# **General Owner's Manual**





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# **Trans/Air Manufacturing**

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# MISSION STATEMENT

To delight our customers with high value climate control systems, components, and services for the bus and commercial vehicle markets.





Trans/Air Manufacturing Corp. is an ISO 9001:2015 registered firm committed to providing world class climate control products and services to the bus and commercial vehicle markets.

FM 39947

# INTRODUCTION

Congratulations on your purchase of a new Trans/Air climate control system!

Trans/Air Manufacturing has been committed to supplying quality transportation products and services world-wide since 1979. We have earned our status as the proven leader in the industry by considering customer service as paramount, while offering a quality product backed by the most comprehensive warranty in the industry.

This General Owner's Manual is being provided to familiarize you with the operation, maintenance, and warranty procedures associated with your Trans/Air system. Taking a moment to review the enclosed information will ensure your continued satisfaction with our product. If you should have any questions, please do not hesitate to contact our warranty/parts/service professionals at 1-800-673-2446, ext. 268.

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# 1. THIS IS YOUR TRANS/AIR SYSTEM

Understanding the basic elements and principles of air conditioning will enable you to effectively operate and maintain your Trans/Air system.

- What is air conditioning
- What are the components of any air conditioning system
- What is the refrigeration cycle
- Trans/Air components

# WHAT IS AIR CONDITIONING

Air conditioning is the cooling, dehumidification and filtration of the air within the passenger compartment of your vehicle.

### WHAT ARE THE COMPONENTS OF ANY AIR CONDITIONING SYSTEM?

- 1. **Thermostat** A thermostat is a temperature sensitive device, which when activated, signals the electro-magnetic compressor clutch to engage.
- 2. **Compressor(s)** The compressor is a belt driven, high pressure pump, which circulates the refrigerant through the evaporator and condenser. The operation of the compressor is controlled by an electro-magnetic clutch which, in turn, is controlled by a thermostat.
- 3. **Electro-Magnetic Clutch** The electro-magnetic clutch controls the operation of the compressor. When engaged, the compressor circulates refrigerant and provides cooling.
- 4. Condenser(s) The condenser is located in the skirt or on the roof of the vehicle. Its primary function is to reject heat, which was transferred to the refrigerant, by the evaporator, from the passenger compartment of the vehicle.
- 5. Filter Drier Removes moisture and particulate matter from refrigerant.
- 6. Expansion Valve Meters refrigerant into evaporator coil.
- 7. **Evaporator(s)** The evaporator is located in the interior of the vehicle. Its primary function is to transfer heat contained in the passenger compartment air, into the refrigerant, which is circulated by the compressor, through the evaporator coil. During this process, the air is also filtered and dehumidified.
- 8. **Refrigerant** A refrigerant is any material which possesses high heat transfer capabilities. Its primary function is to act as the medium for heat transfer, which facilitates the movement of heat from the passenger compartment to the outside air. Refrigerant under varying pressures exists in different states, and performs different heat transfer functions. Under low pressure, refrigerant exists as a gas which can absorb heat. Under high pressure, refrigerant exists as a liquid which can reject heat. The heat transfer properties exhibited when refrigerant changes state, is the foundation of the refrigeration cycle.



# WHAT IS THE REFRIGERATION CYCLE?

- 1. The thermostat, located in the interior of the vehicle, calls for cooling.
- 2. Based on a signal from the thermostat, the electro-magnetic clutch on the compressor engages, circulating refrigerant through the system.
- Refrigerant existing as a gas, and containing heat from the passenger compartment is pumped by the compressor under high pressure into the condenser coil.
- 4. Fans pull cool air through the condenser coil, which contains refrigerant existing as a hot gas.
- 5. The refrigerant undergoes a change-of-state, from a gas to a liquid, through a process called condensation.
- 6. During condensation the hot gas rejects its heat load to the outside air, which was transferred from the passenger compartment, into the refrigerant, by the evaporator.
- 7. The refrigerant now exists as a cool liquid, which passes through the filter drier, which removes moisture and impurities, and then the sight glass, which enables visual inspection of the refrigerant.
- 8. The cool liquid is then pumped to the evaporator where an expansion valve meters the refrigerant into the evaporator coil.
- 9. Fans pull passenger compartment air through a filter, which removes particulate matter and then passes the cleaned air through the evaporator coil.
- 10. The refrigerant undergoes a change of pressure from high to low, and a corresponding change-of-state from liquid to gas, through a process called evaporation.
- 11. During evaporation, the heat contained in the air in the passenger compartment is absorbed by the gaseous refrigerant.
- 12. As warm air passes through the evaporator coil, moisture condenses, and is collected and drained to the exterior of the vehicle.
- 13. The hot gas is then suctioned back to the compressor and pumped to the condenser to repeat the cycle.



#### **BASIC REFRIGERATION CYCLE**

# 2. OPERATING YOUR TRANS/AIR SYSTEM

Becoming familiar with your Trans/Air climate control system operating controls will enable you to realize maximum system performance and maintain a comfortable environment for you and your passengers. All Trans/Air systems are regulated by a combination of fan speeds and thermostat/temperature settings.

- Types of Controls
- Basic Controls (Rotary Switch)
- Basic Controls (Rotary Switches)
- Basic Controls (Rotary Switches)
- EC 2.5 Controls (Micro Processor-Based)
- EC 3 Controls (Micro Processor-Based, PWM Fan Speed)
- EC 4.0 Controls (Micro Processor-Based)

### **TYPES OF CONTROLS**

# There are currently six types of control options available for Trans/Air systems:

#### **Basic Controls (Rotary Switch)**



#### **Basic Controls (Rotary Switches)**



#### **Basic Controls (Rotary Switches)**



EC2.5 Controls (Micro Processor - Based Controls)



EC3 Controls (Micro Processor - Based, PWM Fan Speed Control)



EC4.0 Controls (Micro Processor - Based Control)



The following pages will detail the operation of the various Trans/Air controls

A basic control rotary switch system consists of a three position rotary switch at the driver, controlling the evaporator fans, and a mechanical thermostat located in the air intake of the evaporator.



# **CONTROLS:**

- 1. Off Position System is de-energized
- 2. Low Position System on, evaporator fans on low speed
- 3. Medium Position System on, evaporator fans on medium speed
- 4. High Position System on, evaporator fans on high speed

# **OPERATING NOTES:**

- Thermostat Mechanical thermostat located in air intake of evaporator is adjustable by means of a knob exiting the rear of the unit. Clockwise rotation = Counter Clockwise rotation = Warmer)
- OEM Dash Air In applications where the Trans/Air system is tied in with the OEM dash air system, the OEM Dash system must be operating in order for the Trans/Air system to be energized.
- OEM Switches OEM's may use a variation of these controls, but the operation is usually the same.

# **BASIC CONTROLS ROTARY SWITCHES**

A basic control rotary switch system consists of two rotary switches at the driver, one controlling the evaporator fans and the other controlling the thermostat.



### CONTROLS:

- 1. Position "0" System is de-energized
- 2. Position "1" System on, evaporator fans on low speed
- 3. Position "2" System on, evaporator fans on medium speed
- 4. Position "3" System on, evaporator fans on high speed
- 5. Cooler/Thermostat Clockwise rotation = Cooler, Counter Clockwise rotation = Warmer

### **OPERATING NOTES:**

- OEM Dash Air In applications where the Trans/Air system is tied in with the OEM dash air system, the OEM dash system must be operating in order for the Trans/Air system to be energized.
- OEM Switches OEM's may use a variation of these controls, but the operation is usually the same.

A basic control rotary switch system consists of two, three-position rotary switches at the driver. One rotary switch controls the evaporator fans. One rotary switch controls the heat/vent/cool mode.



# **CONTROLS:**

- 1. Position "0" System is de-energized
- 2. Position "1" System on, evaporator fans on low speed
- 3. Position "2" System on, evaporator fans on medium speed
- 4. Position "3" System on, evaporator fans on high speed
- 5. Heat Position Heat mode
- 6. Cool Position Air conditioning mode
- 7. Fan Position Ventilation mode (evaporator fans only)

# **OPERATING NOTES:**

- Thermostat Mechanical thermostat located in air intake of evaporator is adjustable by means of a knob exiting the rear of the unit. (Clockwise rotation = Cooler, Counter Clockwise rotation = Warmer)
- OEM Dash Air In applications where the Trans/Air system is tied in with the OEM dash air system, the OEM dash system must be operating in order for the Trans/Air system to be energized.
- OEM Switches OEM's may use a variation of these controls, but the operation is usually the same.

# Operation Manual Trans/Air EC 2.5 Climate Control System



The EC2.5 climate control system has two driver control modules: Mode/Fan control switch and Thermostat. The Mode/Fan control switch turns system on/off and controls evaporator blower speed. The Thermostat displays cabin air temperature, service codes and adjusts set point temperature.

# **BASIC OPERATION**

#### Turn system on

With the vehicle running, press the <u>MODE</u> button to turn EC2.5 system on. The A/C indicator will light up indicating system is in A/C mode. Fan speed indicator 1 will light up indicating the fan speed is Low. Thermostat will also turn on automatically. LED display shows cabin air temperature.

#### Select mode of operation (Heat / Defog Optional)

Press the <u>MODE</u> button to change the operation mode between A/C, Defog or Heat.

#### Change fan speed

Press the FAN button to change the fan speed between Low, Medium, and High.

#### Change set point temperature

The thermostat LCD display shows cabin air temperature during normal operation. Press <u>UP</u> or <u>DOWN</u> arrow once for set point mode. The set point temperature and a flashing decimal point will be displayed on the LED in set point mode. Press the <u>UP</u> or <u>DOWN</u> arrow again to adjust the set point to the desired value. After 5 seconds, EC2.5 will switch back to normal operating mode displaying cabin temperature. The new set point then becomes effective.

The default set point temperature is 70°F. This setting is stored in EC2.5's non-volatile memory. It takes effect every time the system turns on. To change the default set point temperature setting, go into the setting mode and adjust the set point to the desired value, then press the <u>UP</u> and <u>DOWN</u> arrow **simultaneously**. The new set point value will be stored into the non-volatile memory and become the default set point.

#### Turn system off

Press the <u>MODE</u> button until all the mode indicators turn off. The fan speed indicators and the thermostat LCD display will turn off consequently.

#### Fan Only mode operation

Press the <u>FAN</u> button while the EC2.5 system is off. The A/C system will be running in Fan Only mode. (Only evaporator blowers run, compressor and condenser remain off.) Press the <u>FAN</u> button to set the fan to desired speed (Low, Medium or High). In Fan Only mode, the thermostat LCD still shows the cabin air temperature. To turn Fan Only mode off, just keep pressing the <u>FAN</u> button until all the fan speed indicators turn off.

#### **TROUBLE SHOOTING**

Service Indicator	
Hi	Internal temperature above 90 °F
Lo	Internal temperature below 60 °F
Sr	Service required High pressure fault or Low pressure fault

No service required when the thermostat LCD shows "Hi" or "Lo".

Turn the system off and then turn it back on to reset the "Sr" code. Service is required if "Sr" code can not be reset.



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### Operation Manual Trans/Air EC 3 Climate Control System



The EC3 climate control system has two driver control modules: Mode/Fan control switch and Thermostat. The Mode/Fan control switch controls system operating mode and evaporator blower speed. The Thermostat displays cabin air temperature, fault codes and adjusts set point temperature.

# **BASIC OPERATION**

#### Turn system on

With the vehicle running, press the <u>MODE</u> button to turn EC3 system on. The A/C indicator will light up indicating system is in A/C mode. All 3 fan speed indicators will light up indicating the fan speed is in Auto mode. This is the default mode of operation. Thermostat will also turn on automatically. LED display shows cabin air temperature.

#### Select operating mode

Press the <u>MODE</u> button to change the operating mode between A/C, Defog and Heat.

#### Change fan speed

Press the <u>FAN</u> button to change the fan speed between Auto, High, Medium, and Low. In Auto fan speed, the evaporator fan speed is controlled automatically by EC3 system based on the difference of the cabin air temperature and the set point temperature.

#### Change set point temperature

Press the <u>UP</u> or <u>DOWN</u> arrow once for set point mode. The set point temperature and a flashing decimal point will be displayed on the LED in set point mode. Press the <u>UP</u> or <u>DOWN</u> arrow again to adjust the set point to the desired value. After 5 seconds, EC3 will switch back to normal operating mode displaying cabin temperature. The new set point then becomes effective.

The default set point temperature is 70°F. This setting is stored in EC3's nonvolatile memory. It takes effect every time the EC3 system turns on. To change the default set point temperature setting, go into the setting mode and adjust the set point to the desired value, then press the <u>UP</u> and <u>DOWN</u> arrow **simultaneously**. The new set point value will be stored into the non-volatile memory and become the default set point.

#### Turn system off

Press the <u>MODE</u> button until all the mode indicators turn off. The fan speed indicators and the thermostat LCD display will turn off consequently.

#### Fan only mode operation

Press the <u>MODE</u> button to turn EC3 system off and then press the <u>FAN</u> button. The A/C system will be running in Fan Only mode. (Only evaporator blowers run, compressor and condenser remain off.) Press the <u>FAN</u> button to set the fan to desired speed (Auto, Low, Medium or High). In Fan Only mode, the thermostat LCD still shows the cabin air temperature. To turn Fan Only mode off, just keep pressing the <u>FAN</u> button until all the fan speed indicators turn off.

#### TROUBLE SHOOTING

Fault Code	Description
HP	High pressure fault
LP	Low pressure fault
Fr	Freezestat fault
Lr	Low clutch voltage/ Blown fuse
bF	Blown fuse
System Indicator	
Hi	Return air temperature above 90 °F
Lo	Return air temperature below 60 °F
Sr	Maintenance required

#### Fault code listing

#### Reset fault code

Turn the system off and then turn it back on.



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EC3 OPERATION MANUAL 701465 REV. B

### Operation Manual Trans/Air EC 4.0 Climate Control System



The EC4.0 climate control system has two driver control modules: Mode/Fan control switch and Thermostat. The Mode/Fan control switch turns system on/off and controls evaporator blower speed. The Thermostat displays cabin air temperature, fault and service codes, and adjusts set point temperature.

# **BASIC OPERATION**

#### Turn system on

With the vehicle running, press the MODE or the FAN button to turn EC4.0 system on. The A/C indicator will light up indicating system is in A/C mode. Fan speed indicator 3 will light up indicating the fan speed is High. Thermostat will also turn on automatically. LED display shows cabin air temperature.

#### Select mode of operation (Heat / Defog Optional)

Press the MODE button to change the operation mode between A/C, Defog or Heat.

#### Change fan speed

Press the FAN button to change the fan speed between Low, Medium, and High.

#### Change set point temperature

The thermostat LED display shows cabin air temperature during normal operation. Press UP or DOWN arrow once for set point mode. The set point temperature and a flashing decimal point will be displayed on the LED in set point mode. Press the UP or DOWN arrow again to adjust the set point to the desired value. After 5 seconds, EC4.0 will switch back to normal operating mode displaying cabin temperature. The new set point then becomes effective. The default set point temperature is 70°F. This setting is stored in EC4.0's nonvolatile memory. It takes effect every time the system turns on. To change the default set point temperature setting, go into the setting mode and adjust the set point to the desired value, then press the UP and DOWN arrow simultaneously. The new set point value will be stored into the nonvolatile memory and become the default set point.

#### Turn system off

Press the MODE button until all the mode indicators turn off. Press the MODE button again to turn fans off, and the system will turn off and the thermostat LED display will turn off consequently.

#### Fan Only mode operation

Press the MODE button until all the mode indicators turn off. The A/C system will be running in Fan Only mode. (Only evaporator blowers run, compressor and condenser remain off.) Press the FAN button to set the fan to desired speed (Low, Medium or High). In Fan Only mode, the thermostat LED still shows the cabin air temperature. To turn Fan Only mode off, press the MODE button and the system will turn off.

Fault Code	Description
HP	High pressure fault
LP	Low pressure fault
Lu	Low clutch voltage/ Blown fuse
Sr	Maintenance required
System Indicator	
Hi	Return air temperature above 90 °F
Lo	Return air temperature below 60 °F
Sr	1500 Hr Service Reminder

#### **TROUBLE SHOOTING**

No service required when the thermostat LED shows "Hi" or "Lo".

Turn the system off and then turn it back on to reset the "Sr" code. Service is required if "Sr" code can not be reset.



EC4.0 OPERATION MANUAL 701509 REV. B

# 3. MAINTAINING YOUR TRANS/AIR SYSTEM

Your Trans/Air climate control system is the finest piece of equipment available on the market today. In order to keep your Trans/Air climate control system operating at peak performance and to maintain warranty, a routine maintenance program MUST be followed. The following Preventive and Corrective Maintenance Schedule, combined with the summary of corrective maintenance conditions should be implemented to ensure optimum performance and continuous service.

- Preventive Maintenance Schedule
- Corrective Maintenance Conditions

# PREVENTIVE MAINTENANCE SCHEDULE

ITEM	WHAT TO CHECK	WEEKLY	MONTHLY
Compressor Belts	Tension and Wear	Check	
Properly tensioned belt ensures maximum compressor performance and belt life.			
Evaporator Filters	Cleanliness	Check	Clean
A properly maintained filter maximizes air flow and system performance.			
Hoses	Secured and Protected	Check	
Properly supported hoses prevent the possibility of refrigerant leaks.			
Wiring Harnesses	Secured and Protected	Check	
Properly supported harnesses prevent the possibility of electrical shorts.			trical shorts.
Condenser Coil	Cleanliness	Check	Clean
A properly maintained condenser coil will ensure maximum heat transfer and system performance.			
Sight Glass Moisture Indicator	Color	Check	
Deep Green = Absence of moisture Yellow = Moisture is present <b>IMMEDIATE SYSTEM SERVICE REQUIRED</b>			

# **CORRECTIVE MAINTENANCE CONDITIONS**

# The following conditions require the immediate attention of your nearest authorized Trans/Air Service Center.

- Vibration and/or noise from engine compartment
- Oil around refrigeration hose connections
- Water dripping from evaporator and/or air ducts
- Vibration and/or noise from the evaporator area
- Noticeable decrease in system performance
- Reduced air flow (this condition is normally a result of dirty or clogged evaporator filters)

# 4. THIS IS YOUR TRANS/AIR WARRANTY

Trans/Air Manufacturing is proud to offer an industry exclusive, two year warranty on all Trans/Air systems. Our products have been designed and manufactured to provide years of continuous and reliable service. In the event of a warrantable failure, rest assured that our commitment to customer service will be extended immediately through Trans/Air's comprehensive Warranty Program.

- Warranty Summary
- Trans/Air Manufacturing Limited Warranty
- Warranty Service Procedures Flow Diagram

### TRANS/AIR MANUFACTURING TWO YEAR LIMITED WARRANTY

Туре	Two (2) Year Limited Warranty
Inception Date	Date of In - Service
Mileage	Unlimited
Optional Coverage	Available on a Pre-Negotiated Basis
System Warranty	A two (2) year system warranty is extended with Trans/Air supplied evaporators, condensers, compressors, and related electrical, piping, and mount kits.
Component Warranty	A two (2) year component warranty is extended when Trans/Air supplies evaporators or condensers.
Parts Warranty	A 6 month parts warranty is extended on Trans/Air supplied replacement parts.
Eligibility	Original Purchaser/Non-Transferable
Limitations	Extends to the value of the repair or replacement of the Trans/Air unit.
Labor Coverage	Two (2) Years Limited
Labor Provisions	Subject to current flat rate schedule. Labor must be performed at an Authorized Trans/Air Service Center. Non-service center labor must be approved by Trans/Air, in advance, in writing.
Provisions	Lack of maintenance voids warranty.
Provisions	Installation related failures are not covered.

This is an abbreviated summary: For full procedures and details, please refer to Trans/Air's Two (2) Year Limited Warranty.

#### Trans/Air Manufacturing Corporation Limited Warranty

Subject to the conditions and limitations set forth below, for a period of two (2) years (with unlimited mileage) starting at the date of delivery to the End User and with proper registration documentation, Trans/Air Manufacturing Corporation (Trans/Air) warrants to the original owner, if still the user, that each manufactured system/component will be free from defects in factory workmanship and materials when used and maintained in accordance with the recommended procedures. Trans/Air will furnish new or remanufactured replacement parts and cover the cost of repair labor for two years following delivery in accordance with the current Trans/Air flat rate labor schedule when performed at an authorized Trans/Air Service Center. This is the End User's sole and exclusive remedy.

THIS IS TRANS/AIR WARRANTY AND IT IS FURNISHED IN LIEU OF ANY AND ALL OTHER WARRANTIES. TRANS/AIR MAKES NO OTHER EXPRESS OR IMPLIED WARRANTIES WHATSOEVER. NO WARRANTY OF MERCHANTIABILITY AND NO WARRANTY OF FITNESS FOR PARTICULAR PURPOSE IS MADE BY TRANS/AIR.

#### **Conditions and Limitations**

1) In order for a two (2) year system warranty to apply, the customer must purchase the evaporator(s), compressor(s), piping kits, electrical kits, mount kits and refrigeration hose from Trans/Air. If the full system is not purchased from Trans/Air, the two (2) year warranty applies to Trans/Air supplied evaporators and condensers only. Extended warranty coverage may be purchased from Trans/Air at the time of purchase of the unit or system. Correction of a failure under this warranty does not extend the warranty beyond the standard two (2) year warranty period. All other components supplied by Trans/Air ac covered by standard parts warranty (see #4 below).

2) Parts are warranted for a 6 month period from the date of sale or until the expiration of the original equipment warranty, whichever is later. Parts covered by warranty must be returned to Trans/Air's factory in Dallastown, PA, by specified carrier freight prepaid, within standard Return Goods Authorization procedures, for evaluation, in order for Trans/Air to authorize any warranty claim.

3) Trans/Air will be responsible for the costs of repairs or replacement covered by warranty only if performed at an authorized Trans/Air Service Center. The Service Center is responsible for effecting repairs or replacement during the warranty period in accordance with current Trans/Air warranty procedures. A customer requesting service calls at a location other than an approved Service Center or one requesting overtime, shall be responsible for all additional warranty repair expenses in excess of the flat rate allowed. Trans/Air is not responsible for towing charges.

4) If the customer has not properly registered the Trans/Air system, the Service Center is not authorized to render warranty services without charge. All information on the warranty registration form must be completed in its entirety and returned to Trans/Air to activate the warranty.

5) Trans/Air does not warrant the installation of Trans/Air products unless indicated by Trans/Air or an authorized Trans/Air Turnkey installation facility. In the cases of installation related failures, which are not covered by warranty Trans/Air specifically is not responsible for failures attributable to inadequate provision by the installer of structural support or inadequate provision of electrical requirements.

6) This warranty does not apply in cases of a failure of Trans/Air product which is attributable to improper evacuation procedures, or the introduction of non-approved refrigerant oil, additives, or other contaminants into the system.

7) This warranty does not apply in cases of failure of Trans/Air product, which is attributable to failure of the end user to perform or provide preventative maintenance in accordance with Trans/Air's guidelines. Examples include, but are not limited to, failure to properly maintain belt tension, clean condenser coils, replace evaporator filters, maintain electrical systems to provide proper voltage to components, or check and tighten hardware or fittings, which may have loosened due to vibration. (See Trans/Air Preventive Maintenance Schedule)

8) This warranty does not apply to failure of Trans/Air product due to normal wear. Examples included but not limited to, return air filters, refrigerant filters, power pack air filters, power pack fuel filters, power pack coolant hoses, any belts, lubricants, transit compressor oil collection rings, condenser and evaporator motor brushes, etc., all of which are considered to be expendable items.

9) This warranty does not apply to loss of refrigerant or any damage caused by loss of refrigerant unless directly attributable to the failure of a Trans/Air product which, at the time of the failure, was under warranty.

10) Trans/Air reserves the right to make changes in design or improvements to its products or parts thereof, without obligation to make or install of such changes or improvements on existing units or upon products covered by this warranty.

11) If Trans/Air makes a product improvement program available to the End User, Trans/Air reserves the right to limit the duration of the programs unless it is safety related. Expenses incurred in completing said product improvements after the closing date of the program are the responsibility of the End User.

12) Trans/Air's warranty shall not apply in the case of damage incurred during shipment, accidental damage, abuse, misuse, act of nature, or if the serial number is missing, or to any product which, in the sole opinion of Trans/Air, has been installed, altered or repaired in a manner affecting the efficiency or performance of the unit or inconsistent with Trans/Air's written procedures.

13) This warranty applies only within the boundaries of the continental United States and Canada. For other available coverage that may be purchased, contact Trans/Air.

TRANS/AIR'S LIABILITY TO THE PURCHASER FOR DAMAGES FROM ANY CAUSE WHATSOEVER AND REGARDLESS OF THE FORM(S) OF ACTION, WHETHER IN CONTACT OR TORT, INCLUDING NEGLIGENCE OR OTHERWISE, SHALL BE LIMITED TO THE VALUE OF REPAIRS TO OR REPLACEMENT OF THE DEFECTIVE COMPONENTS DURING THE WARRANTY PERIOD, AS THE EXCLUSIVE REMEDY, AND STRAIGHT TIME LABOR CHARGES AS OUTLINED IN ITS CURRENT WARRANTY PROCEDURE MANUAL AND FLAT RATE LABOR SCHEDULE. IN NO EVENT SHALL TRANS/AIR BE LIABLE WHATSOEVER FOR ANY PUNITIVE, INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR FOR LOST PROFITS OR OTHER COMMERCIAL LOSSES FROM ANY CAUSE WHATSOEVER, WHETHER OR NOT TRANS/AIR HAS RECEIVED NOTICE OF THE POSSIBILITY OR CERTAINTY OF SUCH DAMAGES OR LOSSES. TRANS/AIR WILL NOT BE LIABLE FOR ANY LOSS OCCURING BECAUSE THE EQUIPMENT IS OUT OF SERVICE. NO ACTION OR PROCEEDING ARISING OUT OF, FOR BREACH OF, OR IN ANY MANNER RELATING TO THIS WARRANTY MAY BE BROUGHT BY ANYONE AFTER SIX (6) MONTHS FROM NOTIFICATION TO TRANS/AIR OF AN IN-WARRANTY FALURE.

# WARRANTY SERVICE PROCEDURES FLOW DIAGRAM

Should a Trans/Air Manufacturing product fail due to defective material or workmanship, the following procedures must be followed.



Please note, a properly completed and registered warranty is required to obtain warranty coverage!!

# 5. THESE ARE YOUR TRANS/AIR SERVICE CENTERS

Trans/Air Manufacturing is pleased to offer our website listing of authorized Service Center professionals. The key word is professional. All Trans/Air Service Centers successfully undergo a rigorous review process prior to their being appointed as an authorized Service Center. Servicing mobile climate control systems is their primary business. They possess the proper facility, tools, trained staff, and understanding of Trans/Air warranty procedures, necessary to guarantee your service requirements will be satisfied the FIRST TIME, ON TIME, EVERY TIME.

We take pride in being associated with these professionals in providing the highest quality products and services for the transportation industry.

# ATTENTION...FLEET OPERATORS!

If you're interested in becoming a TRANS/AIR WARRANTY SERVICE CENTER, call...1-800-673-2446, extension 268.

# 6. THIS IS YOUR WARRANTY REGISTRATION

In order to experience the full benefits of our warranty, it is imperative that your Trans/Air system be registered completely and accurately. Failure to properly register the system will adversely affect the availability of warranty coverage. A properly registered system will enable Trans/Air to respond immediately in the unlikely event of a warrantable failure. Your copy of a warranty registration report (Customer's Copy/Yellow) should be with this booklet. Take a few moments to ensure that this form is complete and correct. If not properly completed, please contact your delivering dealer.

- Notes
- Service Record
- Warranty Registration Report

### WARRANTY REGISTRATION AVAILABLE ON-LINE @ www.transairmfg.com

SERVICE RECORD		
DATE	DESCRIPTION	

SERVICE RECORD		
DATE	DESCRIPTION	

#### TERMS AND CONDITIONS OF SALE

ORDERS: All orders must be in writing and include the TRANS/AIR model or part number. TRANS/AIR is not responsible for incorrect shipments unless a written order is received.

ACCEPTANCE OR ORDERS: All orders are subject to acceptance by TRANS/AIR at TRANS/AIR's home office in Dallastown, Pennsylvania. Acceptance of orders is at TRANS/AIR's sole and absolute discretion. Acceptance of an order and shipment of an accepted order will be contingent, among other things, upon TRANS/AIR's satisfaction with purchaser's financial condition and credit. The availability and terms of credit to be extended to purchaser shall be within TRANS/AIR's sole discretion subject to applicable provisions of law. Whenever in TRANS/AIR's sole judgment purchaser's financial condition or credit is not satisfactory. TRANS/AIR may decline acceptance or withhold shipment of an order or alter, suspend or change credit terms and require satisfactory security to cover all amounts then due or that may become due from purchaser.

**DELIVERIES:** TRANS/AIR always tries to ship by the projected shipping date; however, because of many factors beyond its reasonable control, projected shipment dates are estimates only. No contract will be deemed to exist to ship by a specified date unless TRANS/AIR agrees in writing, signed by an authorized officer of TRANS/AIR. All shipments will be F.O.B. Factory or Warehouse at named shipping point, with title passing to purchaser upon delivery to the carrier by TRANS/AIR.

SPECIAL ENGINE MOUNTINGS: TRANS/AIR's installation of single or dual compressor mountings is based on specific engines and information received from the vehicle manufacturer. TRANS/AIR is not responsible for rework or extra charges based on vehicle manufacturer changes. Kits that do not fit may be returned for credit only if permission to return is obtained from TRANS/AIR, at TRANS/AIR's sole discretion.

PRICES: Published prices are subject to change without notice at any time to acceptance of your order, except when a written quotation has been given. All prices are in U.S. dollars and all prices are F.O.B. point of shipment. TRANS/AIR's price does not include other charges, such as transportation charges, insurance charges, import or export duties, consular fees, any present or future sales, use, occupation or other taxes which may be imposed, all of which are to be paid by the purchaser. Shipments will not be insured unless specifically requested on the purchase order and the purchaser pays for the insurance.

SHORTAGES: Any shortage in shipment or invoicing correction must be reported in writing to TRANS/AIR within five (5) days of receipt of shipment.

**RETURN OF PRODUCTS:** Permission must be obtained from TRANS/AIR before any products are returned. If return of a product is made necessary through any fault of TRANS/AIR, and permission is granted for its return, TRANS/AIR will give full credit, including all transportation charges. If return is due to no fault of TRANS/AIR, and permission for return is granted, credit less a service charge of no less than 25% on accepted items will be issued when the product is returned, transportation prepaid, counted, inspected and found to be insaleable condition.

PAYMENT: Terms of payment are cash on delivery unless previous credit arrangements have been made. Maximum credit terms are Net 30 Days. TRANS/AIR reserves the right to add to an account outstanding for more than thirty (30) days a service charge of 1-1/2% of the principal amount due at the end of each month, or the maximum allowable legal interest rate, if a lesser amount. CANCELLATION: Orders canceled may be subject to charge for expenses incurred by TRANS/AIR in procurement and stocking of parts to make required shipment.

SPECIAL ORDERS: Systems requiring special parts, engineering, etc., will require a deposit of 50% of the price of the order. Should an order be canceled, the deposit will be forfeited, and a cancellation fee will be charged for additional incurred costs. WARRANTY TERMS: EXCEPT AS SPECIFICALLY SET FORTH IN TRANS/AIR'S STANDARD LIMITED WARRANTY FROM TIME TO TIME IN EFFECT, TRANS/AIR MAKES NO WARRANTIES, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO ANY PRODUCT, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MER-CHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ANY STATED EXPRESS WARRANTY IS IN LIEU OF ALL LIABILITIES AND OBLIGATIONS OF TRANS/AIR FOR DAMAGES, INCLUDING, BUT NOT LIMITED TO, INCIDENTAL, CONSEQUENTIAL, SPECIAL AND ANY OTHER DAMAGES ARISING OUT OT OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE PRODUCT, EVEN IF TRANS/AIR HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAM-AGES. TRANS/AIR'S ENTIRE LIABILITY FOR ANY CLAIM OR MATTER WHATSOEVER, REGARDLESS OF FORM, SHALL BE LIMITED TO REPLACEMENT OF THE DEFECTIVE OR NON-CONFORMING PRODUCT OR REFUND OF ITS PURCHASE PRICE. IN NO EVENT SHALL TRANS/AIR BE LIABLE TO PURCHASER OR ANY THIRD PARTY FOR INCI-DENTAL, CONSEQUENTIAL, SPECIAL OR ANY OTHER DAMAGES WHATSOEVER ARISING FROM THE USE OR

TECHNICAL OR OTHER ASSISTANCE: Any information or assistance which may be given to purchaser is based on TRANS/AIR's experience and judgment, but no warranty, expressed or implied, is made as to the information or assistance.

GOVERNING LAW: These Terms and Conditions of Sale shall be governed and construed according to the laws of the State of Pennsylvania, without regard to its principles of conflicts of laws. Purchaser submits to the jurisdiction of the courts of the State of Pennsylvania and the United States District Court for the Eastern District of Pennsylvania, and agrees that all actions or proceedings between TRANS/AIR and purchaser shall be heard and determined in a state or federal court in Pennsylvania. A ruling by any court that one or more of the provisions contained in these Terms and Conditions of Sale. Thereafter, these Terms and Conditions of Sale shall be construed as if the invalid, illegal or unenforceable provision had been amended to the extent necessary to be enforceable within the jurisdiction of the court making the ruling.

NO WAIVER: No waiver, alteration or modification of these Terms and Conditions of Sale shall be valid unless made in writing and signed by an authorized officer of TRANS/AIR.

COLLECTION EXPENSE: TRANS/AIR shall be entitled to recover its collection costs, including the reasonable fees of counsel, if it turns purchaser's account over to an attorney or collection agency for collection.

NO JURY TRIAL: NEITHER TRANS/AIR NOR PURCHASER WILL ELECT A TRIAL BY JURY IN ANY ACTION, SUIT, PROCEEDING OR COUNTERCLAIM IN ANY MATTER RELATING TO OR ARISING OUT OF ANY SALE BY TRANS/AIR TO PURCHASER.

QUOTATION CONDITIONS: QUOTE GOOD FOR 90 DAYS! Prices and terms on a quotation are not subject to verbal changes unless approved in writing by TRANS/AIR. Prices are based on costs and conditions existing at the time of the quotation and are subject to change by TRANS/AIR before final acceptance. Typographical errors are subject to correction.

FORCE MAJEURE: If TRANS/AIR is delayed by force majeure in the performance of any of its obligations, then the performance of the obligation shall be excused until the cause of the delay ceases. The term "force majeure" means any cause of delay, other than financial incapacity, beyond the reasonable control of TRANS/AIR. Force majeure includes, without limitation, strikes, lockouts, riots, sabotage, act of war or piracy; destruction of essential equipment by fire, explosion, storm, flood or earthquake; and delay caused by failure of power supplies or transport facilities.

CUSTOMS CLEARANCES: Purchaser is responsible for obtaining clearance of all items through customs in the country to which they are to be shipped.