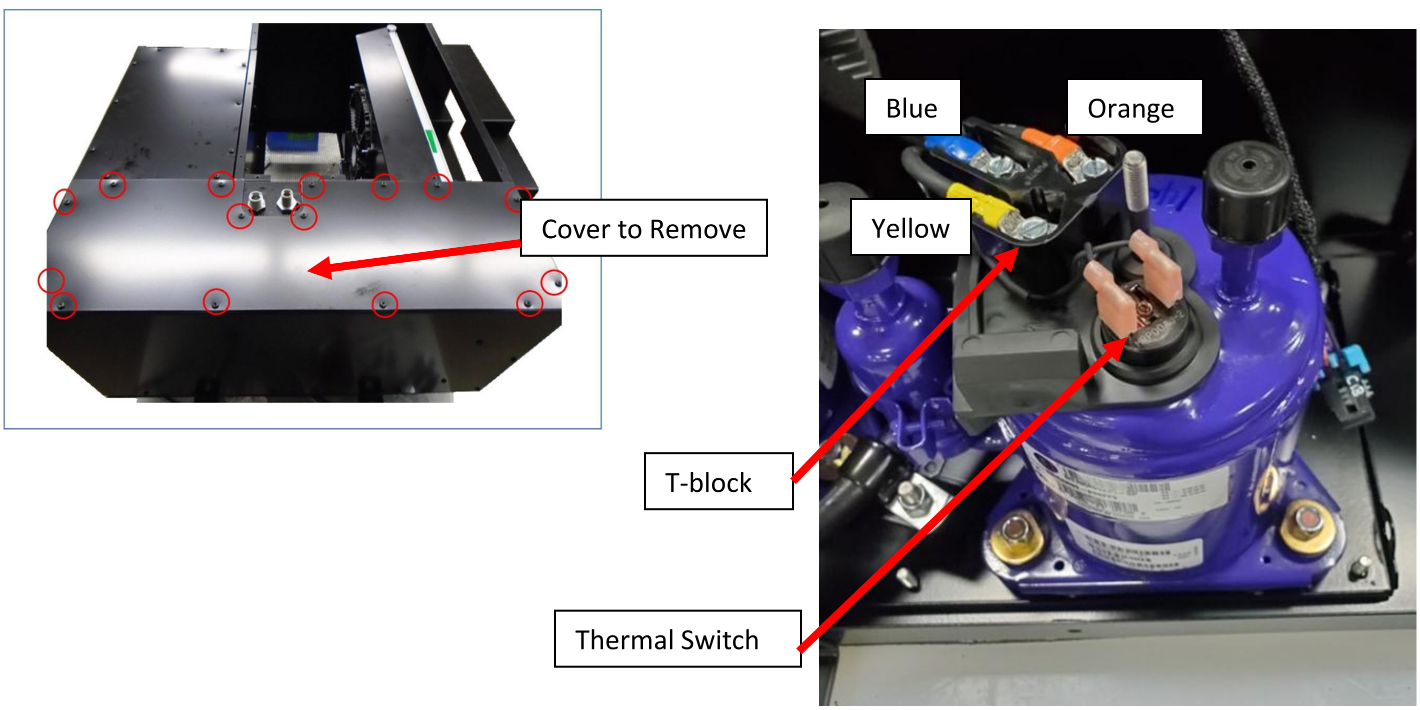
Compressor Cap, Thermal Switch, and T-block

Compressor Cap, Thermal Switch, and T-block Removal

1. Remove the unit sheet metal cover shown by removing 16 T25 screws.
2. Remove the nut (7/16” socket) to remove the compressor plastic cap.
3. Mark down or take a picture of the phase harness wire colors with respect to the compressor blade terminals.
4. Remove the phase harness by removing the 3 flat head screws. Remove the thermal overload switch harness blade terminals.
5. Use needle-nose plyers to **carefully** bend the compressor phase blade terminals to a vertical position. Remove the T-block.

Compressor Cap, Thermal Switch, and T-block Installation

1. Insert the T-block onto the compressor in the correct orientation. Carefully bend the compressor phase blade terminals to match the threaded holes.
2. Connect the phase harness thermal switch blade terminals to the compressor thermal switch.
3. Connect the phase harness to the T-block in the orientation shown. Use brand new flat head screws (not the old ones). Torque to 30 in. lbs.
4. Insert the compressor cap and secure with the nut. Torque to 20 in. lbs.
5. Secure the unit sheet metal cover with 16 screws. Torque to 20 in. lbs.



Component Servicing

Compressor

Compressor Removal

1. Evacuate the system refrigerant.
2. Remove the compressor cap, thermal switch, and T-block. Refer to Compressor Cap, Thermal Switch, and T-block.
3. Disconnect the inlet, outlet, and jumper refrigerant fittings. Use a backer wrench on the compressor side of the connection to ensure no damage to the compressor. 1 1/16" and 7/8" wrench.
4. Remove the 3 nuts holding the compressor to the unit. ½" socket. Remove compressor.

Compressor Installation

1. Make sure the compressor is equipped with rubber feet, black grommet (between washer and compressor), and white spacers (unless on unit bolts).
2. Place the compressor as shown and secure with 3 nuts with washers. Torque to 20 in. lbs.
3. Connect the refrigerant fittings to the compressor. Use a backer wrench when tightening. Torque the 1 1/16" to 22 ft. lbs. and the 7/8" to 18 ft. lbs.
4. Attach the compressor T-block, thermal switch, phase harness, and compressor cap. Refer to Compressor Cap, Thermal Switch, and T-block.
5. Charge the system with refrigerant per the specifications. Refer to Refrigerant Charge.

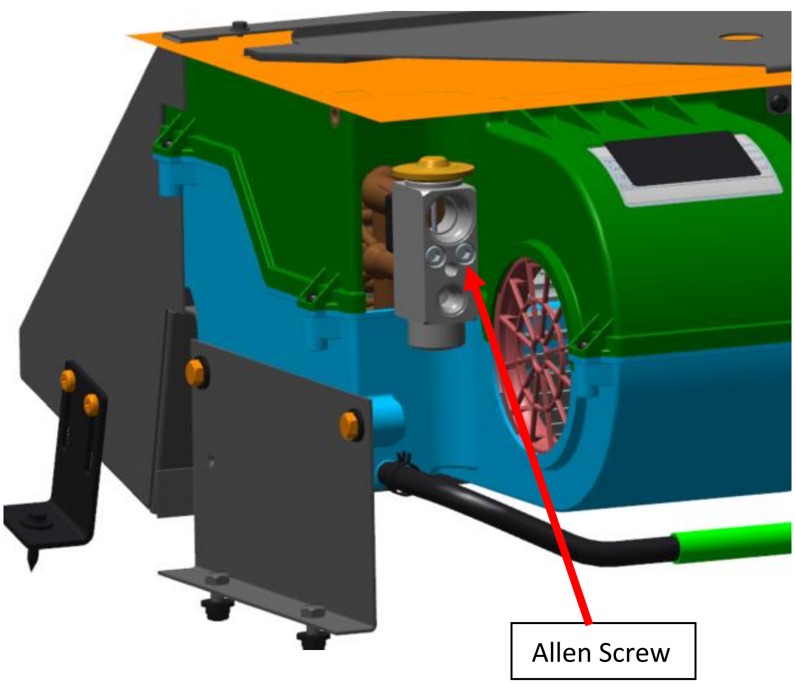
TXV (Thermal Expansion Valve)

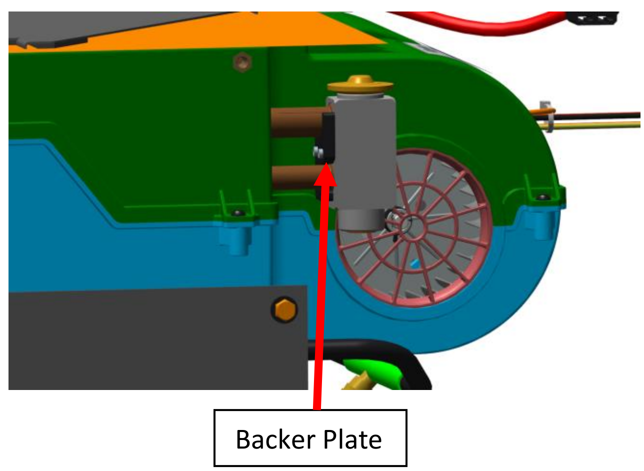
TXV Removal

1. Evacuate the system refrigerant.
2. Disconnect the external refrigerant line connections by removing the Allen bolt and plate.
3. Remove the 2 long screws on the face of the TXV. 5/32” Allen wrench.
4. Remove the backer plate and remove the TXV.

TXV Installation

1. Insert the TXV into place with the larger diameter hole on top.
2. Secure the backer plate to the TXV by securing the 2 screws. Torque to 50 in. lbs.
3. Connect the external refrigerant line connections by securing the Allen bolt with TXV plate. Torque to 50 in. lbs.
4. Charge the system with refrigerant per the specifications. Refer to Refrigerant Charge.





Component Servicing

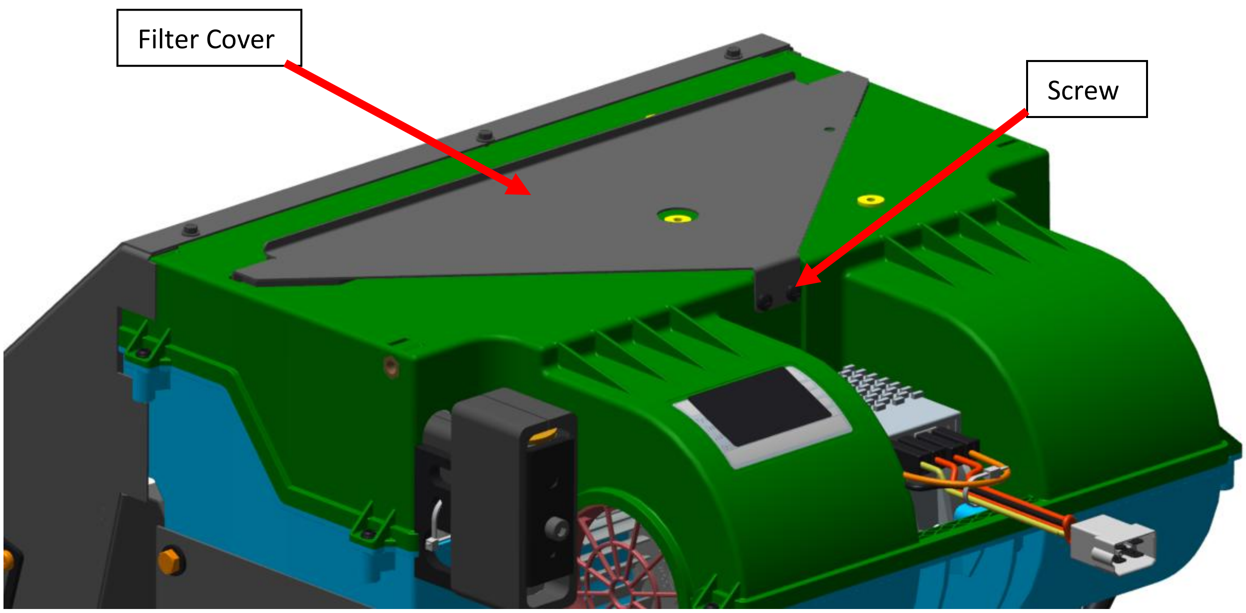
Evaporator Filter / Splash Guard

Evaporator Filter / Splash Guard Removal

1. Verify the unit is powered off.
2. Remove the 2 Phillips head screws holding the filter cover to the unit.
3. Remove the filter cover and the filter cover gasket.
4. Remove the filter.

Evaporator Filter / Splash Guard Installation

1. Verify the unit is powered off.
2. Insert the new filter in place. It is non-directional.
3. Place the filter cover gasket and cover in place and secure with the 2 screws. Torque to 20 in. lbs.



Component Servicing

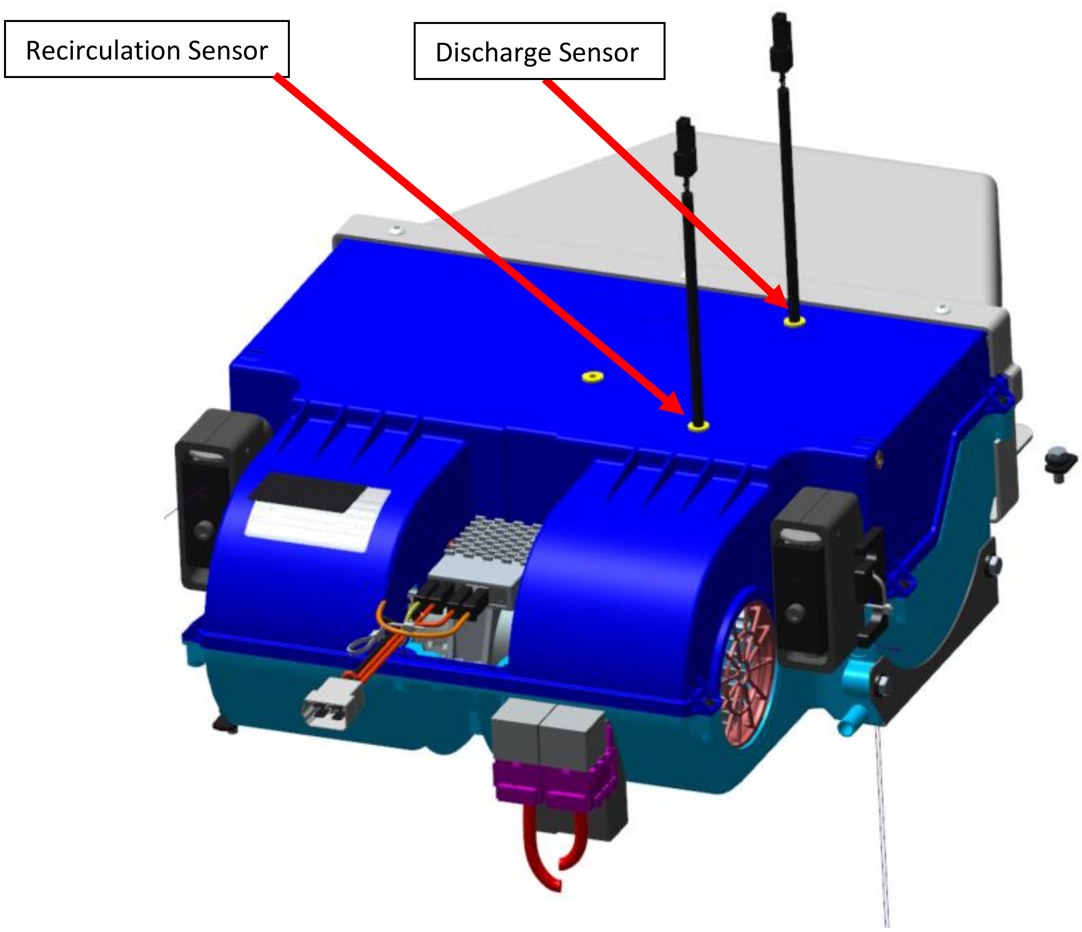
Temperature Sensor

Temperature Sensor Removal

1. Disconnect the temperature sensor from the electrical harness via the connector.
2. Carefully remove the temperature sensor from the unit.

Temperature Sensor Installation

1. Carefully insert the temperature sensor into the same hole in the unit.
2. Secure the electrical connector to the harness.



Component Servicing

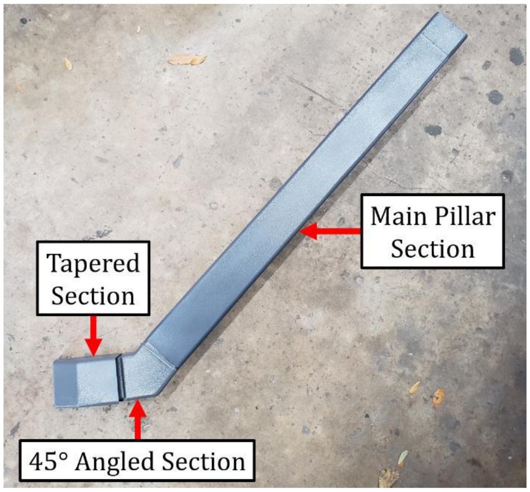
Plastic Vertical Post Covers

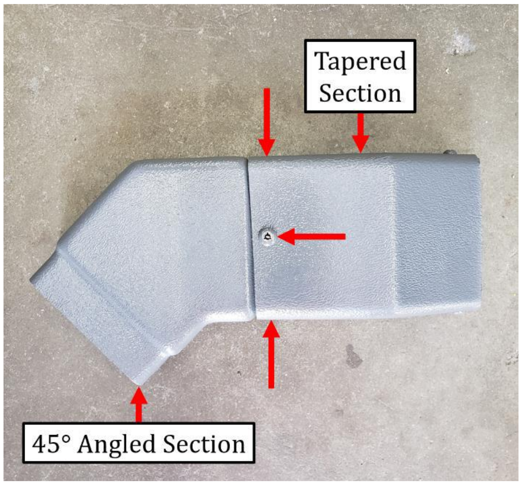
Plastic Vertical Post Cover Removal

1. Carefully drill out the rivets holding the cover to the metal channel. Take extreme caution not to puncture the hoses inside the cover. If only the tapered or 45-degree angled section is broken, do not remove the entire cover assembly.
2. Remove the broken cover.

Plastic Vertical Post Cover Installation

1. Assemble the vertical plastic cover with the tapered and 45-degree sections as shown using the 3/16” rivets.
2. Use rivets to secure the plastic cover to the metal channel.





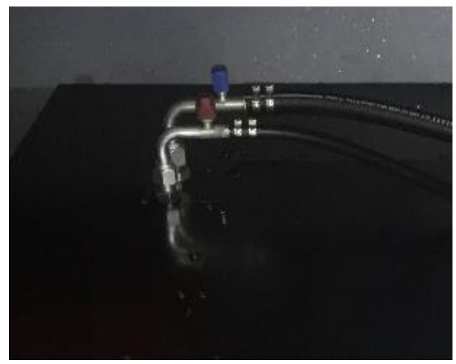
Bergstrom

Component Servicing

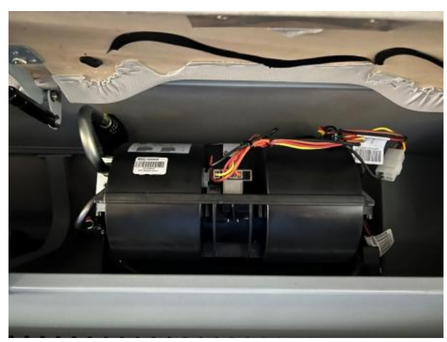
Other Serviceable Parts

HMI (Human-Machine Interface)

Refrigerant Hoses and Fittings (Internal and external to main unit)

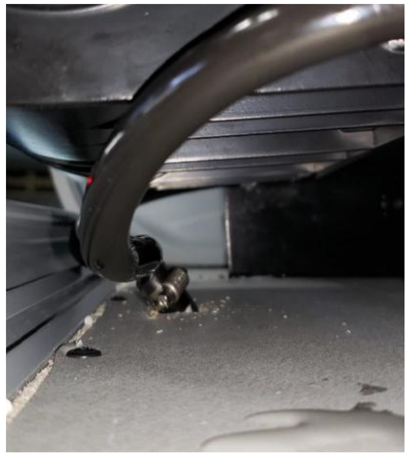


Vehicle and Unit Electrical Harnesses



Component Servicing

Drain Hoses



Air Conditioning System

A/C System Operation Check

The following is an A/C system **"Field Test" and Evaluation Procedure** to be used by service personnel. This procedure can be used to determine if a Bergstrom A/C system is performing properly and contains the correct refrigerant charge. The performance guidelines shown are approximate, and subject to many operational variables. Ambient temperature must be 65 degrees F or above to accurately test for A/C performance.

1. Run the vehicle engine A/C for some time so that the cab temperature is at or near the set point temperature. Park the vehicle and turn the engine off.

2. Use the Bergstrom HMI to set the HVAC controls to AC on, blower at MED-HIGH speed, and the temperature control to the coldest setting.

3. Physically verify that the eClimaCoach A/C compressor is operational by touching the unit and verifying it is vibrating. Verify the condenser fan turns on (condenser fan may start and stop, this is normal).

4. The suction hose fitting (larger fitting at the top of the eClimaCoach unit) should be cold to the touch. This fitting may sweat or even frost slightly. The discharge hose fitting (smaller fitting at the top of the eClimaCoach unit) should be warm to the touch.

5. Chilled air should be discharged from the supply louvers in the vehicle cabin. After 3-5 minutes of A/C operation the system should begin to cool.

6. Air inlet / outlet temperature differentials are greatly affected by ambient temperature and relative humidity. In cool ambient conditions, differentials smaller than 15 degrees may be seen. Air can only be chilled to a certain level, and then the A/C compressor will cycle off to prevent evaporator freeze-up. High humidity may also result in smaller differentials; a large amount of cooling capacity is required to dehumidify the air, as well as cool it.

7. Measure and record the inlet air to the vehicle evaporator unit (internal cabin air temperature) and vent discharge air temperature (choose louver closest to evaporator unit) and calculate the differential of the two values. Record the humidity value for the day.

8. Measure and record the suction (low pressure) and discharge (high pressure) refrigerant pressures.

9. Your A/C air vent temperature differential should be greater than 5 degrees F. The discharge air should be at least 5 degrees F cooler than the inlet air. Your suction pressure should be in the 20-50 psig range and discharge pressure in the 120-250 psig range.

Air Conditioning System

Refrigerant Charge Information

A correct refrigerant charge is necessary to achieve optimum performance from an A/C system. When servicing the refrigerant system, the only way to be certain of an exact charge is to fill an empty system with the specified amount of refrigerant. If the A/C system is operating and the amount of refrigerant within the system is not known, some simple checks can be performed to determine if the operating charge is adequate:

1. Compressor running.
2. Suction hose fitting (at evaporator outlet) cold to the touch. This fitting may sweat or even frost lightly.
3. Chilled discharge air at the dash louvers when the temperature control is set at the coolest setting.

Charge Procedure for eClimaCoach Systems:

1. Vacuum the system from **both** high pressure and low-pressure charge ports.
2. Charge the system with **6 lbs. of virgin R-134a**.

Leak Checking Procedure:

1. Verify all nuts, bolts, clamps, etc. are torqued to specification.
2. Run a vacuum test after tightening and verify the leak is still present.
3. Charge the system with a small amount (1-2 oz.) of refrigerant.
4. Use a refrigerant sniffer tool to check all the possible leak points in the system. The most common location for leaks is the TXV connection.
5. Repeat the vacuum test to verify the leak has been found.

Air Conditioning System

Service Tips

1. Use only virgin (new, not reclaimed) R134a refrigerant.
2. Reclaiming refrigerant, evacuating the A/C system, and charging with the proper amount of refrigerant resolves many A/C issues.
3. Some refrigerant loss will occur in one year's time, and this is recognized as normal. Vibration, hose porosity, and general construction of the system make a leak proof system nearly impossible.
4. Bergstrom does not recommend or endorse the use of "Stop Leak" or "Leak Sealing" products.

R134a Temperature/Pressure Chart

Pressure	Temp	Pressure	Temp	Pressure	Temp	Pressure	Temp	Pressure	Temp	Pressure	Temp
psig/Hg"	Deg F	psig	Deg F	psig	Deg F	psig	Deg F	psig	Deg F	psig	Deg F
22	-62.38	13	11.77	37	42	61	62.75	145	109.4	265	150.6
20	-55.02	14	13.38	38	43	62	63.5	150	111.5	270	152
18	-48.85	15	14.94	39	43.98	63	64.24	155	113.6	275	153.4
16	-43.5	16	16.46	40	44.95	64	64.98	160	115.6	280	154.7
14	-38.76	17	17.95	41	45.91	65	65.71	165	117.6	285	156.1
12	-34.49	18	19.4	42	46.85	66	66.43	170	119.6	290	157.4
10	-30.6	19	20.81	43	47.78	67	67.14	175	121.5	295	158.7
8	-27.02	20	22.19	44	48.7	68	67.85	180	123.3	300	160
6	-23.7	21	23.55	45	49.61	69	68.55	185	125.2	305	161.3
4	-20.59	22	24.87	46	50.51	70	69.24	190	126.9	310	162.5
2	-17.67	23	26.16	47	51.39	75	72.62	195	128.7	315	163.8
0	-14.92	24	27.43	48	52.26	80	75.86	200	130.4	320	165
1	-12.31	25	28.68	49	53.13	85	78.98	205	132.1	325	166.2
2	-9.84	26	29.9	50	53.98	90	81.97	210	133.8	330	167.4
3	-7.47	27	31.1	51	54.82	95	84.87	215	135.5	335	168.6
4	-5.21	28	32.27	52	55.65	100	86.66	220	137.1	340	169.8
5	-3.04	29	33.43	53	56.48	105	90.37	225	138.7	345	171
6	-0.95	30	34.56	54	57.29	110	92.99	230	140.2	350	172.1
7	1.05	31	35.68	55	58.1	115	95.53	235	141.8	355	173.3
8	2.99	32	36.77	56	58.89	120	98	240	143.3	360	174.4
9	4.86	33	37.85	57	59.68	125	100.4	245	144.8	365	175.4
10	6.67	34	38.91	58	60.46	130	102.7	250	146.3	370	176.3
11	8.42	35	39.96	59	61.23	135	105	255	147.7	375	177.3
12	10.12	36	40.99	60	62	140	107.2	260	149.2	380	178.2

The numbers above represent the boiling points for R134a

Testing eClimaCoach Normal Operation

System Operation

The unit can be operated with the key in any position. The unit will not turn off when the position of the key is changed. If system ON or OFF is desired, the HMI controller head will need to be manually operated upon.

The unit will operate in an attempt to control the parcel rack unit's inlet air temperature according to the temperature set on the operator interface. The electric compressor speed is variable and will be set according to the difference between set temperature and parcel rack unit air temperature.

Evaporator blower speed is fixed for this system and cannot be changed.

System will monitor parcel rack outlet air temperatures in order to prevent evaporator freezing.

System will monitor a refrigerant high-pressure switch and disable compressor operation if the switch is activated.

Auto Start

The system has an integrated clock and Auto Start feature. If the Auto Start is reached and Auto Start is enabled, the system will turn on automatically and continue to run for a maximum of 30 minutes to pre-condition the bus interior.

Run Time Matrix with AGM deep cycle batteries fully charged.

Ambient	Controller set point	Solar	Hours/Run time	Deep cycle AGM battery quantity
<70F	75F	3 Panels (330x3= 990watts)	3.0	4
<80F	75F	3 Panels (330x3= 990watts)	2.5	4
<90F	75F	3 Panels (330x3= 990watts)	2.0	4
<100F	75F	3 Panels (330x3= 990watts)	1.5	4
<110F	75F	3 Panels (330x3= 990watts)	1.0	4

Note: Runtime may vary depending on battery type, battery charge, temperature load, and state of the batteries.

If normal operation is not achieved consult the Diagnostics Guide, Fault Codes, or other troubleshooting sections.

To start the system push ON/OFF button. Display will show current mode (COOL or HEAT) and the temperature setting.

The Auto icon will also be displayed if the auto start feature is activated. The icon will be flashing if the system is running due to an auto start event.

The Service icon will be displayed if there are any active fault codes.

Changing TEMPERATURE set point –
From the main screen, push the up or down arrows. Temperature range is from 60°F (coolest) to 85°F (warmest).

Changing MODE – press ENTER, use up or down arrows to select COOL or HEAT. After 5 seconds selection will be set.

Operating Instructions

To view System Runtime/Hours – press ENTER until "Hrs" shows on display. When hours are displayed, pressing ENTER for 5 seconds will reset the hours to zero.

To change from °F to °C press ENTER until temperature symbol only shows – push the up or down arrow to change. After 5 seconds selection will be locked.

Anytime the control is idle for 5 seconds the screen will return to the temperature set point screen.

To view the Clock, press ENTER until a 24hr time format clock is displayed.

Press and hold Enter for 5 seconds to adjust hours.
After adjusting hours (Up/Down), press Enter to adjust minutes.
After adjusting minutes (Up/Down), press Enter to accept changes.

Operating Instructions

To view the Auto Start Time screen, press ENTER until a 24hr time format clock is displayed along with the AUTO icon.

Press and hold Enter for 5 seconds to adjust hours.
After adjusting hours (Up/Down), press Enter to adjust minutes.
After adjusting minutes (Up/Down), press Enter to accept changes.

To view the Auto Start Enable screen, press ENTER until the Auto icon is displayed along with either ON or OFF.

Press the up or down arrow keys to enable or disable the Auto Start feature.
When auto start is enabled the AUTO icon will be displayed on the main temperature screen.
When the system is running due to an auto start event, the AUTO icon will flash on the main temperature screen.

To enter SERVICE MODE: Push both the ON/OFF and ENTER buttons simultaneously at any time.

Display will show service indicator and a code 00 unless a fault has occurred. If there is an active fault the display will show it as 01, 02, etc. Use up and down arrows to scroll through the Fault Codes.

Operating Instructions

To enter the wireless device pairing screen: Press the Enter button from the main service screen.

BLU_0 = not paired

BLU_1 = paired

Press Up to begin the pairing process.